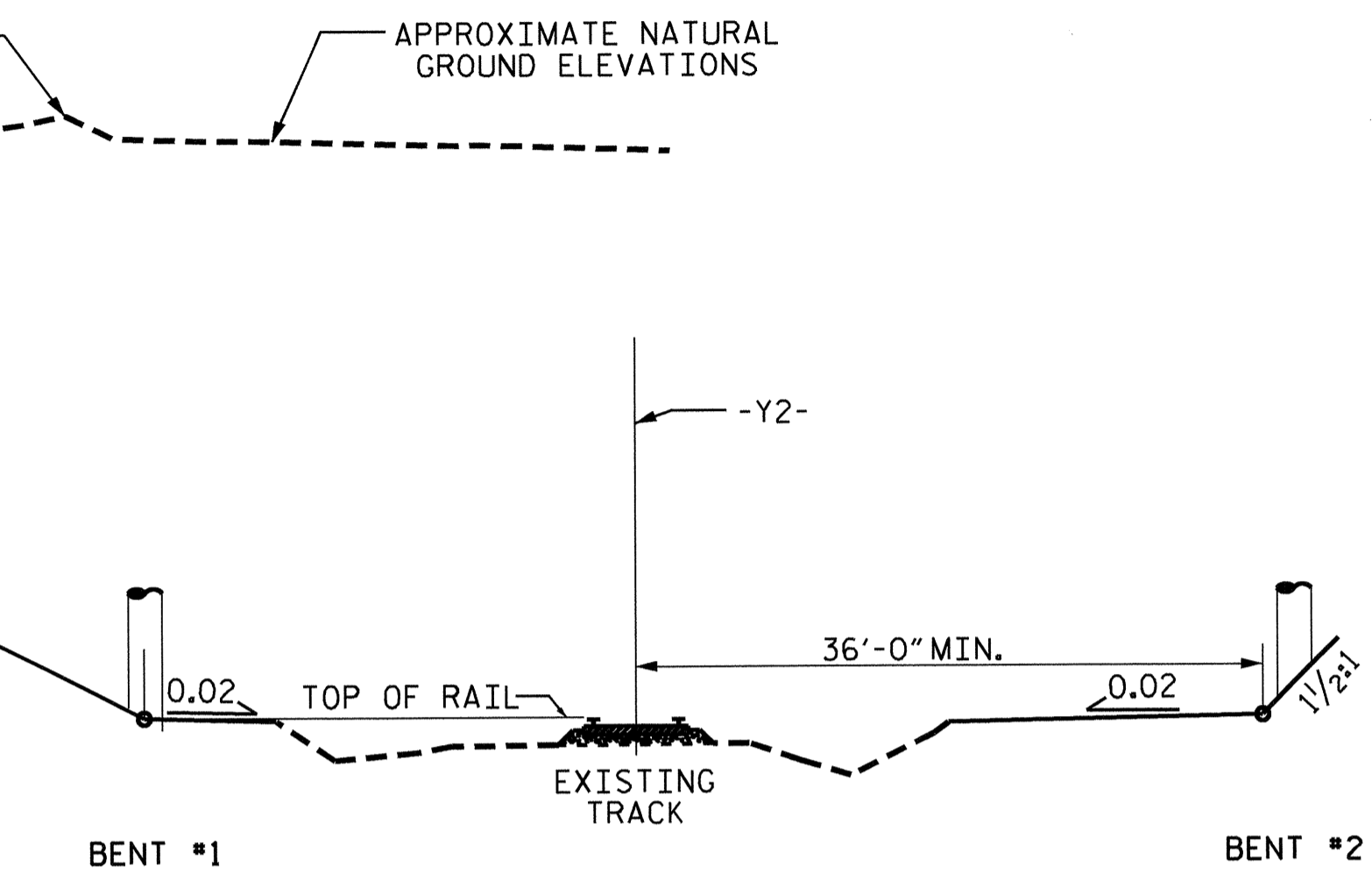
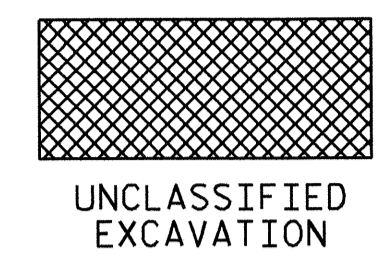
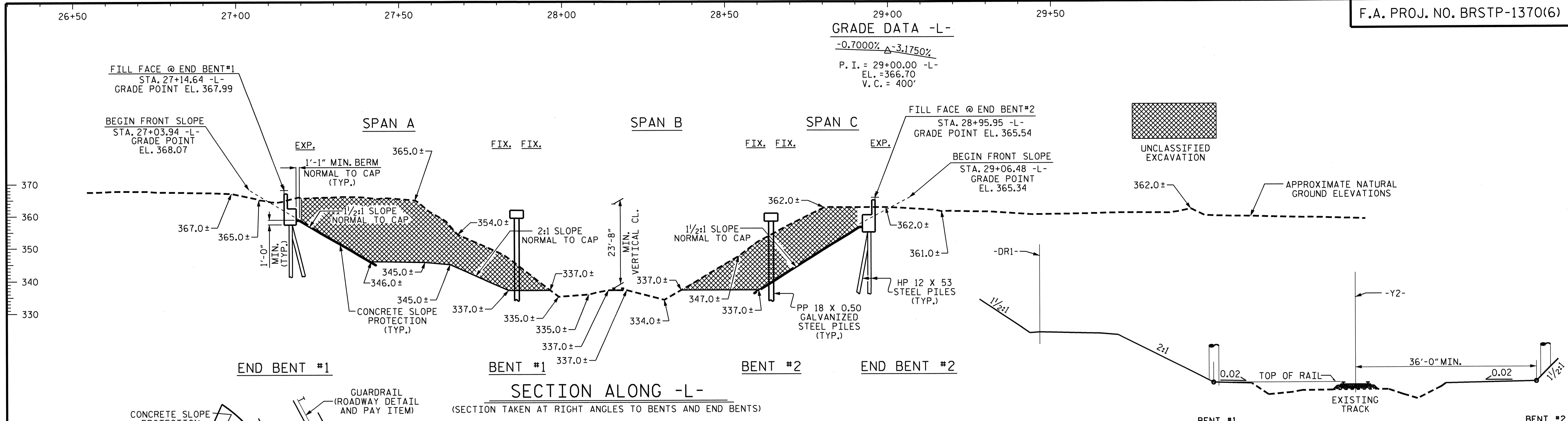
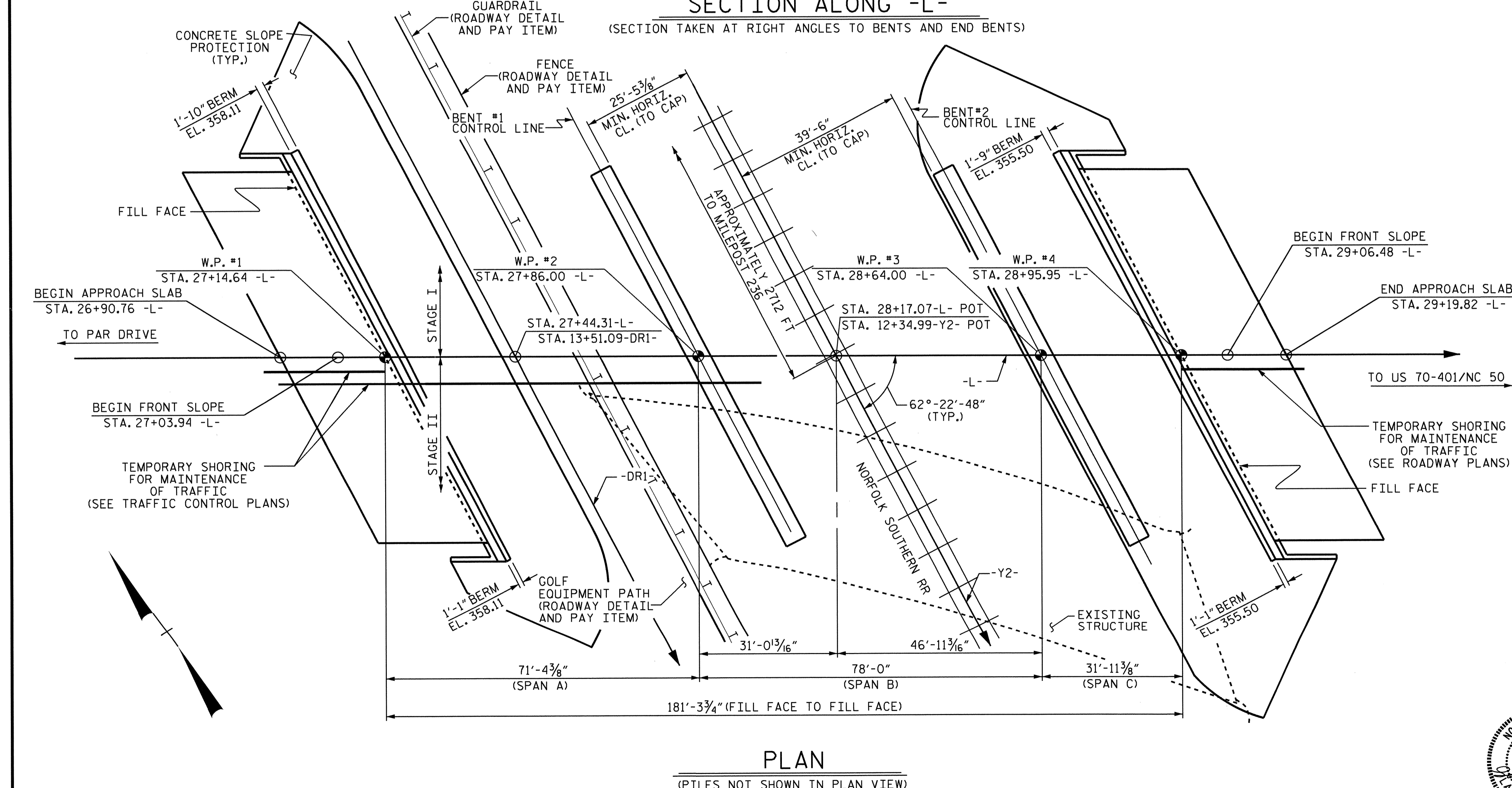


GRADE DATA -L-

-0.7000% Δ-3.1750%
 P. I. = 29+00.00 -L-
 EL. = 366.70
 V. C. = 400'

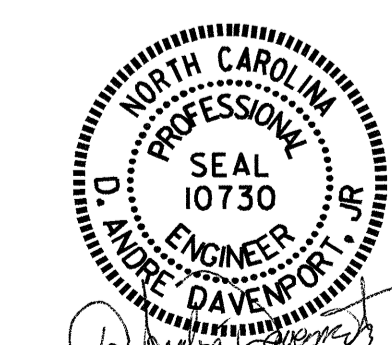
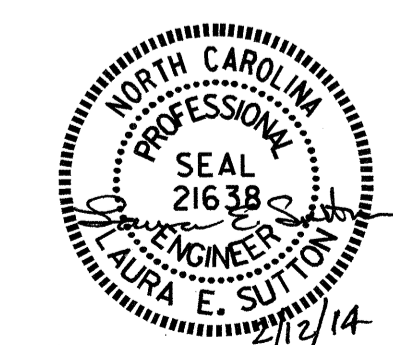


TOP OF RAIL ELEVATIONS	
STATION	ELEVATION
11+40.00 -Y2-	337.14
11+60.00 -Y2-	337.10
11+80.00 -Y2-	337.04
12+00.00 -Y2-	336.94
12+20.00 -Y2-	336.83
12+40.00 -Y2-	336.73
12+60.00 -Y2-	336.66
12+80.00 -Y2-	336.58
13+00.00 -Y2-	336.47
13+20.00 -Y2-	336.36



PROJECT NO. U-4432
 WAKE COUNTY
 STATION: 28+17.07 -L-
 REPLACES BRIDGE NO. 259
 MILEPOST 236.51

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING FOR
 BRIDGE OVER NORFOLK
 SOUTHERN RAILWAY ON
 SR 1370 (TRYON ROAD)
 BETWEEN PAR DRIVE
 AND US 70-401/NC 50



DRAWN BY : D.A. DAVENPORT DATE : 11/15/12
 CHECKED BY : K.D. LAYNE DATE : 06/14/13
 DESIGN ENGINEER OF RECORD : G.W. DICKEY DATE : 06/25/13

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1	
1			3			TOTAL SHEETS 52	
2			4				

NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT #1 AND END BENT #2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 125 TONS PER PILE.

DRIVE PILES AT END BENT #1 AND END BENT #2 TO A REQUIRED DRIVING RESISTANCE OF 210 TONS PER PILE.

PILES AT BENT #1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 210 TONS PER PILE.

DRIVE PILES AT BENT #1 TO A REQUIRED DRIVING RESISTANCE OF 350 TONS PER PILE.

PILES AT BENT #2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 175 TONS PER PILE.

DRIVE PILES AT BENT #2 TO A REQUIRED DRIVING RESISTANCE OF 300 TONS PER PILE.

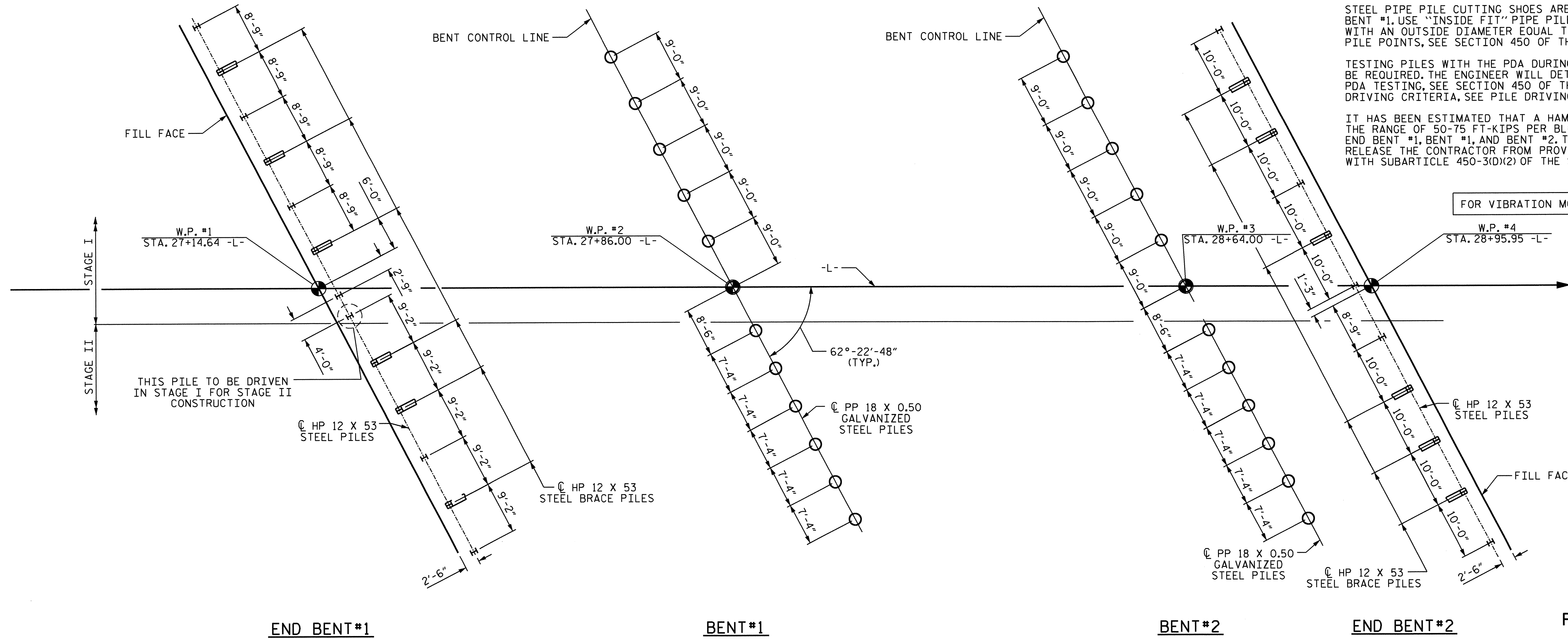
INSTALL PILES AT BENT #1 AND BENT #2 TO A TIP ELEVATION NO HIGHER THAN EL. 311.0 AND EL. 317.0, RESPECTIVELY.

STEEL PIPE PILE CUTTING SHOES ARE REQUIRED FOR STEEL PIPE PILES AT BENT #1. USE "INSIDE FIT" PIPE PILE CUTTING SHOES, I.E., CUTTING SHOES WITH AN OUTSIDE DIAMETER EQUAL TO THE PIPE PILE DIAMETER. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS AND FOR PILE DRIVING CRITERIA, SEE PILE DRIVING CRITERIA PROVISION.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 50-75 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT #1, BENT #1, AND BENT #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.

FOR VIBRATION MONITORING, SEE ROADWAY PLANS.

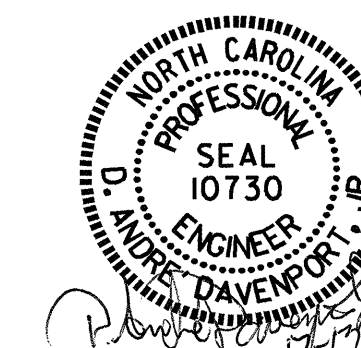


FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE TO PILE CENTERLINE
BRACE PILES AT END BENTS ARE BATTERED 3:12

PROJECT NO. U-4432
WAKE COUNTY
STATION: 28+17.07-L-

SHEET 2 OF 3



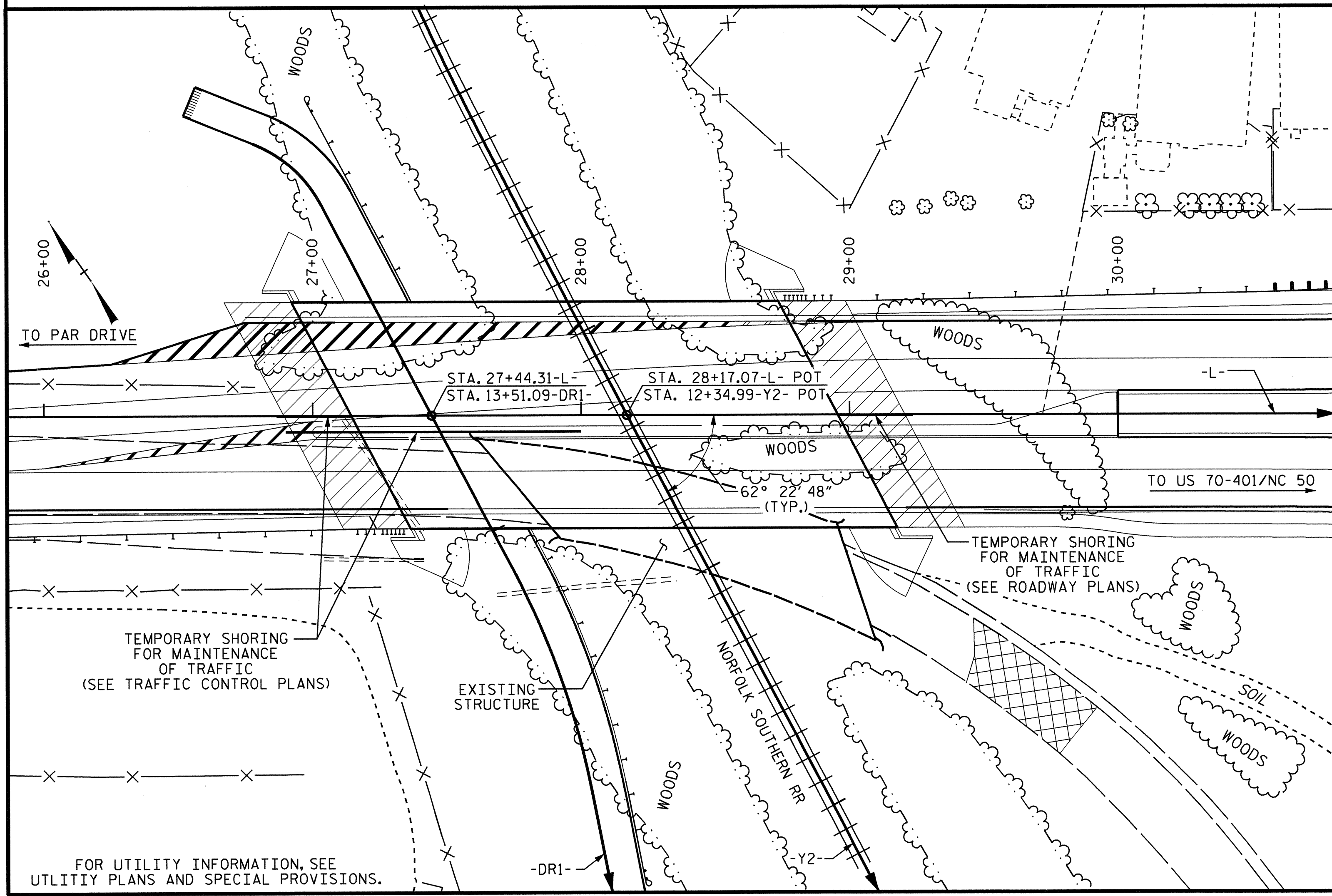
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING FOR
BRIDGE OVER NORFOLK
SOUTHERN RAILWAY ON
SR 1370 (TRYON ROAD)
BETWEEN PAR DRIVE
AND US 70-401/NC 50

DRAWN BY : D.A. DAVENPORT DATE : 11/15/12
CHECKED BY : K.D. LAYNE DATE : 06/14/13
DESIGN ENGINEER
OF RECORD : G.W. DICKEY DATE : 06/25/13

REVISIONS						SHEET NO. S-2
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 52
2			4			

BM. #2 EL = 358.05 RAILROAD SPIKE IN BASE OF 24" DIA. WHITE OAK, 162' RIGHT OF STA. 29+55.00-L-

NOTES



LOCATION SKETCH

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
 THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
 REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
 THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.
 THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 50 FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.
 STEEL SHEET PILING REQUIRED FOR SHORING SHALL BE HOT ROLLED.
 TEMPORARY SHORING WILL BE REQUIRED IN THE AREAS INDICATED IN THE PLAN VIEW (SHEET S-1). FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.
 AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE CONSISTING OF 2 @ 45'-0" AND 1 @ 40'-0" SIMPLE SPAN REINFORCED CONCRETE DECK GIRDERS; CLEAR ROADWAY WIDTH OF 24'-0" AND 7/4" REINFORCED CONCRETE DECK WITH 4" ASPHALT WEARING SURFACE ON REINFORCED CONCRETE ABUTMENTS AND REINFORCED CONCRETE POST AND BEAM INTERIOR BENTS AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE, SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
 FOR PLACING LOADS ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

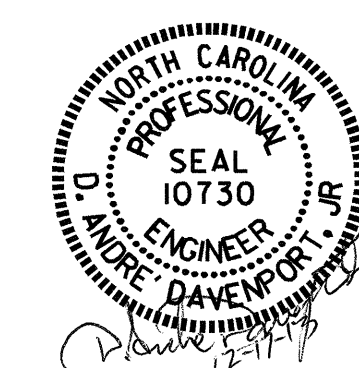
THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED, THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.
 NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
 FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
 THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
 FOR INTERIOR BENTS #1 & #2, 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 MAINTENANCE AND PROTECTION OF GOLF COURSE TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.
 THE RAILROAD TRACK TOP OF RAIL ELEVATIONS ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE TOP OF RAIL ELEVATIONS AND REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS	HP 12 X 53 STEEL PILES	PP 18 X 0.50 GALVANIZED STEEL PILES	STEEL PILE POINTS	TWO BAR METAL RAIL	1'-2" X 2'-11 3/4" CONCRETE PARAPET	72" CHAIN LINK FENCE	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	FOAM JOINT SEALS	ELECTRICAL CONDUIT SYSTEM FOR SIGNALS			
	LUMP SUM	EACH	LUMP SUM	SO. FT.	SO. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	NO.	LIN. FT.	NO.	SO. YDS.	LUMP SUM	LUMP SUM	LUMP SUM			
SUPERSTRUCTURE				15,585	14,258				27	1,578.75			341.01	357.73	352.00							
END BENT #1						98.9		11261		13	715					520						
BENT #1						65.9		7348				12	600	12								
BENT #2						67.4		7148				12	600									
END BENT #2						102.0		10967		11	415					805						
TOTAL	LUMP SUM	1	LUMP SUM	15,585	14,258	334.2	LUMP SUM	36724	27	1,578.75	24	1130	24	1200	12	341.01	357.73	352.00	1325	LUMP SUM	LUMP SUM	LUMP SUM

PROJECT NO. U-4432
 WAKE COUNTY
 STATION: 28+17.07-L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING FOR
 BRIDGE OVER NORFOLK
 SOUTHERN RAILWAY ON
 SR 1370 (TRYON ROAD)
 BETWEEN PAR DRIVE
 AND US 70-401/NC 50

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS 52
2			4			

DRAWN BY: D.A. DAVENPORT DATE: 06/14/13
 CHECKED BY: K.D. LAYNE DATE: 06/14/13
 DESIGN ENGINEER OF RECORD: G.W. DICKEY DATE: 06/25/13

LOAD FACTORS:

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

LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																							
LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER	
						MOMENT					SHEAR					MOMENT							
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (ft)
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.03	--	1.75	0.843	1.28	A	I	33.708	1.028	1.36	A	I	20.225	0.80	1.028	1.03	A	I	33.708	
	HL-93(0pr)	N/A	--	1.66	--	1.35	0.843	1.66	A	I	33.708	1.028	1.77	A	I	20.225	N/A	--	--	--	--	--	
	HS-20(Inv)	36.000	2	1.41	50.714	1.75	0.843	1.75	A	I	33.708	1.028	1.68	A	I	20.225	0.80	0.843	1.41	A	I	33.708	
	HS-20(0pr)	36.000	--	2.18	78.602	1.35	0.843	2.27	A	I	33.708	1.028	2.18	A	I	20.225	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SV	SNSH	13.500	--	42.263	1.4	0.843	4.87	A	I	33.708	1.028	4.77	A	I	20.225	0.80	0.843	3.13	A	I	33.708	
		SNGARBS2	20.000	--	47.077	1.4	0.843	3.66	A	I	33.708	1.028	3.46	A	I	20.225	0.80	0.843	2.35	A	I	33.708	
		SNAGRIS2	22.000	--	49.237	1.4	0.843	3.48	A	I	33.708	1.028	3.25	A	I	20.225	0.80	0.843	2.24	A	I	33.708	
		SNCOTTS3	27.250	--	42.468	1.4	0.843	2.42	A	I	33.708	1.028	2.39	A	I	20.225	0.80	0.843	1.56	A	I	33.708	
		SNAGGRS4	34.925	--	45.764	1.4	0.843	2.04	A	I	33.708	1.028	2.03	A	I	20.225	0.80	0.843	1.31	A	I	33.708	
		SNS5A	35.550	--	45.535	1.4	0.843	1.99	A	I	33.708	1.028	2.09	A	I	20.225	0.80	0.843	1.28	A	I	33.708	
		SNS6A	39.950	--	47.083	1.4	0.843	1.83	A	I	33.708	1.028	1.93	A	I	20.225	0.80	0.843	1.18	A	I	33.708	
	SNS7B	42.000	--	47.144	1.4	0.843	1.74	A	I	33.708	1.028	1.93	A	I	20.225	0.80	0.843	1.12	A	I	33.708		
	T1ST	TNAGRIT3	33.000	--	47.46	1.4	0.843	2.24	A	I	33.708	1.028	2.28	A	I	20.225	0.80	0.843	1.44	A	I	33.708	
		TNT4A	33.075	--	47.808	1.4	0.843	2.25	A	I	33.708	1.028	2.19	A	I	20.225	0.80	0.843	1.45	A	I	33.708	
		TNT6A	41.600	--	49.299	1.4	0.843	1.84	A	I	33.708	1.028	2.11	A	I	20.225	0.80	0.843	1.19	A	I	33.708	
		TNT7A	42.000	--	50.094	1.4	0.843	1.85	A	I	33.708	1.028	2.03	A	I	20.225	0.80	0.843	1.19	A	I	33.708	
		TNT7B	42.000	--	52.004	1.4	0.843	1.92	A	I	33.708	1.028	1.86	A	I	20.225	0.80	0.843	1.24	A	I	33.708	
		TNAGRIT4	43.000	--	50.512	1.4	0.843	1.83	A	I	33.708	1.028	1.79	A	I	20.225	0.80	0.843	1.17	A	I	33.708	
TNAGT5A		45.000	--	49.775	1.4	0.843	1.72	A	I	33.708	1.028	1.82	A	I	20.225	0.80	0.843	1.11	A	I	33.708		
TNAGT5B	45.000	3	1.09	49.114	1.4	0.843	1.7	A	I	33.708	1.028	1.7	A	I	20.225	0.80	0.843	1.09	A	I	33.708		

NOTES:

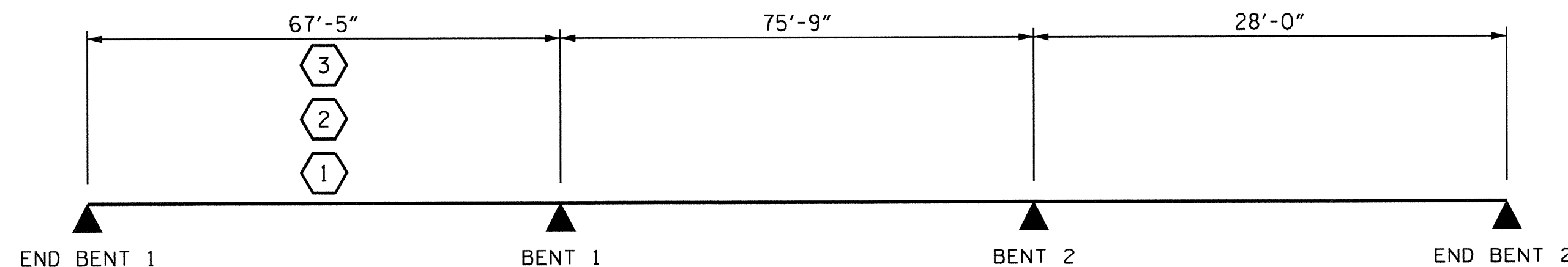
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

COMMENTS:

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

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

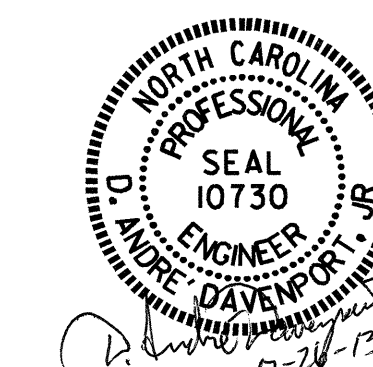


LRFR SUMMARY

PROJECT NO. U-4432
WAKE COUNTY
 STATION: 28+17.07-L-

ASSEMBLED BY : D.A. DAVENPORT DATE : 06/26/12
 CHECKED BY : K.D. LAYNE DATE : 06/14/13
 DESIGN ENGINEER OF RECORD : G.W. DICKEY DATE : 06/25/13
 DRAWN BY : MAA 1/08
 CHECKED BY : GM/DI 2/08

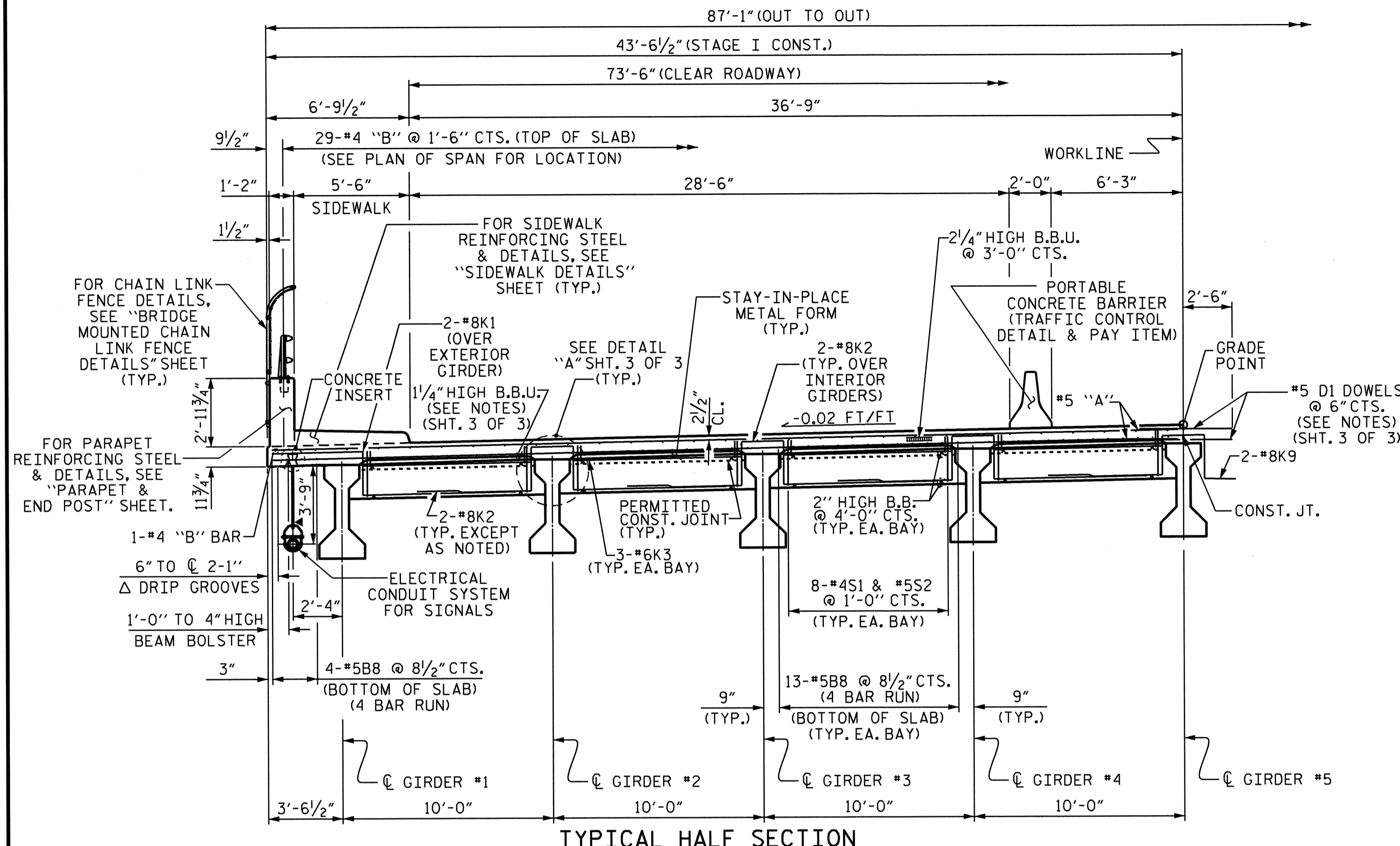
REV. 11/2/08R MAA/GM



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

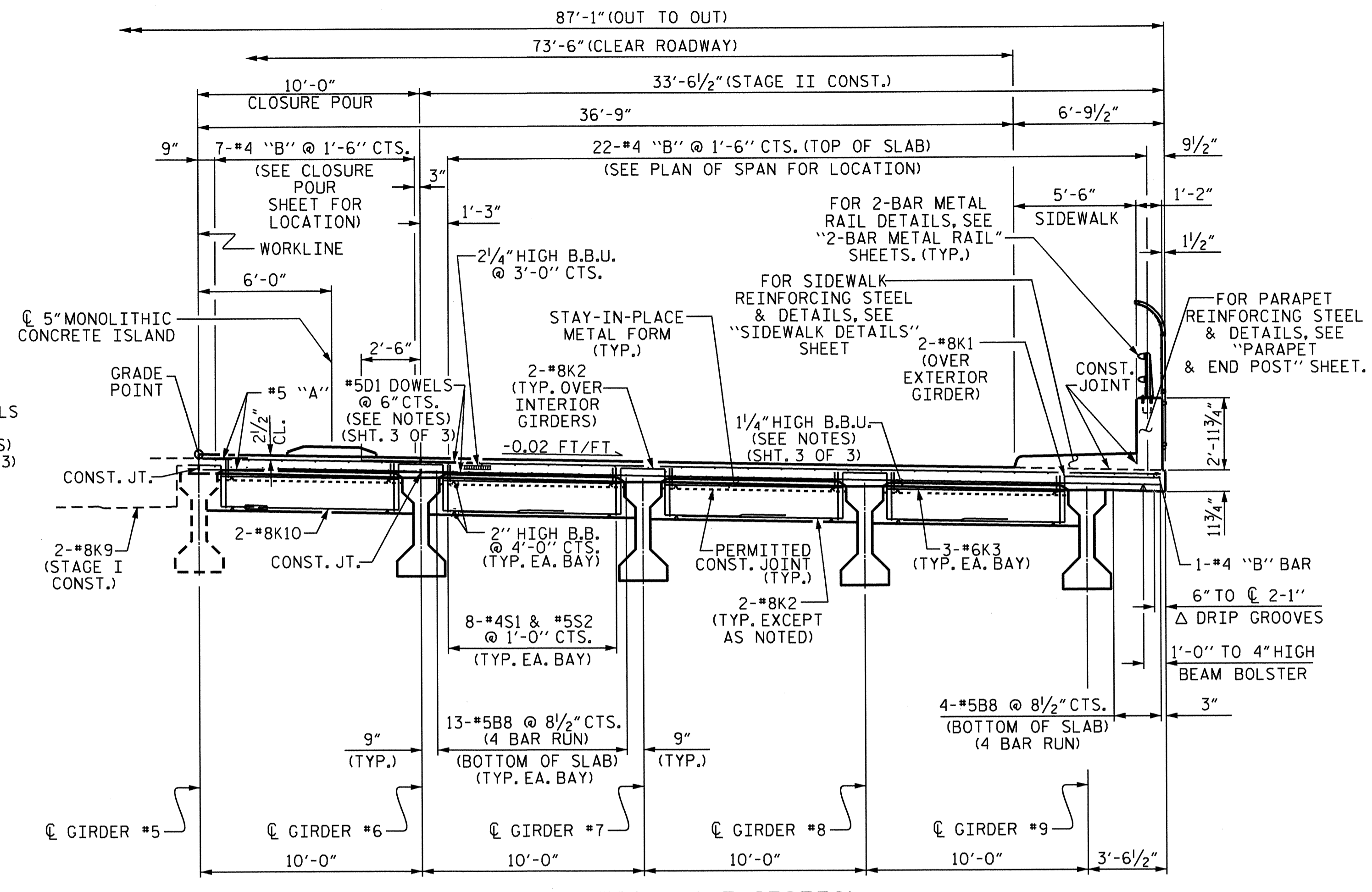
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			52

STD. NO. LRFR1



TYPICAL HALF SECTION

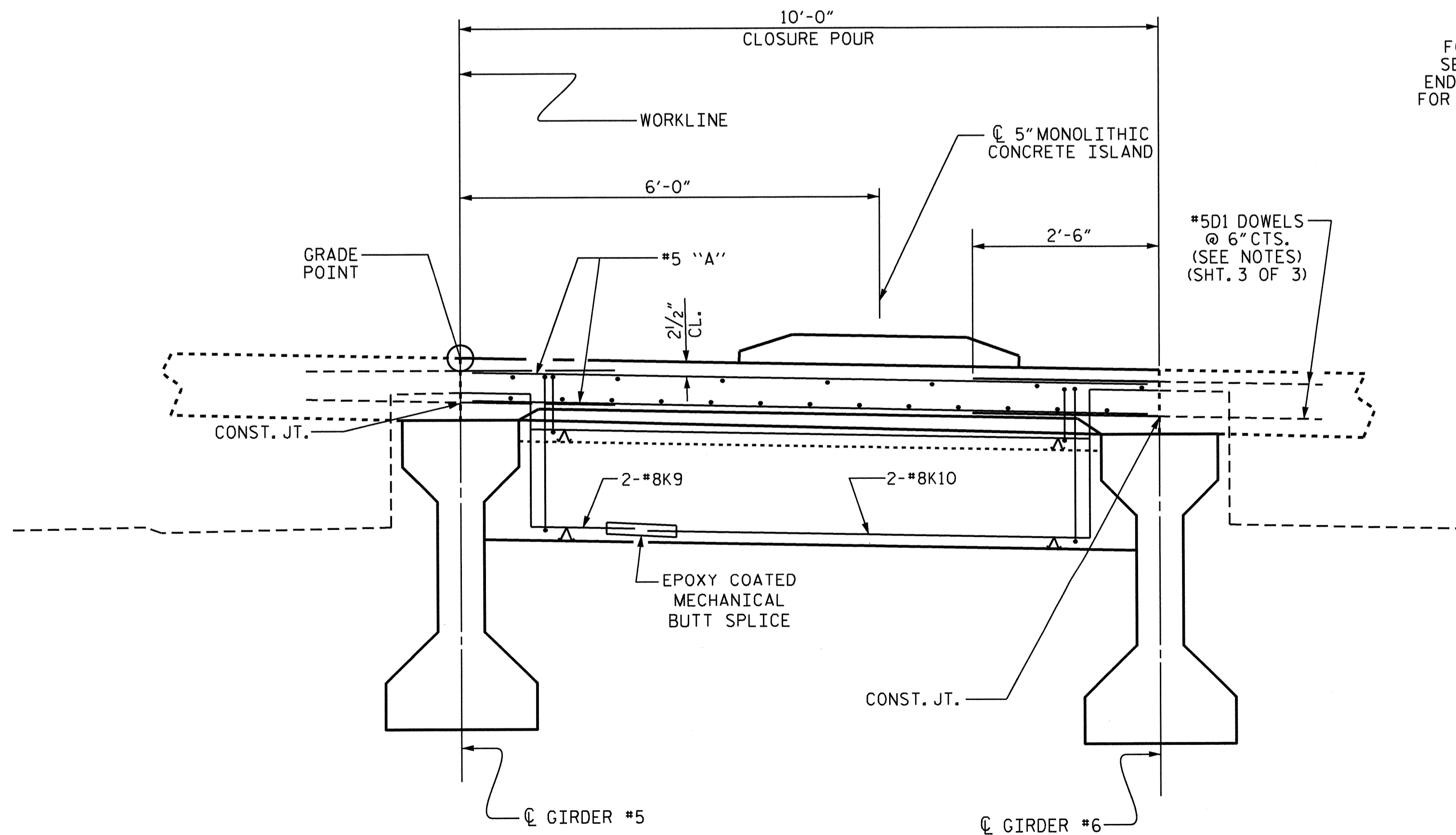
SHOWING END BENT DIAPHRAGM (STAGE I CONSTRUCTION)



TYPICAL HALF SECTION

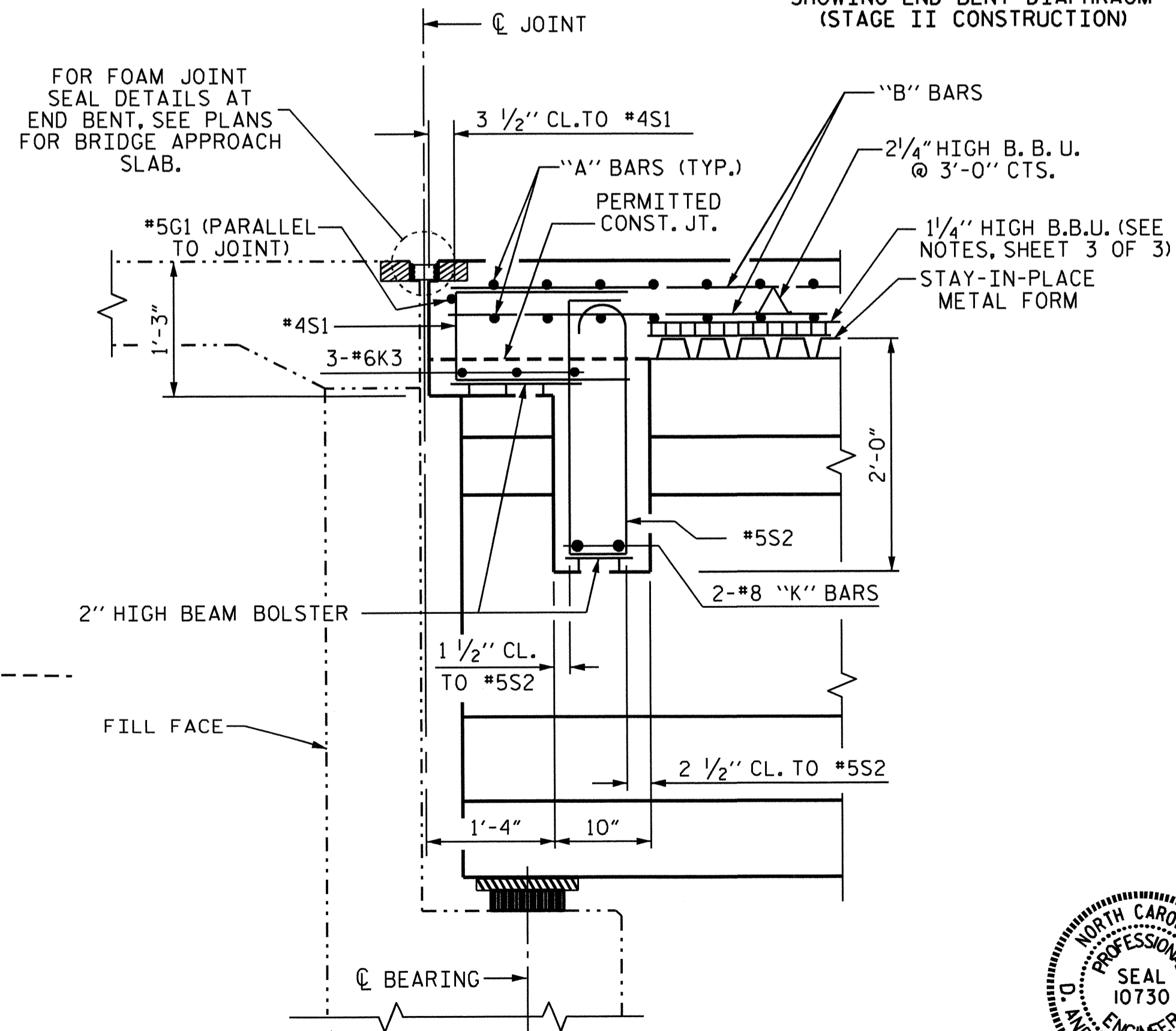
SHOWING END BENT DIAPHRAGM (STAGE II CONSTRUCTION)

▲ DIMENSION MEASURED FROM BOTTOM OF SLAB TO \bar{C} CONDUIT.



SECTION THRU CLOSURE POUR

SHOWING END BENT DIAPHRAGM (STAGE II CONSTRUCTION)



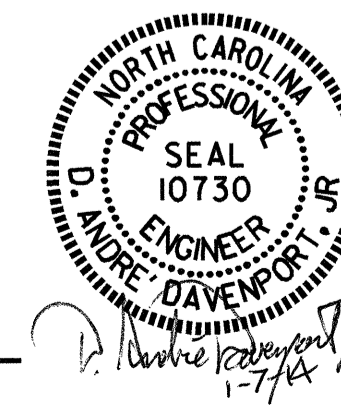
SECTION THRU END BENT DIAPHRAGM

PROJECT NO. U-4432
 WAKE COUNTY
 STATION: 28+17.07 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

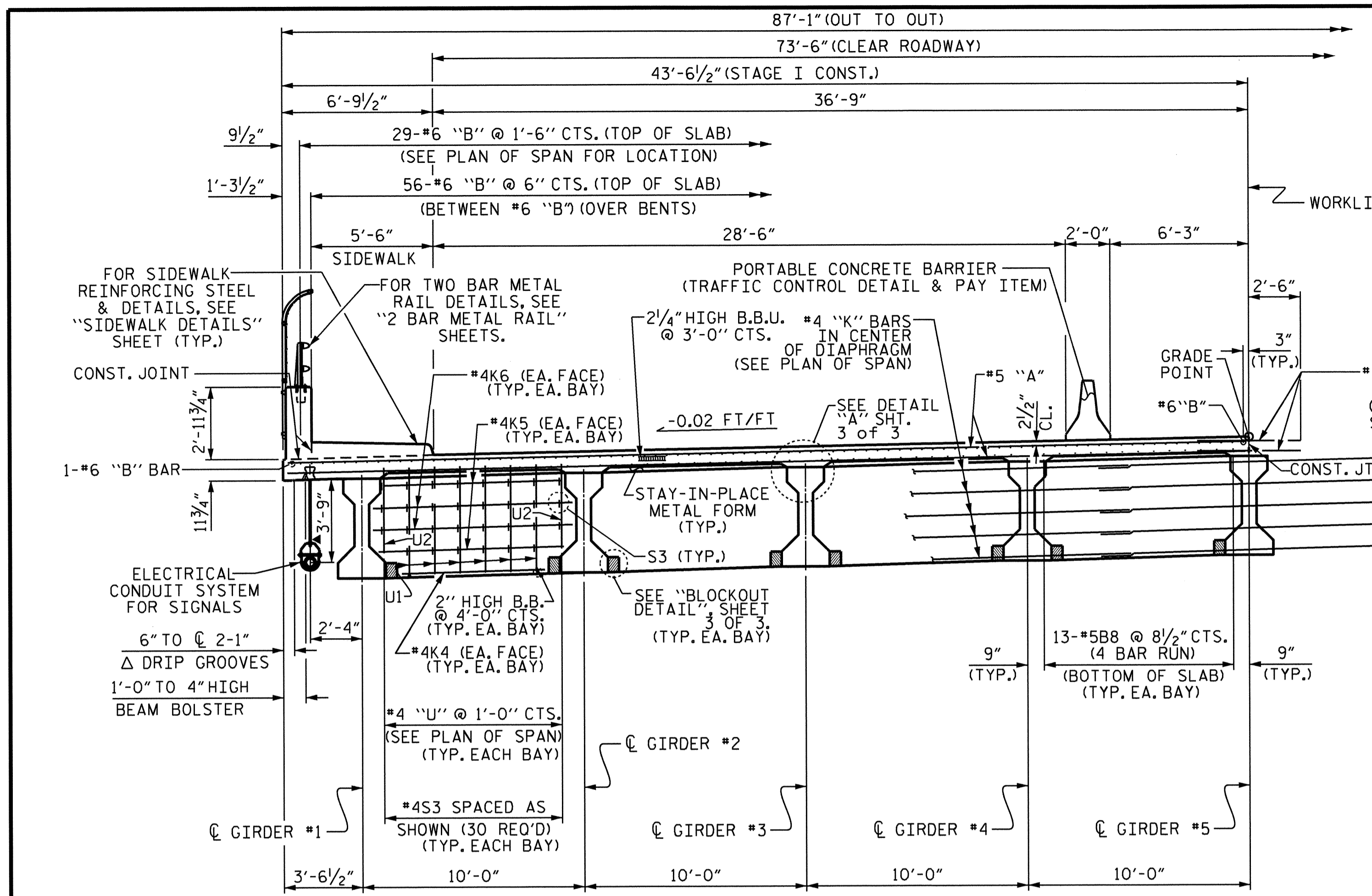
SUPERSTRUCTURE
 TYPICAL SECTION



DRAWN BY: J.D. HAWK DATE: 8/5/12
 CHECKED BY: K.D. LAYNE DATE: 11/8/12
 DESIGN ENGINEER OF RECORD: G.W. DICKEY DATE: 6/25/13

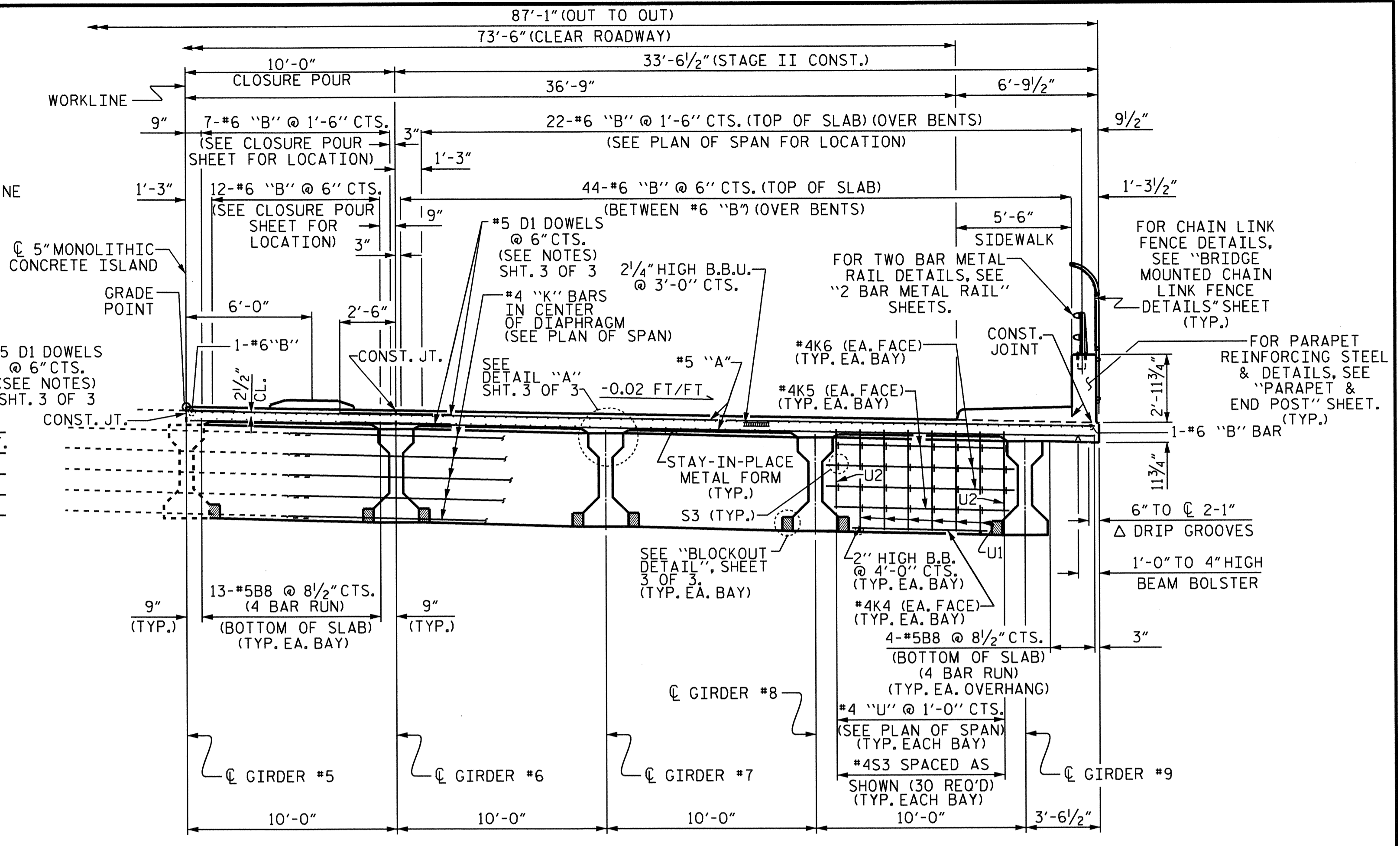
07-JAN-2014 10:45
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			52



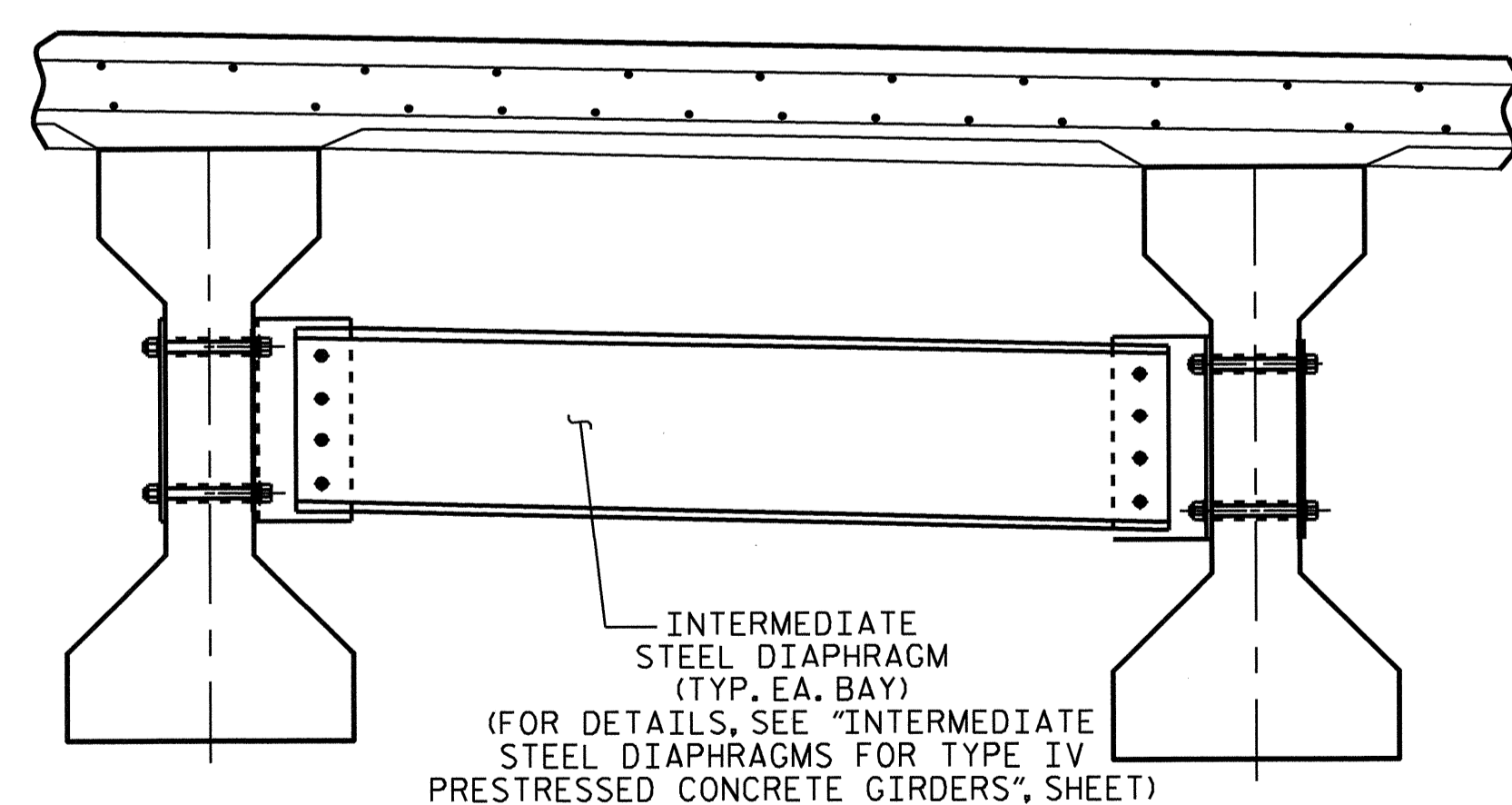
TYPICAL HALF SECTION

SHOWING BENT DIAPHRAGM
(STAGE I CONSTRUCTION)

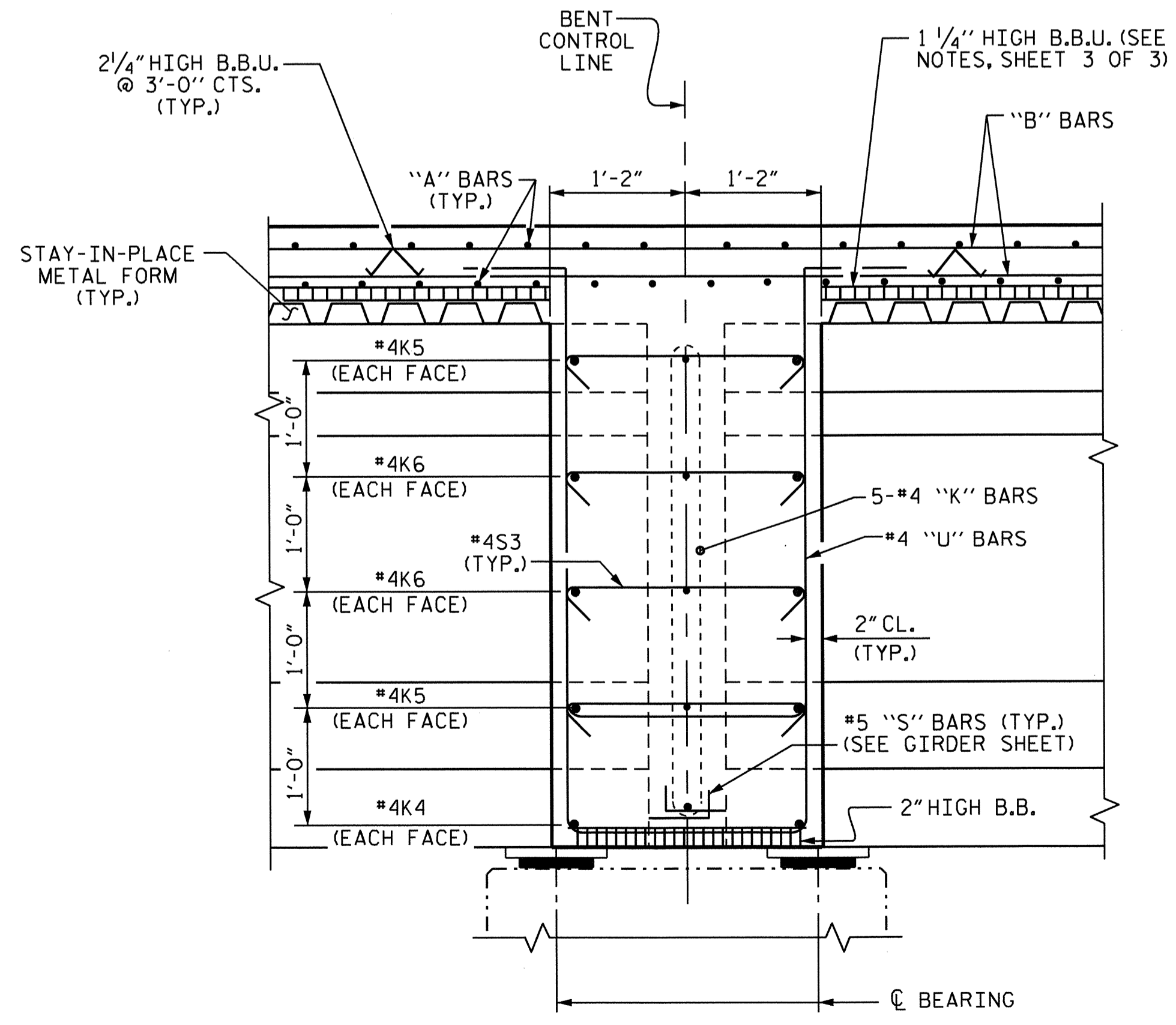


TYPICAL HALF SECTION

SHOWING BENT DIAPHRAGM
(STAGE II CONSTRUCTION)



INTERMEDIATE DIAPHRAGM

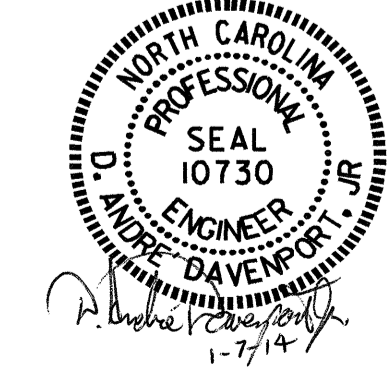


SECTION THRU BENT DIAPHRAGM

DRAWN BY : J.D. HAWK
 CHECKED BY : K.D. LAYNE
 DESIGN ENGINEER OF RECORD : G.W. DICKEY
 DATE : 8/5/12
 DATE : 11/8/12
 DATE : 6/25/13

07-JAN-2014 10:46
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 dadavenport

PROJECT NO. U-4432
 WAKE COUNTY
 STATION: 28+17.07 -L-
 SHEET 2 OF 3



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE TYPICAL SECTION					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-6
					TOTAL SHEETS 52

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.

FOR EACH STAGE, 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.

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

*5G1 BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.

THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF THE SIDEWALK AND CONCRETE ISLAND.

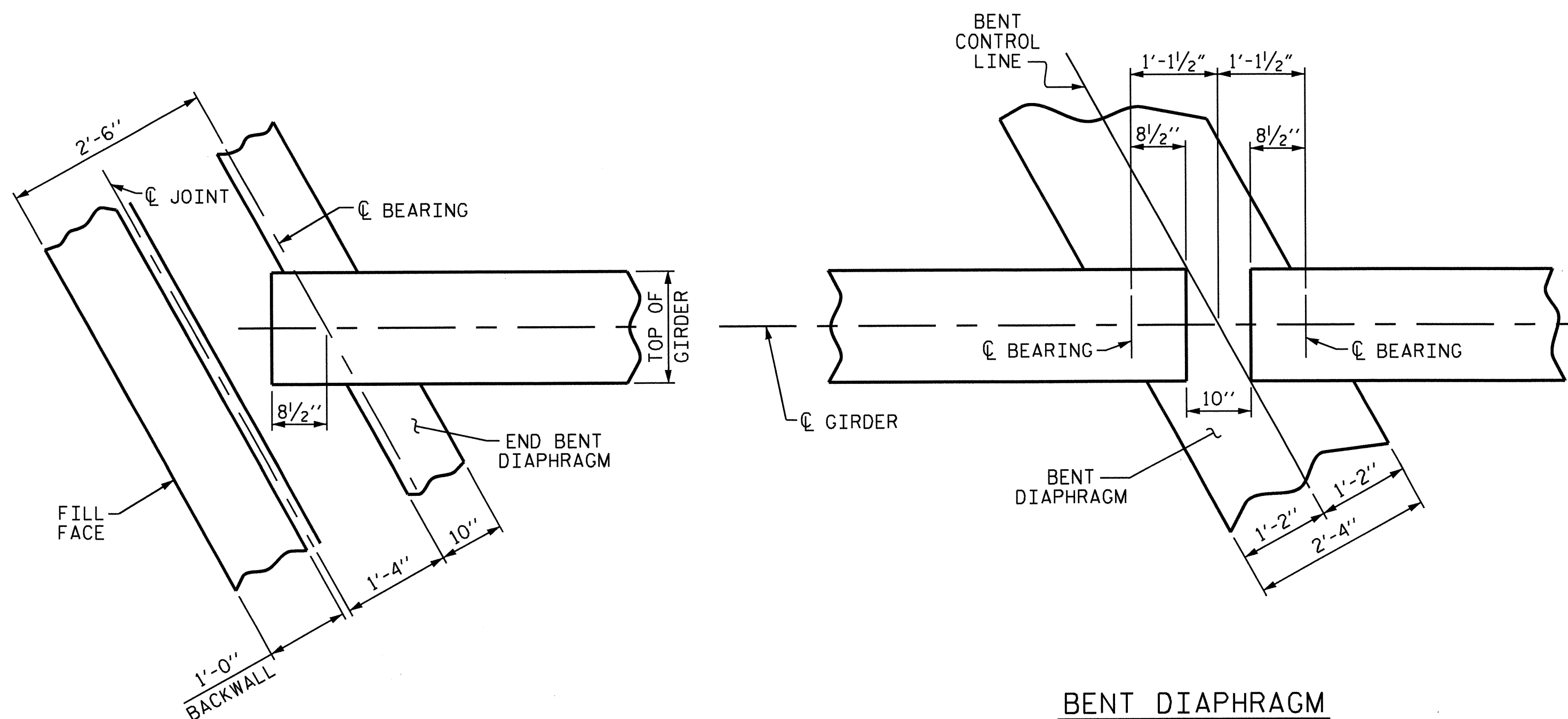
FOR END POST DETAILS AND REINFORCING STEEL, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS."

*5 D1 DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE TOP AND BOTTOM SLAB REINFORCING STEEL.

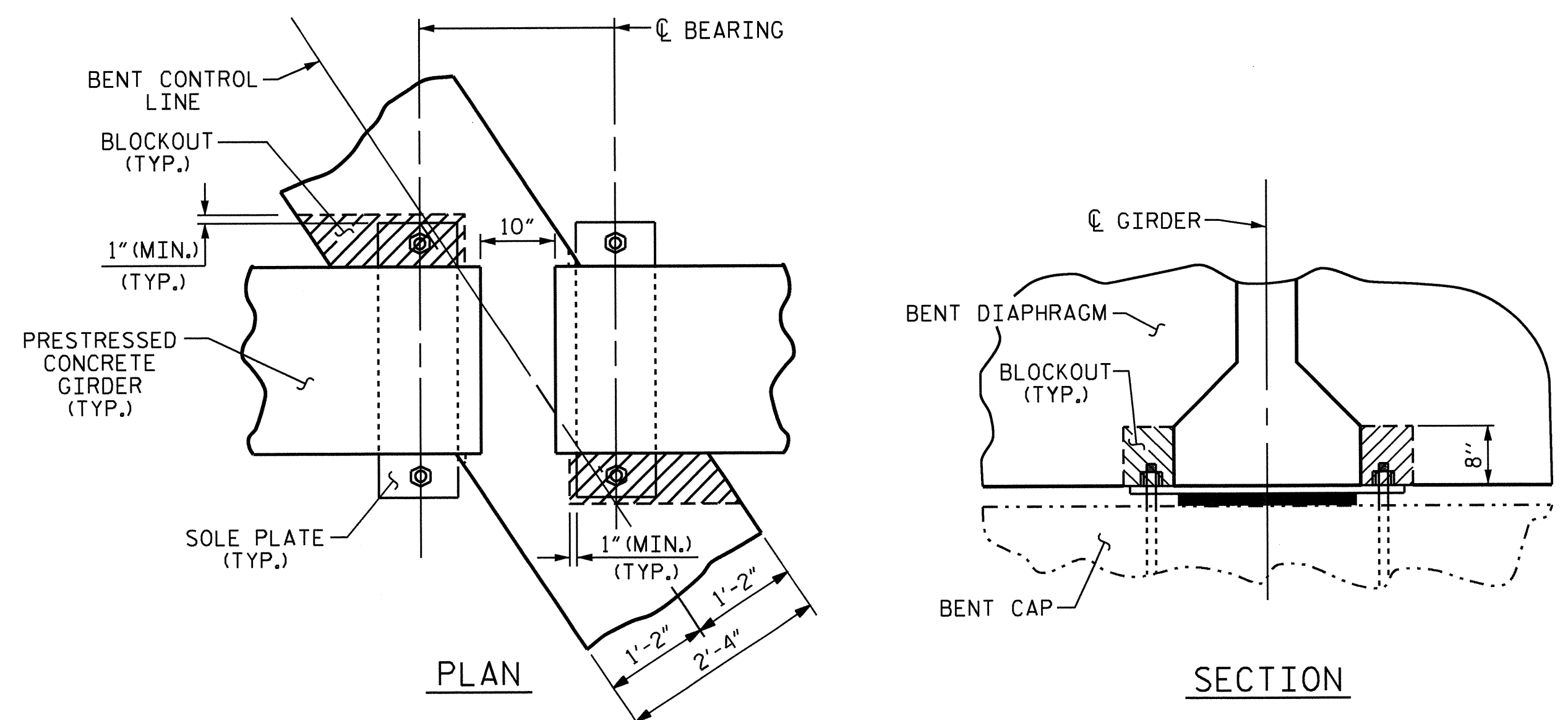
SEE TRAFFIC CONTROL PLANS FOR LOCATION AND PAY LIMITS OF THE ANCHORED PORTABLE CONCRETE BARRIER.

3/4" DIAMETER PIPE SLEEVE INSERTS SHALL BE INSTALLED AT A MAXIMUM OF 10'-0" CTS. TO ACCOMMODATE THE ELECTRICAL CONDUIT SYSTEM, SEE ELECTRICAL CONDUIT SYSTEM DETAILS.

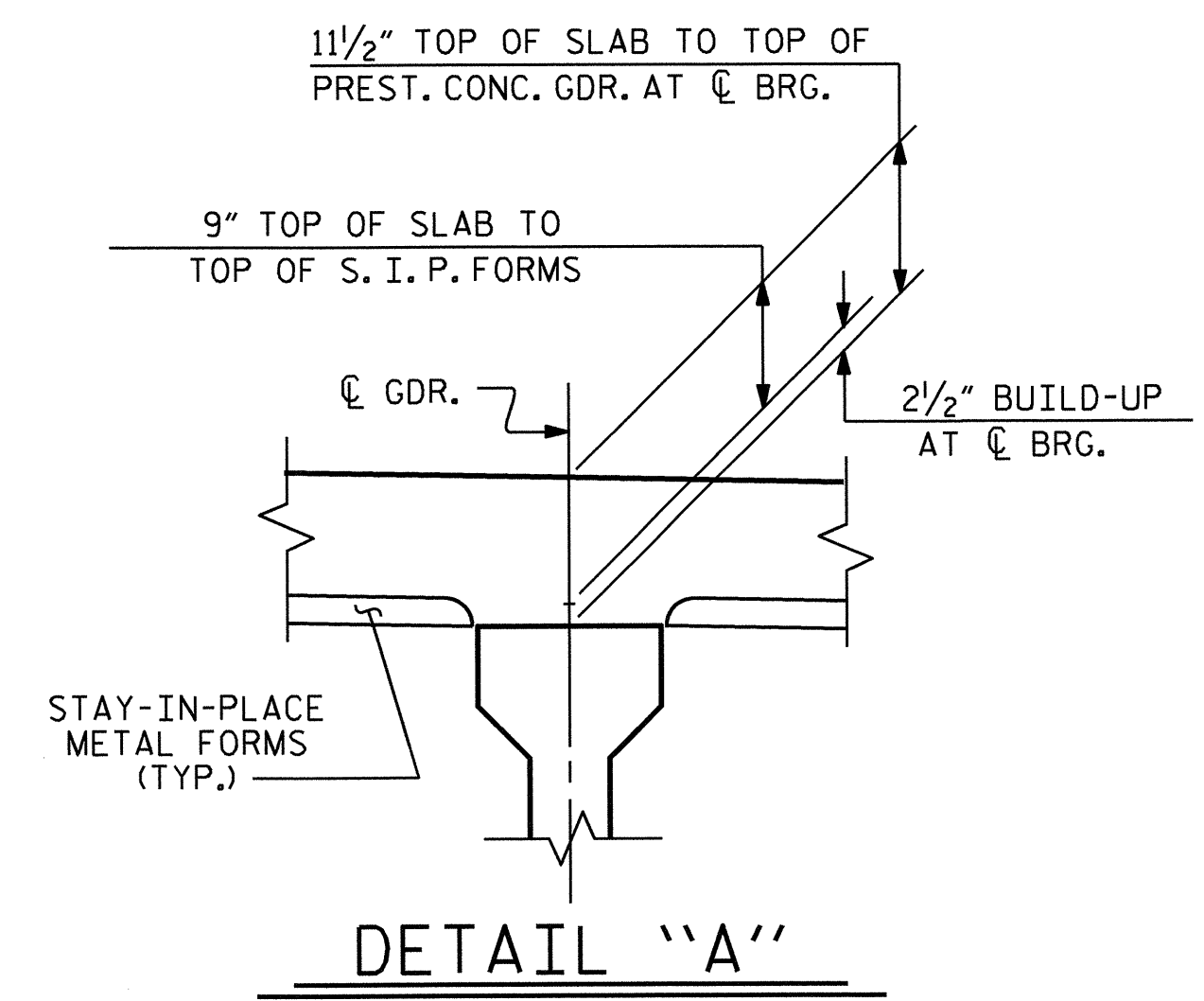
FOR MECHANICAL BUTT SPLICES, SEE STANDARD SPECIFICATIONS. MECHANICAL BUTT SPLICES SHALL BE EPOXY COATED.



PLAN OF DIAPHRAGMS



BENT DIAPHRAGM BLOCK-OUT DETAIL

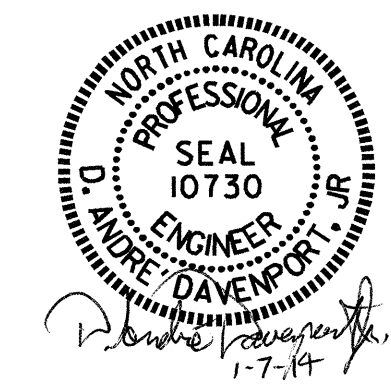


DETAIL "A"

PROJECT NO. U-4432
WAKE COUNTY
 STATION: 28+17.07 -L-

SHEET 3 OF 3

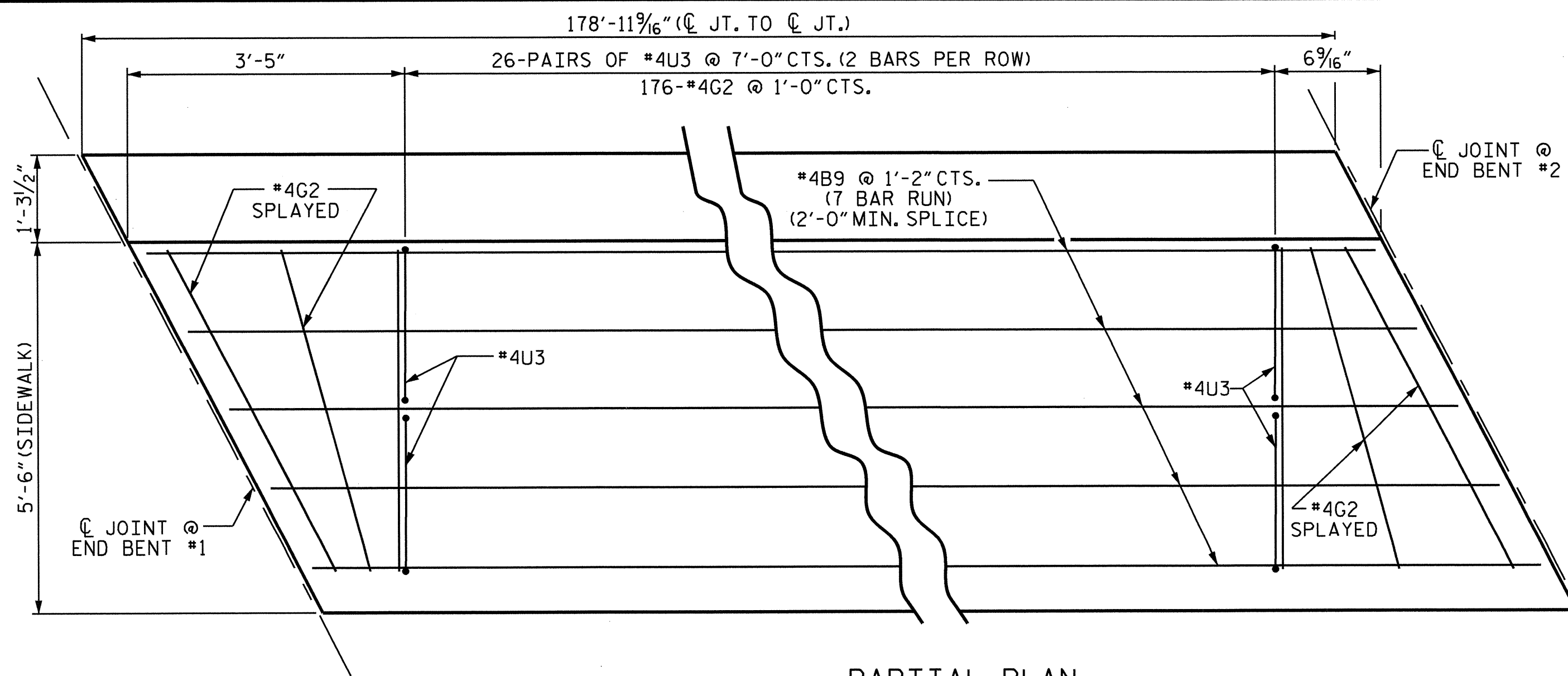
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION
 DETAILS



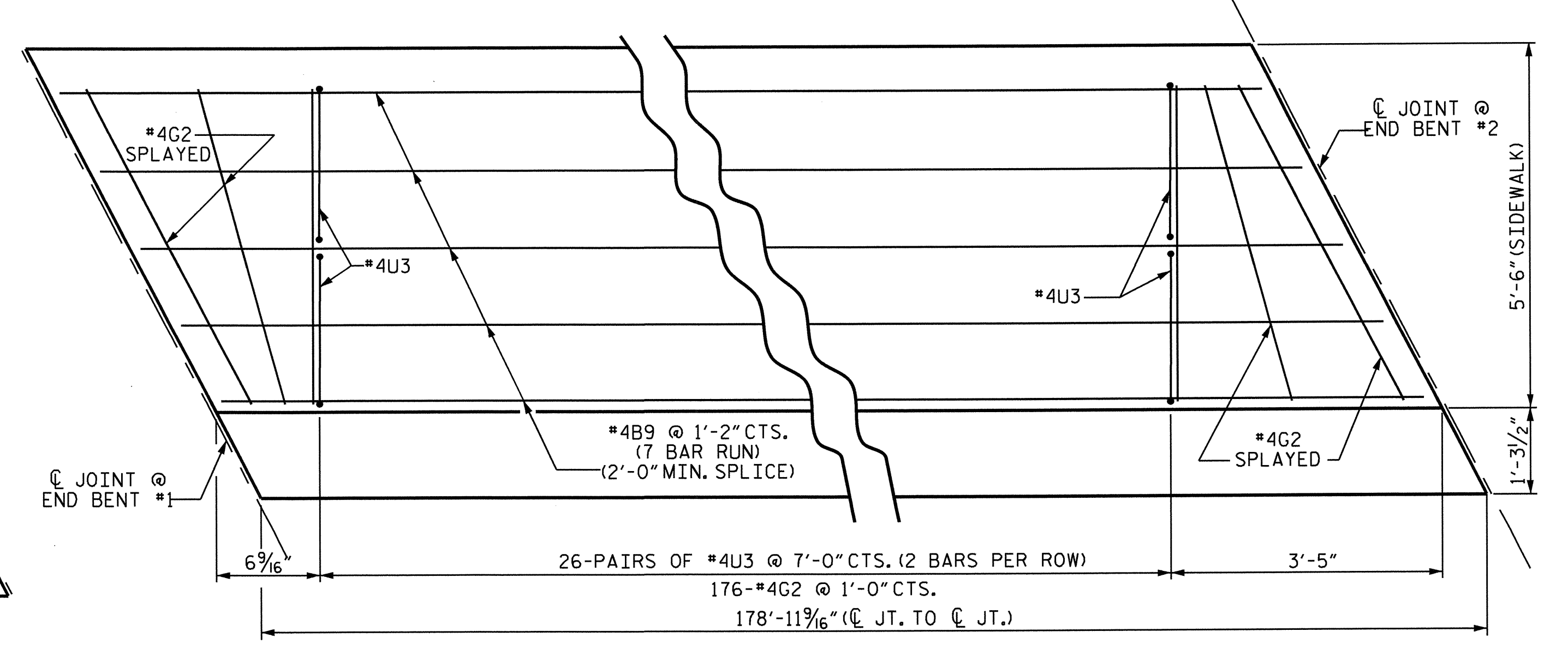
DRAWN BY: J.D. HAWK DATE: 8/5/12
 CHECKED BY: K.D. LAYNE DATE: 11/8/12
 DESIGN ENGINEER OF RECORD: G.W. DICKEY DATE: 6/25/13

07-JAN-2014 10:46
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 dadavenport

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			52



PARTIAL PLAN
(STAGE I)



PARTIAL PLAN
(STAGE II)

PLAN OF SIDEWALK

NOTES:

THE #4U3 BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER SPAN HAS BEEN SCREEDED OFF.

SIDEWALK IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.

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

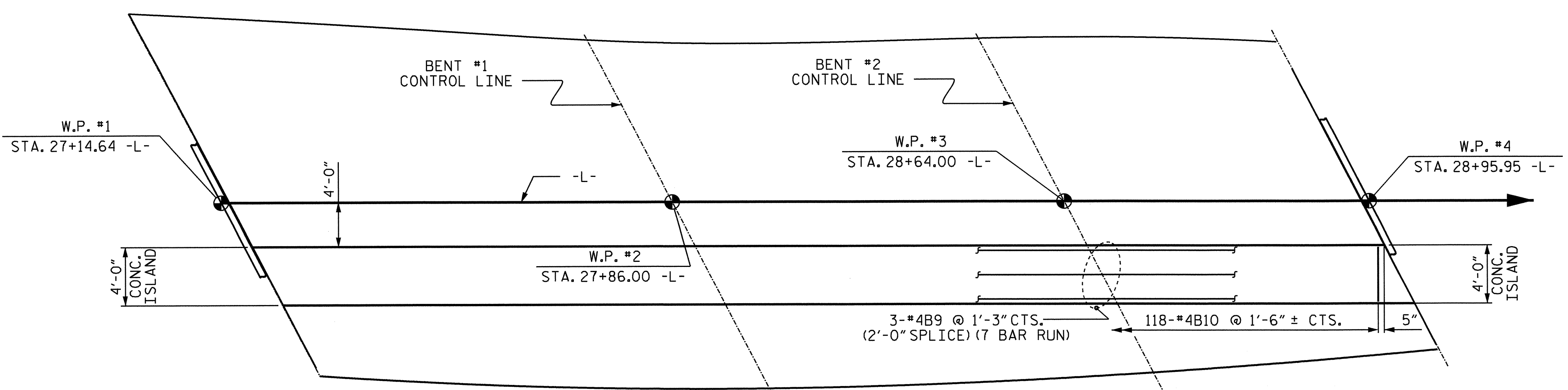
CONCRETE AND REINFORCING STEEL FOR THE SIDEWALK AND CONCRETE ISLAND IS INCLUDED IN THE SUPERSTRUCTURE BILL OF MATERIAL. PAYMENT FOR THE SIDEWALK SHALL BE INCLUDED IN THE PAY ITEM "REINFORCED CONCRETE DECK SLAB".

ALL REINFORCING STEEL IN SIDEWALK & CONCRETE ISLAND SHALL BE EPOXY COATED.

