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TIP PROJECT: B-5548

CONTRACT: C203828

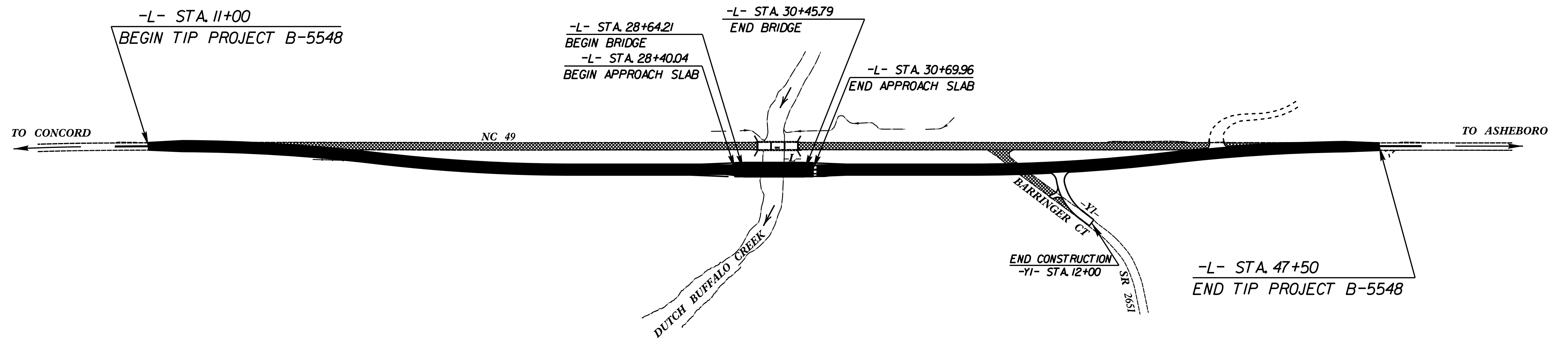
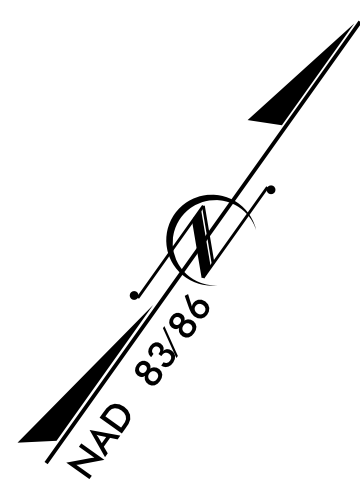
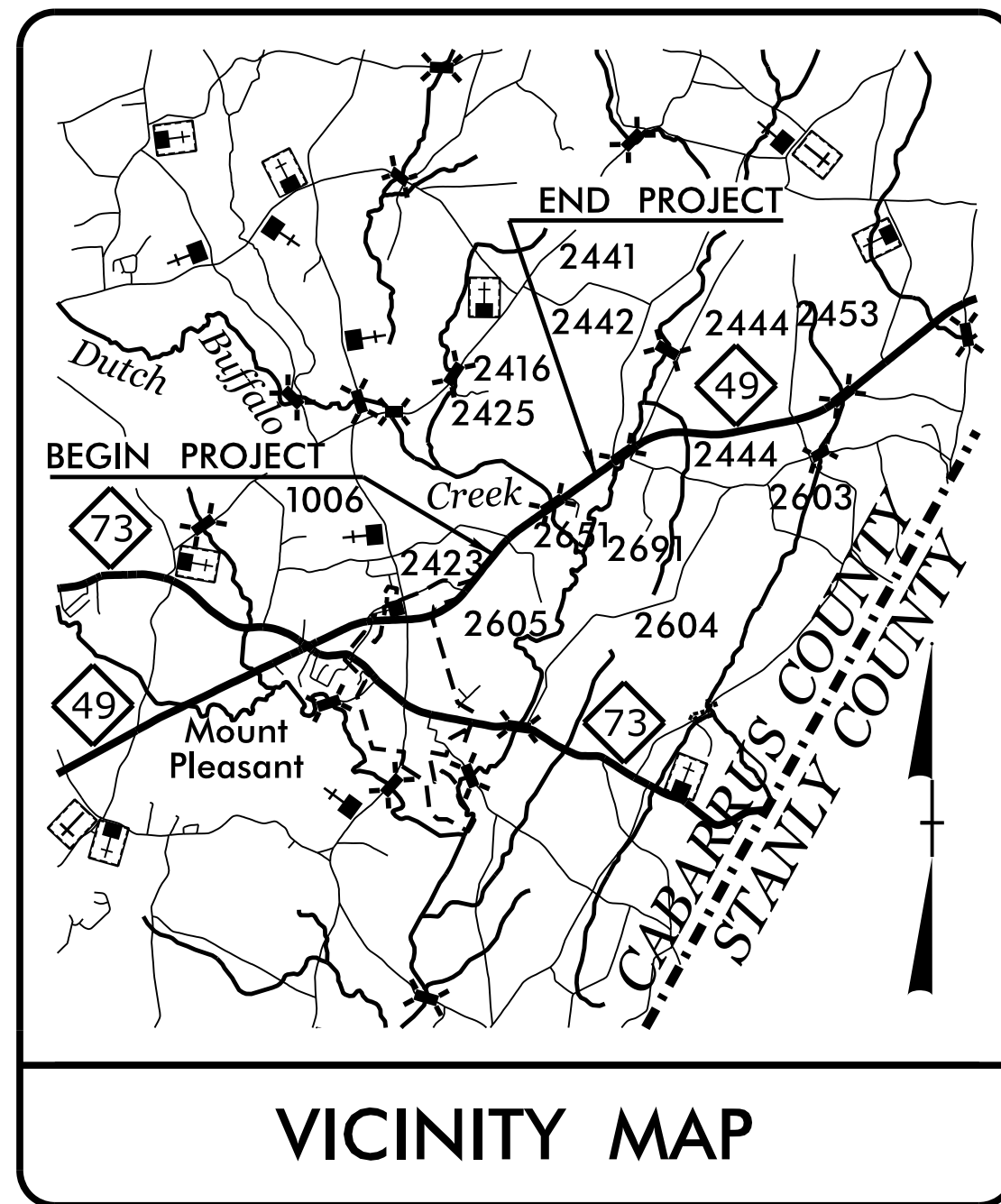
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CABARRUS COUNTY

LOCATION: BRIDGE NO. 103 OVER DUTCH BUFFALO CREEK ON NC 49.

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5548		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
55048.1.1	NHPP-0049(032)	PE	
55048.2.1	NHPP-0049(032)	R/W,UTIL	
55048.3.1	NHPP-0049(032)	CONSTR.	



STRUCTURE



DESIGN DATA

ADT 2017 = 8,400
 ADT 2037 = 11,500
 DHV = 11 %
 D = 60 %
 K = 15 % *
 V = 60 MPH
 * TTST = 7% DUAL = 8%
 FUNC CLASS: ARTERIAL
 REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-5548 = 0.657 MI
 LENGTH OF STRUCTURE TIP PROJECT B-5548 = 0.034 MI
 TOTAL LENGTH OF TIP PROJECT B-5548 = 0.691 MI

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

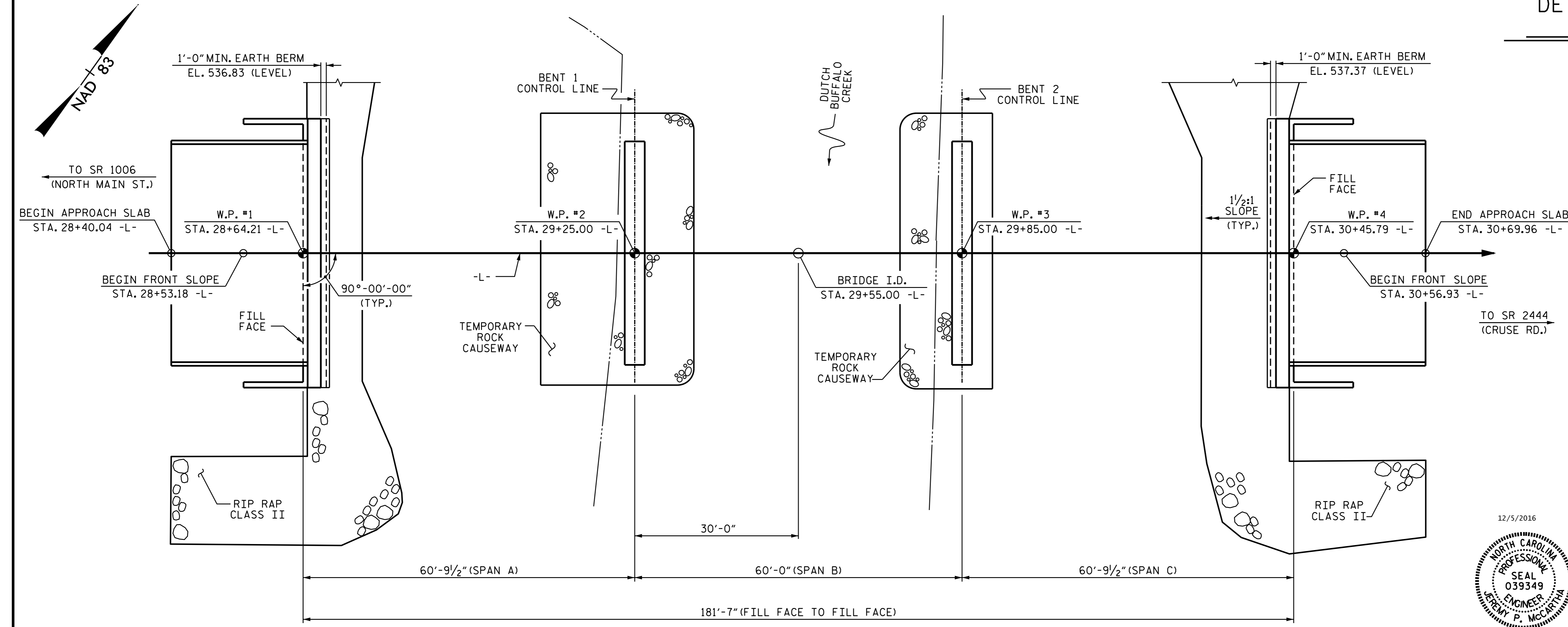
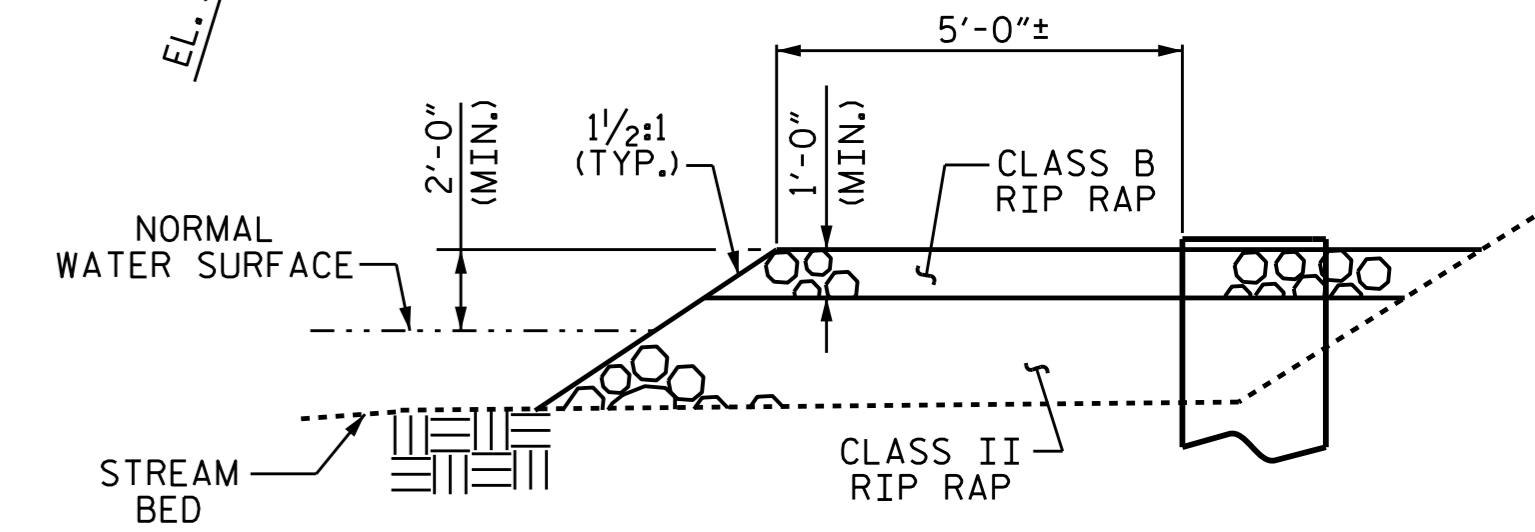
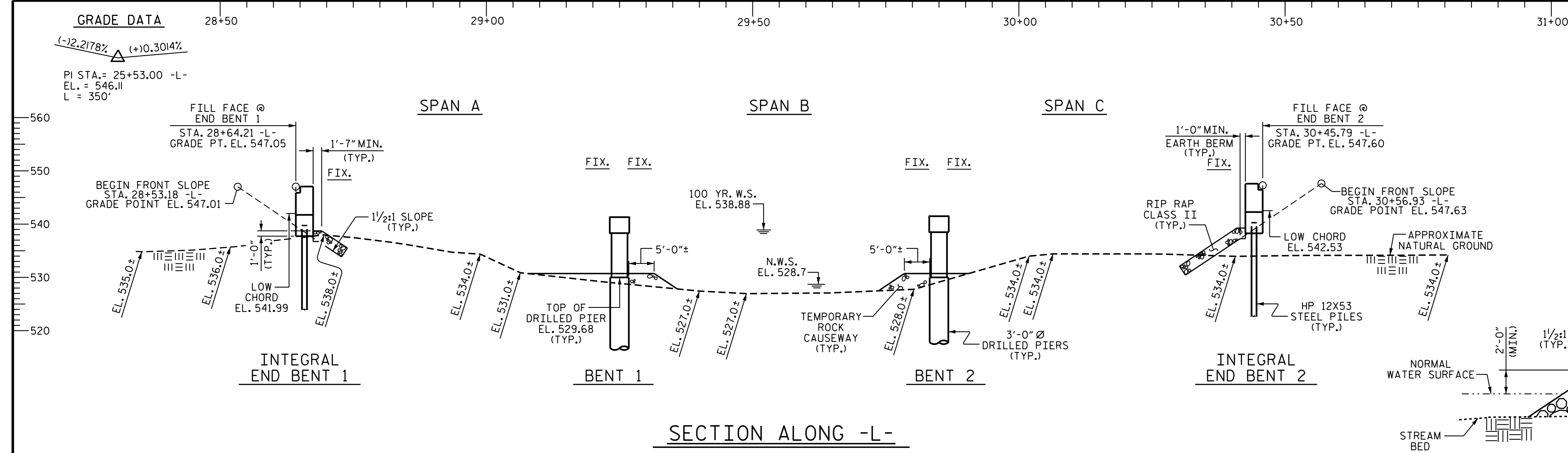
2012 STANDARD SPECIFICATIONS

LETTING DATE :

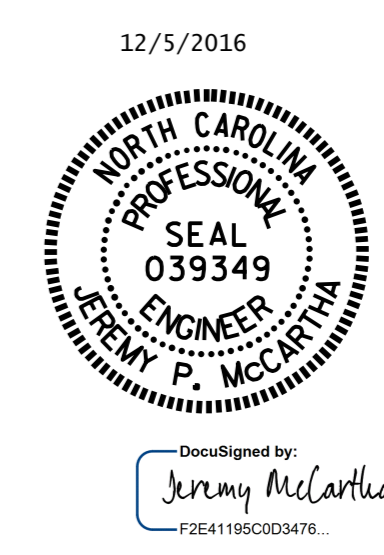
JANUARY 17, 2017

E. E. MURRAY, PE
 PROJECT ENGINEER

V. A. PATEL, PE
 PROJECT DESIGN ENGINEER



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS.



PROJECT NO. B-5548
 CABARRUS COUNTY
 STATION: 29+55.00 -L-
 SHEET 1 OF 4 REPLACES BRIDGE #103

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER
 DUTCH BUFFALO CREEK
 ON NC 49 BETWEEN
 SR 1006 AND SR 2444

DRAWN BY: K. D. LAYNE DATE: 4/21/16
 CHECKED BY: V.A. PATEL DATE: 7/26/16
 DESIGN ENGINEER OF RECORD: N'DAIUTO DATE: 3/1/16

PLAN
 PILES AND DRILLED PIERS ARE NOT SHOWN FOR CLARITY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

142+00

142+50

143+00

SPAN A

SPAN B

SPAN C

540

530

520

APPROXIMATE
NATURAL GROUND

APPROXIMATE
NATURAL GROUND

ABUTMENT "A"

PIER NO. 1

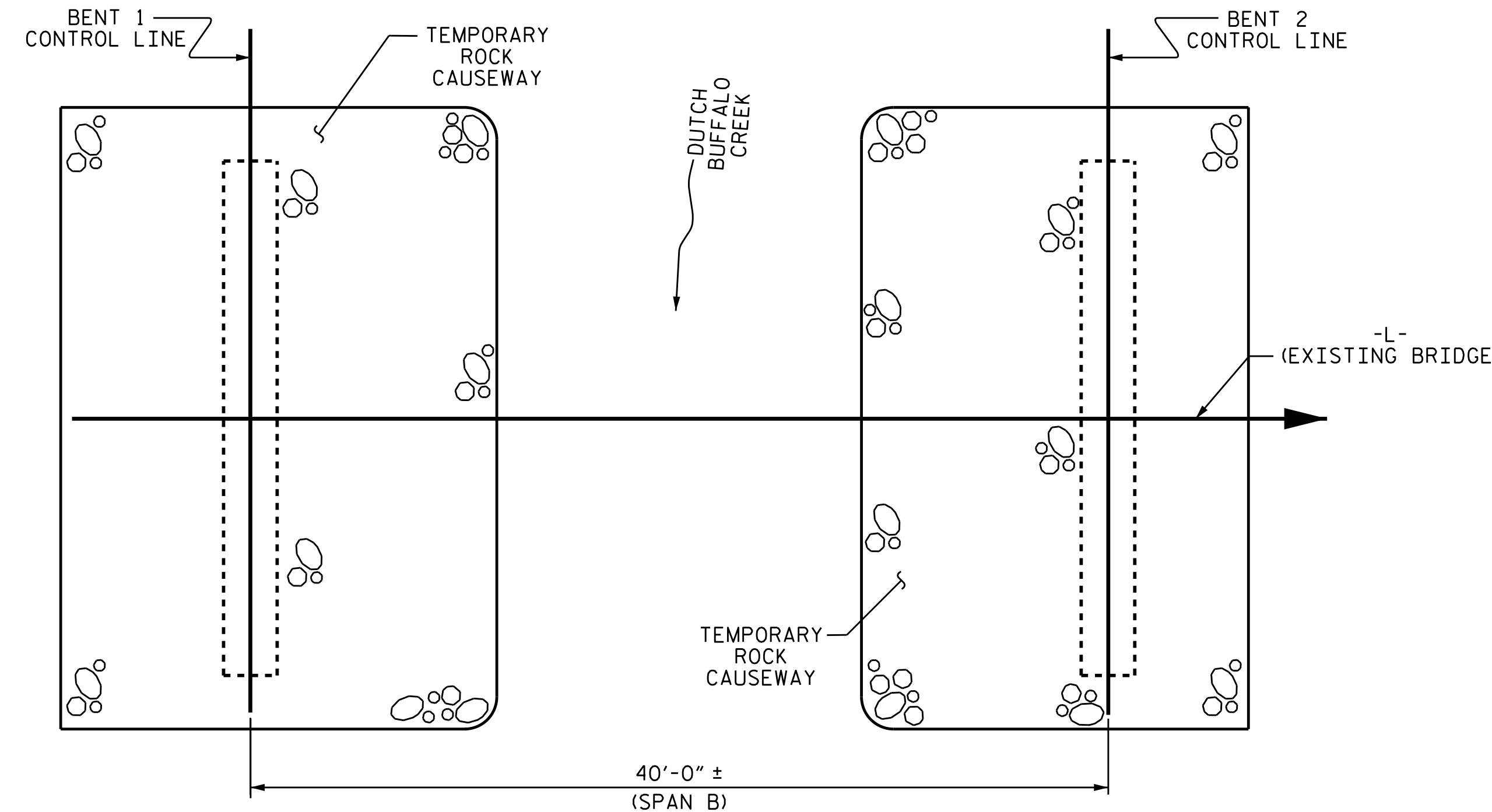
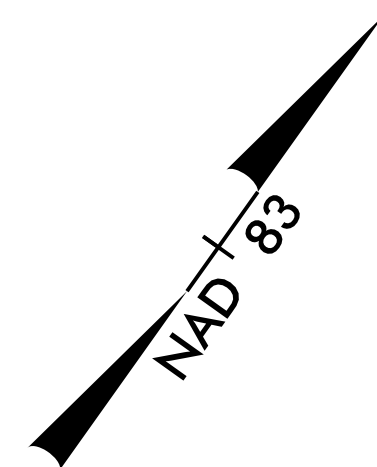
PIER NO. 2

ABUTMENT "B"

N.W.S.
EL. 528.7

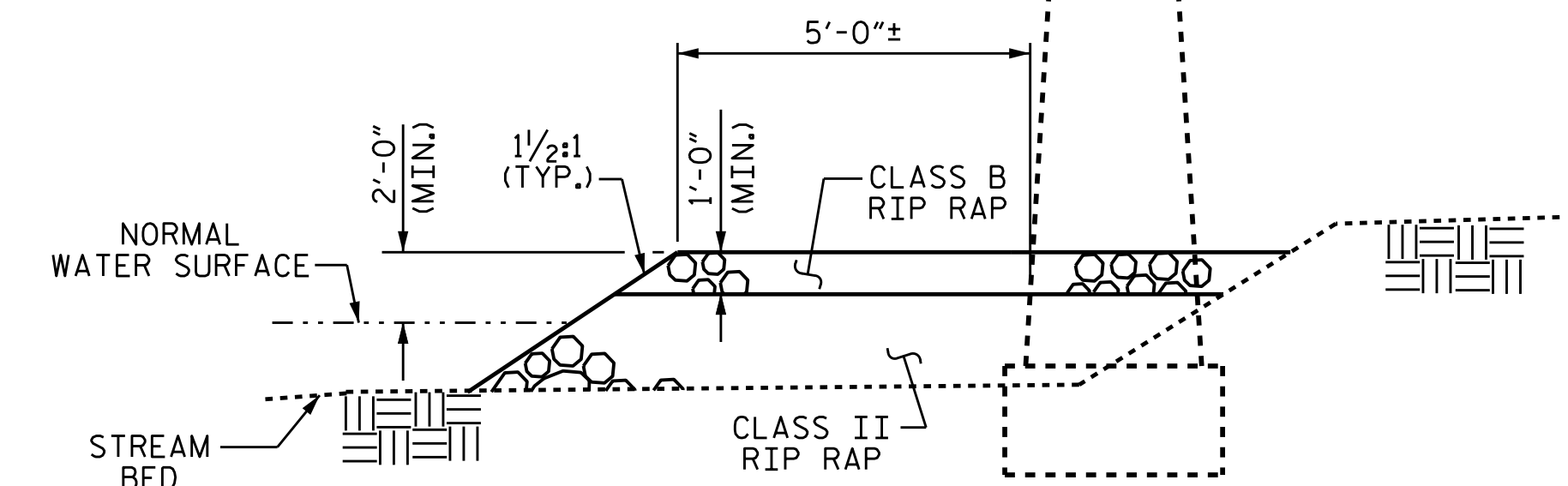
EL. 527.0 ±

SECTION ALONG EXISTING BRIDGE



PLAN

END BENTS AND PIERS NOT
SHOWN FOR CLARITY.

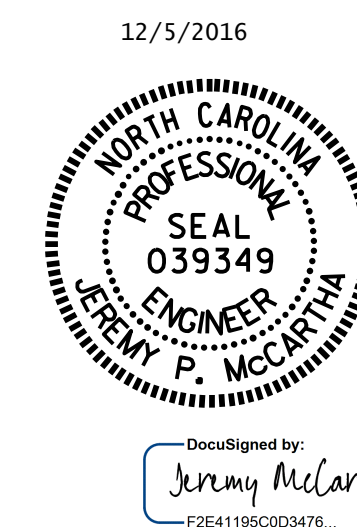


DETAIL OF TEMPORARY
ROCK CAUSEWAY

FOR REMOVAL OF EXISTING BRIDGE

PROJECT NO. B-5548
CABARRUS COUNTY
STATION: 29+55.00 -L-

SHEET 2 OF 4



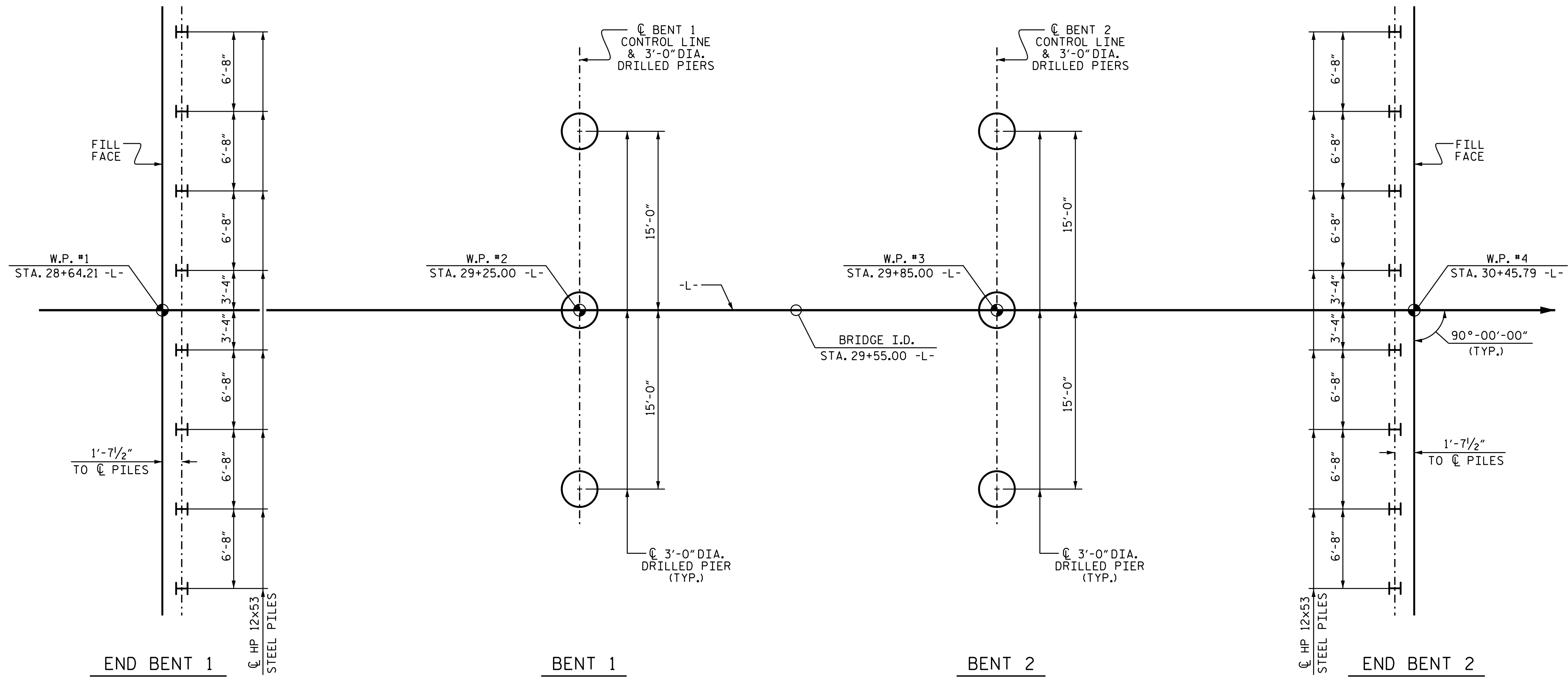
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER
DUTCH BUFFALO CREEK
ON NC 49 BETWEEN
SR 1006 AND SR 2444

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

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

DRAWN BY : K. D. LAYNE DATE : 4/21/16
CHECKED BY : V. A. PATEL DATE : 7/26/16



FOUNDATION LAYOUT

(DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE)

NOTES

FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 AND END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 85 TONS PER PILE.

DRIVE PILES AT END BENT 1 & END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 142 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

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

FOR DRILLED PIERS, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 411 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT BENT 1 & BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 335.0 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 25.0 TSF.

PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT 1 & BENT 2. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 526.0 WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT CASINGS.

INSTALL DRILLED PIERS AT BENT 1 & BENT 2 TO A TIP ELEVATION NO HIGHER THAN 512.5 WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 13.5 FT INTO PARTIALLY WEATHERED ROCK AND ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT 1 & BENT 2 IS ELEVATION 525.0. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

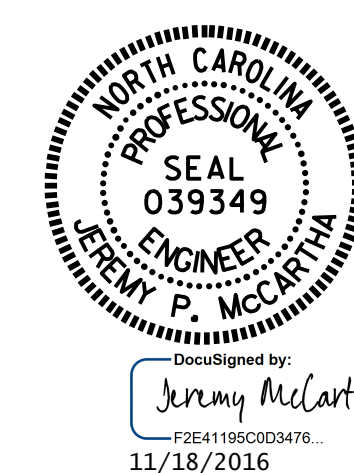
SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

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

PROJECT NO. B-5548
CABARRUS COUNTY
 STATION: 29+55.00 -L-

SHEET 3 OF 4



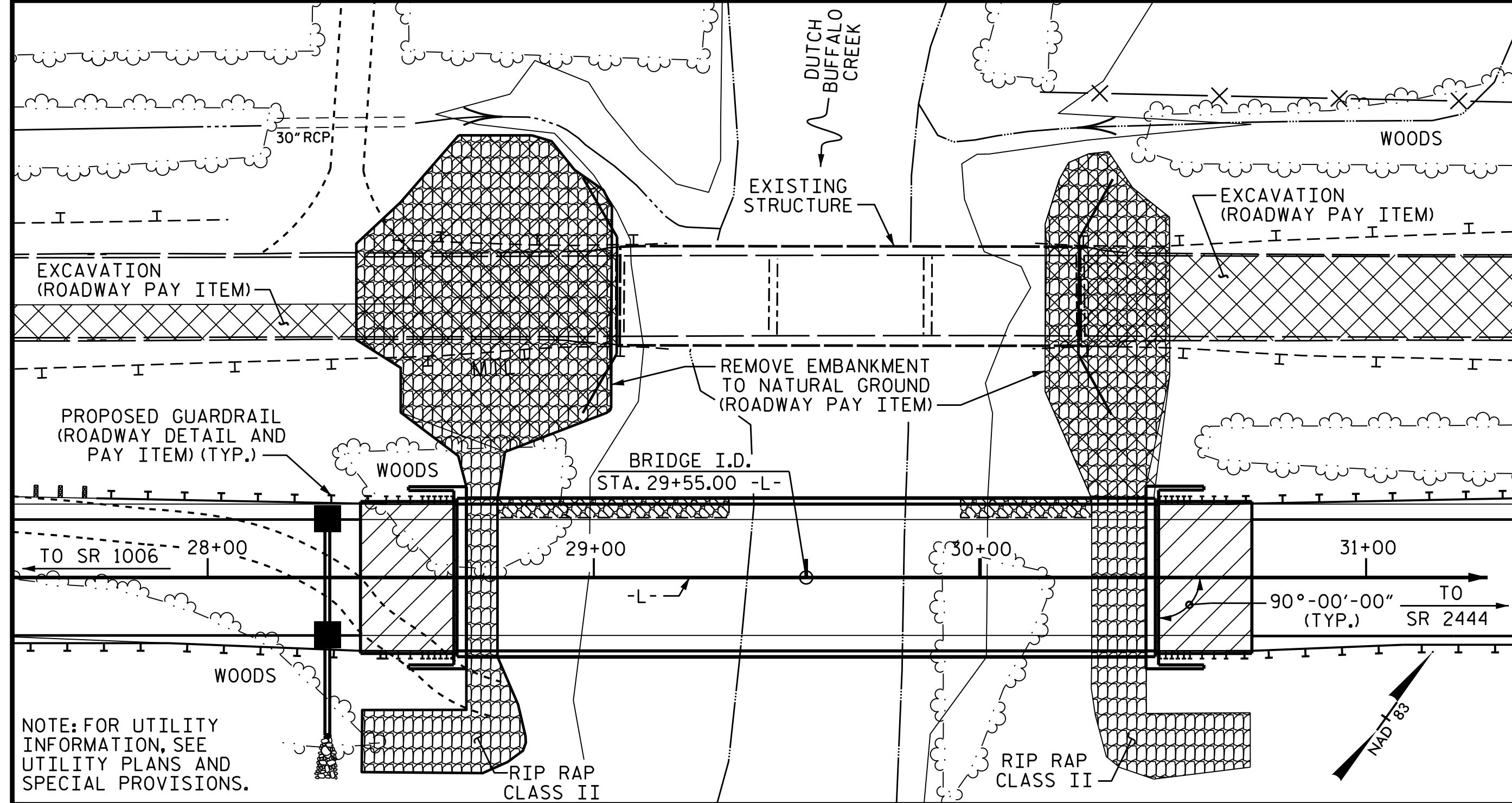
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER
 DUTCH BUFFALO CREEK
 ON NC 49 BETWEEN
 SR 1006 AND SR 2444

DRAWN BY : K. D. LAYNE DATE : 4/21/16
 CHECKED BY : V.A. PATEL DATE : 7/26/16
 DESIGN ENGINEER OF RECORD: N'DAIUTO DATE : 3/1/16

DOCUMENT NOT CONSIDERED
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 SIGNATURES COMPLETED

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

BENCHMARK #2: RR SPIKE IN BASE OF 30" OAK, 19' RT. OF STA. 30+29 -BL- EL. 557.26



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 SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.
- THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STA. 29+55.00 -L-.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.
- THE EXISTING STRUCTURE CONSISTING OF 3 SPANS (1 @ 39.5', 1 @ 40.0' AND 1 @ 39.5') WITH REINFORCED CONCRETE DECK GIRDERS WITH A CLEAR ROADWAY WIDTH OF 26.0' ON FULL HEIGHT REINFORCED CONCRETE ABUTMENTS AND REINFORCED CONCRETE POST AND WEB INTERIOR BENTS AND LOCATED UPSTREAM FROM PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
- THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
- REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED 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 THE STANDARD SPECIFICATIONS.
- THE STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES".
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE & REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURE	3'-0" DIA. DRILLED PIERS IN SOIL	3'-0" DIA. DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-0" DIA. DRILLED PIER	PDA TESTING	SID INSPECTIONS	SPT TESTING	CSL TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	EACH	SO. FT.	SO. FT.	CU. YDS.
SUPERSTRUCTURE										7,853	8,433	
END BENT 1												34.4
BENT 1			12.8	39.0	11.0							21.0
BENT 2			2.8	49.0	11.0							21.1
END BENT 2												34.4
TOTAL	LUMP SUM	LUMP SUM	15.6	87.0	22.0	1	1	1	1	7,853	8,433	110.9

	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	45" PRESTRESSED CONCRETE GIRDERS	HP 12x53 STEEL PILES	STEEL PILE POINTS	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	ASBESTOS ACCESSMENT
	LUMP SUM	LBS.	LBS.	NO. LIN. FT.	NO. LIN. FT.	EACH	LIN. FT.	TON	SO. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE				15 895.00			359.83			LUMP SUM	
END BENT 1		4,188			8 120	8		665	745		
BENT 1		6,820	1,386								
BENT 2		6,850	1,386								
END BENT 2		4,188			8 120	8		370	415		
TOTAL	LUMP SUM	22,046	2,772	15 895.00	16 240	16	359.83	1,035	1,160	LUMP SUM	LUMP SUM

HYDRAULIC DATA

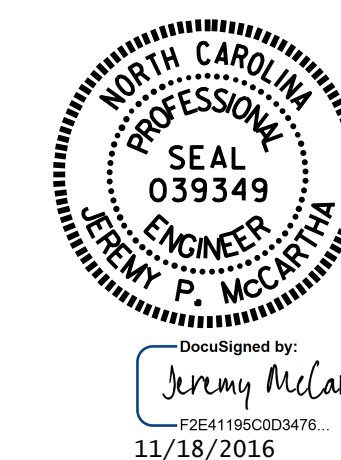
DESIGN DISCHARGE _____ = 6,400 C.F.S.
 FREQUENCY OF DESIGN FLOOD _____ = 50 YR.
 DESIGN HIGH WATER ELEVATION _____ = 537.8
 DRAINAGE AREA _____ = 44.2 SQ.MI.
 BASE DISCHARGE (Q100) _____ = 7,980 C.F.S.
 BASE HIGH WATER ELEVATION _____ = 538.88

OVERTOPPING DATA

OVERTOPPING DISCHARGE _____ = 22,416 C.F.S.
 FREQUENCY OF OVERTOPPING FLOOD _____ = 500 YR.+
 OVERTOPPING FLOOD ELEVATION _____ = 546.63

PROJECT NO. B-5548
CABARRUS COUNTY
 STATION: 29+55.00 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER
 DUTCH BUFFALO CREEK
 ON NC 49 BETWEEN
 SR 1006 AND SR 2444

DRAWN BY : K. D. LAYNE DATE : 4/21/16
 CHECKED BY : V.A. PATEL DATE : 6/26/16
 DESIGN ENGINEER OF RECORD: N'DAIUTO DATE : 3/1/16

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

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

LOAD FACTORS

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT						
							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)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	①	1.03	--	1.75	0.790	1.32	B	I	29.167	0.901	1.75	B	I	29.167	0.80	0.901	1.03	B	I	29.167		
	HL-93(0pr)	N/A	--	1.71	--	1.35	0.790	1.71	B	I	29.167	0.901	2.27	B	I	29.167	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	②	1.31	47.016	1.75	0.790	1.67	B	I	29.167	0.901	1.98	B	I	29.167	0.80	0.790	1.31	B	I	29.167		
	HS-20(0pr)	36.000	--	2.16	77.890	1.35	0.790	2.16	B	I	29.167	0.901	2.57	B	I	29.167	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.80	37.842	1.40	0.790	4.48	B	I	29.167	0.901	4.94	B	I	29.167	0.80	0.790	2.80	B	I	29.167	
		SNGARBS2	20.000	--	2.15	42.990	1.40	0.790	3.43	B	I	29.167	0.901	3.79	B	I	29.167	0.80	0.790	2.15	B	I	29.167	
		SNAGRIS2	22.000	--	2.06	45.366	1.40	0.790	3.29	B	I	29.167	0.901	3.63	B	I	29.167	0.80	0.790	2.06	B	I	29.167	
		SNCOTTS3	27.250	--	1.40	38.057	1.40	0.790	2.23	B	I	29.167	0.901	2.49	B	I	29.167	0.80	0.790	1.40	B	I	29.167	
		SNAGGRS4	34.925	--	1.19	41.566	1.40	0.790	1.90	B	I	29.167	0.901	2.27	B	I	29.167	0.80	0.790	1.19	B	I	29.167	
		SNS5A	35.550	--	1.16	41.318	1.40	0.790	1.86	B	I	29.167	0.901	2.42	B	I	29.167	0.80	0.790	1.16	B	I	29.167	
		SNS6A	39.950	--	1.08	42.997	1.40	0.790	1.72	B	I	29.167	0.901	2.31	B	I	29.167	0.80	0.790	1.08	B	I	29.167	
	SNS7B	42.000	--	1.03	43.062	1.40	0.790	1.64	B	I	29.167	0.901	2.42	B	I	29.167	0.80	0.790	1.03	B	I	29.167		
	TTST	TNAGRIT3	33.000	--	1.32	43.408	1.40	0.790	2.10	B	I	29.167	0.901	2.66	B	I	29.167	0.80	0.790	1.32	B	I	29.167	
		TNT4A	33.075	--	1.32	43.789	1.40	0.790	2.11	B	I	29.167	0.901	2.49	B	I	29.167	0.80	0.790	1.32	B	I	29.167	
		TNT6A	41.600	--	1.09	45.435	1.40	0.790	1.74	B	I	29.167	0.901	2.88	B	I	29.167	0.80	0.790	1.09	B	I	29.167	
		TNT7A	42.000	--	1.10	46.321	1.40	0.790	1.76	B	I	29.167	0.901	2.55	B	I	29.167	0.80	0.790	1.10	B	I	29.167	
		TNT7B	42.000	--	1.15	48.380	1.40	0.790	1.84	B	I	29.167	0.901	2.22	B	I	29.167	0.80	0.790	1.15	B	I	29.167	
		TNAGRIT4	43.000	--	1.09	46.790	1.40	0.790	1.74	B	I	29.167	0.901	2.14	B	I	29.167	0.80	0.790	1.09	B	I	29.167	
TNAGT5A		45.000	--	1.02	45.965	1.40	0.790	1.63	B	I	29.167	0.901	2.30	B	I	29.167	0.80	0.790	1.02	B	I	29.167		
TNAGT5B	45.000	③	1.00	45.230	1.40	0.790	1.61	B	I	29.167	0.901	2.02	B	I	29.167	0.80	0.790	1.00	B	I	29.167			

NOTES

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

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

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

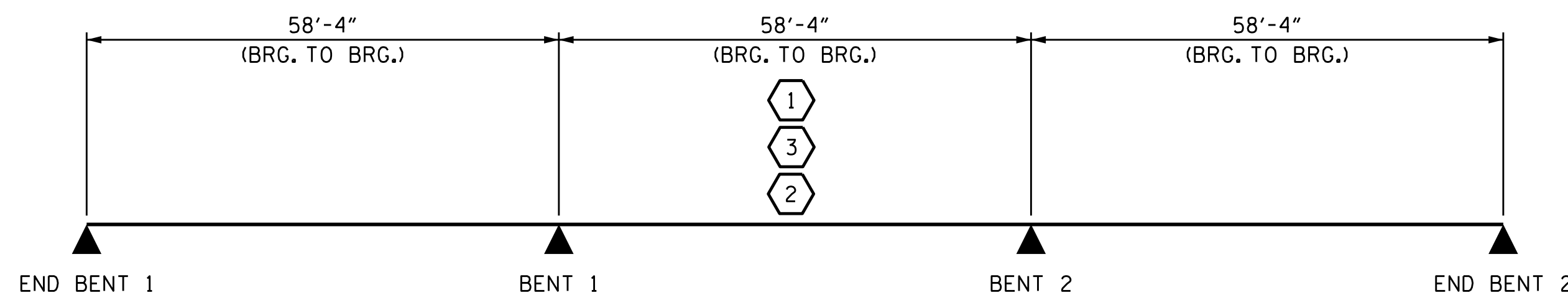
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

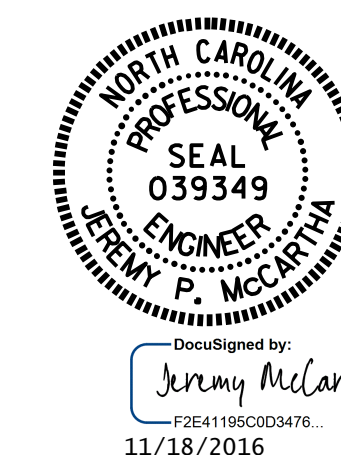
GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. B-5548
CABARRUS COUNTY
 STATION: 29+55.00 -L-



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

ASSEMBLED BY : N.D'AIUTO DATE : 11/3/15
 CHECKED BY : J. P. MCCARTHA DATE : 5/24/16
 DRAWN BY : MAA 1/08 REV. 11/2/08RR MAA/GM
 CHECKED BY : GM/DI 2/08 REV. 10/1/11 MAA/GM

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 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			30

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.

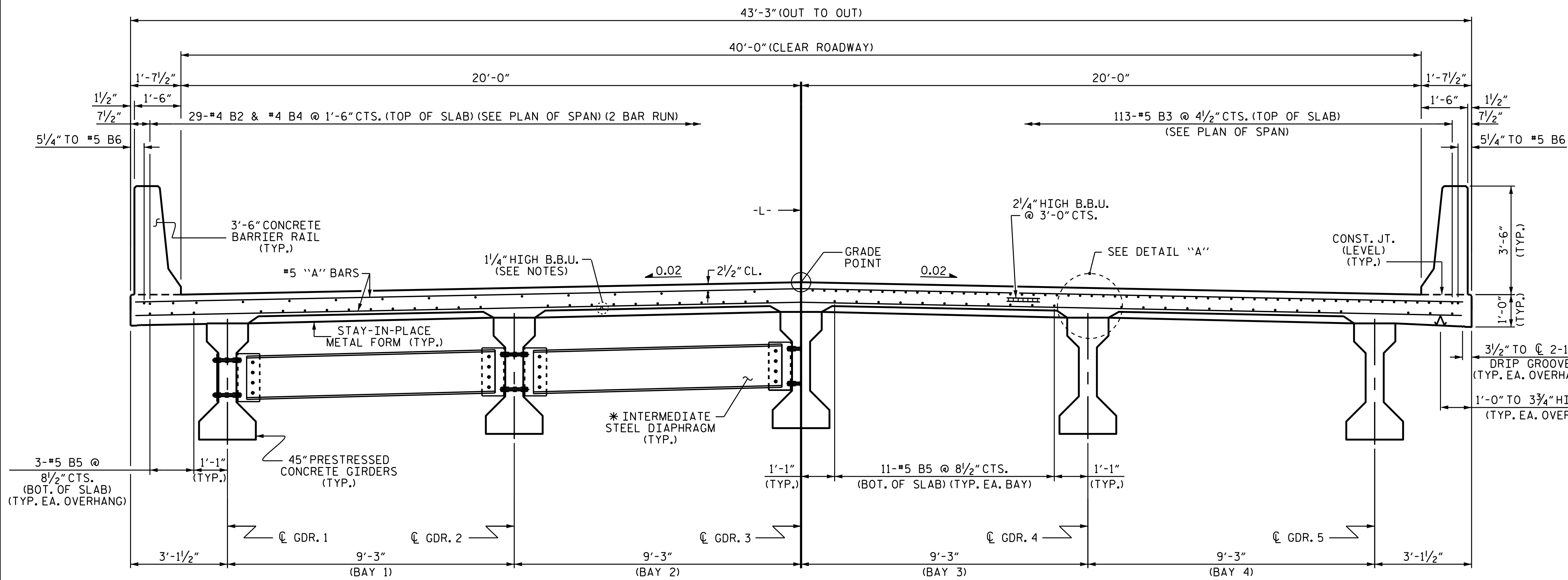
LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

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.

