

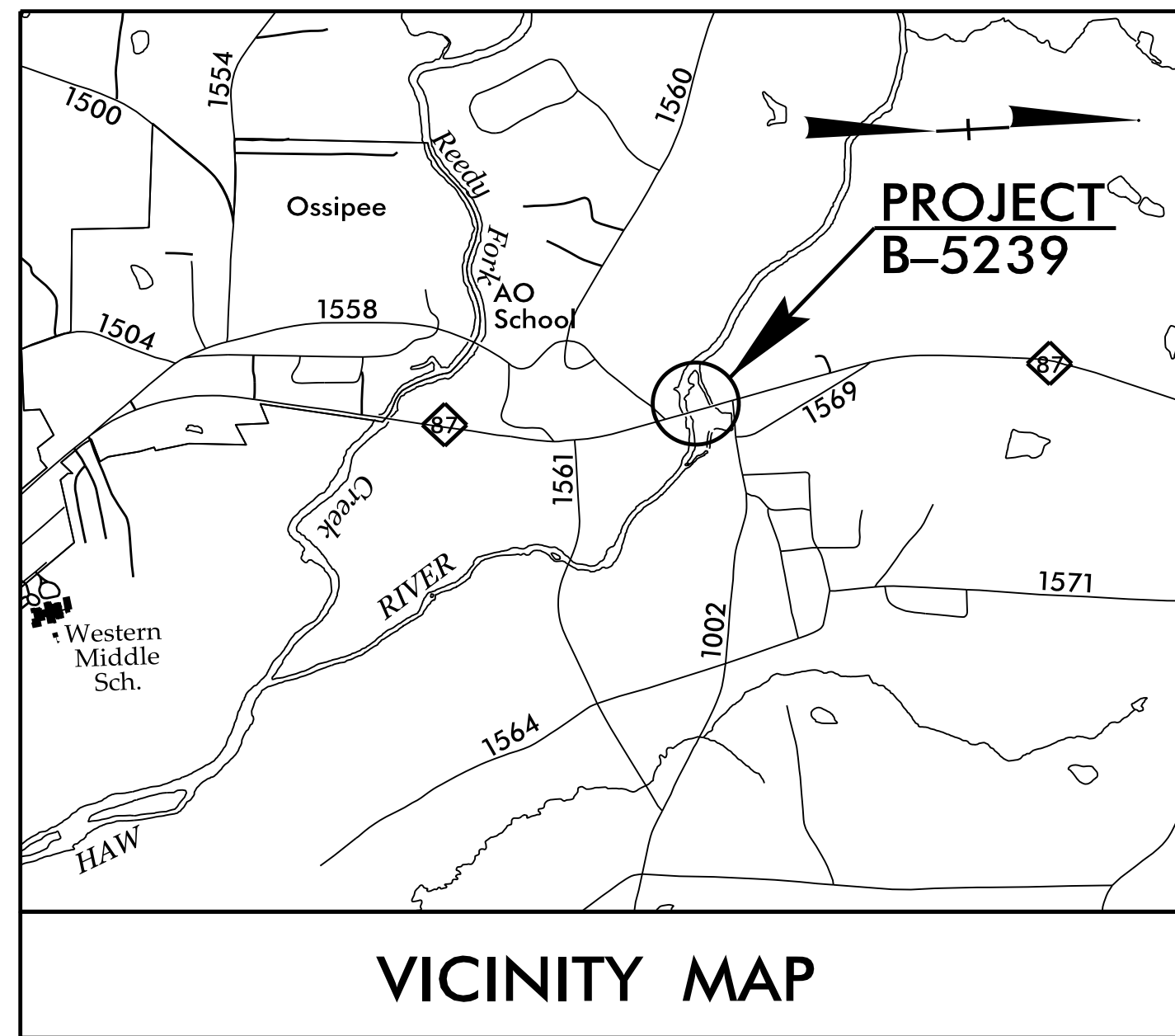
**This electronic collection of documents is provided
for the convenience of the user
and is Not a Certified Document –**

**The documents contained herein were originally issued
and sealed by the individuals whose names and license
numbers appear on each page, on the dates appearing
with their signature on that page.**

**This file or an individual page
shall not be considered a certified document.**

TIP PROJECT: B-5239

CONTRACT: C203676



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

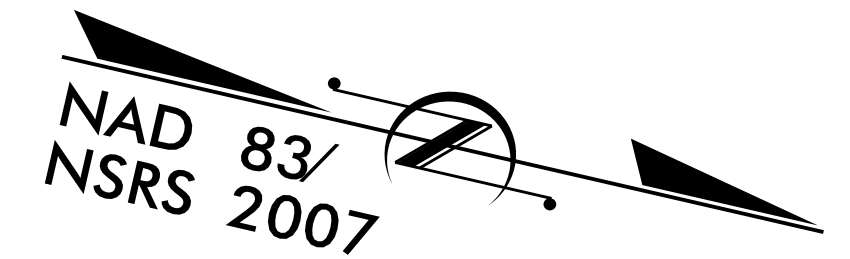
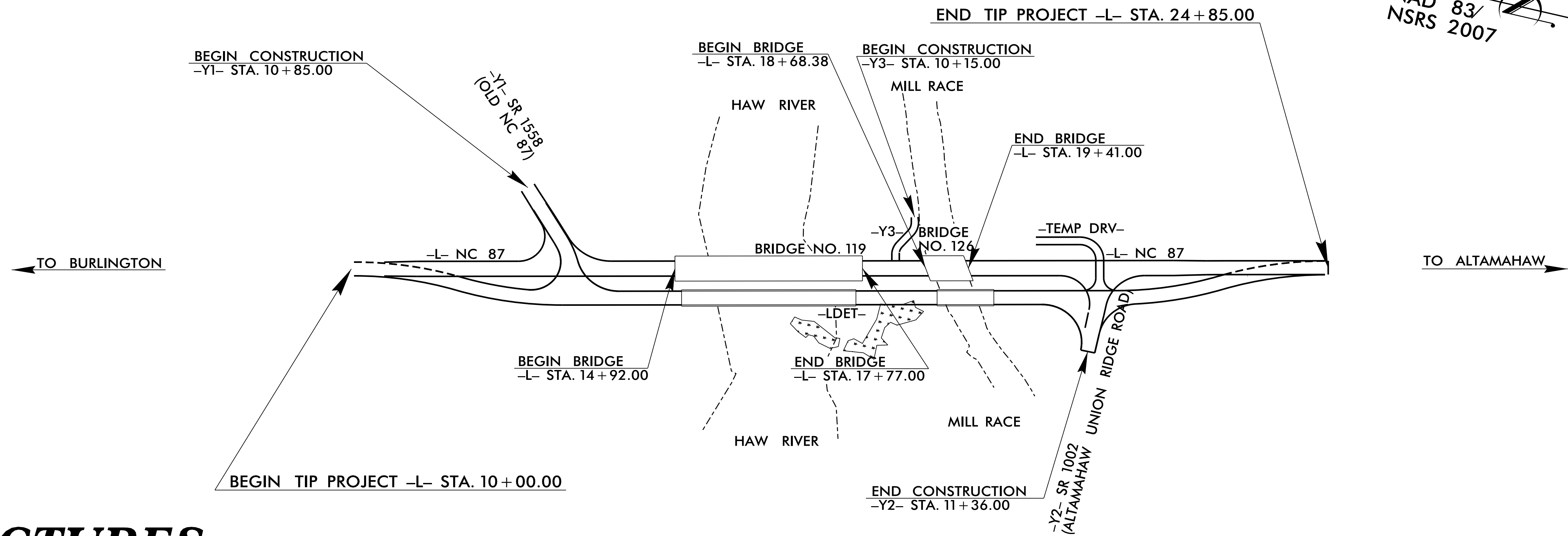
ALAMANCE COUNTY

**LOCATION: BRIDGE NO. 126 OVER MILL RACE
& NO. 119 OVER HAW RIVER ON NC 87**

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURES

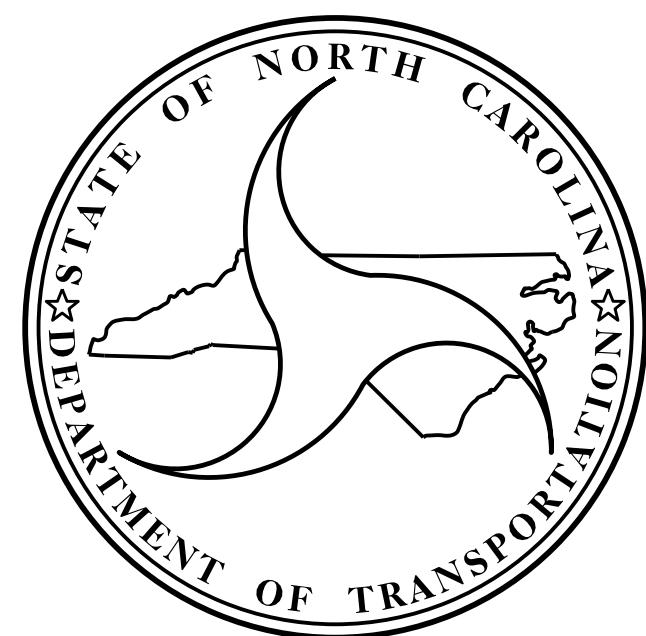
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5239	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
42841.1.1	BRSTP-0087(29)	PE	
42841.1.2.2		R/W & UTILITIES	
42841.3.2	BRSTP-0087(29)	CONST.	

VICINITY MAP



STRUCTURES

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA
 ADT 2017 = 7150
 ADT 2035 = 8500
 K = 10 %
 D = 60 %
 T = 6 % *
 V = 50 MPH
 V_{DET} = 40 MPH
 * TTST = 2% DUAL = 4%
 FUNC CLASS =
 PRINCIPAL ARTERIAL
 "STATEWIDE TIER"

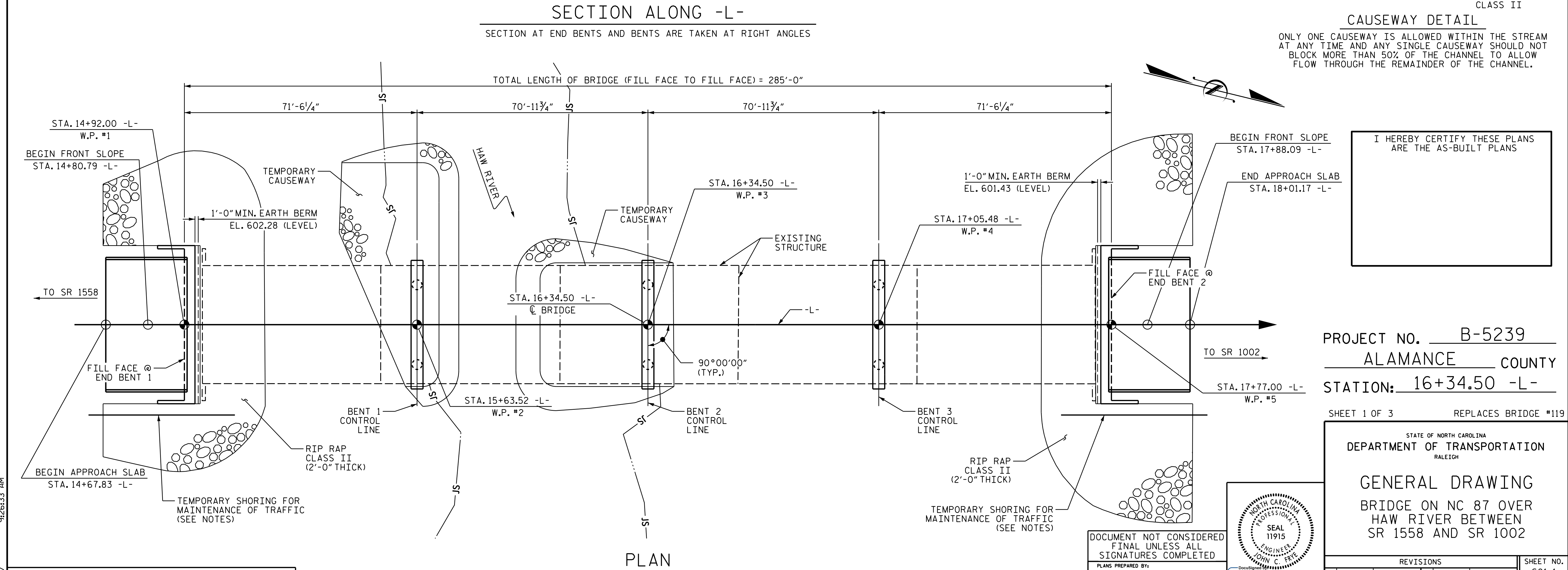
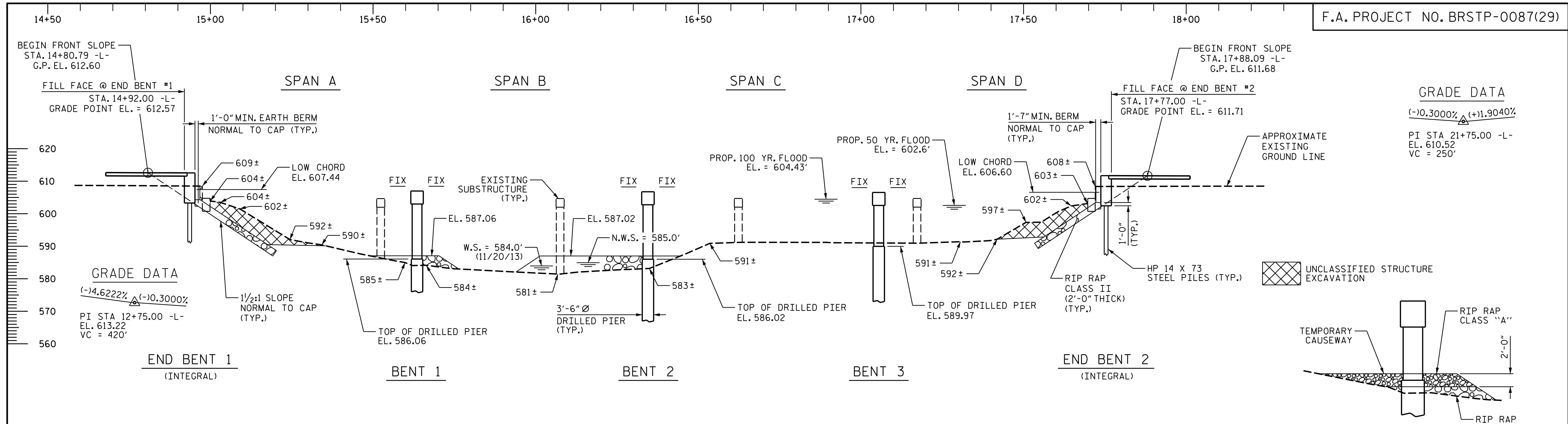
PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5239 = 0.213 MILES
 LENGTH STRUCTURES TIP PROJECT B-5239 = 0.068 MILES
 TOTAL LENGTH TIP PROJECT B-5239 = 0.281 MILES

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

2012 STANDARD SPECIFICATIONS

LETTING DATE :
 December 19, 2017



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

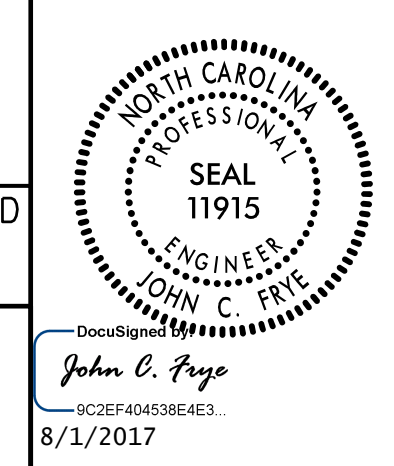
PROJECT NO. B-5239
ALAMANCE COUNTY
STATION: 16+34.50 -L-

SHEET 1 OF 3 REPLACES BRIDGE #119

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE ON NC 87 OVER
HAW RIVER BETWEEN
SR 1558 AND SR 1002

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

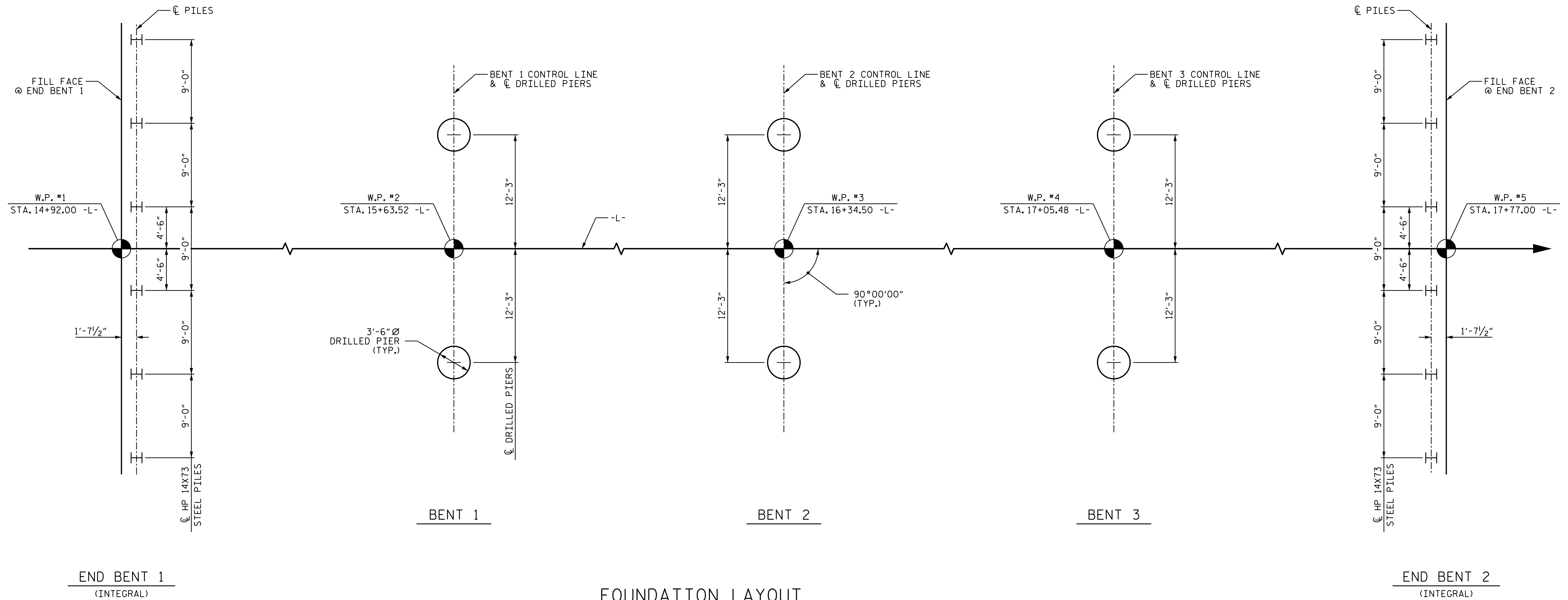


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
(919) 552-2253
www.mottmac.com
LICENSE NO. F-0669

157077
 C:\Users\119_Haw_River\Plans\B-5239-SMU-GDI_000119.dgn
 8/1/2017 9:26:33 AM

DRAWN BY: J. T. WILLIAMS DATE: 4-2017
 CHECKED BY: J. E. MONDOLFI DATE: 4-2017
 DESIGN ENGINEER OF RECORD: J. C. FRYE DATE: 4-2017



DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE.
 DIMENSIONS LOCATING DRILLED PIERS ARE TO DRILLED PIER CENTER.
 ORIENT PILES AS SHOWN.

NOTES:

- FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
- PILES AT END BENTS NO. 1 & NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 125 TONS PER PILE.
- DRIVE PILES AT END BENTS NO. 1 & NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 208 TONS PER PILE.
- FOR DRILLED PIERS, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 411 OF THE STANDARD SPECIFICATIONS.
- INSTALL DRILLED PIERS AT BENT NO. 1 TO A TIP ELEVATION NO HIGHER THAN 573 FT. (LT); 573 FT. (RT), SATISFY THE REQUIRED TIP RESISTANCE AND HAVE A PENETRATION OF AT LEAST 7 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.
- DRILLED PIERS AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 495 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30.0 TSF.
- PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIERS AT BENT NO. 1. DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 580 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

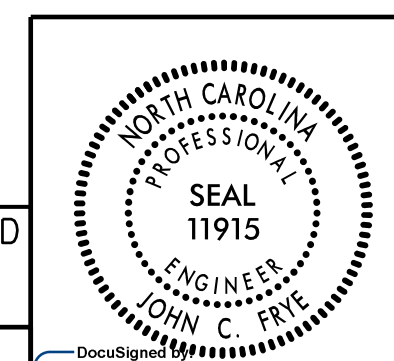
- THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 IS ELEVATION 578 FT. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- INSTALL DRILLED PIERS AT BENT NO. 2 TO A TIP ELEVATION NO HIGHER THAN 573 FT. (LT), 565 FT. (RT), SATISFY THE REQUIRED TIP RESISTANCE AND HAVE A PENETRATION OF AT LEAST 7 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.
- DRILLED PIERS AT BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 495 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30.0 TSF.
- PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIERS AT BENT NO. 2. DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 578 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
- THE SCOUR CRITICAL ELEVATION FOR BENT NO. 2 IS ELEVATION 577 FT. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- INSTALL DRILLED PIERS AT BENT NO. 3 TO A TIP ELEVATION NO HIGHER THAN 558 FT. (LT), 565 FT. (RT), SATISFY THE REQUIRED TIP RESISTANCE AND HAVE A PENETRATION OF AT LEAST 4 FT. INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

- DRILLED PIERS AT BENT NO. 3 ARE DESIGNED FOR A FACTORED RESISTANCE OF 495 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30.0 TSF.
- PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO. 3. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 586 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING.
- THE SCOUR CRITICAL ELEVATION FOR BENT NO. 3 IS ELEVATION 580 FT. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- 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.

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 16+34.50 -L-
 SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE ON NC 87 OVER
 HAW RIVER BETWEEN
 SR 1558 AND SR 1002



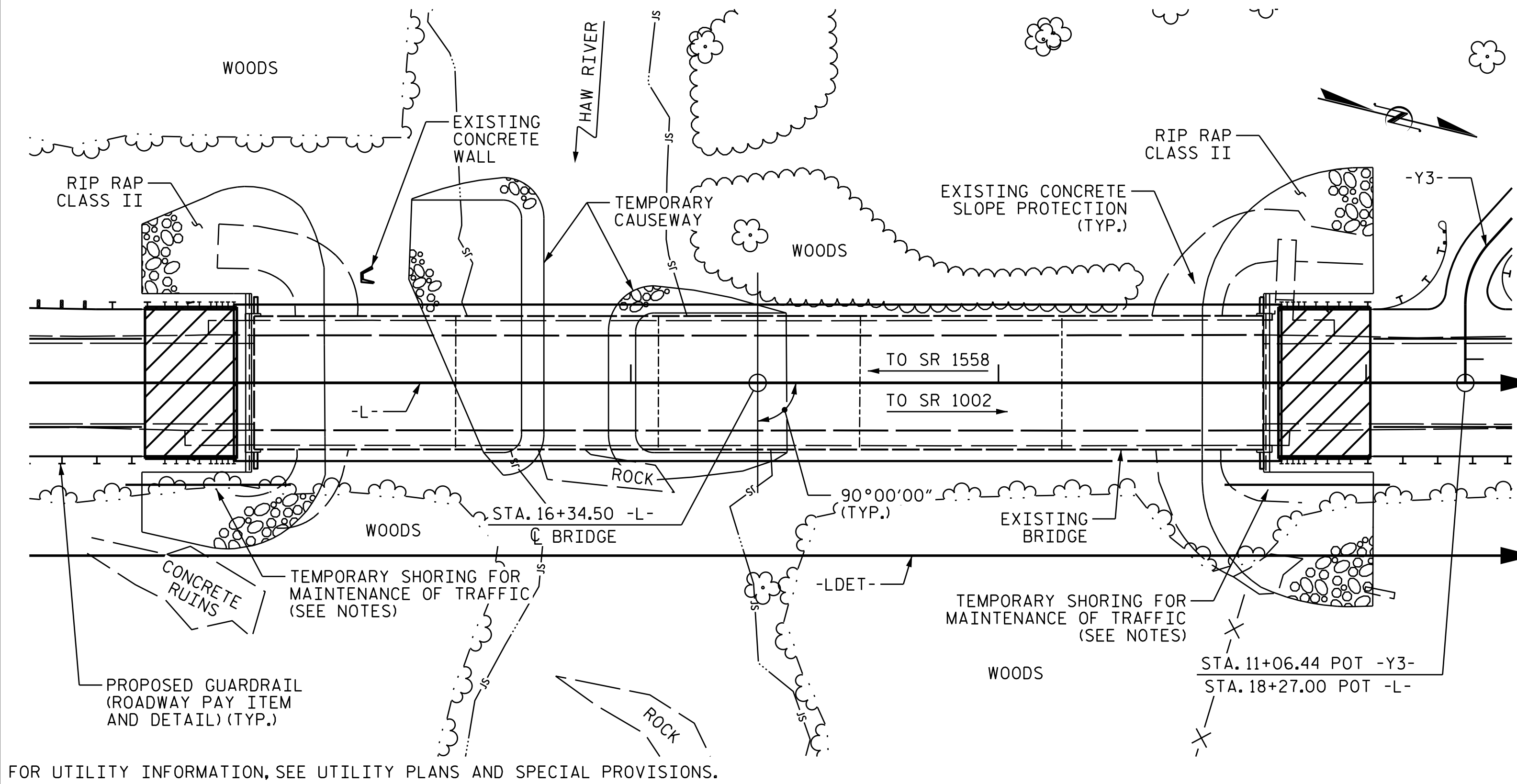
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
M PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 MOTT MACDONALD LICENSE NO. F-0669

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

11/15/2017 11:19 AM
 C:\Users\jwilliams\OneDrive\Documents\Projects\B-5239-SMU\GD2_000119.dgn
 9/26/2017 11:19 AM

BM #1: R/R SPIKE IN BASE 20" SYCAMORE, 167.6' LT. OF STA. 17+79.51 -L-, ELEV. = 598.15'



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE	= 15,300 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 50 YRS.
DESIGN HIGH WATER ELEVATION	= 602.6'
DRAINAGE AREA	= 187.5 SQ. MI.
BASE DISCHARGE (Q100)	= 17,400 C.F.S.
BASE HIGH WATER ELEVATION	= 604.43'

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 22,700+ C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= 500+ YRS.
OVERTOPPING FLOOD ELEVATION	= 611.6'
OVERTOPPING OCCURS AT STA. 20+40 -L-	

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.
 THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS, FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.

THE EXISTING STRUCTURE CONSISTING OF 5 SPANS: 1 @ 54'-11", 1 @ 55'-2", 1 @ 54'-11", 1 @ 54'-10", & 1 @ 54'-91"2"; 26'-0" CLEAR ROADWAY; REINFORCED CONCRETE DECK ON REINFORCED CONCRETE DECK GIRDERS; END BENTS ON STEEL PILES AND INTERIOR BENTS ON SPREAD FOOTINGS, LOCATED AT THE PROPOSED STRUCTURE SITE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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.

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 STATION 16+34.50.

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 MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET 1 OF 3 SHALL BE EXCAVATED FOR A DISTANCE OF 25 FEET EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS TO NOT ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS AT END BENT 3 IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	CONST., MAINT. & REMOVAL OF TEMP. STRUCTURE	CONST., MAINT. & REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURE	3'-6" Ø DRILLED PIERS IN SOIL	3'-6" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIER	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EA.	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.
SUPERSTRUCTURE									12,137	12,304	
END BENT 1											27.5
BENT 1				8.2	18.0	12.1					33.2
BENT 2				14.2	20.0	16.0					33.1
BENT 3				24.0	33.0	10.0					30.9
END BENT 2											27.5
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	46.4	71.0	38.1	1	LUMP SUM	12,137	12,304	152.2

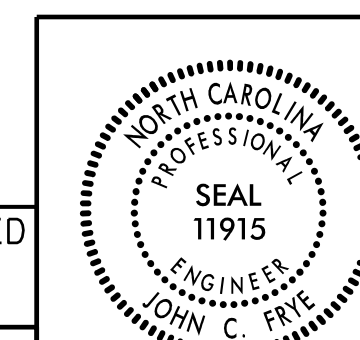
	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	45" PRESTRESSED CONCRETE GIRDERS	PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 STEEL PILES	HP 14 X 73 STEEL PILES	TWO BAR METAL RAIL	1'-2" X 2'-6" CONCRETE PARAPET	RIEPP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	ASBESTOS ASSESSMENT		
	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	EA.	NO.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM	
SUPERSTRUCTURE				16	1,122.33							LUMP SUM	LUMP SUM	
END BENT 1		3,253				6	6	150		360	400			
BENT 1		7,480	1,308											
BENT 2		7,792	1,465											
BENT 3		8,384	1,755											
END BENT 2		3,253				6	6	120		406	451			
TOTAL	LUMP SUM	30,162	4,528	16	1,122.33	12	12	270	551.67	566.67	766	851	LUMP SUM	LUMP SUM

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE ON NC 87 OVER
 HAW RIVER BETWEEN
 SR 1558 AND SR 1002



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-3
1			3			TOTAL SHEETS
2			4			39

157077
 11/17/2015
 C:\Users\119-Haw-River\Plans\B-5239-SMU-GD3-000119.dgn
 9:26:38 AM

DRAWN BY: J. T. WILLIAMS DATE: 4-2017
 CHECKED BY: J. E. MONDOLFI DATE: 4-2017
 DESIGN ENGINEER OF RECORD: J. C. FRYE DATE: 4-2017

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE										COMMENT NUMBER
						MOMENT					SHEAR					MOMENT										
						LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)				
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.15	--	1.75	.898	1.46	ALL	I	34.4	1.091	1.21	ALL	I	20.4	0.80	.898	1.15	ALL	I	34.4				
	HL-93 (OPERATING)	N/A		1.87	--	1.35	.898	1.89	ALL	I	34.4	1.091	1.87	ALL	I	13.4	N/A	--	--	--	--	--				
	HS-20 (INVENTORY)	36.000	②	1.49	53.640	1.75	.898	1.89	ALL	I	34.4	1.091	1.76	ALL	I	13.4	0.80	.898	1.49	ALL	I	34.4				
	HS-20 (OPERATING)	36.000		2.31	83.160	1.35	.898	2.45	ALL	I	34.4	1.091	2.31	ALL	I	13.4	N/A	--	--	--	--	--				
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.32	44.820	1.40	.898	5.27	ALL	I	34.4	1.091	5.33	ALL	I	13.4	0.80	.898	3.32	ALL	I	34.4			
		SNGARBS2	20.000		2.49	49.800	1.40	.898	3.95	ALL	I	34.4	1.091	3.79	ALL	I	13.4	0.80	.898	2.49	ALL	I	34.4			
		SNAGRIS2	22.000		2.37	52.140	1.40	.898	3.75	ALL	I	34.4	1.091	3.53	ALL	I	13.4	0.80	.898	2.37	ALL	I	34.4			
		SNCOTTS3	27.250		1.65	44.963	1.40	.898	2.62	ALL	I	34.4	1.091	2.62	ALL	I	13.4	0.80	.898	1.65	ALL	I	34.4			
		SNAGGRS4	34.925		1.39	48.546	1.40	.898	2.20	ALL	I	34.4	1.091	2.18	ALL	I	13.4	0.80	.898	1.39	ALL	I	34.4			
		SNS5A	35.550		1.36	48.348	1.40	.898	2.15	ALL	I	34.4	1.091	2.21	ALL	I	13.4	0.80	.898	1.36	ALL	I	34.4			
		SNS6A	39.950		1.25	49.938	1.40	.898	1.98	ALL	I	34.4	1.091	2.03	ALL	I	13.4	0.80	.898	1.25	ALL	I	34.4			
		SNS7B	42.000		1.19	49.980	1.40	.898	1.88	ALL	I	34.4	1.091	2.01	ALL	I	13.4	0.80	.898	1.19	ALL	I	34.4			
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.52	50.160	1.40	.898	2.41	ALL	I	34.4	1.091	2.43	ALL	I	13.4	0.80	.898	1.52	ALL	I	34.4			
		TNT4A	33.075		1.53	50.605	1.40	.898	2.42	ALL	I	34.4	1.091	2.35	ALL	I	13.4	0.80	.898	1.53	ALL	I	34.4			
		TNT6A	41.600		1.25	52.000	1.40	.898	1.99	ALL	I	34.4	1.091	2.16	ALL	I	13.4	0.80	.898	1.25	ALL	I	34.4			
		TNT7A	42.000		1.26	52.920	1.40	.898	2.00	ALL	I	34.4	1.091	2.07	ALL	I	13.4	0.80	.898	1.26	ALL	I	34.4			
		TNT7B	42.000		1.31	55.020	1.40	.898	2.07	ALL	I	34.4	1.091	1.93	ALL	I	13.4	0.80	.898	1.31	ALL	I	34.4			
		TNAGRIT4	43.000		1.24	53.320	1.40	.898	1.97	ALL	I	34.4	1.091	1.88	ALL	I	13.4	0.80	.898	1.24	ALL	I	34.4			
TNAGT5A	45.000		1.17	52.650	1.40	.898	1.85	ALL	I	34.4	1.091	1.89	ALL	I	13.4	0.80	.898	1.17	ALL	I	34.4					
TNAGT5B	45.000		③	1.15	51.750	1.40	.898	1.83	ALL	I	34.4	1.091	1.78	ALL	I	13.4	0.80	.898	1.15	ALL	I	34.4				

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

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

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

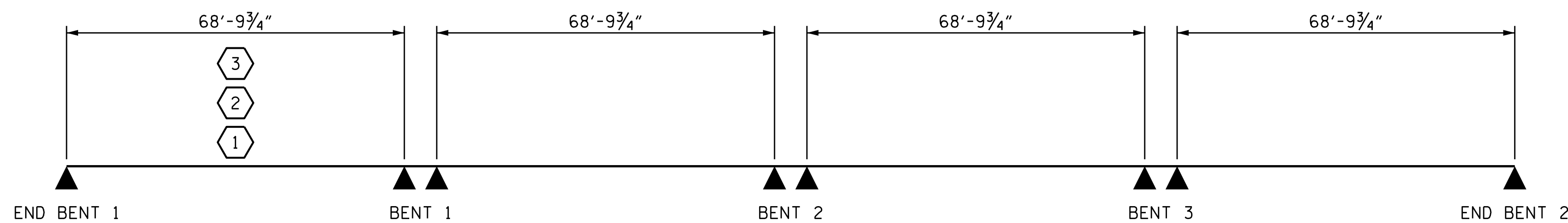
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

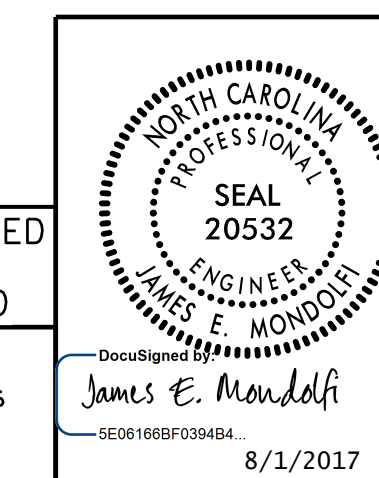
I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 16+34.50 -L-

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



DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S01-4
2			4			TOTAL SHEETS 39

157077
 C:\Users\119_Her_River\Plans\B-5239_SNU_LRFR_000119.dgn
 8/1/2017 9:26:41 AM

DRAWN BY: J. T. WILLIAMS DATE: 4-2017
 CHECKED BY: J. E. MONDOLFI DATE: 4-2017
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 4-2017

NOTES:

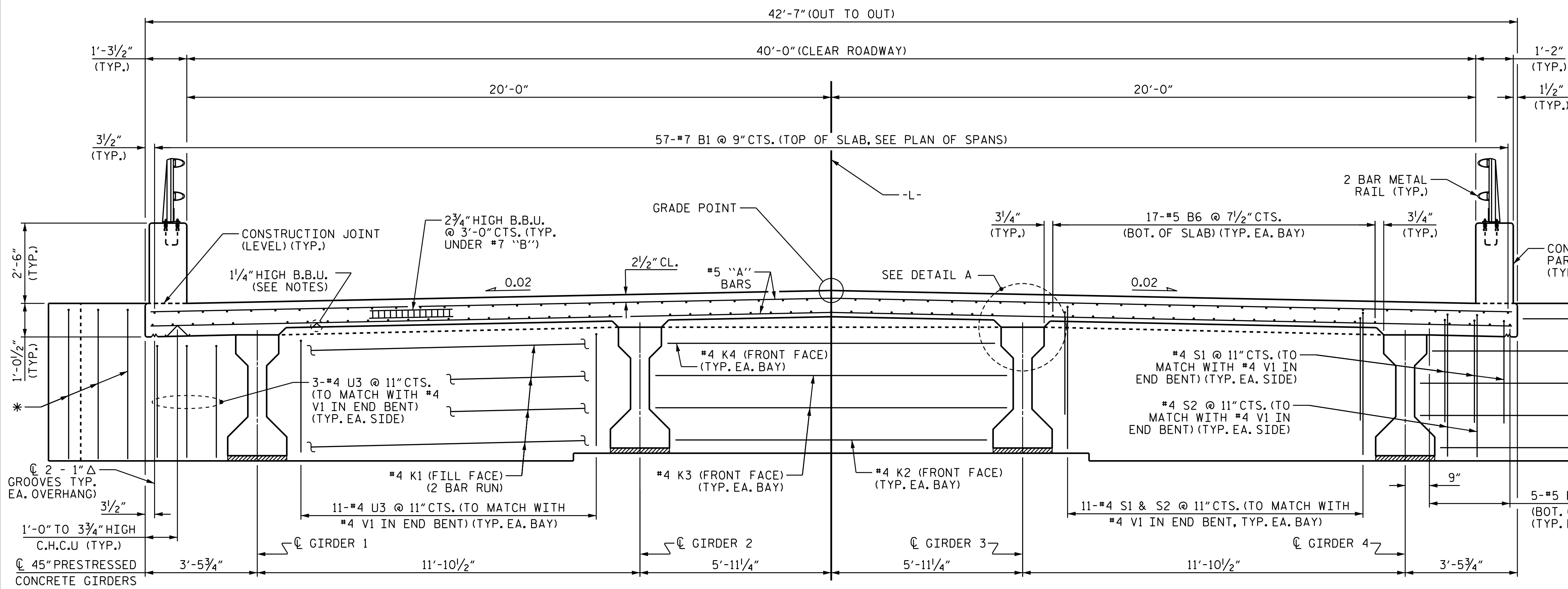
PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 2 1/2"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

PARAPET 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.

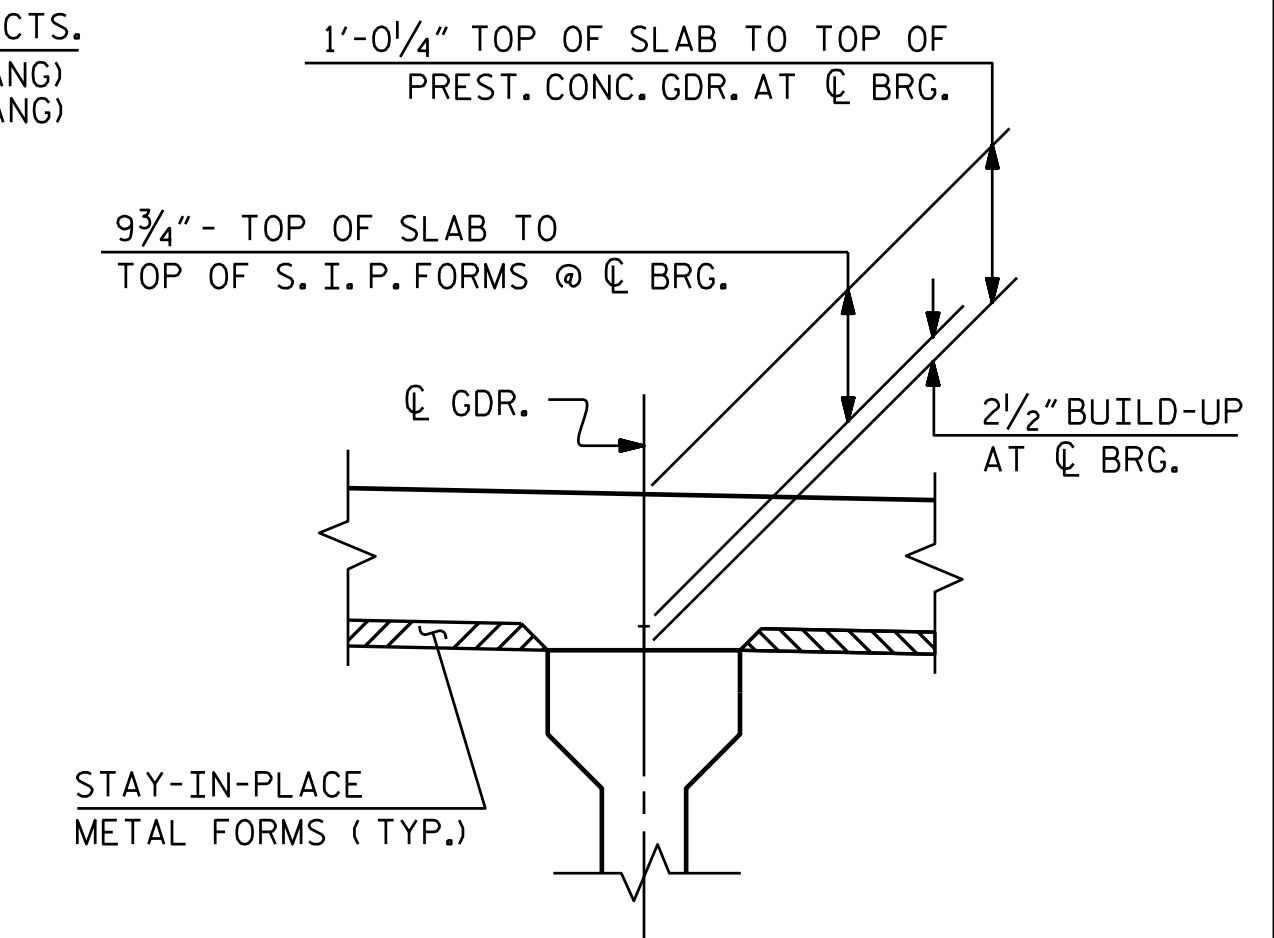
FOR WING ELEVATIONS AND DETAILS, SEE "PLAN OF SPAN DETAILS" SHEETS.



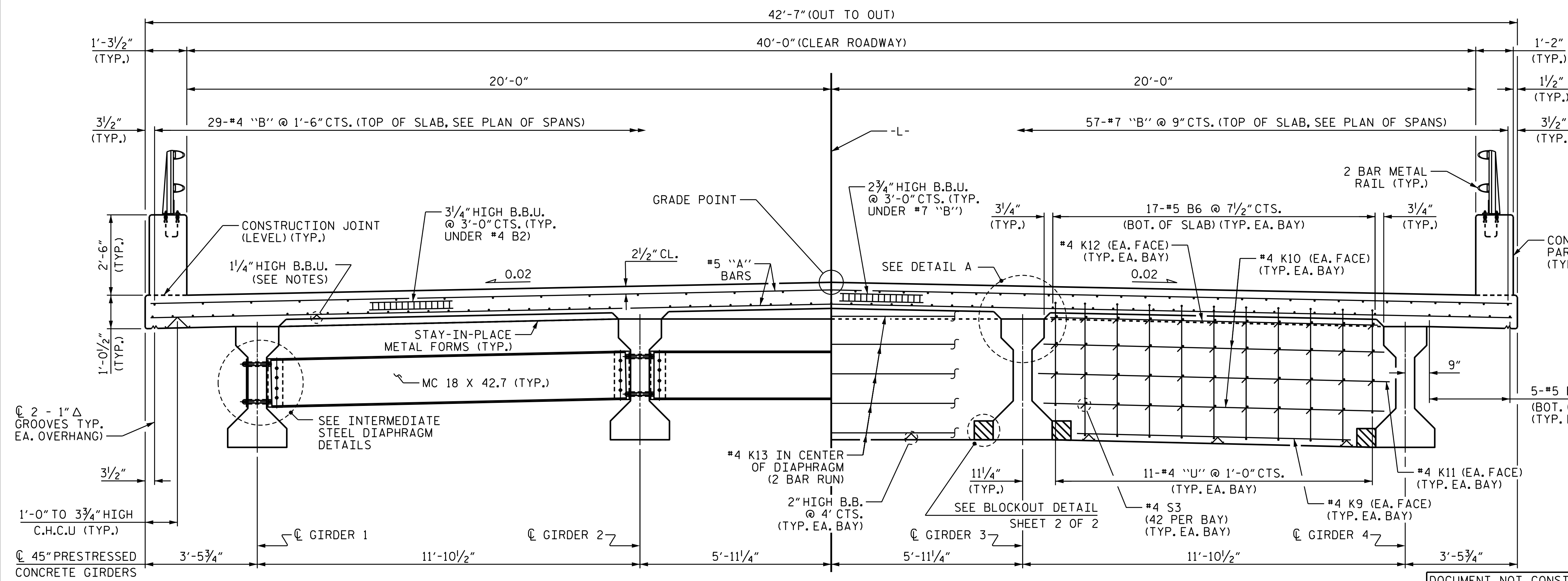
TYPICAL SECTION

(SHOWING ABUTMENT WALL AT END BENT)

* #4 U4 @ 11" CTS. (TO MATCH WITH #4 V1 IN END BENT) (TYP. EA. SIDE)



DETAIL A



HALF TYPICAL SECTION

(SHOWING INTERMEDIATE DIAPHRAGMS)

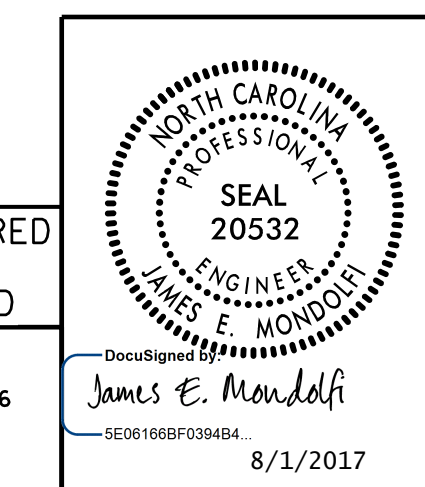
HALF TYPICAL SECTION

(SHOWING BENT DIAPHRAGMS)

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION

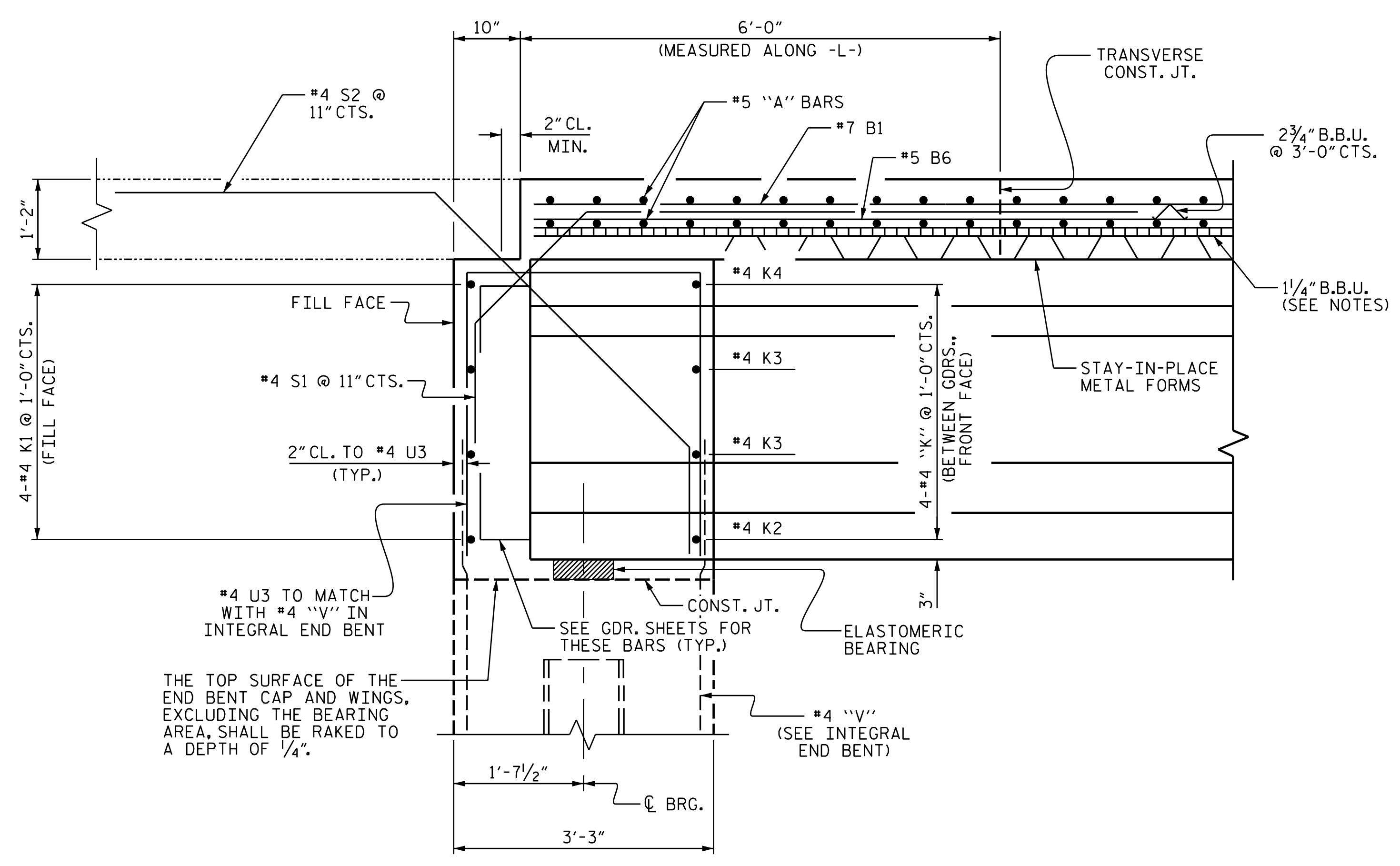


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 PLANS PREPARED BY: MOTT MACDONALD
 PO Box 700 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

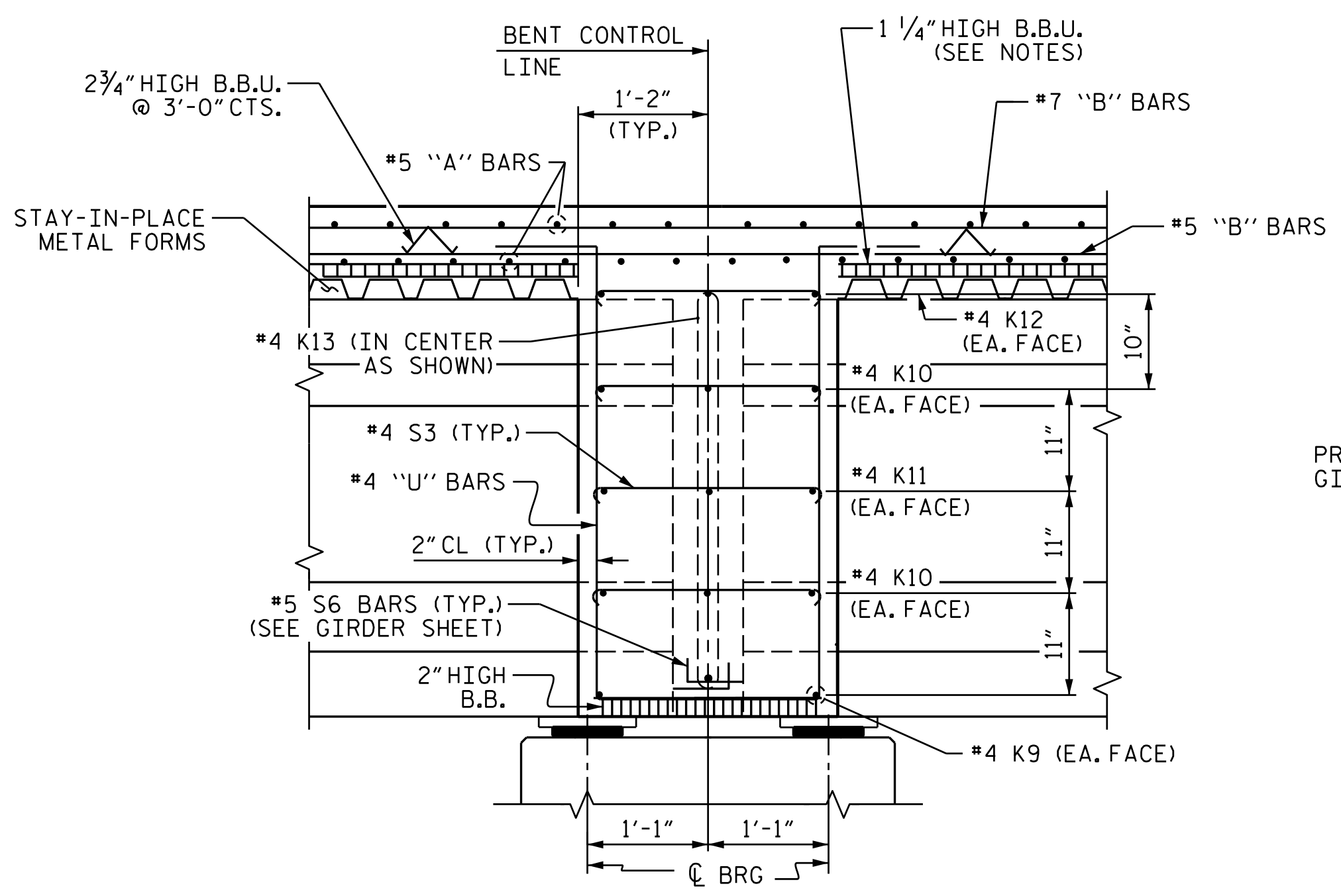
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-5
1			3			TOTAL SHEETS
2			4			39

157077
 C:\Users\j119_Her_River\Plans\B-5239-SMU-TS-000119.dgn
 8/1/2015 9:26:44 AM

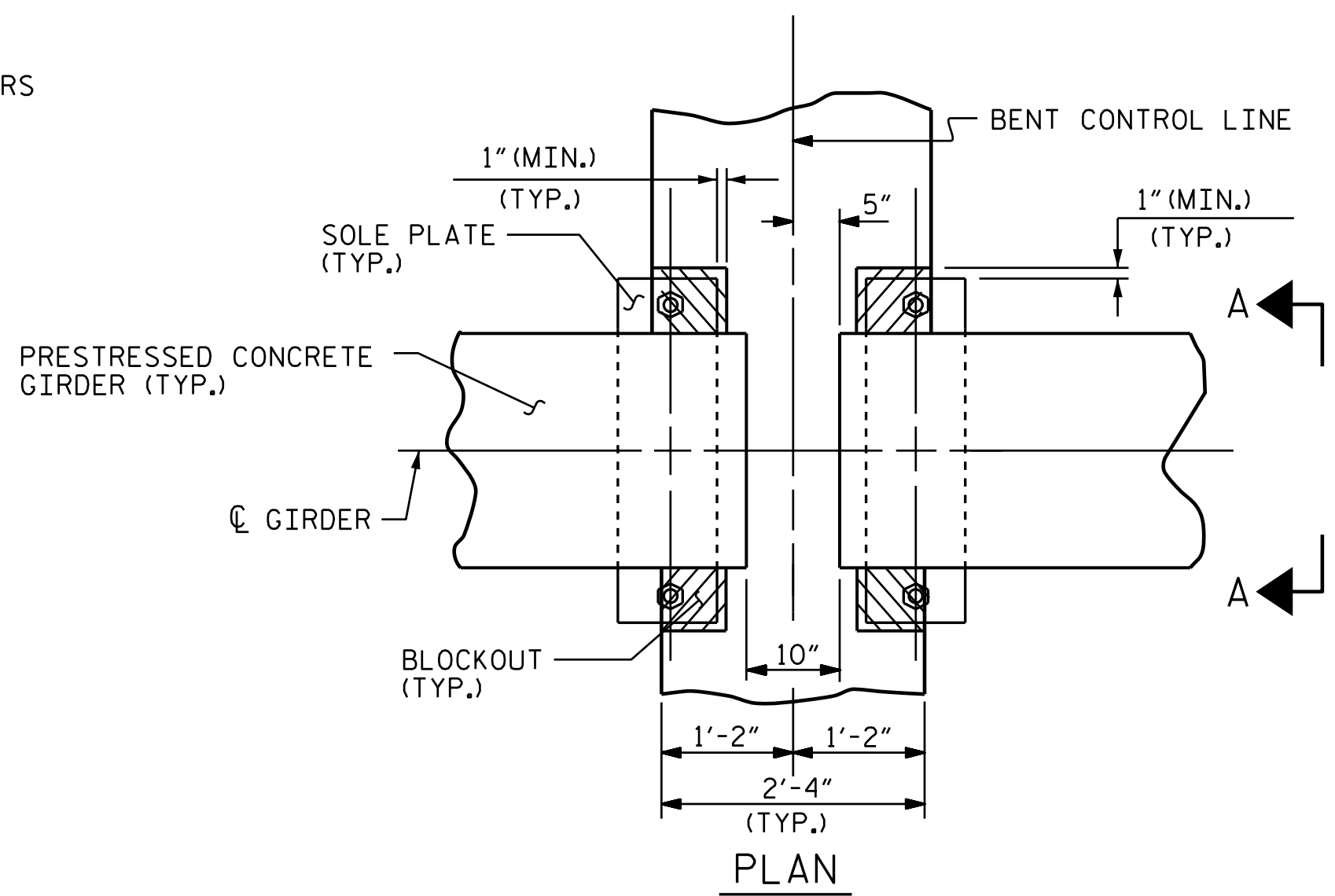
DRAWN BY: J. T. WILLIAMS DATE: 11-2014
 CHECKED BY: J. E. MONDOLFI DATE: 11-2014
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 11-2014



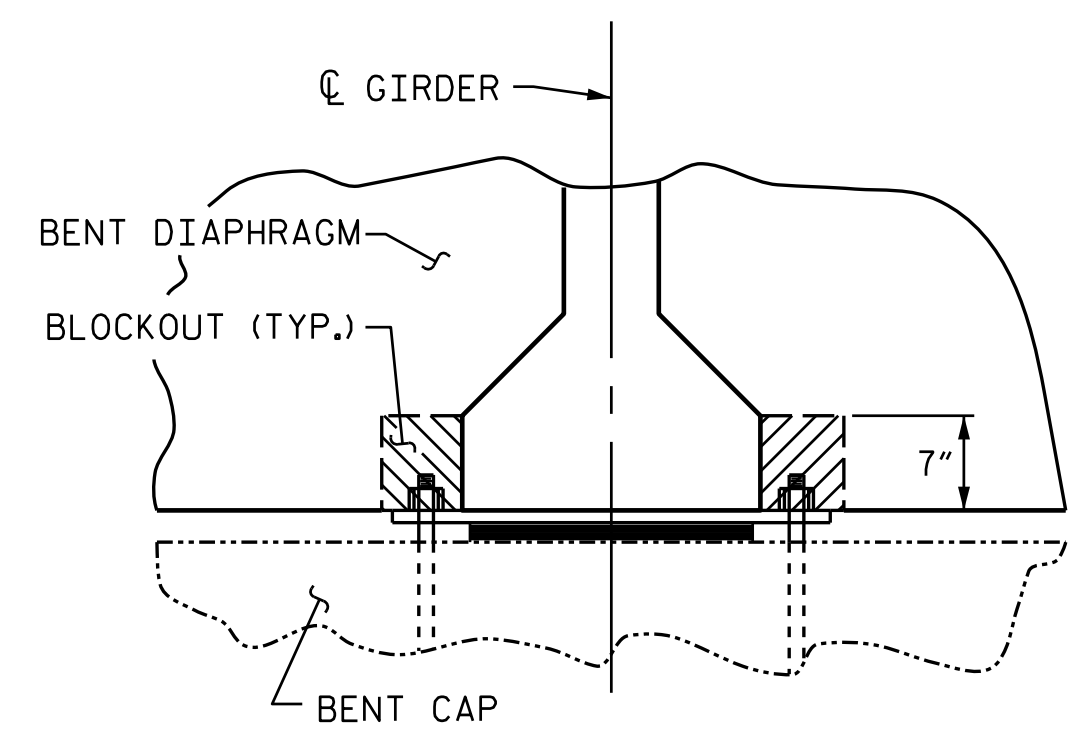
SECTION THRU INTEGRAL END BENT



SECTION THRU BENT DIAPHRAGM



BENT DIAPHRAGM BLOCKOUT DETAIL

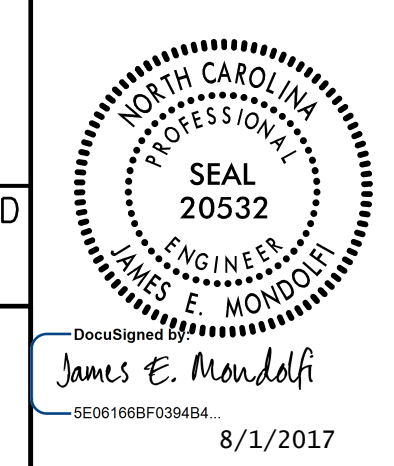


SECTION A-A

PROJECT NO. B-5239
 ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 2 OF 2

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



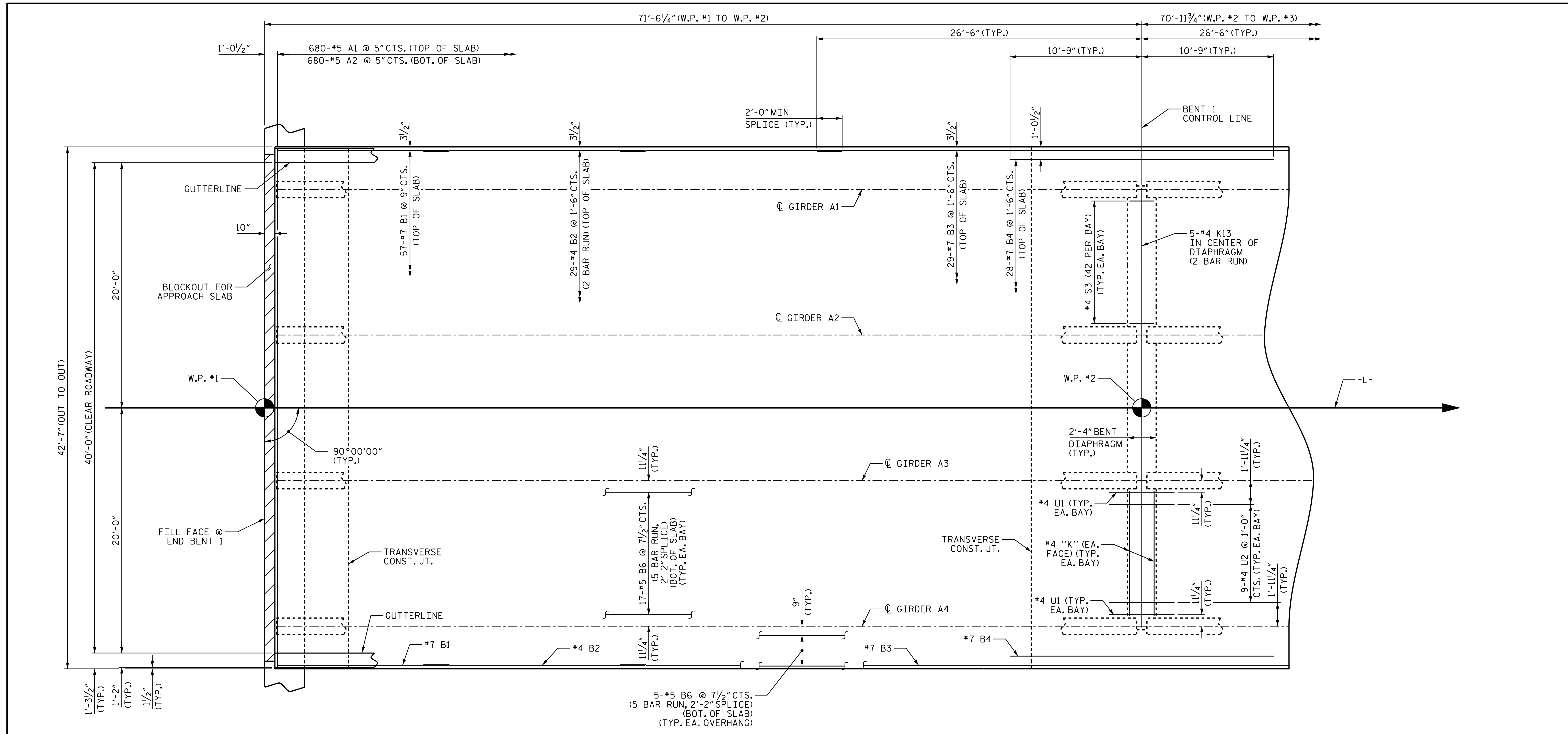
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

PLANS PREPARED BY:
 MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

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

157077
 C:\Users\119_Hes_River\Plans\B-5239-SMU.TS.000119.dgn
 8/1/2017 9:26:46 AM

DRAWN BY: J. T. WILLIAMS DATE: 11-2014
 CHECKED BY: J. E. MONDOLFI DATE: 11-2014
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 11-2014



PLAN OF SPAN A

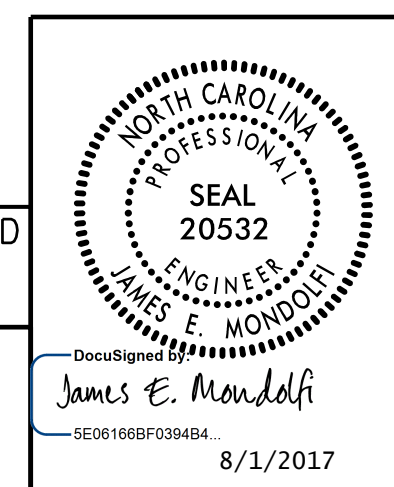
FOR POUR SEQUENCE AND TRANSVERSE CONSTRUCTION JOINT DETAIL, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 1 OF 7

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN A



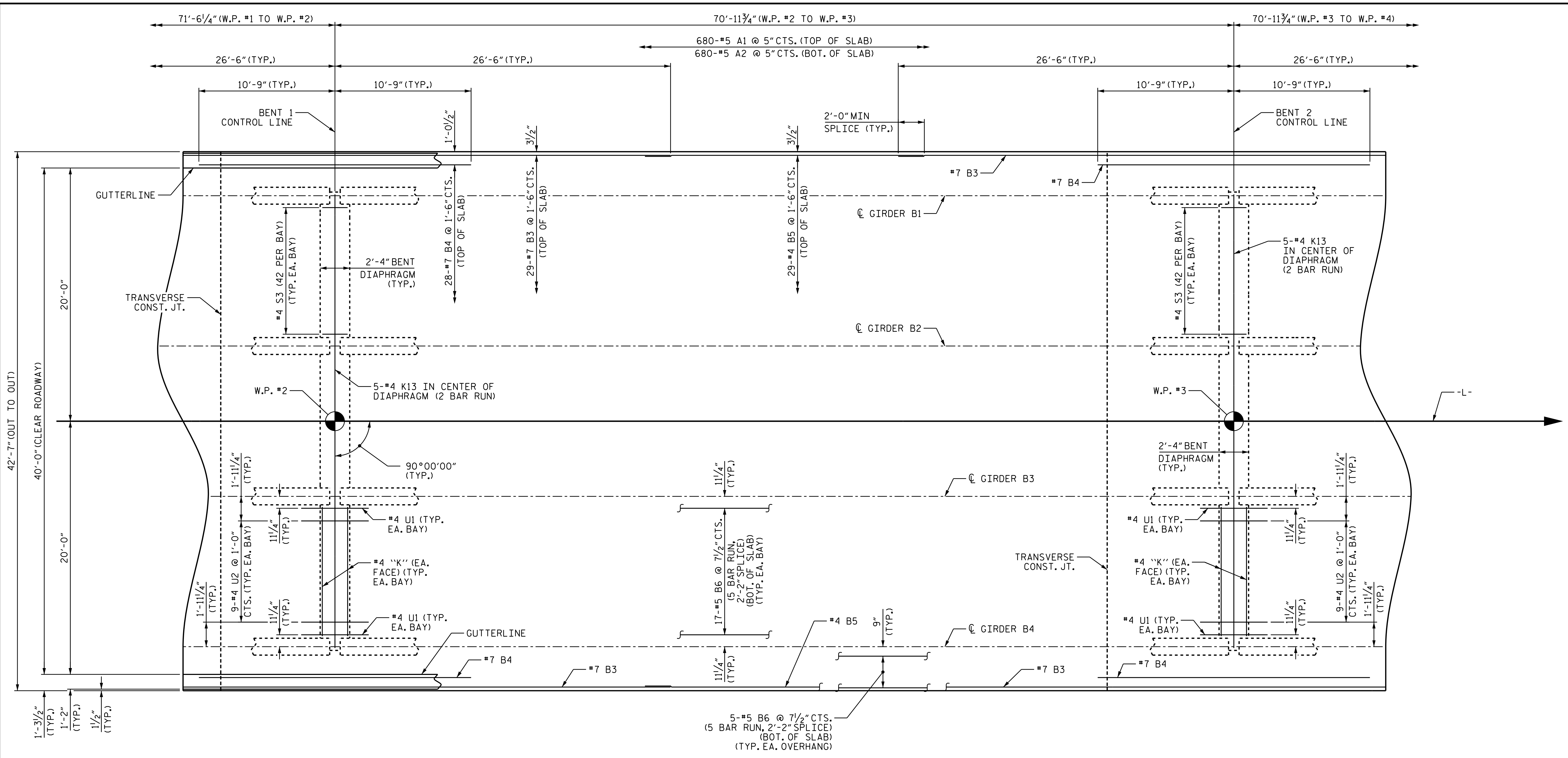
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

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

157077
 11/17/2015
 C:\Users\119_Her_River\Plans\B-5239_SMU.S-000119.dgn
 9:26:48 AM

DRAWN BY: J. T. WILLIAMS DATE: 11-2014
 CHECKED BY: J. E. MONDOLFI DATE: 11-2014
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 11-2014



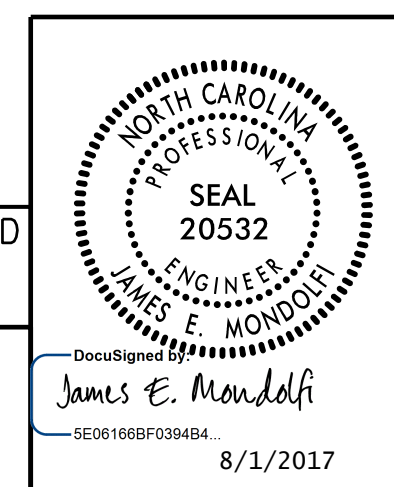
PLAN OF SPAN B

FOR POUR SEQUENCE AND TRANSVERSE CONSTRUCTION JOINT DETAIL, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 2 OF 7

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



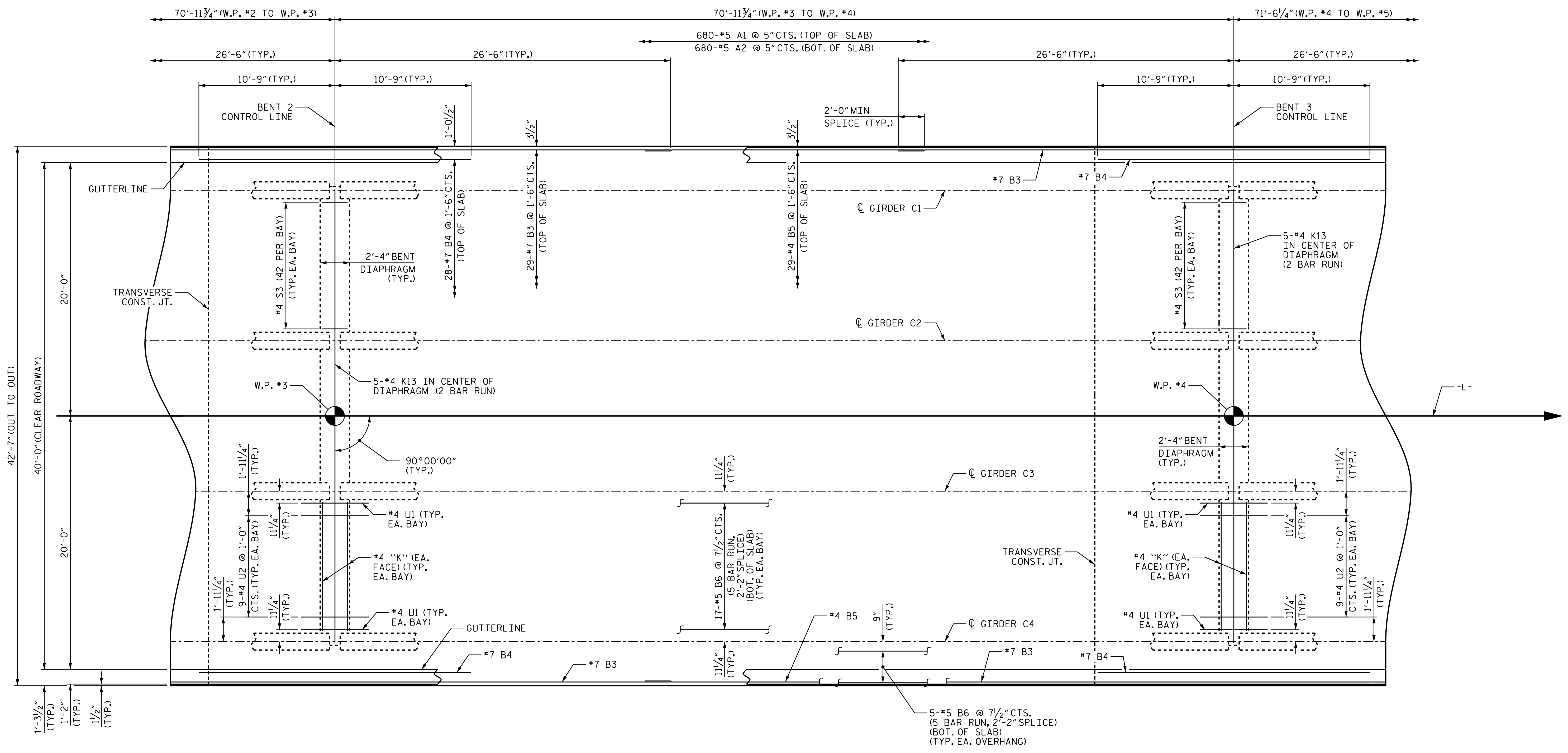
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

PLANS PREPARED BY:
M PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 MOTT MACDONALD LICENSE NO. F-0669

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

11/20/14 11:19:11 AM
 C:\Users\jwilliams\Documents\Projects\B-5239-SMU-S-000119.dgn
 9/26/2014 9:26:50 AM

DRAWN BY: J. T. WILLIAMS DATE: 11-2014
 CHECKED BY: J. E. MONDOLFI DATE: 11-2014
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 11-2014



PLAN OF SPAN C

FOR POUR SEQUENCE AND TRANSVERSE CONSTRUCTION JOINT DETAIL, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.

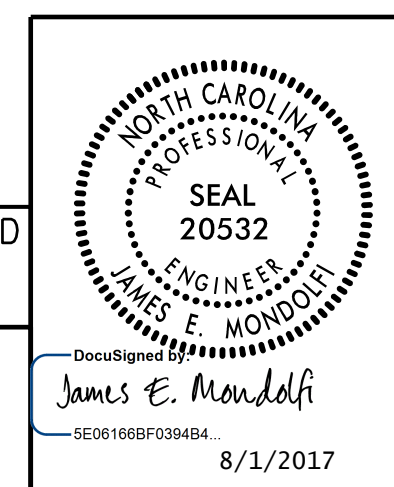
PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 3 OF 7

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN C

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

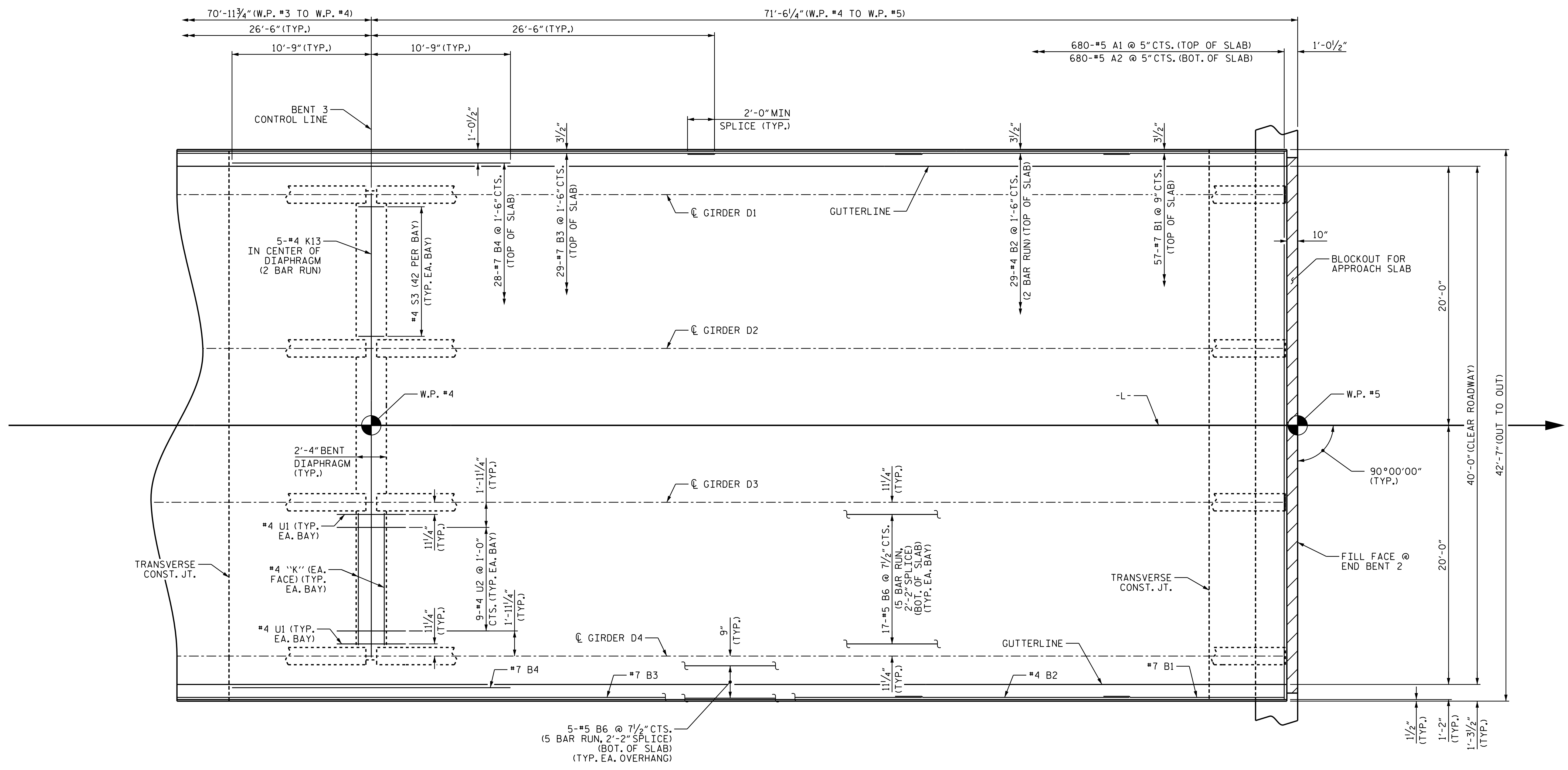


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
M PO Box 700 Fuquay-Varina, NC 27526 (919) 552-2253 www.mottmac.com
M MOTT MACDONALD LICENSE NO. F-0669

12/17/2015 11:19 AM
 C:\Users\jwilliams\Documents\Projects\B-5239-SMU-S-000119.dgn
 9:26:51 AM

DRAWN BY: J. T. WILLIAMS DATE: 12-2014
 CHECKED BY: J. E. MONDOLFI DATE: 12-2014
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 12-2014



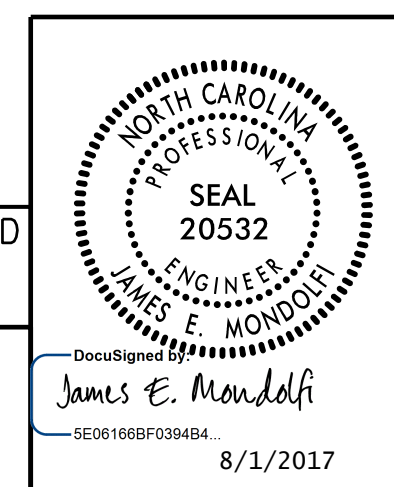
PLAN OF SPAN D

FOR POUR SEQUENCE AND TRANSVERSE CONSTRUCTION JOINT DETAIL, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.

PROJECT NO. B-5239
 ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 4 OF 7

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

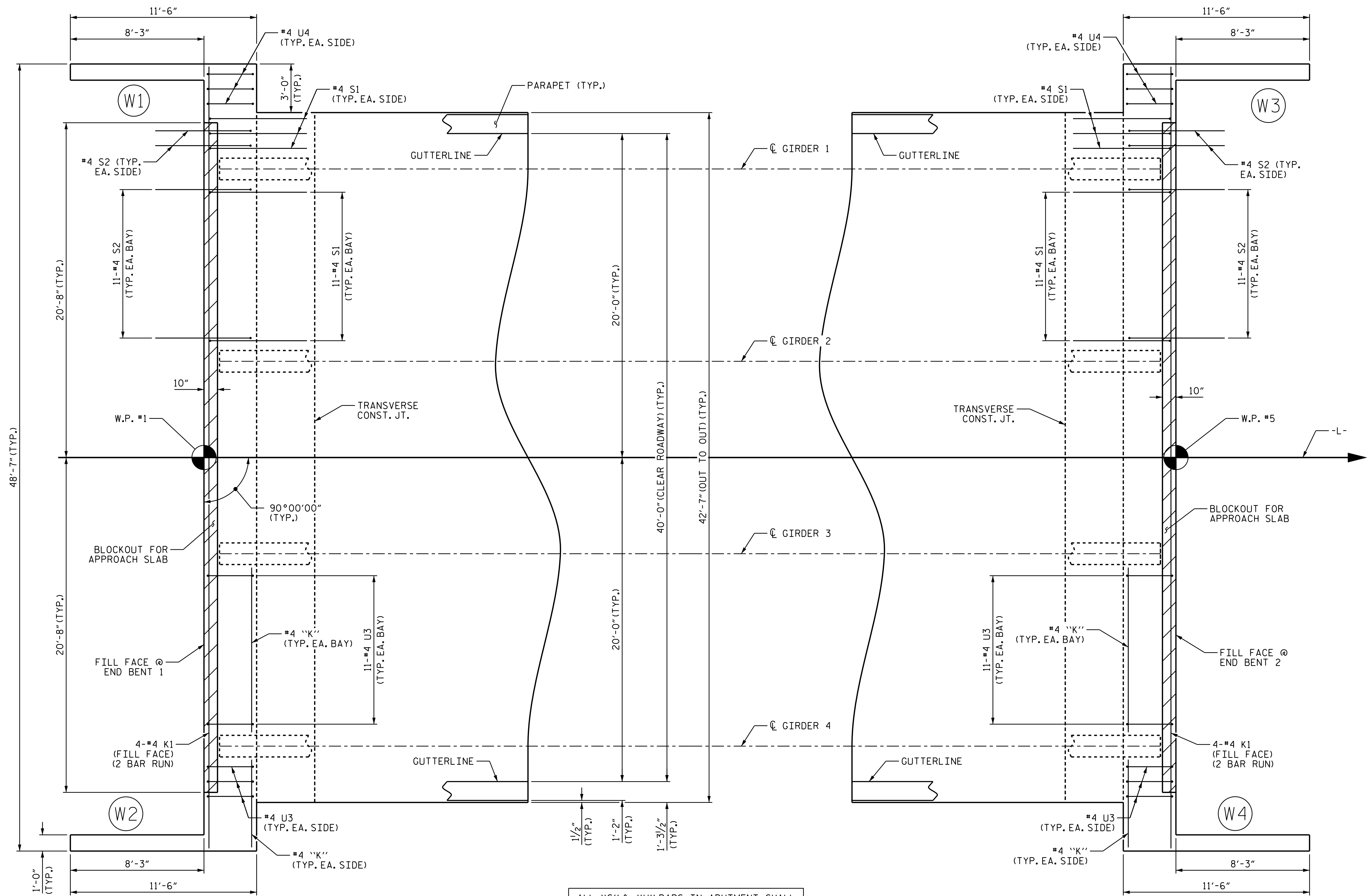


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 PLANS PREPARED BY:
 MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-10
1			3			TOTAL SHEETS
2			4			39

11/15/2014 11:19:11 AM
 C:\Users\jwilliams\Documents\Projects\B-5239-SMU-S-000119.dgn
 9:26:53 AM

DRAWN BY: J. T. WILLIAMS DATE: 11-2014
 CHECKED BY: J. E. MONDOLFI DATE: 11-2014
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 11-2014



PLAN OF ABUTMENT AT END BENT 1

PLAN OF ABUTMENT AT END BENT 2

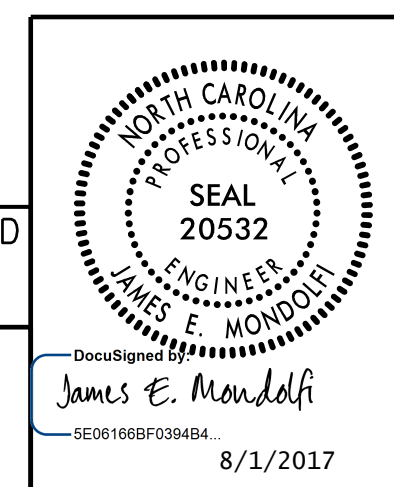
ALL "S" & "U" BARS IN ABUTMENT SHALL MATCH UP WITH #4 V1 IN THE END BENTS.

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 5 OF 7

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN
 DETAILS



DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

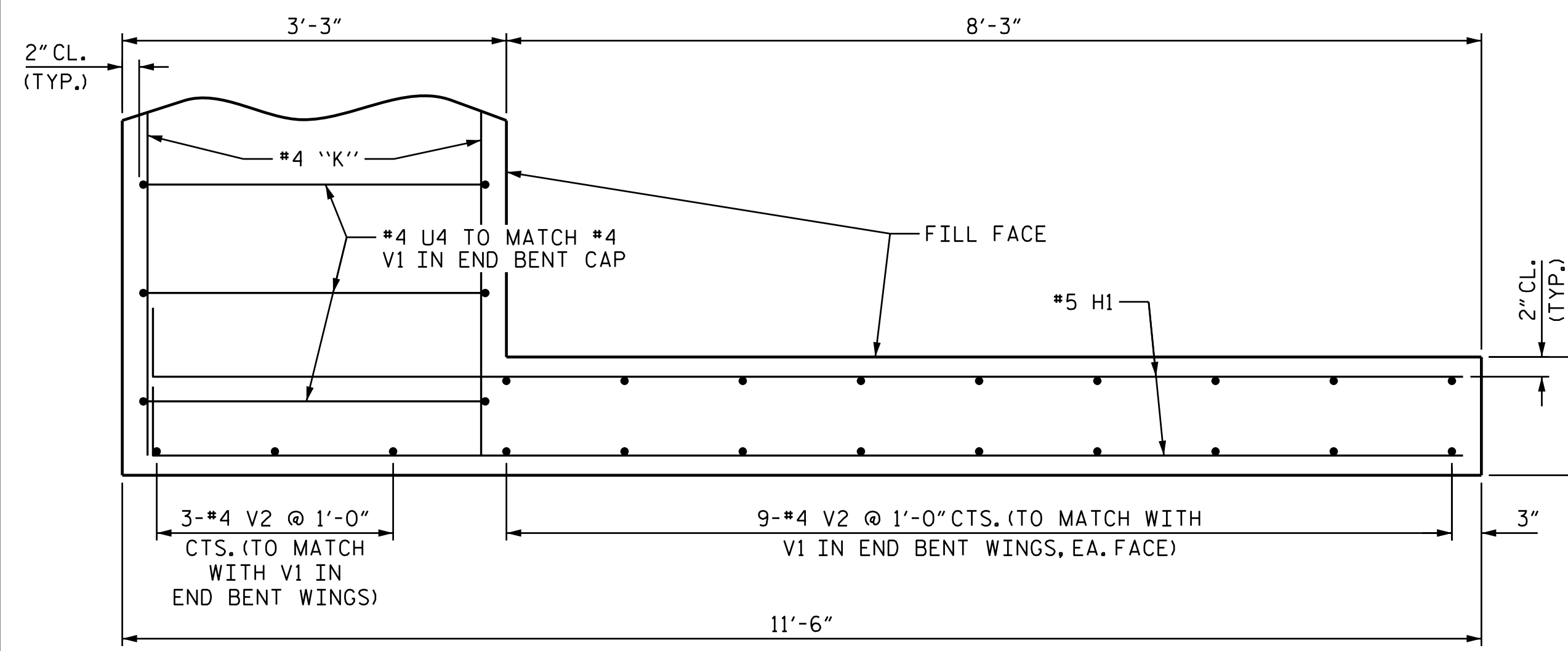
PLANS PREPARED BY:
M PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 MOTT
 MACDONALD LICENSE NO. F-0669

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

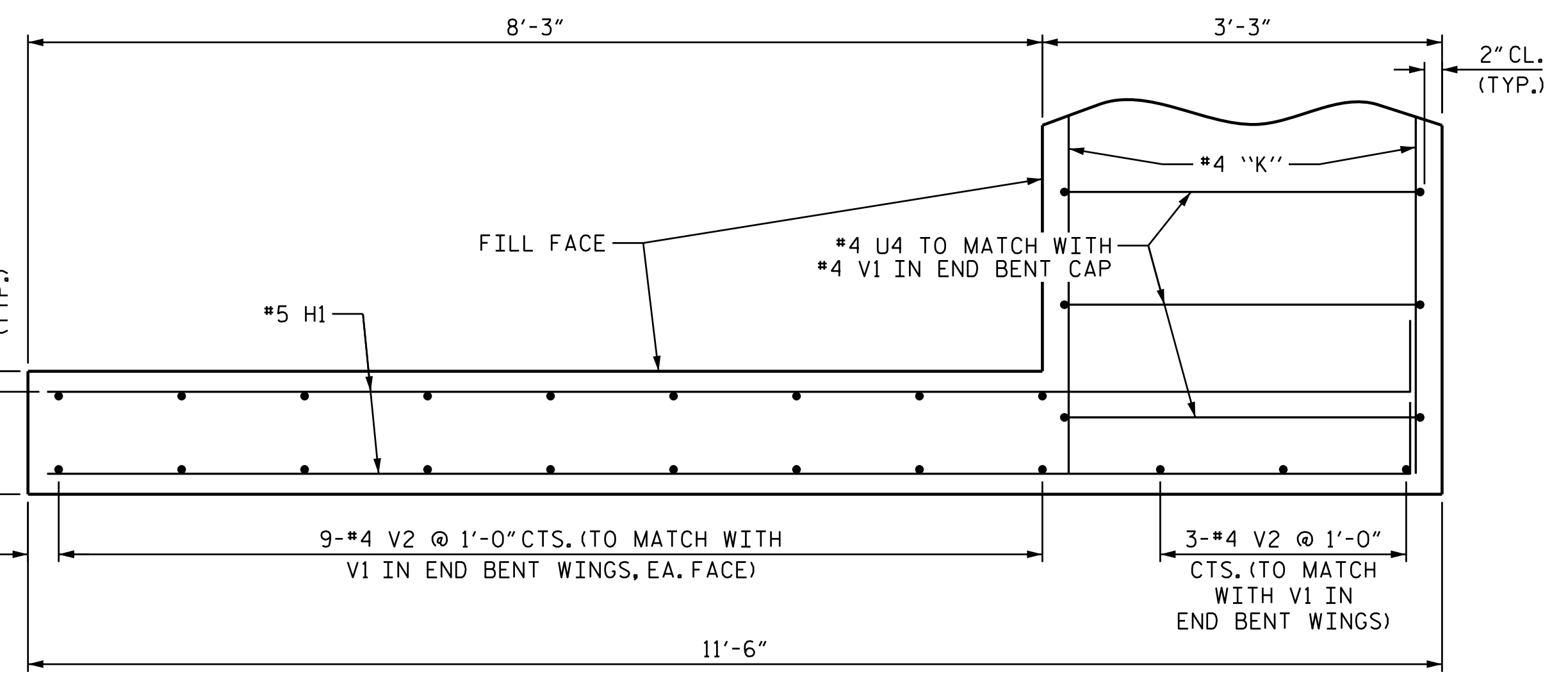
157077
 C:\Users\119_Her_River\Plans\B-5239_SMU.S_000119.dgn
 8/1/2015 9:26:56 AM

DRAWN BY: J. T. WILLIAMS DATE: 12-2014
 CHECKED BY: J. E. MONDOLFI DATE: 1-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 1-2015

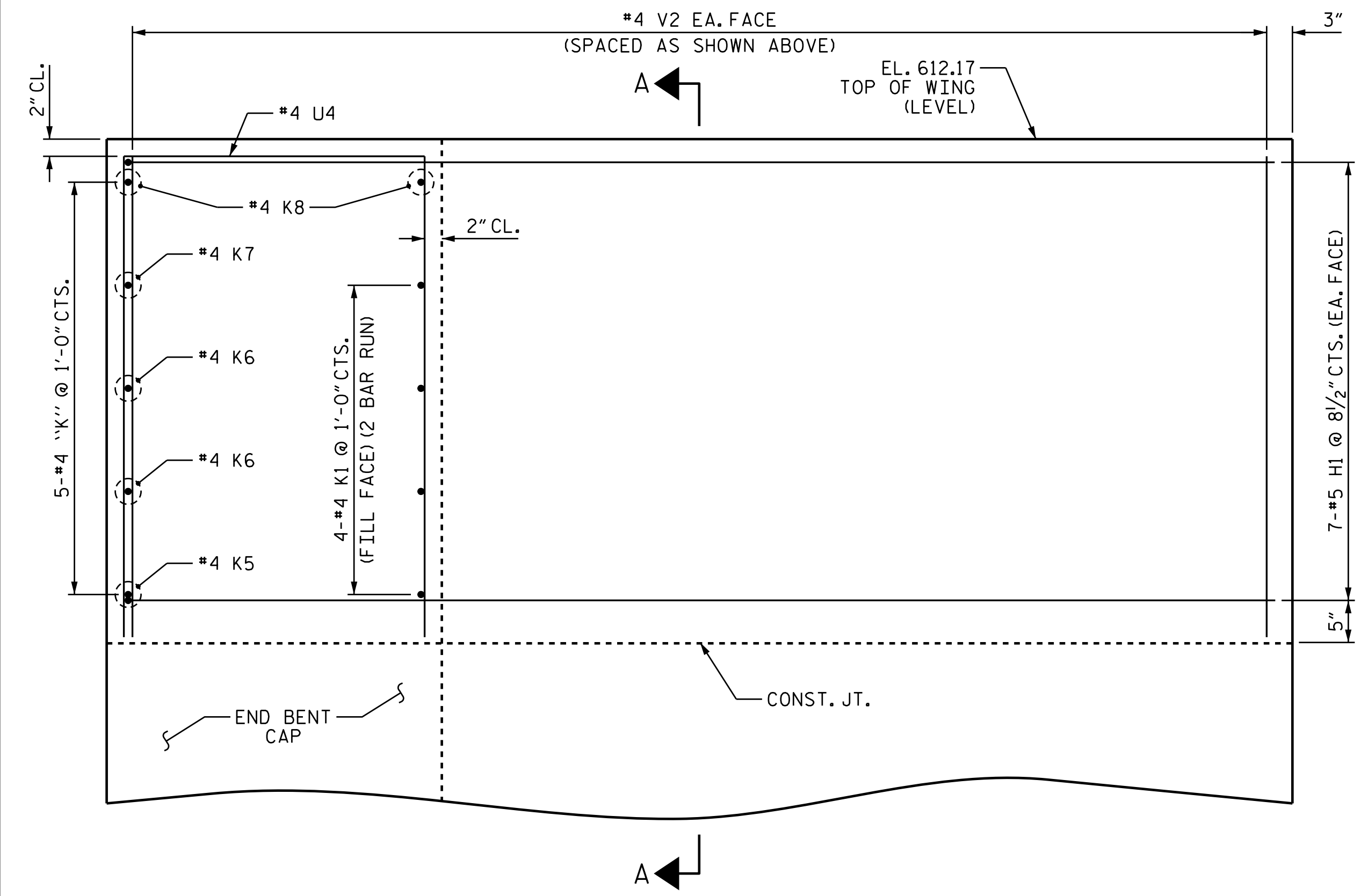
8/1/2017



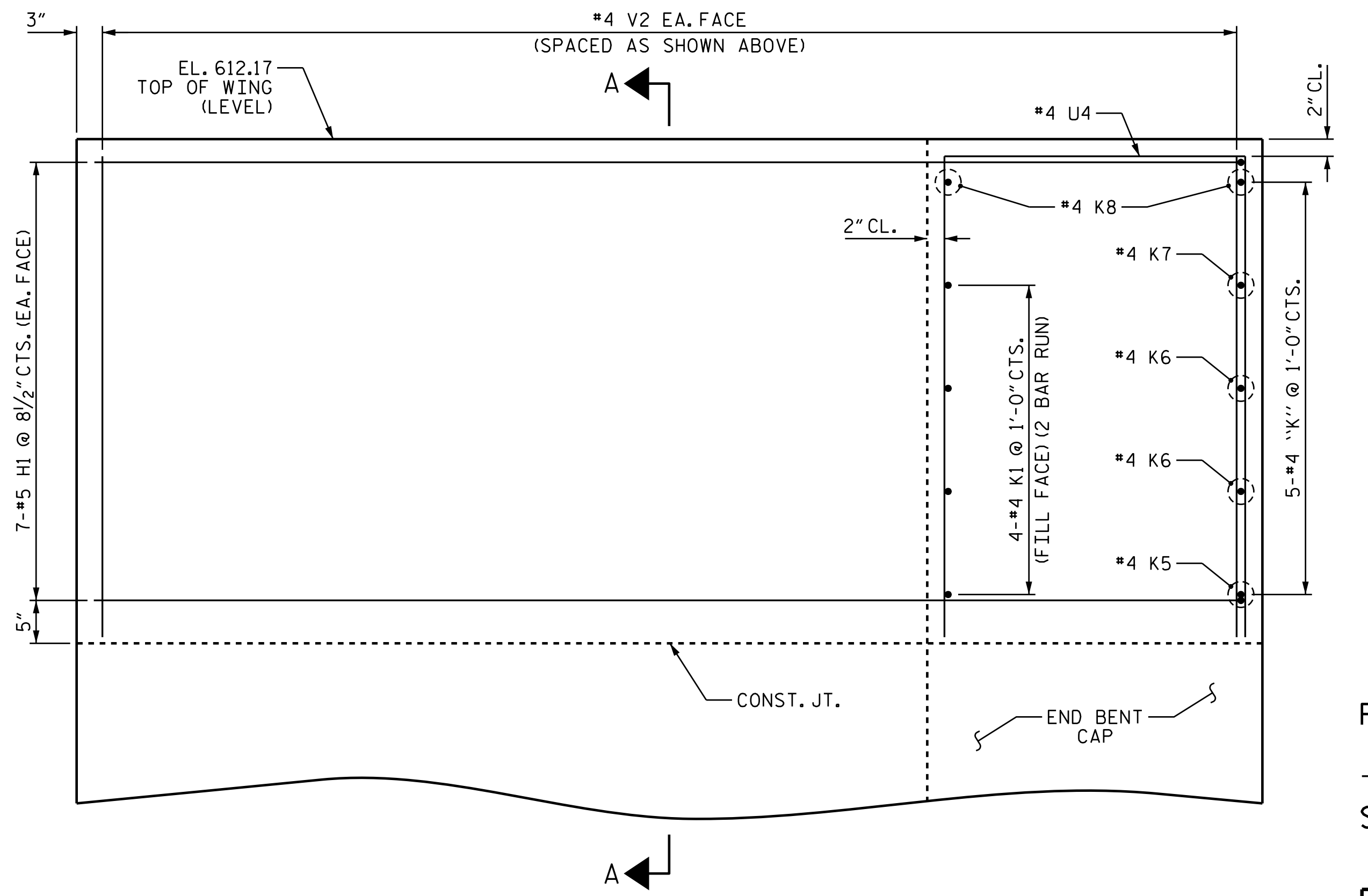
PLAN OF WING W1



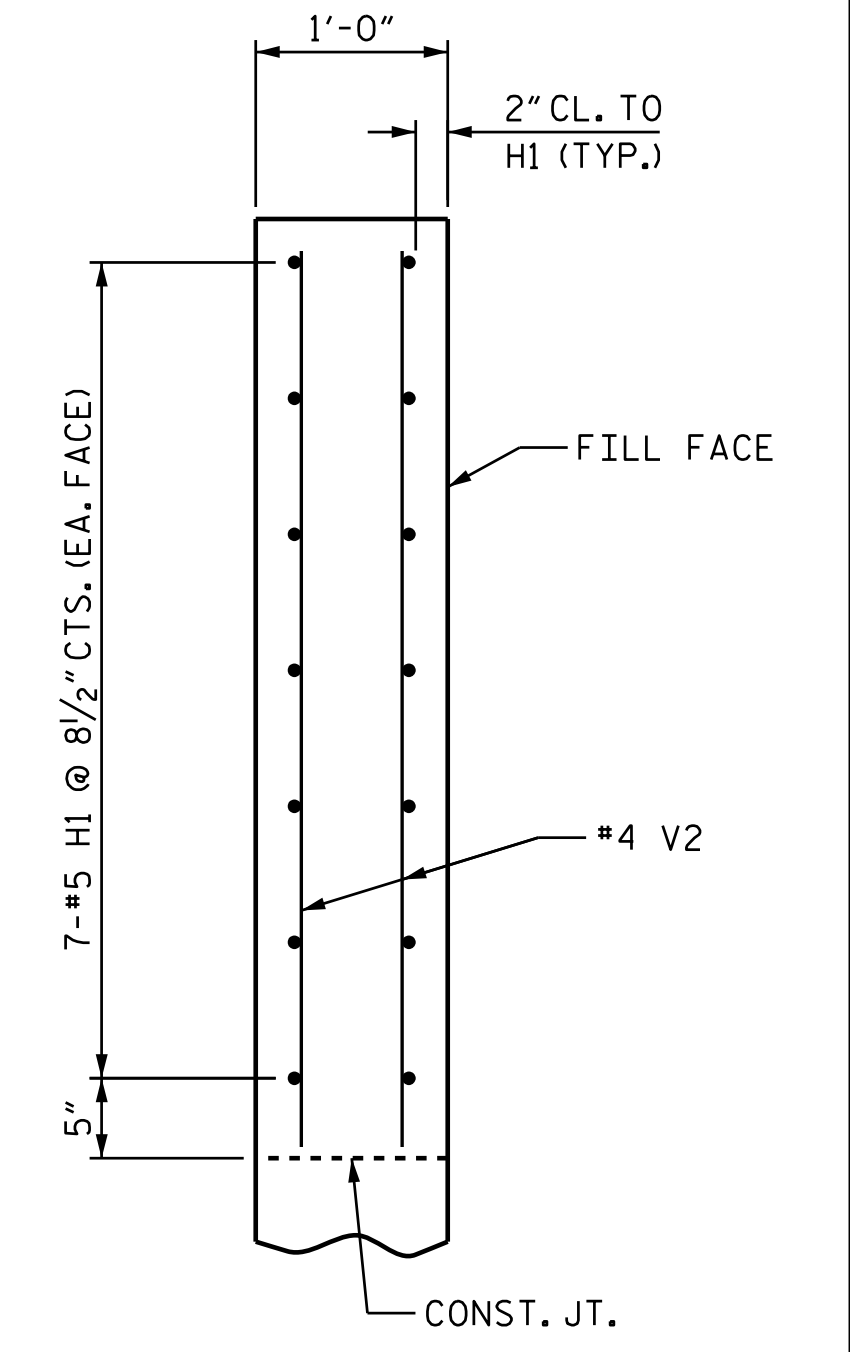
PLAN OF WING W2



ELEVATION OF WING W1



ELEVATION OF WING W2



SECTION A-A

ABUTMENT WINGS @ END BENT 1

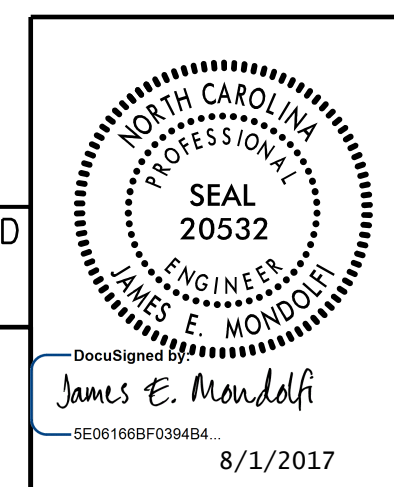
(FOR END BENT REINFORCING STEEL AND DETAILS, SEE "SUBSTRUCTURE END BENT 1" SHEETS)

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 6 OF 7

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN
 DETAILS



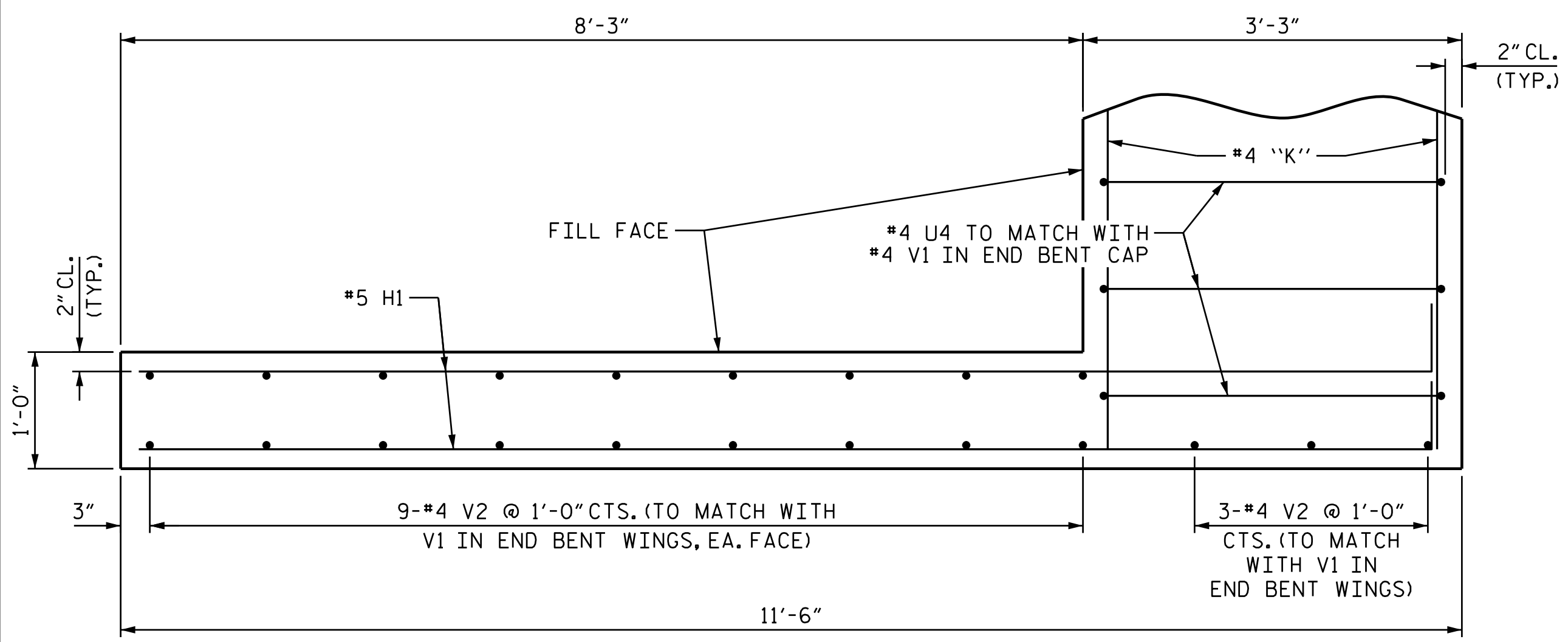
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

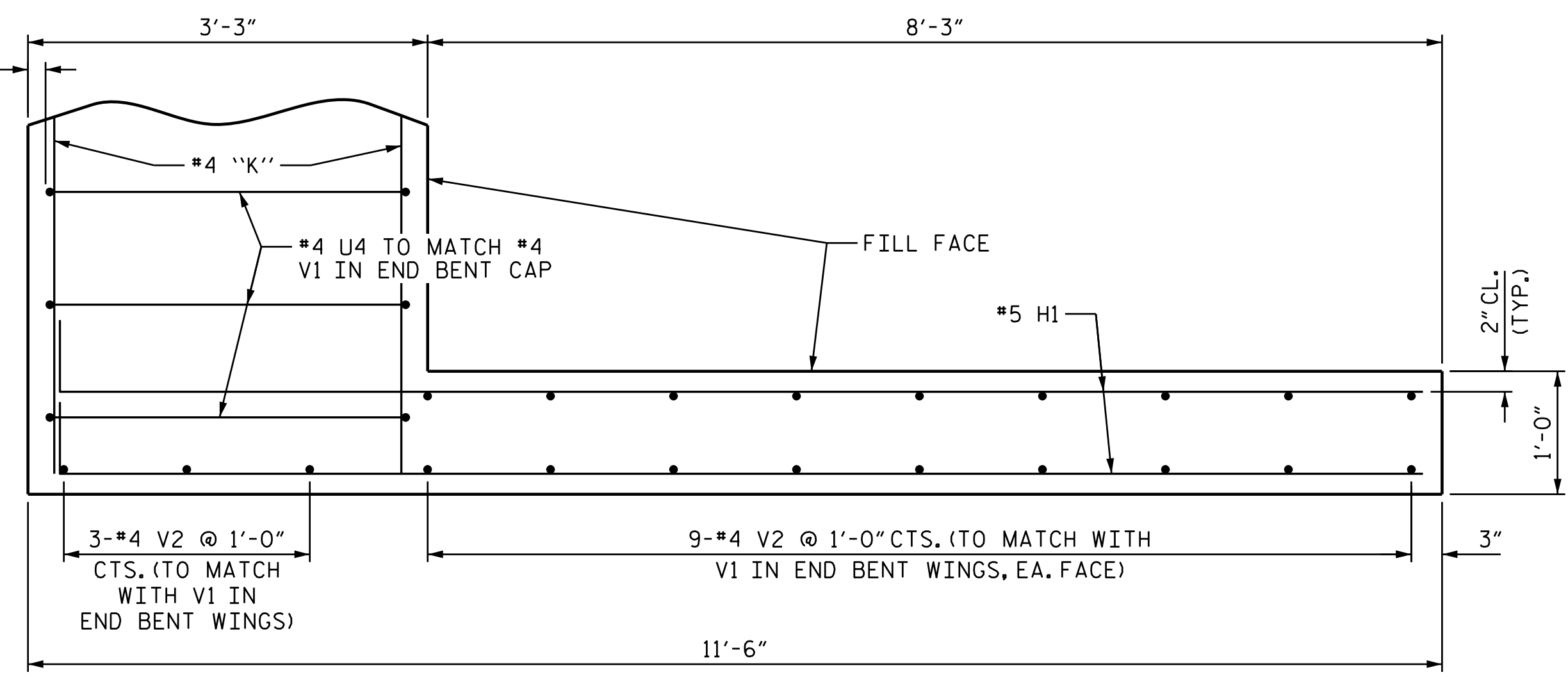
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			TOTAL SHEETS
2			4			39

157077
 C:\Users\119_Her_River\Plans\B-5239-SMU.S-000119.dgn
 8/1/2015 9:26:57 AM

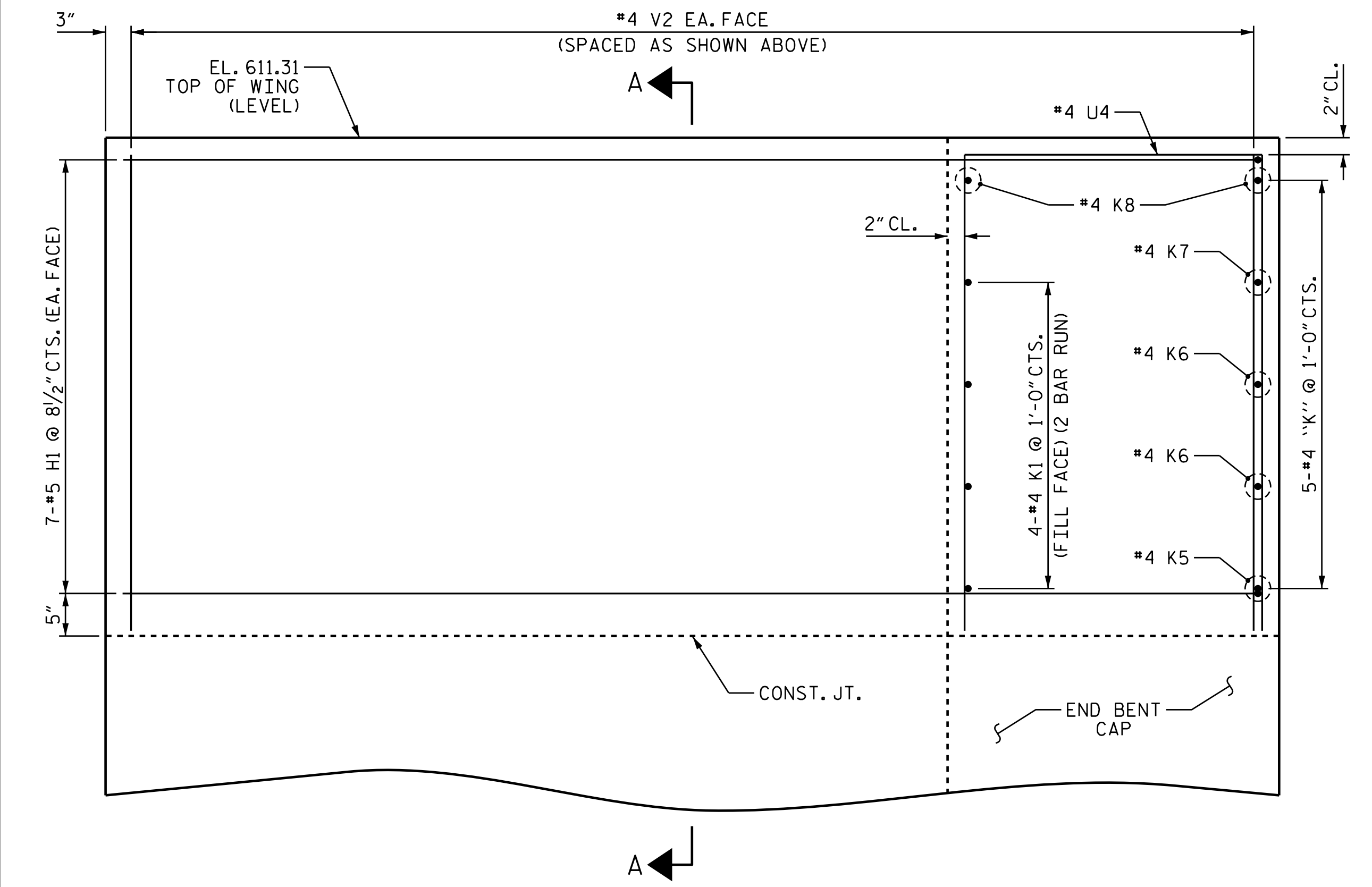
DRAWN BY: J. T. WILLIAMS DATE: 12-2014
 CHECKED BY: J. E. MONDOLFI DATE: 1-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 1-2015