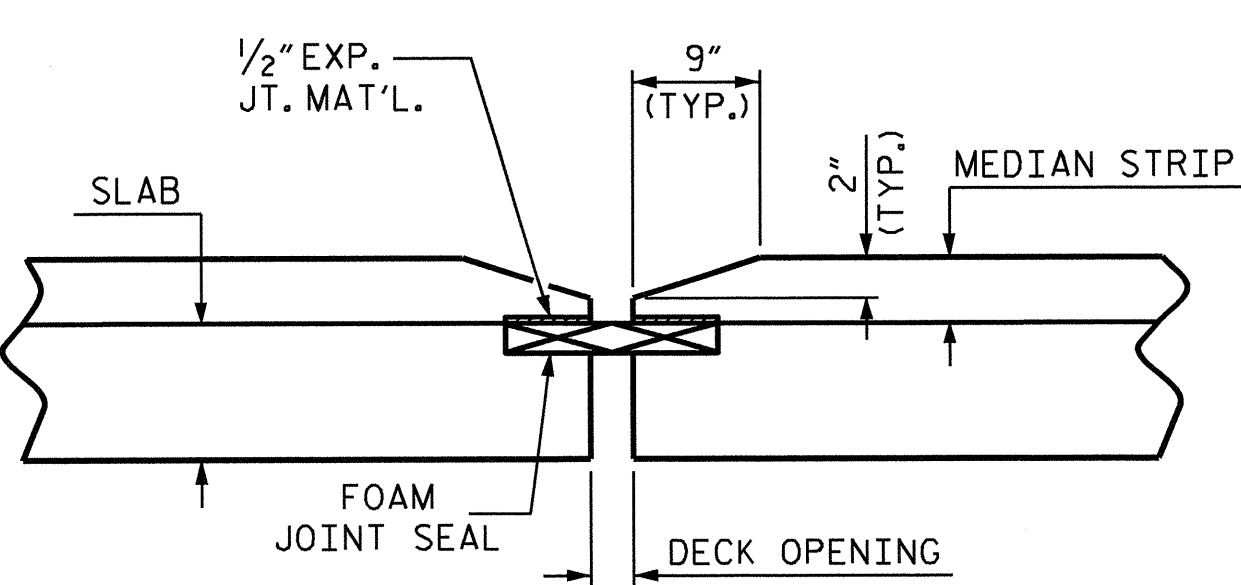
NO SEPARATE PAYMENT WILL BE MADE FOR THE SIDEWALK & CONCRETE ISLAND AS IT IS INCLUDED WITH THE REINFORCED CONCRETE DECK SLAB PAY ITEM.

THE #4U3 BARS IN THE SIDEWALK WITHIN A DISTANCE OF 4'-0" OF THE JOINT ARE TO BE PLACED AFTER THE SAWING OF THE JOINT. THE HOLES SHALL BE DRILLED AND THE BARS GROUTED INTO PLACE.

SEE APPROACH SLAB DETAILS FOR SIDEWALK COVER PLATE DETAILS AT END BENT.

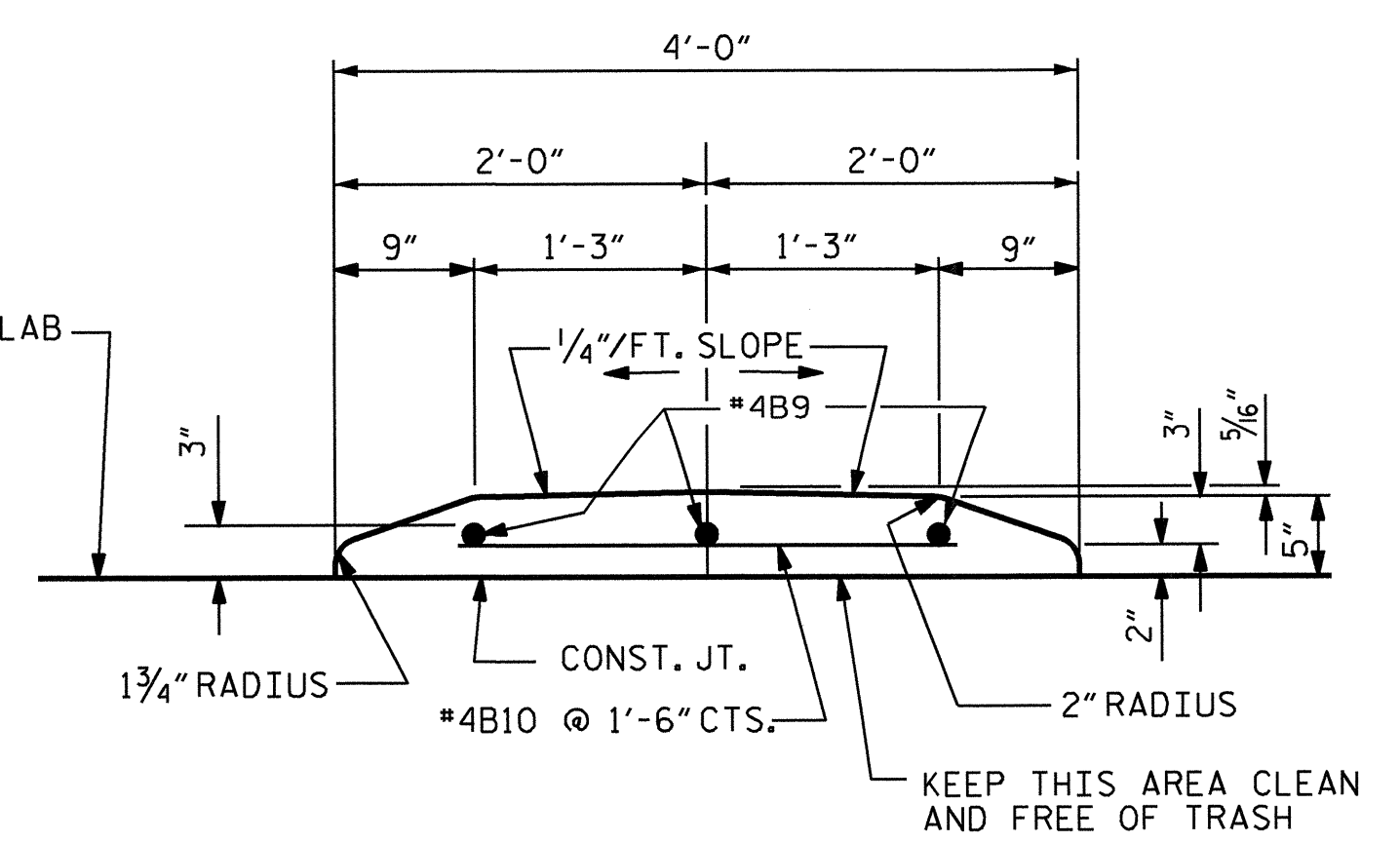


PLAN OF MONOLITHIC CONCRETE ISLAND
(STAGE II)

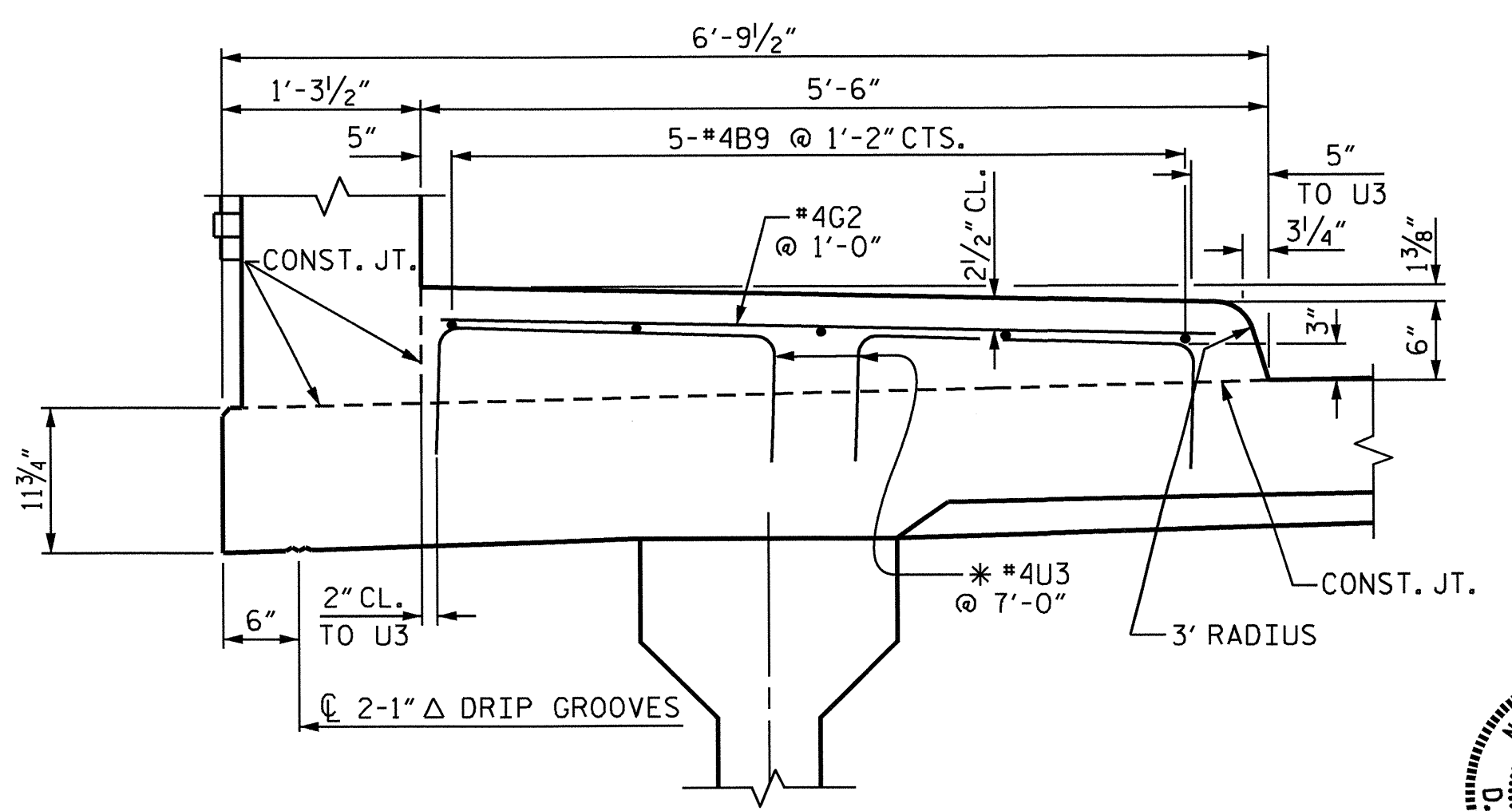


SECTION THRU ISLAND
AT END BENTS

END BENT #1 SHOWN, END BENT #2 SIMILAR



SECTION THROUGH MONOLITHIC CONCRETE ISLAND



SECTION THROUGH SIDEWALK

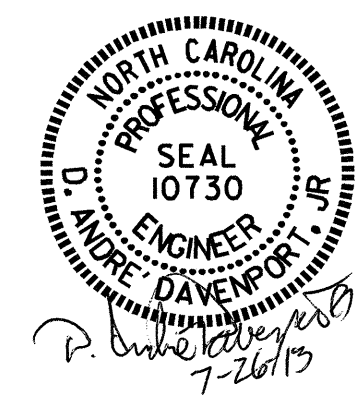
* #4 U3 BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER SPAN HAS BEEN SCREEDED OFF.

PROJECT NO. U-4432
WAKE COUNTY
STATION: 28+17.07 -L-

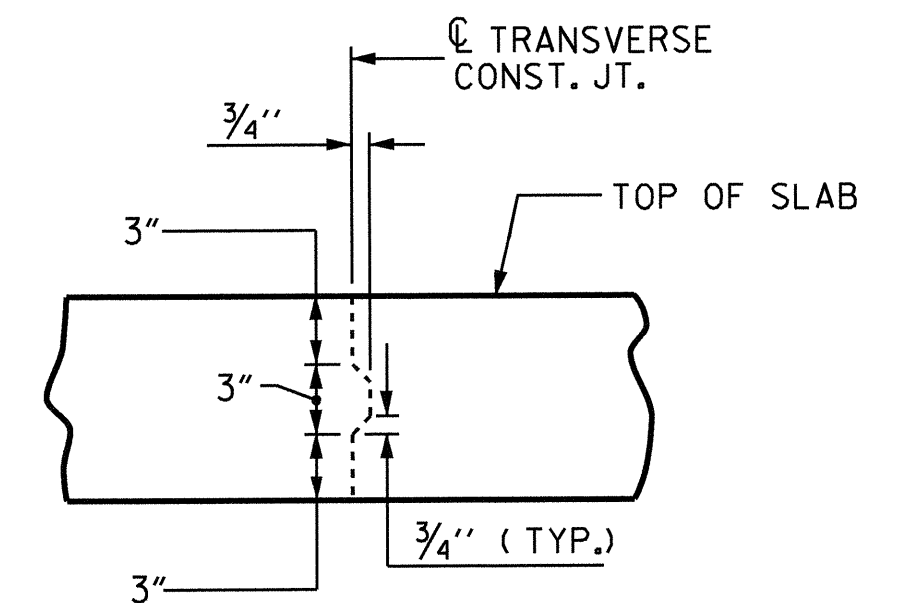
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
SIDEWALK AND
MONOLITHIC
CONCRETE
ISLAND DETAILS

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8	
1			3			TOTAL SHEETS	
2			4			52	

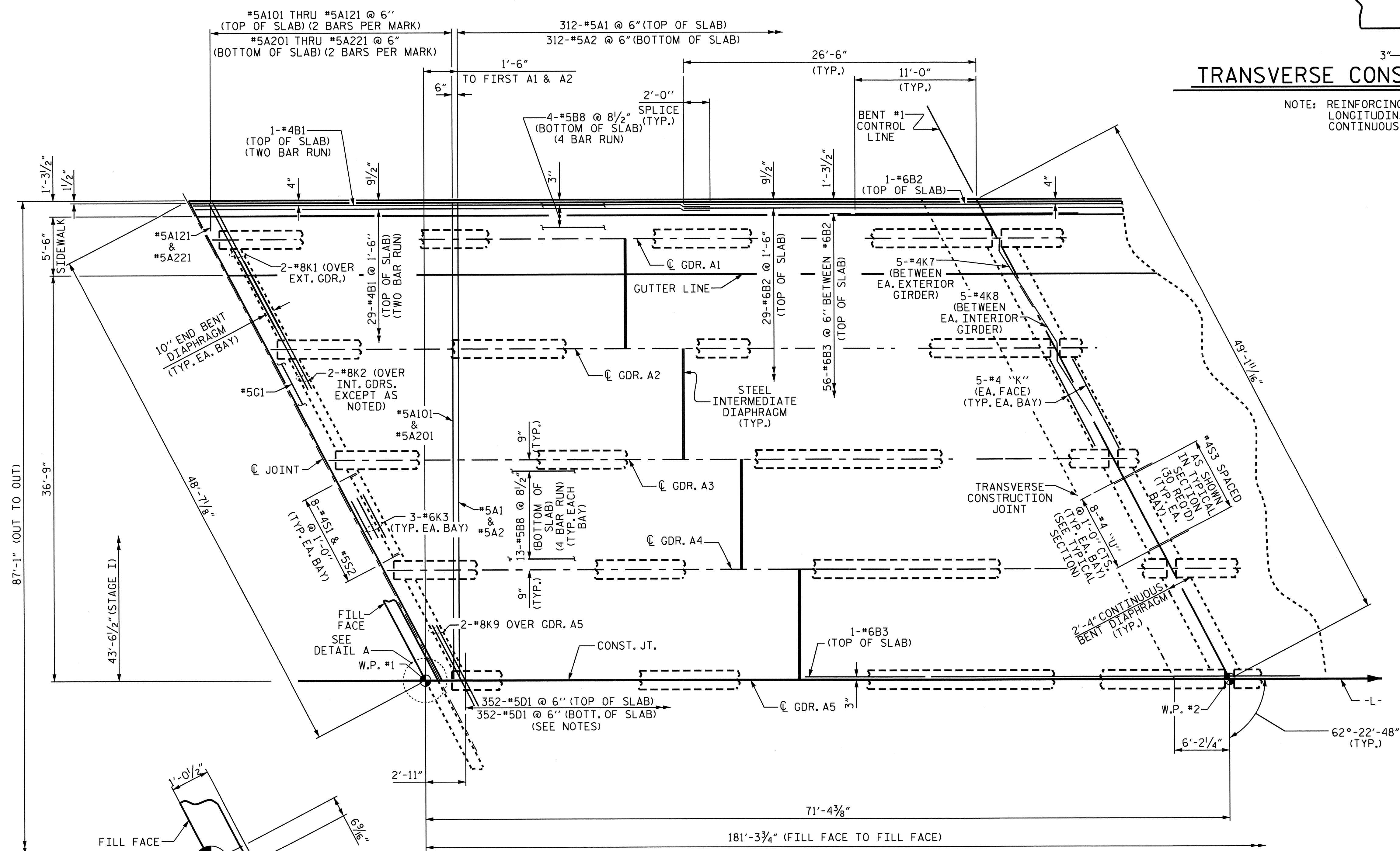


DRAWN BY: J.D. HAWK DATE: 8/5/12
CHECKED BY: K.D. LAYNE DATE: 11/8/12
DESIGN ENGINEER OF RECORD: D.A. DAVENPORT DATE: 6/25/13



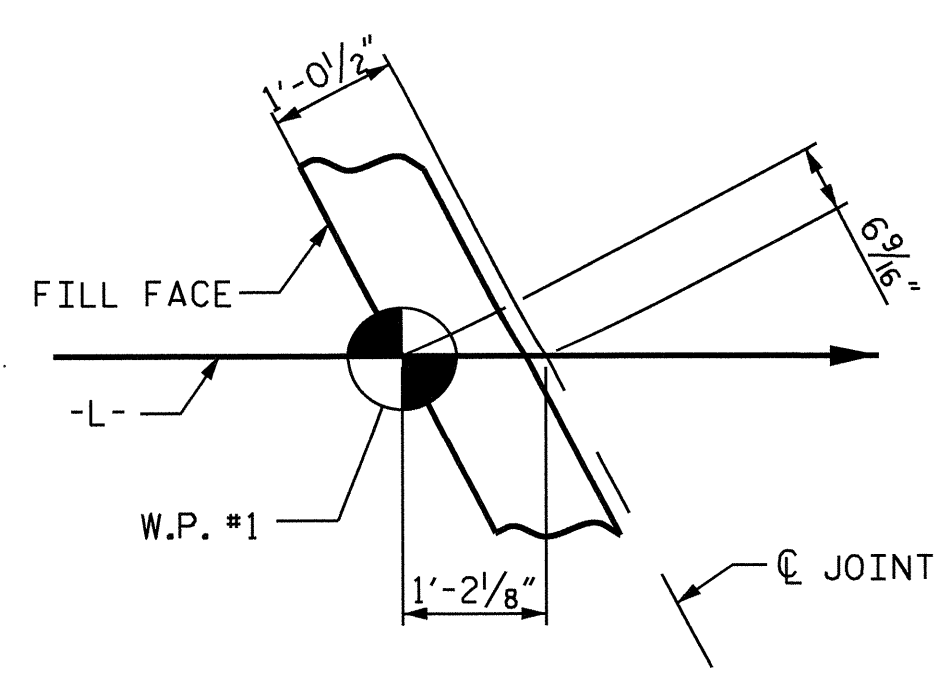
TRANSVERSE CONSTRUCTION JOINT DETAIL

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

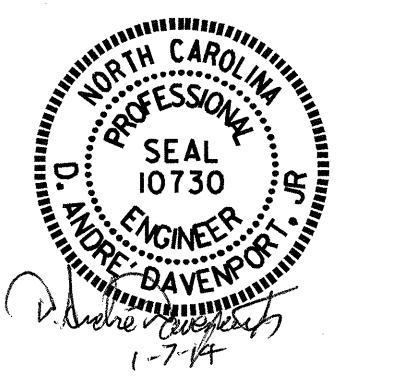


PARTIAL PLAN OF SPANS

SPAN A
(STAGE I CONST.)



DETAIL A



PROJECT NO. U-4432
WAKE COUNTY
 STATION: 28+17.07 -L-

SHEET 1 OF 6

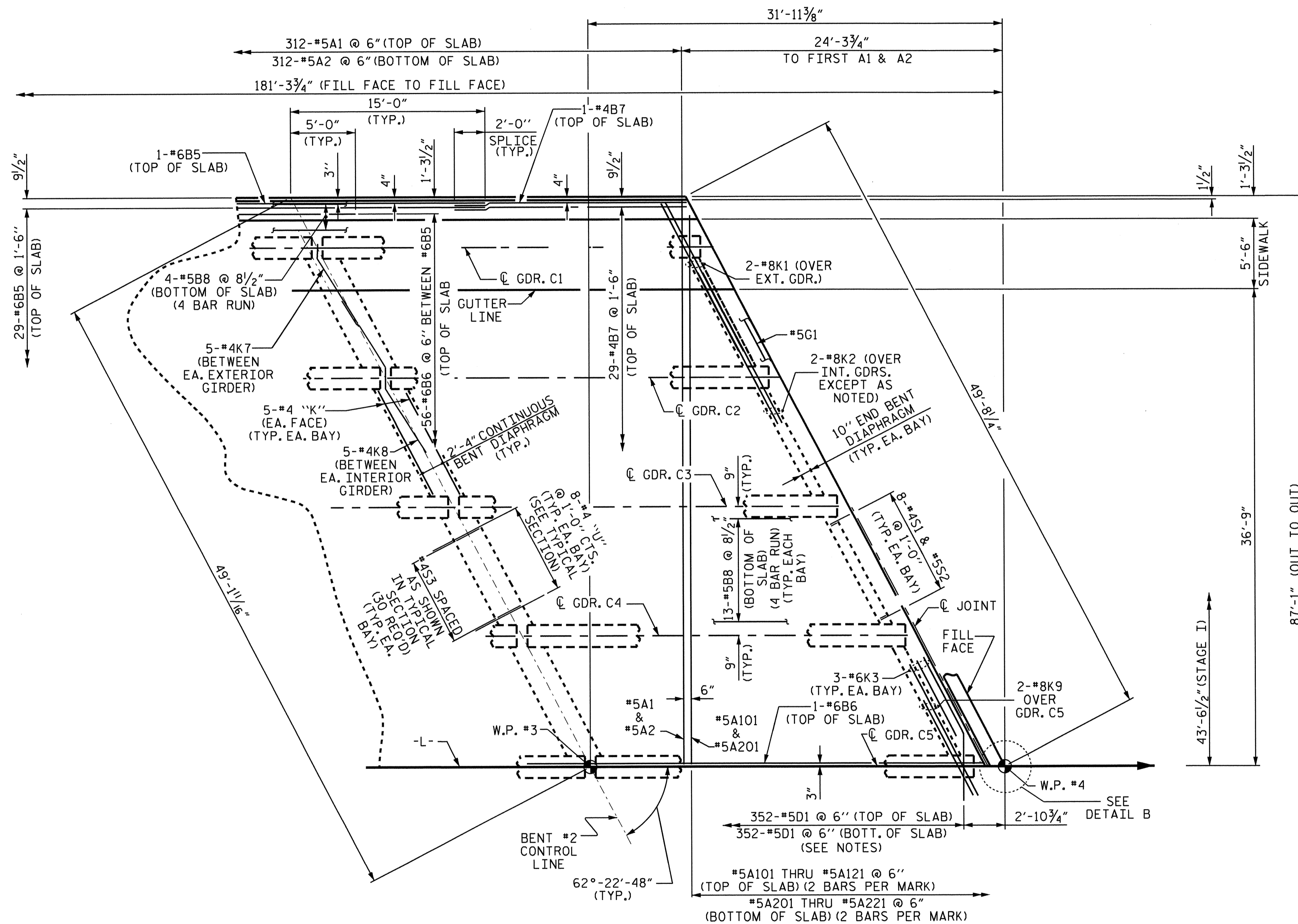
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPANS
 (STAGE I)

REVISIONS						SHEET NO. S-9
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 52
2			4			

DRAWN BY : J.D. HAWK DATE : 8/5/12
 CHECKED BY : K.D. LAYNE DATE : 11/8/12
 DESIGN ENGINEER OF RECORD: G.W. DICKEY DATE : 6/25/13

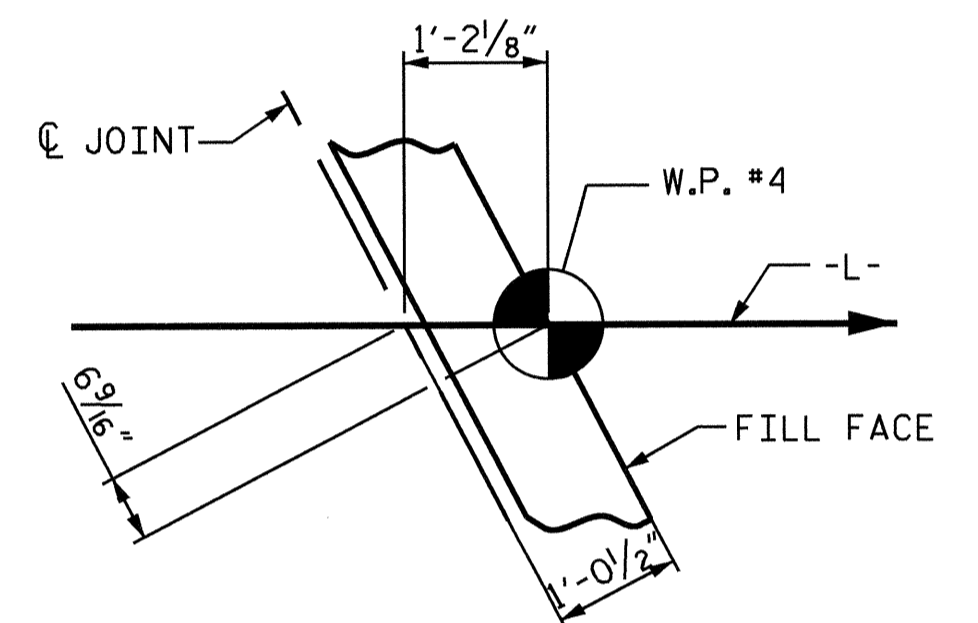
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NC006



PARTIAL PLAN OF SPANS

SPAN C
(STAGE I CONST.)



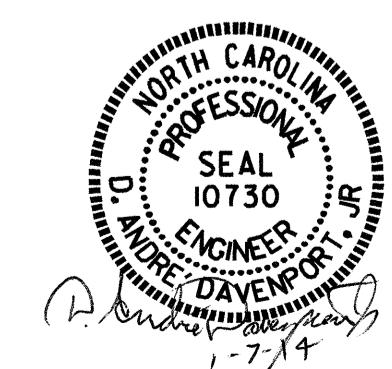
DETAIL B

PROJECT NO. U-4432
WAKE COUNTY
 STATION: 28+17.07 -L-

SHEET 3 OF 6

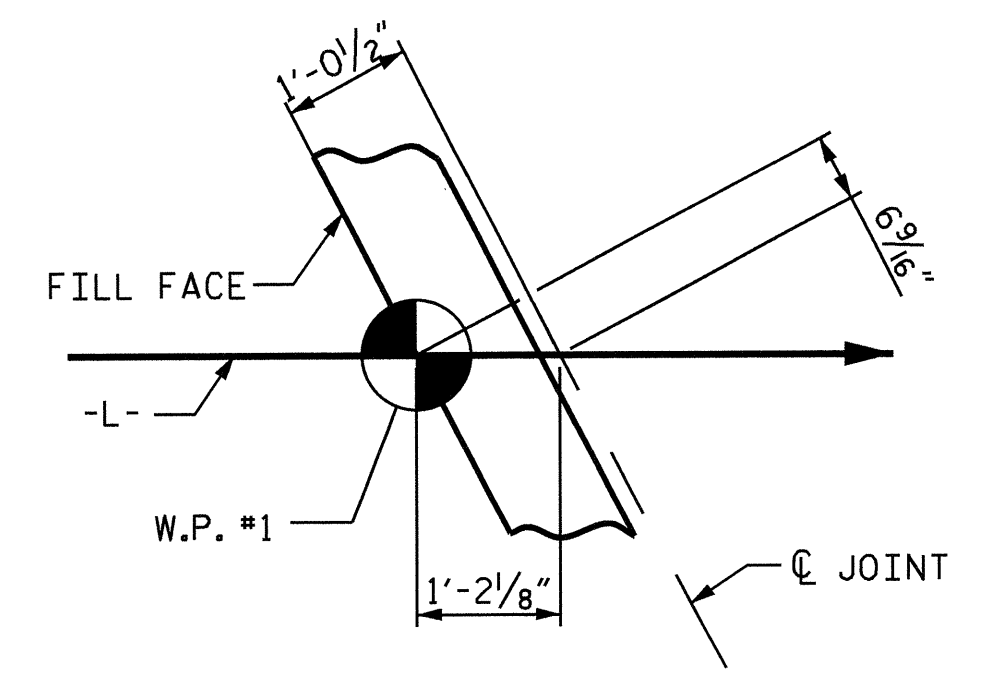
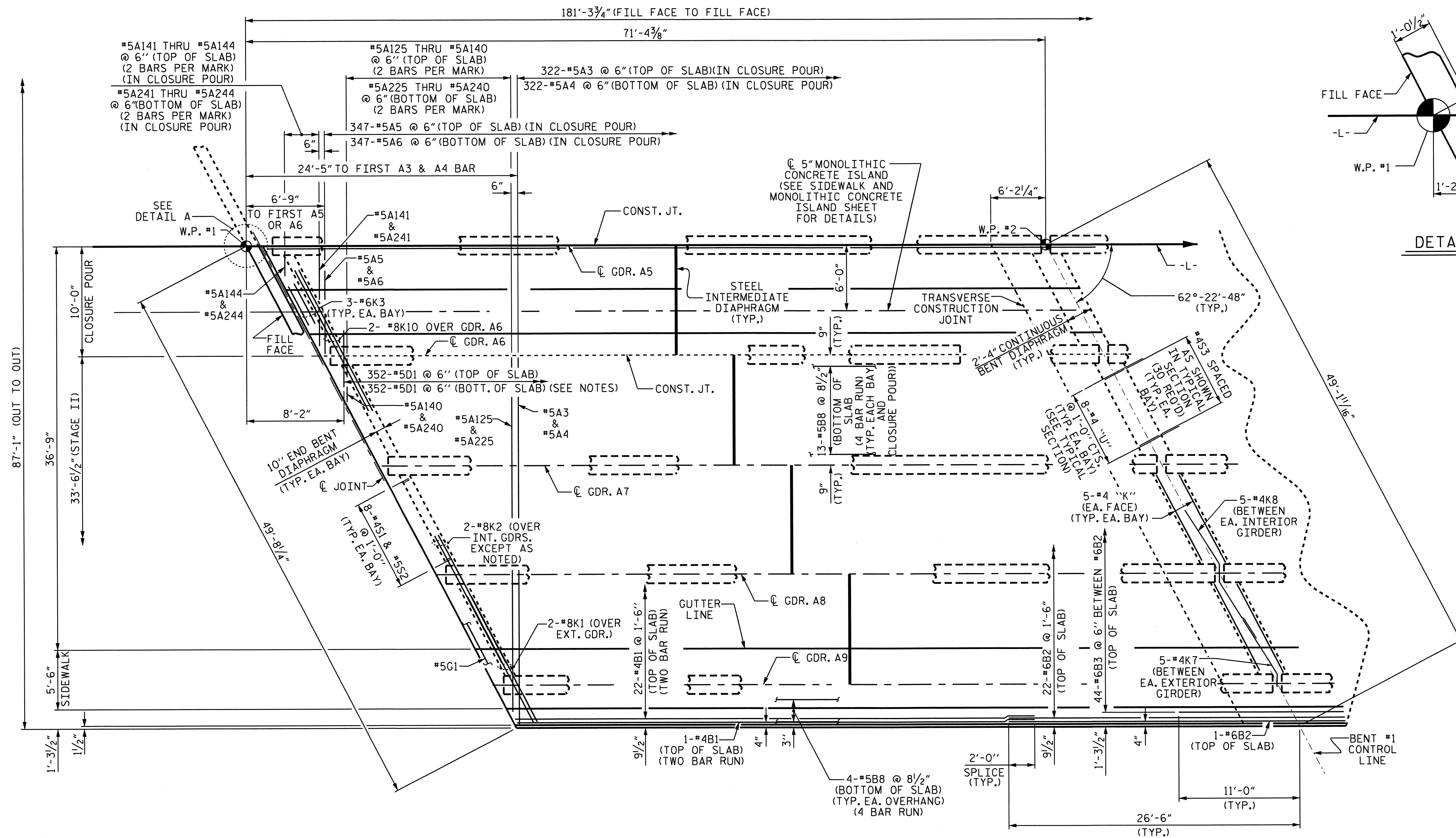
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
PLAN OF SPANS
 (STAGE I)



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	5-11	
1			3			TOTAL SHEETS	
2			4			52	

DRAWN BY : J.D. HAWK DATE : 8/5/12
 CHECKED BY : K.D. LAYNE DATE : 11/8/12
 DESIGN ENGINEER OF RECORD: G.W. DICKEY DATE : 6/25/13



DETAIL A

PARTIAL PLAN OF SPANS

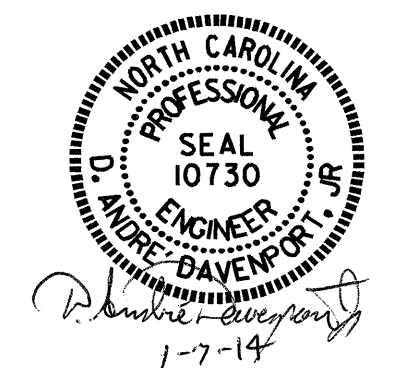
SPAN A
 (STAGE II CONST.)
 (FOR 'B' BARS IN CLOSURE POUR SEE 'CLOSURE POUR TOP OF SLAB 'B' BAR PLACEMENT)

PROJECT NO. U-4432
 WAKE COUNTY
 STATION: 28+17.07 -L-

SHEET 4 OF 6

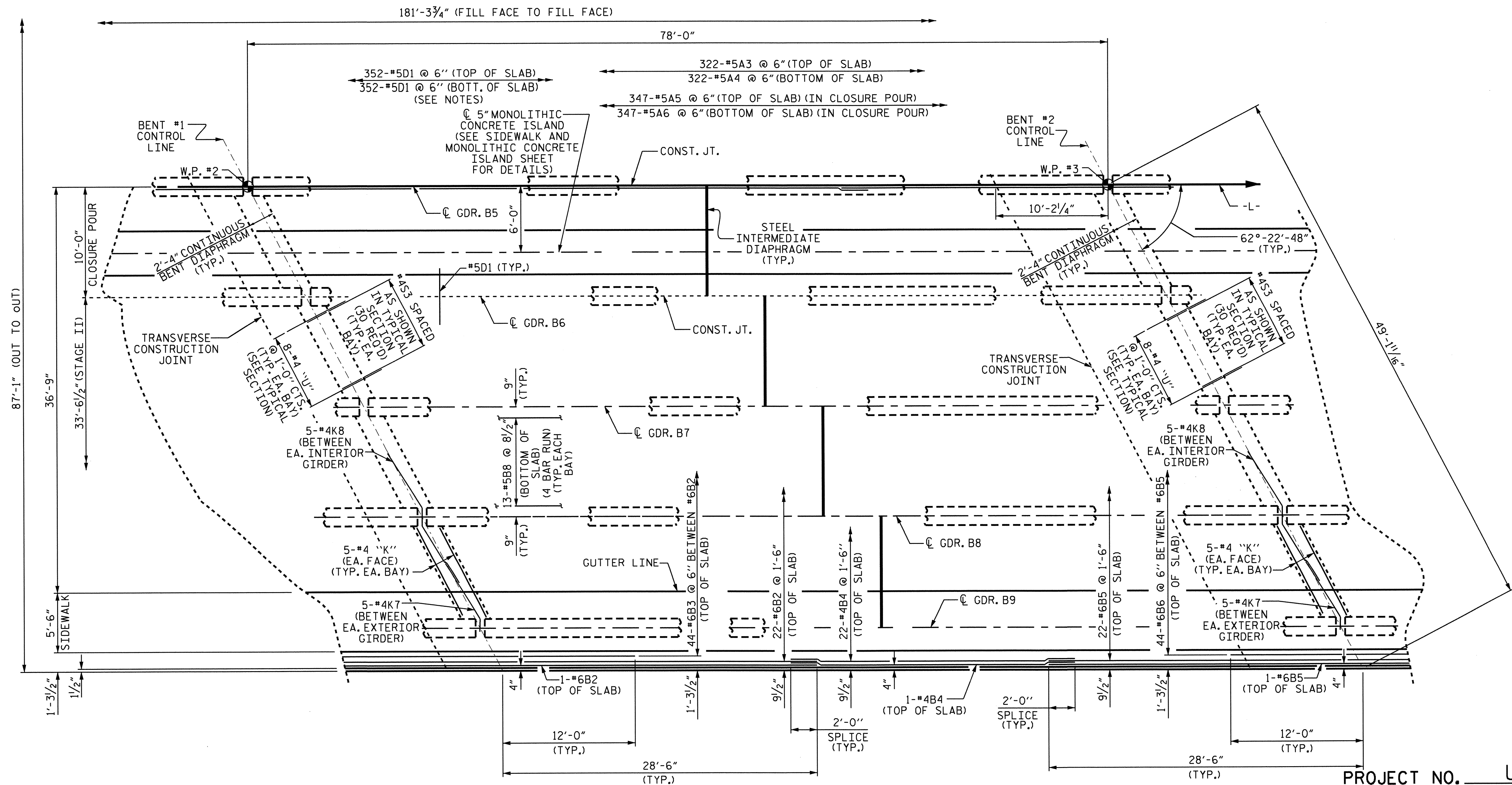
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPANS
 (STAGE II)



DRAWN BY: J.D. HAWK DATE: 8/5/12
 CHECKED BY: K.D. LAYNE DATE: 11/8/12
 DESIGN ENGINEER OF RECORD: G.W. DICKEY DATE: 6/25/13

REVISIONS						SHEET NO. S-12
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 52
2			4			



PARTIAL PLAN OF SPANS

SPAN B
 (STAGE II CONST.)
 (FOR "B" BARS IN CLOSURE
 POUR SEE 'CLOSURE POUR TOP
 OF SLAB "B" BAR PLACEMENT)

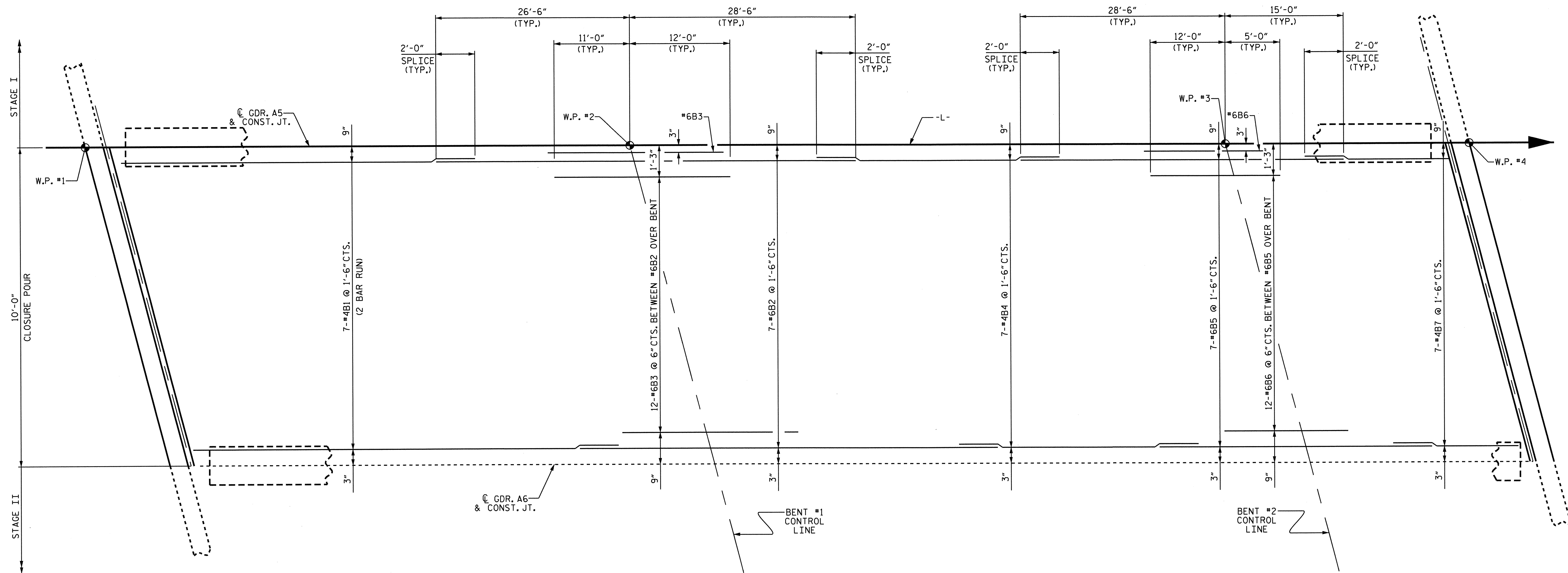
PROJECT NO. U-4432
 WAKE COUNTY
 STATION: 28+17.07 -L-

SHEET 5 OF 6
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPANS
 (STAGE II)



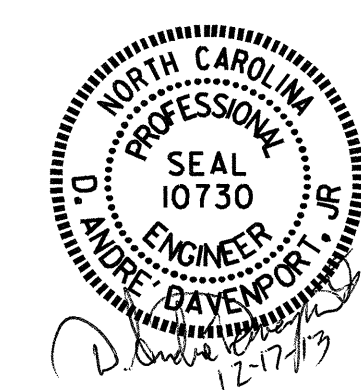
DRAWN BY : J.D. HAWK DATE : 8/5/12
 CHECKED BY : K.D. LAYNE DATE : 11/8/12
 DESIGN ENGINEER OF RECORD: G.W. DICKEY DATE : 6/25/13

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13	
1			3			TOTAL SHEETS	
2			4			52	



CLOSURE POUR "B" BAR PLACEMENT

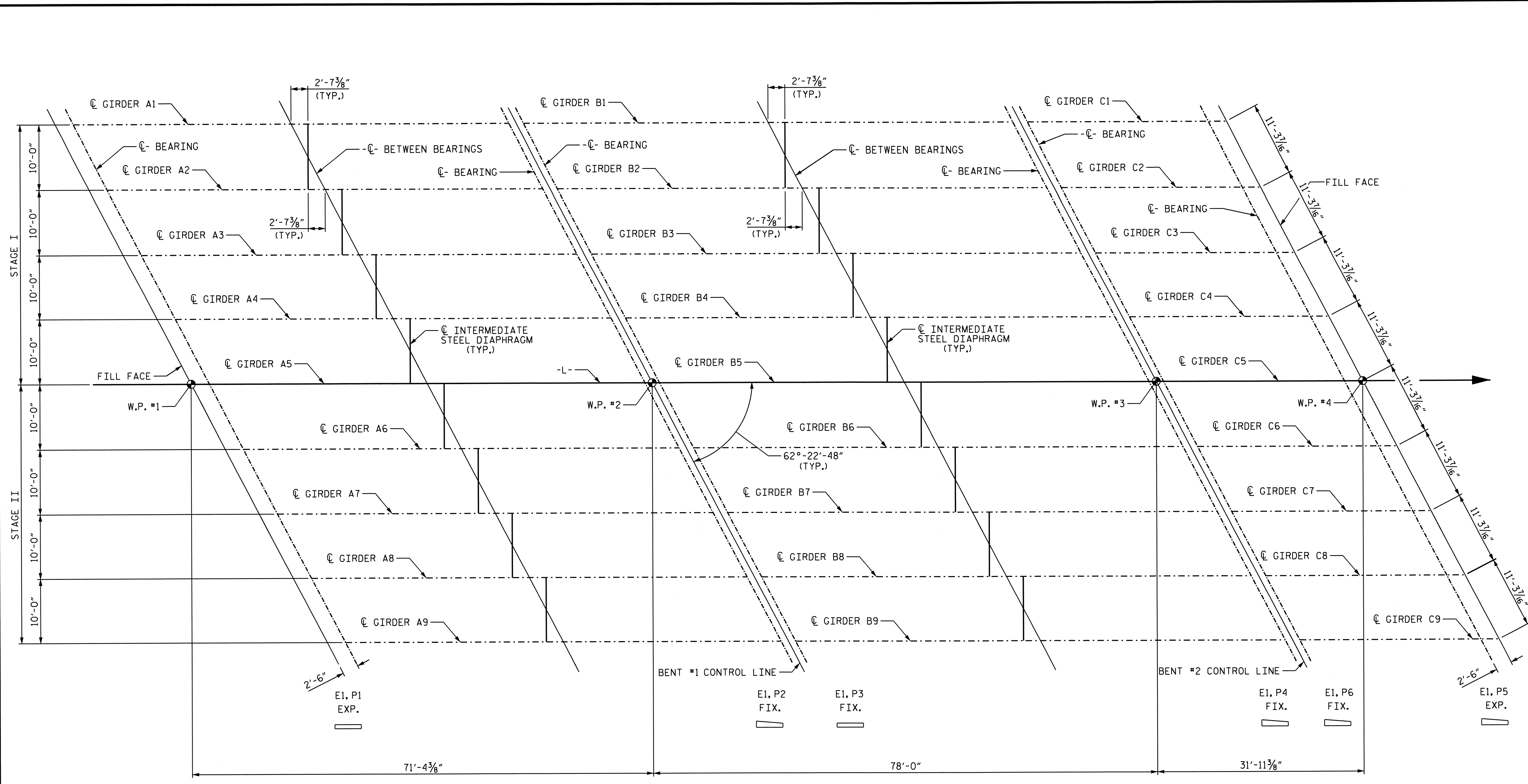
PROJECT NO. U-4432
WAKE COUNTY
 STATION: 28+17.07 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CLOSURE POUR
 TOP OF SLAB
 "B" BAR PLACEMENT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			52

DRAWN BY: J.D. HAWK DATE: 8/5/12
 CHECKED BY: K.D. LAYNE DATE: 11/8/12
 DESIGN ENGINEER: G.W. DICKEY DATE: 06/25/13



SPAN A

SPAN B

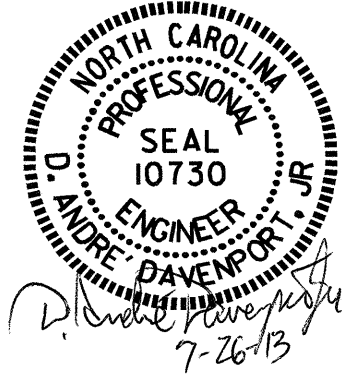
SPAN C

FRAMING PLAN

PROJECT NO. U-4432
WAKE COUNTY
 STATION: 28+17.07-L-

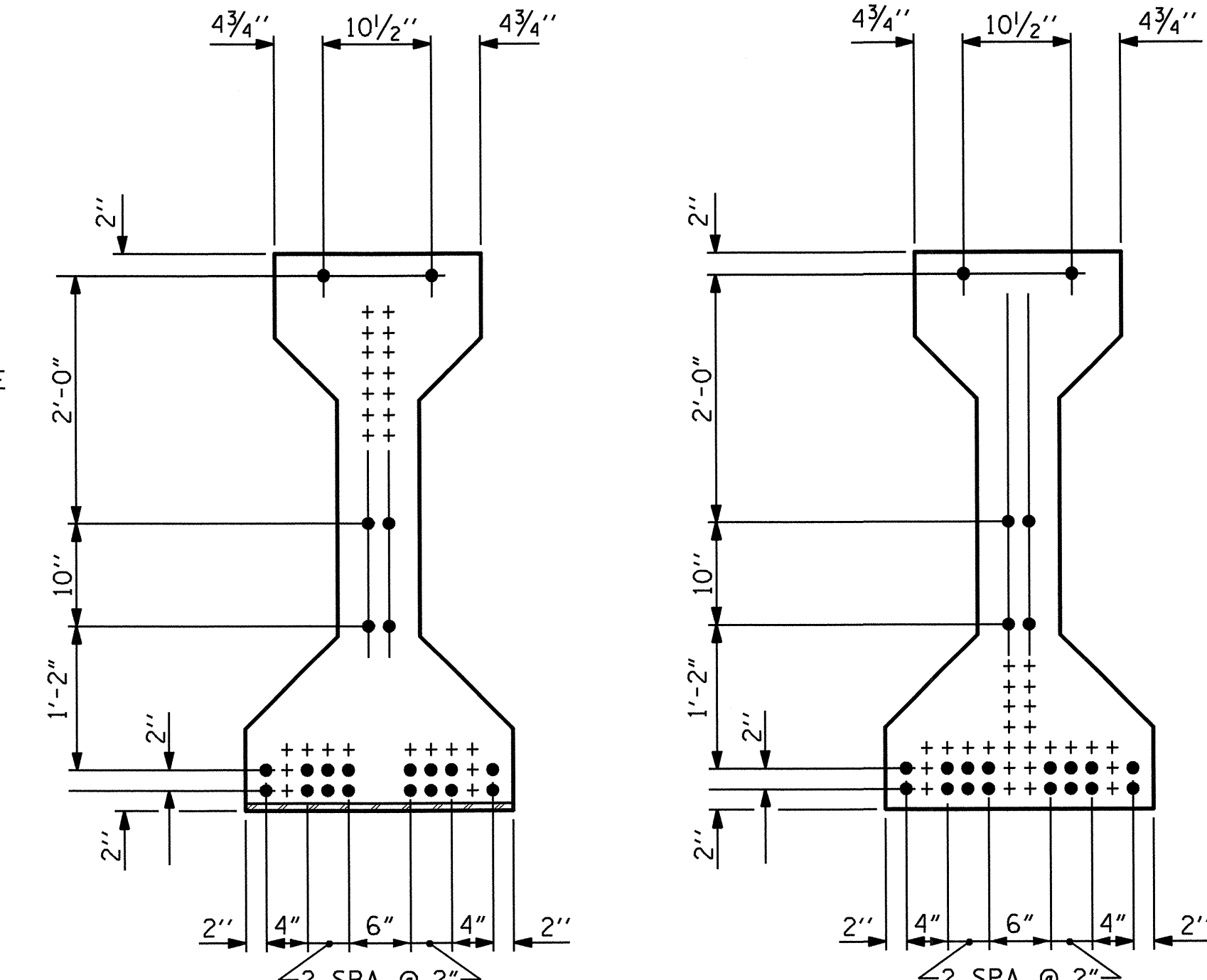
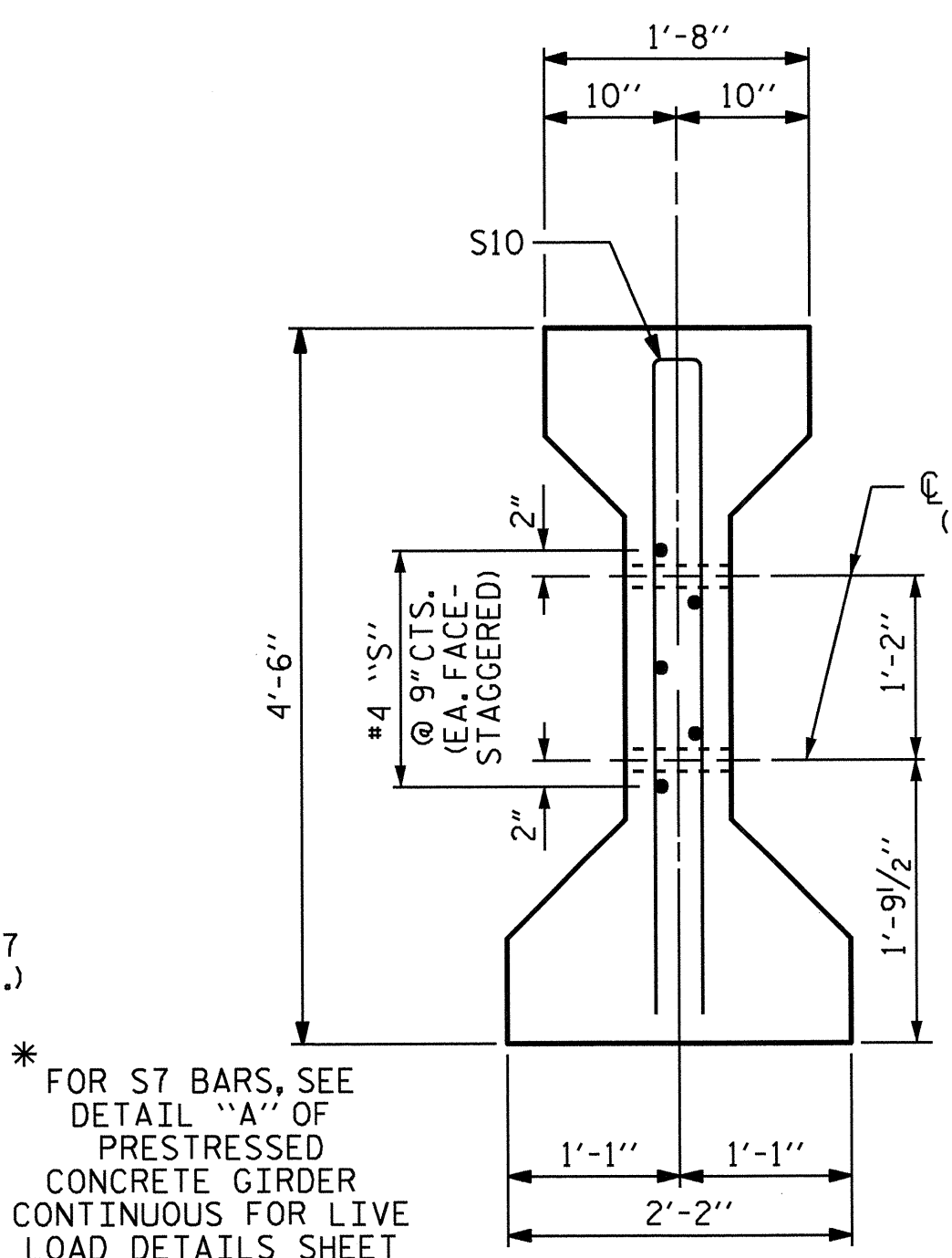
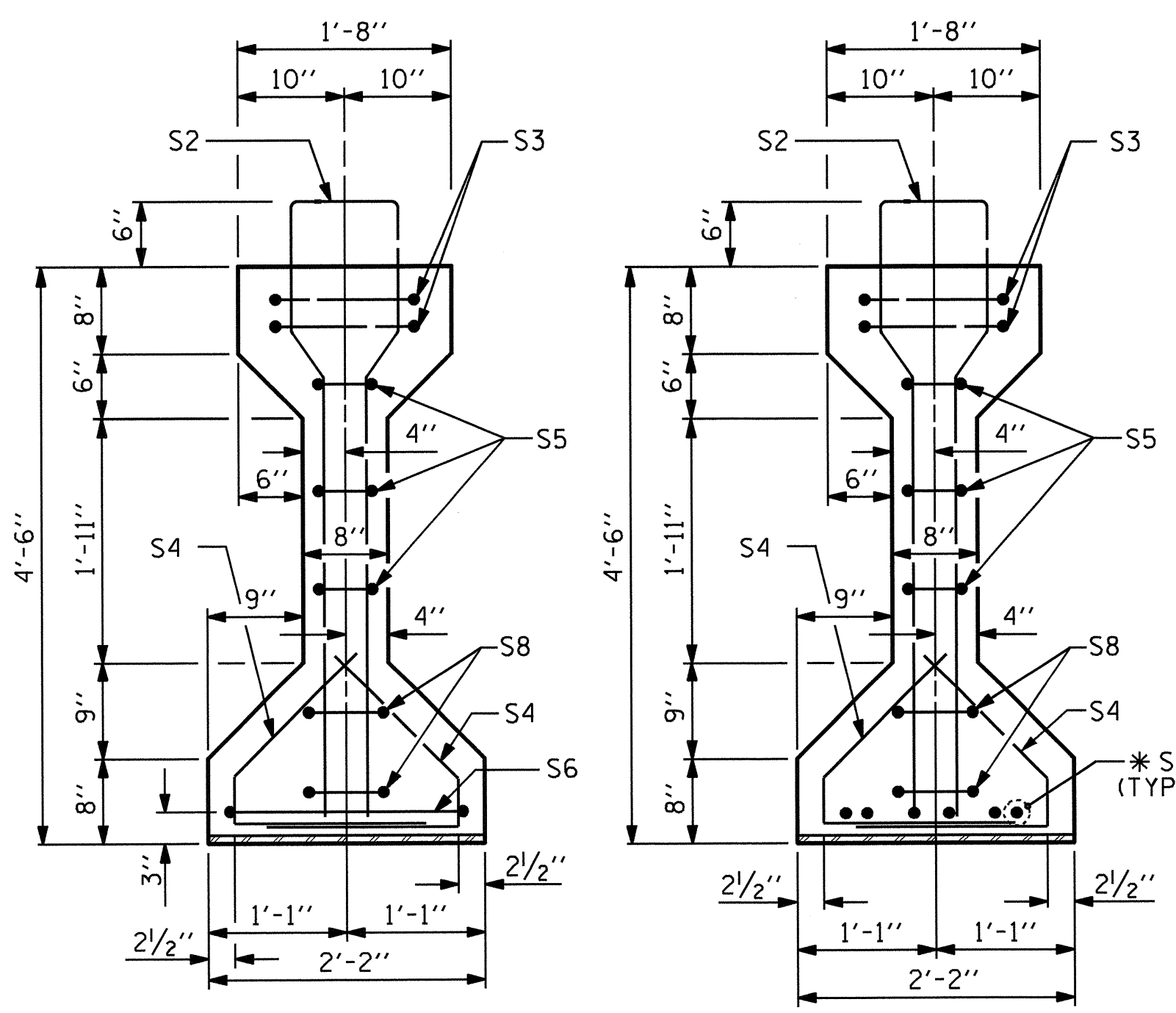
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

FRAMING PLAN



DRAWN BY : J.D. HAWK DATE : 8/5/12
 CHECKED BY : K.D. LAYNE DATE : 11/8/12
 DESIGN ENGINEER OF RECORD: G.W. DICKEY DATE : 06/25/13

REVISIONS						SHEET NO. S-16
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 52
2			4			



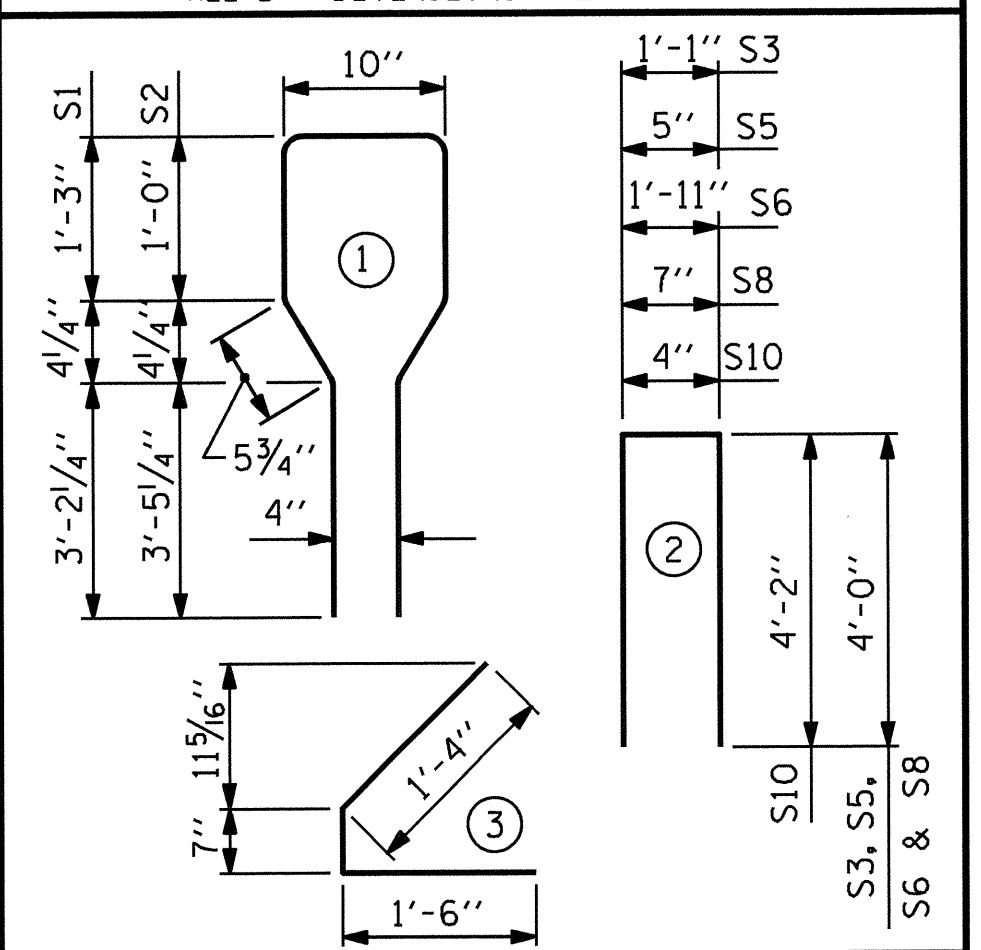
EXTERIOR GDR.	S10	2	#5	2	8'-8"	18
INTERIOR GDR.	S10	4	#5	2	8'-8"	36
EXTERIOR GDR.	S11	5	#4	STR	7'-0"	23
INTERIOR GDR.	S12	5	#4	STR	12'-3"	41

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

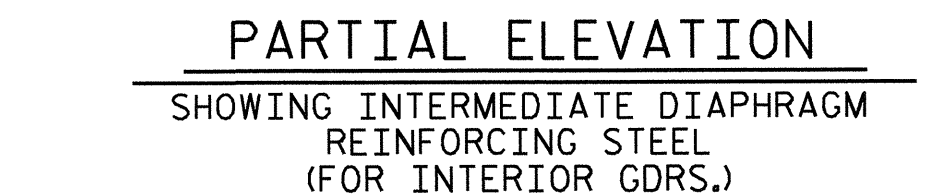
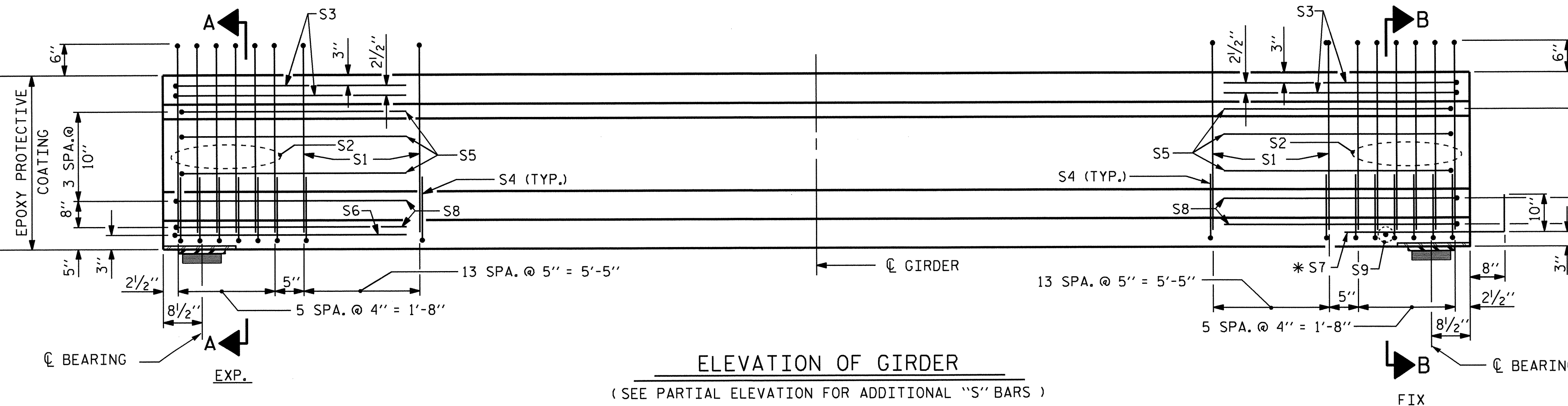
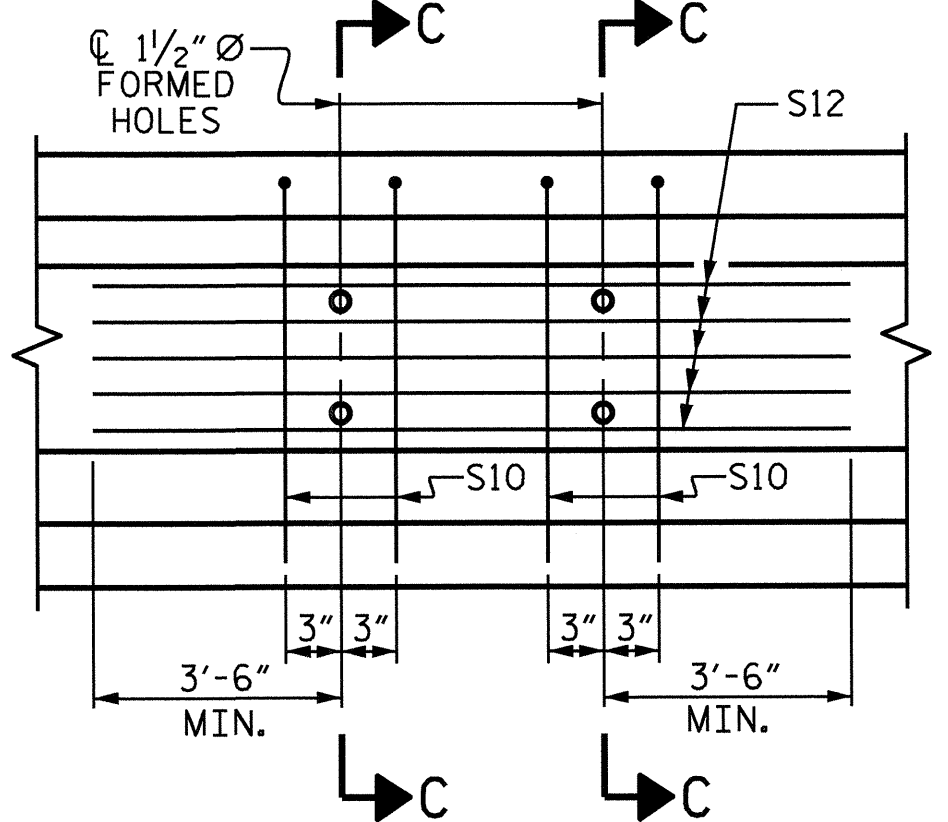
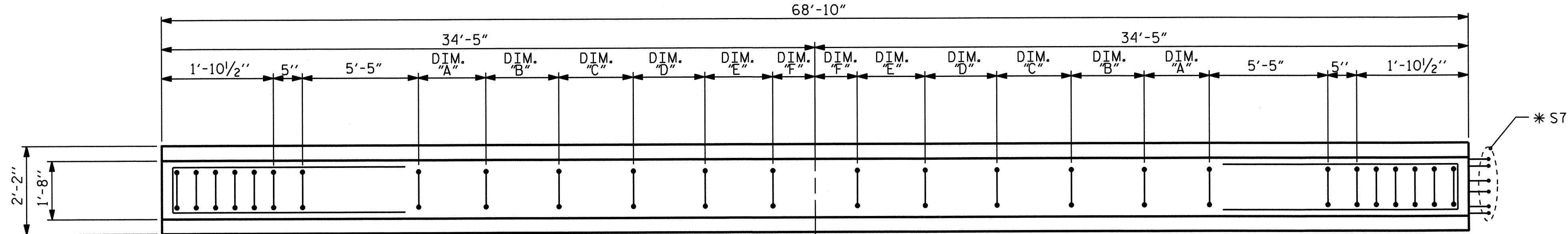
REINFORCING STEEL FOR ONE GIRDER						
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
S1	94	#4	1	10'-8"	670	
S2	12	#6	1	10'-8"	192	
S3	4	#4	2	9'-1"	24	
S4	80	#4	3	3'-5"	183	
S5	6	#4	2	8'-5"	34	
S6	1	#4	2	9'-11"	7	
*S7	6	#5	STR	3'-8"	23	
S8	4	#4	2	8'-7"	23	
S9	1	#3	STR	1'-10"	1	

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

BAR TYPES



GIRDER DIMENSIONS					
DIMENSION A	DIMENSION B	DIMENSION C	DIMENSION D	DIMENSION E	DIMENSION F
13 SPA @ 6"	10 SPA @ 8"	1 SPA @ 11 1/2"	7 SPA @ 13"	2 SPA @ 24"	1 SPA @ 12"



QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	5000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
EXTERIOR GIRDER	1198	14.0	22
INTERIOR GIRDER	1234	14.0	22

GIRDERS REQUIRED			
NUMBER	LENGTH	TOTAL LENGTH	
EXTERIOR GDR.	2	68'-10"	137.667'
INTERIOR GDR.	5	68'-10"	344.167'
	7	-	481.834'

PROJECT NO. U-4432
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 STATION: 28+17.07 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

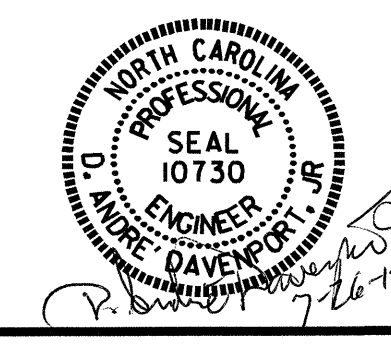
AASHTO TYPE IV
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 SPAN A
 FOR GDR'S A1-A4 AND A7-A9

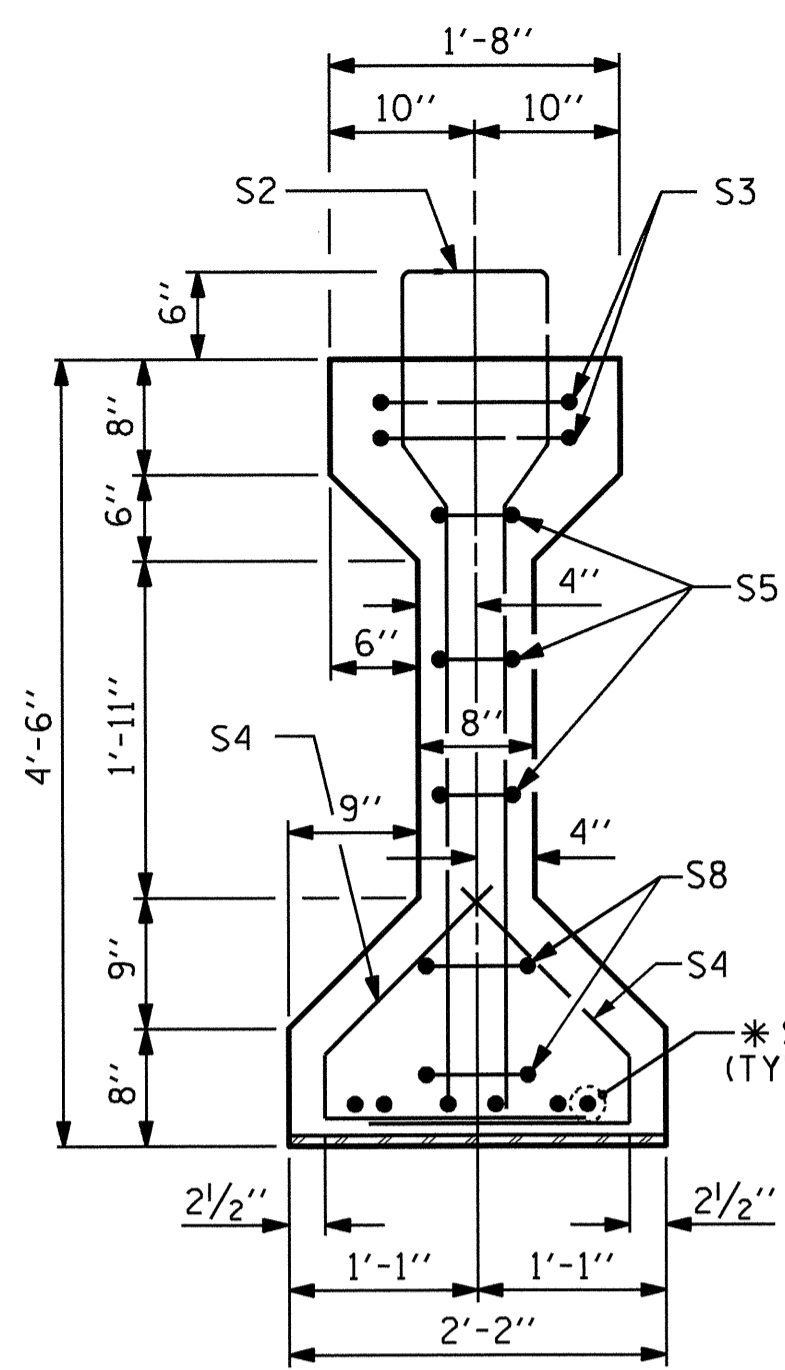
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-17
 TOTAL SHEETS 52

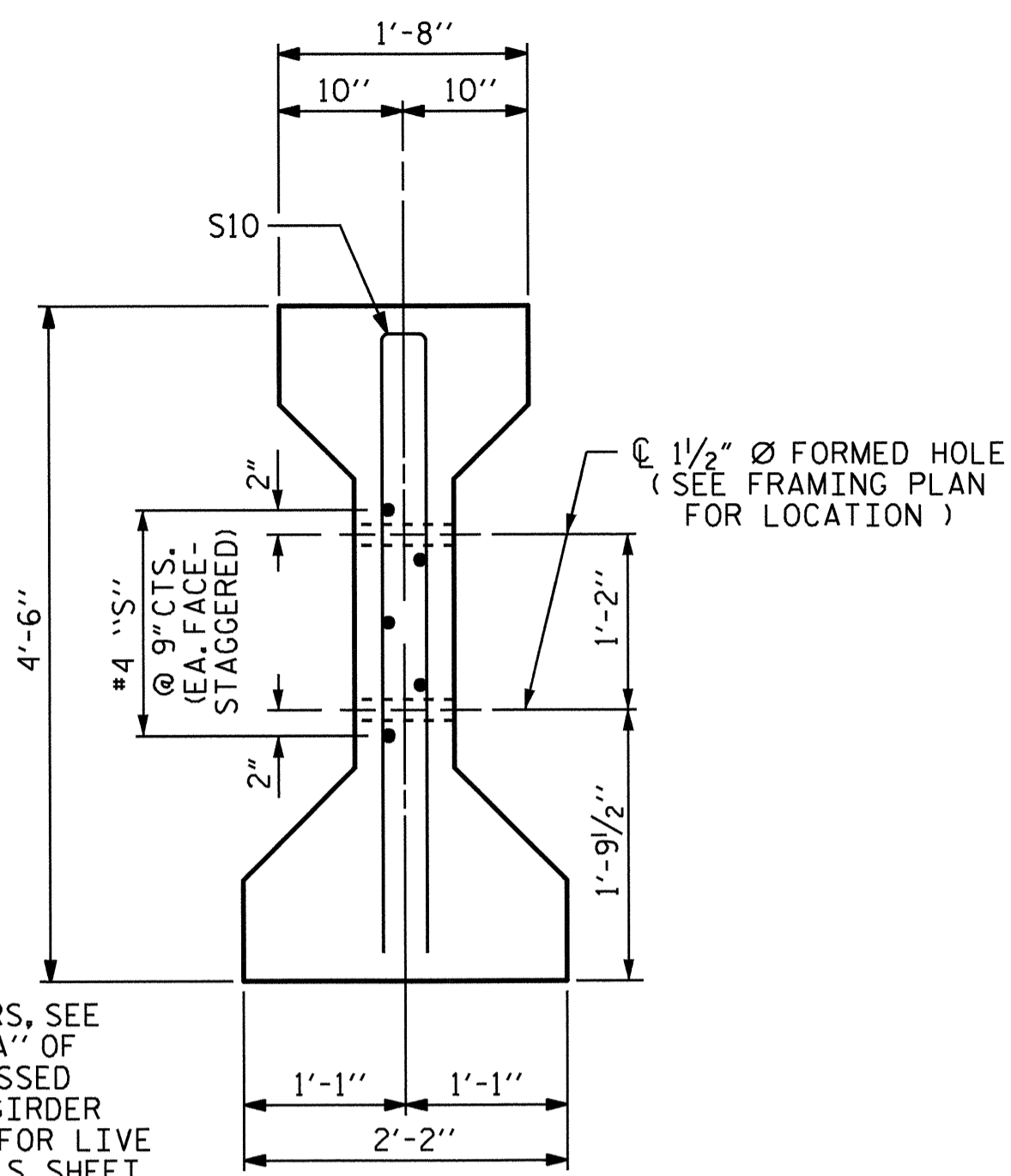
DRAWN BY: J.D. HAWK DATE: 8/5/12
 CHECKED BY: K.D. LAYNE DATE: 11/8/12
 DESIGN ENGINEER OF RECORD: G.W. DICKEY DATE: 06/25/13

DRAWN BY: ELR 8/91 REV. 10/17/00R RWW/LES
 CHECKED BY: GRP 8/91 REV. 5/1/06R TLA/GM
 REV. 10/1/11 MAA/GM

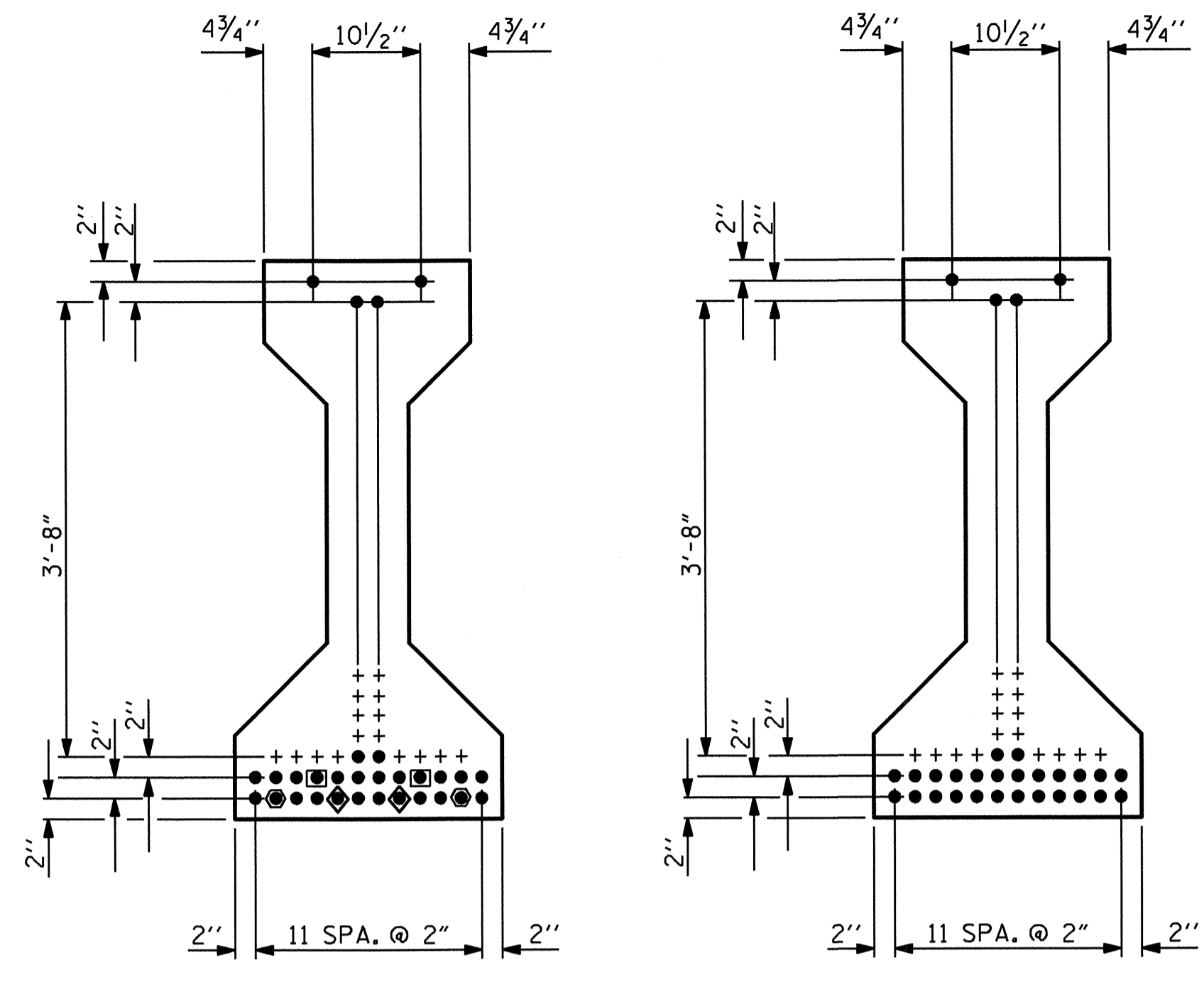




SECTION B-B

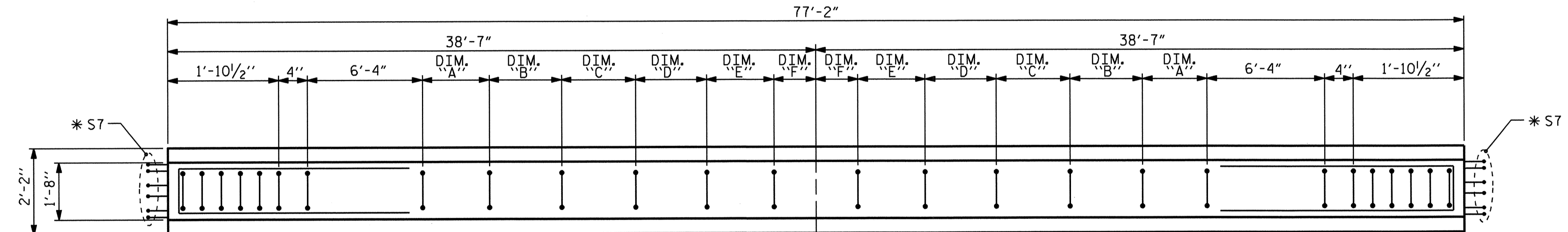


SECTION C-C
(S1 BARS NOT SHOWN)

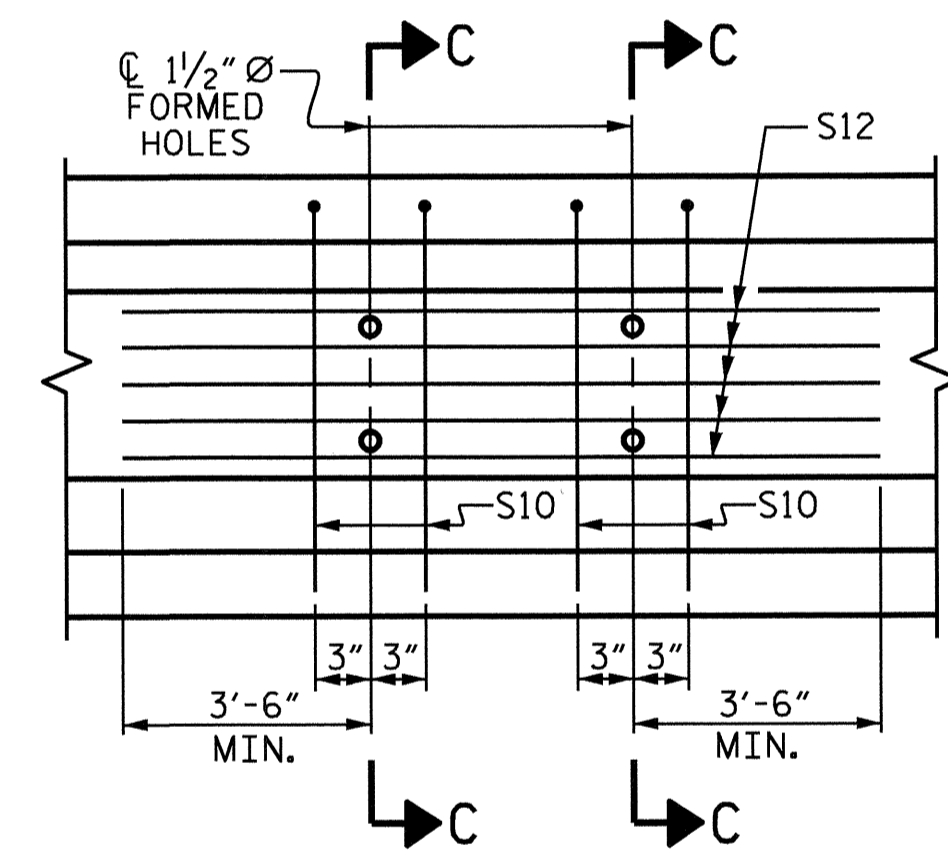


AT END OF GIRDER
AT C OF GIRDER
0.6" Ø LOW RELAXATION STRAND LAYOUT

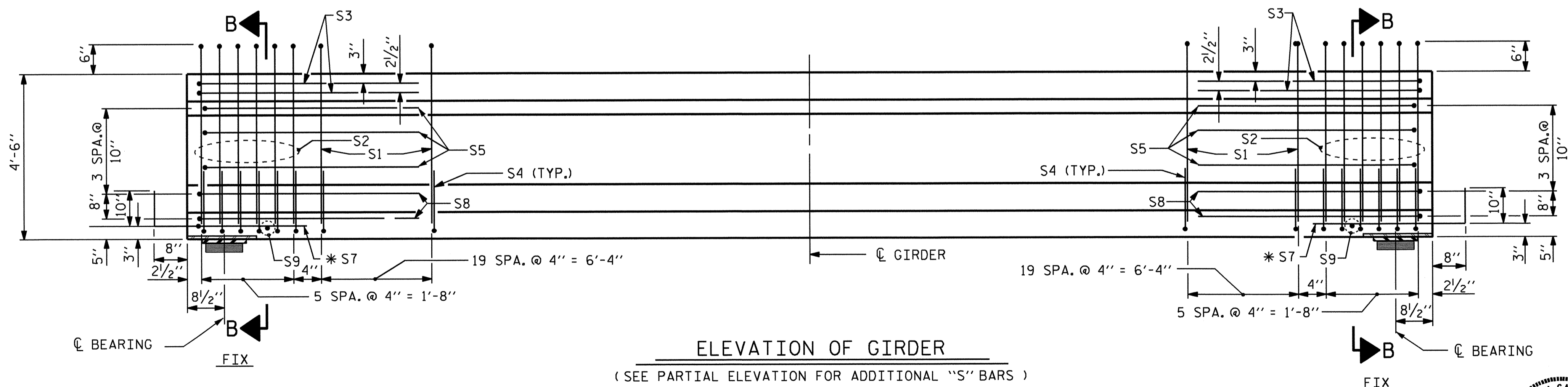
GIRDER DIMENSIONS					
DIMENSION A	DIMENSION B	DIMENSION C	DIMENSION D	DIMENSION E	DIMENSION F
16 SPA @ 5 1/2"	12 SPA @ 7 1/2"	7 SPA @ 12"	1 SPA @ 14 1/2"	3 SPA @ 24"	1 SPA @ 12"



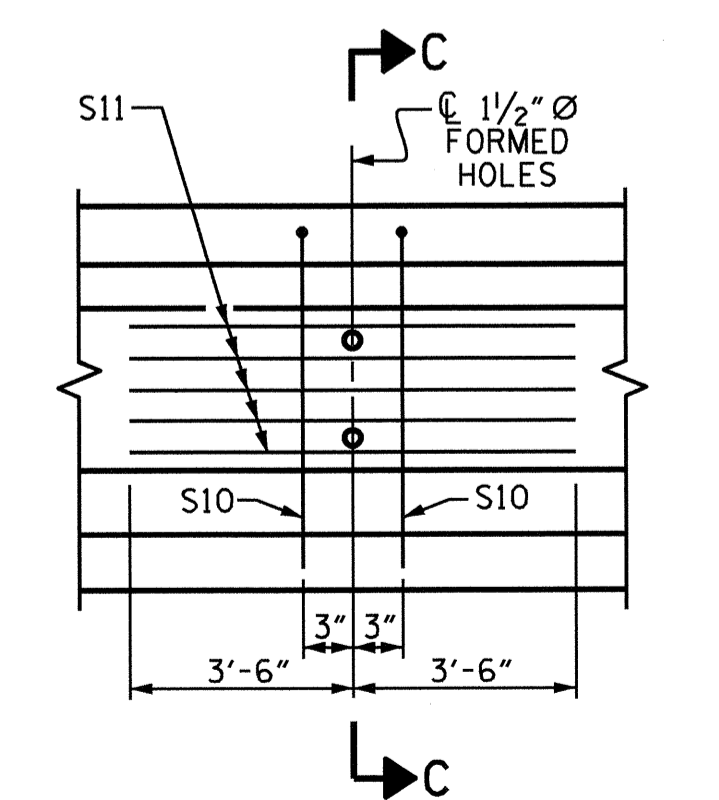
PLAN OF GIRDER



PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL (FOR INTERIOR GDRS.)