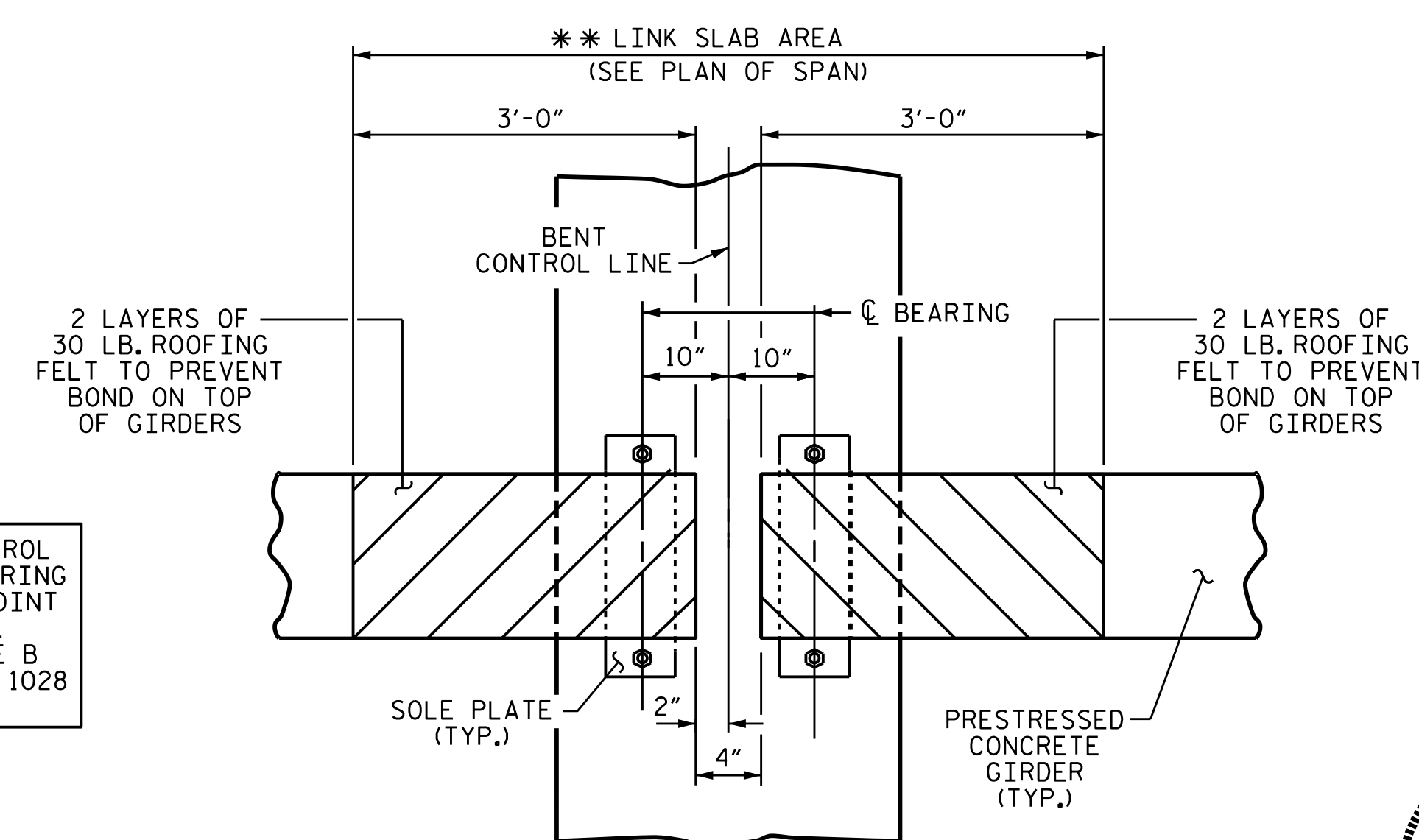
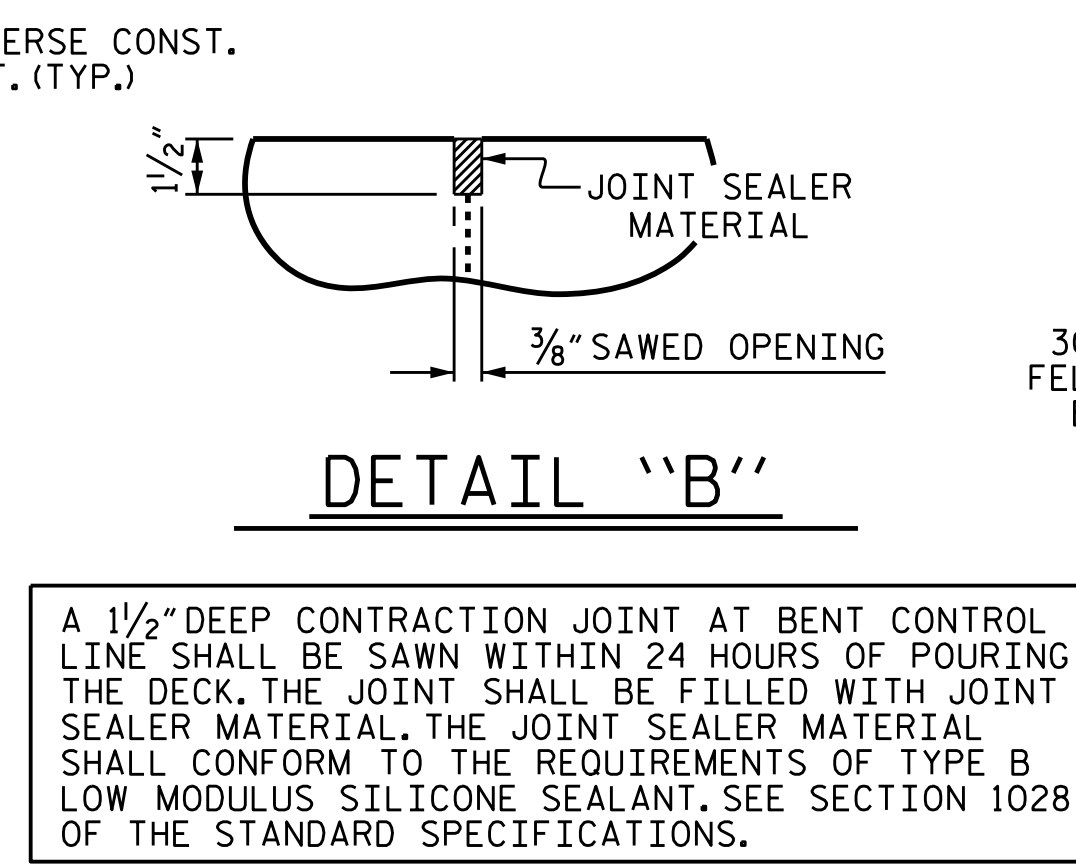
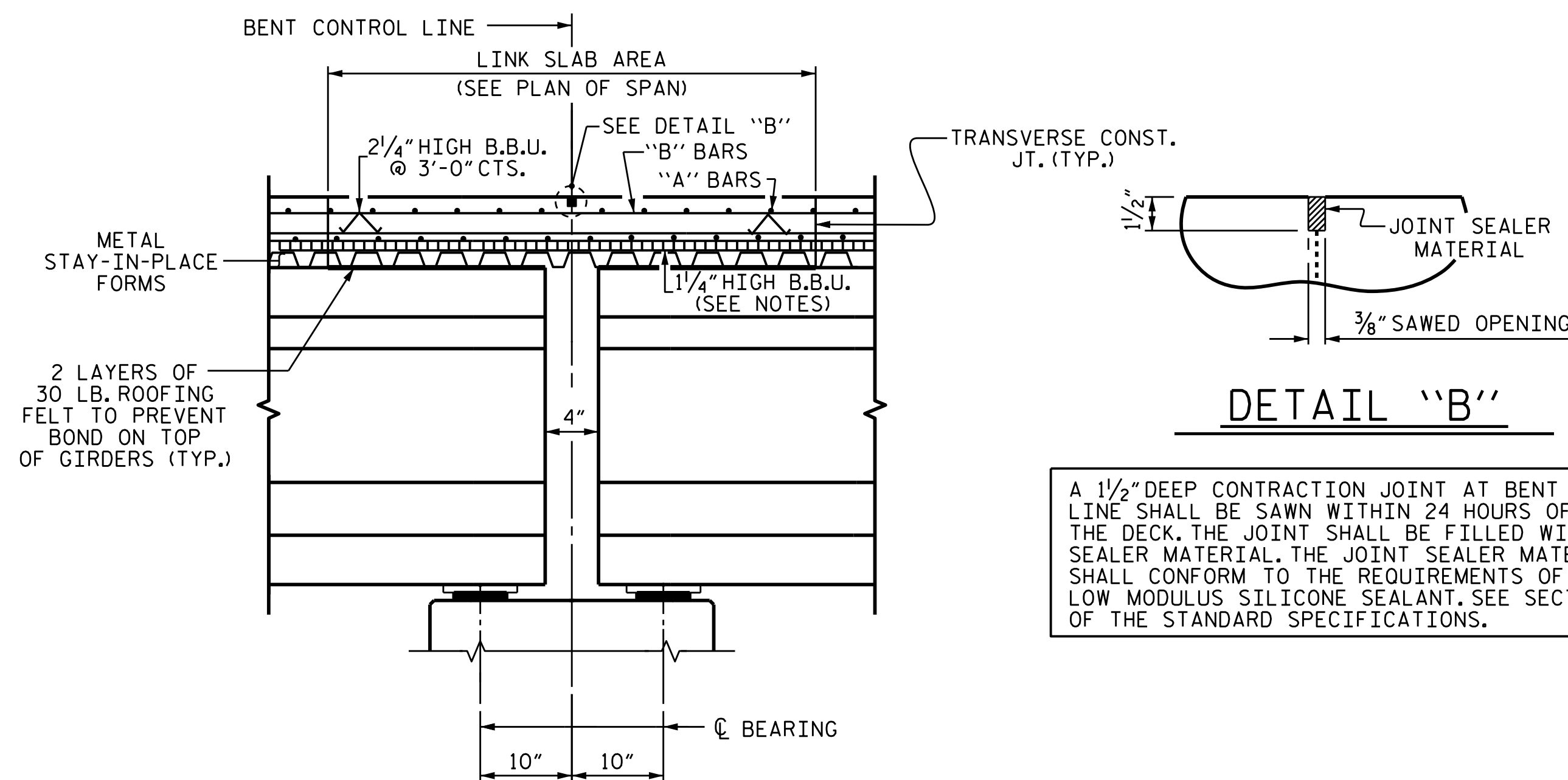
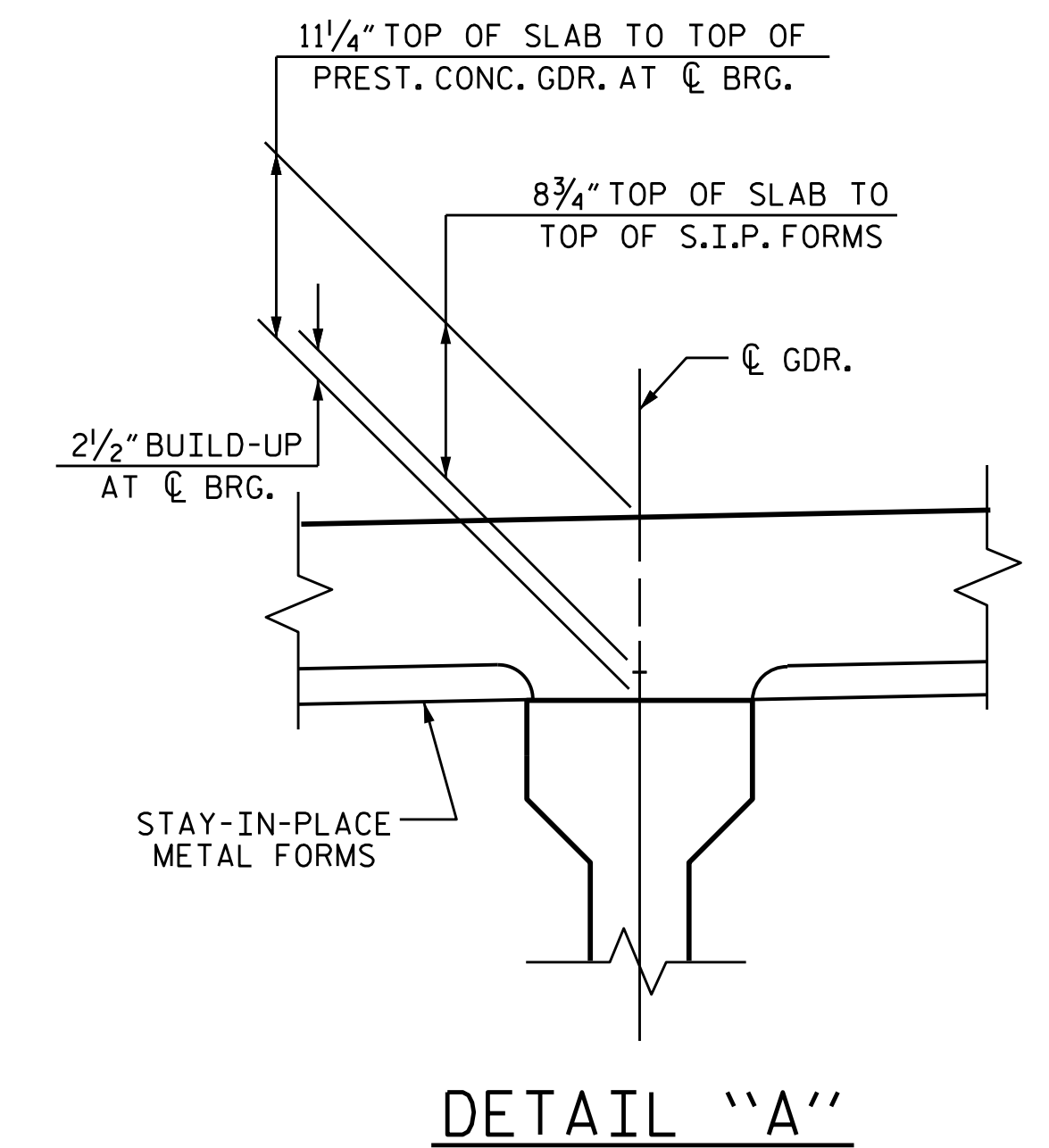
* FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE III PRESTRESSED CONCRETE GIRDERS" SHEET.

** NO WELDING OF FORMS OR FALSEWORK TO THE TOP OF GIRDER WILL BE PERMITTED IN THE LINK SLAB AREA.

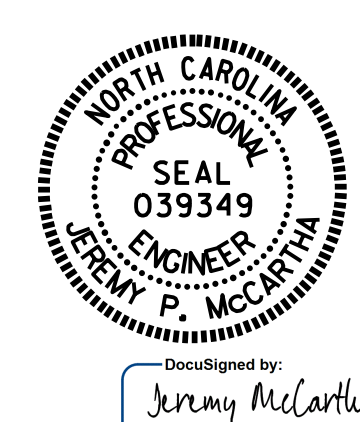


TYPICAL SECTION
(SHOWING INTERMEDIATE DIAPHRAGMS)

TYPICAL SECTION
(SHOWING LINK SLAB AT BENT)



PROJECT NO. B-5548
CABARRUS COUNTY
 STATION: 29+55.00 -L-
 SHEET 1 OF 2

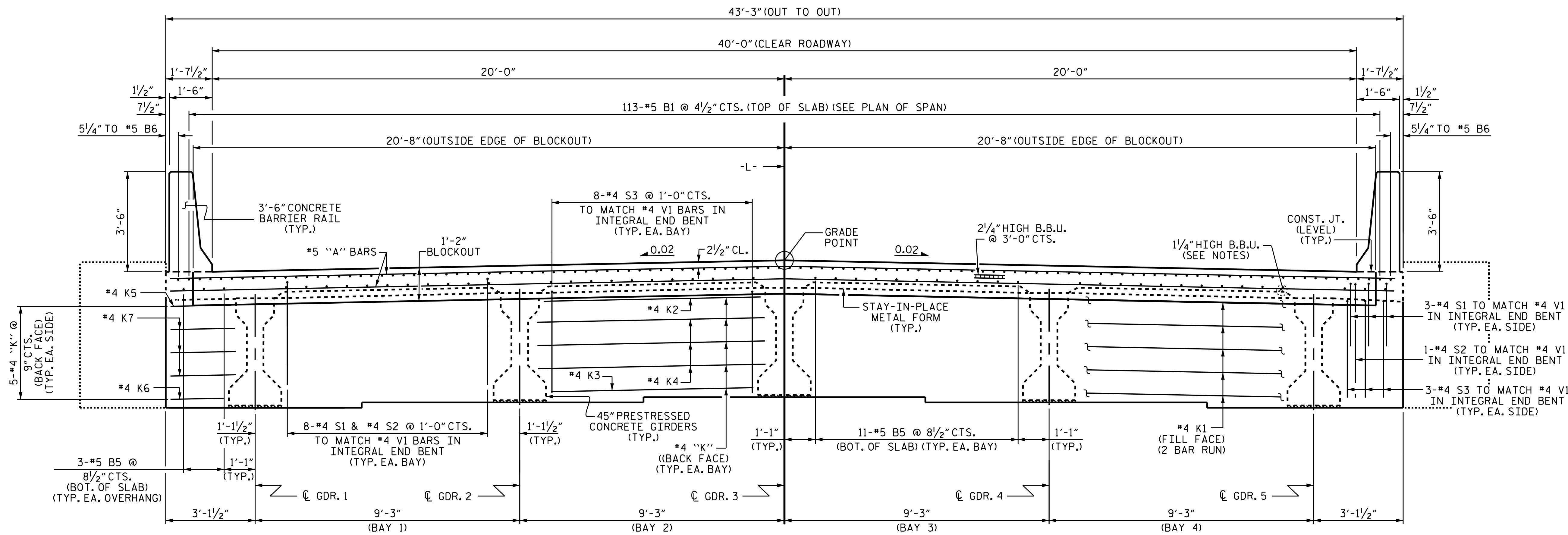


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION

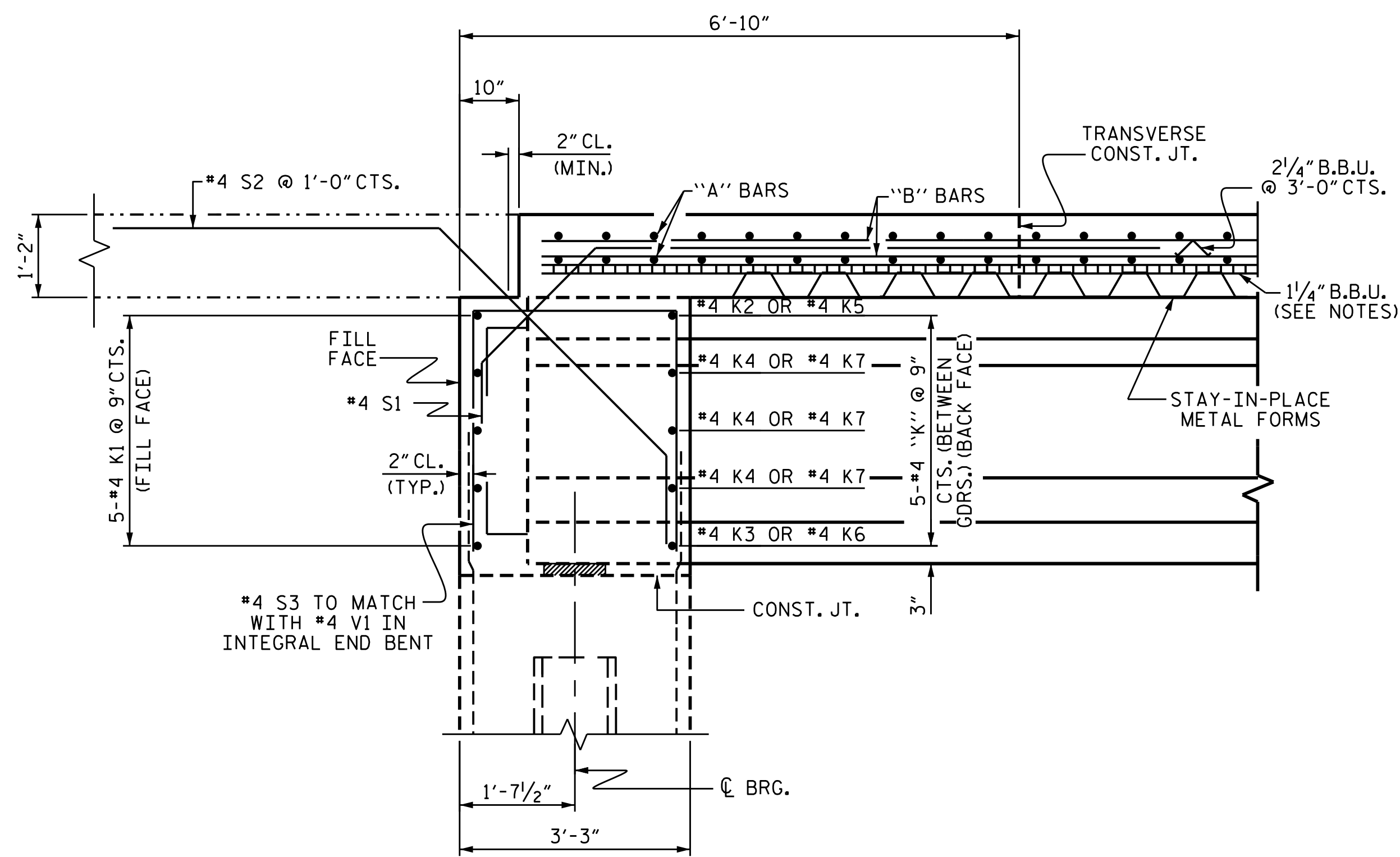
DRAWN BY : N.D'AIUTO DATE : 12/11/15
 CHECKED BY : J. P. MCCARTHA DATE : 6/6/16
 DESIGN ENGINEER OF RECORD : N.D'AIUTO DATE : 3/1/16

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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6	
1			3			TOTAL SHEETS	
2			4			30	

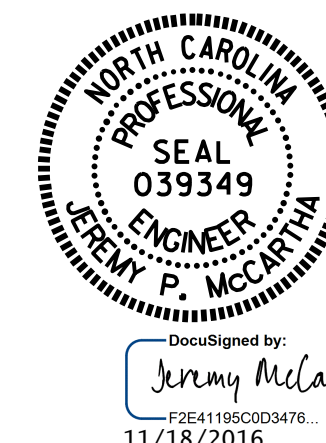


TYPICAL SECTION AT INTEGRAL END BENT



SECTION THROUGH INTEGRAL END BENT

PROJECT NO. B-5548
CABARRUS COUNTY
 STATION: 29+55.00 -L-
 SHEET 2 OF 2

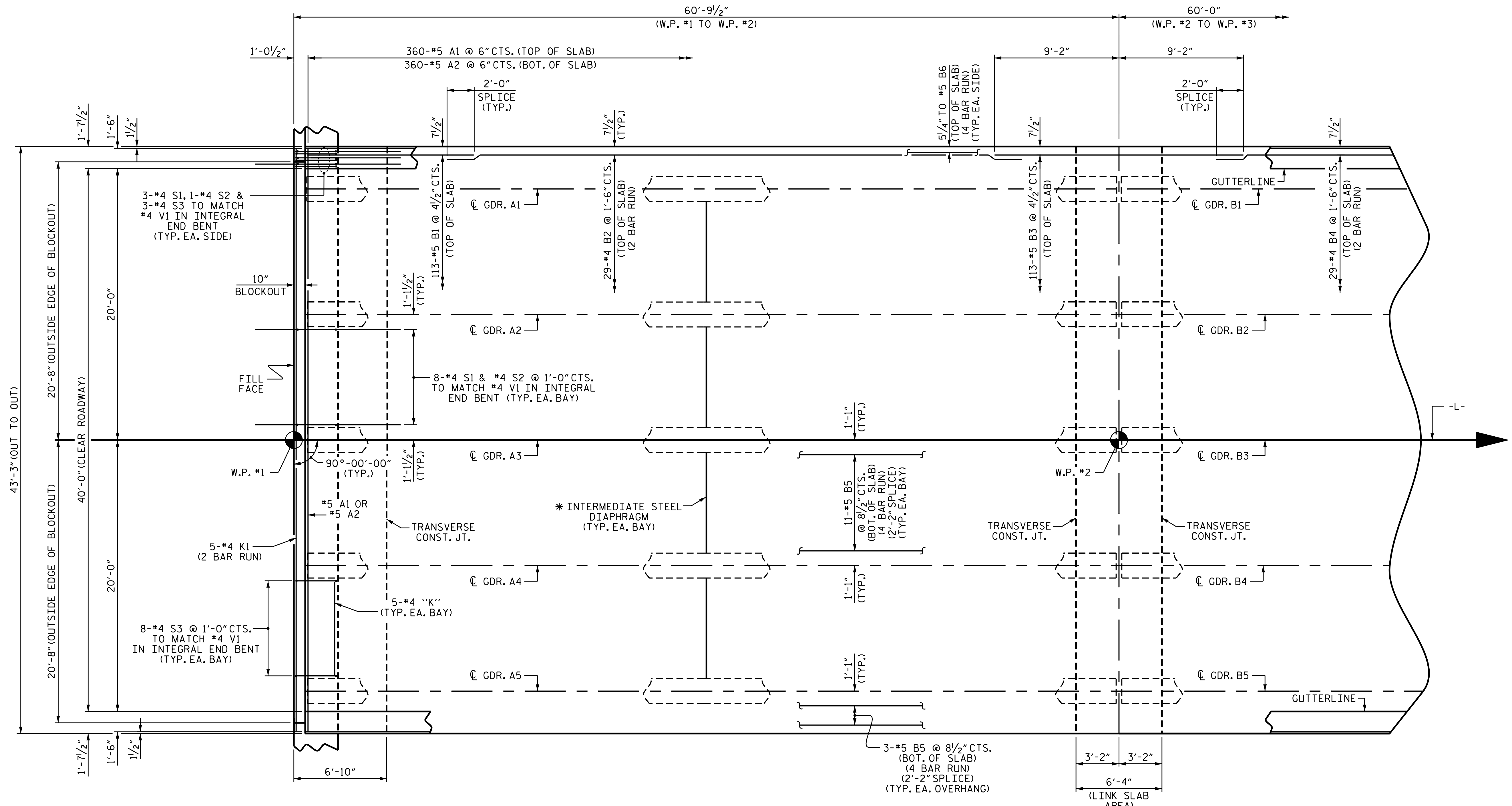


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION

DRAWN BY : N.D. AIUTO DATE : 12/11/15
 CHECKED BY : J. P. MCCARTHA DATE : 6/6/16
 DESIGN ENGINEER OF RECORD: N.D. AIUTO DATE : 3/1/16

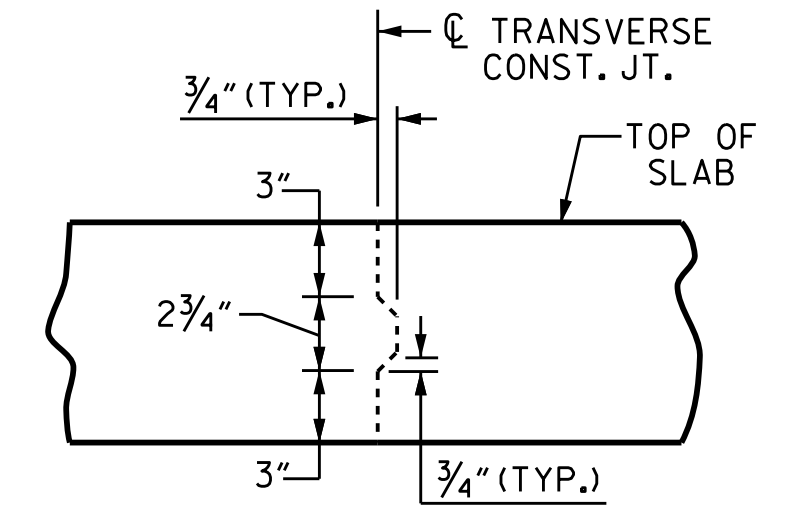
DOCUMENT NOT CONSIDERED
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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7	
1			3			TOTAL SHEETS	
2			4			30	



PLAN OF SPAN A

* FOR INTERMEDIATE STEEL DIAPHRAGMS DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE III PRESTRESSED CONCRETE GIRDERS" SHEET.



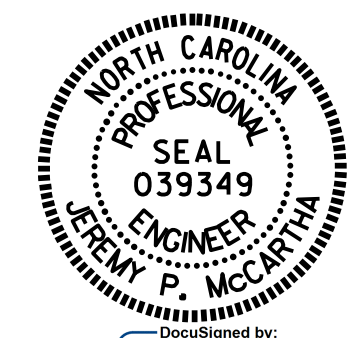
TRANSVERSE CONSTRUCTION JOINT

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

PROJECT NO. B-5548
CABARRUS COUNTY
 STATION: 29+55.00 -L-

SHEET 1 OF 3

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

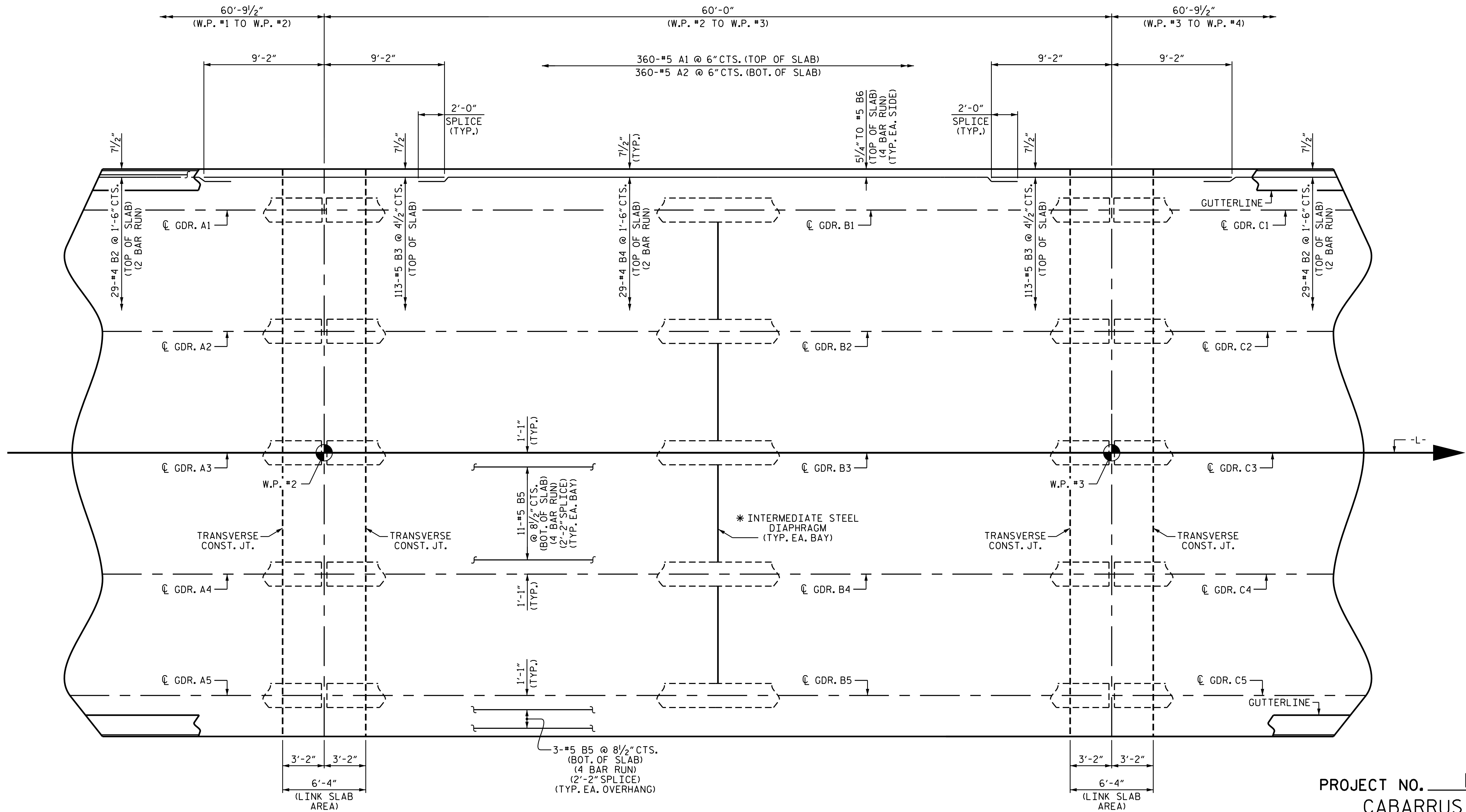


DocuSigned by:
 Jeremy McCartha
 F2E4196C003476
 11/18/2016

DRAWN BY : N.D'AIUTO DATE : 12/15/15
 CHECKED BY : J.P. MCCARTHA DATE : 6/7/16
 DESIGN ENGINEER OF RECORD: N.D'AIUTO DATE : 3/1/16

DOCUMENT NOT CONSIDERED
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			30



PLAN OF SPAN B

FOR TRANSVERSE CONSTRUCTION JOINT DETAILS, SEE "PLAN OF SPAN A" SHEET.

* FOR INTERMEDIATE STEEL DIAPHRAGMS DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE III PRESTRESSED CONCRETE GIRDERS" SHEET.

PROJECT NO. B-5548
CABARRUS COUNTY
 STATION: 29+55.00 -L-

SHEET 2 OF 3



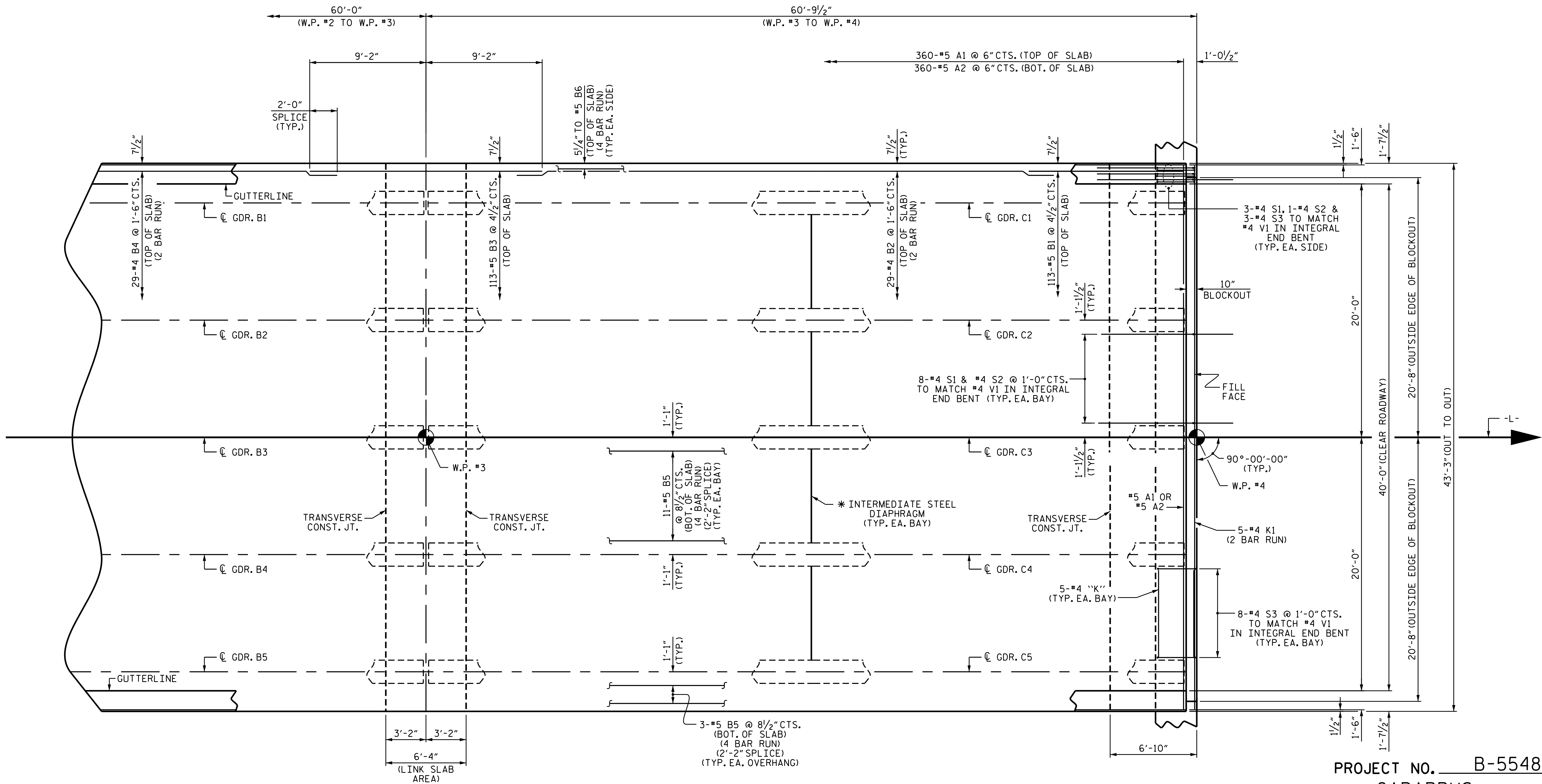
DocuSigned by:
 Jeremy McCartha
 11/18/2016

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

DRAWN BY : N.D'AIUTO DATE : 12/15/15
 CHECKED BY : J. P. MCCARTHA DATE : 6/7/16
 DESIGN ENGINEER OF RECORD: N.D'AIUTO DATE : 3/1/16

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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9	
1			3			TOTAL SHEETS	
2			4			30	



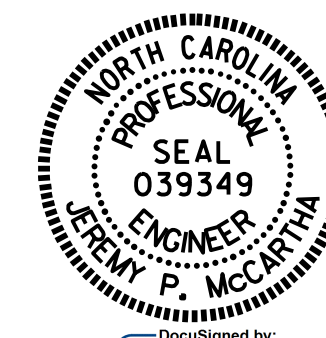
PLAN OF SPAN C

FOR TRANSVERSE CONSTRUCTION JOINT DETAILS, SEE "PLAN OF SPAN A" SHEET.

* FOR INTERMEDIATE STEEL DIAPHRAGMS DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE III PRESTRESSED CONCRETE GIRDERS" SHEET.

PROJECT NO. B-5548
CABARRUS COUNTY
 STATION: 29+55.00 -L-

SHEET 3 OF 3

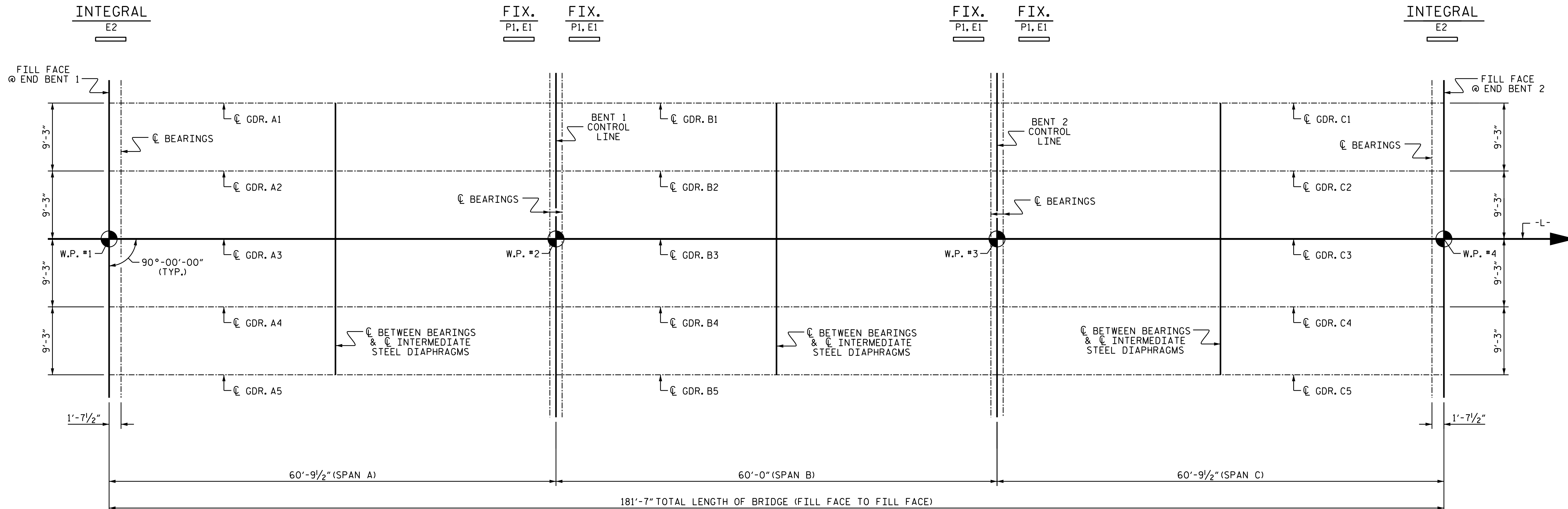


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN C

DRAWN BY : N.D'AIUTO DATE : 12/15/15
 CHECKED BY : J. P. MCCARTHA DATE : 6/7/16
 DESIGN ENGINEER OF RECORD: N.D'AIUTO DATE : 3/1/16

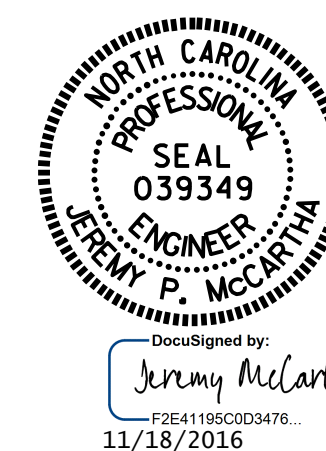
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 SIGNATURES COMPLETED

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10	
1			3			TOTAL SHEETS	
2			4			30	



GIRDER LAYOUT

PROJECT NO. B-5548
CABARRUS COUNTY
 STATION: 29+55.00 -L-

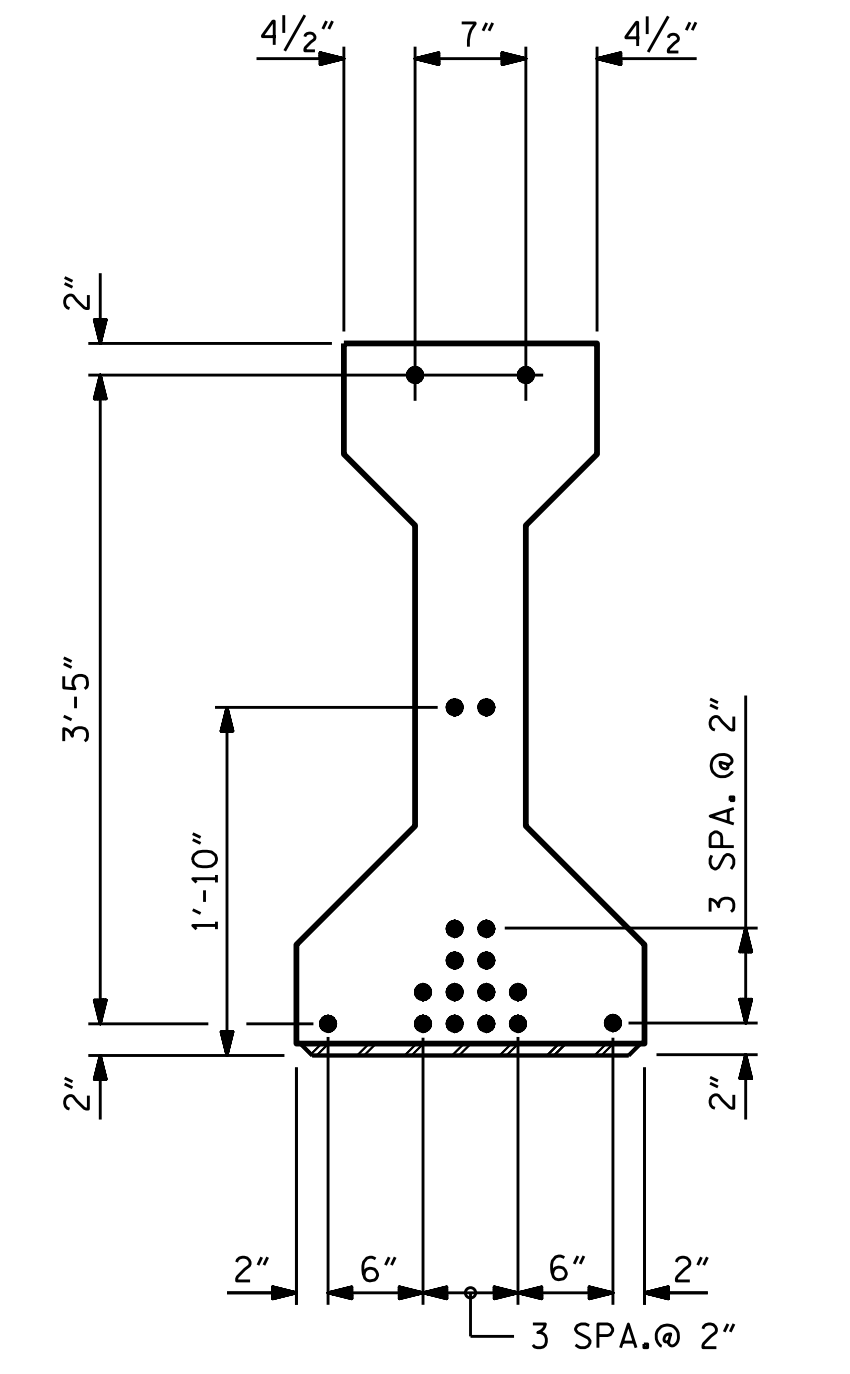
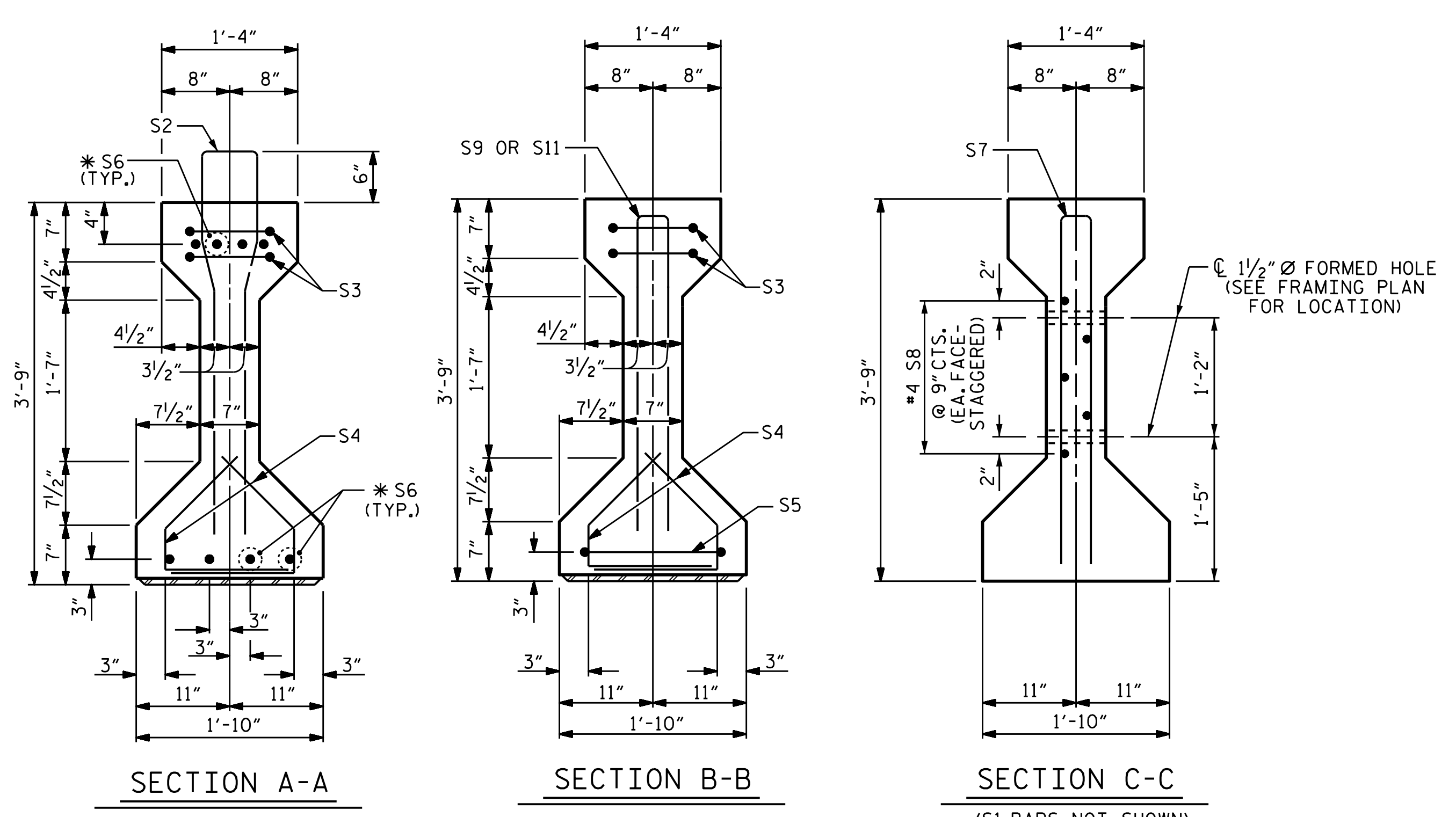


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 GIRDER LAYOUT

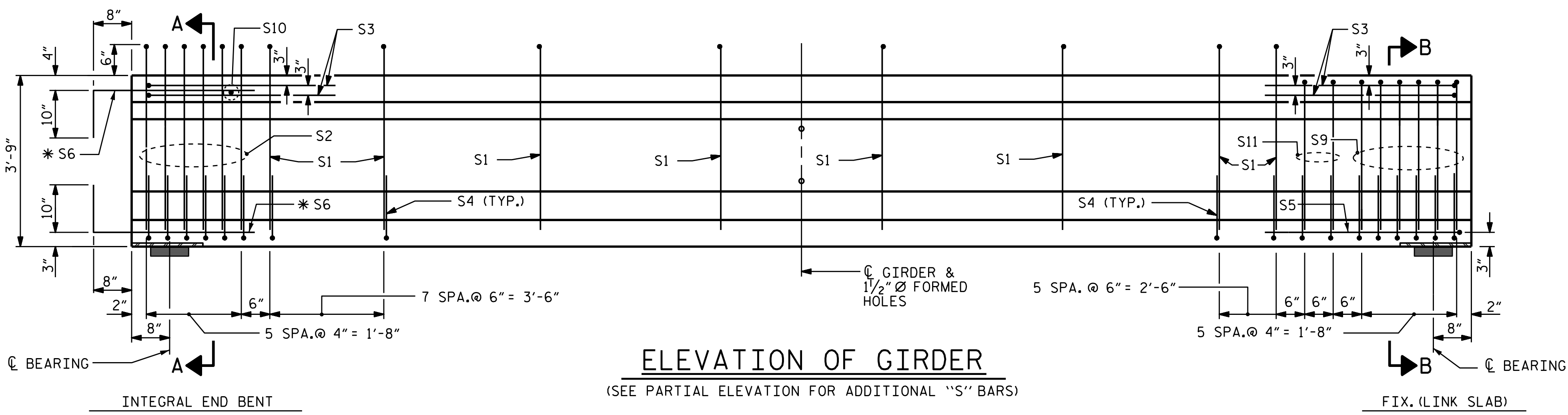
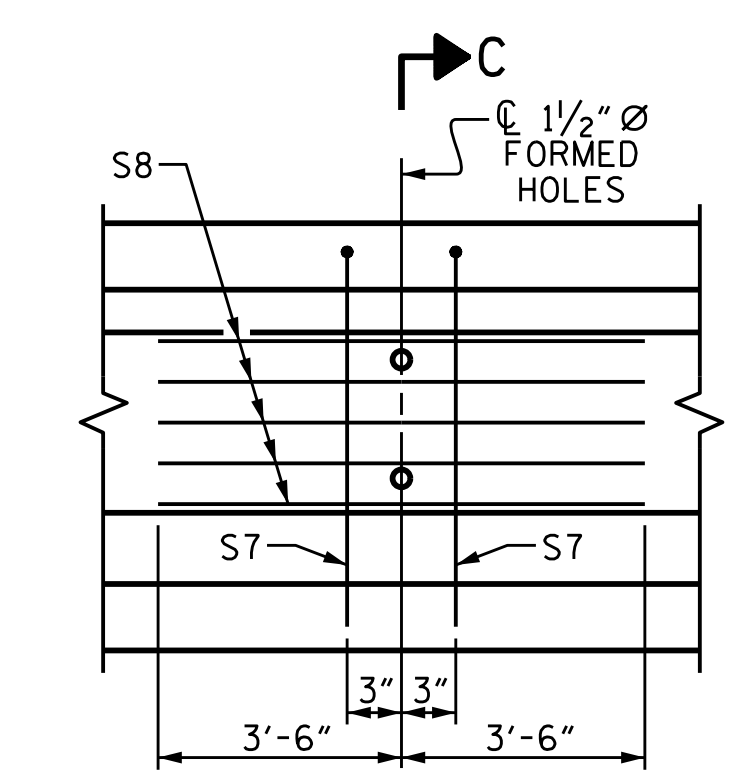
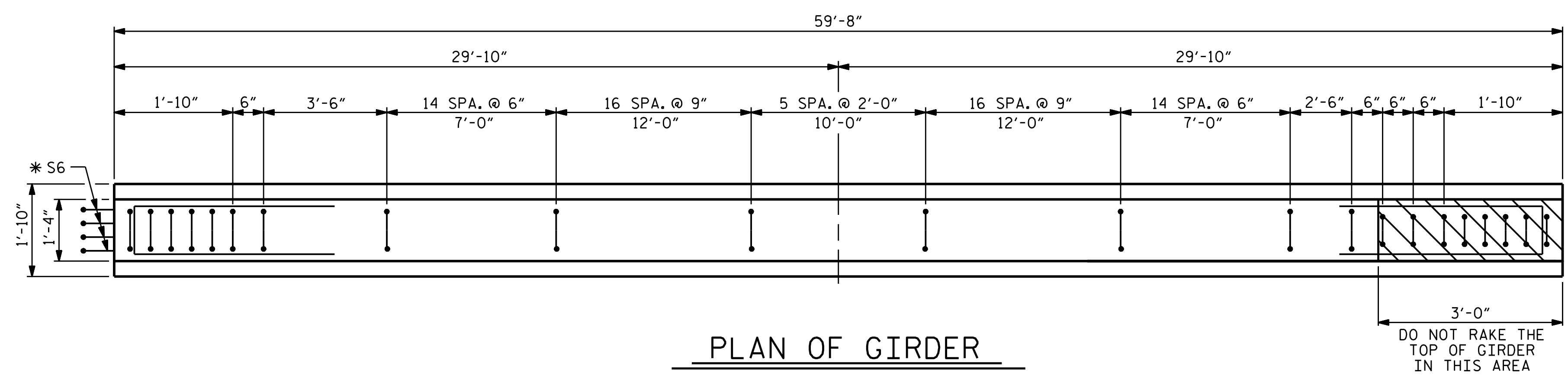
DRAWN BY : N.D'AIUTO DATE : 12/15/15
 CHECKED BY : J. P. MCCARTHA DATE : 6/6/16
 DESIGN ENGINEER OF RECORD : N.D'AIUTO DATE : 3/1/16

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1			3			TOTAL SHEETS	
2			4			30	



0.6" Ø LOW RELAXATION STRAND LAYOUT



0.6" Ø L. R. GRADE 270 STRANDS

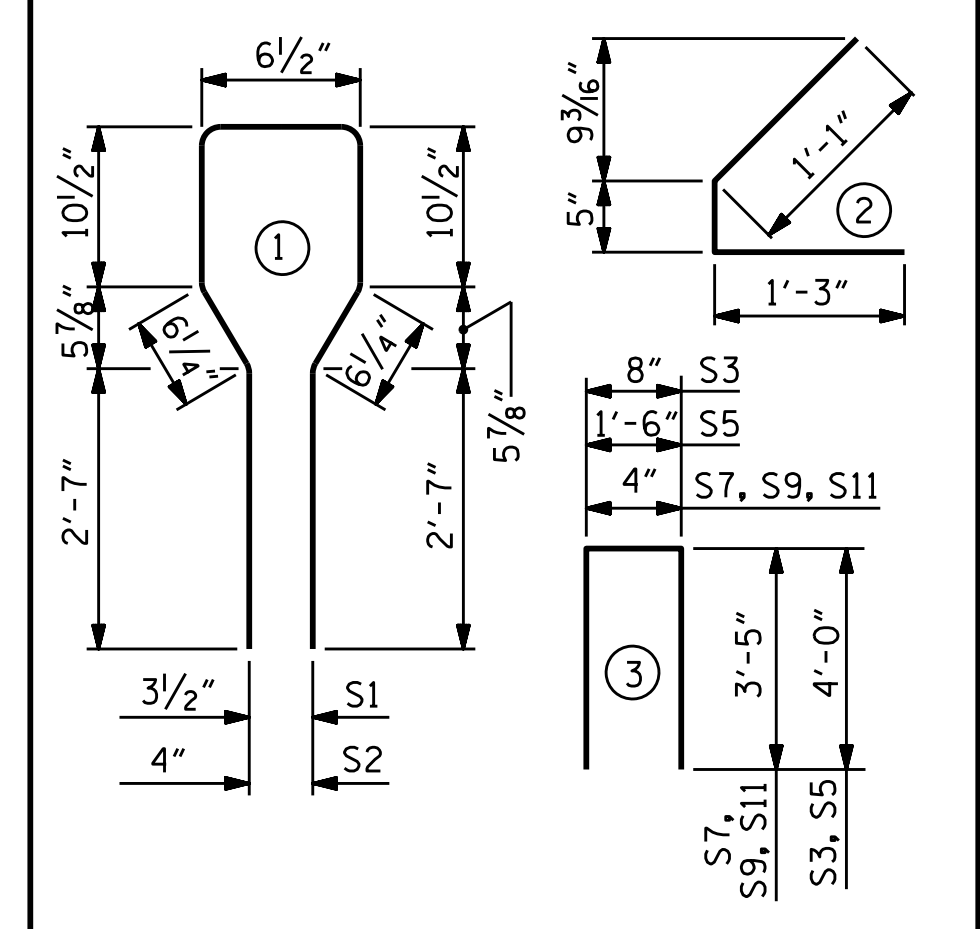
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	78	#4	1	8'-6"	443
S2	6	#6	1	8'-6"	77
S3	4	#4	3	8'-8"	23
S4	56	#4	2	2'-9"	103
S5	1	#4	3	9'-6"	6
*S6	8	#5	STR	3'-8"	31
S7	2	#5	3	7'-2"	15
S8	5	#4	STR	7'-0"	23
S9	6	#6	3	7'-2"	65
S10	1	#3	STR	1'-0"	1
S11	2	#4	3	7'-2"	10

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

BAR TYPES



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL LBS.	5,500 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
45" PCG GIRDER	797	8.6	18

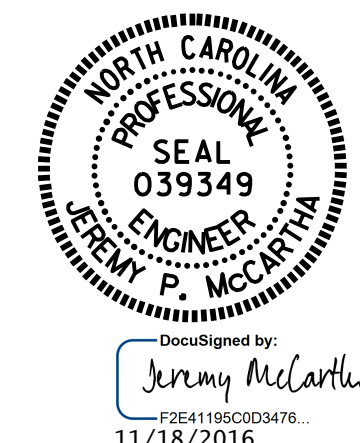
GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5	59'-8"	298'-4"

PROJECT NO. B-5548
CABARRUS COUNTY
 STATION: 29+55.00 -L-

SHEET 1 OF 3

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



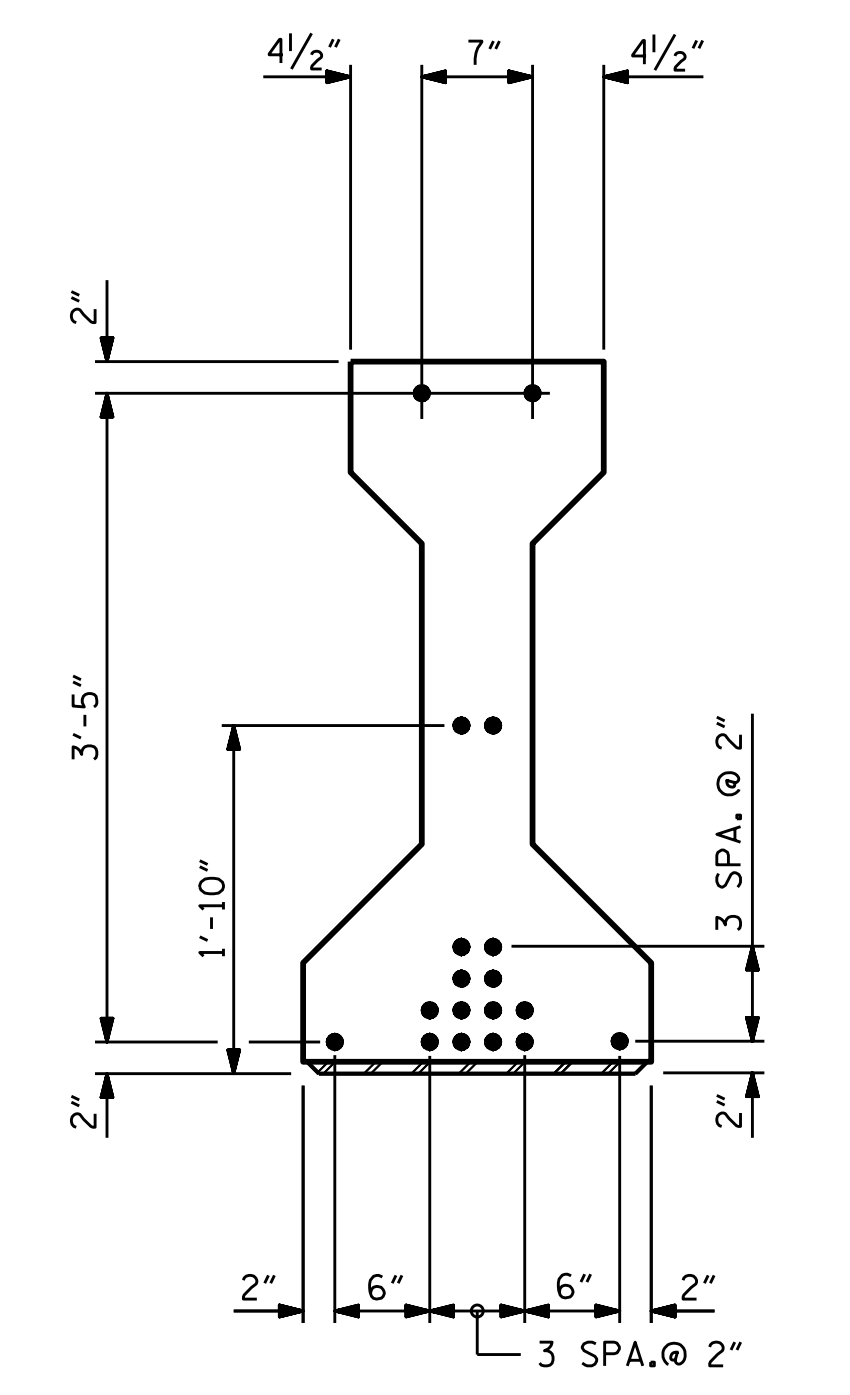
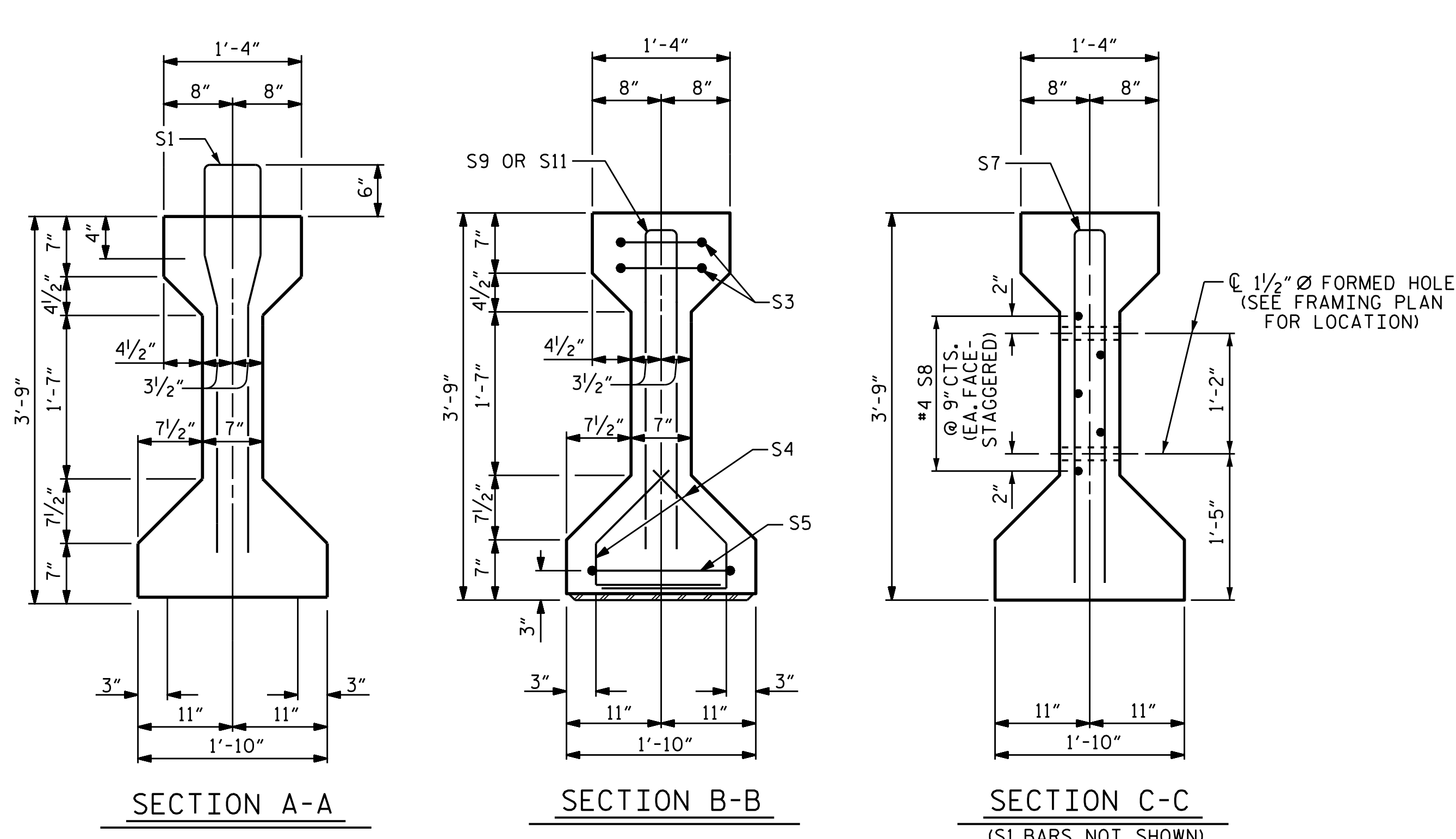
ASSEMBLED BY : N.D'AIUTO DATE : 12/15/15
 CHECKED BY : J. P. MCCARTHA DATE : 6/10/16

DRAWN BY : ELR 8/91
 CHECKED BY : GRP 8/91

DESIGN ENGINEER OF RECORD:
 N.D'AIUTO DATE : 3/1/16

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1			3			TOTAL SHEETS 30	
2			4				



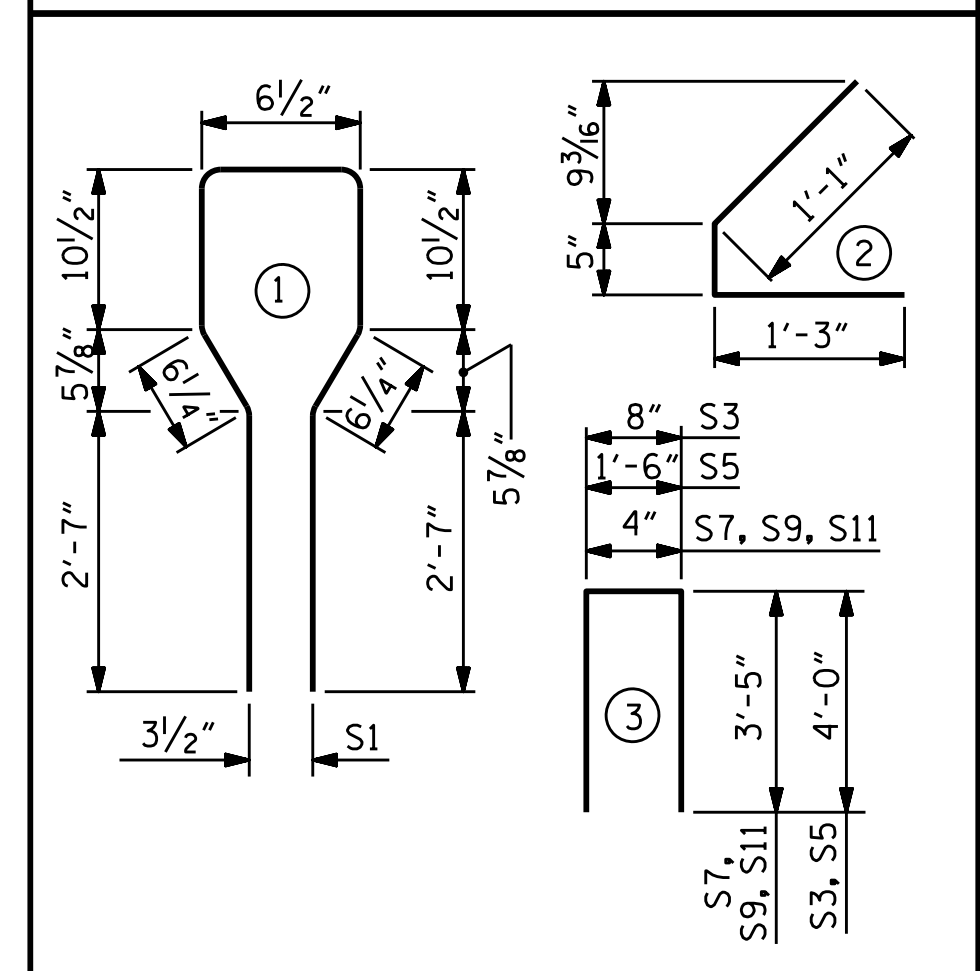
0.6" Ø L. R. GRADE 270 STRANDS

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	76	#4	1	8'-6"	432
S3	4	#4	3	8'-8"	23
S4	56	#4	2	2'-9"	103
S5	2	#4	3	9'-6"	13
S7	2	#5	3	7'-2"	15
S8	5	#4	STR	7'-0"	23
S9	12	#6	3	7'-2"	129
S11	4	#4	3	7'-2"	19

BAR TYPES



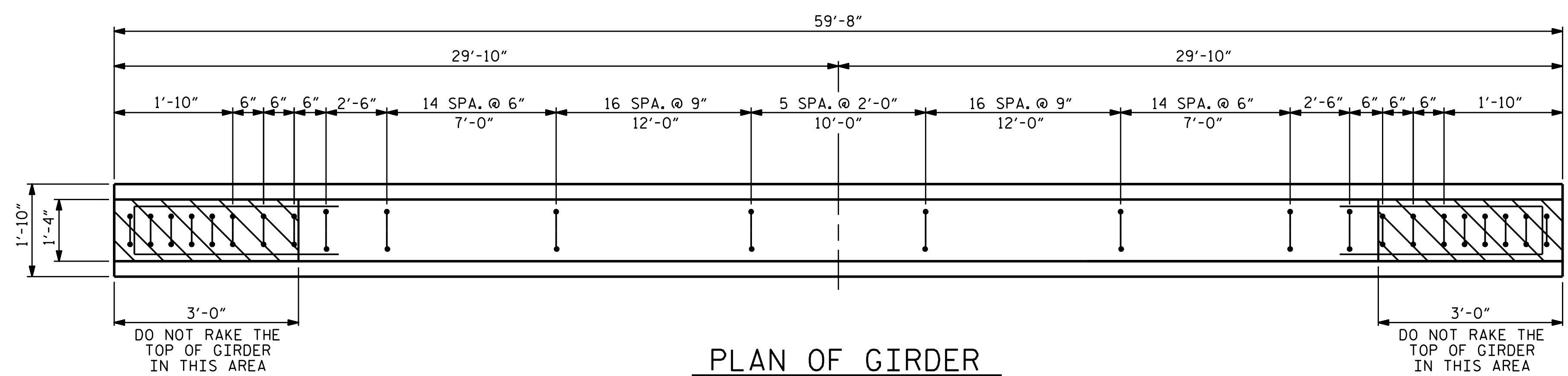
ALL BAR DIMENSIONS ARE OUT-TO-OUT.

QUANTITIES FOR ONE GIRDER

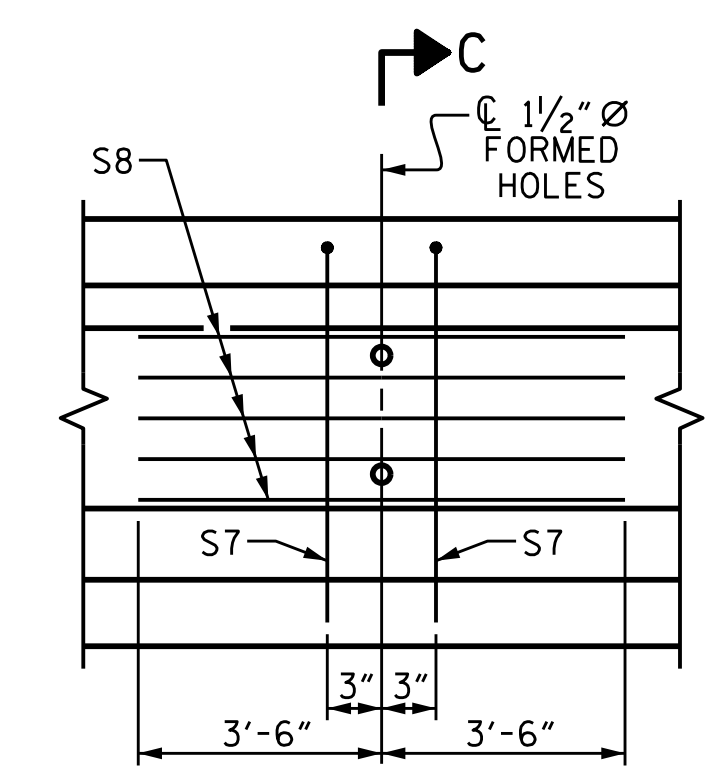
	REINFORCING STEEL LBS.	5,500 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
45" PCG GIRDER	757	8.6	18

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5	59'-8"	298'-4"

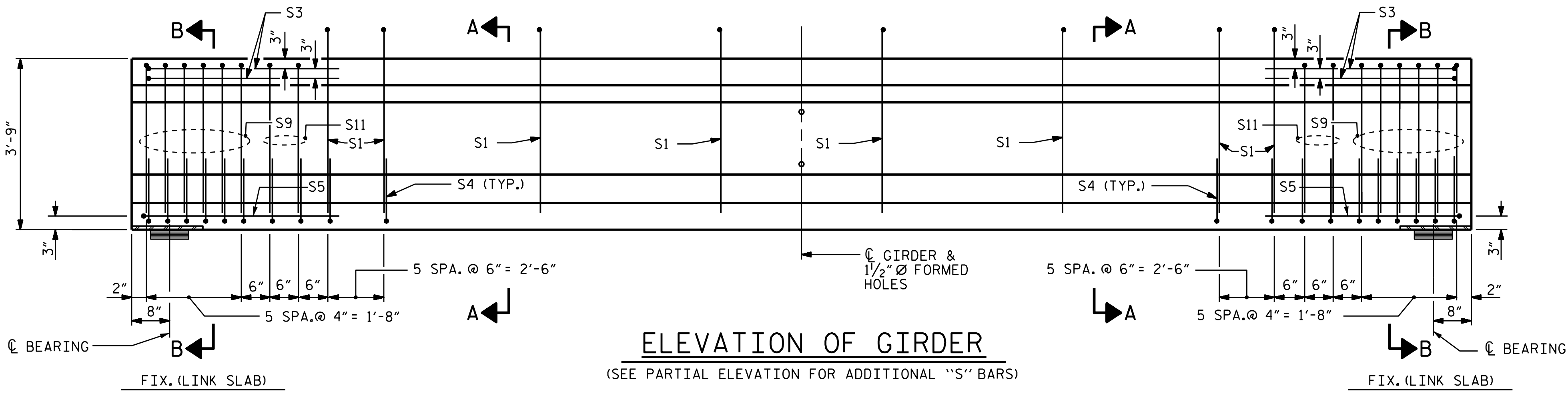


PLAN OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS



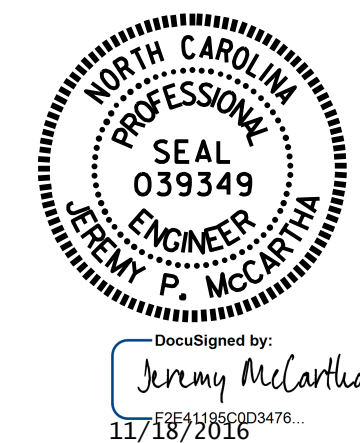
ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

ASSEMBLED BY : N.D'AIUTO DATE : 12/15/15
CHECKED BY : J. P. MCCARTHA DATE : 6/10/16

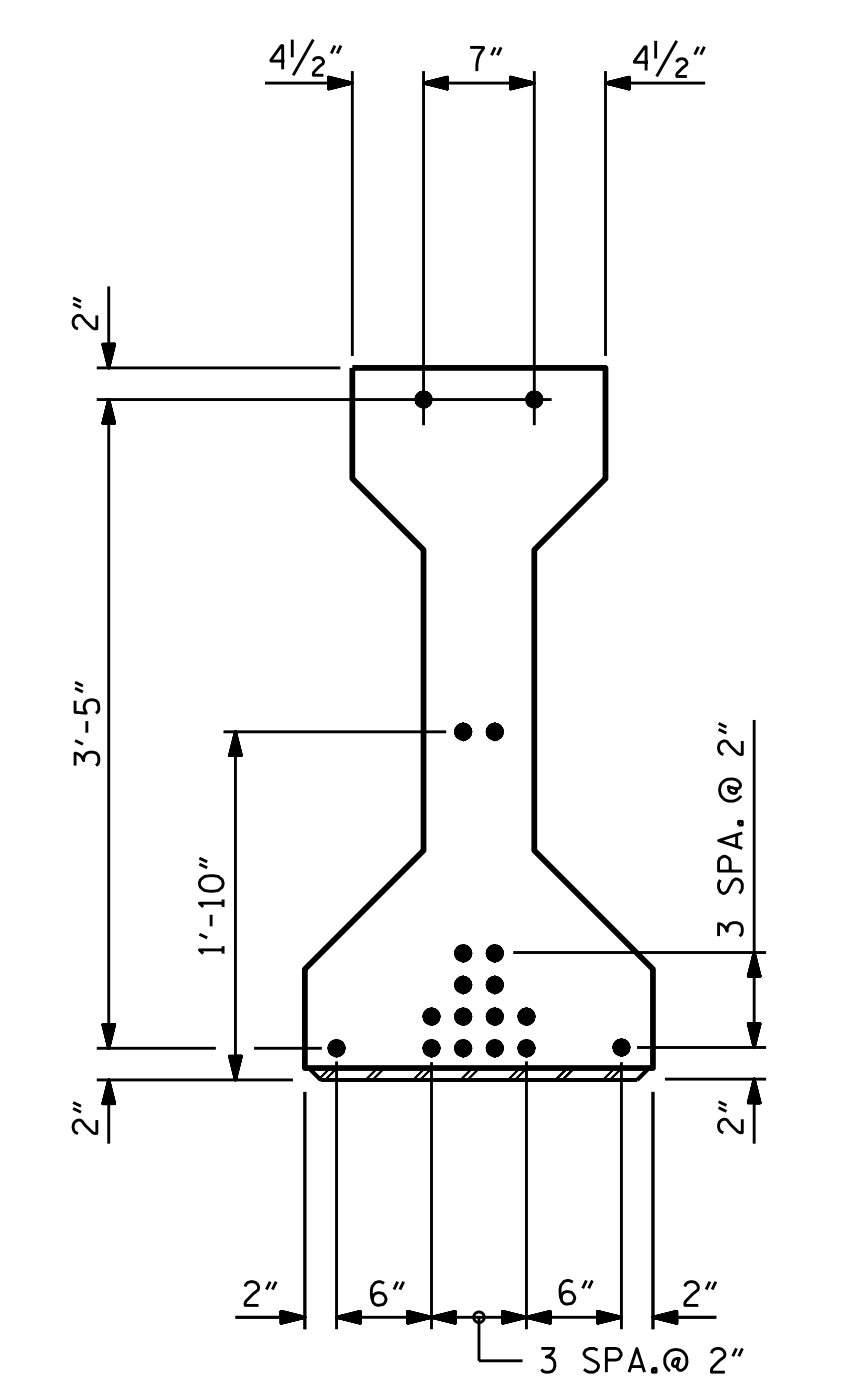
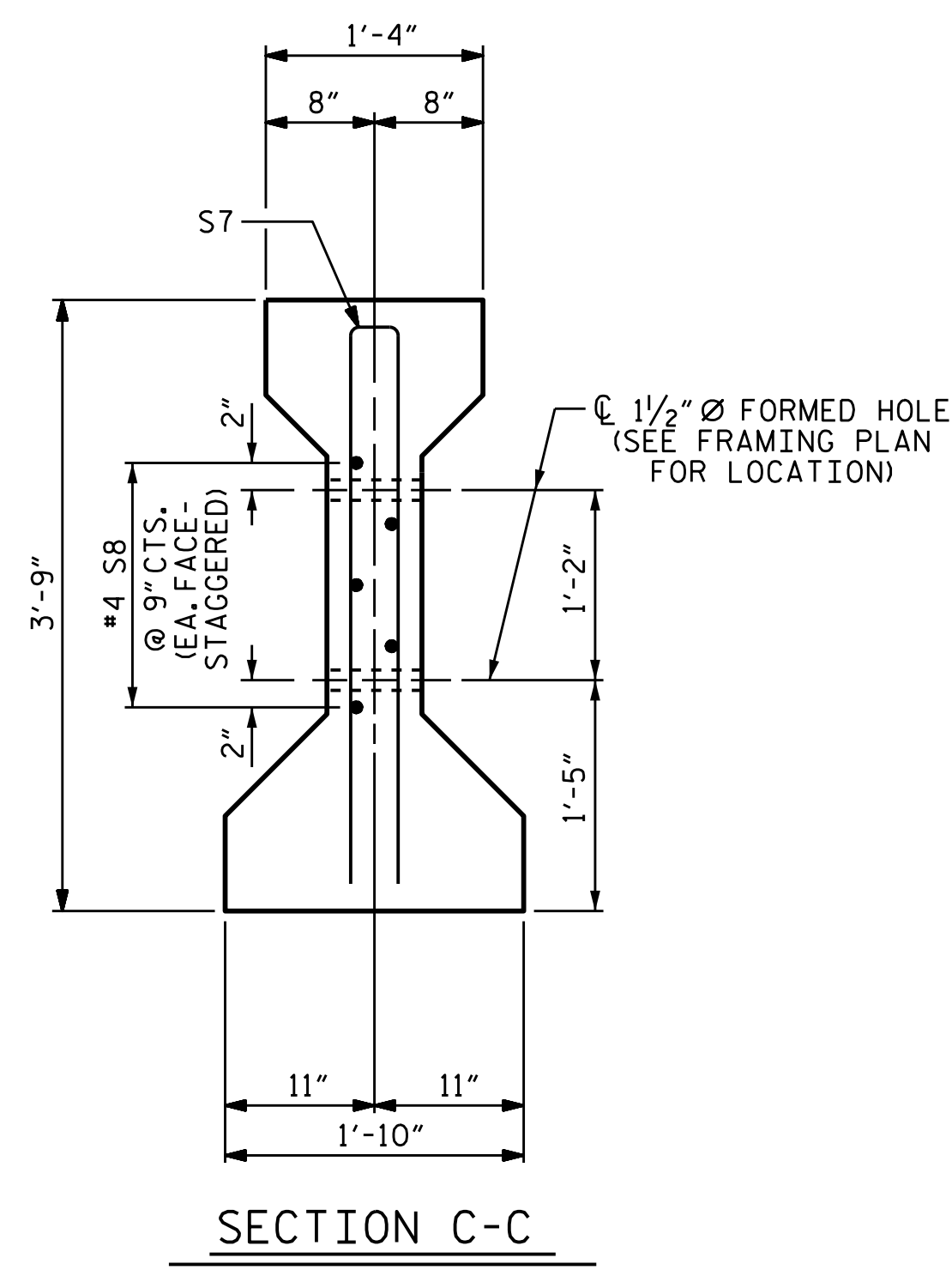
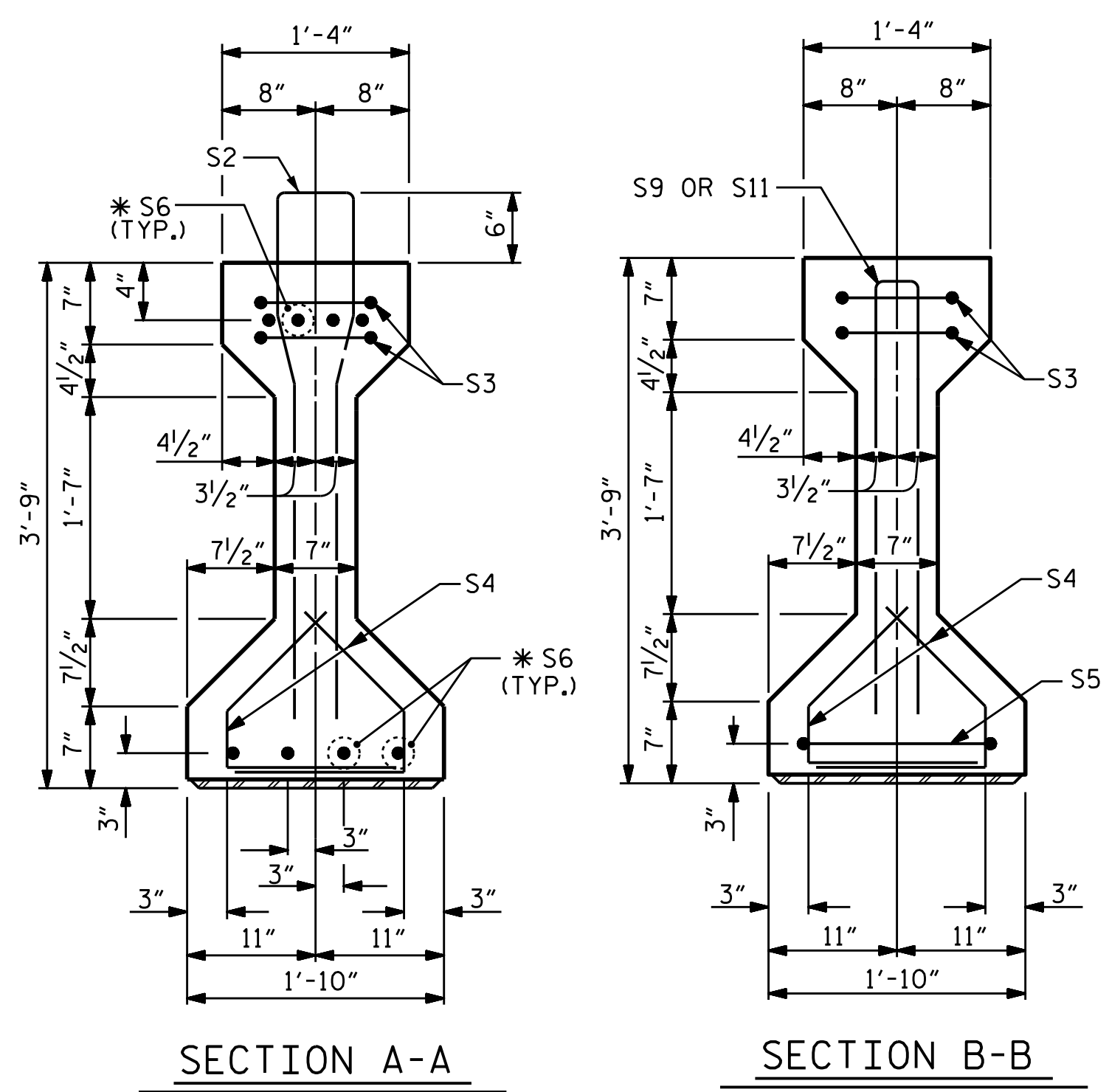
DRAWN BY : ELR 8/91 REV. 5/1/06R TLA/GM
CHECKED BY : GRP 8/91 REV. 10/1/11 MAA/GM
REV. 1/15 MAA/TMG

DESIGN ENGINEER OF RECORD:
N.D'AIUTO DATE : 3/1/16



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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS 30
2			4			



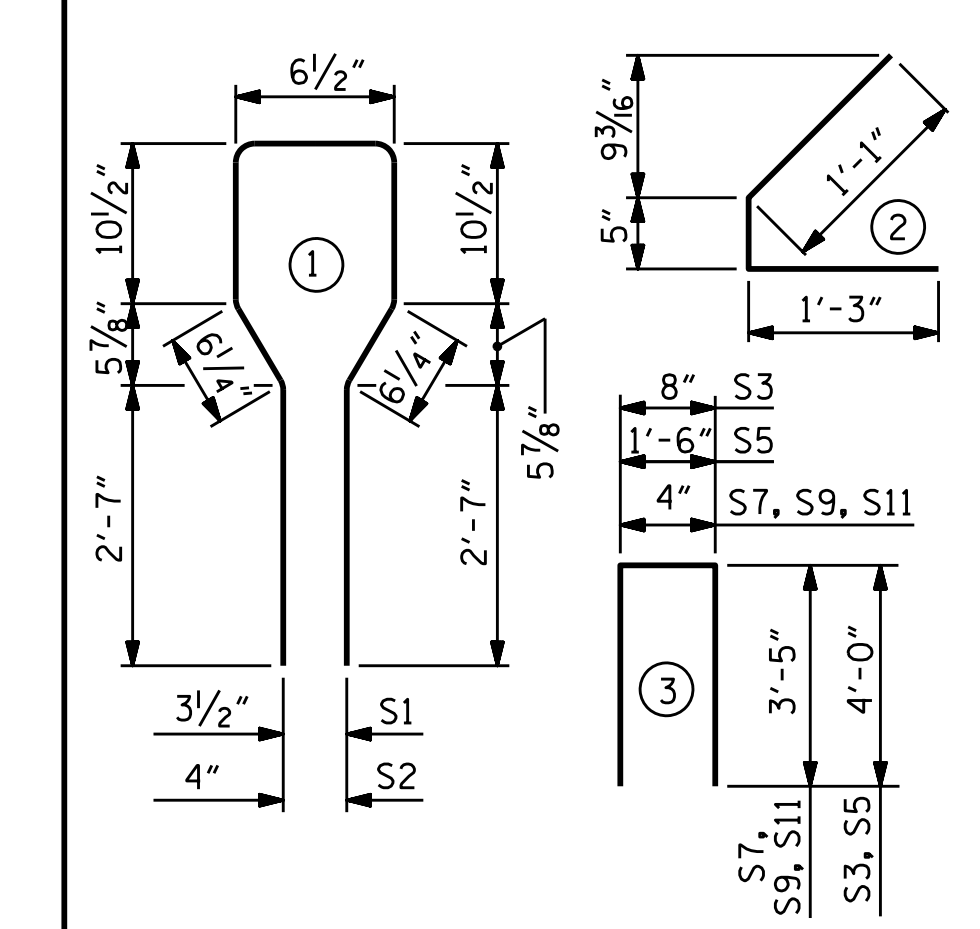
0.6" Ø LOW RELAXATION STRAND LAYOUT

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	78	#4	1	8'-6"	443
S2	6	#6	1	8'-6"	77
S3	4	#4	3	8'-8"	23
S4	56	#4	2	2'-9"	103
S5	1	#4	3	9'-6"	6
*S6	8	#5	STR	3'-8"	31
S7	2	#5	3	7'-2"	15
S8	5	#4	STR	7'-0"	23
S9	6	#6	3	7'-2"	65
S10	1	#3	STR	1'-0"	1
S11	2	#4	3	7'-2"	10

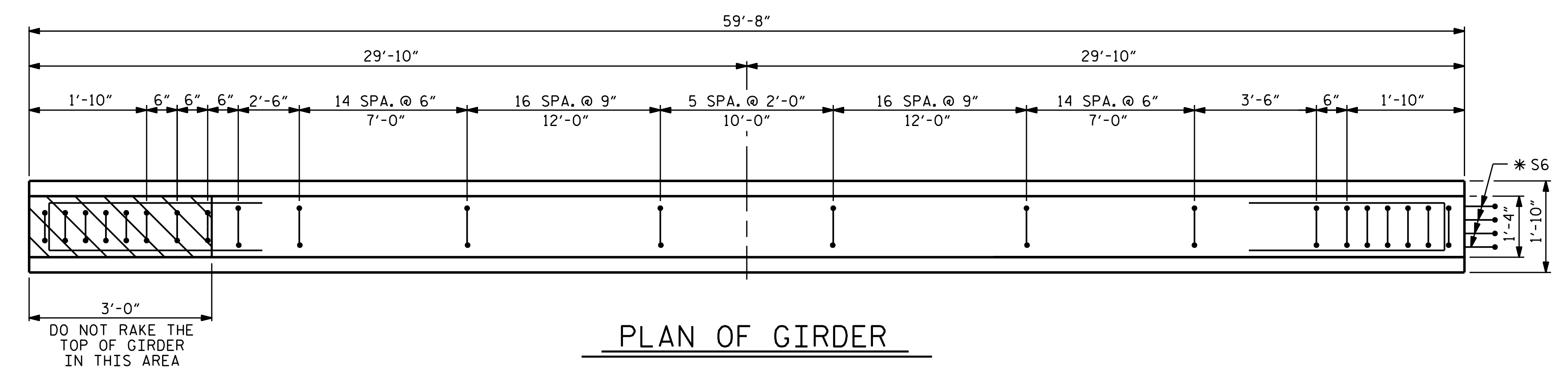
* NOTE: S6 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

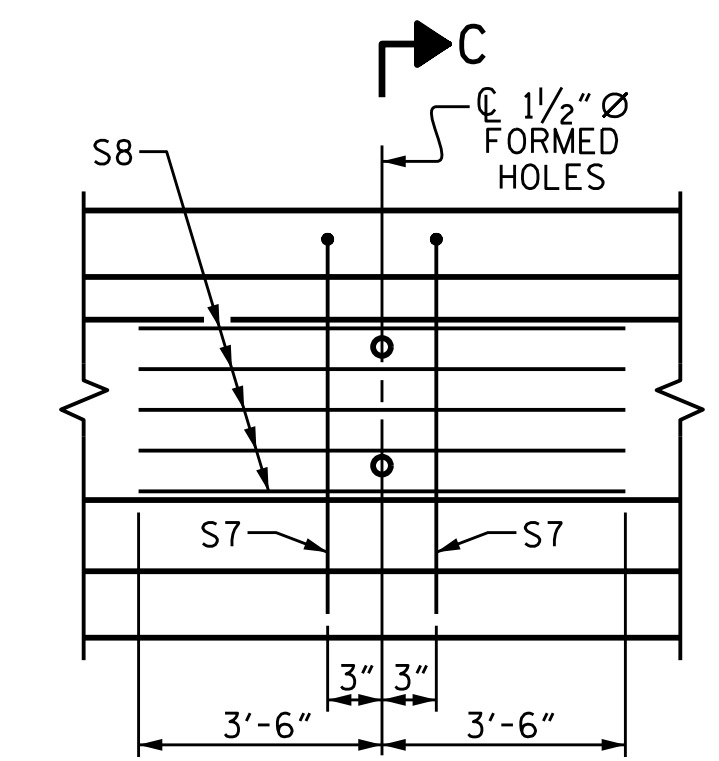


ALL BAR DIMENSIONS ARE OUT-TO-OUT.

QUANTITIES FOR ONE GIRDER			
45" PCG GIRDER	REINFORCING STEEL	5,500 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LBS.	C.Y.	No.
	797	8.6	18
GIRDERS REQUIRED			
NUMBER	LENGTH	TOTAL LENGTH	
5	59'-8"	298'-4"	

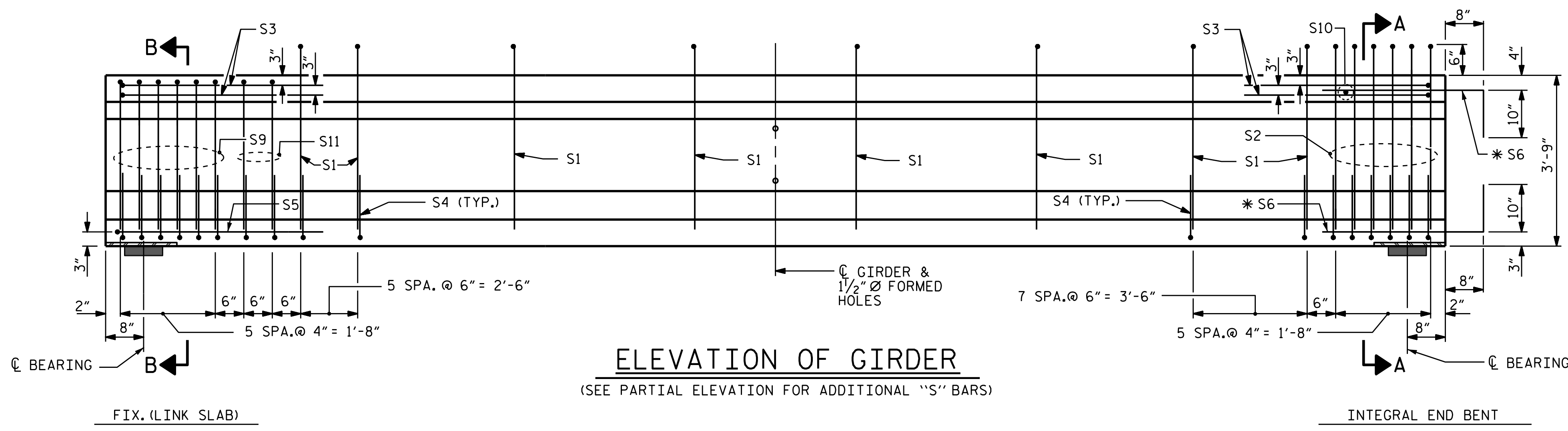


PLAN OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS



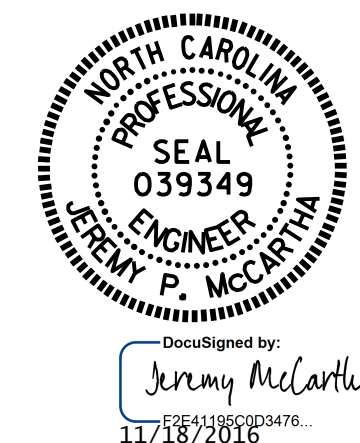
ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

ASSEMBLED BY : N.D'AIUTO DATE : 12/15/15
 CHECKED BY : J. P. MCCARTHA DATE : 6/10/16

DRAWN BY : ELR 8/91 REV. 5/1/06R TLA/GM
 CHECKED BY : GRP 8/91 REV. 10/1/11 MAA/GM
 REV. 1/15 MAA/TMG

DESIGN ENGINEER OF RECORD:
 N.D'AIUTO DATE : 3/1/16



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. B-5548
 CABARRUS COUNTY
 STATION: 29+55.00 -L-
 SHEET 3 OF 3

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

SHEET NO. S-14
 TOTAL SHEETS 30

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.

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

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

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

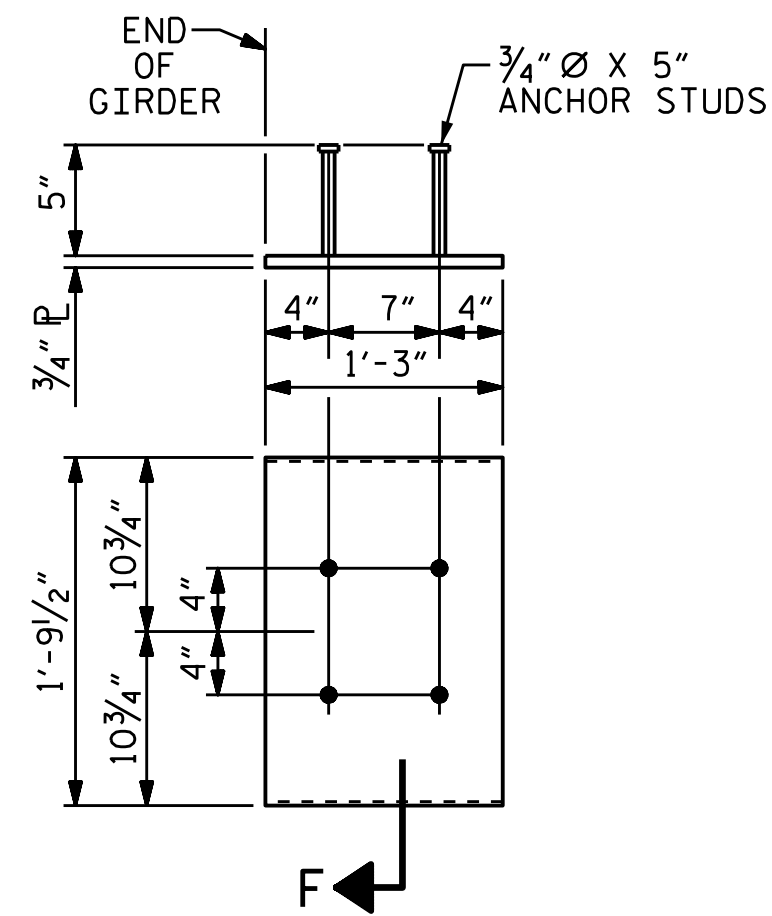
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4,100 PSI.

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

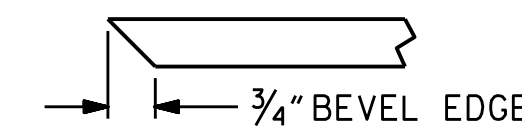
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE AREA SHOWN ON GIRDER SHEET SHALL BE RAKED TO A DEPTH OF 1/4".

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

FOR EMBEDDED CLIPS FOR PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.



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



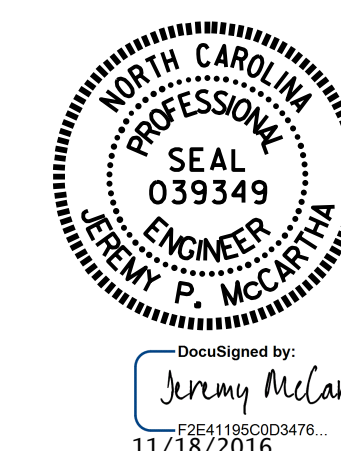
SECTION "F"
(SEE NOTES)

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																							
0.6" Ø LOW RELAXATION	SPAN A, B & C											SPAN A, B & C											
	GIRDER 1 & GIRDER 5											GIRDER 2, 3 & 4											
	TENTH POINTS	0.0	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0.0	0.0	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	0.0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.025	0.048	0.065	0.076	0.080	0.076	0.065	0.048	0.025	0.000	0.000	0.025	0.048	0.065	0.076	0.080	0.076	0.065	0.048	0.025	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.015	0.028	0.038	0.044	0.047	0.044	0.038	0.028	0.015	0.000	0.000	0.017	0.031	0.043	0.050	0.053	0.050	0.043	0.031	0.017	0.000
FINAL CAMBER	↑	0	1/8"	1/4"	5/16"	3/8"	3/8"	3/8"	5/16"	1/4"	1/8"	0	0	1/8"	3/16"	1/4"	5/16"	5/16"	5/16"	1/4"	3/16"	1/8"	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-5548
CABARRUS COUNTY
STATION: 29+55.00 -L-



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

ASSEMBLED BY : N.D'AIUTO DATE : 12/15/15
CHECKED BY : J. P. MCCARTHA DATE : 6/8/16

DRAWN BY : ELR 11/91 REV. 10/1/11 MAA/GM
CHECKED BY : GRP 11/91 REV. 1/15 MAA/TMG
DESIGN ENGINEER OF RECORD:
N.D'AIUTO DATE : 3/1/16

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			30

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.