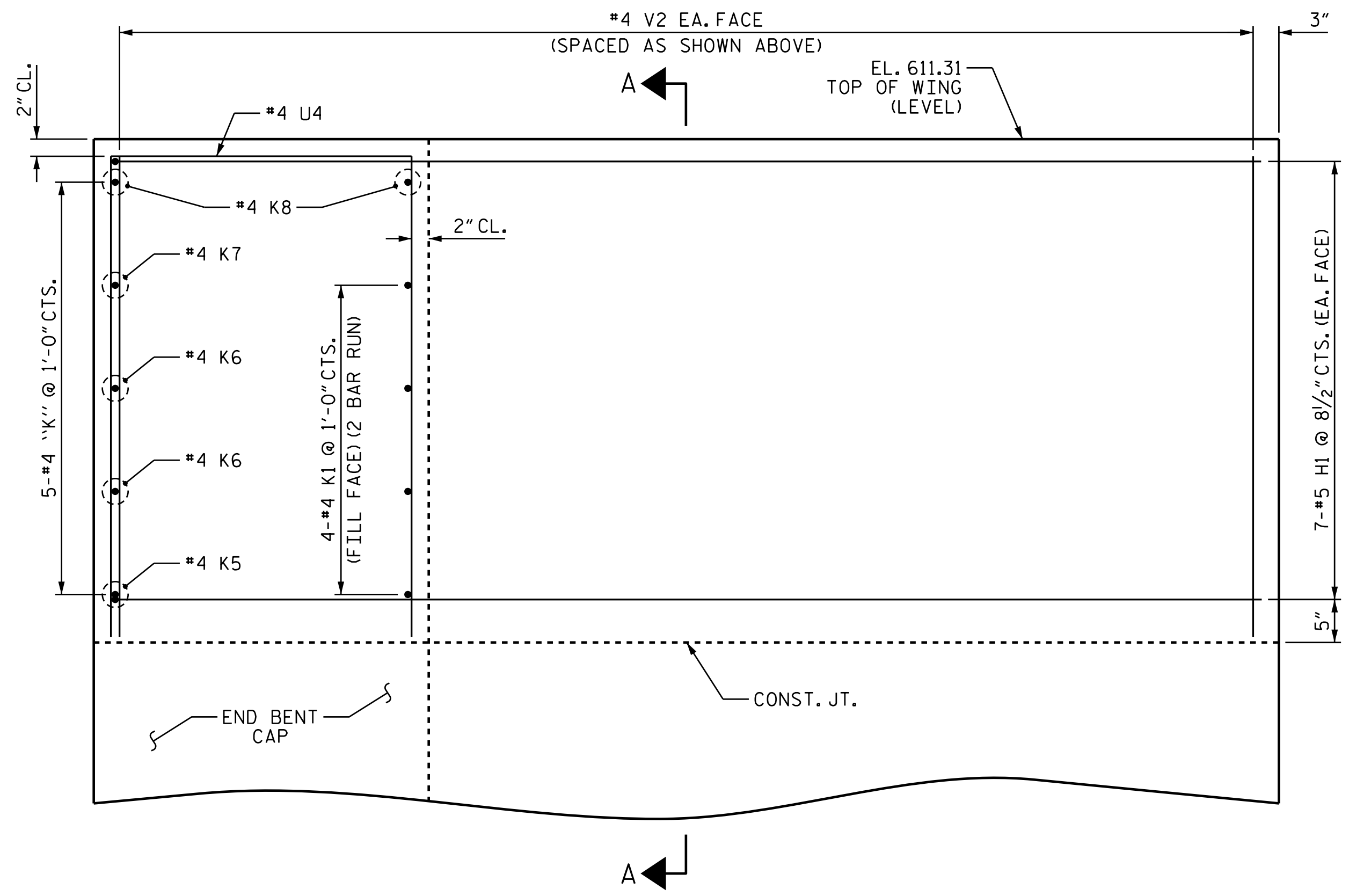
PLAN OF WING W3



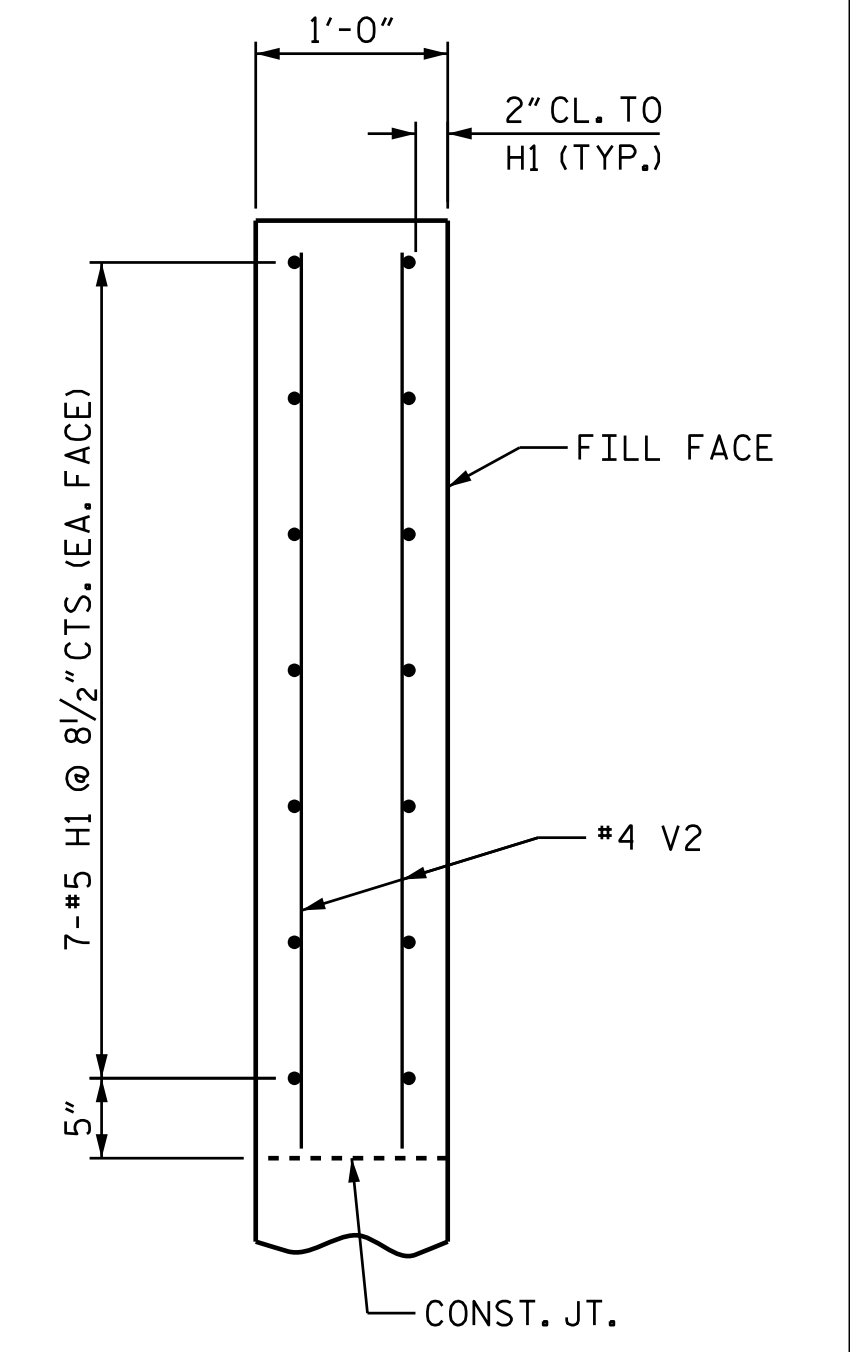
PLAN OF WING W4



ELEVATION OF WING W3



ELEVATION OF WING W4



SECTION A-A

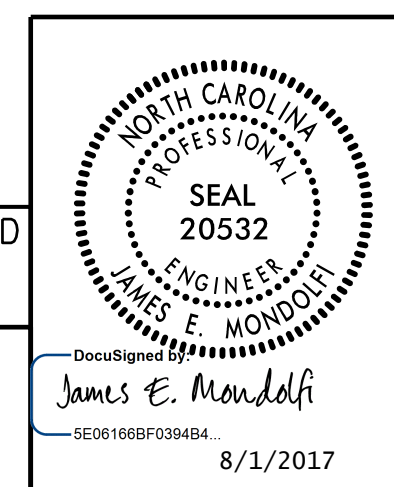
ABUTMENT WINGS @ END BENT 2

(FOR END BENT REINFORCING STEEL AND DETAILS, SEE "SUBSTRUCTURE END BENT 2" SHEETS)

PROJECT NO. B-5239
 ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 7 OF 7

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



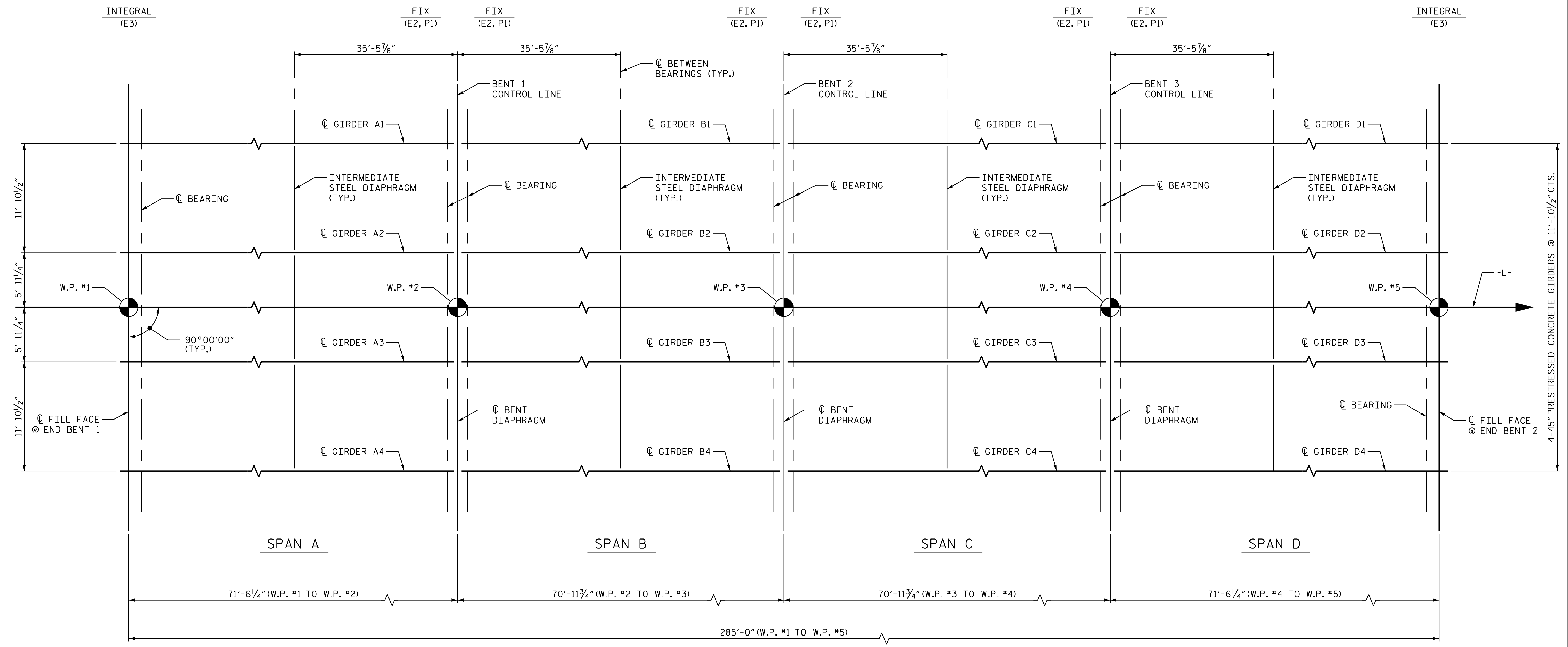
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
 MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

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

157077
 C:\Users\119_Her_River\Plans\B-5239-SMU.S-000119.dgn
 8/1/2015 9:26:58 AM

DRAWN BY: J. T. WILLIAMS DATE: 12-2014
 CHECKED BY: J. E. MONDOLFI DATE: 1-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 1-2015



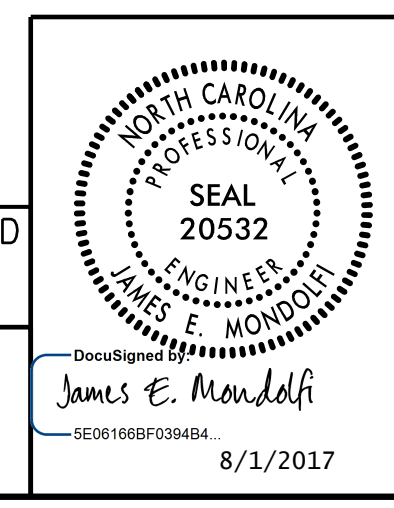
FRAMING PLAN

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 16+34.50 -L-

#157077
 C:\Users\119_Her_River\Plans\B-5239-SMU_FP_000119.dgn
 8/1/2015 9:27:00 AM

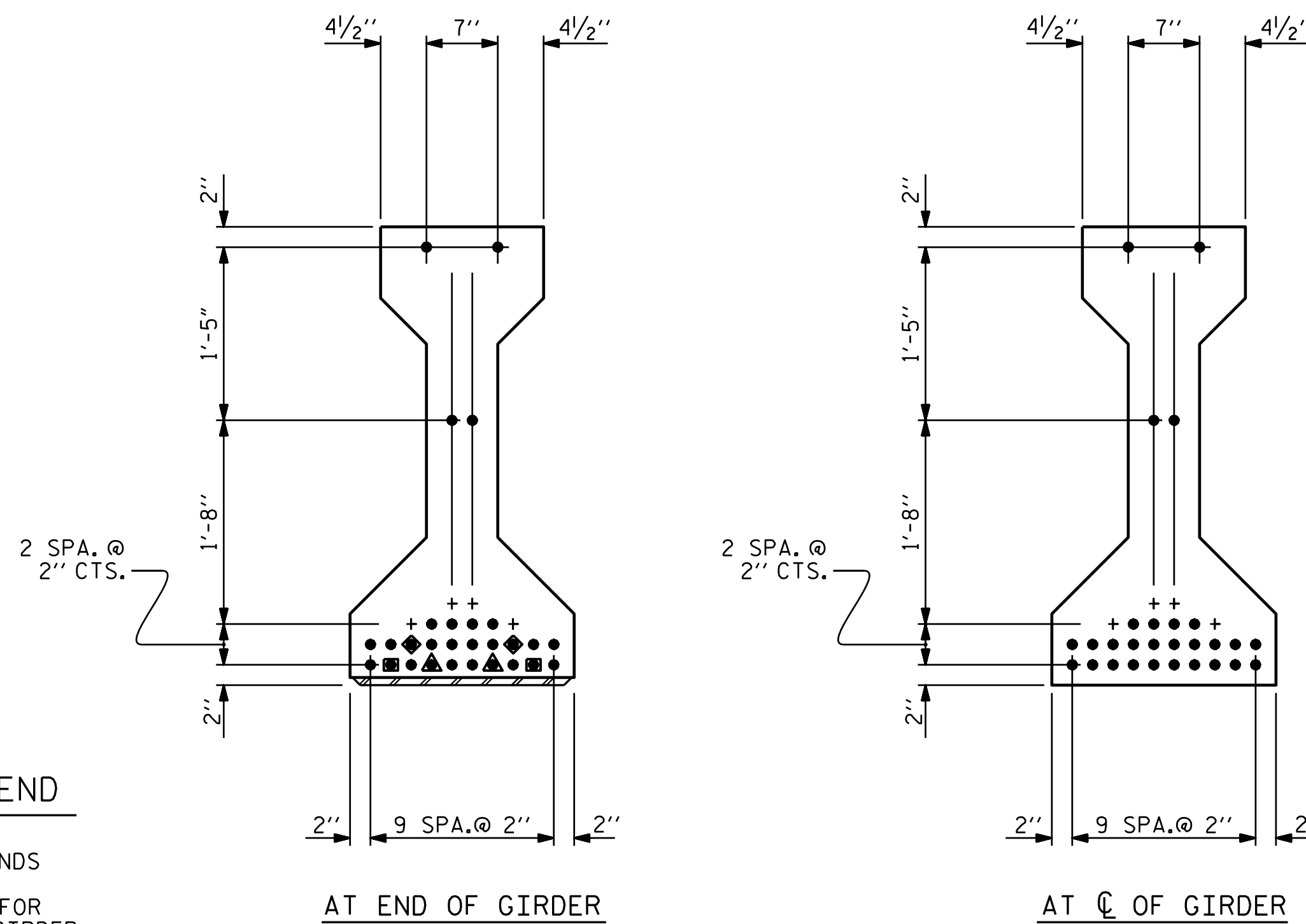
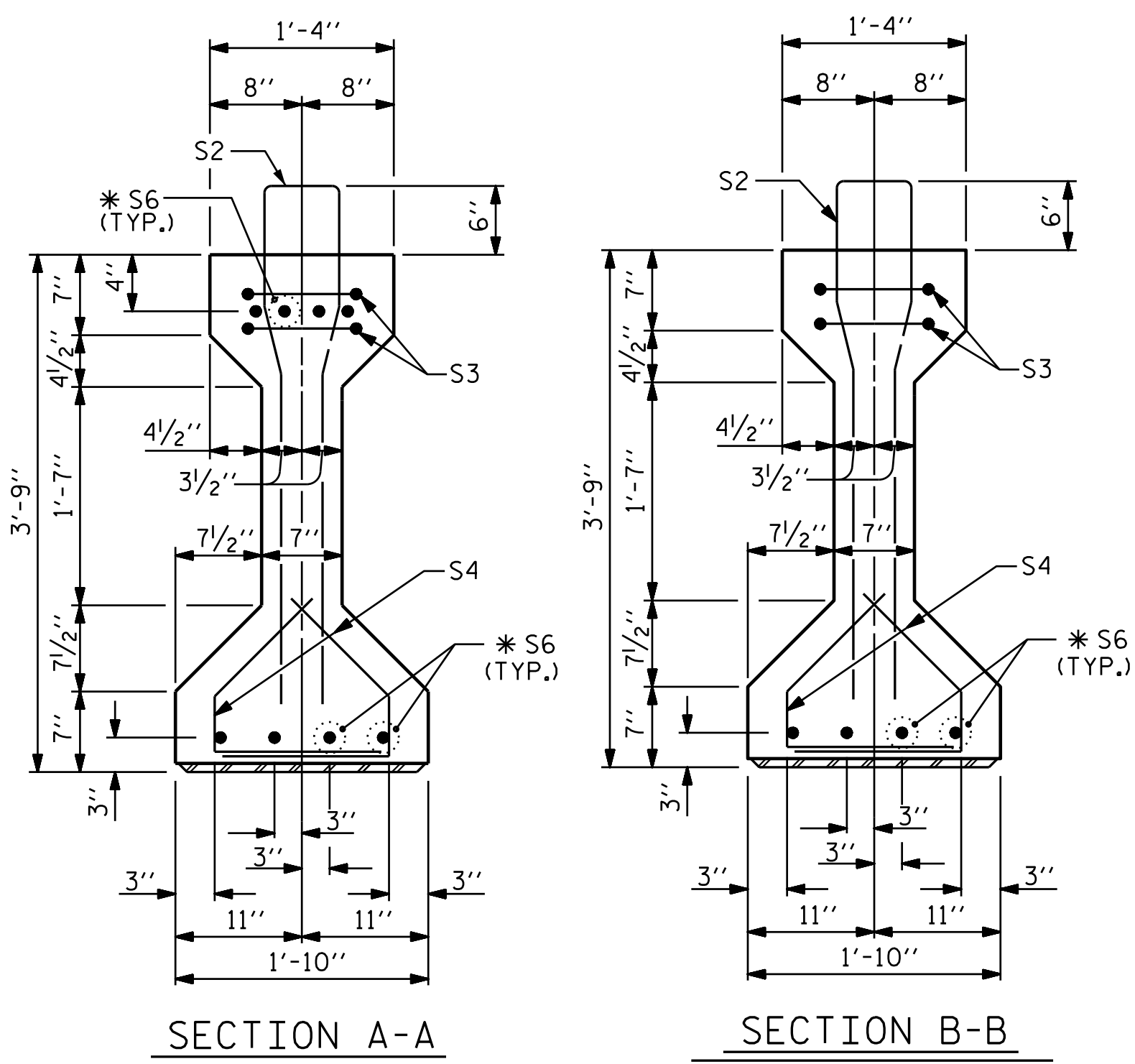
DRAWN BY: J. T. WILLIAMS DATE: 11-2014
 CHECKED BY: J. E. MONDOLFI DATE: 11-2014
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 11-2014

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED
 PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 FRAMING PLAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-14
1			3			TOTAL SHEETS
2			4			39



DEBONDING LEGEND

- FULLY BONDED STRANDS
- ◆ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
- ▲ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

(28 STRANDS, ALL STRAIGHT, 6 DEBONDED STRANDS)

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

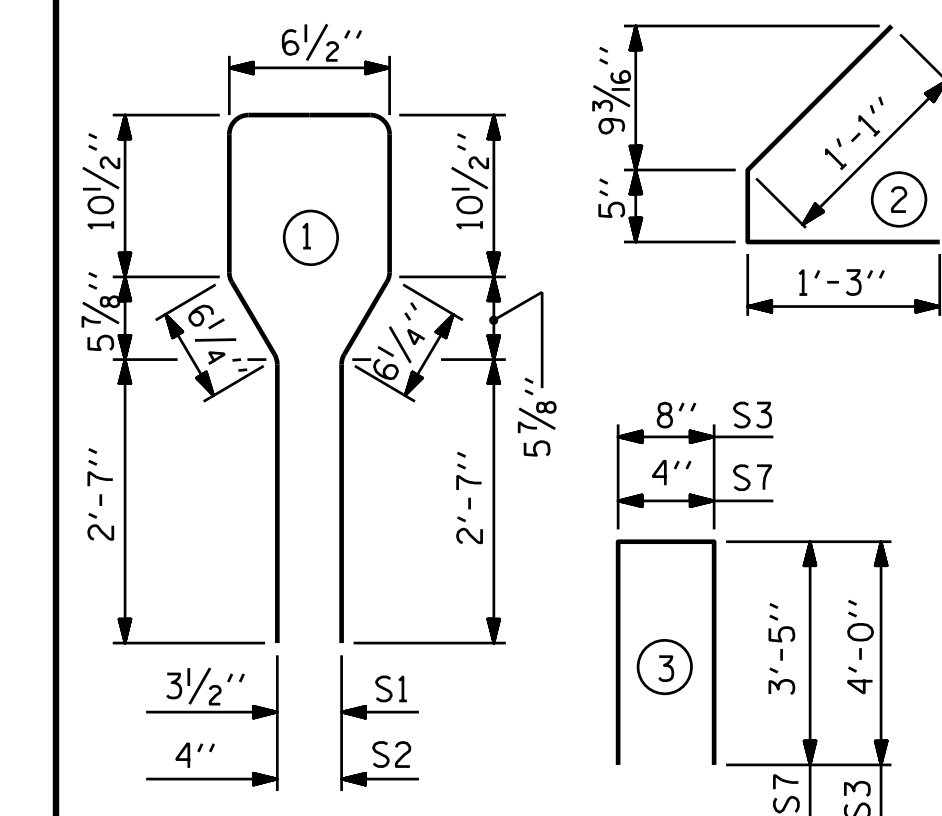
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	68	#4	1	8'-6"	386
S2	16	#6	1	8'-6"	204
S3	4	#4	3	8'-8"	23
S4	72	#4	2	2'-9"	132
* S6	12	#5	STR	3'-8"	46
S7	2	#5	3	7'-2"	15
S8	5	#4	STR	7'-0"	23
S10	1	#3	STR	1'-0"	1

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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT

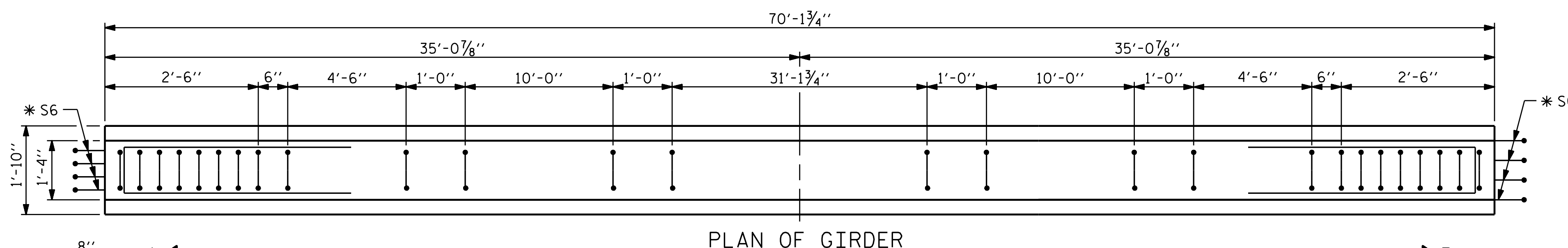


QUANTITIES FOR ONE GIRDER

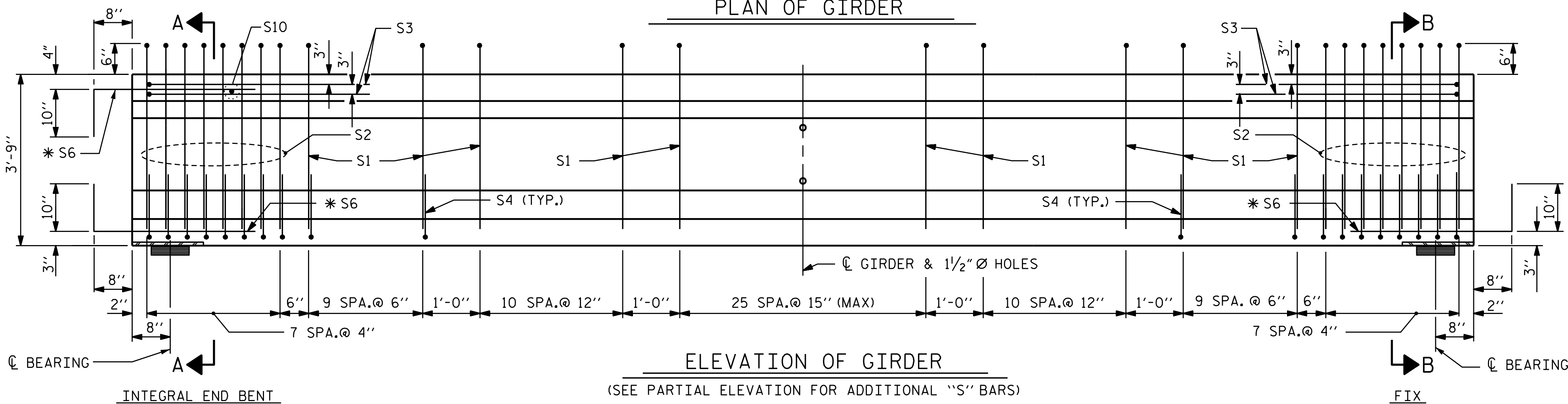
REINFORCING STEEL	8500 PSI CONCRETE	0.6" Ø L. R. STRANDS
LB.	C.Y.	No.
830	10.1	28

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
8	70'-1 3/4"	561.17



PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

AASHTO TYPE III
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD

SPANS A & D

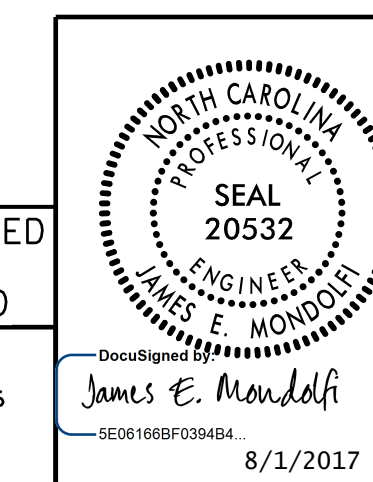
REVISIONS

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

SHEET NO.	
S01-15	TOTAL SHEETS 39

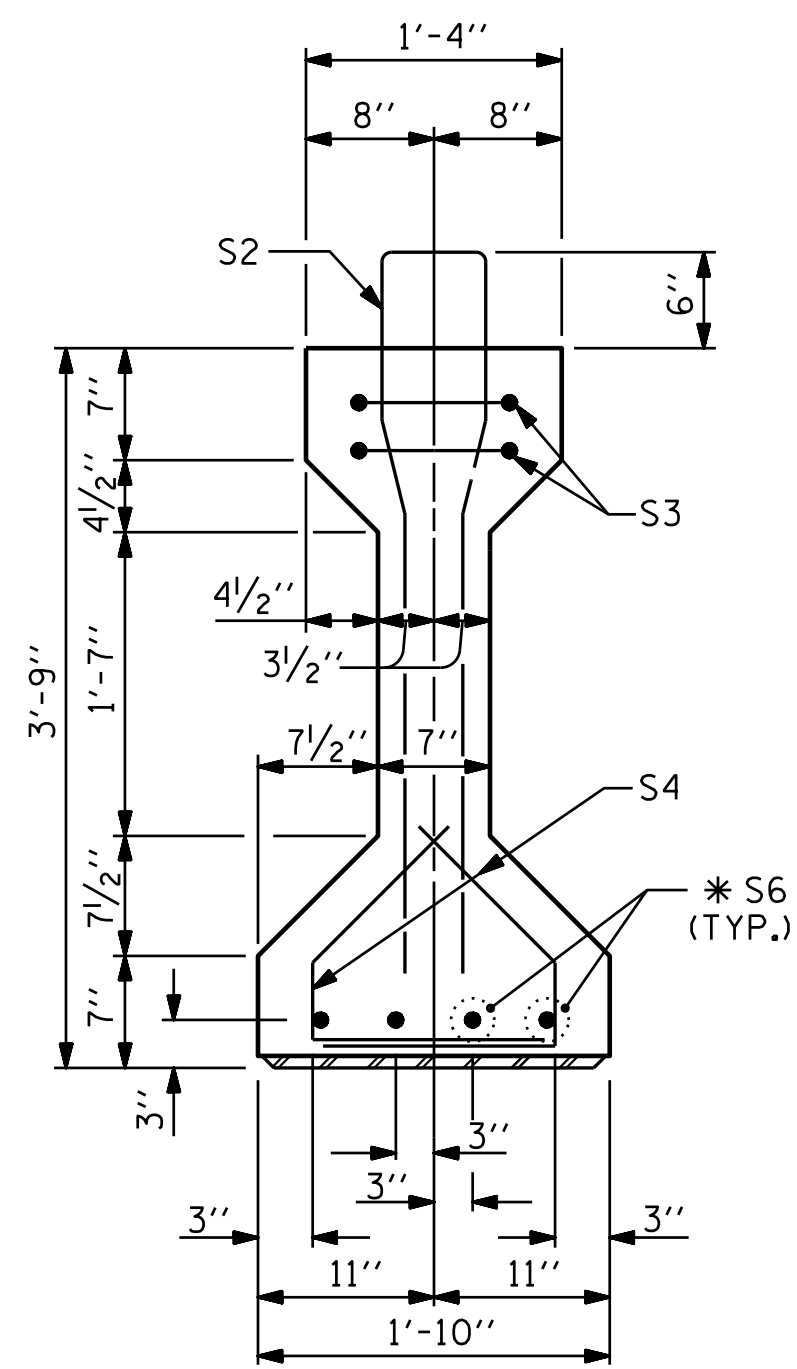
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669



157077
 C:\Users\119_Hey_River\Plans\B-5239_SNU.GI.000119.dgn
 8/1/2017 9:27:03 AM

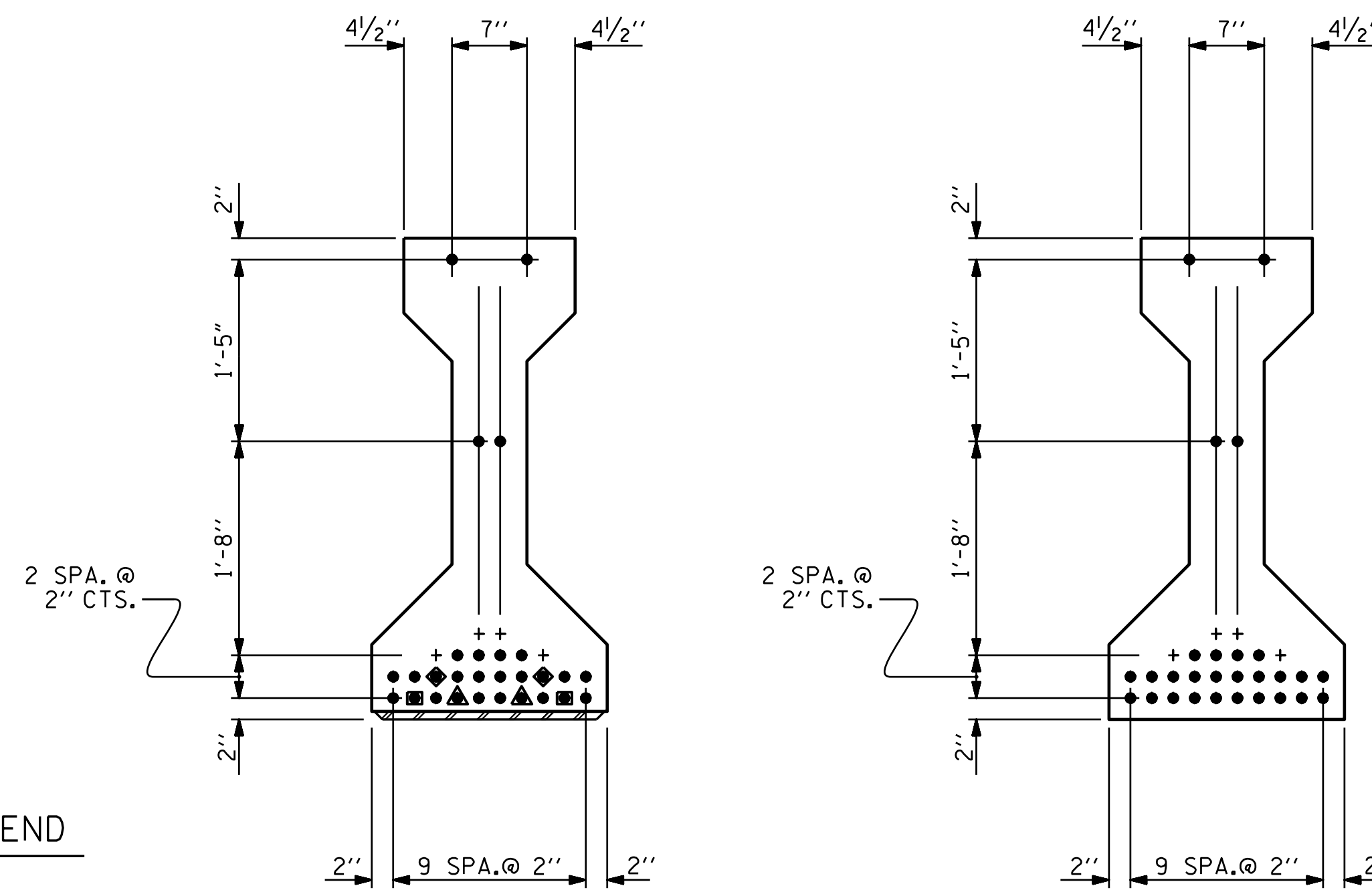
DRAWN BY: J. T. WILLIAMS DATE: 4-2017
 CHECKED BY: J. E. MONDOLFI DATE: 4-2017
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 4-2017



SECTION B-B

DEBONDING LEGEND

- FULLY BONDED STRANDS
- ◆ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
- ▲ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

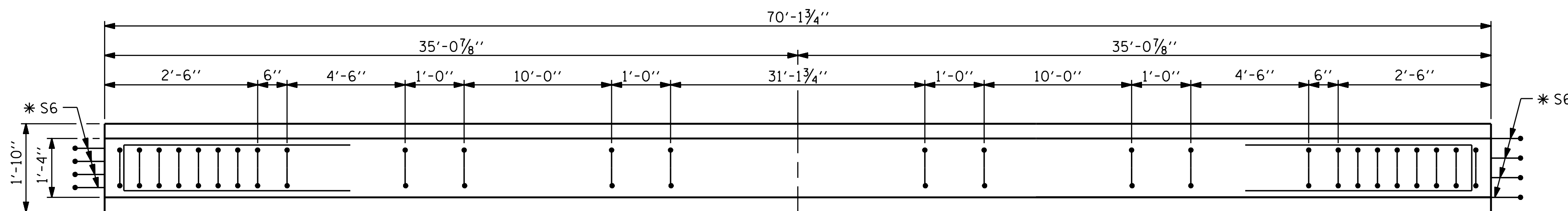


AT END OF GIRDER

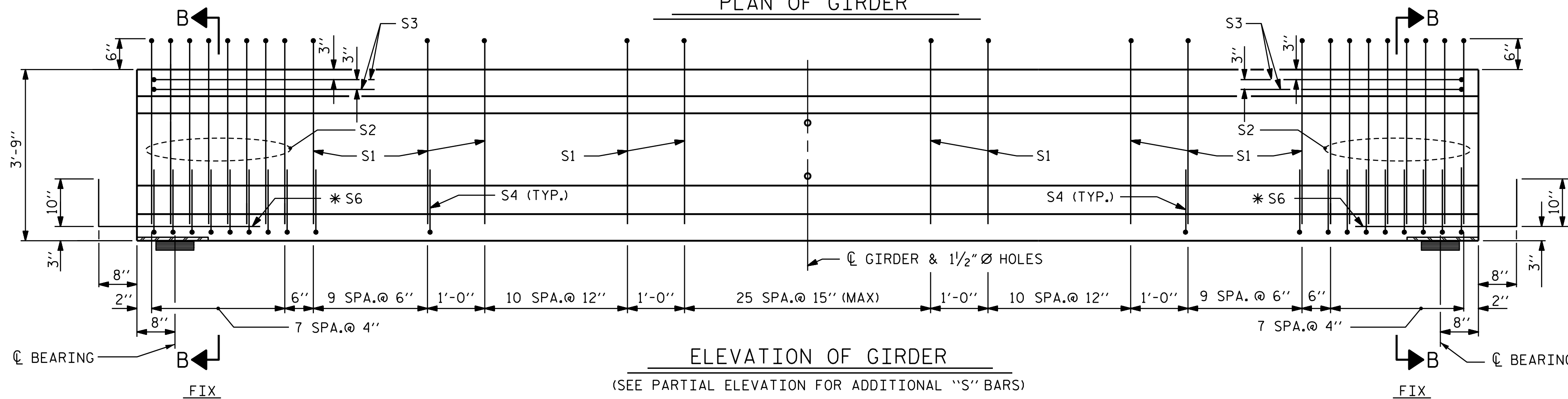
AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

(28 STRANDS, ALL STRAIGHT, 6 DEBONDED STRANDS)



PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

0.6" Ø L. R. GRADE 270 STRANDS

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

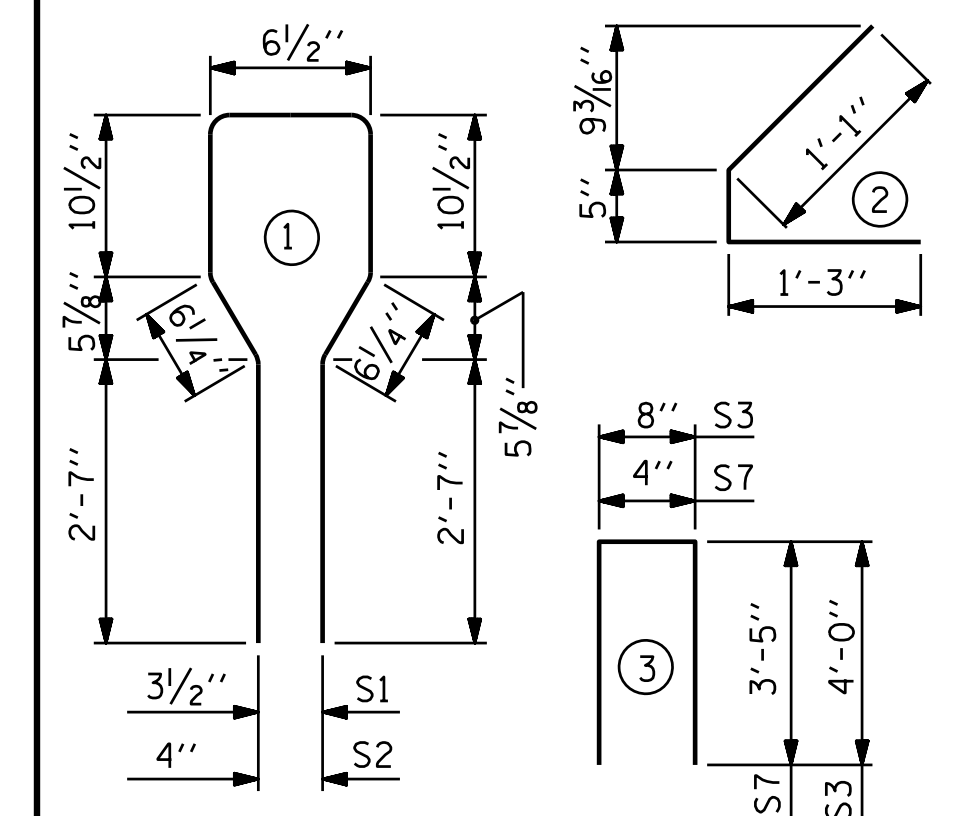
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	68	#4	1	8'-6"	386
S2	16	#6	1	8'-6"	204
S3	4	#4	3	8'-8"	23
S4	72	#4	2	2'-9"	132
*S6	8	#5	STR	3'-8"	31
S7	2	#5	3	7'-2"	15
S8	5	#4	STR	7'-0"	23

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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

REINFORCING STEEL	8500 PSI CONCRETE	0.6" Ø L. R. STRANDS
LB.	C.Y.	No.
814	10.1	28

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
8	70'-1 3/4"	561.17

PROJECT NO. B-5239
ALAMANCE COUNTY
STATION: 16+34.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

AASHTO TYPE III
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD

SPANS B & C

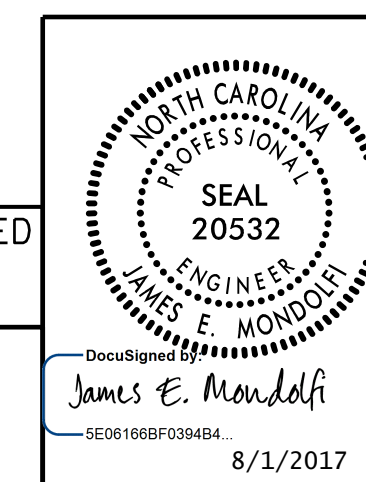
REVISIONS

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

SHEET NO.
S01-16
TOTAL SHEETS
39

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
(919) 552-2253
www.mottmac.com
LICENSE NO. F-0669



157077
 C:\Users\119_Hey_River\Plans\B-5239_SNU_G2_000119.dgn
 8/1/2017 9:27:05 AM

DRAWN BY: J. T. WILLIAMS DATE: 4-2017
 CHECKED BY: J. E. MONDOLFI DATE: 4-2017
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 4-2017

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 6300 PSI.

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

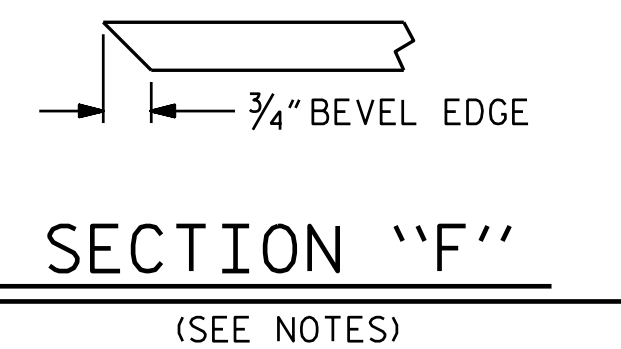
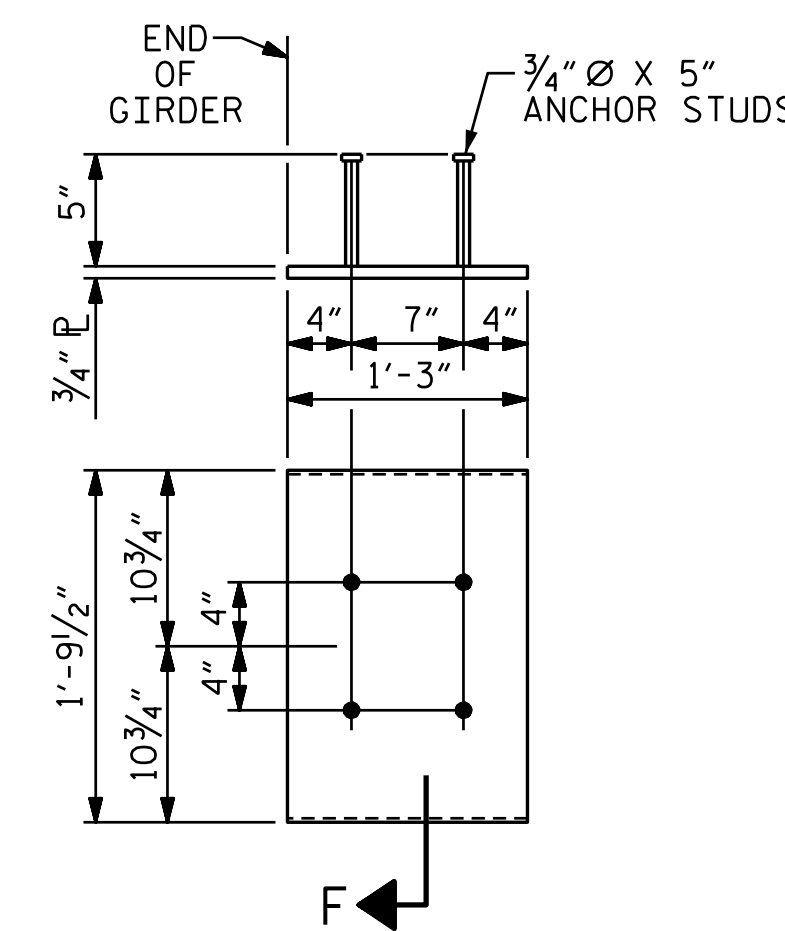
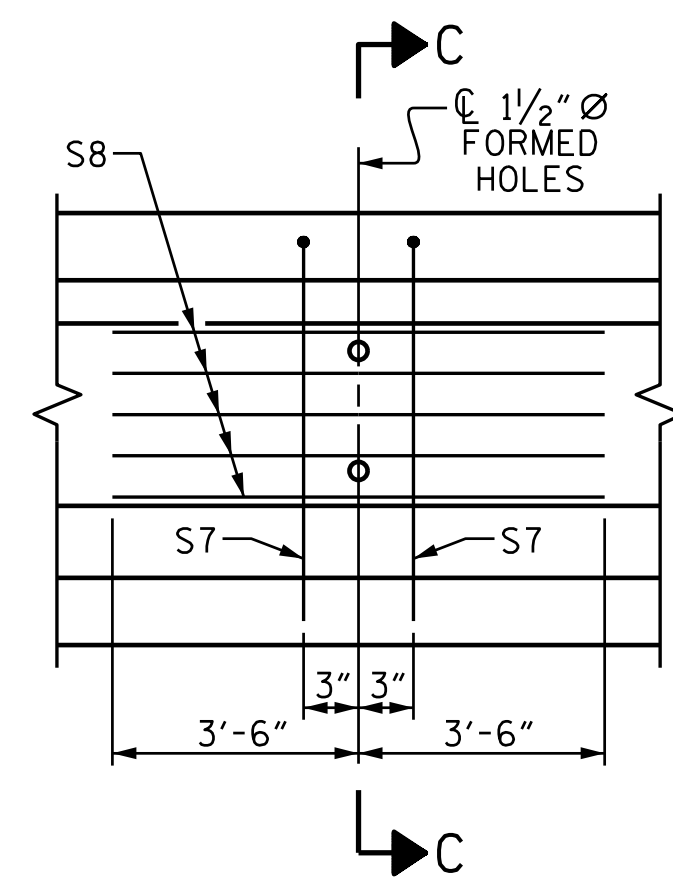
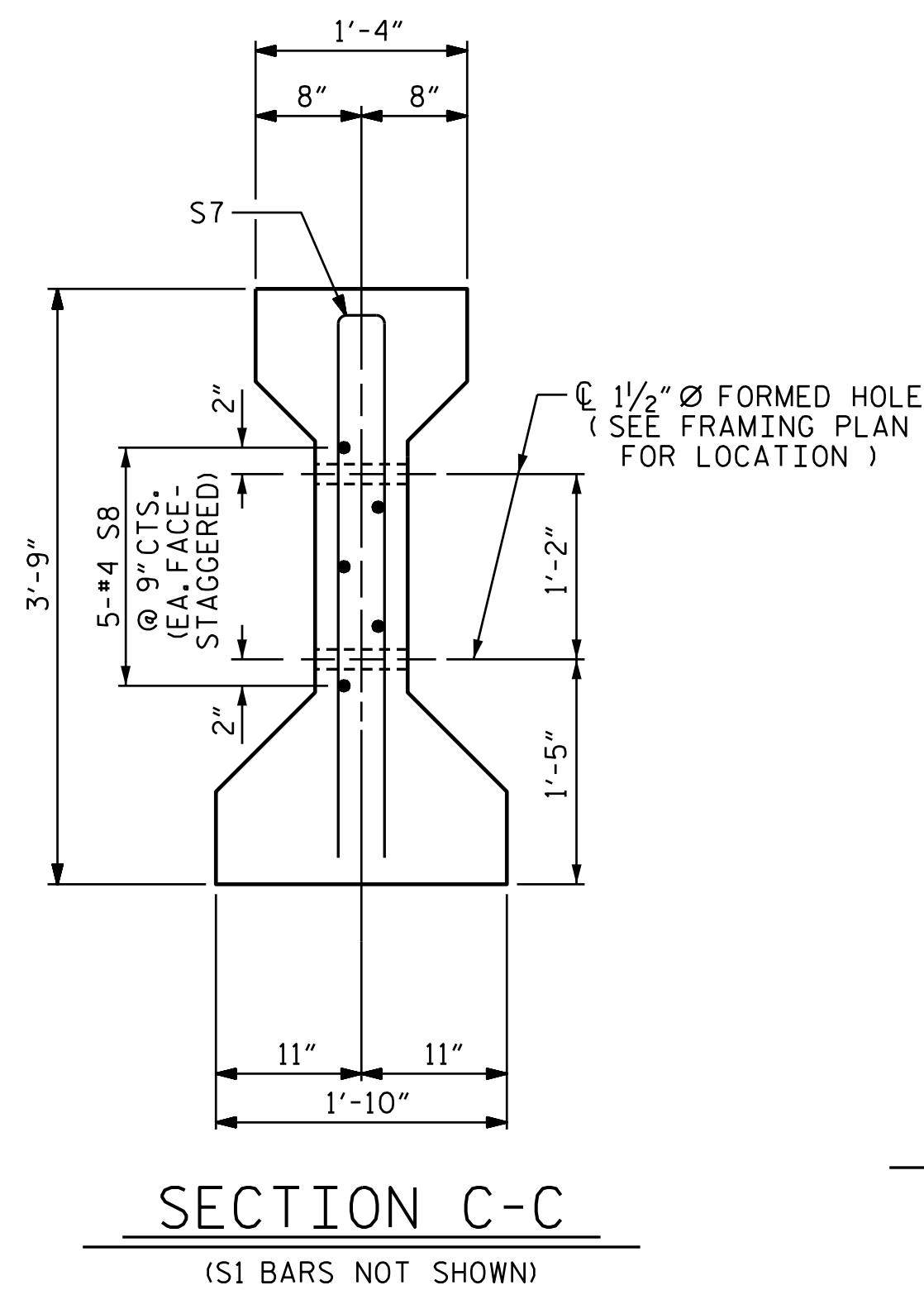
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

FOR EMBEDDED CLIPS FOR PRESTRESSED GIRDERS, SEE SPECIAL PROVISIONS

DEAD LOAD DEFLECTION TABLE												
0.6" Ø LOW RELAXATION	SPANS A, B, C, & D											
	EXTERIOR GIRDERS											
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.0	0.052	0.098	0.134	0.157	0.164	0.157	0.134	0.098	0.052	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.0	0.027	0.054	0.075	0.088	0.093	0.088	0.075	0.054	0.027	0.0
FINAL CAMBER	↑	0.0	5/16"	1/2"	11/16"	13/16"	7/8"	13/16"	11/16"	1/2"	5/16"	0.0
INTERIOR GIRDERS												
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.0	0.052	0.098	0.134	0.157	0.164	0.157	0.134	0.098	0.052	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.0	0.034	0.067	0.093	0.110	0.115	0.110	0.093	0.067	0.034	0.0
FINAL CAMBER	↑	0.0	3/16"	3/8"	1/2"	9/16"	9/16"	9/16"	1/2"	3/8"	3/16"	0.0

* INCLUDES FUTURE WEARING SURFACE

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



PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 DETAILS

REVISIONS

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

SHEET NO.
 S01-17
 TOTAL SHEETS
 39

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

SEAL
 20532
 ENGINEER
 JAMES E. MONDOLFI
 8/1/2017

157077
 12/17/2015
 C:\Users\119_Her_River\Plans\B-5239-SMU-C3-000119.dgn
 9:27:07 AM

DRAWN BY: J. T. WILLIAMS DATE: 4-2017
 CHECKED BY: J. E. MONDOLFI DATE: 4-2017
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 4-2017

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.

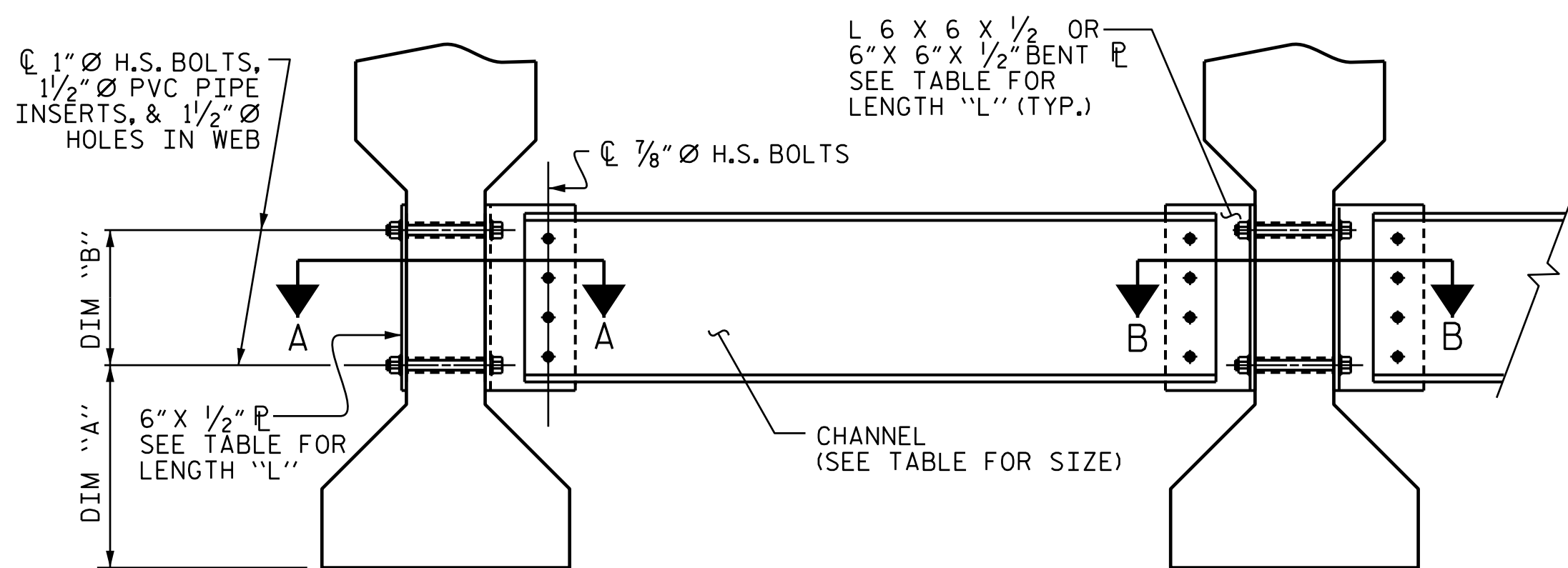
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

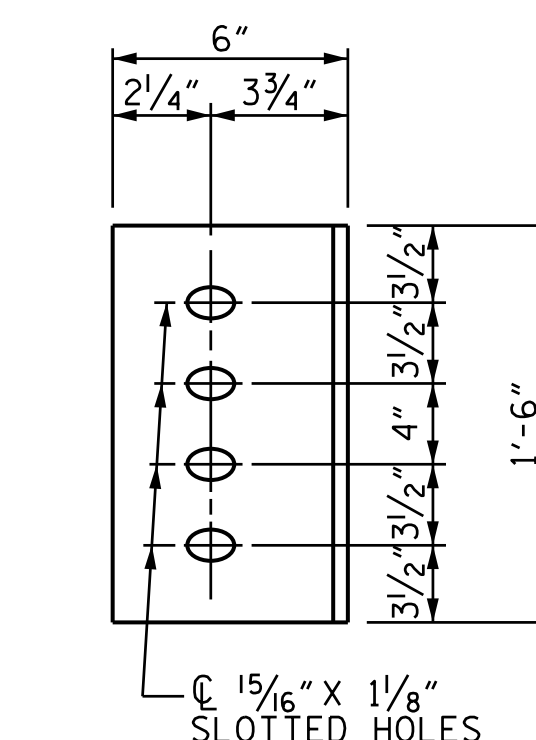
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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.

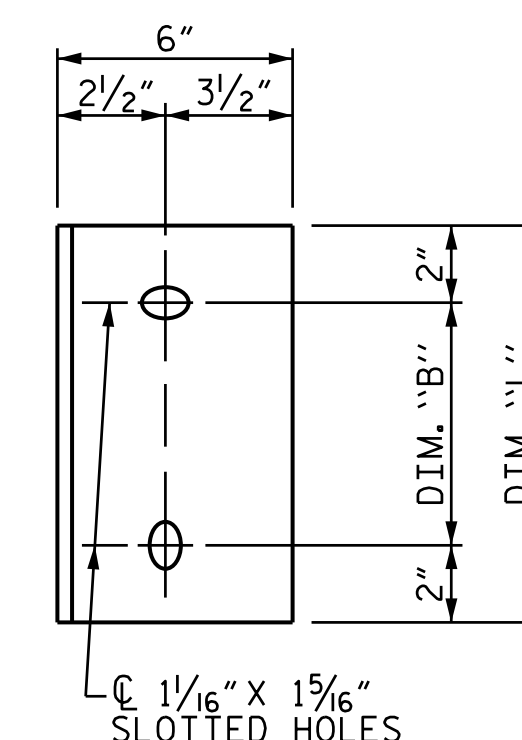
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



EXTERIOR GIRDER
INTERIOR GIRDER
PART SECTION AT INTERMEDIATE DIAPHRAGM



DIAPHRAGM FACE



WEB FACE

CONNECTOR PLATE DETAILS

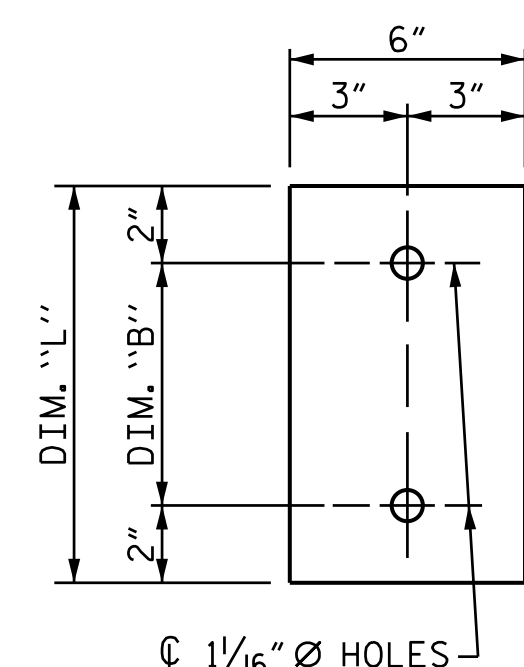
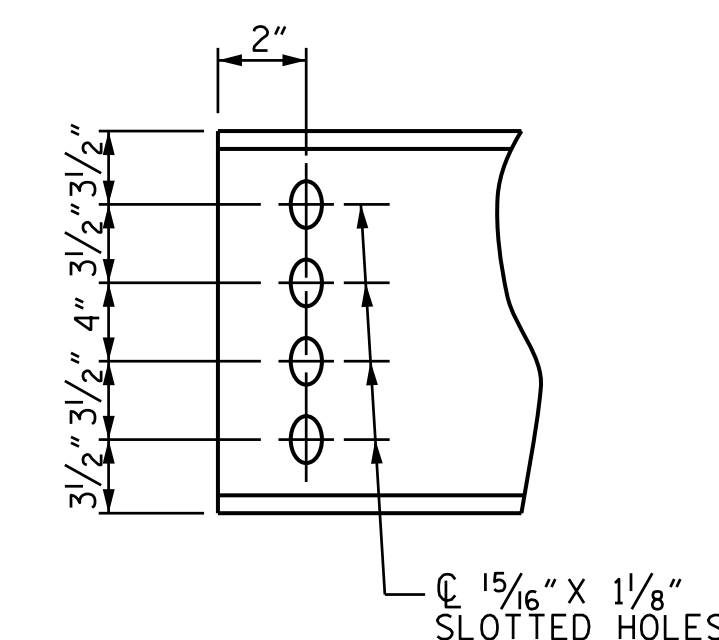


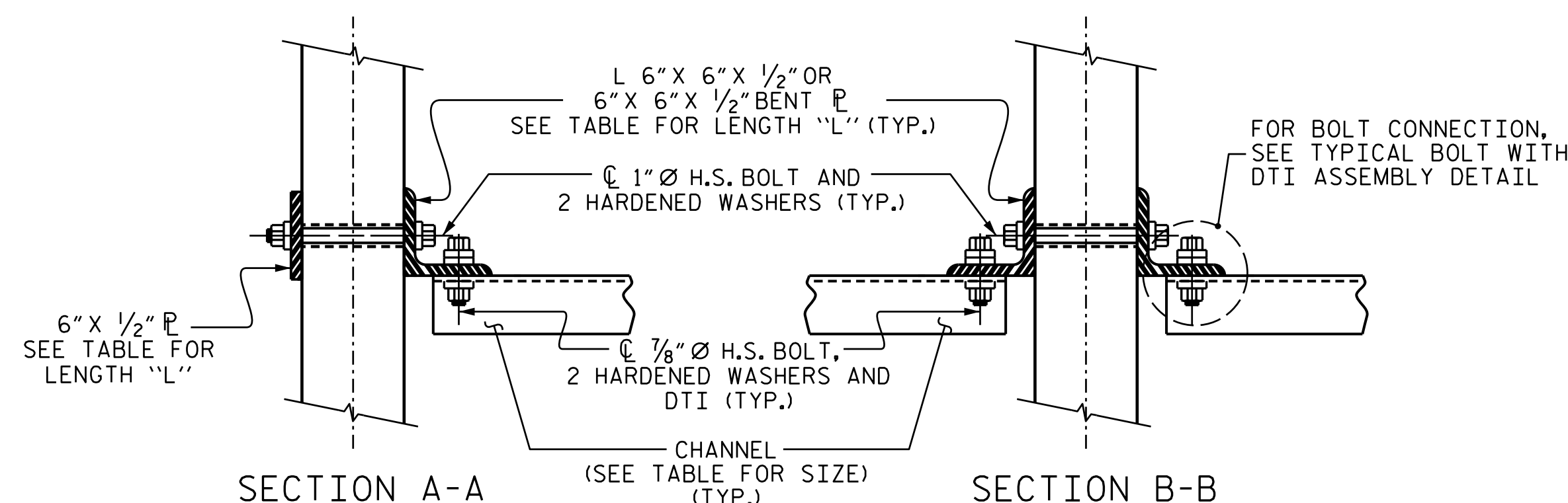
PLATE DETAILS



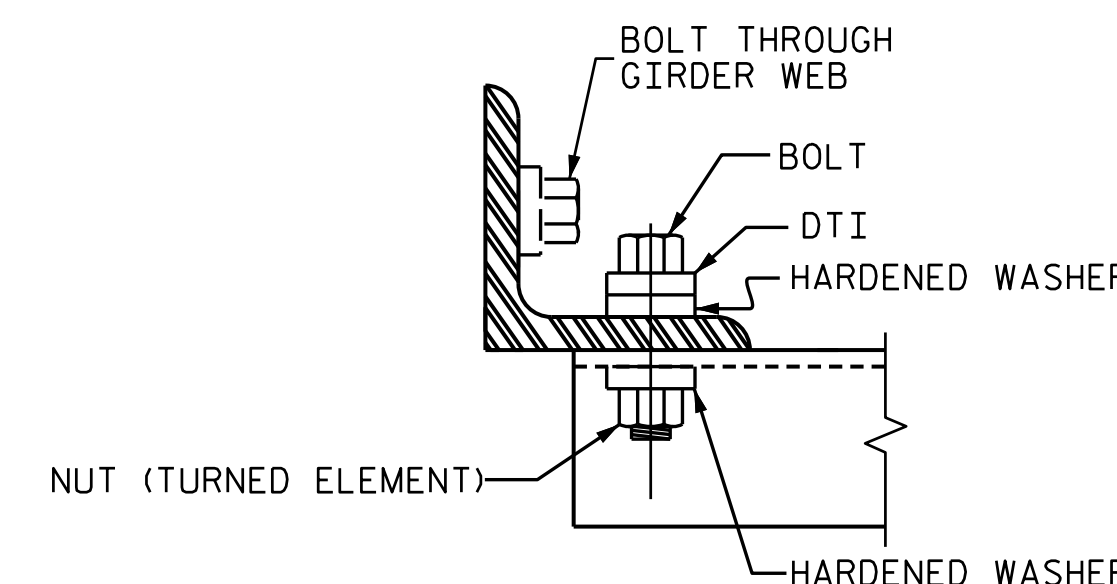
CHANNEL END

TABLE

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



CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. B-5239
ALAMANCE COUNTY
STATION: 16+34.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

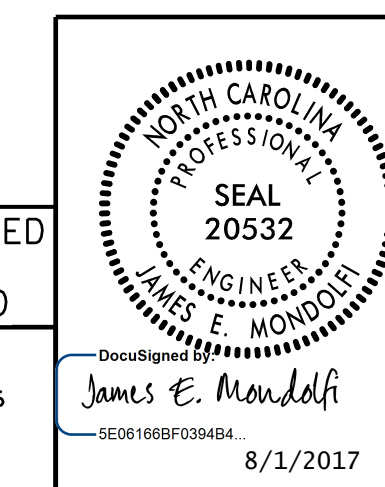
INTERMEDIATE
STEEL DIAPHRAGMS
FOR TYPE III
PRESTRESSED CONCRETE
GIRDERS

REVISIONS

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

SHEET NO.
S01-18
TOTAL SHEETS
39

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PLANS PREPARED BY:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
(919) 552-2253
www.mottmac.com
LICENSE NO. F-0669



11/15/2017 11:19 AM
 C:\Users\119_Hey_River\Plans\B-5239-SMU-L4_000119.dgn
 9:27:09 AM

DRAWN BY: J. T. WILLIAMS DATE: 11-2014
 CHECKED BY: J. E. MONDOLFI DATE: 11-2014
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 11-2014

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.

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

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

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

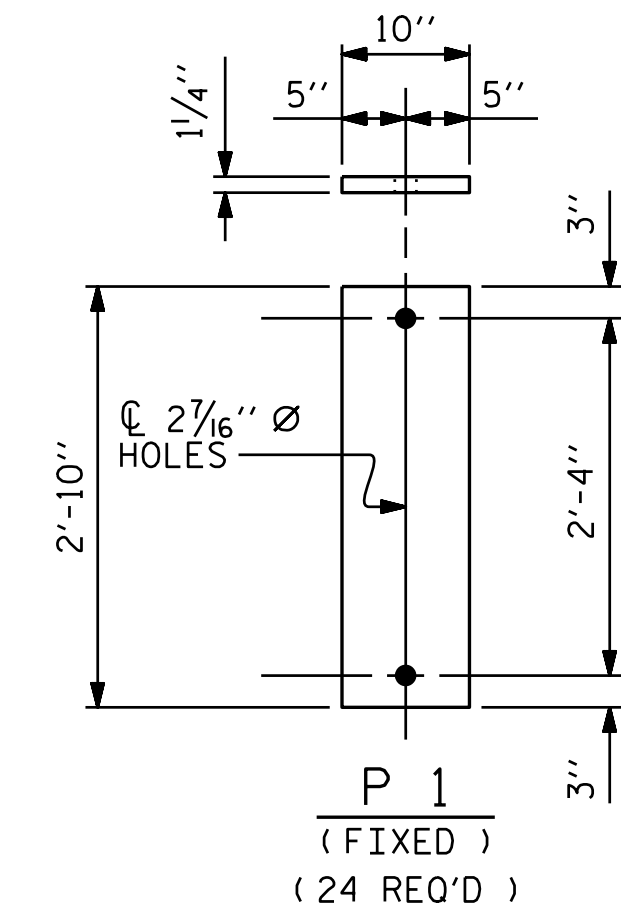
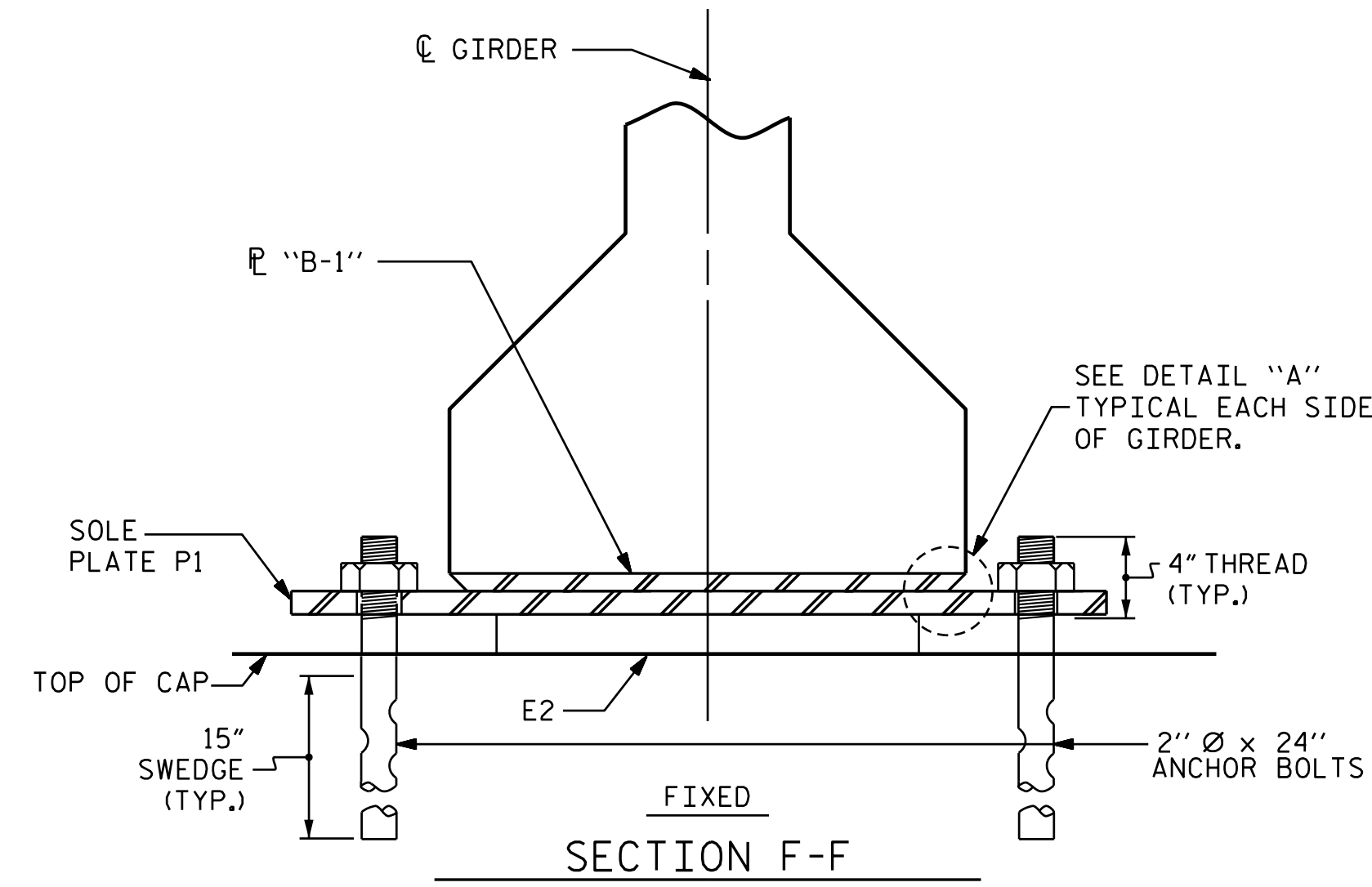
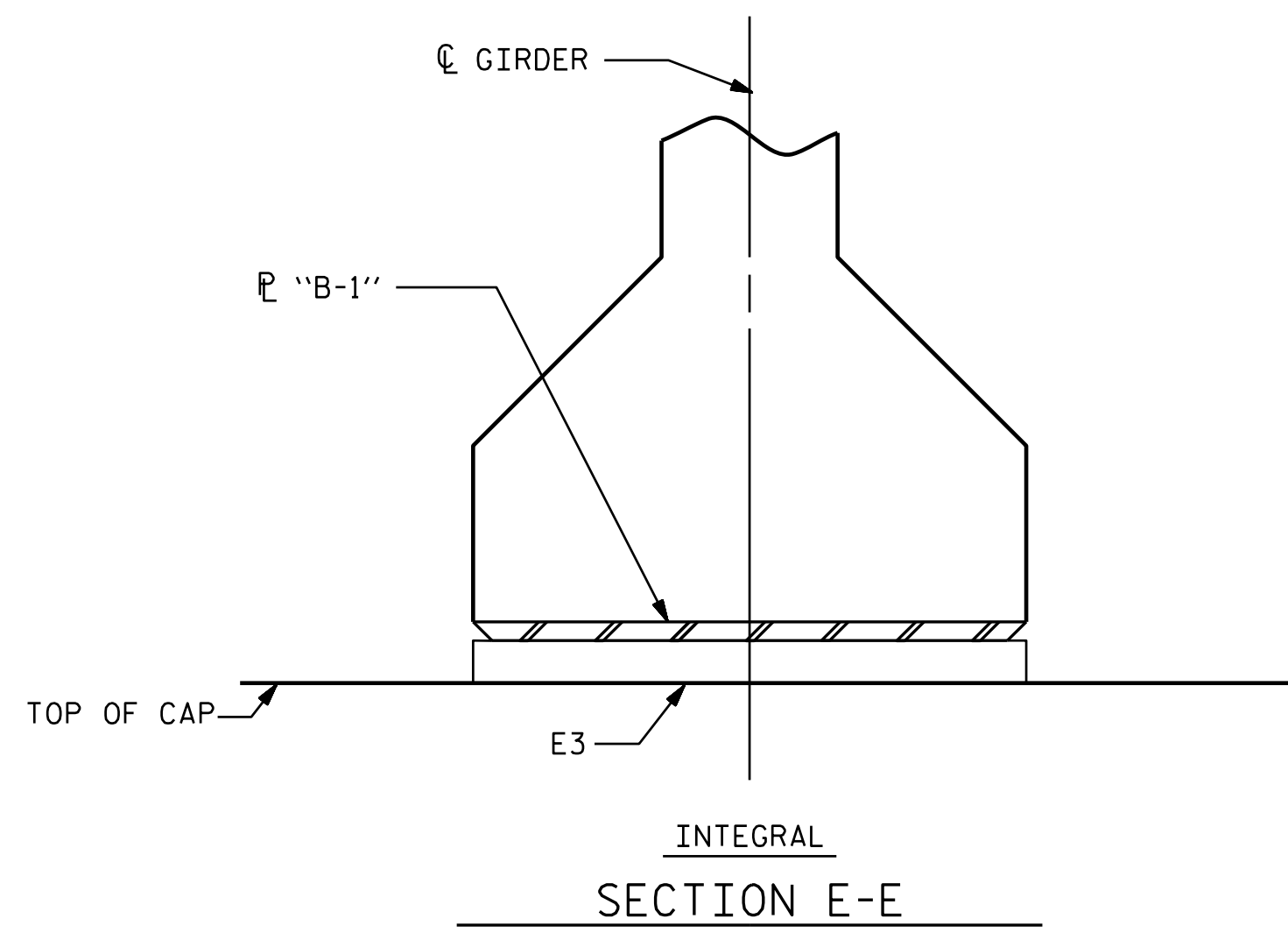
SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLTS AND NUTS. SHOP INSPECTION IS REQUIRED.

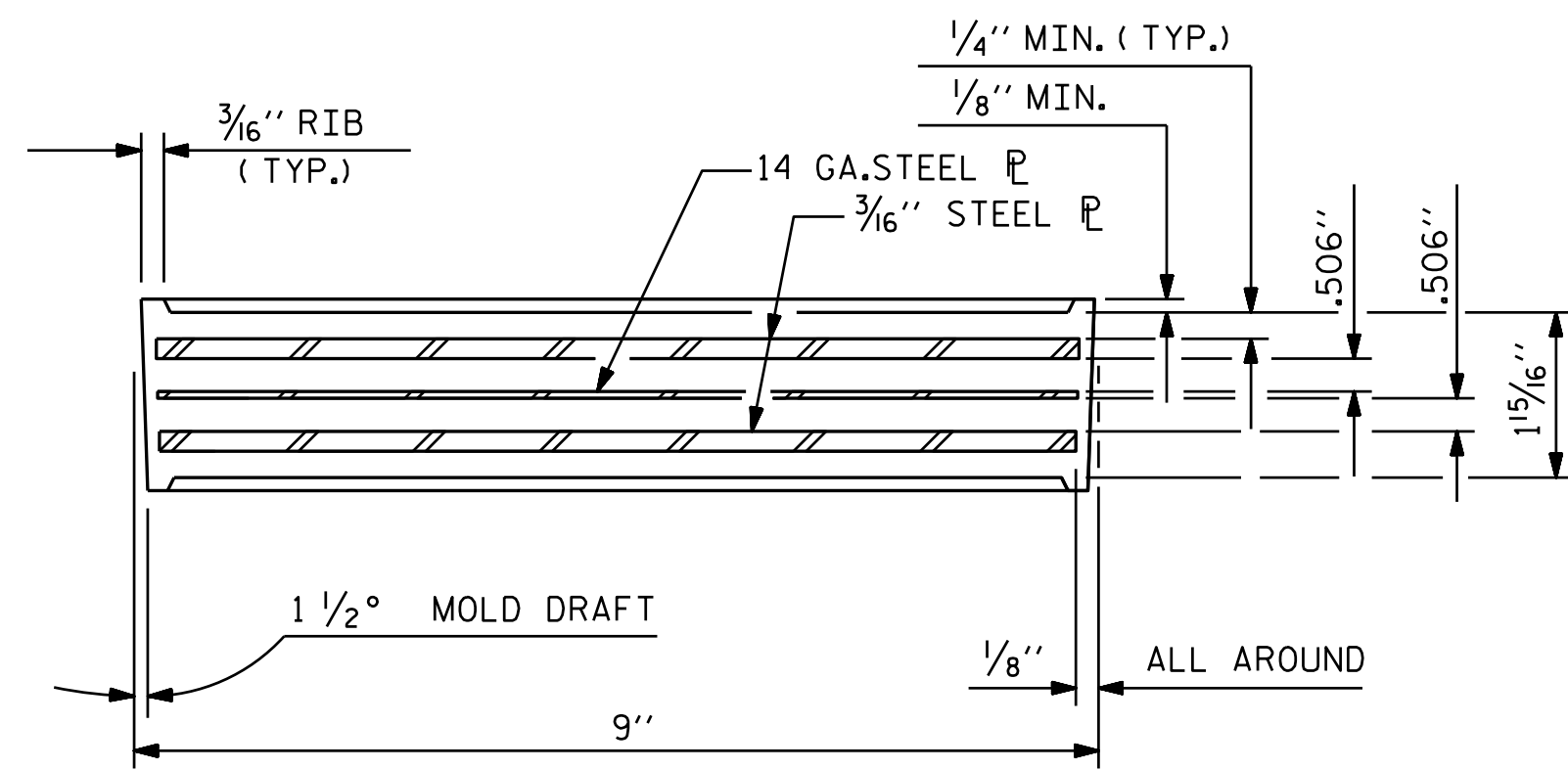
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

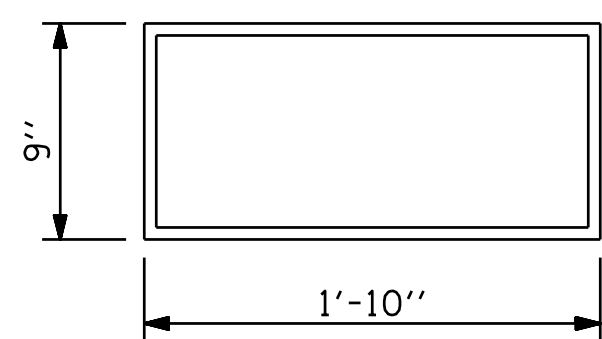
FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.



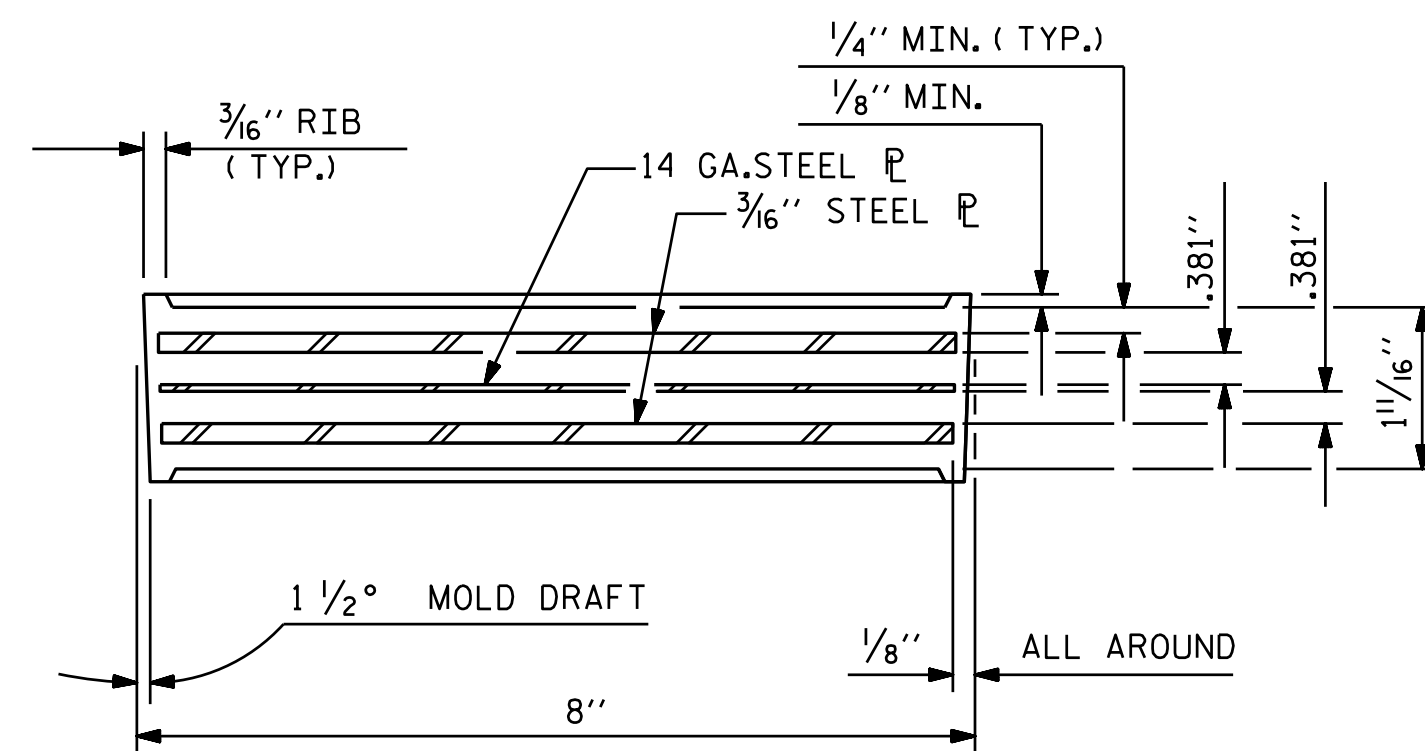
SOLE PLATE DETAILS (P1)



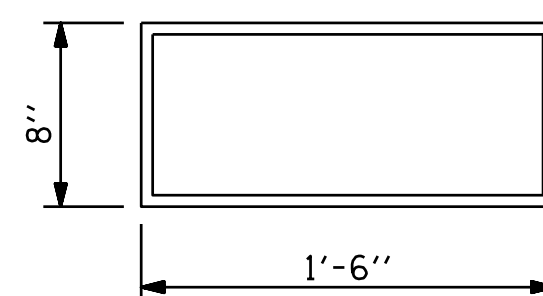
TYPICAL SECTION OF ELASTOMERIC BEARINGS



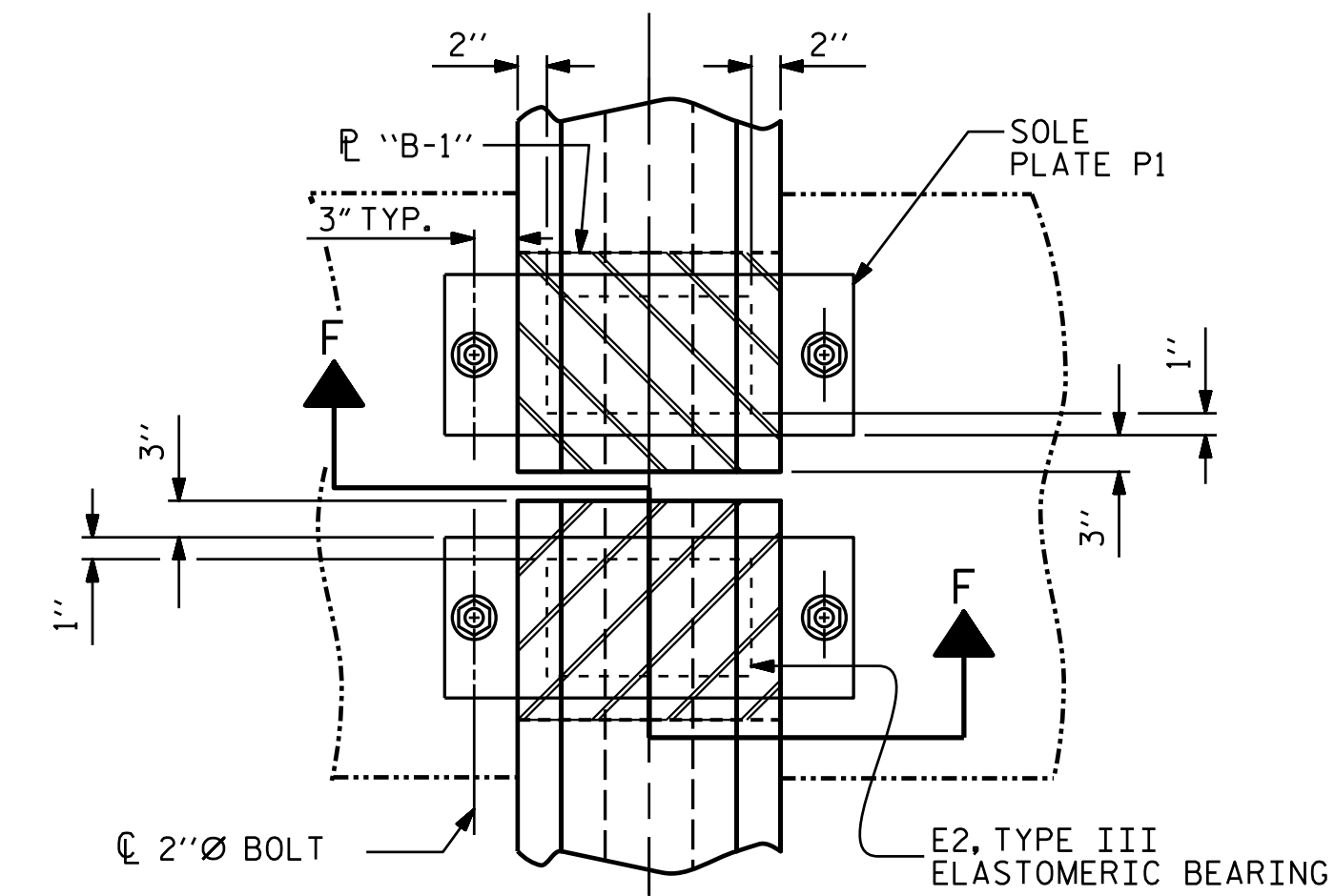
E3 (8 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE IV



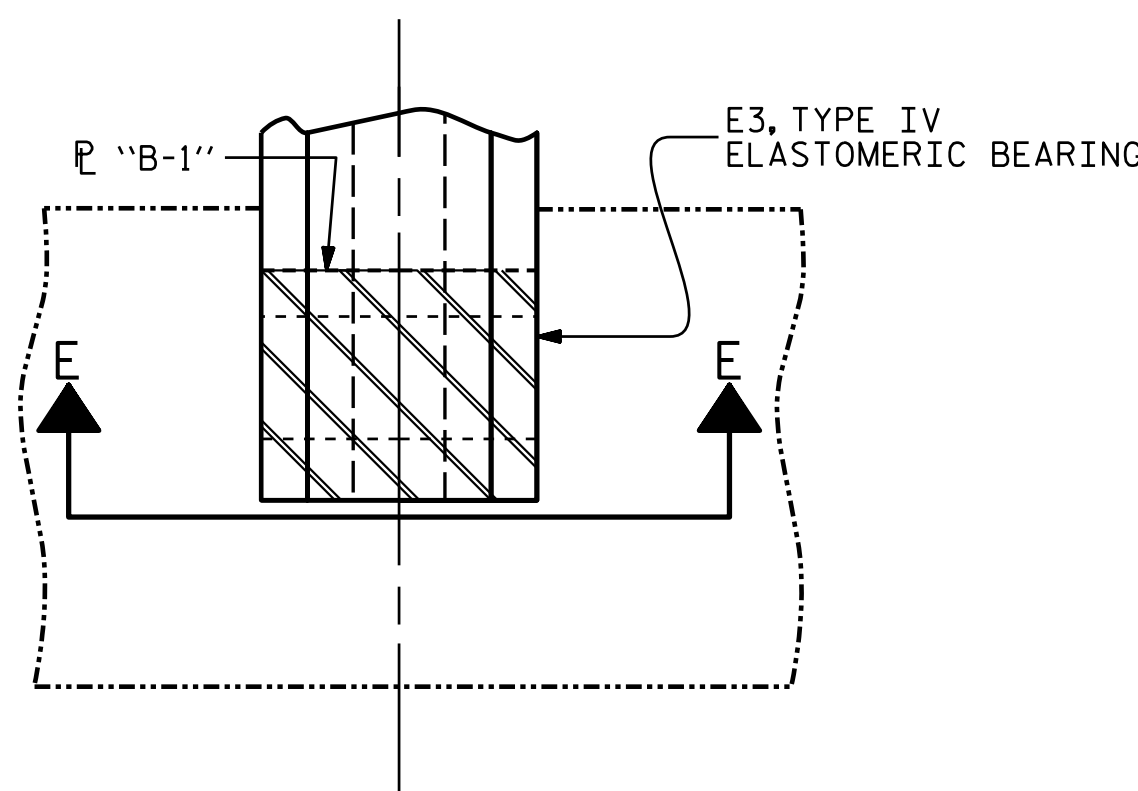
TYPICAL SECTION OF ELASTOMERIC BEARINGS



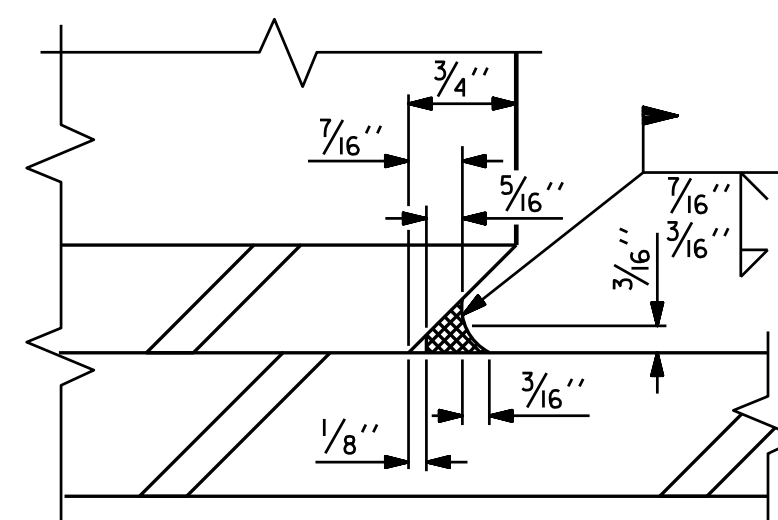
E2 (24 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE III



TYPICAL PLAN @ BENT



TYPICAL PLAN @ END BENT

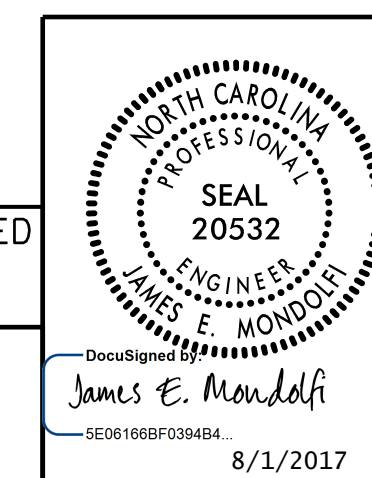


DETAIL "A"

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

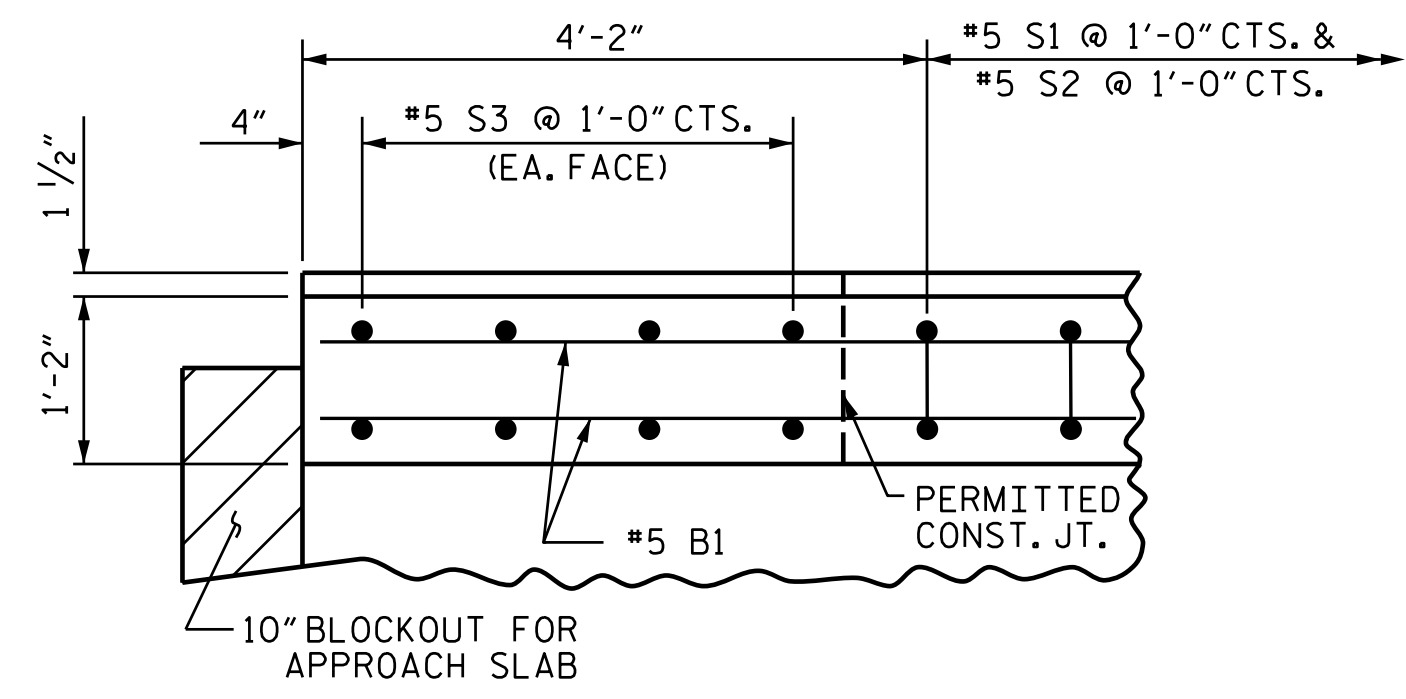
PROJECT NO. B-5239
ALAMANCE COUNTY
STATION: 16+34.50 -L-

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

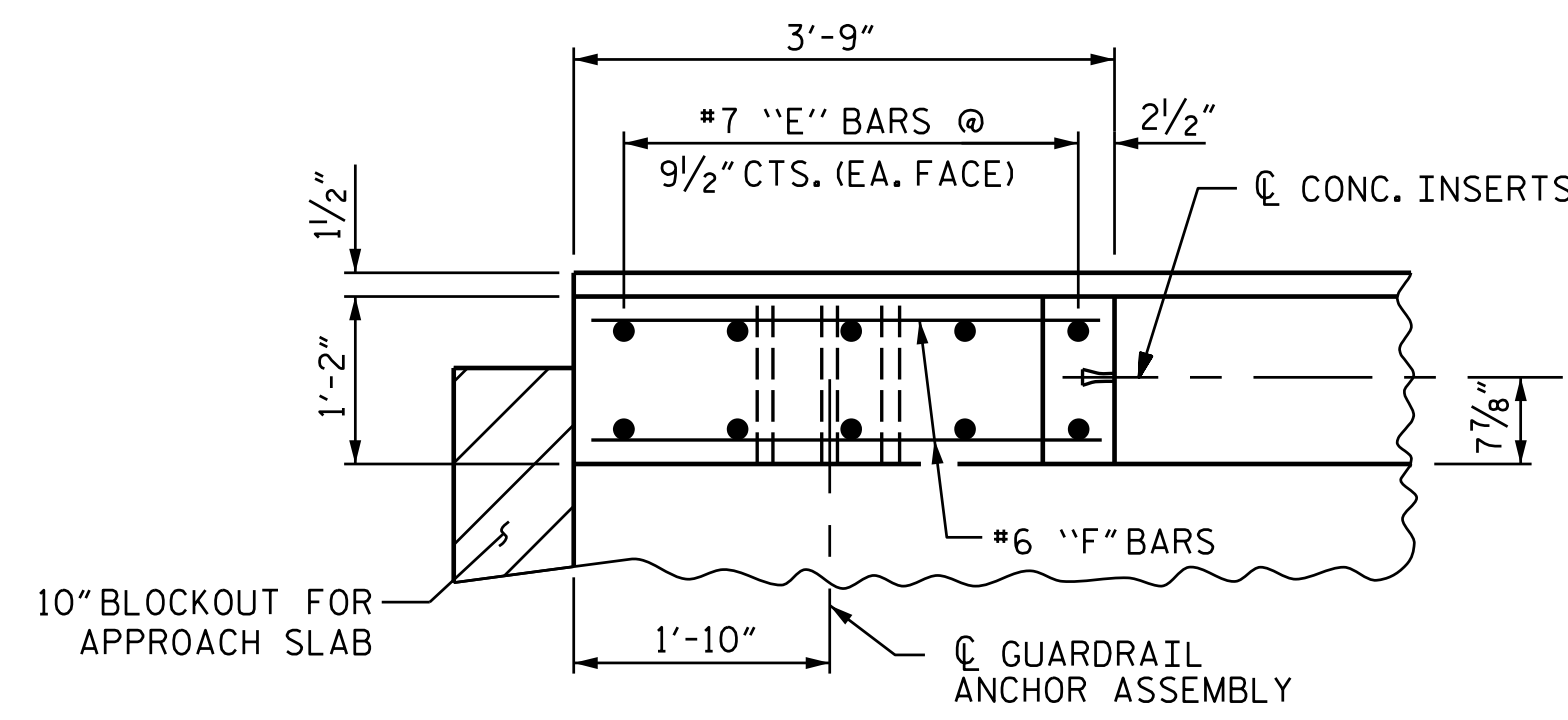


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PLANS PREPARED BY:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
(919) 552-2253
www.mottmac.com
LICENSURE NO. F-0669

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



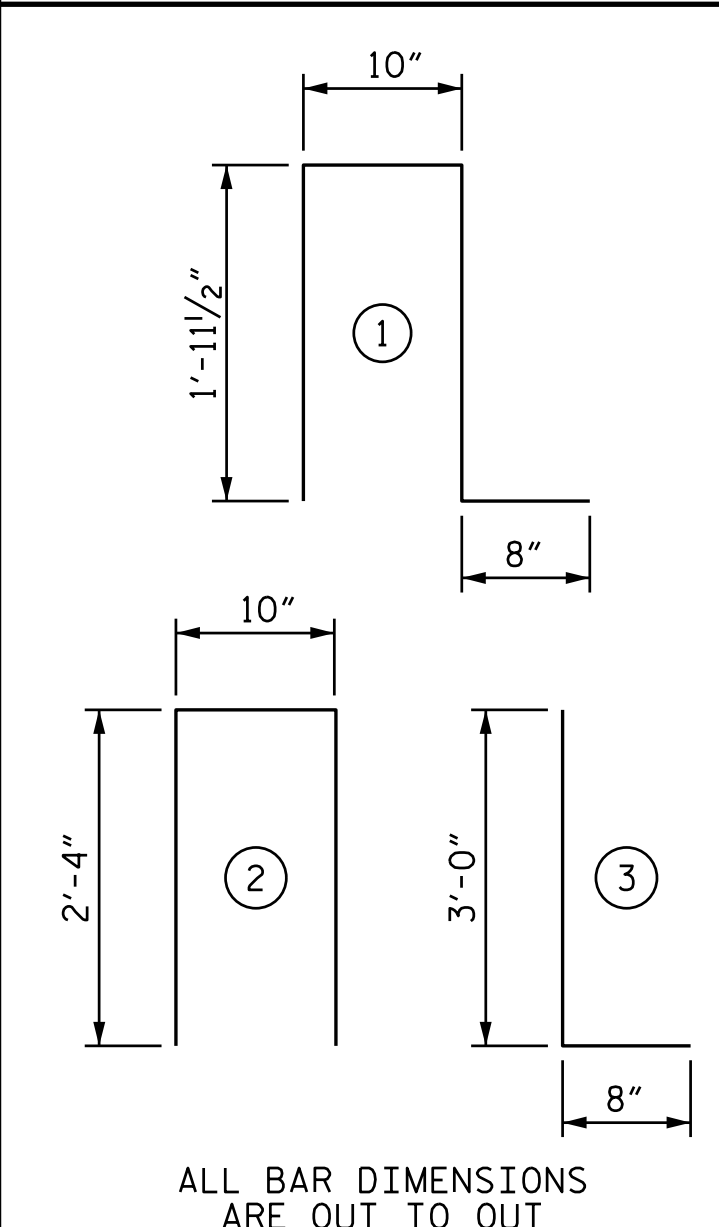
PLAN OF PARAPET



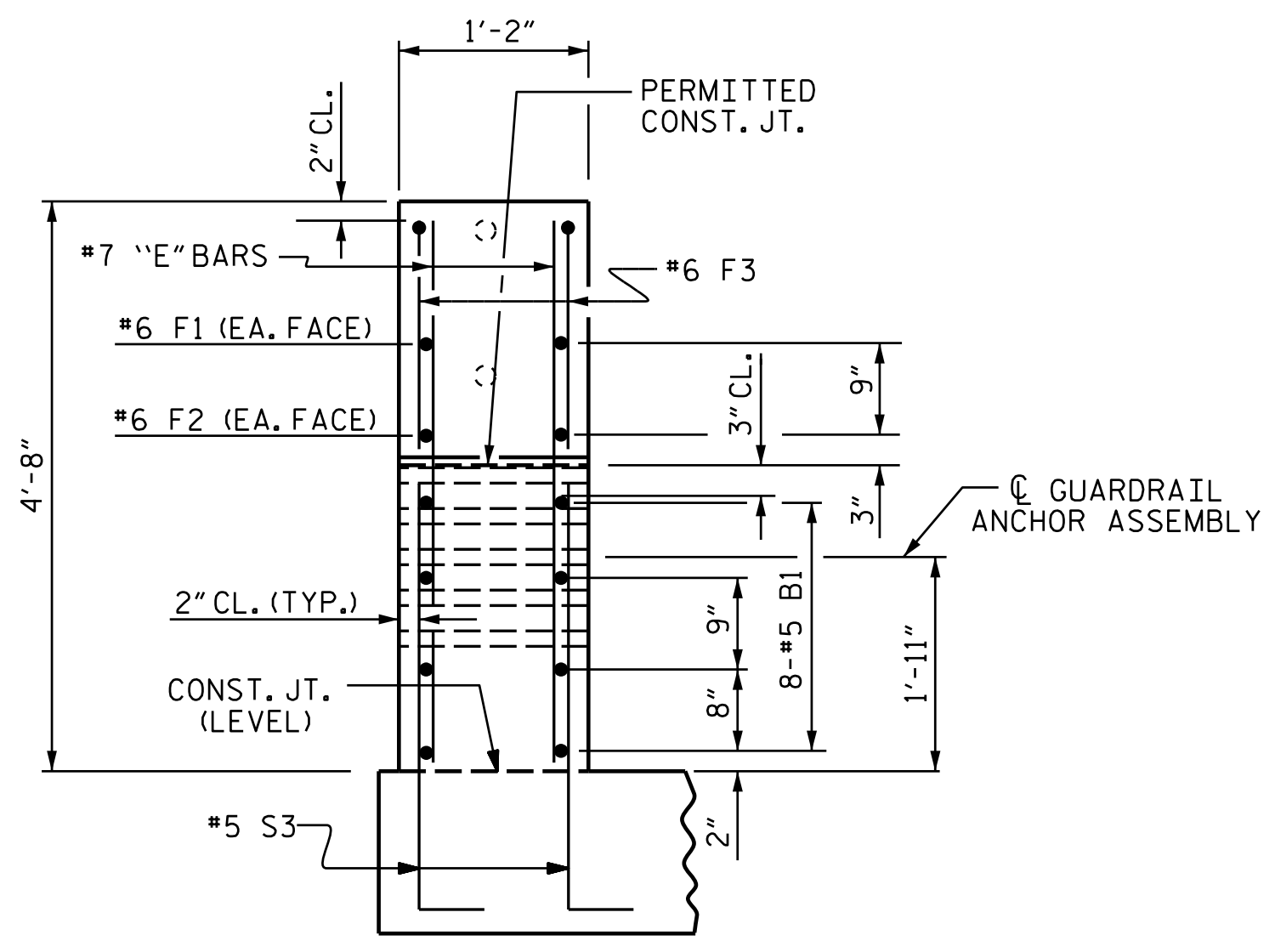
PLAN OF END POST

NOTES:
 ALL REINFORCING STEEL IN PARAPETS AND END POSTS SHALL BE EPOXY COATED.
 FOR DETAIL OF CONCRETE INSERT AND METAL RAIL ANCHOR ASSEMBLY, SEE "RAIL POST SPACINGS AND END OF RAIL DETAIL" SHEET.
 GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.
 PARAPET 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.

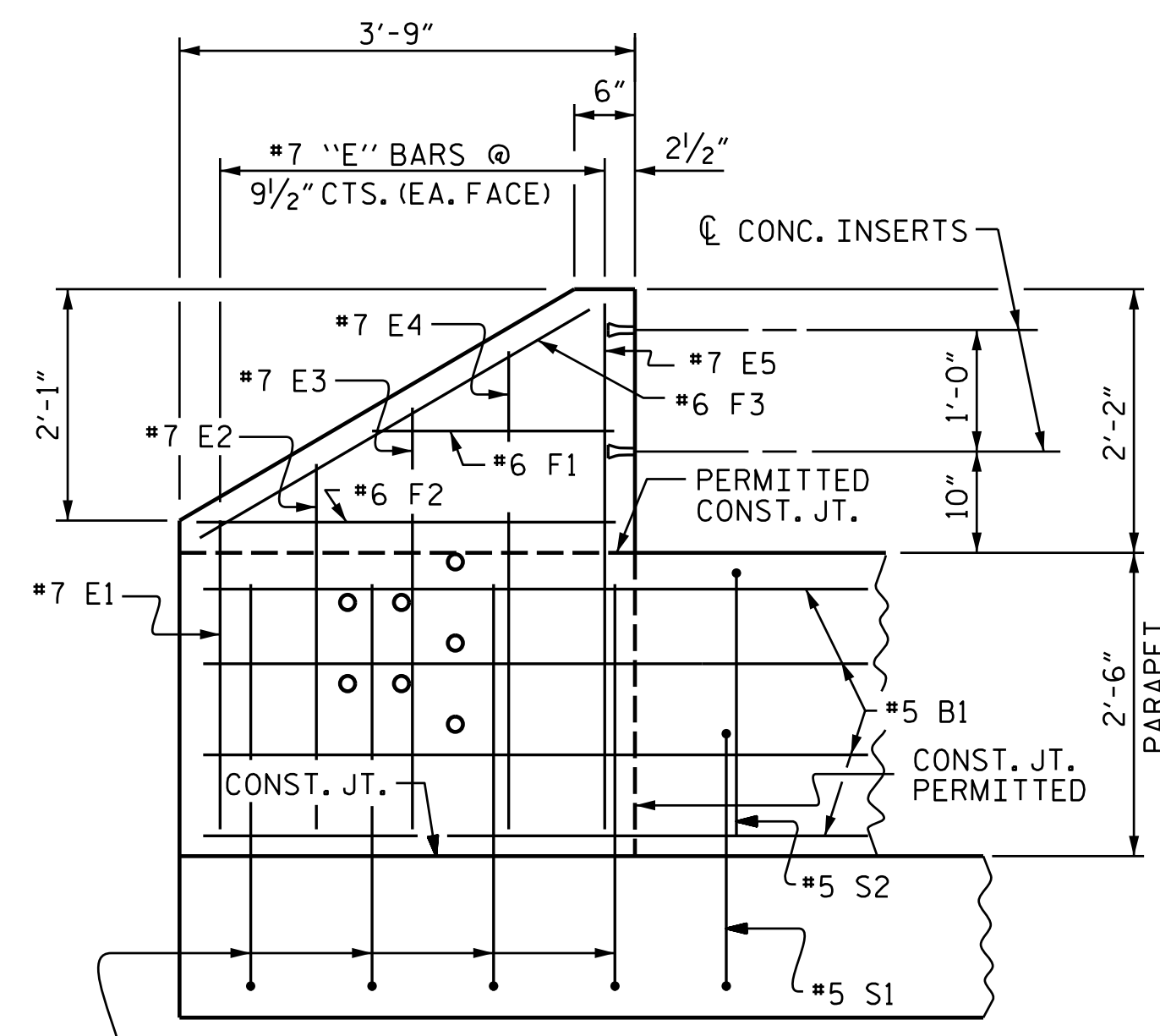
BAR TYPE		BILL OF MATERIAL				
FOR 2 PARAPETS & 4 END POSTS						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* B1	32	#5	STR	22'-10"	762	
* B2	160	#5	STR	23'-3"	3880	
* E1	8	#7	STR	2'-6"	41	
* E2	8	#7	STR	3'-0"	49	
* E3	8	#7	STR	3'-6"	57	
* E4	8	#7	STR	4'-0"	65	
* E5	8	#7	STR	4'-4"	71	
* F1	8	#6	STR	1'-10"	22	
* F2	8	#6	STR	3'-0"	36	
* F3	8	#6	STR	3'-7"	43	
* S1	552	#5	1	5'-5"	3119	
* S2	552	#5	2	5'-6"	3167	
* S3	32	#5	3	3'-8"	122	
* EPOXY COATED REINFORCING STEEL					11,434 LBS.	
CLASS AA CONCRETE					62.2 CU. YDS.	
1'-2" X 2'-6" CONCRETE PARAPET					566.67 LIN. FT.	