ELEVATION OF GIRDER
(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL (FOR EXTERIOR GIRTERS)

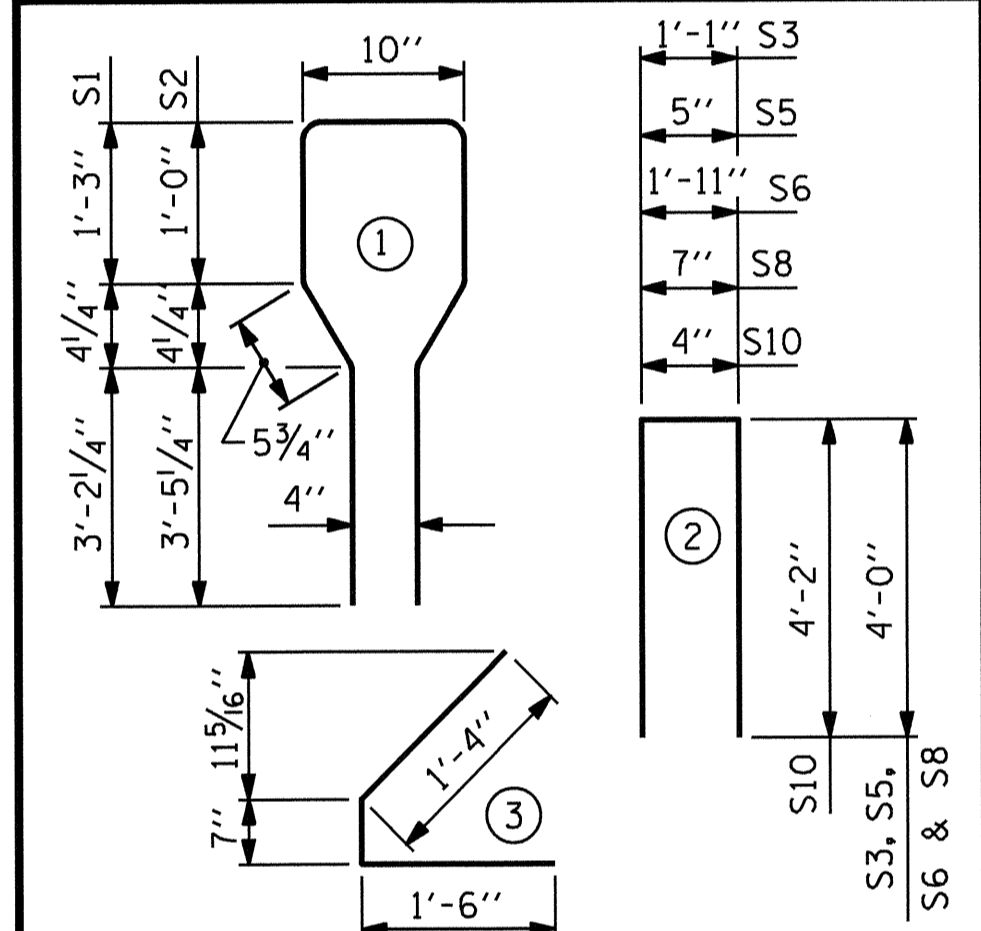
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER						
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
S1	118	#4	1	10'-8"	841	
S2	12	#6	1	10'-8"	192	
S3	4	#4	2	9'-1"	24	
S4	104	#4	3	3'-5"	237	
S5	6	#4	2	8'-5"	34	
*S7	12	#5	STR	3'-8"	46	
S8	4	#4	2	8'-7"	23	
S9	2	#3	STR	1'-10"	1	
EXTERIOR GDR.	S10	2	#5	2	8'-8"	18
INTERIOR GDR.	S10	4	#5	2	8'-8"	36
EXTERIOR GDR.	S11	5	#4	STR	7'-0"	23
INTERIOR GDR.	S12	5	#4	STR	12'-3"	41

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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	6500 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
EXTERIOR GIRDER	1439	15.7	30
INTERIOR GIRDER	1475	15.7	30

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR GDR.	2	77'-2"
INTERIOR GDR.	5	77'-2"
	7	540.167'

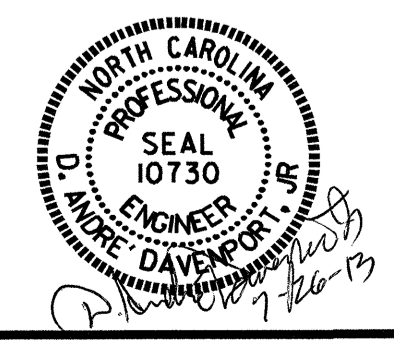
PROJECT NO. U-4432
WAKE COUNTY
STATION: 28+17.07 -L-

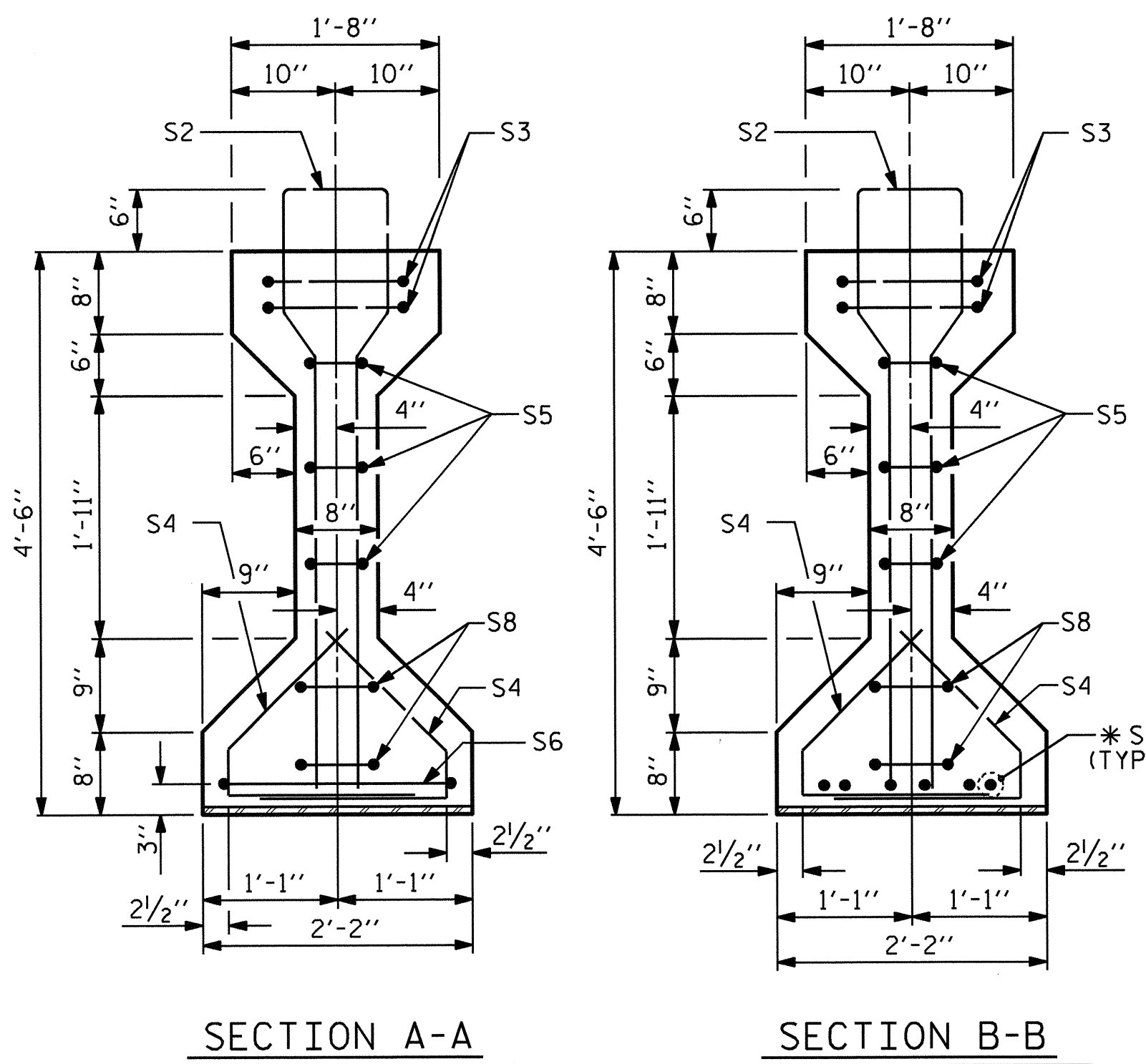
SHEET 2 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPAN B
FOR GDR'S B1-B4 AND B7-B9

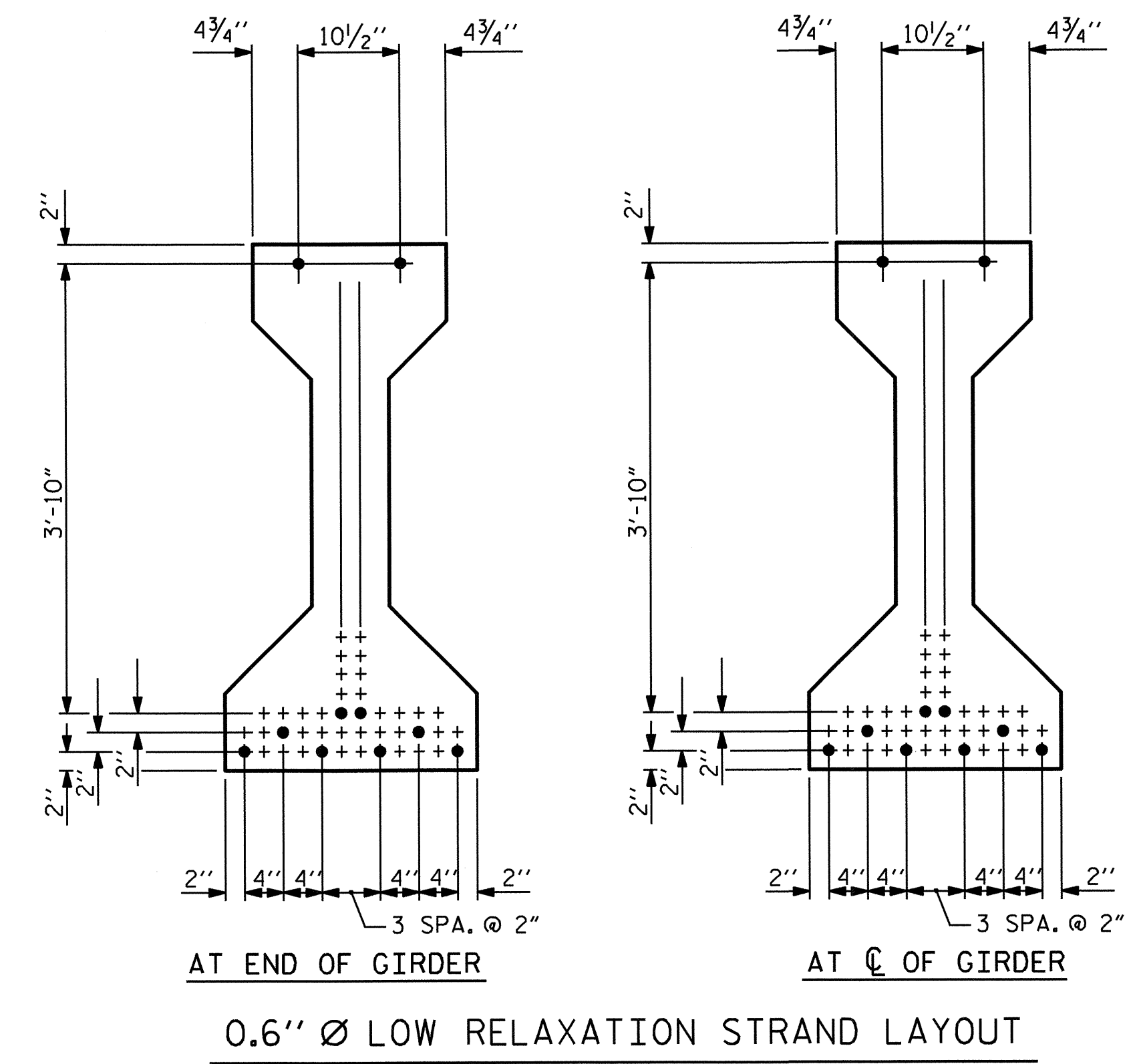
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			52

DRAWN BY: J.D. HAWK DATE: 8/5/12
CHECKED BY: K.D. LAYNE DATE: 11/8/12
DESIGN ENGINEER OF RECORD: G.W. DICKEY DATE: 6/25/13
DRAWN BY: ELR 8/91 REV. 10/17/00R RWW/LES
CHECKED BY: GRP 8/91 REV. 5/1/06R TLA/GM
REV. 10/1/11 MAA/GM





* FOR S7 BARS, SEE
DETAIL "A" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET



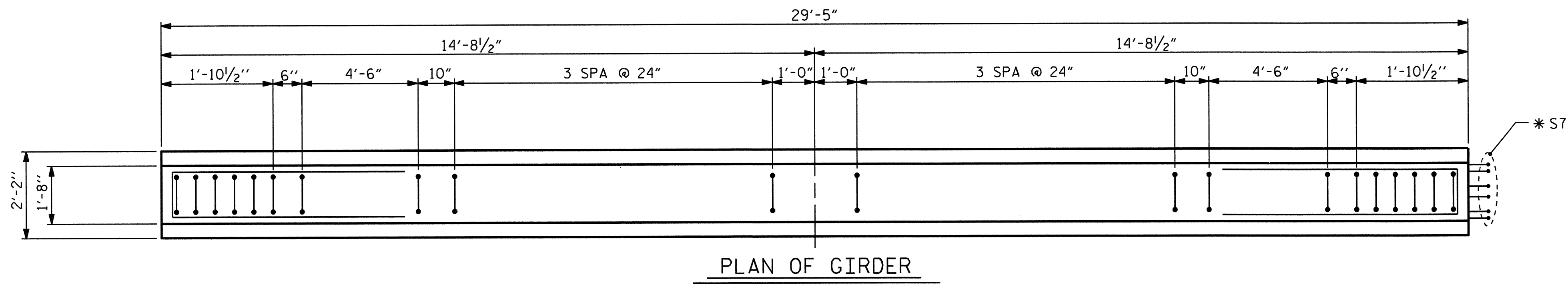
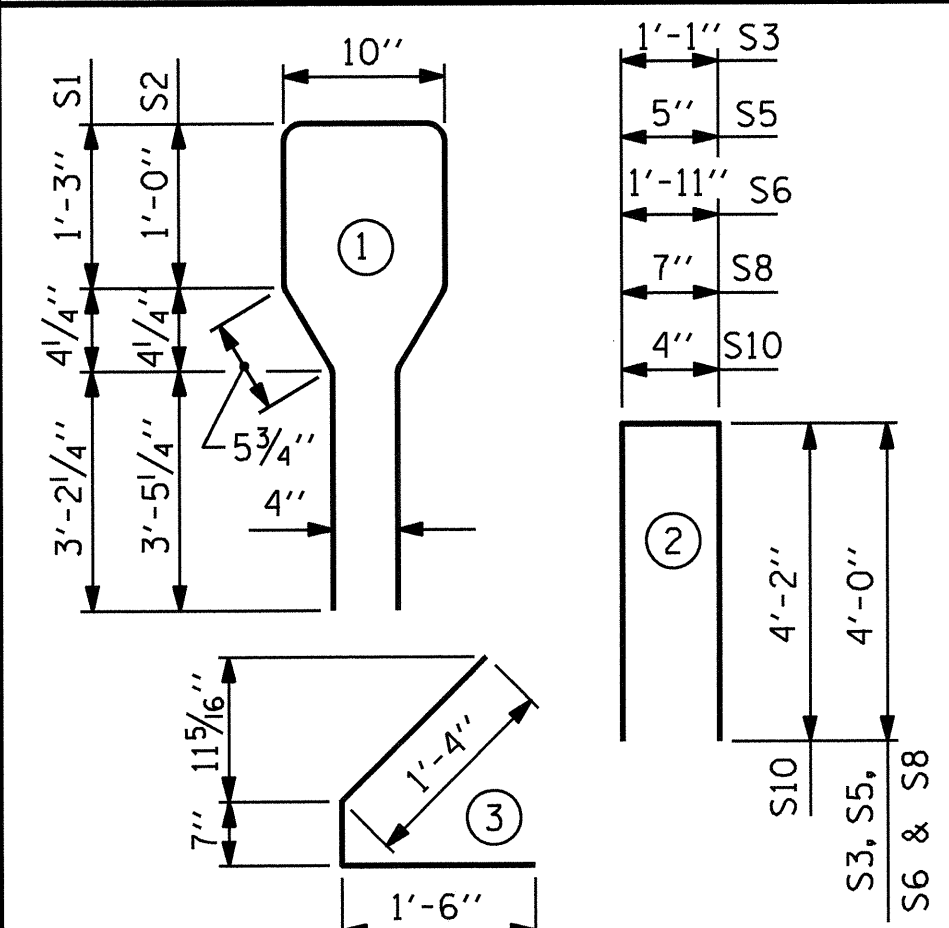
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	28	#4	1	10'-8"	200
S2	12	#6	1	10'-8"	192
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
S6	1	#4	2	9'-11"	7
*S7	6	#5	STR	3'-8"	23
S8	4	#4	2	8'-7"	23
S9	1	#3	STR	1'-10"	1

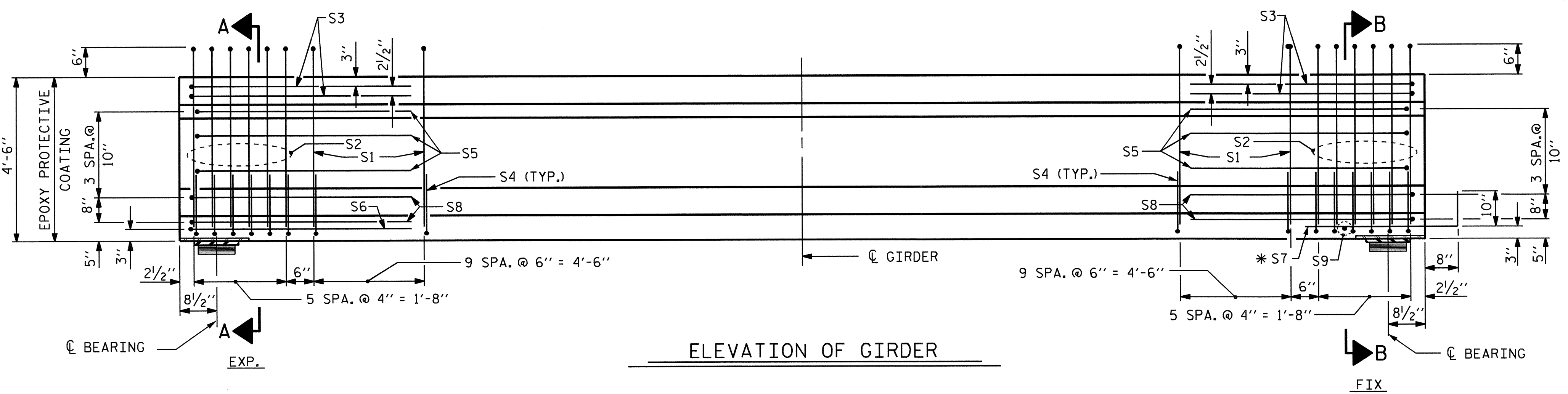
* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



PLAN OF GIRDER



ELEVATION OF GIRDER

QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	5000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
	650	6.0	10

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
7	29'-5"	205.917

PROJECT NO. U-4432
WAKE COUNTY
STATION: 28+17.07 -L-

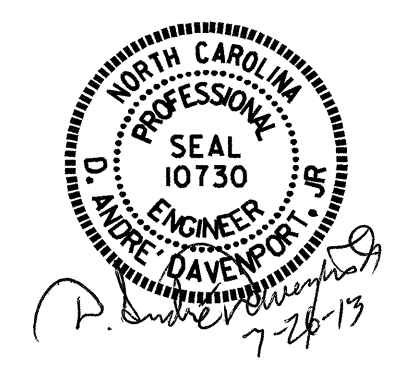
SHEET 3 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPAN C**

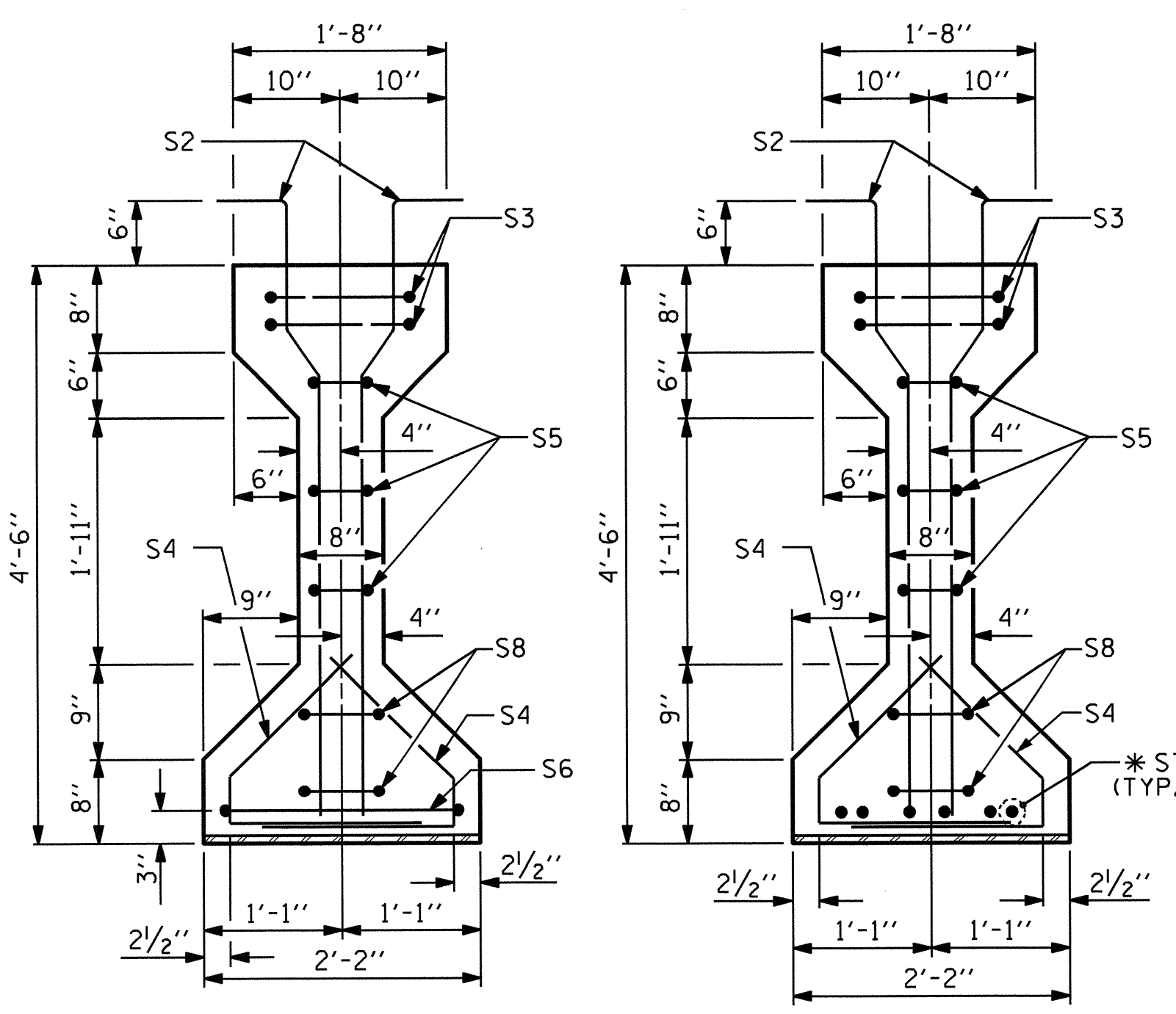
FOR GDR'S C1-C4 AND C7-C9

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19	
1			3			TOTAL SHEETS 52	
2			4				

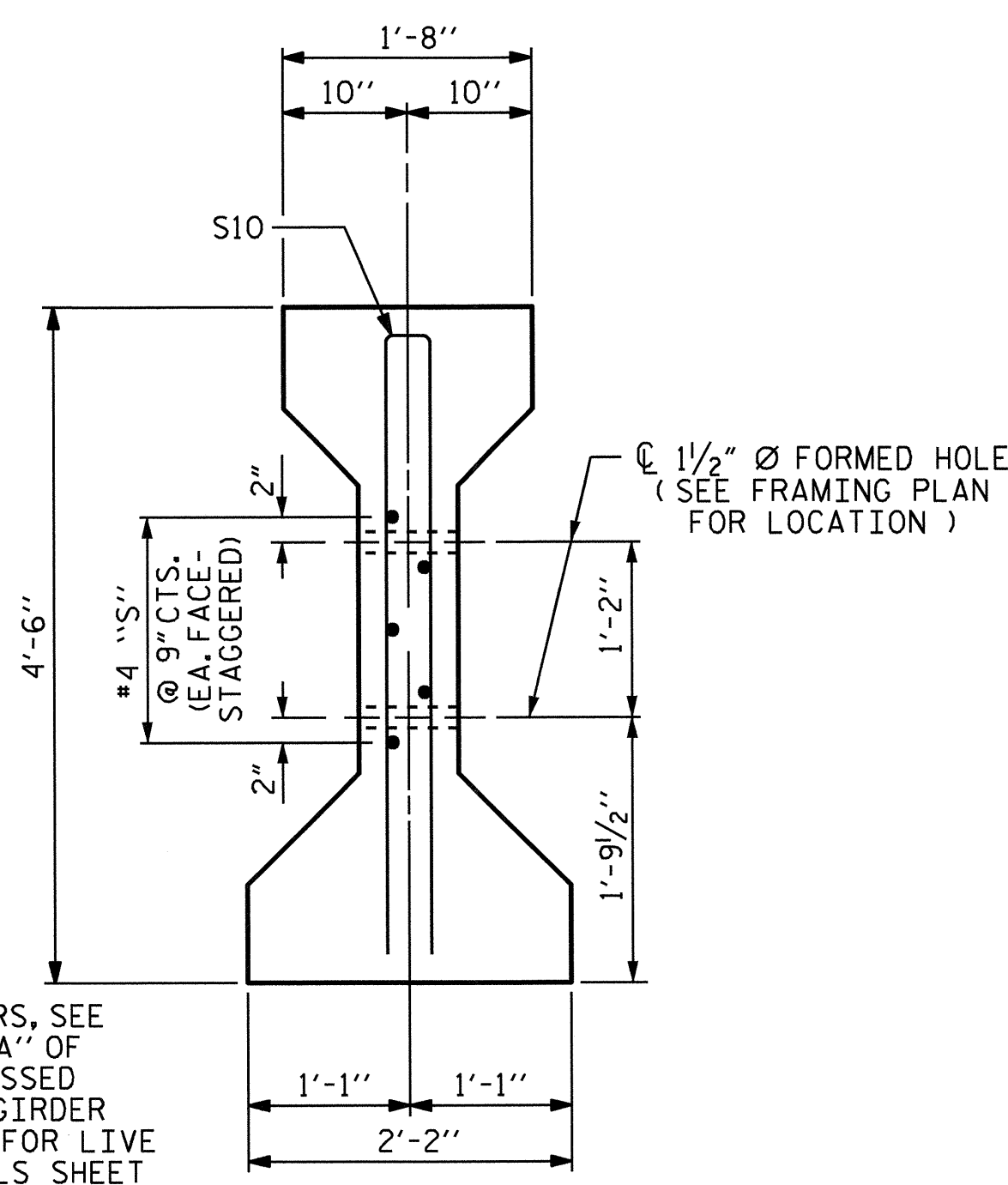


DRAWN BY: J.D. HAWK DATE: 8/5/12
CHECKED BY: K.D. LAYNE DATE: 11/8/12
DESIGN ENGINEER OF RECORD: G.W. DICKEY DATE: 6/25/13

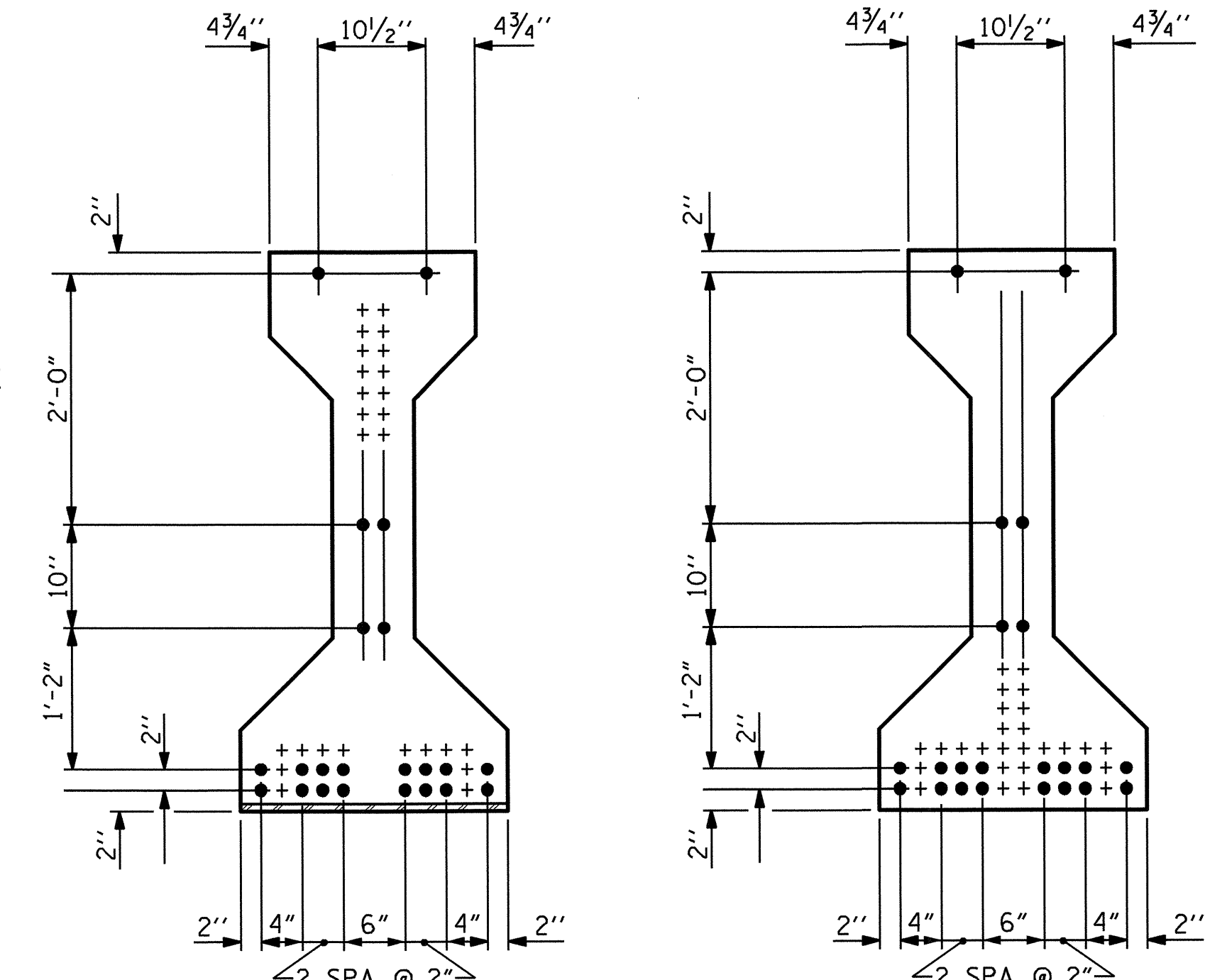
DRAWN BY: ELR 8/91 REV. 10/17/00R RWW/LES
CHECKED BY: GRP 8/91 REV. 5/1/06R TLA/GM
REV. 10/1/11 MAA/GM



* FOR S7 BARS, SEE
DETAIL "A" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET

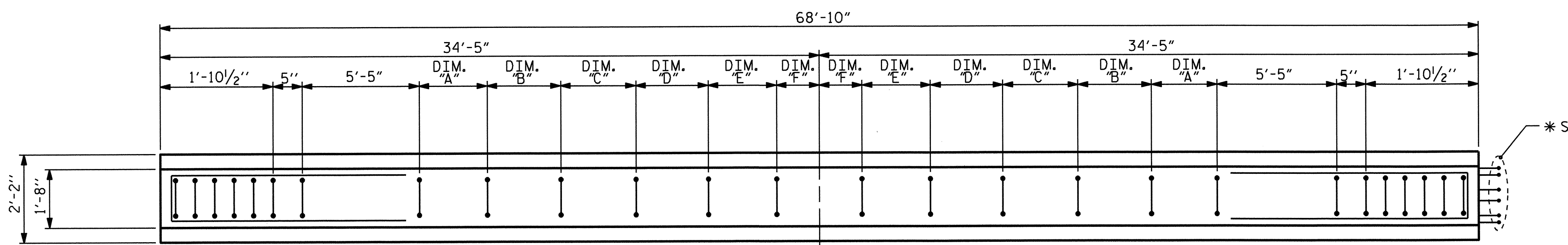


1 1/2" Ø FORMED HOLE
(SEE FRAMING PLAN
FOR LOCATION)

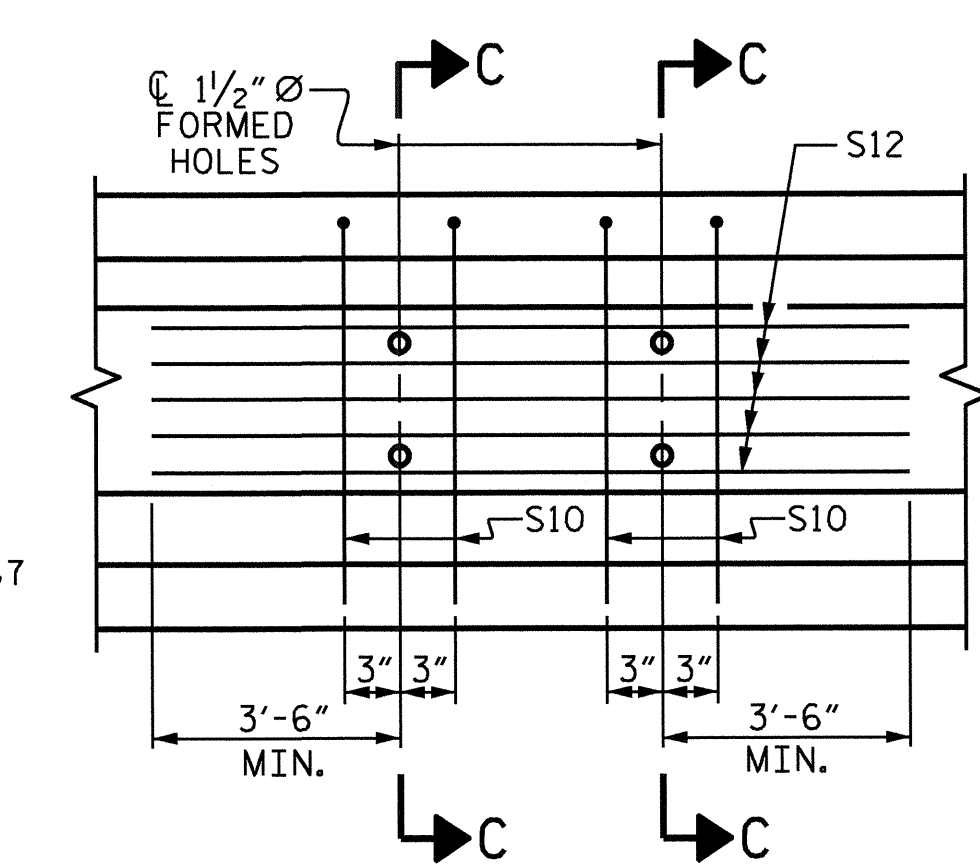


AT END OF GIRDER
AT C OF GIRDER
0.6" Ø LOW RELAXATION STRAND LAYOUT

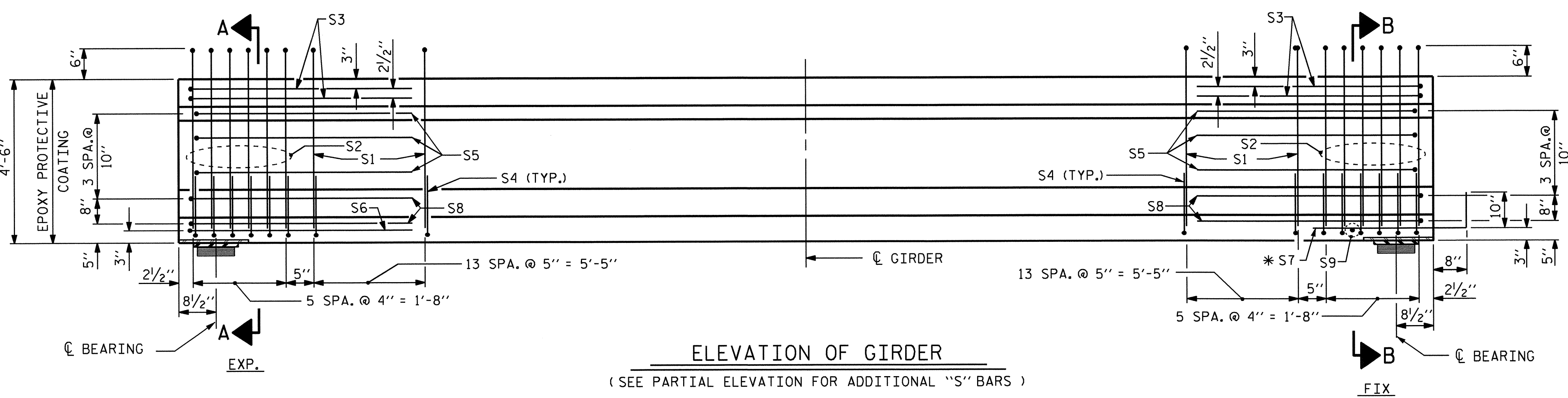
GIRDER DIMENSIONS					
DIMENSION A	DIMENSION B	DIMENSION C	DIMENSION D	DIMENSION E	DIMENSION F
13 SPA @ 6"	10 SPA @ 8"	1 SPA @ 11 1/2"	7 SPA @ 13"	2 SPA @ 24"	1 SPA @ 12"



PLAN OF GIRDER



PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL
(FOR INTERIOR GDRS.)



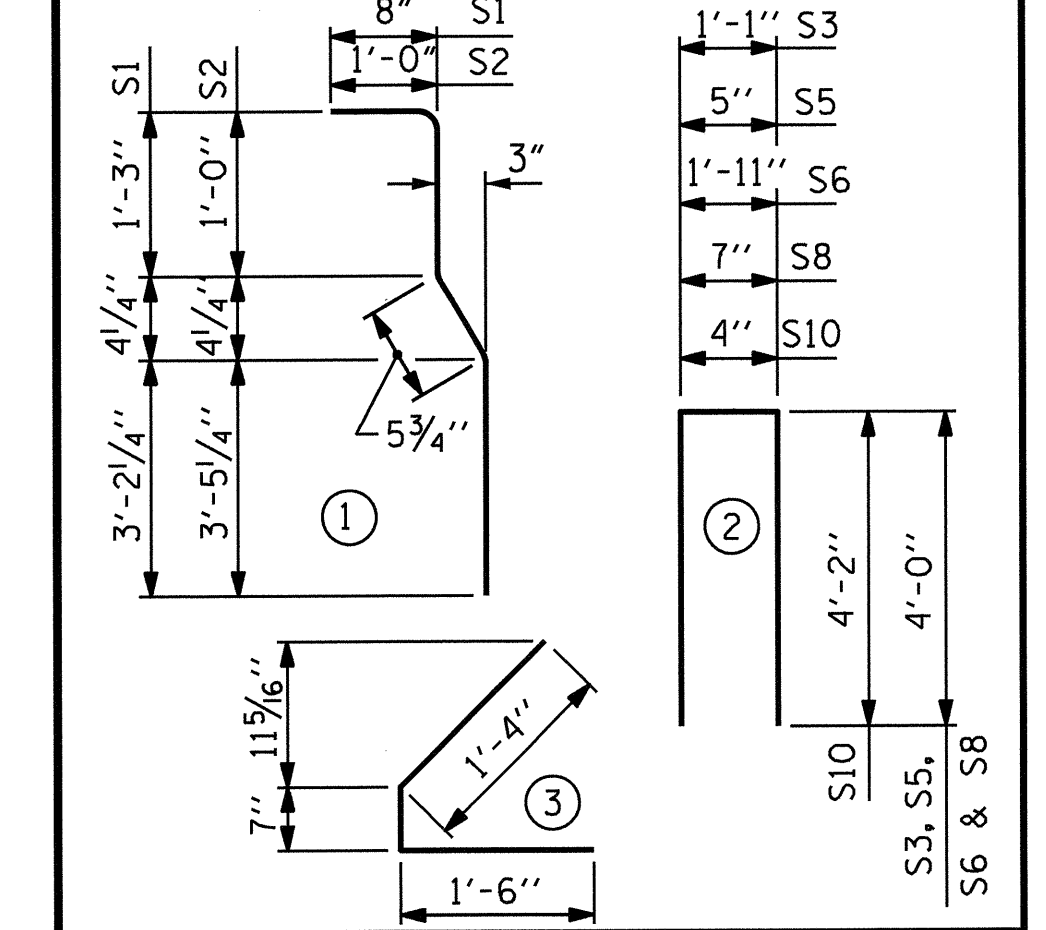
ELEVATION OF GIRDER
(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

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 GIRDER						
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
S1	188	#4	1	5'-7"	701	
S2	24	#6	1	5'-11"	213	
S3	4	#4	2	9'-1"	24	
S4	80	#4	3	3'-5"	183	
S5	6	#4	2	8'-5"	34	
S6	1	#4	2	9'-11"	7	
* S7	6	#5	STR	3'-8"	23	
S8	4	#4	2	8'-7"	23	
S9	1	#3	STR	1'-10"	1	
S10	4	#5	2	8'-8"	36	
S12	5	#4	STR	12'-3"	41	

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

BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT

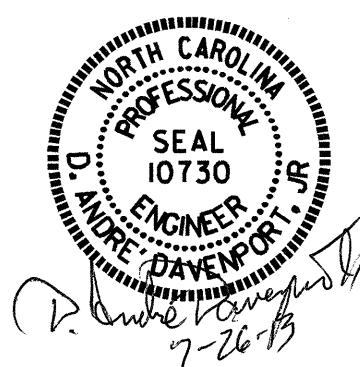


QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL LB.	5000 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
INTERIOR GIRDER	1286	14.0	22

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
2	68'-10"	137.666'

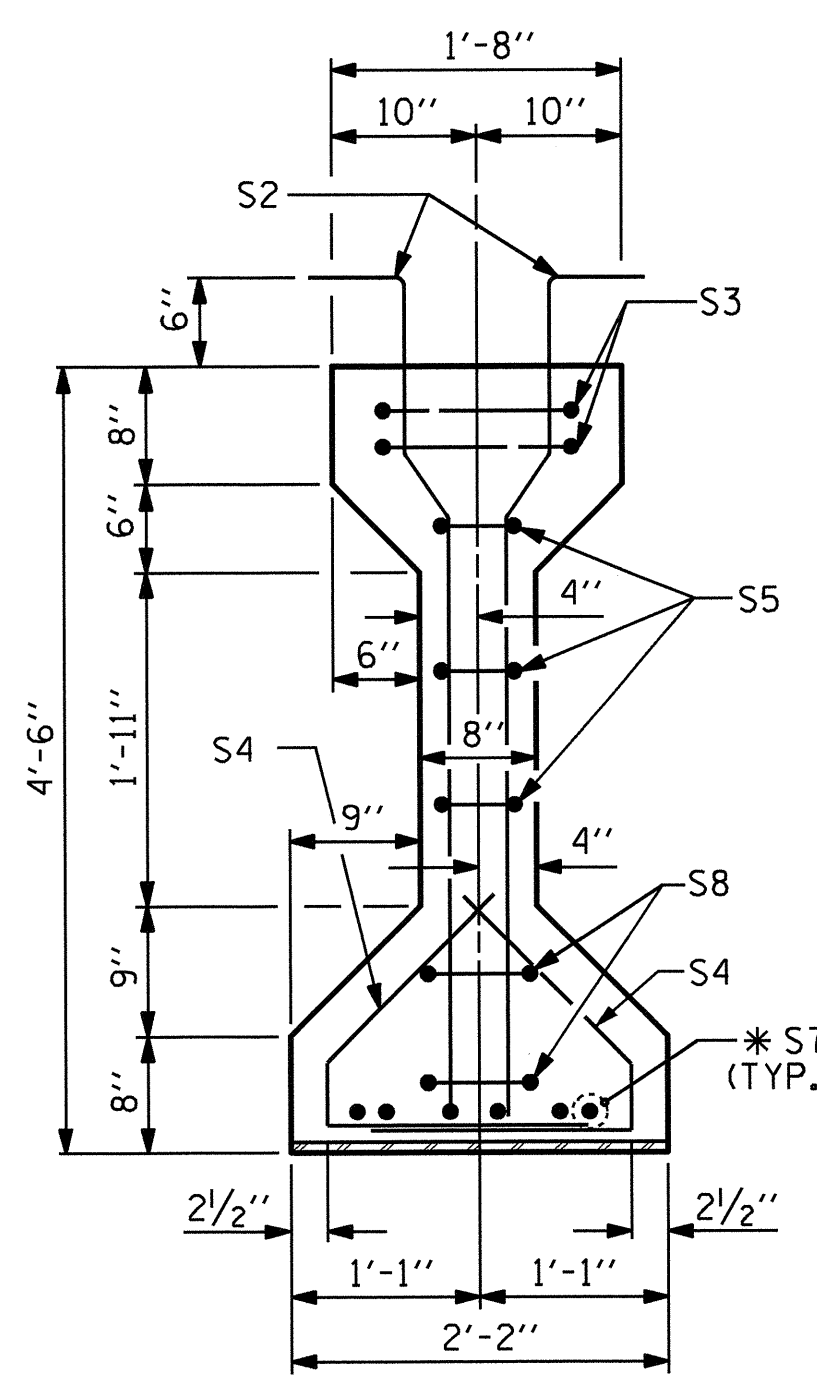
PROJECT NO. U-4432
WAKE COUNTY
STATION: 28+17.07 -L-
SHEET 4 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPAN A
FOR GDR'S A5 AND A6

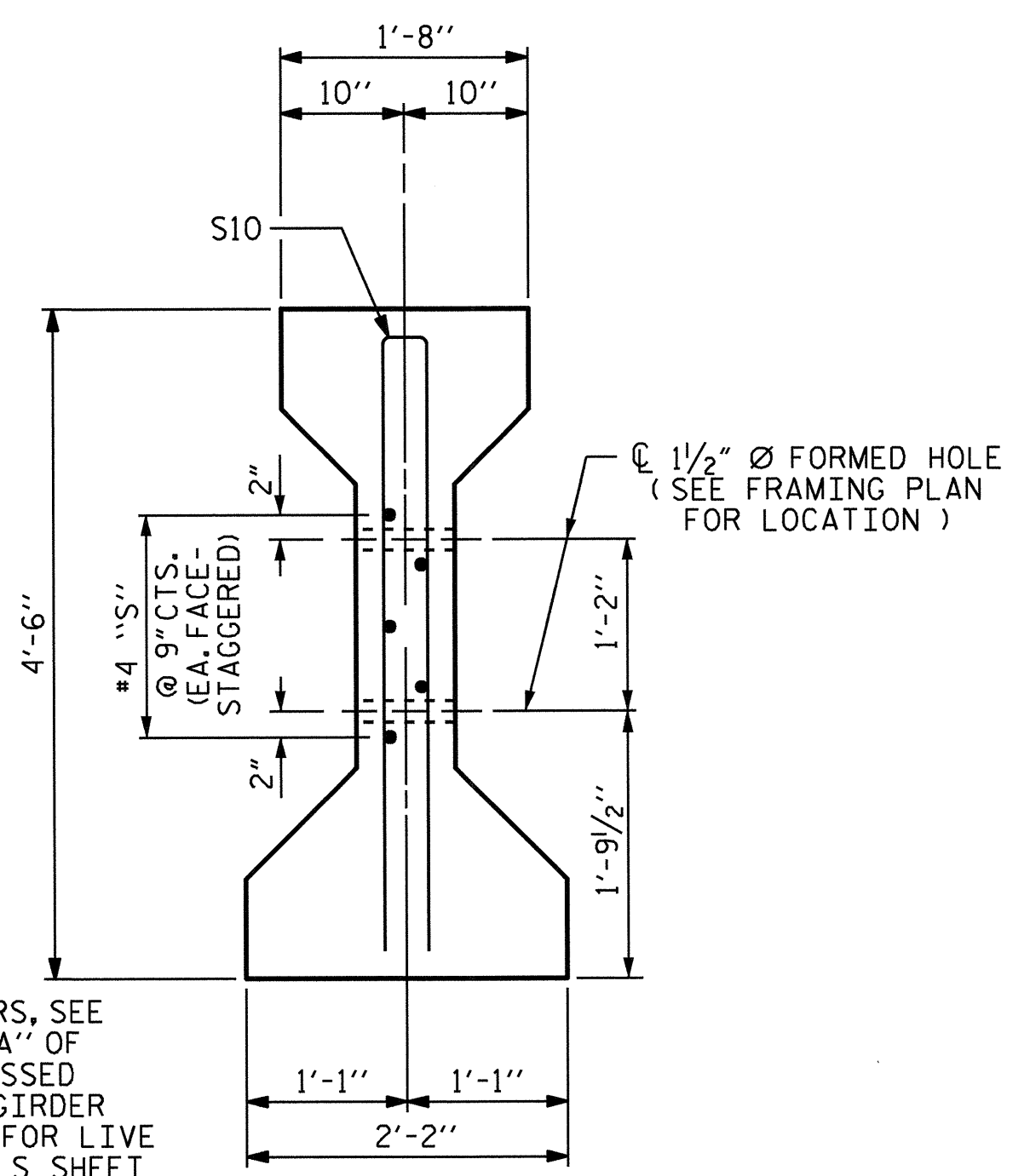


DRAWN BY: J.D. HAWK	DATE: 8/5/12
CHECKED BY: K.D. LAYNE	DATE: 11/8/12
DESIGN ENGINEER OF RECORD: G.W. DICKEY	DATE: 6/25/13
DRAWN BY: ELR 8/91	REV. 10/17/00R RWW/LES
CHECKED BY: GRP 8/91	REV. 5/1/06R TLA/GM
	REV. 10/1/11 MAA/GM

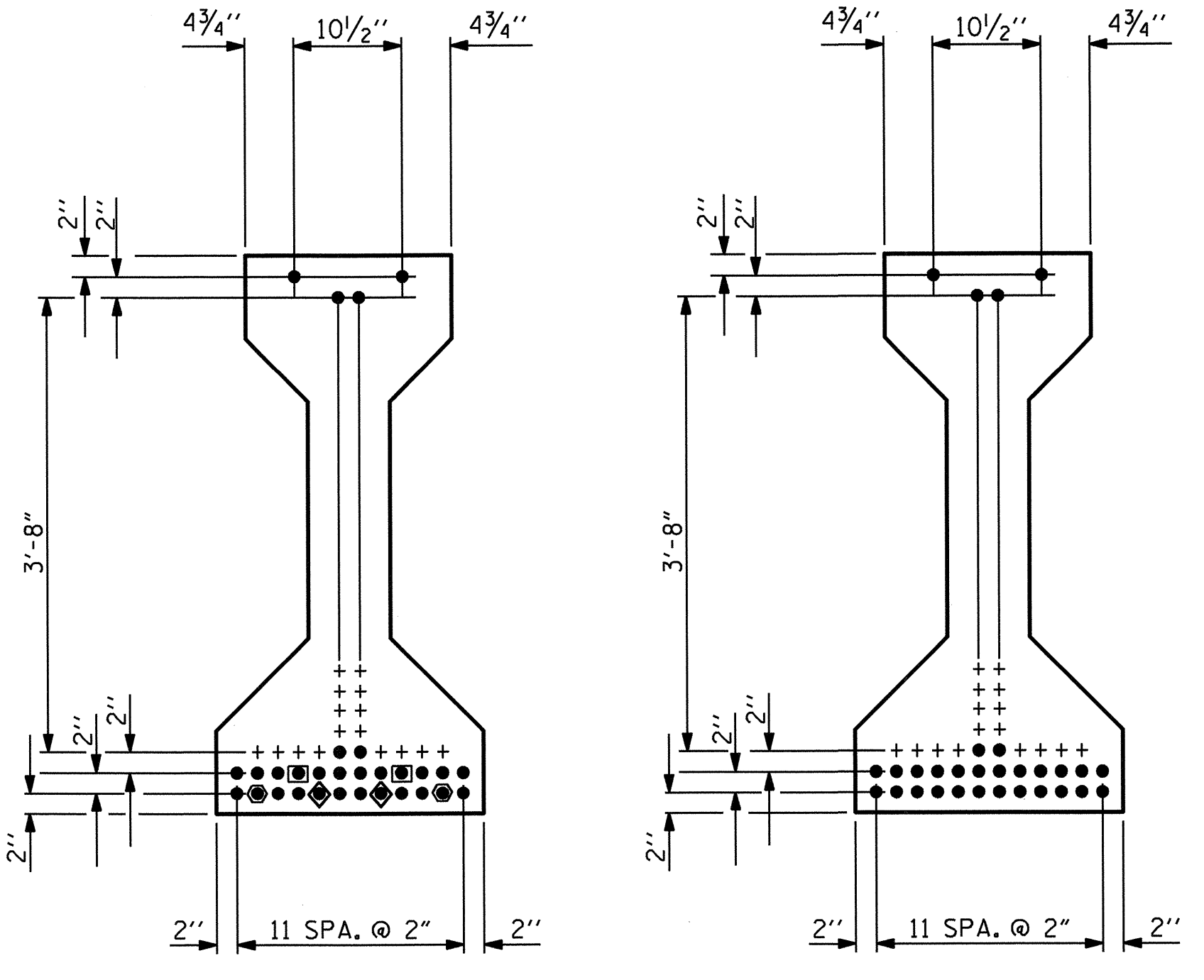
REVISIONS			SHEET NO.	
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	



SECTION B-B



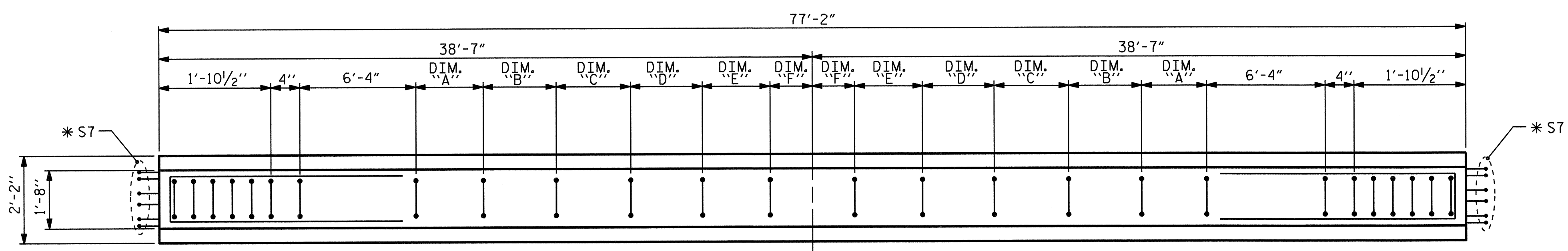
SECTION C-C
(S1 BARS NOT SHOWN)



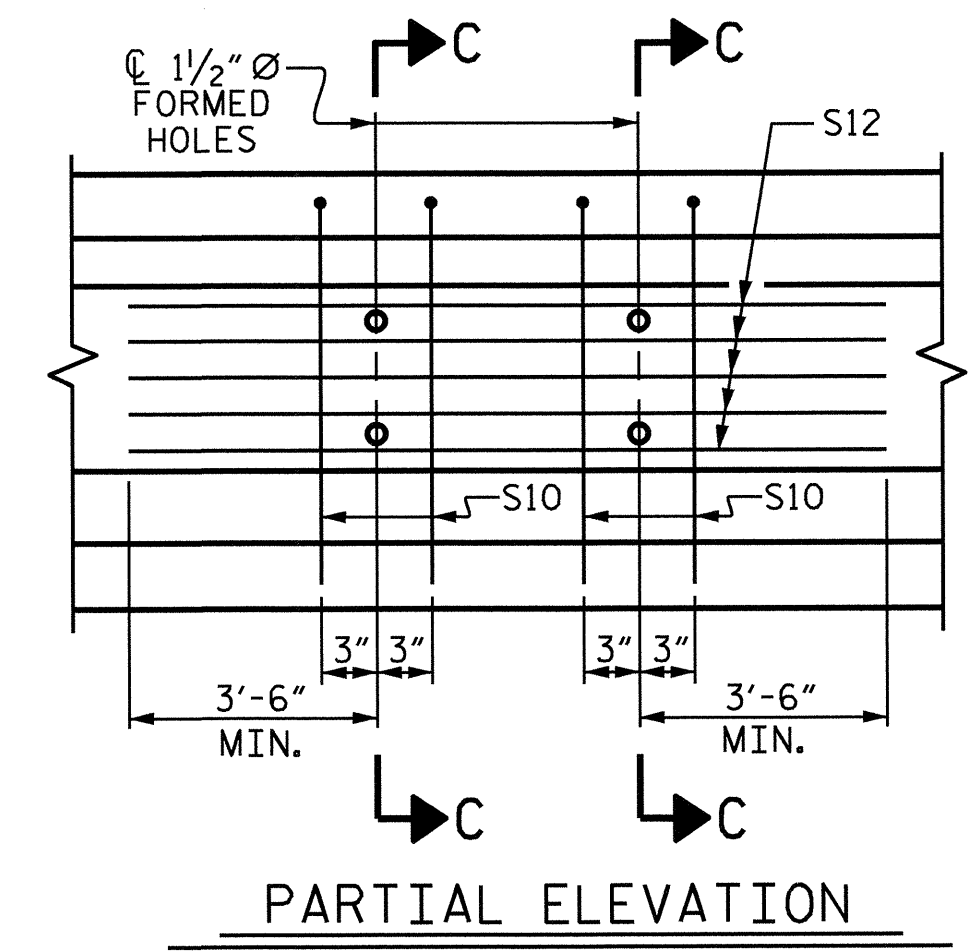
AT END OF GIRDER
AT C OF GIRDER
DEBONDING LEGEND
0.6" Ø LOW RELAXATION STRAND LAYOUT

GIRDER DIMENSIONS					
DIMENSION A	DIMENSION B	DIMENSION C	DIMENSION D	DIMENSION E	DIMENSION F
16 SPA @ 5 1/2"	12 SPA @ 7 1/2"	7 SPA @ 12"	1 SPA @ 14 1/2"	3 SPA @ 24"	1 SPA @ 12"

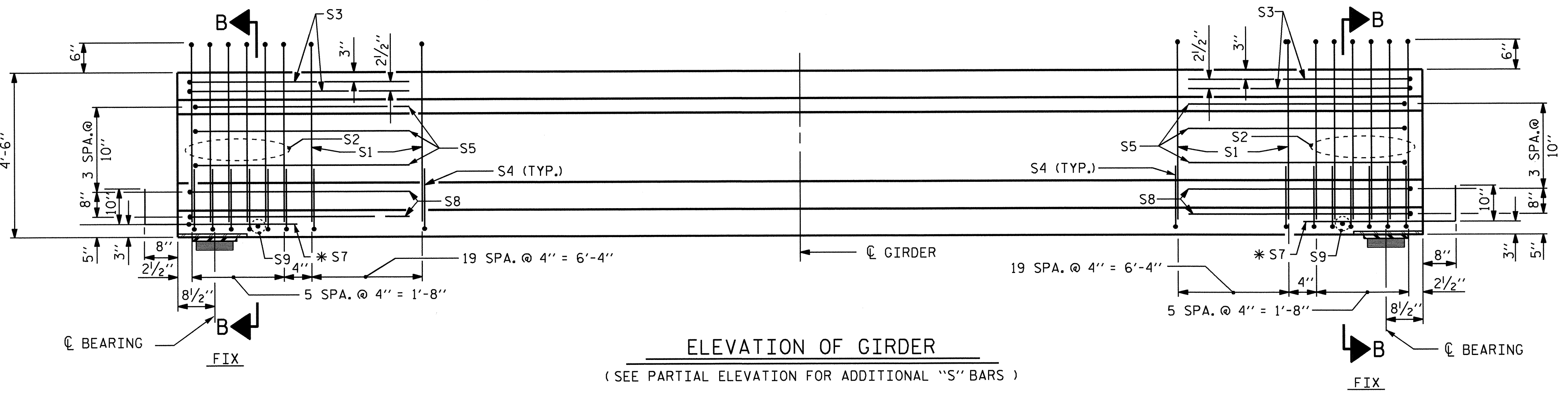
- DEBONDING LEGEND
- FULLY BONDED STRANDS
 - STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER



PLAN OF GIRDER



PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL (FOR INTERIOR GDRS.)



ELEVATION OF GIRDER
(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

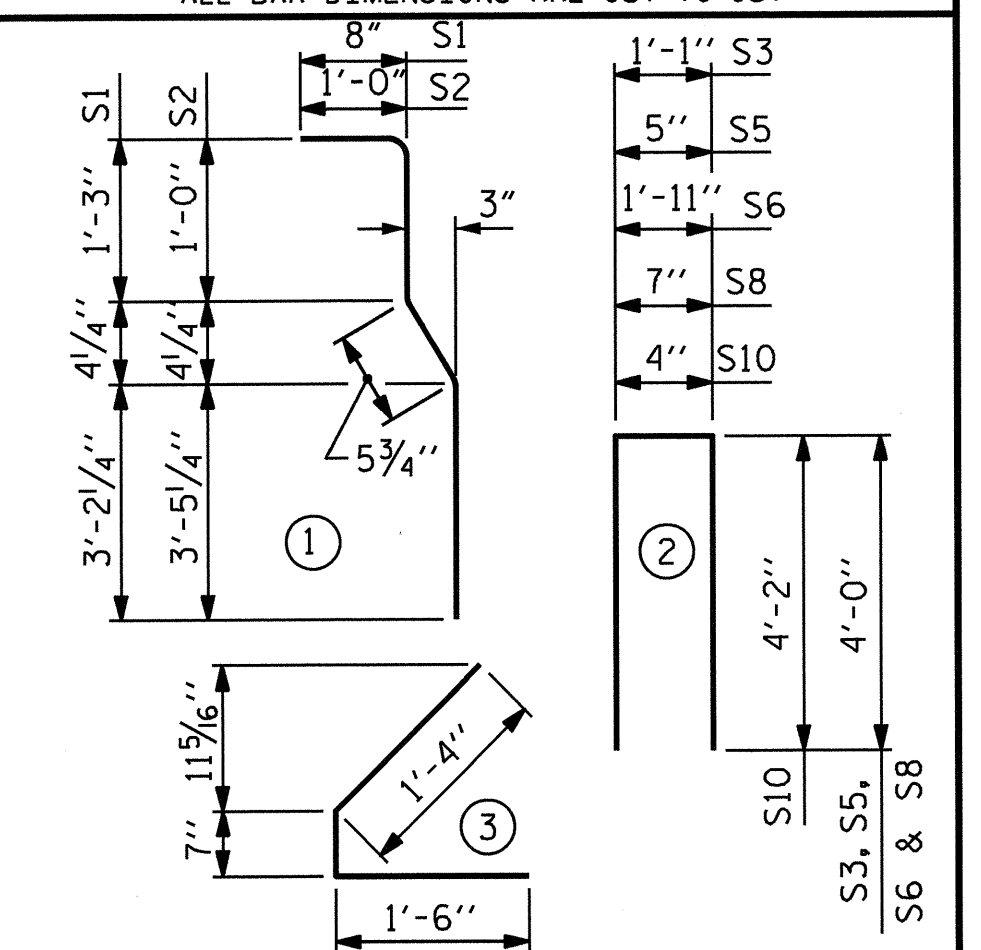
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	236	#4	1	5'-7"	880
S2	24	#6	1	5'-11"	213
S3	4	#4	2	9'-8"	24
S4	104	#4	3	3'-5"	237
S5	6	#4	2	8'-5"	34
* S7	12	#5	STR	3'-8"	46
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	4	#5	2	8'-8"	36
S12	5	#4	STR	12'-3"	41

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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL LB.	6500 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
INTERIOR GIRDER	1535	15.7	30

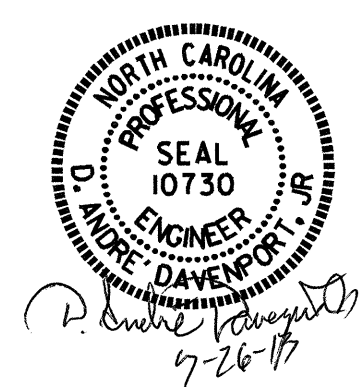
GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
2	77'-2"	154.333

PROJECT NO. U-4432
WAKE COUNTY
STATION: 28+17.07 -L-

SHEET 5 OF 8

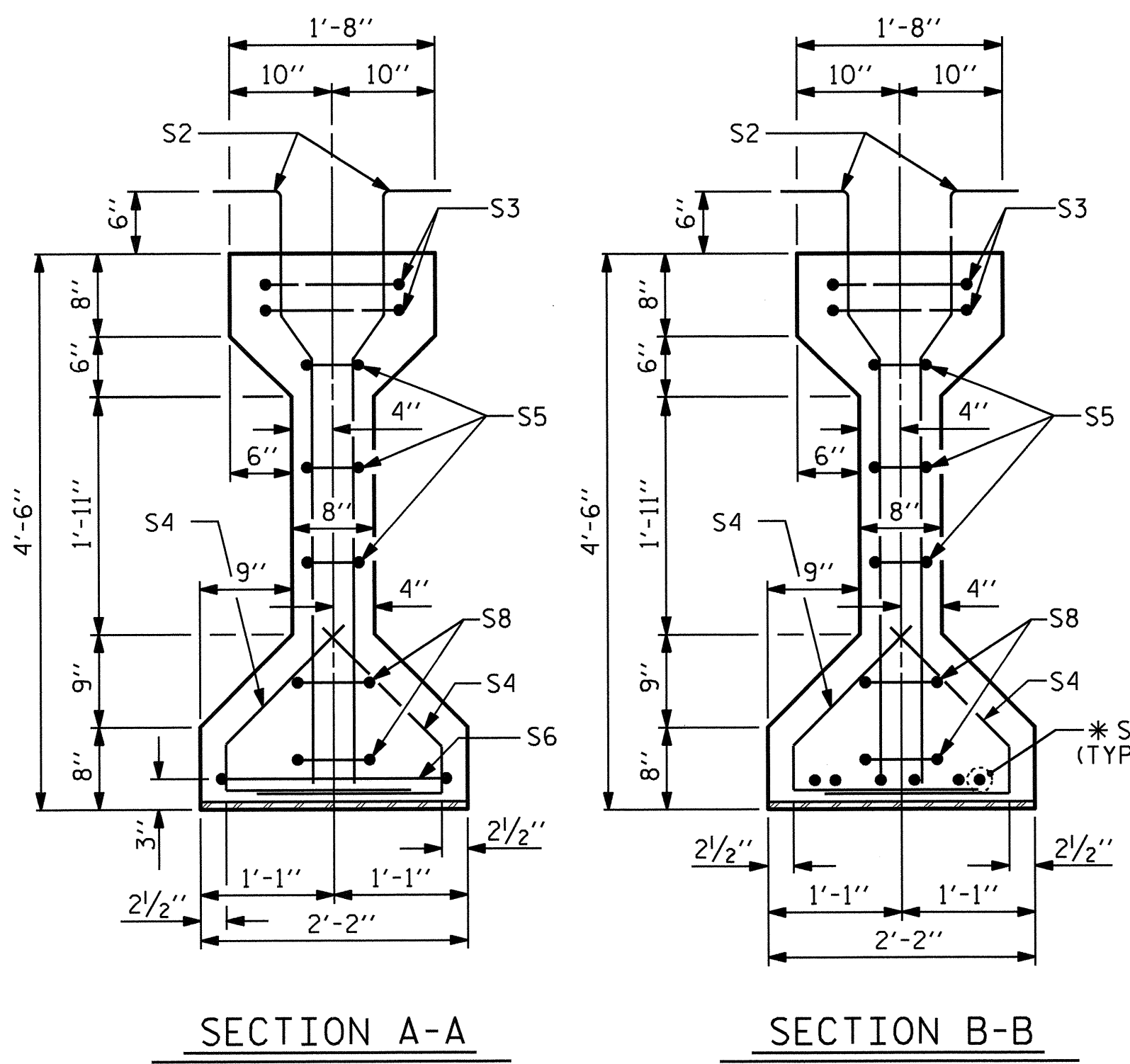
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPAN B
FOR GDR'S B5 AND B6



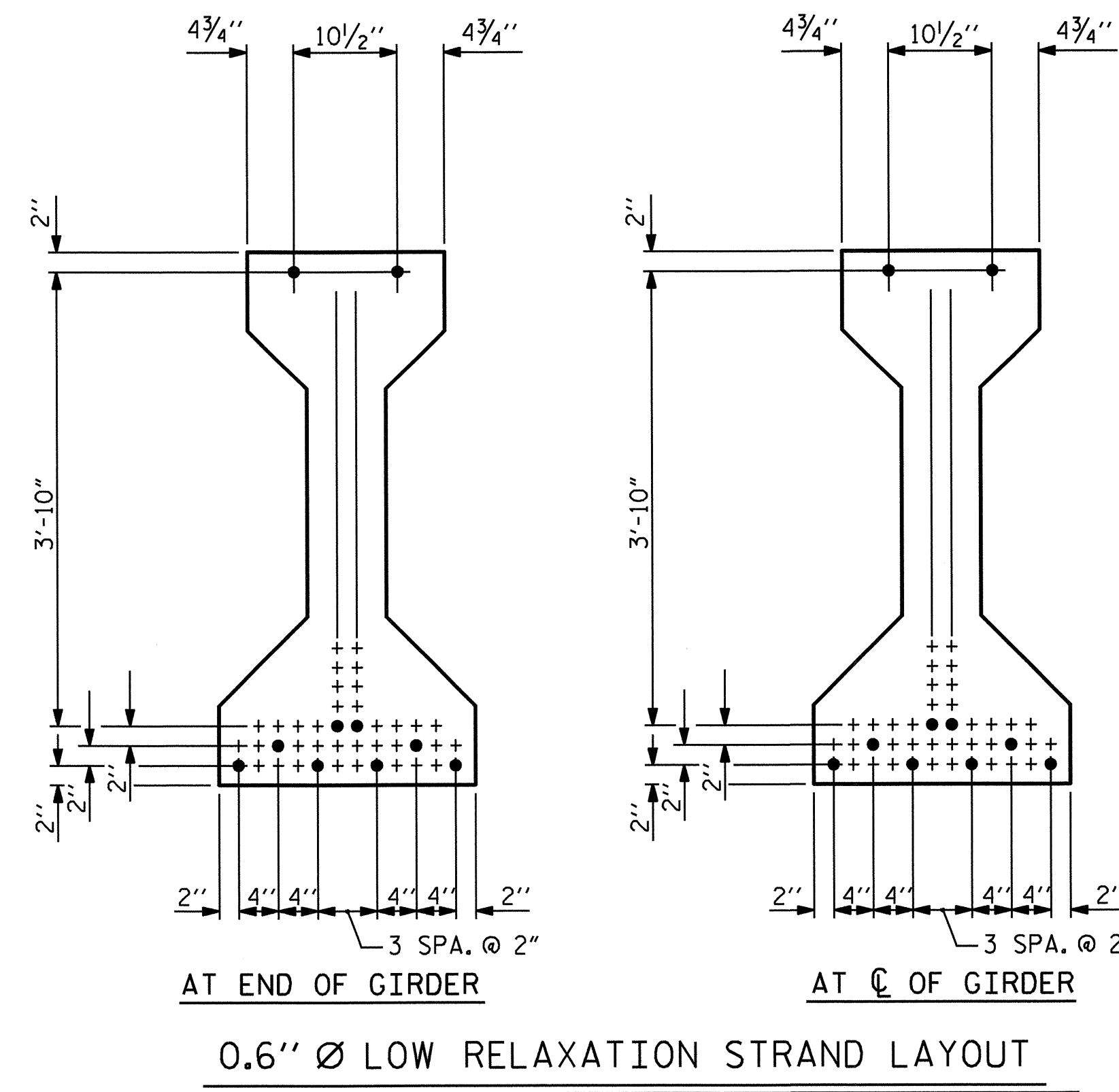
DRAWN BY: J.D. HAWK DATE: 8/5/12
CHECKED BY: K.D. LAYNE DATE: 11/8/12
DESIGN ENGINEER OF RECORD: G.W. DICKEY DATE: 6/25/13

DRAWN BY: ELR 8/91 REV. 10/17/00R RWW/LES
CHECKED BY: GRP 8/91 REV. 5/1/06R TLA/GM
REV. 10/1/11 MAA/GM

REVISIONS						SHEET NO. S-21
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 52
2			4			



* FOR S7 BARS, SEE
DETAIL "A" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET



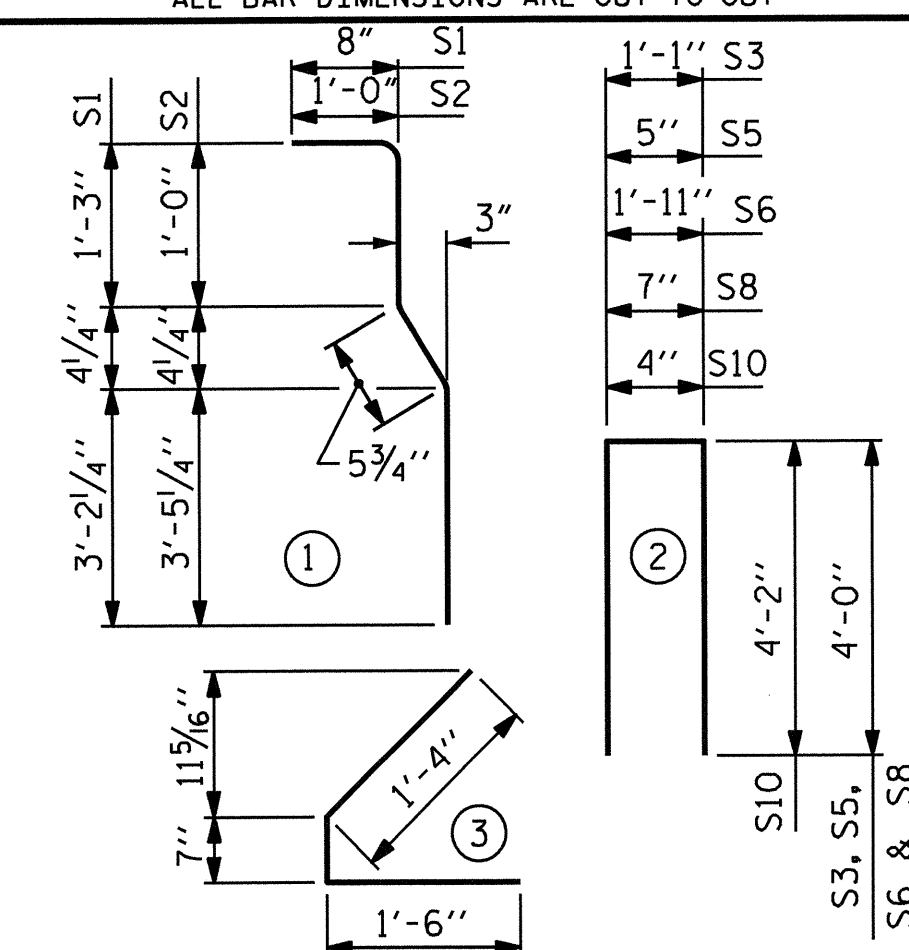
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	56	#4	1	5'-7"	209
S2	24	#6	1	5'-11"	213
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
S6	1	#4	2	9'-11"	7
* S7	6	#5	STR	3'-8"	23
S8	4	#4	2	8'-7"	23
S9	1	#3	STR	1'-10"	1

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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT

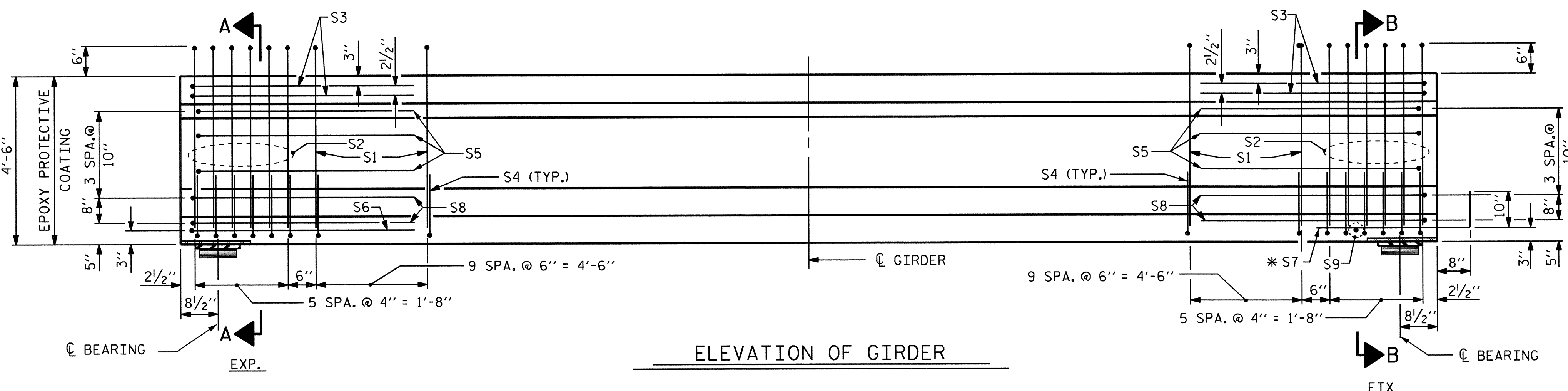
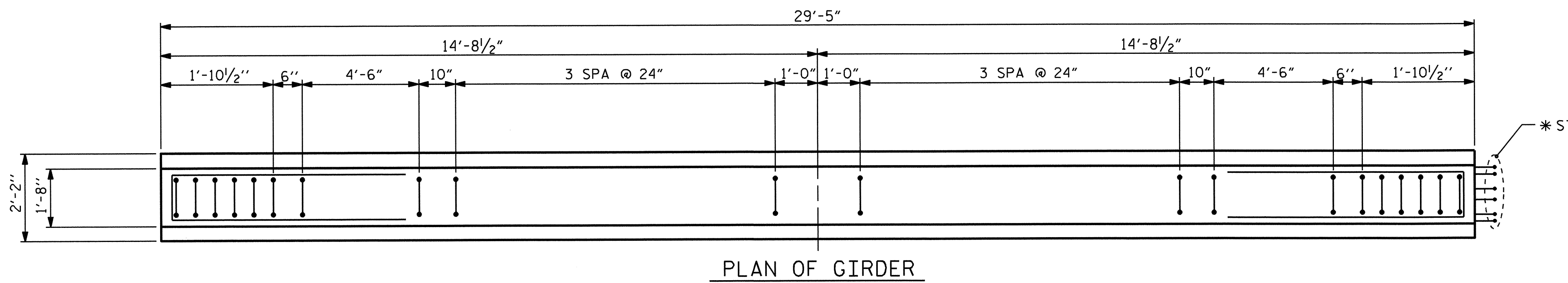


QUANTITIES FOR ONE GIRDER

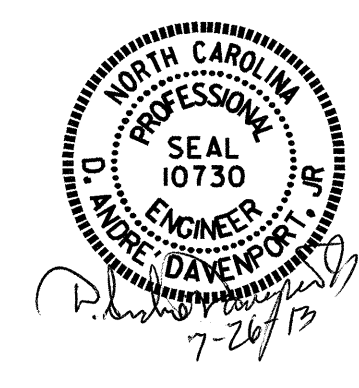
REINFORCING STEEL LB.	5000 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
680	6.0	10

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
2	29'-5"	58.833



DRAWN BY : J.D. HAWK DATE : 8/5/12
 CHECKED BY : K.D. LAYNE DATE : 11/8/12
 DESIGN ENGINEER OF RECORD: G.W. DICKEY DATE : 6/25/13
 DRAWN BY : ELR 8/91 REV. 10/17/00R RWW/LES
 CHECKED BY : GRP 8/91 REV. 5/1/06R TLA/GM
 REV. 10/1/11 MAA/GM



PROJECT NO. U-4432
 WAKE COUNTY
 STATION: 28+17.07 -L-

SHEET 6 OF 8

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 AASHTO TYPE IV
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 SPAN C
 FOR GDR'S C5 AND C6

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			52

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

FOR METALLIZATION, APPLY AN 8 MIL THICK 99.99 PERCENT ZINC (W-Zn-1) THERMAL SPRAYED COATING WITH A 0.5 MIL THICK SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE 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.

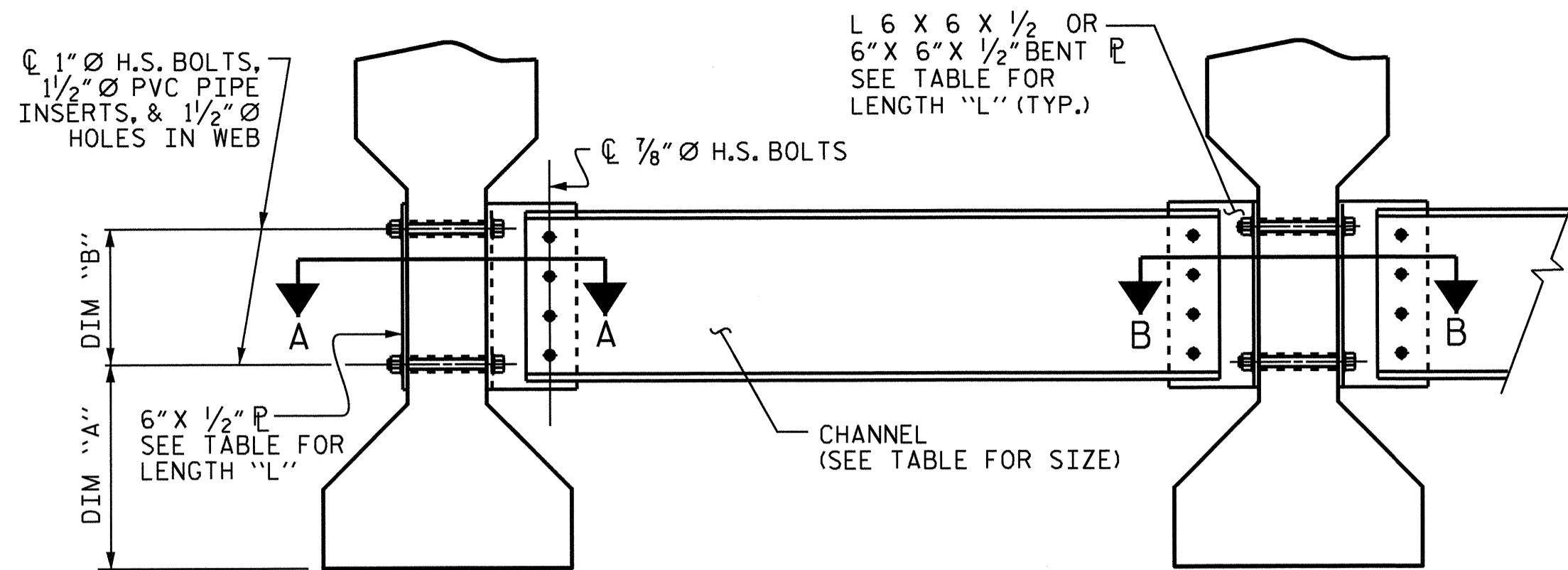
INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

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.

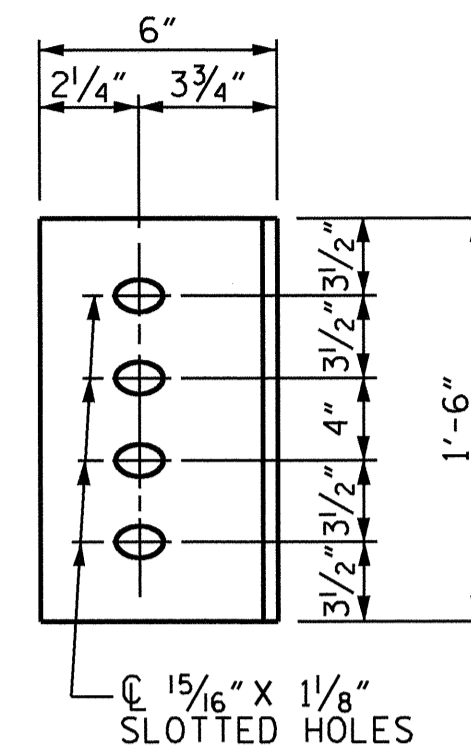
IN THE EXTERIOR BAYS, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

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

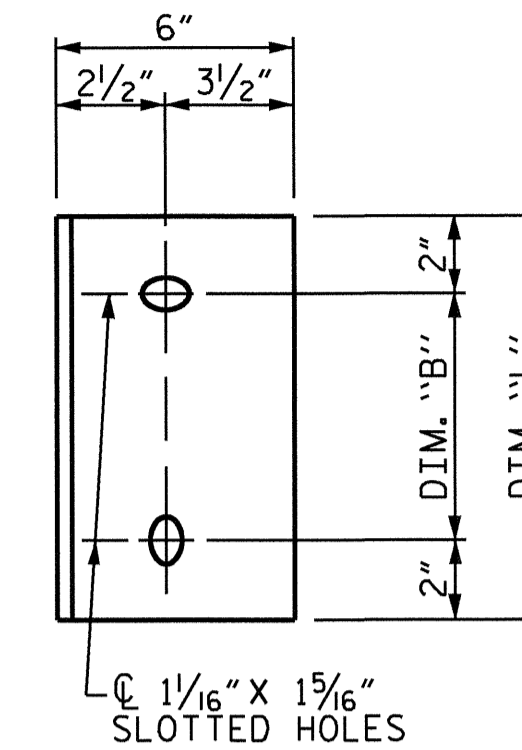
NUTS ON BOLTS FOR CONNECTING DIAPHRAGM TO CONNECTOR PLATE IN BAY 5 SPANS A AND B SHALL BE LEFT LOOSE FOR THE PURPOSE OF ADJUSTMENT UNTIL BOTH SIDES OF SLAB (STAGE I AND II) HAVE BEEN POURED.