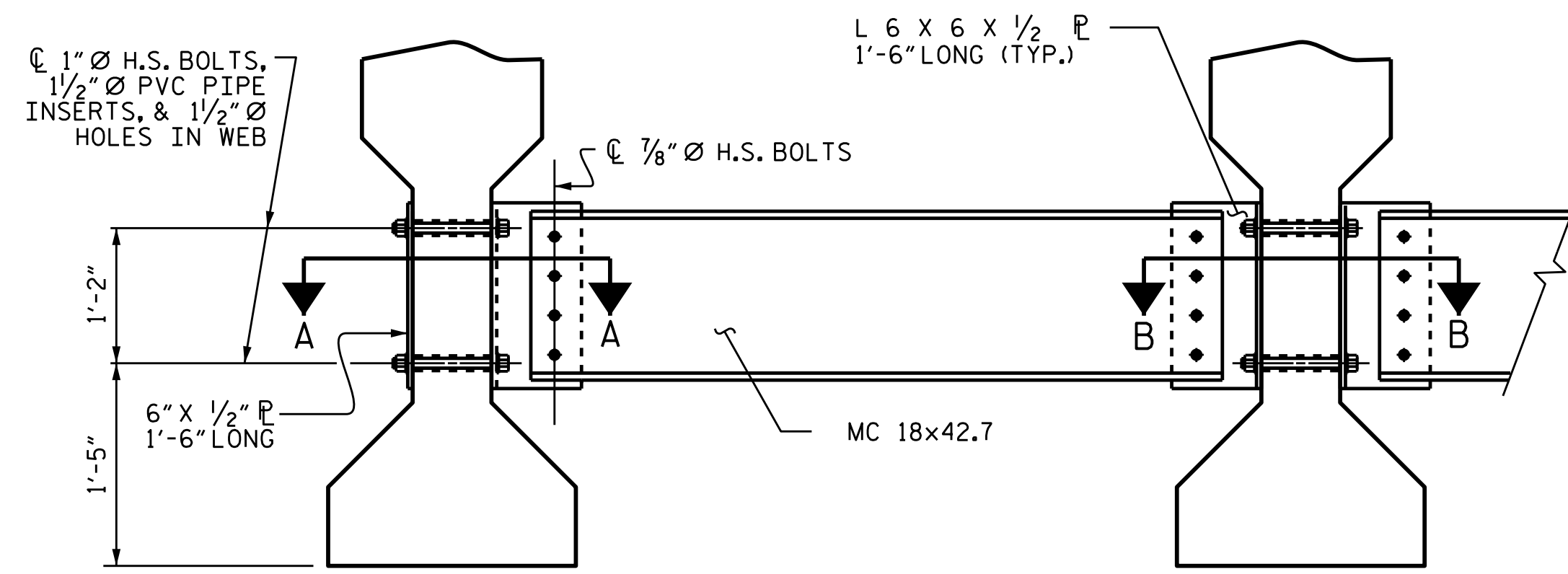
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

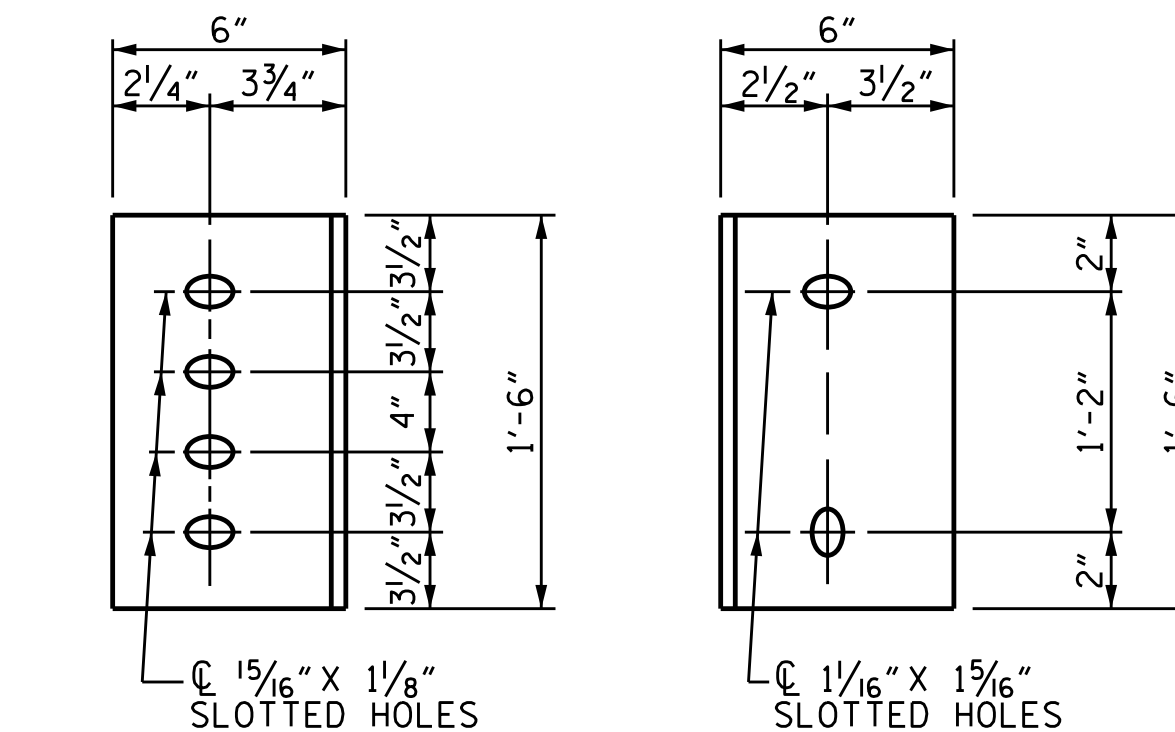
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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.

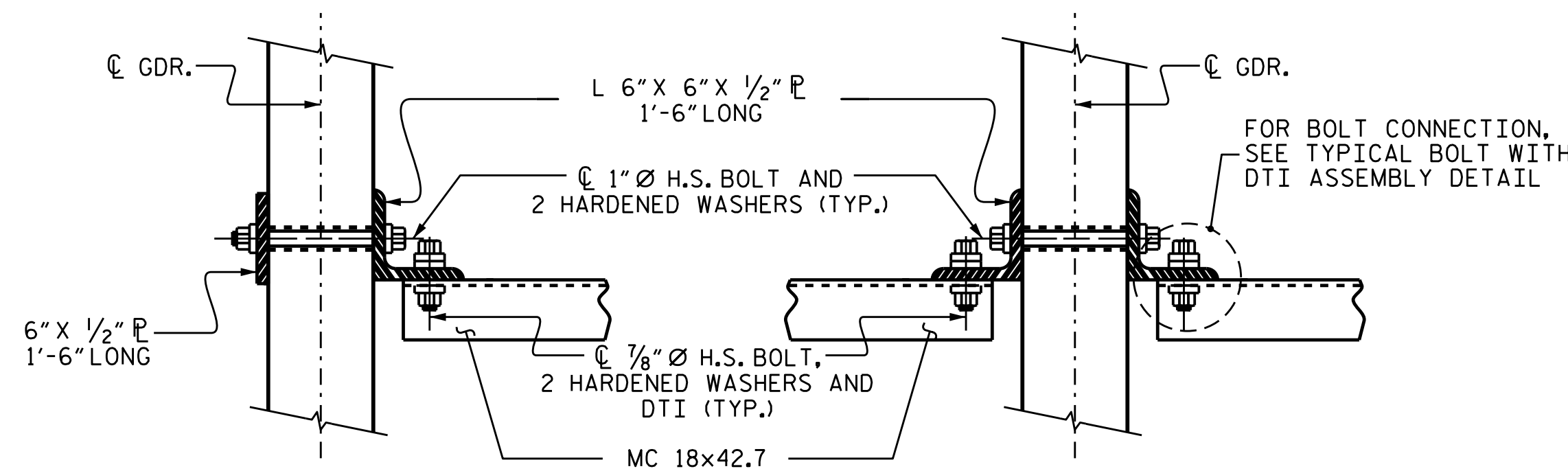
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



EXTERIOR GIRDER INTERIOR GIRDER
PART SECTION AT INTERMEDIATE DIAPHRAGM



CONNECTOR PLATE DETAILS



CONNECTION DETAILS

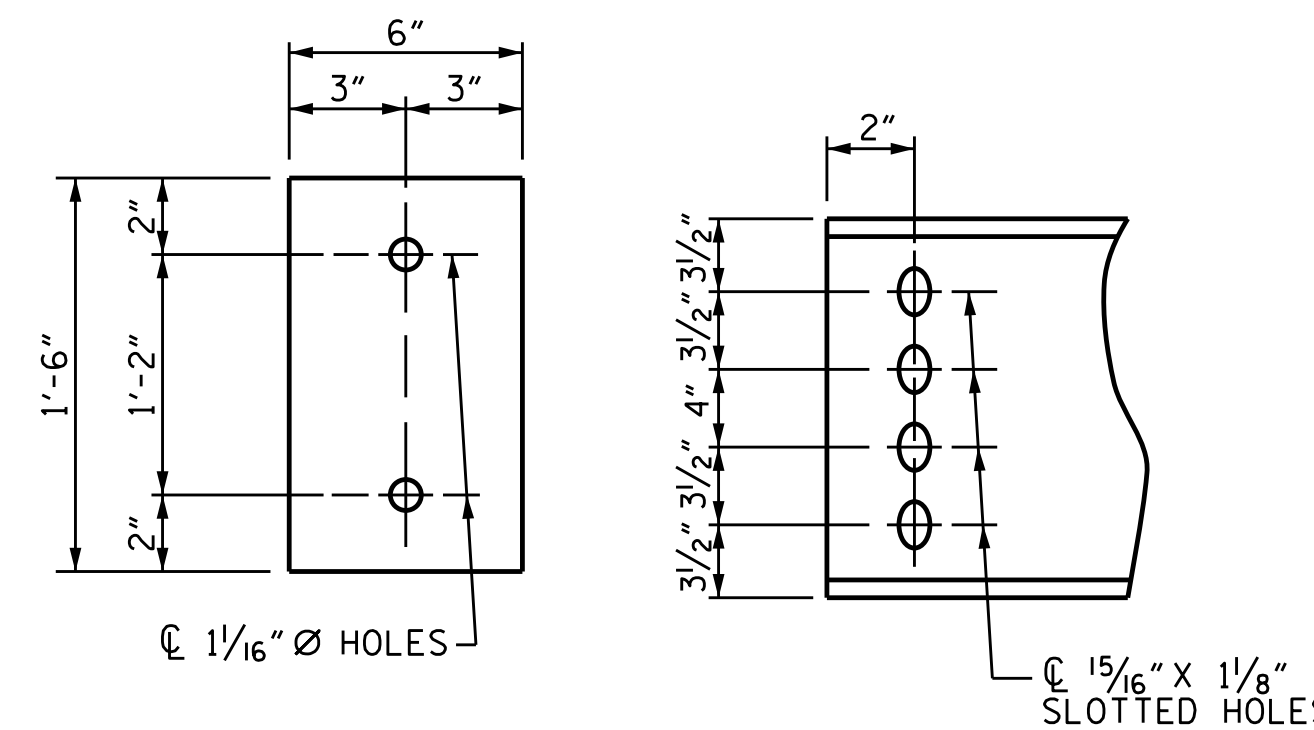
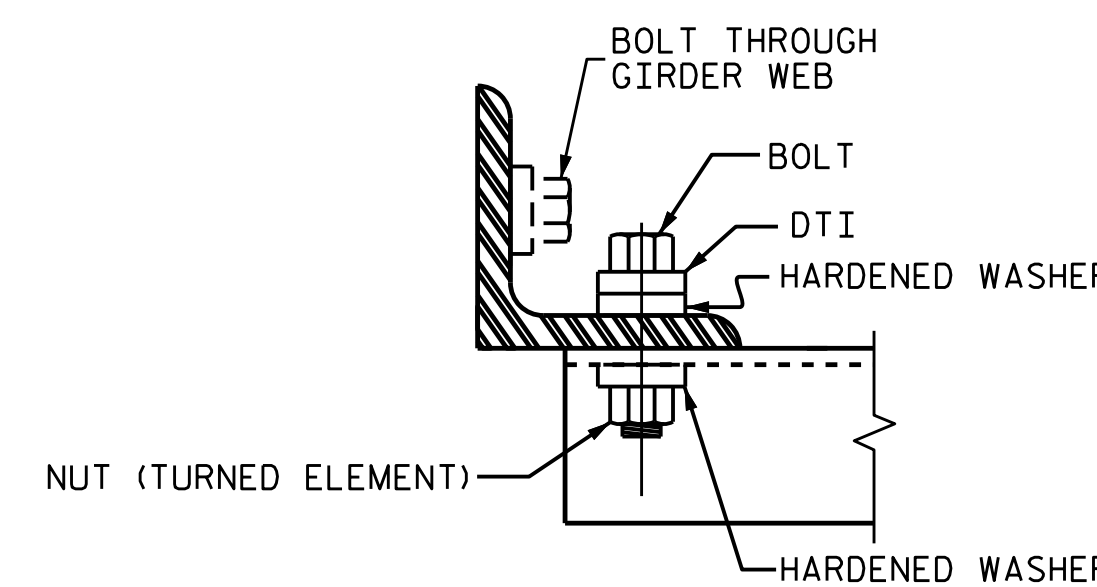
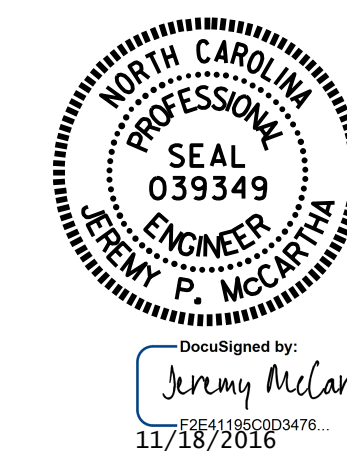


PLATE DETAILS CHANNEL END



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. B-5548
CABARRUS COUNTY
 STATION: 29+55.00 -L-

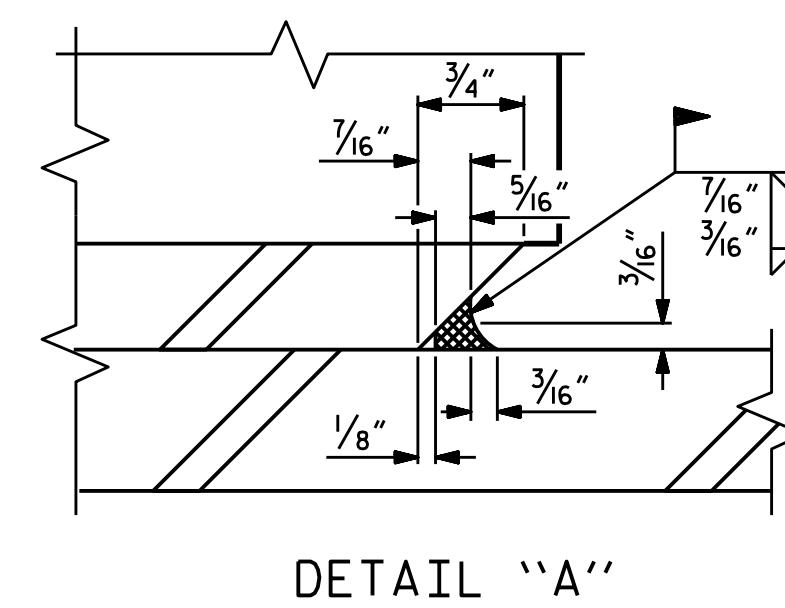
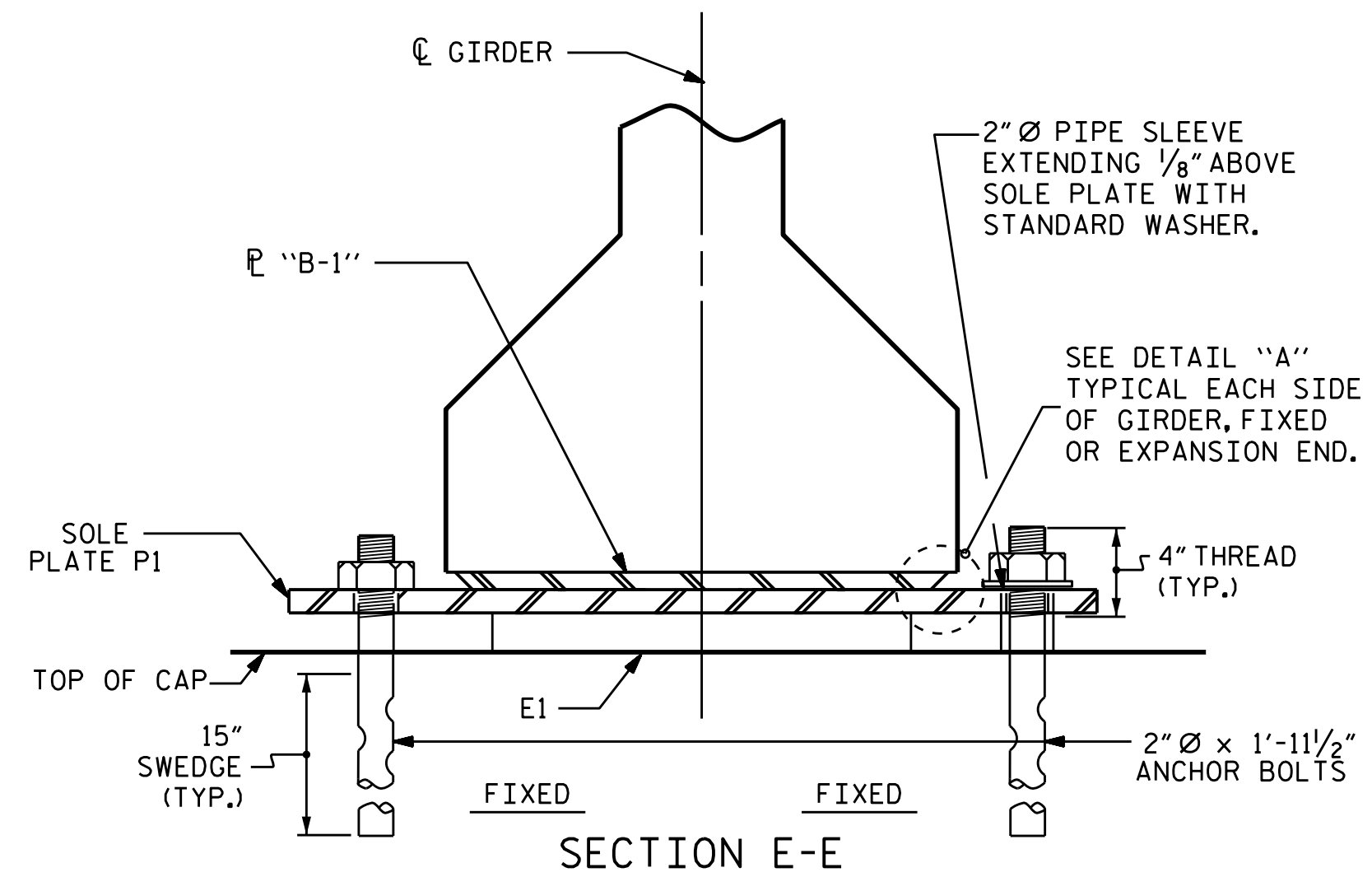
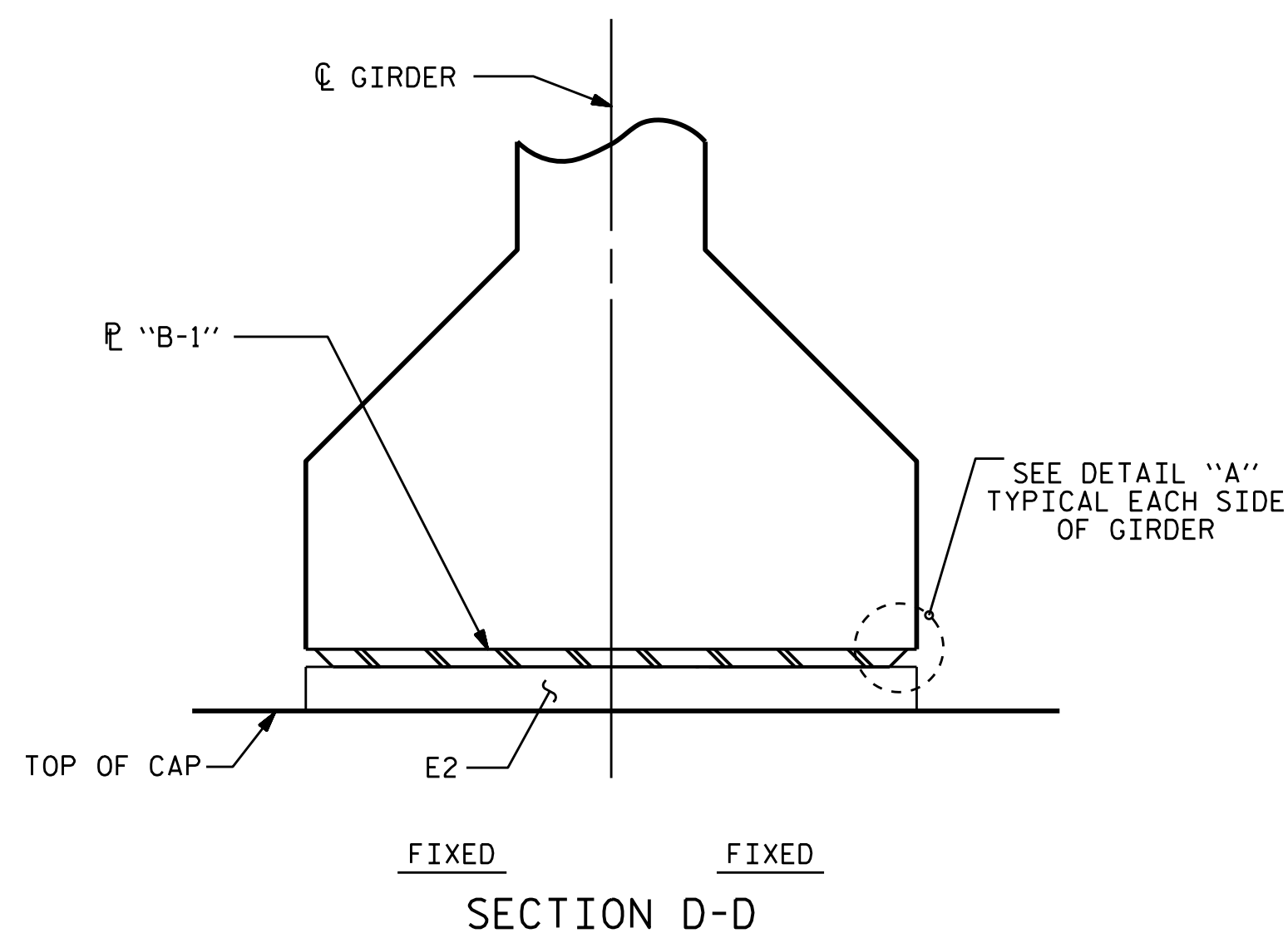


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 INTERMEDIATE
 STEEL DIAPHRAGMS FOR
 TYPE III PRESTRESSED
 CONCRETE GIRDERS

ASSEMBLED BY :	N.D'AIUTO	DATE :	12/15/15
CHECKED BY :	J. P. MCCARTHA	DATE :	6/8/16
DRAWN BY :	TLA 6/05	ADDED :	10/21/05
CHECKED BY :	VC 6/05	REV. :	5/1/06RRR KMM/GM
		REV. :	10/1/11 MAA/GM

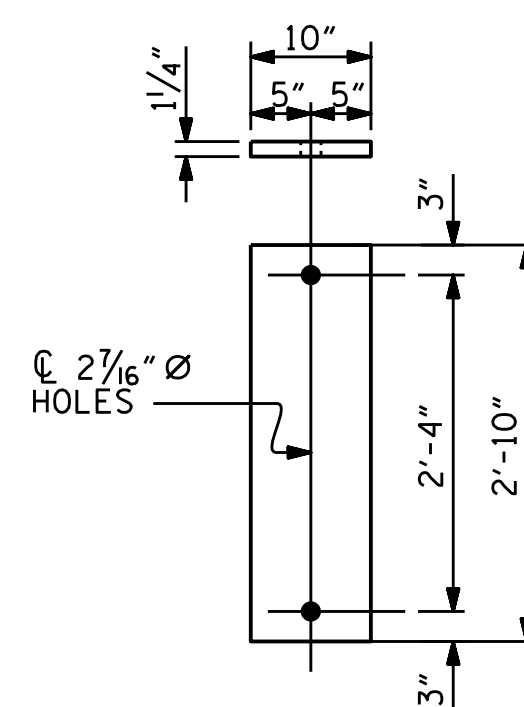
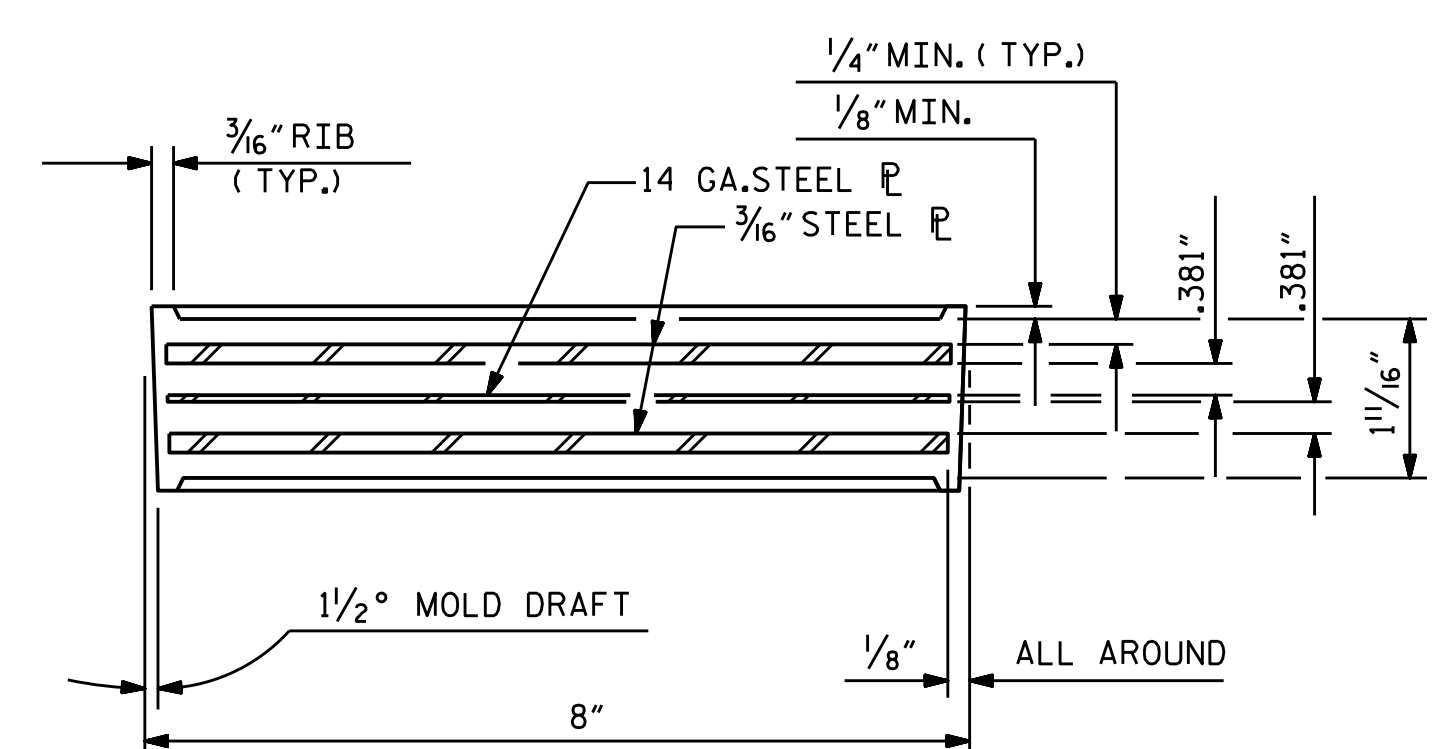
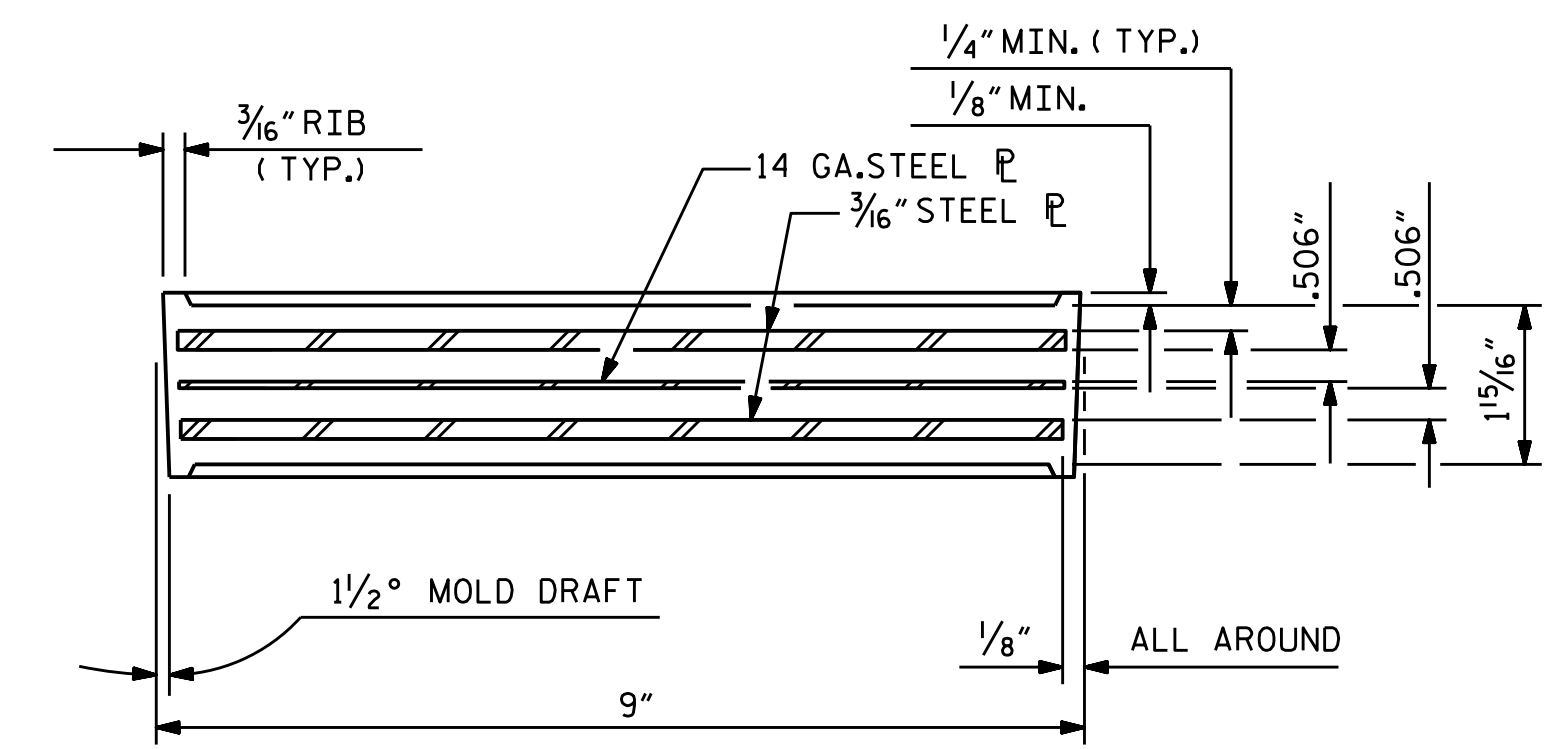
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16	
1			3			TOTAL SHEETS	
2			4			30	



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 P1, 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.

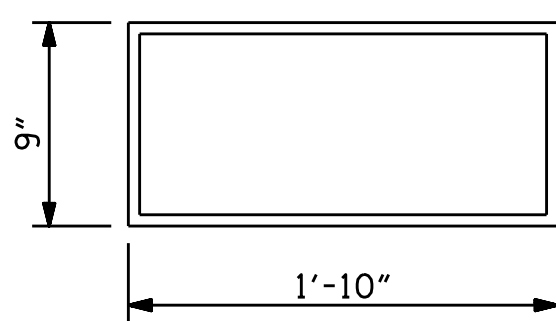


MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE III	205 k
TYPE IV	225 k

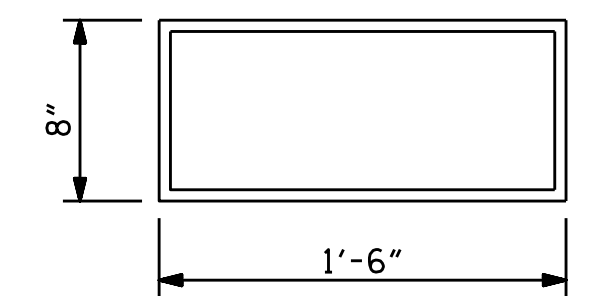
TYPICAL SECTION OF ELASTOMERIC BEARINGS

TYPICAL SECTION OF ELASTOMERIC BEARINGS

SOLE PLATE DETAILS (P1)



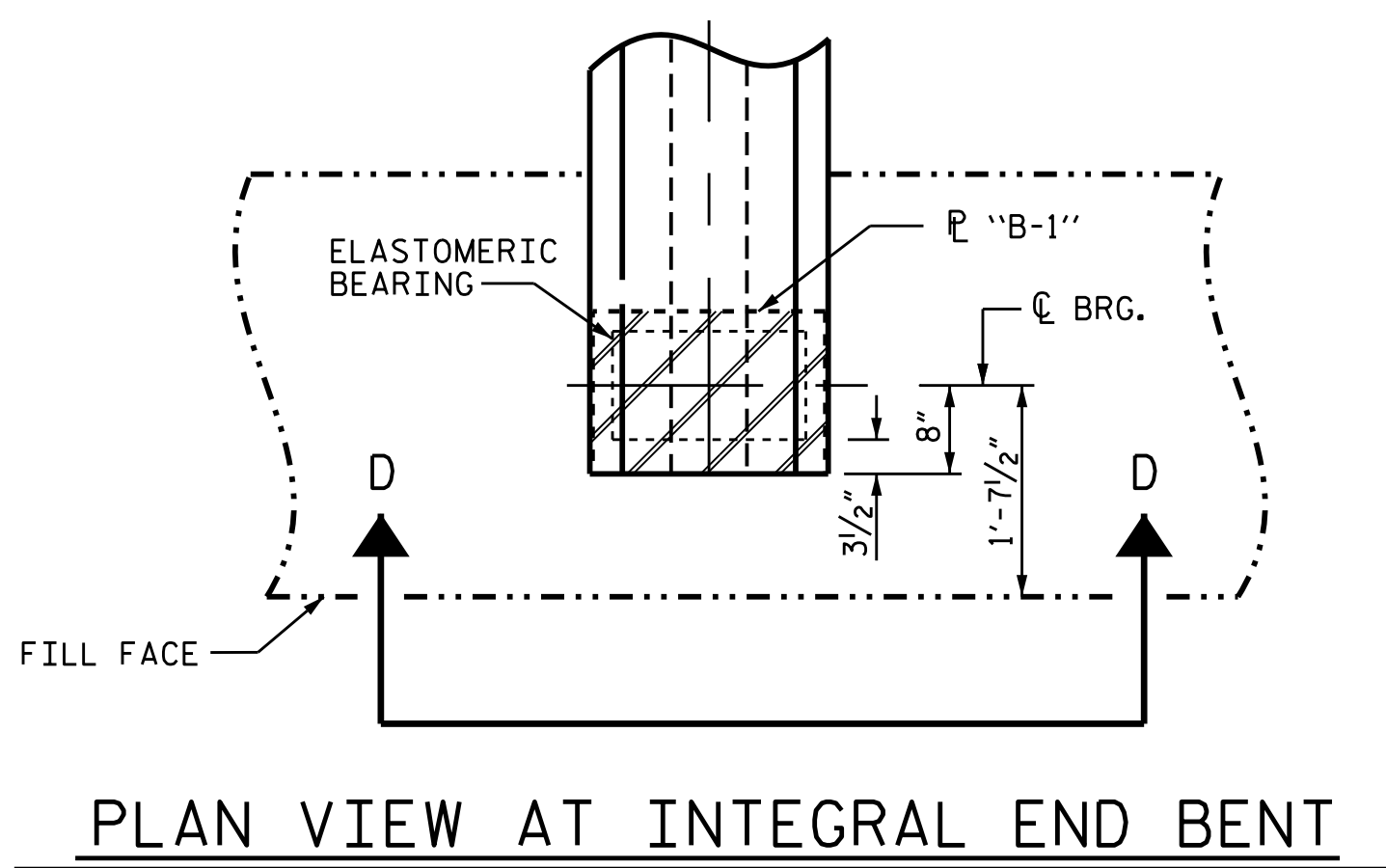
E2 (10 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING



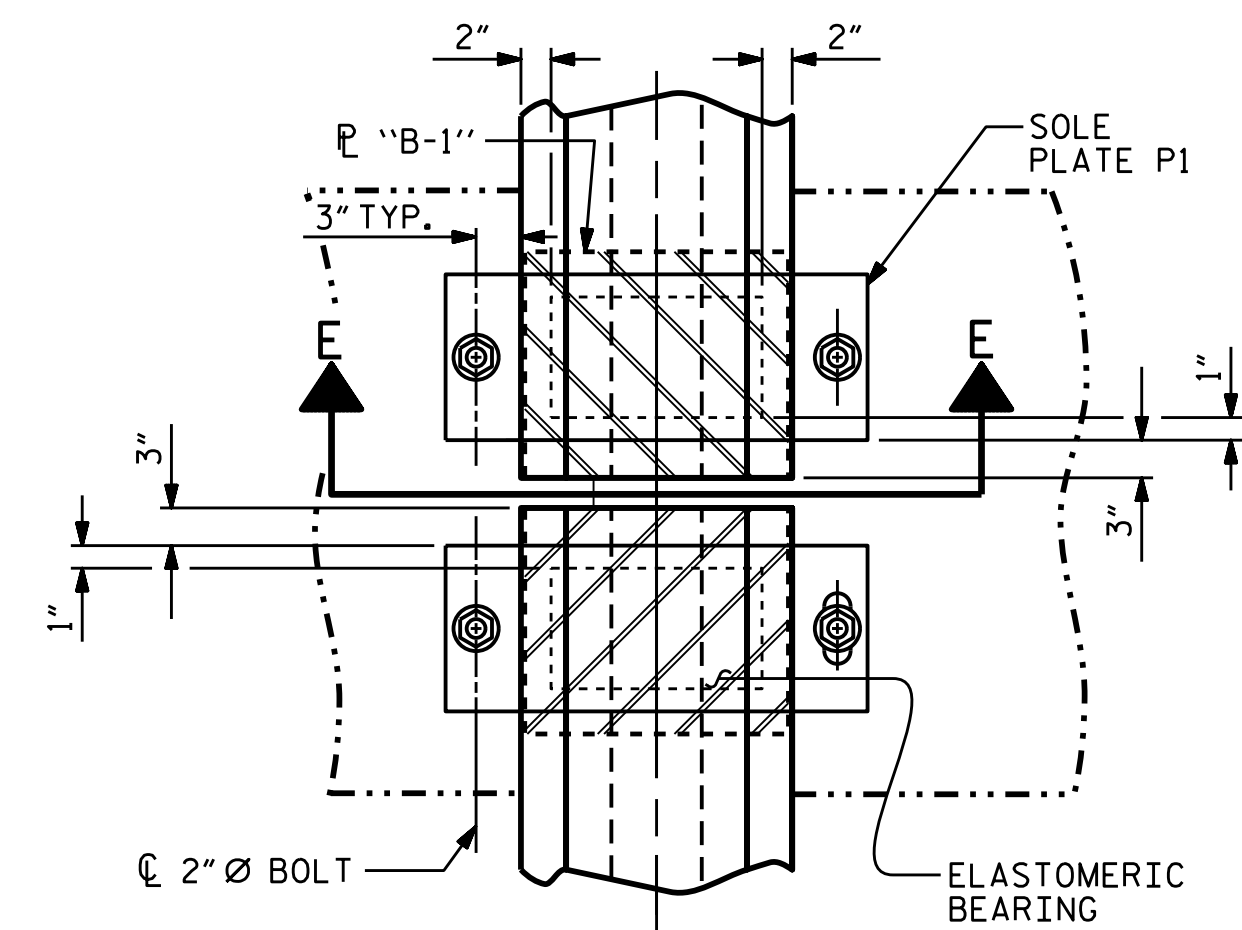
E1 (20 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING

TYPE IV
AT INTEGRAL END BENTS

TYPE III
AT BENT 1 & 2

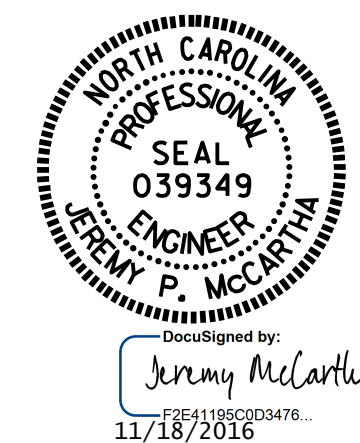


PLAN VIEW AT INTEGRAL END BENT



PLAN VIEW AT BENT
(SHOWING SIMPLE SPAN BENT)

PROJECT NO. B-5548
CABARRUS COUNTY
 STATION: 29+55.00 -L-

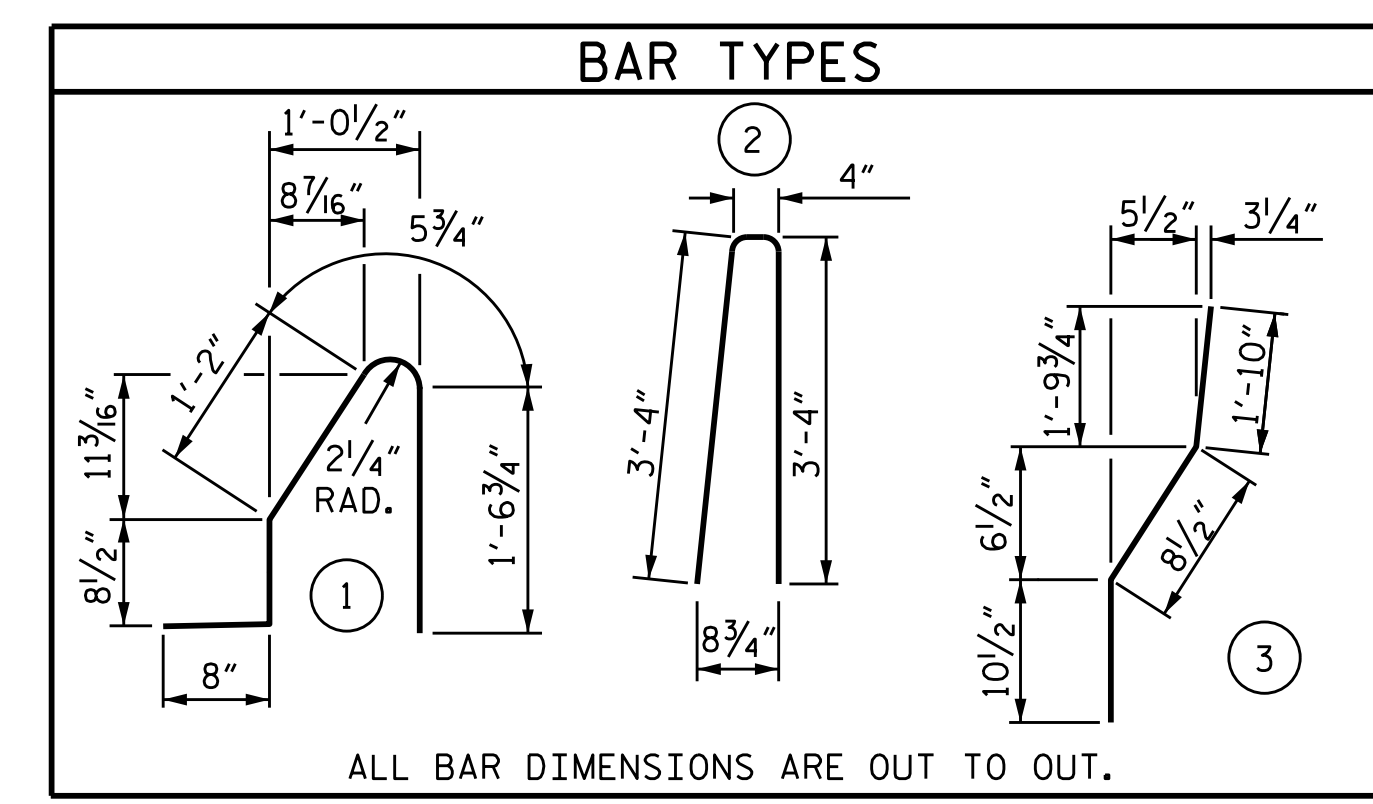
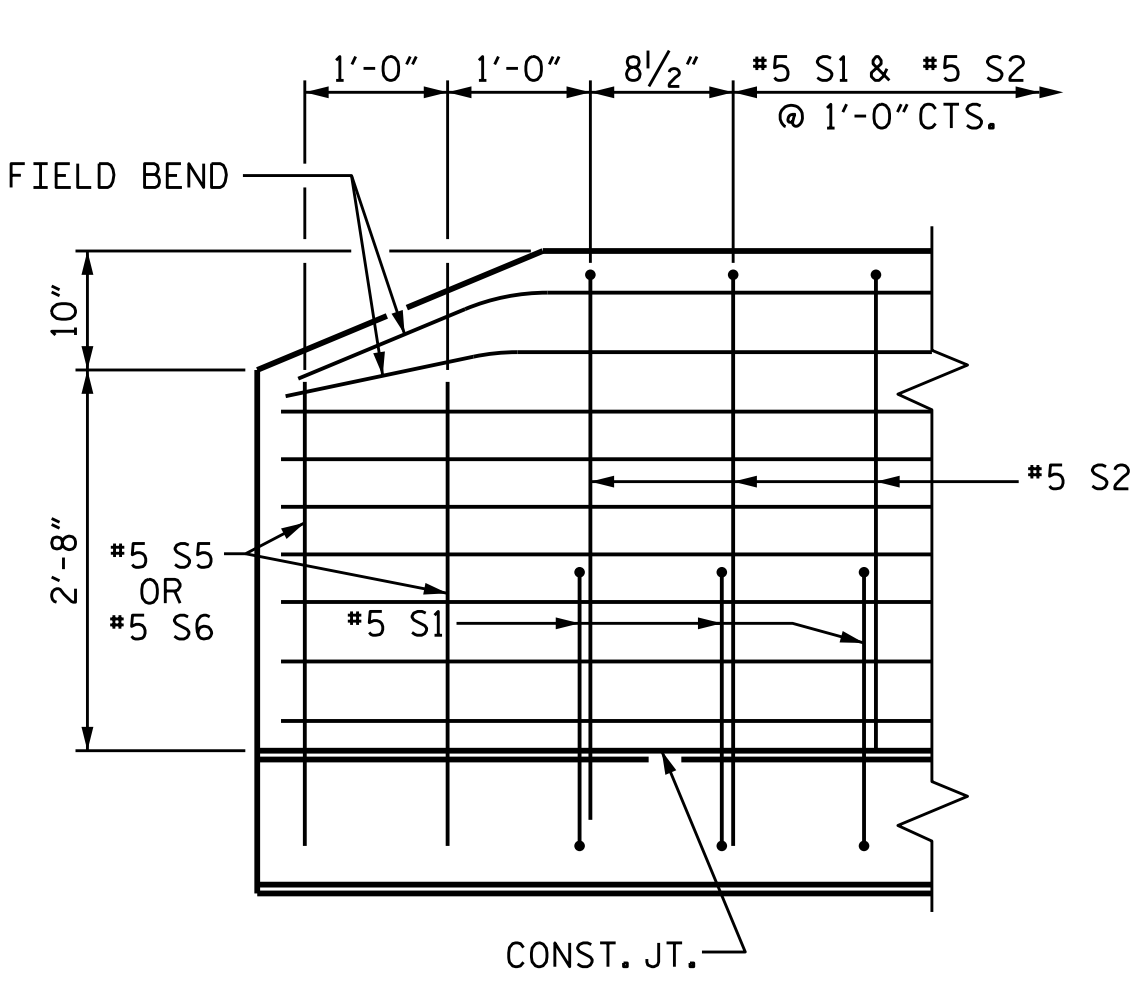
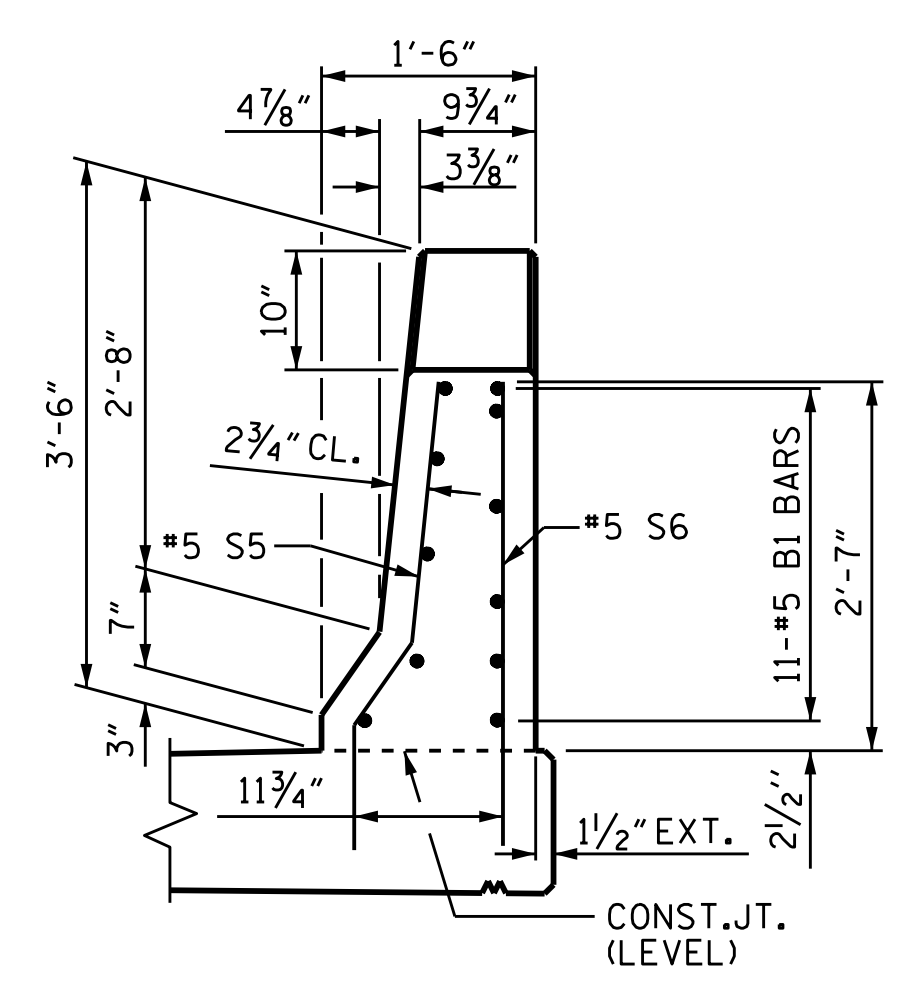
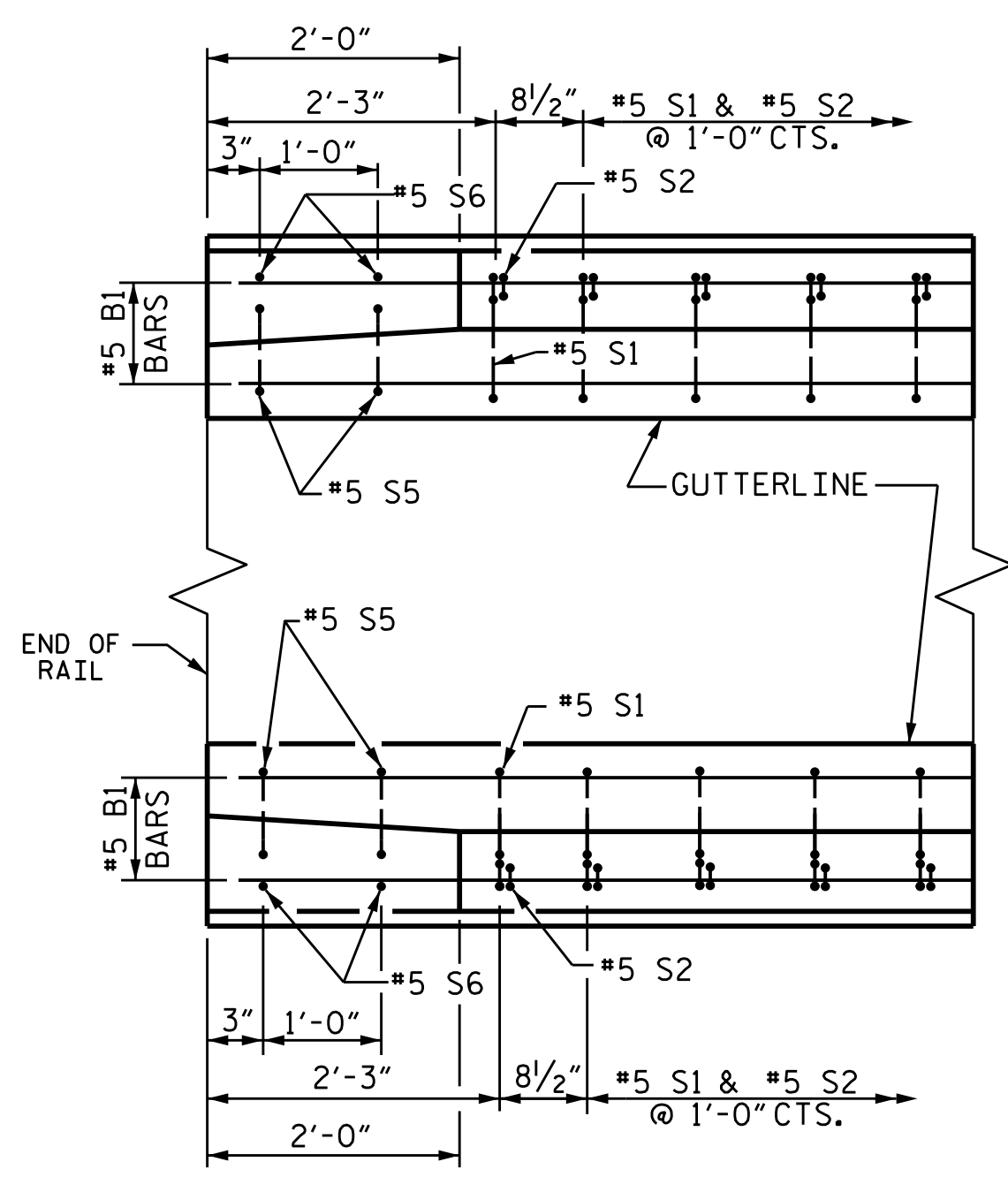
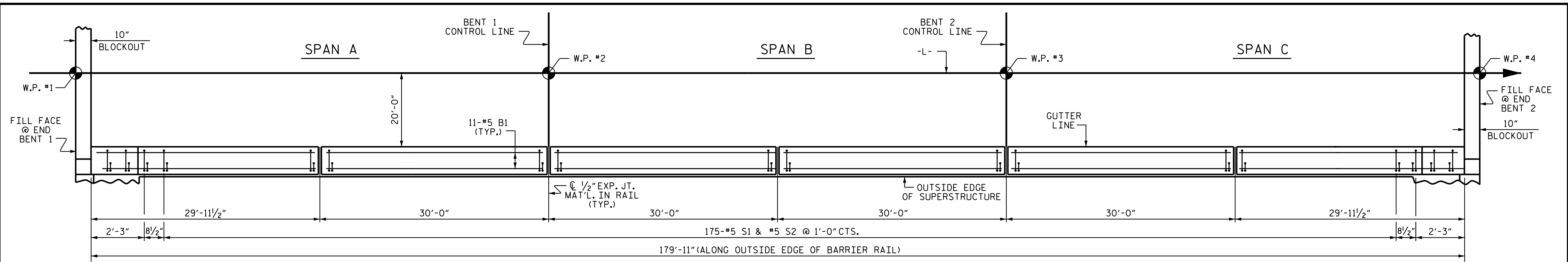


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
ELASTOMERIC BEARING
DETAILS
 PRESTRESSED CONCRETE GIRDER
 SUPERSTRUCTURE

ASSEMBLED BY : N.D'AIUTO	DATE : 12/15/15
CHECKED BY : J.P. MCCARTHA	DATE : 6/10/16
DRAWN BY : WJH	8/89
CHECKED BY : CRK	8/89
REV. 10/1/11	MAA/GM
REV. 6/13	AAC/MAA
REV. 1/15	MAA/TMG

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 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			30



BILL OF MATERIAL						
FOR CONCRETE BARRIER RAIL ONLY						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* B1	132	#5	STR	29'-7"	4073	
* S1	354	#5	1	4'-7"	1692	
* S2	354	#5	2	7'-0"	2585	
* S5	8	#5	3	3'-5"	29	
* S6	8	#5	STR	3'-3"	27	
* EPOXY COATED REINFORCING STEEL					LBS.	8,406
CLASS AA CONCRETE					C.Y.	49.0
CONCRETE BARRIER RAIL					LIN. FT.	359.83

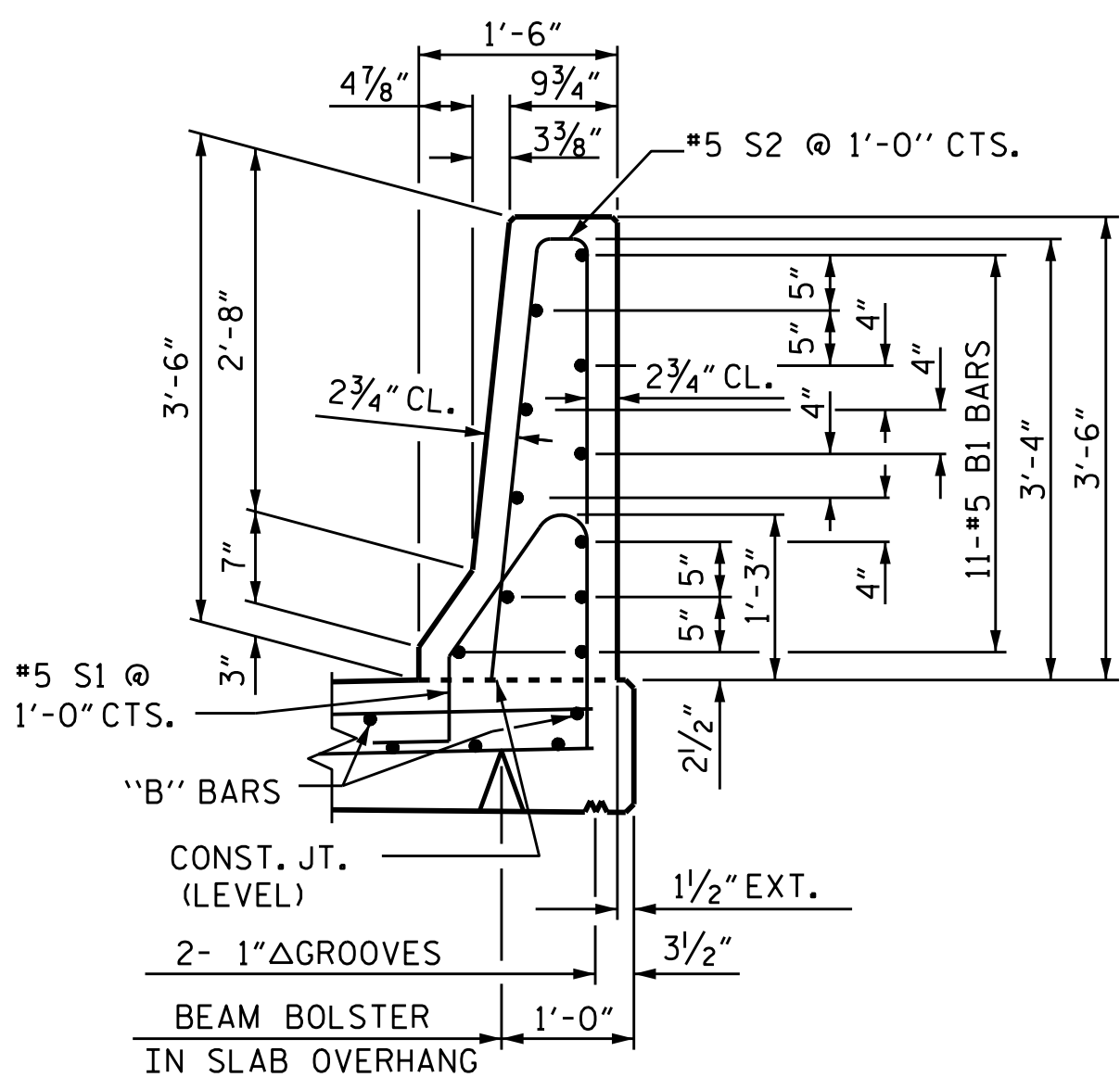
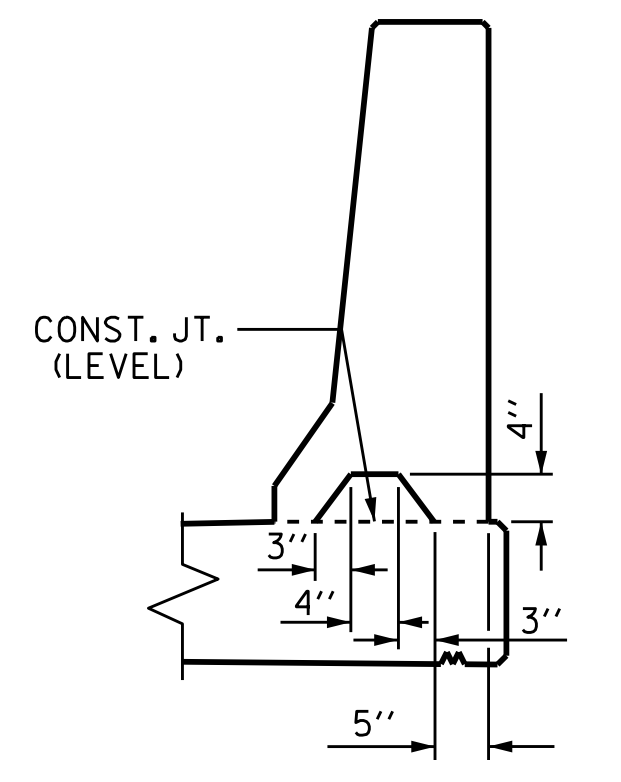
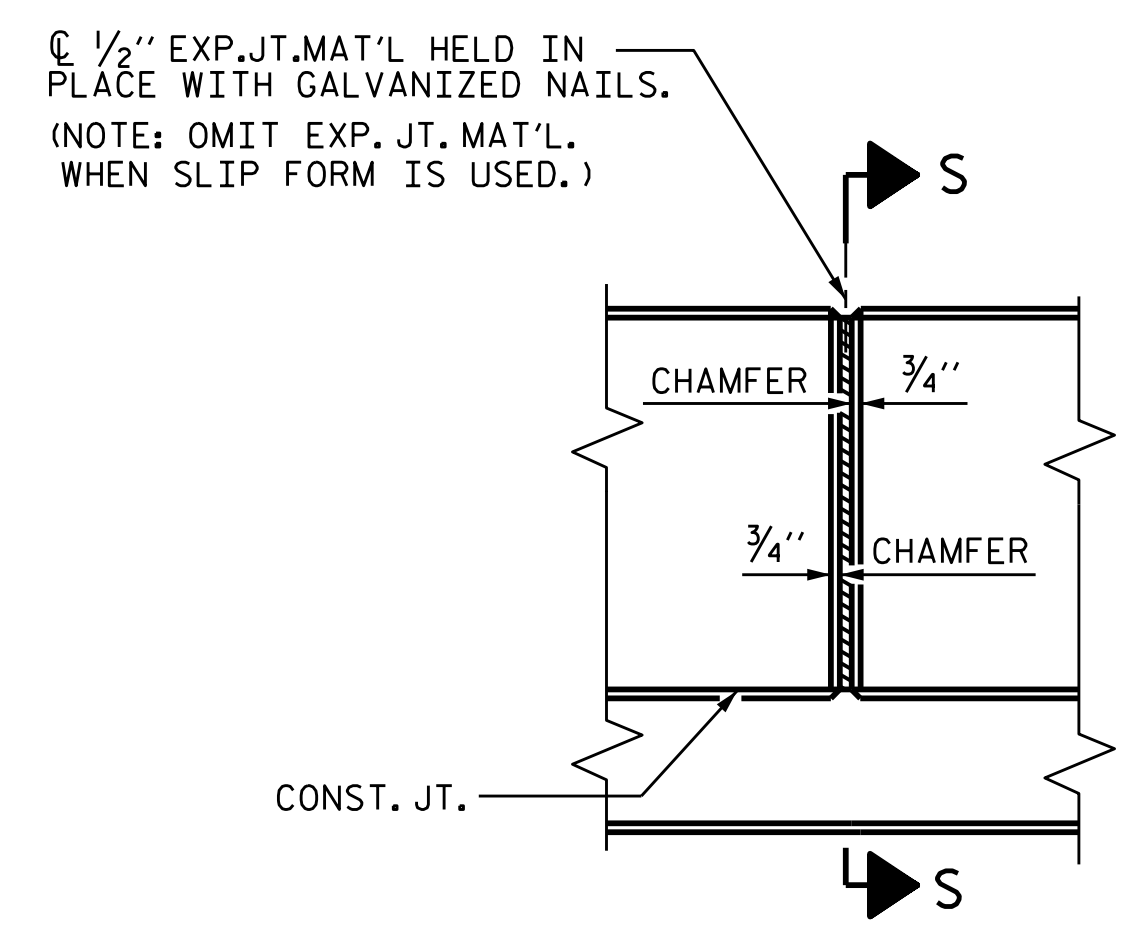
NOTES

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

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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



END OF RAIL DETAILS
FOR ADHESIVE ANCHORING AT SAWED JOINTS

BARRIER RAIL DETAILS

PROJECT NO. B-5548
CABARRUS COUNTY
 STATION: 29+55.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 CONCRETE
 BARRIER RAIL

DocuSigned by:
 Jeremy McArthur
 11/18/2016



ASSEMBLED BY :	ND'AIUTO	DATE :	12/16/15
CHECKED BY :	J. P. MCCARTHA	DATE :	6/9/16
DRAWN BY :	ARB	5/87	REV. 10/1/11
CHECKED BY :	SJD	9/87	REV. 7/12
			REV. 6/13
			MAA/GM
			MAA/GM
			MAA/GM

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

SHEET NO. S-18
TOTAL SHEETS 30

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD-DOWN PLATE AND 4 - 1/8" 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 1/8" 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.)

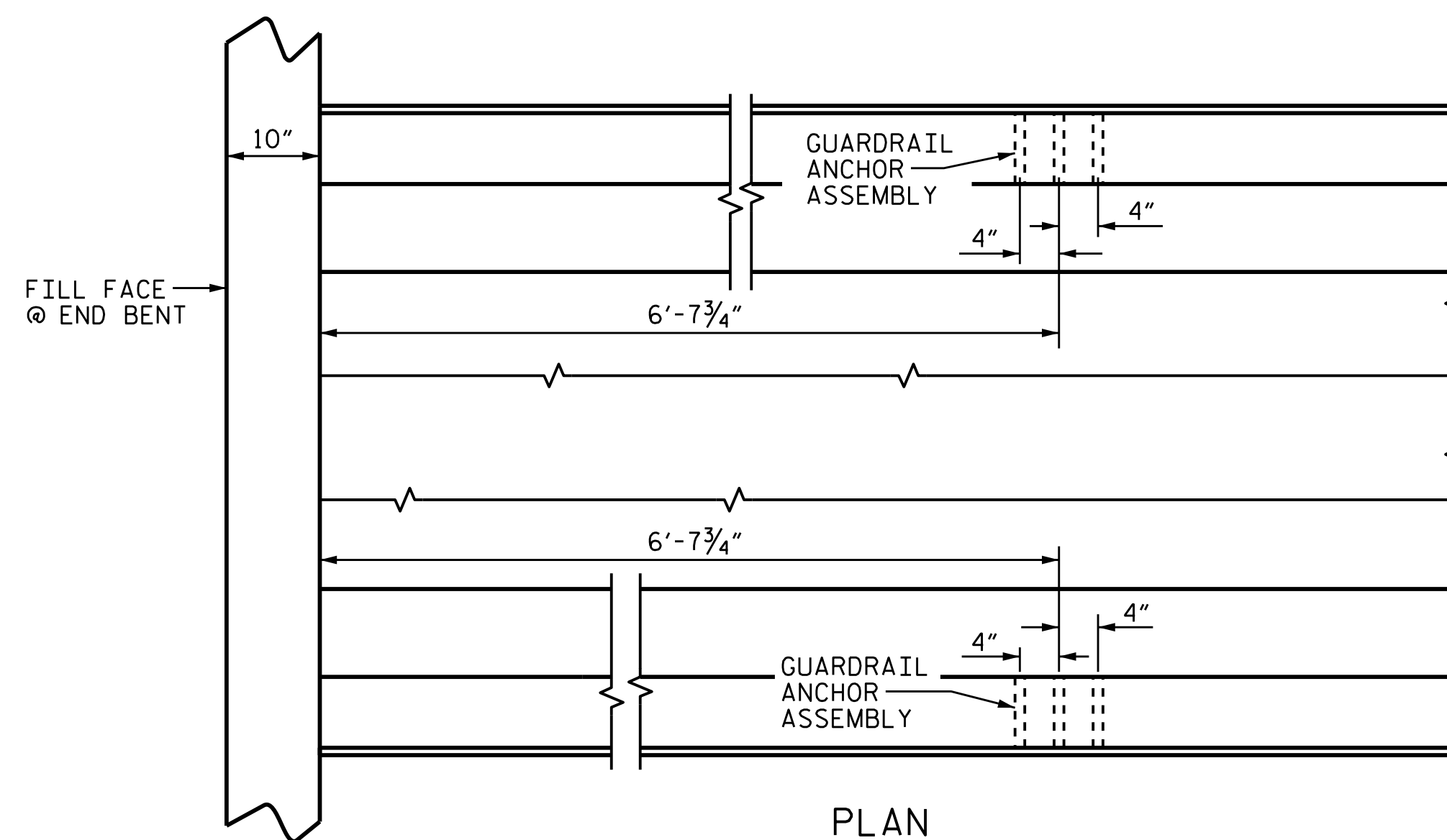
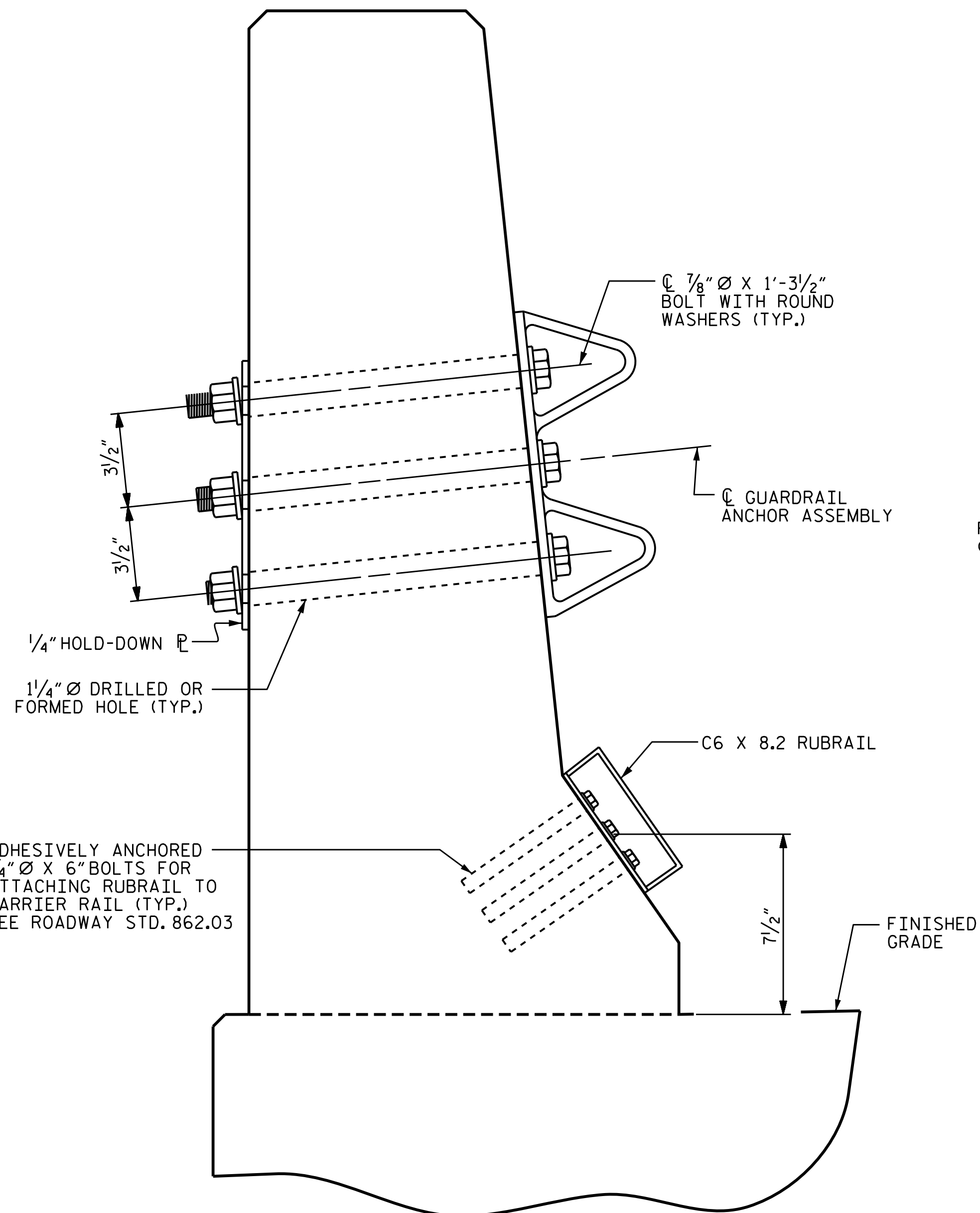
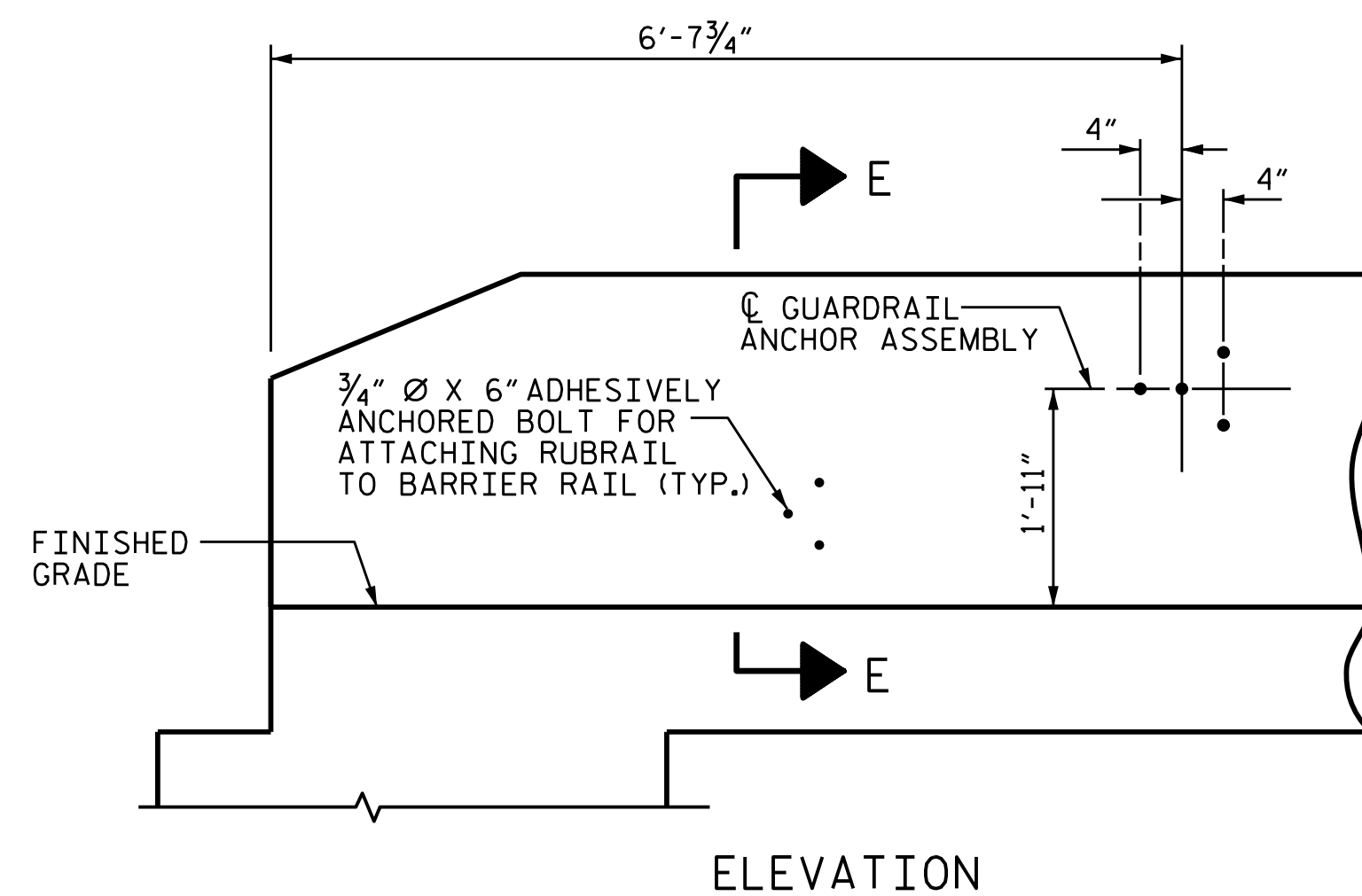
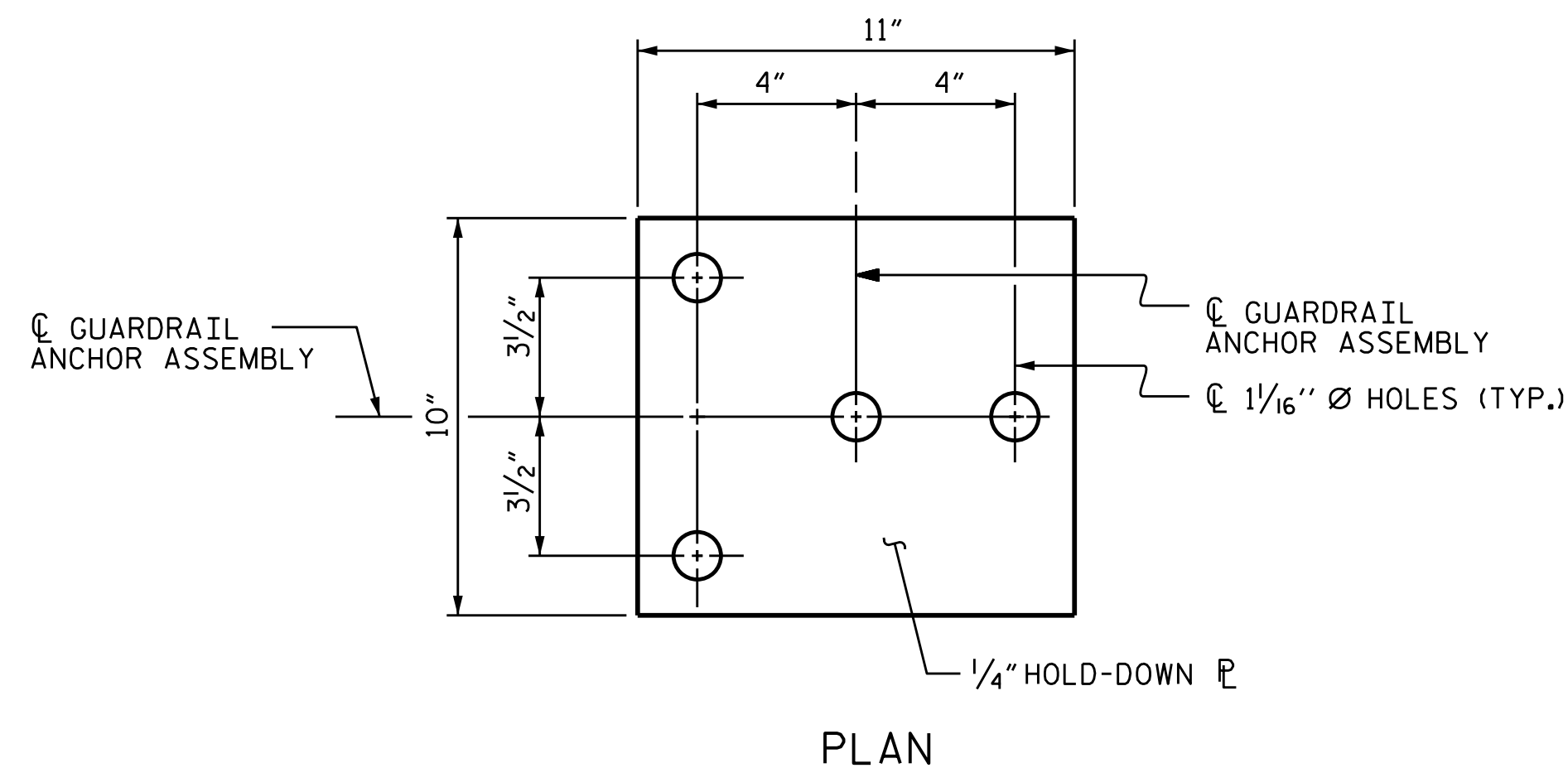
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

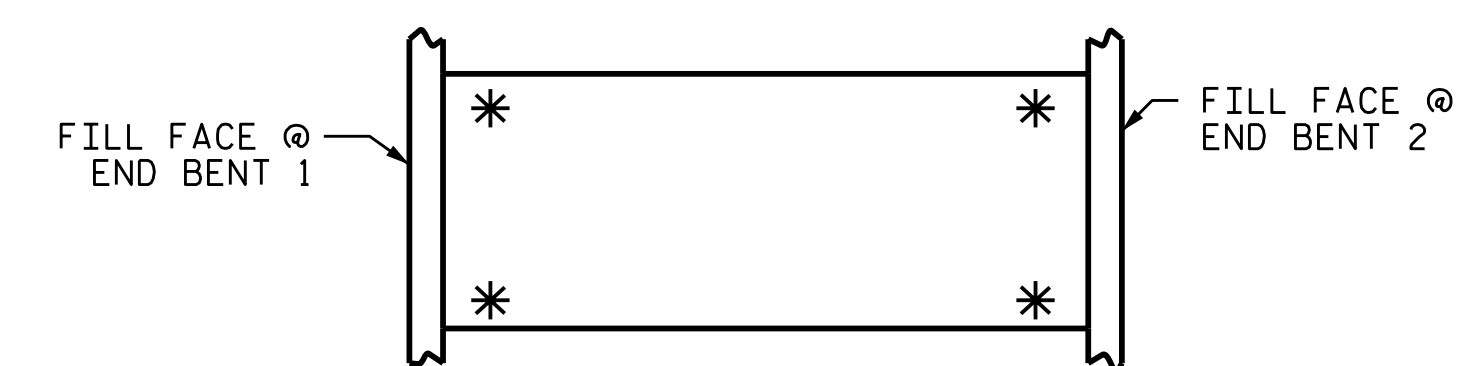
THE 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

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 BOLT OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.

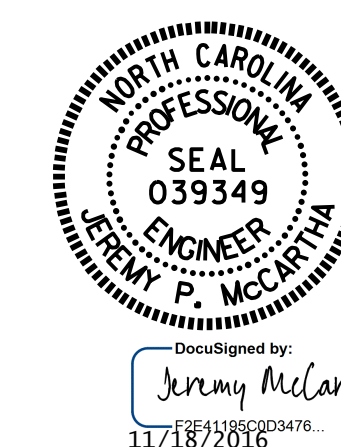


SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-5548
CABARRUS COUNTY
 STATION: 29+55.00 -L-

SHEET 2 OF 2

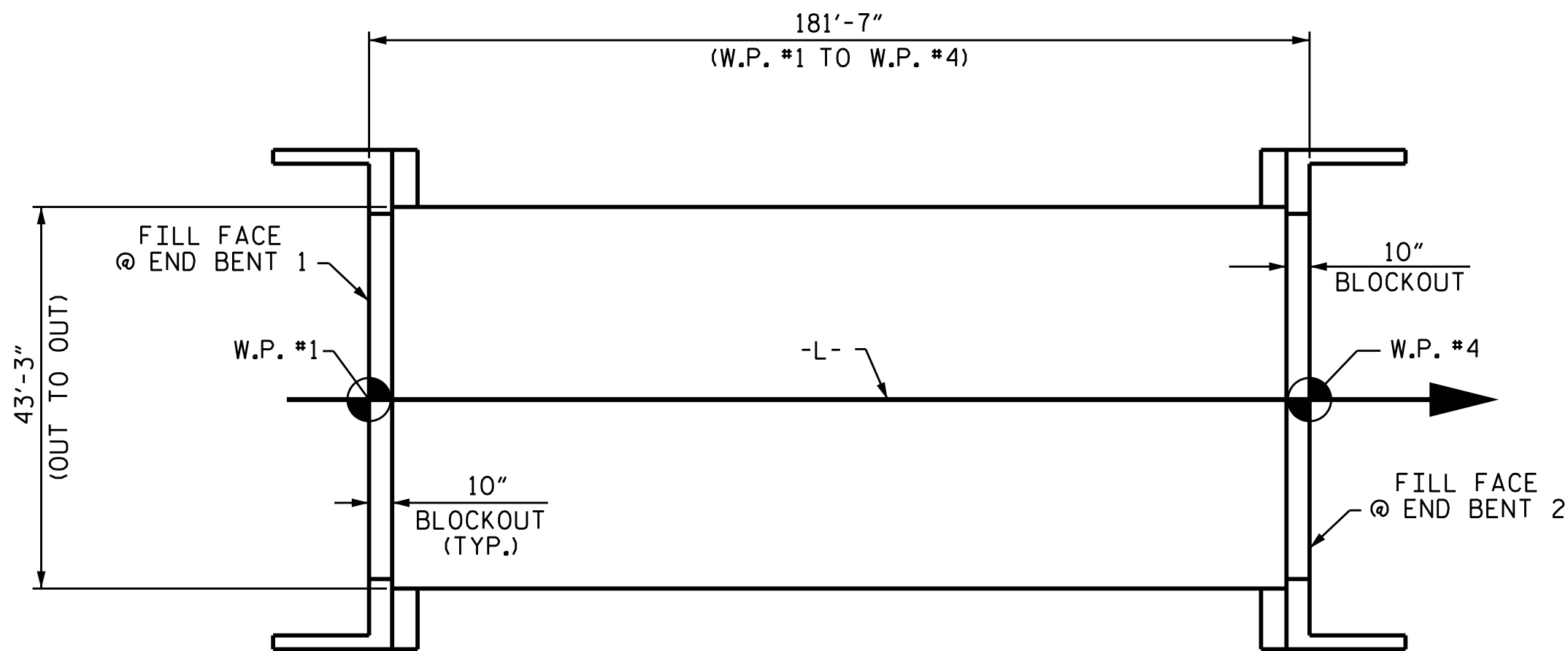


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
**GUARDRAIL ANCHORAGE
 FOR BARRIER RAIL**

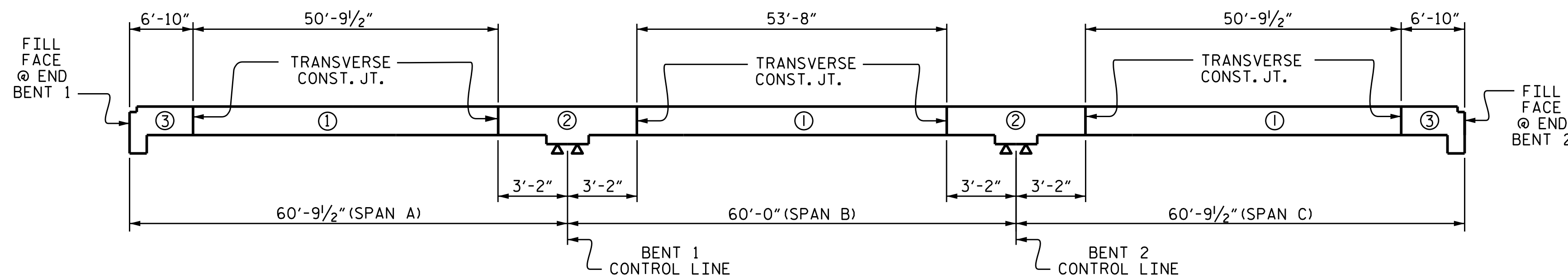
ASSEMBLED BY : N.D'AIUTO	DATE : 12/16/15
CHECKED BY : J. P. MCCARTHA	DATE : 6/9/16
DRAWN BY : TLA 5/06	REV. 10/1/11 MAA/GM
CHECKED BY : GM 5/06	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM

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 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS 30
2			4			



LAYOUT FOR COMPUTING AREA
REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 7,853)



POUR SEQUENCE

POUR ② OR ③ CAN NOT BE STARTED UNTIL ADJACENT ① POURS REACH A MINIMUM OF 3000 PSI.

BAR TYPES		REINFORCING BAR SCHEDULE				
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
* A1	360	#5	STR	42'-11"	16114	
A2	360	#5	STR	42'-11"	16114	
* B1	226	#5	STR	12'-3"	2888	
* B2	116	#4	STR	22'-3"	1724	
* B3	226	#5	STR	18'-4"	4321	
* B4	58	#4	STR	23'-10"	923	
B5	200	#5	STR	46'-7"	9717	
* B6	8	#5	STR	47'-3"	394	
K1	20	#4	STR	22'-4"	298	
K2	8	#4	STR	7'-7"	41	
K3	8	#4	STR	7'-1"	38	
K4	24	#4	STR	8'-4"	134	
K5	4	#4	STR	2'-1"	6	
K6	4	#4	STR	1'-10"	5	
K7	12	#4	STR	2'-3"	18	
* S1	76	#4	1	11'-11"	605	
* S2	68	#4	1	9'-11"	450	
S3	76	#4	2	9'-7"	486	
REINFORCING STEEL				LBS.	26,857	
* EPOXY COATED REINFORCING STEEL				LBS.	27,419	

SUPERSTRUCTURE BILL OF MATERIAL			
	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR #1	212.2		
POUR #2	17.3	26,857	27,419
POUR #3	53.9		
TOTALS**	283.4	26,857	27,419

**QUANTITIES FOR CONCRETE BARRIER RAILS ARE NOT INCLUDED.

GROOVING BRIDGE FLOORS	
APPROACH SLABS	1,788 SQ.FT.
BRIDGE DECK	6,645 SQ.FT.
TOTAL	8,433 SQ.FT.

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"			

PROJECT NO. B-5548
CABARRUS COUNTY
 STATION: 29+55.00 -L-

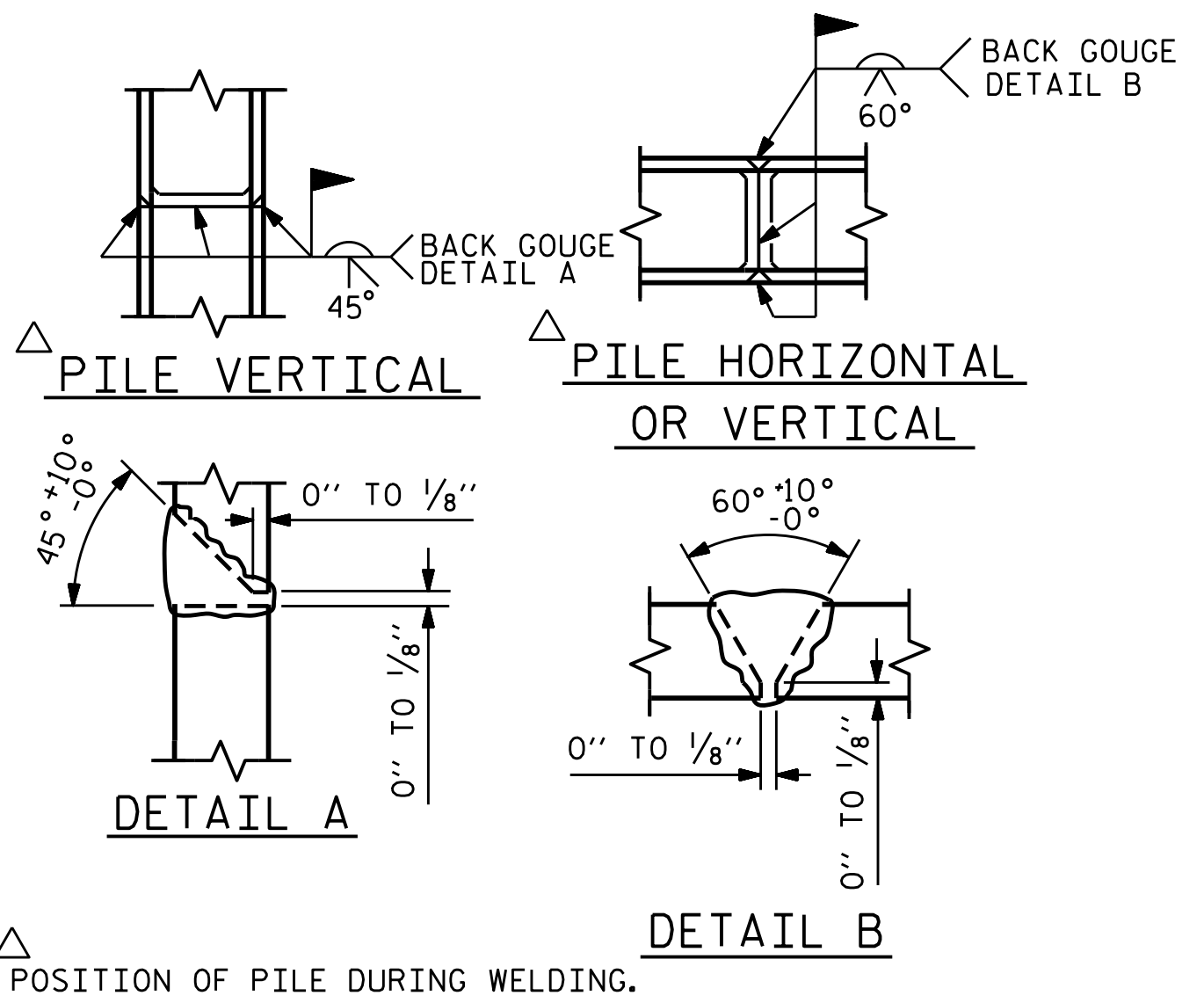


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 BILL OF MATERIAL

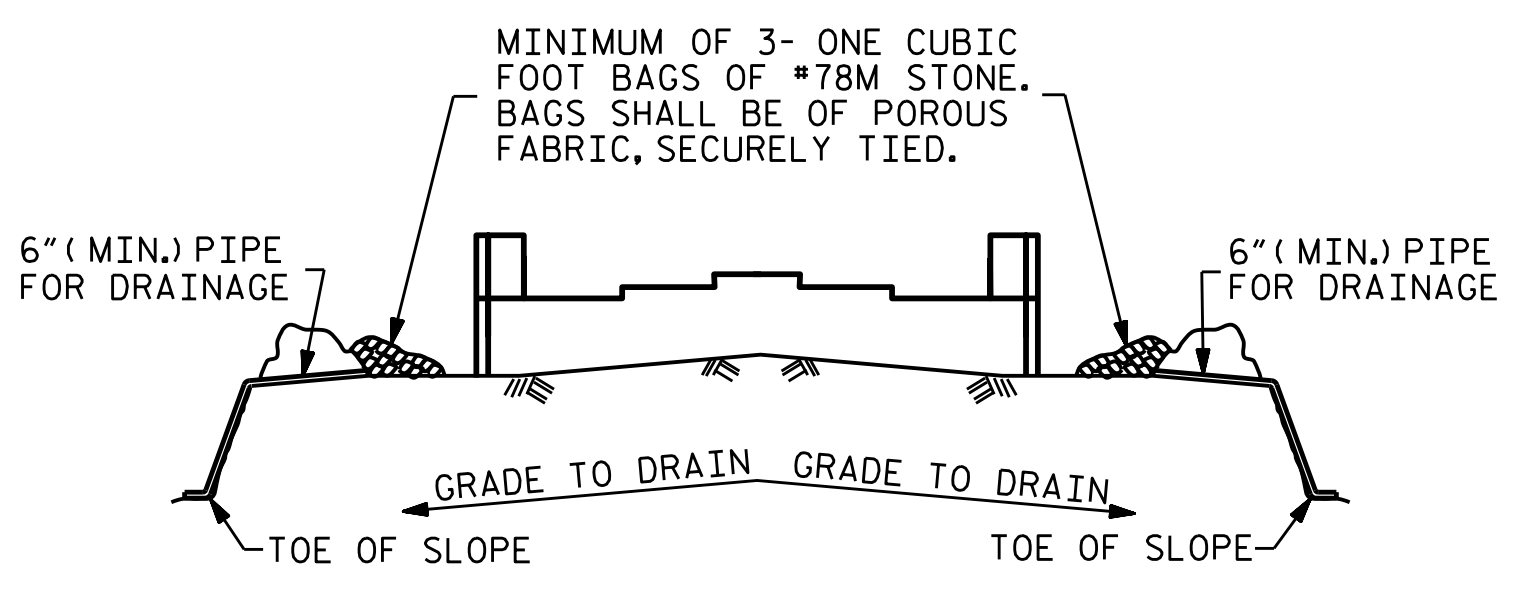
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS 30
2			4			

DRAWN BY : N.D. AIUTO DATE: 12/16/15
 CHECKED BY : J. P. MCCARTHA DATE: 6/10/16
 DESIGN ENGINEER OF RECORD : N.D. AIUTO DATE: 3/1/16