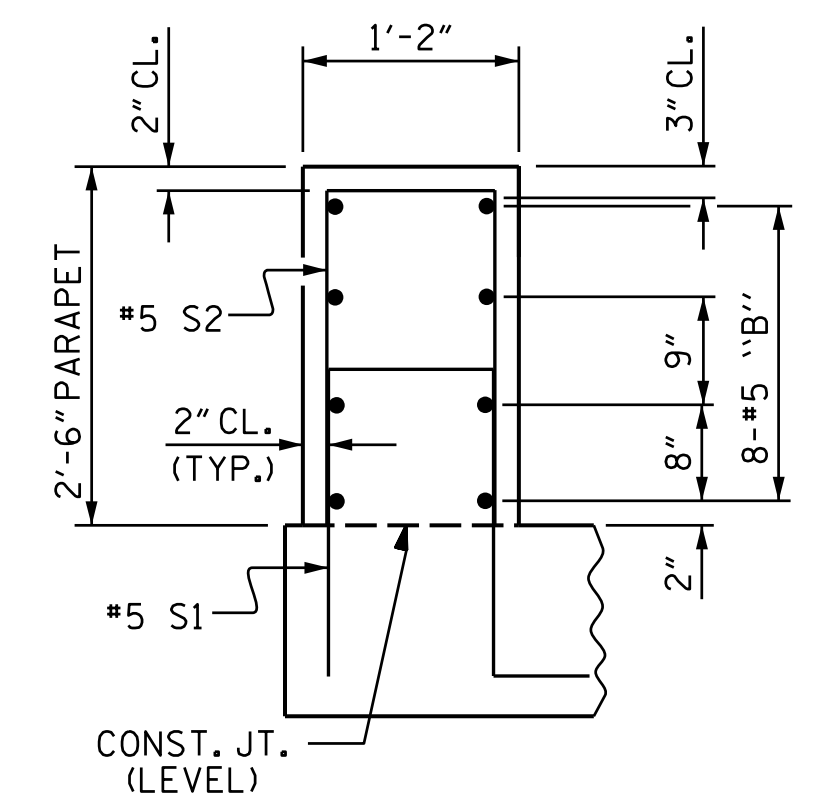
ALL BAR DIMENSIONS ARE OUT TO OUT



END VIEW

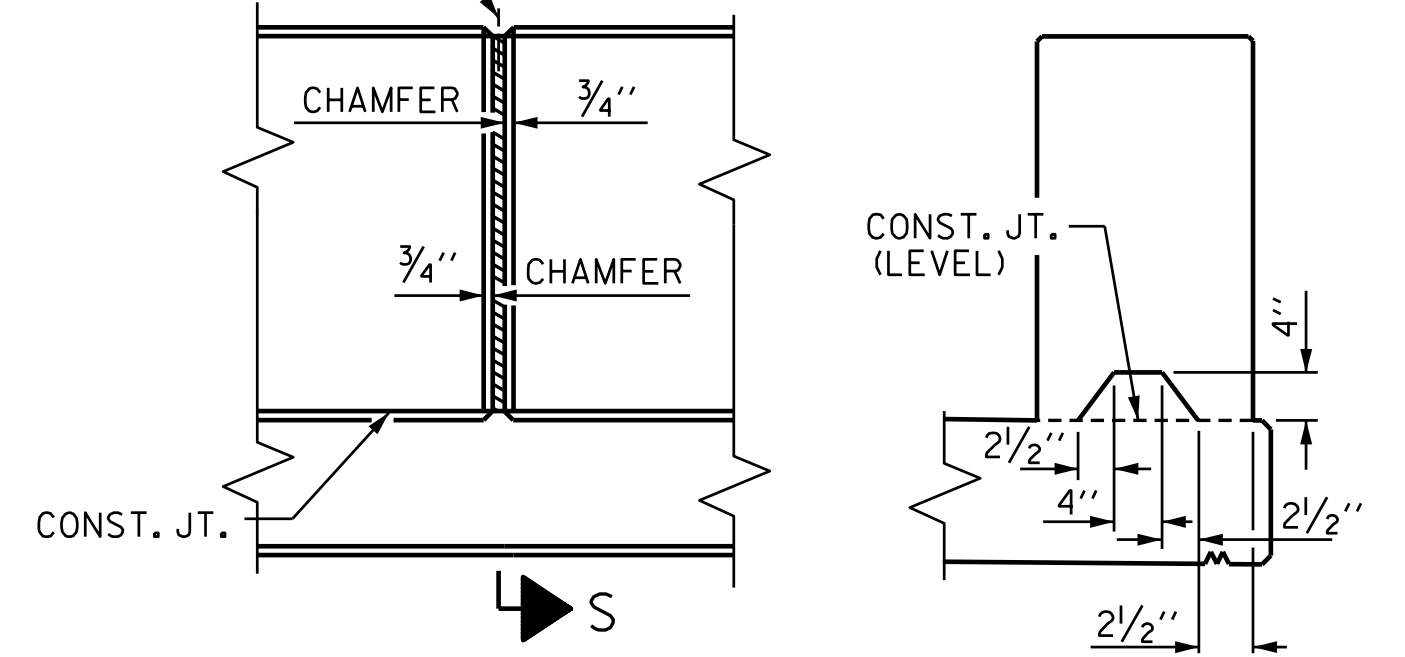


ELEVATION



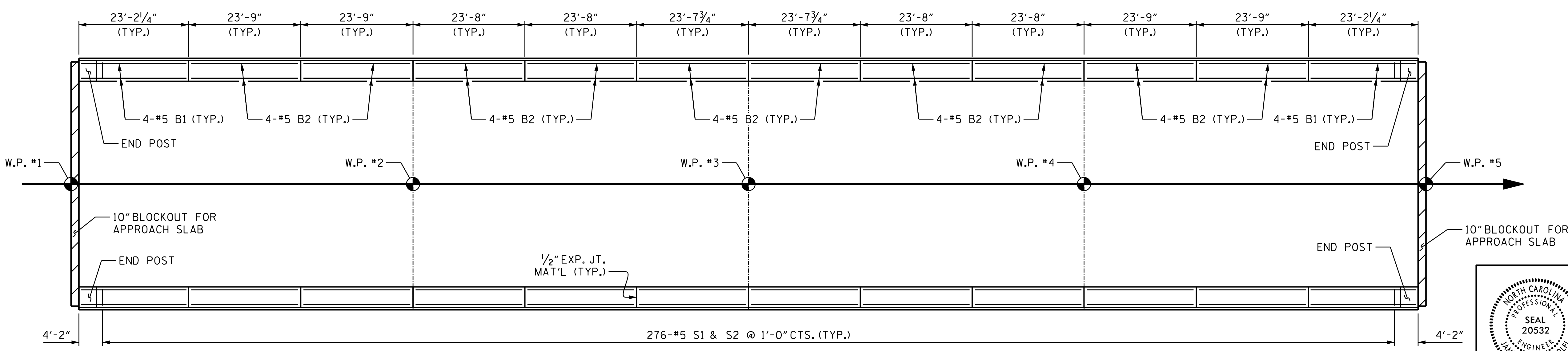
SECTION THROUGH PARAPET

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



ELEVATION AT EXPANSION JOINTS

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

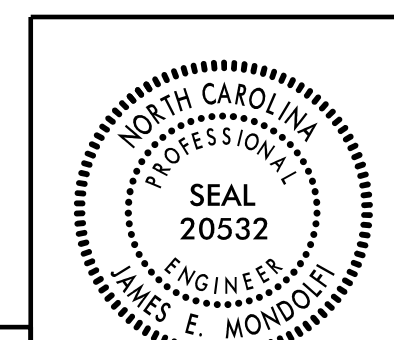


PLAN OF PARAPET

PROJECT NO. B-5239
 ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CONCRETE PARAPET
 AND END POST
 DETAILS



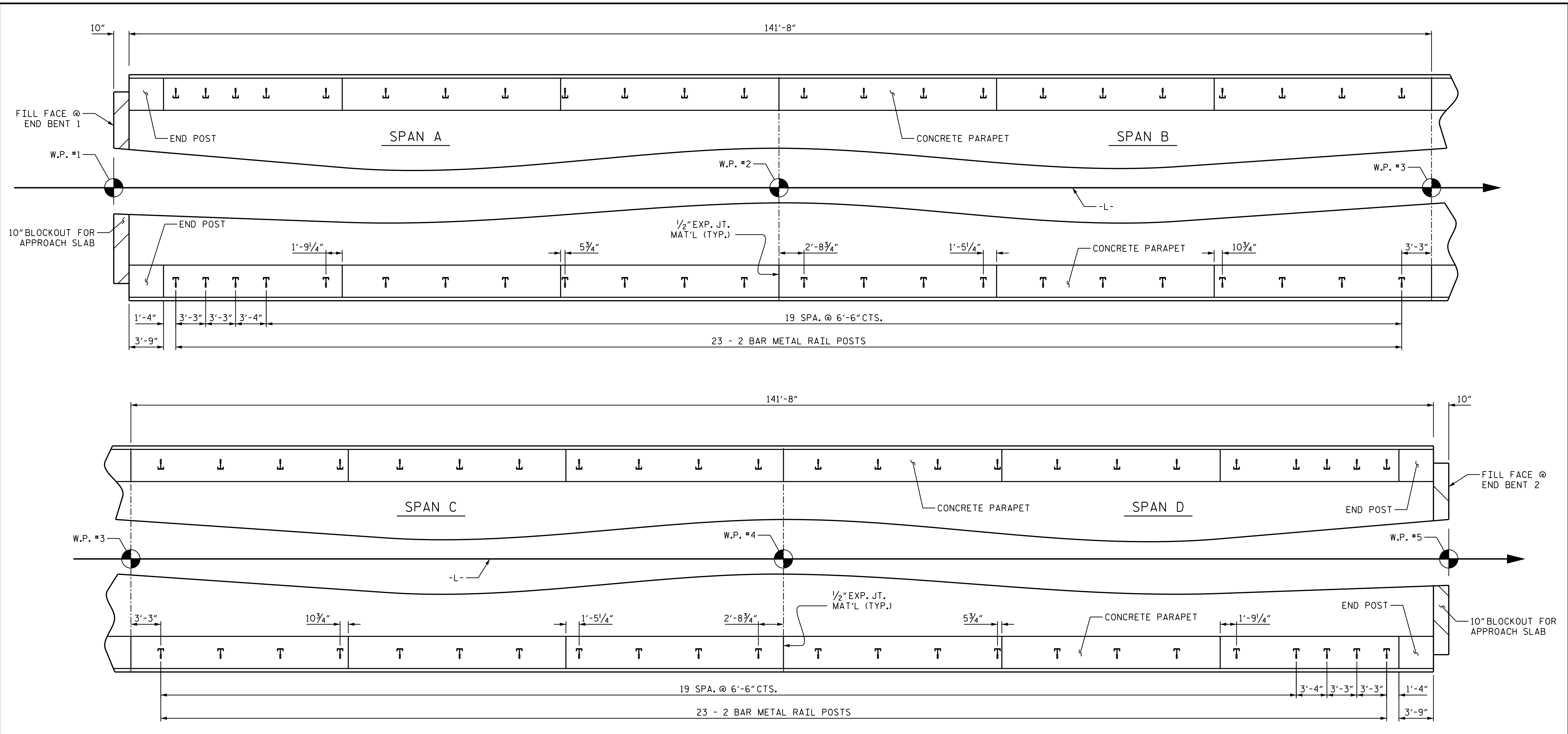
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-20	
1			3			TOTAL SHEETS	
2			4			39	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
 MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

11/27/2015 9:27:13 AM
 C:\Users\119_Her_River\Plans\B-5239_SNU_2MR_000119.dgn

DRAWN BY: J. T. WILLIAMS DATE: 11-2014
 CHECKED BY: J. E. MONDOLFI DATE: 11-2014
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 11-2014



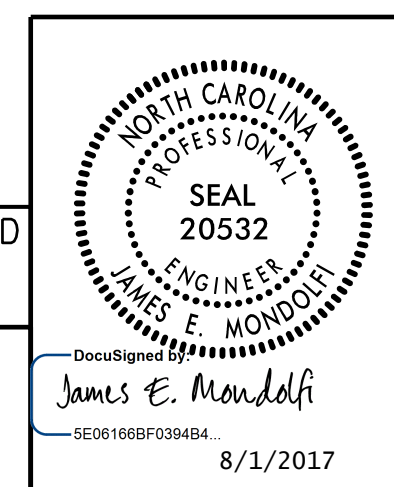
PLAN OF RAIL POST SPACINGS

DIMENSIONS ARE TYPICAL EACH SIDE

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 1'-2" X 2'-6" CONCRETE
 PARAPET AND RAIL
 POST SPACINGS



DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

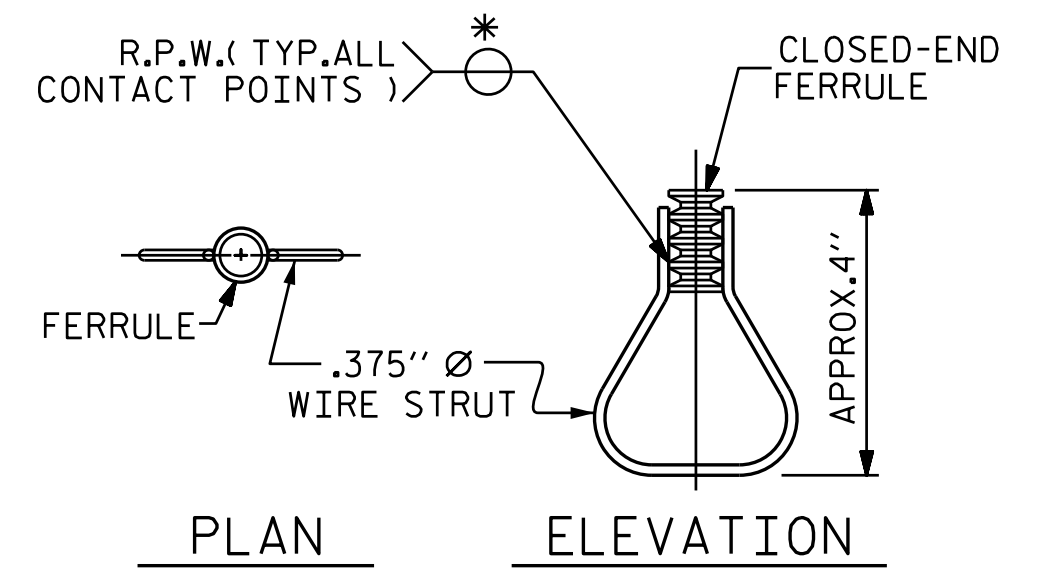
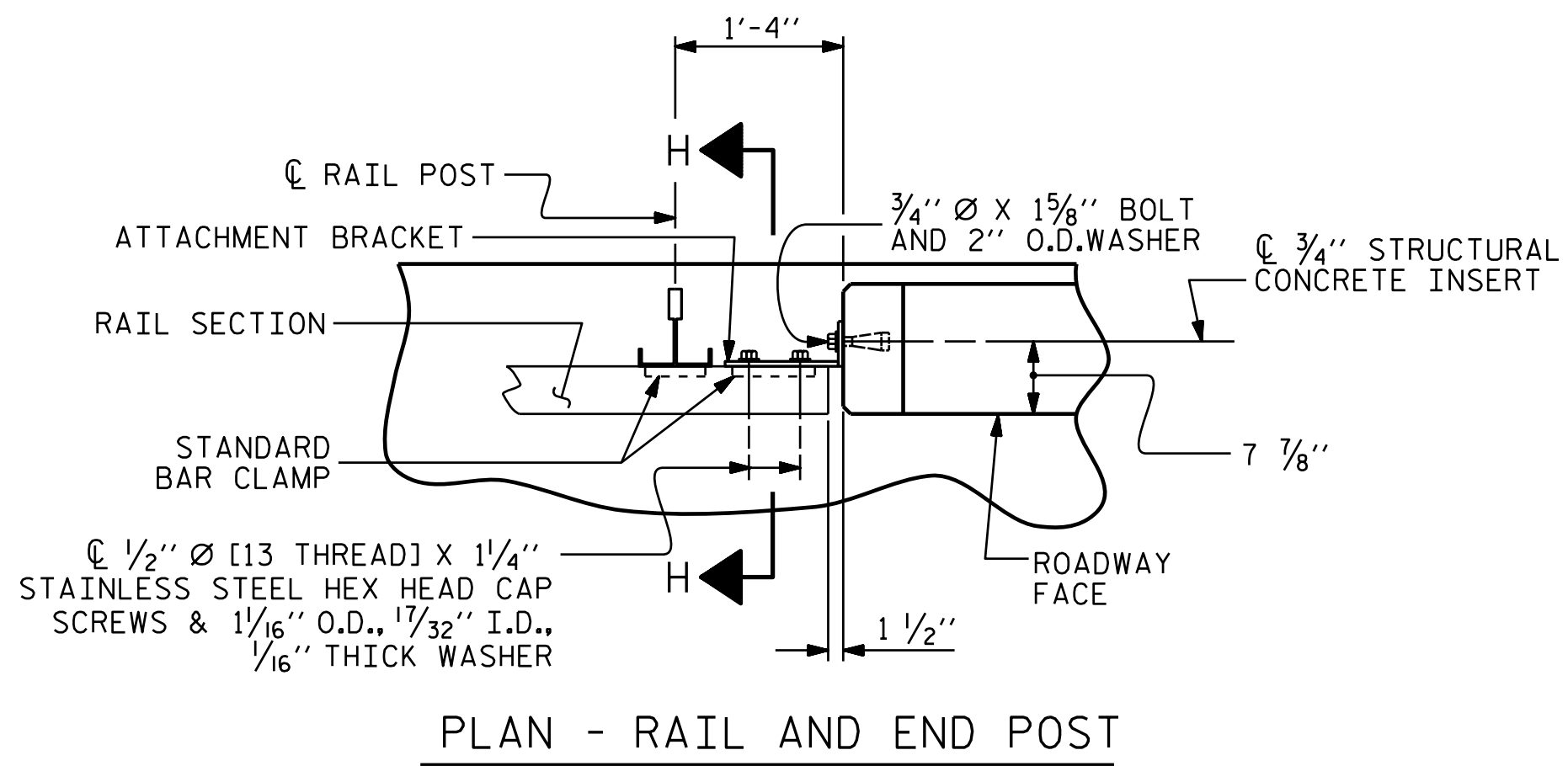
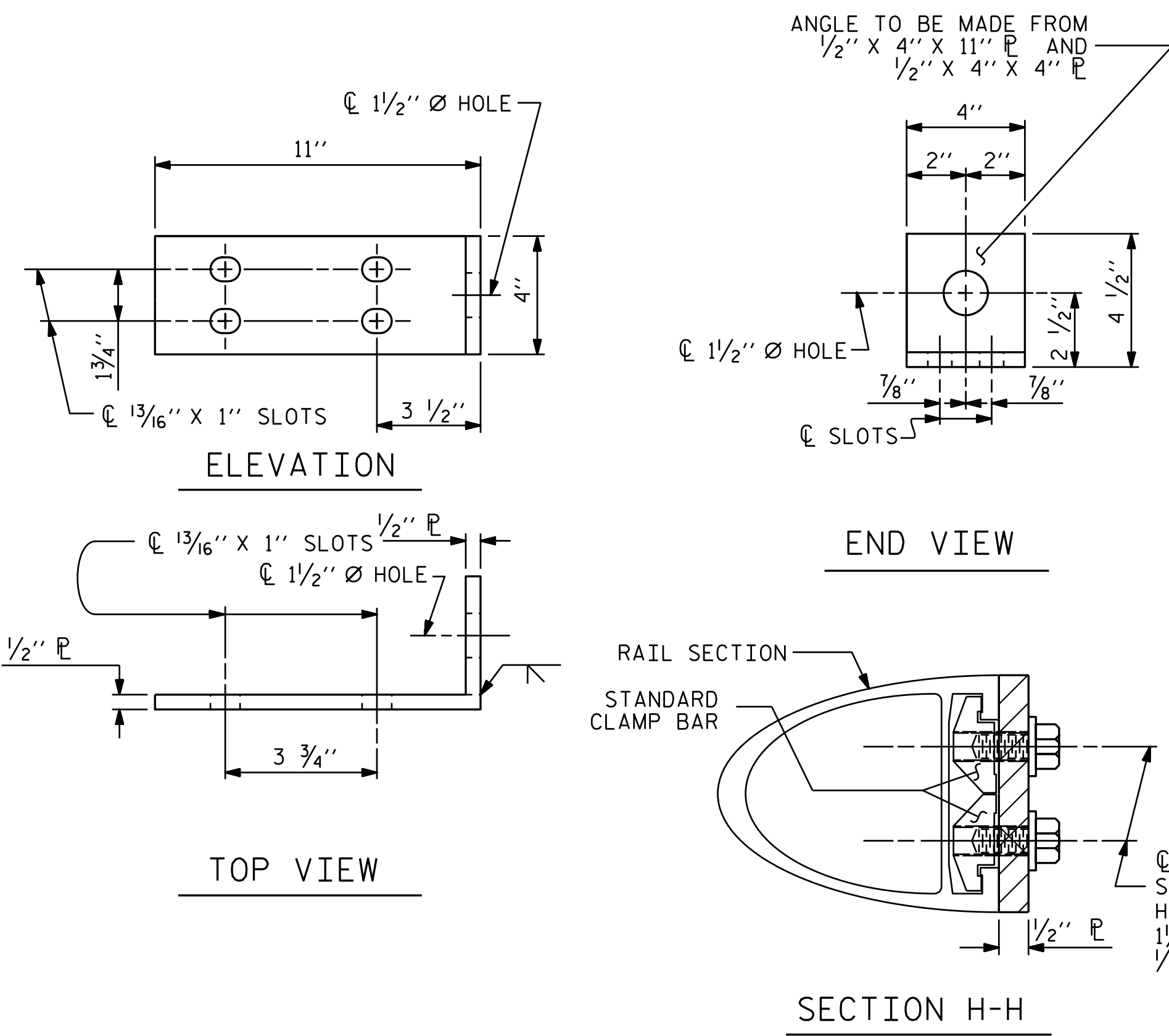
PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-21	
1			3			TOTAL SHEETS	
2			4			39	

157077
 C:\Users\119_Hey_River\My Documents\Plans\B-5239_SMU_2MR_000119.dgn
 8/1/2015 9:27:14 AM

DRAWN BY: J. T. WILLIAMS DATE: 6-2015
 CHECKED BY: J. E. MONDOLFI DATE: 6-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 6-2015

FOR PLAN OF RAIL POST SPACINGS SEE SHEET 2 OF 5



STRUCTURAL CONCRETE INSERT

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

NOTES
 STRUCTURAL CONCRETE INSERT

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

- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
- 1 - 3/4" ϕ X 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" ϕ X 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" ϕ WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES
 METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" ϕ X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" ϕ X 1 5/8" BOLT SHALL HAVE N. C. THREADS.
- CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°.
- STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
- 1/2" ϕ PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

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

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

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

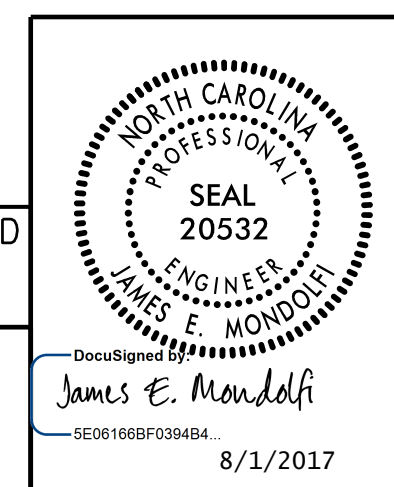
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" ϕ X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" ϕ X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" ϕ X 1 5/8" BOLT SHALL APPLY TO THE 3/4" ϕ X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

RAIL POST SPACINGS AND END OF RAIL DETAILS FOR TWO BAR METAL RAIL



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
 MOTT MACDONALD

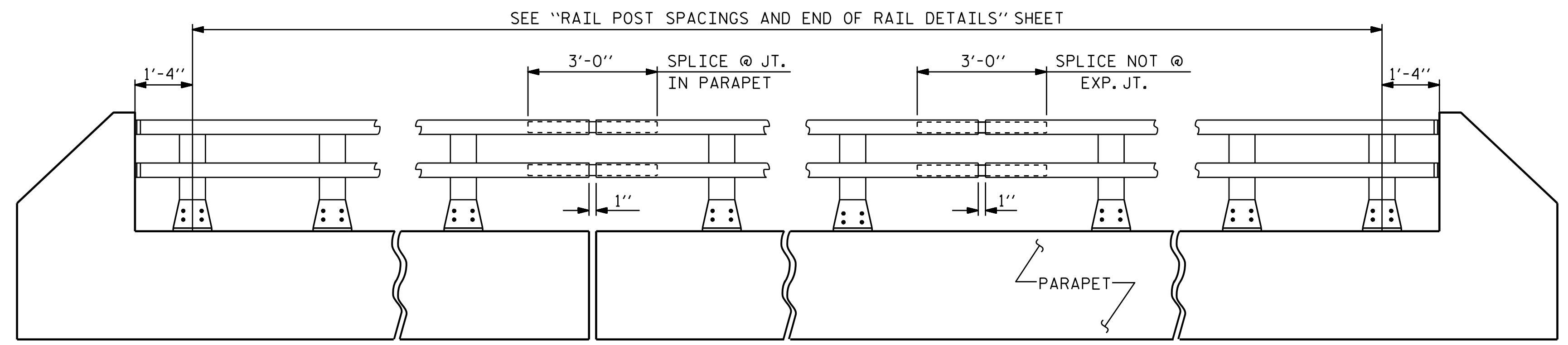
PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

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

11/15/2014 11:19:42 AM
 C:\Users\jwilliams\119_Hwy_R\Projects\B-5239-SMU_2MR_000119.dgn
 9/27/15 AM

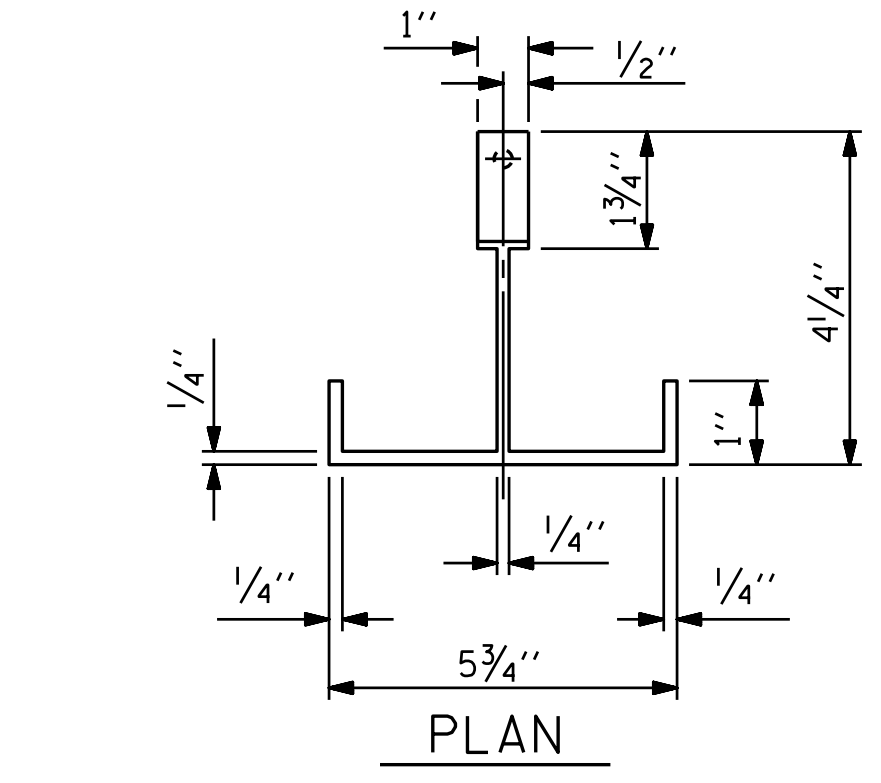
DRAWN BY: J. T. WILLIAMS DATE: 11-2014
 CHECKED BY: J. E. MONDOLFI DATE: 11-2014
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 11-2014

DETAILS FOR ATTACHING METAL RAIL TO END POST

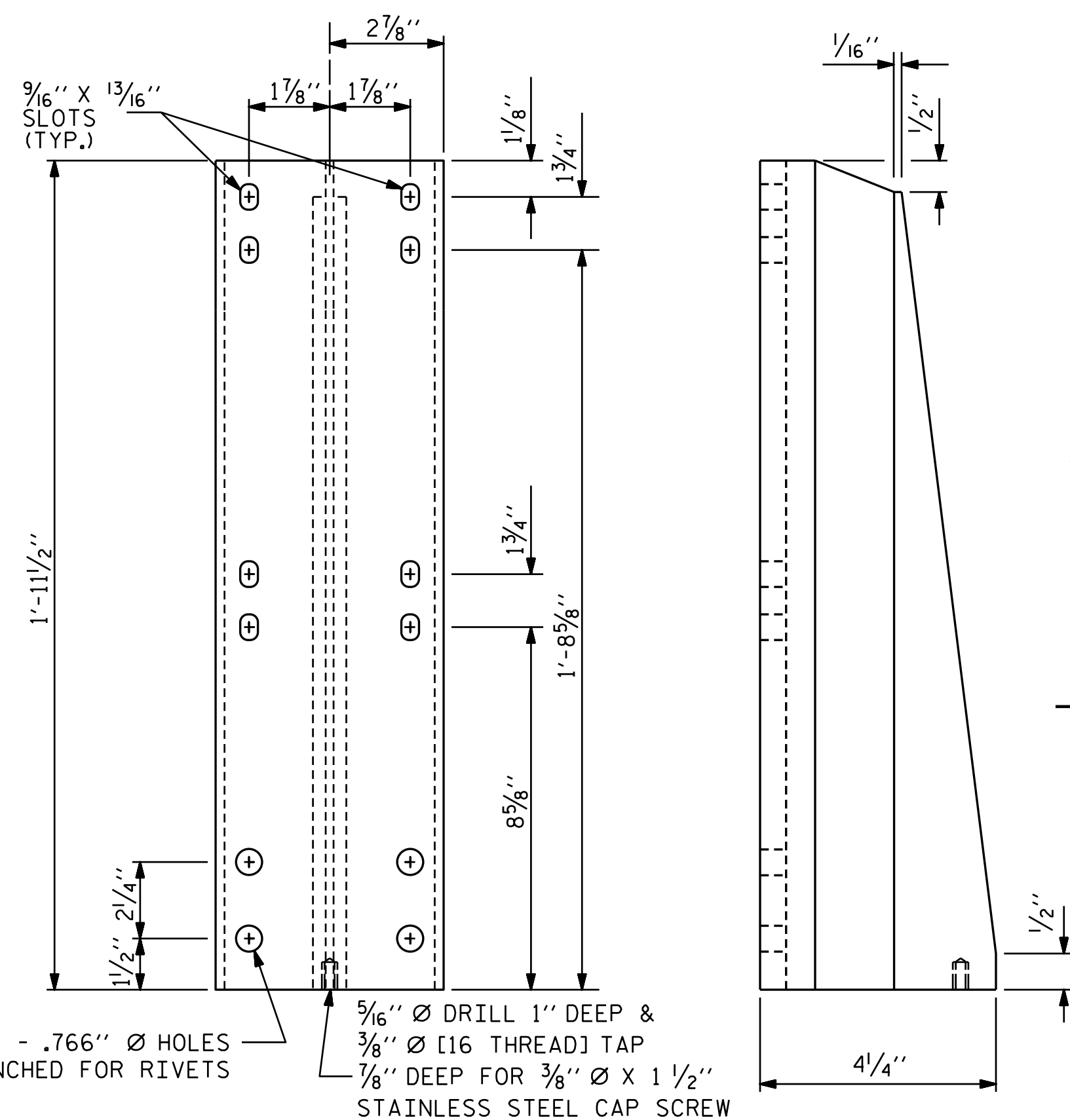


ELEVATION

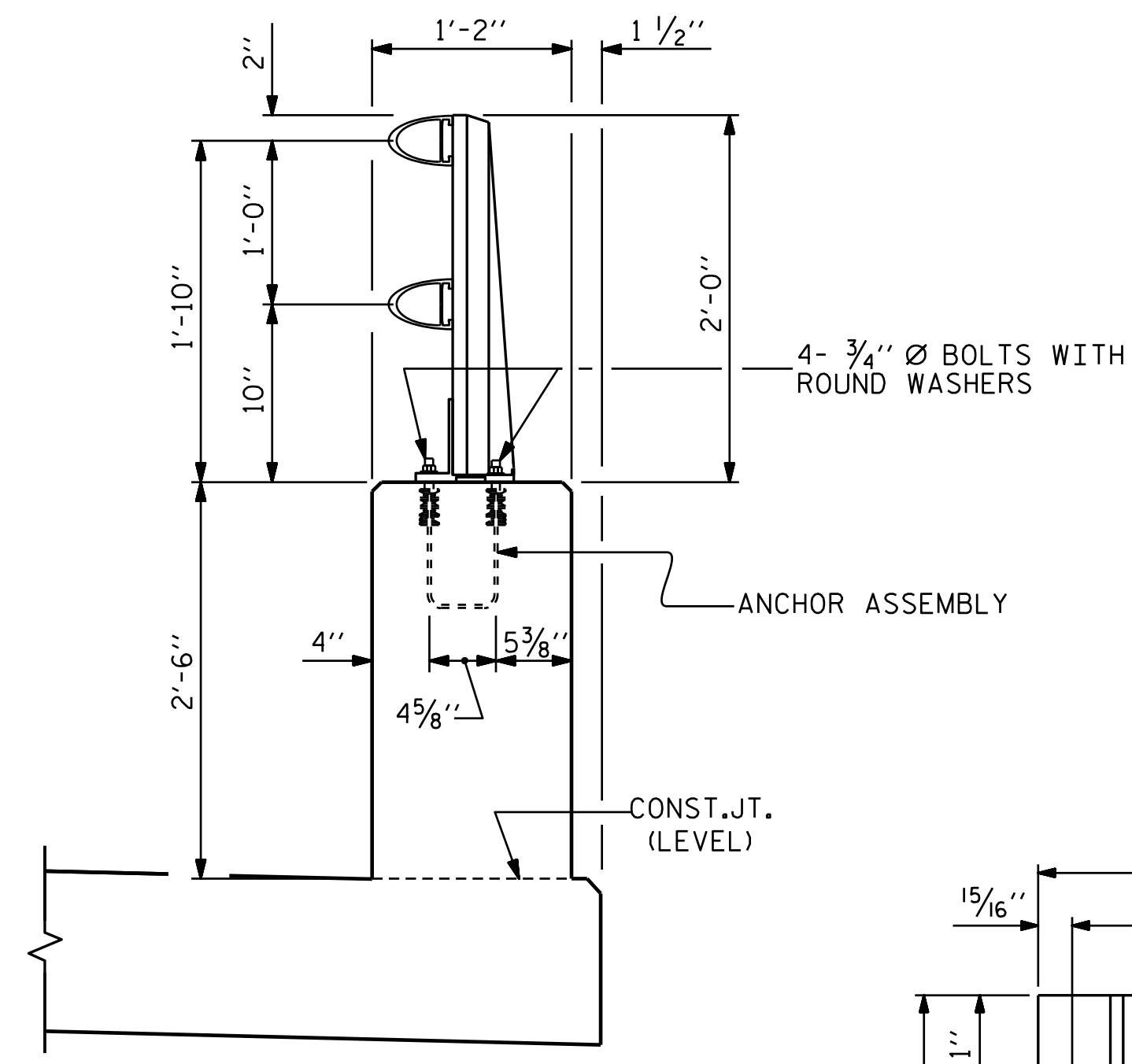
NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET 2 OF 4.



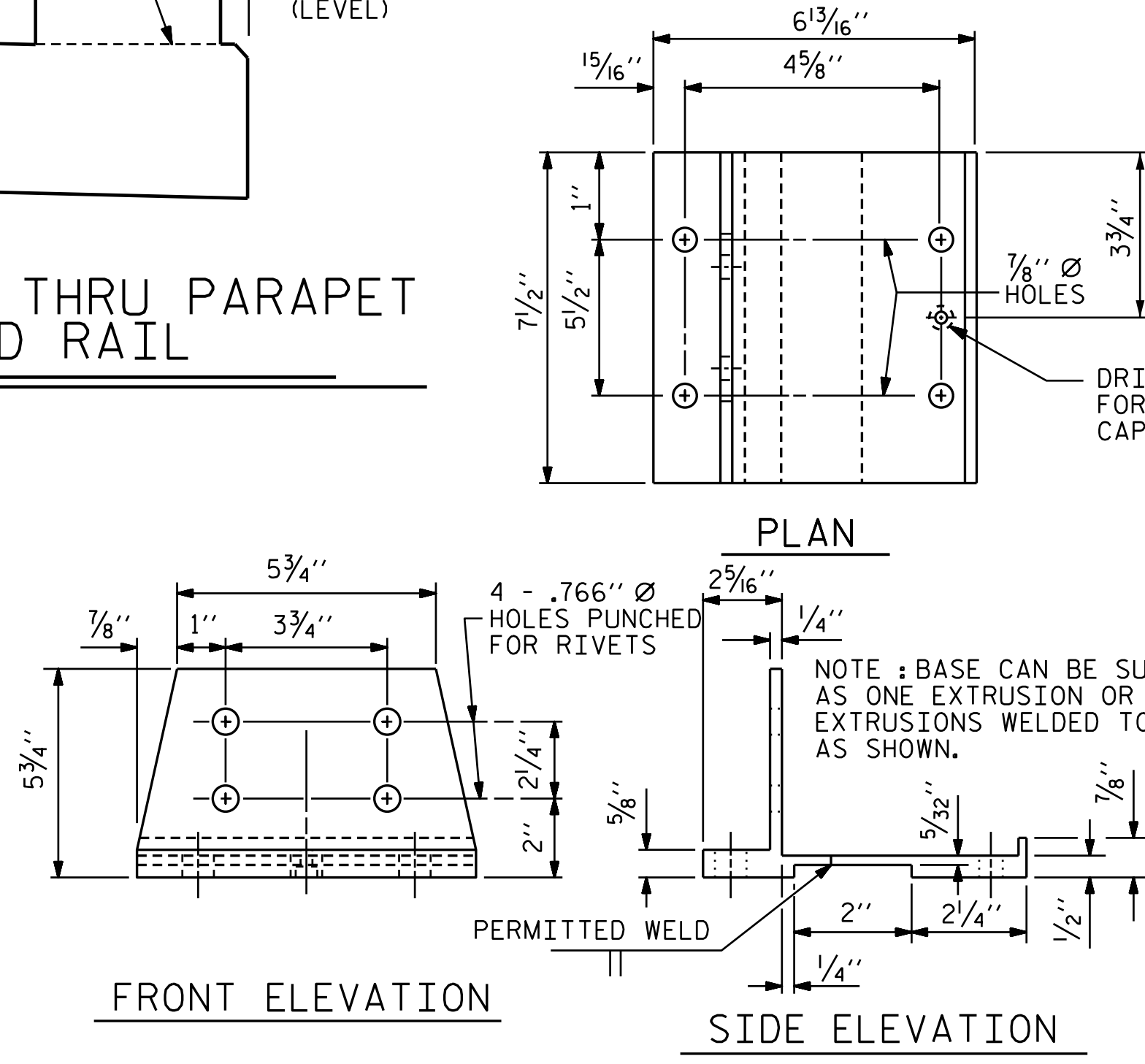
PLAN



FRONT ELEVATION SIDE ELEVATION
DETAILS OF POST

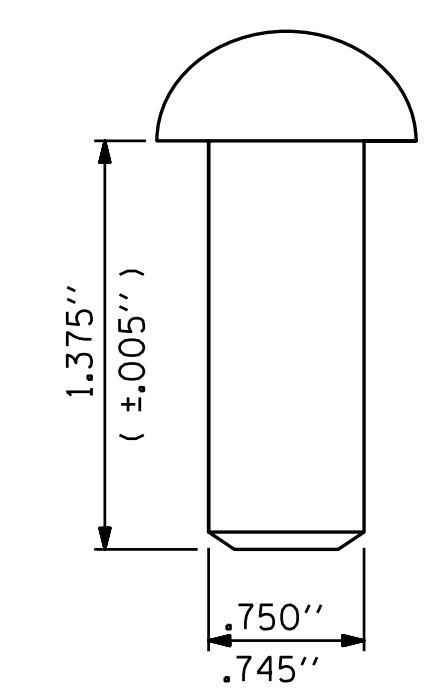


SECTION THRU PARAPET AND RAIL



FRONT ELEVATION SIDE ELEVATION
POST BASE DETAILS

PAY LENGTH = 551.67 LIN. FT.



RIVET DETAIL

NOTES

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

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

ALUMINUM RAILS

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

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

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

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

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

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

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

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

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

GENERAL NOTES

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

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE SHEET 2 OF 4.

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

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

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

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

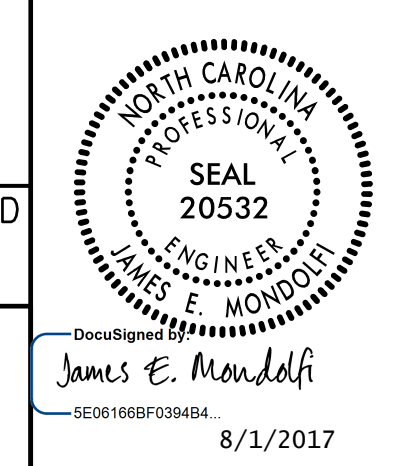
ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

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

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
M MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
919 552-2253
www.mottmac.com
LICENSE NO. F-0669



PROJECT NO. B-5239
ALAMANCE COUNTY
STATION: 16+34.50 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

2 BAR METAL RAIL

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

157077
 8/1/2015 9:27:17 AM
 C:\Users\119_Hey_River\Plans\B-5239_SMU_2MR_000119.dgn

DRAWN BY: J. T. WILLIAMS DATE: 11-2014
 CHECKED BY: J. E. MONDOLFI DATE: 11-2014
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 11-2014

NOTES

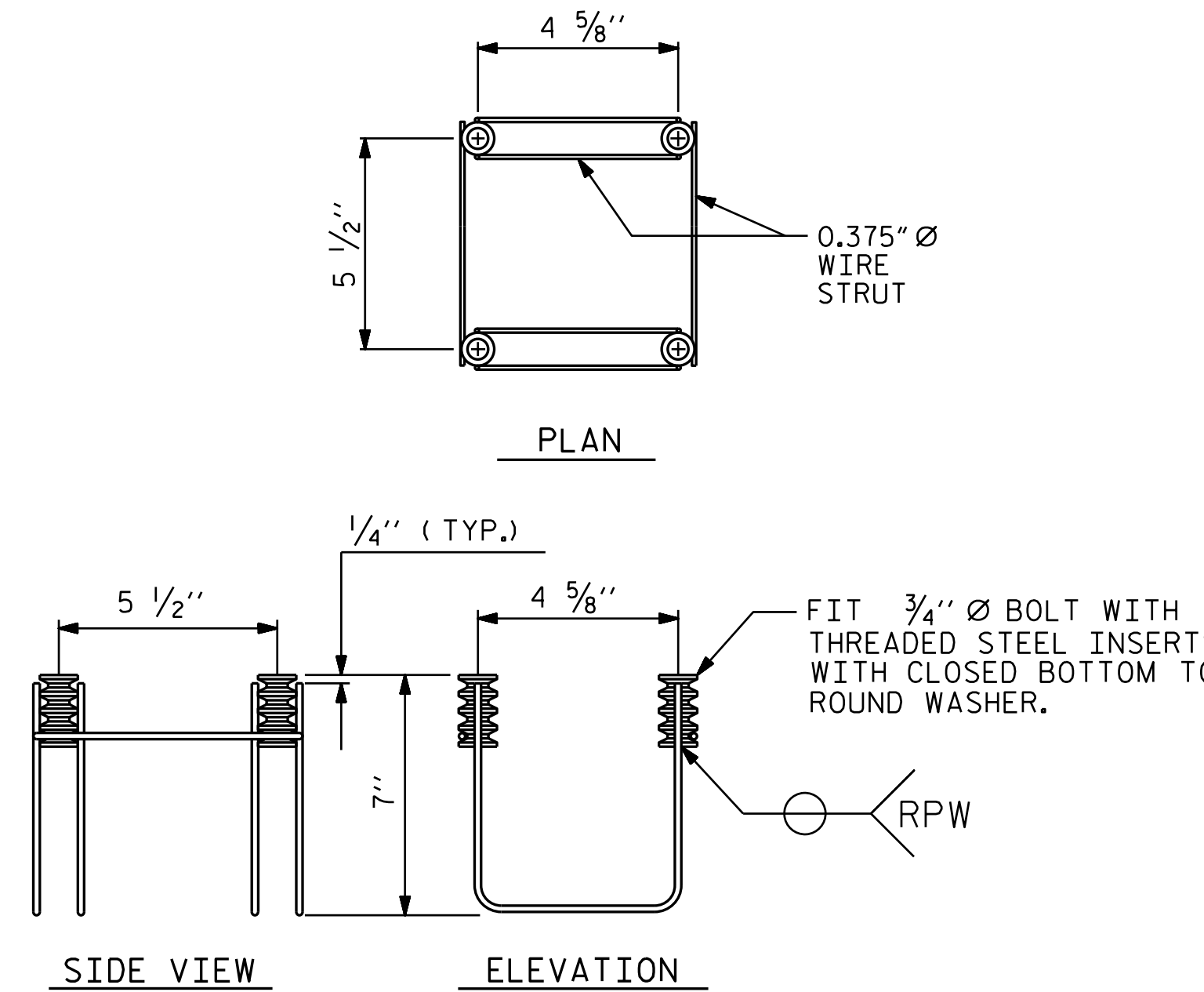
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

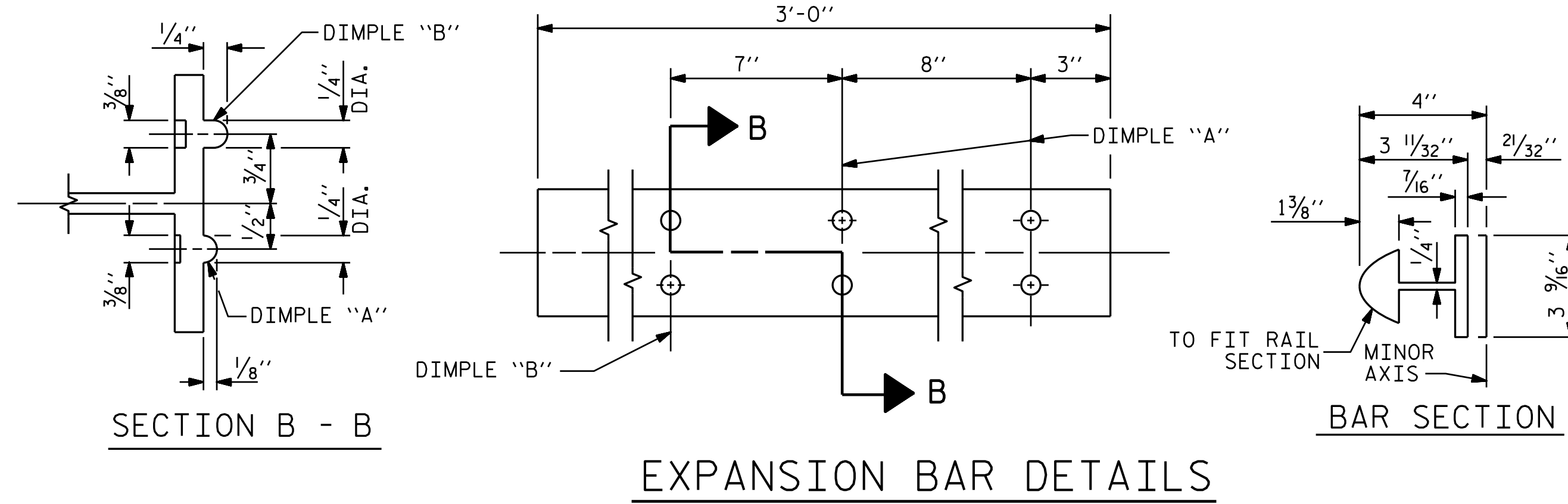
THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

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

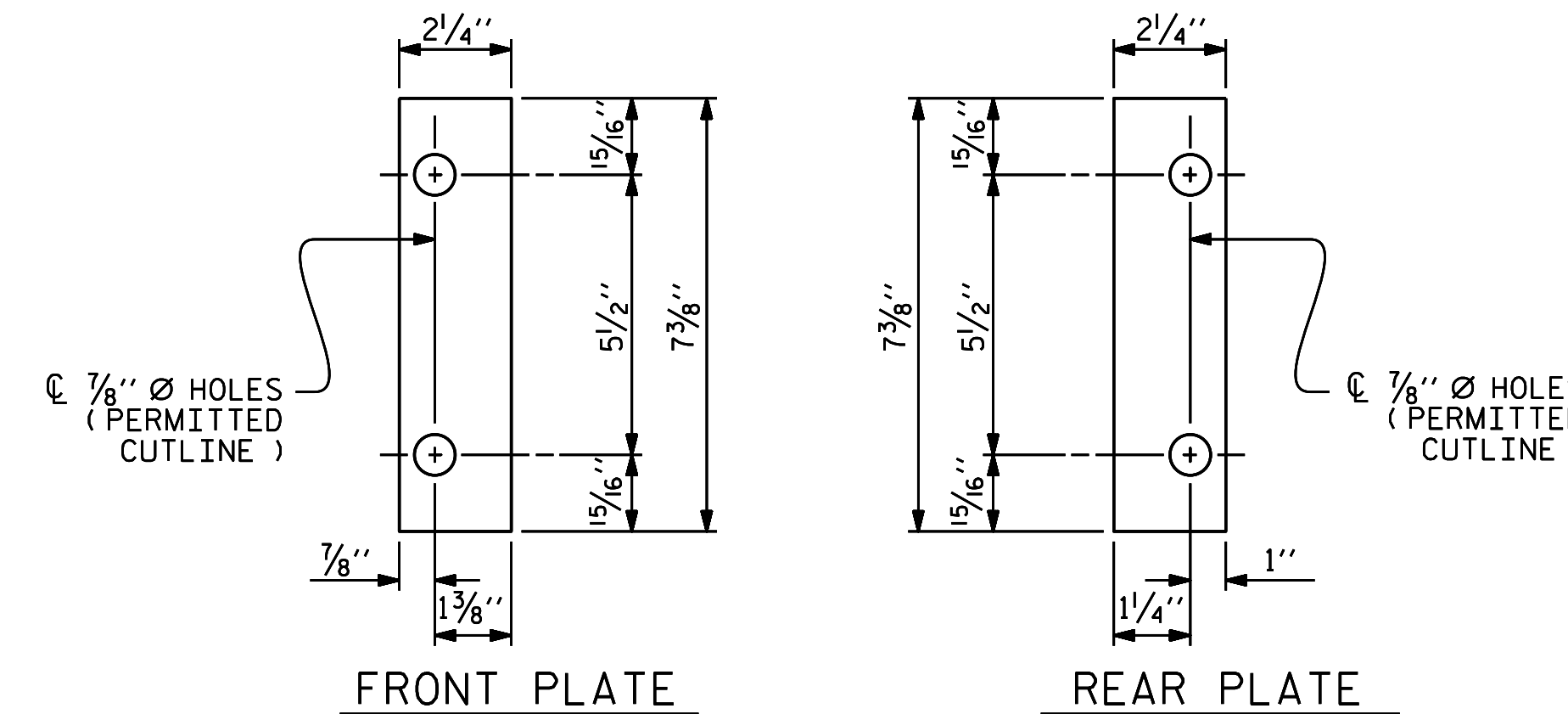


4-BOLT METAL RAIL ANCHOR ASSEMBLY

(92 ASSEMBLIES REQUIRED)

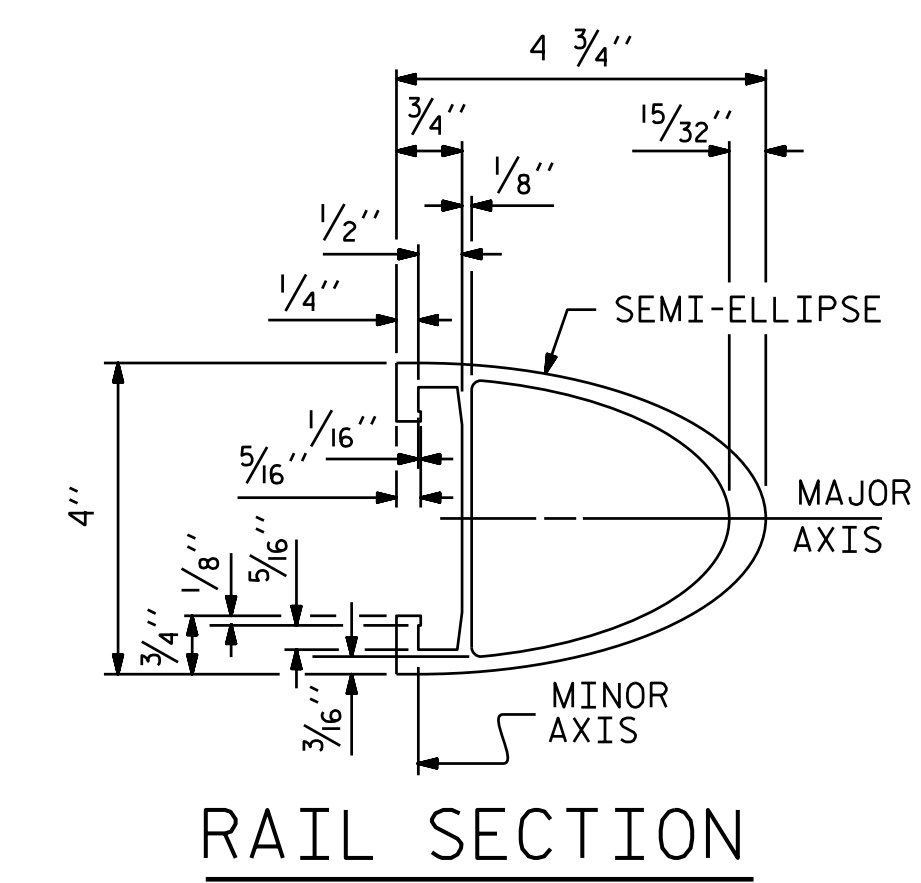


EXPANSION BAR DETAILS

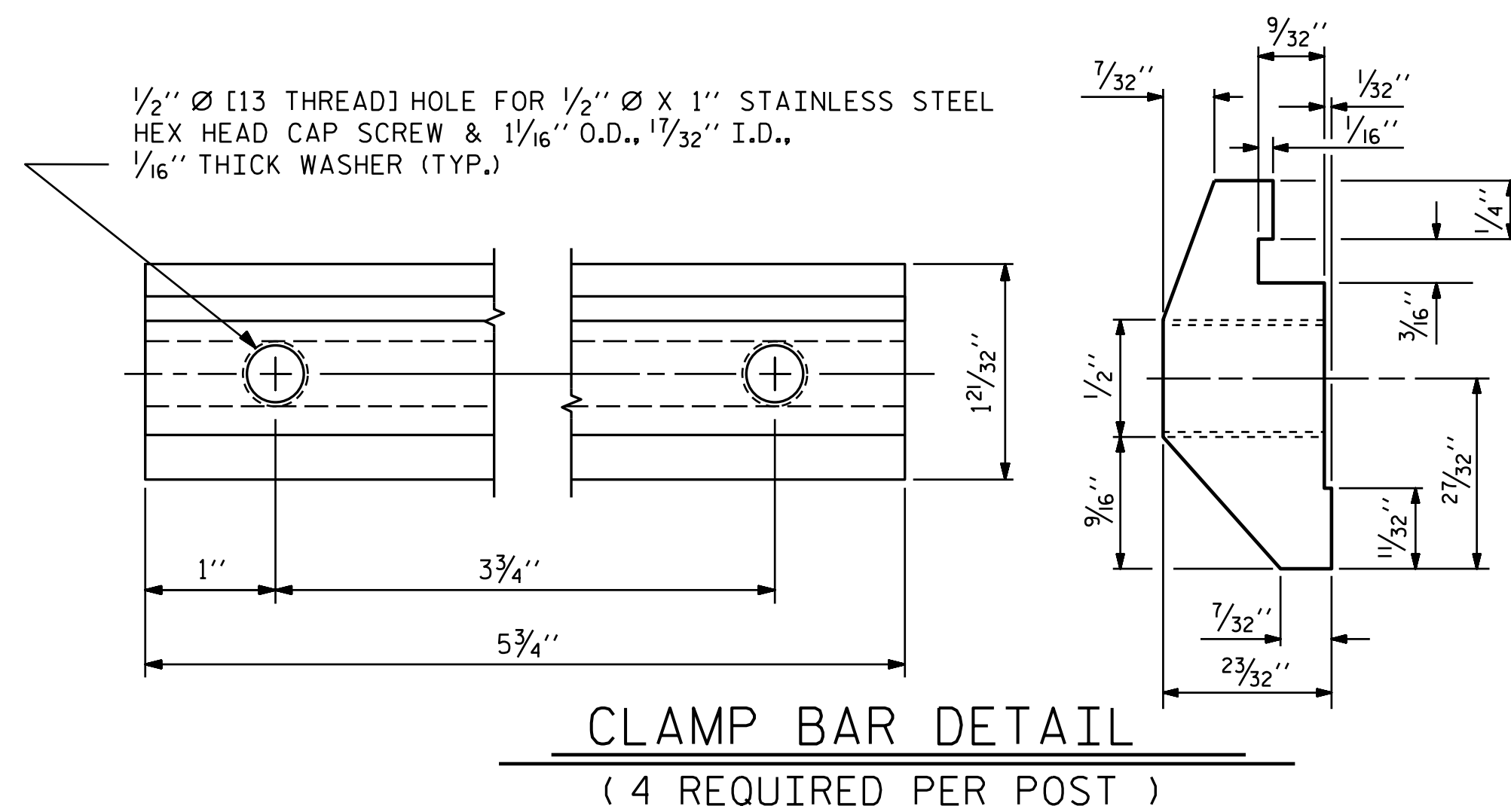


SHIM DETAILS

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

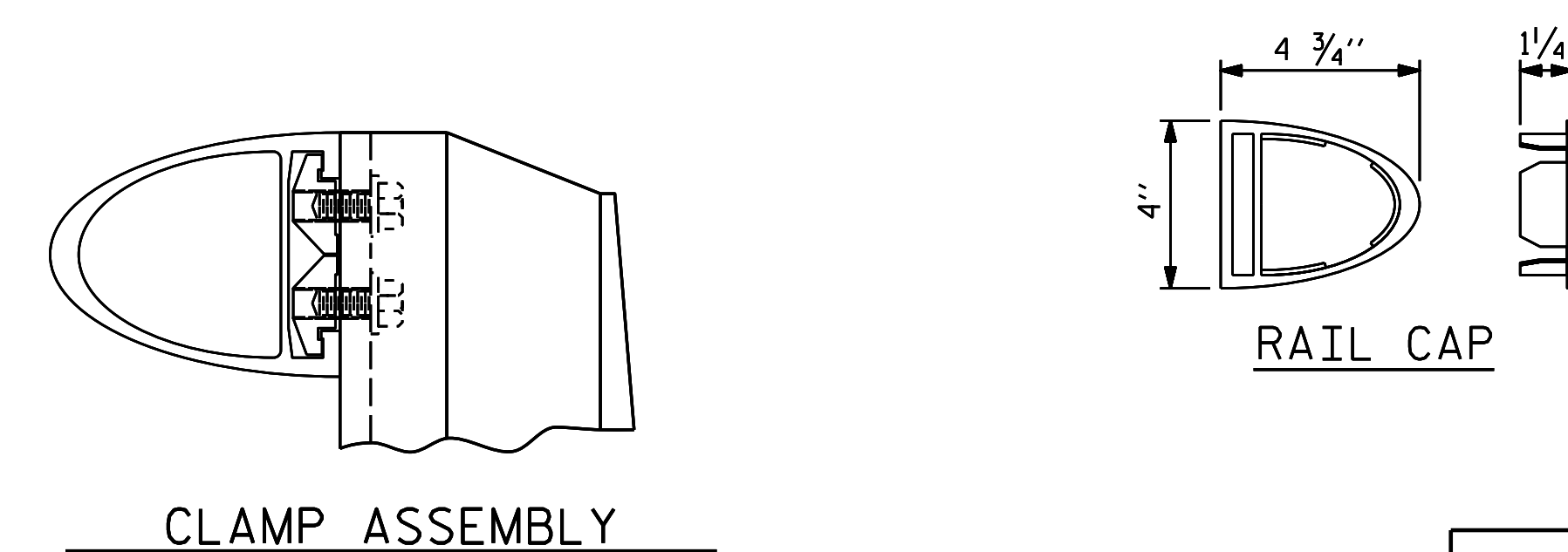


RAIL SECTION



CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY

RAIL CAP

PROJECT NO. B-5239
ALAMANCE COUNTY
STATION: 16+34.50 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

2 BAR METAL RAIL

REVISIONS

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

SHEET NO.
S01-24
TOTAL SHEETS
39

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
(919) 552-2253
www.mottmac.com
LICENSE NO. F-0669

SEAL 20532
ENGINEER
JAMES E. MONDOLFI
8/1/2017

157077
 C:\Users\119_Hey_River\Plans\B-5239_SNU_2MR_000119.dgn
 8/1/2017 9:27:18 AM

DRAWN BY: J. T. WILLIAMS DATE: 11-2014
CHECKED BY: J. E. MONDOLFI DATE: 11-2014
DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 11-2014

NOTES

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

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 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.

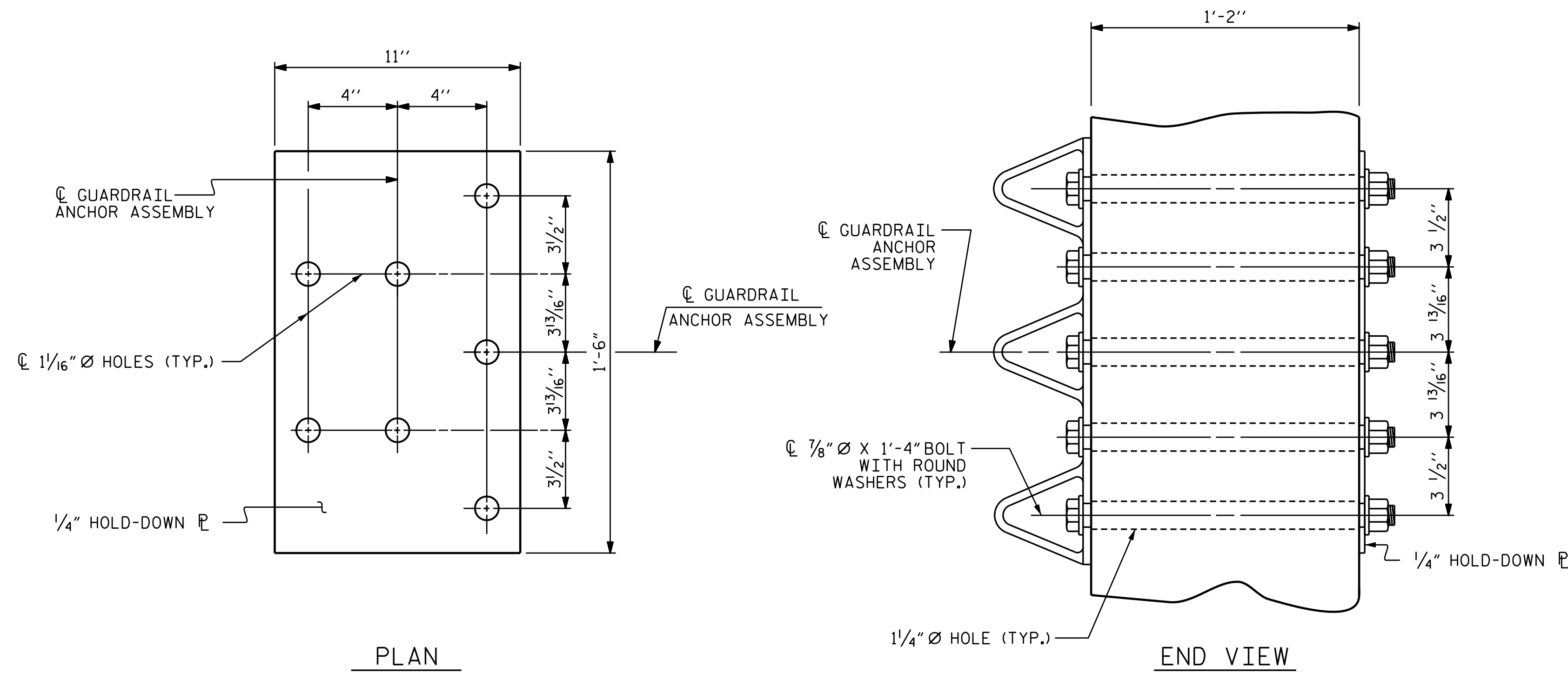
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

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

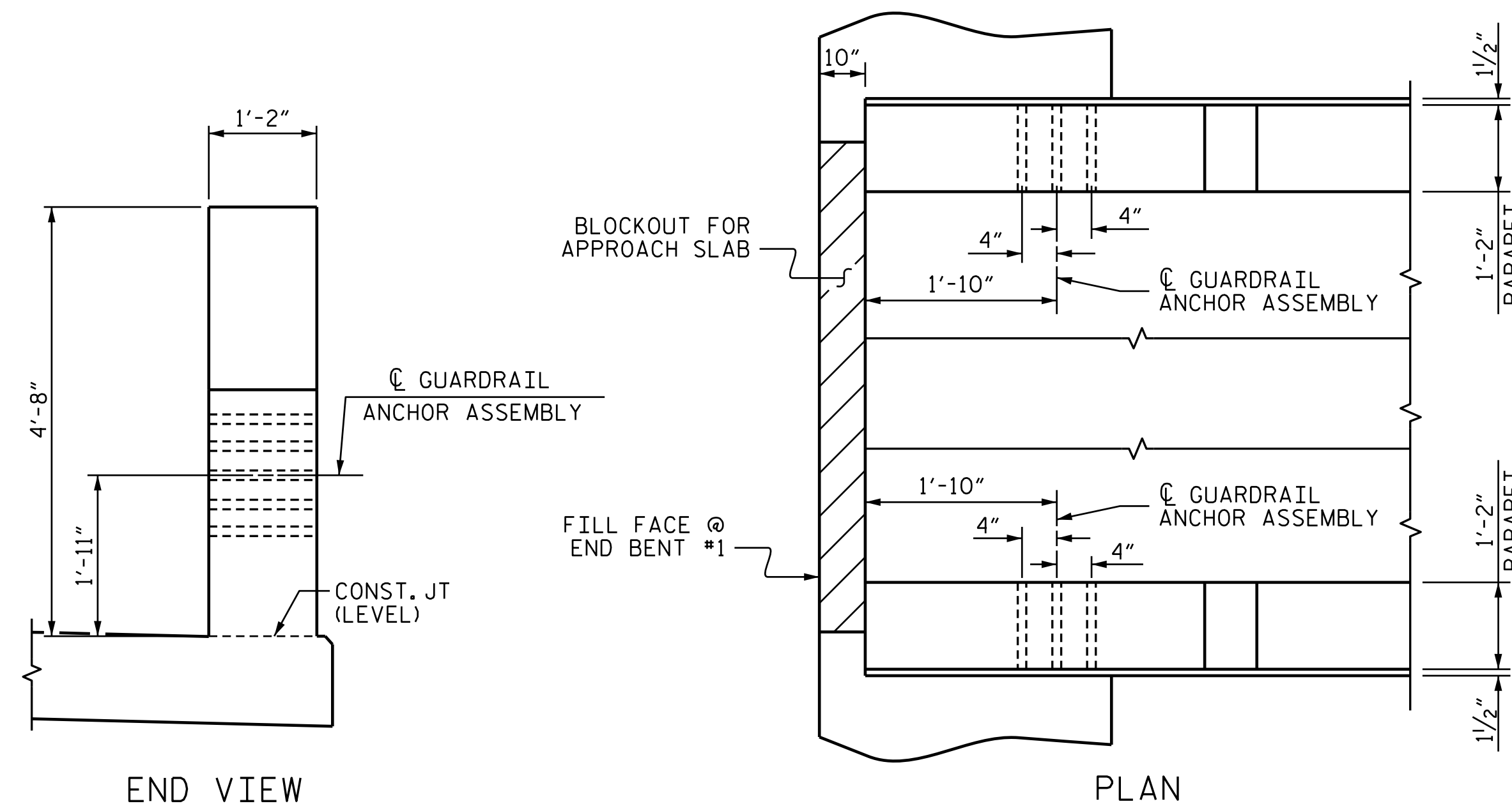


GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



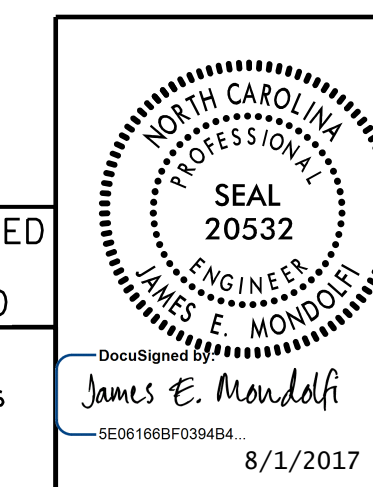
LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 16+34.50 -L-

157077
 11/17/2015
 C:\Users\119_Herz_River\My Documents\B-5239-SMU_CR_000119.dgn
 9:27:19 AM

DRAWN BY: J. T. WILLIAMS DATE: 11-2014
 CHECKED BY: J. E. MONDOLFI DATE: 11-2014
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 11-2014

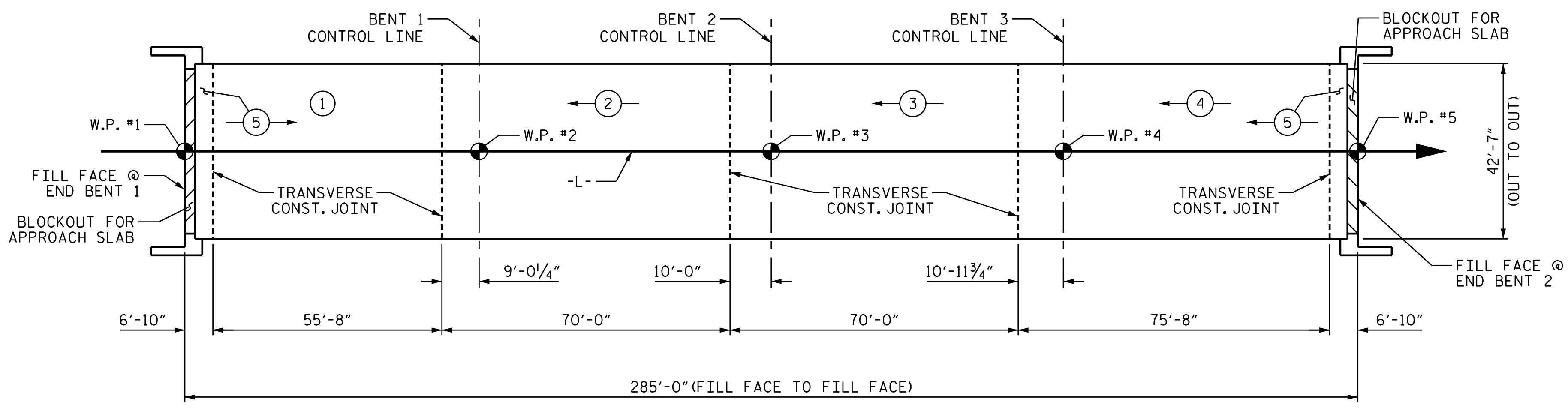
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED
 PLANS PREPARED BY:
M PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 MOTT MACDONALD LICENSE NO. F-0669



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

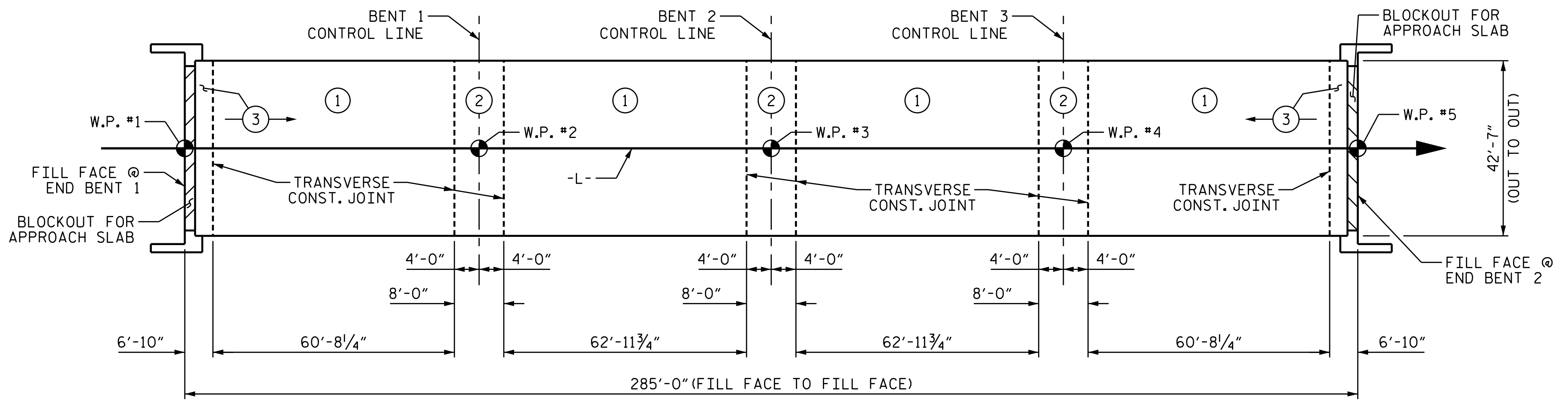
GUARDRAIL ANCHORAGE
 DETAILS
 FOR METAL RAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-25
1			3			TOTAL SHEETS
2			4			39



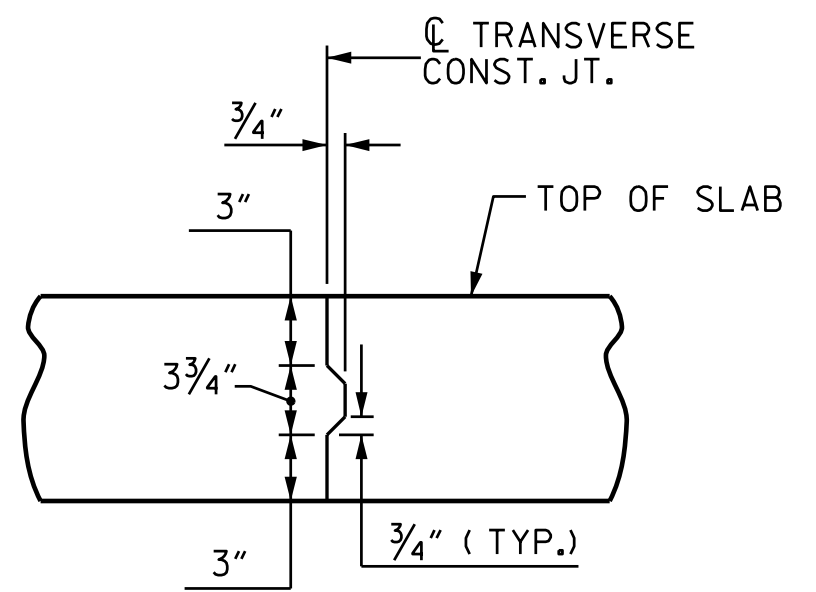
POURING SEQUENCE AND LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB
(CONTINUOUS FOR LIVE LOAD) (12,137 SF)

⊕ = INDICATES POUR NUMBER AND DIRECTION OF POUR



OPTIONAL POURING SEQUENCE
(CONTINUOUS FOR LIVE LOAD)

NOTE: POUR 2 CAN NOT BE STARTED UNTIL BOTH ADJACENT 1 POURS REACH A MINIMUM OF 3000 PSI.



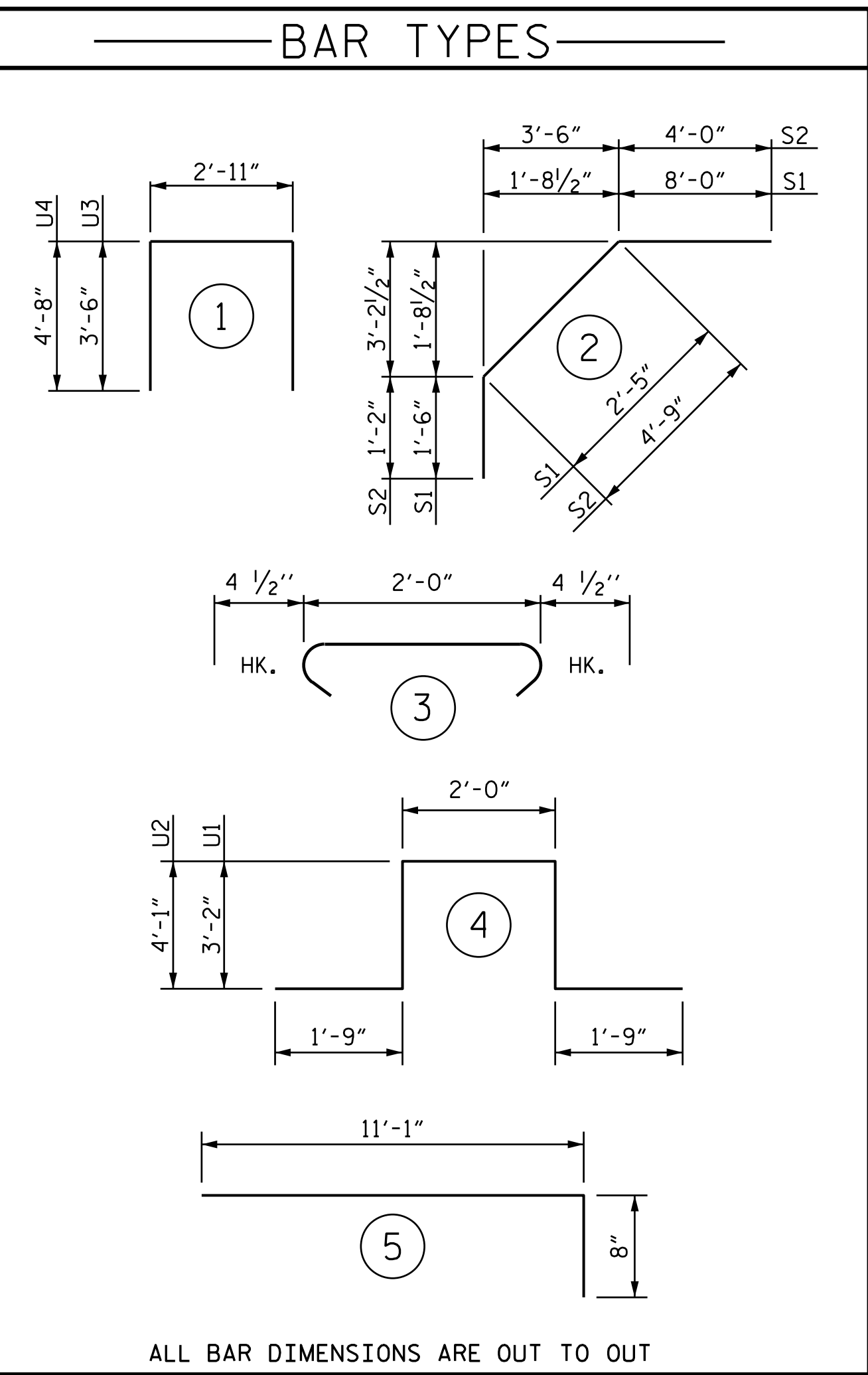
TRANSVERSE CONSTRUCTION JOINT DETAIL

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

BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	680	#5	STR	42'-3"	29965
A2	680	#5	STR	42'-3"	29965
*B1	114	#7	STR	14'-0"	3262
*B2	116	#4	STR	18'-1"	1401
*B3	87	#7	STR	53'-0"	9425
*B4	84	#7	STR	21'-6"	3691
*B5	58	#4	STR	22'-0"	852
B6	305	#5	STR	58'-4"	18557
H1	56	#5	5	11'-9"	686
K1	16	#4	STR	25'-2"	269
K2	6	#4	STR	9'-8"	39
K3	12	#4	STR	10'-11"	88
K4	6	#4	STR	10'-2"	41
K5	4	#4	STR	5'-2"	14
K6	8	#4	STR	5'-10"	31
K7	4	#4	STR	5'-5"	14
K8	8	#4	STR	2'-8"	14
K9	18	#4	STR	8'-6"	102
K10	36	#4	STR	10'-7"	254
K11	18	#4	STR	10'-11"	131
K12	18	#4	STR	10'-2"	122
K13	30	#4	STR	19'-6"	391
*S1	78	#4	2	11'-11"	621
*S2	74	#4	2	9'-11"	490
S3	378	#4	3	2'-9"	694
U1	18	#4	4	11'-10"	142
U2	81	#4	4	13'-8"	739
U3	78	#4	1	9'-11"	517
U4	12	#4	1	12'-3"	98
V2	84	#4	STR	4'-8"	262
REINFORCING STEEL				LBS.	53,170
*EPOXY COATED REINFORCING STEEL				LBS.	49,707

GROOVING BRIDGE FLOORS	
APPROACH SLABS	1,820 SQ.FT.
BRIDGE DECK	10,484 SQ.FT.
TOTAL	12,304 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"			



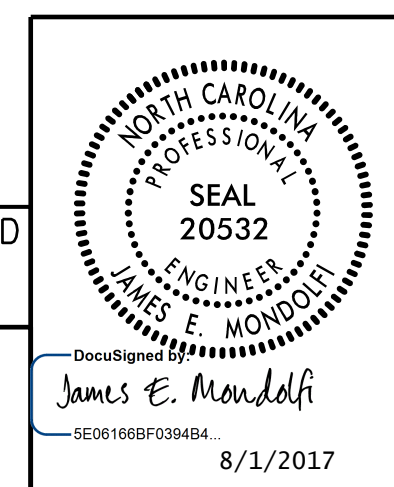
ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL			
	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
SPANS	A, B, C, & D	53,170	49,707
POUR 1	75.6		
POUR 2	106.7		
POUR 3	106.7		
POUR 4	114.4		
POUR 5	66.8		
TOTALS**	470.2	53,170	49,707

**QUANTITIES FOR PARAPET ARE NOT INCLUDED

PROJECT NO. B-5239
ALAMANCE COUNTY
STATION: 16+34.50 -L-

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

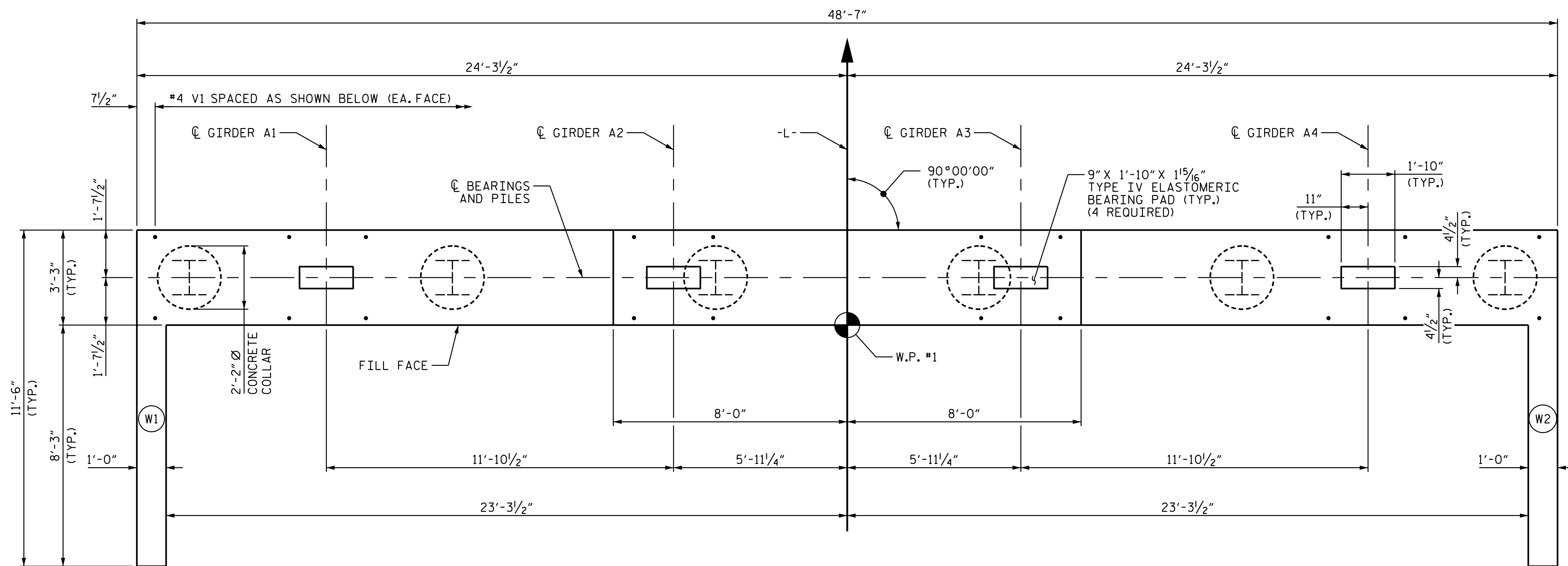


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PLANS PREPARED BY:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
(919) 552-2253
www.mottmac.com
LICENSE NO. F-0669

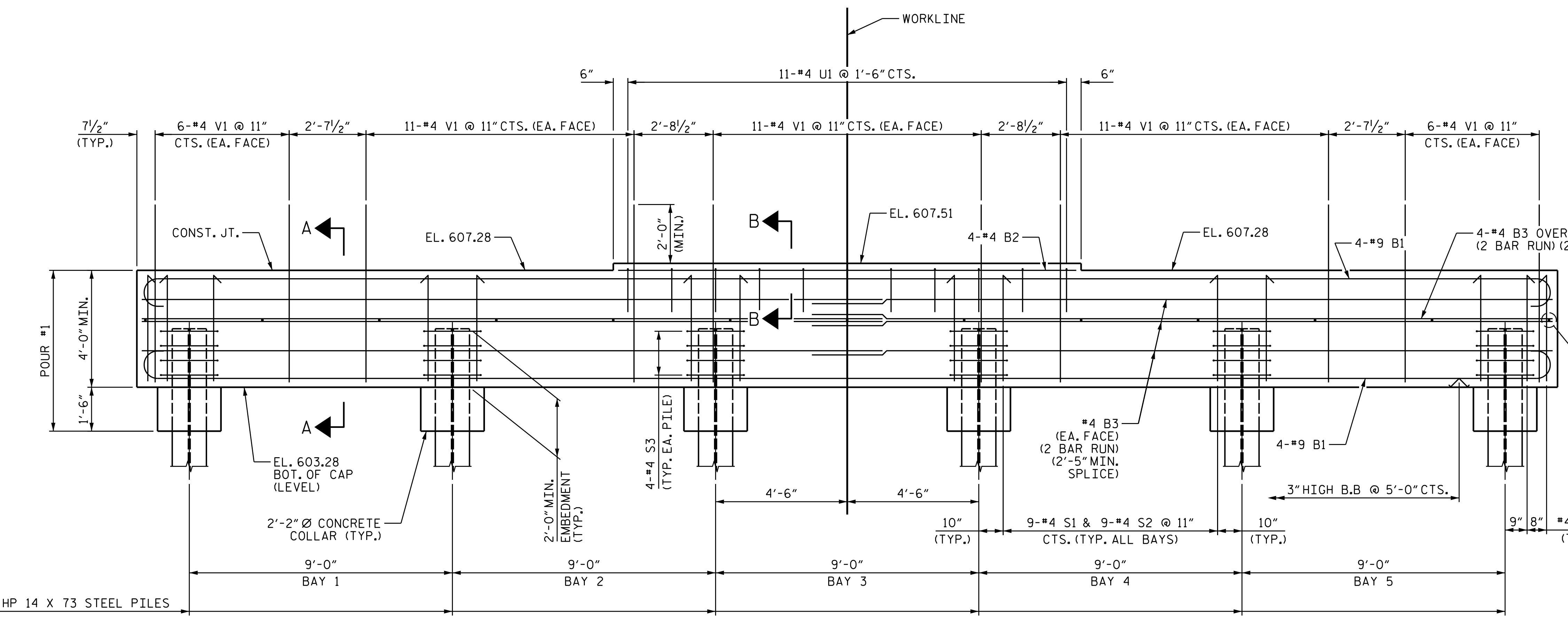
REVISIONS						SHEET NO. S01-26
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			

#157077
 C:\Users\119_Hey_River\Plans\B-5239-SMU_BM_000119.dgn
 8/1/2015 9:27:21 AM

DRAWN BY: J. T. WILLIAMS DATE: 12-2014
 CHECKED BY: J. E. MONDOLFI DATE: 12-2014
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 12-2014



PLAN

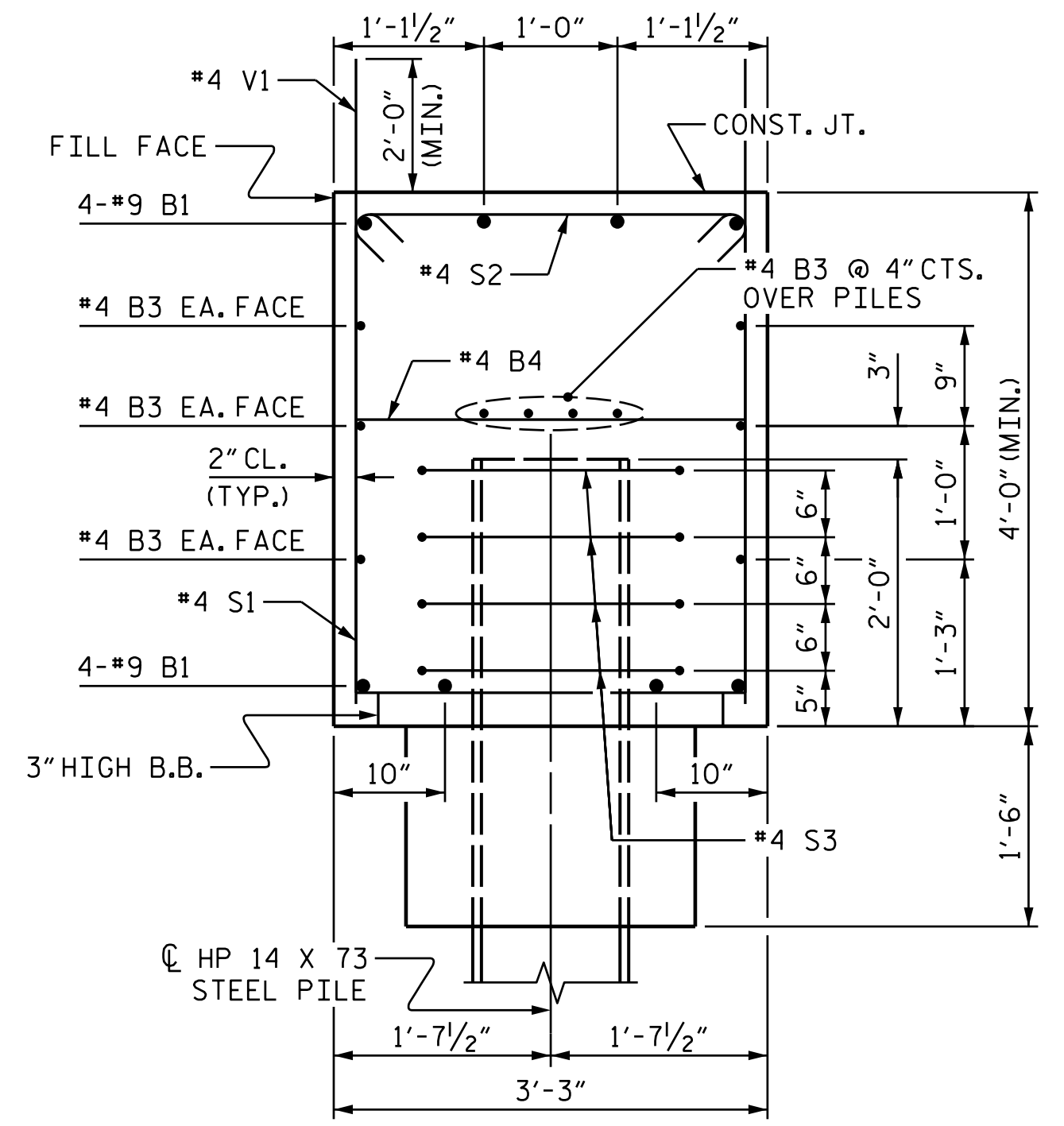


ELEVATION

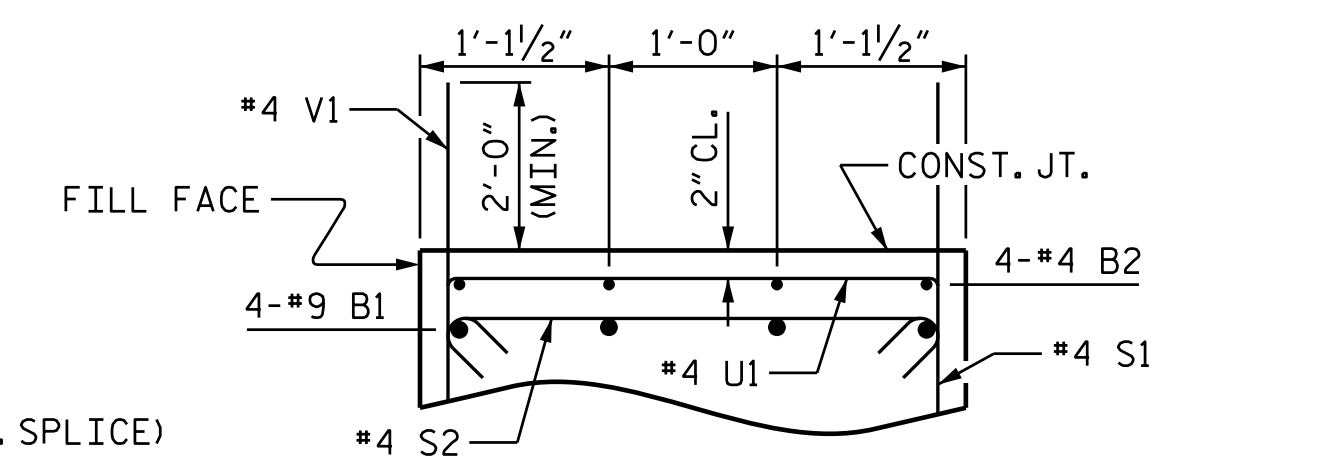
(WINGS NOT SHOWN FOR CLARITY)

NOTES:

- SEE SUPERSTRUCTURE SHEETS FOR UPPER PART OF INTEGRAL END BENT DETAILS.
- FOR PILE SPLICE DETAILS, SEE END BENT, SHEET 2 OF 2.
- INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WINGWALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WINGWALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
- THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".



SECTION A-A

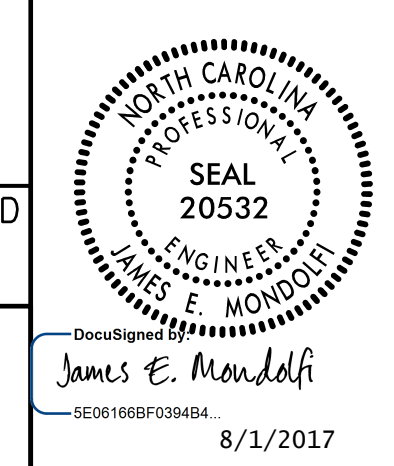


SECTION B-B

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 1 OF 2

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

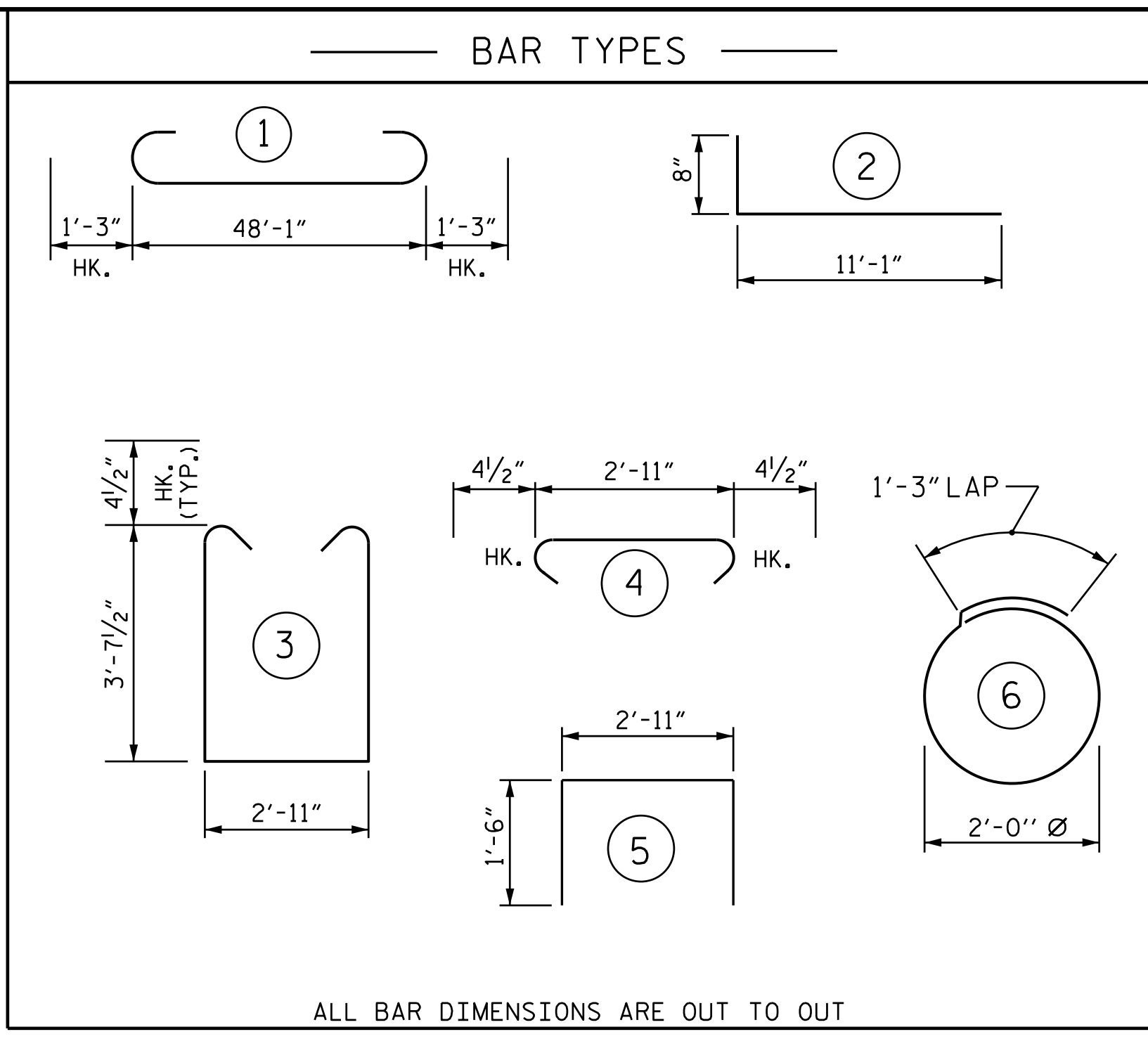
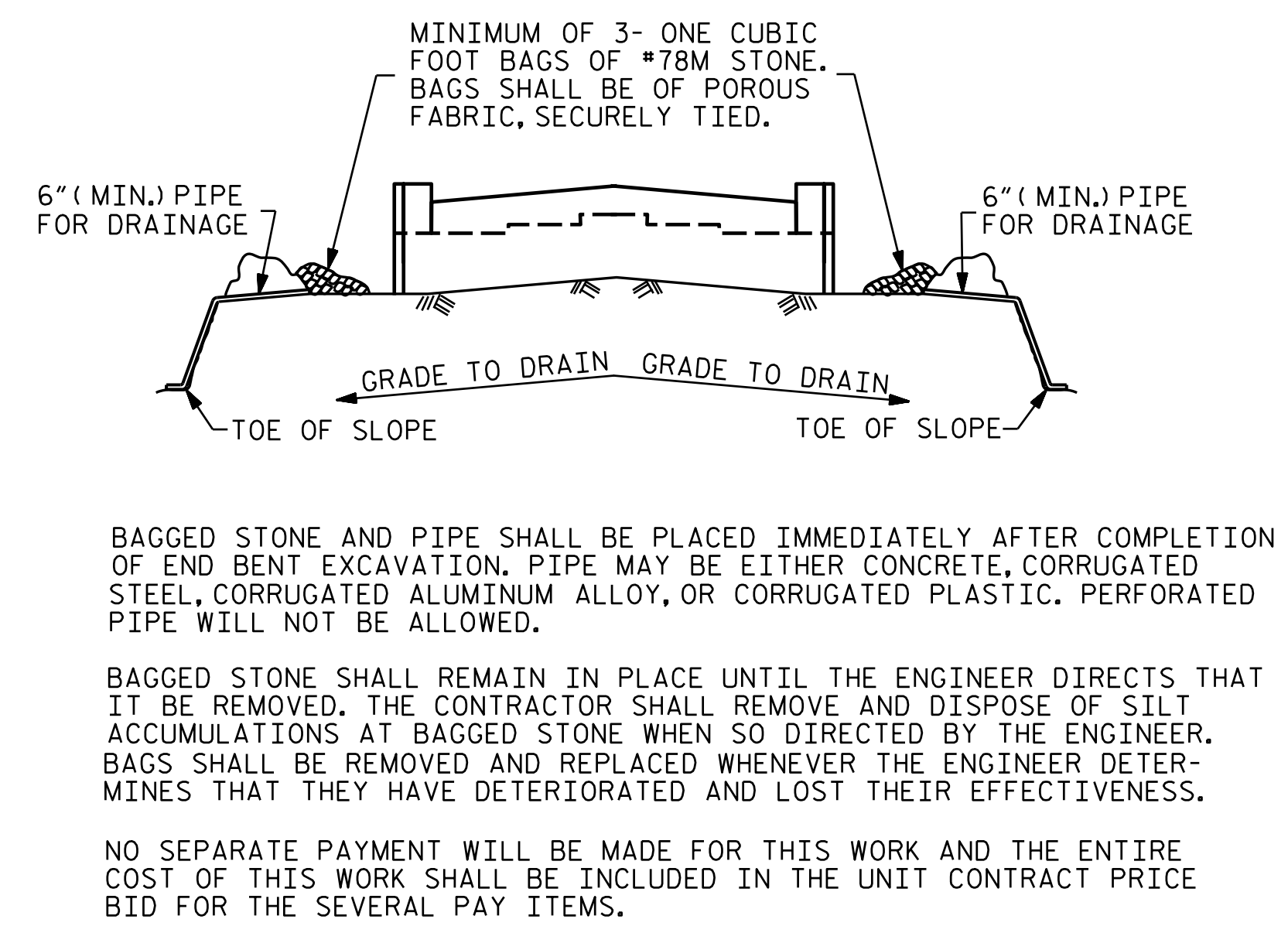
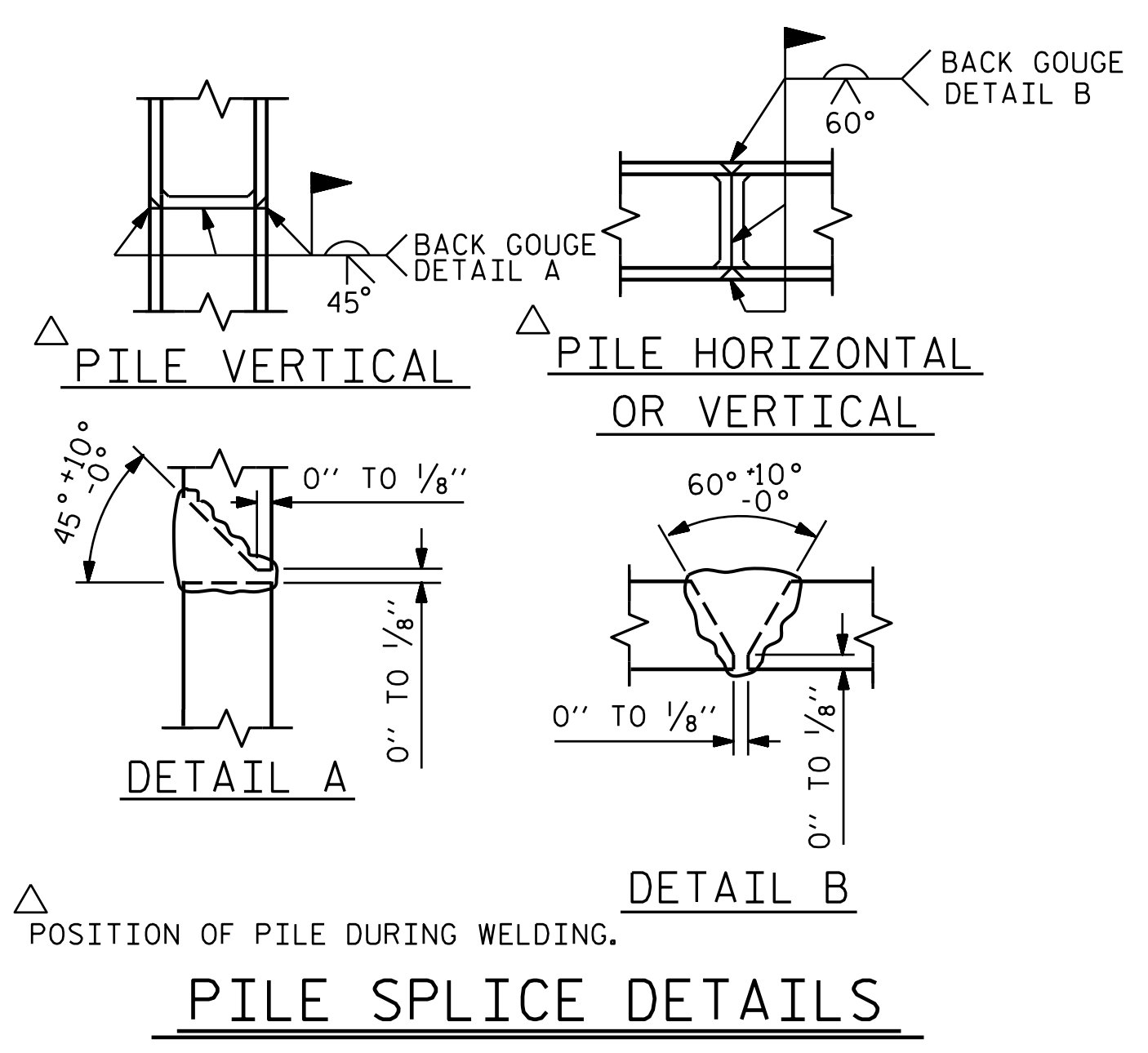


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

REVISIONS						SHEET NO. S01-27
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			

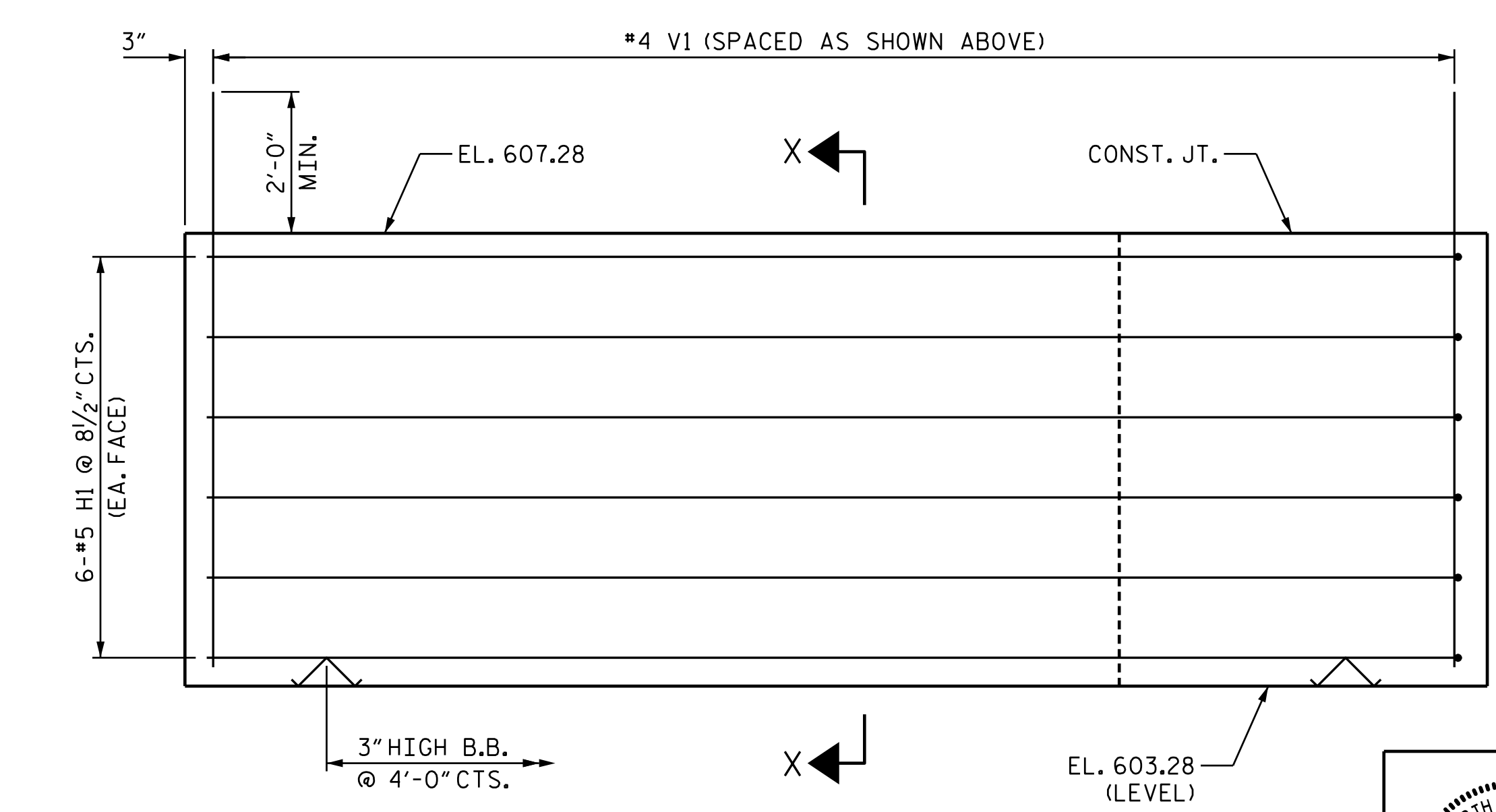
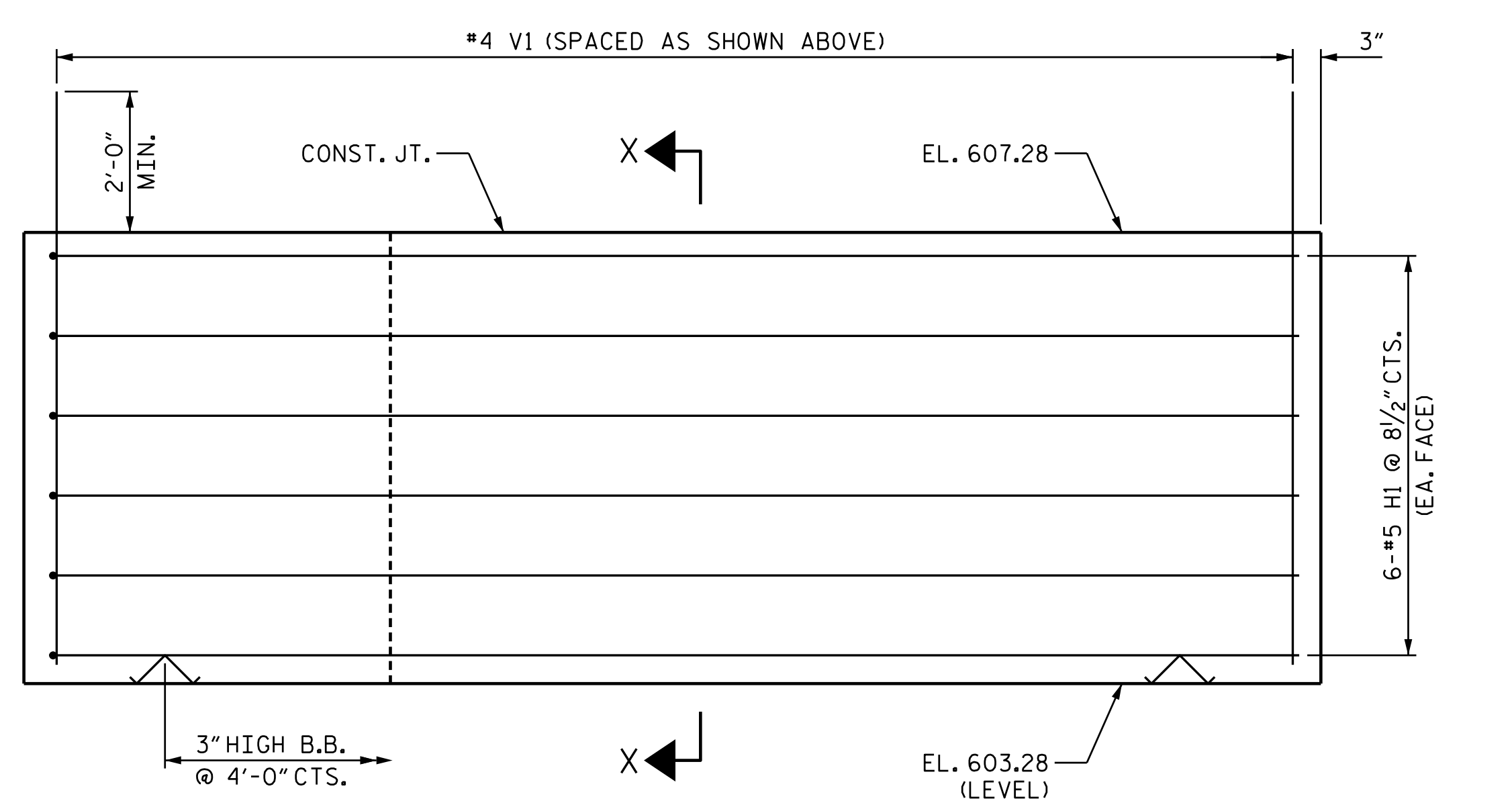
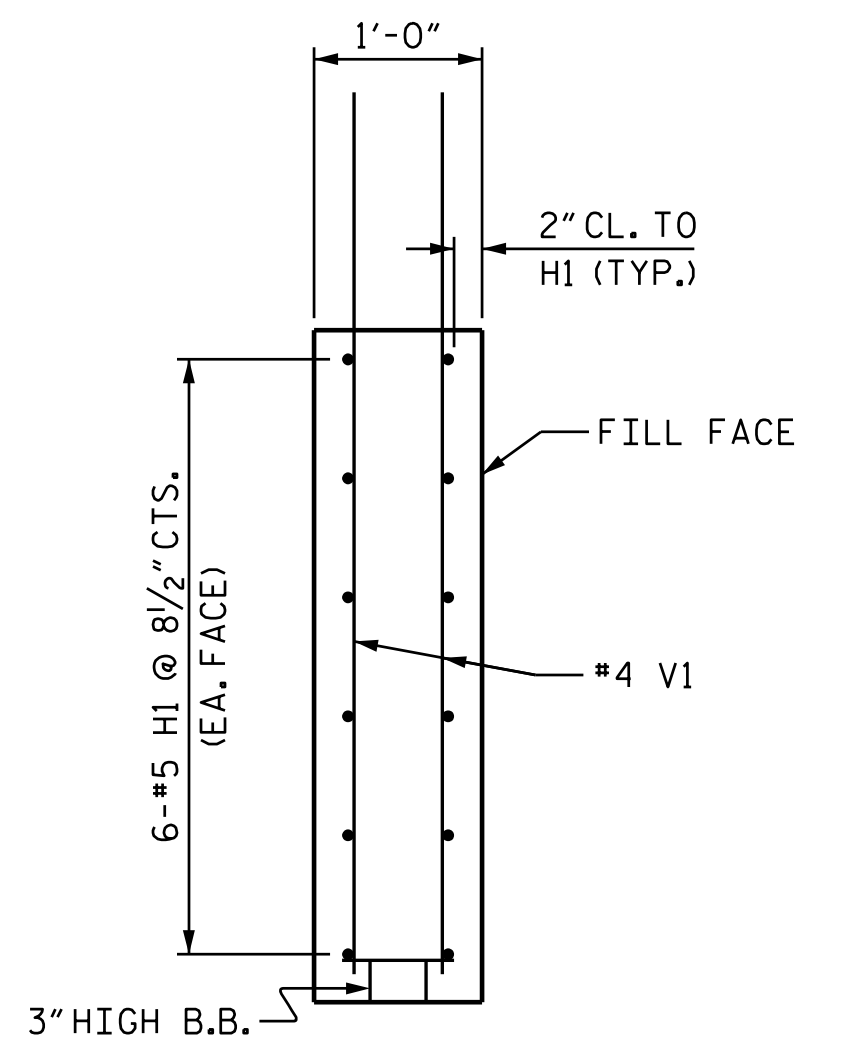
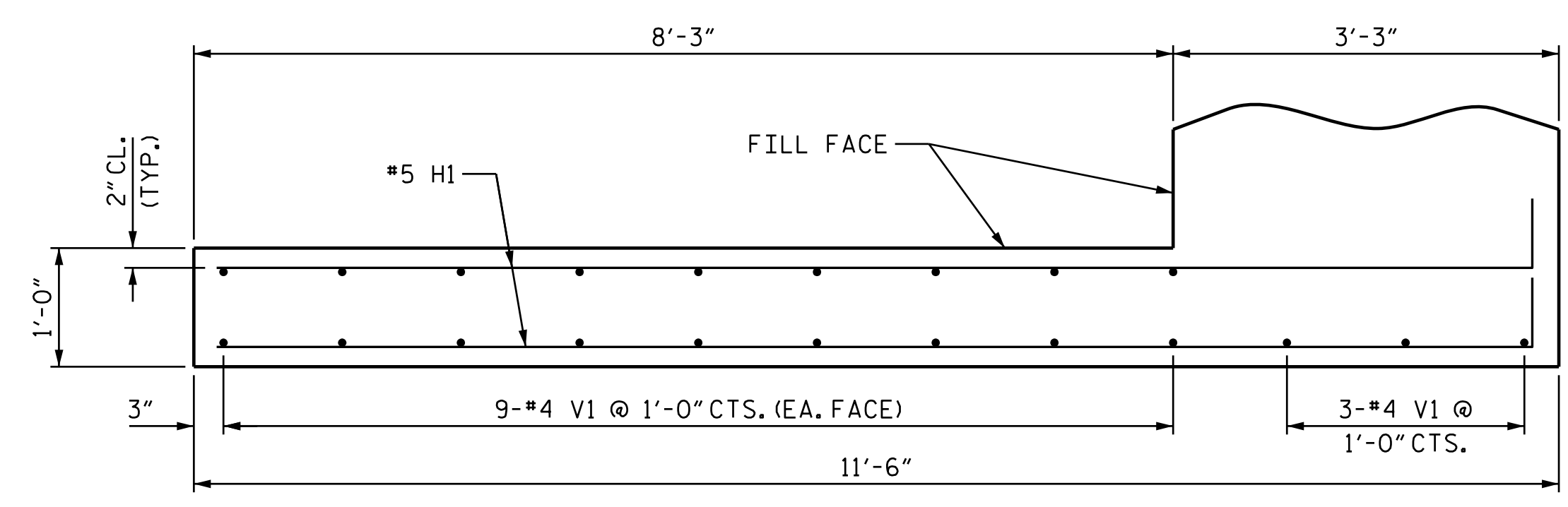
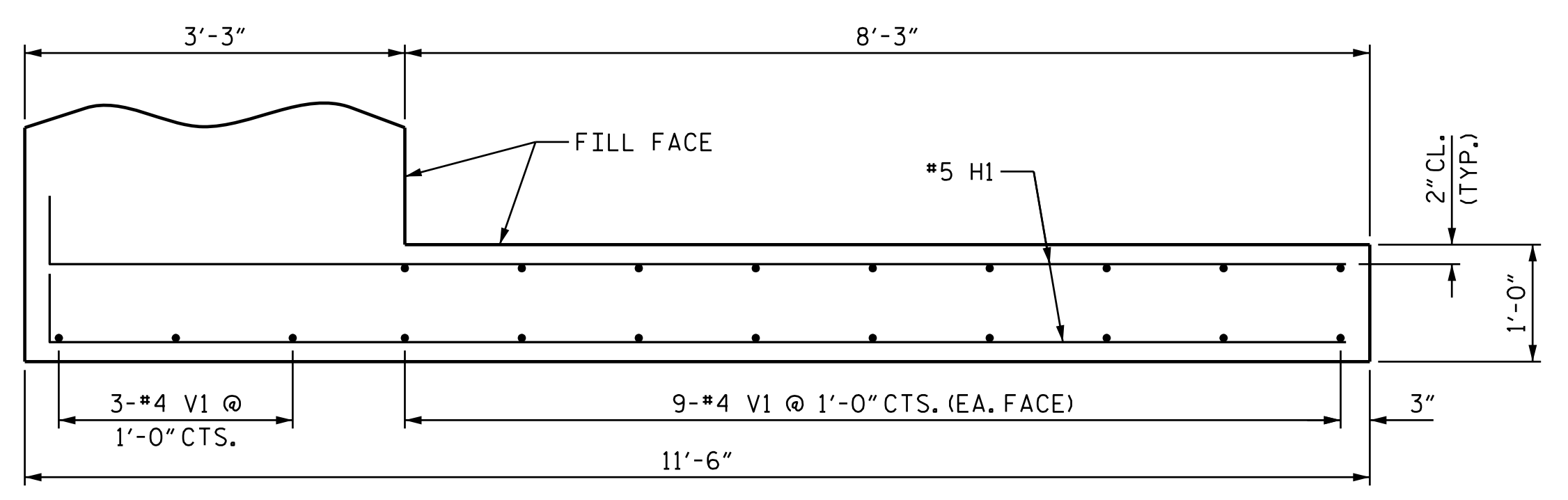
12/20/17
 11:27:07
 C:\Users\119_Hen_River\Plans\B-5239-SMU-E1.000119.dgn
 9:27:25 AM

DRAWN BY: J. T. WILLIAMS DATE: 12-2014
 CHECKED BY: J. E. MONDOLFI DATE: 12-2014
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 12-2014



BILL OF MATERIAL

END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	50'-7"	1376
B2	4	#4	STR	15'-8"	42
B3	20	#4	STR	25'-4"	338
B4	13	#4	STR	2'-11"	25
H1	24	#5	2	11'-9"	294
S1	49	#4	3	10'-11"	357
S2	49	#4	4	3'-8"	120
S3	24	#4	6	7'-7"	122
U1	11	#4	5	5'-11"	43
V1	132	#4	STR	6'-1"	536
REINFORCING STEEL				=	3253 LBS
CLASS A CONCRETE: POUR #1: CAP, LOWER WINGS, & COLLARS					27.5 C.Y.
HP 14 X 73 STEEL PILES: NO. 6					LIN. FT. 150
PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 STEEL PILES:					NO. 6

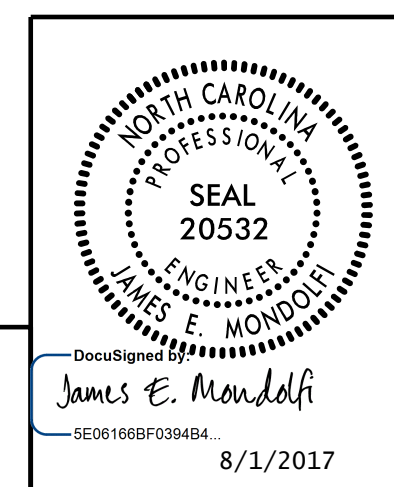


PROJECT NO. B-5239
ALAMANCE COUNTY
STATION: 16+34.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1
INTEGRAL



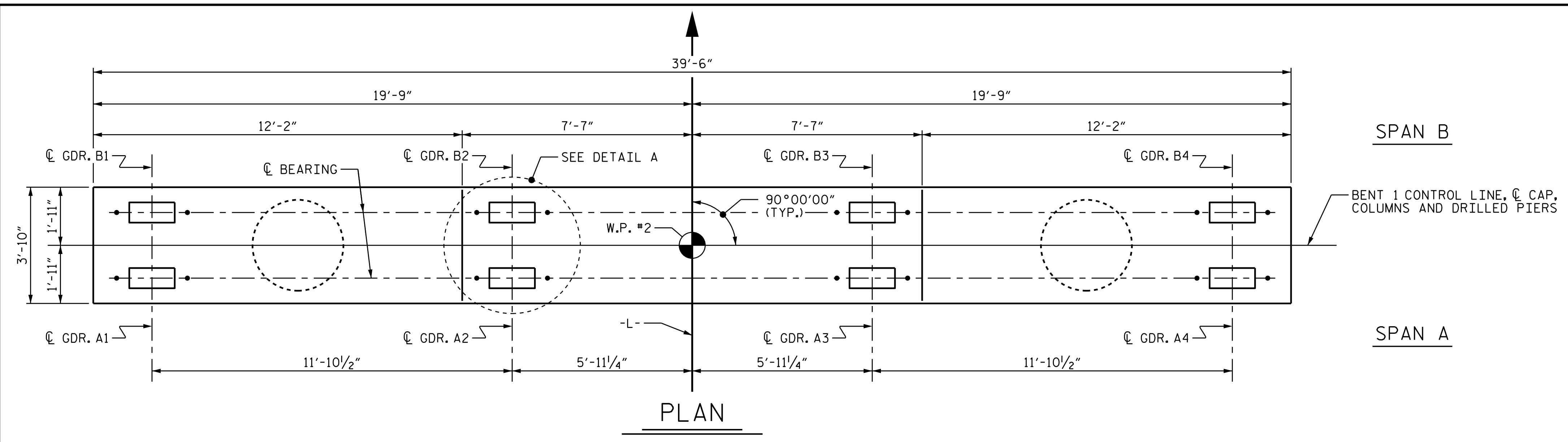
157077
 8/1/2015
 C:\Users\119_Her_River\Plans\B-5239-SMU.E1.000119.dgn
 9:27:26 AM

DRAWN BY: J. T. WILLIAMS DATE: 4-2017
 CHECKED BY: J. E. MONDOLFI DATE: 4-2017
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 4-2017

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

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



NOTES:

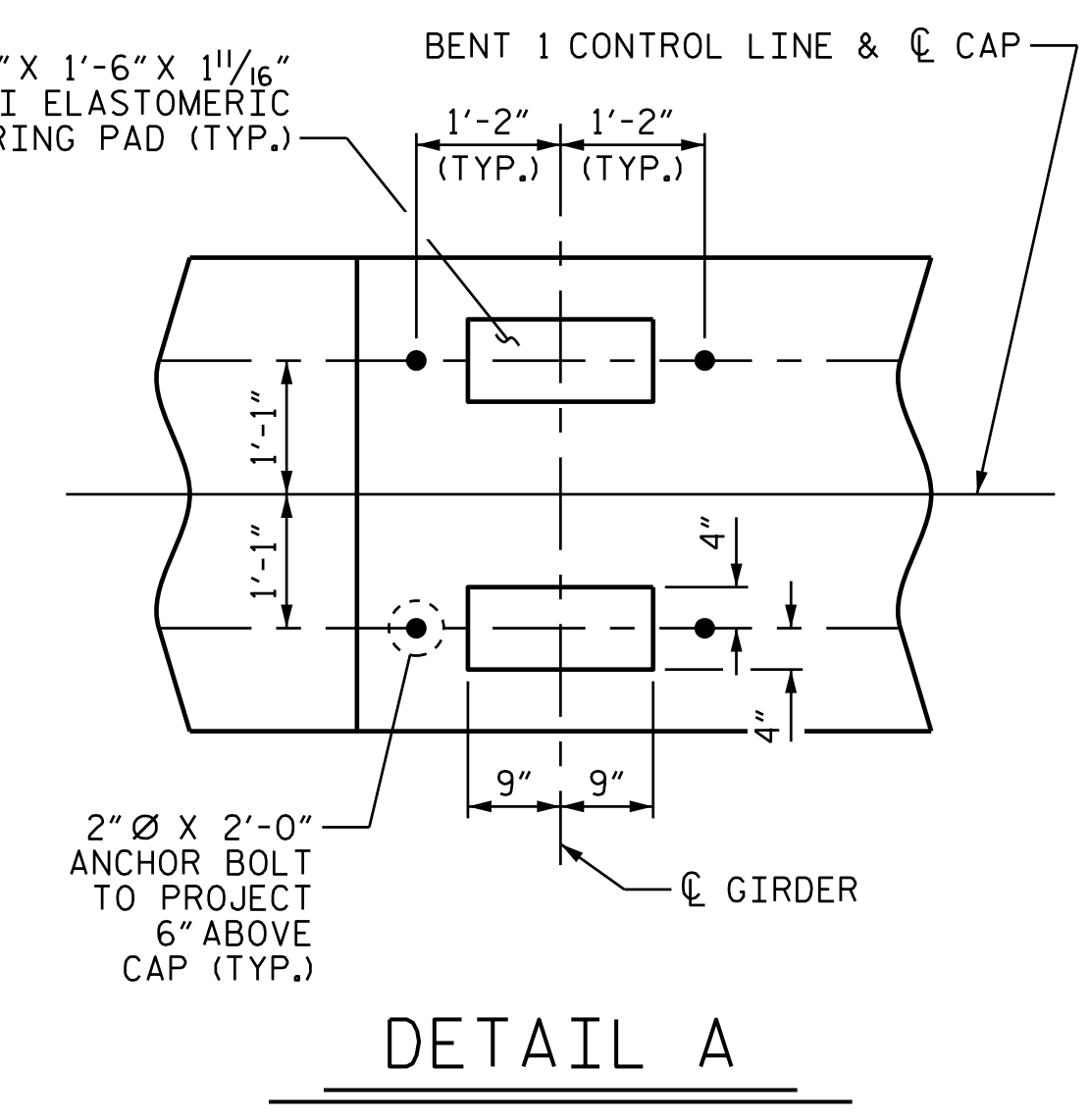
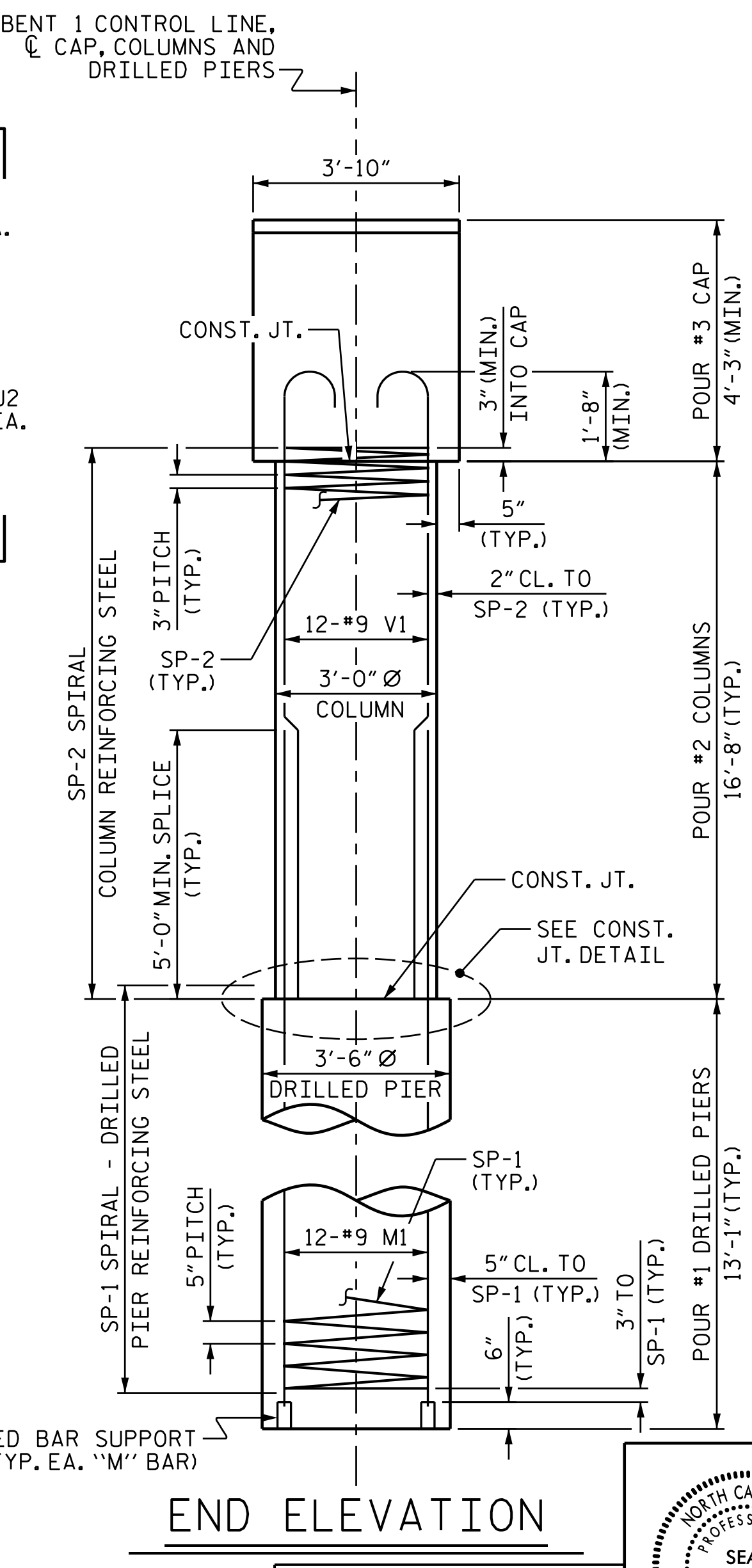
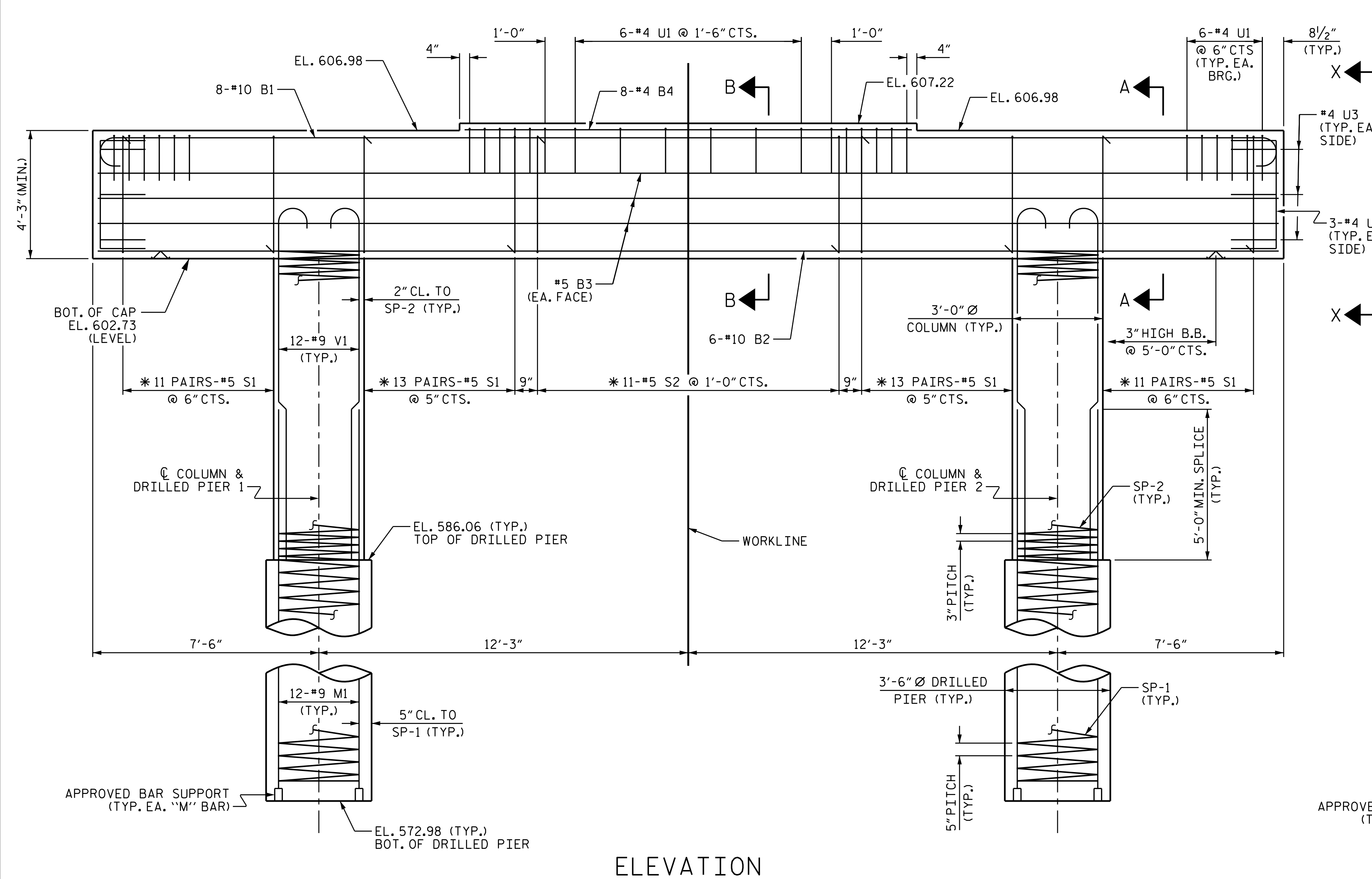
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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

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

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

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



ELEVATION

* INVERT ALTERNATE PAIRS (S1) OR STIRRUPS (S2)

END ELEVATION

APPROVED BAR SUPPORT (TYP. EA. "M" BAR)

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
BENT 1

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

SHEET NO. S01-29
 TOTAL SHEETS 39

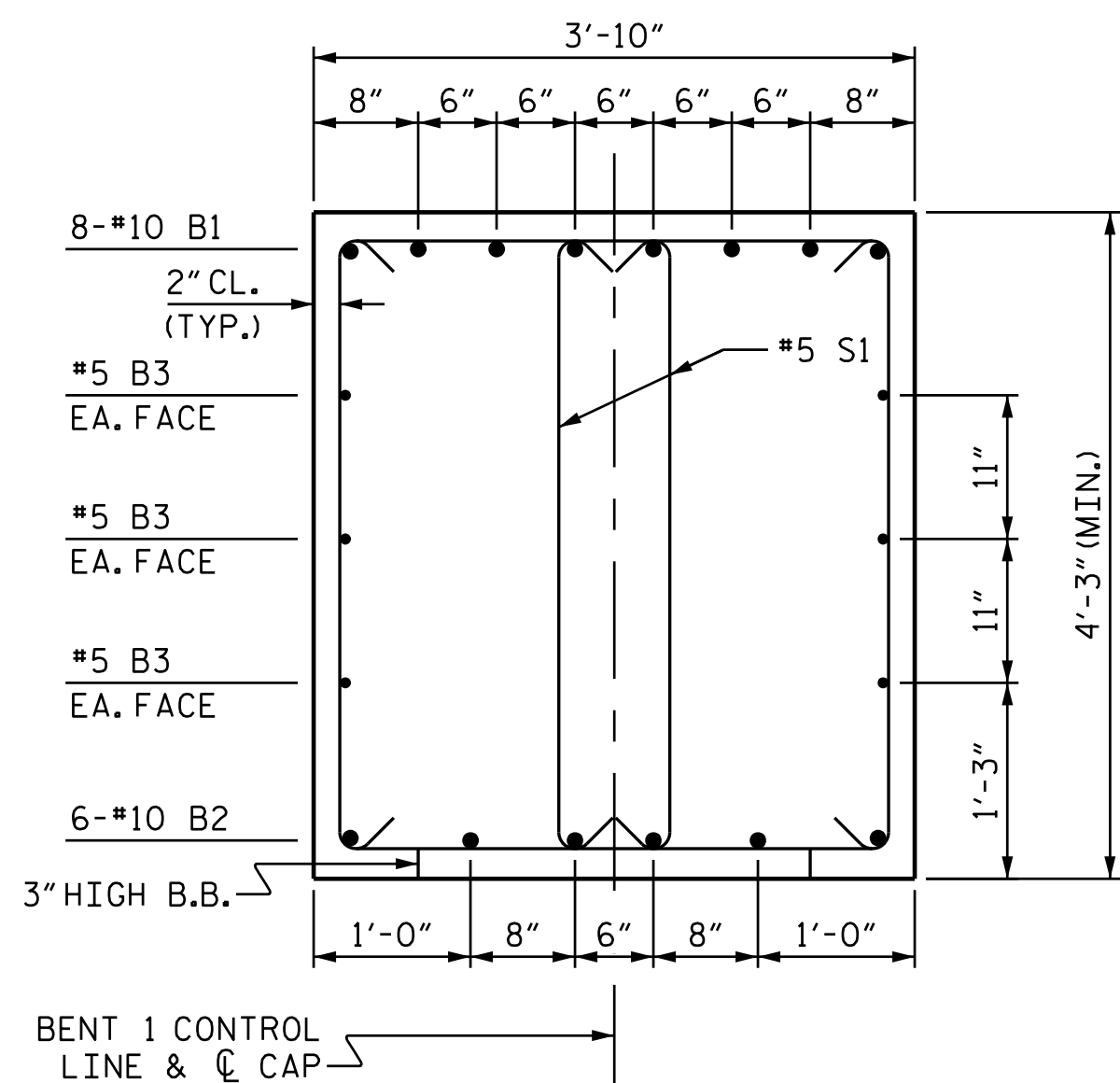
157077
 C:\Users\jwilliams\119_Hwy_River\Plans\B-5239-SMU-B1_000119.dgn
 8/1/2015 9:27:30 AM

DRAWN BY: J. T. WILLIAMS DATE: 2-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015

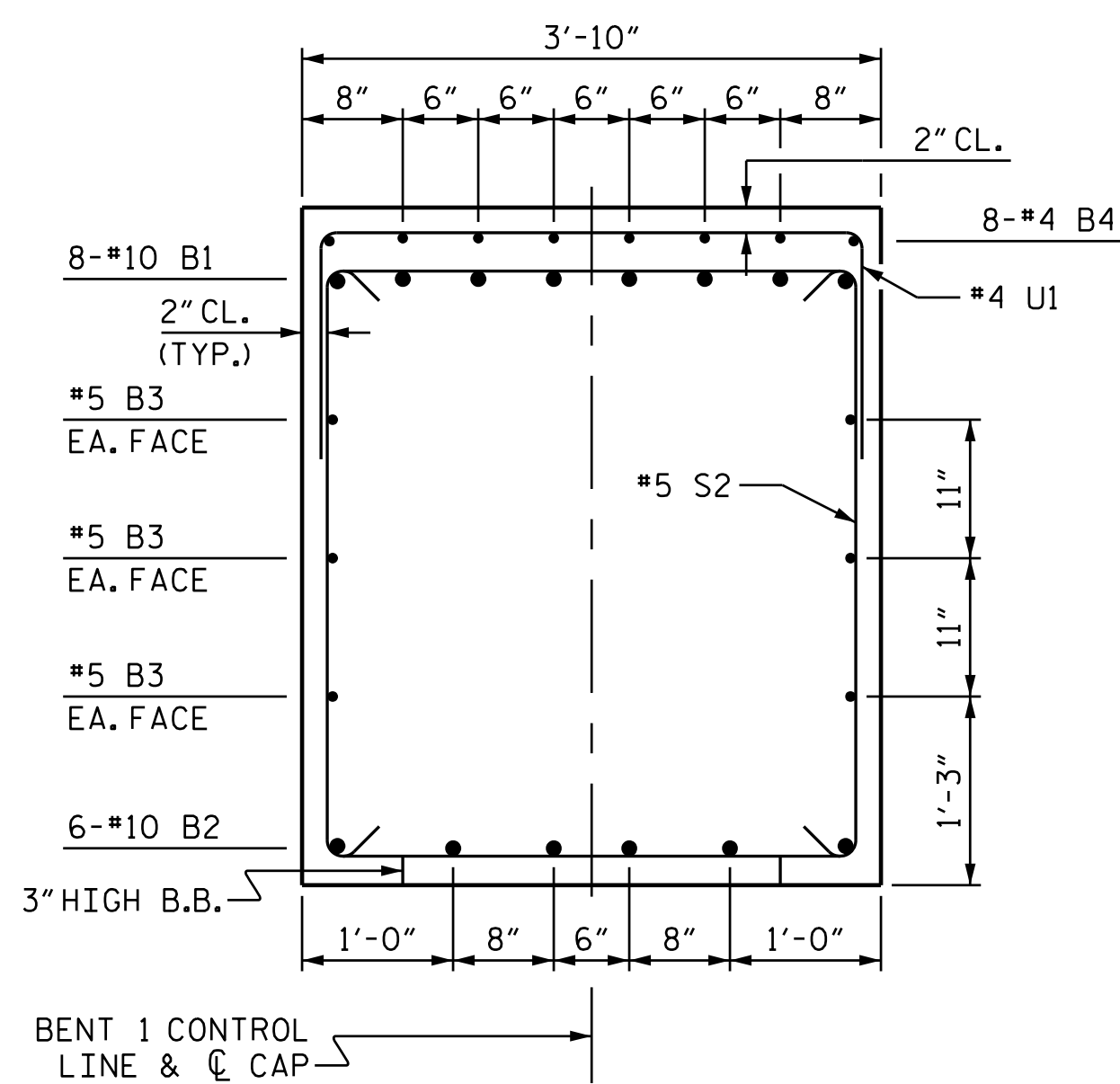
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2233
 www.mottmac.com
 LICENSE NO. F-0669

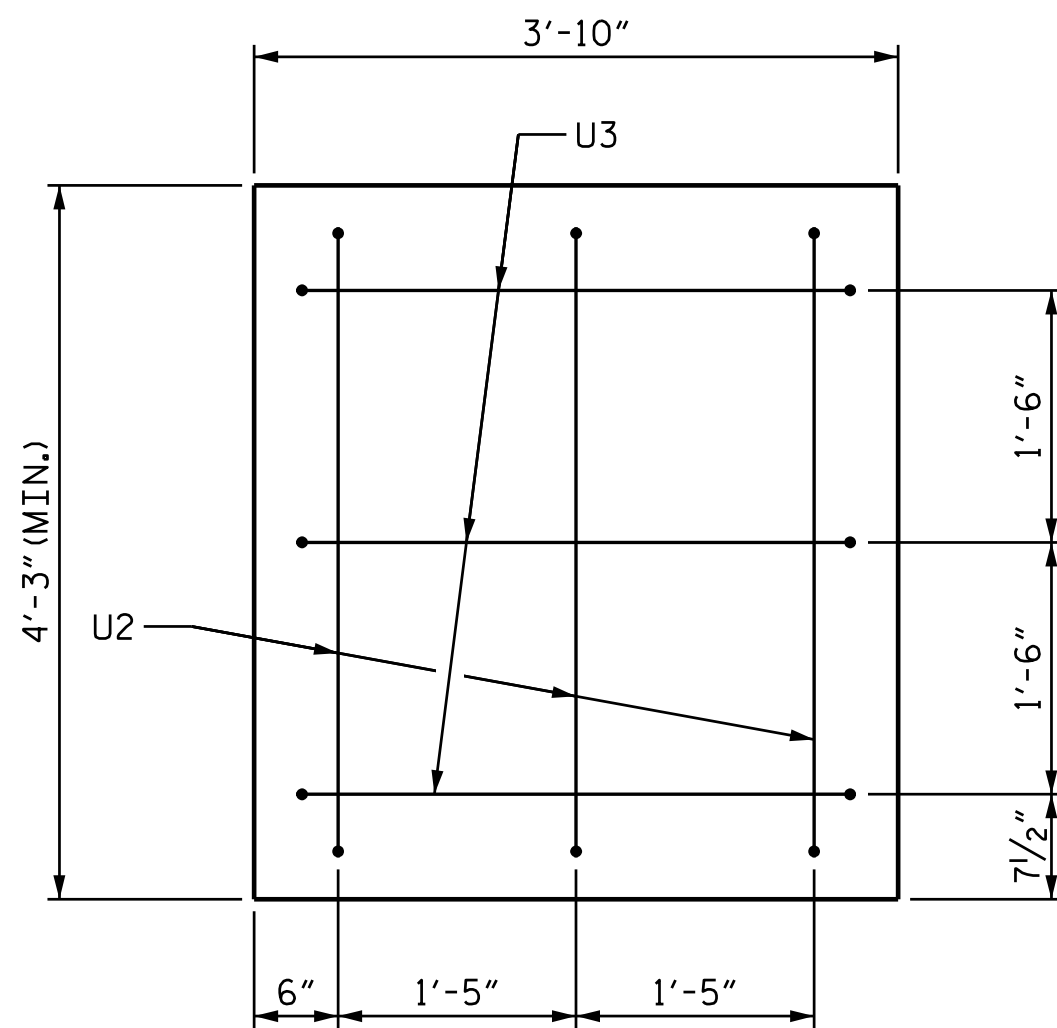
SEAL
 20532
 JAMES E. MONDOLFI
 ENGINEER
 8/1/2017



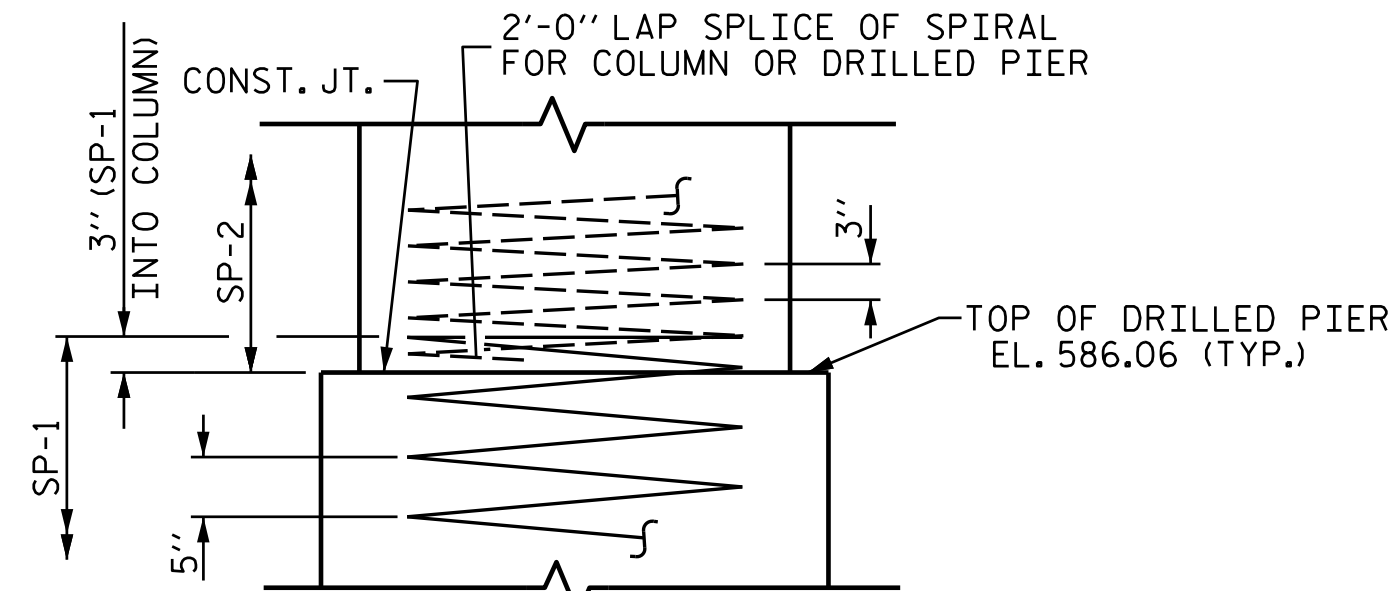
SECTION A-A



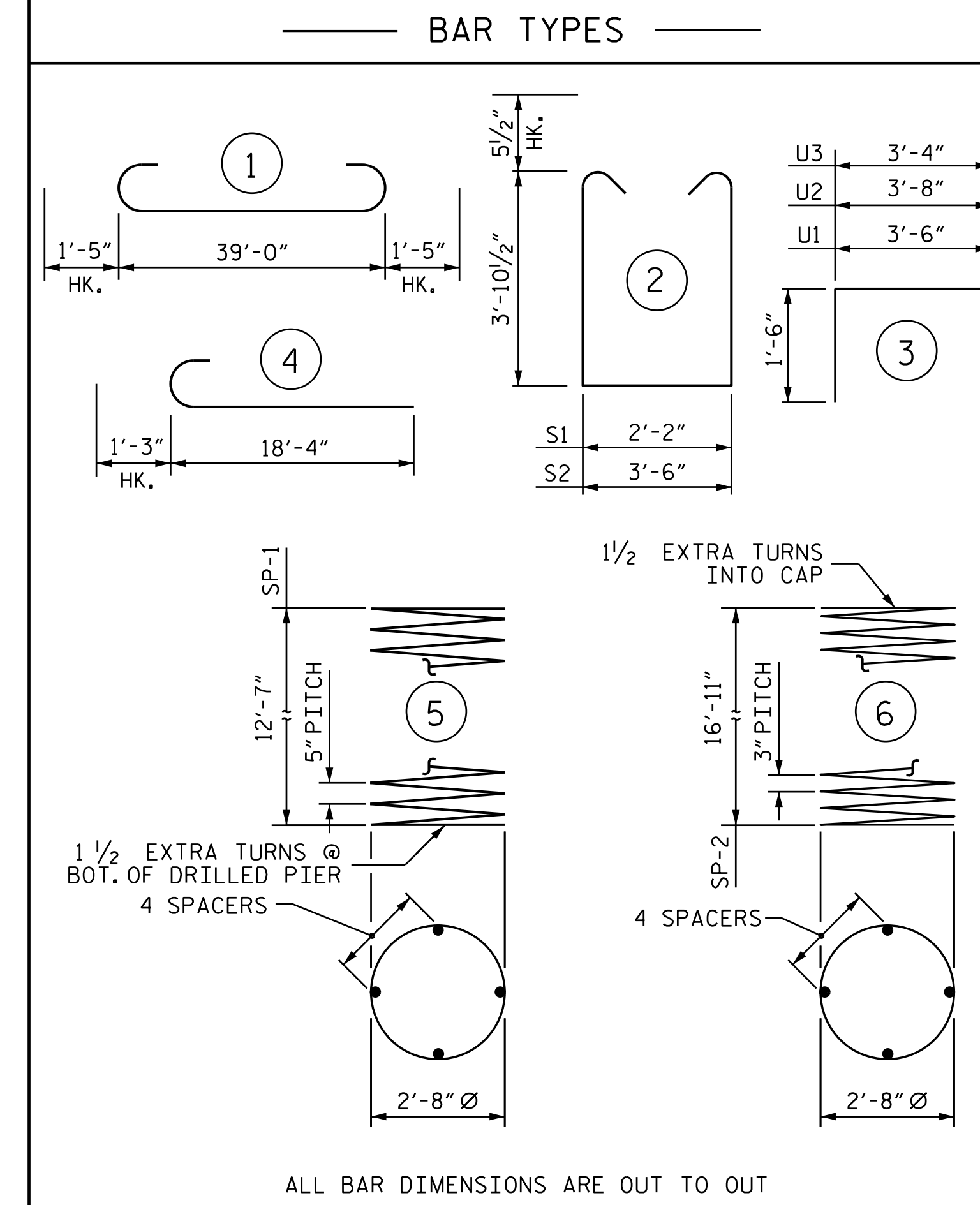
SECTION B-B



END OF CAP-VIEW X-X



CONSTRUCTION JOINT DETAIL



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

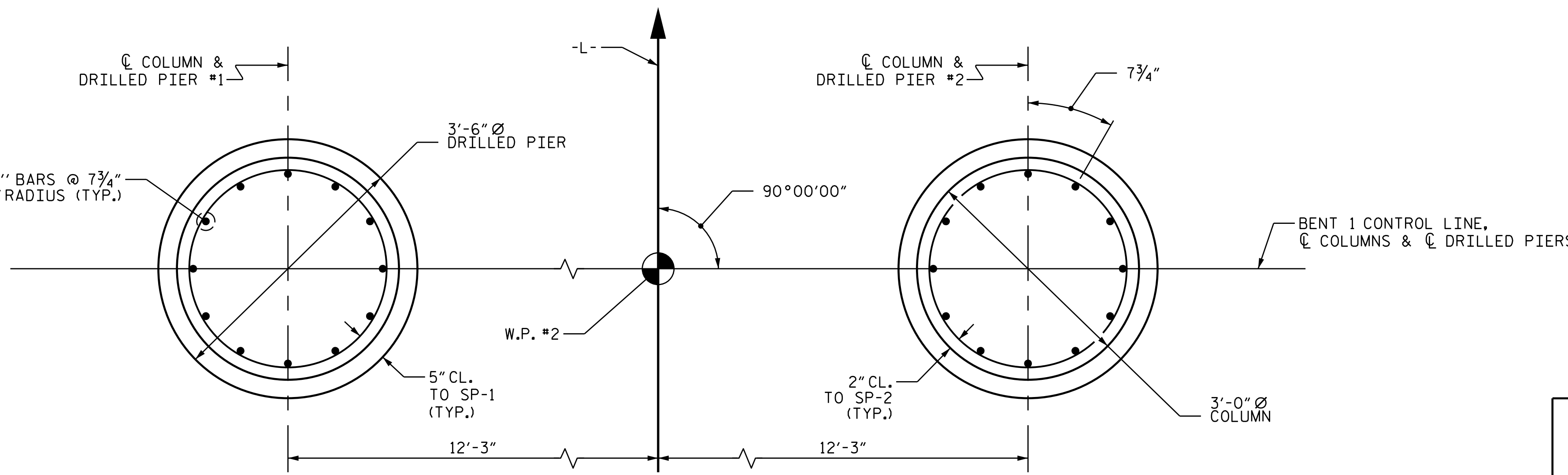
BENT 1					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	1	41'-10"	1440
B2	6	#10	STR	39'-2"	1011
B3	6	#5	STR	39'-2"	245
B4	8	#4	STR	14'-10"	79
M1	24	#9	STR	20'-10"	1700
S1	96	#5	2	10'-10"	1085
S2	11	#5	2	12'-2"	140
U1	30	#4	3	6'-6"	130
U2	6	#4	3	6'-8"	27
U3	6	#4	3	6'-4"	25
V1	24	#9	4	19'-7"	1598

REINFORCING STEEL	=	7,480	LBS
SP-1	2	*	5 261'-2" 545
SP-2	2	**	6 571'-5" 763

SPIRAL COLUMN REINFORCING STEEL	=	1,308	LBS
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.			
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.			

CLASS A CONCRETE BREAKDOWN	
POUR #2 - COLUMNS	8.8 C.Y.
POUR #3 - CAP	24.4 C.Y.
TOTAL	33.2 C.Y.

DRILLED PIERS	
DRILLED PIER CONCRETE	
POUR #1 - DRILLED PIERS	9.4 C.Y.
3'-6" Ø DRILLED PIER IN SOIL	8.2 LIN. FT.
3'-6" Ø DRILLED PIER NOT IN SOIL	18.0 LIN. FT.
CSL TUBES	116.7 FT.
PERMANENT STEEL CASING FOR 3'-6" DRILLED PIER	12.1 LIN. FT.

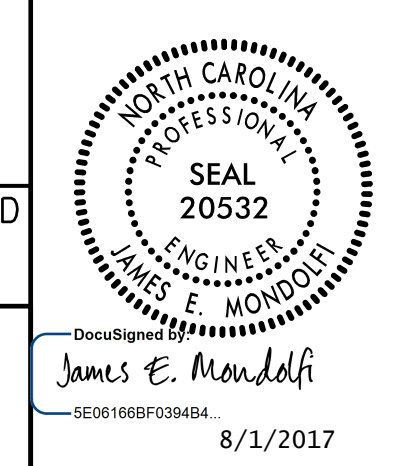


PLAN OF DRILLED PIERS & COLUMNS

PROJECT NO. B-5239
 ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1



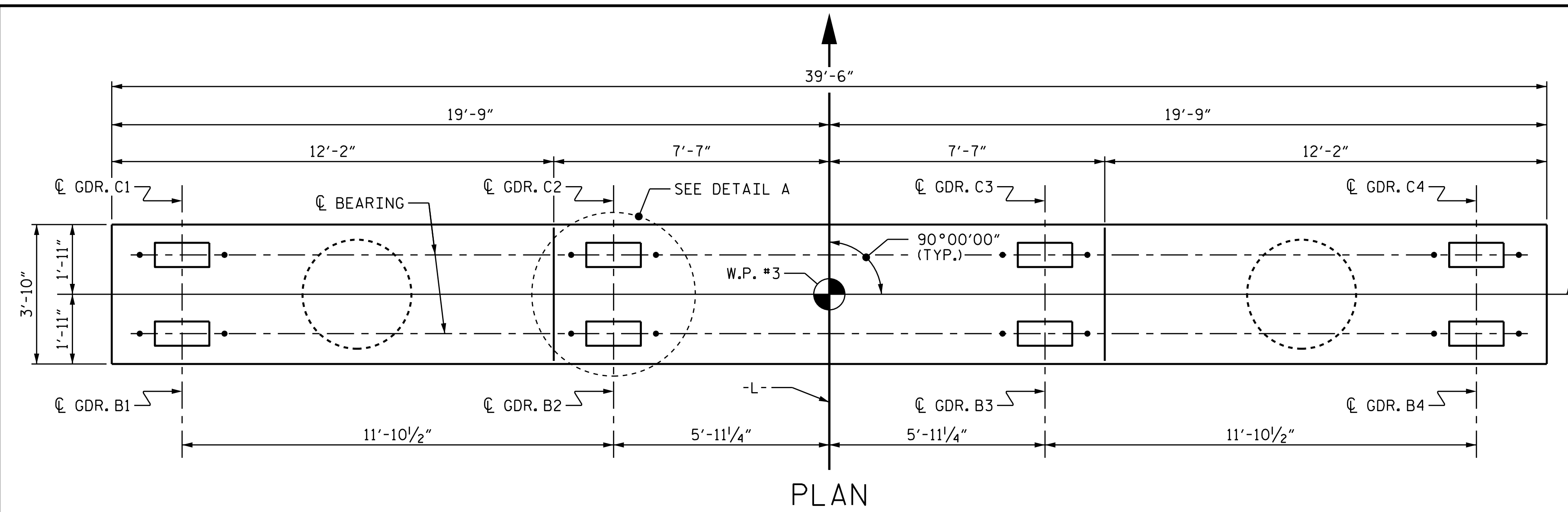
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 PLANS PREPARED BY:
 MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

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

SHEET NO. S01-30
 TOTAL SHEETS 39

#157077
 12/17/2015 9:27:31 AM
 C:\Users\119_Her_River\Plans\B-5239-SMU-B1_000119.dgn

DRAWN BY: J. T. WILLIAMS DATE: 2-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015



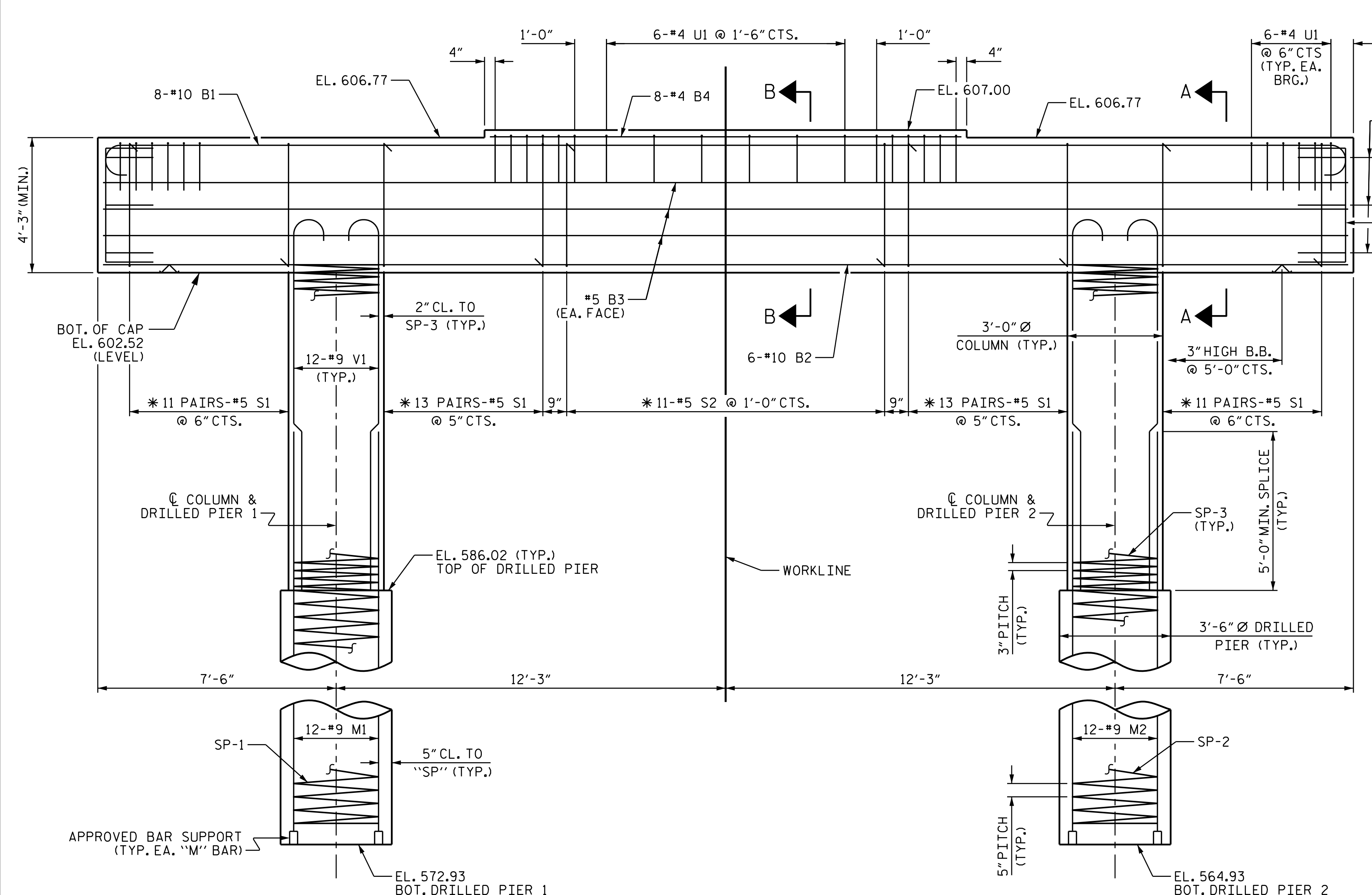
PLAN

SPAN C

SPAN B

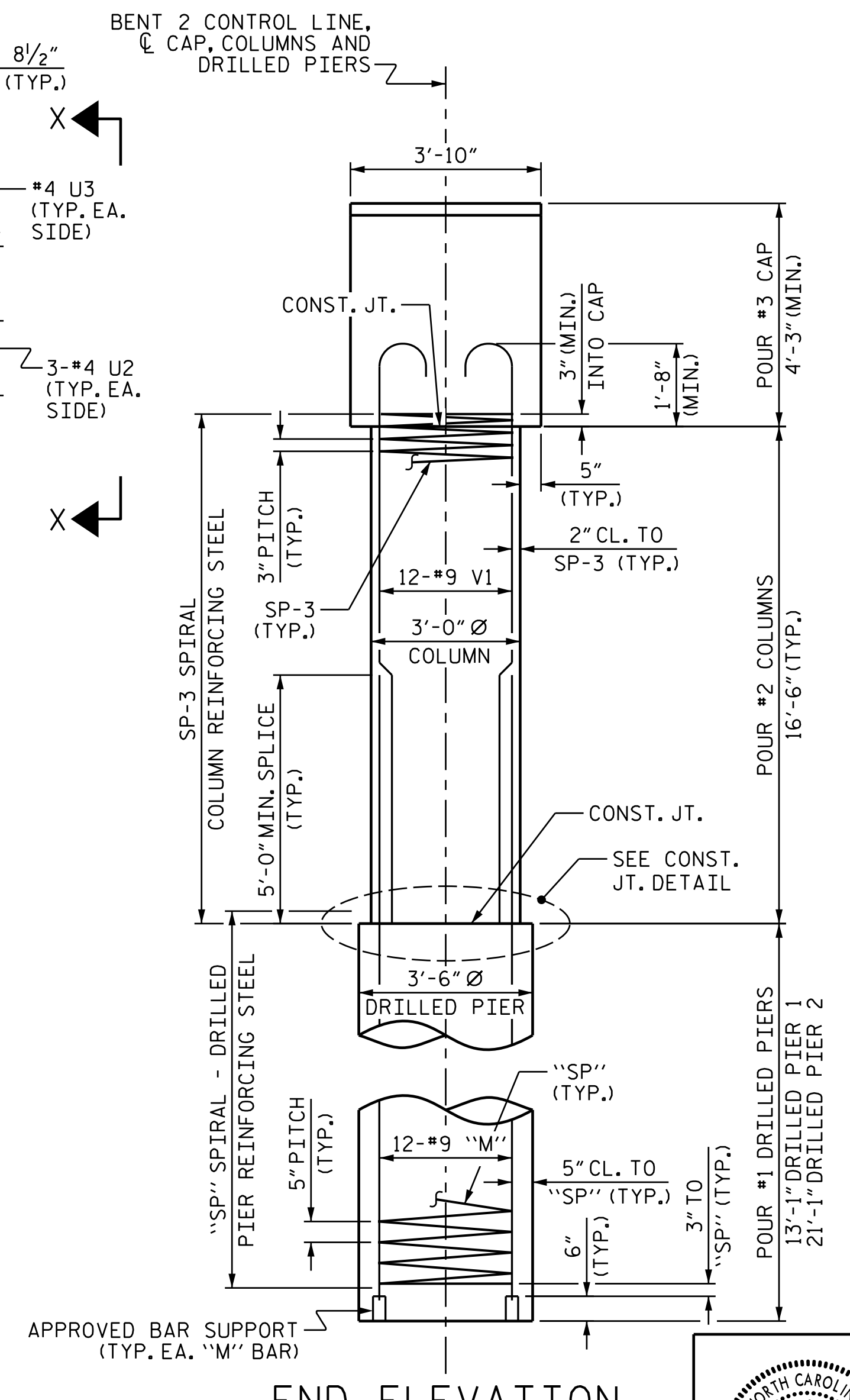
NOTES:

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCED STEEL.
- FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

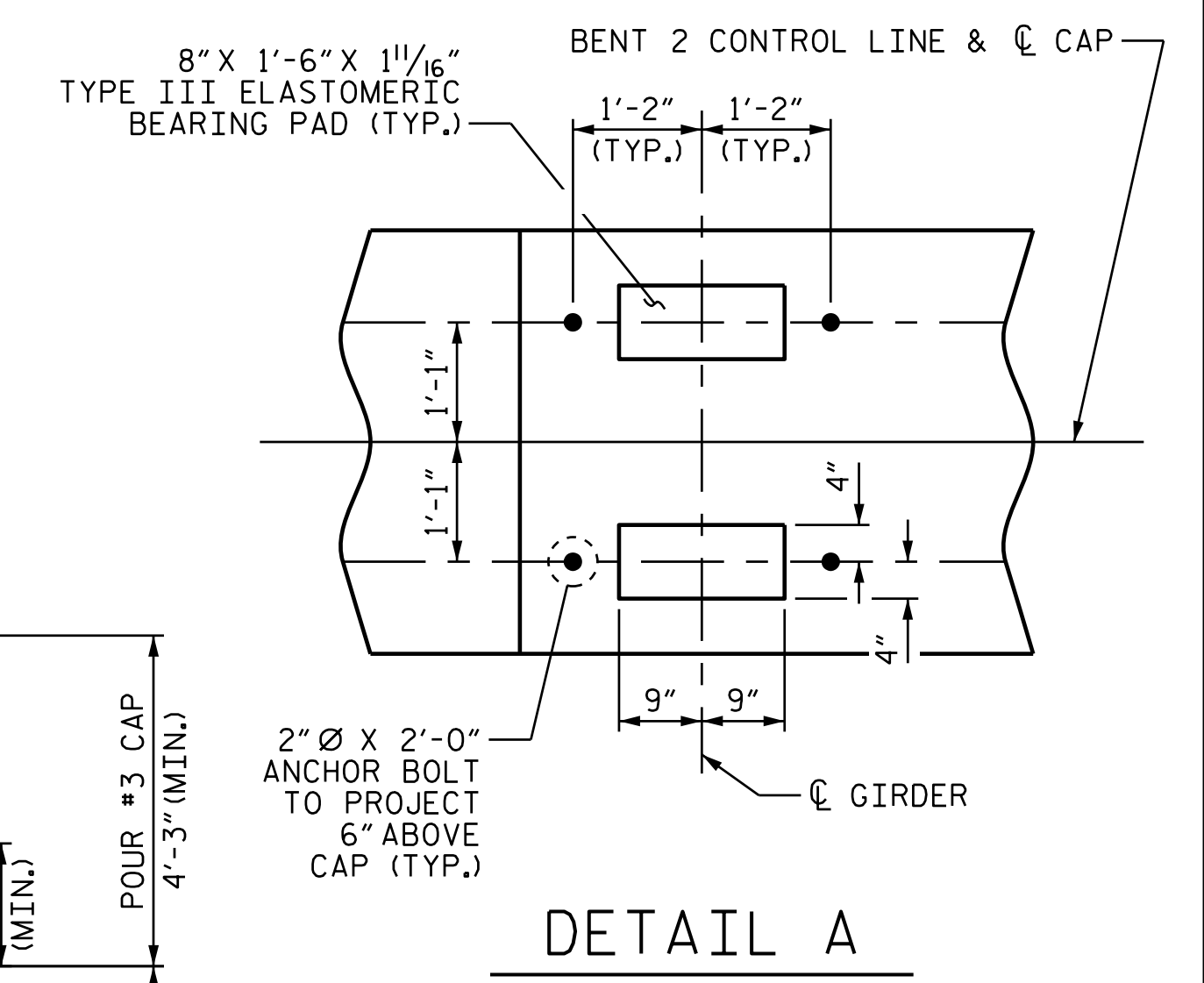


ELEVATION

* INVERT ALTERNATE PAIRS (S1) OR STIRRUPS (S2)



END ELEVATION



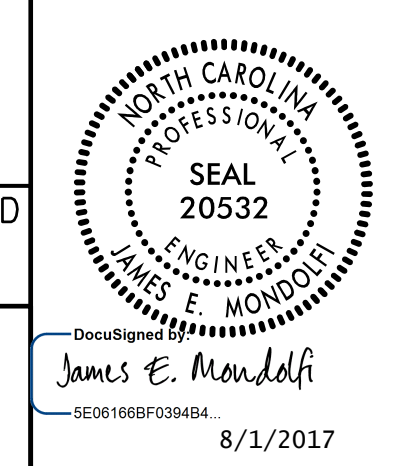
DETAIL A

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT 2



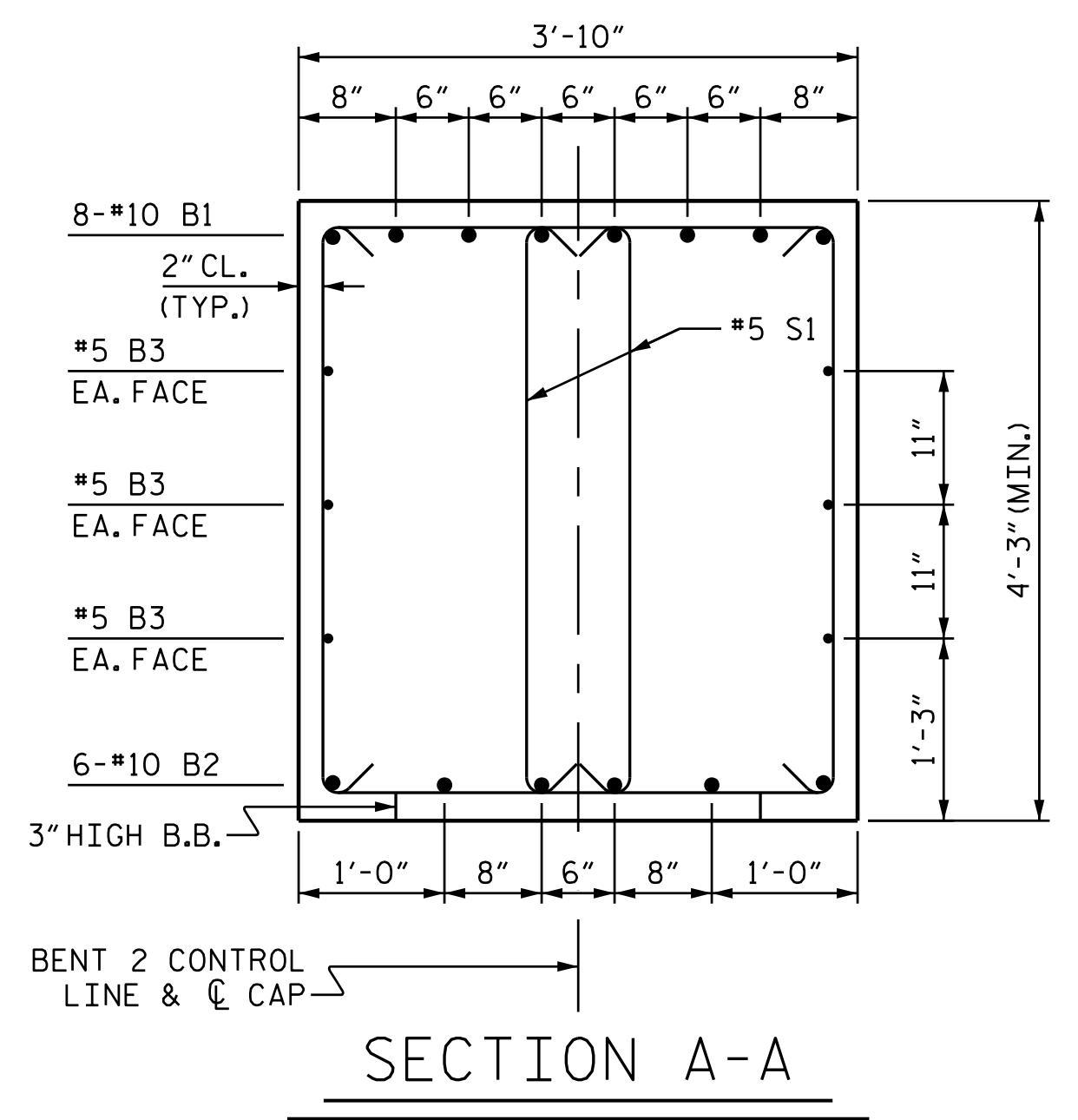
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
M PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2233
 www.mottmac.com
 MOTT MACDONALD LICENSE NO. F-0669

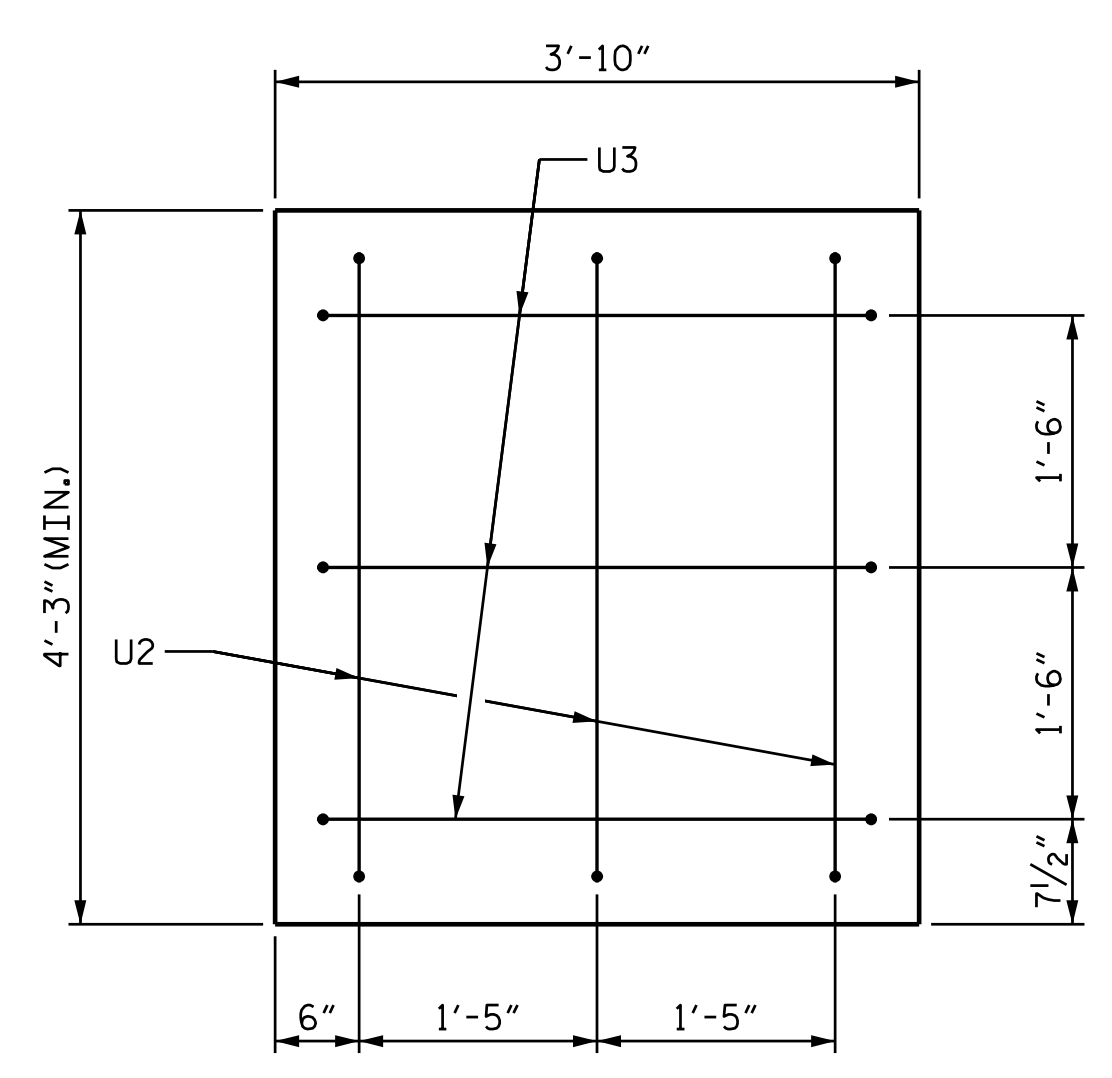
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-31	
1			3			TOTAL SHEETS	
2			4			39	

157077
 C:\Users\119_Hey_River\Plans\B-5239-SMU_B2_000119.dgn
 2/17/2015 9:27:34 AM

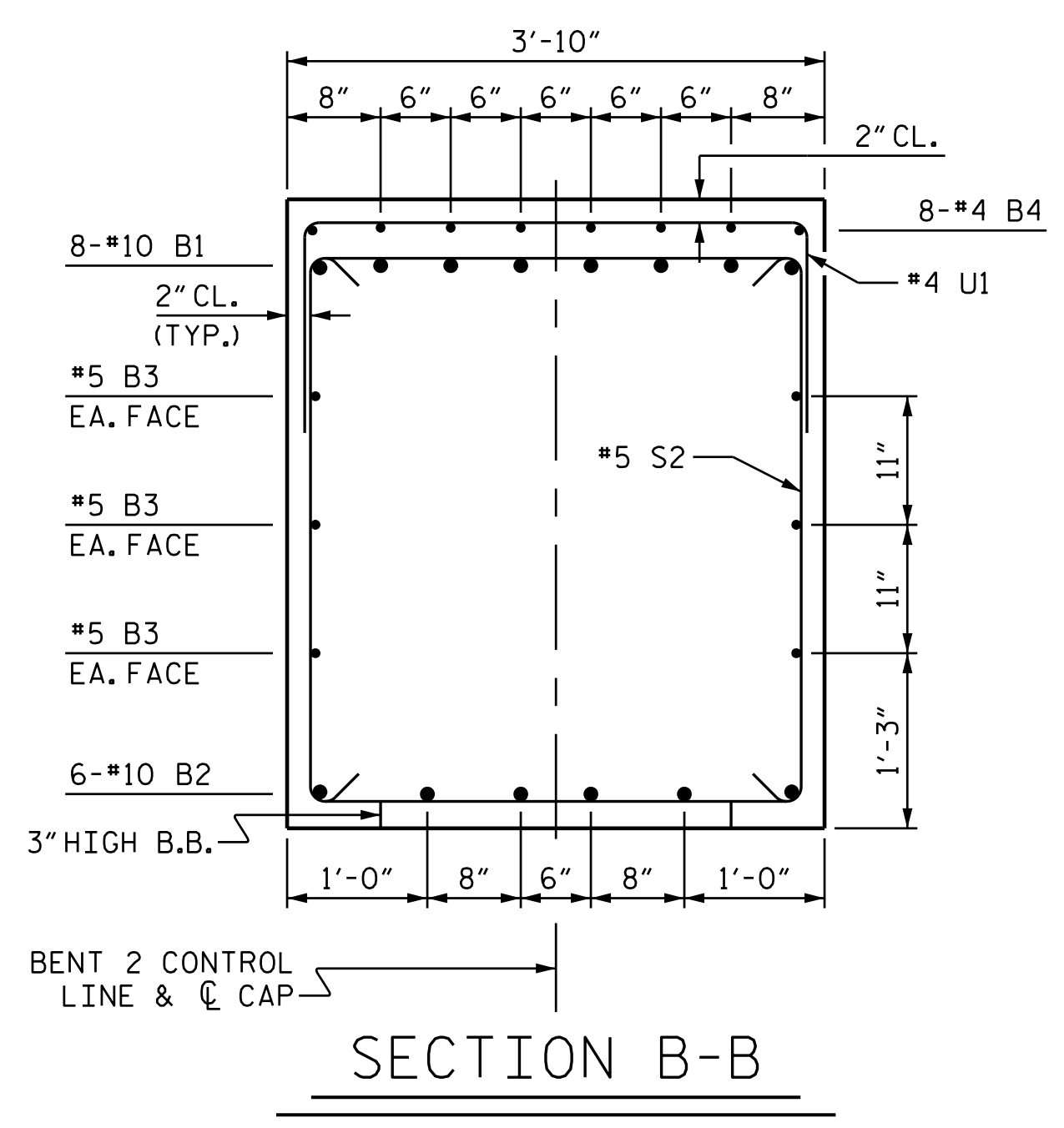
DRAWN BY: J. T. WILLIAMS DATE: 2-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015



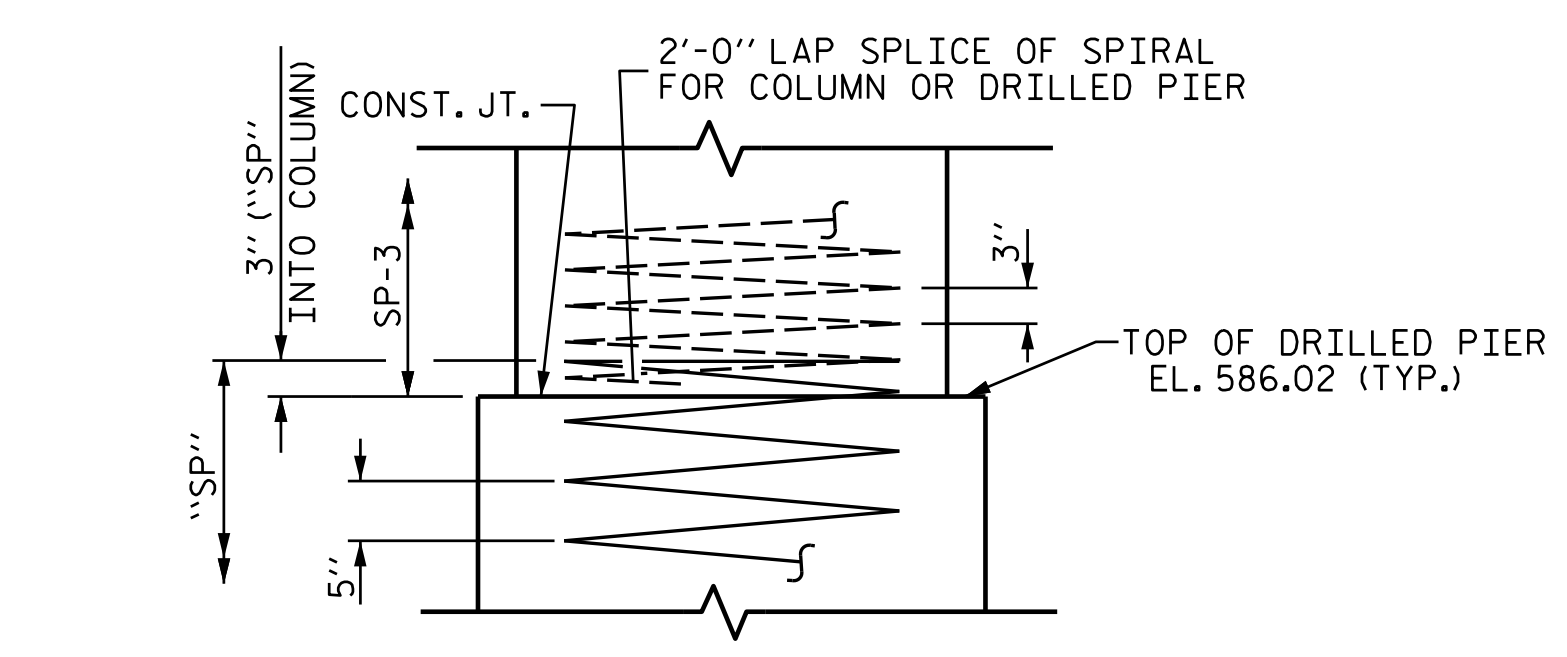
SECTION A-A



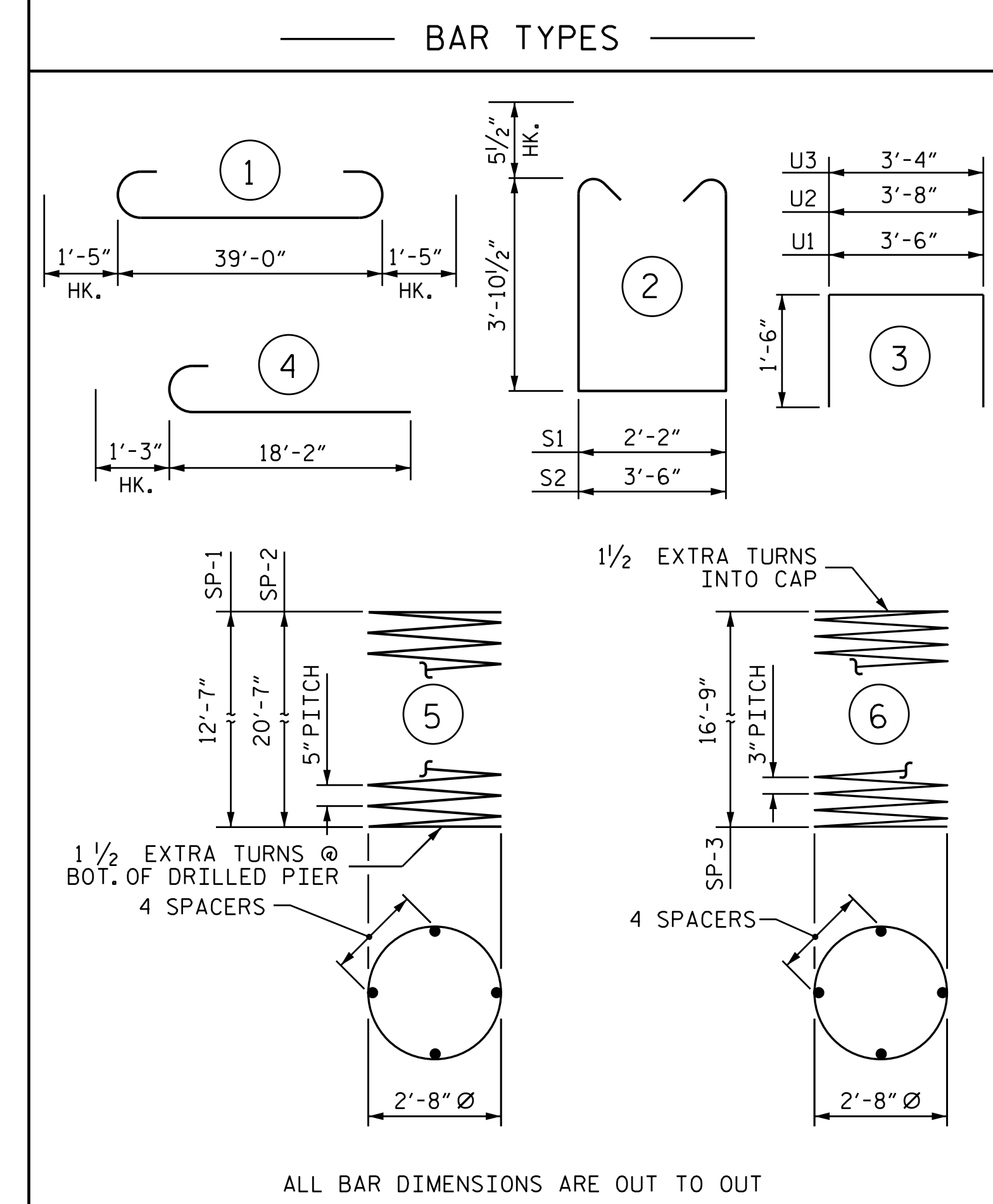
END OF CAP-VIEW X-X



SECTION B-B



CONSTRUCTION JOINT DETAIL



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10		41'-10"	1440
B2	6	#10	STR	39'-2"	1011
B3	6	#5	STR	39'-2"	245
B4	8	#4	STR	14'-10"	79
M1	12	#9	STR	20'-10"	850
M2	12	#9	STR	28'-10"	1176
S1	96	#5		10'-10"	1085
S2	11	#5		12'-2"	140
U1	30	#4		6'-6"	130
U2	6	#4		6'-8"	27
U3	6	#4		6'-4"	25
V1	24	#9		19'-5"	1584

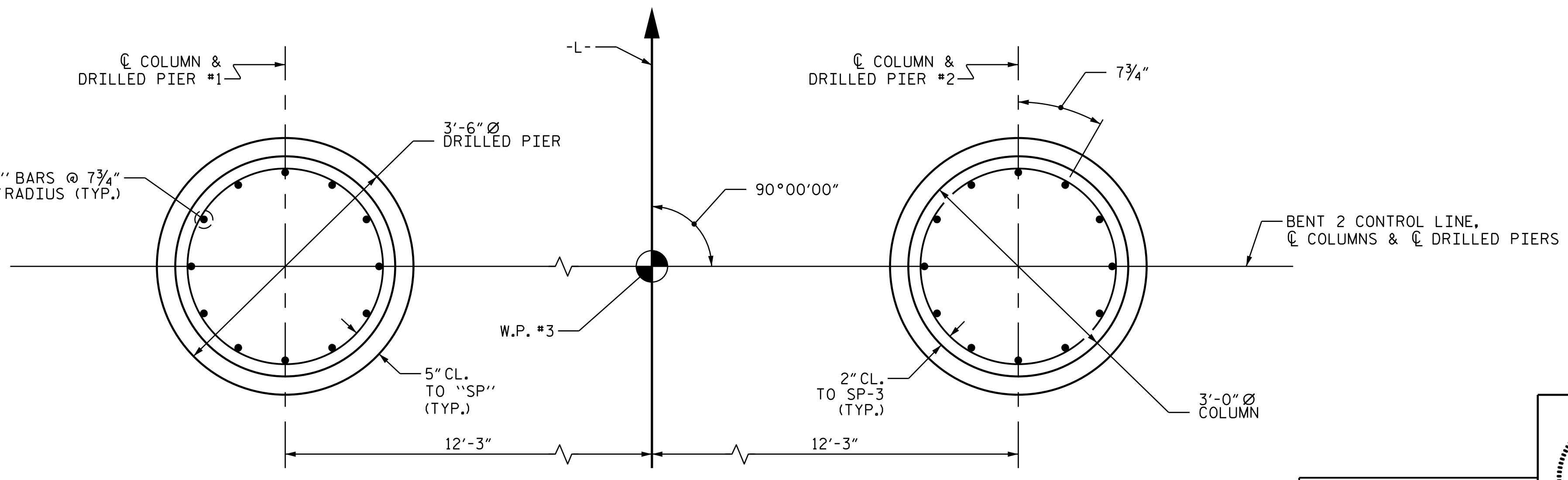
REINFORCING STEEL	=	7,792 LBS
SP-1	1	* * 5 261'-2" 272
SP-2	1	* * 5 419'-6" 438
SP-3	2	* * 6 565'-2" 755

SPIRAL COLUMN REINFORCING STEEL	=	1,465 LBS
---------------------------------	---	-----------

* THE SP-1 THRU SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
 ** THE SP-3 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

CLASS A CONCRETE BREAKDOWN	
POUR #2 - COLUMNS	8.7 C.Y.
POUR #3 - CAP	24.4 C.Y.
TOTAL	33.1 C.Y.

DRILLED PIERS	
DRILLED PIER CONCRETE	
POUR #1 - DRILLED PIERS	12.2 C.Y.
3'-6" Ø DRILLED PIER IN SOIL	14.2 LIN. FT.
3'-6" Ø DRILLED PIER NOT IN SOIL	20.0 LIN. FT.
CSL TUBES	148.7 FT.
PERMANENT STEEL CASING FOR 3'-6" DRILLED PIER	16.0 LIN. FT.

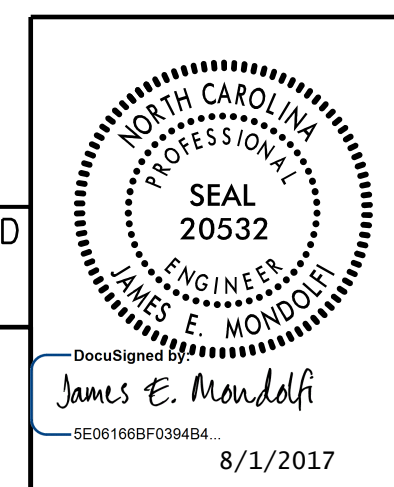


PLAN OF DRILLED PIERS & COLUMNS

PROJECT NO. B-5239
 ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 2



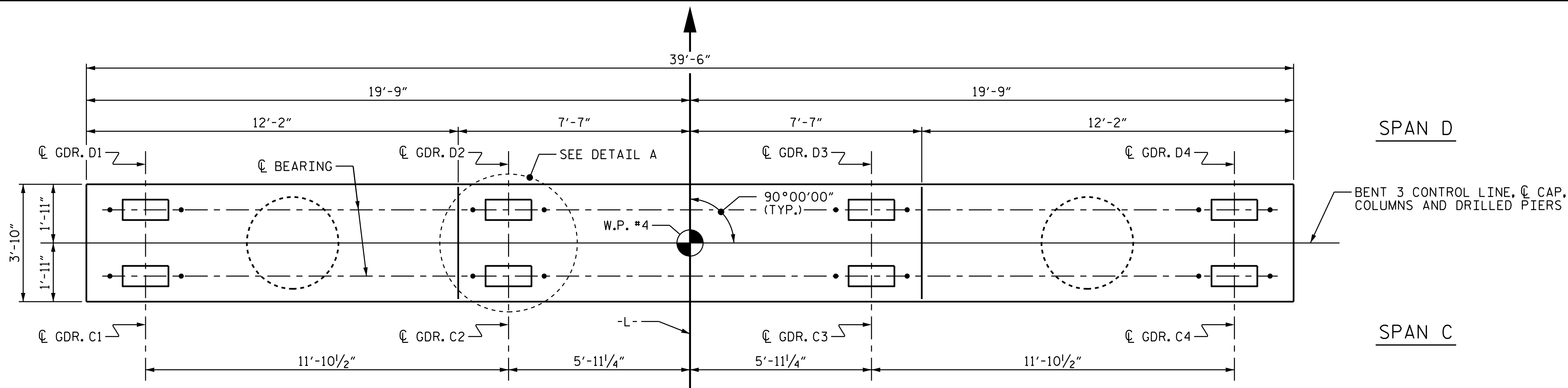
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 PLANS PREPARED BY:
 MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

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

SHEET NO.	S01-32
TOTAL SHEETS	39

157077
 12/1/2015
 C:\Users\119_Hey_River\Plans\B-5239-SMU.B2.000119.dgn
 9:27:36 AM

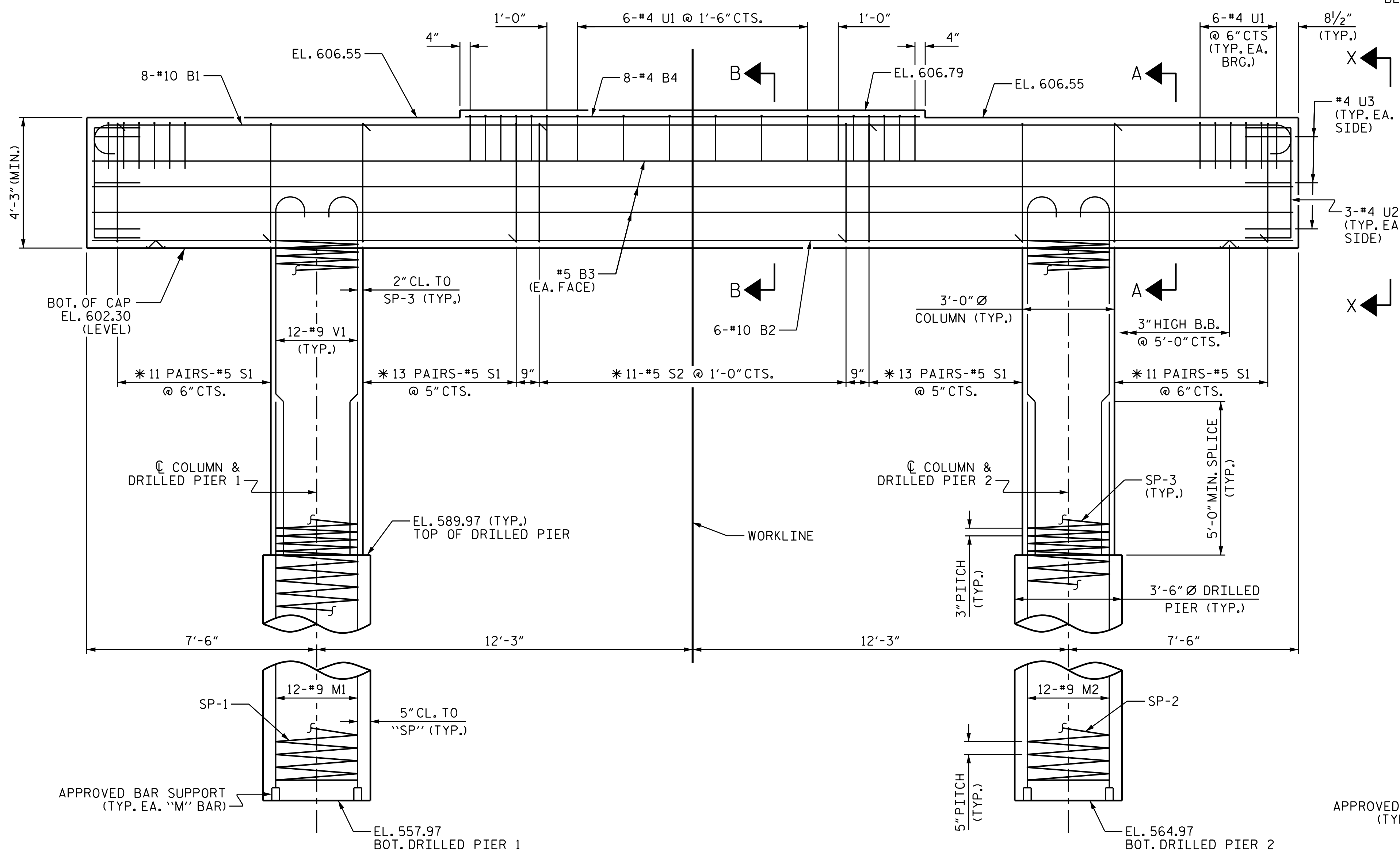
DRAWN BY: J. T. WILLIAMS DATE: 2-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015



PLAN

NOTES:

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCED STEEL.
 FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."
 THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIER IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FOOT BELOW THE GROUND LINE.
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

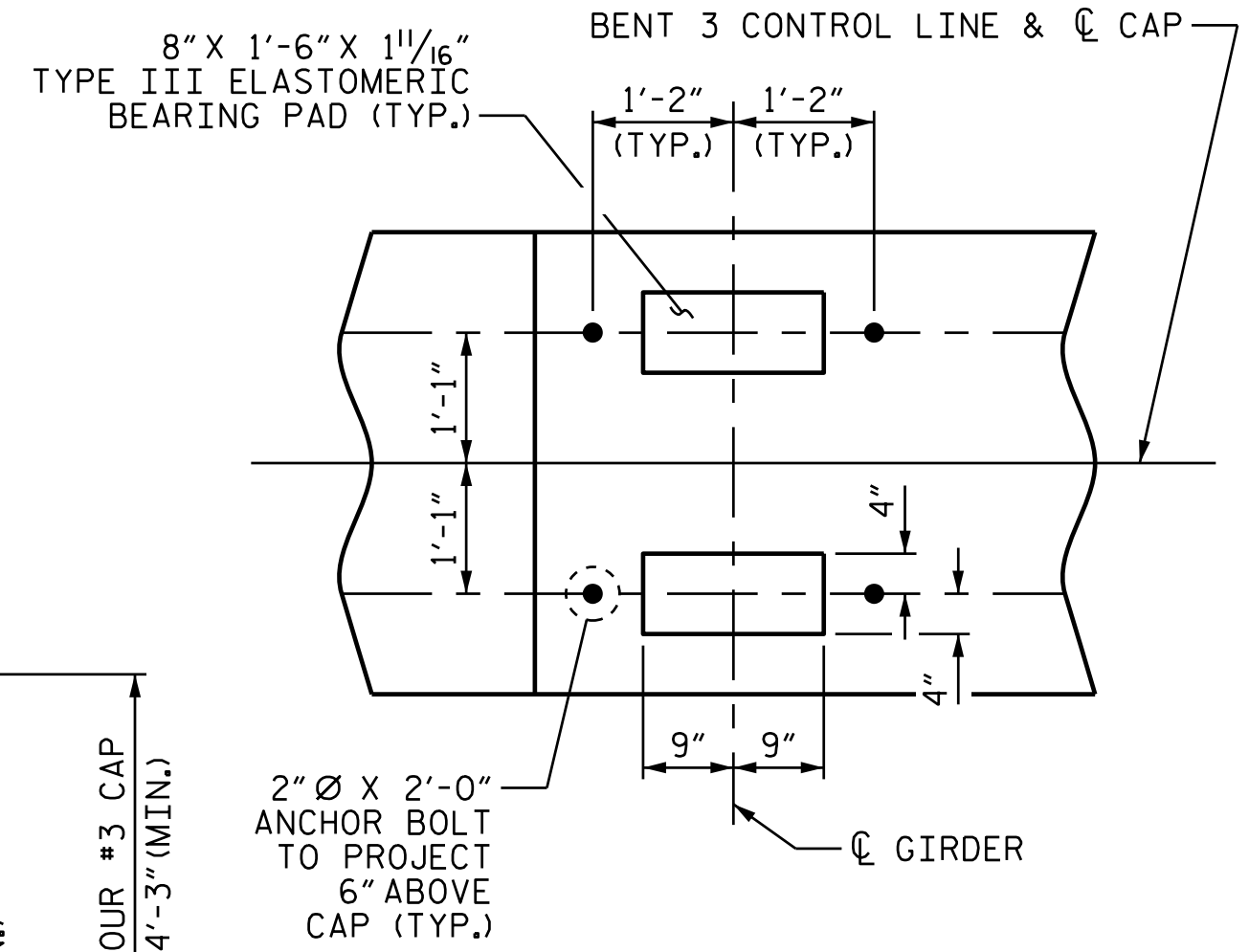


ELEVATION

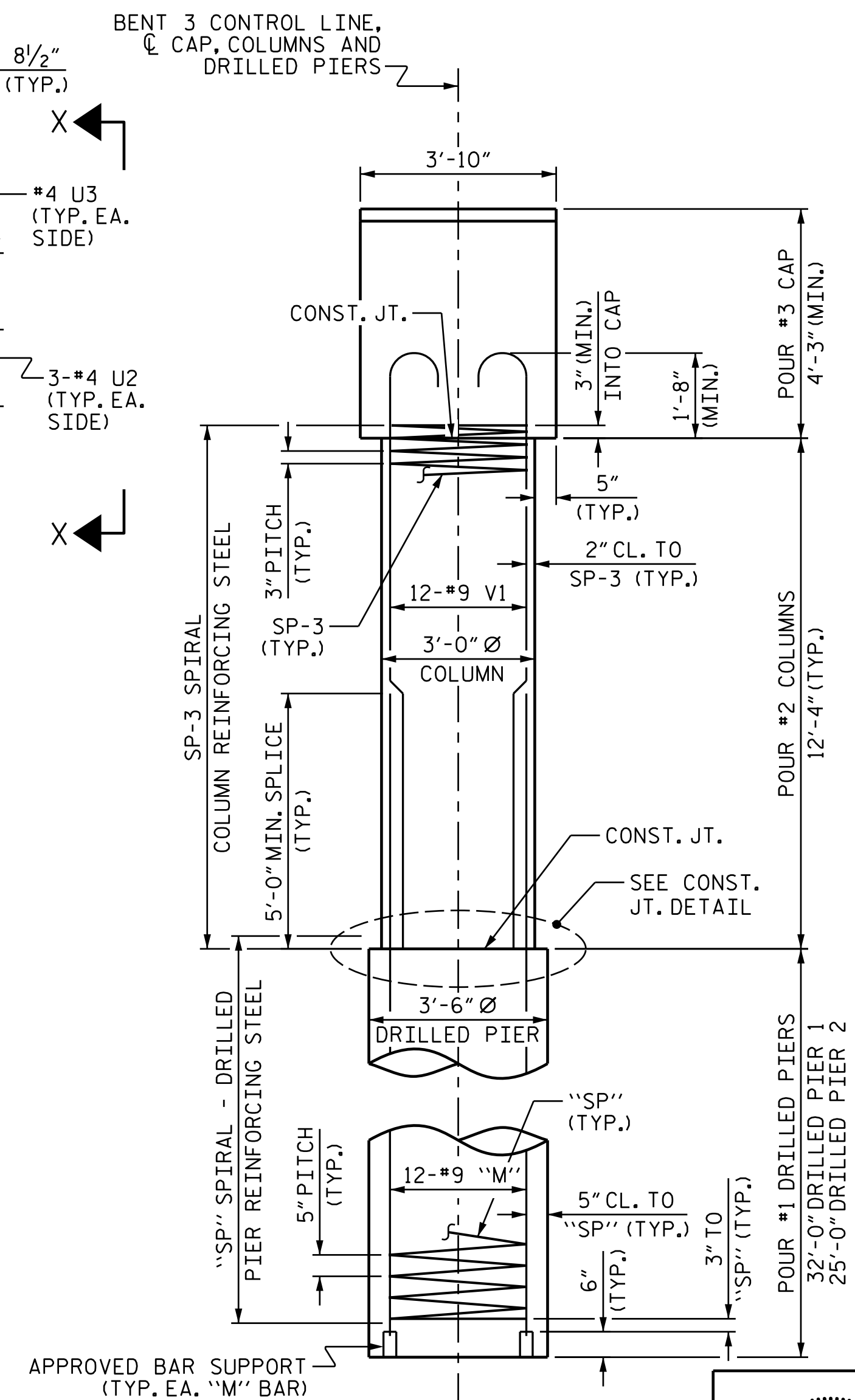
* INVERT ALTERNATE PAIRS (S1) OR STIRRUPS (S2)

SPAN D

SPAN C



DETAIL A



END ELEVATION

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 16+34.50 -L-

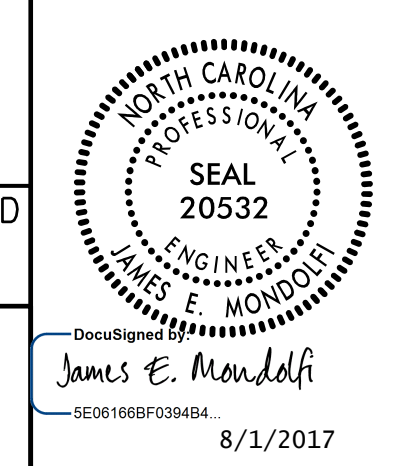
SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT 3

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

SHEET NO. S01-33
 TOTAL SHEETS 39

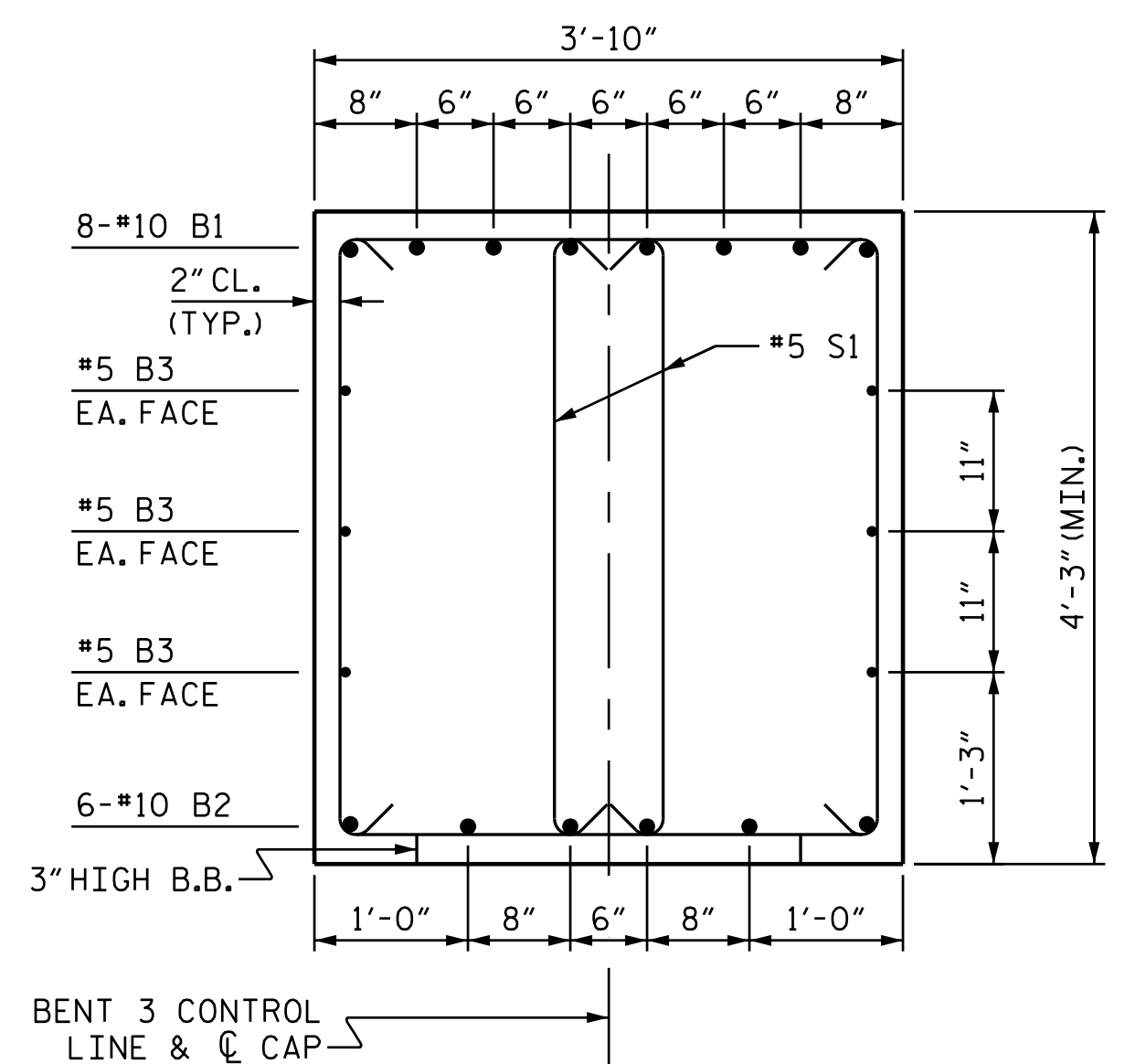


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

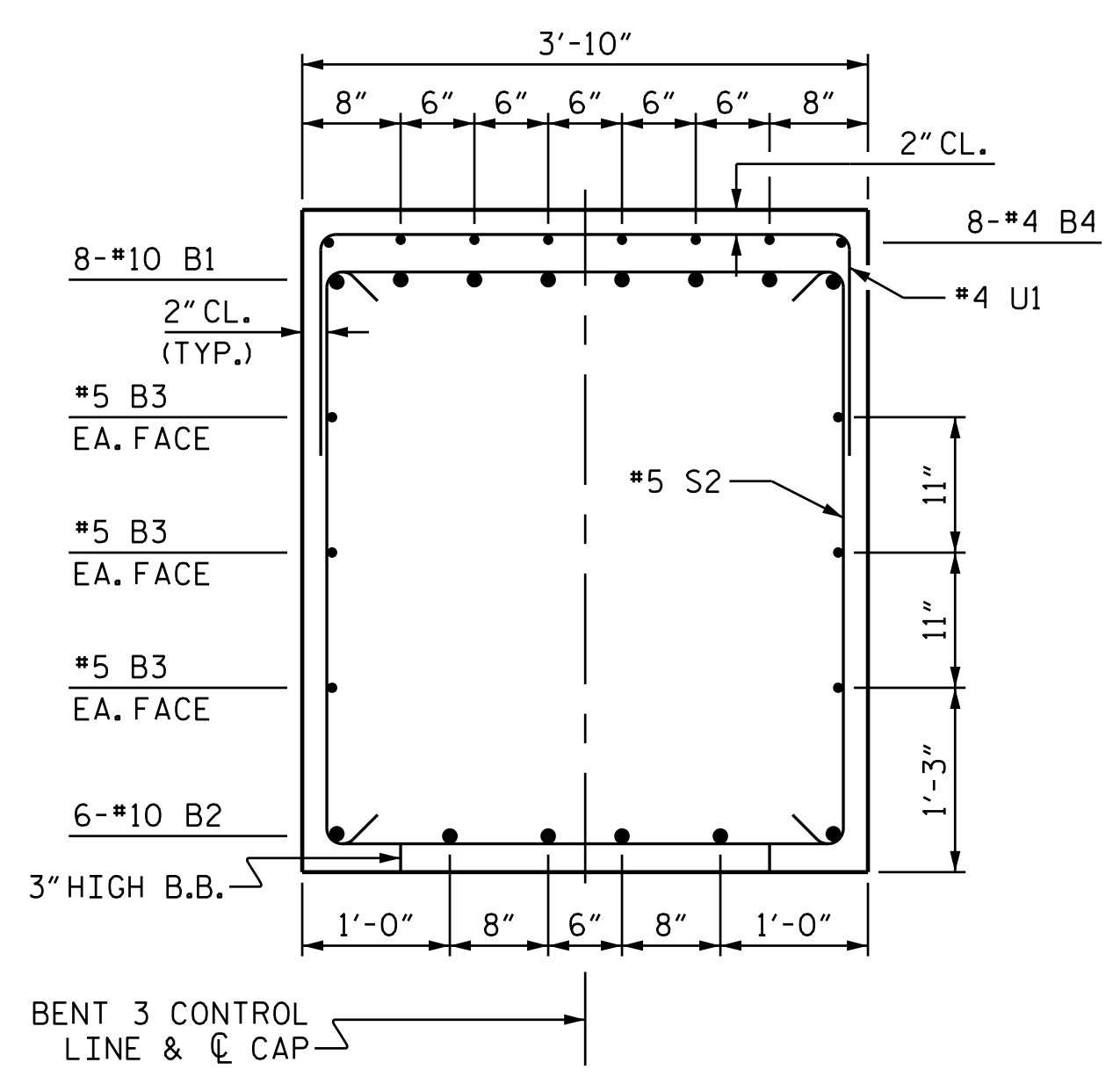
PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

157077
 C:\Users\119_Her_River\Plans\B-5239-SMU-B3_000119.dgn
 2/17/2015 9:27:39 AM

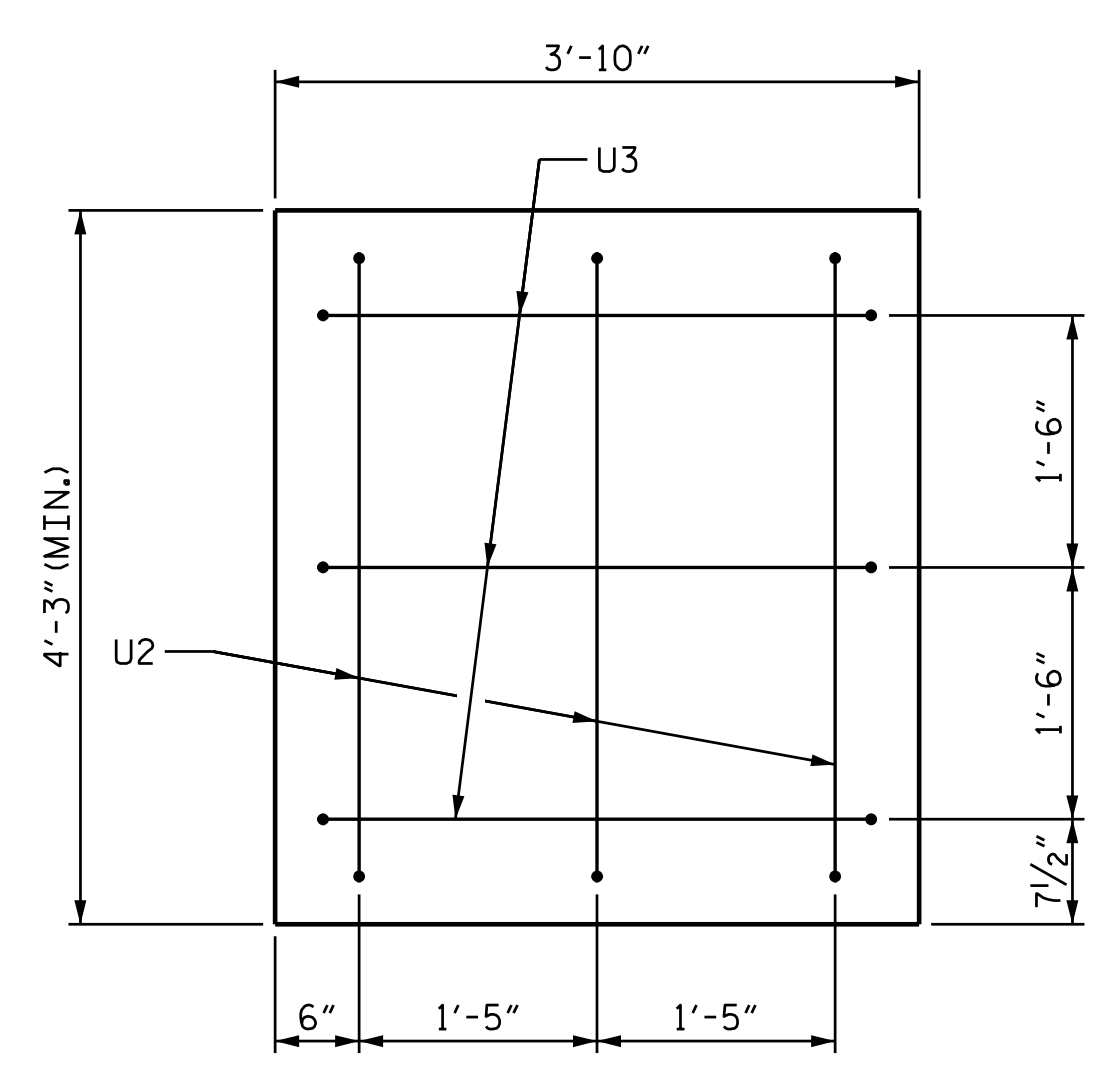
DRAWN BY: J. T. WILLIAMS DATE: 2-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015



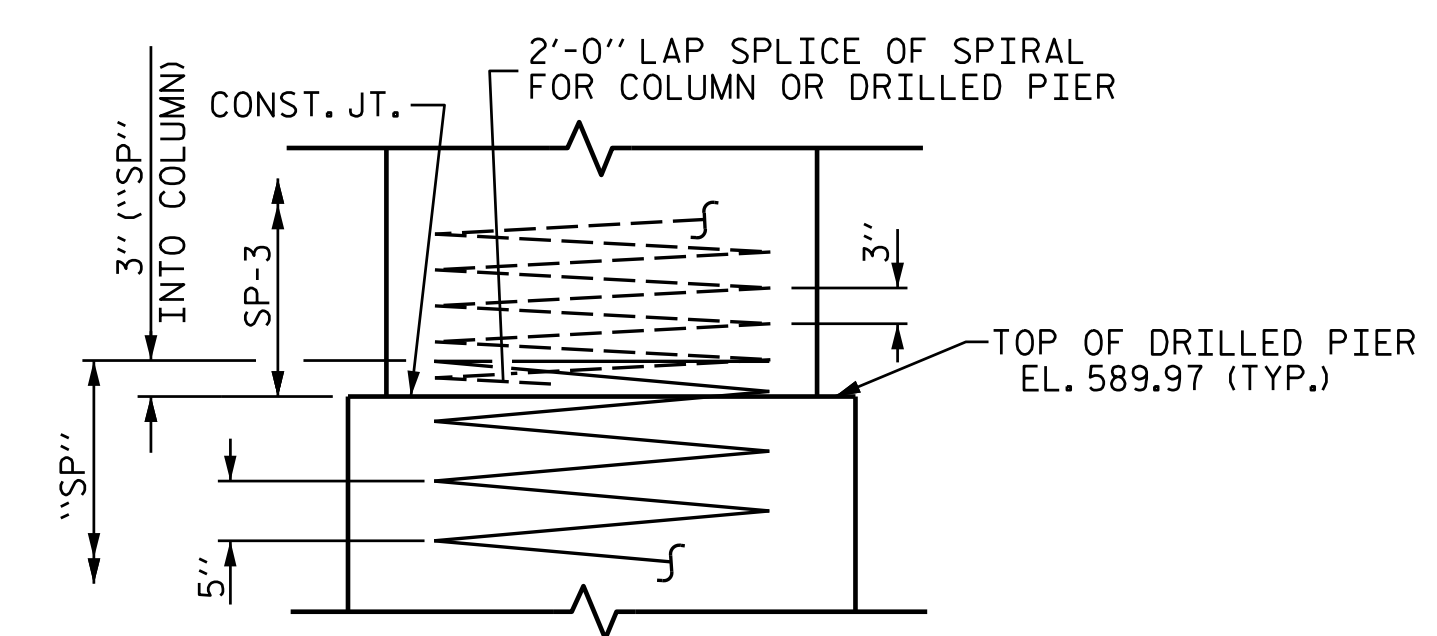
SECTION A-A



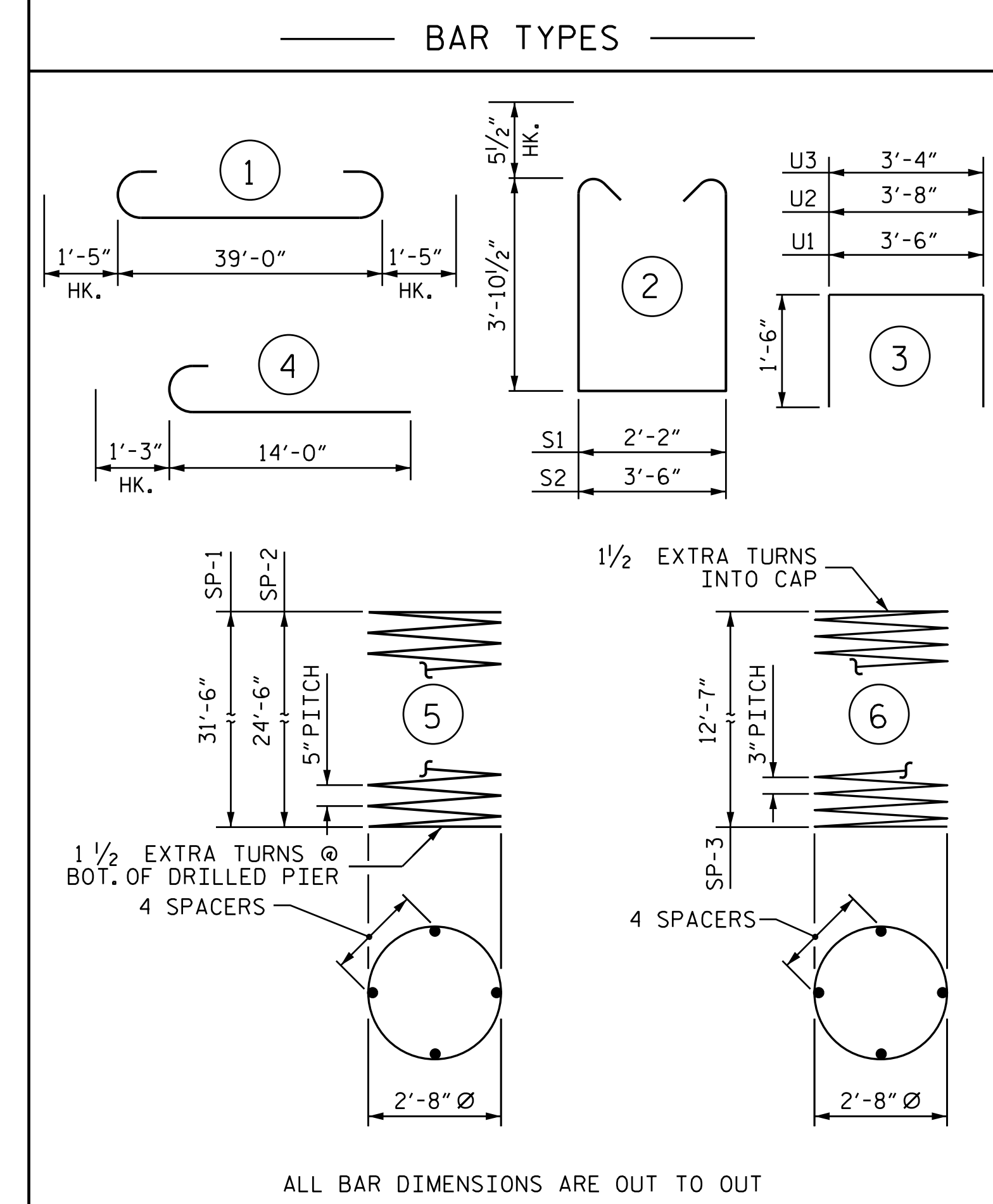
SECTION B-B



END OF CAP-VIEW X-X



CONSTRUCTION JOINT DETAIL



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 3					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10		41'-10"	1440
B2	6	#10	STR	39'-2"	1011
B3	6	#5	STR	39'-2"	245
B4	8	#4	STR	14'-10"	79
M1	12	#9	STR	39'-9"	1622
M2	12	#9	STR	32'-9"	1336
S1	96	#5	2	10'-10"	1085
S2	11	#5	2	12'-2"	140
U1	30	#4	3	6'-6"	130
U2	6	#4	3	6'-8"	27
U3	6	#4	3	6'-4"	25
V1	24	#9	4	15'-3"	1244

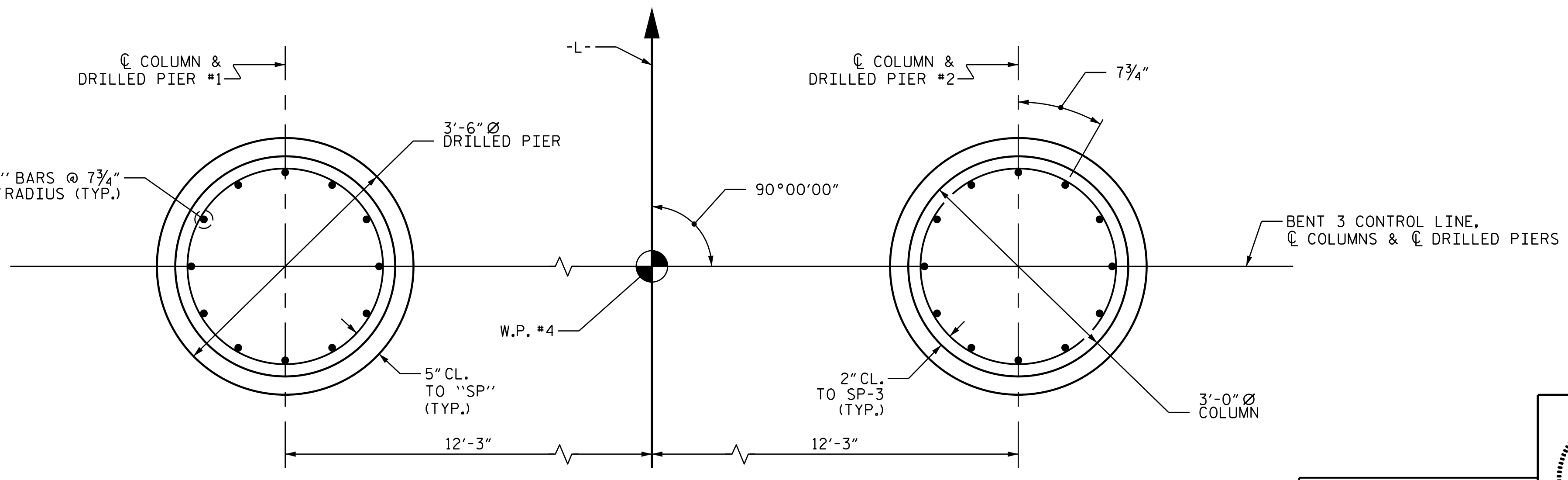
REINFORCING STEEL	=	8,384 LBS
SP-1	1	* * 5 635'-5" 663
SP-2	1	* * 5 497'-7" 519
SP-3	2	* * 6 429'-1" 573

SPIRAL COLUMN REINFORCING STEEL	=	1,755 LBS
---------------------------------	---	-----------

* THE SP-1 THRU SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
 ** THE SP-3 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

CLASS A CONCRETE BREAKDOWN	
POUR #2 - COLUMNS	6.5 C.Y.
POUR #3 - CAP	24.4 C.Y.
TOTAL	30.9 C.Y.

DRILLED PIERS	
DRILLED PIER CONCRETE	
POUR #1 - DRILLED PIERS	20.4 C.Y.
3'-6" Ø DRILLED PIER IN SOIL	24.0 LIN. FT.
3'-6" Ø DRILLED PIER NOT IN SOIL	33.0 LIN. FT.
CSL TUBES	240.0 FT.
PERMANENT STEEL CASING FOR 3'-6" DRILLED PIER	10.0 LIN. FT.

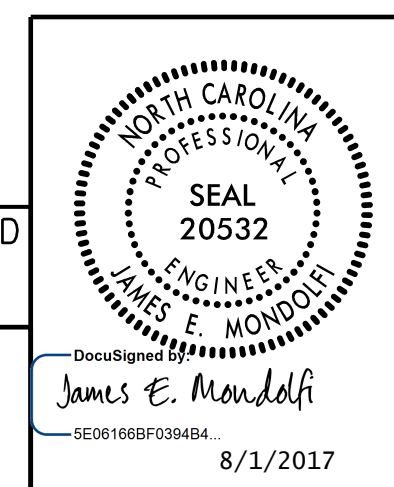


PLAN OF DRILLED PIERS & COLUMNS

PROJECT NO. B-5239
 ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 3



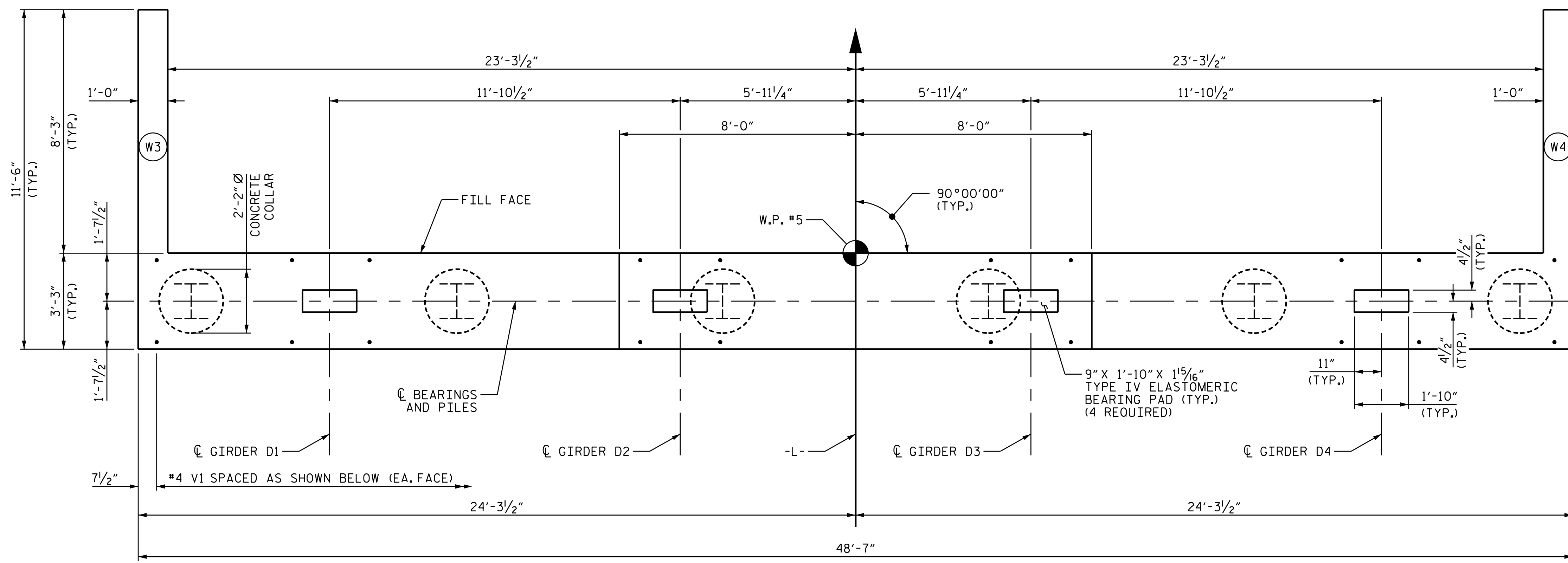
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 PLANS PREPARED BY: MOTT MACDONALD
 PO Box 700 Fuquay-Varina, NC 27526
 (919) 552-2253 www.mottmac.com
 LICENSE NO. F-0669

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

SHEET NO.	S01-34
TOTAL SHEETS	39

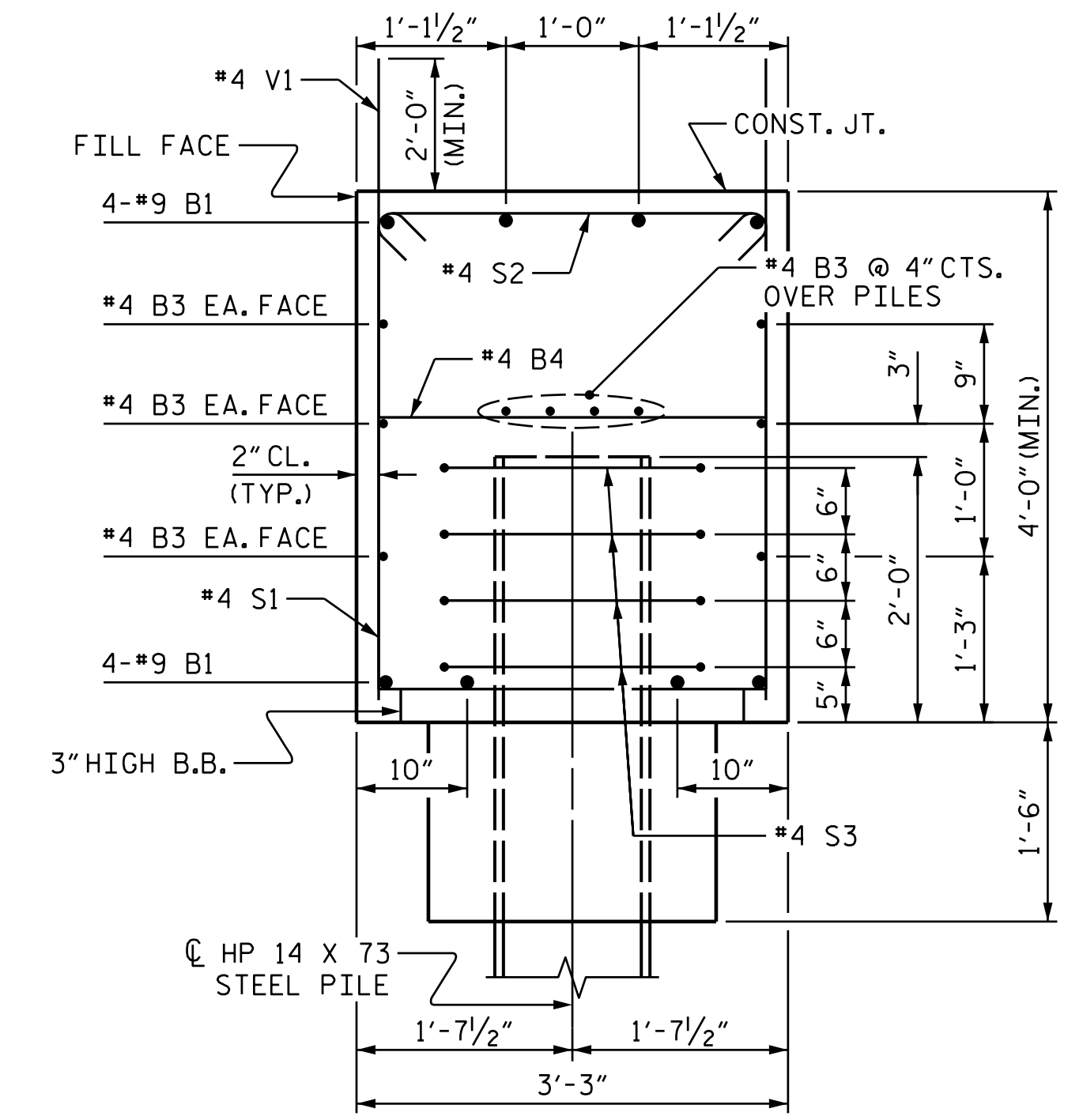
157077
 12/1/2015
 C:\Users\119_Hey_River\My Documents\Plans\B-5239-SMU.B3_000119.dgn
 9:27:40 AM

DRAWN BY: J. T. WILLIAMS DATE: 2-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015

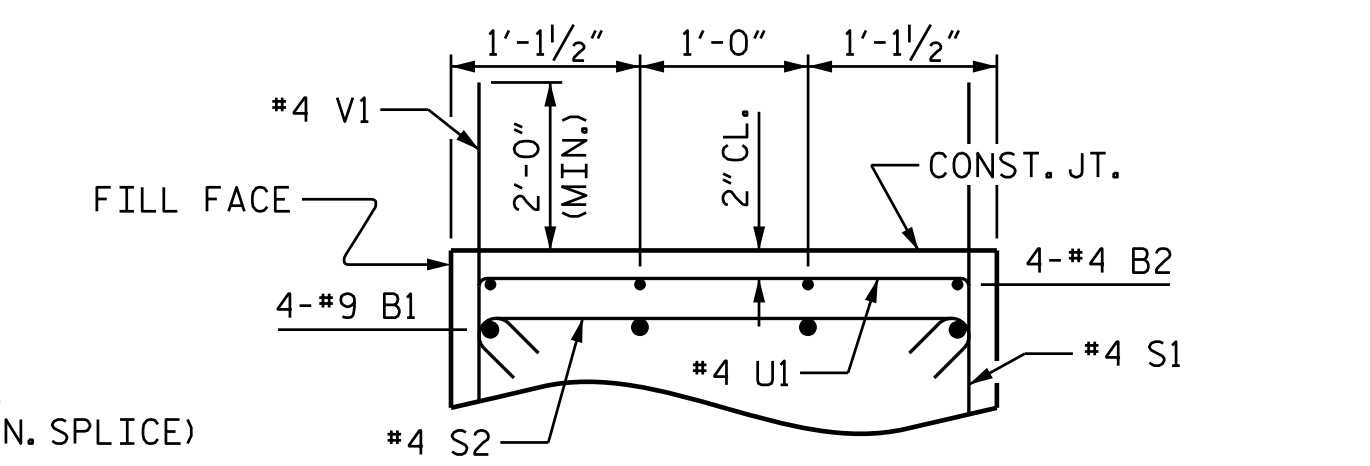


PLAN

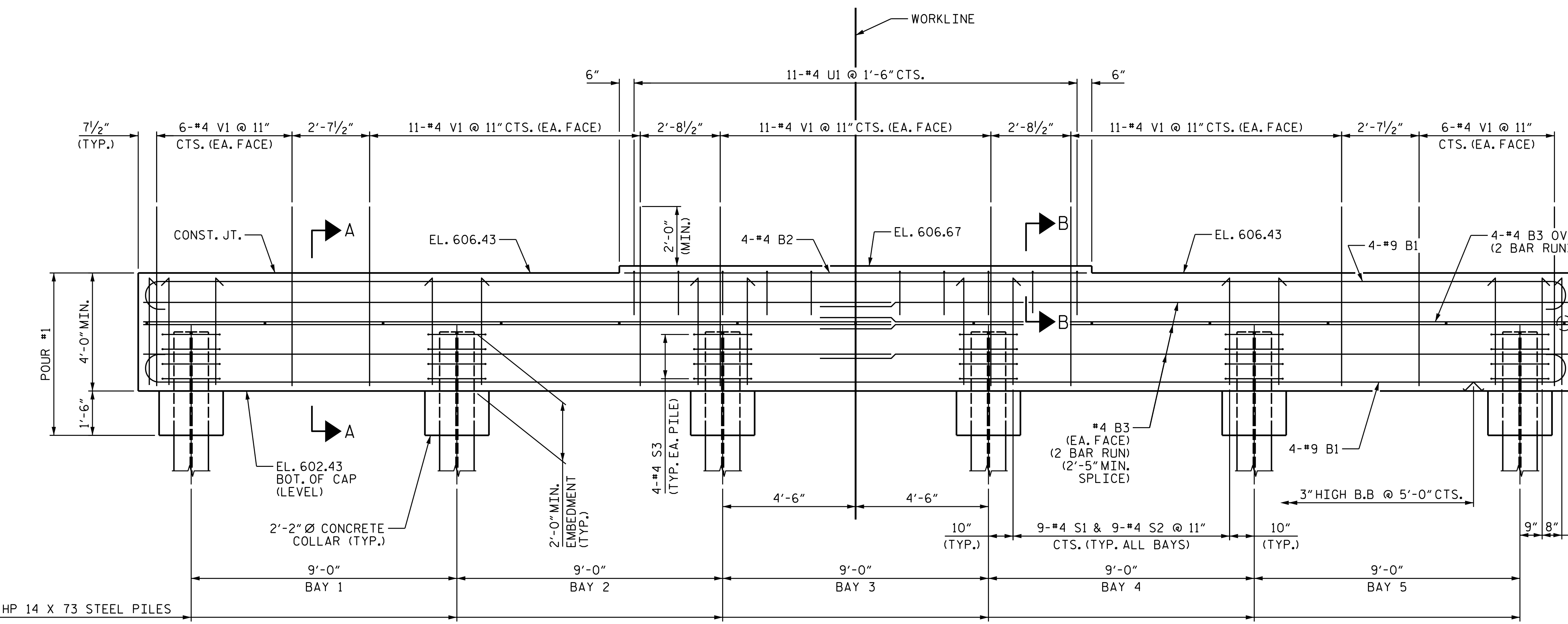
NOTES:
 SEE SUPERSTRUCTURE SHEETS FOR UPPER PART OF INTEGRAL END BENT DETAILS.
 FOR PILE SPLICE DETAILS, SEE END BENT, SHEET 2 OF 2.
 INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WINGWALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WINGWALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
 THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".



SECTION A-A



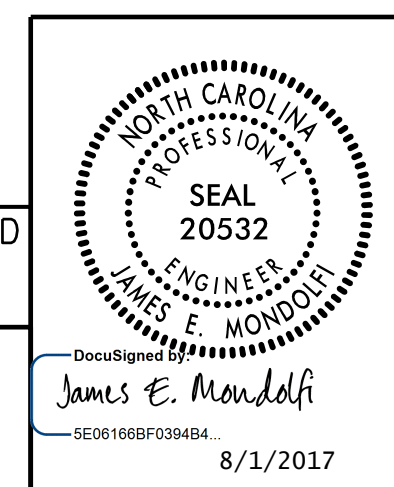
SECTION B-B



ELEVATION
 (WINGS NOT SHOWN FOR CLARITY)

PROJECT NO. B-5239
 ALAMANCE COUNTY
 STATION: 16+34.50 -L-
 SHEET 1 OF 2

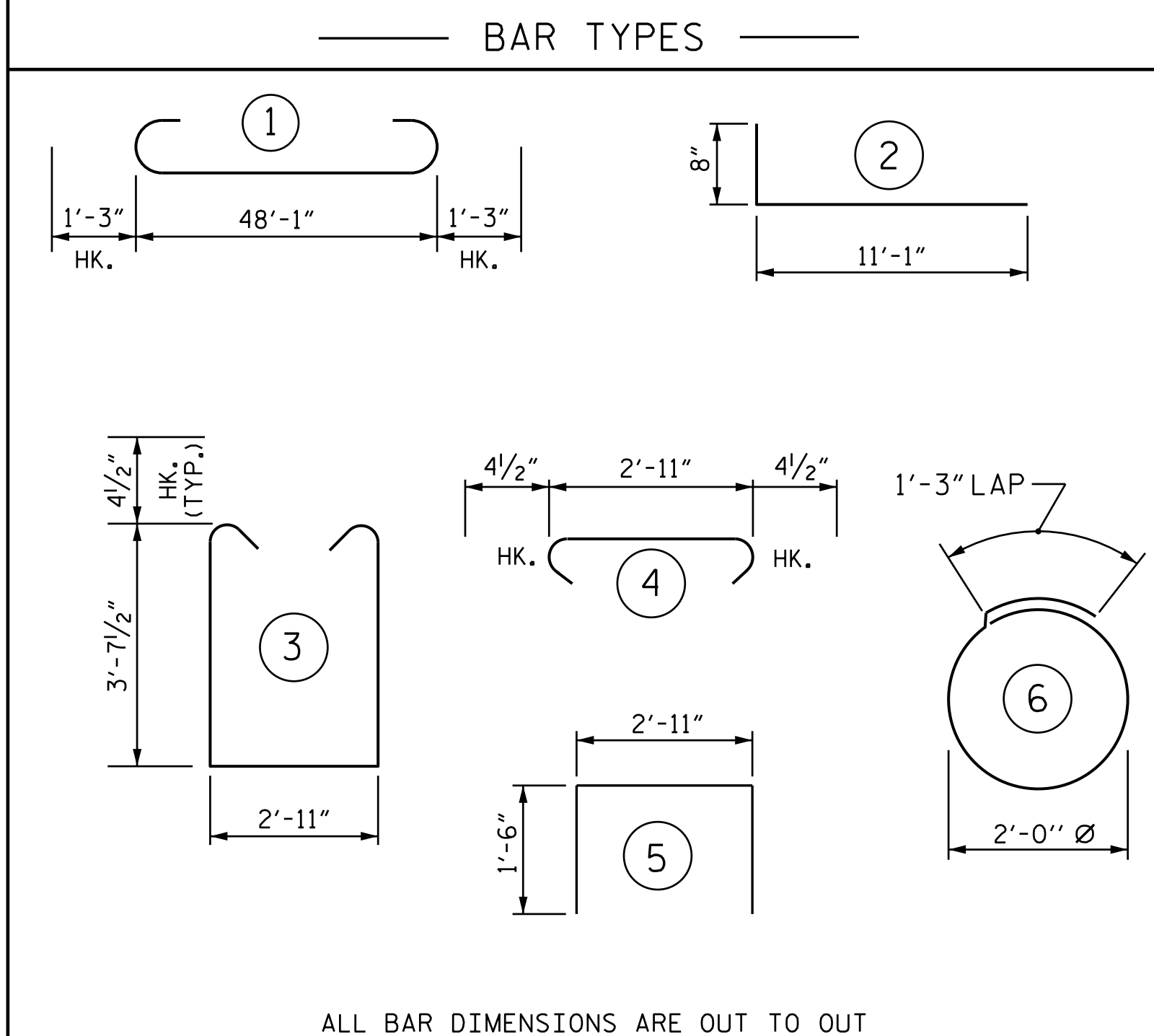
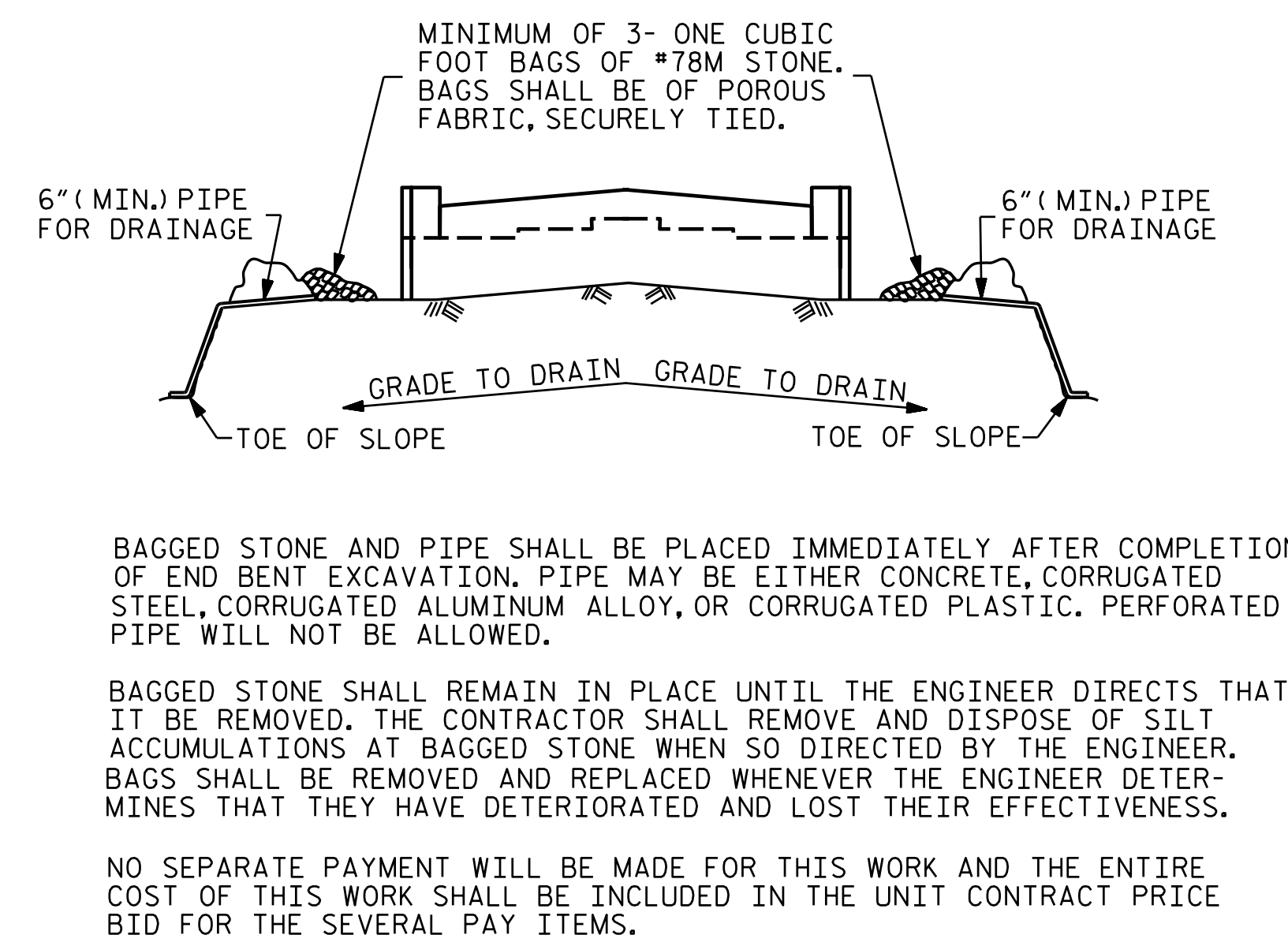
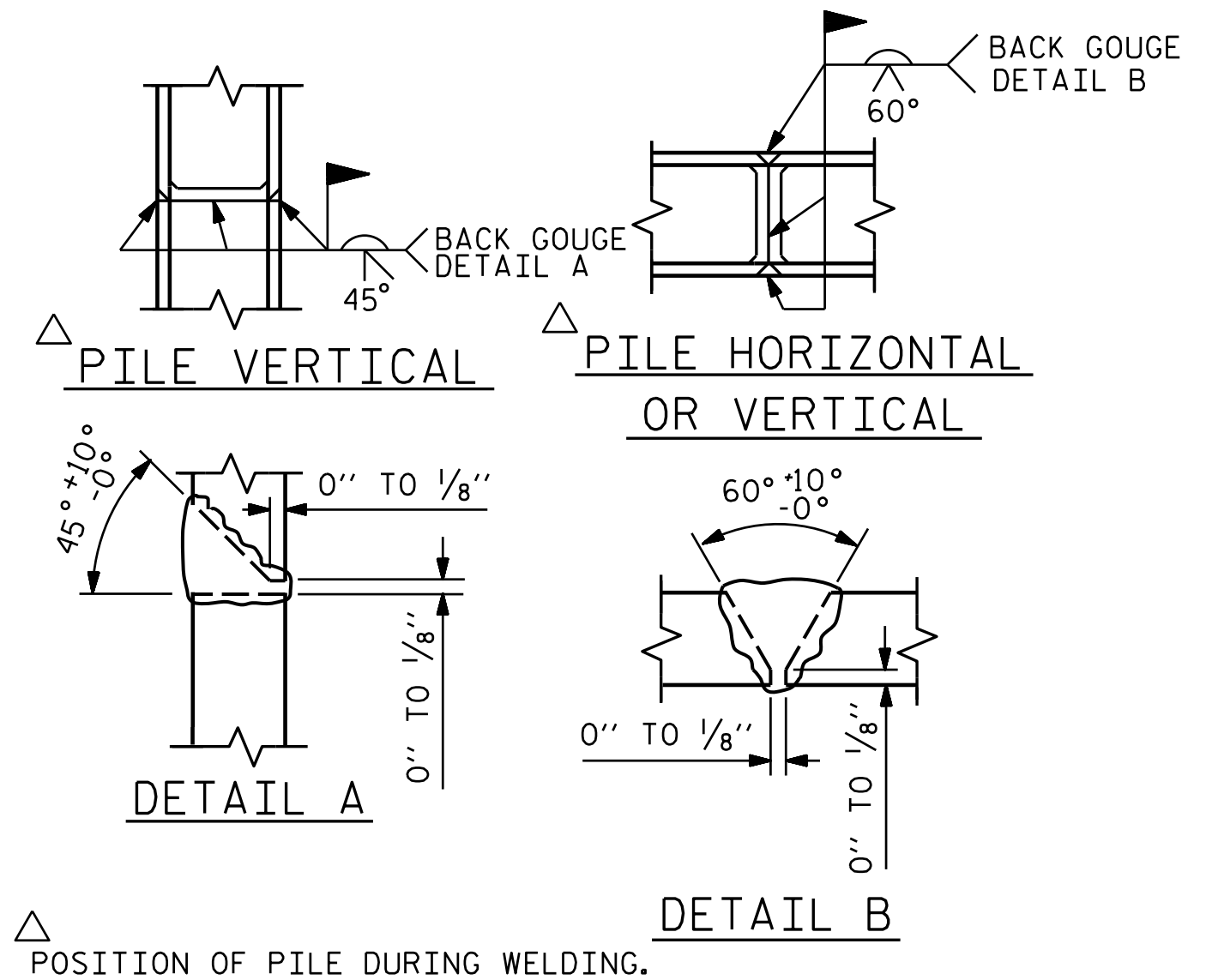
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		SUBSTRUCTURE END BENT 2 INTEGRAL	
REVISIONS			
NO.	BY:	DATE:	TOTAL SHEETS
1			39
2			



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 PLANS PREPARED BY:
 MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

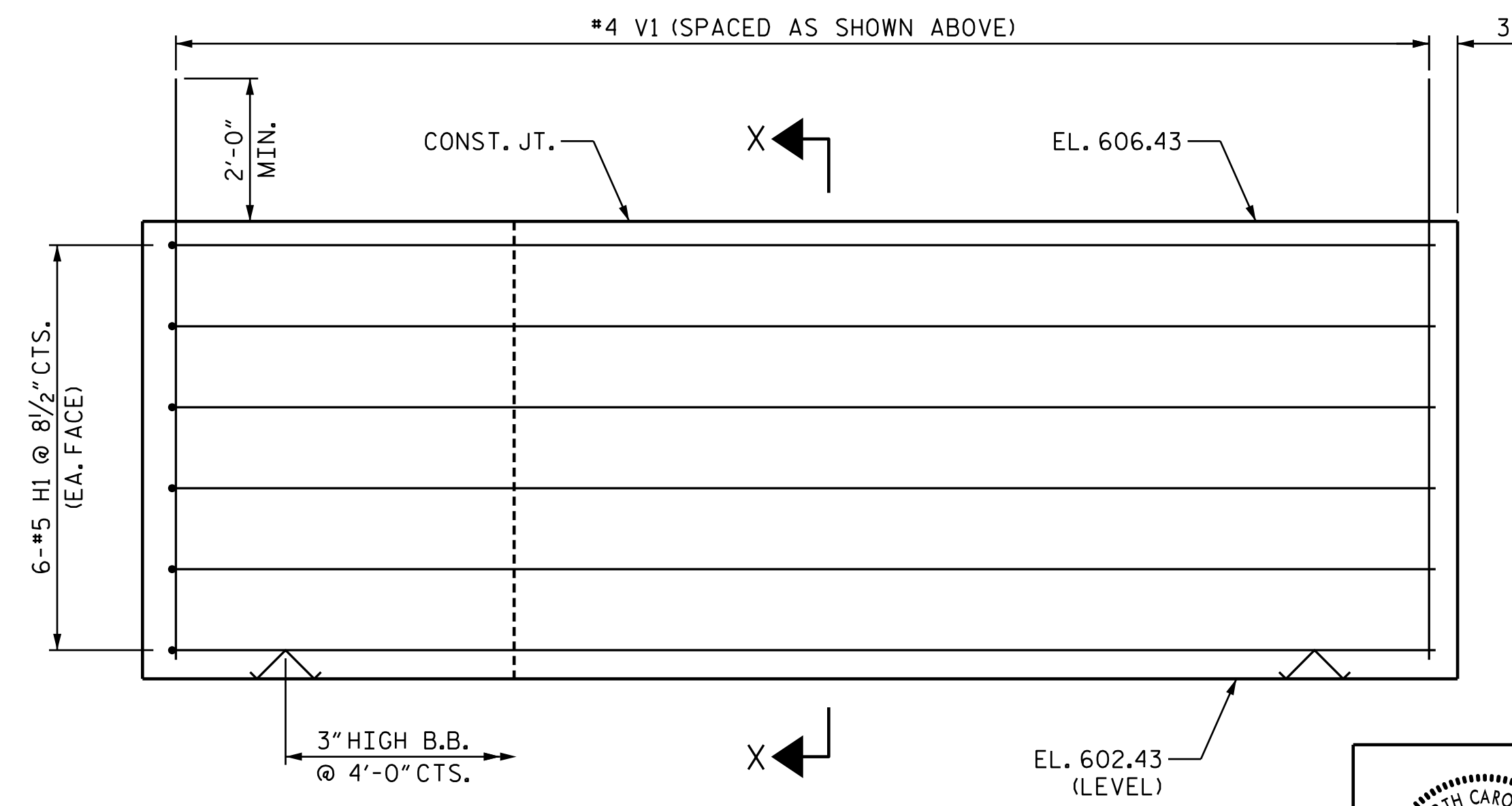
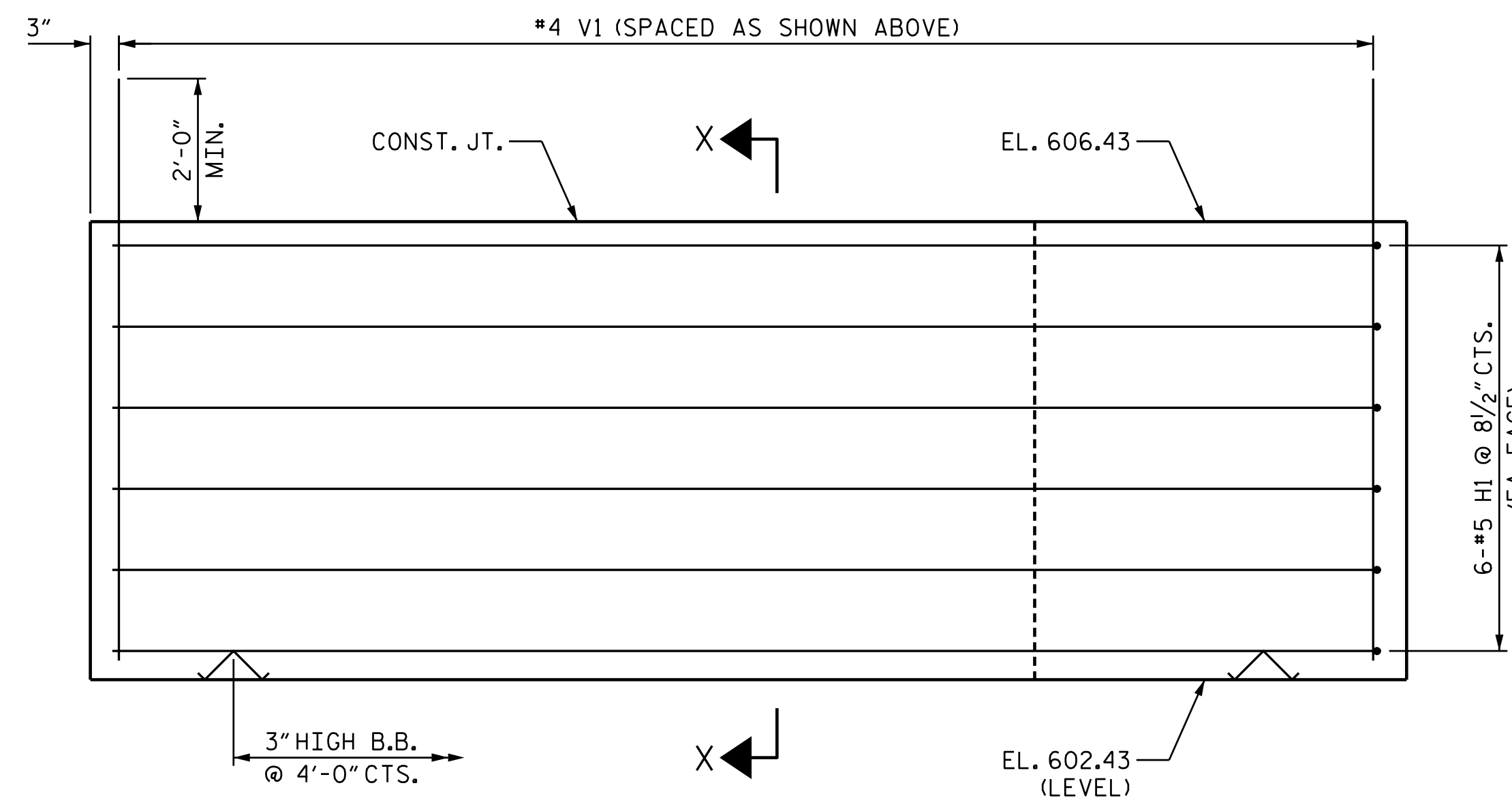
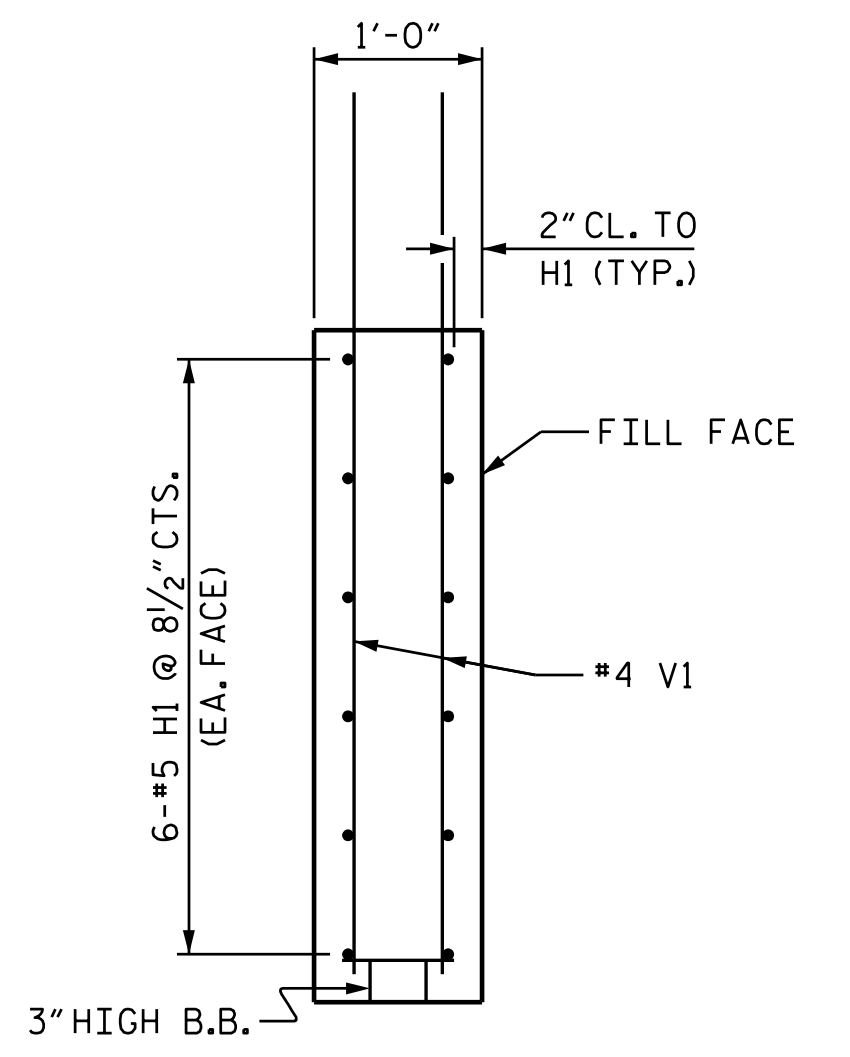
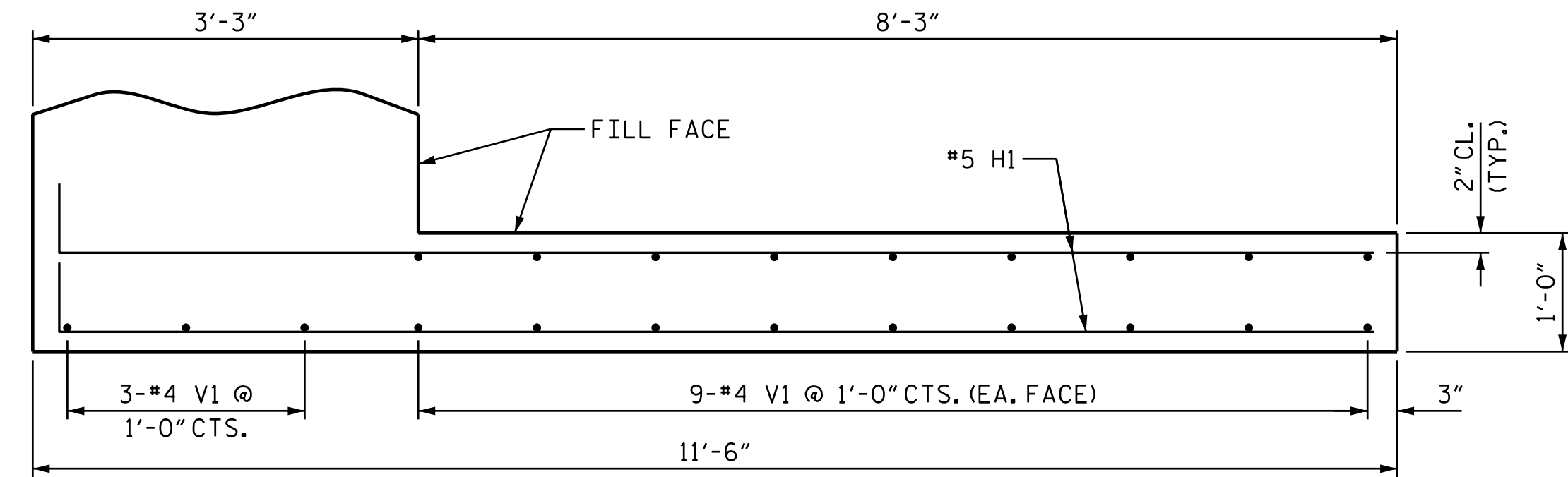
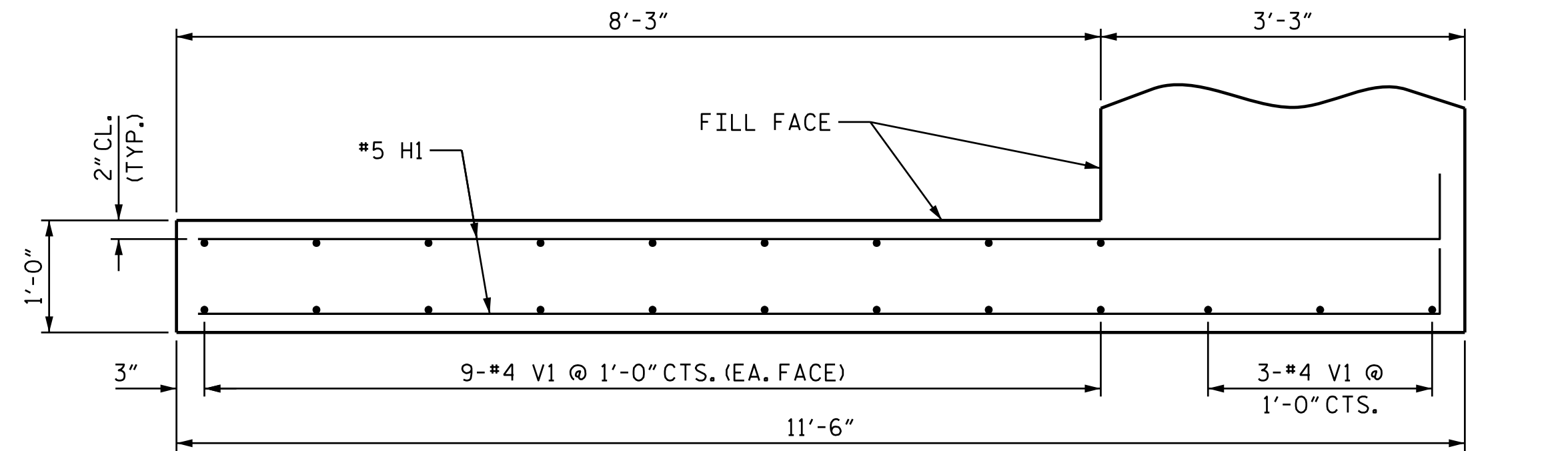
157077
 01/2015
 C:\Users\119_Henry\My Documents\Projects\B-5239-SMU.E2.000119.dgn
 9:27:43 AM

DRAWN BY: J. T. WILLIAMS DATE: 2-2015
 CHECKED BY: J. E. MONDOLFI DATE: 2-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 2-2015



BILL OF MATERIAL

END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	50'-7"	1376
B2	4	#4	STR	15'-8"	42
B3	20	#4	STR	25'-4"	338
B4	13	#4	STR	2'-11"	25
H1	24	#5	2	11'-9"	294
S1	49	#4	3	10'-11"	357
S2	49	#4	4	3'-8"	120
S3	24	#4	6	7'-7"	122
U1	11	#4	5	5'-11"	43
V1	132	#4	STR	6'-1"	536
REINFORCING STEEL				=	3253 LBS
CLASS A CONCRETE: POUR #1: CAP, LOWER WINGS, & COLLARS					27.5 C.Y.
HP 14 X 73 STEEL PILES: NO. 6					LIN. FT. 120
PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 STEEL PILES:					NO. 6

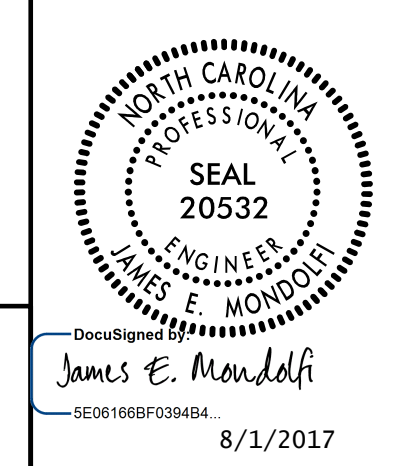


PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2
 INTEGRAL



PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

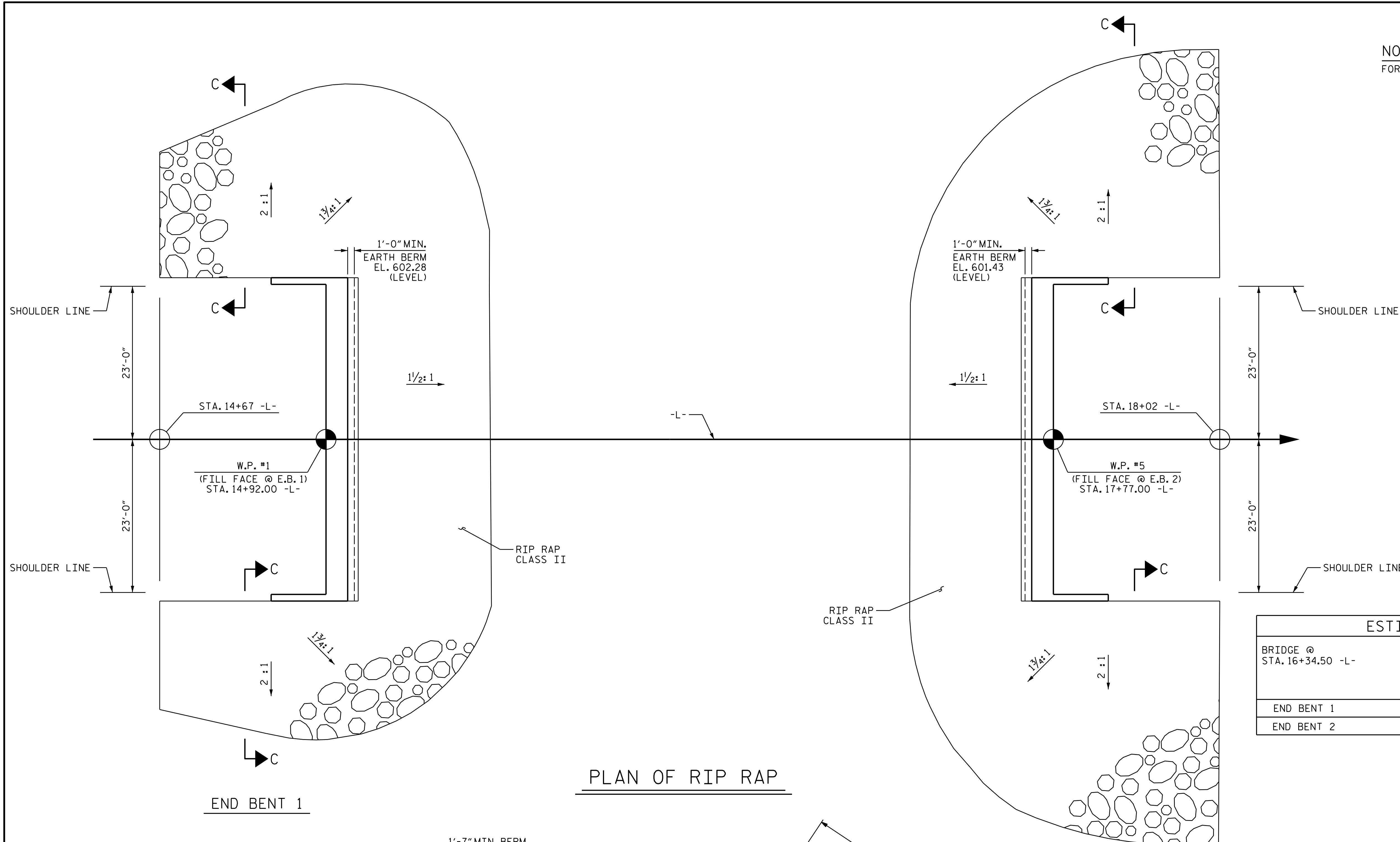
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

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

157077
 C:\Users\119_Hey_River\Plans\B-5239-SMU.E2.000119.dgn
 8/1/2017 9:27:45 AM

DRAWN BY: J. T. WILLIAMS DATE: 4-2017
 CHECKED BY: J. E. MONDOLFI DATE: 4-2017
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 4-2017

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

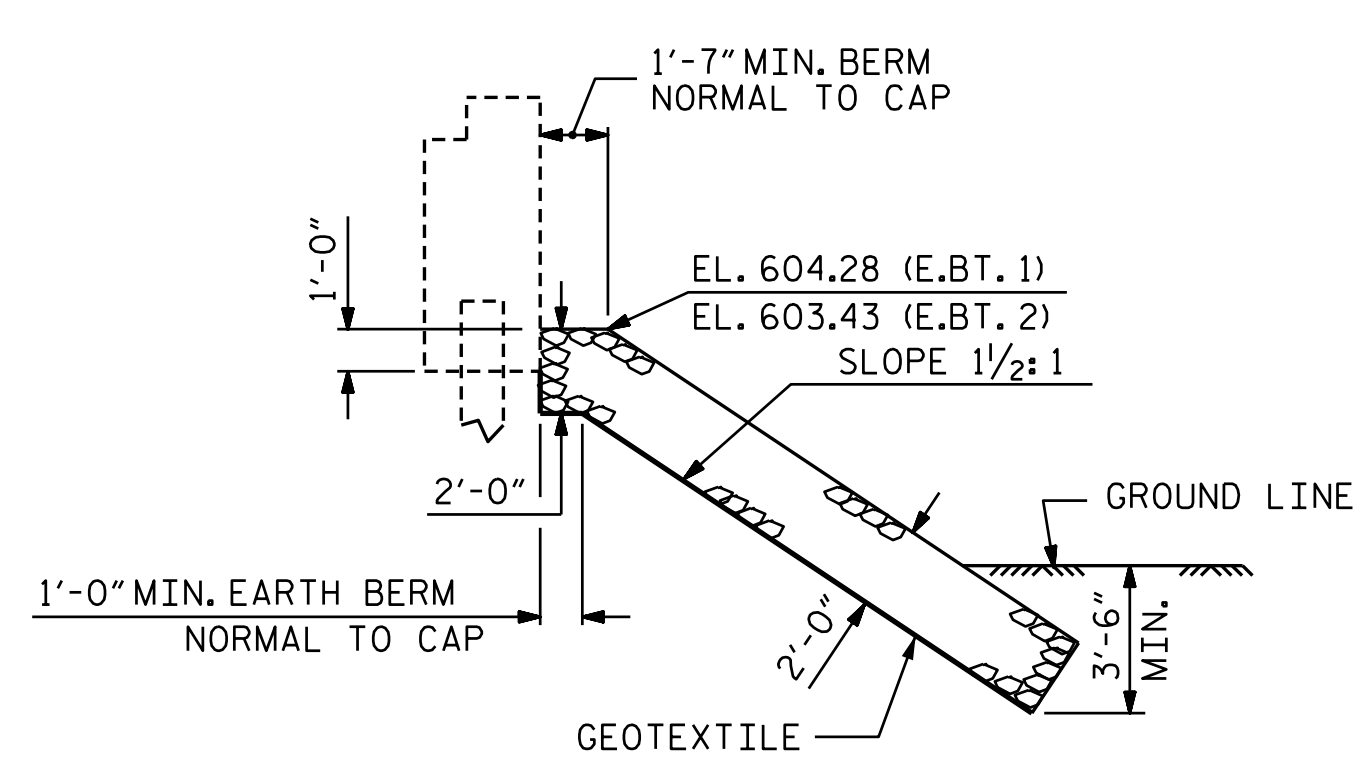


ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+34.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	360	400
END BENT 2	406	451

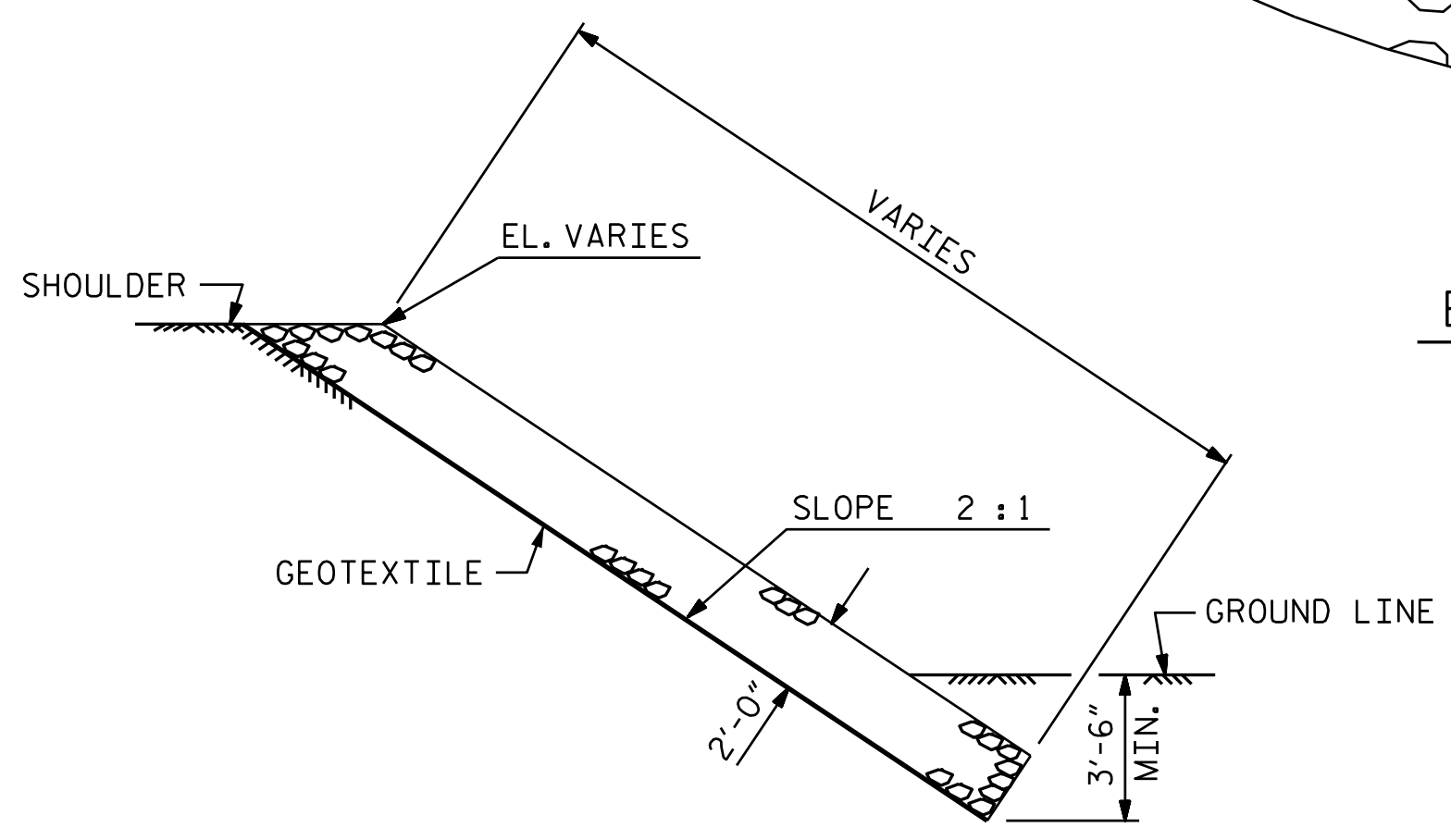
PLAN OF RIP RAP

END BENT 1

END BENT 2



SECTION
BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-5239
ALAMANCE COUNTY
STATION: 16+34.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

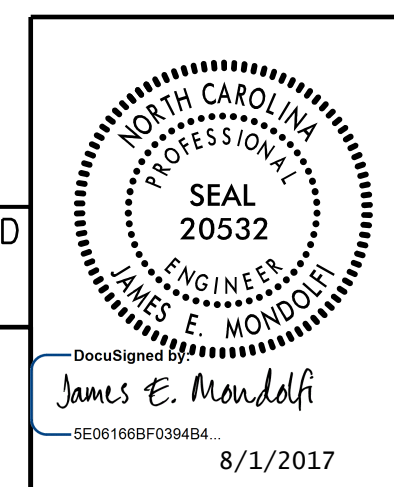
RIP RAP DETAILS

REVISIONS						SHEET NO. S01-37
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			39

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

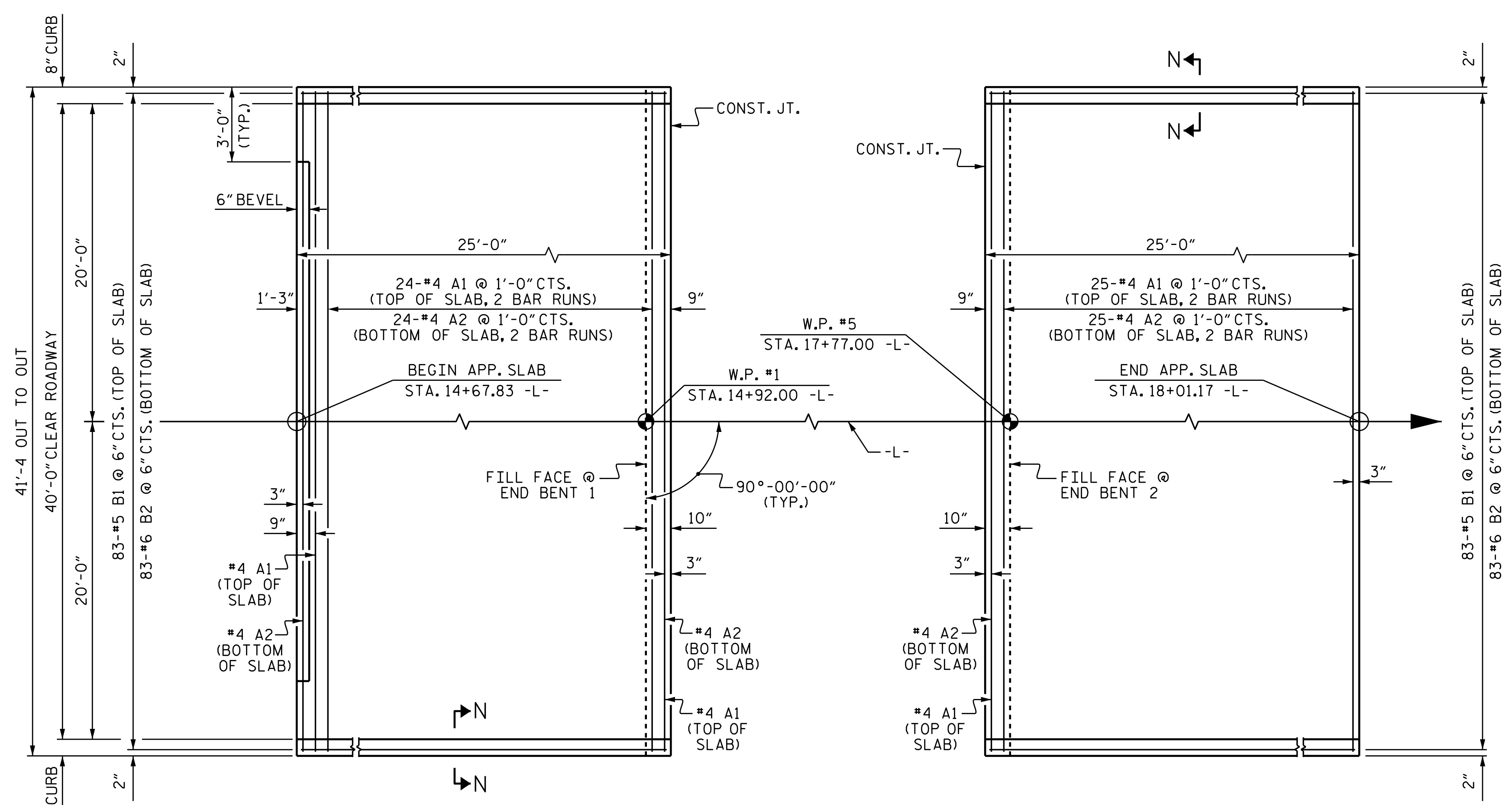
PLANS PREPARED BY:
M MOTT
MACDONALD

PO Box 700
Fuquay-Varina, NC 27526
(919) 552-2253
www.mottmac.com
LICENSE NO. F-0669



157077
 12/17/2015
 C:\Users\119_Hey_River\Plans\B-5239_SNU_RR_000119.dgn
 9:27:47 AM

DRAWN BY: J. T. WILLIAMS DATE: 3-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015



NOTES

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

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.

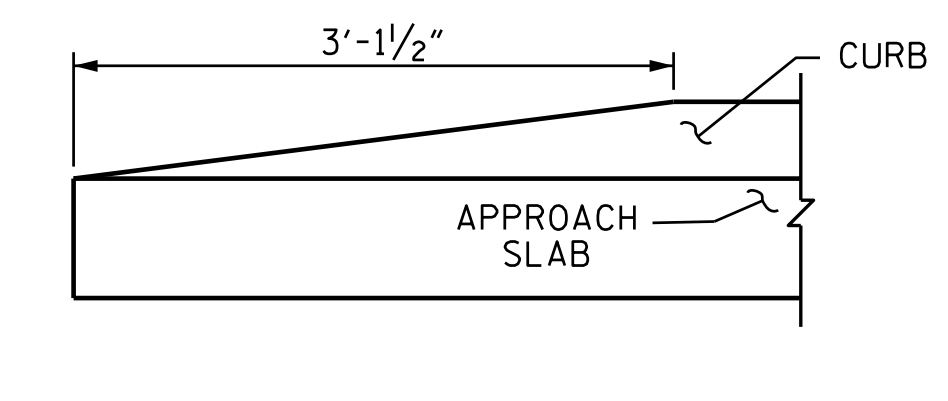
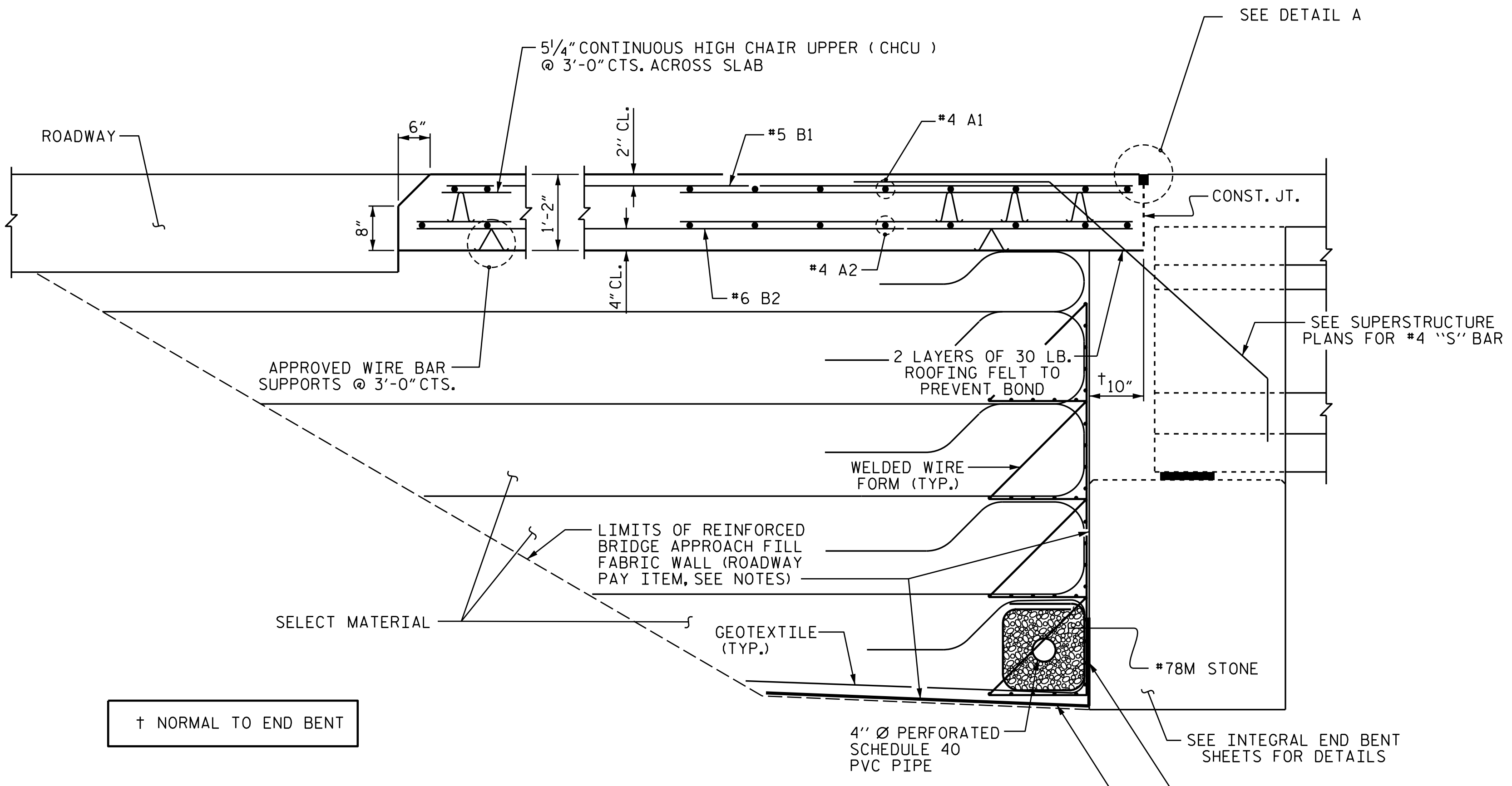
FOR SECTION THRU SLAB @ END BENT 2, SEE SHEET 2 OF 2

BILL OF MATERIAL

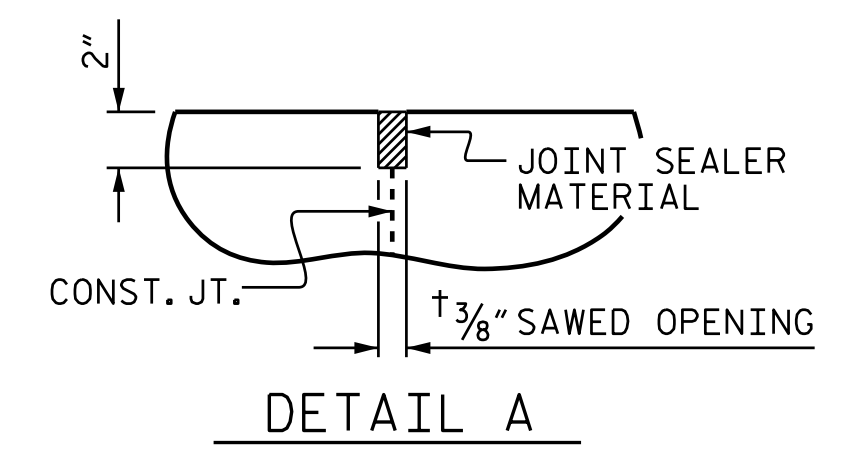
APPROACH SLAB AT EB 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	52	#4	STR	21'-6"	747
A2	52	#4	STR	21'-5"	744
*B1	83	#5	STR	24'-3"	2099
B2	83	#6	STR	24'-7"	3065
REINFORCING STEEL					LBS. 3809
*EPOXY COATED REINFORCING STEEL					LBS. 2846
CLASS AA CONCRETE					C. Y. 44.8
APPROACH SLAB AT EB 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	52	#4	STR	21'-6"	747
A2	52	#4	STR	21'-5"	744
*B1	83	#5	STR	24'-7"	2128
B2	83	#6	STR	24'-7"	3065
REINFORCING STEEL					LBS. 3809
*EPOXY COATED REINFORCING STEEL					LBS. 2875
CLASS AA CONCRETE					C. Y. 44.9

SPLICE LENGTHS

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



END OF CURB WITHOUT SHOULDER BERM GUTTER

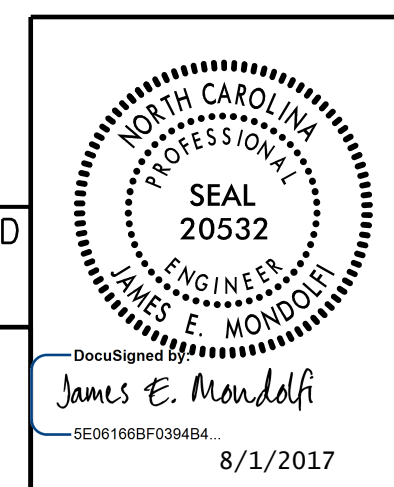


PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 16+34.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT (FOR FLEXIBLE PAVEMENT @ END BENT 1) (FOR RIGID PAVEMENT @ END BENT 2)



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

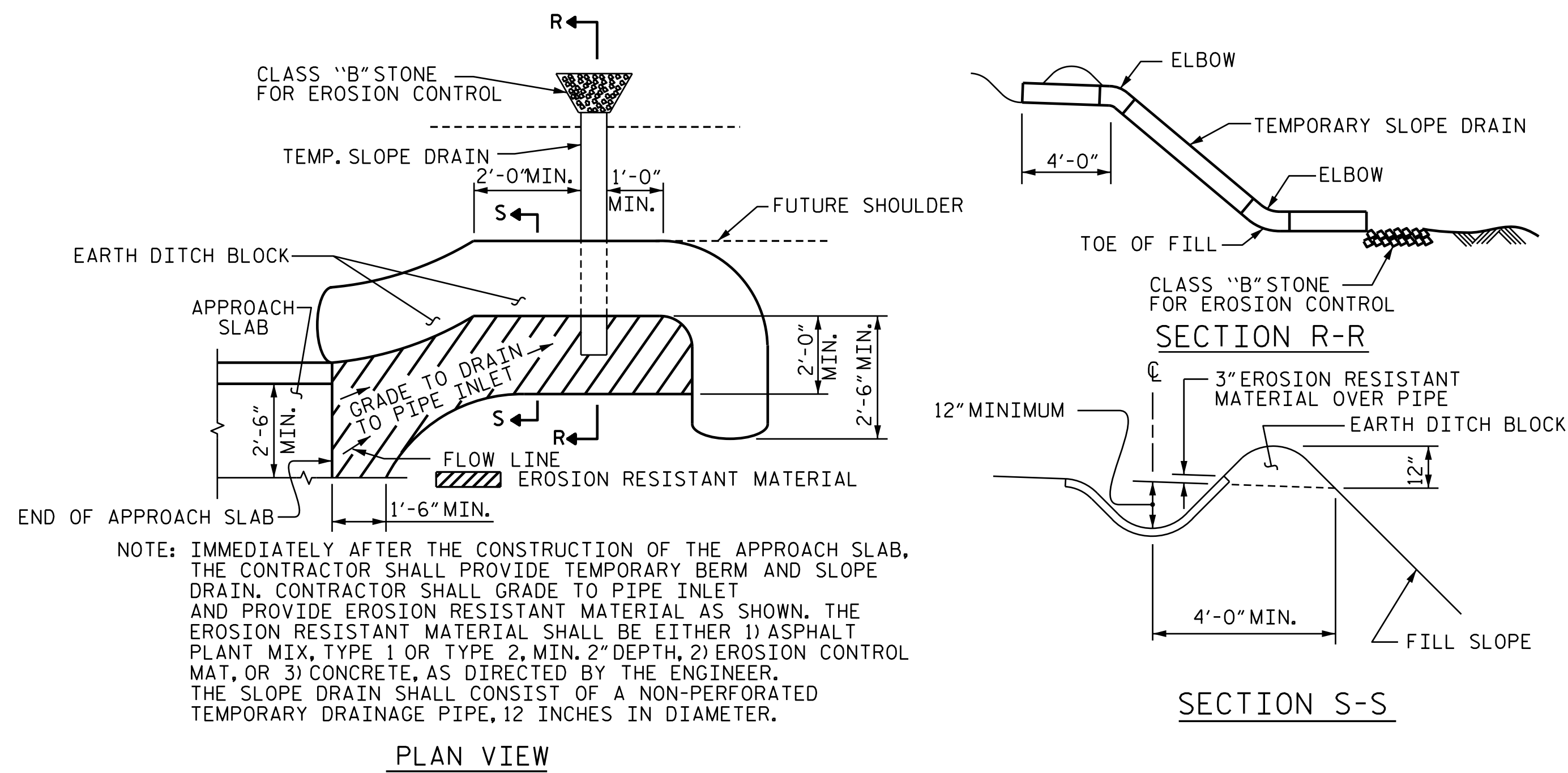
PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700 Fuquay-Varina, NC 27526
 (919) 552-2253 www.mottmac.com
 LICENSE NO. F-0669

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

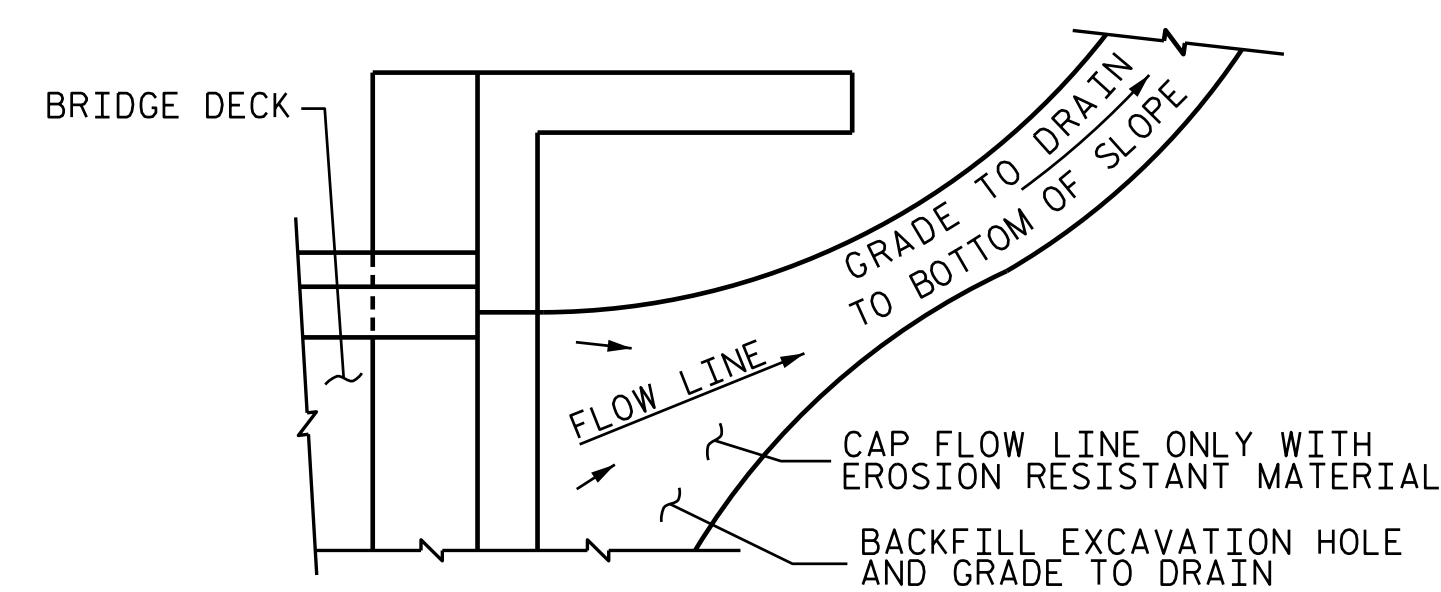
SHEET NO. S01-38
 TOTAL SHEETS 39

157077
 C:\Users\j119_Hey_River\Plans\B-5239_SMU_AS_000119.dgn
 8/1/2015 9:27:49 AM

DRAWN BY: J. T. WILLIAMS DATE: 2-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015



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.

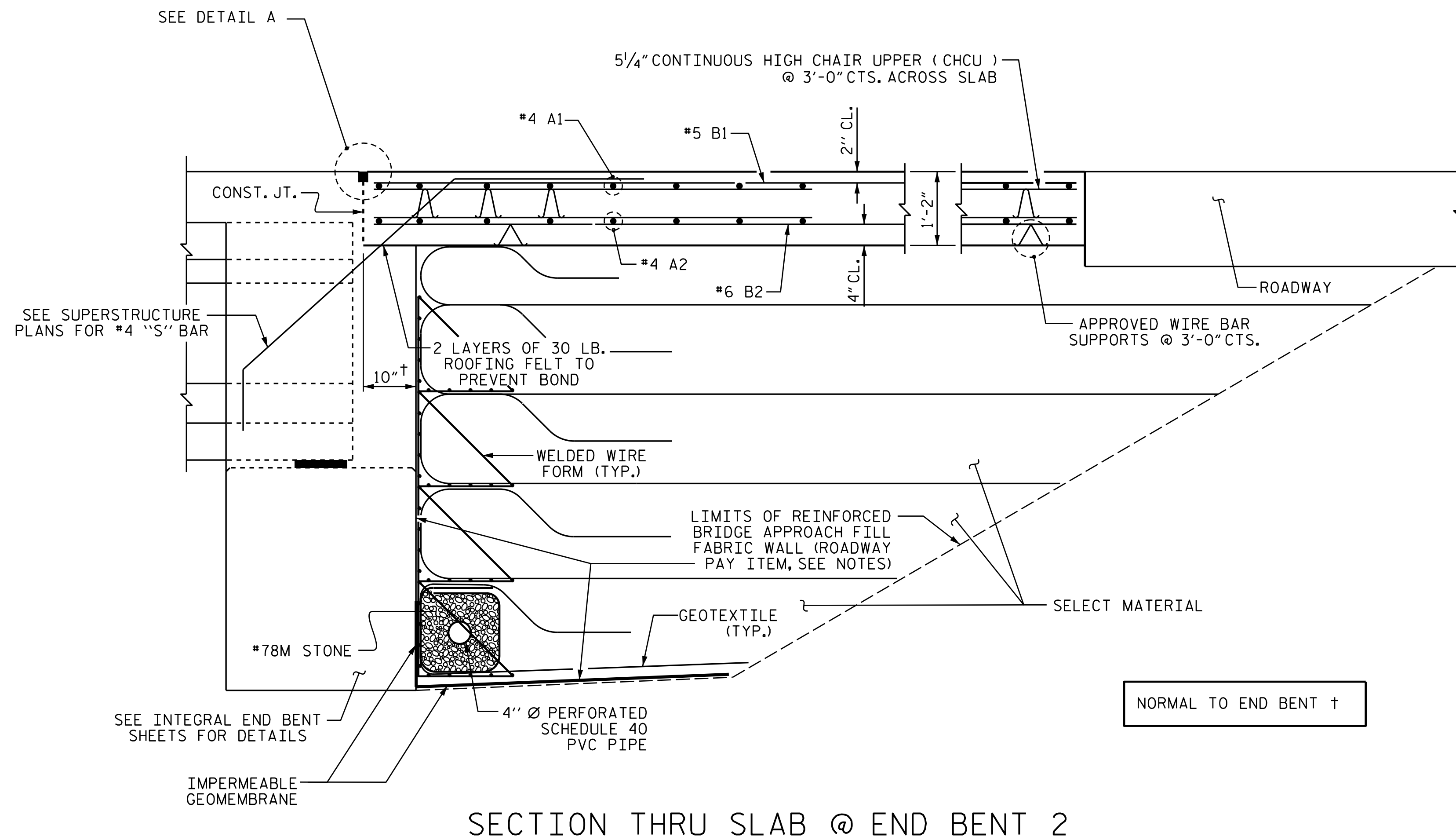


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION THRU SLAB @ END BENT 2

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 16+34.50 -L-

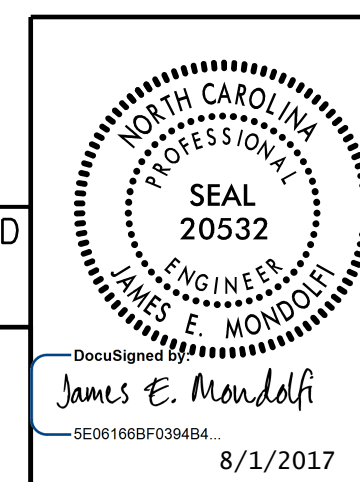
SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BRIDGE APPROACH
 SLAB DETAILS**

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

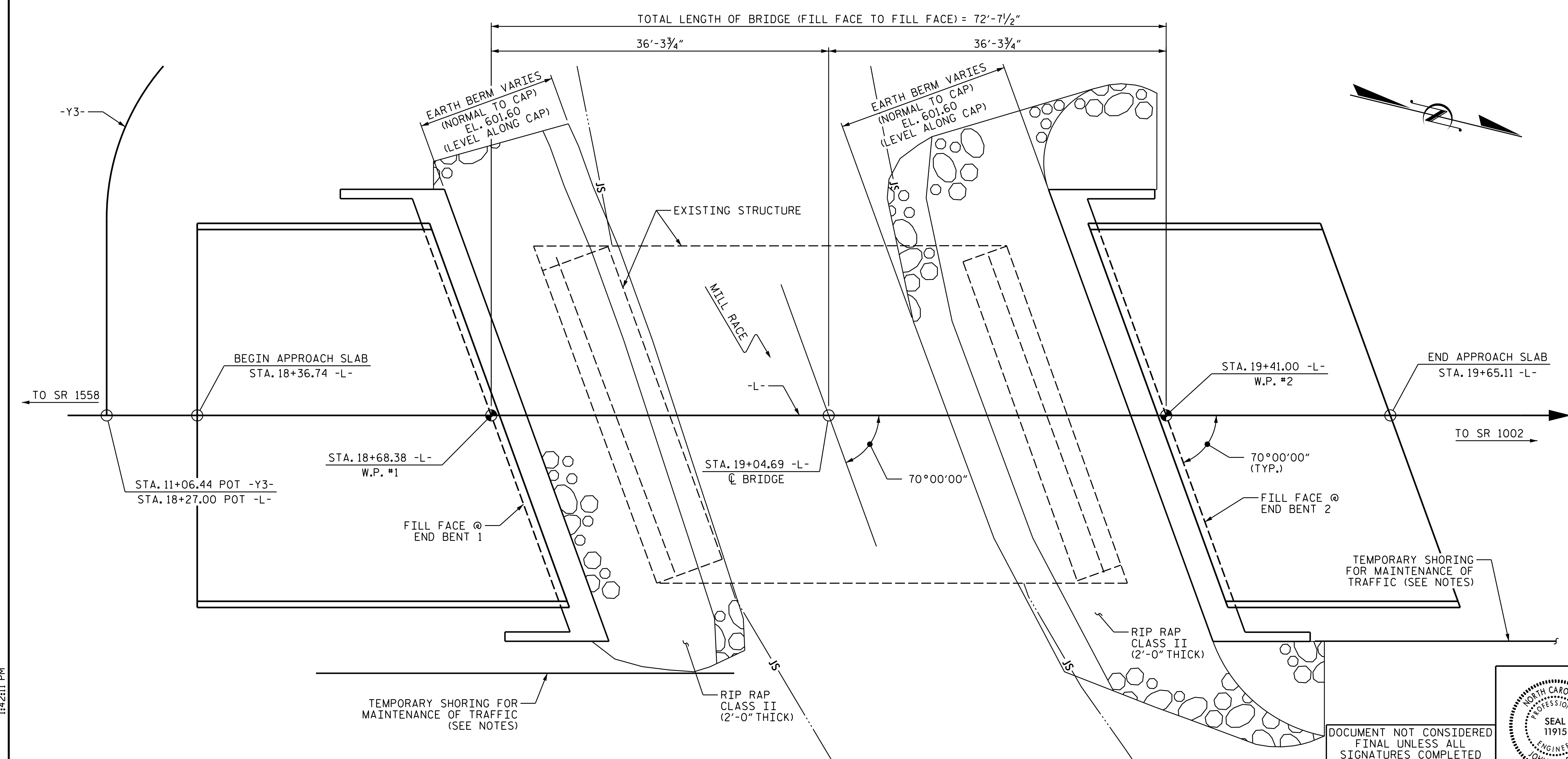
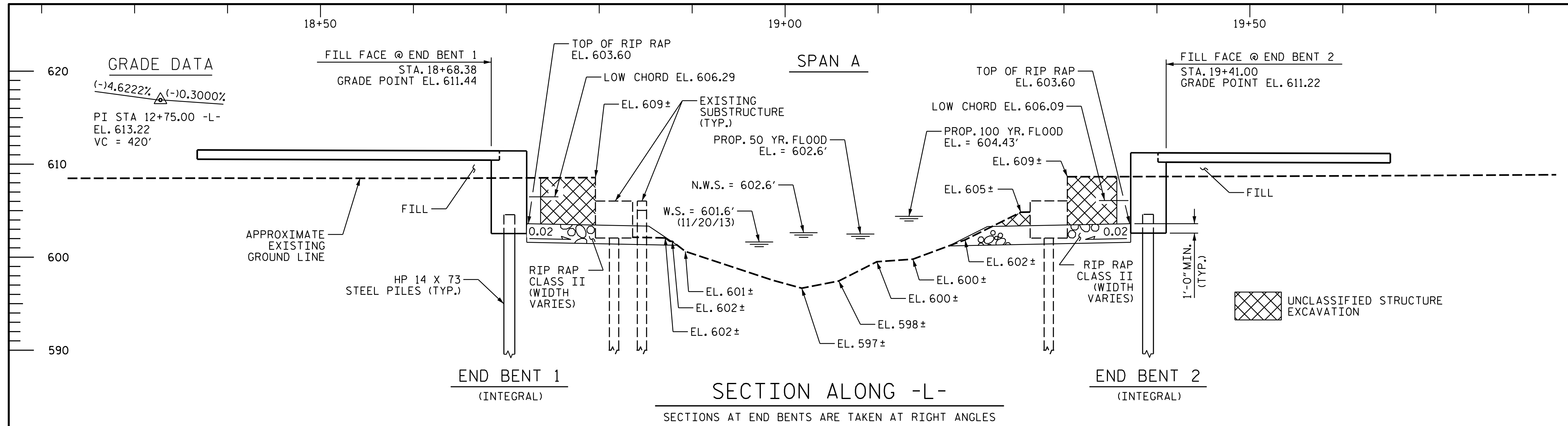
PLANS PREPARED BY:
M PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
MOTT MACDONALD LICENSE NO. F-0669



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-39
1			3			TOTAL SHEETS
2			4			39

#157077
 C:\Users\119_Hey_River\Plans\B-5239_SMU_AS_000119.dgn
 8/1/2015 9:27:50 AM

DRAWN BY: J. T. WILLIAMS DATE: 2-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015



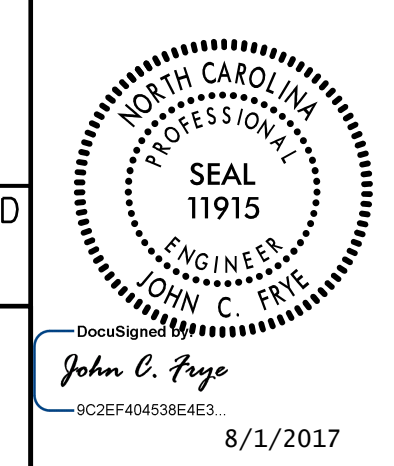
I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 19+04.69 -L-

SHEET 1 OF 3 REPLACES BRIDGE #126

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE ON NC 87 OVER
 MILL RACE BETWEEN
 SR 1558 AND SR 1002



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

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

157077
 C:\Users\126.M\11\Bases\Plans\B-5239-SMU_GD1_000126.dgn
 8/1/2017 14:21:11 PM

DRAWN BY: J. T. WILLIAMS DATE: 4-2017
 CHECKED BY: J. E. MONDOLFI DATE: 4-2017
 DESIGN ENGINEER OF RECORD: J. C. FRYE DATE: 4-2017

NOTES:

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

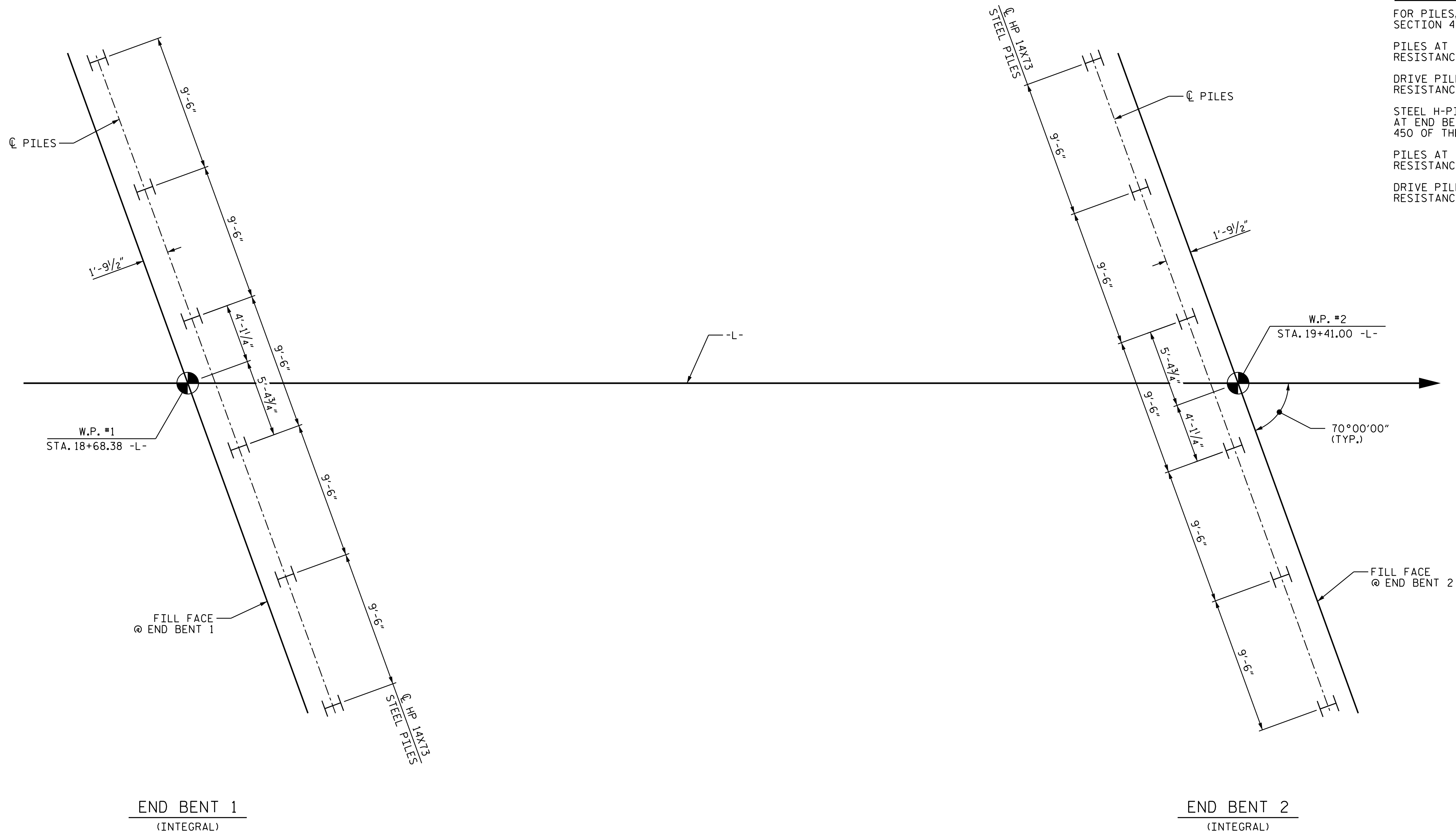
PILES AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 130 TONS PER PILE.

DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 217 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO.1. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 130 TONS PER PILE.

DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 217 TONS PER PILE.



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE.

ORIENT PILES AS SHOWN.

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 19+04.69 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE ON NC 87 OVER
 MILL RACE BETWEEN
 SR 1558 AND SR 1002

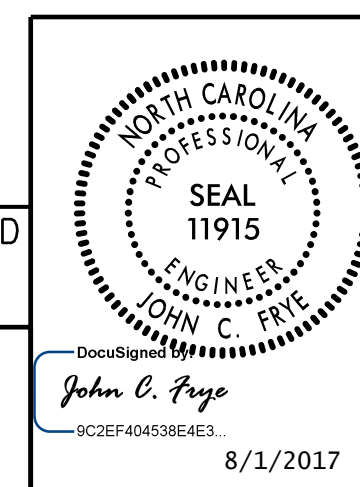
REVISIONS

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

SHEET NO.
 S02-2
 TOTAL SHEETS
 28

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

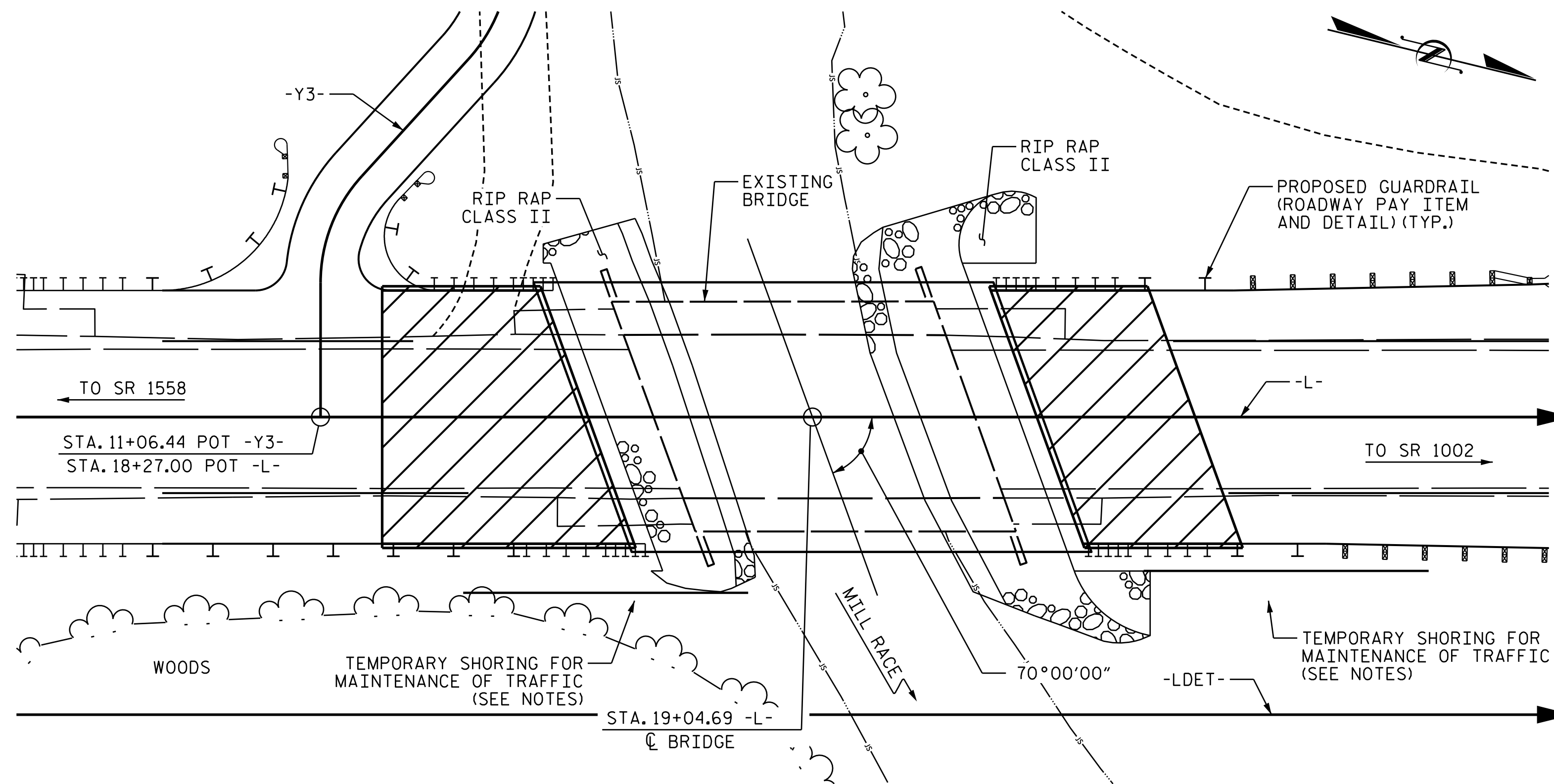
PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669



#157077
 C:\Users\126.M\11.B\es\Plans\B-5239_SMU_CD2_000126.dgn
 8/1/2017 9:27:58 AM

DRAWN BY: J. T. WILLIAMS DATE: 4-2017
 CHECKED BY: J. E. MONDOLFI DATE: 4-2017
 DESIGN ENGINEER OF RECORD: J. C. FRYE DATE: 4-2017

BM #1: R/R SPIKE IN BASE 20" SYCAMORE, 167.6' LT. OF STA. 17+79.51 -L-, ELEV. = 598.15'



LOCATION SKETCH

HYDRAULIC DATA

DESIGN DISCHARGE = 15,300 C.F.S.
 FREQUENCY OF DESIGN FLOOD = 50 YRS.
 DESIGN HIGH WATER ELEVATION = 602.6'
 DRAINAGE AREA = 187.5 SQ. MI.
 BASE DISCHARGE (Q100) = 17,400 C.F.S.
 BASE HIGH WATER ELEVATION = 604.43'

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 22,700+ C.F.S.
 FREQUENCY OF OVERTOPPING FLOOD = 500+ YRS.
 OVERTOPPING FLOOD ELEVATION = 611.6'
 OVERTOPPING OCCURS @ STA. 20+40 -L-

TOTAL BILL OF MATERIAL

	CONST., MAINT. & REMOVAL OF TEMP. STRUCTURE	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	45" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 STEEL PILES	HP 14 X 73 STEEL PILES		STEEL PILE POINTS	TWO BAR METAL RAIL	1'-2" X 2'-6" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	ASBESTOS ASSESSMENT
									NO.	LIN. FT.		EA.	NO.							
	LUMP SUM	LUMP SUM	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	EA.	NO.	LIN. FT.	EA.	LIN. FT.	LIN. FT.	TONS	SO. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE				3,093	4,718				4	280.58					125.86	141.71			LUMP SUM	LUMP SUM
END BENT 1						28.4		3,132			6	6	165	6			83	100		
END BENT 2						26.5		3,092			6	6	225				132	159		
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	3,093	4,718	54.9	LUMP SUM	6,224	4	280.58	12	12	390	6	125.86	141.71	215	259	LUMP SUM	LUMP SUM

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.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

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

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 MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET 1 OF 3 SHALL BE EXCAVATED FOR A DISTANCE OF 25 FEET EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.

THE EXISTING STRUCTURE CONSISTING OF 1 SPAN: 1 @ 50'-11 1/4"; 25'-10" CLEAR ROADWAY; REINFORCED CONCRETE DECK ON REINFORCED CONCRETE DECK GIRDERS; END BENTS ON STEEL PILES; STEEL CAP CRUTCH BENT ON STEEL PILES AT END BENT 1, LOCATED AT THE PROPOSED STRUCTURE SITE 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 SO AS TO NOT ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 19+04.69 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE ON NC 87 OVER
 MILL RACE BETWEEN
 SR 1558 AND SR 1002

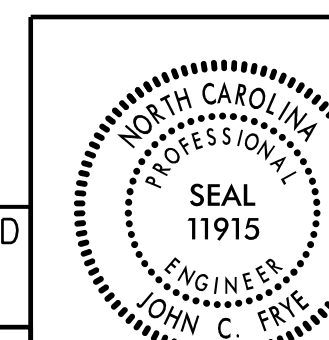
REVISIONS

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

SHEET NO.
 S02-3
 TOTAL SHEETS
 28

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669



John C. Frye
 ENGINEER
 8/1/2017

#157077
 C:\Users\126_MJL\Bos\Plans\B-5239-SMU_CD3_000126.dgn
 8/1/2017 9:28:02 AM

DRAWN BY: J. T. WILLIAMS DATE: 4-2017
 CHECKED BY: J. E. MONDOLFI DATE: 4-2017
 DESIGN ENGINEER OF RECORD: J. C. FRYE DATE: 4-2017

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE								SERVICE III LIMIT STATE								COMMENT NUMBER		
						MOMENT				SHEAR				MOMENT										
						LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION		DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.11	--	1.75	.898	1.46	A	I	34.4	1.165	1.11	A	I	20.4	0.80	.898	1.15	A	I	34.4		
	HL-93 (OPERATING)	N/A		1.75	--	1.35	.898	1.89	A	I	34.4	1.165	1.75	A	I	13.4	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.49	53.640	1.75	.898	1.89	A	I	34.4	1.165	1.64	A	I	13.4	0.80	.898	1.49	A	I	34.4		
	HS-20 (OPERATING)	36.000		2.16	77.760	1.35	.898	2.45	A	I	34.4	1.165	2.16	A	I	13.4	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.32	44.820	1.40	.898	5.27	A	I	34.4	1.165	4.99	A	I	13.4	0.80	.898	3.32	A	I	34.4	
		SNGARBS2	20.000		2.49	49.800	1.40	.898	3.95	A	I	34.4	1.165	3.55	A	I	13.4	0.80	.898	2.49	A	I	34.4	
		SNAGRIS2	22.000		2.37	52.140	1.40	.898	3.75	A	I	34.4	1.165	3.30	A	I	13.4	0.80	.898	2.37	A	I	34.4	
		SNCOTTS3	27.250		1.65	44.963	1.40	.898	2.62	A	I	34.4	1.165	2.45	A	I	13.4	0.80	.898	1.65	A	I	34.4	
		SNAGGRS4	34.925		1.39	48.546	1.40	.898	2.20	A	I	34.4	1.165	2.04	A	I	13.4	0.80	.898	1.39	A	I	34.4	
		SNS5A	35.550		1.36	48.348	1.40	.898	2.15	A	I	34.4	1.165	2.07	A	I	13.4	0.80	.898	1.36	A	I	34.4	
		SNS6A	39.950		1.25	49.938	1.40	.898	1.98	A	I	34.4	1.165	1.90	A	I	13.4	0.80	.898	1.25	A	I	34.4	
		SNS7B	42.000		1.19	49.980	1.40	.898	1.88	A	I	34.4	1.165	1.88	A	I	13.4	0.80	.898	1.19	A	I	34.4	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.52	50.160	1.40	.898	2.41	A	I	34.4	1.165	2.27	A	I	13.4	0.80	.898	1.52	A	I	34.4	
		TNT4A	33.075		1.53	50.605	1.40	.898	2.42	A	I	34.4	1.165	2.20	A	I	13.4	0.80	.898	1.53	A	I	34.4	
		TNT6A	41.600		1.25	52.000	1.40	.898	1.99	A	I	34.4	1.165	2.02	A	I	13.4	0.80	.898	1.25	A	I	34.4	
		TNT7A	42.000		1.26	52.920	1.40	.898	2.00	A	I	34.4	1.165	1.93	A	I	13.4	0.80	.898	1.26	A	I	34.4	
		TNT7B	42.000		1.31	55.020	1.40	.898	2.07	A	I	34.4	1.165	1.81	A	I	13.4	0.80	.898	1.31	A	I	34.4	
		TNAGRIT4	43.000		1.24	53.320	1.40	.898	1.97	A	I	34.4	1.165	1.76	A	I	13.4	0.80	.898	1.24	A	I	34.4	
		TNAGT5A	45.000		1.17	52.650	1.40	.898	1.85	A	I	34.4	1.165	1.76	A	I	13.4	0.80	.898	1.17	A	I	34.4	
TNAGT5B	45.000	③	1.15	51.750	1.40	.898	1.83	A	I	34.4	1.165	1.66	A	I	13.4	0.80	.898	1.15	A	I	34.4			

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

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

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

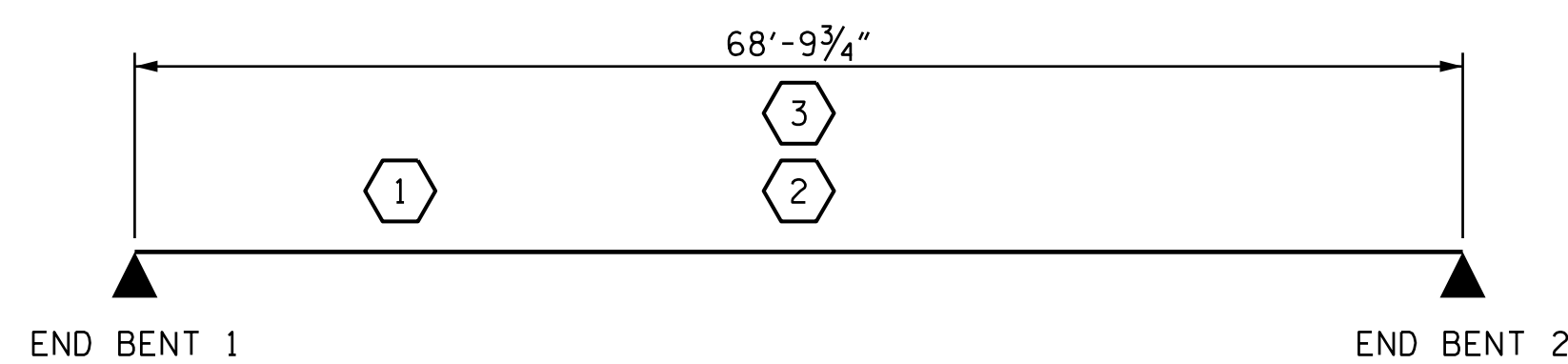
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 19+04.69 -L-

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

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

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

PLANS PREPARED BY:
M PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 MOTT MACDONALD LICENSE NO. F-0669

NORTH CAROLINA
 PROFESSIONAL
 SEAL
 20532
 ENGINEER
 JAMES E. MONDOLFI
 8/1/2017

#1157077
 C:\Users\126.M.J.L. Bess\Plans\B-5239-SMU.LRFR_000126.dgn
 8/1/2017 9:28:04 AM

DRAWN BY: J. T. WILLIAMS DATE: 4-2017
 CHECKED BY: J. E. MONDOLFI DATE: 4-2017
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 4-2017

NOTES:

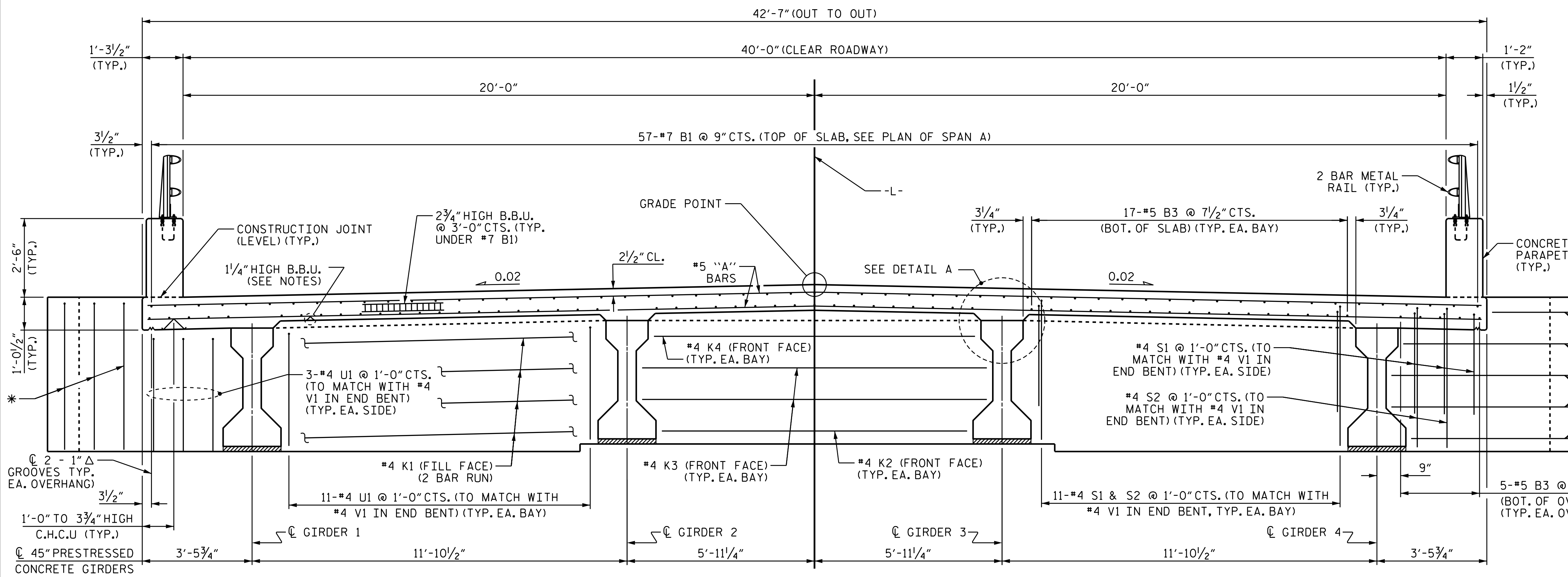
PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 2 1/2"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

PARAPET 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.

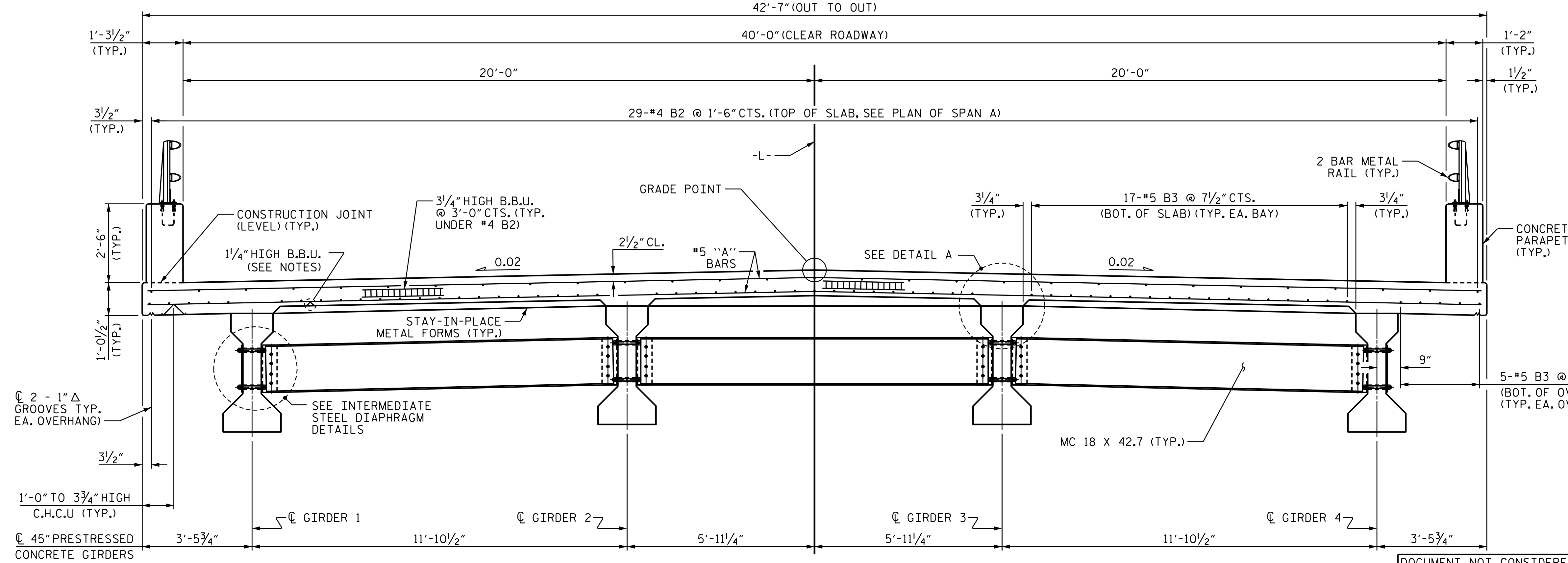
FOR WING ELEVATIONS AND DETAILS, SEE "PLAN OF SPAN DETAILS" SHEETS.



TYPICAL SECTION

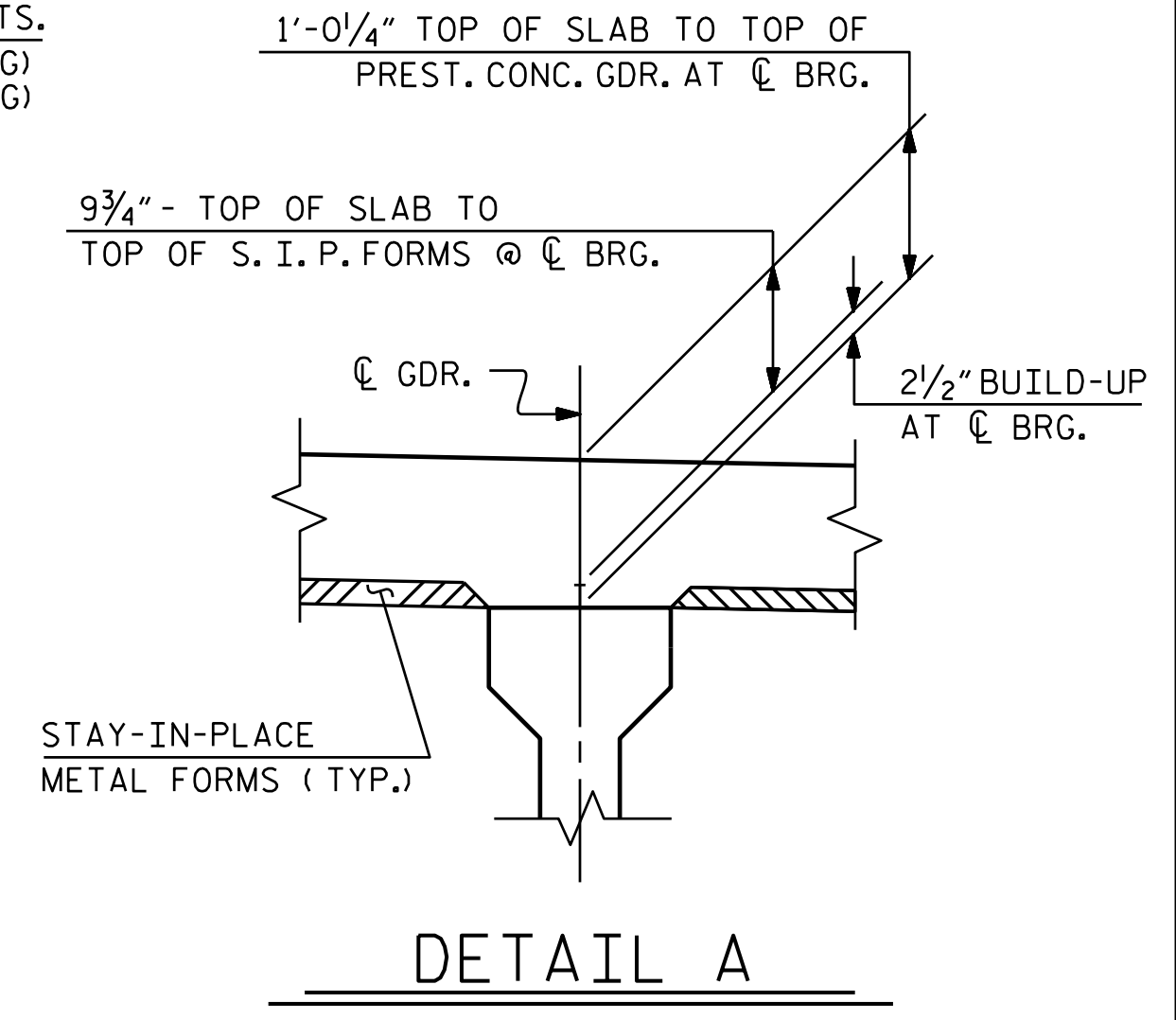
(SHOWING ABUTMENT WALL AT END BENT)

* #4 U2 @ 1'-0" CTS. (TO MATCH WITH #4 V1 IN END BENT) (TYP. EA. SIDE)



TYPICAL SECTION

(SHOWING INTERMEDIATE DIAPHRAGMS)

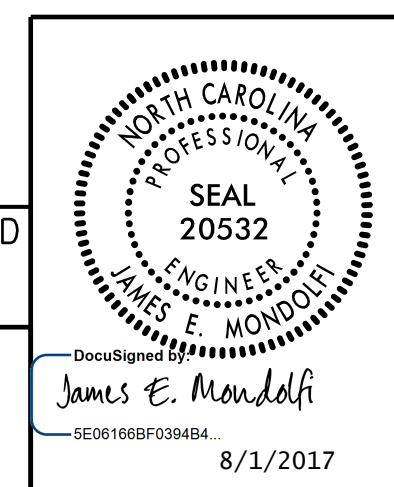


PROJECT NO. B-5239
ALAMANCE COUNTY
STATION: 19+04.69 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION



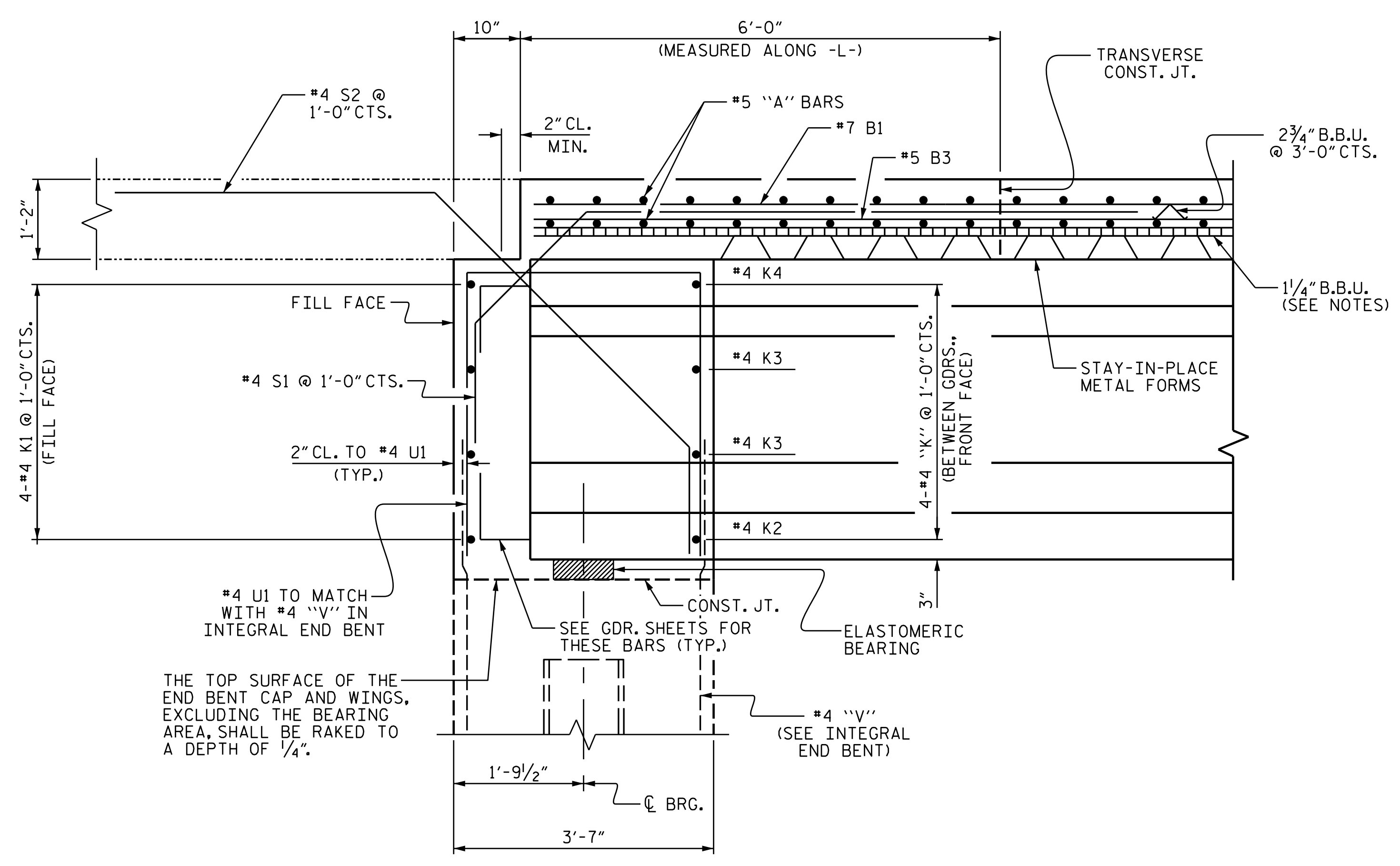
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
(919) 552-2253
www.mottmac.com
LICENSE NO. F-0669

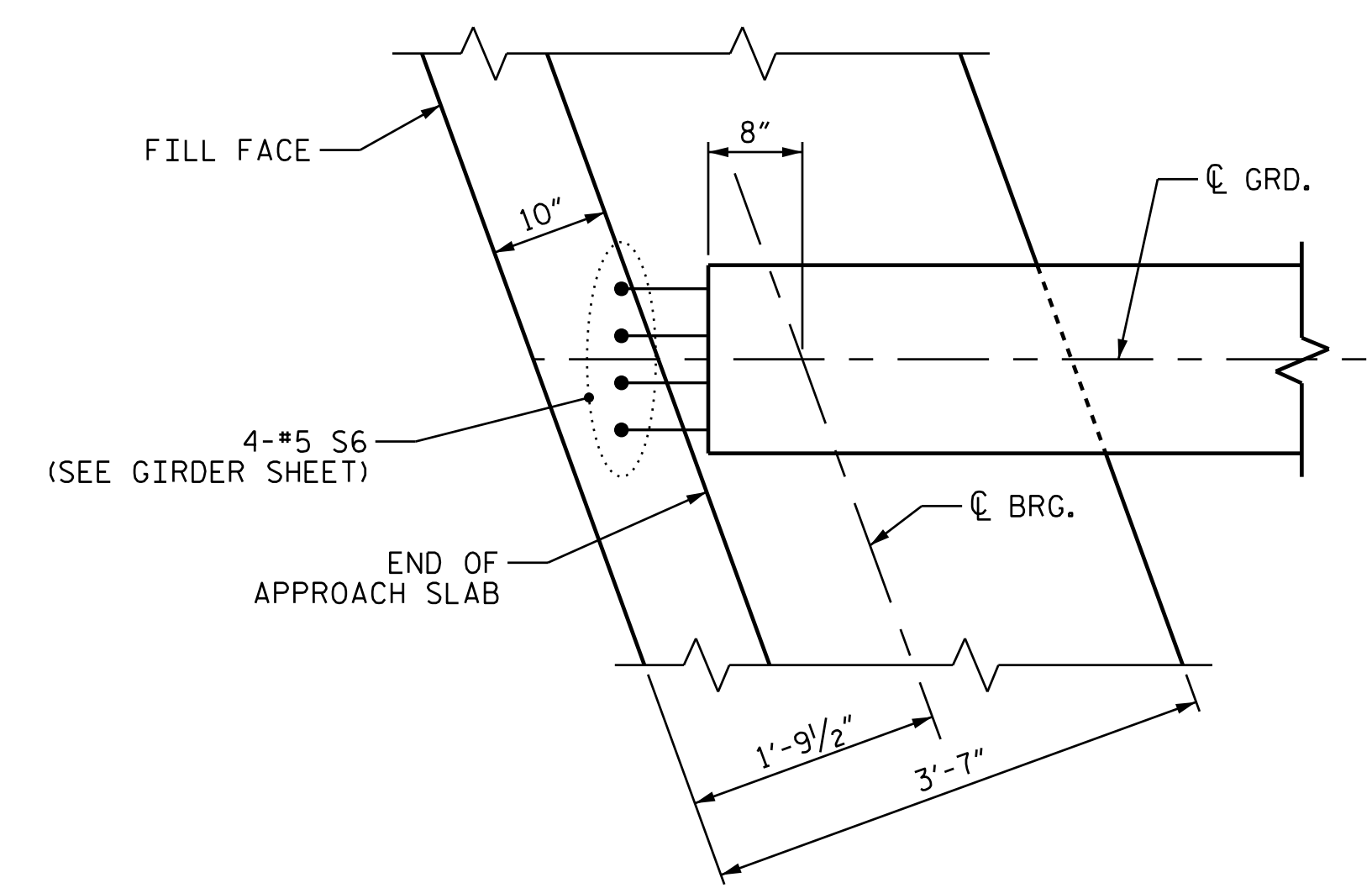
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			TOTAL SHEETS
2			4			28

157077
 C:\Users\126.M.J.L. Res\126.M.J.L. Res\Plans\B-5239-SMU.TS.000126.dgn
 8/1/2015 9:28:06 AM

DRAWN BY: J. T. WILLIAMS DATE: 1-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015



SECTION THRU INTEGRAL END BENT



PLAN OF GIRDER AT INTEGRAL END BENT

#157077
 C:\Users\126.M.J.L. Bess\Plans\B-5239_SMU_TS_000126.dgn
 8/1/2017 9:28:08 AM

DRAWN BY: J. T. WILLIAMS DATE: 1-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 19+04.69 -L-

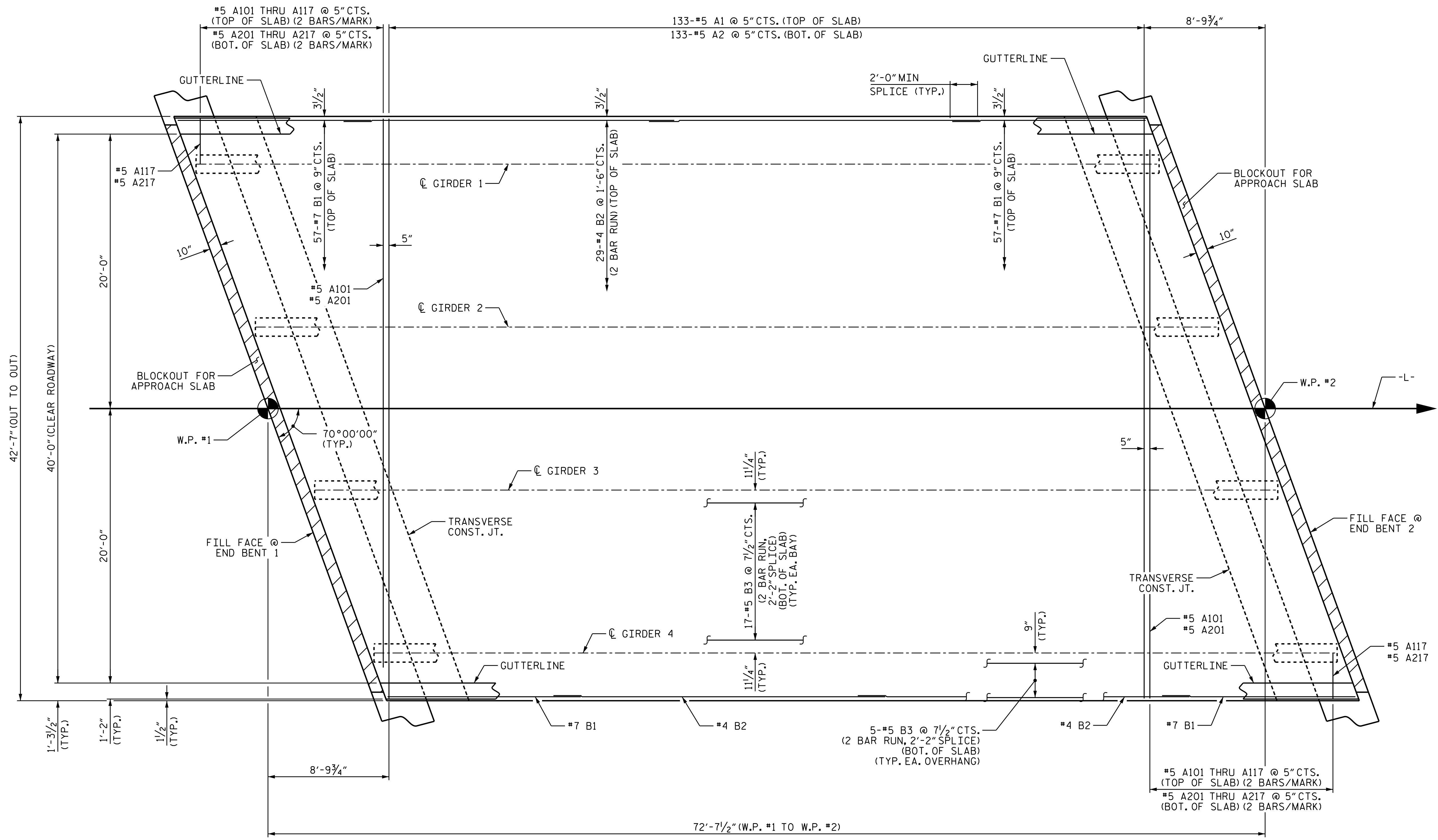
SHEET 2 OF 2

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

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED
 PLANS PREPARED BY:
M PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 MOTT MACDONALD LICENSE NO. F-0669

NORTH CAROLINA
 PROFESSIONAL
 SEAL
 20532
 ENGINEER
 JAMES E. MONDOLFI
 8/1/2017

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



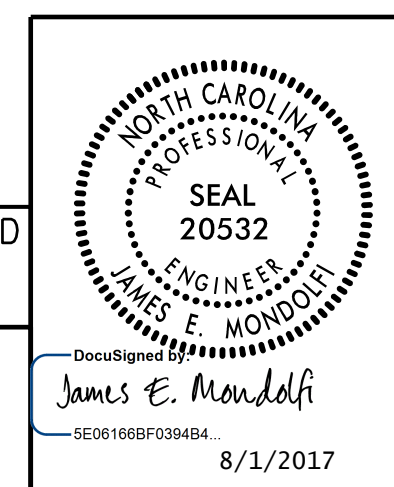
PLAN OF SPAN A

FOR POUR SEQUENCE AND TRANSVERSE CONSTRUCTION JOINT
 DETAIL, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 19+04.69 -L-

SHEET 1 OF 4

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



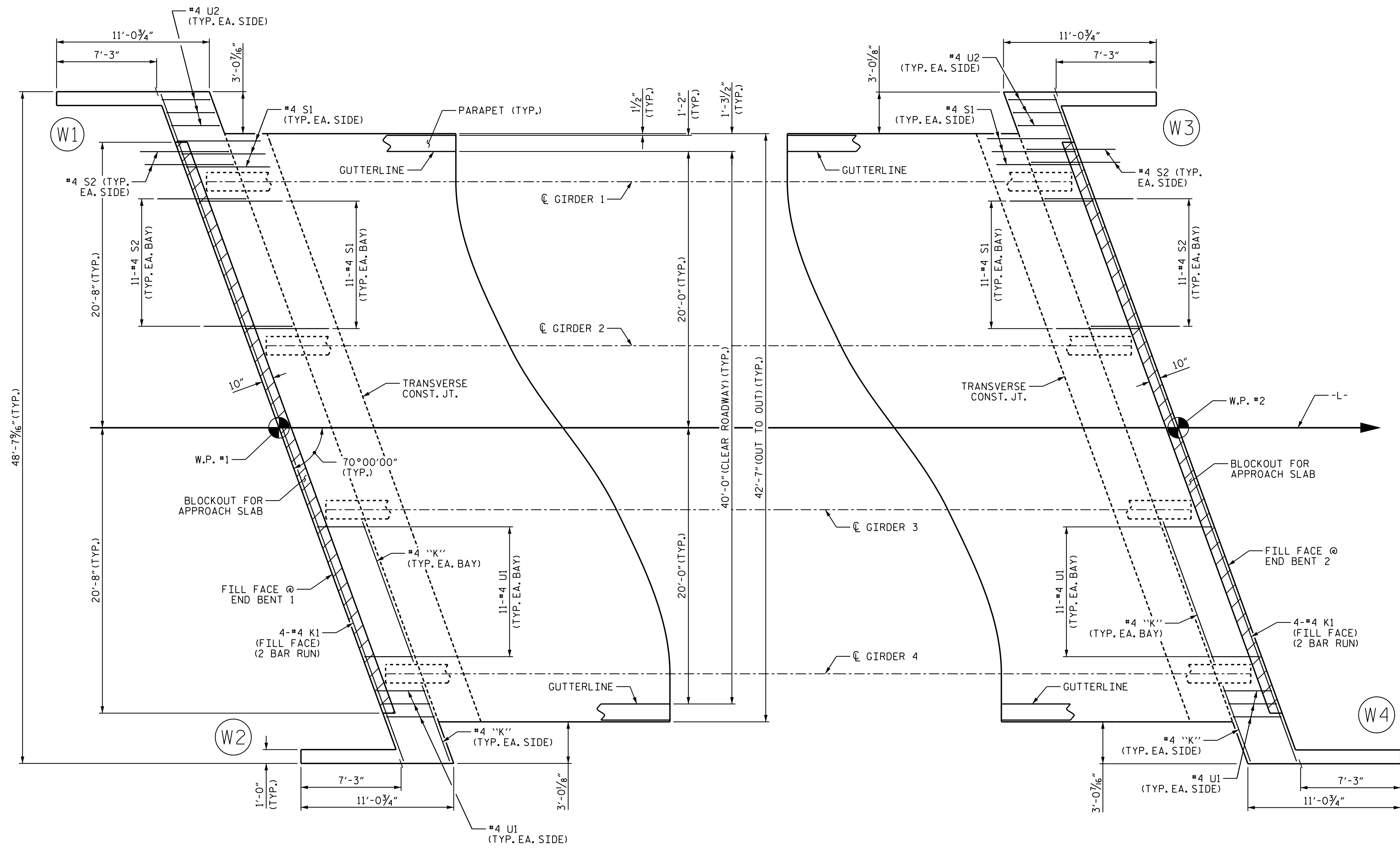
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

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

157077
 C:\Users\126.M.J.L. Res\Plans\B-5239-SMU.S-000126.dgn
 8/1/2015 9:28:10 AM

DRAWN BY: J. T. WILLIAMS DATE: 1-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015



ALL "S" & "U" BARS IN ABUTMENT SHALL MATCH UP WITH #4 V1 IN THE END BENTS.

PLAN OF ABUTMENT AT END BENT 1

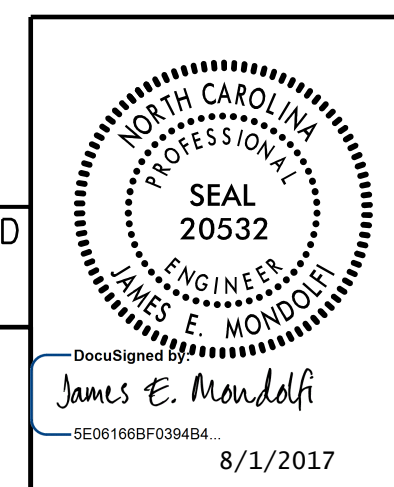
PLAN OF ABUTMENT AT END BENT 2

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 19+04.69 -L-

SHEET 2 OF 4

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

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

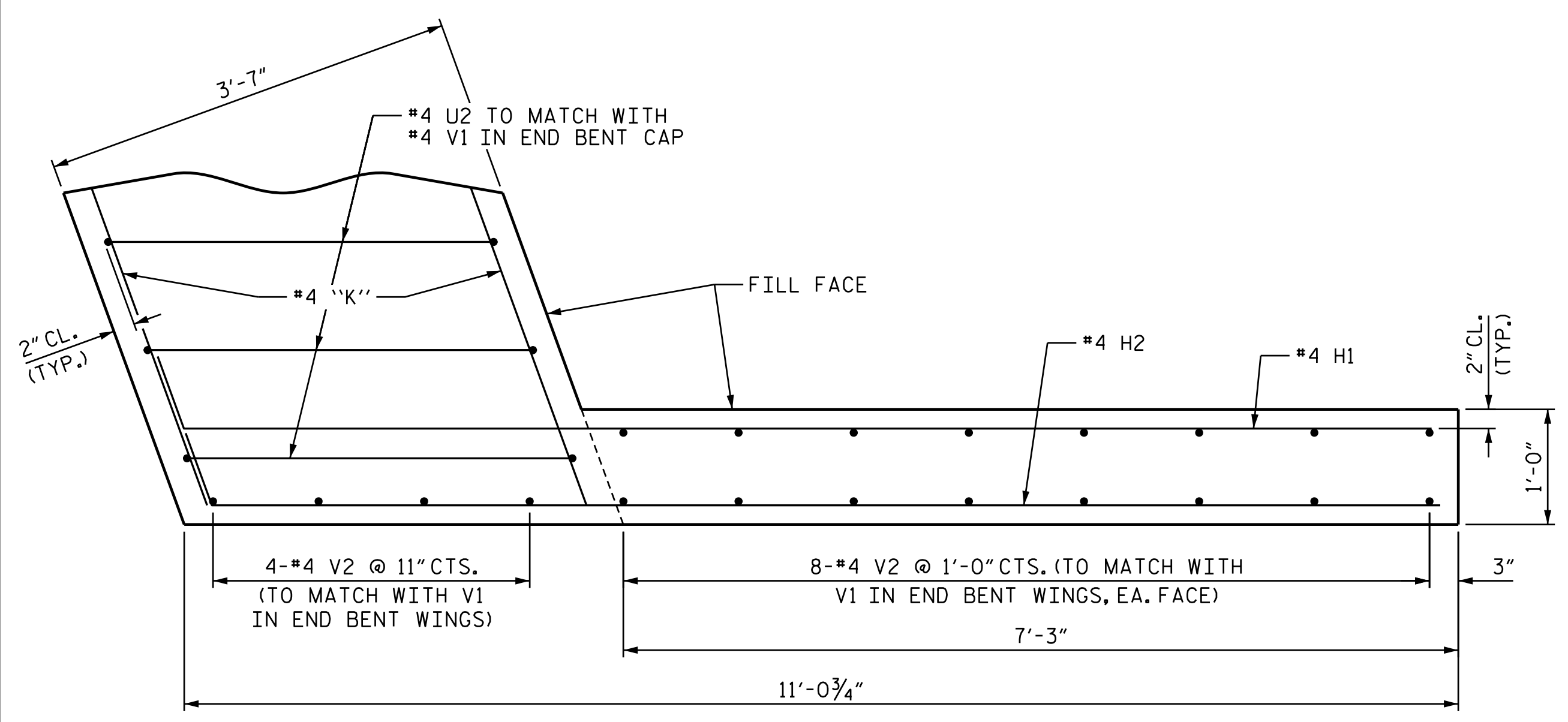


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

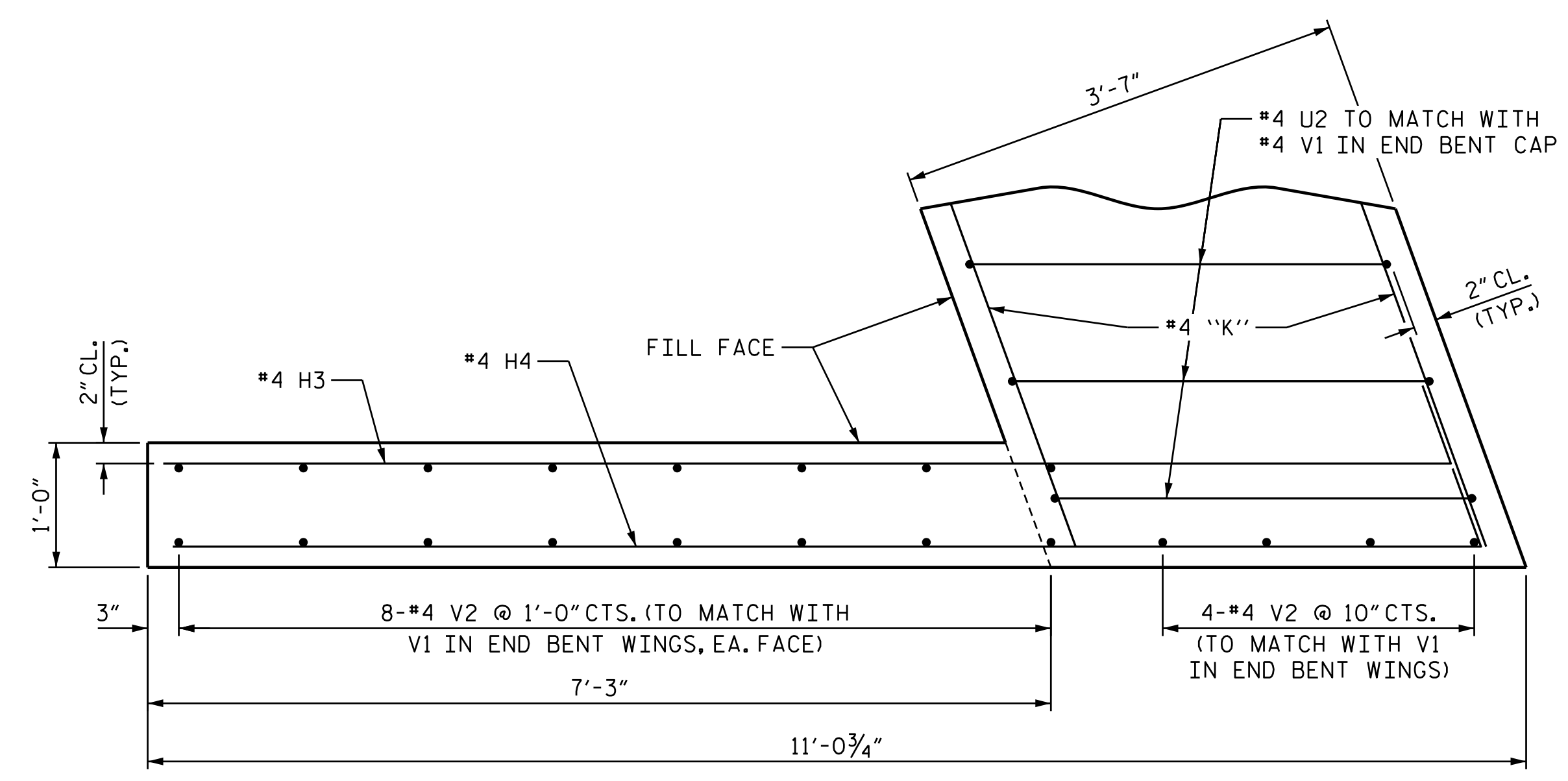
PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

157077
 C:\Users\126.M.J.I. Resa\Plans\B-5239-SMU.S-000126.dgn
 8/1/2015 9:28:13 AM

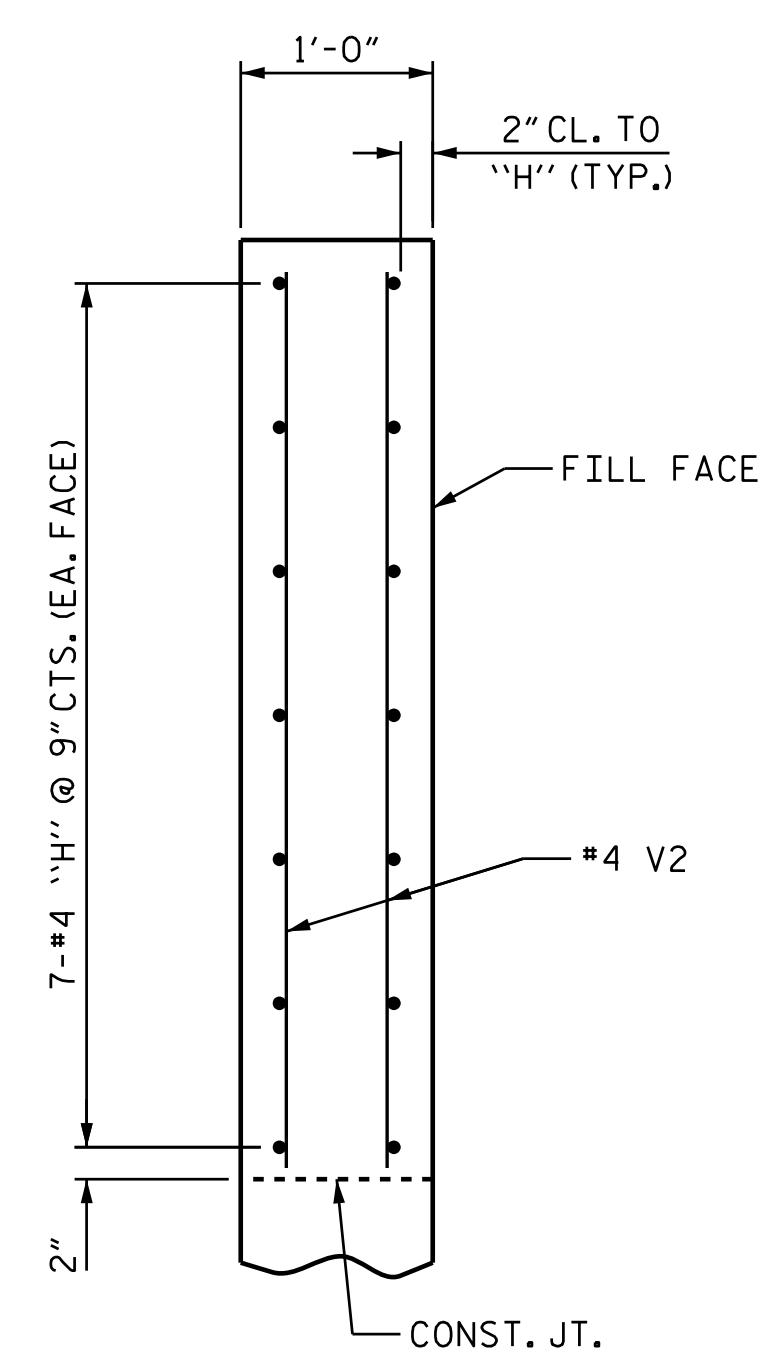
DRAWN BY: J. T. WILLIAMS DATE: 2-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015



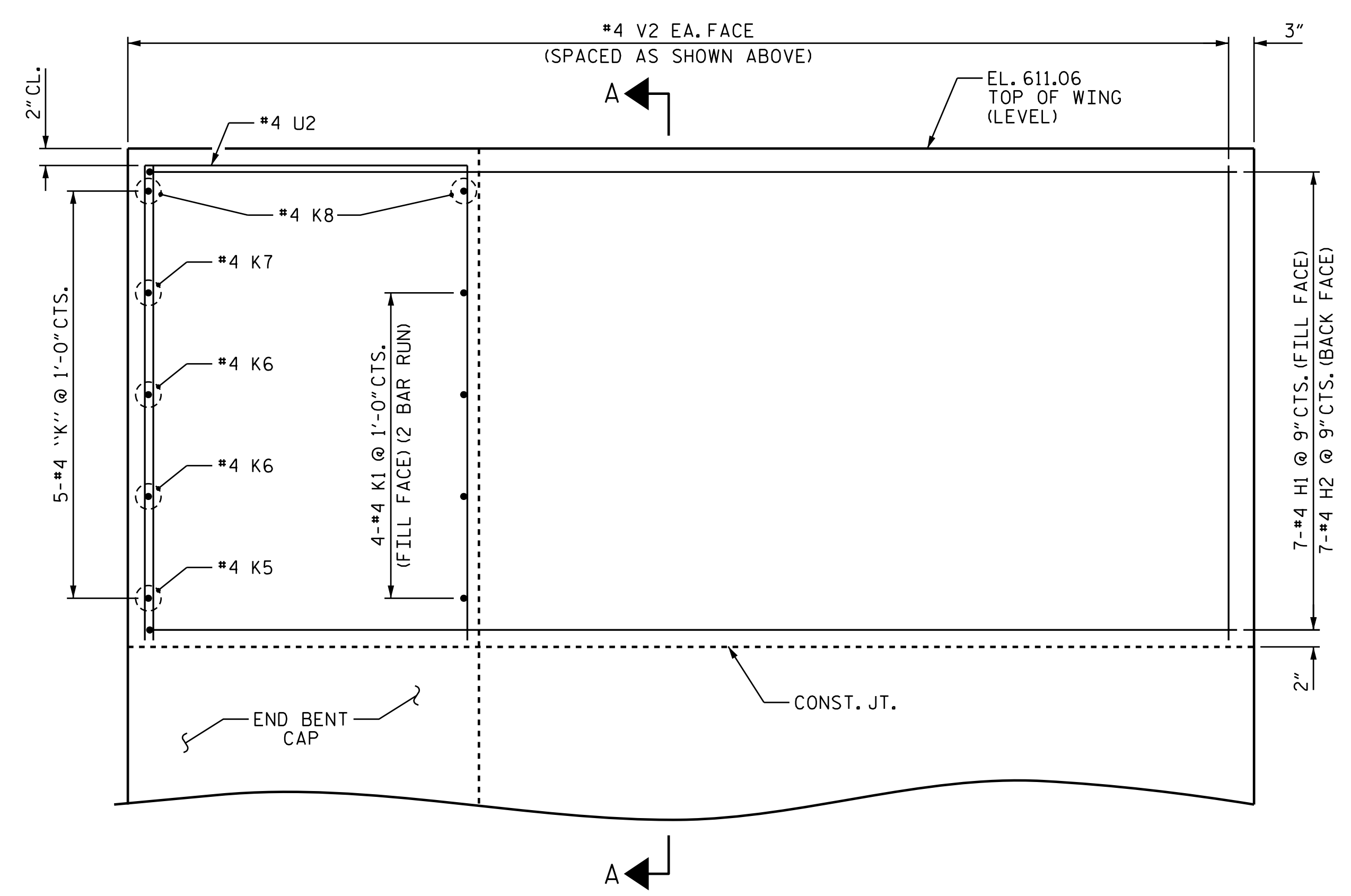
PLAN OF WING W1



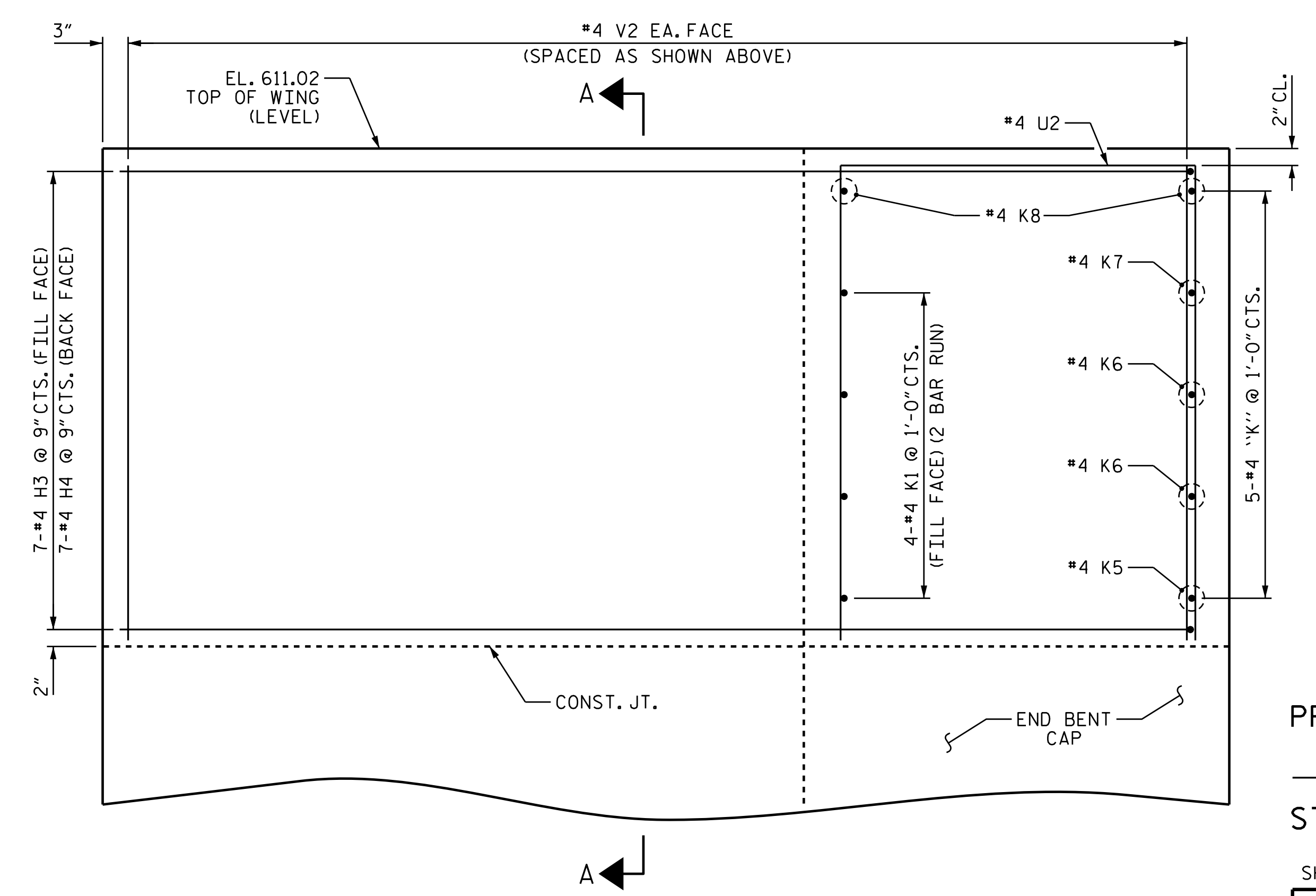
PLAN OF WING W2



SECTION A-A



ELEVATION OF WING W1



ELEVATION OF WING W2

ABUTMENT WINGS @ END BENT 1

(FOR END BENT REINFORCING STEEL AND DETAILS, SEE "SUBSTRUCTURE END BENT 1" SHEETS)

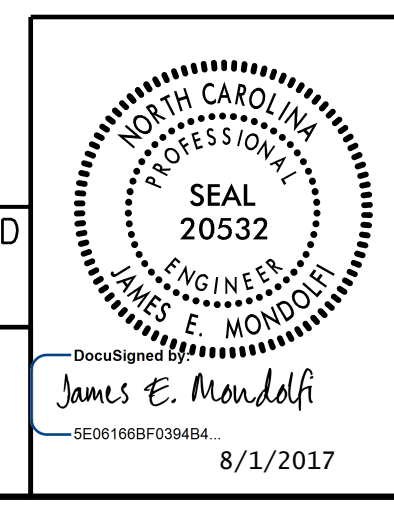
PROJECT NO. B-5239
 ALAMANCE COUNTY
 STATION: 19+04.69 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN
 DETAILS

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

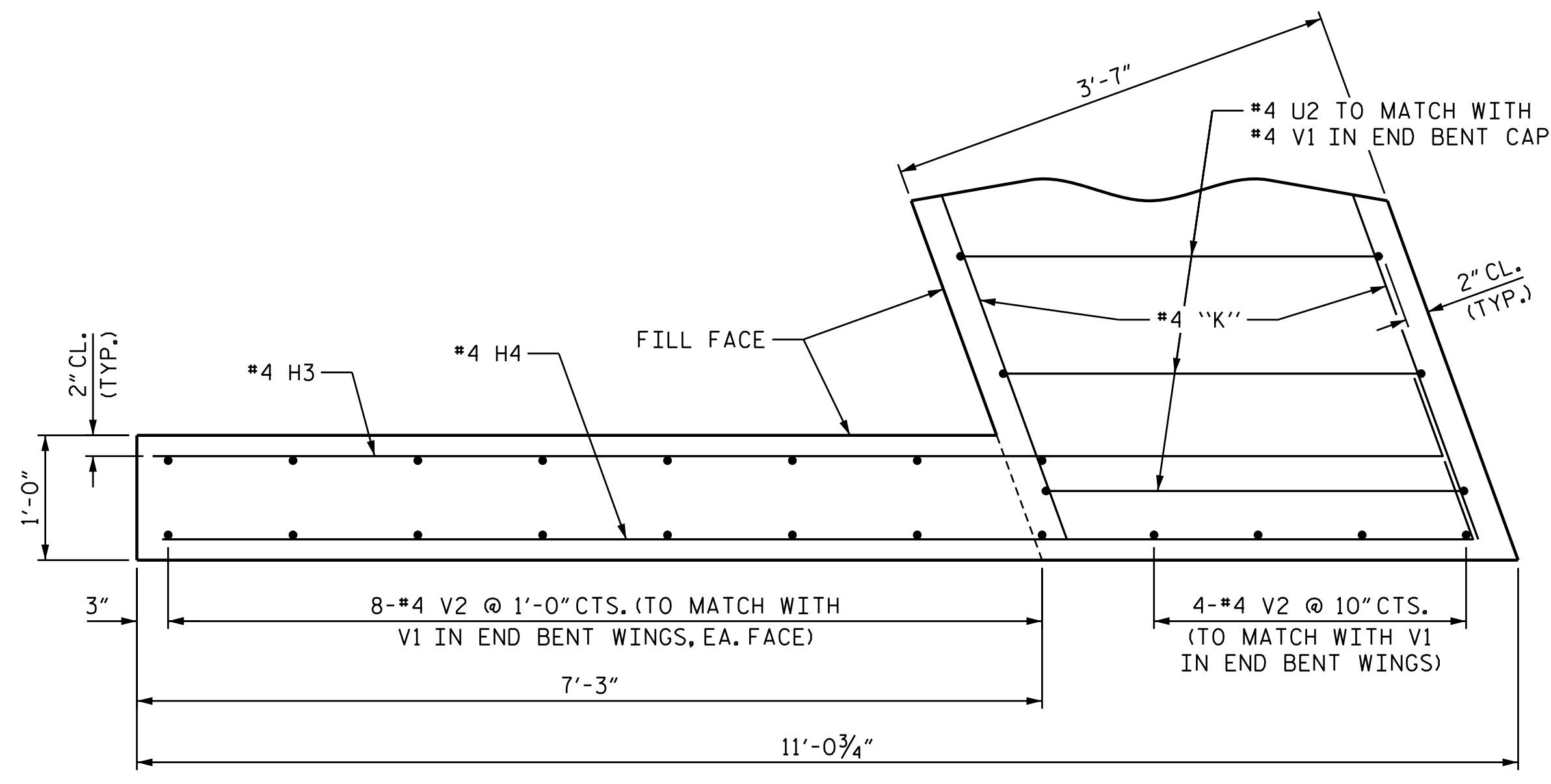


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

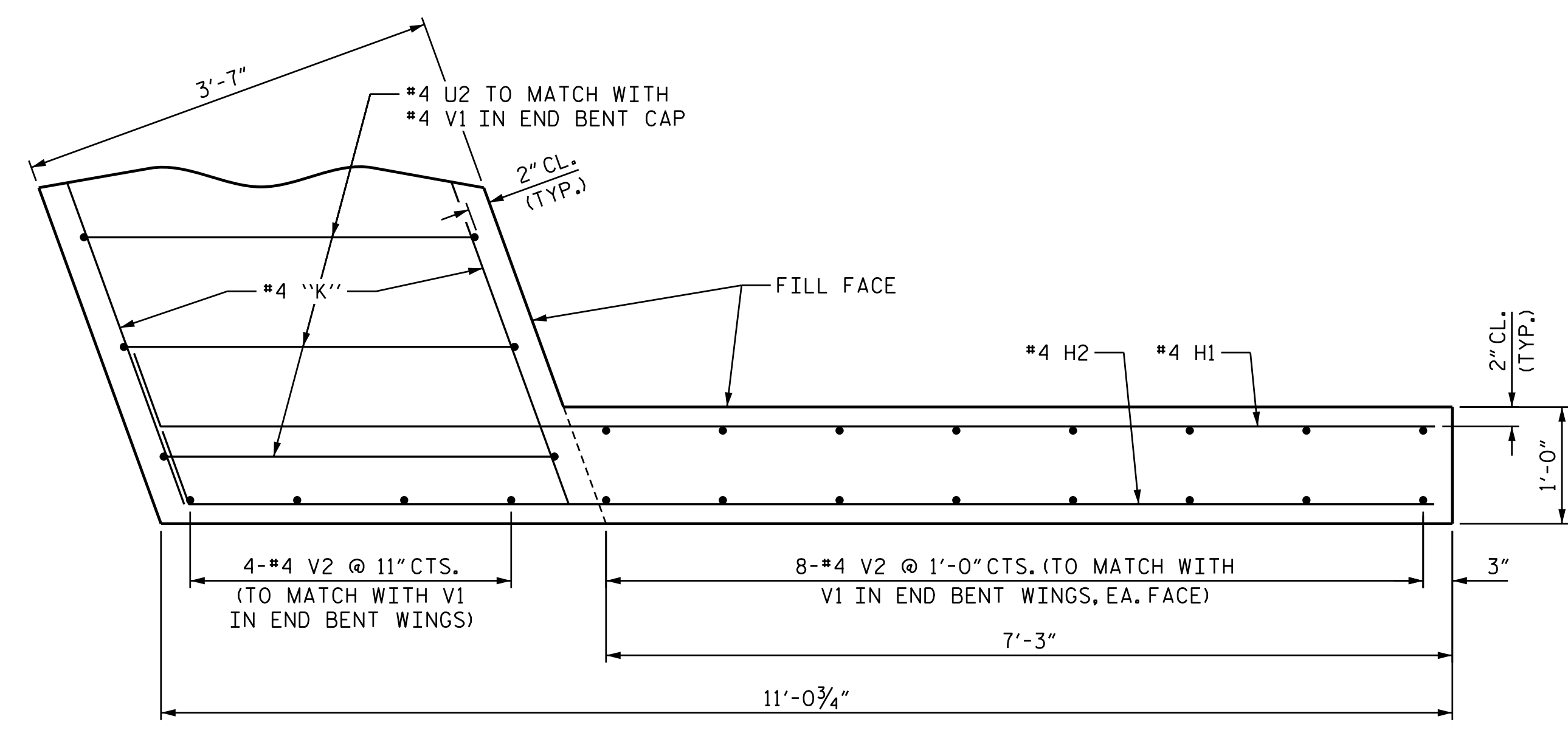
PLANS PREPARED BY:
 MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

157077
 C:\Users\126.M.J.L. P... \Plans\B-5239_SMU.S_000126.dgn
 9/26/14 AM

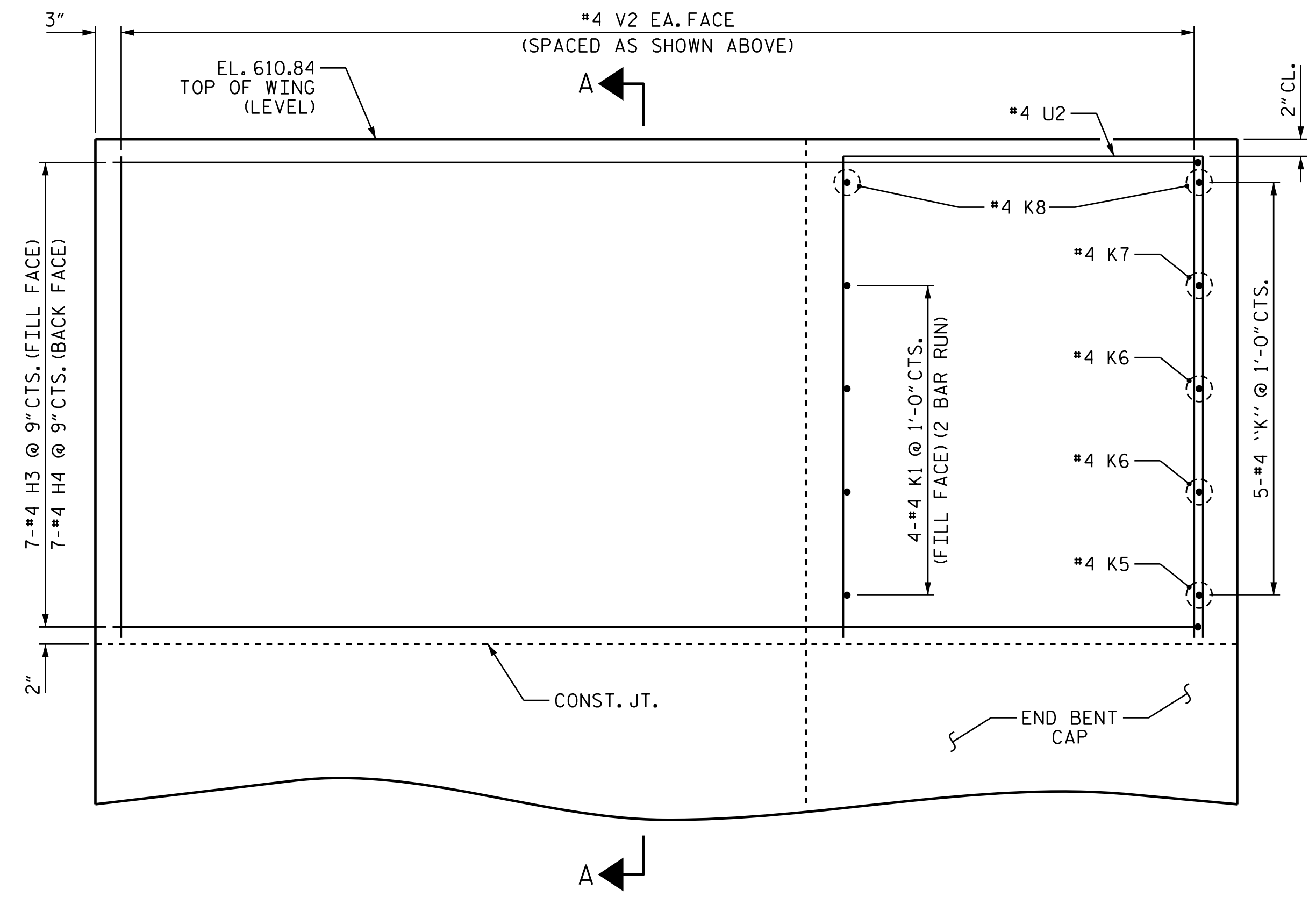
DRAWN BY: J. T. WILLIAMS DATE: 2-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015



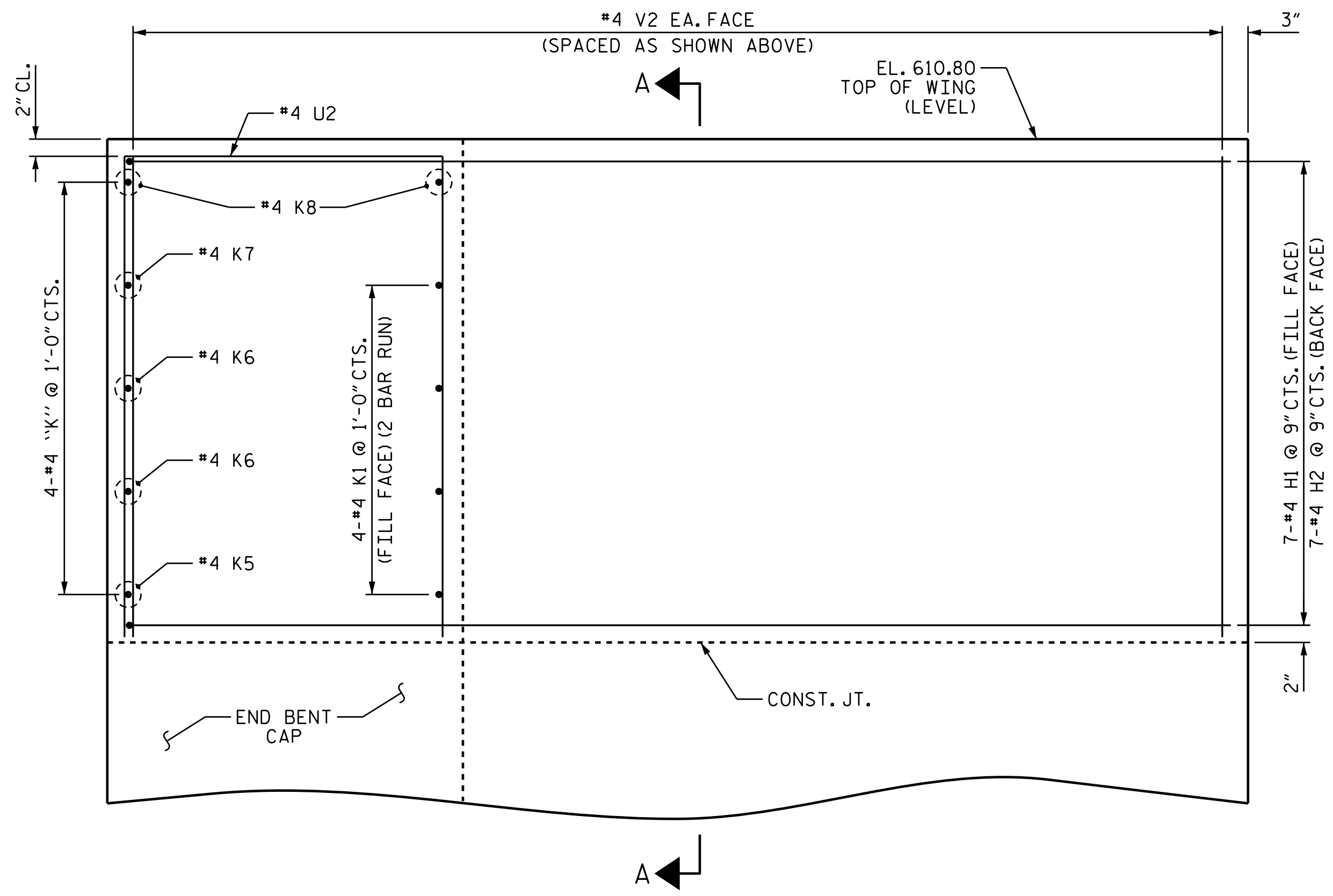
PLAN OF WING W3



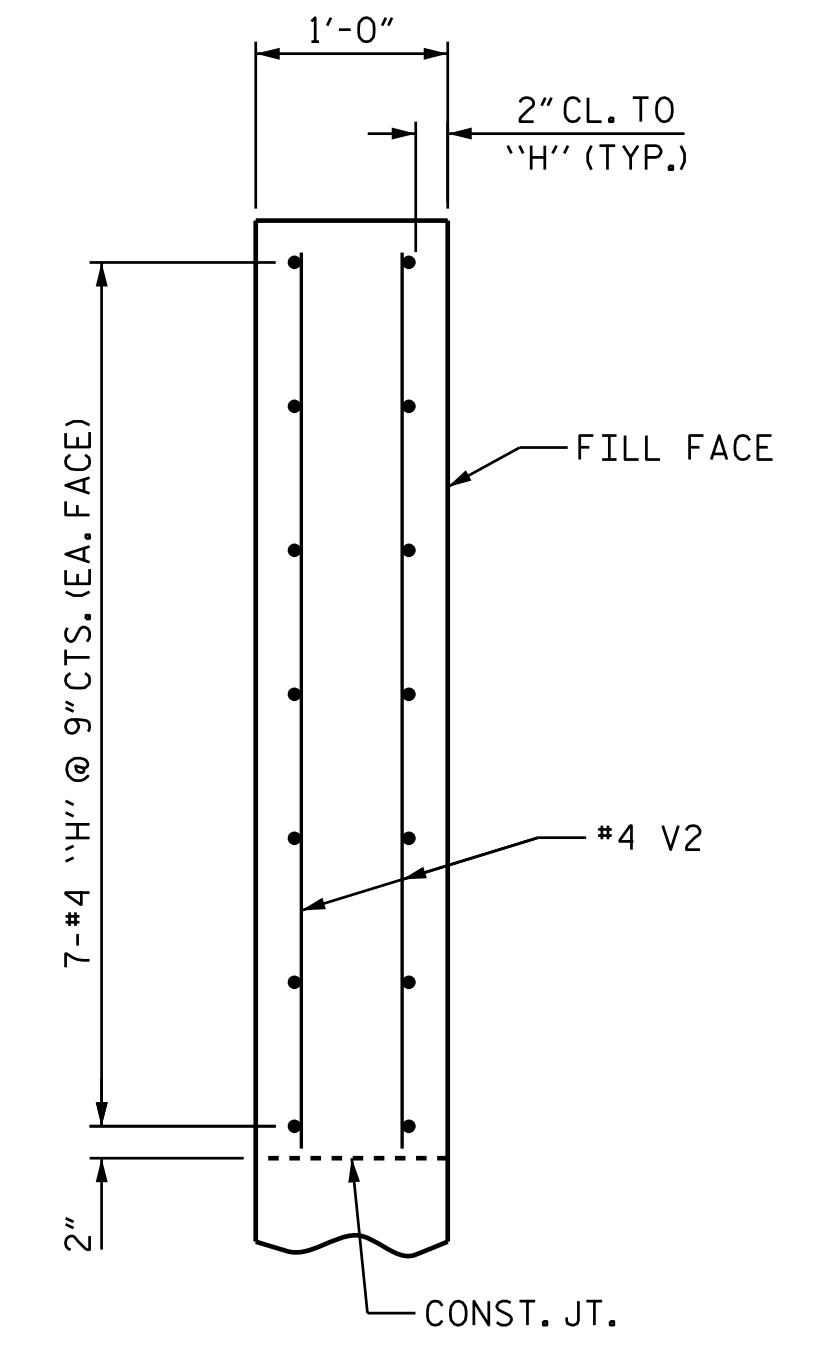
PLAN OF WING W4



ELEVATION OF WING W3



ELEVATION OF WING W4



SECTION A-A

ABUTMENT WINGS @ END BENT 2

(FOR END BENT REINFORCING STEEL AND DETAILS, SEE "SUBSTRUCTURE END BENT 2" SHEETS)

PROJECT NO. B-5239
 ALAMANCE COUNTY
 STATION: 19+04.69 -L-

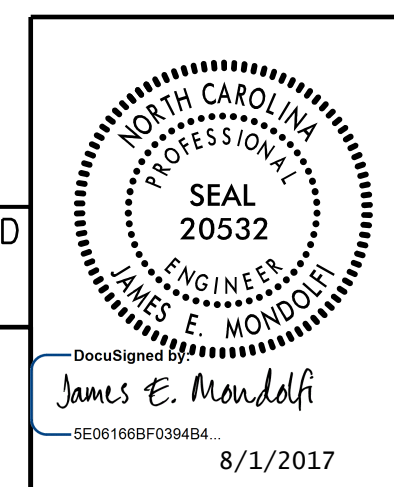
SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN
 DETAILS

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

SHEET NO. S02-10
 TOTAL SHEETS 28

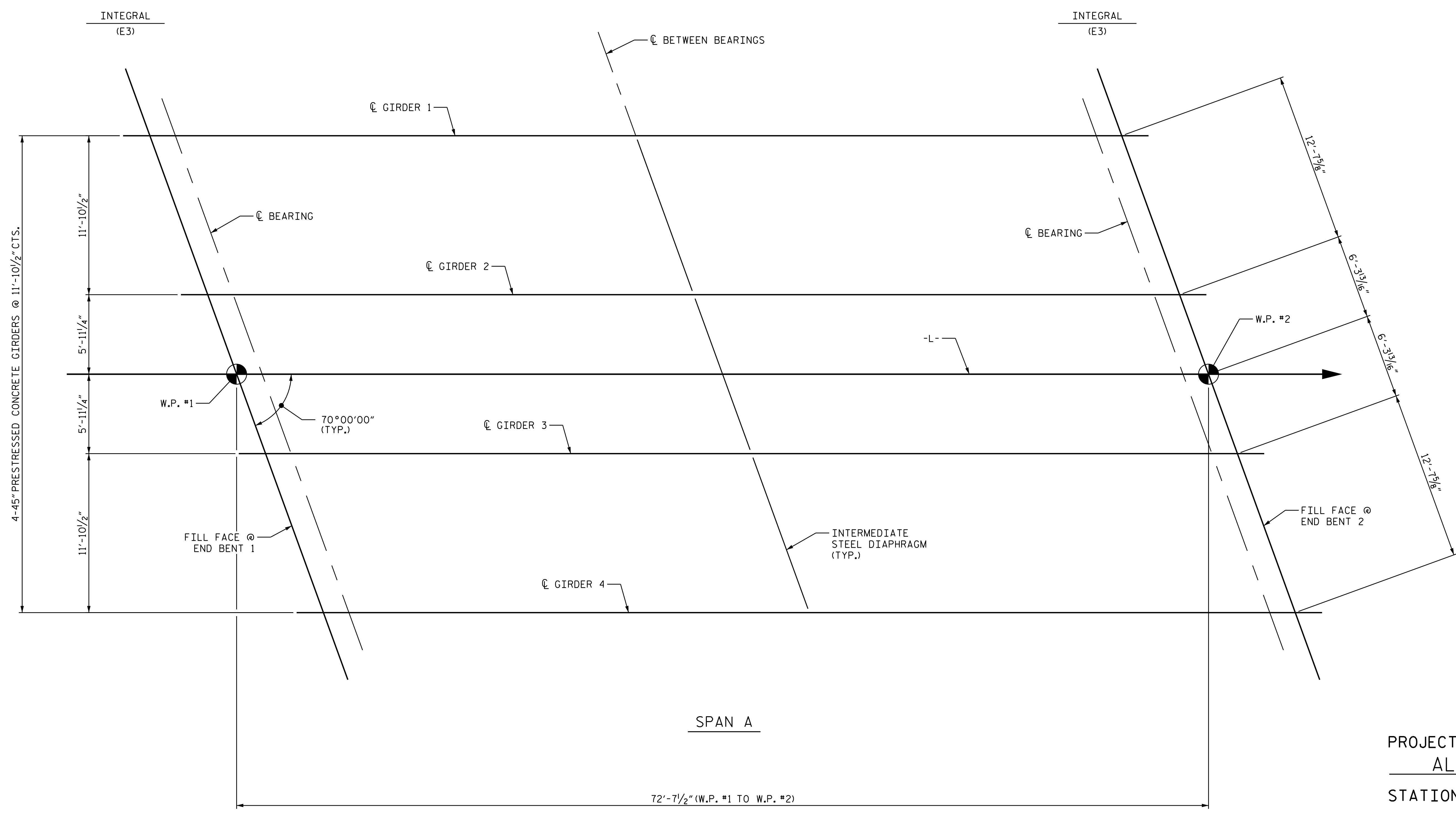


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

157077
 C:\Users\126.M.J.L. Res\Plans\B-5239-SMU.S-000126.dgn
 8/1/2015 9:28:15 AM

DRAWN BY: J. T. WILLIAMS DATE: 2-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015

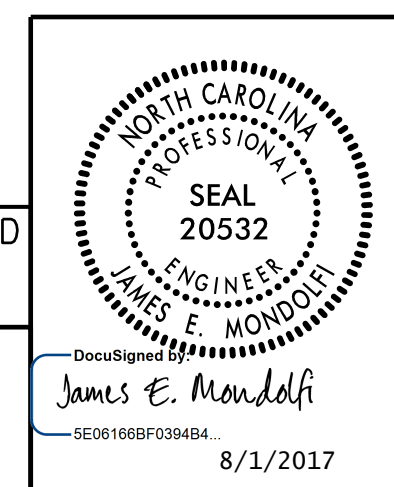


SPAN A

FRAMING PLAN

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 19+04.69 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 FRAMING PLAN



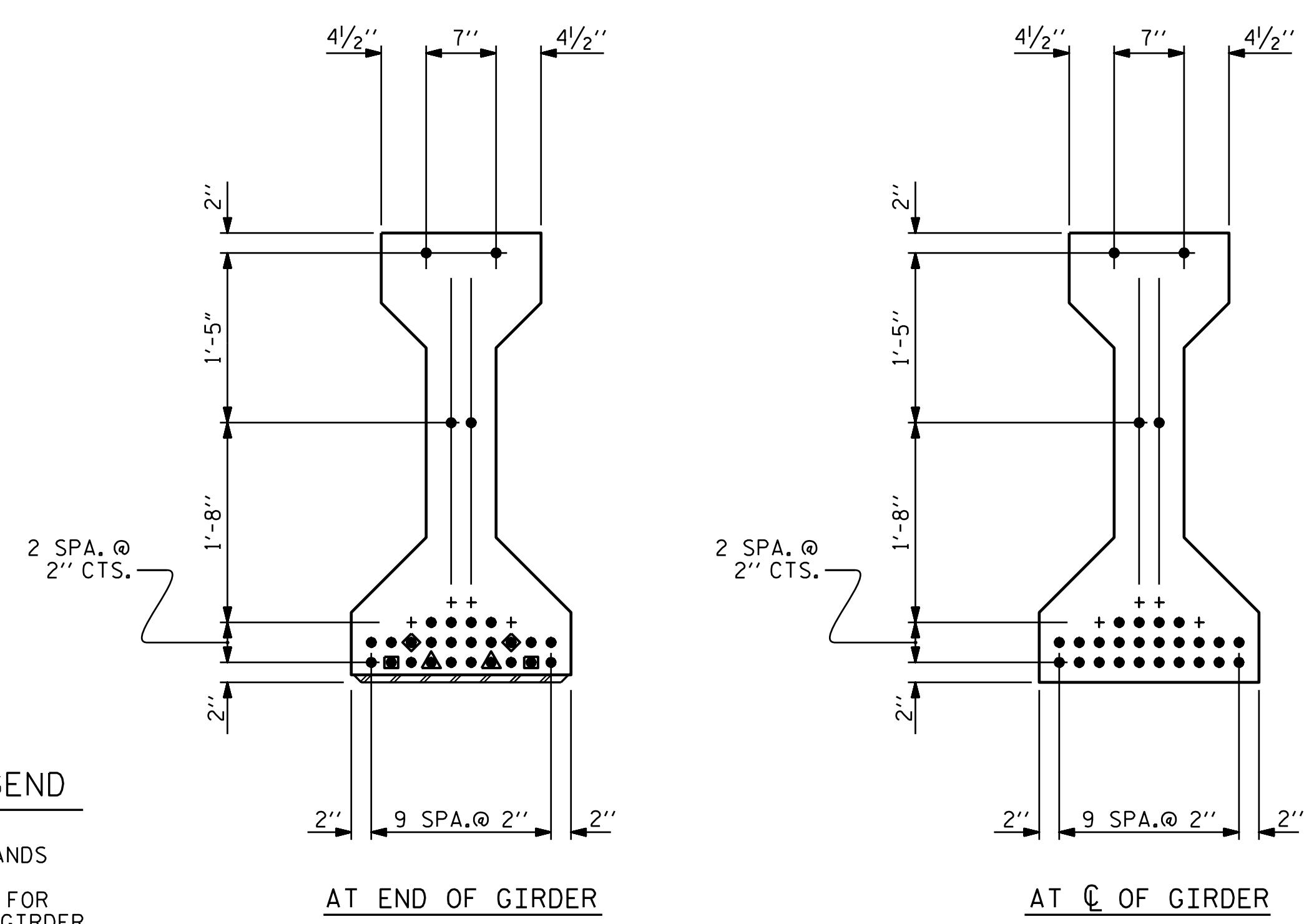
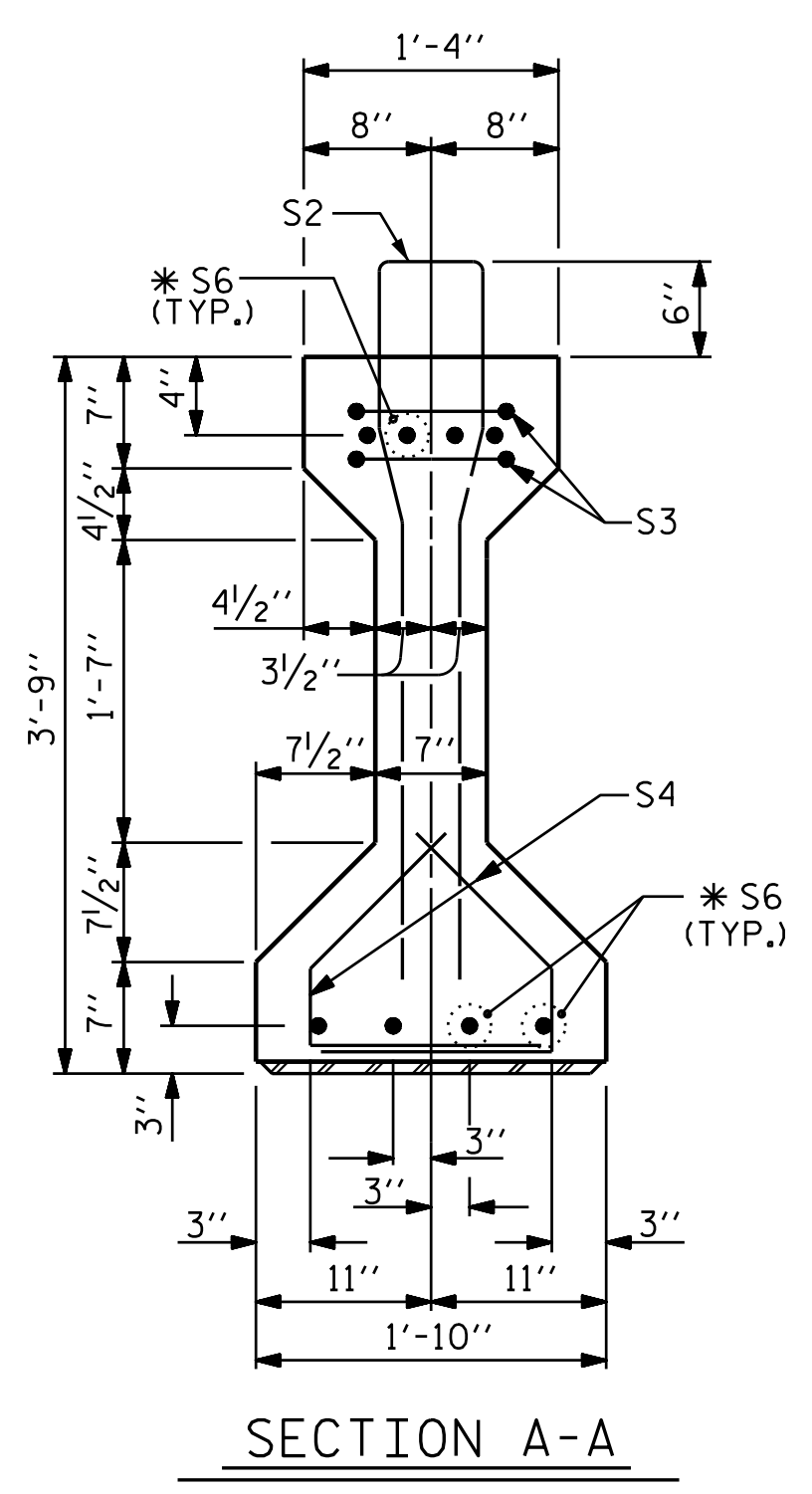
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

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

#157077
 C:\Users\126_MJL\OneDrive\Plans\B-5239_SMU_FP_000126.dgn
 8/1/2015 9:28:17 AM

DRAWN BY: J. T. WILLIAMS DATE: 2-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015



- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - ◆ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
 - ▲ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

0.6" Ø L. R. GRADE 270 STRANDS

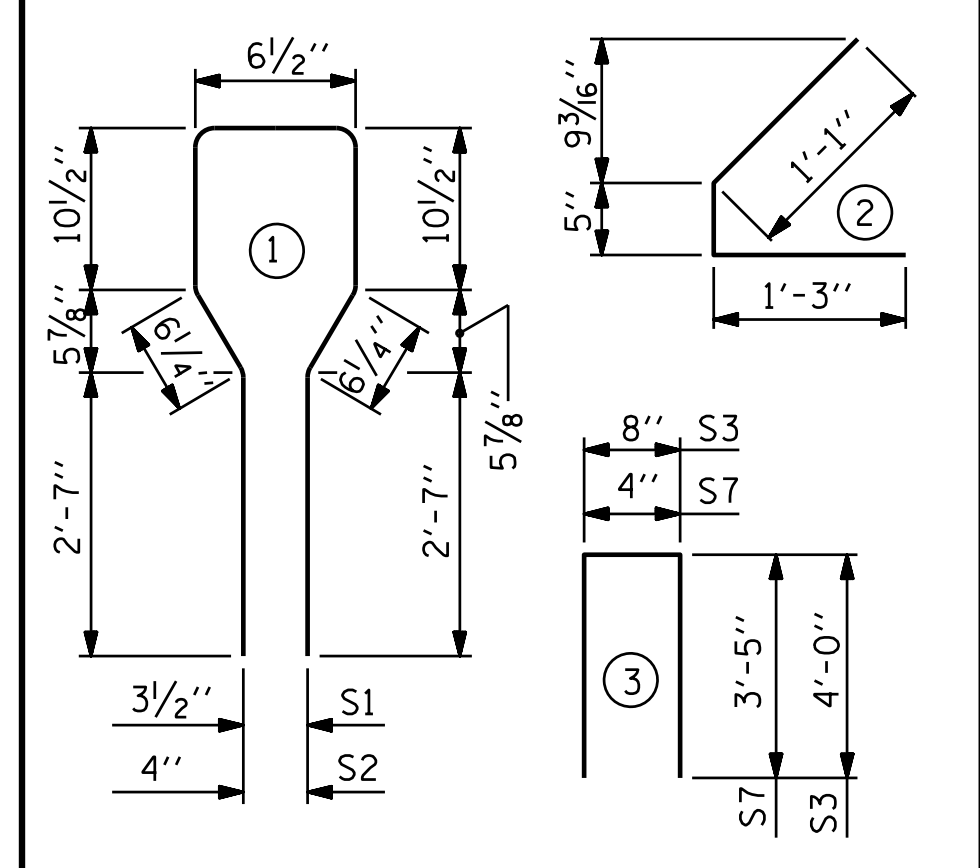
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	68	#4	1	8'-6"	386
S2	16	#6	1	8'-6"	204
S3	4	#4	3	8'-8"	23
S4	72	#4	2	2'-9"	132
* S6	16	#5	STR	3'-8"	61
S7	2	#5	3	7'-2"	15
S8	5	#4	STR	7'-0"	23
S10	2	#3	STR	1'-0"	1

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

BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT

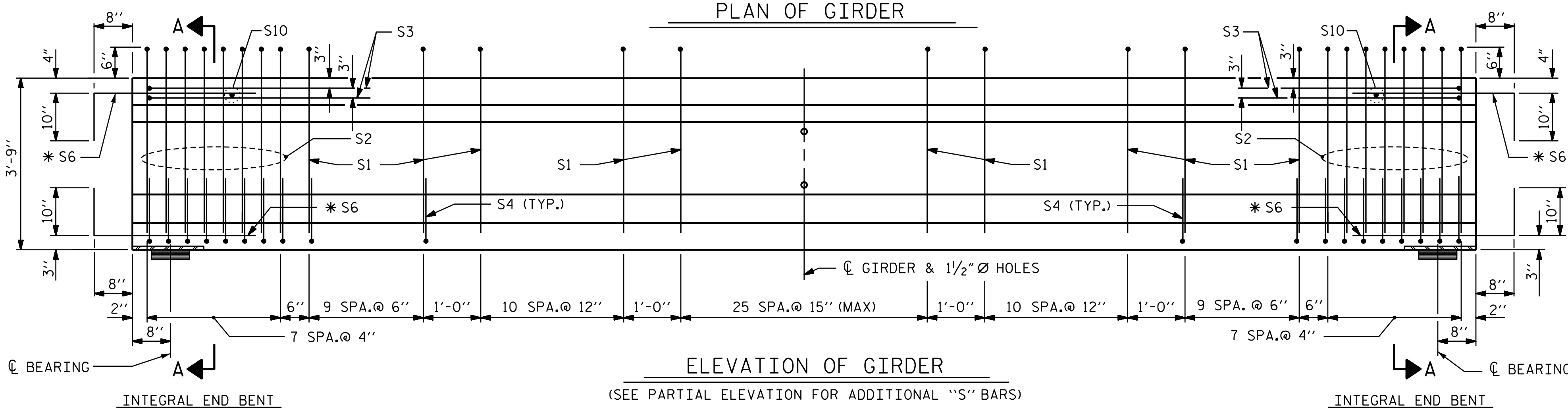
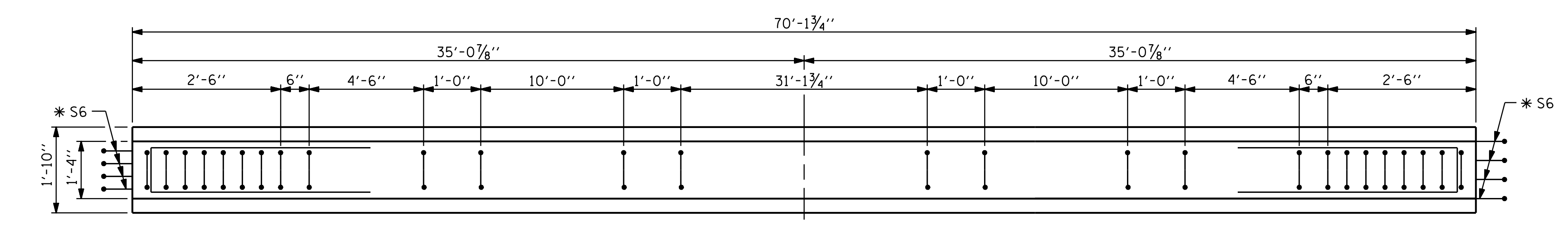


QUANTITIES FOR ONE GIRDER

REINFORCING STEEL LB.	8500 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
845	10.1	28

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	70'-1 3/4"	280.58



PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 19+04.69 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

AASHTO TYPE III
 PRESTRESSED CONCRETE GIRDER

SPAN A

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

SEAL 20532
 ENGINEER
 JAMES E. MONDOLFI
 8/1/2017

157077
 C:\Users\126.M.J.L. Resa\Plans\B-5239-SMU.GI.000126.dgn
 8/1/2017 9:28:18 AM

DRAWN BY: J. T. WILLIAMS DATE: 4-2017
 CHECKED BY: J. E. MONDOLFI DATE: 4-2017
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 4-2017

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 6300 PSI.

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

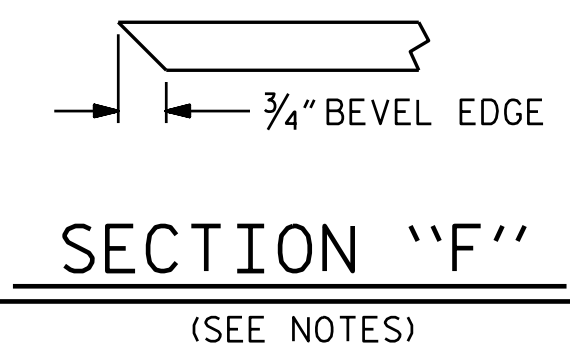
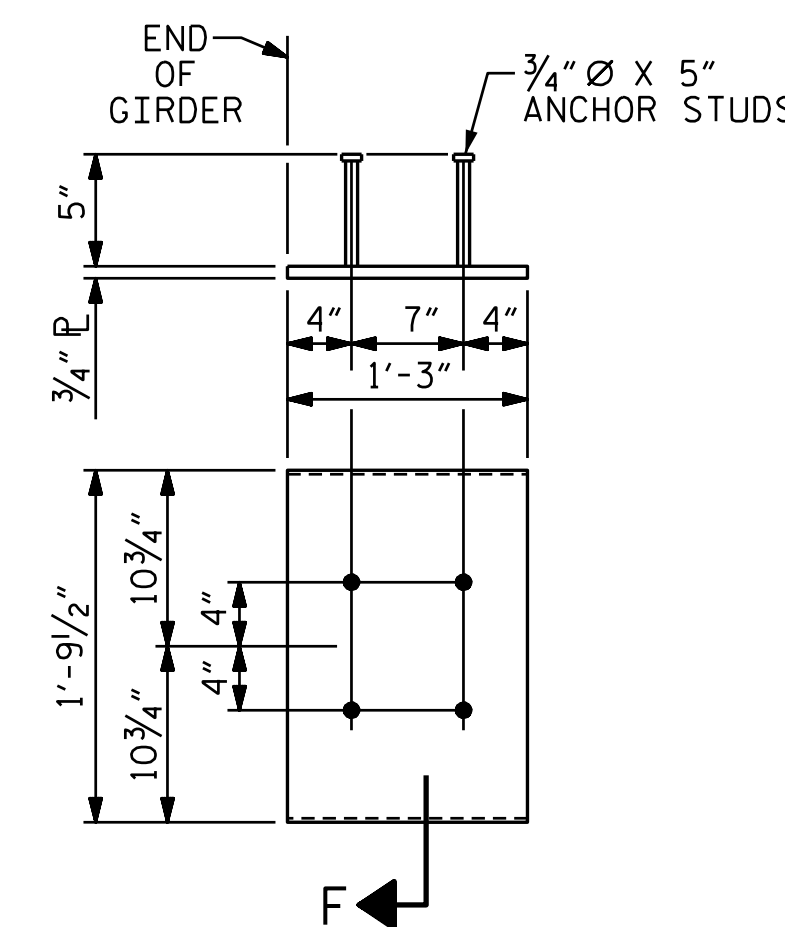
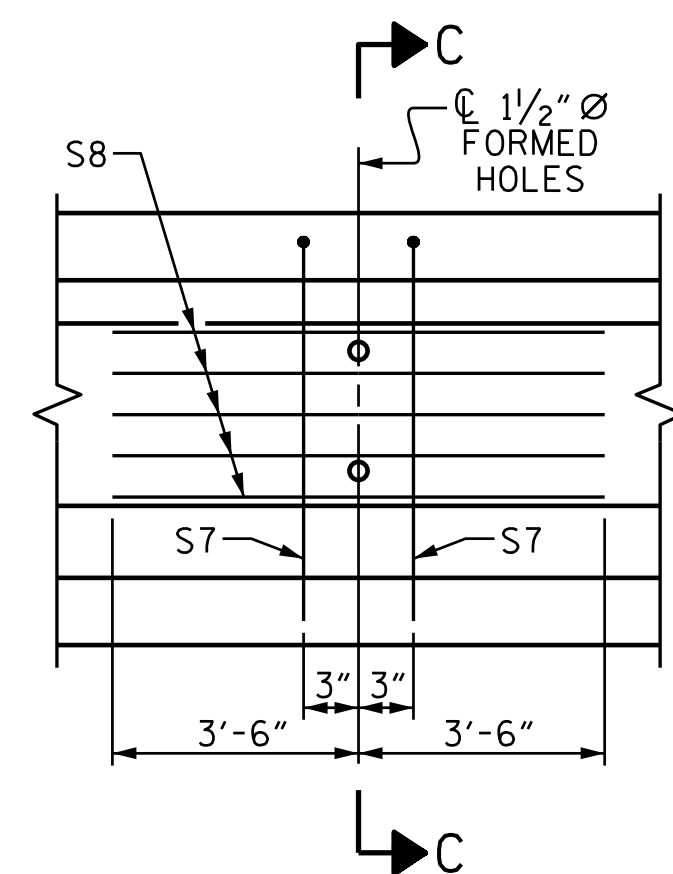
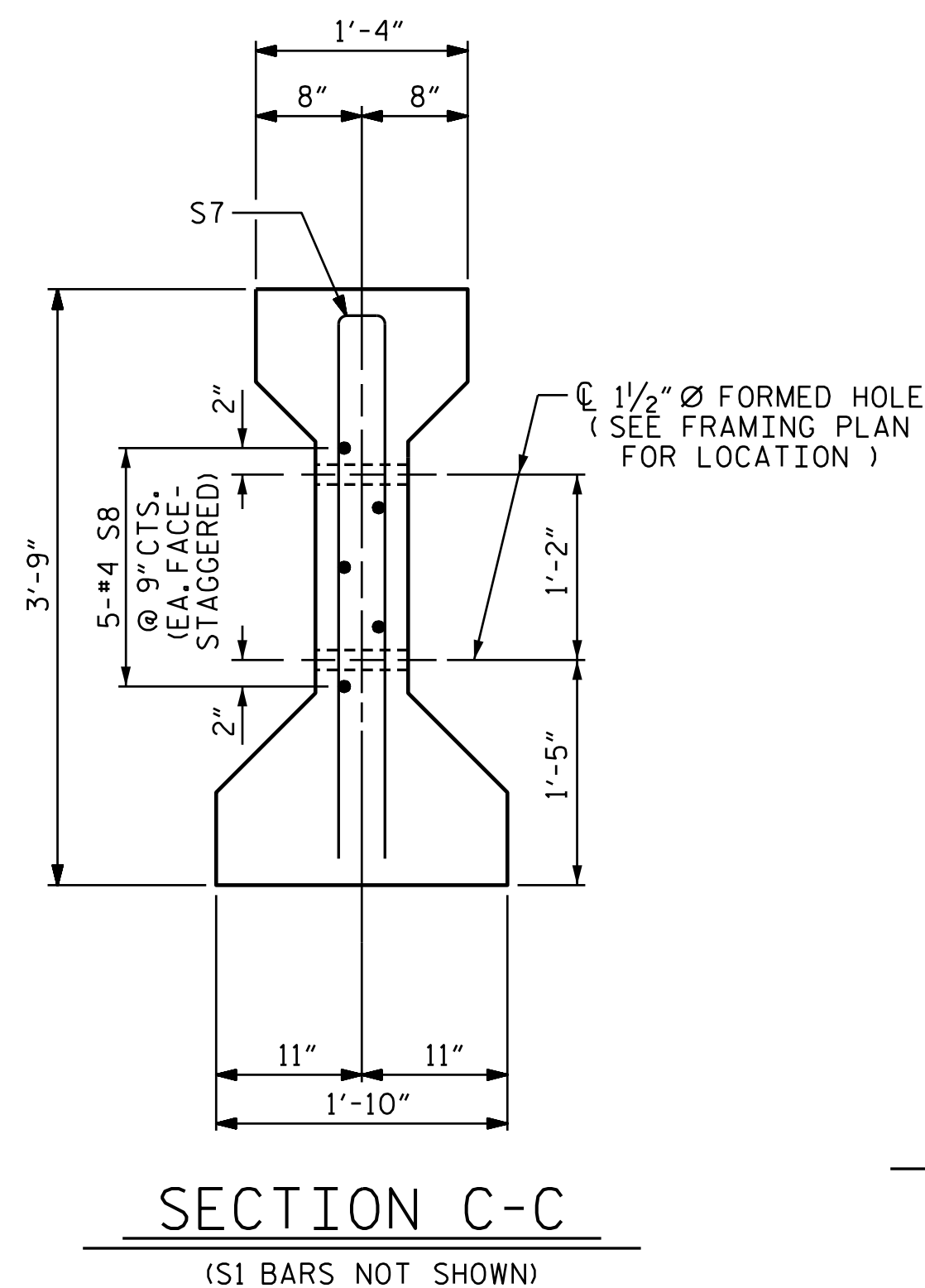
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

FOR EMBEDDED CLIPS FOR PRESTRESSED GIRDERS, SEE SPECIAL PROVISIONS

DEAD LOAD DEFLECTION TABLE												
0.6" Ø LOW RELAXATION	SPAN A											
	EXTERIOR GIRDERS											
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.0	0.052	0.098	0.134	0.157	0.164	0.157	0.134	0.098	0.052	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.0	0.027	0.054	0.075	0.088	0.093	0.088	0.075	0.054	0.027	0.0
FINAL CAMBER	↑	0.0	5/16"	1/2"	11/16"	13/16"	7/8"	13/16"	11/16"	1/2"	5/16"	0.0
INTERIOR GIRDERS												
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.0	0.052	0.098	0.134	0.157	0.164	0.157	0.134	0.098	0.052	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.0	0.034	0.067	0.093	0.110	0.115	0.110	0.093	0.067	0.034	0.0
FINAL CAMBER	↑	0.0	3/16"	3/8"	1/2"	9/16"	9/16"	9/16"	1/2"	3/8"	3/16"	0.0

* INCLUDES FUTURE WEARING SURFACE

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



PROJECT NO. B-5239
ALAMANCE COUNTY
STATION: 19+04.69 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRESTRESSED CONCRETE GIRDER DETAILS

REVISIONS

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

SHEET NO.
S02-13
TOTAL SHEETS
28

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PLANS PREPARED BY:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
(919) 552-2253
www.mottmac.com
LICENSE NO. F-0669

STATE OF NORTH CAROLINA
PROFESSIONAL SEAL
20532
ENGINEER
JAMES E. MONDOLFI
8/1/2017

DRAWN BY: J. T. WILLIAMS DATE: 4-2017
 CHECKED BY: J. E. MONDOLFI DATE: 4-2017
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 4-2017

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, AND CHANNELS 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.

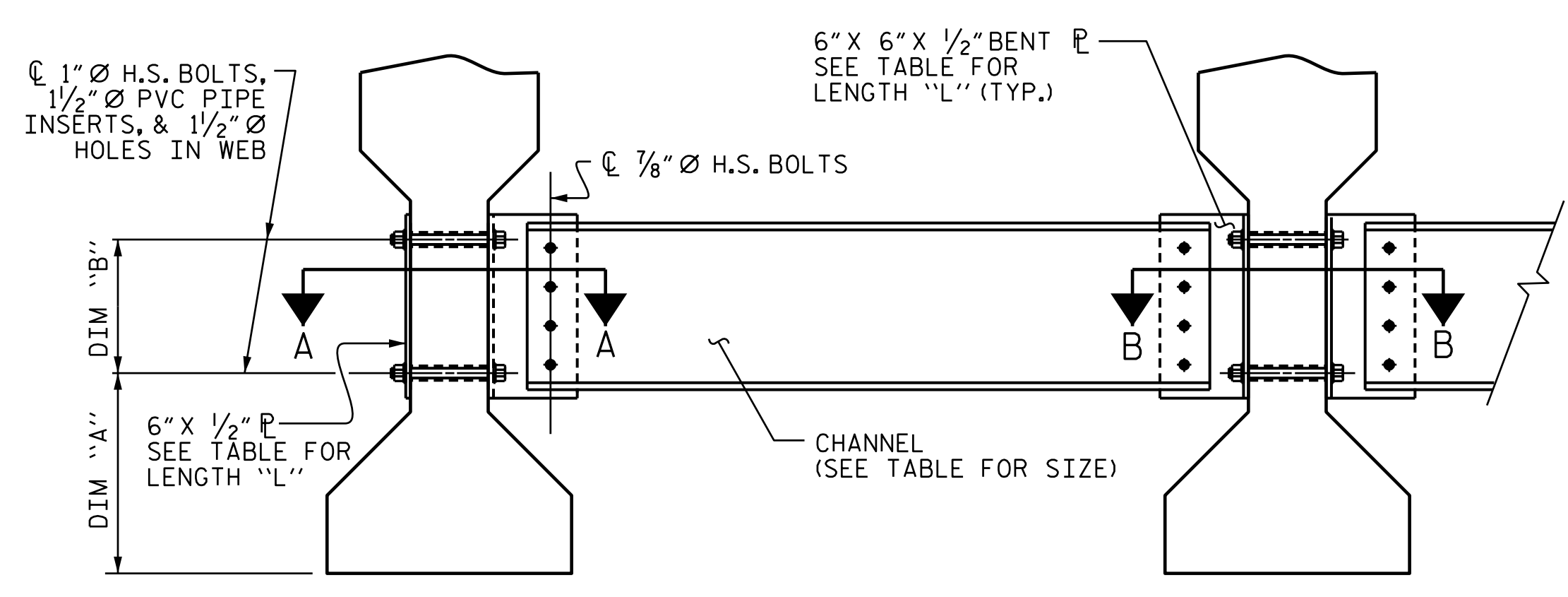
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

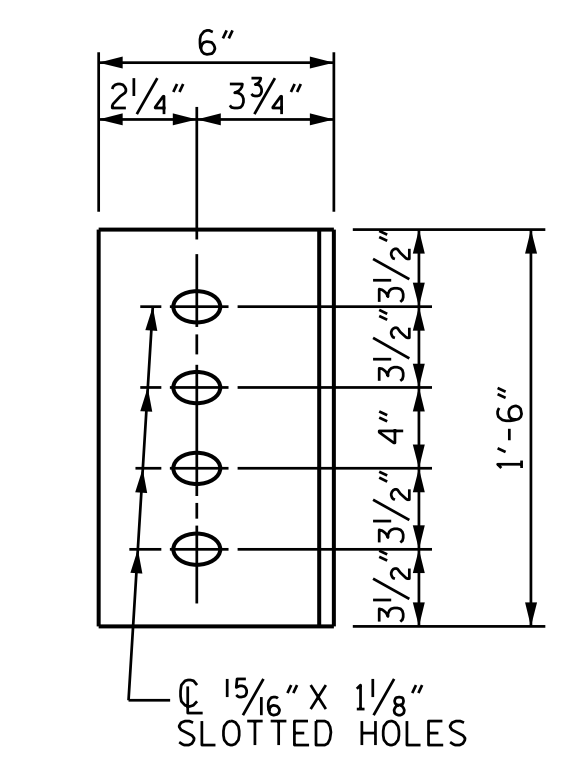
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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.

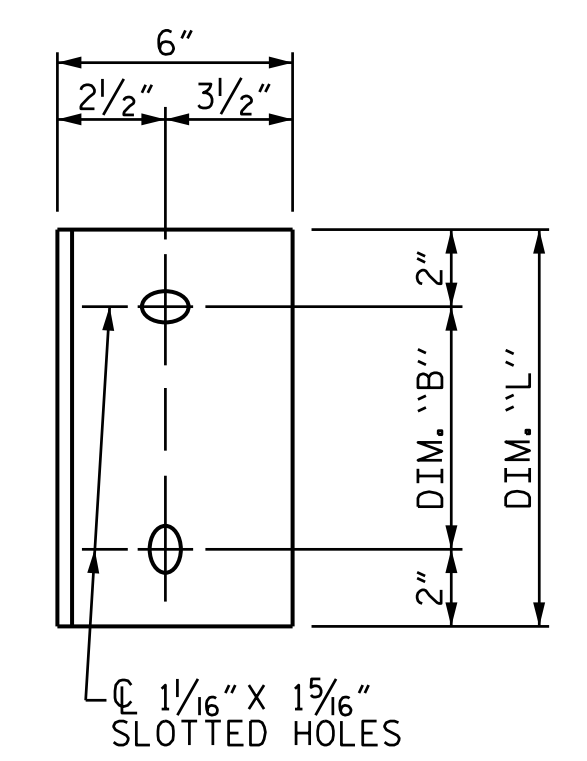
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



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



DIAPHRAGM FACE



WEB FACE

CONNECTOR PLATE DETAILS

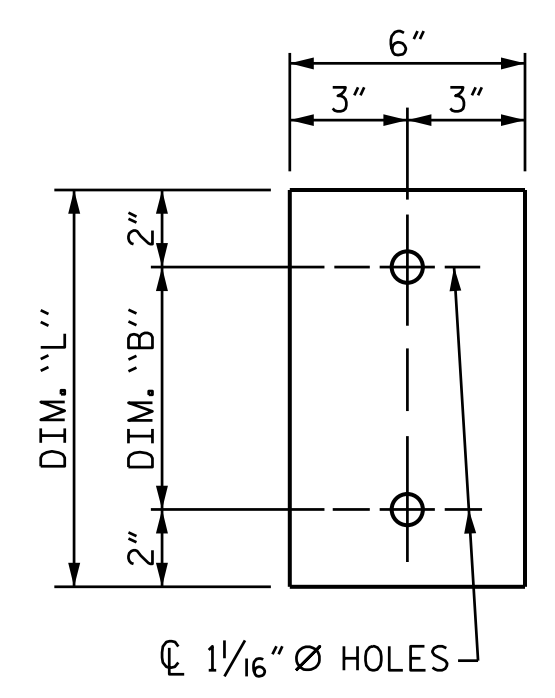
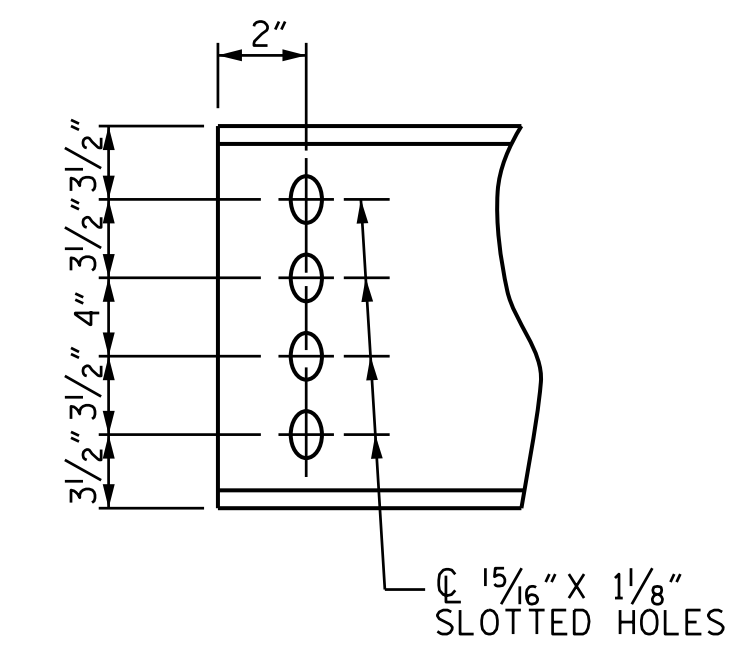


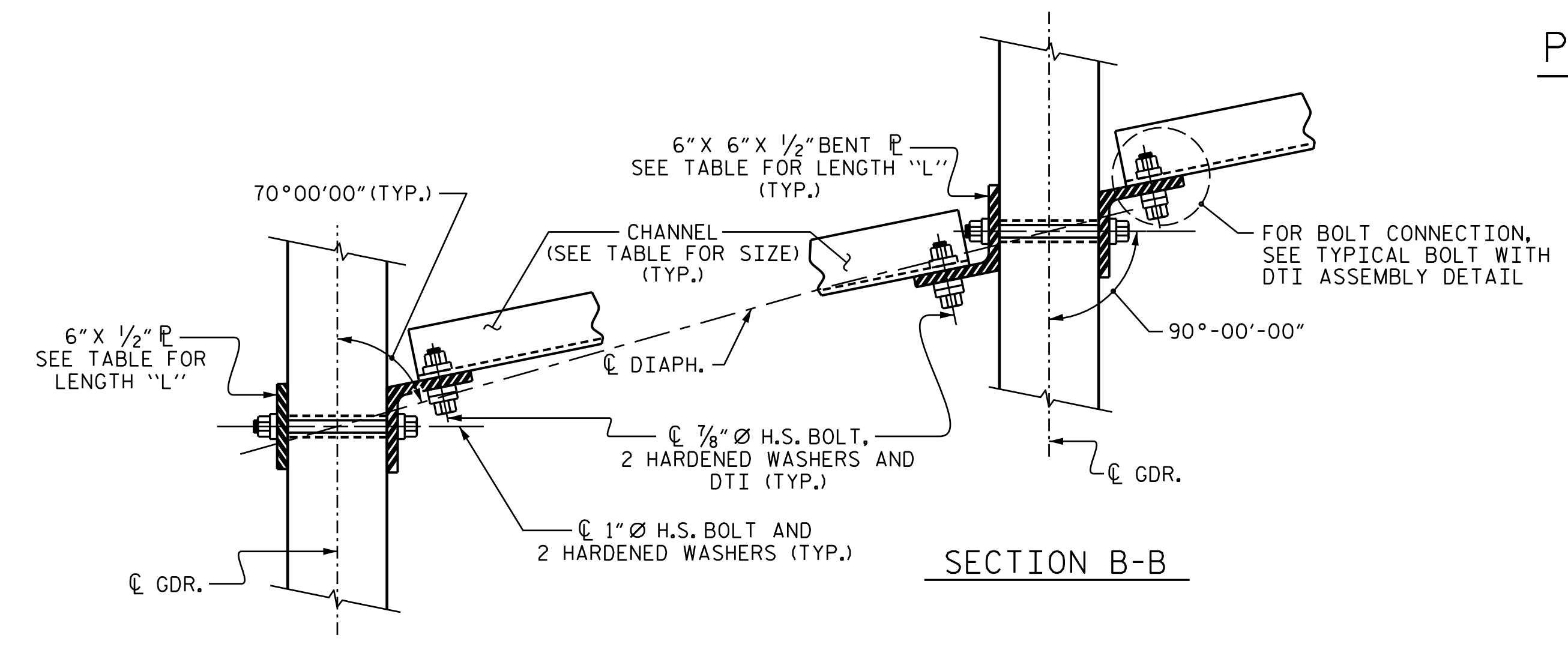
PLATE DETAILS



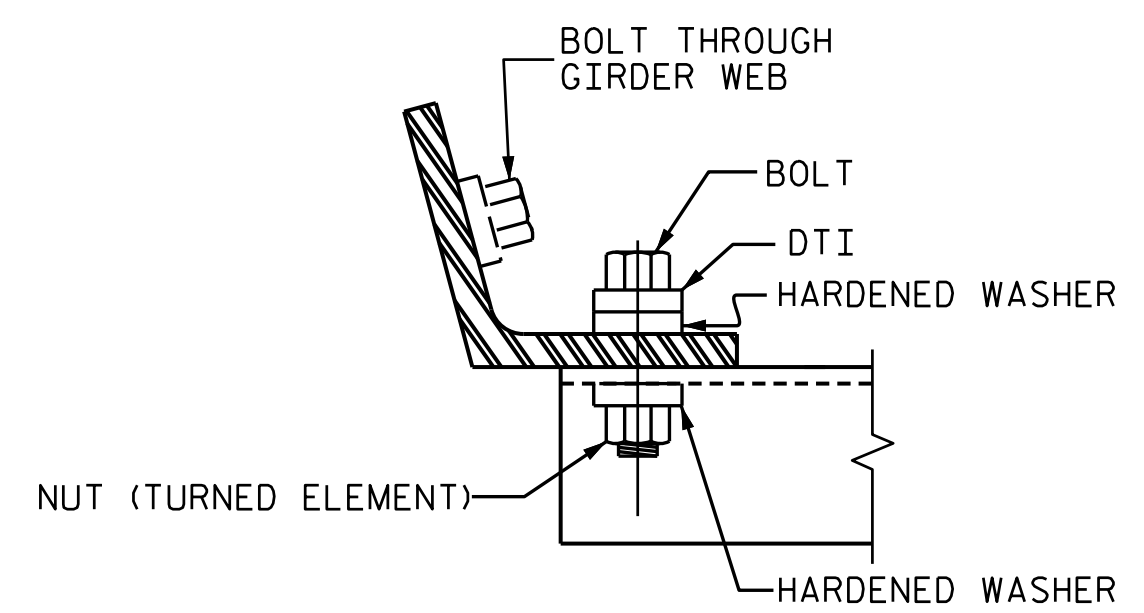
CHANNEL END

TABLE

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



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



BOLT WITH DTI ASSEMBLY DETAIL

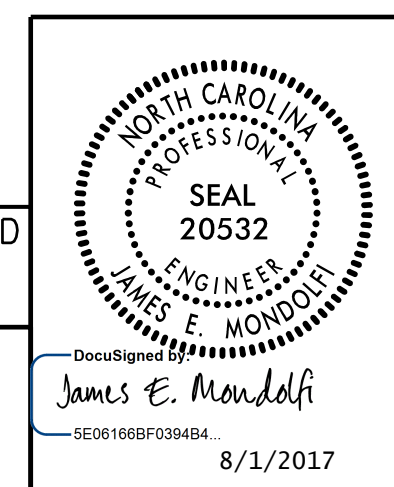
PROJECT NO. B-5239
ALAMANCE COUNTY
STATION: 19+04.69 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**INTERMEDIATE
STEEL DIAPHRAGMS
FOR TYPE III
PRESTRESSED CONCRETE
GIRDERS**

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



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
M MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
(919) 552-2253
www.mottmac.com
LICENSE NO. F-0669

157077
 C:\Users\126_MJL\Bosch\Plans\B-5239_SMU_C3_000126.dgn
 8/1/2015 9:28:22 AM

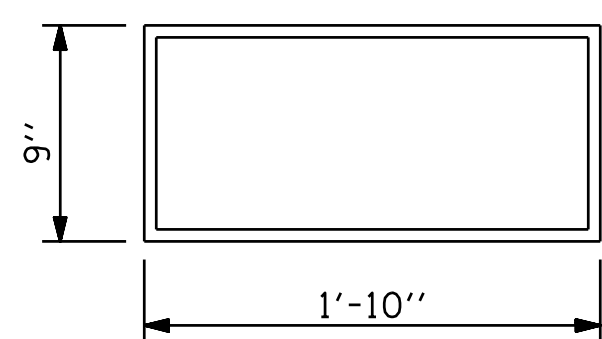
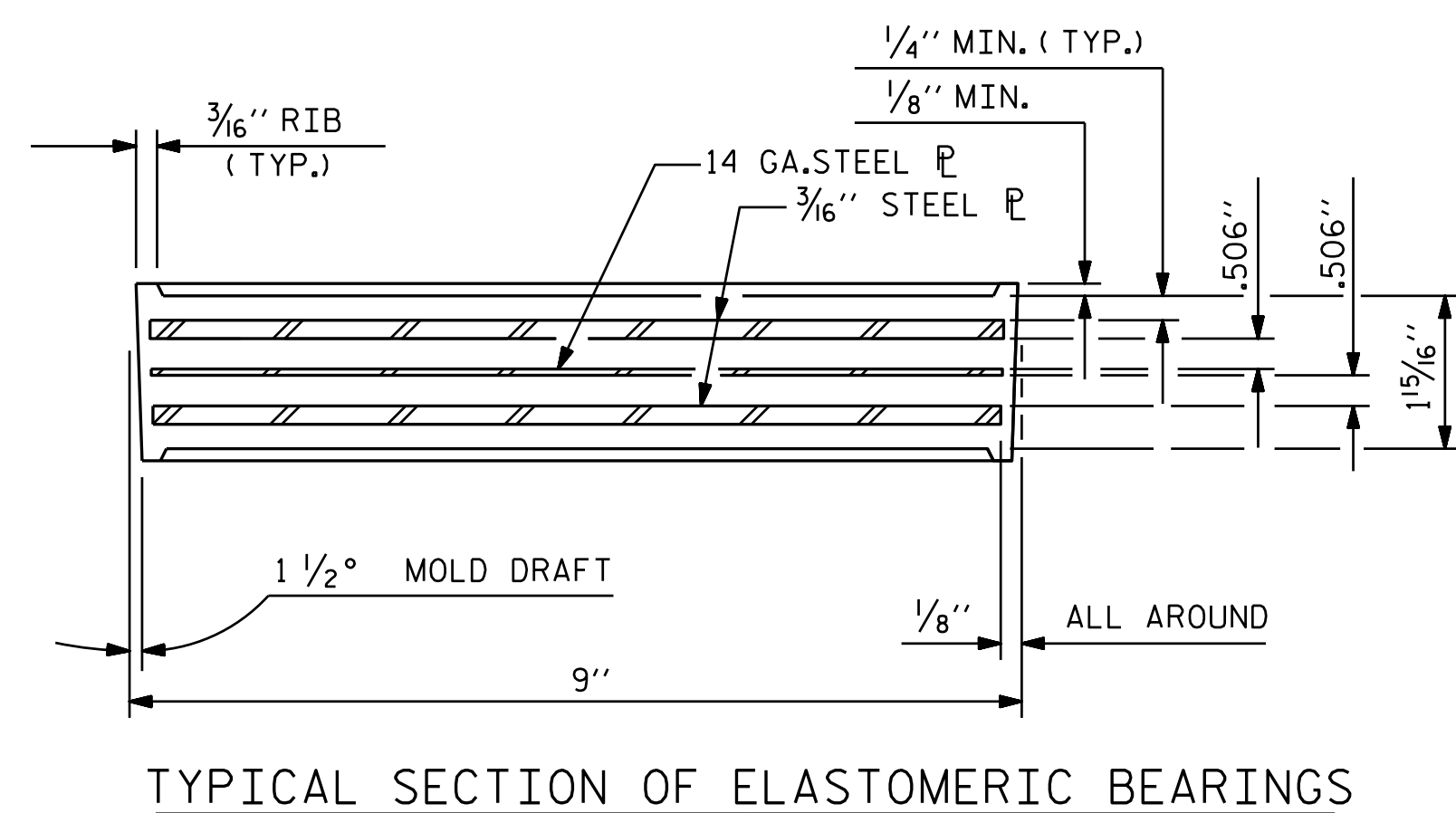
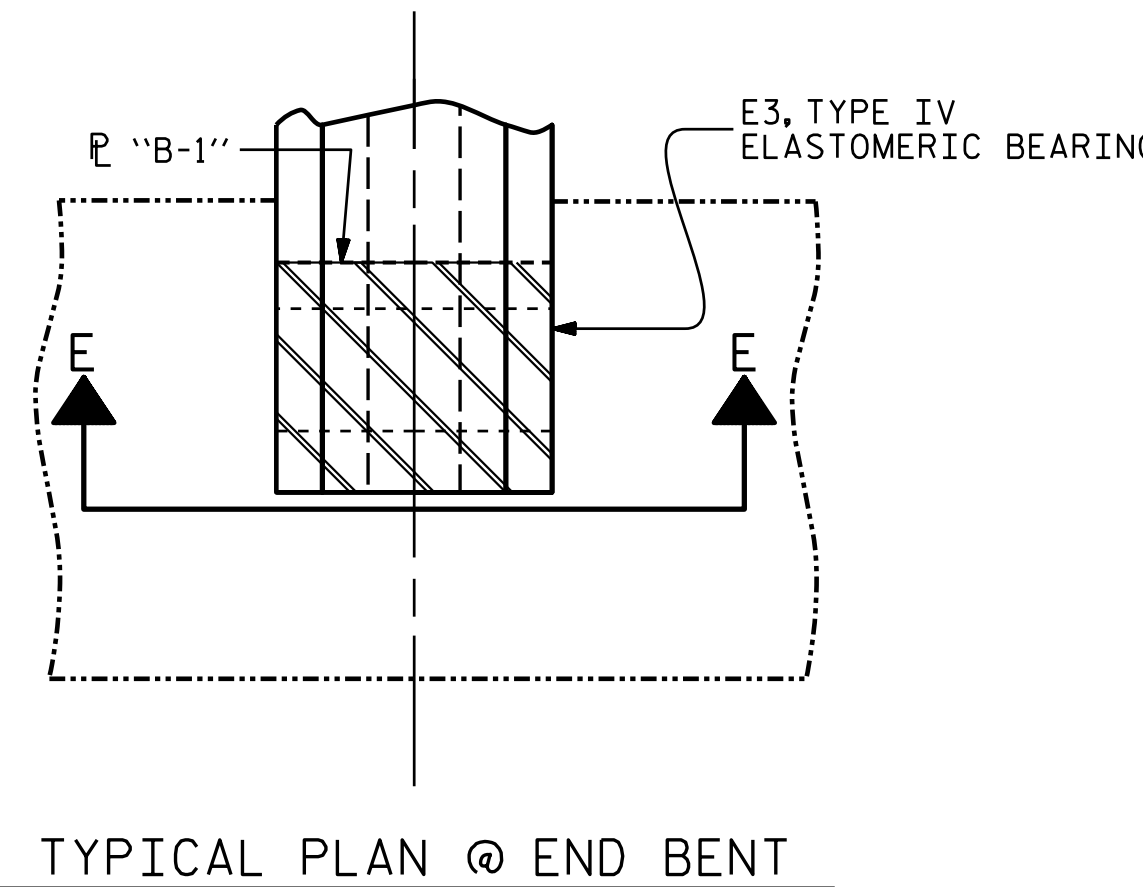
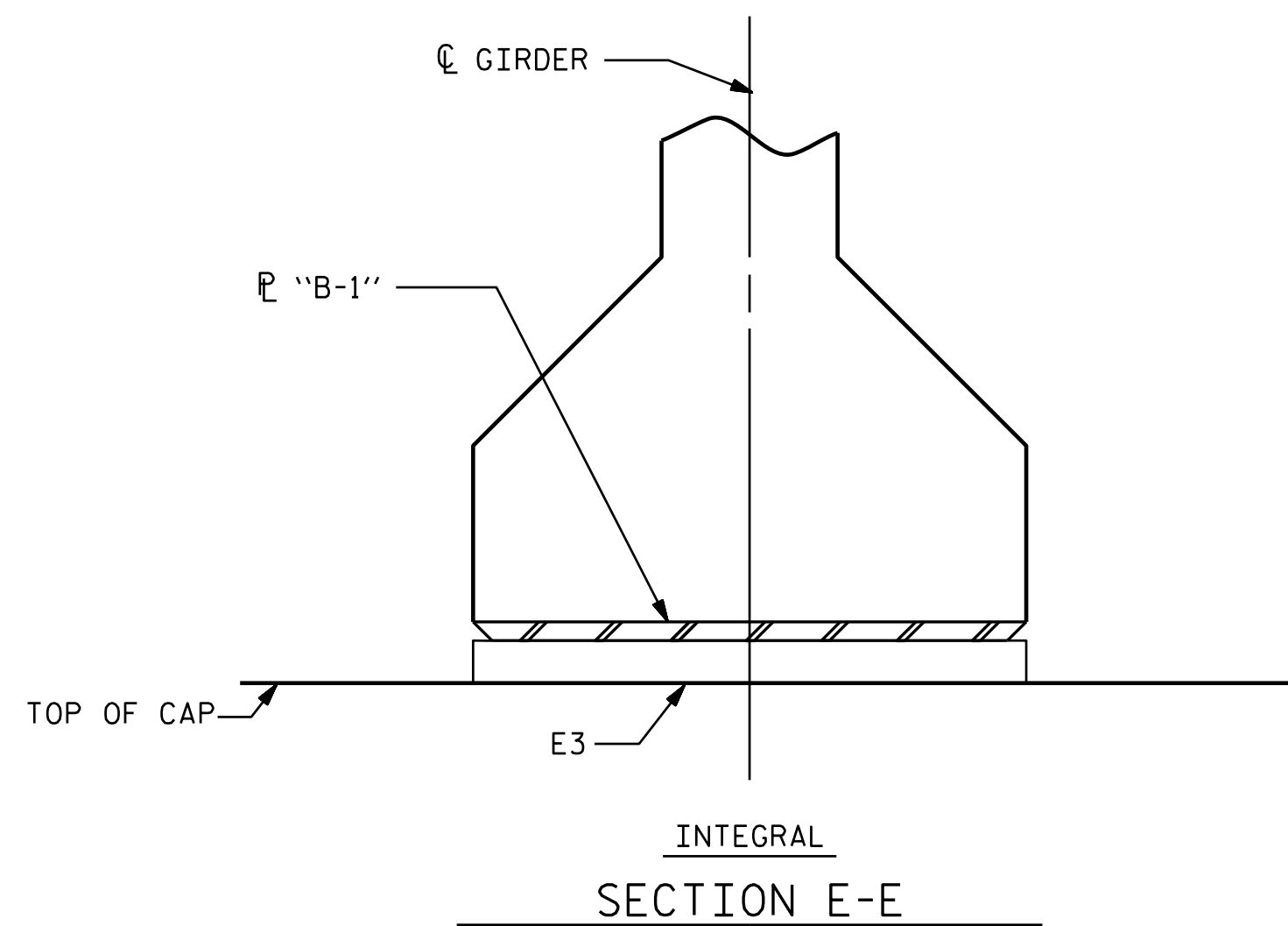
DRAWN BY: J. T. WILLIAMS DATE: 1-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015

NOTES

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 IV	225 k



PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 19+04.69 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

ELASTOMERIC BEARING
 DETAILS
 PRESTRESSED CONCRETE GIRDER
 SUPERSTRUCTURE

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

STATE OF NORTH CAROLINA
 PROFESSIONAL SEAL
 20532
 ENGINEER
 JAMES E. MONDOLFI
 8/1/2017

157077
 1/17/2015 9:26:23 AM
 C:\Users\126.M.J.L.Bres\Plans\B-5239-SMU.BG_000126.dgn

DRAWN BY: J. T. WILLIAMS DATE: 1-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015

NOTES:

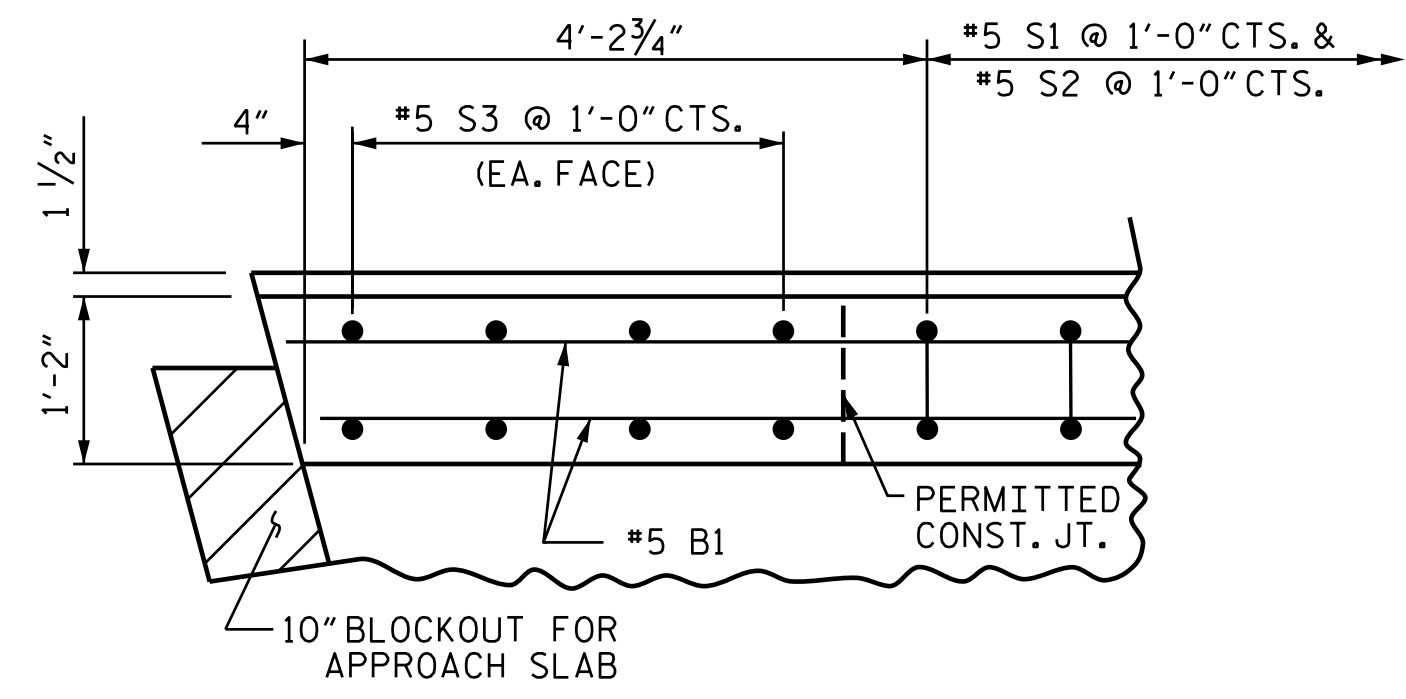
ALL REINFORCING STEEL IN PARAPETS AND END POSTS SHALL BE EPOXY COATED.

FOR DETAIL OF CONCRETE INSERT AND METAL RAIL ANCHOR ASSEMBLY, SEE "RAIL POST SPACINGS AND END OF RAIL DETAIL" SHEET.

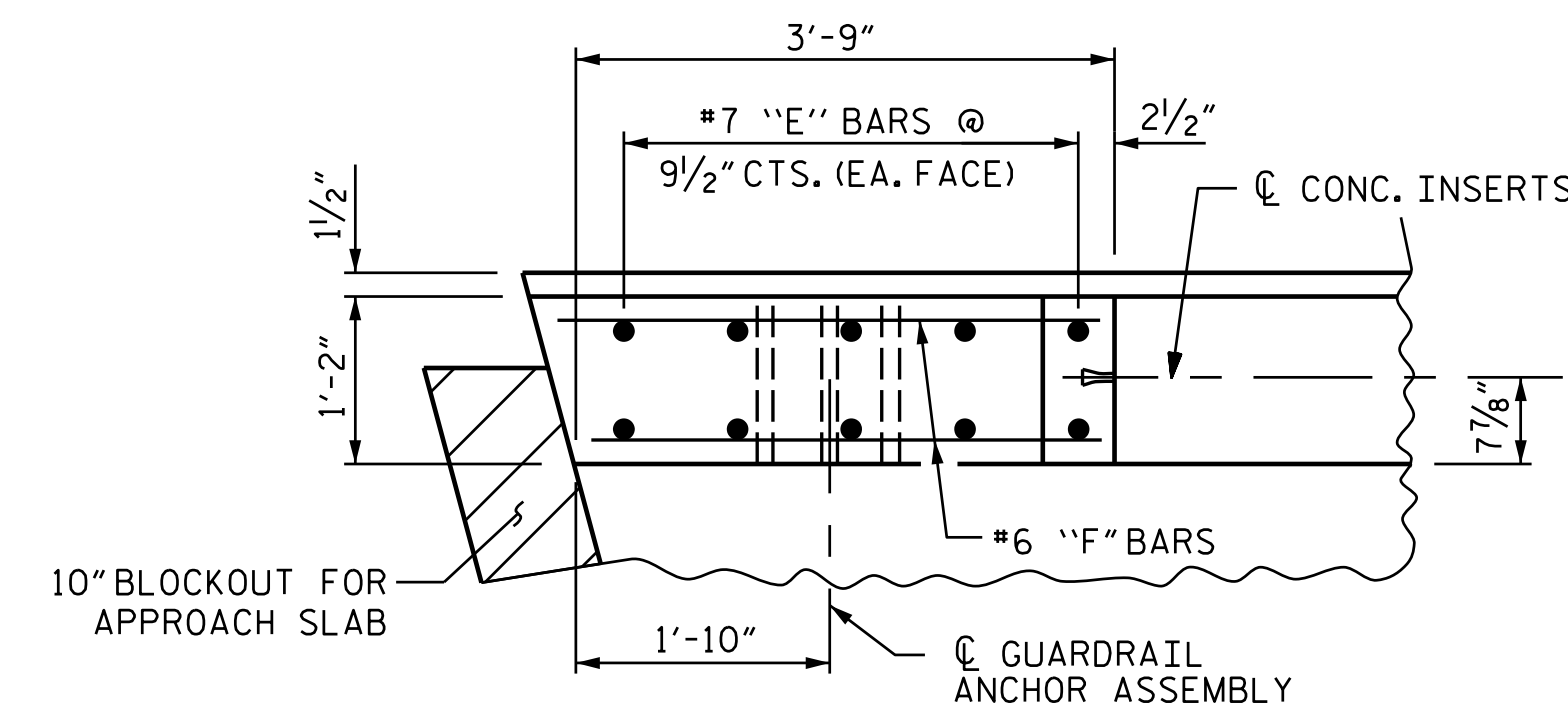
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT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

PARAPET 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.

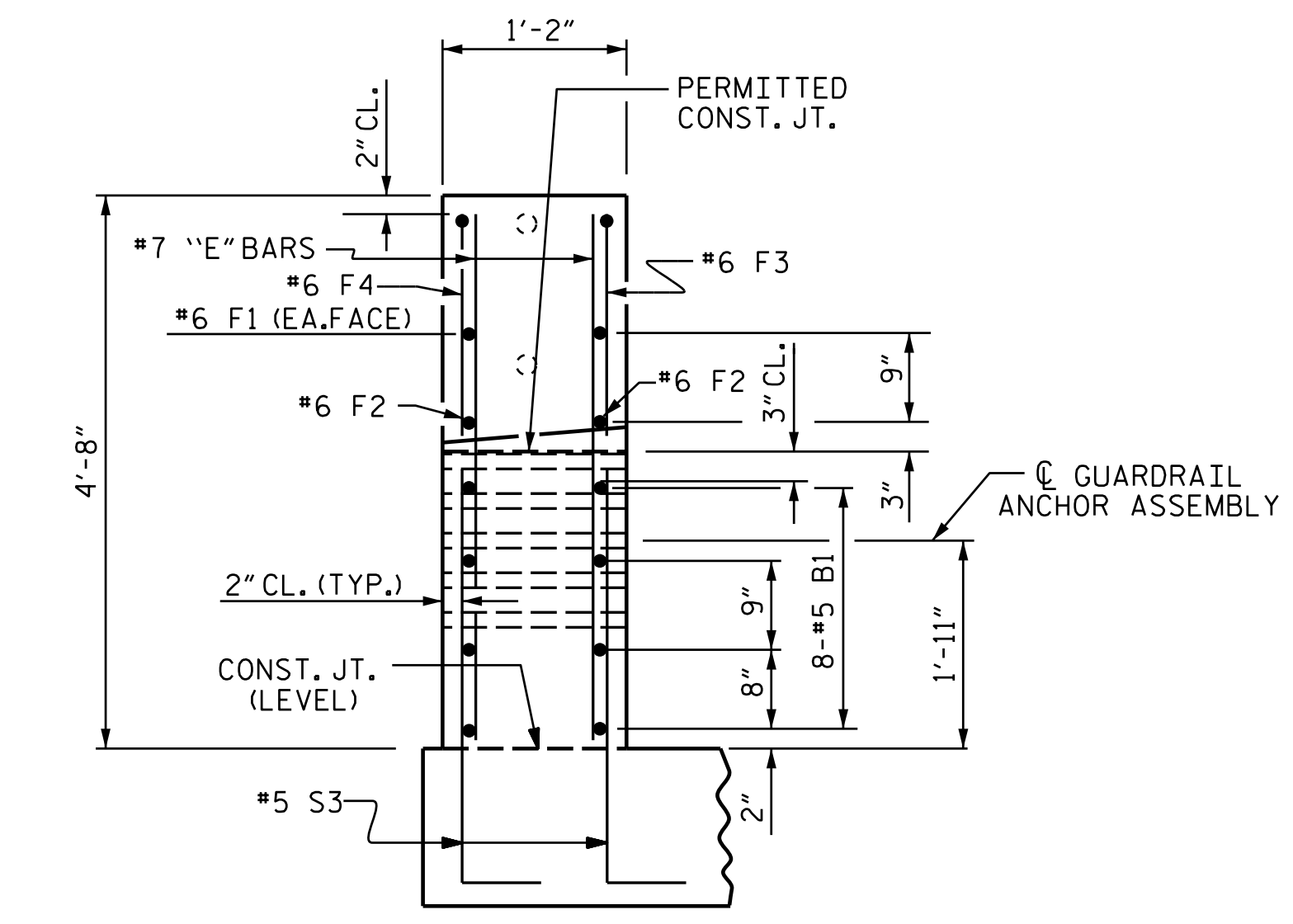
BAR TYPE		BILL OF MATERIAL				
FOR 2 PARAPETS & 4 END POSTS						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* B1	64	#5	STR	11'-11"	795	
* B2	16	#5	STR	29'-7"	494	
* E1	8	#7	STR	2'-6"	41	
* E2	8	#7	STR	3'-0"	49	
* E3	8	#7	STR	3'-6"	57	
* E4	8	#7	STR	4'-0"	65	
* E5	8	#7	STR	4'-4"	71	
* F1	8	#6	STR	1'-11"	23	
* F2	8	#6	STR	3'-4"	40	
* F3	4	#6	STR	3'-8"	22	
* F4	4	#6	STR	3'-11"	24	
* S1	126	#5	1	5'-5"	712	
* S2	126	#5	2	5'-6"	723	
* S3	32	#5	3	3'-8"	122	
* EPOXY COATED REINFORCING STEEL					3,238 LBS.	
CLASS AA CONCRETE					16.3 CU. YDS.	
1'-2" X 2'-6" CONCRETE PARAPET					141.71 LIN. FT.	



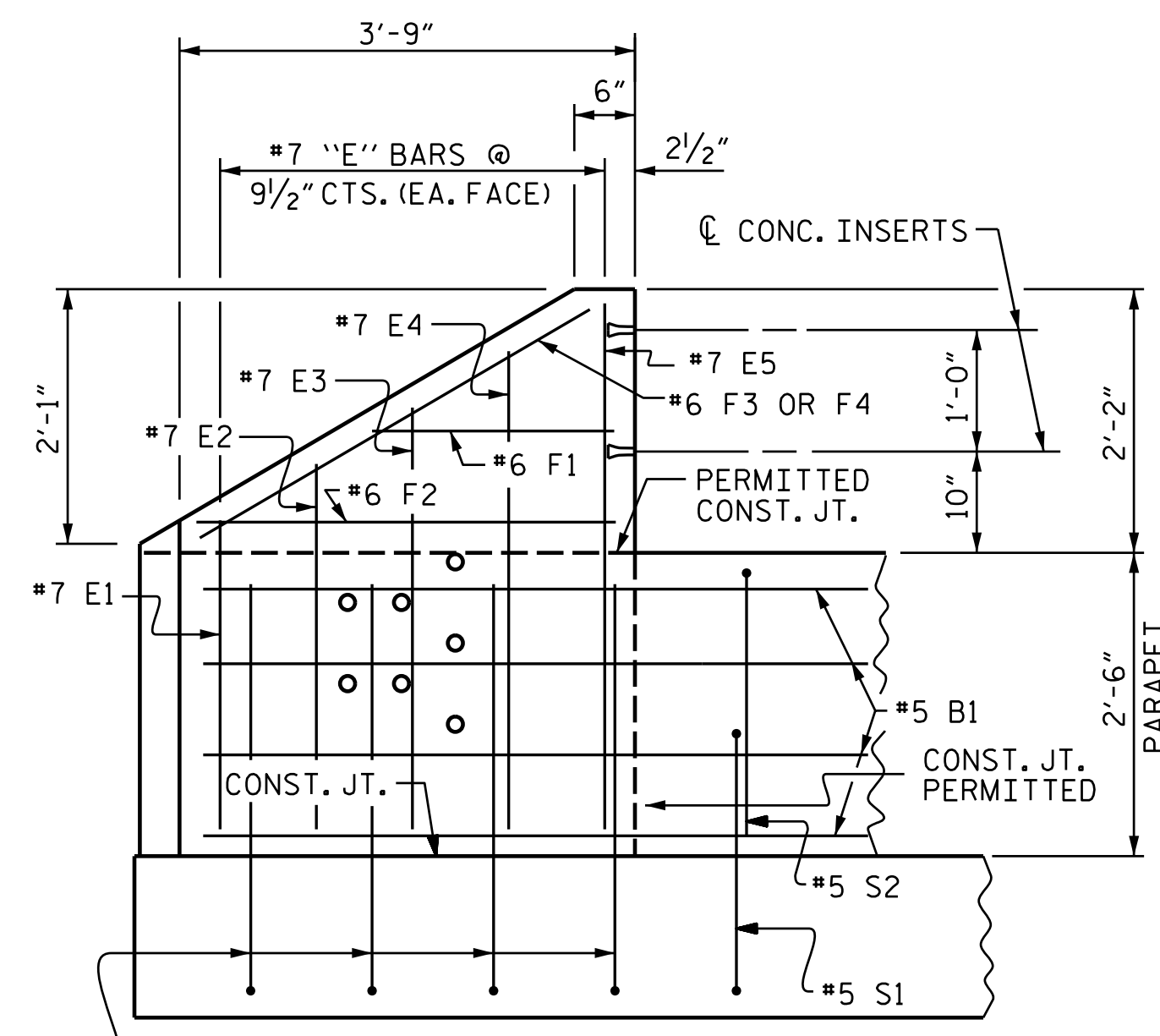
PLAN OF PARAPET



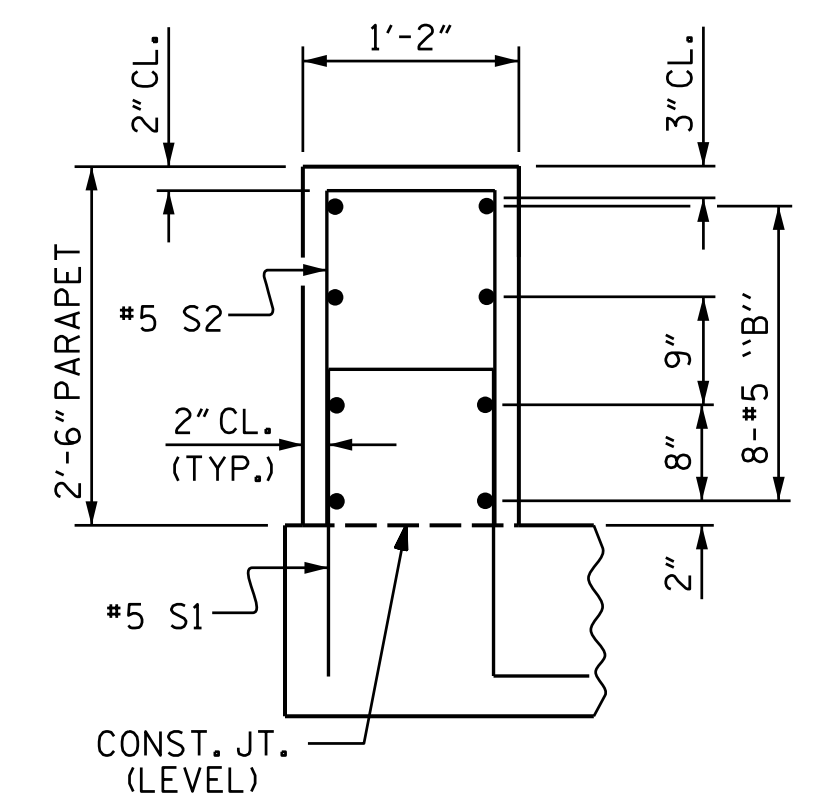
PLAN OF END POST



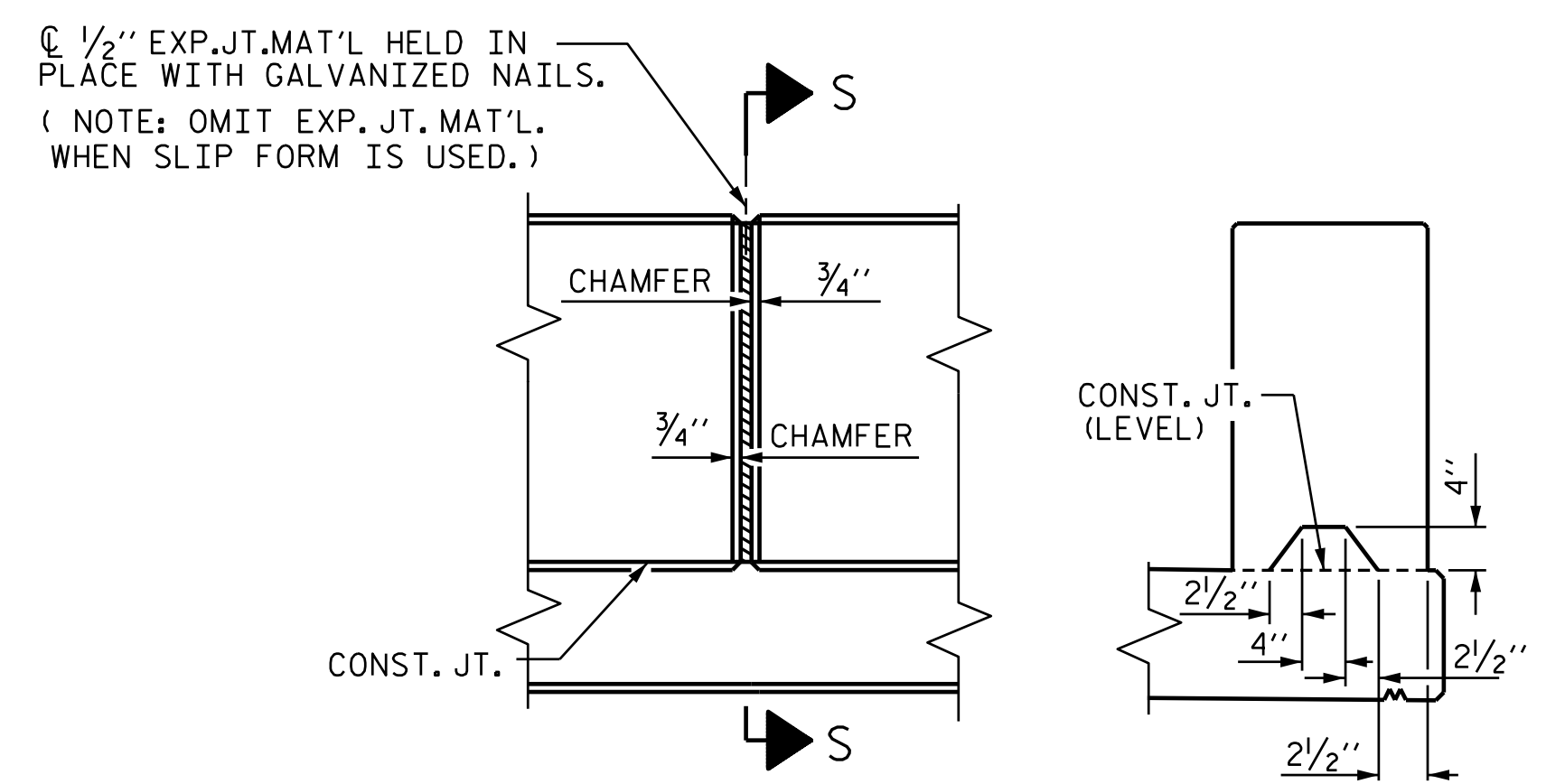
END VIEW



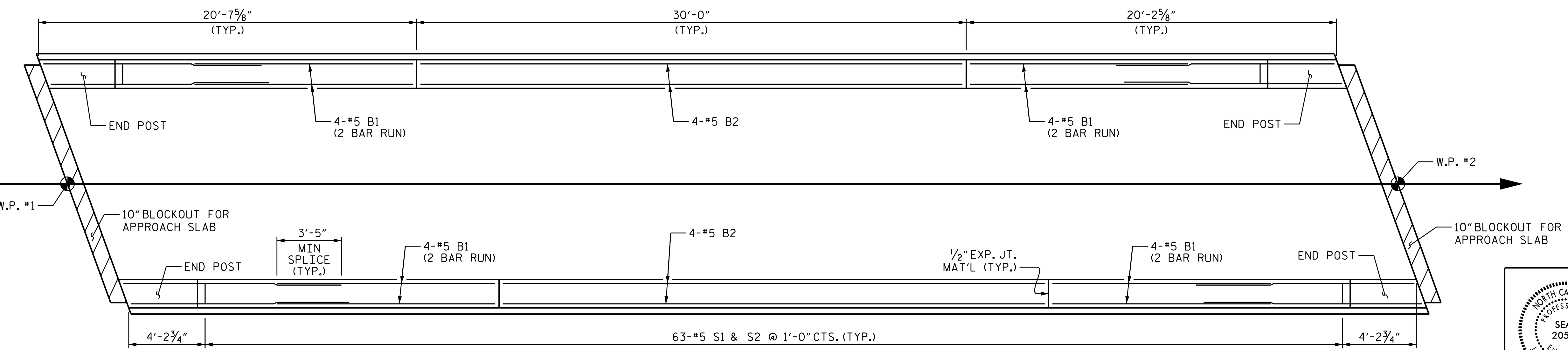
ELEVATION



SECTION THROUGH PARAPET



ELEVATION AT EXPANSION JOINTS



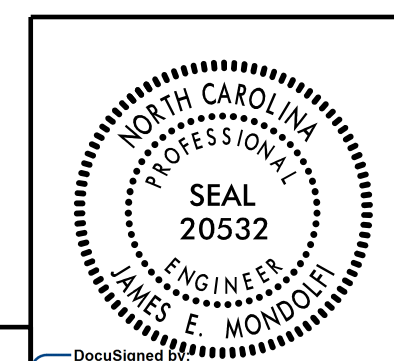
PLAN OF PARAPET

PROJECT NO. B-5239
 ALAMANCE COUNTY
 STATION: 19+04.69 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CONCRETE PARAPET
 AND END POST
 DETAILS

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

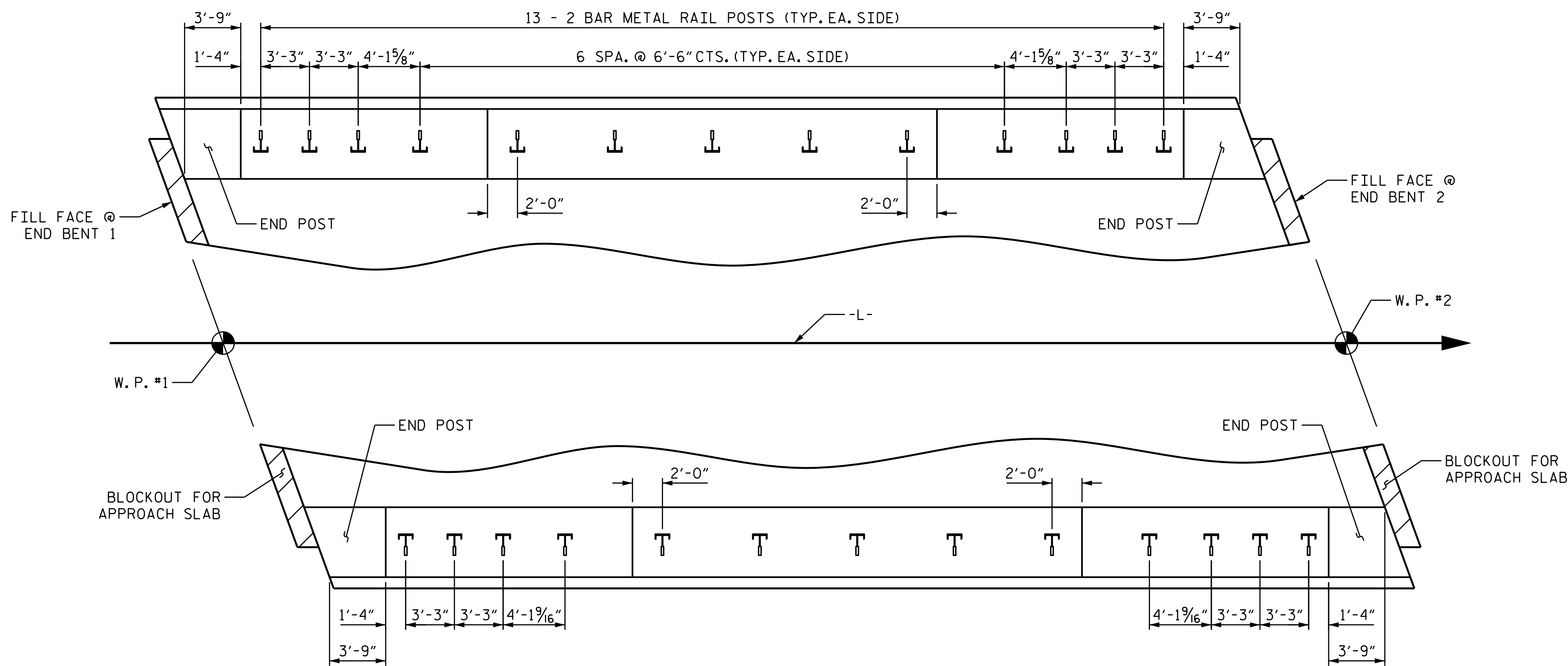


PLANS PREPARED BY:
 MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

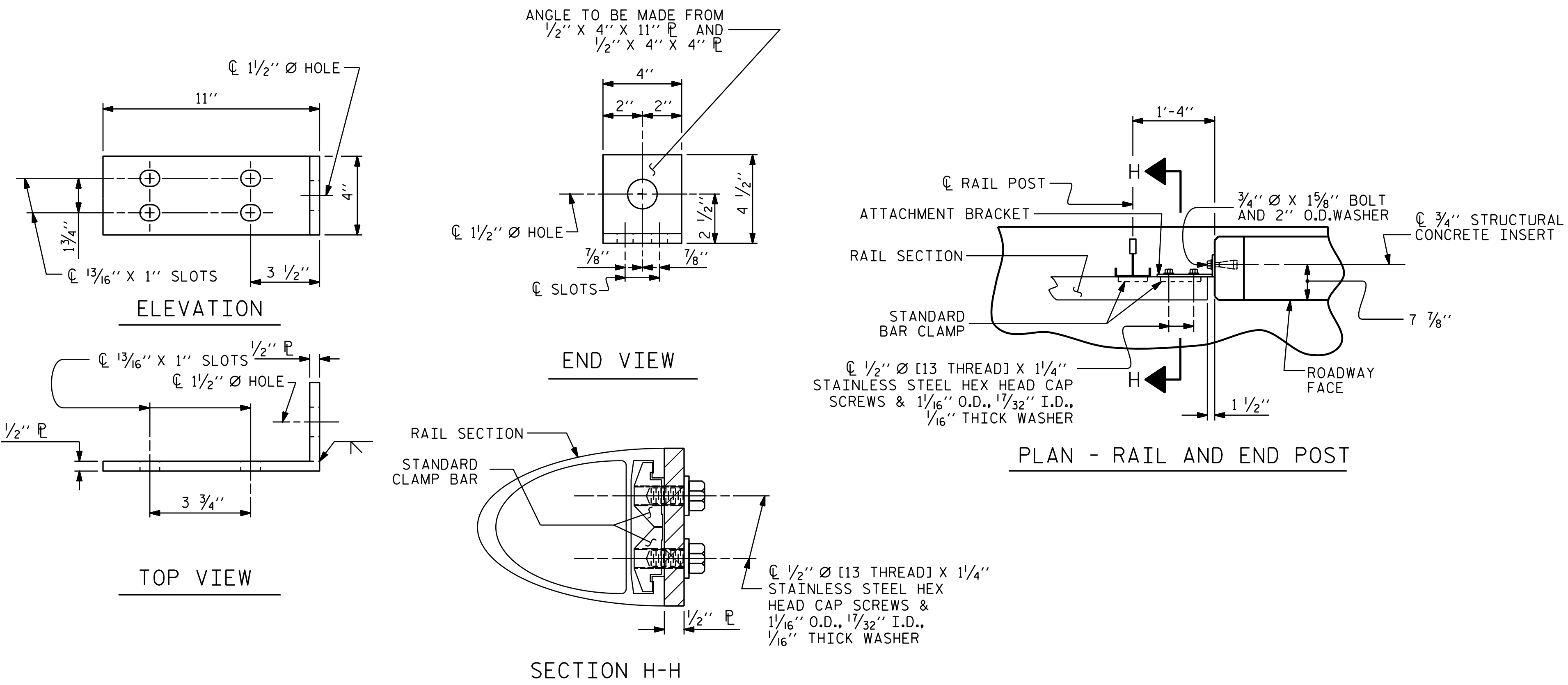
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

157077
 C:\Users\126.M.J.L. B... Plans\B-5239_SMU_2MP_000126.dgn
 9/28/2015 9:28:55 AM

DRAWN BY: J. T. WILLIAMS DATE: 1-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015



PLAN OF RAIL POST SPACINGS



DETAILS FOR ATTACHING METAL RAIL TO END POST

NOTES
 STRUCTURAL CONCRETE INSERT

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

- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
- 1 - 3/4" Ø X 1 1/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 1/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES
 METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

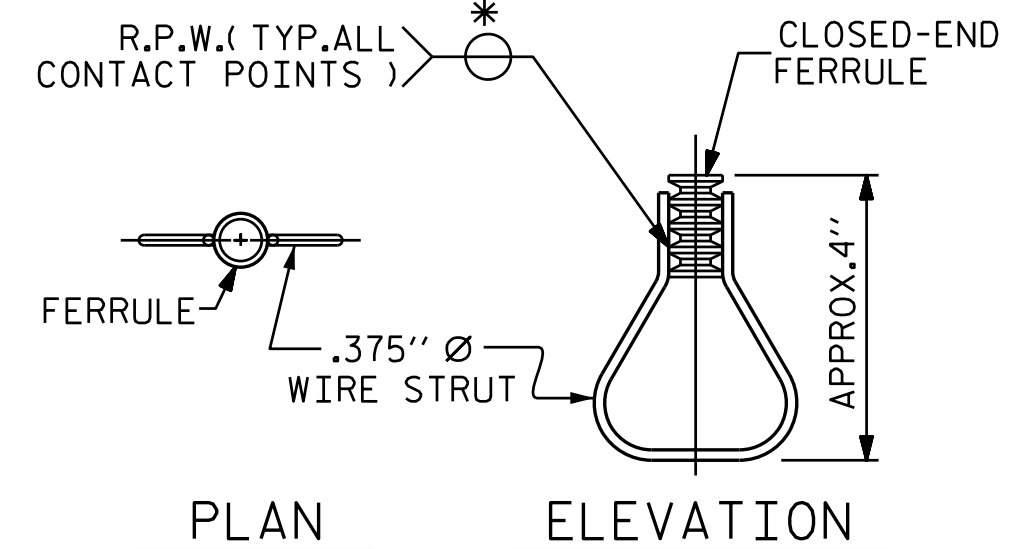
- 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 1/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 1/8" BOLT SHALL HAVE N.C.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

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

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

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

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



STRUCTURAL CONCRETE INSERT

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

PROJECT NO. B-5239
 ALAMANCE COUNTY
 STATION: 19+04.69 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

RAIL POST SPACINGS
 AND
 END OF RAIL DETAILS
 FOR TWO BAR METAL RAILS

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

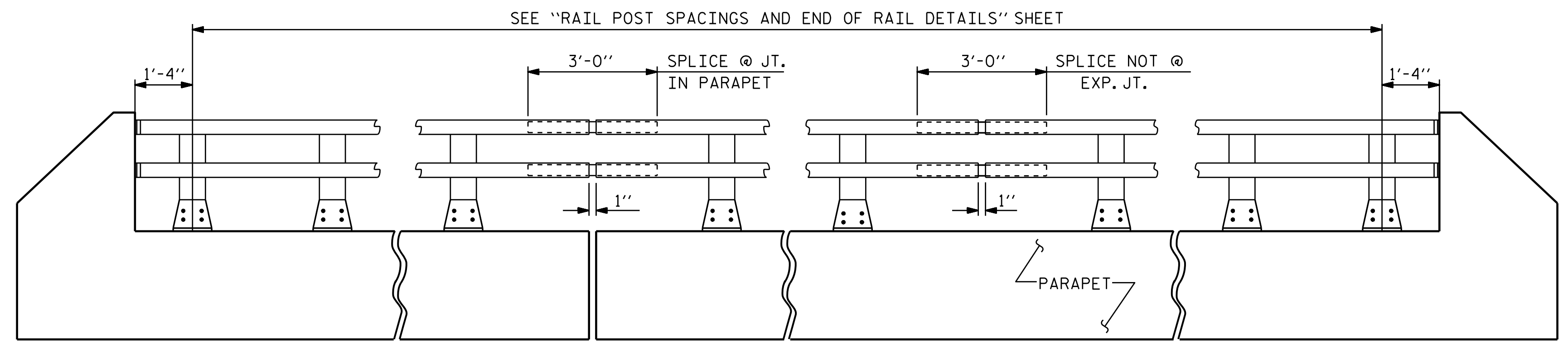
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
 MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

SEAL 20532
 ENGINEER
 JAMES E. MONDOLFI
 8/1/2017

157077
 11/2015
 C:\Users\126_MJL\Bases\Plans\B-5239_SMU_2MR_000126.dgn
 9/28/2015 9:28:56 AM

DRAWN BY: J. T. WILLIAMS DATE: 1-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015



ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET 2 OF 4.

NOTES

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

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

ALUMINUM RAILS

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

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

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

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

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

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

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

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

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

GENERAL NOTES

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

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE SHEET 2 OF 4.

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

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

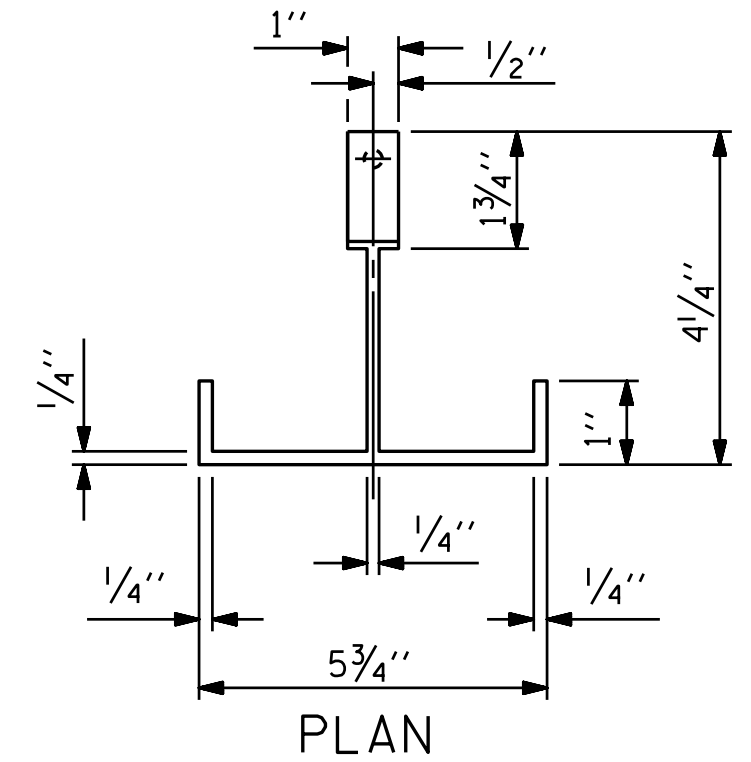
TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

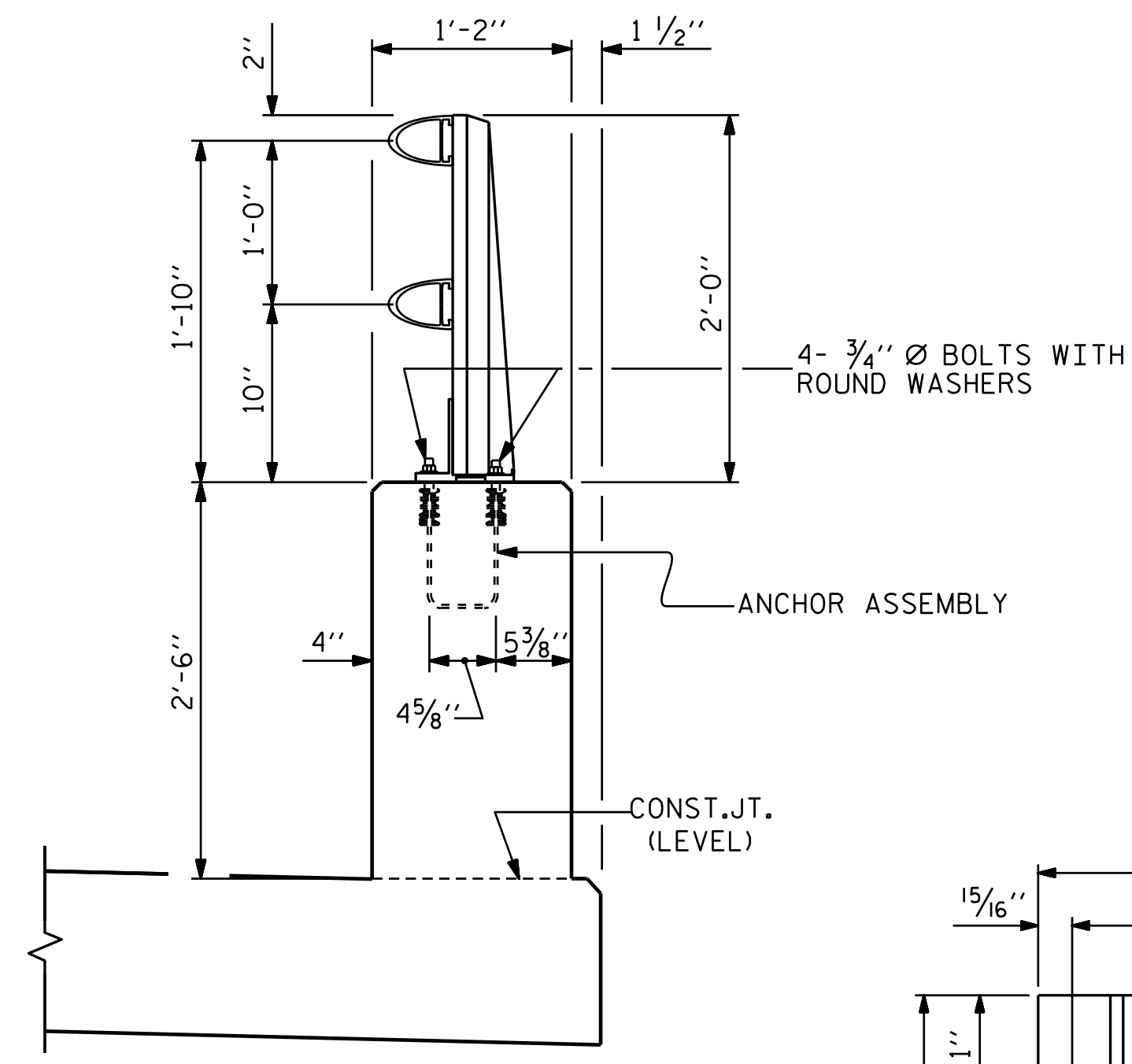
ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

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

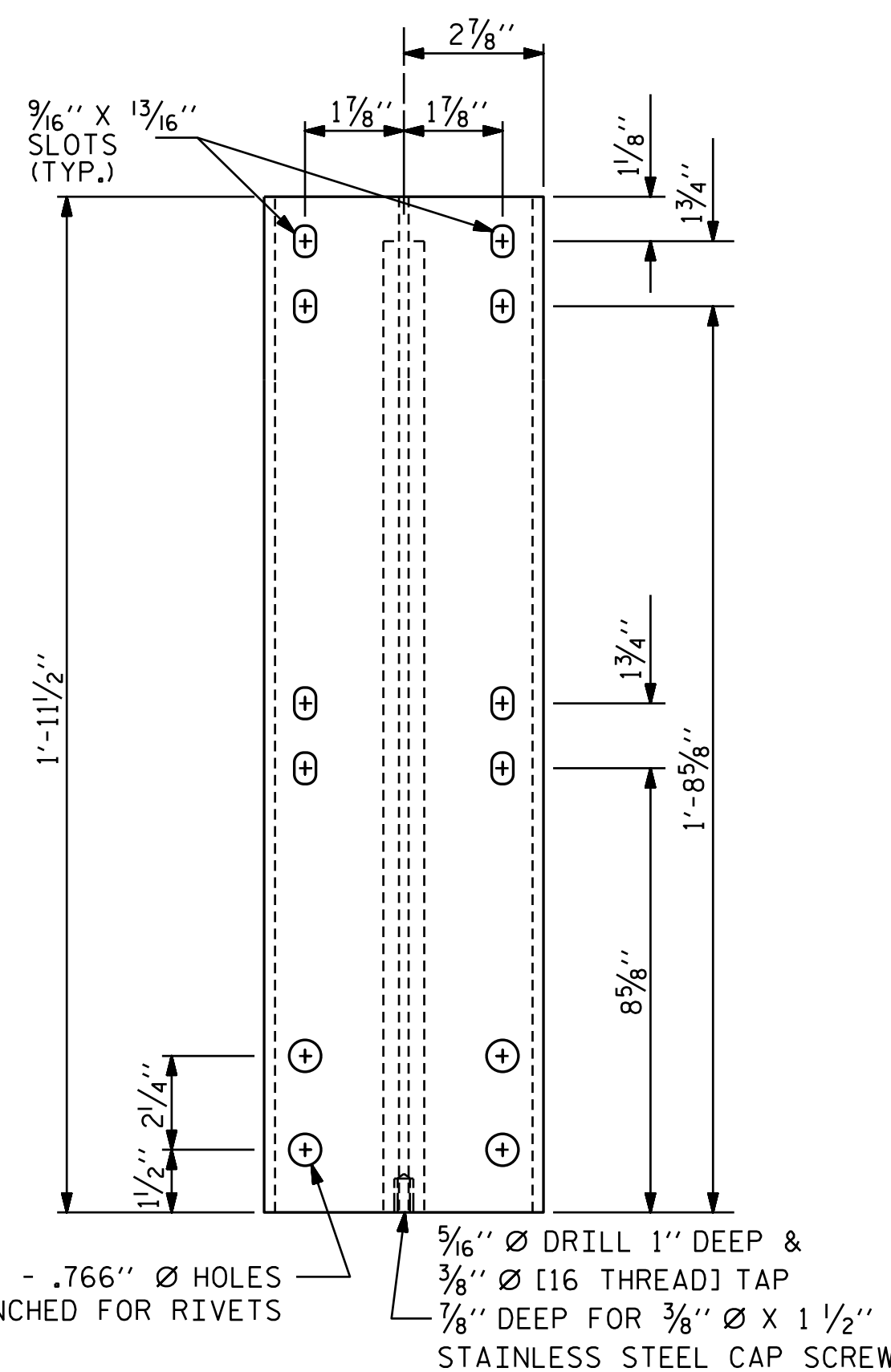
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS.



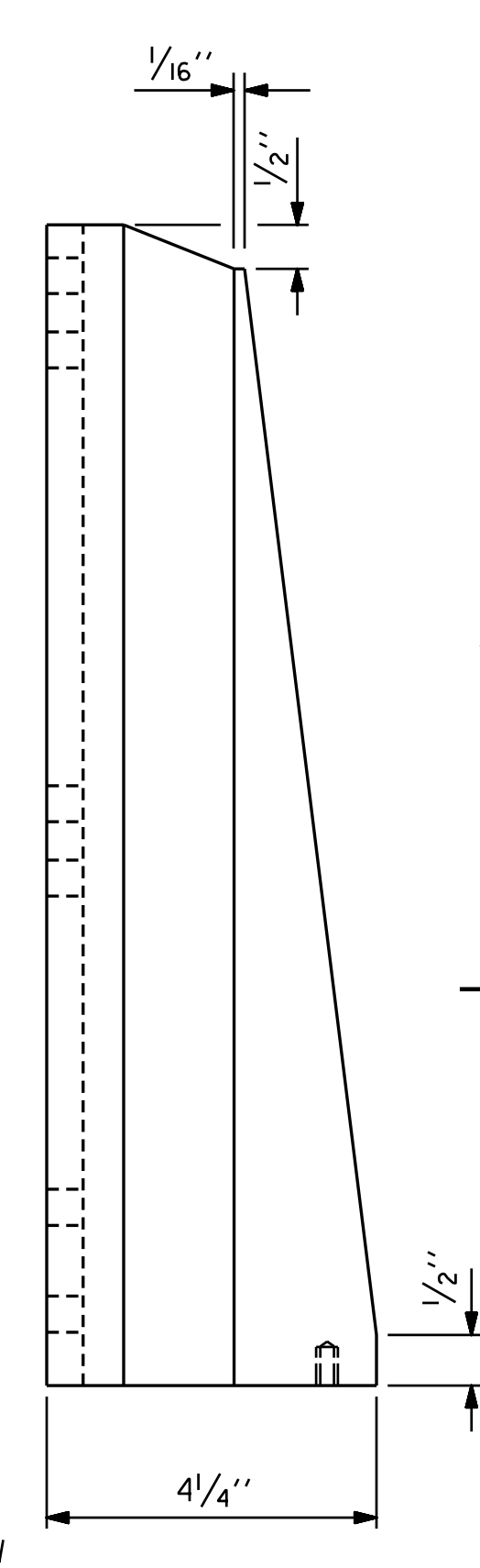
PLAN



SECTION THRU PARAPET AND RAIL

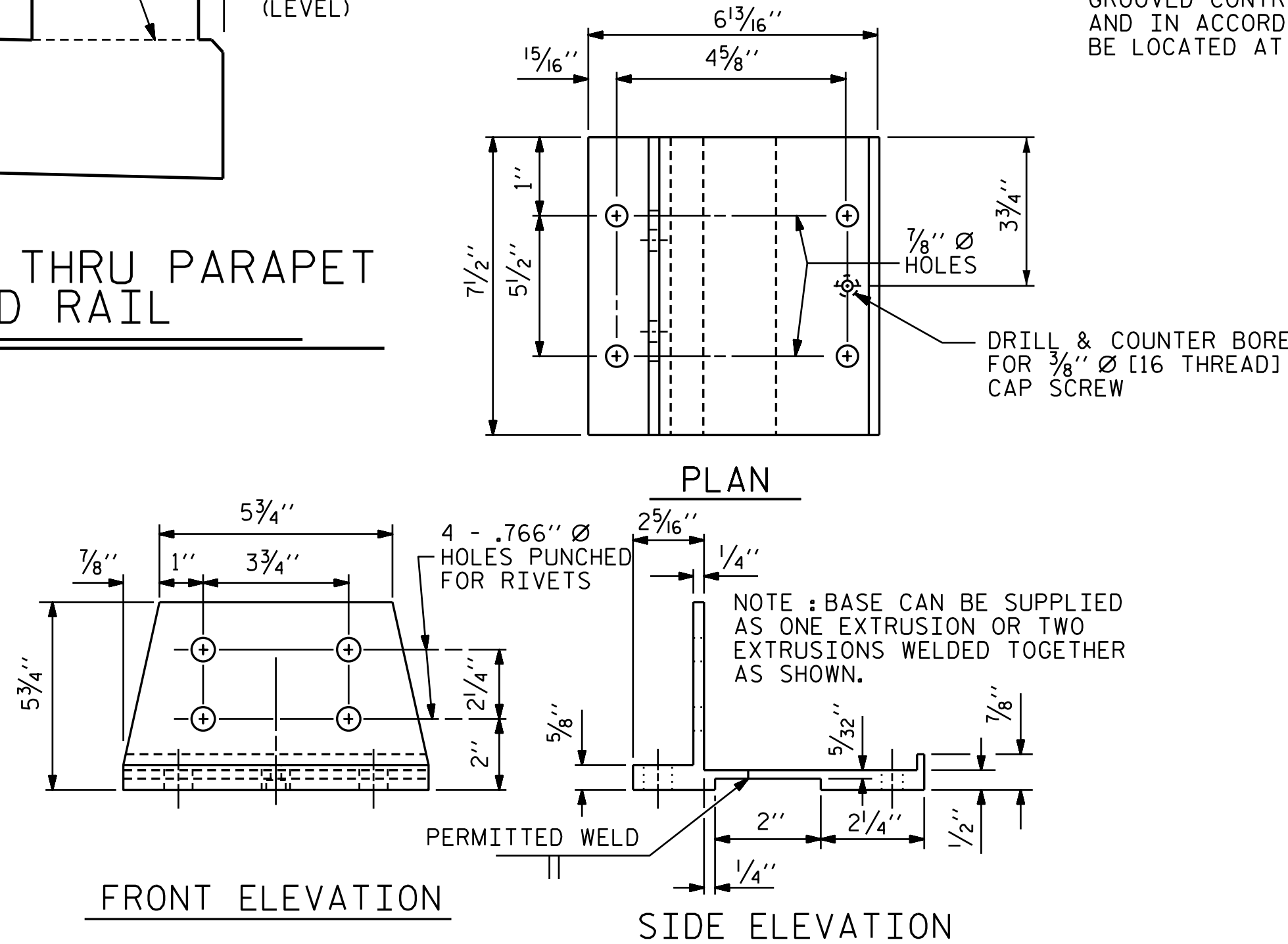


FRONT ELEVATION



SIDE ELEVATION

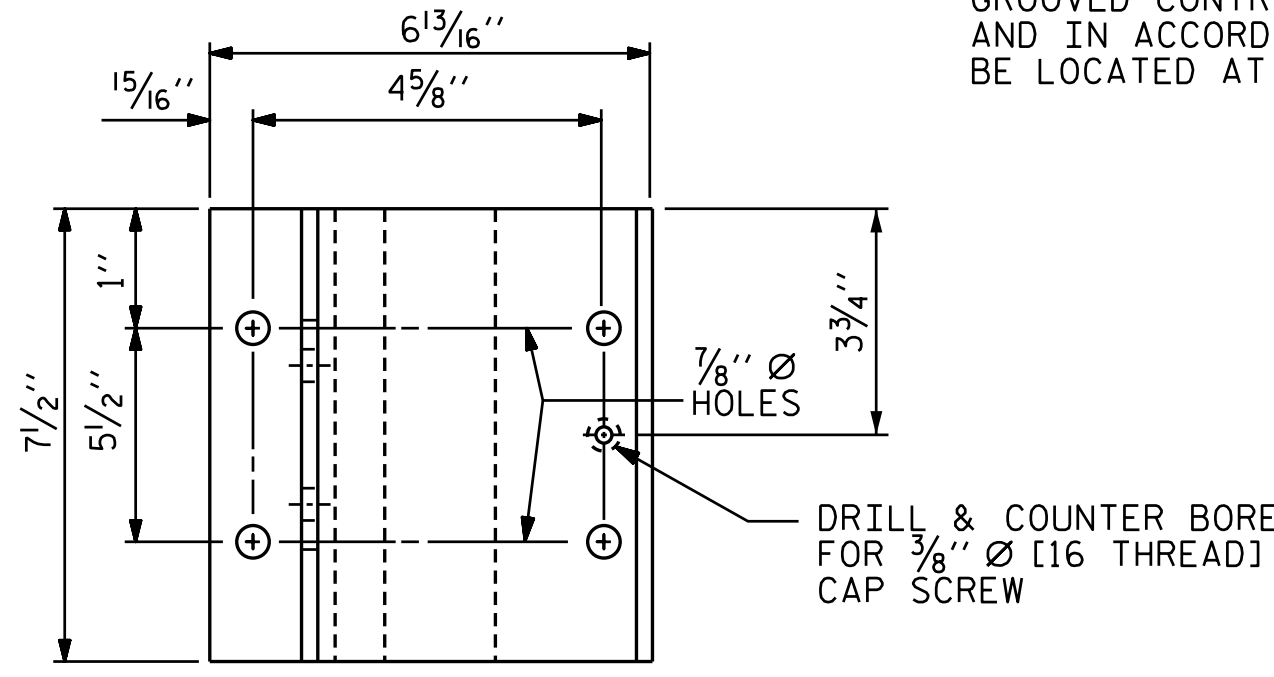
DETAILS OF POST



FRONT ELEVATION

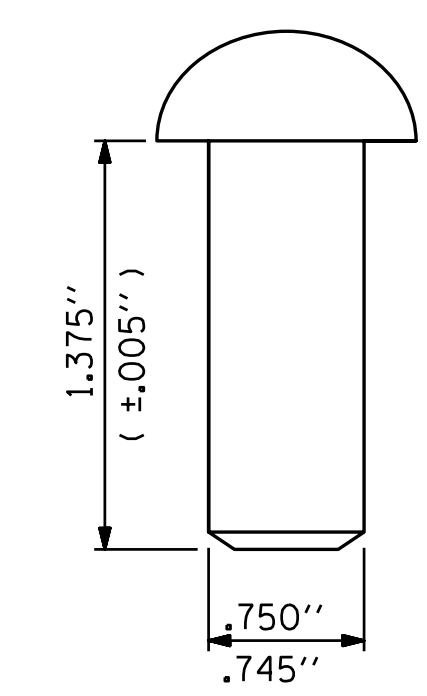
SIDE ELEVATION

POST BASE DETAILS



PLAN

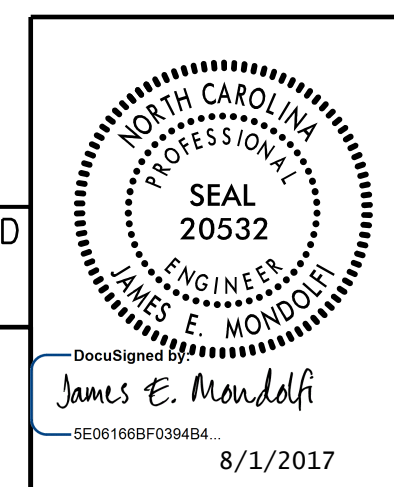
PAY LENGTH = 125.86 LIN. FT.



RIVET DETAIL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY: MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669



PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 19+04.69 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

2 BAR METAL RAIL

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

11/15/2015 11:26:28 AM
 C:\Users\jwilliams\Documents\Projects\B-5239-SMU-2MR-000126.dgn
 9/28/2015 9:28:28 AM
 11/15/2015 11:26:28 AM
 11/15/2015 11:26:28 AM

DRAWN BY: J. T. WILLIAMS DATE: 11-2014
 CHECKED BY: J. E. MONDOLFI DATE: 11-2014
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 11-2014

NOTES

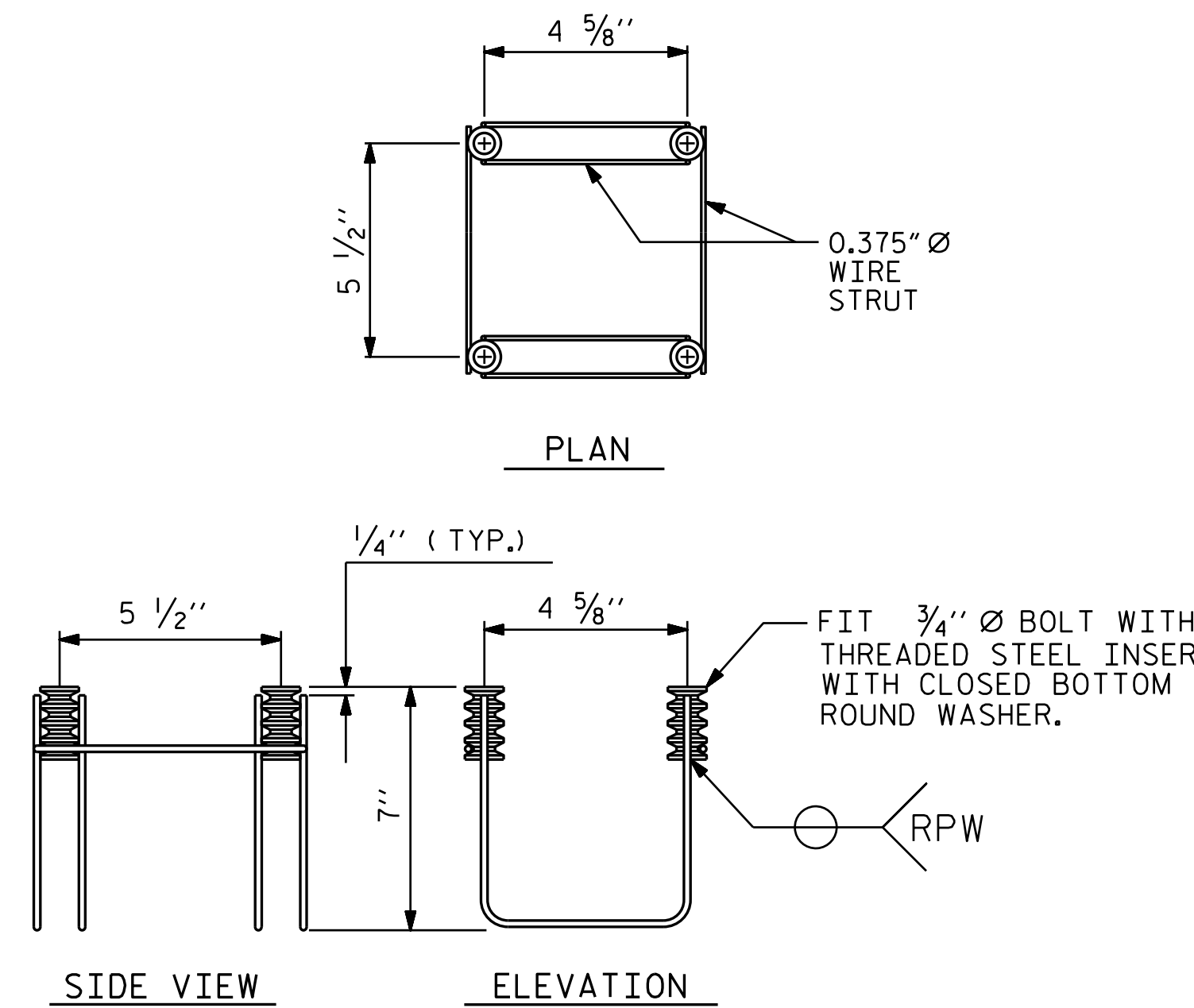
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF 2 BAR METAL RAIL.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

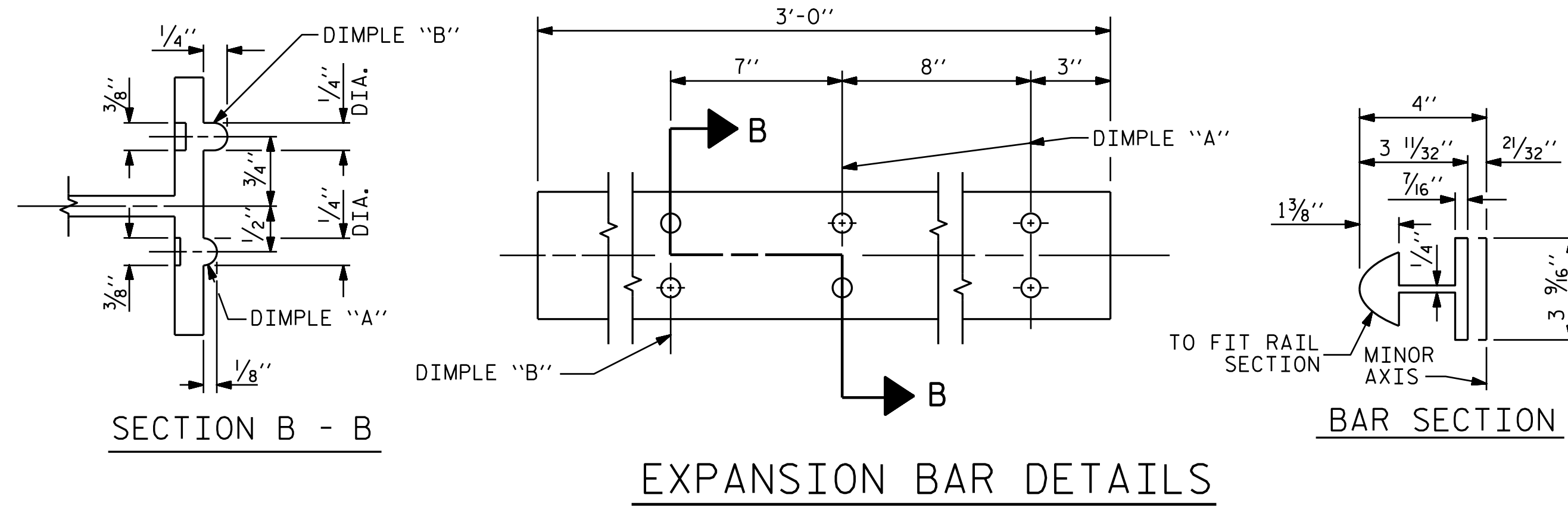
THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

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

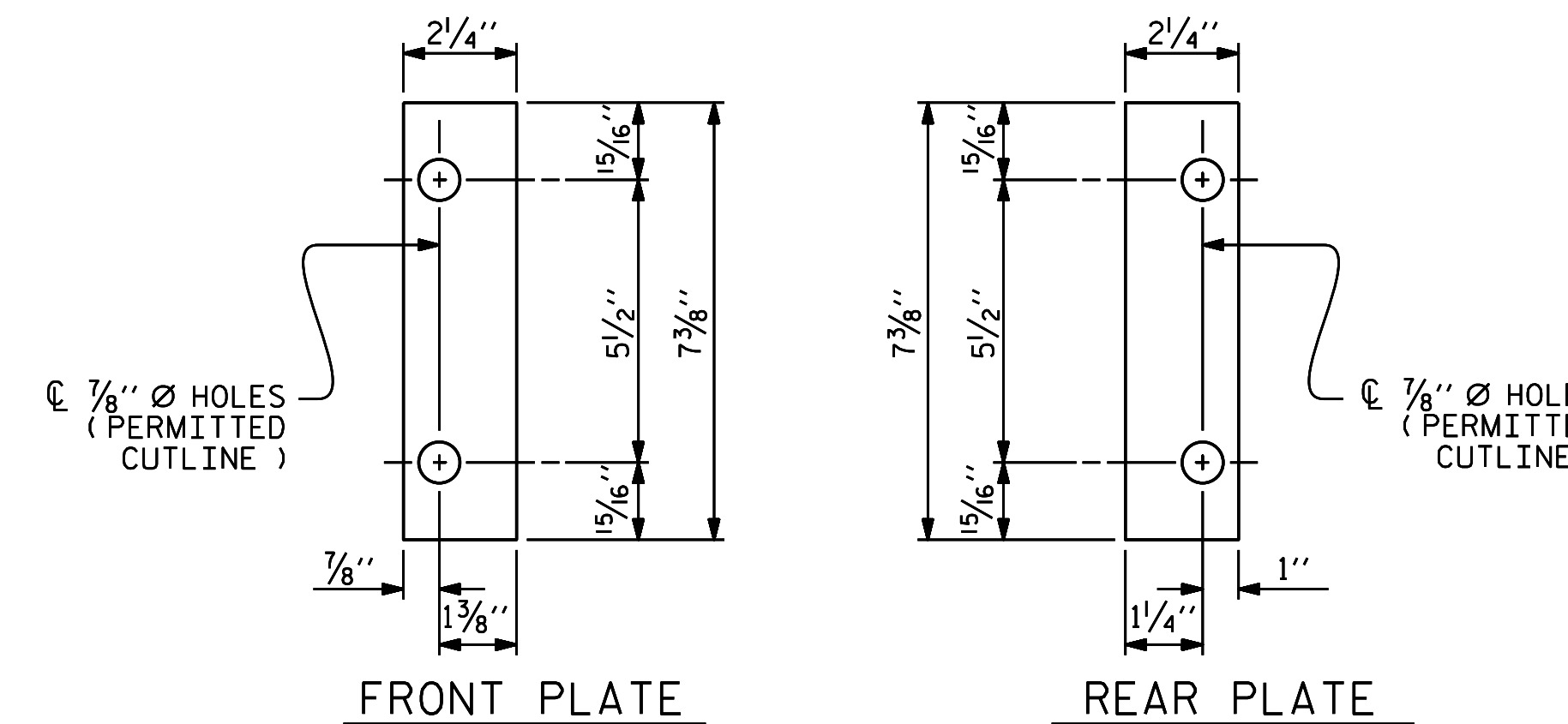


4-BOLT METAL RAIL ANCHOR ASSEMBLY

(26 ASSEMBLIES REQUIRED)

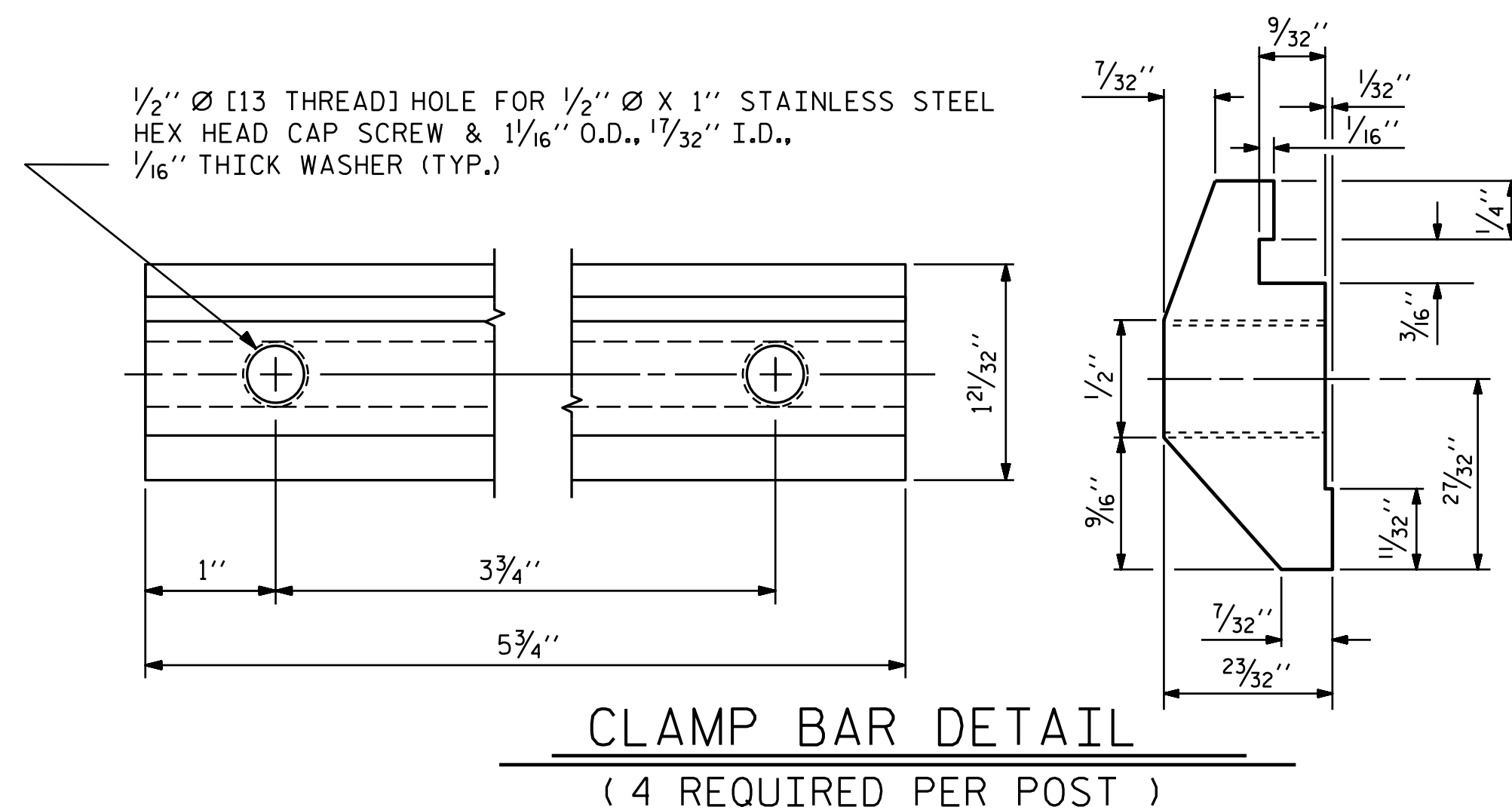


EXPANSION BAR DETAILS



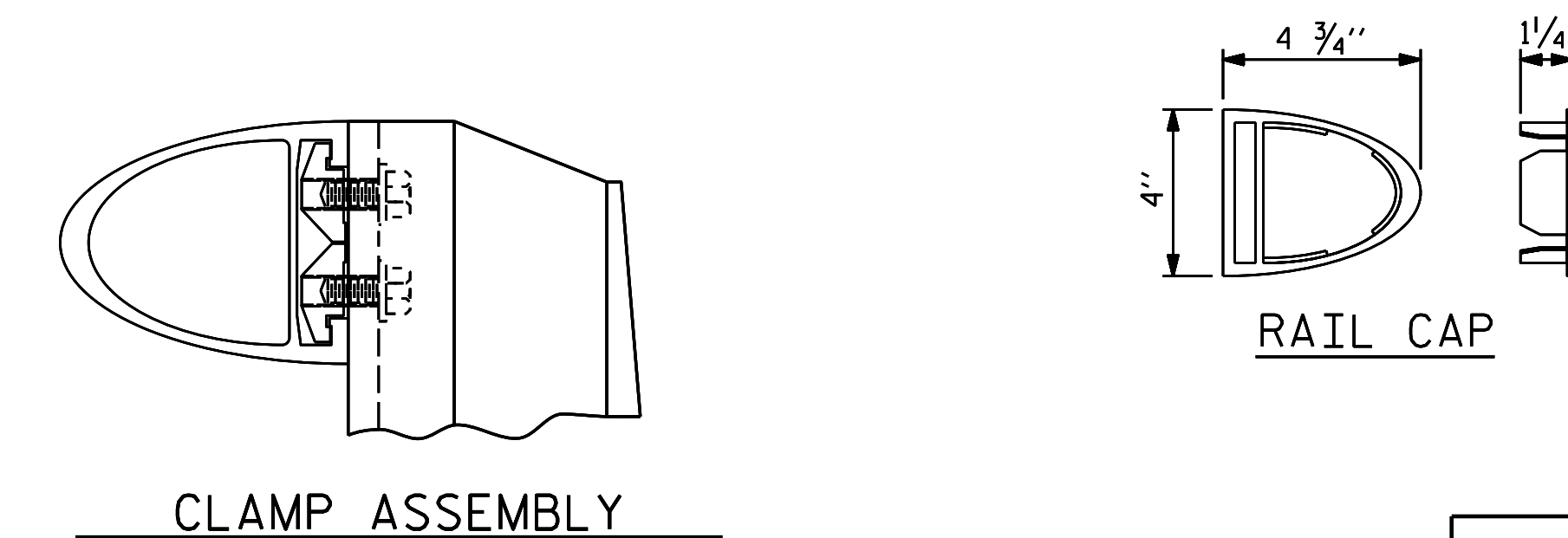
SHIM DETAILS

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



CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY

RAIL CAP

PROJECT NO. B-5239
ALAMANCE COUNTY
STATION: 19+04.69 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

2 BAR METAL RAIL

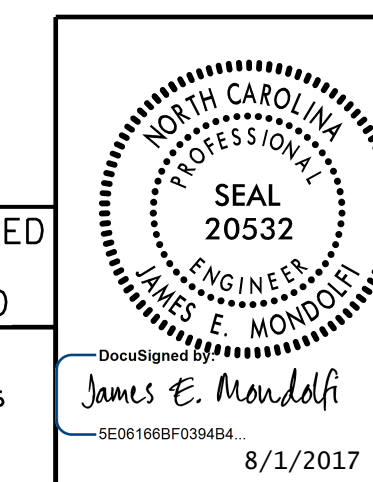
REVISIONS

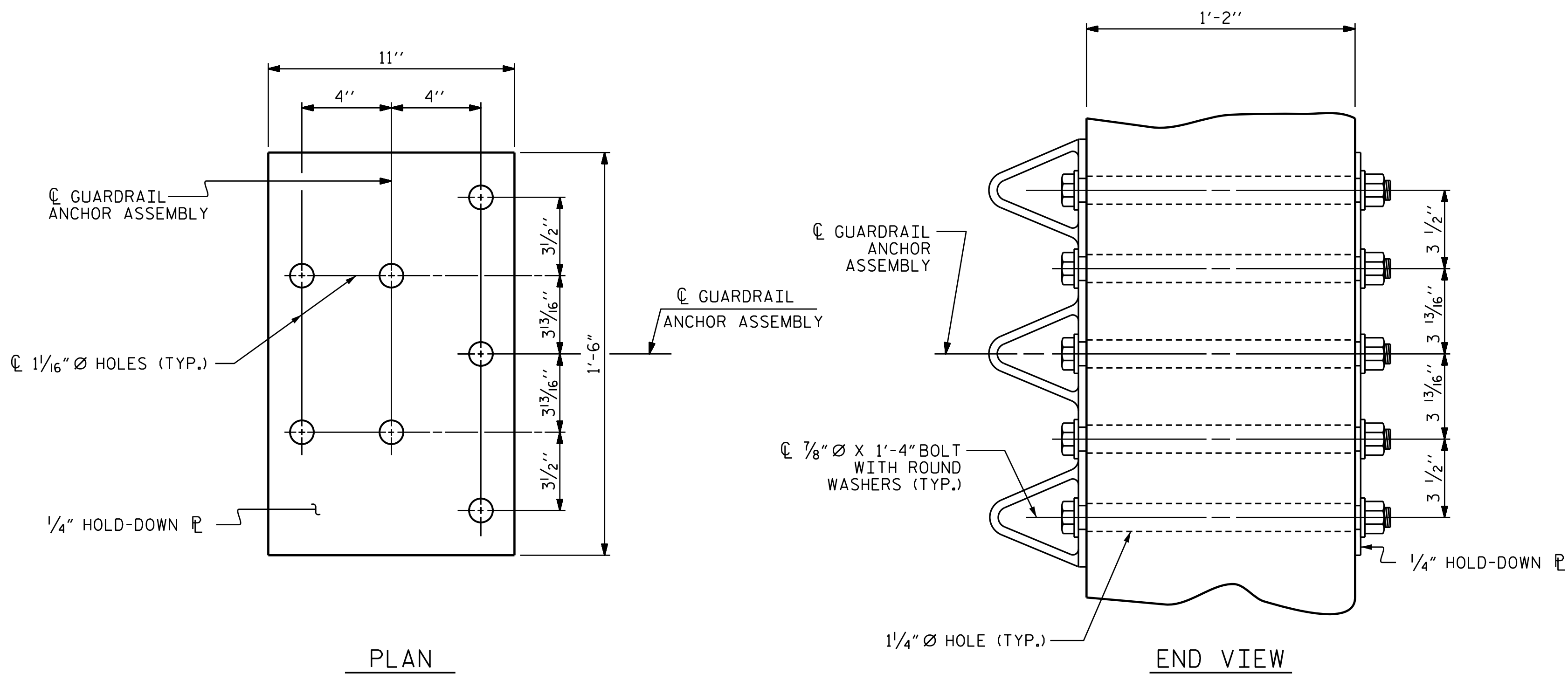
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S02-19
TOTAL SHEETS
28

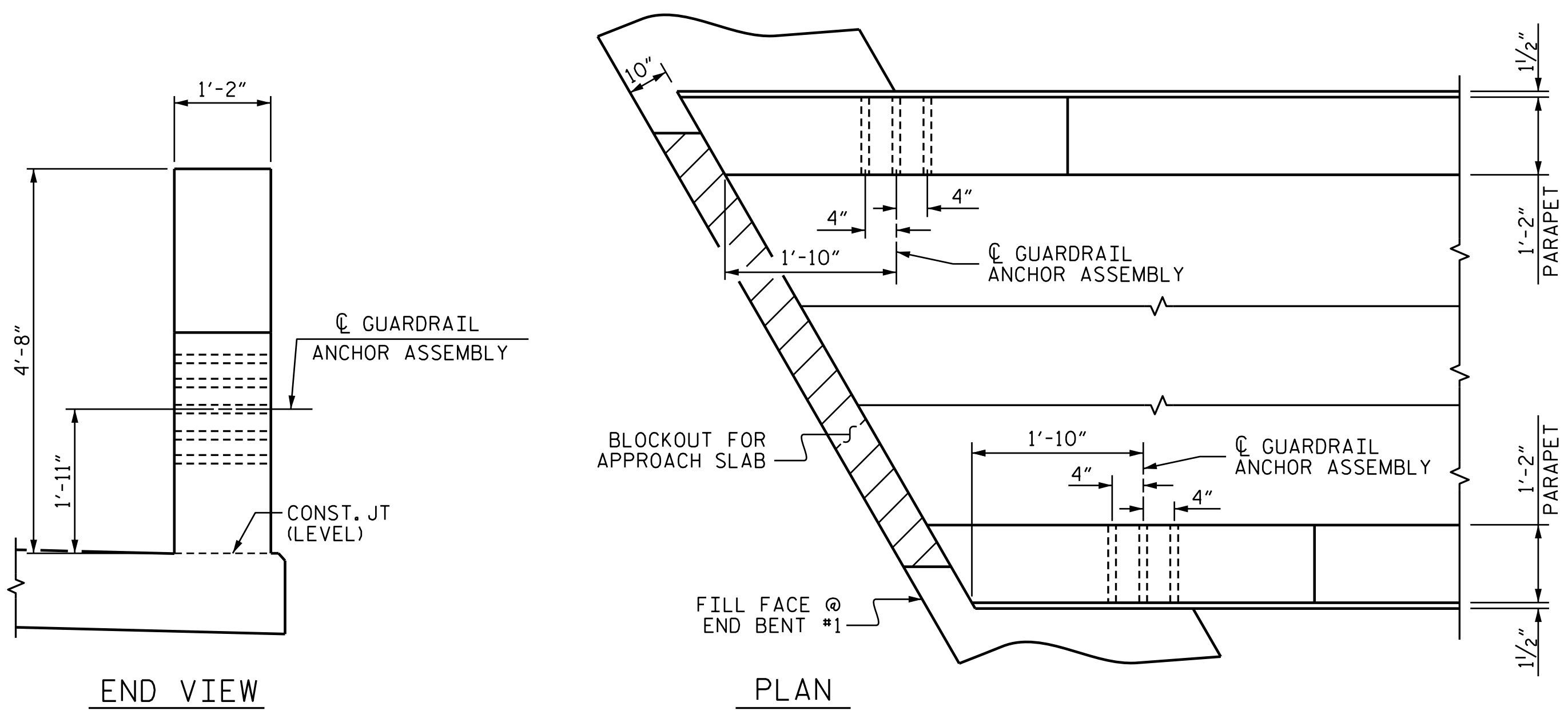
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
(919) 552-2253
www.mottmac.com
LICENSE NO. F-0669





GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF GUARDRAIL ANCHOR AT END POST



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT

NOTES

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

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

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

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

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

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

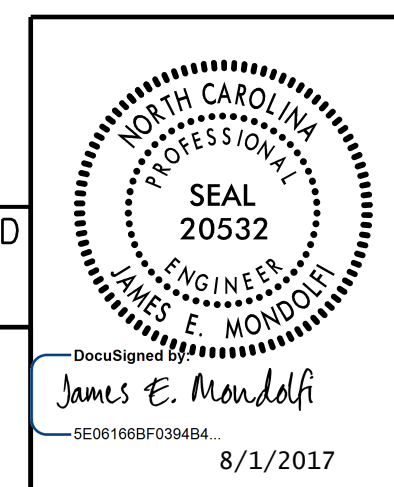
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

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

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 19+04.69 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**GUARDRAIL ANCHORAGE
 DETAILS
 FOR METAL RAILS**



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
M PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 MOTT MACDONALD LICENSE NO. F-0669

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

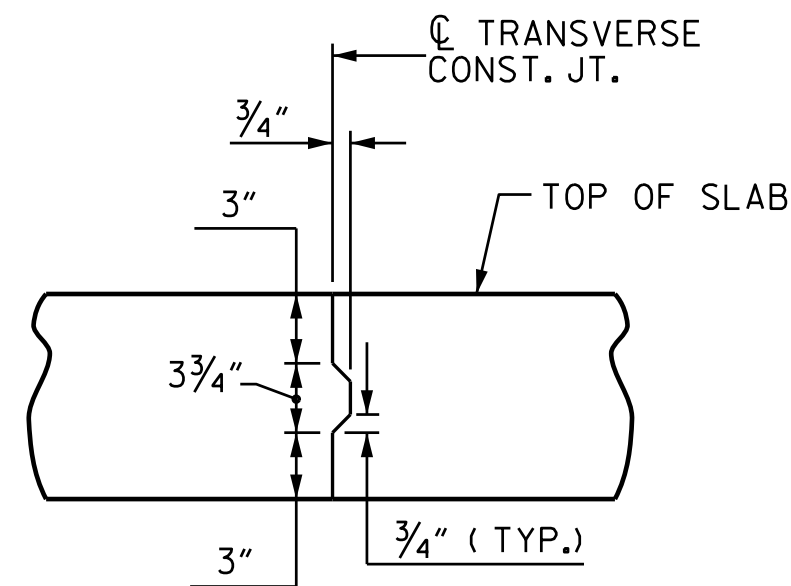
157077
 C:\Users\126_MJL\Bases\Plans\B-5239_SMU_CR_000126.dgn
 3/17/2015 9:28:31 AM

DRAWN BY: J. T. WILLIAMS DATE: 1-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015

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"			

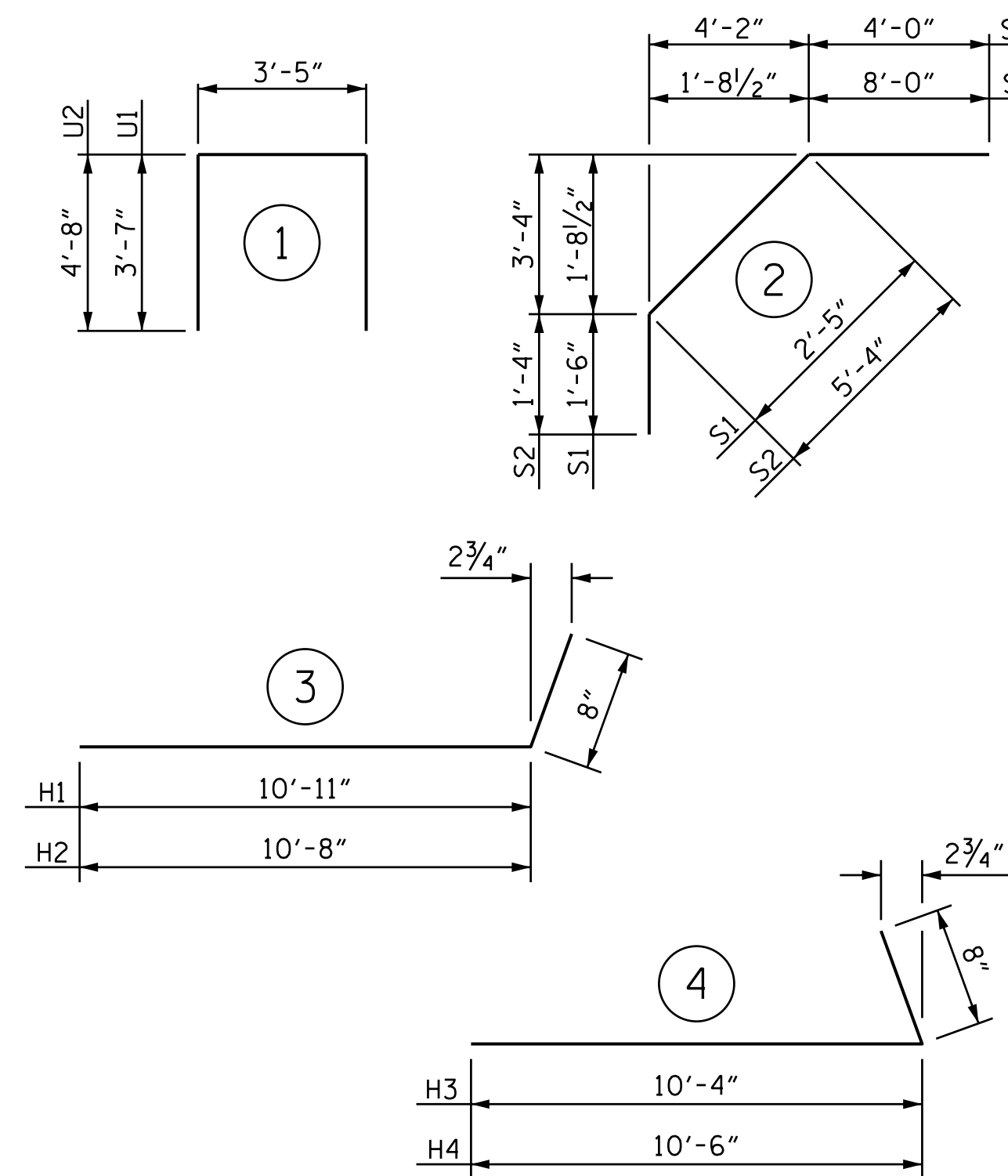
GROOVING BRIDGE FLOORS	
APPROACH SLABS	2,096 SQ.FT.
BRIDGE DECK	2,622 SQ.FT.
TOTAL	4,718 SQ.FT.



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

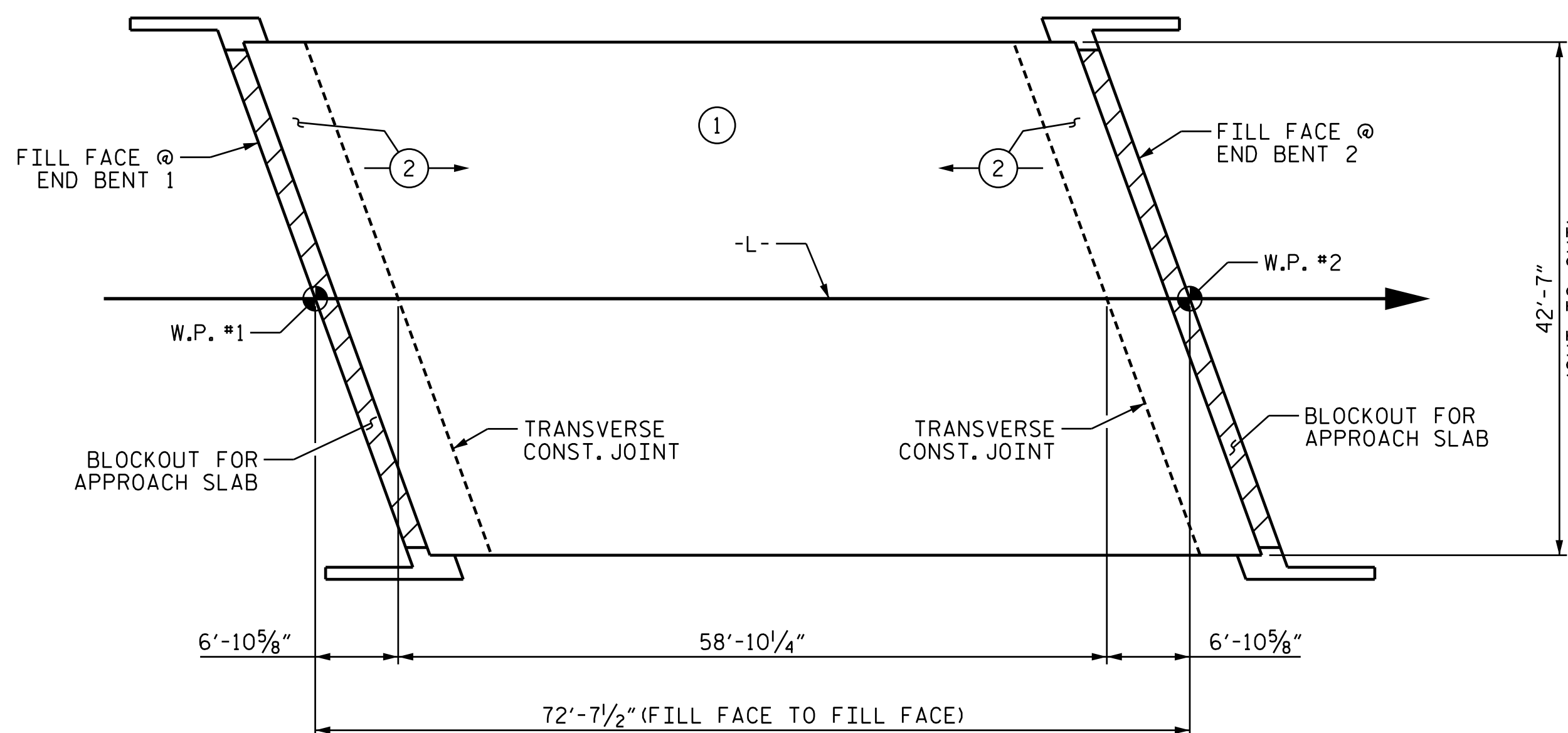
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	133	#5	STR	42'-3"	5861	A214	4	#5	STR	10'-3"	43	
A2	133	#5	STR	42'-3"	5861	A215	4	#5	STR	7'-11"	33	
						A216	4	#5	STR	5'-8"	24	
*A101	4	#5	STR	40'-0"	167	A217	4	#5	STR	3'-4"	14	
*A102	4	#5	STR	37'-9"	157							
*A103	4	#5	STR	35'-5"	148	*B1	114	#7	STR	14'-1"	3282	
*A104	4	#5	STR	33'-2"	138	*B2	58	#4	STR	24'-3"	940	
*A105	4	#5	STR	30'-10"	129	B3	122	#5	STR	36'-4"	4623	
*A106	4	#5	STR	28'-7"	119							
*A107	4	#5	STR	26'-3"	110	H1	14	#4	3	11'-7"	108	
*A108	4	#5	STR	24'-0"	100	H2	14	#4	3	11'-4"	106	
*A109	4	#5	STR	21'-8"	90	H3	14	#4	4	11'-0"	103	
*A110	4	#5	STR	19'-5"	81	H4	14	#4	4	11'-2"	104	
*A111	4	#5	STR	17'-1"	71							
*A112	4	#5	STR	14'-10"	62	K1	16	#4	STR	26'-9"	286	
*A113	4	#5	STR	12'-6"	52	K2	6	#4	STR	10'-3"	41	
*A114	4	#5	STR	10'-3"	43	K3	12	#4	STR	11'-7"	93	
*A115	4	#5	STR	7'-11"	33	K4	6	#4	STR	10'-10"	43	
*A116	4	#5	STR	5'-8"	24	K5	4	#4	STR	5'-7"	15	
*A117	4	#5	STR	3'-4"	14	K6	8	#4	STR	6'-3"	33	
						K7	4	#4	STR	5'-10"	16	
						K8	8	#4	STR	2'-10"	15	
A201	4	#5	STR	40'-0"	167							
A202	4	#5	STR	37'-9"	157							
A203	4	#5	STR	35'-5"	148	*S1	78	#4	2	11'-11"	621	
A204	4	#5	STR	33'-2"	138	*S2	74	#4	2	10'-8"	527	
A205	4	#5	STR	30'-10"	129							
A206	4	#5	STR	28'-7"	119	U1	78	#4	1	10'-7"	551	
A207	4	#5	STR	26'-3"	110	U2	12	#4	1	12'-9"	102	
A208	4	#5	STR	24'-0"	100							
A209	4	#5	STR	21'-8"	90	V2	80	#4	STR	4'-8"	249	
A210	4	#5	STR	19'-5"	81							
A211	4	#5	STR	17'-1"	71							
A212	4	#5	STR	14'-10"	62							
A213	4	#5	STR	12'-6"	52							
										REINFORCING STEEL	LBS.	13,887
										*EPOXY COATED REINFORCING STEEL	LBS.	12,769



POURING SEQUENCE AND LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB

(3,093 SF)

← ⊕ = INDICATES POUR NUMBER AND DIRECTION OF POUR

SUPERSTRUCTURE BILL OF MATERIAL			
	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
SPAN A		13,887	12,769
POUR 1	79.9		
POUR 2	78.0		
TOTALS**	157.9	13,887	12,769

**QUANTITIES FOR PARAPET ARE NOT INCLUDED

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 19+04.69 -L-

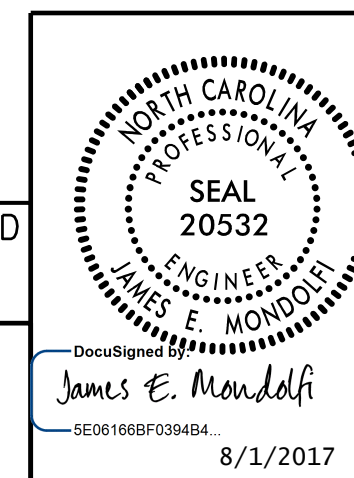
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE BILL OF MATERIAL

REVISIONS

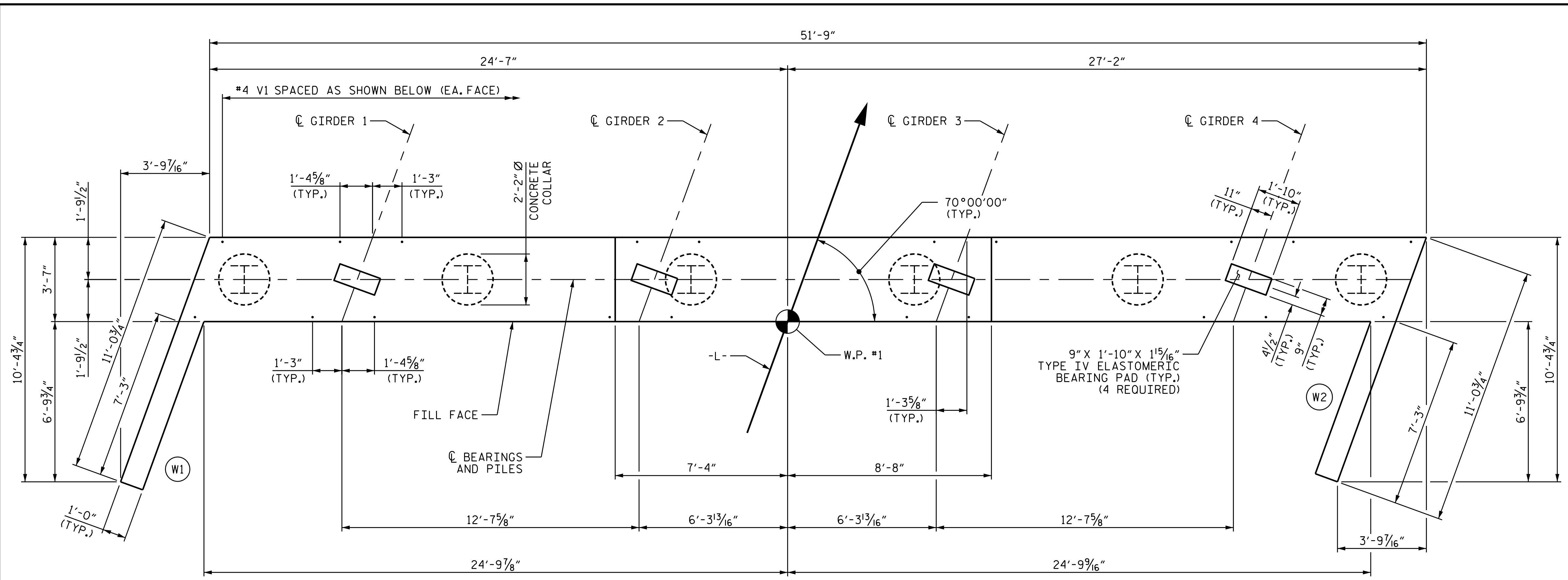
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S02-21
 TOTAL SHEETS
 28



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

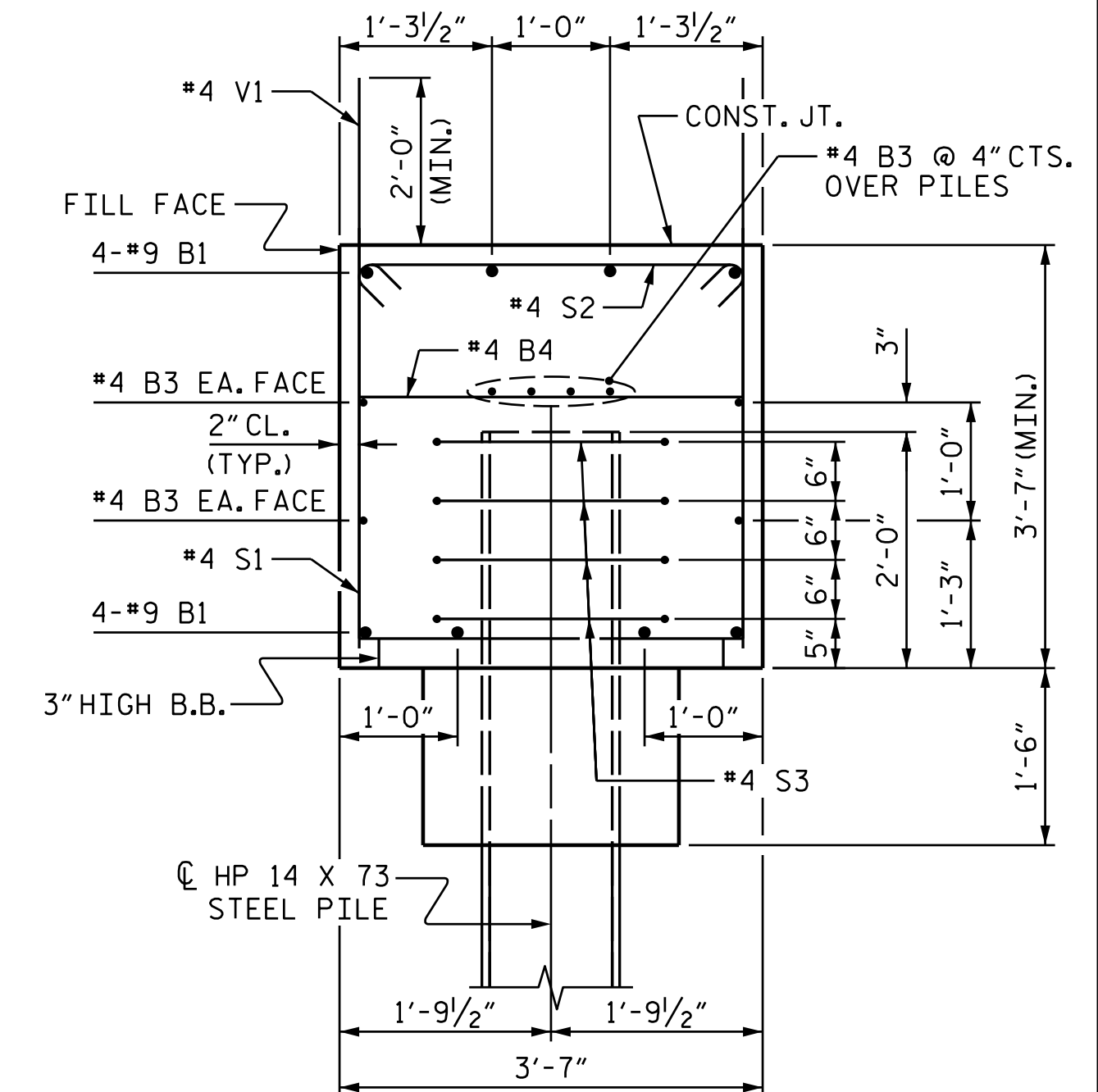
DRAWN BY: J. T. WILLIAMS DATE: 2-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015



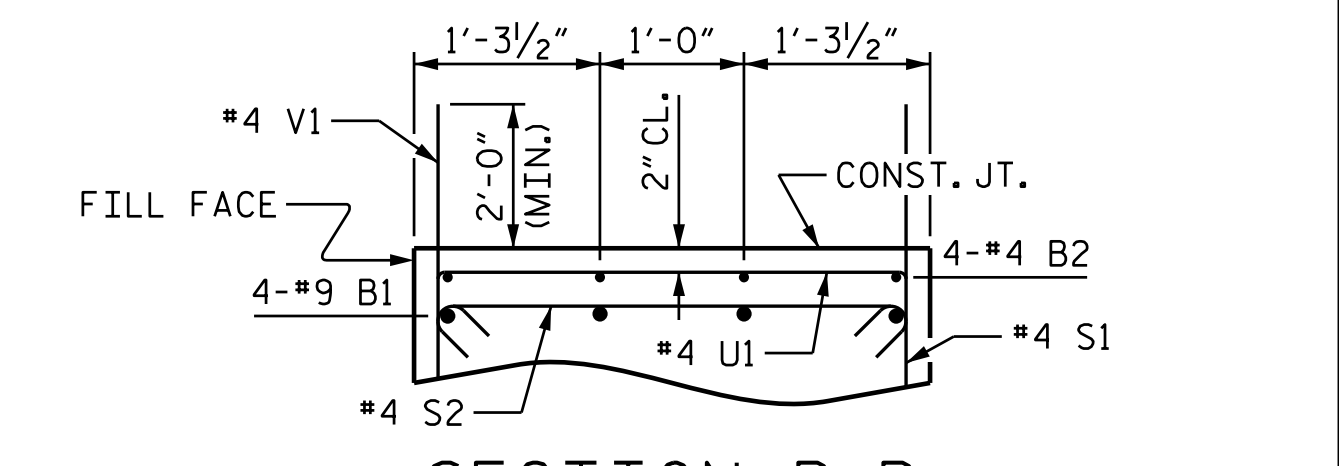
PLAN

NOTES:

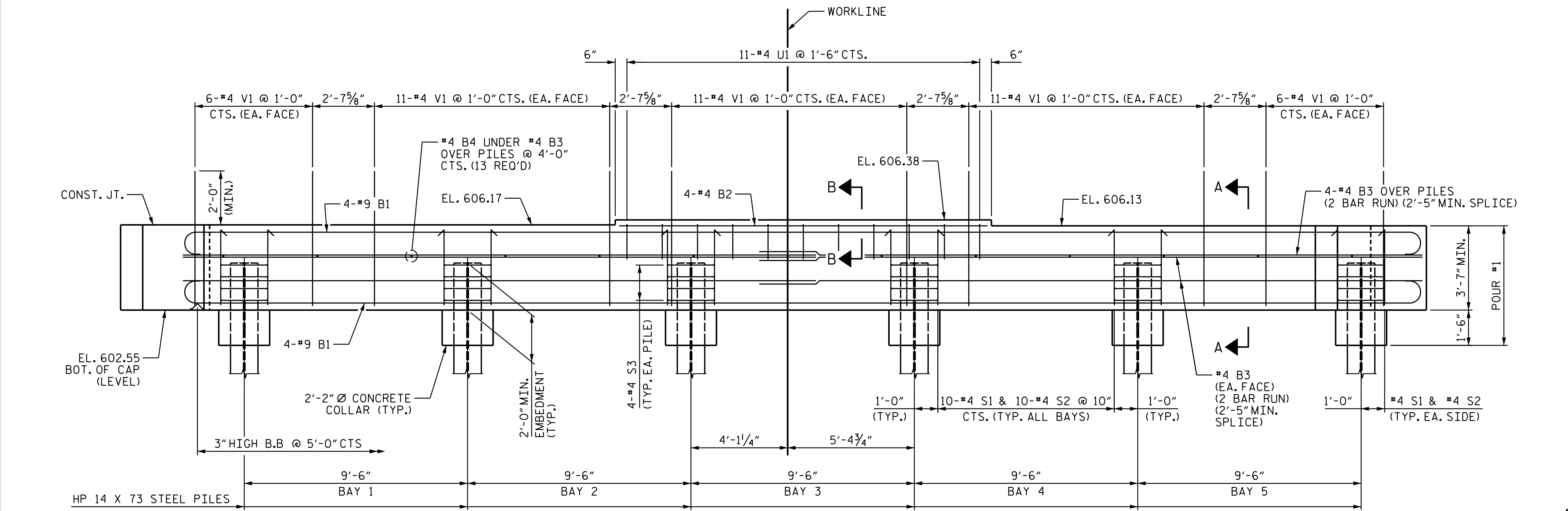
SEE SUPERSTRUCTURE SHEETS FOR UPPER PART OF INTEGRAL END BENT DETAILS.
 FOR PILE SPLICE DETAILS, SEE END BENT, SHEET 2 OF 2.
 INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WINGWALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WINGWALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
 THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".



SECTION A-A



SECTION B-B

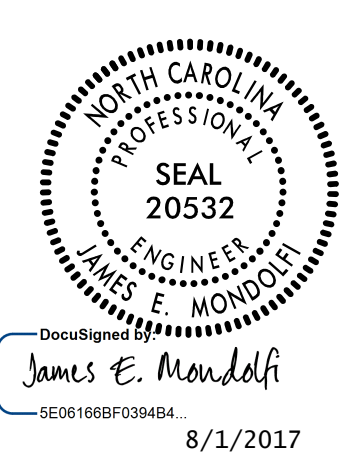


ELEVATION

PROJECT NO. B-5239
 ALAMANCE COUNTY
 STATION: 19+04.69 -L-

SHEET 1 OF 2

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

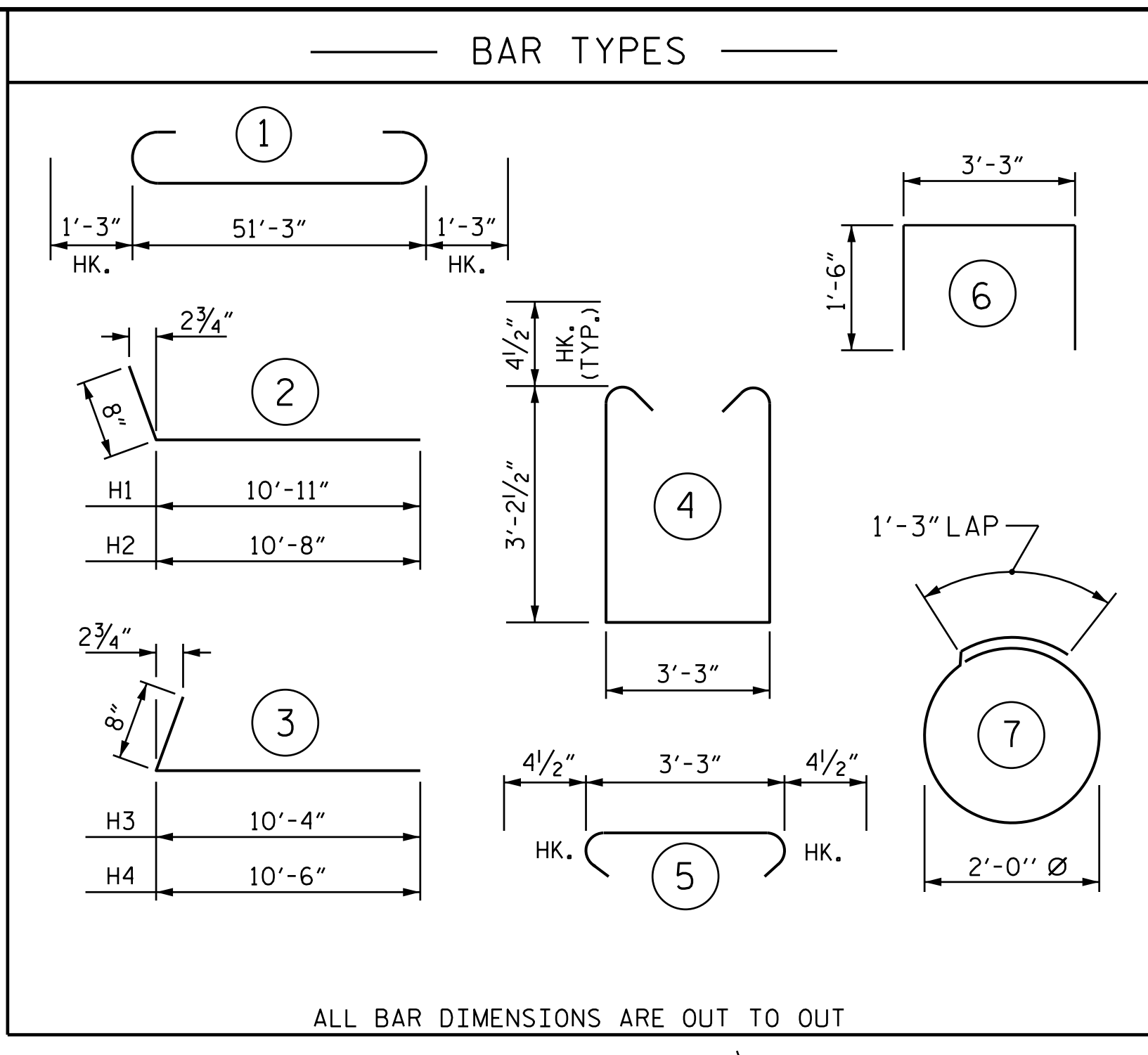
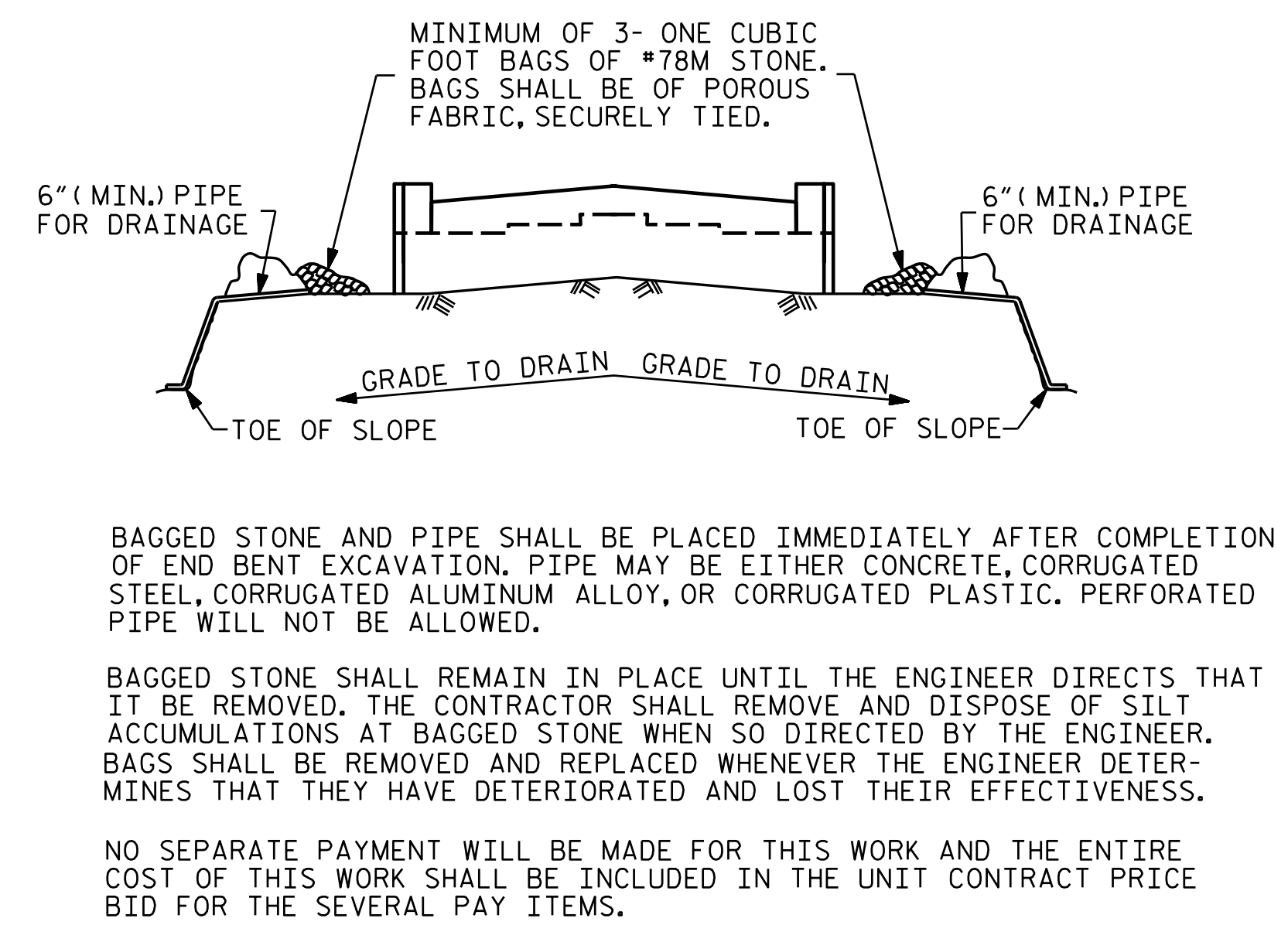
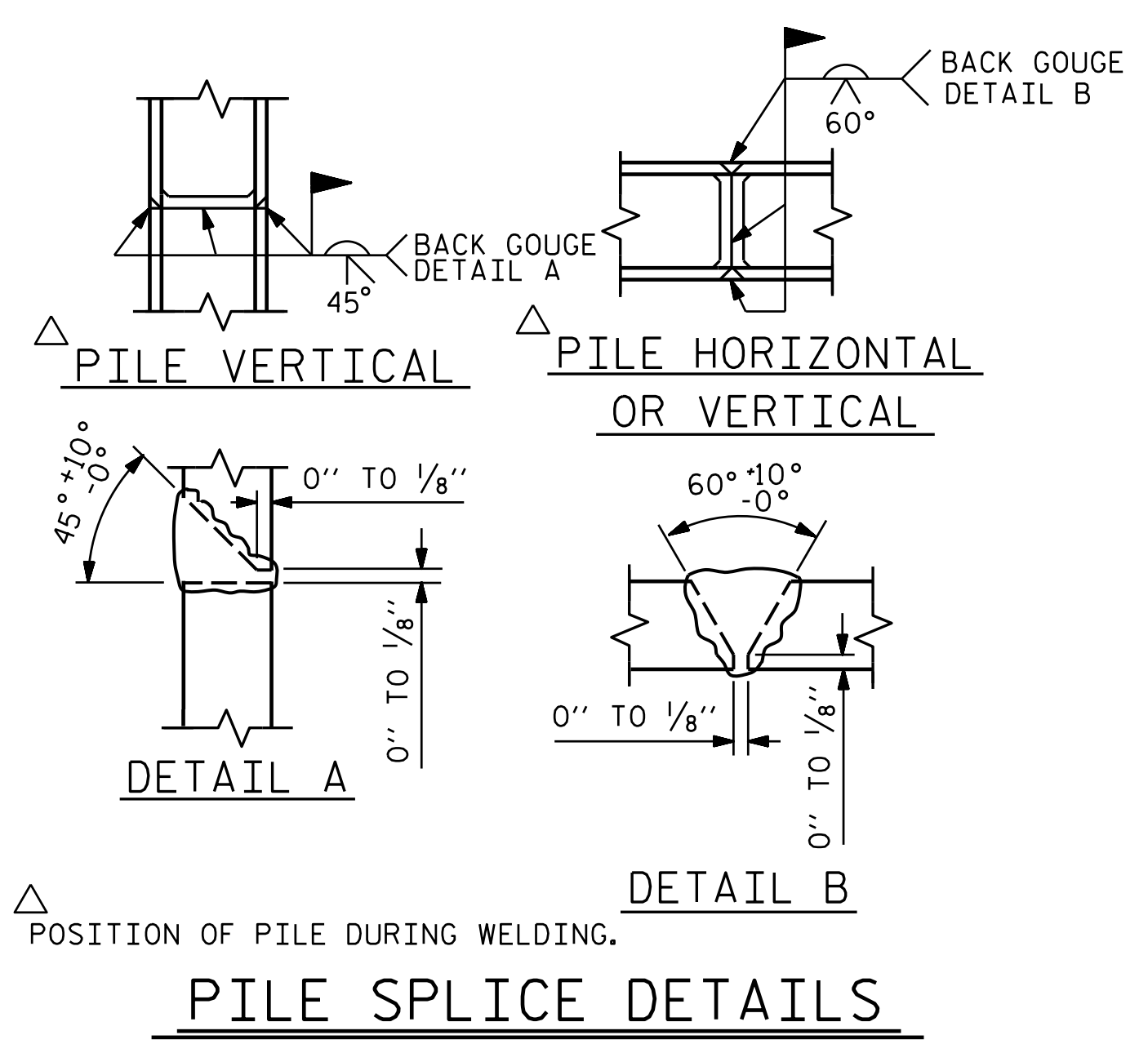


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 PLANS PREPARED BY:
 MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

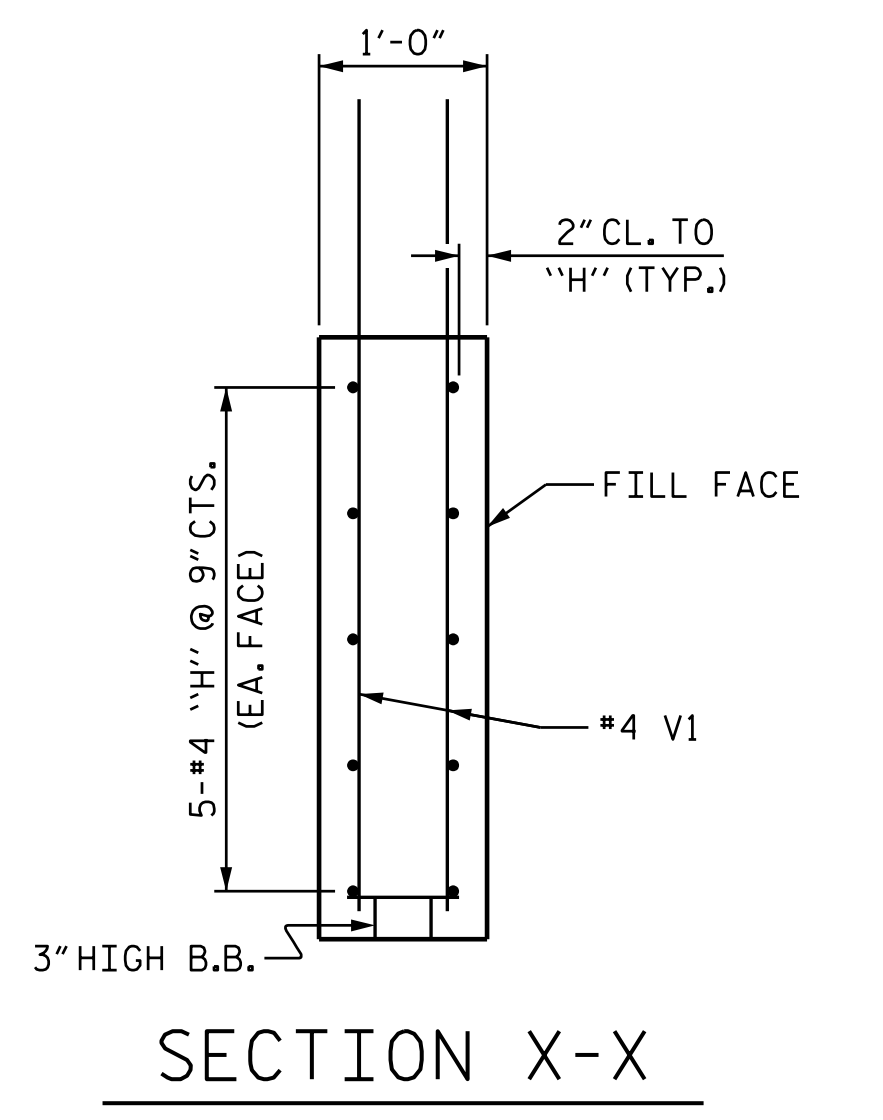
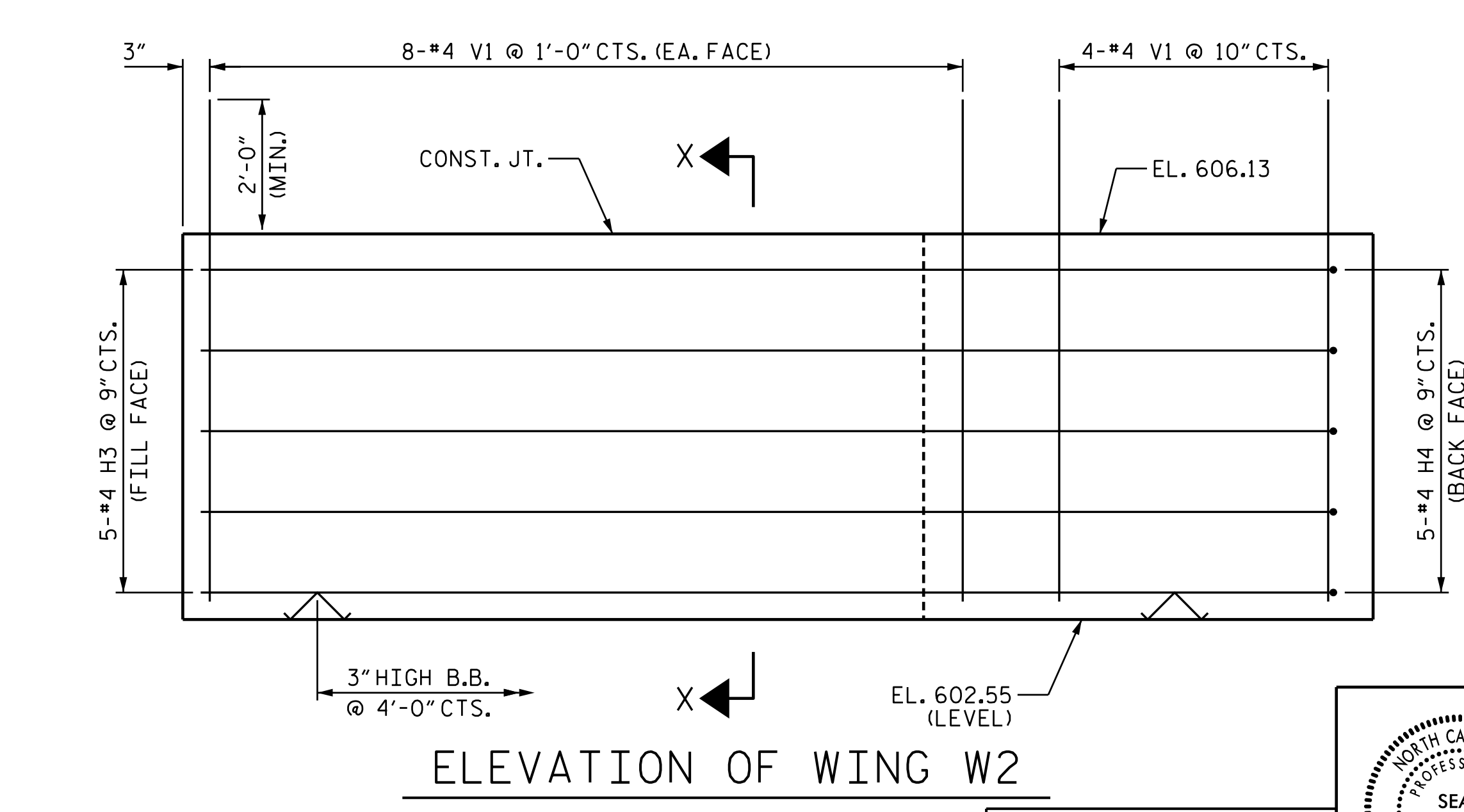
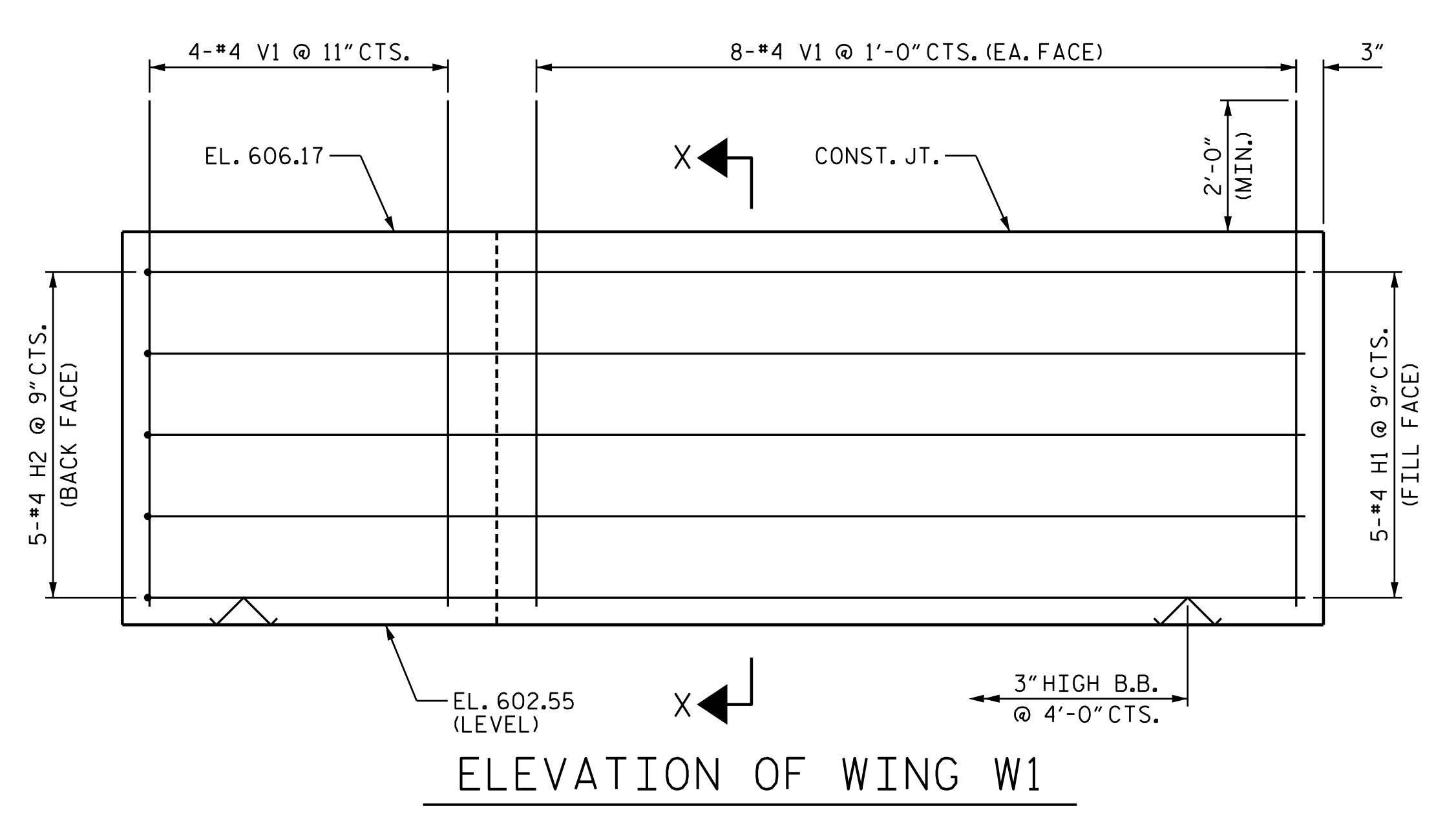
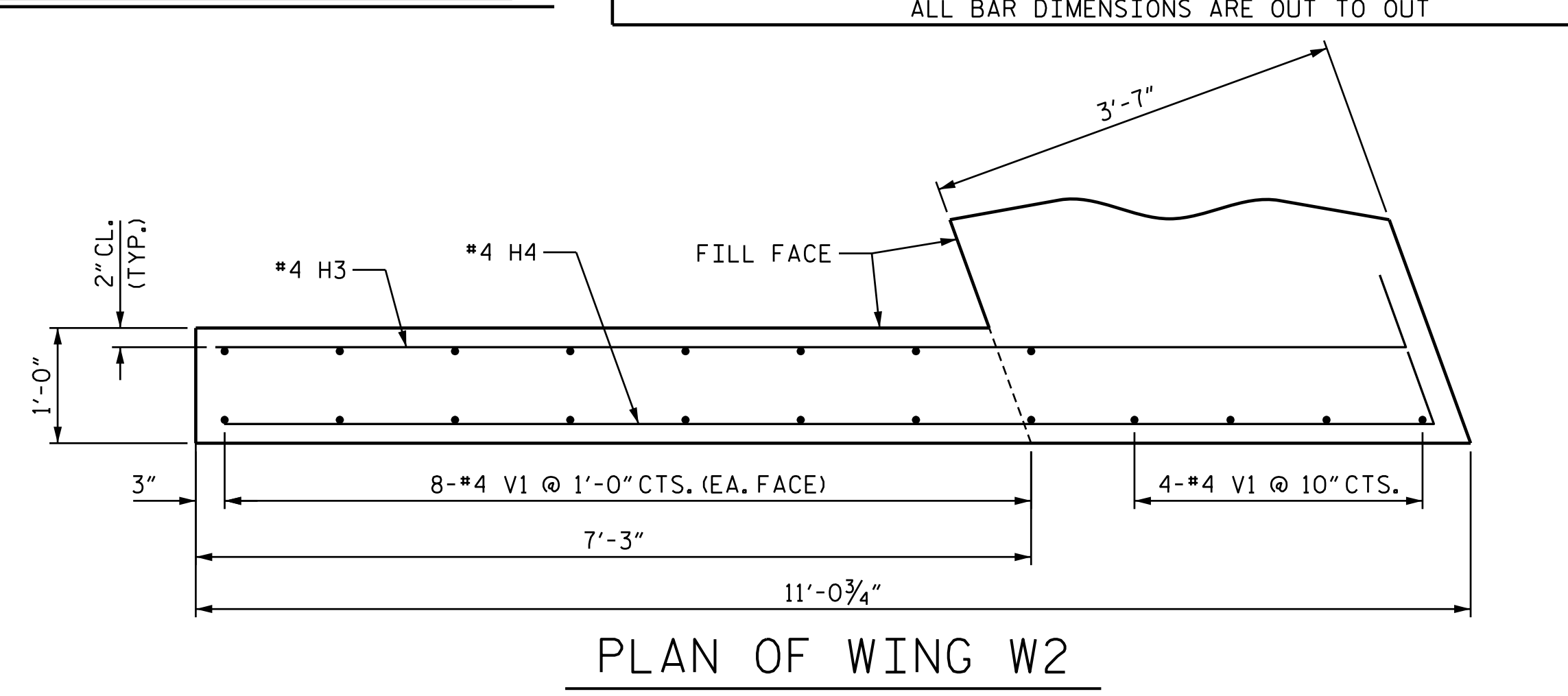
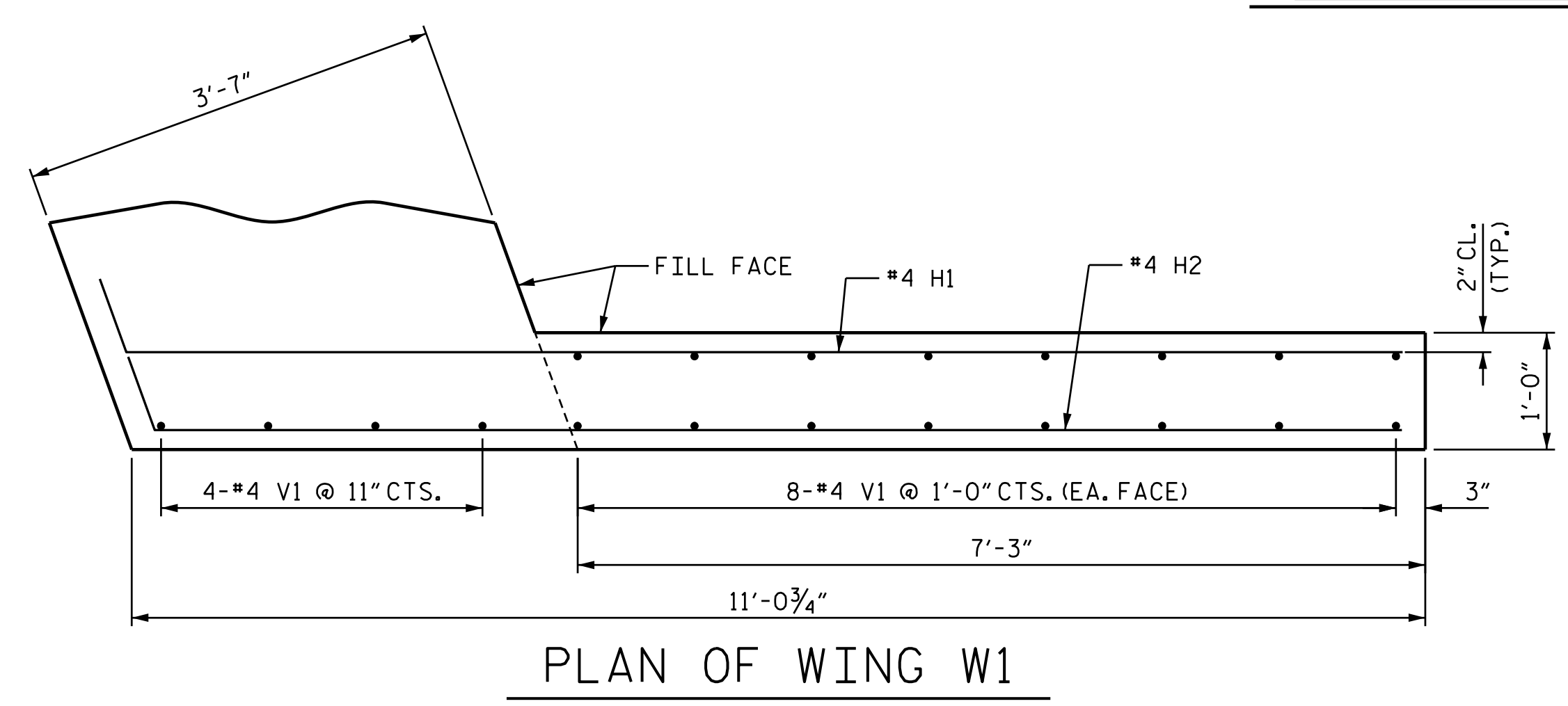
REVISIONS COMPLETED						SHEET NO. S02-22
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 28
2			4			

157077
 C:\Users\126.M.J.L. Bess\Plans\B-5239-SMU.EI.000126.dgn
 8/1/2015 9:28:56 AM

DRAWN BY: J. T. WILLIAMS DATE: 2-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015



BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	53'-9"	1462
B2	4	#4	STR	15'-8"	42
B3	16	#4	STR	26'-11"	288
B4	13	#4	STR	3'-3"	28
H1	5	#4	2	11'-7"	39
H2	5	#4	2	11'-4"	38
H3	5	#4	3	11'-0"	37
H4	5	#4	3	11'-2"	37
S1	52	#4	4	10'-5"	362
S2	52	#4	5	4'-0"	139
S3	24	#4	7	7'-7"	122
U1	11	#4	6	6'-3"	46
V1	130	#4	STR	5'-8"	492
REINFORCING STEEL				=	3132 LBS
CLASS A CONCRETE: POUR #1: CAP, LOWER WINGS, & COLLARS 28.4 C.Y.					
HP 14 X 73 STEEL PILES: NO. 6 LIN. FT. 165					
PILE DRIVING EQUIPMENT SET UP FOR HP 14 X 73 STEEL PILES: NO. 6					
STEEL PILE POINTS: NO. 6					

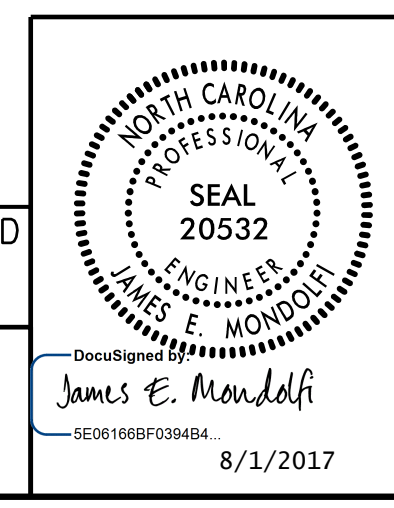


PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 19+04.69 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 1 INTEGRAL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S02-23
TOTAL SHEETS 28

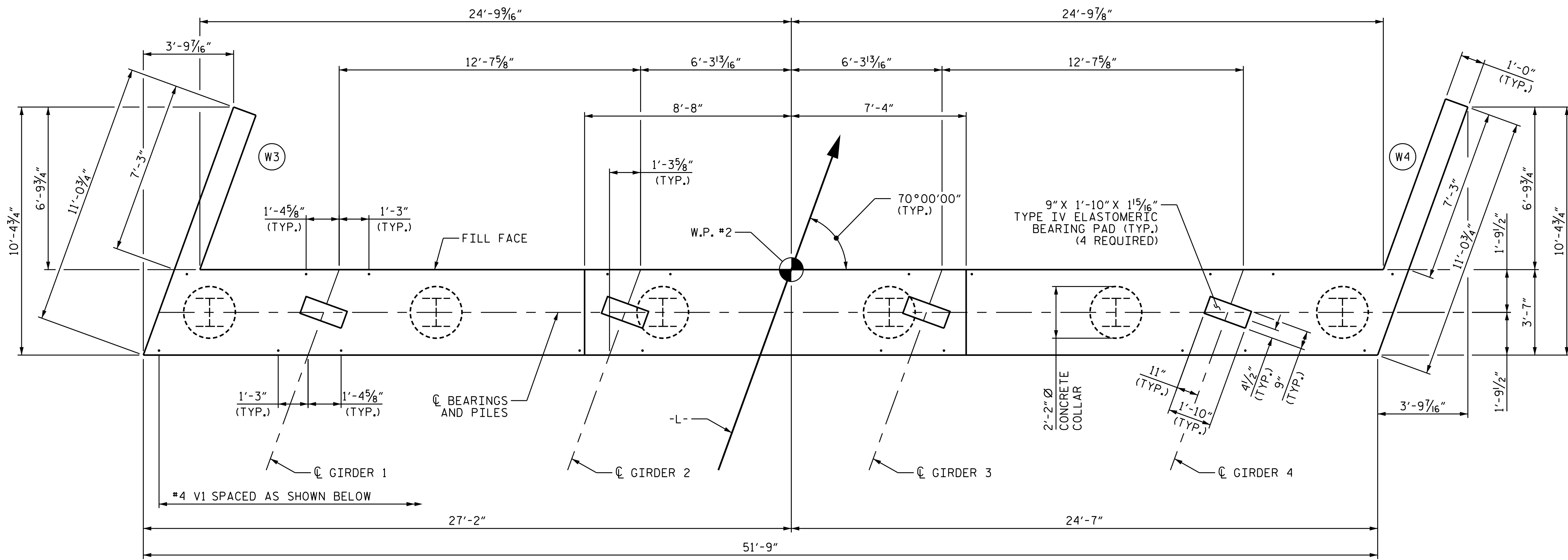


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

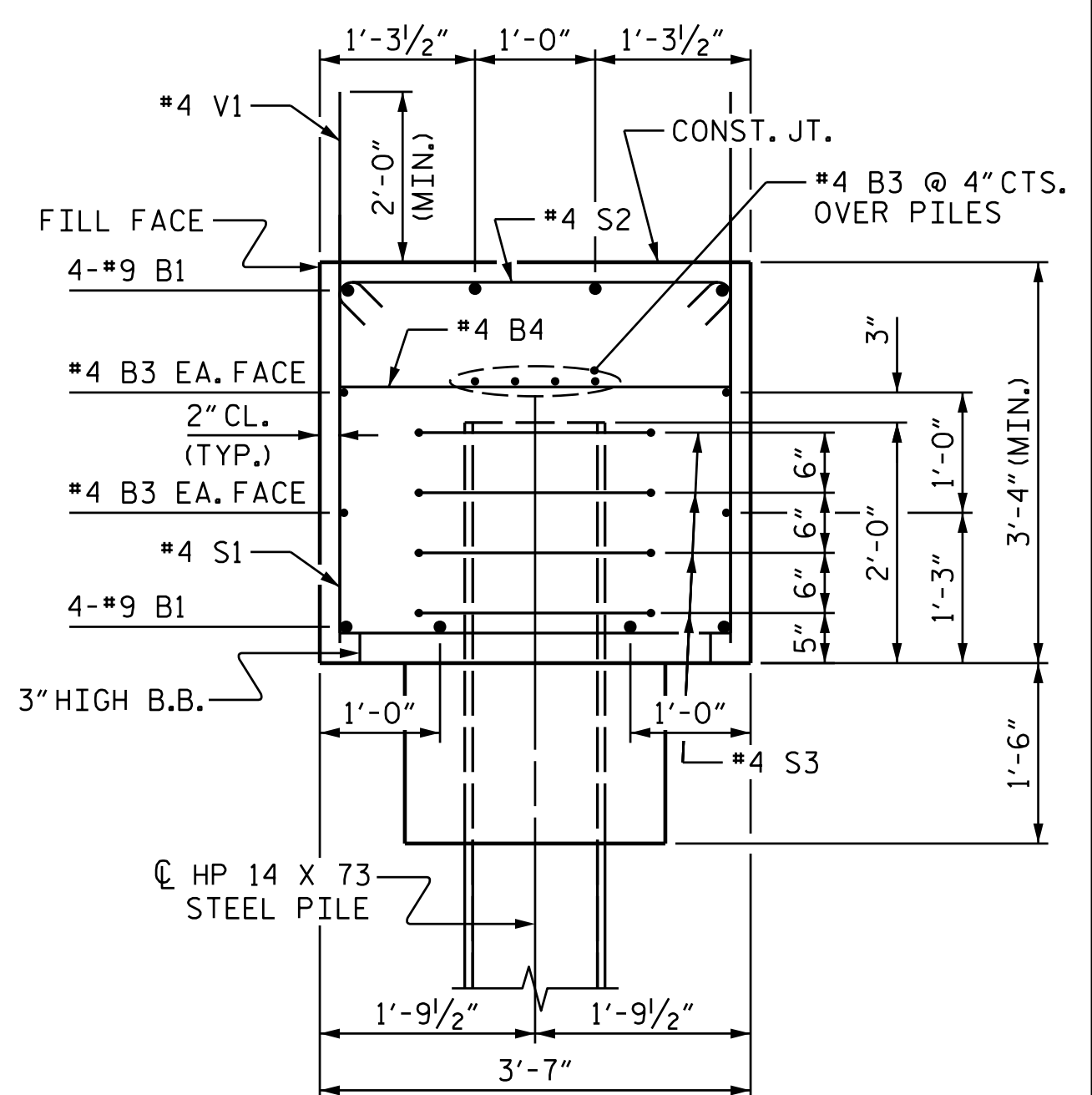
#157077
 C:\Users\126.M.J.L.B\OneDrive\Plans\B-5239-SMU.EI.000126.dgn
 8/1/2017 9:28:37 AM

DRAWN BY: J. T. WILLIAMS DATE: 4-2017
 CHECKED BY: J. E. MONDOLFI DATE: 4-2017
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 4-2017

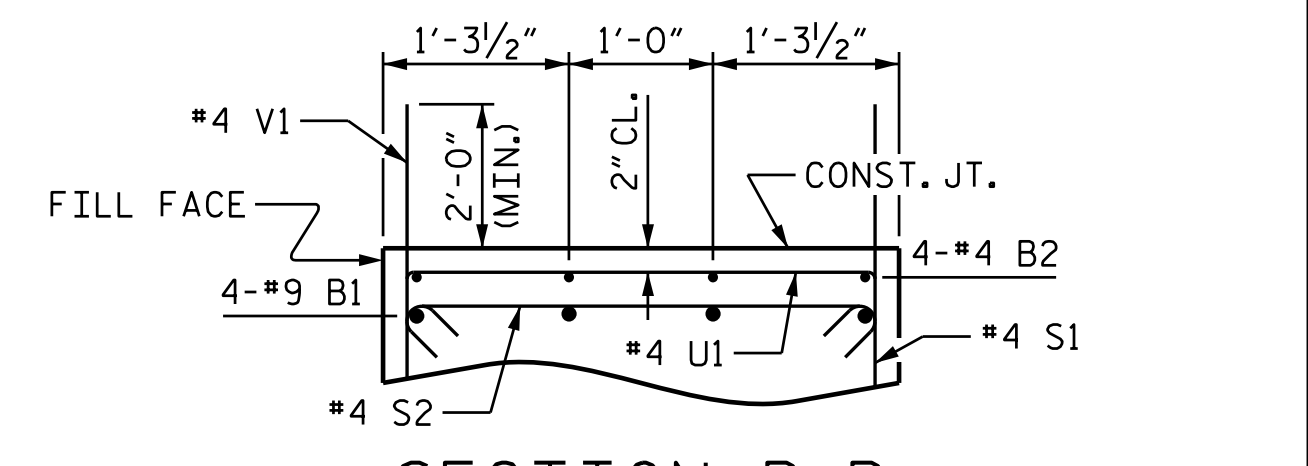


PLAN

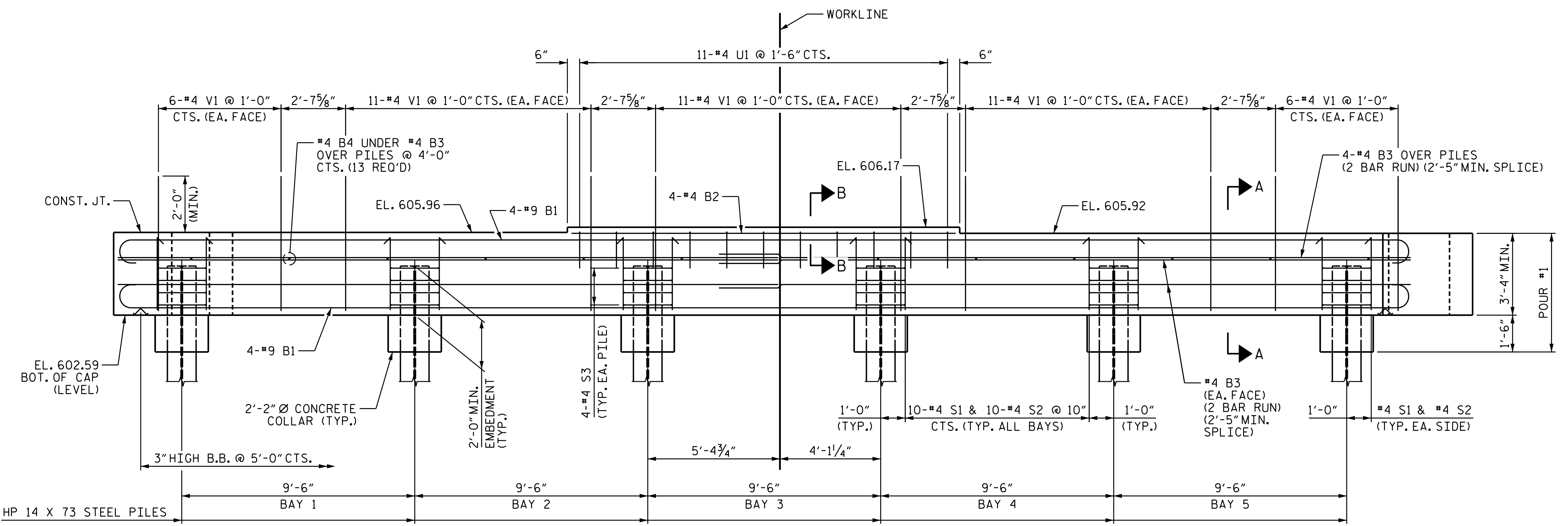
NOTES:
 SEE SUPERSTRUCTURE SHEETS FOR UPPER PART OF INTEGRAL END BENT DETAILS.
 FOR PILE SPLICE DETAILS, SEE END BENT, SHEET 2 OF 2.
 INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WINGWALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WINGWALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
 THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".



SECTION A-A



SECTION B-B

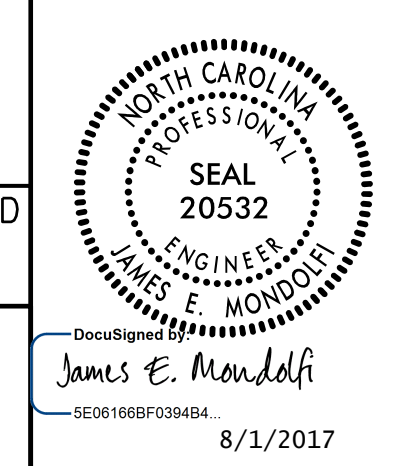


ELEVATION

PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 19+04.69 -L-

SHEET 1 OF 2

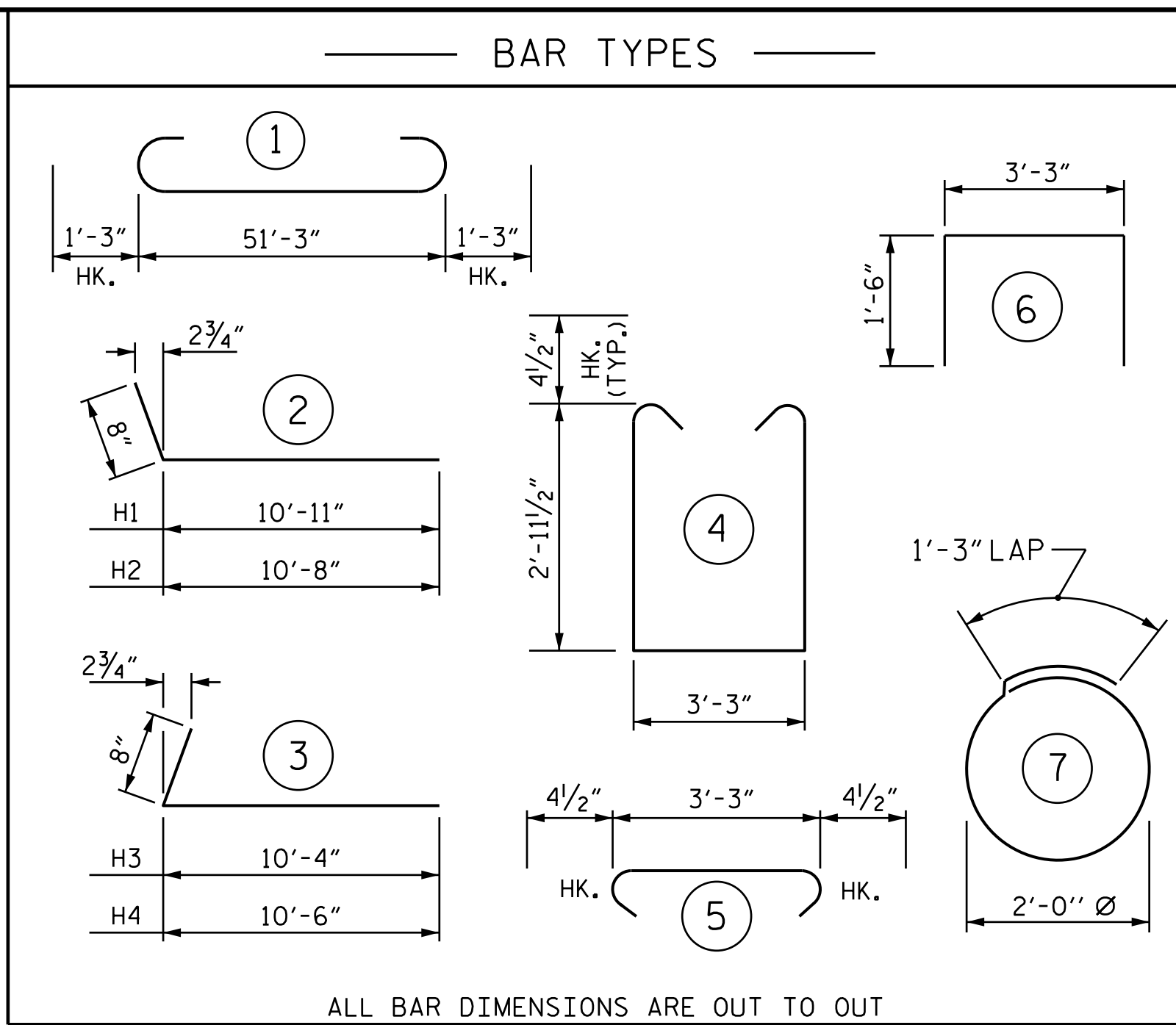
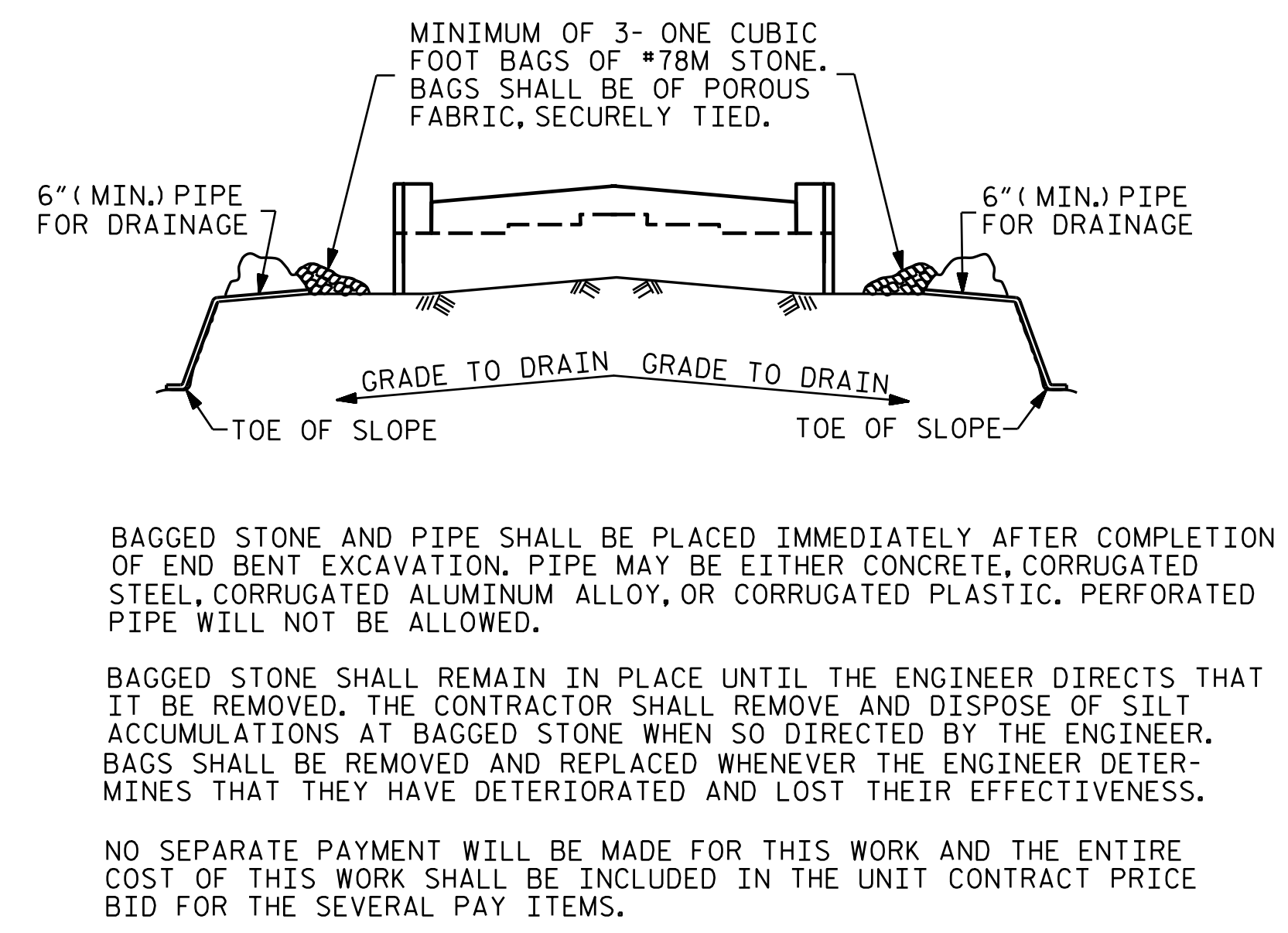
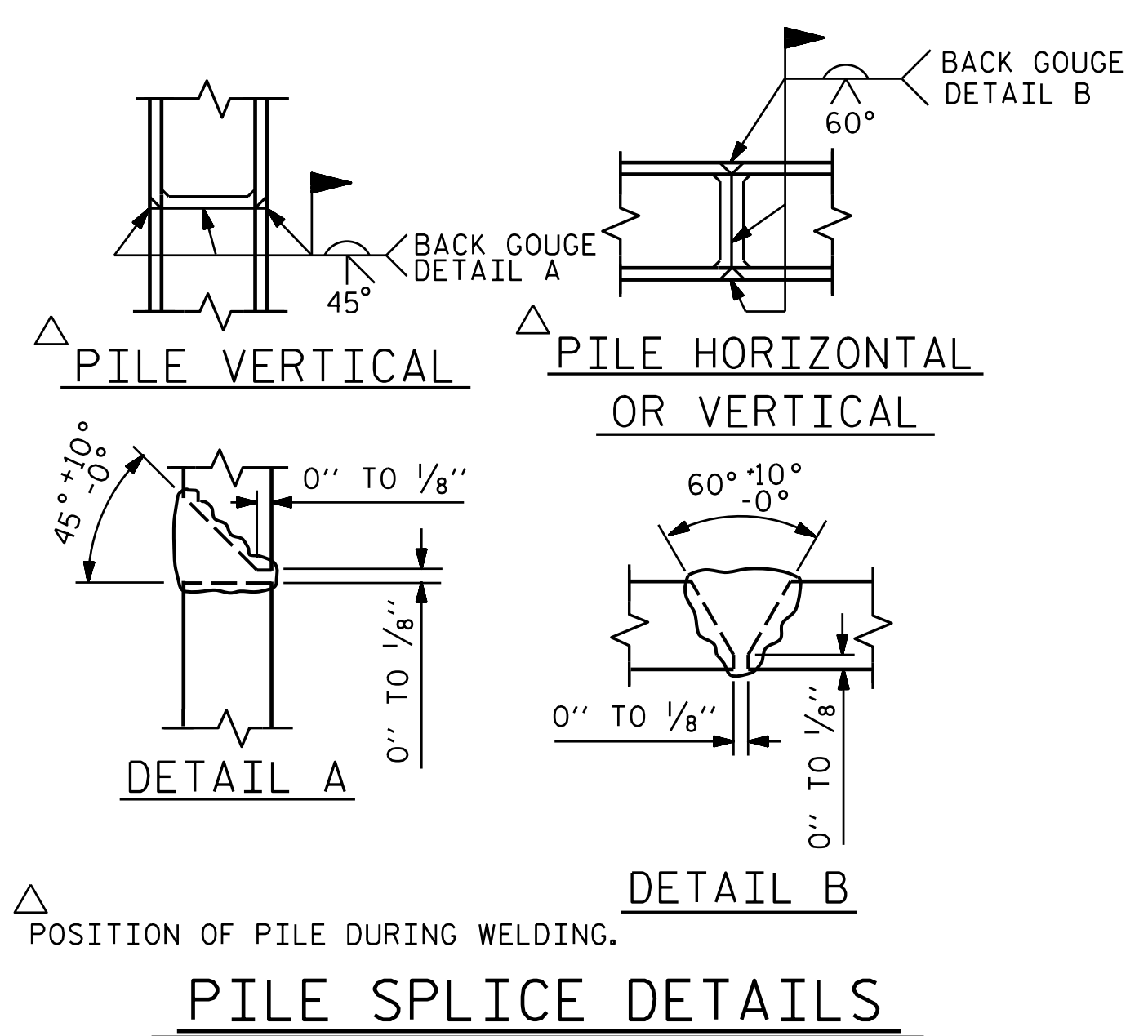
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 2 INTEGRAL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S02-24
					TOTAL SHEETS 28



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
 PLANS PREPARED BY:
M PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
M MOTT MACDONALD LICENSE NO. F-0669

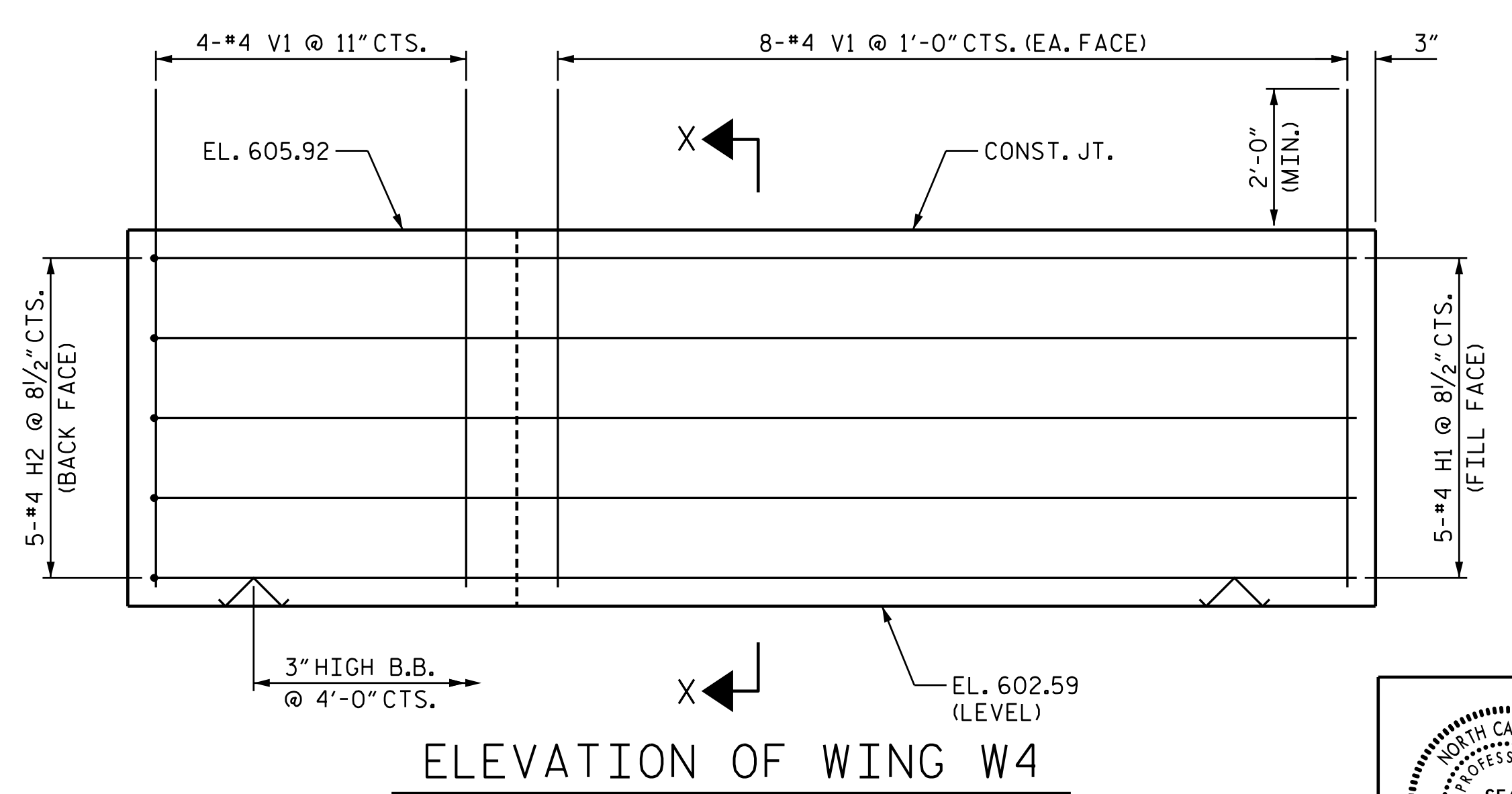
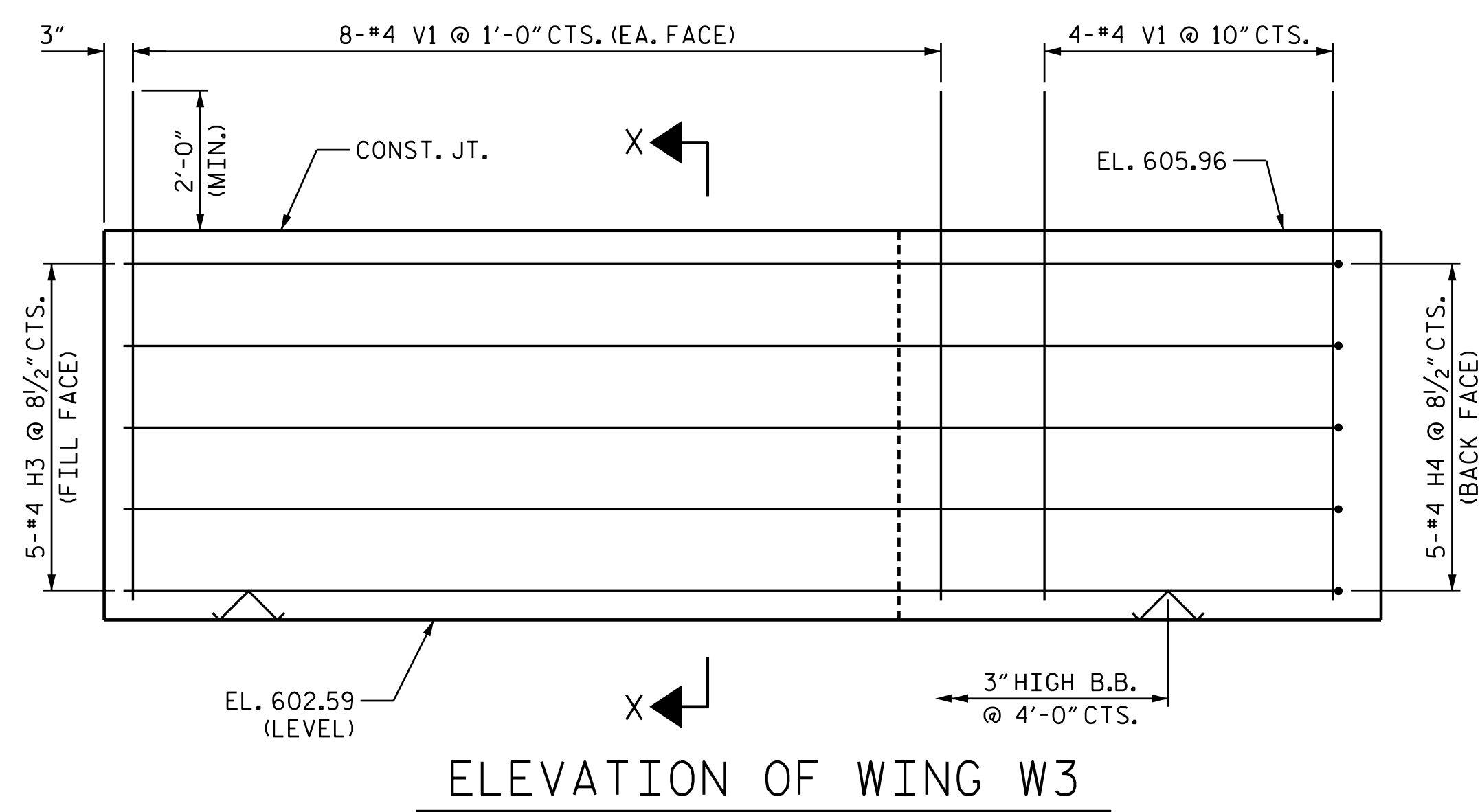
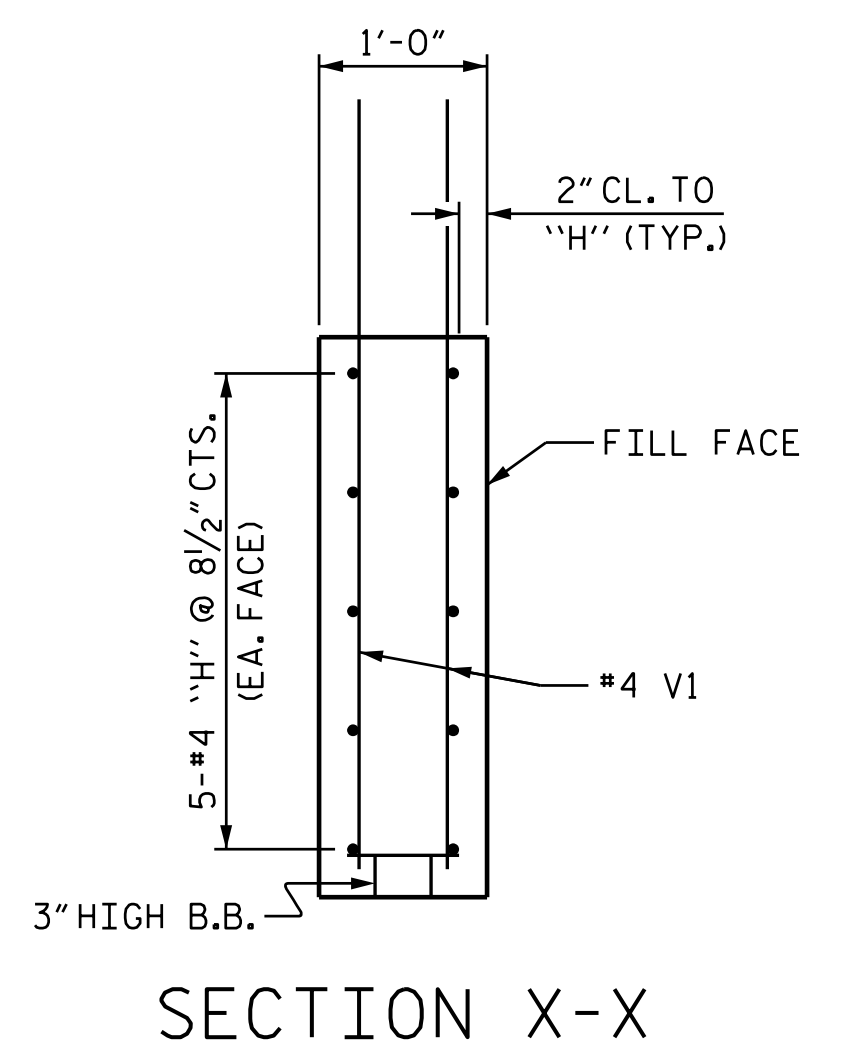
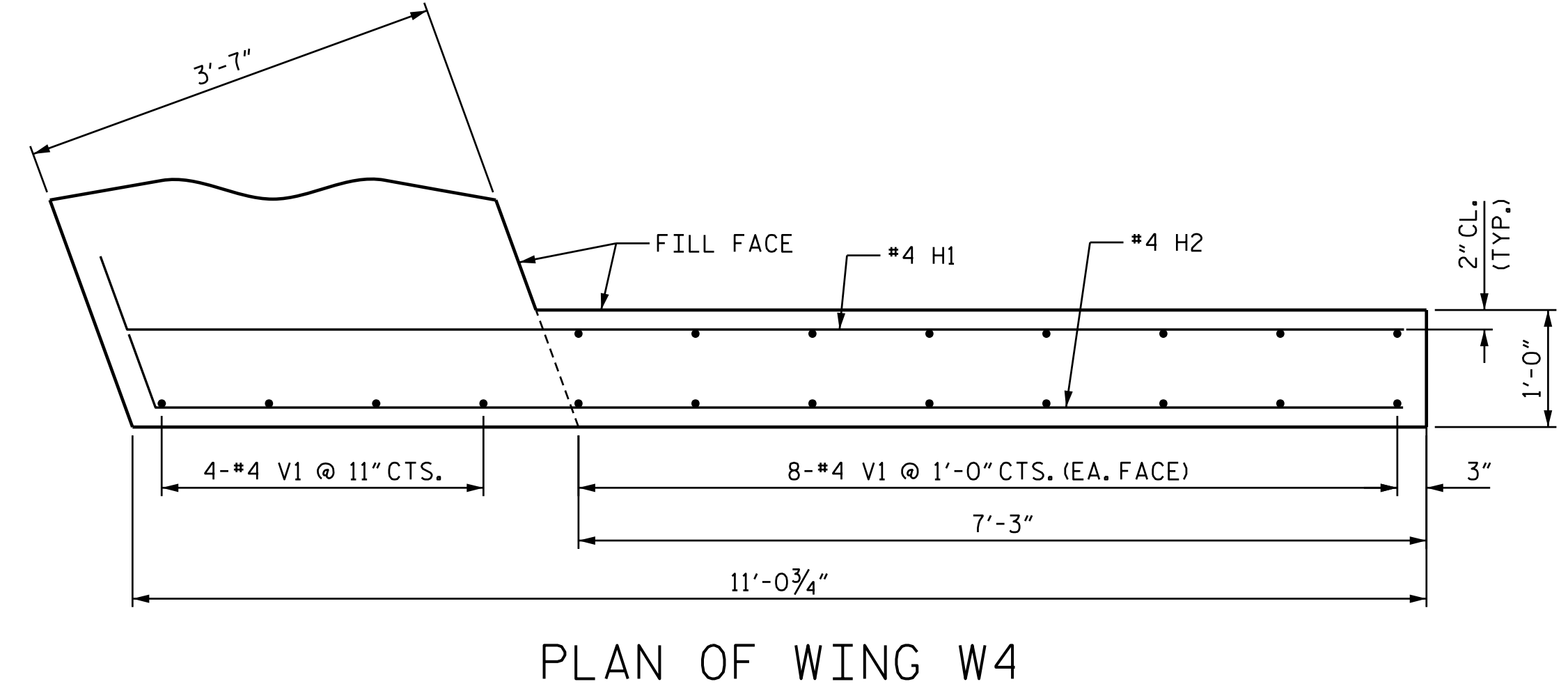
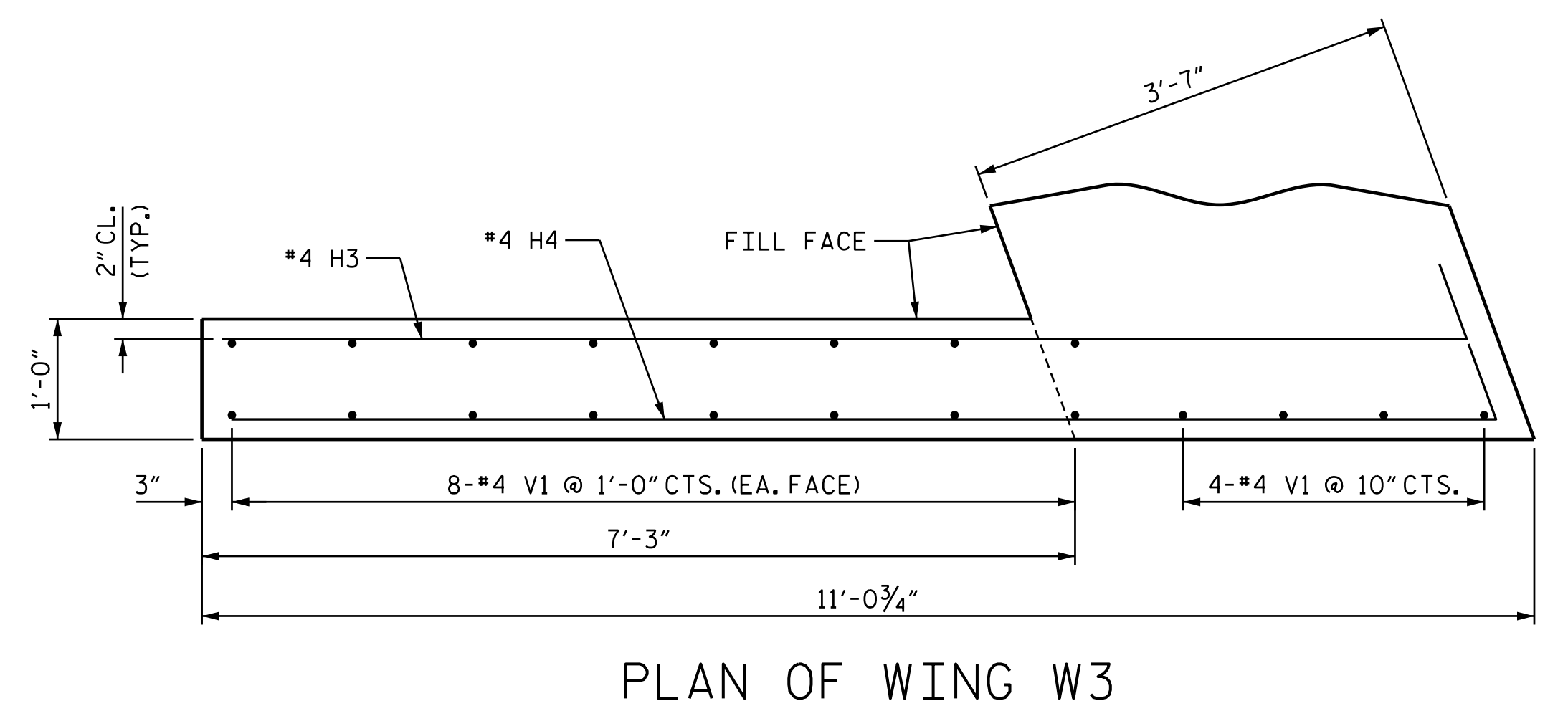
157077
 C:\Users\126.M.J.L. Plans\B-5239-SMU.E2-000126.dgn
 8/1/2015 9:28:41 AM

DRAWN BY: J. T. WILLIAMS DATE: 2-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015



BILL OF MATERIAL

END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	53'-9"	1462
B2	4	#4	STR	15'-8"	42
B3	16	#4	STR	26'-11"	288
B4	13	#4	STR	3'-3"	28
H1	5	#4	2	11'-7"	39
H2	5	#4	2	11'-4"	38
H3	5	#4	3	11'-0"	37
H4	5	#4	3	11'-2"	37
S1	52	#4	4	9'-11"	344
S2	52	#4	5	4'-0"	139
S3	24	#4	7	7'-7"	122
U1	11	#4	6	6'-3"	46
V1	130	#4	STR	5'-5"	470
REINFORCING STEEL				=	3092 LBS
CLASS A CONCRETE: POUR #1: CAP, LOWER WINGS, & COLLARS 26.5 C.Y.					
HP 14 X 73 STEEL PILES: NO. 6 LIN. FT. 225					
PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 STEEL PILES: NO. 6					



PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 19+04.69 -L-

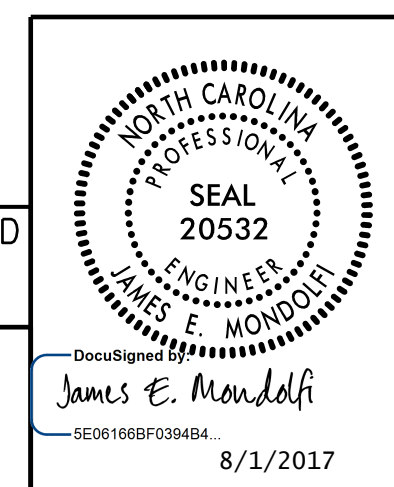
SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
END BENT 2
INTEGRAL

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

SHEET NO. S02-25
 TOTAL SHEETS 28

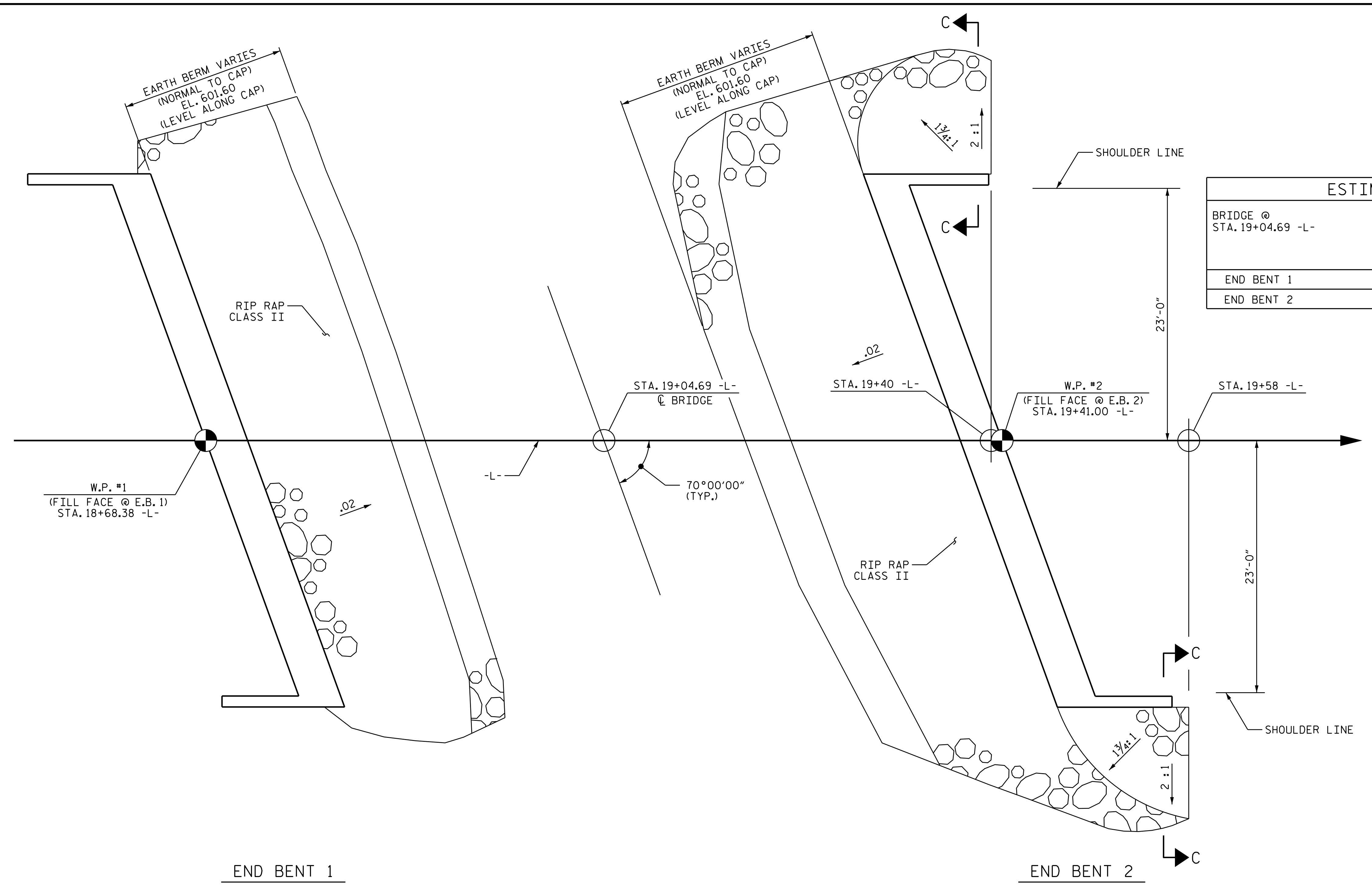


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

157077
 C:\Users\126_MJ\1_Plan\B-5239-SMU-E2-000126.dgn
 8/1/2017 9:28:42 AM

DRAWN BY: J. T. WILLIAMS DATE: 4-2017
 CHECKED BY: J. E. MONDOLFI DATE: 4-2017
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 4-2017

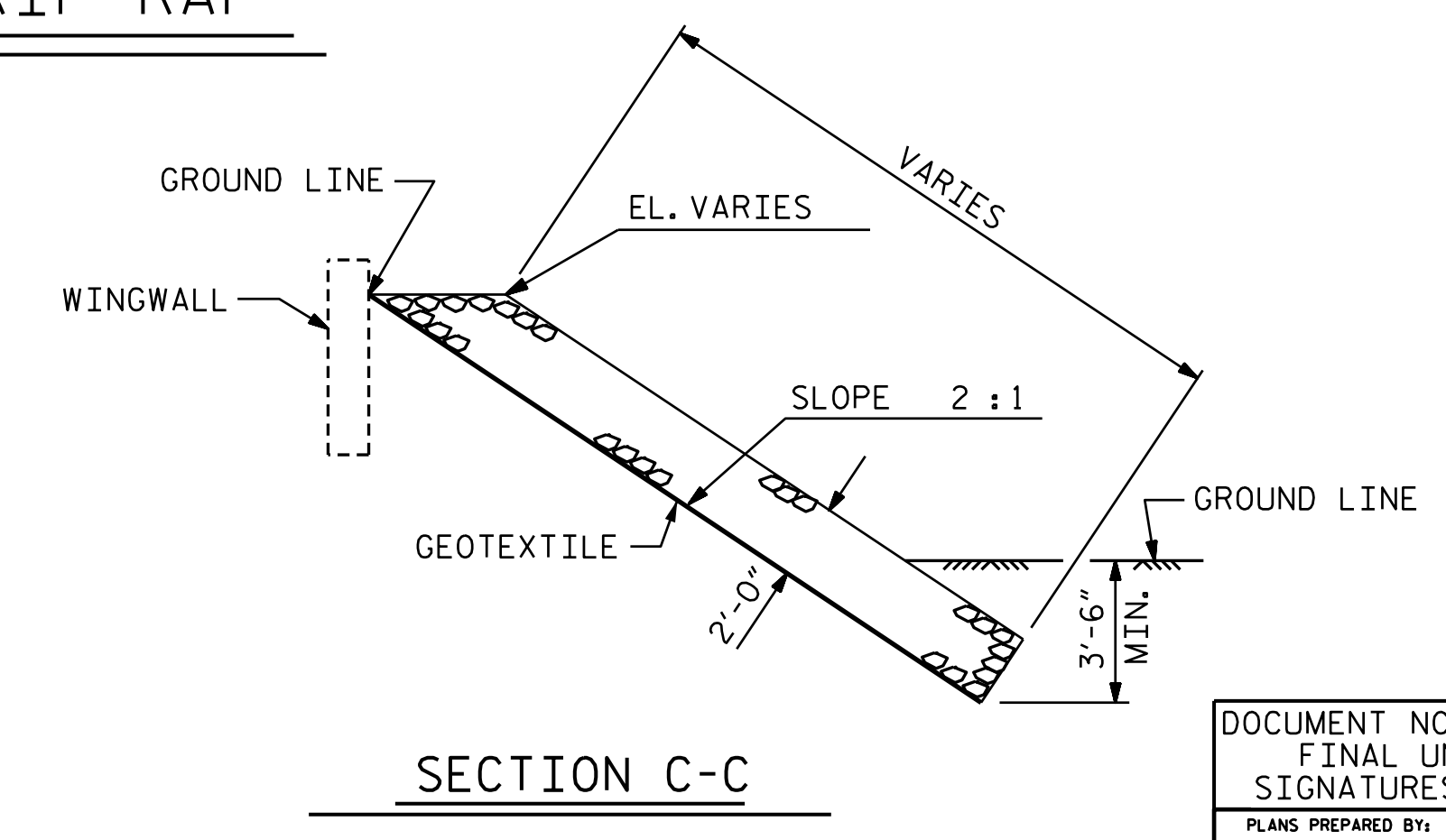
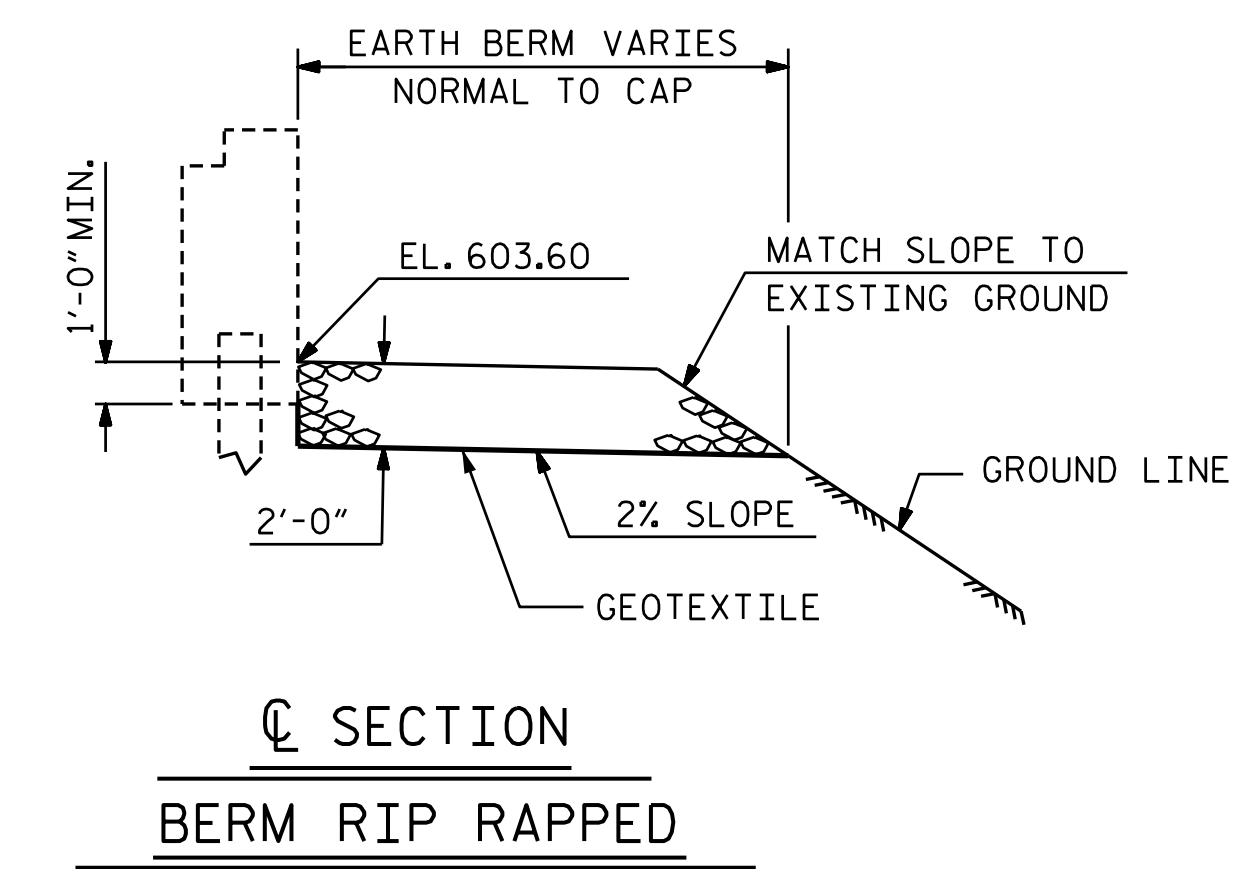


ESTIMATED QUANTITIES		
BRIDGE @ STA. 19+04.69 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	83	100
END BENT 2	132	159

END BENT 1

END BENT 2

PLAN OF RIP RAP

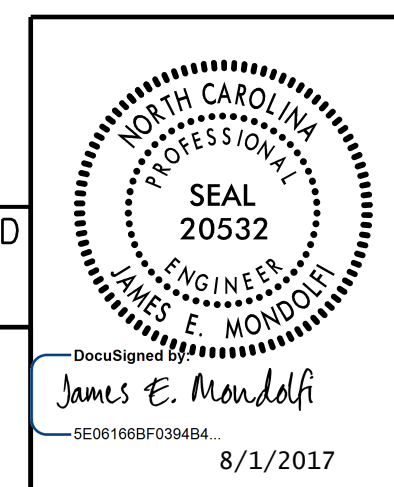


PROJECT NO. B-5239
ALAMANCE COUNTY
 STATION: 19+04.69 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

RIP RAP DETAILS

REVISIONS						SHEET NO. S02-26
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 28
2			4			



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
M MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669

157077
 C:\Users\126.M.J.L. Rese\Plans\B-5239-SMU-RR_000126.dgn
 3/17/2015 9:28:45 AM

DRAWN BY: J. T. WILLIAMS DATE: 3-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015

NOTES

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

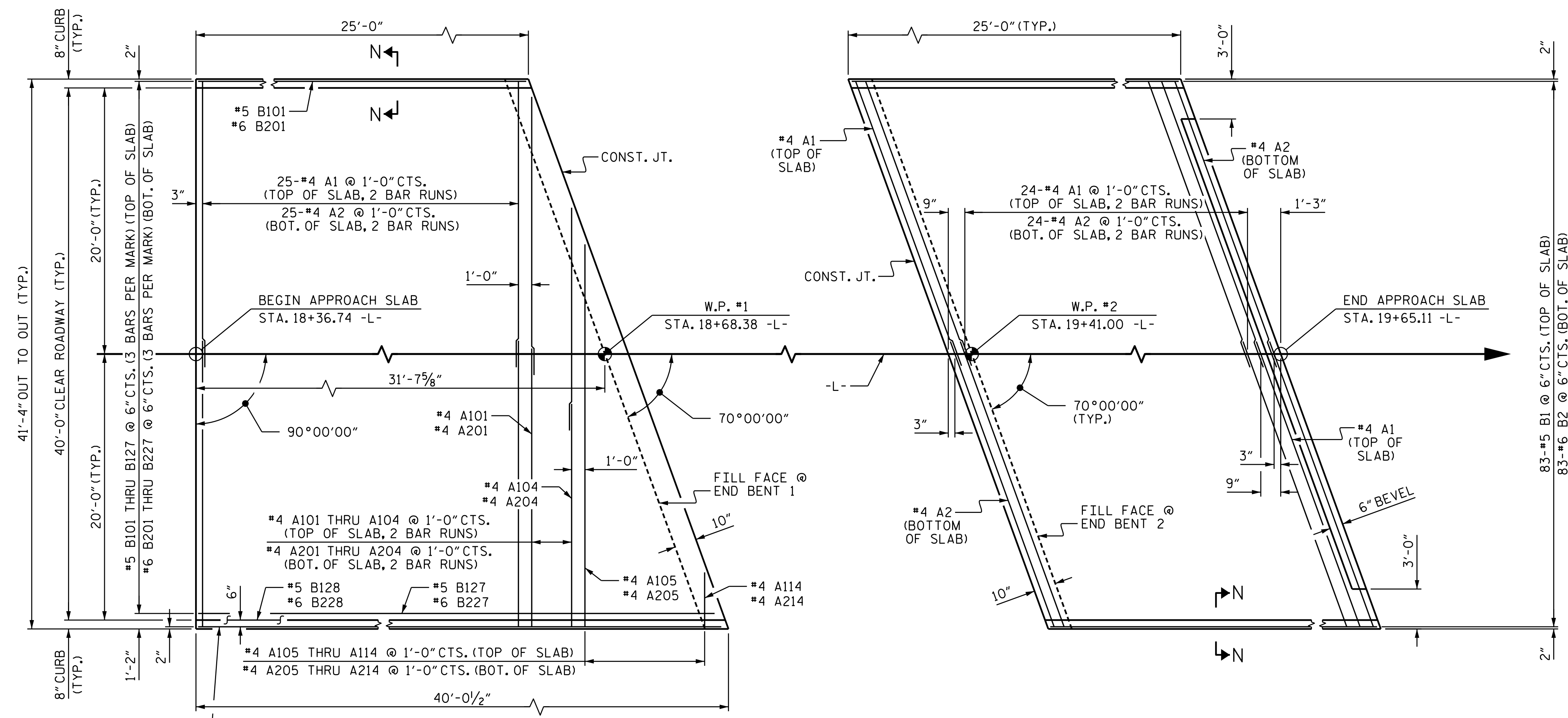
FOR REINFORCED BRIDGE APPROACH FILL FABRIC WALL INCLUDING GEOTEXTILE, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.

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

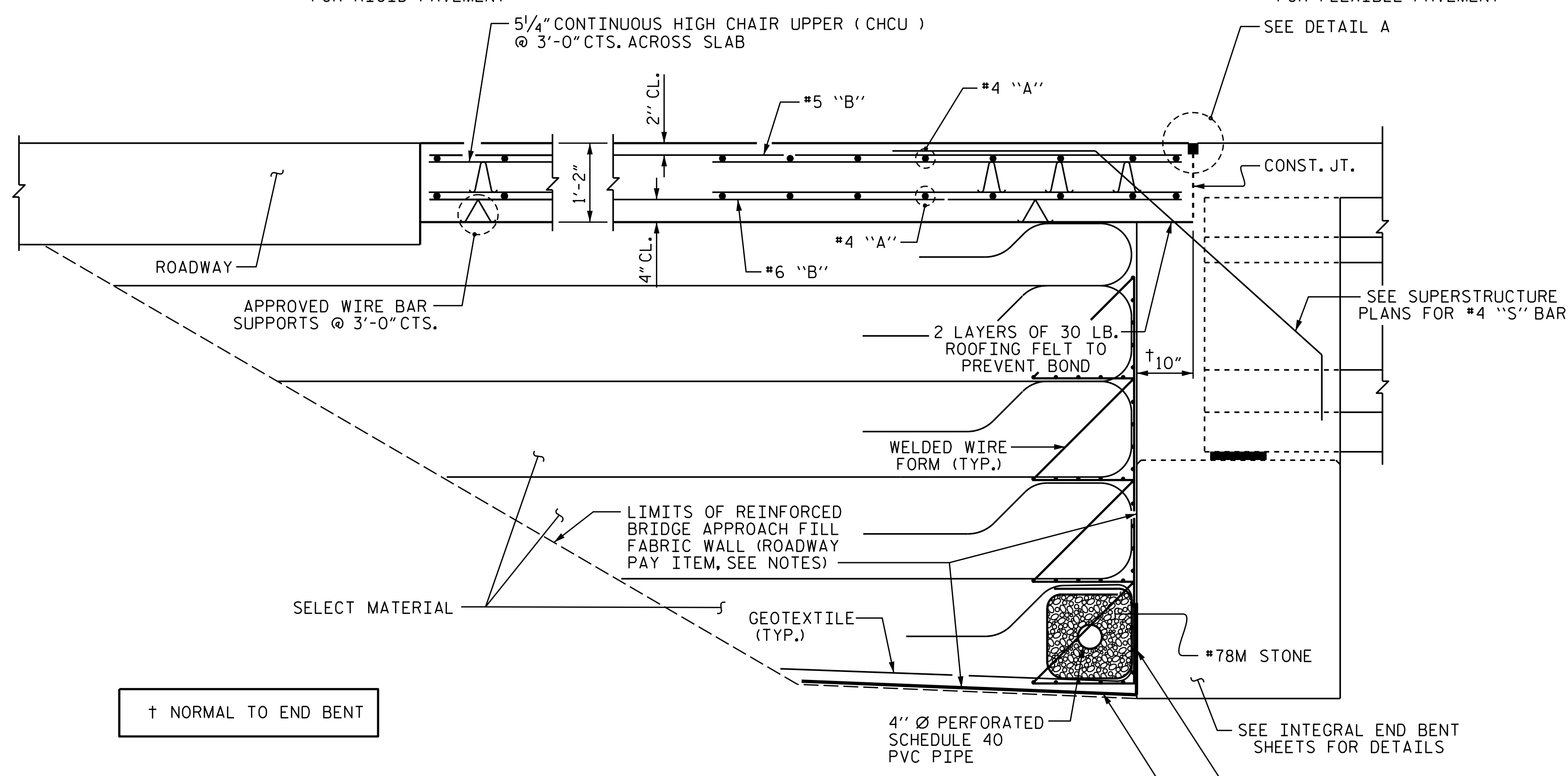
FOR BILL OF MATERIAL, SEE SHEET 2 OF 2

FOR SECTION THRU SLAB @ END BENT 2, SEE SHEET 2 OF 2

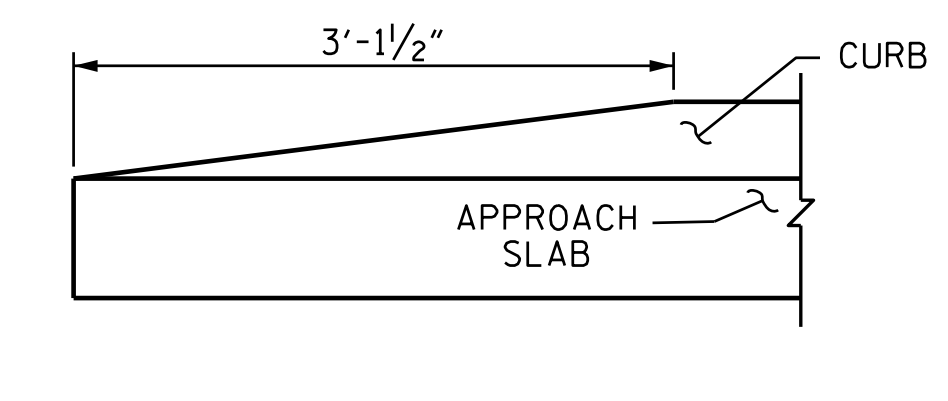


PLAN @ END BENT 1
FOR RIGID PAVEMENT

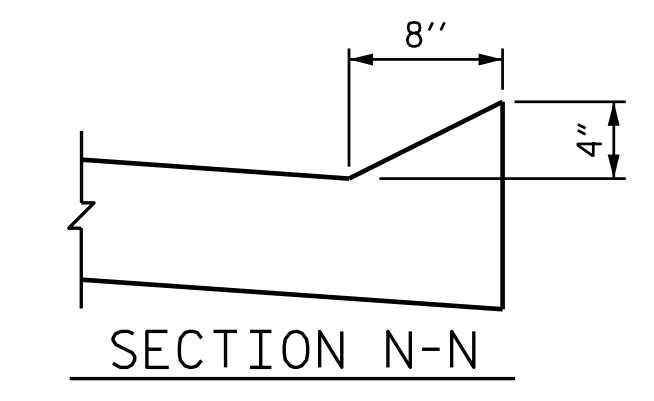
PLAN @ END BENT 2
FOR FLEXIBLE PAVEMENT



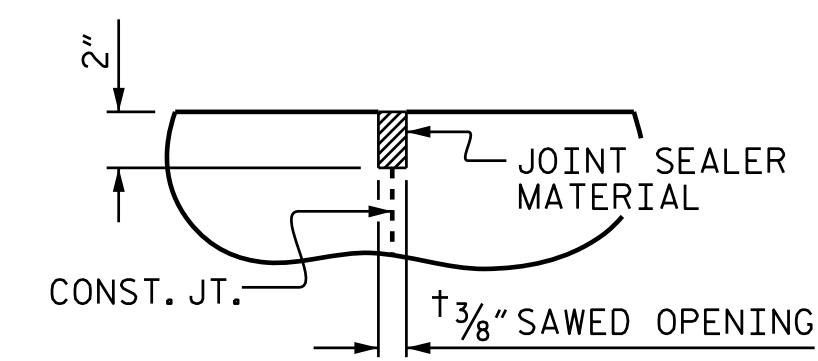
SECTION THRU SLAB @ END BENT 1



END OF CURB WITHOUT SHOULDER BERM GUTTER



SECTION N-N



DETAIL A

PROJECT NO. B-5239
ALAMANCE COUNTY
STATION: 19+04.69 -L-

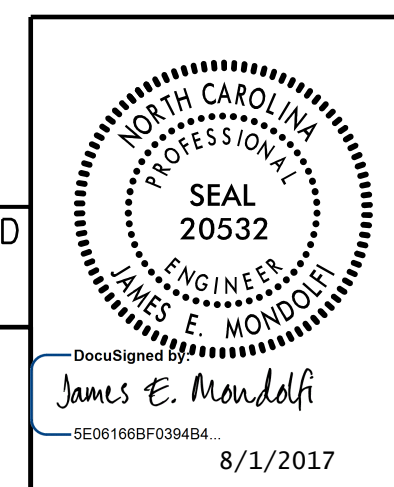
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
BRIDGE APPROACH SLAB
FOR INTEGRAL ABUTMENT
(FOR RIGID PAVEMENT @
END BENT 1) (FOR FLEXIBLE
PAVEMENT @ END BENT 2)

REVISIONS						SHEET NO. S02-27
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 28
2			4			

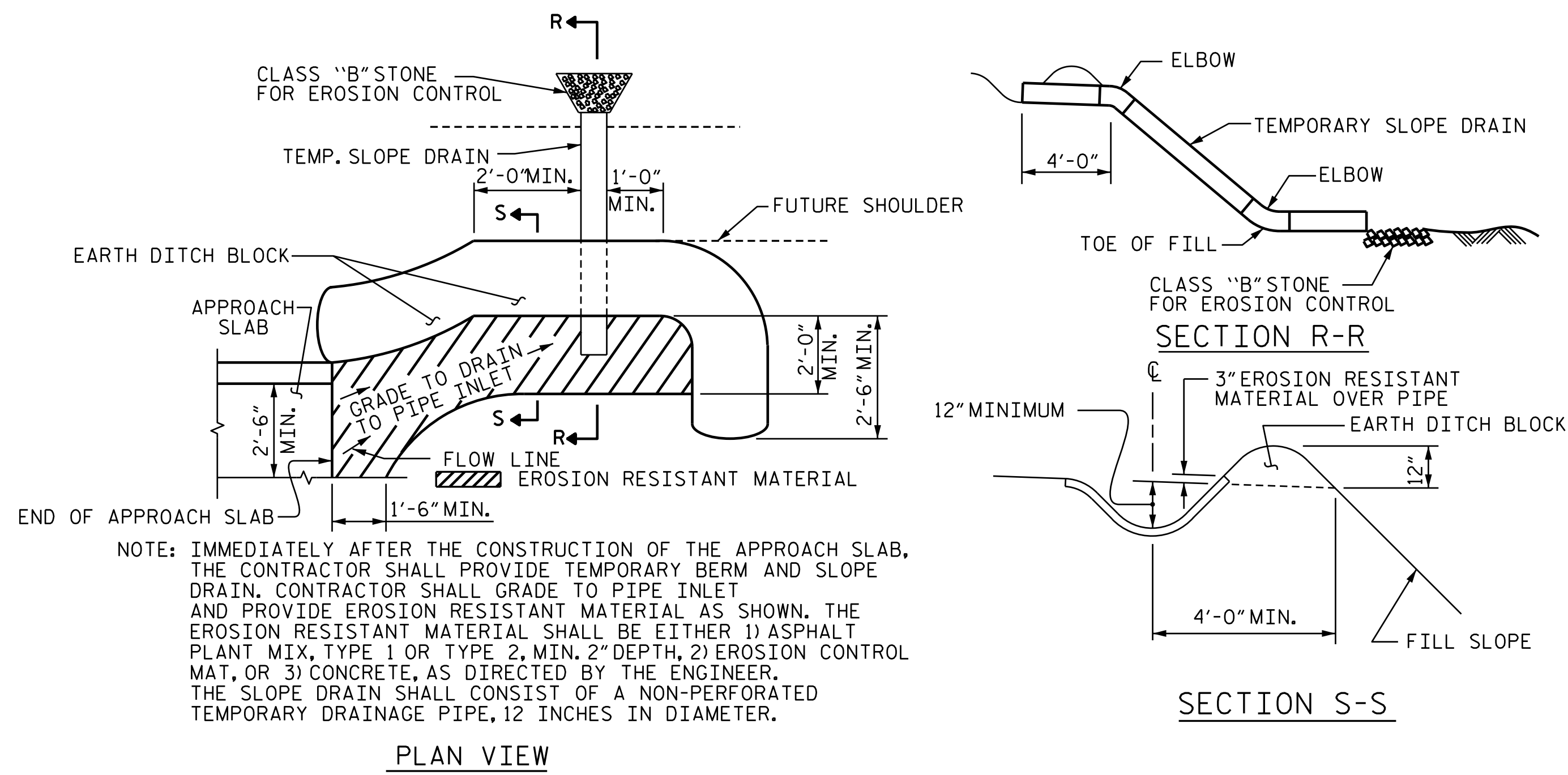
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
MOTT MACDONALD
PO Box 700
Fuquay-Varina, NC 27526
(919) 552-2253
www.mottmac.com
LICENSE NO. F-0669



157077
 C:\Users\126.M.J.L. Res\Plans\B-5239-SMU-AS-000126.dgn
 8/1/2015 9:28:18 AM

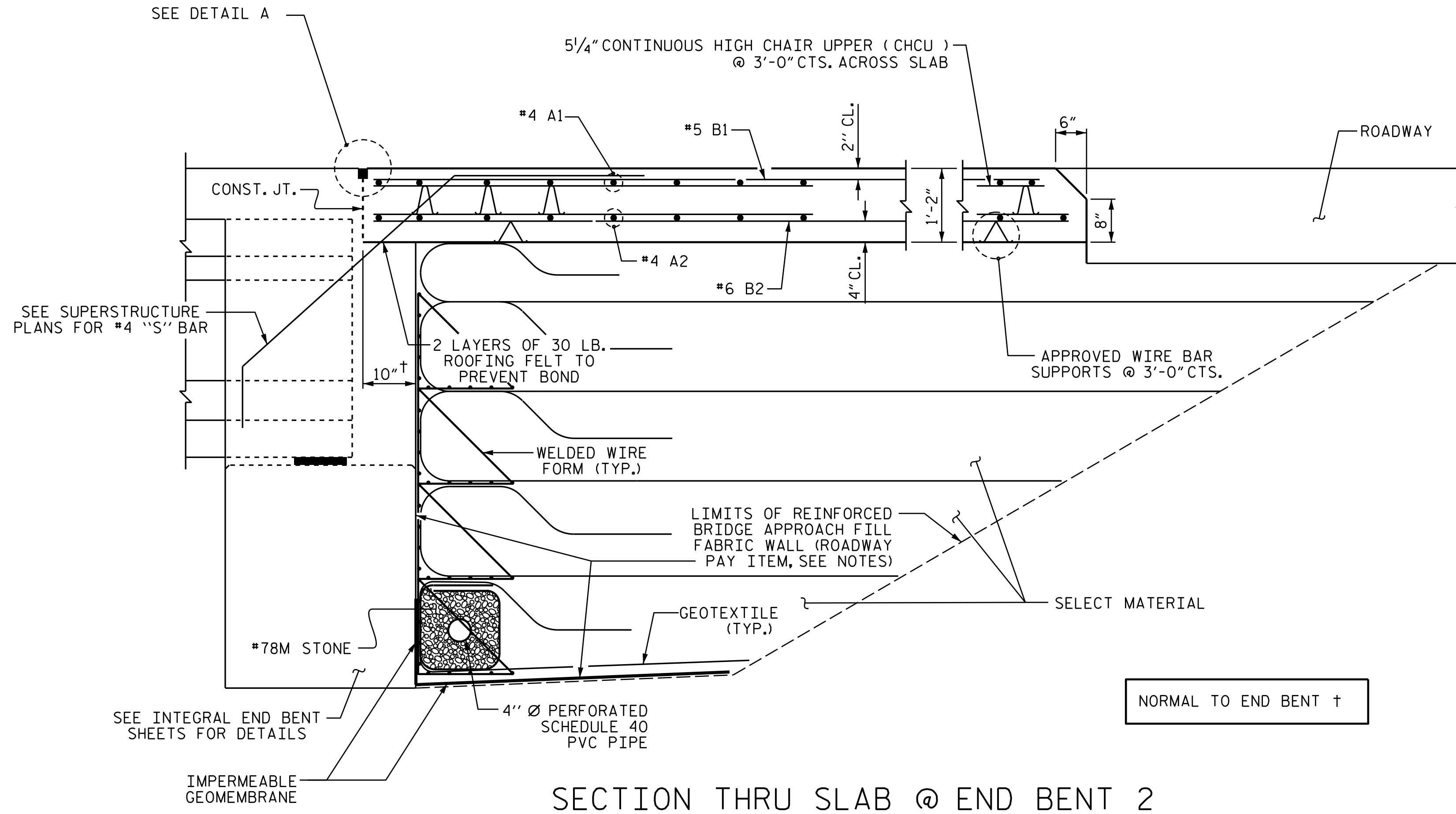
DRAWN BY: J. T. WILLIAMS DATE: 3-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015



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)

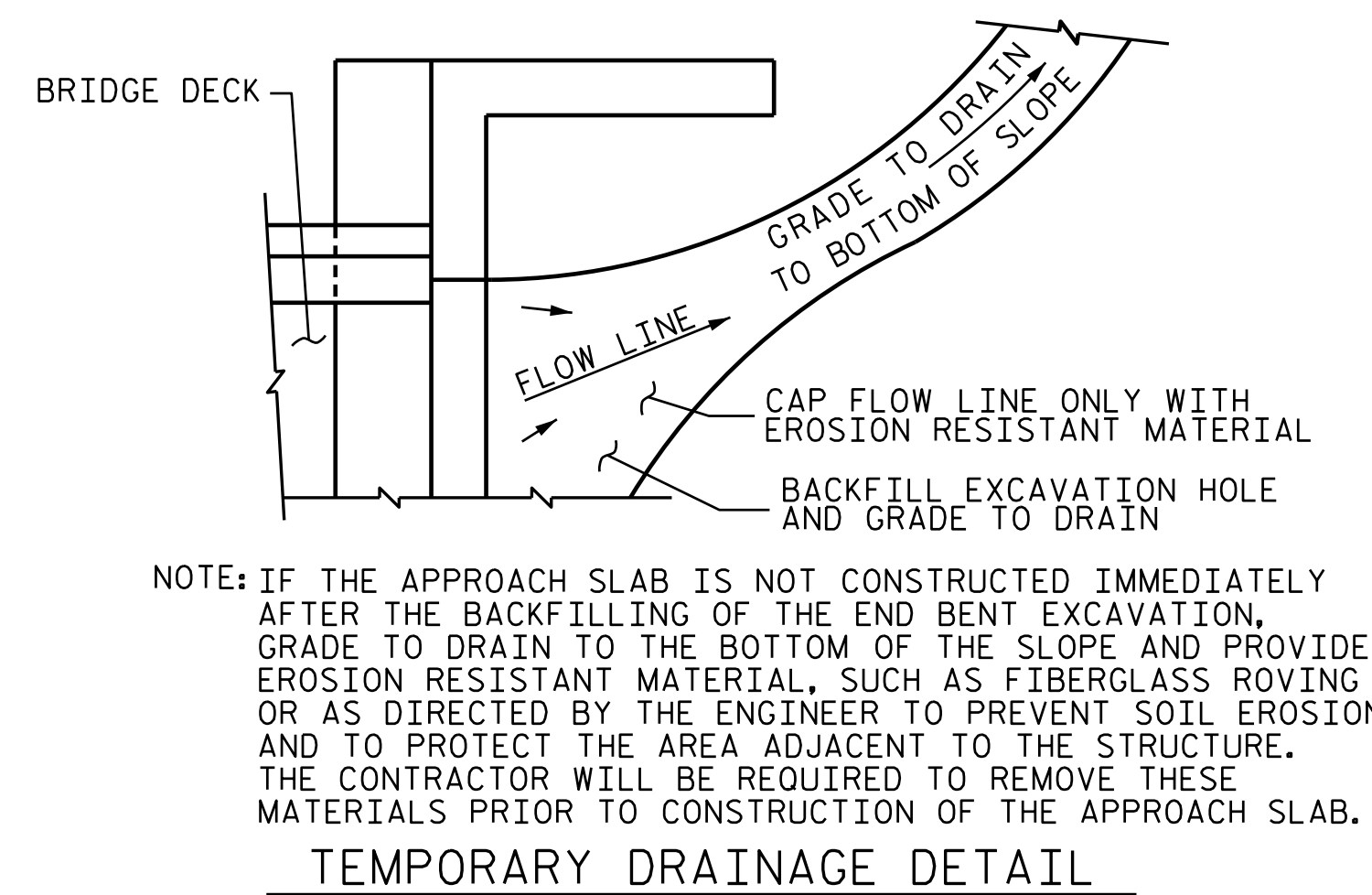


SECTION THRU SLAB @ END BENT 2

BILL OF MATERIAL																	
APPROACH SLAB AT EB 1																	
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	50	#4	STR	21'-6"	718	* B101	3	#5	STR	24'-8"	77	B204	3	#6	STR	26'-3"	118
A2	50	#4	STR	21'-5"	715	* B102	3	#5	STR	25'-2"	79	B205	3	#6	STR	26'-10"	121
						* B103	3	#5	STR	25'-9"	81	B206	3	#6	STR	27'-4"	123
* A101	2	#4	STR	20'-11"	28	* B104	3	#5	STR	26'-3"	82	B207	3	#6	STR	27'-11"	126
* A102	2	#4	STR	19'-6"	26	* B105	3	#5	STR	26'-10"	84	B208	3	#6	STR	28'-5"	128
* A103	2	#4	STR	18'-2"	24	* B106	3	#5	STR	27'-4"	86	B209	3	#6	STR	29'-0"	131
* A104	2	#4	STR	16'-9"	22	* B107	3	#5	STR	27'-11"	87	B210	3	#6	STR	29'-7"	133
* A105	1	#4	STR	28'-9"	19	* B108	3	#5	STR	28'-5"	89	B211	3	#6	STR	30'-1"	136
* A106	1	#4	STR	26'-0"	17	* B109	3	#5	STR	29'-0"	91	B212	3	#6	STR	30'-8"	138
* A107	1	#4	STR	23'-3"	16	* B110	3	#5	STR	29'-7"	93	B213	3	#6	STR	31'-2"	140
* A108	1	#4	STR	20'-6"	14	* B111	3	#5	STR	30'-1"	94	B214	3	#6	STR	31'-9"	143
* A109	1	#4	STR	17'-9"	12	* B112	3	#5	STR	30'-8"	96	B215	3	#6	STR	32'-3"	145
* A110	1	#4	STR	15'-0"	10	* B113	3	#5	STR	31'-2"	98	B216	3	#6	STR	32'-10"	148
* A111	1	#4	STR	12'-3"	8	* B114	3	#5	STR	31'-9"	99	B217	3	#6	STR	33'-5"	151
* A112	1	#4	STR	9'-7"	6	* B115	3	#5	STR	32'-3"	101	B218	3	#6	STR	33'-11"	153
* A113	1	#4	STR	6'-10"	5	* B116	3	#5	STR	32'-10"	103	B219	3	#6	STR	34'-5"	155
* A114	1	#4	STR	4'-1"	3	* B117	3	#5	STR	33'-5"	105	B220	3	#6	STR	35'-0"	158
						* B118	3	#5	STR	33'-11"	106	B221	3	#6	STR	35'-7"	160
A201	2	#4	STR	20'-10"	28	* B119	3	#5	STR	34'-5"	108	B222	3	#6	STR	36'-1"	163
A202	2	#4	STR	19'-5"	26	* B120	3	#5	STR	35'-0"	110	B223	3	#6	STR	36'-8"	165
A203	2	#4	STR	18'-1"	24	* B121	3	#5	STR	35'-7"	111	B224	3	#6	STR	37'-2"	167
A204	2	#4	STR	16'-8"	22	* B122	3	#5	STR	36'-1"	113	B225	3	#6	STR	37'-9"	170
A205	1	#4	STR	28'-9"	19	* B123	3	#5	STR	36'-8"	115	B226	3	#6	STR	38'-3"	172
A206	1	#4	STR	26'-0"	17	* B124	3	#5	STR	37'-2"	116	B227	3	#6	STR	38'-10"	175
A207	1	#4	STR	23'-3"	16	* B125	3	#5	STR	37'-9"	118	B228	2	#6	STR	39'-4"	118
A208	1	#4	STR	20'-6"	14	* B126	3	#5	STR	38'-3"	120						
A209	1	#4	STR	17'-9"	12	* B127	3	#5	STR	38'-10"	122						
A210	1	#4	STR	15'-0"	10	* B128	2	#5	STR	39'-4"	82						
A211	1	#4	STR	12'-3"	8												
A212	1	#4	STR	9'-7"	6	B201	3	#6	STR	24'-8"	111						
A213	1	#4	STR	6'-10"	5	B202	3	#6	STR	25'-2"	113						
A214	1	#4	STR	4'-1"	3	B203	3	#6	STR	25'-9"	116						
													REINFORCING STEEL	LBS.	4902		
													* EPOXY COATED REINFORCING STEEL	LBS.	3694		
													CLASS AA CONCRETE	C. Y.	58.4		

BILL OF MATERIAL						
APPROACH SLAB AT EB 2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* A1	52	#4	STR	22'-10"	793	
A2	52	#4	STR	22'-9"	790	
* B1	83	#5	STR	24'-3"	2099	
B2	83	#6	STR	24'-7"	3065	
					REINFORCING STEEL	LBS. 3855
					* EPOXY COATED REINFORCING STEEL	LBS. 2892
					CLASS AA CONCRETE	C. Y. 44.7

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



TEMPORARY DRAINAGE DETAIL

PROJECT NO. B-5239
 ALAMANCE COUNTY
 STATION: 19+04.69 -L-

SHEET 2 OF 2

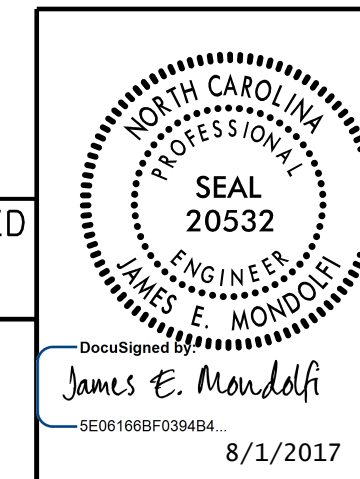
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH SLAB DETAILS

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
 MOTT MACDONALD
 PO Box 700
 Fuquay-Varina, NC 27526
 (919) 552-2253
 www.mottmac.com
 LICENSE NO. F-0669



#157077
 P:\2015\courses\126_M.J.L.Rosa\Plans\B-5239_SMU.LAS_000126.dgn
 8/1/2015 9:28:49 AM

DRAWN BY: J. T. WILLIAMS DATE: 3-2015
 CHECKED BY: J. E. MONDOLFI DATE: 3-2015
 DESIGN ENGINEER OF RECORD: J. E. MONDOLFI DATE: 3-2015

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