EXTERIOR GIRDER **INTERIOR GIRDER**
PART SECTION AT INTERMEDIATE DIAPHRAGM



DIAPHRAGM FACE



WEB FACE

CONNECTOR PLATE DETAILS

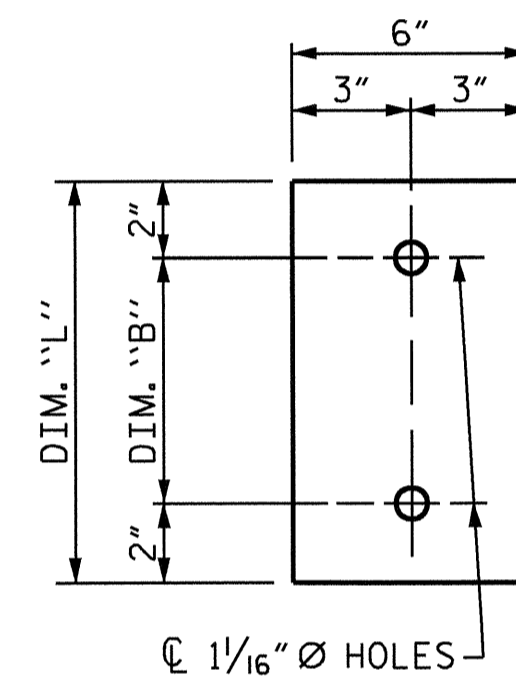
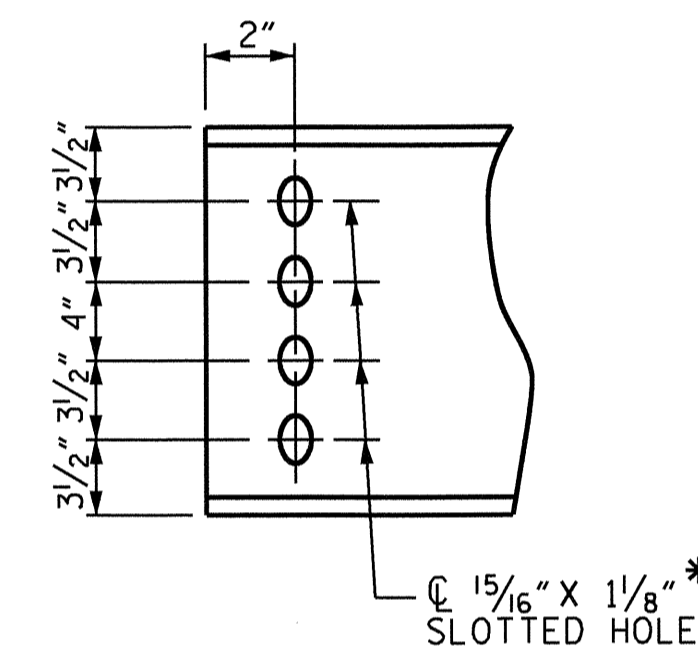
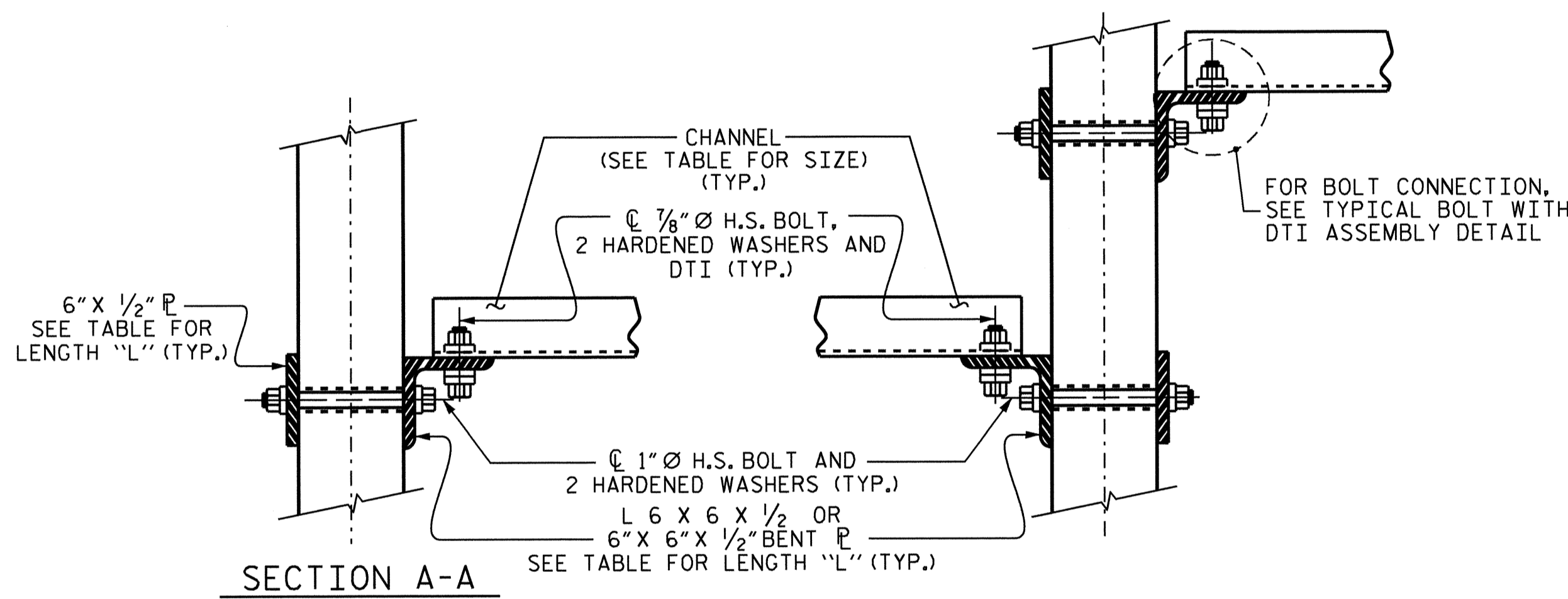


PLATE DETAILS



CHANNEL END

*USE 1 5/16" X 1 1/8" SLOTTED HOLES FOR CHANNELS IN BAY 5 BETWEEN GIRDERS #5 AND #6 SPANS A AND B (2 REQUIRED)



SECTION A-A **SECTION B-B**
CONNECTION DETAILS

TABLE

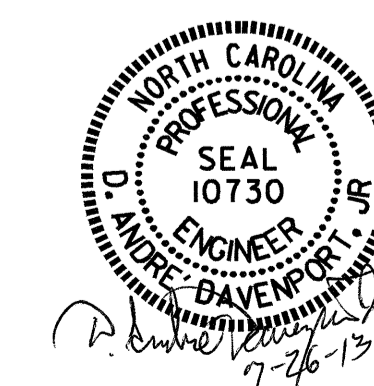
GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
IV	MC 18 x 42.7	1'-10"	1'-2"	1'-6"

PROJECT NO. U-4432
WAKE COUNTY
STATION: 28+17.07 -L-

SHEET 7 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INTERMEDIATE
STEEL DIAPHRAGMS
FOR TYPE IV
PRESTRESSED CONCRETE
GIRDERS



REVISIONS						SHEET NO. S-23
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 52
2			4			

DRAWN BY: J.D. HAWK DATE: 8/5/12
CHECKED BY: K.D. LAYNE DATE: 11/8/12
DESIGN ENGINEER OF RECORD: G.W. DICKEY DATE: 6/25/13
DRAWN BY: TLA 6/05 ADDED 10/21/05 KMM/GM
CHECKED BY: VC 6/05 REV. 5/1/06RRR MAA/GM
REV. 10/1/11

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. BEVEL EDGES OF PLATE "B-1" TO GIVE CLOSE FIT BUT NOT TIGHT FIT TO STEEL CASTING FORM.

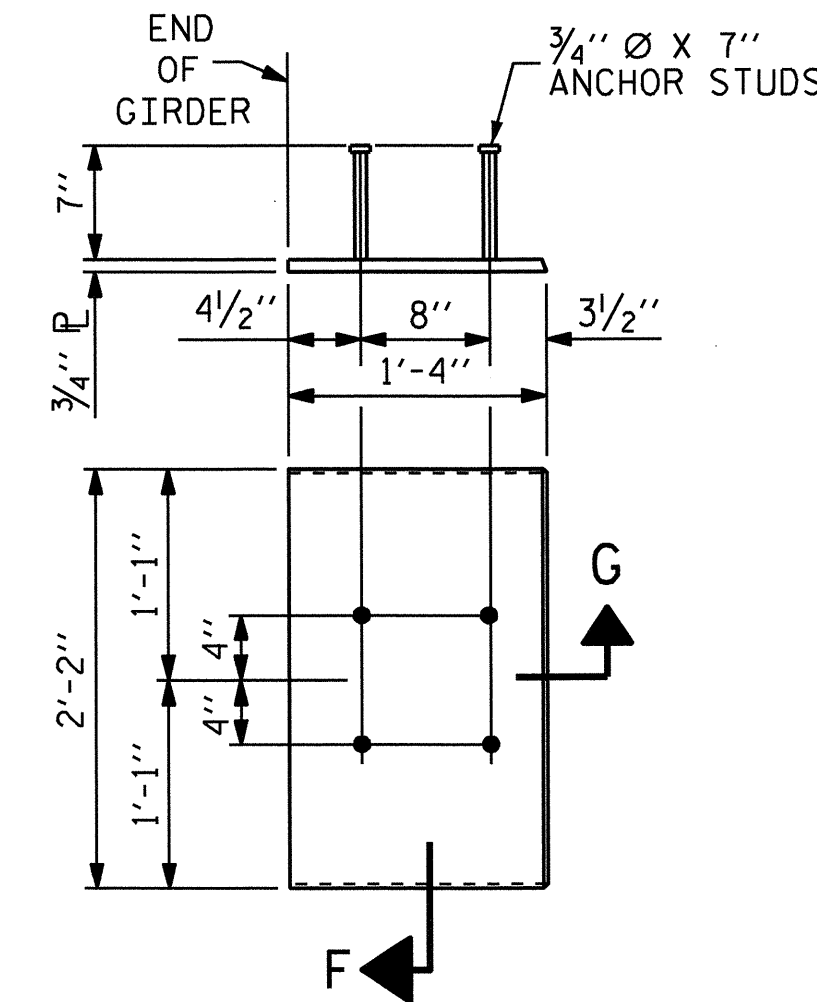
ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

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 4000 PSI IN SPAN A & SPAN C AND 5000 PSI IN SPAN B.

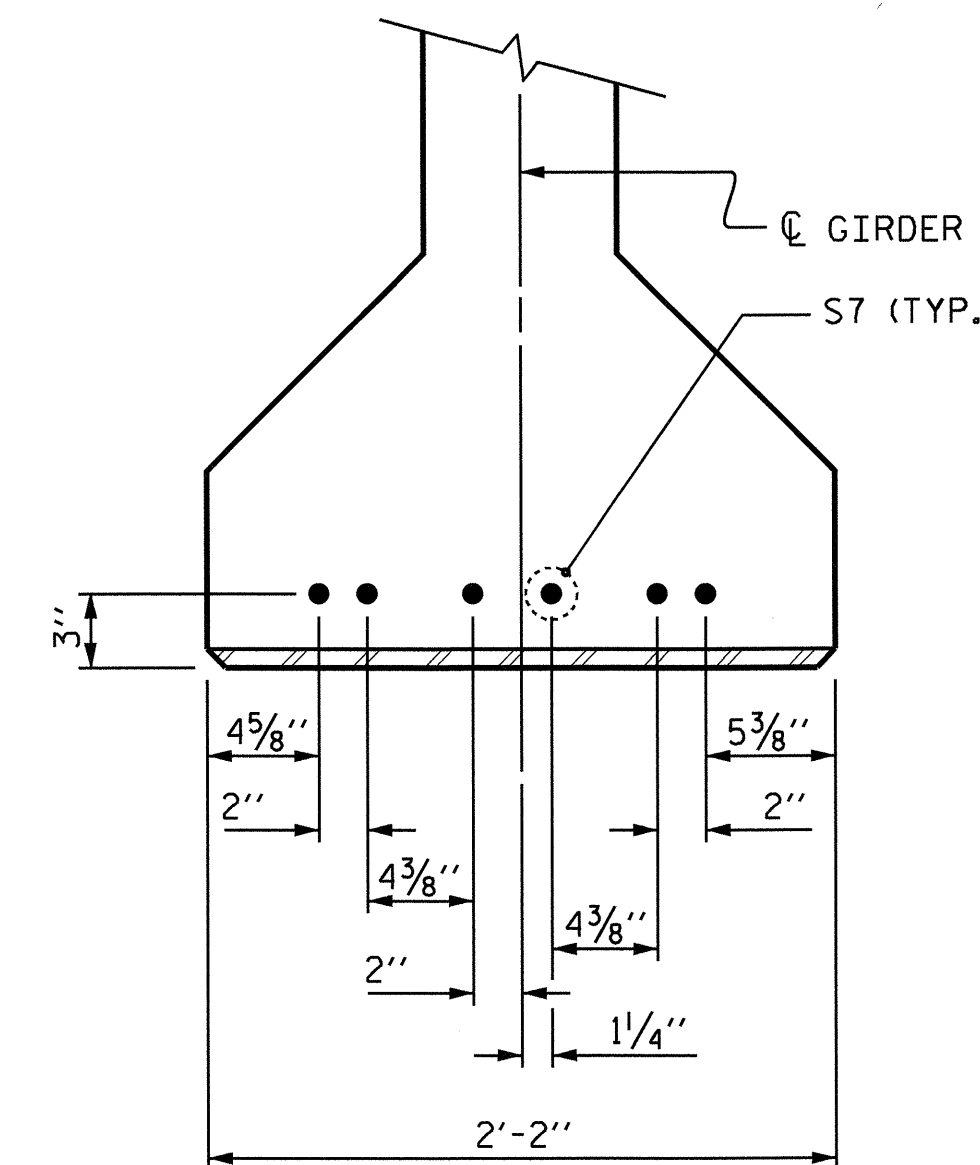
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

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



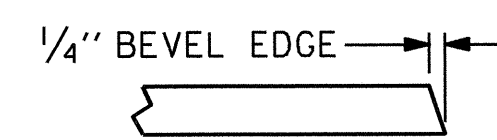
EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER

(2 REQ'D PER GIRDER)

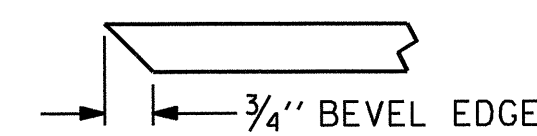


DETAIL "A"

(FOR AASHTO TYPE IV GIRDERS)



SECTION "G"

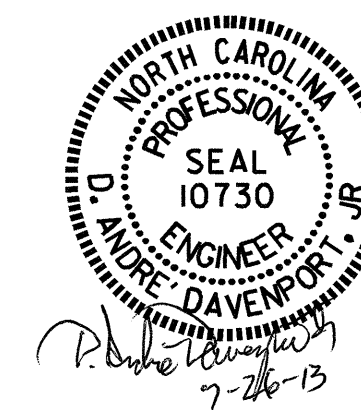


SECTION "F"

(SEE NOTES)

PROJECT NO. U-4432
WAKE COUNTY
 STATION: 28+17.07 -L-

SHEET 8 OF 8



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			52

DRAWN BY : J.D. HAWK	DATE : 8/5/12
CHECKED BY : K.D. LAYNE	DATE : 11/8/12
DESIGN ENGINEER OF RECORD: G.W. DICKEY	DATE : 6/25/13
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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																	
0.6 "Ø LOW RELAXATION	SPAN "A"											SPAN "A"										SPAN "A"											
	GIRDERS #2,#3,#7 & #8											GIRDERS #1 & #9										GIRDERS #4, #5 & #6											
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	.034	.065	.089	.104	.109	.104	.089	.065	.034	0	0	.034	.065	.089	.104	.109	.104	.089	.065	.034	0	0	.034	.065	.089	.104	.109	.104	.089	.065	.034	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	.017	.032	.044	.052	.054	.052	.044	.032	.017	0	0	.015	.029	.040	.046	.049	.046	.040	.029	.015	0	0	.016	.030	.041	.048	.050	.048	.041	.030	.016	0
FINAL CAMBER ↑	0	3/16"	3/8"	9/16"	5/8"	11/16"	5/8"	9/16"	3/8"	3/16"	0	0	1/4"	7/16"	9/16"	11/16"	3/4"	11/16"	9/16"	7/16"	1/4"	0	0	1/4"	7/16"	9/16"	11/16"	11/16"	11/16"	9/16"	7/16"	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 GIRDERS																																	
0.6 "Ø LOW RELAXATION	SPAN "B"											SPAN "B"										SPAN "B"											
	GIRDERS #2,#3,#7 & #8											GIRDERS #1 & #9										GIRDERS #4, #5 & #6											
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	.061	.116	.159	.186	.195	.186	.159	.116	.061	0	0	.061	.116	.159	.186	.195	.186	.159	.116	.061	0	0	.061	.116	.159	.186	.195	.186	.159	.116	.061	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	.024	.045	.062	.073	.076	.073	.062	.045	.024	0	0	.021	.041	.056	.065	.068	.065	.056	.041	.021	0	0	.022	.042	.057	.067	.070	.067	.057	.042	.022	0
FINAL CAMBER ↑	0	7/16"	7/8"	13/16"	13/8"	17/16"	13/8"	13/16"	7/8"	7/16"	0	0	1/2"	7/8"	1 1/4"	17/16"	1 1/2"	17/16"	1 1/4"	7/8"	1/2"	0	0	1/2"	7/8"	1 1/4"	17/16"	1 1/2"	17/16"	1 1/4"	7/8"	1/2"	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 GIRDERS																																	
0.6 "Ø LOW RELAXATION	SPAN "C"											SPAN "C"										SPAN "C"											
	GIRDERS #2,#3,#7 & #8											GIRDERS #1 & #9										GIRDERS #4, #5 & #6											
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0	.003	.006	.008	.010	.010	.010	.008	.006	.003	0	0	.003	.006	.008	.010	.010	.010	.008	.006	.003	0	0	.003	.060	.008	.010	.010	.010	.008	.006	.003	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	.001	.001	.001	.002	.002	.002	.001	.001	.001	0	0	.000	.001	.001	.001	.001	.001	.001	.001	.000	0	0	.001	.001	.001	.001	.002	.001	.001	.001	.001	0
FINAL CAMBER ↑	0	0	1/16"	1/16"	1/8"	1/8"	1/8"	1/16"	1/16"	0	0	0	1/16"	1/16"	1/16"	1/8"	1/8"	1/8"	1/16"	1/16"	1/16"	0	0	0	1/16"	1/16"	1/8"	1/8"	1/8"	1/16"	1/16"	0	0

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

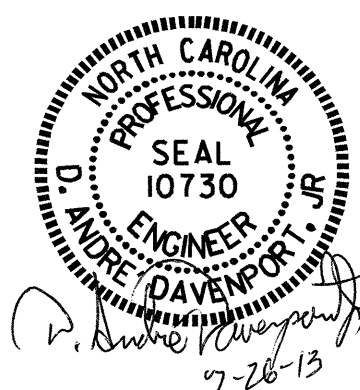
PROJECT NO. U-4432
WAKE COUNTY
STATION: 28+17.07-L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

DEAD LOAD DEFLECTIONS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			52



DRAWN BY : J.D. HAWK DATE : 8/5/12
CHECKED BY : K.D. LAYNE DATE : 11/8/12
DESIGN ENGINEER OF RECORD: G.W. DICKEY DATE : 06/25/13

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.

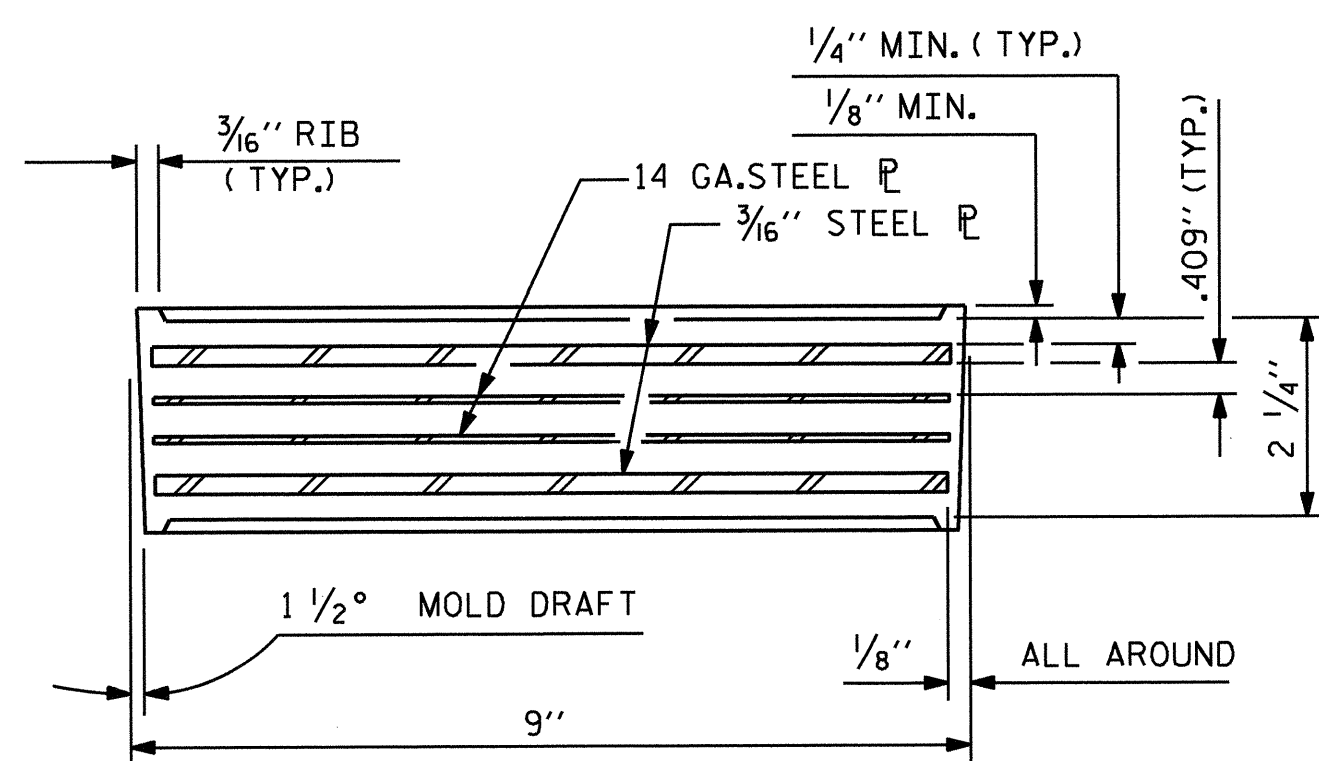
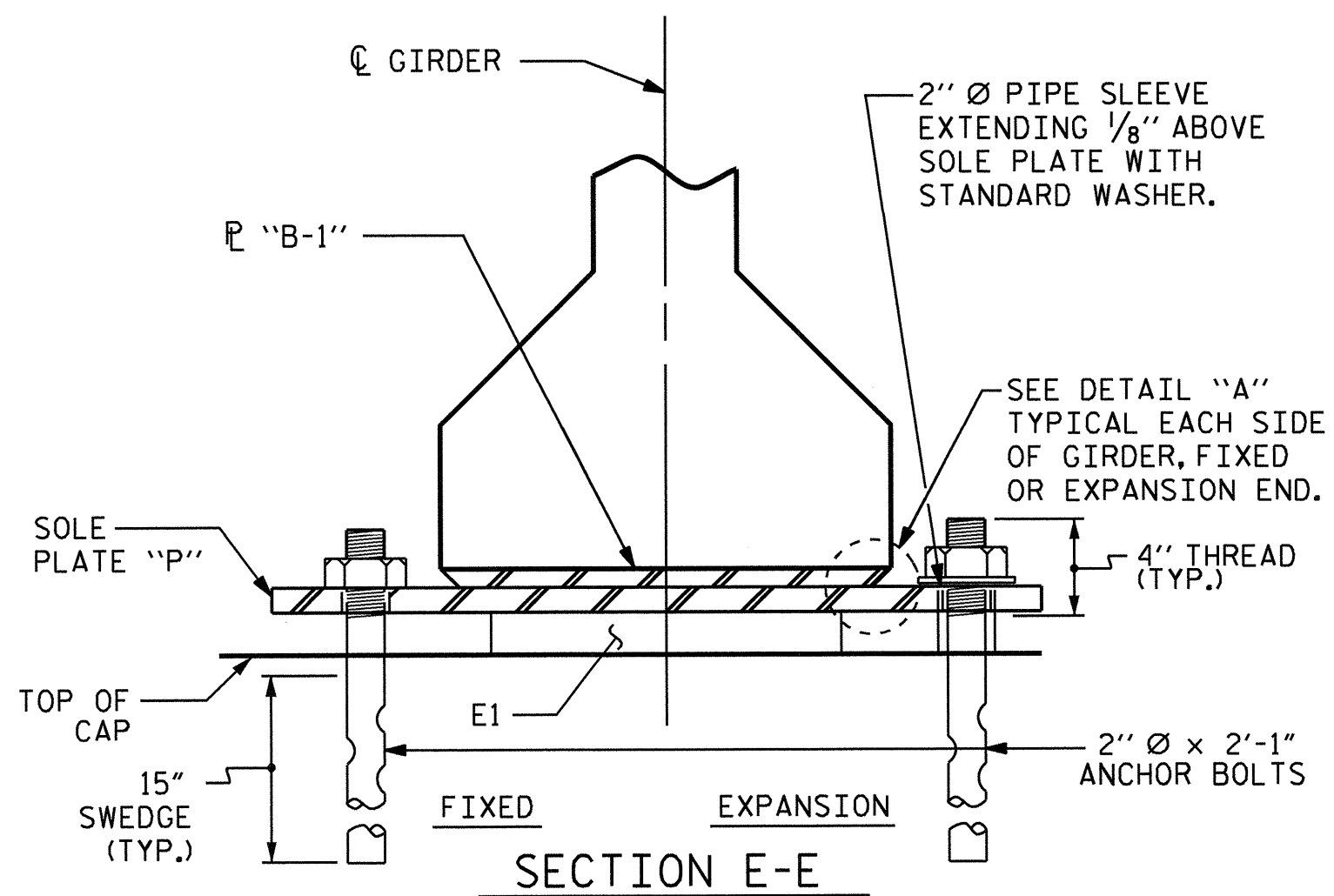
SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

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.

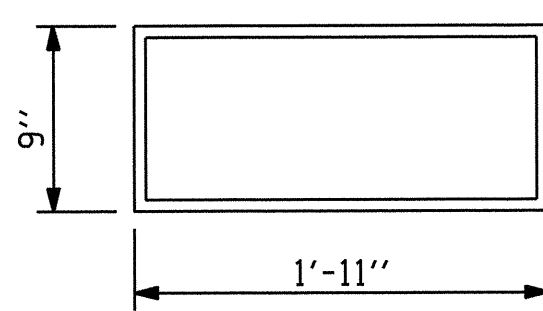
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

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



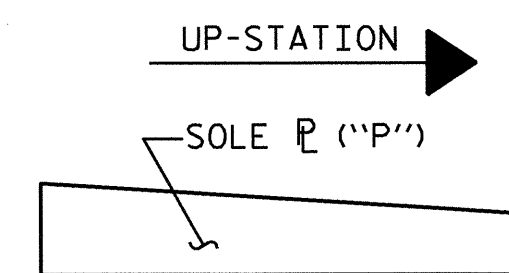
TYPICAL SECTION OF ELASTOMERIC BEARINGS



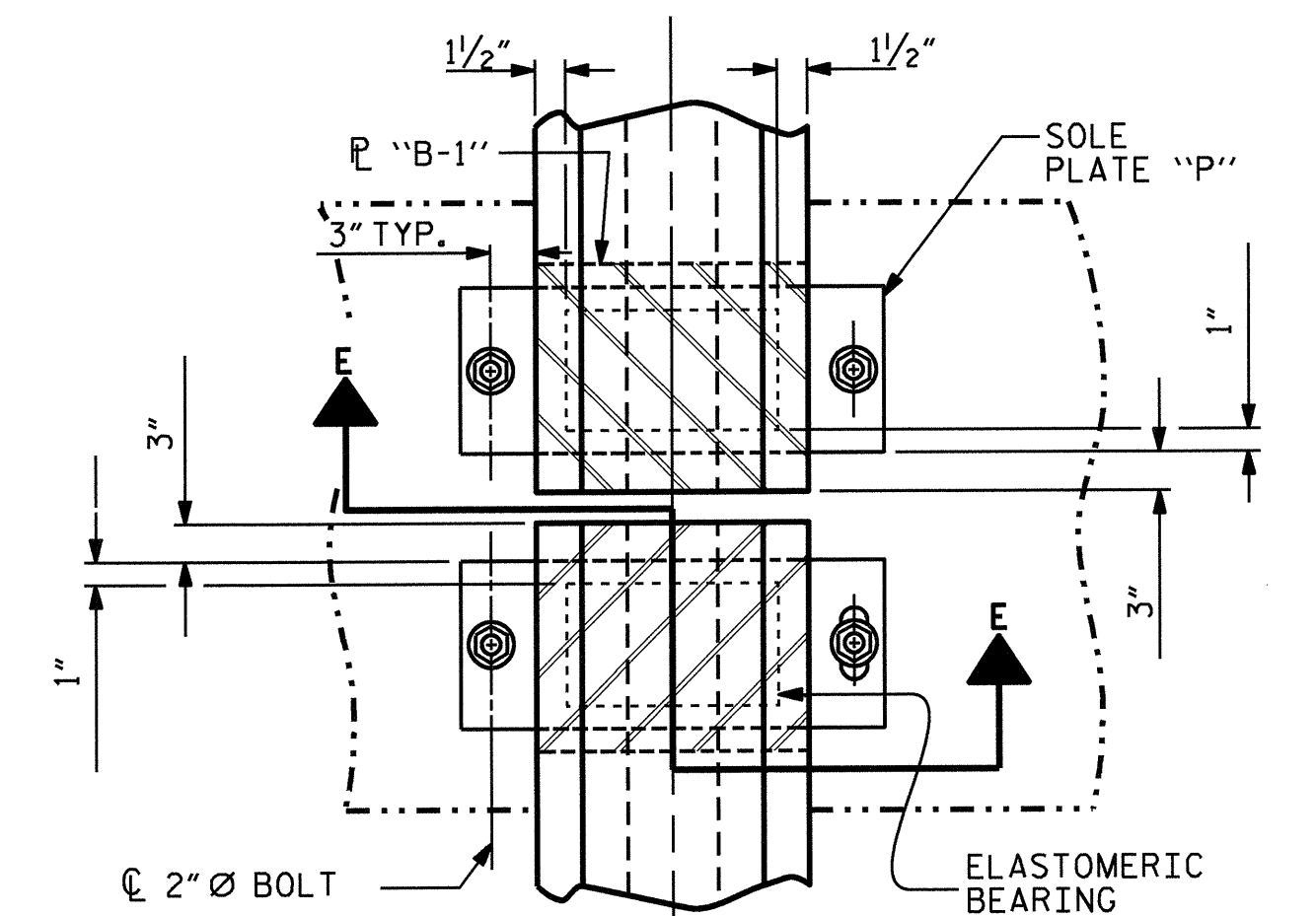
E1 (54 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE V

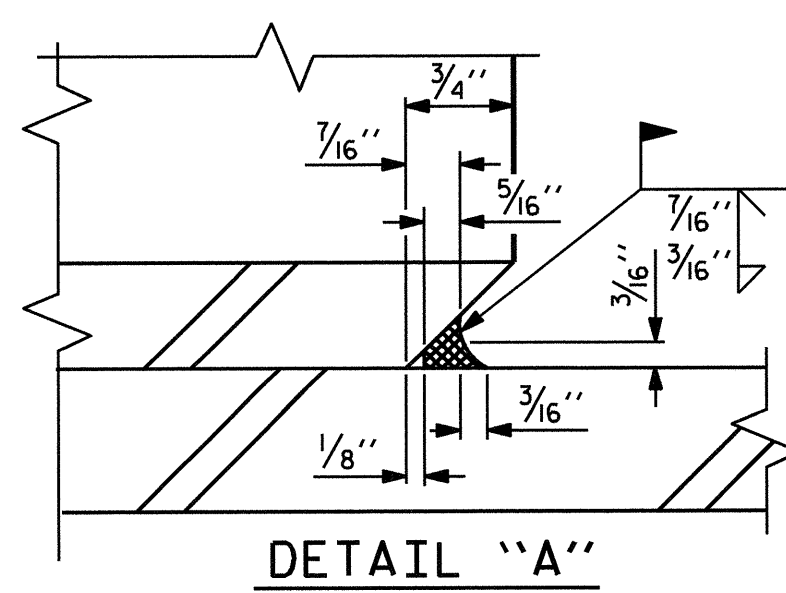


SOLE P PLACEMENT DETAIL

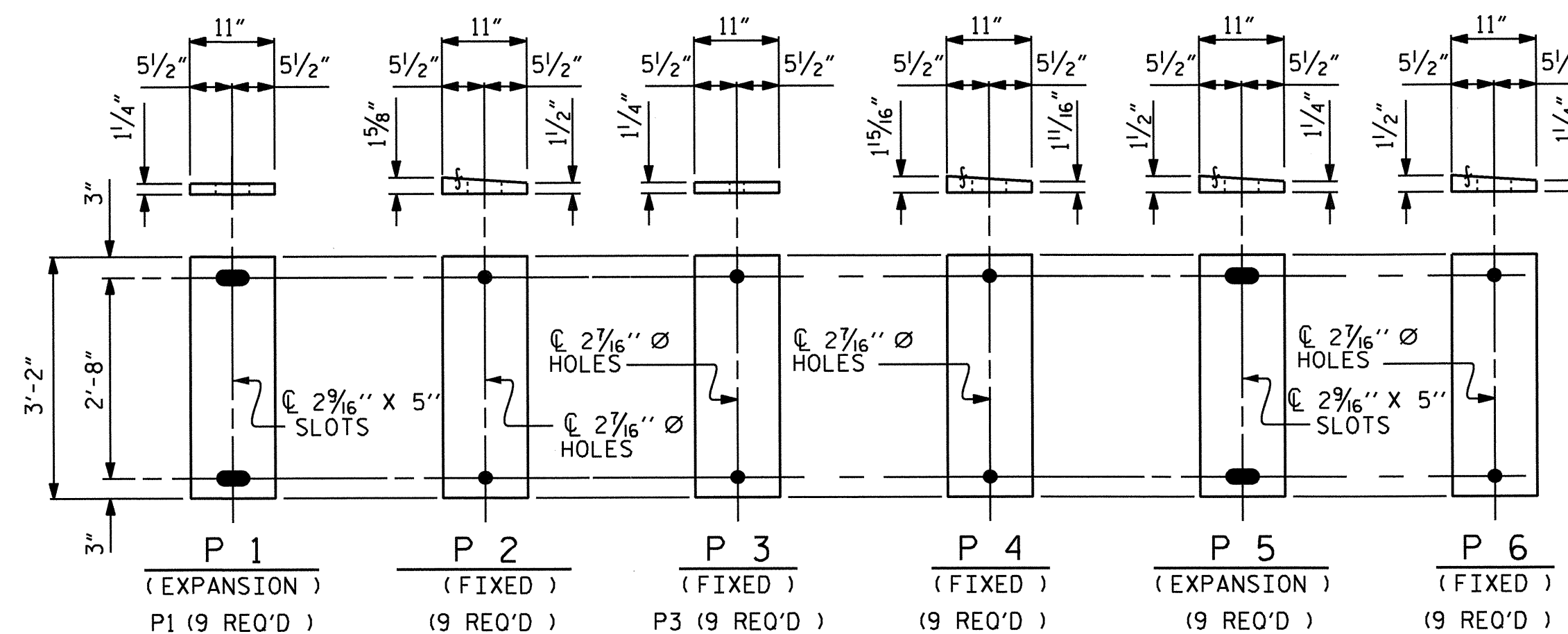


TYPICAL HALF-PLAN (SHOWING CONTINUOUS BENT)

TYPICAL HALF-PLAN (SHOWING SIMPLE SPAN BENT)



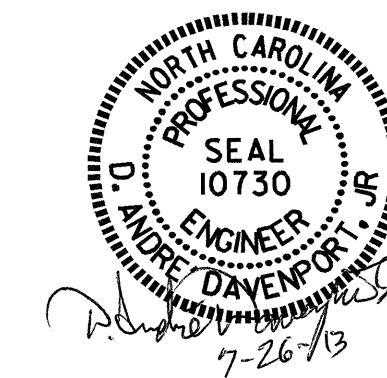
DETAIL "A"



SOLE PLATE DETAILS ("P")

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

PROJECT NO. U-4432
 WAKE COUNTY
 STATION: 28+17.07-L-



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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			52

DRAWN BY: J.D. HAWK DATE: 8/5/12
 CHECKED BY: K.D. LAYNE DATE: 11/8/12
 DESIGN ENGINEER OF RECORD: G.W. DICKEY DATE: 06/25/13
 DRAWN BY: EEM 2/97 REV. 5/1/06 TLA/GM
 CHECKED BY: VAP 2/97 REV. 10/1/11 MAA/GM
 REV. 6/13 AAC/MAA

NOTES

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

UNLESS OTHERWISE REQUIRED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR HAS THE OPTION TO USE AN ALTERNATE TO THE 2 BAR METAL RAIL. THE ALTERNATE RAIL SHALL MEET THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) UNDER "2 BAR METAL RAIL ALTERNATE". ADJUSTMENTS TO THE CONCRETE WILL NOT BE ALLOWED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

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

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

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

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

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

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

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

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

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

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

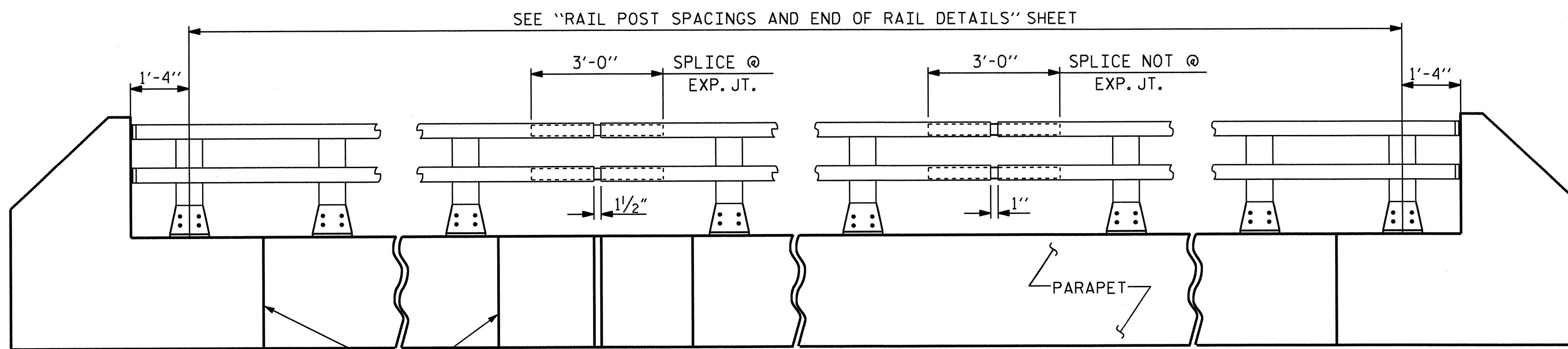
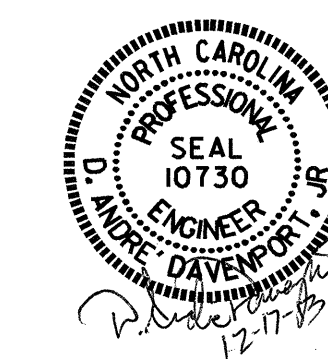
PAY LENGTH = 341.01 LIN. FT.

PROJECT NO. U-4432
WAKE COUNTY
 STATION: 28+17.07 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 2 BAR METAL RAIL

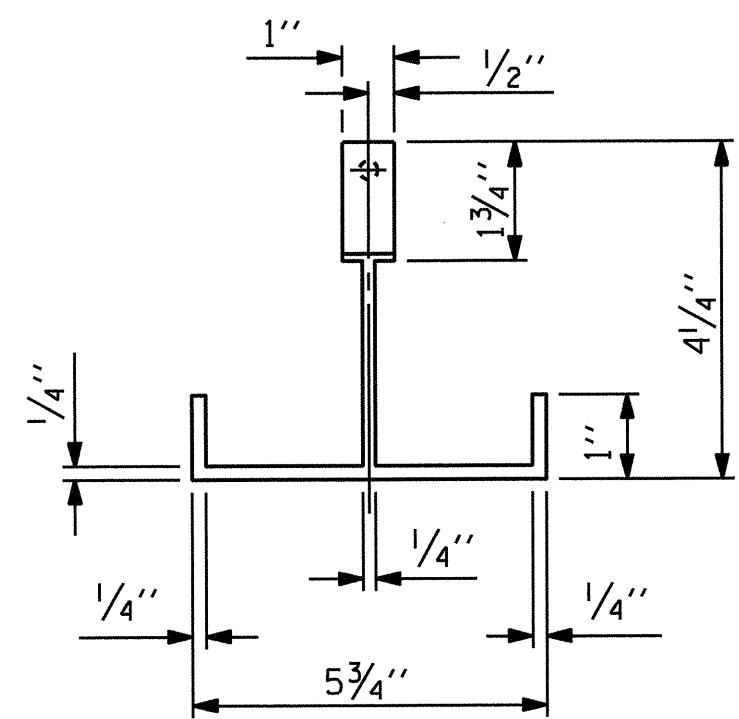
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27	
1			3			TOTAL SHEETS	52
2			4				



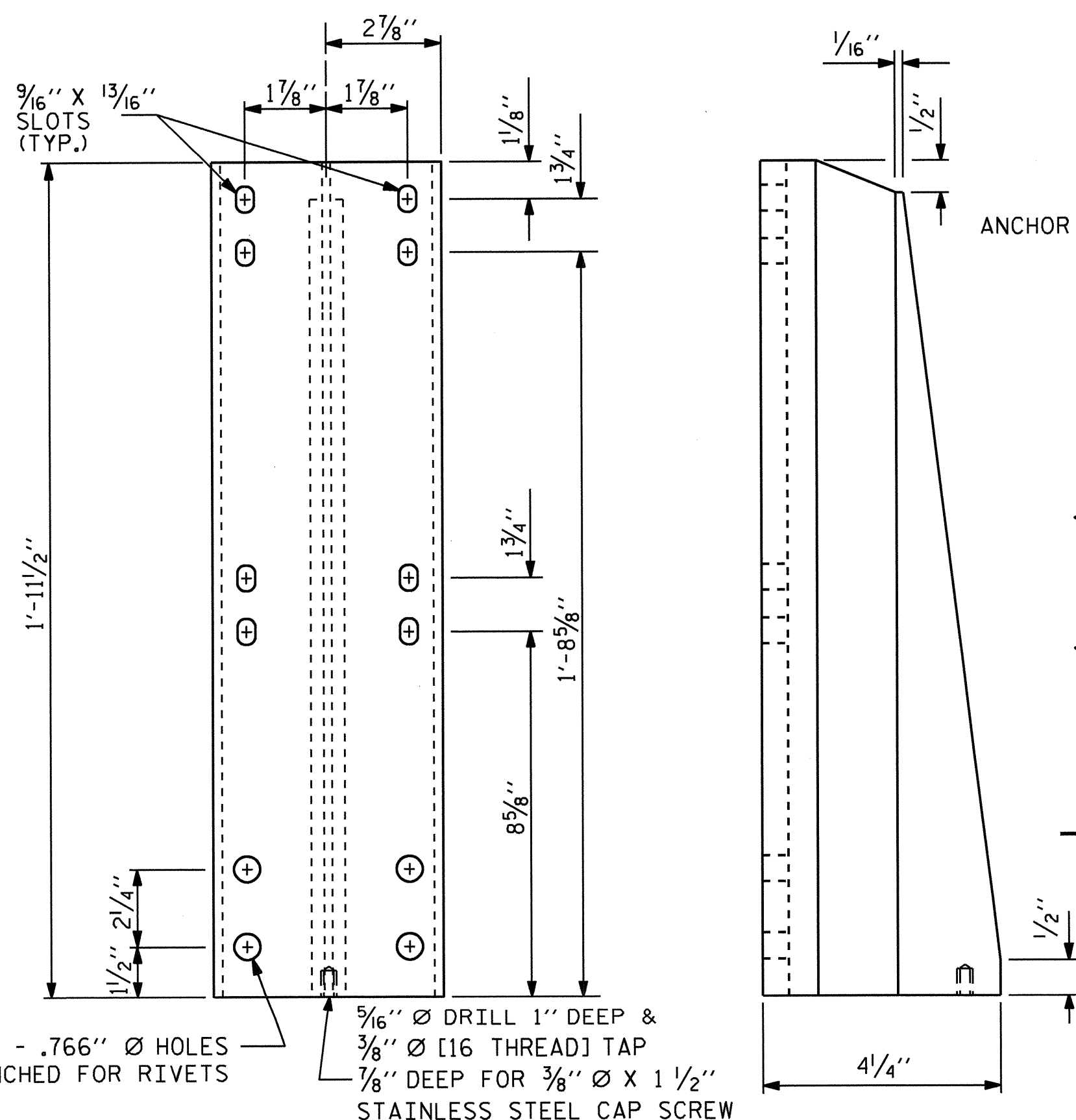
TOOLED CONTRACTION JT. (SEE NOTES)

ELEVATION

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



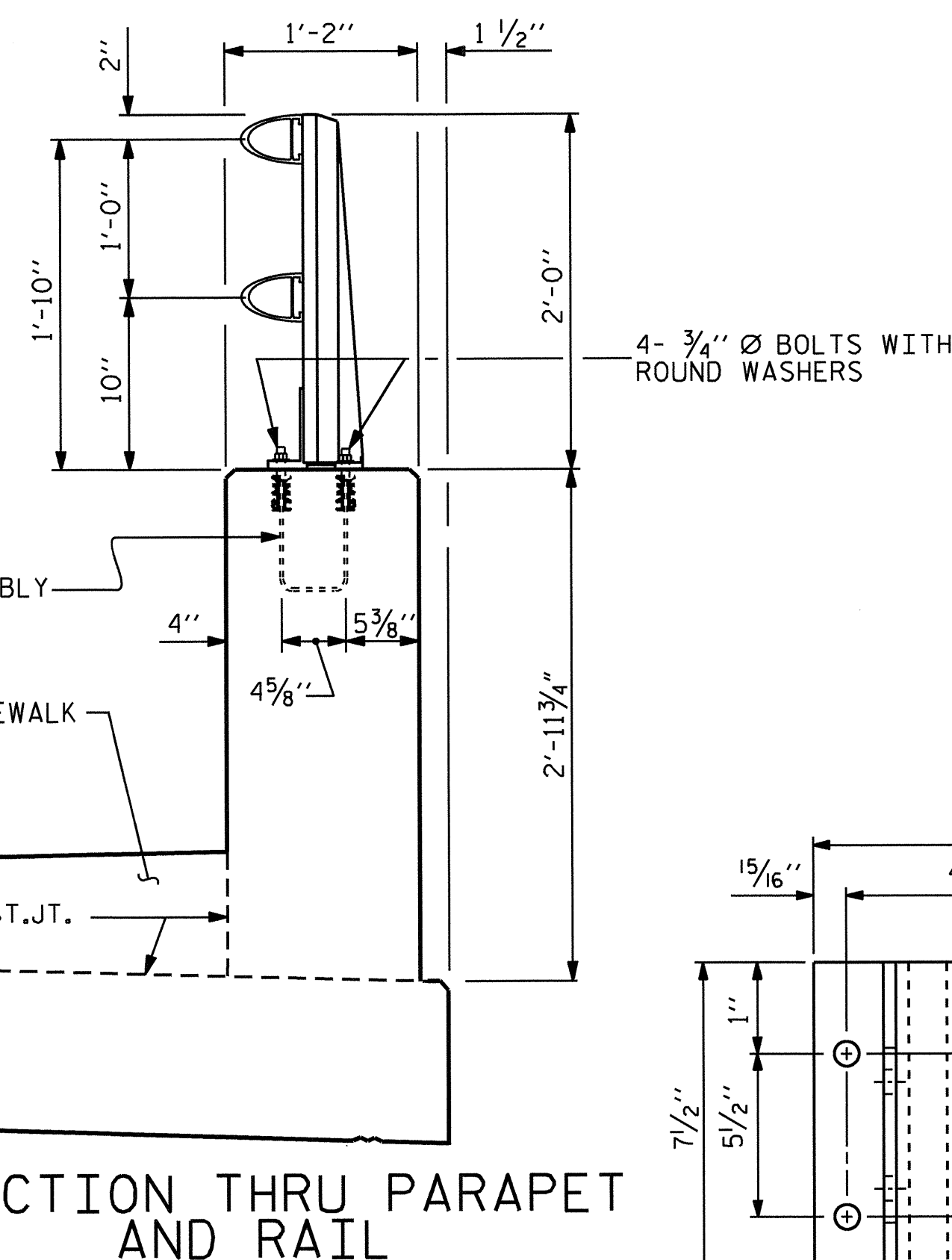
PLAN



FRONT ELEVATION

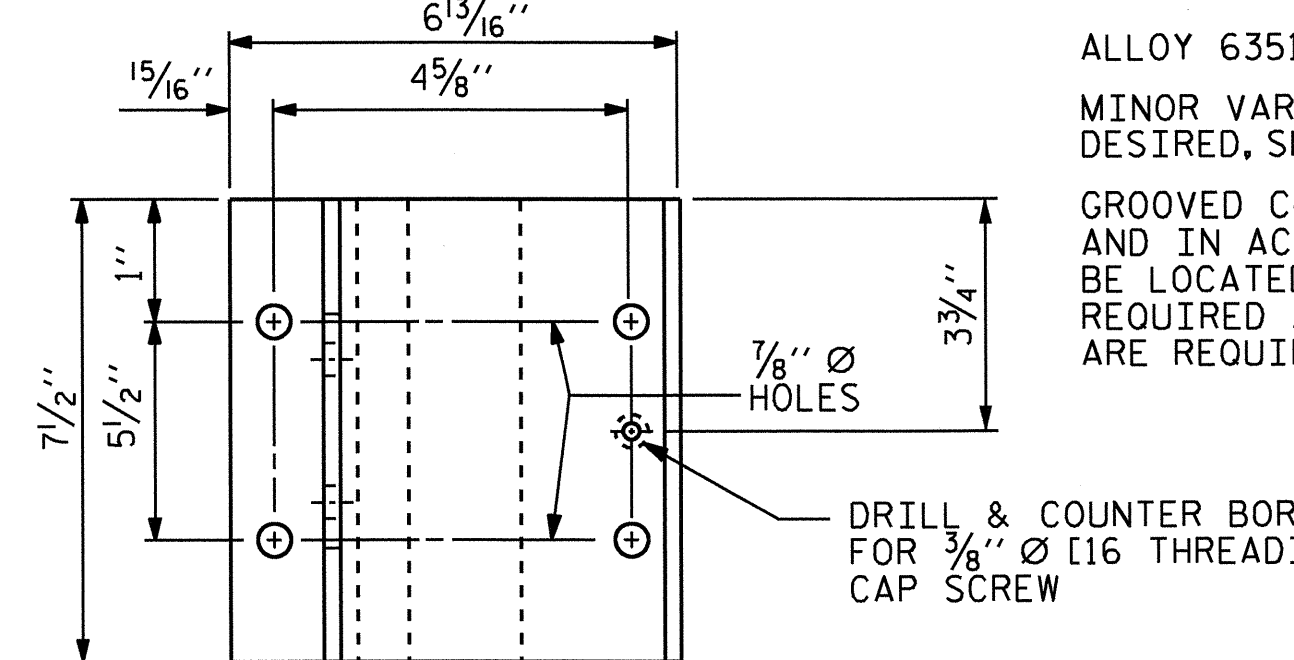
SIDE ELEVATION

DETAILS OF POST

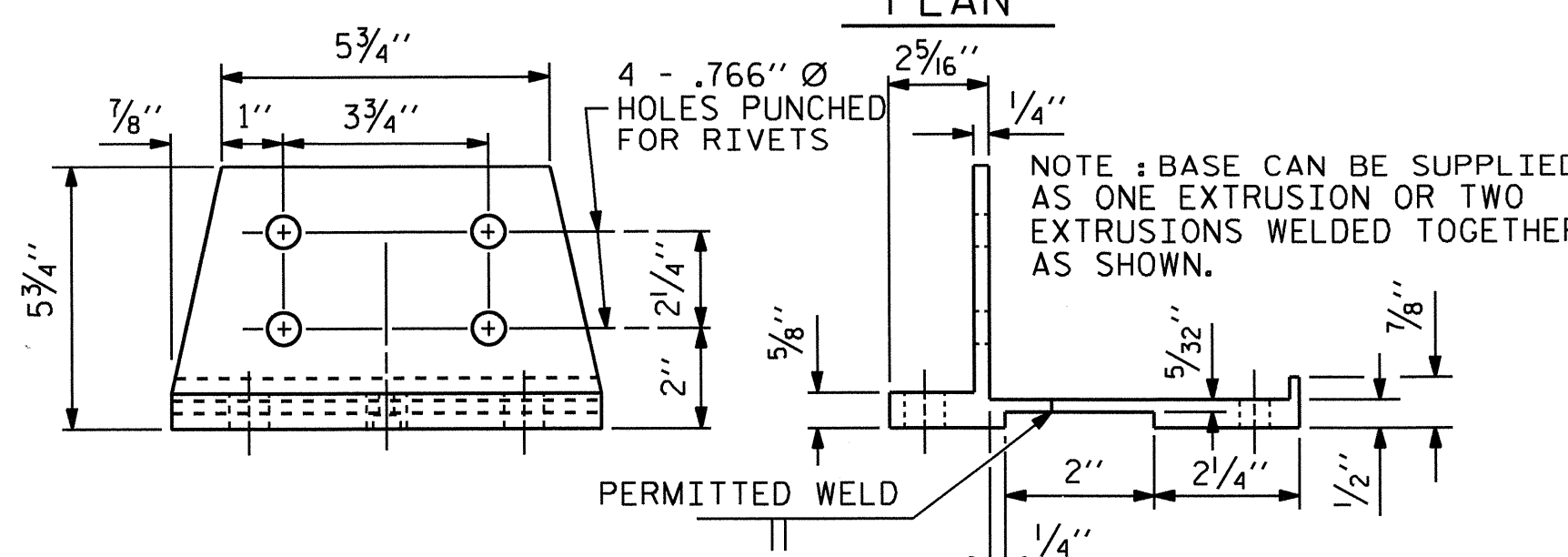


SECTION THRU PARAPET AND RAIL

4- 3/4" Ø BOLTS WITH ROUND WASHERS



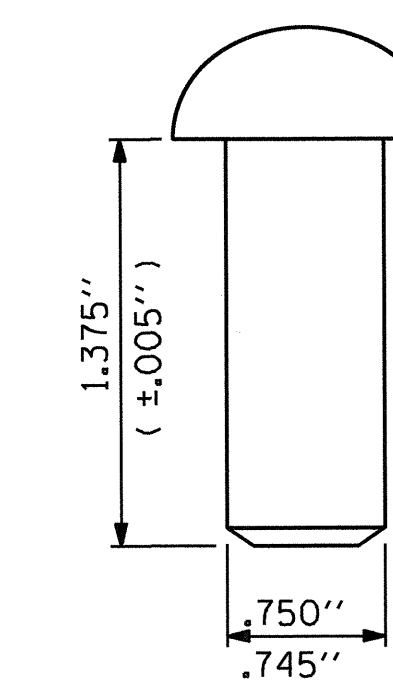
PLAN



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



RIVET DETAIL

DRAWN BY: J.D. HAWK	DATE: 8/5/12
CHECKED BY: K.D. LAYNE	DATE: 11/8/12
DESIGN ENGINEER OF RECORD: D.A. DAVENPORT	DATE: 5/13/13
DRAWN BY: EEM 6/94	REV. 5/1/06 TLA/GM
CHECKED BY: RGW 6/94	REV. 10/1/11 MAA/GM
	REV. 6/13 MAA/GM

NOTES

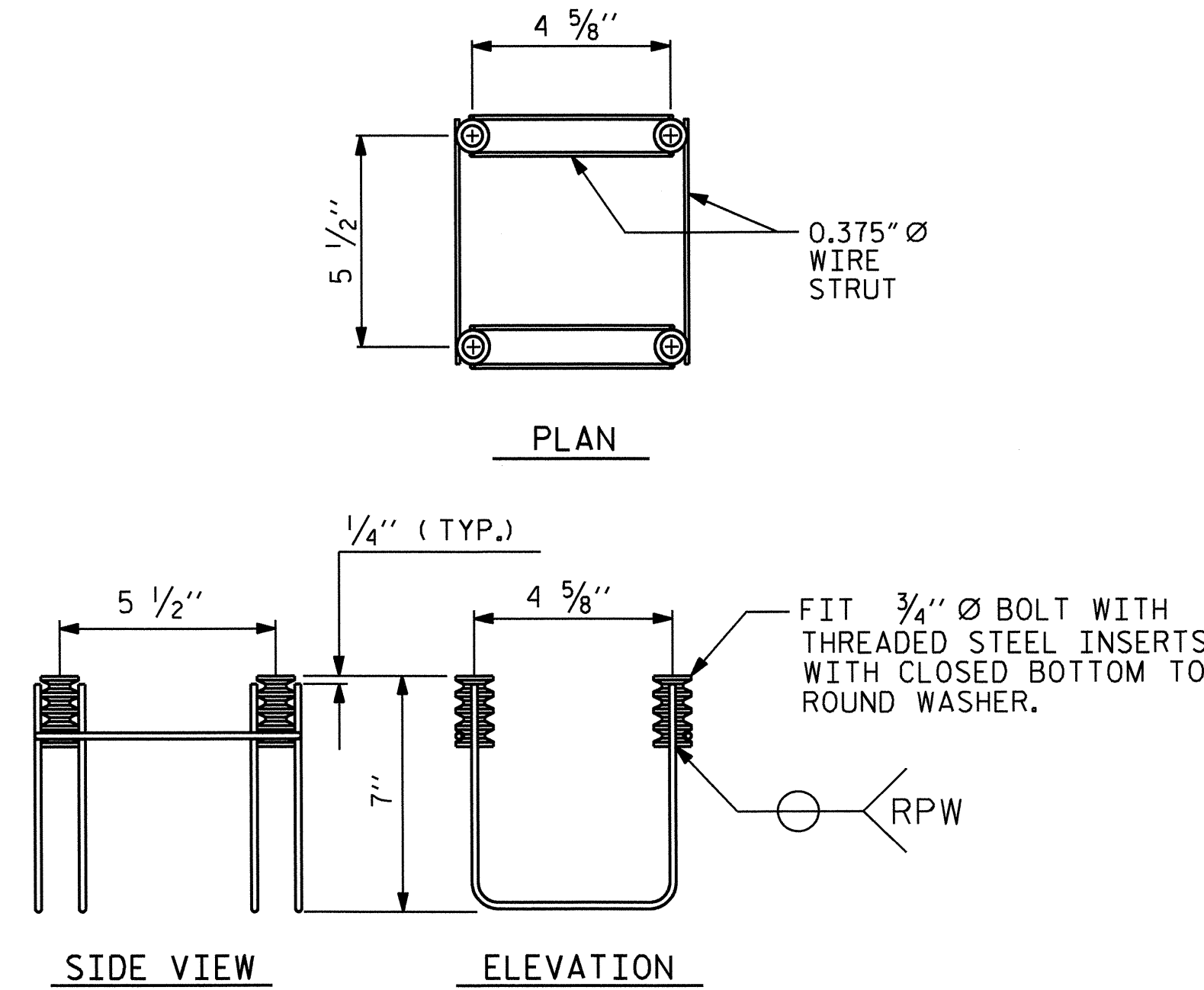
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/6" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

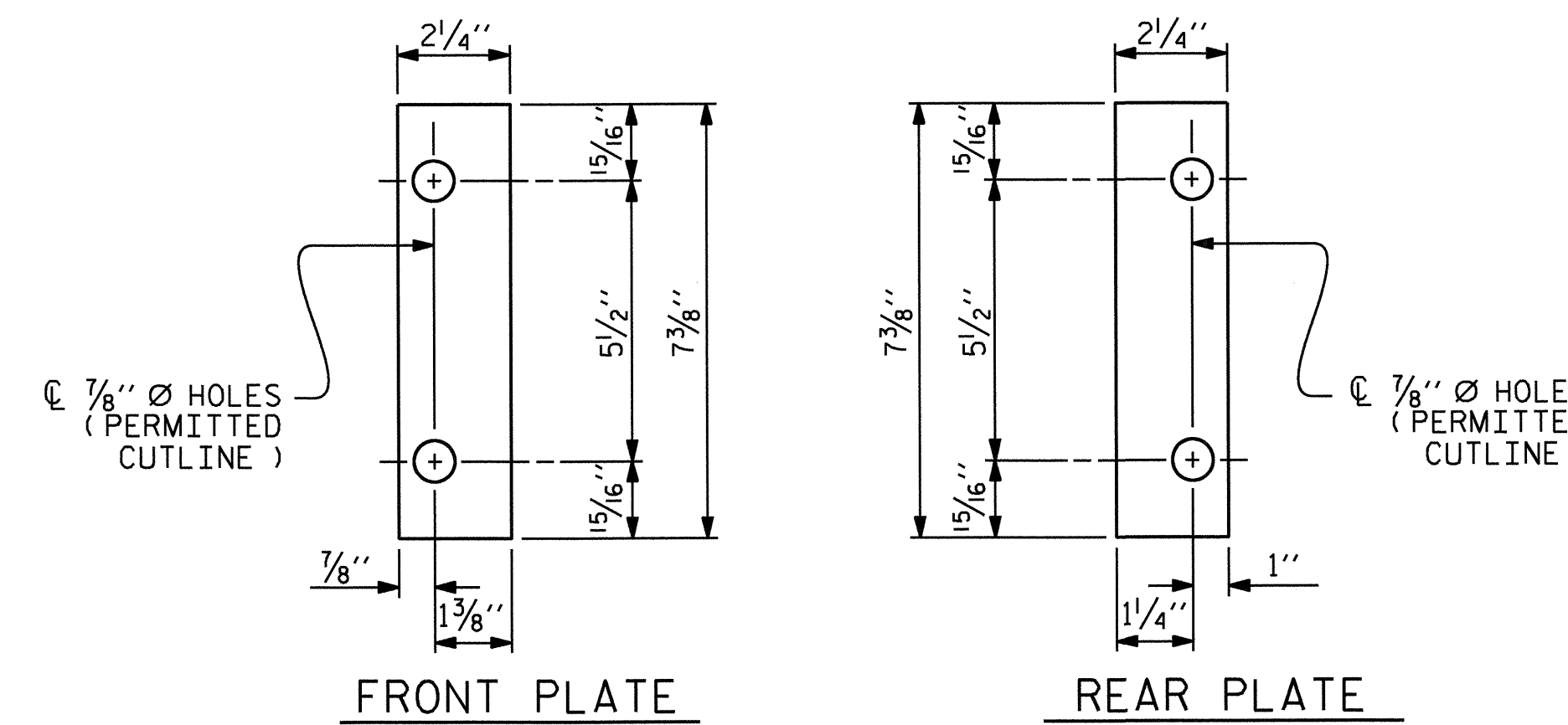
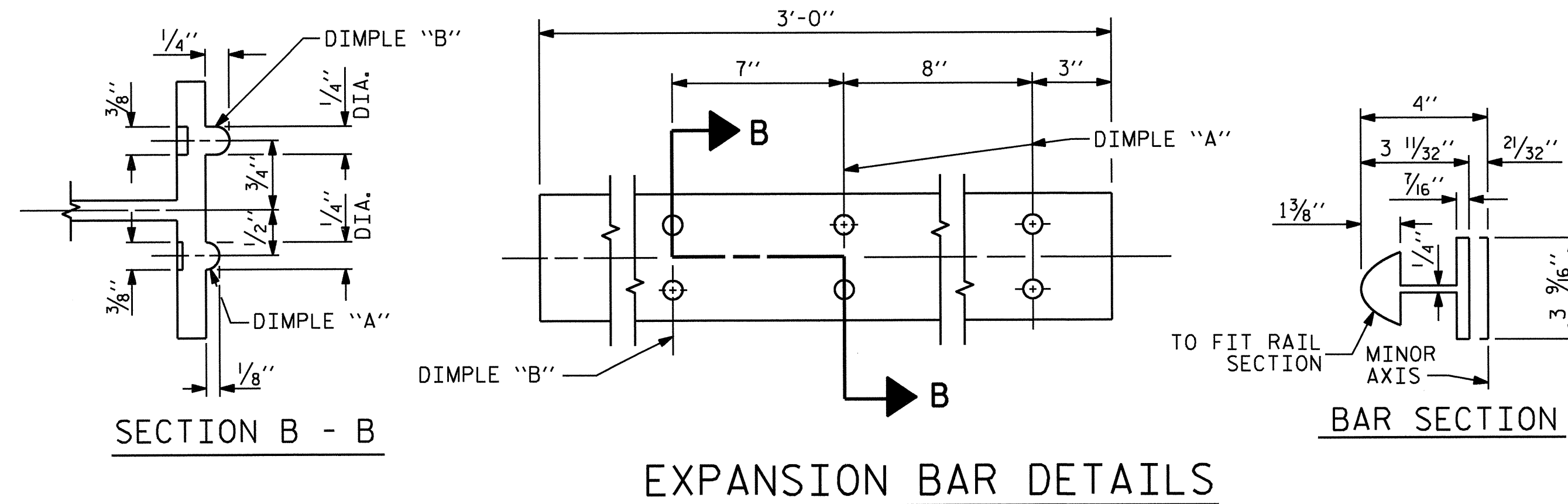
THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

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



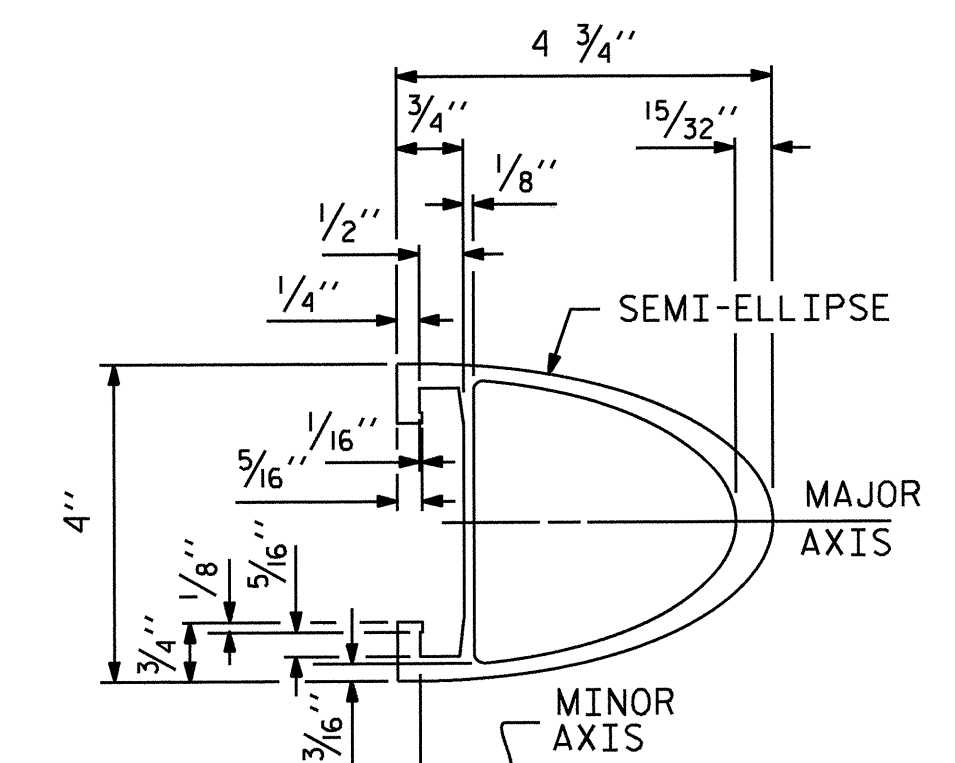
4-BOLT METAL RAIL ANCHOR ASSEMBLY

(60 ASSEMBLIES REQUIRED)

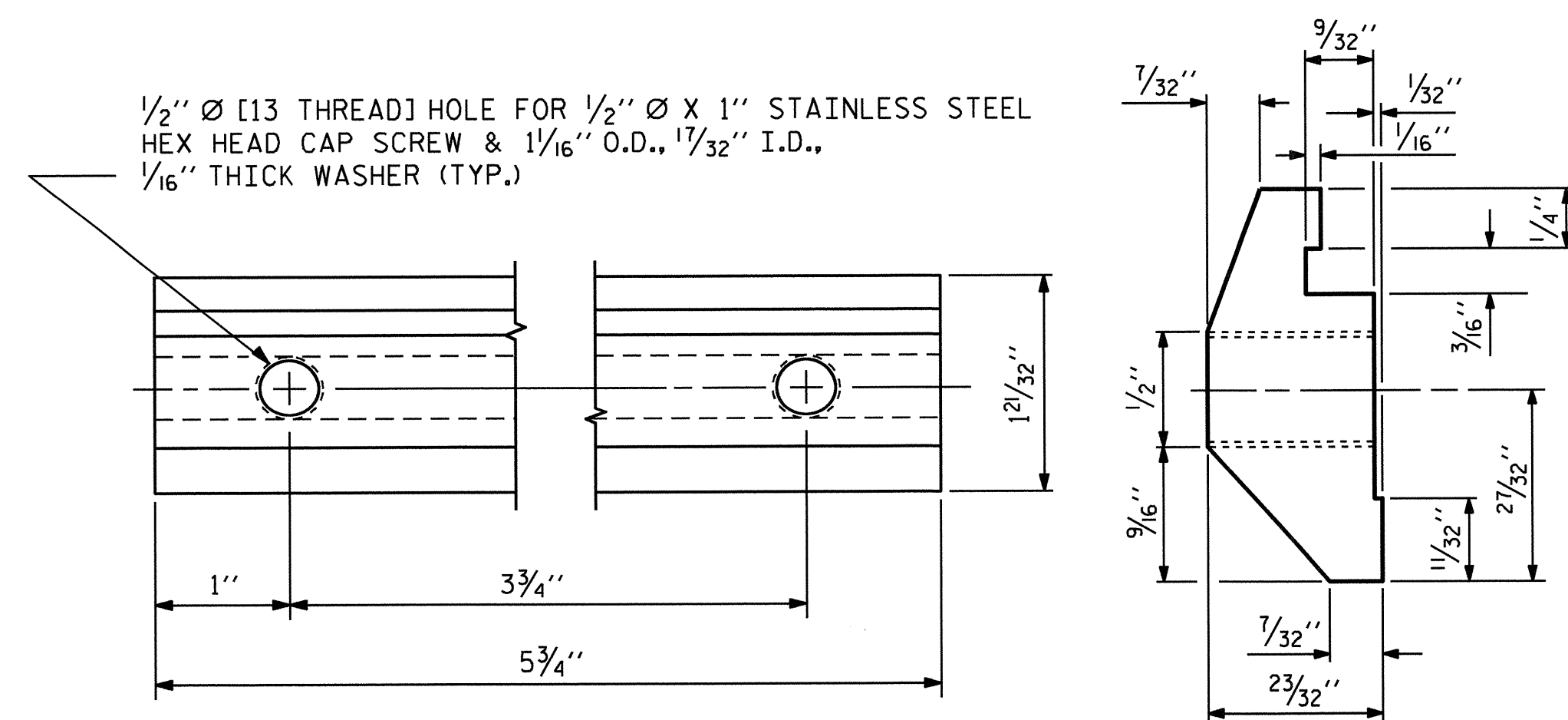


SHIM DETAILS

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

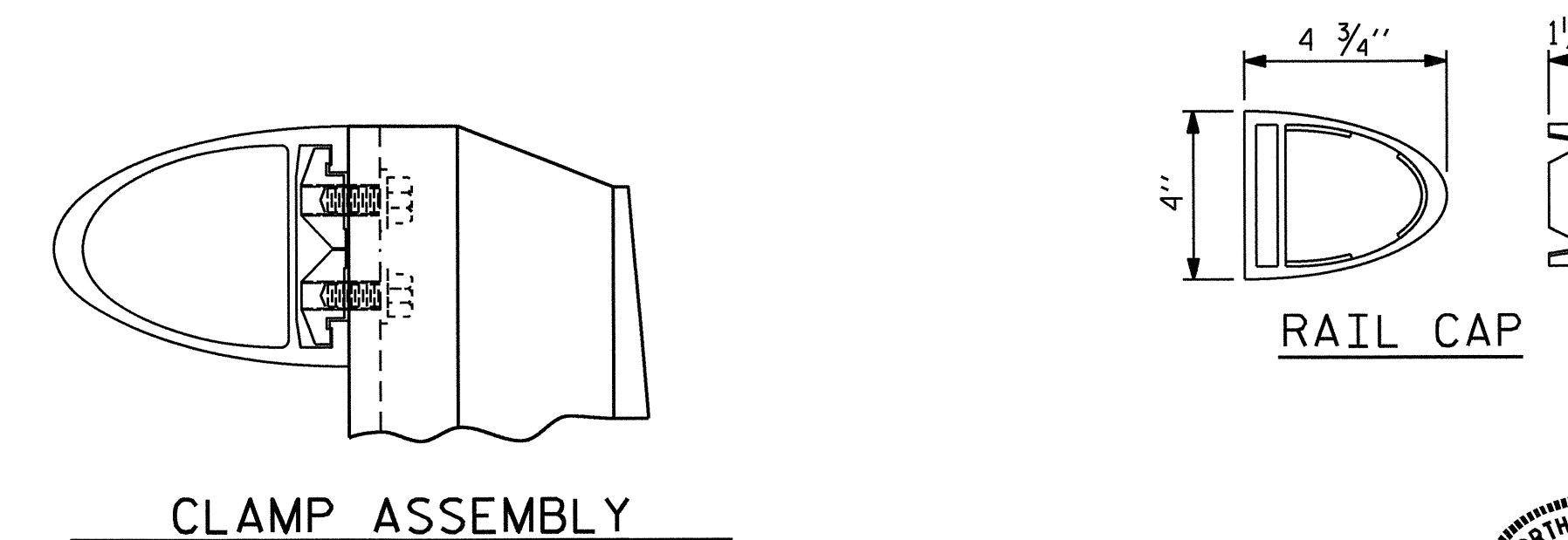


RAIL SECTION



CLAMP BAR DETAIL

(4 REQUIRED PER POST)



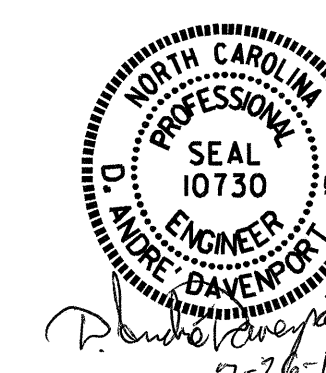
RAIL CAP

CLAMP ASSEMBLY

PROJECT NO. U-4432
WAKE COUNTY
STATION: 28+17.07 -L-

SHEET 2 OF 3

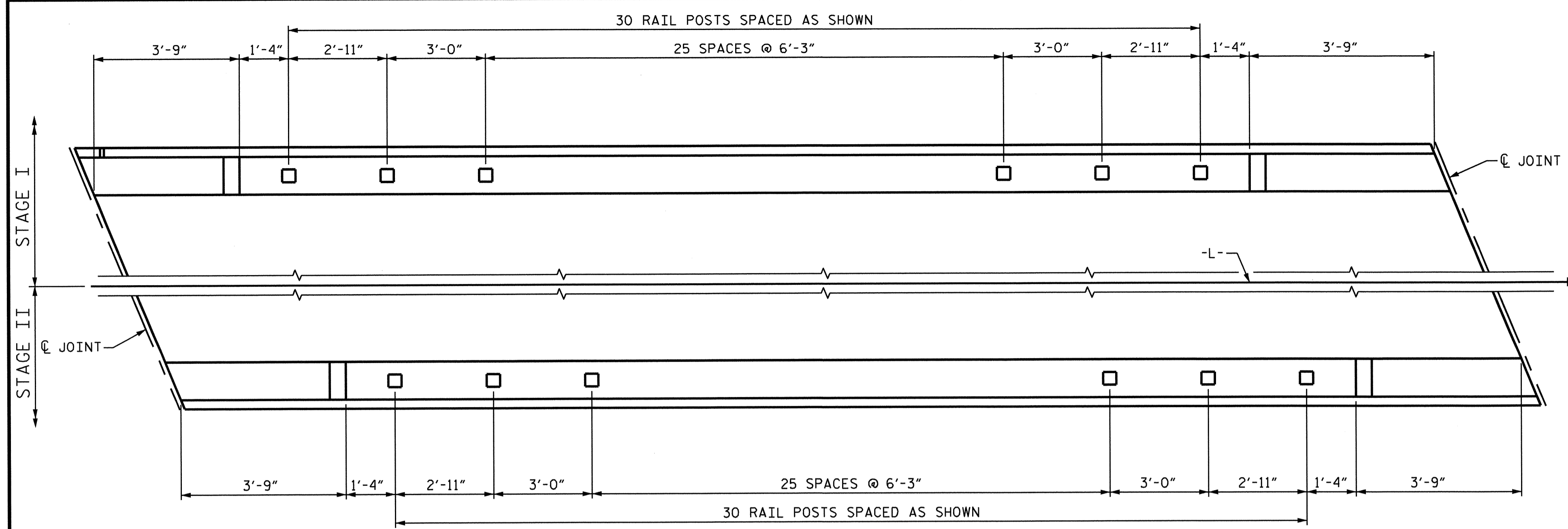
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
2 BAR METAL RAIL



DRAWN BY : J.D. HAWK DATE : 8/5/12
CHECKED BY : K.D. LAYNE DATE : 11/8/12
DESIGN ENGINEER OF RECORD: D.A. DAVENPORT DATE : 5/13/13

DRAWN BY : EEM 6/94 REV. 8/16/99 MAB/LES
CHECKED BY : RCW 6/94 REV. 5/1/06R KMM/GM
REV. 10/1/11 MAA/GM

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28	
1			3			TOTAL SHEETS 52	
2			4				



PLAN OF RAIL POST SPACINGS

NOTES

STRUCTURAL CONCRETE INSERT

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

NOTES

METAL RAIL TO END POST CONNECTION

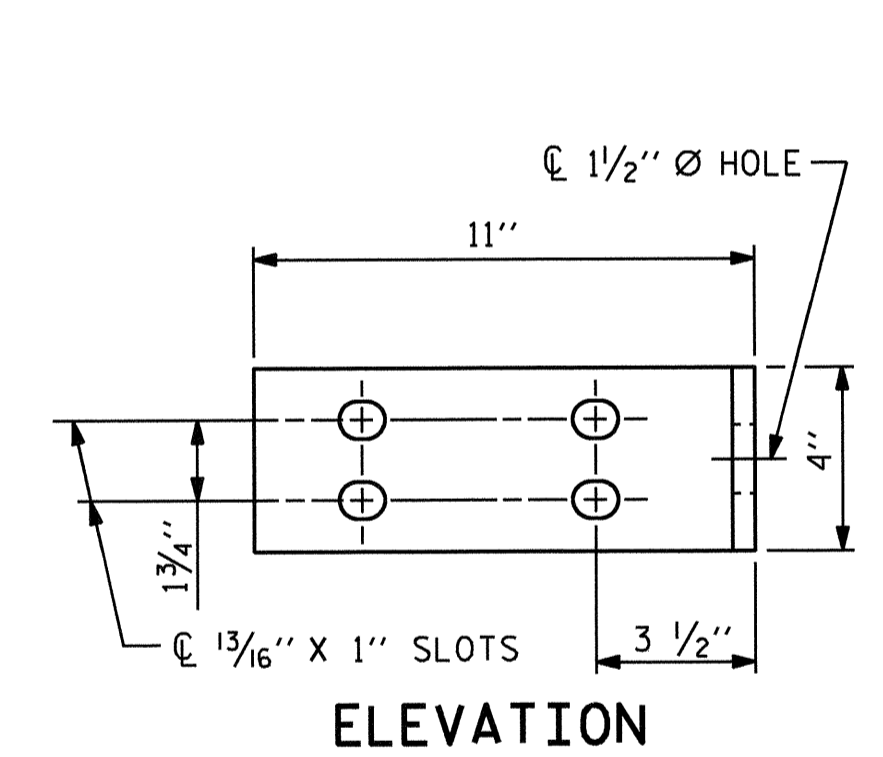
- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 1/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 1/8" BOLT SHALL HAVE N.C. THREADS.
 - CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.
 - STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
 - 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

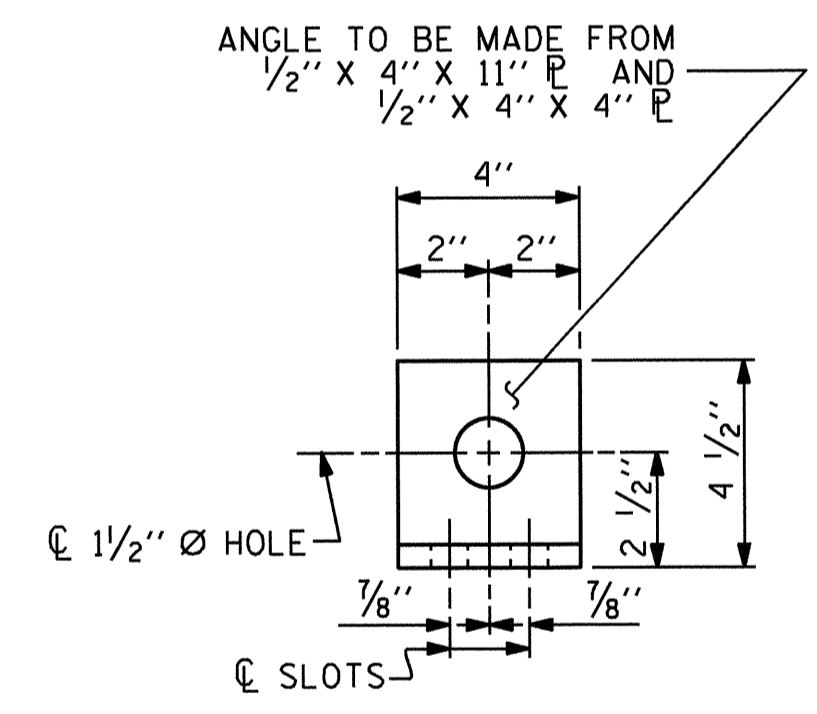
THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

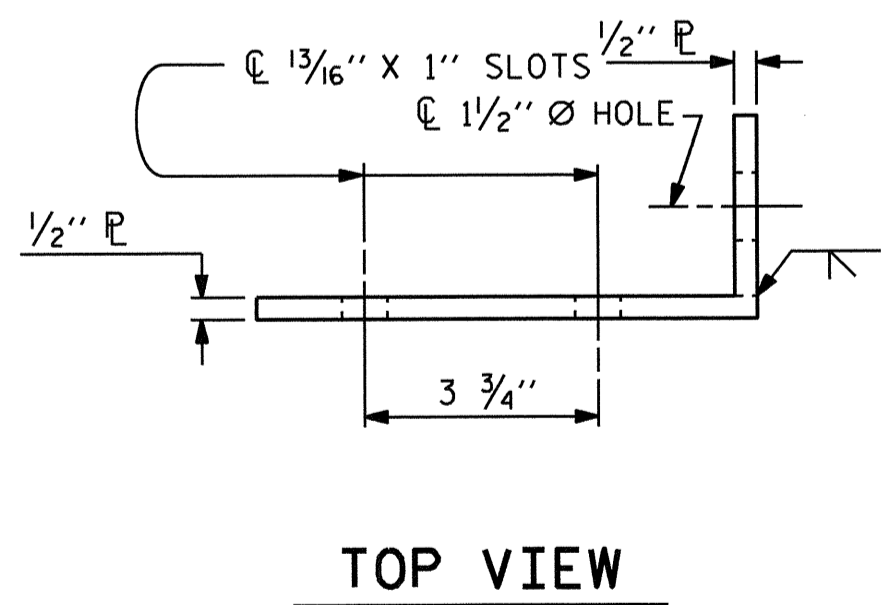
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 1/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 1/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



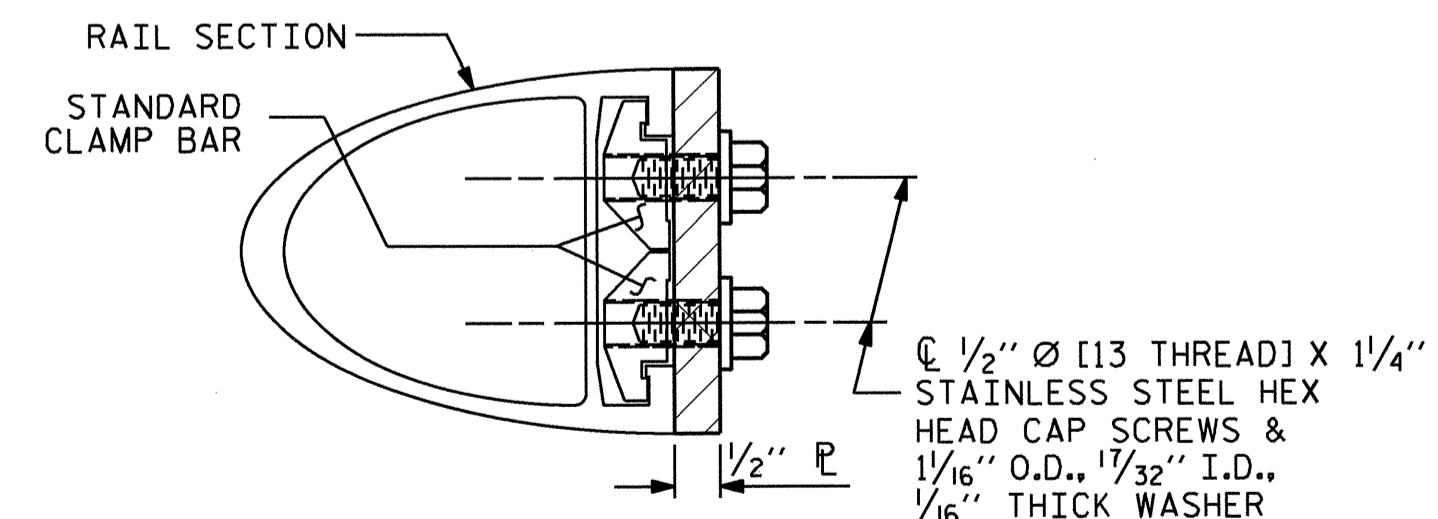
ELEVATION



END VIEW (FIX AND EXP.)



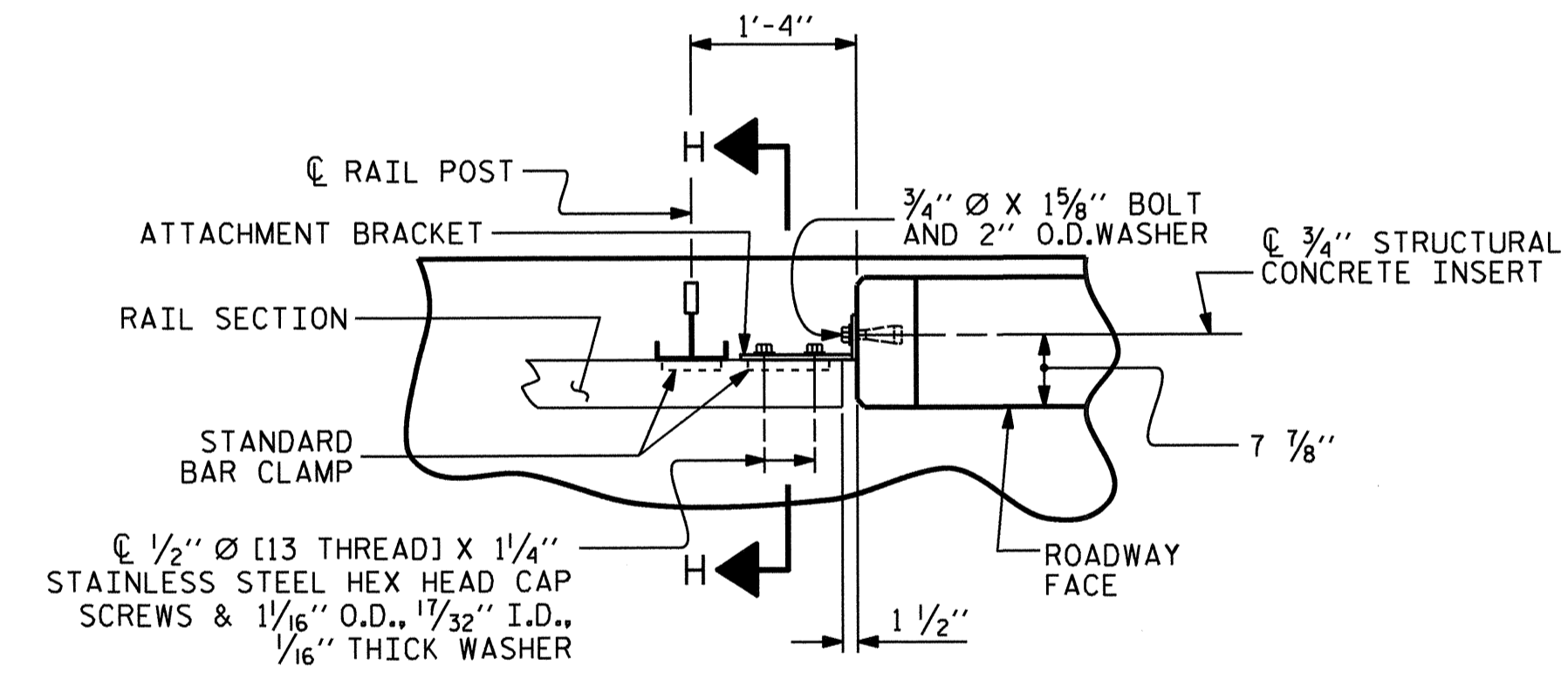
TOP VIEW



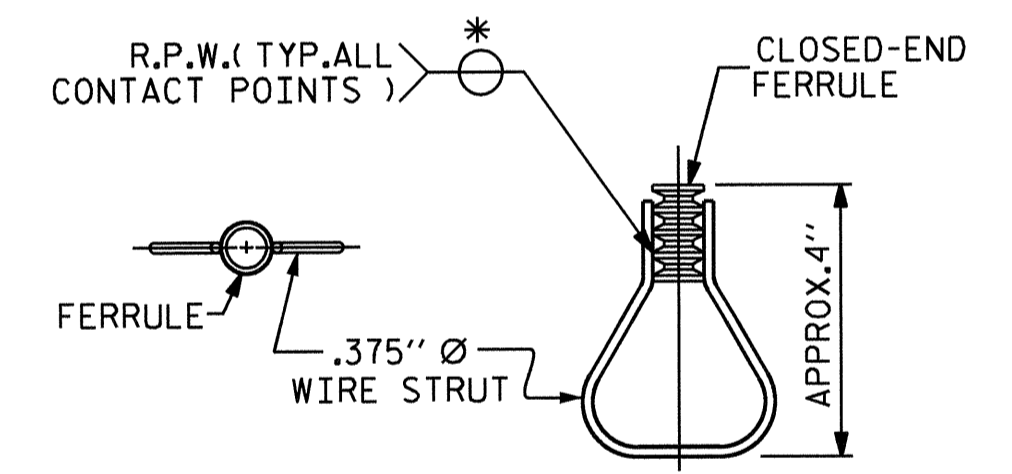
SECTION H-H (FIX)

FIXED

DETAILS FOR ATTACHING METAL RAIL TO END POST



PLAN - RAIL AND END POST



STRUCTURAL CONCRETE INSERT

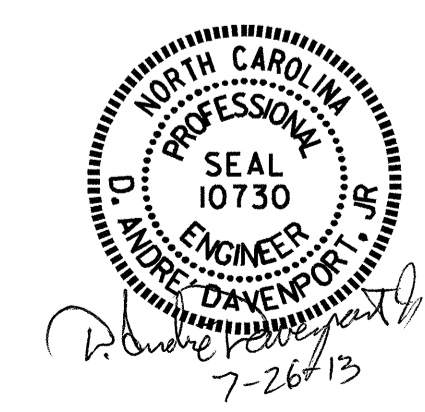
* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. U-4432
WAKE COUNTY
 STATION: 28+17.07 -L-

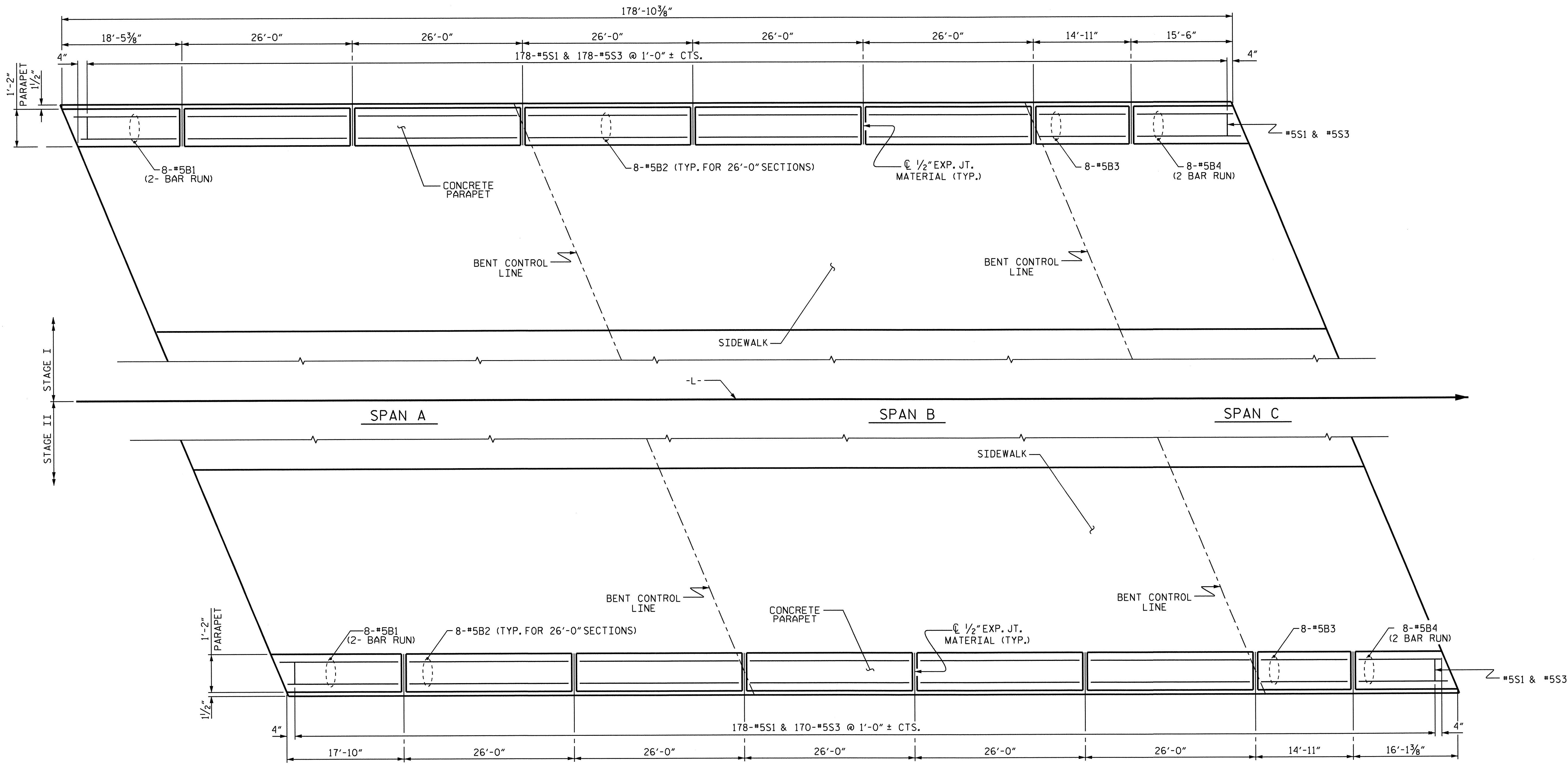
SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 RAIL POST SPACINGS
 AND
 END OF RAIL DETAILS
 FOR ONE OR TWO BAR METAL RAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	5-29
1			3			TOTAL SHEETS
2			4			52



DRAWN BY : J.D. HAWK	DATE : 8/5/12
CHECKED BY : K.D. LAYNE	DATE : 11/8/12
DESIGN ENGINEER OF RECORD : D.A. DAVENPORT	DATE : 5/13/13
DRAWN BY : FCJ 1/88	REV. 5/7/03 RWW/JTE
CHECKED BY : CRK 3/89	REV. 5/1/06 TLA/GM
	REV. 10/1/11 MAA/GM



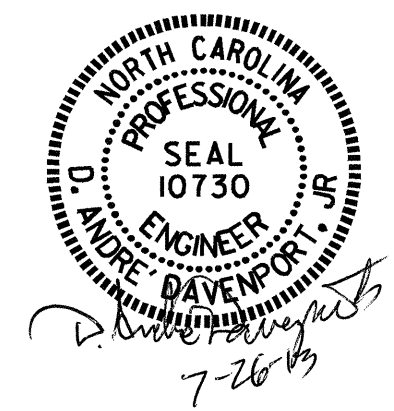
PLAN OF PARAPET

PROJECT NO. U-4432
WAKE COUNTY
 STATION: 28+17.07 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**PARAPET AND
 END POST DETAILS
 FOR TWO BAR
 METAL RAIL**



DRAWN BY : J.D. HAWK DATE : 8/5/12
 CHECKED BY : K.D. LAYNE DATE : 11/8/12
 DESIGN ENGINEER OF RECORD: D.A. DAVENPORT DATE : 5/13/13

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			52

NOTES

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

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

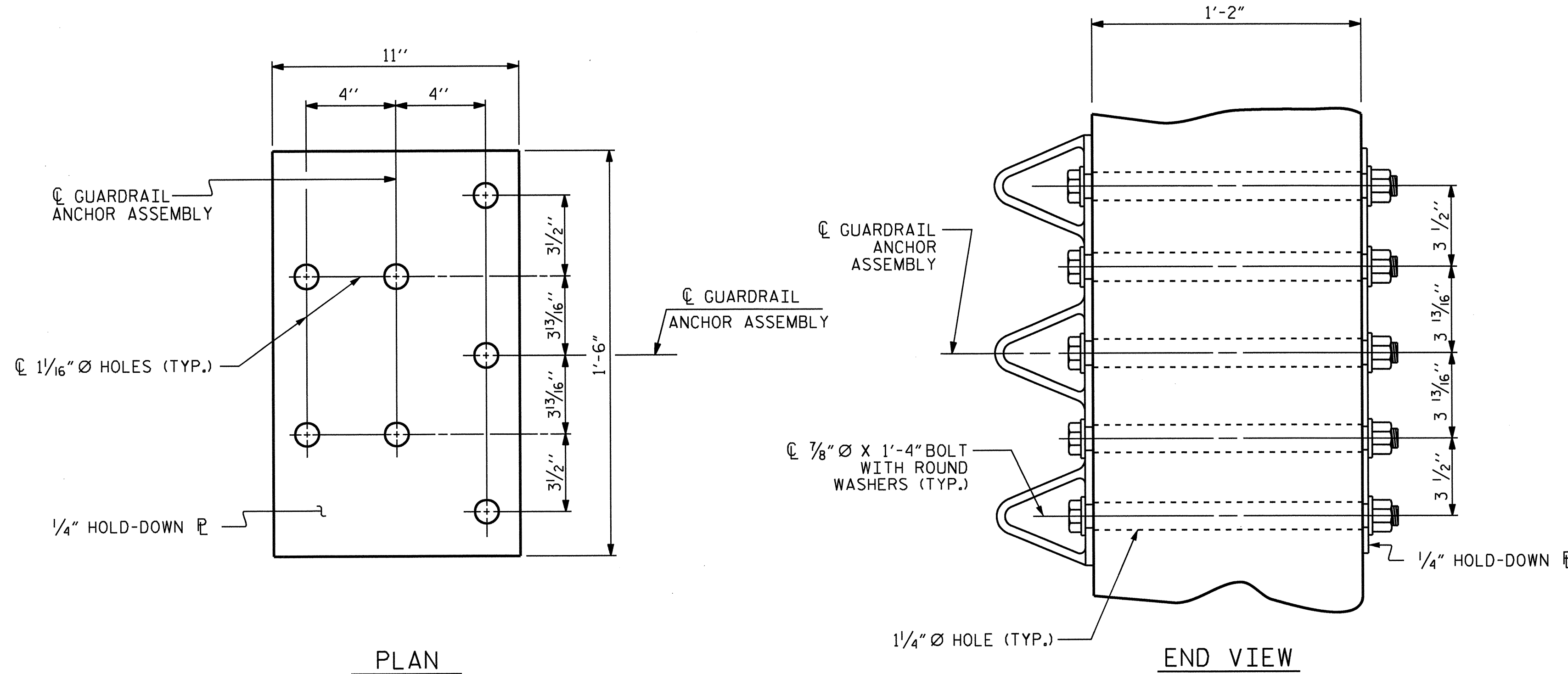
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

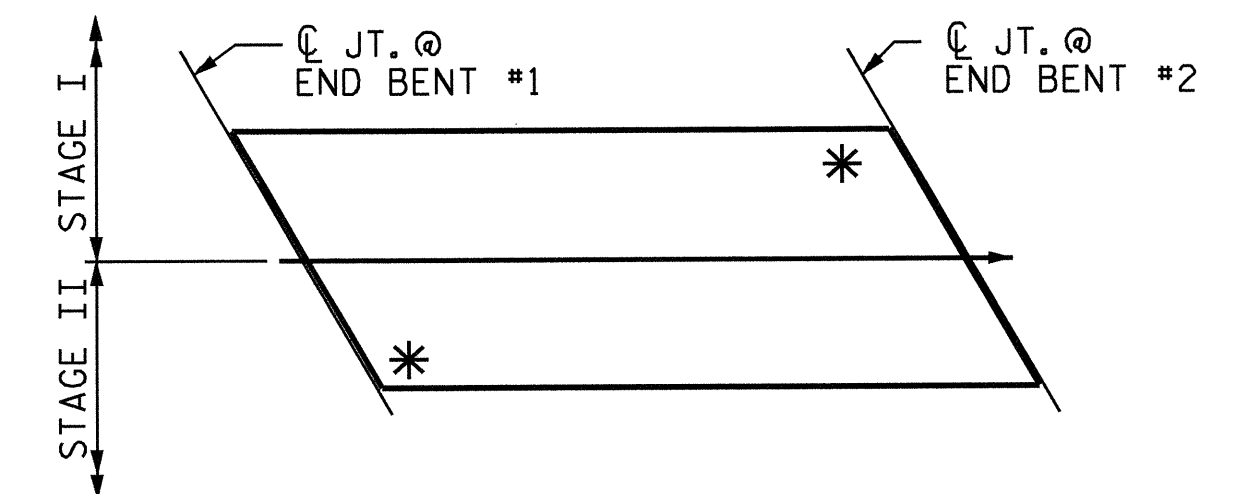
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

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

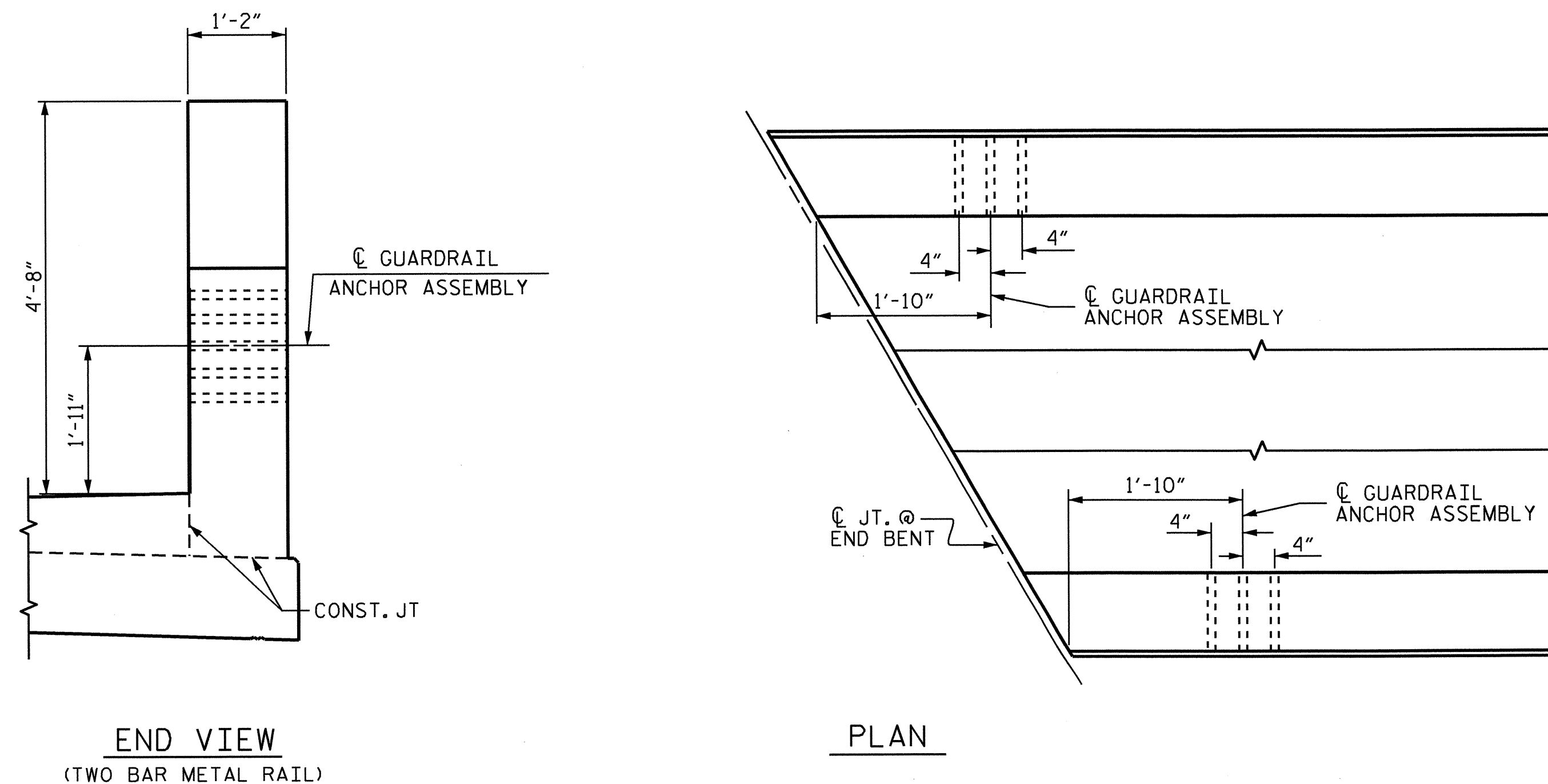


GUARDRAIL ANCHOR ASSEMBLY DETAILS



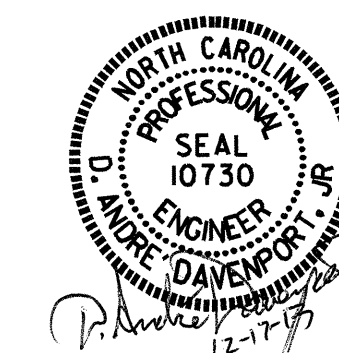
SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. U-4432
WAKE COUNTY
 STATION: 28+17.07 -L-



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

REVISIONS						SHEET NO. S-32
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 52
2			4			

DRAWN BY: J.D. HAWK DATE: 8/5/12
 CHECKED BY: K.D. LAYNE DATE: 11/8/12
 DESIGN ENGINEER OF RECORD: D.A. DAVENPORT DATE: 5/13/13

DRAWN BY: MAA 5/10
 CHECKED BY: GM 5/10
 ADDED 5/6/10
 REV. 10/1/11
 REV. 12/5/11
 MAA/GM
 MAA/GM

NOTES

FOR BRIDGE MOUNTED CHAIN LINK FENCE, SEE SPECIAL PROVISIONS.

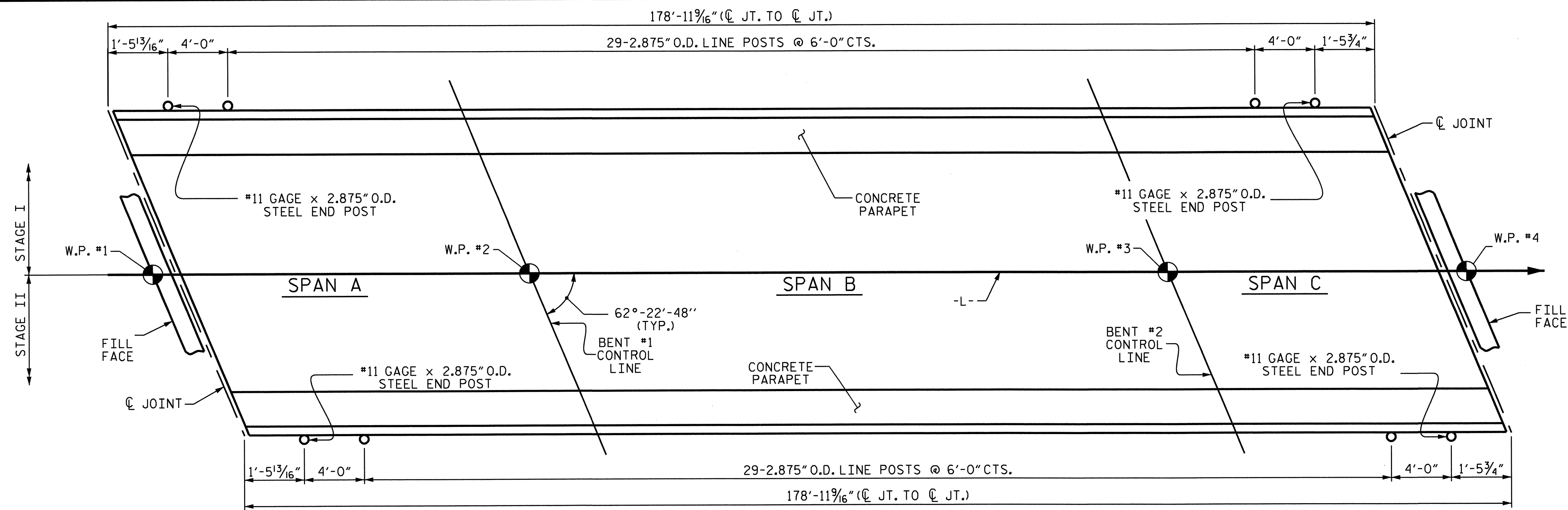
MATERIAL FOR ANCHOR BOLTS SHALL BE TYPE 304 STAINLESS STEEL WITH A MINIMUM 9000 PSI ULTIMATE STRENGTH. NUTS AND WASHERS SHALL BE TYPE 304 STAINLESS STEEL. ANCHOR BOLTS SHALL BE EMBEDDED AS PER ADHESIVE BONDING SYSTEM MANUFACTURER SPECIFICATIONS. NUTS SHALL BE AMERICAN STANDARD FINISHED HEXAGON THICK NUTS, CLASS 2B THREADS.

LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE ANCHOR BOLTS IS 10 KIPS, FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS.

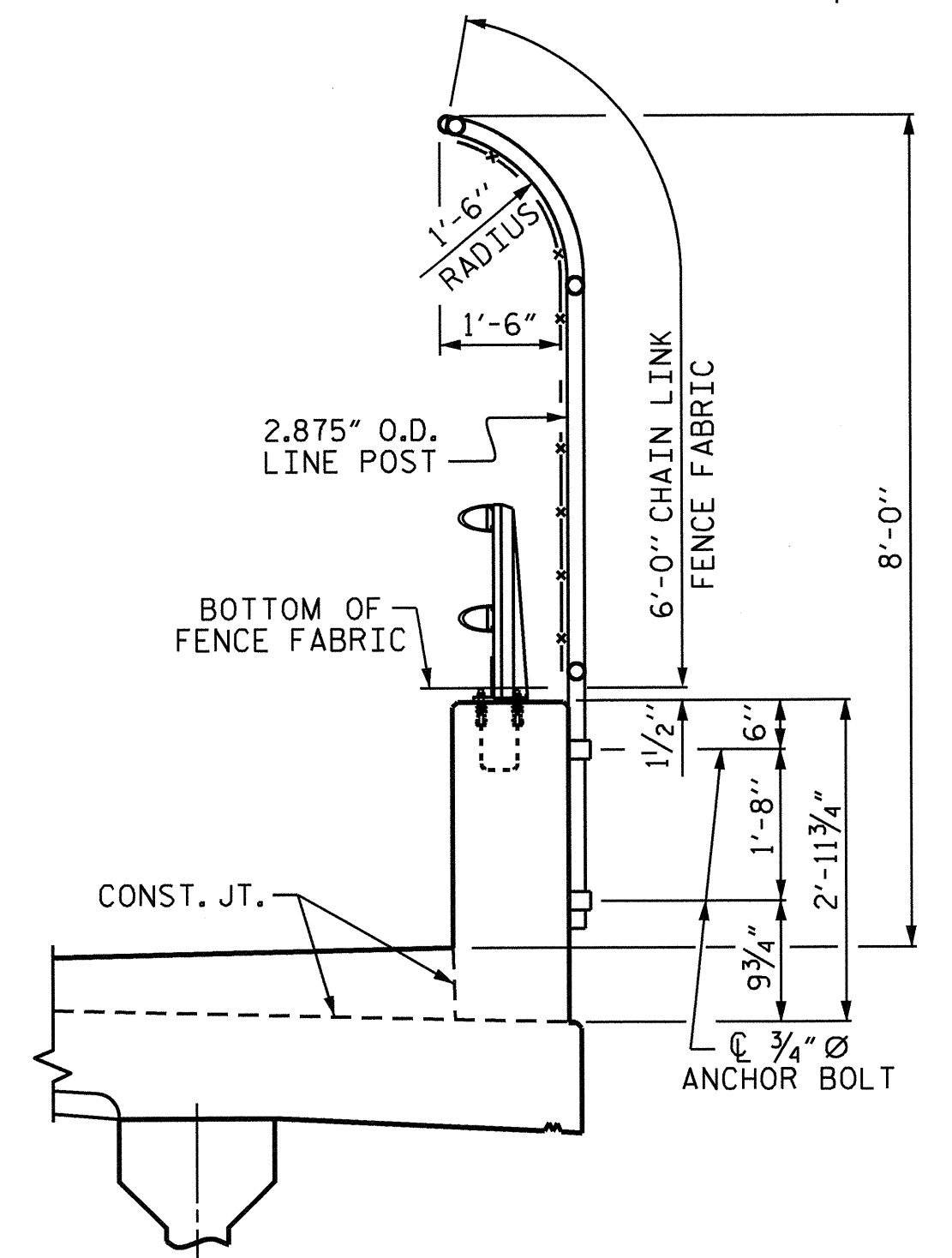
ALL FENCE MATERIAL SHALL MEET THE REQUIREMENTS OF SECTION 1050 OF THE STANDARD SPECIFICATIONS, GALVANIZE ALL STEEL PARTS AND HARDWARE IN ACCORDANCE WITH ARTICLE 1076 OF THE STANDARD SPECIFICATIONS.

FENCE POST LOCATIONS SHALL BE SHIFTED, AS NECESSARY, TO MAINTAIN 1'-0" MINIMUM DISTANCE FROM ANCHOR BOLT TO JOINTS IN PARAPET.

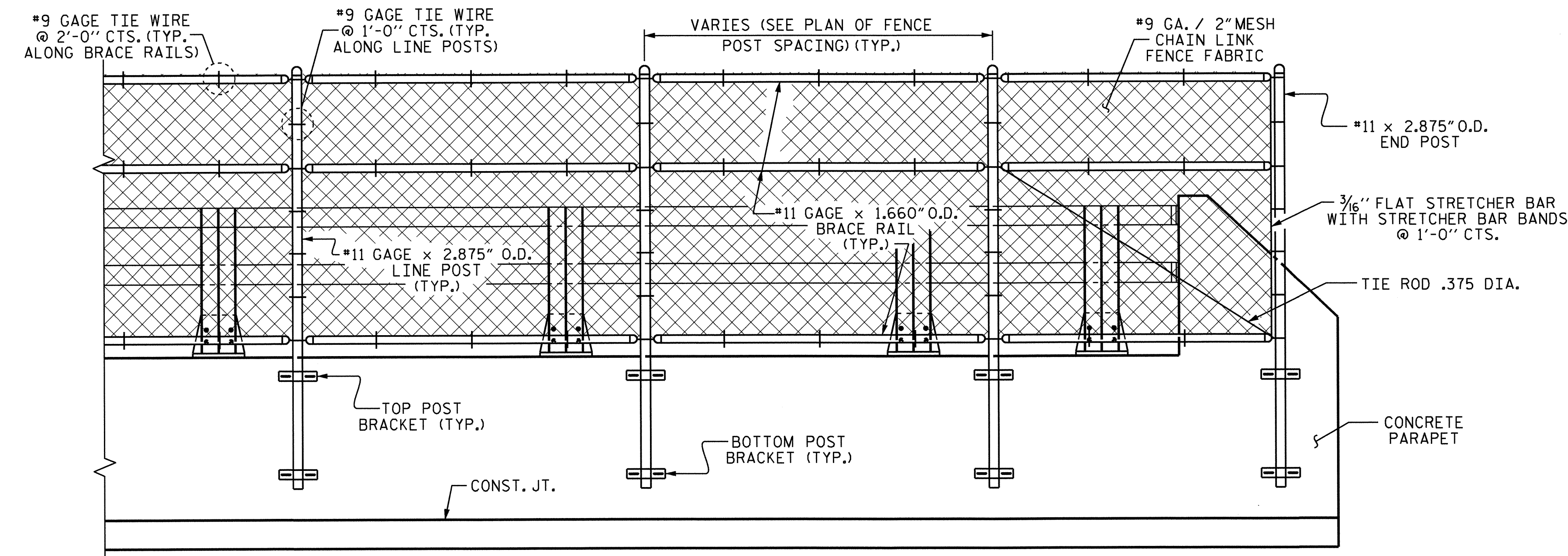
WELDING SHALL BE DONE IN ACCORDANCE WITH ARTICLE 1072-20 OF STANDARD SPECIFICATIONS.



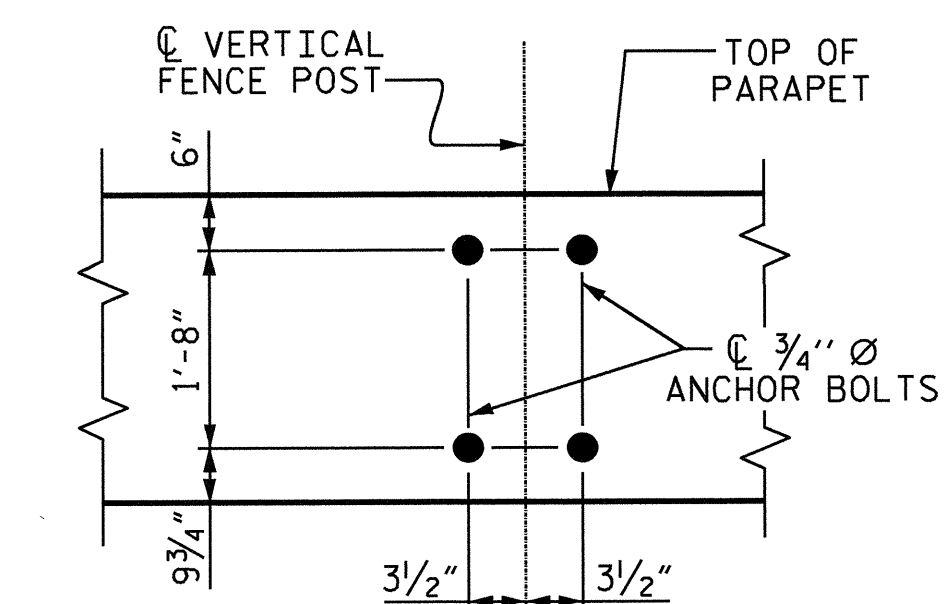
PLAN OF FENCE POST SPACING



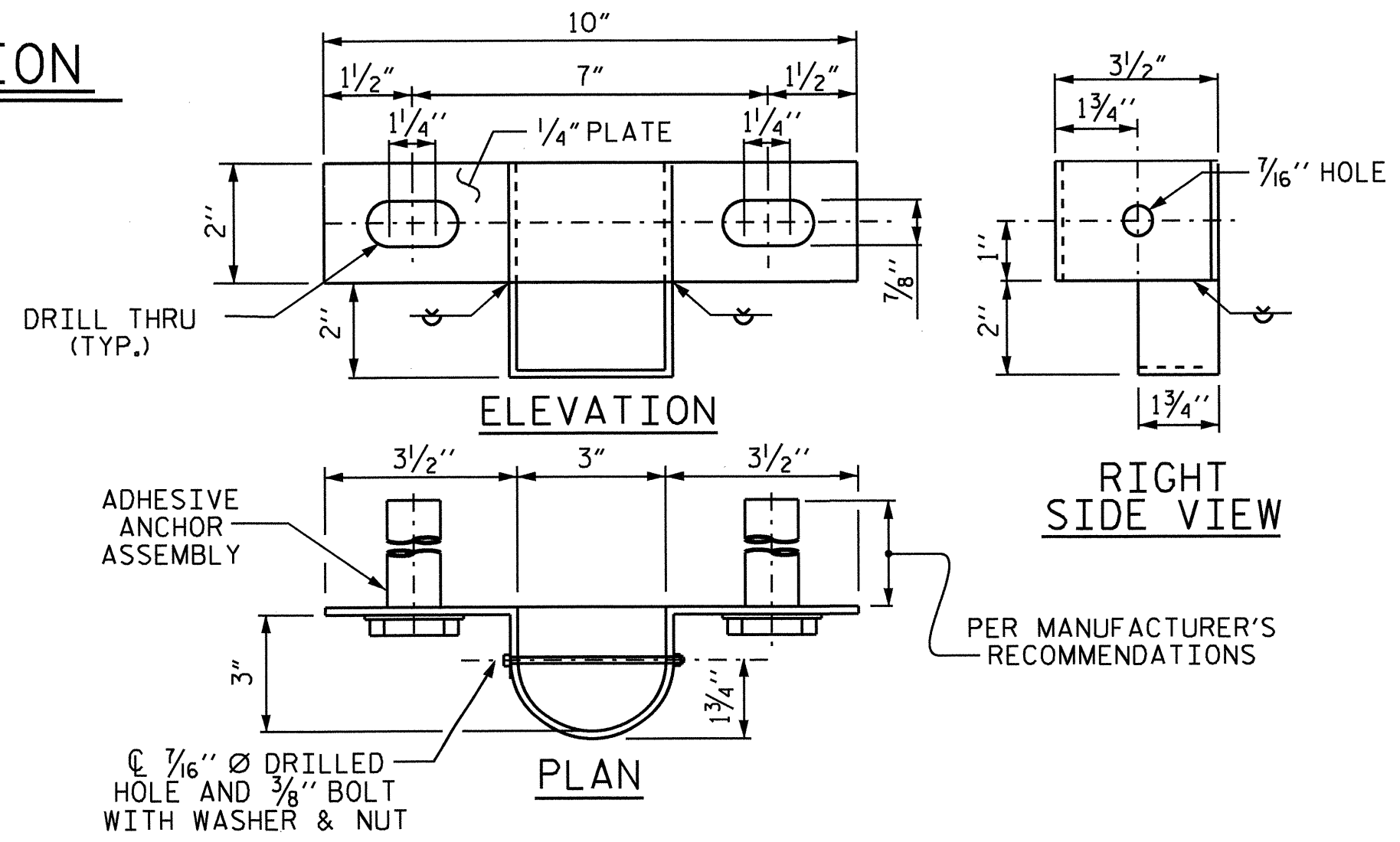
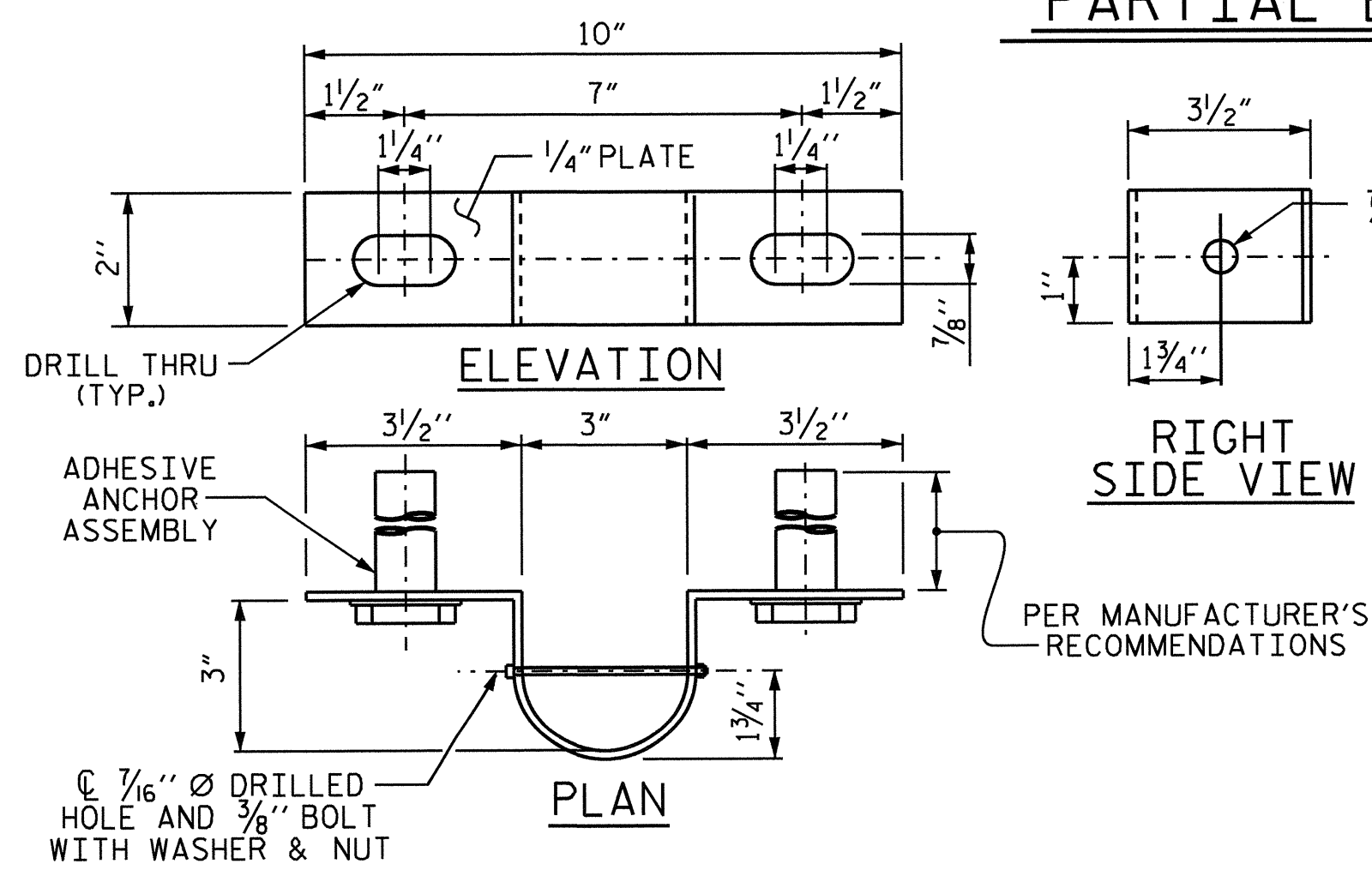
SECTION THRU FENCE



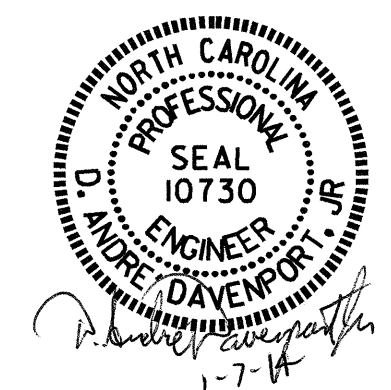
PARTIAL ELEVATION



BOLT SETTING DETAIL



72" CHAIN LINK FENCE	
STAGE I PAY LENGTH	176.0 LIN. FT.
STAGE II PAY LENGTH	176.0 LIN. FT.
TOTAL PAY LENGTH	352.0 LIN. FT.



PROJECT NO. U-4432
WAKE COUNTY
 STATION: 28+17.07 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

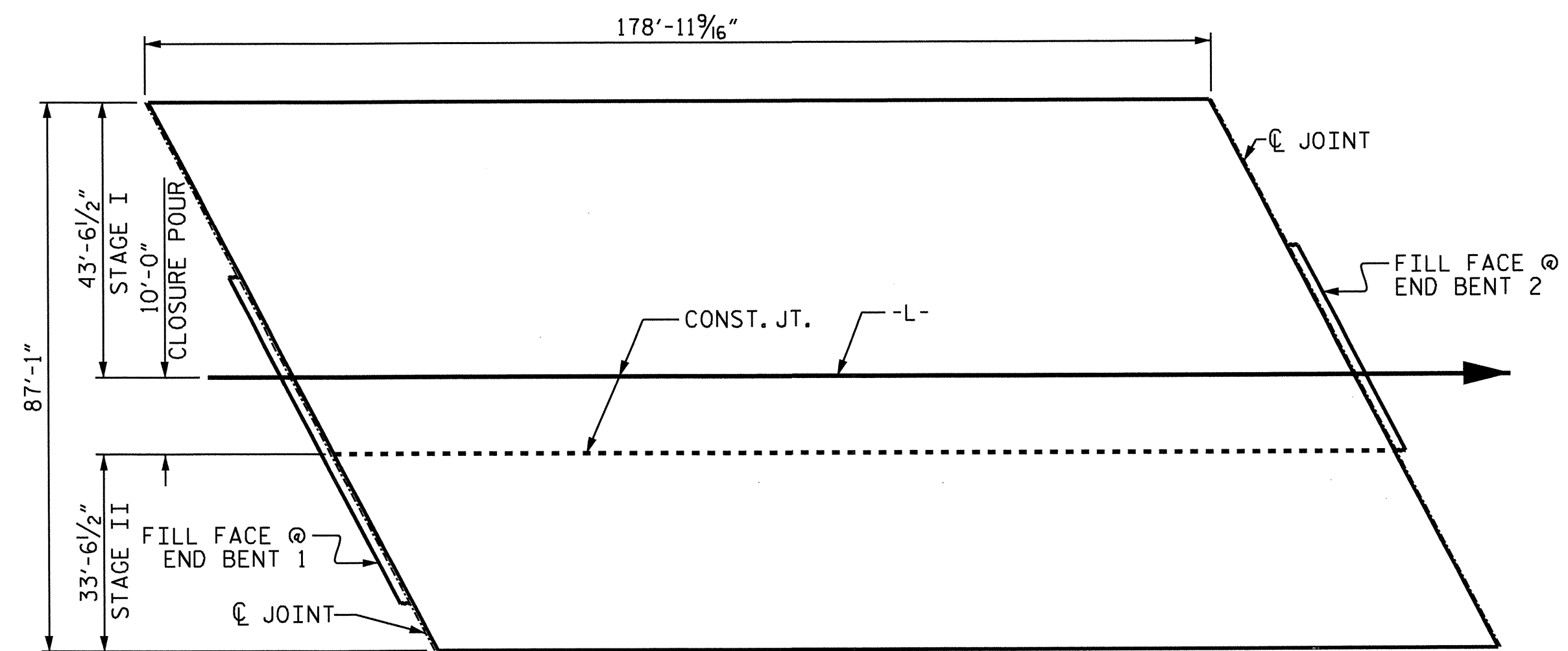
SUPERSTRUCTURE
 BRIDGE MOUNTED
 CHAIN LINK FENCE
 DETAILS

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33	
1			3			TOTAL SHEETS	
2			4			52	

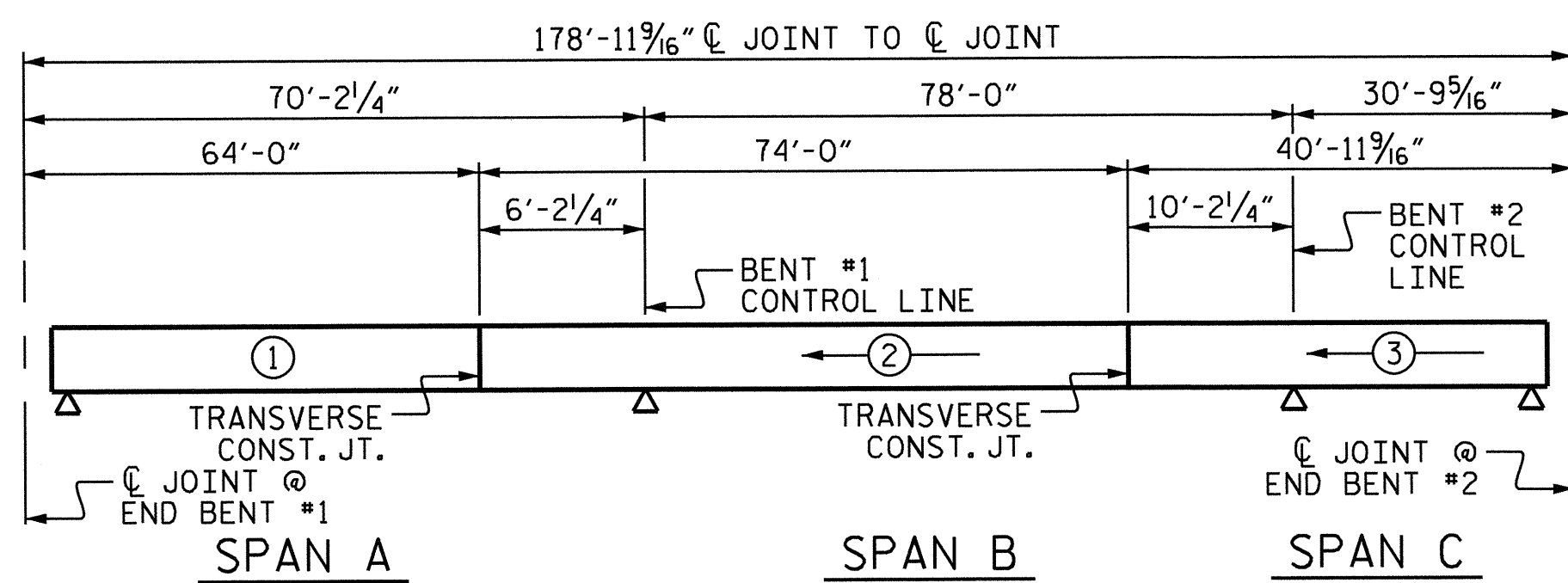
DRAWN BY: J.D. HAWK DATE: 8/5/12
 CHECKED BY: K.D. LAYNE DATE: 11/8/12
 DESIGN ENGINEER OF RECORD: D.A. DAVENPORT DATE: 5/13/13

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

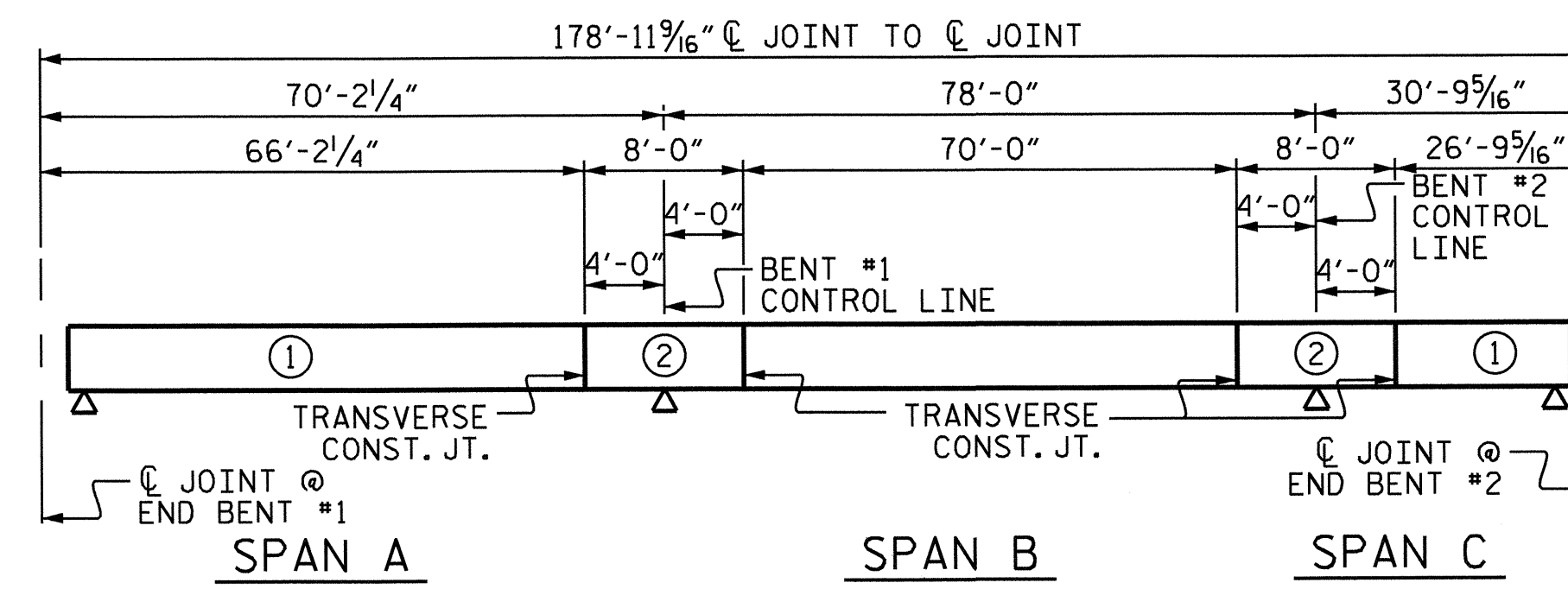
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			



LAYOUT FOR COMPUTING AREA
REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 15,585)



POURING SEQUENCE



OPTIONAL POURING SEQUENCE

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

PROJECT NO. U-4432
WAKE COUNTY
 STATION: 28+17.07 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 BILL OF MATERIAL



DRAWN BY : J.D. HAWK DATE : 8/5/12
 CHECKED BY : K.D. LAYNE DATE : 11/5/12
 DESIGN ENGINEER OF RECORD: D.A. DAVENPORT DATE : 5/13/13

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

S-35
TOTAL SHEETS
52

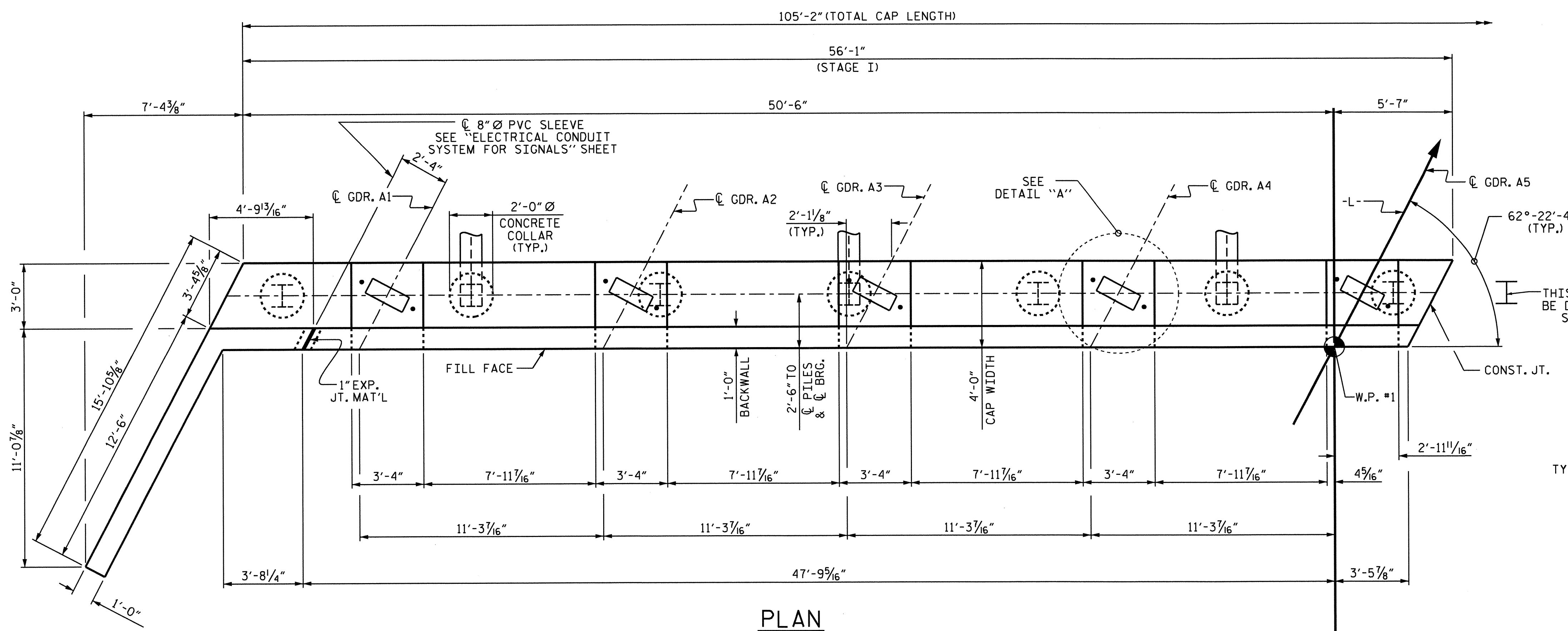
NOTES

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

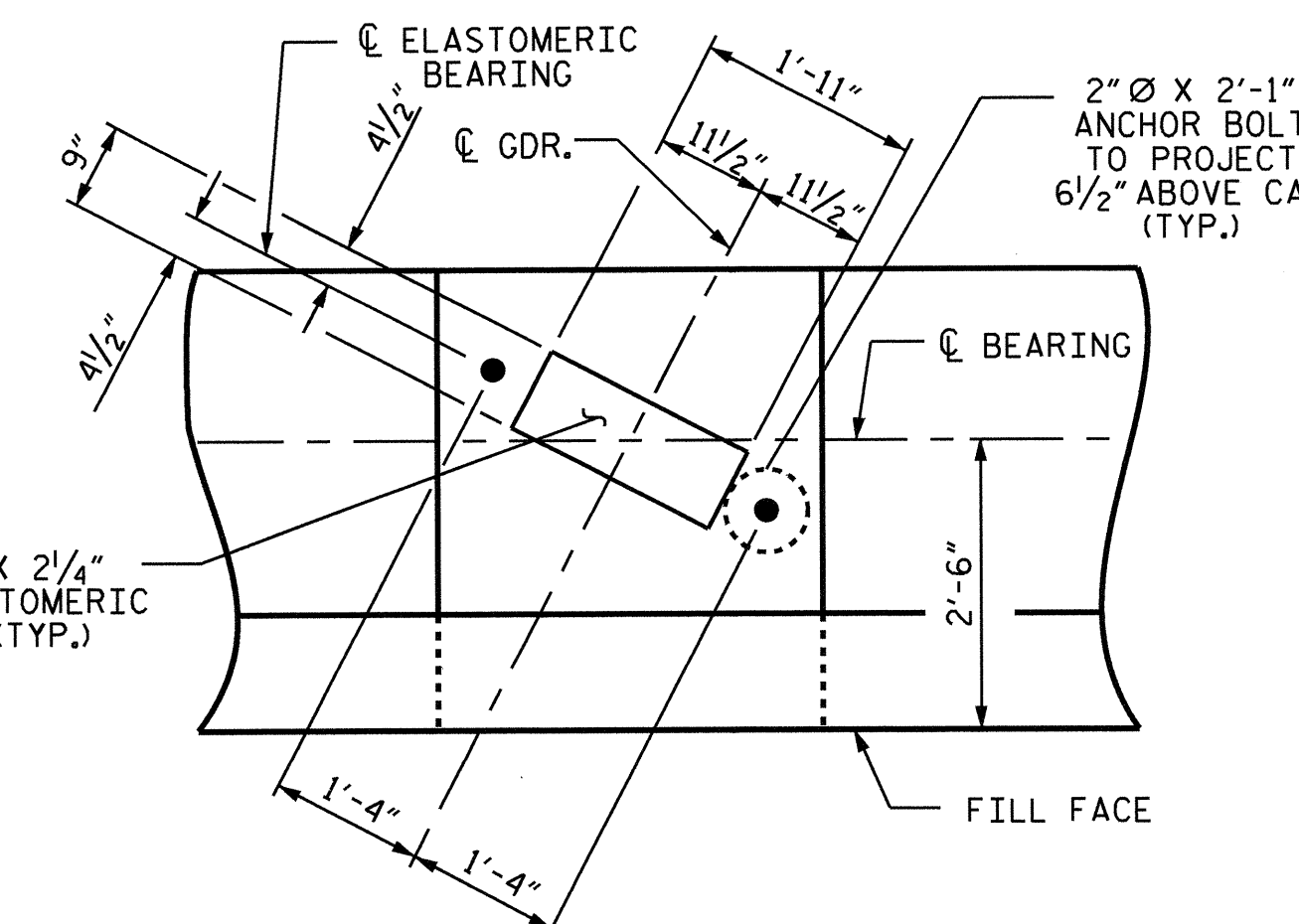
INSTALL THE 4" DIA. DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

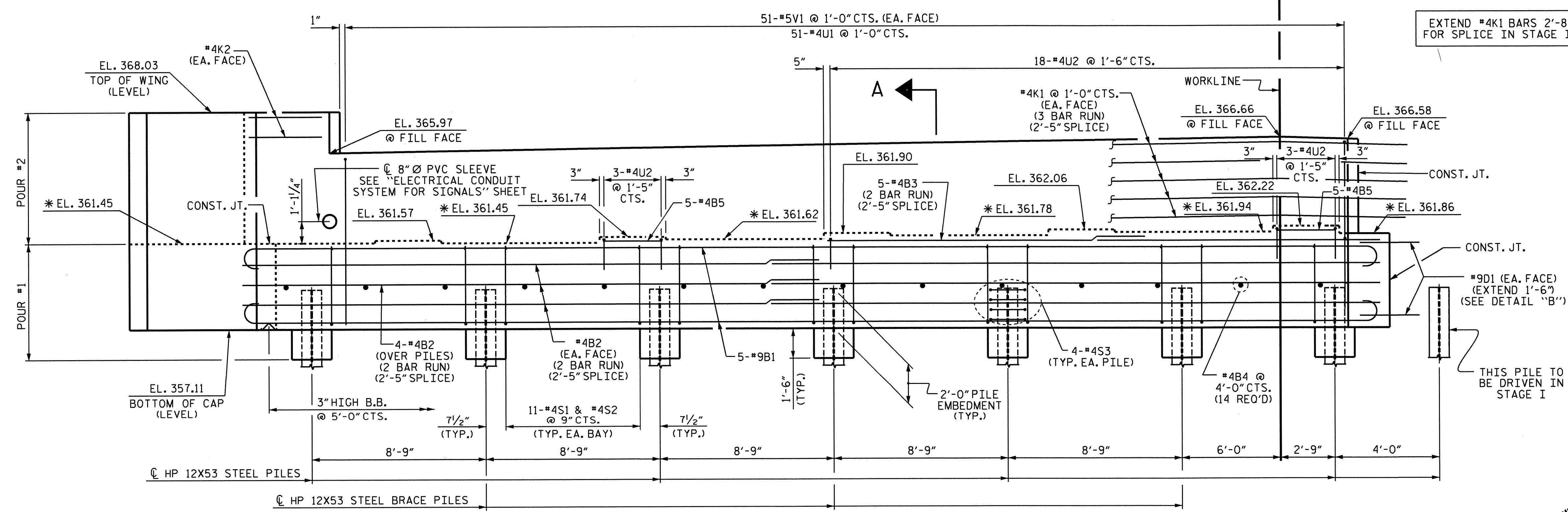
THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.



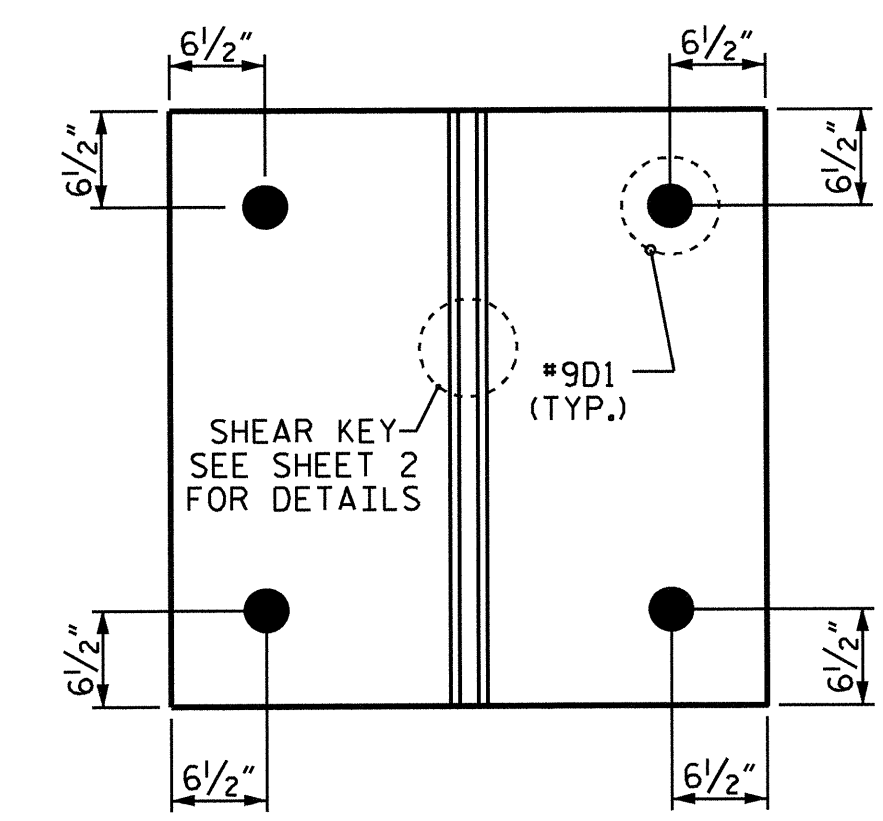
PLAN



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



ELEVATION

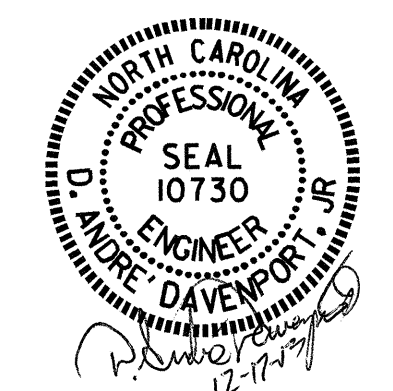


DETAIL "B"

PROJECT NO. U-4432
WAKE COUNTY
STATION: 28+17.07 -L-

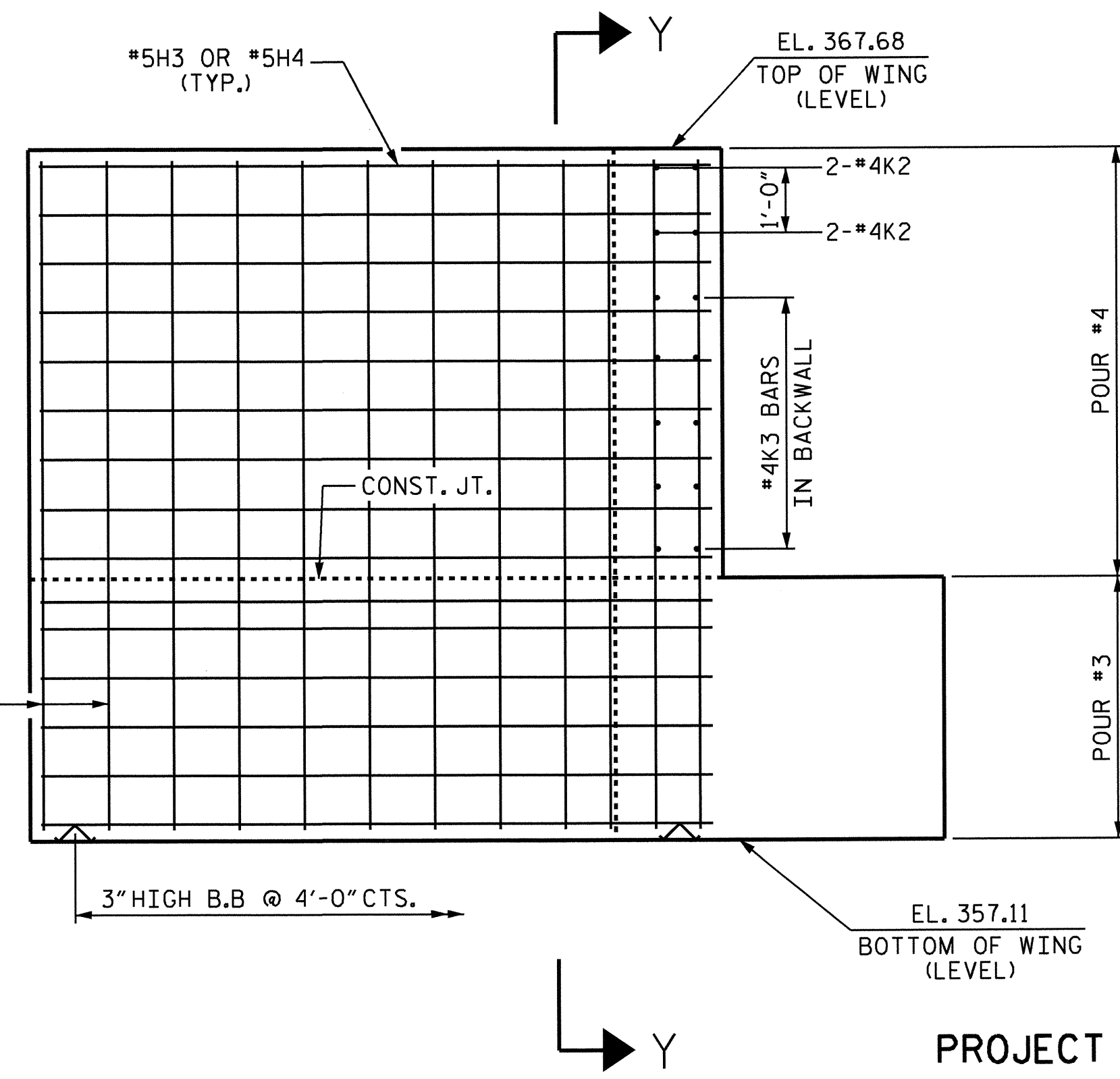
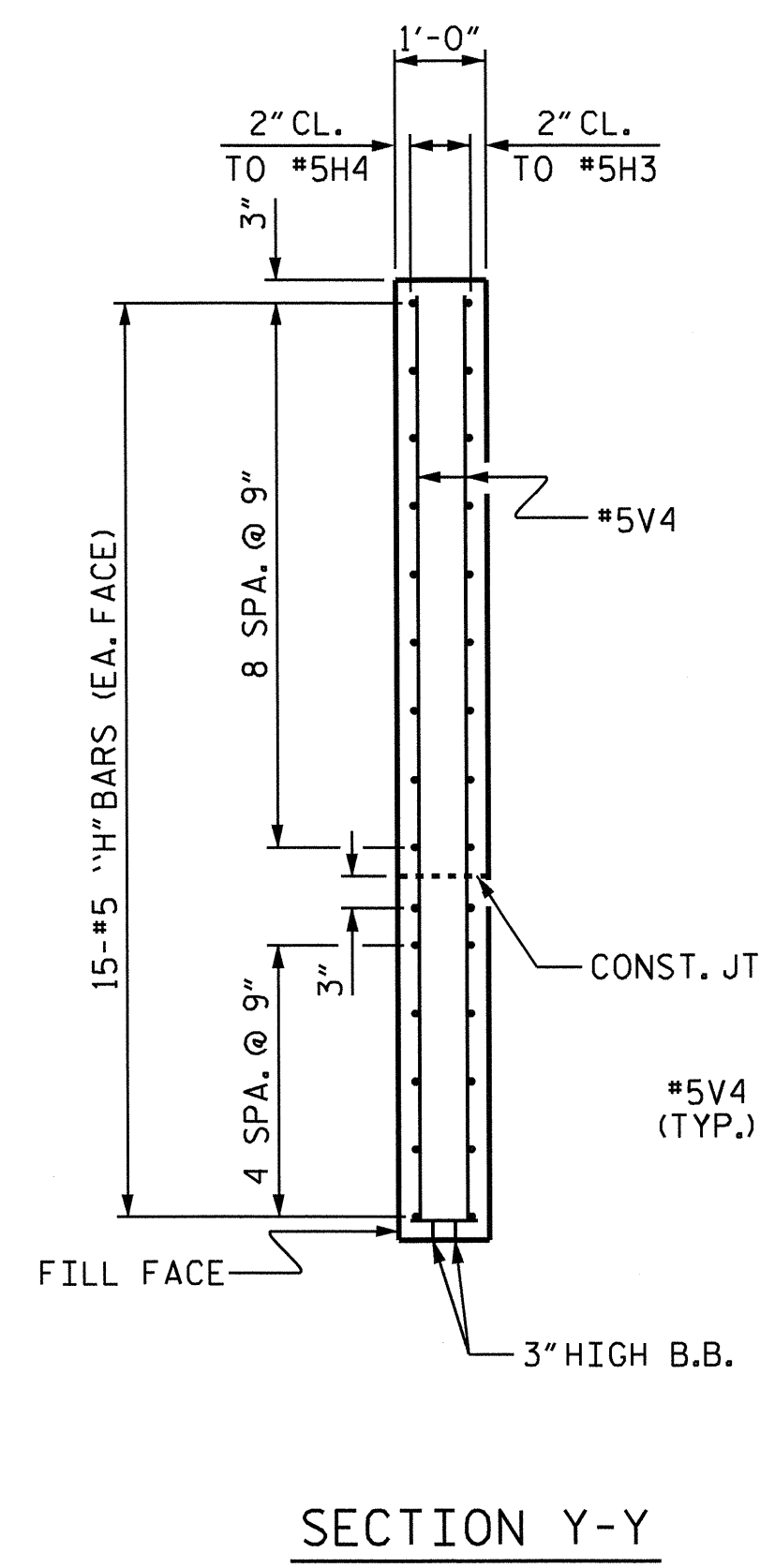
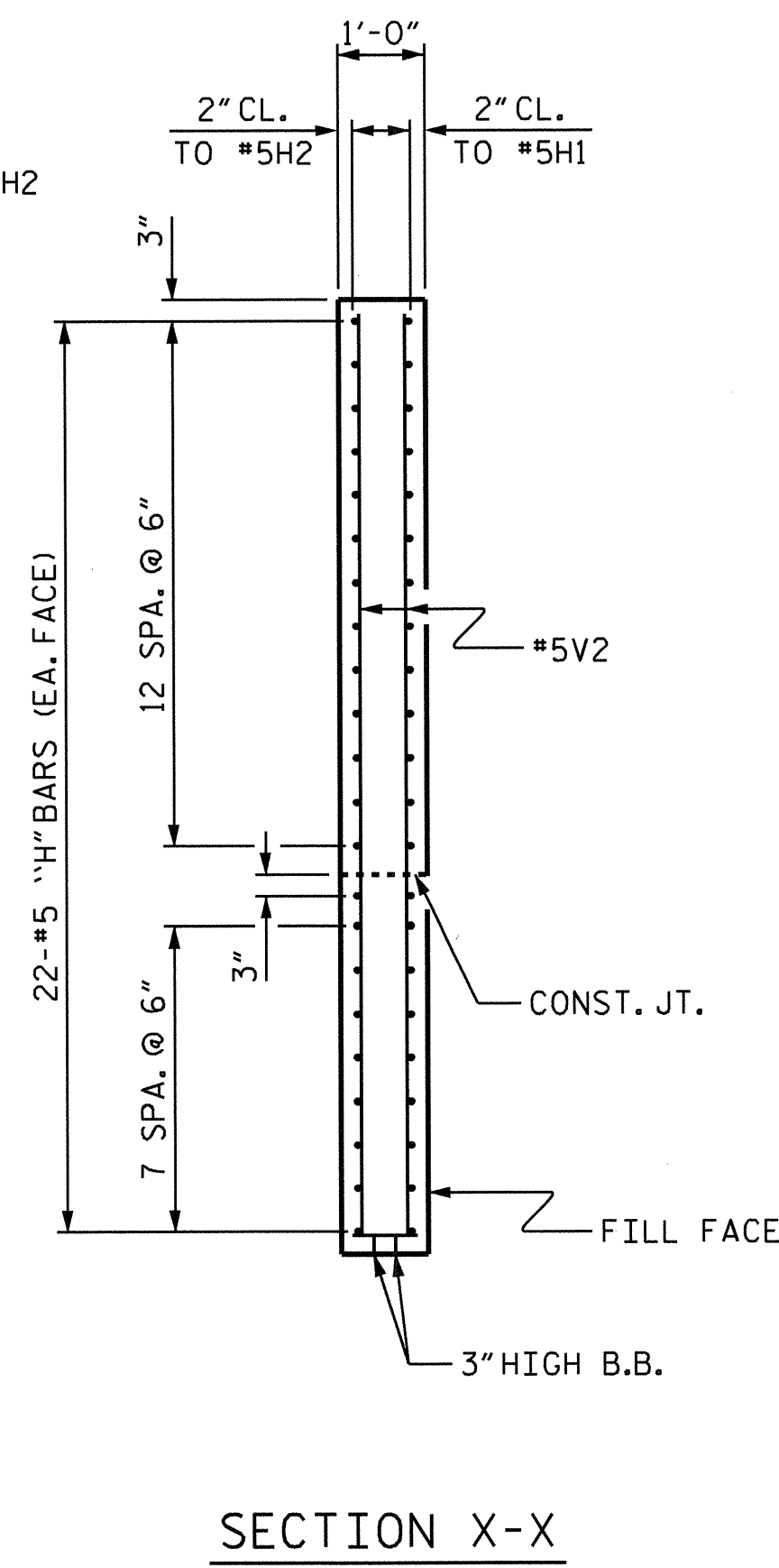
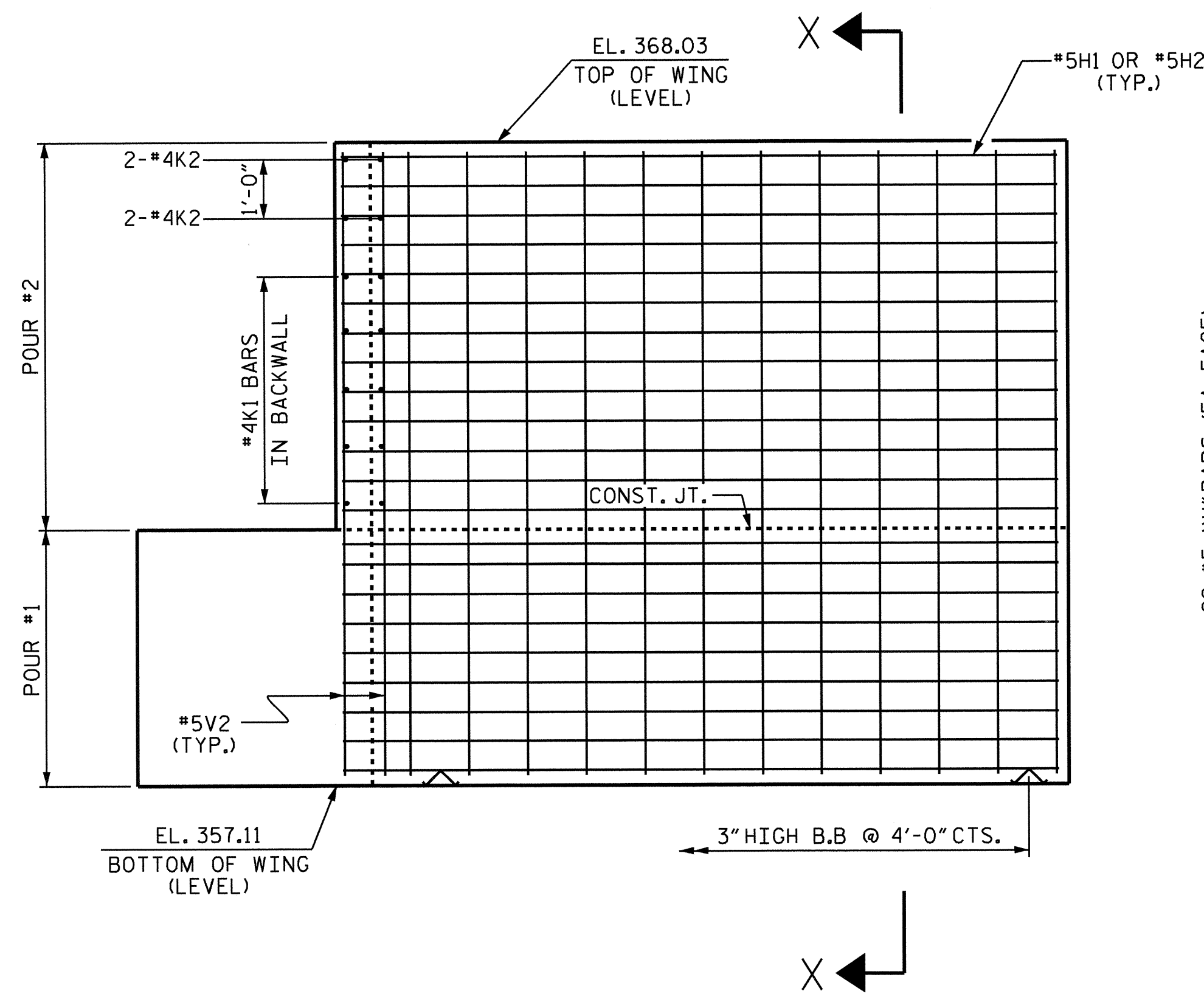
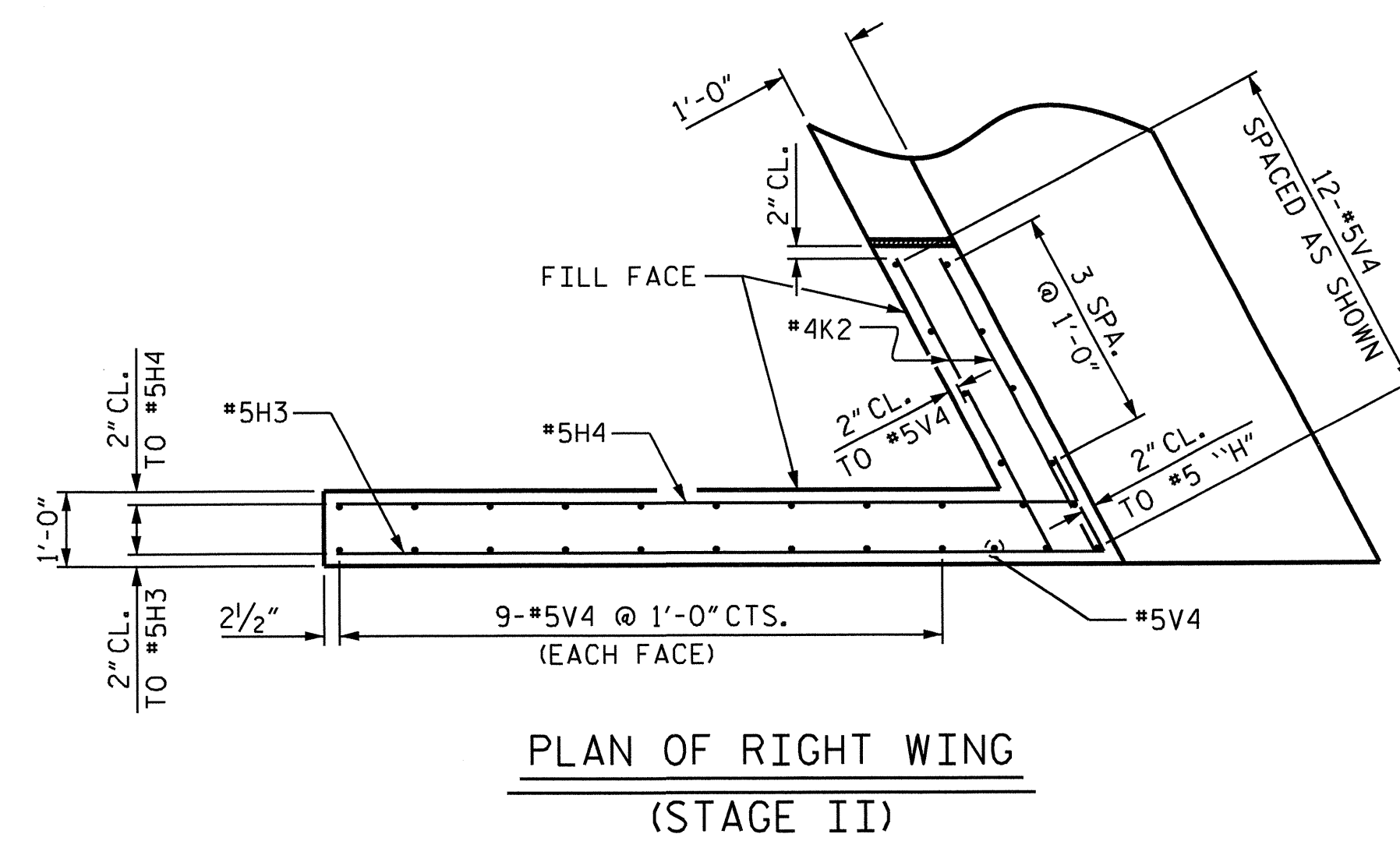
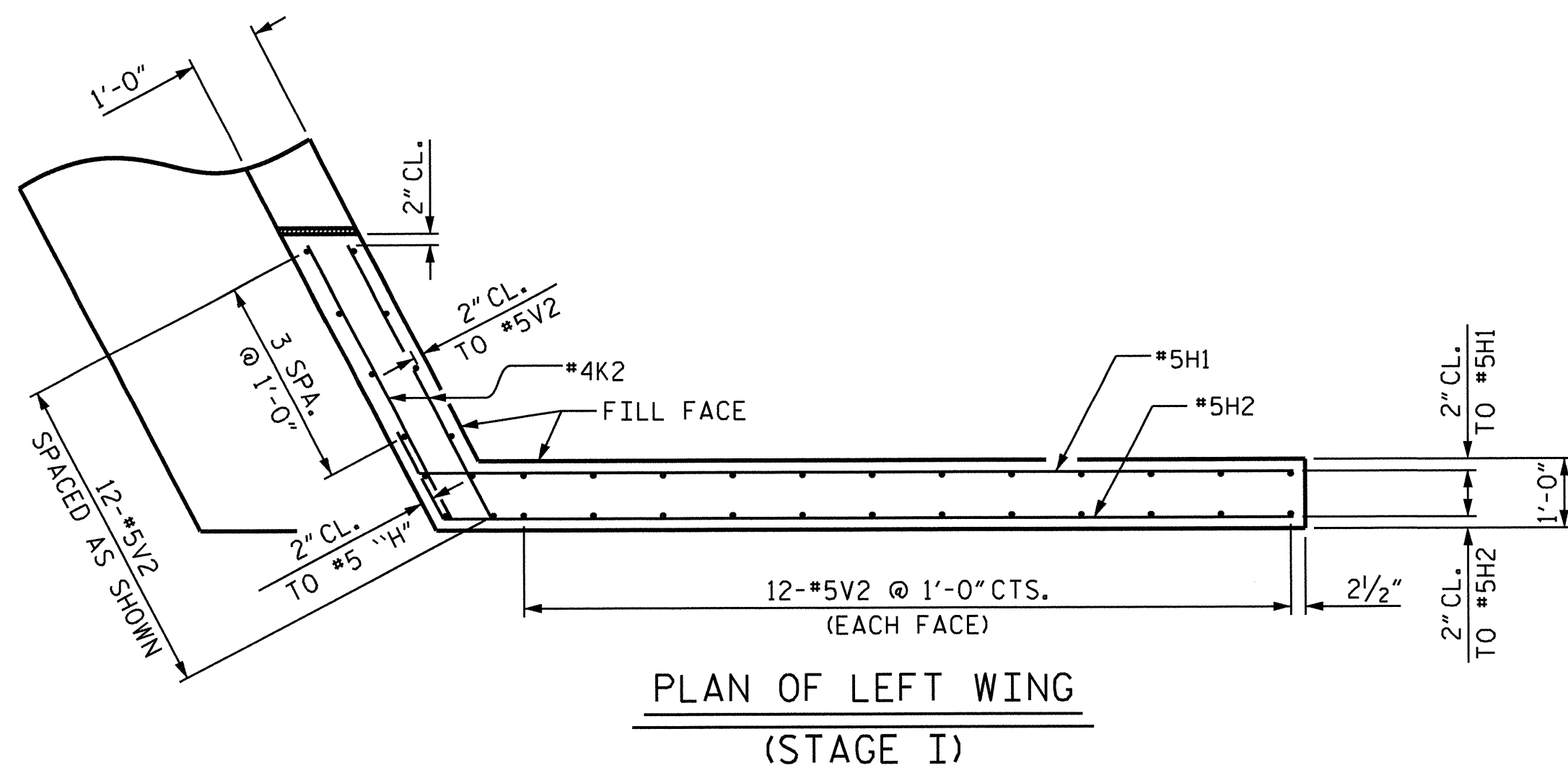
SHEET 1 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-36
SUBSTRUCTURE END BENT #1 (STAGE I)						
REVISIONS						TOTAL SHEETS 52
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