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PILE SPLICE DETAILS



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

6" (MIN.) PIPE FOR DRAINAGE

6" (MIN.) PIPE FOR DRAINAGE

GRADE TO DRAIN

GRADE TO DRAIN

TOE OF SLOPE

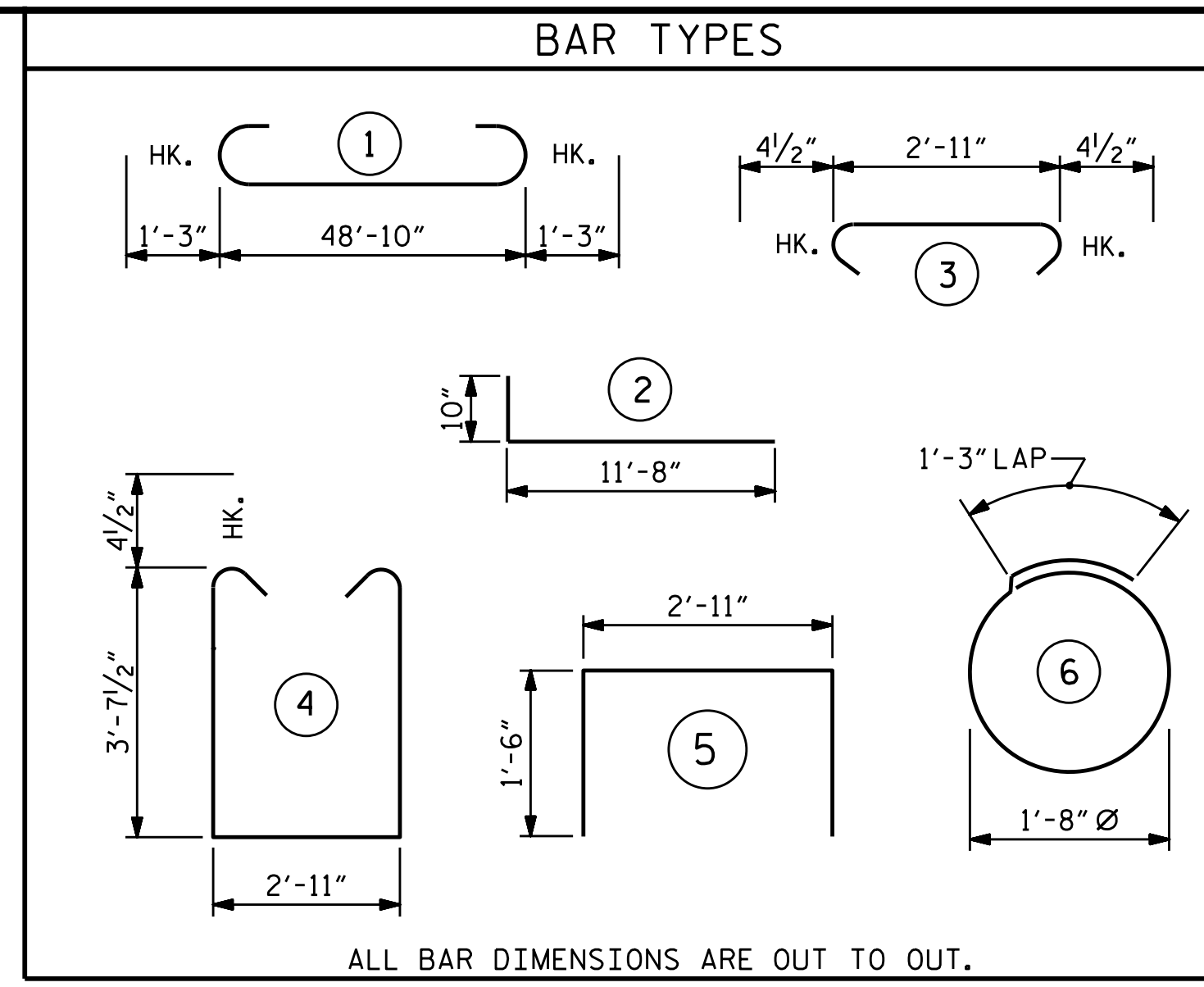
TOE OF SLOPE

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

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

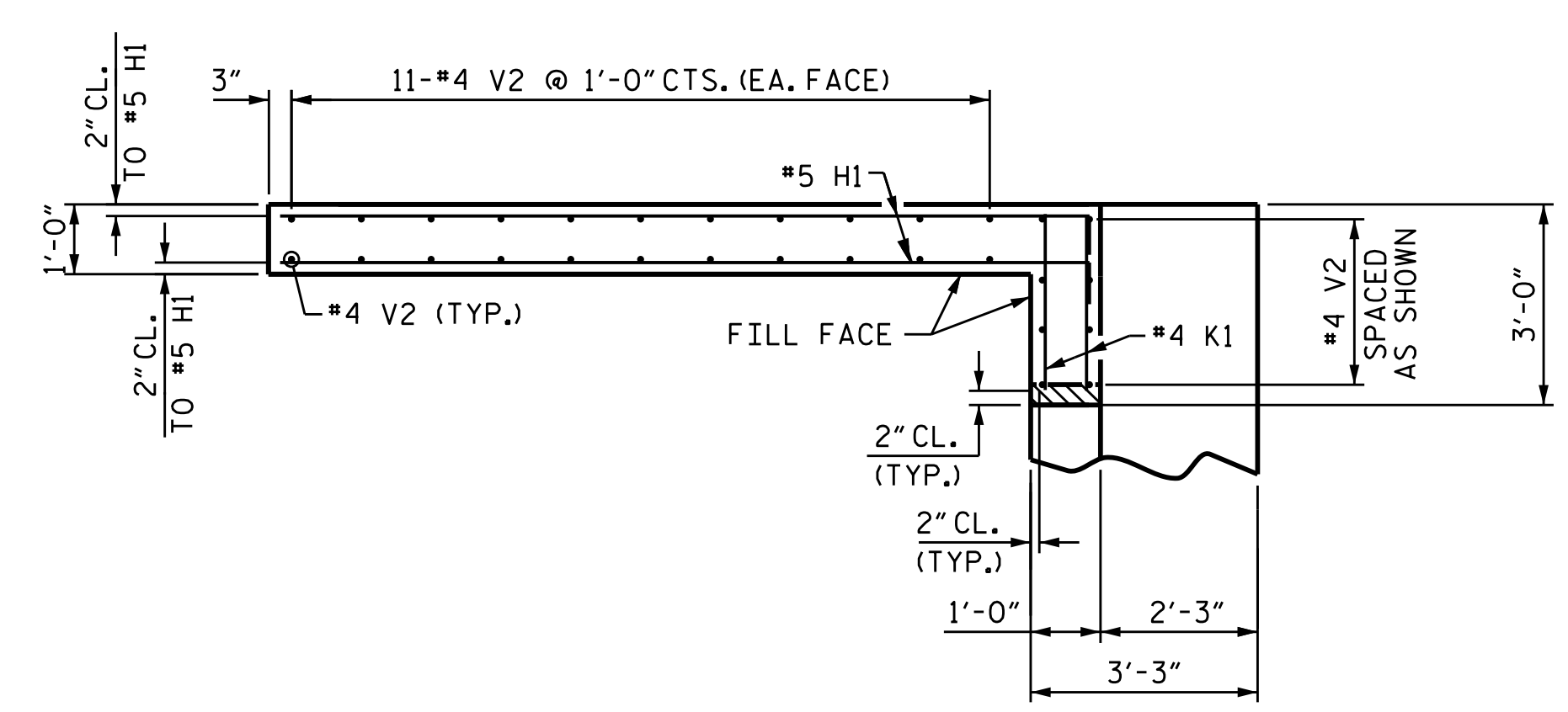
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

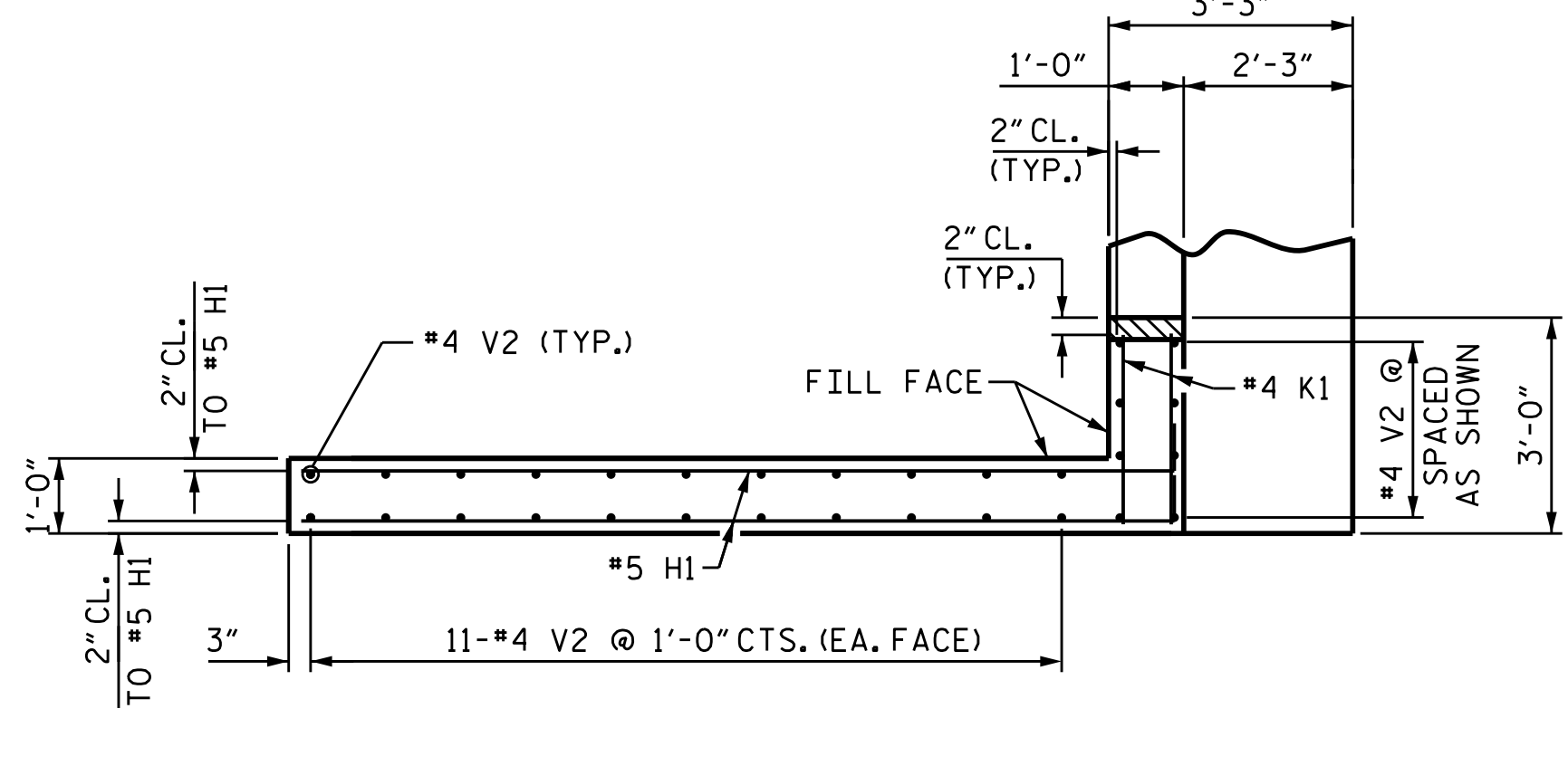


ALL BAR DIMENSIONS ARE OUT TO OUT.

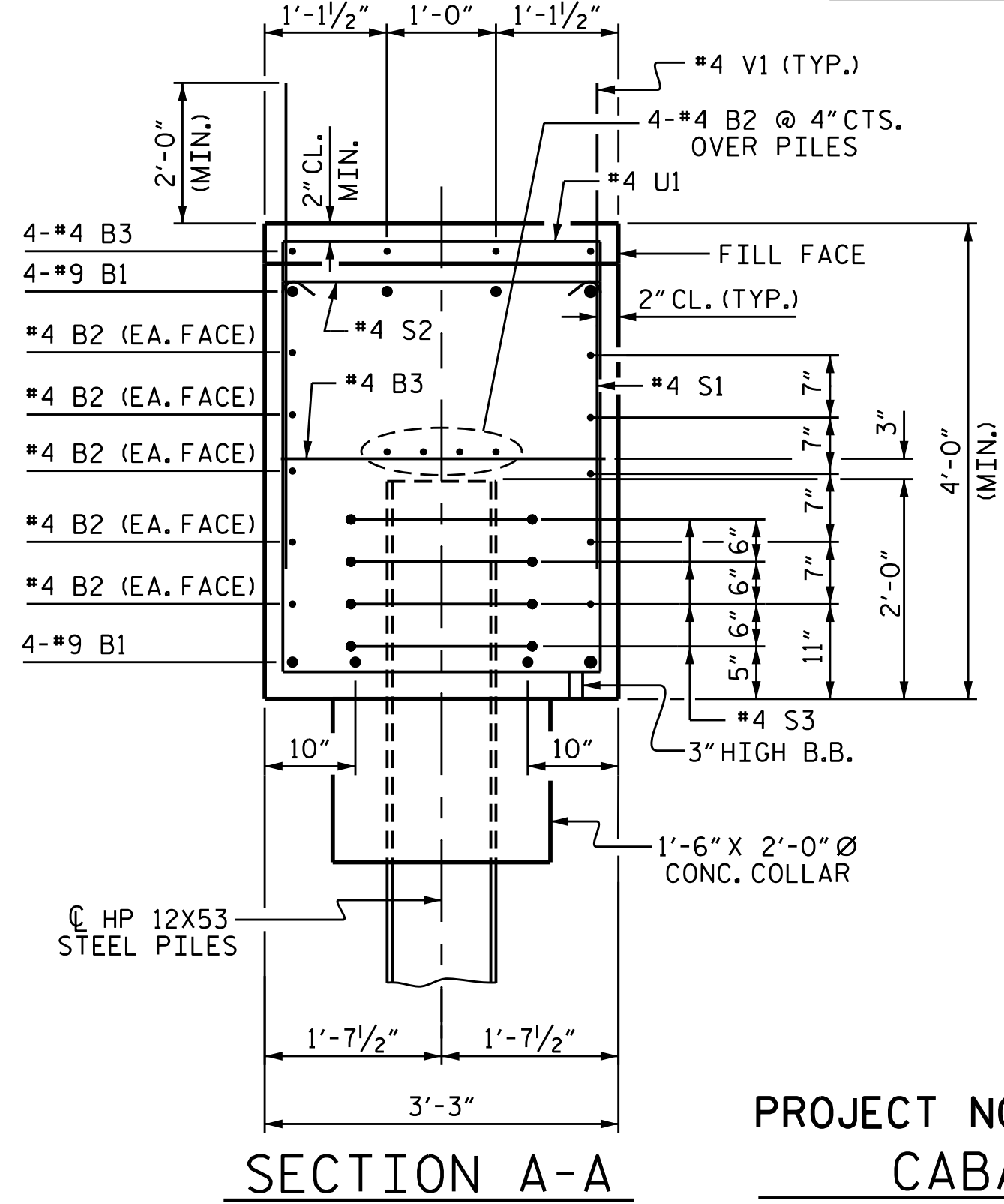
BILL OF MATERIAL					
END BENT 1					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	51'-4"	1,396
B2	28	#4	STR	25'-9"	482
B3	17	#4	STR	2'-11"	33
H1	72	#5	2	12'-6"	939
K1	24	#4	STR	2'-8"	43
S1	49	#4	4	10'-11"	357
S2	49	#4	3	3'-8"	120
S3	32	#4	6	6'-6"	139
U1	2	#4	5	5'-11"	8
V1	76	#4	STR	6'-3"	317
V2	60	#4	STR	8'-10"	354
REINFORCING STEEL					LBS. 4,188
CLASS A CONCRETE					
POUR #1 (CAP, LOWER WINGS, & COLLARS)					C.Y. 29.0
POUR #2 (UPPER PART OF WINGS)					C.Y. 5.4
TOTAL CLASS A CONCRETE					C.Y. 34.4
HP 12X53 STEEL PILES					
NO. 8				LIN. FT.	120
STEEL PILE POINTS				EACH	8



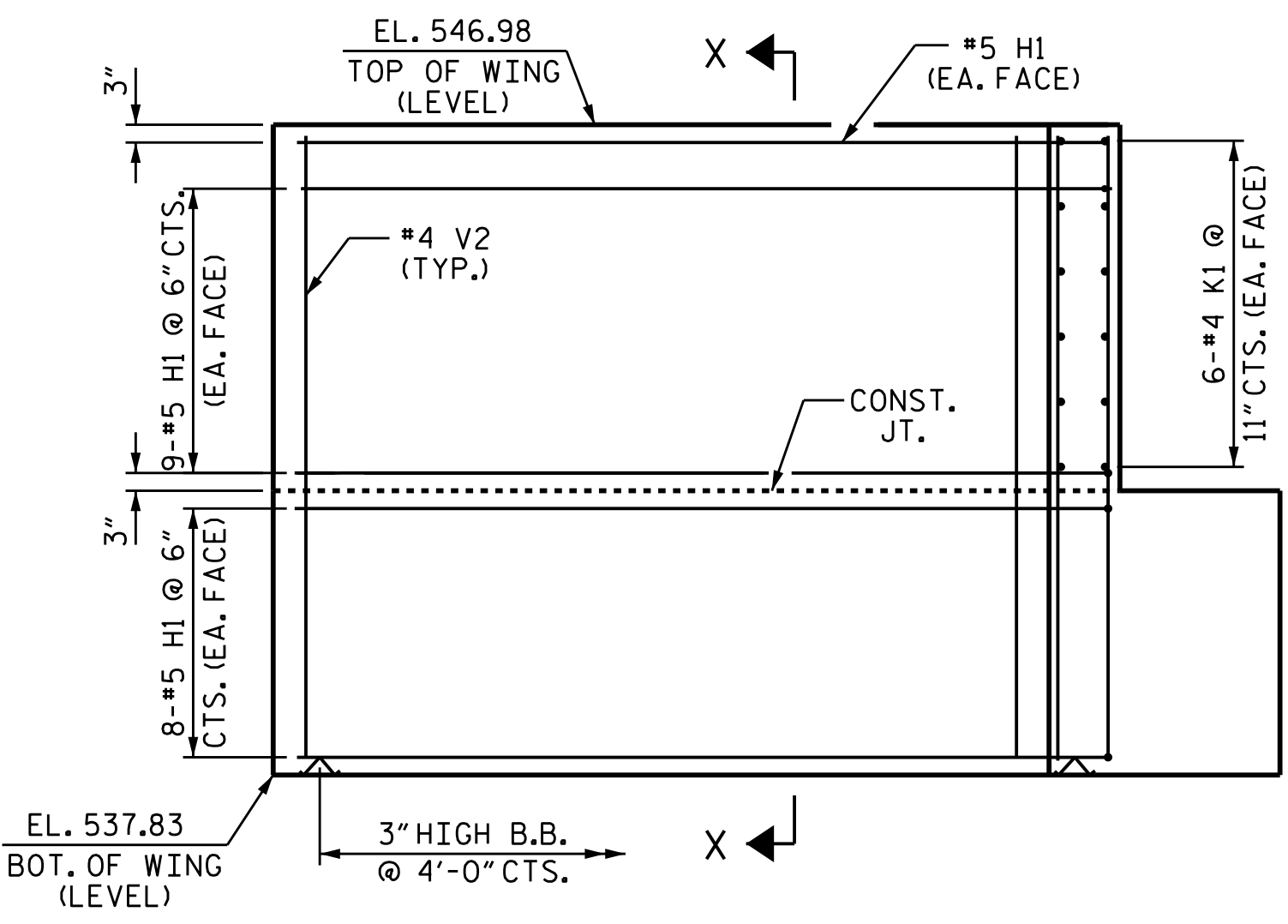
PLAN OF LEFT WING



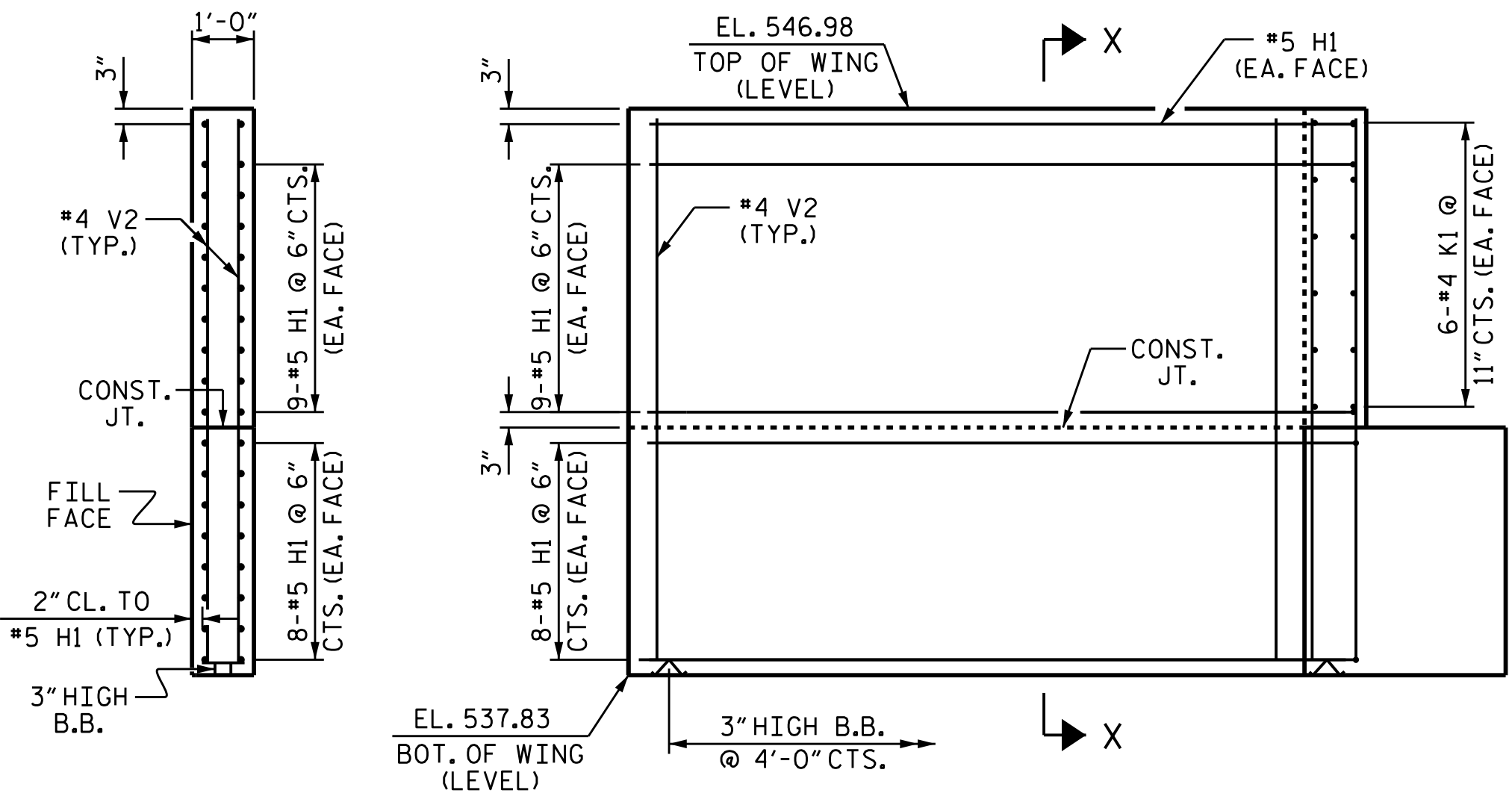
PLAN OF RIGHT WING



SECTION A-A



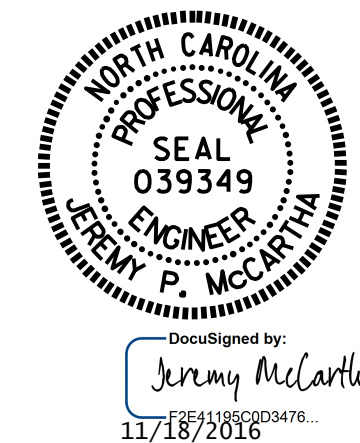
ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING

PROJECT NO. B-5548
 CABARRUS COUNTY
 STATION: 29+55.00 -L-

SHEET 2 OF 2



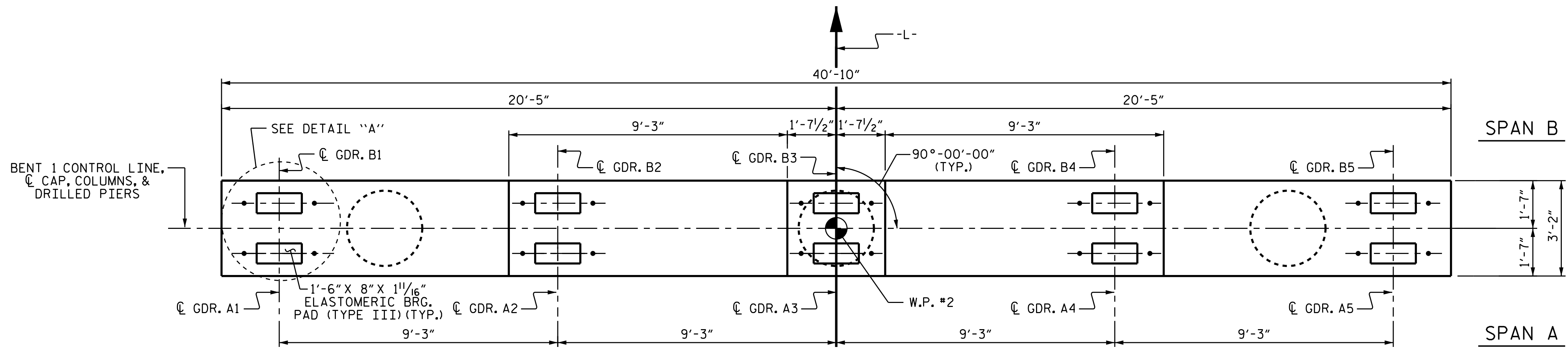
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 INTEGRAL
 END BENT 1

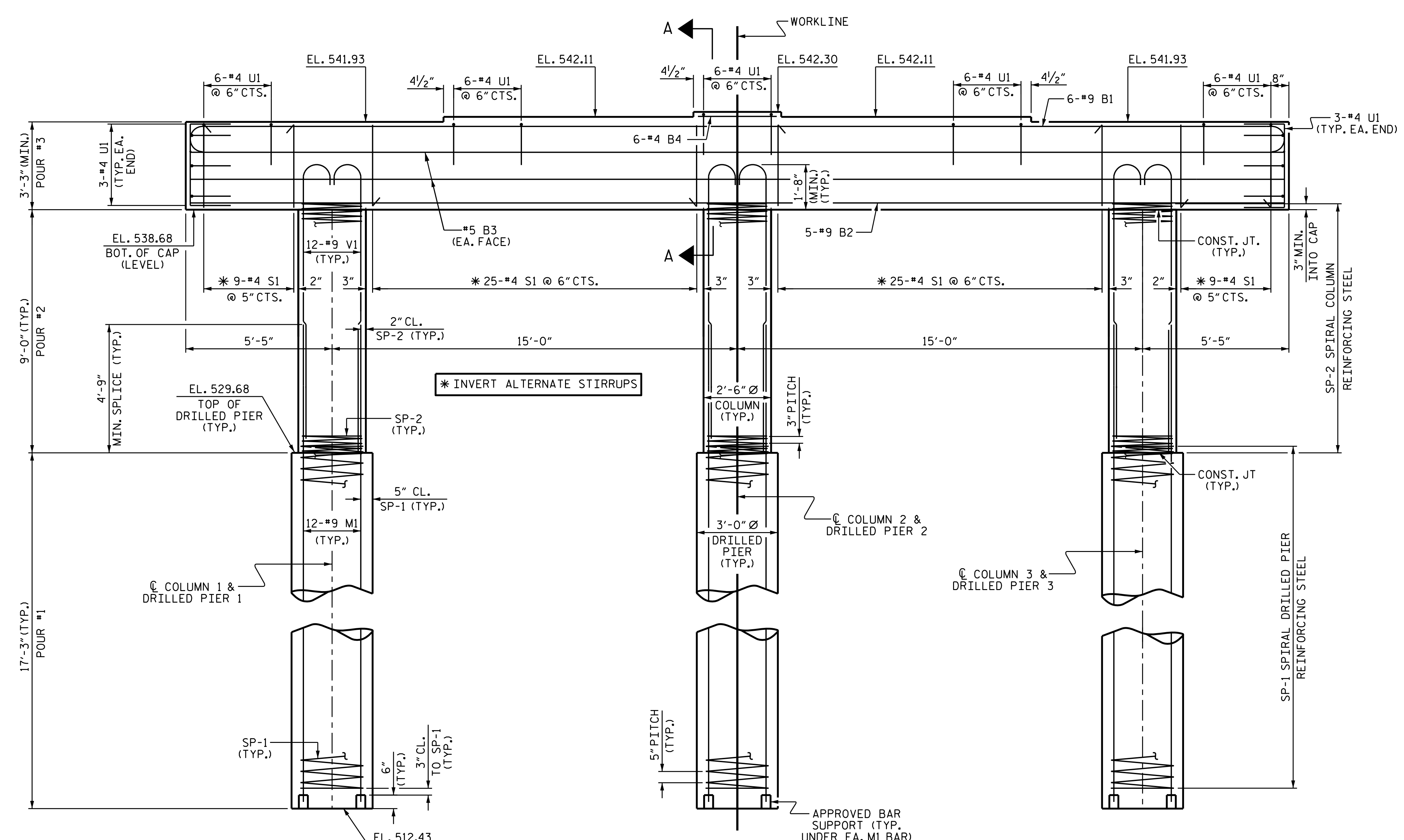
DRAWN BY: N. D'AIUTO DATE: 4/12/16
 CHECKED BY: J.K. BOWLES DATE: 4/29/16
 DESIGN ENGINEER OF RECORD: N. D'AIUTO DATE: 3/1/16

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS 30
2			4			



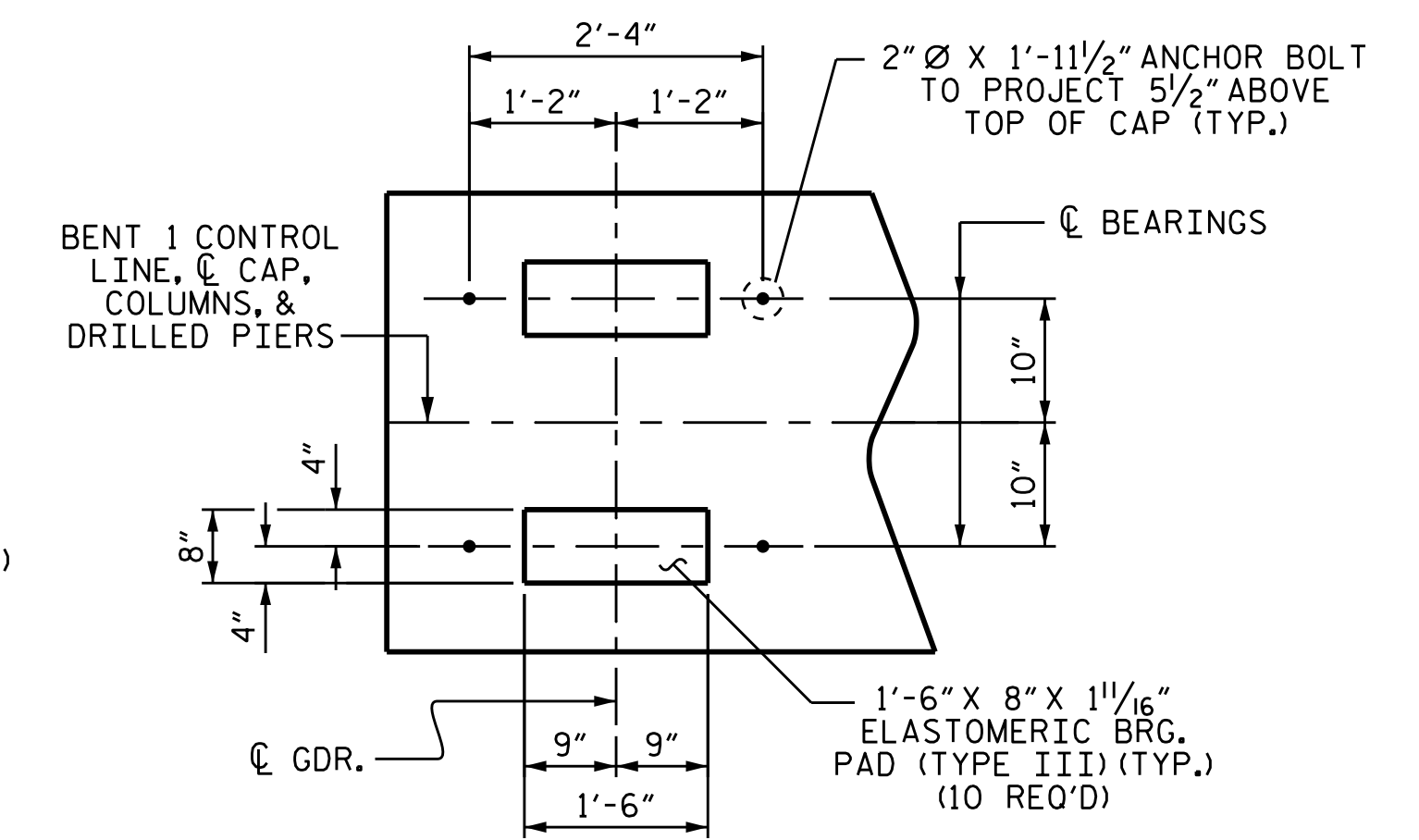
PLAN



ELEVATION

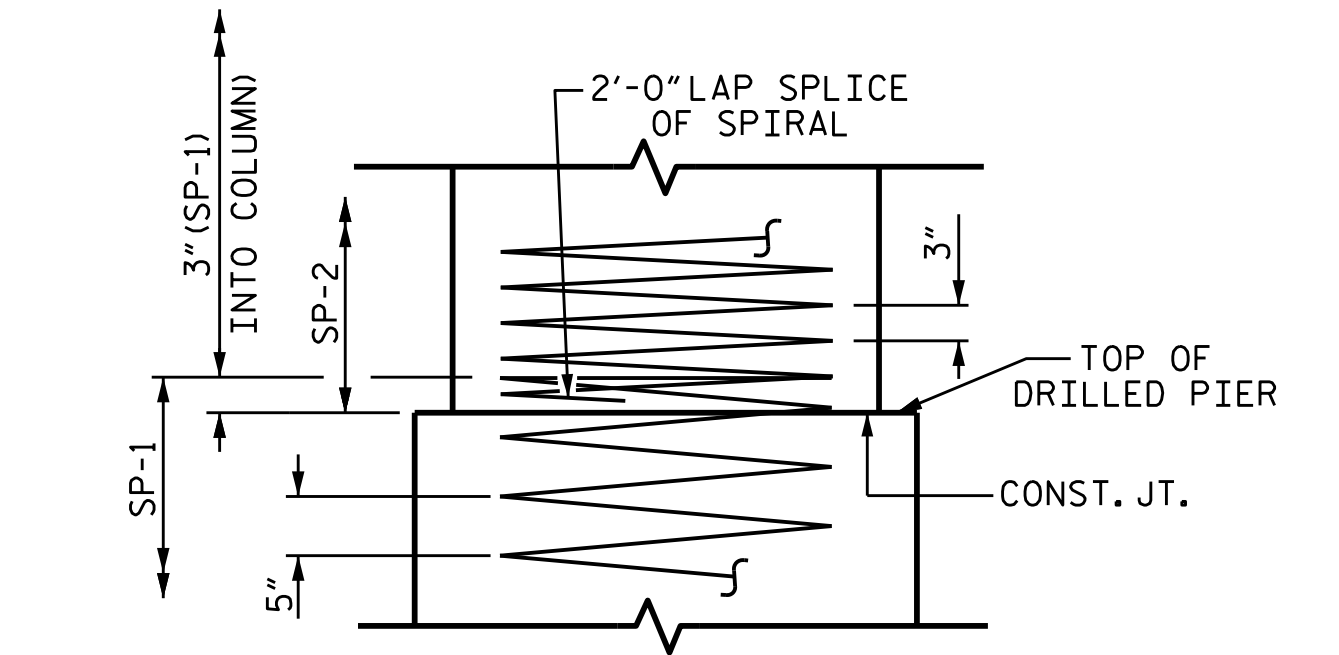
NOTES

- STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
- FOR DRILLED PIERS, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 411 OF THE STANDARD SPECIFICATIONS.
- ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".
- DRILLED PIERS SHOULD BE TERMINATED ONE FOOT ± ABOVE NORMAL WATER SURFACE ELEVATION FOR SHAFTS LOCATED IN WATER.
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.



DETAIL "A"

DIMENSIONS ARE TYPICAL FOR EACH BEARING.



CONSTRUCTION JOINT DETAIL

PROJECT NO. B-5548
CABARRUS COUNTY
 STATION: 29+55.00 -L-

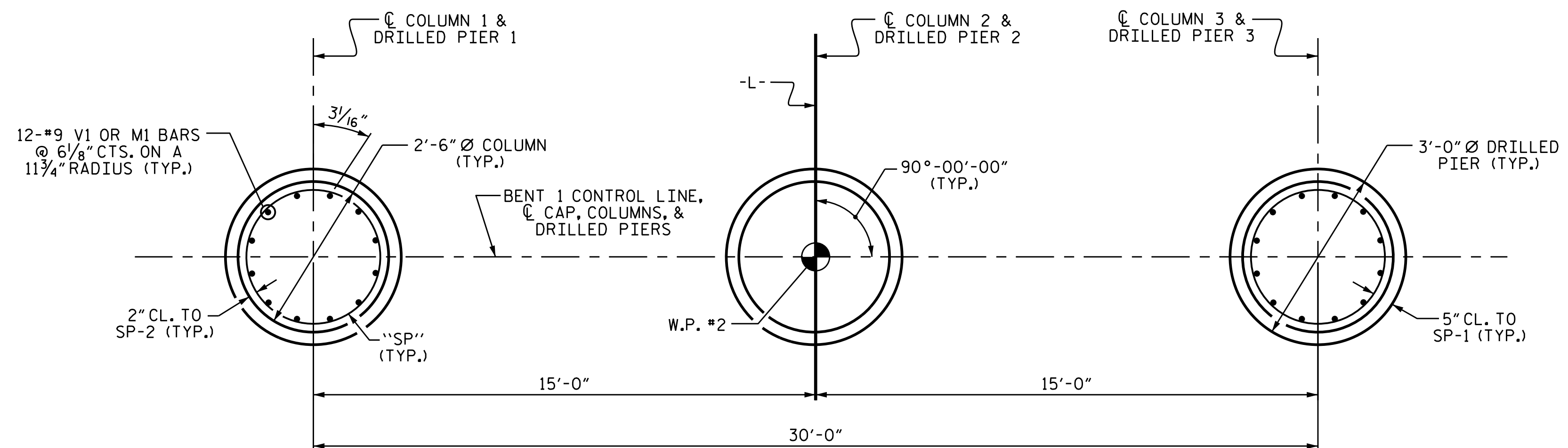
SHEET 1 OF 2



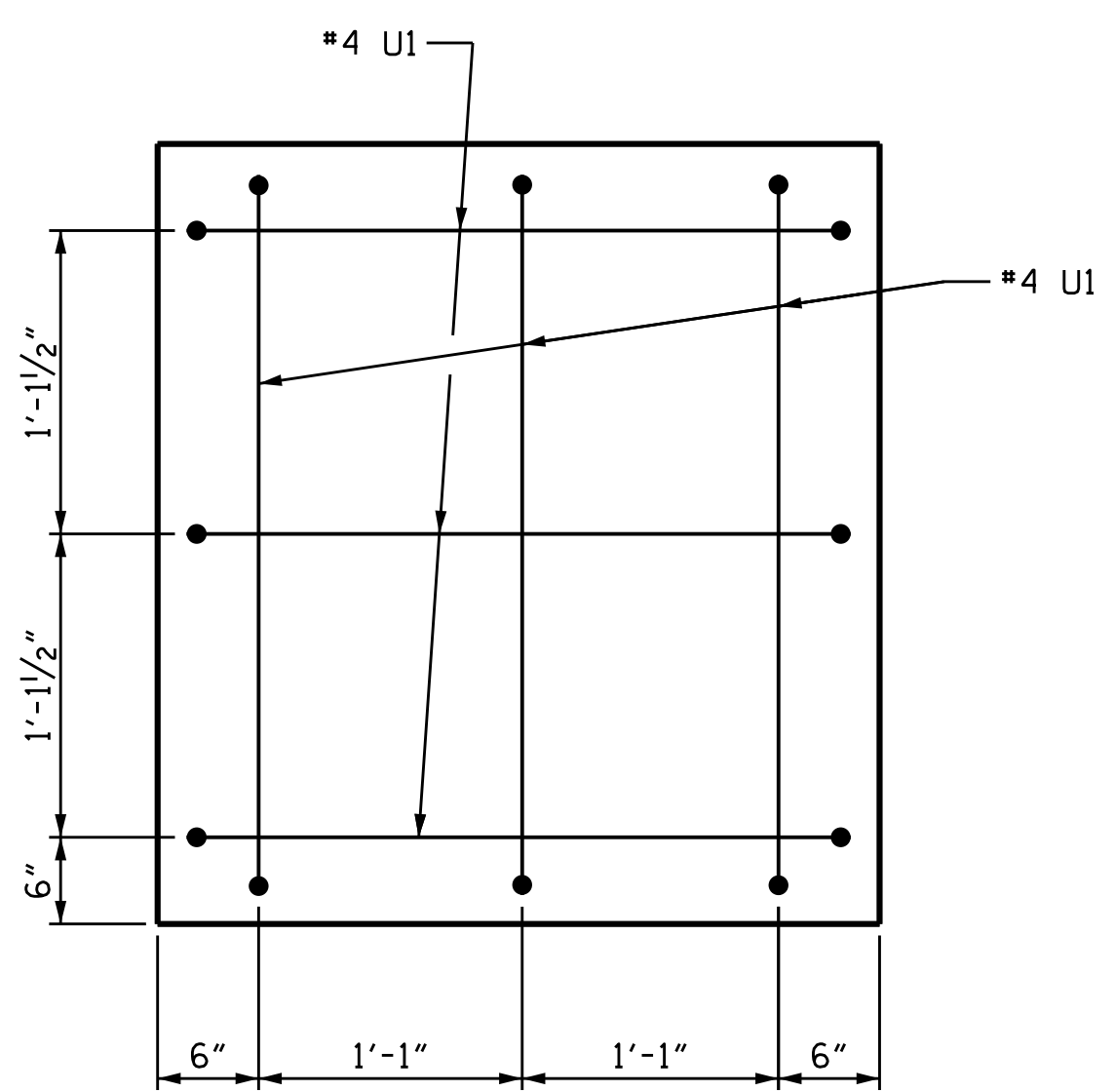
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1

DRAWN BY: N. D'AIUTO DATE: 4/11/16
 CHECKED BY: J.K. BOWLES DATE: 6/15/16
 DESIGN ENGINEER OF RECORD: N. D'AIUTO DATE: 3/1/16

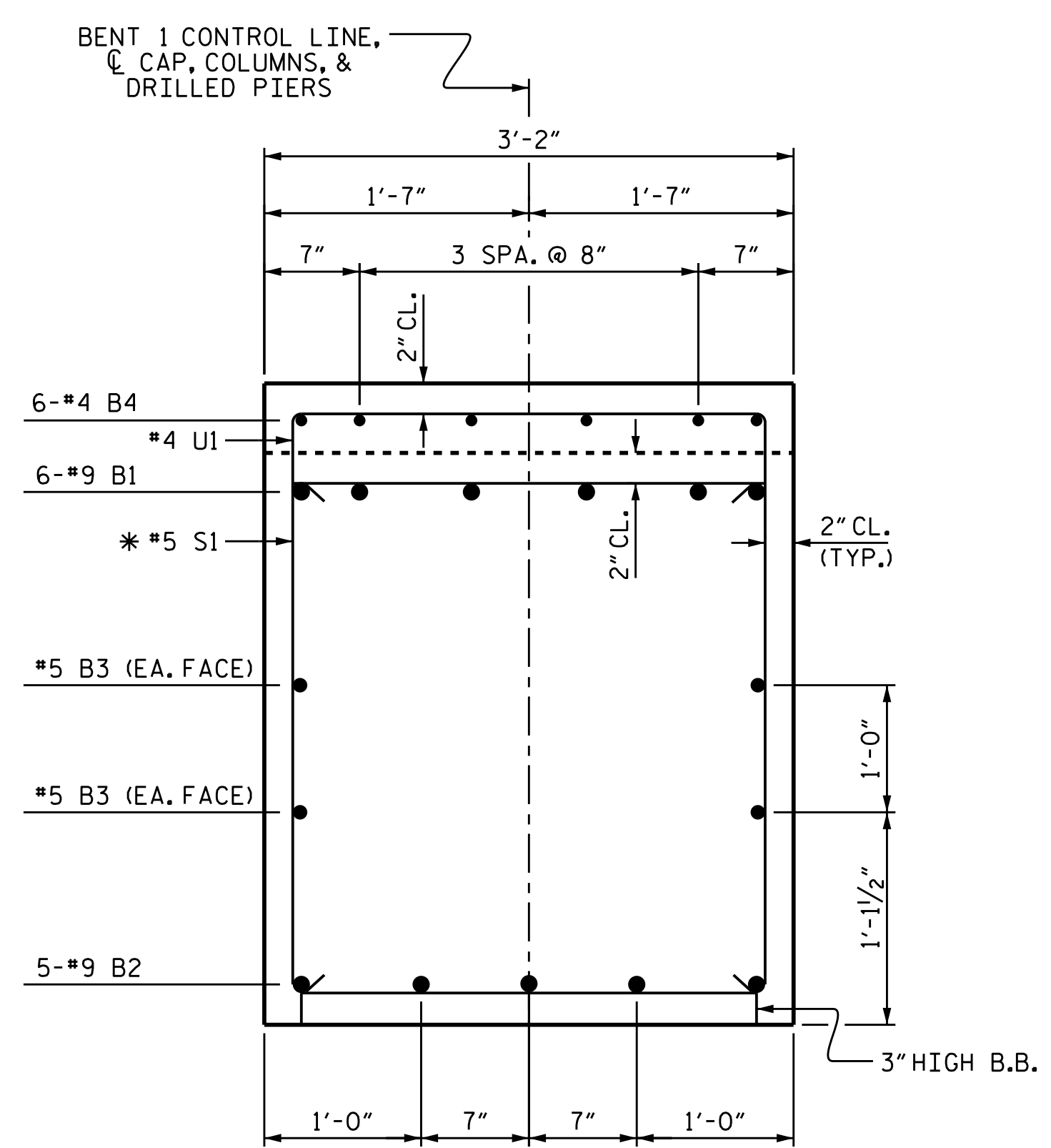
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23	
1			3			TOTAL SHEETS	
2			4			30	



PLAN OF DRILLED PIERS & COLUMNS



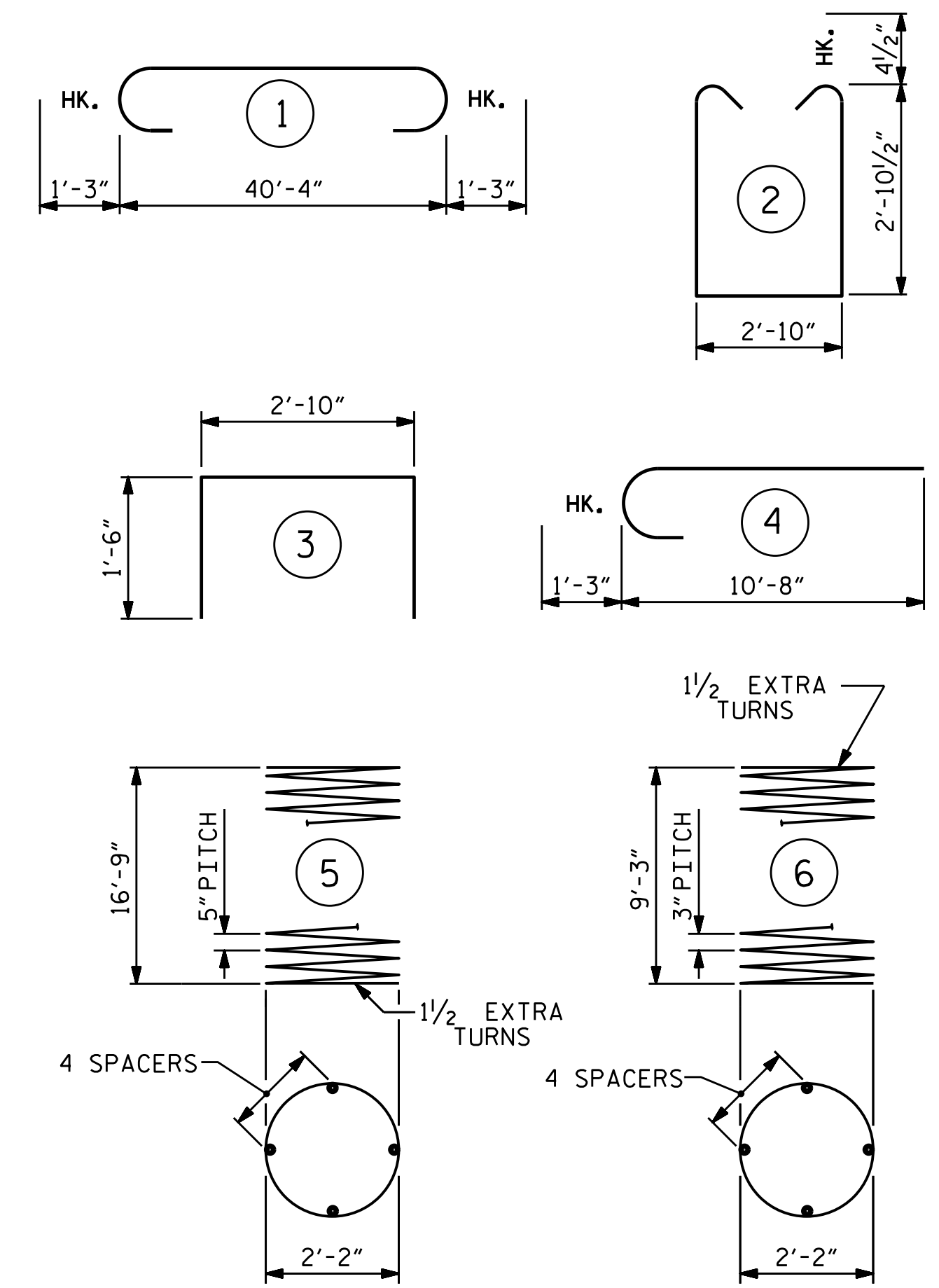
END VIEW



SECTION A-A

* INVERT ALTERNATE STIRRUPS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

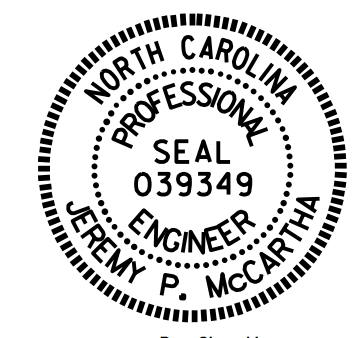
BILL OF MATERIAL

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#9	1	42'-10"	874
B2	5	#9	STR	40'-6"	689
B3	4	#5	STR	40'-6"	169
B4	6	#4	STR	2'-11"	12
M1	36	#9	STR	24'-9"	3,029
S1	68	#4	2	9'-4"	424
U1	42	#4	3	5'-10"	164
V1	36	#9	4	11'-11"	1,459
REINFORCING STEEL					LBS. 6,820
SP-1	3	**	5	277'-11"	870
SP-2	3	*	6	257'-3"	516
SPIRAL COLUMN REINFORCING STEEL					LBS. 1,386
* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.					
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.					
CLASS A CONCRETE					
POUR #2 (COLUMNS)			C.Y.	4.9	
POUR #3 (CAP)			C.Y.	16.1	
TOTAL CLASS A CONCRETE			C.Y.	21.0	
DRILLED PIER QUANTITIES					
DRILLED PIER CONCRETE					
POUR #1 (DRILLED PIERS)			C.Y.	13.5	
3'-0" Ø DRILLED PIERS IN SOIL			LIN. FT.	12.8	
3'-0" Ø DRILLED PIERS NOT IN SOIL			LIN. FT.	39.0	
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER			LIN. FT.	11.0	
CSL TUBES			LIN. FT.	225.0	

PROJECT NO. B-5548
CABARRUS COUNTY
 STATION: 29+55.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1

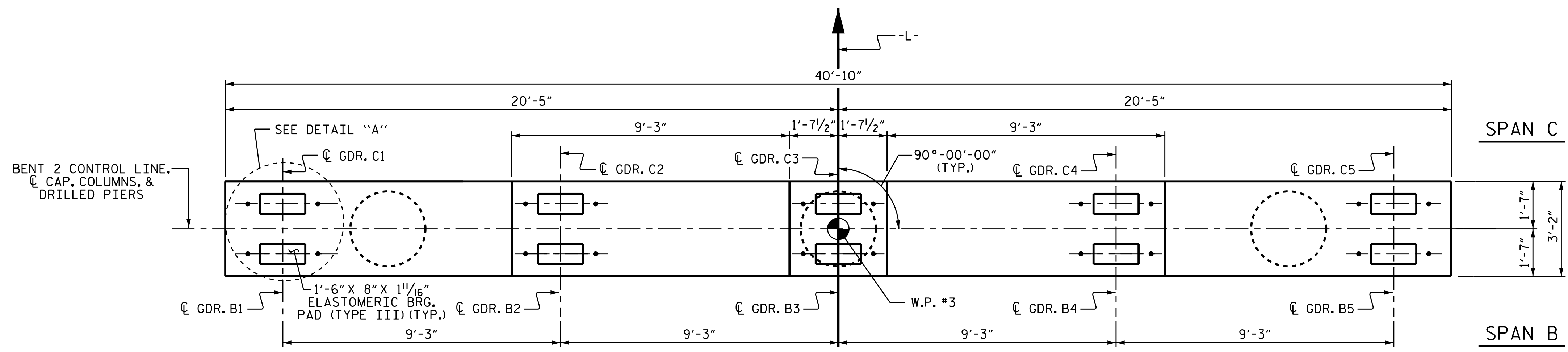


DocuSigned by:
 Jeremy McArthur
 11/18/2016

DRAWN BY : N. D'AIUTO DATE : 4/12/16
 CHECKED BY : J.K. BOWLES DATE : 6/15/16
 DESIGN ENGINEER OF RECORD: N. D'AIUTO DATE : 3/1/16

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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24	
1			3			TOTAL SHEETS	30
2			4				



NOTES

STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

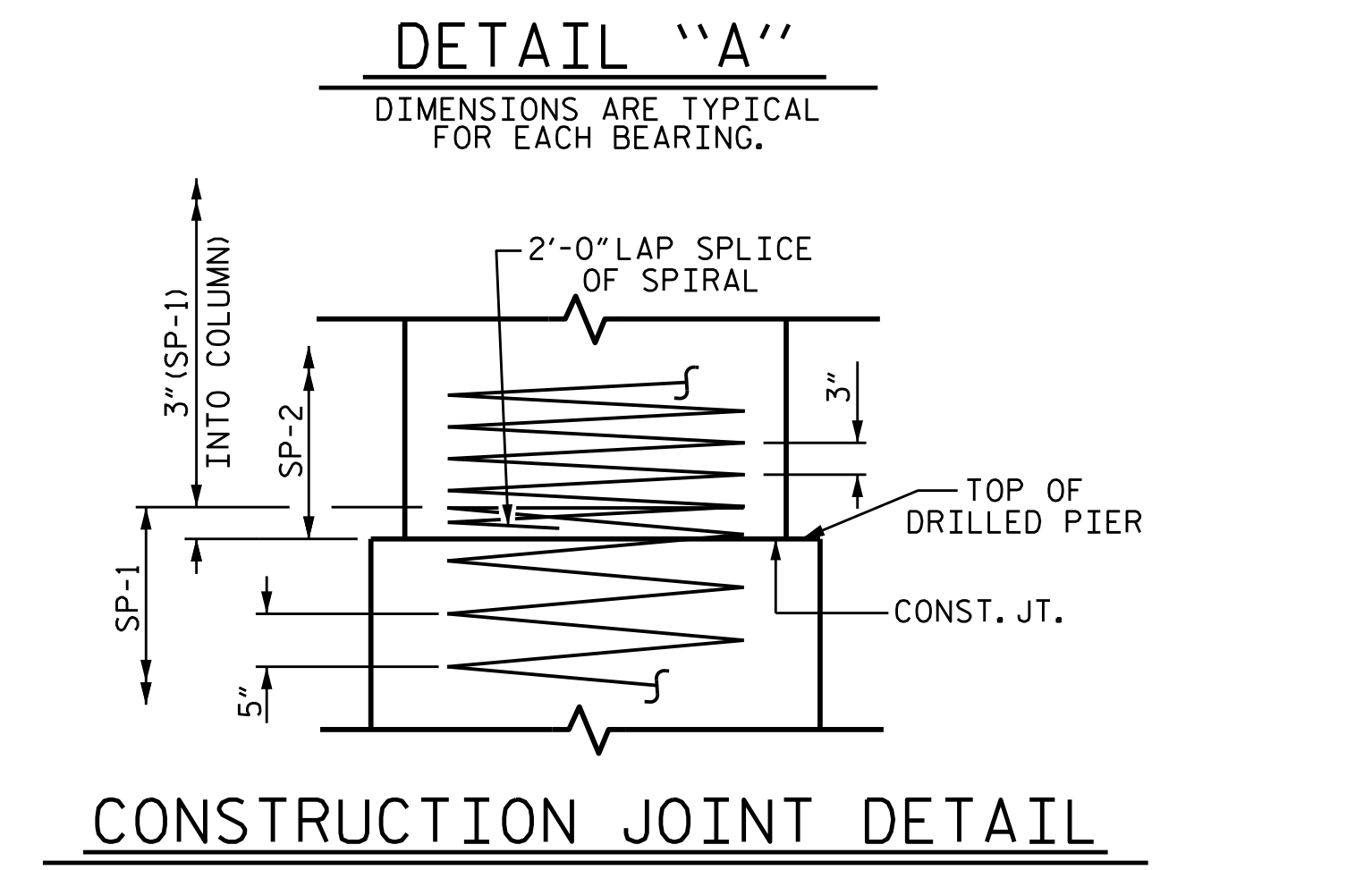
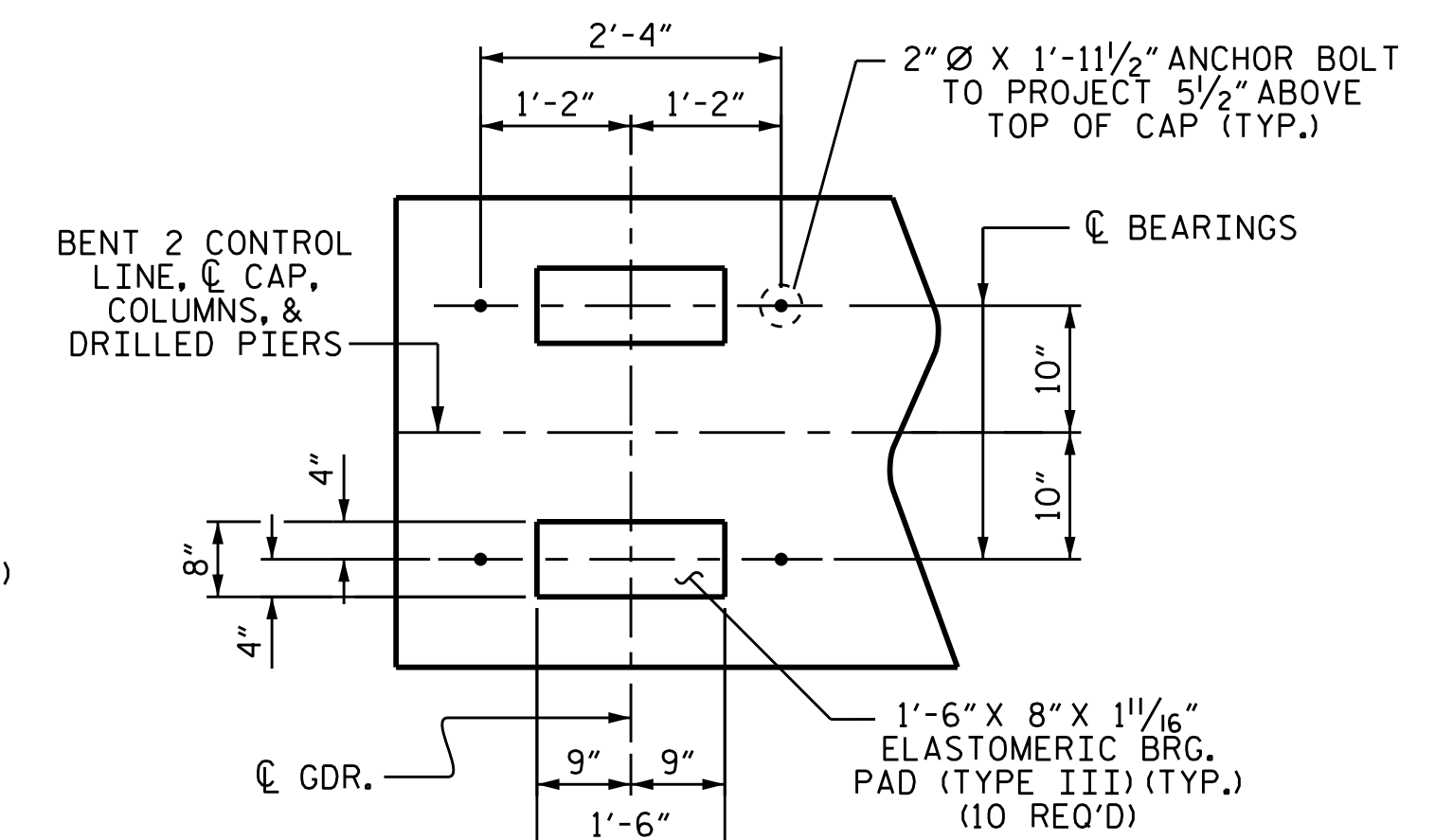
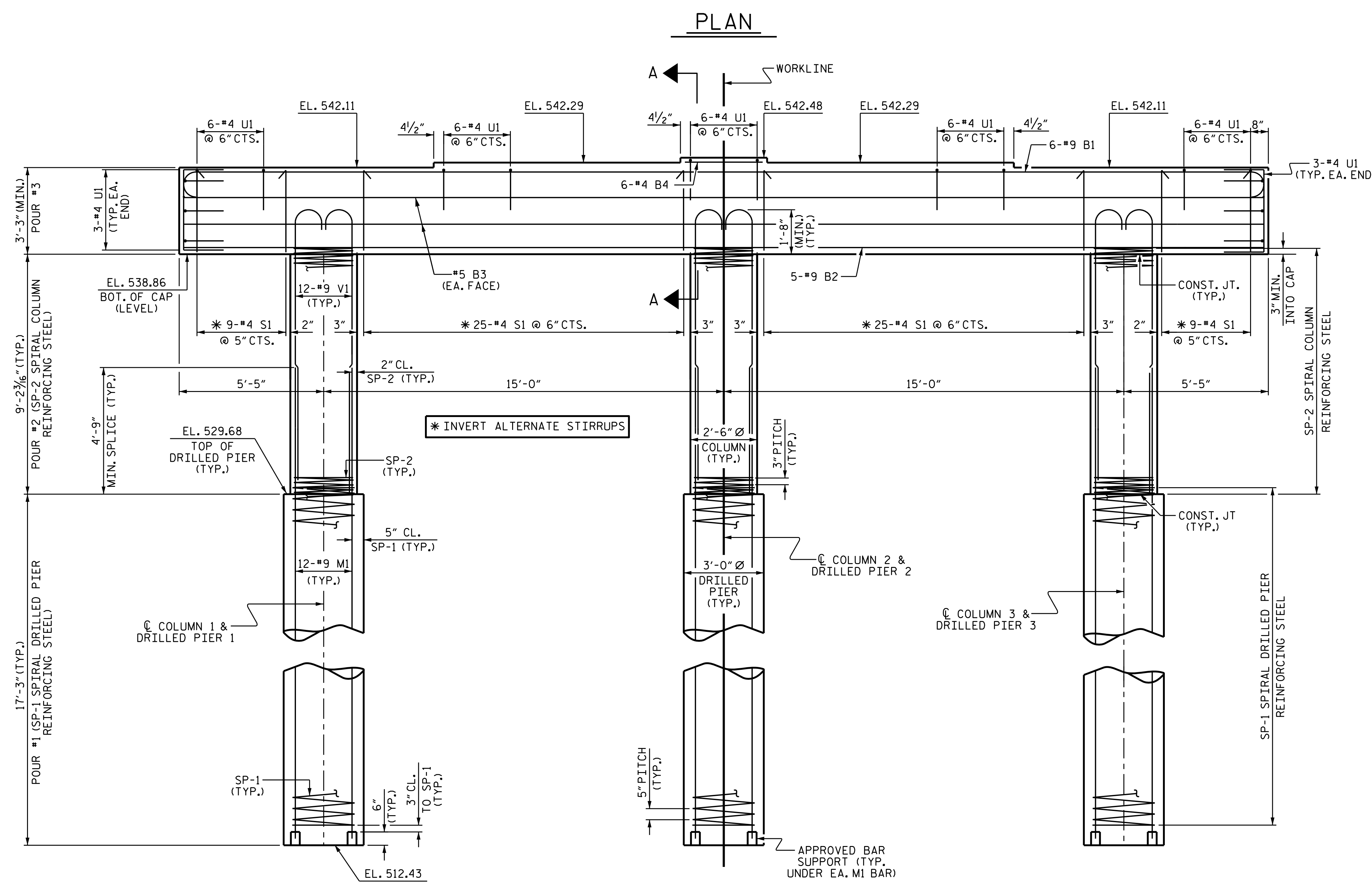
HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR DRILLED PIERS, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

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

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.



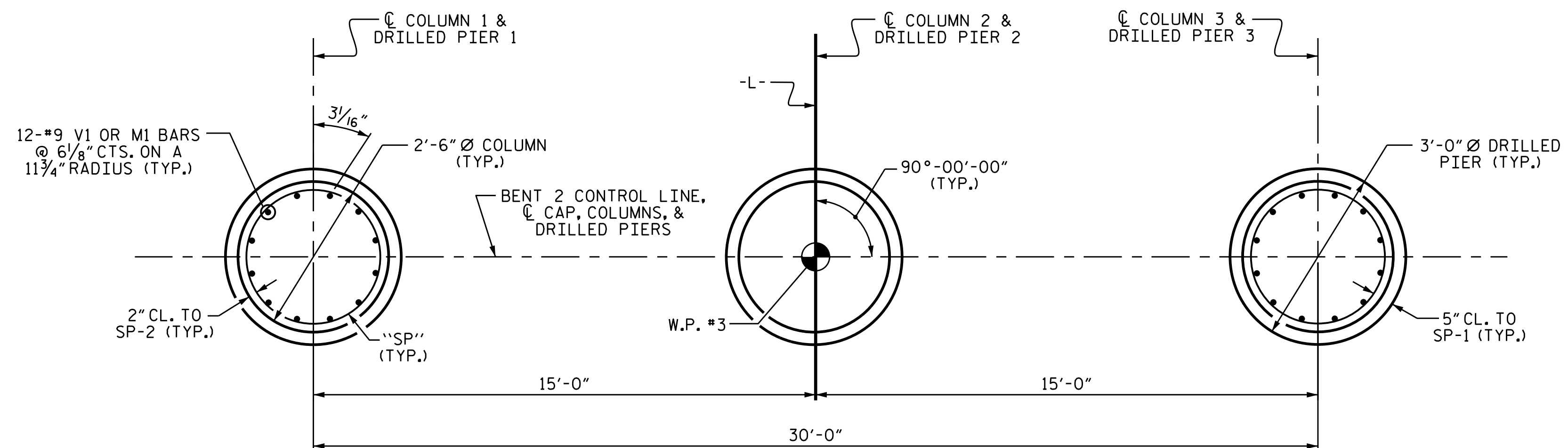
PROJECT NO. B-5548
CABARRUS COUNTY
 STATION: 29+55.00 -L-
 SHEET 1 OF 2



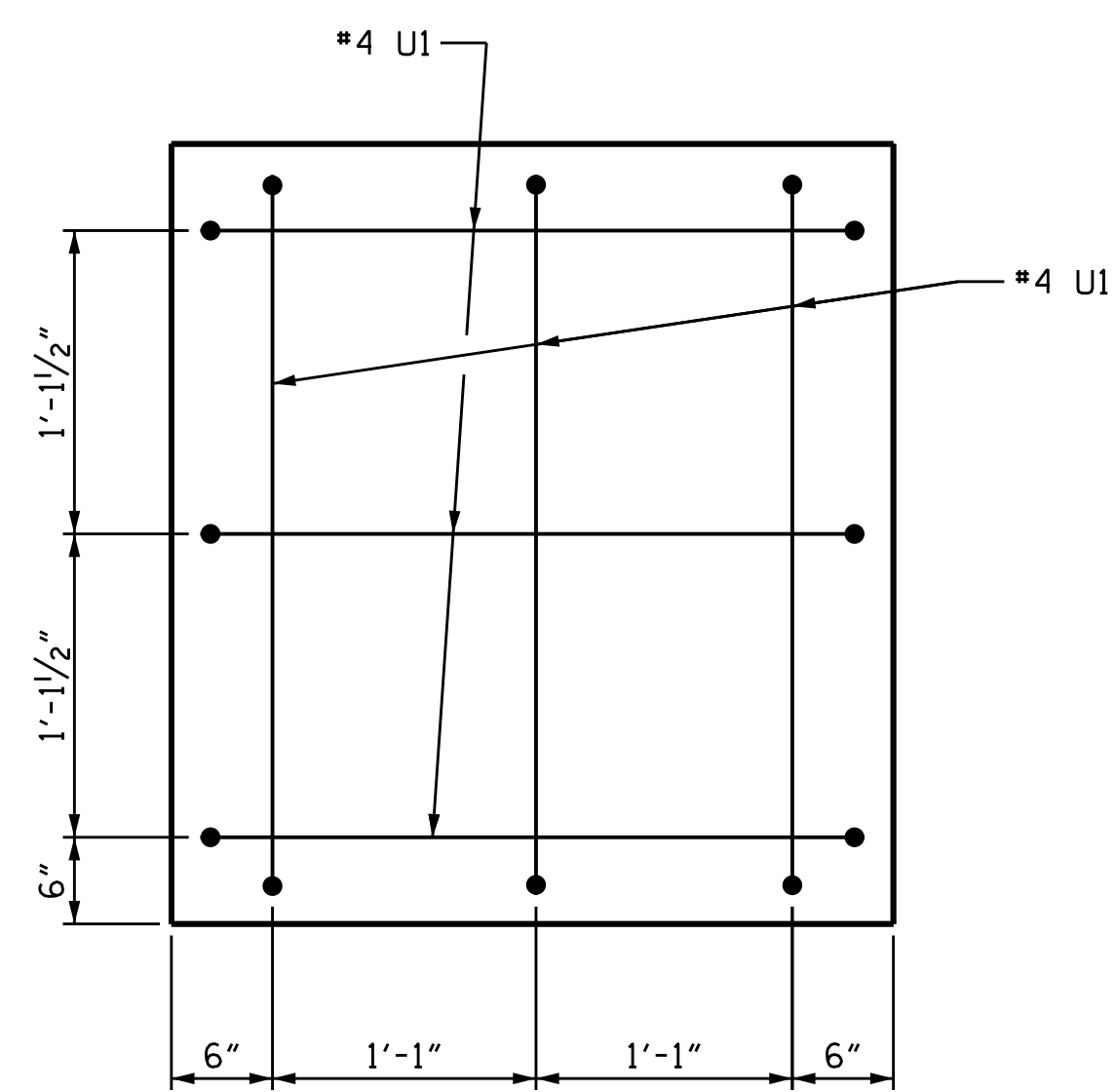
DRAWN BY : N. D'AIUTO DATE : 4/11/16
 CHECKED BY : J.K. BOWLES DATE : 6/15/16
 DESIGN ENGINEER OF RECORD: N. D'AIUTO DATE : 3/1/16

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

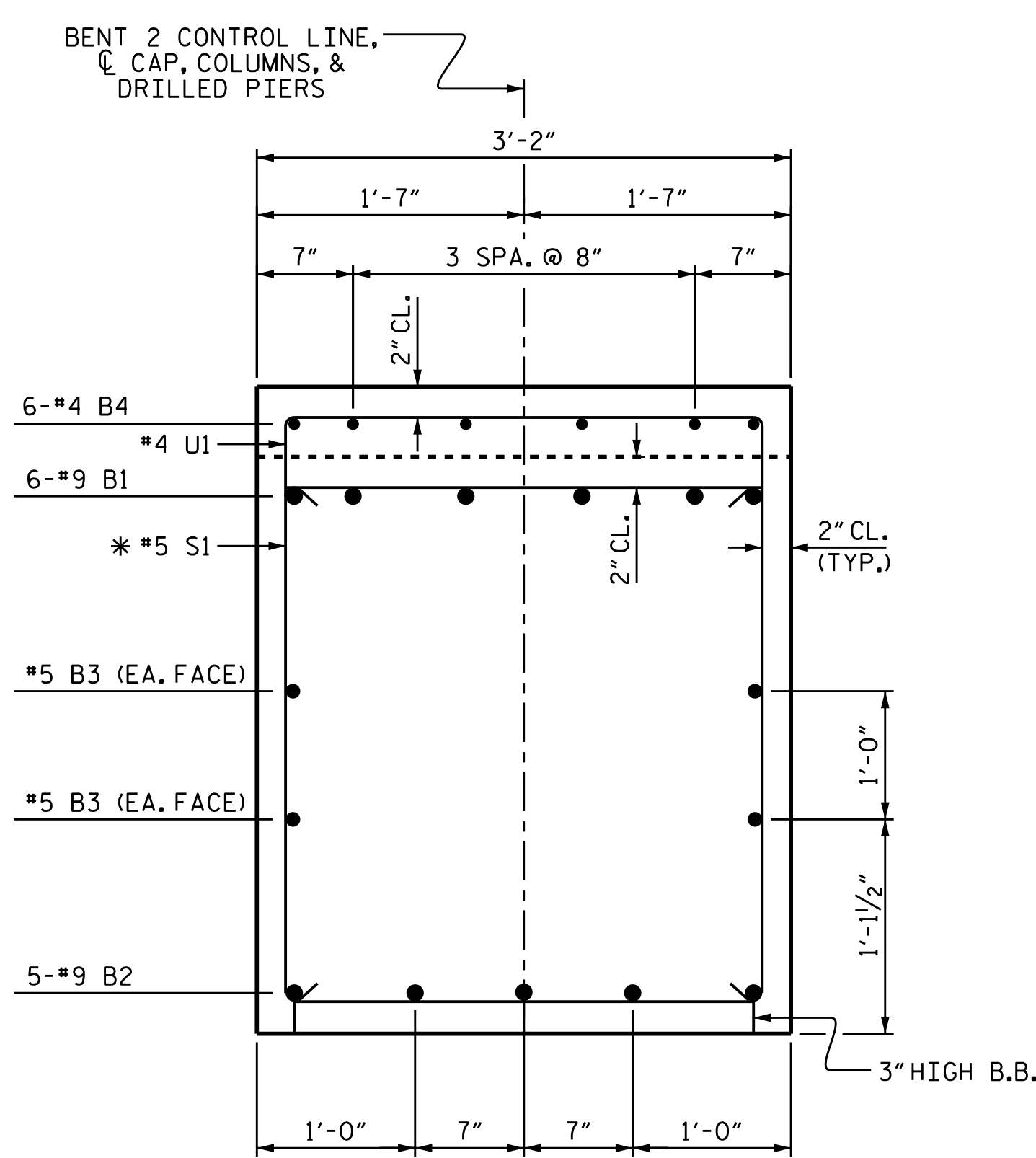
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25	
1			3			TOTAL SHEETS 30	
2			4				



PLAN OF DRILLED PIERS & COLUMNS



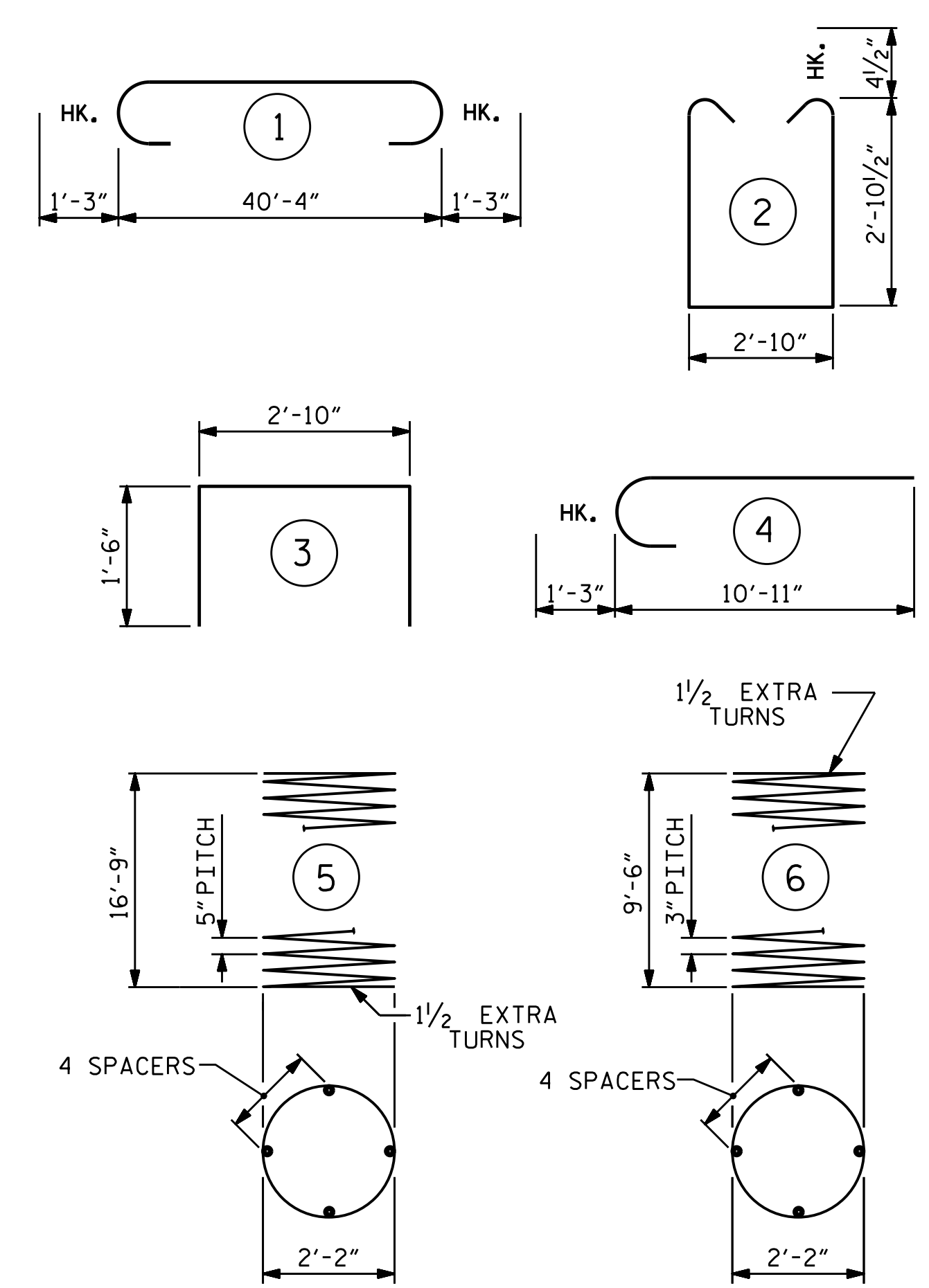
END VIEW



SECTION A-A

* INVERT ALTERNATE STIRRUPS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

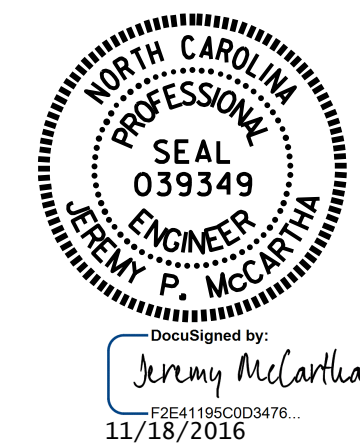
BILL OF MATERIAL

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#9	1	42'-10"	874
B2	5	#9	STR	40'-6"	689
B3	4	#5	STR	40'-6"	169
B4	6	#4	STR	2'-11"	12
M1	36	#9	STR	24'-9"	3,029
S1	68	#4	2	9'-4"	424
U1	42	#4	3	5'-10"	164
V1	36	#9	4	12'-2"	1,489
REINFORCING STEEL				LBS.	6,850
SP-1	3	*#	5	277'-11"	870
SP-2	3	*#	6	262'-3"	516
SPIRAL COLUMN REINFORCING STEEL				LBS.	1,386
* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.					
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.					
CLASS A CONCRETE				C.Y.	5.0
POUR #2 (COLUMNS)				C.Y.	16.1
POUR #3 (CAP)				C.Y.	21.1
TOTAL CLASS A CONCRETE				C.Y.	21.1
DRILLED PIER QUANTITIES					
DRILLED PIER CONCRETE				C.Y.	13.5
POUR #1 (DRILLED PIERS)				C.Y.	13.5
3'-0" Ø DRILLED PIERS IN SOIL				LIN. FT.	2.8
3'-0" Ø DRILLED PIERS NOT IN SOIL				LIN. FT.	49.0
PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER				LIN. FT.	11.0
CSL TUBES				LIN. FT.	225.0

PROJECT NO. B-5548
 CABARRUS COUNTY
 STATION: 29+55.00 -L-

SHEET 2 OF 2

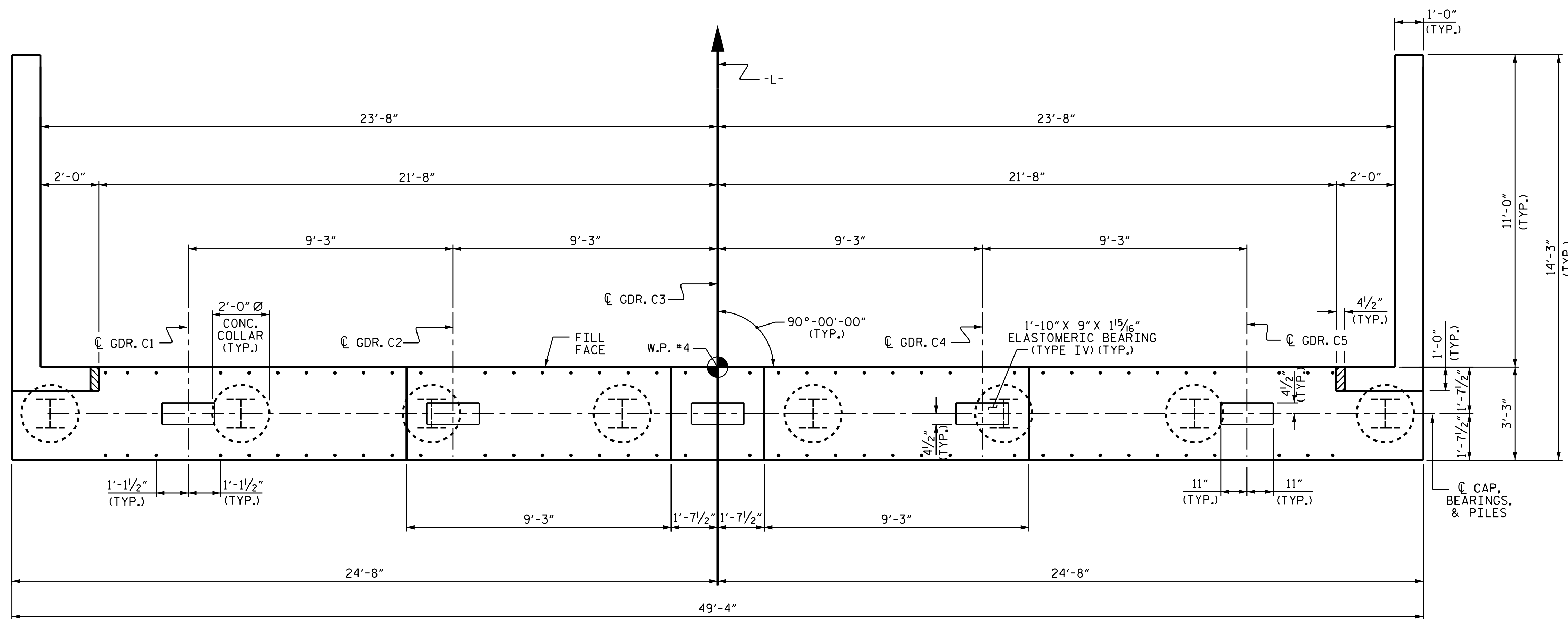
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 2



DRAWN BY : N. D'AIUTO DATE : 4/12/16
 CHECKED BY : J.K. BOWLES DATE : 6/15/16
 DESIGN ENGINEER OF RECORD : N. D'AIUTO DATE : 3/1/16

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26	
1			3			TOTAL SHEETS	30
2			4				



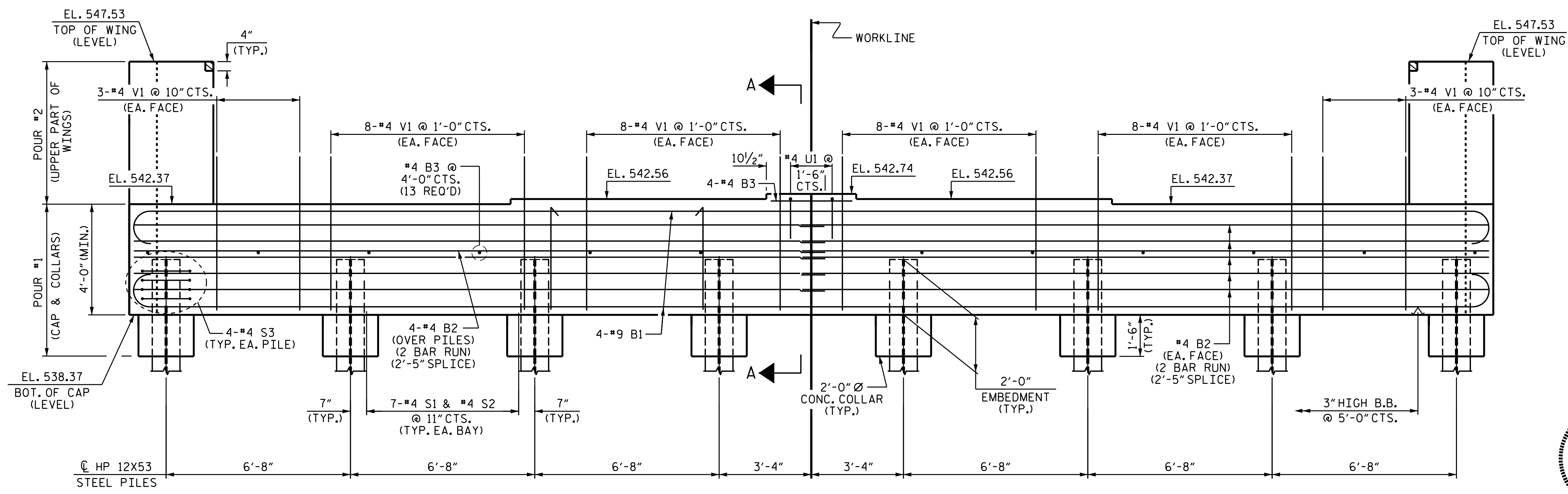
PLAN

NOTES

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

THE CONCRTE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE BARRIER RAIL IS 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.



ELEVATION

PROJECT NO. B-5548
 CABARRUS COUNTY
 STATION: 29+55.00 -L-

SHEET 1 OF 2



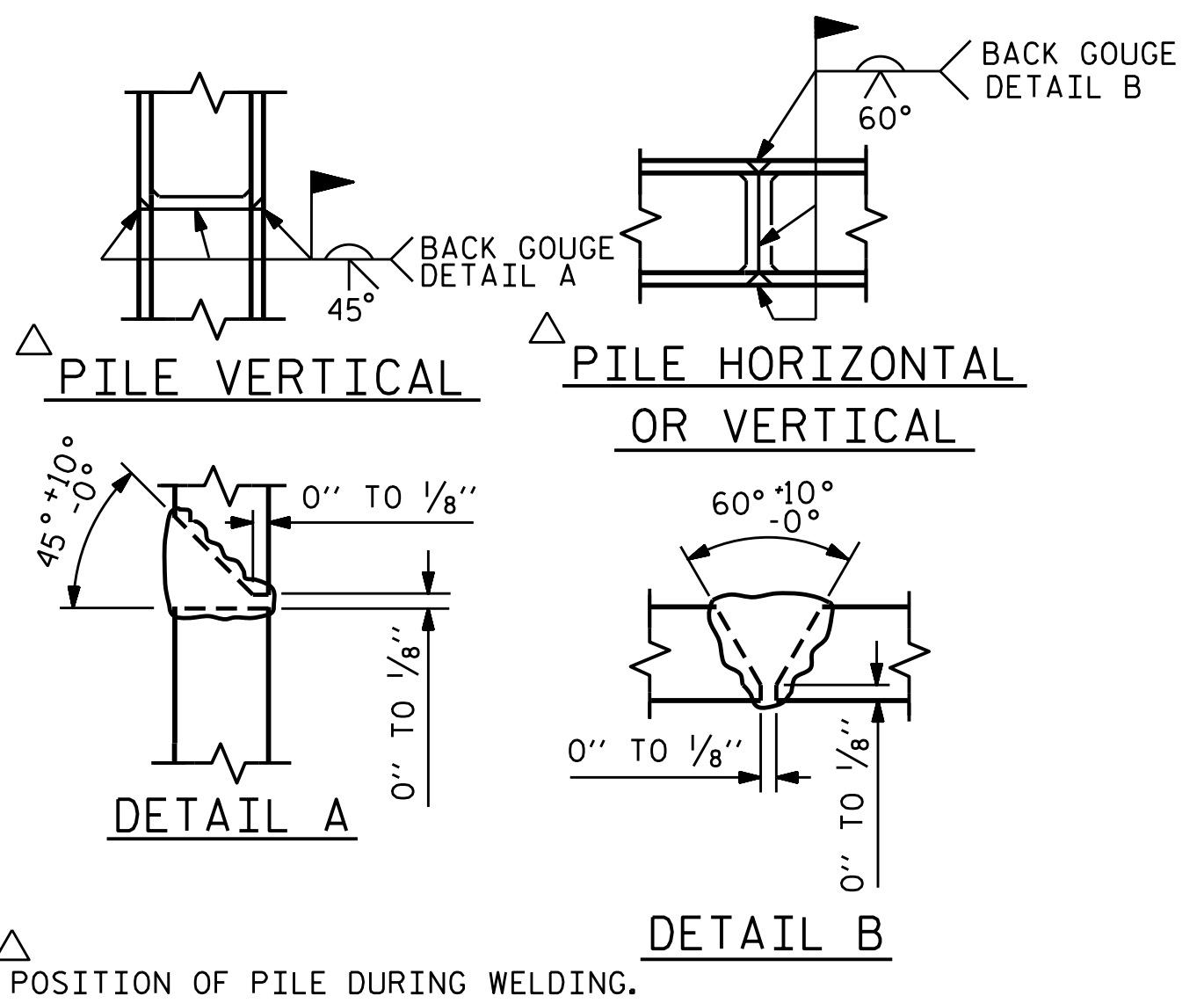
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 INTEGRAL
 END BENT 2

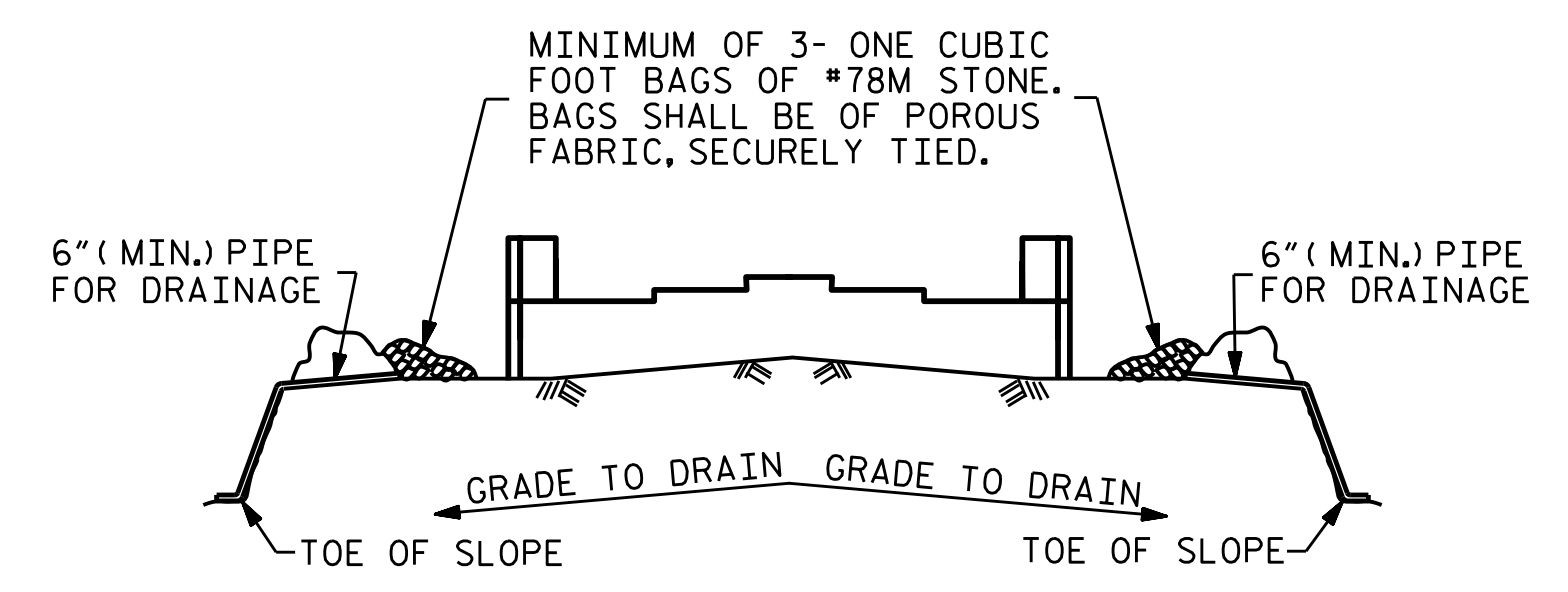
DRAWN BY : N. D'AIUTO DATE : 4/11/16
 CHECKED BY : J.K. BOWLES DATE : 4/29/16
 DESIGN ENGINEER OF RECORD : N. D'AIUTO DATE : 3/1/16

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27	
1			3			TOTAL SHEETS	
2			4			30	



PILE SPLICE DETAILS

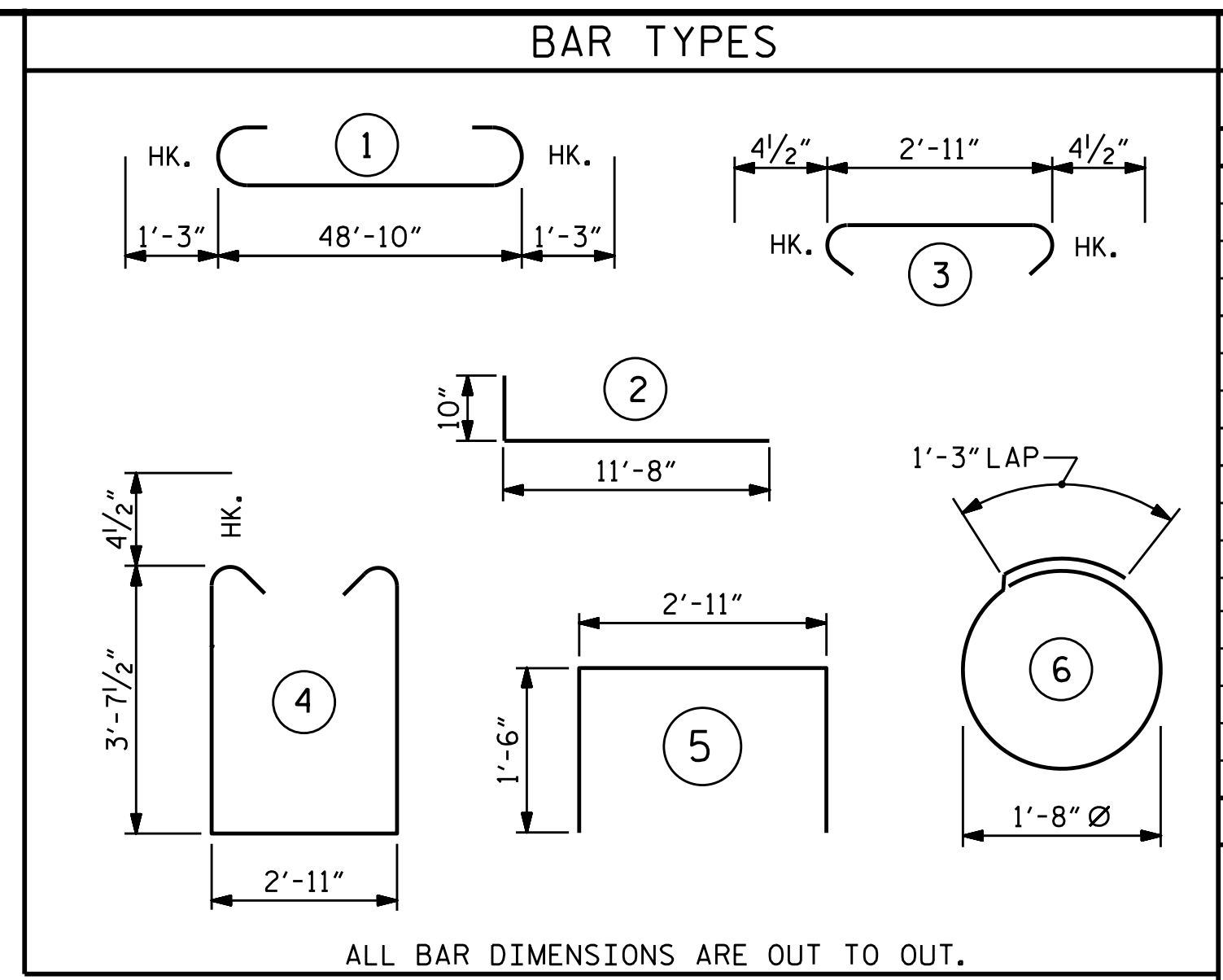


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

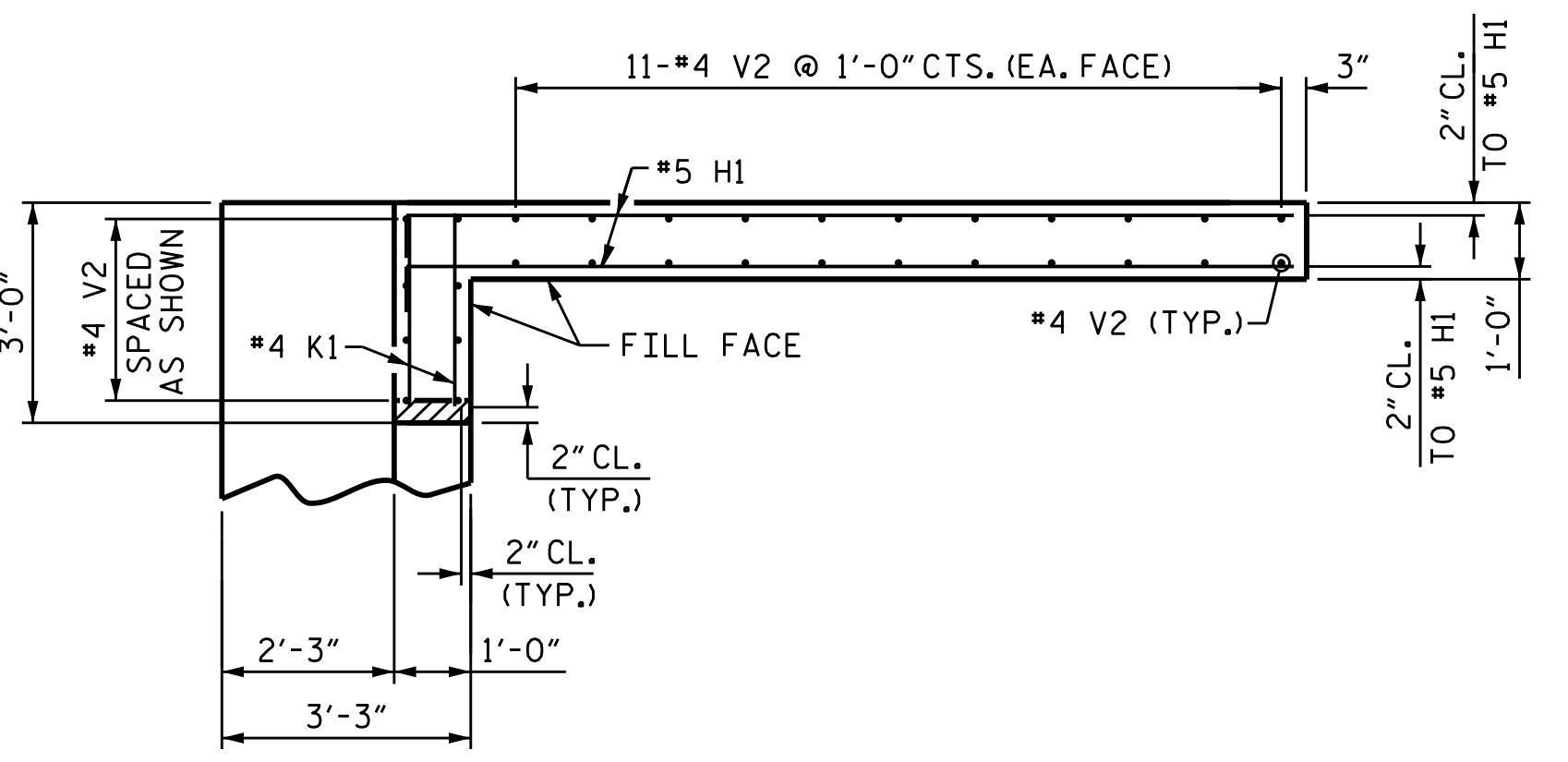
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

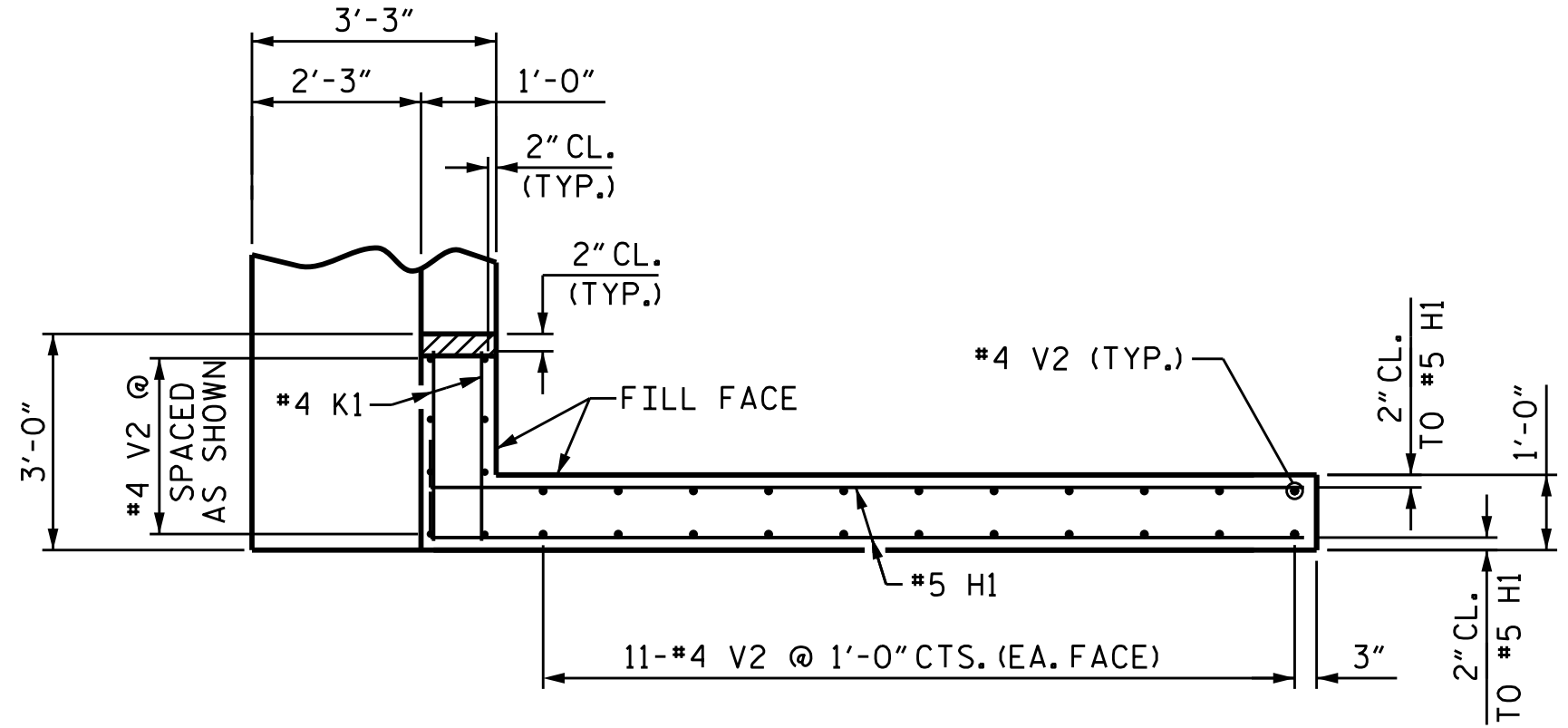
TEMPORARY DRAINAGE AT END BENT



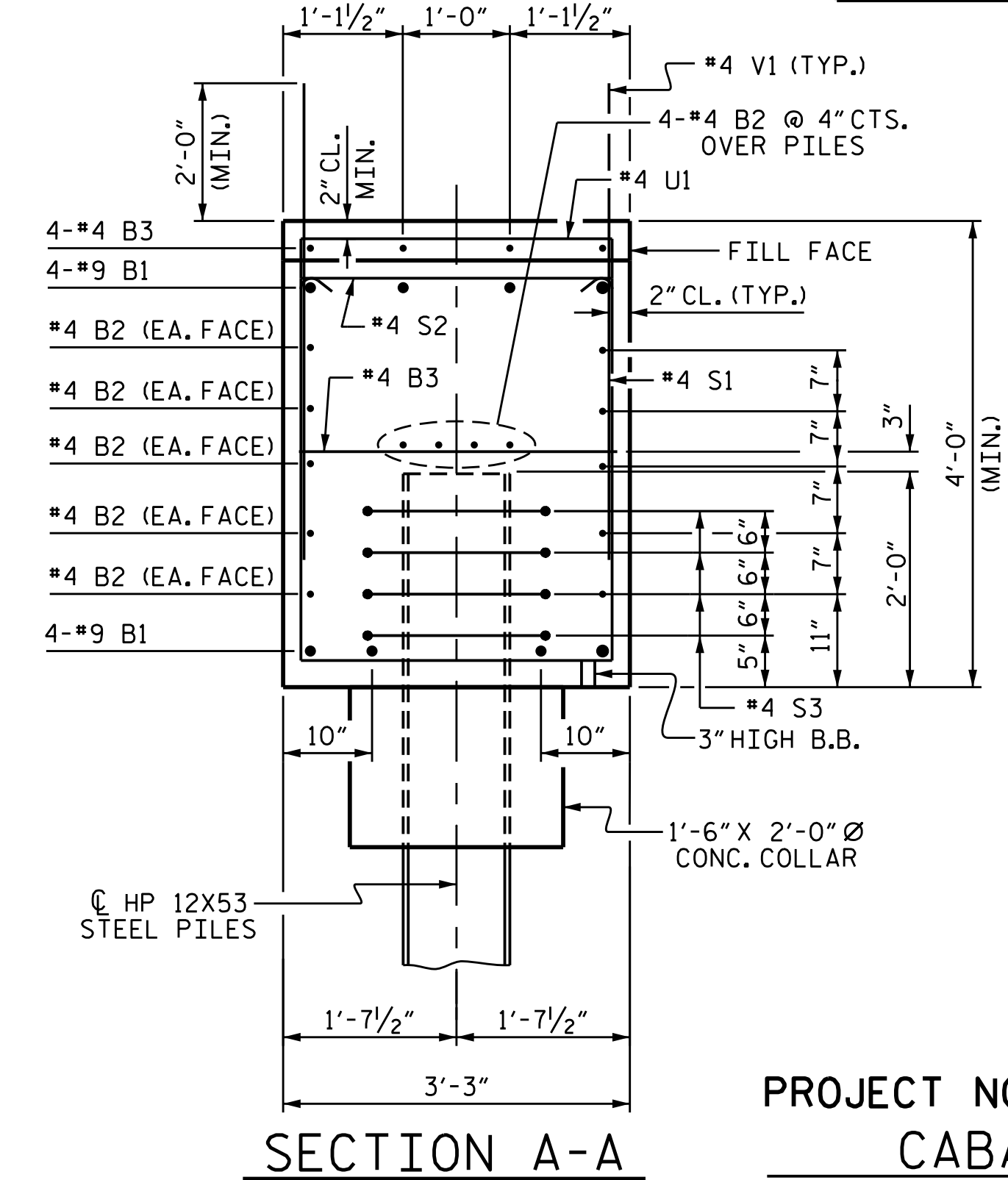
BILL OF MATERIAL					
END BENT 2					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	51'-4"	1,396
B2	28	#4	STR	25'-9"	482
B3	17	#4	STR	2'-11"	33
H1	72	#5	2	12'-63"	939
K1	24	#4	STR	2'-8"	43
S1	49	#4	4	10'-11"	357
S2	49	#4	3	3'-8"	120
S3	32	#4	6	6'-6"	139
U1	2	#4	5	5'-11"	8
V1	76	#4	STR	6'-3"	317
V2	60	#4	STR	8'-10"	354
REINFORCING STEEL				LBS.	4,188
CLASS A CONCRETE					
POUR #1 (CAP, LOWER WINGS, & COLLARS)				C.Y.	29.0
POUR #2 (UPPER PART OF WINGS)				C.Y.	5.4
TOTAL CLASS A CONCRETE				C.Y.	34.4
HP 12X53 STEEL PILES				LIN. FT.	120
NO. 8					
STEEL PILE POINTS				EACH	8



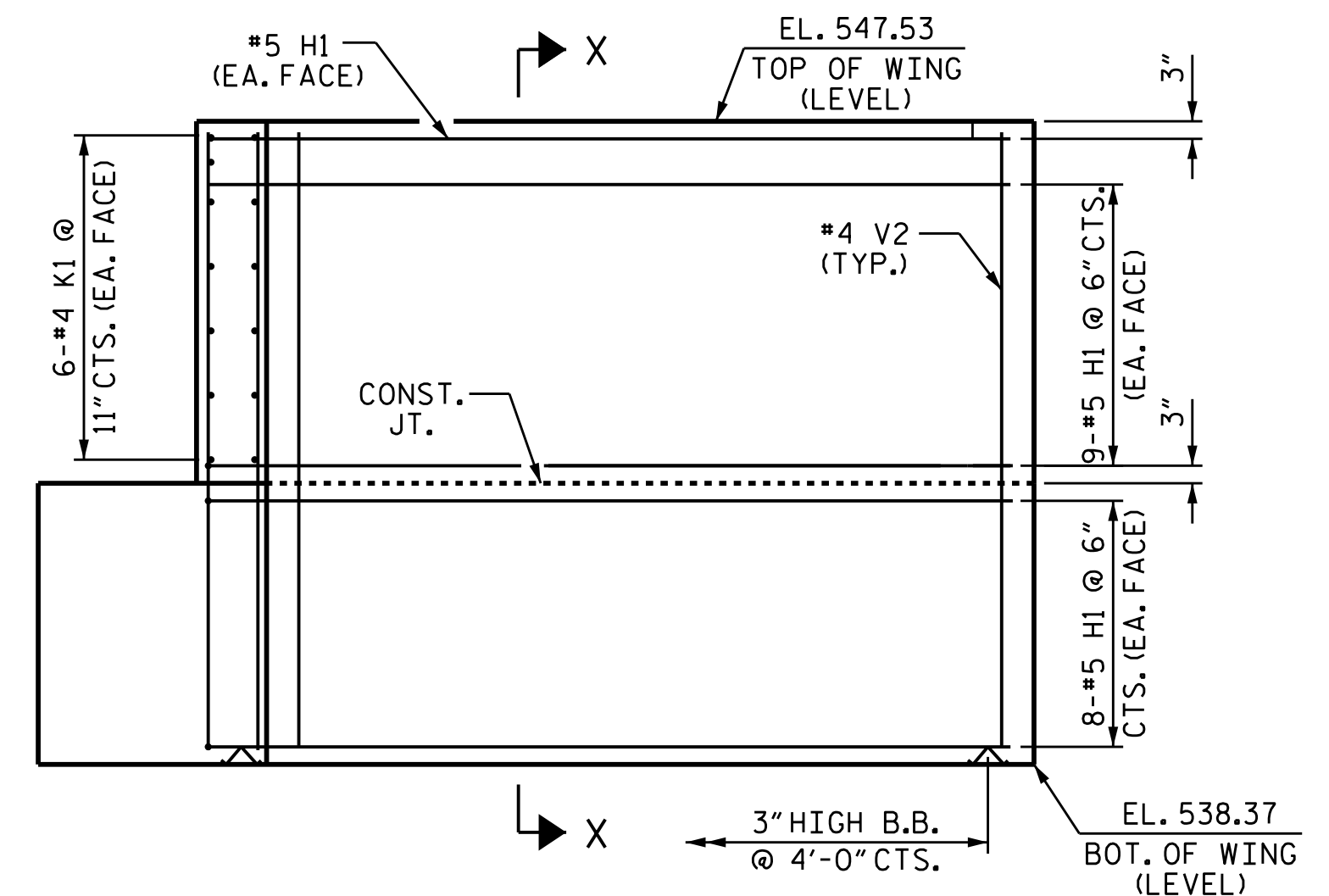
PLAN OF LEFT WING



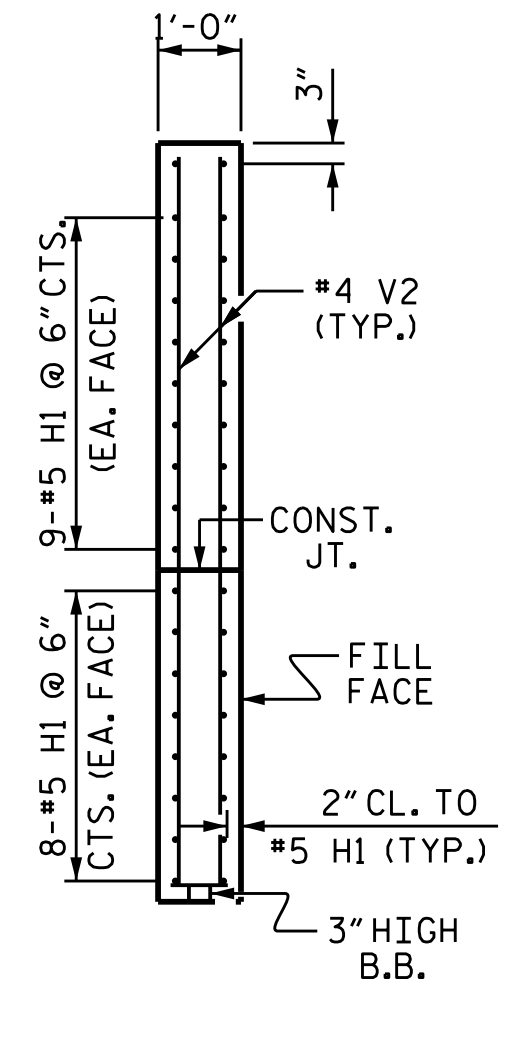
PLAN OF RIGHT WING



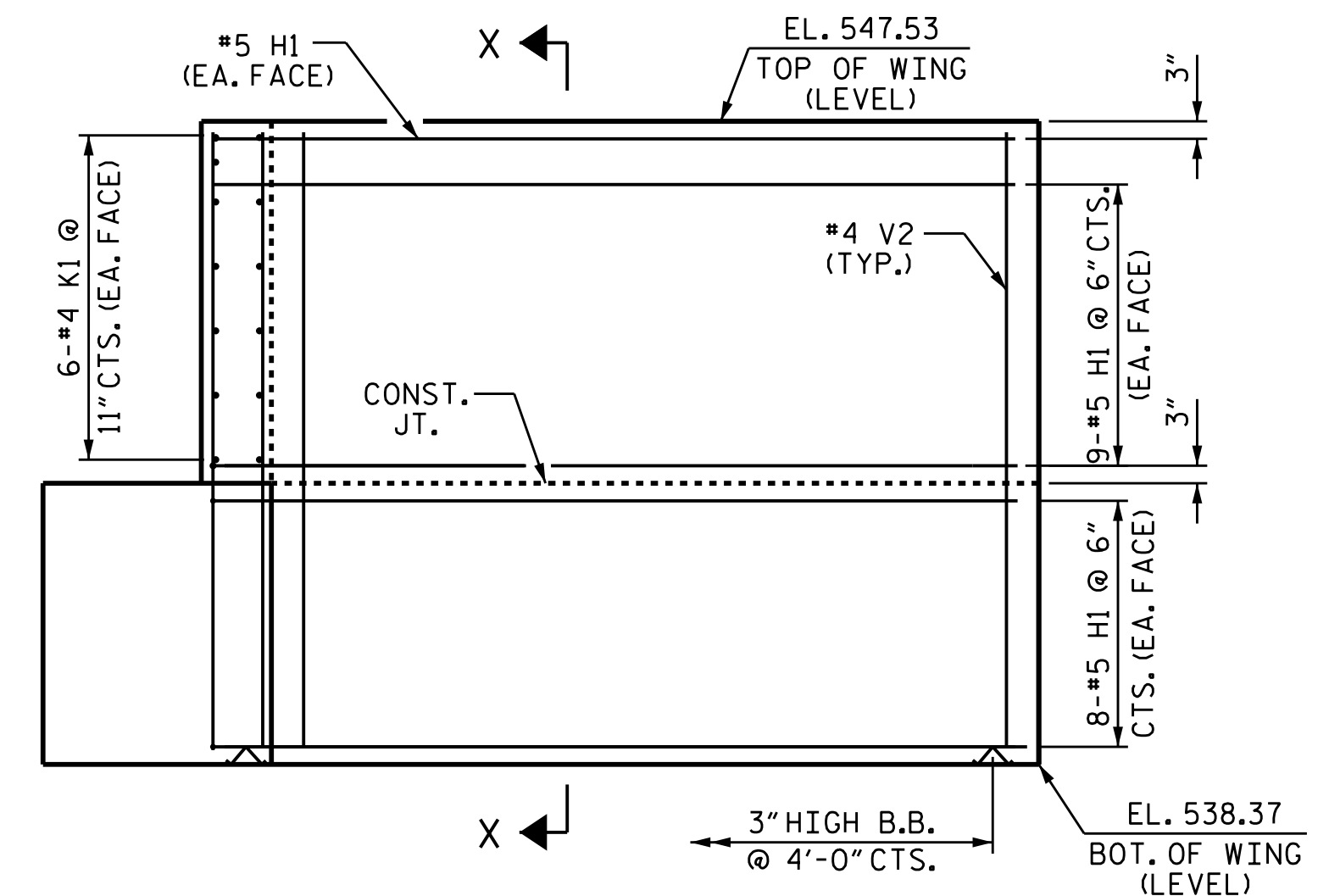
PROJECT NO. B-5548
CABARRUS COUNTY
STATION: 29+55.00 -L-
SHEET 2 OF 2



ELEVATION OF LEFT WING



SECTION X-X



ELEVATION OF RIGHT WING



DRAWN BY: N. D'AIUTO DATE: 4/12/16
CHECKED BY: J.K. BOWLES DATE: 4/29/16
DESIGN ENGINEER OF RECORD: N. D'AIUTO DATE: 3/1/16

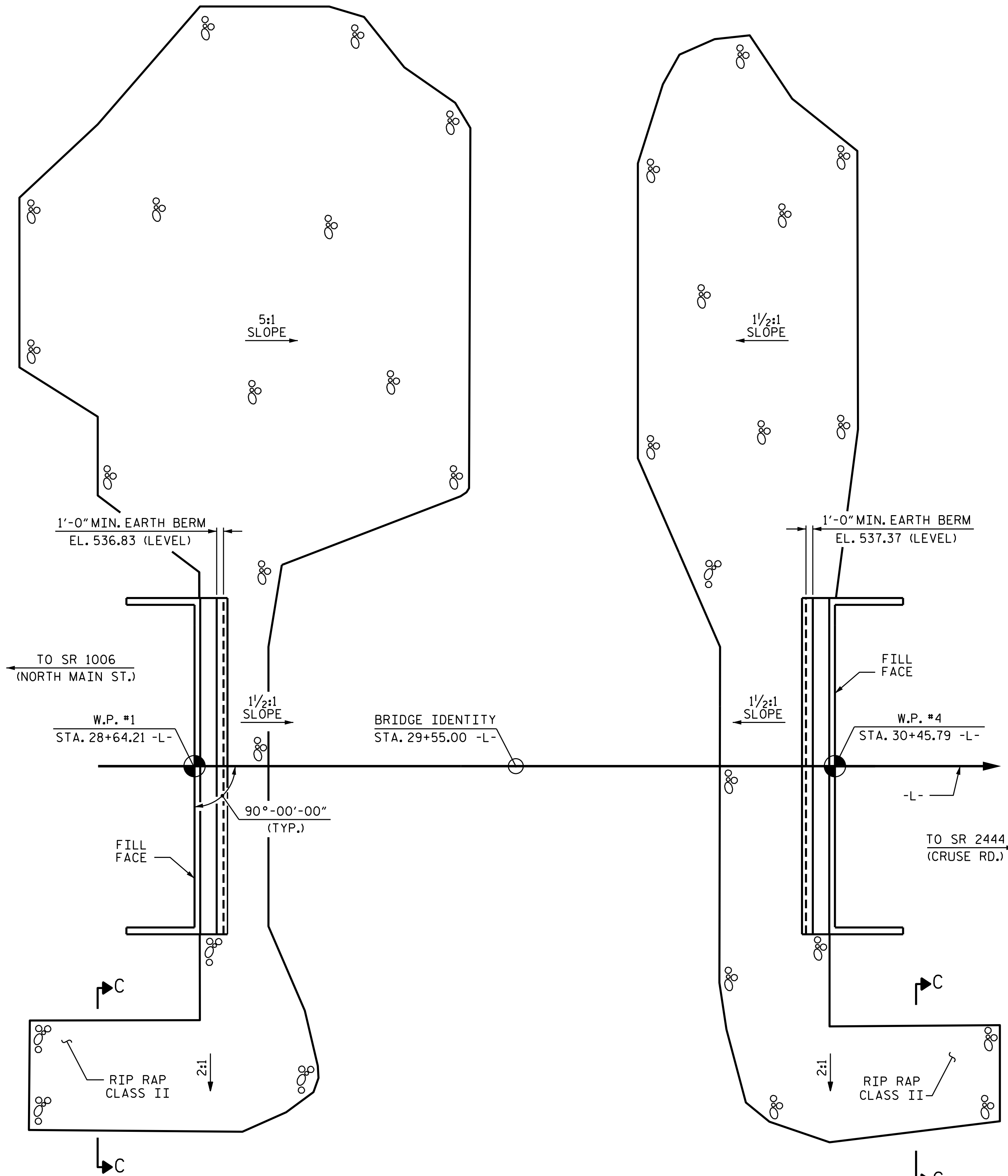
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28	
1			3			TOTAL SHEETS 30	
2			4				

ESTIMATED QUANTITIES

BRIDGE @ STA. 29+55.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
* END BENT 1	665	745
* END BENT 2	370	415
TOTAL	1,035	1,160

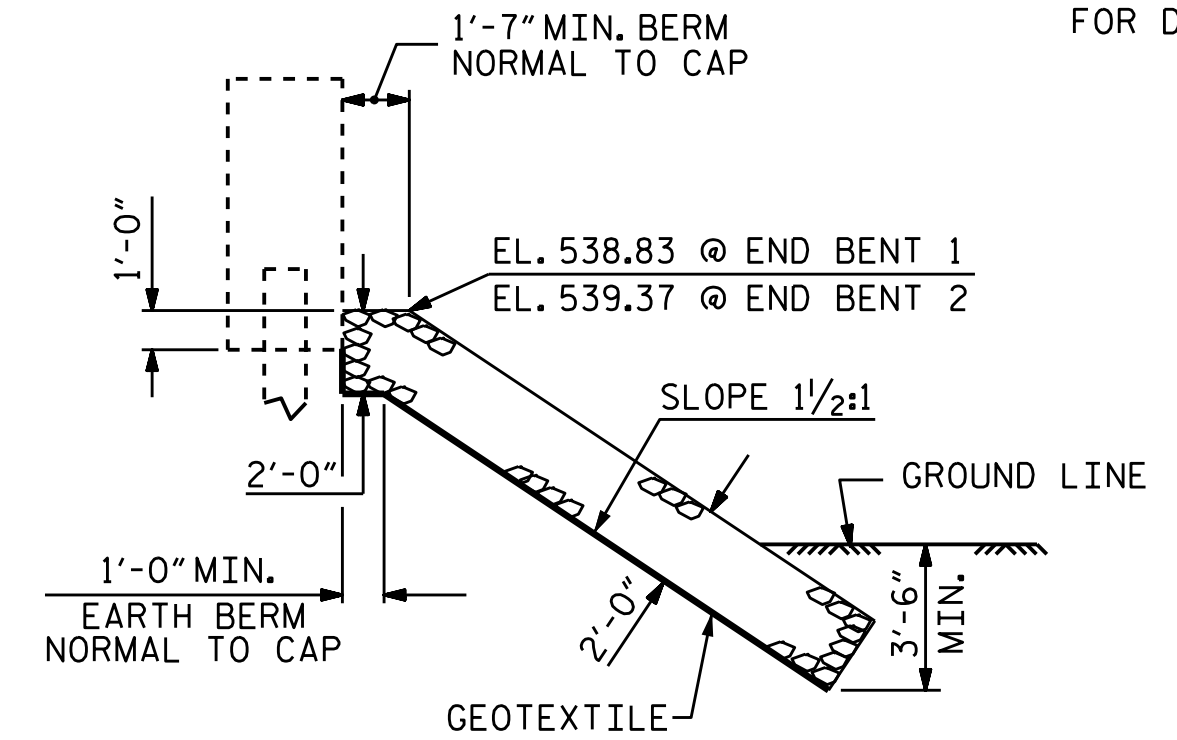
* THE CLASS II RIP RAP THAT IS TO BE PLACED IN THE AREA OF THE EXISTING END BENTS HAS BEEN INCLUDED IN THE QUANTITY SHOWN FOR END BENT 1 AND END BENT 2. APPROXIMATELY 595 TONS OF RIP RAP AND APPROXIMATELY 665 SQUARE YARDS OF GEOTEXTILE FOR DRAINAGE FOR END BENT 1. APPROXIMATELY 195 TONS OF RIP RAP AND APPROXIMATELY 220 SQUARE YARDS OF GEOTEXTILE FOR DRAINAGE FOR END BENT 2.



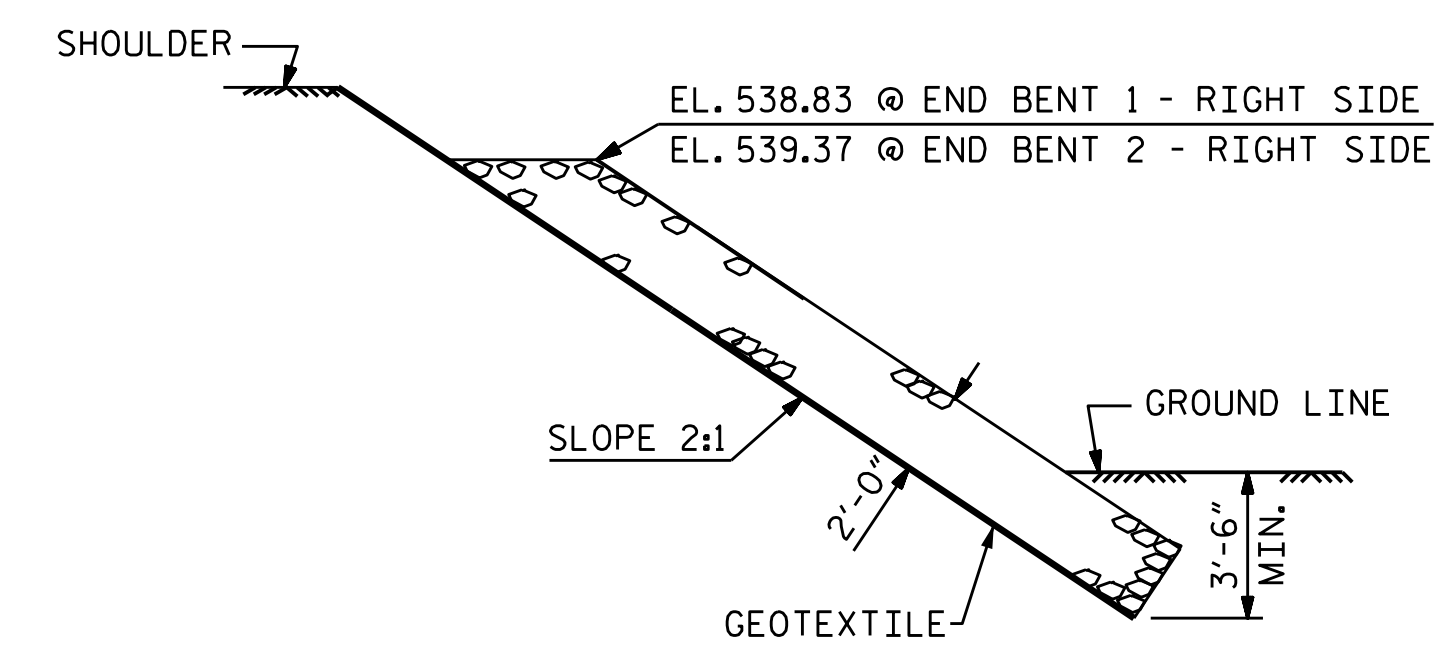
INTEGRAL
END BENT 1

INTEGRAL
END BENT 2

PLAN

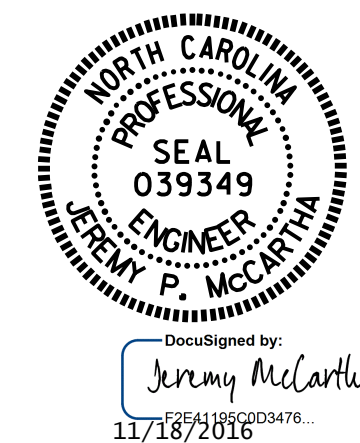


SECTION
BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-5548
CABARRUS COUNTY
 STATION: 29+55.00 -L-



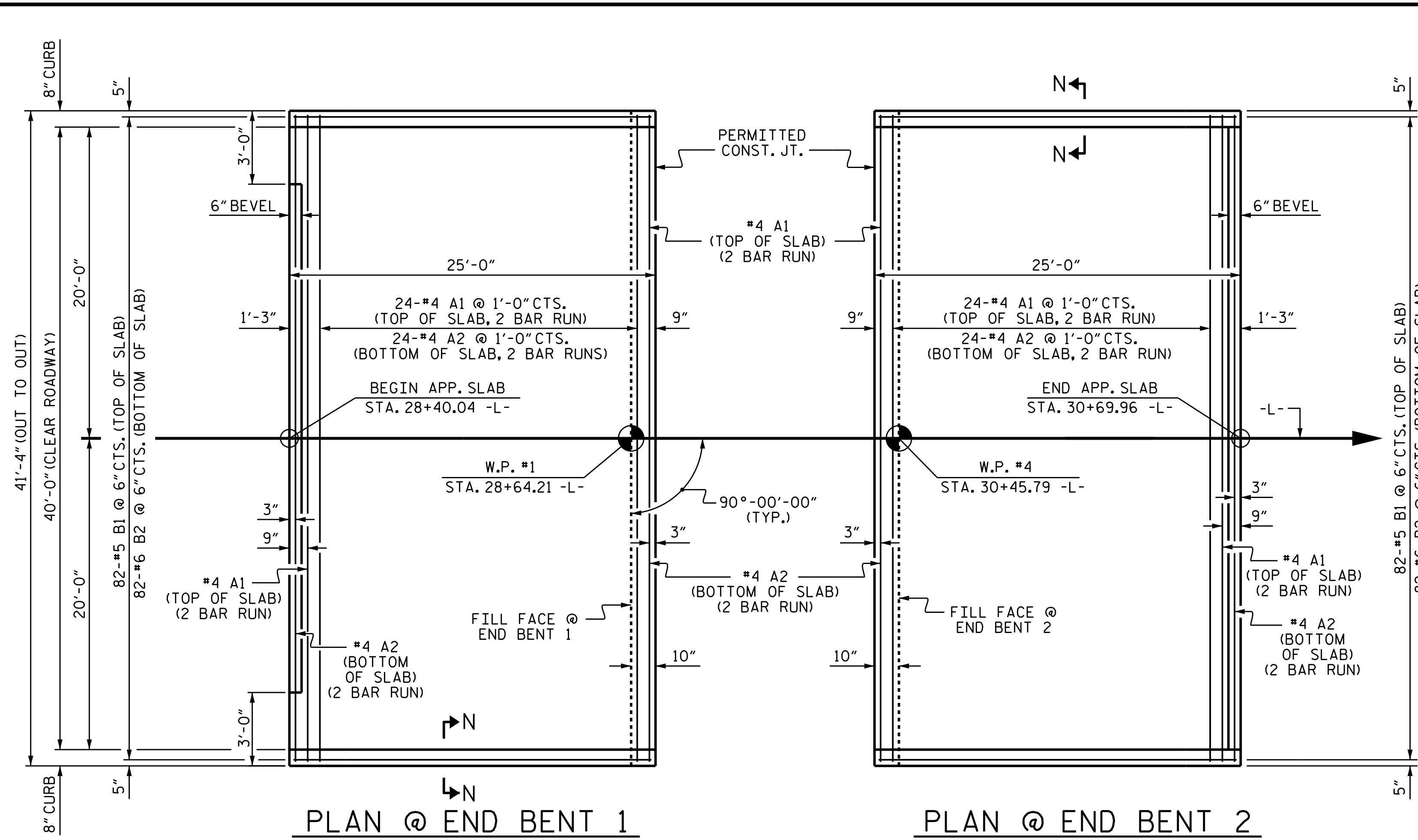
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

RIP RAP DETAILS

DRAWN BY : N. D'AIUTO DATE : 3/23/16
 CHECKED BY : J.K. BOWLES DATE : 4/28/16

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-29
2			4			30



PLAN @ END BENT 1

PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

NOTES

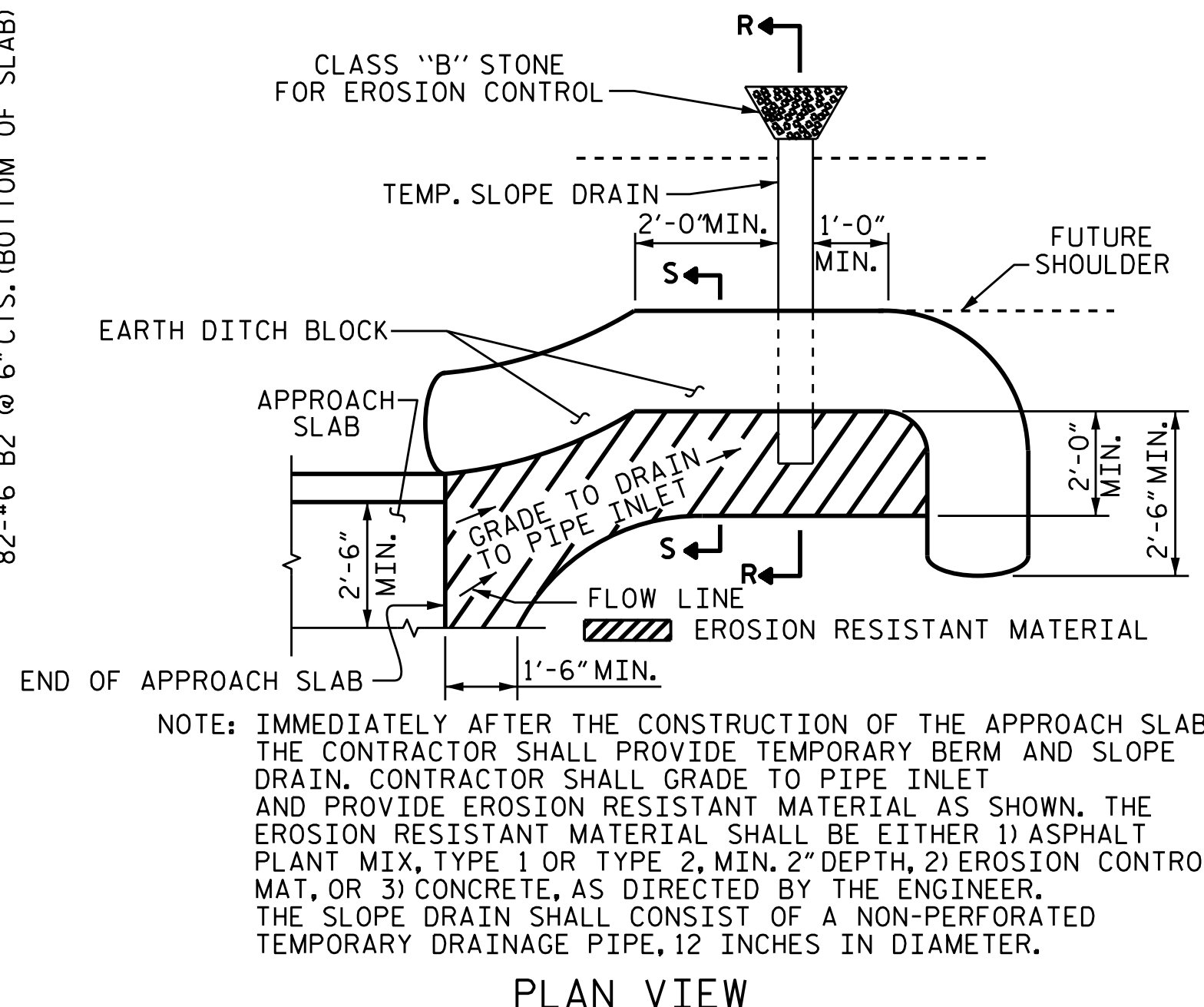
THE APPROACH SLAB MAY BE CAST MONOLITHICALLY WITH THE END BENT DIAPHRAGM AND THE END SECTION OF THE BRIDGE DECK NEAR THE INTEGRAL END BENT.

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

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

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

BILL OF MATERIAL					
FOR ONE APPROACH SLAB (2 REQUIRED)					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	52	#4	STR	21'-6"	747
A2	52	#4	STR	21'-5"	744
*B1	82	#5	STR	24'-3"	2074
B2	82	#6	STR	24'-8"	3038
REINFORCING STEEL				LBS.	3,782
* EPOXY COATED REINFORCING STEEL				LBS.	2,821
CLASS AA CONCRETE				C.Y.	44.6



PLAN VIEW

SECTION R-R

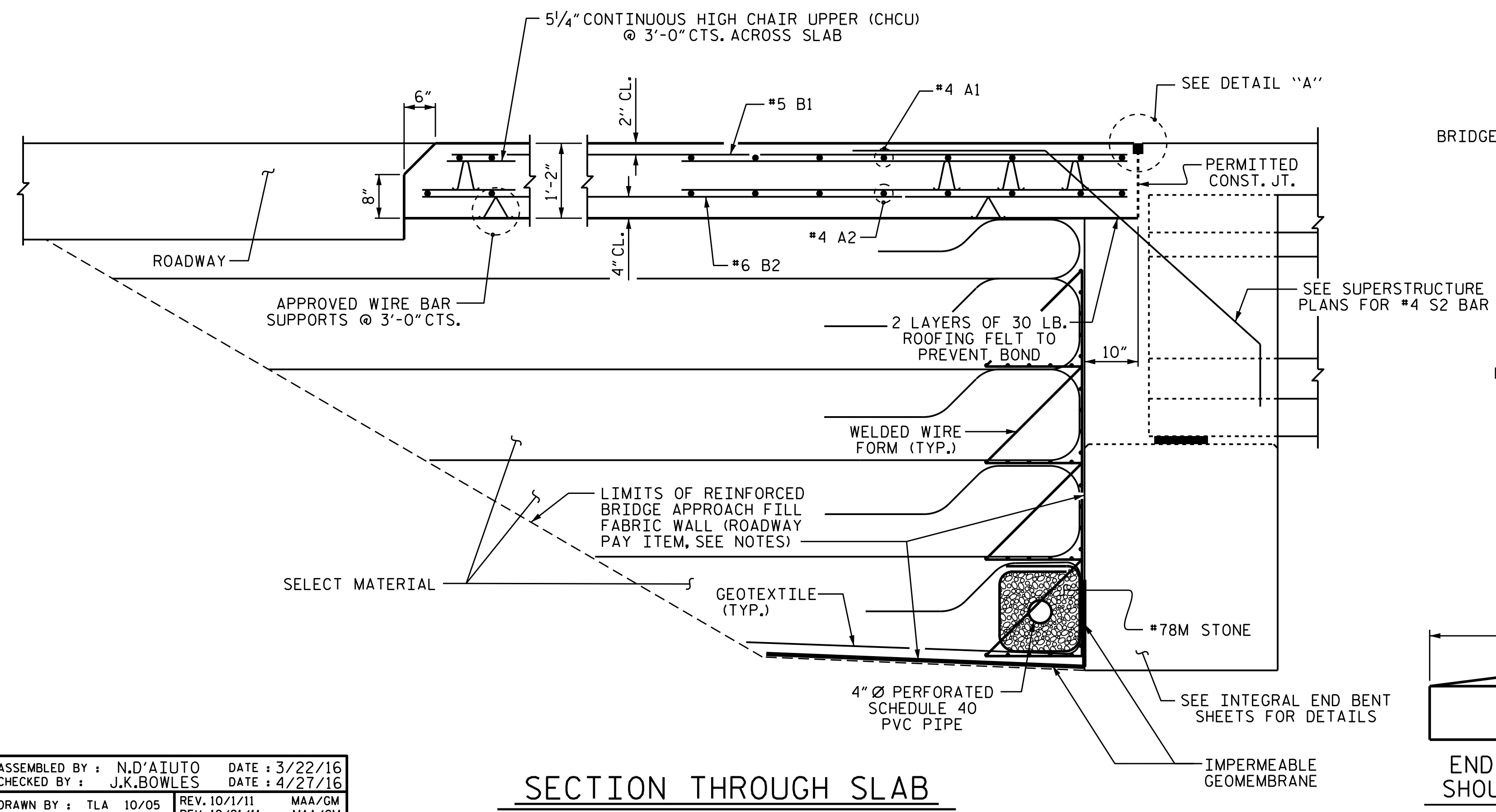
SECTION S-S

NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

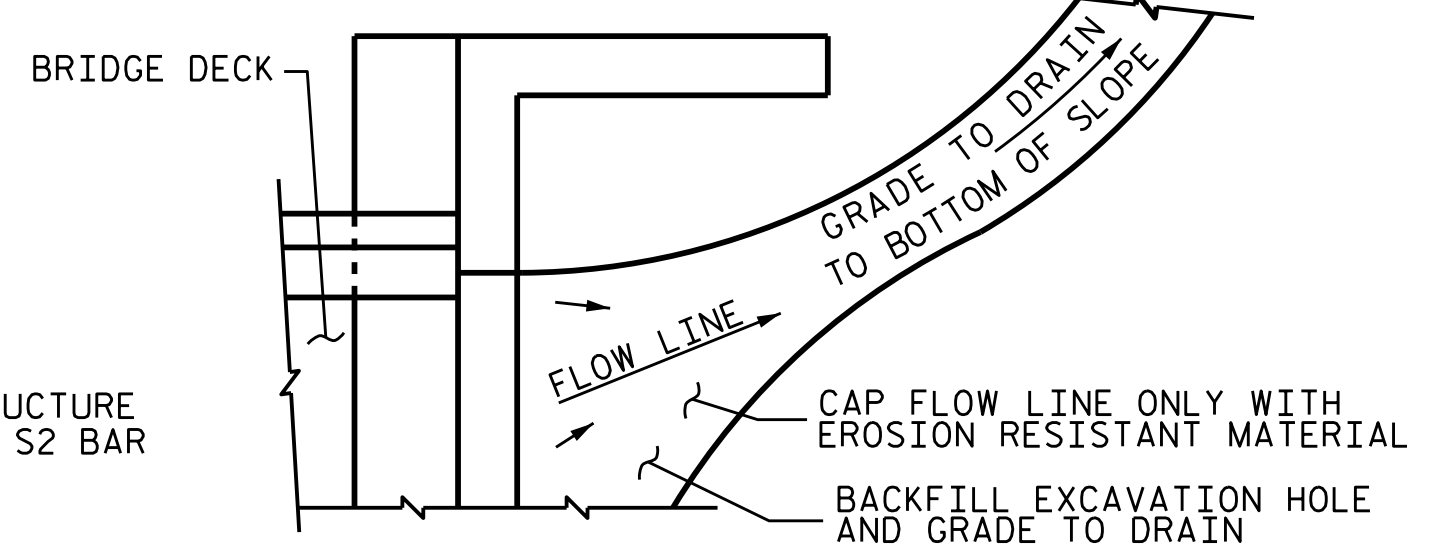
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

SPlice LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"

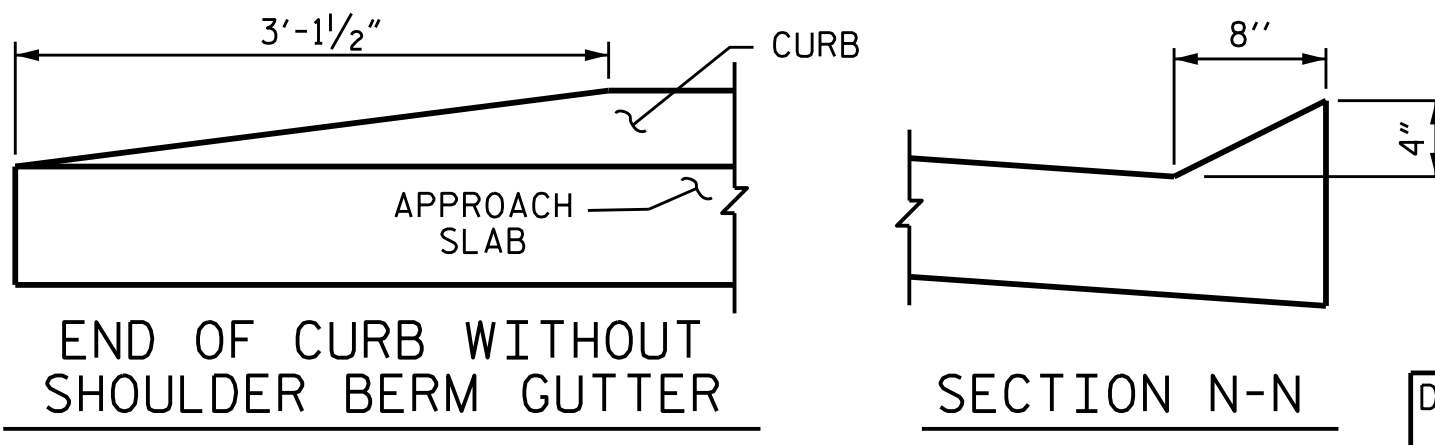


SECTION THROUGH SLAB



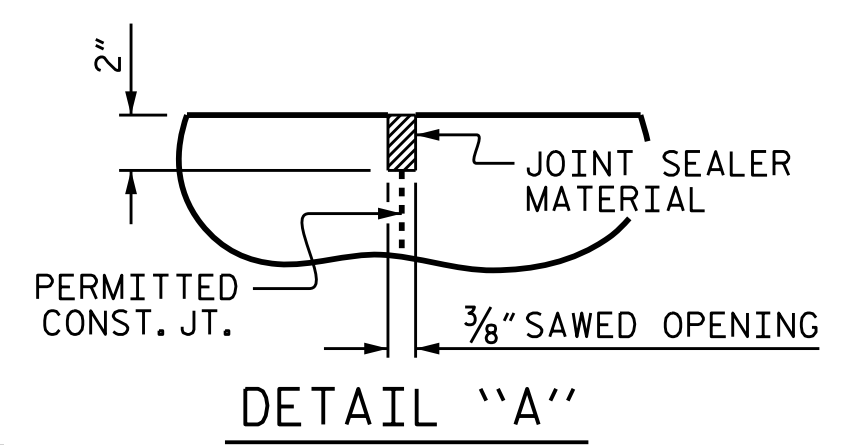
TEMPORARY DRAINAGE DETAIL

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.



END OF CURB WITHOUT SHOULDER BERM GUTTER

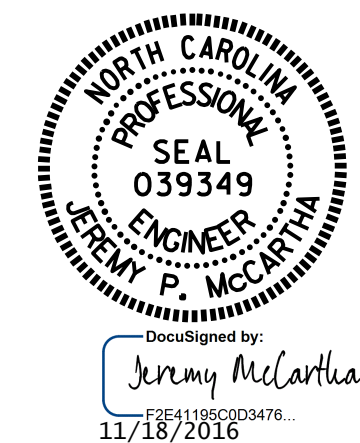
SECTION N-N



DETAIL "A"

ASSEMBLED BY : N.D'AIUTO	DATE : 3/22/16
CHECKED BY : J.K.BOWLES	DATE : 4/27/16
DRAWN BY : TLA	10/05
CHECKED BY : GM	5/06
REV. 10/17/11	MAA/GM
REV. 12/21/11	MAA/GM
REV. 6/13	MAA/GM

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jpmccartha



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PROJECT NO. B-5548
CABARRUS COUNTY
STATION: 29+55.00 -L-

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

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

STD. NO. BAS5

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.
ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.
IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.
DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.
WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".
EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.
WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.
METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN