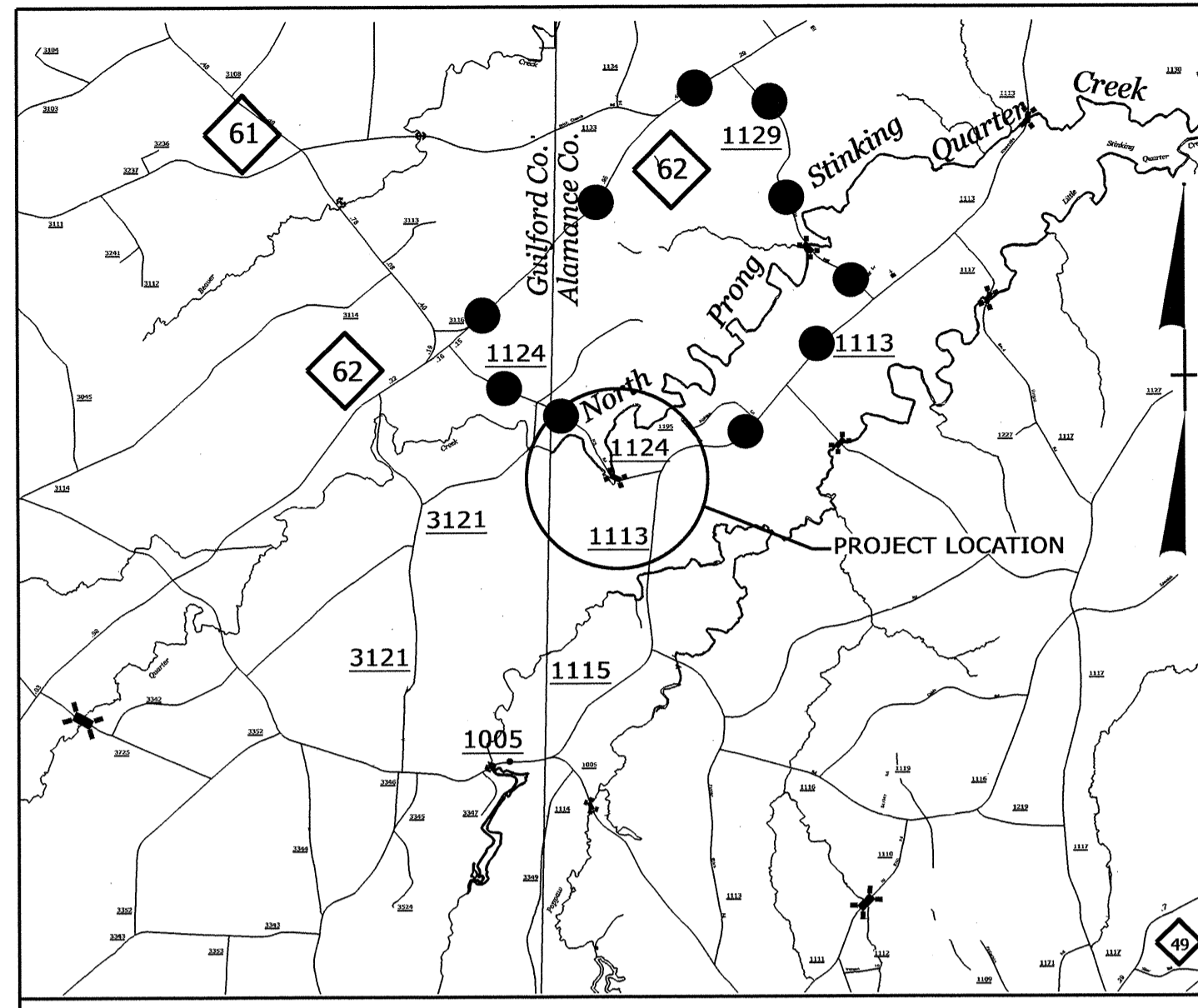
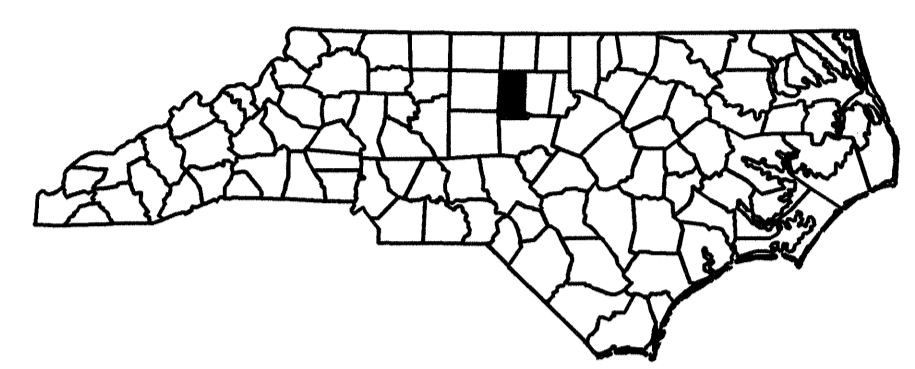


09/08/09

TIP PROJECT: B-4401

CONTRACT: C203257

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4401		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33681.1.1	BRZ-1124(5)	PE	
33681.2.1	BRZ-1124(5)	RW & UTILITIES	
33681.3.FD1	BRZ-1124(5)	CONSTRUCTION	



VICINITY MAP

●●●● OFFSITE DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ALAMANCE COUNTY

LOCATION: BRIDGE NO. 161 OVER NORTH PRONG STINKING
QUARTER CREEK ON SR 1124 (STAFFORD MILL ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

STRUCTURE

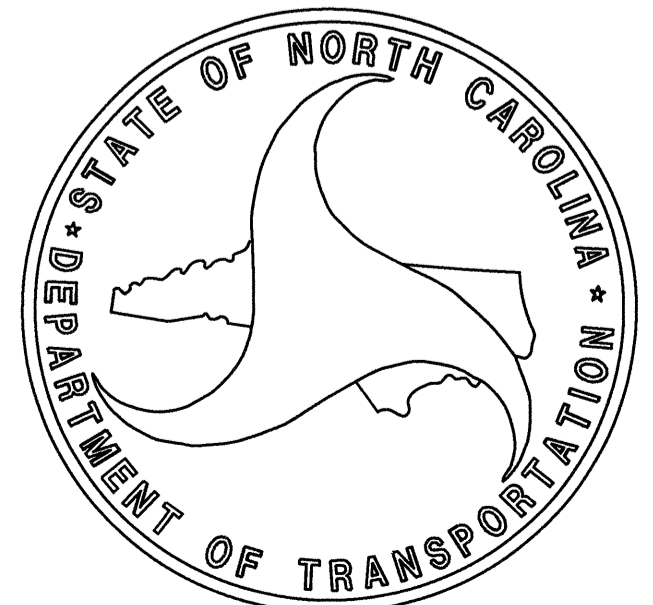
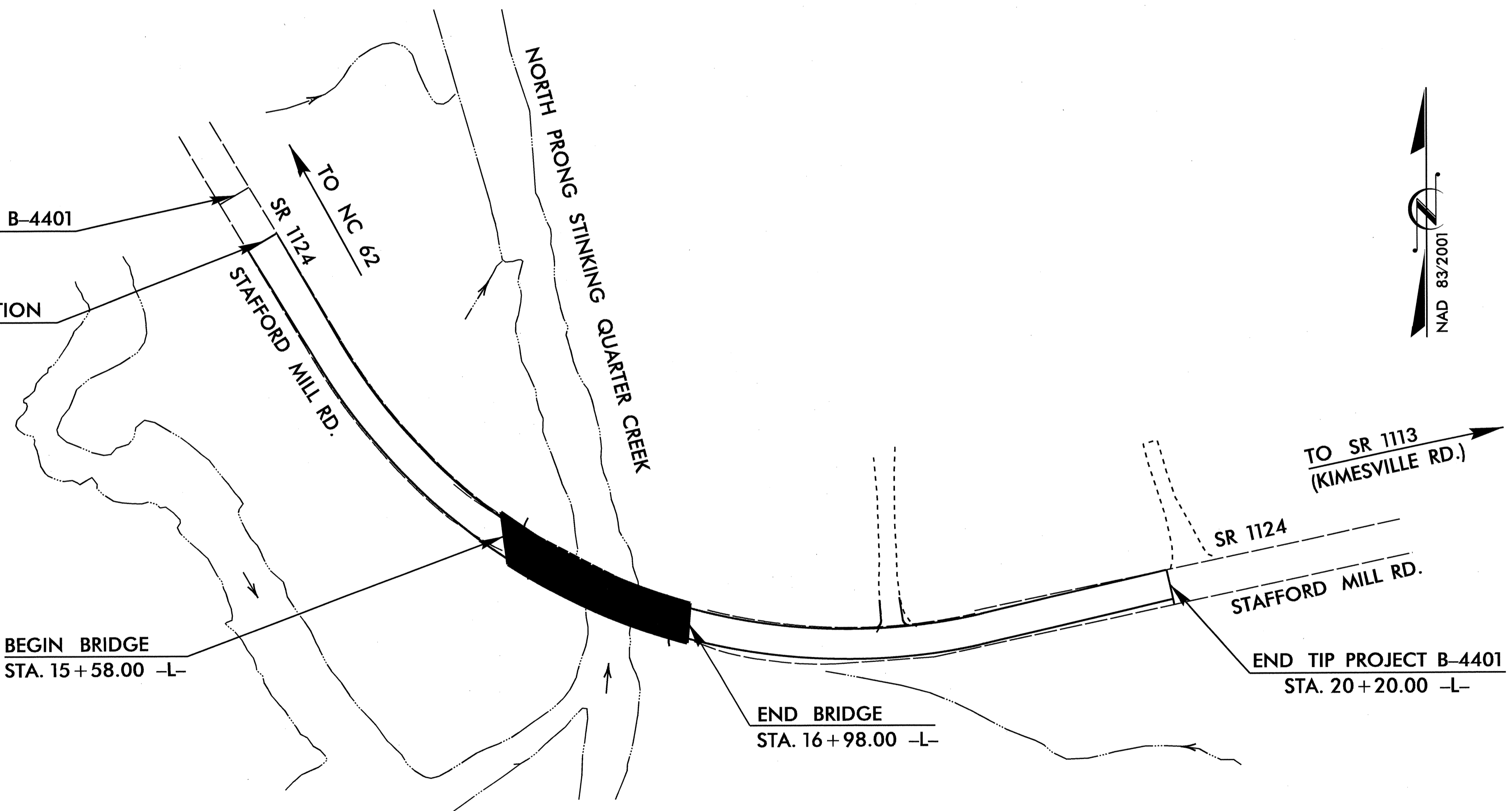
BEGIN TIP PROJECT B-4401
STA. 11+75.00 -L-

BEGIN CONSTRUCTION
STA. 12+75.00 -L-

BEGIN BRIDGE
STA. 15+58.00 -L-

END BRIDGE
STA. 16+98.00 -L-

END TIP PROJECT B-4401
STA. 20+20.00 -L-



DESIGN DATA

ADT 2010 =	200 vpd
ADT 2035 =	400 vpd
DHV =	13 %
D =	85 %
T =	14 % *
V =	35 MPH
* TTST 4% DUAL 10%	
Functional Class- Rural Local	
Sub Regional Tier	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4401	=	0.133 Miles
LENGTH STRUCTURE TIP PROJECT B-4401	=	0.027 Miles
TOTAL LENGTH TIP PROJECT B-4401	=	0.160 Miles

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

2012 STANDARD SPECIFICATIONS

LETTING DATE:
November 19, 2013

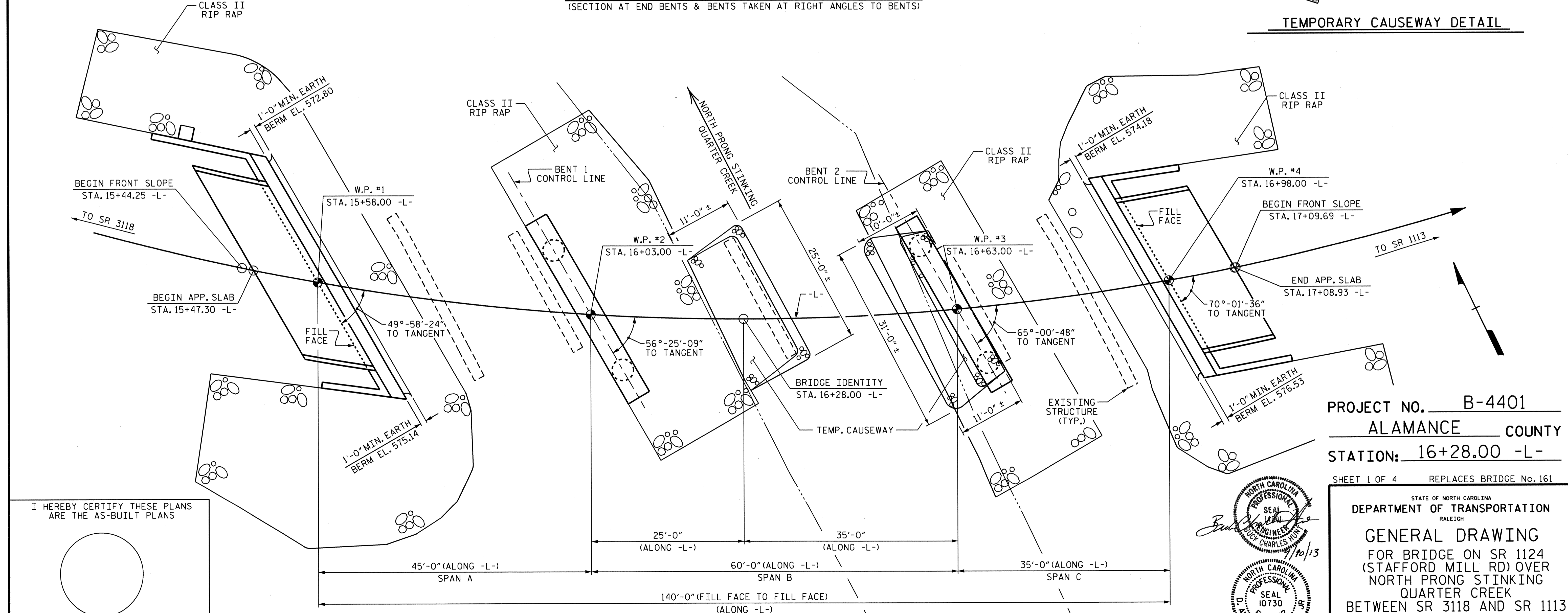
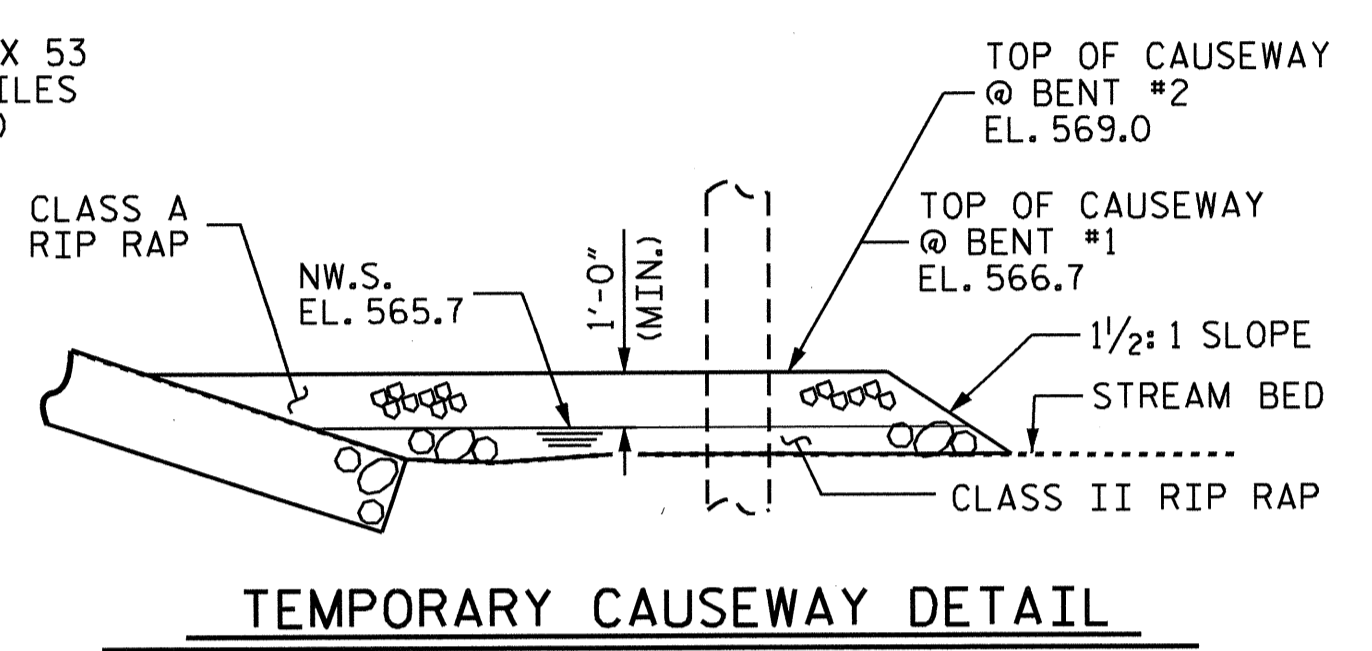
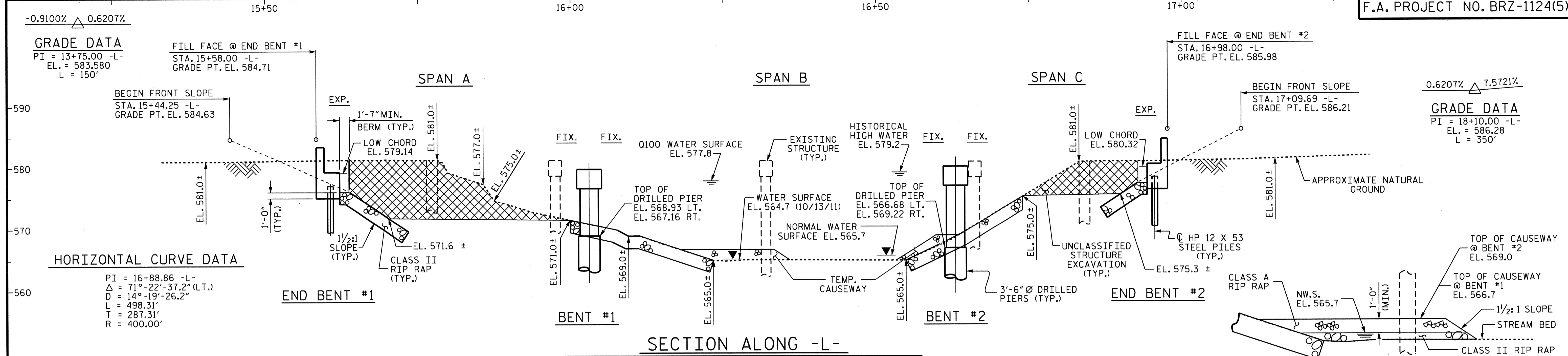
B.C. HUNT, P.E.
PROJECT ENGINEER

D.A. DAVENPORT, JR. P.E.
PROJECT DESIGN ENGINEER

STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR., RALEIGH, NC 27610

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

03-SEP-2013 12:10
\$\$\$\$\$DGN\$\$\$\$\$
davenport



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

DRAWN BY : R. P. PATEL DATE : 11-20-12
 CHECKED BY : K. D. LAYNE DATE : 12-07-12
 DESIGN ENGINEER OF RECORD: R. L. CHESSON DATE : 04/11/13

ELEVATION
 (PILES NOT SHOWN FOR CLARITY)

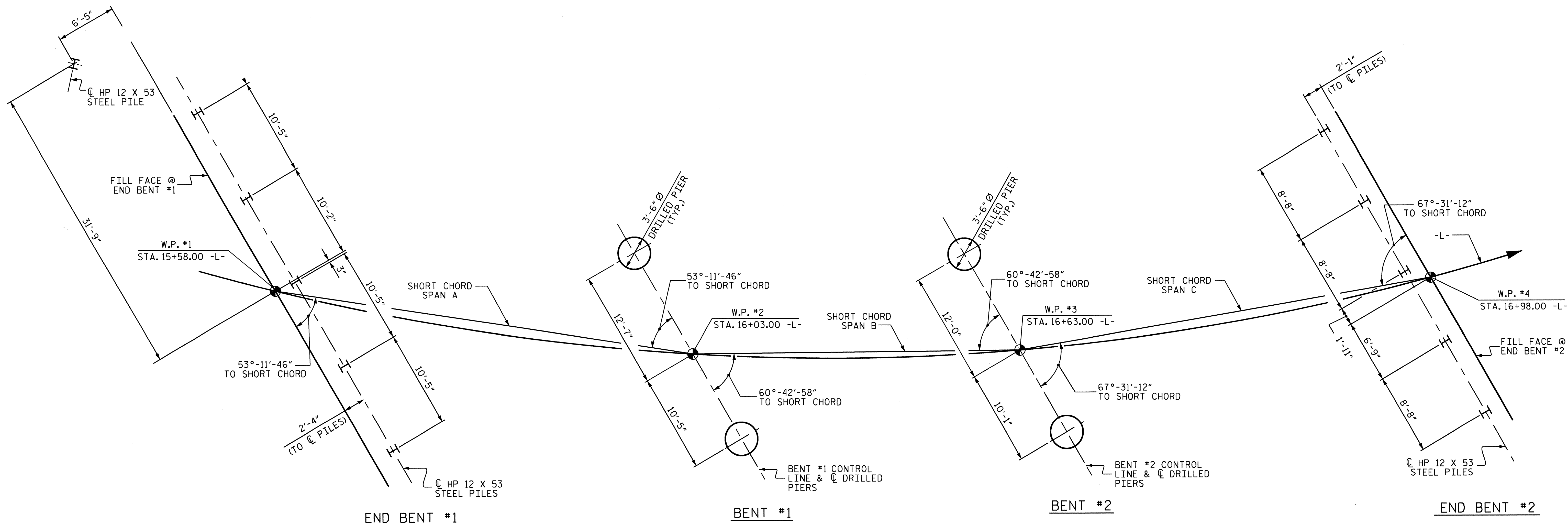
Professional Engineer Seal for R. L. Chesson, No. 10730, State of North Carolina.

PROJECT NO. B-4401
 ALAMANCE COUNTY
 STATION: 16+28.00 -L-
 SHEET 1 OF 4 REPLACES BRIDGE No. 161

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1124
 (STAFFORD MILL RD) OVER
 NORTH PRONG STINKING
 QUARTER CREEK
 BETWEEN SR 3118 AND SR 1113

REVISIONS						SHEET NO. S-1
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			



FOUNDATION LAYOUT

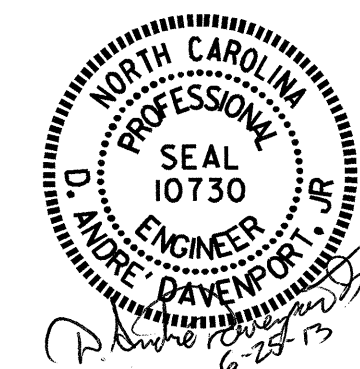
DIMENSIONS LOCATING DRILLED PILES ARE TO DRILLED PIER CENTER

NOTES

- FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- DRILLED PIERS AT BENT #1 AND #2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 300 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 40 TSF.
- PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT #1 AND BENT #2. IF REQUIRED, DO NOT EXTEND CASING BELOW ELEVATION 559.0 (BENT #1) OR ELEVATION 560.0 (BENT #2) WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING.
- INSTALL DRILLED PIERS AT BENT #1 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 552.0 AND WITH THE REQUIRED TIP RESISTANCE.
- INSTALL DRILLED PIERS AT BENT #2 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 553.0 AND WITH THE REQUIRED TIP RESISTANCE.
- THE SCOUR CRITICAL ELEVATIONS FOR BENT #1 AND BENT #2 IS ELEVATION 558.0 (BENT #1) AND 559.0 (BENT #2). SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS.
- CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. SEE SECTION 411 OF OF THE STANDARD SPECIFICATIONS.
- FOR PILES SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- PILES AT END BENT #1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 80 TONS PER PILE.
- PILES AT END BENT #2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 65 TONS PER PILE.
- PILE EXCAVATION IS REQUIRED TO INSTALL PILES AT END BENT #1 AND END BENT #2. EXCAVATE HOLES AT PILE LOCATIONS TO ELEVATION 564.0 (END BENT #1) AND TO ELEVATION 566.0 (END BENT #2). FOR PILE EXCAVATION SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- CONCRETE IS REQUIRED TO FILL HOLES FOR PILE EXCAVATION AT END BENT #1 AND END BENT #2.
- DO NOT DRIVE PILES AT END BENT #1 OR END BENT #2 AFTER PLACING PILES IN EXCAVATED HOLES.

PROJECT NO. B-4401
ALAMANCE COUNTY
 STATION: 16+28.00 -L-

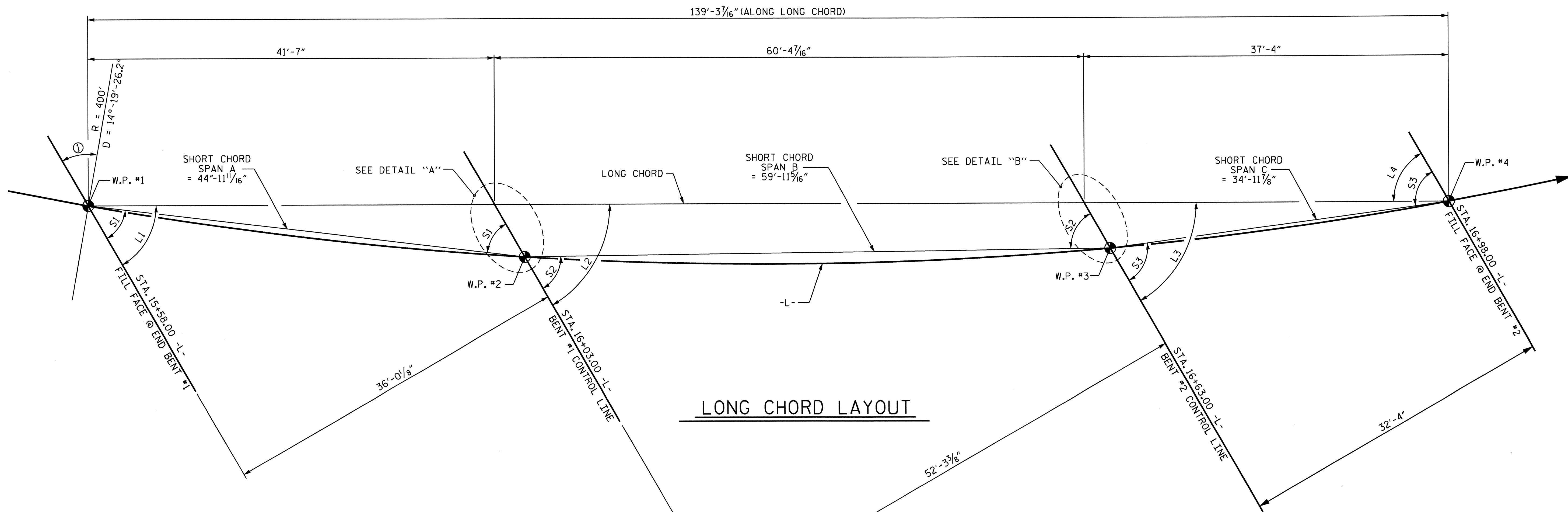
SHEET 2 OF 4



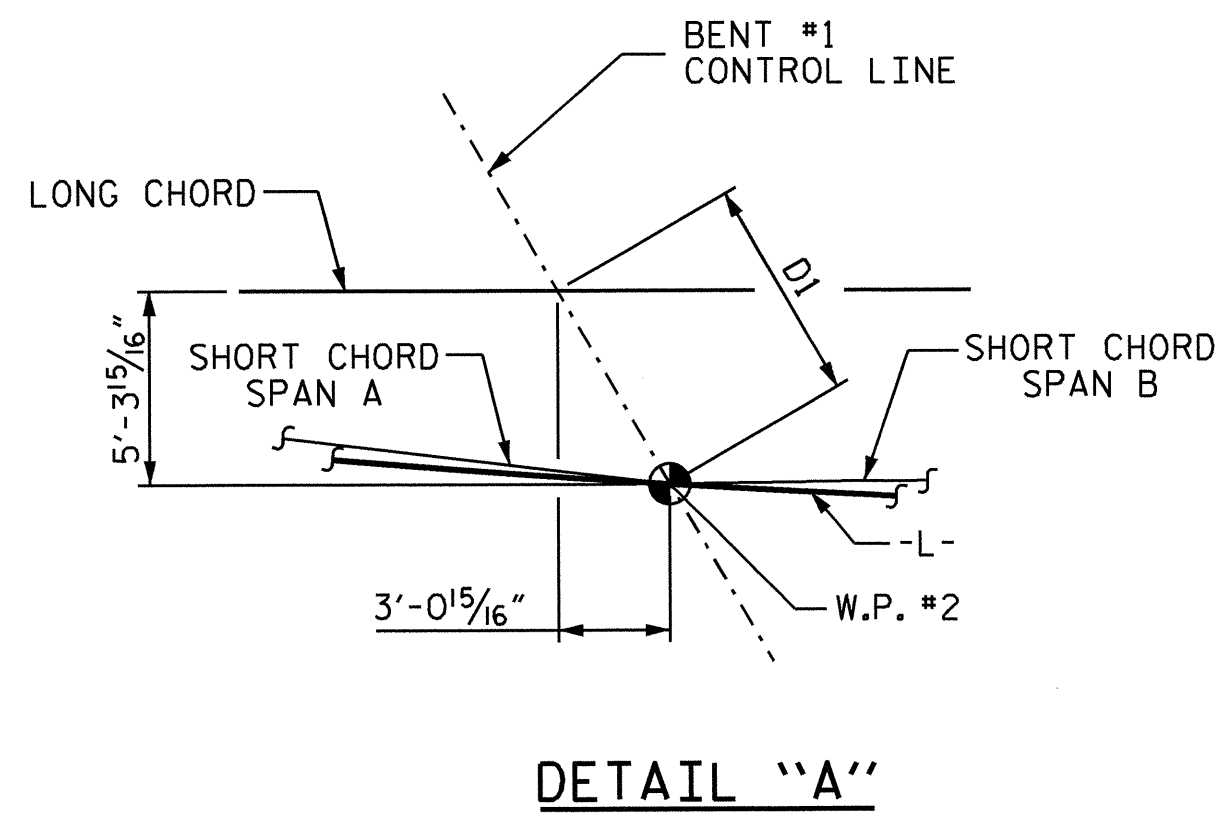
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON SR 1124
 (STAFFORD MILL RD) OVER
 NORTH PRONG STINKING
 QUARTER CREEK
 BETWEEN SR 3118 AND SR 1113

DRAWN BY : R. P. PATEL DATE : 11-20-12
 CHECKED BY : K. D. LAYNE DATE : 12-07-12
 DESIGN ENGINEER OF RECORD: R. L. CHESSON DATE : 04/11/13

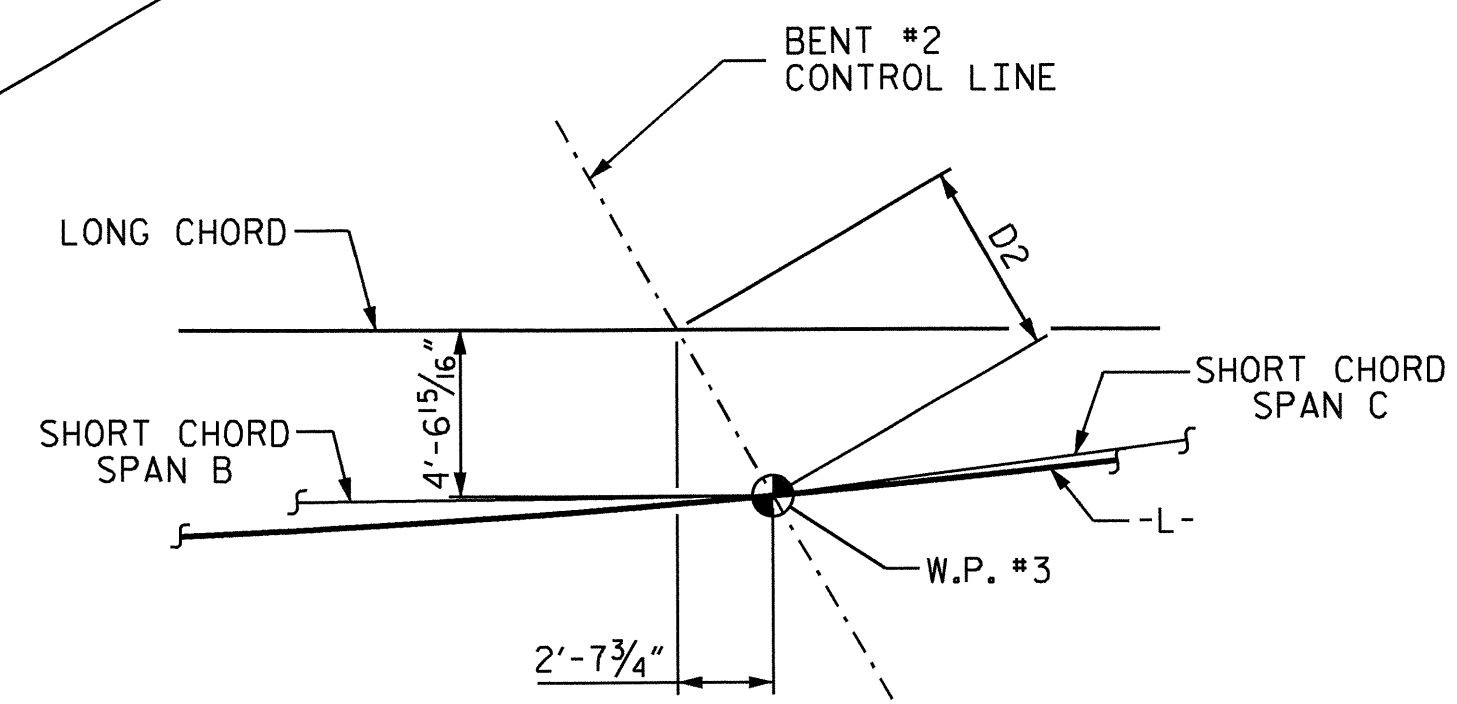
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2	
1			3			TOTAL SHEETS	35
2			4				



LONG CHORD LAYOUT



DETAIL "A"



DETAIL "B"

HORIZONTAL CURVE DATA -L-

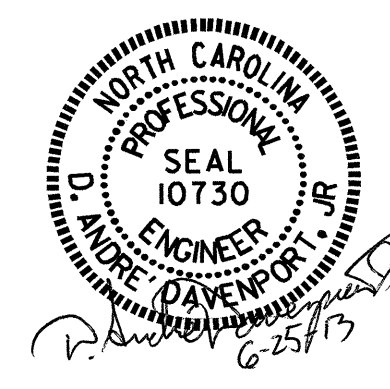
PI = 16+88.86 -L-
 Δ = 71°-22'-37.2" (LT.)
D = 14°-19'-26.2"
L = 498.31'
T = 287.31'
R = 400.00'

PROJECT NO. B-4401
ALAMANCE COUNTY
STATION: 16+28.00 -L-

SHEET 3 OF 4

ANGLES			
	LONG CHORD		SHORT CHORD
L1	60°-00'-00"	S1	53°-11'-46"
L2	60°-00'-00"	S2	60°-42'-58"
L3	60°-00'-00"	S3	67°-31'-12"
L4	60°-00'-00"		
1	40°-01'-36"		

OFFSETS	
D1	6'-1 13/16"
D2	5'-3 1/16"

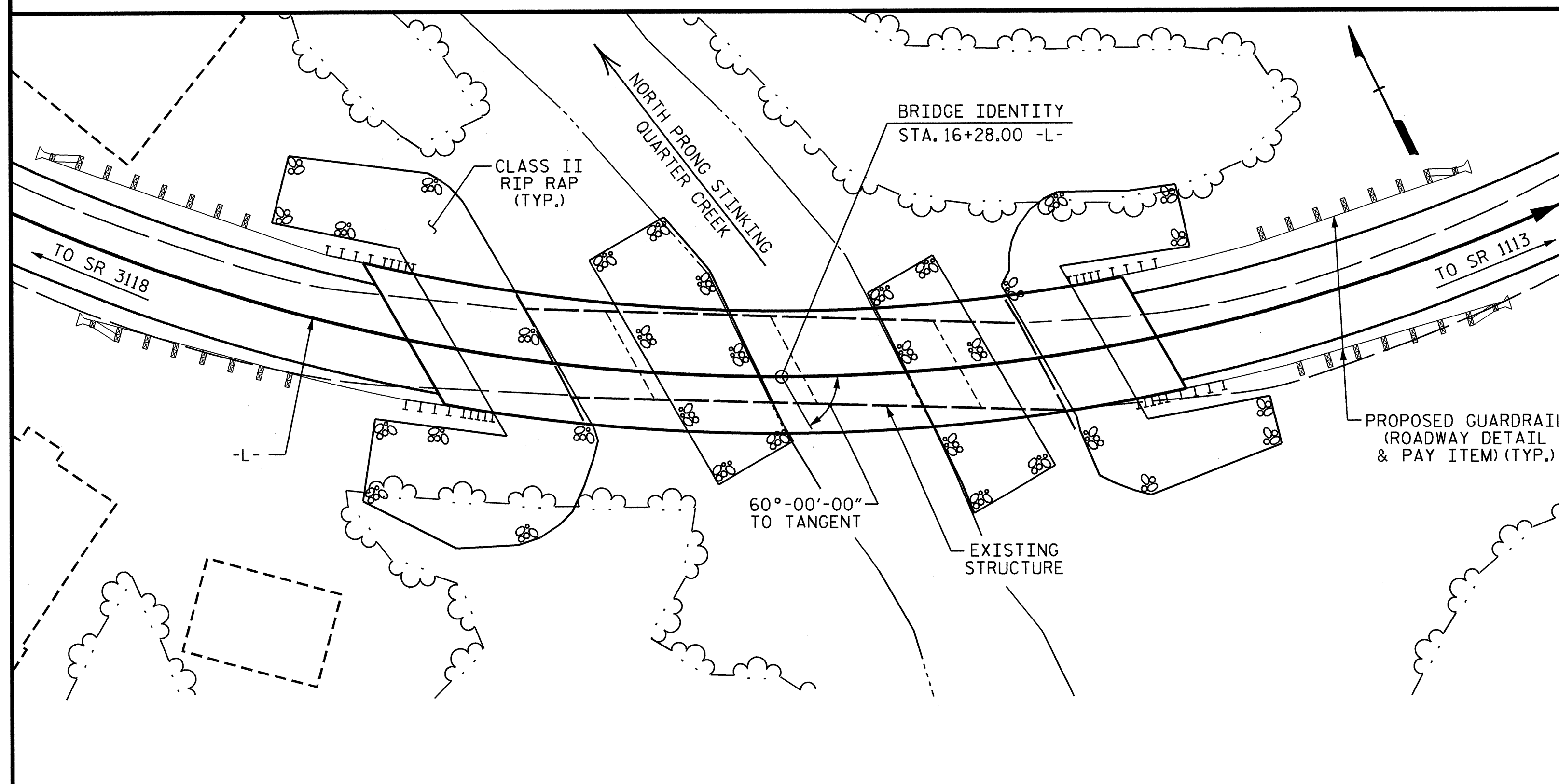


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
FOR BRIDGE ON SR 1124
(STAFFORD MILL RD) OVER
NORTH PRONG STINKING
CREEK
BETWEEN SR 3118 AND SR 1113

DRAWN BY : R. P. PATEL DATE : 11-20-12
CHECKED BY : K. D. LAYNE DATE : 12-07-12
DESIGN ENGINEER OF RECORD: R. L. CHESSON DATE : 04/11/13

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			35

B.M. #1: RAILROAD SPIKE IN ROOT BALL OF 28" Ø OAK 139' LEFT OF STA. 16+92.00 -L-, EL. 591.61



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS

LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES".

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 SHOULD BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

HYDRAULIC DATA

DESIGN DISCHARGE	= 4300 C.F.S.
FREQUENCY OF DESIGN DISCHARGE	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= 576.4
DRAINAGE AREA	= 19.7 SQ. MI.
BASE DISCHARGE (0100)	= 5500 C.F.S.
BASE HIGH WATER ELEVATION	= 577.8

OVERTOPPING DATA

OVERTOPPING DISCHARGE	= 12850 C.F.S.
FREQUENCY OF OVERTOPPING	= 500+ YRS.
OVERTOPPING ELEVATION	= 584.1

IN AS MUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 16+28.00 -L-".

THE EXISTING STRUCTURE CONSISTING OF 4 SIMPLE SPANS: 1 @ 17'-11/2", 1 @ 35'-1/2", 1 @ 35'-0", 1 @ 18'-4 1/2" WITH A CLEAR ROADWAY WIDTH OF 19'-1" AND TIMBER DECK ON I-BEAMS; SUBSTRUCTURE: END BENTS CONSISTING OF TIMBER CAP AND PILES; INTERIOR BENTS CONSISTING OF TIMBER CAPS AND PILES WITH CONCRETE SILLS AND LOCATED AT THE PROPOSED SITE SHALL BE REMOVED.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF STANDARD SPECIFICATIONS.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR. THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAYS, THE CLASS II RIP RAP USED IN THE CAUSEWAYS MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 16+28.00 -L-.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 25 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATION. EXCAVATION AREA SHOULD BE SLOPED 2% TOWARDS CREEK.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

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.

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	CONST. MAINT. & REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURE	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	3'-6" Ø DRILLED PIERS IN SOIL	3'-6" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIER	SID INSPECTIONS	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	EA.	EA.	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.
SUPERSTRUCTURE												4,023	3,612		LUMP SUM	
END BENT 1			36	24										46.9		4,874
BENT 1					15.25	17.0	20.1							21.1		5,563
BENT 2					13.0	17.0	17.9							19.8		6,097
END BENT 2			35	15										35.6		4,577
TOTAL	LUMP SUM	LUMP SUM	71	39	28.28	34.0	38.0	2	2	2	LUMP SUM	4,023	3,612	123.4	LUMP SUM	21111

TOTAL BILL OF MATERIAL

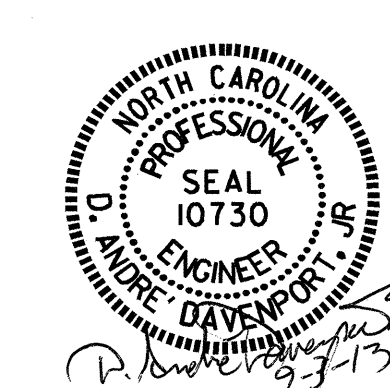
	SPIRAL COLUMN REINFORCING STEEL	45° PRESTRESSED CONCRETE GIRDER	HP 12 X 53 STEEL PILES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	FOAM JOINT SEALS
	LBS.	NO. LIN. FT.	NO. LIN. FT.	LIN. FT.	TON	SQ. YD.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE		12 535.90		275.6			LUMP SUM	LUMP SUM
END BENT 1			6 60		225	250		
BENT 1	1,072				135	145		
BENT 2	1,051				130	140		
END BENT 2			5 50		135	150		
TOTAL	2,123	12 535.90	11 110	275.6	625	685	LUMP SUM	LUMP SUM

DRAWN BY : R.P. PATEL DATE : 11-15-12
 CHECKED BY : K.D. LAYNE DATE : 12-07-12
 DESIGN ENGINEER OF RECORD: R.L. CHESSON DATE : 04/11/13

03-SEP-2013 12:08
 R:\Structures\Plans\B4401.sd.GD.dgn
 dadavenport

PROJECT NO. B-4401
 ALAMANCE COUNTY
 STATION: 16+28.00 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON SR 1124
 (STAFFORD MILL RD) OVER
 NORTH PRONG STINKING
 QUARTER CREEK
 BETWEEN SR 3118 AND SR 1113

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS 35
2			4			

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(InV)	N/A	1	1.10	--	1.75	0.715	1.31	B	I	29.005	0.898	1.6	A	I	2.048	0.80	0.879	1.10	B	I	29.005		
	HL-93(0pr)	N/A	--	1.69	--	1.35	0.715	1.69	B	I	29.005	0.898	2.08	A	I	2.048	N/A	--	--	--	--	--		
	HS-20(InV)	36.000	2	1.39	49.947	1.75	0.727	1.64	A	I	20.478	0.898	1.88	A	I	2.048	0.80	0.715	1.39	B	I	29.005		
	HS-20(0pr)	36.000	--	2.13	76.733	1.35	0.727	2.13	A	I	20.478	0.898	2.44	A	I	2.048	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.97	40.142	1.4	0.727	3.89	A	I	20.478	0.898	4.63	A	I	20.478	0.80	0.715	2.97	B	I	29.005	
		SNGARBS2	20.000	--	2.28	45.641	1.4	0.727	3.18	A	I	16.382	0.879	3.75	B	I	29.005	0.80	0.715	2.28	B	I	29.005	
		SNAGRIS2	22.000	--	2.19	48.182	1.4	0.727	3.09	A	I	16.382	0.898	3.57	A	I	2.048	0.80	0.715	2.19	B	I	29.005	
		SNCOTTS3	27.250	--	1.48	40.372	1.4	0.727	1.94	A	I	20.478	0.898	2.36	A	I	20.478	0.80	0.715	1.48	B	I	29.005	
		SNAGGRS4	34.925	--	1.26	44.119	1.4	0.727	1.74	A	I	20.478	0.898	2.23	A	I	2.048	0.80	0.715	1.26	B	I	29.005	
		SNS5A	35.550	--	1.23	43.854	1.4	0.727	1.69	A	I	20.478	0.898	2.32	A	I	2.048	0.80	0.715	1.23	B	I	29.005	
		SNS6A	39.950	--	1.14	45.648	1.4	0.727	1.6	A	I	20.478	0.898	2.16	A	I	2.048	0.80	0.715	1.14	B	I	29.005	
	SNS7B	42.000	--	1.09	45.718	1.4	0.727	1.53	A	I	20.478	0.898	2.19	A	I	2.048	0.80	0.715	1.09	B	I	29.005		
	TTST	TNAGRIT3	33.000	--	1.40	46.087	1.4	0.727	1.97	A	I	20.478	0.898	2.54	A	I	2.048	0.80	0.715	1.40	B	I	29.005	
		TNT4A	33.075	--	1.41	46.495	1.4	0.727	1.99	A	I	20.478	0.898	2.42	A	I	2.048	0.80	0.715	1.41	B	I	29.005	
		TNT6A	41.600	--	1.16	48.255	1.4	0.727	1.68	A	I	20.478	0.898	2.36	A	I	2.048	0.80	0.715	1.16	B	I	29.005	
		TNT7A	42.000	--	1.17	49.204	1.4	0.727	1.72	A	I	20.478	0.898	2.18	A	I	2.048	0.80	0.715	1.17	B	I	29.005	
		TNT7B	42.000	--	1.22	51.388	1.4	0.727	1.78	A	I	20.478	0.898	2.09	A	I	2.048	0.80	0.715	1.22	B	I	29.005	
		TNAGRIT4	43.000	--	1.16	49.705	1.4	0.727	1.71	A	I	20.478	0.898	2.01	A	I	2.048	0.80	0.715	1.16	B	I	29.005	
TNAGT5A		45.000	--	1.09	48.822	1.4	0.727	1.58	A	I	20.478	0.898	2.07	A	I	2.048	0.80	0.715	1.08	B	I	29.005		
TNAGT5B	45.000	3	1.07	48.036	1.4	0.727	1.54	A	I	20.478	0.898	1.9	A	I	2.048	0.80	0.715	1.07	B	I	29.005			

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

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

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

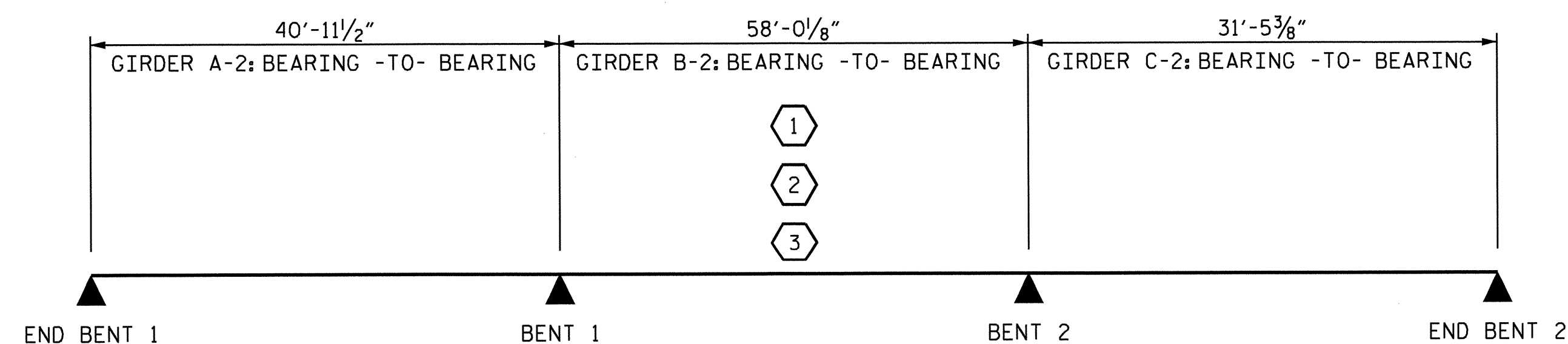
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

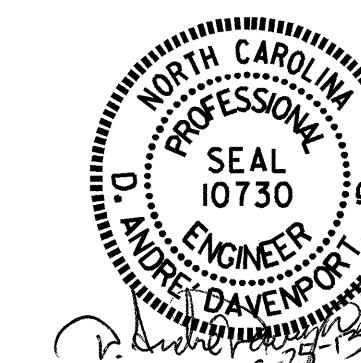
GIRDER LOCATION

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



LRFR SUMMARY

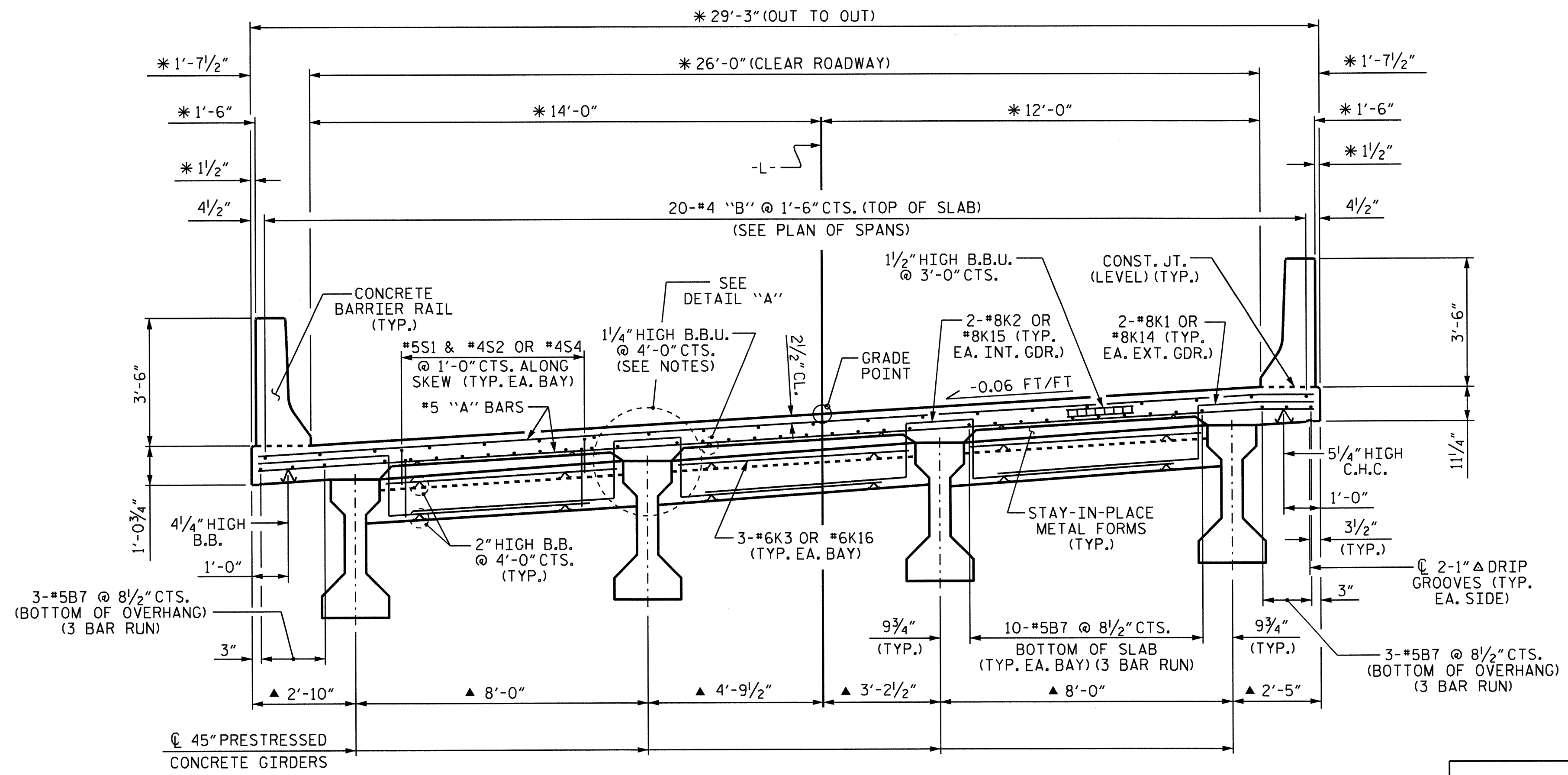
PROJECT NO. B-4401
ALAMANCE COUNTY
 STATION: 16+28.00 -L-



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

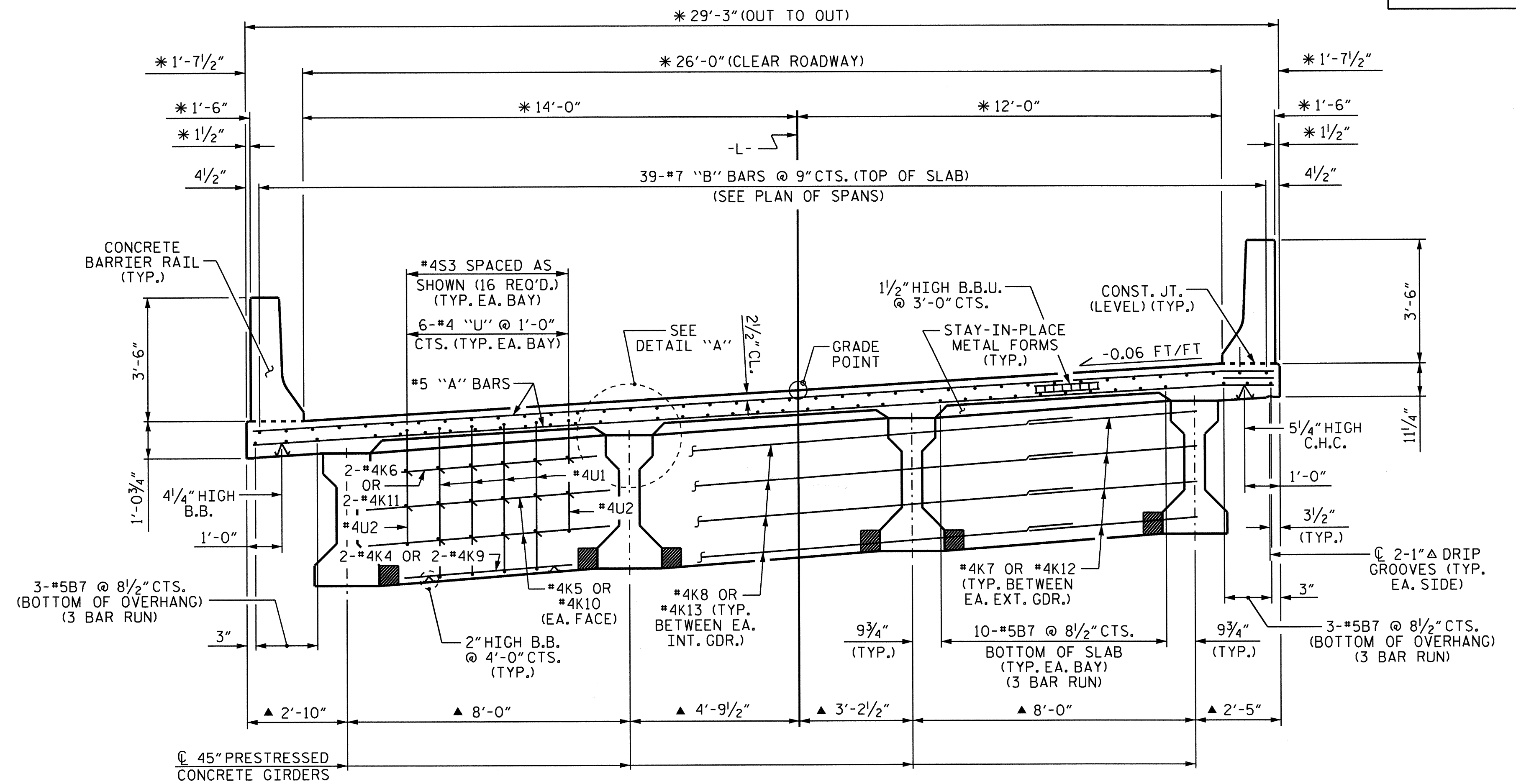
ASSEMBLED BY : R. L. CHESSON DATE : 05/2012
 CHECKED BY : D. R. SMITH DATE : 05/2012
 DESIGN ENGINEER OF RECORD : R. L. CHESSON DATE : 04/11/13
 DRAWN BY : MAA 1/08 REV. 11/12/08R MAA/GM
 CHECKED BY : GM/DI 2/08

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			5
2			4			35



TYPICAL SECTION @ END BENT DIAPHRAGM

* RADIAL DIMENSIONS
▲ RADIAL THRU WORKPOINT



TYPICAL SECTION @ BENT DIAPHRAGM

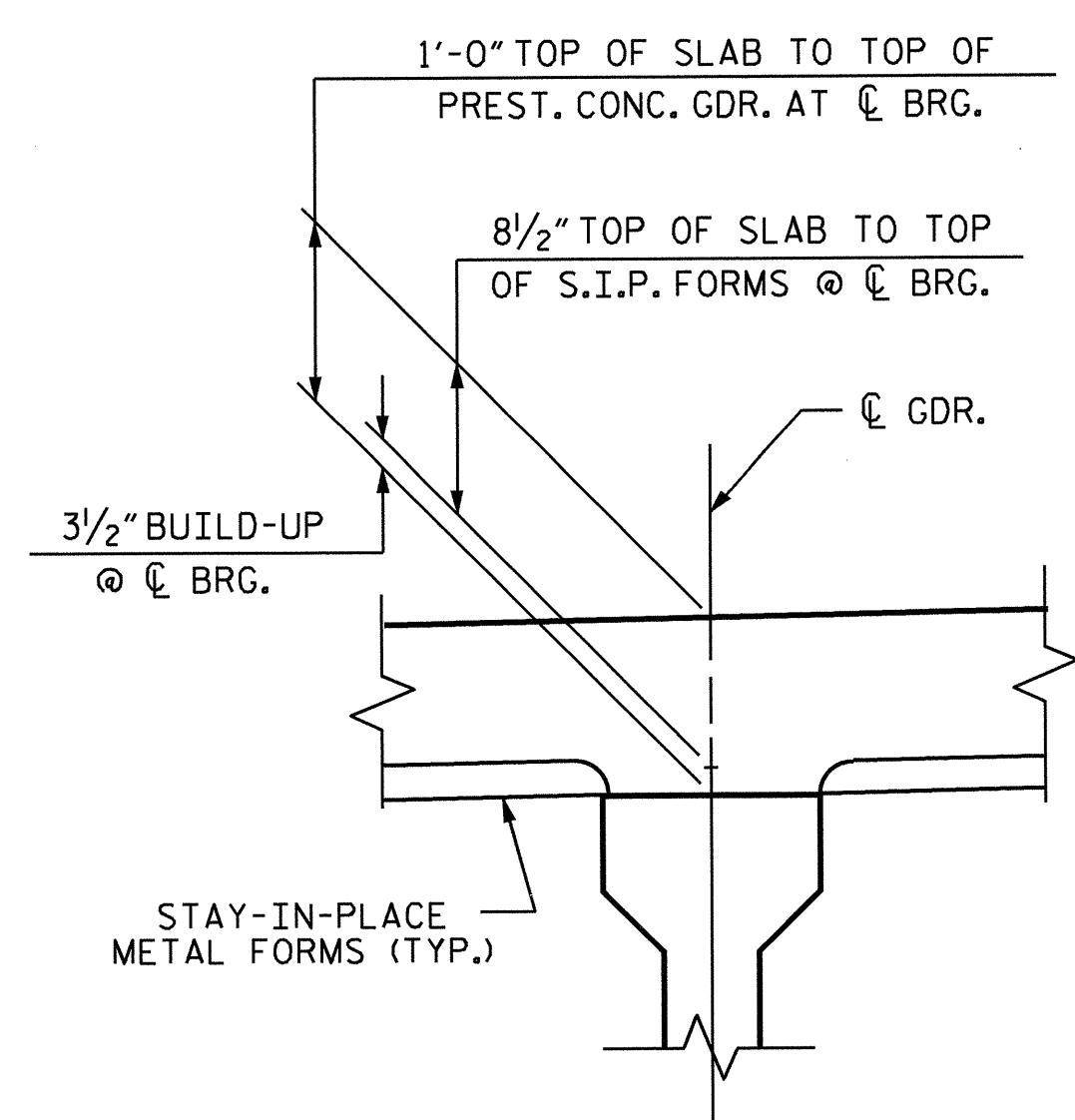
NOTES

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

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

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

BARRIER RAIL 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.



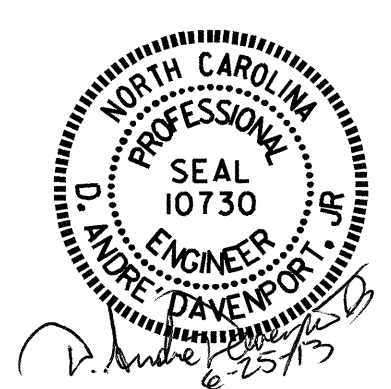
DETAIL "A"

PROJECT NO. B-4401

ALAMANCE COUNTY

STATION: 16+28.00 -L-

SHEET 1 OF 2



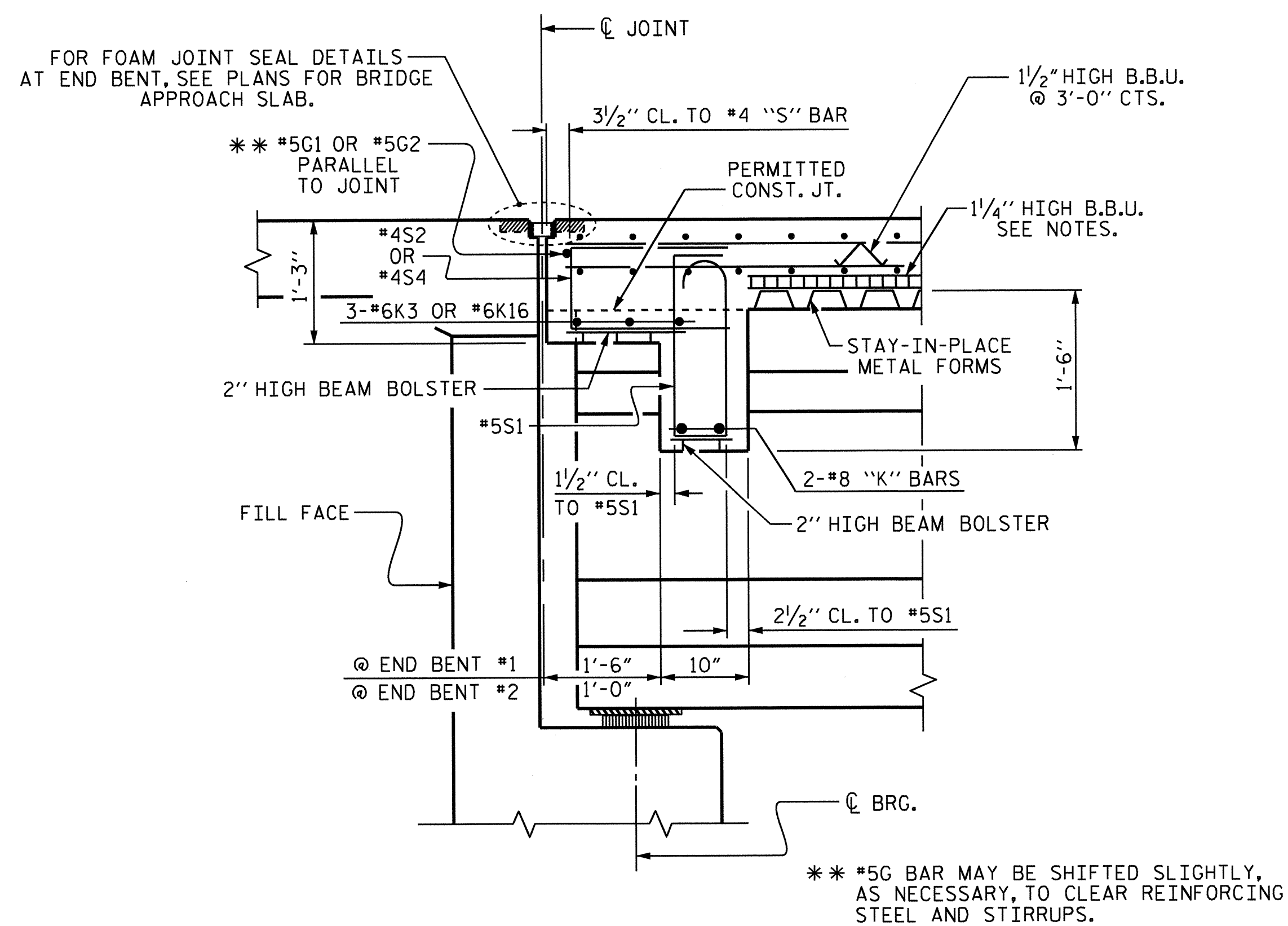
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION

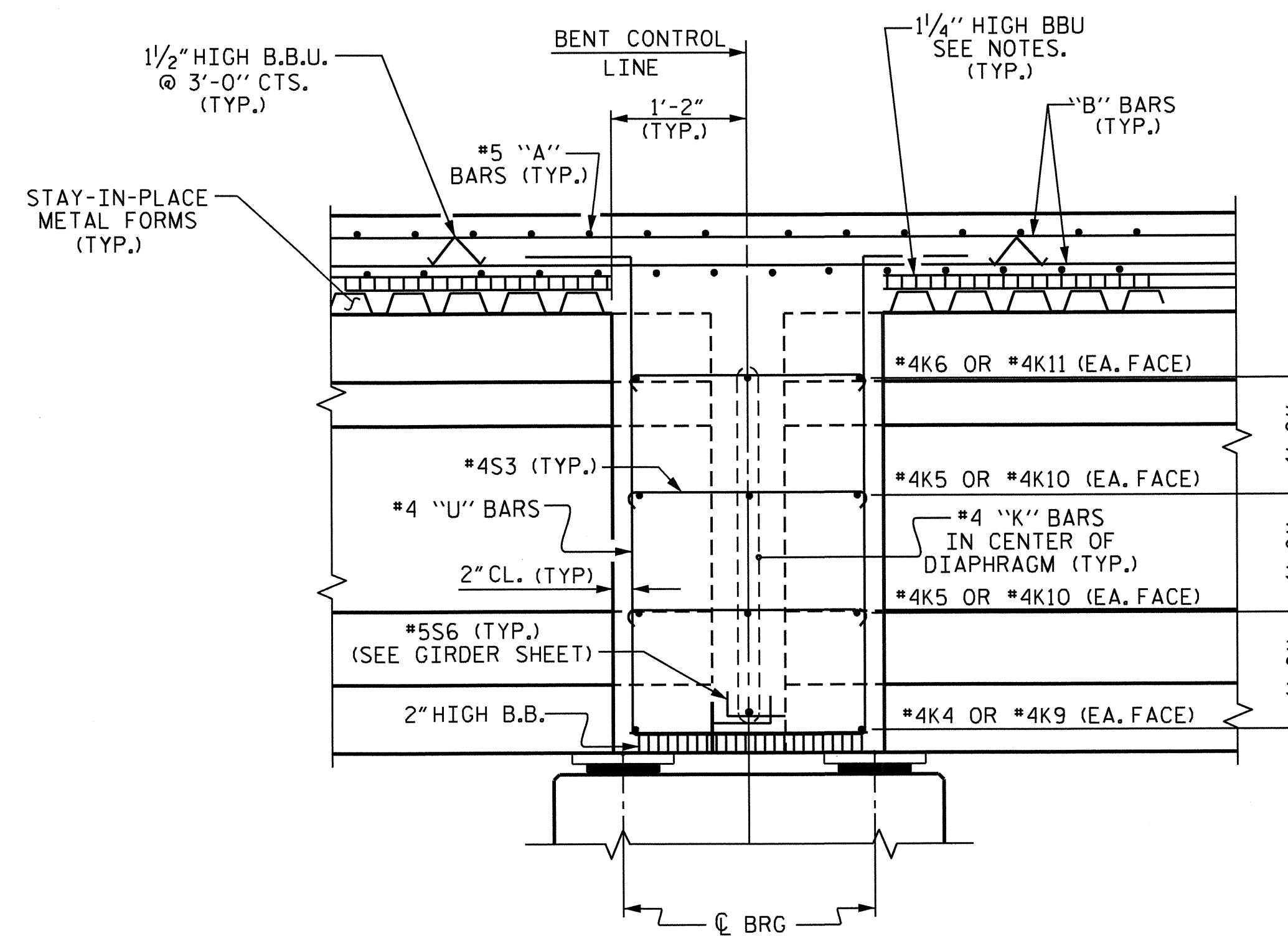
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			35

DRAWN BY : M.K. BEARD
CHECKED BY : K.D. LAYNE
DESIGN ENGINEER OF RECORD : R.L. CHESSON

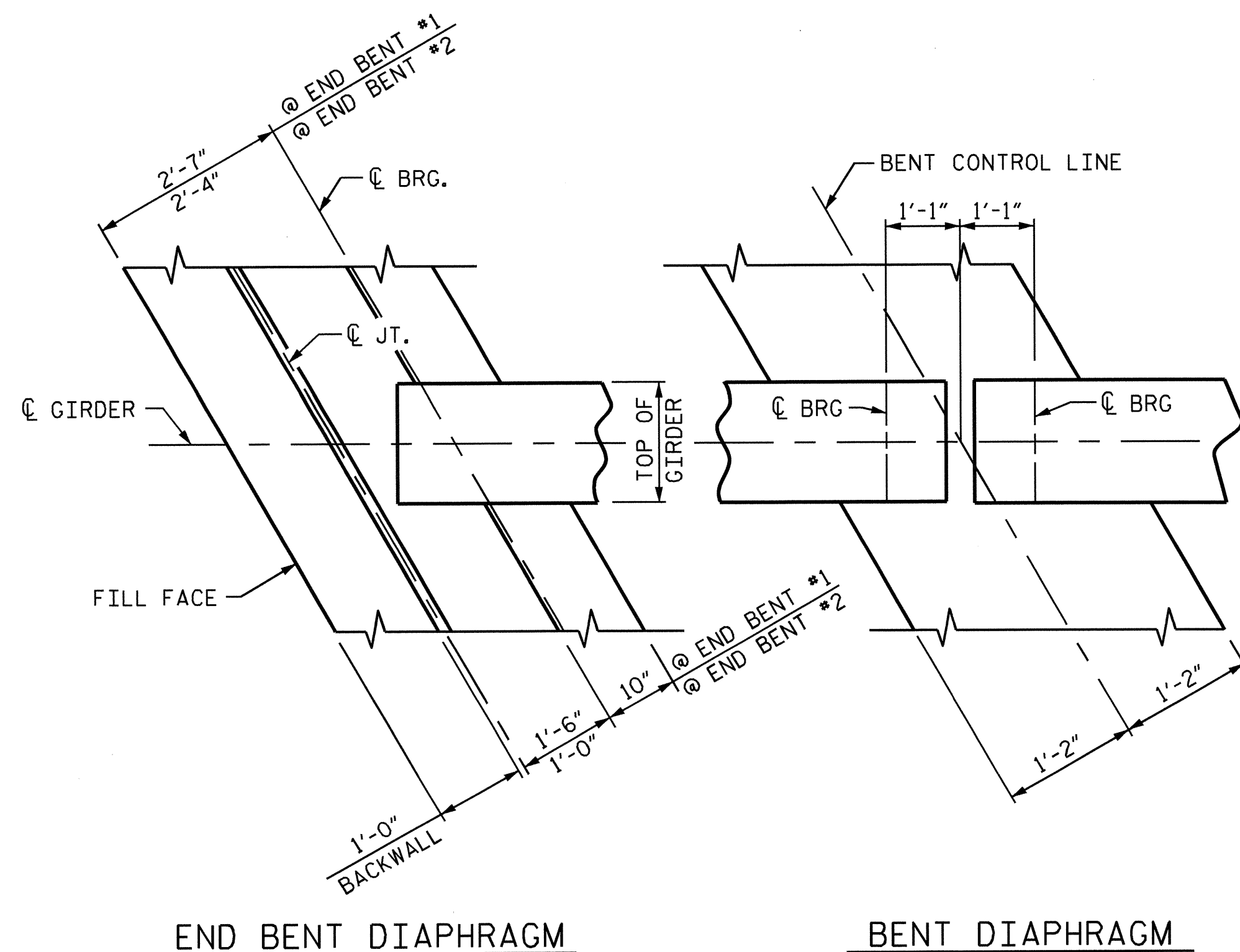
DATE : 7/10/12
DATE : 9/12
DATE : 04/11/13



SECTION THRU END BENT DIAPHRAGM



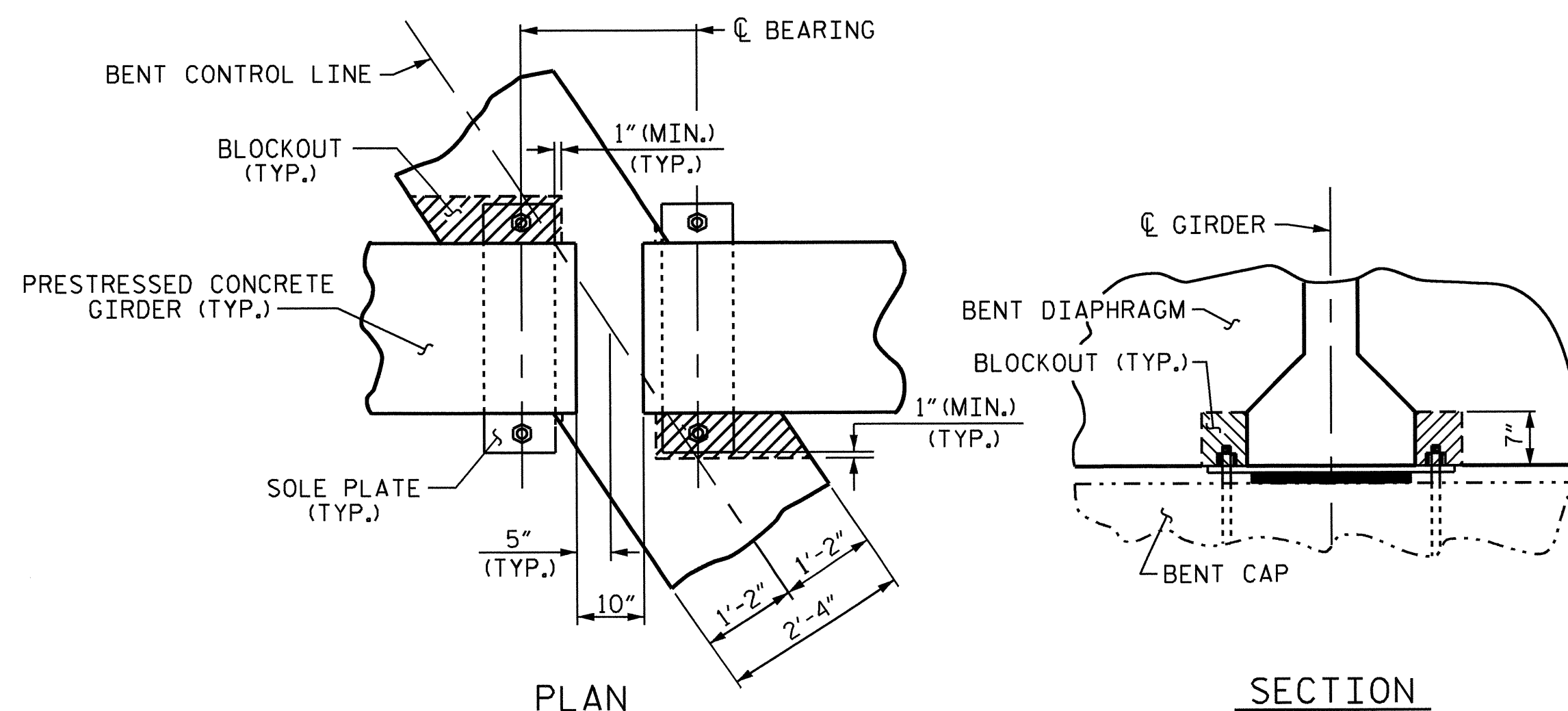
SECTION THRU BENT DIAPHRAGM



END BENT DIAPHRAGM

BENT DIAPHRAGM

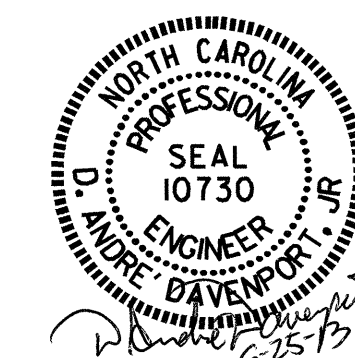
PLAN



PLAN

SECTION

BENT DIAPHRAGM BLOCK-OUT DETAIL



PROJECT NO. B-4401
ALAMANCE COUNTY
 STATION: 16+28.00 -L-

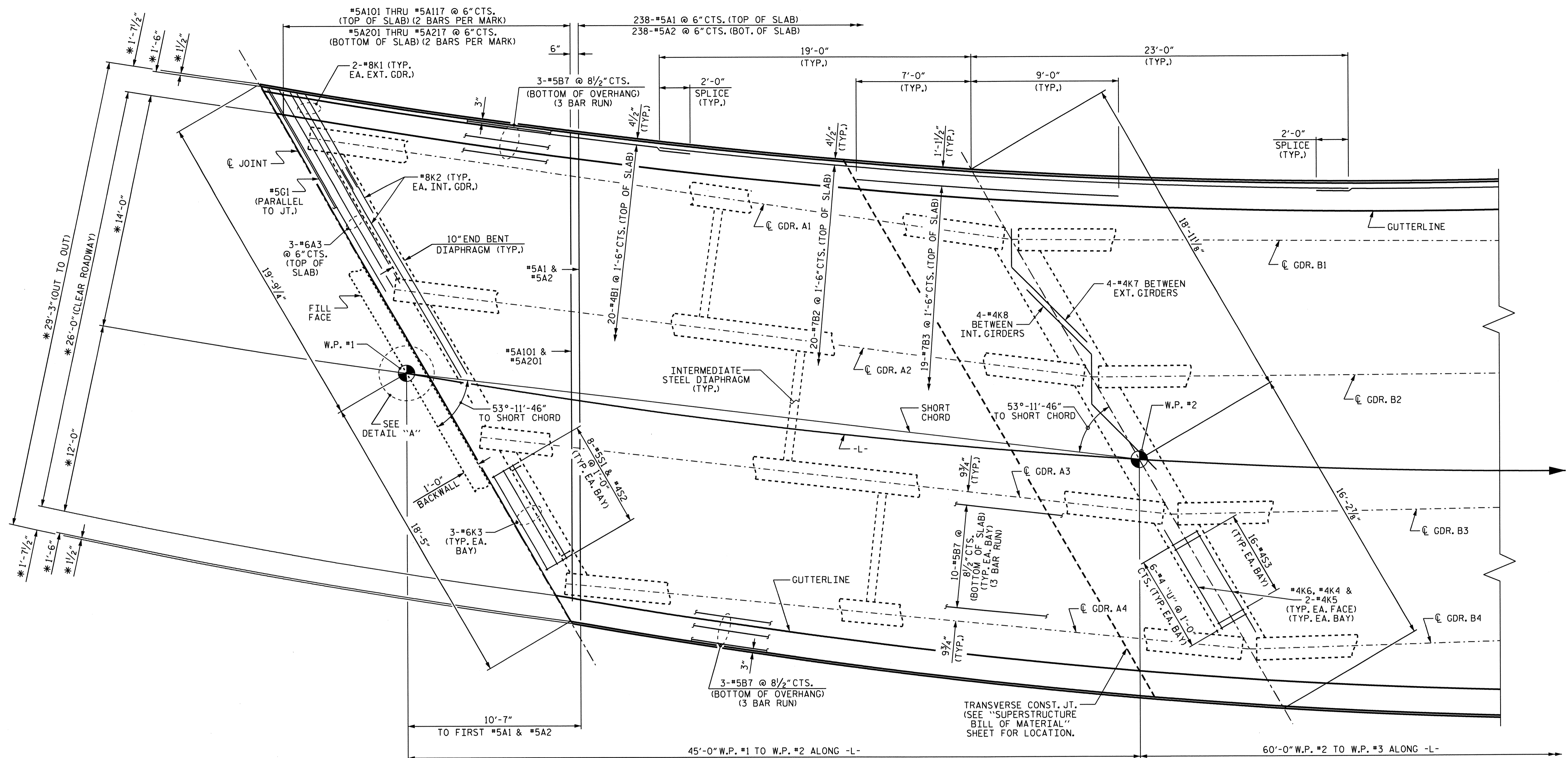
SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION

DRAWN BY : M.K. BEARD DATE : 7/12/12
 CHECKED BY : K.D. LAYNE DATE : 9/12
 DESIGN ENGINEER OF RECORD : R.L. CHESSON DATE : 04/11/13

24-JUN-2013 08:00
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 dadavenport

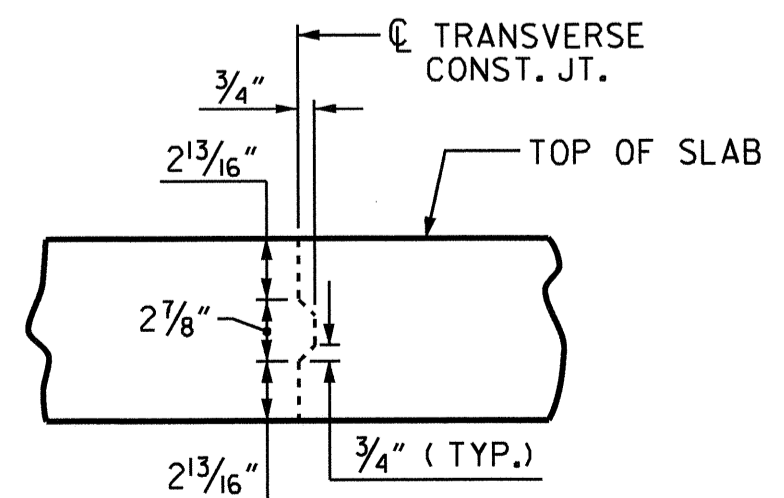
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-7
2			4			35



PLAN OF SPAN A

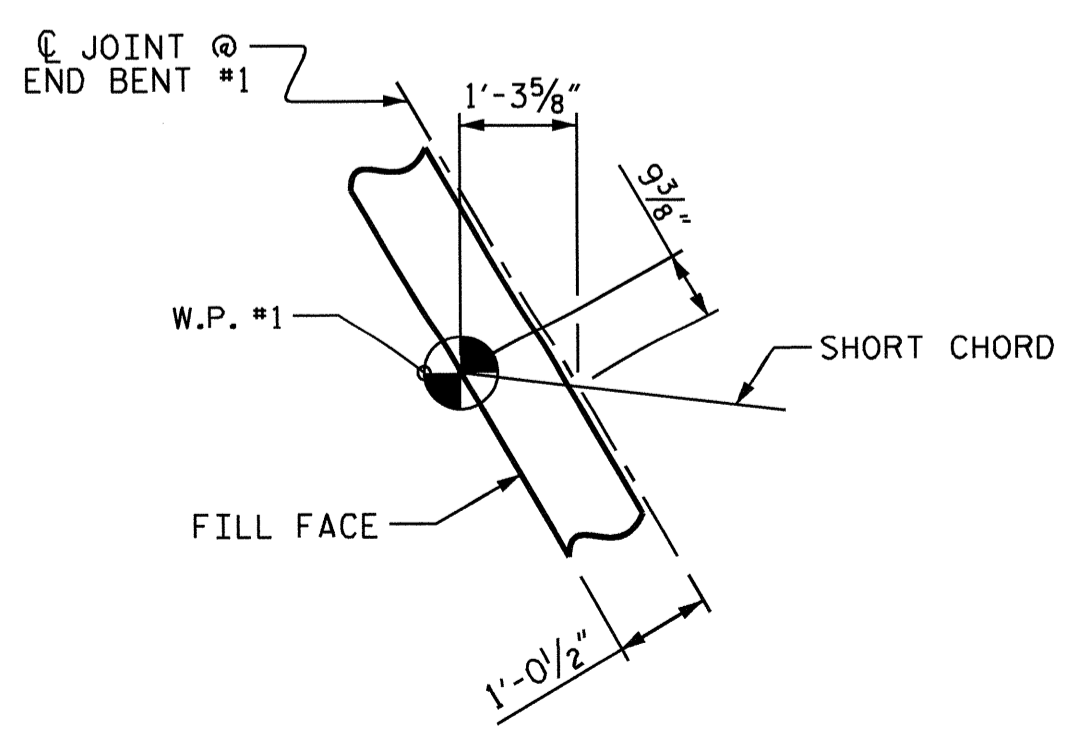
"A" BARS TO BE PLACED PERPENDICULAR TO LONG CHORD

*RADIAL DIMENSIONS



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

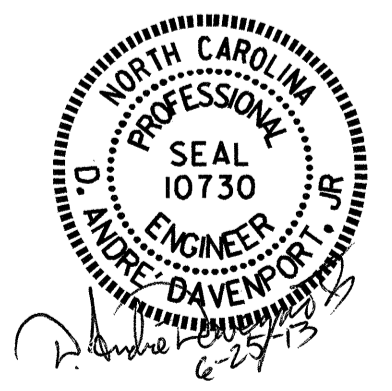


DETAIL "A"

PROJECT NO. B-4401
ALAMANCE COUNTY
 STATION: 16+28.00 -L-

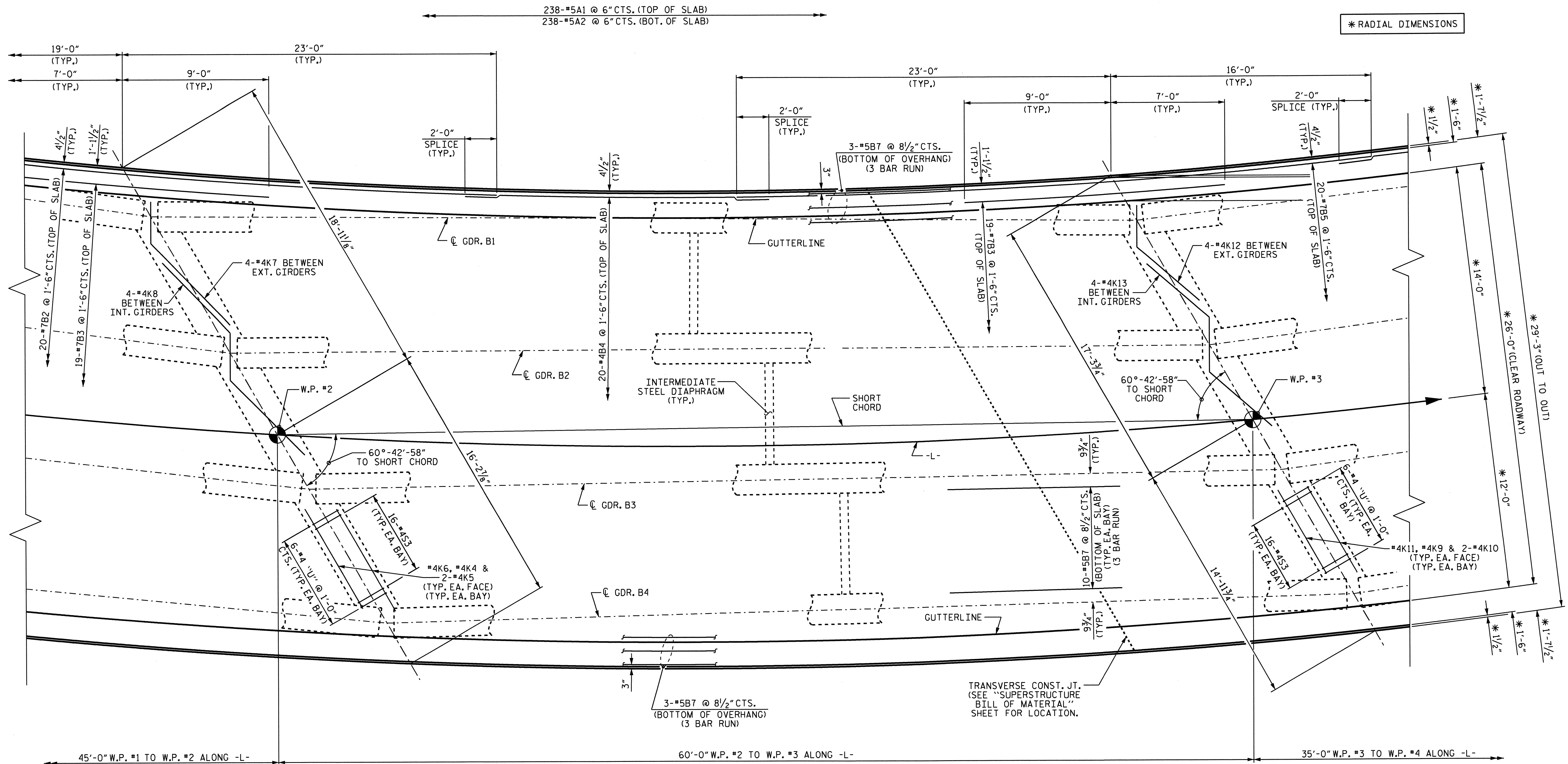
SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN A

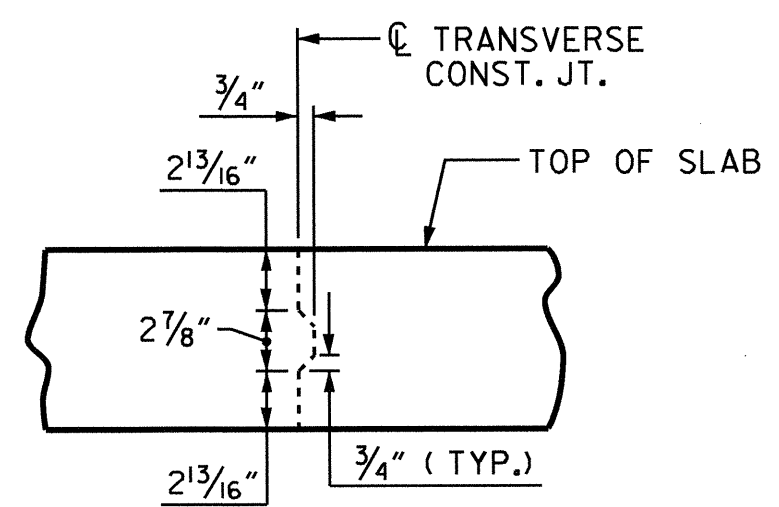


DRAWN BY: M.K. BEARD DATE: 7/24/12
 CHECKED BY: K.D. LAYNE DATE: 9/12
 DESIGN ENGINEER OF RECORD: R.L. CHESSON DATE: 04/11/13

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			35



PLAN OF SPAN B
 "A" BARS TO BE PLACED PERPENDICULAR TO LONG CHORD



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

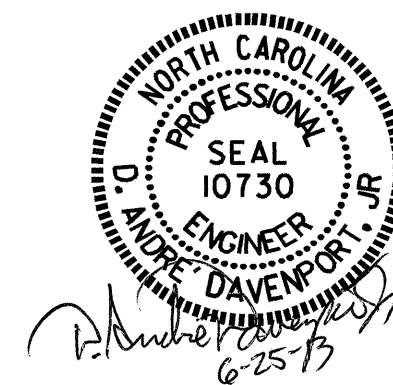
DRAWN BY: M.K. BEARD DATE: 7/24/12
 CHECKED BY: K.D. LAYNE DATE: 9/12
 DESIGN ENGINEER OF RECORD: R.L. CHESSON DATE: 04/11/13

24-JUN-2013 07:59
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 dadavenport

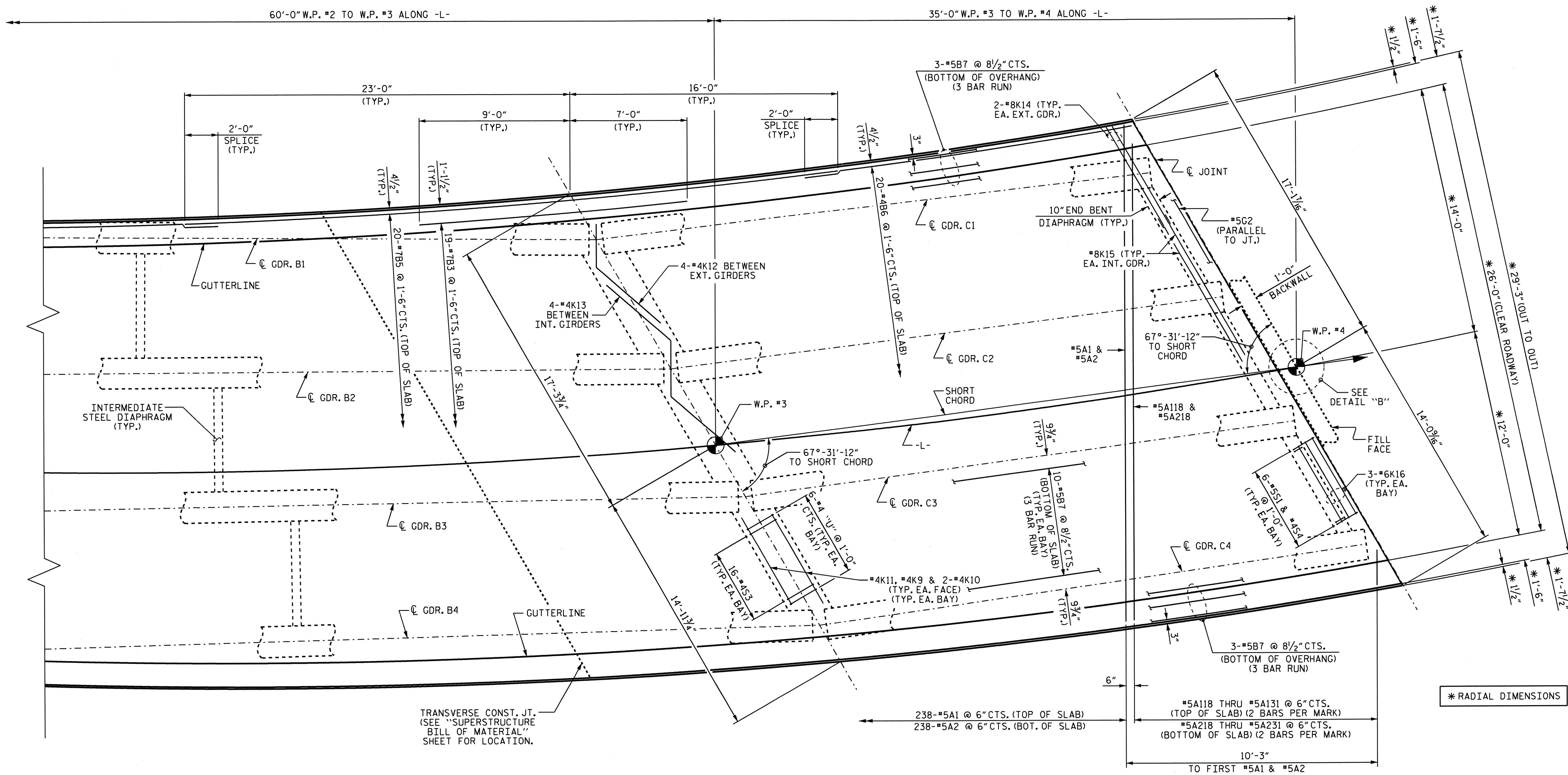
PROJECT NO. B-4401
ALAMANCE COUNTY
 STATION: 16+28.00 -L-

SHEET 2 OF 3

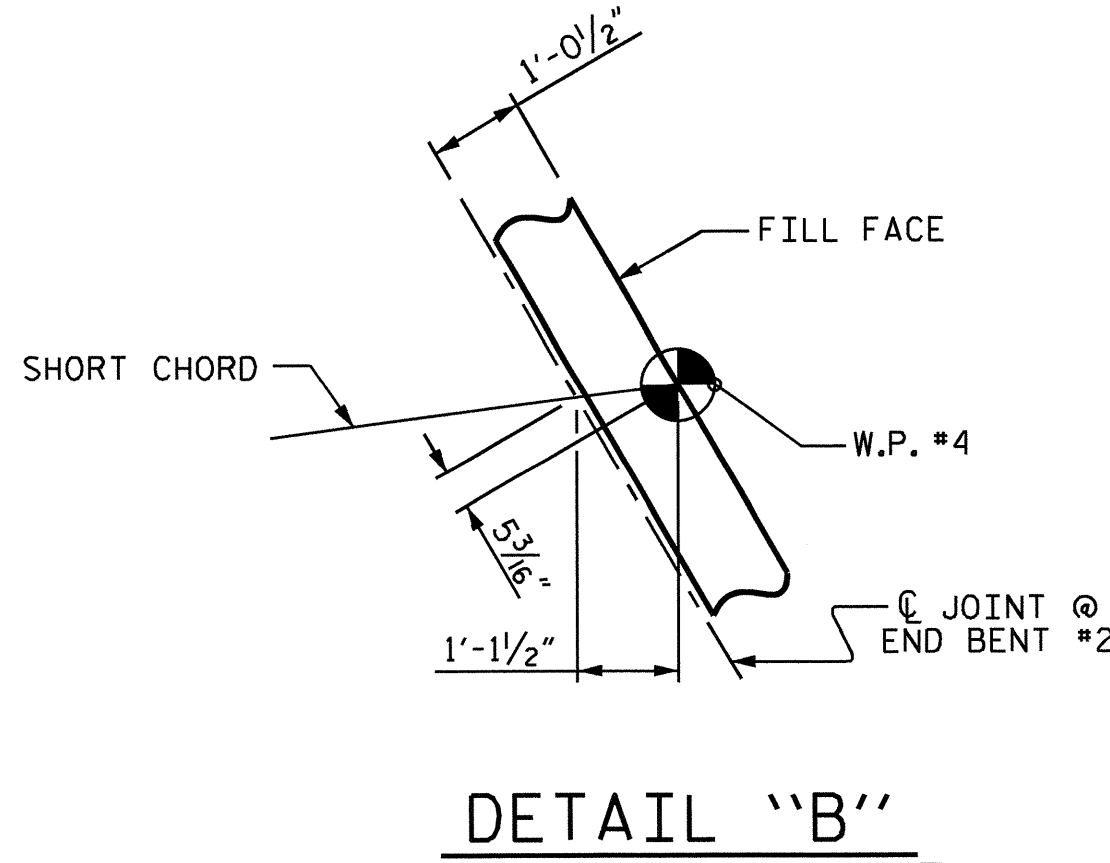
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN B



REVISIONS						SHEET NO. S-9
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

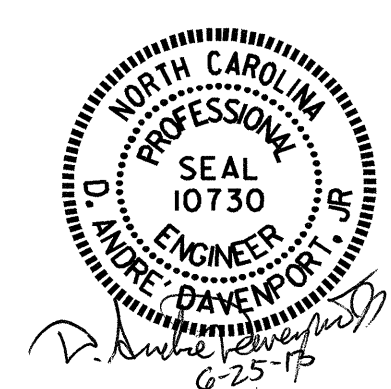


PLAN OF SPAN C
 "A" BARS TO BE PLACED PERPENDICULAR TO LONG CHORD



PROJECT NO. B-4401
ALAMANCE COUNTY
 STATION: 16+28.00 -L-

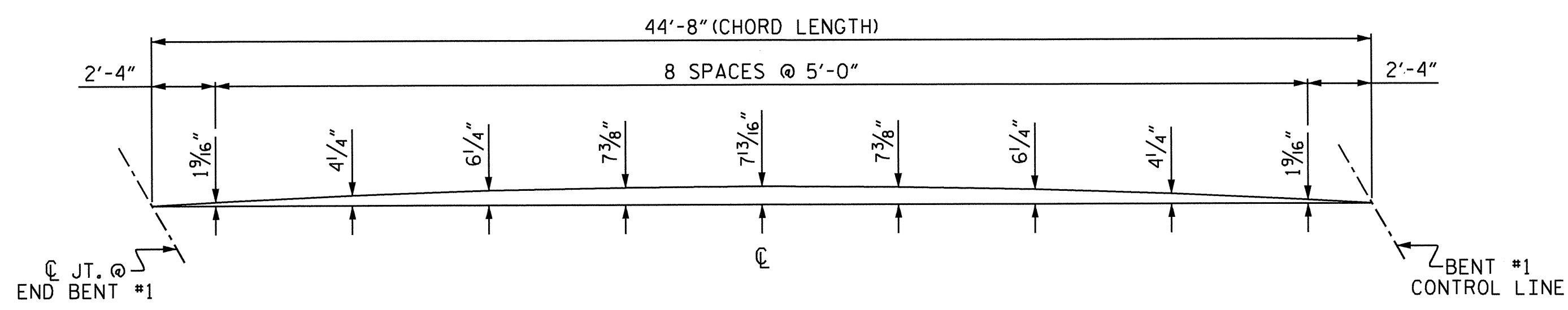
SHEET 3 OF 3



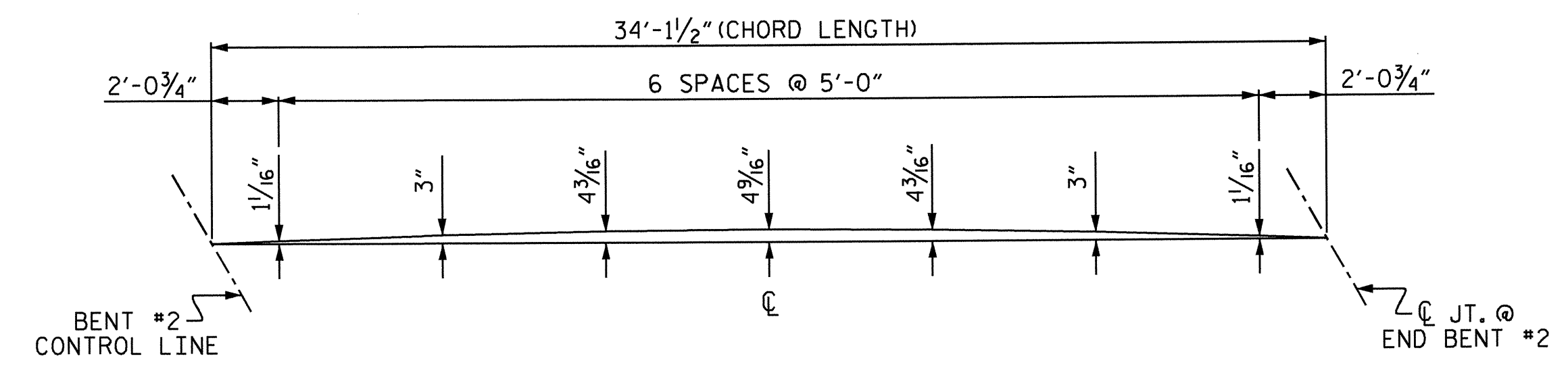
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN C

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			35

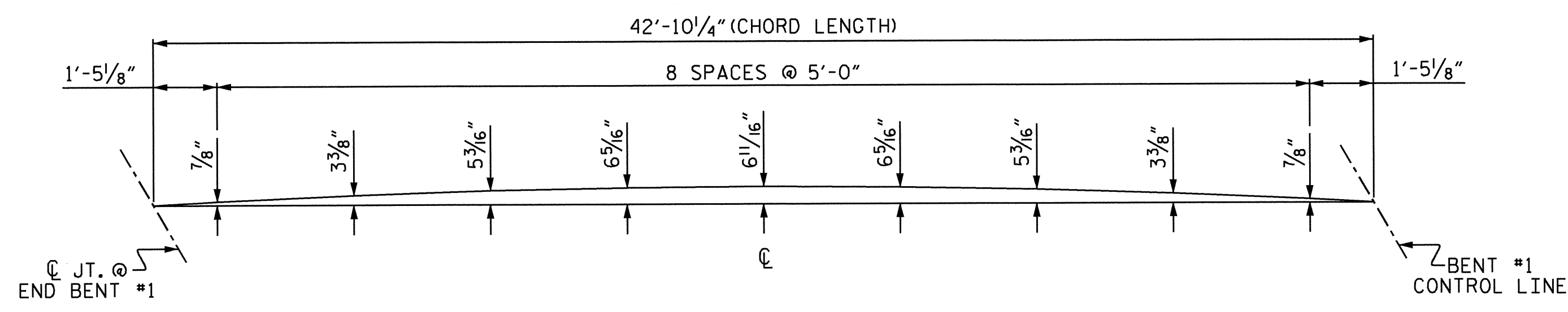
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 CHECKED BY : K.D. LAYNE DATE : 9/12
 DESIGN ENGINEER OF RECORD: R.L. CHESSON DATE : 04/11/13



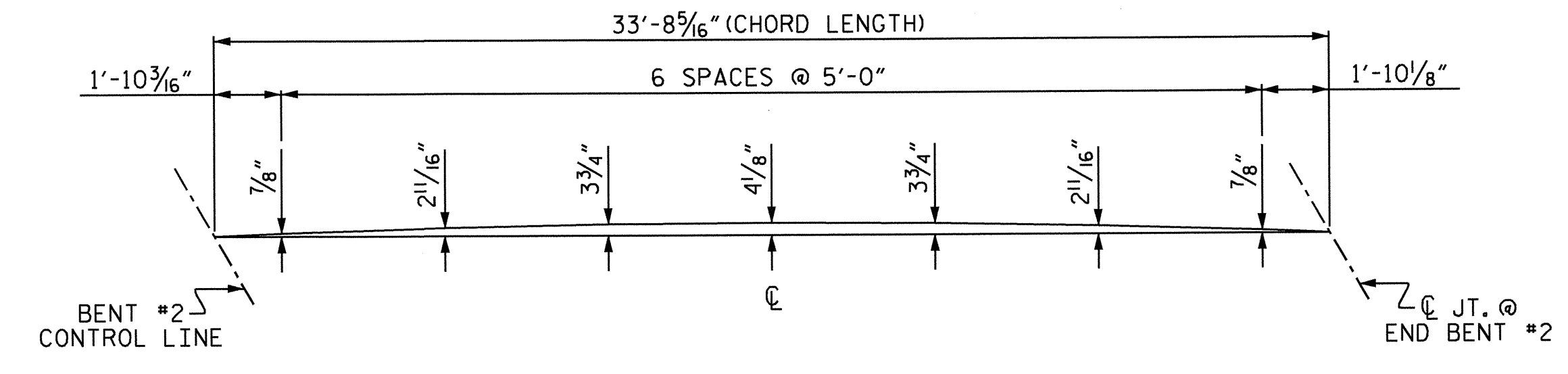
ARC OFFSETS - SPAN A (LEFT SIDE)



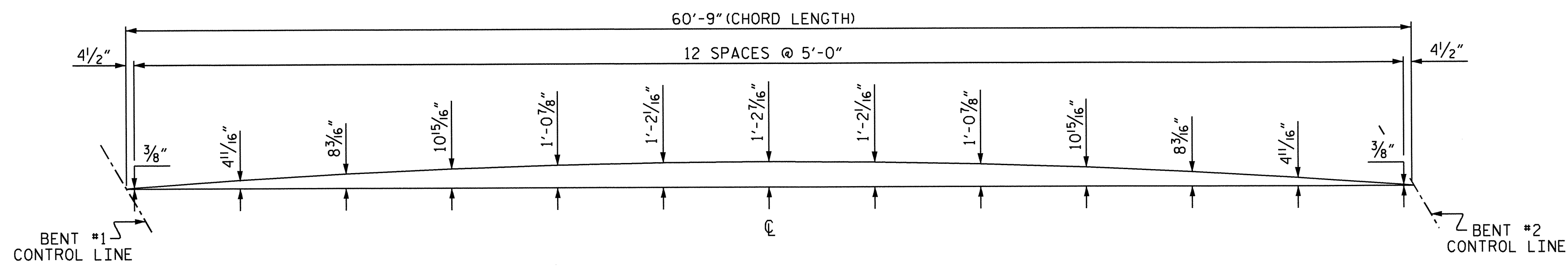
ARC OFFSETS - SPAN C (LEFT SIDE)



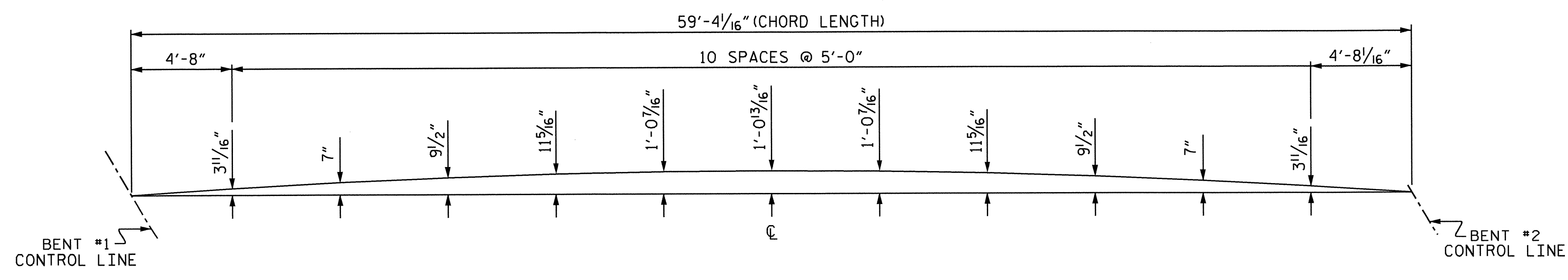
ARC OFFSETS - SPAN A (RIGHT SIDE)



ARC OFFSETS - SPAN C (RIGHT SIDE)

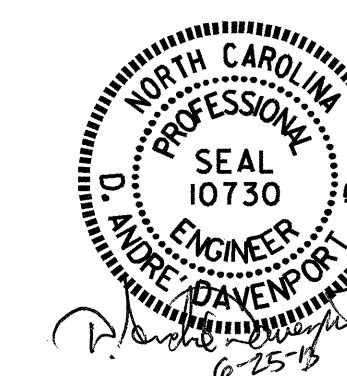


ARC OFFSETS - SPAN B (LEFT SIDE)



ARC OFFSETS - SPAN B (RIGHT SIDE)

PROJECT NO. B-4401
ALAMANCE COUNTY
 STATION: 16+28.00 -L-

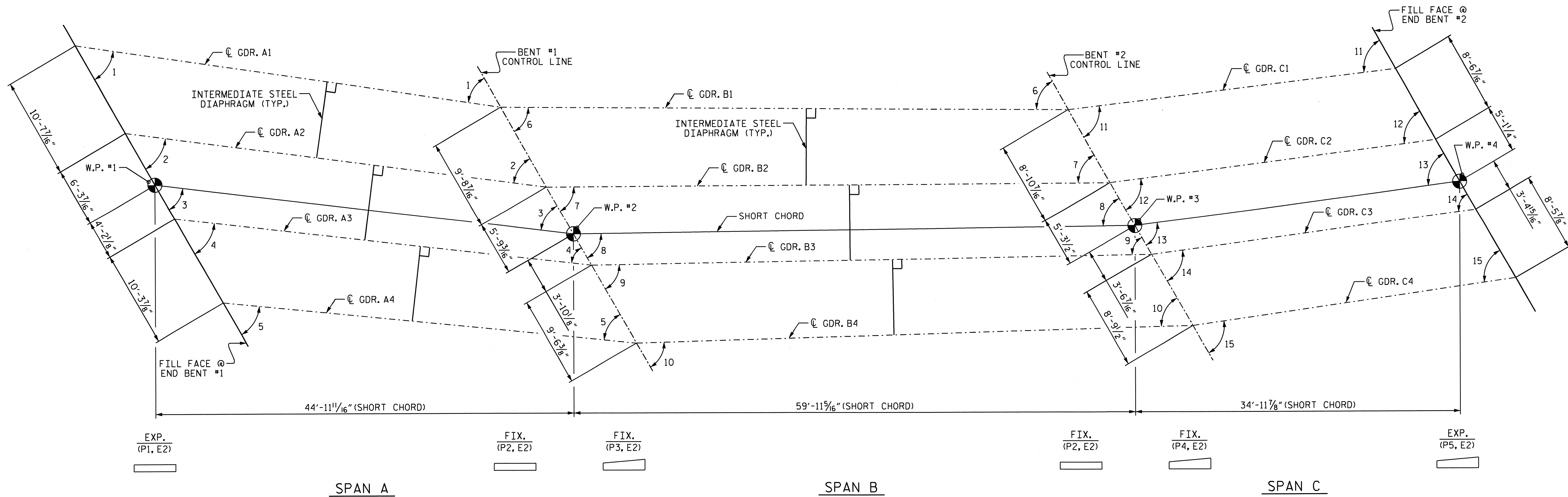


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 ARC OFFSETS

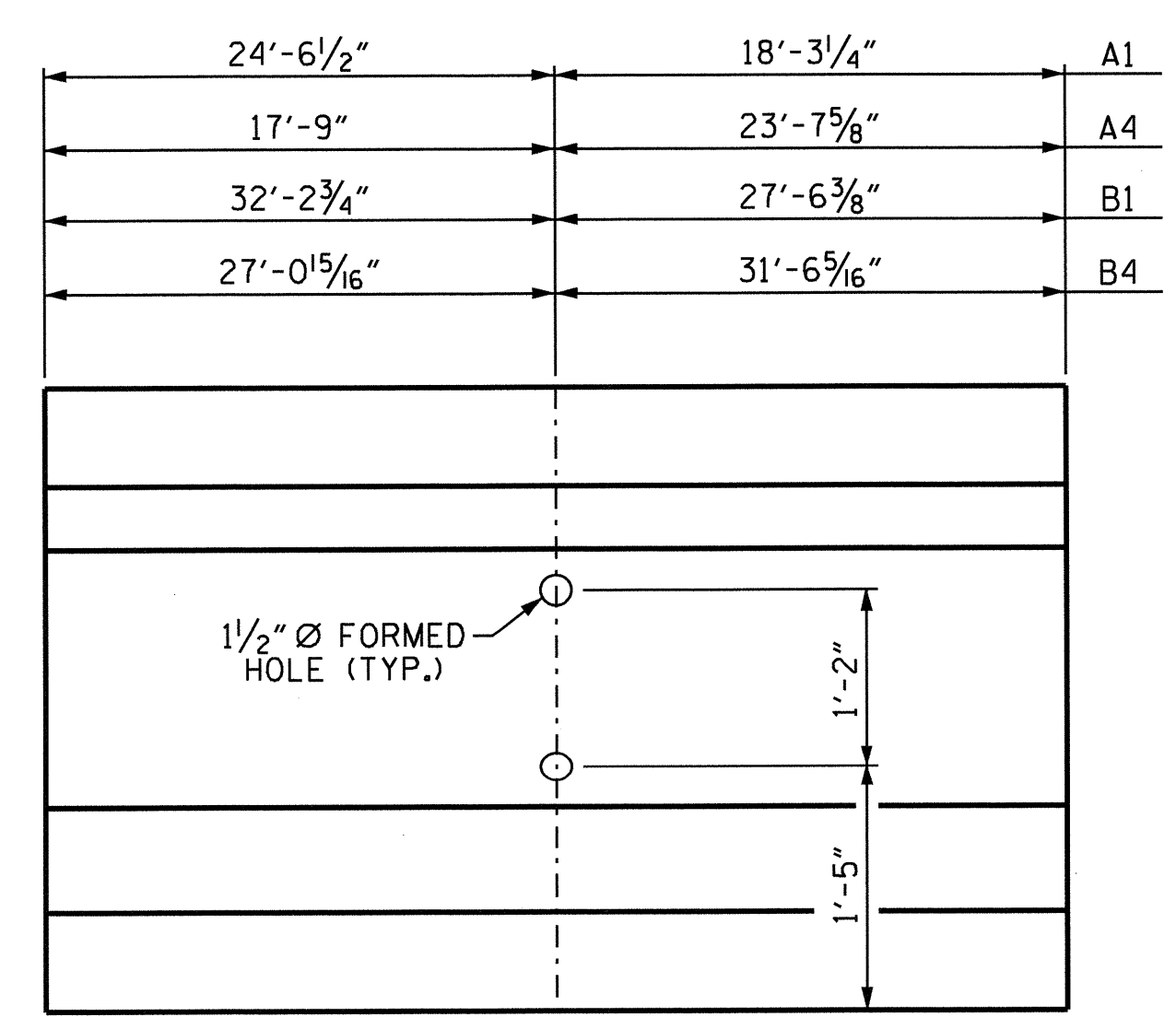
DRAWN BY : M.K. BEARD DATE : 8/2/12
 CHECKED BY : K.D. LAYNE DATE : 9/12
 DESIGN ENGINEER OF RECORD: R.L. CHESSON DATE : 04/11/13

24-JUN-2013 07:59
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 dadavenport

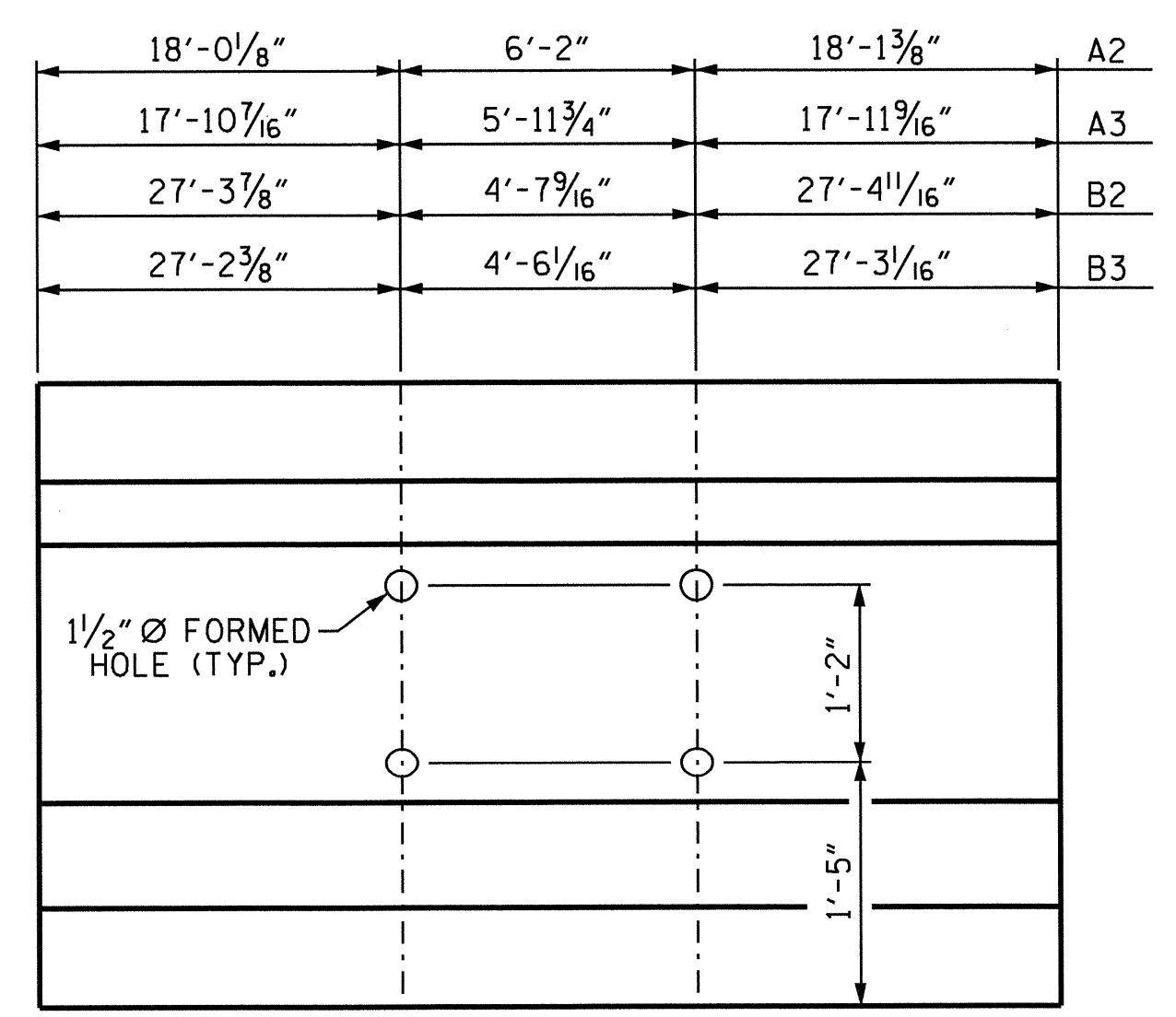
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			11
2			4			35



GIRDER LAYOUT
 SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE III PRESTRESSED CONCRETE GIRDERS" SHEET.

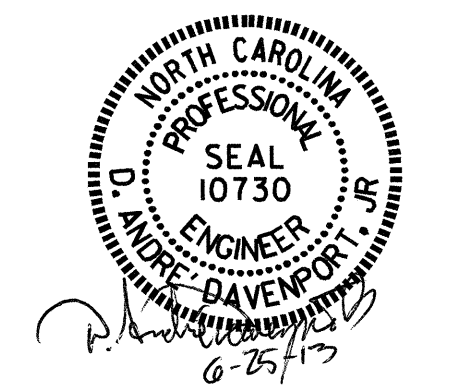


ELEVATION OF EXTERIOR GIRDERS



ELEVATION OF INTERIOR GIRDERS

ANGLES					
1	51°-45'-31"	6	59°-38'-26"	11	66°-43'-58"
2	52°-40'-19"	7	60°-19'-22"	12	67°-13'-54"
3	53°-11'-46"	8	60°-42'-58"	13	67°-31'-12"
4	53°-32'-17"	9	60°-58'-24"	14	67°-42'-33"
5	54°-21'-40"	10	61°-35'-40"	15	68°-09'-58"



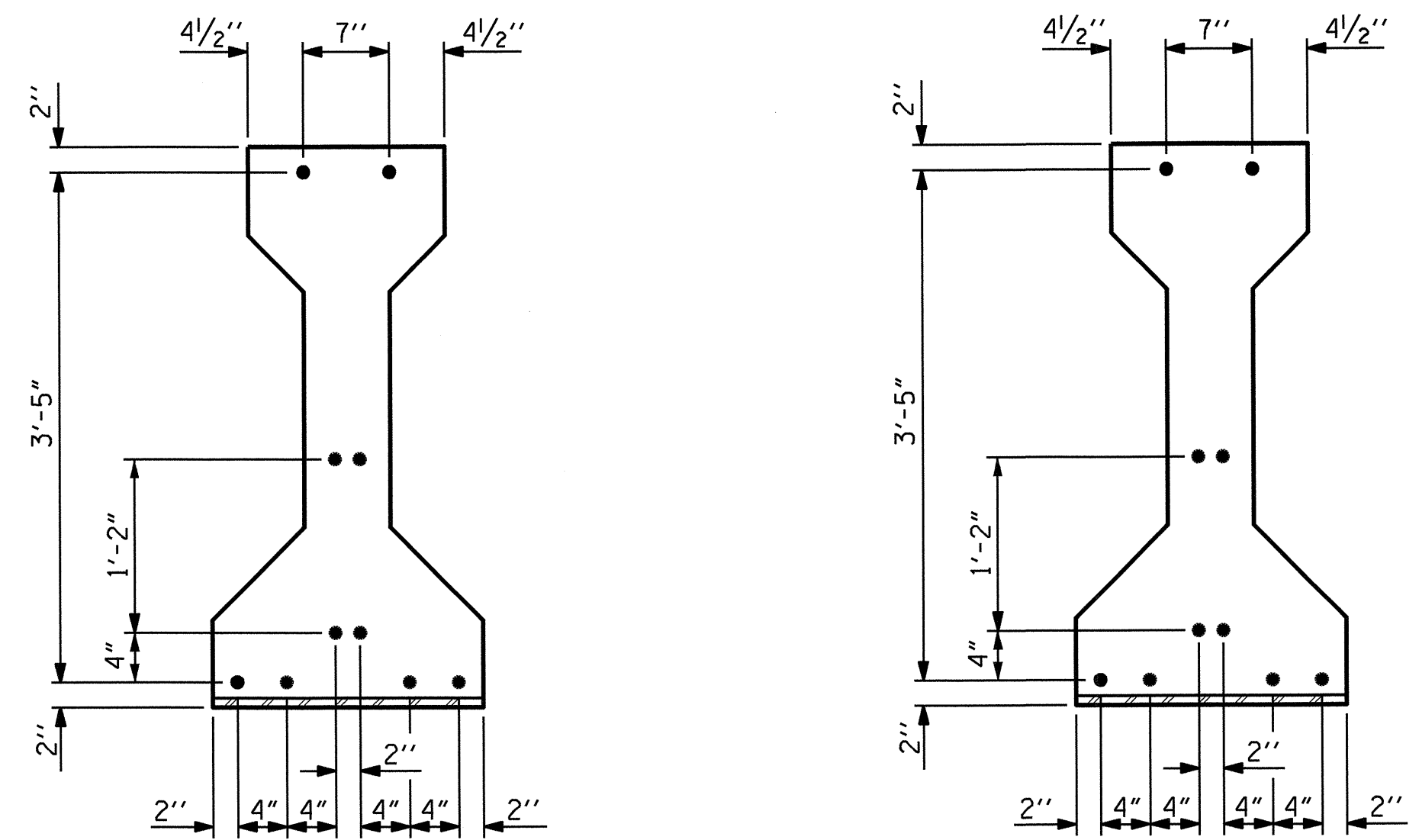
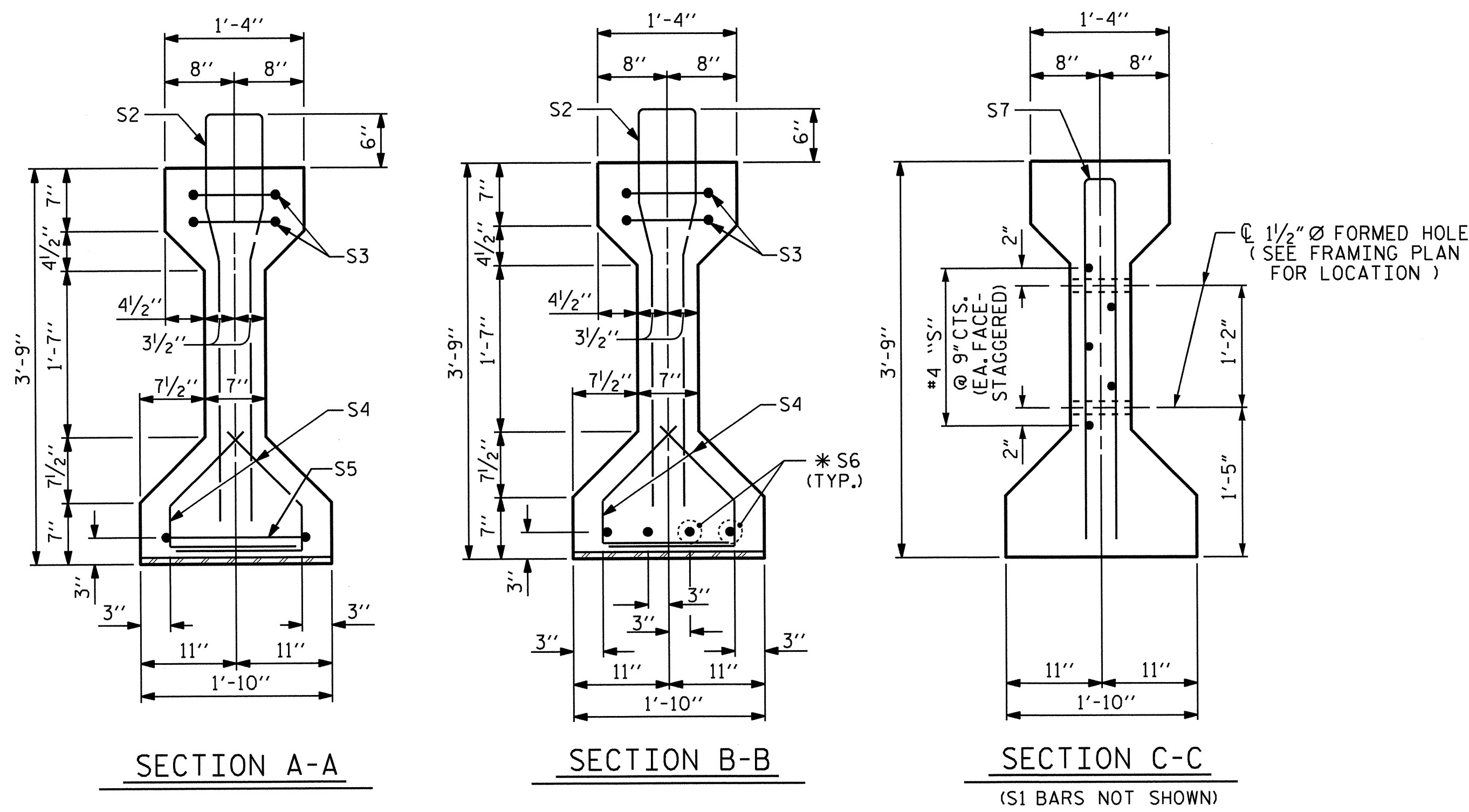
PROJECT NO. B-4401
ALAMANCE COUNTY
 STATION: 16+28.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 FRAMING PLAN

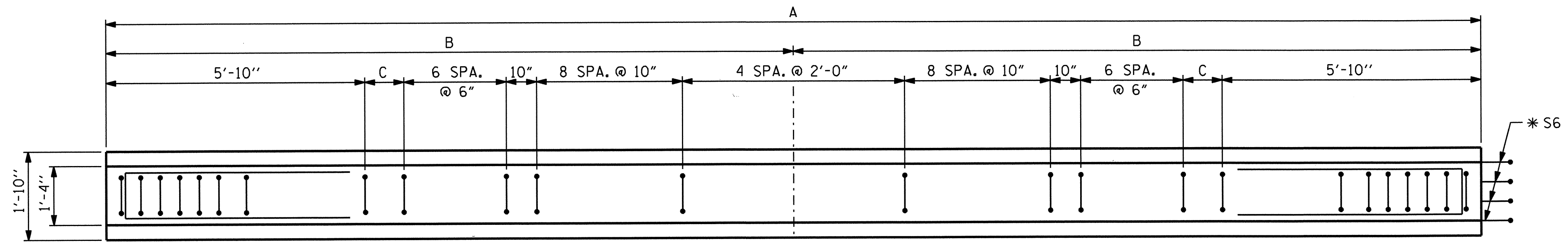
REVISIONS						SHEET NO. S-12
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

DRAWN BY : M.K. BEARD DATE : 8/3/12
 CHECKED BY : K.D. LAYNE DATE : 9/12
 DESIGN ENGINEER OF RECORD: R.L. CHESSON DATE : 04/11/13

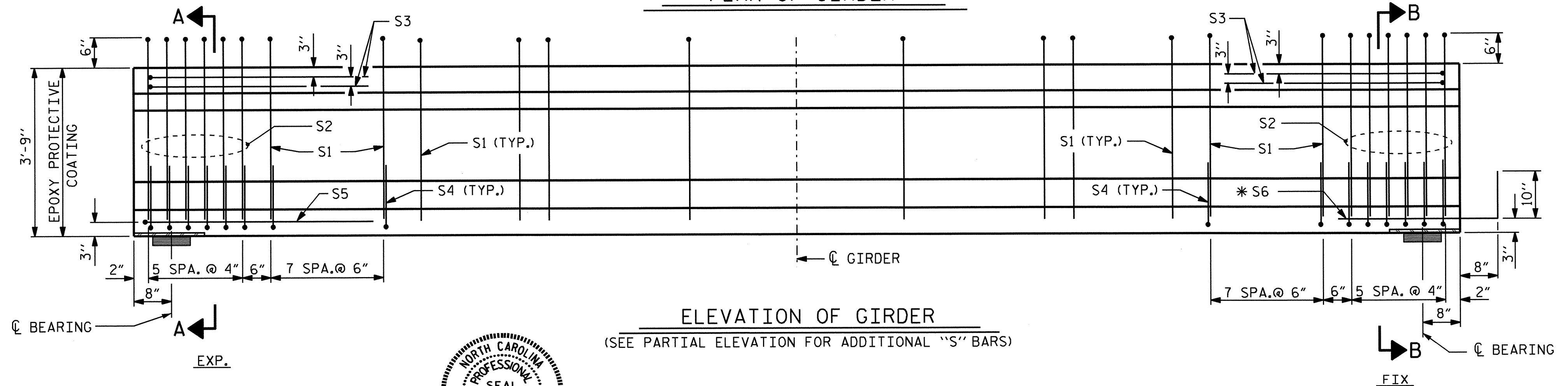


AT END OF GIRDER
AT C OF GIRDER
0.6" Ø LOW RELAXATION STRAND LAYOUT

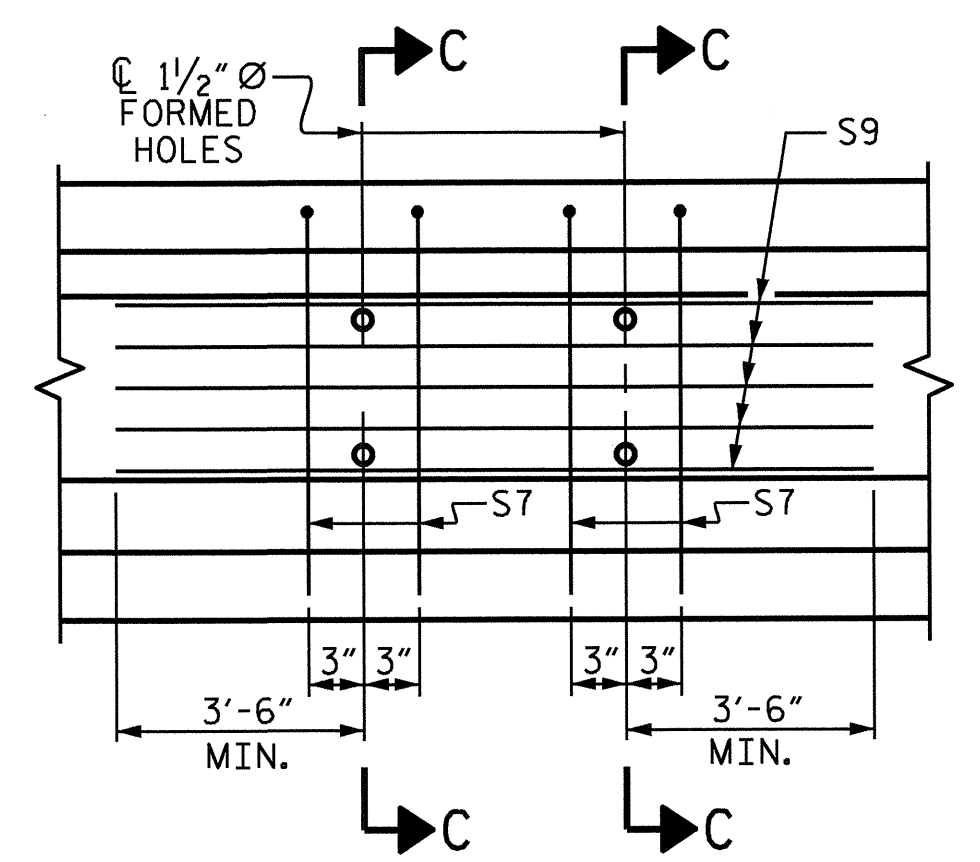
GIRDER DIMENSIONS			
GDR.	A	B	C
A1	42'-9 3/4"	21'-4 1/8"	2 SPA. @ 6 1/16"
A2	42'-3 1/2"	21'-1 3/4"	2 SPA. @ 4 1/8"
A3	41'-9 3/4"	20'-10 7/8"	1 SPA. @ 6 7/8"
A4	41'-4 5/8"	20'-8 5/16"	1 SPA. @ 4 5/16"



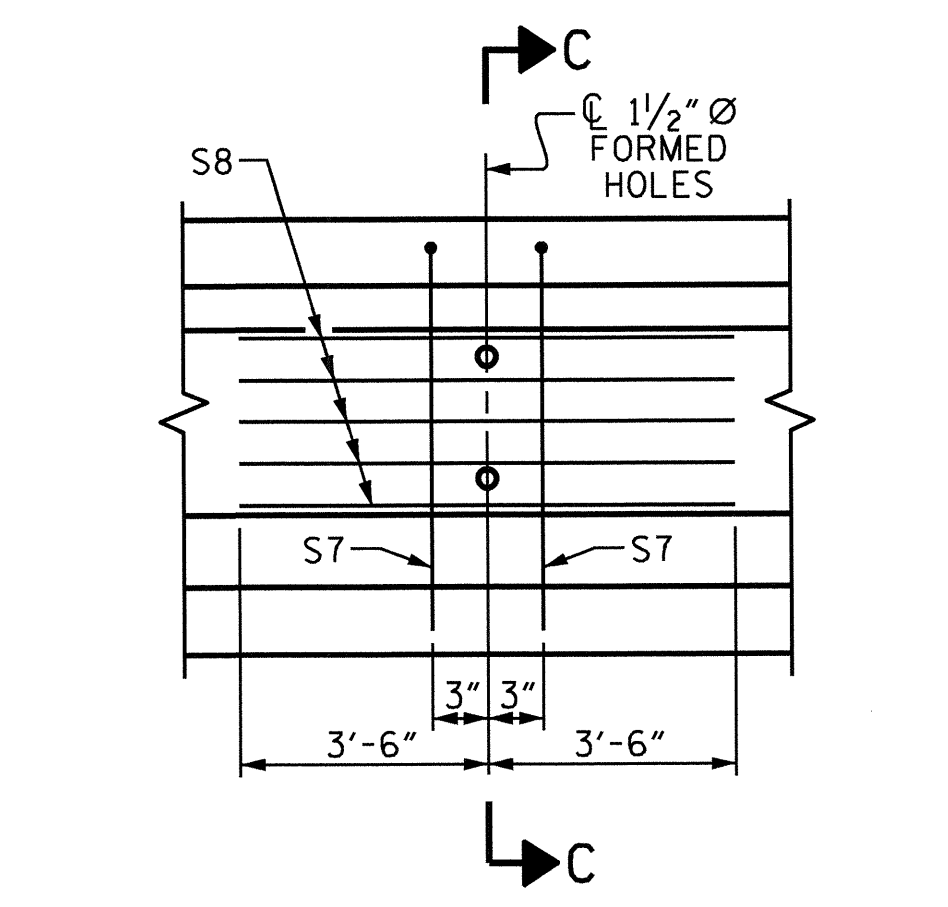
PLAN OF GIRDER



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



PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. A2 & A3



PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. A1 & A4

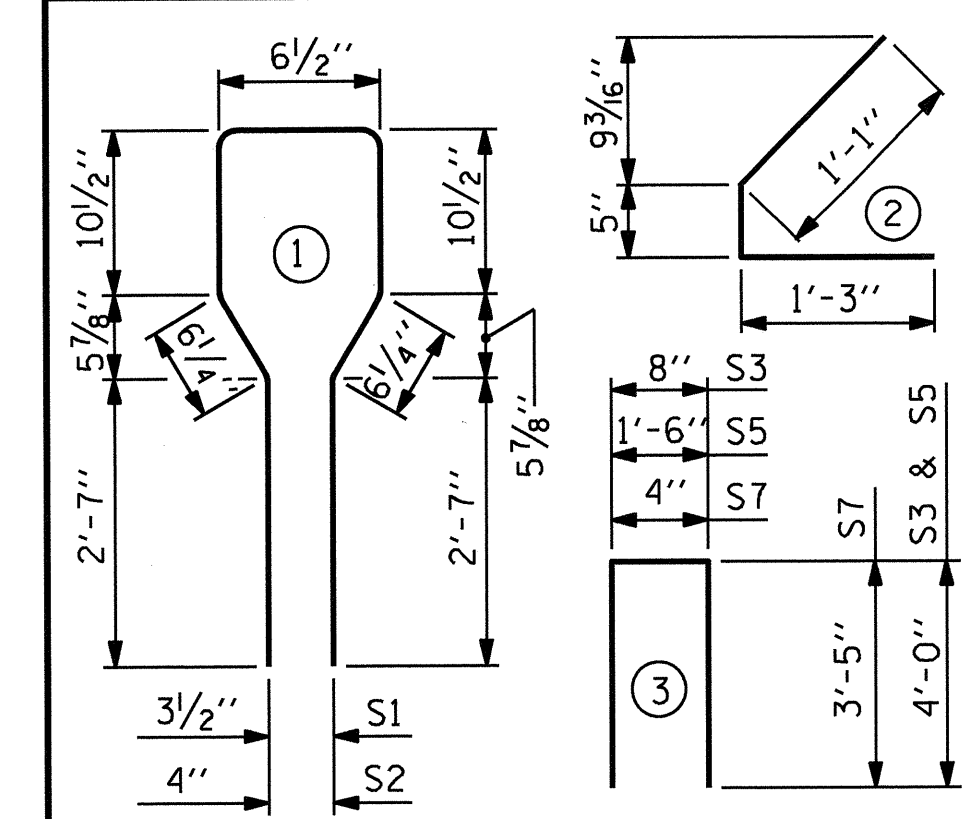
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQ. INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER						
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
A1 & A2	S1	53	#4	1	8'-6"	301
A3 & A4	S1	51	#4	1	8'-6"	290
	S2	12	#6	1	8'-6"	153
	S3	4	#4	3	8'-8"	23
	S4	56	#4	2	2'-9"	103
	S5	1	#4	3	9'-6"	6
	* S6	4	#5	STR	3'-8"	15
EXTERIOR GDR.	S7	2	#5	3	7'-2"	15
INTERIOR GDR.	S7	4	#5	3	7'-2"	30
EXTERIOR GDR.	S8	5	#4	STR	7'-0"	23
INTERIOR GDR.	S9	5	#4	STR	13'-2"	44

* NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR EACH GIRDER

GDR.	REINFORCING STEEL	5000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
A1	639	6.2	10
A2	675	6.1	10
A3	664	6.0	10
A4	628	6.0	10

GIRDERS REQUIRED

GDR.	LENGTH
	A1
A2	42'-3 1/2"
A3	41'-9 3/4"
A4	41'-4 5/8"
TOTAL LENGTH	168'-3 5/8"

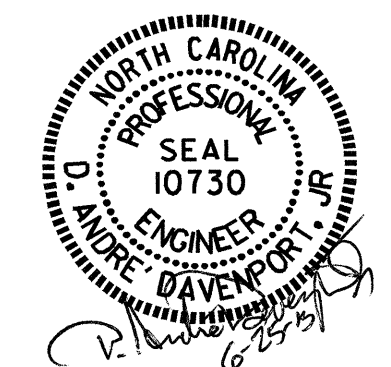
PROJECT NO. B-4401
ALAMANCE COUNTY
STATION: 16+28.00 -L-

SHEET 1 OF 5

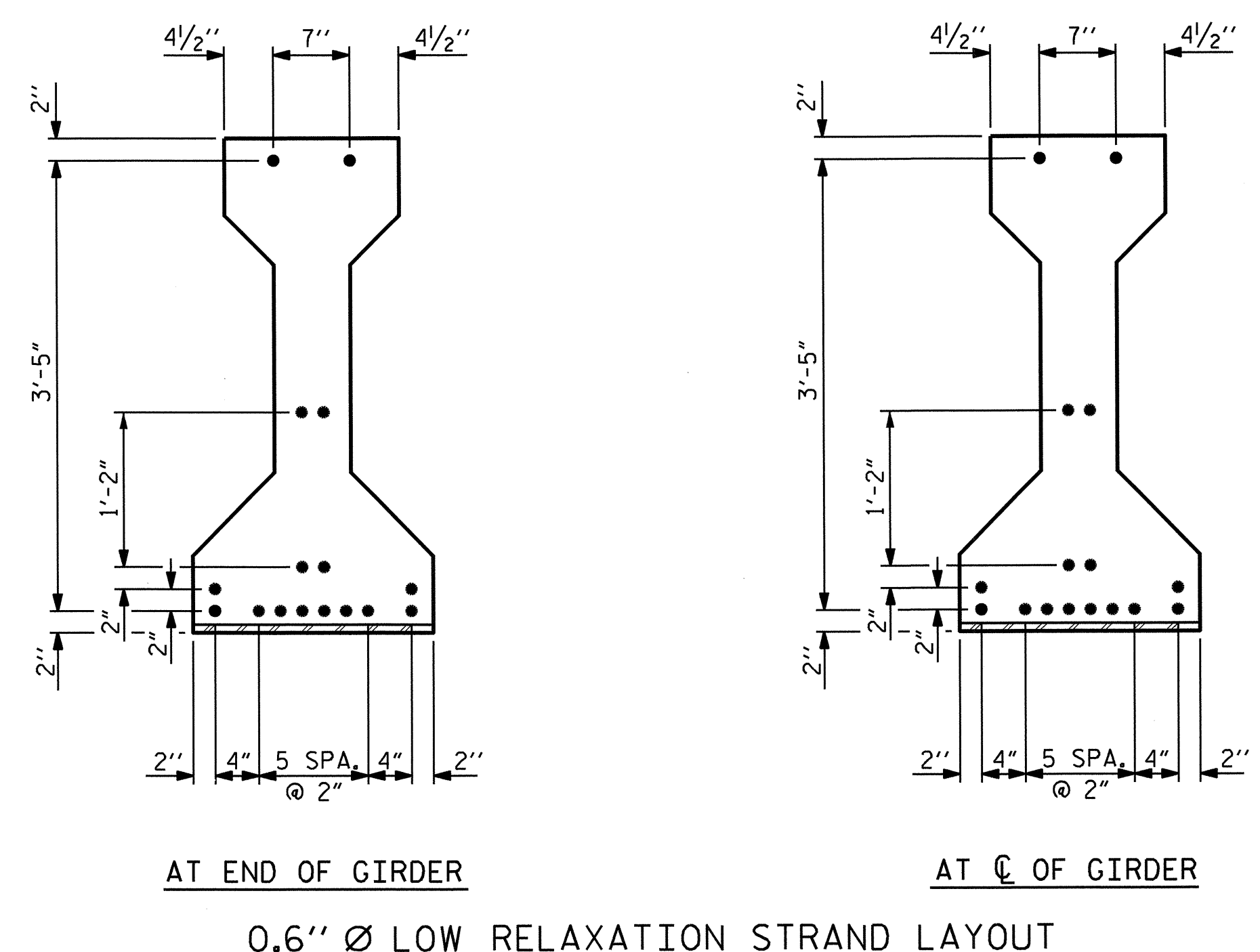
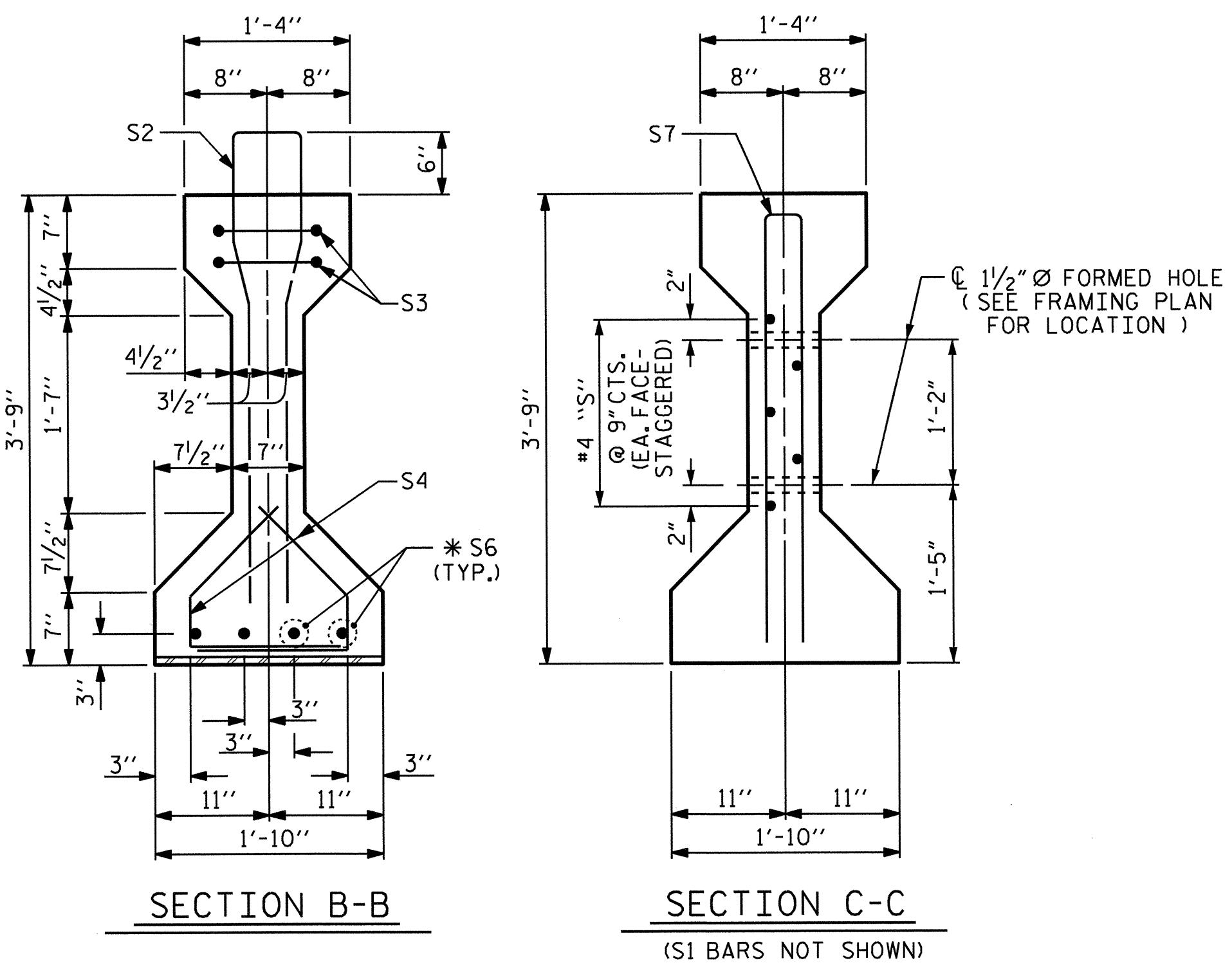
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE III
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPAN A

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

EXP.
DRAWN BY : M.K. BEARD DATE : 8/9/12
CHECKED BY : K.D. LAYNE DATE : 9/12
DESIGN ENGINEER OF RECORD: R.L. CHESSON DATE : 04/11/13



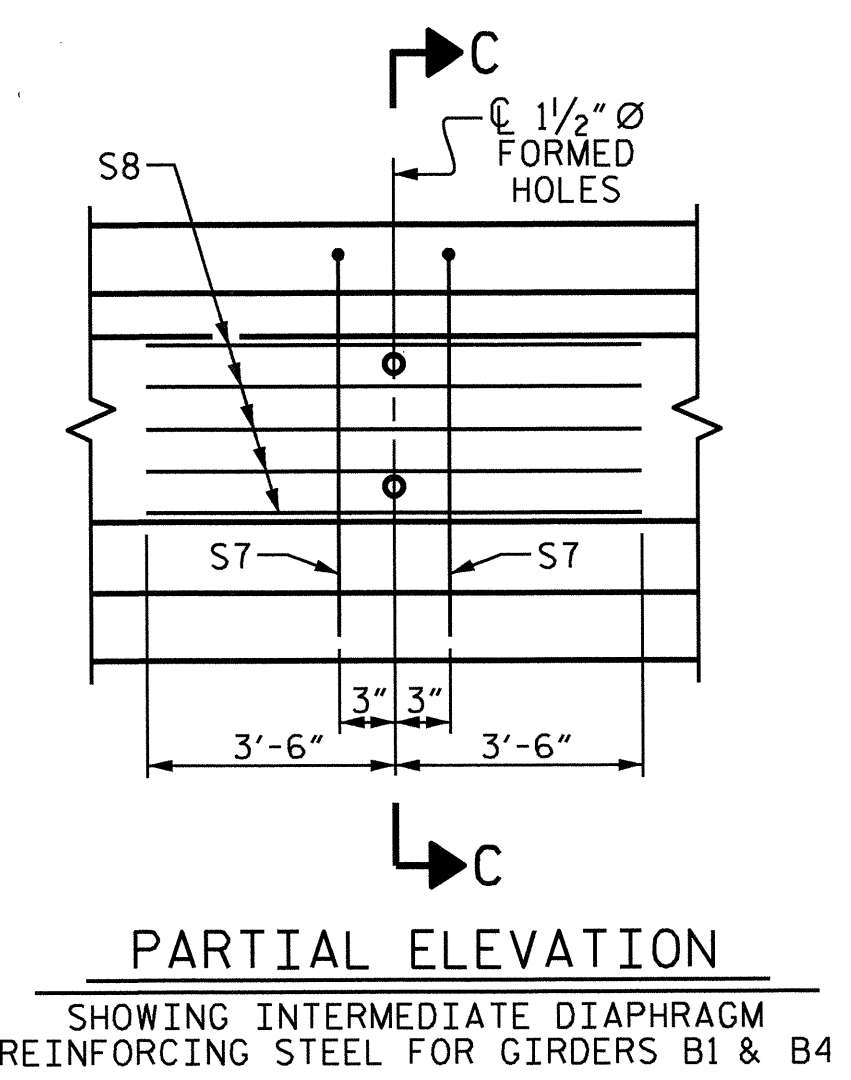
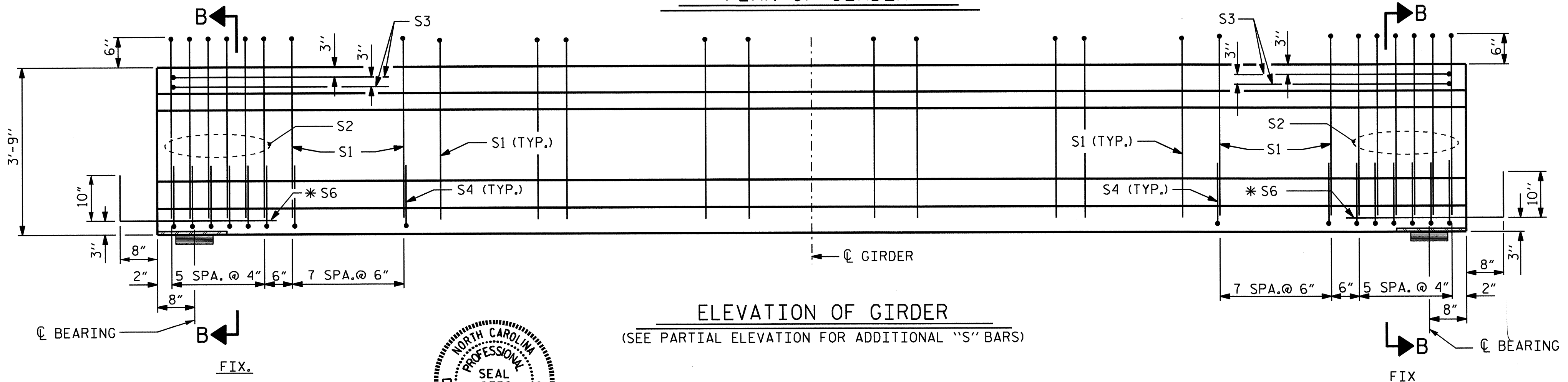
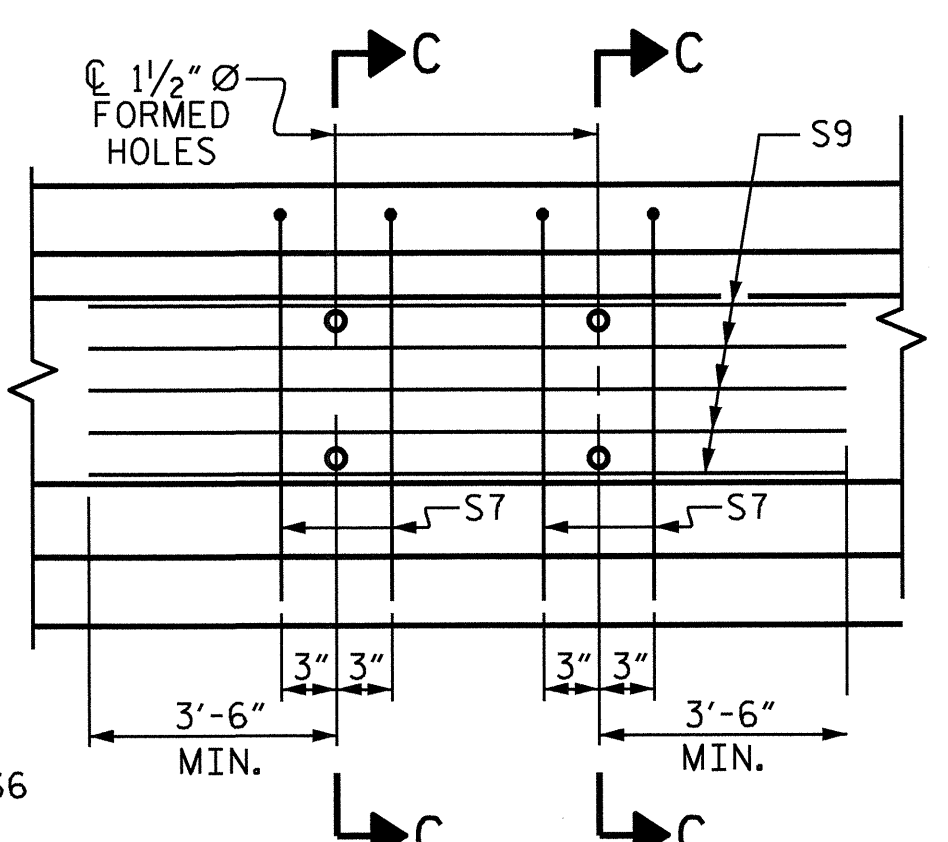
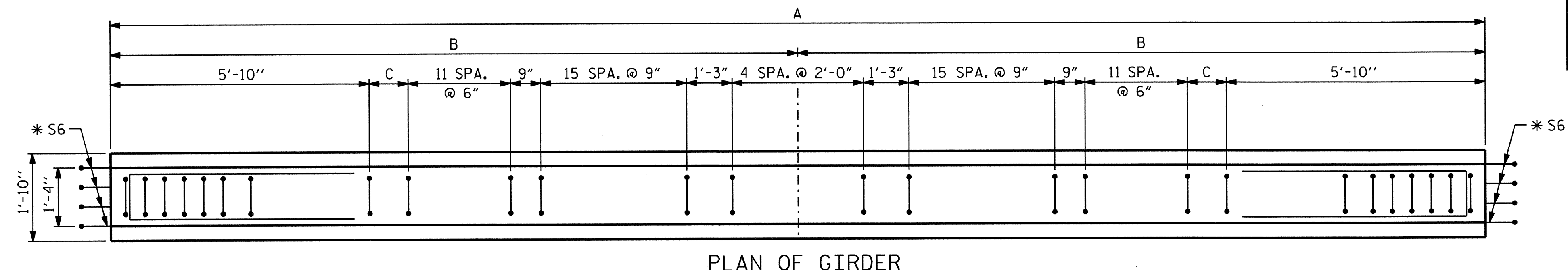
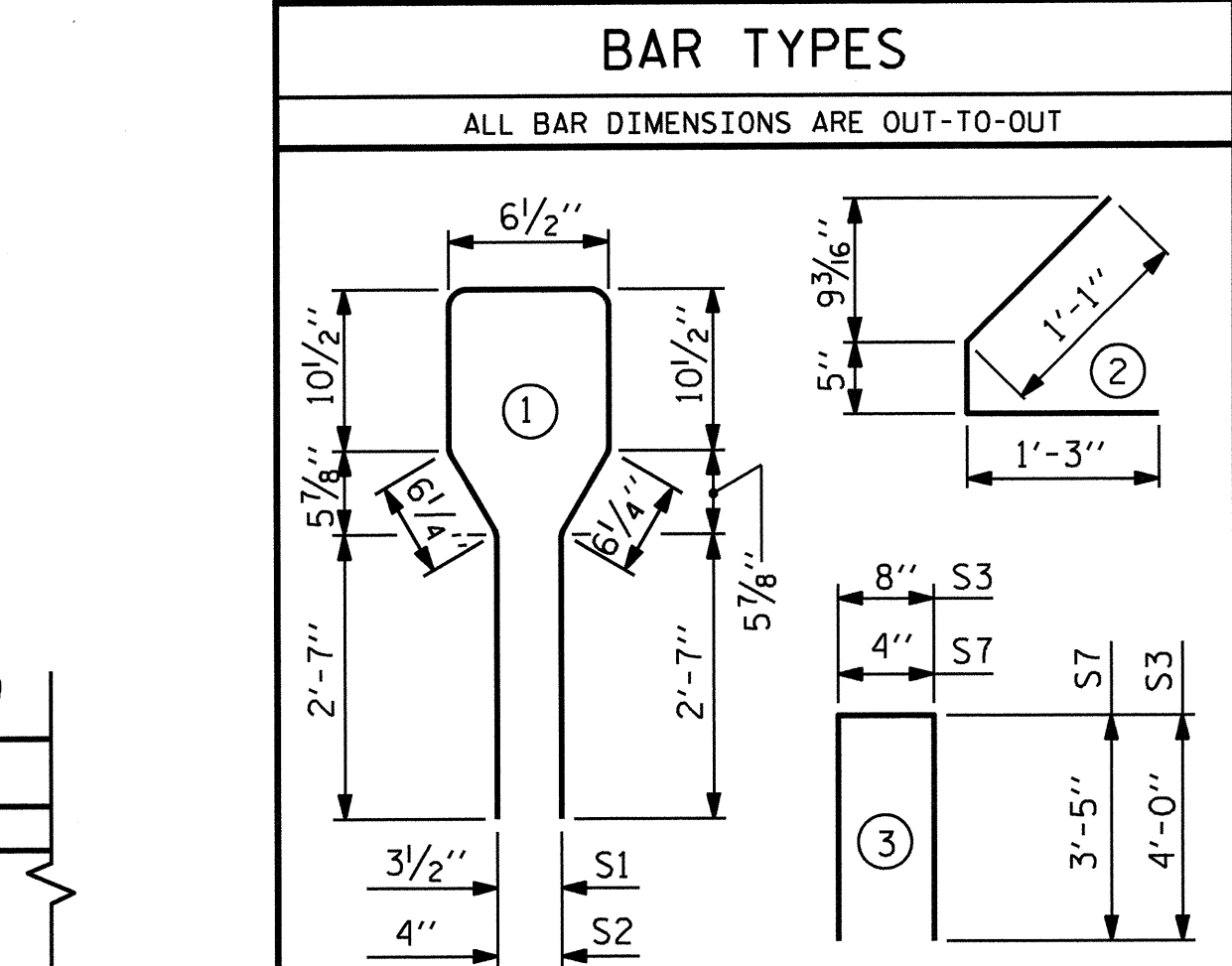
DRAWN BY : ELR 8/91 REV. 10/17/00R RWW/LES
CHECKED BY : GRP 8/91 REV. 5/1/06R TLA/GM
REV. 10/1/11 MAA/GM



GIRDER DIMENSIONS			
GDR.	A	B	C
B1	59'-9 ¹ / ₈ "	29'-10 ⁹ / ₁₆ "	3 SPA. @ 5 ³ / ₁₆ "
B2	59'-4 ¹ / ₈ "	29'-8 ¹ / ₁₆ "	2 SPA. @ 6 ¹ / ₂ "
B3	58'-11 ¹ / ₂ "	29'-5 ³ / ₄ "	2 SPA. @ 5 ³ / ₈ "
B4	58'-7 ¹ / ₄ "	29'-3 ⁵ / ₈ "	2 SPA. @ 4 ⁵ / ₁₆ "

0.6" Ø L. R. GRADE 270 STRANDS					
AREA (SQ. 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
B1	S1	#1	1	8'-6"	460
B2-B4	S1	#4	1	8'-6"	449
	S2	#6	1	8'-6"	153
	S3	#4	3	8'-8"	23
	S4	#4	2	2'-9"	103
	*S6	#5	STR	3'-8"	31
EXTERIOR GDR.	S7	#5	3	7'-2"	15
INTERIOR GDR.	S7	#5	3	7'-2"	30
EXTERIOR GDR.	S8	#4	STR	7'-0"	23
INTERIOR GDR.	S9	#4	STR	11'-8"	39

* NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

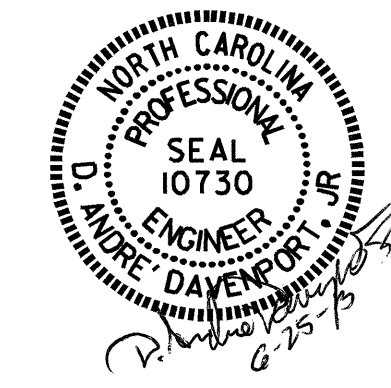


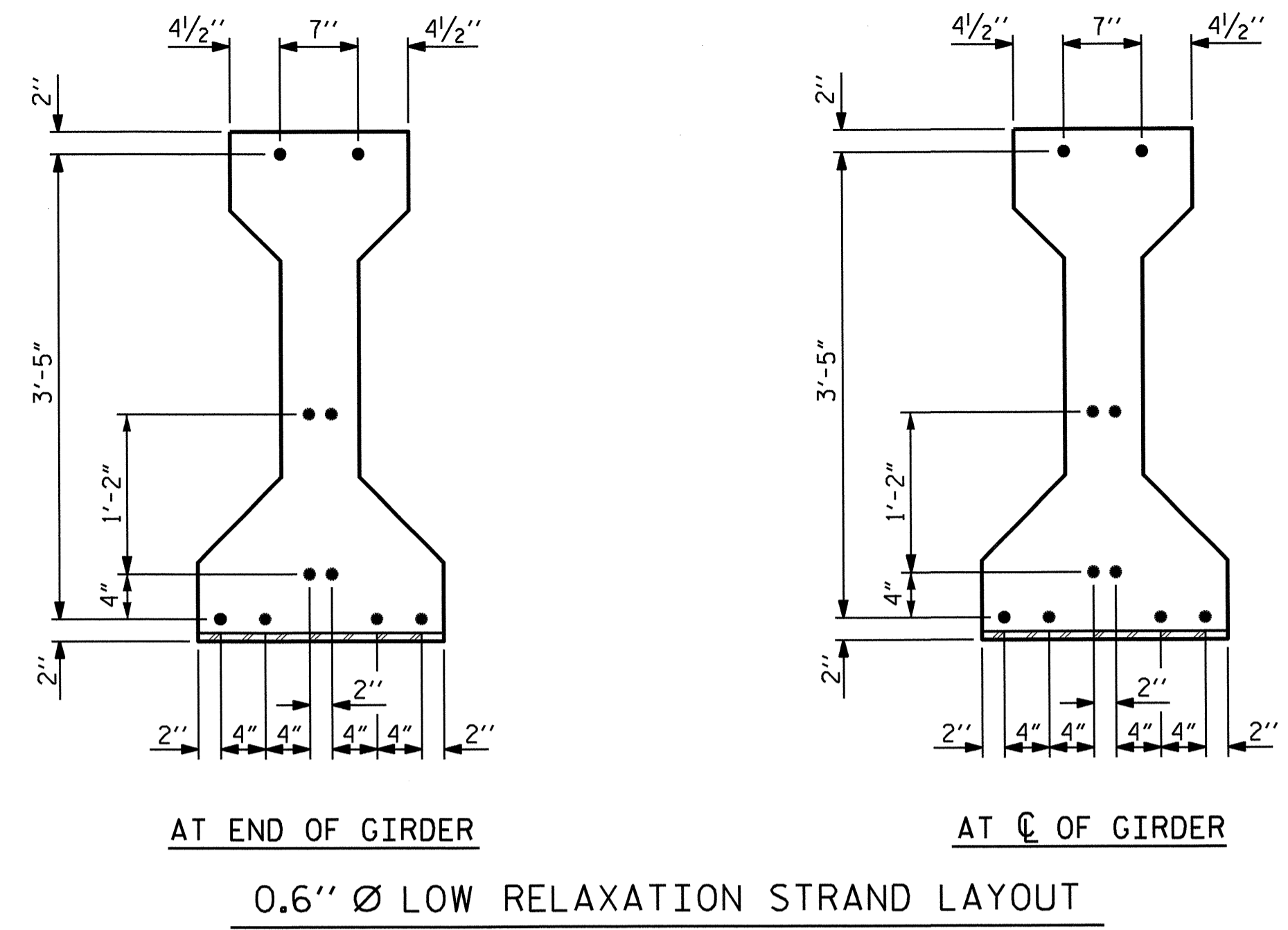
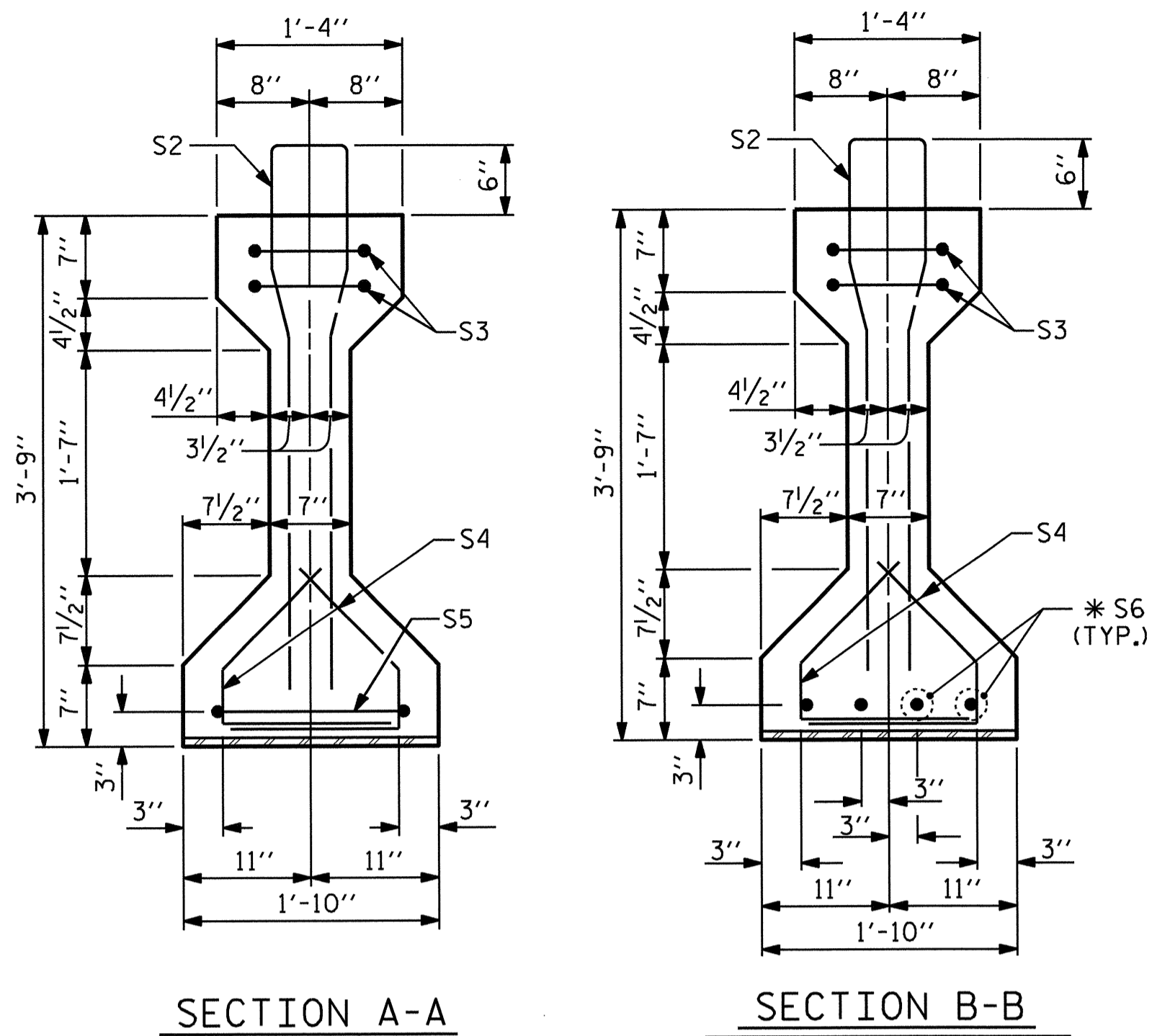
QUANTITIES FOR EACH GIRDER			
	REINFORCING STEEL LB.	5000 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
B1	808	8.6	16
B2	828	8.5	16
B3	828	8.5	16
B4	797	8.4	16
GIRDERS REQUIRED		LENGTH	
B1		59'-9 ¹ / ₈ "	
B2		59'-4 ¹ / ₈ "	
B3		58'-11 ¹ / ₂ "	
B4		58'-7 ¹ / ₄ "	
TOTAL LENGTH		236'-8"	

PROJECT NO. B-4401
 ALAMANCE COUNTY
 STATION: 16+28.00 -L-
 SHEET 2 OF 5

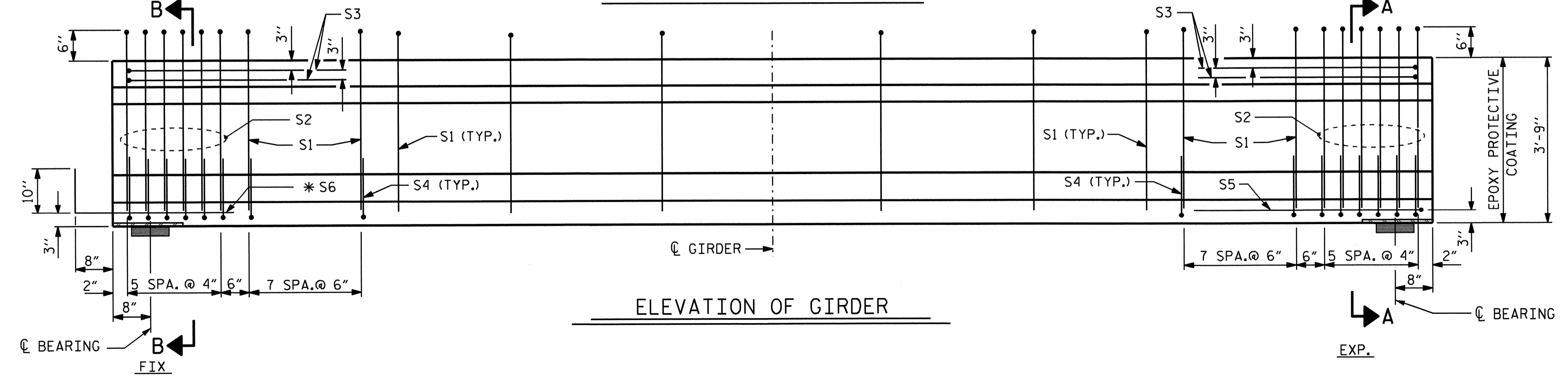
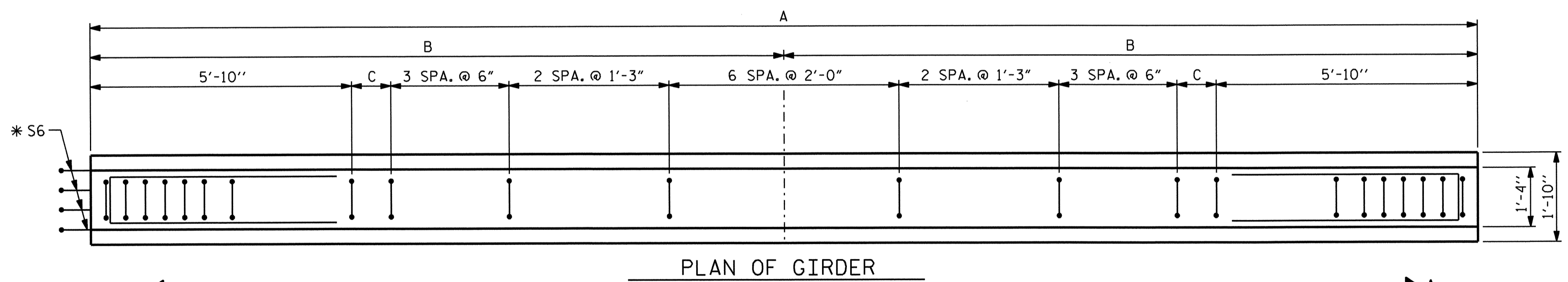
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH			
STANDARD AASHTO TYPE III PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD SPAN B			
REVISIONS			SHEET NO.
NO.	BY:	DATE:	S-14
1			TOTAL SHEETS
2			35

DRAWN BY: M.K. BEARD DATE: 8/9/12
 CHECKED BY: K.D. LAYNE DATE: 9/12
 DESIGN ENGINEER OF RECORD: R.L. CHESSON DATE: 04/11/13





GIRDER DIMENSIONS			
GDR.	A	B	C
C1	32'-10 ⁷ / ₈ "	16'-5 ⁷ / ₁₆ "	7 ⁷ / ₁₆ "
C2	32'-9 ³ / ₈ "	16'-4 ¹¹ / ₁₆ "	6 ¹¹ / ₁₆ "
C3	32'-8 ¹ / ₈ "	16'-4 ¹ / ₁₆ "	6 ¹ / ₁₆ "
C4	32'-6 ³ / ₄ "	16'-3 ³ / ₈ "	5 ³ / ₈ "

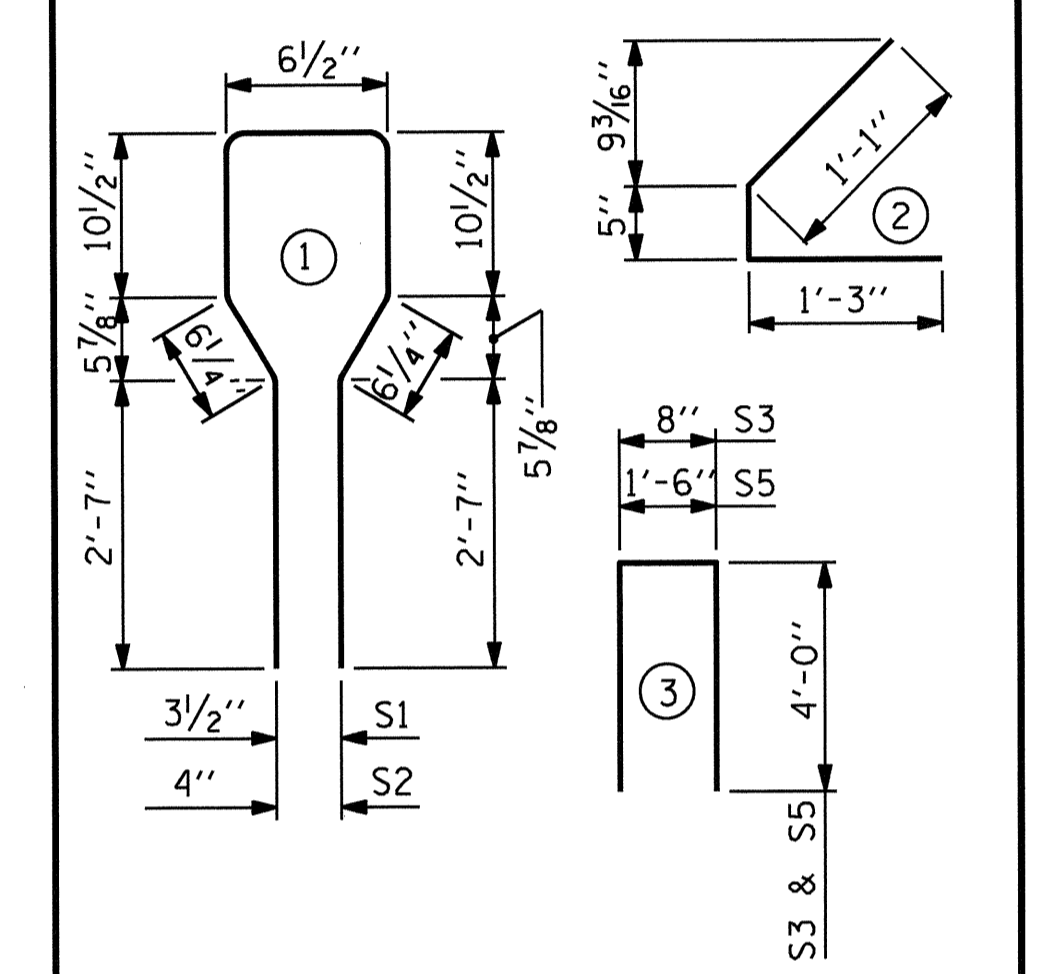


0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	33	#4	1	8'-6"	187
S2	12	#6	1	8'-6"	153
S3	4	#4	3	8'-8"	23
S4	56	#4	2	2'-9"	103
S5	1	#4	3	9'-6"	6
*S6	4	#5	STR	3'-8"	15

* NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT

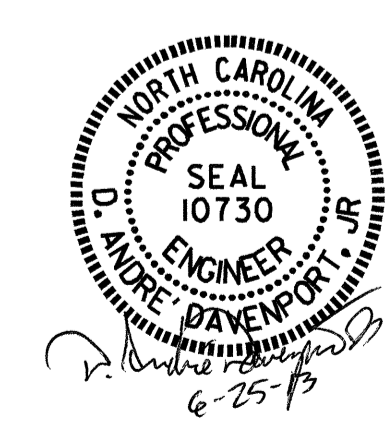


QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL LB.	5000 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
C1-C4	487	4.7	10

GIRDERS REQUIRED	
NUMBER	LENGTH
C1	32'-10 ⁷ / ₈ "
C2	32'-9 ³ / ₈ "
C3	32'-8 ¹ / ₈ "
C4	32'-6 ³ / ₄ "
TOTAL LENGTH	130'-11 ¹ / ₈ "

PROJECT NO. B-4401
ALAMANCE COUNTY
STATION: 16+28.00 -L-

SHEET 3 OF 5
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE III
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPAN C



DRAWN BY : M.K. BEARD	DATE : 8/9/12
CHECKED BY : K.D. LAYNE	DATE : 9/12
DESIGN ENGINEER OF RECORD : R.L. CHESSON	DATE : 04/11/13
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

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.

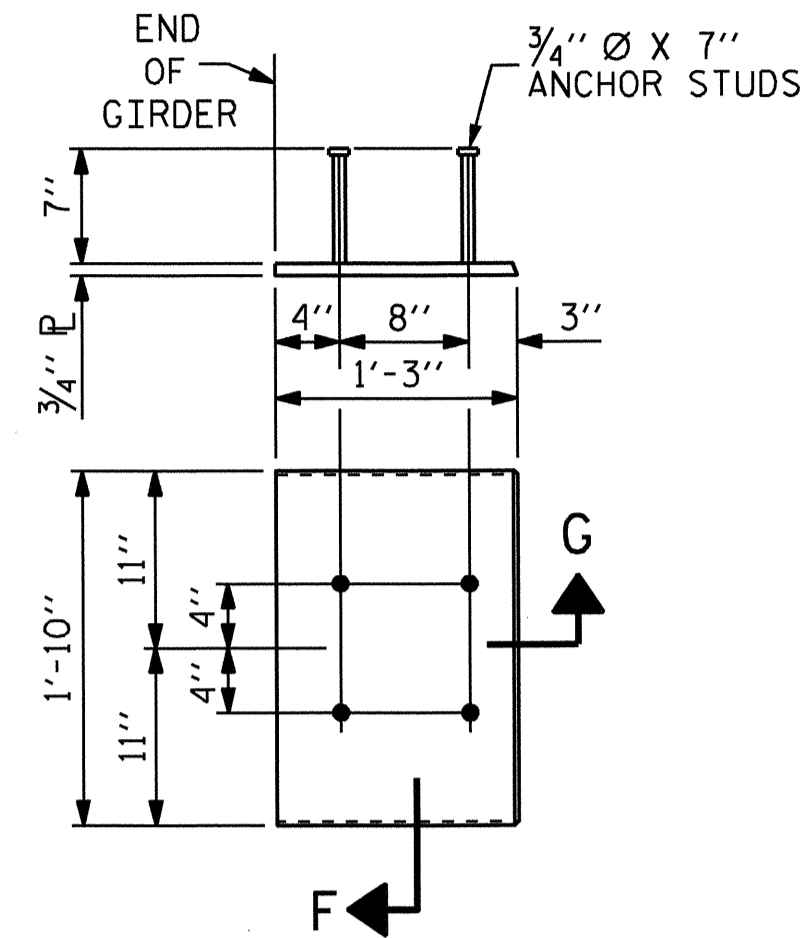
AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

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.

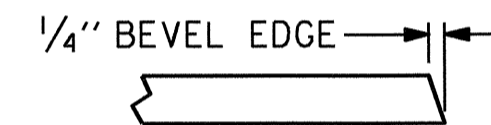
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

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

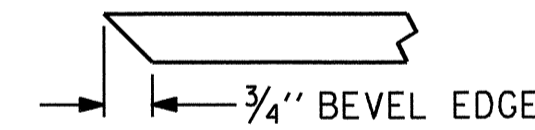
WHEN DRAPED STRANDS ARE DETAILED, THE LONGITUDINAL LOCATION OF THE HOLD DOWN DEVICES SHALL BE WITHIN 6" OF THE LOCATION SHOWN AND THE CENTER OF GRAVITY OF THE GROUP OF DRAPED STRANDS SHALL BE LOCATED WITHIN 1/2" OF THE THEORETICAL LOCATION SHOWN.



EMBEDDED PLATE "B-1" DETAILS
FOR AASHTO TYPE III GIRDER
(2 REQ'D PER GIRDER)



SECTION "G"

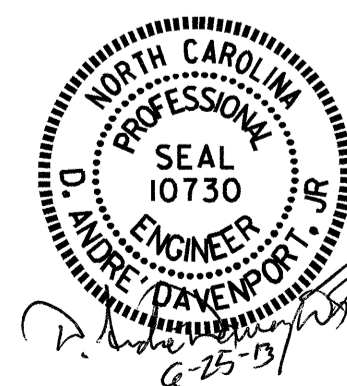


SECTION "F"

(SEE NOTES)

PROJECT NO. B-4401
ALAMANCE COUNTY
STATION: 16+28.00 -L-

SHEET 4 OF 5



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

DRAWN BY : M.K. BEARD	DATE : 8/9/12
CHECKED BY : K.D. LAYNE	DATE : 9/12
DESIGN ENGINEER OF RECORD: R.L. CHESSON	DATE : 04/11/13
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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			35
2			4			

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.

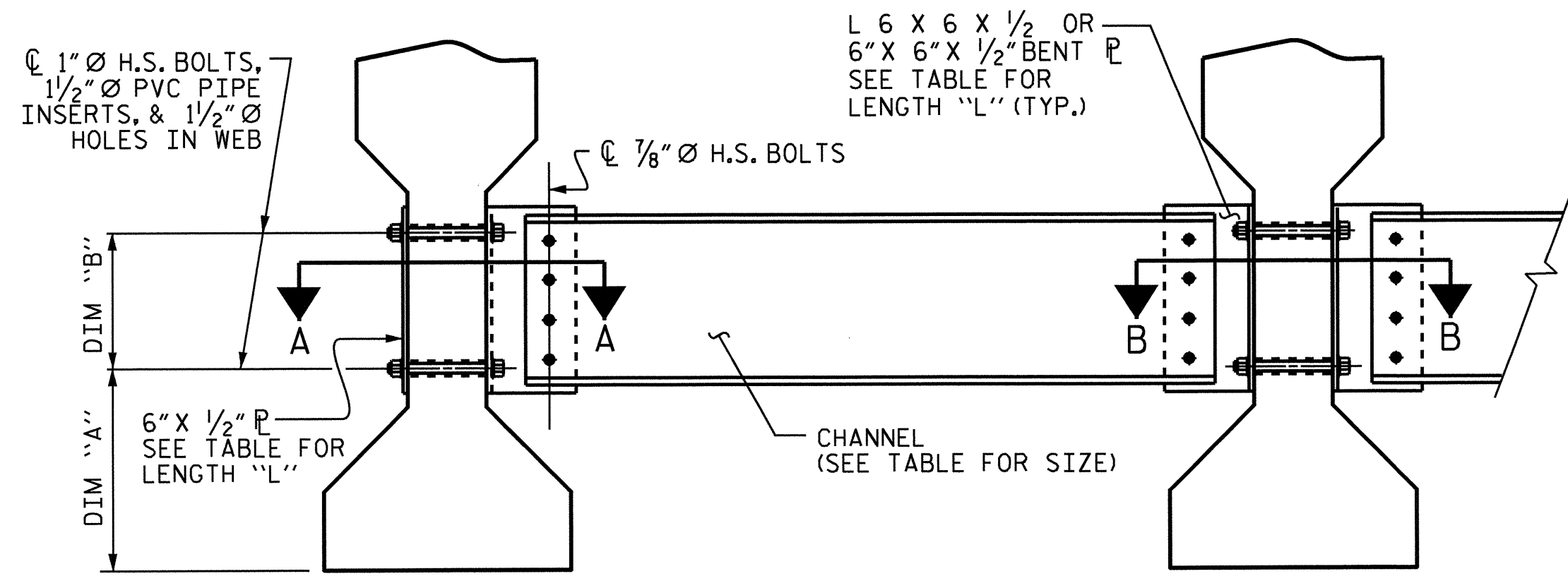
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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.

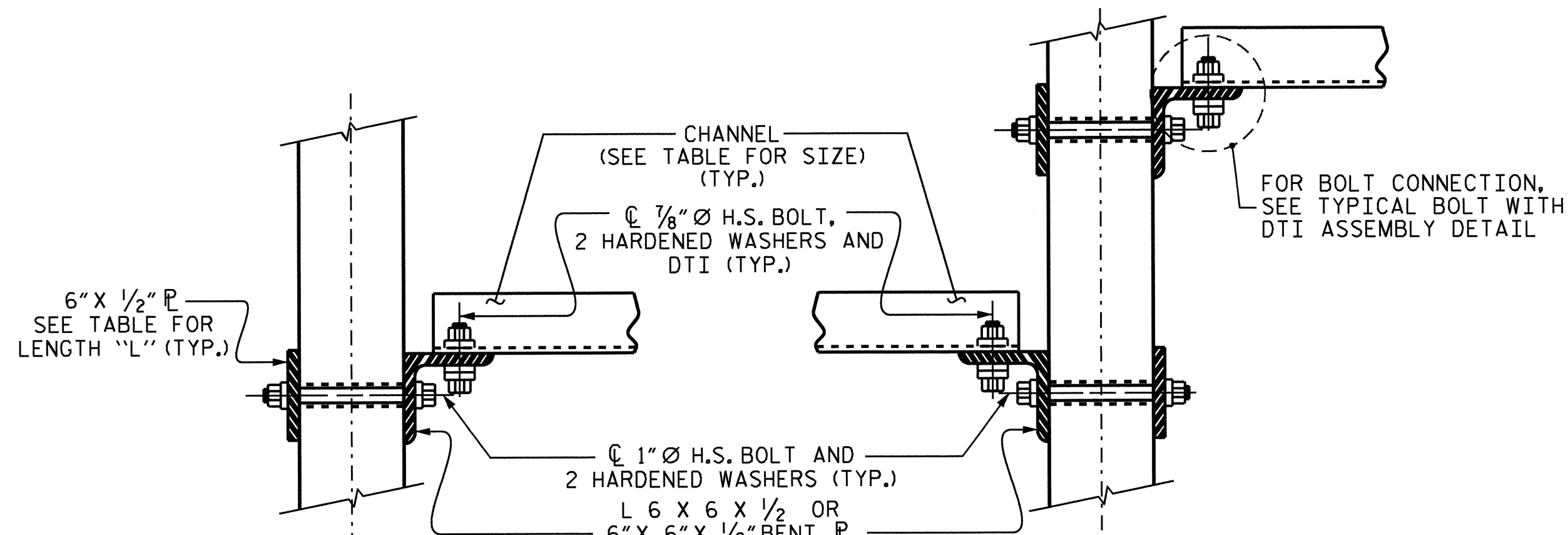


EXTERIOR GIRDER

INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM

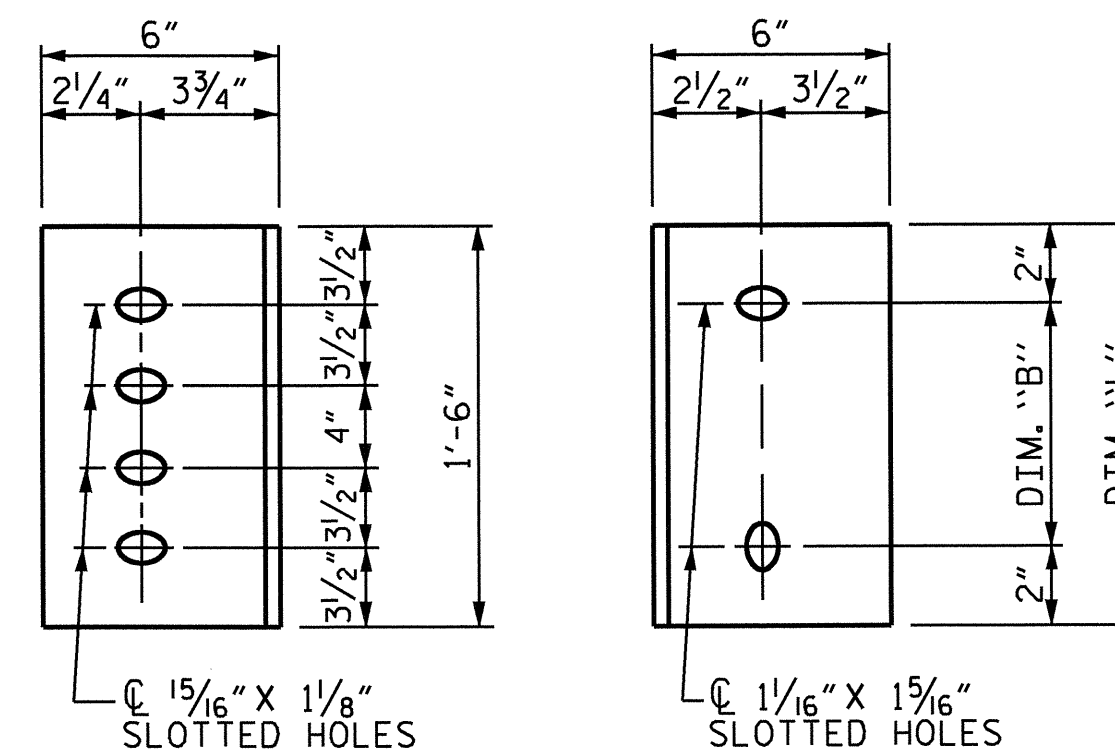
(TYPE III GIRDER SHOWN)



SECTION A-A

SECTION B-B

CONNECTION DETAILS



DIAPHRAGM FACE (TYPE III)

WEB FACE

CONNECTOR PLATE DETAILS

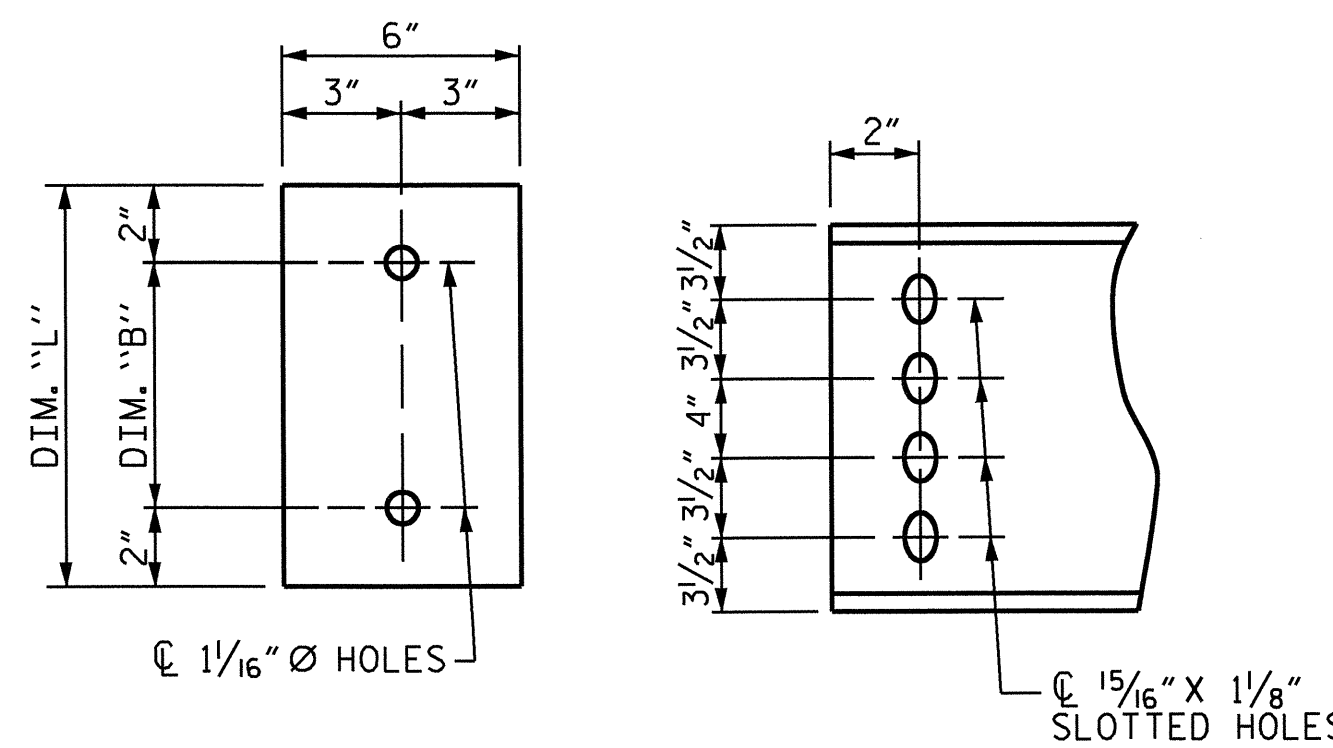
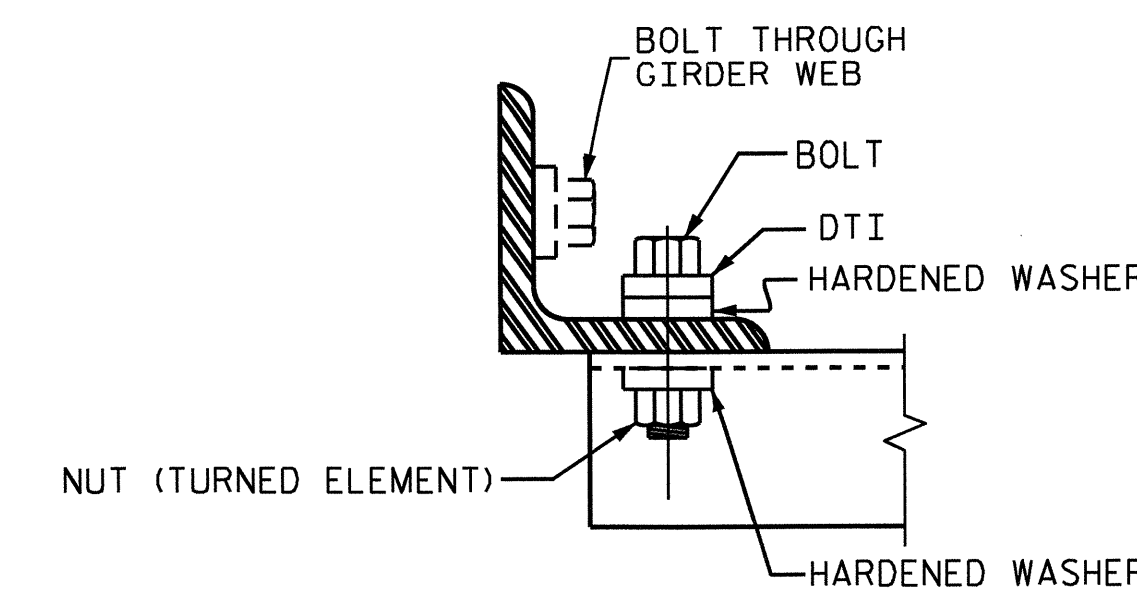


PLATE DETAILS

CHANNEL END (TYPE III)

TABLE

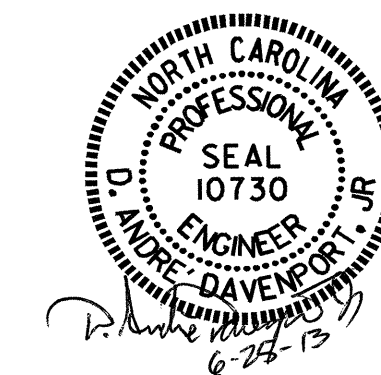
GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
III	MC 18 x 42.7	1'-5"	1'-2"	1'-6"



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. B-4401
ALAMANCE COUNTY
 STATION: 16+28.00 -L-

SHEET 5 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 INTERMEDIATE
 STEEL DIAPHRAGMS
 FOR TYPE III
 PRESTRESSED CONCRETE
 GIRDERS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-17
2			4			TOTAL SHEETS 35

DRAWN BY : M.K. BEARD DATE : 7/12/12
 CHECKED BY : K.D. LAYNE DATE : 9/12
 DESIGN ENGINEER OF RECORD : R.L. CHESSON DATE : 04/11/13

DRAWN BY : TLA 6/05
 CHECKED BY : VC 6/05
 ADDED 10/21/05
 REV. 5/1/06RRR KMM/GM
 REV. 10/1/11 MAA/GM

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																		
0.6" Ø LOW RELAXATION	SPAN A											SPAN A										SPAN A												
	GIRDER A1											GIRDERS A2 & A3										GIRDER A4												
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)	↑	0.000	0.004	0.008	0.011	0.012	0.013	0.012	0.011	0.008	0.004	0.000	0.000	0.004	0.008	0.011	0.012	0.013	0.012	0.011	0.008	0.004	0.000	0.000	0.004	0.008	0.011	0.012	0.013	0.012	0.011	0.008	0.004	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.003	0.006	0.009	0.010	0.011	0.010	0.009	0.006	0.003	0.000	0.000	0.004	0.007	0.009	0.011	0.012	0.011	0.009	0.007	0.004	0.000	0.000	0.003	0.006	0.008	0.009	0.010	0.009	0.008	0.006	0.003	0.000
FINAL CAMBER	↑	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

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

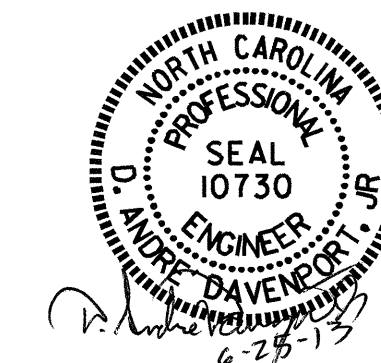
DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																		
0.6" Ø LOW RELAXATION	SPAN B											SPAN B										SPAN B												
	GIRDER B1											GIRDERS B2 & B3										GIRDER B4												
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.029	0.055	0.076	0.089	0.093	0.089	0.076	0.055	0.029	0.000	0.000	0.029	0.055	0.075	0.088	0.093	0.088	0.075	0.055	0.029	0.000	0.000	0.029	0.054	0.074	0.087	0.092	0.087	0.074	0.054	0.029	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.012	0.023	0.032	0.037	0.039	0.037	0.032	0.023	0.012	0.000	0.000	0.015	0.028	0.038	0.044	0.047	0.044	0.038	0.028	0.015	0.000	0.000	0.013	0.025	0.035	0.041	0.043	0.041	0.035	0.025	0.013	0.000
FINAL CAMBER	↑	0	3/16"	3/8"	1/2"	5/8"	5/8"	5/8"	1/2"	3/8"	3/16"	0	0	3/16"	5/16"	7/16"	1/2"	9/16"	1/2"	7/16"	5/16"	3/16"	0	0	3/16"	3/8"	1/2"	9/16"	5/16"	3/16"	1/2"	3/8"	3/16"	0

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																																			
0.6" Ø LOW RELAXATION	SPAN C											SPAN C										SPAN C													
	GIRDER C1											GIRDERS C2 & C3										GIRDER C4													
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)	↑	0.000	0.003	0.006	0.009	0.010	0.011	0.010	0.009	0.006	0.003	0.000	0.000	0.003	0.006	0.009	0.010	0.011	0.010	0.009	0.006	0.003	0.000	0.000	0.003	0.006	0.009	0.010	0.011	0.010	0.009	0.006	0.003	0.000	
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.001	0.002	0.003	0.003	0.004	0.003	0.003	0.002	0.001	0.000	0.000	0.001	0.002	0.003	0.004	0.004	0.004	0.003	0.002	0.001	0.000	0.000	0.001	0.002	0.003	0.003	0.004	0.003	0.003	0.002	0.001	0.000	
FINAL CAMBER	↑	0	0	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	0	0	0	0	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	0	0	0	0	1/16"	1/16"	1/16"	1/16"	1/16"	1/16"	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. B-4401
ALAMANCE COUNTY
STATION: 16+28.00 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
DEAD LOAD DEFLECTION					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					TOTAL SHEETS
S-18					35

DRAWN BY : M.K. BEARD DATE : 8/2/12
CHECKED BY : K.D. LAYNE DATE : 9/12
DESIGN ENGINEER OF RECORD: R.L. CHESSON DATE : 04/11/13

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.

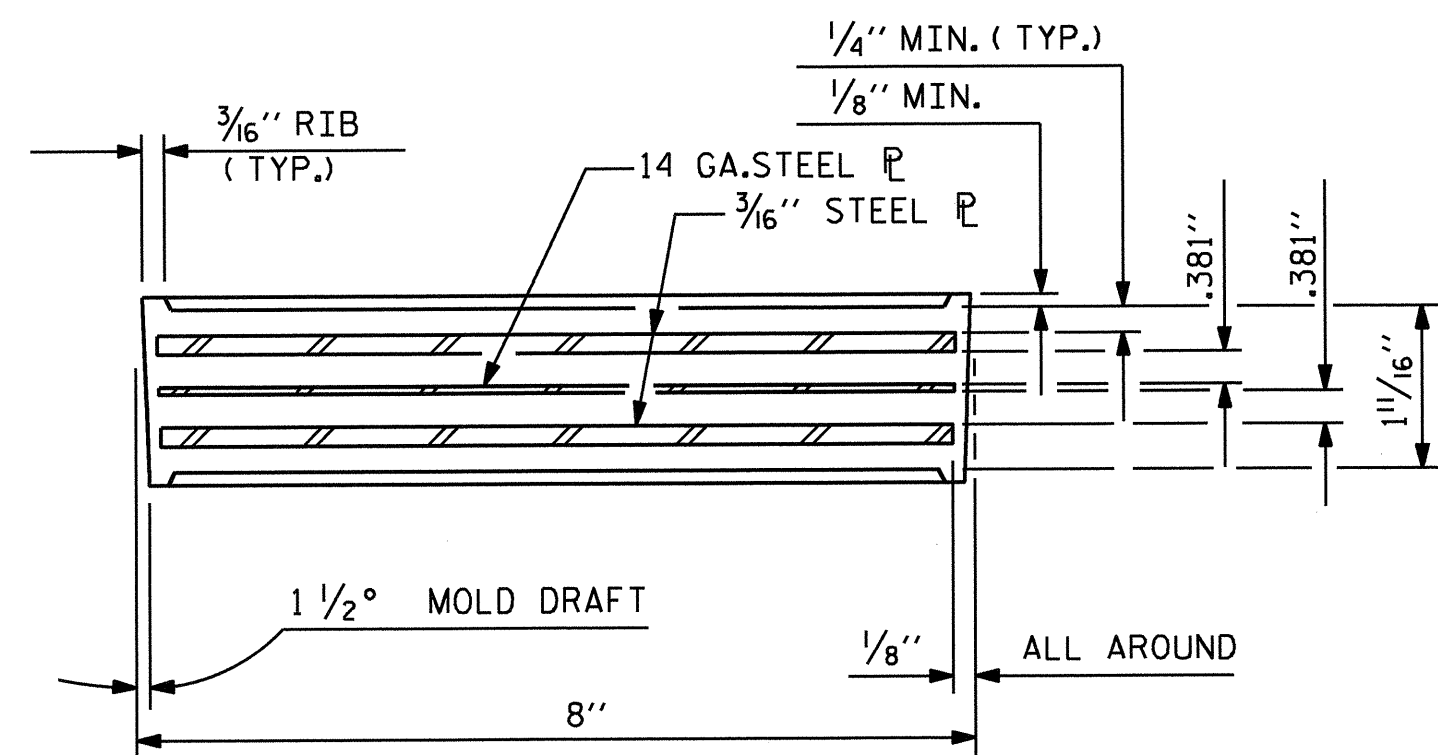
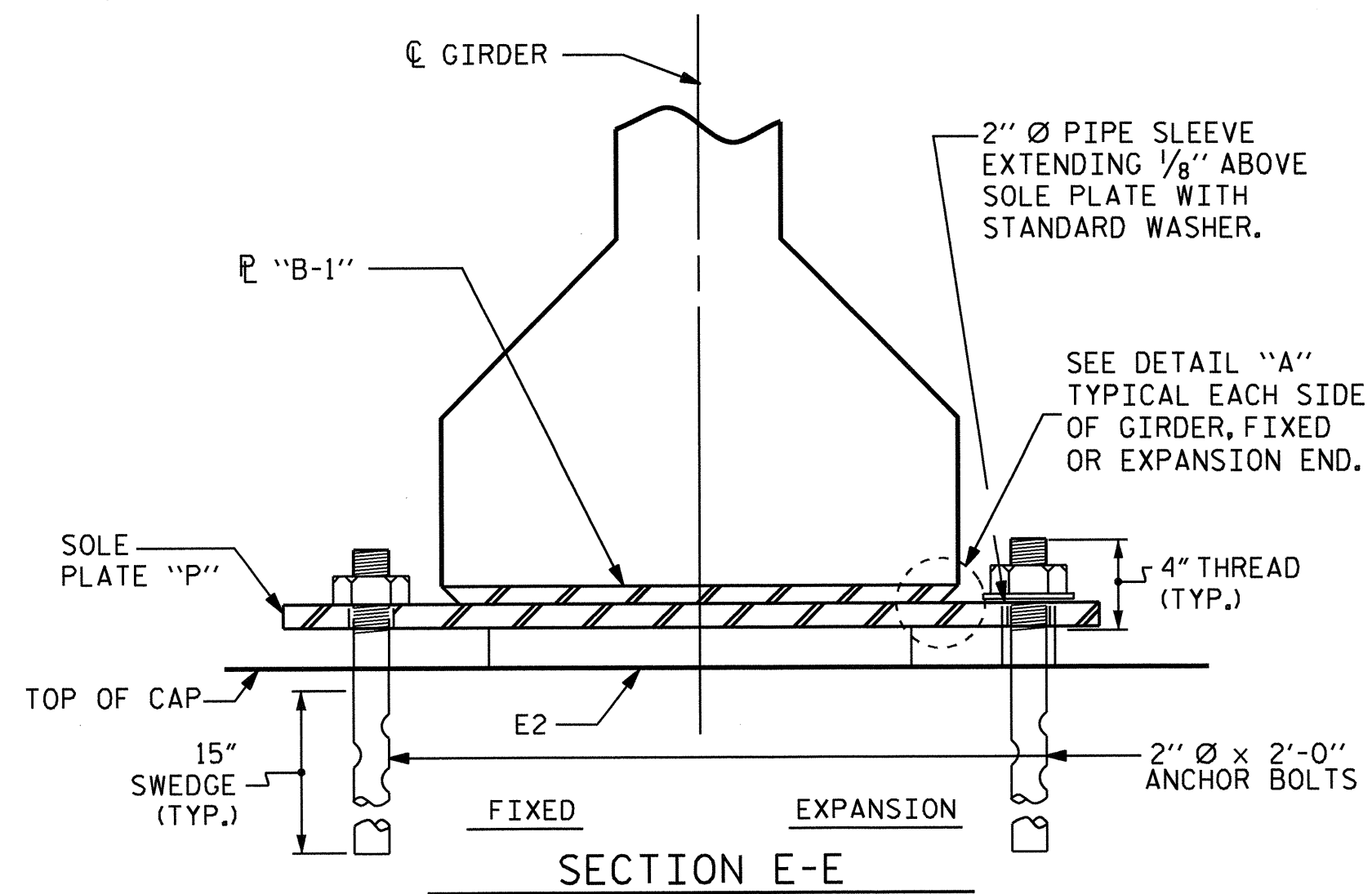
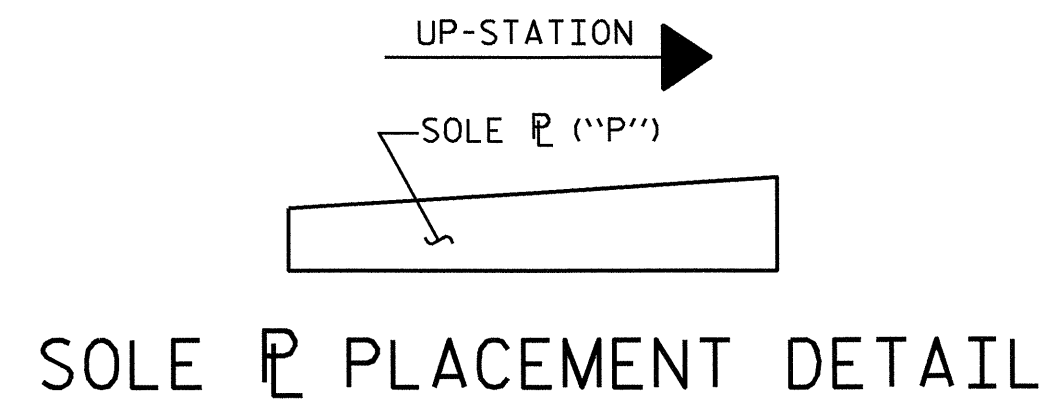
SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

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. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

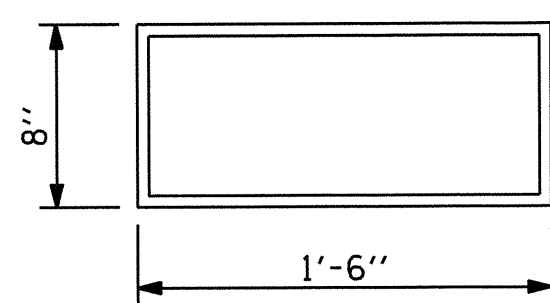
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.



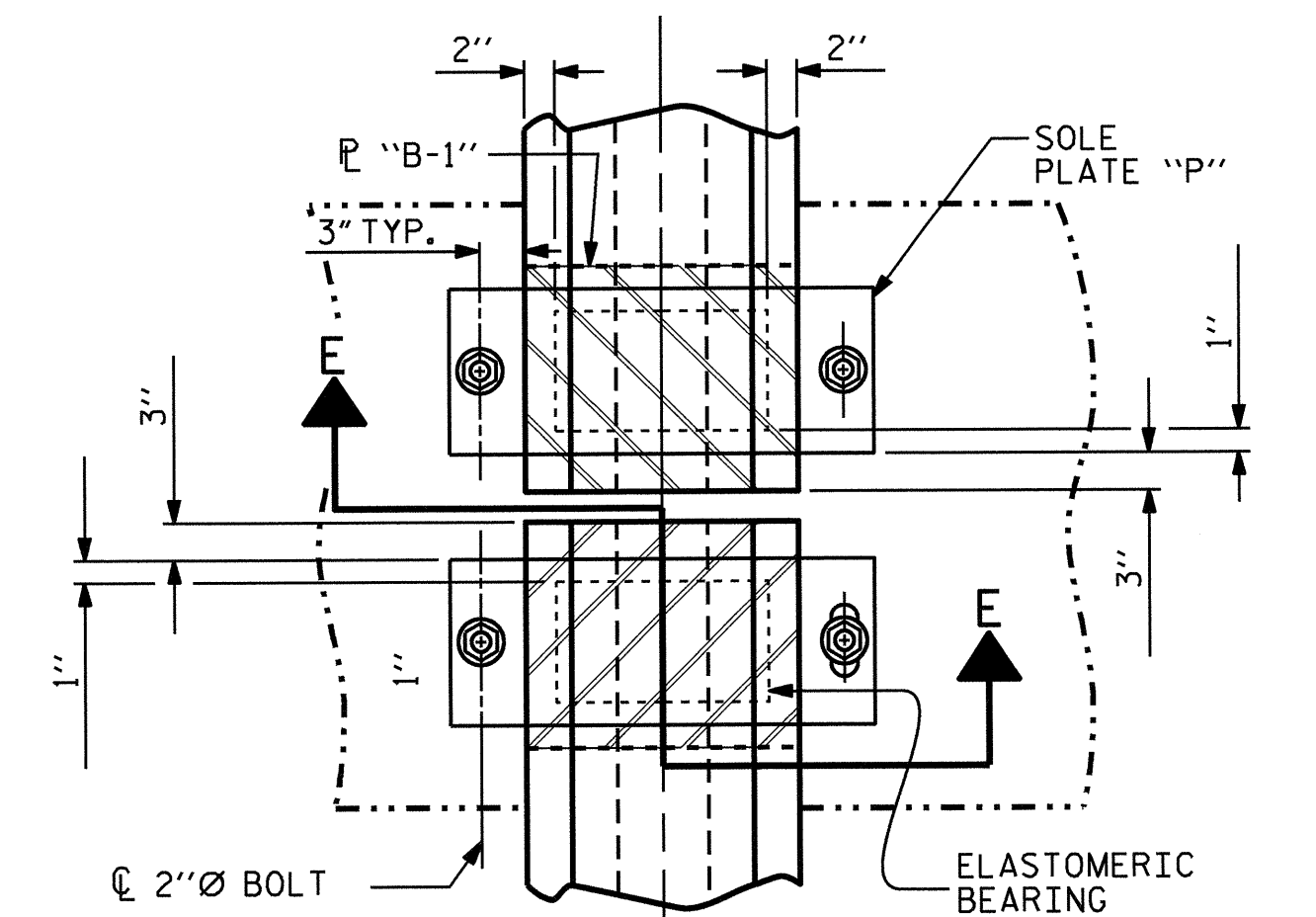
TYPICAL SECTION OF ELASTOMERIC BEARINGS



E2 (24 REQ'D)

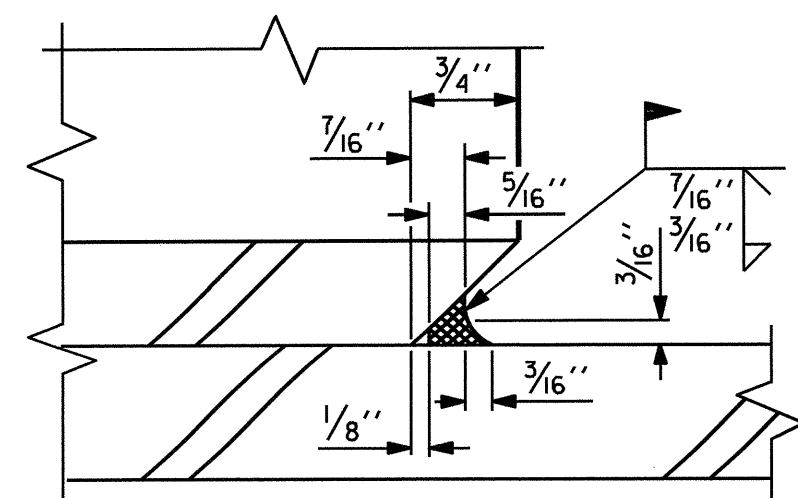
PLAN VIEW OF ELASTOMERIC BEARING

TYPE III

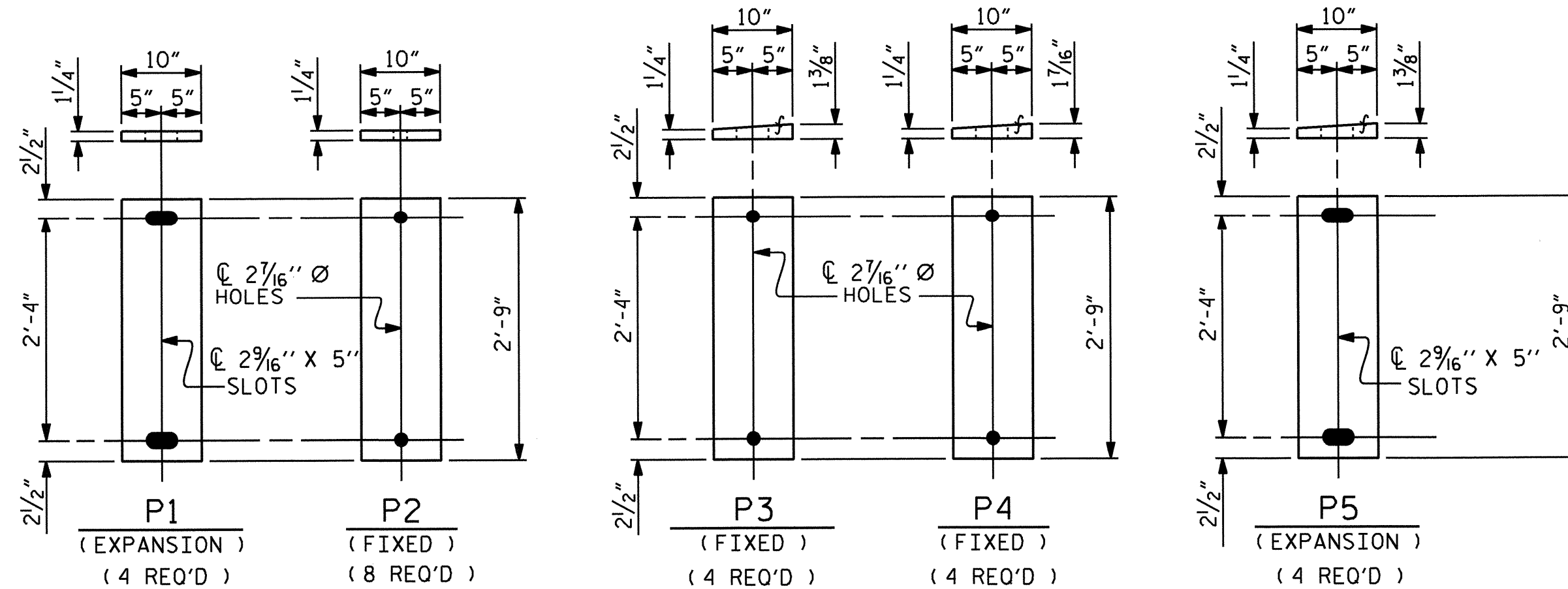


TYPICAL HALF-PLAN (SHOWING CONTINUOUS BENT)

TYPICAL HALF-PLAN (SHOWING SIMPLE SPAN BENT)



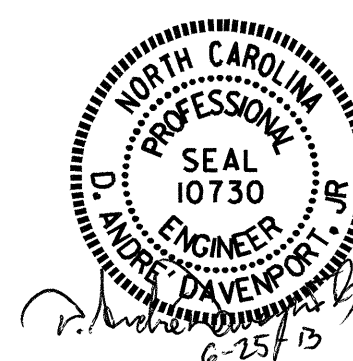
DETAIL "A"



SOLE PLATE DETAILS ("P")

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE III	205 k

PROJECT NO. B-4401
ALAMANCE COUNTY
 STATION: 16+28.00 -L-



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

REVISIONS						SHEET NO. S-19
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

DRAWN BY : M.K. BEARD	DATE : 8/9/12
CHECKED BY : K.D. LAYNE	DATE : 9/12
DESIGN ENGINEER OF RECORD : R.L. CHESSON	DATE : 04/11/13
DRAWN BY : WJH 8/89	REV. 5/1/06 TLA/GM
CHECKED BY : CRK 8/89	REV. 10/1/11 MAA/GM
	REV. 10/24/12 AAC/MAA

NOTES

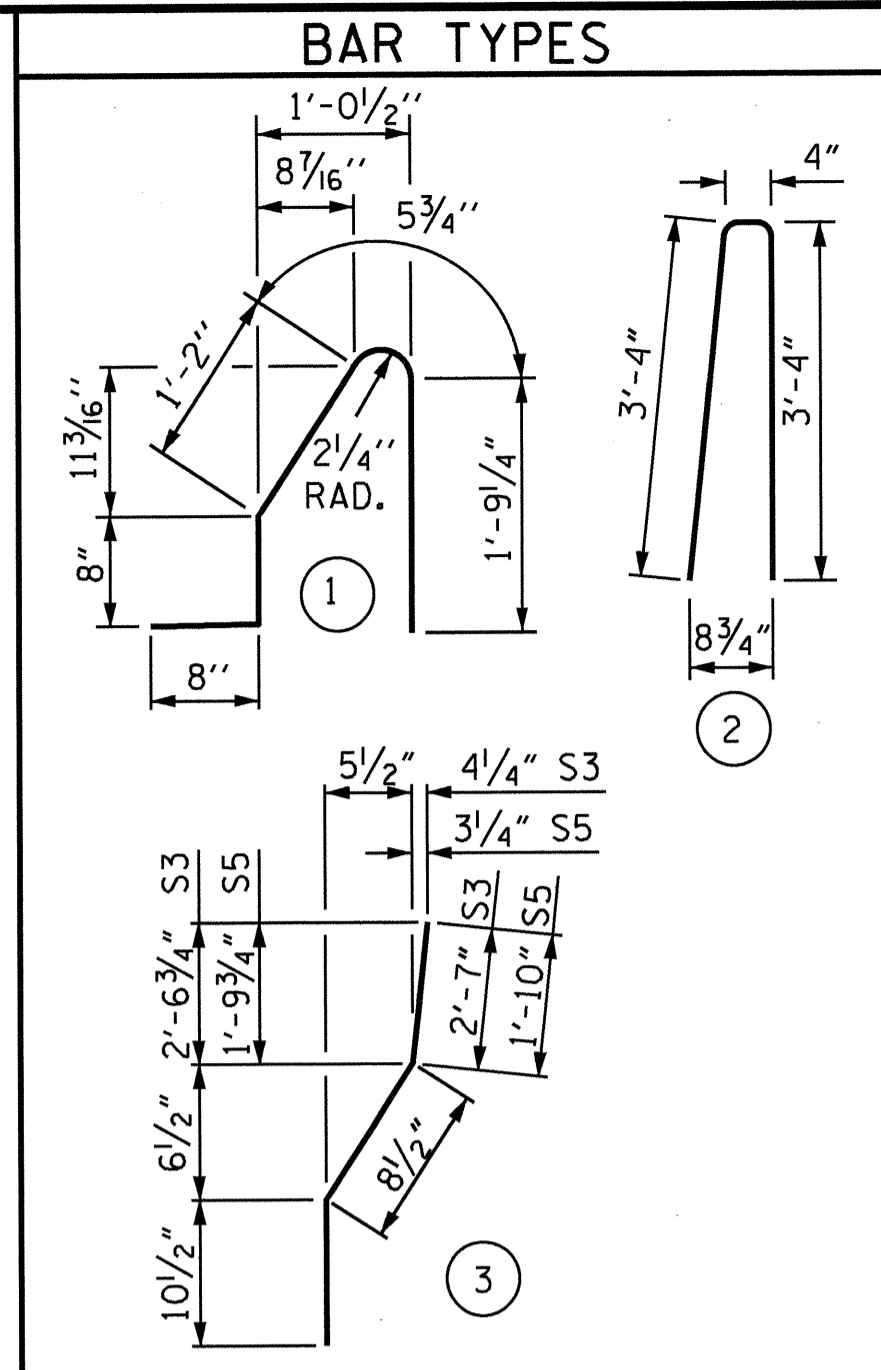
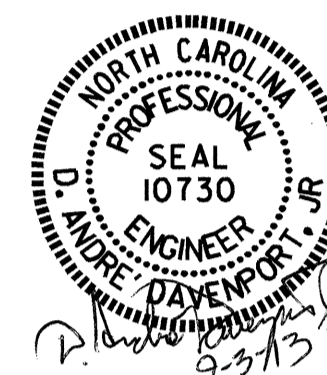
THE BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

WHEN FOAM JOINT SEAL IS REQUIRED, THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF BARRIER RAIL.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

THE #5 S3, S4, S5 AND S6 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM, AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #5 S3, S4, S5 AND S6 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

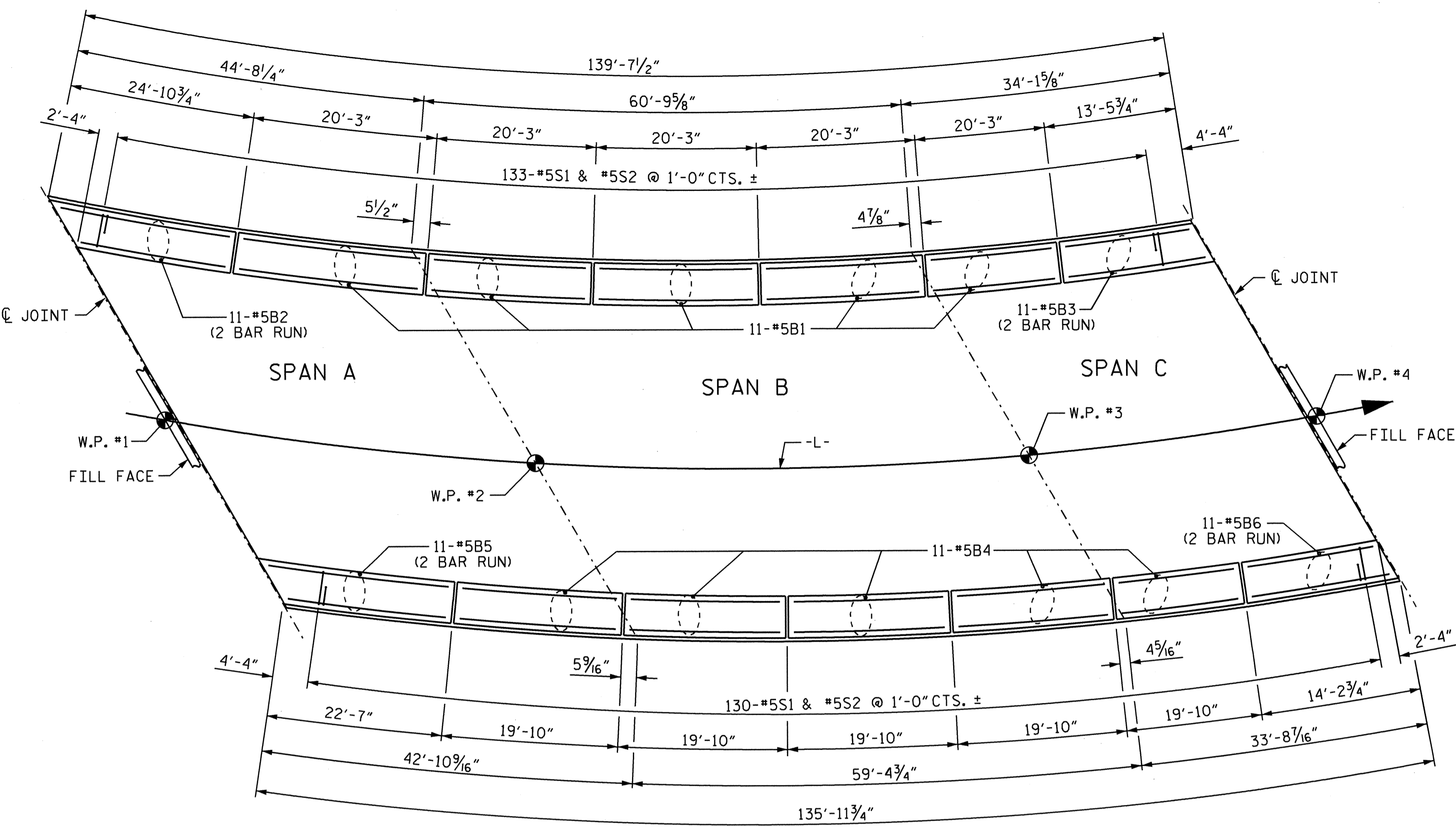
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS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



ALL BAR DIMENSIONS ARE OUT TO OUT

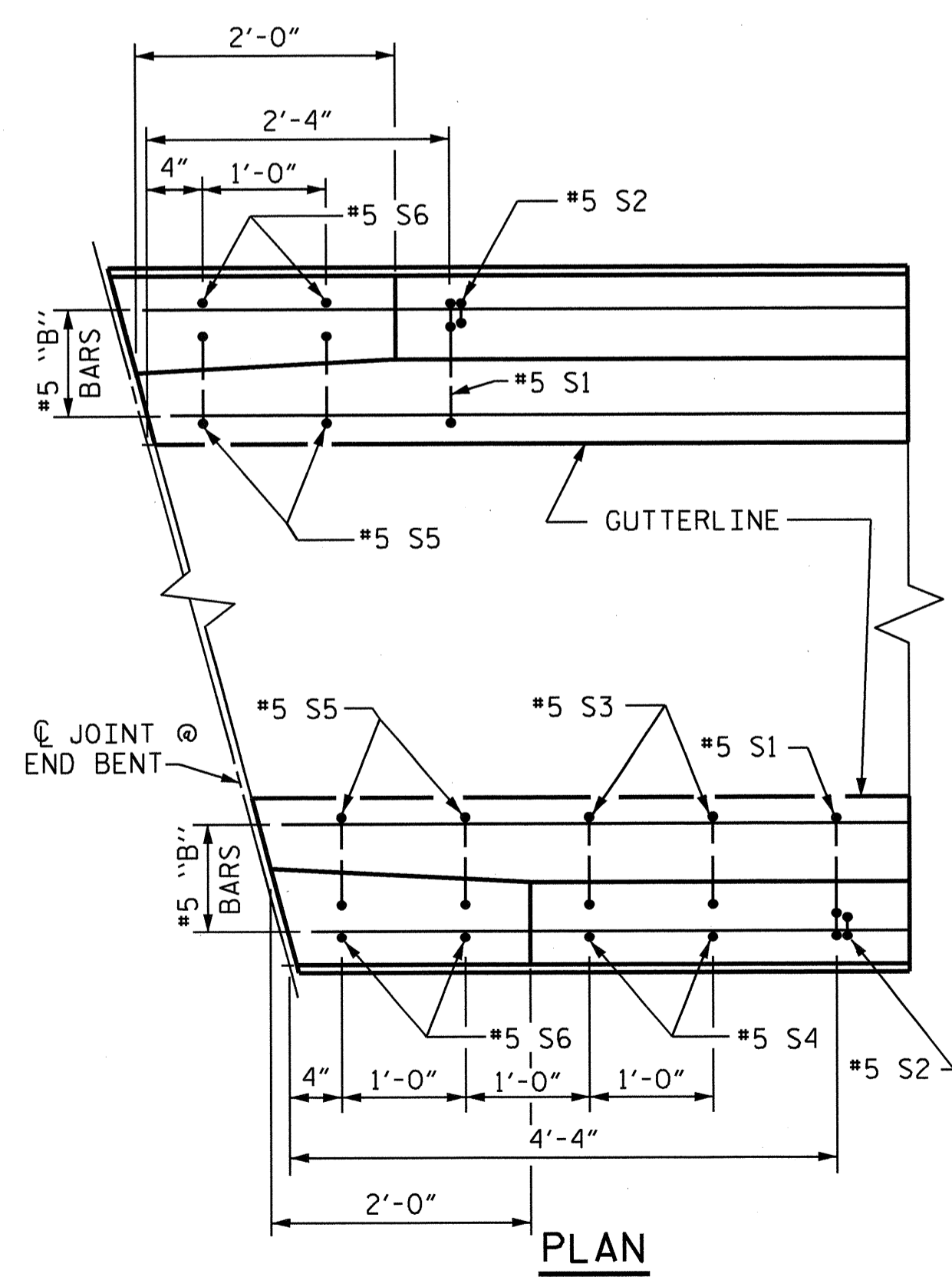
BILL OF MATERIAL
FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	55	#5	STR	19'-10"	1138
* B2	22	#5	STR	13'-10"	317
* B3	22	#5	STR	8'-6"	195
* B4	55	#5	STR	19'-5"	1114
* B5	22	#5	STR	13'-3"	304
* B6	22	#5	STR	8'-6"	195
* S1	263	#5	1	4'-9"	1303
* S2	263	#5	2	7'-0"	1920
* S3	4	#5	3	4'-2"	17
* S4	4	#5	STR	4'-0"	17
* S5	8	#5	3	3'-5"	29
* S6	8	#5	STR	3'-3"	27
* EPOXY COATED REINFORCING STEEL					6576 LBS.
CLASS AA CONCRETE					37.5 CU. YDS.
CONCRETE BARRIER RAIL					275.6 LIN. FT.

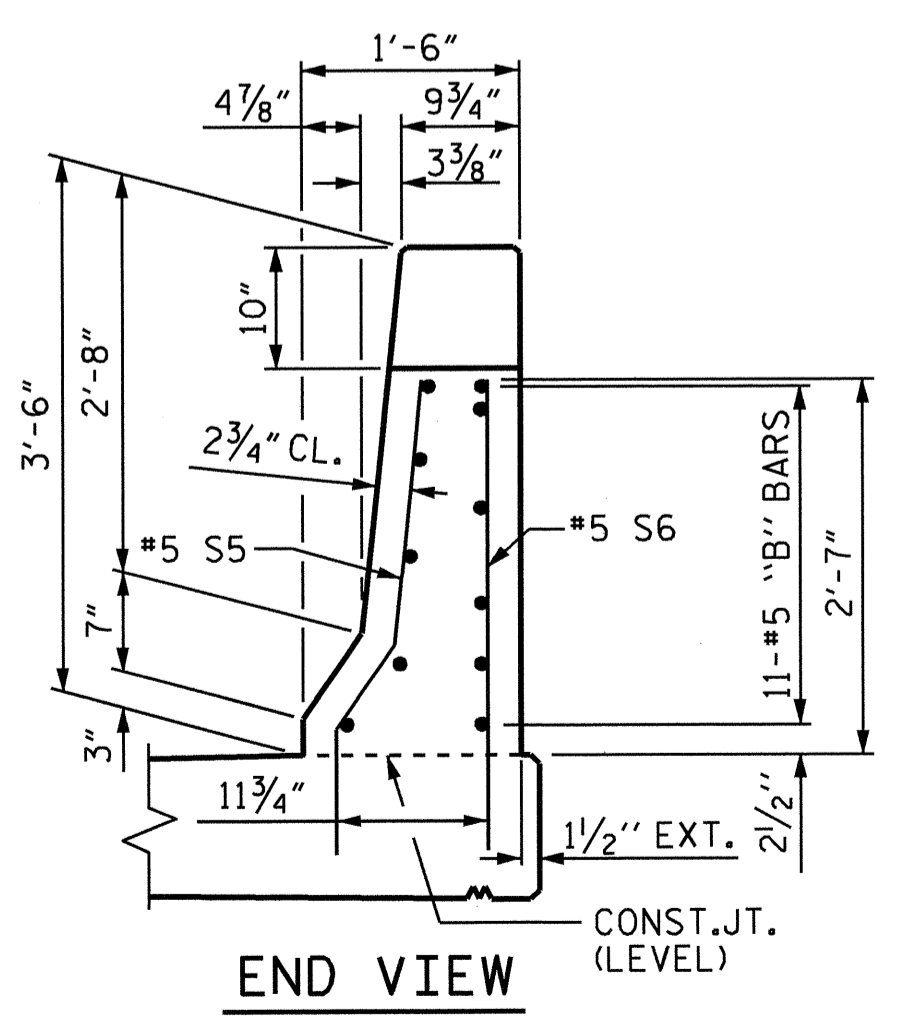


PLAN

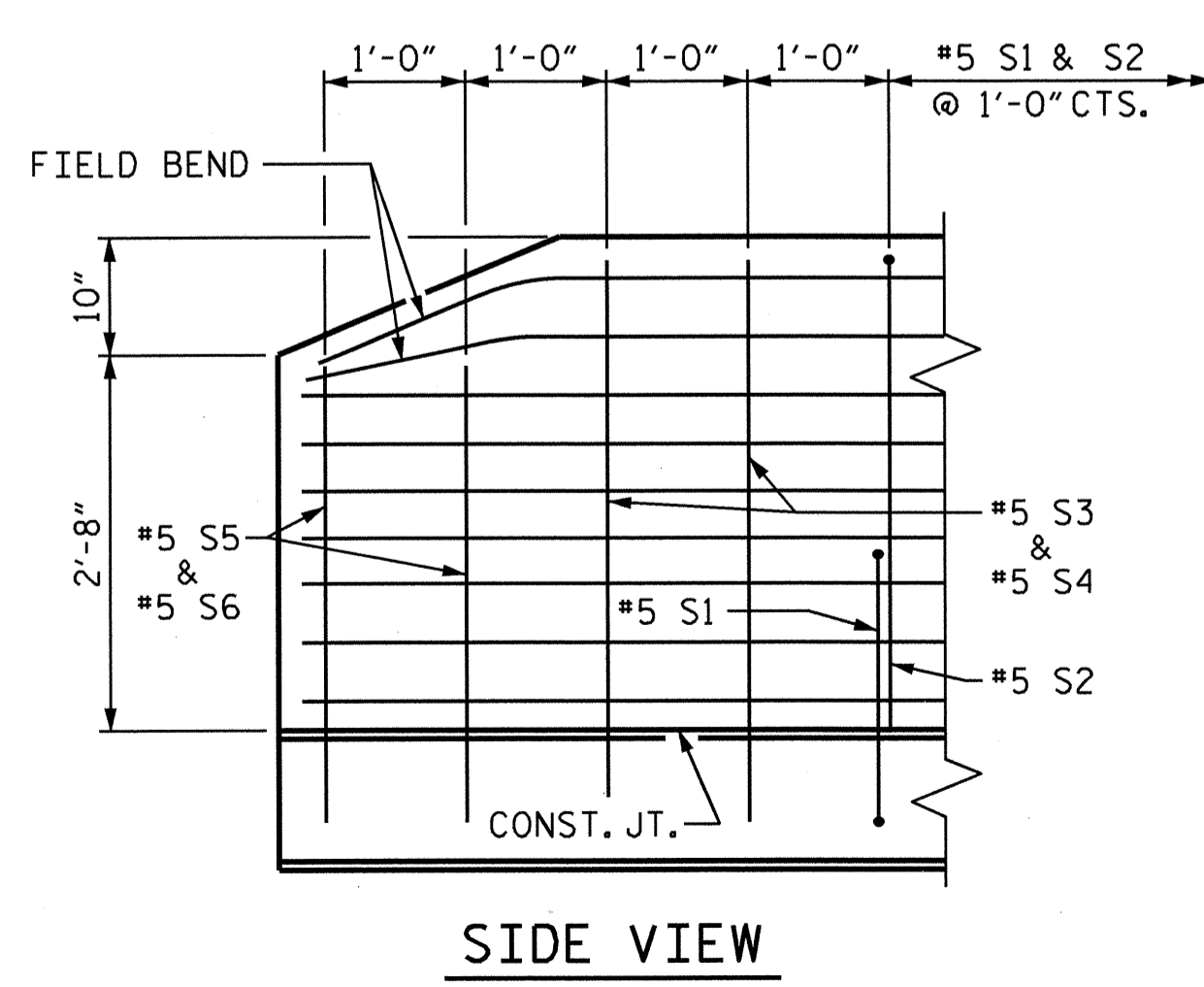
SEE "END OF RAIL DETAILS" FOR ADDITIONAL REINFORCEMENT. DIMENSIONS SHOWN ARE TAKEN ALONG OUTSIDE FACE OF RAIL.



PLAN



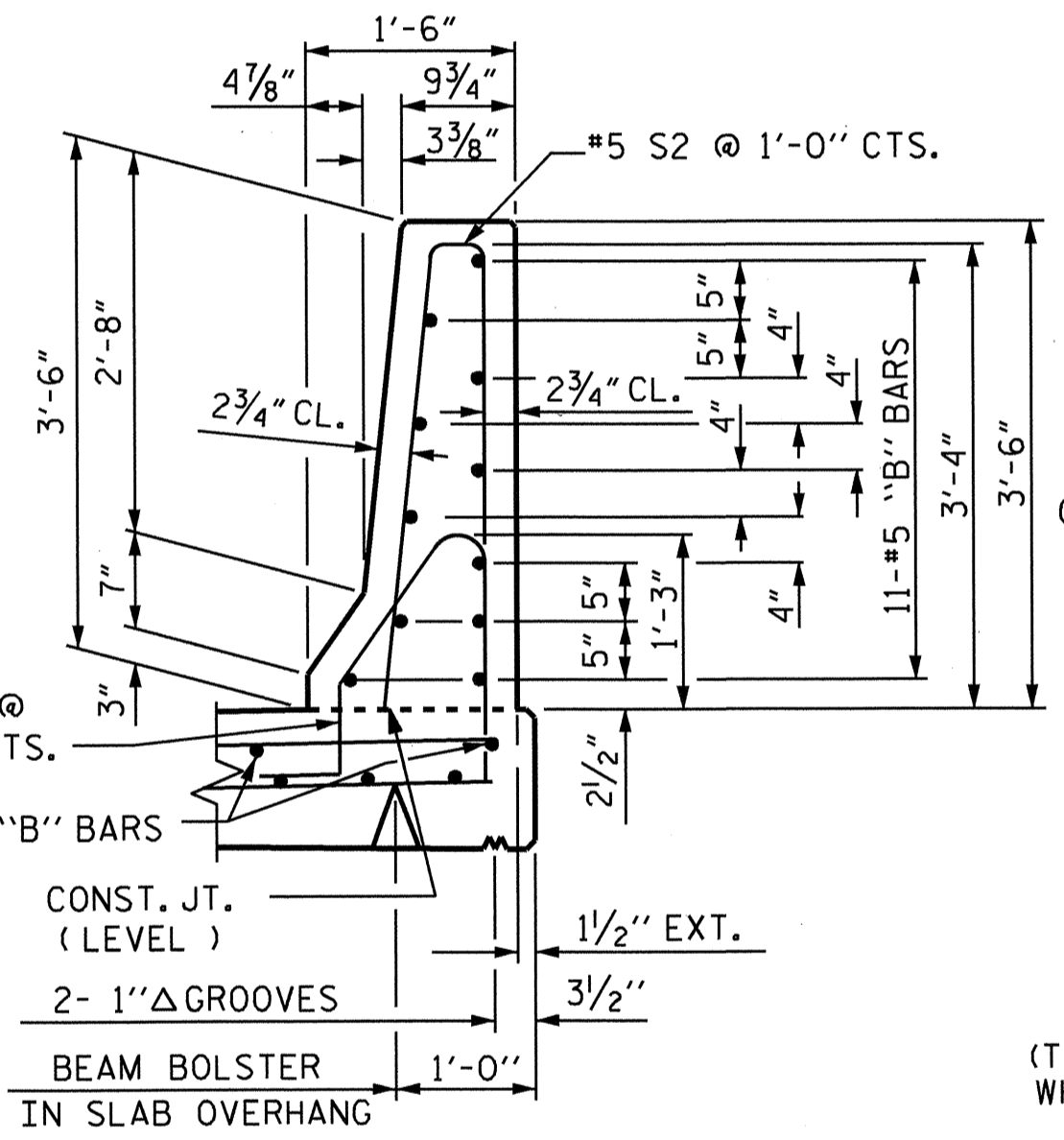
END VIEW



SIDE VIEW

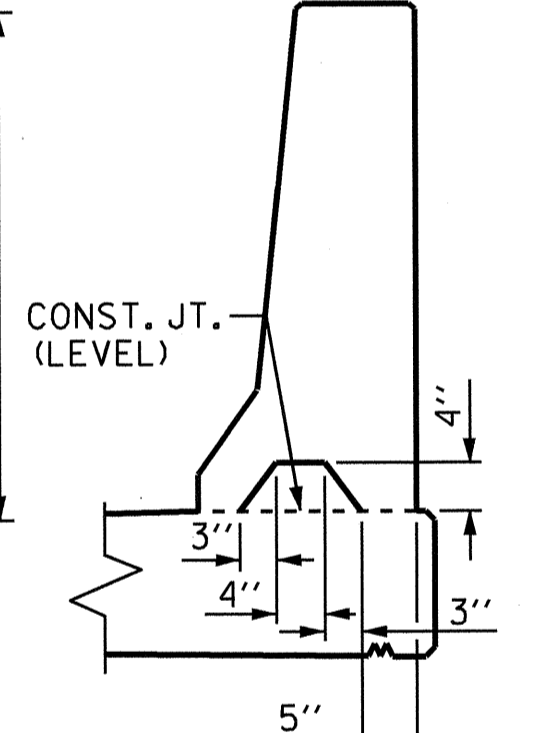
END OF RAIL DETAILS

FOR ADHESIVE ANCHORING AT SAWED JOINTS



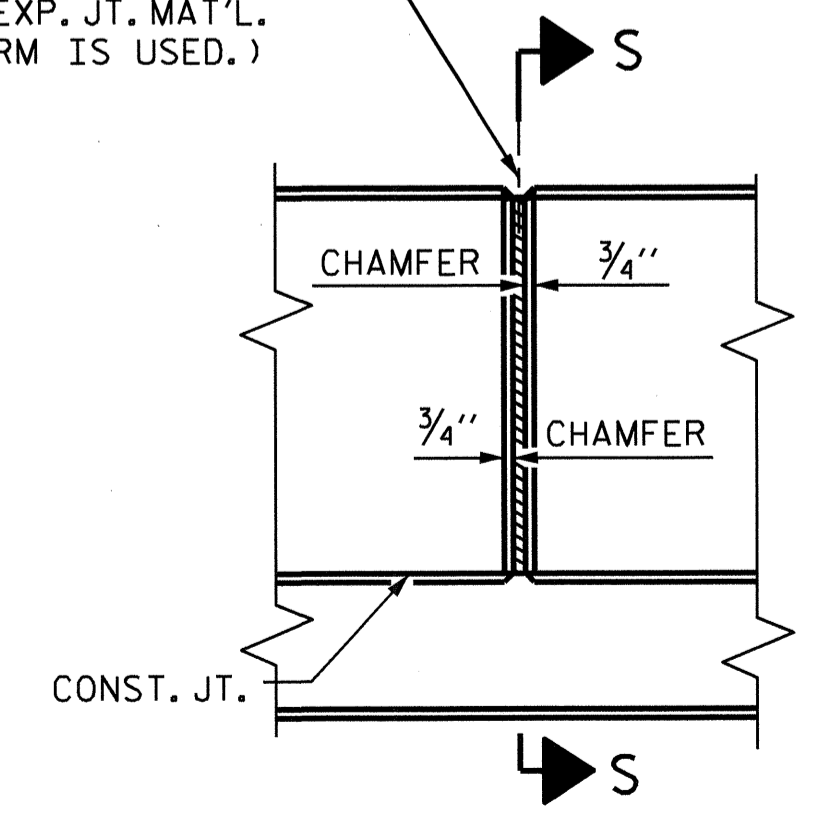
SECTION THRU RAIL

1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS. (NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED.)



SECTION S-S

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



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

DRAWN BY : M.K. BEARD	DATE : 8/22/12
CHECKED BY : K.D. LAYNE	DATE : 9/12
DESIGN ENGINEER OF RECORD : R.L. CHESSON	DATE : 04/11/13
DRAWN BY : ARB 5/87	REV. 10/1/11
CHECKED BY : SJD 9/87	REV. 7/12
	REV. 10/12
	MAA/GM
	MAA/GM
	MAA/GM

PROJECT NO. B-4401
ALAMANCE COUNTY
STATION: 16+28.00 -L-

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

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20	
1			3			TOTAL SHEETS	
2			4			35	

NOTES

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

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

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

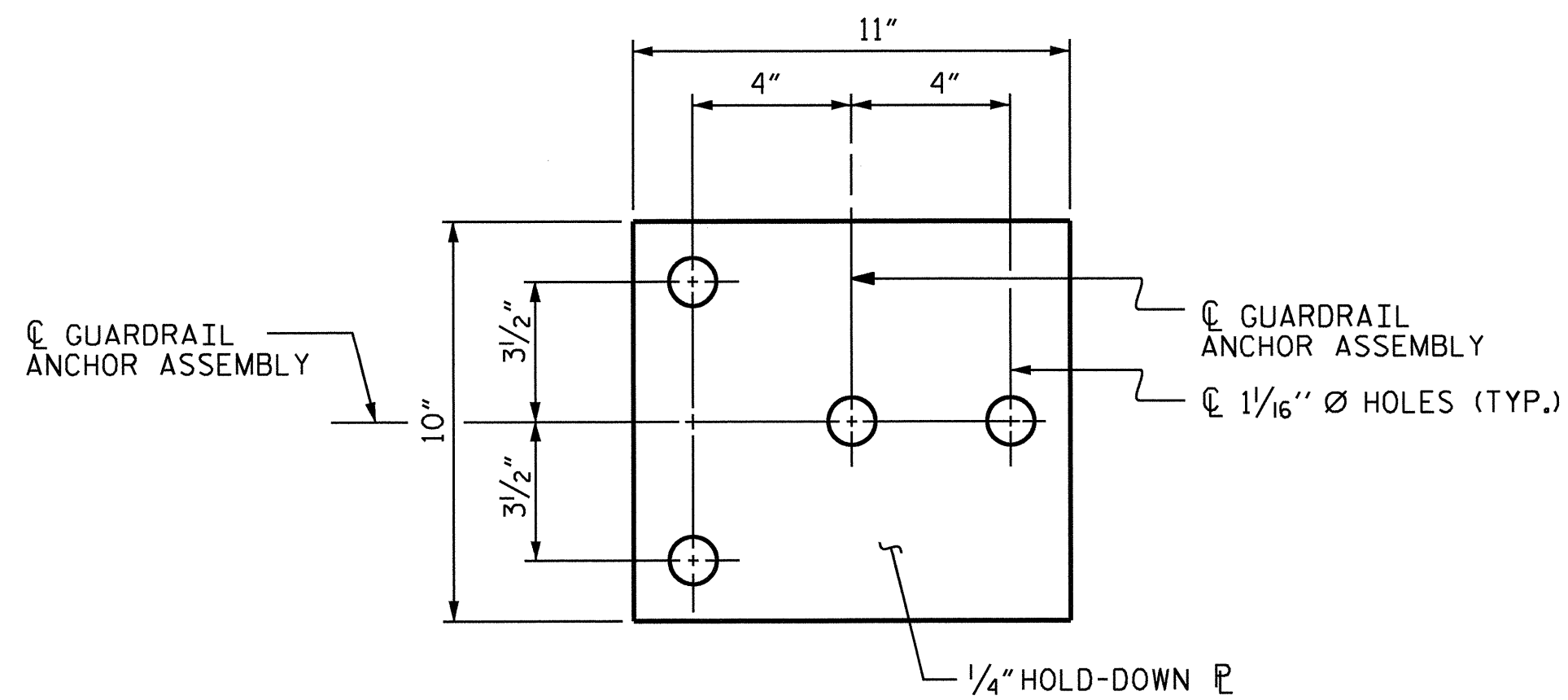
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

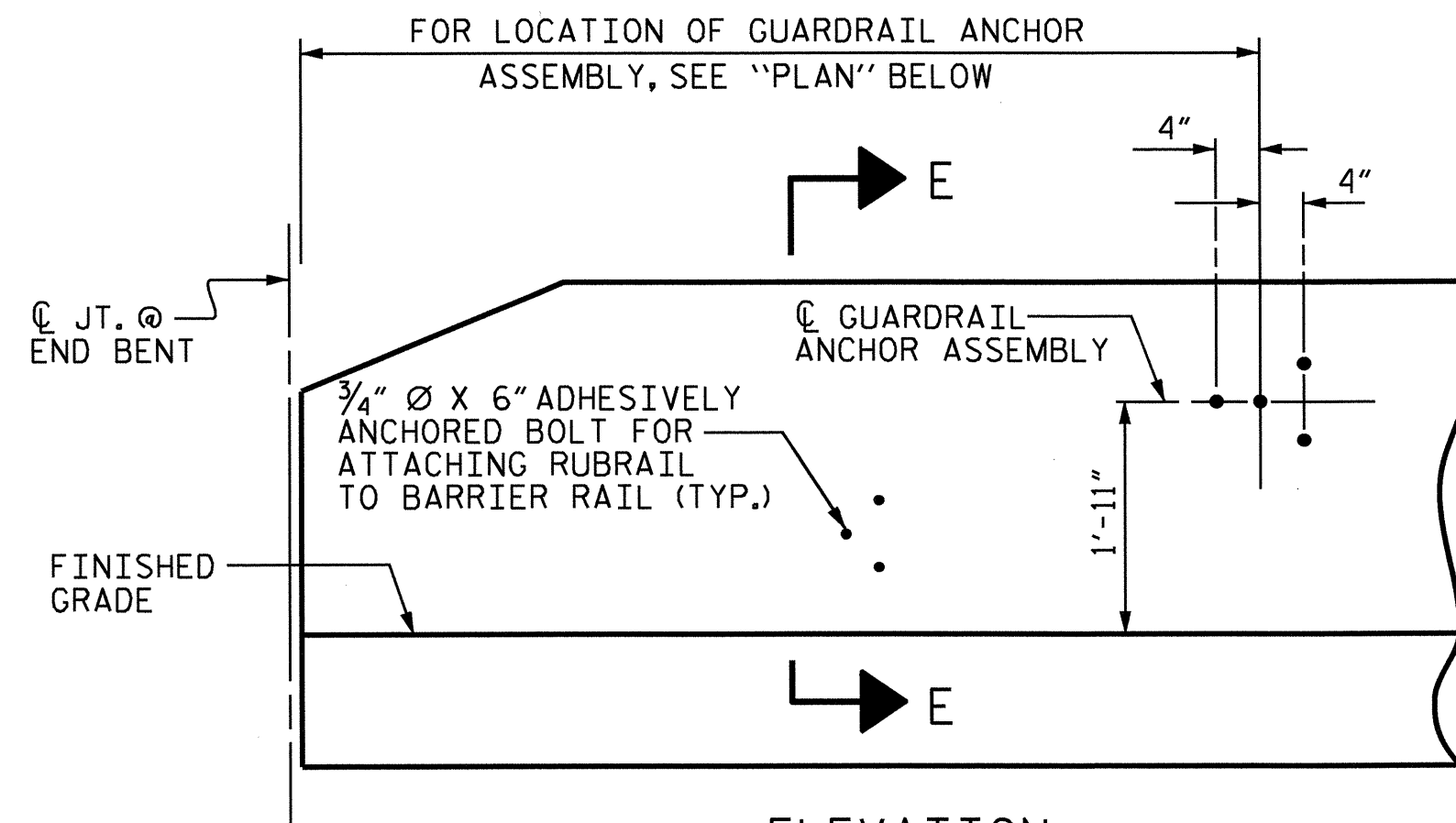
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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

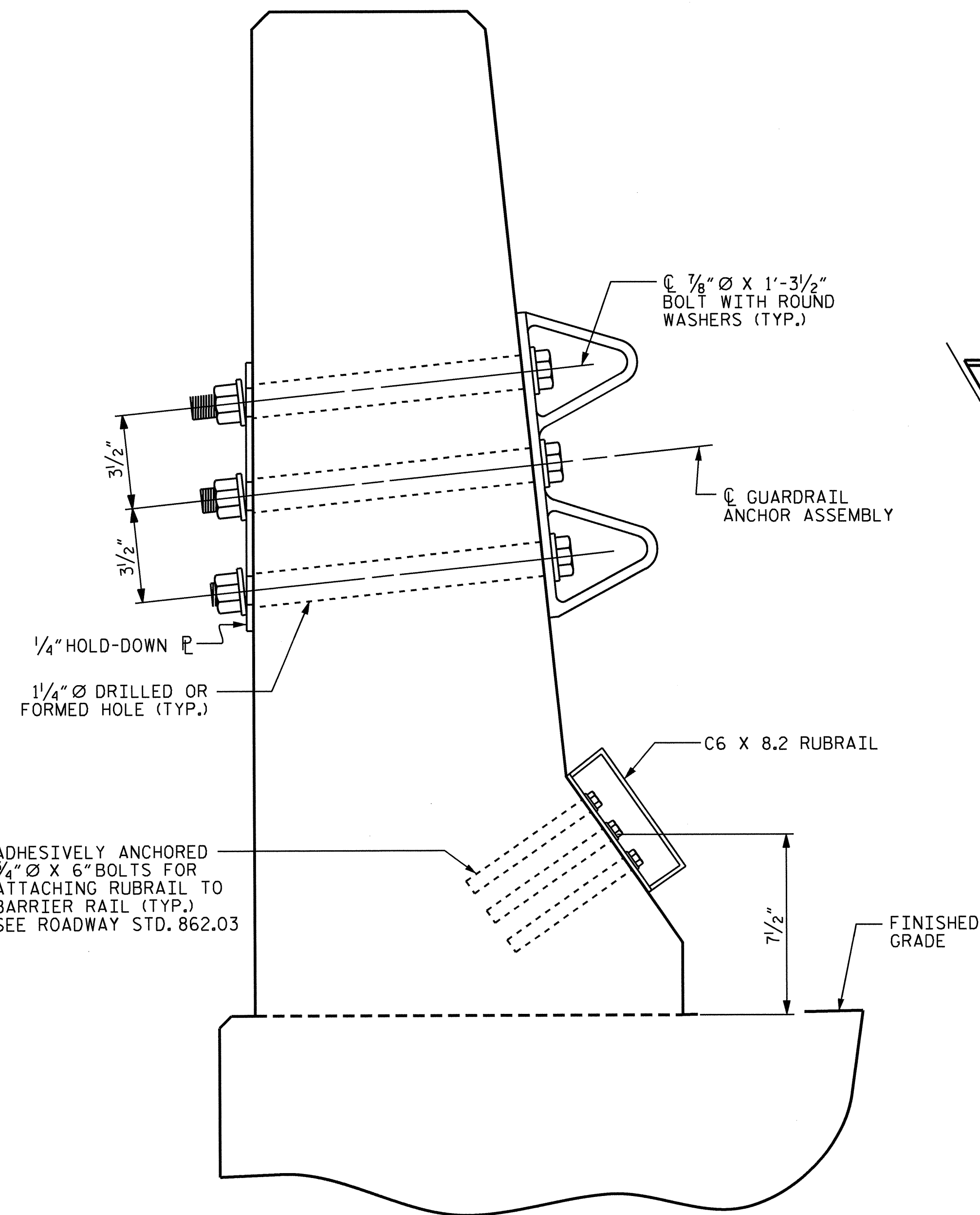
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR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



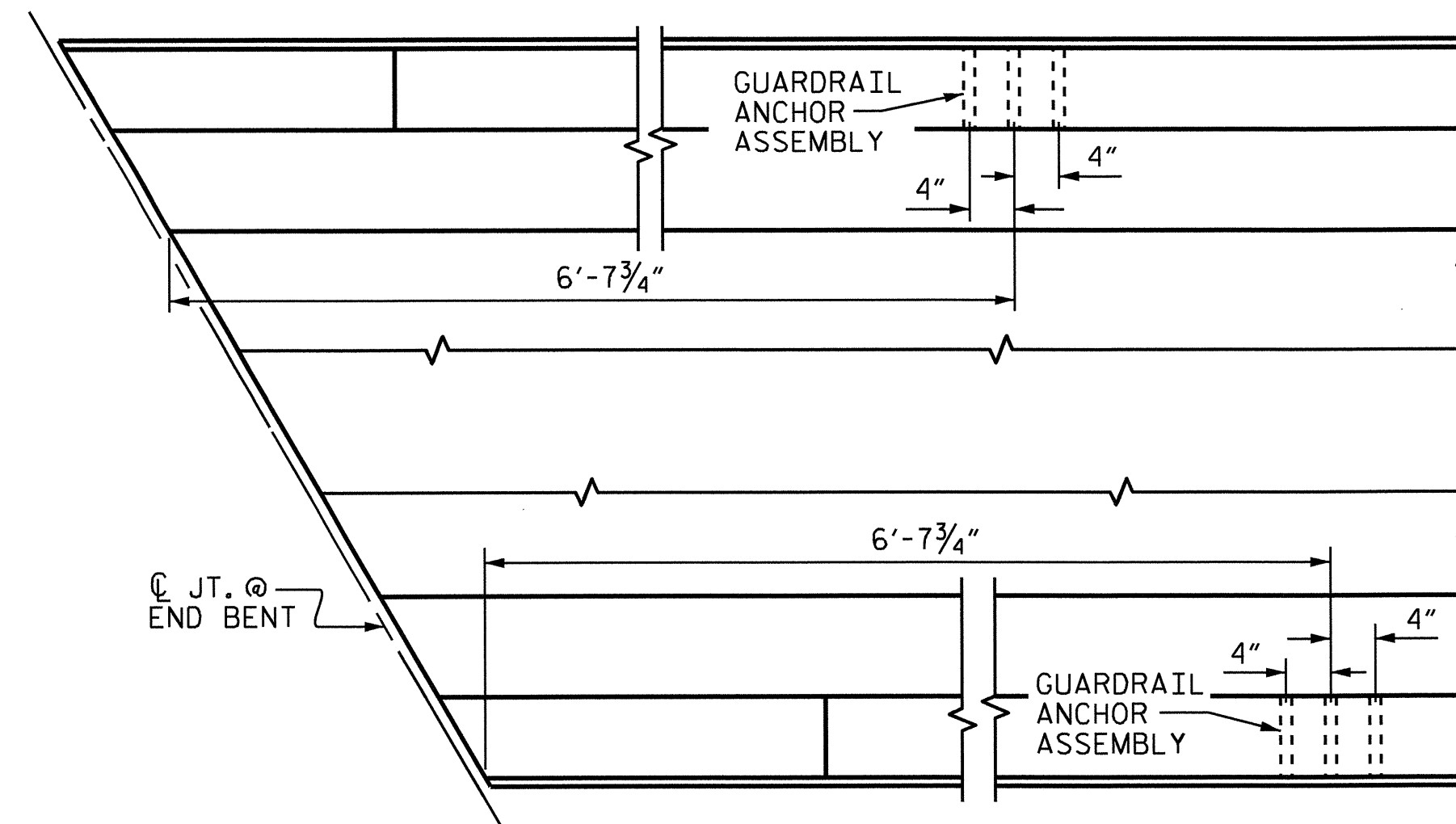
PLAN



ELEVATION



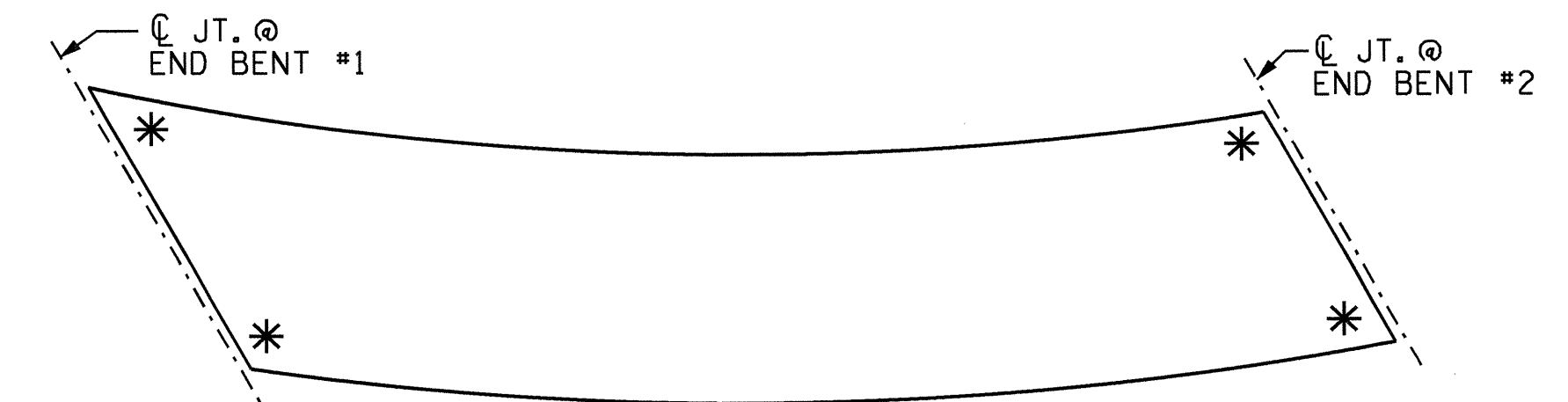
SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

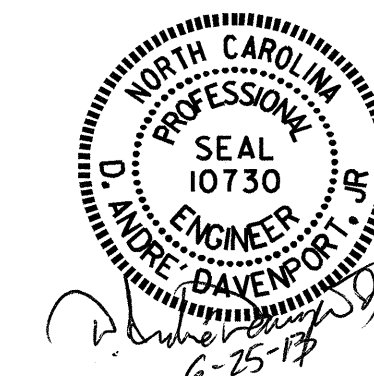
END BENT #1 SHOWN, END BENT #2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

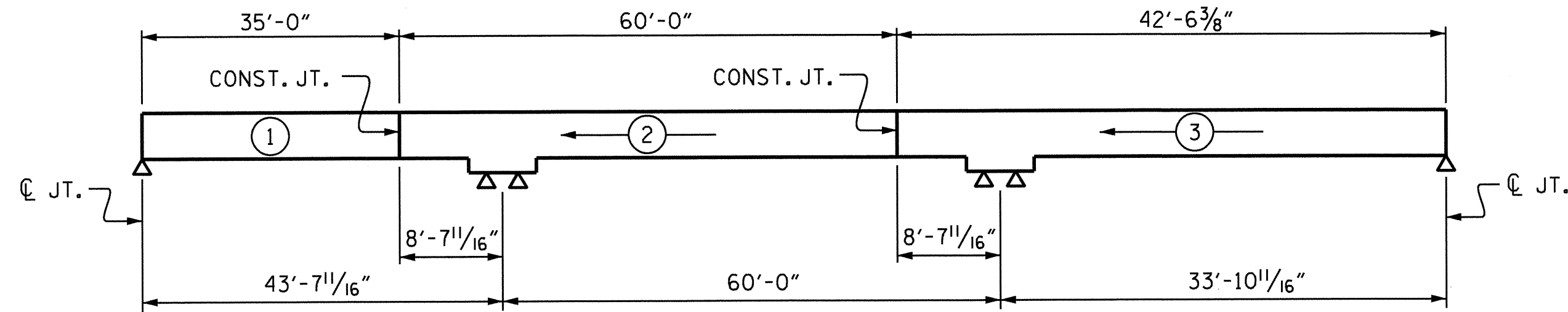
PROJECT NO. B-4401
ALAMANCE COUNTY
 STATION: 16+28.00 -L-



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

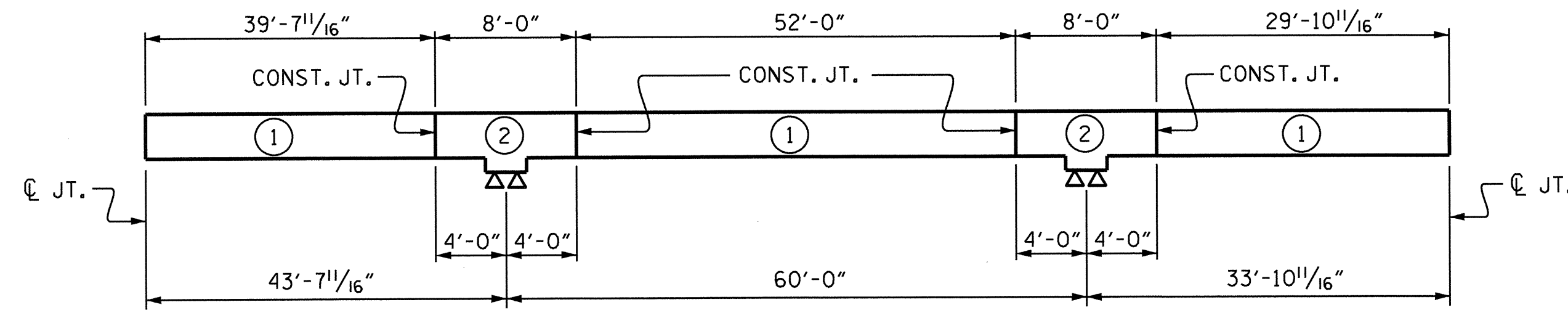
DRAWN BY : M.K. BEARD	DATE : 8/22/12
CHECKED BY : K.D. LAYNE	DATE : 9/12
DESIGN ENGINEER OF RECORD : R.L. CHESSON	DATE : 04/11/13
DRAWN BY : TLA 5/06	REV. 10/1/11 MAA/GM
CHECKED BY : GM 5/06	REV. 7/12 MAA/GM
	REV. 10/12 MAA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-21
2			4			35



POURING SEQUENCE

DIRECTION OF POUR
ALL DIMENSIONS MEASURED ALONG -L-



OPTIONAL POURING SEQUENCE

POUR ② CANNOT BE STARTED UNTIL BOTH ADJACENT ① POURS REACH A MINIMUM OF 3,000 PSI.
ALL DIMENSIONS MEASURED ALONG -L-

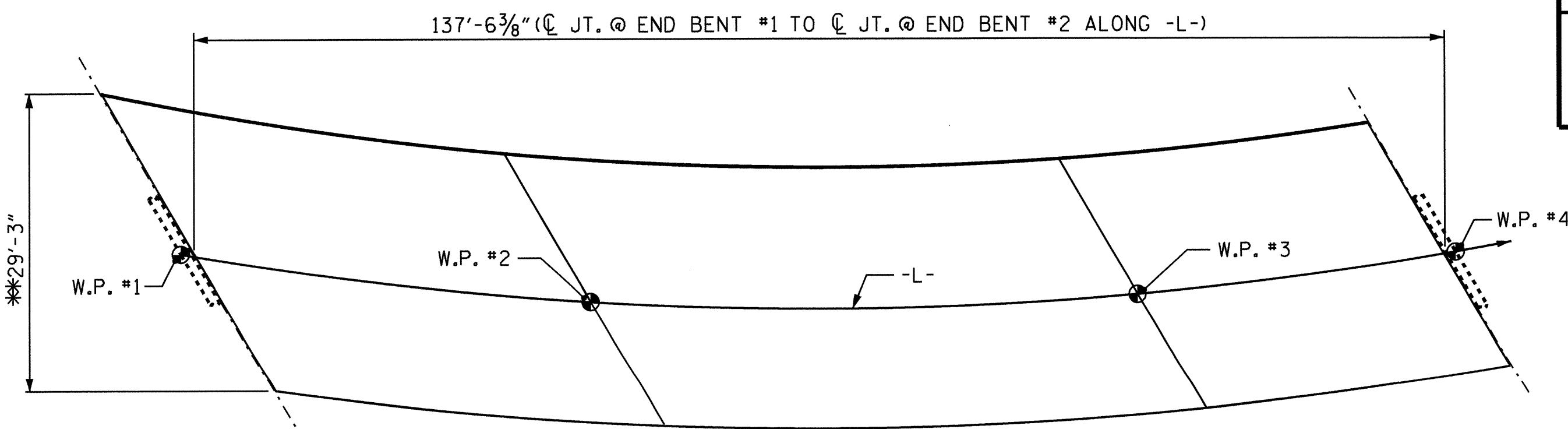
SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
SPAN A, B & C	146.8	14,451	14,990
TOTALS **	146.8	14,451	14,990

**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

POUR SEQUENCE

SPANS A, B & C	CLASS AA CONCRETE (CU. YDS.)
POUR #1	34.4
POUR #2	64.0
POUR #3	48.5
TOTALS **	146.8



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 4,023)

**RADIAL DIMENSION

BILL OF MATERIAL

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
*A1	238	#5	STR	28'-11"	7178	A216	2	#5	STR	4'-8"	10
A2	238	#5	STR	28'-11"	7178	A217	2	#5	STR	3'-1"	6
*A3	3	#6	STR	14'-2"	64	A218	2	#5	STR	28'-5"	59
*A101	2	#5	STR	27'-11"	58	A219	2	#5	STR	26'-7"	55
*A102	2	#5	STR	26'-4"	55	A220	2	#5	STR	24'-8"	51
*A103	2	#5	STR	24'-9"	52	A221	2	#5	STR	22'-9"	47
*A104	2	#5	STR	23'-3"	48	A222	2	#5	STR	20'-11"	44
*A105	2	#5	STR	21'-8"	45	A223	2	#5	STR	19'-0"	40
*A106	2	#5	STR	20'-1"	42	A224	2	#5	STR	17'-1"	36
*A107	2	#5	STR	18'-6"	39	A225	2	#5	STR	15'-3"	32
*A108	2	#5	STR	17'-0"	35	A226	2	#5	STR	13'-4"	28
*A109	2	#5	STR	15'-5"	32	A227	2	#5	STR	11'-5"	24
*A110	2	#5	STR	13'-10"	29	A228	2	#5	STR	9'-6"	20
*A111	2	#5	STR	12'-4"	26	A229	2	#5	STR	7'-7"	16
*A112	2	#5	STR	10'-9"	22	A230	2	#5	STR	5'-8"	12
*A113	2	#5	STR	9'-3"	19	A231	2	#5	STR	3'-9"	8
*A114	2	#5	STR	7'-8"	16	*B1	20	#4	STR	27'-6"	367
*A115	2	#5	STR	6'-2"	13	*B2	20	#7	STR	42'-0"	1717
*A116	2	#5	STR	4'-8"	10	*B3	38	#7	STR	16'-0"	1243
*A117	2	#5	STR	3'-1"	6	*B4	20	#4	STR	18'-10"	252
*A118	2	#5	STR	28'-5"	59	*B5	20	#7	STR	39'-0"	1594
*A119	2	#5	STR	26'-7"	55	*B6	20	#4	STR	19'-11"	266
*A120	2	#5	STR	2'-8"	51	B7	108	#5	STR	47'-11"	5398
*A121	2	#5	STR	22'-9"	47	*G1	1	#5	STR	37'-9"	39
*A122	2	#5	STR	20'-11"	44	*G2	1	#5	STR	30'-9"	32
*A123	2	#5	STR	19'-0"	40	*K1	4	#8	1	13'-4"	142
*A124	2	#5	STR	17'-1"	36	*K2	4	#8	2	20'-11"	223
*A125	2	#5	STR	15'-3"	32	*K3	9	#6	STR	8'-3"	112
*A126	2	#5	STR	13'-4"	28	K4	6	#4	STR	5'-8"	23
*A127	2	#5	STR	11'-5"	24	K5	12	#4	STR	8'-6"	68
*A128	2	#5	STR	9'-6"	20	K6	6	#4	STR	7'-7"	30
*A129	2	#5	STR	7'-7"	16	K7	8	#4	3	6'-2"	33
*A130	2	#5	STR	5'-8"	12	K8	8	#4	4	11'-10"	63
*A131	2	#5	STR	3'-9"	8	K9	6	#4	STR	5'-2"	21
A201	2	#5	STR	27'-11"	58	K10	12	#4	STR	7'-9"	62
A202	2	#5	STR	26'-4"	55	K11	6	#4	STR	6'-11"	28
A203	2	#5	STR	24'-9"	52	K12	8	#4	3	5'-8"	30
A204	2	#5	STR	23'-3"	48	K13	8	#4	4	10'-10"	58
A205	2	#5	STR	21'-8"	45	*K14	4	#8	1	11'-10"	126
A206	2	#5	STR	20'-1"	42	*K15	4	#8	2	19'-0"	203
A207	2	#5	STR	18'-6"	39	*K16	9	#6	STR	6'-8"	90
A208	2	#5	STR	17'-0"	35	*S1	42	#5	5	4'-8"	204
A209	2	#5	STR	15'-5"	32	*S2	24	#4	6	4'-4"	69
A210	2	#5	STR	13'-10"	29	S3	96	#4	7	2'-9"	176
A211	2	#5	STR	12'-4"	26	*S4	18	#4	6	3'-4"	40
A212	2	#5	STR	10'-9"	22	U1	24	#4	8	11'-8"	187
A213	2	#5	STR	9'-3"	19	U2	12	#4	8	9'-8"	77
A214	2	#5	STR	7'-8"	16						
A215	2	#5	STR	6'-7"	13						

GROOVING BRIDGE FLOORS

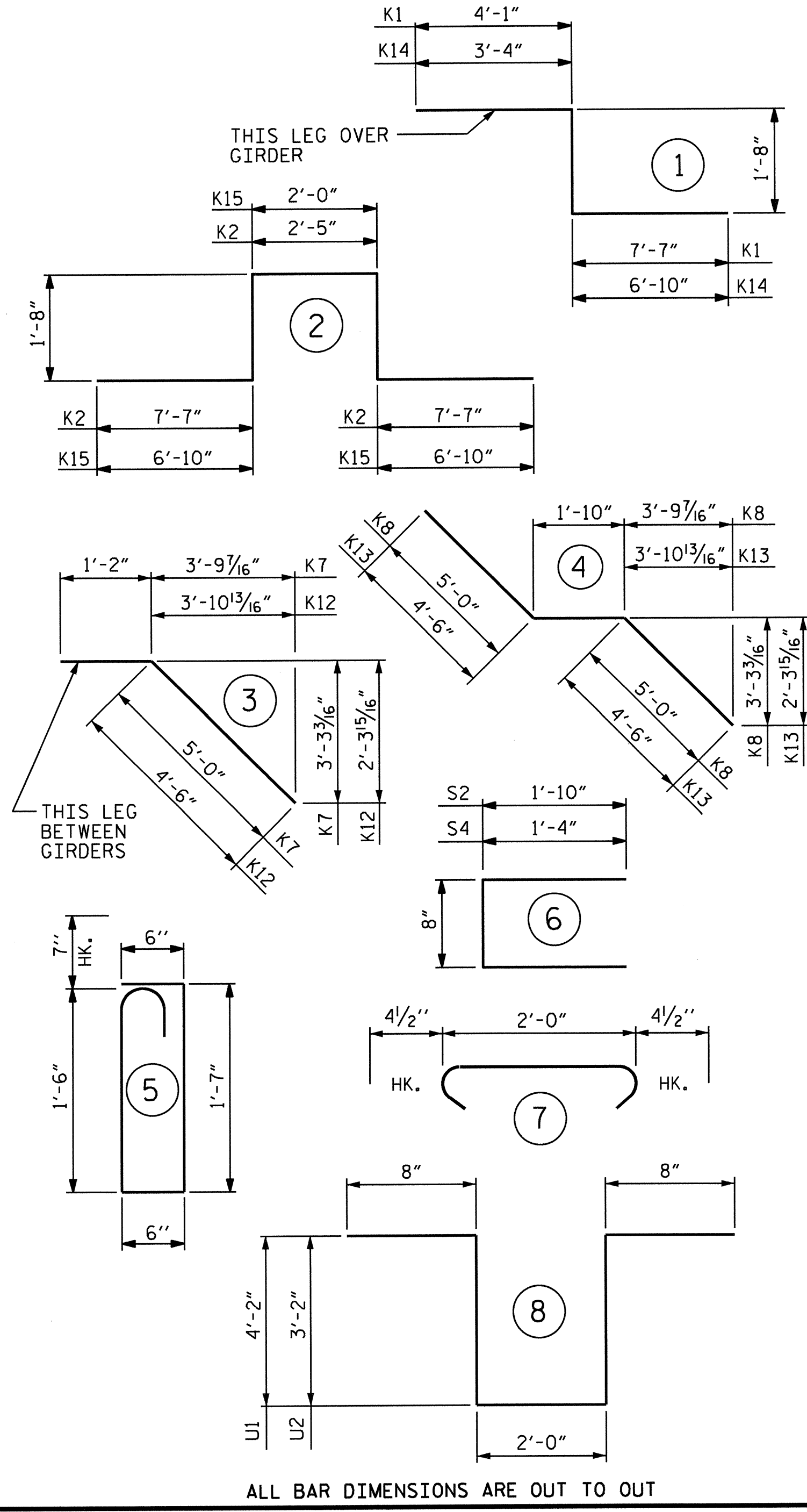
APPROACH SLABS	482	SQ.FT.
BRIDGE DECK	3,130	SQ.FT.
TOTAL	3,612	SQ.FT.

REINFORCING STEEL	14,451	LBS
* EPOXY COATED REINFORCING STEEL	14,990	LBS

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

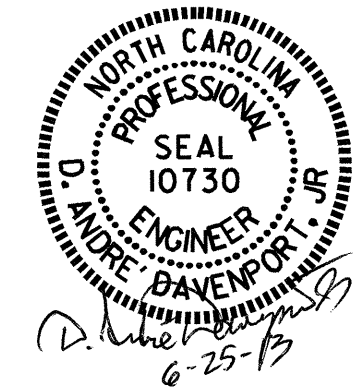
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. B-4401
ALAMANCE COUNTY
STATION: 16+28.00 -L-



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

DRAWN BY : M.K. BEARD	DATE : 8/27/12	
CHECKED BY : K.D. LAYNE	DATE : 9/12	
DESIGN ENGINEER OF RECORD : R.L. CHESSON	DATE : 04/11/13	
DRAWN BY : JMB 5/87	REV. 8/16/99	RWW/LES
CHECKED BY : SJD 9/87	REV. 5/1/06	TLA/GM
	REV. 10/1/11	MAA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			35

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

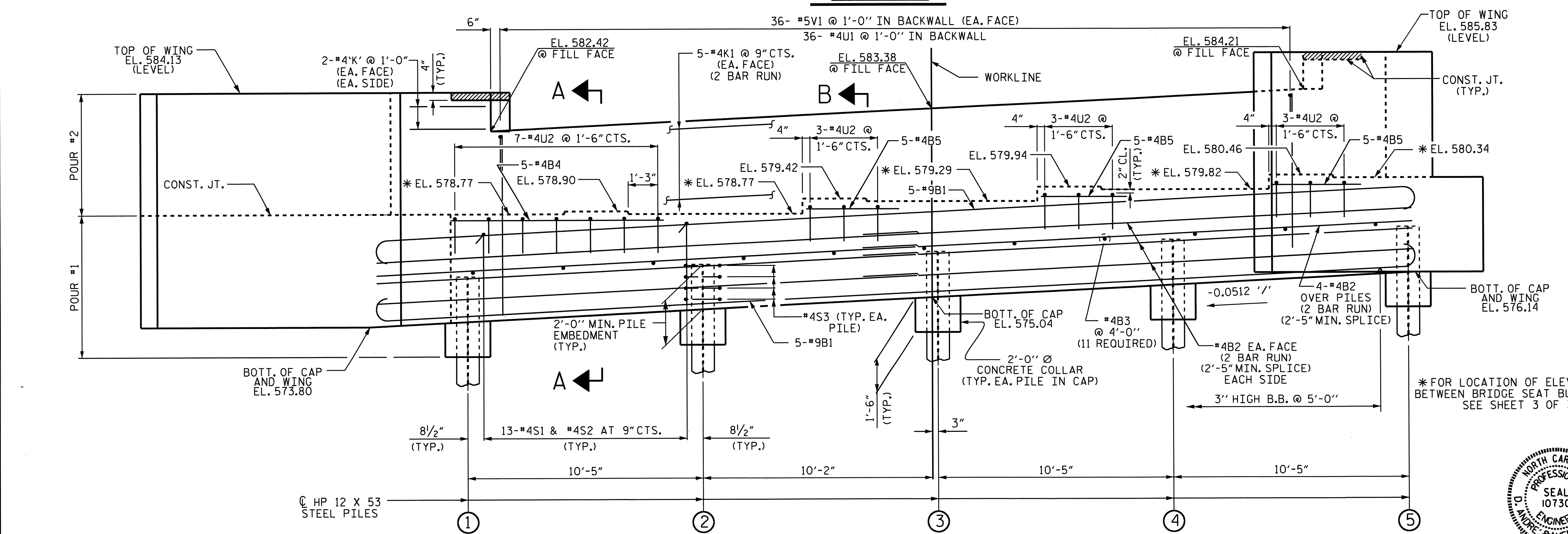
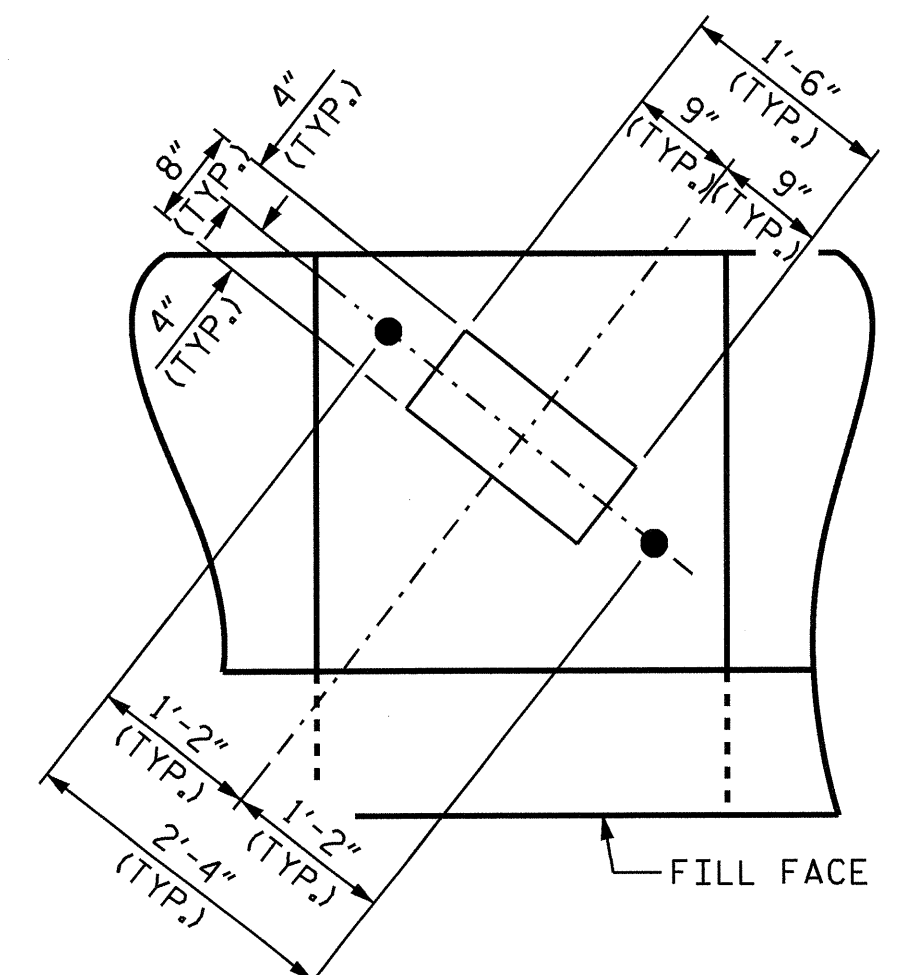
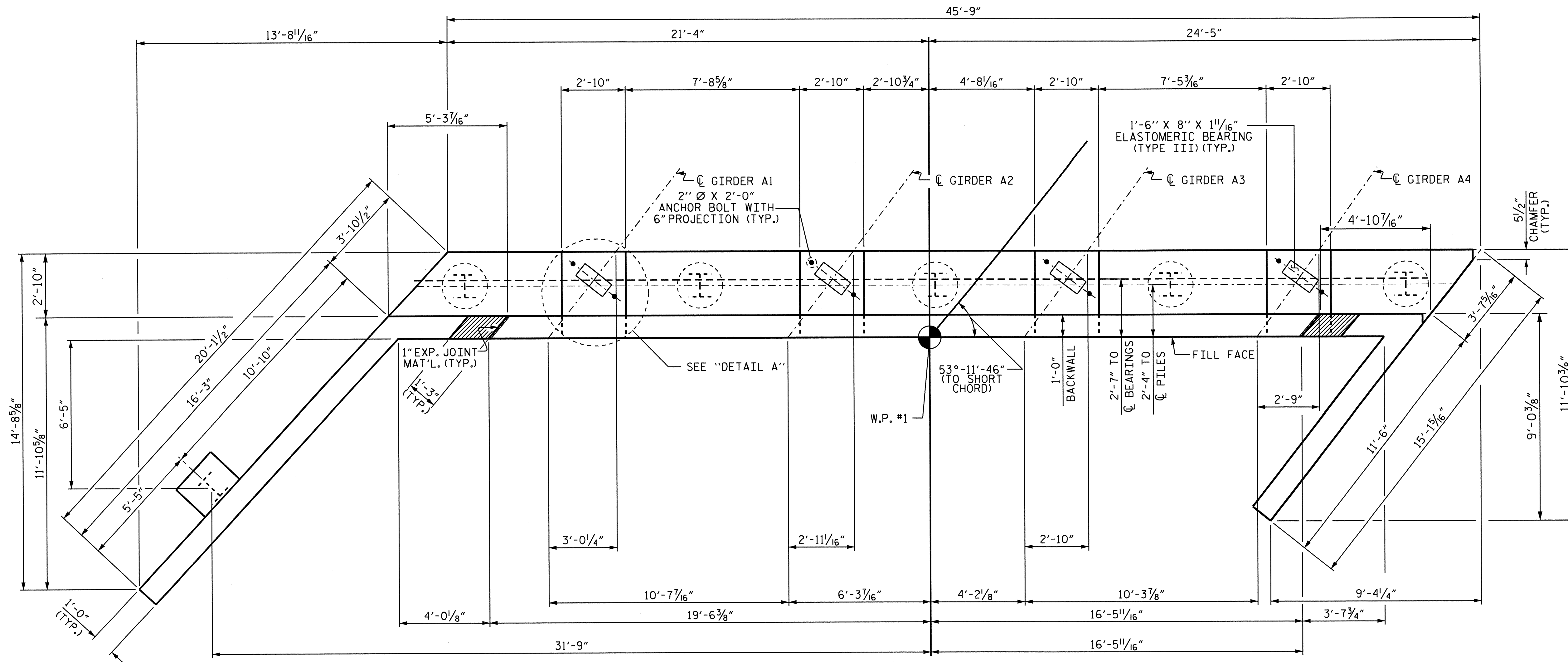
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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%.

DO NOT DRIVE PILES AFTER PLACING PILES IN EXCAVATED HOLES.

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

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.



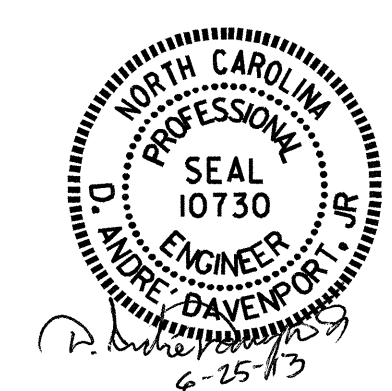
TOP OF PILE ELEVATIONS	
①	575.98
②	576.51
③	577.05
④	577.58
⑤	578.11

PROJECT NO. B-4401
ALAMANCE COUNTY
STATION: 16+28.00 -L-

SHEET 1 OF 3

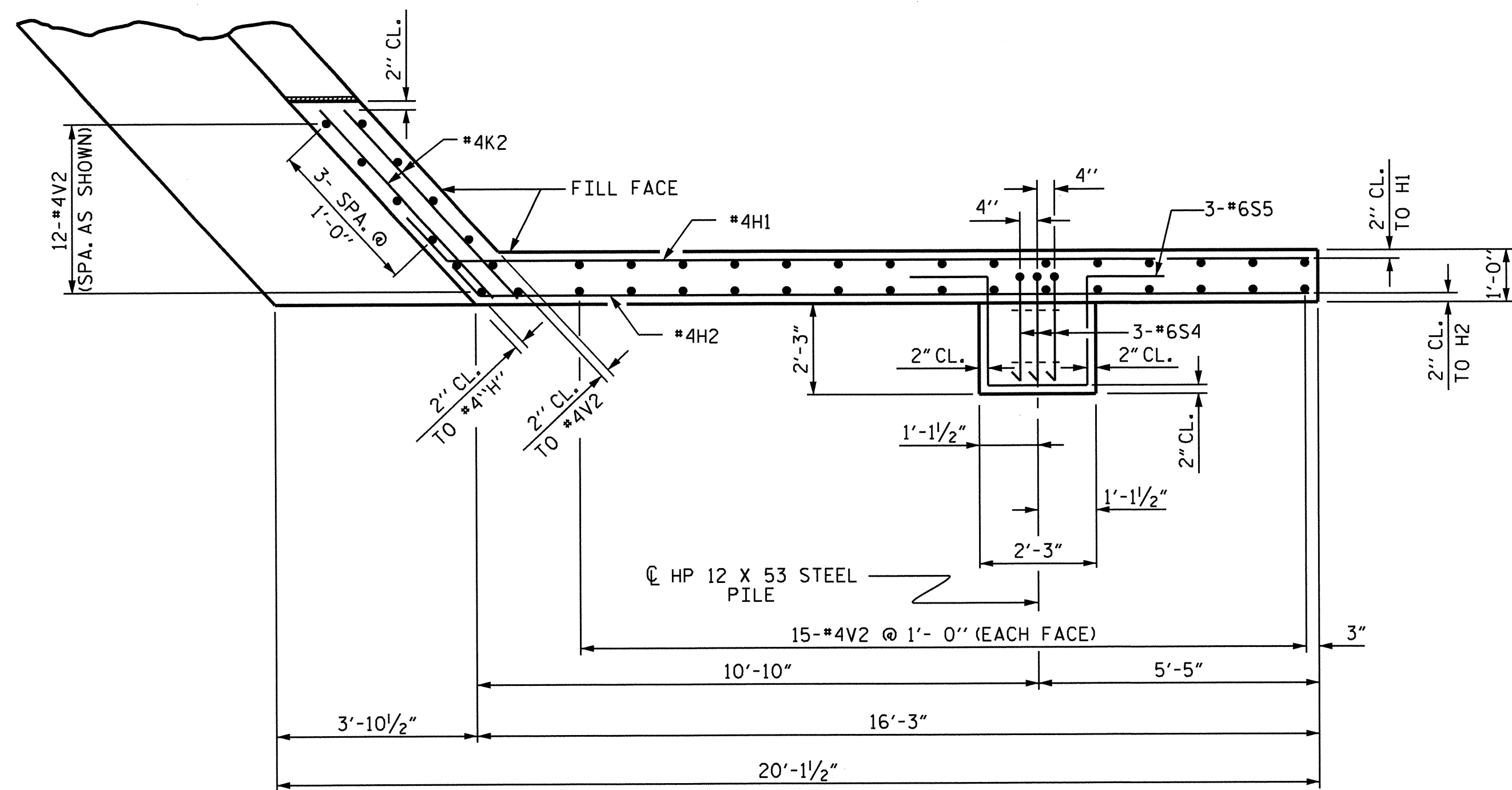
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT #1

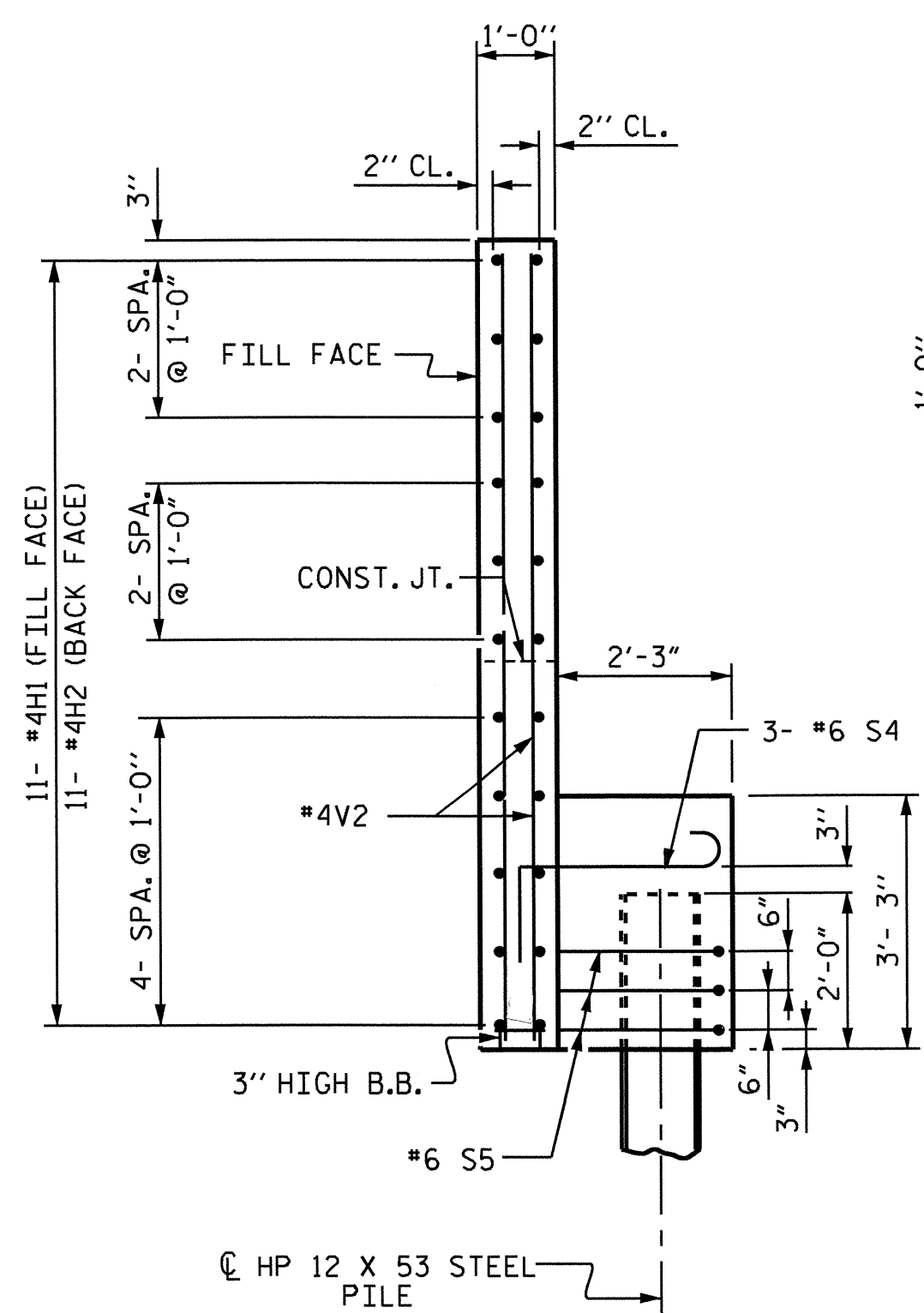


DRAWN BY: D.A. DAVENPORT DATE: 8/03/12
CHECKED BY: R.P. PATEL DATE: 11/26/12
DESIGN ENGINEER OF RECORD: R.L. CHESSON DATE: 04/11/13

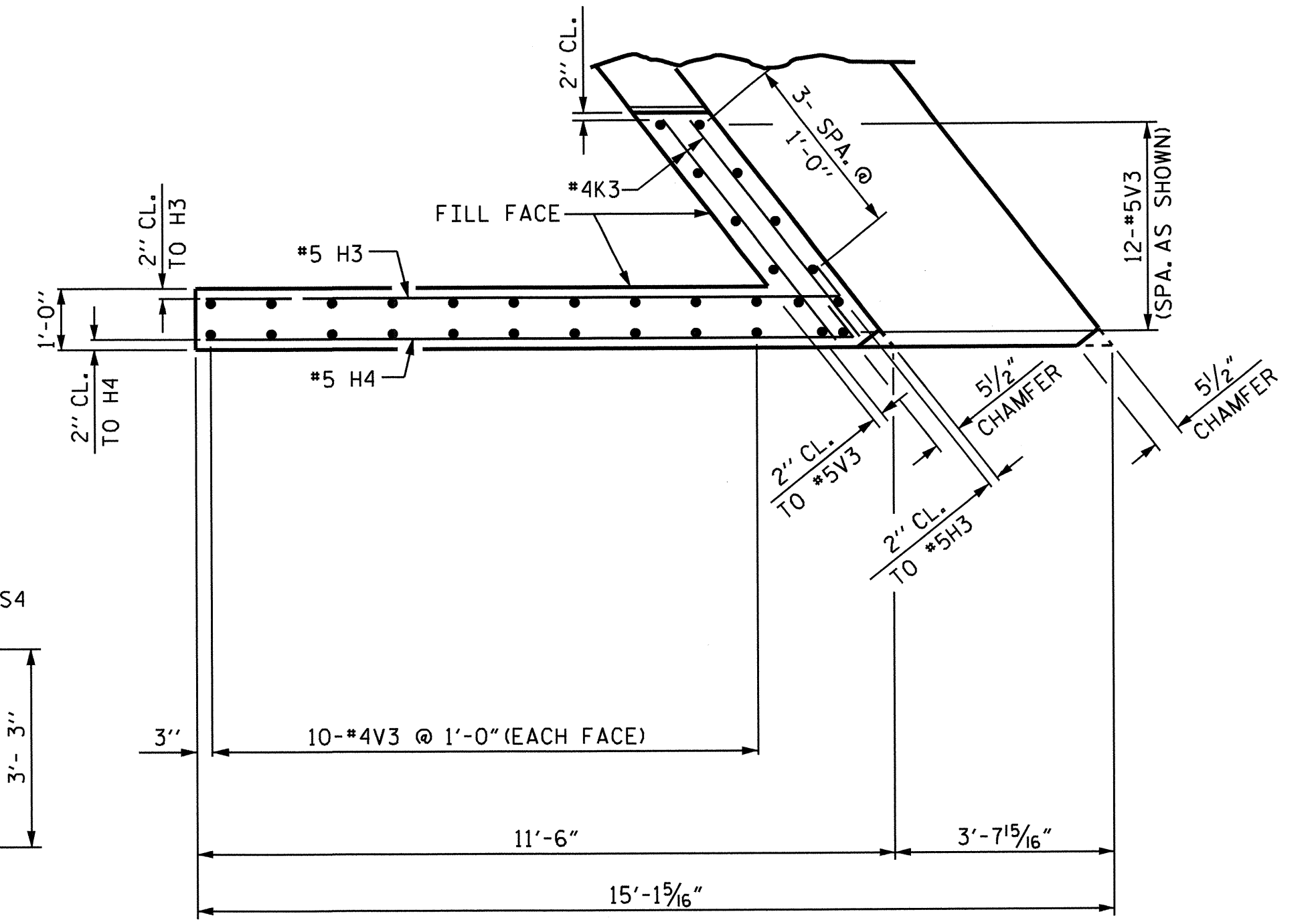
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23	
1			3			TOTAL SHEETS	35
2			4				



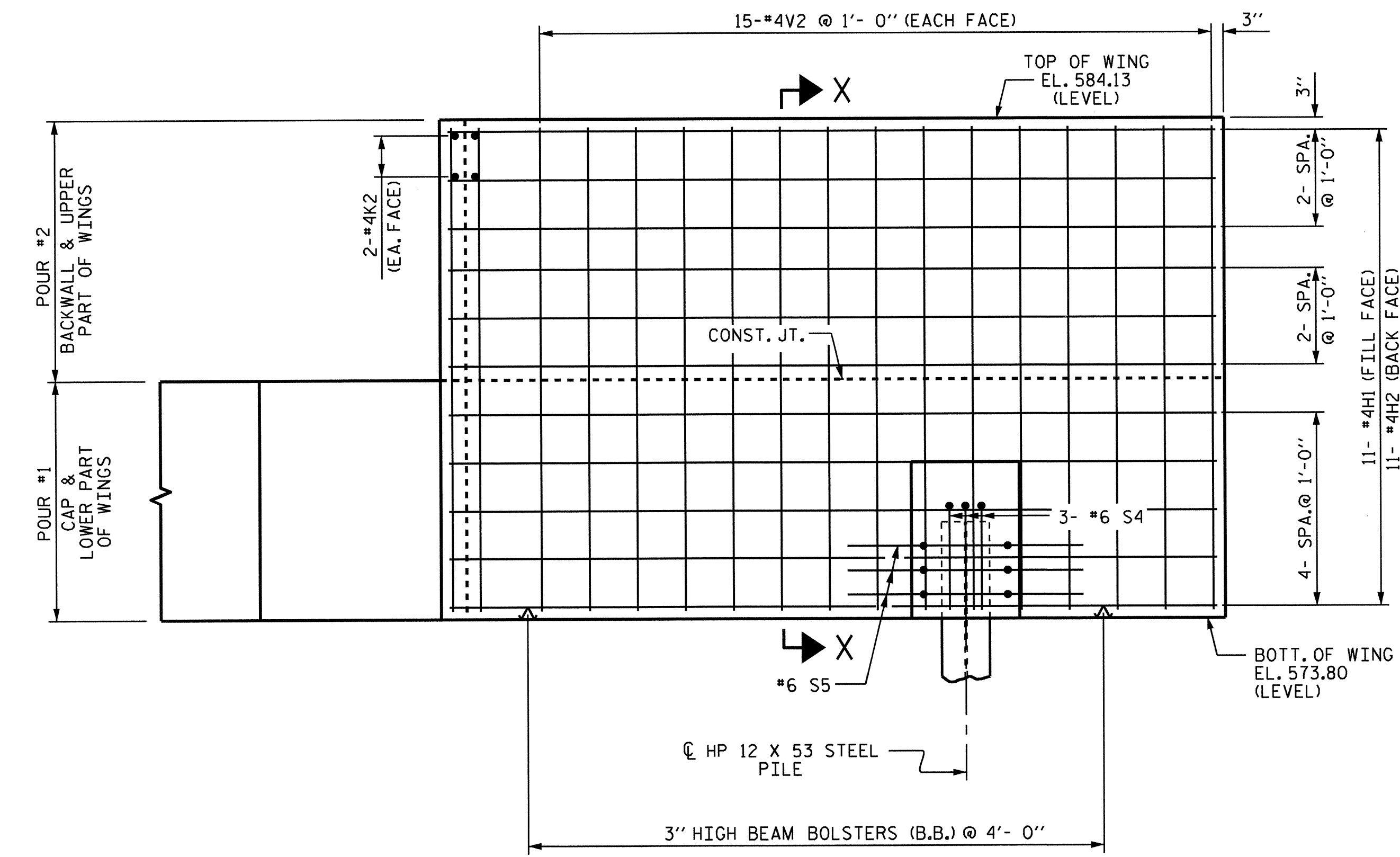
PLAN OF LEFT WING



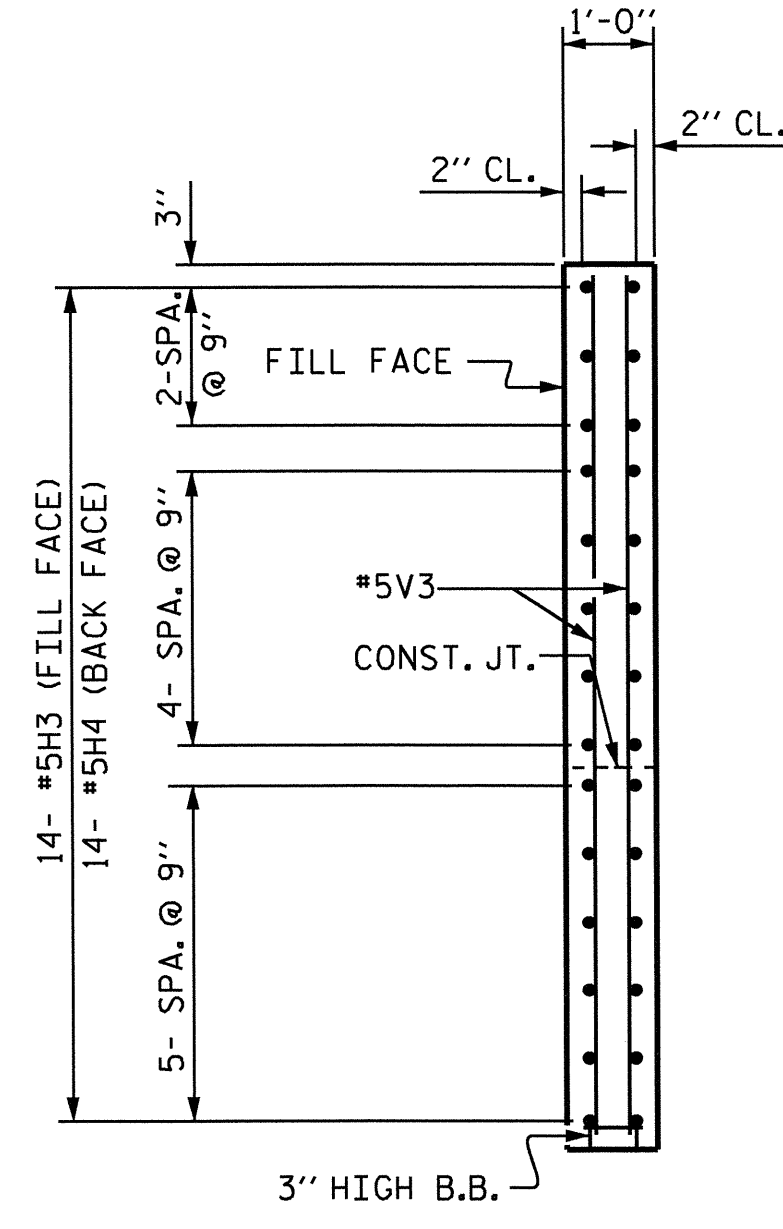
SECTION X-X



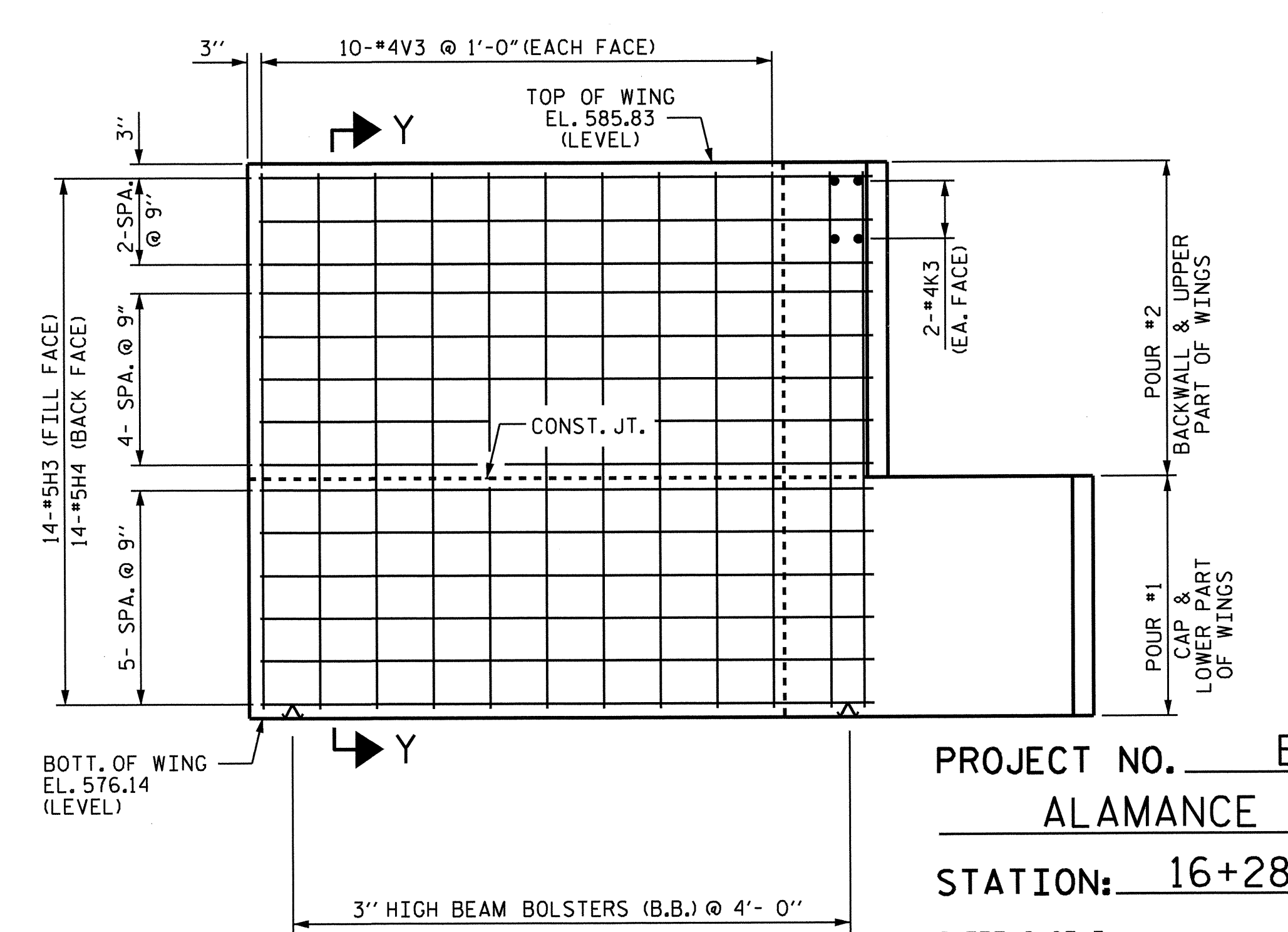
PLAN OF RIGHT WING



ELEVATION OF LEFT WING



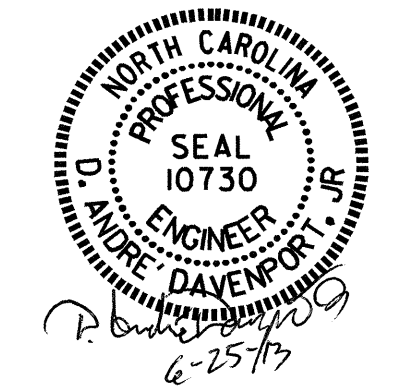
SECTION Y-Y



ELEVATION OF RIGHT WING

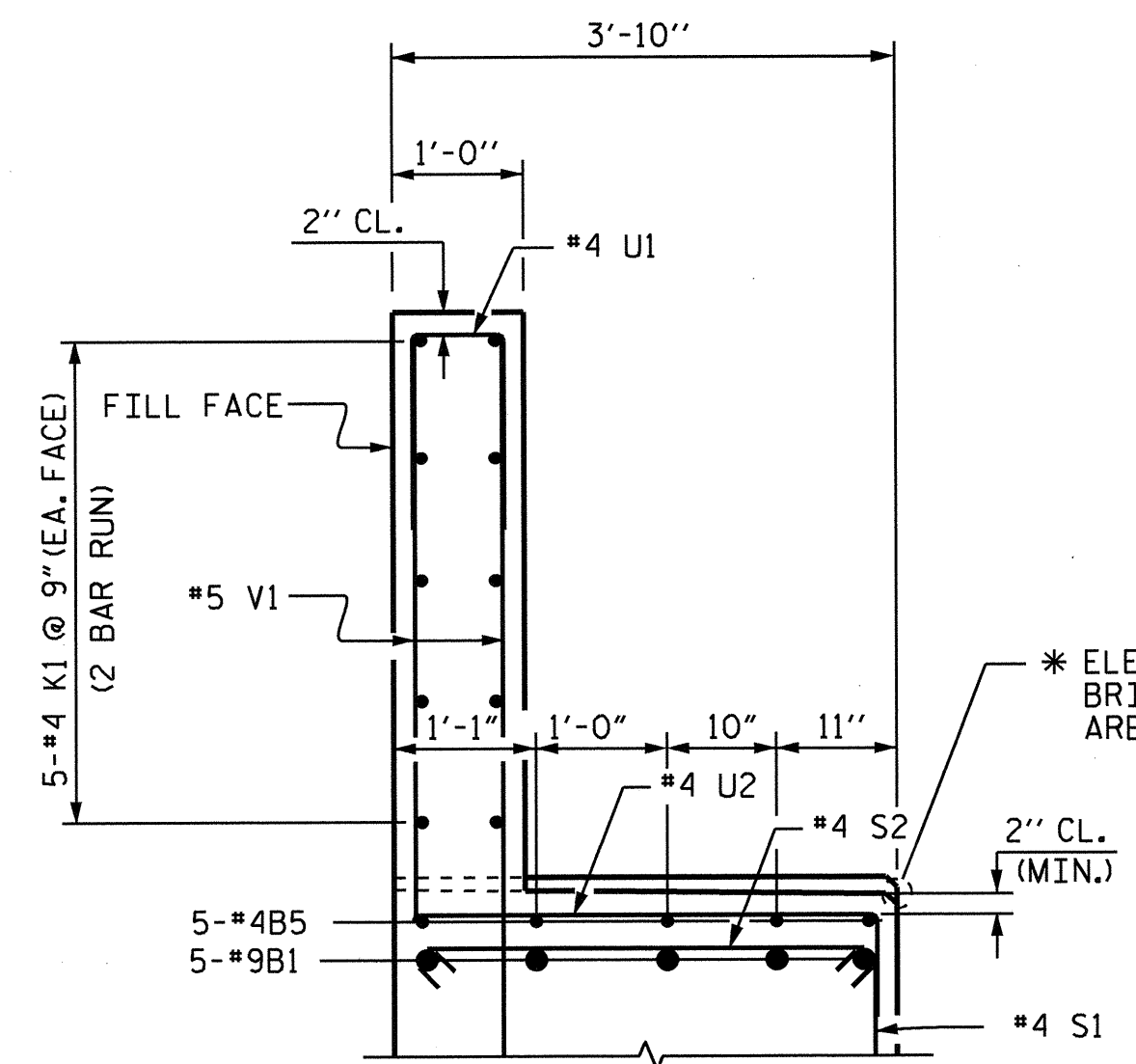
PROJECT NO. B-4401
 ALAMANCE COUNTY
 STATION: 16+28.00 -L-

SHEET 2 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT #1
 WING DETAILS

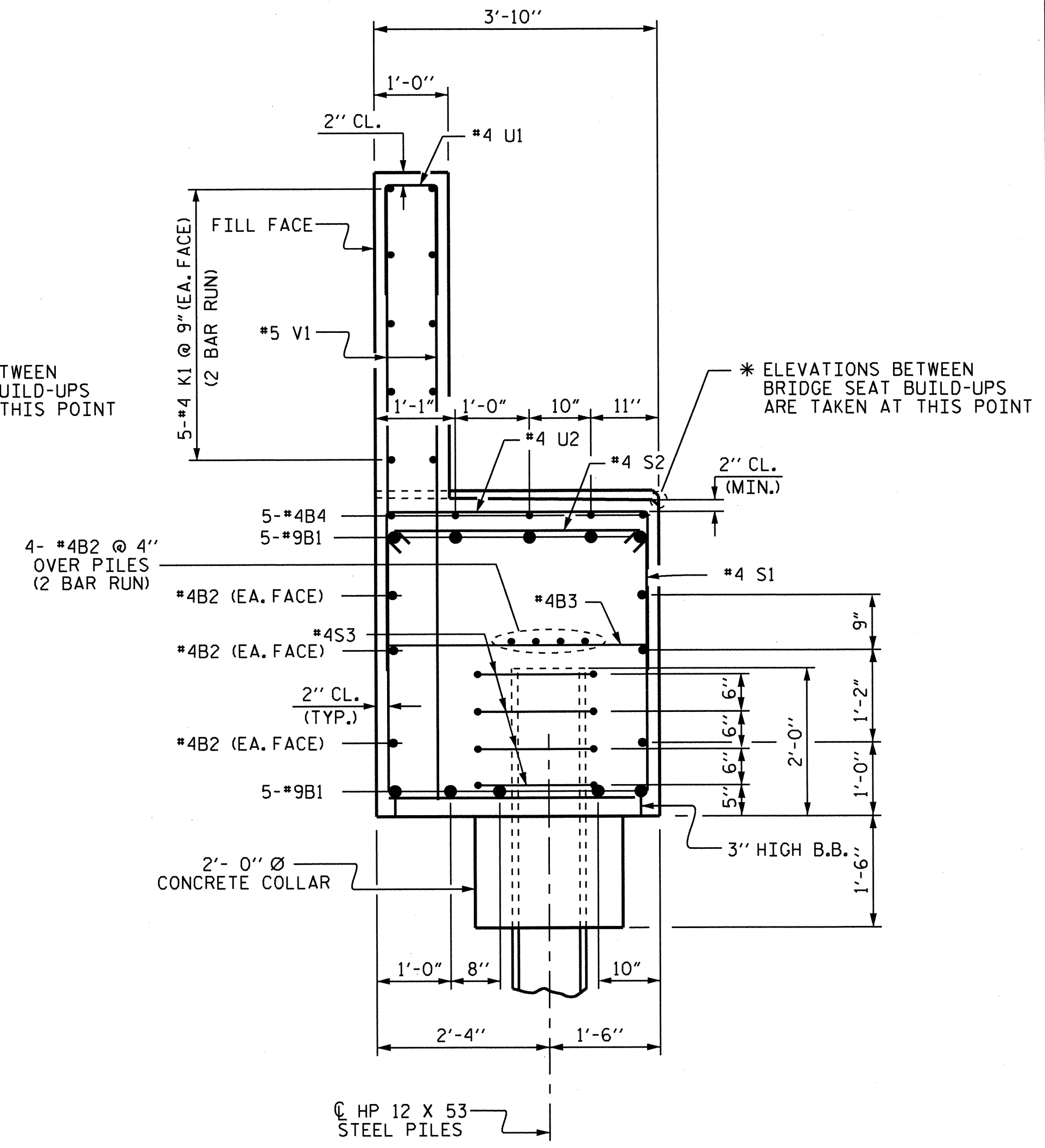


DRAWN BY : D.A. DAVENPORT DATE : 08/03/12
 CHECKED BY : R.P. PATEL DATE : 11/26/12
 DESIGN ENGINEER OF RECORD: R.L. CHESSON DATE : 04/11/13

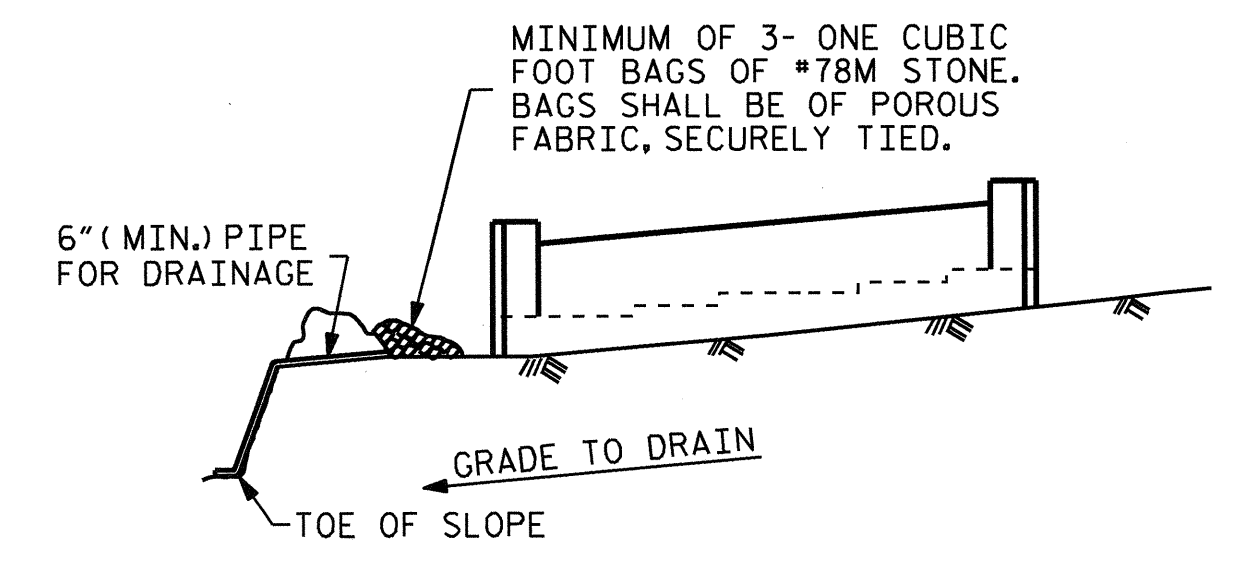
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24	
1			2			TOTAL SHEETS 35	
2			4				



PARTIAL SECTION B-B



SECTION A-A

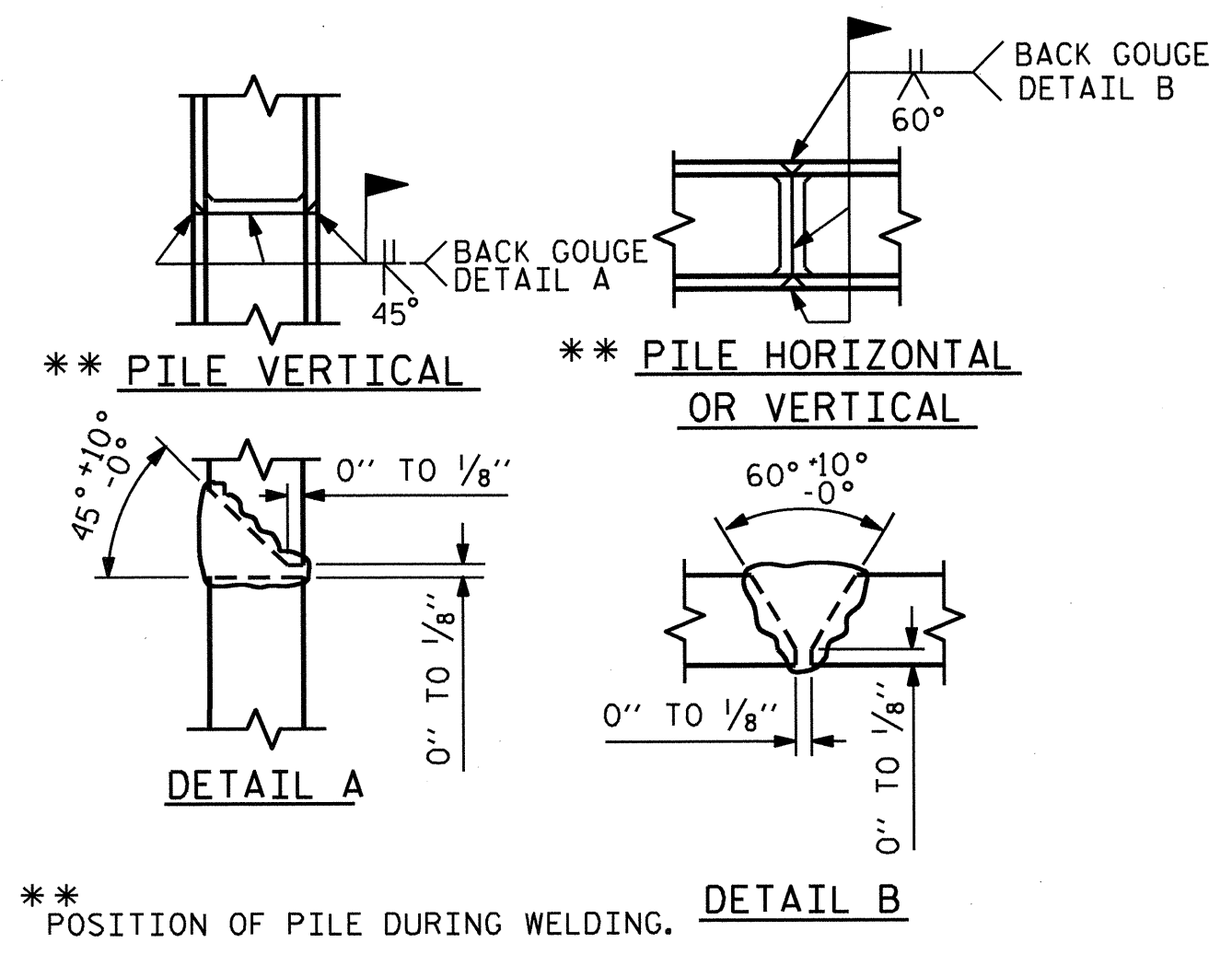


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

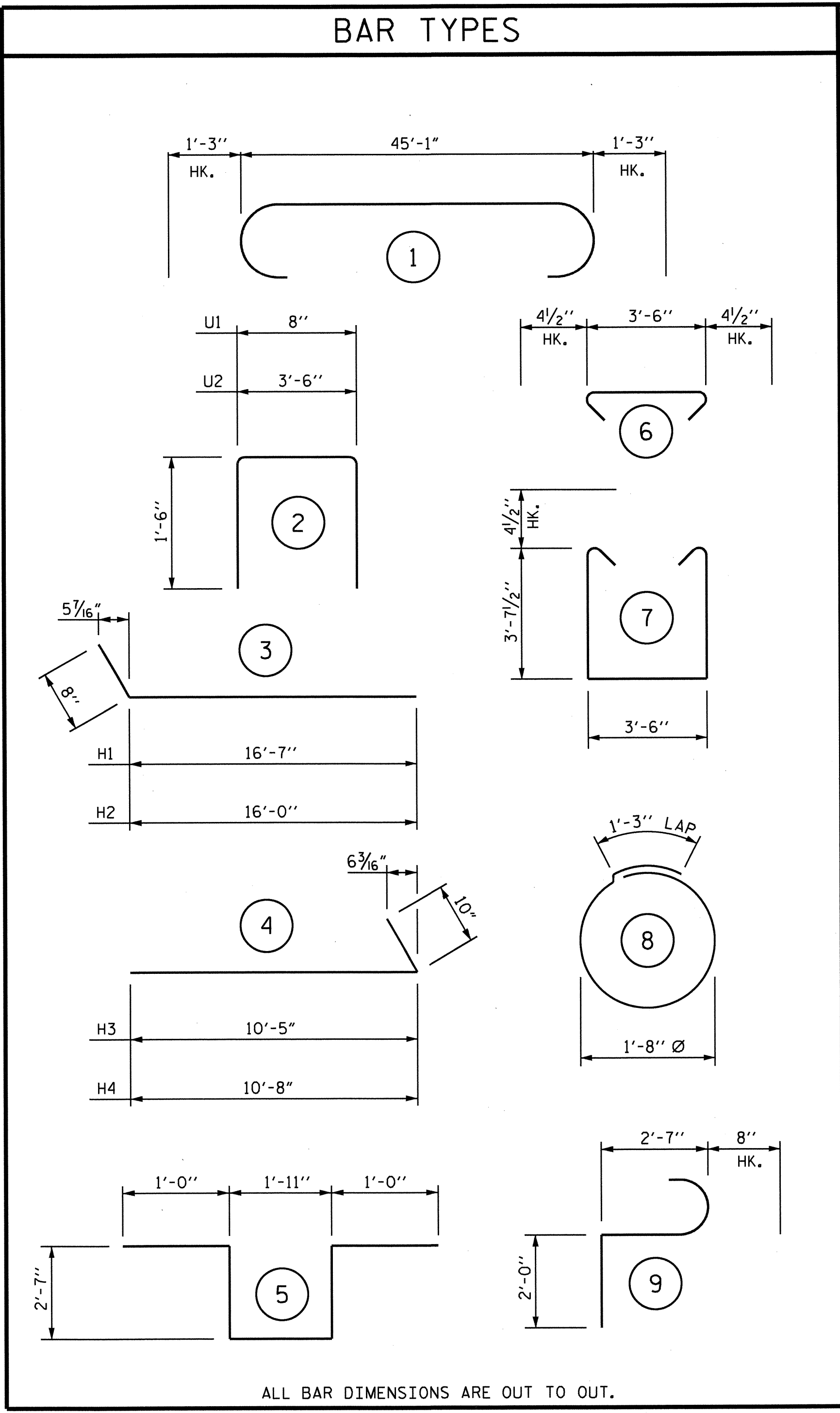
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS



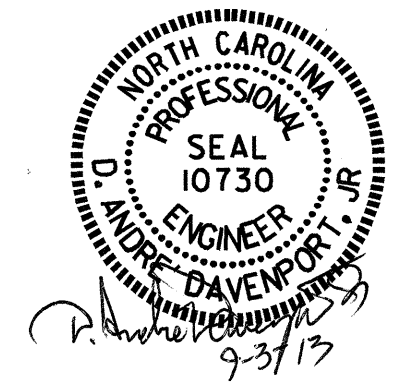
BAR TYPES

BILL OF MATERIAL					
END BENT #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#9	1	47'-7"	1618
B2	20	#4	STR	23'-11"	320
B3	11	#4	STR	3'-8"	27
B4	5	#4	STR	9'-5"	31
B5	15	#4	STR	3'-4"	33
H1	11	#4	3	17'-3"	127
H2	11	#4	3	16'-8"	122
H3	14	#5	4	11'-3"	164
H4	14	#5	4	11'-6"	168
K1	20	#4	STR	23'-11"	320
K2	4	#4	STR	4'-10"	13
K3	4	#4	STR	4'-3"	11
S1	52	#4	7	11'-6"	399
S2	52	#4	6	4'-3"	148
S3	20	#4	8	6'-6"	87
S4	3	#6	9	5'-3"	24
S5	3	#6	5	9'-1"	41
U1	36	#4	2	3'-8"	88
U2	16	#4	2	6'-6"	69
V1	72	#5	STR	7'-10"	588
V2	42	#4	STR	9'-11"	278
V3	32	#4	STR	9'-3"	198
REINFORCING STEEL				LBS.	4874
CLASS A CONCRETE BREAKDOWN					
POUR #1 (CAP, CONCRETE COLLAR & LOWER PART OF WINGS)					34.6 C.Y.
POUR #2 BACKWALL & UPPER PART OF WINGS					12.3 C.Y.
TOTAL CLASS A CONCRETE					46.9 C.Y.
HP 12 X 53 STEEL PILES					
NO. 6				LIN. FT.	60.0
PILE EXCAVATION IN SOIL				LIN. FT.	36.0
PILE EXCAVATION NOT IN SOIL				LIN. FT.	24.0

PROJECT NO. B-4401
ALAMANCE COUNTY
 STATION: 16+28.00 -L-

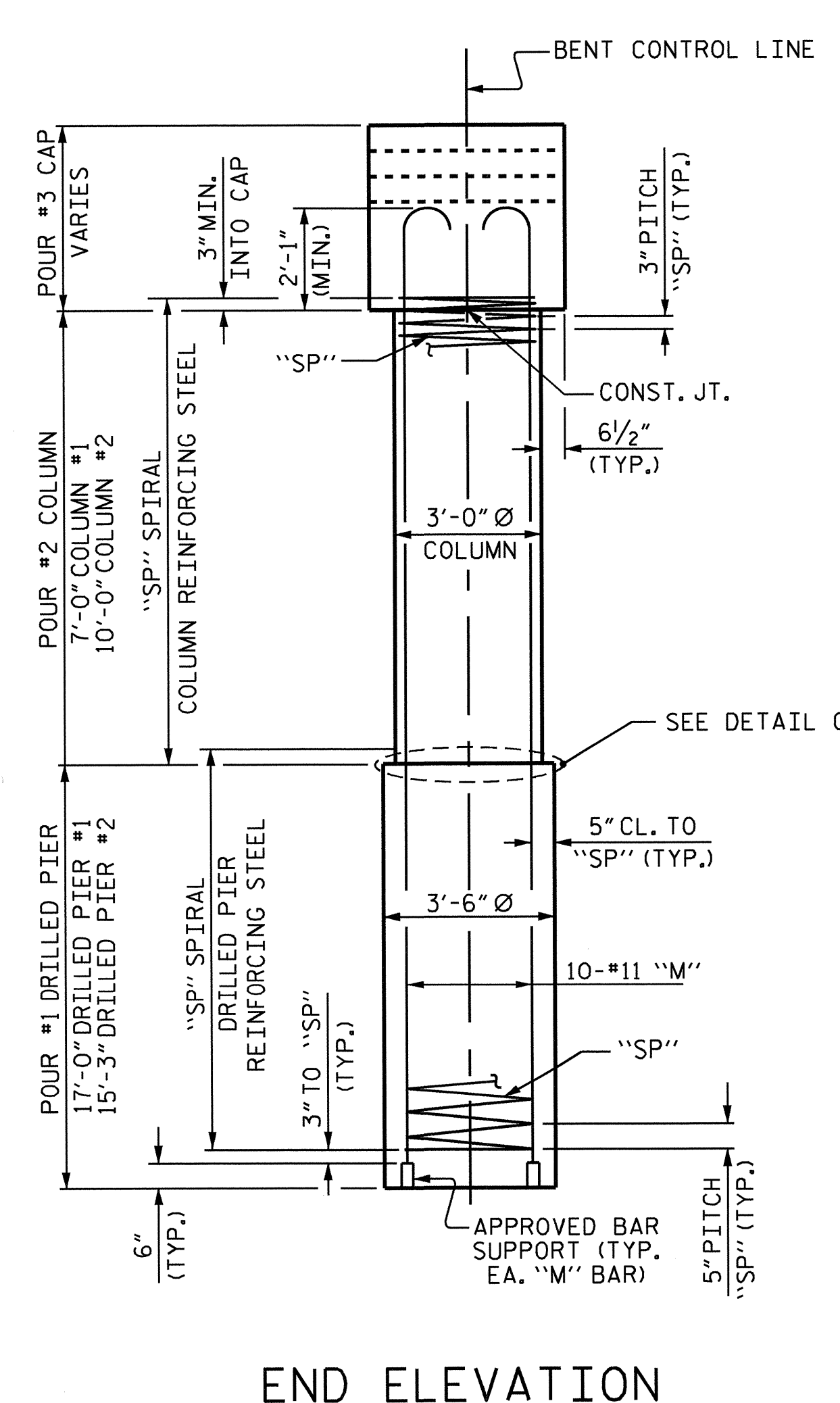
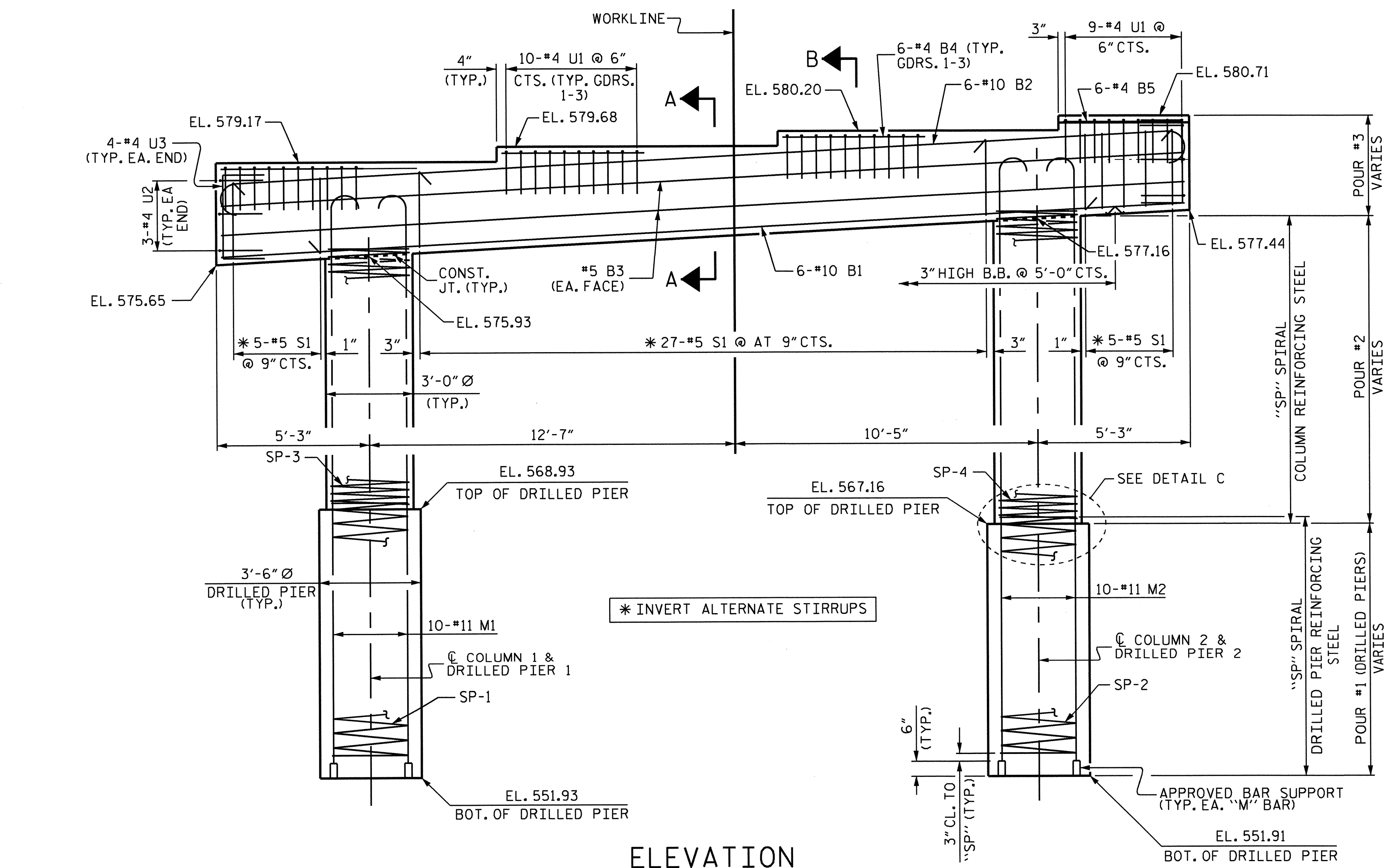
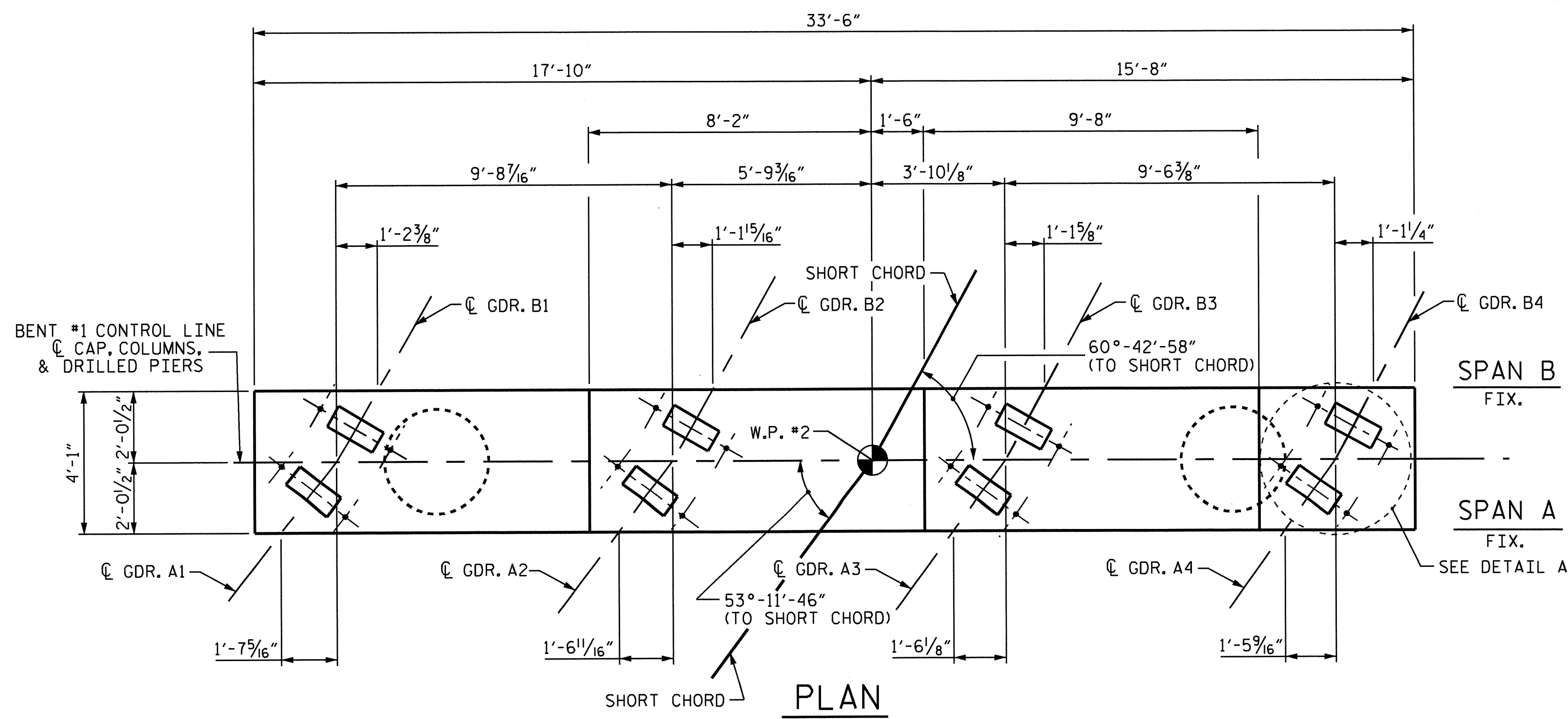
SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT #1



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS 35
2			4			

DRAWN BY: D.A. DAVENPORT DATE: 08/06/12
 CHECKED BY: R.P. PATEL DATE: 11/26/12
 DESIGN ENGINEER OF RECORD: R.L. CHESSON DATE: 04/11/13



NOTES:

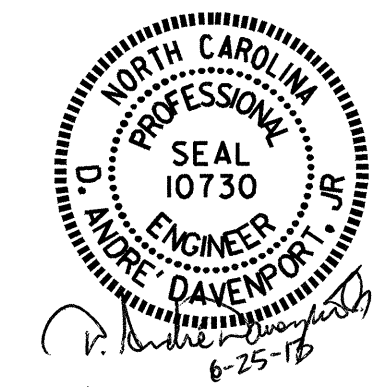
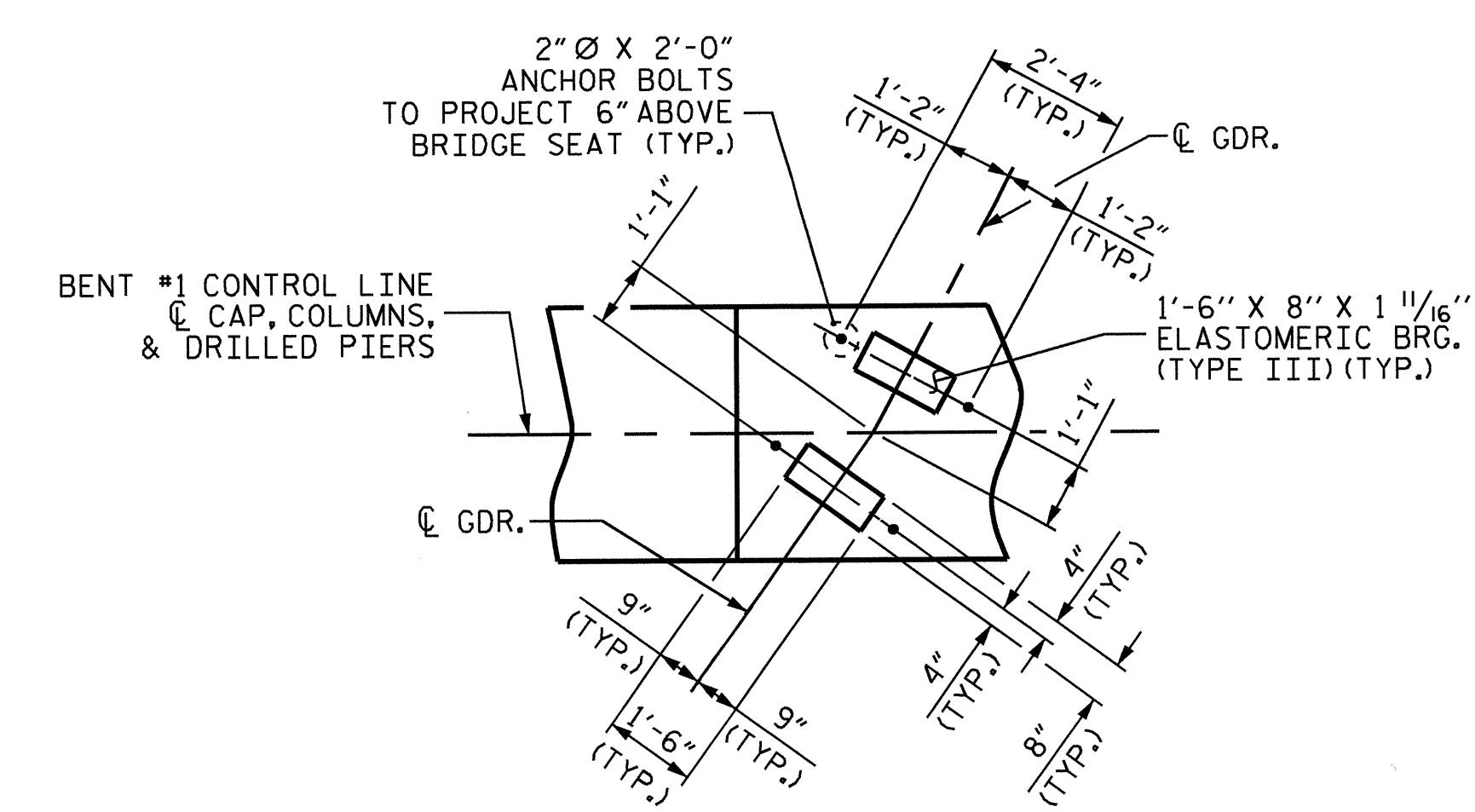
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

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

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

SPLICING OF THE LONGITUDINAL BARS IN THE DRILLED PIERS WILL BE NOT PERMITTED.



PROJECT NO. B-4401
ALAMANCE COUNTY
 STATION: 16+28.00 -L-

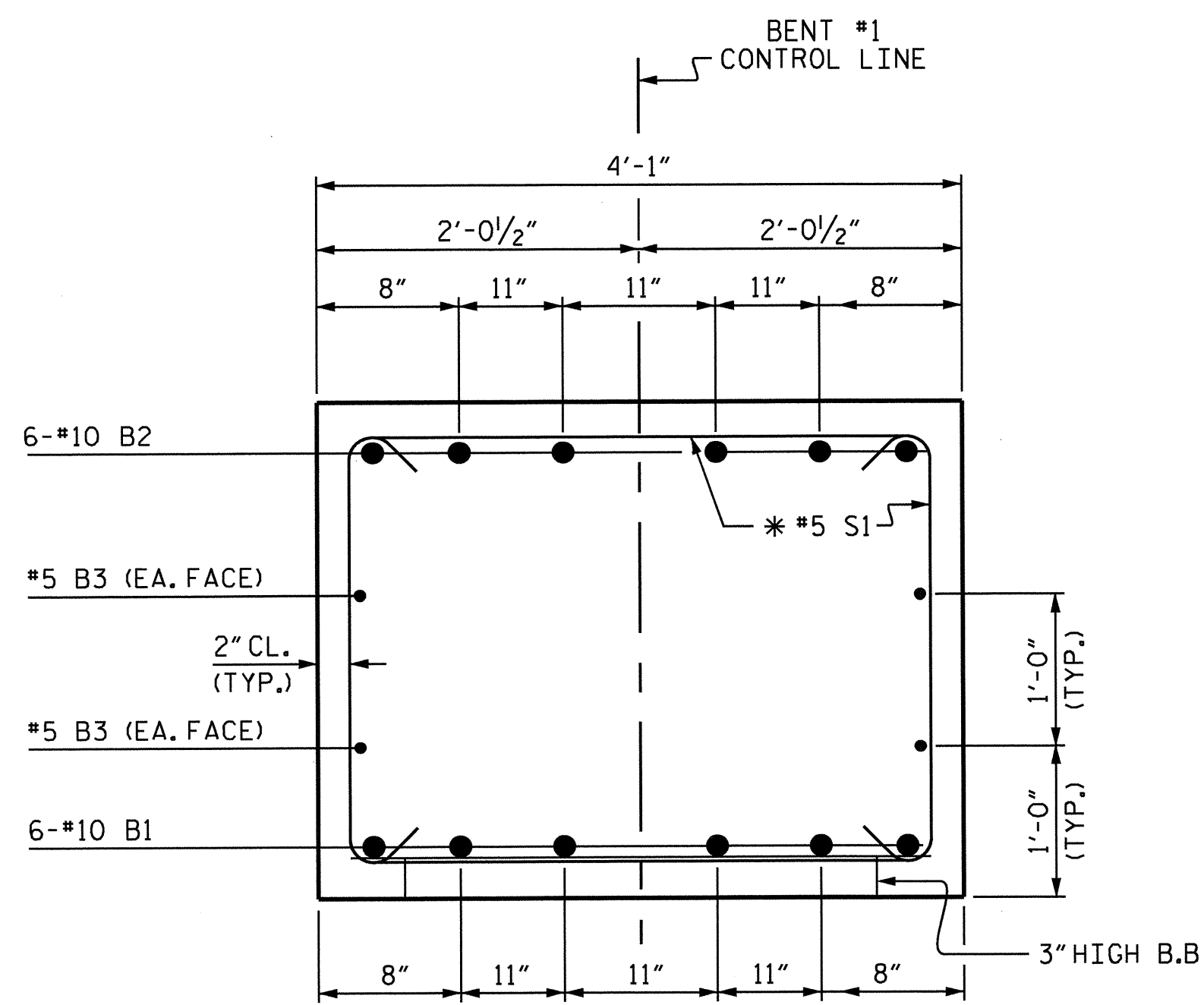
SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
BENT #1

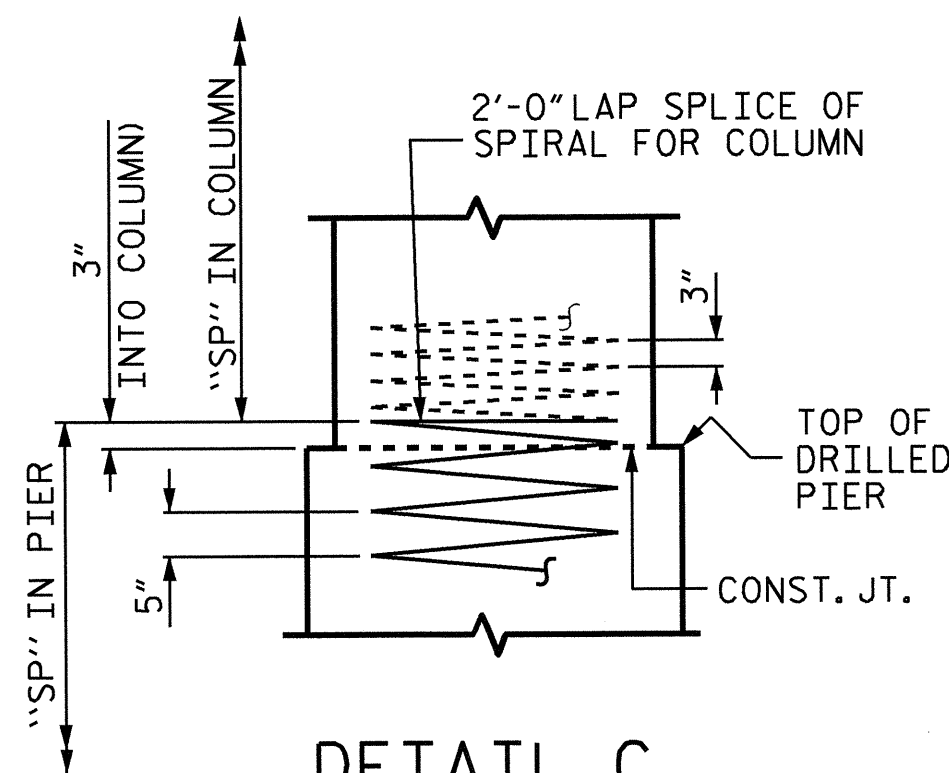
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			35

DRAWN BY: R. P. PATEL DATE: 11-6-12
 CHECKED BY: J. G. KHARVA DATE: 11-19-12
 DESIGN ENGINEER OF RECORD: R. L. CHESSON DATE: 4/11/13

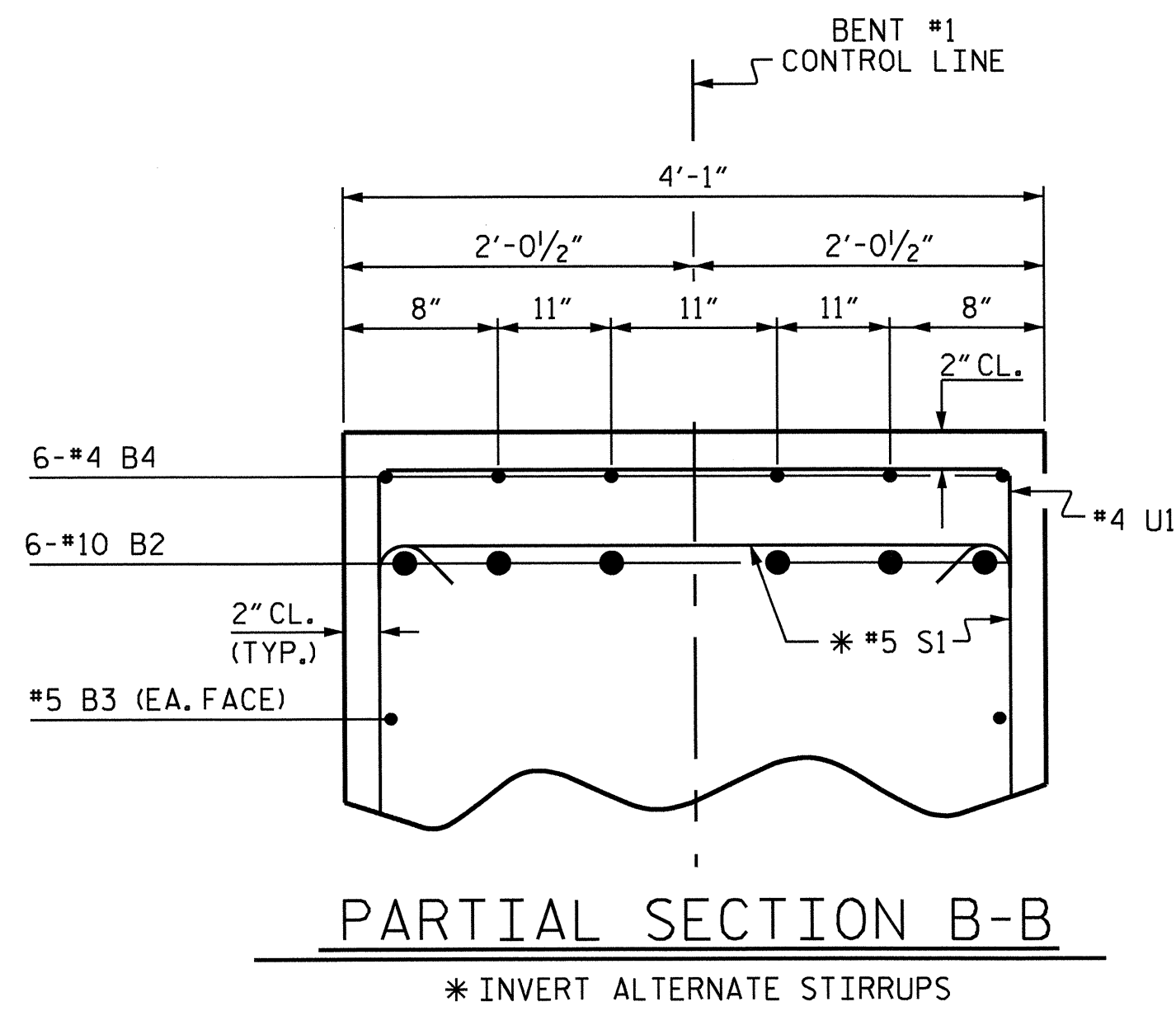


SECTION A-A

* INVERT ALTERNATE STIRRUPS

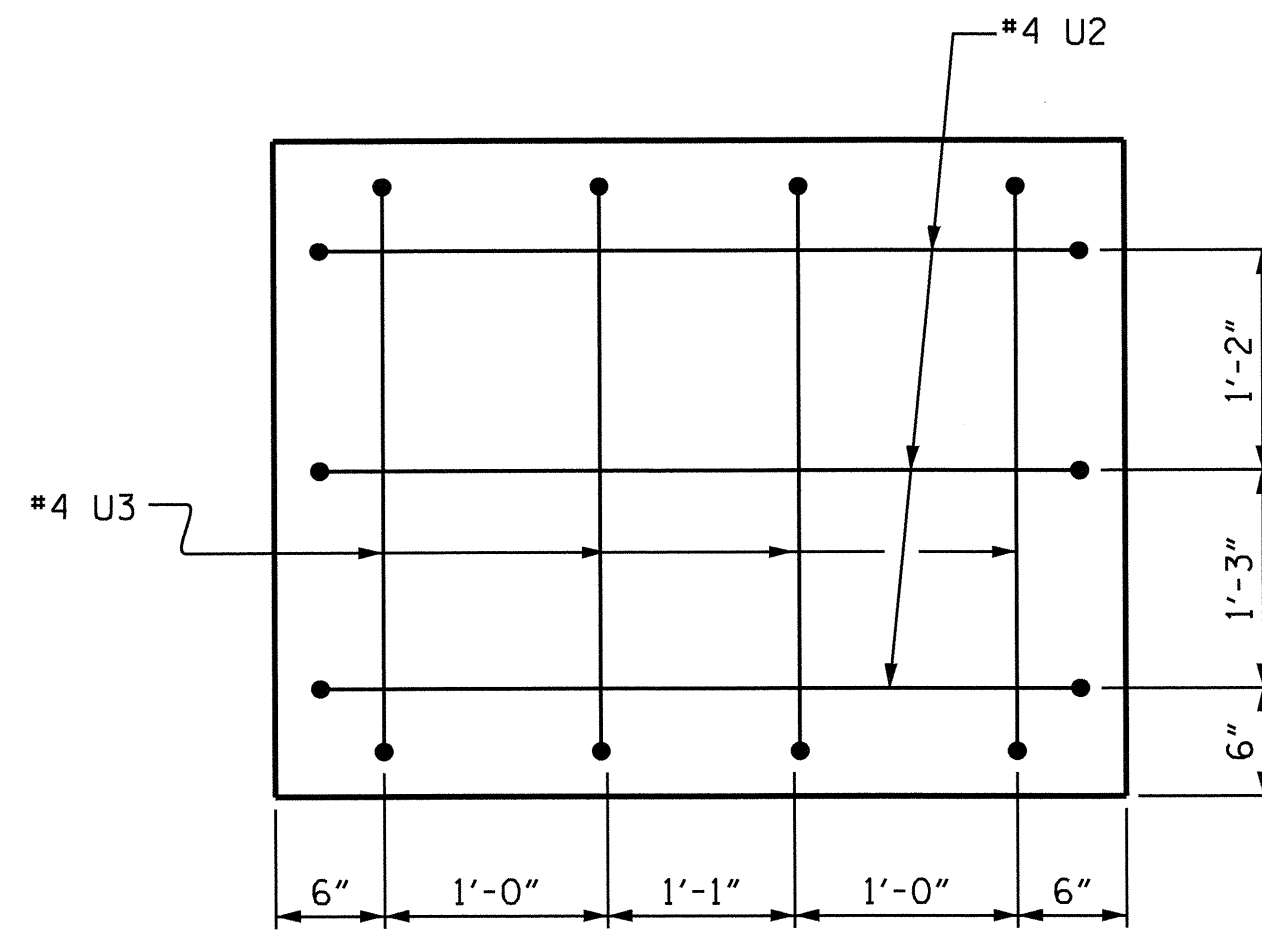


DETAIL C



PARTIAL SECTION B-B

* INVERT ALTERNATE STIRRUPS

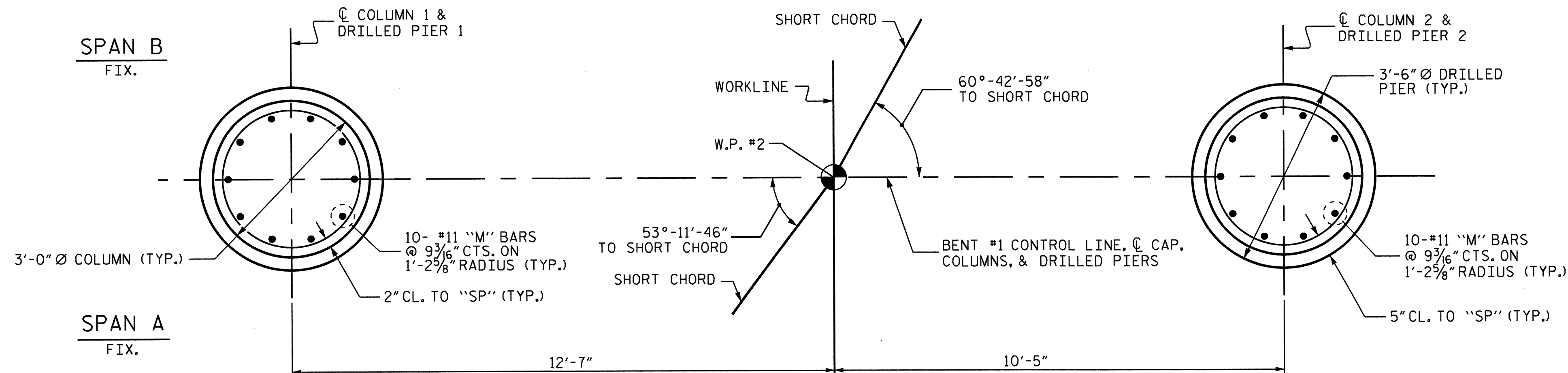


END VIEW

(TYP. BOTH ENDS)

2" MIN. CONCRETE COVER FROM END OF CAP REQUIRED FOR ALL #4 U2 AND #4 U3 BARS.

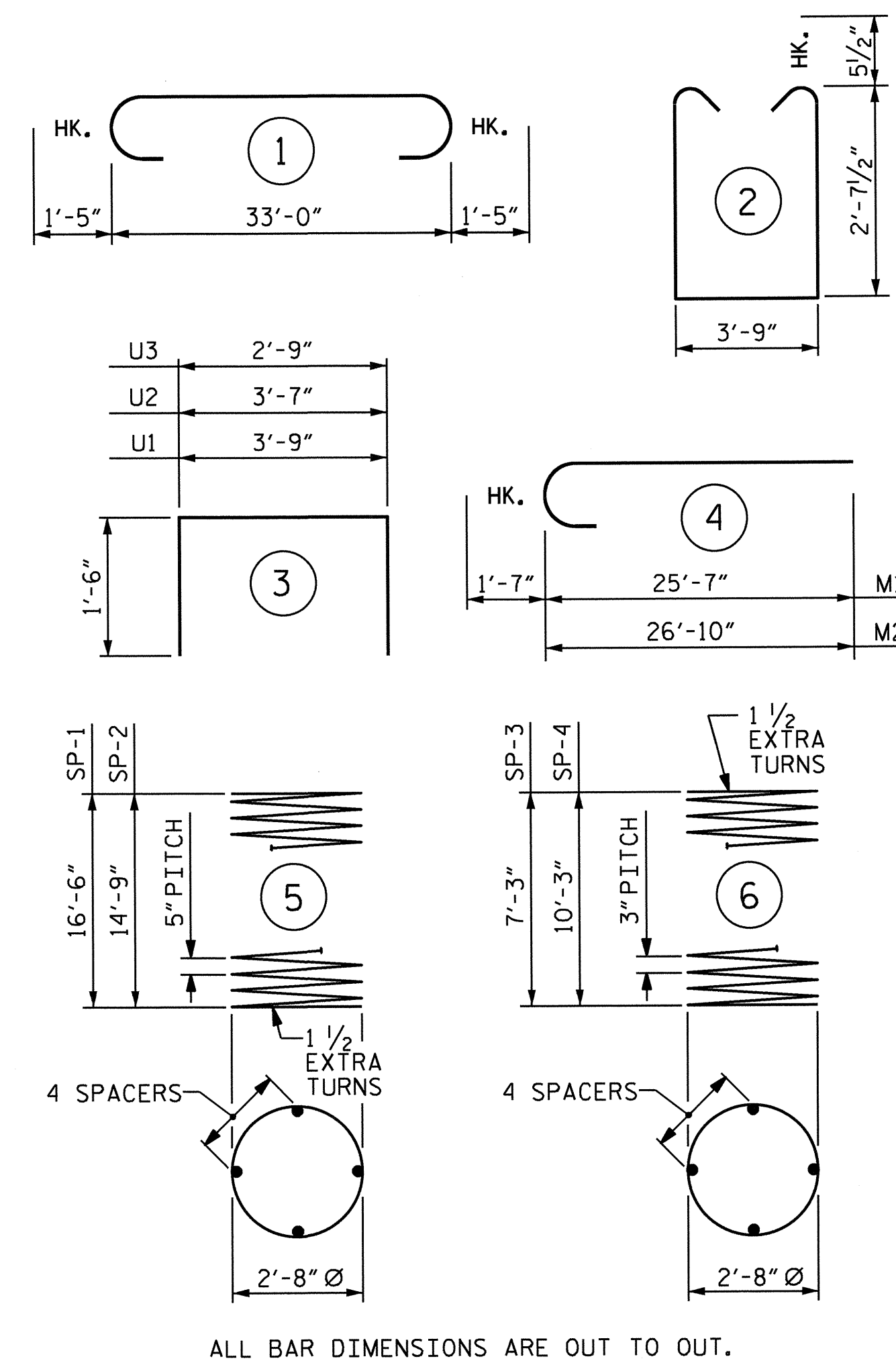
#4 U2 AND #4 U3 BARS MAY BE SHIFTED UP TO 2" TO CLEAR 'B' BARS.



PLAN OF DRILLED PIERS & COLUMNS

(DETAILS ARE TYPICAL EACH DRILLED PIER & COLUMN)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	33'-2"	856
B2	6	#10	1	35'-10"	925
B3	4	#5	STR	33'-2"	138
B4	18	#4	STR	4'-11"	59
B5	6	#4	STR	4'-1"	16
M1	10	#11	4	27'-2"	1443
M2	10	#11	4	28'-5"	1510
S1	37	#5	2	9'-11"	383
U1	39	#4	3	6'-9"	176
U2	6	#4	3	6'-7"	26
U3	8	#4	3	5'-9"	31
REINFORCING STEEL					LBS. 5563
SP-1	1	*	5	338'-8"	353
SP-2	1	*	5	303'-9"	317
SP-3	1	**	6	251'-2"	168
SP-4	1	**	6	350'-0"	234
SPIRAL COLUMN REINFORCING STEEL					LBS. 1072
CLASS A CONCRETE					
POUR #2 (COLUMNS)				C.Y.	4.5
POUR #3 (CAP)				C.Y.	16.6
TOTAL CLASS A CONCRETE					C.Y. 21.1
DRILLED PIERS:					
DRILLED PIER CONCRETE					
POUR #1				C.Y.	11.5
3'-6" Ø DRILLED PIERS IN SOIL				LIN. FT.	15.25
3'-6" Ø DRILLED PIERS NOT IN SOIL				LIN. FT.	17.0
PERMANENT STEEL CASING				LIN. FT.	20.1
CSL TUBES				LIN. FT.	141

* THE SP-1 & SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

** THE SP-3 & SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

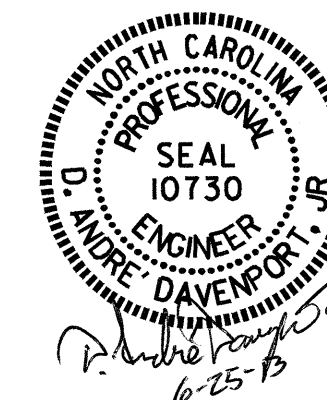
PROJECT NO. B-4401
ALAMANCE COUNTY
 STATION: 16+28.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE

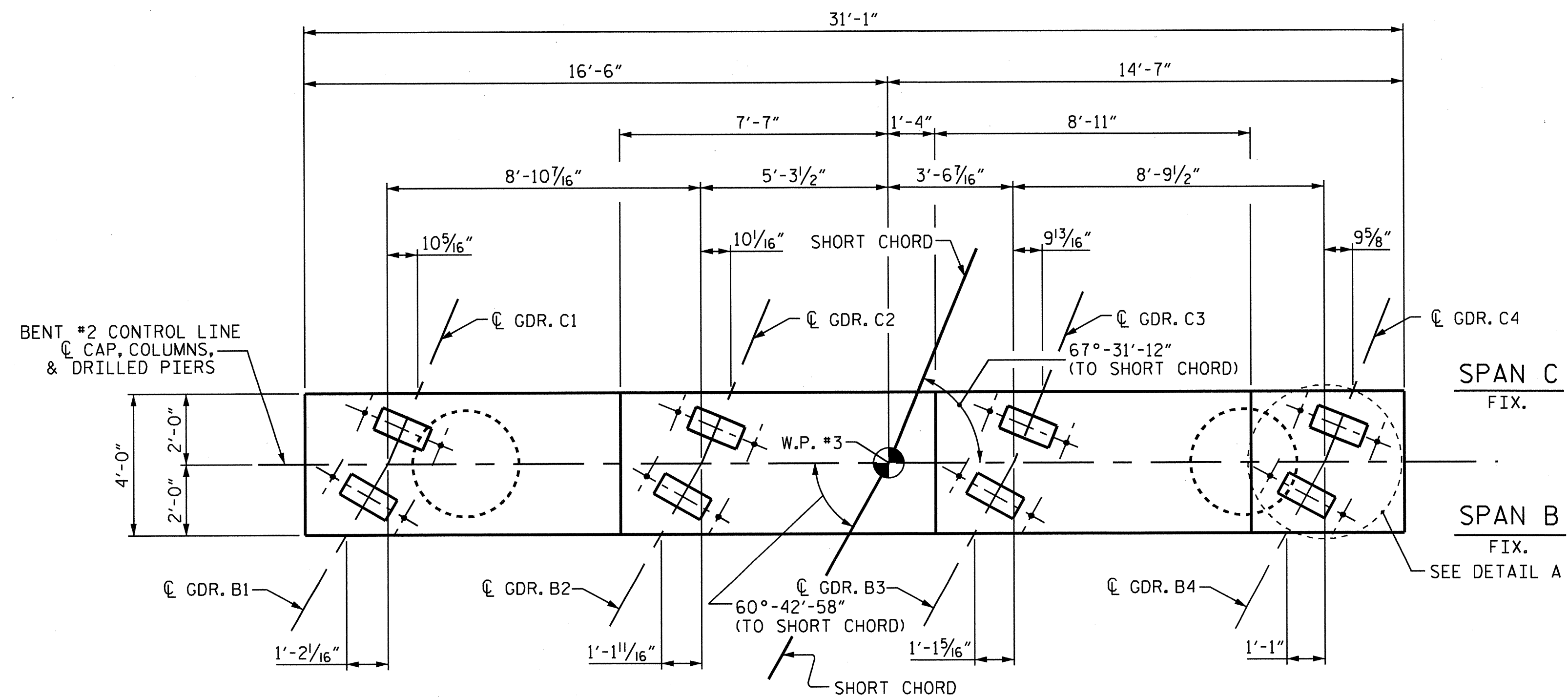
BENT #1



DRAWN BY : R. P. PATEL DATE : 11-6-12
 CHECKED BY : J. G. KHARVA DATE : 11-19-12
 DESIGN ENGINEER OF RECORD: R. L. CHESSON DATE : 04/11/13

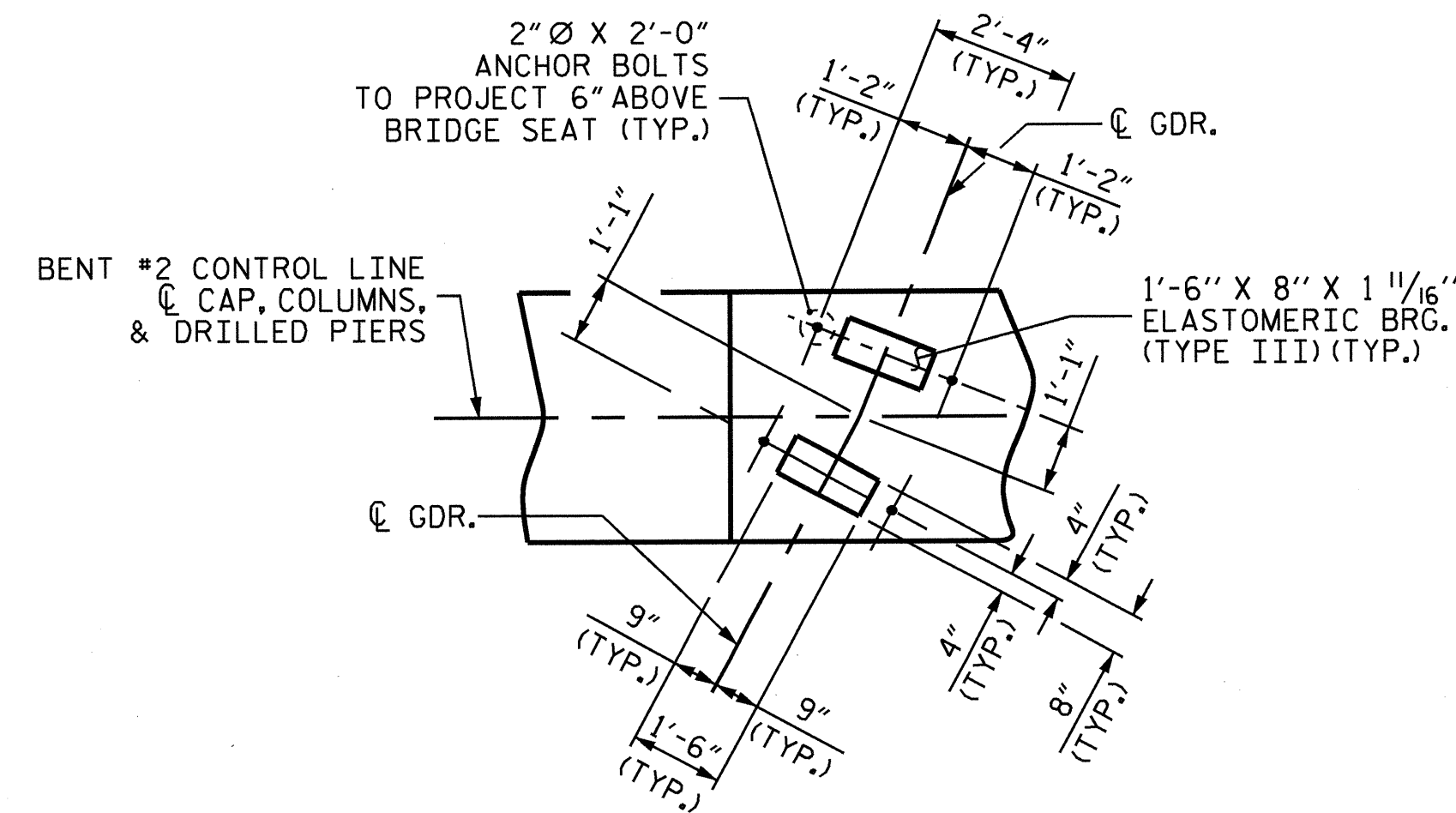
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			35

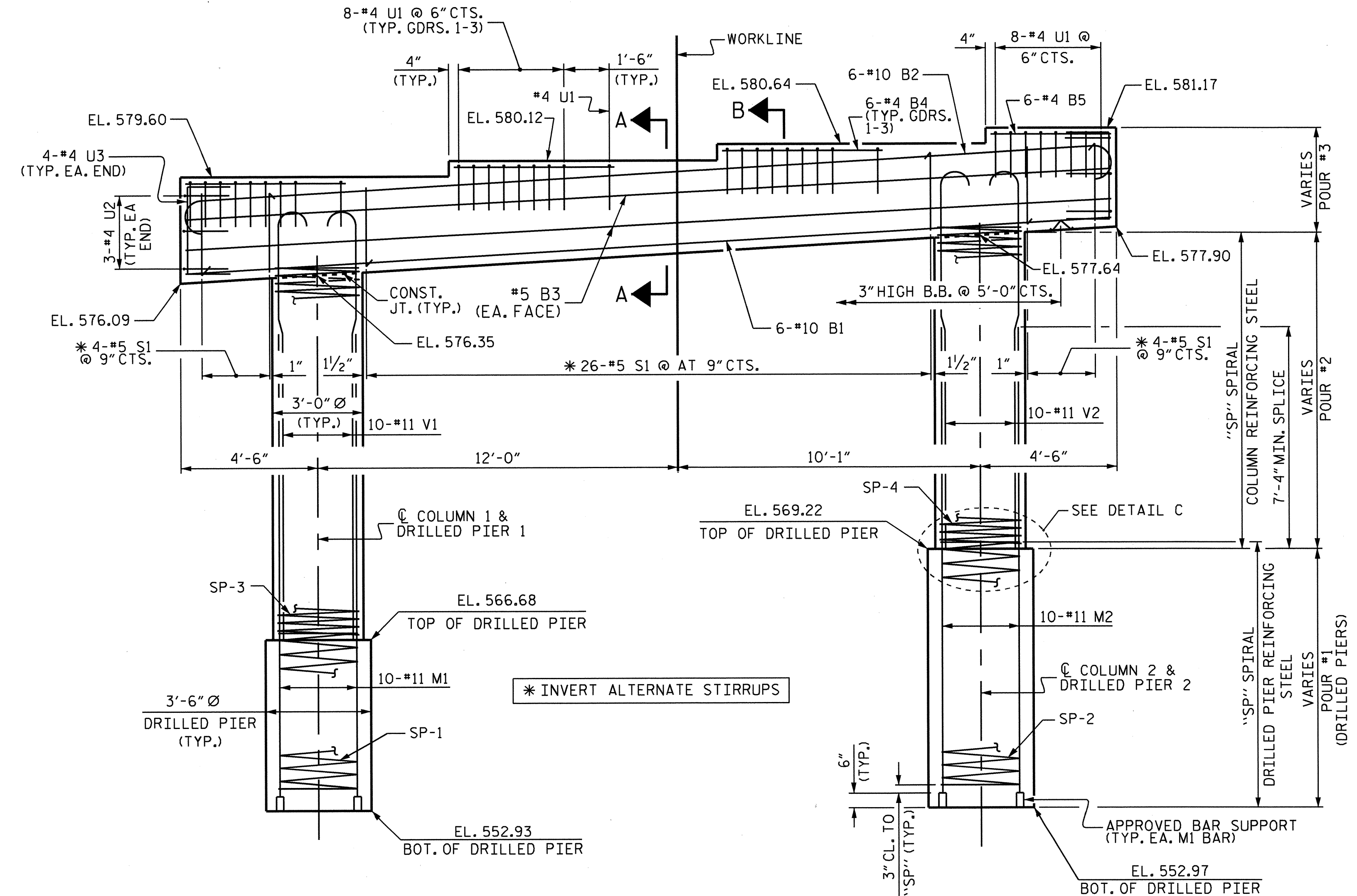


PLAN

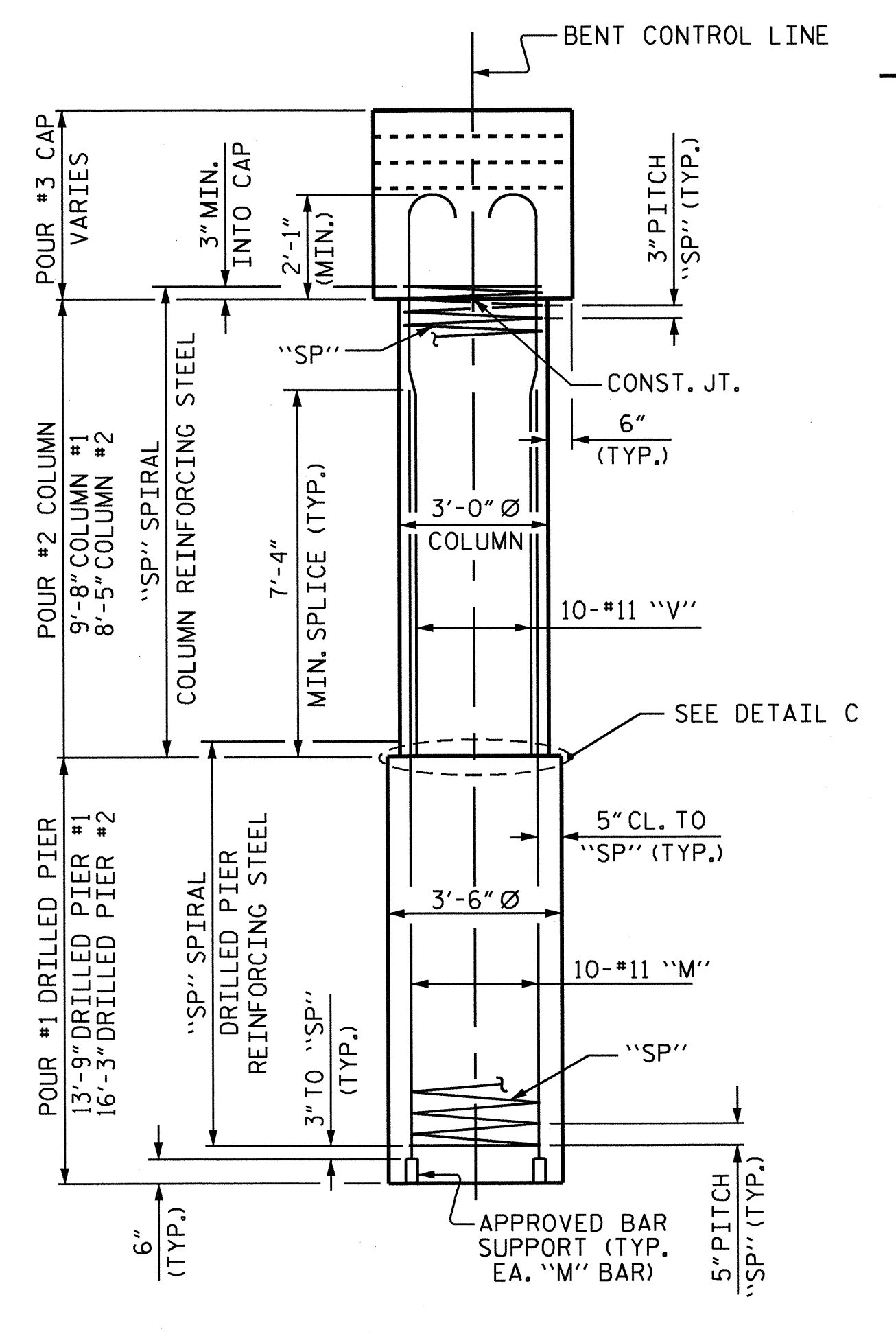
NOTES:
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."
 THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.



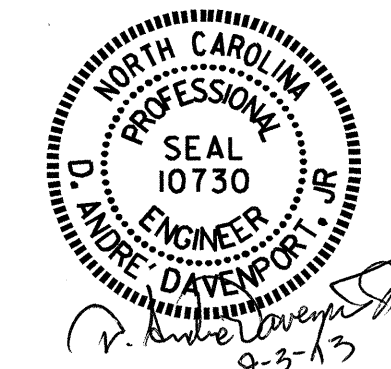
DETAIL A



ELEVATION



END ELEVATION

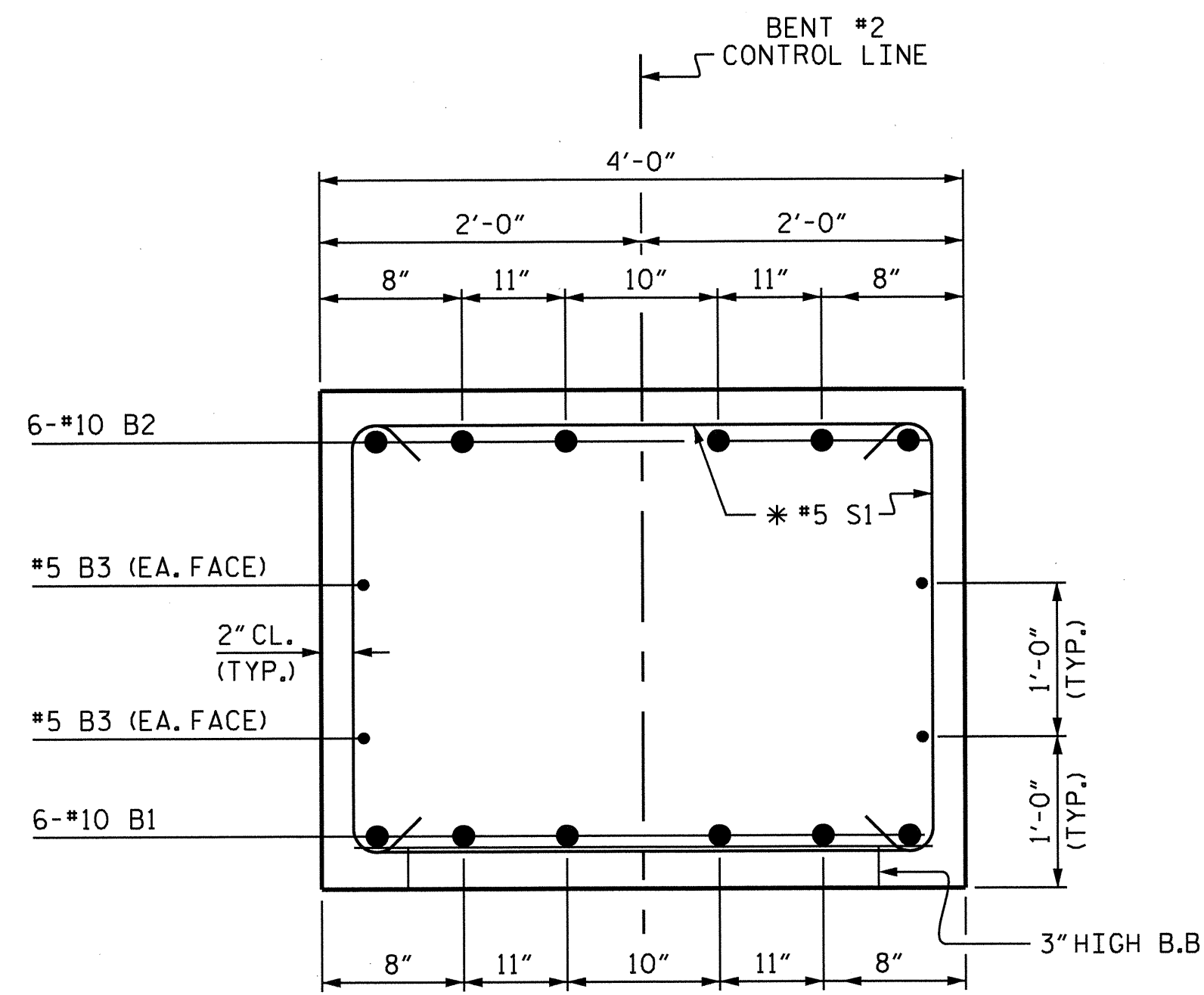


PROJECT NO. B-4401
ALAMANCE COUNTY
 STATION: 16+28.00 -L-

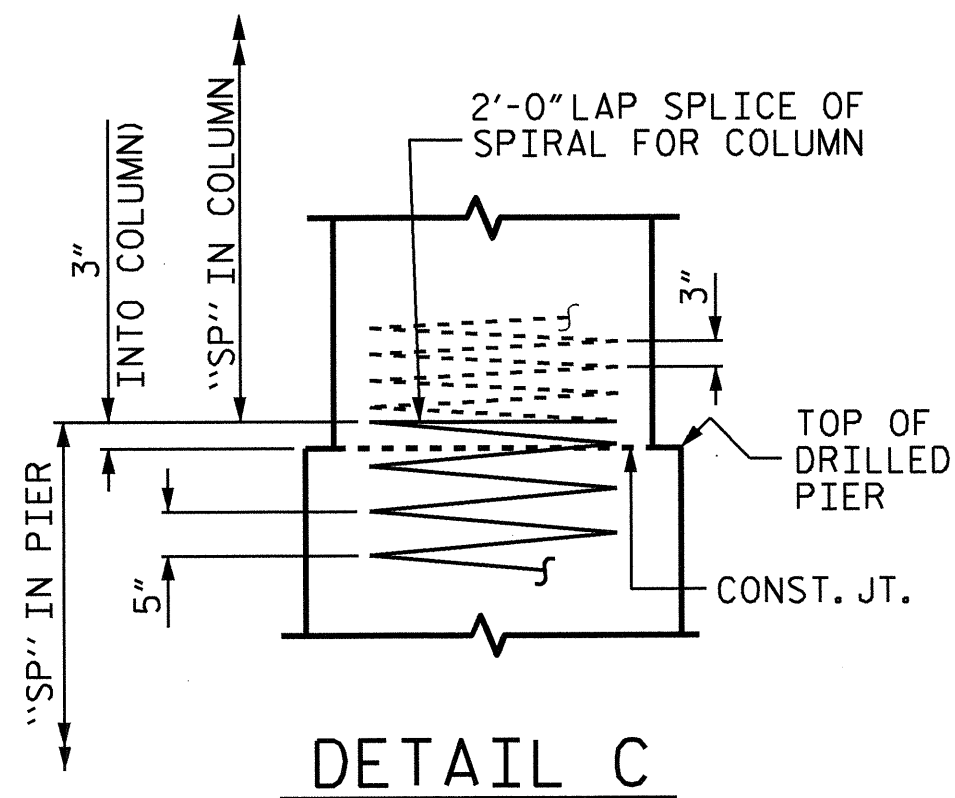
SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
SUBSTRUCTURE						S-28
BENT #2						
REVISIONS						TOTAL SHEETS 35
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

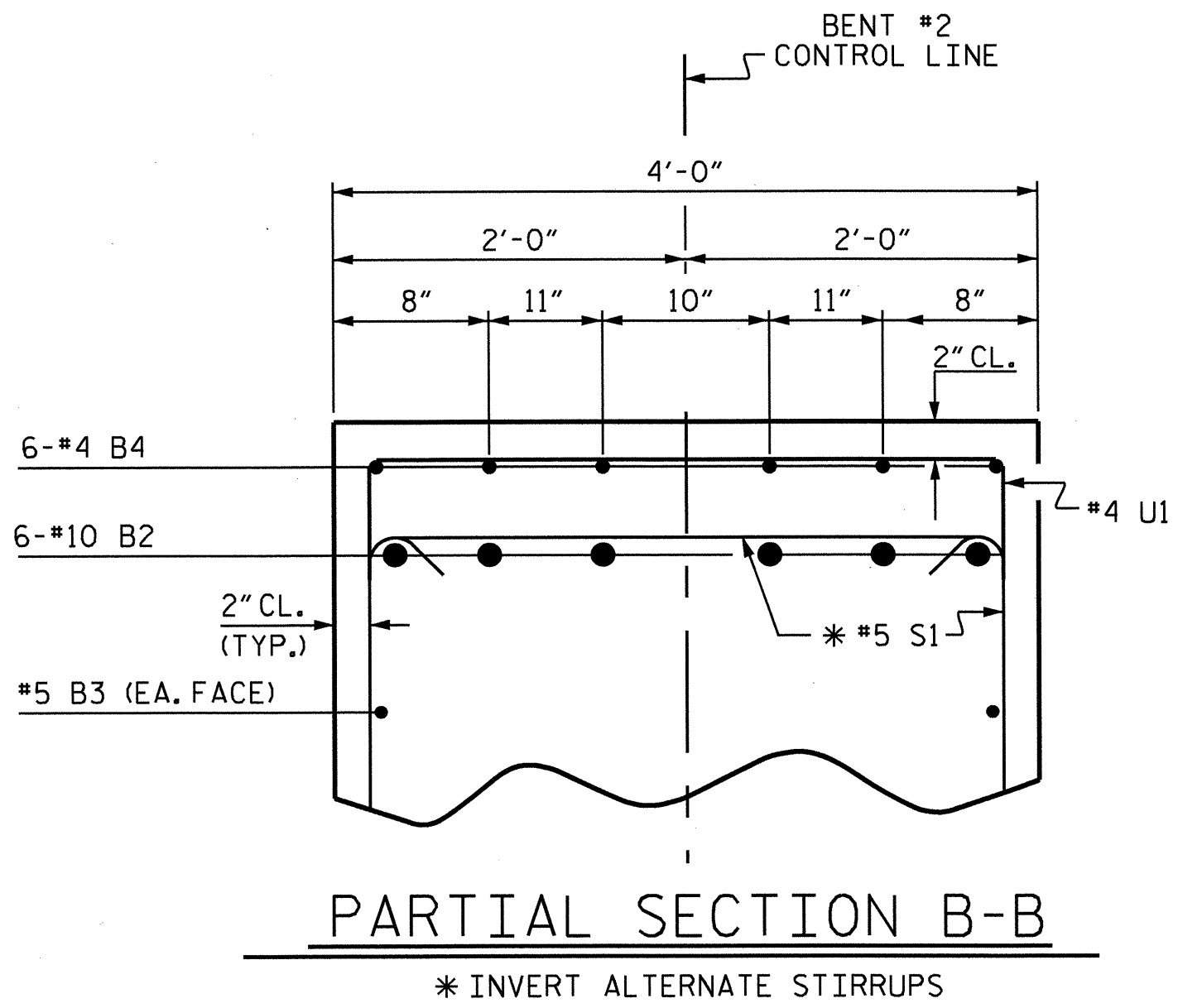
DRAWN BY : R. P. PATEL DATE : 11-6-12
 CHECKED BY : J. G. KHARVA DATE : 11-19-12
 DESIGN ENGINEER OF RECORD: R. L. CHESSON DATE : 04/11/13



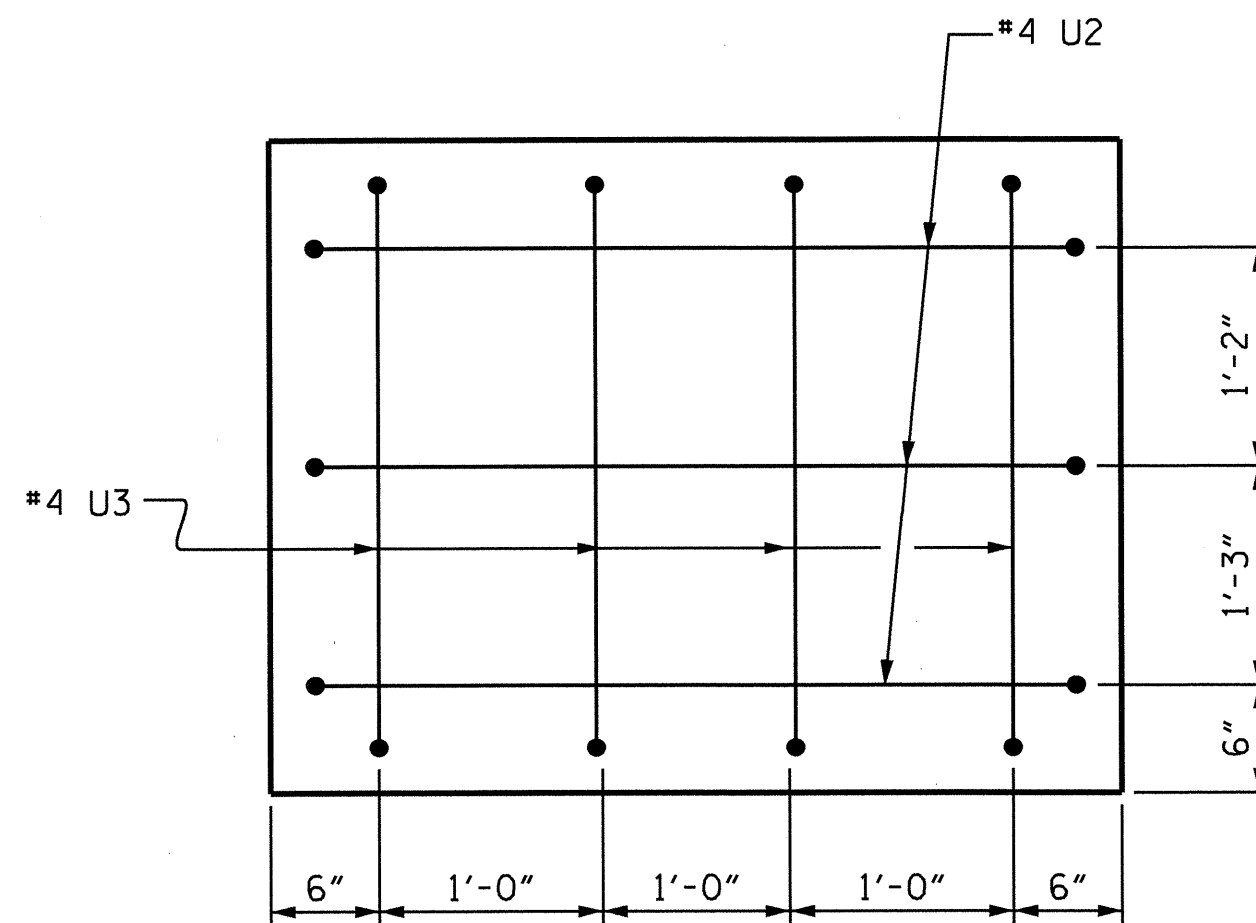
SECTION A-A
* INVERT ALTERNATE STIRRUPS



DETAIL C



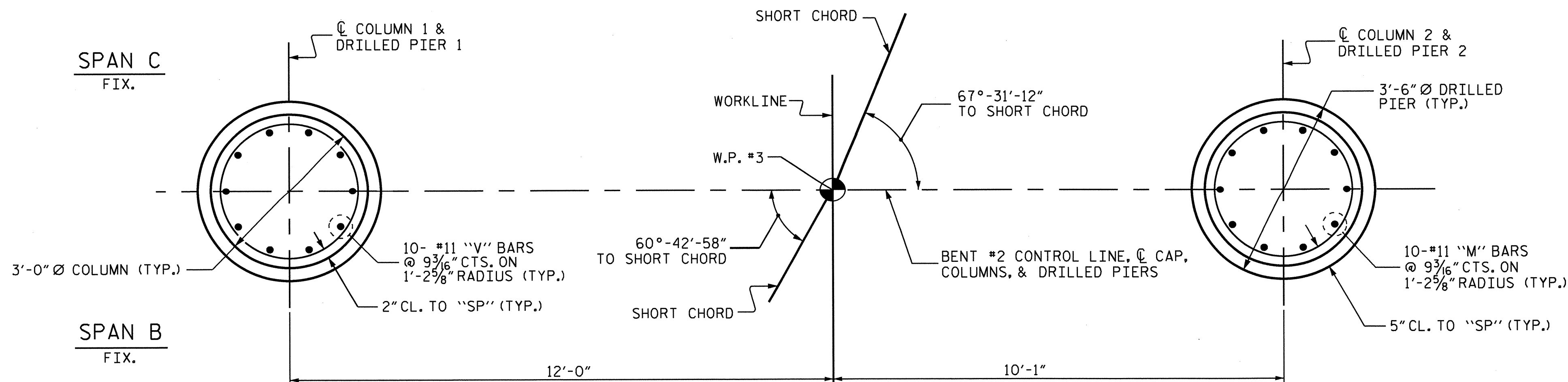
PARTIAL SECTION B-B
* INVERT ALTERNATE STIRRUPS



END VIEW
(TYP. BOTH ENDS)

2" MIN. CONCRETE COVER FROM END OF CAP REQUIRED FOR ALL #4 U2 AND #4 U3 BARS.

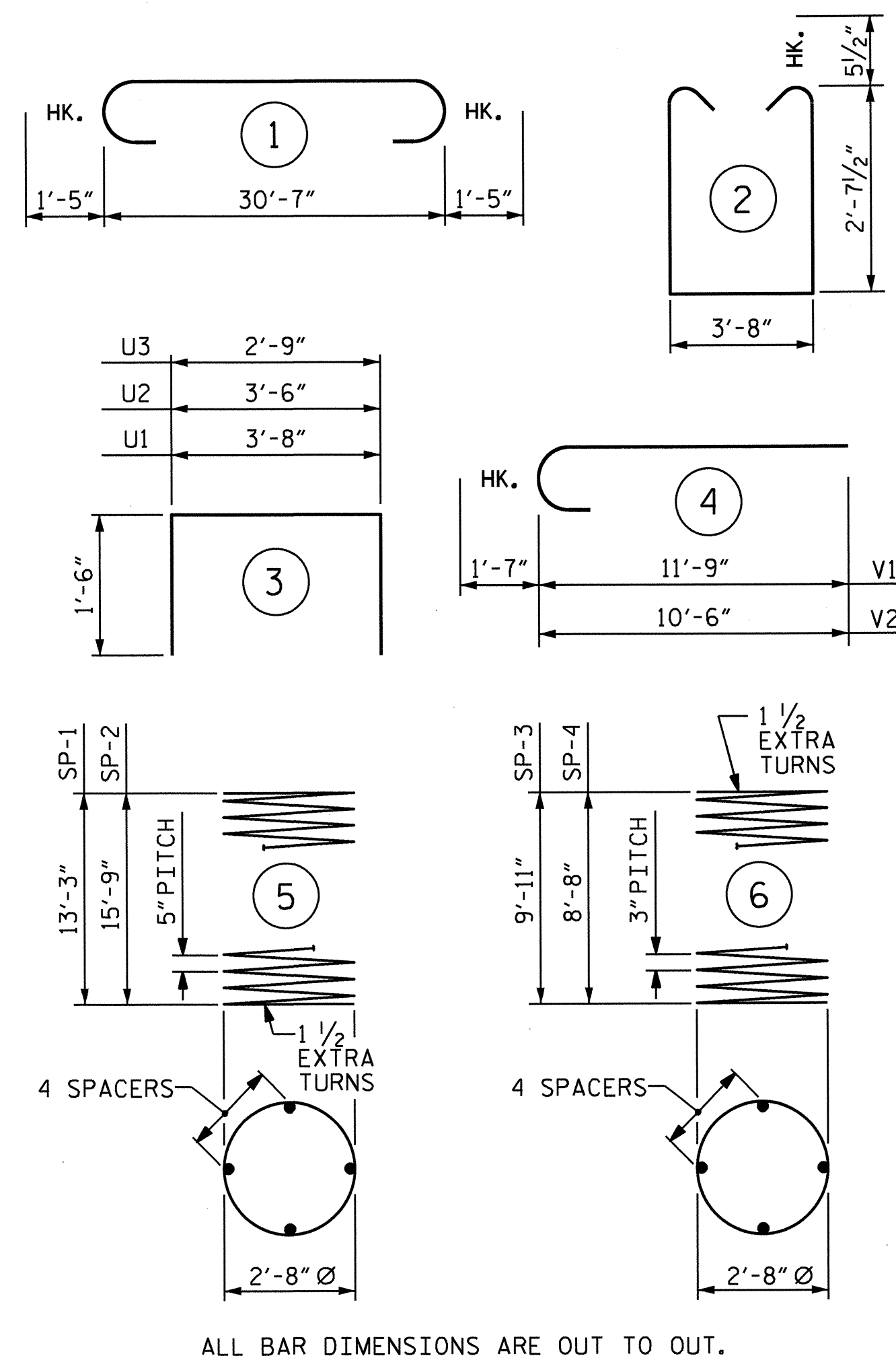
#4 U2 AND #4 U3 BARS MAY BE SHIFTED UP TO 2" TO CLEAR "B" BARS.



PLAN OF DRILLED PIERS & COLUMNS

(DETAILS ARE TYPICAL EACH DRILLED PIER & COLUMN)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	30'-9"	794
B2	6	#10	1	33'-5"	863
B3	4	#5	STR	30'-9"	128
B4	18	#4	STR	5'-4"	64
B5	6	#4	STR	4'-0"	16
M1	10	#11	STR	20'-7"	1094
M2	10	#11	STR	23'-1"	1226
S1	34	#5	2	9'-10"	349
U1	35	#4	3	6'-8"	156
U2	6	#4	3	6'-6"	26
U3	8	#4	3	5'-9"	31
V1	10	#11	4	13'-4"	708
V2	10	#11	4	12'-1"	642
REINFORCING STEEL					LBS. 6097
SP-1	1	*	5	275'-0"	287
SP-2	1	**	5	324'-3"	338
SP-3	1	**	6	339'-8"	227
SP-4	1	**	6	298'-6"	199
SPIRAL COLUMN REINFORCING STEEL					LBS. 1051
CLASS A CONCRETE					
POUR #2 (COLUMNS)				C.Y.	4.7
POUR #3 (CAP)				C.Y.	15.1
TOTAL CLASS A CONCRETE					C.Y. 19.8
DRILLED PIERS:					
DRILLED PIER CONCRETE					
POUR #1				C.Y.	10.7
3'-6" Ø DRILLED PIERS IN SOIL				LIN. FT.	13.0
3'-6" Ø DRILLED PIERS NOT IN SOIL				LIN. FT.	17.0
PERMANENT STEEL CASING				LIN. FT.	17.9
CSL TUBES				LIN. FT.	132

* THE SP-1 & SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

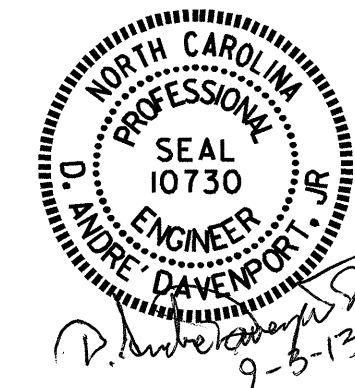
** THE SP-3 & SP-4 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

PROJECT NO. B-4401
ALAMANCE COUNTY
STATION: 16+28.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #2



DRAWN BY: R. P. PATEL DATE: 11-6-12
CHECKED BY: J. G. KHARVA DATE: 11-19-12
DESIGN ENGINEER OF RECORD: R. L. CHESSON DATE: 04/11/13

03-SEP-2013 12:10
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			35

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

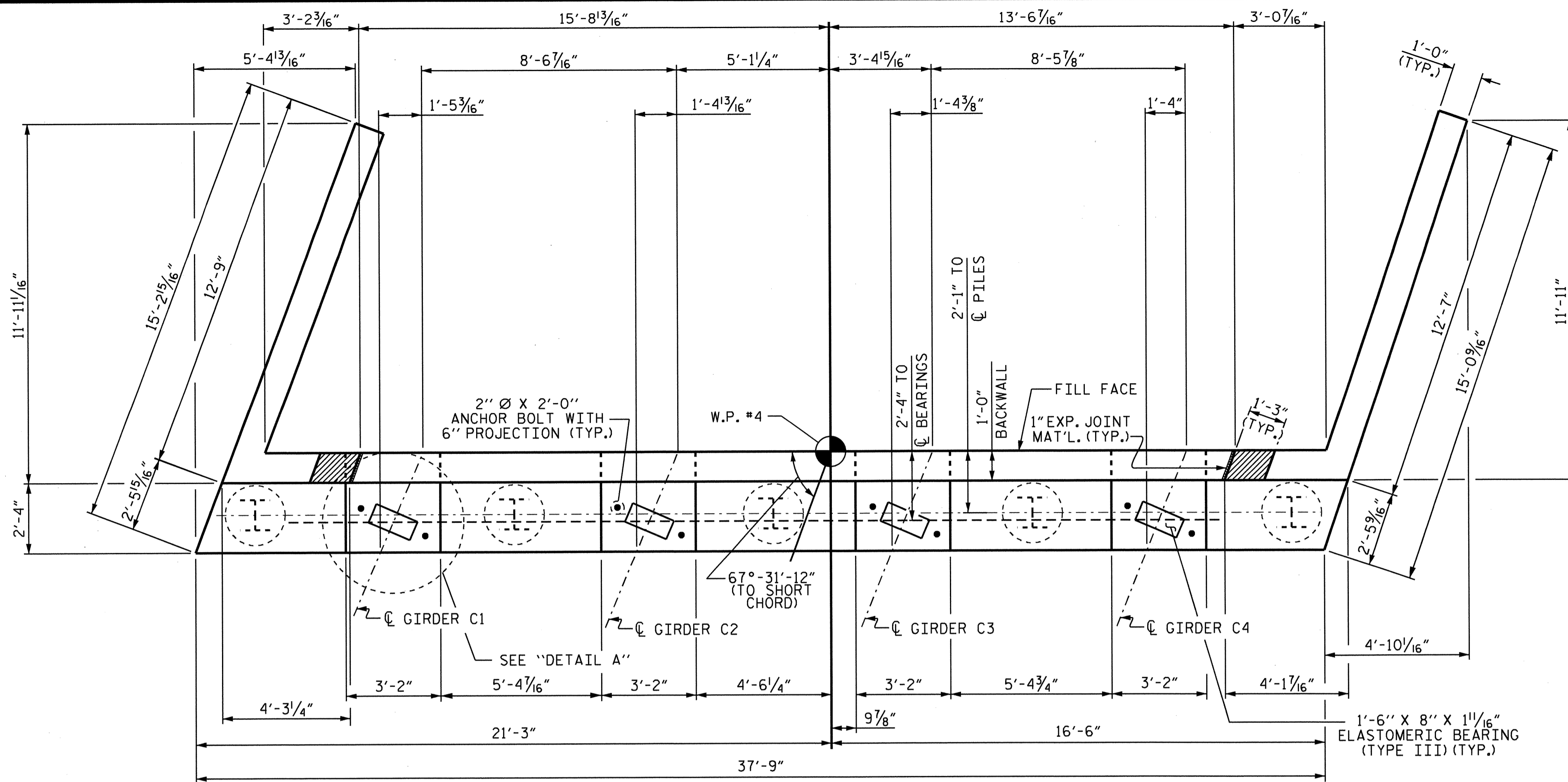
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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%.

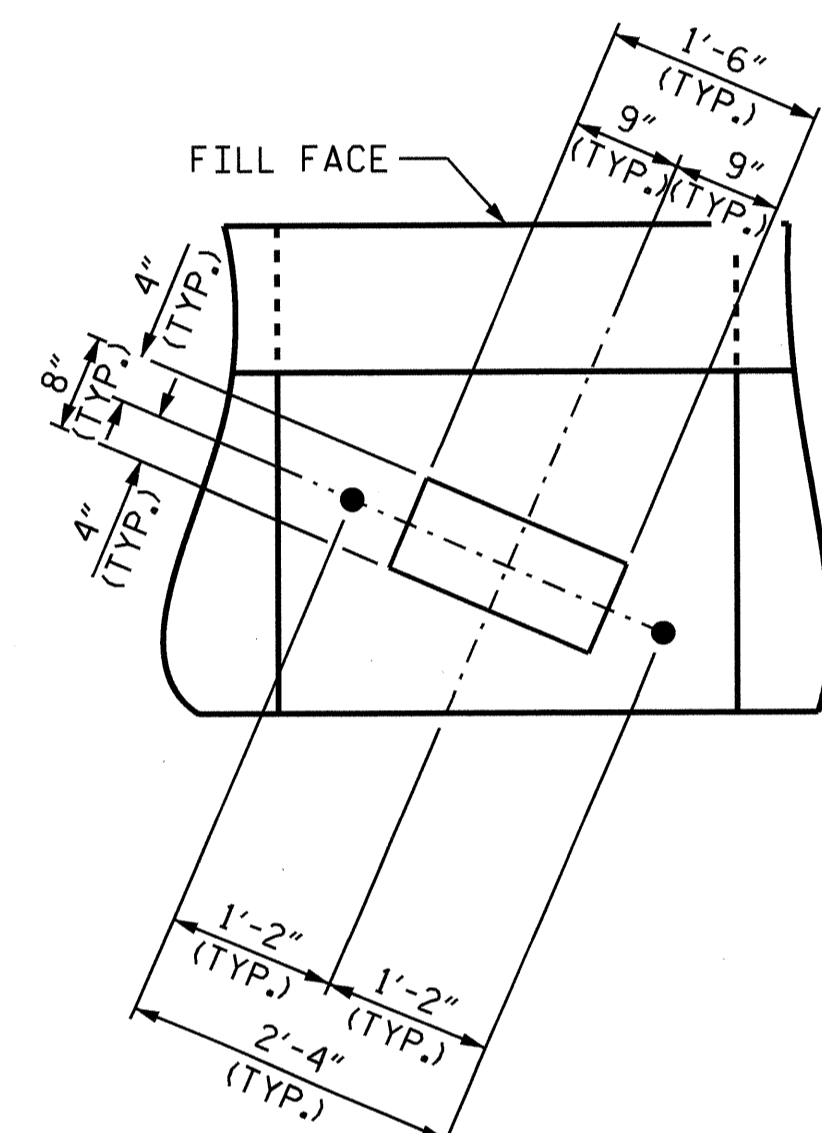
DO NOT DRIVE PILES AFTER PLACING PILES IN EXCAVATED HOLES.

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

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.

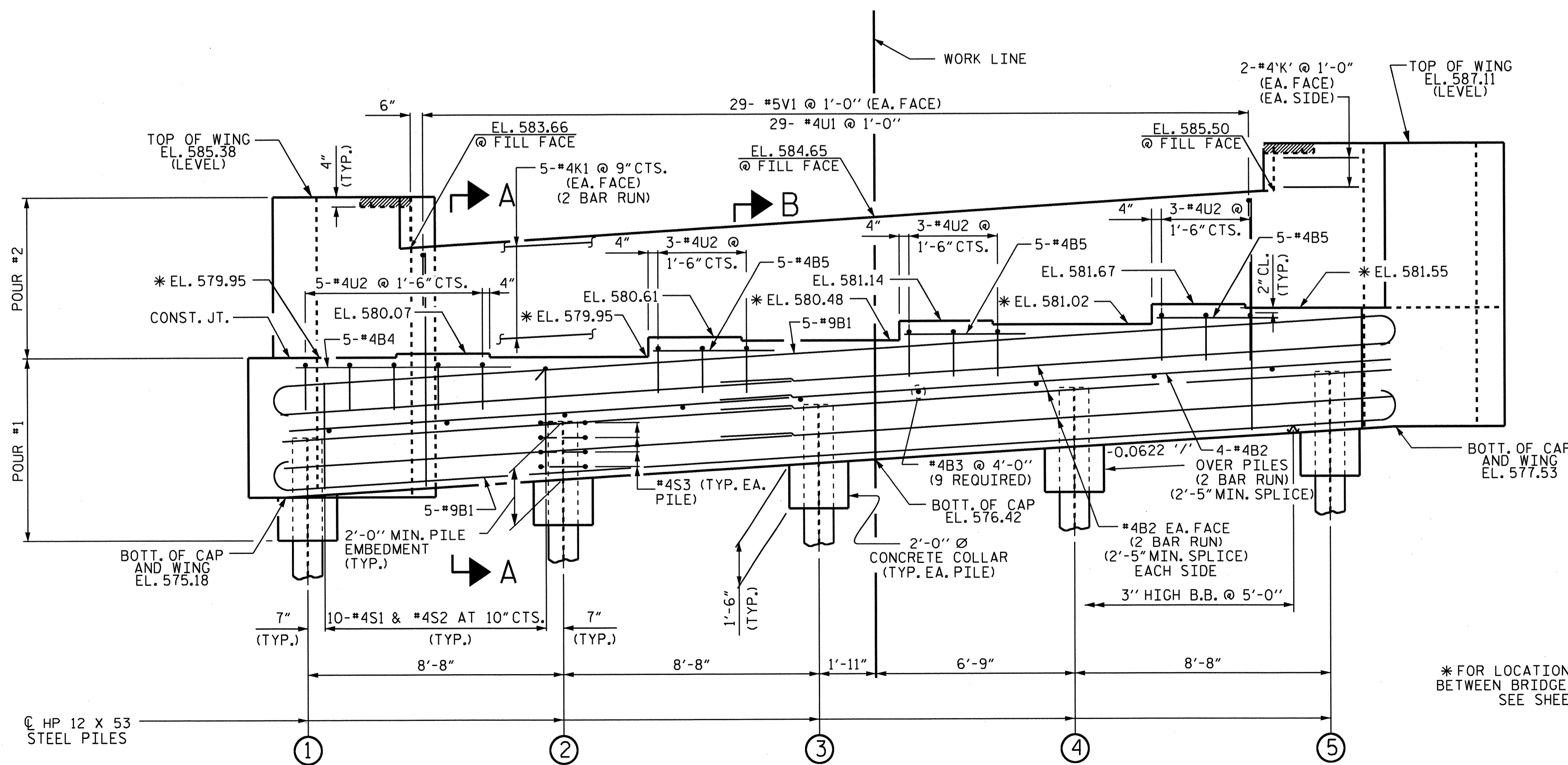


PLAN



DETAIL A

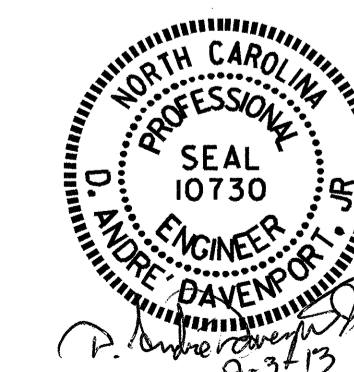
TOP OF PILE ELEVATIONS	
①	577.26
②	577.80
③	578.34
④	578.88
⑤	579.42



ELEVATION

(WING PILE NOT SHOWN FOR CLARITY)

* FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILDUPS SEE SHEET 3 OF 3



PROJECT NO. B-4401
ALAMANCE COUNTY
STATION: 16+28.00 -L-

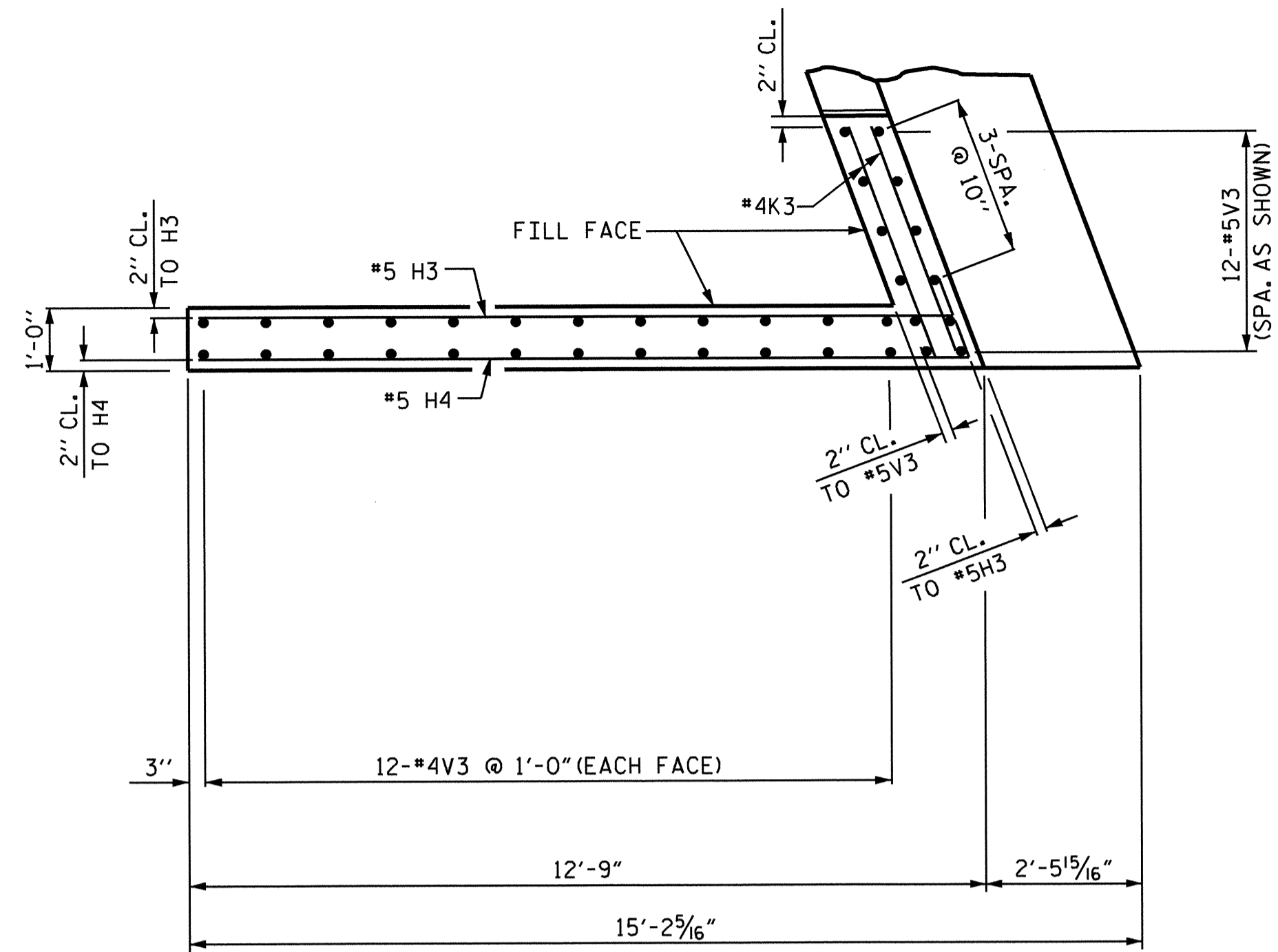
SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

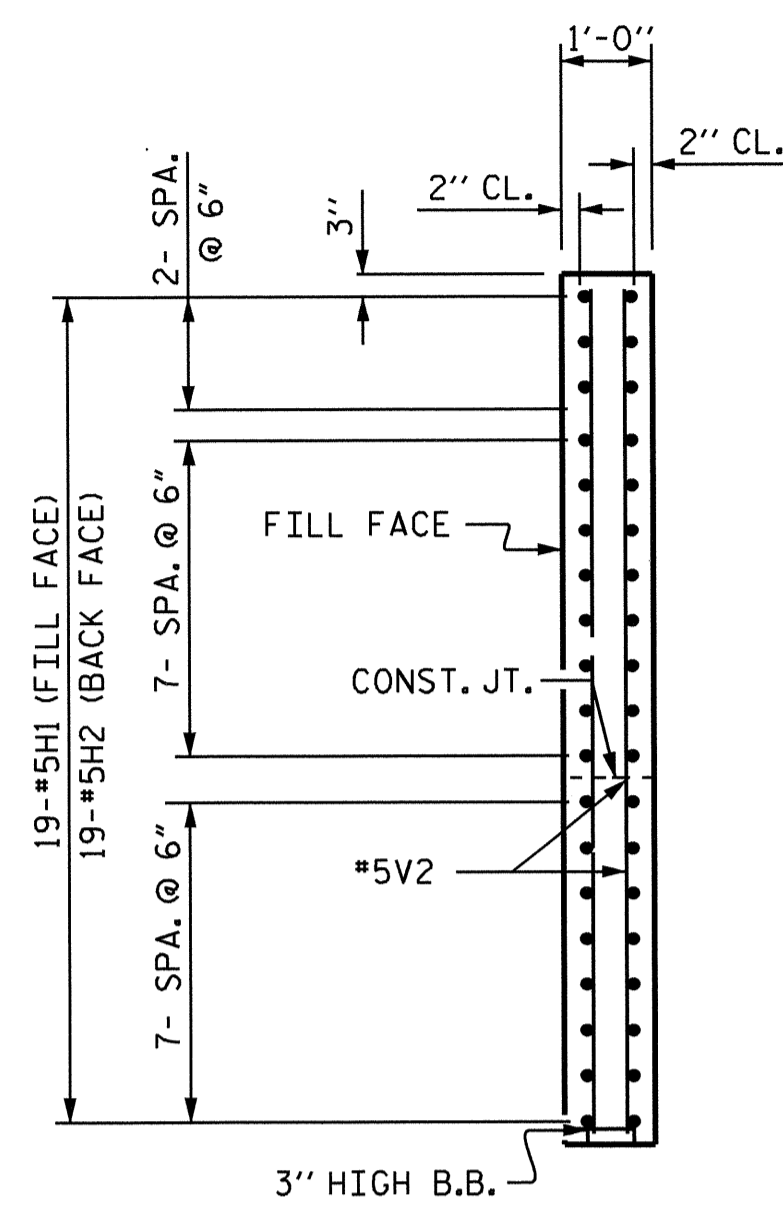
SUBSTRUCTURE
END BENT #2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS 35
2			4			

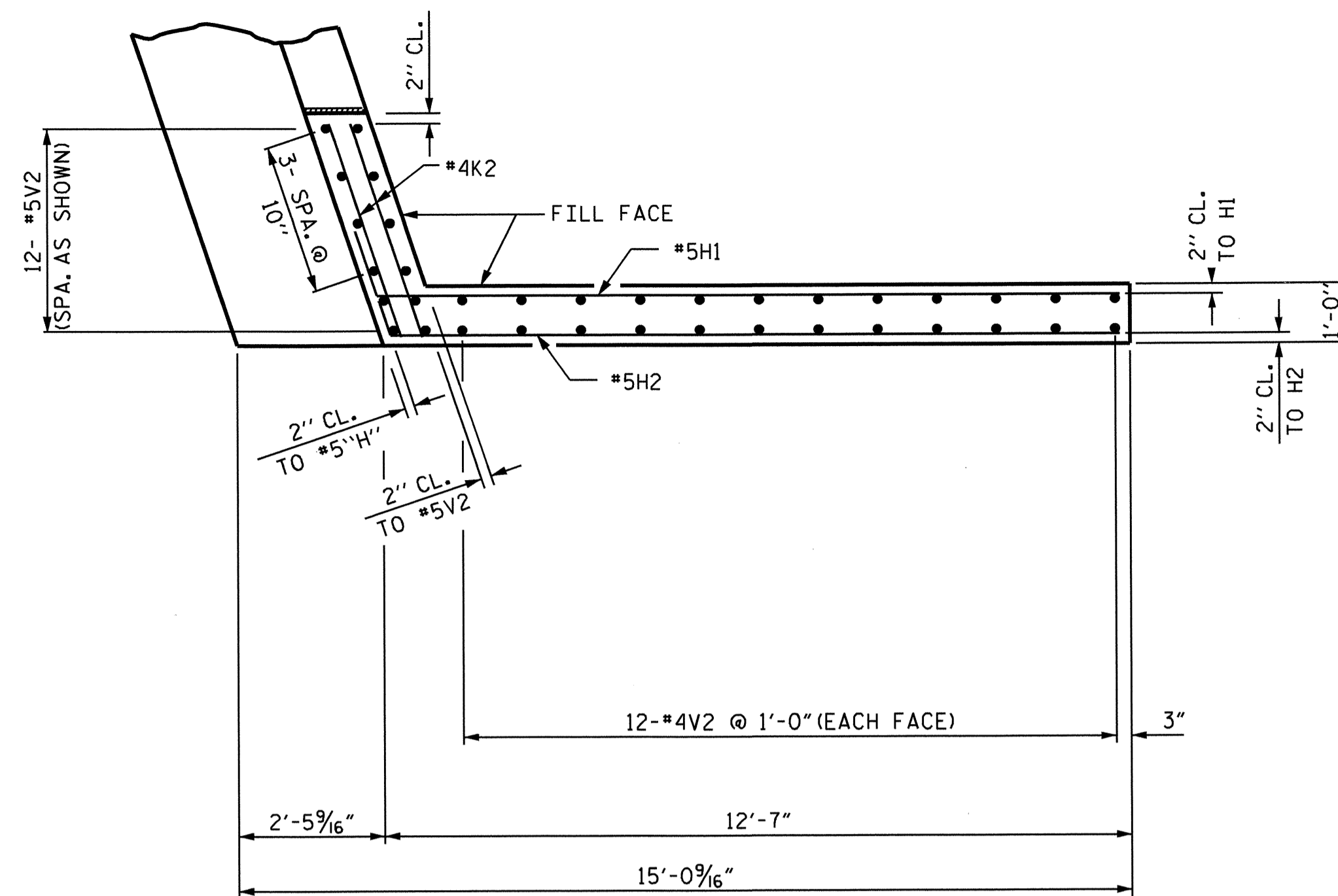
DRAWN BY: D.A. DAVENPORT DATE: 8/07/12
CHECKED BY: R.P. PATEL DATE: 11/30/12
DESIGN ENGINEER OF RECORD: R.L. CHESSON DATE: 04/11/13



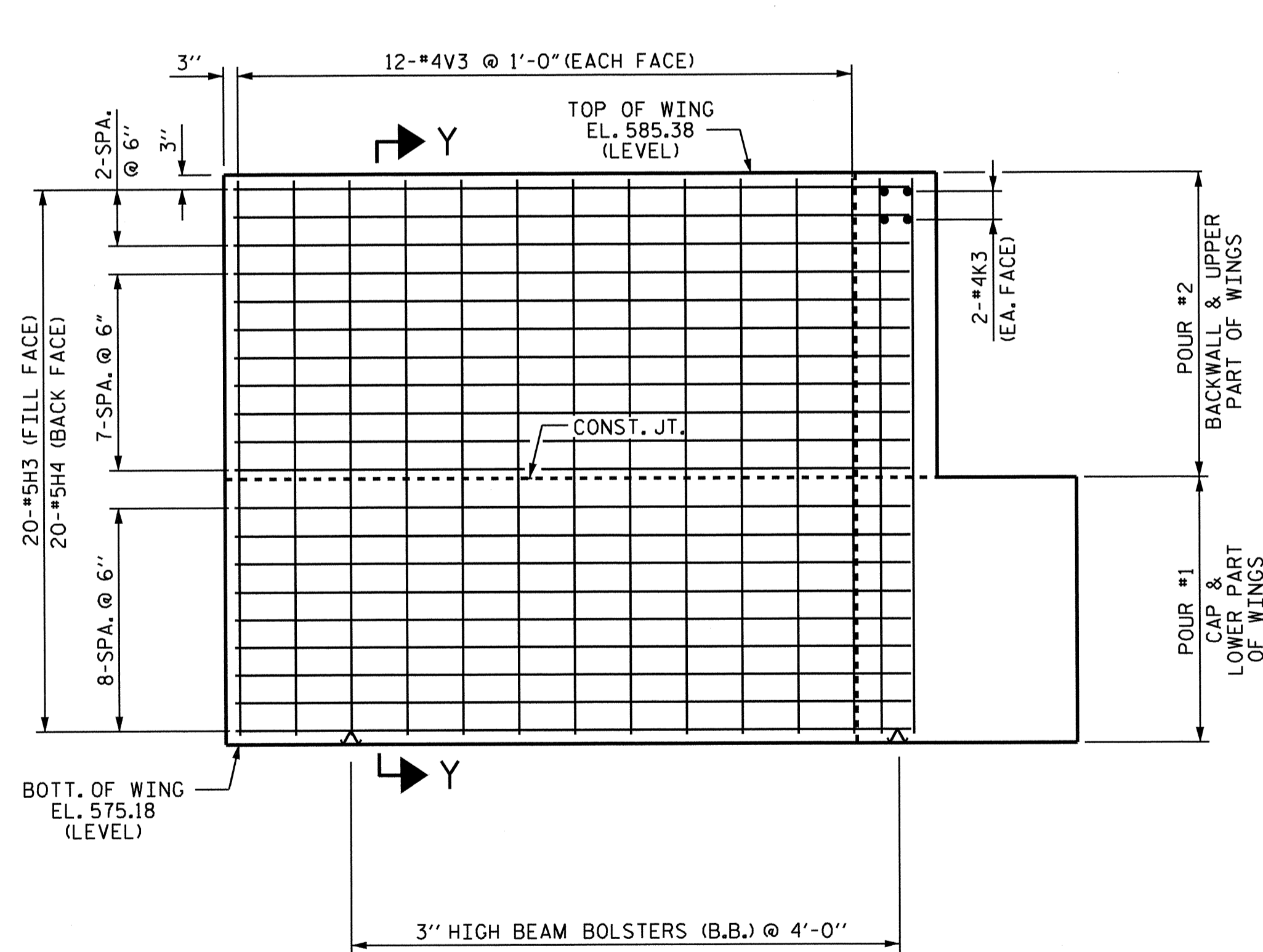
PLAN OF RIGHT WING



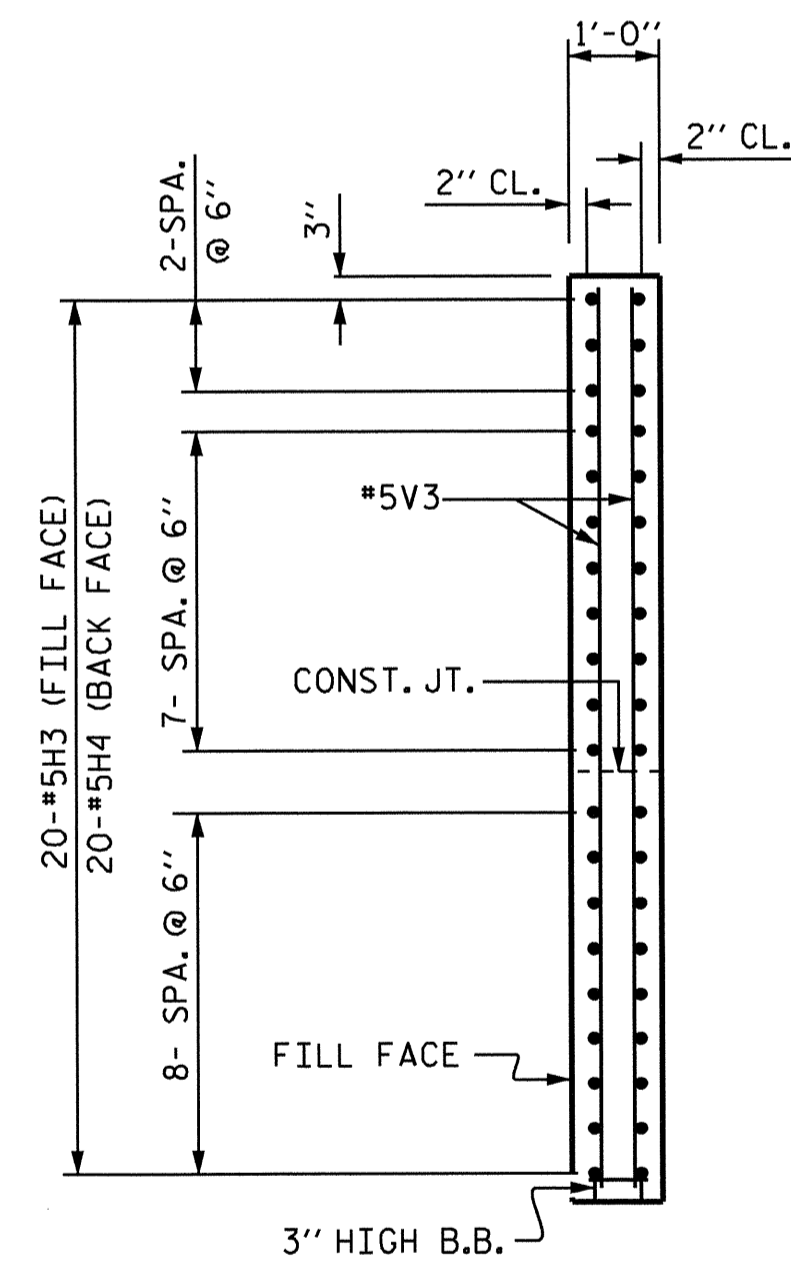
SECTION X-X



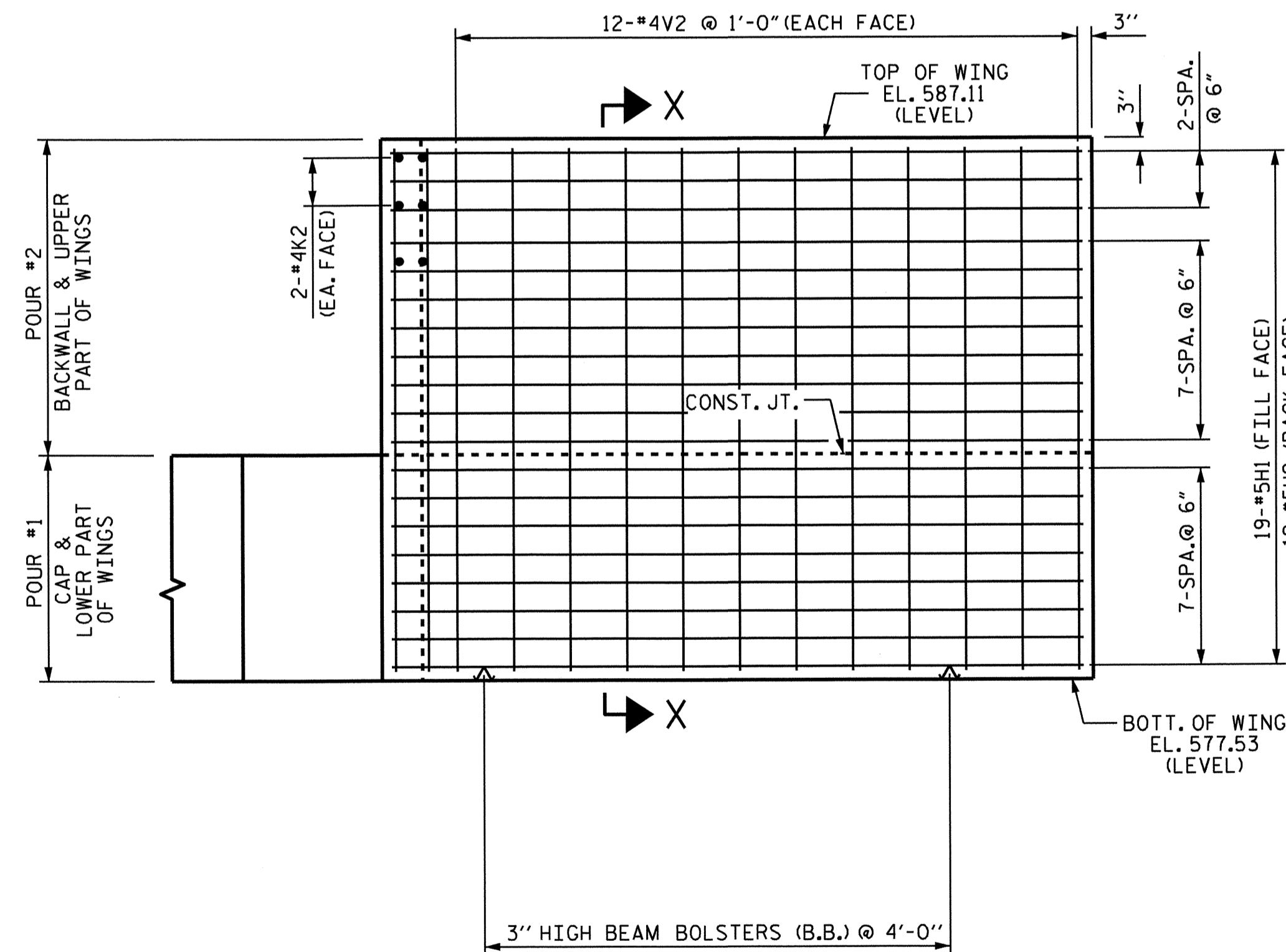
PLAN OF LEFT WING



ELEVATION OF RIGHT WING



SECTION Y-Y



ELEVATION OF LEFT WING

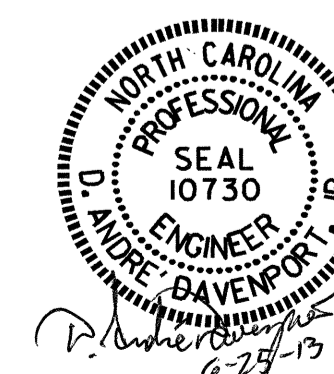
PROJECT NO. B-4401
ALAMANCE COUNTY
 STATION: 16+28.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE

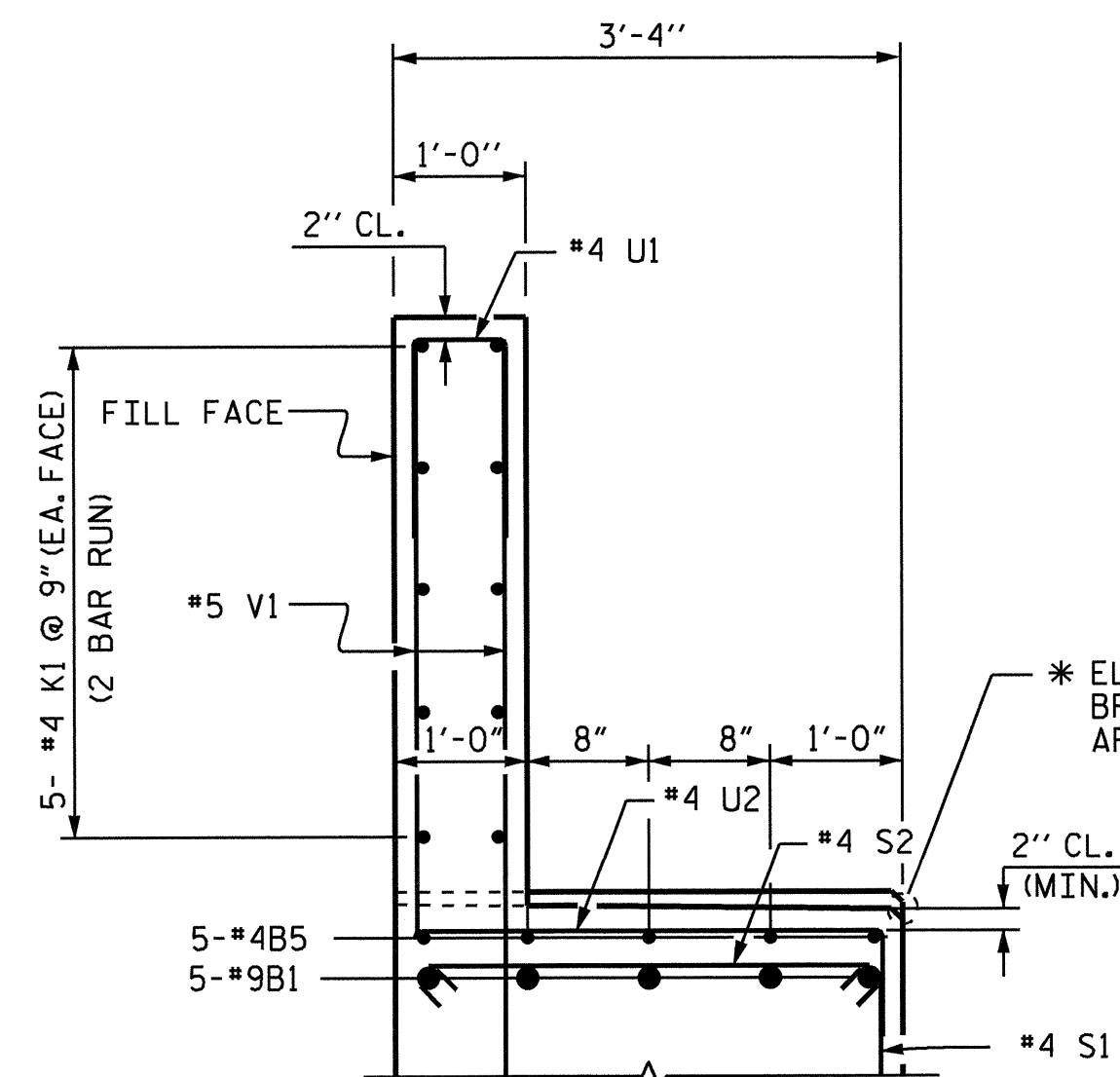
END BENT #2
 WING DETAILS



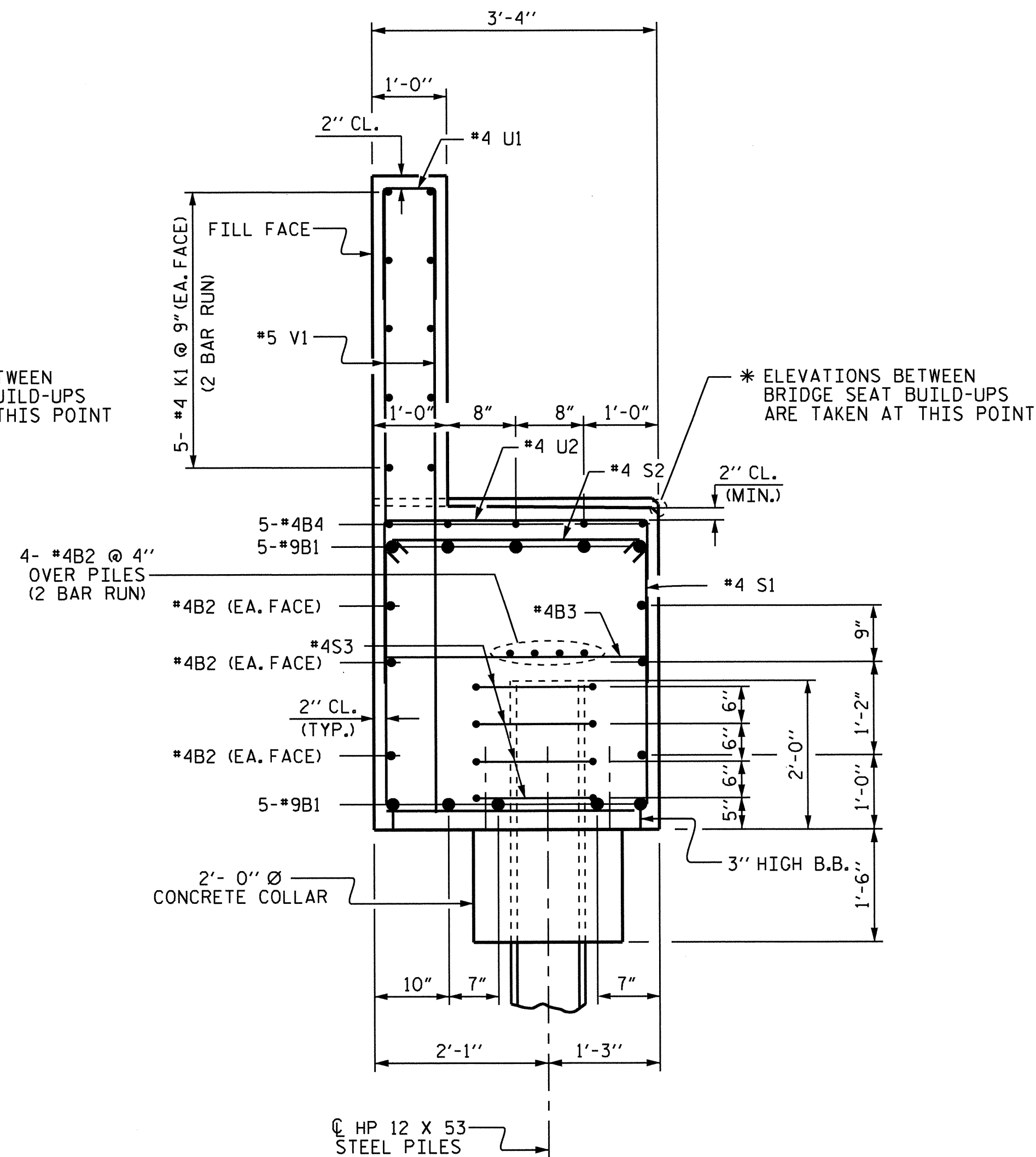
DRAWN BY : D.A. DAVENPORT DATE : 08/08/12
 CHECKED BY : R.P. PATEL DATE : 11/30/12
 DESIGN ENGINEER OF RECORD: ROLAND CHESBON DATE : 04/11/13

24-JUN-2013 09:19
 R:\Structures\Plans\B4401.SD.E*.dgn
 davenport

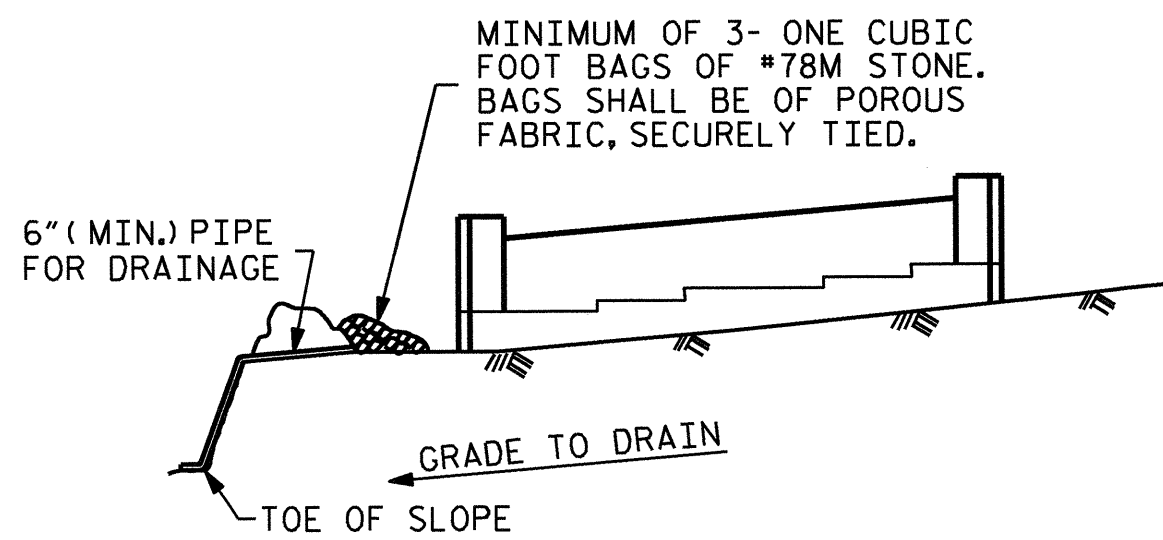
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-31
1			3			TOTAL SHEETS
2			4			35



PARTIAL SECTION B-B



SECTION A-A

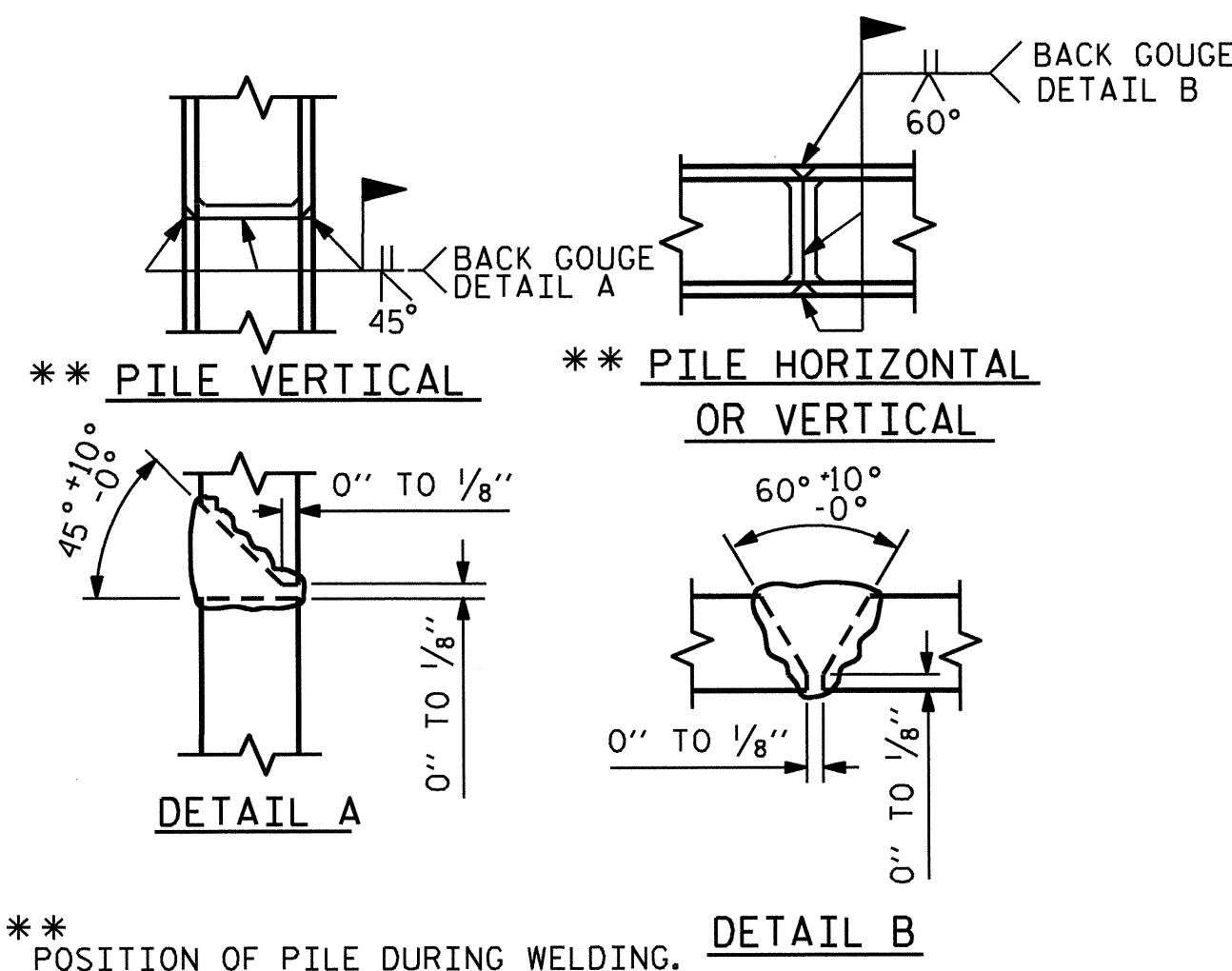


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

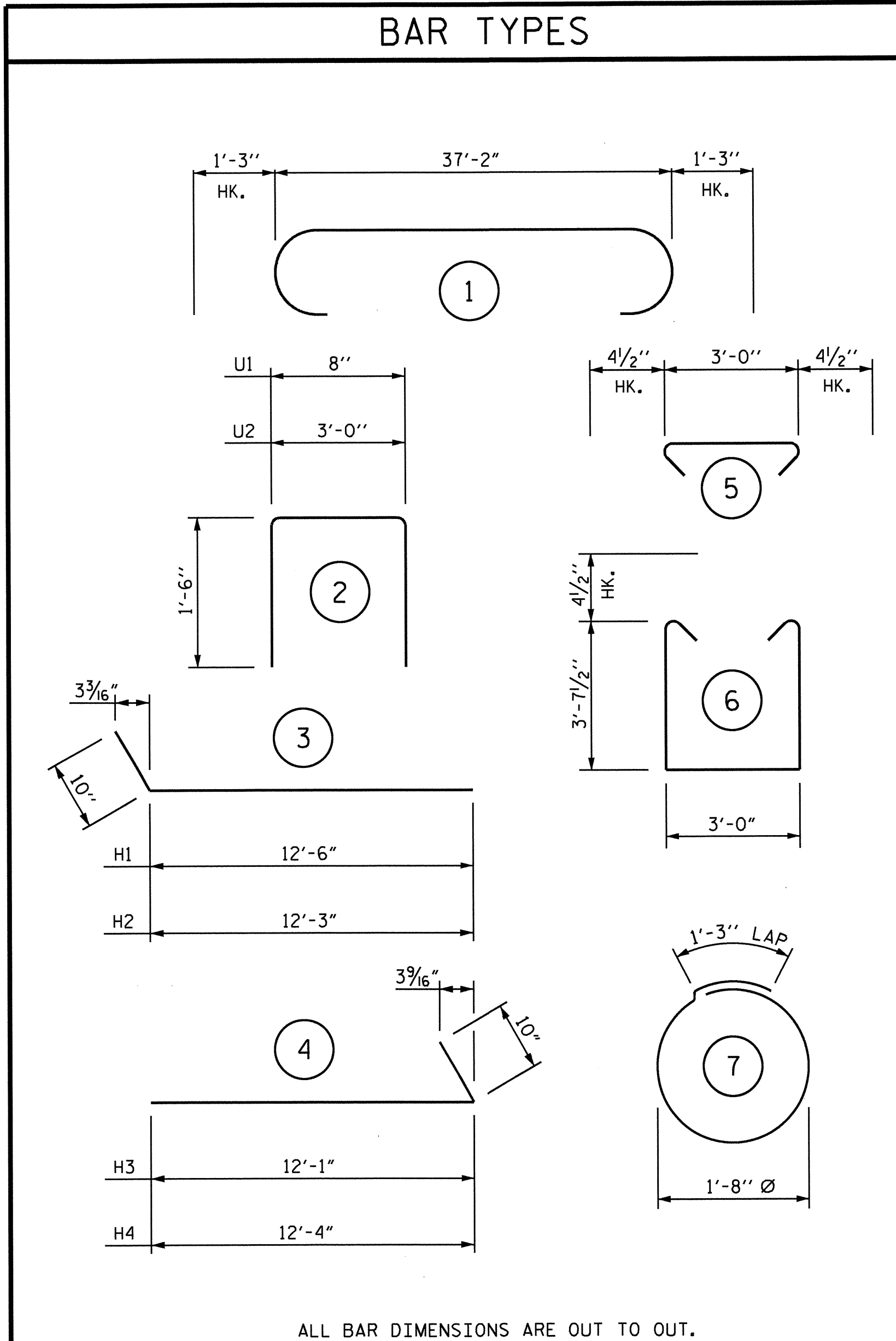
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT #2

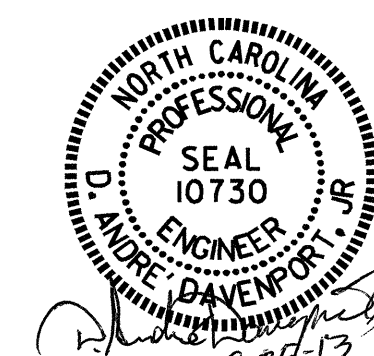
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#9	1	39'-8"	1349
B2	20	#4	STR	19'-11"	266
B3	9	#4	STR	3'-0"	18
B4	5	#4	STR	7'-4"	24
B5	15	#4	STR	3'-4"	33
H1	19	#5	3	13'-4"	264
H2	19	#5	3	13'-1"	259
H3	20	#5	4	12'-11"	269
H4	20	#5	4	13'-2"	275
K1	20	#4	STR	19'-11"	266
K2	4	#4	STR	3'-9"	10
K3	4	#4	STR	3'-10"	10
S1	40	#4	6	11'-0"	294
S2	40	#4	5	3'-9"	100
S3	20	#4	7	6'-6"	87
U1	29	#4	2	3'-8"	71
U2	14	#4	2	6'-6"	61
V1	58	#5	STR	7'-9"	469
V2	36	#4	STR	9'-1"	218
V3	36	#4	STR	9'-9"	234

REINFORCING STEEL	LBS.	4577
CLASS A CONCRETE BREAKDOWN		
POUR #1 (CAP, CONCRETE COLLAR & LOWER PART OF WINGS)		24.9 C.Y.
POUR #2 BACKWALL & UPPER PART OF WINGS		10.7 C.Y.
TOTAL CLASS A CONCRETE		35.6 C.Y.
HP 12 X 53 STEEL PILES		
NO. 5	LIN. FT.	50.0
PILE EXCAVATION IN SOIL	LIN. FT.	35.0
PILE EXCAVATION NOT IN SOIL	LIN. FT.	15.0

PROJECT NO. B-4401
ALAMANCE COUNTY
 STATION: 16+28.00 -L-

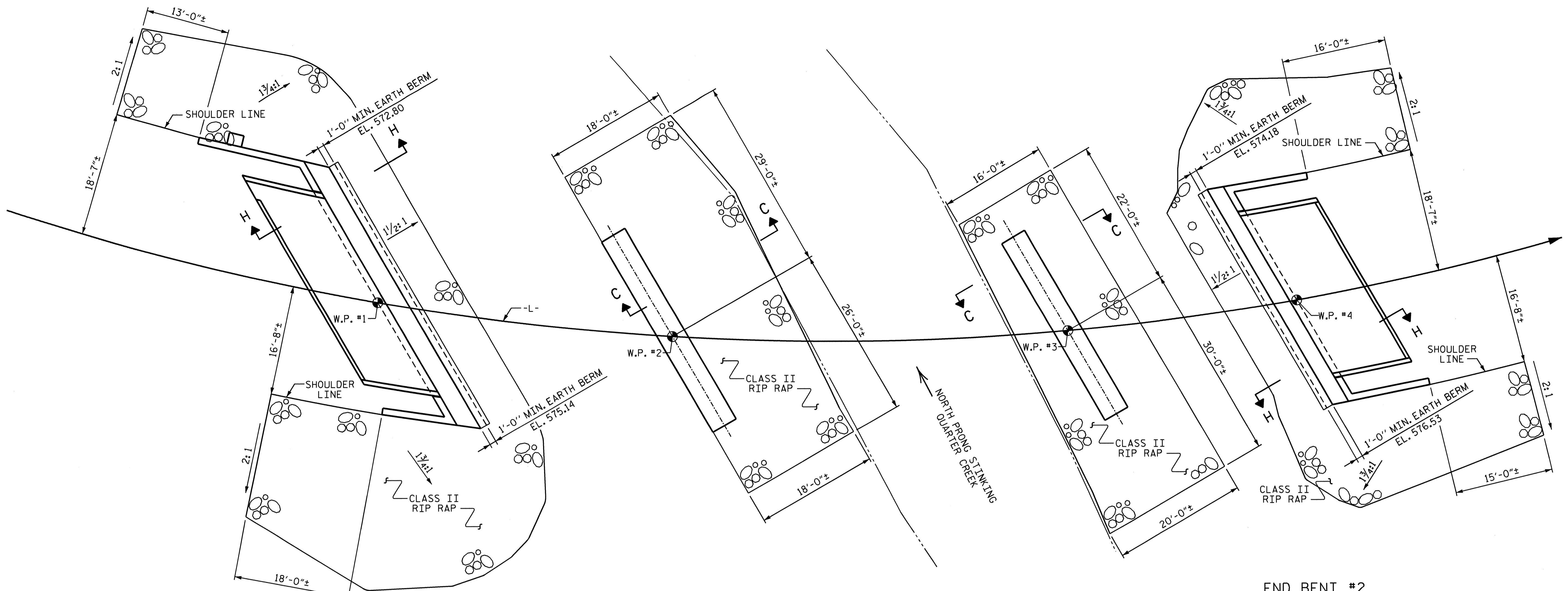
SHEET 3 OF 3

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



DRAWN BY: D.A. DAVENPORT DATE: 08/08/12
 CHECKED BY: R.P. PATEL DATE: 11/30/12
 DESIGN ENGINEER OF RECORD: R.L. CHESSON DATE: 04/11/13

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			35



END BENT #1
(SHOULDER RIP RAP IS HIGHER THAN BERM RIP RAP)

BENT #1

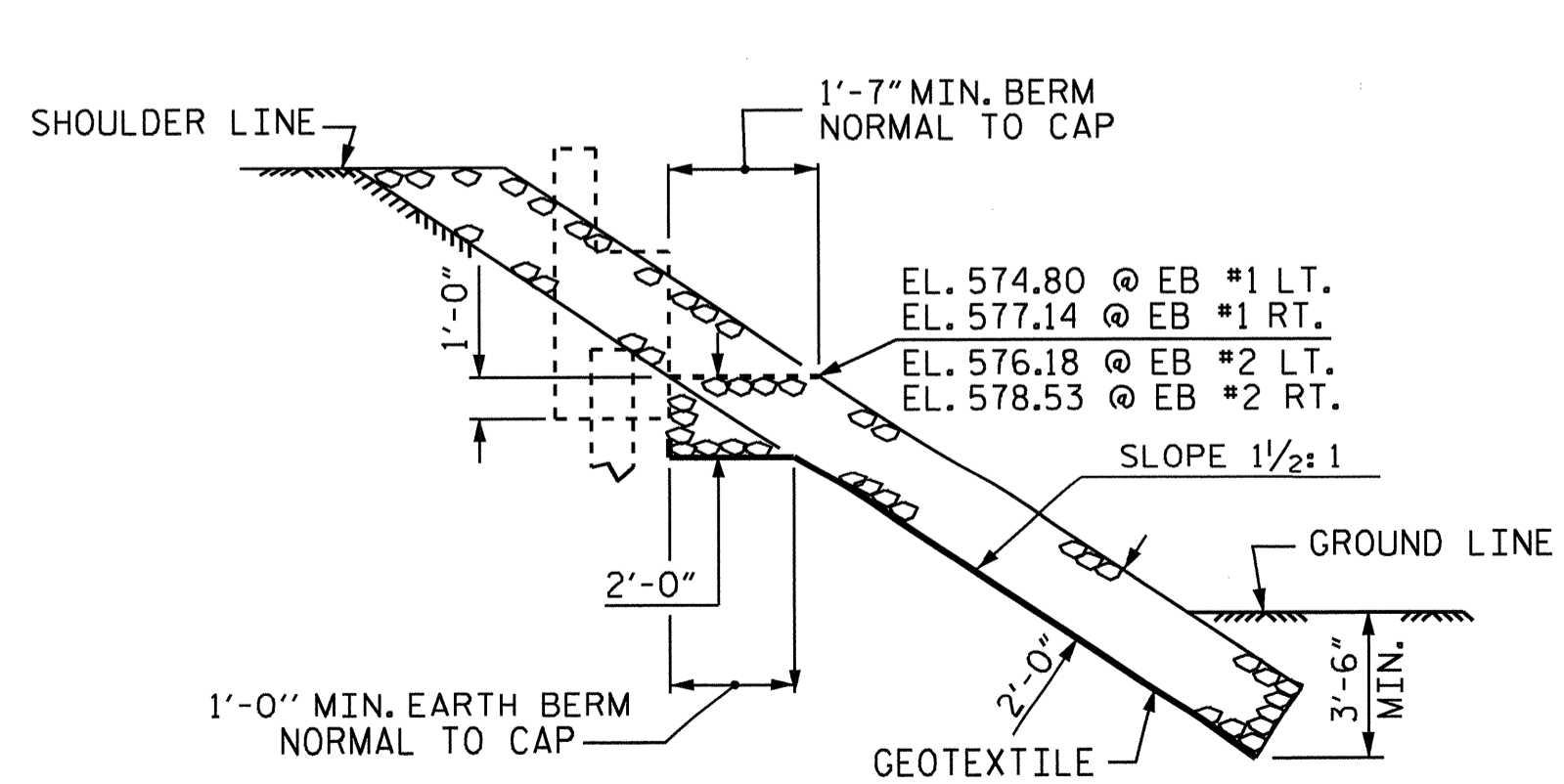
BENT #2

END BENT #2
(SHOULDER RIP RAP IS HIGHER THAN BERM RIP RAP)

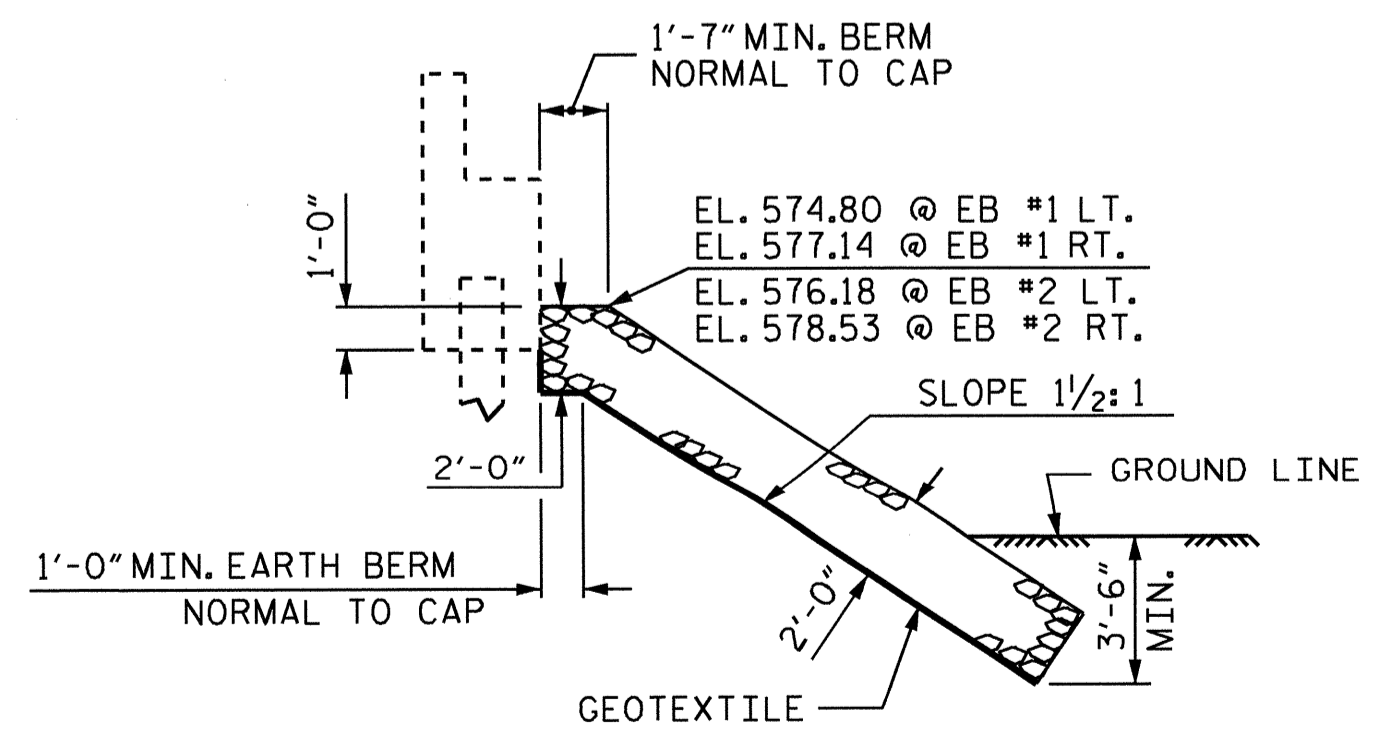
PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+28.00 -L-	RIp RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	225	250
BENT 1	135	145
BENT 2	130	140
END BENT 2	135	150
TOTAL	625	685

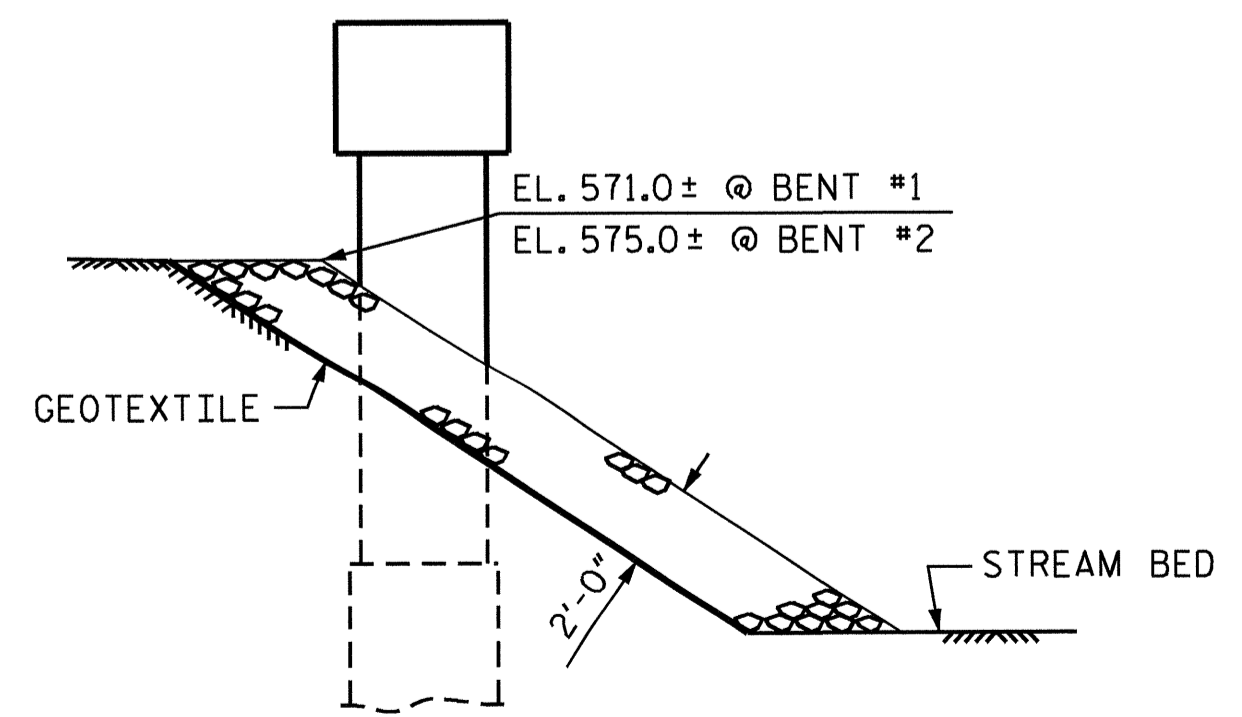
PROJECT NO. B-4401
ALAMANCE COUNTY
 STATION: 16+28.00 -L-



SECTION H-H



SECTION C-C

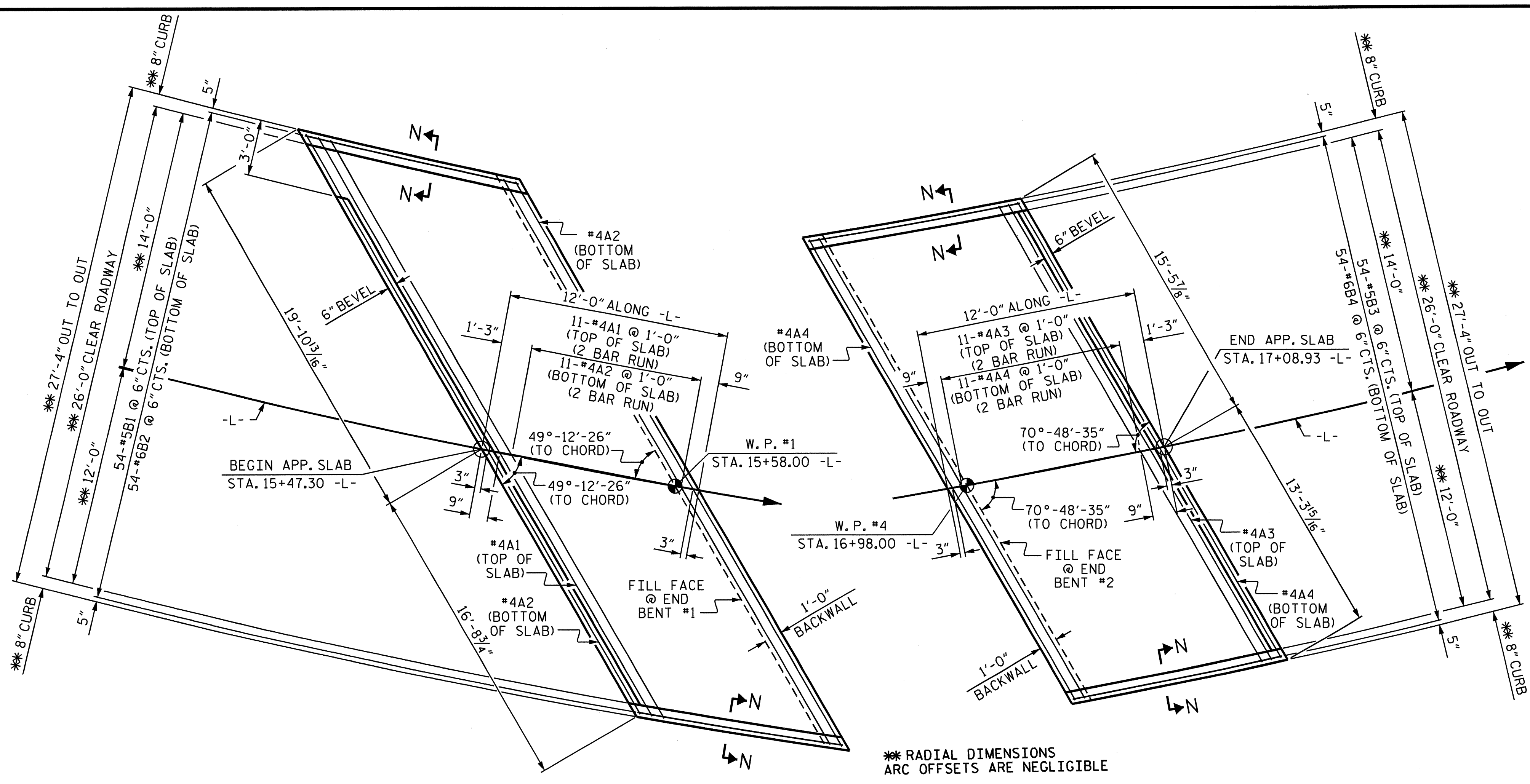


SECTION C-C



ASSEMBLED BY : KEITH D. LAYNE	DATE : 12-07-12
CHECKED BY : R. P. PATEL	DATE : 12-12-12
DESIGN ENGINEER OF RECORD : D. A. D.	DATE : 04/11/13
DRAWN BY : REK 1/84	REV. 5/1/06R TLA/GM
CHECKED BY : RDU 1/84	REV. 10/1/11 MAA/GM
	REV. 12/21/11 MAA/GM

REVISIONS						SHEET NO. S-33
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			



PLAN @ END BENT #1
10'-8 3/8" FILL FACE CHORD LENGTH

PLAN @ END BENT #2
10'-11 1/16" FILL FACE CHORD LENGTH

** RADIAL DIMENSIONS
ARC OFFSETS ARE NEGLIGIBLE

NOTES

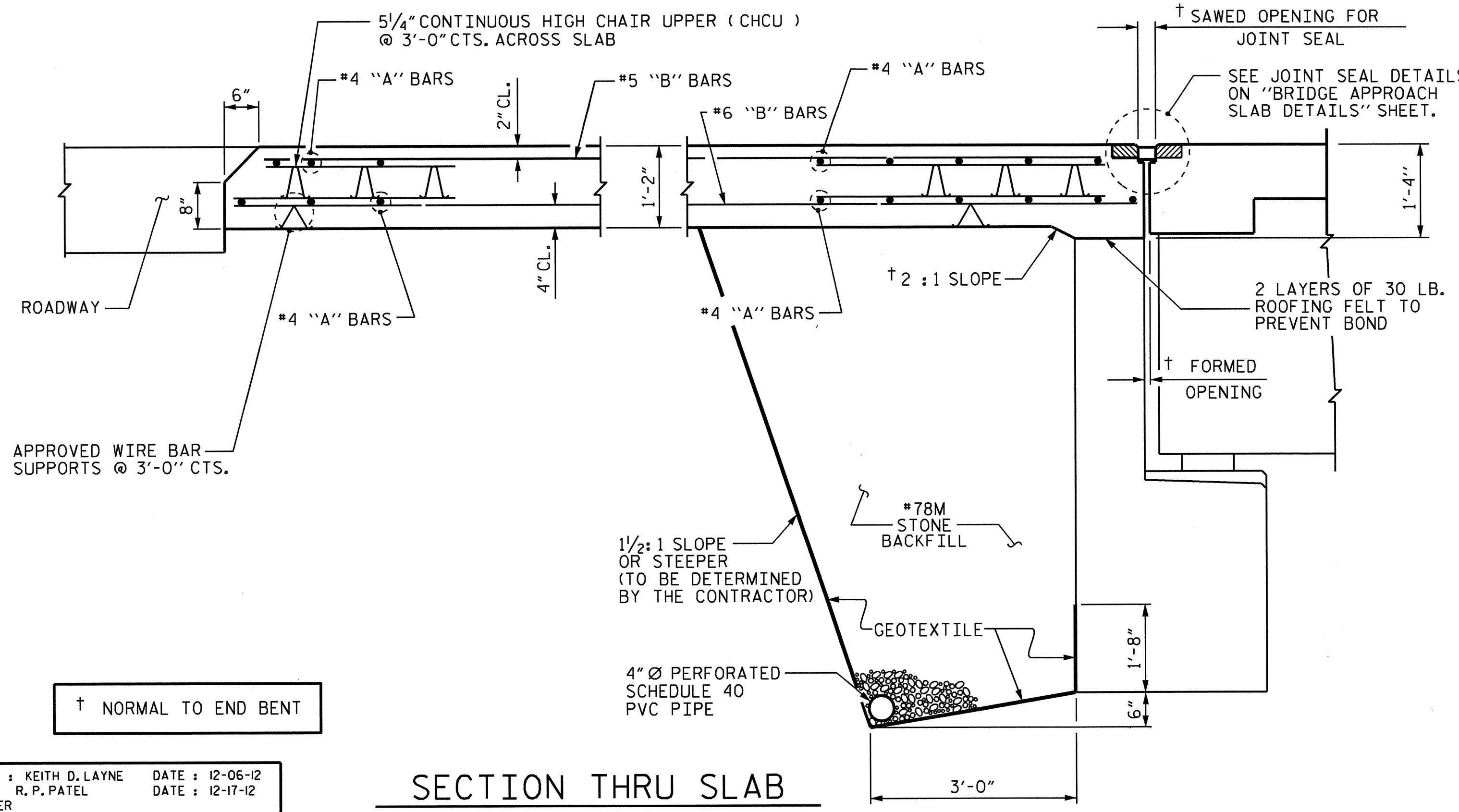
- FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.
- GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.
- #78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.
- #78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.
- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
- AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED, SEE ROADWAY PLANS.
- THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE BARRIER RAIL OR PARAPET AND END POST.
- FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.
- 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

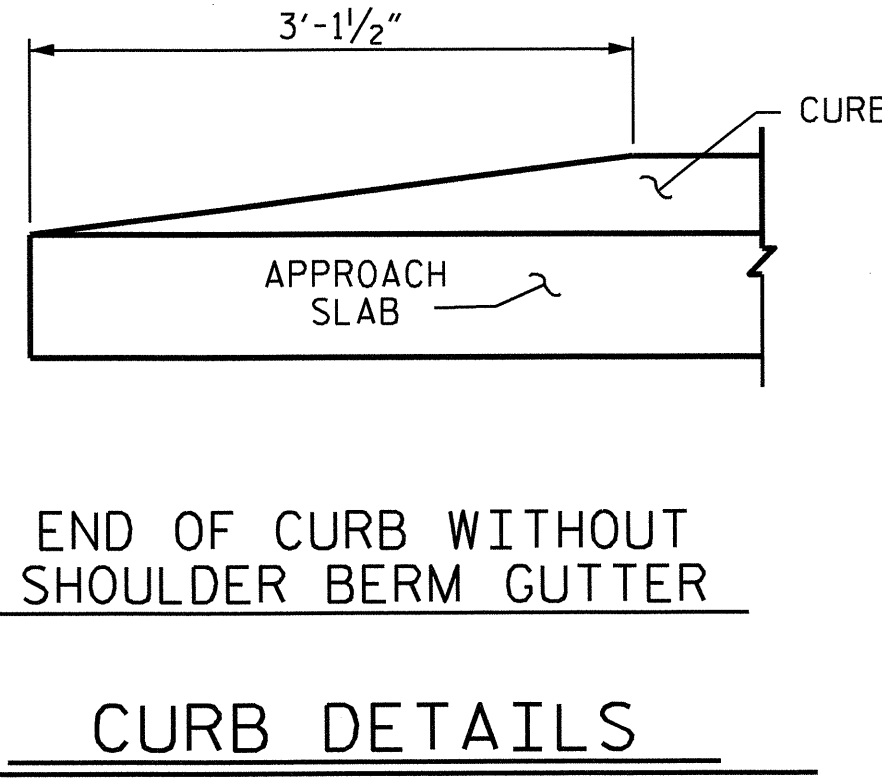
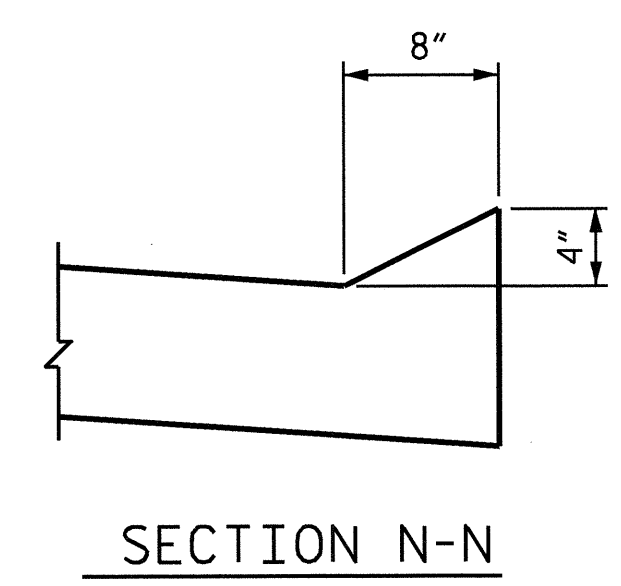
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	24	#4	STR	19'-1"	306
A2	26	#4	STR	19'-0"	330
*B1	54	#5	STR	10'-7"	596
B2	54	#6	STR	11'-3"	912
REINFORCING STEEL				LBS.	1,242
*EPOXY COATED REINFORCING STEEL				LBS.	902
CLASS AA CONCRETE				C. Y.	14.4
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A3	24	#4	STR	15'-5"	247
A4	26	#4	STR	15'-4"	266
*B3	54	#5	STR	11'-0"	620
B4	54	#6	STR	11'-7"	940
REINFORCING STEEL				LBS.	1,206
*EPOXY COATED REINFORCING STEEL				LBS.	867
CLASS AA CONCRETE				C. Y.	14.4

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

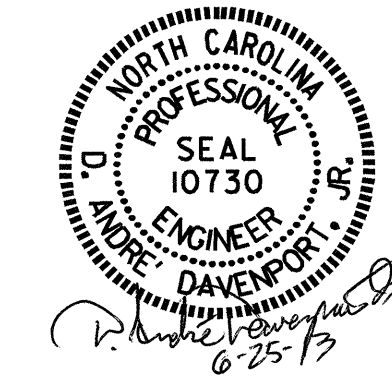


CURB DETAILS

PROJECT NO. B-4401
ALAMANCE COUNTY
STATION: 16+28.00 -L-

SHEET 1 OF 2

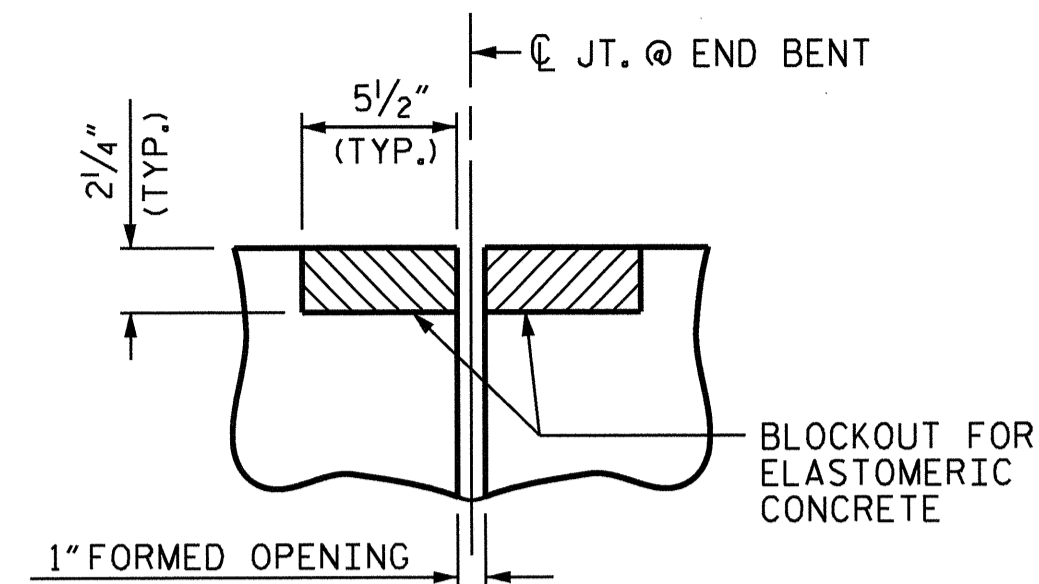
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH SLAB
FOR FLEXIBLE PAVEMENT



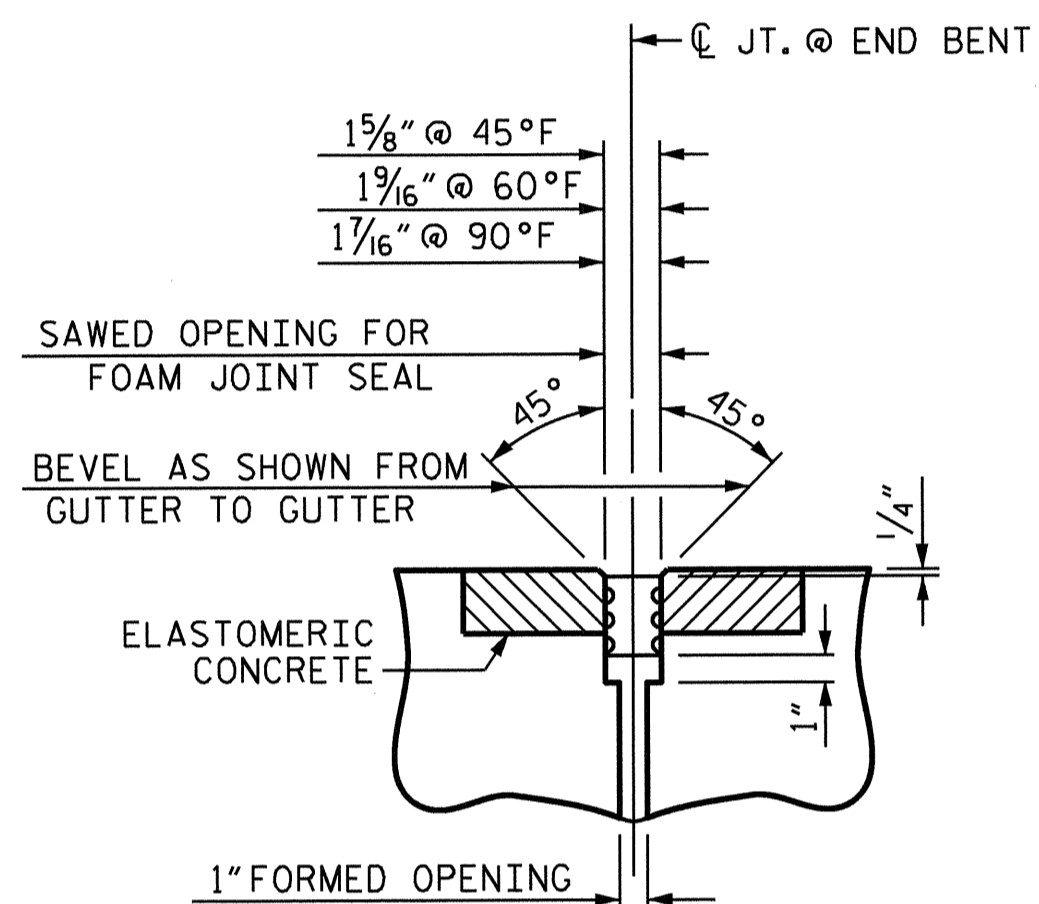
ASSEMBLED BY : KEITH D. LAYNE	DATE : 12-06-12
CHECKED BY : R. P. PATEL	DATE : 12-17-12
DESIGN ENGINEER	
OF RECORD : D. A. DAVENPORT	DATE : 04-11-13
DRAWN BY : EEM 3/95	REV. 5/1/06RR KMM/GM
CHECKED BY : VAP 3/95	REV. 10/1/11 MAA/GM
	REV. 12/21/11 MAA/GM

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

SHEET NO.	S-34
TOTAL SHEETS	35



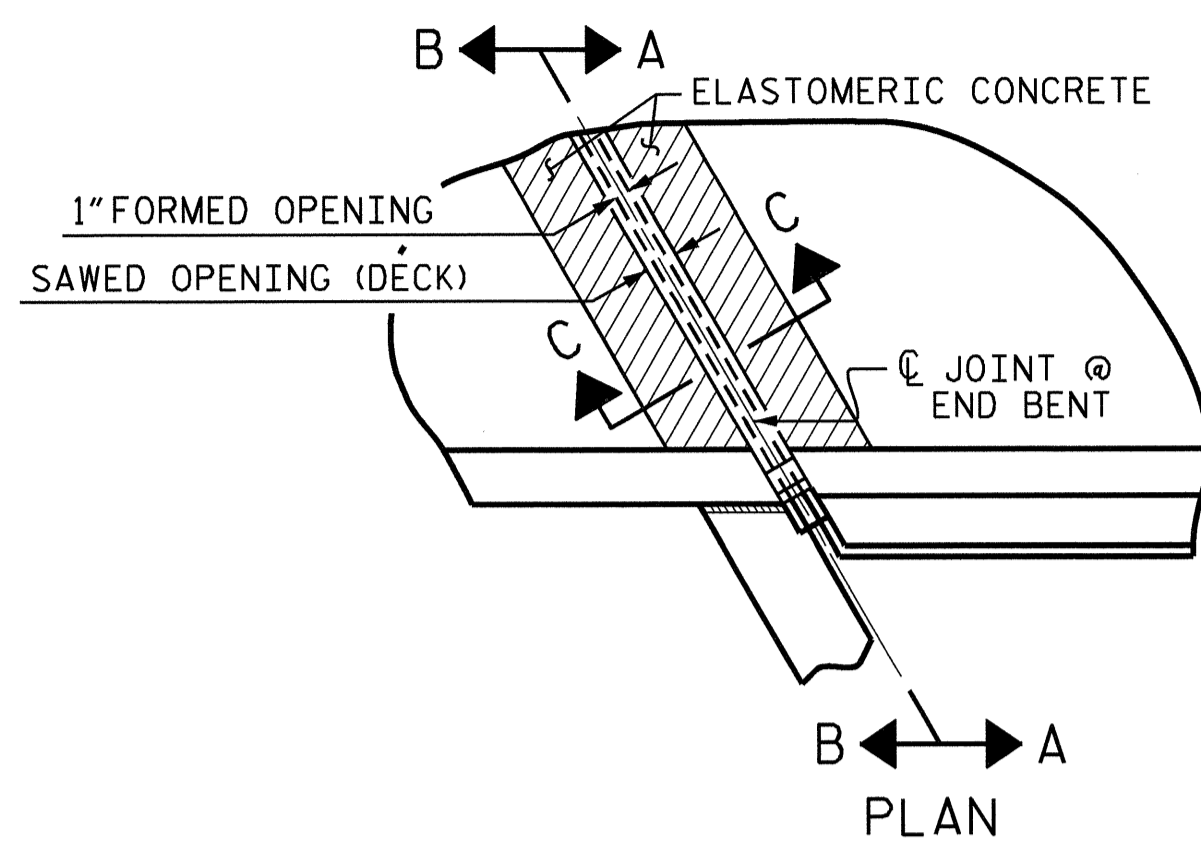
SECTION C-C
FOAM JOINT SEAL
(PRE-SAWED ELASTOMERIC
CONCRETE DIMENSIONS)



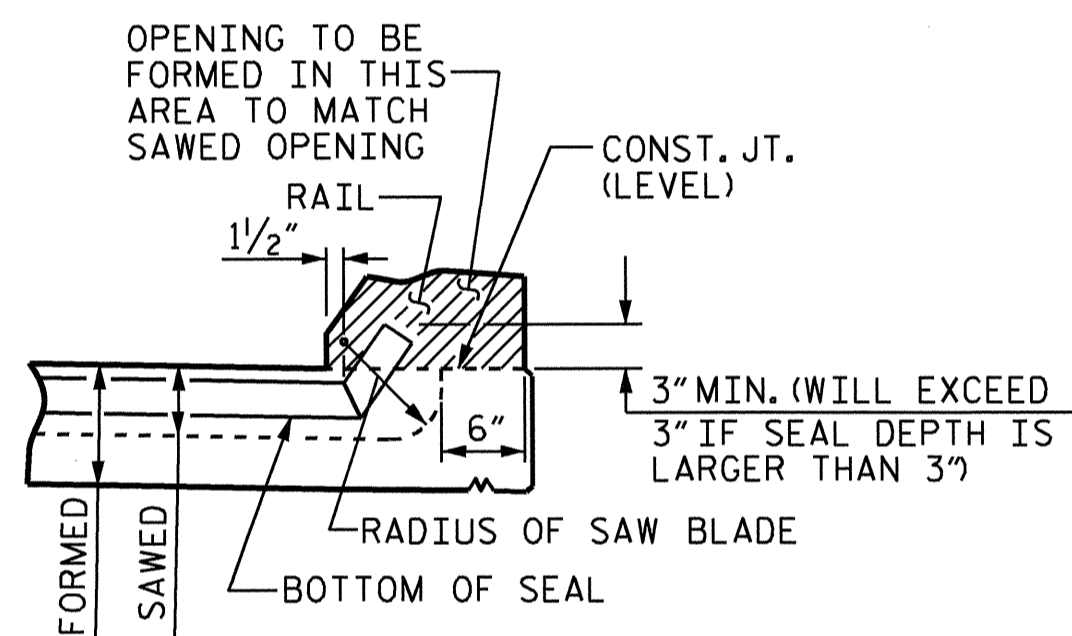
SECTION C-C
FOAM JOINT SEAL
(EXPANSION)

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	5.8
2	4.8
TOTAL	10.6

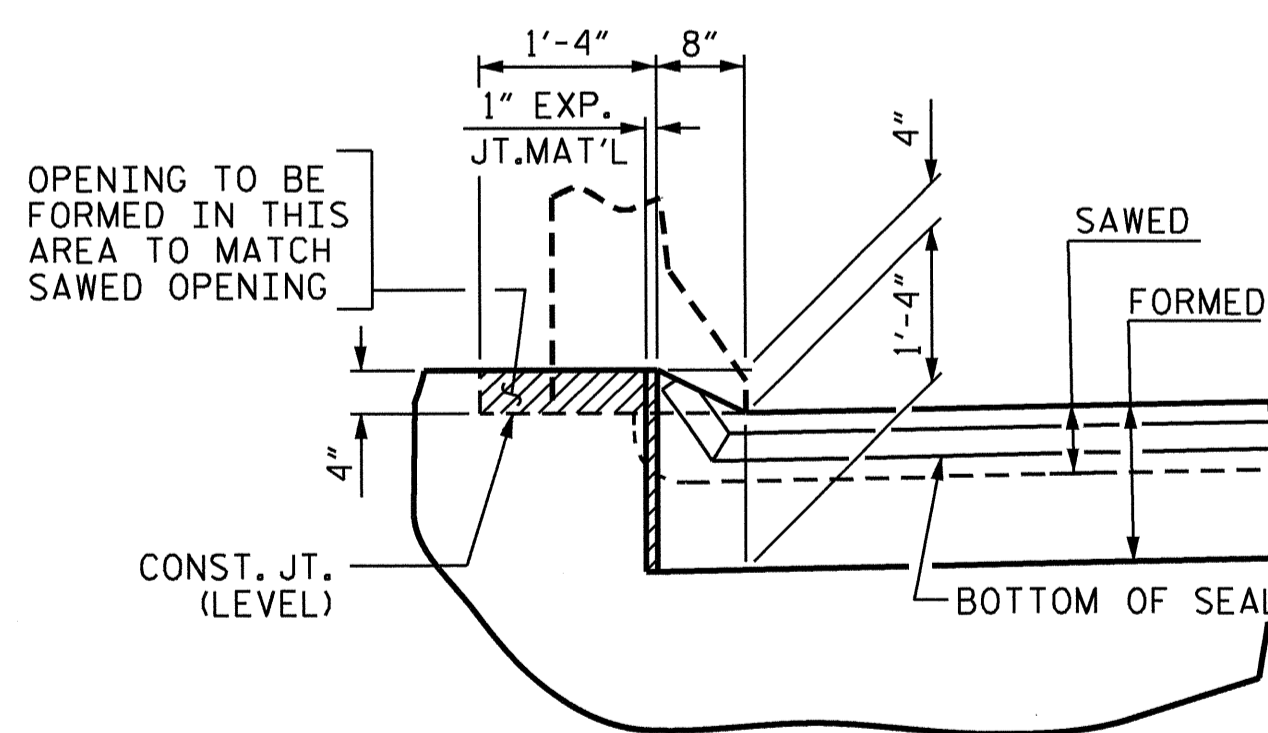
* BASED ON THE MINIMUM BLOCKOUT SHOWN.



PLAN



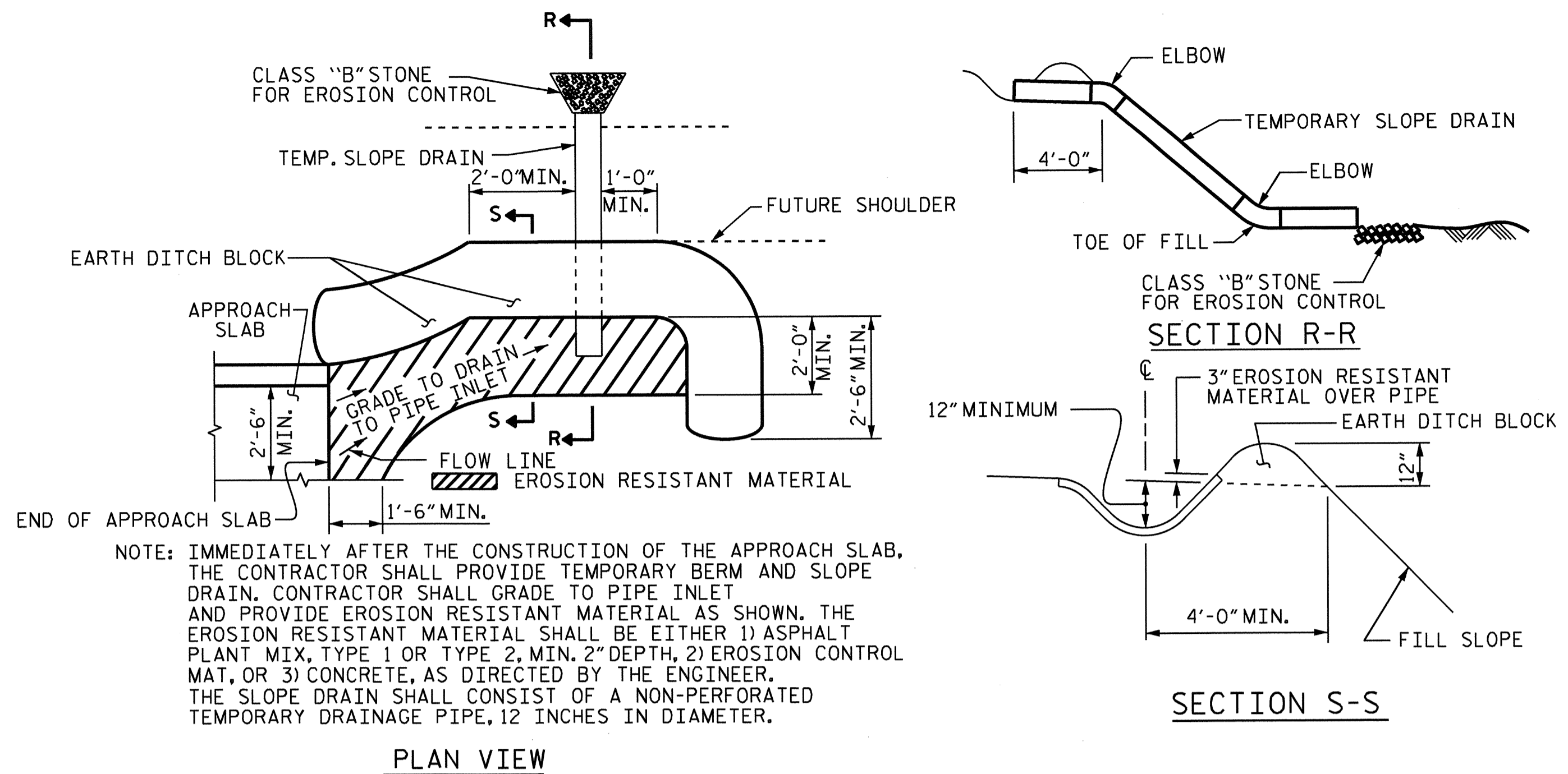
SECTION A-A



SECTION B-B

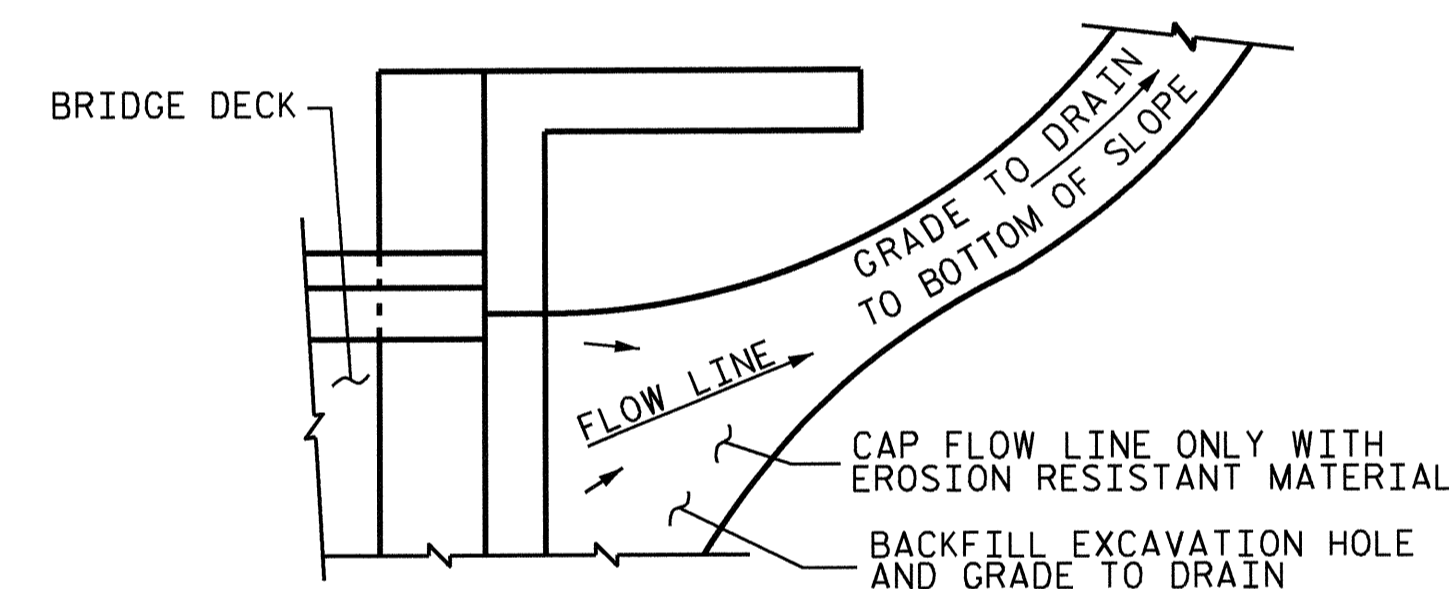
JOINT SEAL DETAILS @ END BENT

FOAM JOINT SEAL TO BE CUT, HEAT WELDED AND TURNED UP PARALLEL TO SLOPED FACE OF THE BARRIER RAIL.
THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE BARRIER RAIL.



TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



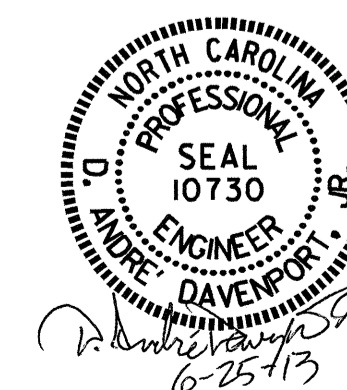
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. B-4401
ALAMANCE COUNTY
STATION: 16+28.00 -L-

SHEET 2 OF 2

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



ASSEMBLED BY : KEITH D. LAYNE DATE : 12-06-12
CHECKED BY : R. P. PATEL DATE : 12-17-12
DESIGN ENGINEER
OF RECORD : D. A. DAVENPORT DATE : 04-11-13
DRAWN BY : FCJ 11/88 REV. 10/11/11 MAA/GM
CHECKED BY : ARB 11/88 REV. 7/12 MAA/GM
REV. 10/12 MAA/GM

REVISIONS						SHEET NO. S-35
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

STD. NO. BAS4

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

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