* SEE SHEET 4 OF 4 FOR LOCATION OF ELEVATION

DRAWN BY : T. H. CARROLL DATE : 3/13
CHECKED BY : H. A. LOCKLEAR DATE : 4/13
DESIGN ENGINEER OF RECORD : H. T. DIEU DATE : 11/12/13



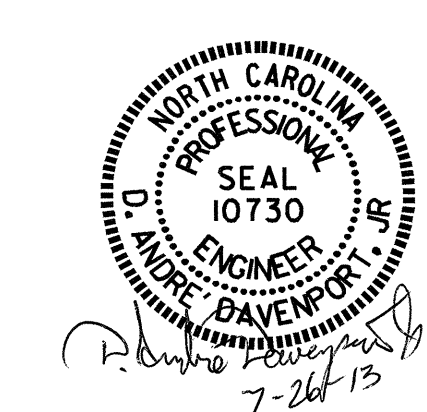
PROJECT NO. U-4432
WAKE COUNTY
 STATION: 28+17.07 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
SUBSTRUCTURE END BENT #1						S-38
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	52
1			3			
2			4			

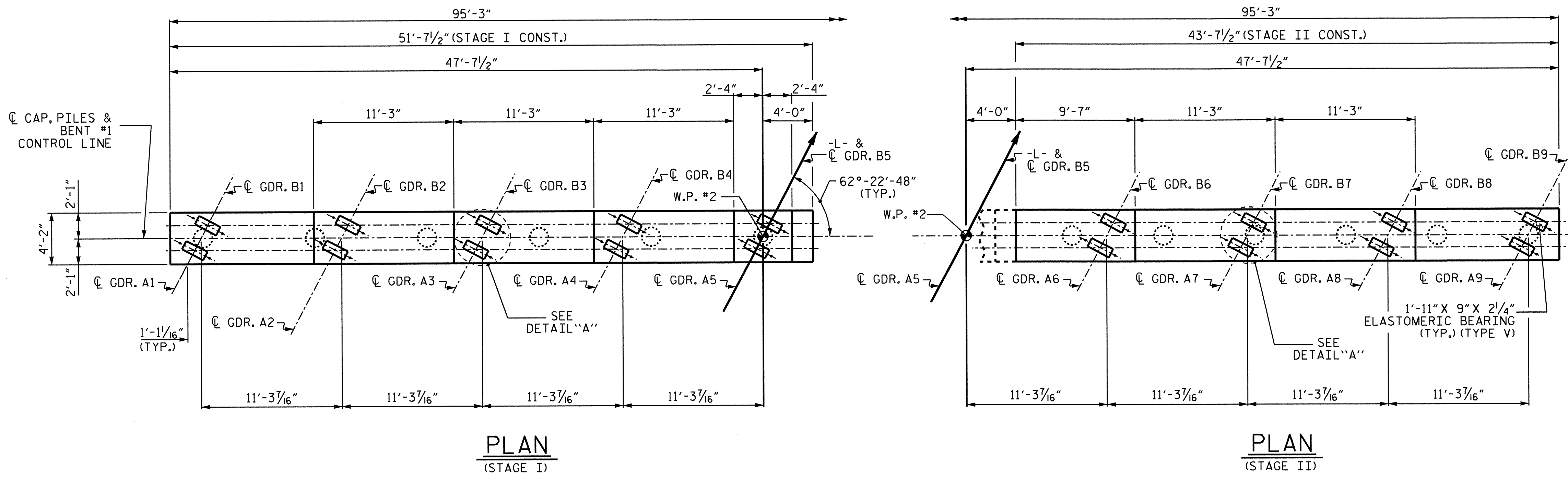
DRAWN BY : T. H. CARROLL DATE : 3/13
 CHECKED BY : H. A. LOCKLEAR DATE : 4/13
 DESIGN ENGINEER OF RECORD : H. T. DIEU DATE : 11/12/13

26-JUL-2013 07:50
 R:\Structures\PLANS\PLANS\U4432.SD.E*.dgn
 dodovenport



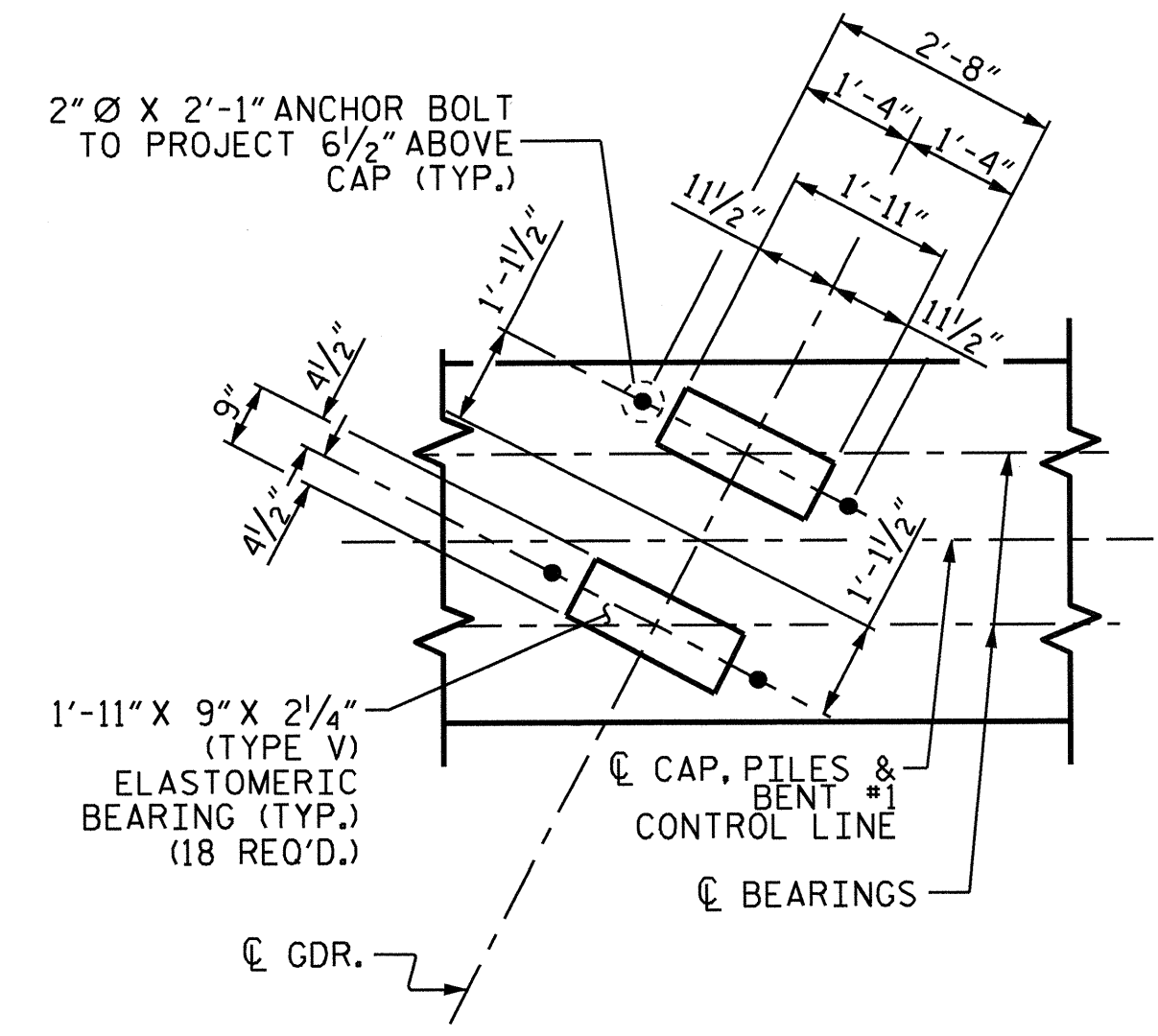
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 FOR REINFORCING STEEL IN PILE, SEE "18" STEEL PIPE PILE" SHEET.
 CONCRETE DISPLAYED BY PP 18 X 0.50 GALVANIZED STEEL PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.
 GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 40 FEET. GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

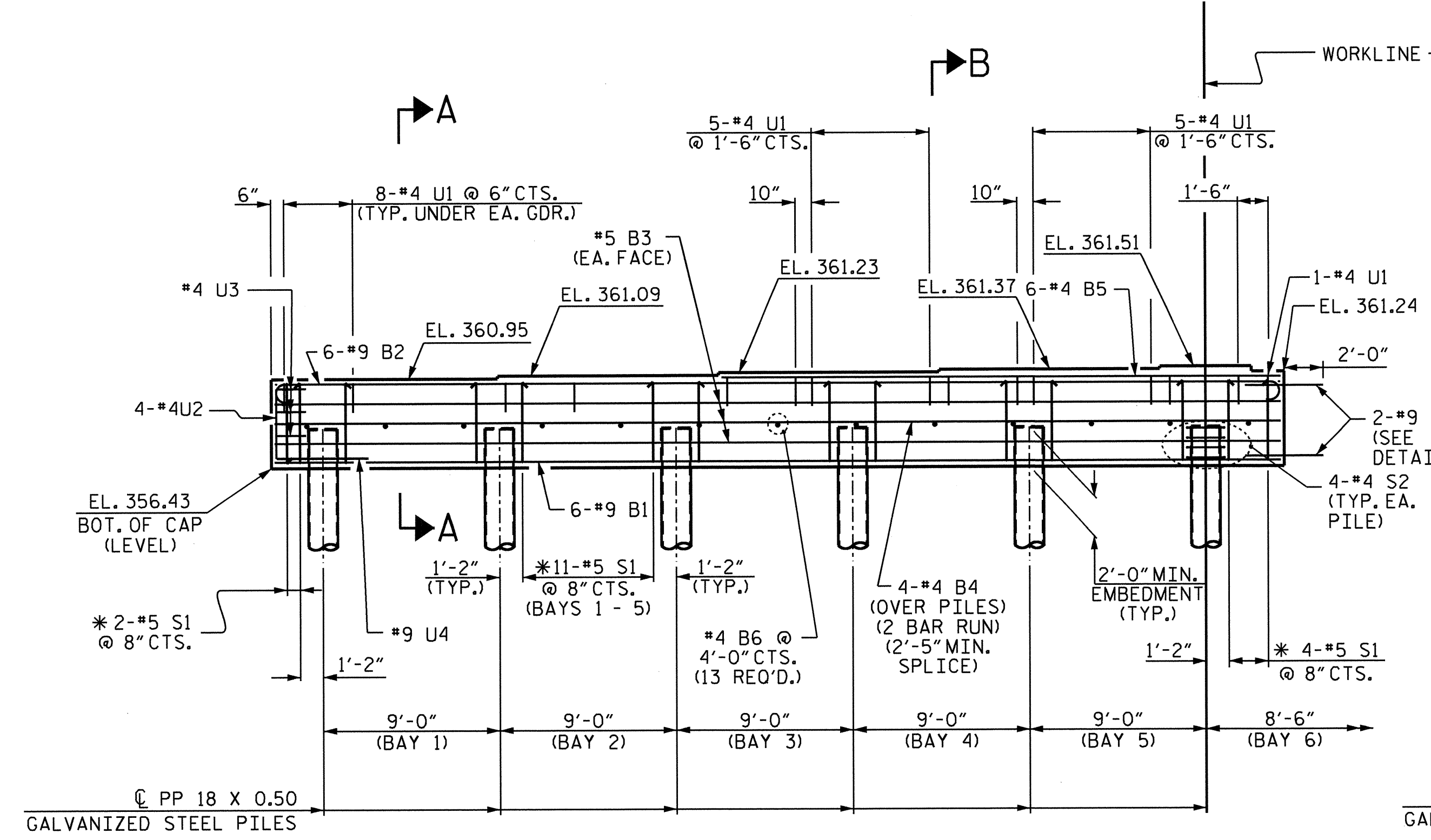


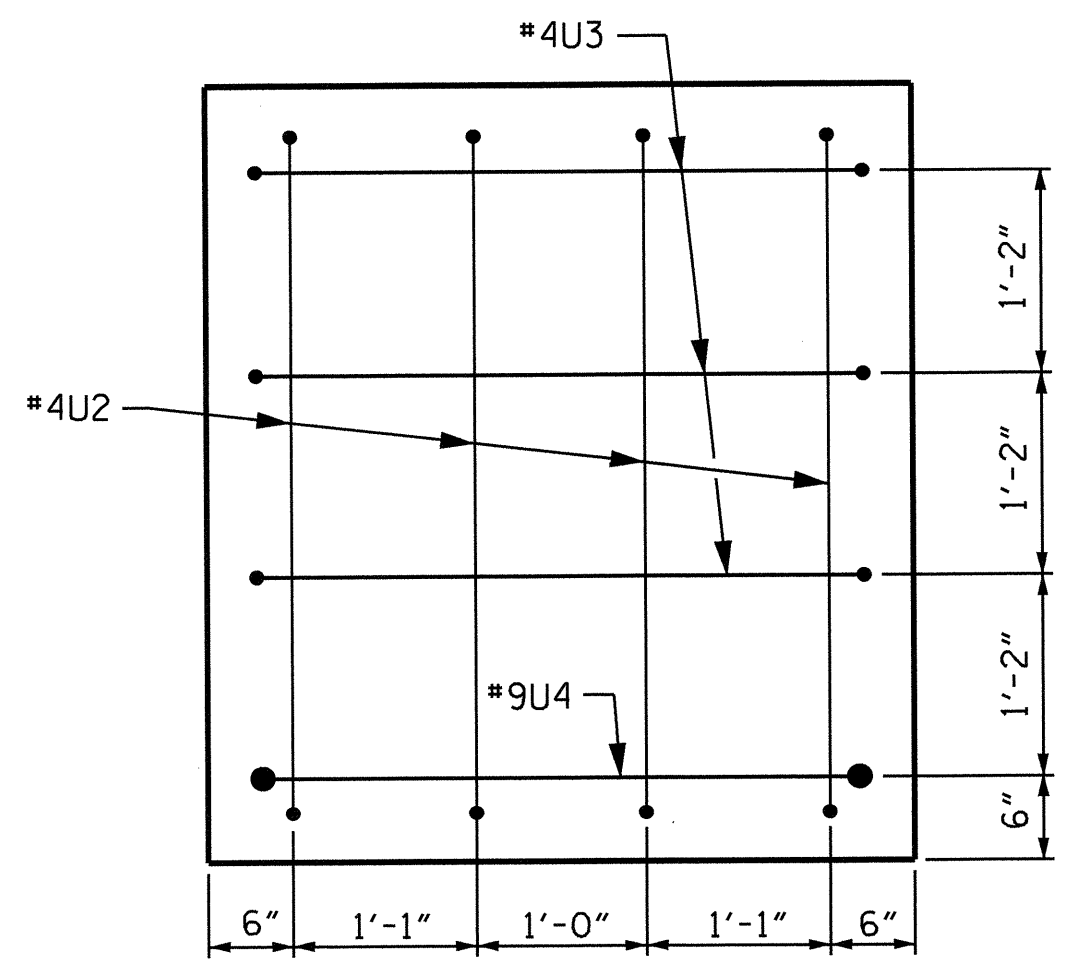
PLAN
(STAGE I)

PLAN
(STAGE II)

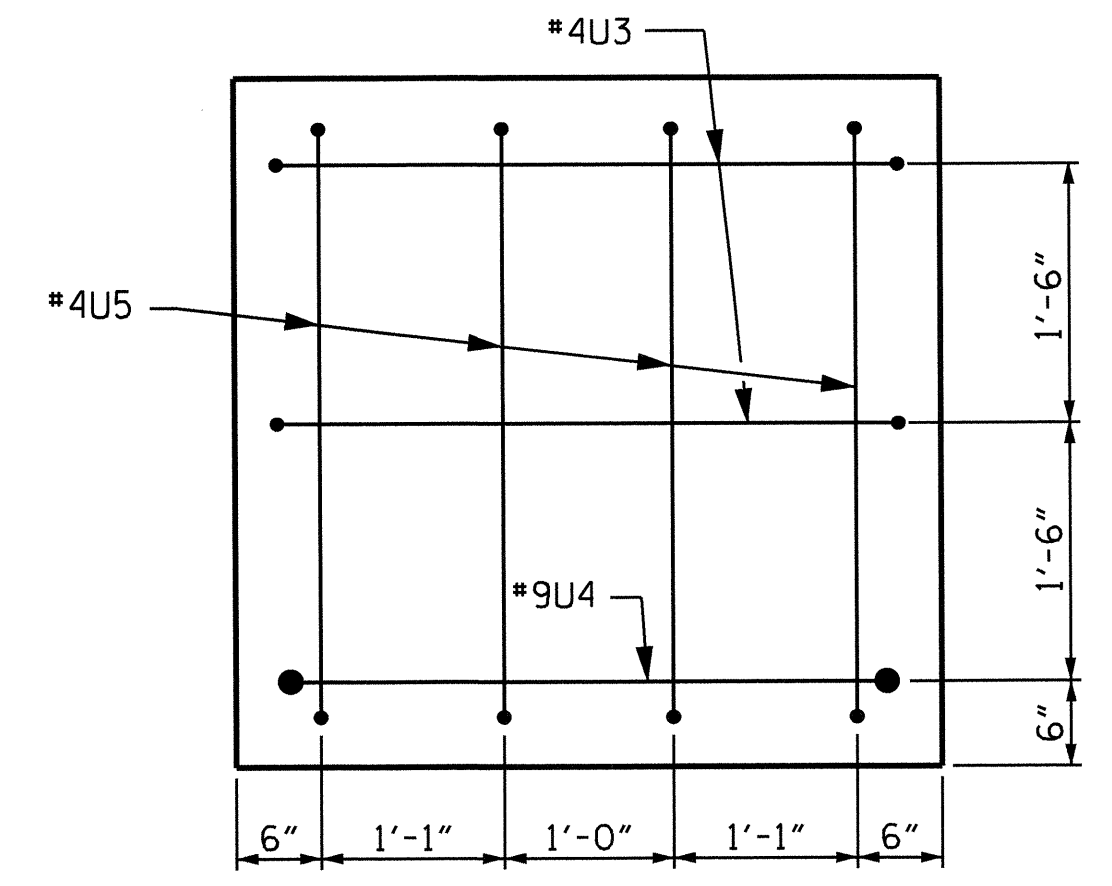


DETAIL "A"
(TYP. EA. GIRDER)

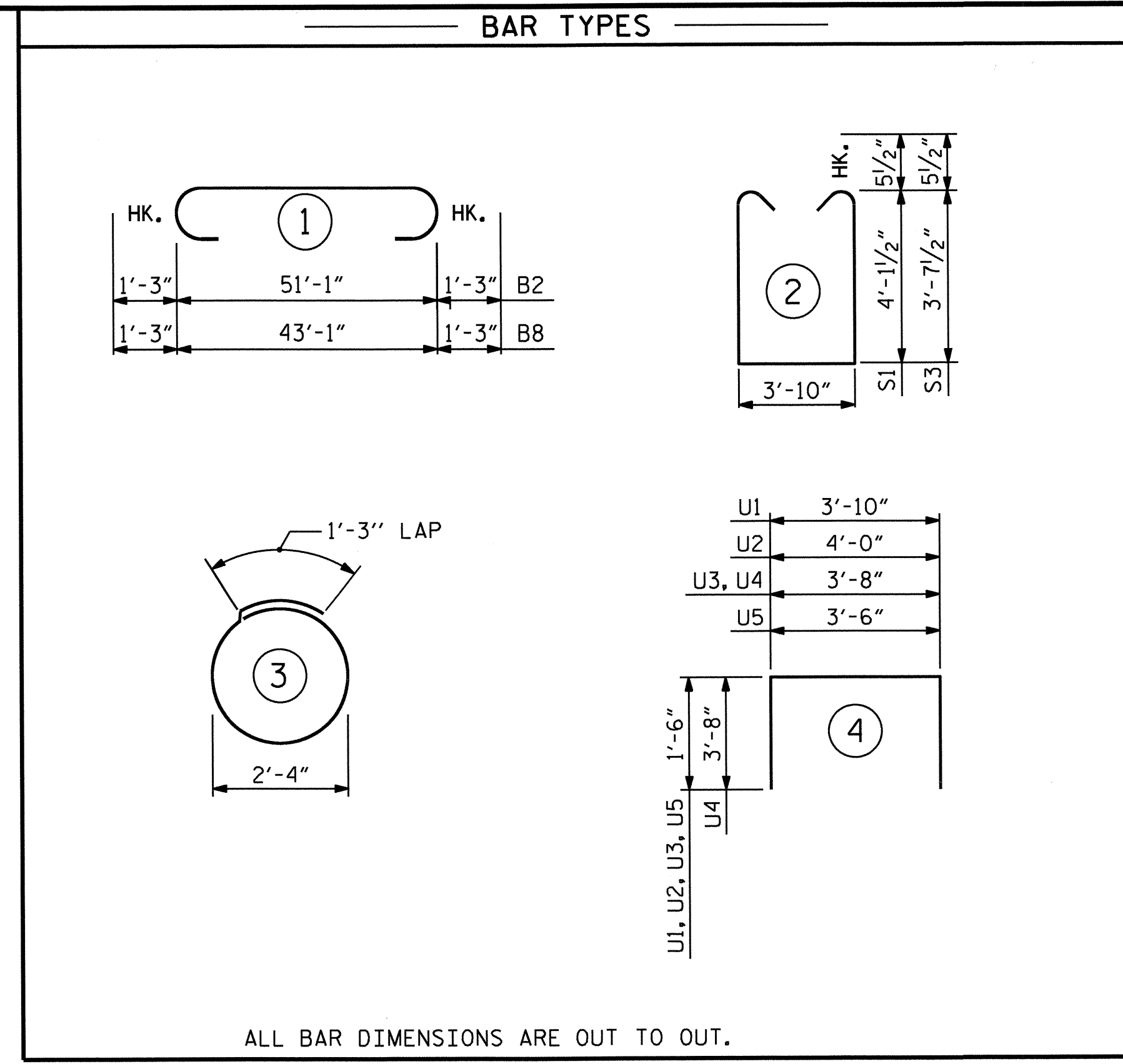




LEFT END VIEW

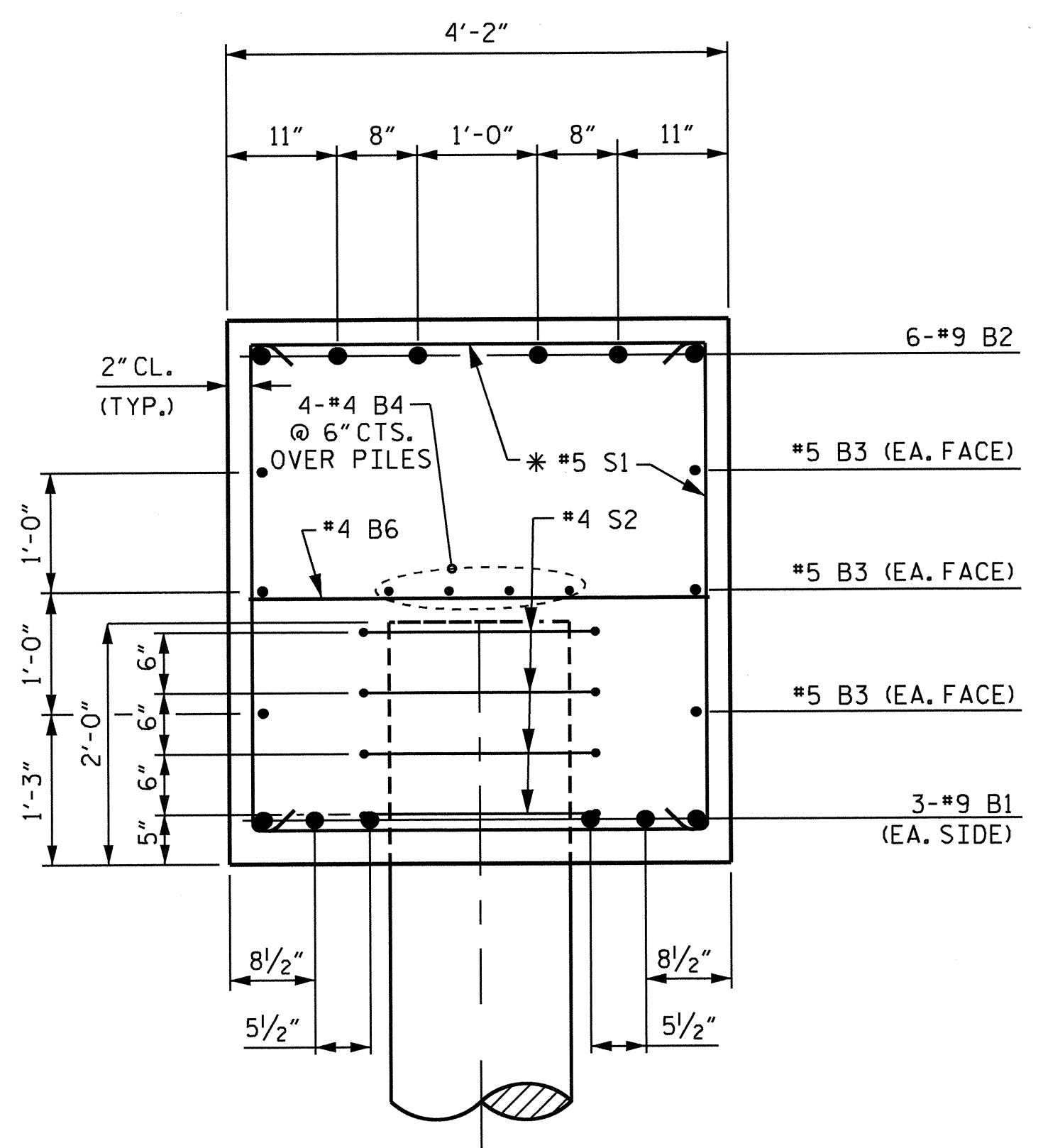


RIGHT END VIEW

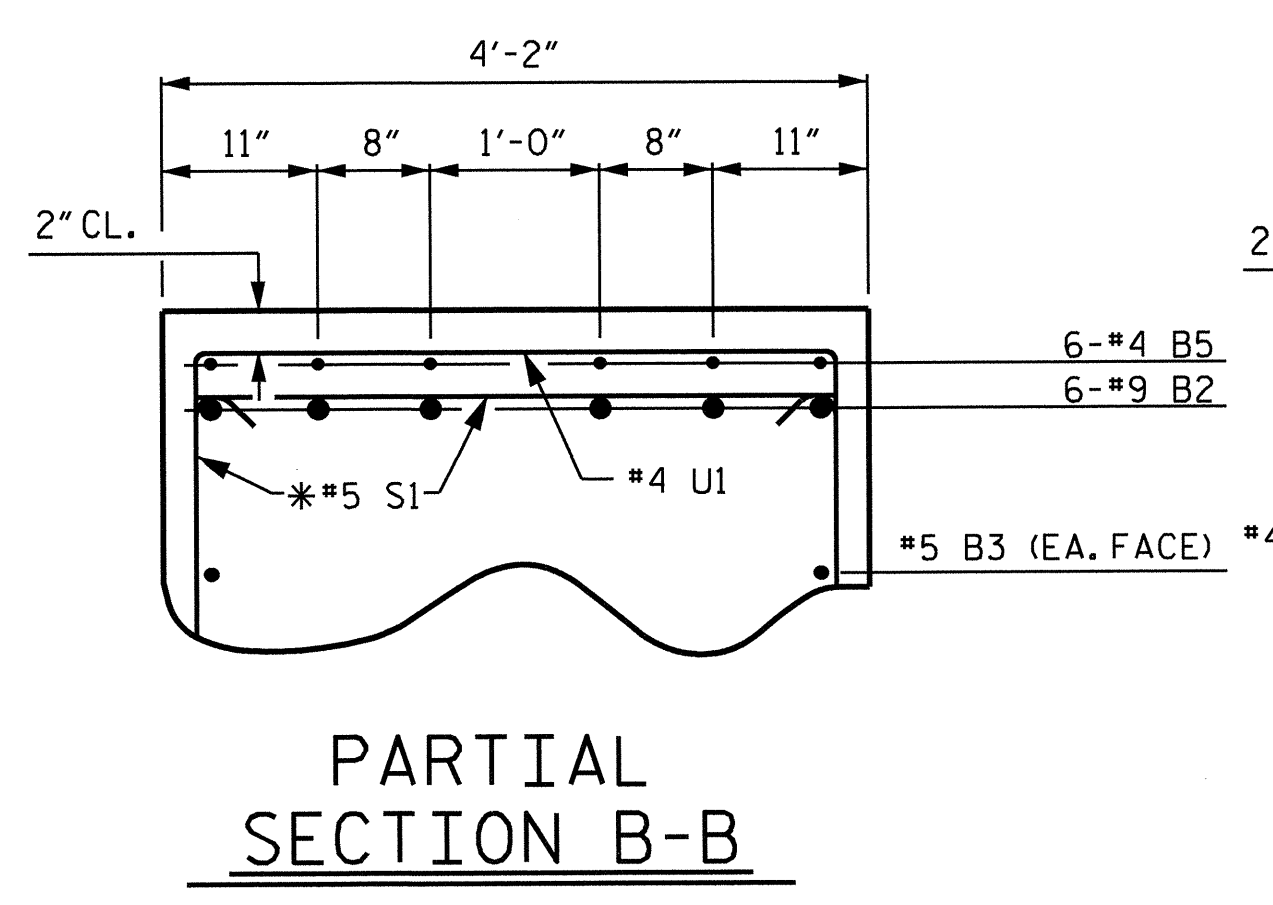


BILL OF MATERIAL BENT 1 (STAGE I)						BILL OF MATERIAL BENT 1 (STAGE II)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#9	STR	51'-3"	1046	B6	13	#4	STR	3'-10"	33
B2	6	#9	1	53'-7"	1093	B7	6	#9	STR	43'-3"	882
B3	6	#5	STR	51'-3"	321	B8	6	#9	1	45'-7"	930
B4	8	#4	STR	26'-11"	144	B9	6	#5	STR	43'-3"	271
B5	6	#4	STR	28'-6"	114	B10	8	#4	STR	22'-11"	122
B6	13	#4	STR	3'-10"	33	B11	6	#4	STR	31'-9"	127
						B12	6	#4	STR	9'-3"	37
D1	4	#9	STR	4'-0"	54						
						S2	24	#4	3	8'-7"	138
S1	61	#5	2	13'-0"	827	S3	37	#5	2	12'-0"	463
S2	24	#4	3	8'-7"	138						
U1	51	#4	4	6'-10"	233	U1	46	#4	4	6'-10"	210
U2	4	#4	4	7'-0"	19	U3	2	#4	4	6'-8"	9
U3	3	#4	4	6'-8"	13	U4	1	#9	4	11'-0"	37
U4	1	#9	4	11'-0"	37	U5	4	#4	4	6'-6"	17
REINFORCING STEEL = 4072 LBS						REINFORCING STEEL = 3276 LBS					
CLASS A CONCRETE CAP 37.2 C.Y.						CLASS A CONCRETE CAP 28.7 C.Y.					
PP 18 X 0.50 GALVANIZED STEEL PILES No. 6 300 LIN. FT.						PP 18 X 0.50 GALVANIZED STEEL PILES No. 6 300 LIN. FT.					
STEEL PILE POINTS EA. 6						STEEL PILE POINTS EA. 6					

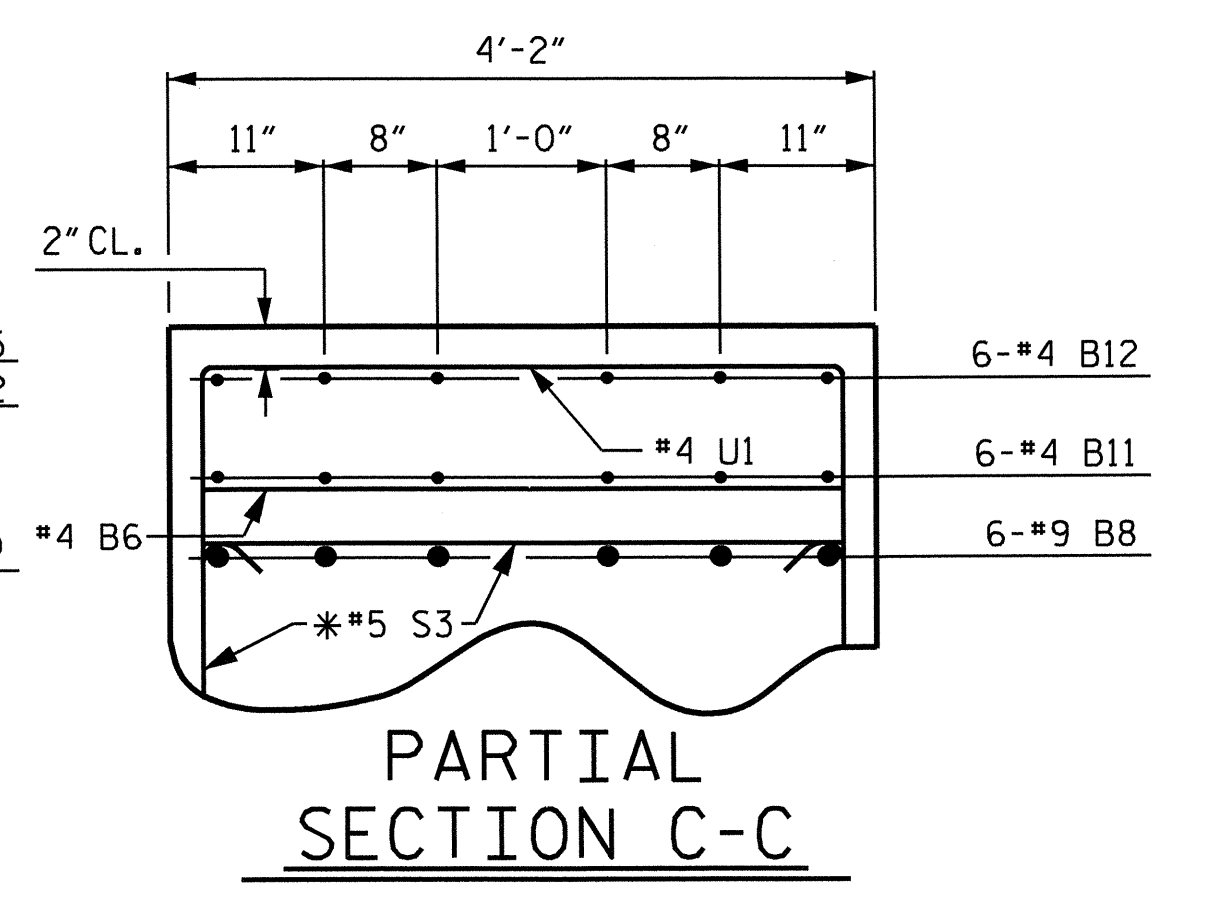
NOTE: THE VOLUME OF CONCRETE DISPLACED BY THE PIPE PILES HAS BEEN DEDUCTED FROM THE TOTAL VOLUME.



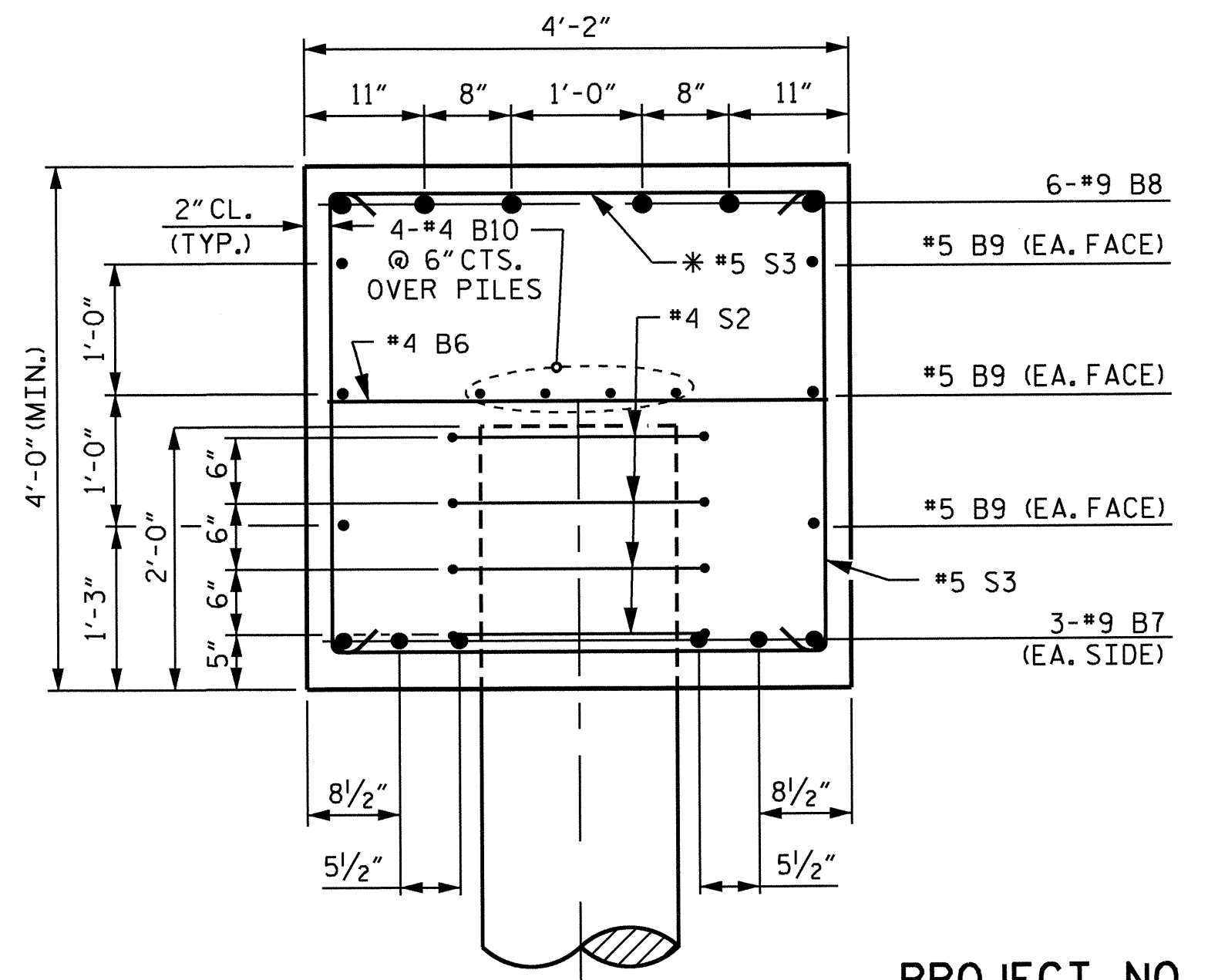
SECTION A-A



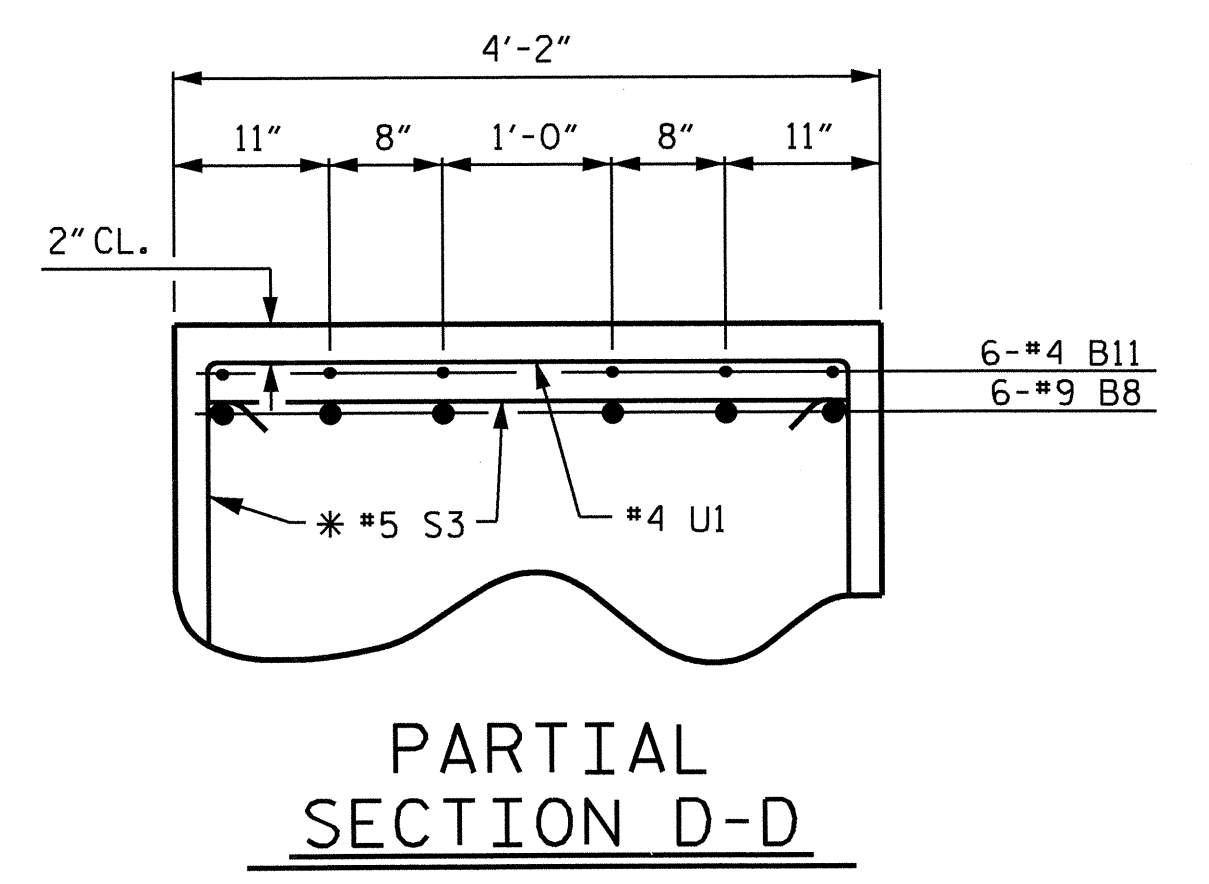
PARTIAL SECTION B-B



PARTIAL SECTION C-C



SECTION E-E



PARTIAL SECTION D-D

* INVERT ALTERNATE STIRRUPS

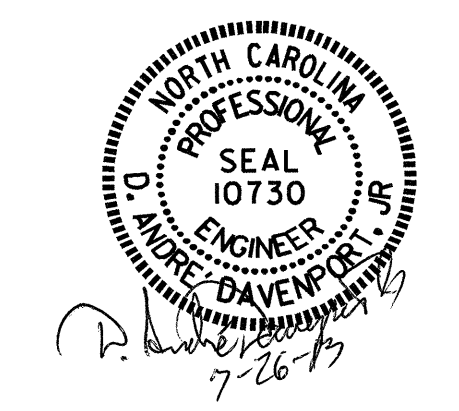
PROJECT NO. U-4432
 WAKE COUNTY
 STATION: 28+17.07 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-41
1			3			TOTAL SHEETS
2			4			52

DRAWN BY: J.P. MCCARTHA DATE: 3/13
 CHECKED BY: R.P. PATEL DATE: 3/13
 DESIGN ENGINEER OF RECORD: H. T. DIEU DATE: 11/12/13



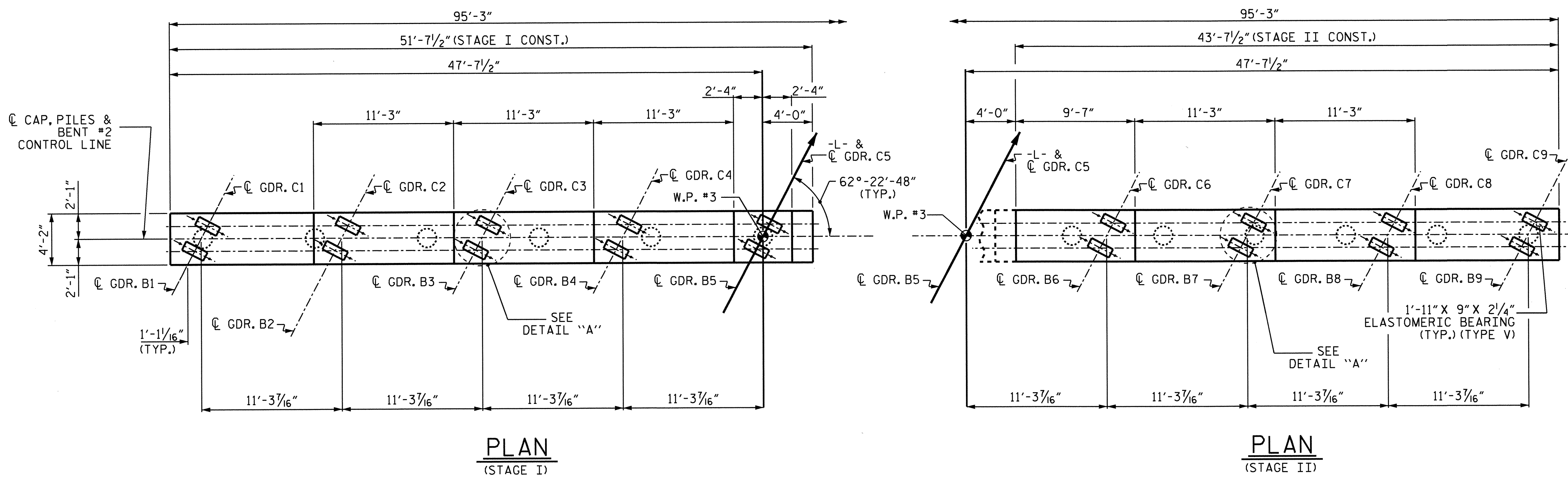
NOTES

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

FOR REINFORCING STEEL IN PILE, SEE "18" STEEL PIPE PILE" SHEET.

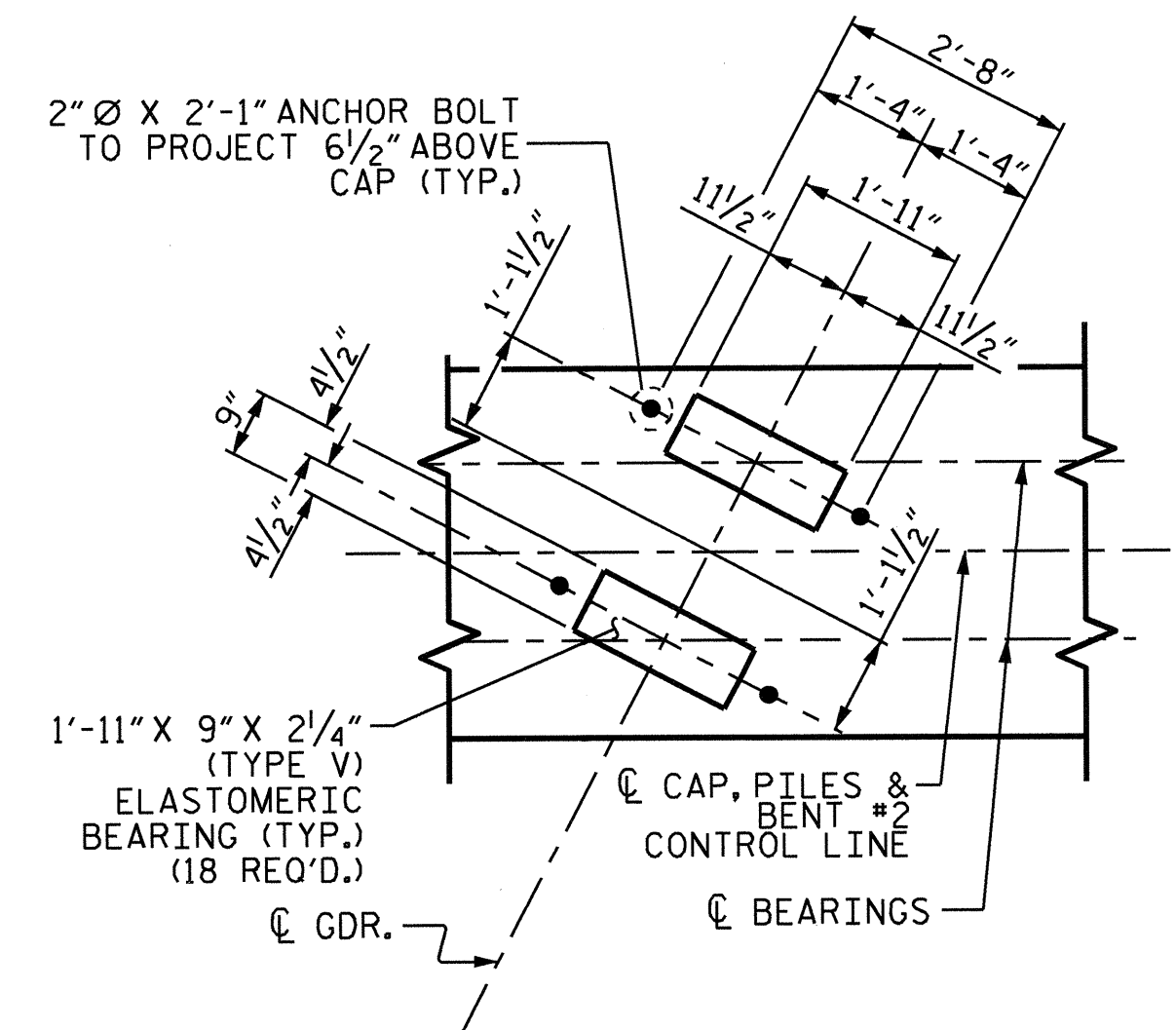
CONCRETE DISPLAYED BY PP 18 X 0.50 GALVANIZED STEEL PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 40 FEET. GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

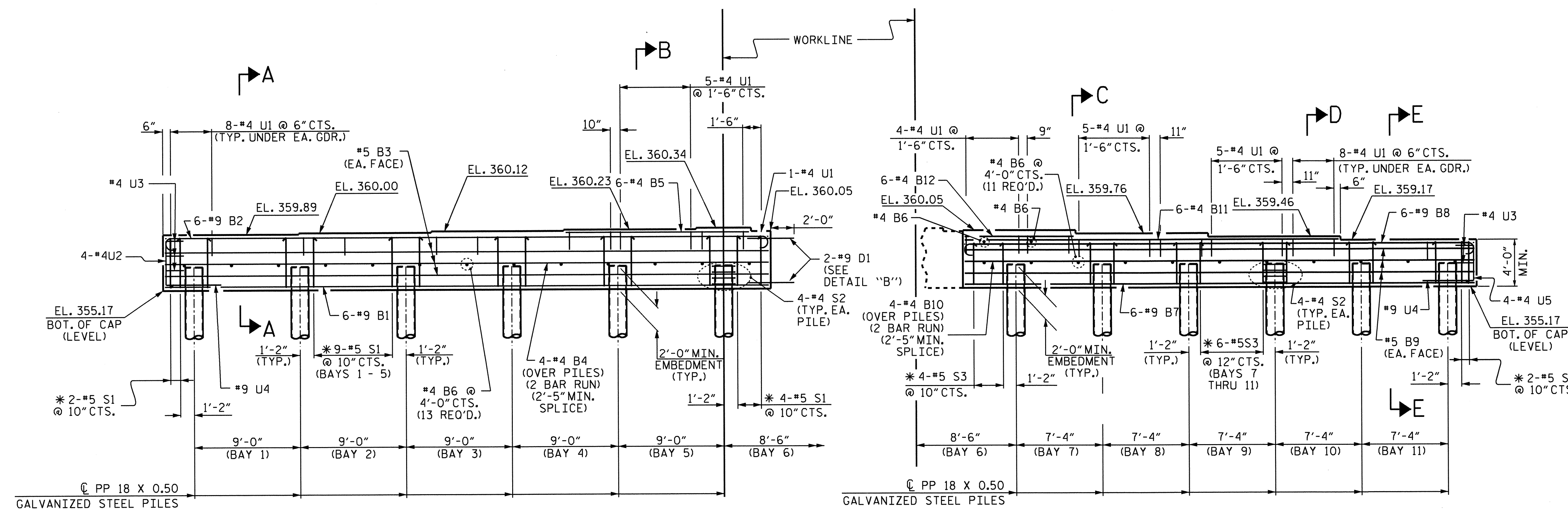


PLAN
(STAGE I)

PLAN
(STAGE II)

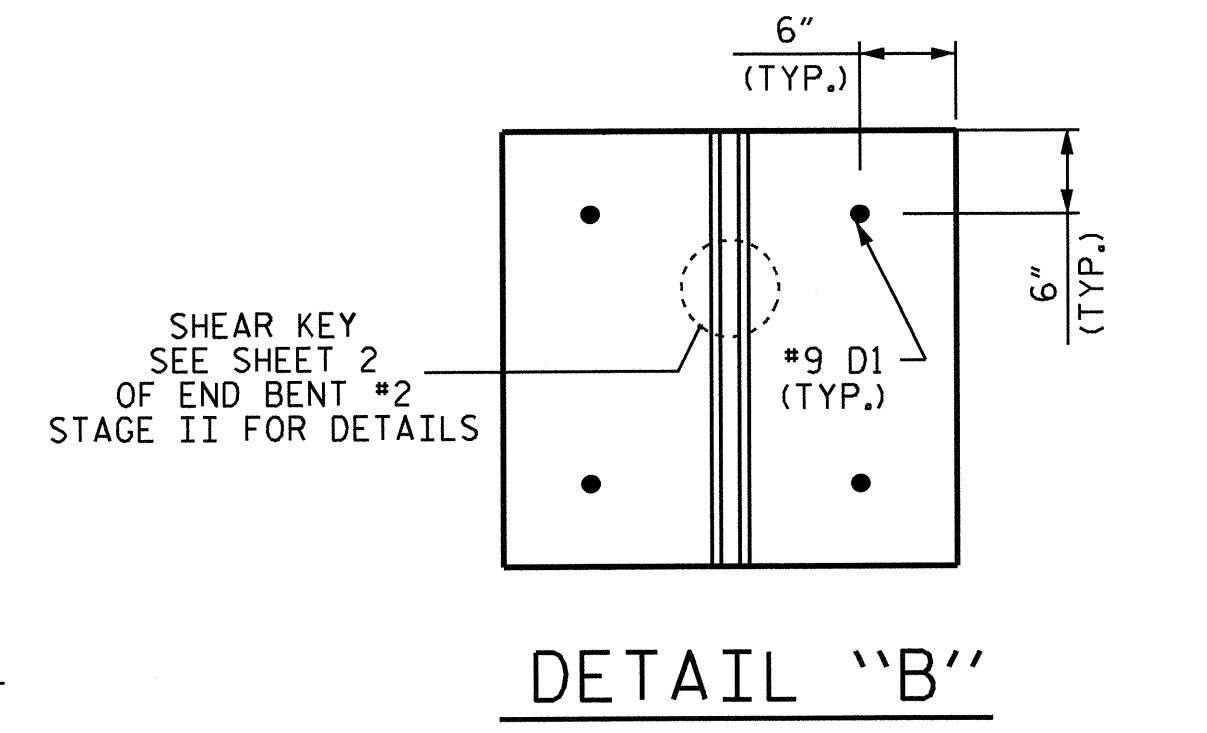


DETAIL "A"
(TYP. EA. GIRDER)



ELEVATION
(STAGE I)

ELEVATION
(STAGE II)

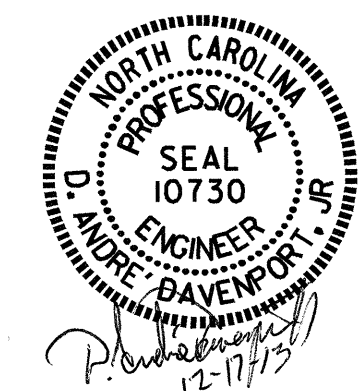


DETAIL "B"

PROJECT NO. U-4432
WAKE COUNTY
 STATION: 28+17.07 -L-

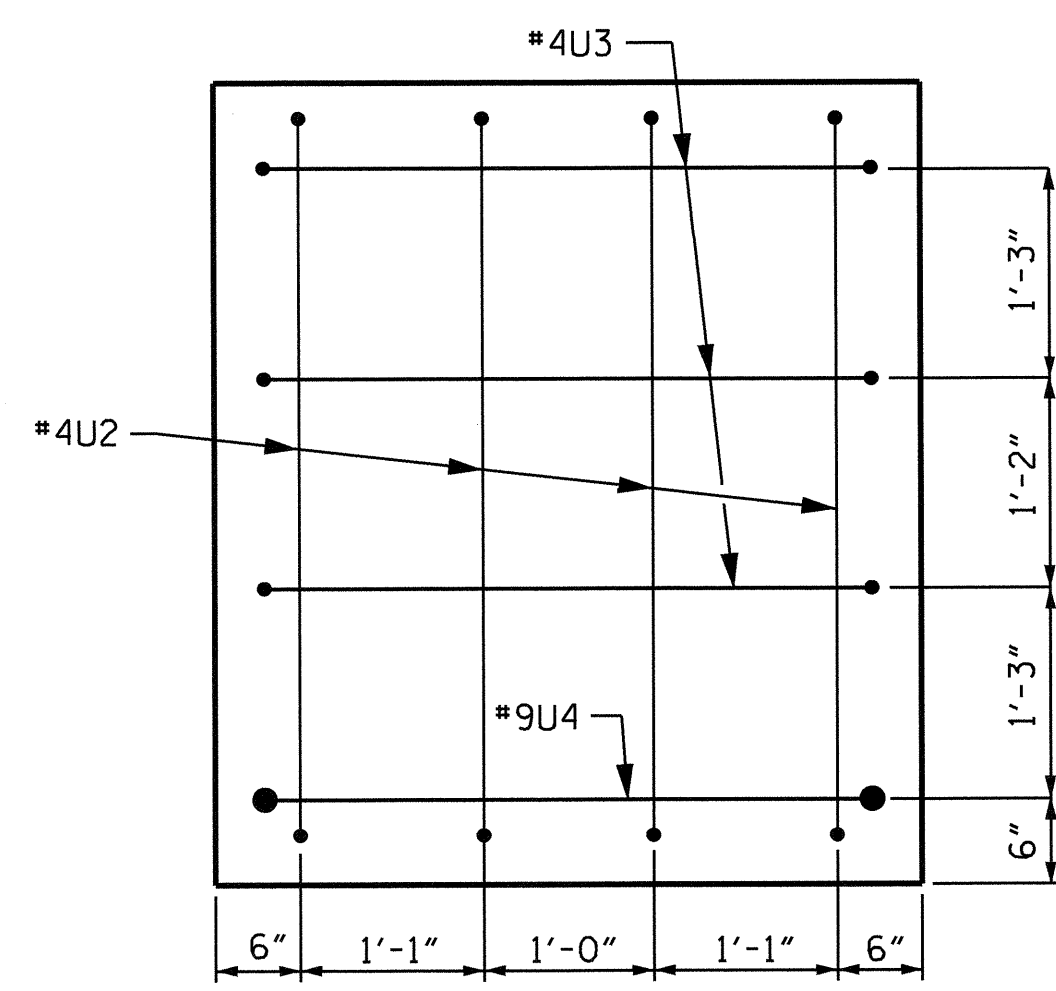
SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
BENT #2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-42
					TOTAL SHEETS 52

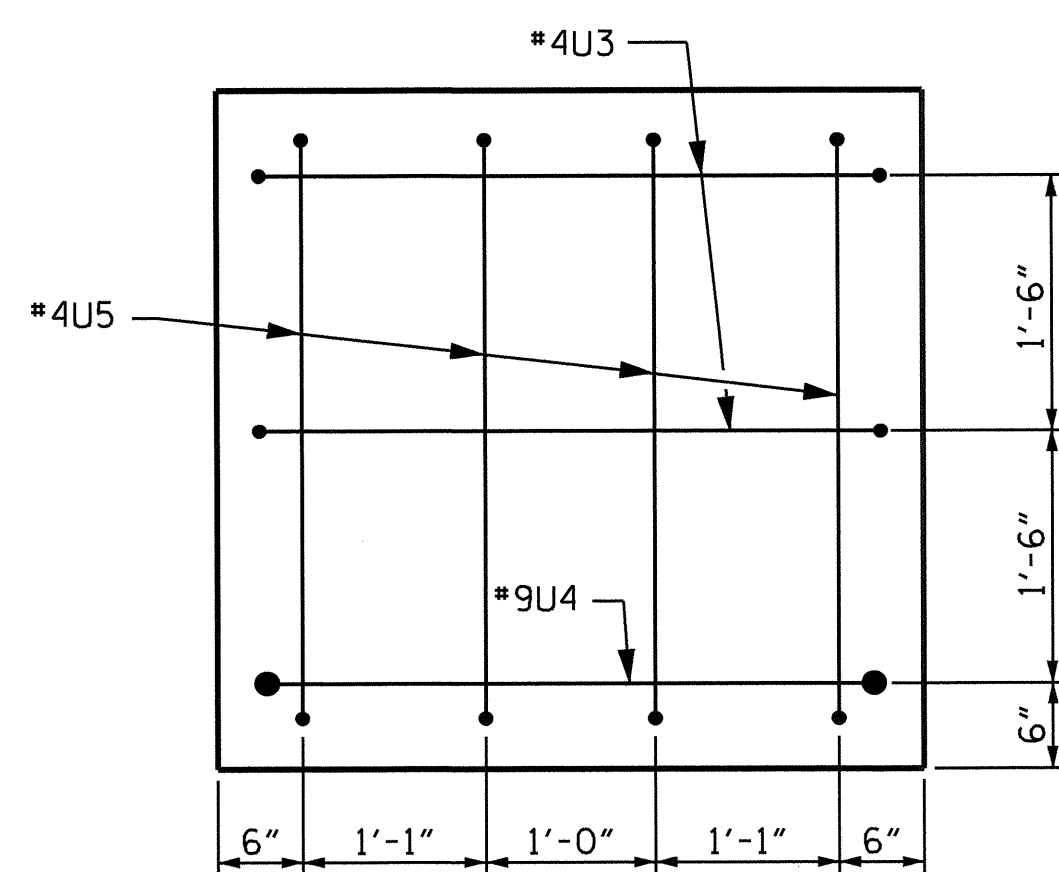


DRAWN BY: J.P. MCCARTHA DATE: 3/13
 CHECKED BY: R.P. PATEL DATE: 3/13
 DESIGN ENGINEER OF RECORD: H.T. DIEU DATE: 11/12/13

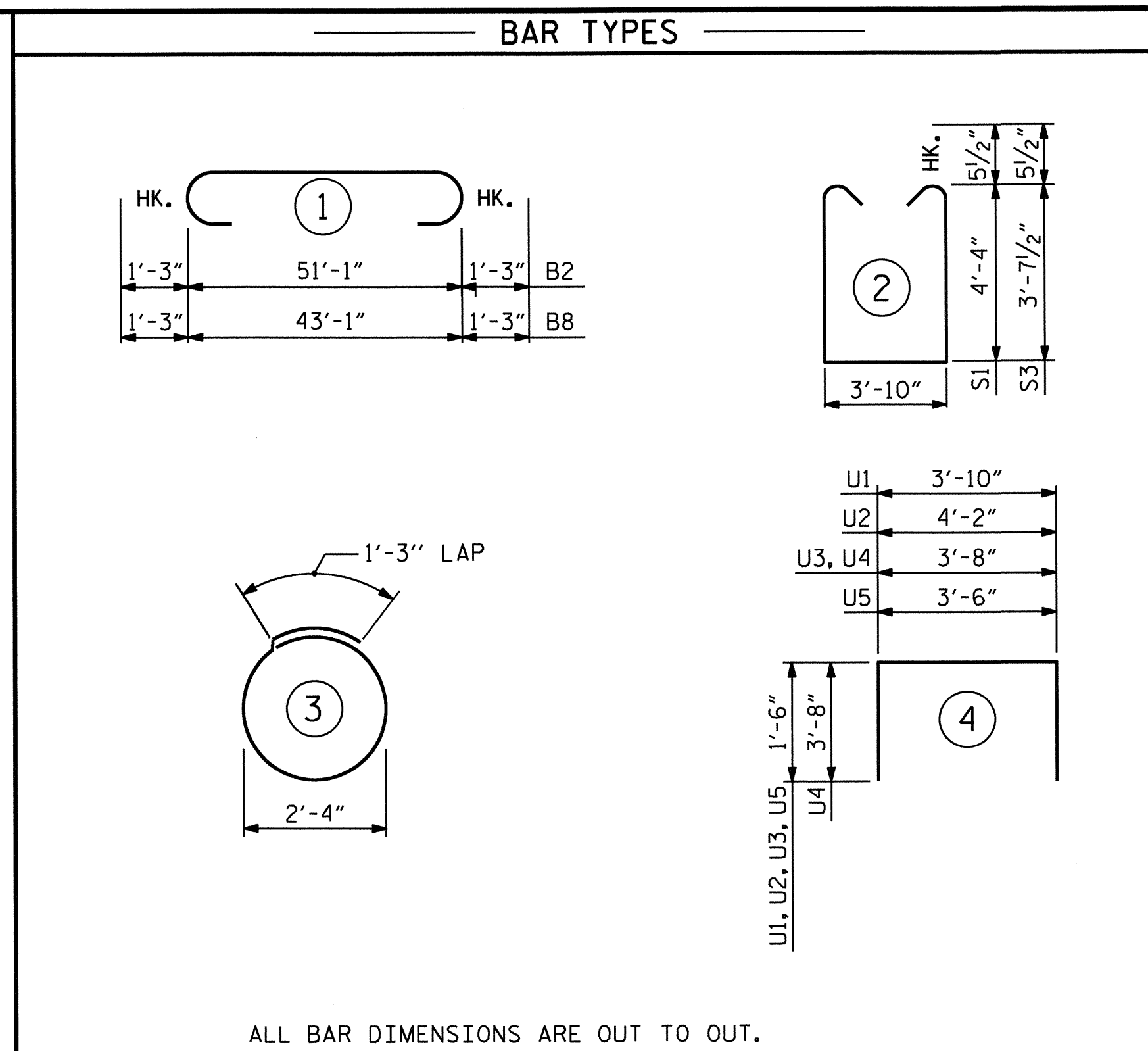
* INVERT ALTERNATE STIRRUPS



LEFT END VIEW

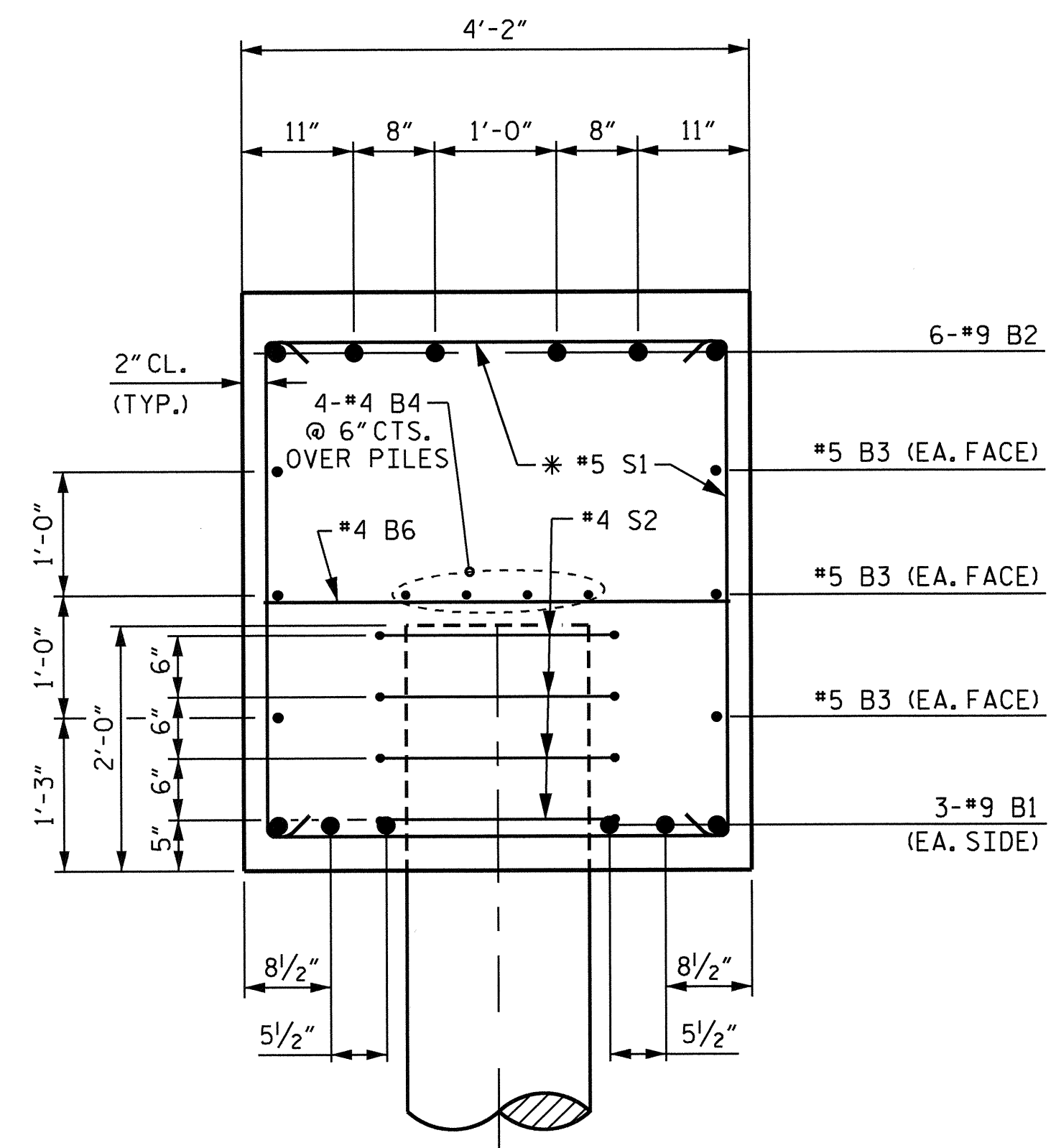


RIGHT END VIEW

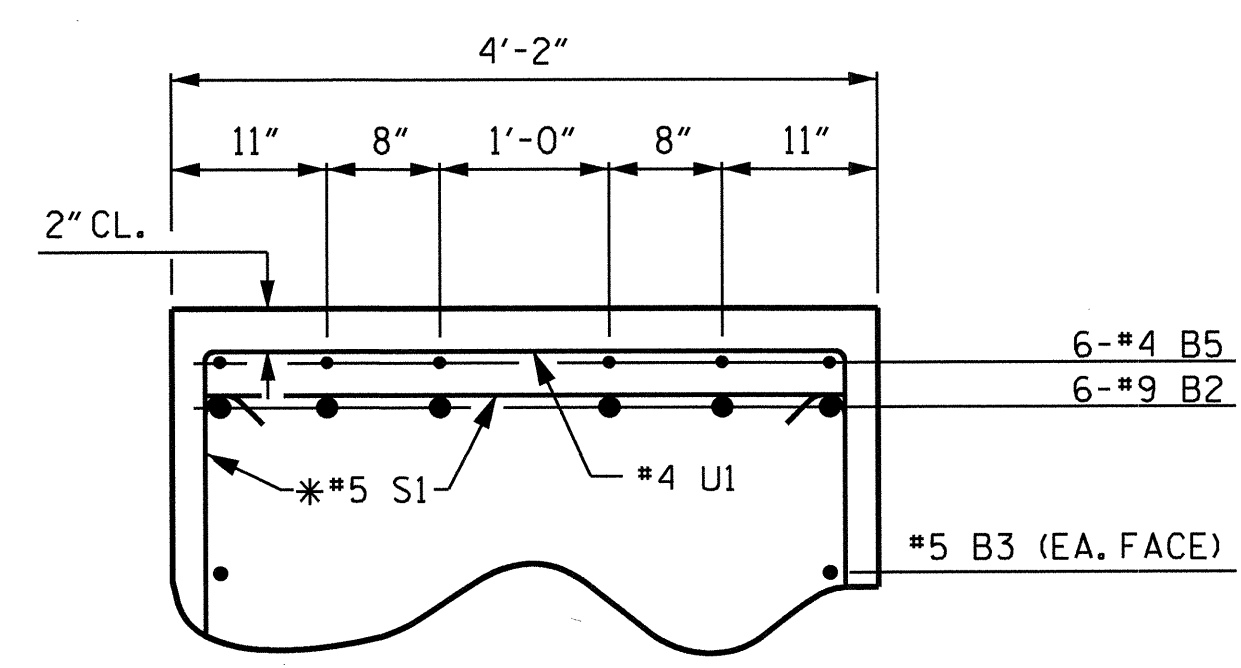


BILL OF MATERIAL BENT 2 (STAGE I)						BILL OF MATERIAL BENT 2 (STAGE II)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#9	STR	51'-3"	1046	B6	13	#4	STR	3'-10"	33
B2	6	#9	1	53'-7"	1093	B7	6	#9	STR	43'-3"	882
B3	6	#5	STR	51'-3"	321	B8	6	#9	1	45'-7"	930
B4	8	#4	STR	26'-11"	144	B9	6	#5	STR	43'-3"	271
B5	6	#4	STR	15'-7"	62	B10	8	#4	STR	22'-11"	122
B6	13	#4	STR	3'-10"	33	B11	6	#4	STR	31'-9"	127
						B12	6	#4	STR	9'-3"	37
D1	4	#9	STR	4'-0"	54						
						S2	24	#4	3	8'-7"	138
S1	51	#5	2	13'-5"	714	S3	36	#5	2	12'-0"	451
S2	24	#4	3	8'-7"	138						
						U1	46	#4	4	6'-10"	210
U1	46	#4	4	6'-10"	210	U3	2	#4	4	6'-8"	9
U2	4	#4	4	7'-2"	19	U4	1	#9	4	11'-0"	37
U3	3	#4	4	6'-8"	13	U5	4	#4	4	6'-6"	17
U4	1	#9	4	11'-0"	37						
REINFORCING STEEL = 3884 LBS						REINFORCING STEEL = 3264 LBS					
CLASS A CONCRETE CAP = 38.4 C.Y.						CLASS A CONCRETE CAP = 29.0 C.Y.					
PP 18 X 0.50 GALVANIZED STEEL PILES No. 6 = 300 LIN. FT.						PP 18 X 0.50 GALVANIZED STEEL PILES No. 6 = 300 LIN. FT.					

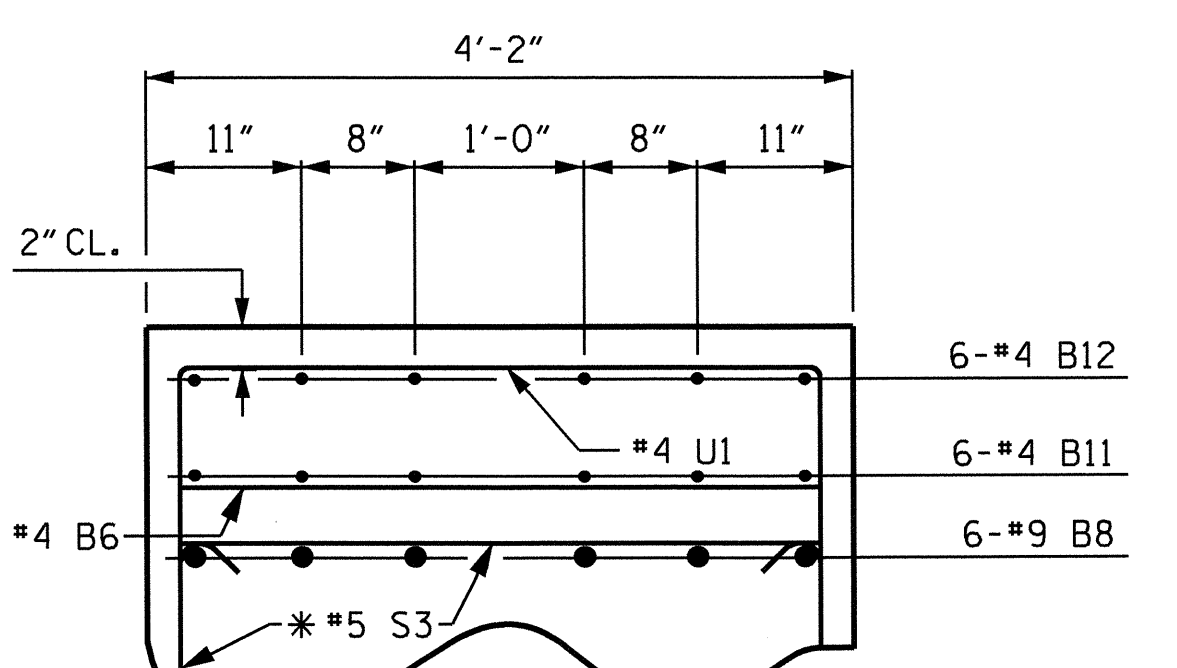
NOTE: THE VOLUME OF CONCRETE DISPLACED BY THE PIPE PILES HAS BEEN DEDUCTED FROM THE TOTAL VOLUME.



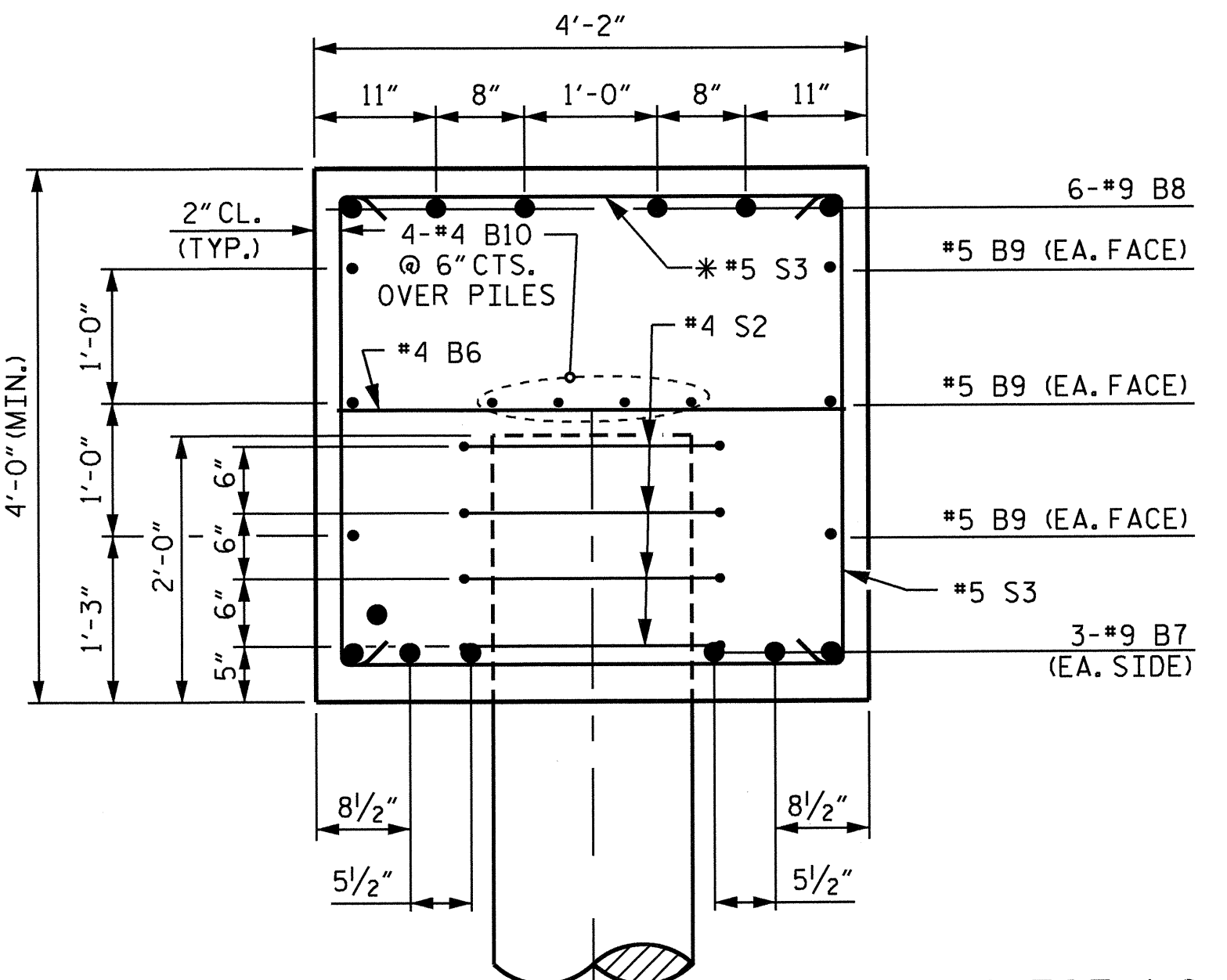
SECTION A-A



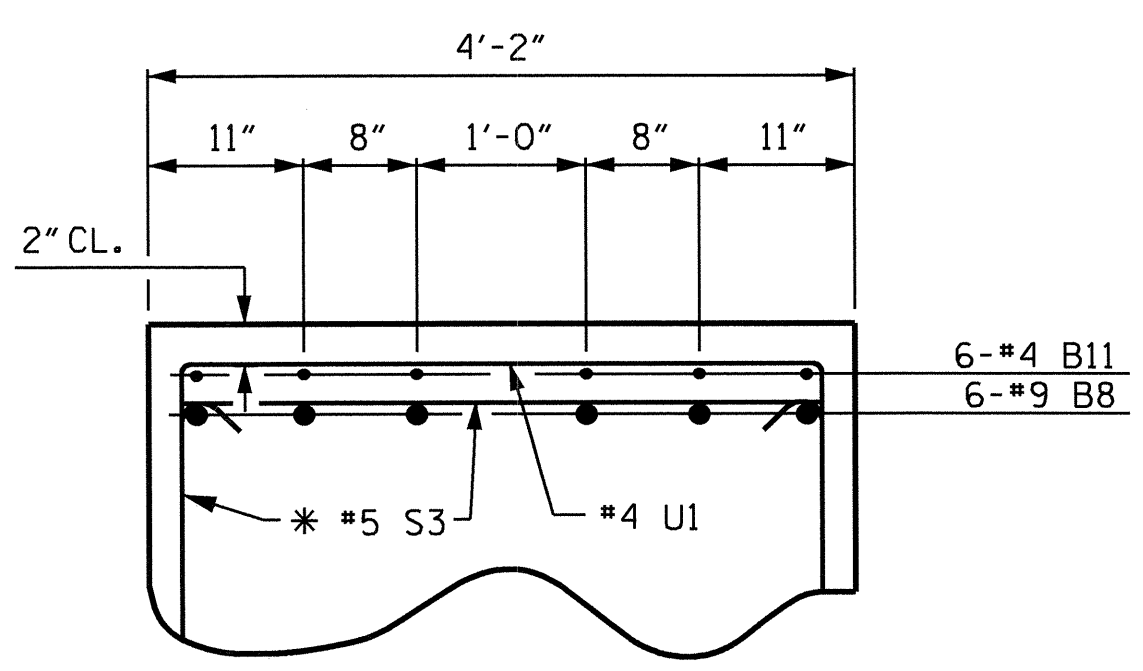
PARTIAL SECTION B-B



PARTIAL SECTION C-C



SECTION E-E



PARTIAL SECTION D-D

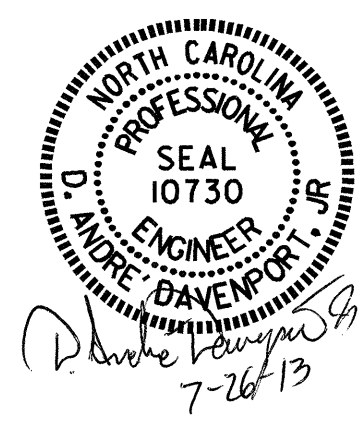
* INVERT ALTERNATE STIRRUPS

PP 18 X 0.50 GALVANIZED STEEL PILE

PP 18 X 0.50 GALVANIZED STEEL PILE

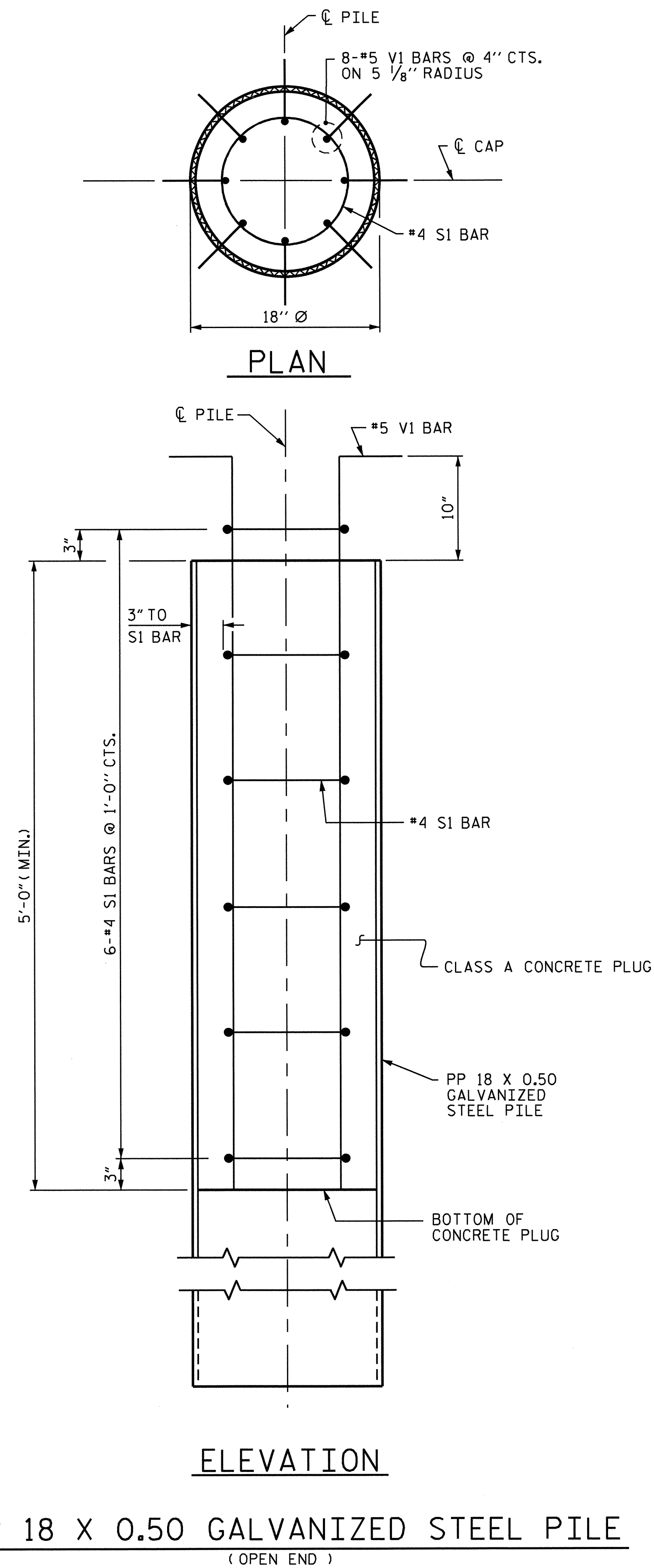
PROJECT NO. U-4432
WAKE COUNTY
STATION: 28+17.07 -L-
SHEET 2 OF 2

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



DRAWN BY: J.P. MCCARTHA DATE: 3/13
CHECKED BY: R.P. PATEL DATE: 3/13
DESIGN ENGINEER OF RECORD: H. T. DIEU DATE: 11/12/13

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-43
2			4			TOTAL SHEETS 52



PP 18 X 0.50 GALVANIZED STEEL PILE
(OPEN END)

ASSEMBLED BY : J.P. MCCARTHA	DATE : 3/13
CHECKED BY : R.P. PATEL	DATE : 3/25
DESIGN ENGINEER OF RECORD : D.A. DAVENPORT	DATE : 4/26/13
DRAWN BY : RWW 1/01	REV. 10/1/05 LBG/TLA
CHECKED BY : LES 1/01	REV. 5/1/06R MAA/KMM
	REV. 10/1/11 MAA/GM

26-JUL-2013 08:37
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dadavenport

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 18 X 0.50 GALVANIZED STEEL PILES.

PIPE PILES SHALL BE OPEN END PILES.

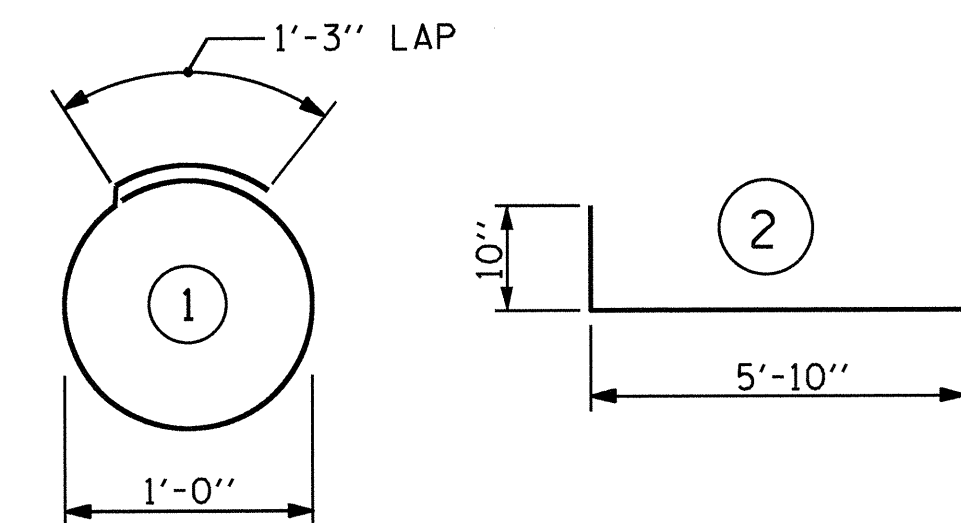
STEEL PIPE PILE CUTTING SHOES ARE REQUIRED FOR STEEL PIPE PILES AT BENT #1. USE 'INSIDE FIT' PIPE PILE CUTTING SHOES, I.E., CUTTING SHOES WITH AN OUTSIDE DIAMETER EQUAL TO THE PIPE PILE DIAMETER, FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

**BILL OF MATERIAL FOR ONE
PP 18 X 0.50 GALVANIZED STEEL PILE**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SI	6	#4	1	4'-5"	18
V1	8	#5	2	6'-8"	56
REINFORCING STEEL =				74	lbs

CLASS A CONCRETE
5'-0" MINIMUM PLUG 0.3 CY

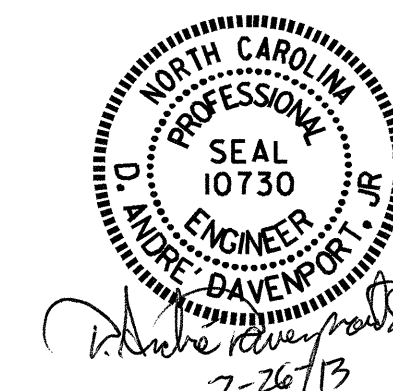
BAR TYPES



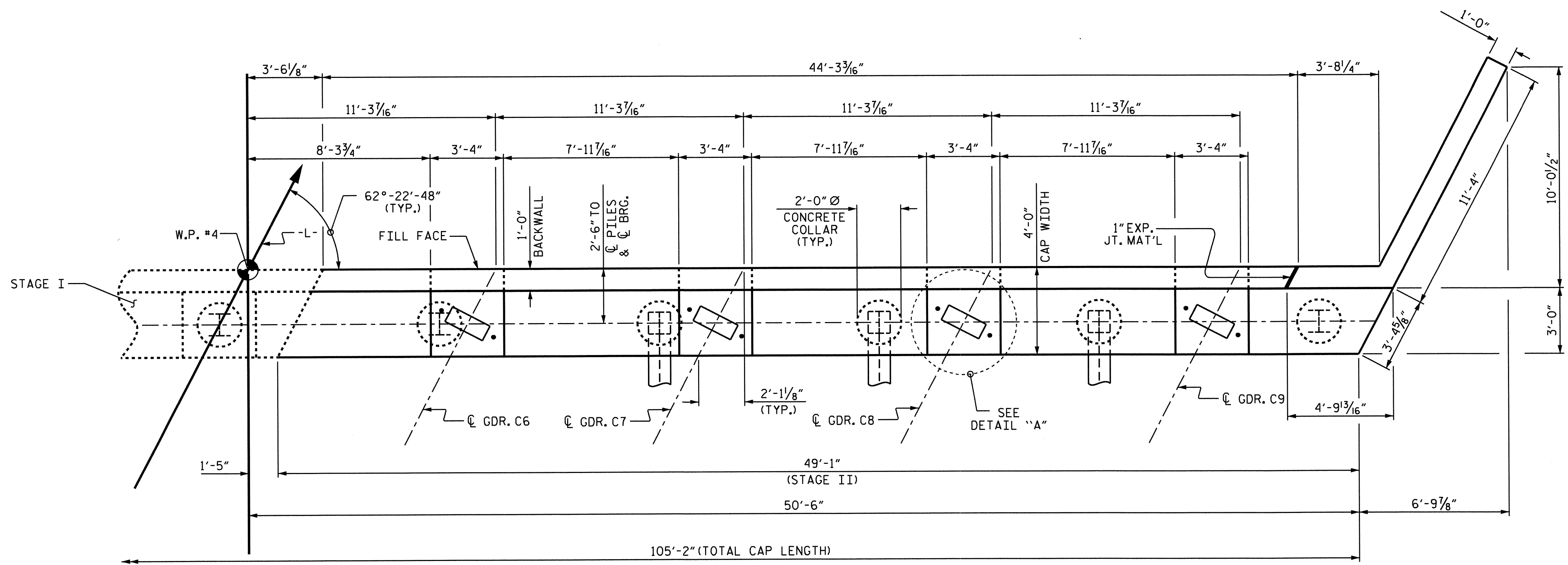
ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. U-4432
WAKE COUNTY
STATION: 28+17.07 -L-

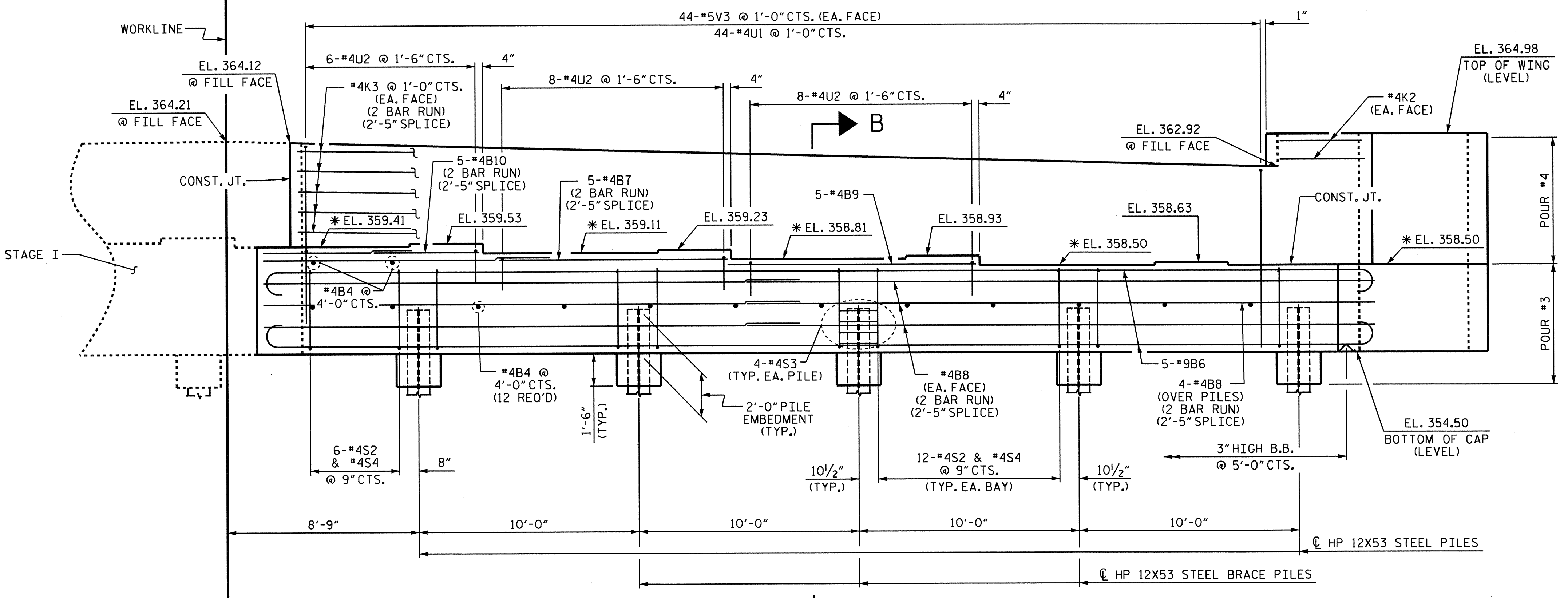
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
18" STEEL PIPE PILE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-44					TOTAL SHEETS 52



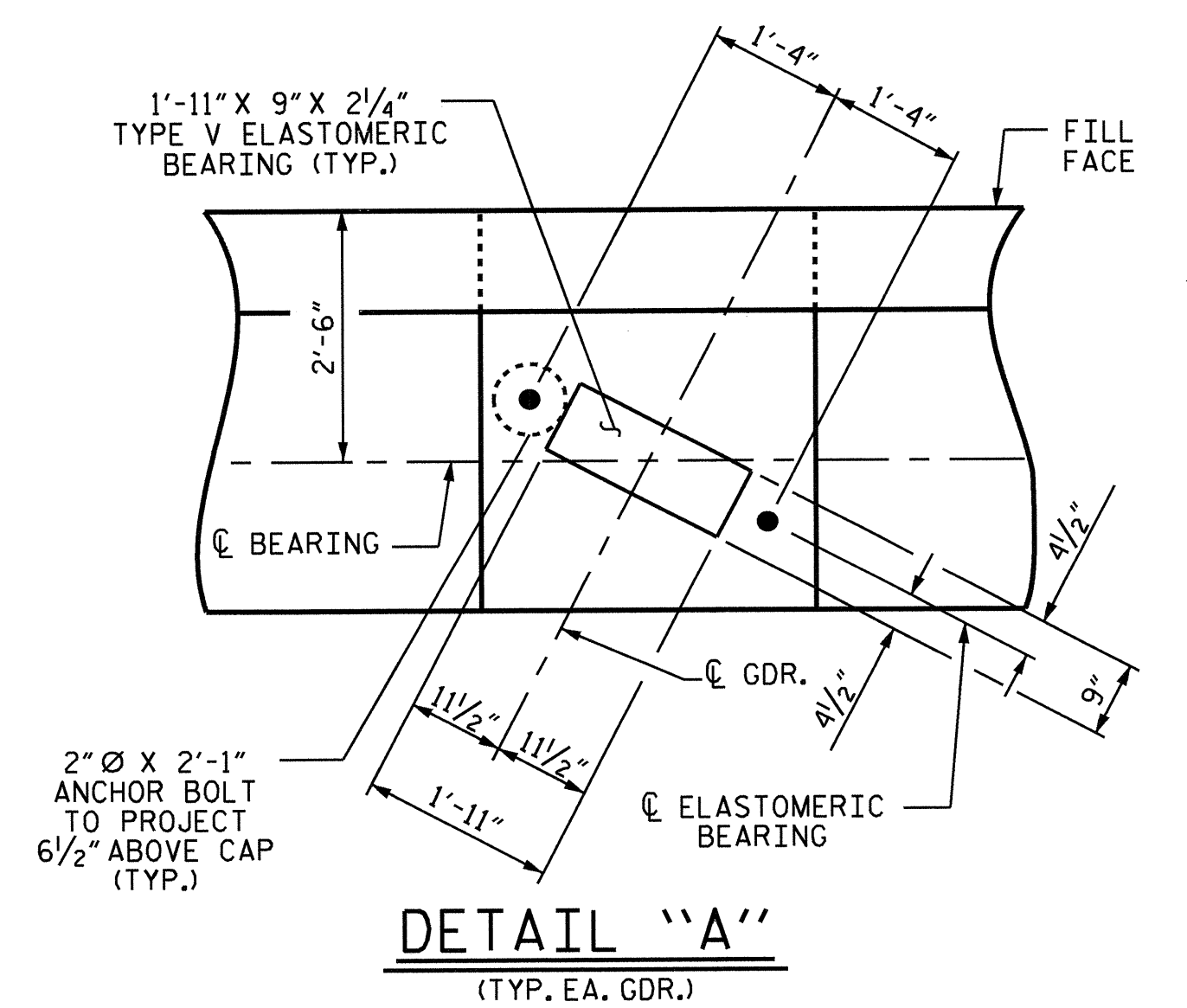
STD. NO. SPP3



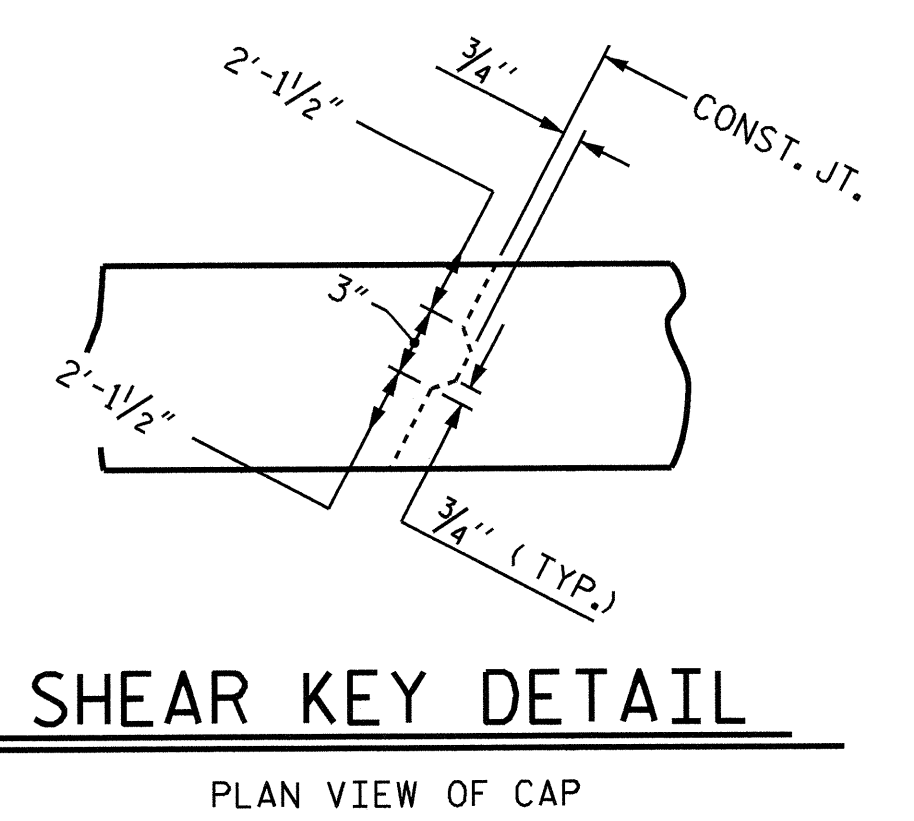
PLAN



ELEVATION



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

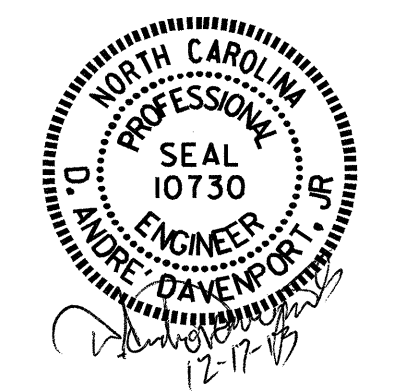


SHEAR KEY DETAIL

PROJECT NO. U-4432
WAKE COUNTY
 STATION: 28+17.07 -L-

SHEET 2 OF 4

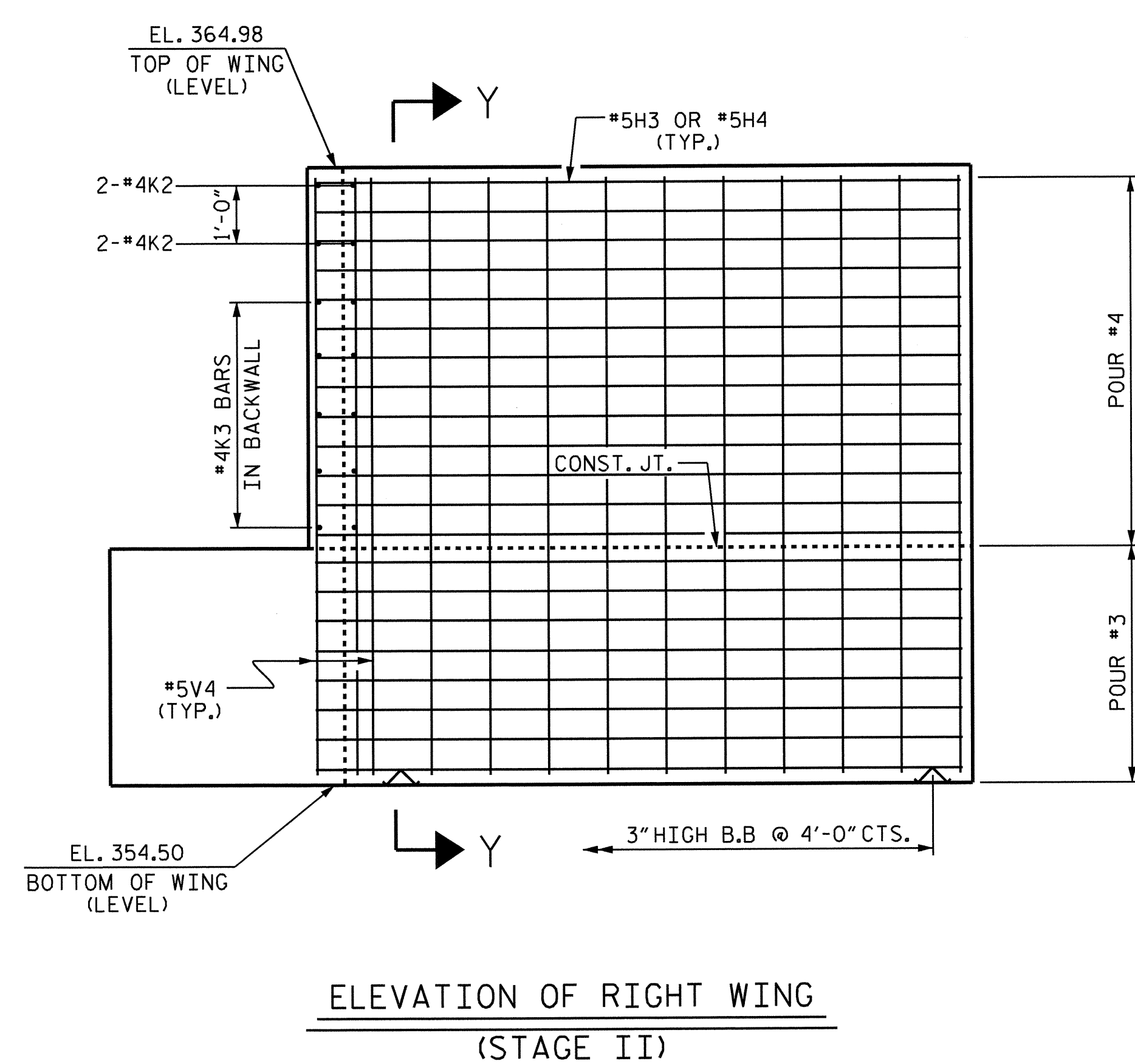
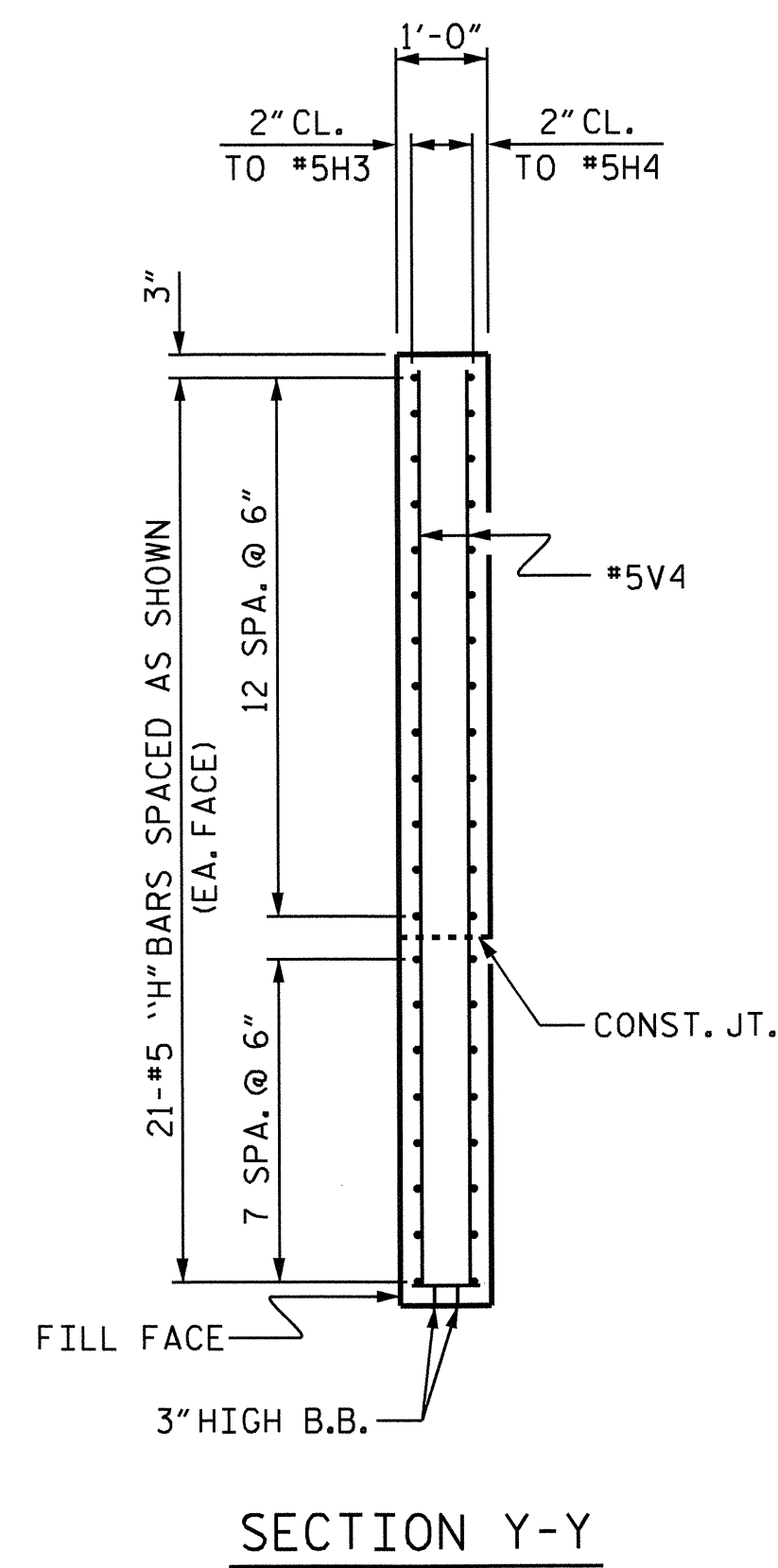
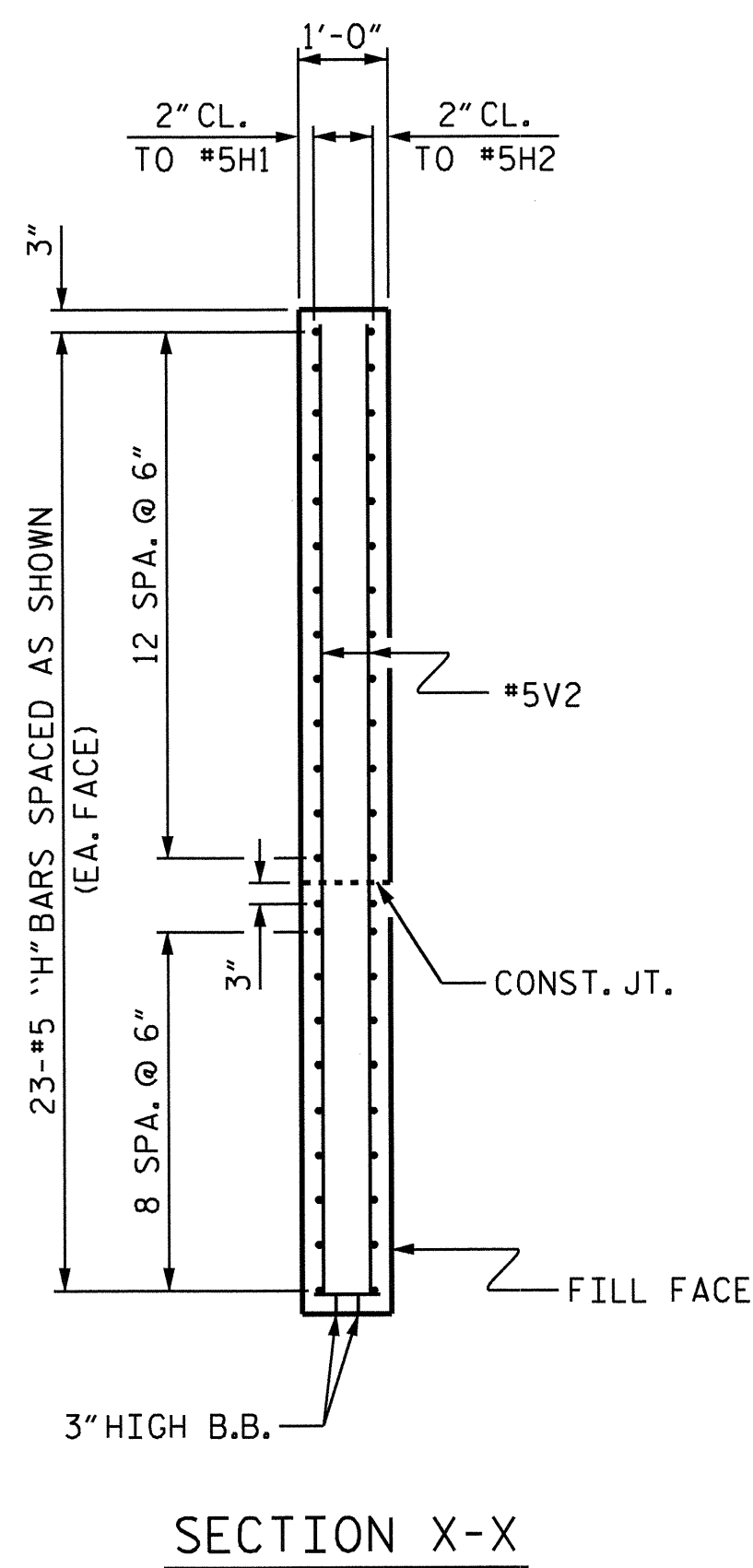
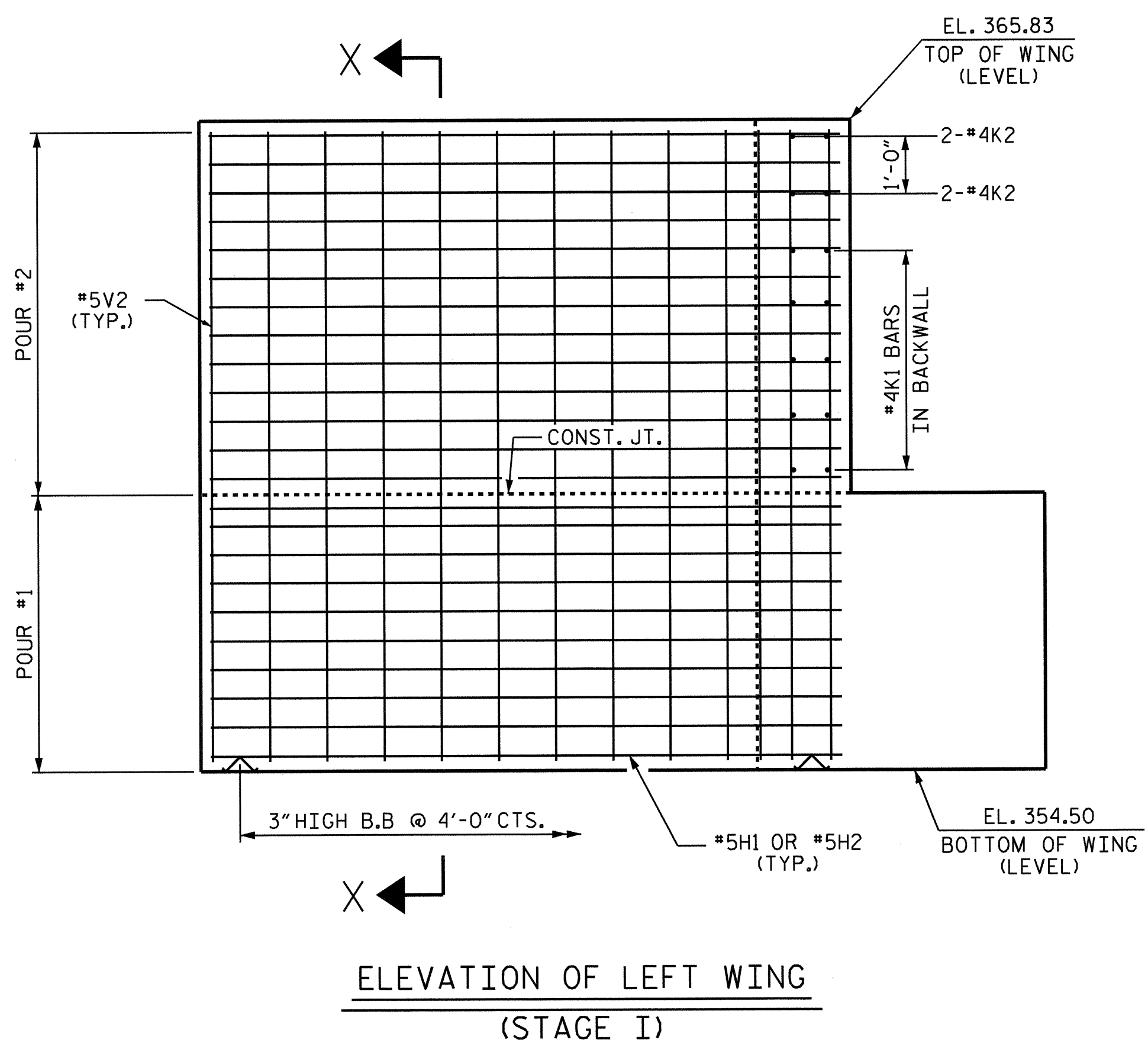
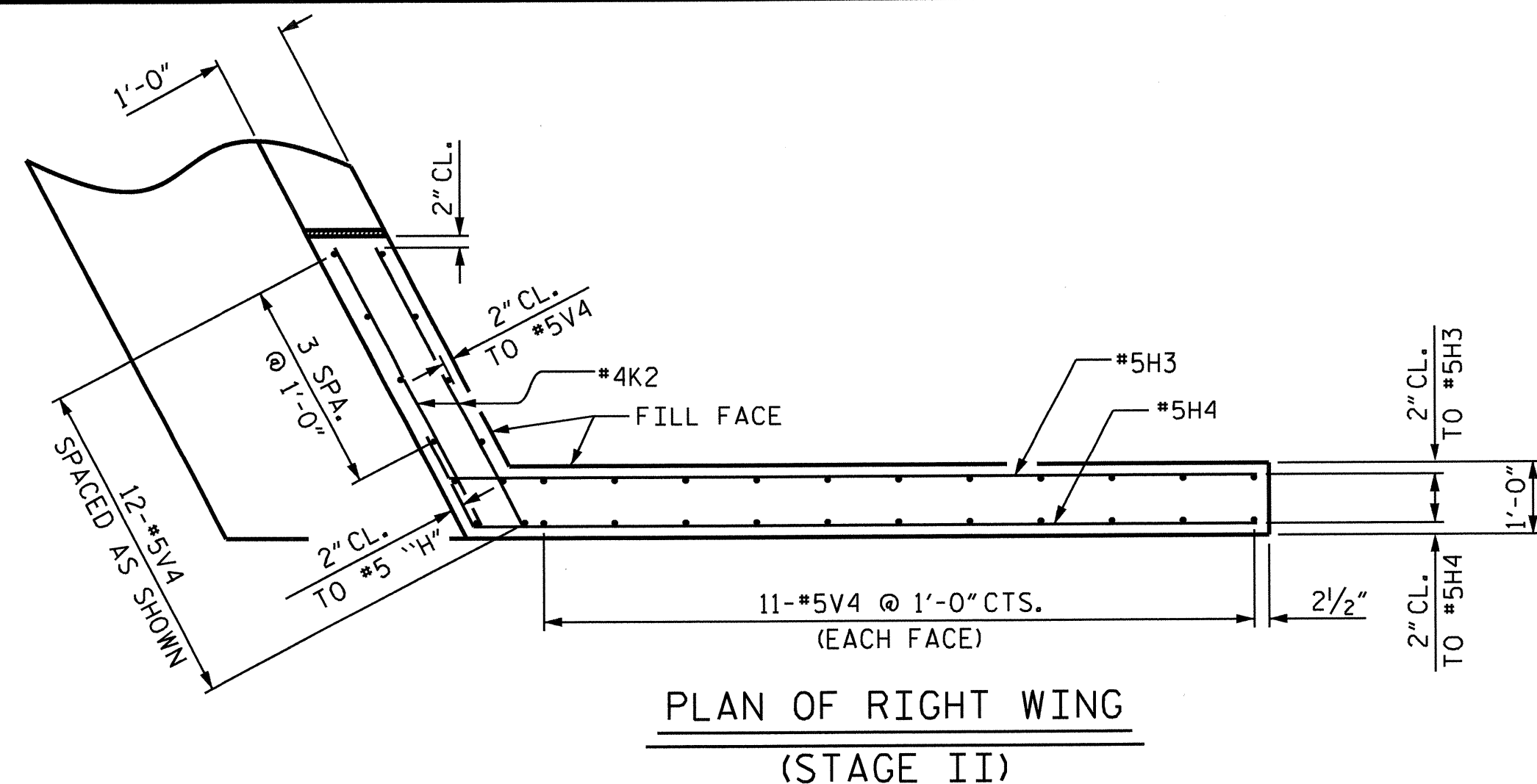
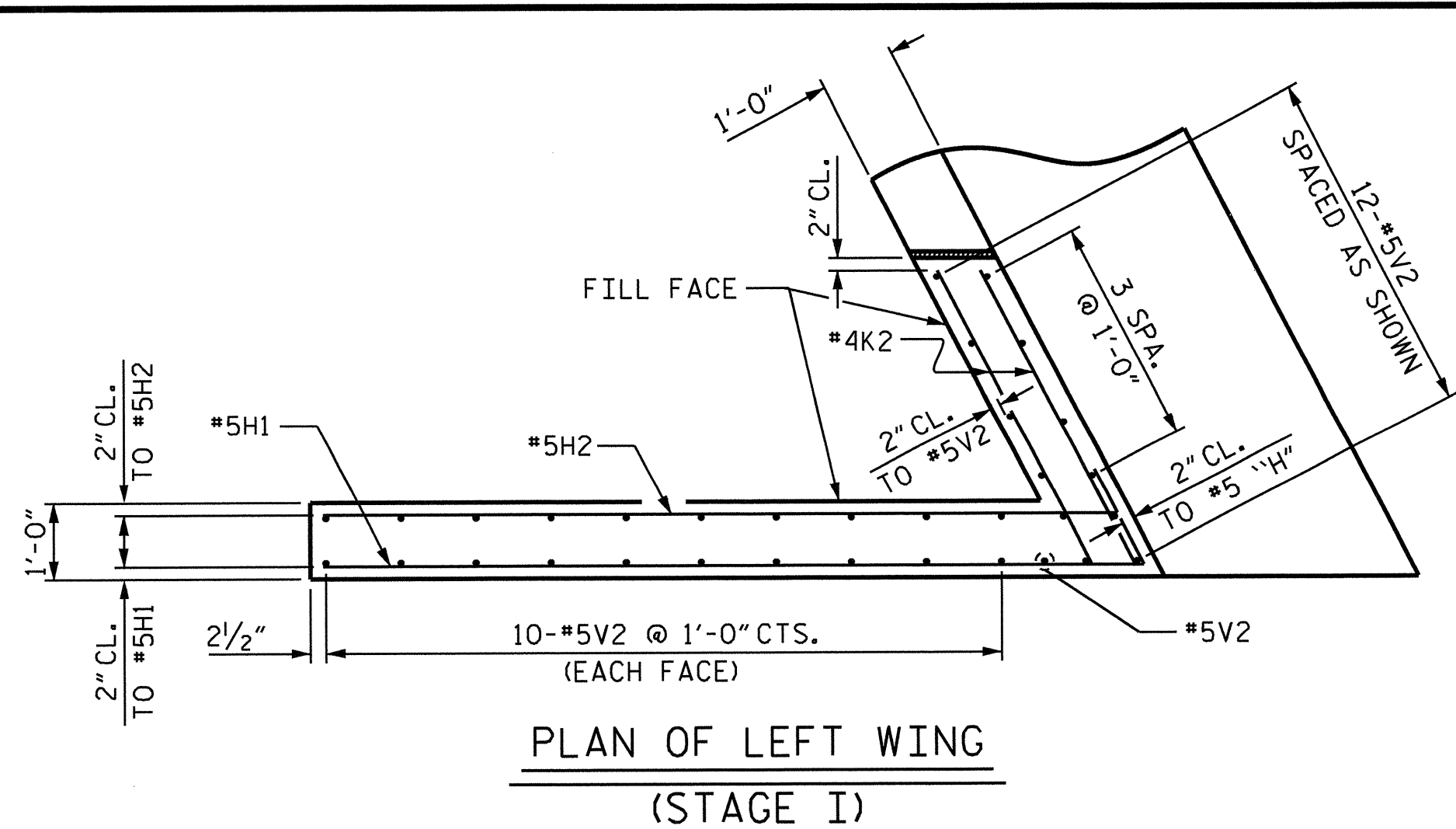
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT #2
 (STAGE II)



* SEE SHEET 4 OF 4 FOR LOCATION OF ELEVATION

DRAWN BY : T. H. CARROLL DATE : 3/13
 CHECKED BY : H. A. LOCKLEAR DATE : 4/13
 DESIGN ENGINEER OF RECORD : H. T. DIEU DATE : 11/12/13

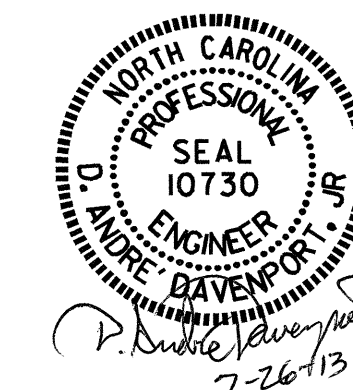
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-46
1			3			TOTAL SHEETS
2			4			52



PROJECT NO. U-4432
WAKE COUNTY
 STATION: 28+17.07 -L-

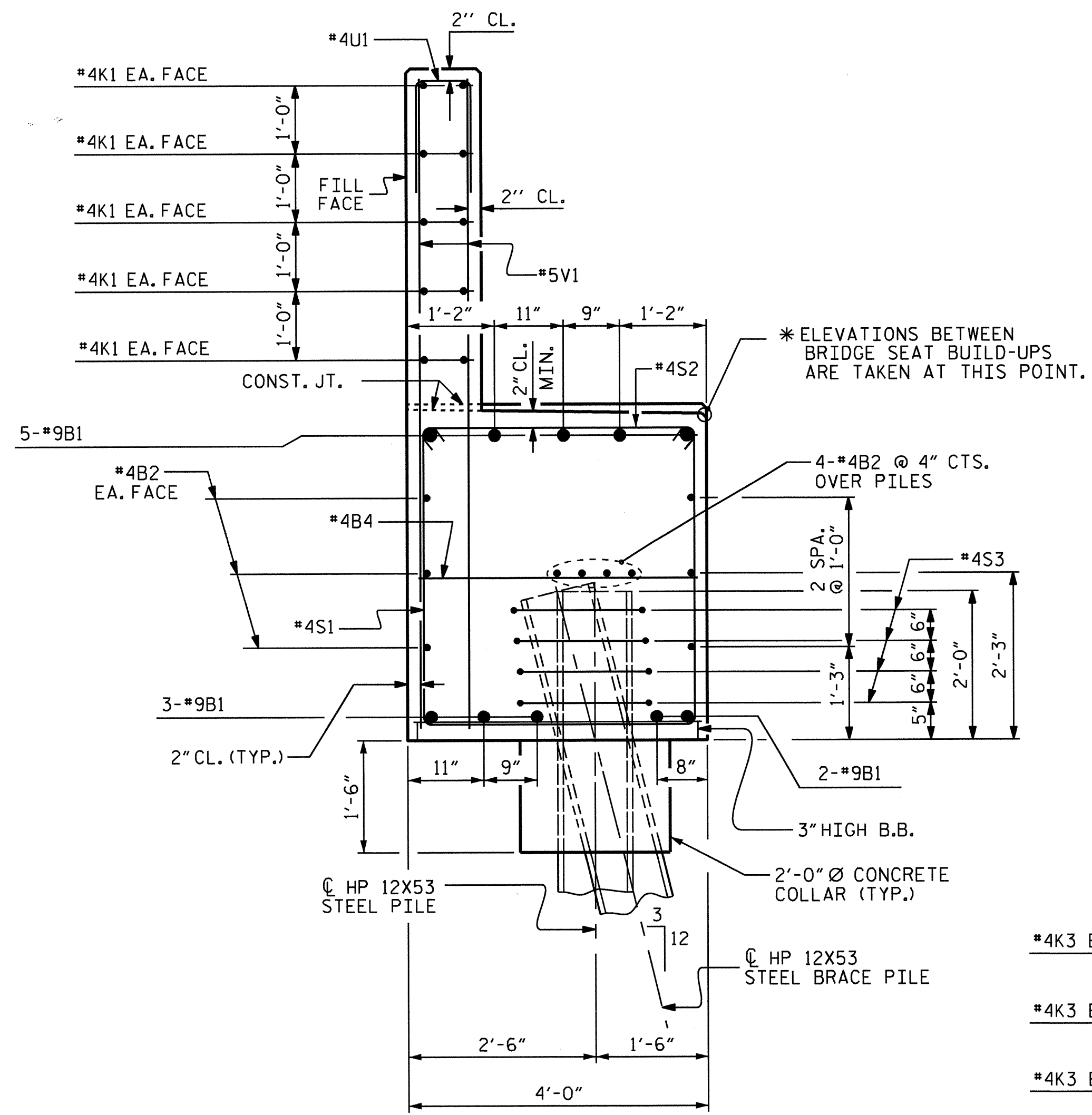
SHEET 3 OF 4

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

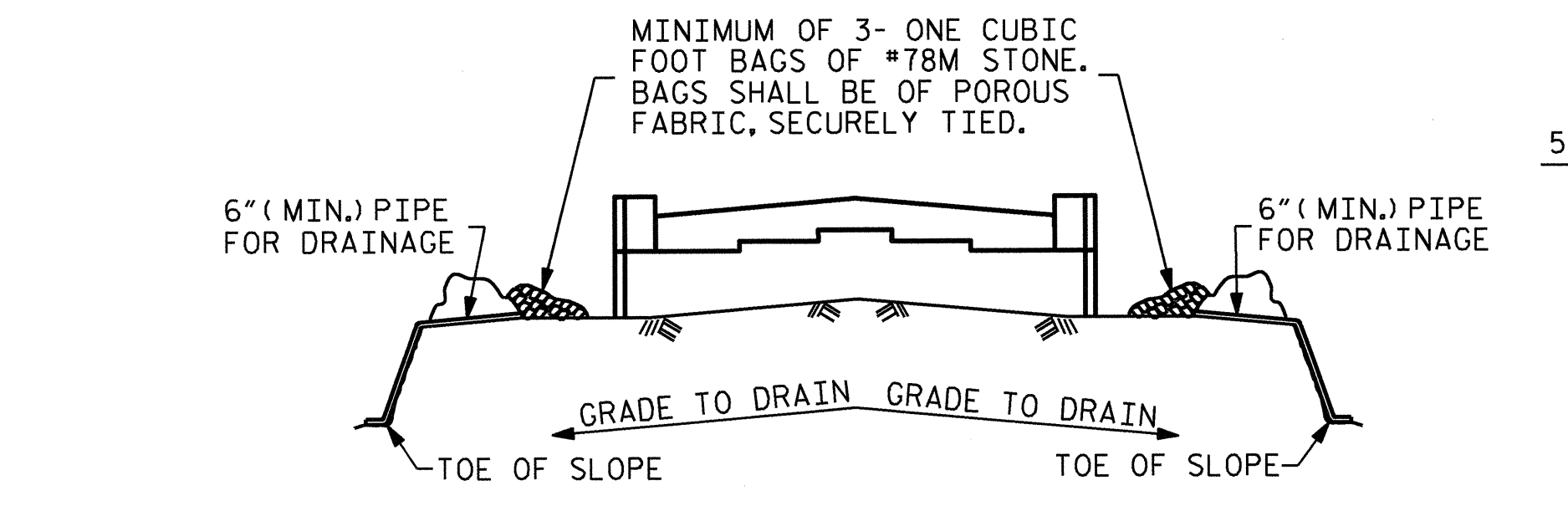


DRAWN BY: T. H. CARROLL DATE: 3/13
 CHECKED BY: H. A. LOCKLEAR DATE: 4/13
 DESIGN ENGINEER OF RECORD: H. T. DIEU DATE: 11/12/13

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-47
1			3			TOTAL SHEETS
2			4			52



SECTION A-A



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

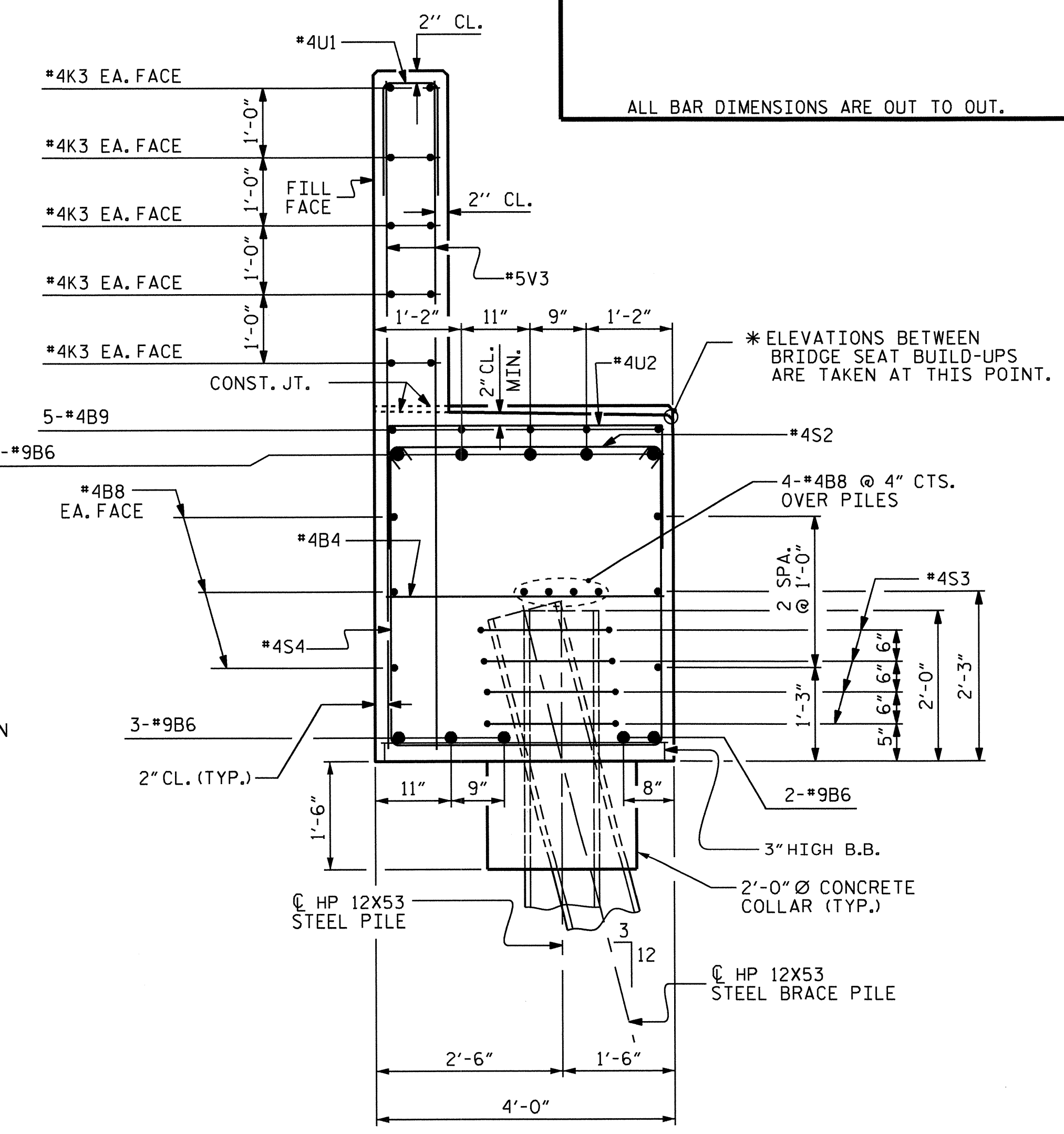
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

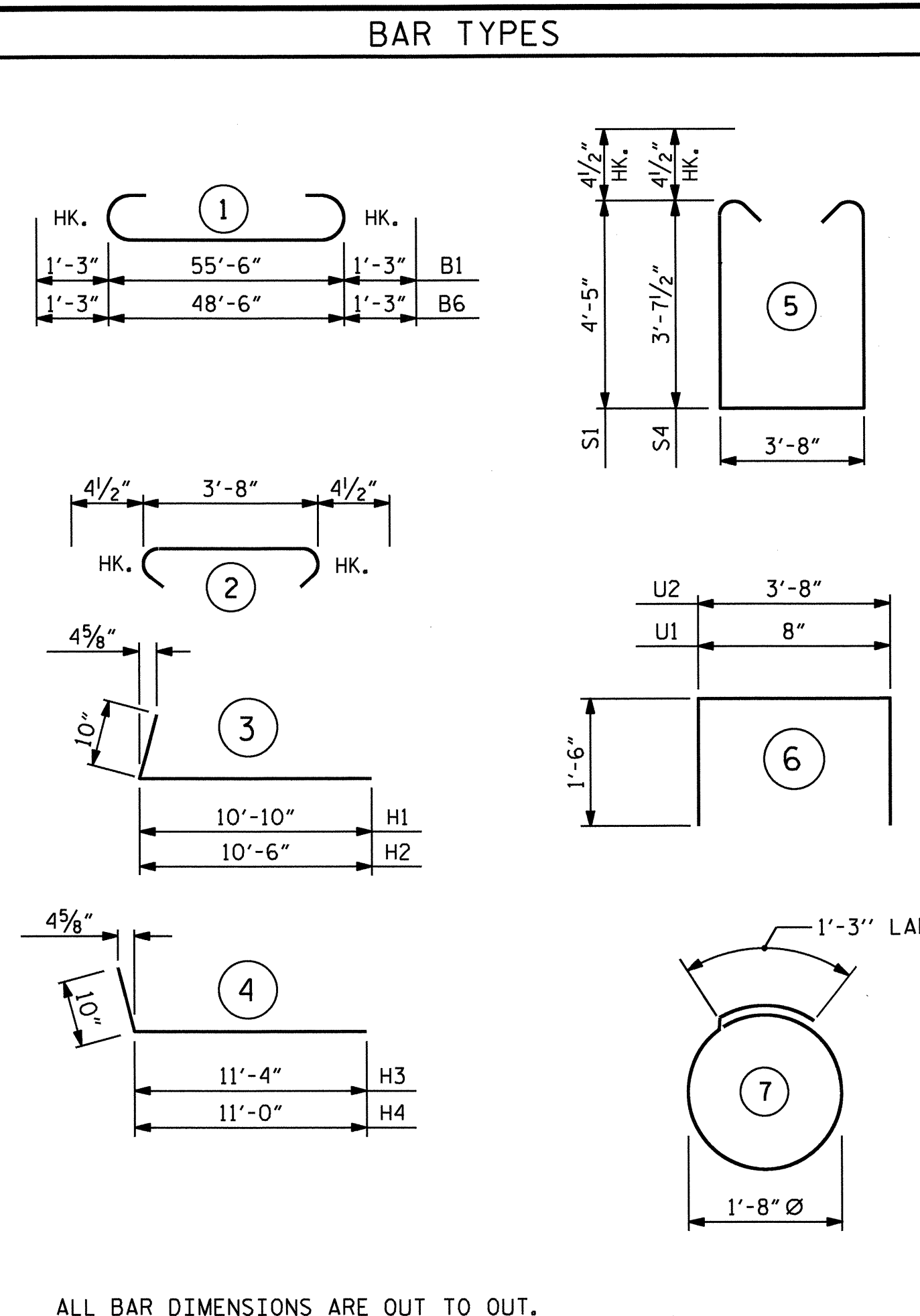
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

DRAWN BY: T. H. CARROLL DATE: 3/13
 CHECKED BY: H. A. LOCKLEAR DATE: 4/13
 DESIGN ENGINEER OF RECORD: H. T. DIEU DATE: 11/12/13

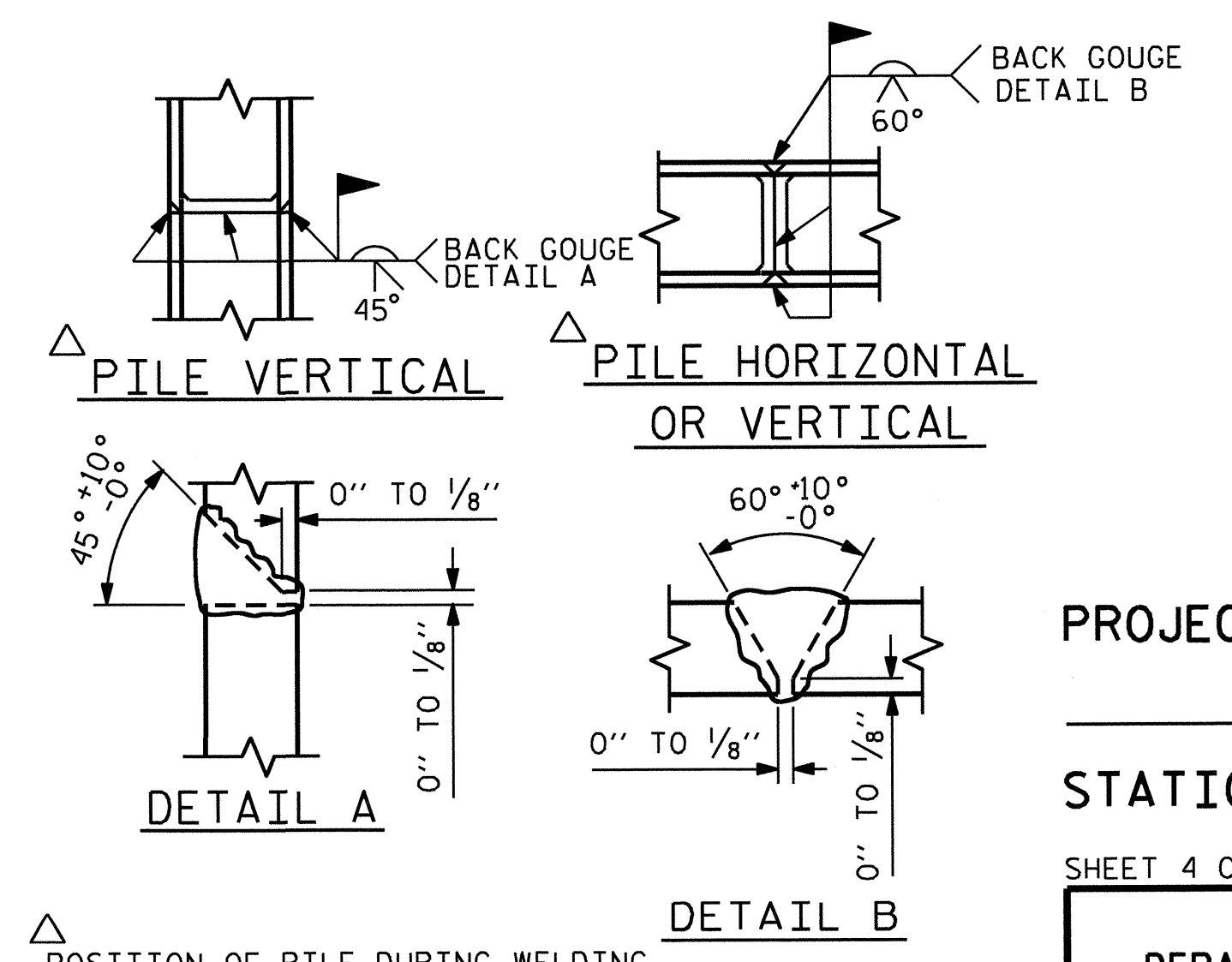


SECTION B-B

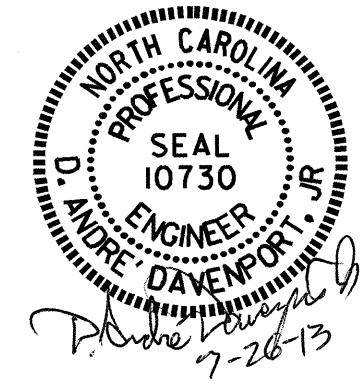


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL											
END BENT #2											
STAGE I						STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	9	1	58'-0"	1972	B4	14	4	STR	3'-8"	34
B2	20	4	4	29'-1"	389	B6	10	9	1	51'-0"	1734
B3	5	4	STR	14'-3"	48	B7	10	4	STR	11'-10"	79
B4	14	4	STR	3'-8"	34	B8	20	4	STR	25'-7"	342
B5	5	4	STR	3'-0"	10	B9	5	4	STR	11'-3"	38
						B10	10	4	STR	6'-2"	41
D1	4	9	STR	3'-0"	41						
						H3	21	5	4	12'-2"	266
H1	23	5	3	11'-8"	280	H4	21	5	4	11'-10"	259
H2	23	5	3	11'-4"	272						
						K2	4	4	STR	4'-5"	12
K1	30	4	STR	21'-3"	426	K3	20	4	STR	25'-7"	342
K2	4	4	STR	4'-5"	12						
						S2	54	4	2	4'-5"	159
S1	63	4	5	13'-3"	558	S3	20	4	7	6'-6"	87
S2	63	4	2	4'-5"	186	S4	54	4	5	11'-8"	421
S3	24	4	7	6'-6"	104						
						U1	44	4	6	3'-8"	108
U1	51	4	6	3'-8"	125	U2	22	4	6	6'-8"	98
U2	14	4	6	6'-8"	62						
						V3	88	5	STR	8'-1"	742
V1	102	5	STR	8'-11"	949	V4	34	5	STR	10'-1"	358
V2	33	5	STR	11'-0"	379						
REINFORCING STEEL LBS 5847						REINFORCING STEEL LBS 5120					
CLASS 'A' CONCRETE BREAKDOWN						CLASS 'A' CONCRETE BREAKDOWN					
POUR #1 CAP, CONCRETE COLLAR, & LOWER PART OF WING 44.2 C.Y.						POUR #1 CAP, CONCRETE COLLAR, & LOWER PART OF WING 34.7 C.Y.					
POUR #2 UPPER WINGS & BACKWALL 12.0 C.Y.						POUR #4 UPPER WINGS & BACKWALL 11.1 C.Y.					
CLASS 'A' CONCRETE TOTAL 56.2 C.Y.						CLASS 'A' CONCRETE TOTAL 45.8 C.Y.					
HP12X53 STEEL PILES NO. 6 LIN. FT. 240						HP12X53 STEEL PILES NO. 5 LIN. FT. 175					



PILE SPLICE DETAILS



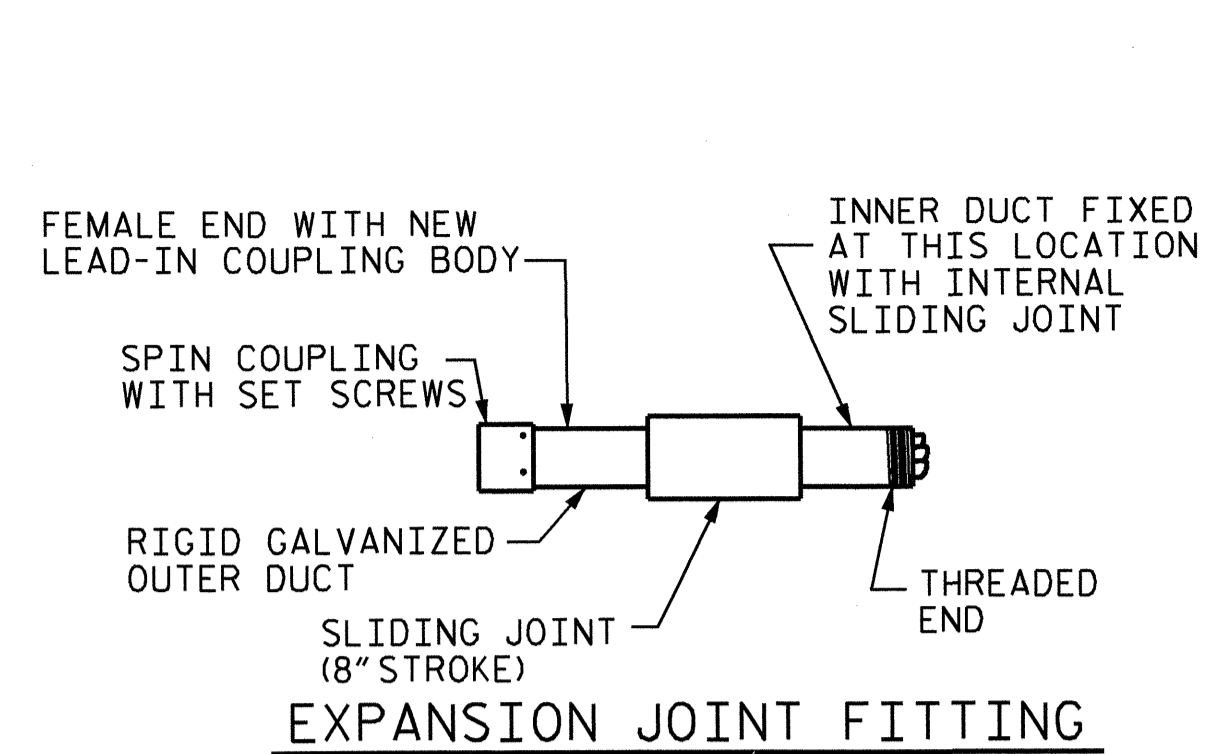
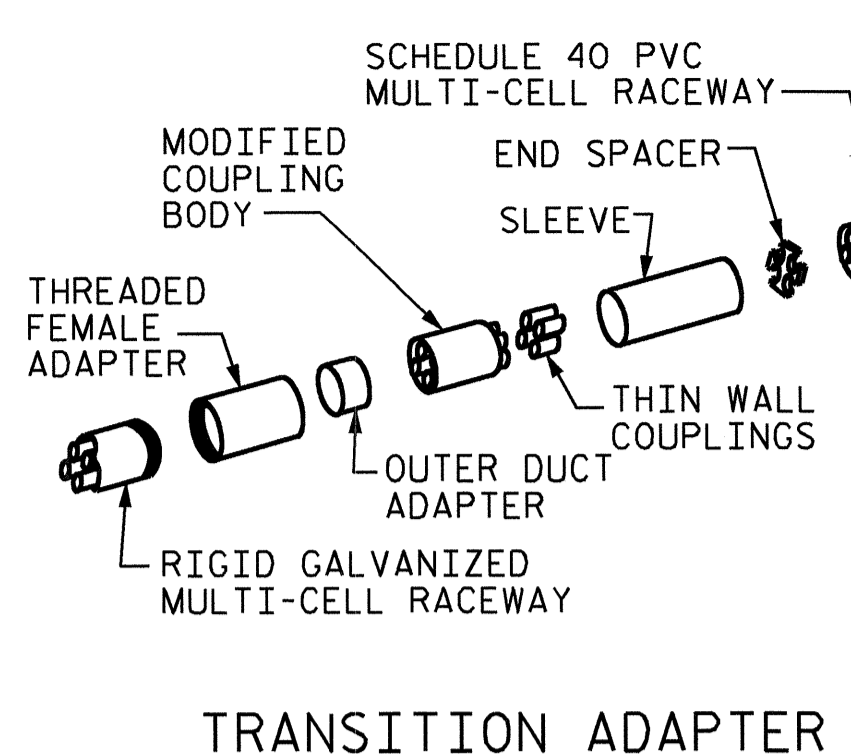
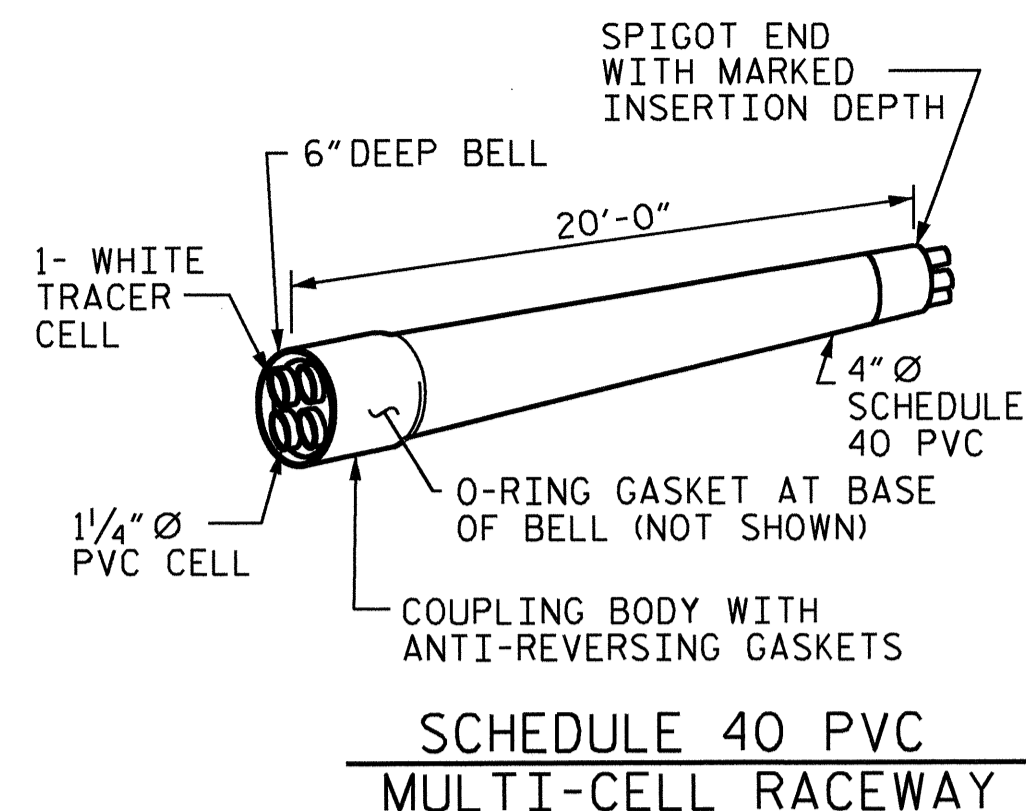
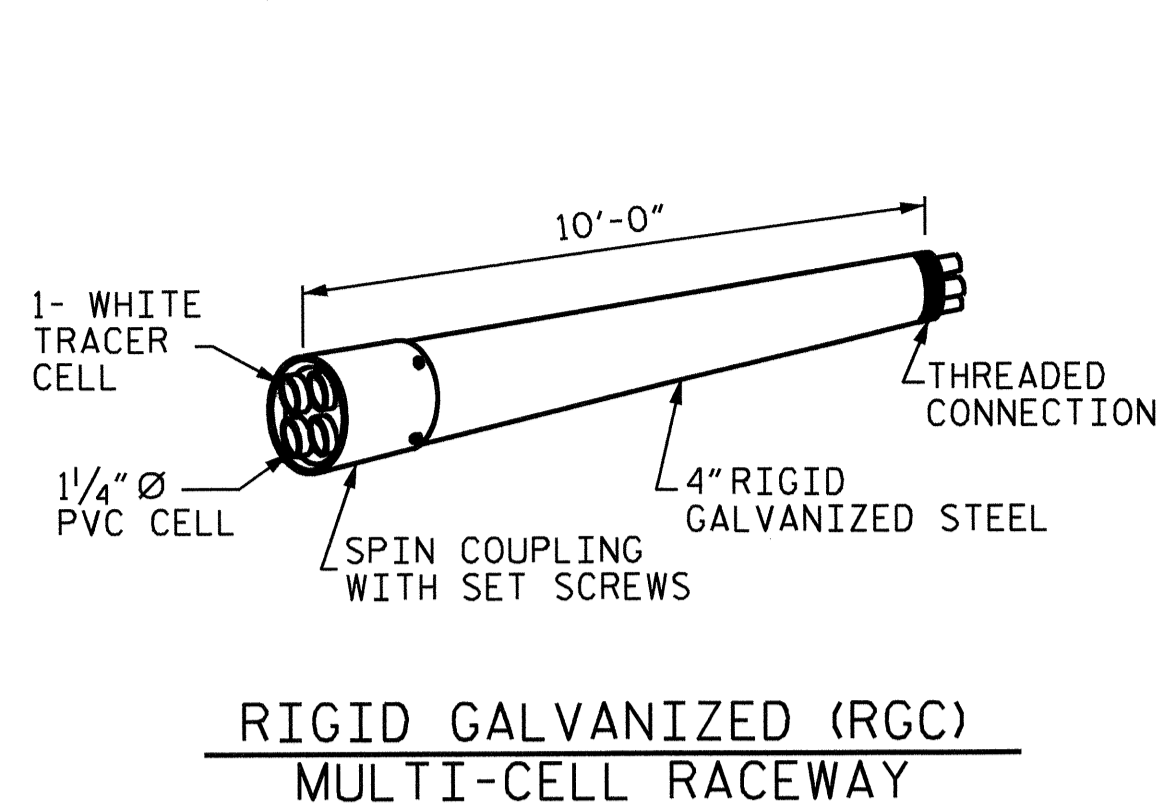
PROJECT NO. U-4432
 WAKE COUNTY
 STATION: 28+17.07 -L-

SHEET 4 OF 4

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-48
1			3			TOTAL SHEETS
2			4			52

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT #2



NOTES

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE TOTAL QUANTITY OF CONDUIT NEEDED TO COMPLETE THE WORK AND THAT THE CONDUIT(S) ARE PLACED AT THE NOTED DIMENSION AND ABOVE THE BOTTOM OF THE GIRDER.

THE INSTALLATION OF THE CONDUIT SYSTEM SHALL BE PAID FOR AS LUMP SUM. THE PRICE SHALL INCLUDE ALL CONDUIT, HANGERS, STABILIZERS, EXPANSION JOINTS, CONCRETE INSERTS, PVC SLEEVES AND ALL NECESSARY HARDWARE TO COMPLETE THE WORK.

THE CONTRACTOR SHALL FIELD VERIFY THAT THE CONDUIT SYSTEM IS NOT IN CONFLICT WITH THE GUARDRAIL POSTS.

SEE DETAIL "C" FOR HANGER ASSEMBLY INSTALLATION.

INSTALL SLEEVES PARALLEL TO GIRDERS. SEE DETAIL "B" FOR SLEEVE INSTALLATION.

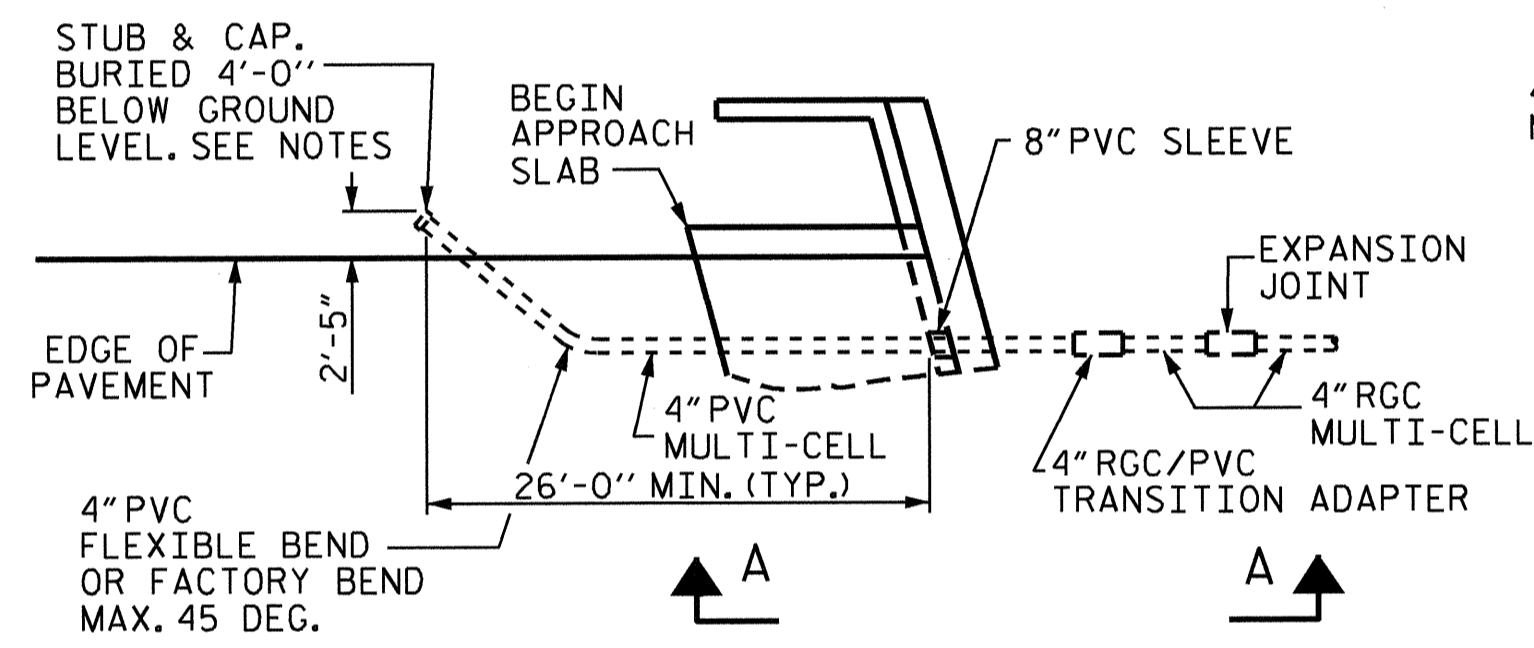
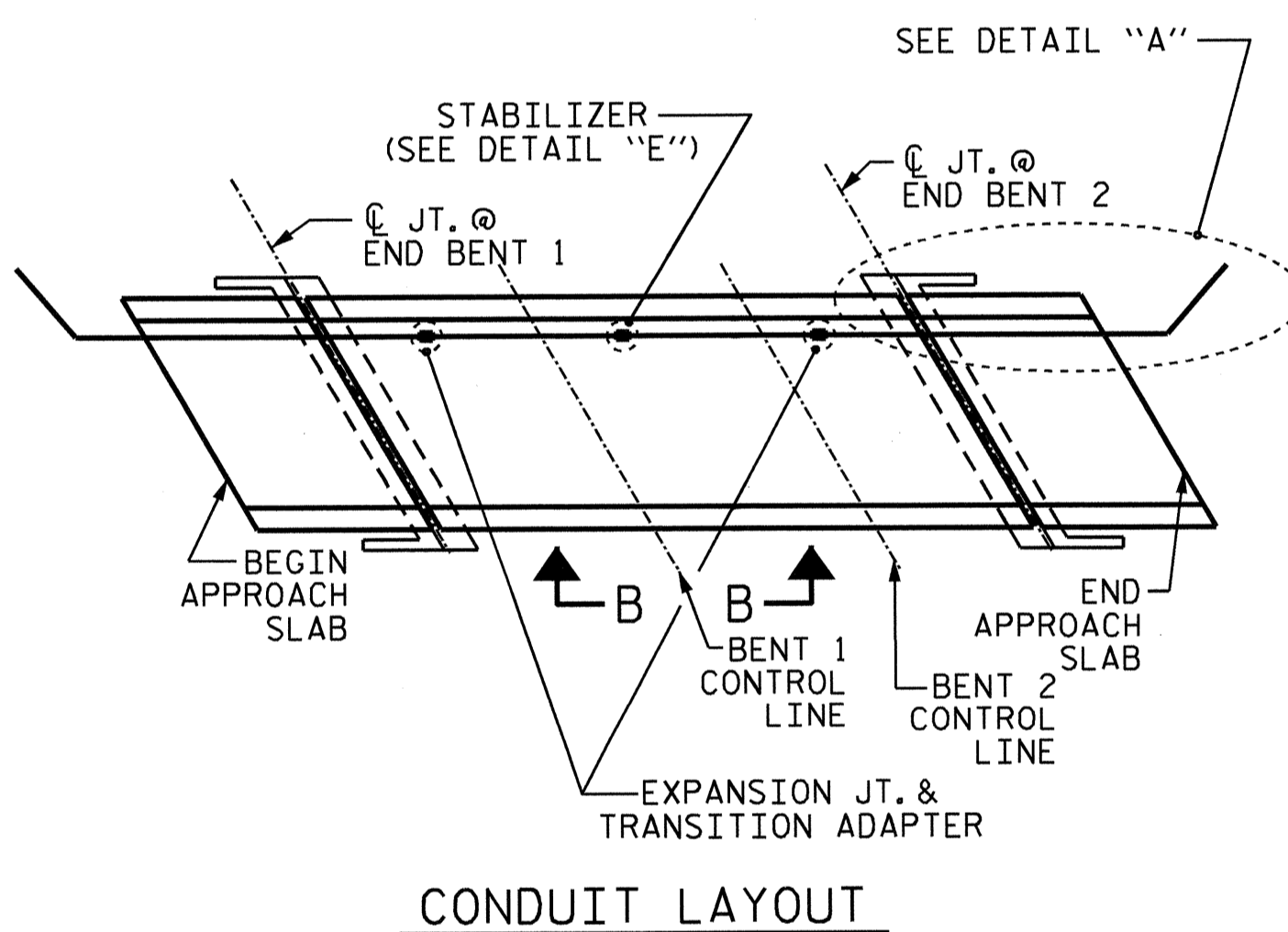
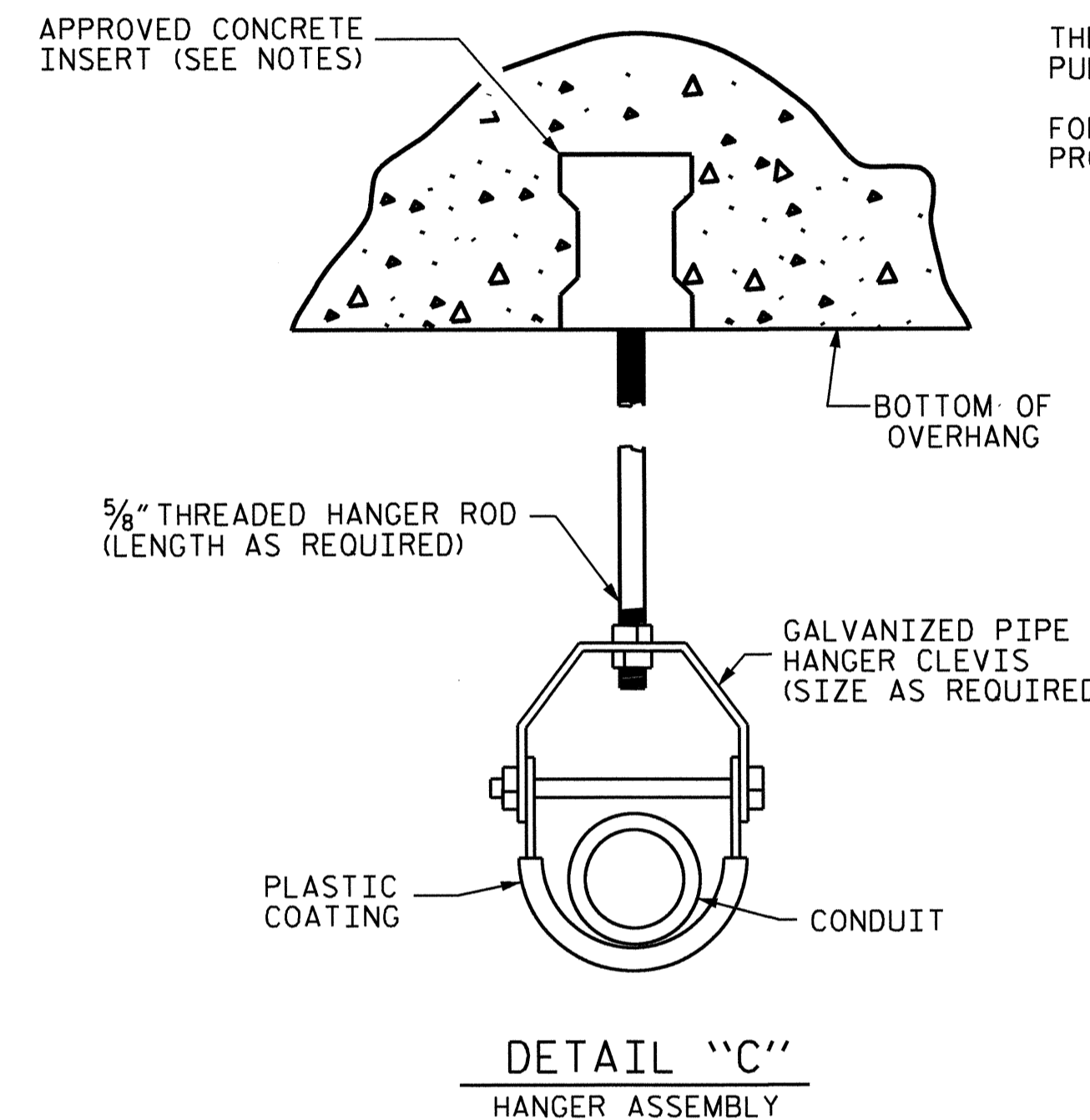
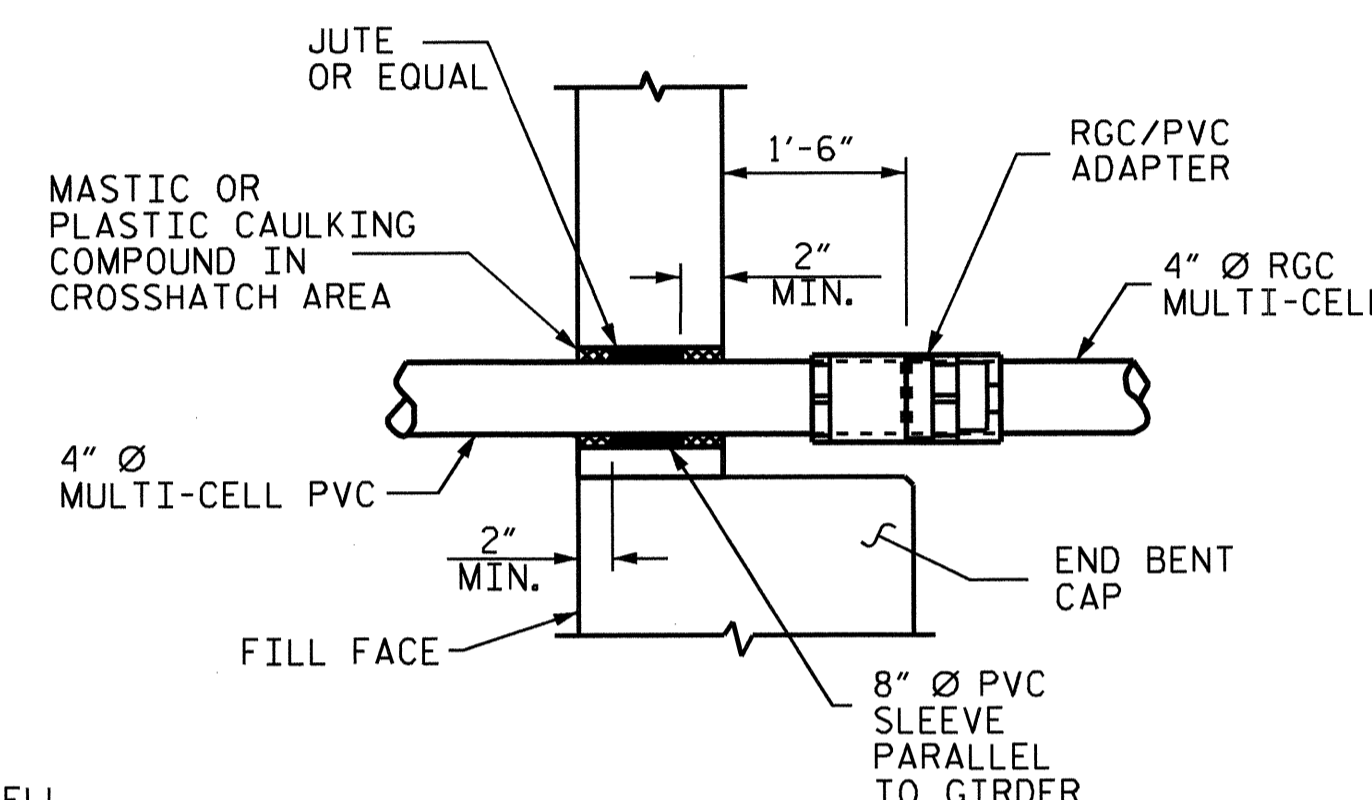
PROVIDE TRANSITION ADAPTER AND EXPANSION JOINT FOR CONDUIT AT END BENT #1 AND END BENT #2.

INSTALL STABILIZER'S MIDWAY BETWEEN DECK EXPANSION JOINTS. STABILIZER CAN NOT BE USED INSTEAD OF A HANGER ASSEMBLY.

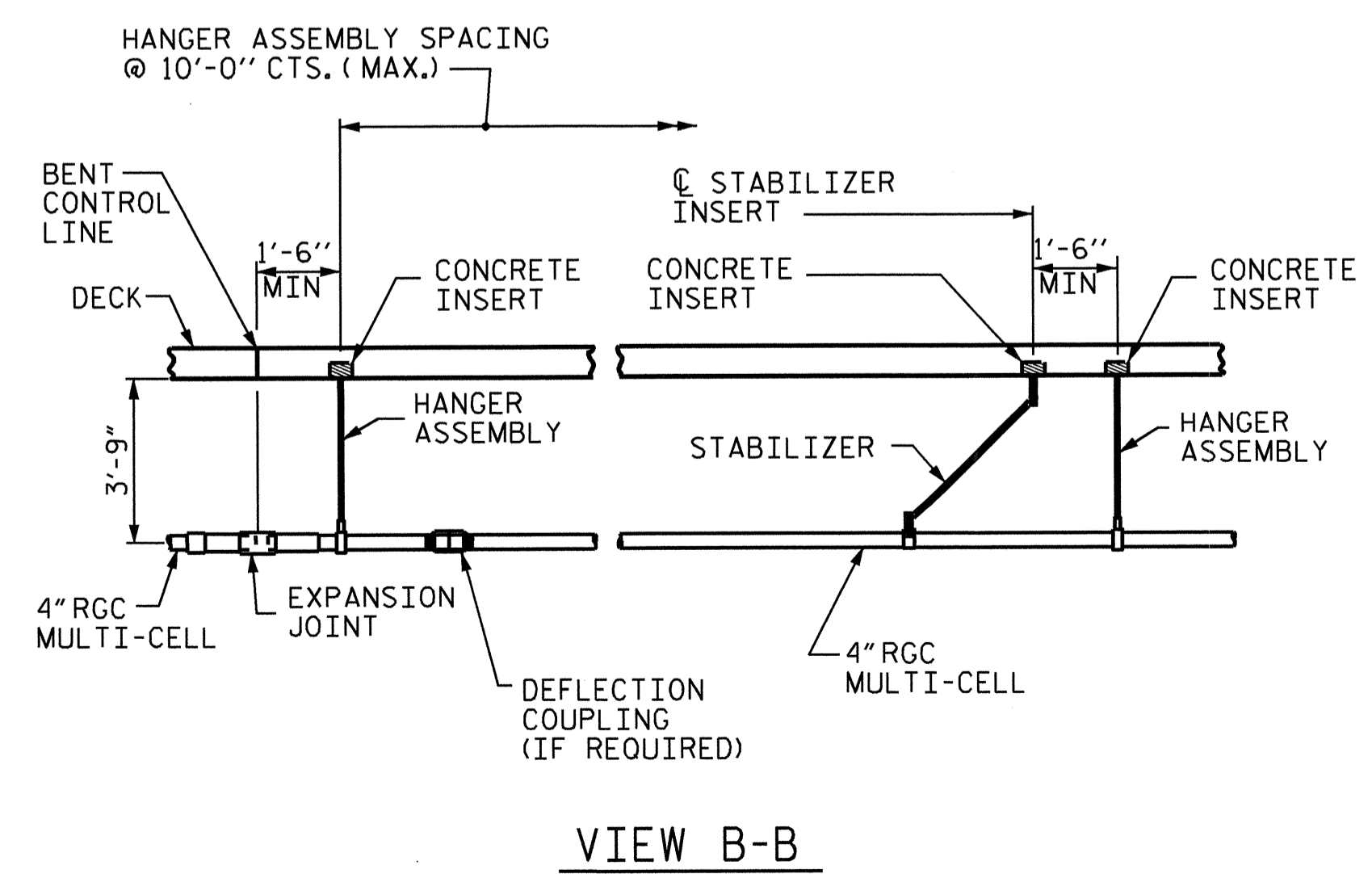
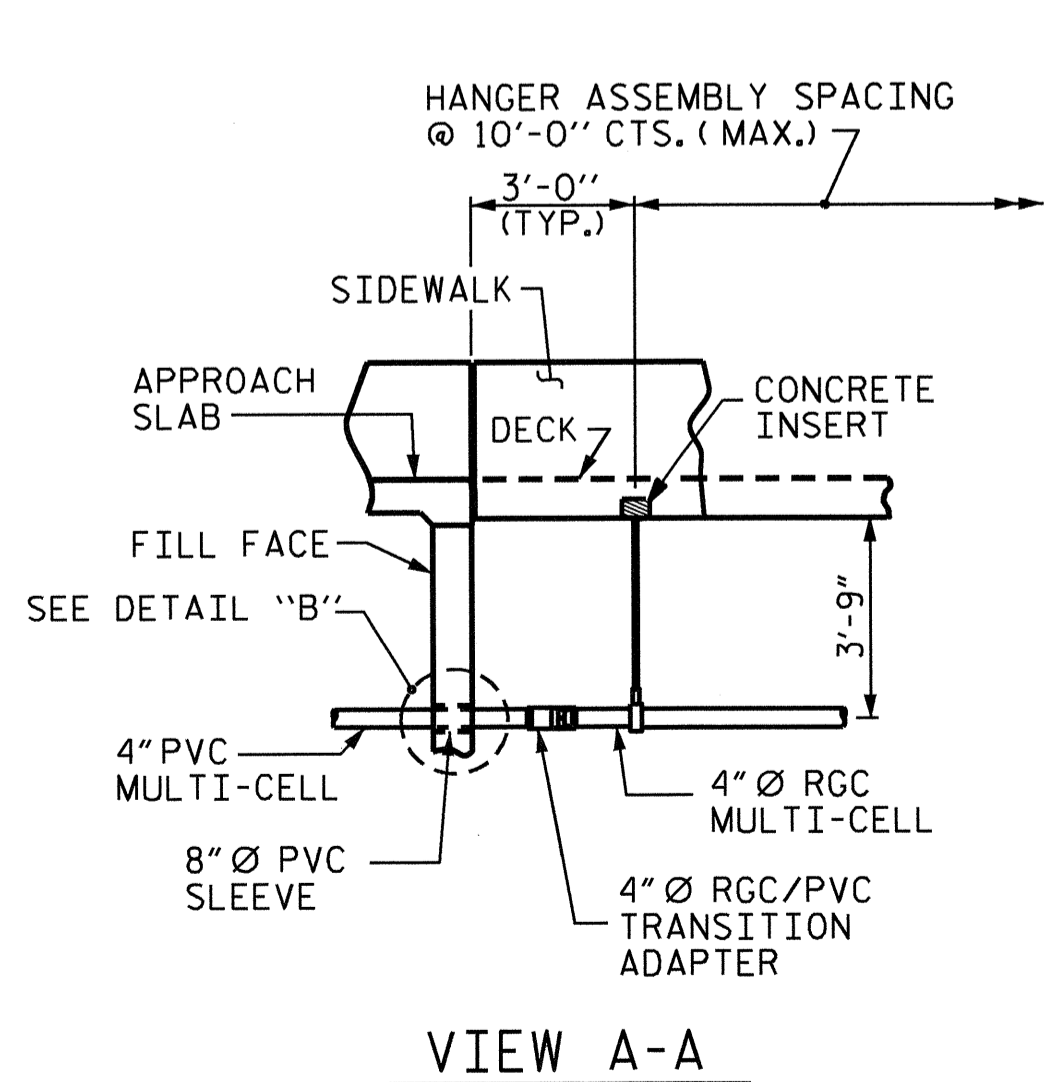
THE CONCRETE SCREW INSERT SHALL HAVE A ROD SIZE OF 5/8" AND A PULL FORCE OF 1260 lbs.

FOR ELECTRICAL CONDUIT SYSTEM FOR SIGNALS, SEE SPECIAL PROVISIONS.

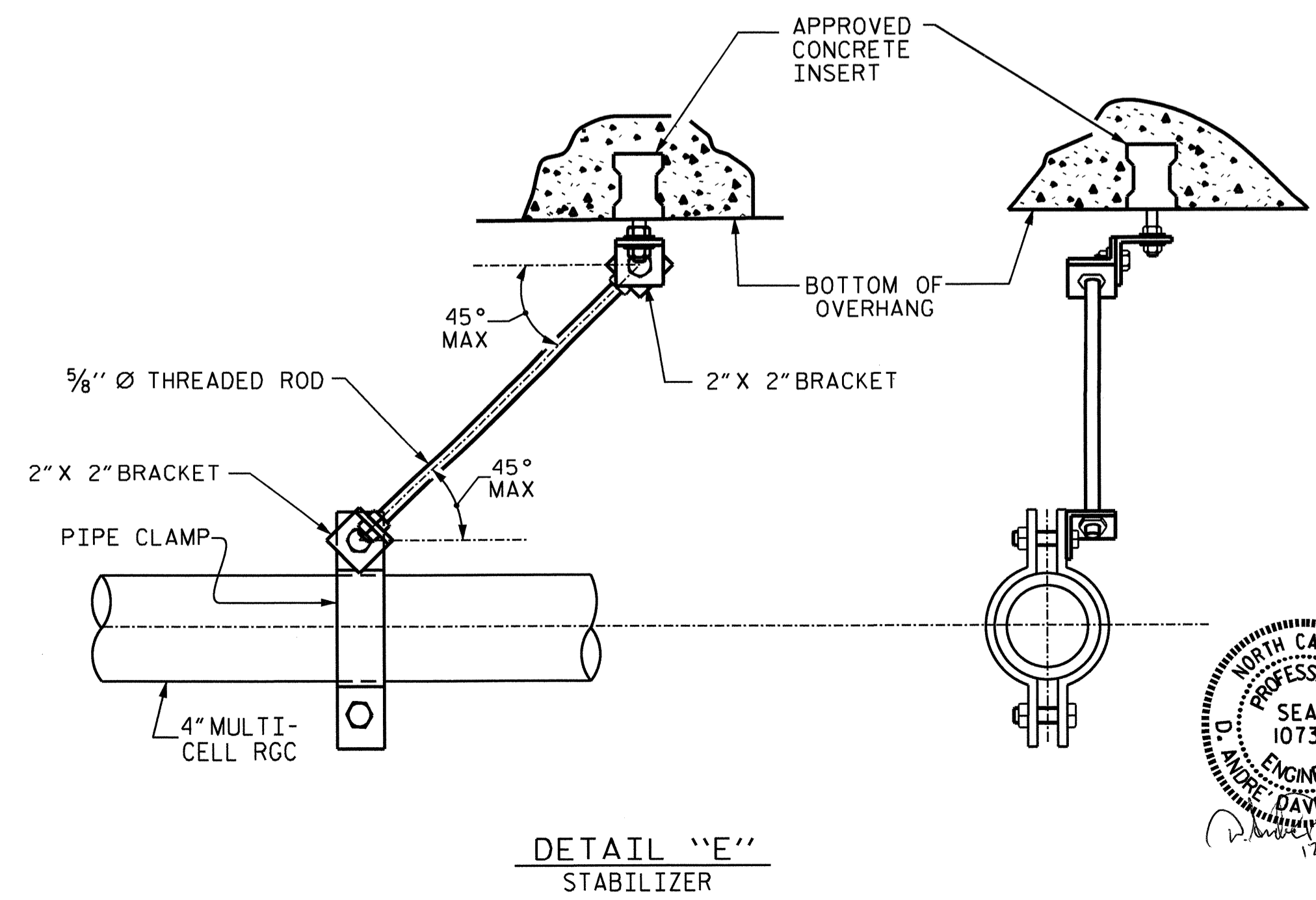
DETAIL "D"
4" MULTI-CELL COMPONENTS



DETAIL "A"
TERMINATION OF CONDUIT AT WING WALL. END BENT #1 SHOWN, END BENT #2 SIMILAR.

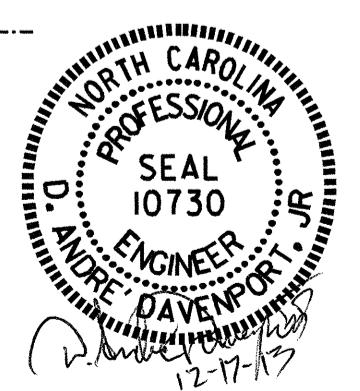


ELECTRIC CONDUIT DETAILS



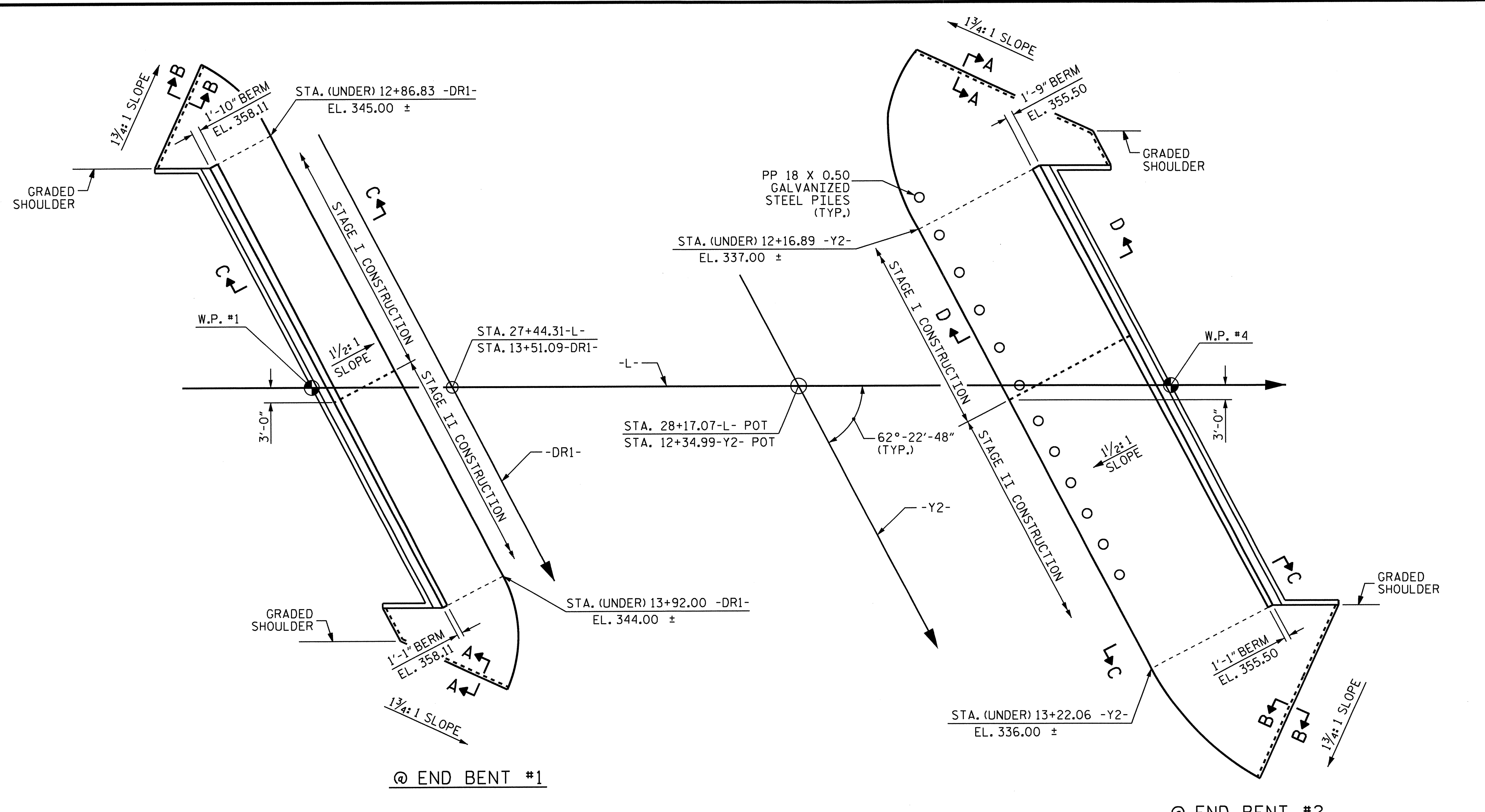
PROJECT NO. U-4432
WAKE COUNTY
 STATION: 28+17.07 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 ELECTRICAL CONDUIT
 SYSTEM FOR SIGNALS



DRAWN BY: J.D. HAWK DATE: 10/5/12
 CHECKED BY: K.D. LAYNE DATE: 11/8/12
 DESIGN ENGINEER OF RECORD: D.A. DAVENPORT DATE: 6/25/13
 DRAWN BY: RWW 2-4-03 REV. 5/1/06 TLA/GM
 CHECKED BY: DBM 2-4-03 REV. 10/1/11 MAA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5-49
2			4			52



END BENT #1

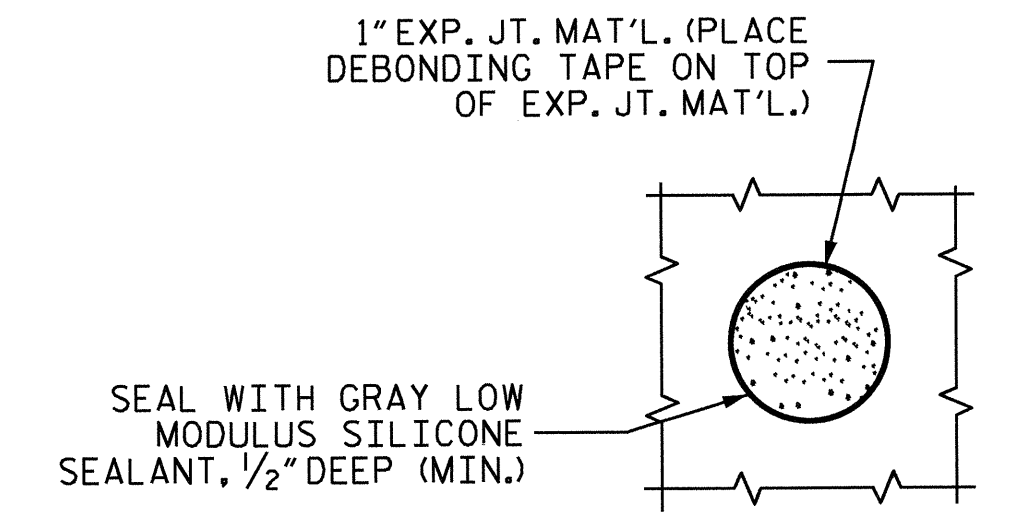
END BENT #2

PLAN

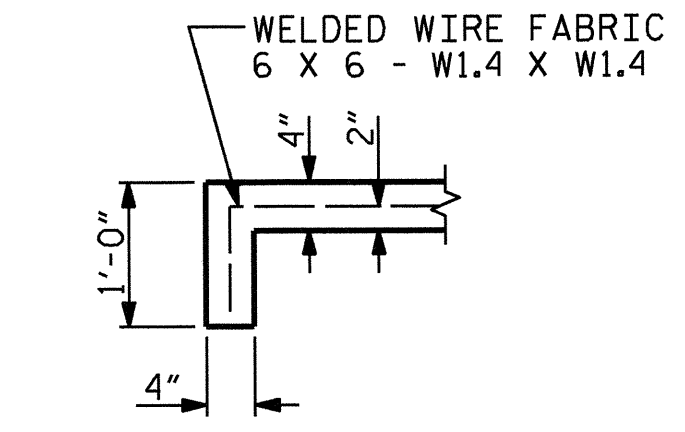
GENERAL NOTES

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.

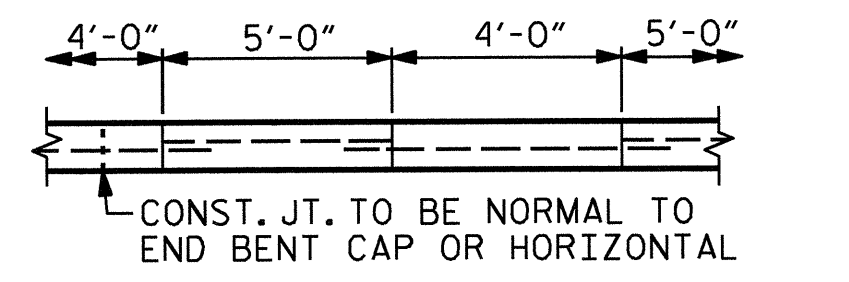
SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.



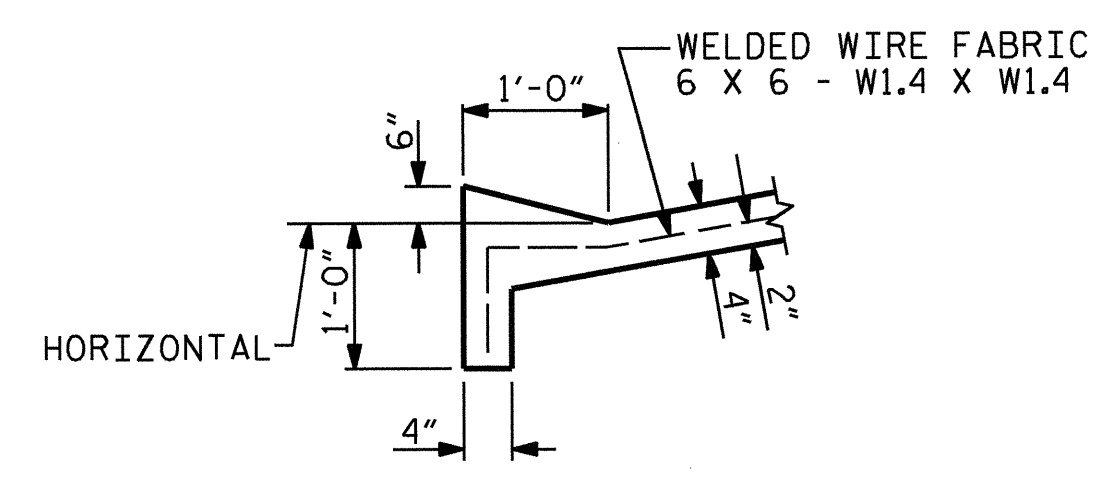
PLAN WHERE CONCRETE SLOPE PROTECTION MUST BE PLACED AROUND A BENT GALVANIZED STEEL PIPE PILE



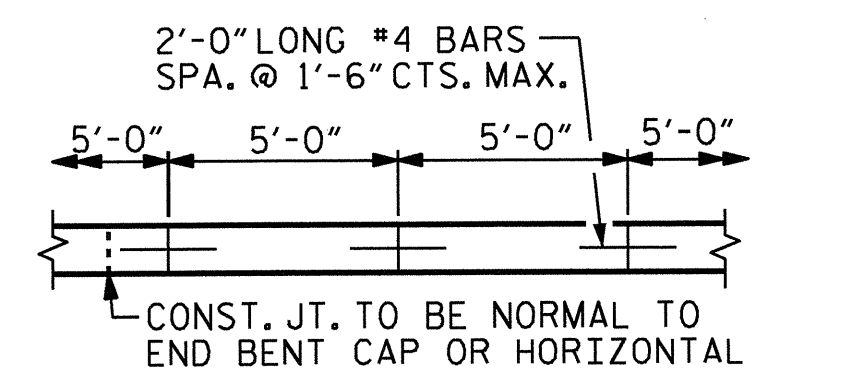
SECTION A-A



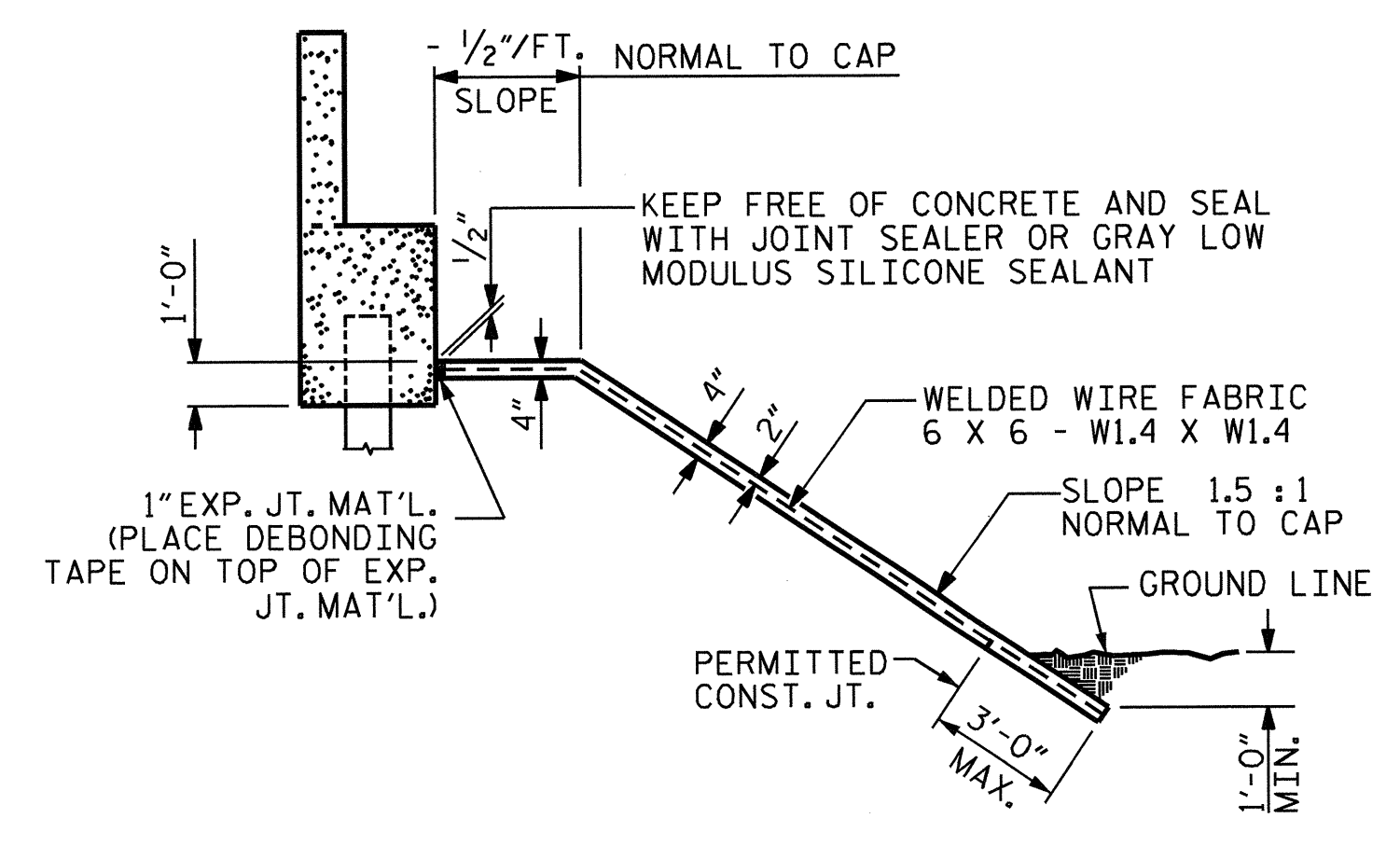
OPTIONAL POURING DETAIL



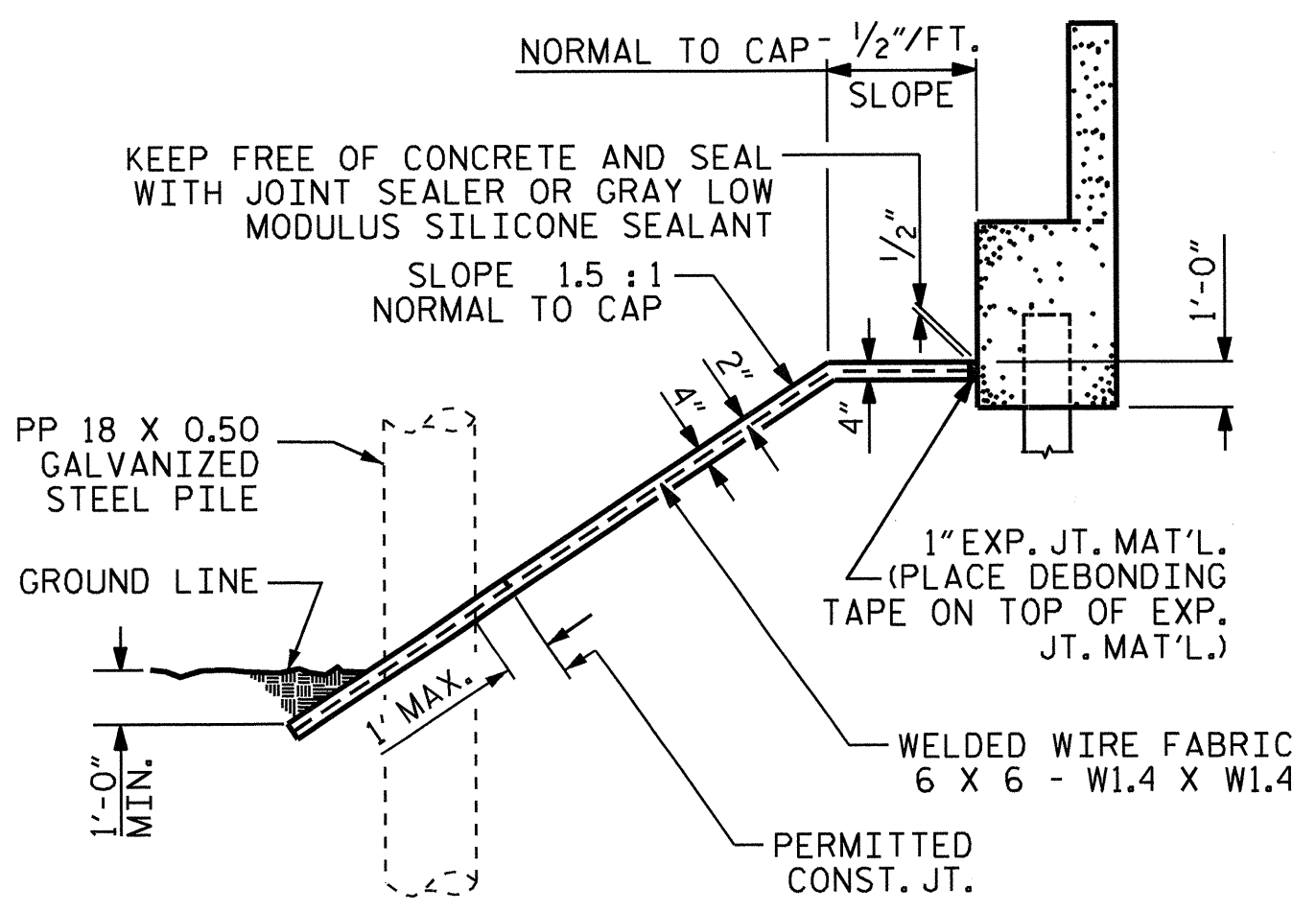
SECTION B-B



POURING DETAIL



SECTION C-C



SECTION D-D

BRIDGE @ STA. 28+17.07 -L-	4" SLOPE PROTECTION			* WELDED WIRE FABRIC 60 INCHES WIDE		
	SQUARE YARDS			APPROX. L.F.		
	STAGE I	STAGE II	TOTAL	STAGE I	STAGE II	TOTAL
END BENT #1	265	255	520	525	515	1,040
END BENT #2	370	435	805	735	870	1,605
TOTAL			1,325			2,645

PROJECT NO. U-4432
 WAKE COUNTY
 STATION: 28+17.07 -L-

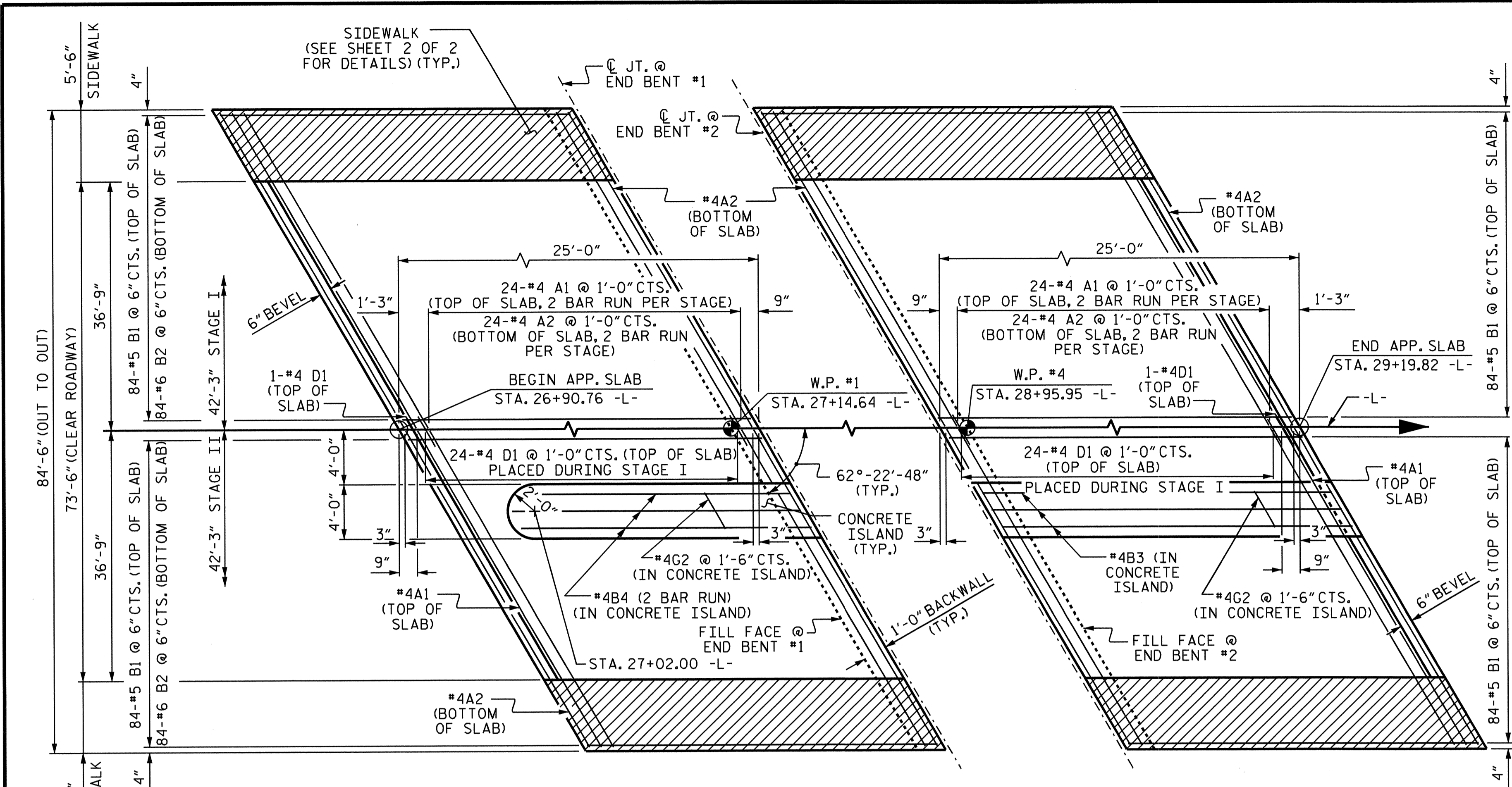
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SLOPE PROTECTION DETAILS

REVISIONS						SHEET NO. S-50
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 52
2			4			

DRAWN BY: R.P. PATEL DATE: 3-12-13
 CHECKED BY: KIM BEARD DATE: 4-16-13
 DESIGN ENGINEER OF RECORD: D.A. DAVENPORT DATE: 6/25/13

DRAWN BY: ELR 5/92 REV. 5/1/06 TLA/GM
 CHECKED BY: GRP 6/92 REV. 10/1/11 MAA/GM
 REV. 12/21/11 MAA/GM



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

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

THE #4 D1 DOWELS SHALL BE PLACED IN THE SAME PLANE AS THE TOP SLAB REINFORCING STEEL.

WITH FOAM JOINT SEAL

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2 1/2".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL
APPROACH SLABS STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	100	#4	STR	24'-8"	1648
A2	104	#4	STR	24'-7"	1708
*B1	168	#5	STR	23'-5"	4103
B2	168	#6	STR	24'-7"	6203
*B3	8	#4	STR	24'-7"	131
*D1	50	#4	STR	4'-5"	148
*G1	50	#4	STR	5'-7"	186
*U1	16	#4	1	3'-4"	36

REINFORCING STEEL	LBS.	7911
*EPOXY COATED REINFORCING STEEL	LBS.	6252

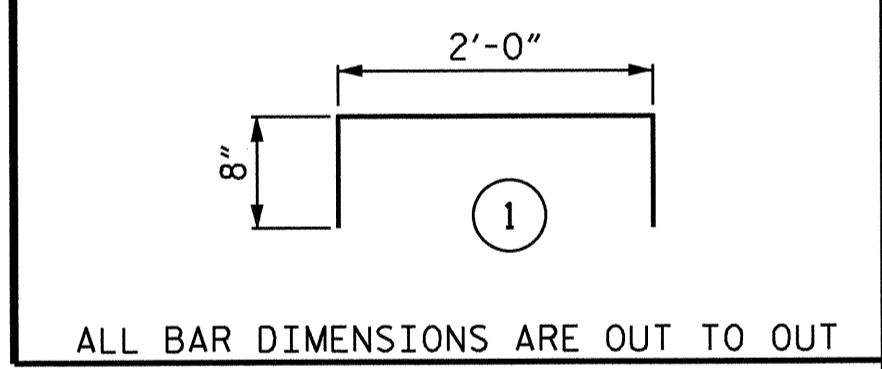
APPROACH SLAB STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	100	#4	STR	24'-8"	1648
A2	104	#4	STR	24'-7"	1708
*B1	168	#5	STR	23'-5"	4103
B2	168	#6	STR	24'-7"	6203
*B3	11	#4	STR	24'-7"	181
*B4	6	#4	STR	10'-0"	40
*G1	50	#4	STR	5'-7"	186
*G2	34	#4	STR	2'-8"	61
*U1	16	#4	1	3'-4"	36

REINFORCING STEEL	LBS.	7911
*EPOXY COATED REINFORCING STEEL	LBS.	6255

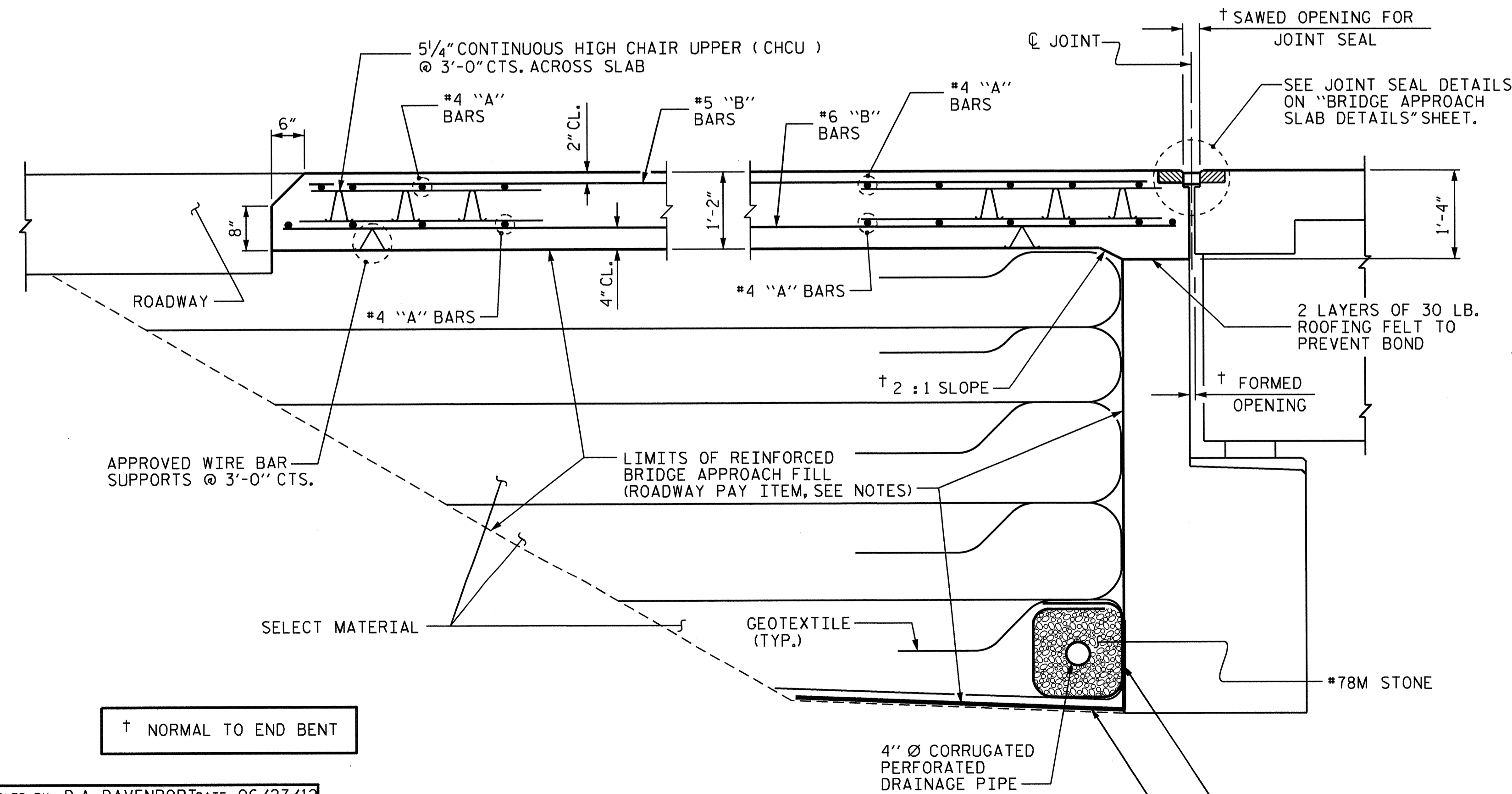
CLASS AA CONCRETE	C. Y.	100.6
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BAR TYPE

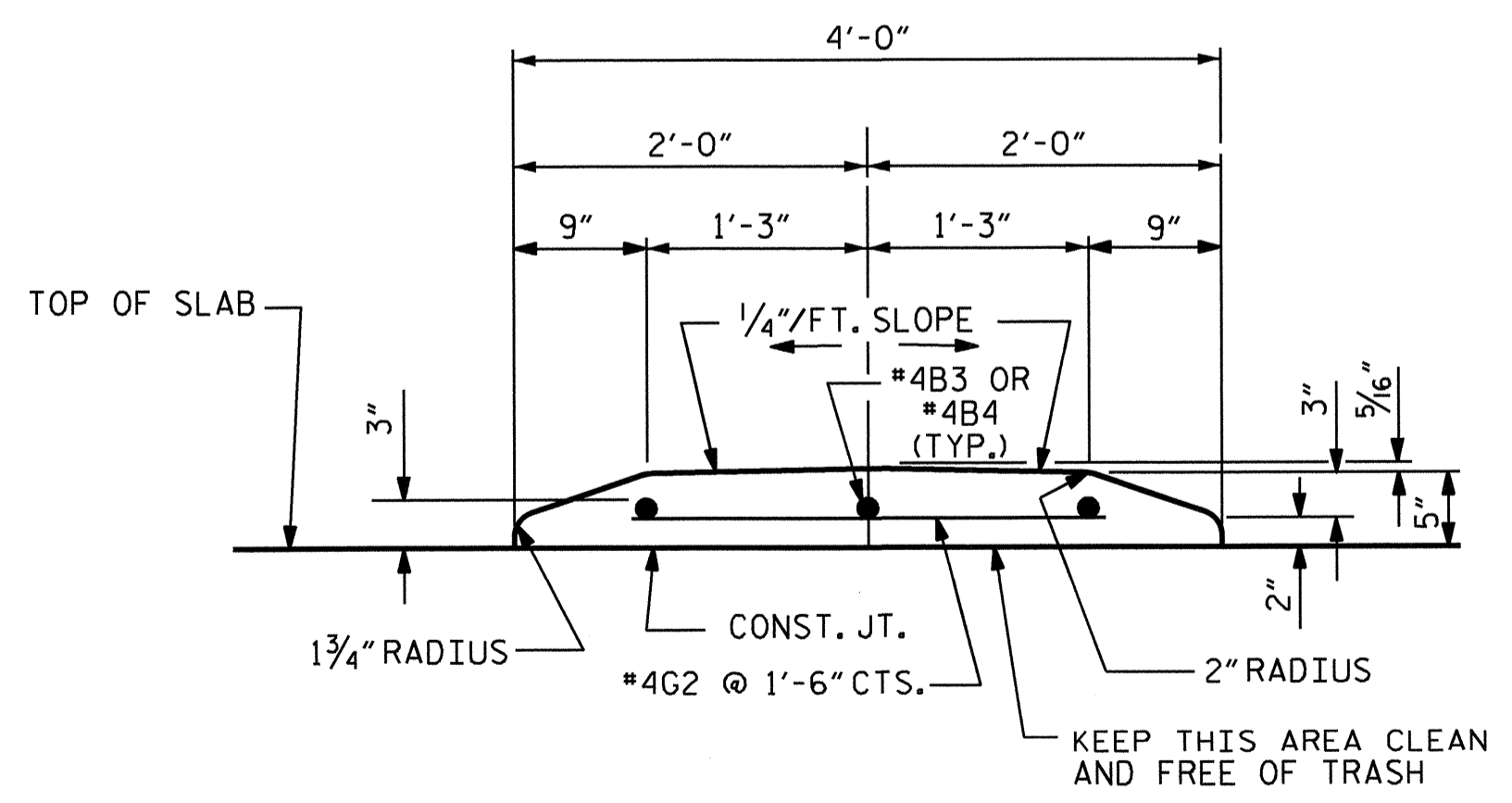


SPLICE LENGTHS

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



SECTION THRU SLAB



SECTION THROUGH MONOLITHIC CONCRETE ISLAND

SEE "SECTION THRU ISLAND AT END BENTS" ON "SIDEWALK AND MONOLITHIC CONCRETE ISLAND DETAILS" SHEET FOR JOINT BETWEEN APPROACH SLAB AND BRIDGE

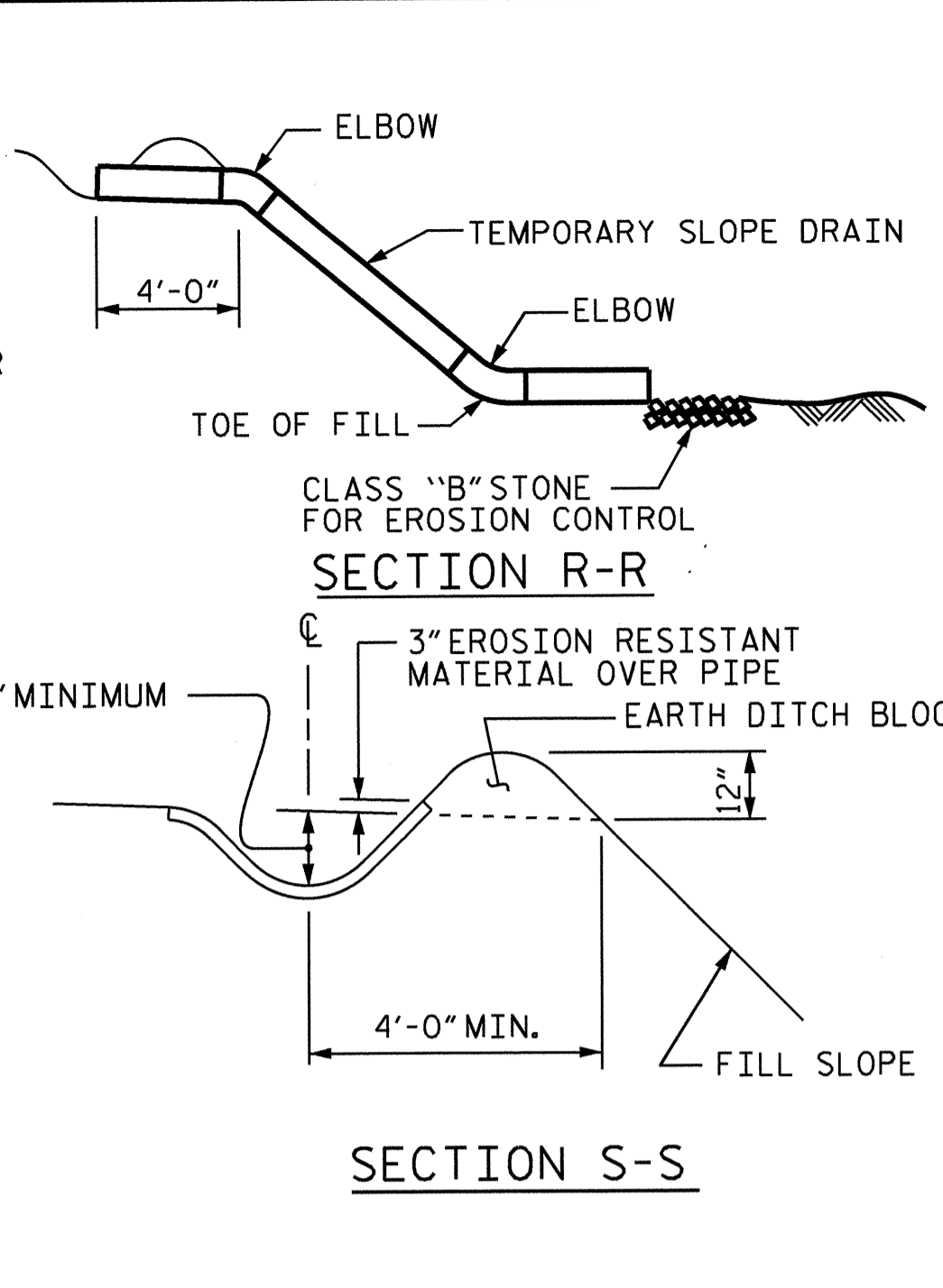
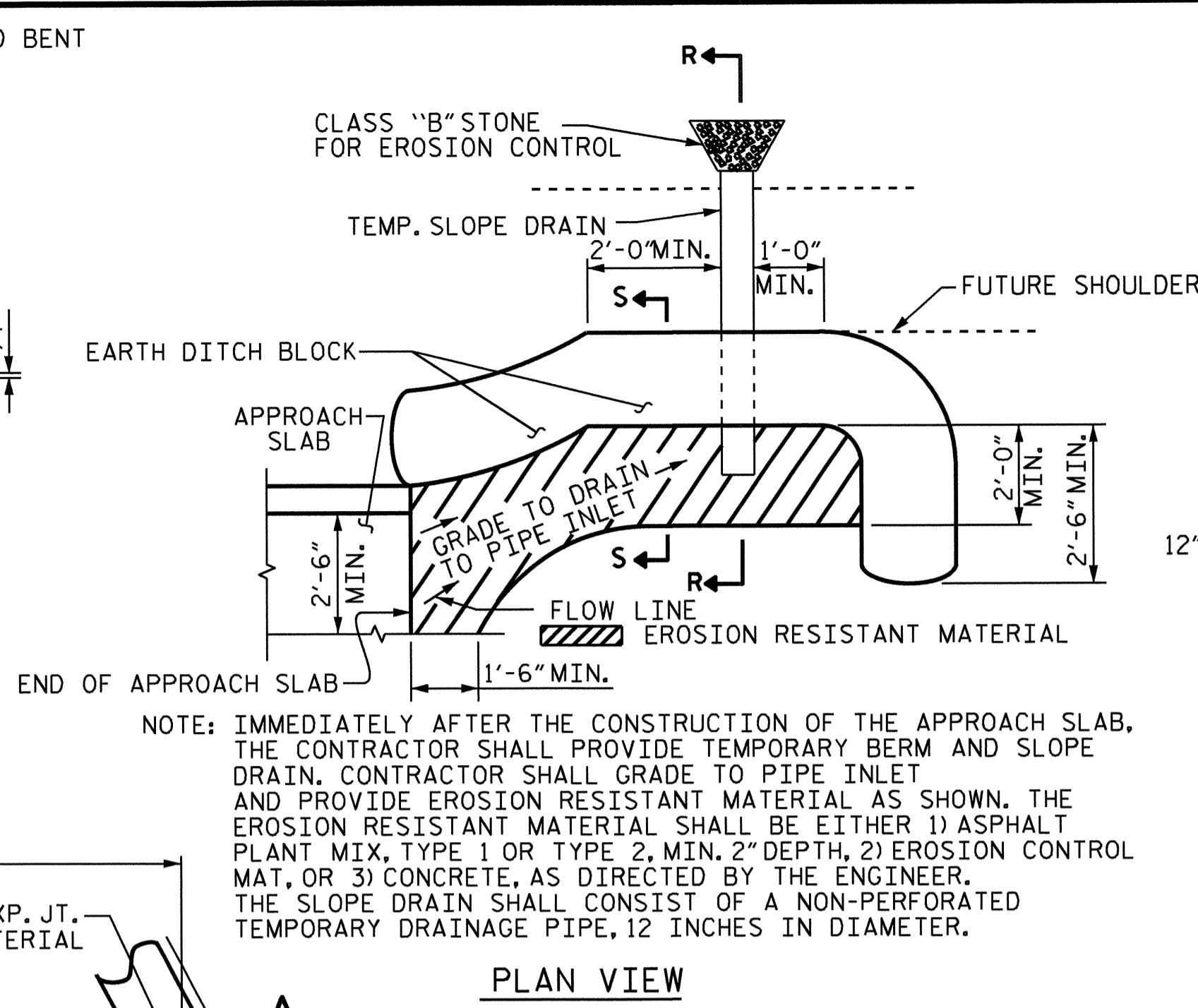
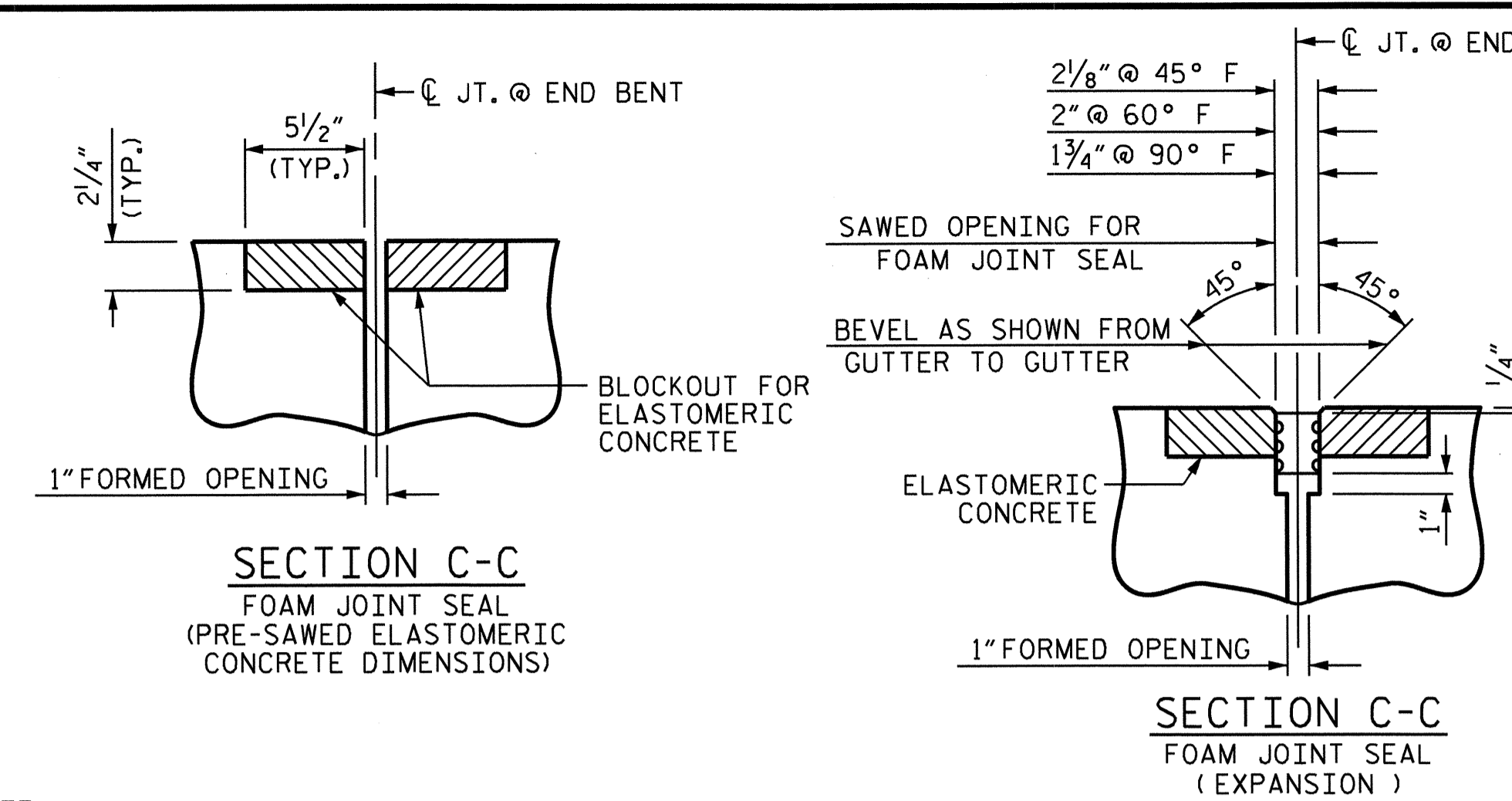
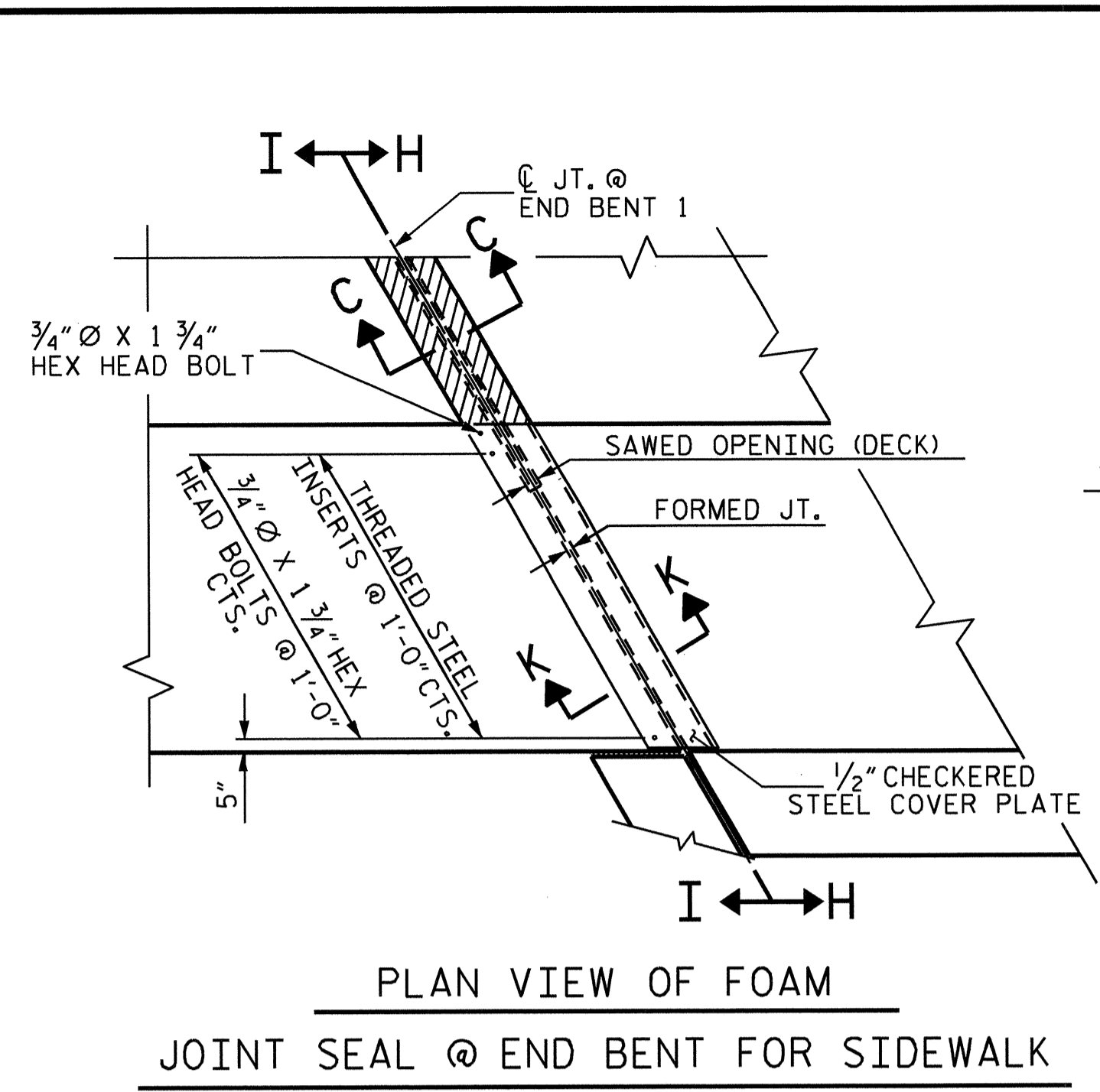


PROJECT NO. U-4432
WAKE COUNTY
STATION: 28+17.07 -L-

SHEET 1 OF 2
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH SLAB
FOR FLEXIBLE PAVEMENT

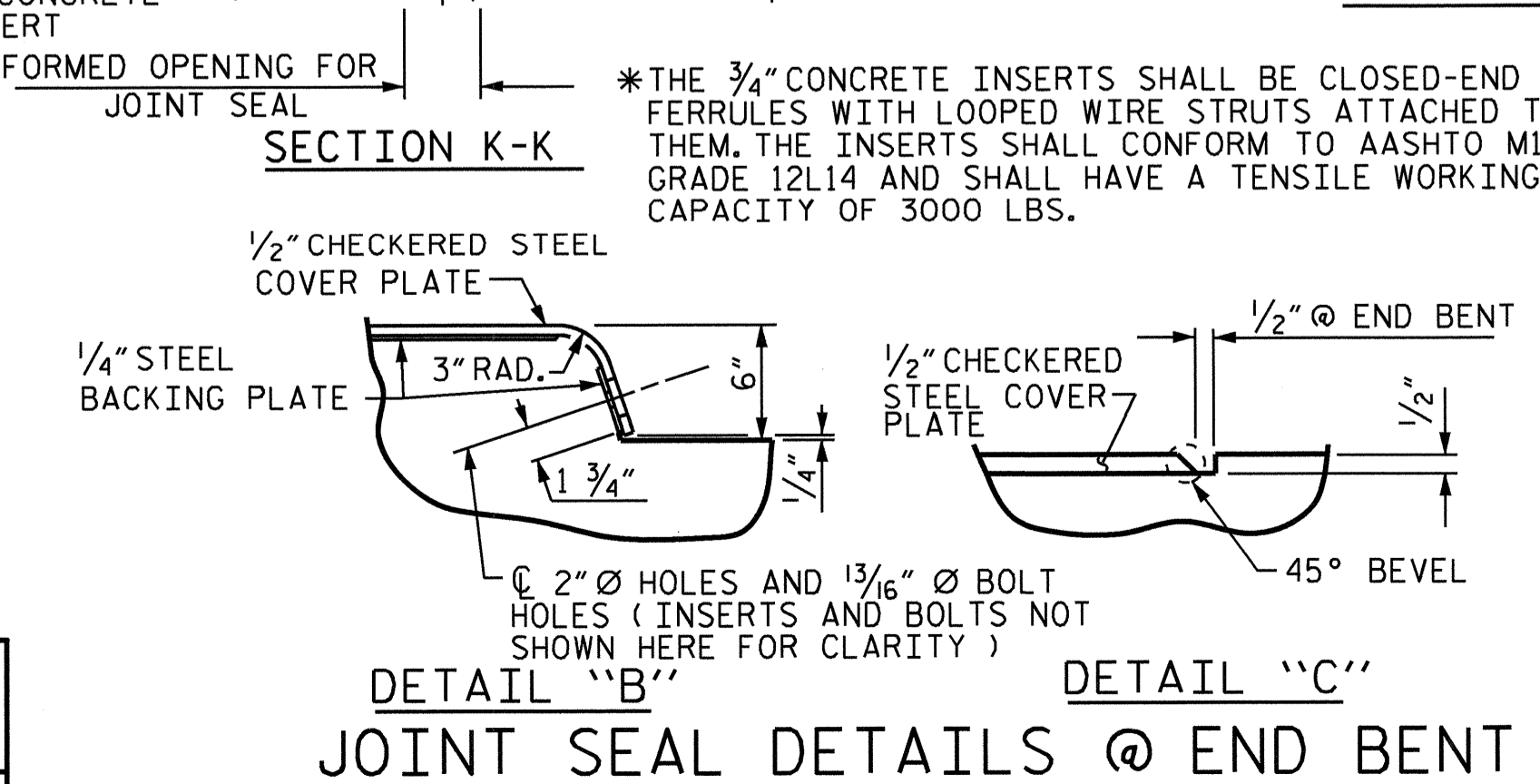
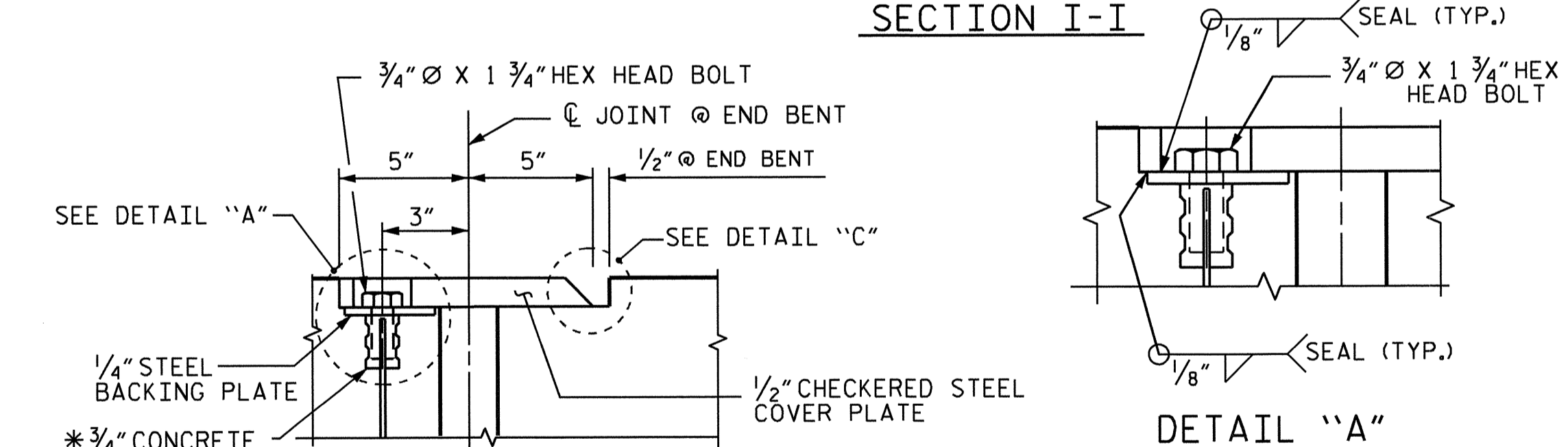
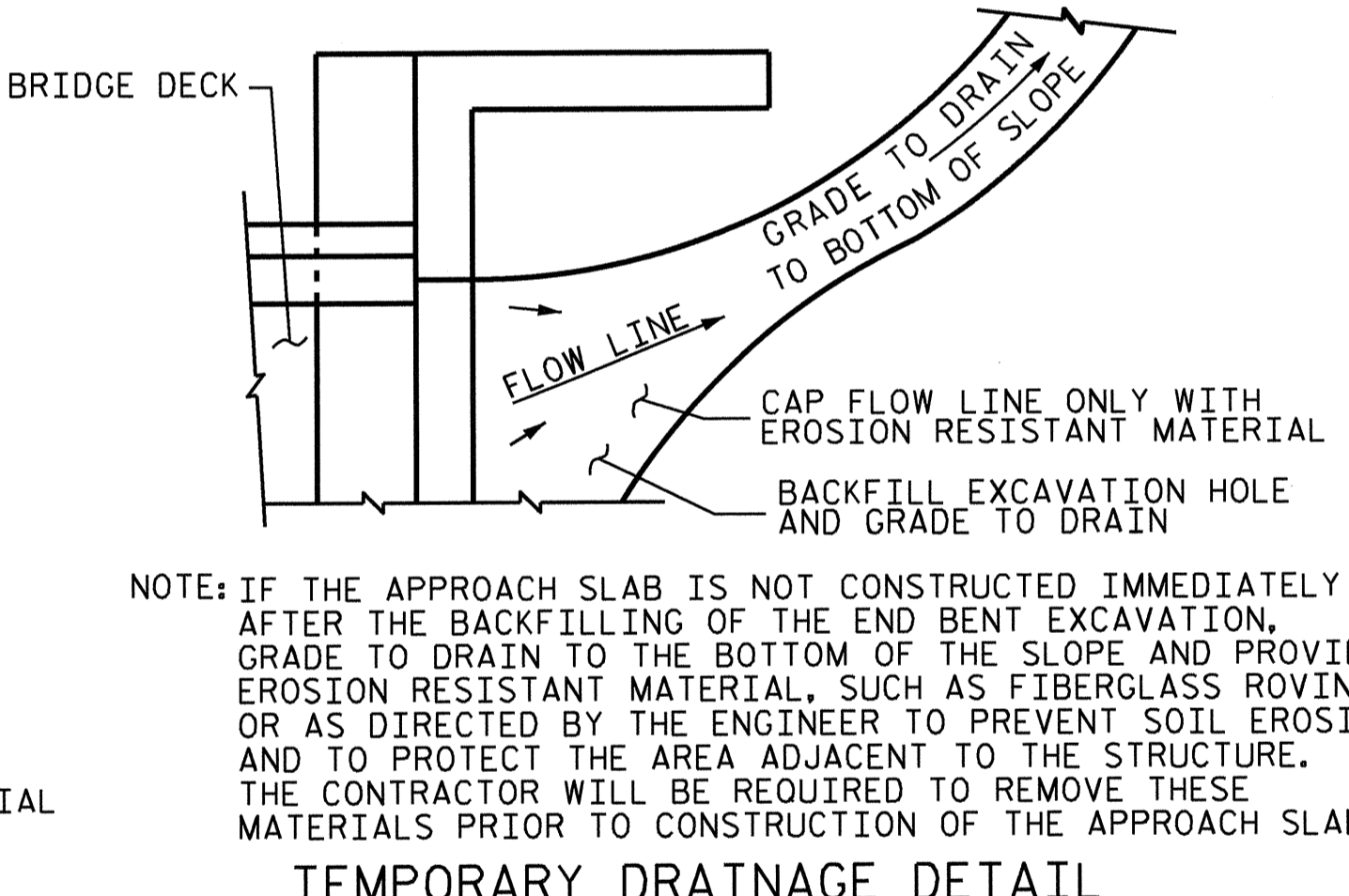
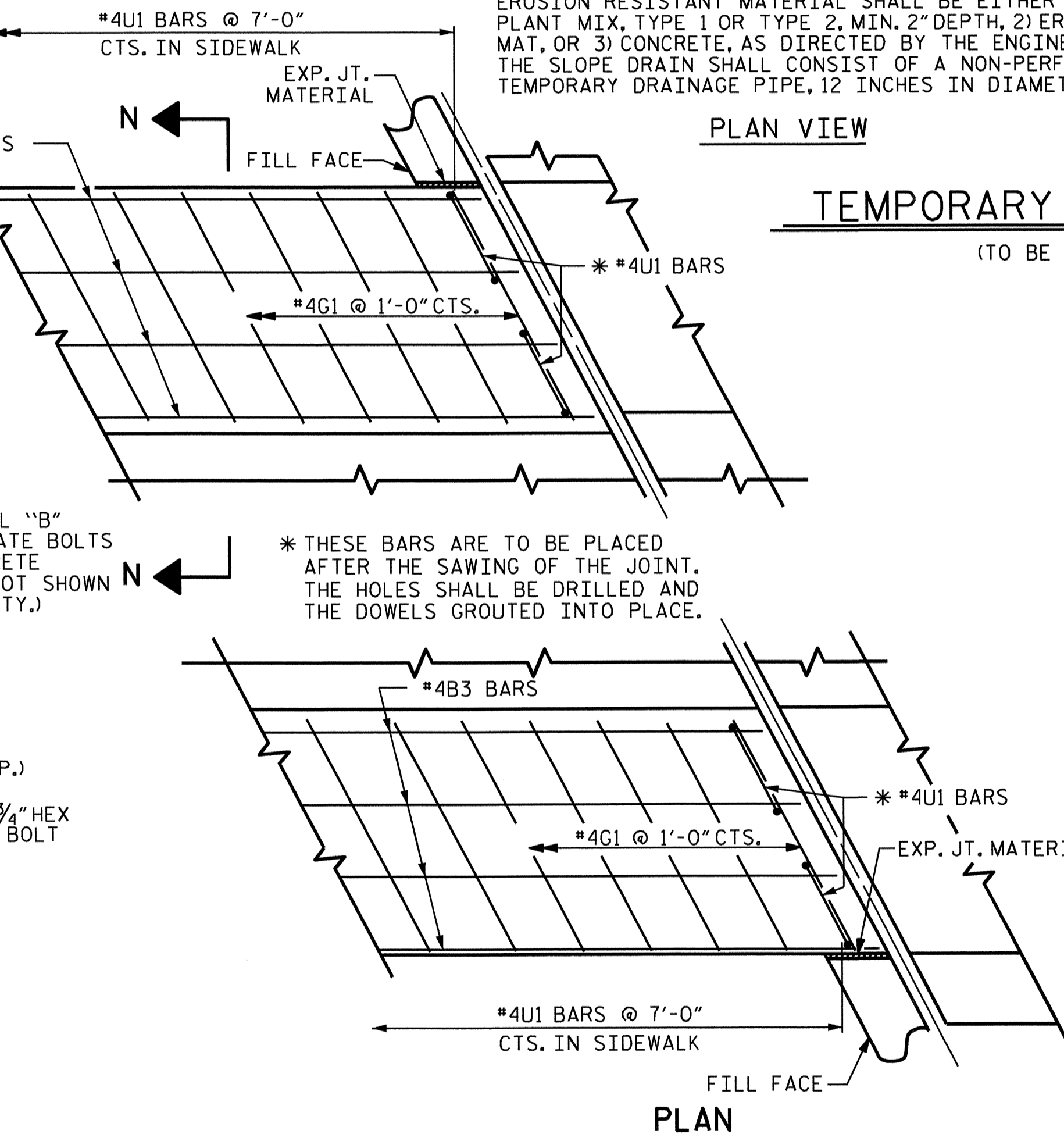
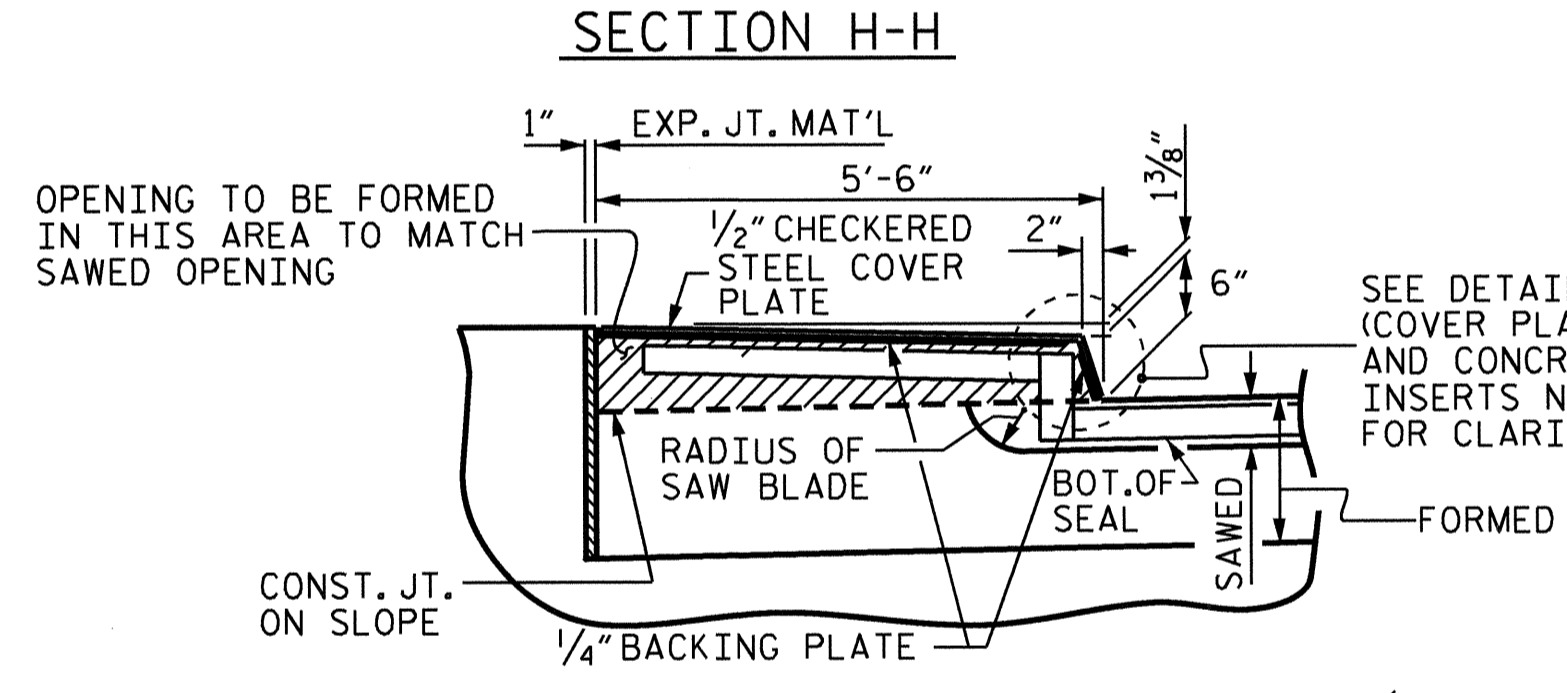
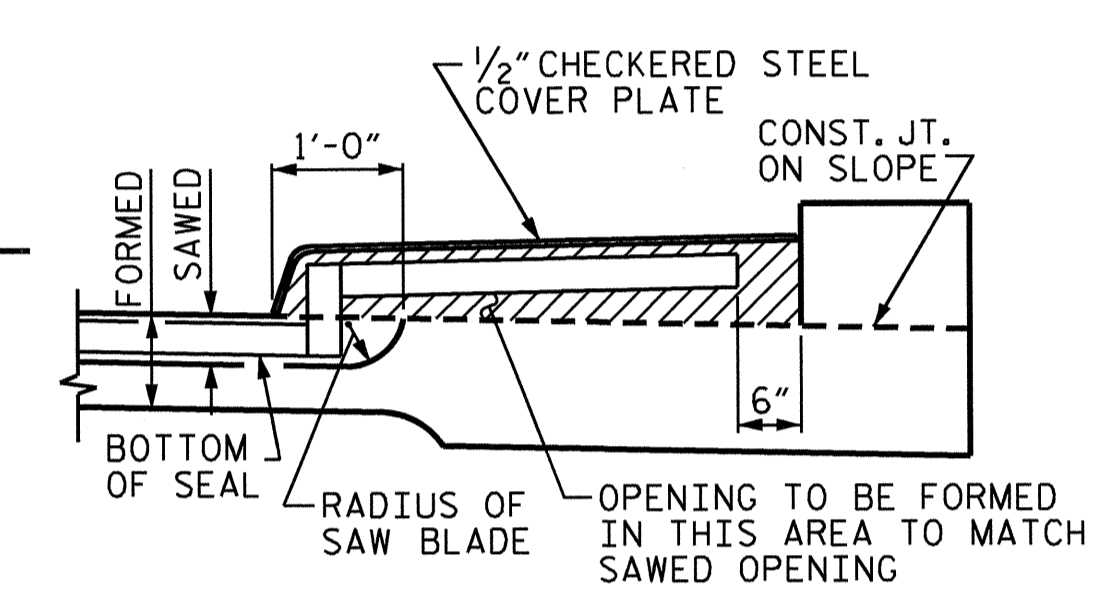
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-51
1			3			TOTAL SHEETS 52
2			4			

ASSEMBLED BY: D.A. DAVENPORT DATE: 06/27/12
CHECKED BY: R.P. PATEL DATE: 02/28/13
DESIGN ENGINEER OF RECORD: D.A. DAVENPORT DATE: 04/15/13
DRAWN BY: EEM 3/95 REV. 5/1/06RR KMM/GM
CHECKED BY: VAP 3/95 REV. 10/1/11 MAA/GM
REV. 12/2/11 MAA/GM



ELASTOMERIC CONCRETE			
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)		
	STAGE I	STAGE II	
1	7.1	7.1	14.2
2	7.1	7.1	14.2
SUBTOTAL	14.2	14.2	-
TOTAL			28.4

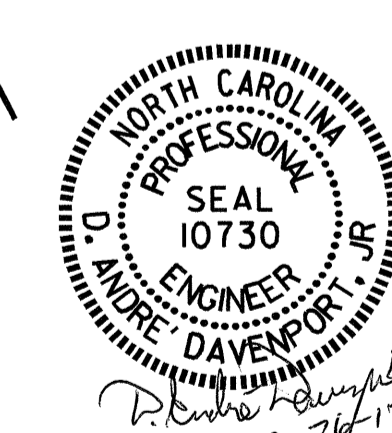
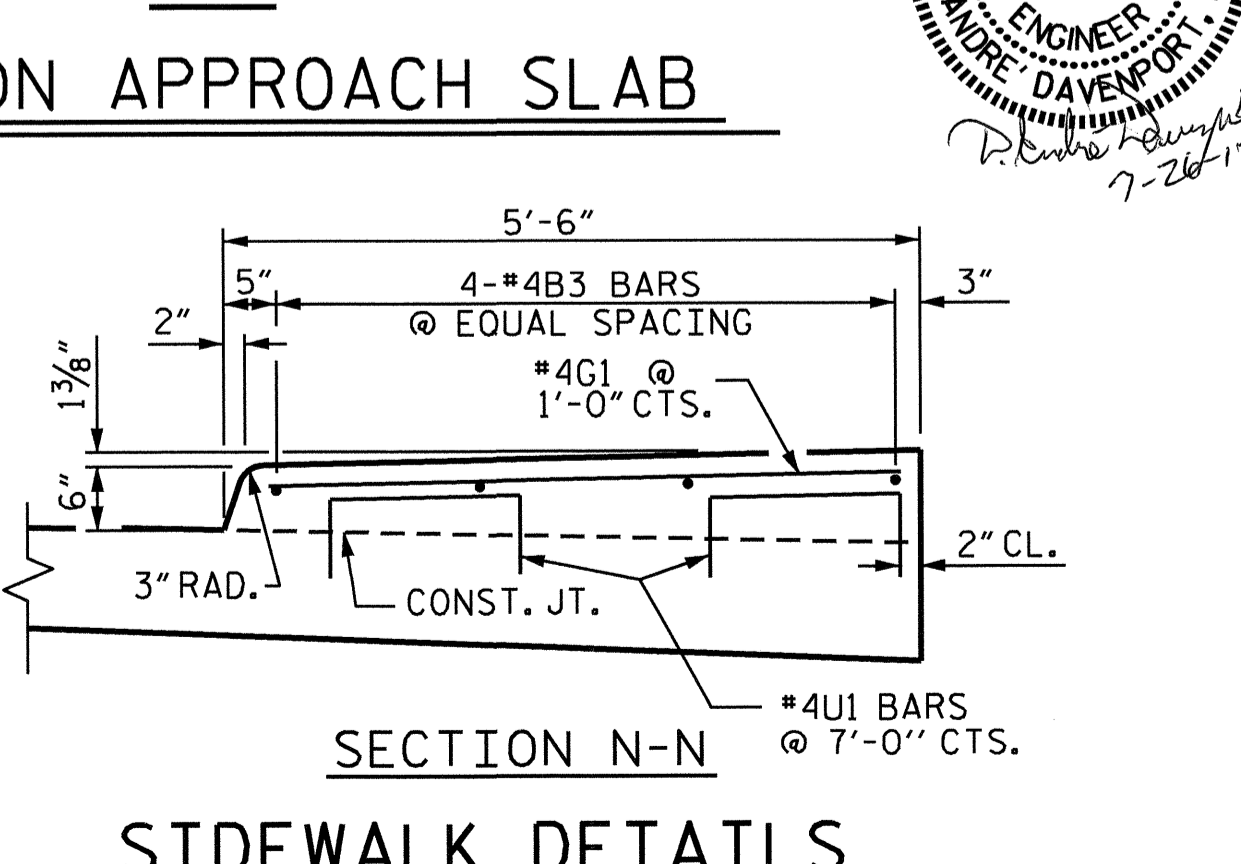
* BASED ON THE MINIMUM BLOCKOUT SHOWN.



THE STEEL PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR APPROVED EQUAL. AFTER FABRICATION, THE PLATES SHALL BE COMMERCIALY BLAST CLEANED AND EITHER COATED WITH A MINIMUM THICKNESS OF 4 MILS (DRY) OF ZINC-RICH PAINT, GALVANIZED OR METALLIZED TO A MINIMUM THICKNESS OF 6 MILS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE 3/4\"/>

NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE COVER PLATE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR "FOAM JOINT SEALS".



PROJECT NO. U-4432
 WAKE COUNTY
 STATION: 28+17.07 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 52

ASSEMBLED BY : D.A. DAVENPORT DATE : 06/27/12
 CHECKED BY : R.P. PATEL DATE : 02/28/13
 DESIGN ENGINEER OF RECORD : D.A. DAVENPORT DATE : 04/15/13
 DRAWN BY : FCJ 11/88
 CHECKED BY : ARB 11/88

REV. 5/7/03 RWW/JTE
 REV. 5/1/06RRR MAA/KMM
 REV. 10/1/11 MAA/GM

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	-----	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	-----	SEE PLANS
IMPACT ALLOWANCE	-----	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF		
STRUCTURAL STEEL - AASHTO M270 GRADE 36	-	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	-	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	-	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION		
GRADE 60	--	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	-----	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	-----	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR		
UNTREATED - EXTREME FIBER STRESS	-----	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	-----	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	-----	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N.C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE. ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN