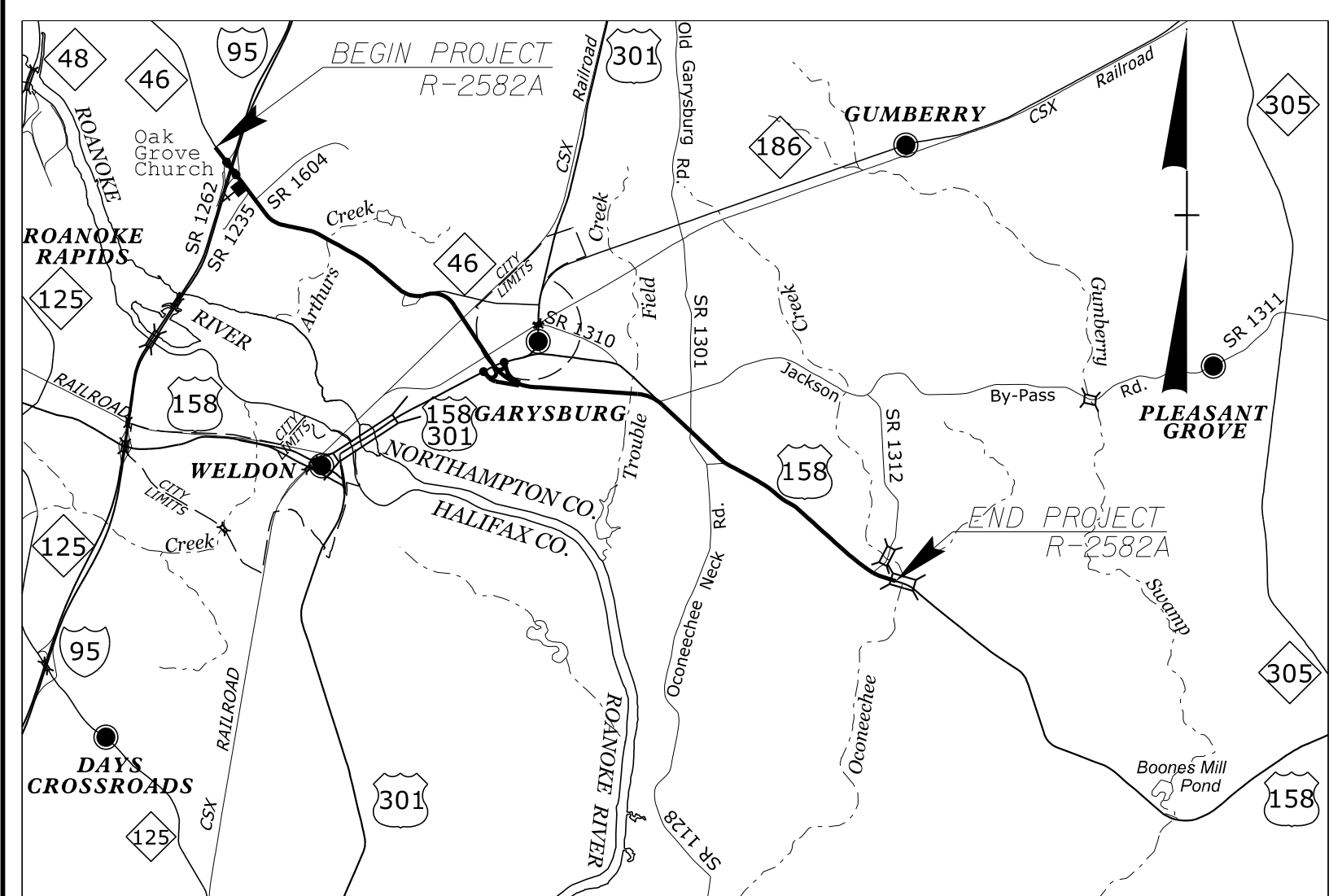


09_08/2019

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2582A		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34472.1.4		PE	
34472.2.4		RW, UTIL.	
34472.2.4		CONST.	

TIP PROJECT: R-2582A

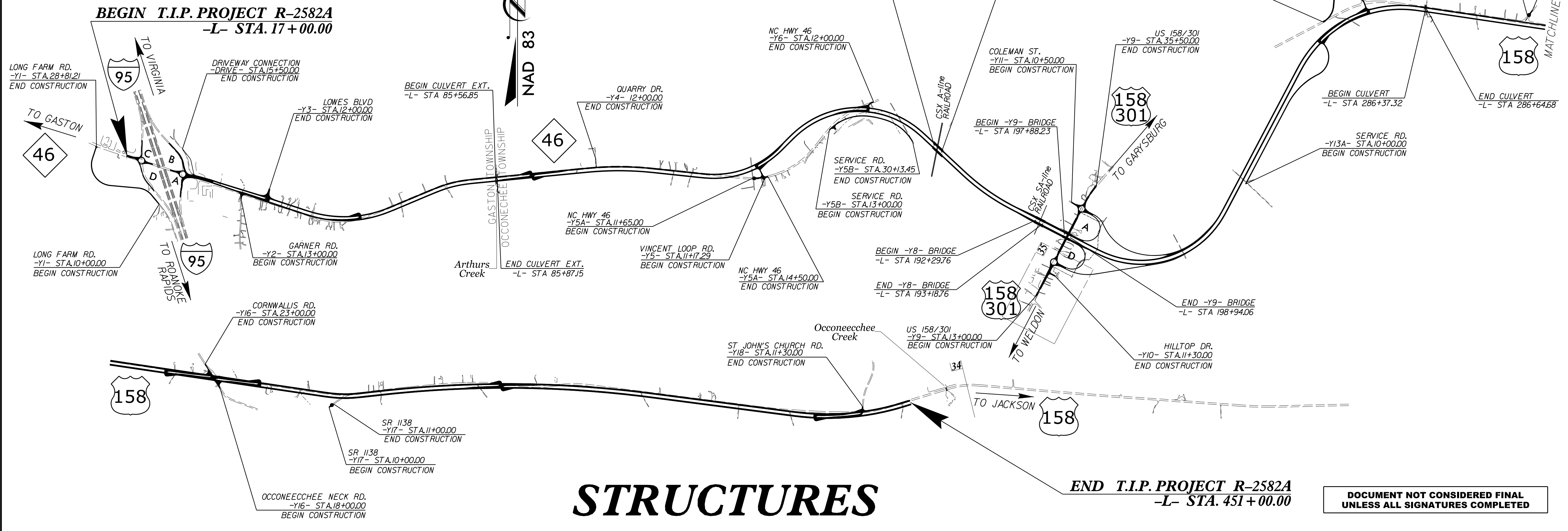
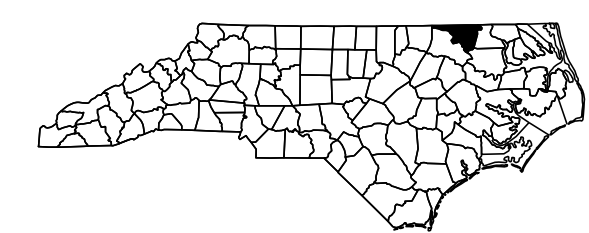


VICINITY MAP

NORTHAMPTON COUNTY

LOCATION: US 158 FROM I-95/NC 46 IN ROANOKE RAPIDS TO SR 1312 (ST. JOHN CHURCH RD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, RESURFACING, GUARDRAIL, SIGNALS AND STRUCTURES.



STRUCTURES

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CONTRACT: C204210

DESIGN DATA

ADT 2017 =	6200
ADT 2037 =	8200
DHV =	11 %
D =	60 %
T =	21 % *
V =	70 MPH
* TTST =	14 DUAL=7
FUNC CLASS =	EXPRESSWAY / FREEWAY
STATEWIDE TIER	

PROJECT LENGTH

LENGTH ROADWAY T.I.P. PROJECT R-2582A =	8.149 MILES
LENGTH STRUCTURE T.I.P. PROJECT R-2582A =	0.098 MILES
TOTAL LENGTH OF T.I.P. PROJECT R-2582A =	8.220 MILES

Prepared in the Office of:
WETHERILL ENGINEERING
1223 Jones Franklin Rd. Raleigh, N.C. 27606
License No. F-0377
Bus: 919.851.8077 Fax: 919.851.8107

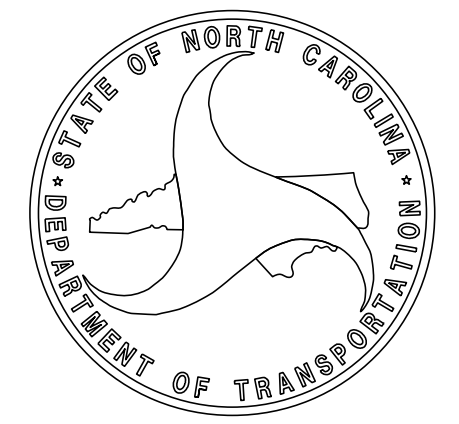
Prepared for:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr.,
Raleigh NC, 27610

2018 STANDARD SPECIFICATIONS

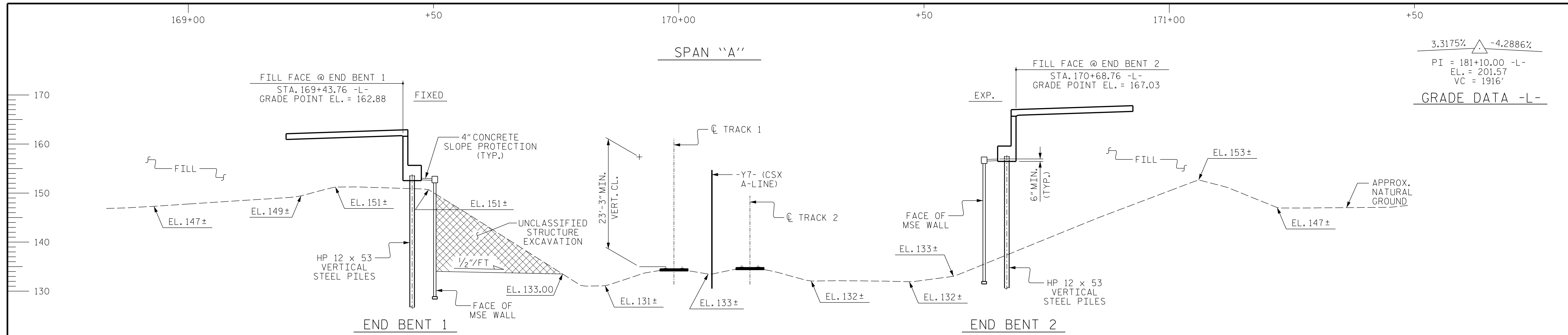
LETTING DATE:
July 16, 2019

EDWARD G. WETHERILL, P.E.
PROJECT ENGINEER

GREG GILLAND, P.E.
PROJECT DESIGN ENGINEER



5/17/2019
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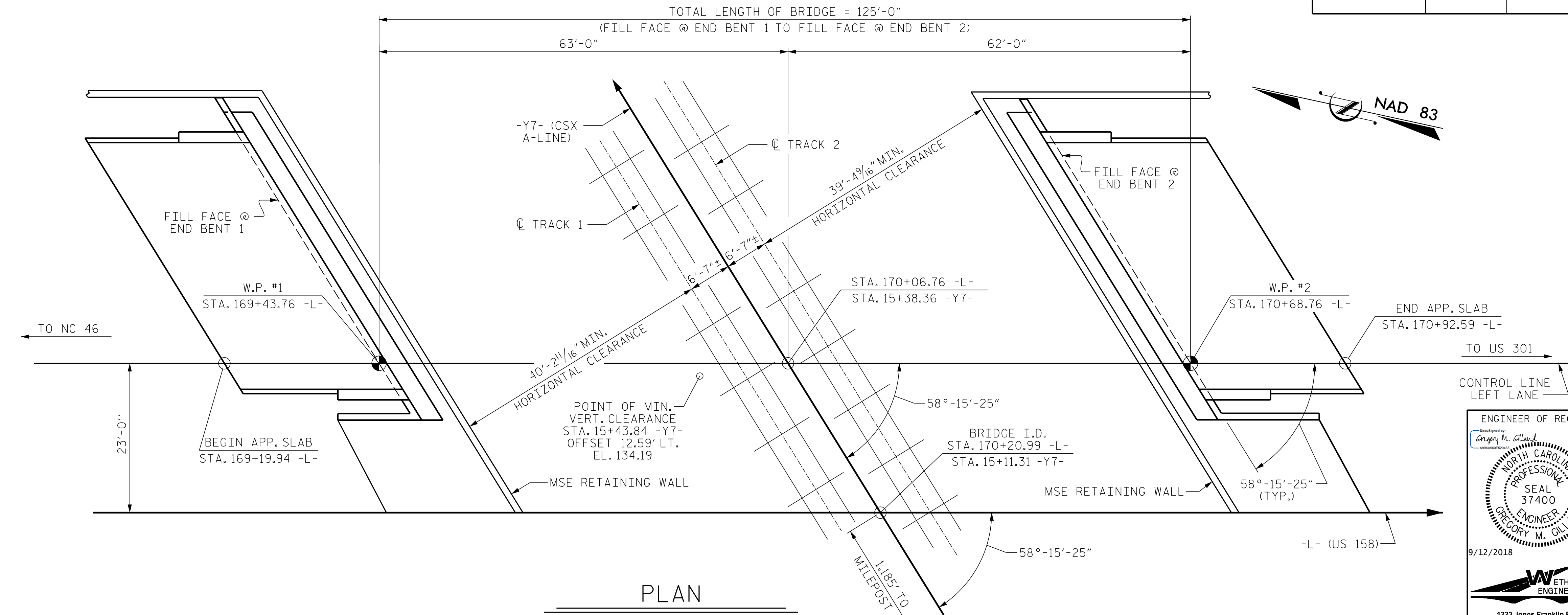


3.3175% Δ -4.2886%
 PI = 181+10.00 -L-
 EL. = 201.57
 VC = 1916'
 GRADE DATA -L-

SECTION ALONG LEFT LANE CONTROL LINE

(SECTIONS AT END BENTS TAKEN AT RIGHT ANGLES)
 (FUTURE TRACKS NOT SHOWN FOR CLARITY)

TOP OF RAIL ELEVATIONS					
-Y7- (TRACK 1)			-Y7- (TRACK 2)		
STATION	LEFT RAIL	RIGHT RAIL	STATION	LEFT RAIL	RIGHT RAIL
10+00.01	132.52	132.54	9+98.94	132.62	---
11+18.35	133.03	133.02	10+21.92	---	132.71
12+12.85	133.40	133.41	11+17.05	133.08	133.05
13+07.36	133.72	133.72	12+13.17	133.45	133.45
14+01.37	133.96	133.93	13+06.40	133.83	133.79
14+91.44	134.11	134.10	14+01.96	134.13	134.14
15+86.93	134.25	134.26	14+91.70	134.38	134.38
16+83.03	134.51	134.51	15+87.00	134.57	134.56
17+78.88	134.66	134.68	16+82.32	134.73	134.74
18+77.10	134.72	134.72	17+78.85	134.85	134.84
19+83.12	134.71	134.73	18+76.54	134.90	134.93
			19+82.44	134.97	134.98



PLAN

(PILES NOT SHOWN IN PLAN VIEW)
 (FUTURE TRACKS NOT SHOWN FOR CLARITY)

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-
 SHEET 1 OF 3
 MILE POST 80.78

ENGINEER OF RECORD:
 Gregory M. Olland
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 37400
 GREGORY M. OLLAND
 9/12/2018
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
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 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 LEFT LANE BRIDGE
 ON US 158 OVER CSX A-LINE
 BETWEEN NC 46 & US 301

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

SHEET NO. S1-1
 TOTAL SHEETS 27

DRAWN BY: D. HODGE DATE: 5/18
 CHECKED BY: G.M. GILLAND DATE: 5/18

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

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NOTES

SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS FOR THE SETTLEMENT GAUGES REQUIRED AT END BENTS No. 1 AND 2.

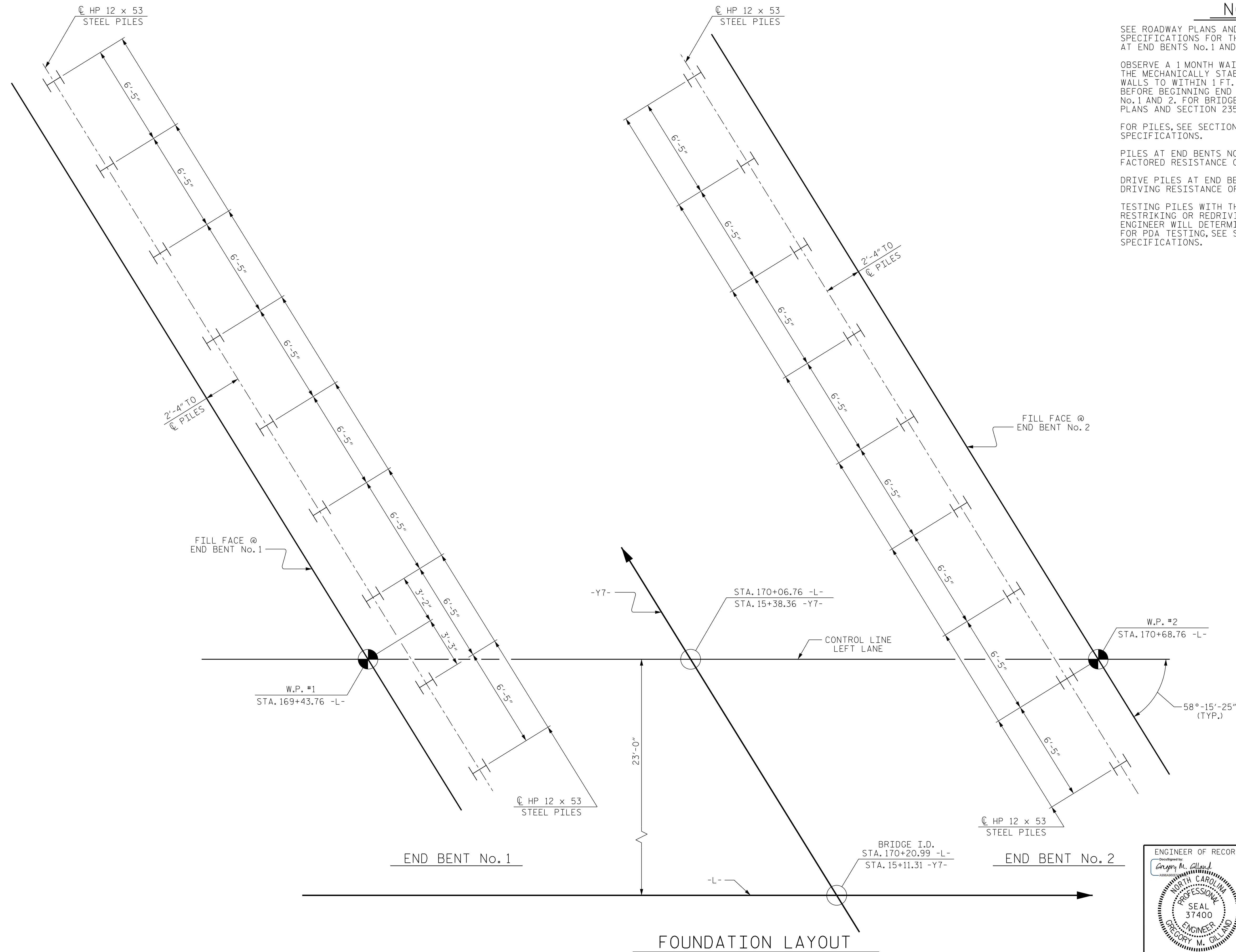
OBSERVE A 1 MONTH WAITING PERIOD AFTER CONSTRUCTING THE MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALLS TO WITHIN 1 FT. OF THE BOTTOM OF CAP ELEVATION BEFORE BEGINNING END BENT CONSTRUCTION AT END BENTS No. 1 AND 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENTS NO. 1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE.

DRIVE PILES AT END BENTS NO. 1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE.

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



PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-

SHEET 2 OF 3

ENGINEER OF RECORD:
 Greg M. Gilland
 NORTH CAROLINA
 PROFESSIONAL
 SEAL
 37400
 ENGINEER
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 1/23/2019
 WETHERILL
 ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 LEFT LANE BRIDGE
 ON US 158 OVER CSX A-LINE
 BETWEEN NC 46 & US 301

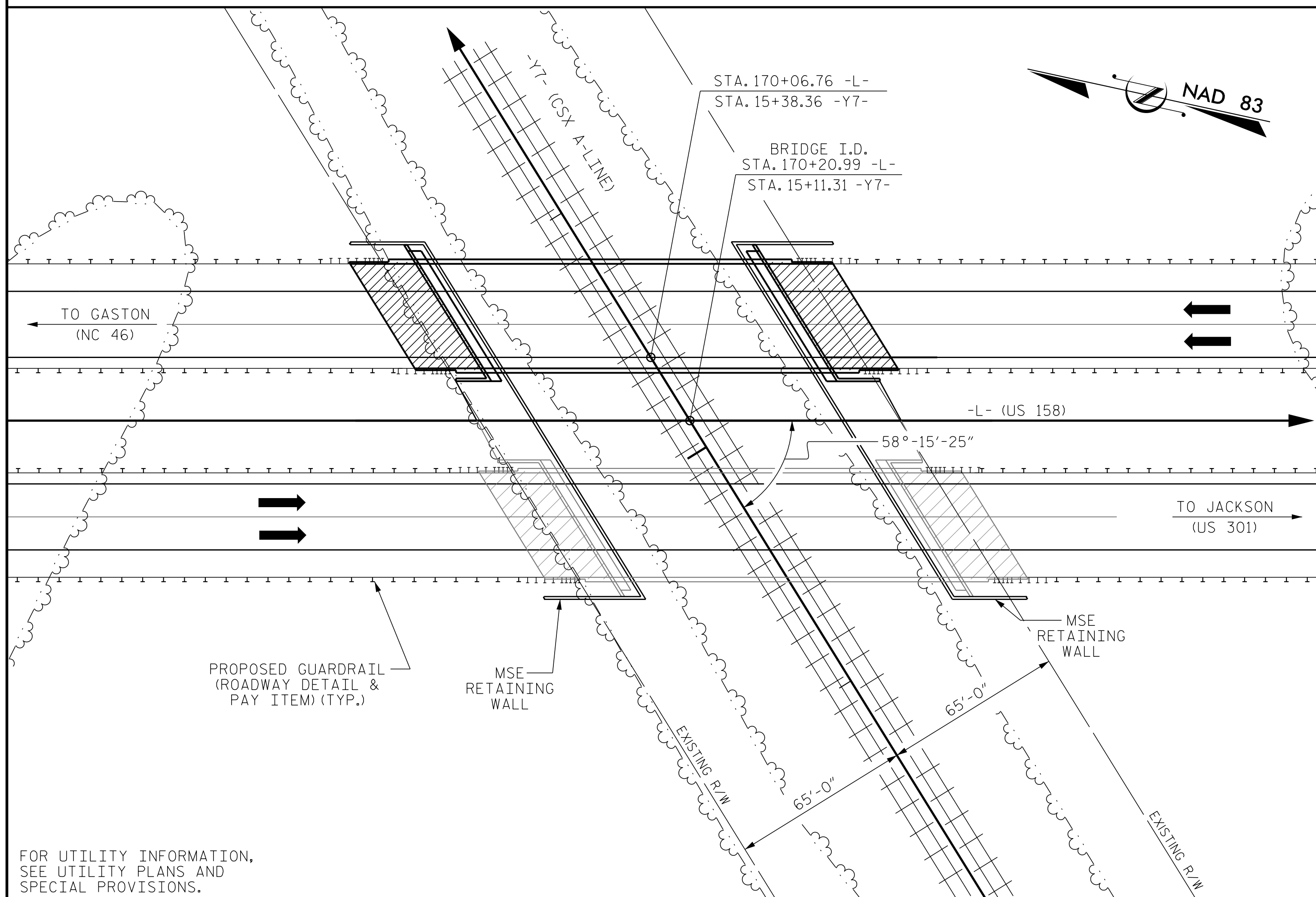
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-2
1			3			TOTAL SHEETS
2			4			27

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

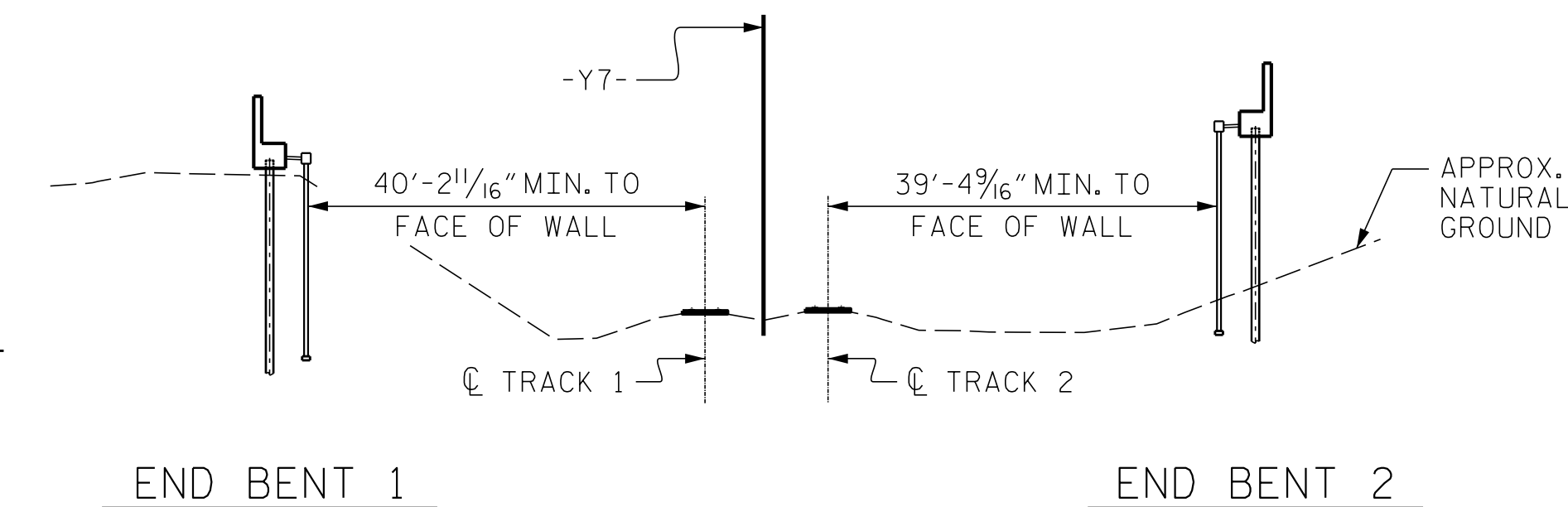
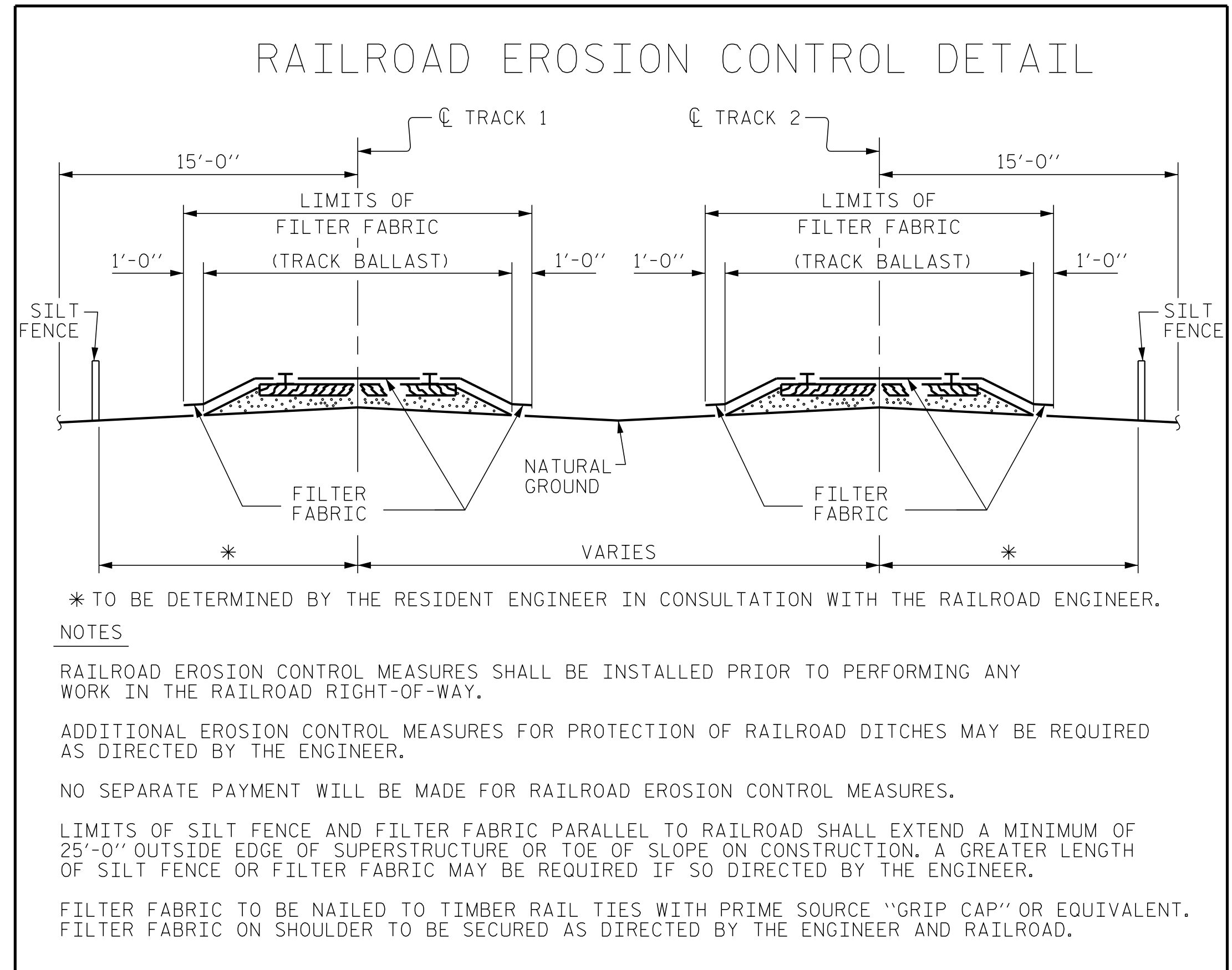
DRAWN BY : D. HODGE DATE : 5/18
 CHECKED BY : G.M. GILLAND DATE : 5/18

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BM #3: R/R SPIKE IN POWER POLE, 392' RT. OF STA. 170+32 -L-, ELEV. = 154.85



LOCATION SKETCH



GENERAL NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR RAILROAD PROVISIONS, SEE SPECIAL PROVISIONS.

FOR RAILROAD PROVISIONS, SEE SPECIAL PROVISIONS. REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

THE RAILROAD TRACK TOP OF RAIL ELEVATIONS ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE TOP OF RAIL ELEVATIONS AND REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 110 FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

ALL EXCAVATED SOIL WITHIN THE RAILROAD RIGHT OF WAY SHALL REMAIN ON CSX PROPERTY AND BE PLACED AT THE DIRECTION OF THE CSX REPRESENTATIVE AND THE ENGINEER.

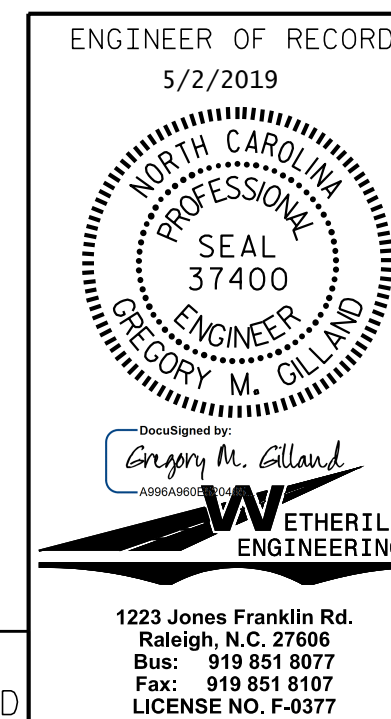
FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

TOTAL BILL OF MATERIAL

	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	MODIFIED 72" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 x 53 STEEL PILES		PILE REDRIVES	CONCRETE BARRIER RAIL	72" CHAIN LINK FENCE	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS
	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	No.	LIN. FT.	EACH	No.	LIN. FT.	EACH	LIN. FT.	LIN. FT.	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE			5,054	5,891		LUMP SUM		4	481.38					286.96	240		LUMP SUM	LUMP SUM
END BENT No. 1					41.8		6,195			9	9	855	5			49		
END BENT No. 2					43.9		6,805			9	9	880	5			52		
TOTAL	1	LUMP SUM	5,054	5,891	85.7	LUMP SUM	13,000	4	481.38	18	18	1,735	10	286.96	240	101	LUMP SUM	LUMP SUM

DRAWN BY: D. HODGE DATE: 5/18
 CHECKED BY: G.M. GILLAND DATE: 5/18

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-

SHEET 3 OF 3

ENGINEER OF RECORD: 5/2/2019

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 LEFT LANE BRIDGE
 ON US 158 OVER CSX A-LINE
 BETWEEN NC 46 & US 301

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-3
1			3			TOTAL SHEETS 27
2			4			

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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	0.940	1.38	A	EL	59.46	1.090	1.15	A	I	95.57	0.80	0.940	1.15	A	EL	59.46	①	
	HL-93 (OPERATING)	N/A		1.78	--	1.35	0.940	1.78	A	EL	59.46	1.090	1.80	A	I	95.57	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.68	60.48	1.75	0.940	2.01	A	EL	59.46	1.090	1.89	A	I	95.57	0.80	0.940	1.68	A	EL	59.46		
	HS-20 (OPERATING)	36.000		2.49	89.64	1.35	0.940	2.60	A	EL	59.46	1.090	2.49	A	I	95.57	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		4.06	54.81	1.40	0.940	6.08	A	EL	59.46	1.090	6.17	A	I	95.57	0.80	0.940	4.06	A	EL	59.46	
		SNGARBS2	20.000		2.90	58.00	1.40	0.940	4.34	A	EL	59.46	1.090	4.26	A	I	95.57	0.80	0.940	2.90	A	EL	59.46	
		SNAGRIS2	22.000		2.70	59.40	1.40	0.940	4.04	A	EL	59.46	1.090	3.92	A	I	95.57	0.80	0.940	2.70	A	EL	59.46	
		SNCOTTS3	27.250		2.02	55.05	1.40	0.940	3.02	A	EL	59.46	1.090	2.99	A	I	95.57	0.80	0.940	2.02	A	EL	59.46	
		SNAGGRS4	34.925		1.64	57.28	1.40	0.940	2.45	A	EL	59.46	1.090	2.40	A	I	95.57	0.80	0.940	1.64	A	EL	59.46	
		SNS5A	35.550		1.61	57.24	1.40	0.940	2.40	A	EL	59.46	1.090	2.40	A	I	95.57	0.80	0.940	1.61	A	EL	59.46	
		SNS6A	39.950		1.45	57.93	1.40	0.940	2.18	A	EL	59.46	1.090	2.16	A	I	95.57	0.80	0.940	1.45	A	EL	59.46	
		SNS7B	42.000		1.38	57.96	1.40	0.940	2.07	A	EL	59.46	1.090	2.09	A	I	95.57	0.80	0.940	1.38	A	EL	59.46	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.77	58.41	1.40	0.940	2.64	A	EL	59.46	1.090	2.62	A	I	95.57	0.80	0.940	1.77	A	EL	59.46	
		TNT4A	33.075		1.77	58.54	1.40	0.940	2.65	A	EL	59.46	1.090	2.57	A	I	95.57	0.80	0.940	1.77	A	EL	59.46	
		TNT6A	41.600		1.43	59.49	1.40	0.940	2.14	A	EL	59.46	1.090	2.20	A	I	95.57	0.80	0.940	1.43	A	EL	59.46	
		TNT7A	42.000		1.43	60.06	1.40	0.940	2.14	A	EL	59.46	1.090	2.16	A	I	95.57	0.80	0.940	1.43	A	EL	59.46	
		TNT7B	42.000		1.45	60.90	1.40	0.940	2.18	A	EL	59.46	1.090	2.06	A	I	95.57	0.80	0.940	1.45	A	EL	59.46	
		TNAGRIT4	43.000		1.40	60.20	1.40	0.940	2.09	A	EL	59.46	1.090	2.00	A	I	95.57	0.80	0.940	1.40	A	EL	59.46	
TNAGT5A	45.000		1.33	59.85	1.40	0.940	1.99	A	EL	59.46	1.090	1.95	A	I	95.57	0.80	0.940	1.33	A	EL	59.46			
TNAGT5B	45.000		③	1.32	59.40	1.40	0.940	1.97	A	EL	59.46	1.090	1.89	A	I	95.57	0.80	0.940	1.32	A	EL	59.46		

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. CONTROLLING DESIGN LOAD RATING ① IS AT TWO LOCATIONS, SEE SUMMARY CHART.
- 2.
- 3.
- 4.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

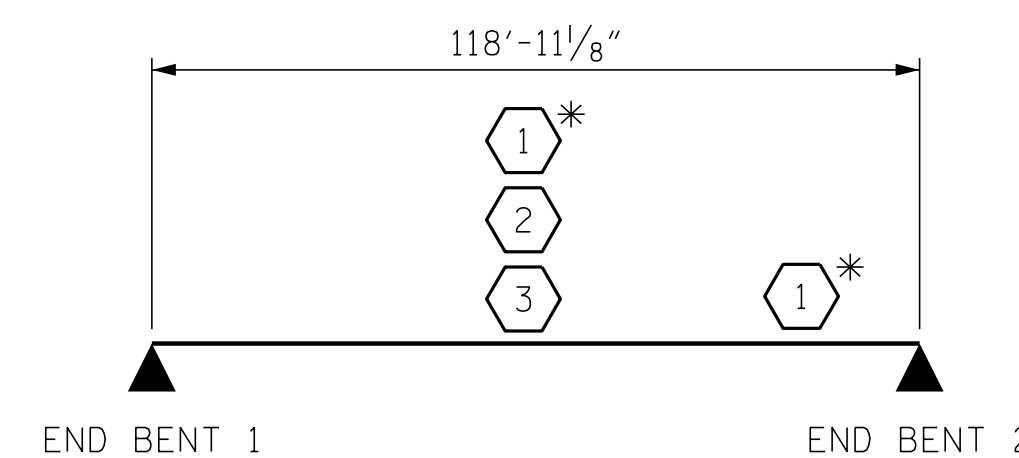
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

* SEE COMMENT 1

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-

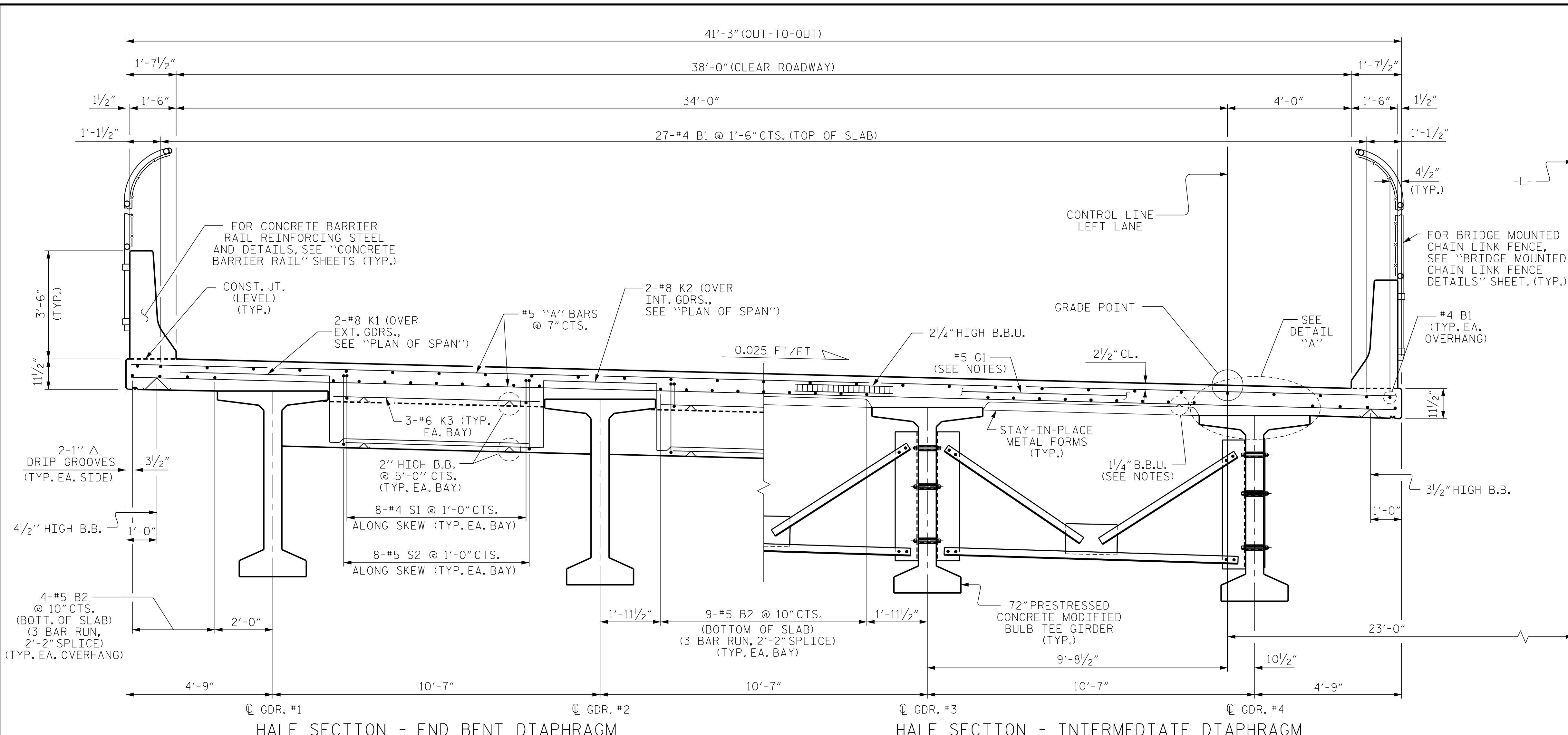
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ASSEMBLED BY : D. HODGE	DATE : 5/18
CHECKED BY : G.M. GILLAND	DATE : 5/18
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD:
Gregory M. Olland
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 37400
 GREGORY M. OLLAND
 9/12/2018

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS (NON-INTERSTATE TRAFFIC) (LEFT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S1-4 TOTAL SHEETS 27



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.

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

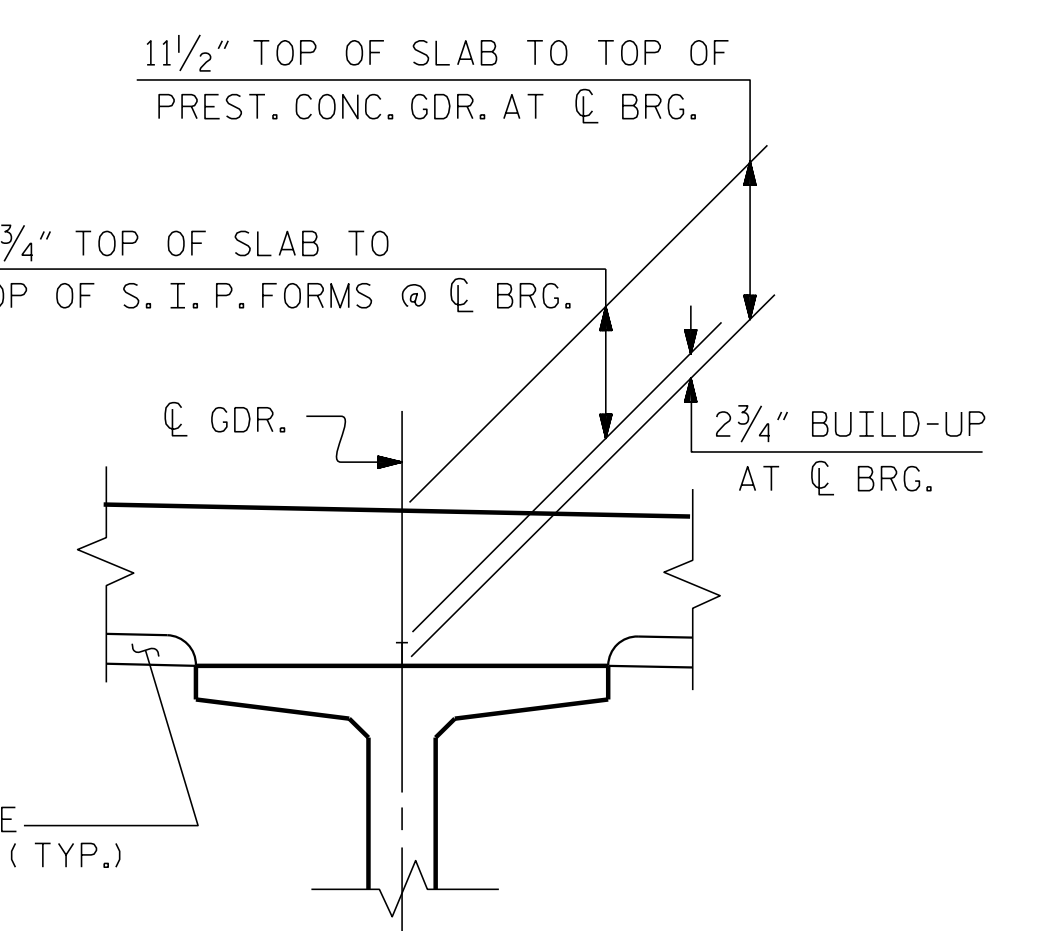
#5 G1 BAR MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR REINFORCING STEEL AND STIRRUPS.

HALF SECTION - END BENT DIAPHRAGM

HALF SECTION - INTERMEDIATE DIAPHRAGM

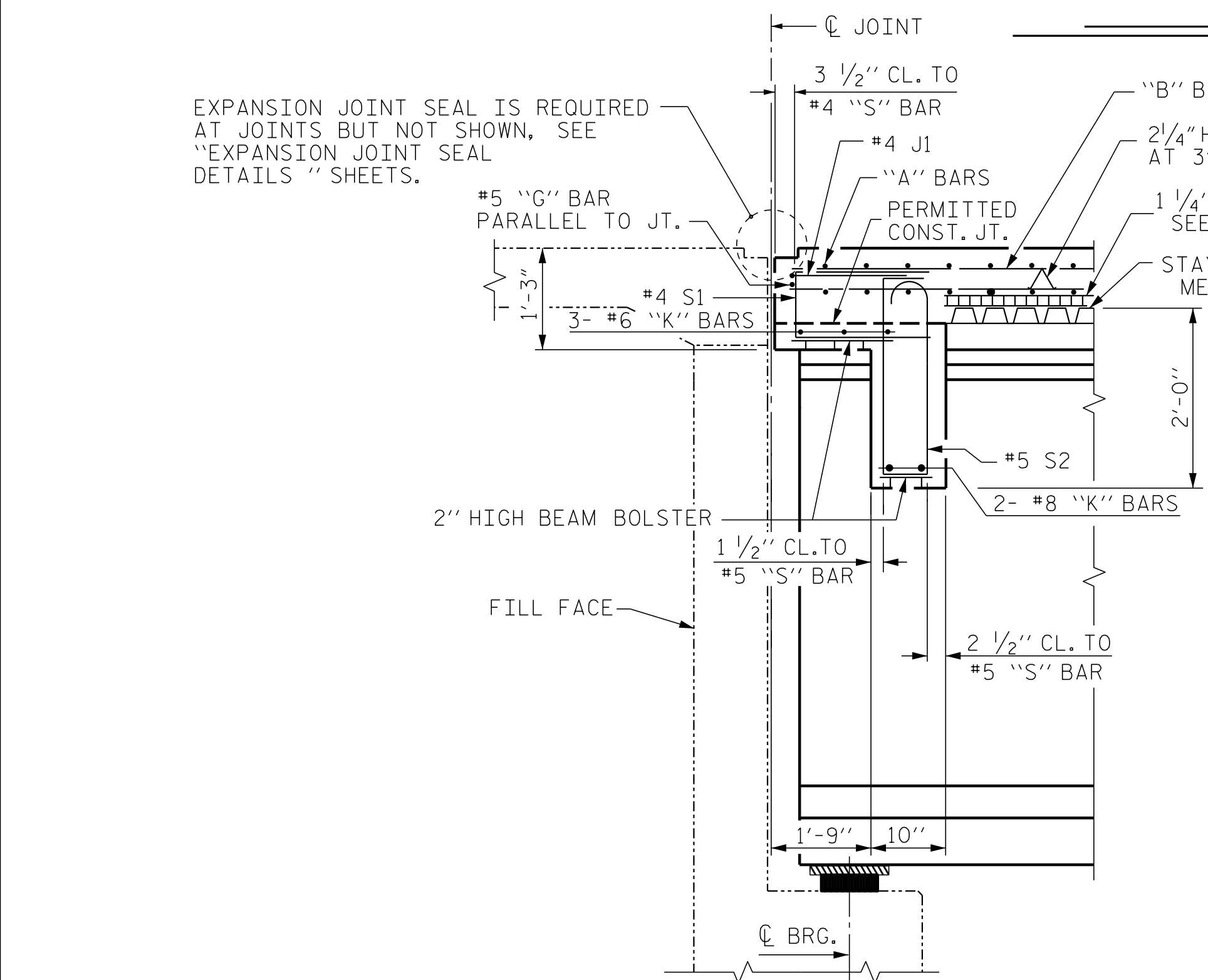
TYPICAL SECTION

SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 72" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET FOR DETAILS

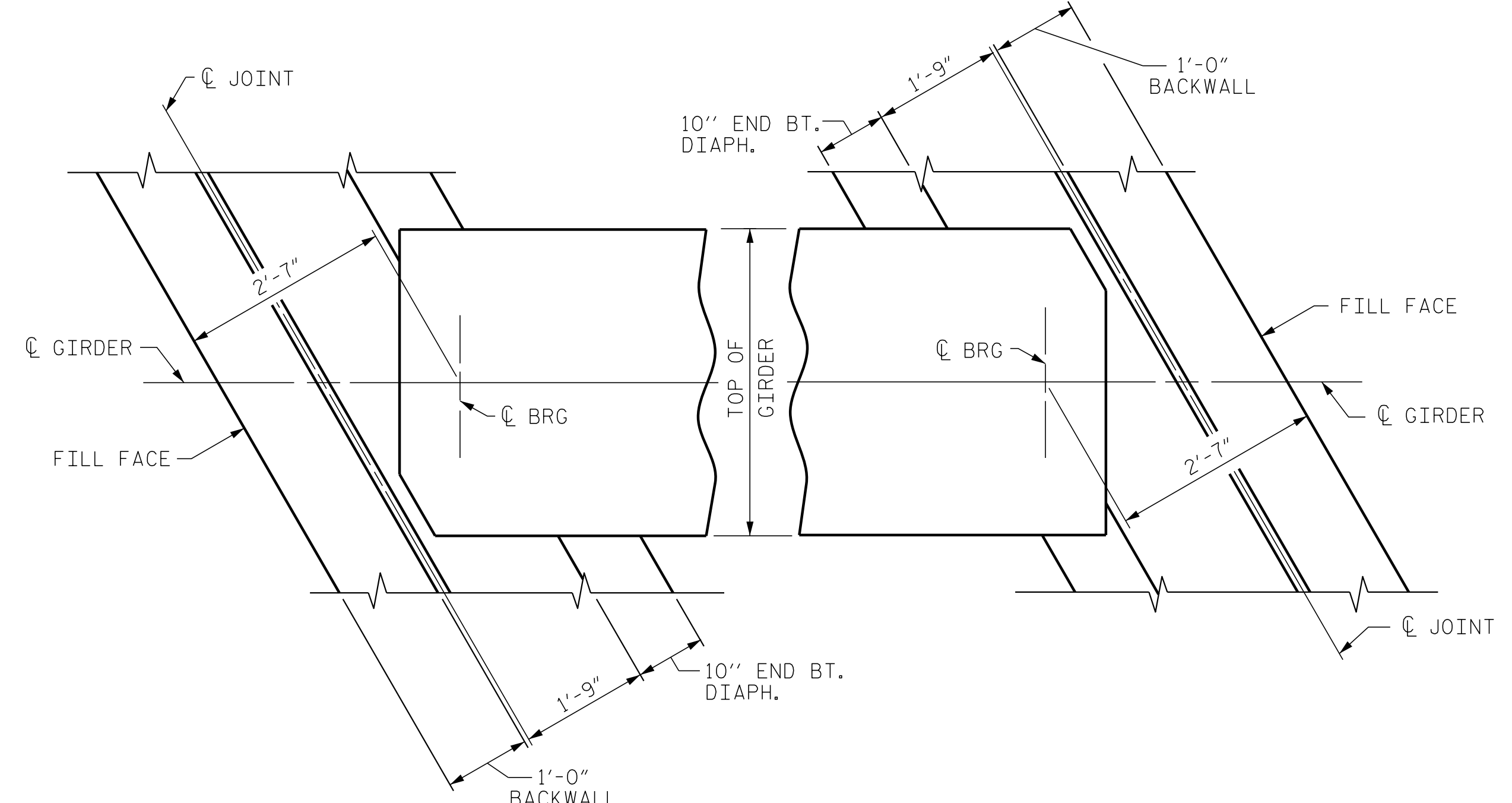


DETAIL "A"

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-



SECTION THRU END BENT DIAPHRAGM



END BENT No. 1 DIAPHRAGM

END BENT No. 2 DIAPHRAGM

PLAN

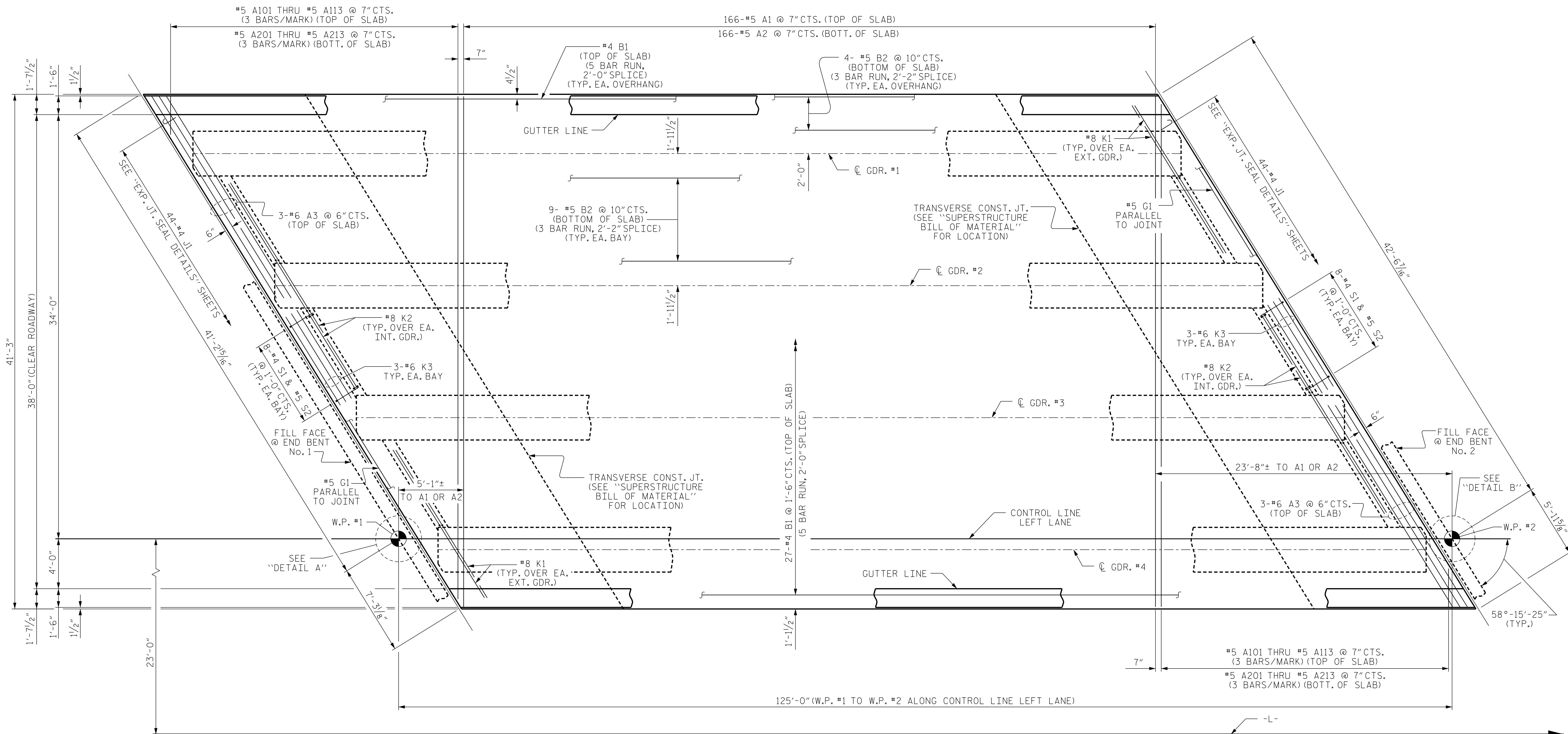
DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

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DRAWN BY: D. HODGE DATE: 3/18
 CHECKED BY: B.C. HUNT DATE: 3/18

ENGINEER OF RECORD:
Gregory M. Olland
 NORTH CAROLINA PROFESSIONAL ENGINEER
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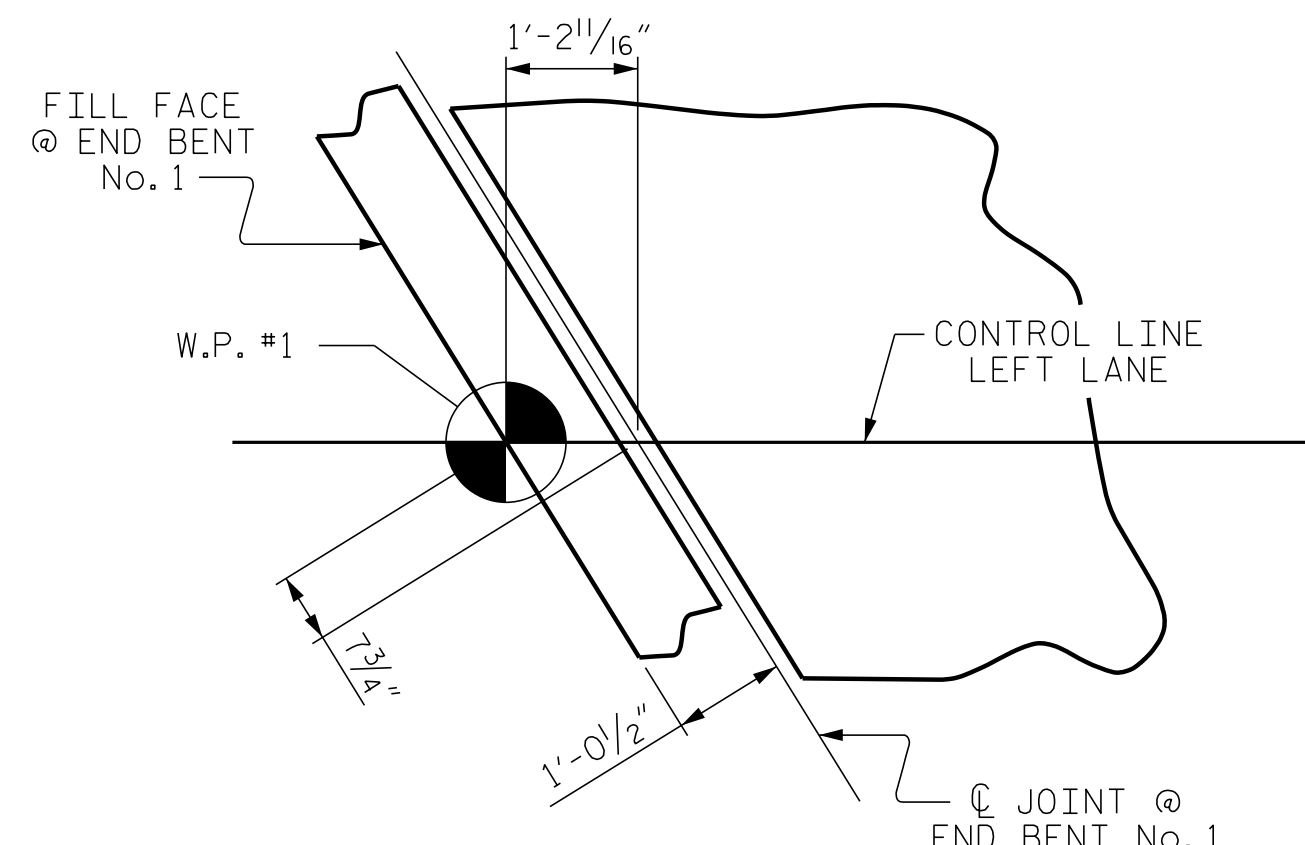
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE TYPICAL SECTION (LEFT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
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SHEET NO. S1-5					TOTAL SHEETS 27



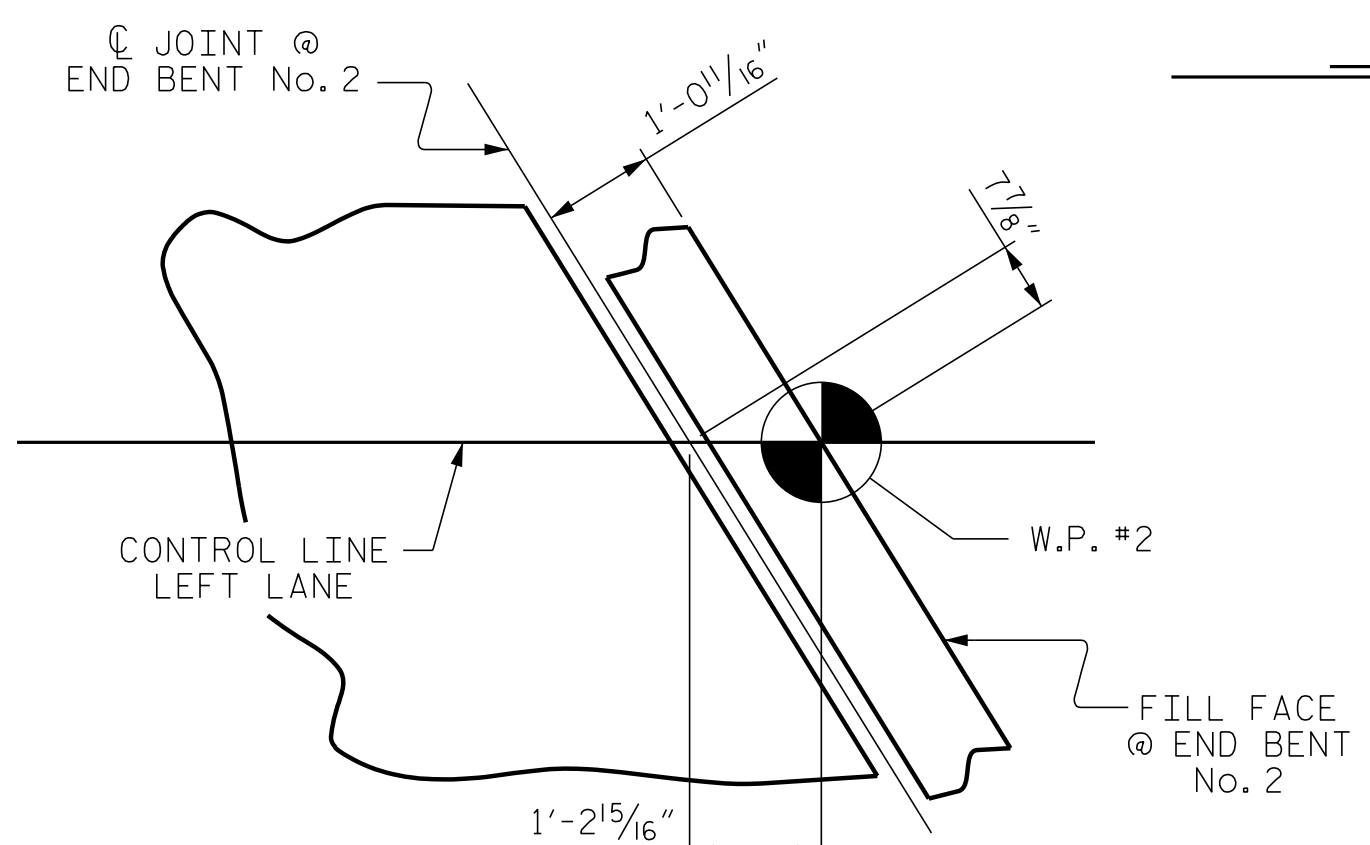
PLAN OF SPAN "A"

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-

NOTES :
 FOR CONCRETE BARRIER RAIL DETAILS AND REINFORCING STEEL, SEE "CONCRETE BARRIER RAIL" SHEETS.
 FOR LOCATIONS OF INTERMEDIATE STEEL DIAPHRAGMS, SEE "FRAMING PLAN" SHEET.



DETAIL A



DETAIL B

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN
 (LEFT LANE)

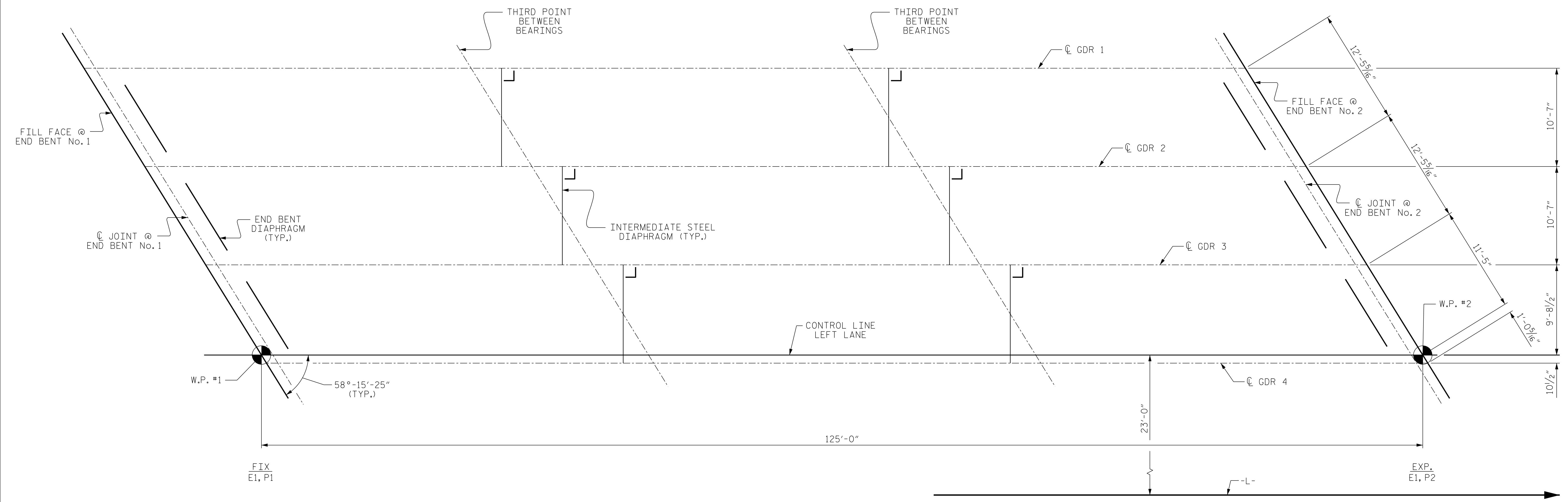
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SHEET NO. S1-6
 TOTAL SHEETS 27

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SPAN A

FRAMING PLAN

FOR LOCATION OF BOLT HOLES IN GIRDERS SEE SHEET ENTITLED "PRESTRESSED CONCRETE GIRDER DETAILS"

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-

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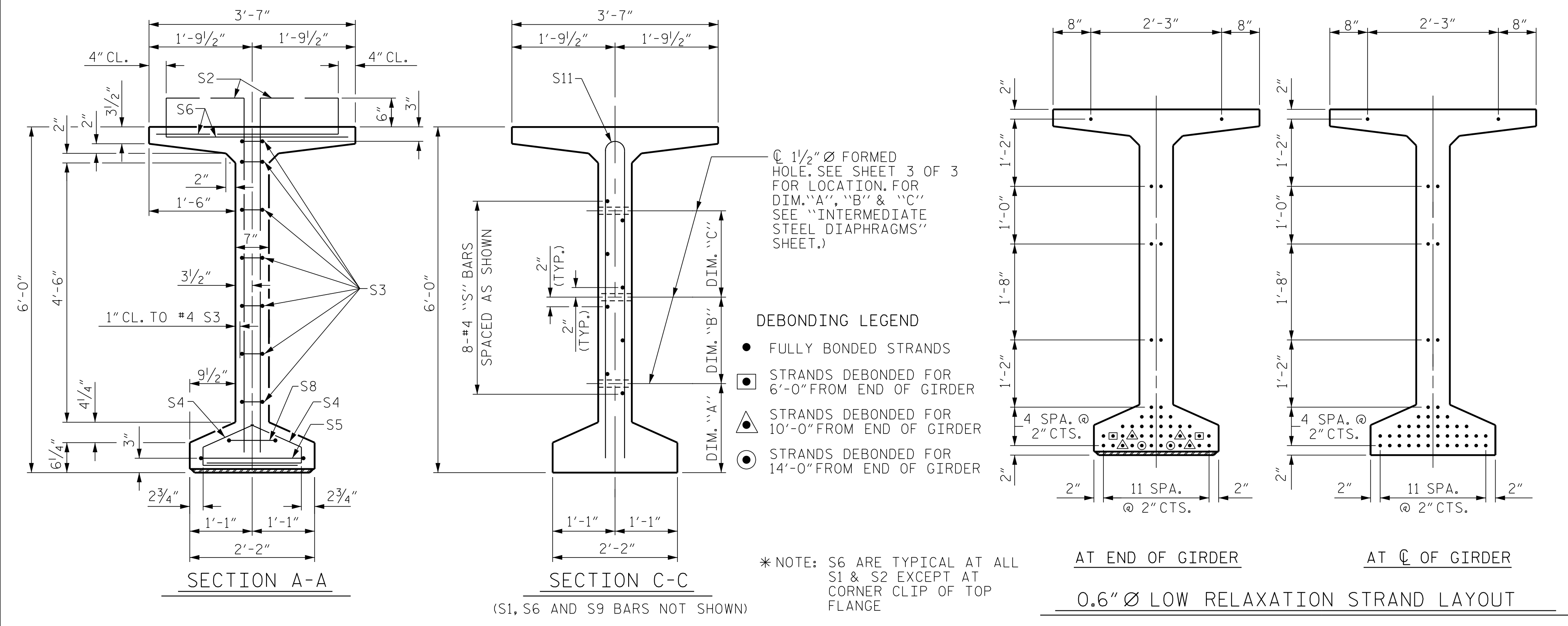
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STATE OF NORTH CAROLINA
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 RALEIGH

SUPERSTRUCTURE
 FRAMING PLAN
 (LEFT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-7
1			3			TOTAL SHEETS
2			4			27



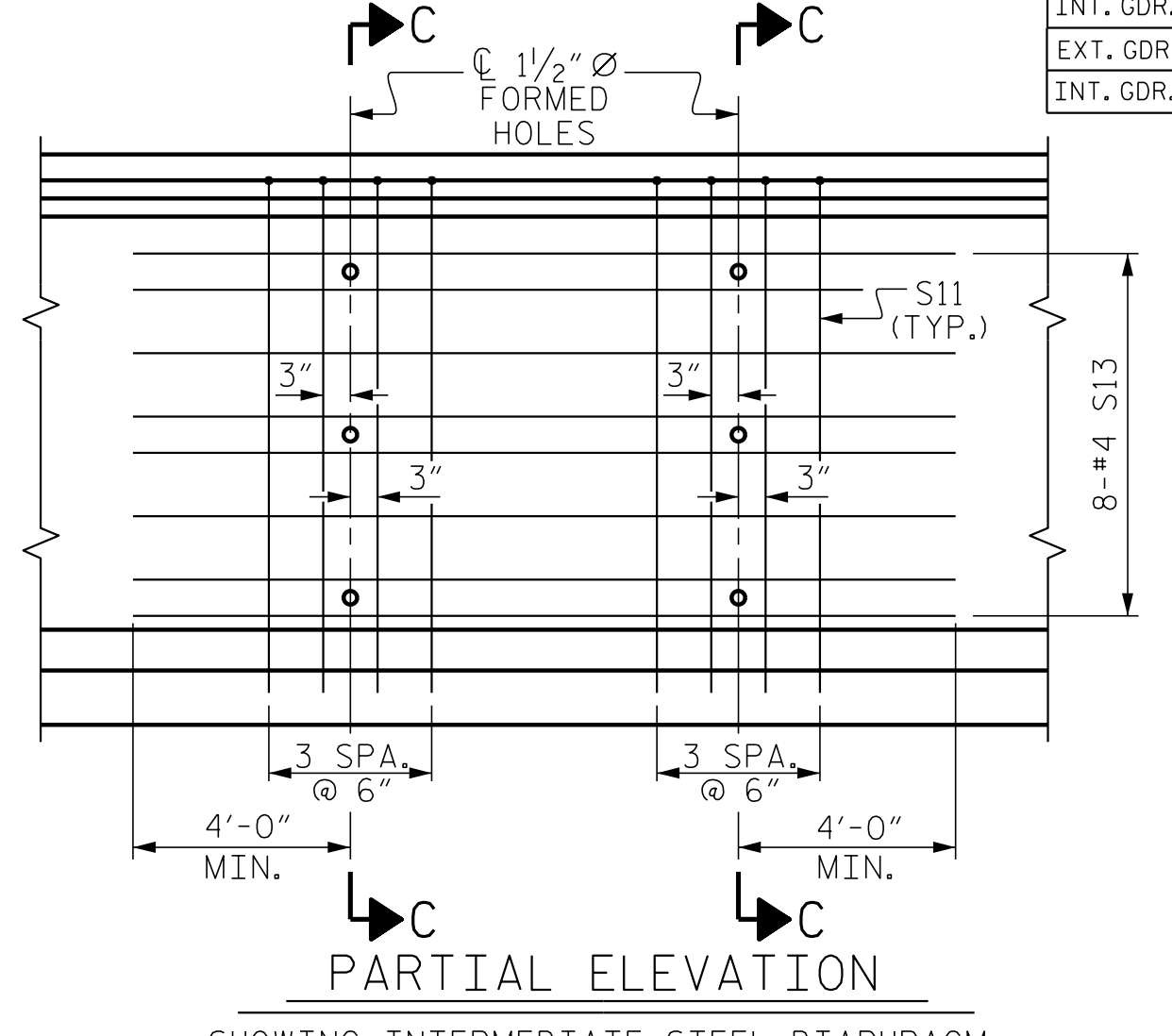
AT END OF GIRDER AT C OF GIRDER
0.6" Ø LOW RELAXATION STRAND LAYOUT

① 1/2" Ø FORMED HOLE. SEE SHEET 3 OF 3 FOR LOCATION. FOR DIM. "A", "B" & "C" SEE "INTERMEDIATE STEEL DIAPHRAGMS" SHEET.)

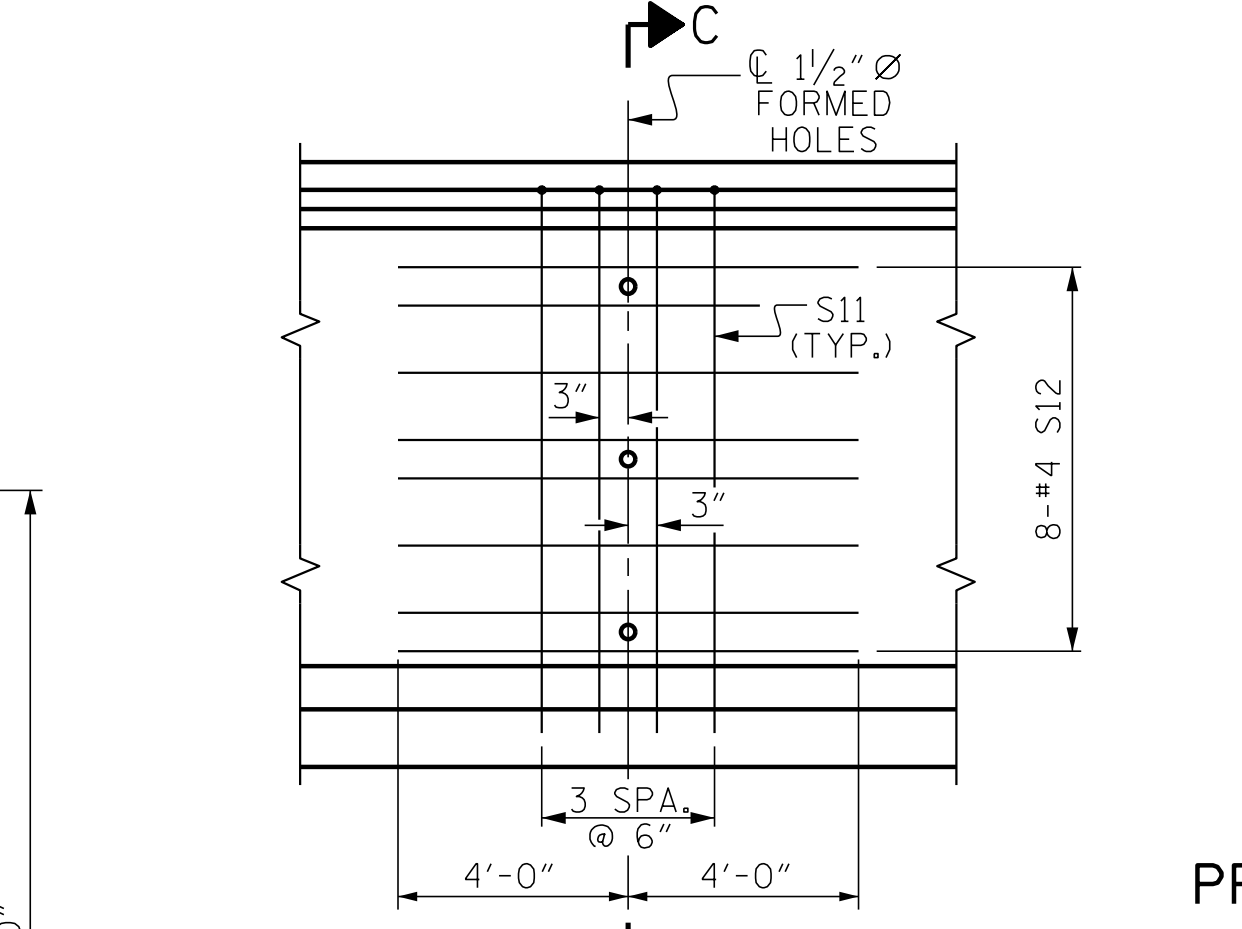
DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
- ▲ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 14'-0" FROM END OF GIRDER

* NOTE: S6 ARE TYPICAL AT ALL S1 & S2 EXCEPT AT CORNER CLIP OF TOP FLANGE



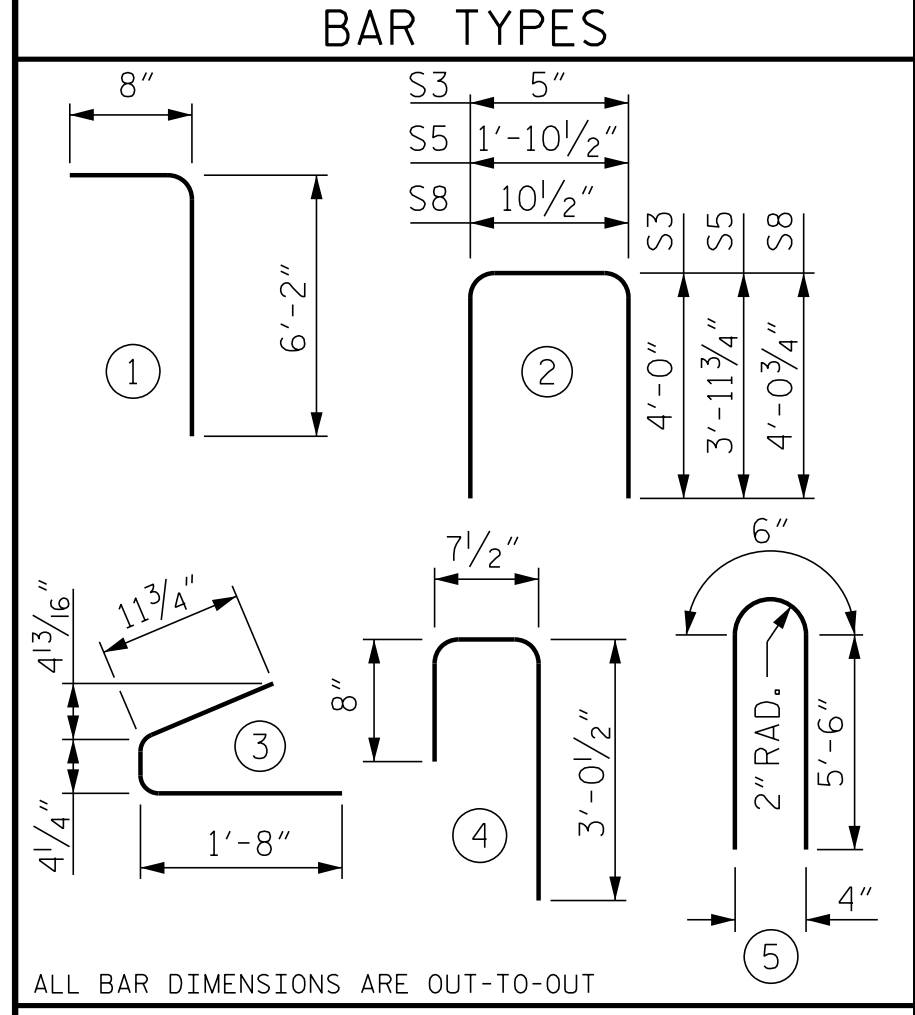
PARTIAL ELEVATION
SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR INTERIOR GIRDER



PARTIAL ELEVATION
SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR EXTERIOR GIRDER

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

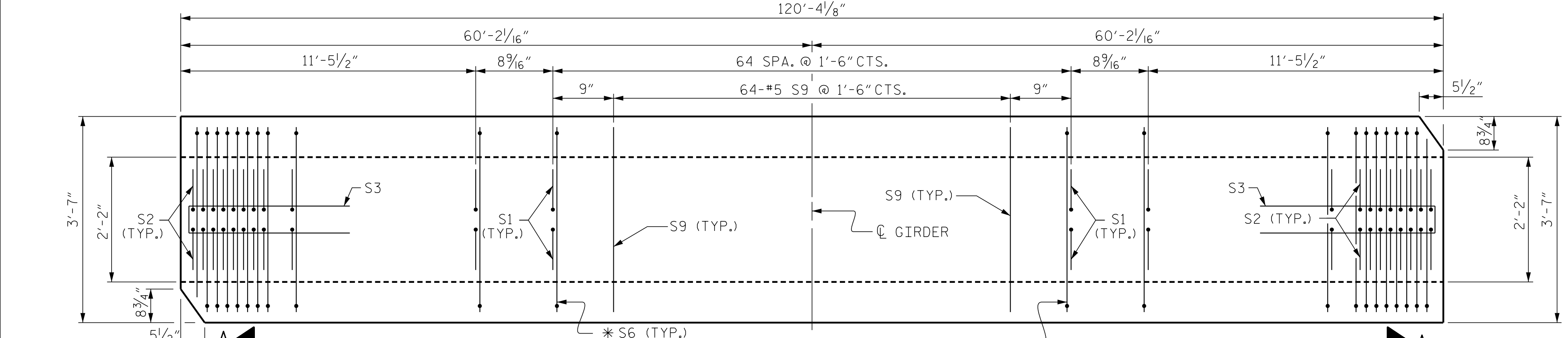
REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	206	#4	1	6'-10"	940
S2	32	#5	1	6'-10"	228
S3	14	#4	2	8'-5"	79
S4	108	#4	3	3'-0"	216
S5	2	#5	2	9'-10"	21
S6	236	#5	4	4'-4"	1067
S8	2	#5	2	9'-0"	19
S9	64	#5	STR	3'-3"	217
EXT. GDR. S11	8	#5	5	11'-6"	96
INT. GDR. S11	16	#5	5	11'-6"	192
EXT. GDR. S12	16	#4	STR	8'-0"	86
INT. GDR. S13	16	#4	STR	14'-7"	156



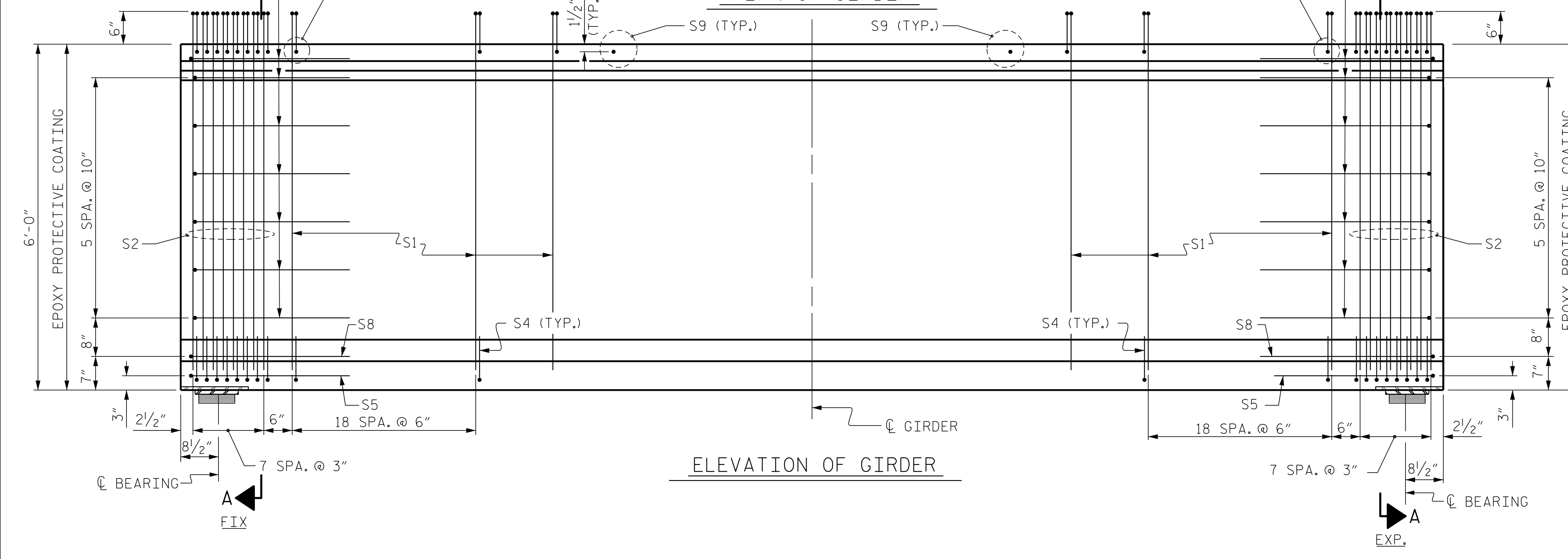
ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	9500 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
EXTERIOR GIRDER	2969	25.8	46
INTERIOR GIRDER	3135	25.8	46

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
4	120'-4 1/8"	481'-4 1/2"



PLAN OF GIRDER



ELEVATION OF GIRDER

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 170+20.99 -L-
SHEET 1 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

72" PRESTRESSED CONCRETE
MODIFIED BULB TEE
(LEFT LANE)

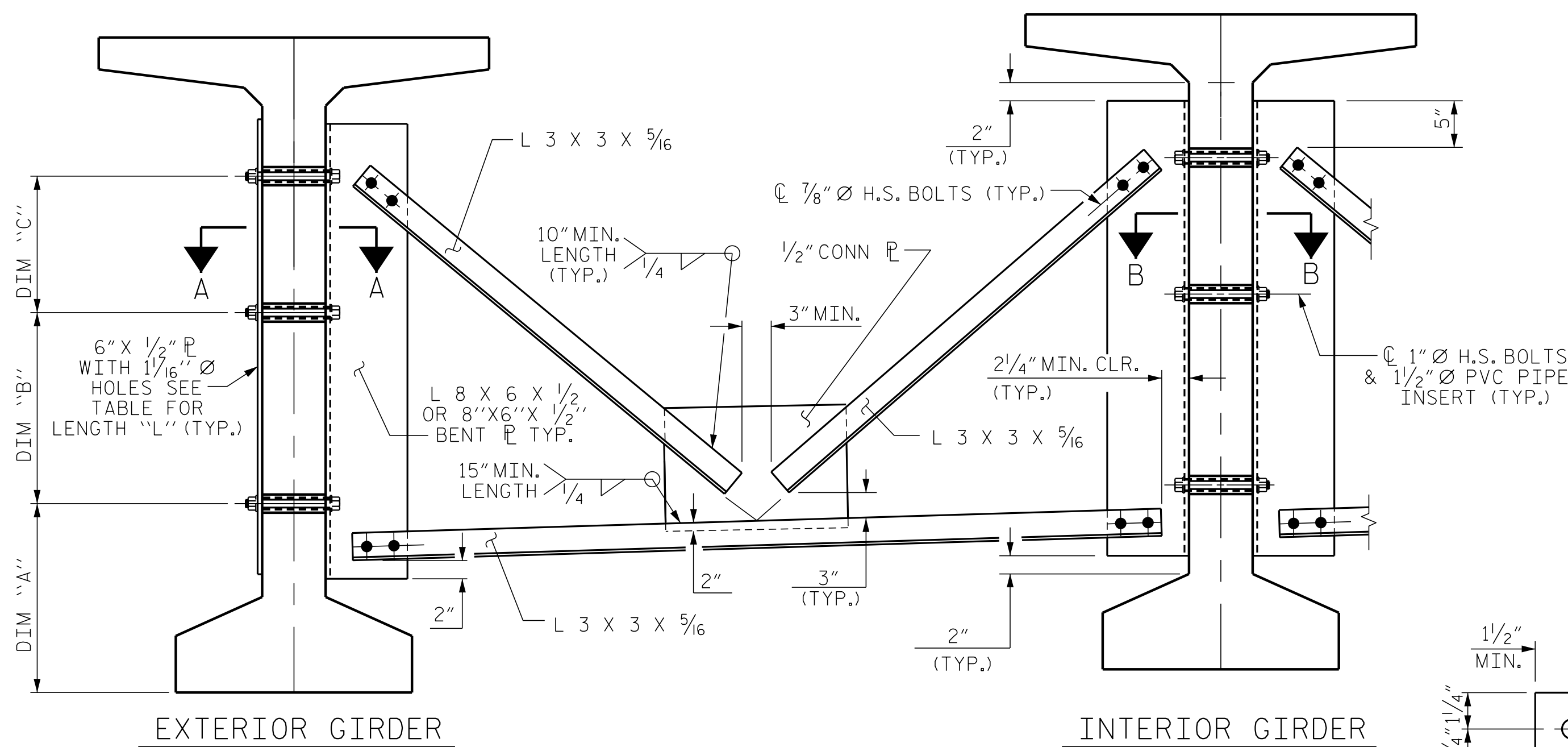
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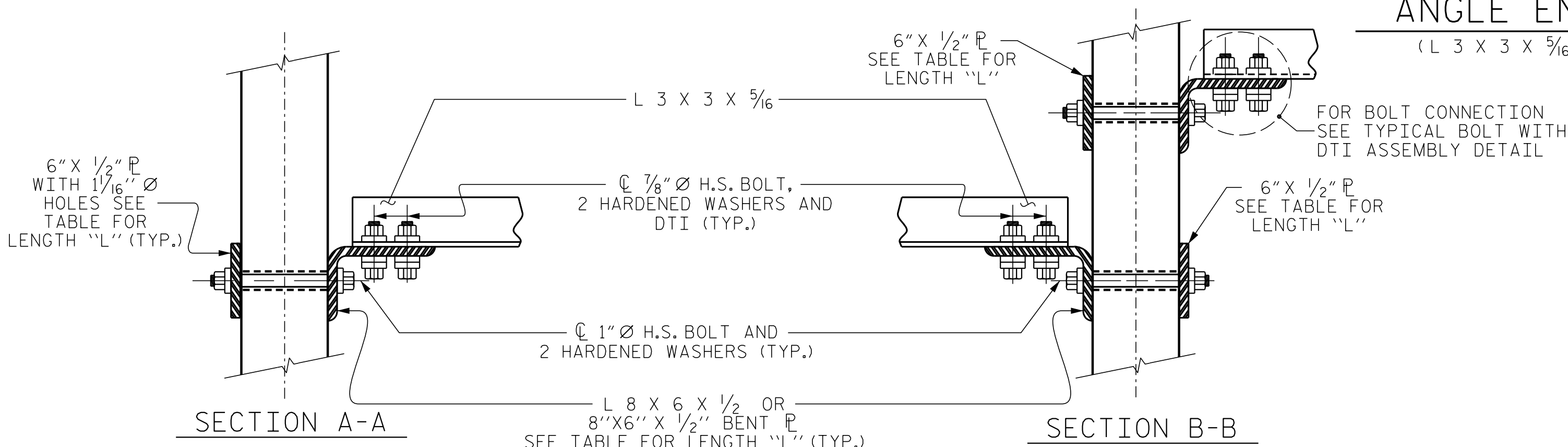
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CHECKED BY: B.C. HUNT DATE: 3/18

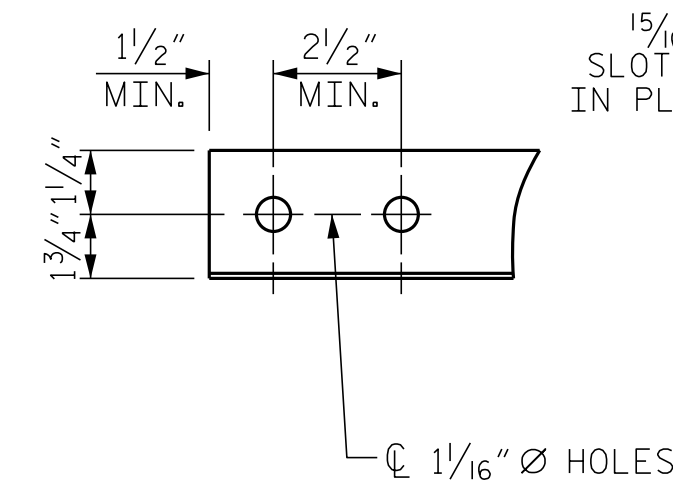


PART SECTION AT INTERMEDIATE DIAPHRAGM

(72" BULB TEE GIRDER SHOWN)

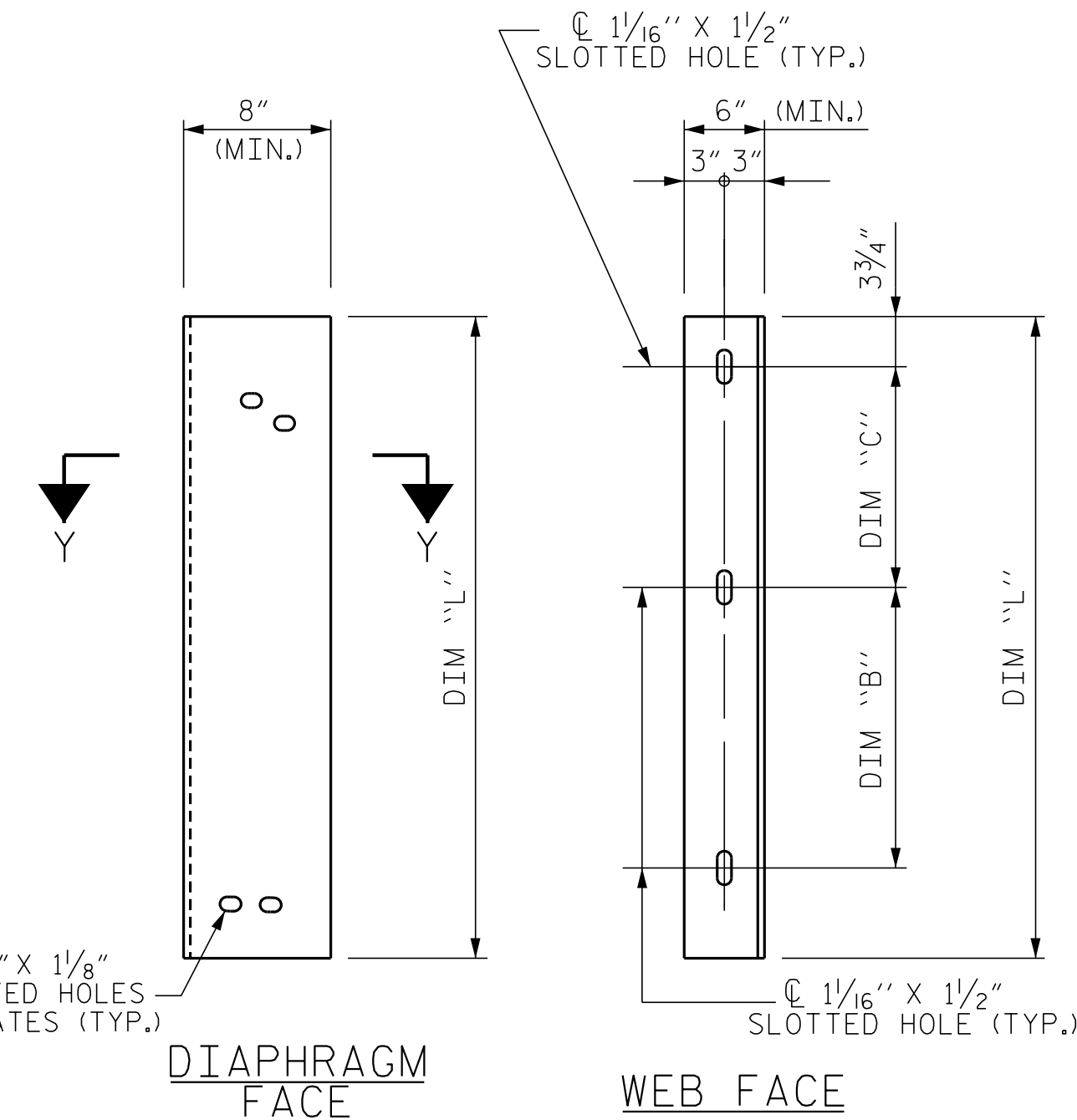


CONNECTION DETAILS

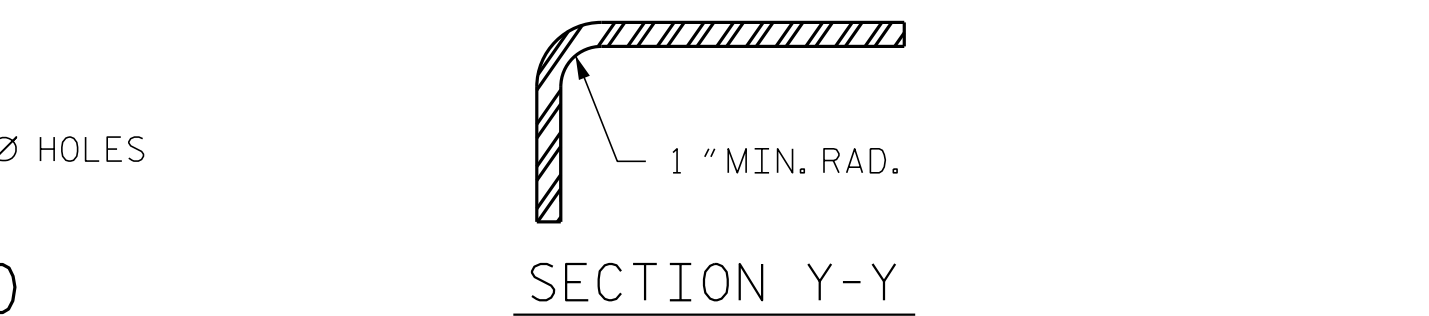


ANGLE END

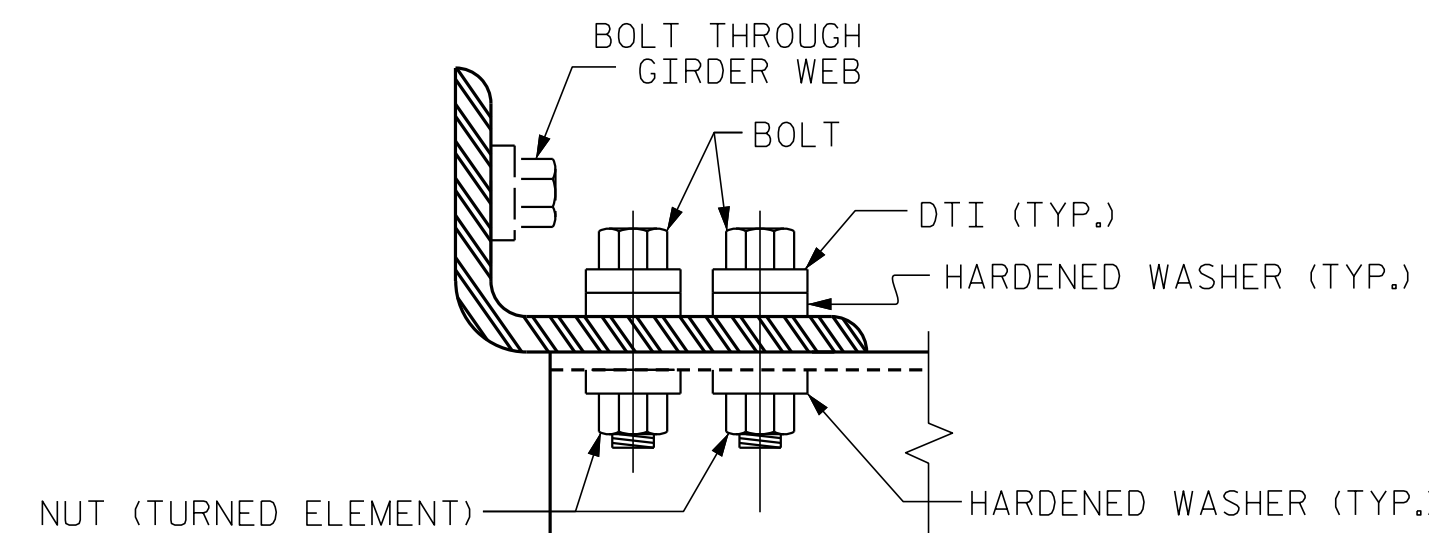
(L 3 X 3 X 5/16)



CONNECTOR PLATE DETAIL



SECTION Y-Y



BOLT WITH DTI ASSEMBLY DETAIL

STRUCTURAL STEEL NOTES

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

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

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

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

FOR METALLIZATION, APPLY 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.

TABLE

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
72" BULB TEE	1'-7"	1'-8"	1'-8"	4'-2"

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-

SHEET 2 OF 3

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 INTERMEDIATE
 STEEL DIAPHRAGMS FOR
 72" MODIFIED BULB TEE
 PRESTRESSED CONCRETE GIRDERS
 (LEFT LANE)

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			27

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NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 7,500 PSI.

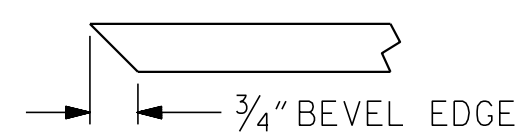
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

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

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

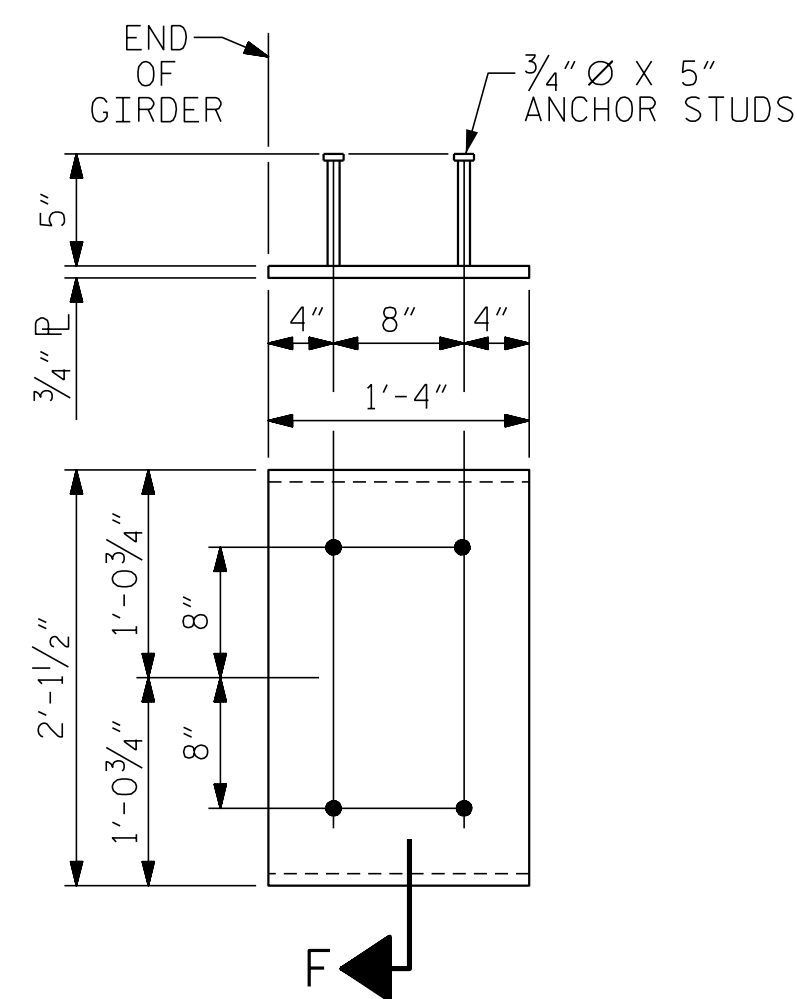
A 2" x 2" CHAMFER IS ALLOWED AT THE INTERSECTION OF THE WEB AND THE BOTTOM FLANGE OF THE 72" MODIFIED BULB TEES.

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



SECTION "F"

(SEE NOTES)

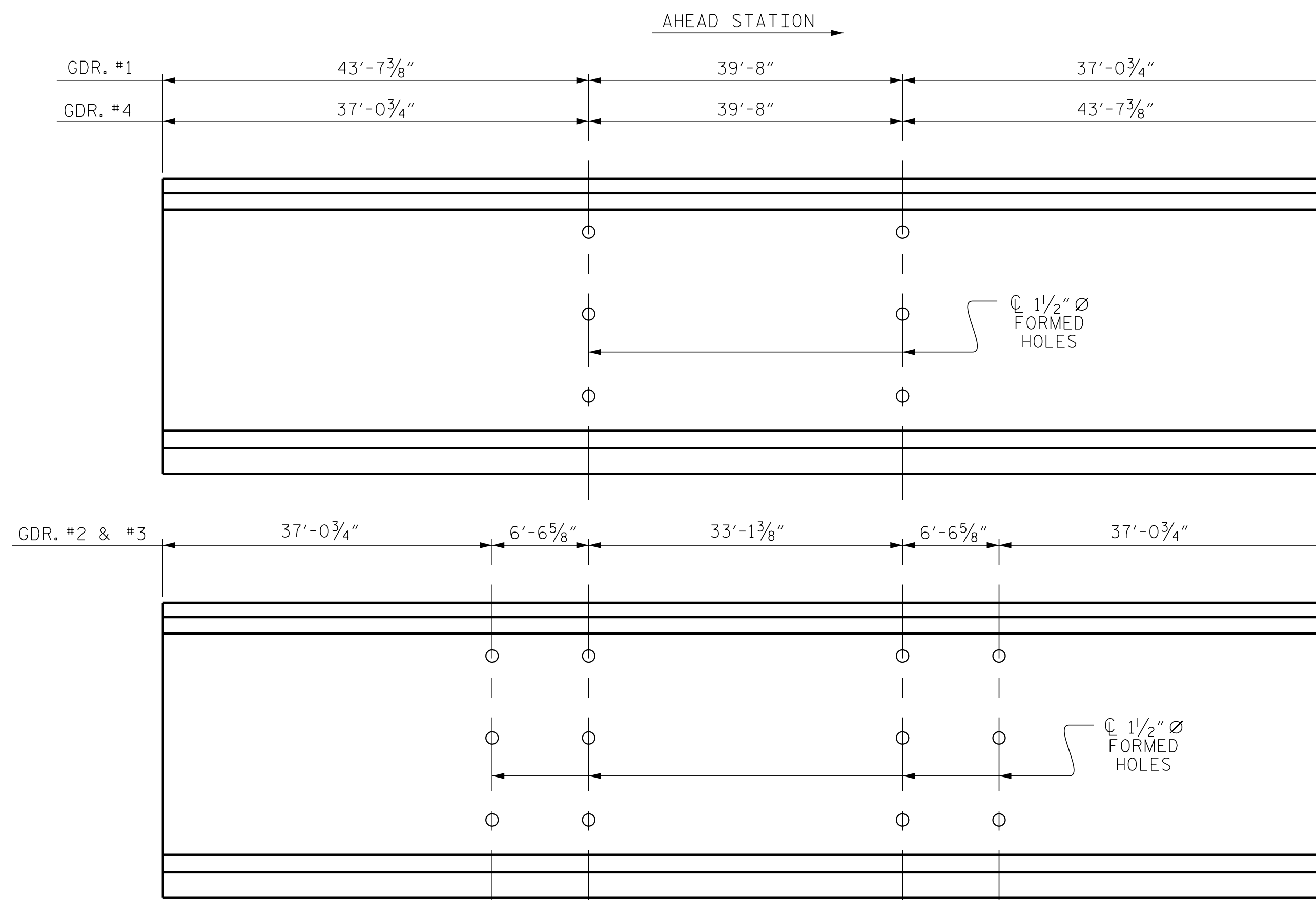


EMBEDDED PLATE "B-1" DETAILS FOR 72" MODIFIED BULB TEES

(2 REQ'D PER GIRDER)

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
0.6" Ø LOW RELAXATION	SPAN A																					
	GIRDERS #1 THRU #4																					
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.046	0.091	0.133	0.172	0.207	0.236	0.259	0.276	0.286	0.290	0.286	0.276	0.259	0.236	0.207	0.172	0.133	0.091	0.046	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.029	0.059	0.087	0.115	0.137	0.159	0.173	0.187	0.192	0.197	0.192	0.187	0.173	0.159	0.137	0.115	0.087	0.059	0.029	0.000
FINAL CAMBER	↑	0	3/16"	3/8"	9/16"	11/16"	13/16"	15/16"	1 1/16"	1 1/16"	1 1/8"	1 1/8"	1 1/8"	1 1/16"	1 1/16"	1 5/16"	1 3/16"	1 1/16"	9/16"	3/8"	3/16"	0

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



LOCATION OF BOLT HOLES IN GIRDERS

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 170+20.99 -L-

SHEET 3 OF 3

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 PRESTRESSED CONCRETE
 GIRDER DETAILS
 (LEFT LANE)

REVISIONS						SHEET NO.
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NOTES

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

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

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

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

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

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

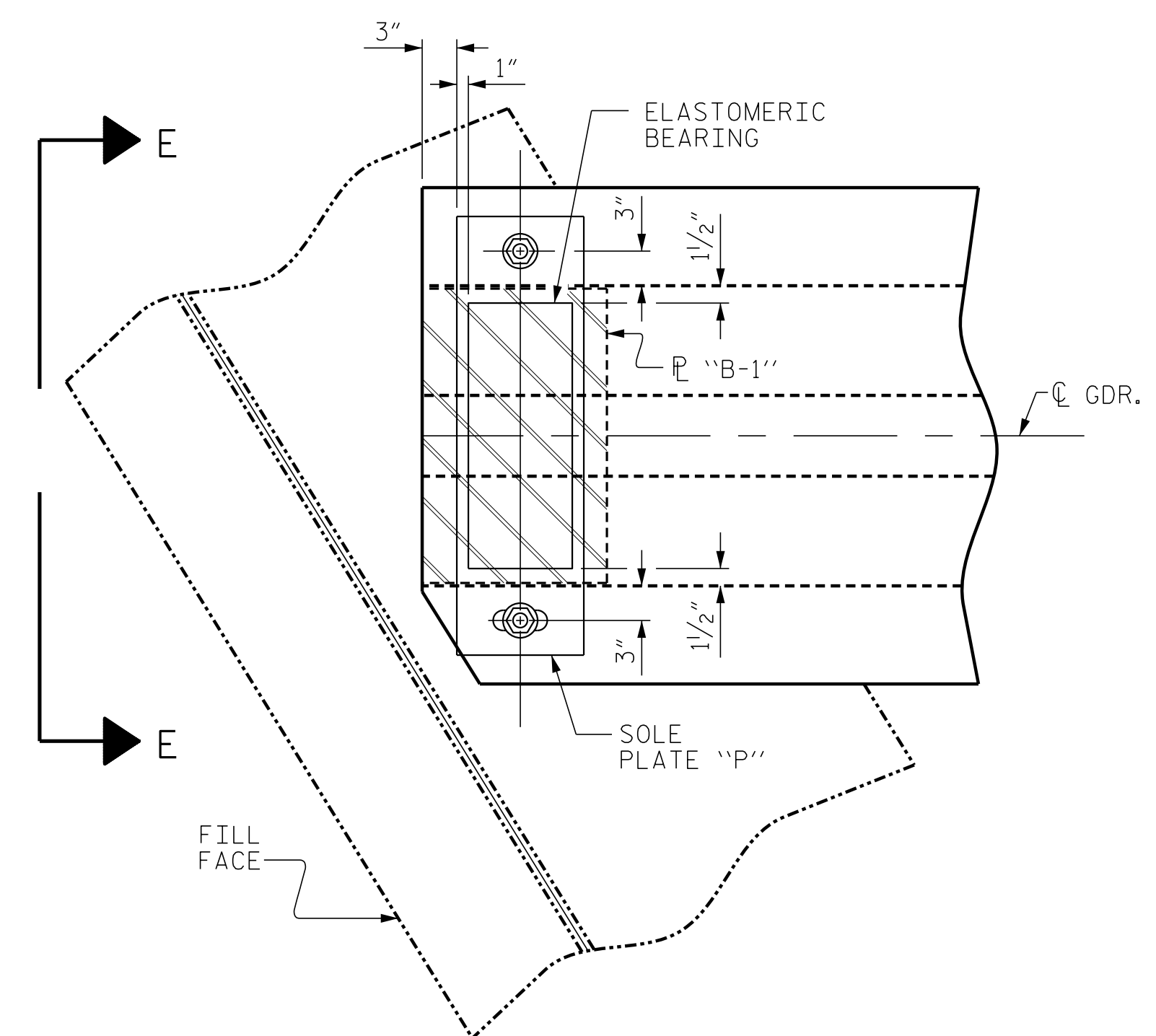
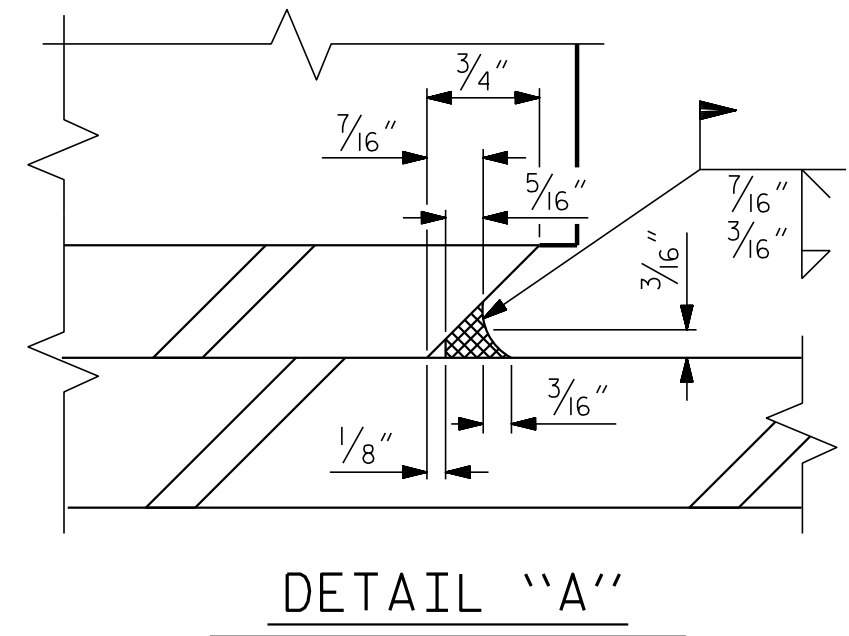
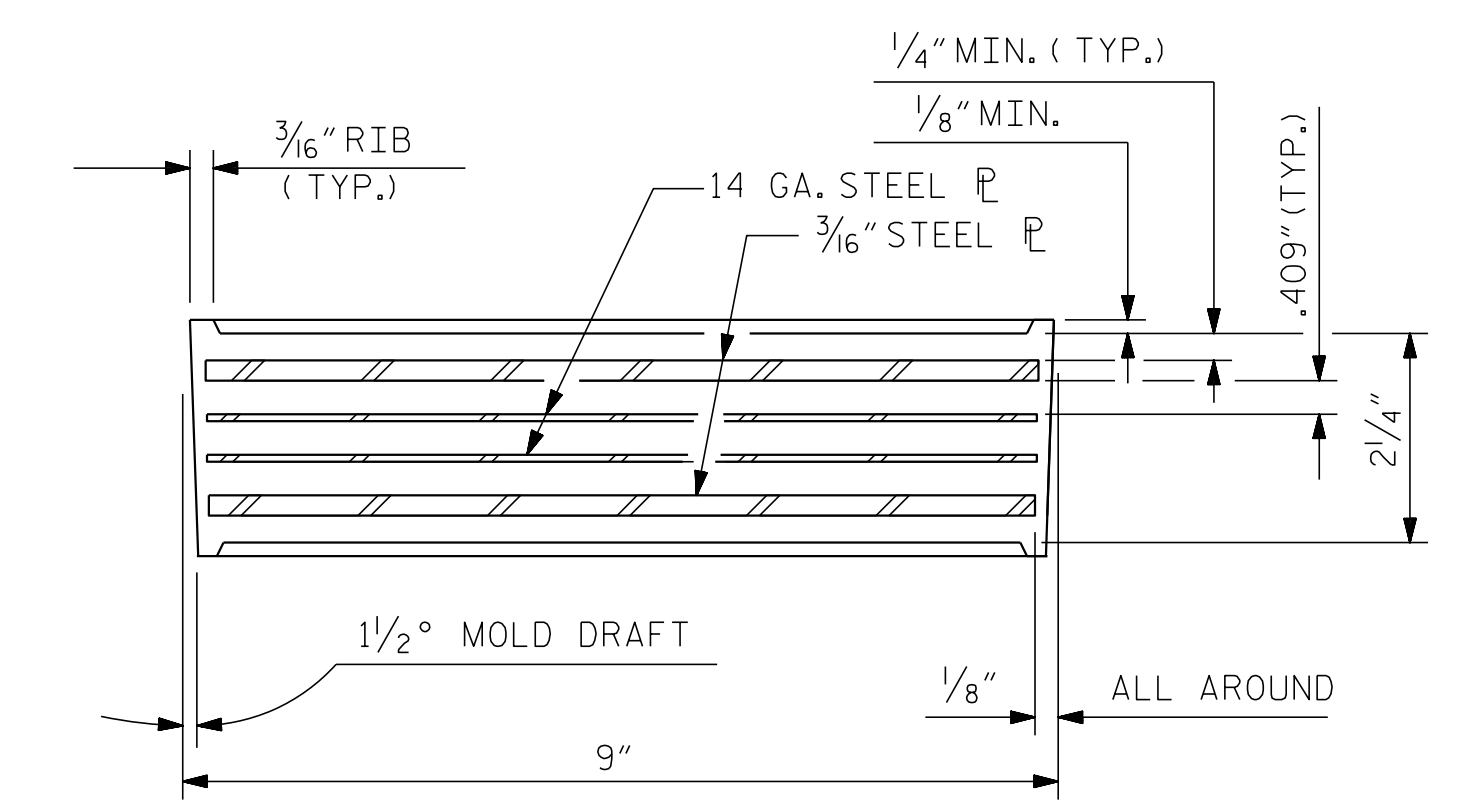
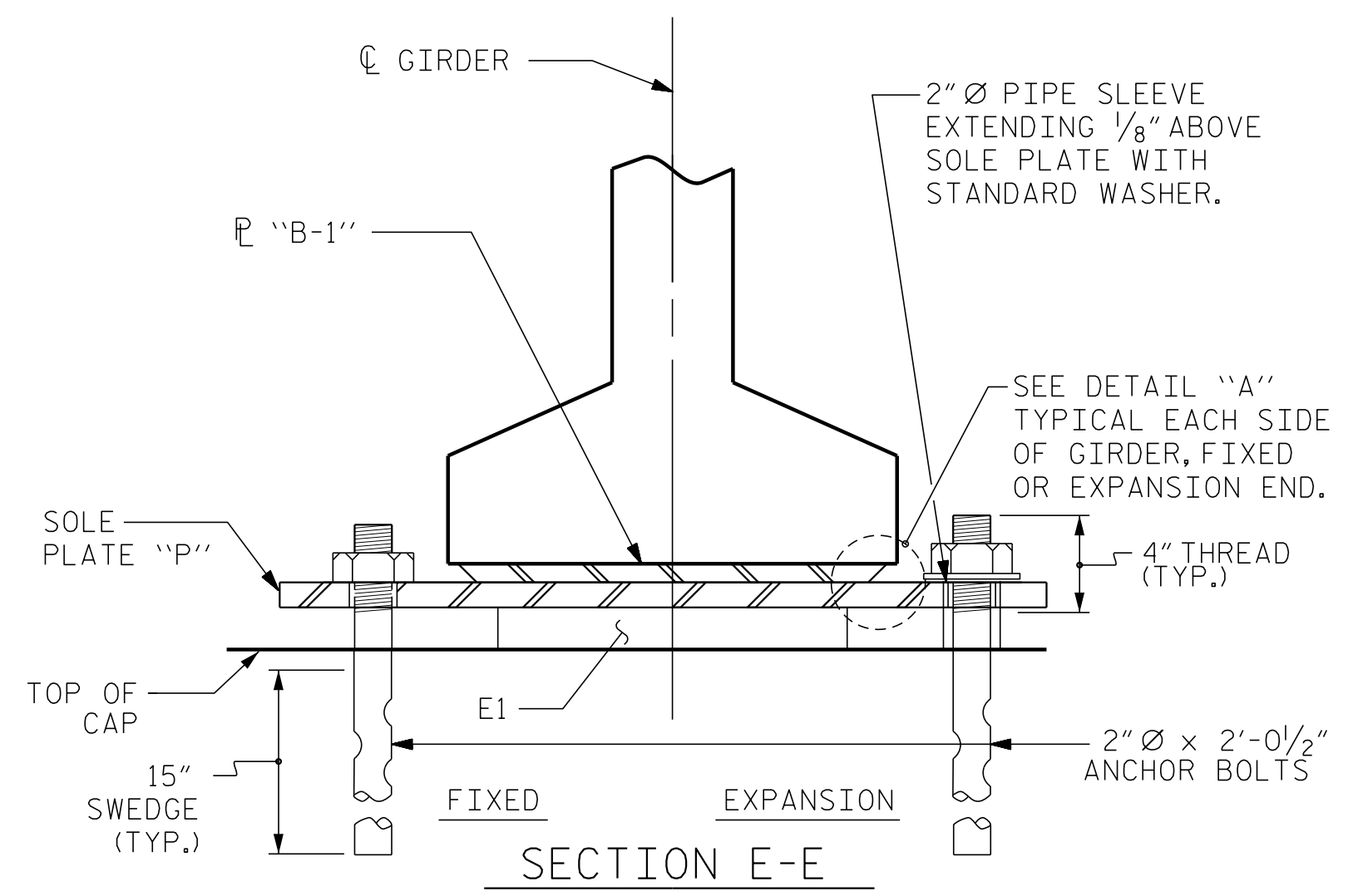
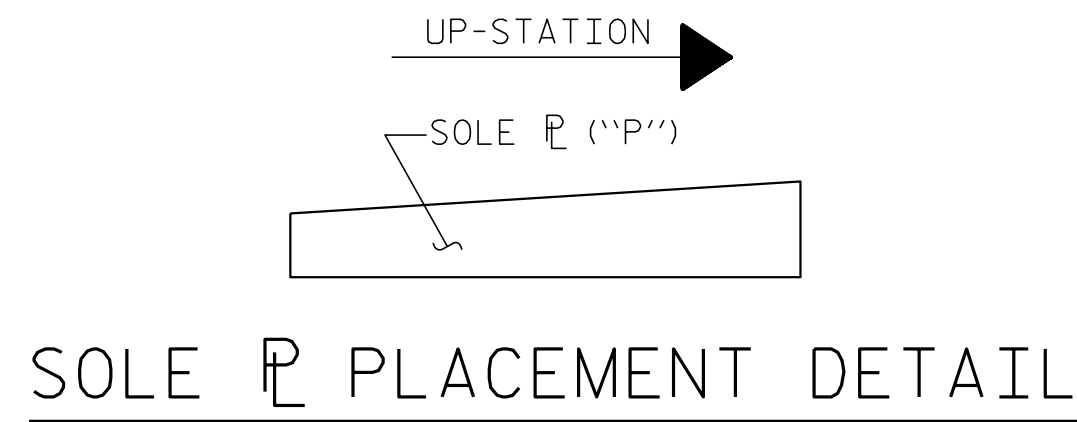
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

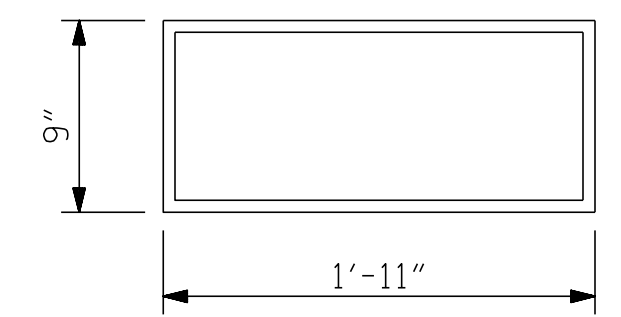
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



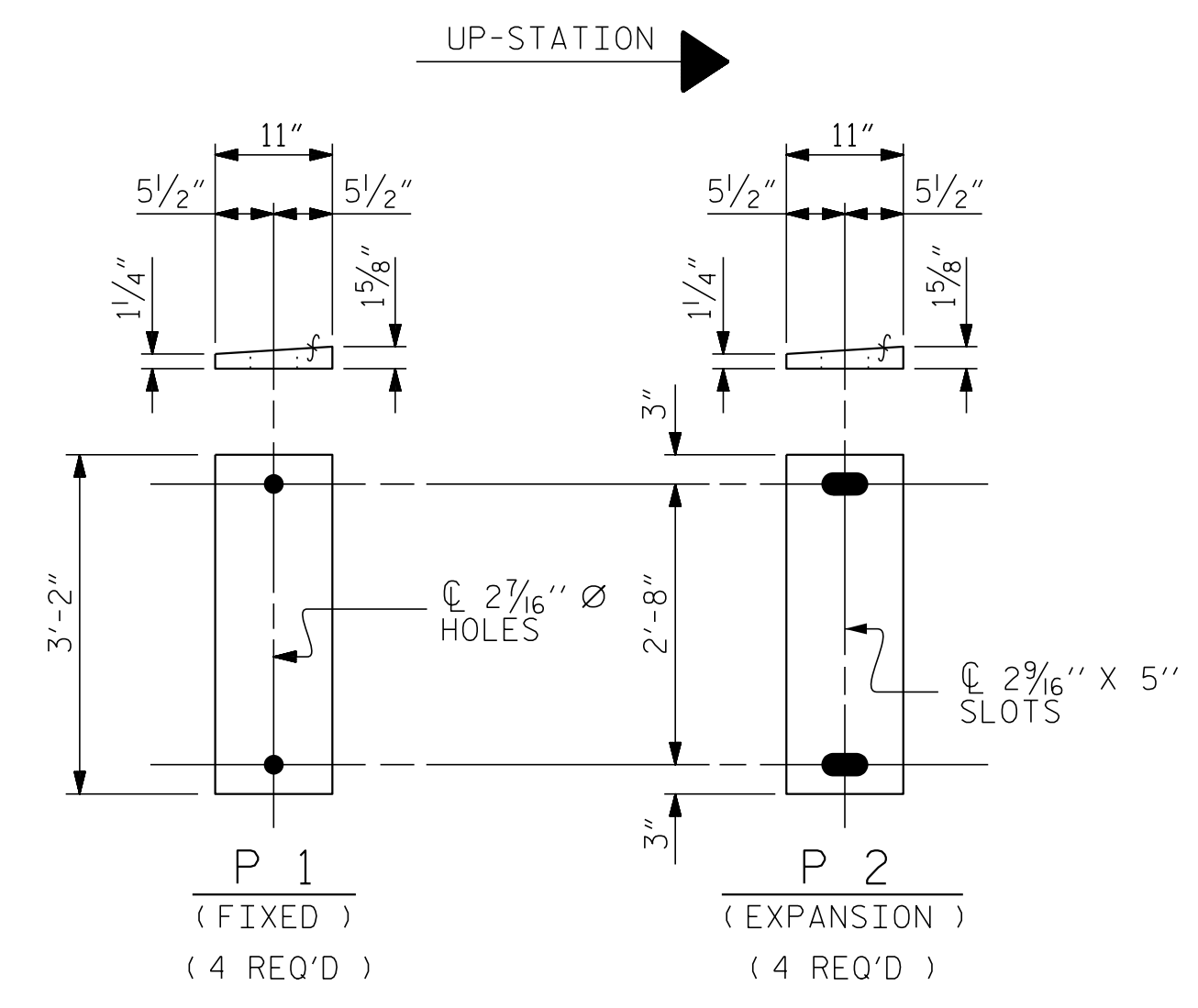
TYPICAL PLAN (SHOWING SIMPLE SPAN END BENT)



E1 (8 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE V



SOLE PLATE DETAILS ("P")

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

PROJECT NO. R-2582A
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STATE OF NORTH CAROLINA
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 RALEIGH
 STANDARD
 ELASTOMERIC BEARING
 DETAILS
 PRESTRESSED CONCRETE GIRDER
 SUPERSTRUCTURE
 (LEFT LANE)

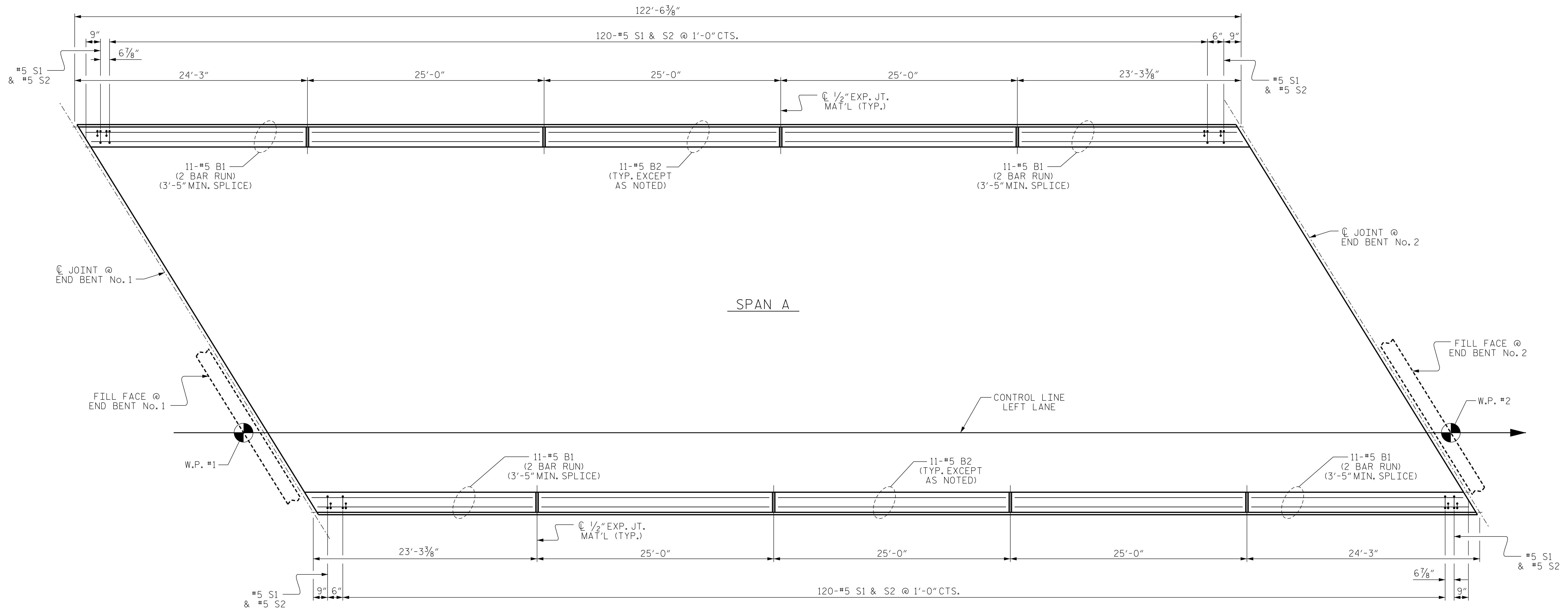
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CHECKED BY : B.C. HUNT	DATE : 3/18
DRAWN BY : EEM 2/97	REV. 6/13 AAC/MAA
CHECKED BY : VAP 2/97	REV. 1/15 MAA/TMG
	REV. 12/17 MAA/THC

NOTES:
#5 S1 AND S2 BARS MAY BE SHIFTED SLIGHTLY TO MAINTAIN 2" CLEAR TO EXPANSION JOINT IN RAIL.



PLAN OF CONCRETE BARRIER RAIL

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 170+20.99 -L-

SHEET 1 OF 2

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DRAWN BY: D. HODGE DATE: 3/18
CHECKED BY: B.C. HUNT DATE: 3/18

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD:
Gregory M. Olland
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 37400
GREGORY M. OLLAND
9/12/2018
ETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE BARRIER RAIL
(LEFT LANE)

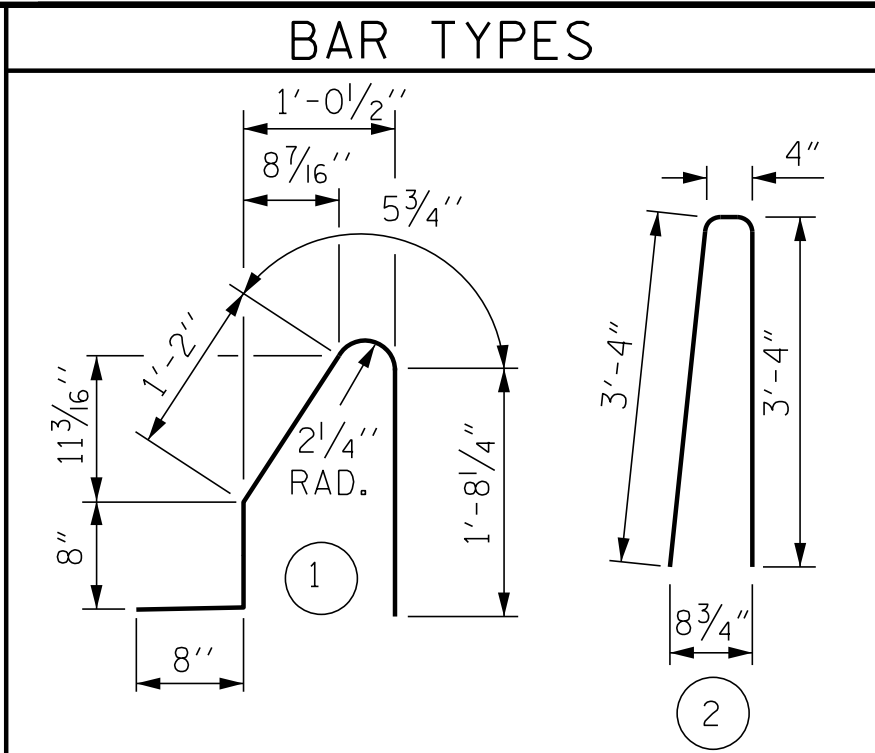
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-12
1			3			TOTAL SHEETS
2			4			27

NOTES

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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



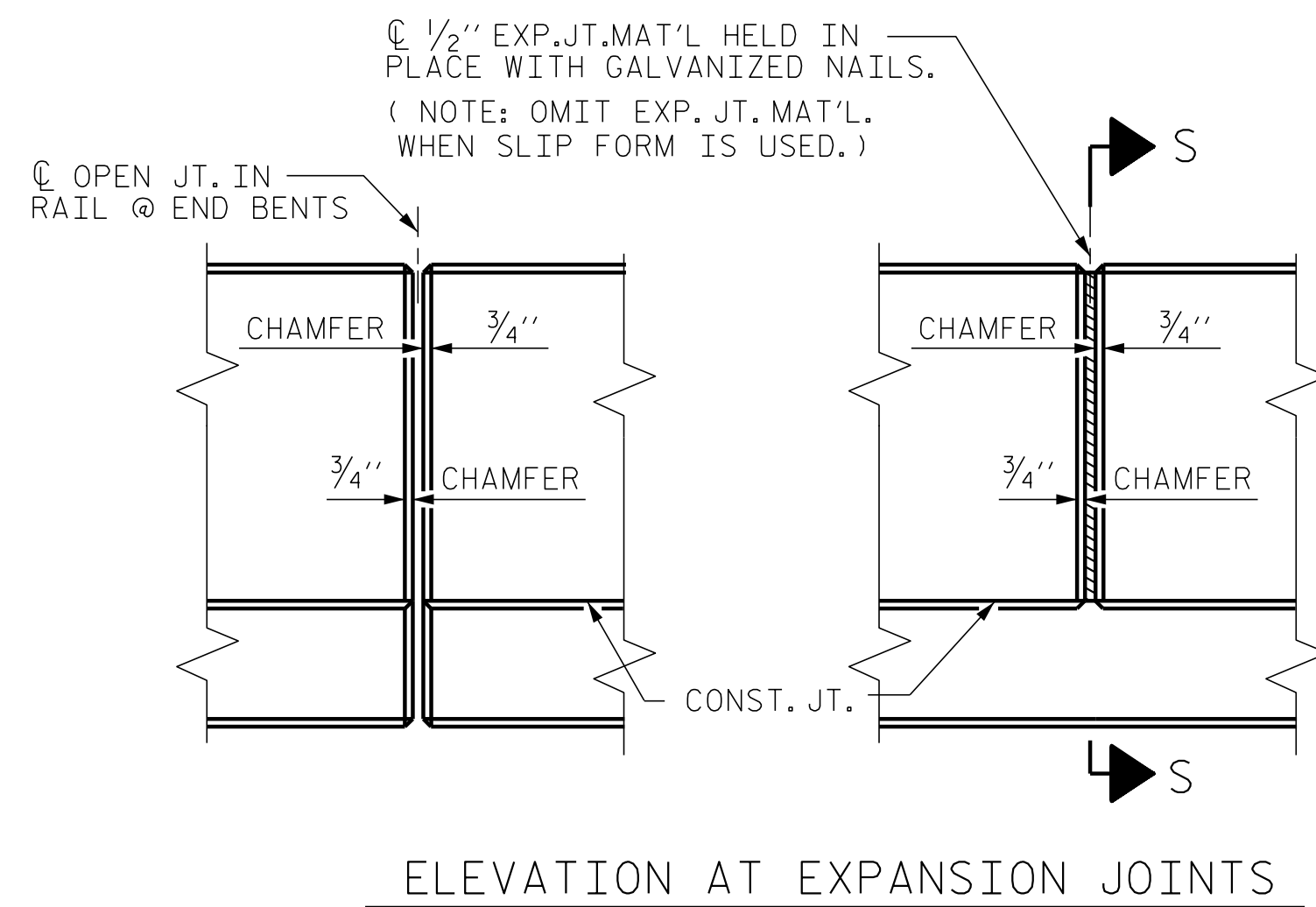
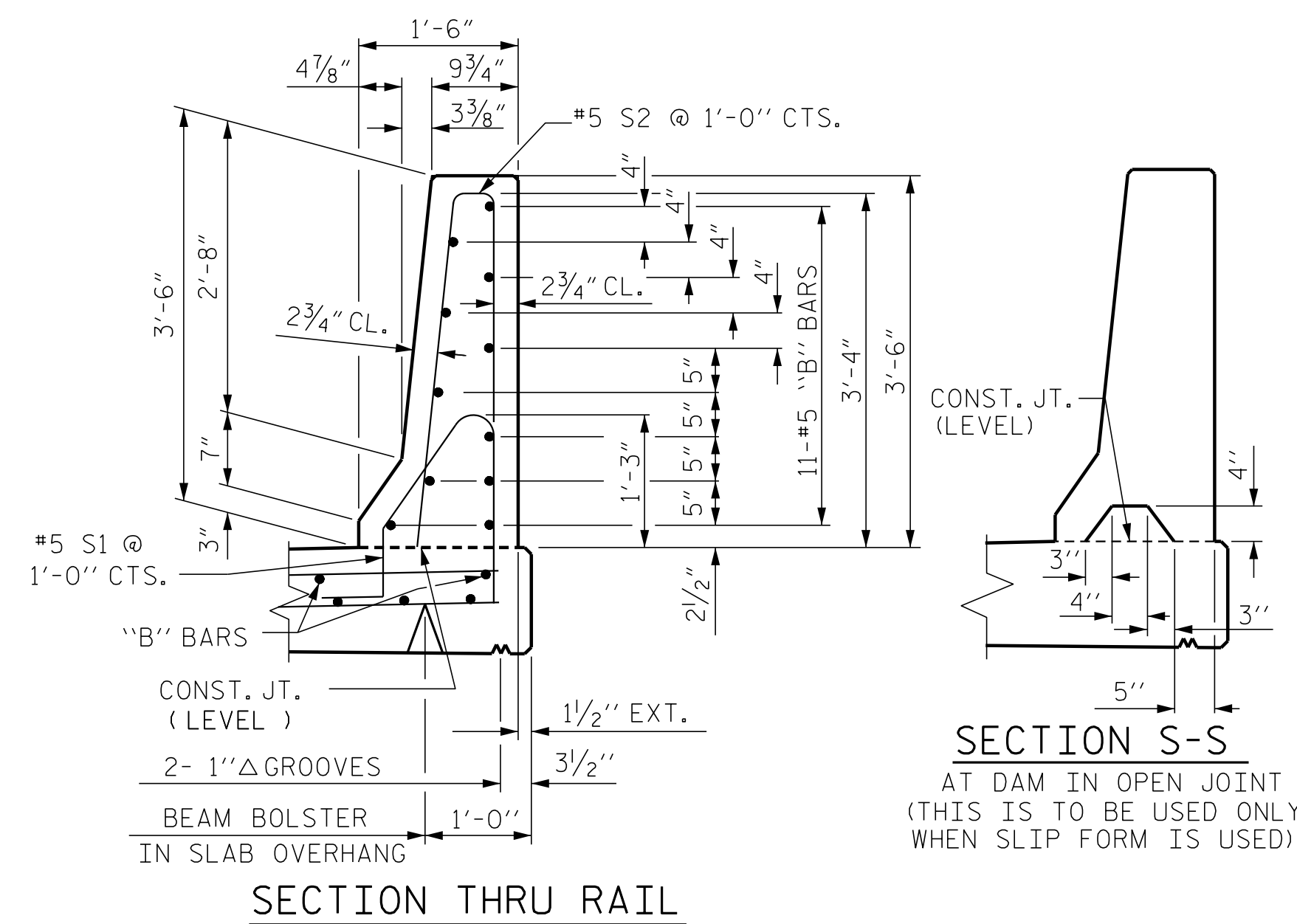
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* S1	244	#5	1	4'-8"	1188
* S2	244	#5	2	7'-0"	1781
* B1	88	#5	STR	13'-7"	1247
* B2	66	#5	STR	24'-7"	1692

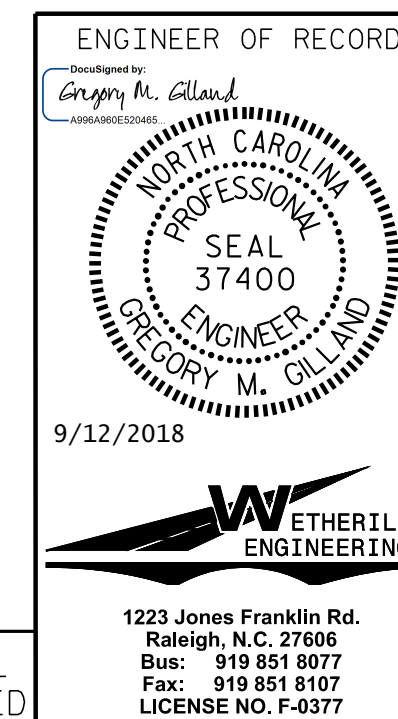
* EPOXY COATED REINFORCING STEEL	5,908 LBS.
CLASS AA CONCRETE	33.3 CU. YDS.
CONCRETE BARRIER RAIL	245.10 LIN. FT.



BARRIER RAIL DETAILS

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 CONCRETE
 BARRIER RAIL
 (LEFT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-13
1			3			TOTAL SHEETS
2			4			27

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1223 Jones Franklin Rd.
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 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STD. NO. CBR1 (SHT 3)

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ASSEMBLED BY : D. HODGE	DATE : 3/18
CHECKED BY : B.C. HUNT	DATE : 3/18
DRAWN BY : ARB 5/87	REV. 7/12 MAA/GM
CHECKED BY : SJD 9/87	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

NOTES

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

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

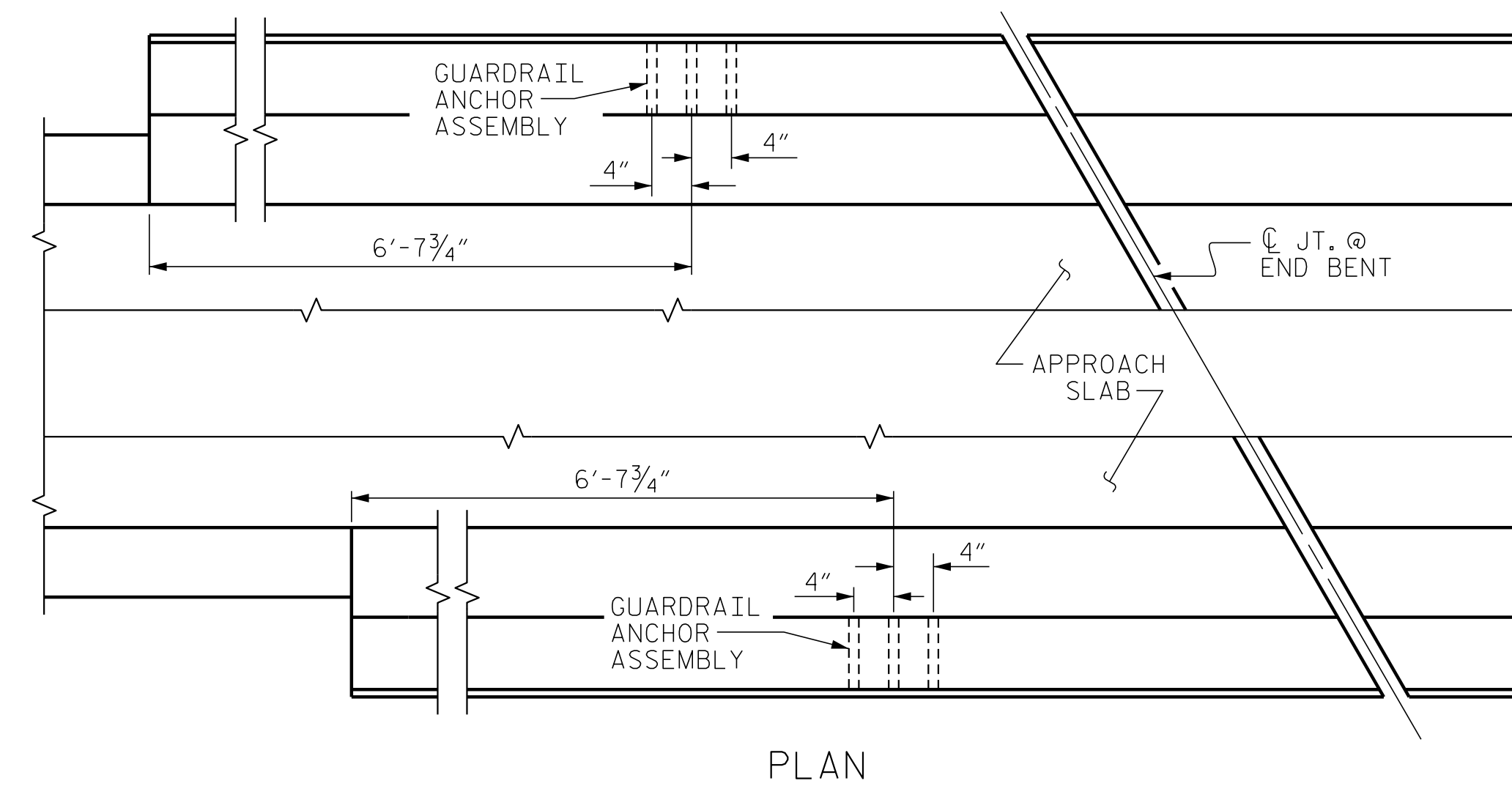
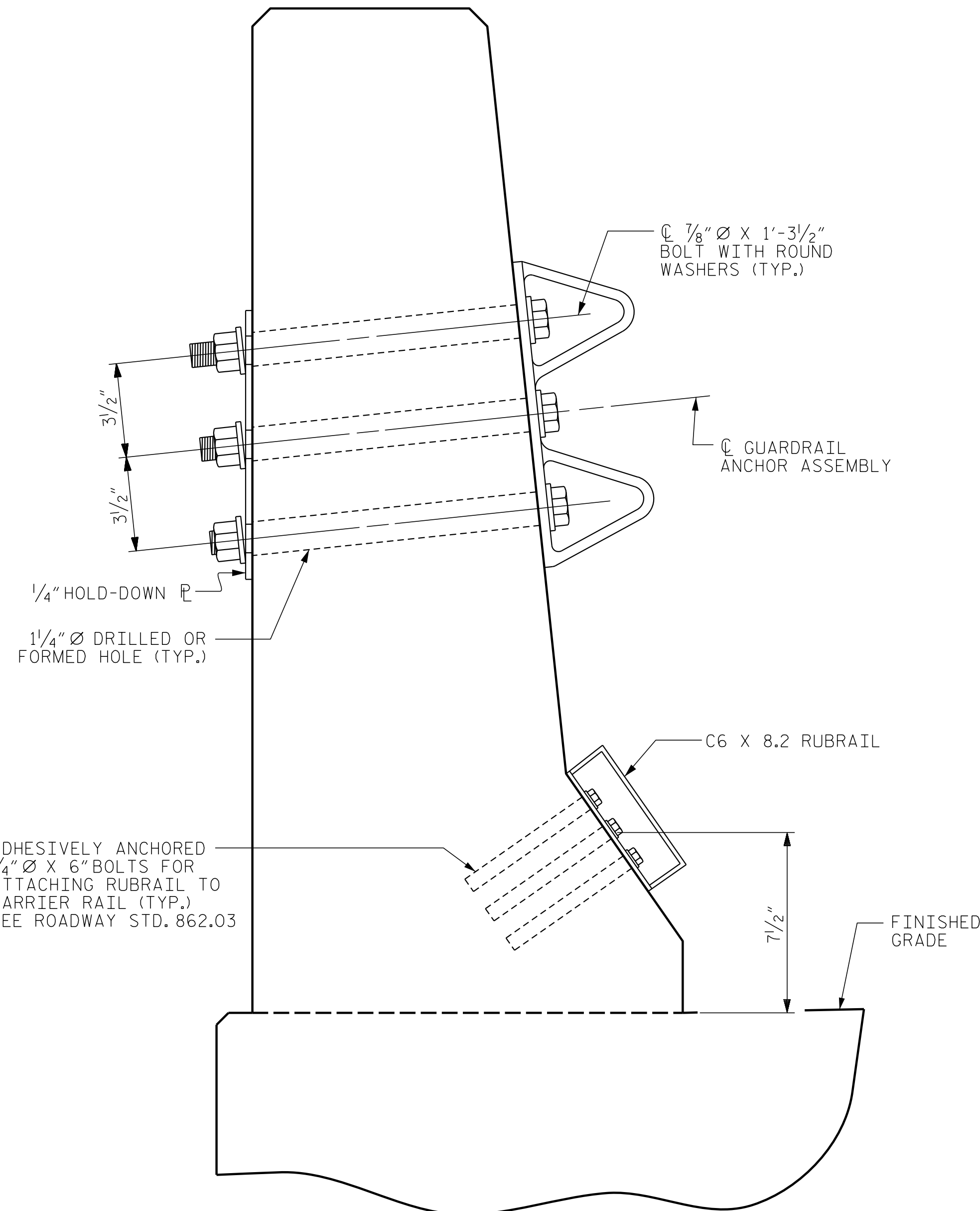
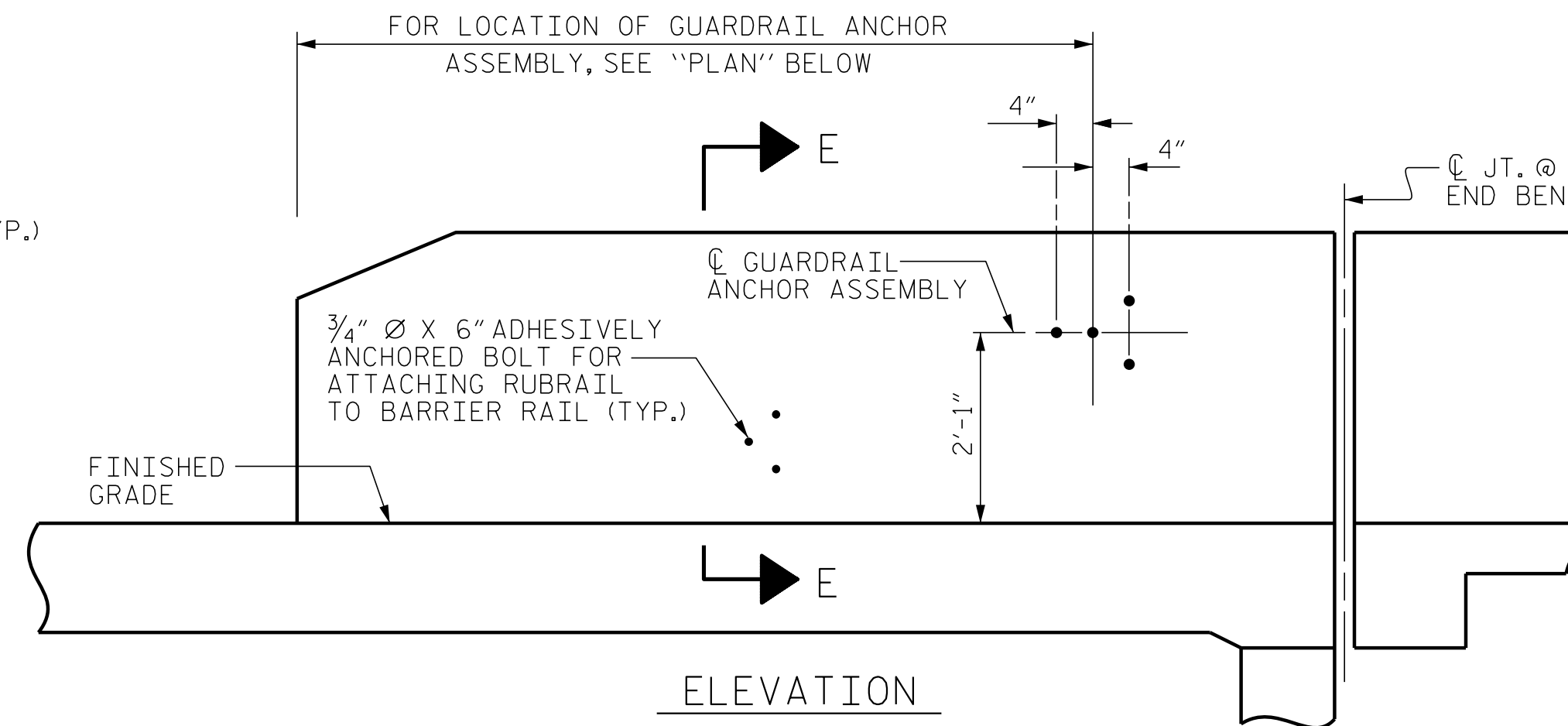
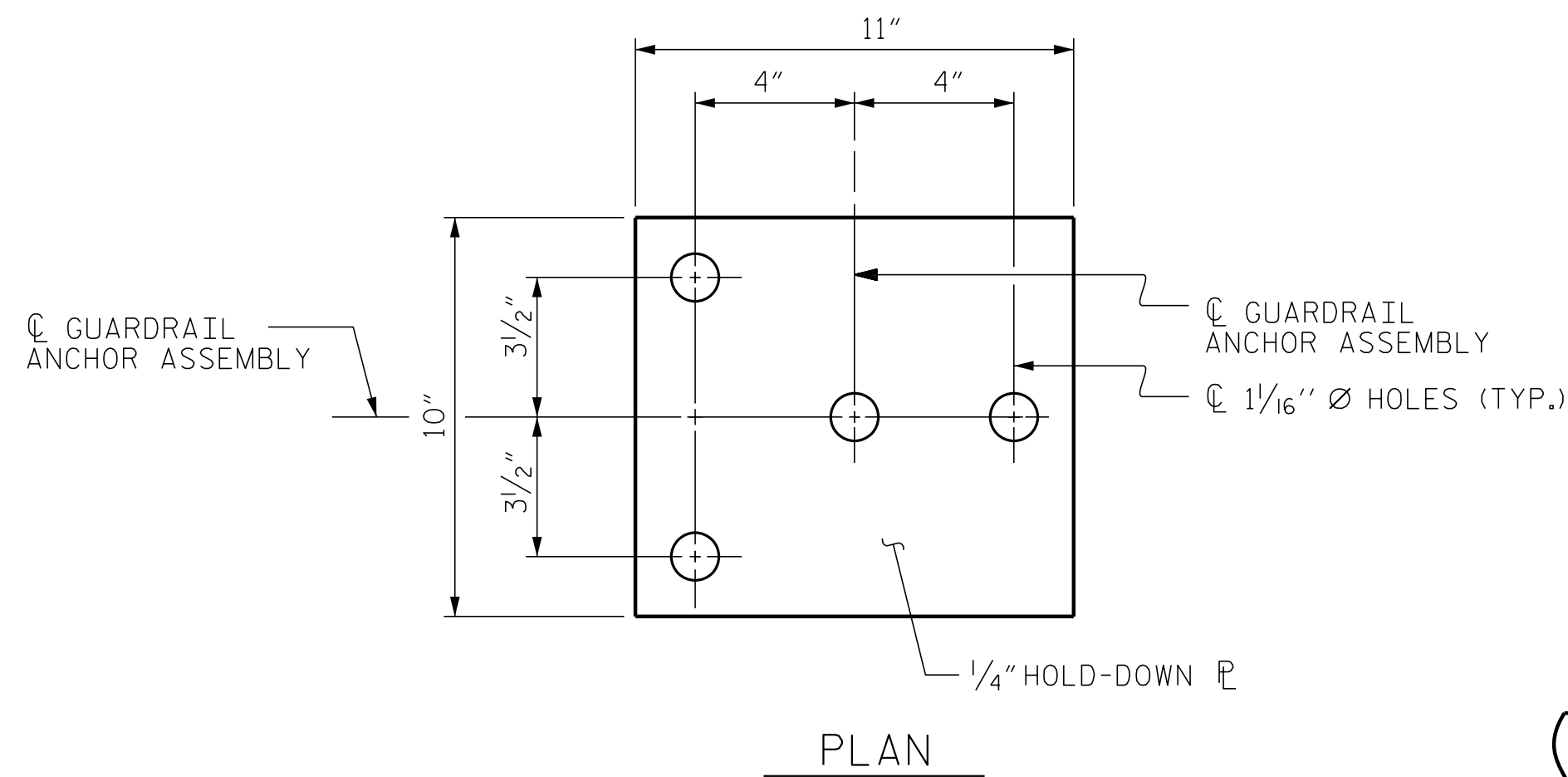
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

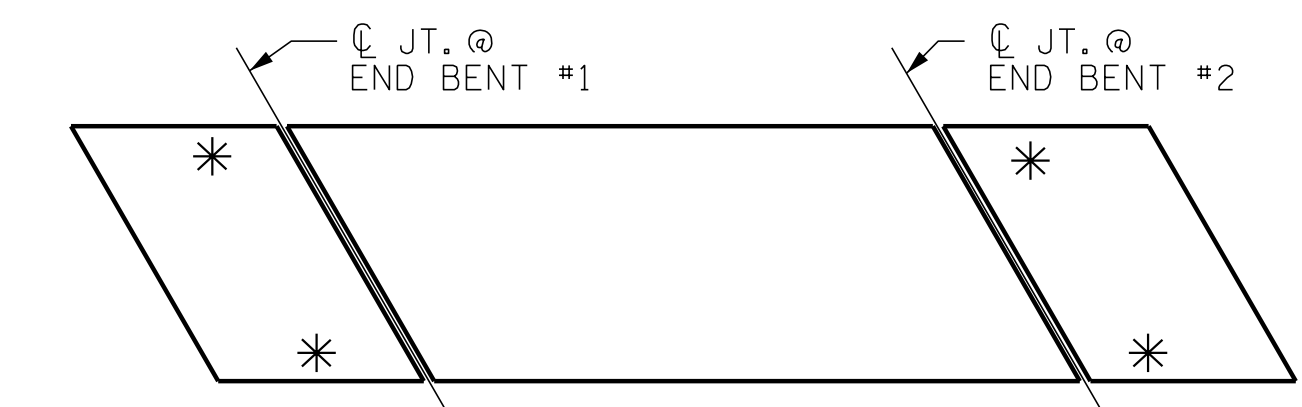
THE 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

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



LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-

ENGINEER OF RECORD:
Gregory M. O'Neil
 NORTH CAROLINA PROFESSIONAL ENGINEER
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 GREGORY M. O'NEIL
 9/12/2018
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
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 LICENSE NO. F-0377

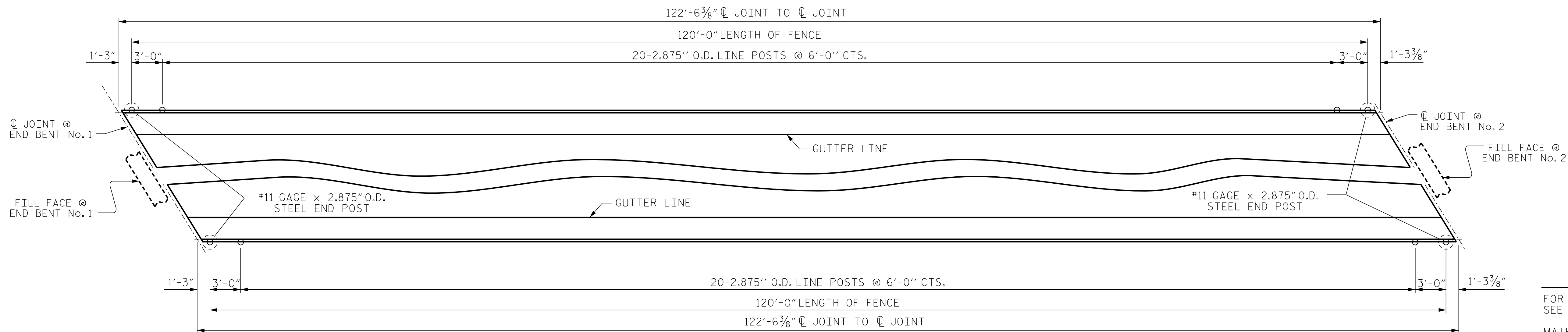
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 FOR BARRIER RAIL
 (LEFT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-14
1			3			TOTAL SHEETS
2			4			27

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ASSEMBLED BY : D. HODGE	DATE : 3/18
CHECKED BY : B.C. HUNT	DATE : 3/18
DRAWN BY : TLA 5/06	REV. 7/12 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC



PLAN OF FENCE POST SPACING

NOTES

FOR BRIDGE MOUNTED CHAIN LINK FENCE, SEE SPECIAL PROVISIONS.

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

FOR SETTING ANCHOR BOLTS, THE CONTRACTOR SHALL USE AN ADHESIVE BONDING SYSTEM. LEVEL ONE FIELD TESTING OF BONDING SYSTEM IS REQUIRED.

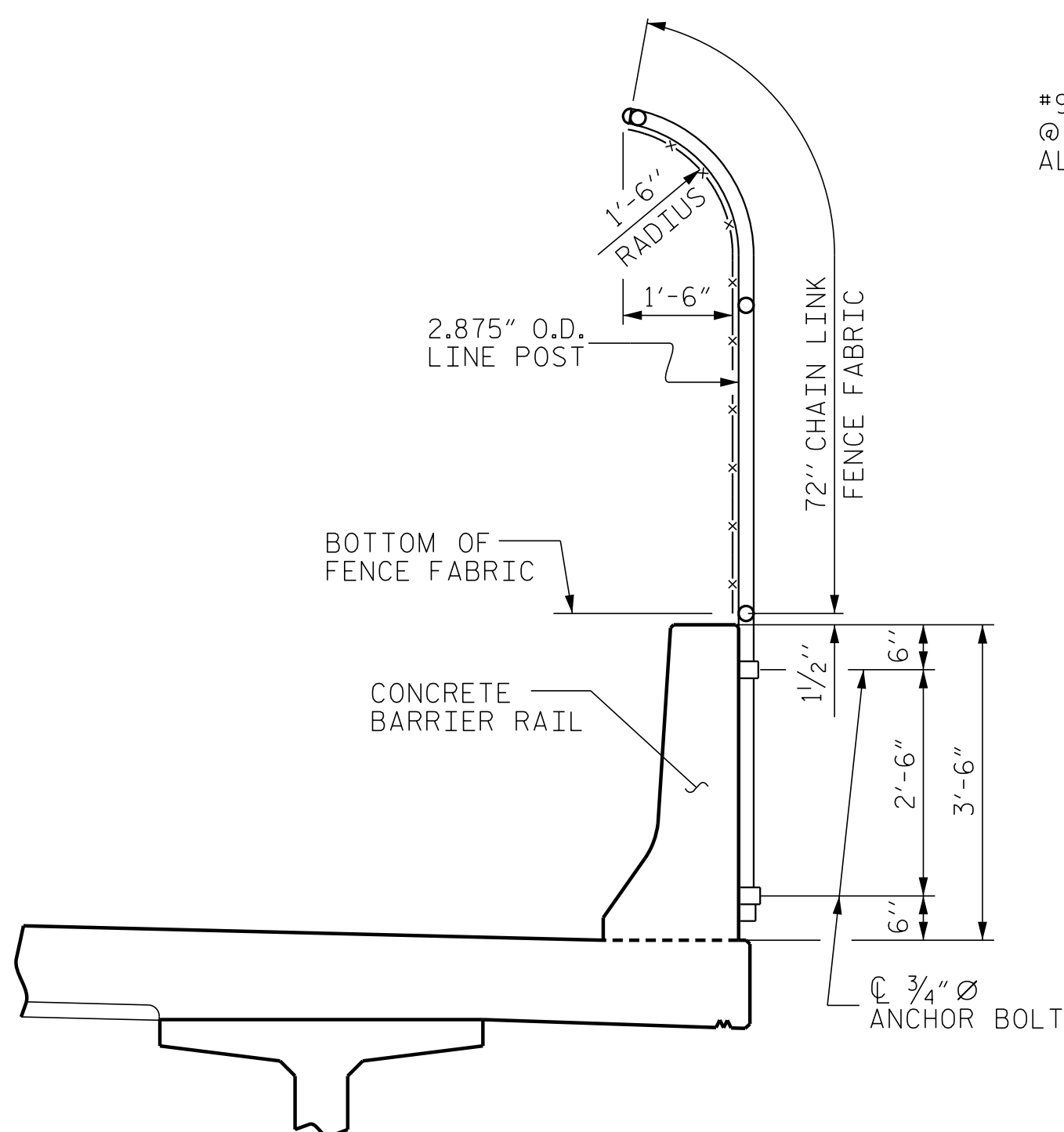
ALL FENCE MATERIAL SHALL MEET THE REQUIREMENTS OF SECTION 1050 OF THE STANDARD SPECIFICATIONS. VINYL COAT ALL STEEL PARTS AND HARDWARE IN ACCORDANCE WITH ARTICLE 1050 OF THE STANDARD SPECIFICATIONS.

ALL FENCE COMPONENTS SHALL BE VINYL COATED - BLACK.

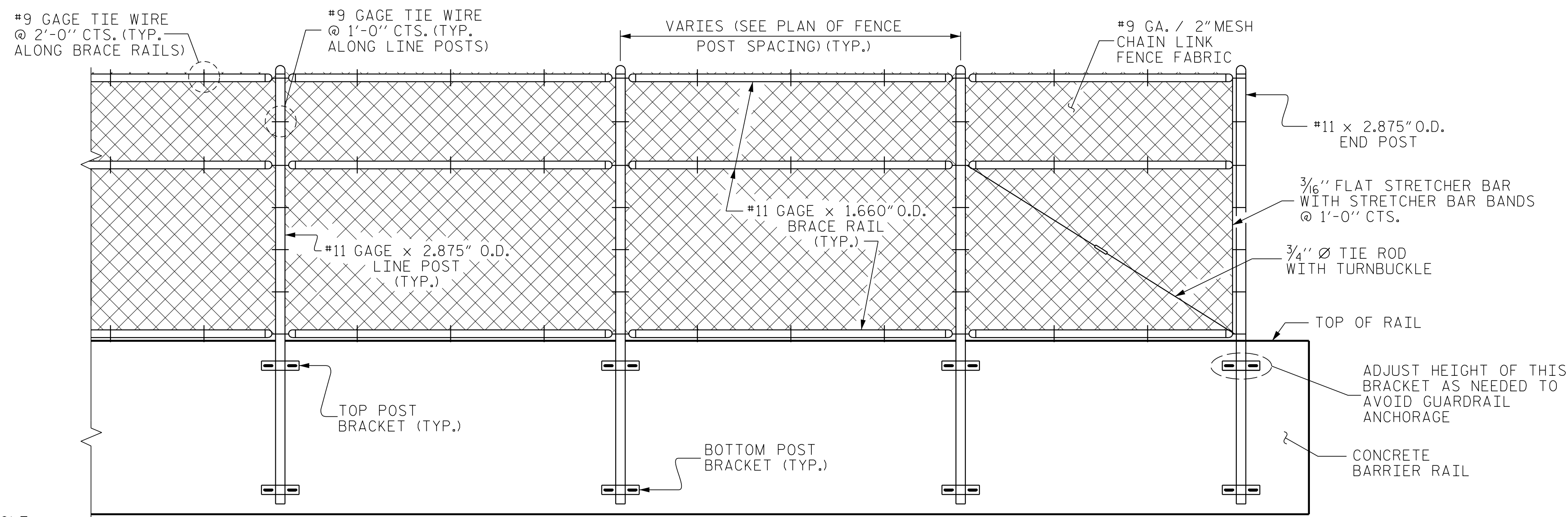
FENCE POST LOCATIONS SHALL BE SHIFTED, AS NECESSARY, TO MAINTAIN A 6" MINIMUM DISTANCE FROM ANCHOR BOLT TO JOINTS IN BARRIER RAIL.

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

ADHESIVE BONDING SYSTEM SHALL HAVE MINIMUM PULLOUT STRENGTH OF 10 KIPS. THE ADHESIVE BONDING SYSTEM SHALL BE CHOSEN FROM THOSE ON THE NCDOT APPROVED PRODUCTS LIST.

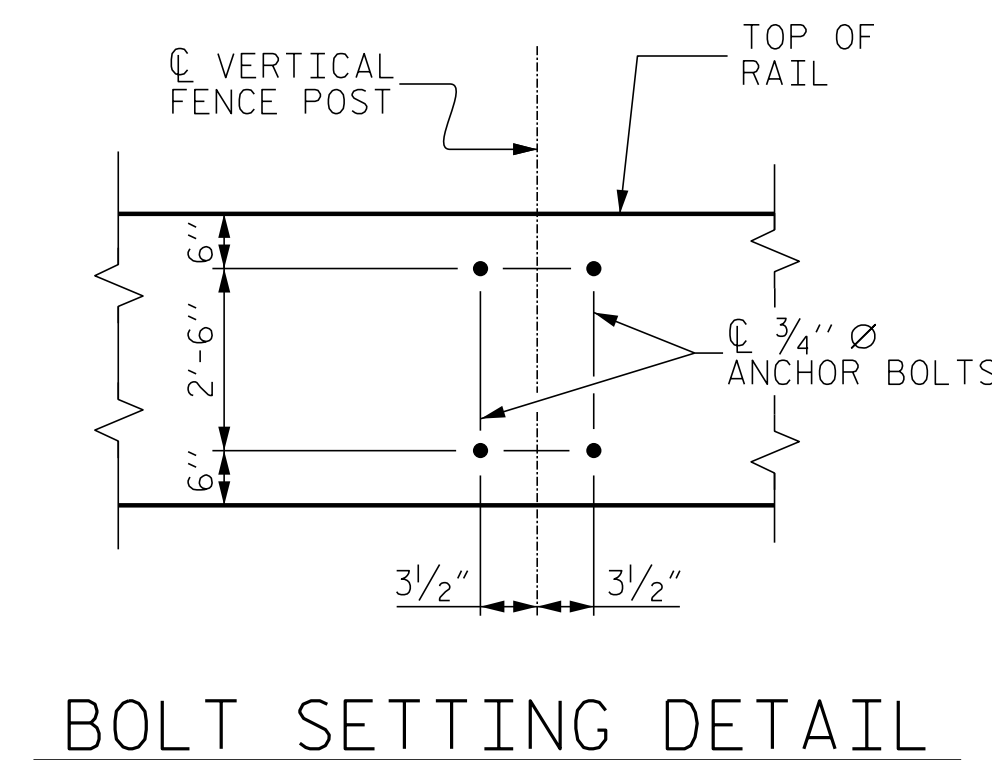
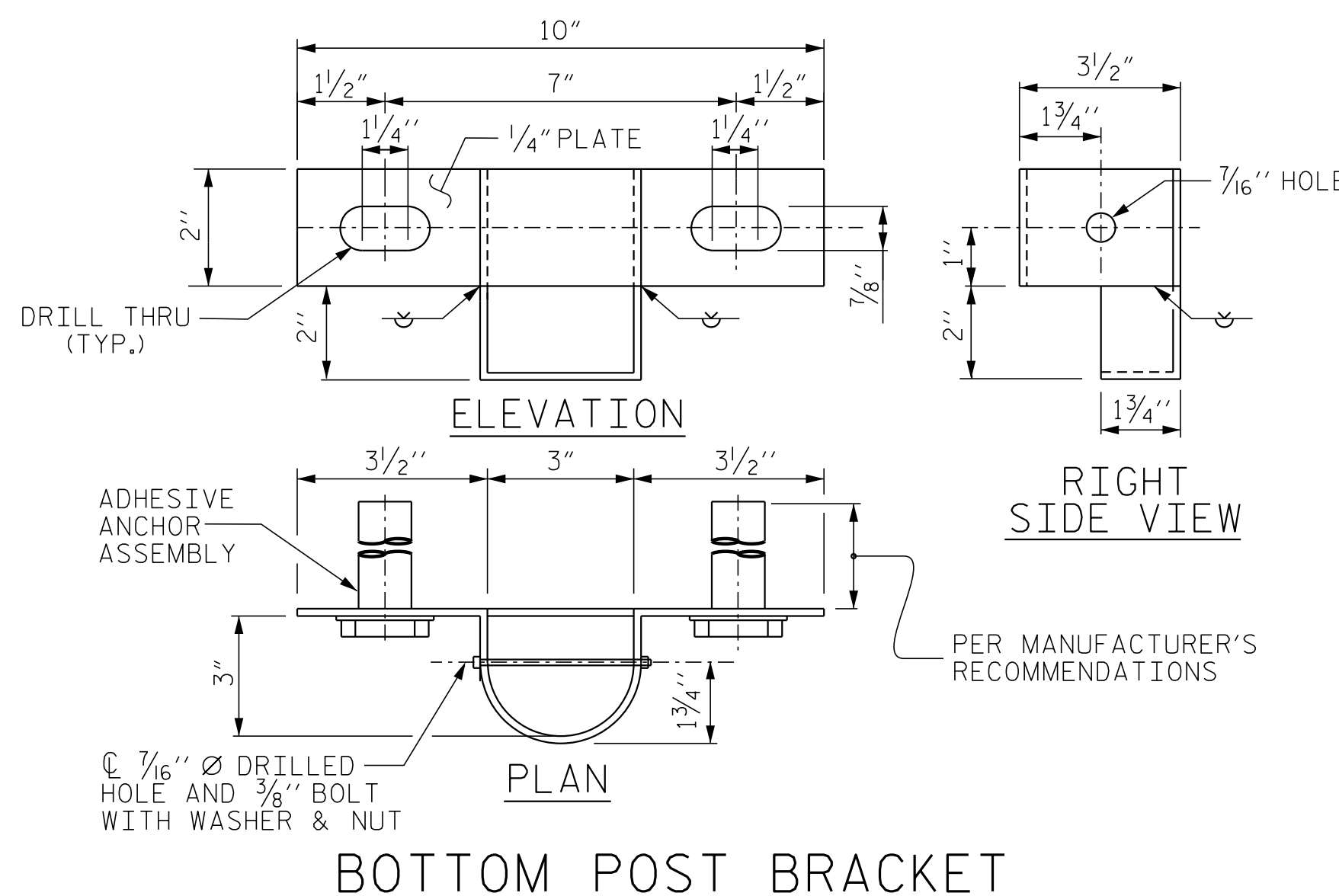
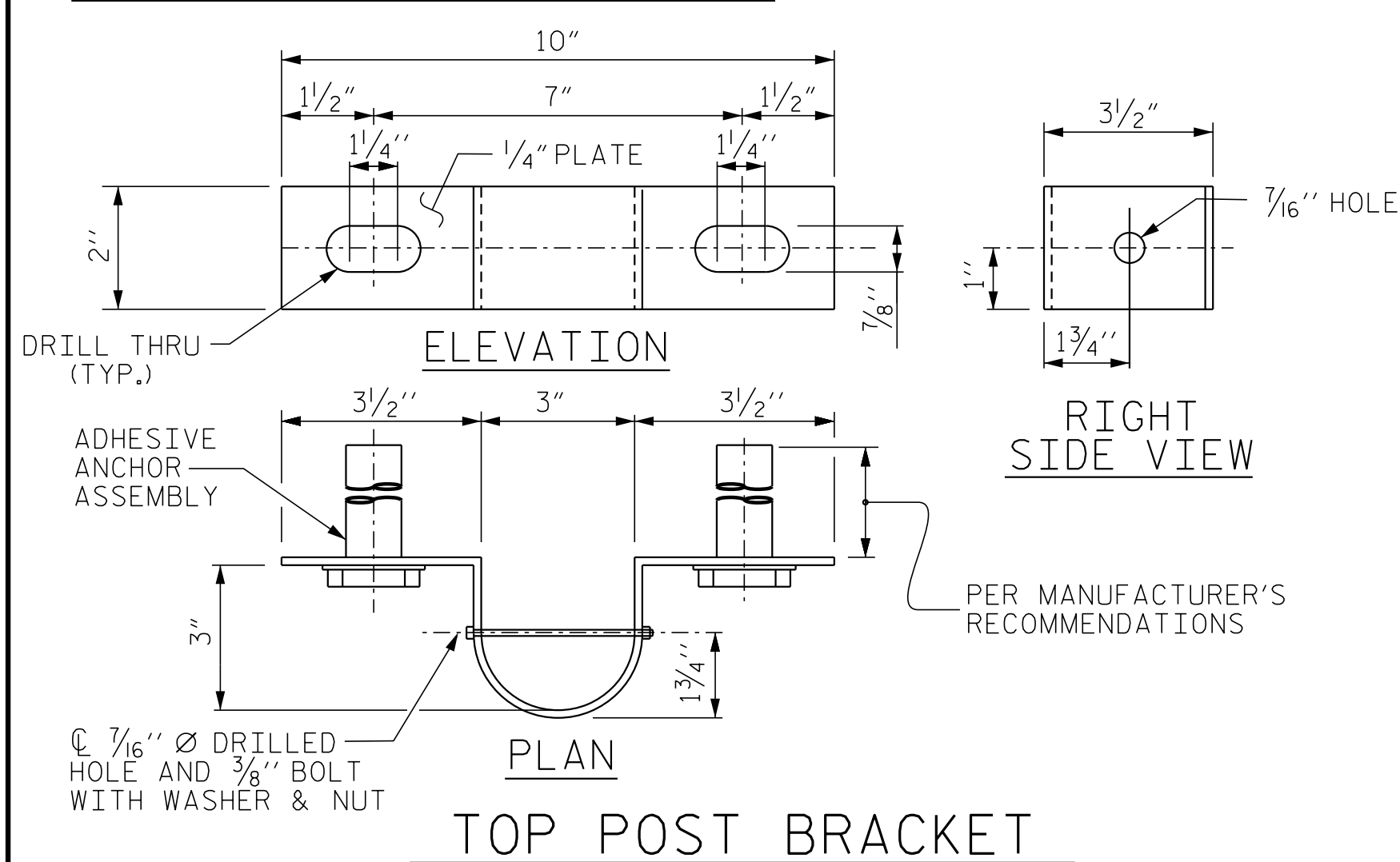


SECTION THRU FENCE



PARTIAL ELEVATION

72" CHAIN LINK FENCE
 TOTAL PAY LENGTH 240.0 LIN. FT.



PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-

ENGINEER OF RECORD:
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 GREGORY M. O'NEIL
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 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 BRIDGE MOUNTED
 CHAIN LINK FENCE
 DETAILS
 (LEFT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-15
1			3			TOTAL SHEETS
2			4			27

DRAWN BY: D. HODGE DATE: 8/18
 CHECKED BY: T. KOCH DATE: 8/18

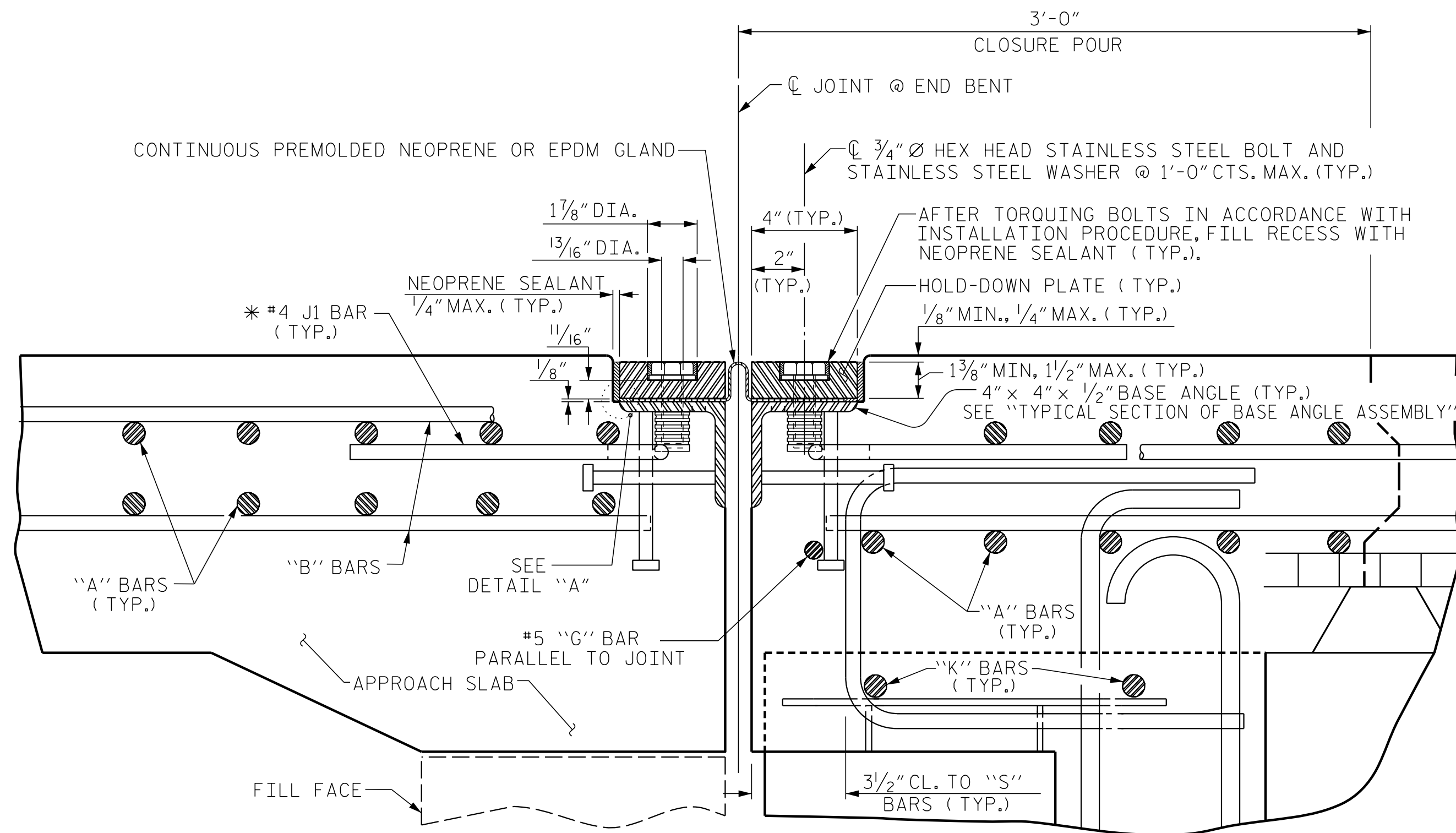
DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

INSTALLATION PROCEDURE

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

GENERAL NOTES

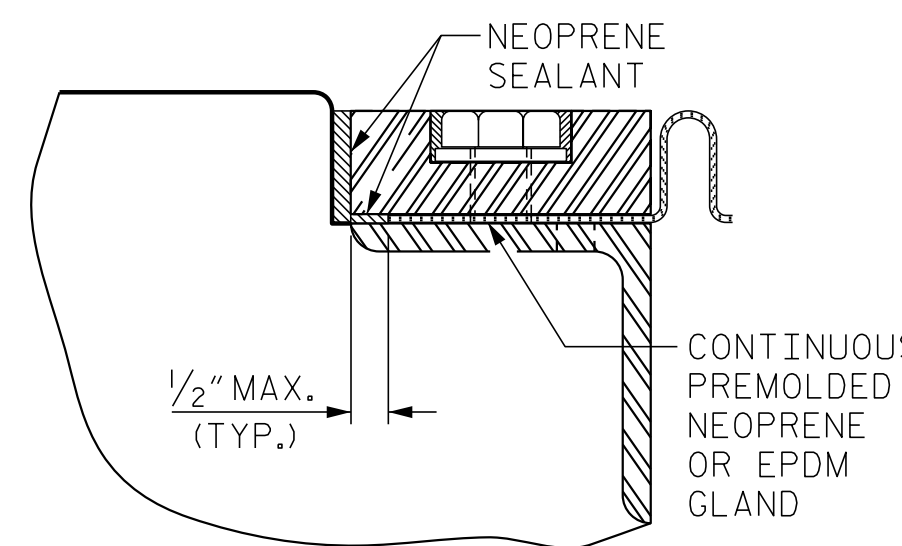
1. FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.
2. ALL PLATES AND ANGLES SHALL CONFORM TO AASHTO M270 GRADE 36 STEEL OR APPROVED EQUAL. ALL HOLD-DOWN BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL CONFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. ALL STUD ANCHORS SHALL CONFORM TO AASHTO M169, GRADES 1010 THRU 1020 OR APPROVED EQUAL. ALL CONCRETE INSERTS SHALL BE CLOSED END AND SHALL CONFORM TO AASHTO M169, GRADE 12L14. TENSILE CAPACITY SHALL BE 3000 LBS. MINIMUM.
3. A PREMOLDED CORRUGATED OR NON-CORRUGATED GLAND SHALL BE USED FOR JOINTS SKEWED BETWEEN 50° THRU 130°. FOR JOINTS SKEWED LESS THAN 50° OR MORE THAN 130°, ONLY A CORRUGATED GLAND SHALL BE USED.
4. CLOSED END FERRULES AND STUD ANCHORS SHALL BE SHOP WELDED AND ALL HOLES SHALL BE SHOP DRILLED AS SHOWN ON PLANS. STUD ANCHORS SHALL BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION.
5. SURFACES COMING IN CONTACT WITH NEOPRENE SHALL BE GROUND SMOOTH PRIOR TO METALLIZING.
6. UPON COMPLETION OF SHOP FABRICATION, THE HOLD-DOWN PLATE AND BASE ANGLE ASSEMBLY, AS SHOWN IN THE "TYPICAL SECTION OF BASE ANGLE ASSEMBLY", SHALL BE METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
7. THE COVER PLATES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
8. BASE ANGLE ASSEMBLY SHALL BE CONTINUOUS FOR THE LENGTH OF THE JOINT. AT CROWN BREAKS, THE ENDS OF THE BASE ANGLE ASSEMBLY SHALL BE CUT PARALLEL TO THE BRIDGE CENTERLINE FOR SKEWS LESS THAN 80° AND GREATER THAN 100°. FINISHED WELD SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).
9. FIELD SPLICES OF HOLD-DOWN PLATES SHALL BE KEPT TO A MINIMUM. CONTRACTOR SHALL FURNISH DETAILED PLANS SHOWING PROPOSED SPLICE LOCATIONS FOR APPROVAL. HOLD-DOWN PLATES SHALL NOT EXCEED 20' LENGTHS UNLESS APPROVED BY THE ENGINEER.
10. NO ALTERNATE JOINT DETAILS SHALL BE PERMITTED IN LIEU OF THOSE SHOWN ON THESE PLANS.
11. THE CONTRACTOR MAY, AT HIS OPTION, USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF CONCRETE INSERTS FOR COVER PLATES. THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.
12. THE FABRICATOR SHALL PROVIDE 1/2" Ø THREADED HOLES IN THE HOLD-DOWN PLATES TO ASSIST IN LIFTING AND PLACING. THE HOLES SHALL BE 3/4" DEEP AT 6'-0" MAXIMUM SPACING AND A MINIMUM OF TWO HOLES PER PLATE.



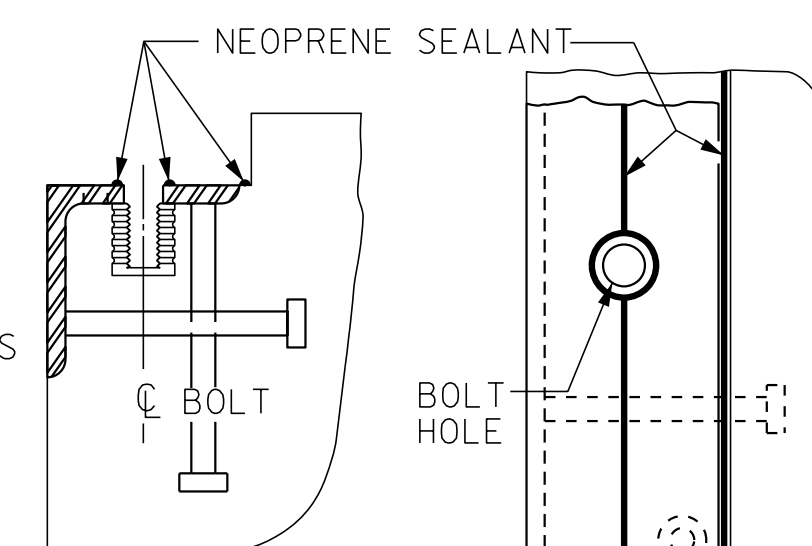
EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT -- PRESTRESSED GIRDER SUPERSTRUCTURE

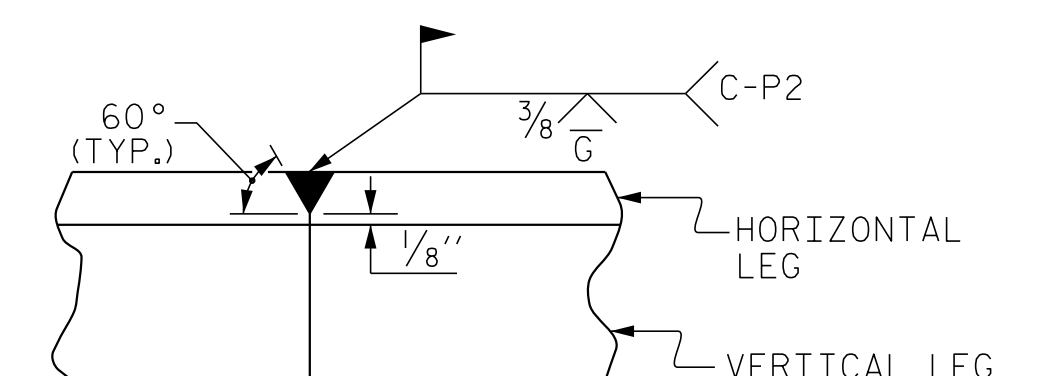
* THE QUANTITY OF #4 J1 BARS ON THE BILL OF MATERIAL IS BASED ON 1'-0" CENTERS. J1 BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF J1 BARS SPECIFIED, ADDITIONAL J1 BARS WILL NOT BE REQUIRED.



DETAIL "A"

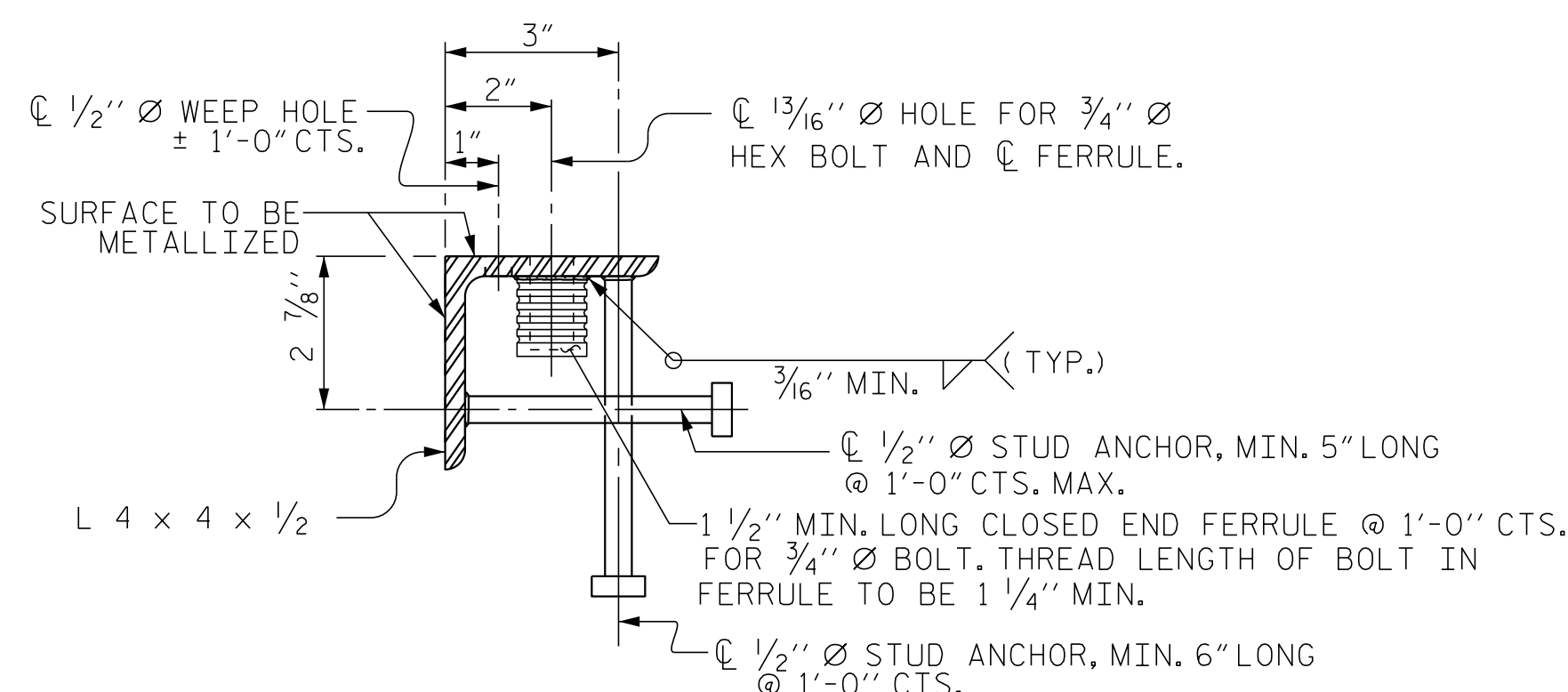


CROSS SECTION
PLAN VIEW
INSTALLATION SKETCH



DETAIL- FIELD WELD
SPLICE OF BASE ANGLE

MOVEMENT AND SETTING AT JOINT					
END BENT NO.	SKEW ANGLE	TOTAL MOVEMENT (ALONG C RDWY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
1	58°-15'-25"	0	1"	1"	1"
2	58°-15'-25"	3/4"	1 1/16"	1 3/8"	1 1/8"



TYPICAL SECTION OF BASE ANGLE ASSEMBLY

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-

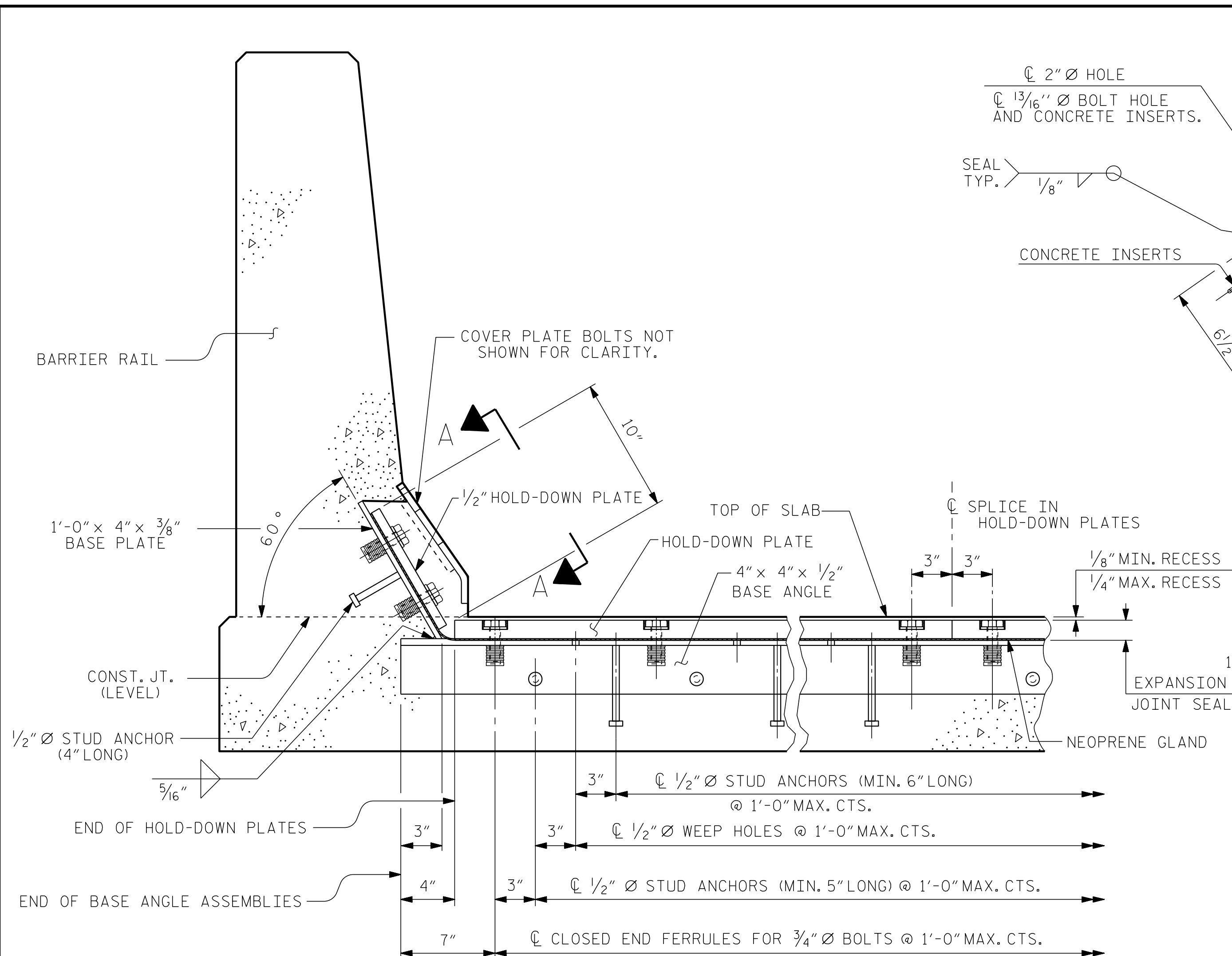
SHEET 1 OF 2

ASSEMBLED BY : D. HODGE	DATE : 8/18
CHECKED BY : T. KOCH	DATE : 8/18
DRAWN BY : REK 9/87	REV. 10/11 MAA/GM
CHECKED BY : CRK 10/87	REV. 10/17 MAA/THC
	REV. 6/18 MAA/THC

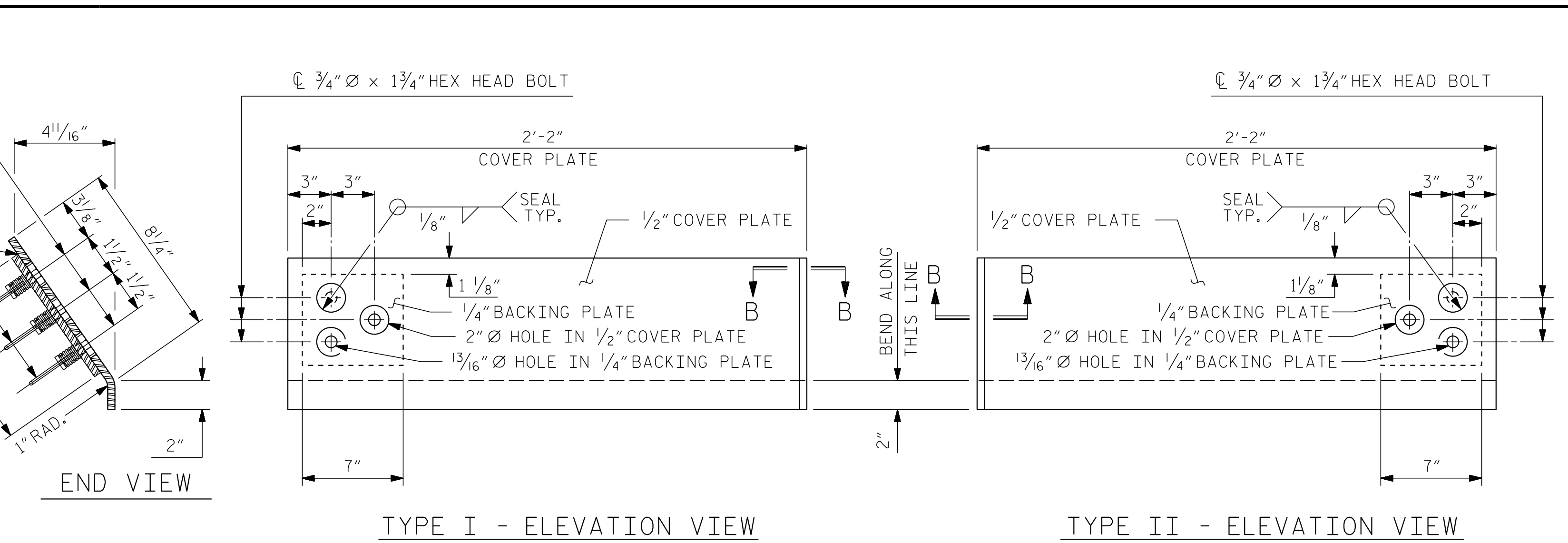
DOCUMENT NOT CONSIDERED FINAL
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ENGINEER OF RECORD:
Gregory M. Allard
 NORTH CAROLINA PROFESSIONAL SEAL 37400
 ENGINEER
 GREGORY M. OLLAND
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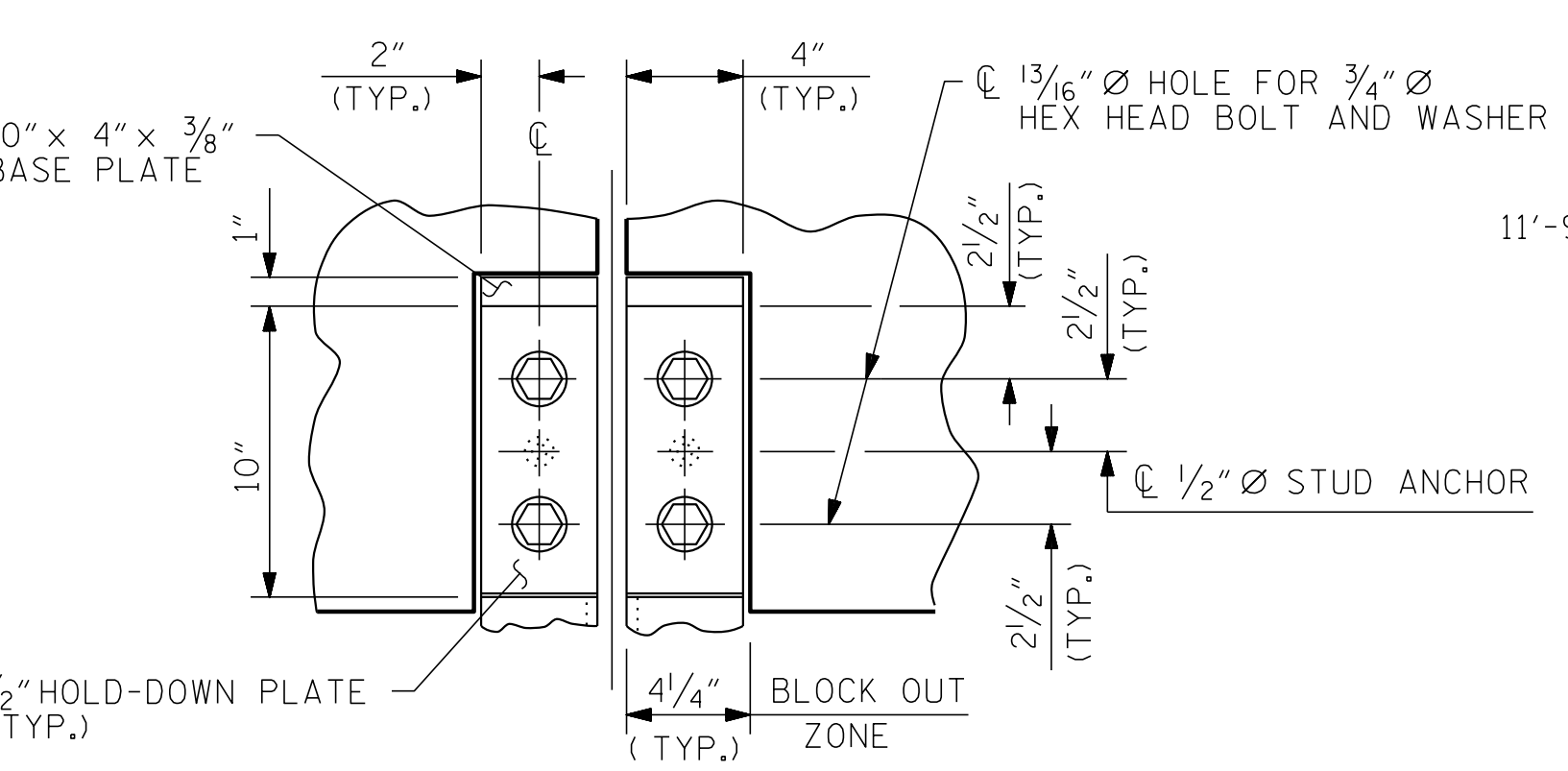
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD EXPANSION JOINT SEAL DETAILS (LEFT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S1-16					TOTAL SHEETS 27



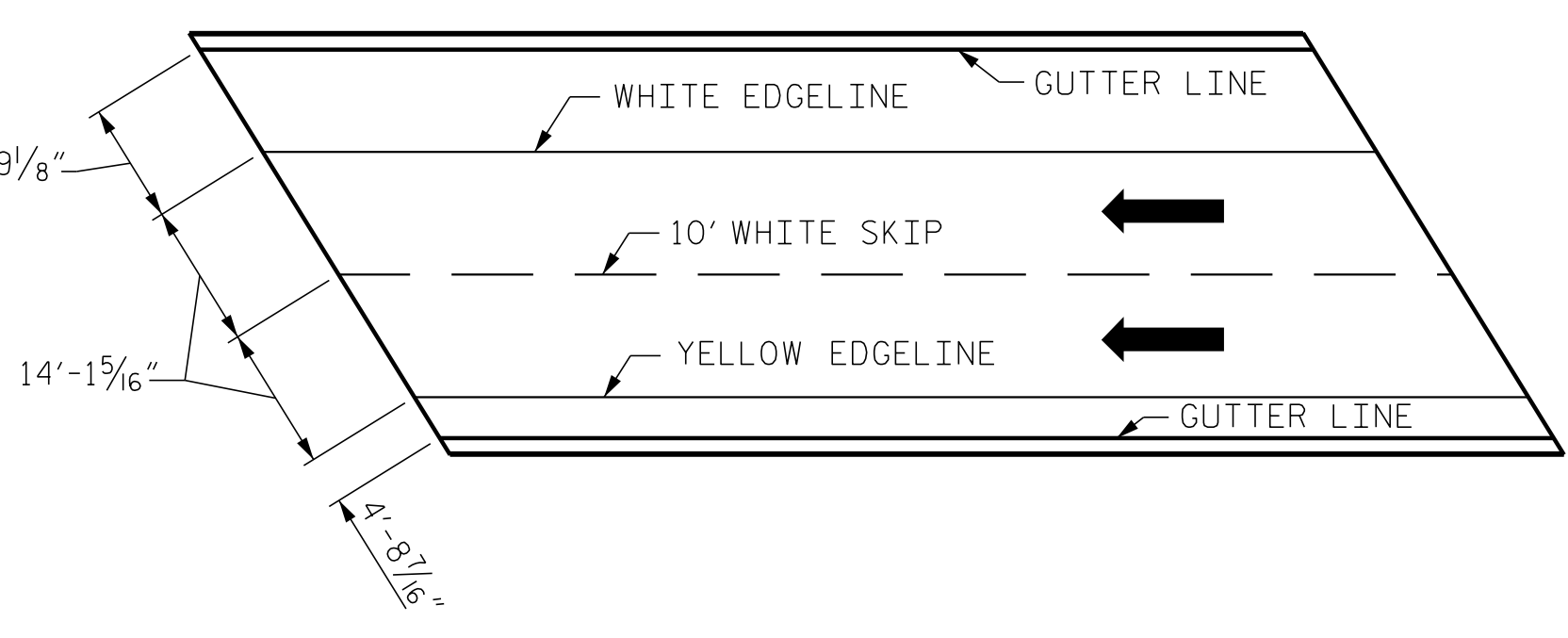
SECTION THRU RAIL NORMAL TO JOINT



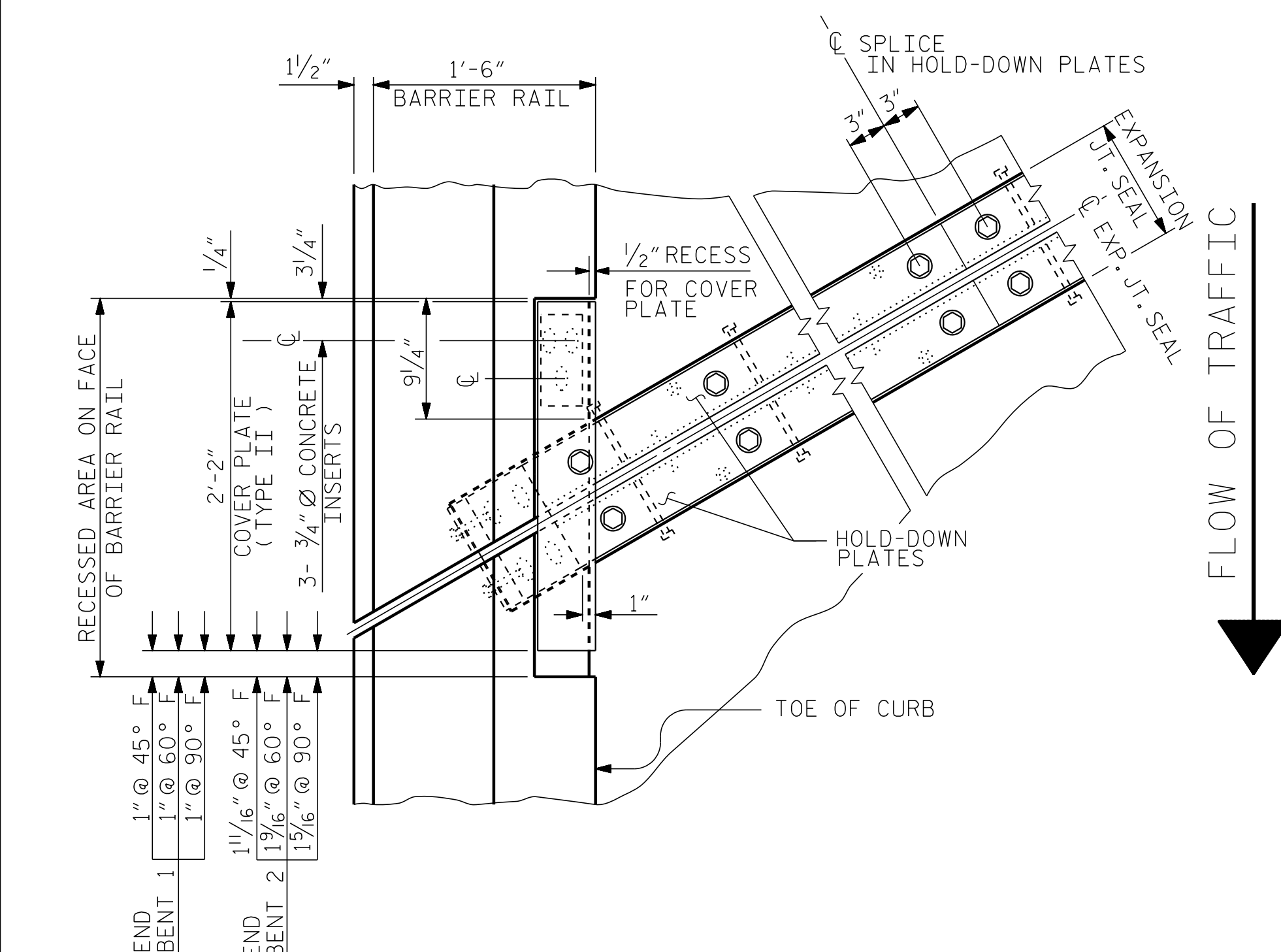
COVER PLATE DETAILS



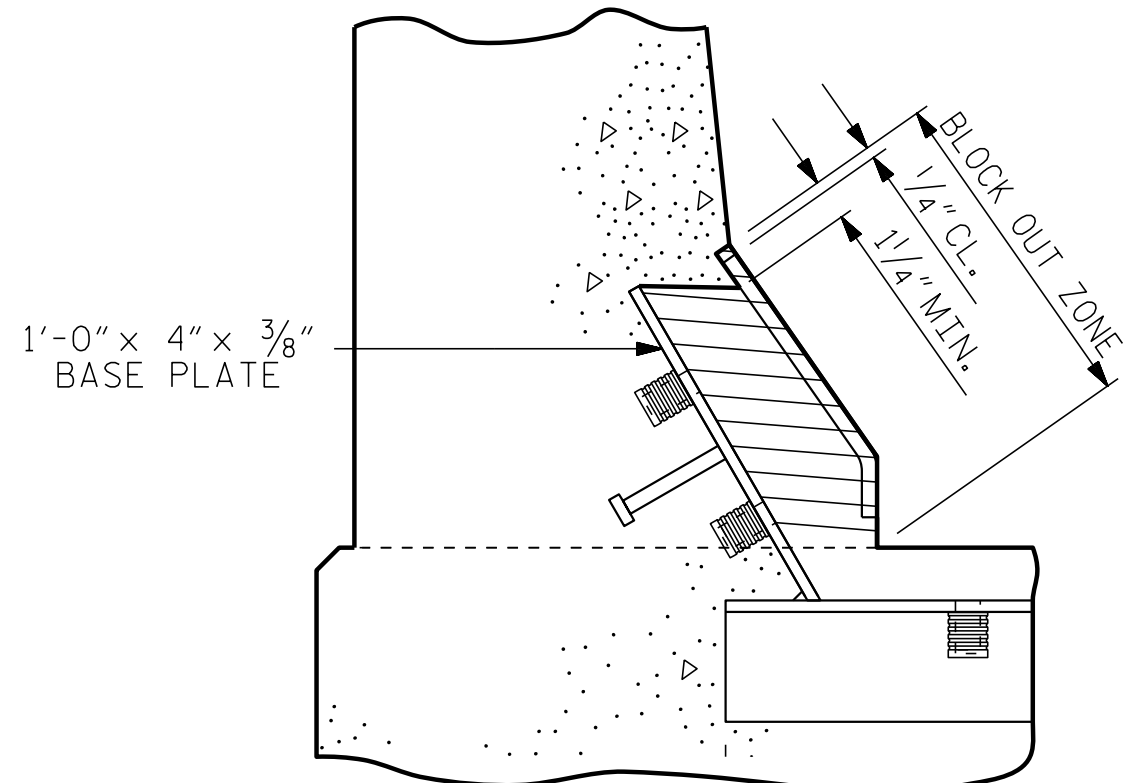
SECTION A - A



PAVEMENT MARKING ALIGNMENT

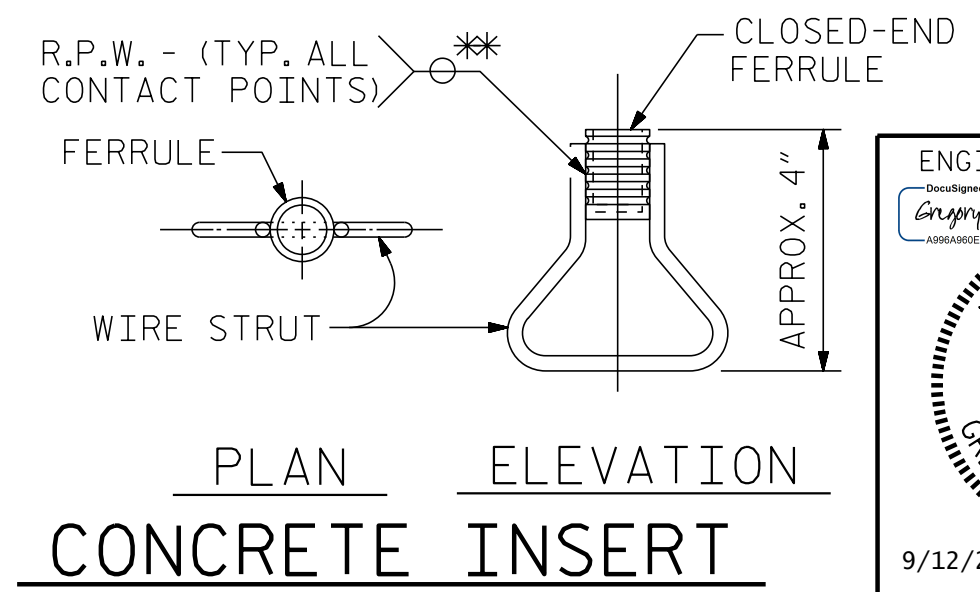


PLAN OF EXPANSION JOINT SEAL



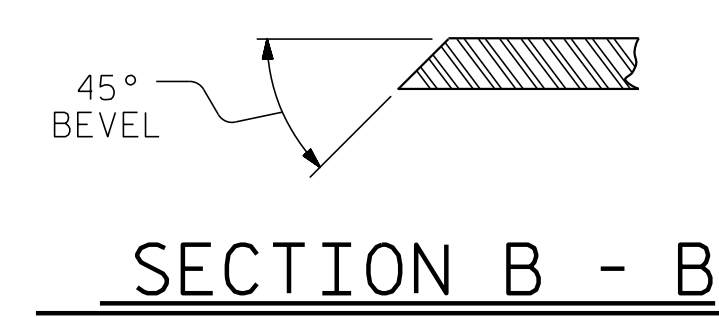
BLOCK OUT DETAIL

SEE "SECTION A - A" FOR OTHER DETAILS.



CONCRETE INSERT

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



SECTION B - B

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-
 SHEET 2 OF 2



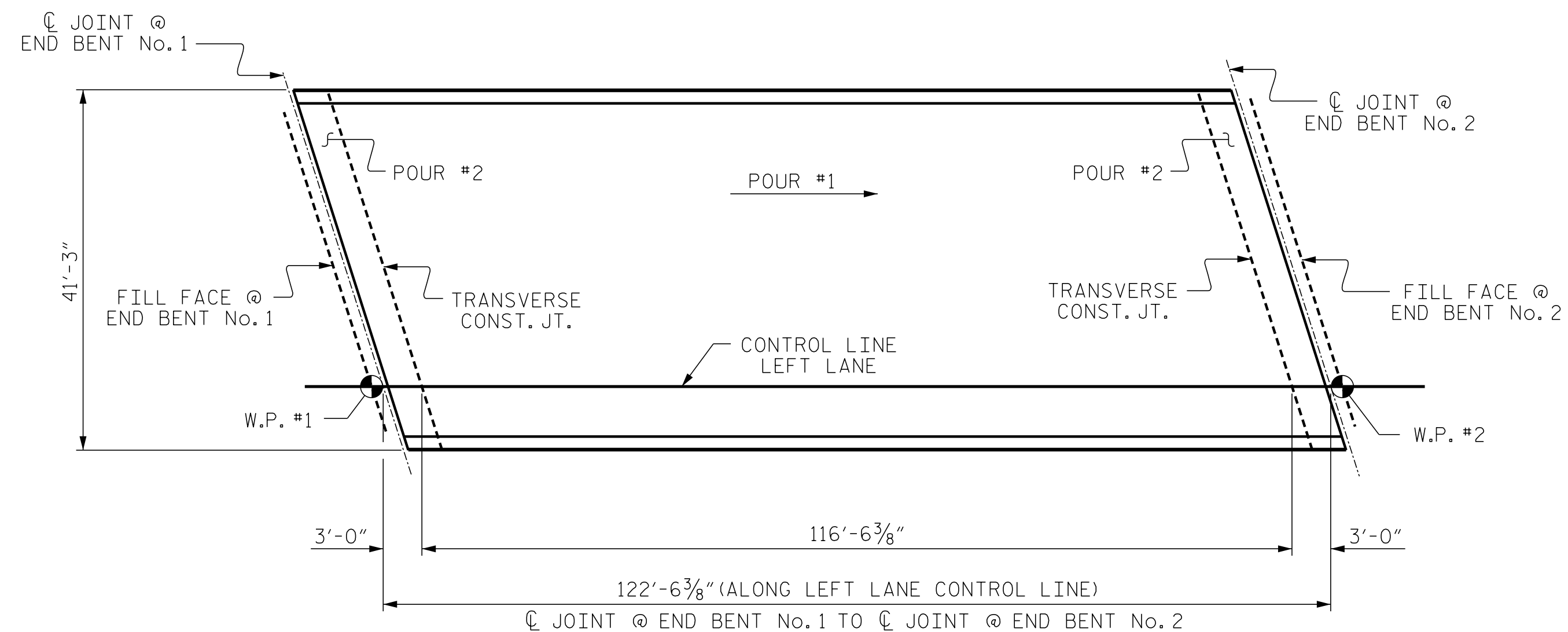
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 EXPANSION JOINT
 SEAL DETAILS
 FOR BARRIER RAIL
 (LEFT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-17
1			3			TOTAL SHEETS
2			4			27

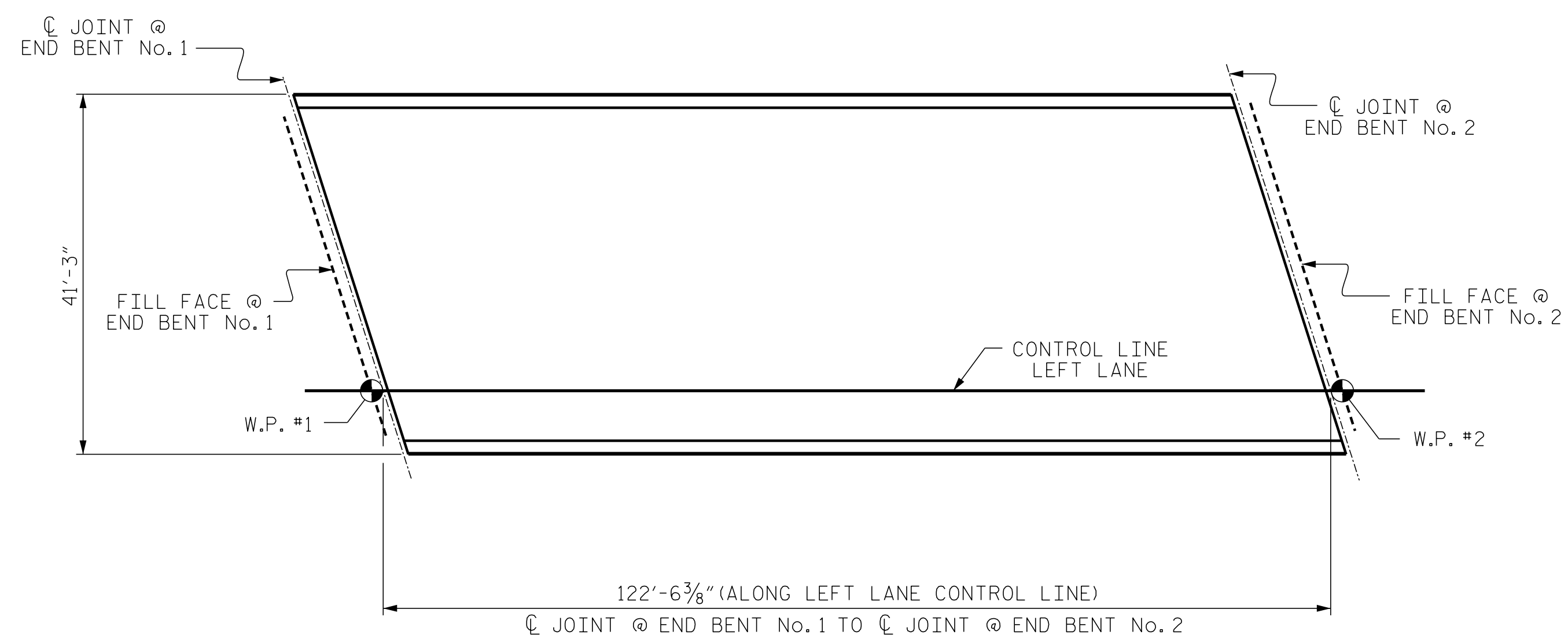
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

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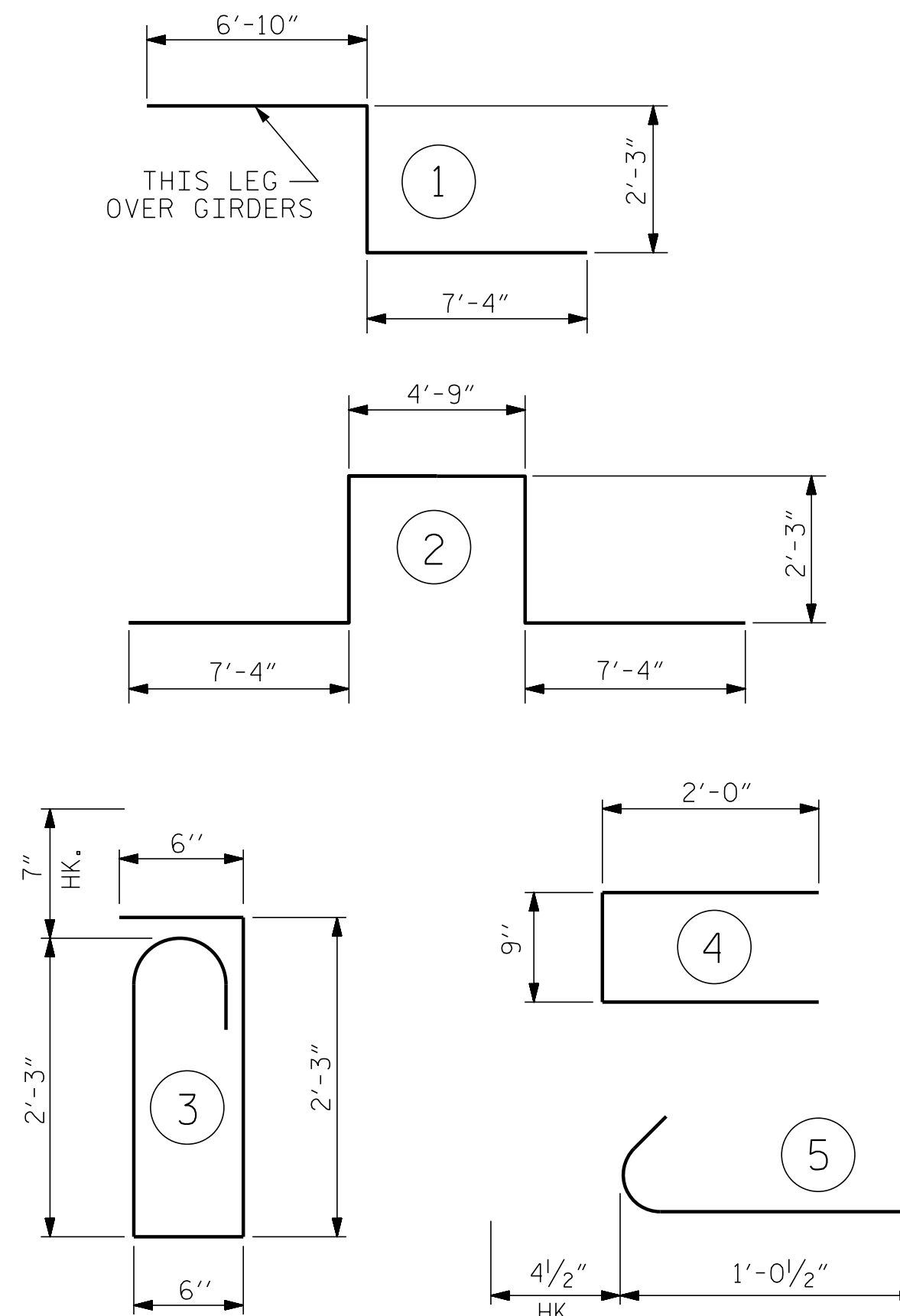
POUR SEQUENCE SKETCH



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 5,054)

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

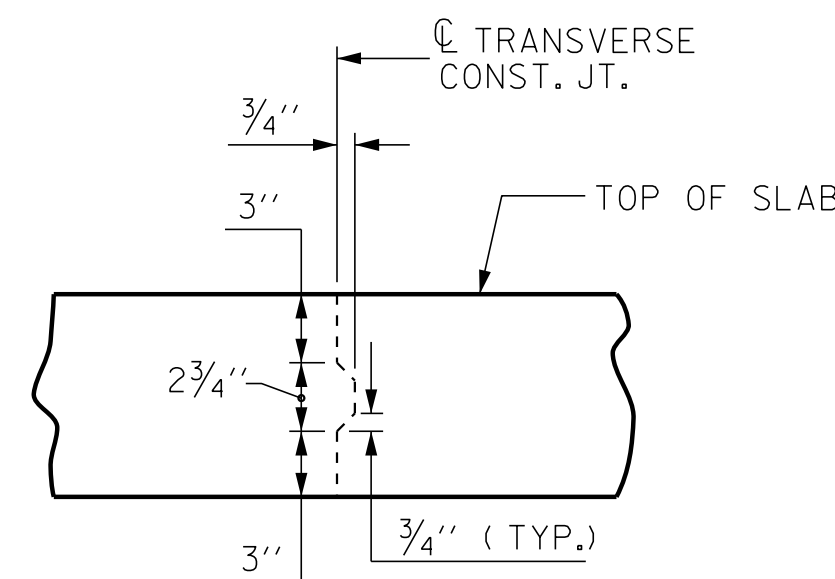
SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	* EPOXY COATED REINFORCING STEEL (LBS.)
TOTALS**	170.0	13,660	13,031

**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

GROOVING BRIDGE FLOORS

APPROACH SLABS	1,657 SQ.FT.
BRIDGE DECK	4,234 SQ.FT.
TOTAL	5,891 SQ.FT.



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	166	#5	STR	40'-11"	7084	A201	6	#5	STR	38'-5"	240
A2	166	#5	STR	40'-11"	7084	A202	6	#5	STR	35'-8"	223
* A3	6	#6	STR	19'-0"	171	A203	6	#5	STR	32'-10"	205
						A204	6	#5	STR	30'-0"	188
* A101	6	#5	STR	38'-5"	240	A205	6	#5	STR	27'-2"	170
* A102	6	#5	STR	35'-8"	223	A206	6	#5	STR	24'-4"	152
* A103	6	#5	STR	32'-10"	205	A207	6	#5	STR	21'-6"	135
* A104	6	#5	STR	30'-0"	188	A208	6	#5	STR	18'-8"	117
* A105	6	#5	STR	27'-2"	170	A209	6	#5	STR	15'-10"	99
* A106	6	#5	STR	24'-4"	152	A210	6	#5	STR	13'-0"	81
* A107	6	#5	STR	21'-6"	135	A211	6	#5	STR	10'-2"	64
* A108	6	#5	STR	18'-8"	117	A212	6	#5	STR	7'-4"	46
* A109	6	#5	STR	15'-10"	99	A213	6	#5	STR	4'-6"	28
* A110	6	#5	STR	13'-0"	81						
* A111	6	#5	STR	10'-2"	64	* B1	145	#4	STR	26'-1"	2526
* A112	6	#5	STR	7'-4"	46	B2	105	#5	STR	42'-2"	4618
* A113	6	#5	STR	4'-6"	28						

* G1	2	#5	STR	48'-1"	100
* J1	88	#4	5	1'-5"	83
* K1	8	#8	1	16'-5"	351
* K2	8	#8	2	23'-11"	511
K3	18	#6	STR	7'-9"	210
* S1	48	#4	4	4'-9"	152
* S2	48	#5	3	6'-1"	305

REINFORCING STEEL LBS. 13,660
* EPOXY COATED REINFORCING STEEL LBS. 13,031
* THESE BARS ARE EPOXY COATED.

POUR SEQUENCE BREAKDOWN	
SPAN A	CLASS AA CONCRETE (C.Y.)
POUR #1	142.5
POUR #2	27.5
TOTAL **	170.0

** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 170+20.99 -L-

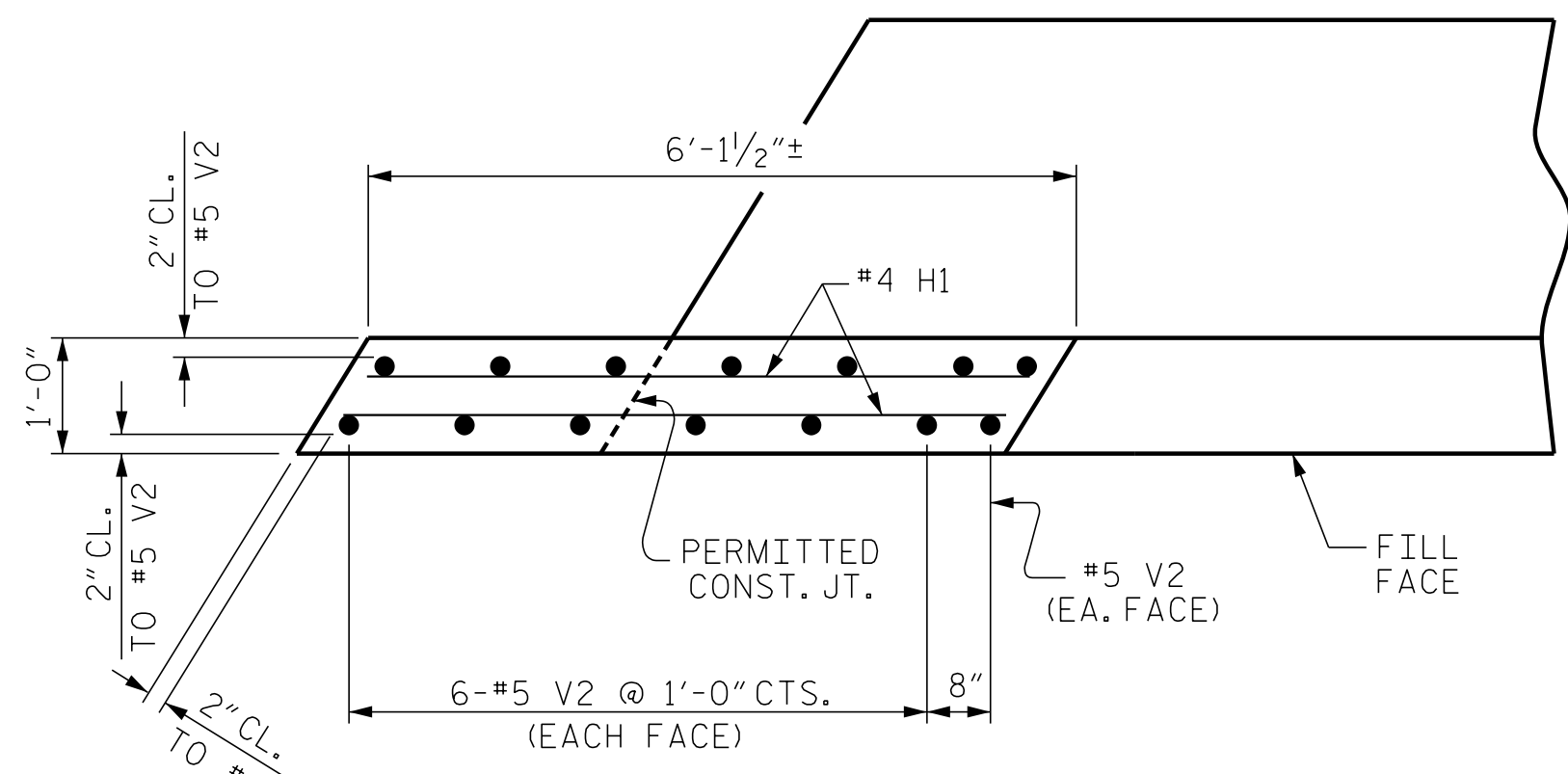
ENGINEER OF RECORD:
Gregory M. Olland
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 37400
GREGORY M. OLLAND
9/12/2018
ETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

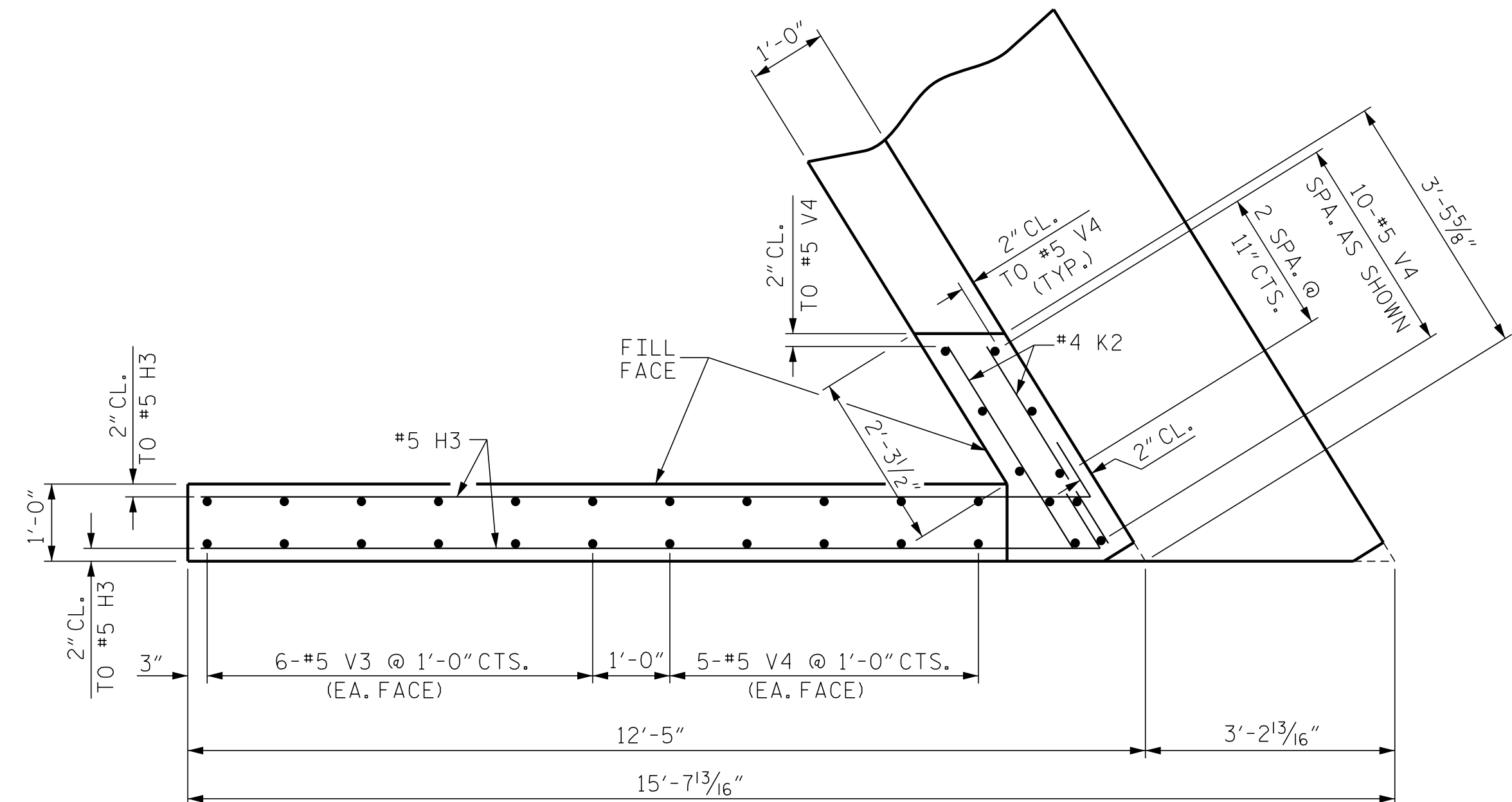
SUPERSTRUCTURE BILL OF MATERIAL (LEFT LANE)

REVISIONS

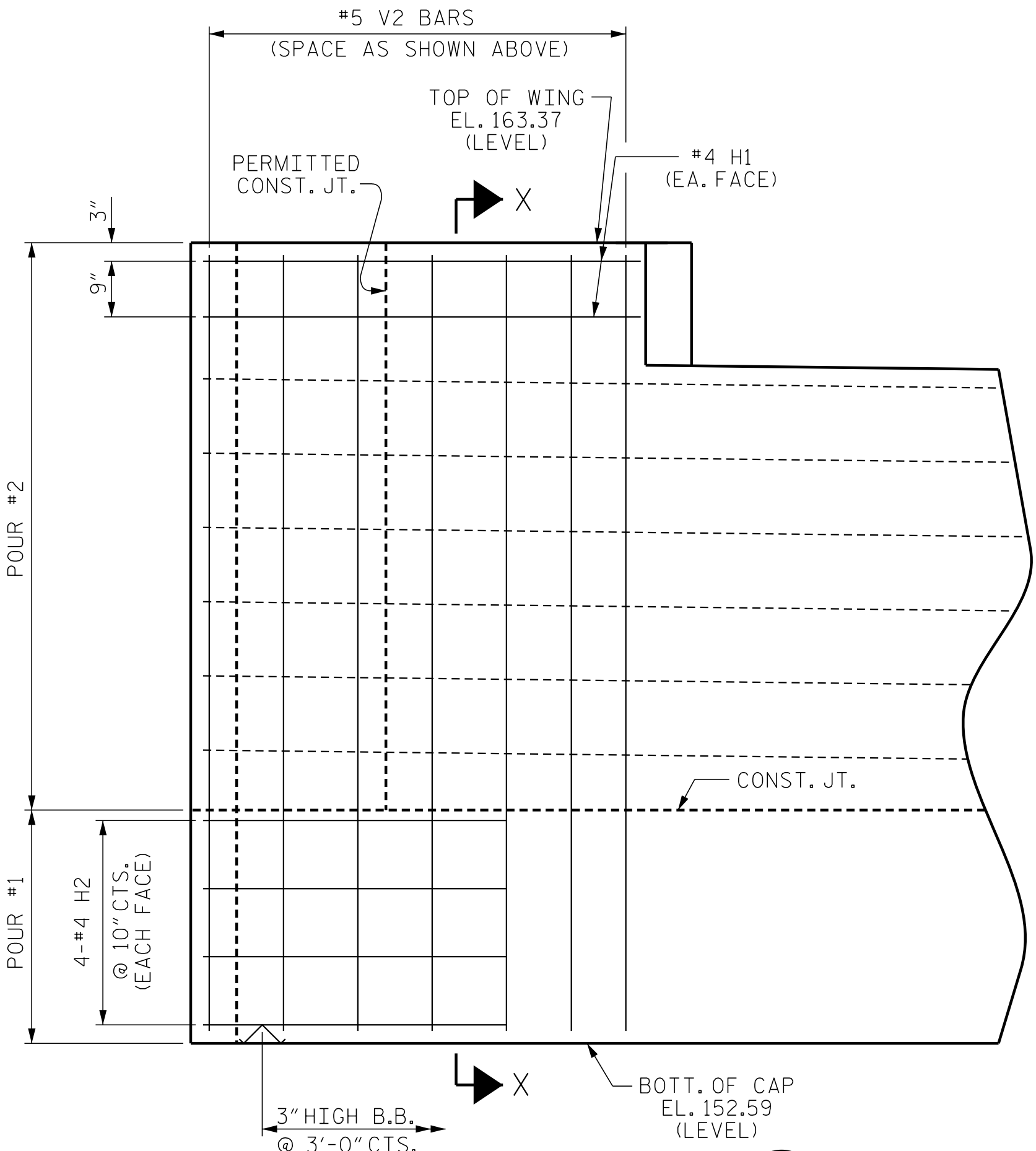
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			TOTAL SHEETS
2			4			27



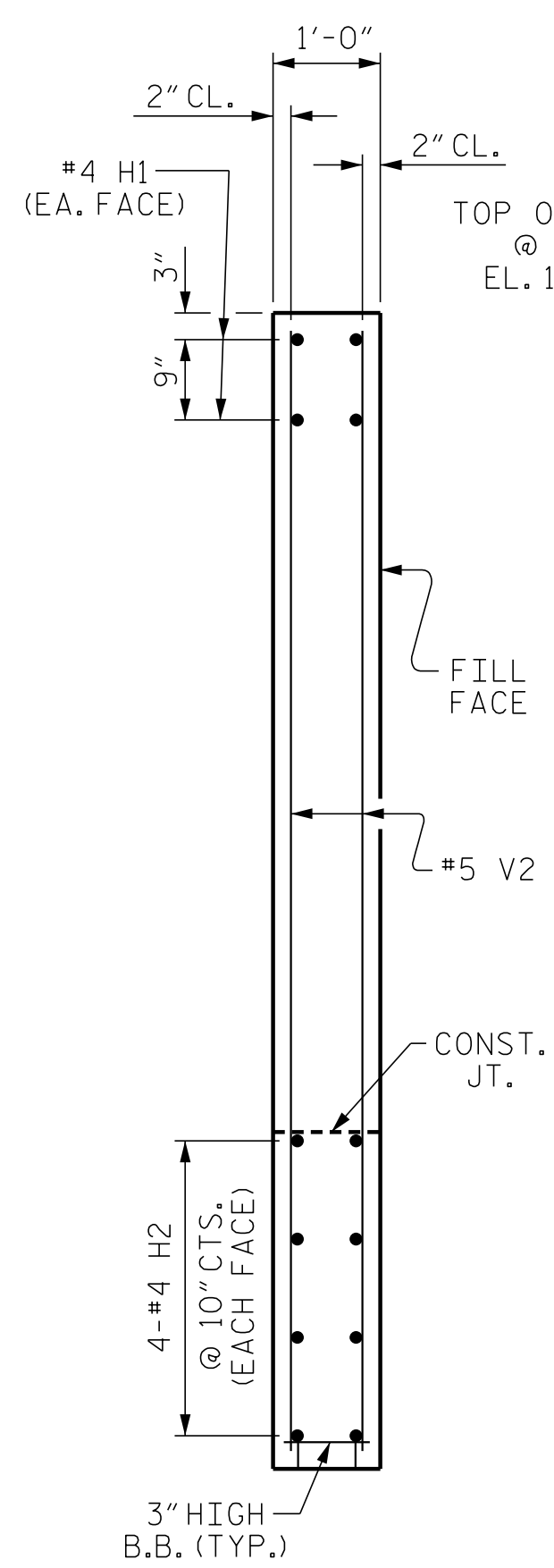
PLAN OF WING - (W1)



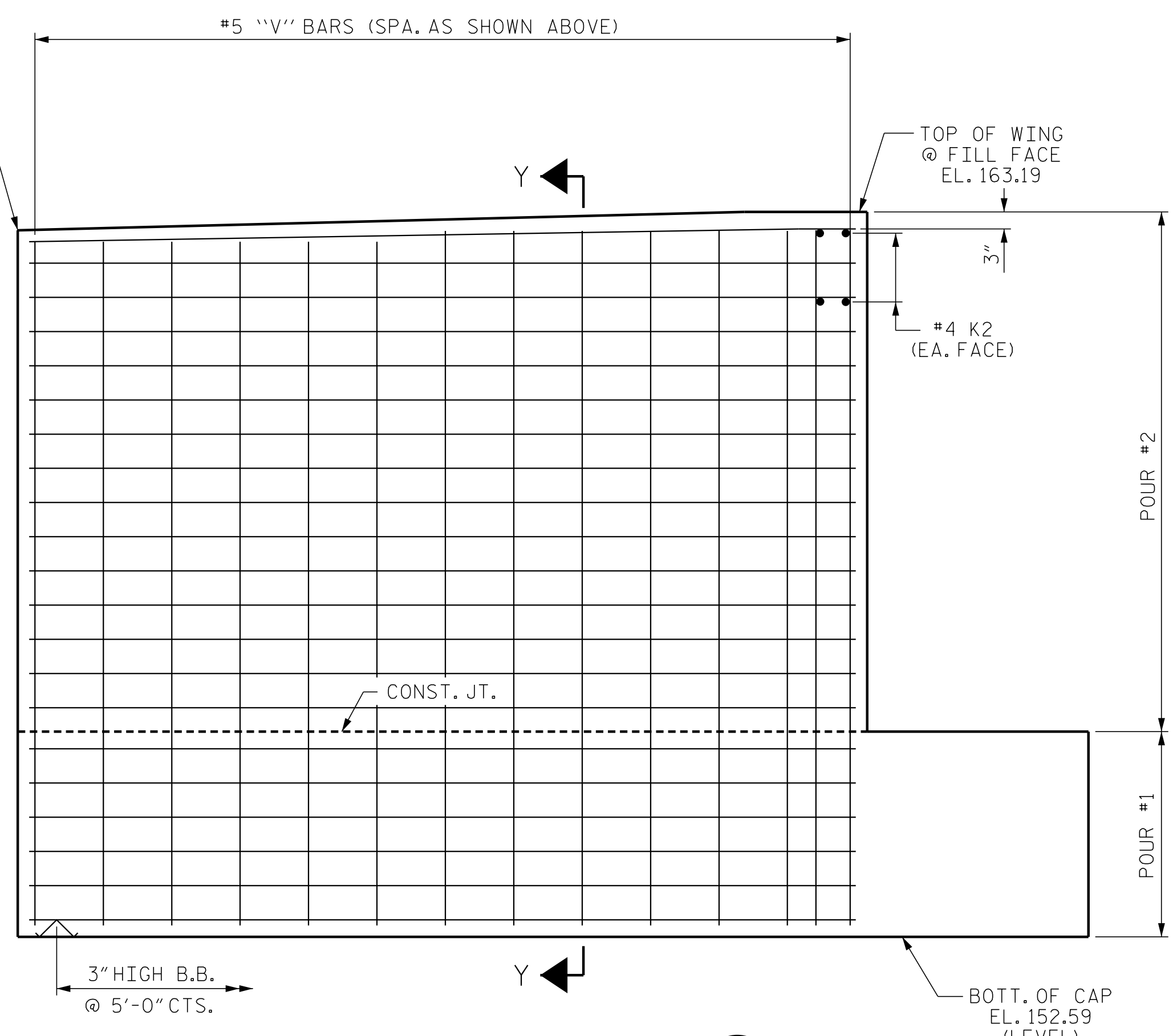
PLAN OF WING - (W2)



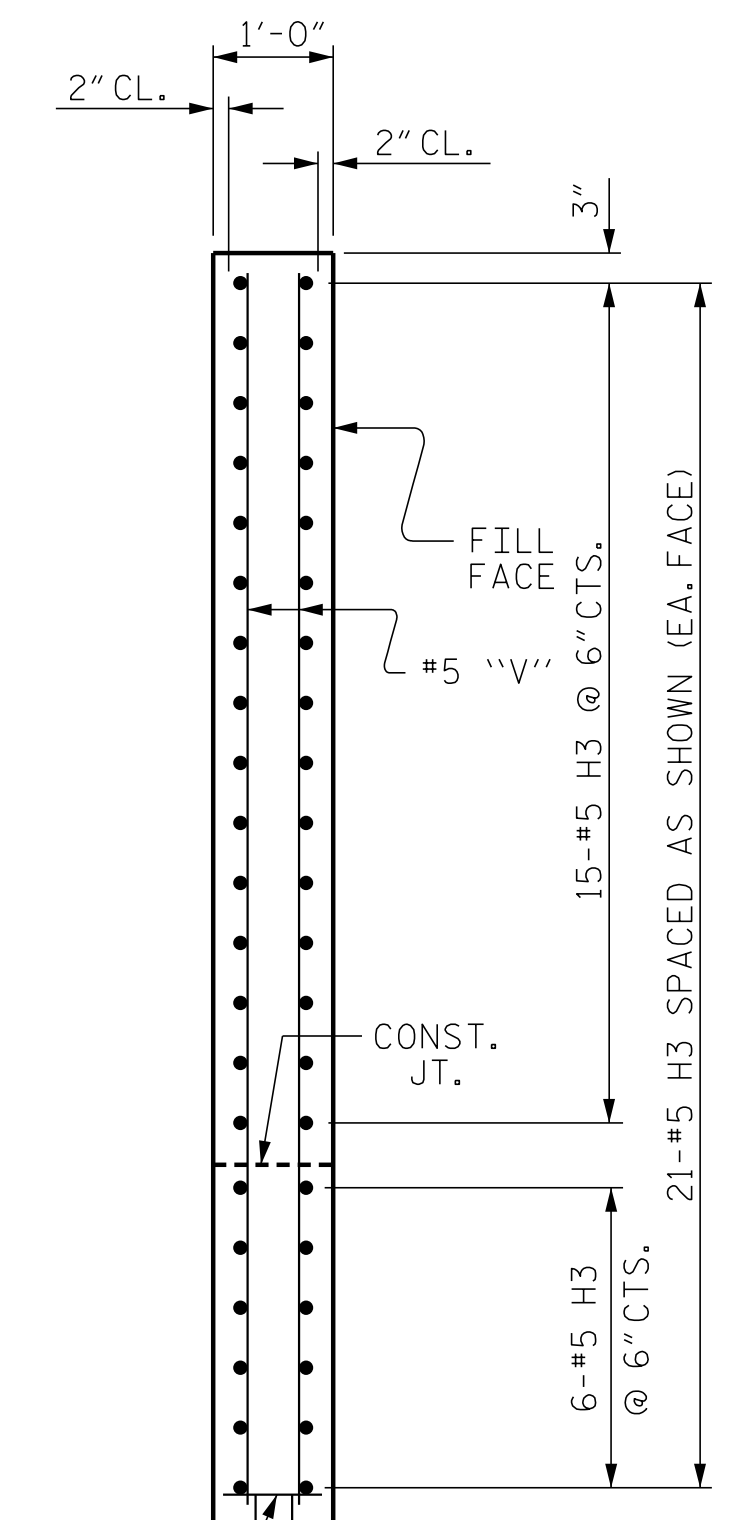
ELEVATION OF WING - (W1)



SECTION X-X
(K1 BARS NOT SHOWN)



ELEVATION OF WING - (W2)



SECTION Y-Y

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-
 SHEET 2 OF 3

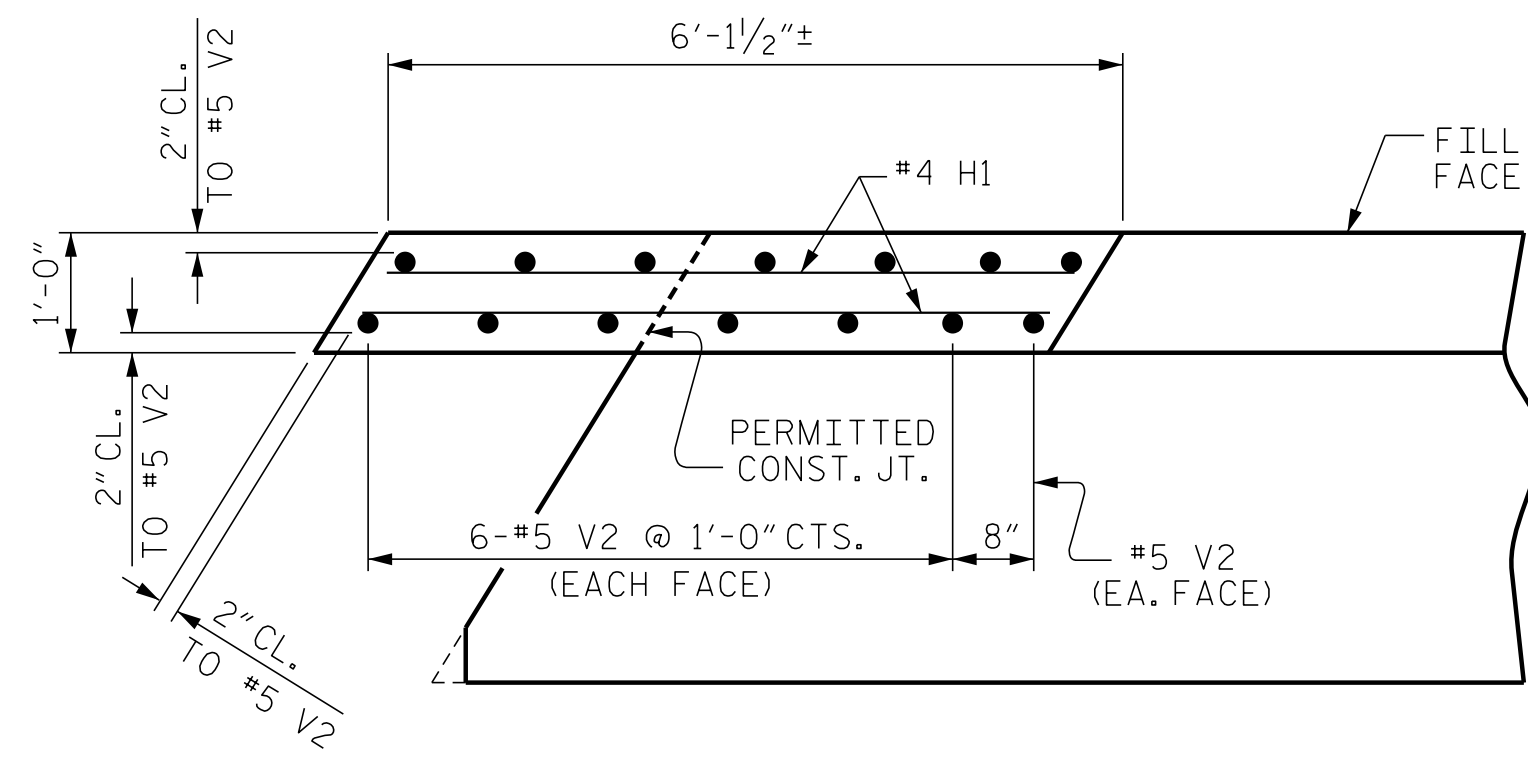
ENGINEER OF RECORD:
Gregory M. Olland
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 37400
 GREGORY M. OLLAND
 9/12/2018
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
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 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 1 LEFT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S1-20					TOTAL SHEETS 27

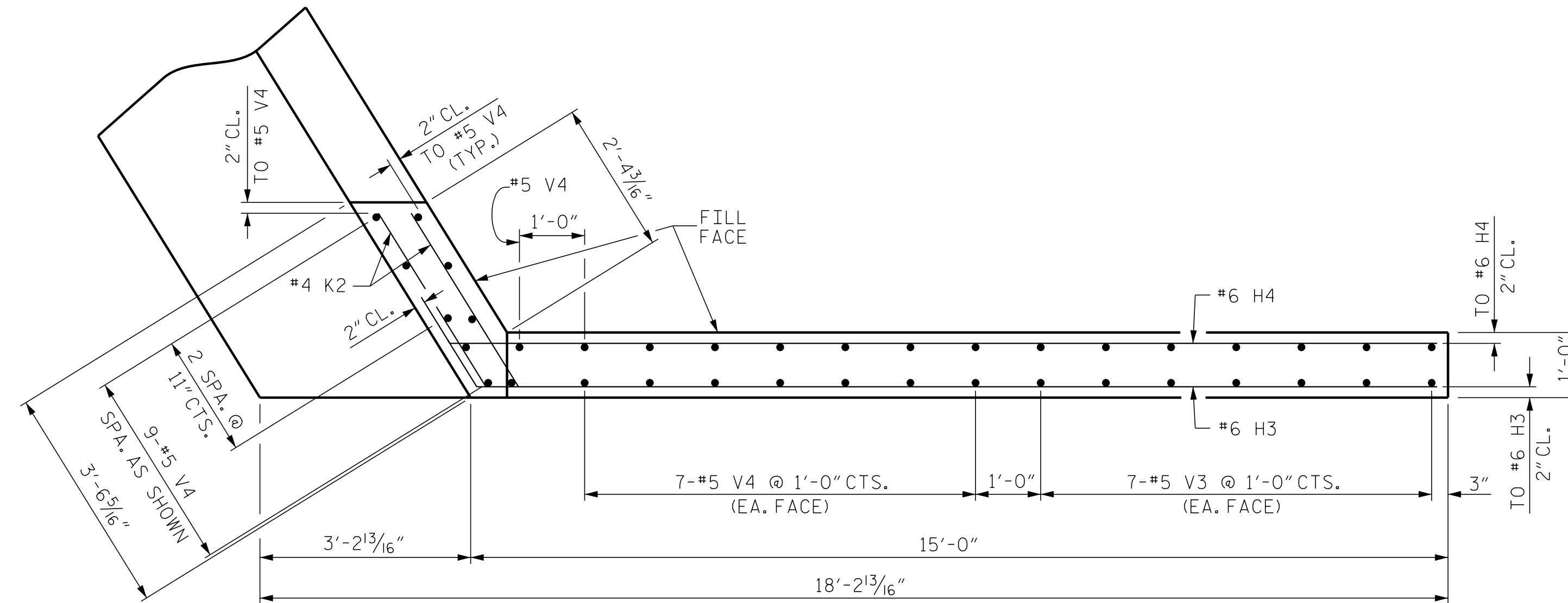
DRAWN BY: D. HODGE DATE: 5/18
 CHECKED BY: G.M. GILLAND DATE: 5/18

DOCUMENT NOT CONSIDERED FINAL
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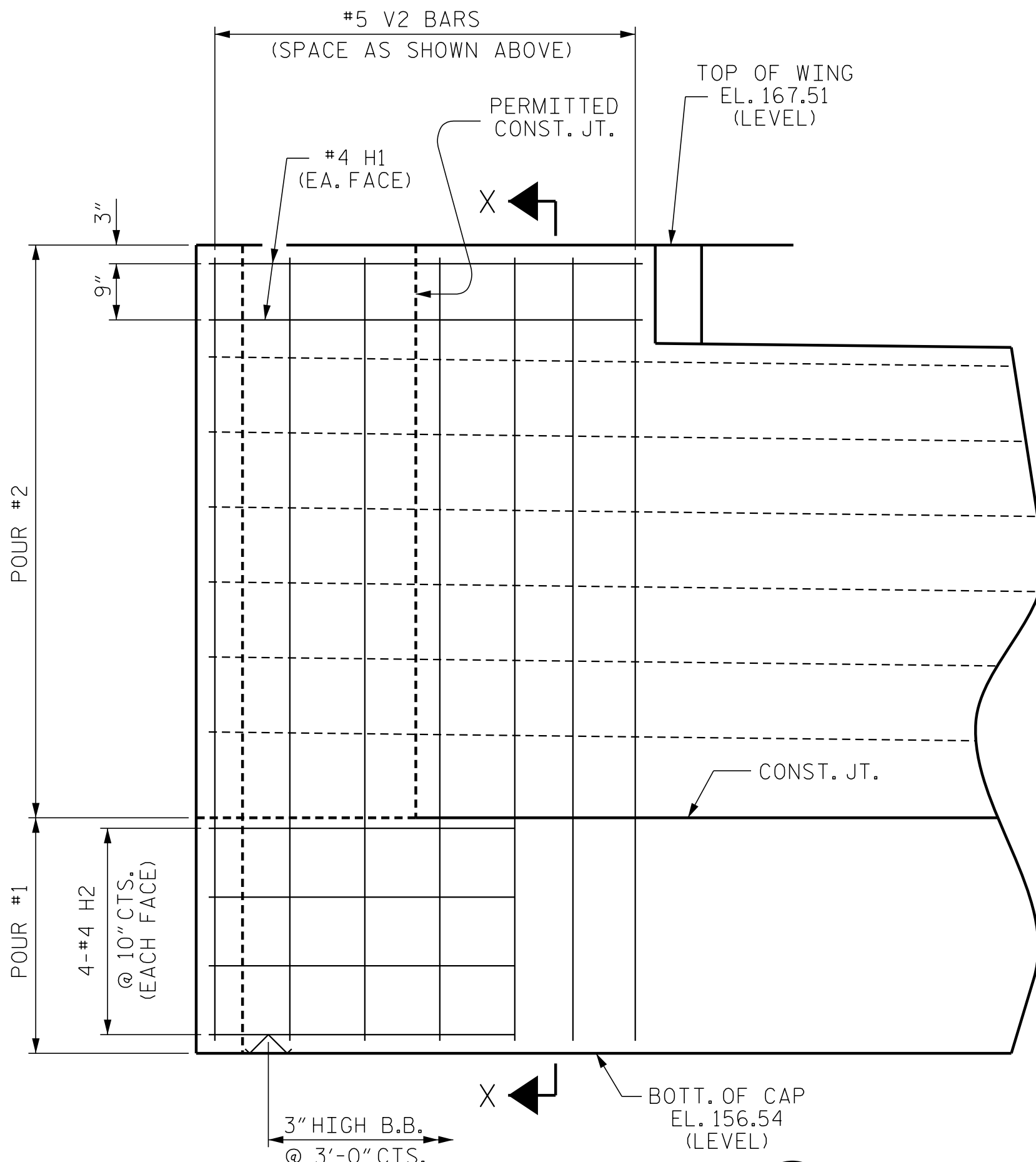
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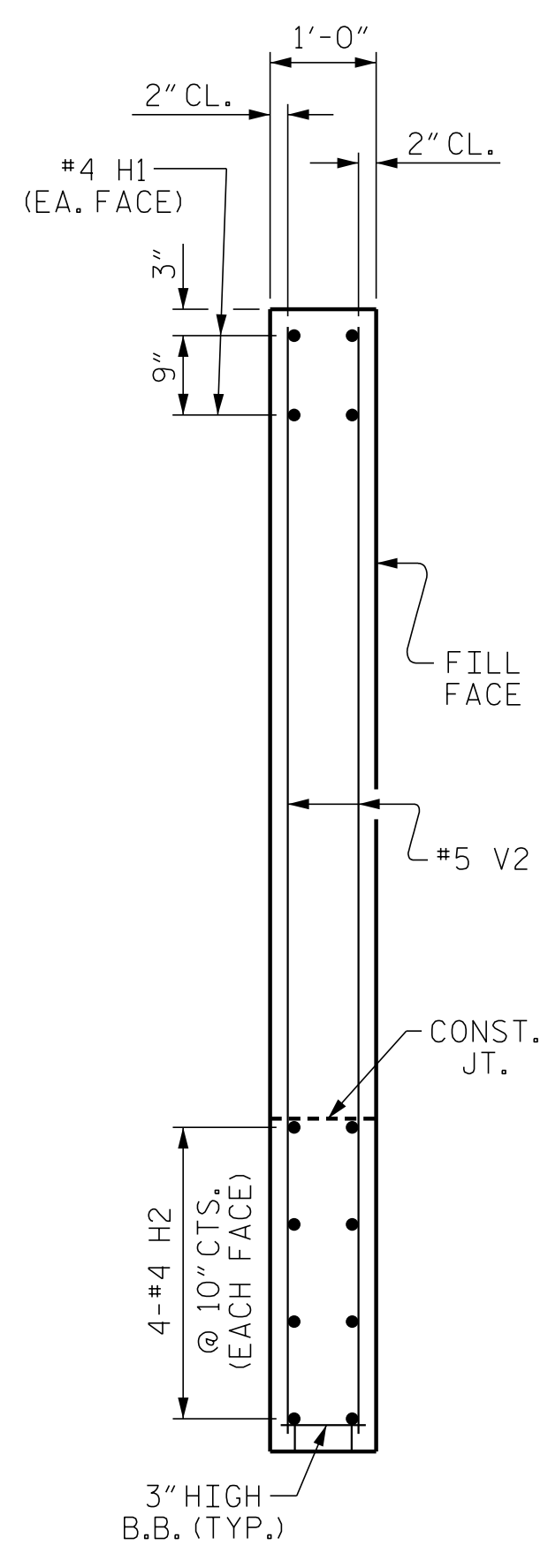
PLAN OF WING - (W1)



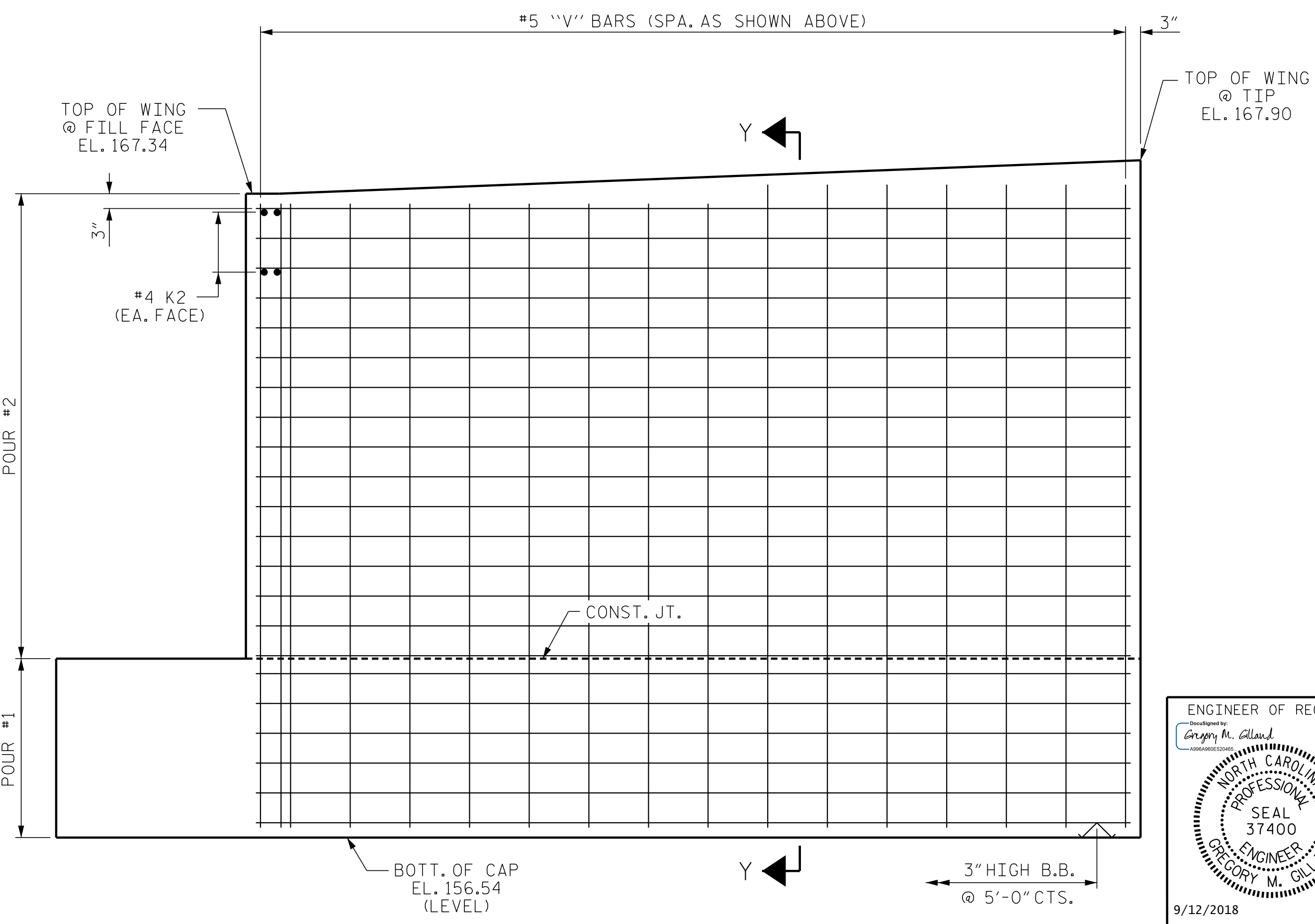
PLAN OF WING - (W2)



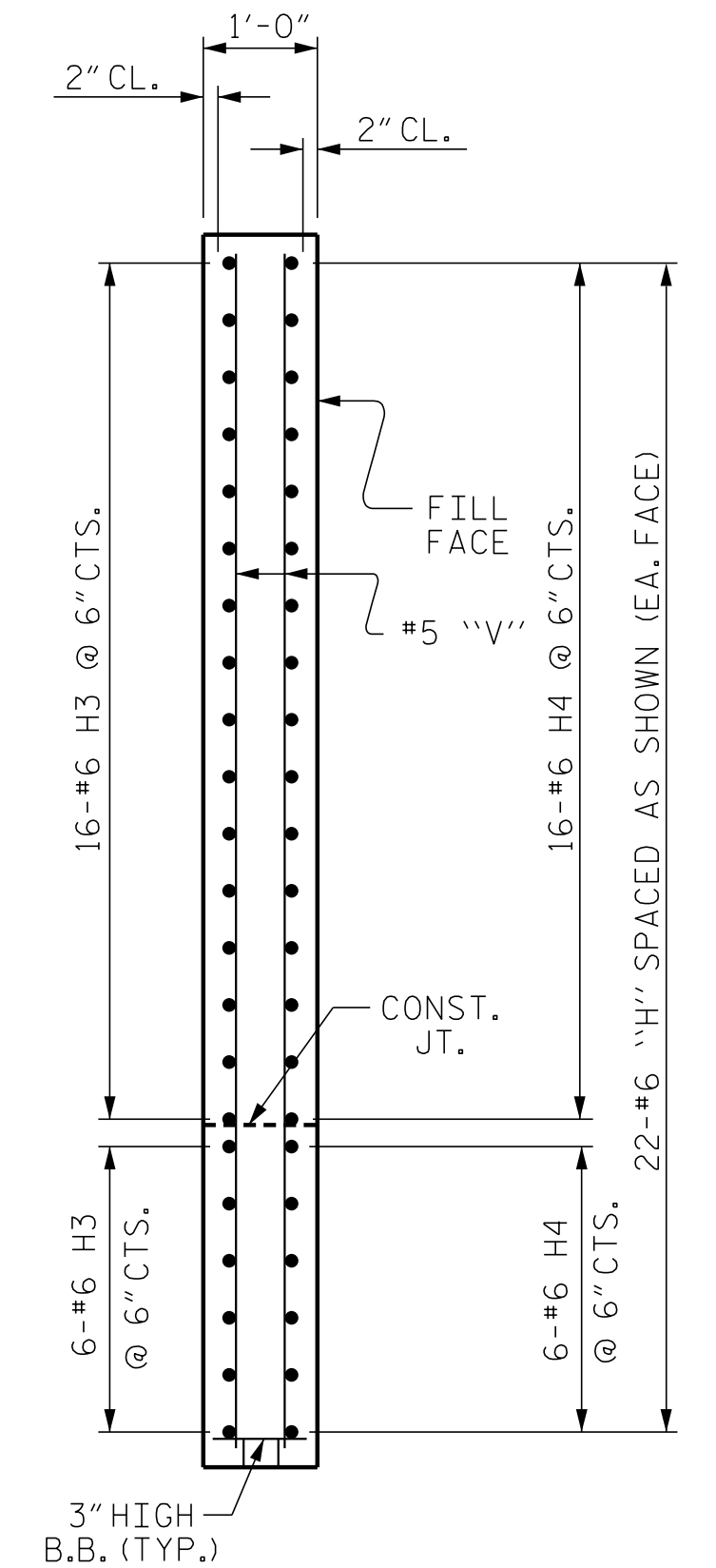
ELEVATION OF WING - (W1)



SECTION X-X



ELEVATION OF WING - (W2)



SECTION Y-Y

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-
 SHEET 2 OF 3

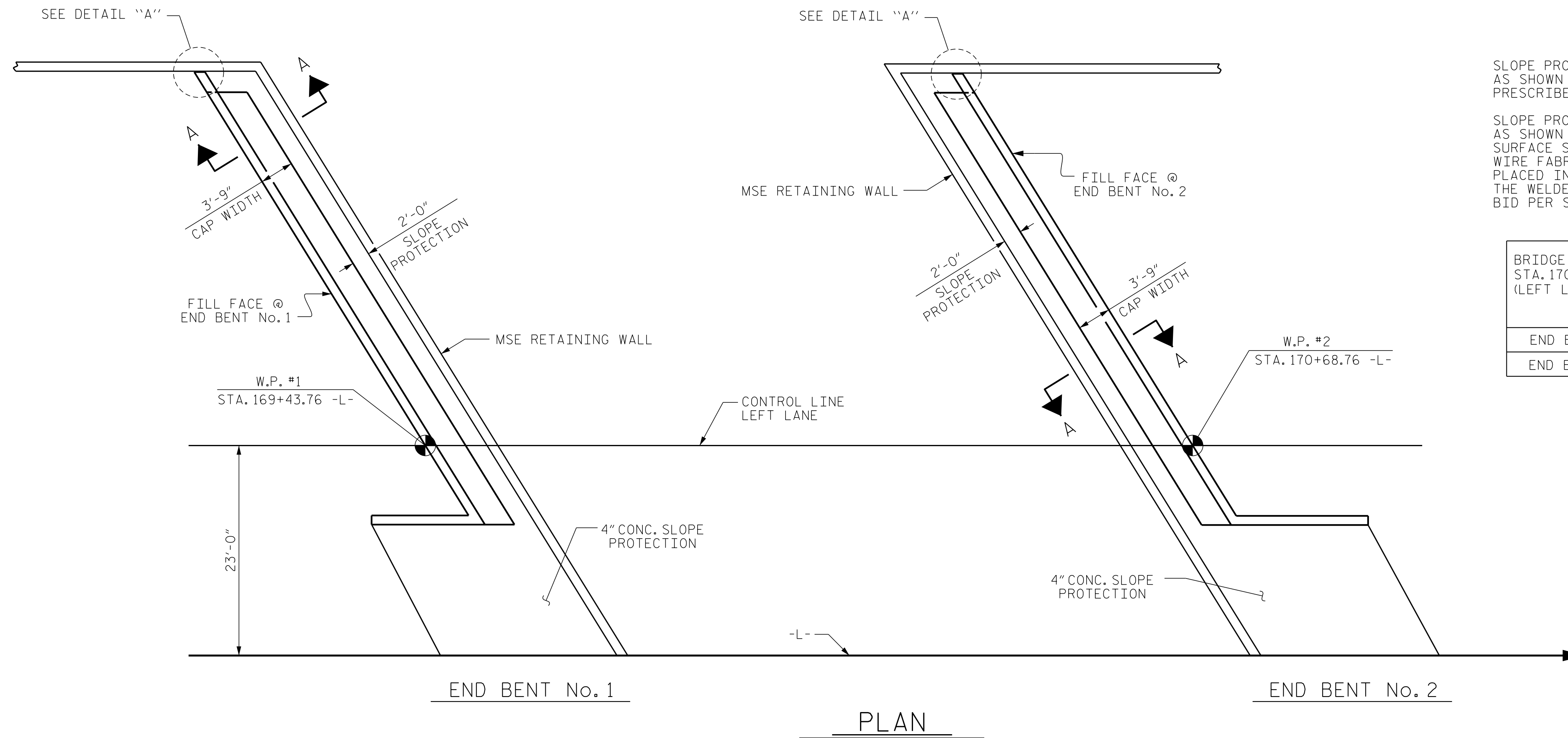
ENGINEER OF RECORD:
Gregory M. Olland
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 37400
 GREGORY M. OLLAND
 9/12/2018
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
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 LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 2 LEFT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S1-23					TOTAL SHEETS 27

DRAWN BY: D. HODGE DATE: 5/18
 CHECKED BY: G.M. GILLAND DATE: 5/18

DOCUMENT NOT CONSIDERED FINAL
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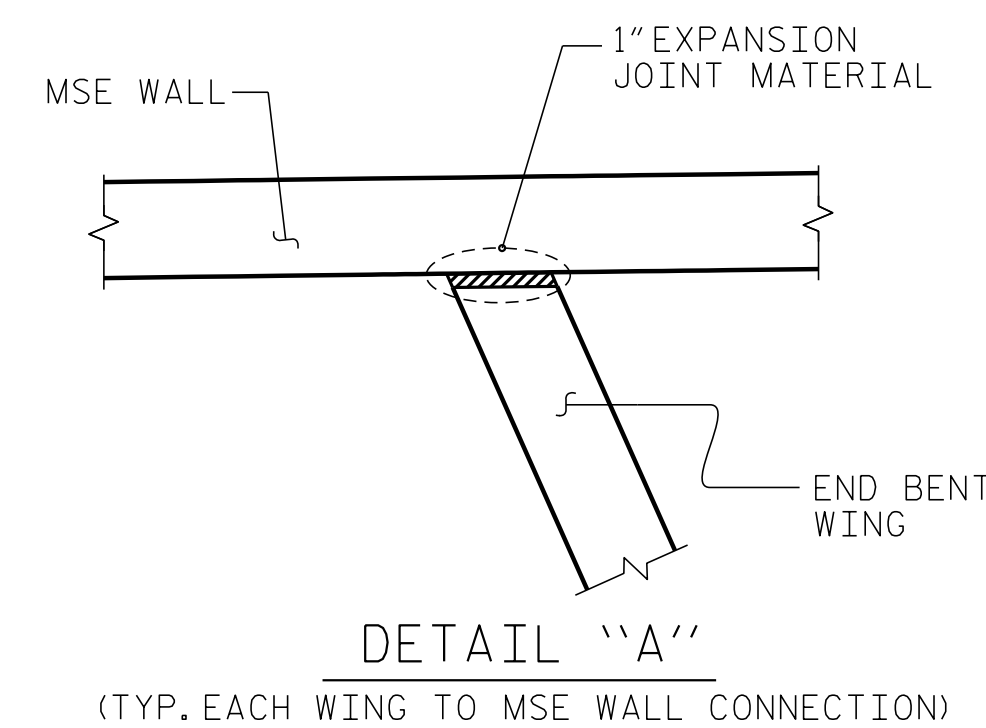
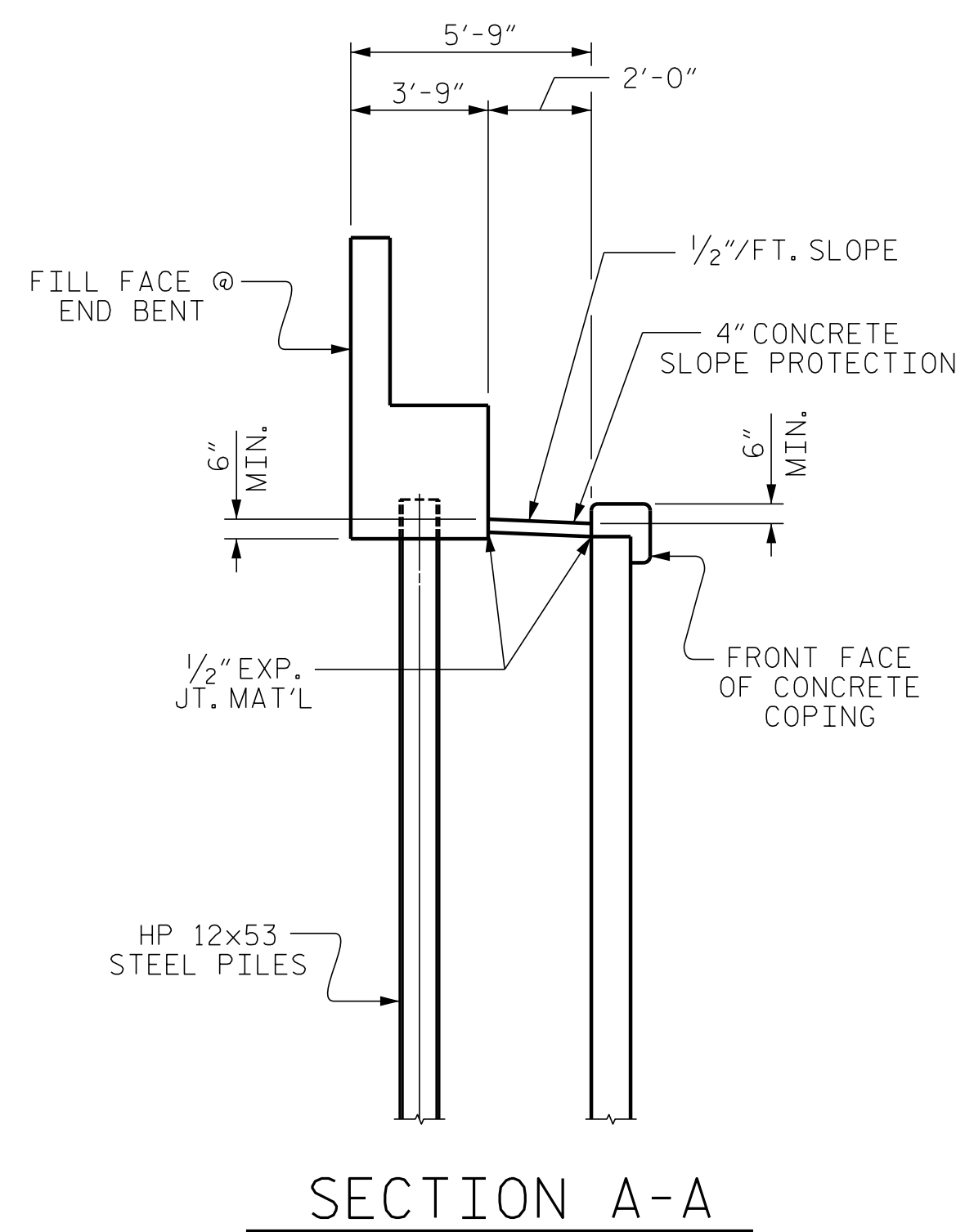


NOTES

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

SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FINISHED TO THE SATISFACTION OF THE ENGINEER. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 20" WIDE AND PLACED IN THE MIDDLE OF THE 4" CONCRETE SLOPE PROTECTION. THE COST OF THE WELDED WIRE FABRIC SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

BRIDGE @ STA. 170+20.99 -L- (LEFT LANE)	4" SLOPE PROTECTION	WELDED WIRE FABRIC 20 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	49	86
END BENT 2	52	91



PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-

ENGINEER OF RECORD:
Gregory M. Olland
 NORTH CAROLINA PROFESSIONAL SEAL 37400
 ENGINEER
 GREGORY M. OLLAND
 9/12/2018
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
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 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

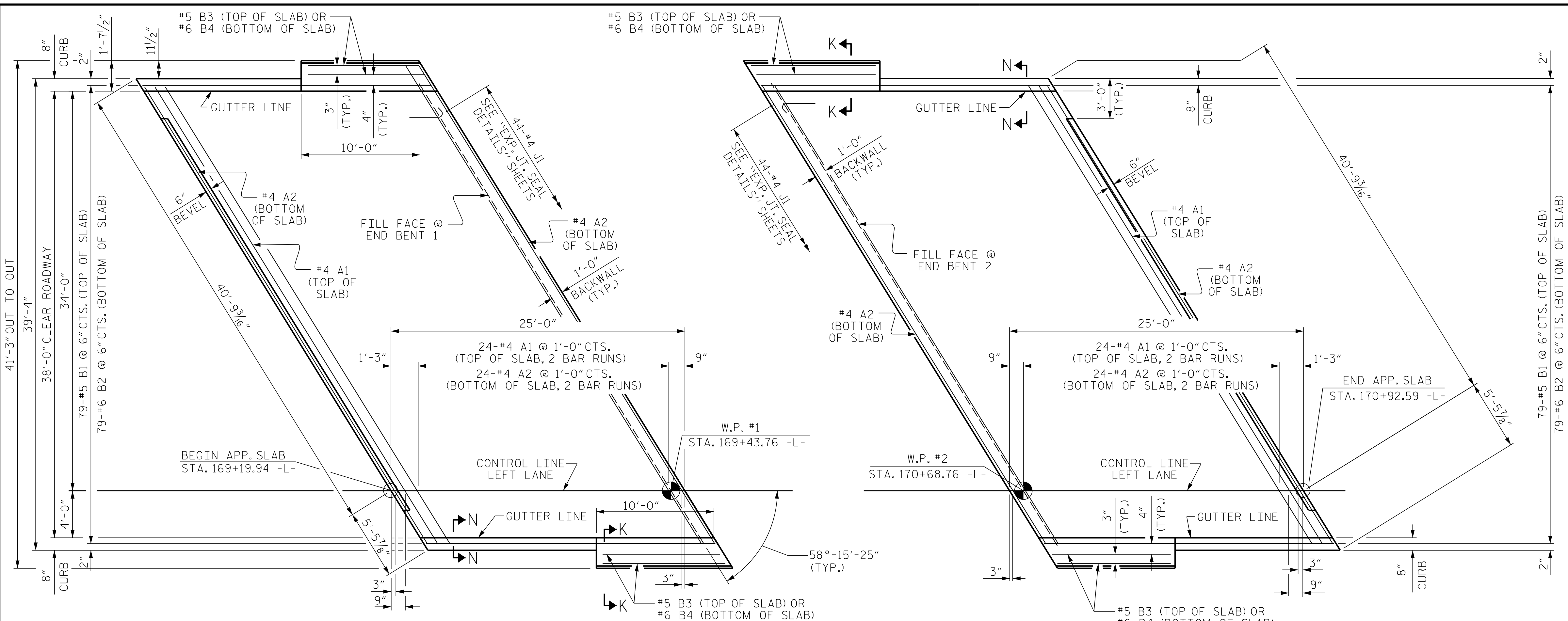
SLOPE PROTECTION DETAILS LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-25
1			3			TOTAL SHEETS
2			4			27

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DRAWN BY : D. HODGE DATE : 4/18
 CHECKED BY : G.M. GILLAND DATE : 5/18

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PLAN @ END BENT 1

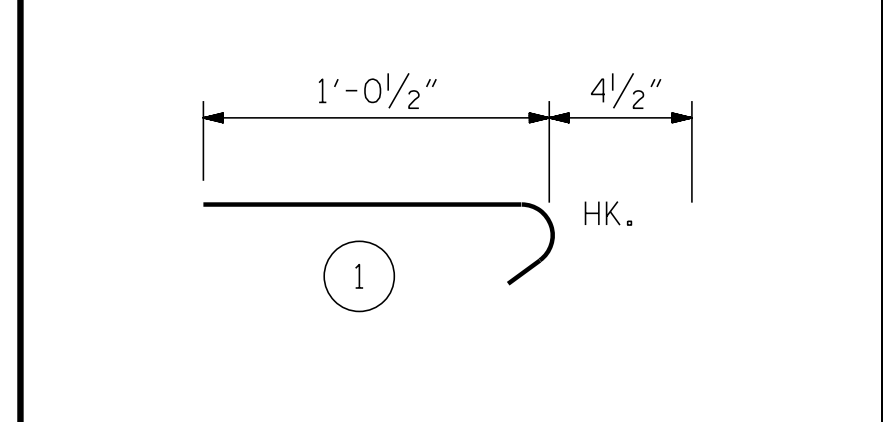
PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

NOTES

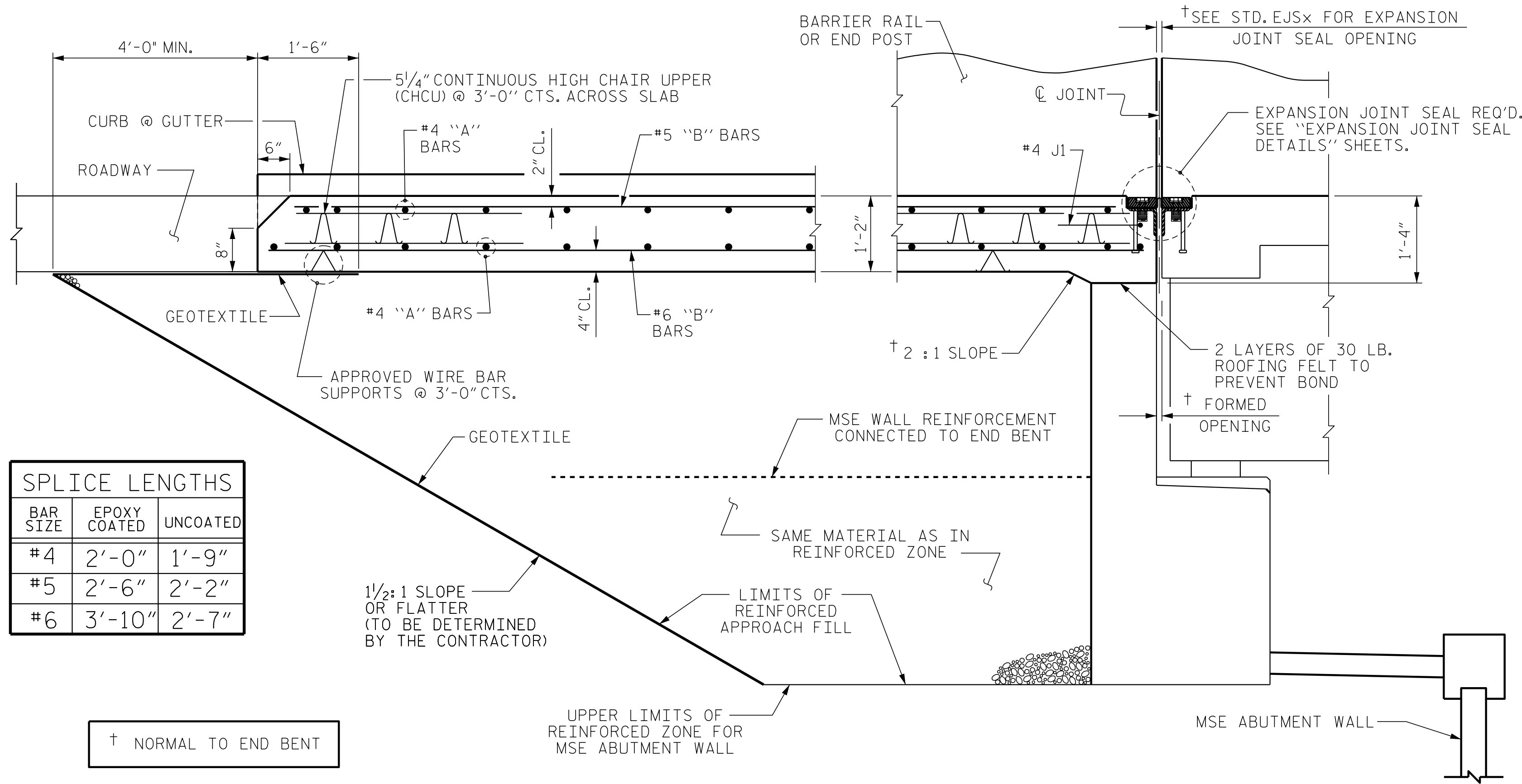
- FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, MSE WALL REINFORCEMENT AND BACKFILL MATERIAL SEE ROADWAY PLANS.
- GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.
- BACKFILL MATERIAL SHALL BE THE SAME MATERIAL USED IN THE MSE REINFORCED ZONE.
- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
- AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
- FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL						
APPROACH SLAB AT BENT 1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	50	#4	STR	25'-1"	838	
A2	52	#4	STR	25'-0"	868	
*B1	79	#5	STR	23'-6"	1936	
B2	79	#6	STR	24'-7"	2917	
*B3	4	#5	STR	9'-10"	41	
B4	4	#6	STR	9'-10"	59	
*J1	44	#4	1	1'-5"	42	
REINFORCING STEEL **					LBS.	3,844
*EPOXY COATED REINFORCING STEEL **					LBS.	2,857
CLASS AA CONCRETE **					C. Y.	43.6
APPROACH SLAB AT BENT 2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	50	#4	STR	25'-1"	838	
A2	52	#4	STR	25'-0"	868	
*B1	79	#5	STR	23'-6"	1936	
B2	79	#6	STR	24'-7"	2917	
*B3	4	#5	STR	9'-10"	41	
B4	4	#6	STR	9'-10"	59	
*J1	44	#4	1	1'-5"	42	
REINFORCING STEEL **					LBS.	3,844
*EPOXY COATED REINFORCING STEEL **					LBS.	2,857
CLASS AA CONCRETE **					C. Y.	43.6



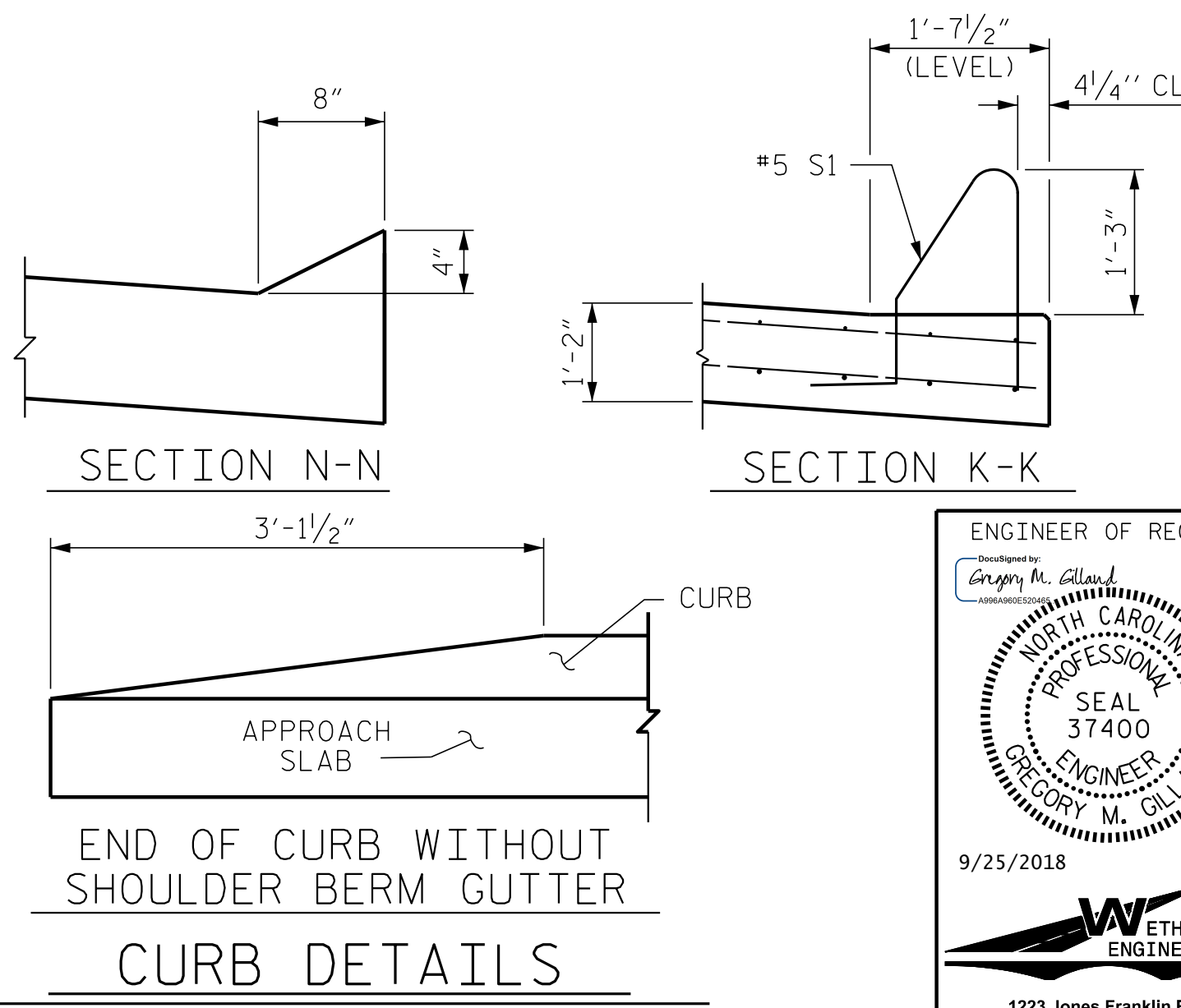
ALL BAR DIMENSIONS ARE OUT TO OUT
 ** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED. SEE SHEET 2 OF 2.

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



SECTION THRU SLAB

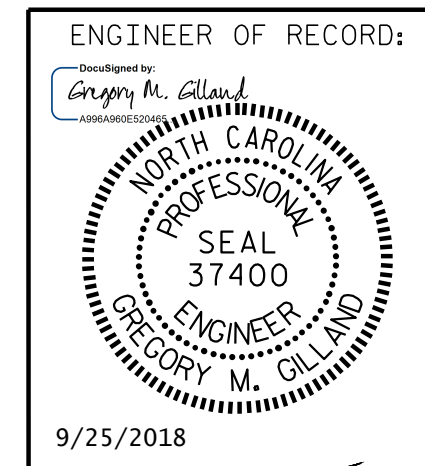
(TYPE III - REINFORCED APPROACH FILL)



CURB DETAILS

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

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-
 SHEET 1 OF 2



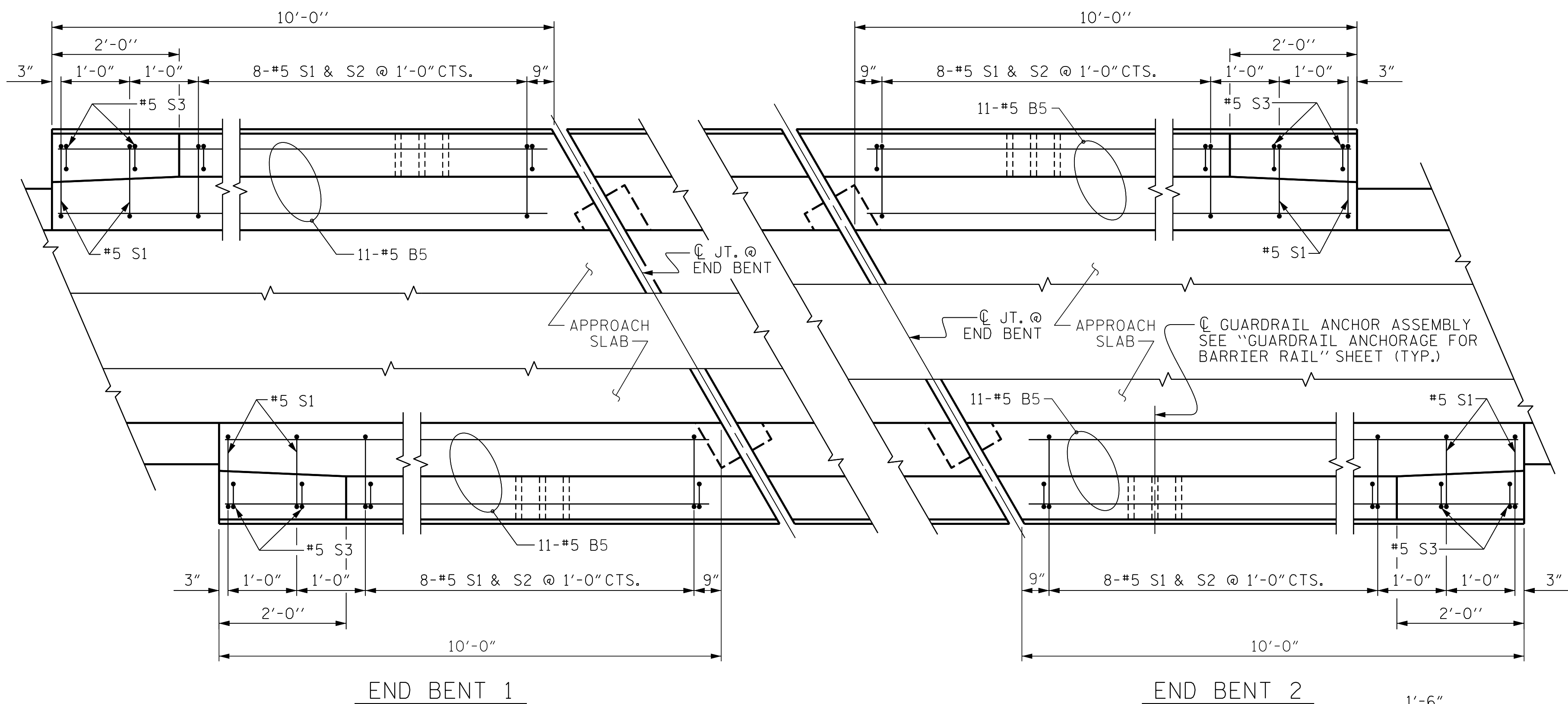
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR FLEXIBLE PAVEMENT
 (LEFT LANE)

ASSEMBLED BY: D. HODGE	DATE: 8/18
CHECKED BY: G.M. GILLAND	DATE: 8/18
DRAWN BY: EEM 3/95	REV. 12/21/11 MAA/GM
CHECKED BY: VAP 3/95	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

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

SHEET NO.	S1-26
TOTAL SHEETS	27



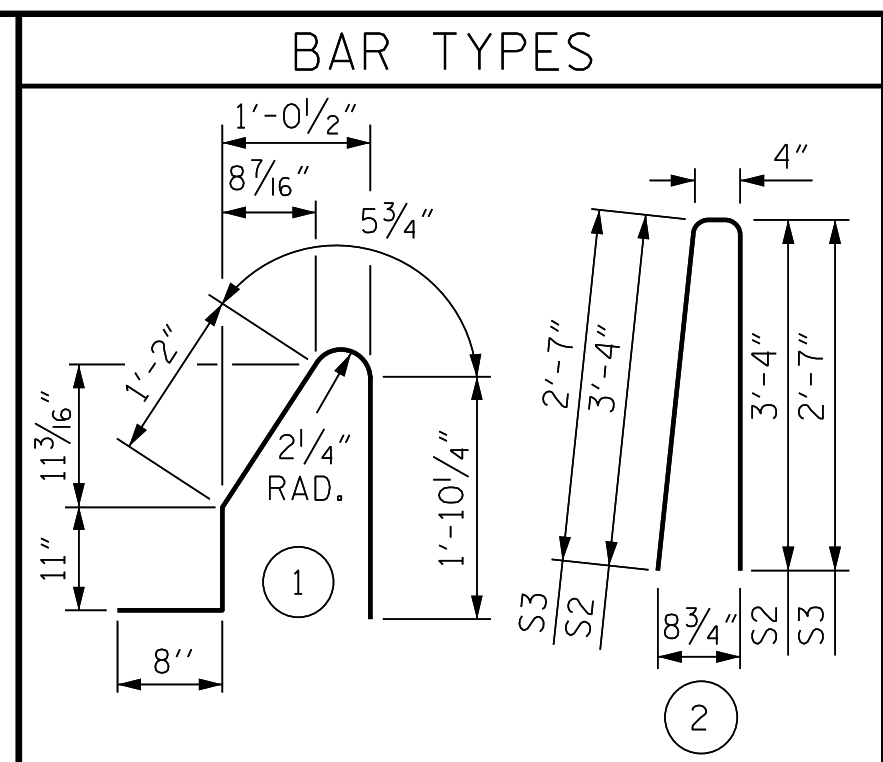
END BENT 1
END BENT 2
PLAN OF BARRIER RAIL

NOTES

THE COST OF THE BARRIER RAIL ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LINEAR FOOT CONTRACT PRICE BID FOR "CONCRETE BARRIER RAIL".

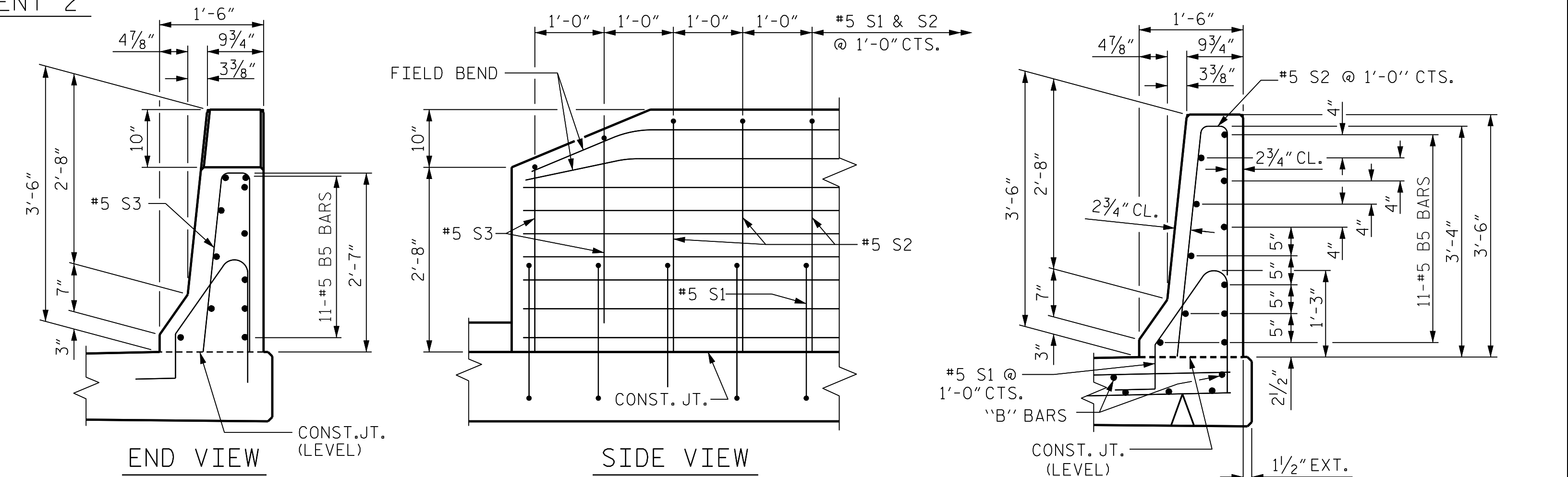
THE BARRIER RAIL ON EACH APPROACH SLAB SHALL NOT BE CAST UNTIL ALL APPROACH SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

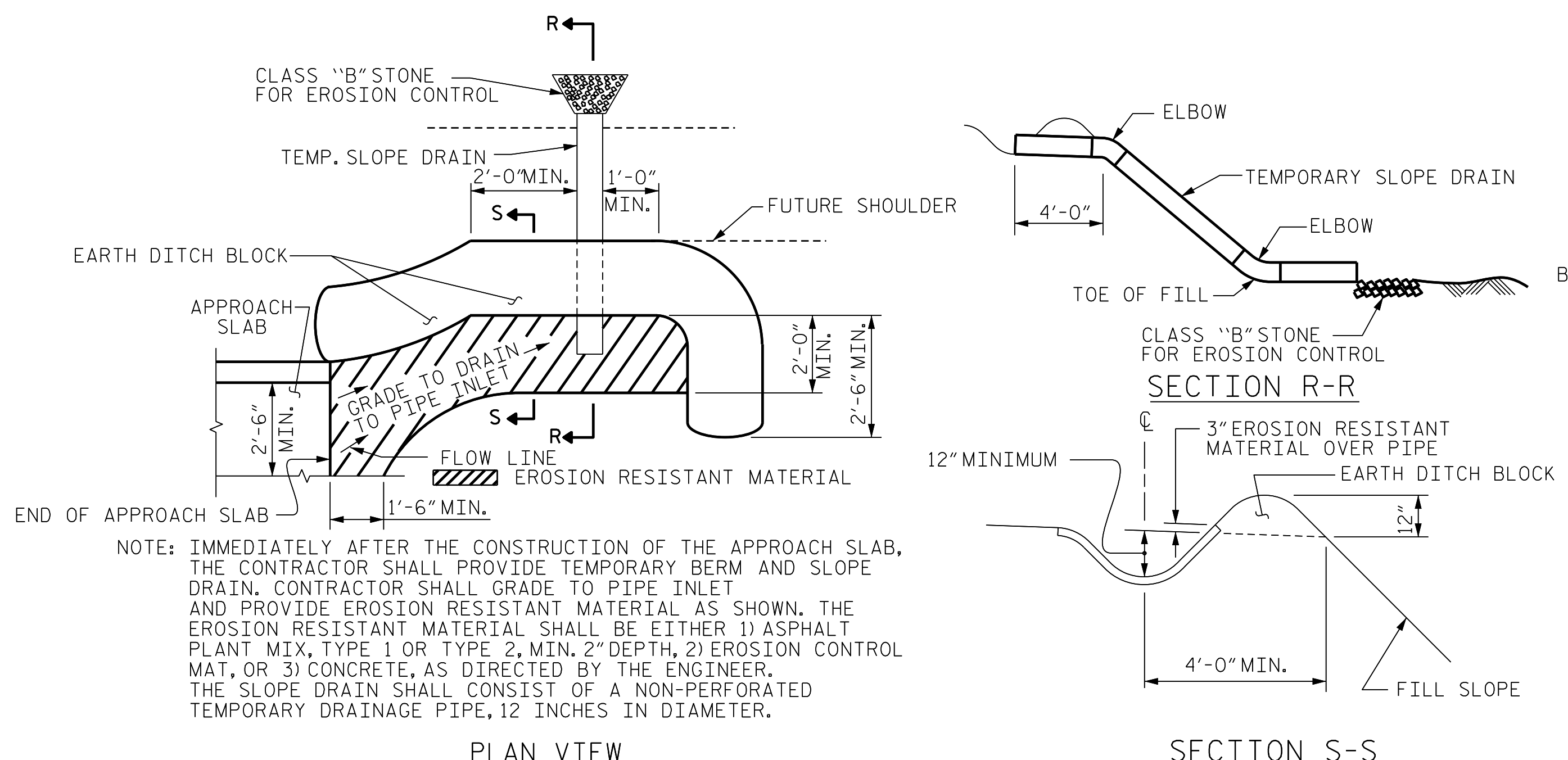


ALL BAR DIMENSIONS ARE OUT TO OUT

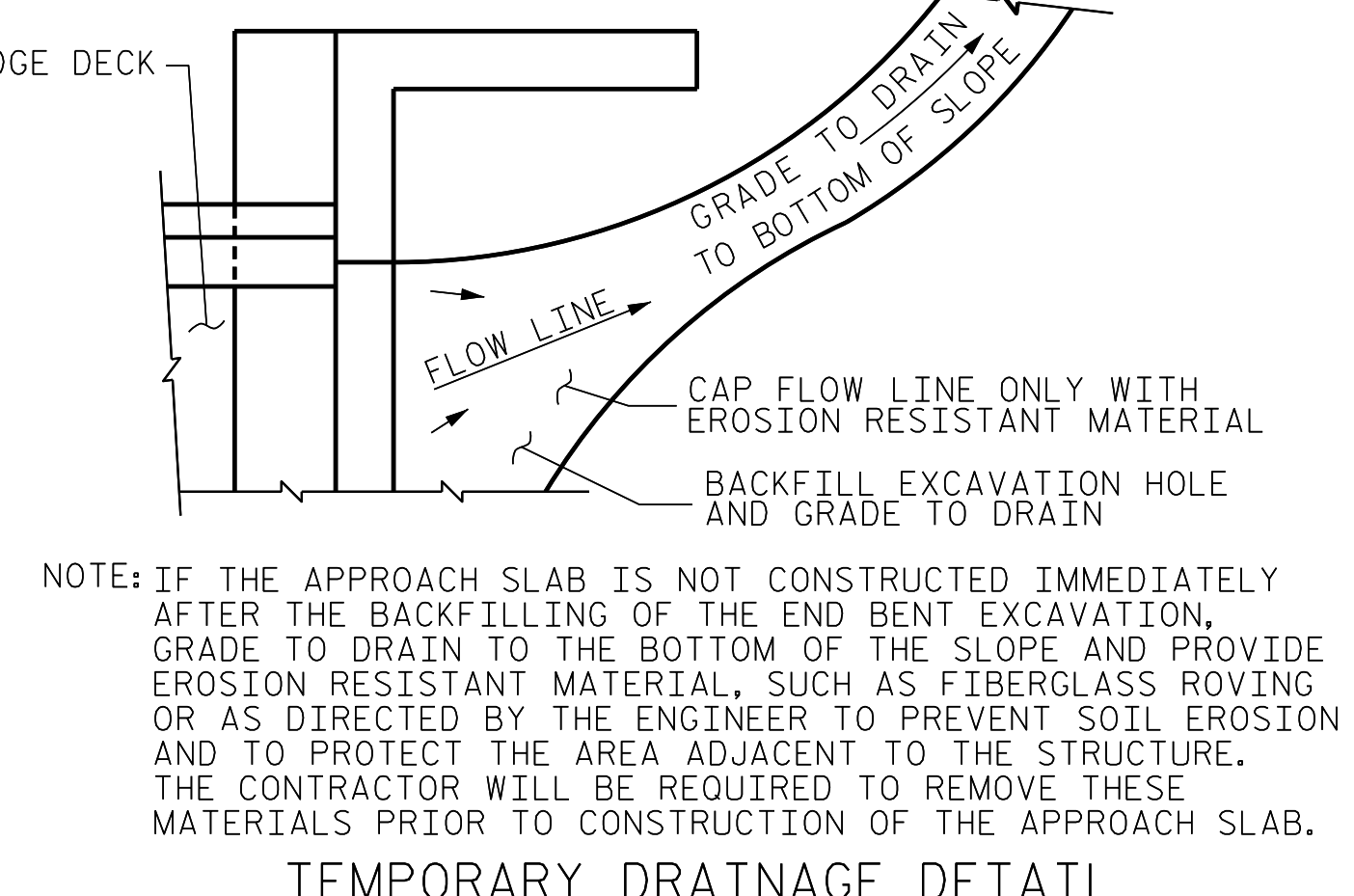
BILL OF MATERIAL					
BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B5	44	#5	STR	9'-10"	451
* S1	40	#5	1	5'-1"	212
* S2	32	#5	2	7'-0"	234
* S3	8	#5	2	5'-6"	46
* EPOXY COATED REINFORCING STEEL				LBS.	943
CLASS AA CONCRETE				C. Y.	5.7
CONCRETE BARRIER RAIL				41.86 LIN. FT.	



END VIEW
SIDE VIEW
SECTION THRU RAIL



PLAN VIEW
SECTION R-R
TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



TEMPORARY DRAINAGE DETAIL

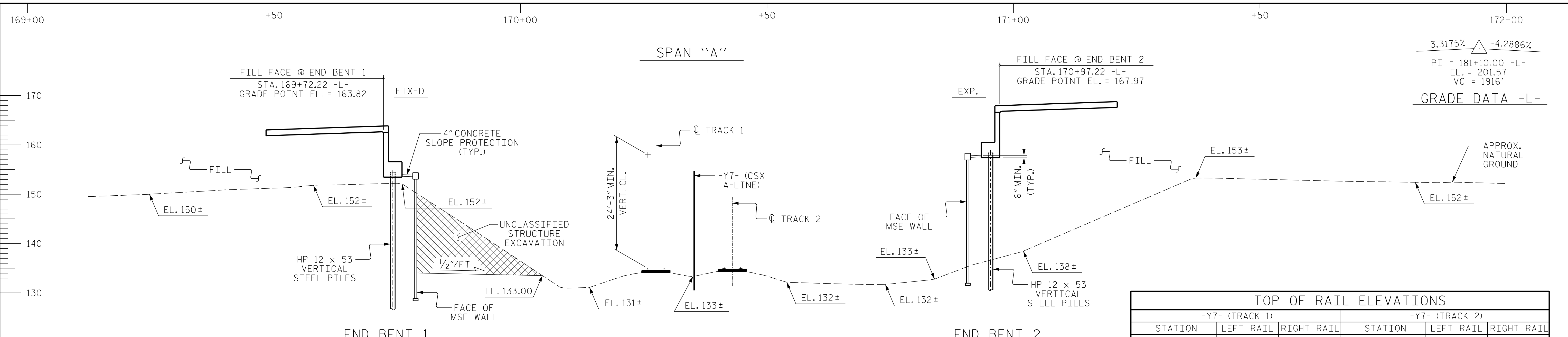
PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 170+20.99 -L-
SHEET 2 OF 2

ENGINEER OF RECORD:
Gregory M. Allard
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 37400
GREGORY M. OIL LAND
9/12/2018
ETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB DETAILS (LEFT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S1-27				
TOTAL SHEETS 27				

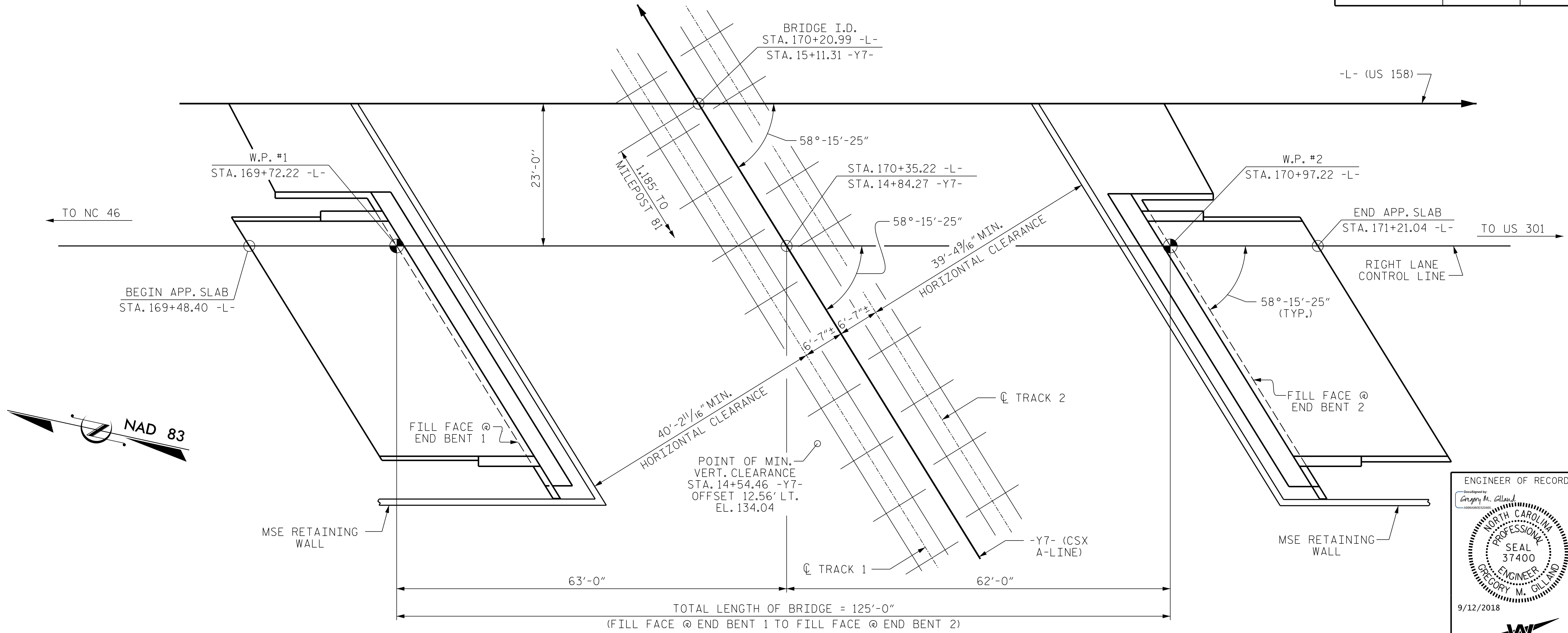
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3.3175% Δ -4.2886%
 PI = 181+10.00 -L-
 EL. = 201.57
 VC = 1916'
 GRADE DATA -L-

TOP OF RAIL ELEVATIONS					
-Y7- (TRACK 1)			-Y7- (TRACK 2)		
STATION	LEFT RAIL	RIGHT RAIL	STATION	LEFT RAIL	RIGHT RAIL
10+00.01	132.52	132.54	9+98.94	132.62	---
11+18.35	133.03	133.02	10+21.92	---	132.71
12+12.85	133.40	133.41	11+17.05	133.08	133.05
13+07.36	133.72	133.72	12+13.17	133.45	133.45
14+01.37	133.96	133.93	13+06.40	133.83	133.79
14+91.44	134.11	134.10	14+01.96	134.13	134.14
15+86.93	134.25	134.26	14+91.70	134.38	134.38
16+83.03	134.51	134.51	15+87.00	134.57	134.56
17+78.88	134.66	134.68	16+82.32	134.73	134.74
18+77.10	134.72	134.72	17+78.85	134.85	134.84
19+83.12	134.71	134.73	18+76.54	134.90	134.93
			19+82.44	134.97	134.98

SECTION ALONG RIGHT LANE CONTROL LINE
 (SECTIONS AT END BENTS TAKEN AT RIGHT ANGLES)
 (FUTURE TRACKS NOT SHOWN FOR CLARITY)



PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-
 SHEET 1 OF 3 15+11.31 -Y7-
 MILE POST 80.78 BRIDGE No. 127

ENGINEER OF RECORD:
Gregory M. O'Neil
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 37400
 GREGORY M. O'NEIL
 9/12/2018
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

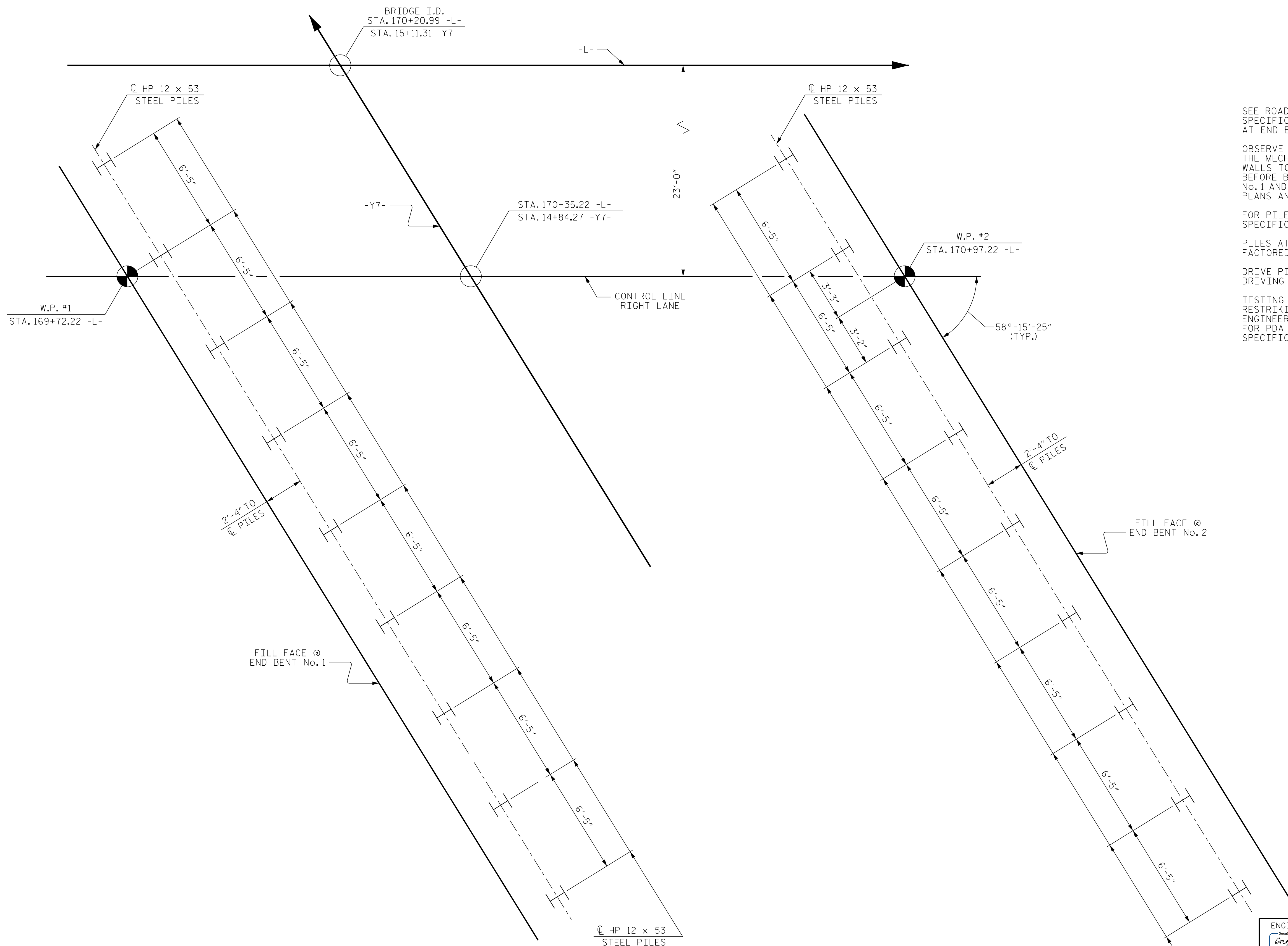
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GENERAL DRAWING RIGHT LANE BRIDGE ON US 158 OVER CSX A-LINE BETWEEN NC 46 & US 301					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S2-1					TOTAL SHEETS 27

DRAWN BY: D. HODGE DATE: 5/18
 CHECKED BY: G.M. GILLAND DATE: 5/18

PLAN
 (PILES NOT SHOWN IN PLAN VIEW)
 (FUTURE TRACKS NOT SHOWN FOR CLARITY)

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

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NOTES

SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS FOR THE SETTLEMENT GAUGES REQUIRED AT END BENTS No. 1 AND 2.

OBSERVE A 1 MONTH WAITING PERIOD AFTER CONSTRUCTING THE MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALLS TO WITHIN 1 FT. OF THE BOTTOM OF CAP ELEVATION BEFORE BEGINNING END BENT CONSTRUCTION AT END BENTS No. 1 AND 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENTS NO.1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE.

DRIVE PILES AT END BENTS NO.1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE.

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

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PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-
 SHEET 2 OF 3

DRAWN BY : D. HODGE DATE : 5/18
 CHECKED BY : G.M. GILLAND DATE : 5/18

FOUNDATION LAYOUT

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD:
Gregory M. Gilland
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

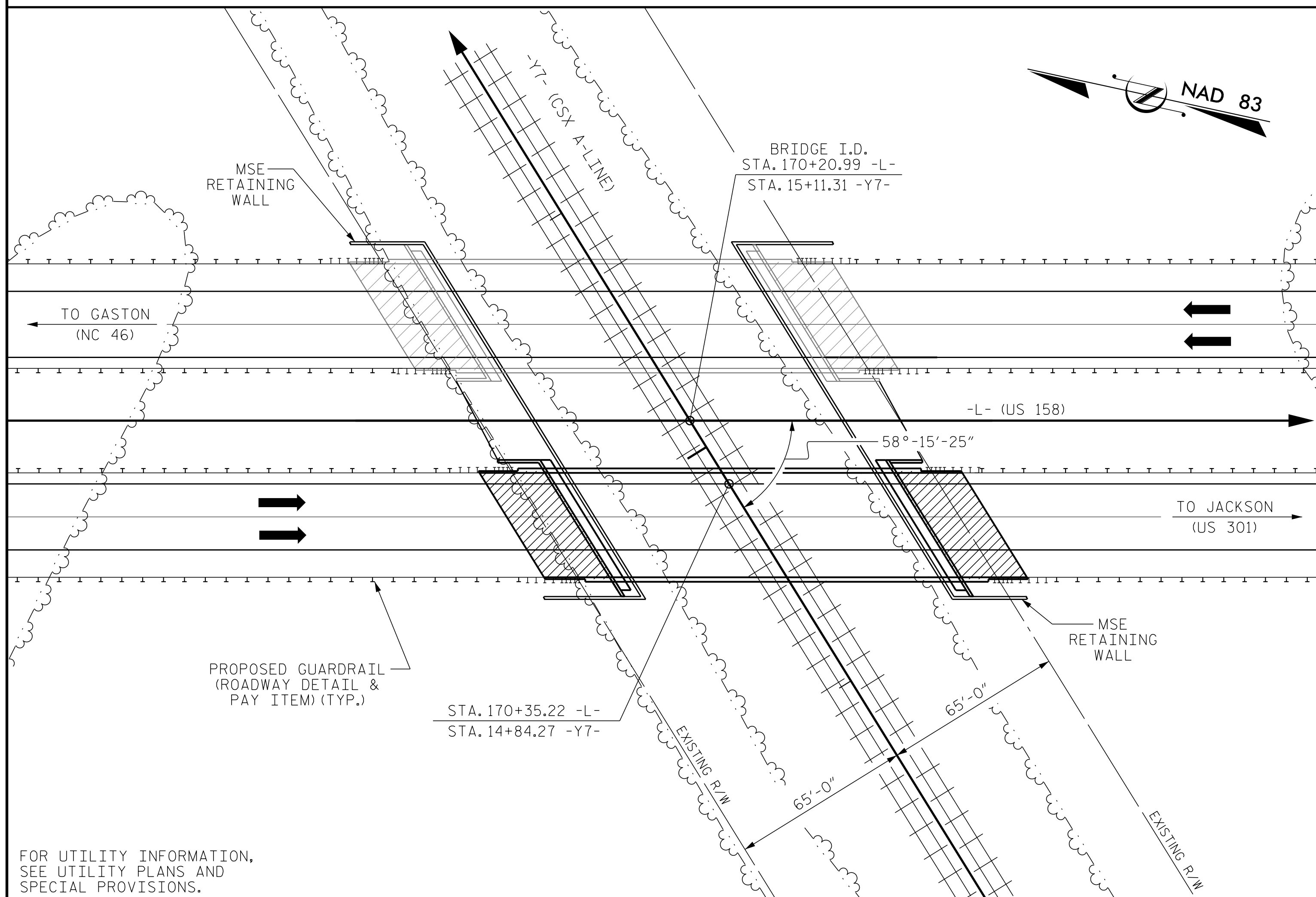
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 RIGHT LANE BRIDGE
 ON US 158 OVER CSX A-LINE
 BETWEEN NC 46 & US 301

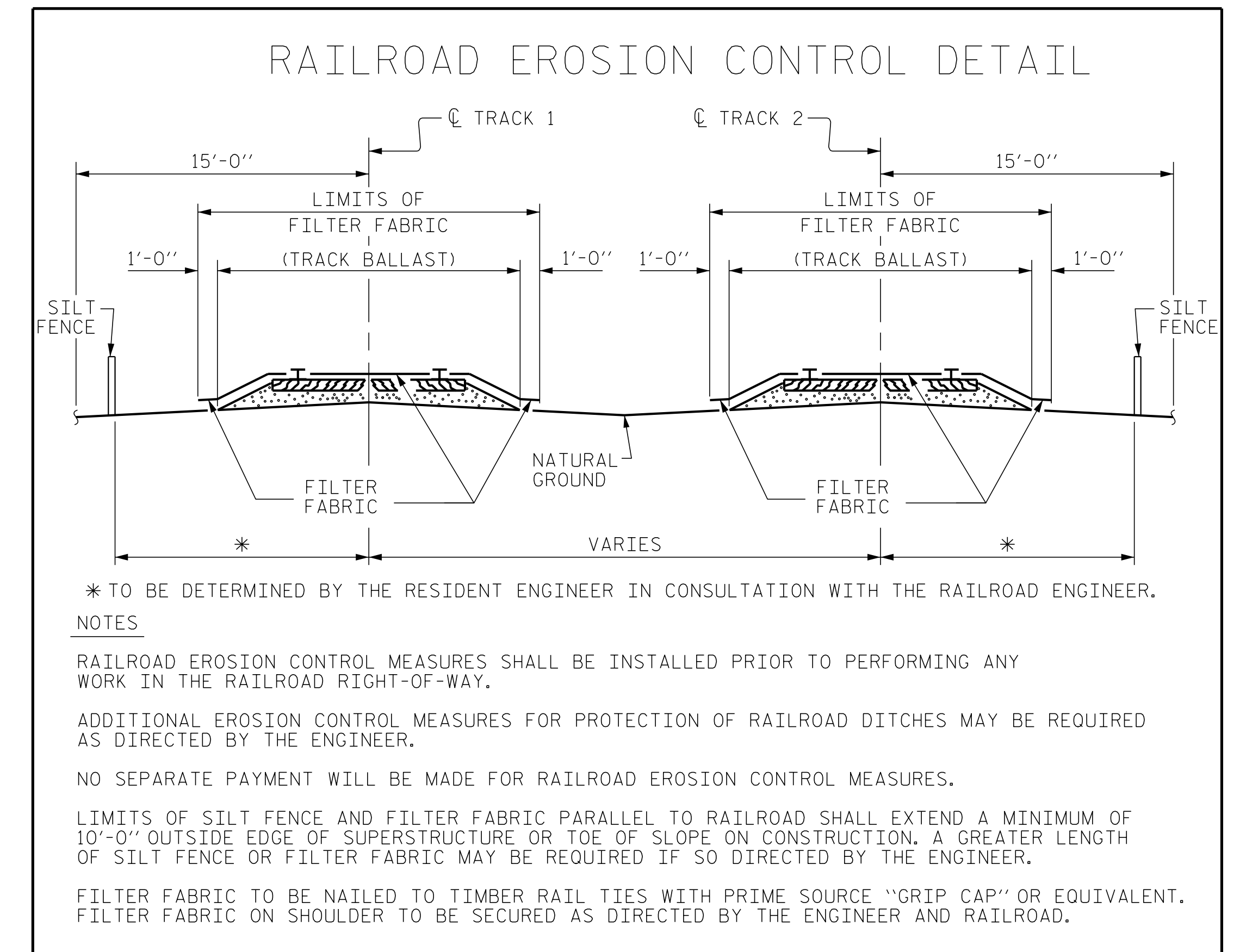
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.	S2-2
TOTAL SHEETS	27

BM #3: R/R SPIKE IN POWER POLE, 392' RT. OF STA. 170+32 -L-, ELEV. = 154.85



LOCATION SKETCH



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

GENERAL NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR RAILROAD PROVISIONS, SEE SPECIAL PROVISIONS.

FOR RAILROAD PROVISIONS, SEE SPECIAL PROVISIONS. REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

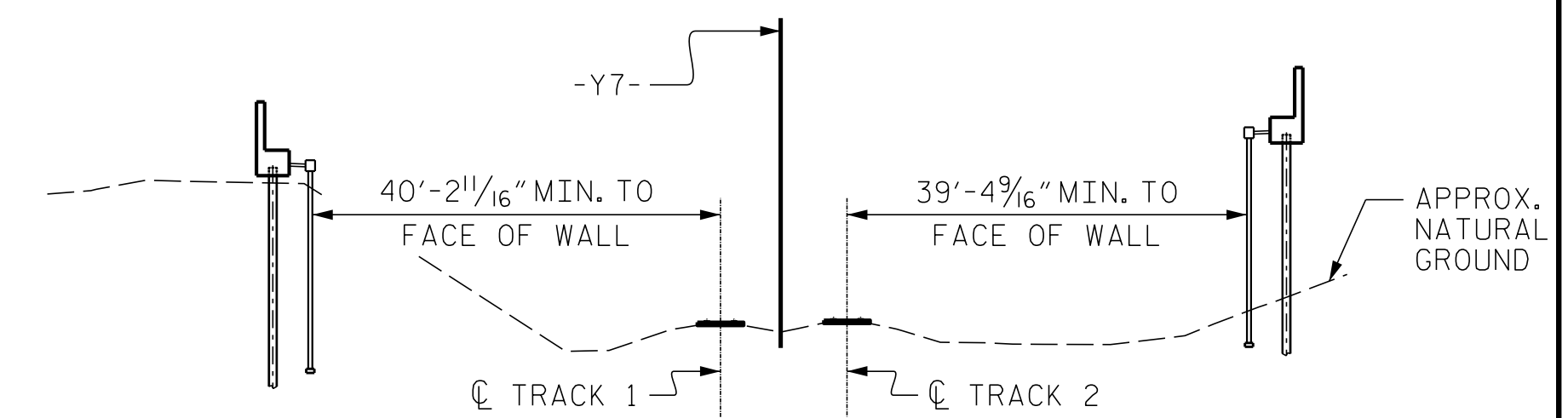
THE RAILROAD TRACK TOP OF RAIL ELEVATIONS ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE TOP OF RAIL ELEVATIONS AND REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 110 FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

ALL EXCAVATED SOIL WITHIN THE RAILROAD RIGHT OF WAY SHALL REMAIN ON CSX PROPERTY AND BE PLACED AT THE DIRECTION OF THE CSX REPRESENTATIVE AND THE ENGINEER.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.



END BENT 1

END BENT 2

SECTION THROUGH RAILROAD

LOOKING IN DIRECTION OF INCREASING STATIONS ON RAILROAD (SPAN LENGTH BASED ON THIS SECTION) (FUTURE TRACKS NOT SHOWN FOR CLARITY)

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-

SHEET 3 OF 3

TOTAL BILL OF MATERIAL

	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	MODIFIED 72" PRESTRESSED CONCRETE GIRDERS	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 x 53 STEEL PILES	PILE REDRIVES	CONCRETE BARRIER RAIL	72" CHAIN LINK FENCE	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS	
	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	No.	LIN. FT.	EACH	No.	LIN. FT.	EACH	LIN. FT.	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE			5,054	5,891		LUMP SUM		4	481.38			286.96	240			LUMP SUM	LUMP SUM
END BENT No. 1					43.5		6,766		9	9	855	5		52			
END BENT No. 2					42.6		6,295		9	9	860	5		50			
TOTAL	1	LUMP SUM	5,054	5,891	86.1	LUMP SUM	13,061	4	481.38	18	18	1,715	10	102	LUMP SUM	LUMP SUM	

ENGINEER OF RECORD:
5/2/2019

Gregory M. O'Neil
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 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 RIGHT LANE BRIDGE
 ON US 158 OVER CSX A-LINE
 BETWEEN NC 46 & US 301

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-3
1			3			TOTAL SHEETS
2			4			27

DRAWN BY: D. HODGE DATE: 5/18
 CHECKED BY: G.M. GILLAND DATE: 5/18

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

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LOAD FACTORS:

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

LOAD AND RESISTANCE FACTOR RATING (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			
						LIVE-LOAD FACTORS (γ_{LL})	MOMENT					SHEAR					LIVE-LOAD FACTORS (γ_{LL})	MOMENT						
							DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.15	--	1.75	0.940	1.38	A	EL	59.46	1.090	1.15	A	I	95.57	0.80	0.940	1.15	A	EL	59.46	①	
	HL-93 (OPERATING)	N/A		1.78	--	1.35	0.940	1.78	A	EL	59.46	1.090	1.80	A	I	95.57	N/A	--	--	--	--	--	--	
	HS-20 (INVENTORY)	36.000	②	1.68	60.48	1.75	0.940	2.01	A	EL	59.46	1.090	1.89	A	I	95.57	0.80	0.940	1.68	A	EL	59.46		
	HS-20 (OPERATING)	36.000		2.49	89.64	1.35	0.940	2.60	A	EL	59.46	1.090	2.49	A	I	95.57	N/A	--	--	--	--	--	--	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		4.06	54.81	1.40	0.940	6.08	A	EL	59.46	1.090	6.17	A	I	95.57	0.80	0.940	4.06	A	EL	59.46	
		SNGARBS2	20.000		2.90	58.00	1.40	0.940	4.34	A	EL	59.46	1.090	4.26	A	I	95.57	0.80	0.940	2.90	A	EL	59.46	
		SNAGRIS2	22.000		2.70	59.40	1.40	0.940	4.04	A	EL	59.46	1.090	3.92	A	I	95.57	0.80	0.940	2.70	A	EL	59.46	
		SNCOTTS3	27.250		2.02	55.05	1.40	0.940	3.02	A	EL	59.46	1.090	2.99	A	I	95.57	0.80	0.940	2.02	A	EL	59.46	
		SNAGGRS4	34.925		1.64	57.28	1.40	0.940	2.45	A	EL	59.46	1.090	2.40	A	I	95.57	0.80	0.940	1.64	A	EL	59.46	
		SNS5A	35.550		1.61	57.24	1.40	0.940	2.40	A	EL	59.46	1.090	2.40	A	I	95.57	0.80	0.940	1.61	A	EL	59.46	
		SNS6A	39.950		1.45	57.93	1.40	0.940	2.18	A	EL	59.46	1.090	2.16	A	I	95.57	0.80	0.940	1.45	A	EL	59.46	
	SNS7B	42.000		1.38	57.96	1.40	0.940	2.07	A	EL	59.46	1.090	2.09	A	I	95.57	0.80	0.940	1.38	A	EL	59.46		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.77	58.41	1.40	0.940	2.64	A	EL	59.46	1.090	2.62	A	I	95.57	0.80	0.940	1.77	A	EL	59.46	
		TNT4A	33.075		1.77	58.54	1.40	0.940	2.65	A	EL	59.46	1.090	2.57	A	I	95.57	0.80	0.940	1.77	A	EL	59.46	
		TNT6A	41.600		1.43	59.49	1.40	0.940	2.14	A	EL	59.46	1.090	2.20	A	I	95.57	0.80	0.940	1.43	A	EL	59.46	
		TNT7A	42.000		1.43	60.06	1.40	0.940	2.14	A	EL	59.46	1.090	2.16	A	I	95.57	0.80	0.940	1.43	A	EL	59.46	
		TNT7B	42.000		1.45	60.90	1.40	0.940	2.18	A	EL	59.46	1.090	2.06	A	I	95.57	0.80	0.940	1.45	A	EL	59.46	
		TNAGRIT4	43.000		1.40	60.20	1.40	0.940	2.09	A	EL	59.46	1.090	2.00	A	I	95.57	0.80	0.940	1.40	A	EL	59.46	
TNAGT5A		45.000		1.33	59.85	1.40	0.940	1.99	A	EL	59.46	1.090	1.95	A	I	95.57	0.80	0.940	1.33	A	EL	59.46		
TNAGT5B	45.000	③	1.32	59.40	1.40	0.940	1.97	A	EL	59.46	1.090	1.89	A	I	95.57	0.80	0.940	1.32	A	EL	59.46			

NOTES:

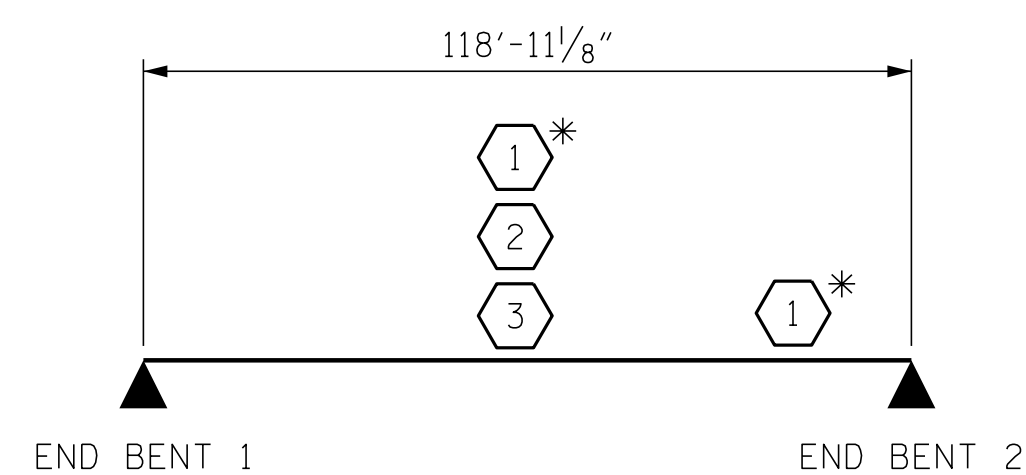
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

COMMENTS:

1. CONTROLLING DESIGN LOAD RATING ① IS AT TWO LOCATIONS, SEE SUMMARY CHART.
- 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

* SEE COMMENT 1

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-

ENGINEER OF RECORD:
 Gregory M. Olland
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 37400
 GREGORY M. OLLAND
 9/12/2018
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

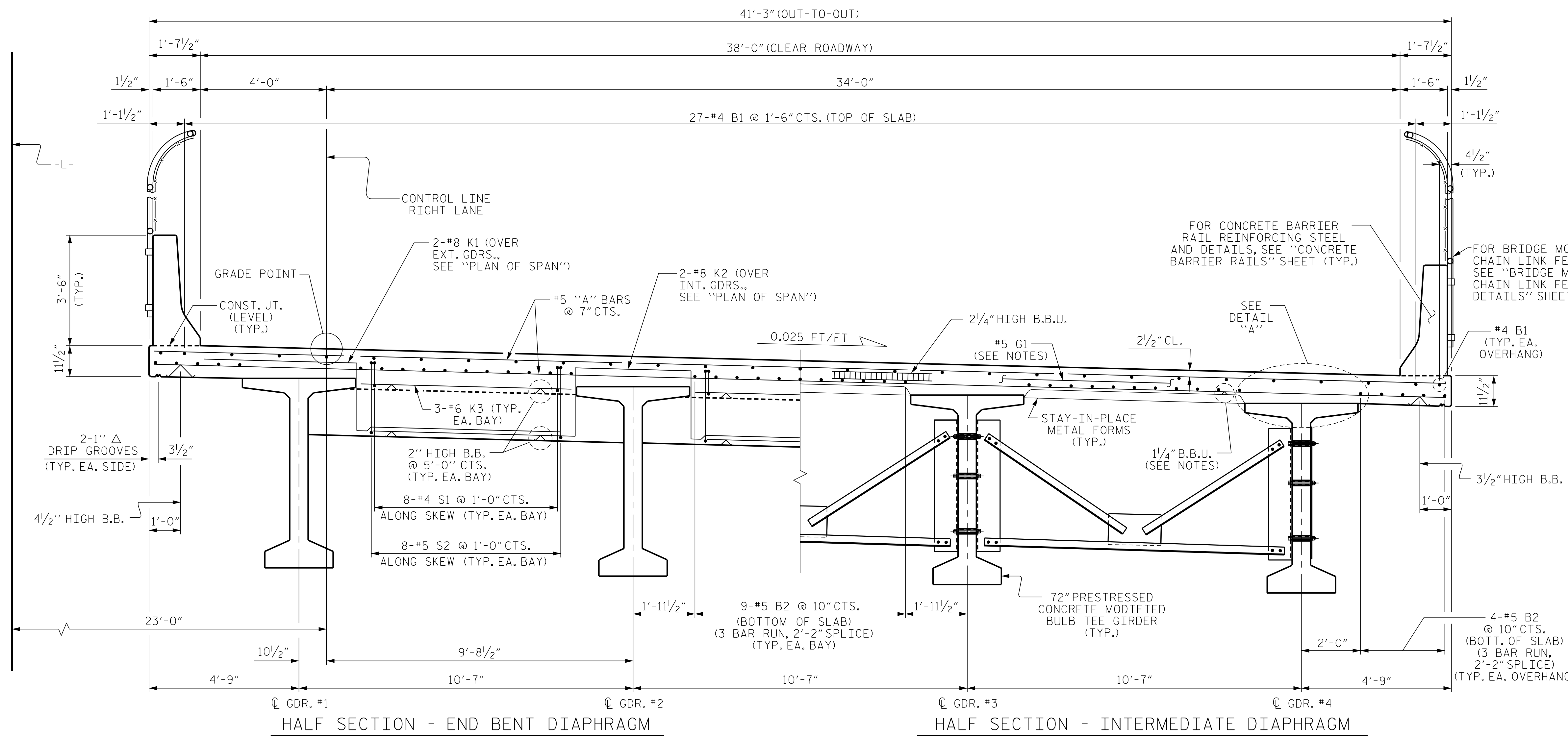
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE GIRDERS
 (NON-INTERSTATE TRAFFIC)
 (RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-4
1			3			TOTAL SHEETS
2			4			27

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

STD. NO. LRFR1

ASSEMBLED BY : D. HODGE	DATE : 5/18
CHECKED BY : G.M. GILLAND	DATE : 5/18
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC



HALF SECTION - END BENT DIAPHRAGM

HALF SECTION - INTERMEDIATE DIAPHRAGM

TYPICAL SECTION

SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 72" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET FOR DETAILS

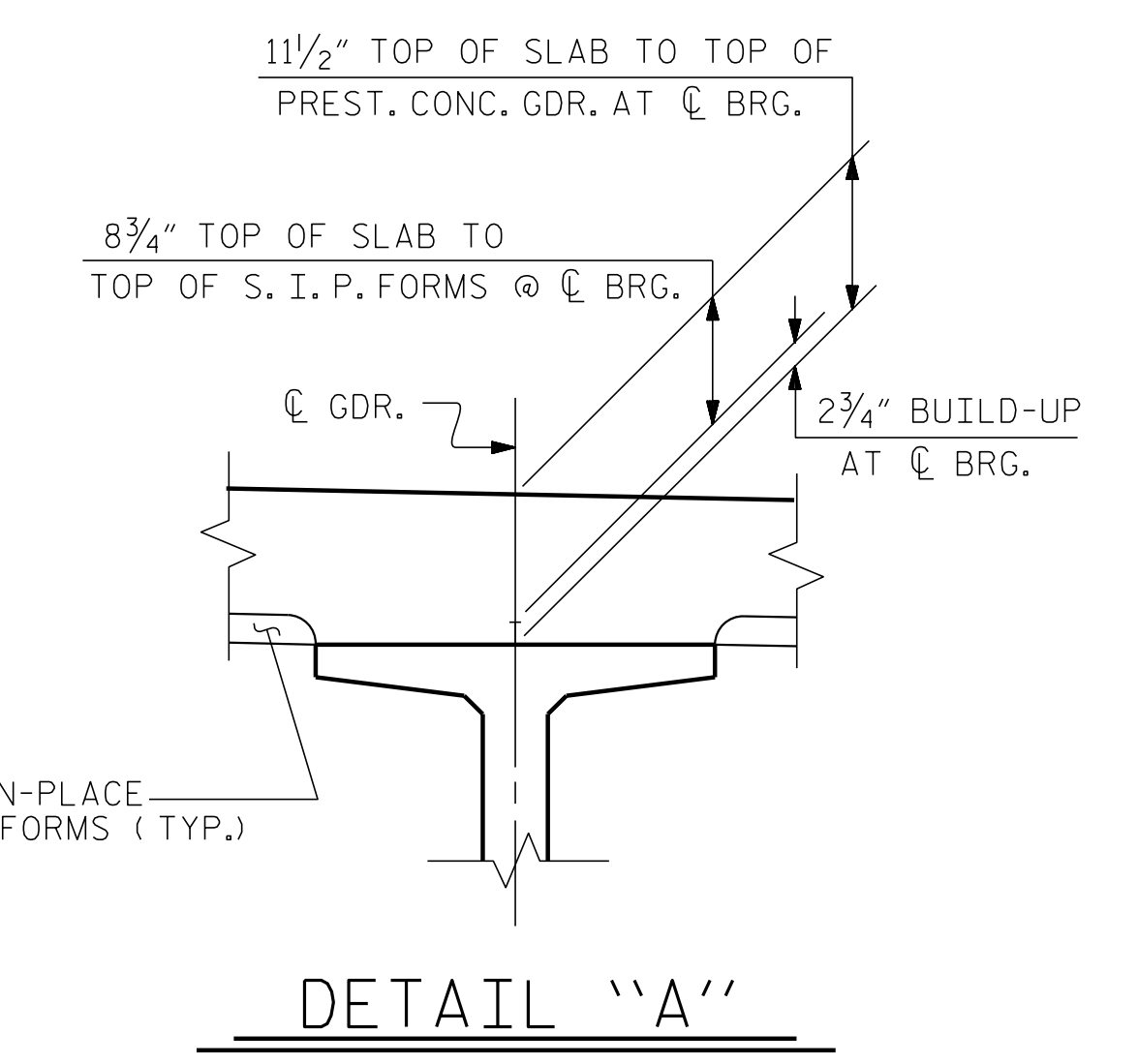
NOTES

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.

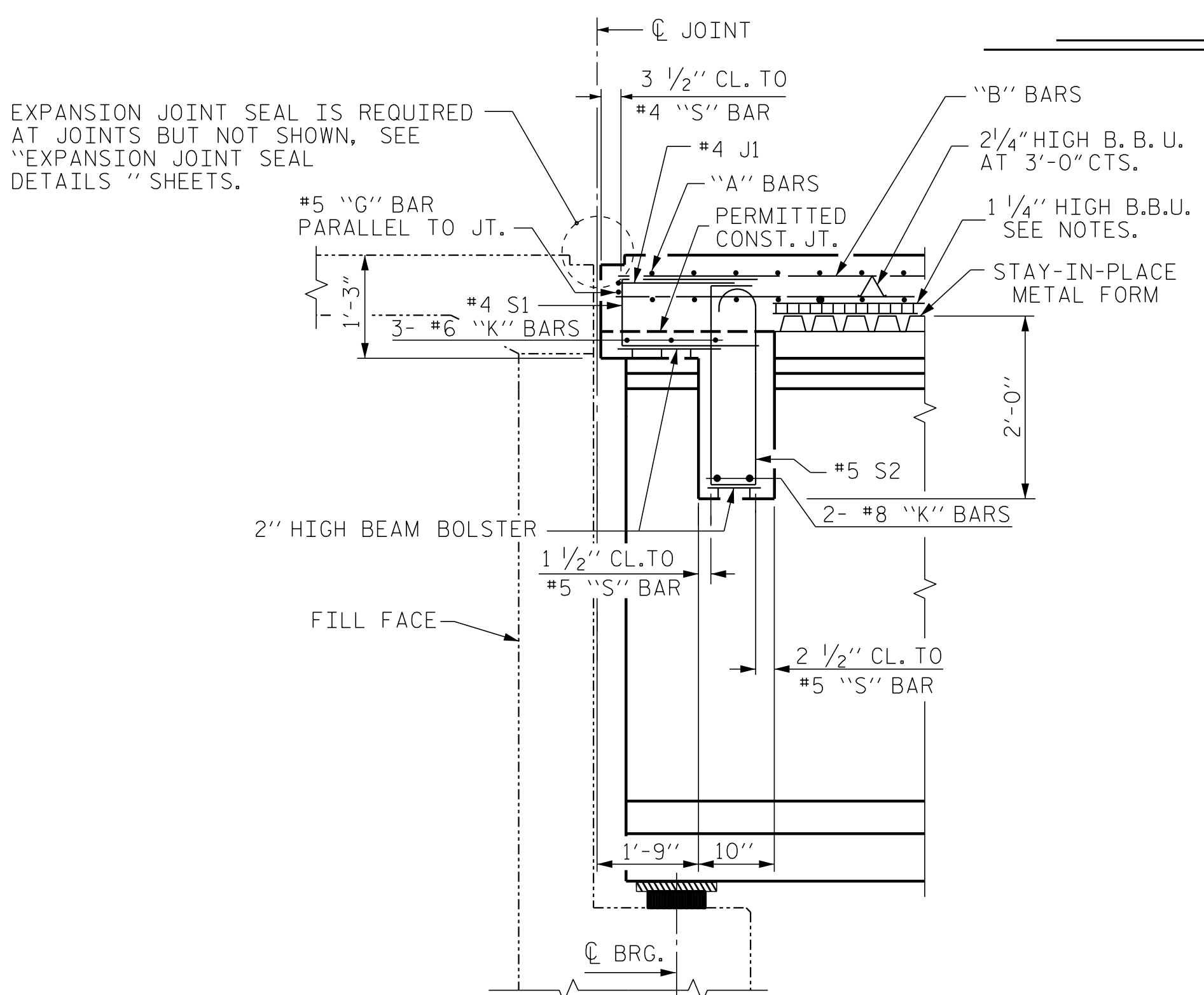
LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

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

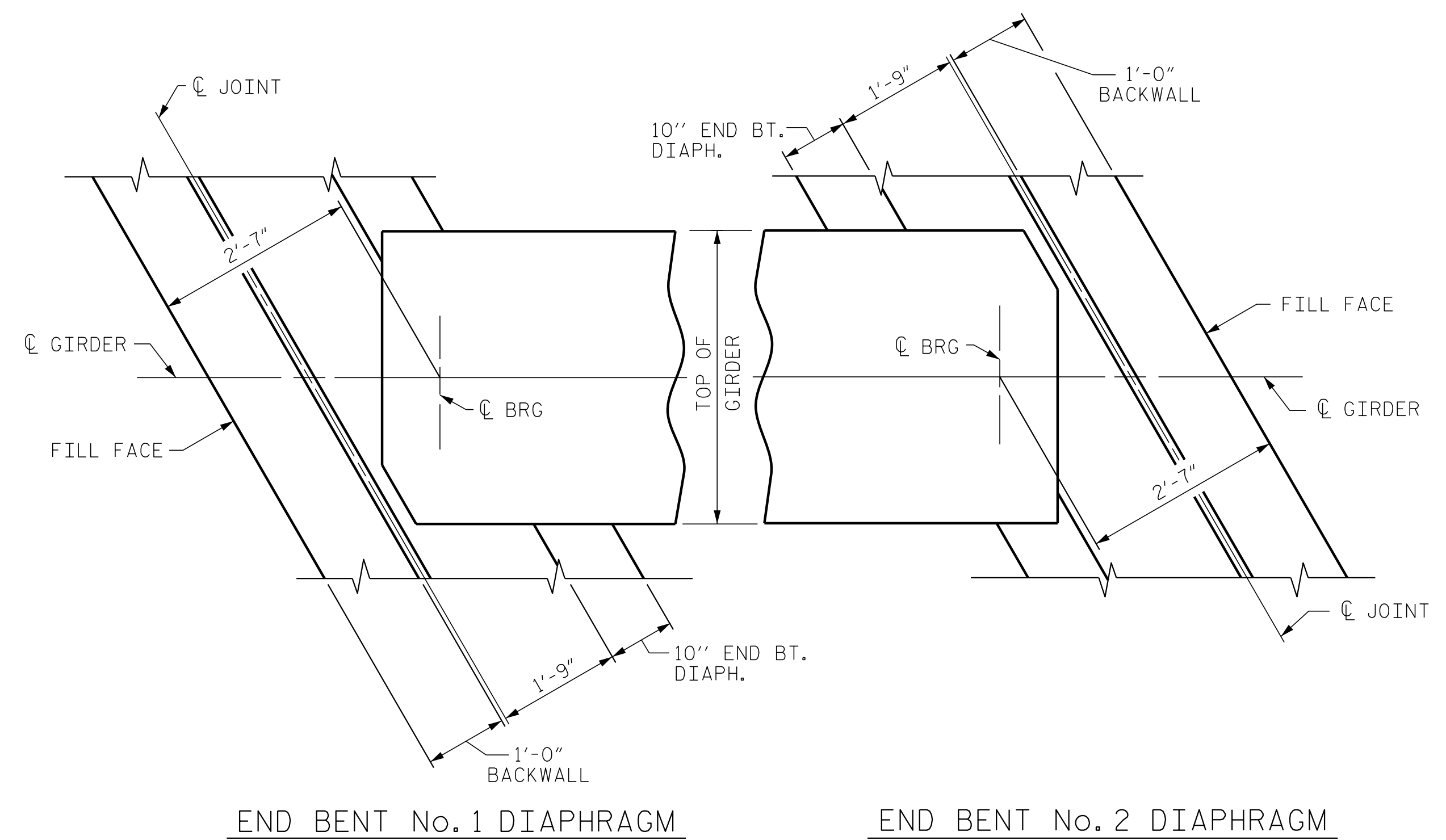
#5 G1 BAR MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR REINFORCING STEEL AND STIRRUPS.



DETAIL "A"



SECTION THRU END BENT DIAPHRAGM



END BENT No. 1 DIAPHRAGM

END BENT No. 2 DIAPHRAGM

PLAN

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-

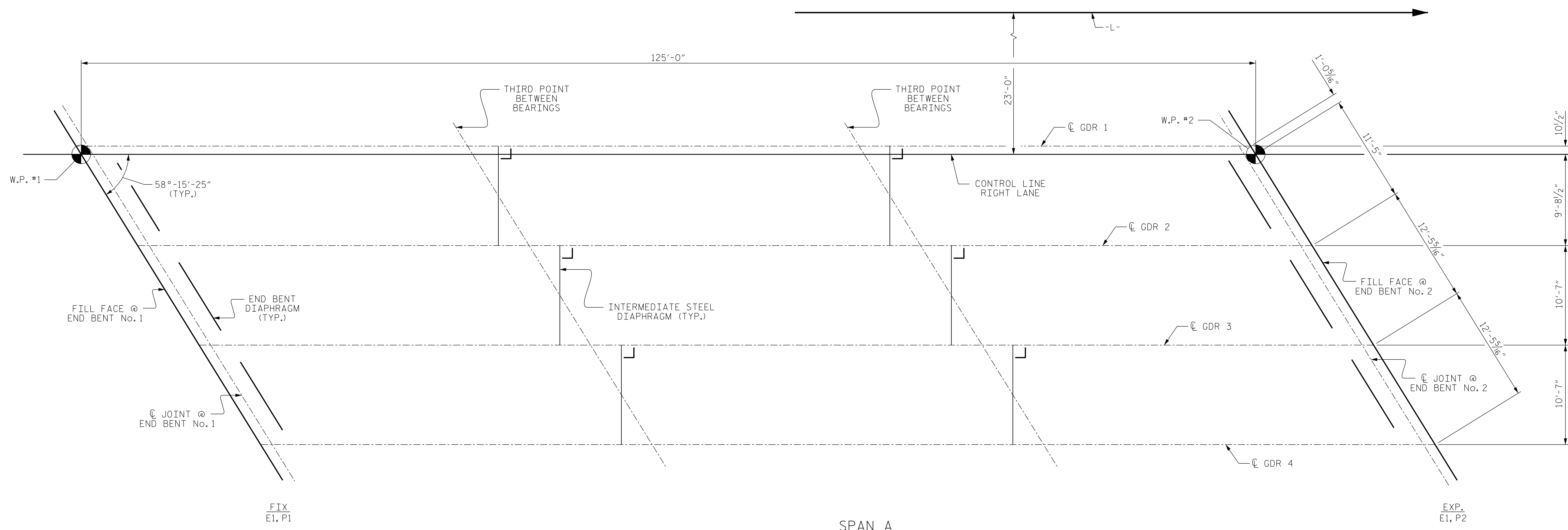
ENGINEER OF RECORD:
 Gregory M. Olland
 NORTH CAROLINA PROFESSIONAL SEAL 37400
 ENGINEER
 GREGORY M. OLLAND
 9/12/2018
 WETHERILL ENGINEERING
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 LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE TYPICAL SECTION (RIGHT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S2-5					TOTAL SHEETS 27

DRAWN BY: D. HODGE DATE: 3/18
 CHECKED BY: B.C. HUNT DATE: 3/18

DOCUMENT NOT CONSIDERED FINAL
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FRAMING PLAN

FOR LOCATION OF BOLT HOLES IN GIRDERS SEE SHEET ENTITLED "PRESTRESSED CONCRETE GIRDER DETAILS"

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-

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DRAWN BY : D. HODGE DATE : 3/18
 CHECKED BY : B.C. HUNT DATE : 3/18

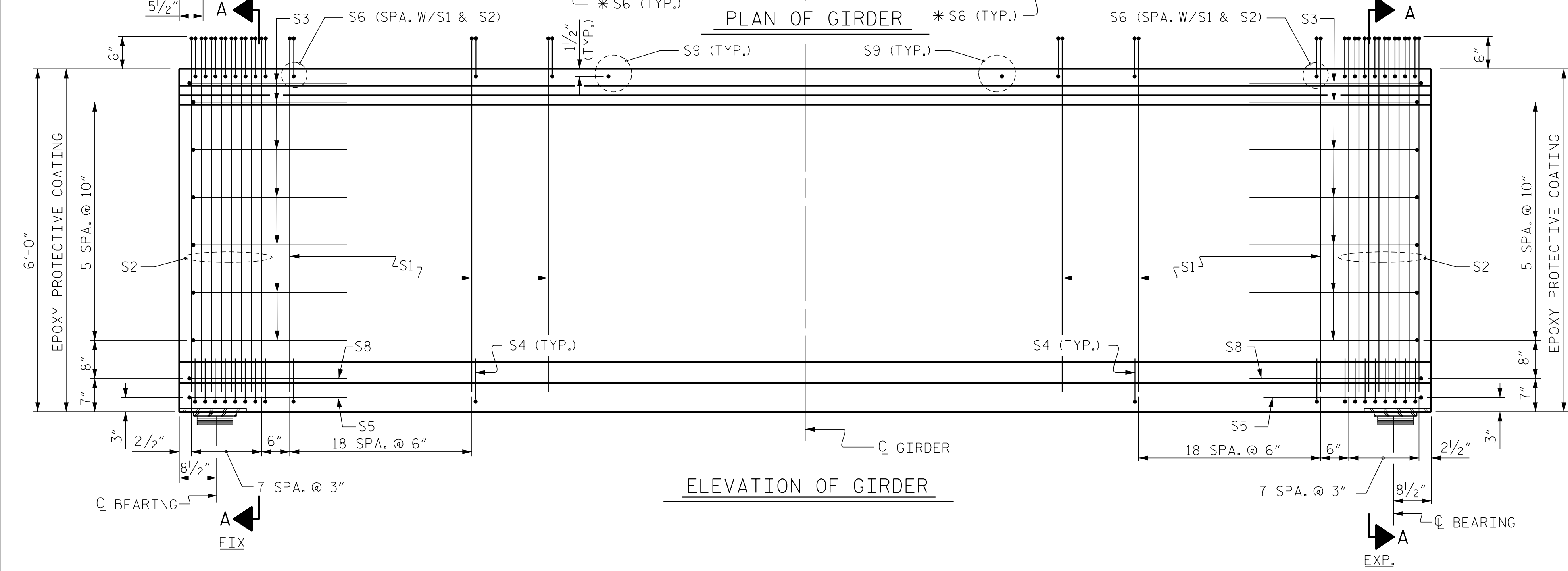
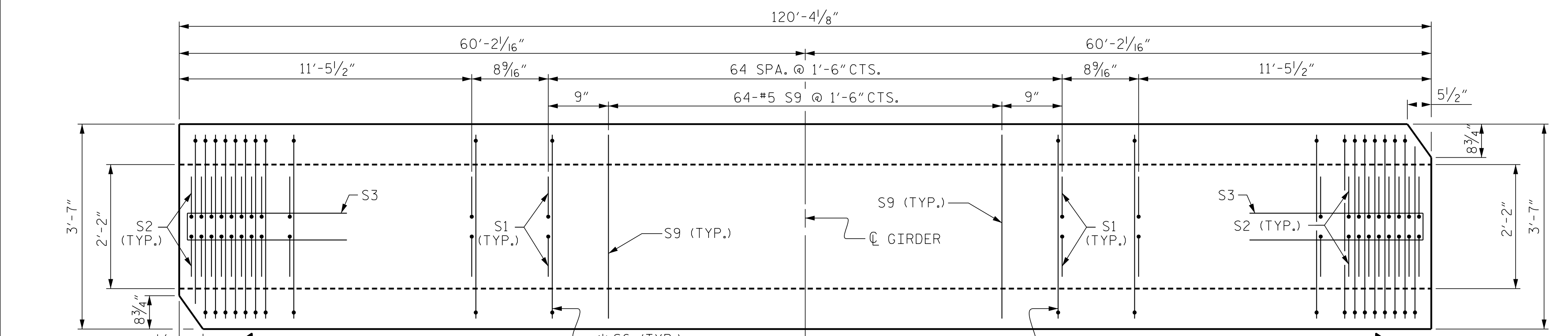
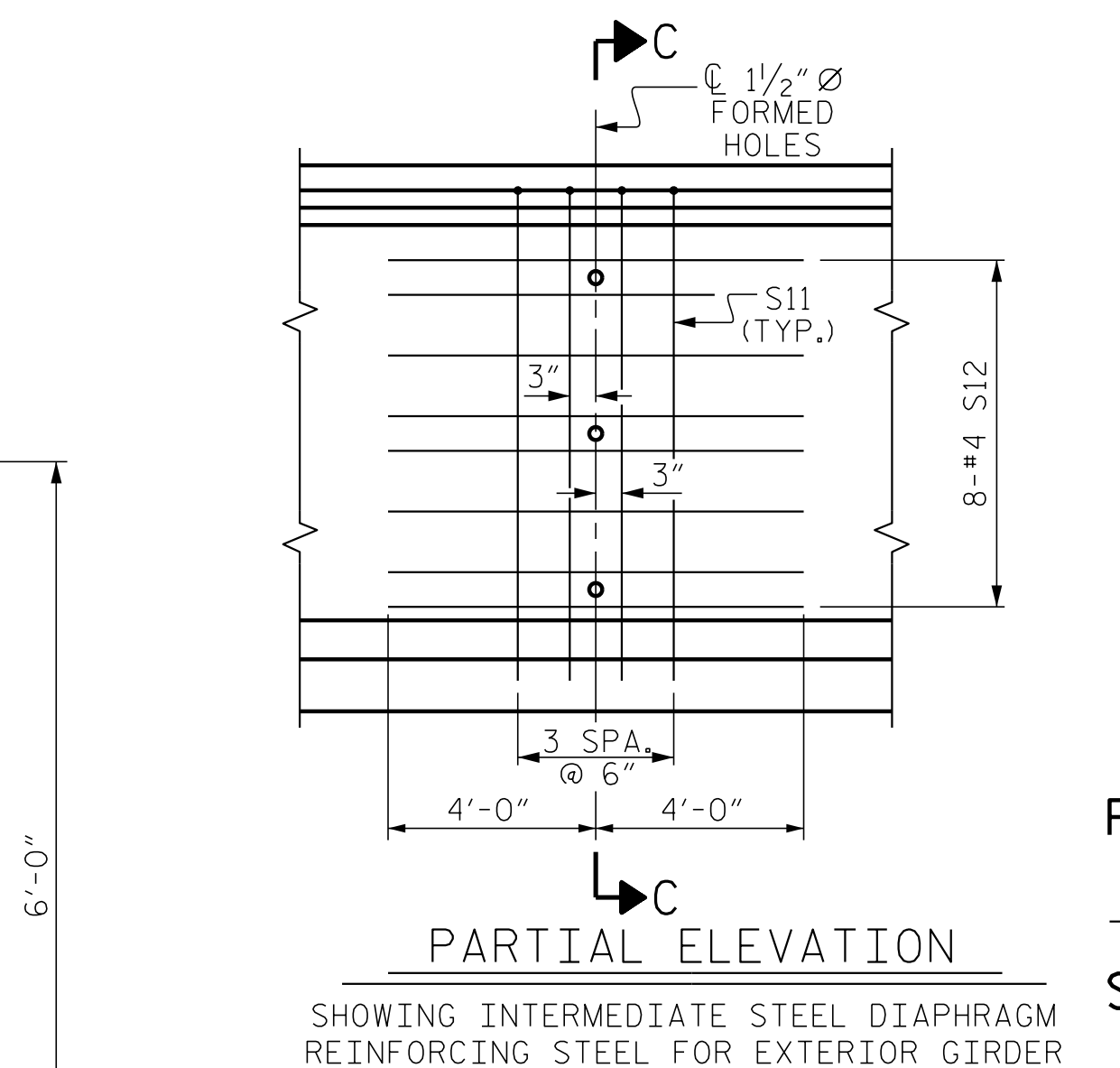
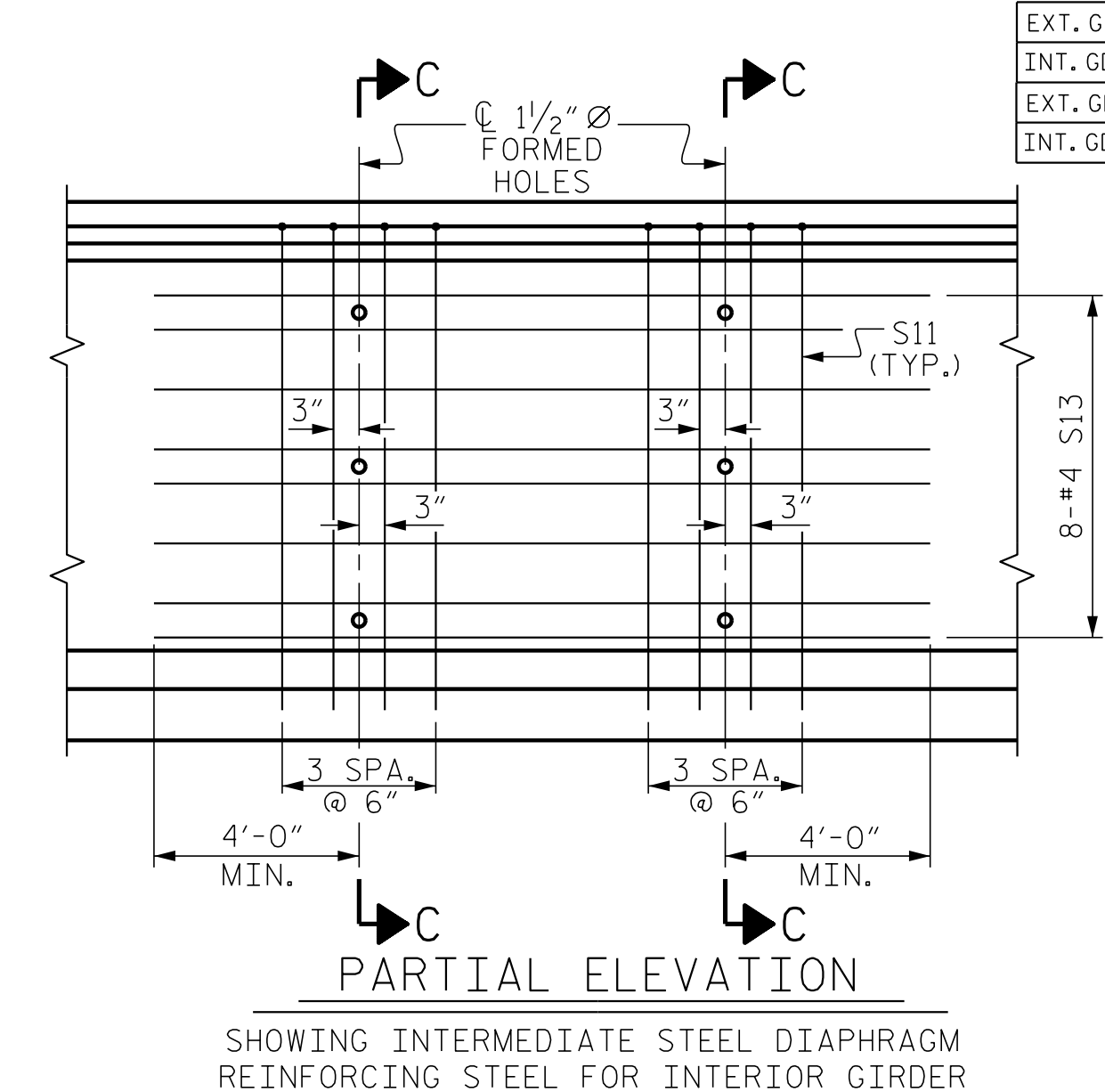
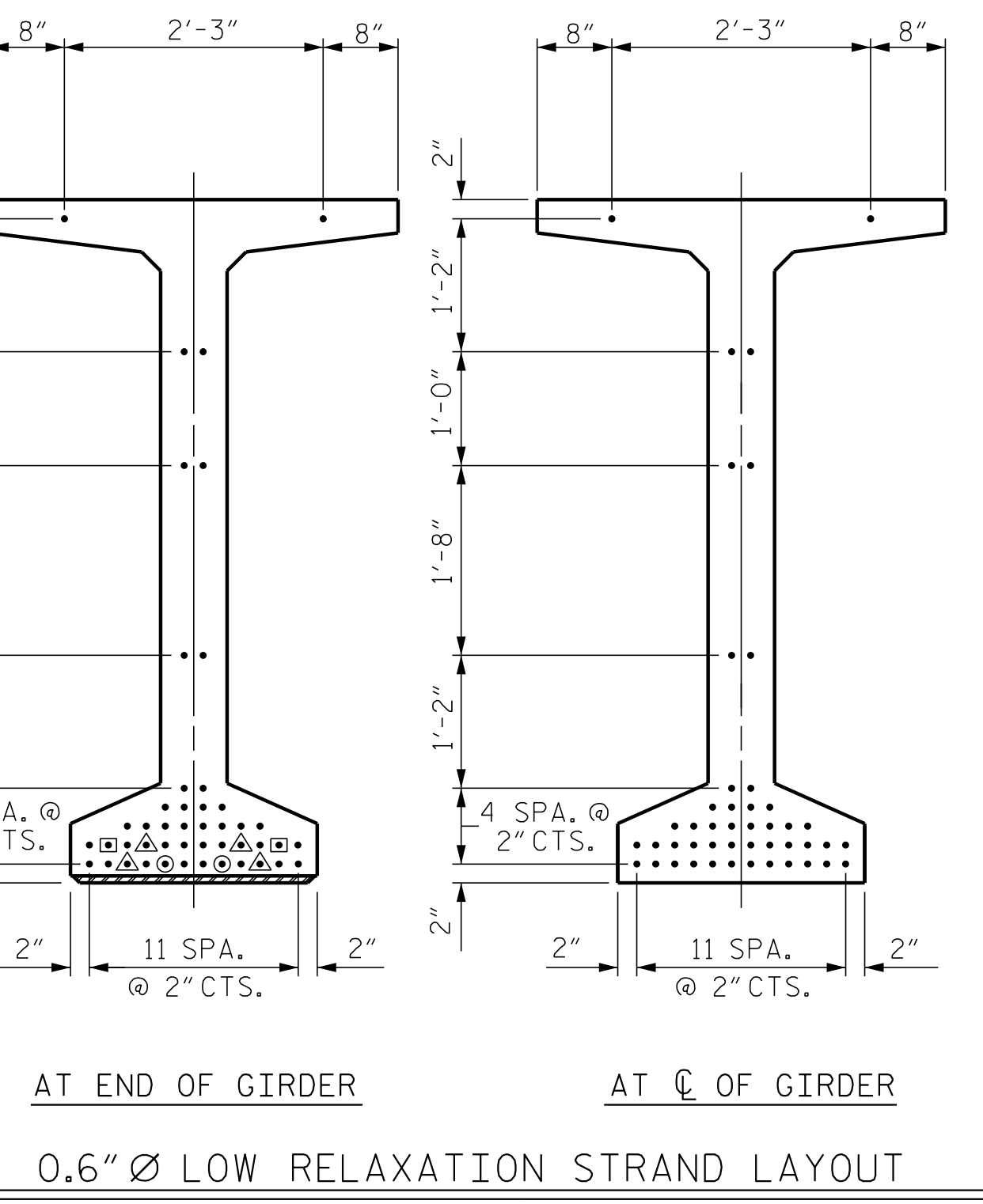
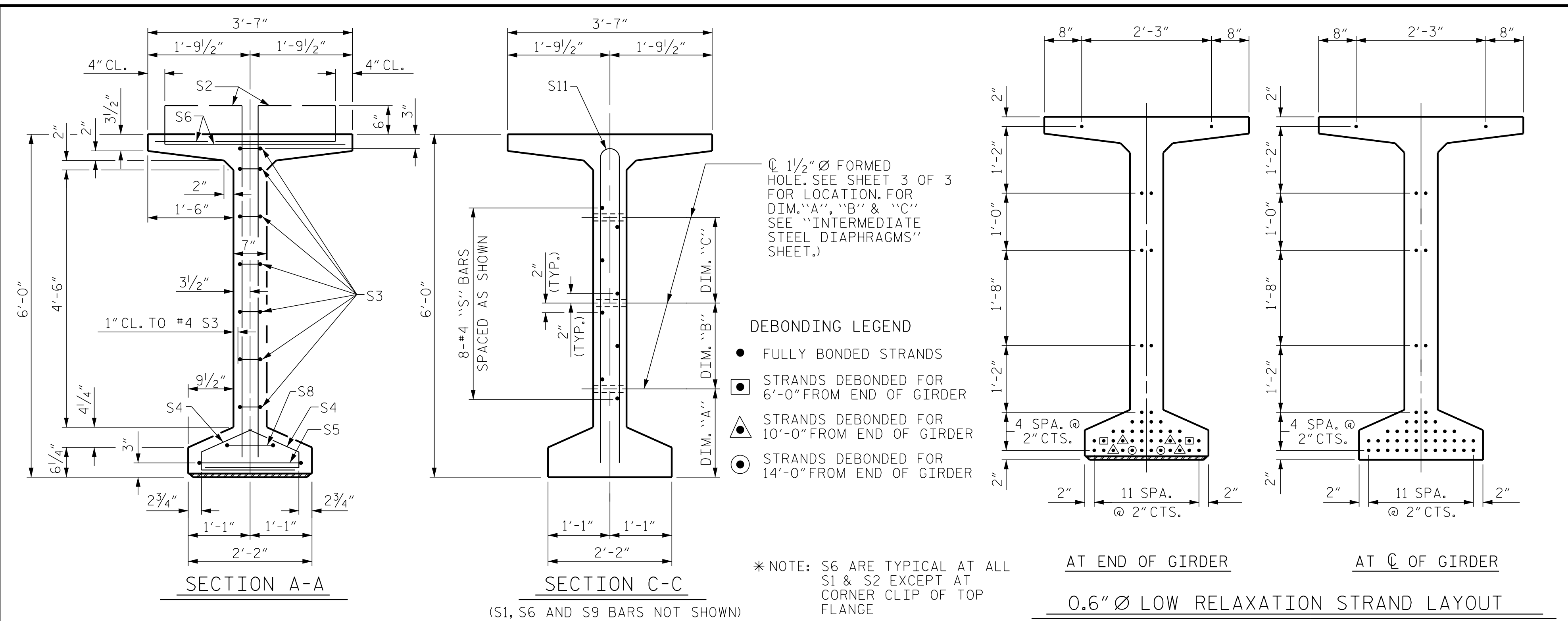
DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD:
Gregory M. Olland
 NORTH CAROLINA PROFESSIONAL ENGINEER
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 GREGORY M. OLLAND
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

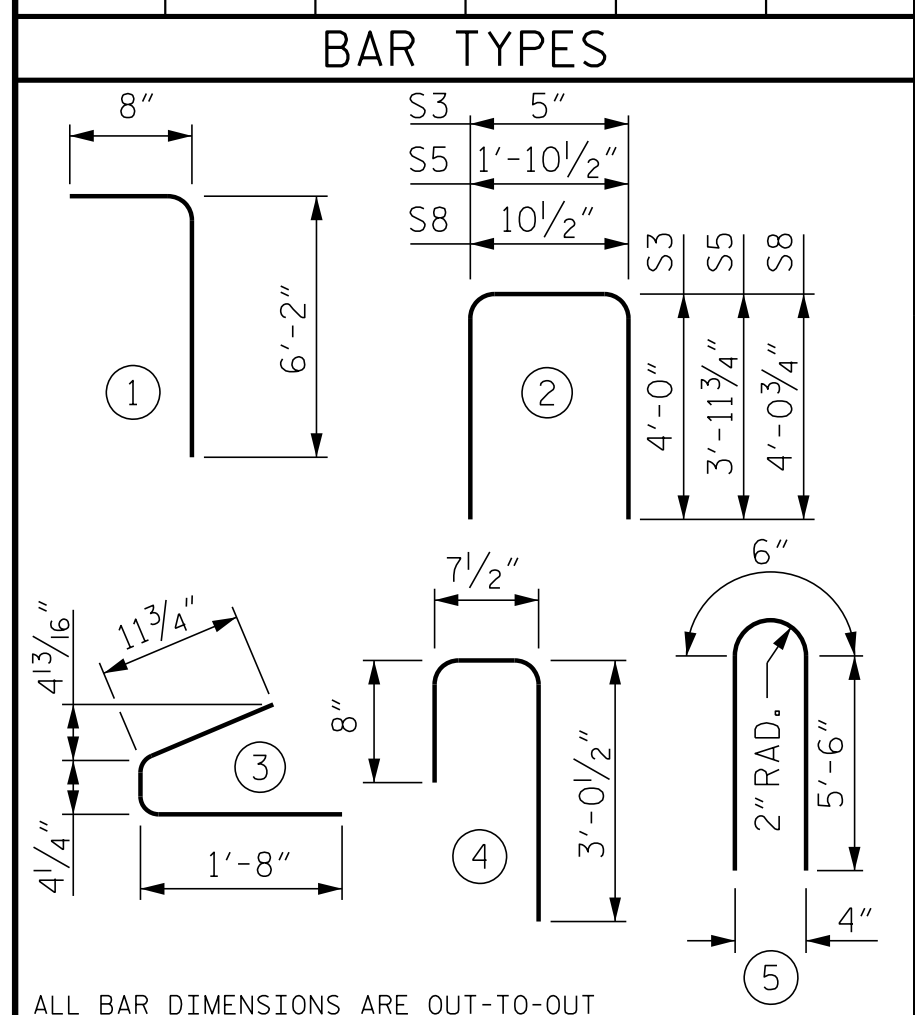
SUPERSTRUCTURE
 FRAMING PLAN
 (RIGHT LANE)

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



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

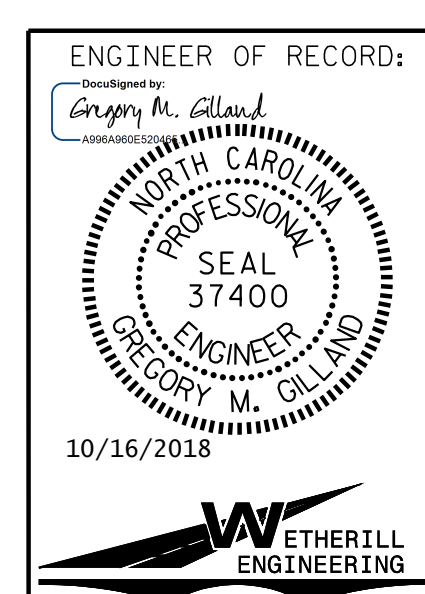
REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	206	#4	1	6'-10"	940
S2	32	#5	1	6'-10"	228
S3	14	#4	2	8'-5"	79
S4	108	#4	3	3'-0"	216
S5	2	#5	2	9'-10"	21
S6	236	#5	4	4'-4"	1067
S8	2	#5	2	9'-0"	19
S9	64	#5	STR	3'-3"	217
EXT. GDR. S11	8	#5	5	11'-6"	96
INT. GDR. S11	16	#5	5	11'-6"	192
EXT. GDR. S12	16	#4	STR	8'-0"	86
INT. GDR. S13	16	#4	STR	14'-7"	156



QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	9500 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
EXTERIOR GIRDER	2969	25.8	46
INTERIOR GIRDER	3135	25.8	46

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
4	120'-4 1/8"	481'-4 1/2"

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-
 SHEET 1 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 72" PRESTRESSED CONCRETE
 MODIFIED BULB TEE
 (RIGHT LANE)

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

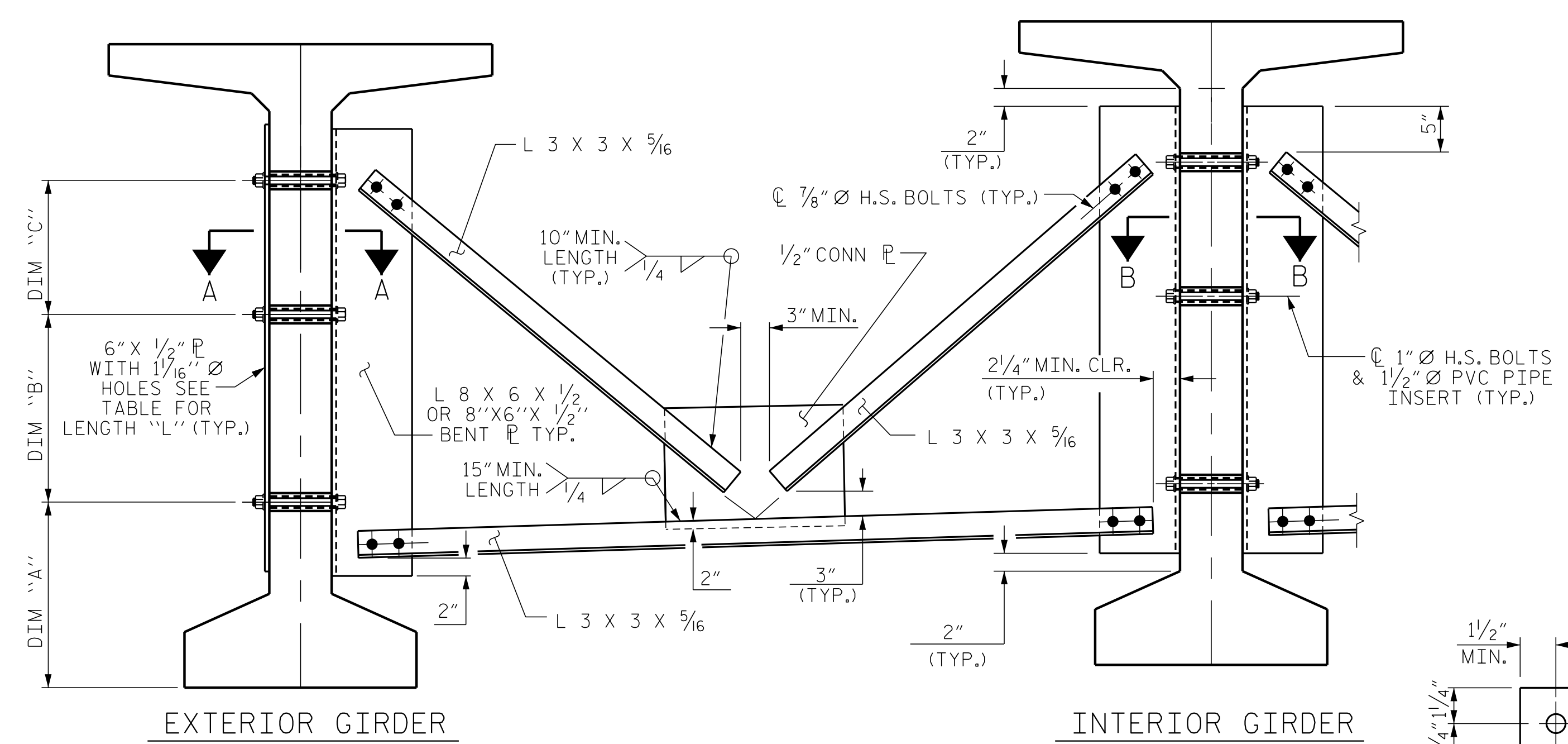
DRAWN BY: D. HODGE DATE: 3/18
 CHECKED BY: B.C. HUNT DATE: 3/18

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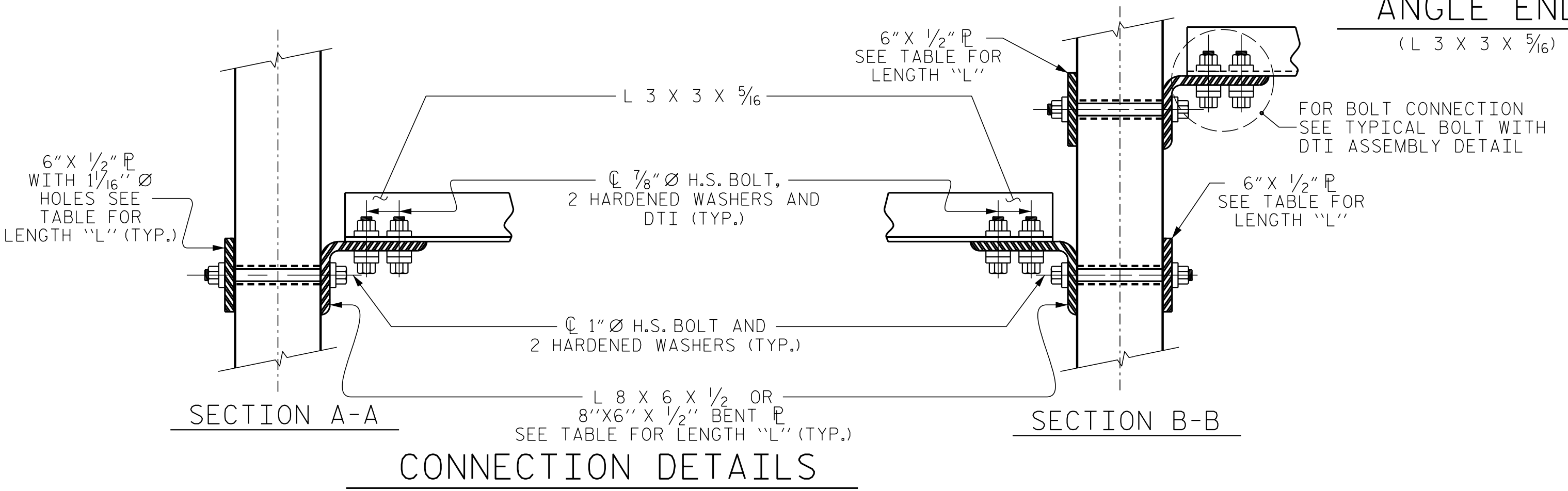
1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

SHEET NO.
 S2-8
 TOTAL SHEETS
 27

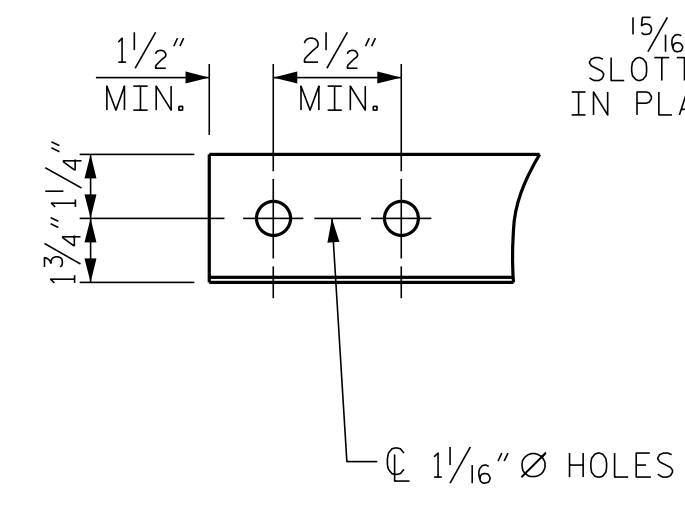
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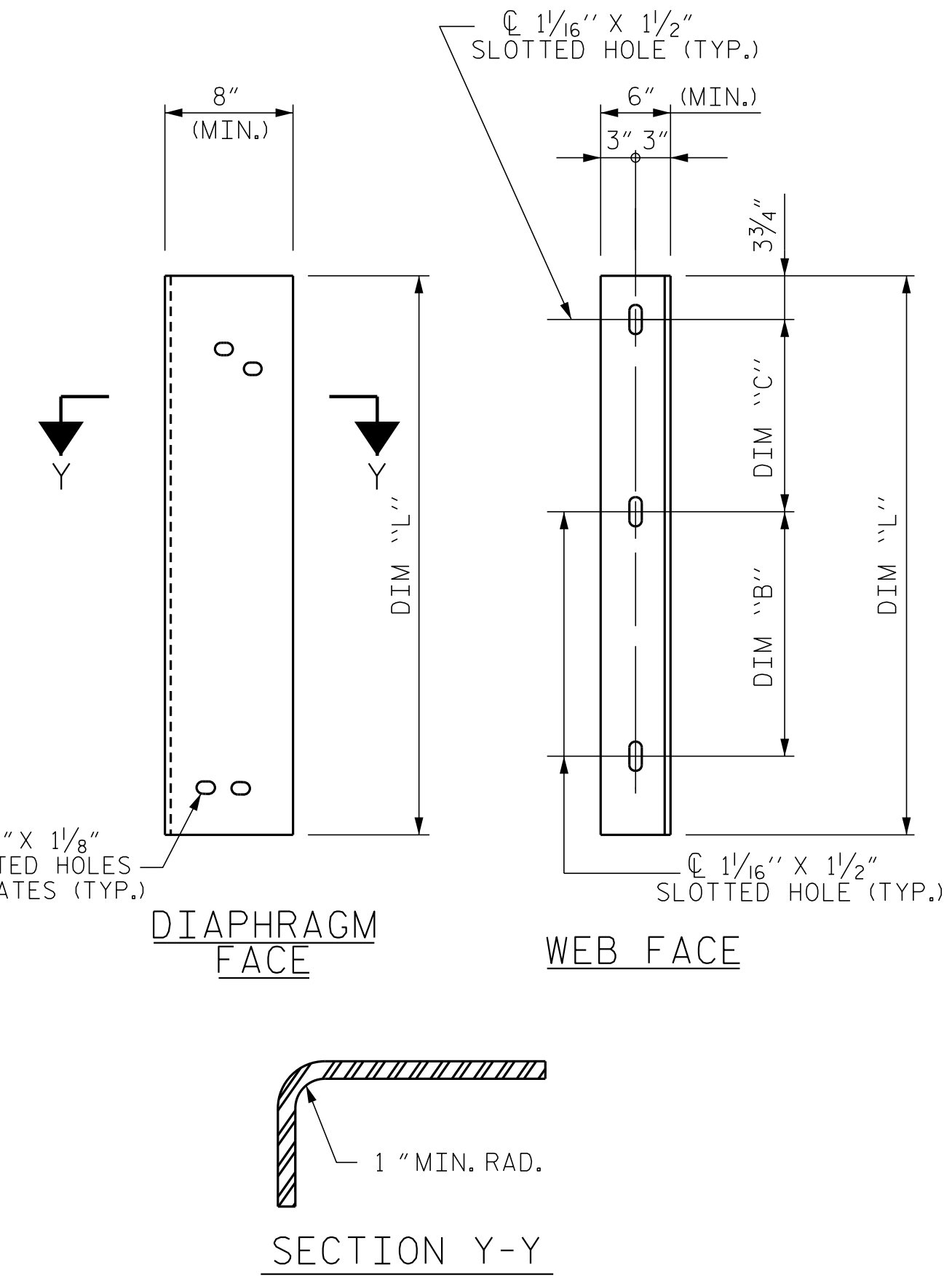
PART SECTION AT INTERMEDIATE DIAPHRAGM
(72" BULB TEE GIRDER SHOWN)



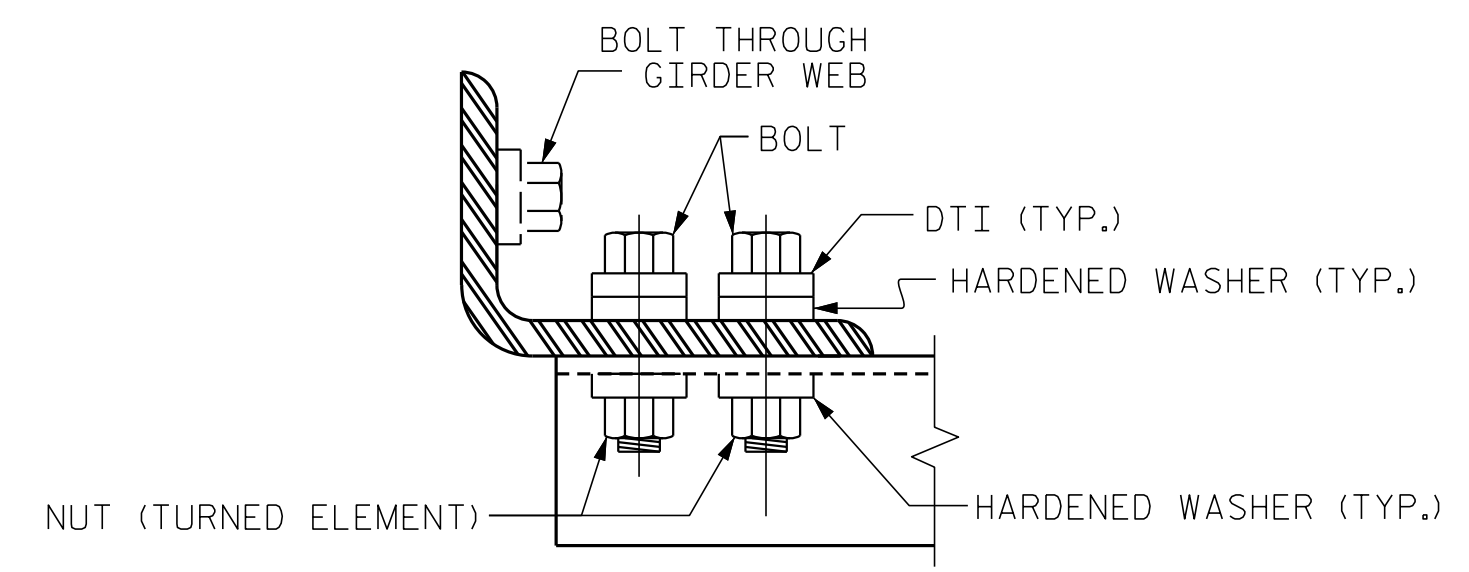
CONNECTION DETAILS



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



CONNECTOR PLATE DETAIL



BOLT WITH DTI ASSEMBLY DETAIL

STRUCTURAL STEEL NOTES

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

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

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

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

FOR METALLIZATION, APPLY 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.

TABLE

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
72" BULB TEE	1'-7"	1'-8"	1'-8"	4'-2"

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-
 SHEET 2 OF 3

ENGINEER OF RECORD:

 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
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 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 INTERMEDIATE
 STEEL DIAPHRAGMS FOR
 72" MODIFIED BULB TEE
 PRESTRESSED CONCRETE GIRDERS
 (RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-9
1			3			TOTAL SHEETS
2			4			27

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NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 7,500 PSI.

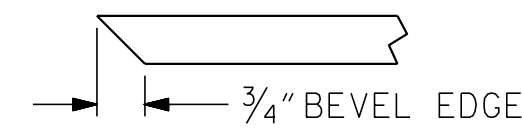
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

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

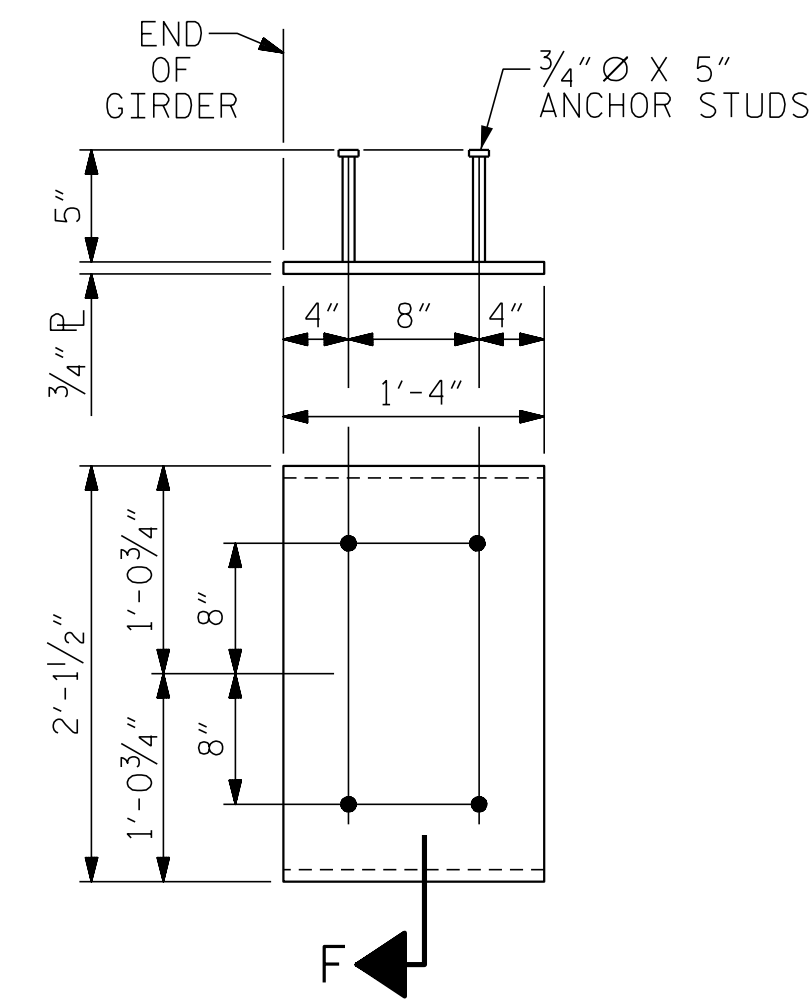
WHEN DRAPED STRANDS ARE DETAILED, THE LONGITUDINAL LOCATION OF THE HOLD DOWN DEVICES SHALL BE WITHIN 6" OF THE LOCATION SHOWN AND THE CENTER OF GRAVITY OF THE GROUP OF DRAPED STRANDS SHALL BE LOCATED WITHIN 1/2" OF THE THEORETICAL LOCATION SHOWN.

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

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



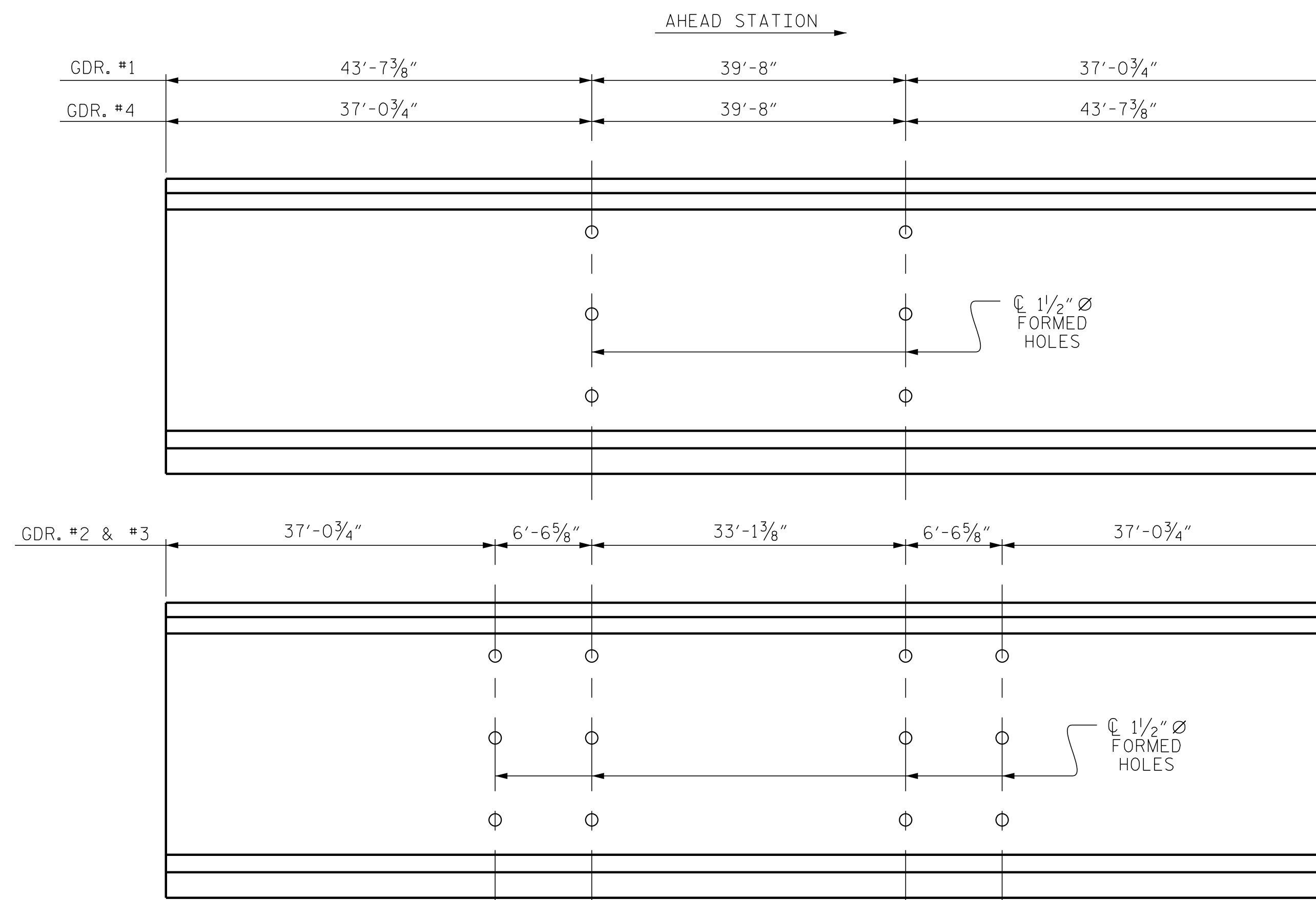
SECTION "F"
(SEE NOTES)



EMBEDDED PLATE "B-1" DETAILS
FOR 72" MODIFIED BULB TEES
(2 REQ'D PER GIRDER)

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
0.6" Ø LOW RELAXATION	SPAN A																					
	GIRDERS #1 THRU #4																					
TWENTIETH POINTS	0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.046	0.091	0.133	0.172	0.207	0.236	0.259	0.276	0.286	0.290	0.286	0.276	0.259	0.236	0.207	0.172	0.133	0.091	0.046	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.029	0.059	0.087	0.115	0.137	0.159	0.173	0.187	0.192	0.197	0.192	0.187	0.173	0.159	0.137	0.115	0.087	0.059	0.029	0.000
FINAL CAMBER	↑	0	3/16"	3/8"	9/16"	1 1/16"	1 3/16"	1 5/16"	1 1/16"	1 1/16"	1 1/8"	1 1/8"	1 1/8"	1 1/16"	1 1/16"	1 5/16"	1 3/16"	1 1/16"	9/16"	3/8"	3/16"	0

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



LOCATION OF BOLT HOLES IN GIRDERS

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 170+20.99 -L-

SHEET 3 OF 3

ASSEMBLED BY : D. HODGE DATE : 3/18
CHECKED BY : B.C. HUNT DATE : 3/18
DRAWN BY : ELR 11/91 REV. 1/15 MAA/TMG
9/5/2018 5:08:46 PM 9/5/2018 12:02 PM 9/5/2018 12:02 PM
CHECKED BY : GRP 11/91 REV. 2/15 MAA/TMG
REV. 12/17 MAA/THC

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ENGINEER OF RECORD:
Developed by
Gregory M. Olland
NORTH CAROLINA
PROFESSIONAL
SEAL
37400
ENGINEER
GREGORY M. OLLAND
9/12/2018
ETHERILL
ENGINEERING
1223 Jones Franklin Rd.
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Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
PRESTRESSED CONCRETE
GIRDER DETAILS
(RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-10
1			3			TOTAL SHEETS
2			4			27

NOTES

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

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

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

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

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

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

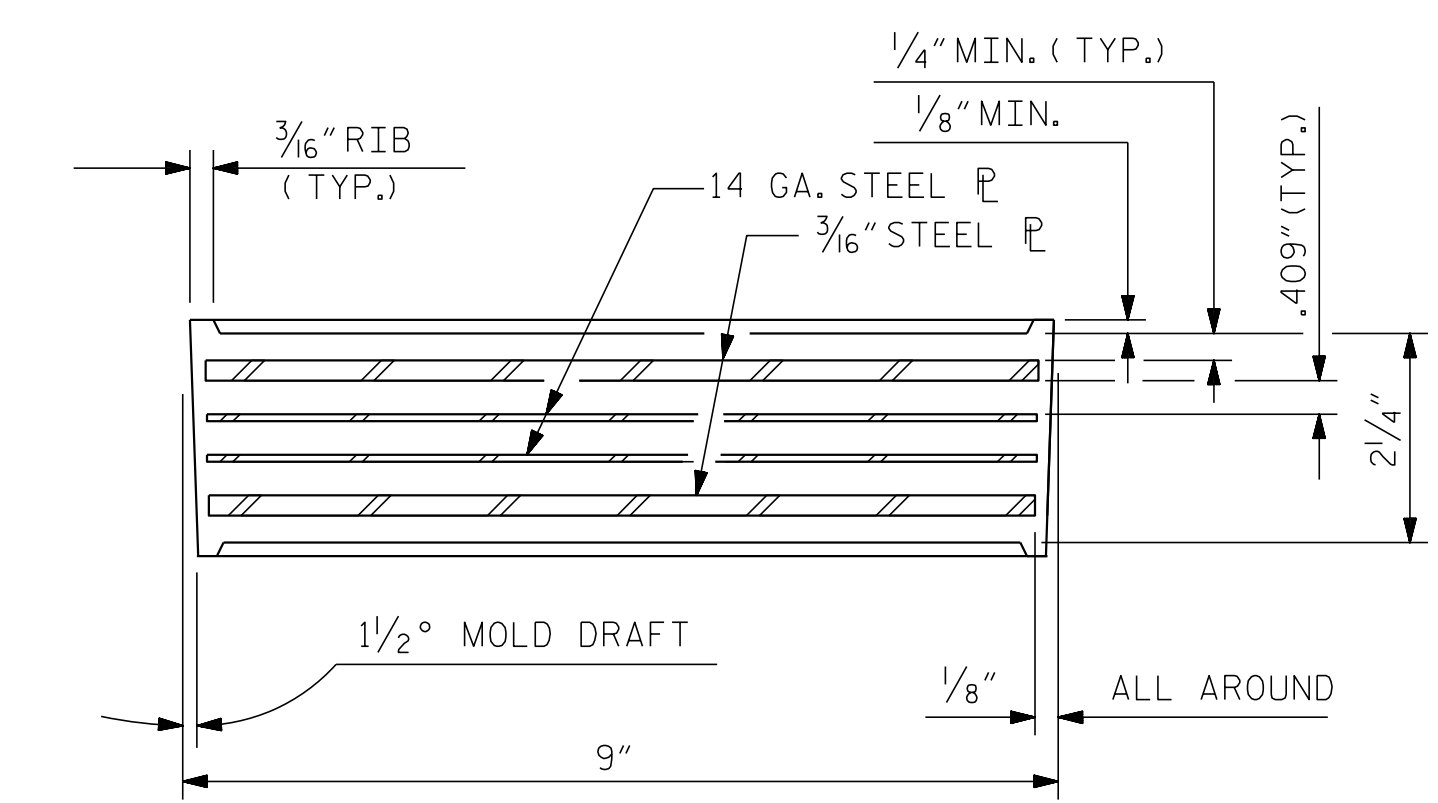
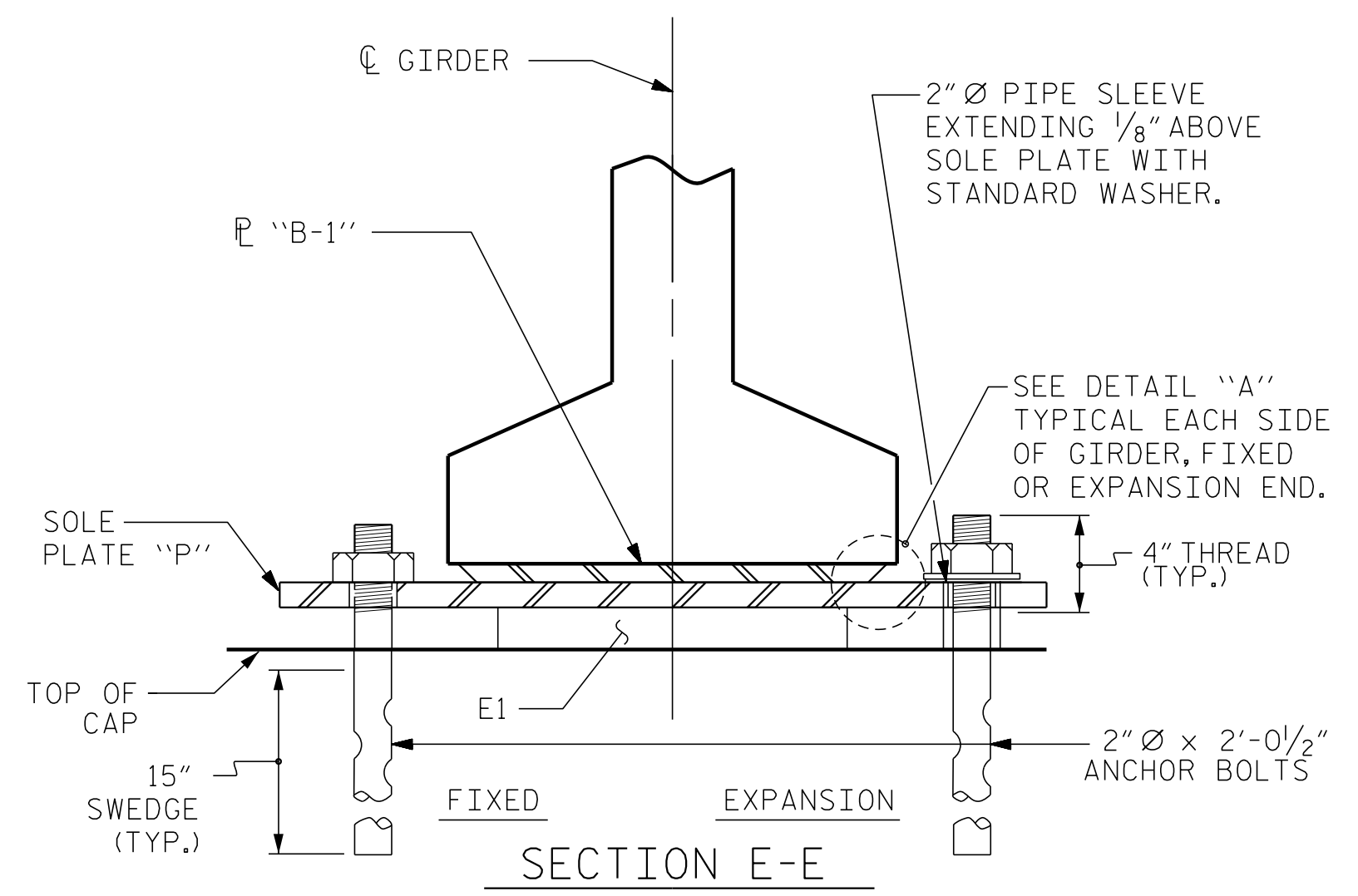
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

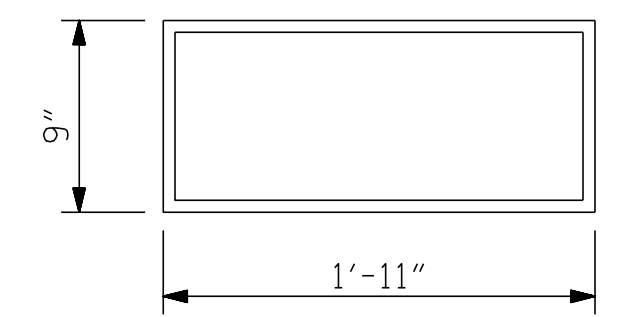
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

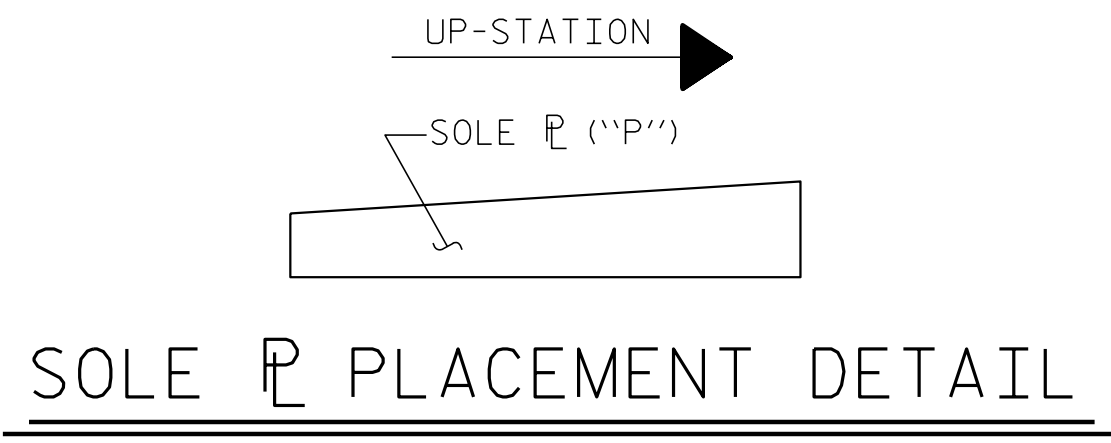
ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



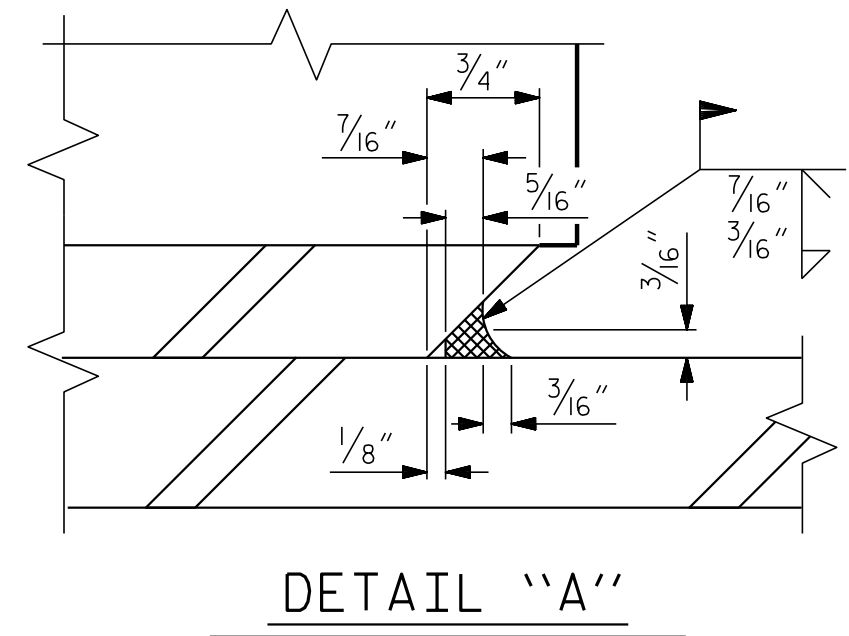
TYPICAL SECTION OF ELASTOMERIC BEARINGS



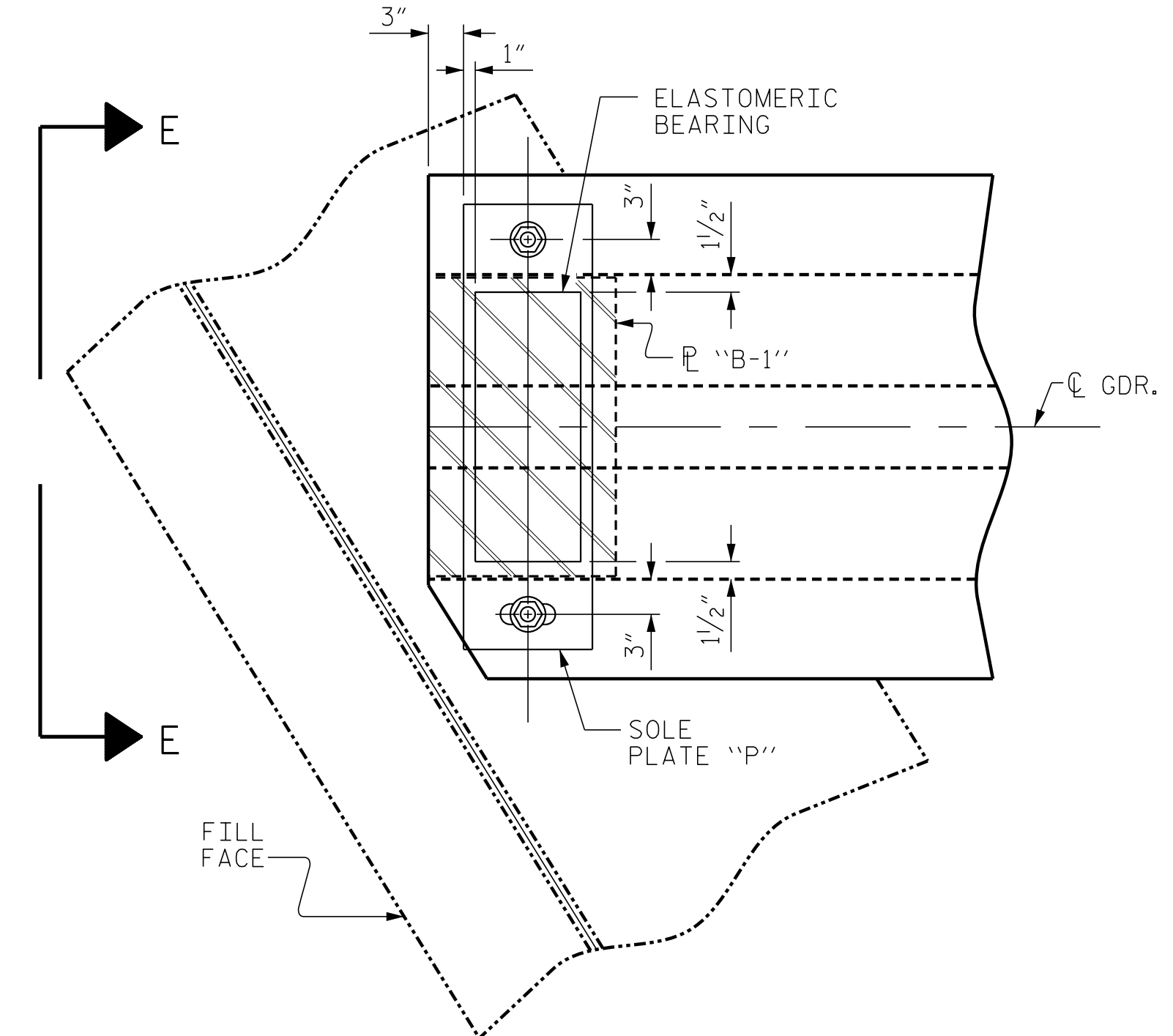
E1 (8 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE V



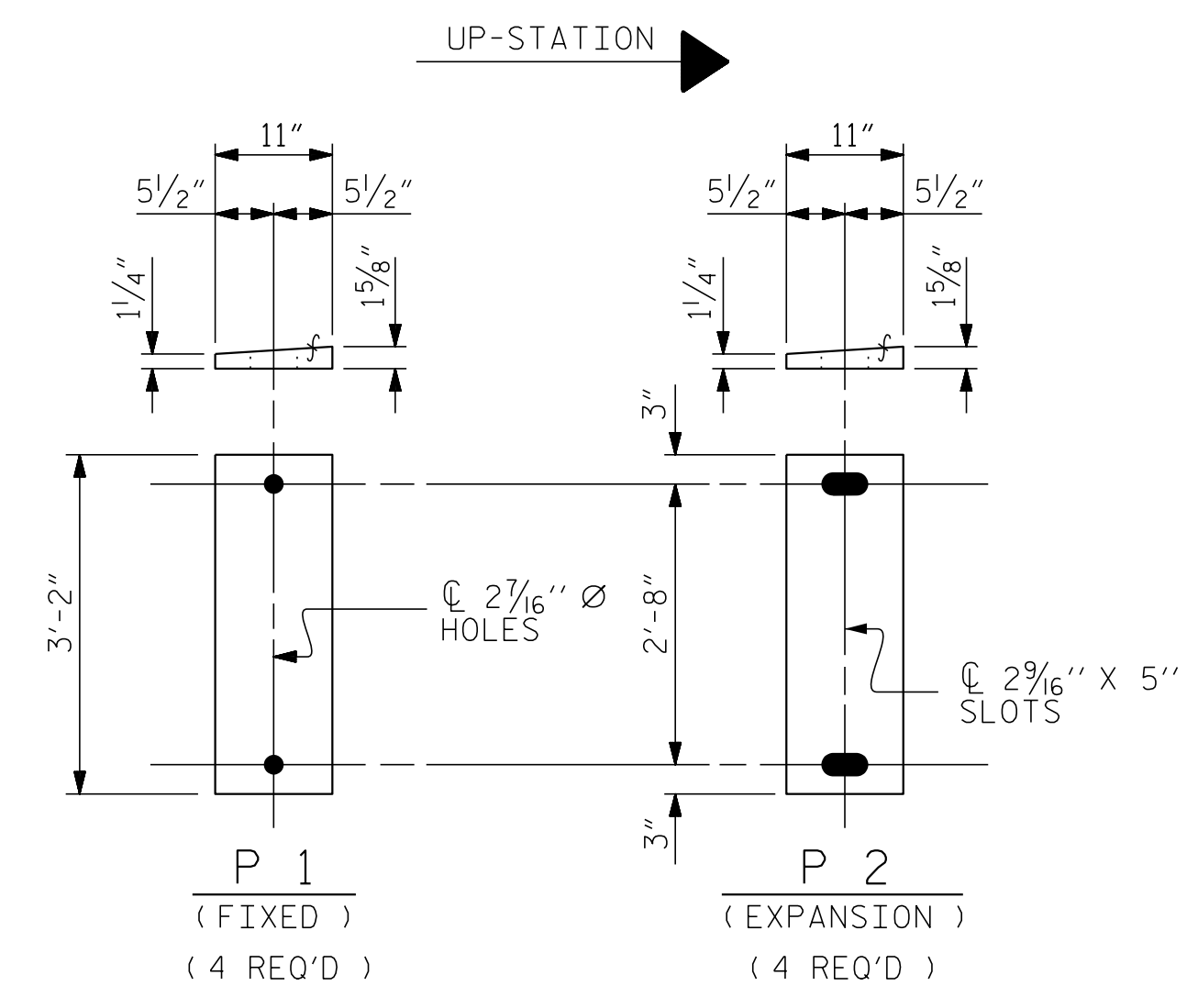
SOLE "P" PLACEMENT DETAIL



DETAIL "A"



TYPICAL PLAN
(SHOWING SIMPLE SPAN END BENT)



SOLE PLATE DETAILS ("P")

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

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 170+20.99 -L-

ENGINEER OF RECORD:

 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
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 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
ELASTOMERIC BEARING
DETAILS
 PRESTRESSED CONCRETE GIRDER
 SUPERSTRUCTURE
 (RIGHT LANE)

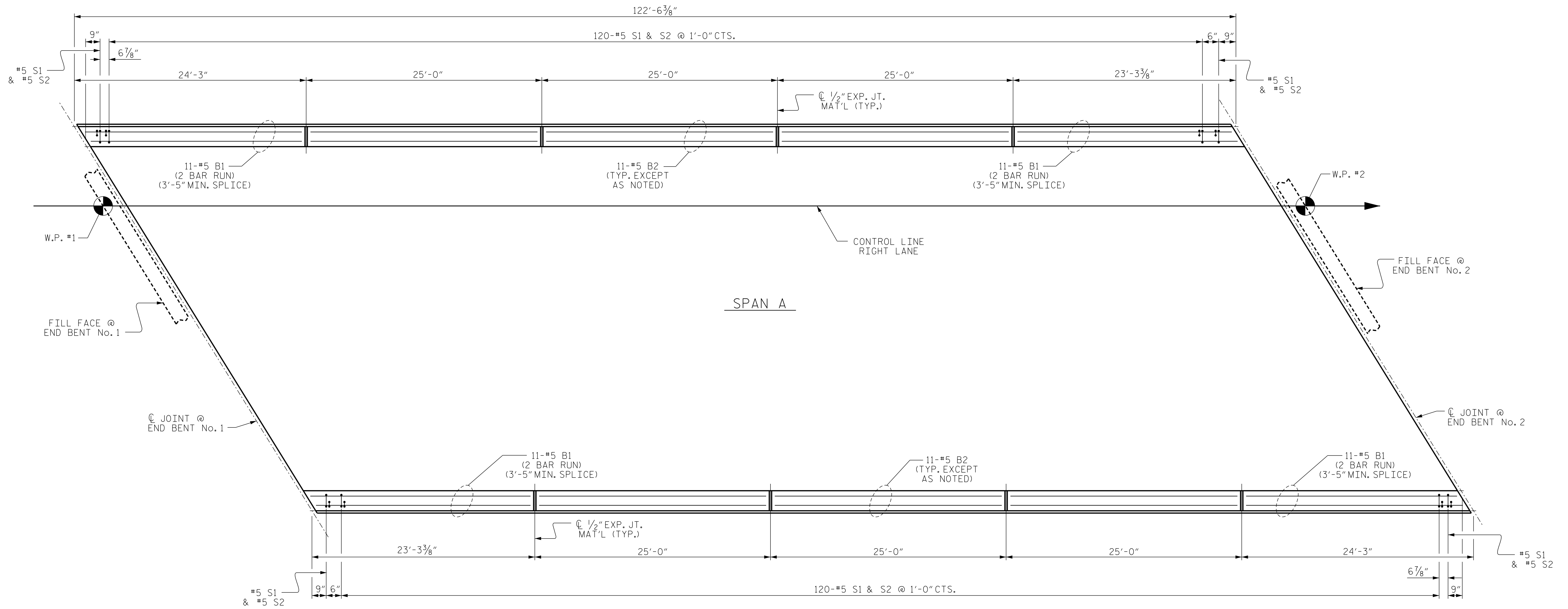
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-11
1			3			TOTAL SHEETS
2			4			27

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ASSEMBLED BY : D. HODGE	DATE : 3/18
CHECKED BY : B.C. HUNT	DATE : 3/18
DRAWN BY : EEM 2/97	REV. 6/13 AAC/MAA
CHECKED BY : VAP 2/97	REV. 1/15 MAA/TMG
	REV. 12/17 MAA/THC

NOTES:
 #5 S1 AND S2 BARS MAY BE SHIFTED SLIGHTLY TO MAINTAIN 2" CLEAR TO EXPANSION JOINT IN RAIL.



PLAN OF CONCRETE BARRIER RAIL

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-

SHEET 1 OF 2

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DRAWN BY : D. HODGE DATE : 3/18
 CHECKED BY : B.C. HUNT DATE : 3/18

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ENGINEER OF RECORD:
Gregory M. Olland
 NORTH CAROLINA PROFESSIONAL SEAL 37400
 ENGINEER
 GREGORY M. OLLAND
 9/12/2018
 WETHERILL ENGINEERING
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 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CONCRETE BARRIER RAIL
 (RIGHT LANE)

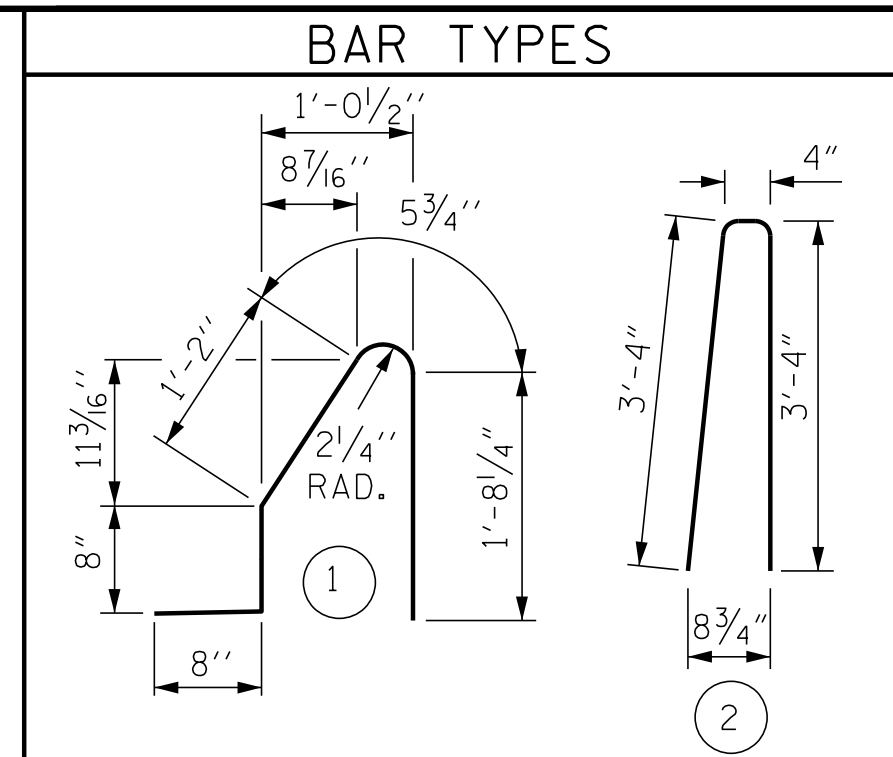
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			27
2			4			

NOTES

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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



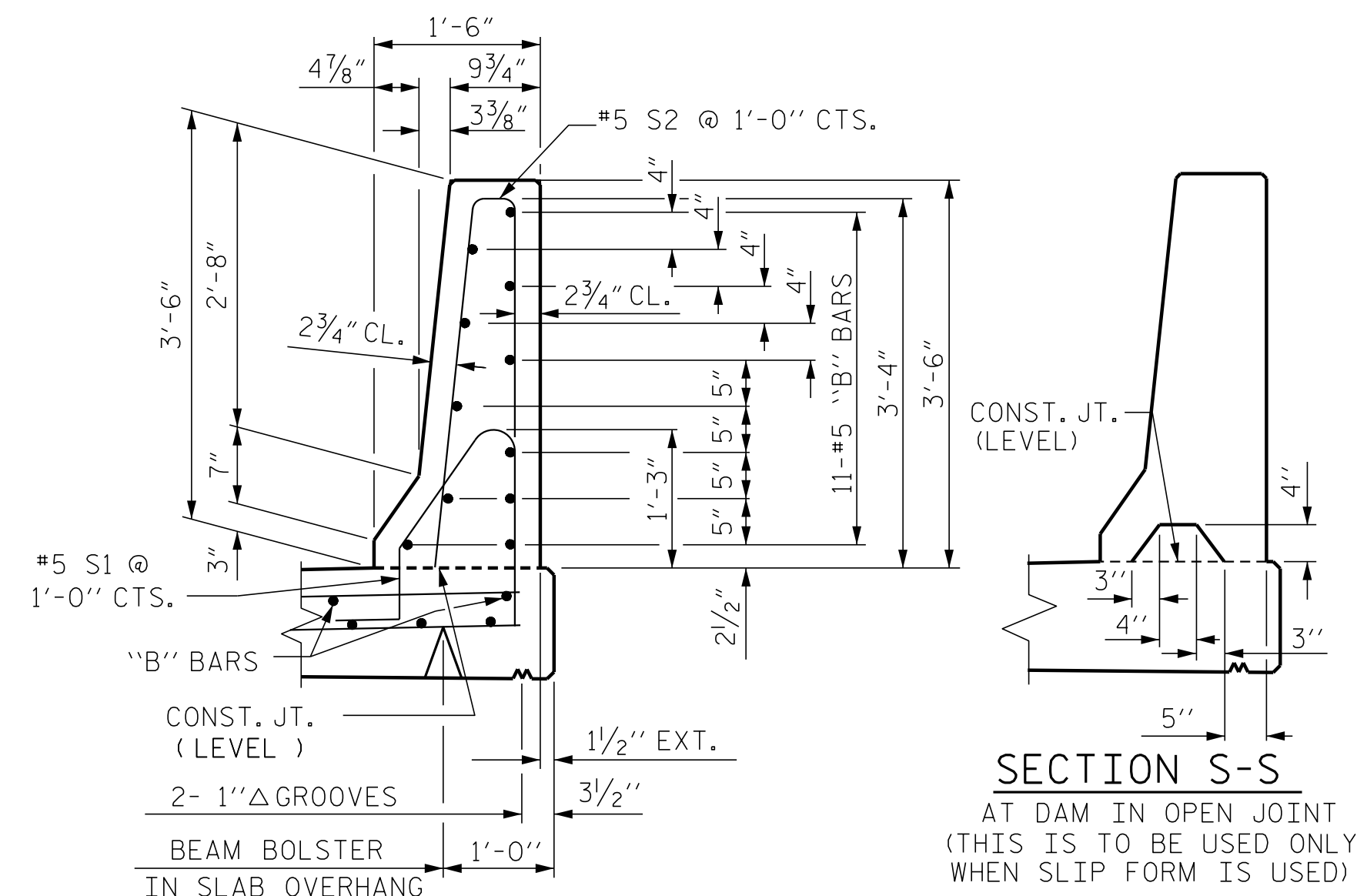
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

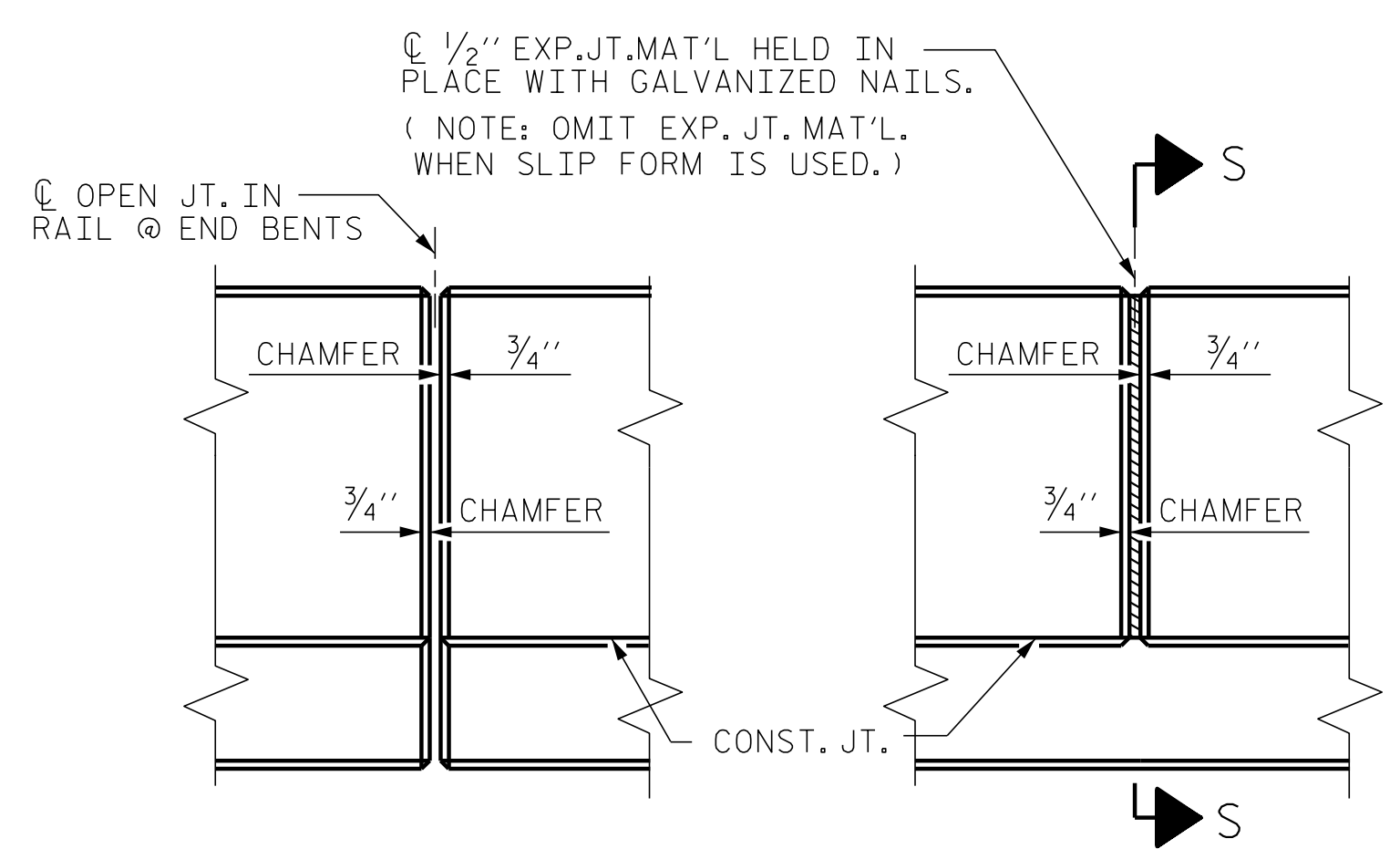
FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* S1	244	#5	1	4'-8"	1188
* S2	244	#5	2	7'-0"	1781
* B1	88	#5	STR	13'-7"	1247
* B2	66	#5	STR	24'-7"	1692

* EPOXY COATED REINFORCING STEEL	5,908 LBS.
CLASS AA CONCRETE	33.3 CU. YDS.
CONCRETE BARRIER RAIL	245.10 LIN. FT.



SECTION THRU RAIL



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

PROJECT NO. R-2582A

NORTHAMPTON COUNTY

STATION: 170+20.99 -L-

SHEET 2 OF 2

ENGINEER OF RECORD:
Gregory M. Olland
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 GREGORY M. OLLAND
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 CONCRETE
 BARRIER RAIL
 (RIGHT LANE)

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ASSEMBLED BY : D. HODGE	DATE : 3/18
CHECKED BY : B.C. HUNT	DATE : 3/18
DRAWN BY : ARB 5/87	REV. 7/12 MAA/GM
CHECKED BY : SJD 9/87	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

NOTES

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

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

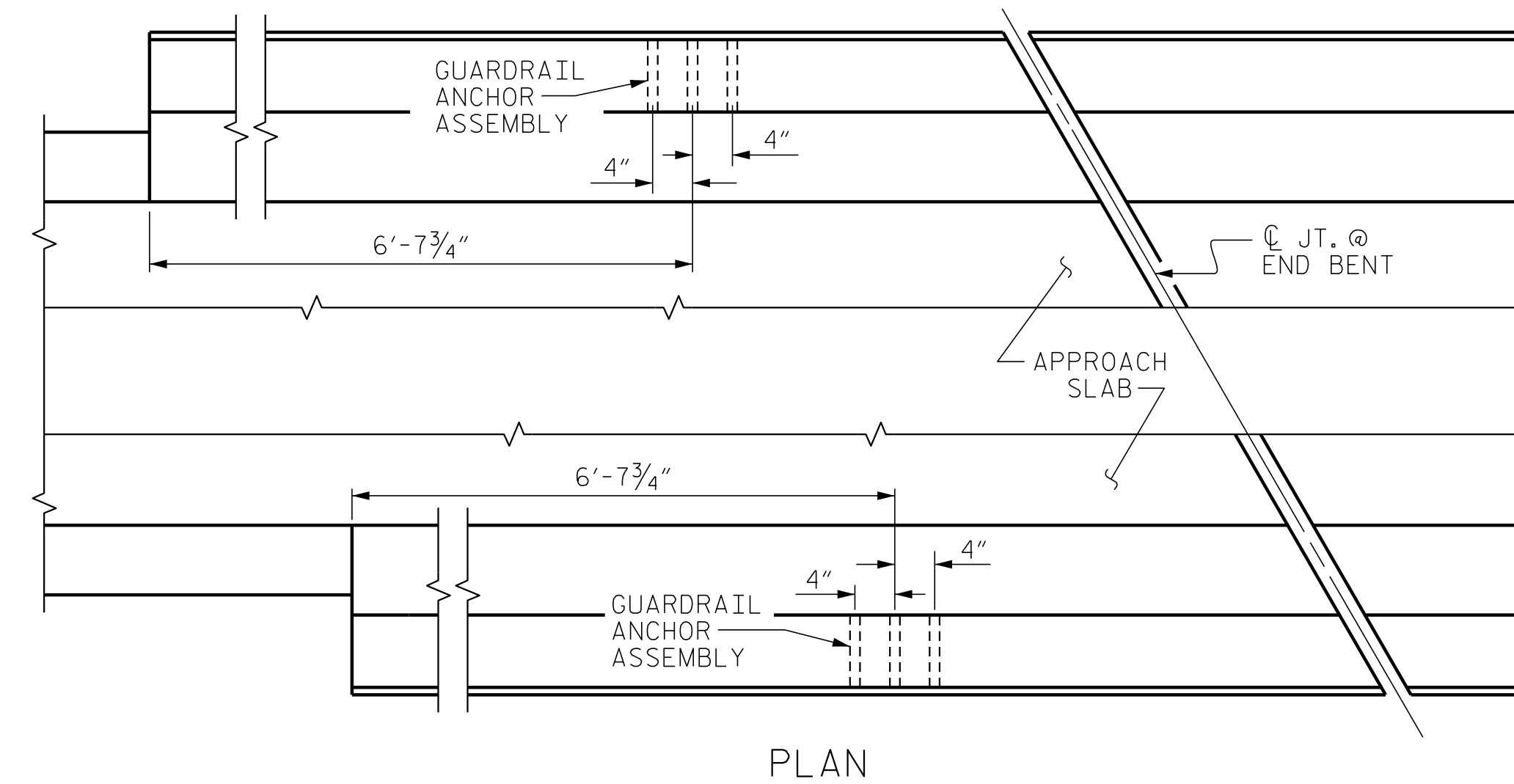
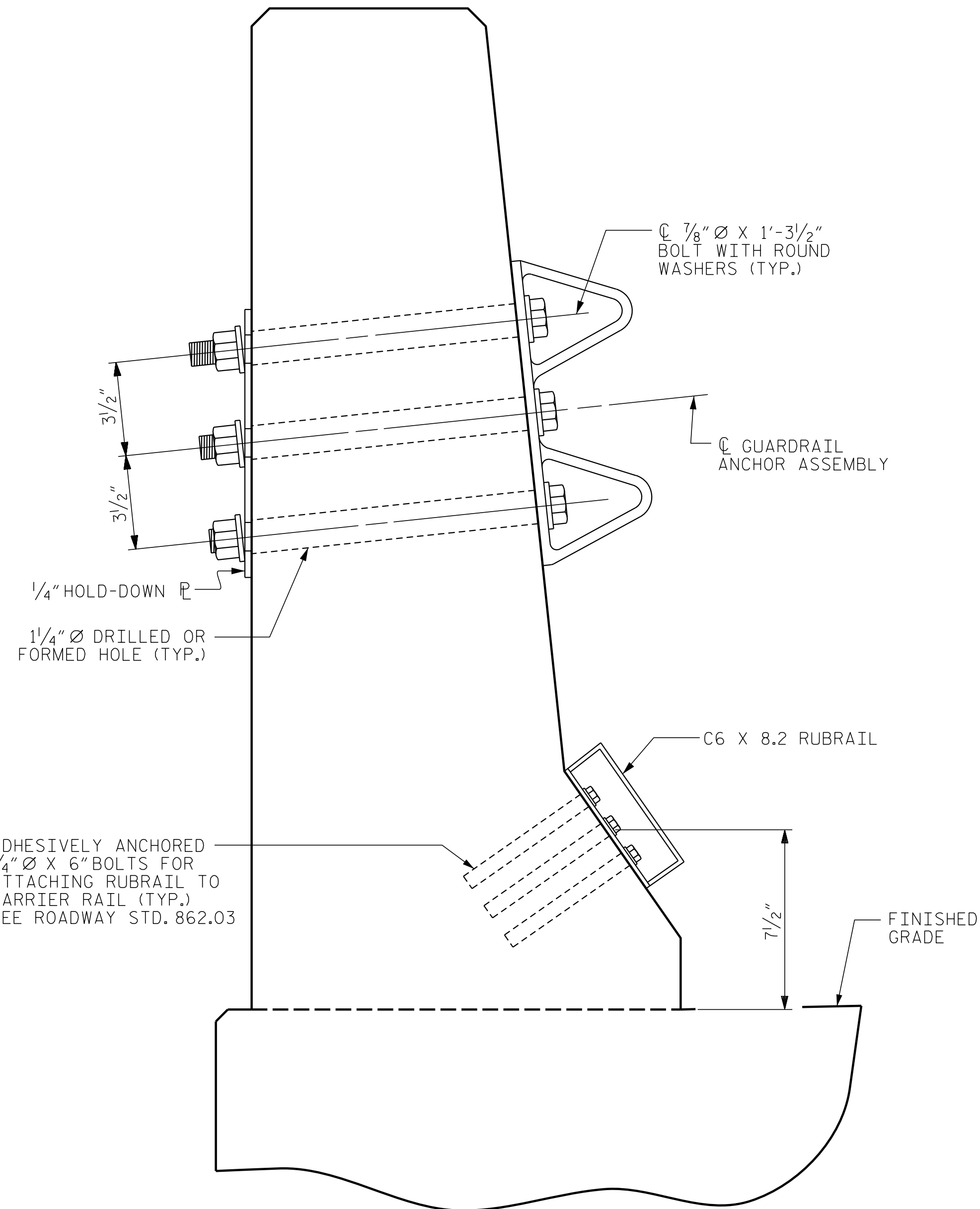
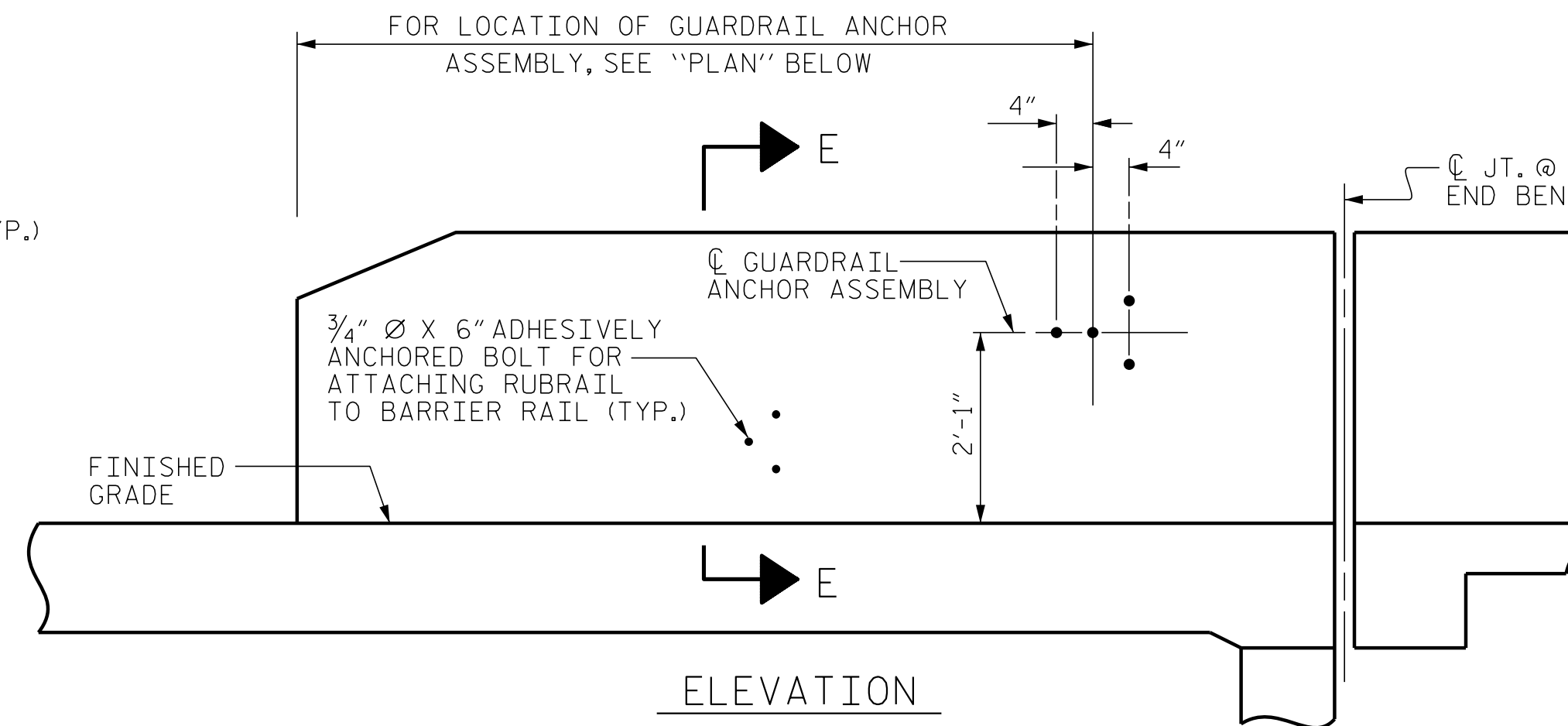
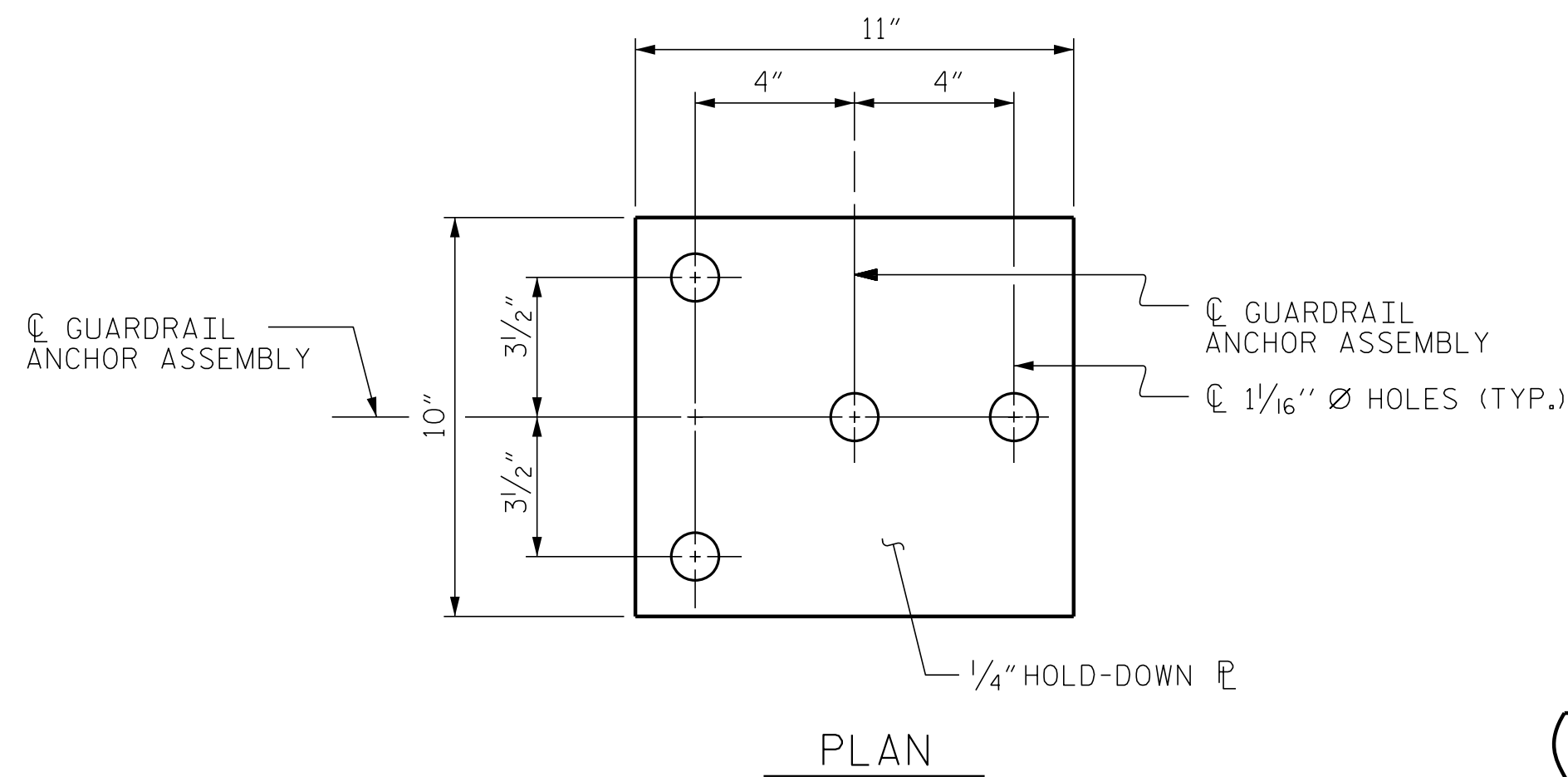
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

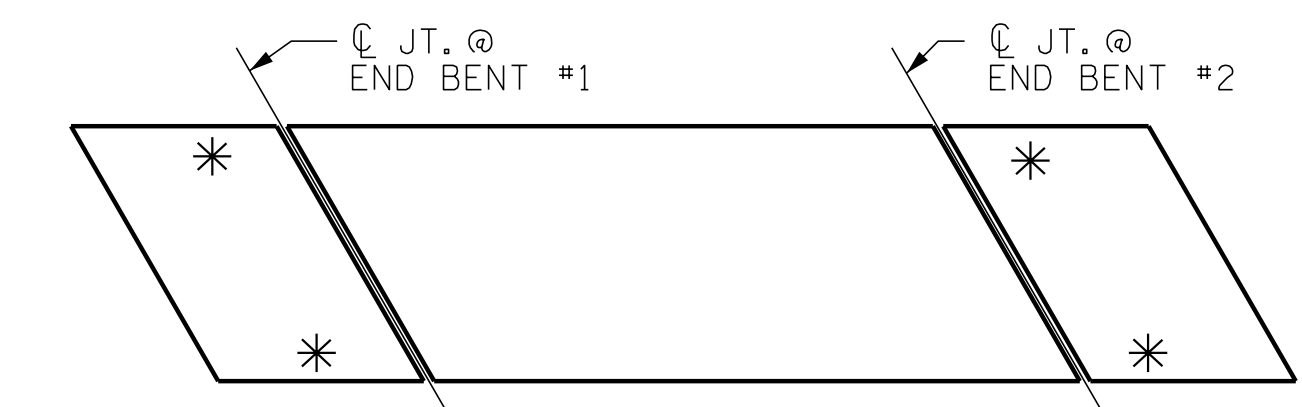
THE 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

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



LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-

ENGINEER OF RECORD:
 Gregory M. Olland
 NORTH CAROLINA PROFESSIONAL ENGINEER
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 GREGORY M. OLLAND
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 1223 Jones Franklin Rd.
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 Fax: 919 851 8107
 LICENSE NO. F-0377

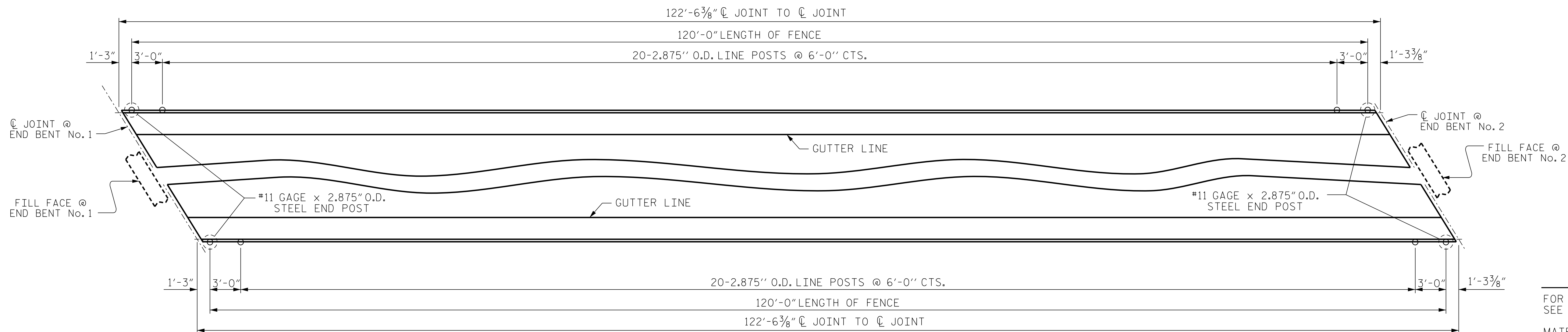
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 FOR BARRIER RAIL
 (RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-14
1			3			TOTAL SHEETS
2			4			27

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

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ASSEMBLED BY : D. HODGE	DATE : 3/18
CHECKED BY : B.C. HUNT	DATE : 3/18
DRAWN BY : TLA 5/06	REV. 7/12 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC



PLAN OF FENCE POST SPACING

NOTES

FOR BRIDGE MOUNTED CHAIN LINK FENCE, SEE SPECIAL PROVISIONS.

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

FOR SETTING ANCHOR BOLTS, THE CONTRACTOR SHALL USE AN ADHESIVE BONDING SYSTEM. LEVEL ONE FIELD TESTING OF BONDING SYSTEM IS REQUIRED.

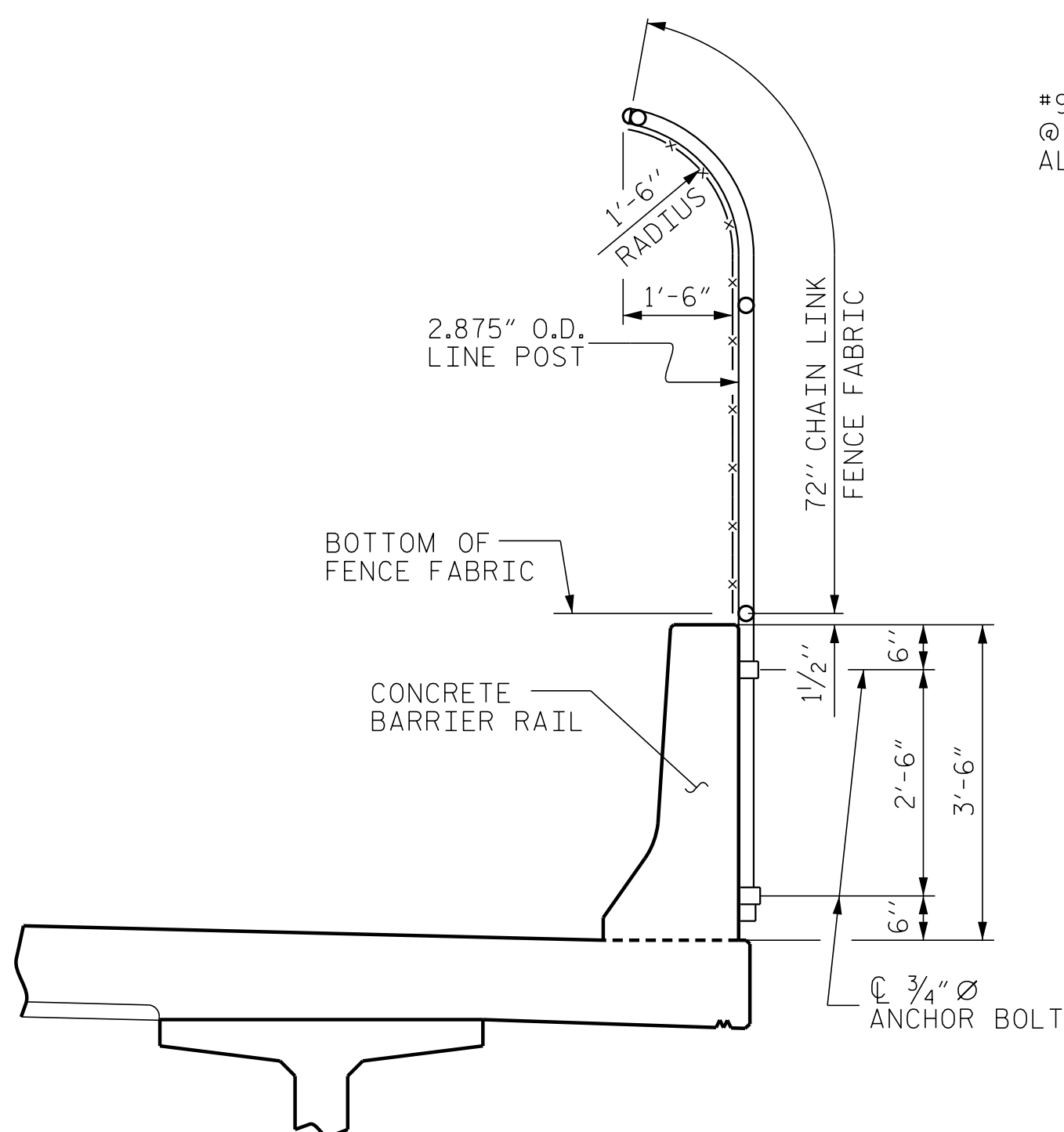
ALL FENCE MATERIAL SHALL MEET THE REQUIREMENTS OF SECTION 1050 OF THE STANDARD SPECIFICATIONS. VINYL COAT ALL STEEL PARTS AND HARDWARE IN ACCORDANCE WITH ARTICLE 1050 OF THE STANDARD SPECIFICATIONS.

ALL FENCE COMPONENTS SHALL BE VINYL COATED - BLACK.

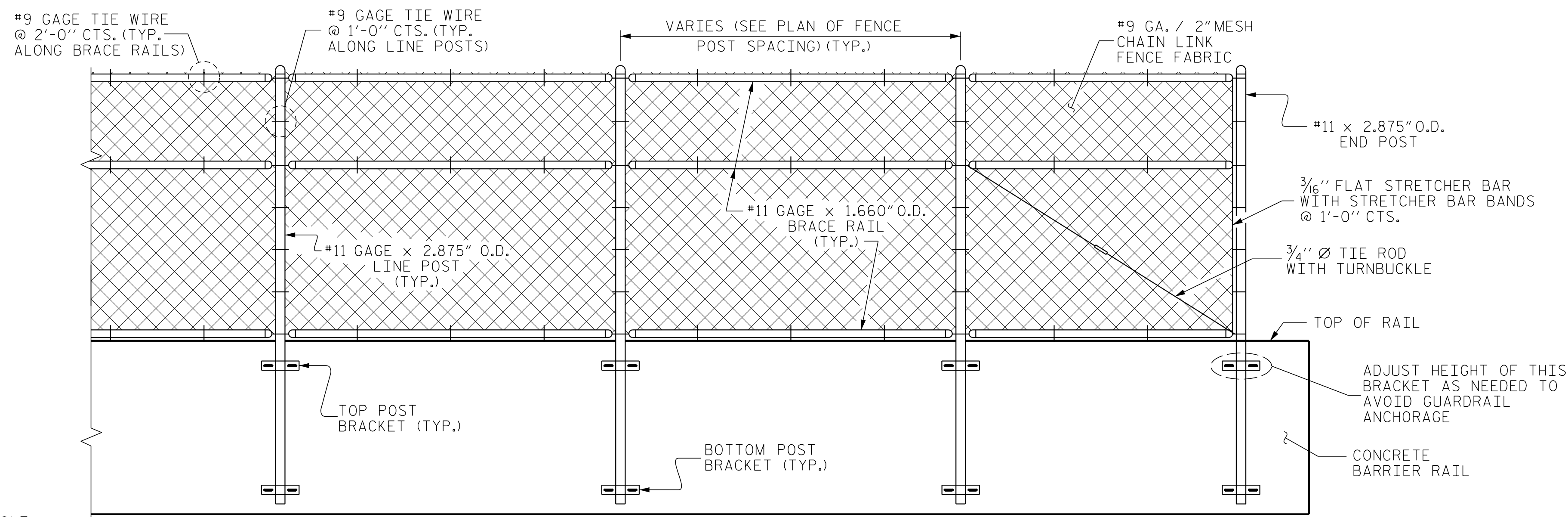
FENCE POST LOCATIONS SHALL BE SHIFTED, AS NECESSARY, TO MAINTAIN A 6" MINIMUM DISTANCE FROM ANCHOR BOLT TO JOINTS IN BARRIER RAIL.

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

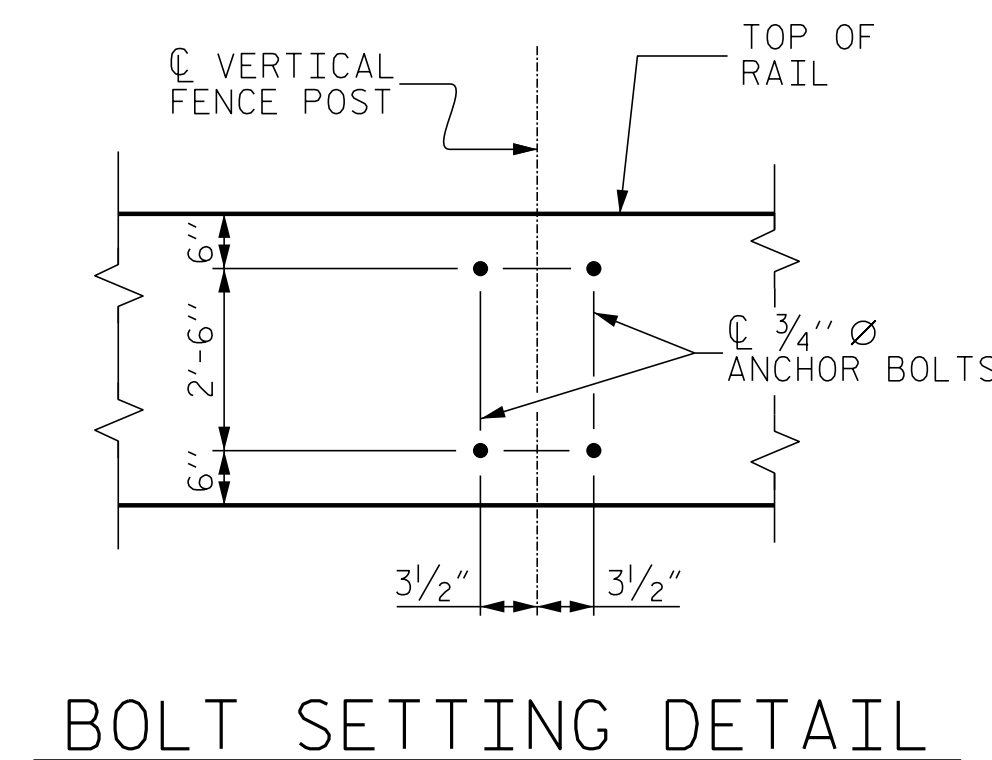
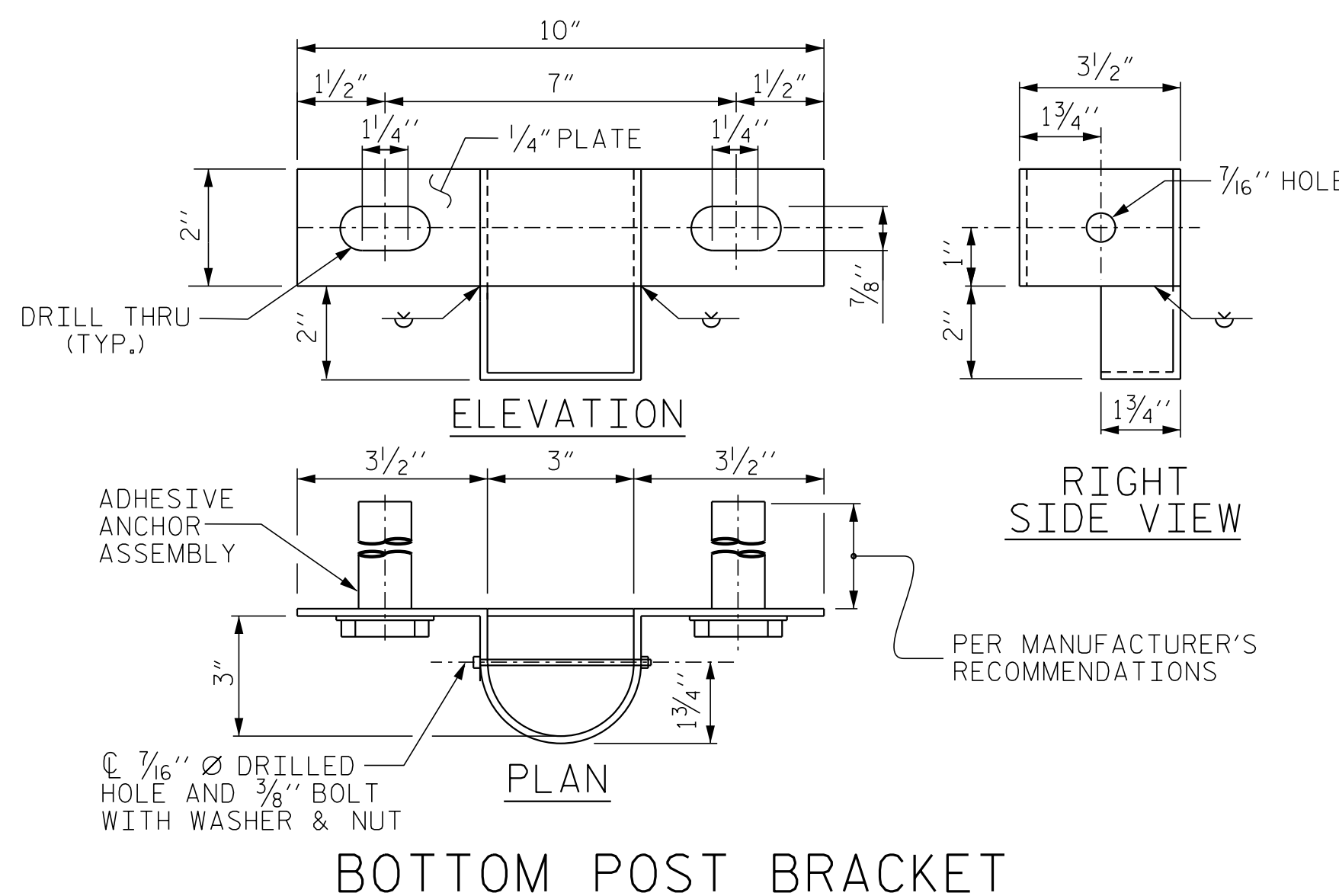
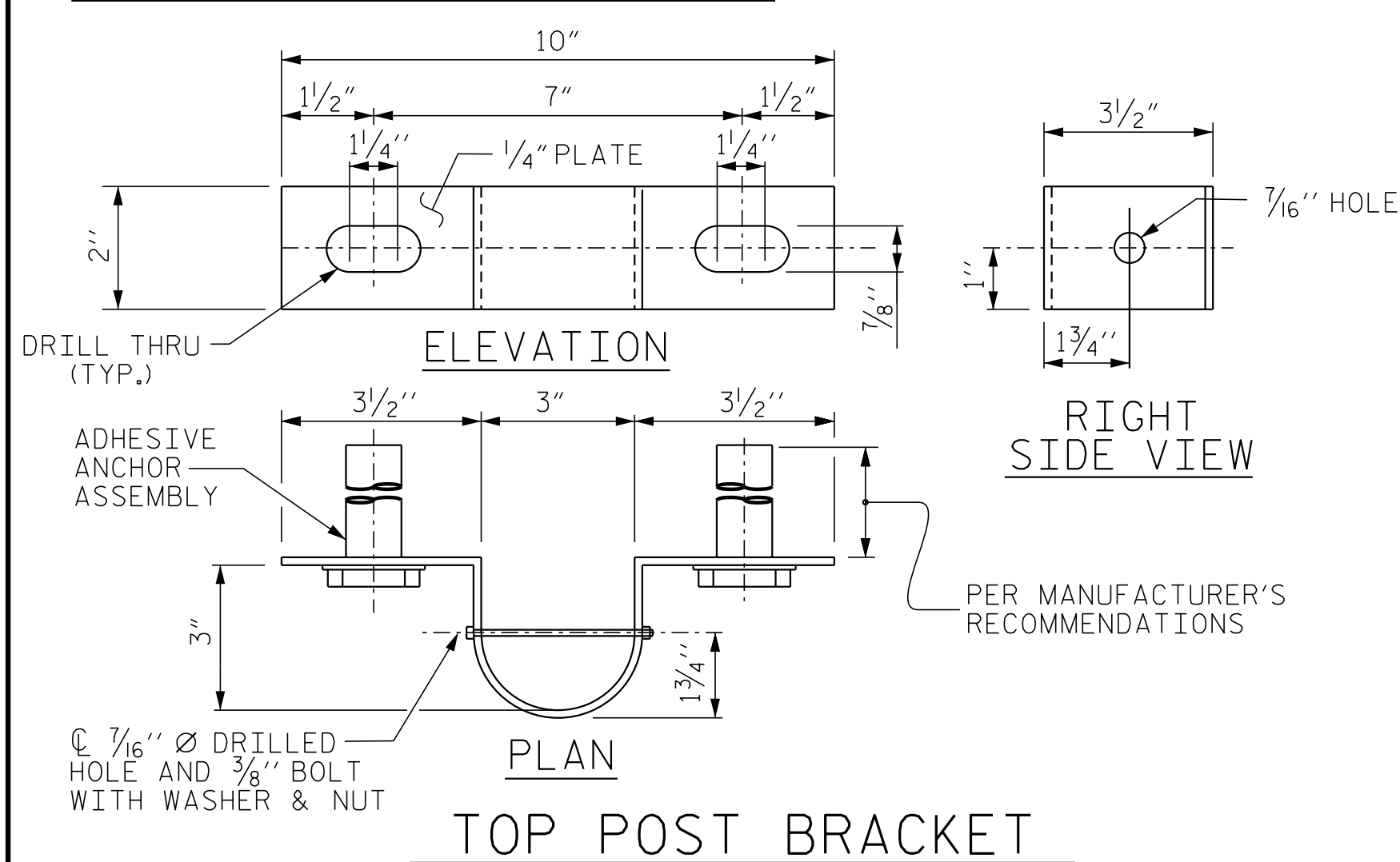
ADHESIVE BONDING SYSTEM SHALL HAVE MINIMUM PULLOUT STRENGTH OF 10 KIPS. THE ADHESIVE BONDING SYSTEM SHALL BE CHOSEN FROM THOSE ON THE NCDOT APPROVED PRODUCTS LIST.



SECTION THRU FENCE



PARTIAL ELEVATION



72" CHAIN LINK FENCE
 TOTAL PAY LENGTH 240.0 LIN. FT.

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-

ENGINEER OF RECORD:
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 GREGORY M. OLLAND
 9/12/2018
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 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE MOUNTED CHAIN LINK FENCE DETAILS (RIGHT LANE)

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			TOTAL SHEETS
2			4			27

DRAWN BY: D. HODGE DATE: 8/18
 CHECKED BY: T. KOCH DATE: 8/18

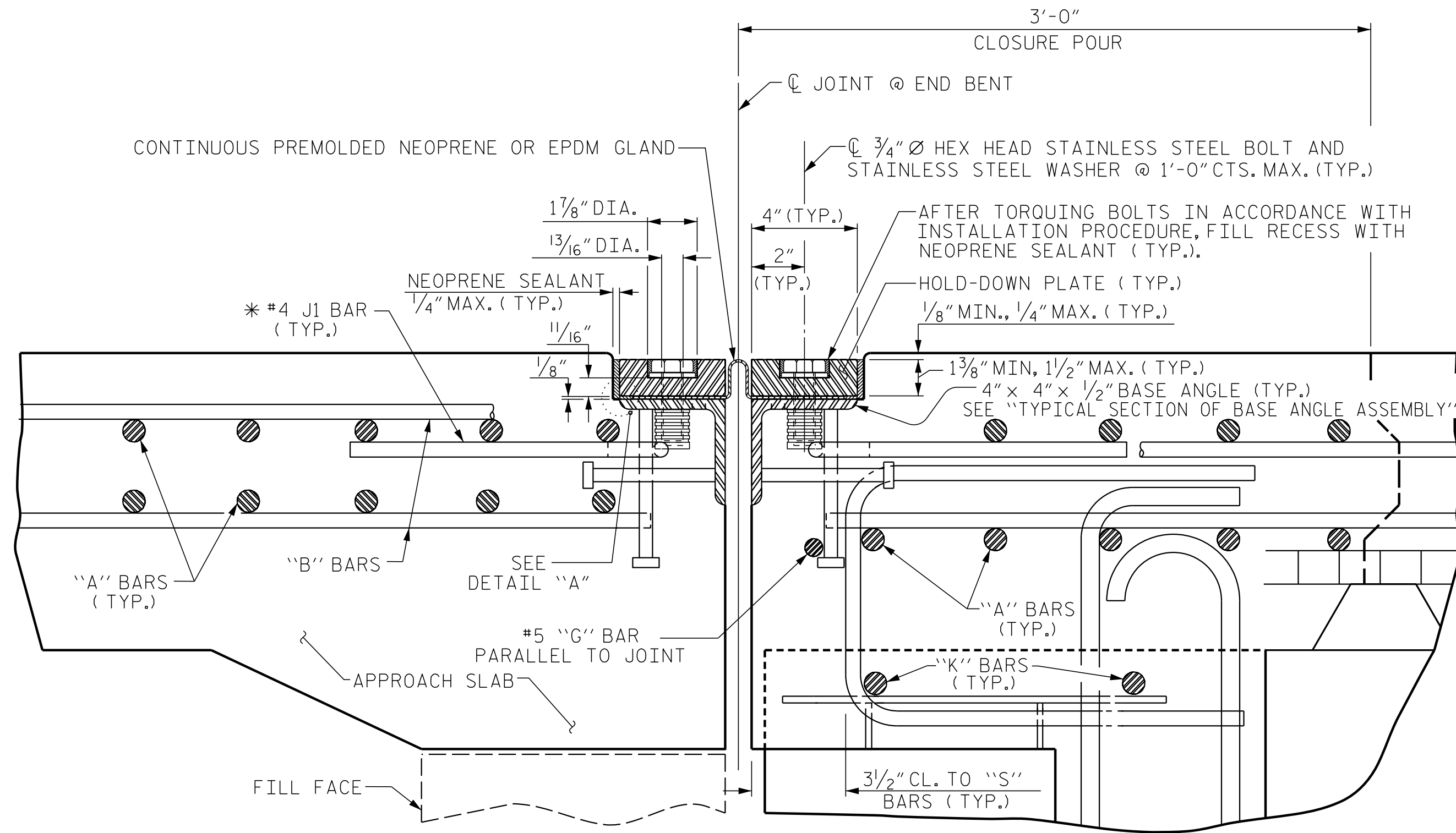
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INSTALLATION PROCEDURE

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

GENERAL NOTES

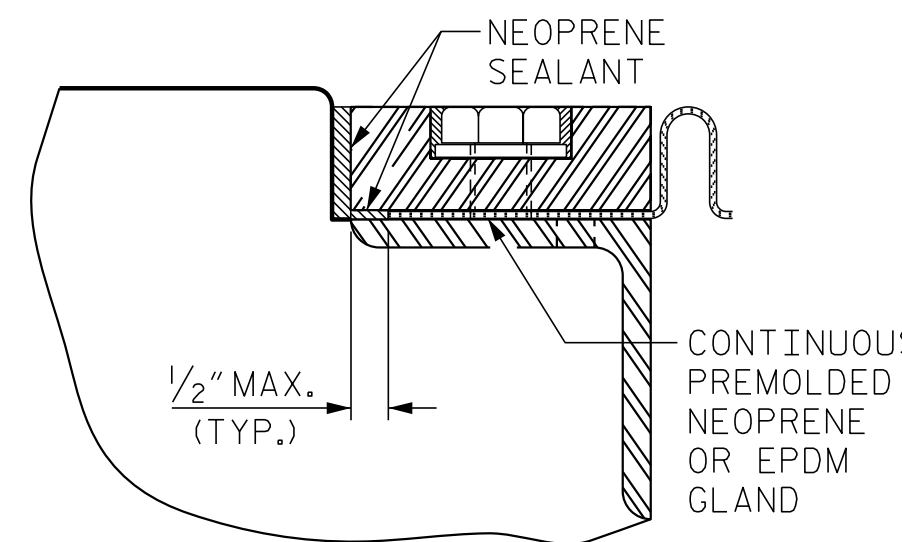
1. FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.
2. ALL PLATES AND ANGLES SHALL CONFORM TO AASHTO M270 GRADE 36 STEEL OR APPROVED EQUAL. ALL HOLD-DOWN BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL CONFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. ALL STUD ANCHORS SHALL CONFORM TO AASHTO M169, GRADES 1010 THRU 1020 OR APPROVED EQUAL. ALL CONCRETE INSERTS SHALL BE CLOSED END AND SHALL CONFORM TO AASHTO M169, GRADE 12L14. TENSILE CAPACITY SHALL BE 3000 LBS. MINIMUM.
3. A PREMOLDED CORRUGATED OR NON-CORRUGATED GLAND SHALL BE USED FOR JOINTS SKEWED BETWEEN 50° THRU 130°. FOR JOINTS SKEWED LESS THAN 50° OR MORE THAN 130°, ONLY A CORRUGATED GLAND SHALL BE USED.
4. CLOSED END FERRULES AND STUD ANCHORS SHALL BE SHOP WELDED AND ALL HOLES SHALL BE SHOP DRILLED AS SHOWN ON PLANS. STUD ANCHORS SHALL BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION.
5. SURFACES COMING IN CONTACT WITH NEOPRENE SHALL BE GROUND SMOOTH PRIOR TO METALLIZING.
6. UPON COMPLETION OF SHOP FABRICATION, THE HOLD-DOWN PLATE AND BASE ANGLE ASSEMBLY, AS SHOWN IN THE "TYPICAL SECTION OF BASE ANGLE ASSEMBLY", SHALL BE METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
7. THE COVER PLATES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
8. BASE ANGLE ASSEMBLY SHALL BE CONTINUOUS FOR THE LENGTH OF THE JOINT. AT CROWN BREAKS, THE ENDS OF THE BASE ANGLE ASSEMBLY SHALL BE CUT PARALLEL TO THE BRIDGE CENTERLINE FOR SKEWS LESS THAN 80° AND GREATER THAN 100°. FINISHED WELD SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).
9. FIELD SPLICES OF HOLD-DOWN PLATES SHALL BE KEPT TO A MINIMUM. CONTRACTOR SHALL FURNISH DETAILED PLANS SHOWING PROPOSED SPLICE LOCATIONS FOR APPROVAL. HOLD-DOWN PLATES SHALL NOT EXCEED 20' LENGTHS UNLESS APPROVED BY THE ENGINEER.
10. NO ALTERNATE JOINT DETAILS SHALL BE PERMITTED IN LIEU OF THOSE SHOWN ON THESE PLANS.
11. THE CONTRACTOR MAY, AT HIS OPTION, USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF CONCRETE INSERTS FOR COVER PLATES. THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.
12. THE FABRICATOR SHALL PROVIDE 1/2" Ø THREADED HOLES IN THE HOLD-DOWN PLATES TO ASSIST IN LIFTING AND PLACING. THE HOLES SHALL BE 3/4" DEEP AT 6'-0" MAXIMUM SPACING AND A MINIMUM OF TWO HOLES PER PLATE.



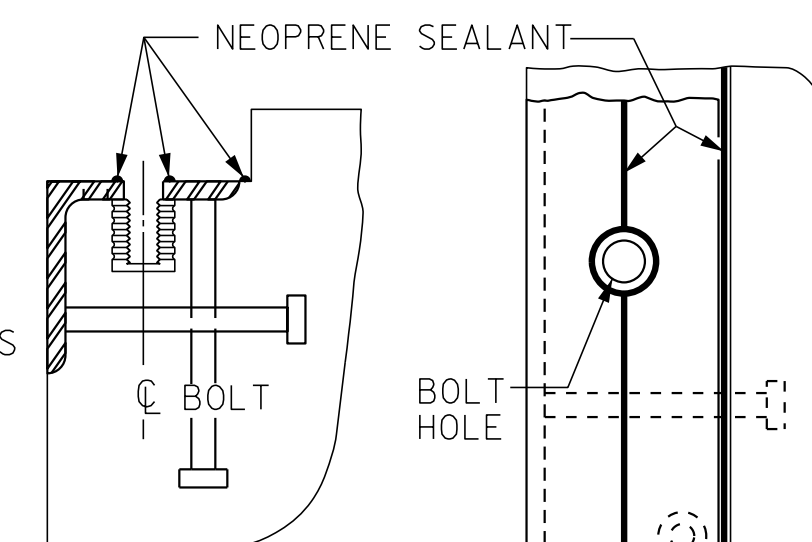
EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT -- PRESTRESSED GIRDER SUPERSTRUCTURE

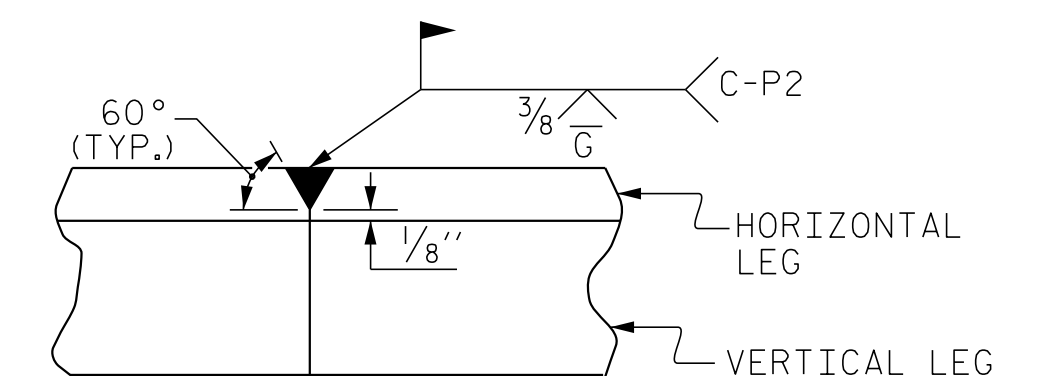
* THE QUANTITY OF #4 J1 BARS ON THE BILL OF MATERIAL IS BASED ON 1'-0" CENTERS. J1 BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF J1 BARS SPECIFIED, ADDITIONAL J1 BARS WILL NOT BE REQUIRED.



DETAIL "A"

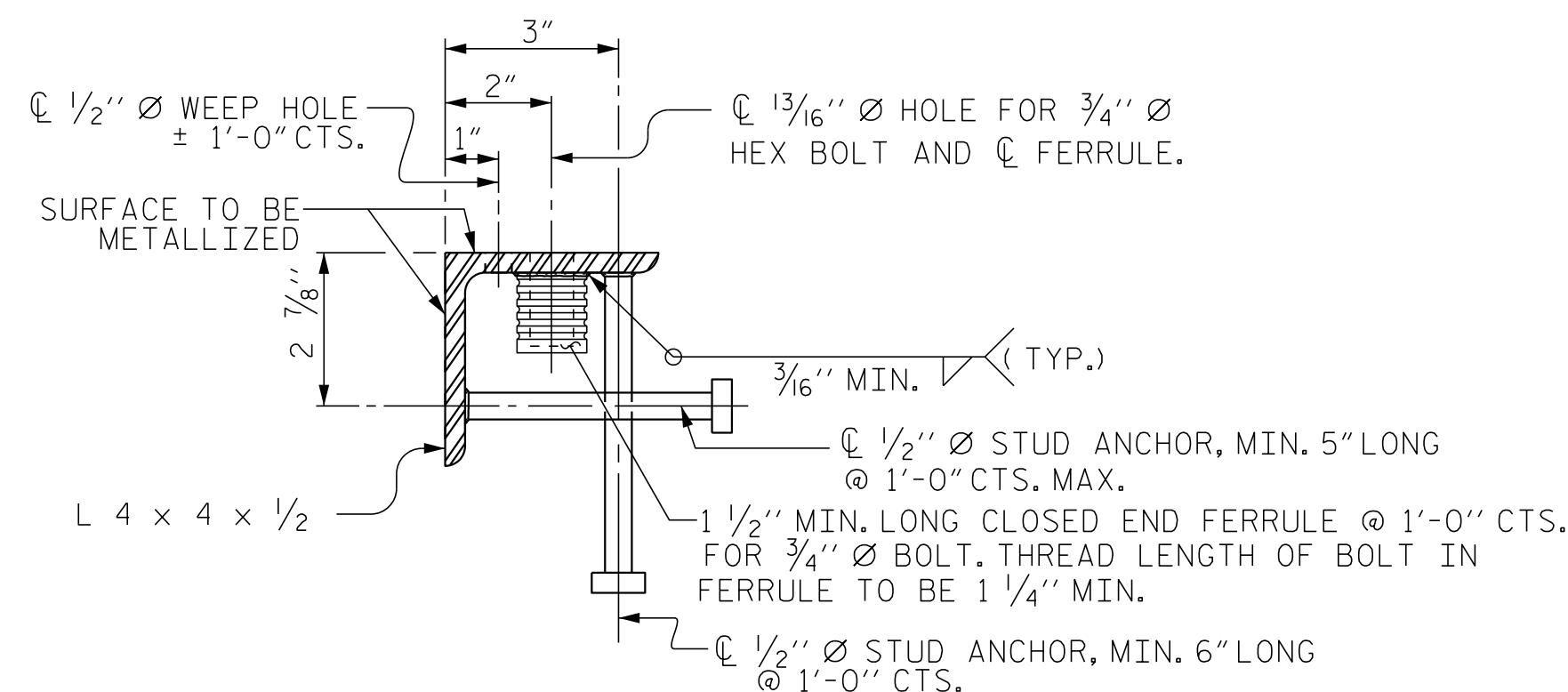


**CROSS SECTION
PLAN VIEW
INSTALLATION SKETCH**



**DETAIL- FIELD WELD
SPLICE OF BASE ANGLE**

MOVEMENT AND SETTING AT JOINT					
END BENT NO.	SKEW ANGLE	TOTAL MOVEMENT (ALONG C RDWY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
1	58°-15'-25"	0	1"	1"	1"
2	58°-15'-25"	3/4"	1 1/16"	1 3/8"	1 1/8"



TYPICAL SECTION OF BASE ANGLE ASSEMBLY

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-

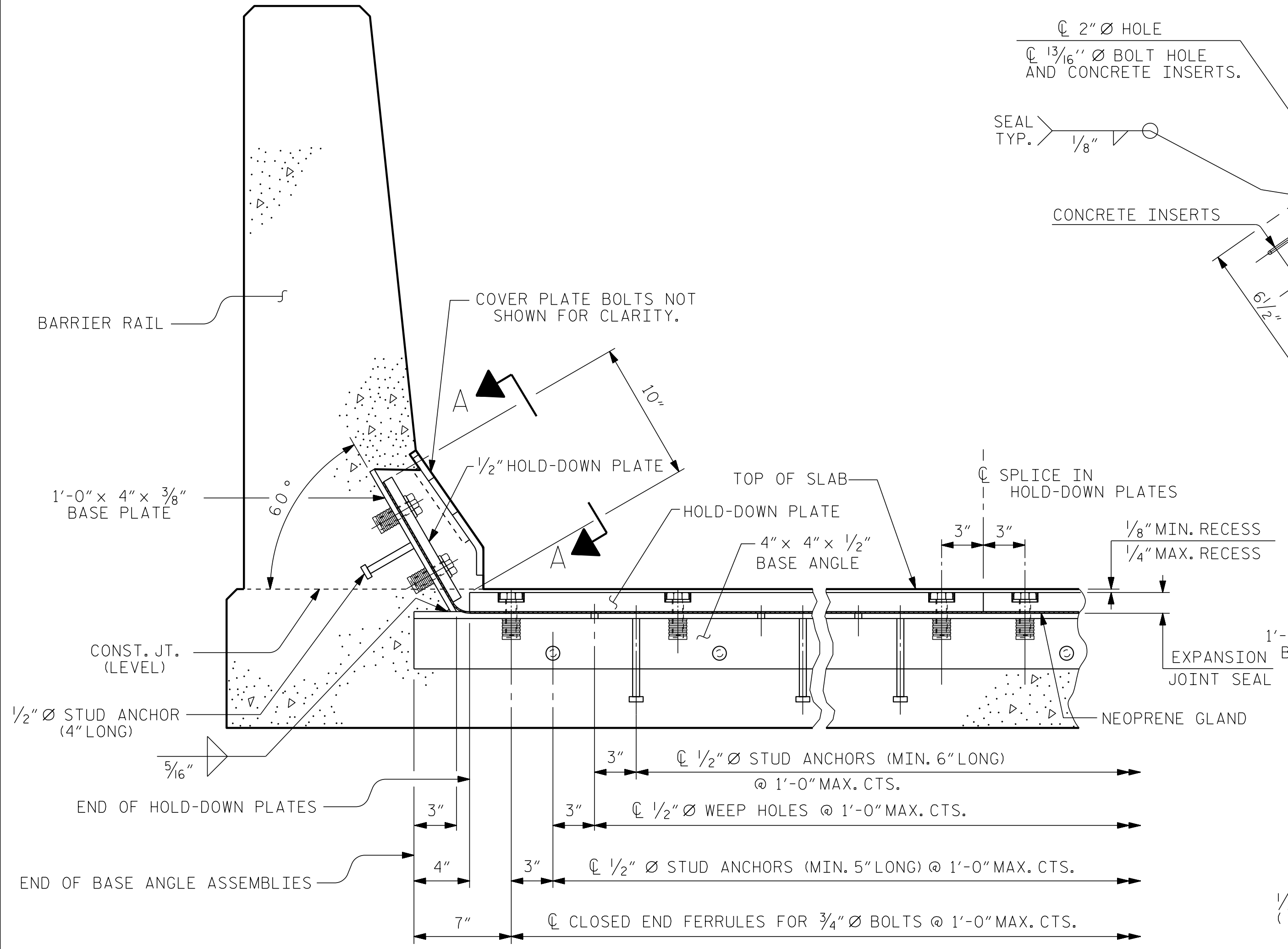
SHEET 1 OF 2

ASSEMBLED BY : D. HODGE	DATE : 8/18
CHECKED BY : T. KOCH	DATE : 8/18
DRAWN BY : REK 9/87	REV. 10/11 MAA/GM
CHECKED BY : CRK 10/87	REV. 10/17 MAA/THC
	REV. 6/18 MAA/THC

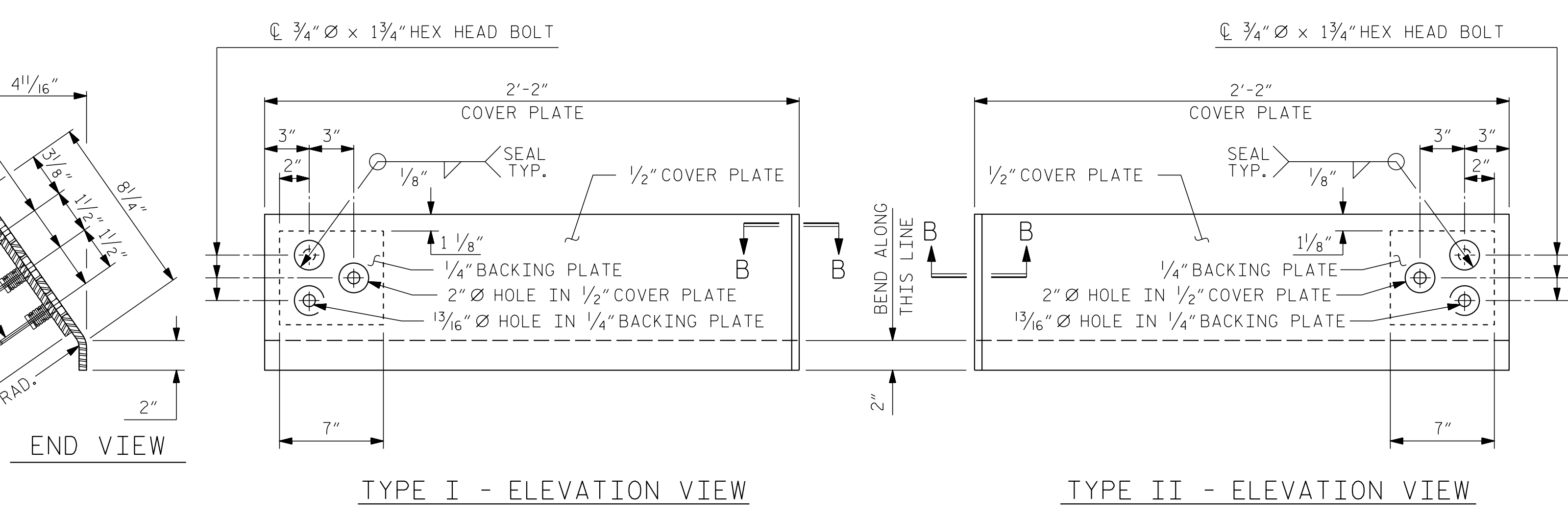
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD:
Gregory M. Oll
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 37400
 GREGORY M. OLL AND
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 9/12/2018
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
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 Fax: 919 851 8107
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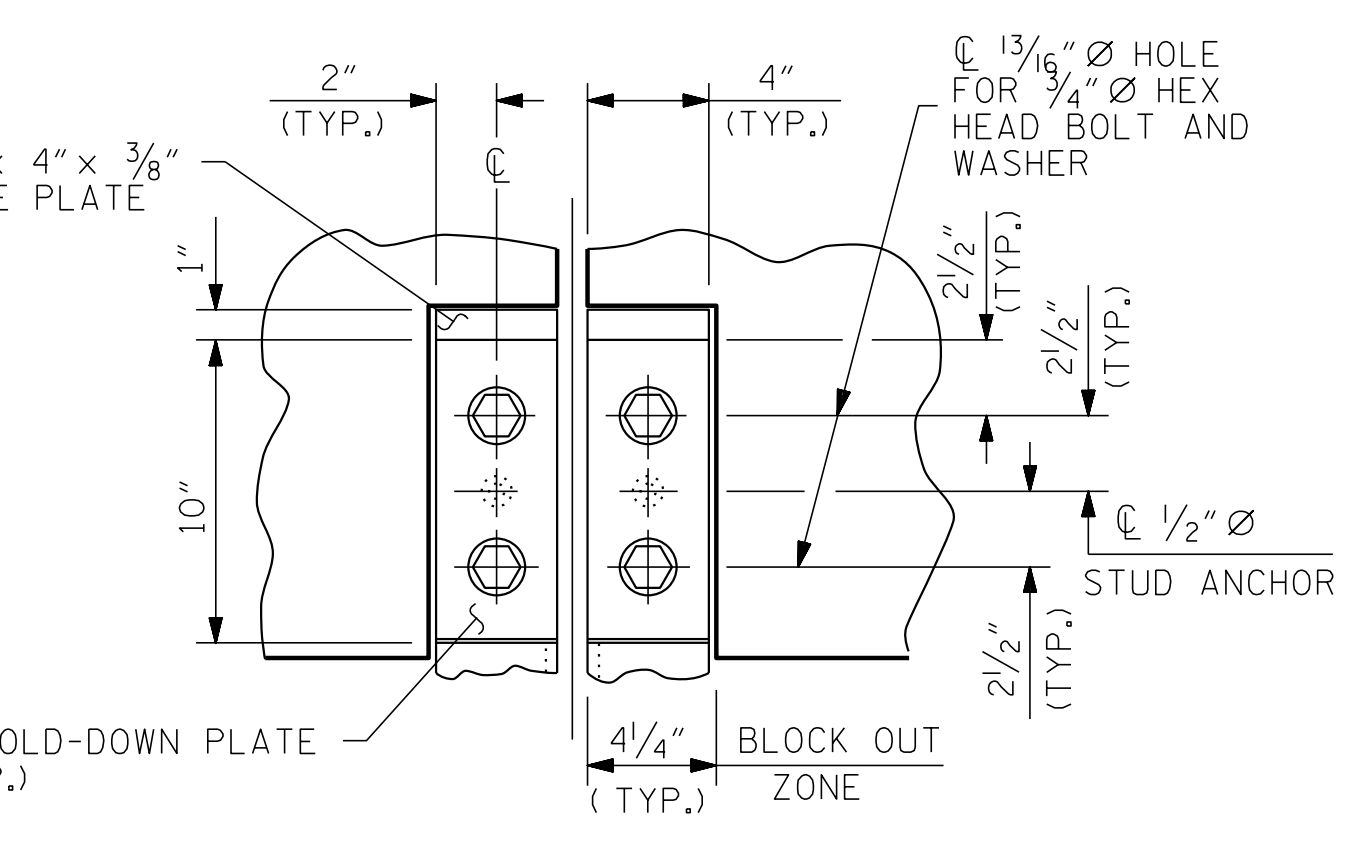
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD EXPANSION JOINT SEAL DETAILS (RIGHT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S2-16					TOTAL SHEETS 27



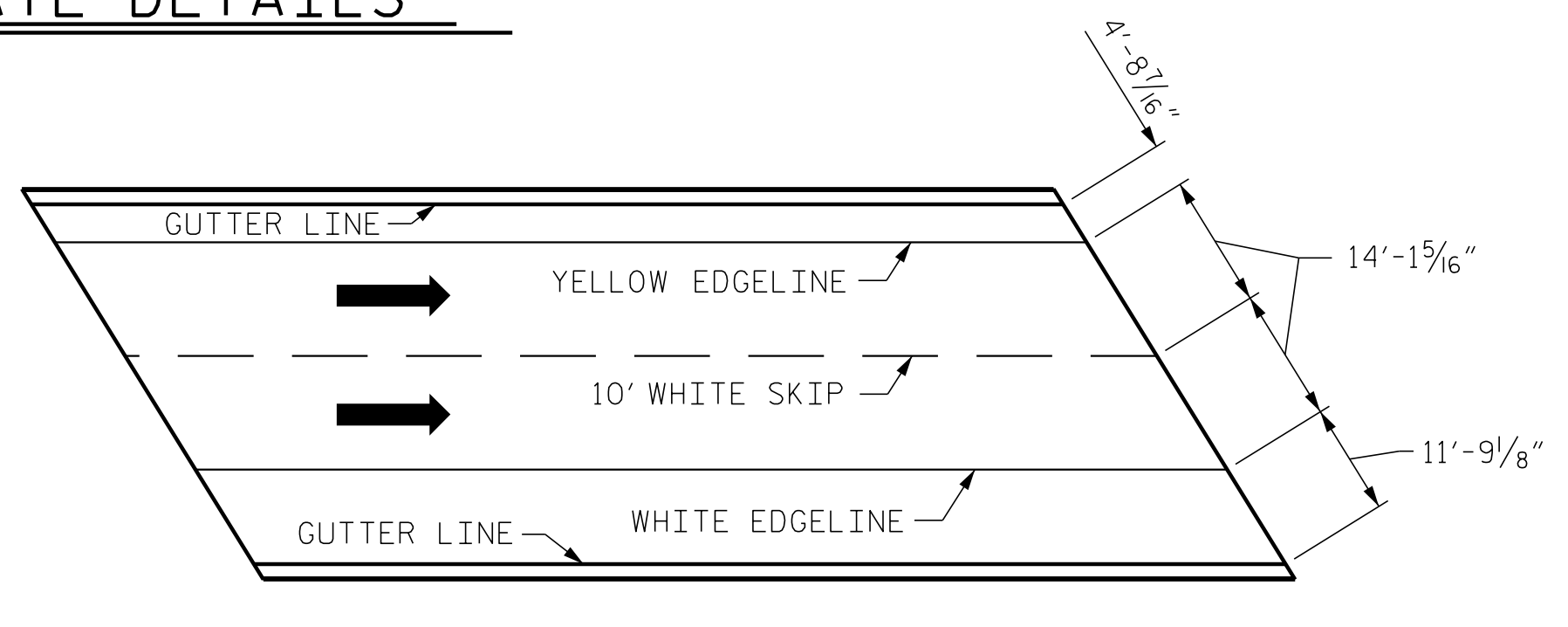
SECTION THRU RAIL NORMAL TO JOINT



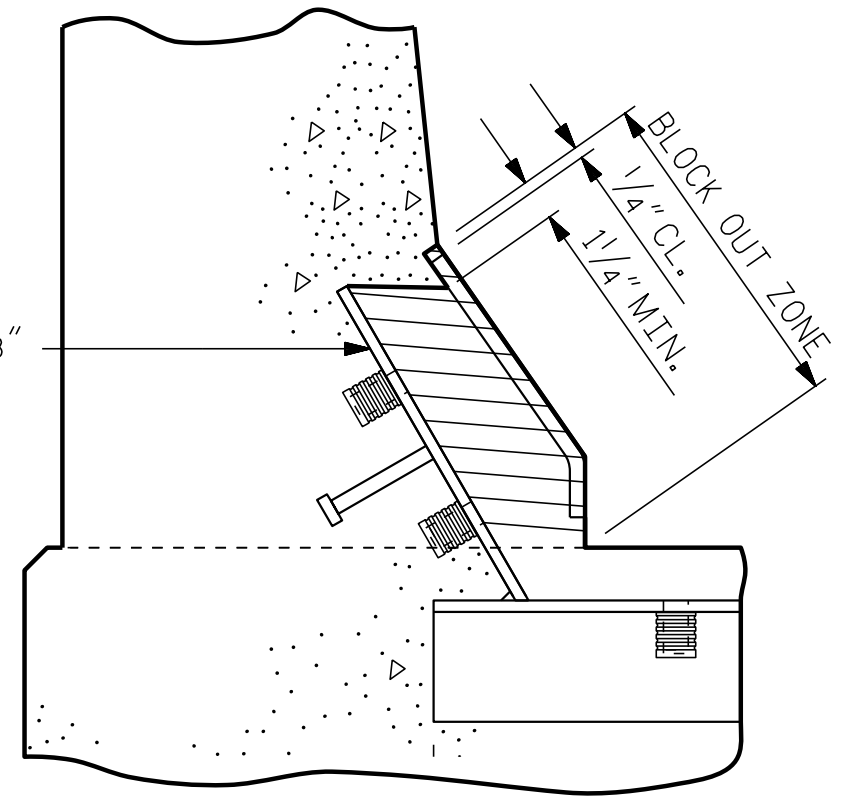
COVER PLATE DETAILS



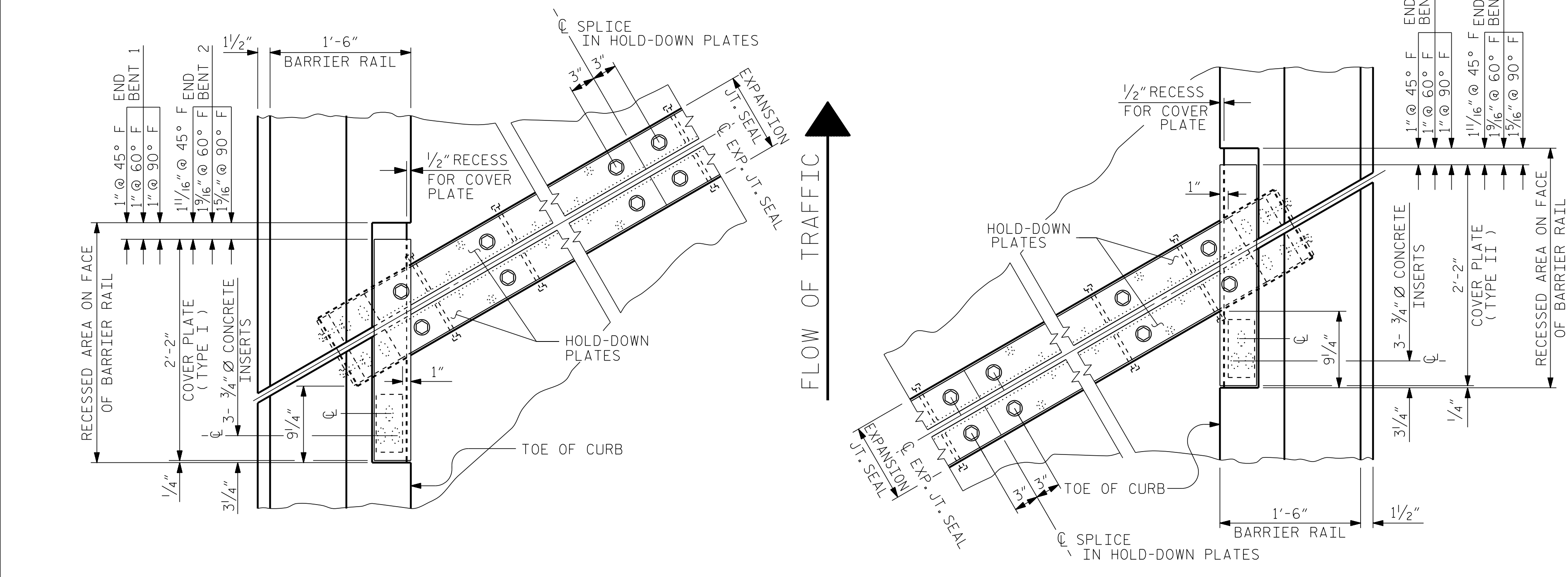
SECTION A - A



PAVEMENT MARKING ALIGNMENT



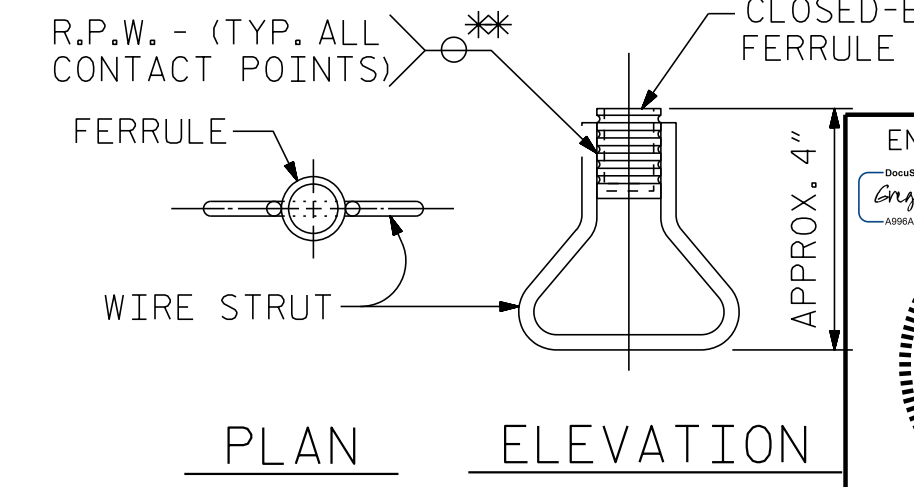
SECTION B - B



PLAN OF EXPANSION JOINT SEAL

BLOCK OUT DETAIL

SEE "SECTION A - A" FOR OTHER DETAILS.



CONCRETE INSERT

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-
 SHEET 2 OF 2

ENGINEER OF RECORD:
Gary M. Olland
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 37400
 GREGORY M. OLLAND
 9/12/2018

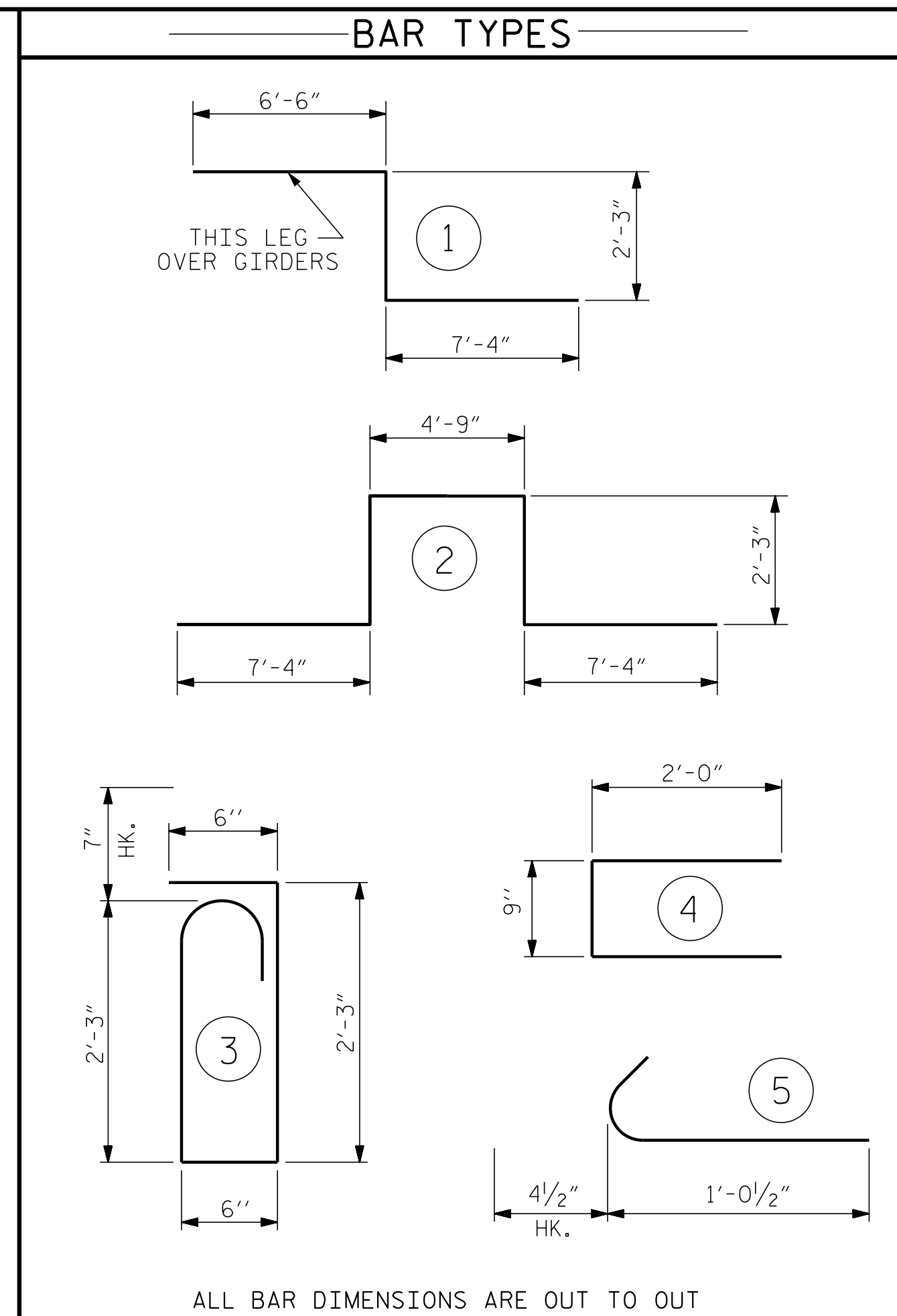
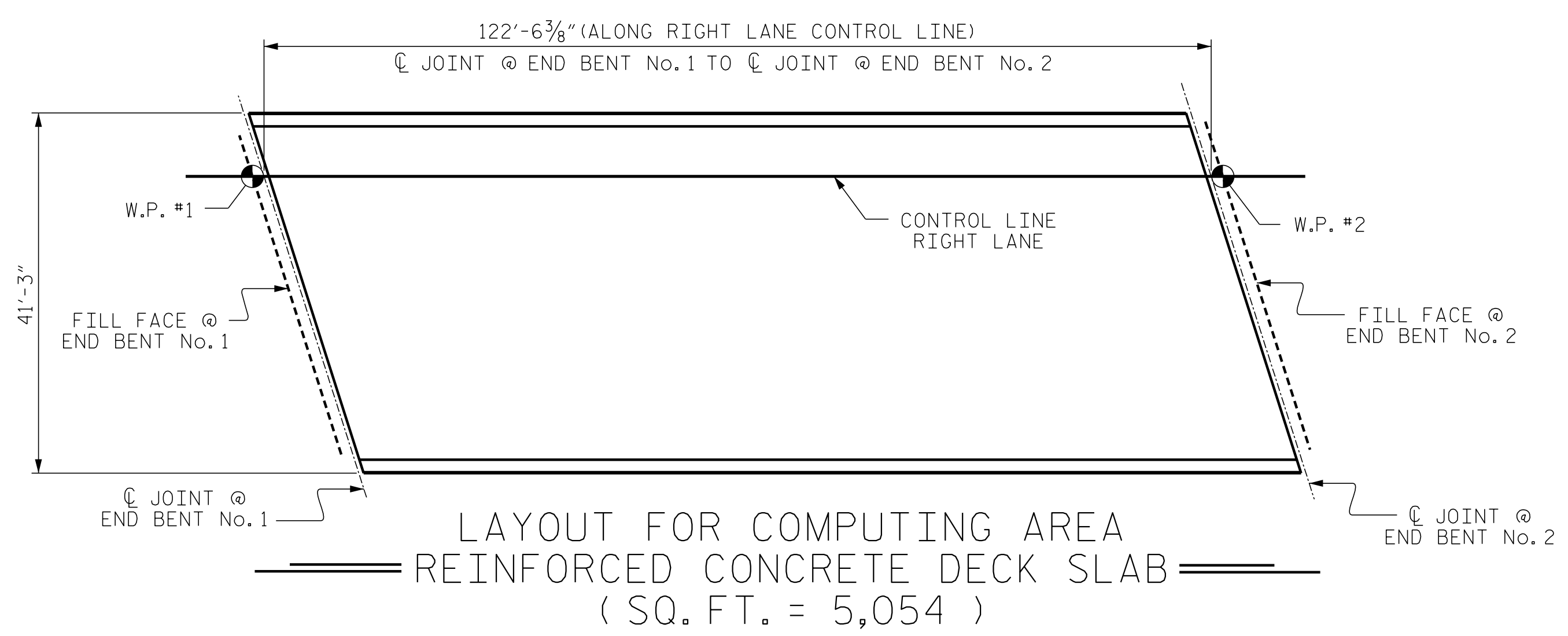
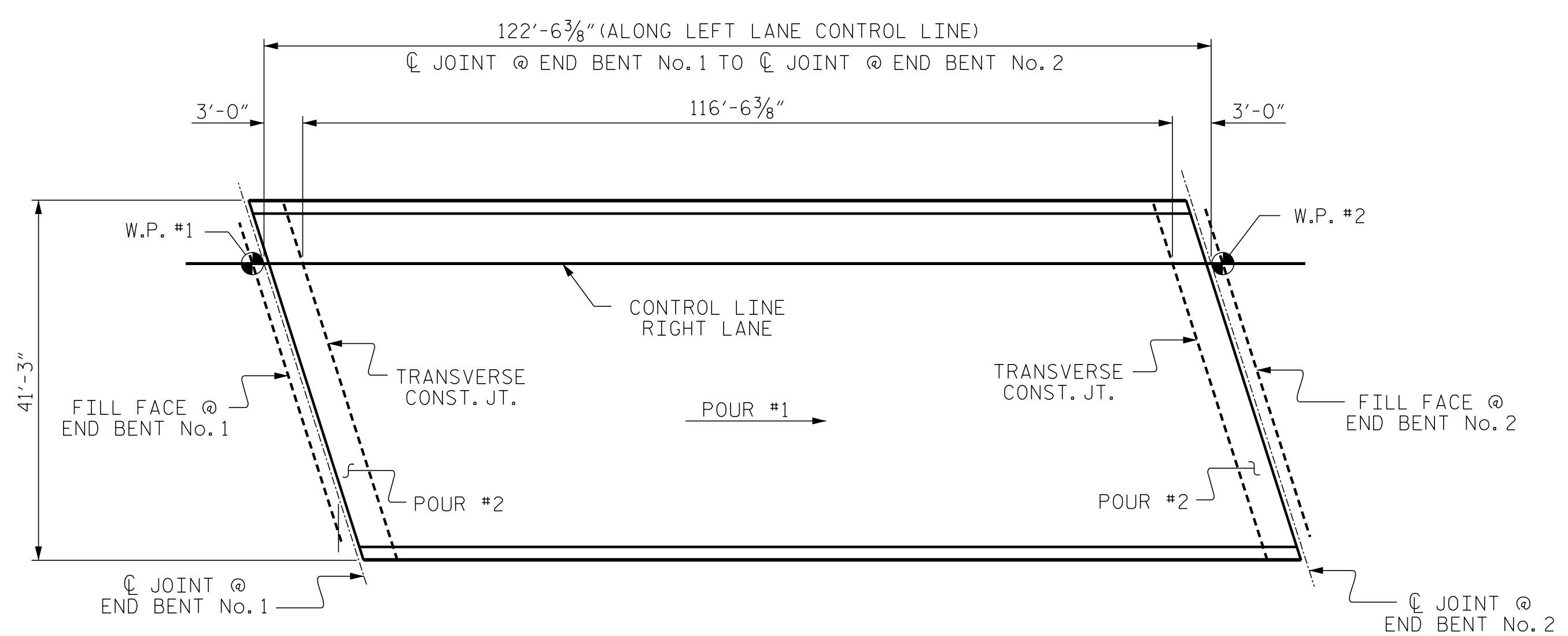
ETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
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 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 EXPANSION JOINT
 SEAL DETAILS
 FOR BARRIER RAIL
 (RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-17
1			3			TOTAL SHEETS
2			4			27

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ASSEMBLED BY : D. HODGE	DATE : 8/18
CHECKED BY : T. KOCH	DATE : 8/18
DRAWN BY : REK 9/87	REV. 7/12 MAA/GM
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	REV. 12/17 MAA/THC



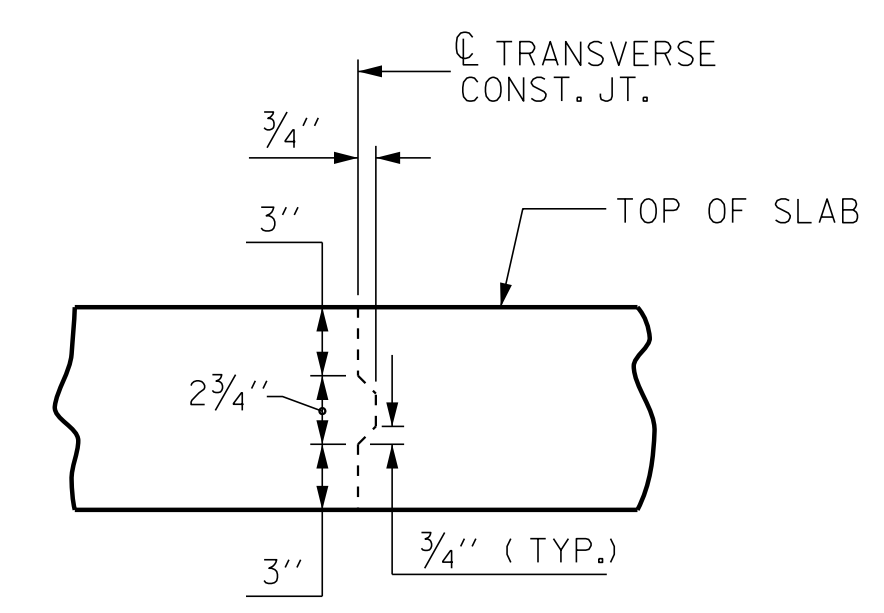
— SUPERSTRUCTURE BILL OF MATERIAL —

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	* EPOXY COATED REINFORCING STEEL (LBS.)
TOTALS**	170.0	13,660	13,031

**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

GROOVING BRIDGE FLOORS

APPROACH SLABS	1,657 SQ.FT.
BRIDGE DECK	4,234 SQ.FT.
TOTAL	5,891 SQ.FT.



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

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	166	#5	STR	40'-11"	7084	A201	6	#5	STR	38'-5"	240
A2	166	#5	STR	40'-11"	7084	A202	6	#5	STR	35'-8"	223
* A3	6	#6	STR	19'-0"	171	A203	6	#5	STR	32'-10"	205
						A204	6	#5	STR	30'-0"	188
* A101	6	#5	STR	38'-5"	240	A205	6	#5	STR	27'-2"	170
* A102	6	#5	STR	35'-8"	223	A206	6	#5	STR	24'-4"	152
* A103	6	#5	STR	32'-10"	205	A207	6	#5	STR	21'-6"	135
* A104	6	#5	STR	30'-0"	188	A208	6	#5	STR	18'-8"	117
* A105	6	#5	STR	27'-2"	170	A209	6	#5	STR	15'-10"	99
* A106	6	#5	STR	24'-4"	152	A210	6	#5	STR	13'-0"	81
* A107	6	#5	STR	21'-6"	135	A211	6	#5	STR	10'-2"	64
* A108	6	#5	STR	18'-8"	117	A212	6	#5	STR	7'-4"	46
* A109	6	#5	STR	15'-10"	99	A213	6	#5	STR	4'-6"	28
* A110	6	#5	STR	13'-0"	81						
* A111	6	#5	STR	10'-2"	64	* B1	145	#4	STR	26'-1"	2526
* A112	6	#5	STR	7'-4"	46	B2	105	#5	STR	42'-2"	4618
* A113	6	#5	STR	4'-6"	28						
						* G1	2	#5	STR	48'-1"	100
						* J1	88	#4	5	1'-5"	83
						* K1	8	#8	1	16'-5"	351
						* K2	8	#8	2	23'-11"	511
						K3	18	#6	STR	7'-9"	210
						* S1	48	#4	4	4'-9"	152
						* S2	48	#5	3	6'-1"	305

REINFORCING STEEL LBS. 13,660
 * EPOXY COATED REINFORCING STEEL LBS. 13,031
 * THESE BARS ARE EPOXY COATED.

POUR SEQUENCE BREAKDOWN

SPAN A	CLASS AA CONCRETE (C.Y.)
POUR #1	142.5
POUR #2	27.5
TOTAL **	170.0

**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

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

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

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-

ENGINEER OF RECORD:
 Gregory M. Olland
 NORTH CAROLINA PROFESSIONAL SEAL 37400
 ENGINEER
 GREGORY M. OLLAND
 9/12/2018
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

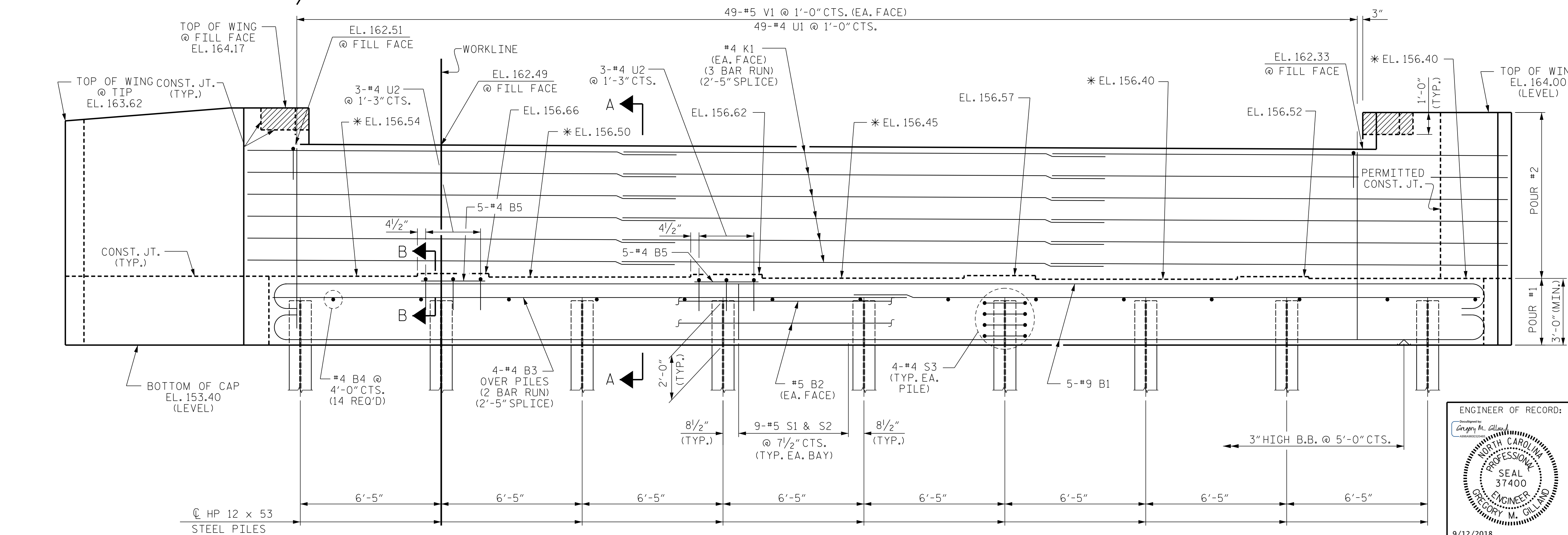
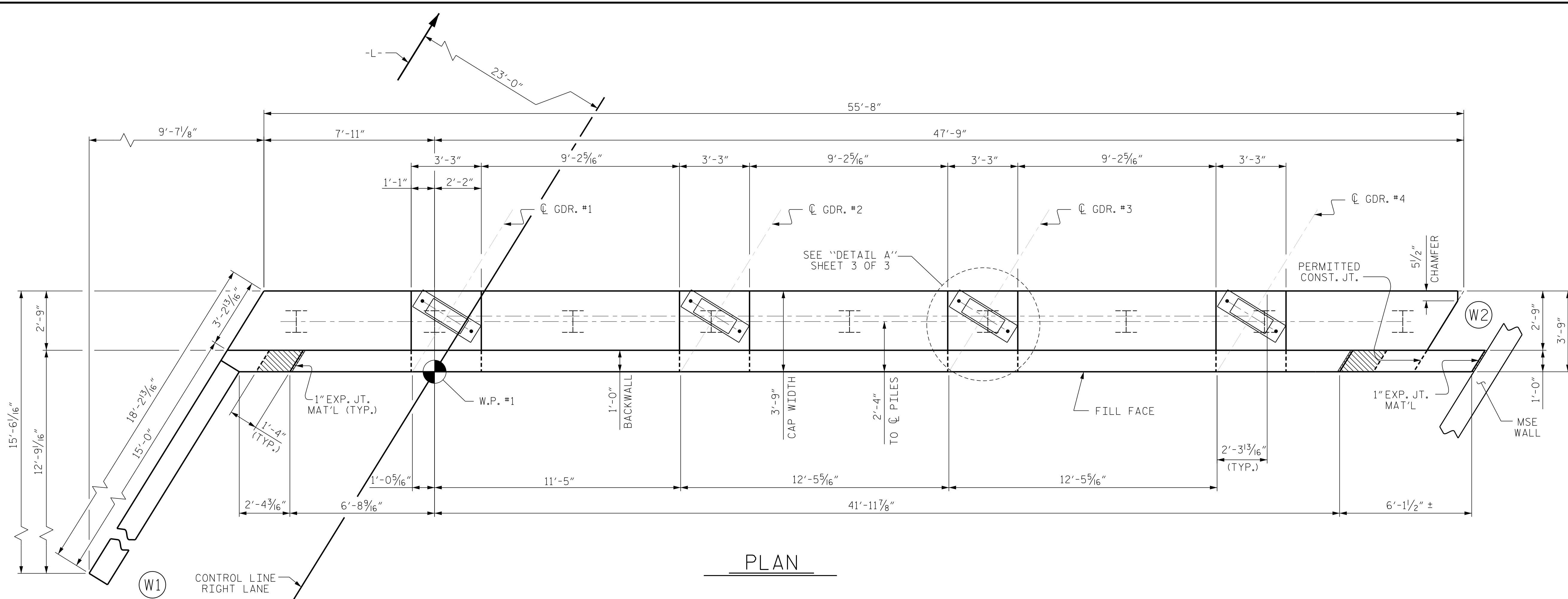
SUPERSTRUCTURE
 BILL OF MATERIAL
 (RIGHT LANE)

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

DRAWN BY: D. HODGE DATE: 3/18
 CHECKED BY: B.C. HUNT DATE: 3/18

DOCUMENT NOT CONSIDERED FINAL
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PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-
 SHEET 1 OF 3

ENGINEER OF RECORD:
 Gregory M. Olland
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 37400
 GREGORY M. OLLAND
 9/12/2018
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
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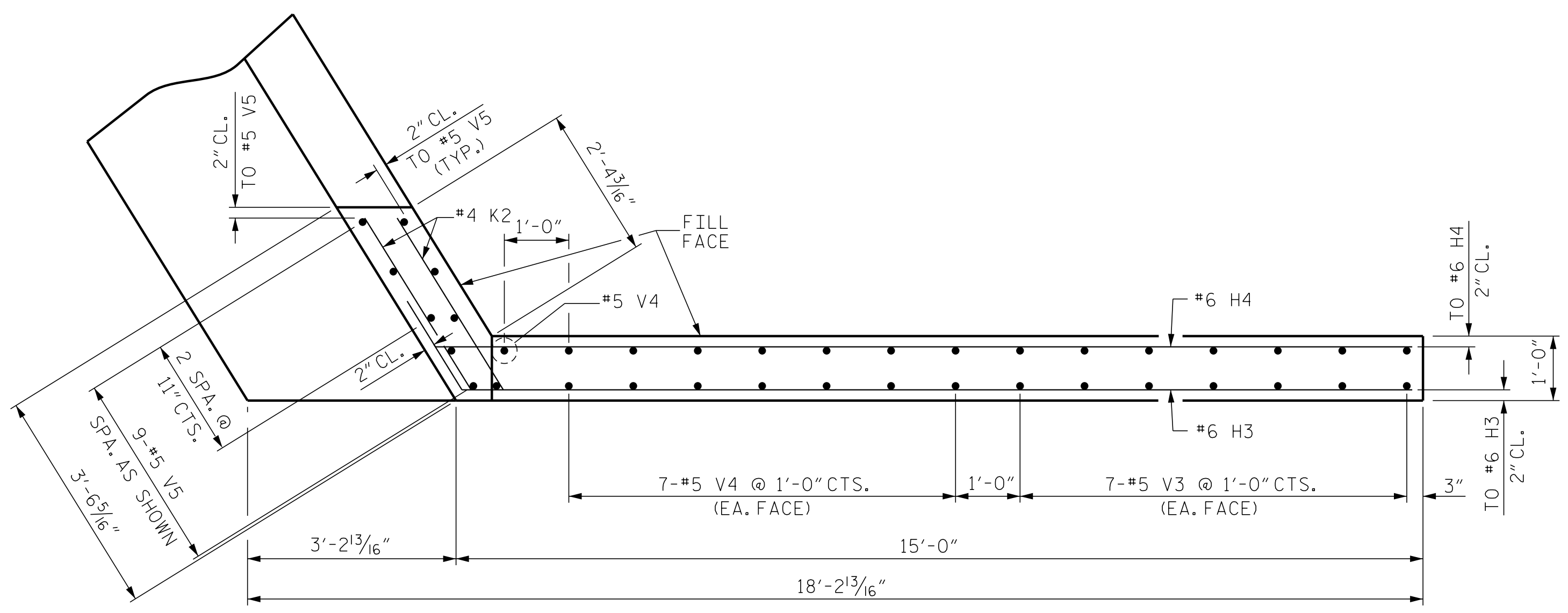
STATE OF NORTH CAROLINA		DEPARTMENT OF TRANSPORTATION		RALEIGH	
SUBSTRUCTURE END BENT No. 1 RIGHT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S2-19
TOTAL SHEETS					27

* FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS, SEE SECTION A-A, SHEET 3 OF 3.

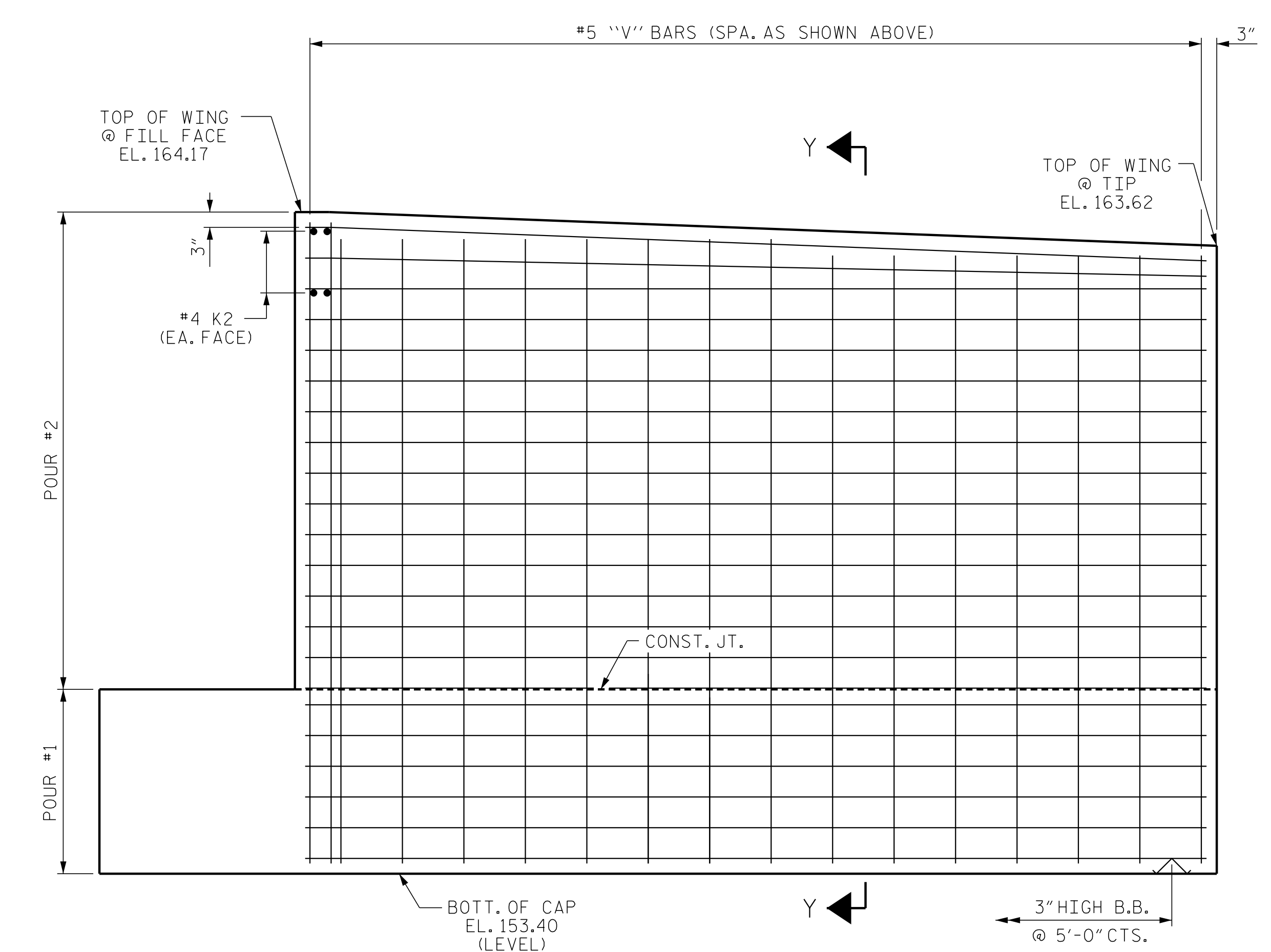
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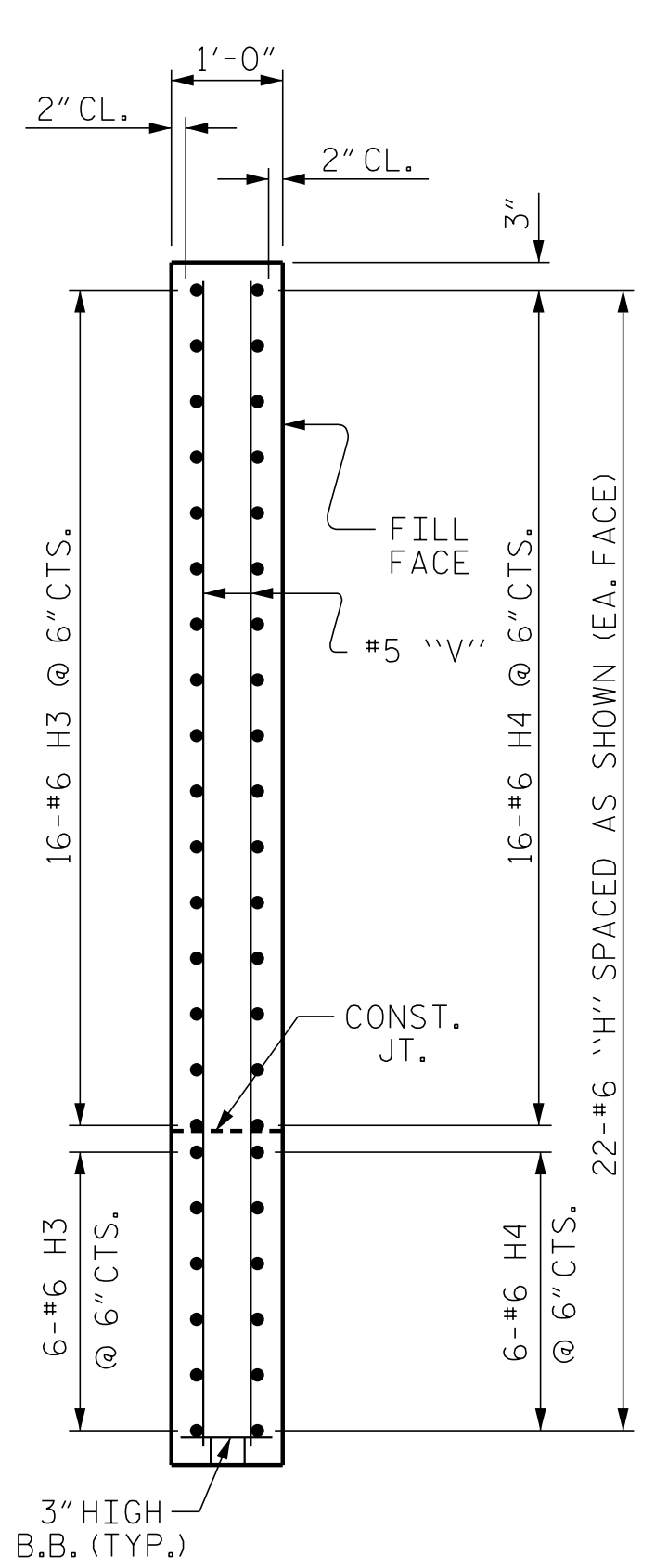
DRAWN BY: D. HODGE DATE: 5/18
 CHECKED BY: G.M. GILLAND DATE: 5/18



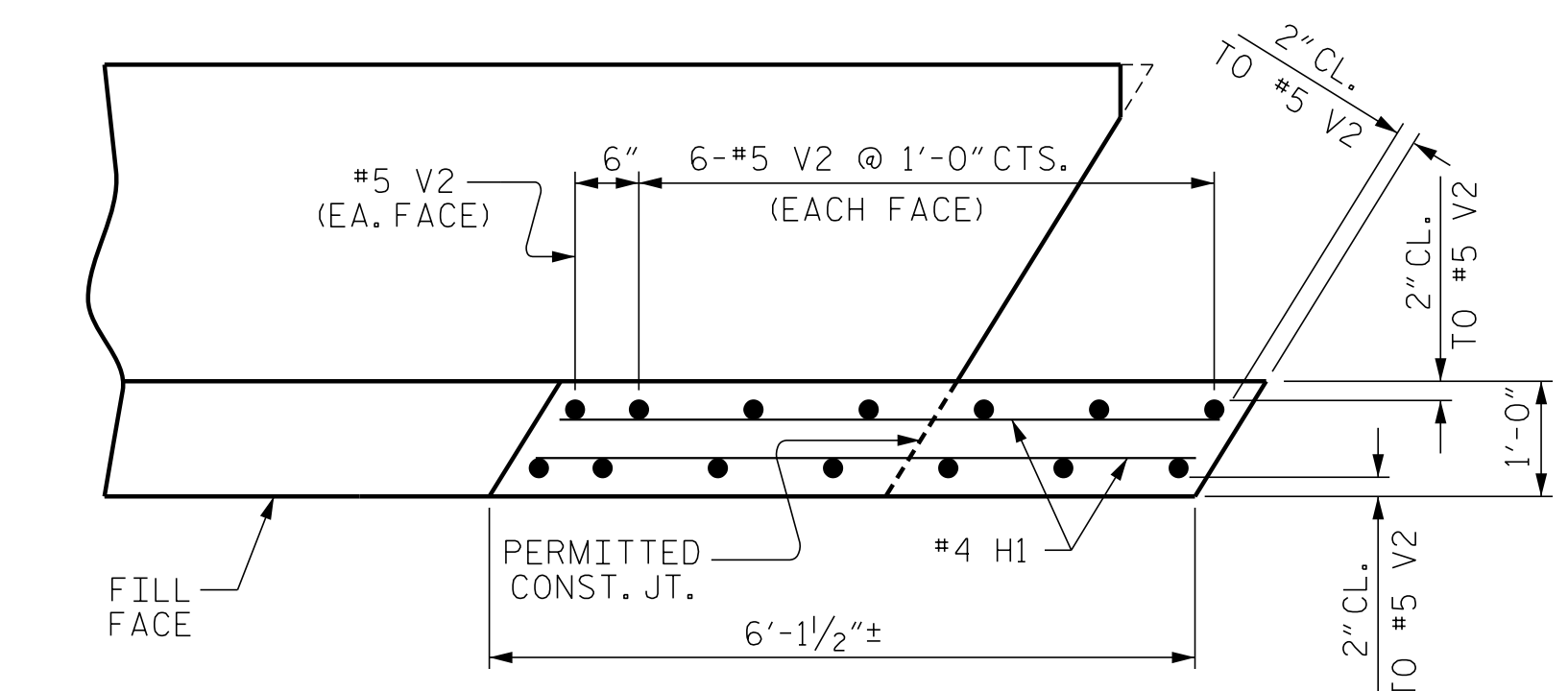
PLAN OF WING - (W1)



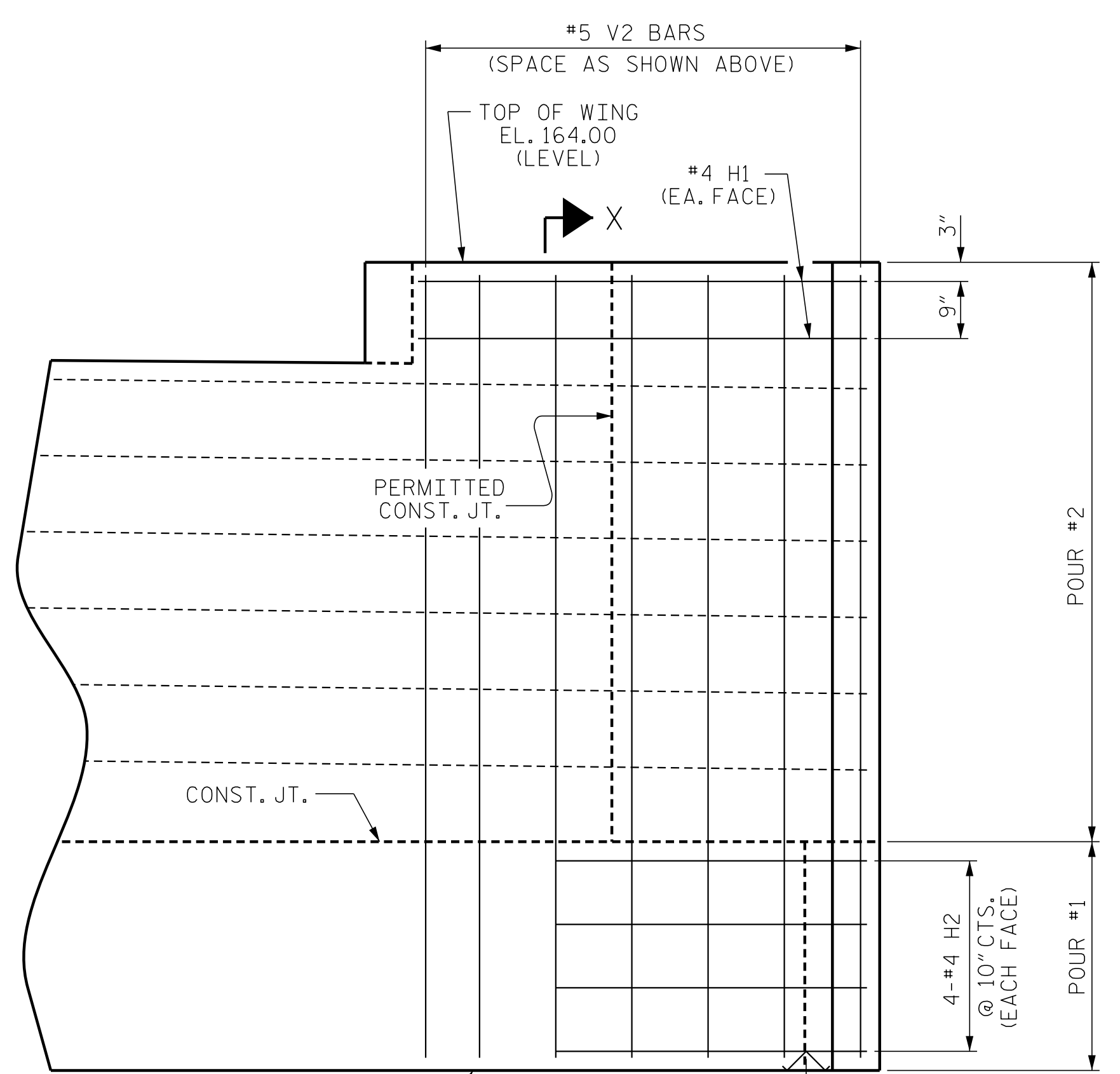
ELEVATION OF WING - (W1)



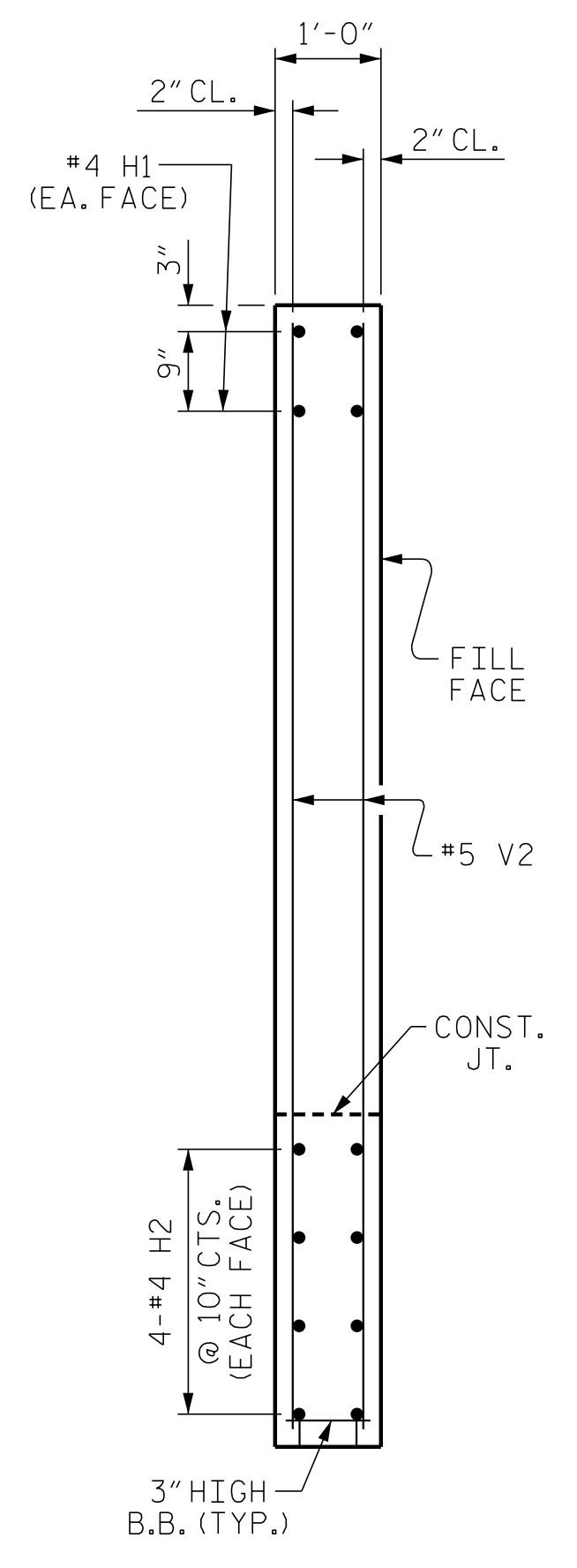
SECTION Y-Y



PLAN OF WING - (W2)



ELEVATION OF WING - (W2)



SECTION X-X
(K1 BARS NOT SHOWN)

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-
 SHEET 2 OF 3

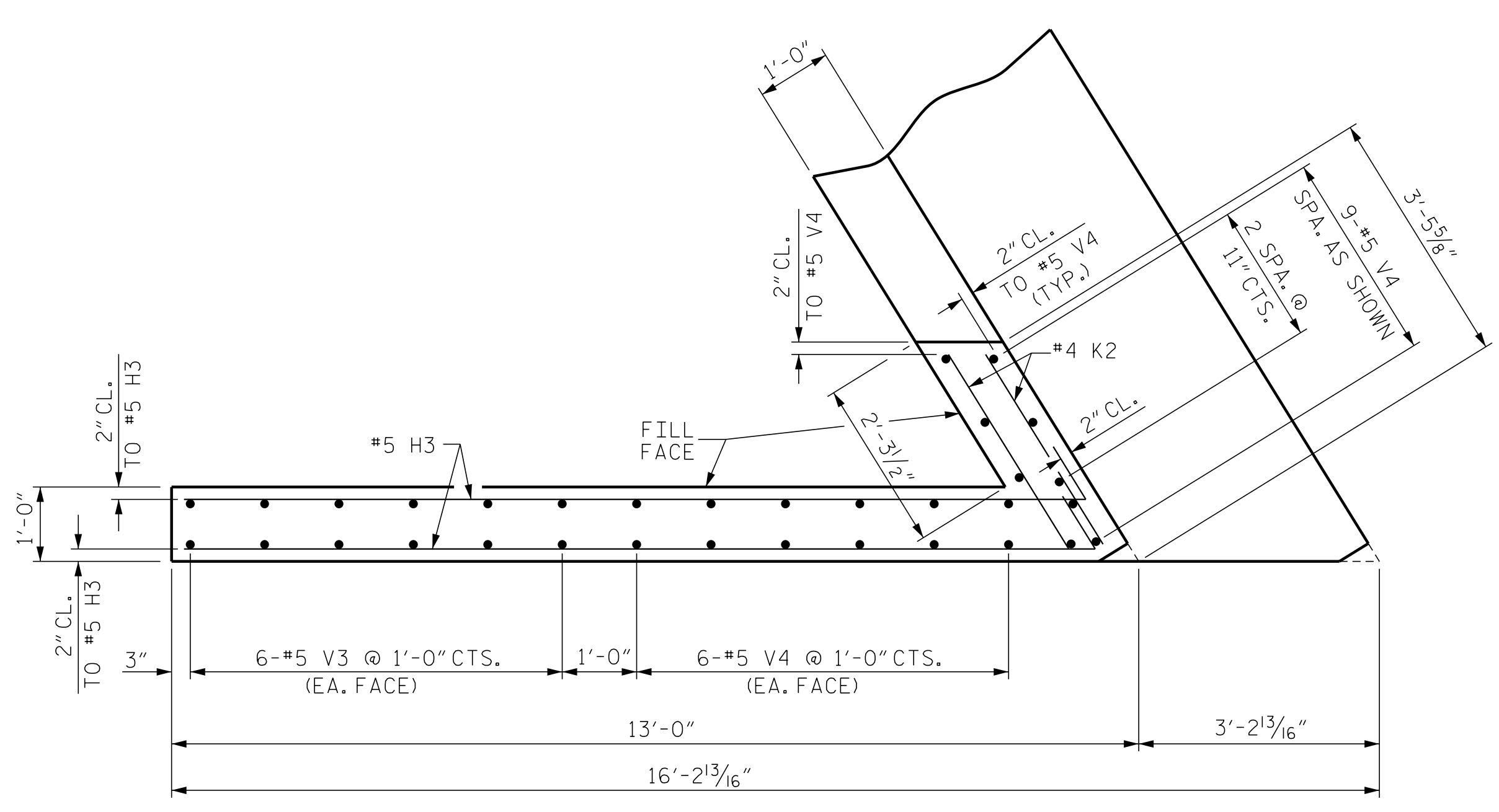


STATE OF NORTH CAROLINA		DEPARTMENT OF TRANSPORTATION		RALEIGH	
SUBSTRUCTURE					
END BENT No. 1					
RIGHT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S2-20					TOTAL SHEETS 27

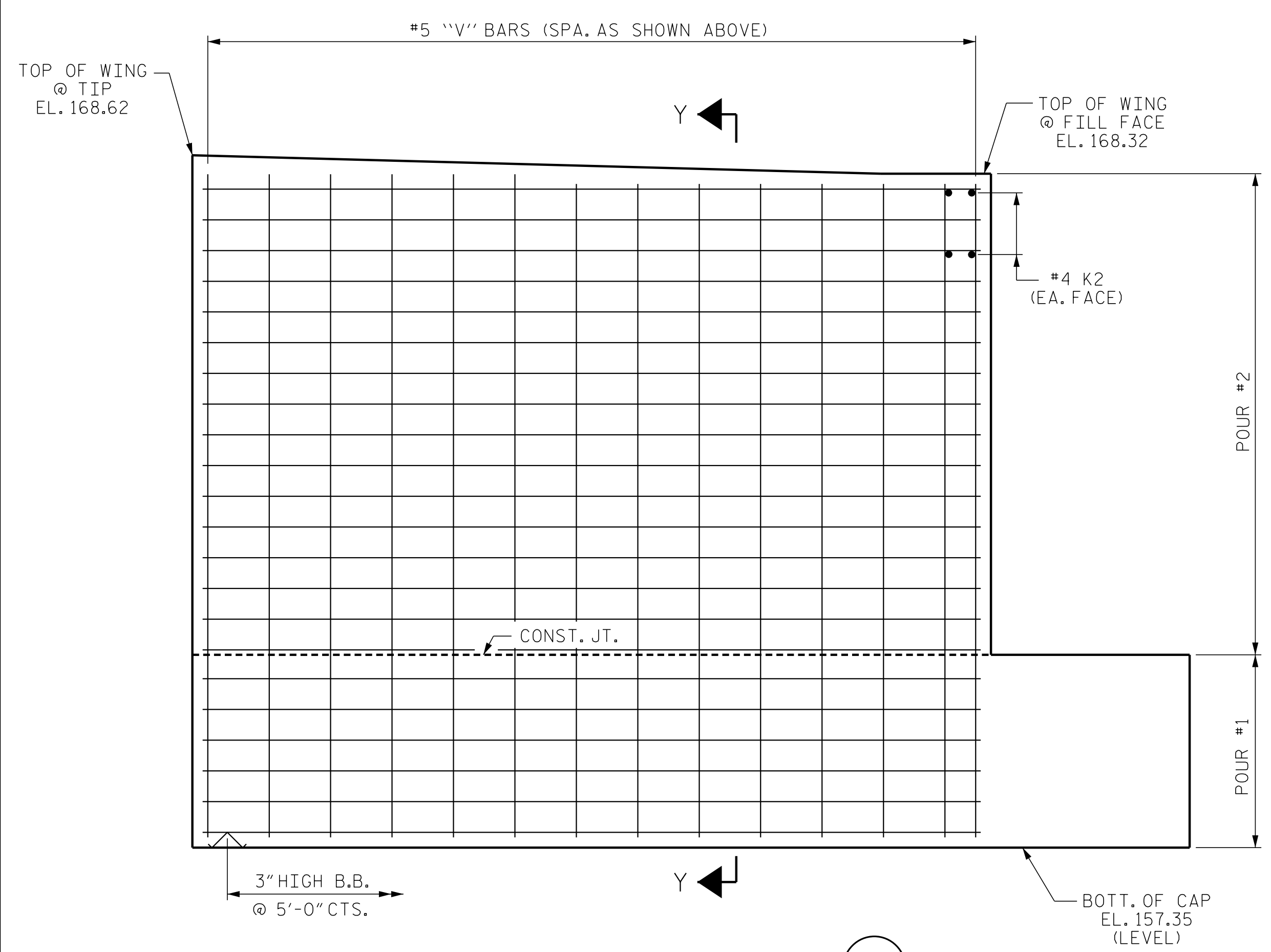
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 UNLESS ALL SIGNATURES COMPLETED

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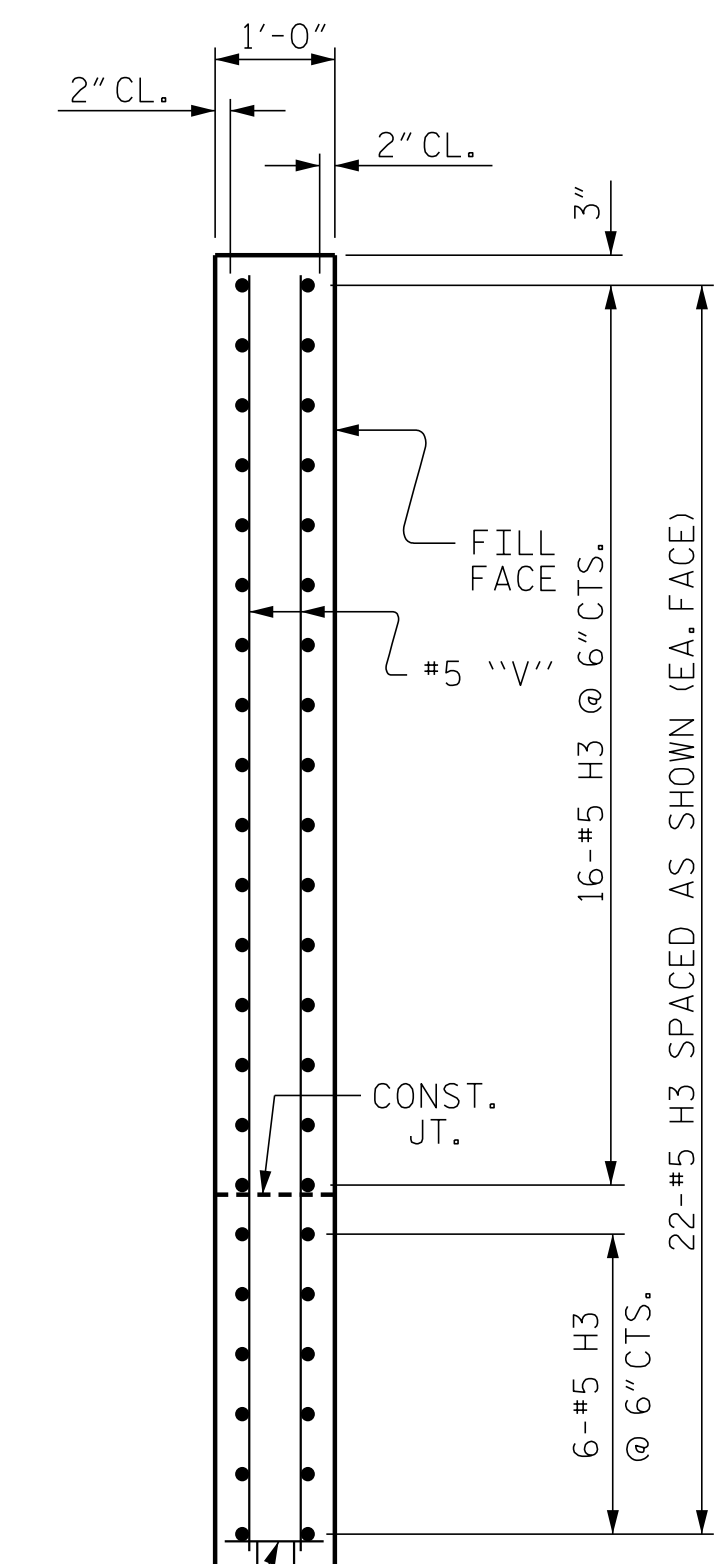
DRAWN BY: D. HODGE DATE: 5/18
 CHECKED BY: G.M. GILLAND DATE: 5/18



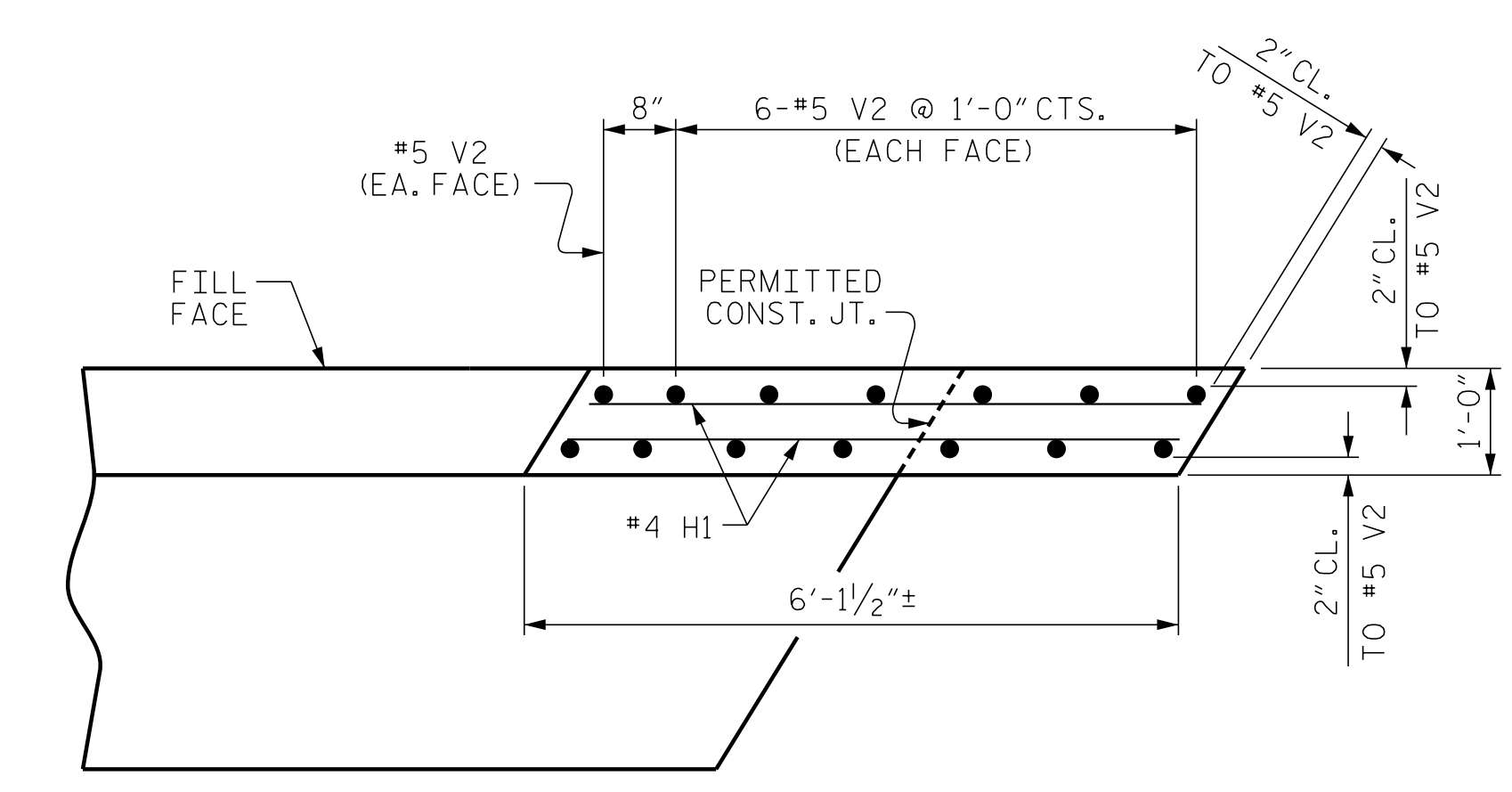
PLAN OF WING - (W1)



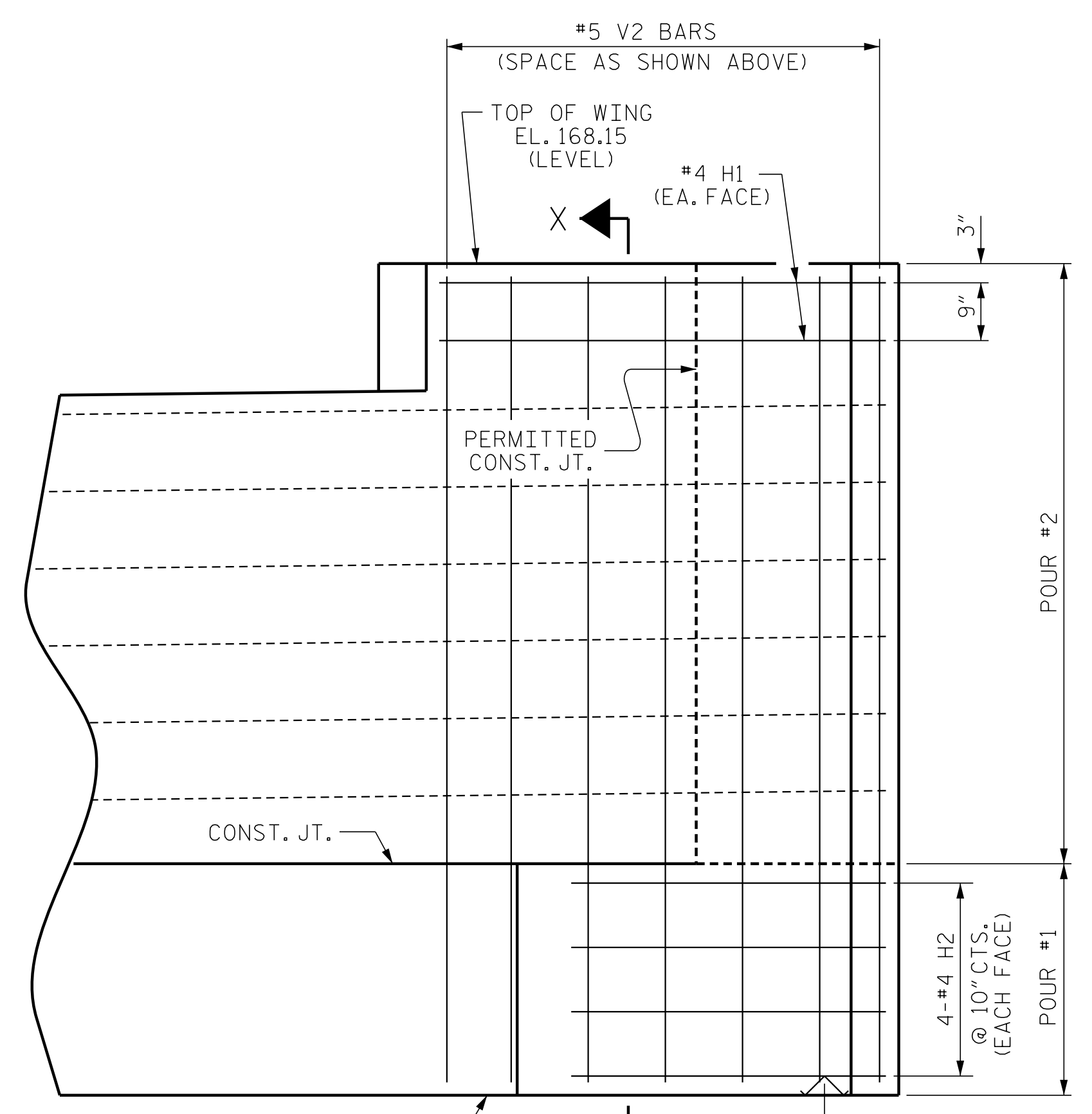
ELEVATION OF WING - (W1)



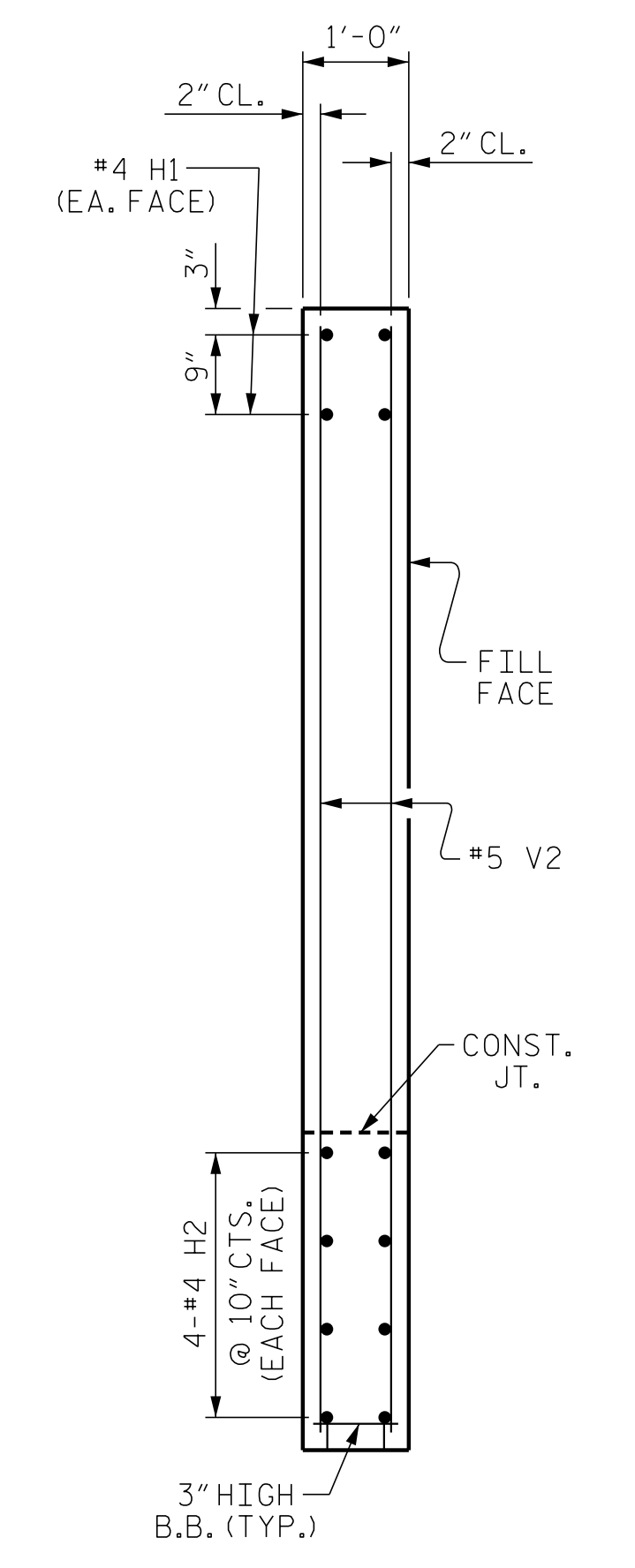
SECTION Y-Y



PLAN OF WING - (W2)



ELEVATION OF WING - (W2)



SECTION X-X
(K1 BARS NOT SHOWN)

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-
 SHEET 2 OF 3

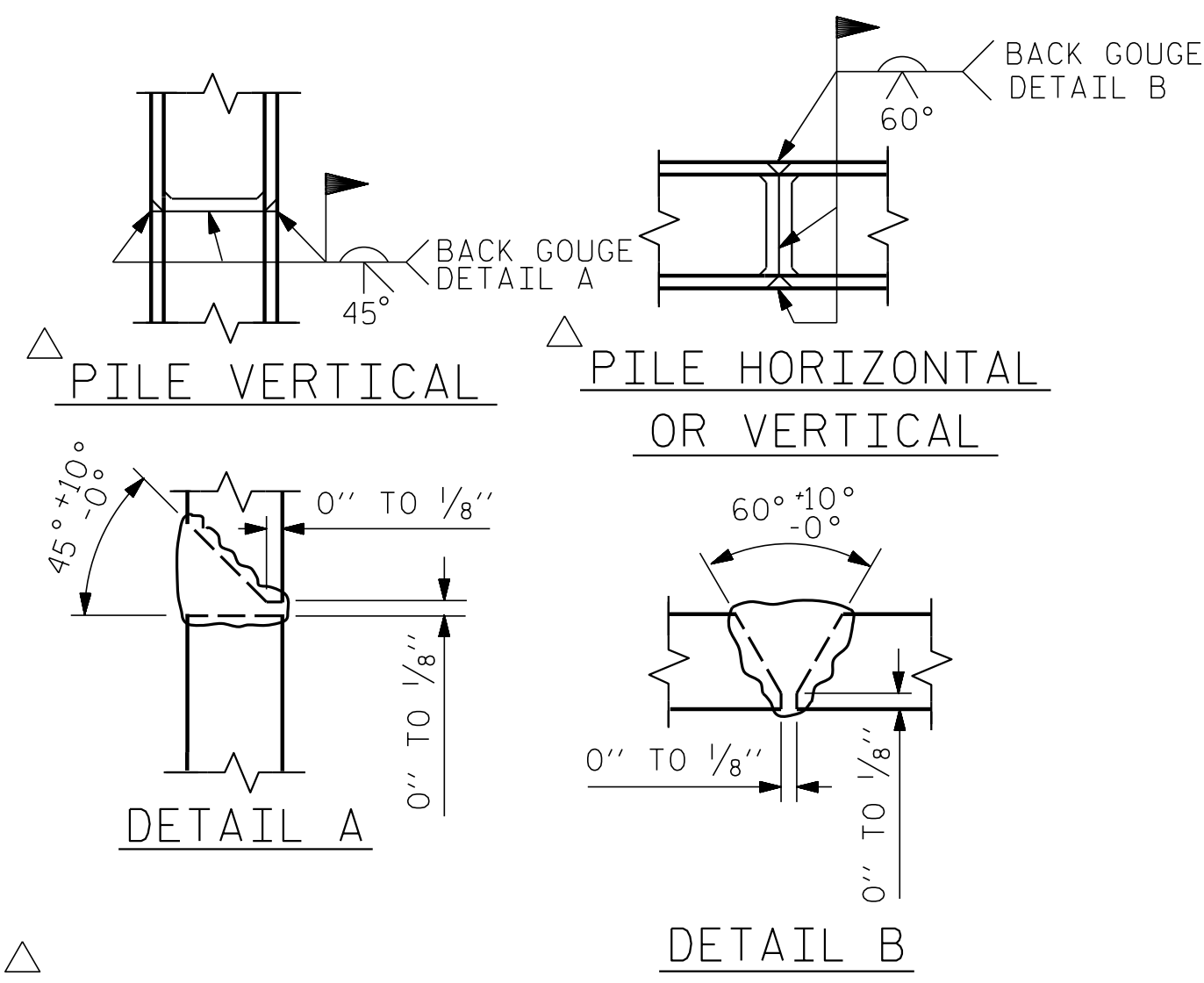
ENGINEER OF RECORD:
Gregory M. Olland
 NORTH CAROLINA
 PROFESSIONAL
 SEAL
 37400
 ENGINEER
 GREGORY M. OLLAND
 9/12/2018
 WETHERILL
 ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 2 RIGHT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S2-23
TOTAL SHEETS					27

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

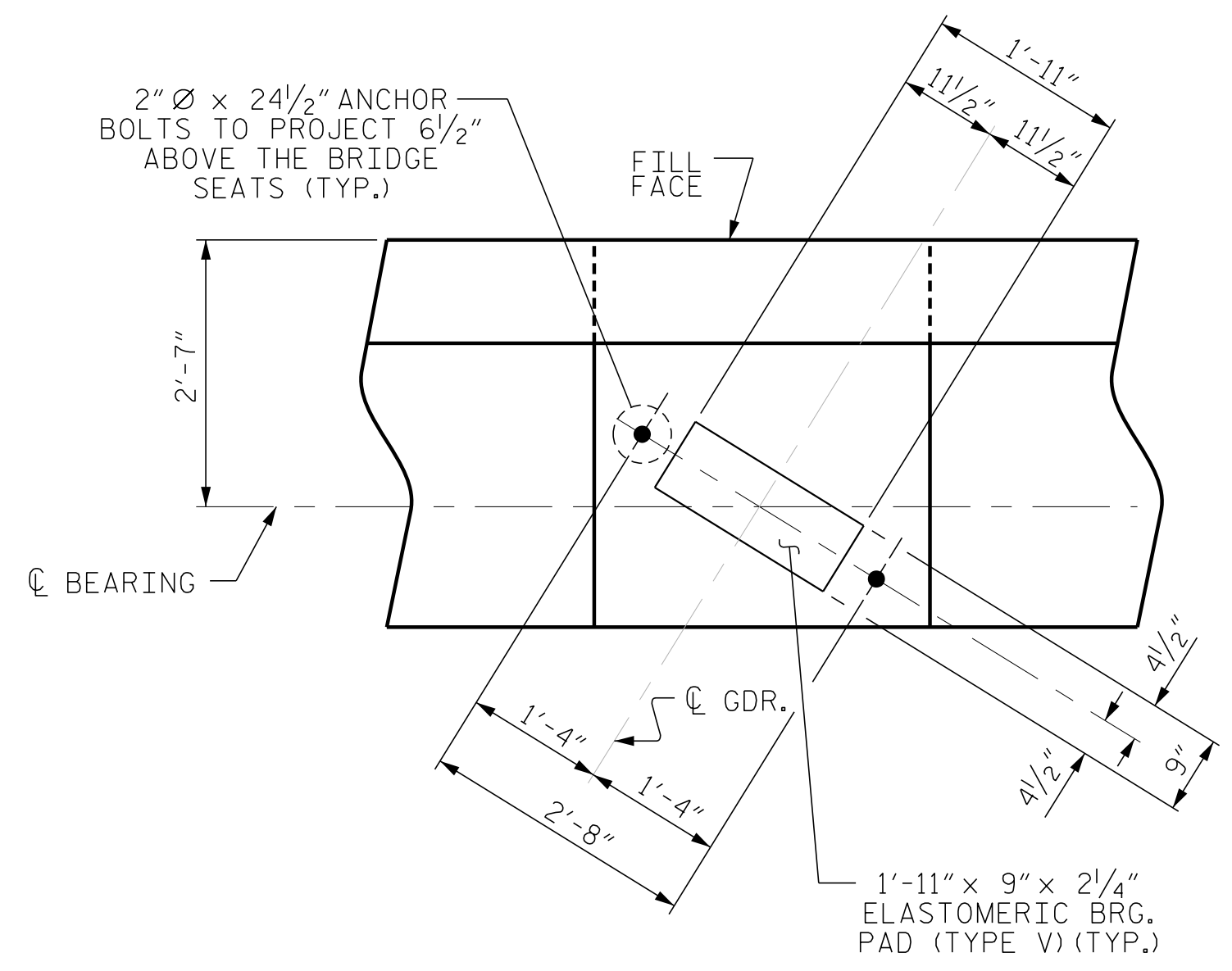
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DRAWN BY: D. HODGE DATE: 5/18
 CHECKED BY: G.M. GILLAND DATE: 5/18

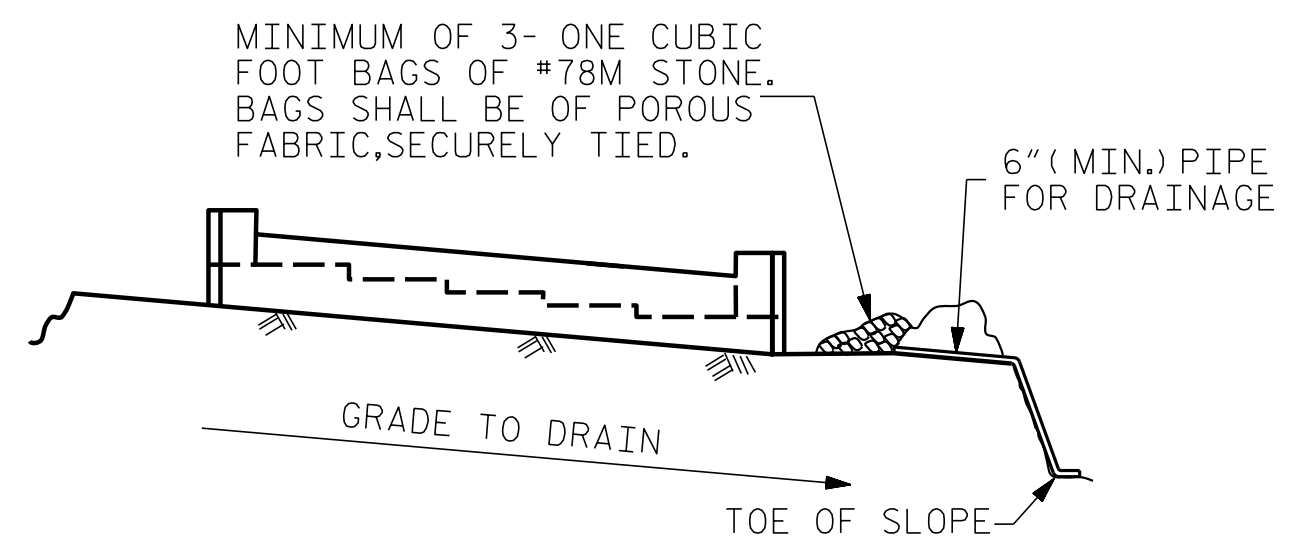


PILE SPLICE DETAILS

POSITION OF PILE DURING WELDING.



DETAIL "A"
(TYP. EA. GIRDER)

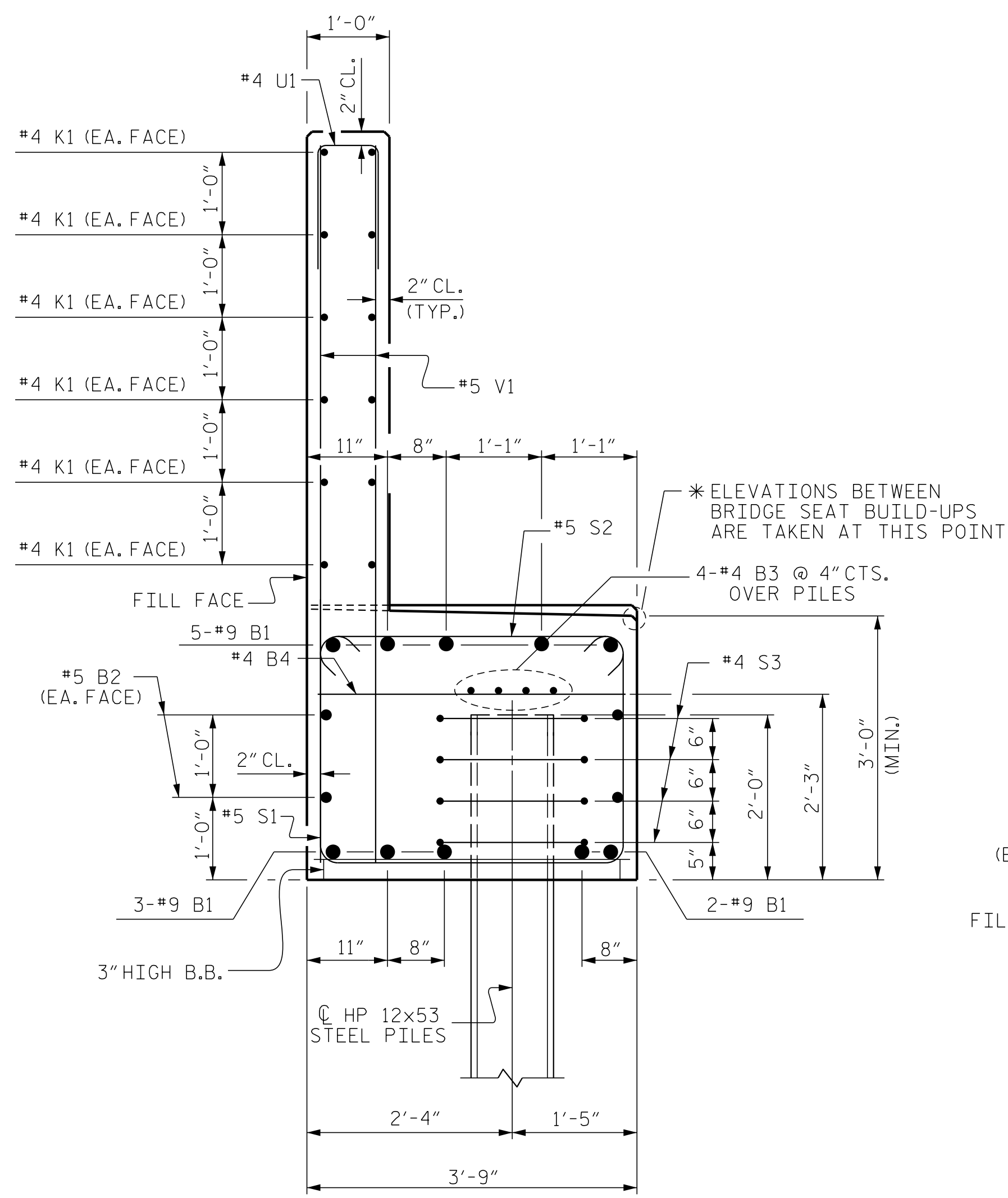


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

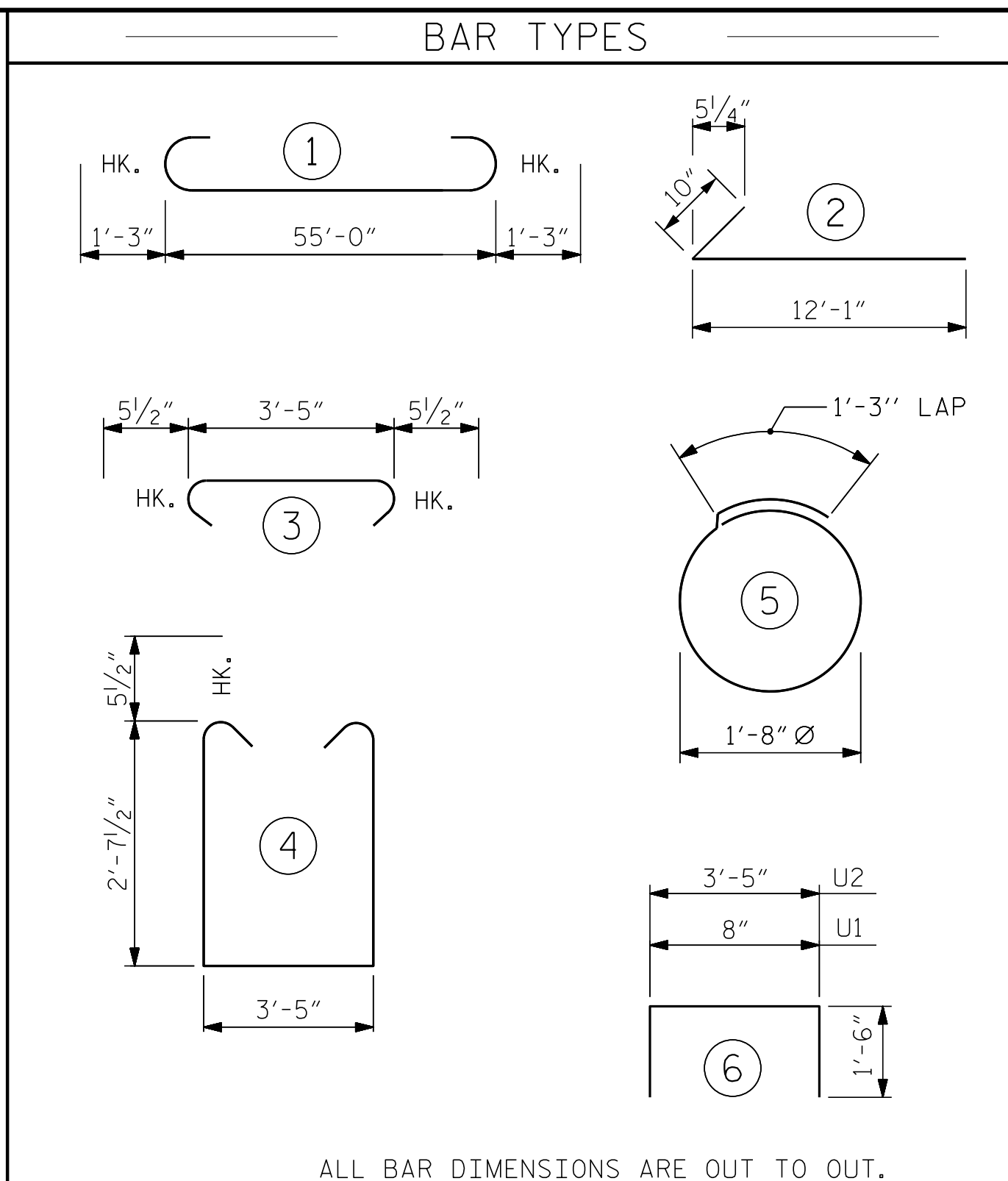
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT



SECTION A-A



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#9	1	57'-6"	1955
B2	4	#5	STR	55'-3"	231
B3	8	#4	STR	28'-11"	155
B4	14	#4	STR	3'-5"	32
B5	10	#4	STR	2'-11"	19
H1	4	#4	STR	5'-8"	15
H2	8	#4	STR	4'-2"	22
H3	44	#5	2	12'-11"	593
K1	36	#4	STR	21'-0"	505
K2	4	#4	STR	2'-10"	8
S1	72	#5	4	9'-7"	720
S2	72	#5	3	4'-4"	325
S3	36	#4	5	6'-6"	156
U1	49	#4	6	3'-8"	120
U2	6	#4	6	6'-5"	26
V1	98	#5	STR	8'-9"	894
V2	14	#5	STR	10'-5"	152
V3	12	#5	STR	10'-9"	135
V4	21	#5	STR	10'-7"	232

REINFORCING STEEL		6,295 LBS.
CLASS A CONCRETE BREAKDOWN		
POUR #1	CAP AND LOWER PART OF WINGS	25.4 C.Y.
POUR #2	BACKWALL AND UPPER PART OF WINGS	17.2 C.Y.
TOTAL CLASS A CONCRETE		42.6 C.Y.
HP 12 X 53 STEEL PILES		
NO: 9		860 L.F.
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES		9 EA.
PILE REDRIVES		5 EA.

NOTES

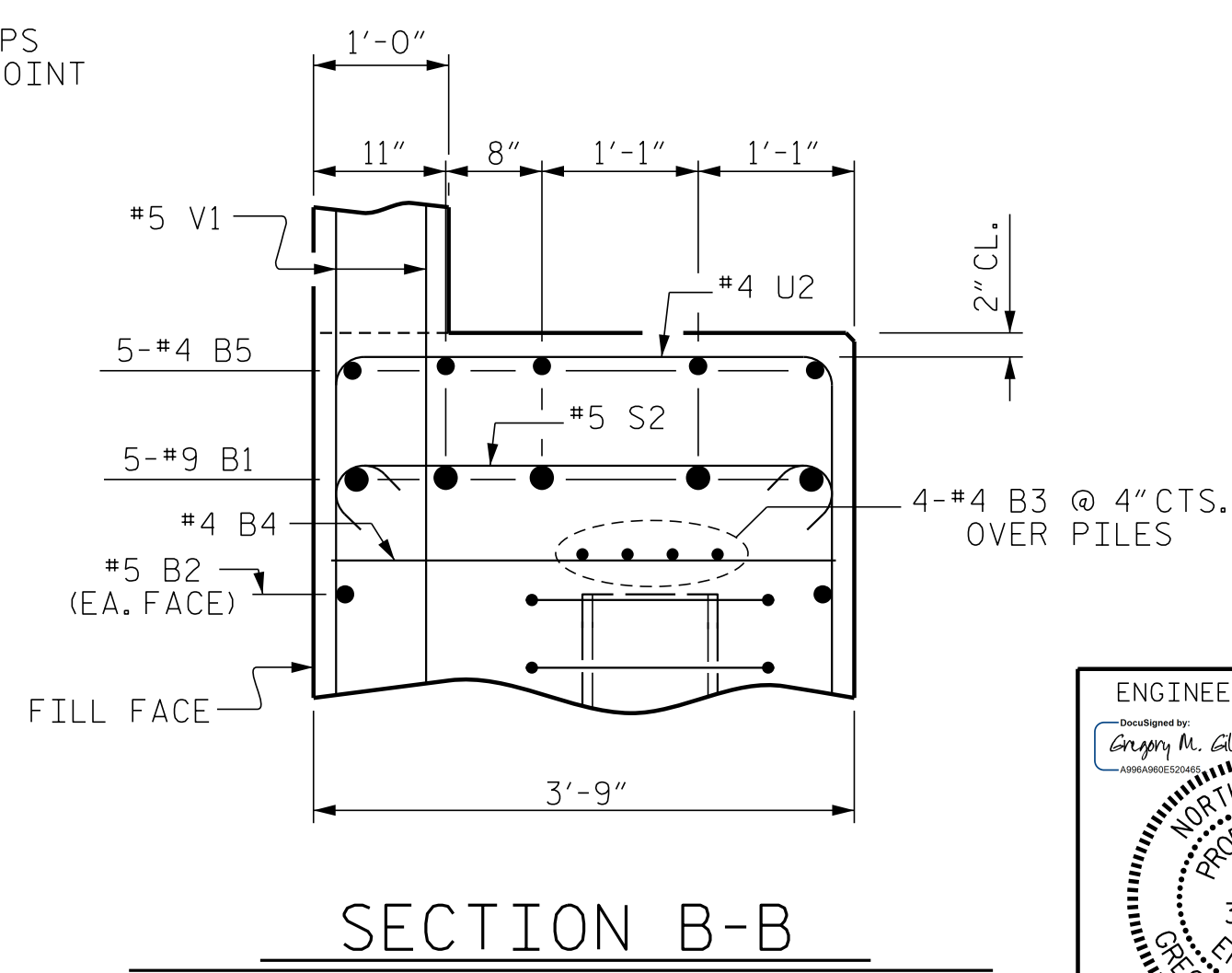
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

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

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



SECTION B-B

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-
 SHEET 3 OF 3

ENGINEER OF RECORD:
Gregory M. Gilland
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 37400
 GREGORY M. GILLAND
 9/25/2018
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

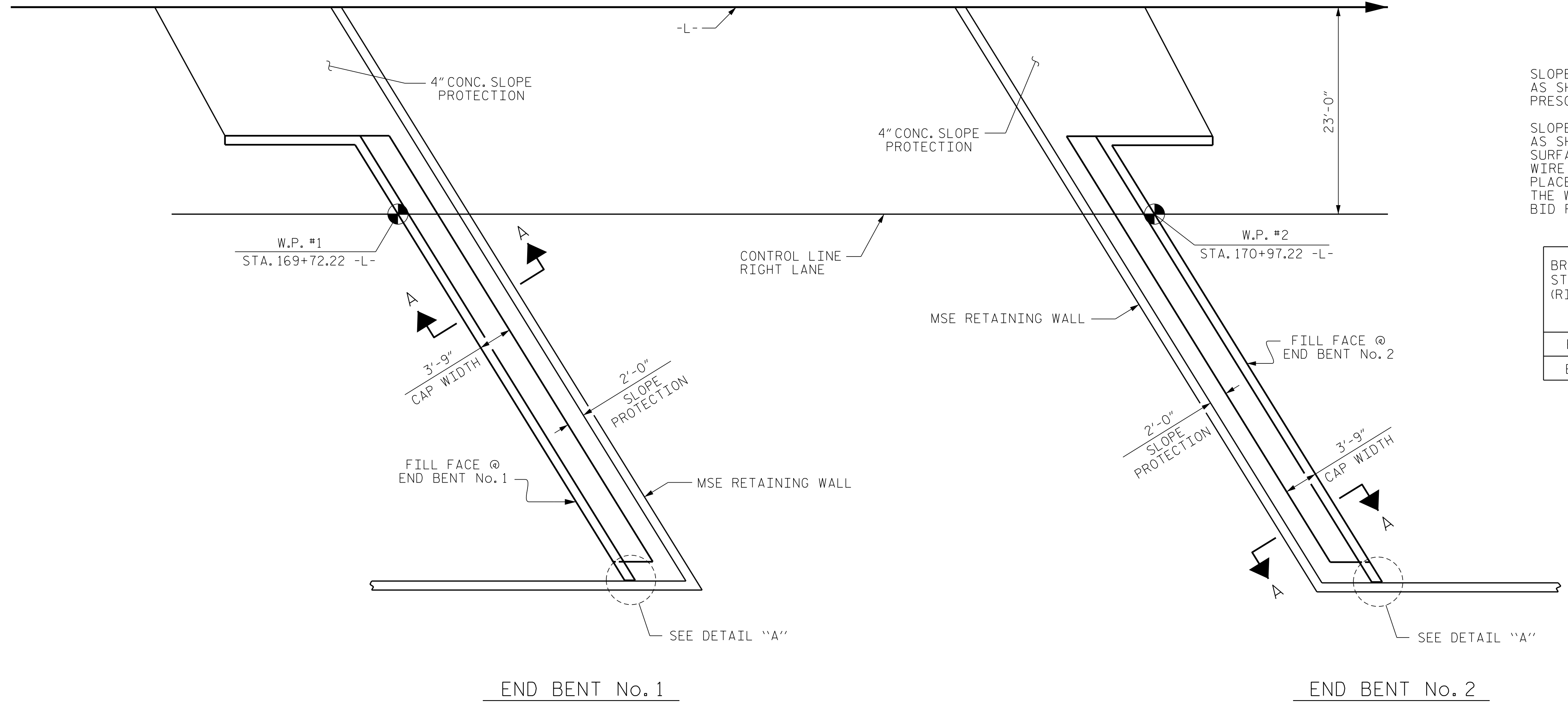
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 2 RIGHT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S2-24
TOTAL SHEETS 27

DRAWN BY: D. HODGE DATE: 5/18
 CHECKED BY: G.M. GILLAND DATE: 5/18

DOCUMENT NOT CONSIDERED FINAL
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NOTES

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

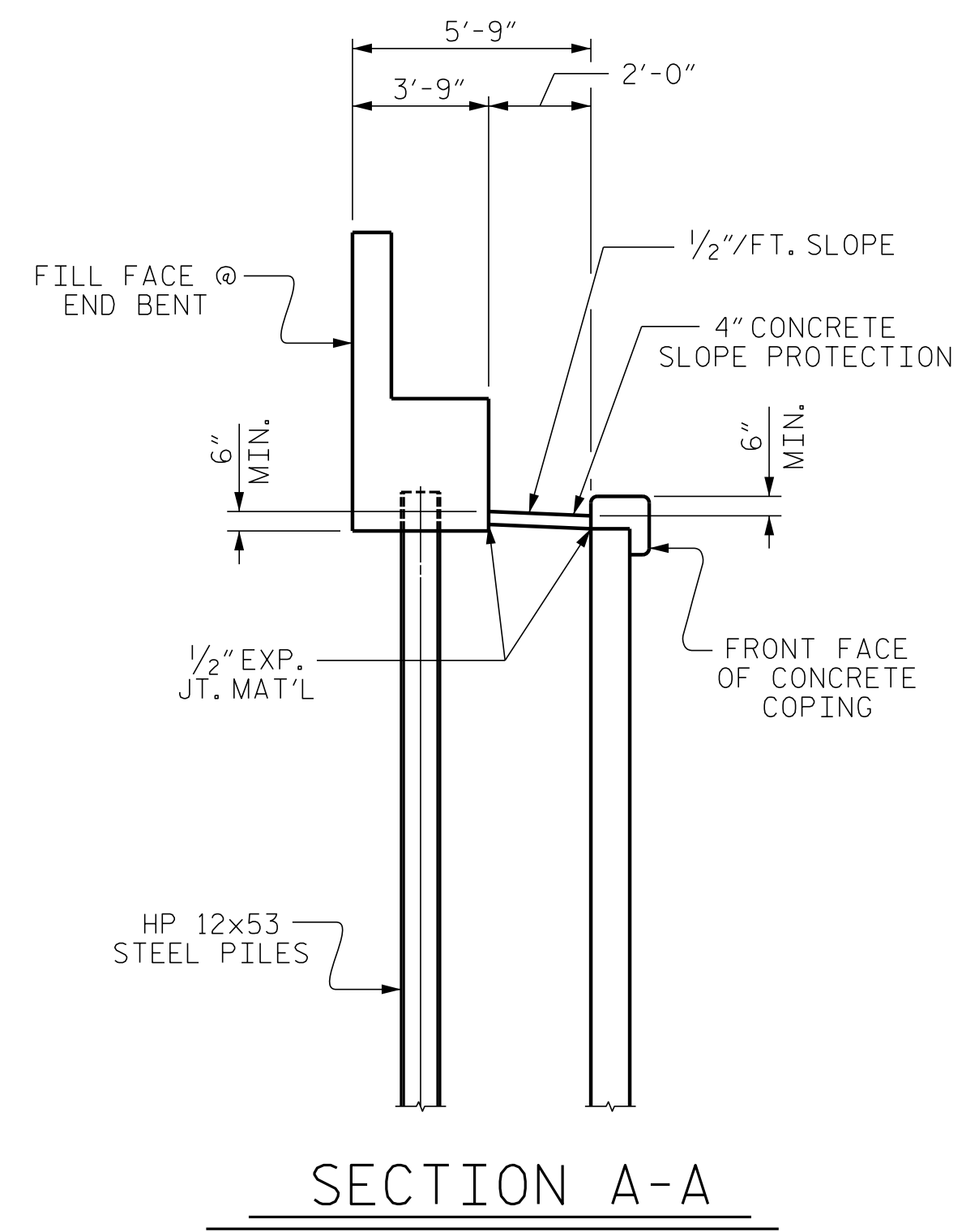
SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FINISHED TO THE SATISFACTION OF THE ENGINEER. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 20" WIDE AND PLACED IN THE MIDDLE OF THE 4" CONCRETE SLOPE PROTECTION. THE COST OF THE WELDED WIRE FABRIC SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

BRIDGE @ STA. 170+20.99 -L- (RIGHT LANE)	4" SLOPE PROTECTION	WELDED WIRE FABRIC 20 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	52	91
END BENT 2	50	88

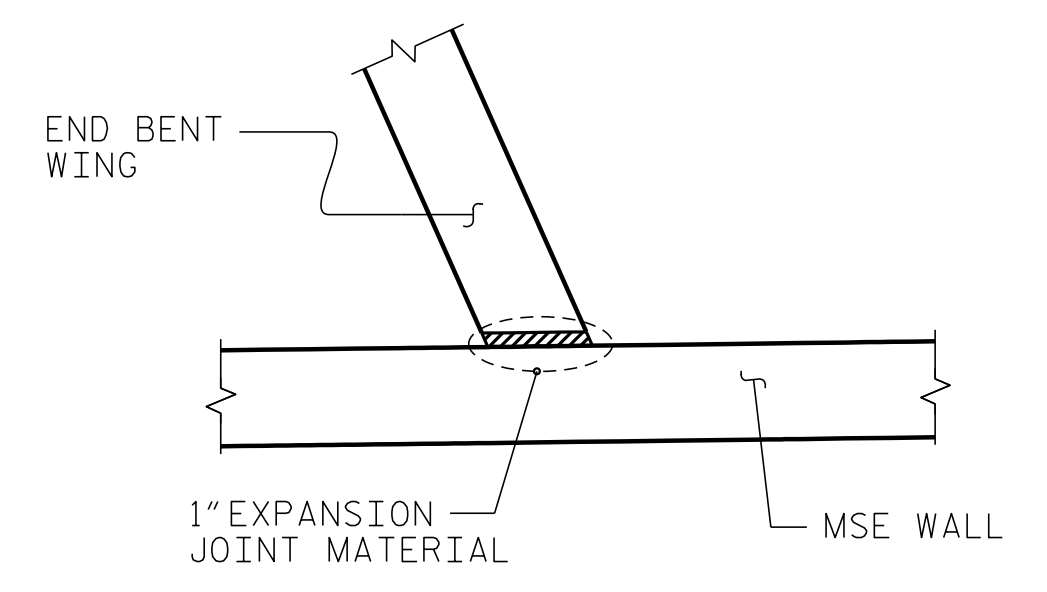
END BENT No. 1

END BENT No. 2

PLAN



SECTION A-A



DETAIL "A"
(TYP. EACH WING TO MSE WALL CONNECTION)

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-

ENGINEER OF RECORD:
 Developed by
Gregory M. Olland
 NORTH CAROLINA
 PROFESSIONAL
 SEAL
 37400
 ENGINEER
 GREGORY M. OLLAND
 9/12/2018
 WETHERILL
 ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

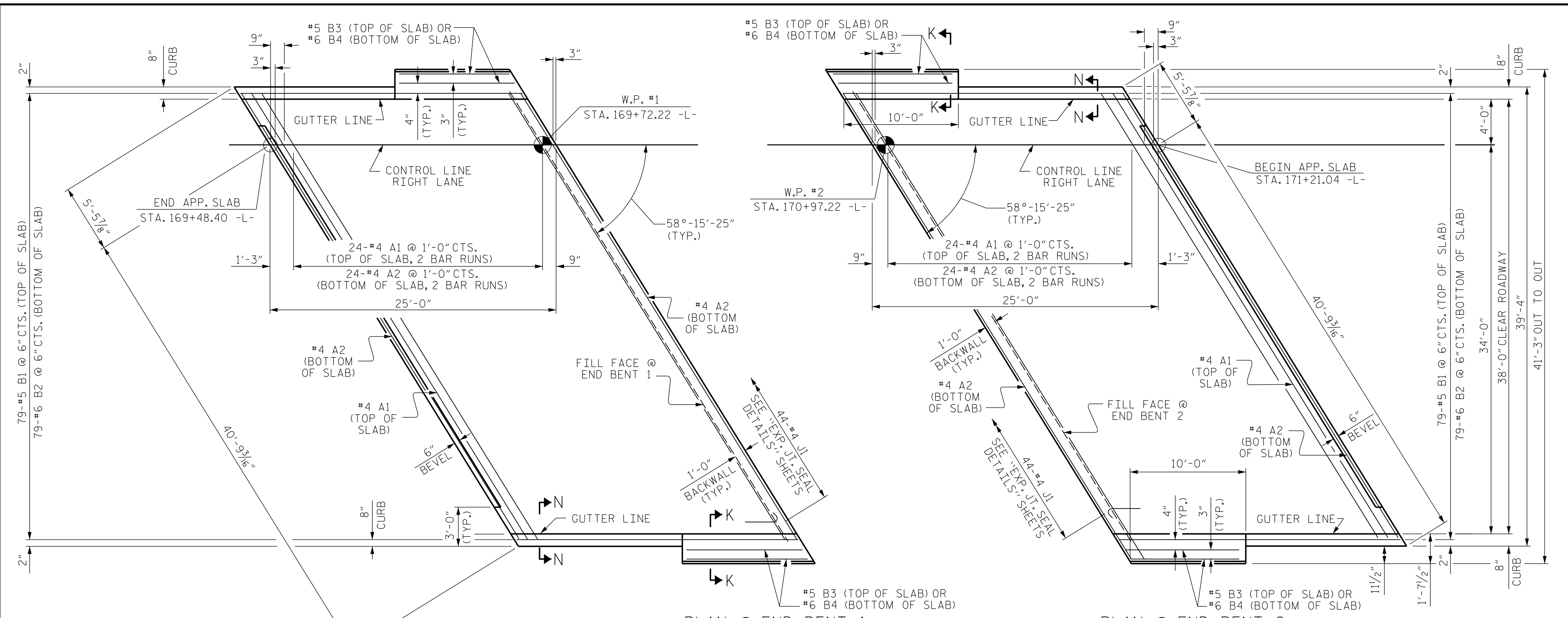
**SLOPE PROTECTION DETAILS
 RIGHT LANE**

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

DRAWN BY : D. HODGE DATE : 4/18
 CHECKED BY : G.M. GILLAND DATE : 5/18

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

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PLAN @ END BENT 1

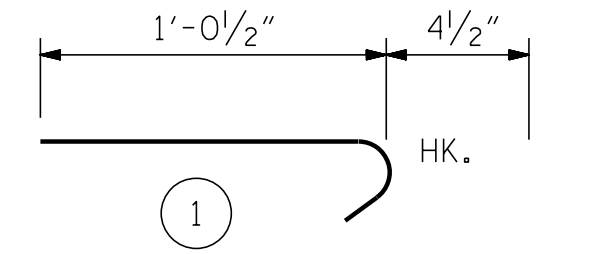
PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

NOTES

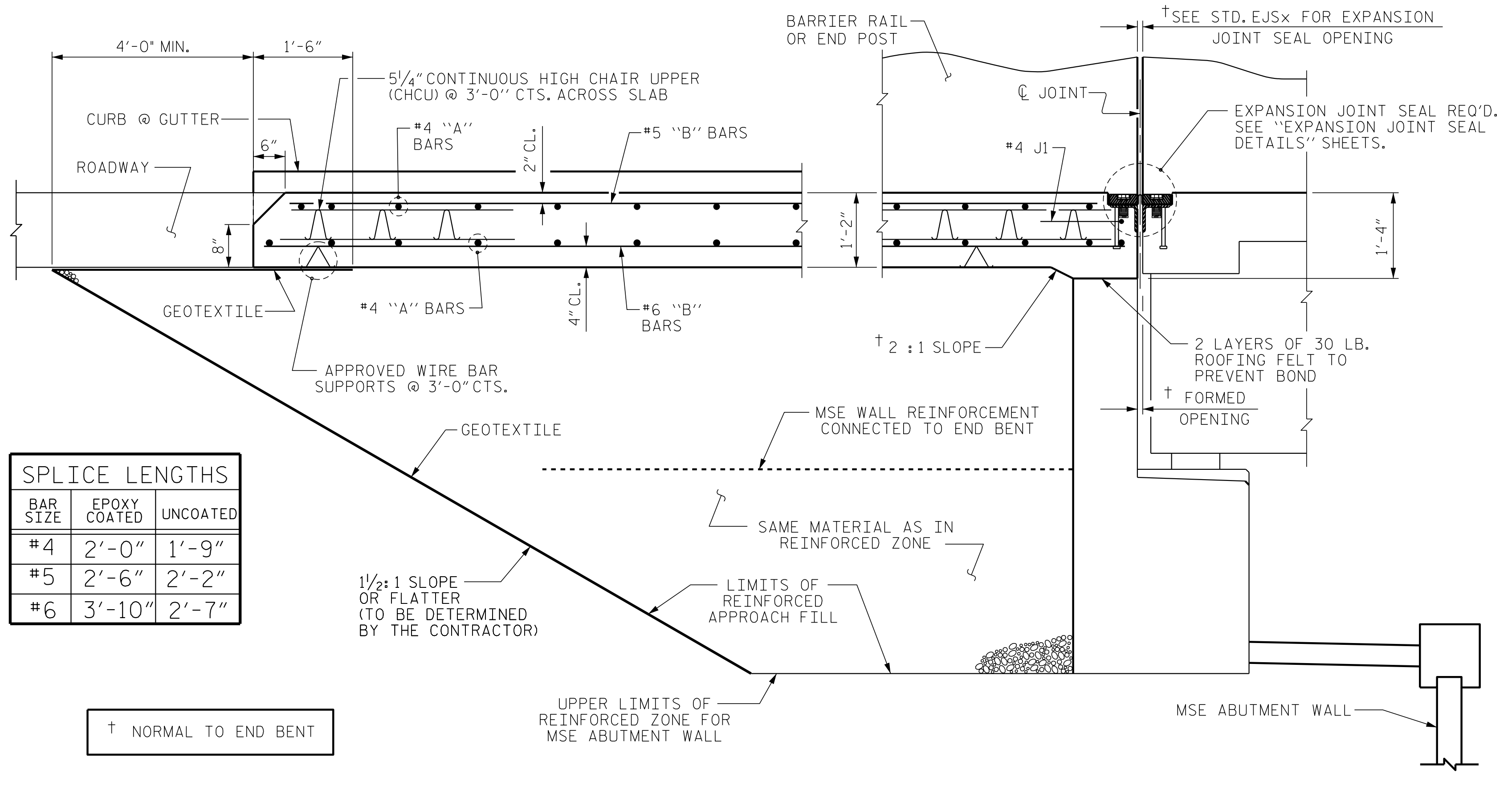
- FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, MSE WALL REINFORCEMENT AND BACKFILL MATERIAL SEE ROADWAY PLANS.
- GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.
- BACKFILL MATERIAL SHALL BE THE SAME MATERIAL USED IN THE MSE REINFORCED ZONE.
- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
- AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
- FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL						
APPROACH SLAB AT BENT 1						
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	50	#4	STR	25'-1"	838	
A2	52	#4	STR	25'-0"	868	
*B1	79	#5	STR	23'-6"	1936	
B2	79	#6	STR	24'-7"	2917	
*B3	4	#5	STR	9'-10"	41	
B4	4	#6	STR	9'-10"	59	
*J1	44	#4	1	1'-5"	42	
REINFORCING STEEL **					LBS.	3,844
*EPOXY COATED REINFORCING STEEL **					LBS.	2,857
CLASS AA CONCRETE **					C. Y.	43.6
APPROACH SLAB AT BENT 2						
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	50	#4	STR	25'-1"	838	
A2	52	#4	STR	25'-0"	868	
*B1	79	#5	STR	23'-6"	1936	
B2	79	#6	STR	24'-7"	2917	
*B3	4	#5	STR	9'-10"	41	
B4	4	#6	STR	9'-10"	59	
*J1	44	#4	1	1'-5"	42	
REINFORCING STEEL **					LBS.	3,844
*EPOXY COATED REINFORCING STEEL **					LBS.	2,857
CLASS AA CONCRETE **					C. Y.	43.6
BAR TYPE						



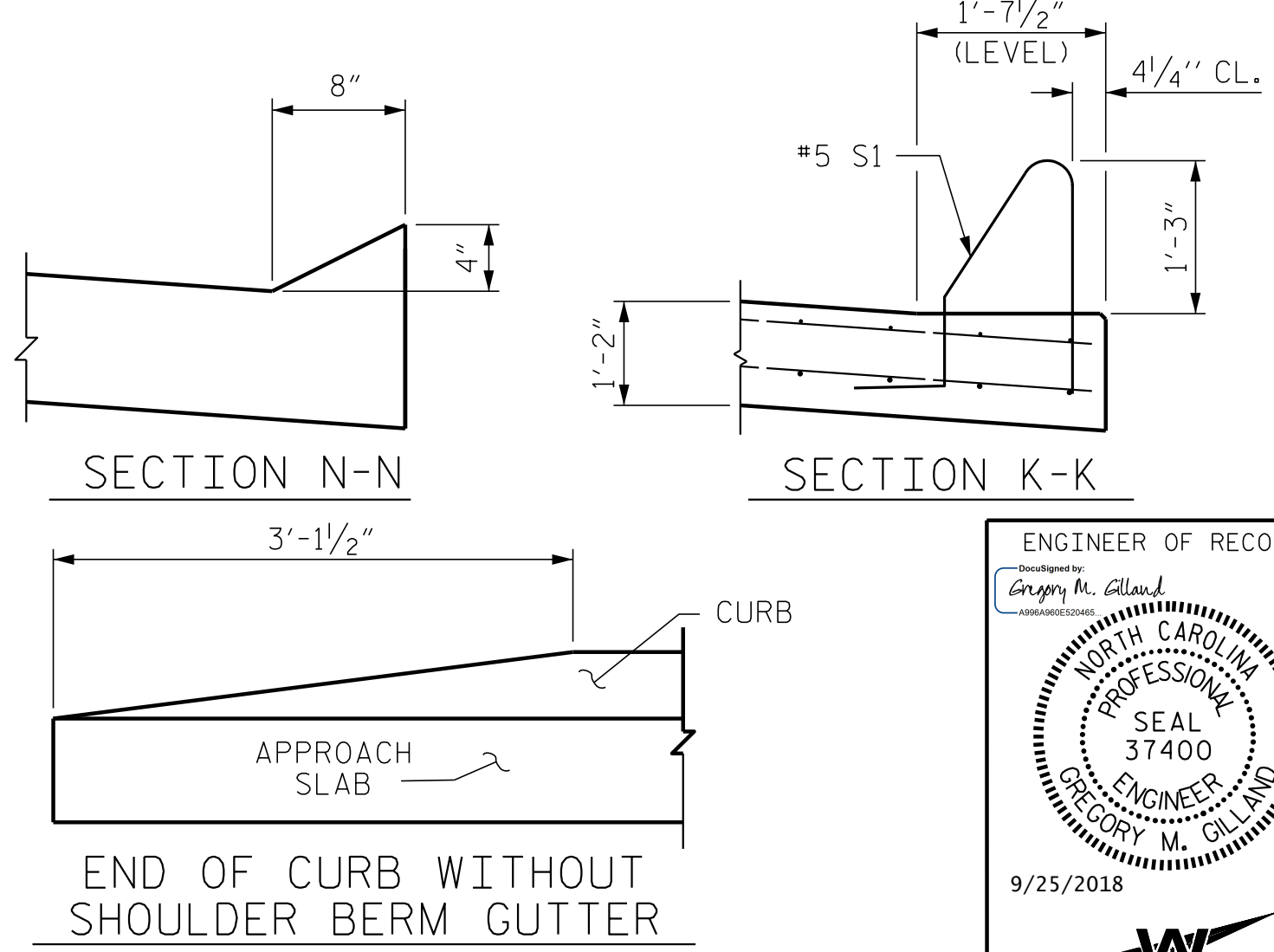
ALL BAR DIMENSIONS ARE OUT TO OUT
 ** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED. SEE SHEET 2 OF 2.

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



SECTION THRU SLAB

(TYPE III - REINFORCED APPROACH FILL)

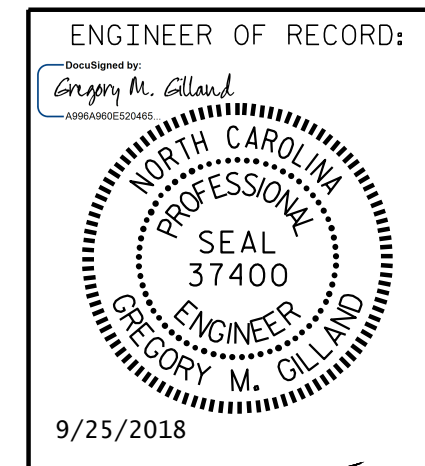


CURB DETAILS

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

† NORMAL TO END BENT

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 170+20.99 -L-
 SHEET 1 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR FLEXIBLE PAVEMENT
 (RIGHT LANE)

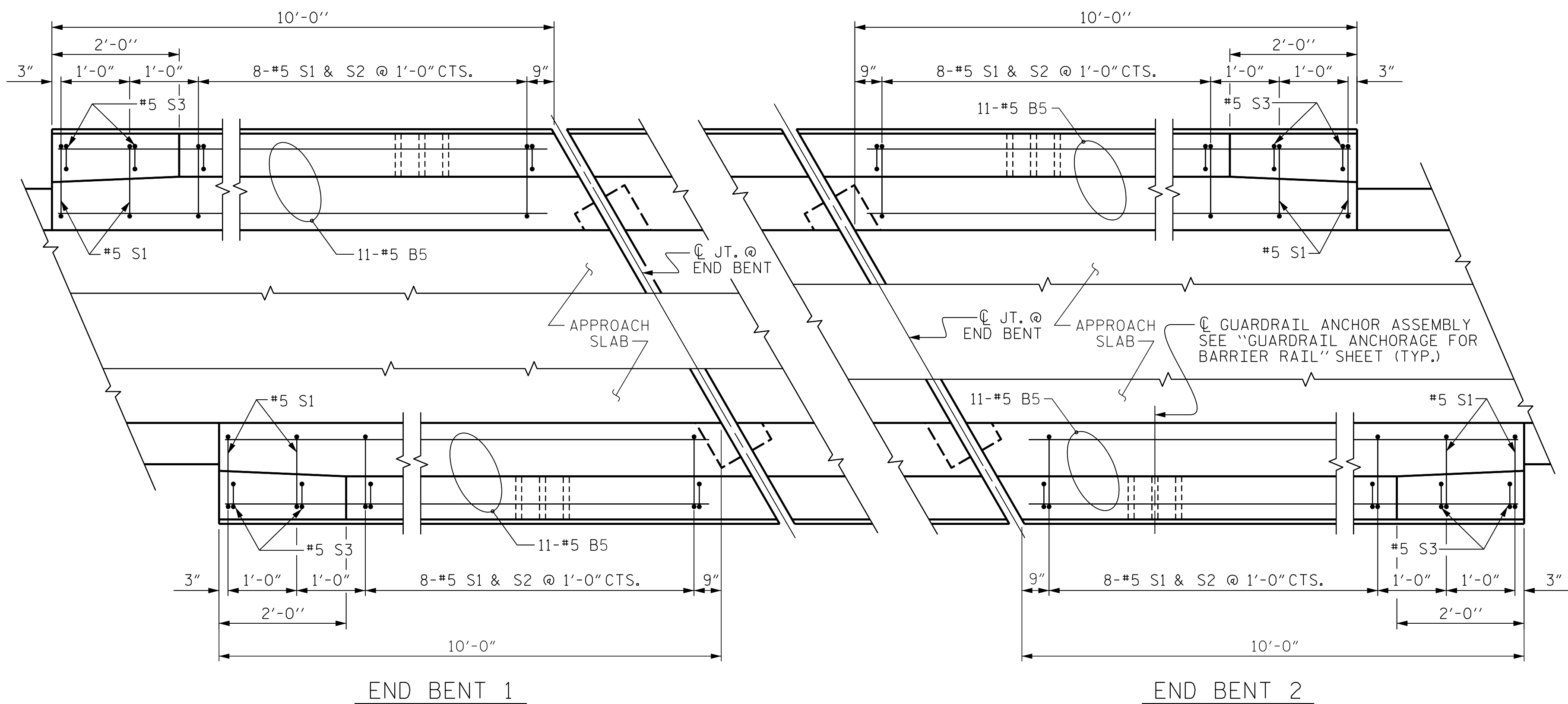
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NO.	BY:	DATE:	NO.	BY:	DATE:
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SHEET NO. S2-26
 TOTAL SHEETS 27

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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ASSEMBLED BY : D. HODGE DATE : 8/18
 CHECKED BY : G.M. GILLAND DATE : 9/18
 DRAWN BY : EEM 3/95 REV. 12/21/11 MAA/GM
 CHECKED BY : VAP 3/95 REV. 6/13 MAA/GM
 REV. 12/17 MAA/THC



END BENT 1
END BENT 2
PLAN OF BARRIER RAIL

NOTES

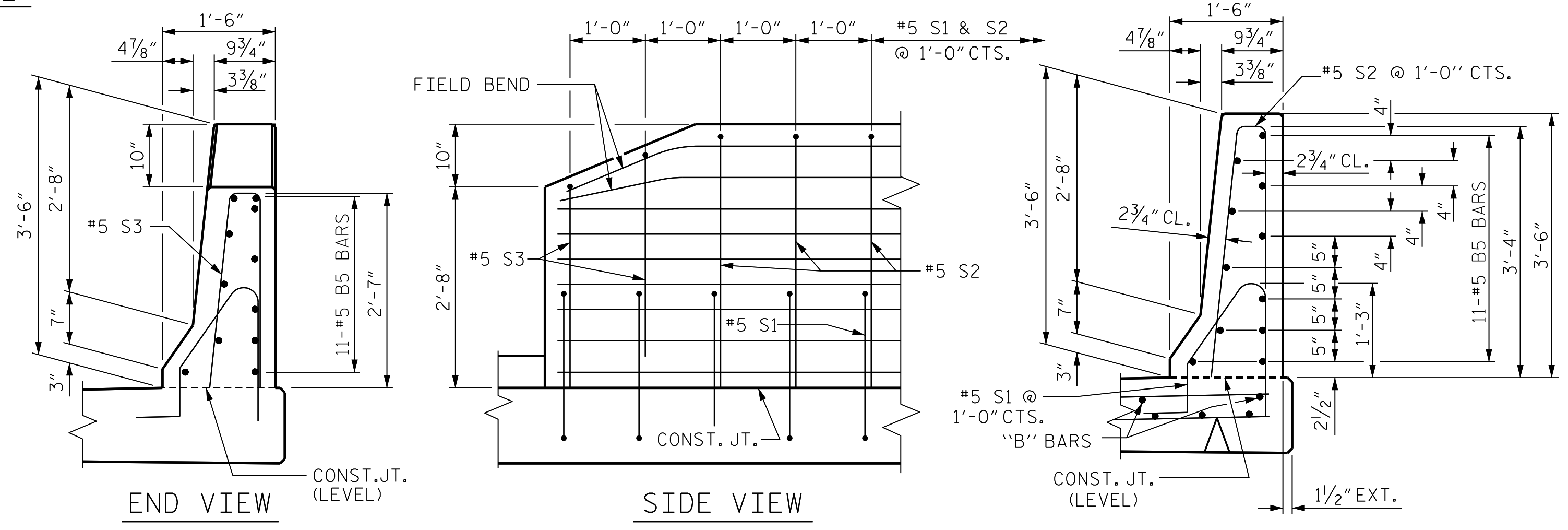
THE COST OF THE BARRIER RAIL ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LINEAR FOOT CONTRACT PRICE BID FOR "CONCRETE BARRIER RAIL".
THE BARRIER RAIL ON EACH APPROACH SLAB SHALL NOT BE CAST UNTIL ALL APPROACH SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

BAR TYPES

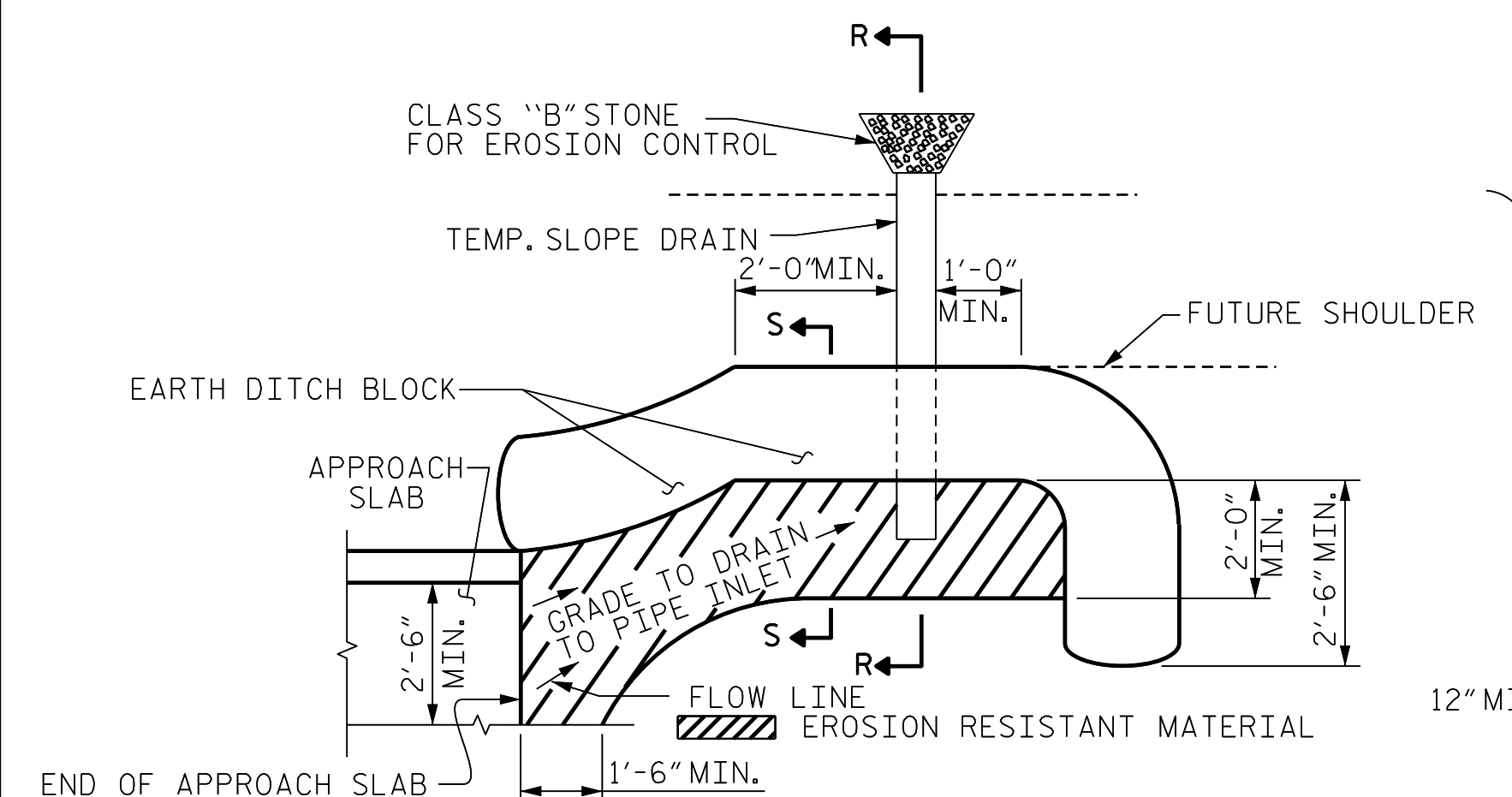
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B5	44	#5	STR	9'-10"	451
* S1	40	#5	1	5'-1"	212
* S2	32	#5	2	7'-0"	234
* S3	8	#5	2	5'-6"	46
* EPOXY COATED REINFORCING STEEL				LBS.	943
CLASS AA CONCRETE				C. Y.	5.7
CONCRETE BARRIER RAIL				41.86 LIN. FT.	

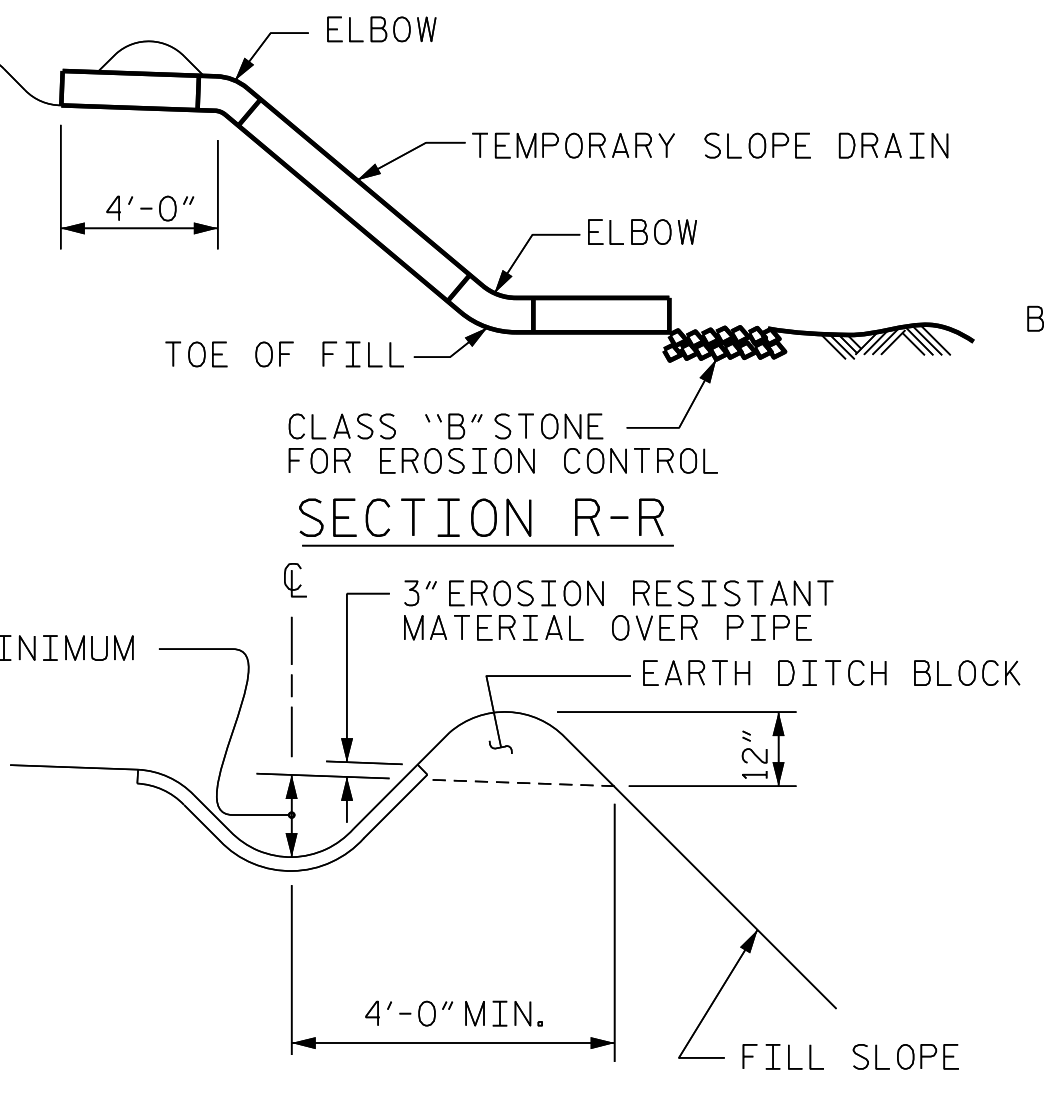


END VIEW
SIDE VIEW
SECTION THRU RAIL
END OF RAIL DETAILS

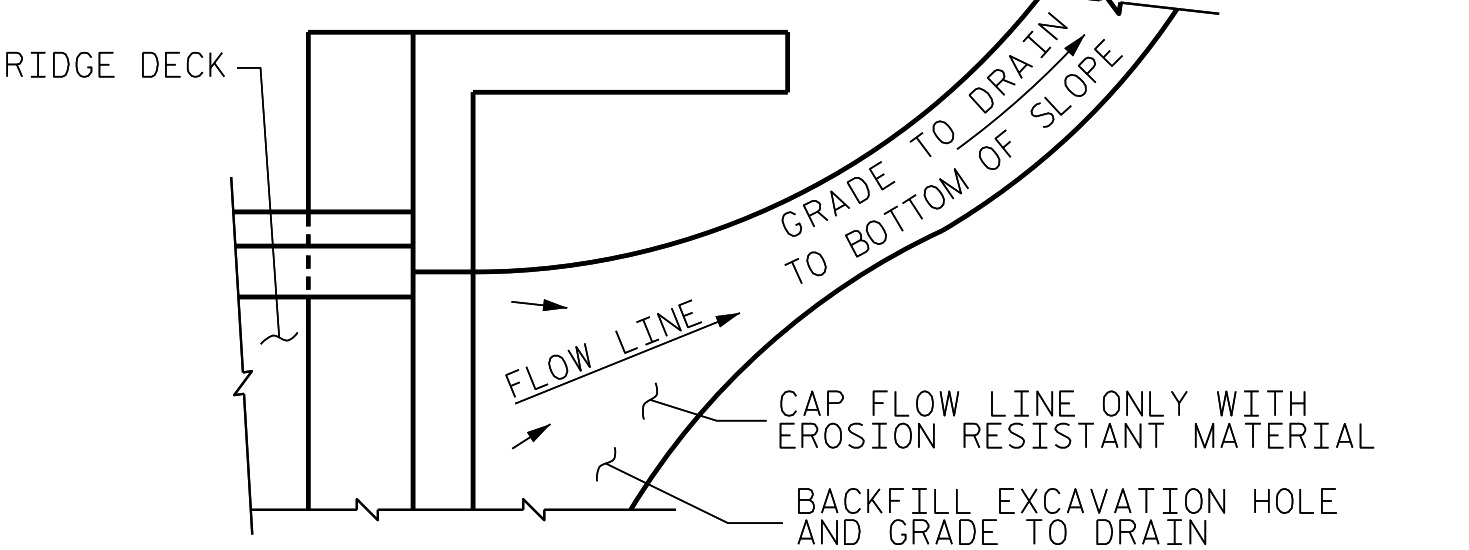


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 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.

PLAN VIEW



SECTION R-R
SECTION S-S



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)

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 170+20.99 -L-
SHEET 2 OF 2



ENGINEER OF RECORD:
Gregory M. O'Neil
PROFESSIONAL ENGINEER
SEAL 37400
GREGORY M. O'NEIL
9/12/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH
SLAB DETAILS
(RIGHT LANE)

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

SHEET NO. S2-27
TOTAL SHEETS 27

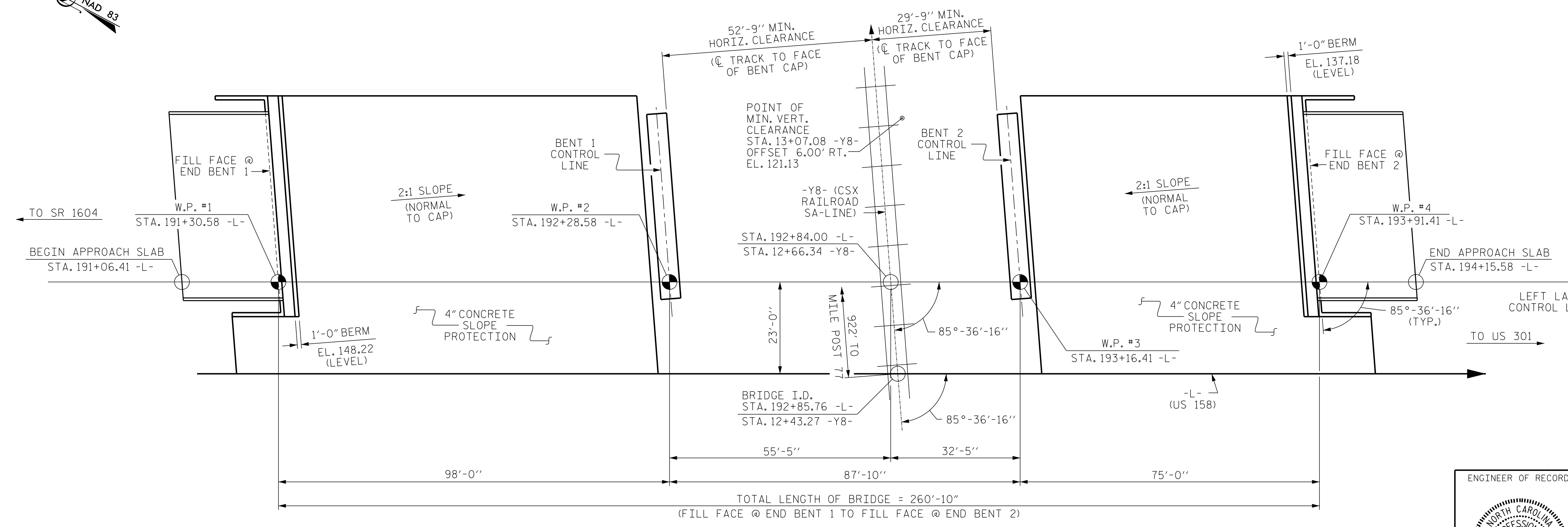
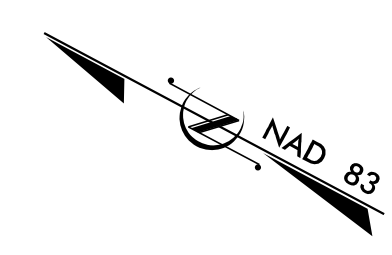
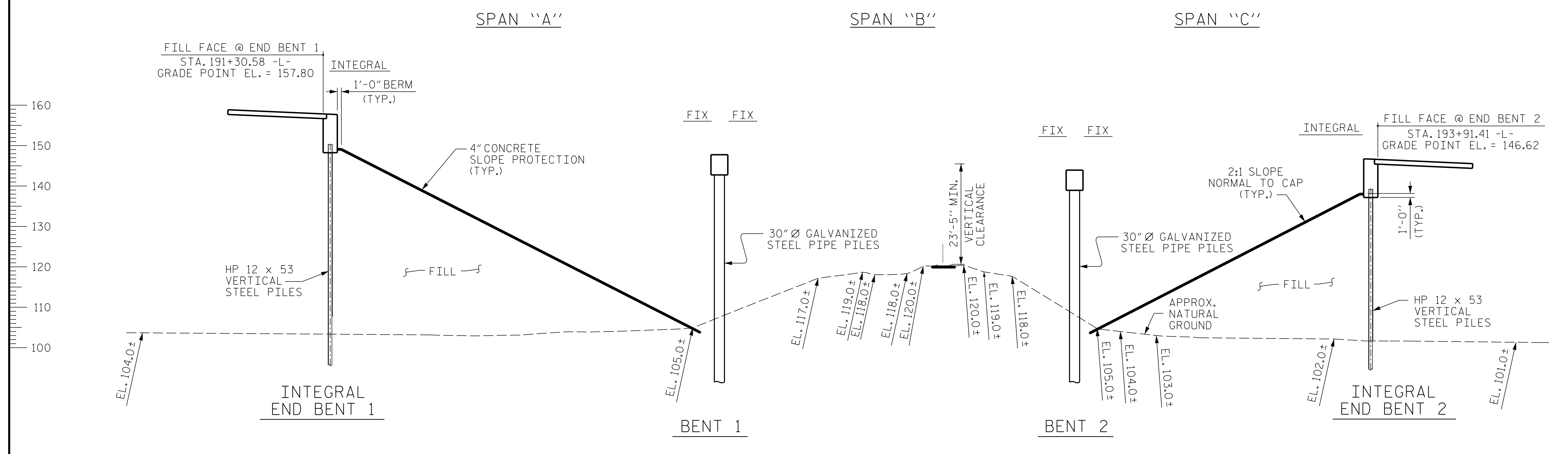
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ASSEMBLED BY : D. HODGE	DATE : 8/18
CHECKED BY : G.M. GILLAND	DATE : 9/18
DRAWN BY : FCJ 11/88	REV. 6/13 MAA/GM
CHECKED BY : ARB 11/88	REV. 12/17 MAA/THC
	REV. 5/18 MAA/THC

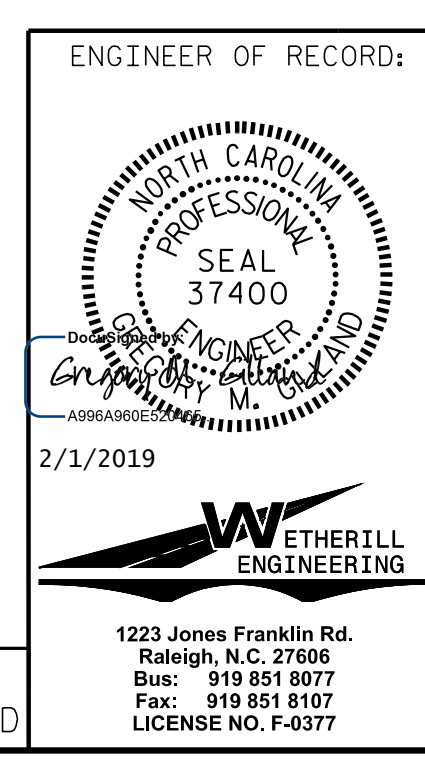
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

191+00 +50 192+00 +50 193+00 +50 194+00

-4.2886% Δ -0.3000%
 PI = 199+50.00 -L-
 EL. = 122.66
 VC = 850.00'
 GRADE DATA -L-



PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 1 OF 4 12+43.27 -Y8-
 MILE POST 77.17 BRIDGE No. 128



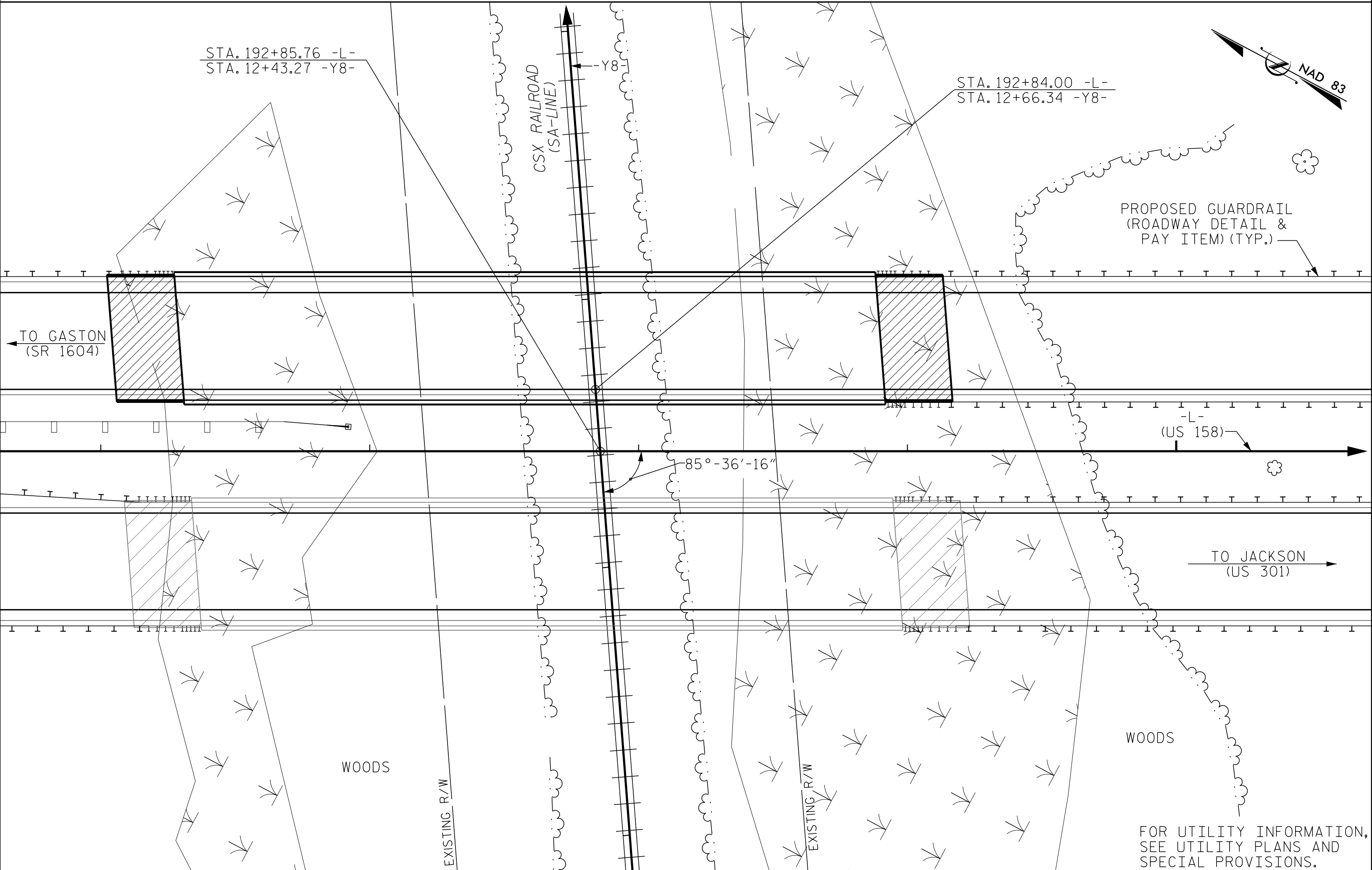
ENGINEER OF RECORD:		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH	
1223 Jones Franklin Rd. Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 LICENSE NO. F-0377		GENERAL DRAWING	
		LEFT LANE BRIDGE ON US 158 OVER CSX SA-LINE BETWEEN SR 1604 & US 301	
REVISIONS			
NO.	BY:	DATE:	SHEET NO.
1			S3-1
2			TOTAL SHEETS 38

DRAWN BY: D. HODGE DATE: 10/18
 CHECKED BY: G.M. GILLAND DATE: 1/19

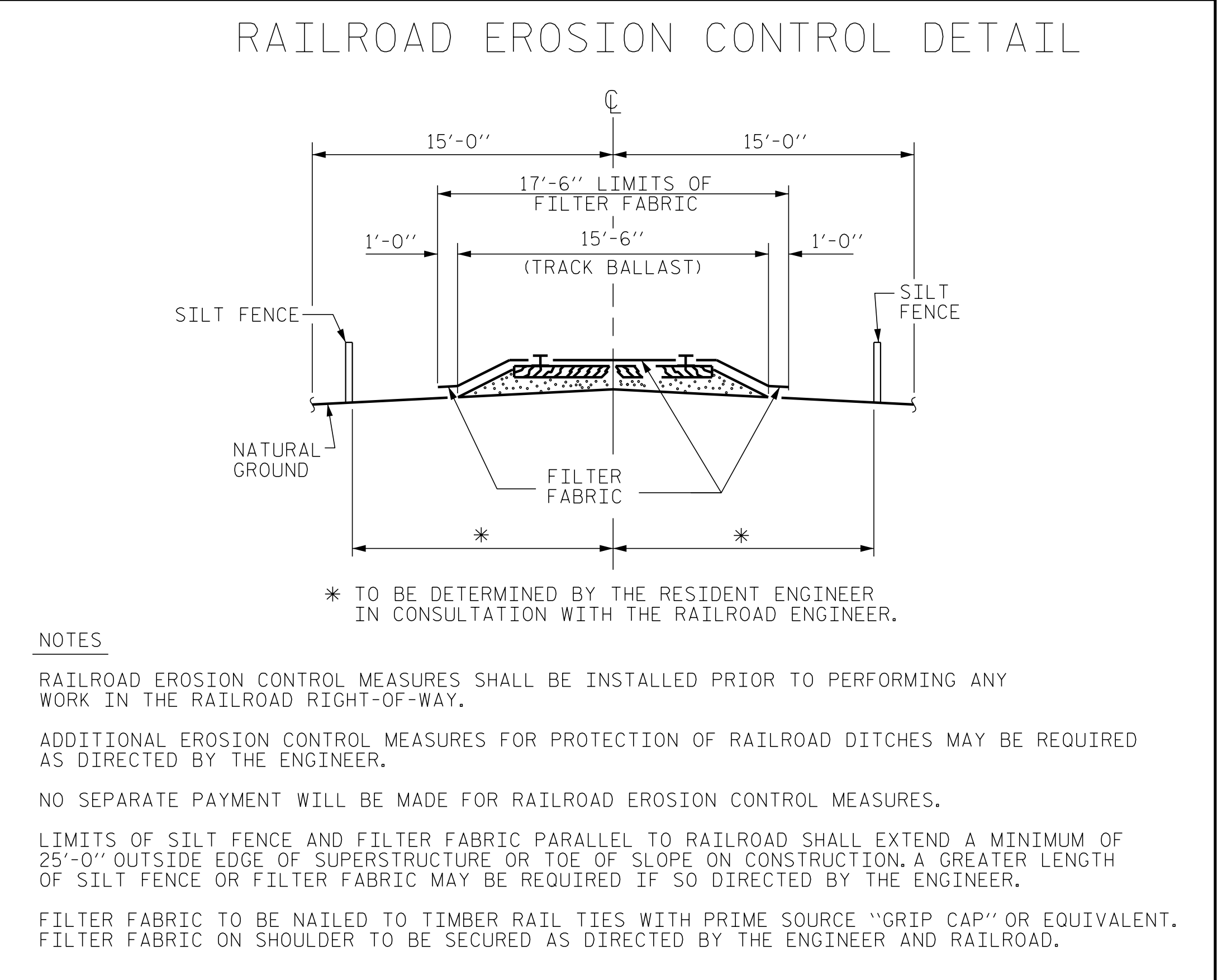
DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

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BM #4: R/R SPIKE IN 24" SWEET GUM, 450' LT. OF STA. 197+65 -L-, ELEV. = 102.47



LOCATION SKETCH



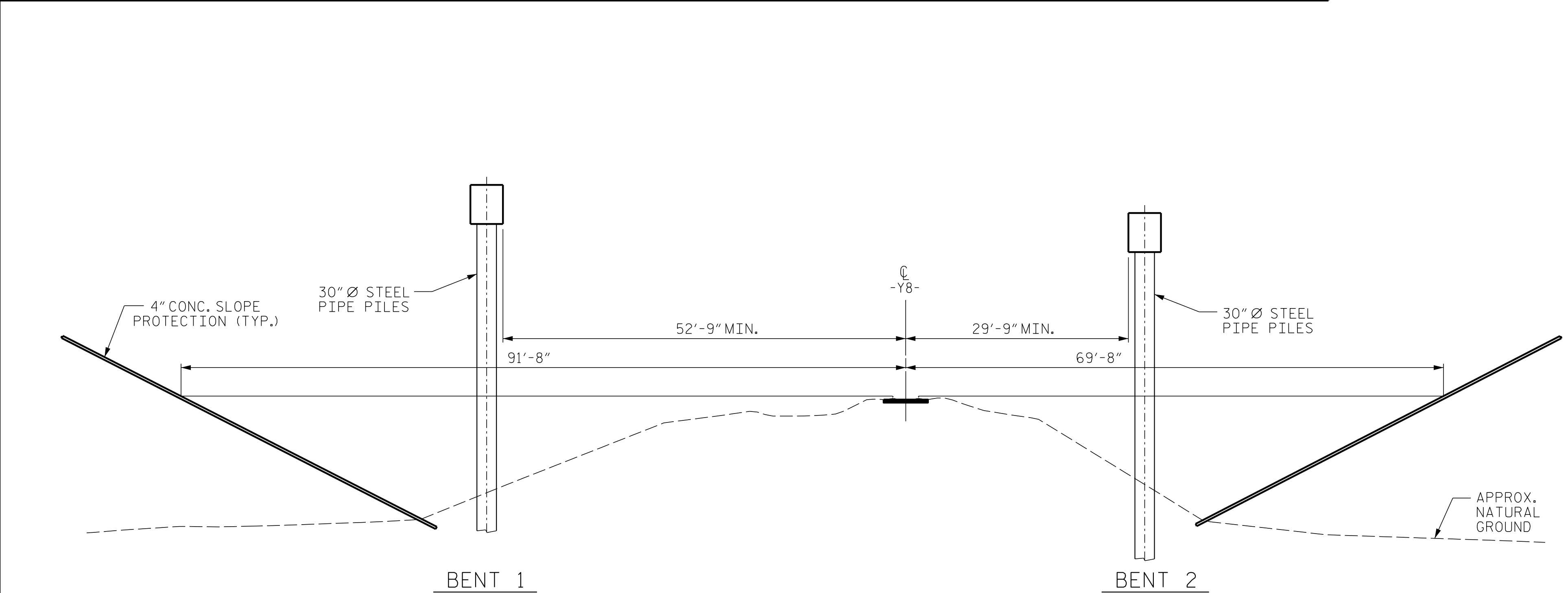
NOTES

RAILROAD EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO PERFORMING ANY WORK IN THE RAILROAD RIGHT-OF-WAY.
 ADDITIONAL EROSION CONTROL MEASURES FOR PROTECTION OF RAILROAD DITCHES MAY BE REQUIRED AS DIRECTED BY THE ENGINEER.
 NO SEPARATE PAYMENT WILL BE MADE FOR RAILROAD EROSION CONTROL MEASURES.
 LIMITS OF SILT FENCE AND FILTER FABRIC PARALLEL TO RAILROAD SHALL EXTEND A MINIMUM OF 25'-0" OUTSIDE EDGE OF SUPERSTRUCTURE OR TOE OF SLOPE ON CONSTRUCTION. A GREATER LENGTH OF SILT FENCE OR FILTER FABRIC MAY BE REQUIRED IF SO DIRECTED BY THE ENGINEER.
 FILTER FABRIC TO BE NAILED TO TIMBER RAIL TIES WITH PRIME SOURCE "GRIP CAP" OR EQUIVALENT. FILTER FABRIC ON SHOULDER TO BE SECURED AS DIRECTED BY THE ENGINEER AND RAILROAD.

TOP OF RAIL ELEVATIONS		
-Y8- (CSX SA-LINE)		
STATION	LEFT RAIL	RIGHT RAIL
8+20.29	117.74	117.71
9+01.53	118.26	118.26
9+82.26	118.72	118.73
10+00.00	118.63	118.63
10+87.93	119.31	---
11+02.75	---	119.46
12+11.80	120.37	120.34
12+96.15	121.04	121.04
13+89.68	121.81	121.81
14+76.35	122.48	122.46
15+65.81	123.25	123.24
15+79.35	123.54	123.54
16+33.02	124.04	124.07

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-

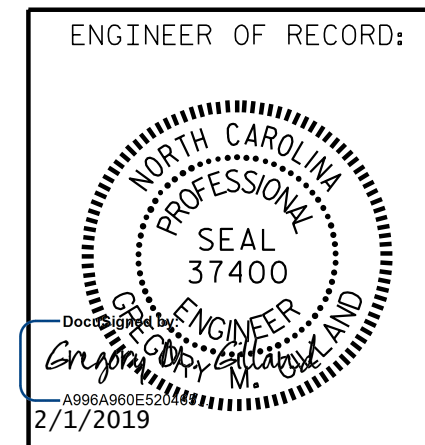
SHEET 2 OF 4



SECTION THROUGH RAILROAD

LOOKING IN DIRECTION OF INCREASING STATIONS ON RAILROAD
 (SPAN LENGTH BASED ON THIS SECTION)

DRAWN BY : D. HODGE DATE : 10/18
 CHECKED BY : G.M. GILLAND DATE : 1/19



1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

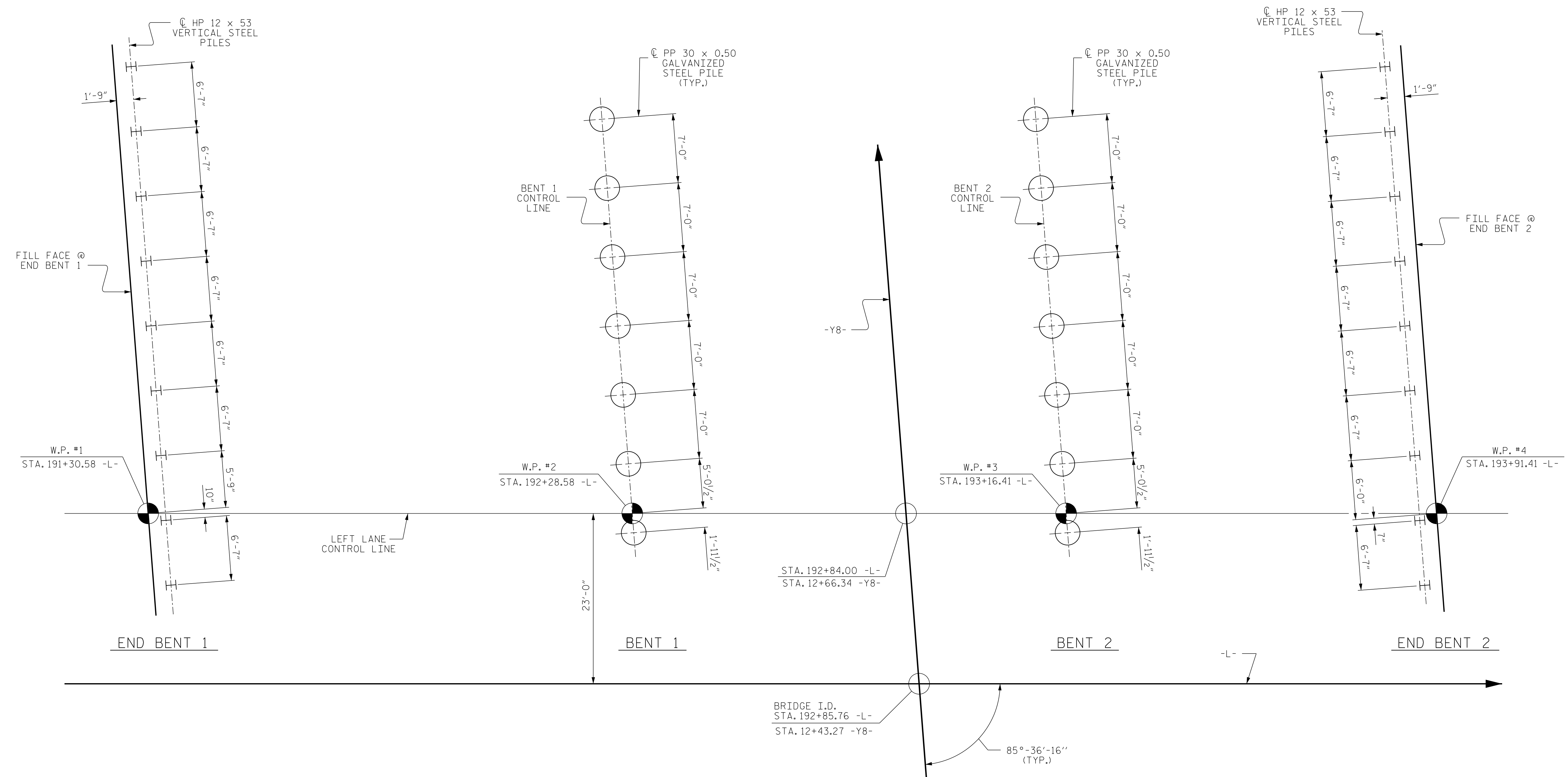
GENERAL DRAWING
 LEFT LANE BRIDGE
 ON US 158 OVER CSX SA-LINE
 BETWEEN SR 1604 & US 301

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-2
1			3			TOTAL SHEETS
2			4			38

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FOUNDATION LAYOUT

FOUNDATION NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENTS NO. 1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE.

DRIVE PILES AT END BENTS NO. 1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 185 TONS PER PILE.

PILES AT BENTS NO. 1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 245 TONS PER PILE.

DRIVE PILES AT BENTS NO. 1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 330 TONS PER PILE.

INSTALL PILES AT BENT NO. 1 TO A TIP ELEVATION NO HIGHER THAN 78.5 FT.

INSTALL PILES AT BENT NO. 2 TO A TIP ELEVATION NO HIGHER THAN 70.5 FT.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 66,300 TO 107,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENTS NO. 1 & 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

OBSERVE A 5 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENTS NO. 1 & 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

OBSERVE A 5 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT OF FINISHED GRADE AT THE APPROACHES OF THE BOTH END BENTS BEFORE BEGINNING CONSTRUCTION AT BENTS NO. 1 & 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT BENTS NO. 1 OR 2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED AT END BENTS 1 & 2. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PIPE PILE PLATES ARE REQUIRED FOR STEEL PIPE PILES AT BENTS NO. 1 & 2. USE PIPE PILE PLATES WITH A DIAMETER EQUAL TO THE PIPE PILE DIAMETER. FOR STEEL PIPE PILE PLATES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS FOR THE SETTLEMENT GAUGES REQUIRED AT END BENT NO. 1, END BENT NO. 2, INTERIOR BENT NO. 1, AND INTERIOR BENT NO. 2.

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 3 OF 4

DRAWN BY : D. HODGE DATE : 11/18
 CHECKED BY : G.M. GILLAND DATE : 12/18

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ENGINEER OF RECORD:

1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

LEFT LANE BRIDGE
 ON US 158 OVER CSX SA-LINE
 BETWEEN SR 1604 & US 301

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-3
1			3			TOTAL SHEETS
2			4			38

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF 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.

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

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

THE RAILROAD TRACK TOP OF RAIL ELEVATIONS ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE TOP OF RAIL ELEVATIONS AND REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

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

FOR INTERIOR BENTS, ONLY PARTIAL GALVANIZING OF THE PILES IS REQUIRED. SEE INTERIOR BENT SHEETS FOR REQUIRED GALVANIZED LENGTHS. PAYMENT FOR PARTIALLY GALVANIZED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR GALVANIZED STEEL PILES.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR RAILROAD PROVISIONS, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL


	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	PILE DRIVING EQUIPMENT SETUP FOR PP 30 X 0.50 GALVANIZED STEEL PILES	HP 12 x 53 STEEL PILES		PP 30 x 0.50 GALVANIZED STEEL PILES		PIPE PILE PLATES	PILE REDRIVES	CONCRETE BARRIER RAIL	72" CHAIN LINK FENCE	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	
	EACH	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	No.	LIN. FT.	EACH	EACH	No.	LIN. FT.	No.	LIN. FT.	EACH	EACH	LIN. FT.	LIN. FT.	SO. YDS.	LUMP SUM	
SUPERSTRUCTURE		12,846	13,236		LUMP SUM		15	1,285.42										518.33	504.0		LUMP SUM
END BENT No. 1				46.5		7,560			9		9	810				5				815	
BENT No. 1				40.0		4,370				7			7	819	7	4					
BENT No. 2				40.0		4,370				7			7	854	7	4					
END BENT No. 2				45.5		7,499			9		9	900				5				625	
TOTAL	2	12,846	13,236	172.0	LUMP SUM	23,799	15	1,285.42	18	14	18	1,710	14	1,673	14	18	518.33	504.0	1,440	LUMP SUM	

PROJECT NO. R-2582A

NORTHAMPTON COUNTY

STATION: 192+85.76 -L-

SHEET 4 OF 4

ENGINEER OF RECORD: 3/26/2019  Gregory M. Gilland 199808030461		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH GENERAL DRAWING LEFT LANE BRIDGE ON US 158 OVER CSX SA-LINE BETWEEN SR 1604 & US 301																			
1223 Jones Franklin Rd. Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 LICENSE NO. F-0377		REVISIONS <table border="1"> <tr> <th>NO.</th> <th>BY:</th> <th>DATE:</th> <th>NO.</th> <th>BY:</th> <th>DATE:</th> </tr> <tr> <td>1</td> <td></td> <td></td> <td>3</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> <td>4</td> <td></td> <td></td> </tr> </table>		NO.	BY:	DATE:	NO.	BY:	DATE:	1			3			2			4		
NO.	BY:	DATE:	NO.	BY:	DATE:																
1			3																		
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DRAWN BY : D. HODGE DATE : 10/18
 CHECKED BY : G.M. GILLAND DATE : 1/19

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LOAD FACTORS:

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

LOAD AND RESISTANCE FACTOR RATING (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	1.06	--	1.75	0.80	1.37	B	I	42.79	1.01	1.06	B	I	60.19	0.80	0.80	1.08	A	I	47.56	1 & 2	
	HL-93 (OPERATING)	N/A		1.76	--	1.35	0.80	1.78	B	I	42.79	1.01	1.76	A	I	86.18	N/A	0.80	--	--	--	--	1 & 2	
	HS-20 (INVENTORY)	36.000	②	1.49	53.64	1.75	0.80	1.85	B	I	42.79	1.01	1.78	B	I	77.59	0.80	0.80	1.49	A	I	47.56	1 & 2	
	HS-20 (OPERATING)	36.000		2.33	83.88	1.35	0.80	2.40	B	I	42.79	1.01	2.33	B	I	77.59	N/A	0.80	--	--	--	--	1 & 2	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.52	47.52	1.40	0.80	5.37	B	I	42.79	1.01	5.57	B	I	77.59	0.80	0.80	3.52	A	I	47.56	1 & 2
		SNGARBS2	20.000		2.55	51.00	1.40	0.80	3.93	B	I	42.79	1.01	3.90	B	I	77.59	0.80	0.80	2.55	A	I	47.56	1 & 2
		SNAGRIS2	22.000		2.39	52.58	1.40	0.80	3.70	B	I	42.79	1.01	3.60	B	I	77.59	0.80	0.80	2.39	A	I	47.56	1 & 2
		SNCOTTS3	27.250		1.75	47.69	1.40	0.80	2.67	B	I	42.79	1.01	2.73	B	I	77.59	0.80	0.80	1.75	A	I	47.56	1 & 2
		SNAGGRS4	34.925		1.44	50.29	1.40	0.80	2.20	B	I	42.79	1.01	2.23	B	I	77.59	0.80	0.80	1.44	A	I	47.56	1 & 2
		SNS5A	35.550		1.40	49.77	1.40	0.80	2.16	B	I	42.79	1.01	2.25	B	I	77.59	0.80	0.80	1.40	A	I	47.56	1 & 2
		SNS6A	39.950		1.28	51.14	1.40	0.80	1.97	B	I	42.79	1.01	2.03	B	I	77.59	0.80	0.80	1.28	A	I	47.56	1 & 2
		SNS7B	42.000		1.22	51.24	1.40	0.80	1.88	B	I	42.79	1.01	1.98	B	I	77.59	0.80	0.80	1.22	A	I	47.56	1 & 2
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.56	51.48	1.40	0.80	2.40	B	I	42.79	1.01	2.43	B	I	77.59	0.80	0.80	1.56	A	I	47.56	1 & 2
		TNT4A	33.075		1.56	51.60	1.40	0.80	2.41	B	I	42.79	1.01	2.39	B	I	77.59	0.80	0.80	1.56	A	I	47.56	1 & 2
		TNT6A	41.600		1.27	52.83	1.40	0.80	1.96	B	I	42.79	1.01	2.10	B	I	77.59	0.80	0.80	1.27	A	I	47.56	1 & 2
		TNT7A	42.000		1.27	53.34	1.40	0.80	1.96	B	I	42.79	1.01	2.06	B	I	77.59	0.80	0.80	1.27	A	I	47.56	1 & 2
		TNT7B	42.000		1.30	54.60	1.40	0.80	2.02	B	I	42.79	1.01	1.94	B	I	77.59	0.80	0.80	1.30	A	I	47.56	1 & 2
		TNAGRIT4	43.000		1.24	53.32	1.40	0.80	1.93	B	I	42.79	1.01	1.88	B	I	77.59	0.80	0.80	1.24	A	I	47.56	1 & 2
TNAGT5A	45.000		1.18	53.10	1.40	0.80	1.82	B	I	42.79	1.01	1.84	B	I	77.59	0.80	0.80	1.18	A	I	47.56	1 & 2		
TNAGT5B	45.000	③	1.17	52.65	1.40	0.80	1.80	B	I	42.79	1.01	1.78	B	I	77.59	0.80	0.80	1.17	A	I	47.56	1 & 2		

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. END RESTRAINT FOR INTEGRAL END BENTS IS NOT CONSIDERED FOR LOAD RATING ANALYSIS.

2. LOAD RATING ASSUMES SIMPLE SPAN CONDITIONS PER NCDOT BRIDGE DESIGN MANUAL, CHAPTER 6.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

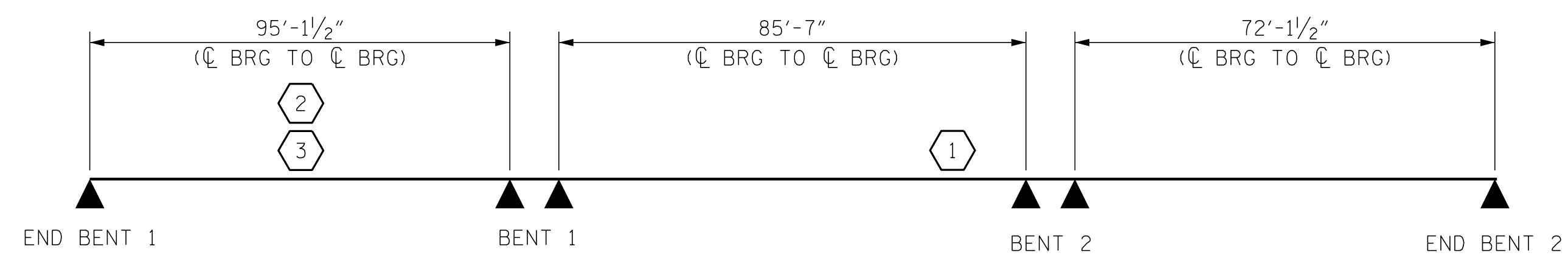
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
E - EXTERIOR LEFT AND RIGHT GIRDER



LRFR SUMMARY

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 192+85.76 -L-

ENGINEER OF RECORD:

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS (NON-INTERSTATE TRAFFIC) (LEFT LANE)

REVISIONS

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

SHEET NO. S3-5
TOTAL SHEETS 38

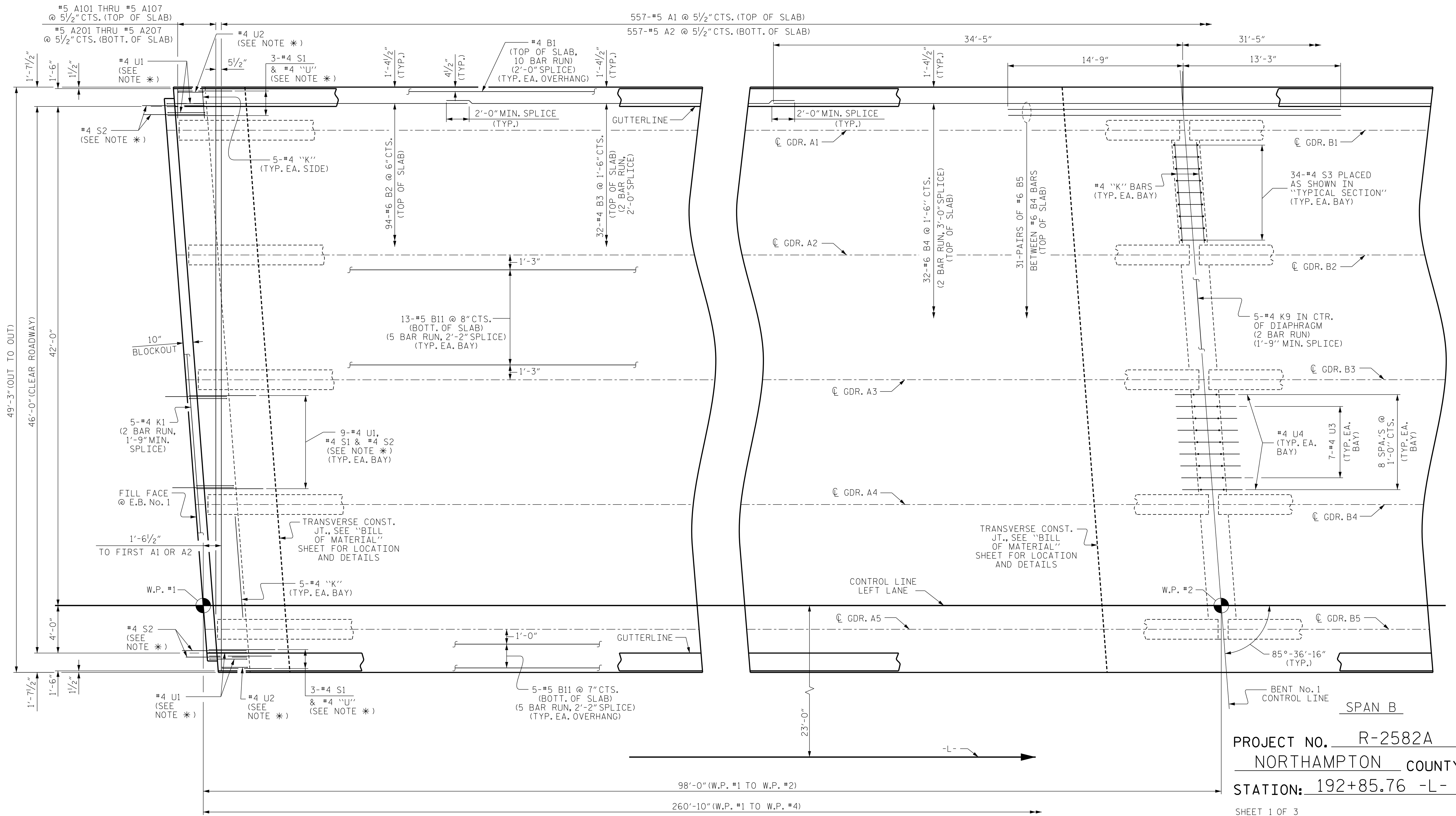
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

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ASSEMBLED BY : G.M. GILLAND	DATE : 11-18
CHECKED BY : B.C. HUNT	DATE : 11-18
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

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 3/25/2019 8:03:28 AM



PARTIAL PLAN OF SPAN

FOR LOCATION OF INTERMEDIATE DIAPHRAGMS, SEE "FRAMING PLAN" SHEET.

FOR CONCRETE BARRIER RAIL DETAILS AND REINFORCING STEEL, SEE "CONCRETE BARRIER RAIL" SHEETS.

* THESE BARS ARE TO MATCH SPACING OF THE #4 "V" BARS IN END BENT.

DRAWN BY: D. HODGE DATE: 10/18
 CHECKED BY: T. KOCH DATE: 10/18

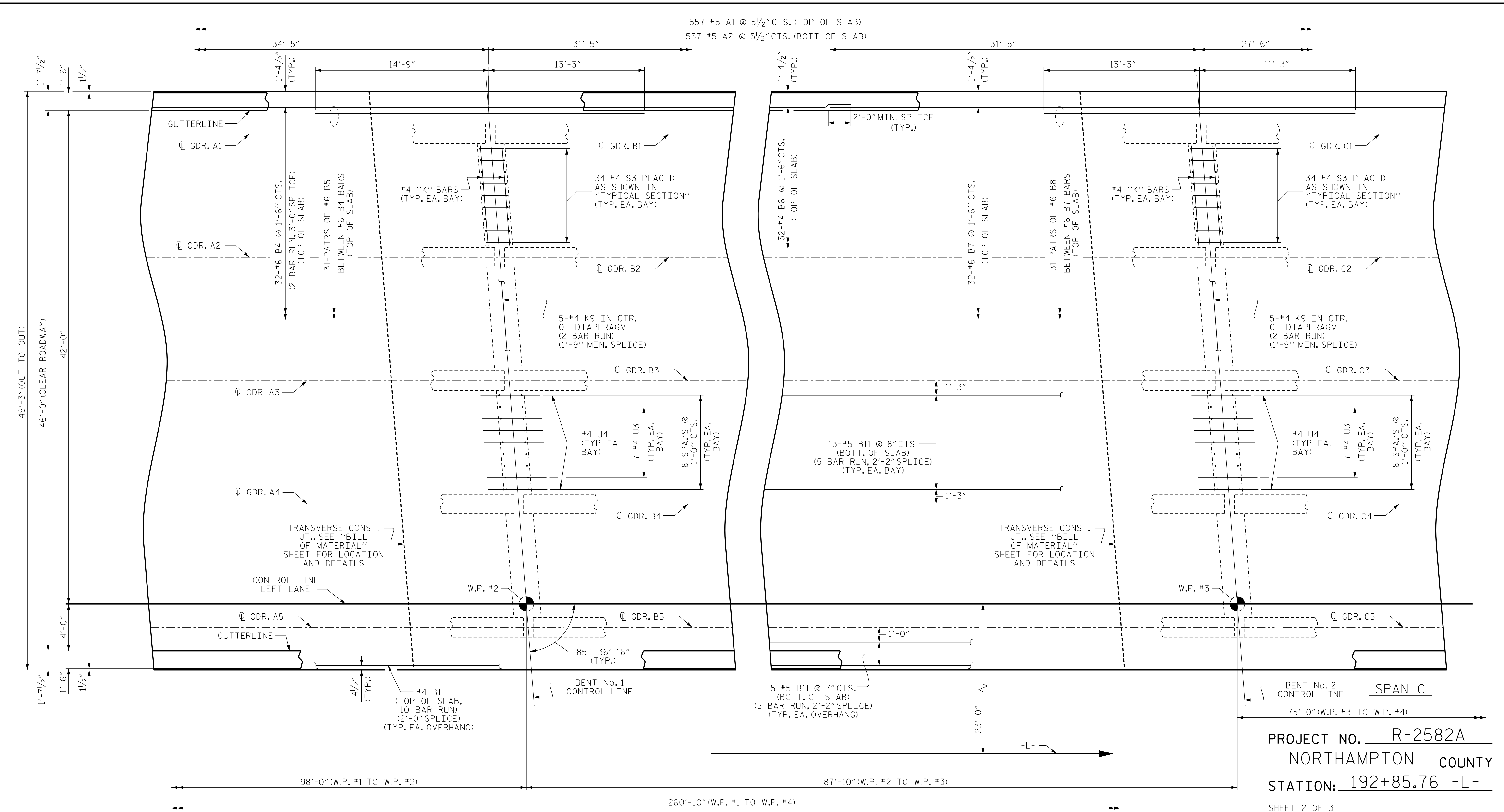
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD:
 3/26/2019

 Gregory M. Gillingham
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
SUPERSTRUCTURE					
PLAN OF SPANS					
(LEFT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S3-9
TOTAL SHEETS					38

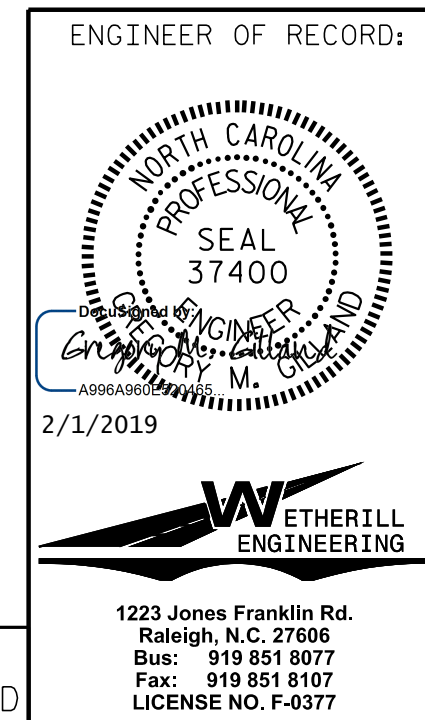
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 1/31/2019 10:40:24 AM



PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 2 OF 3

PARTIAL PLAN OF SPAN

FOR LOCATION OF INTERMEDIATE DIAPHRAGMS, SEE "FRAMING PLAN" SHEET.
 FOR CONCRETE BARRIER RAIL DETAILS AND REINFORCING STEEL, SEE "CONCRETE BARRIER RAIL" SHEETS.



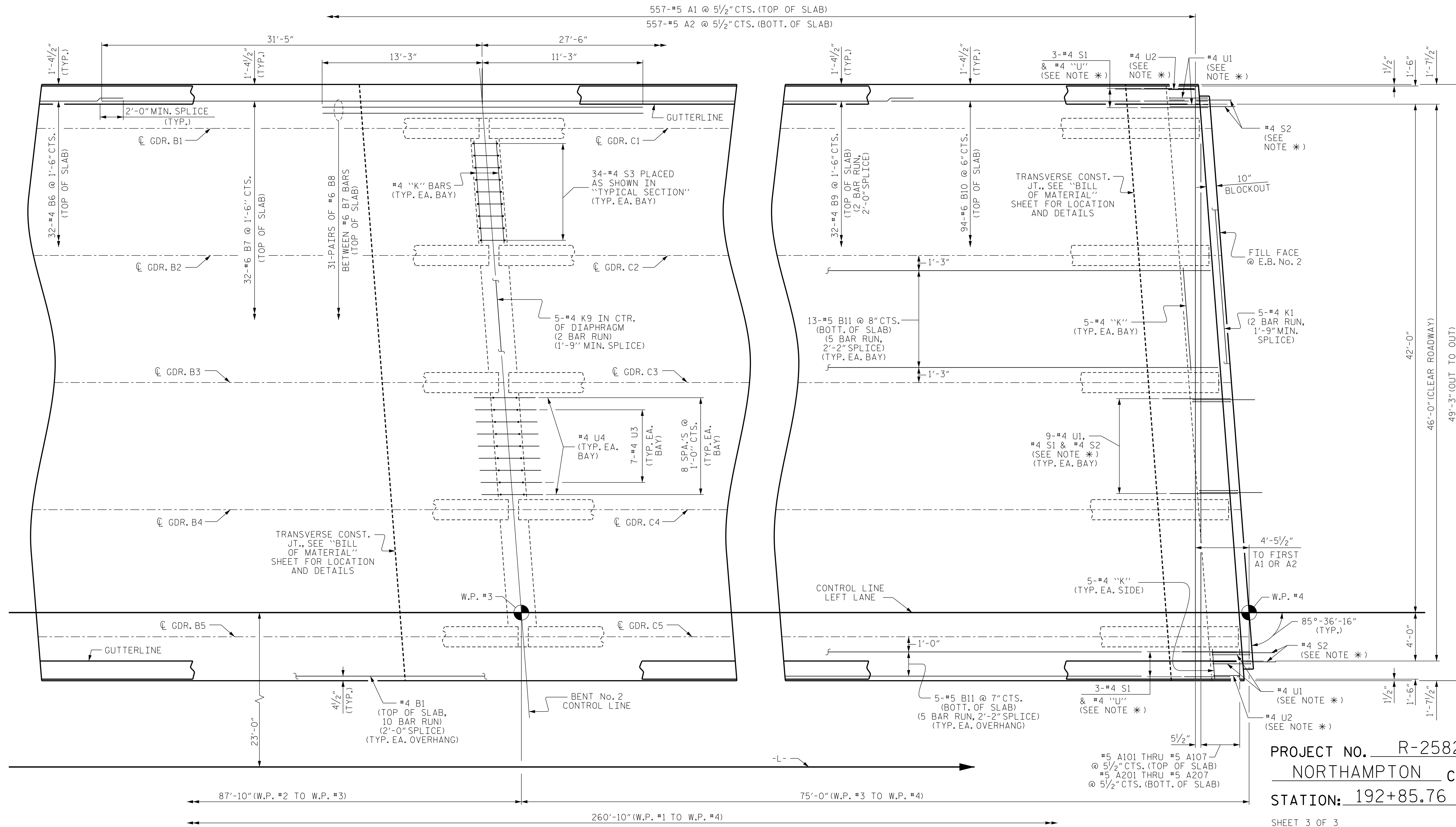
ENGINEER OF RECORD:		STATE OF NORTH CAROLINA	
		DEPARTMENT OF TRANSPORTATION	
		RALEIGH	
SUPERSTRUCTURE			
PLAN OF SPANS			
(LEFT LANE)			
REVISIONS			
NO.	BY:	DATE:	SHEET NO.
1			33-10
2			TOTAL SHEETS 38

DRAWN BY: D. HODGE DATE: 10/18
 CHECKED BY: T. KOCH DATE: 10/18

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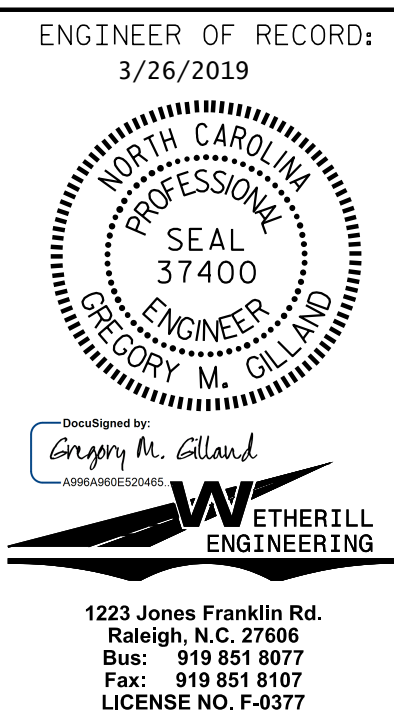
PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 3 OF 3

PARTIAL PLAN OF SPAN

FOR LOCATION OF INTERMEDIATE DIAPHRAGMS, SEE "FRAMING PLAN" SHEET.

FOR CONCRETE BARRIER RAIL DETAILS AND REINFORCING STEEL, SEE "CONCRETE BARRIER RAIL" SHEETS.

* THESE BARS ARE TO MATCH SPACING OF THE #4 "V" BARS IN END BENT.



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPANS
 (LEFT LANE)

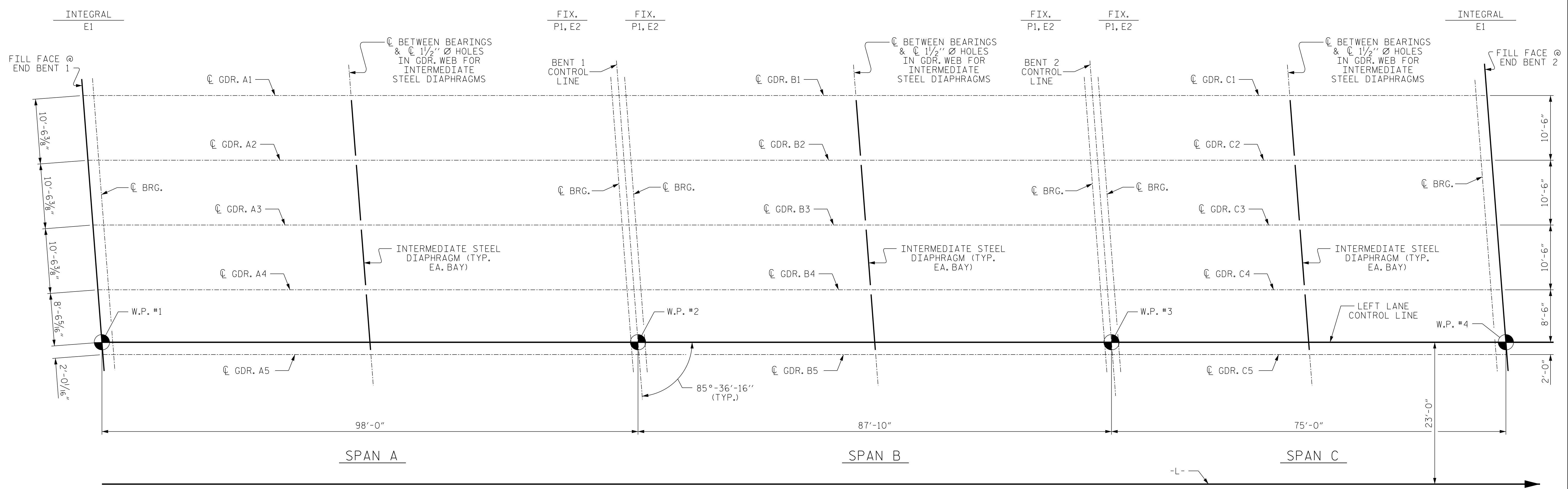
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 CHECKED BY: T. KOCH DATE: 10/18

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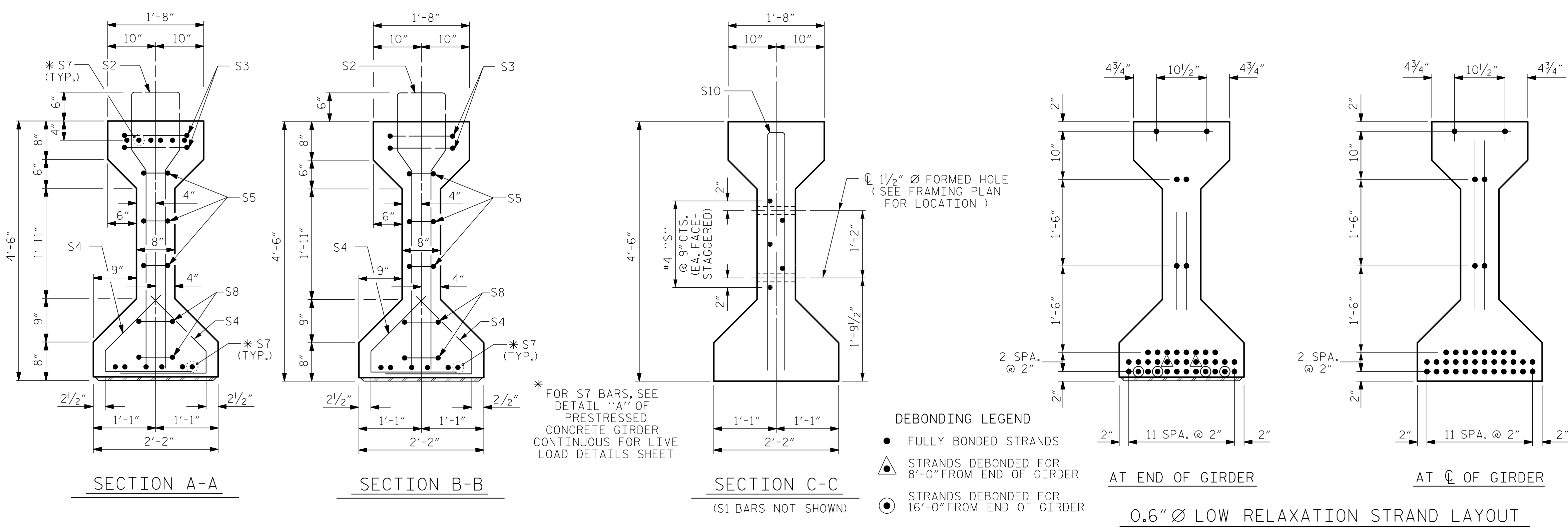


PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-

ENGINEER OF RECORD:  ETHERILL ENGINEERING		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE GIRDER LAYOUT (LEFT LANE)	
REVISIONS			
NO.	BY:	DATE:	NO.
1			3
2			4
			SHEET NO. S-12 TOTAL SHEETS 38

DRAWN BY : D. HODGE DATE : 10/18
 CHECKED BY : G.M. GILLAND DATE : 11/18

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UNLESS ALL SIGNATURES COMPLETED



- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - △ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 16'-0" FROM END OF GIRDER



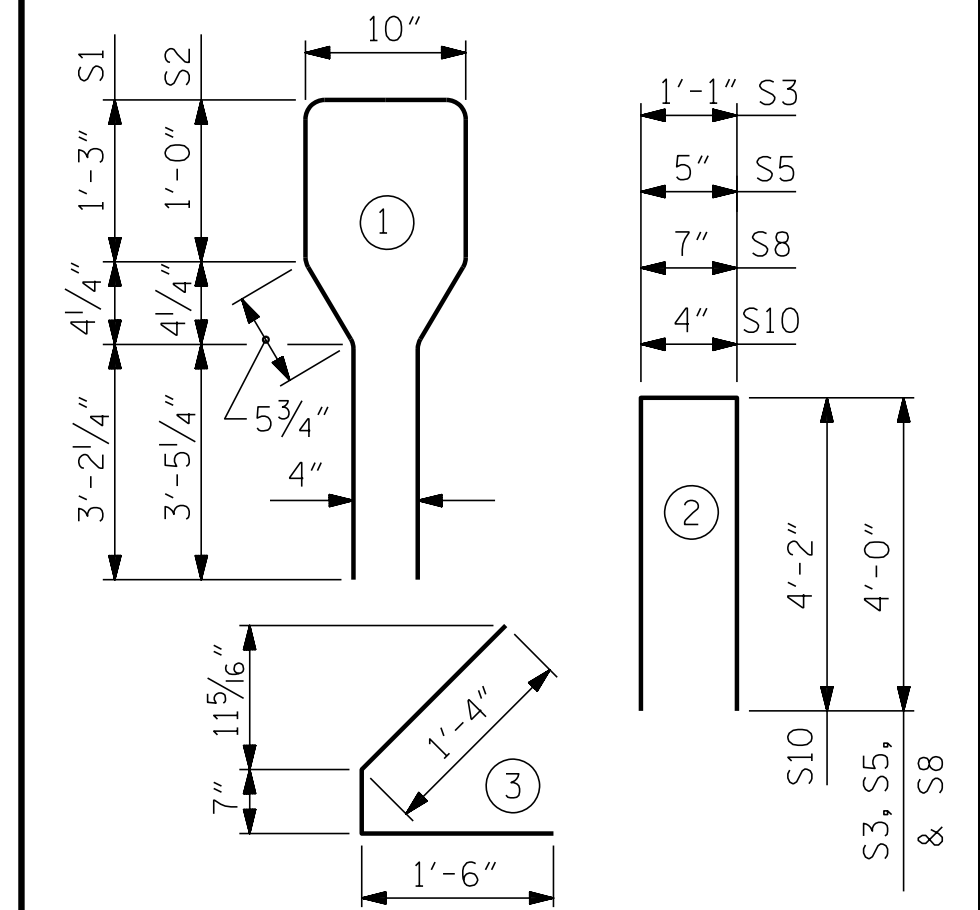
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	74	#4	1	10'-8"	527
S2	14	#6	1	10'-8"	224
S3	4	#4	2	9'-1"	24
S4	68	#4	3	3'-5"	155
S5	6	#4	2	8'-5"	34
* S7	18	#5	STR	3'-8"	69
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23
S13	1	#3	STR	1'-4"	1

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

BAR TYPES

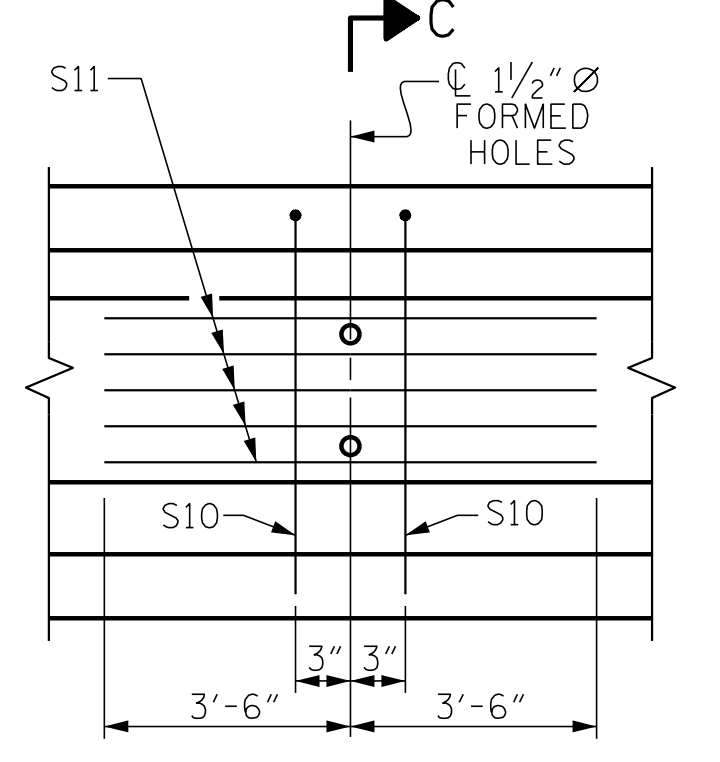
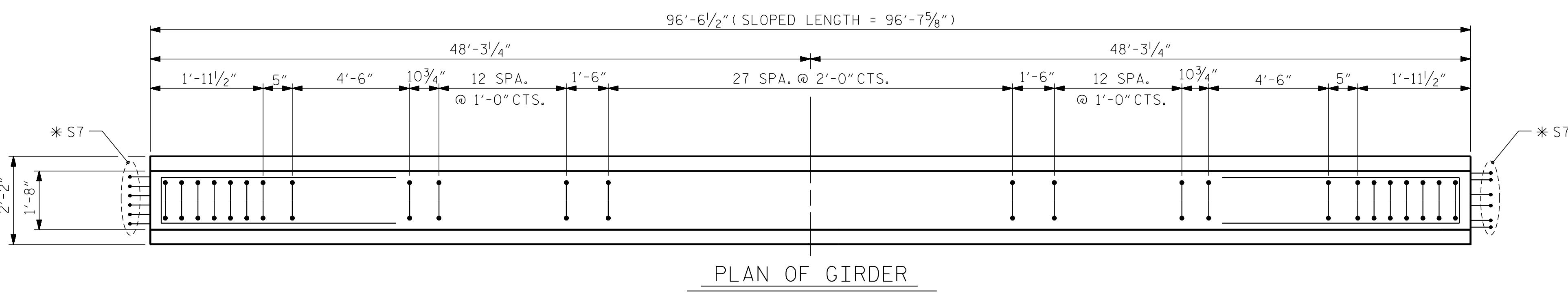
ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

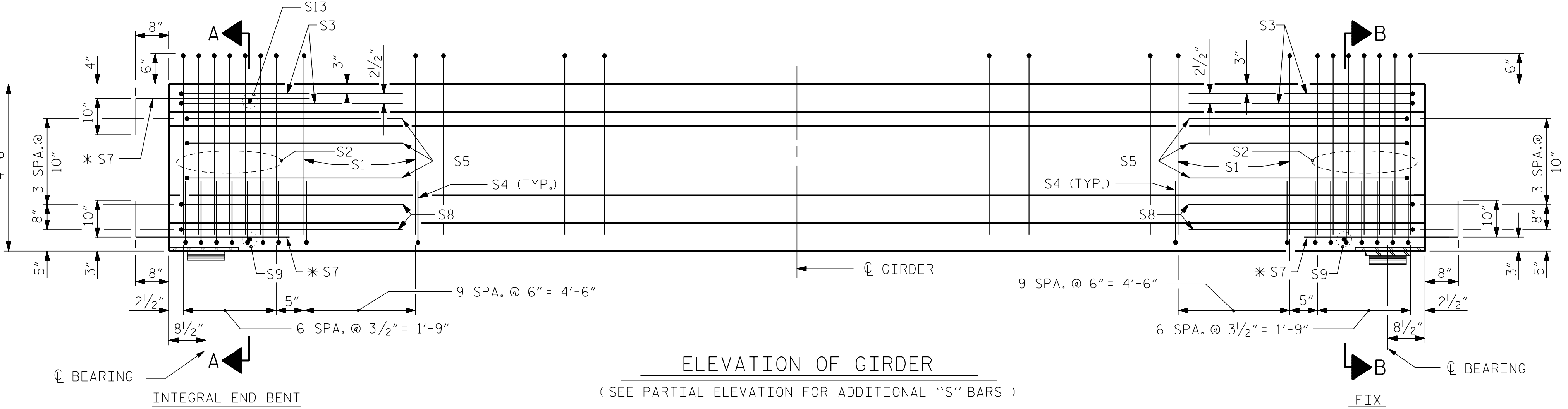
REINFORCING STEEL	9000 PSI CONCRETE	0.6" Ø L. R. STRANDS
1,099	19.6	38

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
5	96'-6 1/2"	482.71



PARTIAL ELEVATION

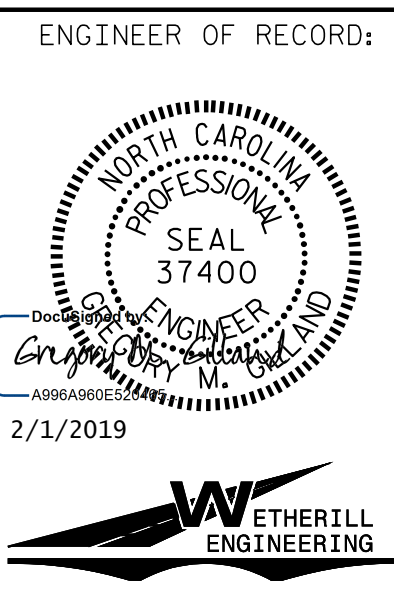
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDERS



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 1 OF 5



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

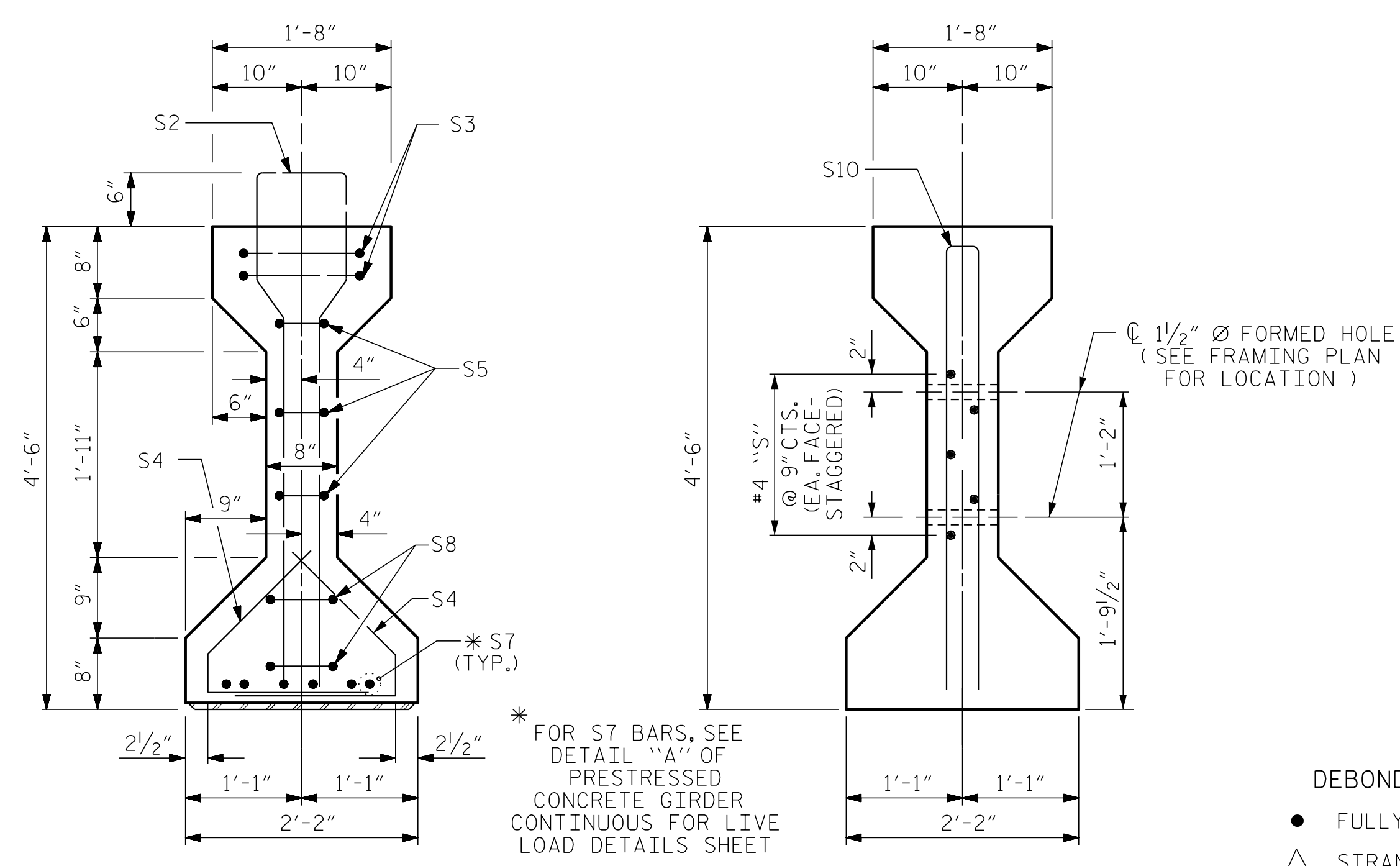
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NO.	BY:	DATE:	NO.	BY:	DATE:
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2			4		

ASSEMBLED BY : D. HODGE	DATE : 10/18
CHECKED BY : G.M. GILLAND	DATE : 11/18
DRAWN BY : ELR 8/91	REV. 10/1/11 MAA/CM
CHECKED BY : GRP 8/91	REV. 1/15 MAA/TMG
	REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

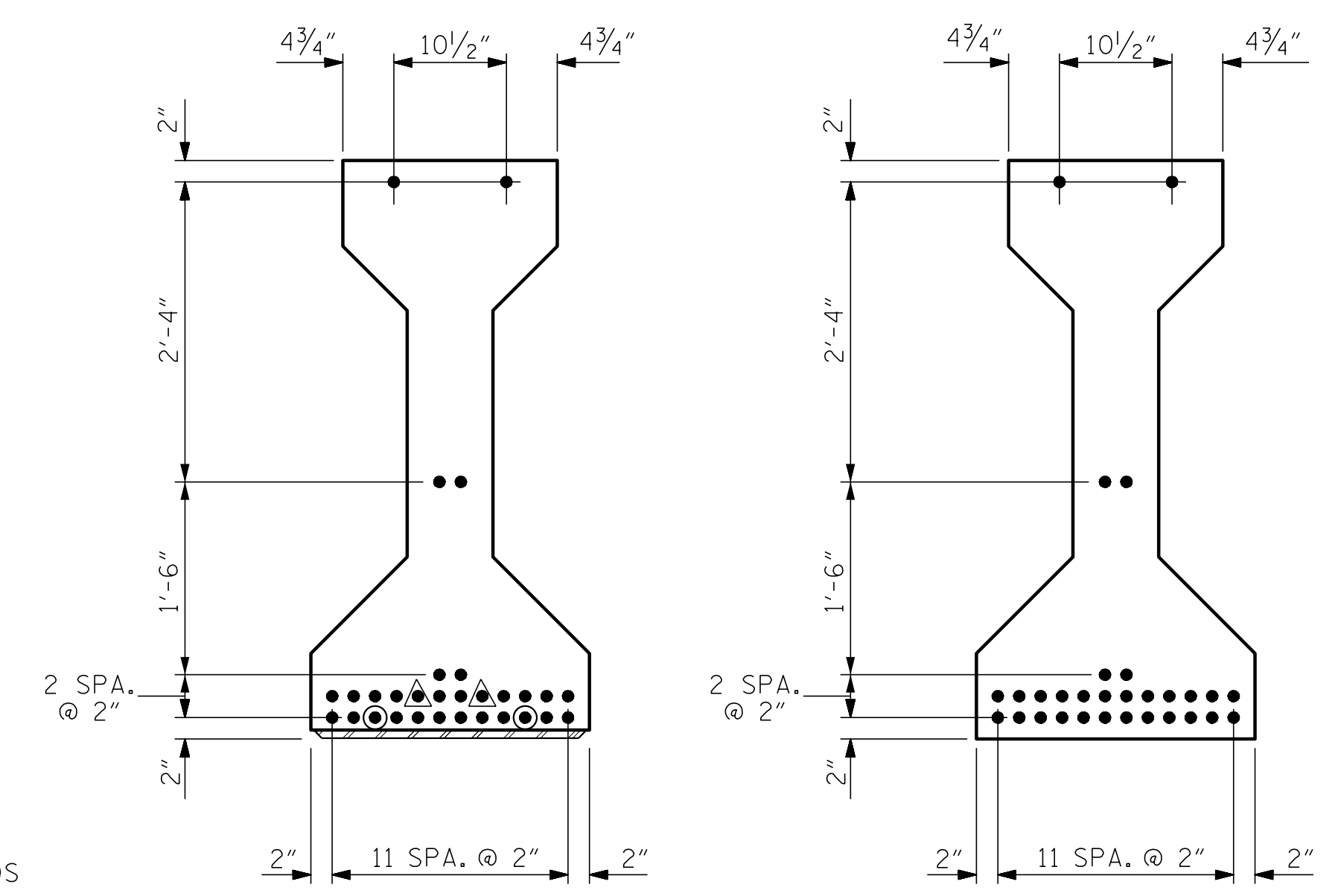
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 Fax: 919 851 8107
 LICENSE NO. F-0377

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

- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - ▲ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
 - ⊙ STRANDS DEBONDED FOR 16'-0" FROM END OF GIRDER



0.6" Ø LOW RELAXATION STRAND LAYOUT

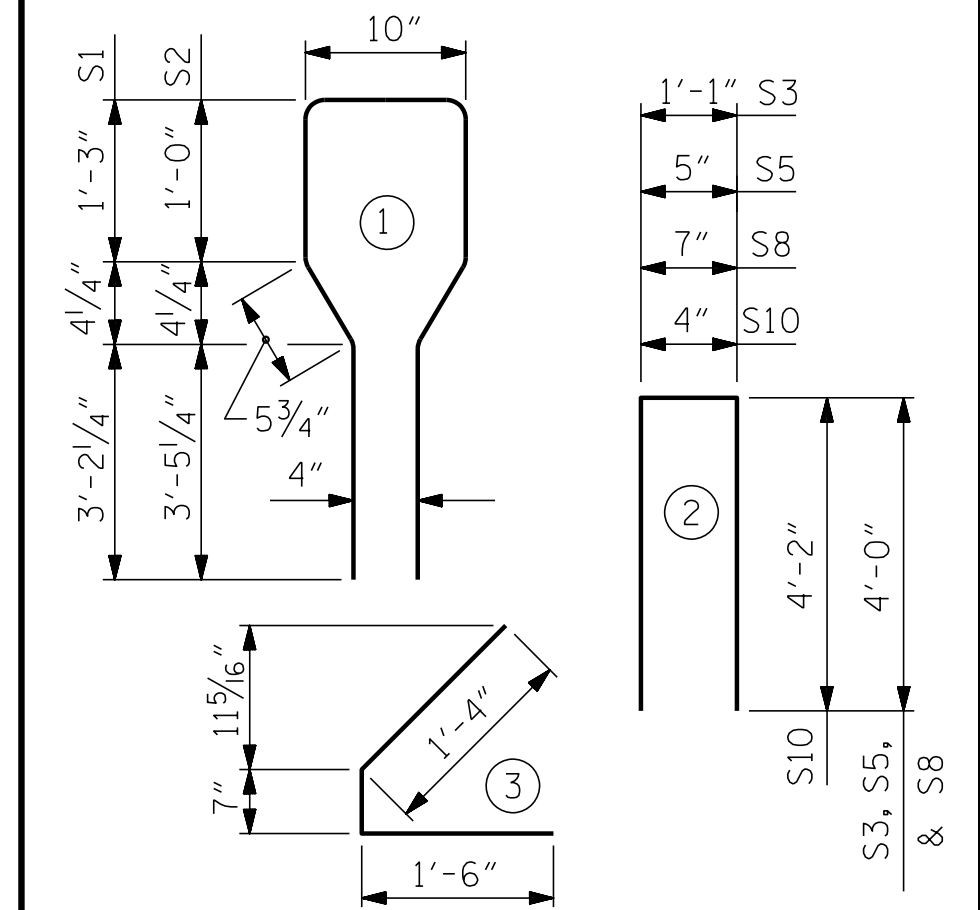
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	72	#4	1	10'-8"	513
S2	12	#6	1	10'-8"	192
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
* S7	12	#5	STR	3'-8"	46
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23

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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT

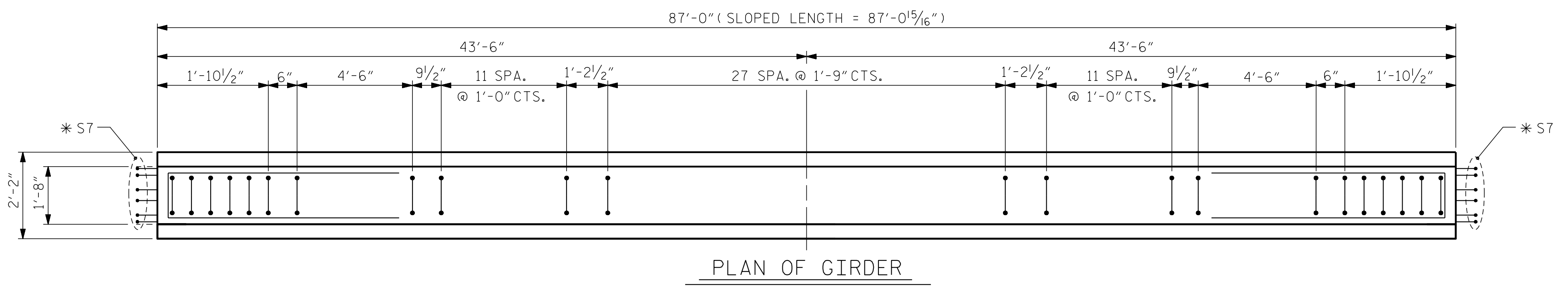


QUANTITIES FOR ONE GIRDER

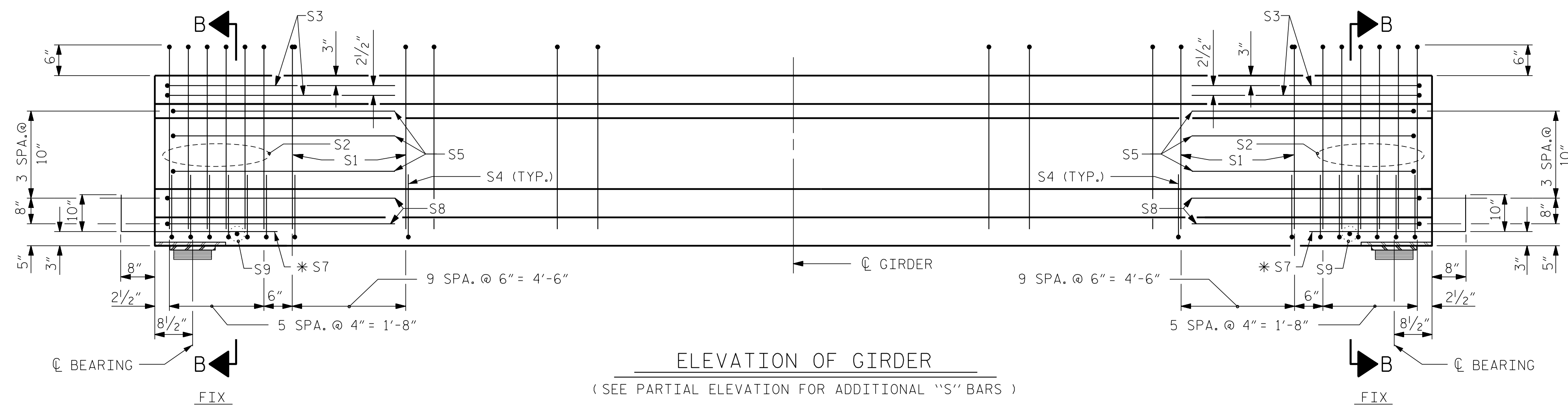
	REINFORCING STEEL	7000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
	1020	17.7	30

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5	87'-0"	435.00

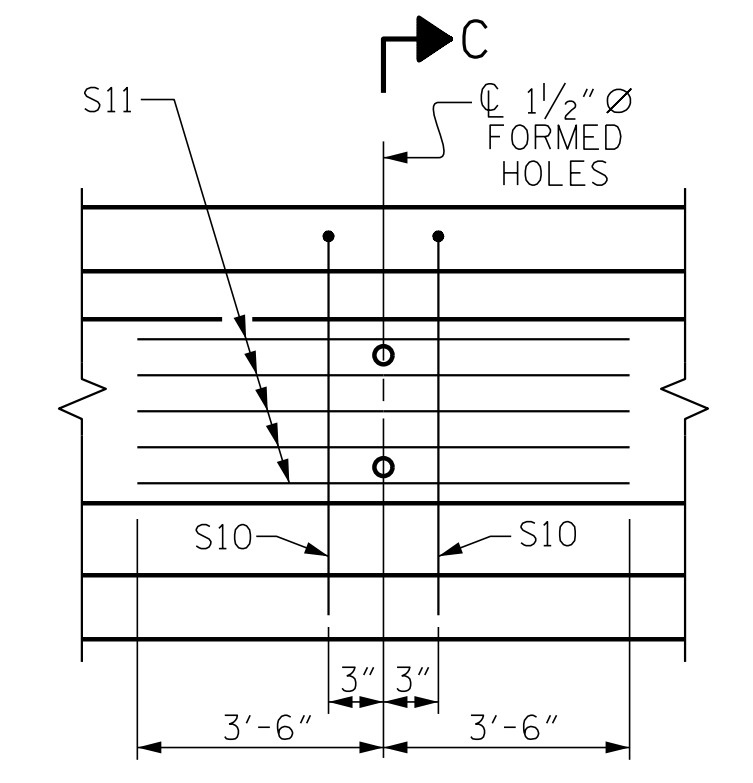


PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

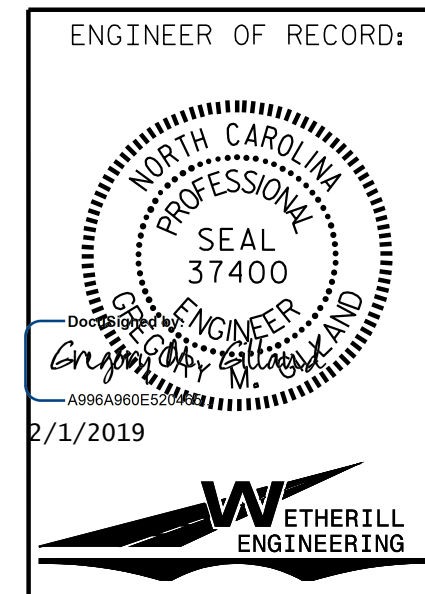


PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDERS

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 192+85.76 -L-

SHEET 2 OF 5



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
(LEFT LANE)
(SPAN B)

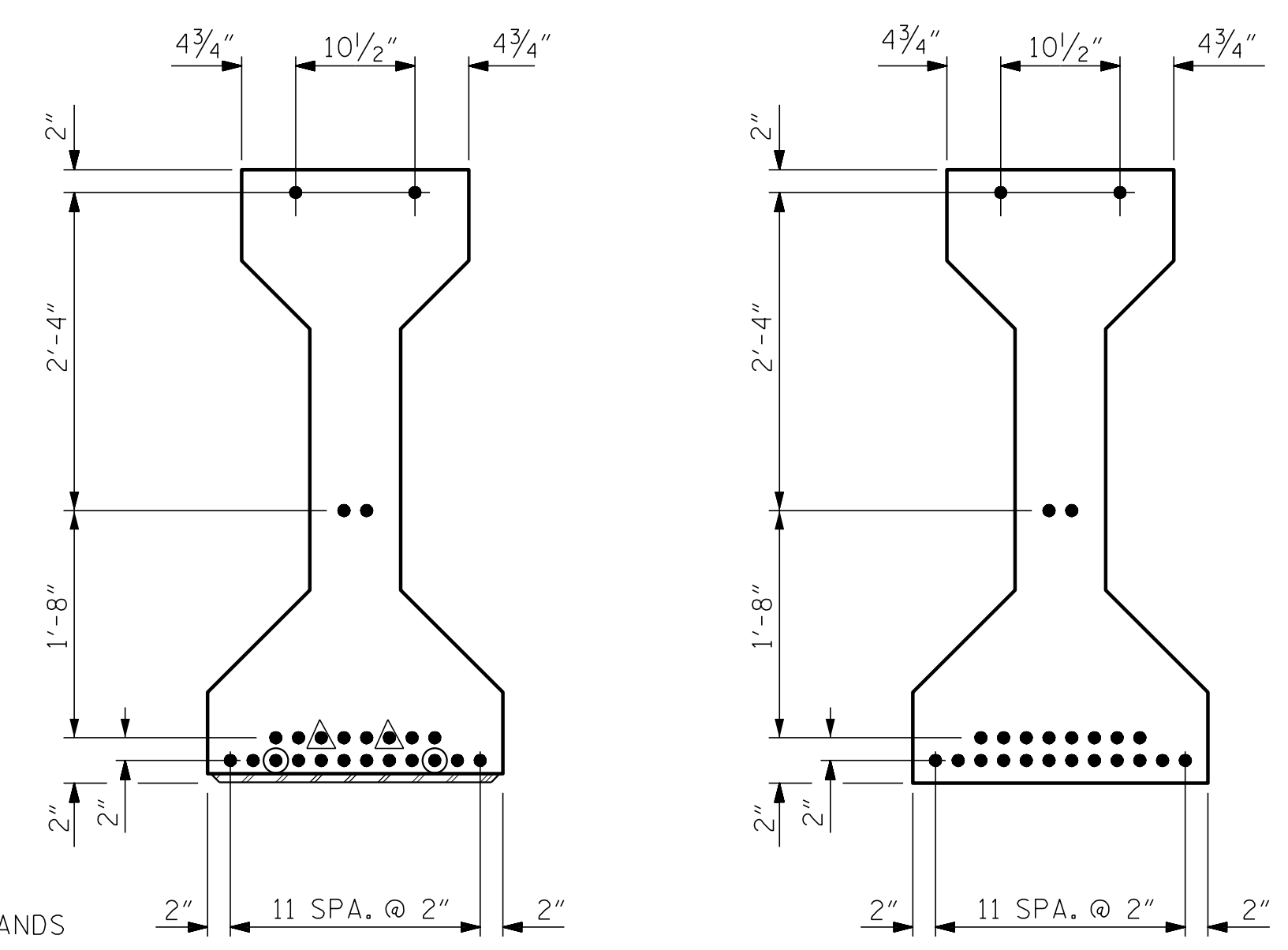
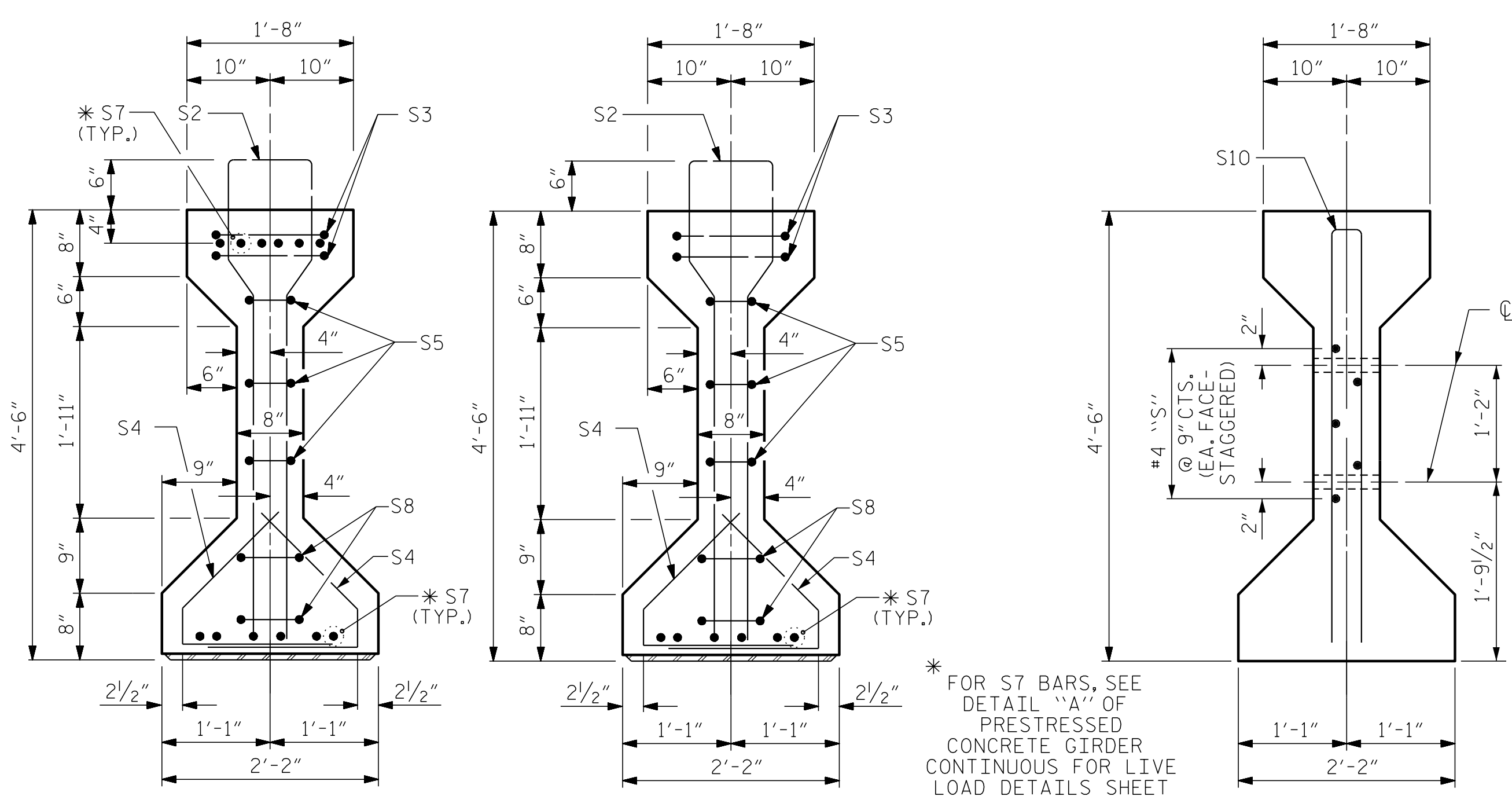
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NO.	BY:	DATE:	TOTAL SHEETS
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2			
3			
4			

ASSEMBLED BY : D. HODGE	DATE : 10/18
CHECKED BY : G.M. GILLAND	DATE : 11/18
DRAWN BY : ELR 8/91	REV. 10/1/11 MAA/CM
CHECKED BY : GRP 8/91	REV. 1/15 MAA/TMG
	REV. 12/17 MAA/THC

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 1/31/2019 10:46:07 AM



- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - ▲ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
 - ◎ STRANDS DEBONDED FOR 16'-0" FROM END OF GIRDER

0.6" Ø L. R. GRADE 270 STRANDS

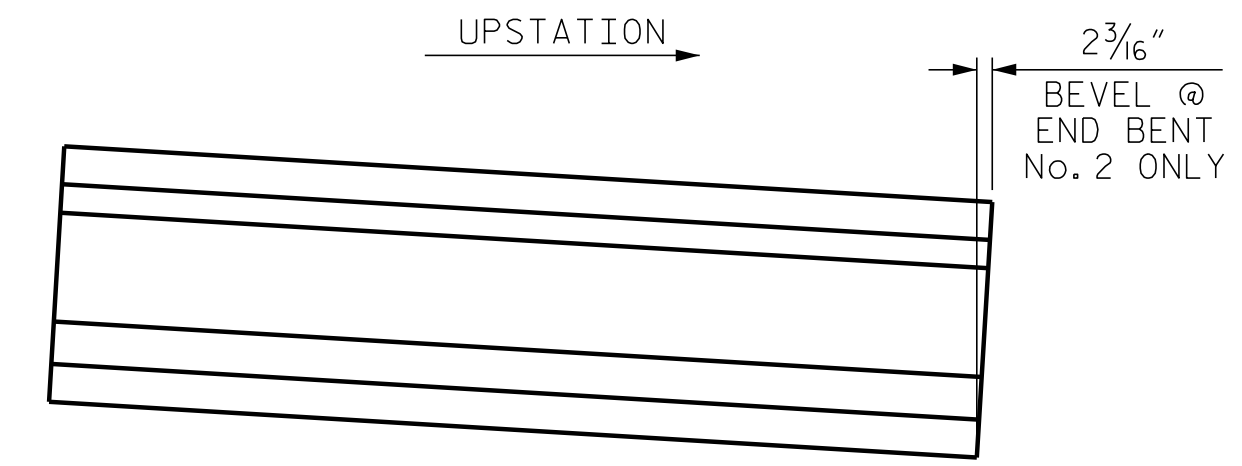
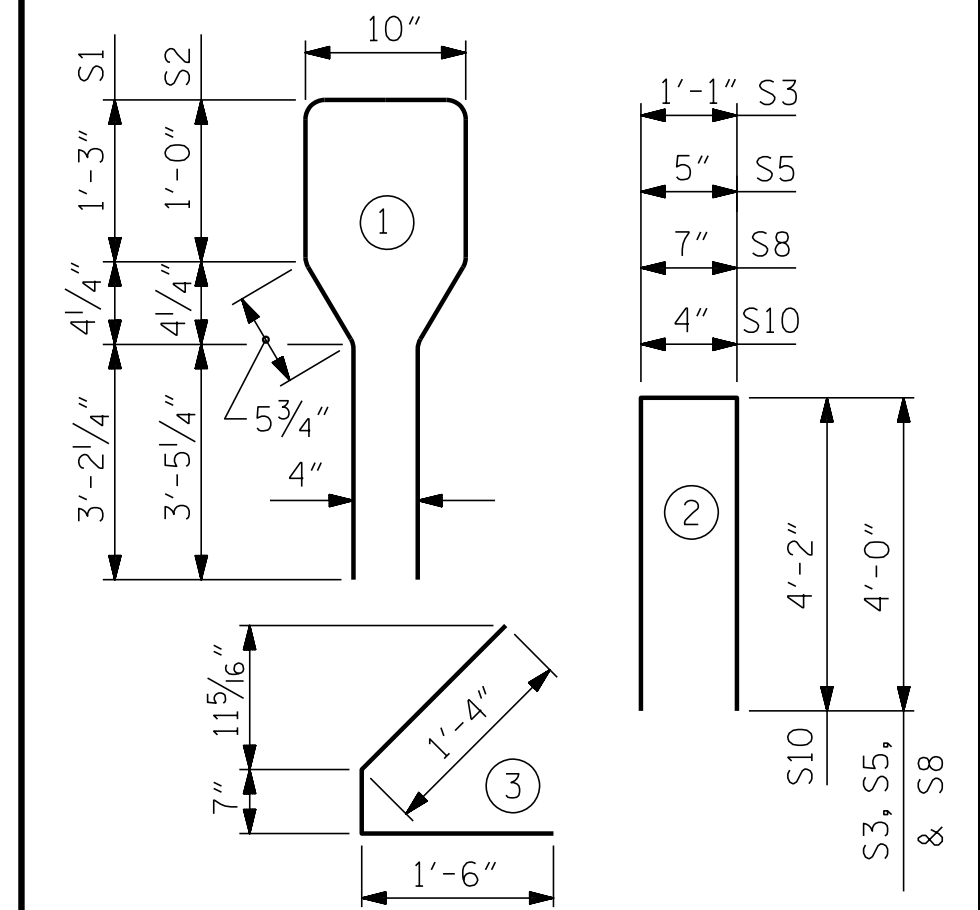
AREA (SQ. INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

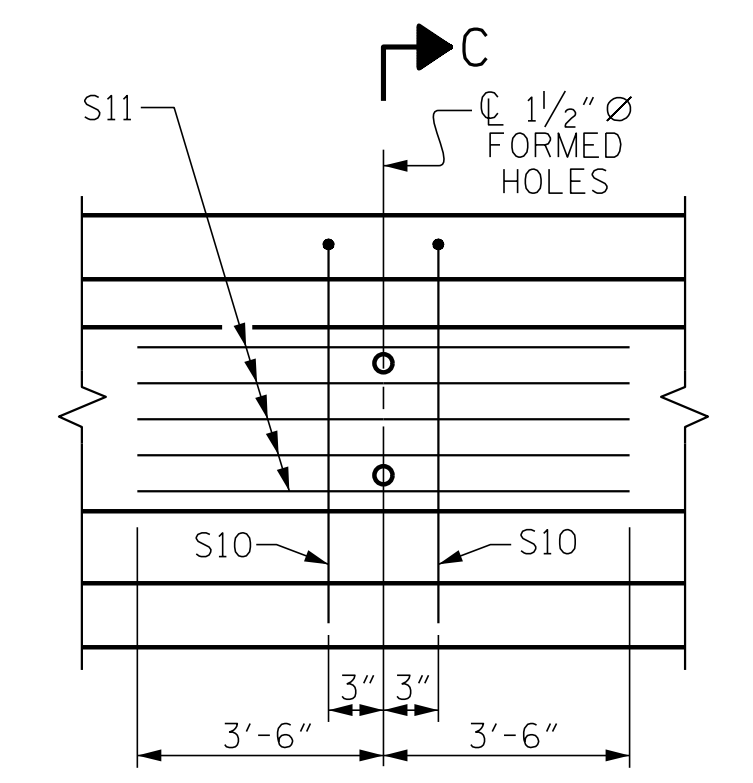
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	66	#4	1	10'-8"	470
S2	12	#6	1	10'-8"	192
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
* S7	18	#5	STR	3'-8"	69
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23
S13	1	#3	STR	1'-4"	1

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

BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT



ELEVATION
SHOWING BEVELLED END OF GIRDERS



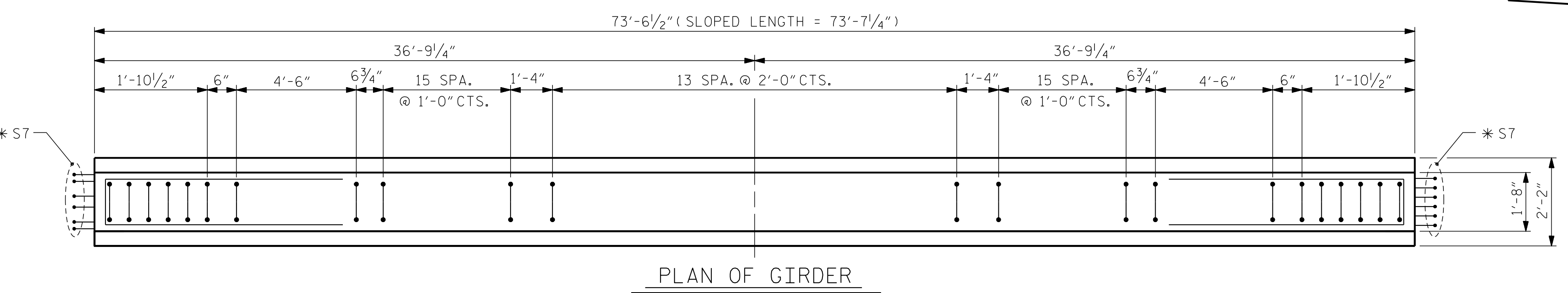
PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDERS

QUANTITIES FOR ONE GIRDER

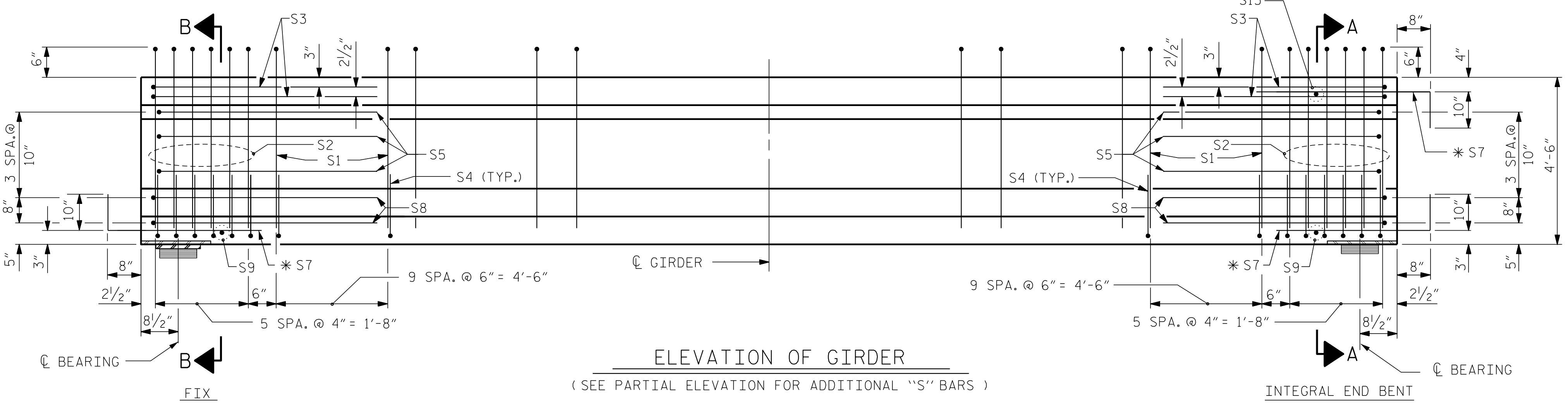
REINFORCING STEEL (LB.)	5000 PSI CONCRETE (C.Y.)	0.6" Ø L. R. STRANDS (No.)
1,001	14.9	24

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5	73'-6 1/2"	367.71



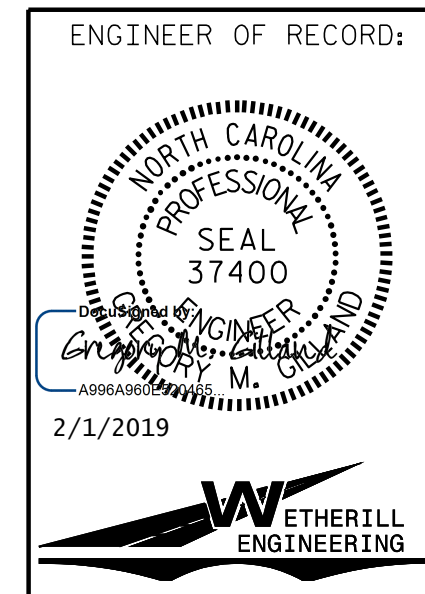
PLAN OF GIRDER



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

INTEGRAL END BENT

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 3 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 AASHTO TYPE IV
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 (LEFT LANE)
 (SPAN C)

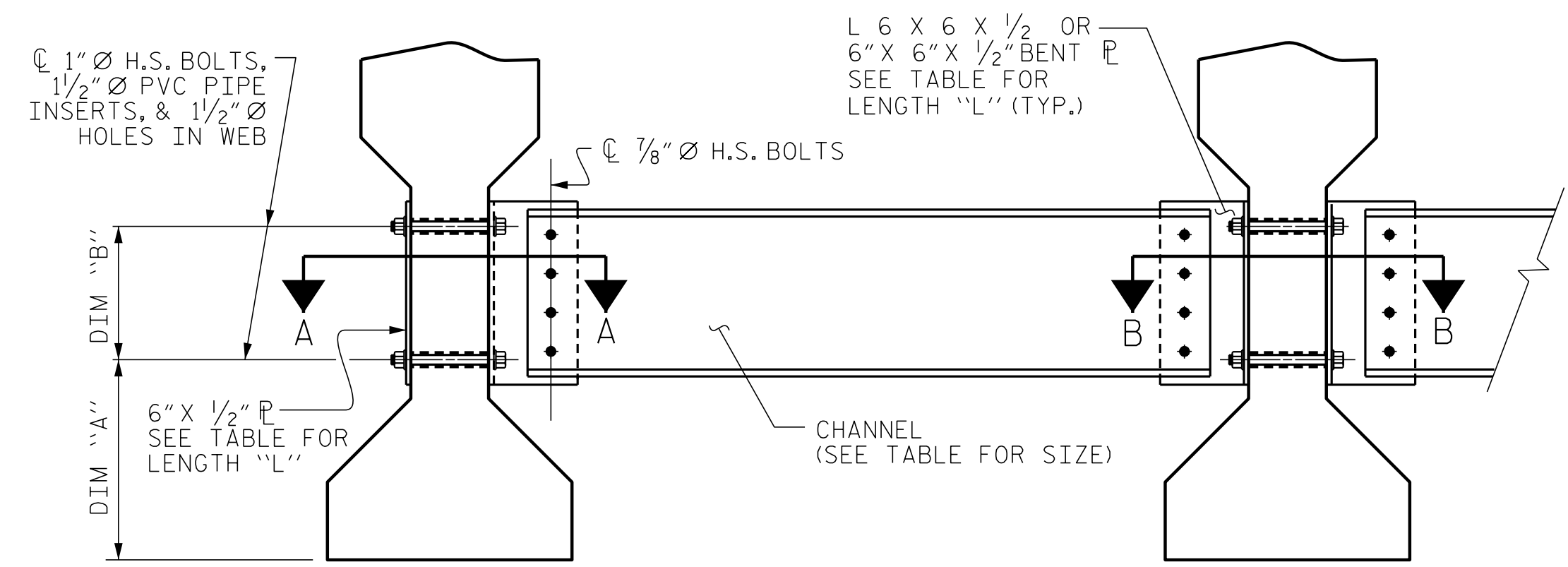
ASSEMBLED BY : D. HODGE	DATE : 10/18
CHECKED BY : G.M. GILLAND	DATE : 11/18
DRAWN BY : ELR 8/91	REV. 10/11/11 MAA/CM
CHECKED BY : GRP 8/91	REV. 1/15 MAA/TMG
	REV. 12/17 MAA/THC

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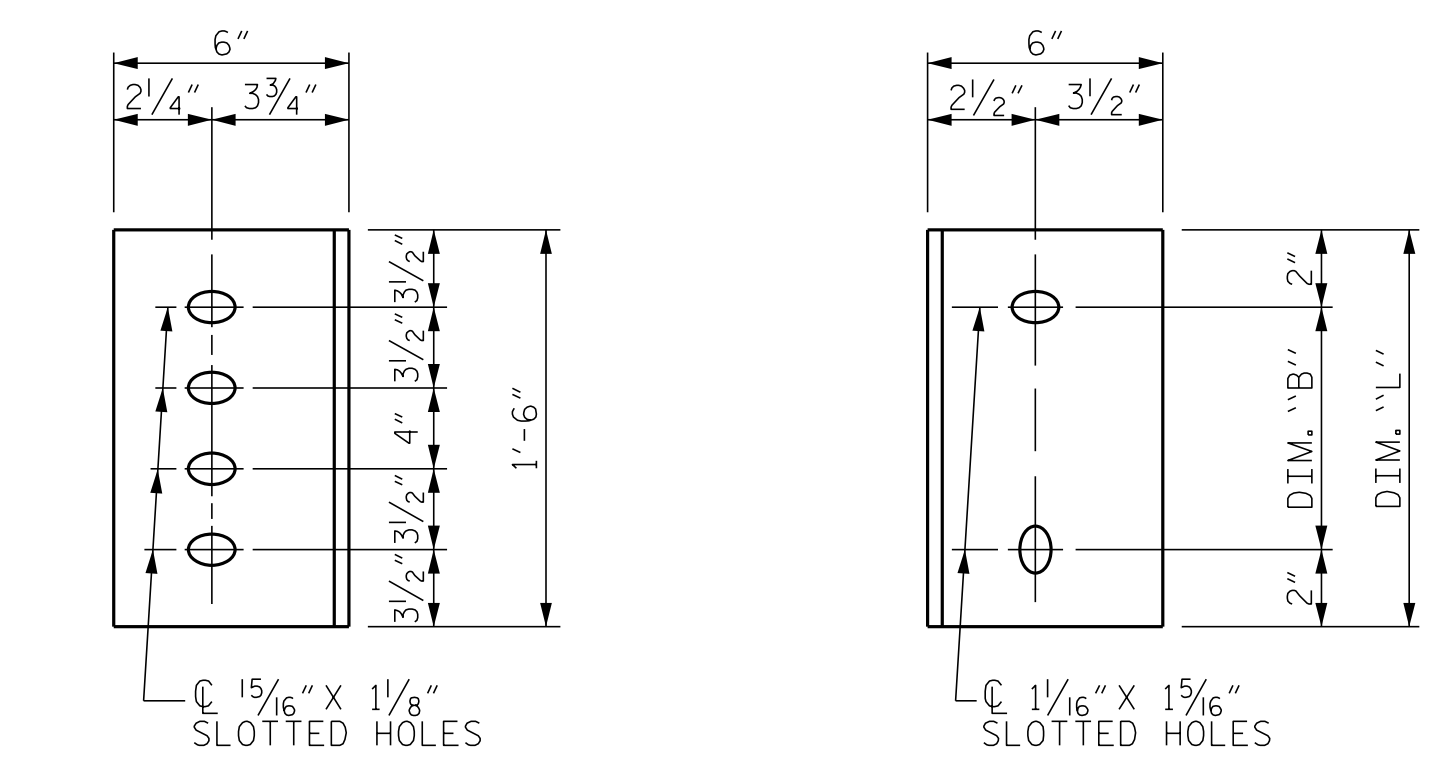
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NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					38

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EXTERIOR GIRDER INTERIOR GIRDER
 PART SECTION AT INTERMEDIATE DIAPHRAGM
 (TYPE IV GIRDER SHOWN)



DIAPHRAGM FACE (TYPE IV GDR.) WEB FACE
 CONNECTOR PLATE DETAILS

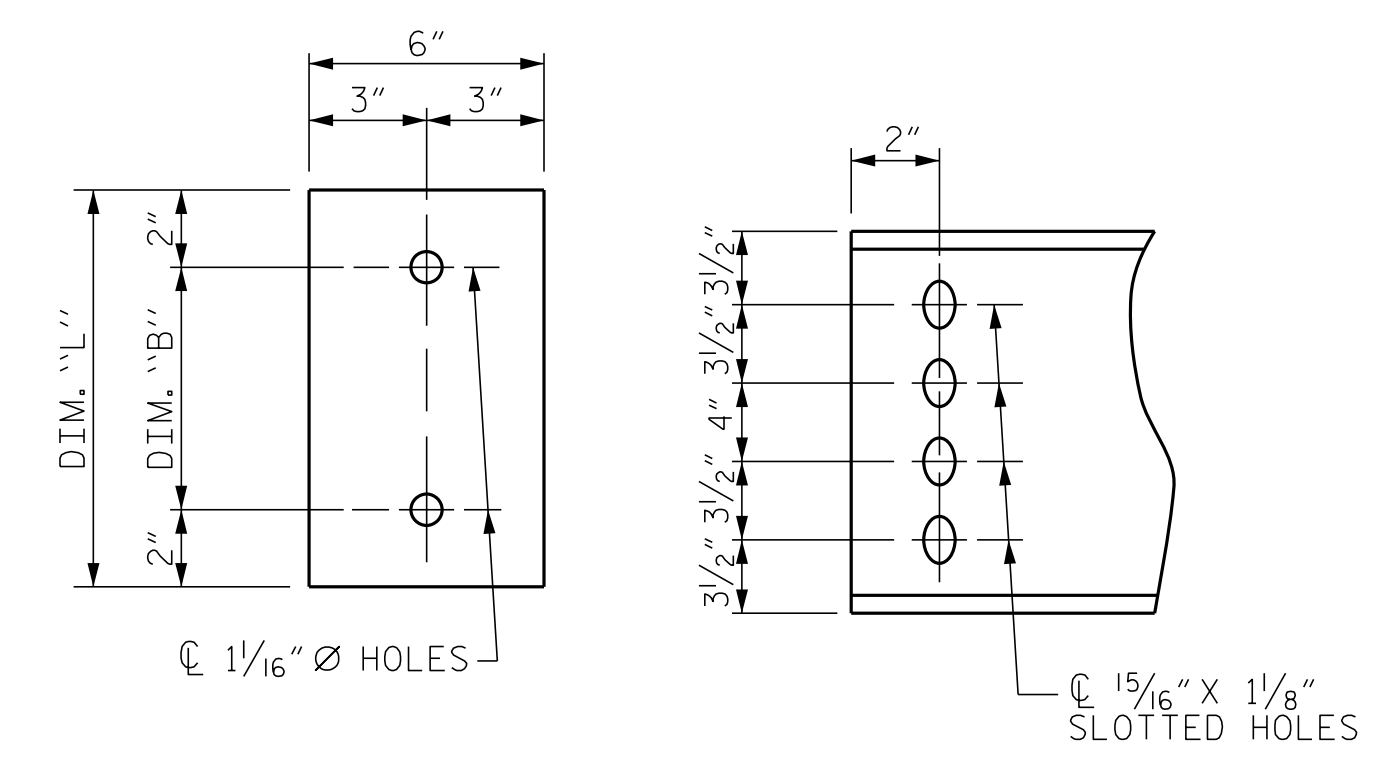
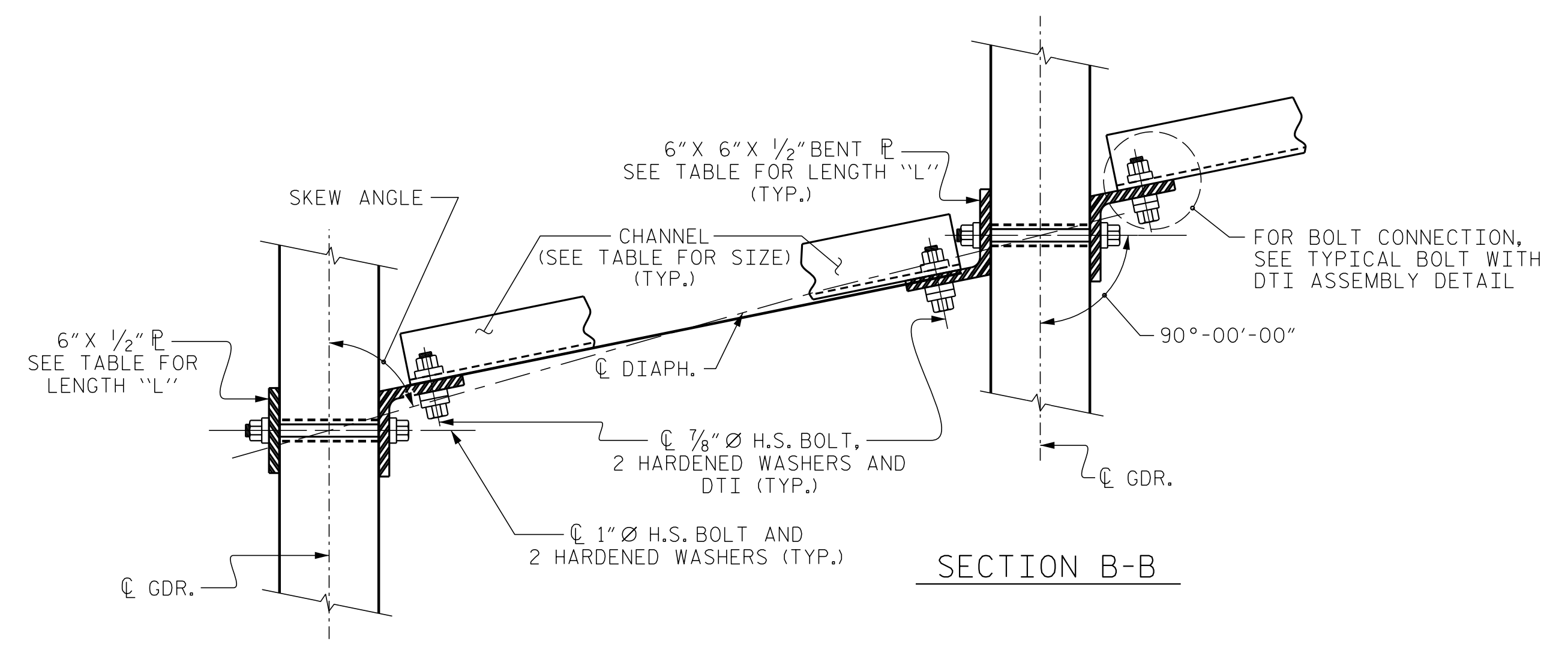
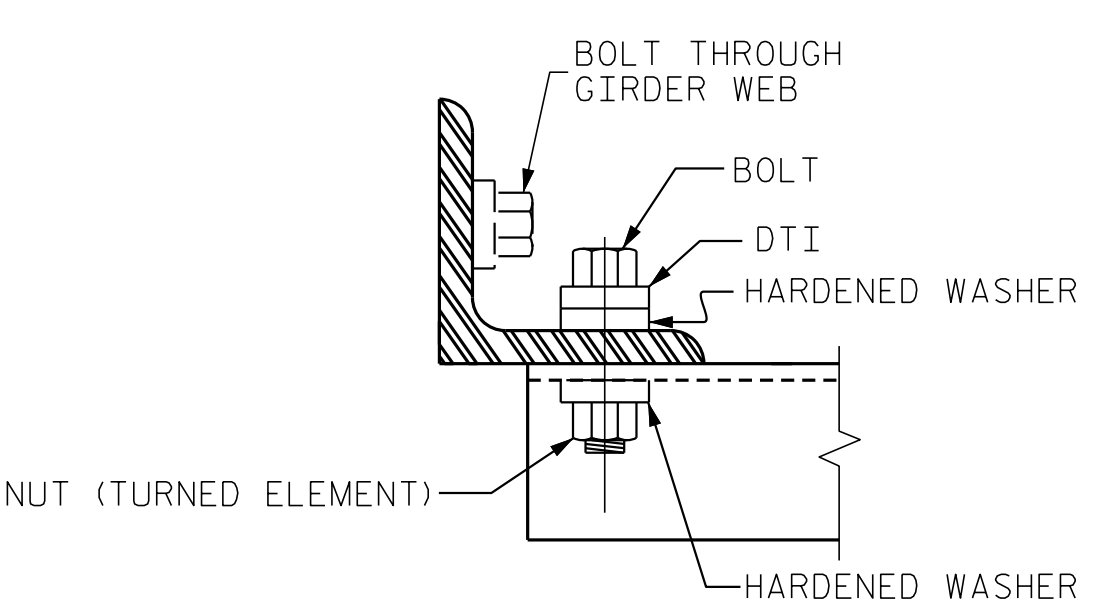


PLATE DETAILS CHANNEL END
 (TYPE IV GDR.)



SECTION A-A SECTION B-B
 CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

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

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

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

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

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

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

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

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

TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
IV	MC 18 x 42.7	1'-9 1/2"	1'-2"	1'-6"

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-

SHEET 4 OF 5

ENGINEER OF RECORD:

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 INTERMEDIATE
 STEEL DIAPHRAGMS
 FOR TYPE IV PRESTRESSED
 CONCRETE GIRDERS
 (LEFT LANE)

1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

REVISIONS

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

SHEET NO. S3-16
 TOTAL SHEETS 38

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ASSEMBLED BY : D. HODGE	DATE : 10/18
CHECKED BY : G.M. GILLAND	DATE : 11/18
DRAWN BY : TLA 6/05	REV. 5/1/06RRR KMM/GM
CHECKED BY : VC 6/05	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

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DEAD LOAD DEFLECTION TABLE FOR GIRDERS											
0.6" Ø LOW RELAXATION	SPAN A										
	GIRDERS #1 & #5										
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.057	0.109	0.149	0.174	0.183	0.174	0.149	0.109	0.057	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.046	0.090	0.125	0.147	0.154	0.147	0.125	0.090	0.046	0.000
FINAL CAMBER ↑	0	1/8"	1/4"	5/16"	5/16"	3/8"	5/16"	5/16"	1/4"	1/8"	0

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS											
0.6" Ø LOW RELAXATION	SPAN A										
	GIRDERS #2, #3 & #4										
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.057	0.109	0.149	0.174	0.183	0.174	0.149	0.109	0.057	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.049	0.097	0.134	0.158	0.166	0.158	0.134	0.097	0.049	0.000
FINAL CAMBER ↑	0	1/8"	1/8"	3/16"	3/16"	3/16"	3/16"	3/16"	1/8"	1/8"	0

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS											
0.6" Ø LOW RELAXATION	SPAN B										
	GIRDERS #1 & #5										
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.050	0.095	0.130	0.153	0.160	0.153	0.130	0.095	0.050	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.032	0.064	0.088	0.104	0.109	0.104	0.088	0.064	0.032	0.000
FINAL CAMBER ↑	0	1/4"	3/8"	1/2"	9/16"	5/8"	9/16"	1/2"	3/8"	1/4"	0

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS											
0.6" Ø LOW RELAXATION	SPAN B										
	GIRDERS #2, #3 & #4										
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.050	0.095	0.130	0.153	0.160	0.153	0.130	0.095	0.050	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.035	0.070	0.097	0.114	0.120	0.114	0.097	0.070	0.035	0.000
FINAL CAMBER ↑	0	3/16"	5/16"	3/8"	7/16"	1/2"	7/16"	3/8"	5/16"	3/16"	0

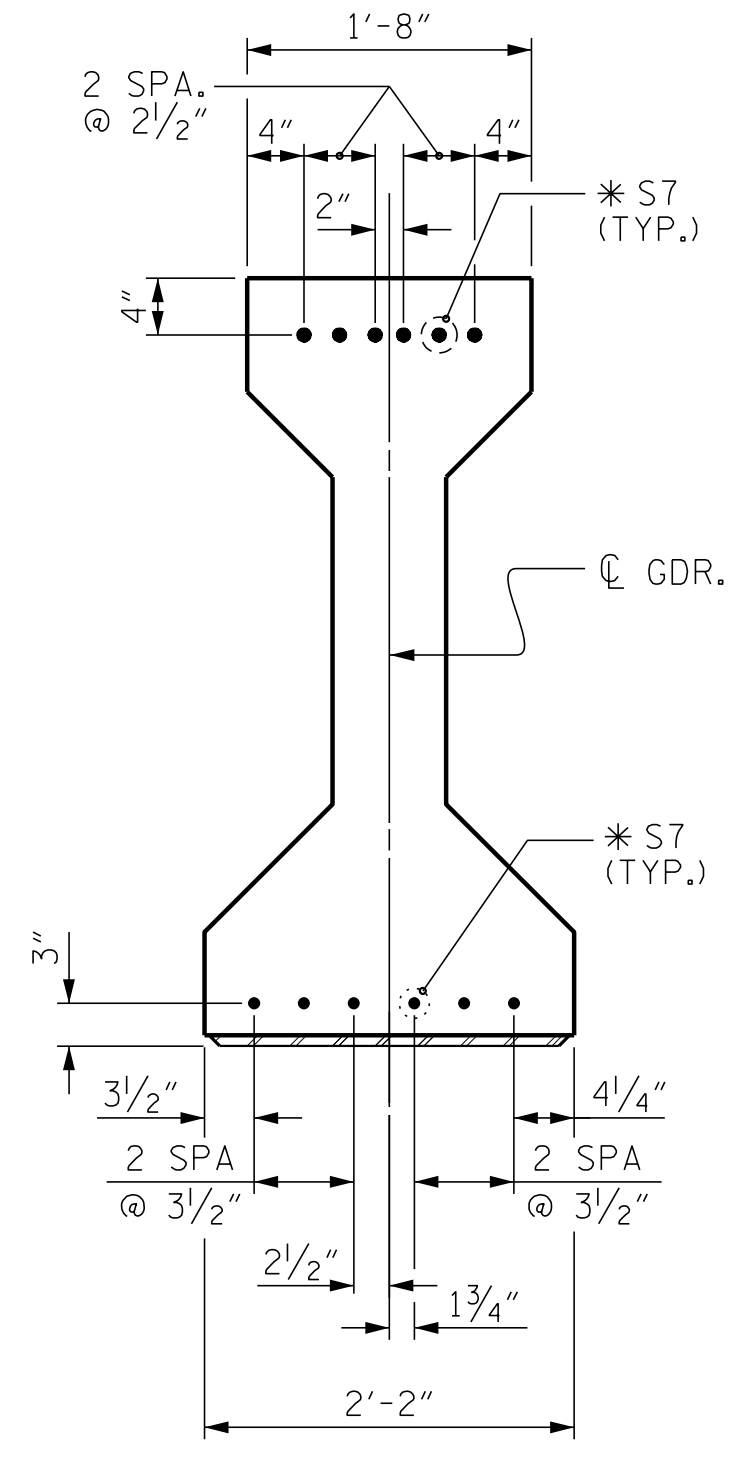
* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR GIRDERS											
0.6" Ø LOW RELAXATION	SPAN C										
	GIRDERS #1 & #5										
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.034	0.064	0.088	0.103	0.108	0.103	0.088	0.064	0.034	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.018	0.036	0.049	0.058	0.062	0.058	0.049	0.036	0.018	0.000
FINAL CAMBER ↑	0	3/16"	5/16"	7/16"	9/16"	9/16"	7/16"	5/16"	3/16"	0	0

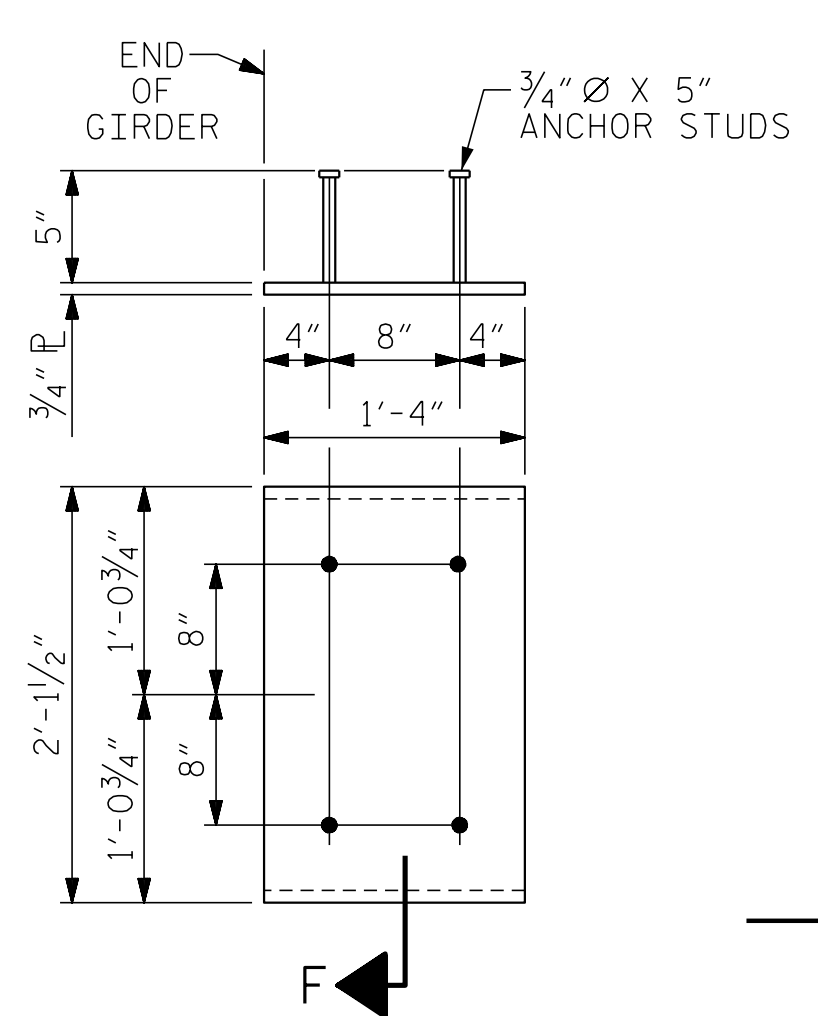
* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR GIRDERS											
0.6" Ø LOW RELAXATION	SPAN C										
	GIRDERS #2, #3 & #4										
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.034	0.064	0.088	0.103	0.108	0.103	0.088	0.064	0.034	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.019	0.038	0.053	0.063	0.066	0.063	0.053	0.038	0.019	0.000
FINAL CAMBER ↑	0	3/16"	5/16"	7/16"	1/2"	1/2"	1/2"	7/16"	5/16"	3/16"	0

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



DETAIL "A"
(FOR AASHTO TYPE IV GIRDERS)



SECTION "F"
(SEE NOTES)

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

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.

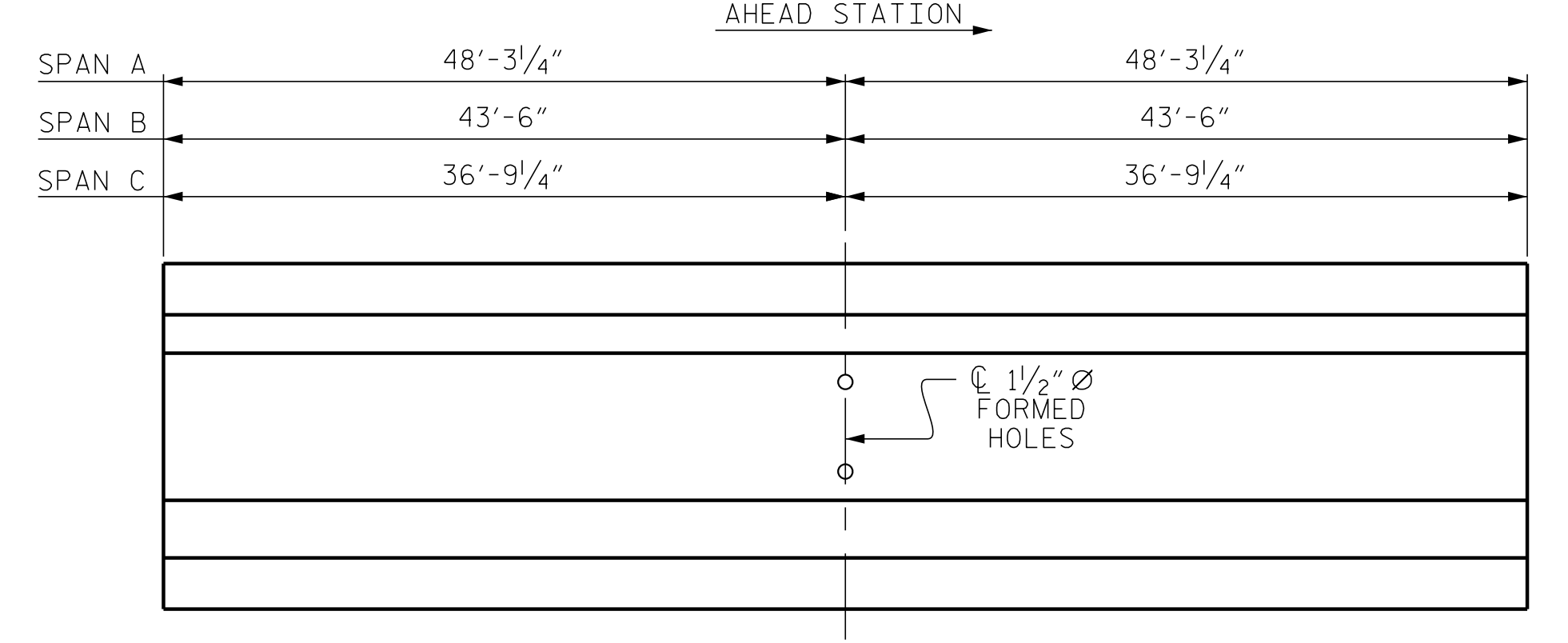
AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 7,000 PSI FOR SPAN A, 5,500 PSI FOR SPAN B AND 4,000 PSI FOR SPAN C.

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".

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



LOCATION OF BOLT HOLES IN GIRDERS

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 192+85.76 -L-
SHEET 5 OF 5

ENGINEER OF RECORD:

ETHERILL ENGINEERING

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LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS (LEFT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S3-17
					TOTAL SHEETS 38

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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.

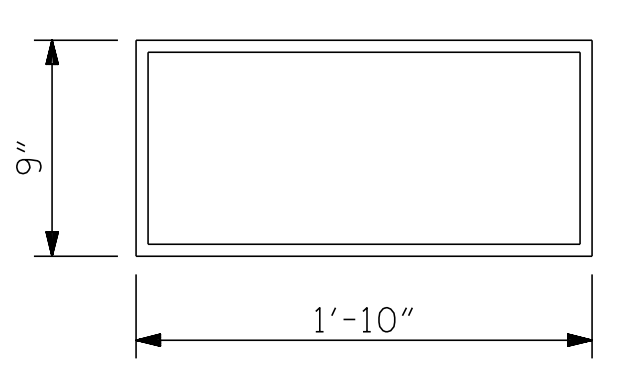
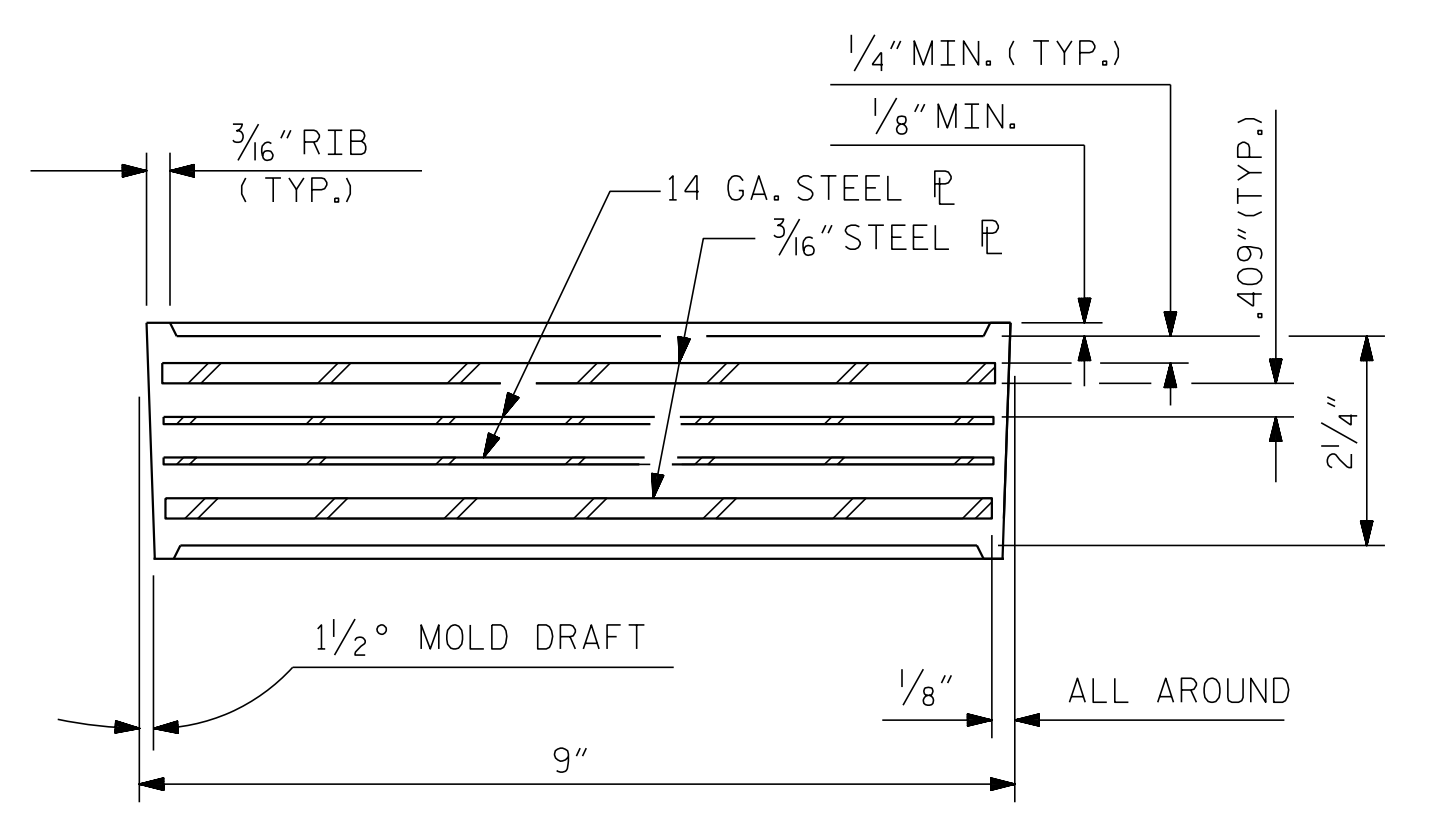
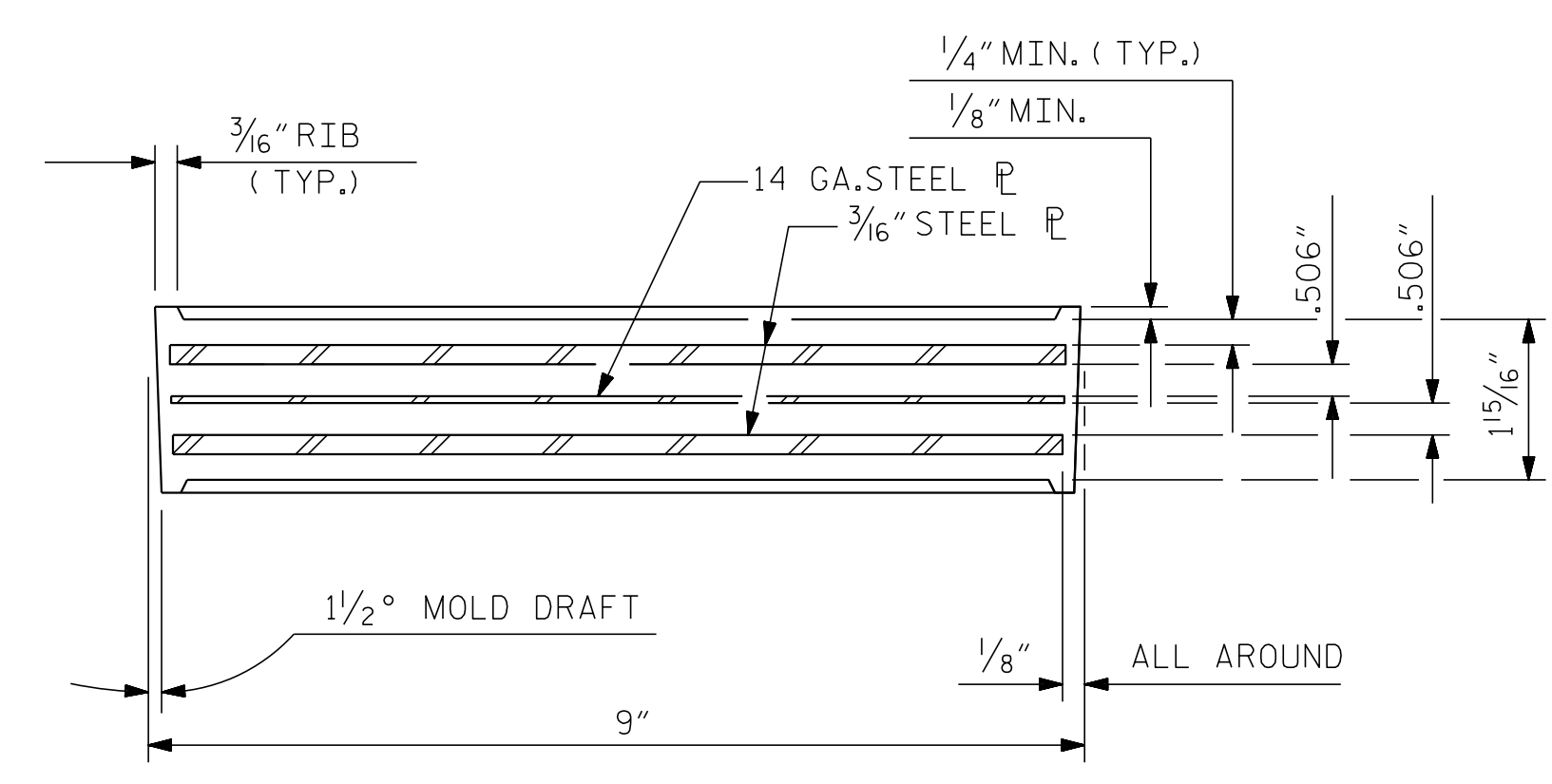
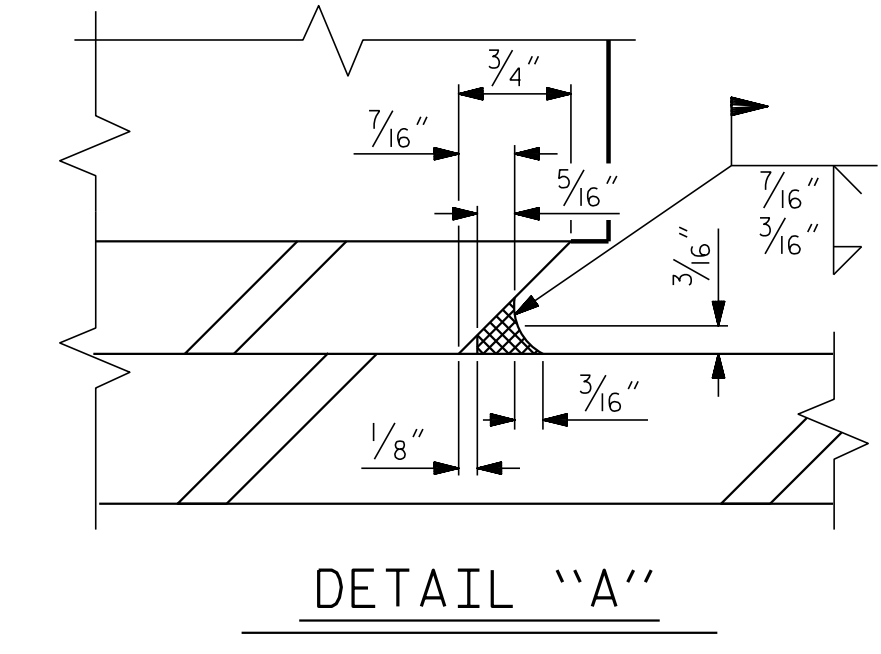
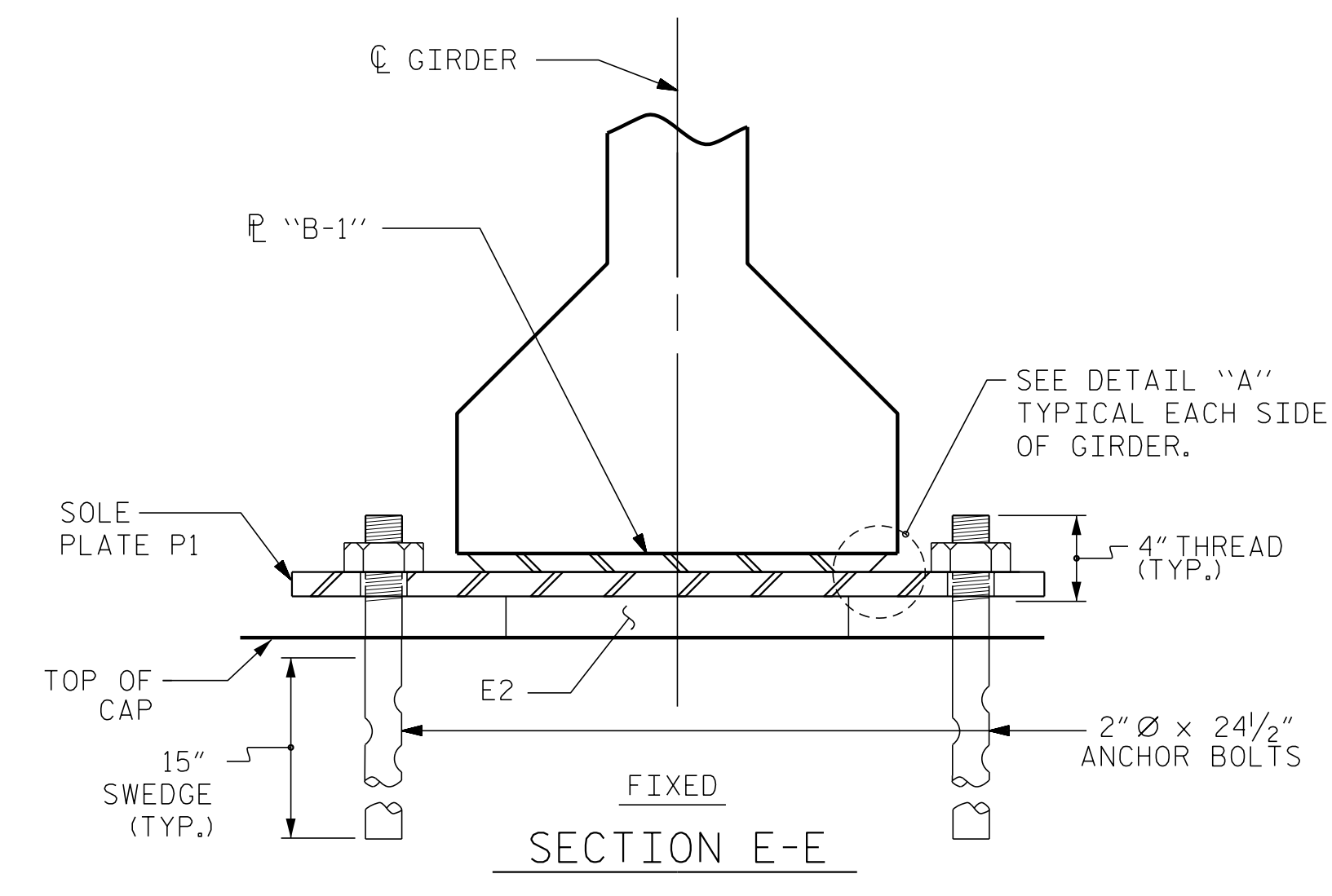
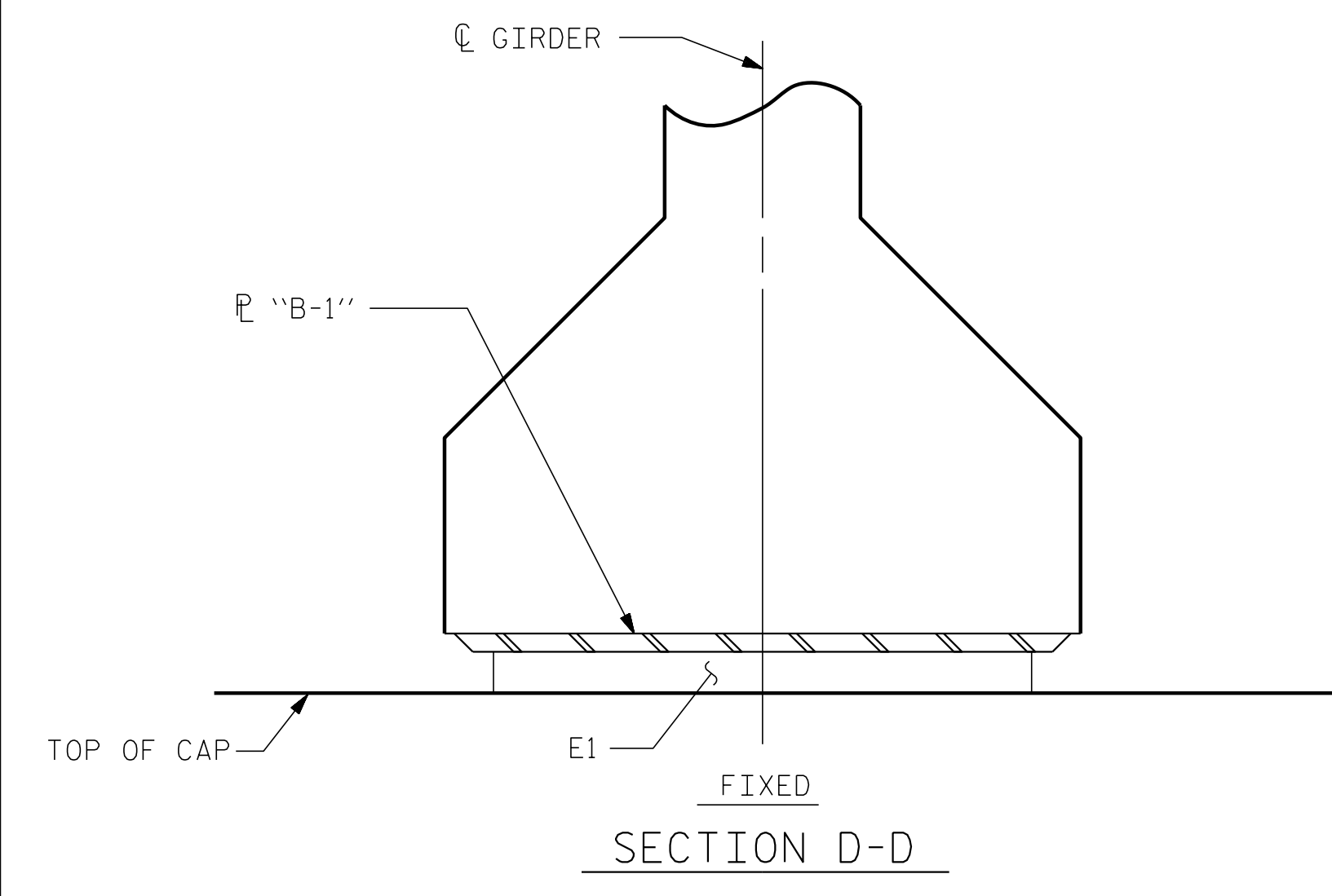
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

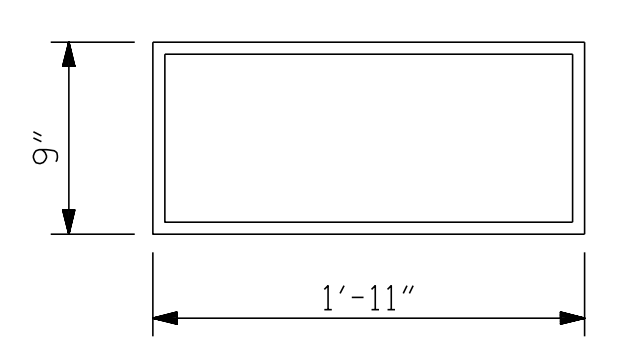
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

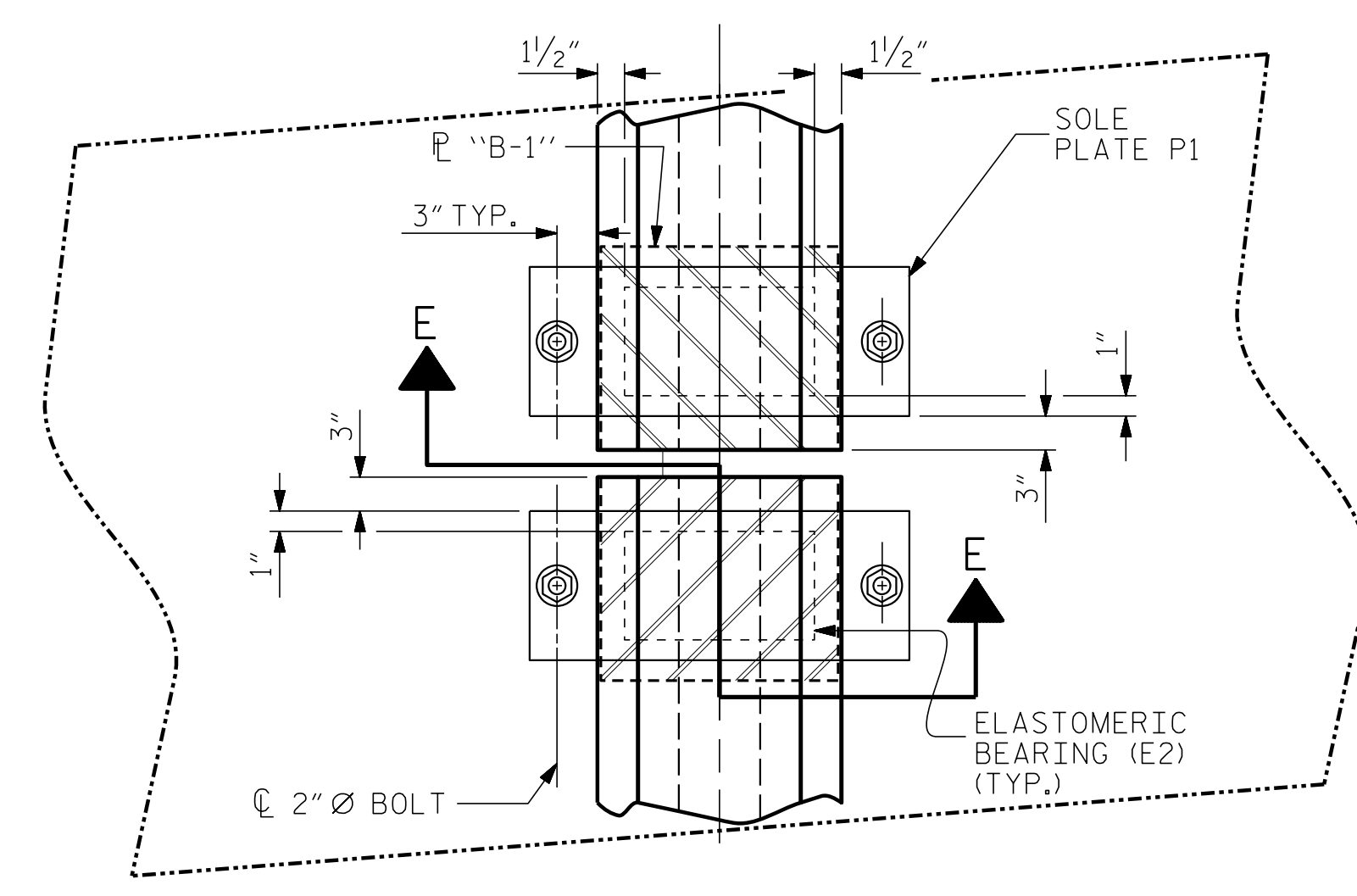
ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



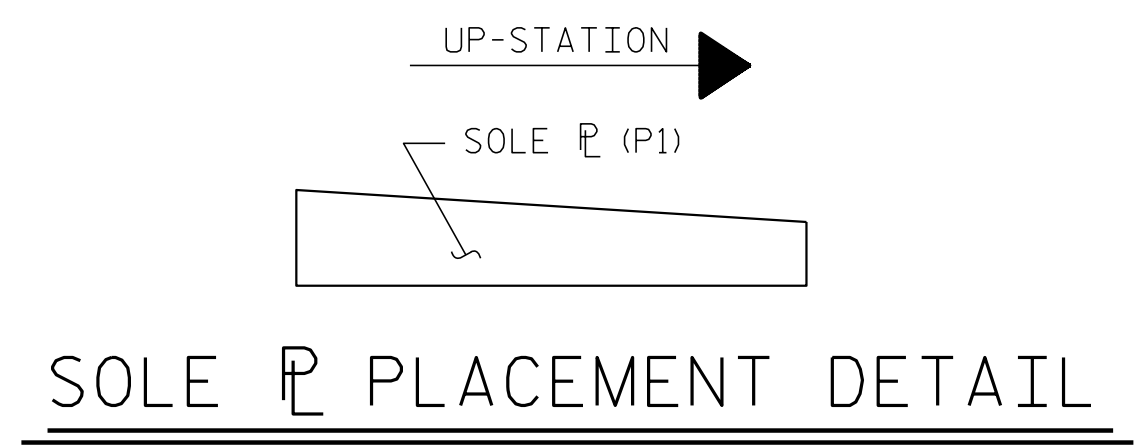
E1 (10 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE IV



E2 (20 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE V

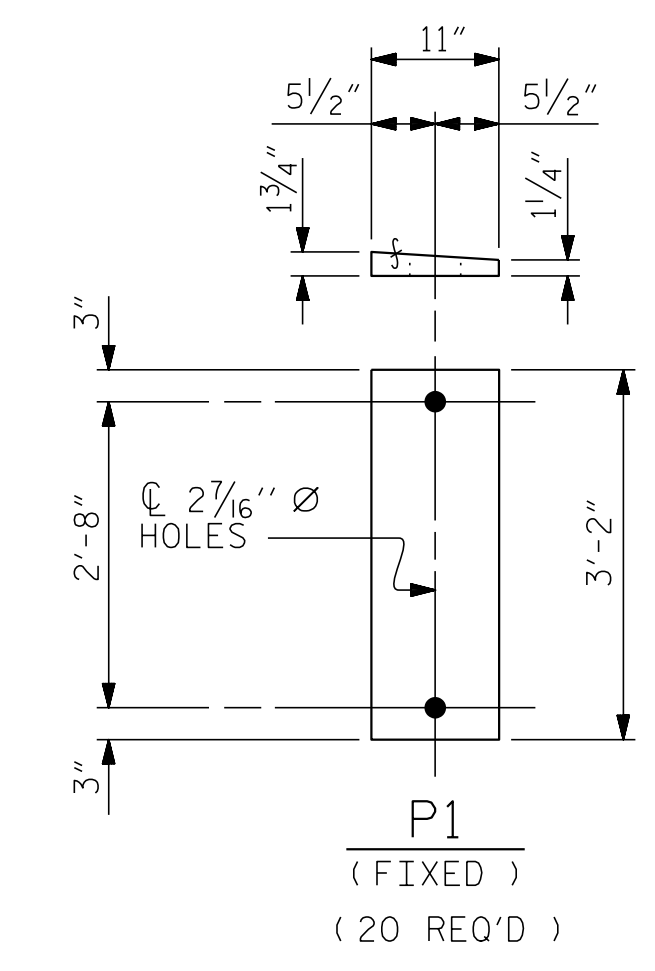


TYPICAL PLAN
(SHOWING CONTINUOUS BENT)

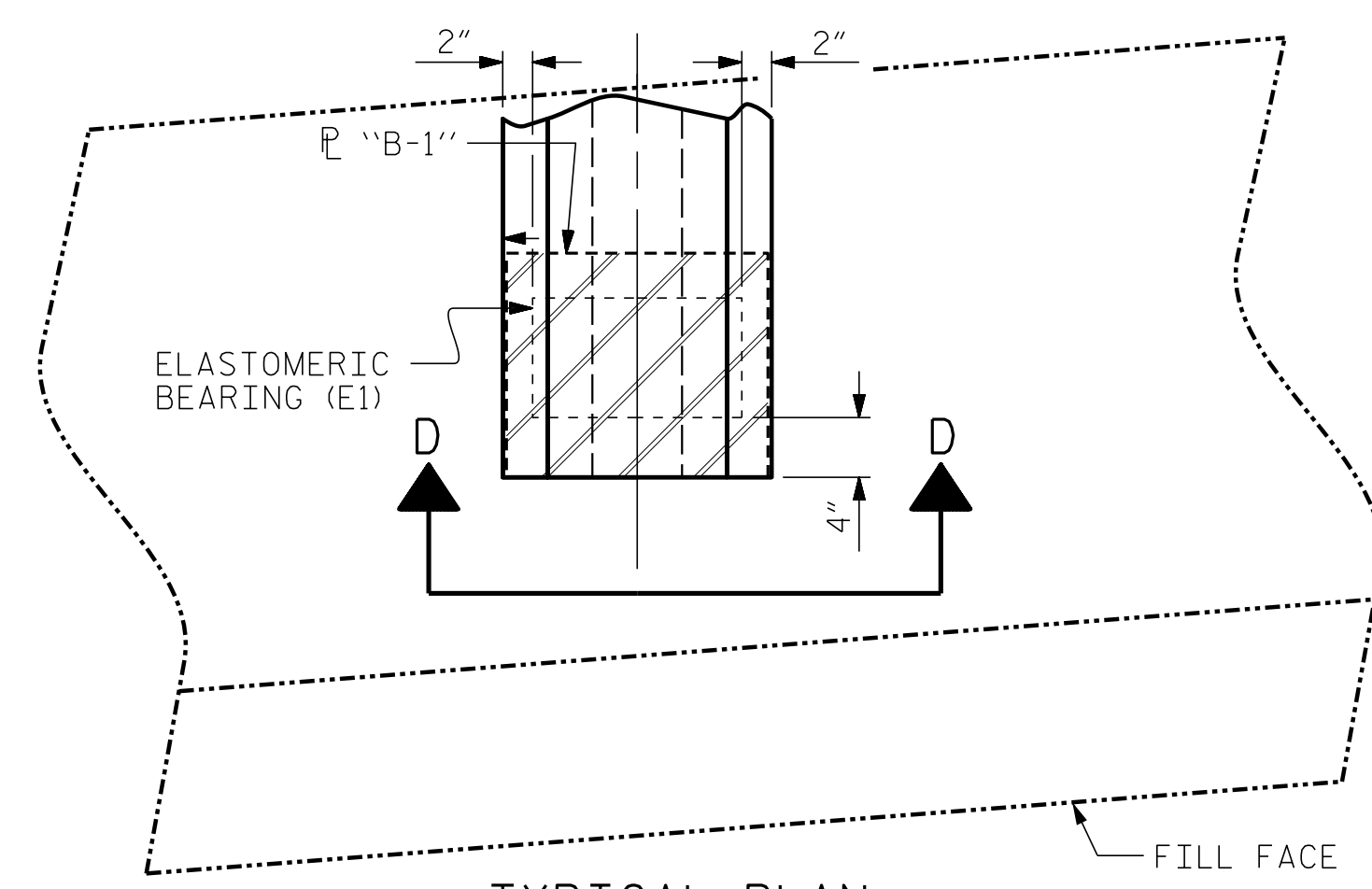


MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE IV	225 k
TYPE V	365 k

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 192+85.76 -L-



SOLE PLATE DETAILS (P1)



TYPICAL PLAN
(SHOWING END BENT)

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Raleigh, N.C. 27606
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
ELASTOMERIC BEARING
DETAILS
PRESTRESSED CONCRETE GIRDER
SUPERSTRUCTURE
(LEFT LANE)

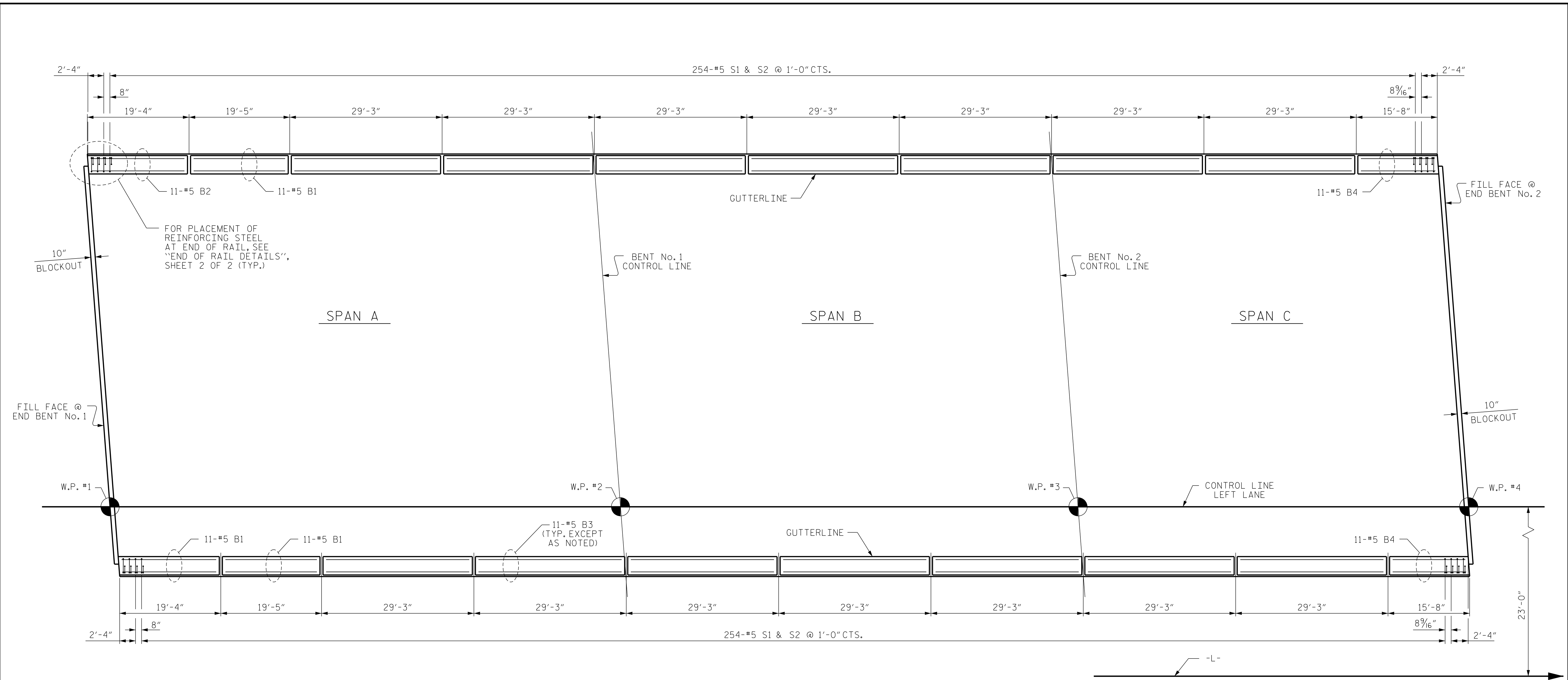
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
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2			4	

TOTAL SHEETS: 38

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DRAWN BY: D. HODGE DATE: 11/18
CHECKED BY: G.M. GILLAND DATE: 11/18

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PLAN OF CONCRETE BARRIER RAIL

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 1 OF 2

DRAWN BY : D. HODGE DATE : 10/18
 CHECKED BY : G.M. GILLAND DATE : 11/18

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ENGINEER OF RECORD:

WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
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 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CONCRETE BARRIER RAIL (LEFT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-19
1			3			TOTAL SHEETS
2			4			38

NOTES

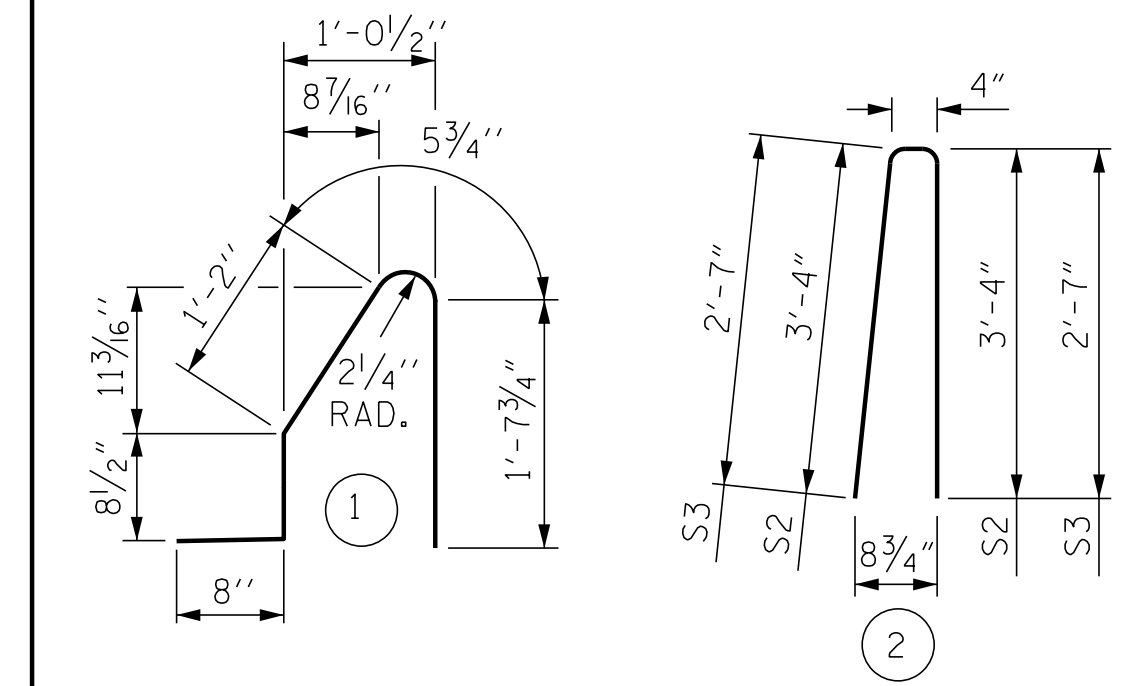
THE BARRIER RAIL SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

THE #5 S1 & S2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN THE BARRIER RAIL.

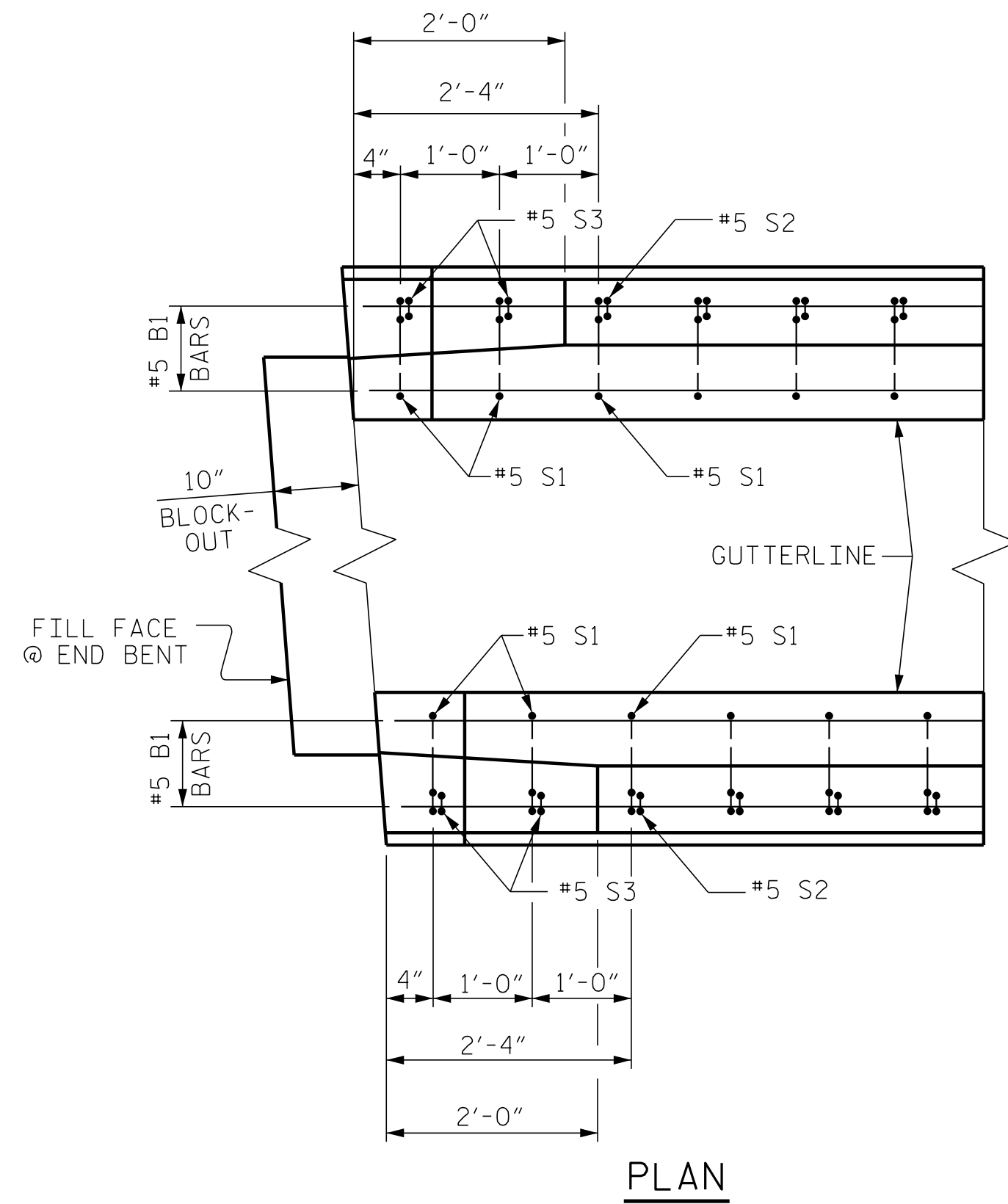
BAR TYPES



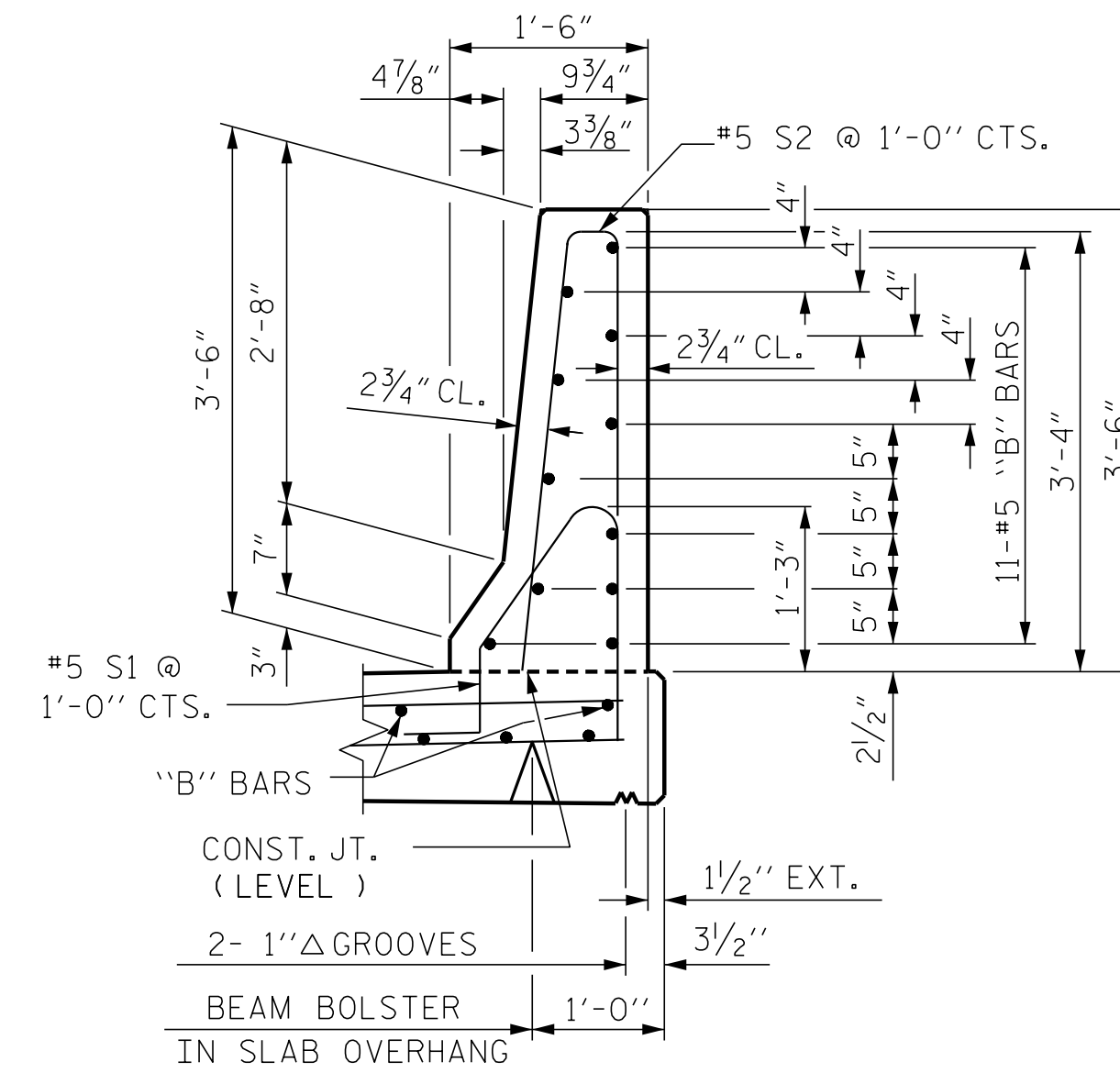
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

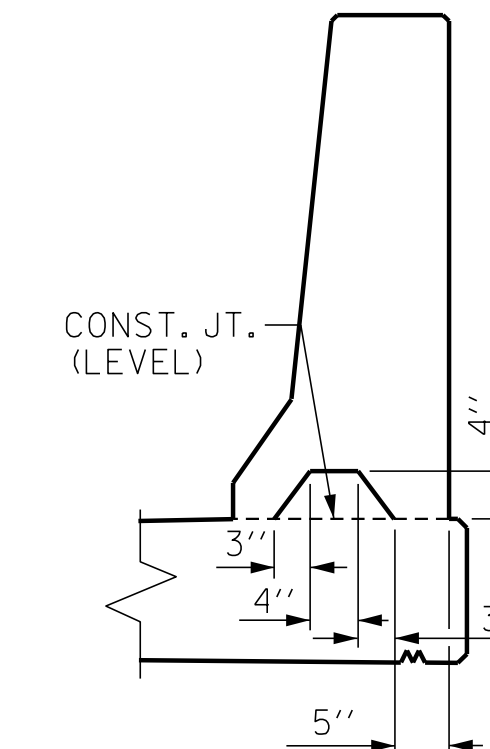
FOR CONCRETE BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* S1	520	#5	1	4'-8"	2531
* S2	512	#5	2	7'-0"	3738
* S3	8	#5	2	5'-6"	46
* B1	33	#5	STR	19'-0"	654
* B2	11	#5	STR	18'-10"	216
* B3	154	#5	STR	28'-10"	4631
* B4	22	#5	STR	15'-2"	348
* EPOXY COATED REINFORCING STEEL					12,164 LBS.
CLASS AA CONCRETE					70.4 CU. YDS.
CONCRETE BARRIER RAIL					518.33 LIN. FT.



PLAN

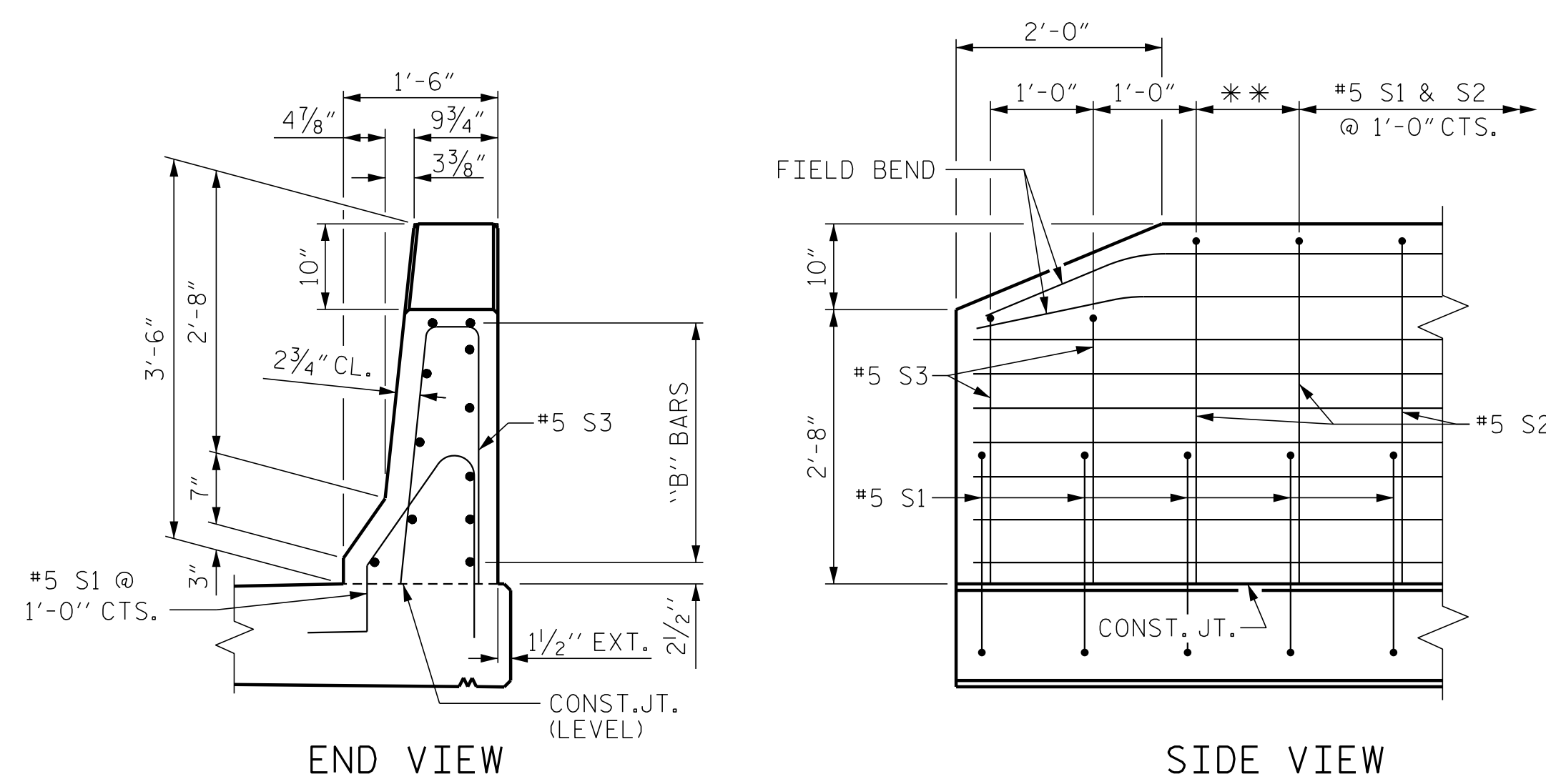


SECTION THRU RAIL



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

** VARIES, SEE "PLAN", SHEET 1 OF 2

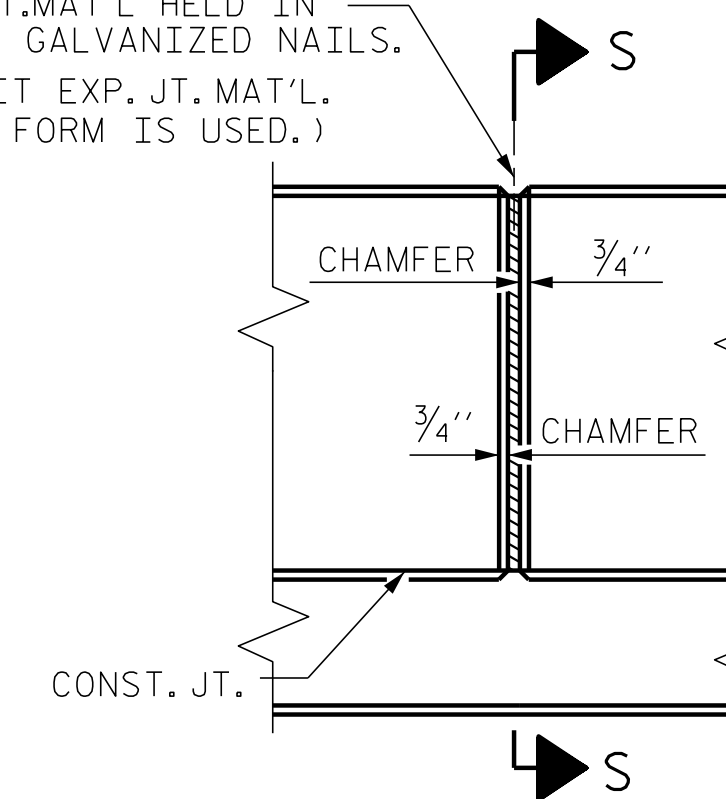


END VIEW

SIDE VIEW

END OF RAIL DETAILS

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
BARRIER RAIL DETAILS

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 192+85.76 -L-

SHEET 2 OF 2

ENGINEER OF RECORD:

ETHERILL ENGINEERING
1223 Jones Franklin Rd.
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LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
CONCRETE
BARRIER RAIL
(LEFT LANE)

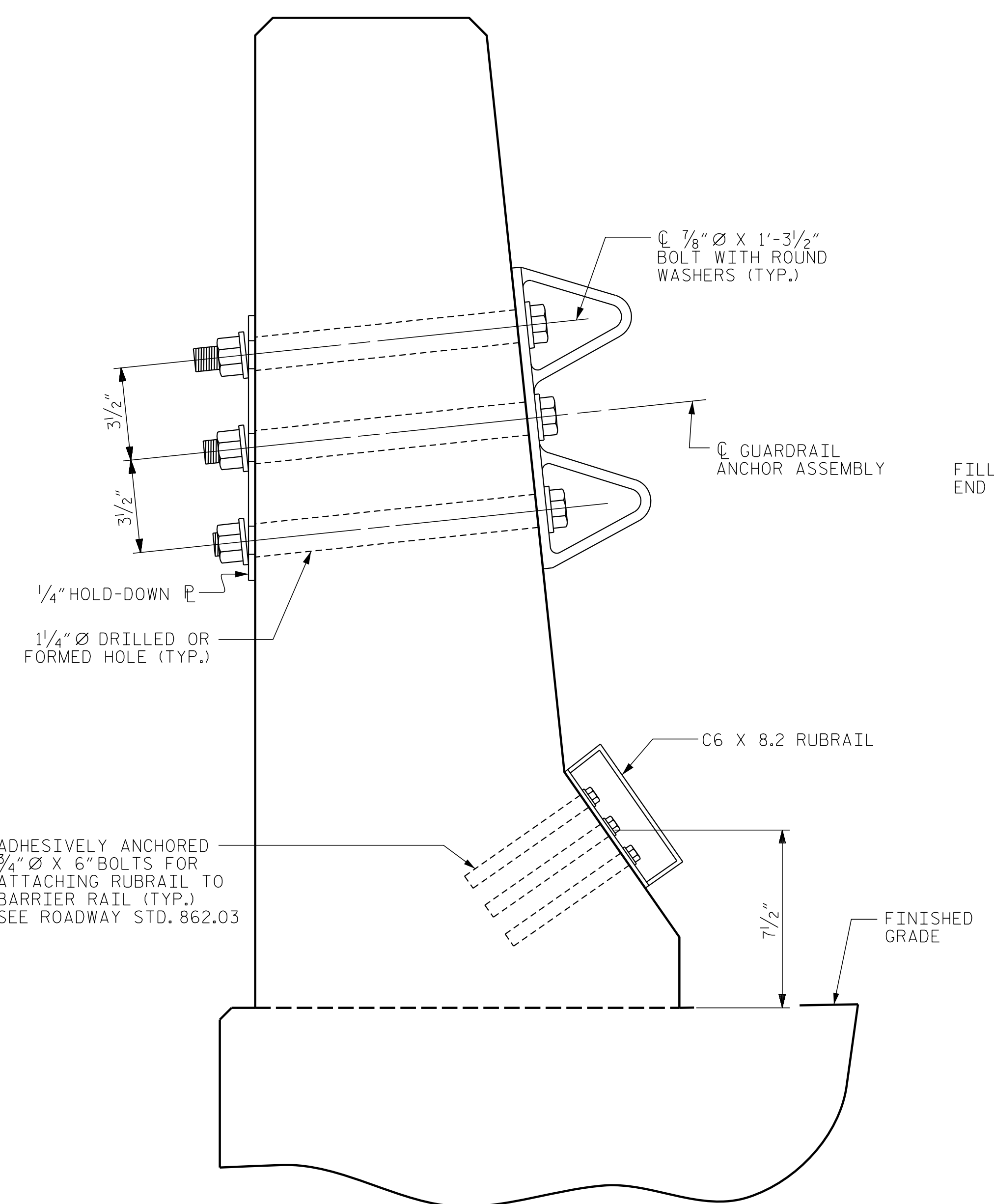
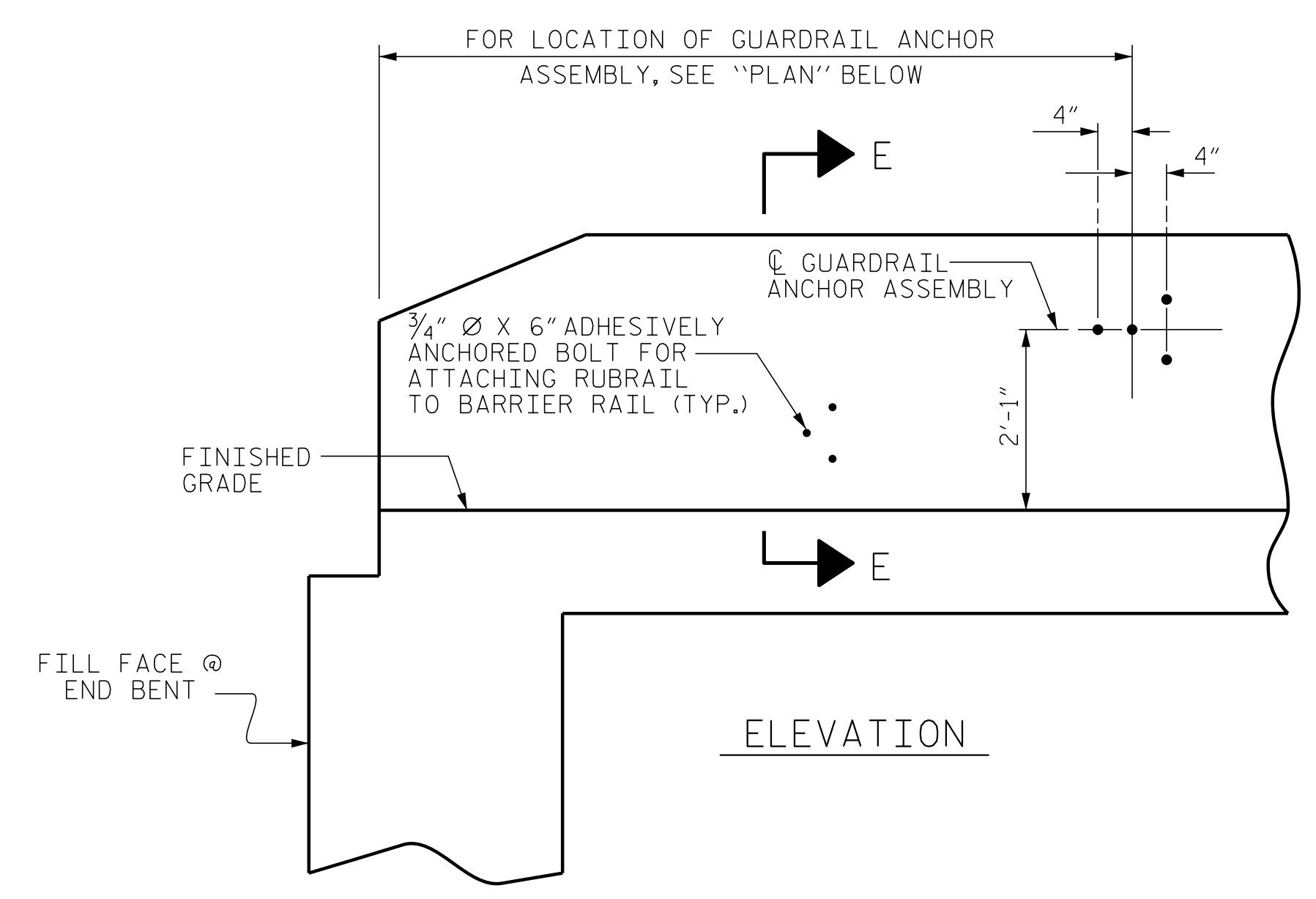
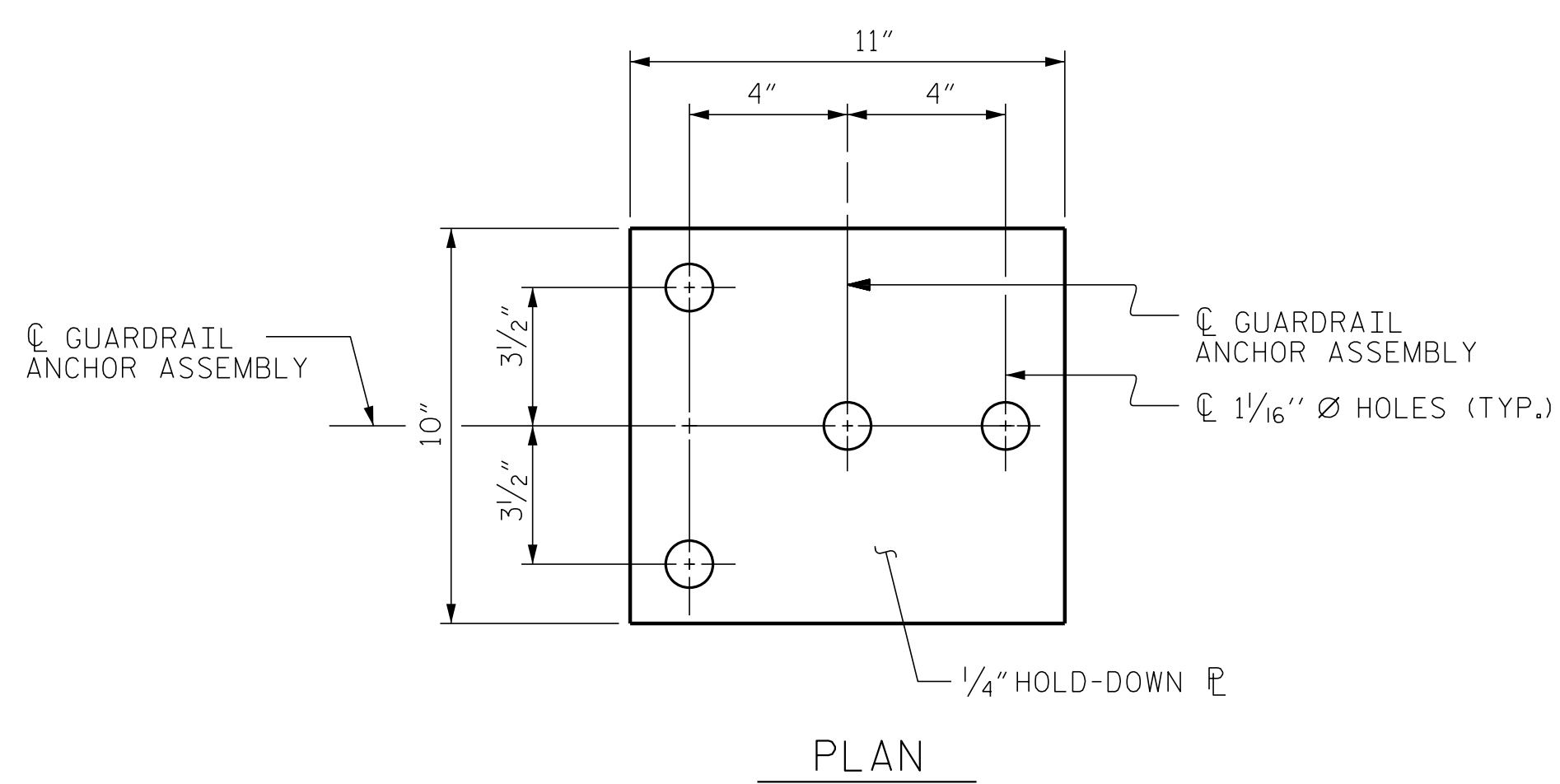
REVISIONS

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

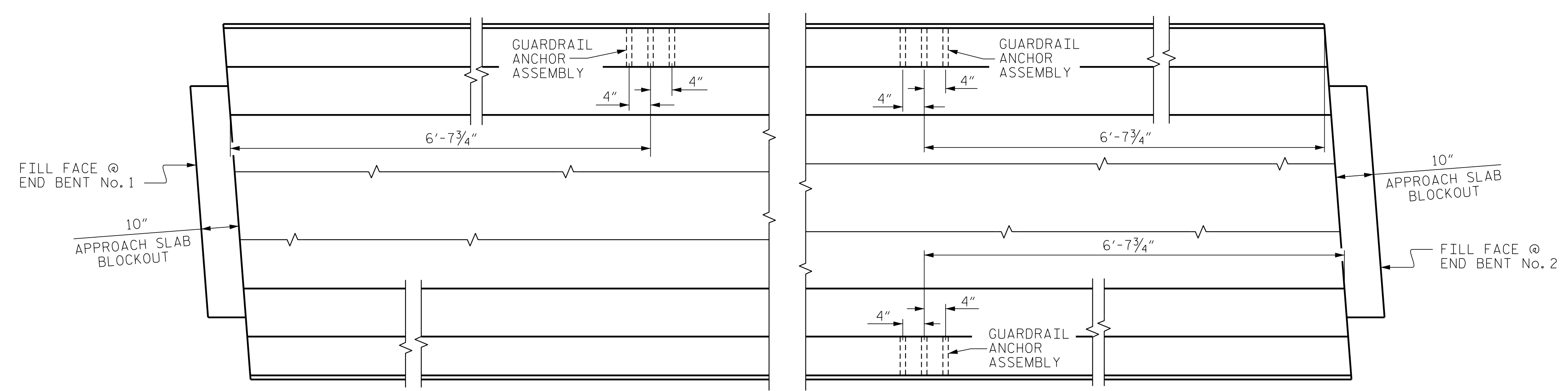
SHEET NO.
S-20
TOTAL SHEETS
38

DOCUMENT NOT CONSIDERED FINAL
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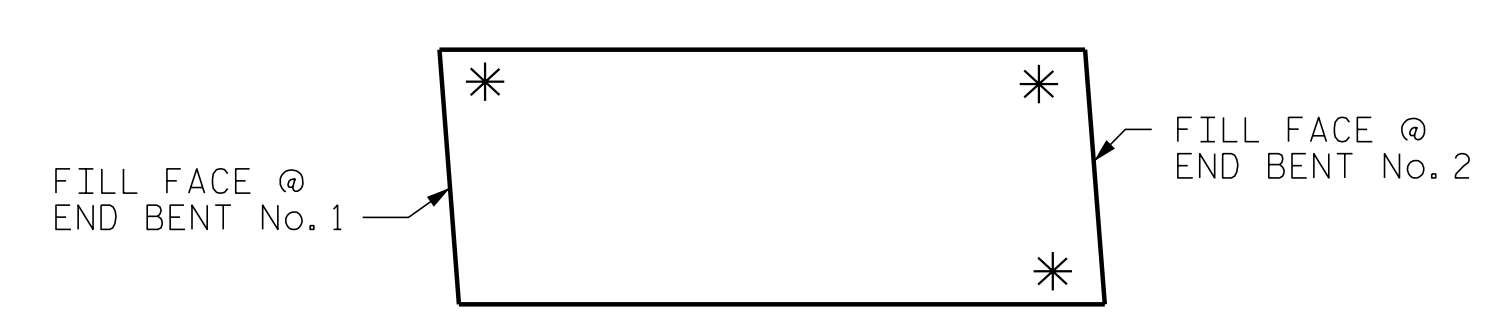
ASSEMBLED BY : D. HODGE	DATE : 10/18
CHECKED BY : G.M. GILLAND	DATE : 11/18
DRAWN BY : ARB 5/87	REV. 7/12 MAA/GM
CHECKED BY : SJD 9/87	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC



SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN
LOCATION OF ANCHORS FOR GUARDRAIL



SKETCH SHOWING POINTS OF ATTACHMENTS
* DENOTES GUARDRAIL ANCHOR ASSEMBLY

NOTES

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

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

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

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

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

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

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

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

ENGINEER OF RECORD:

2/1/2019

ETHERILL ENGINEERING

1223 Jones Franklin Rd.
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LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GUARDRAIL ANCHORAGE
FOR BARRIER RAIL
(LEFT LANE)

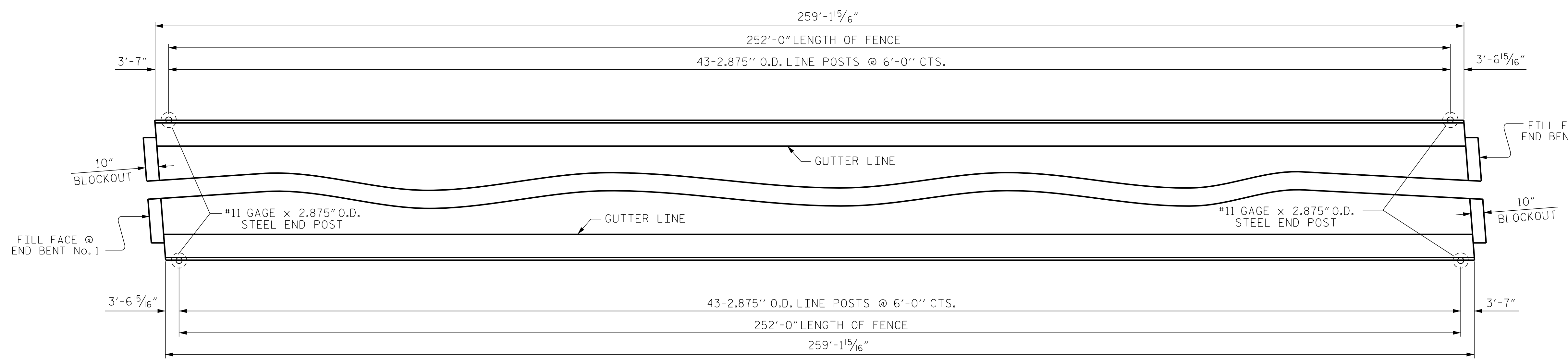
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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			38
2			4			

SHEET NO. S3-21

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DRAWN BY: D. HODGE DATE: 10/18
CHECKED BY: G.M. GILLAND DATE: 11/18

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PLAN OF FENCE POST SPACING

NOTES

FOR BRIDGE MOUNTED CHAIN LINK FENCE, SEE SPECIAL PROVISIONS.

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

FOR SETTING ANCHOR BOLTS, THE CONTRACTOR SHALL USE AN ADHESIVE BONDING SYSTEM. LEVEL ONE FIELD TESTING OF BONDING SYSTEM IS REQUIRED.

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

ALL FENCE COMPONENTS SHALL BE VINYL COATED - BLACK.

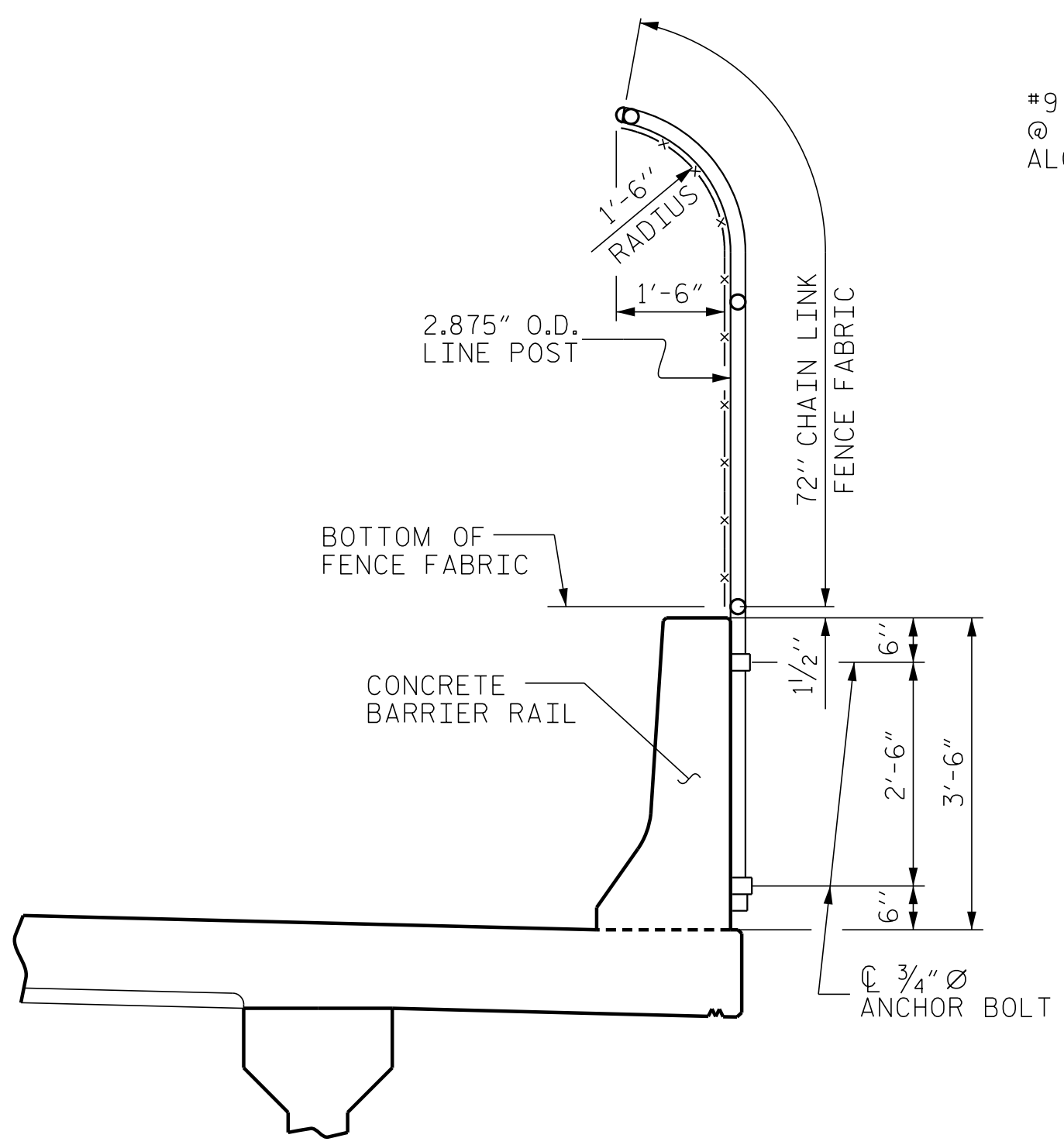
FENCE POST LOCATIONS SHALL BE SHIFTED, AS NECESSARY, TO MAINTAIN A 6" MINIMUM DISTANCE FROM ANCHOR BOLT TO JOINTS IN BARRIER RAIL.

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

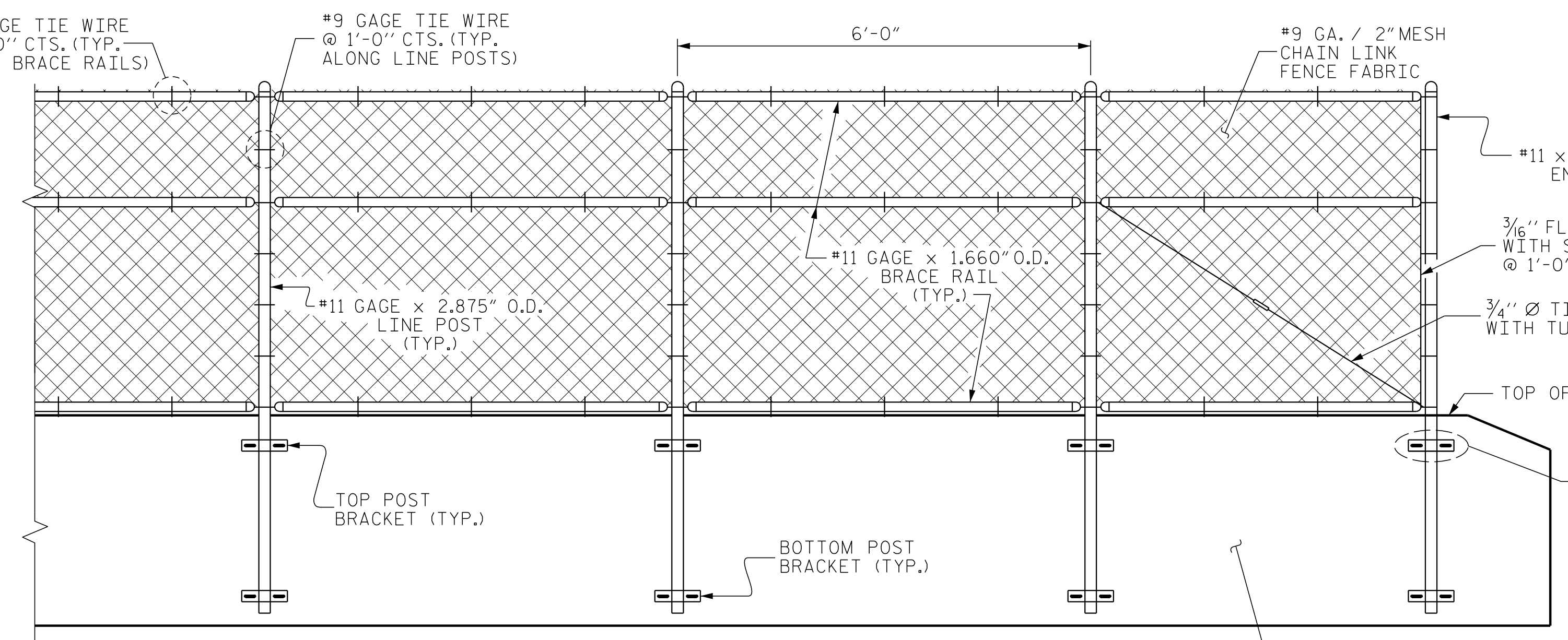
ADHESIVE BONDING SYSTEM SHALL HAVE MINIMUM PULLOUT STRENGTH OF 10 KIPS. THE ADHESIVE BONDING SYSTEM SHALL BE CHOSEN FROM THOSE ON THE NCDOT APPROVED PRODUCTS LIST.

72" CHAIN LINK FENCE
 TOTAL PAY LENGTH 504.0 LIN. FT.

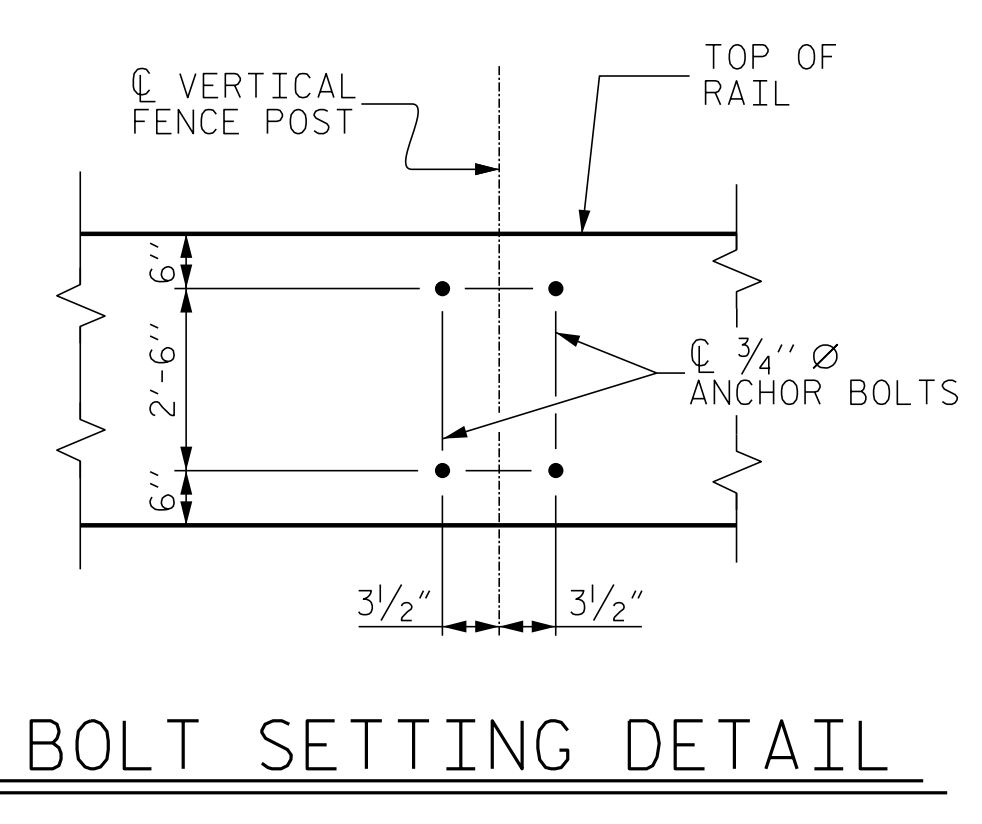
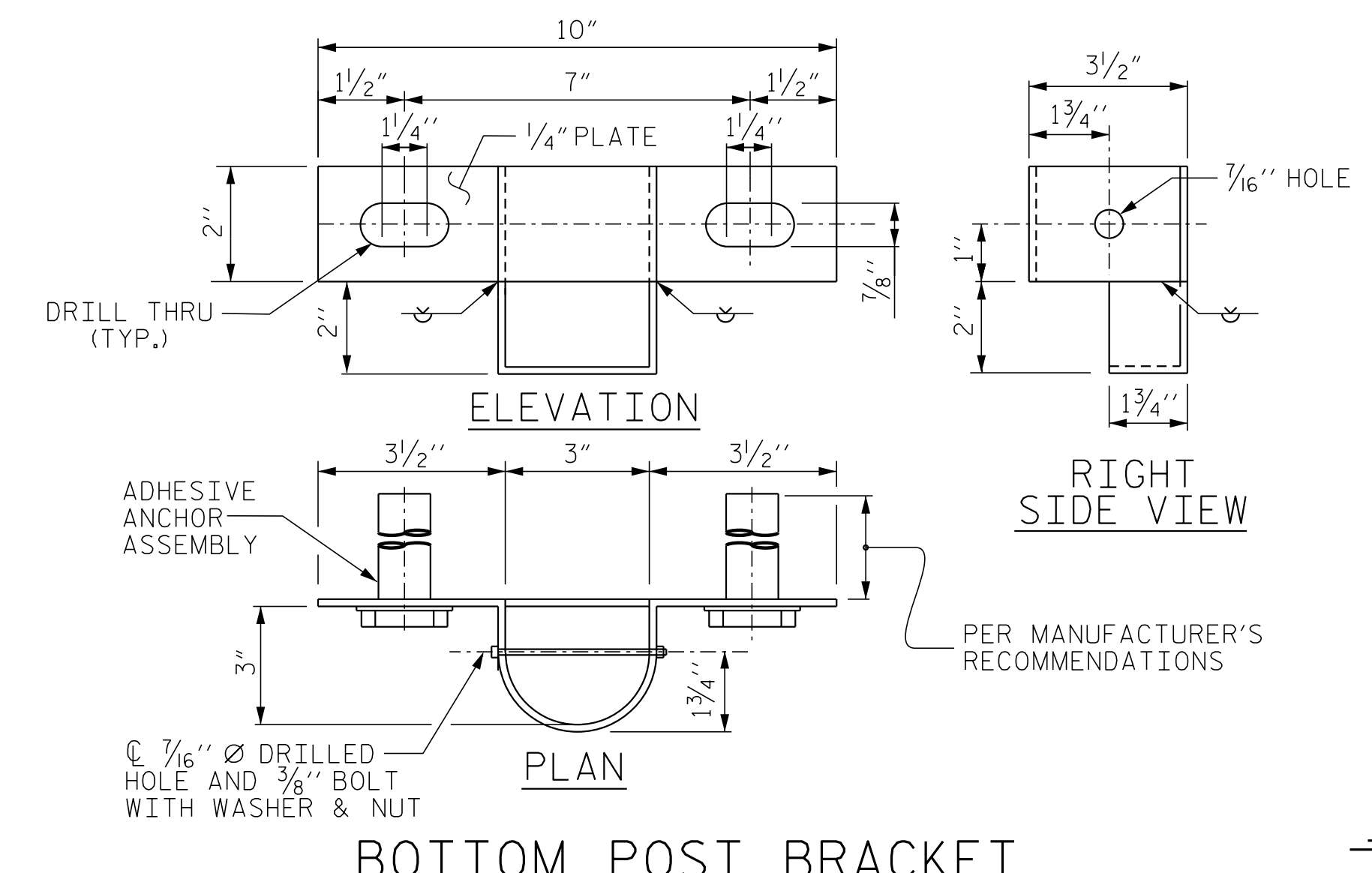
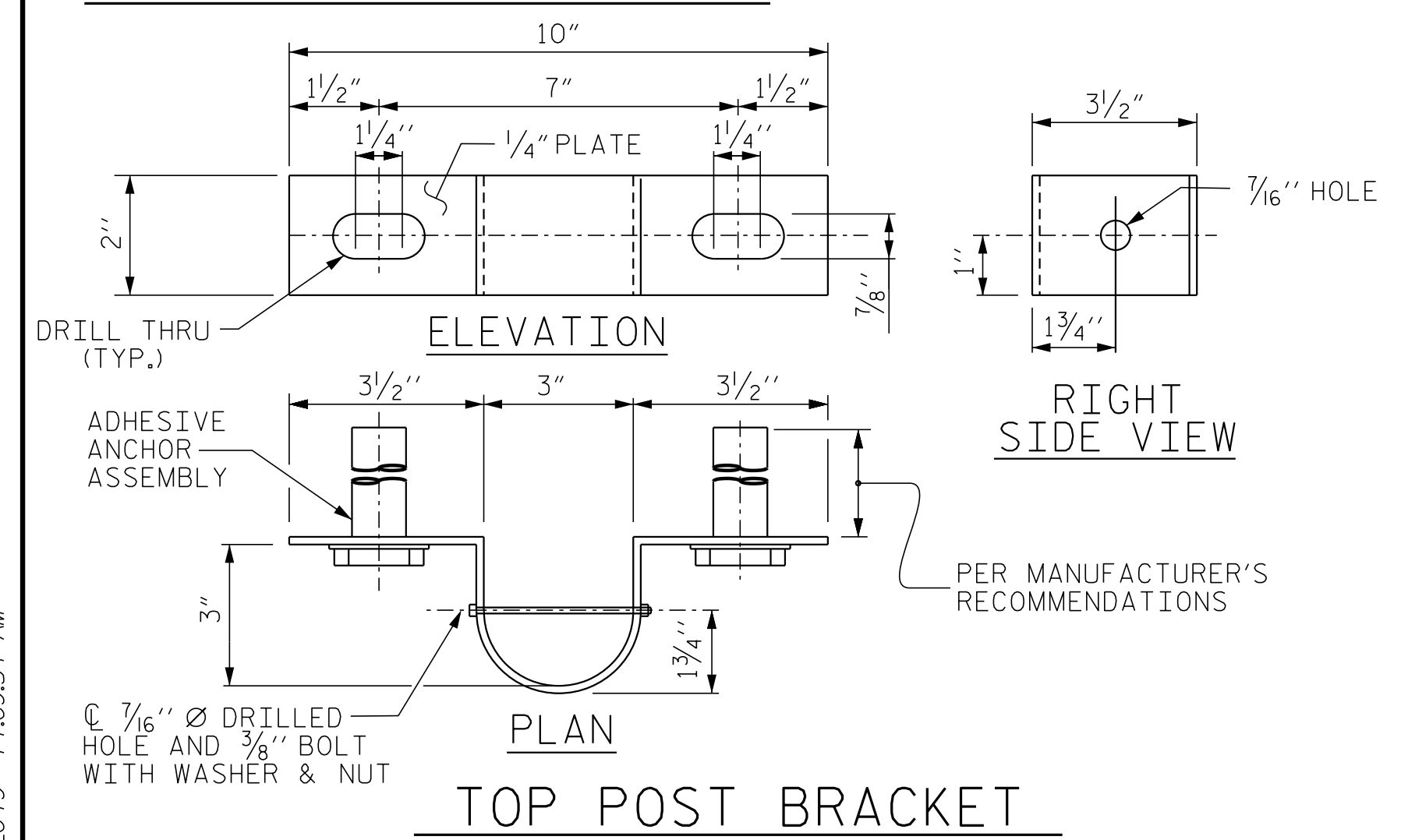
PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-



SECTION THRU FENCE



PARTIAL ELEVATION



DRAWN BY: D. HODGE DATE: 10/18
 CHECKED BY: G.M. GILLAND DATE: 11/18

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ENGINEER OF RECORD:

 GREGORY M. ETHERILL
 2/1/2019
 ETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

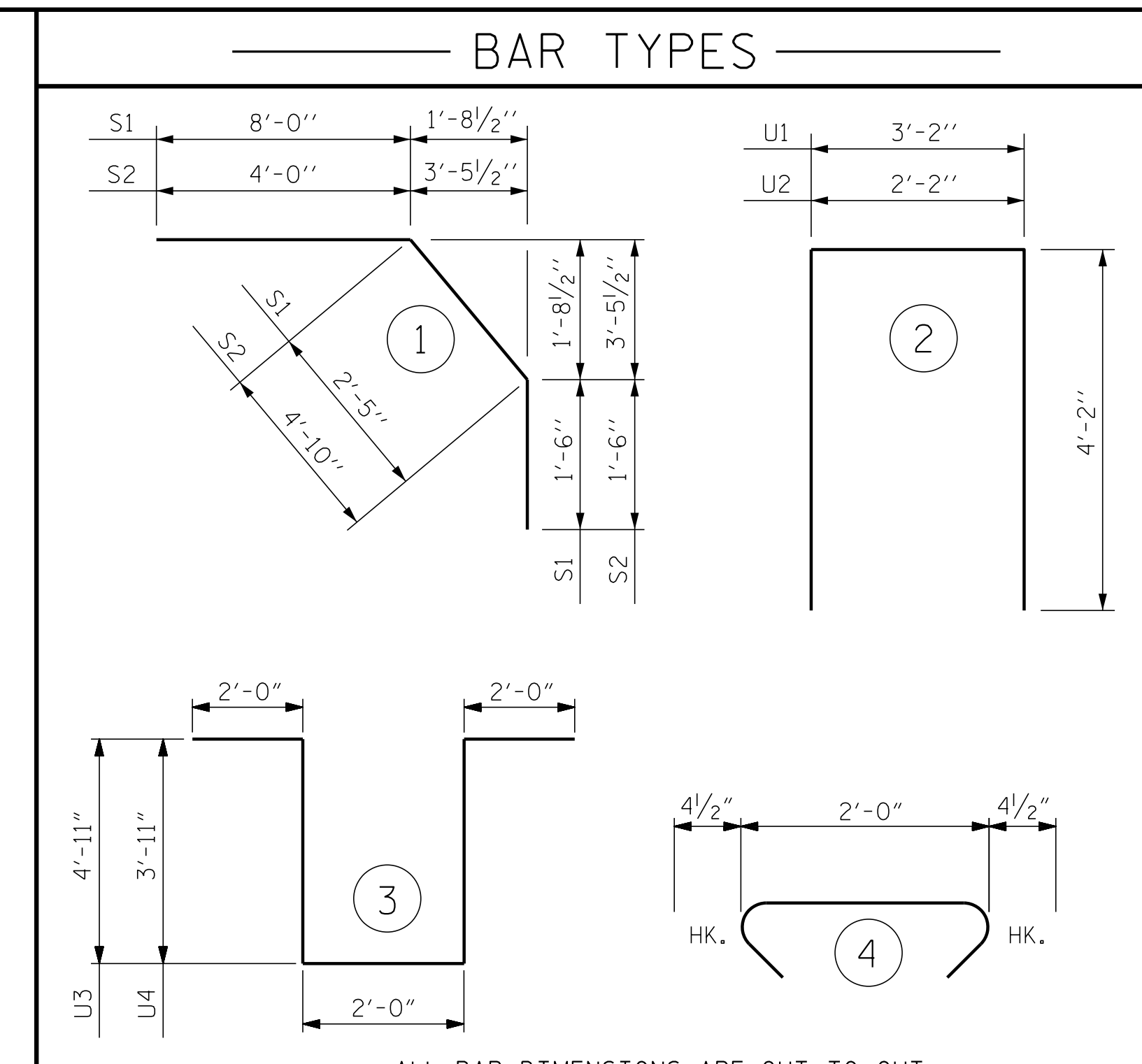
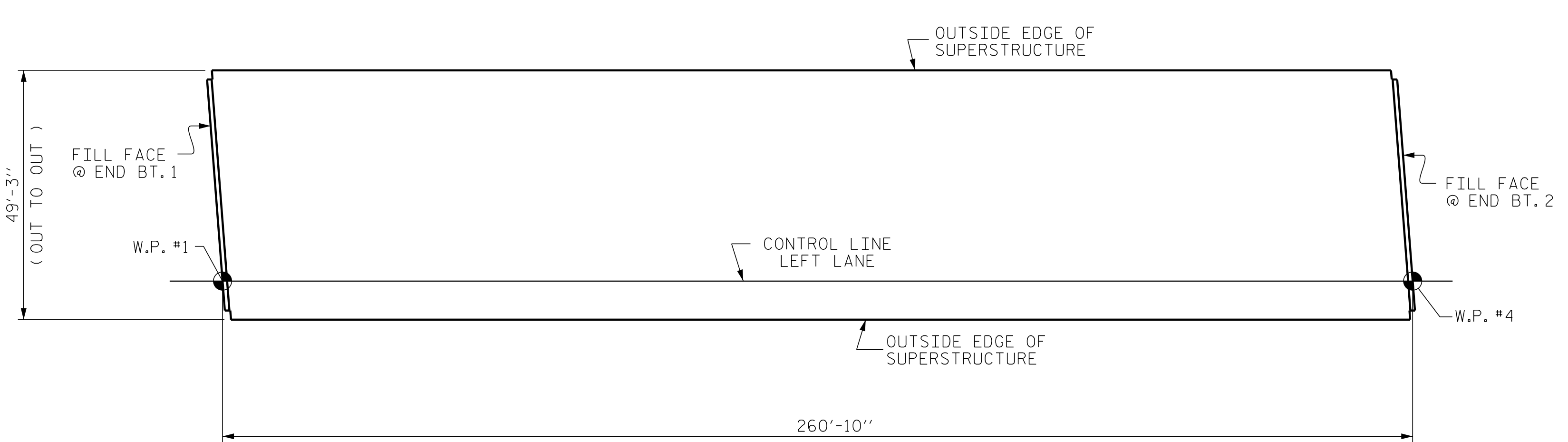
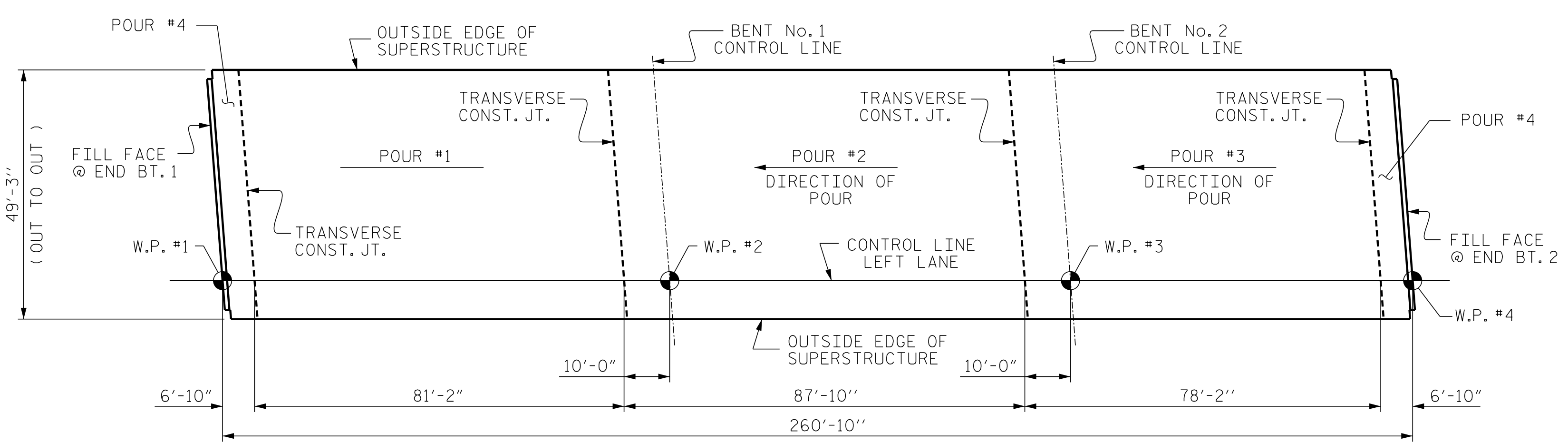
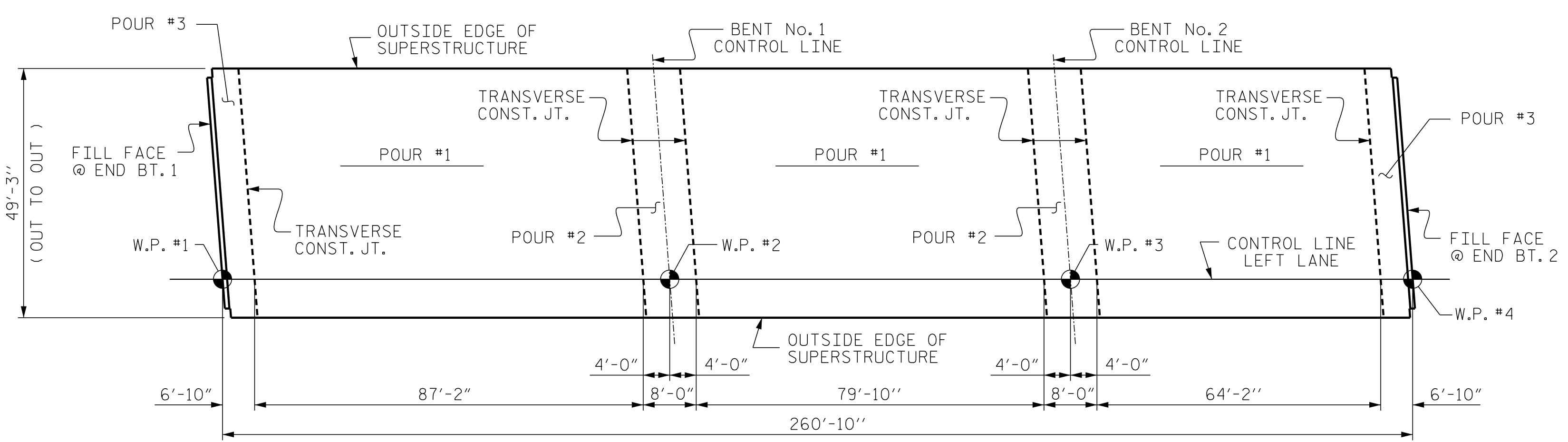
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
BRIDGE MOUNTED CHAIN LINK FENCE DETAILS
 (LEFT LANE)

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

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GROOVING BRIDGE FLOORS	
APPROACH SLABS	2,092 SQ.FT.
BRIDGE DECK	11,144 SQ.FT.
TOTAL	13,236 SQ.FT.

CLASS AA CONCRETE BREAKDOWN	
POUR #1	133.5 CY
POUR #2	160.2 CY
POUR #3	144.3 CY
POUR #4	75.0 CY
CLASS AA CONCRETE BREAKDOWN TOTAL	513.0 CY

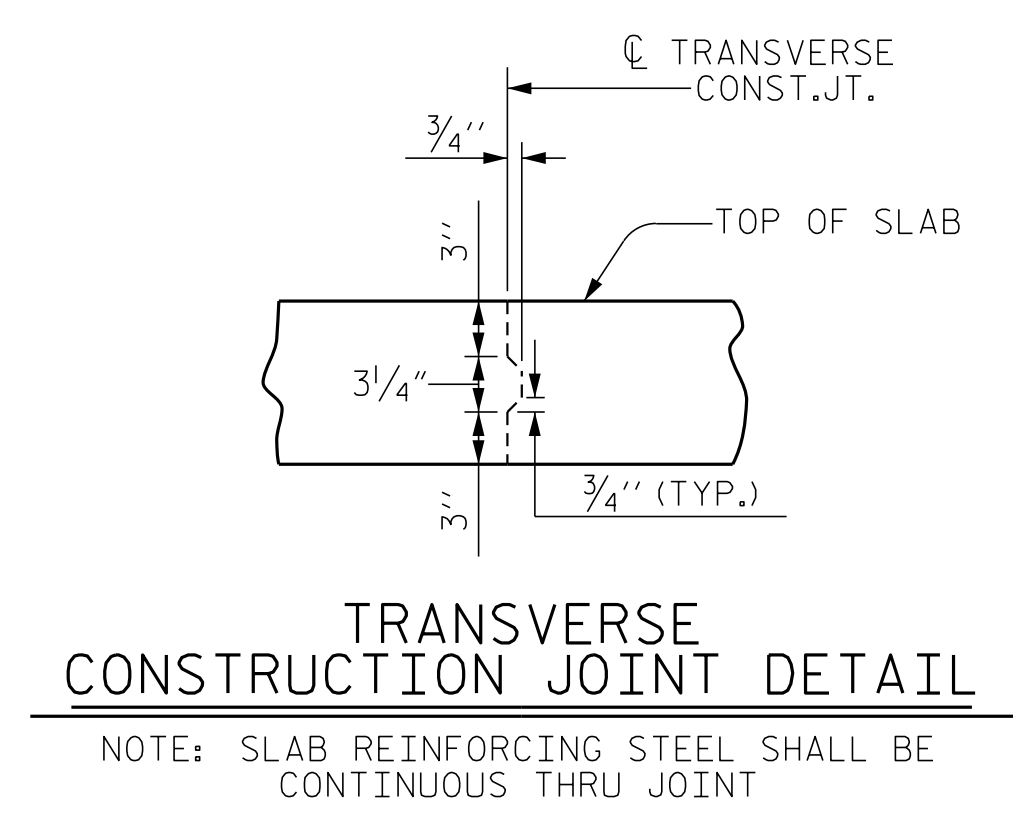


SUPERSTRUCTURE BILL OF MATERIAL			
	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	* EPOXY COATED REINFORCING STEEL (LBS.)
TOTALS **	513.0	49,338	48,831

** QUANTITIES FOR CONCRETE BARRIER RAIL ARE NOT INCLUDED

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

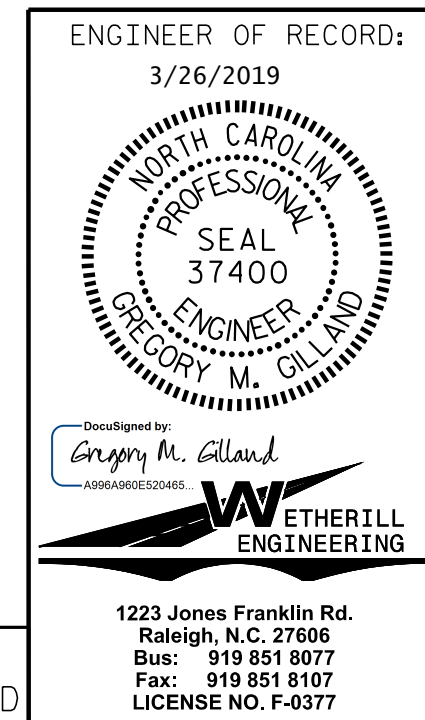
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			



BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	557	#5	STR	48'-11"	28,418
A2	557	#5	STR	48'-11"	28,418
* A101	2	#5	STR	44'-6"	93
* A102	2	#5	STR	38'-6"	80
* A103	2	#5	STR	32'-7"	68
* A104	2	#5	STR	26'-7"	55
* A105	2	#5	STR	20'-7"	43
* A106	2	#5	STR	14'-8"	31
* A107	2	#5	STR	8'-8"	18
A201	2	#5	STR	44'-6"	93
A202	2	#5	STR	38'-6"	80
A203	2	#5	STR	32'-7"	68
A204	2	#5	STR	26'-7"	55
A205	2	#5	STR	20'-7"	43
A206	2	#5	STR	14'-8"	31
A207	2	#5	STR	8'-8"	18
* B1	20	#4	STR	27'-9"	371
* B2	94	#6	STR	20'-0"	2824
* B3	64	#4	STR	24'-4"	1040
* B4	64	#6	STR	34'-5"	3308
* B5	62	#6	STR	28'-0"	2607
* B6	32	#4	STR	29'-0"	620
* B7	32	#6	STR	58'-11"	2832
* B8	62	#6	STR	24'-6"	2282
* B9	64	#4	STR	18'-9"	802
* B10	94	#6	STR	15'-0"	2118
B11	310	#5	STR	53'-6"	17,298
K1	20	#4	STR	24'-6"	327
K2	48	#4	STR	8'-6"	273
K3	48	#4	STR	9'-6"	305
K4	8	#4	STR	8'-0"	43
K5	16	#4	STR	6'-10"	73
K6	8	#4	STR	2'-5"	13
K7	8	#4	STR	2'-10"	15
K8	4	#4	STR	2'-1"	6
K9	20	#4	STR	22'-2"	296
* S1	84	#4	1	11'-11"	669
* S2	80	#4	1	10'-4"	552
S3	272	#4	4	2'-9"	500
U1	80	#4	2	11'-6"	615
U2	4	#4	2	10'-6"	28
U3	56	#4	3	15'-10"	592
U4	16	#4	3	13'-10"	148
REINFORCING STEEL			LBS.	49,338	
* EPOXY COATED REINFORCING STEEL			LBS.	48,831	

* THESE BARS ARE EPOXY COATED.

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-

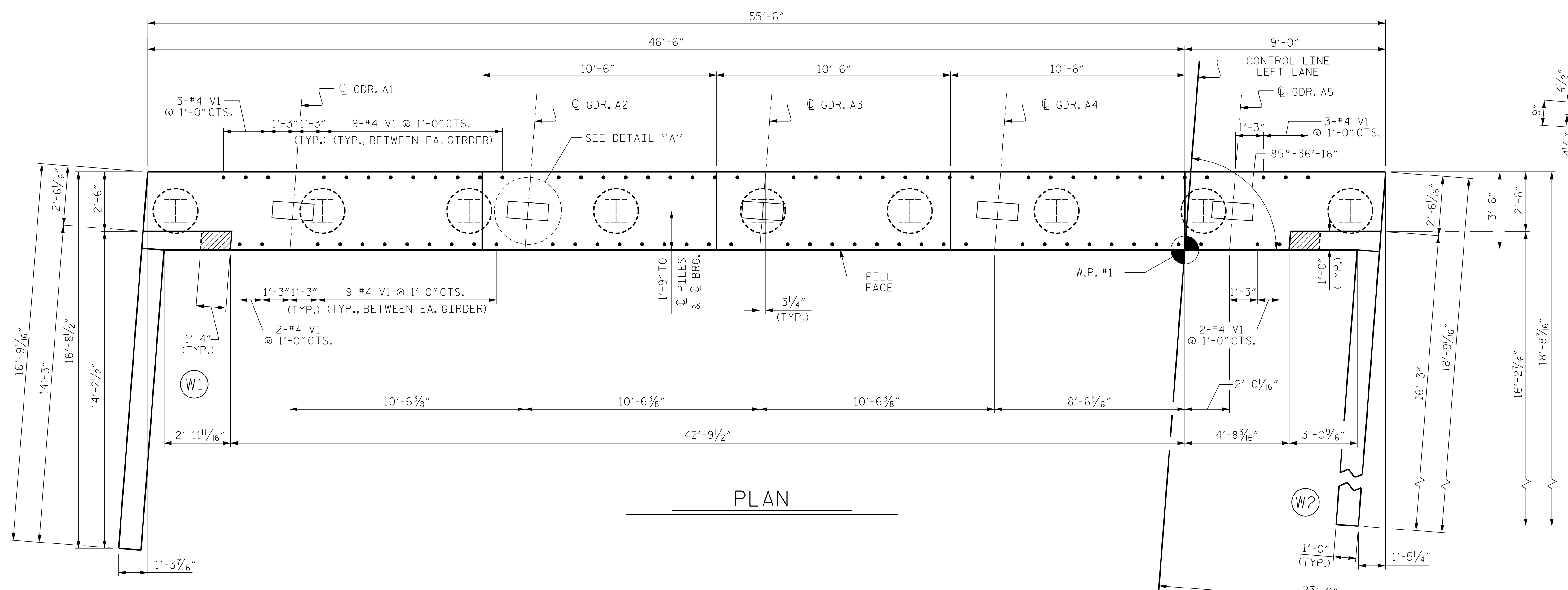


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE BILL OF MATERIAL (LEFT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
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2			4		

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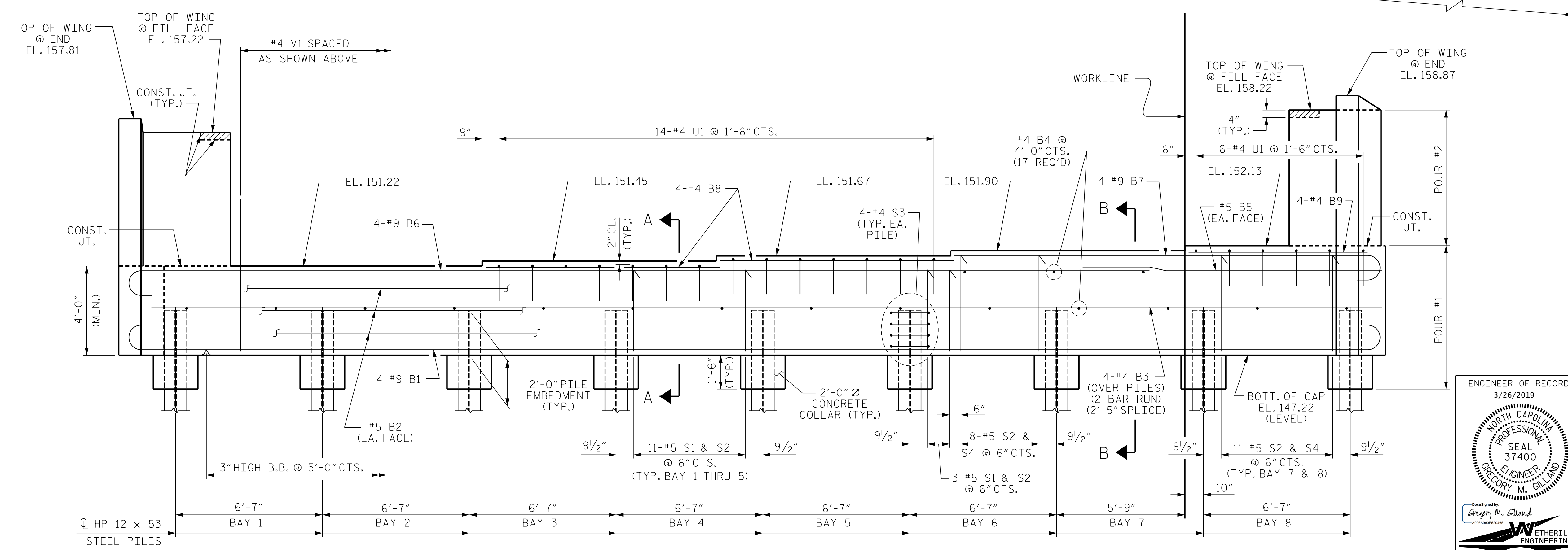
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DRAWN BY: D. HODGE DATE: 10/18
 CHECKED BY: T. KOCH/G.M.G. DATE: 11/18



PLAN

DETAIL "A"
(TYP. EACH GIRDER)



ELEVATION

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 1 OF 3

ENGINEER OF RECORD:
 3/26/2019

 Gregory M. Gilland
 WETHERILL ENGINEERING

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1
 (LEFT LANE)

REVISIONS					
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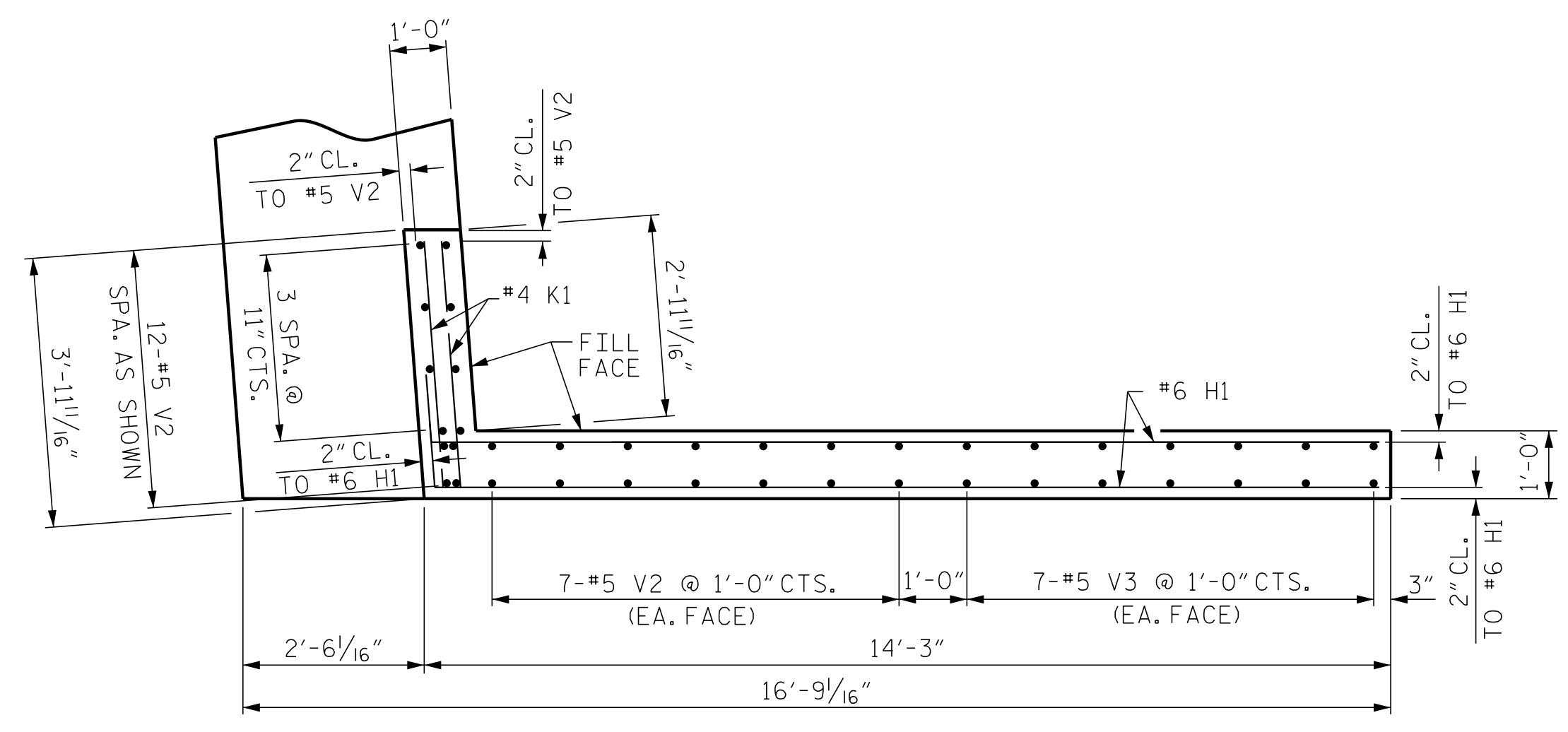
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 TOTAL SHEETS 38

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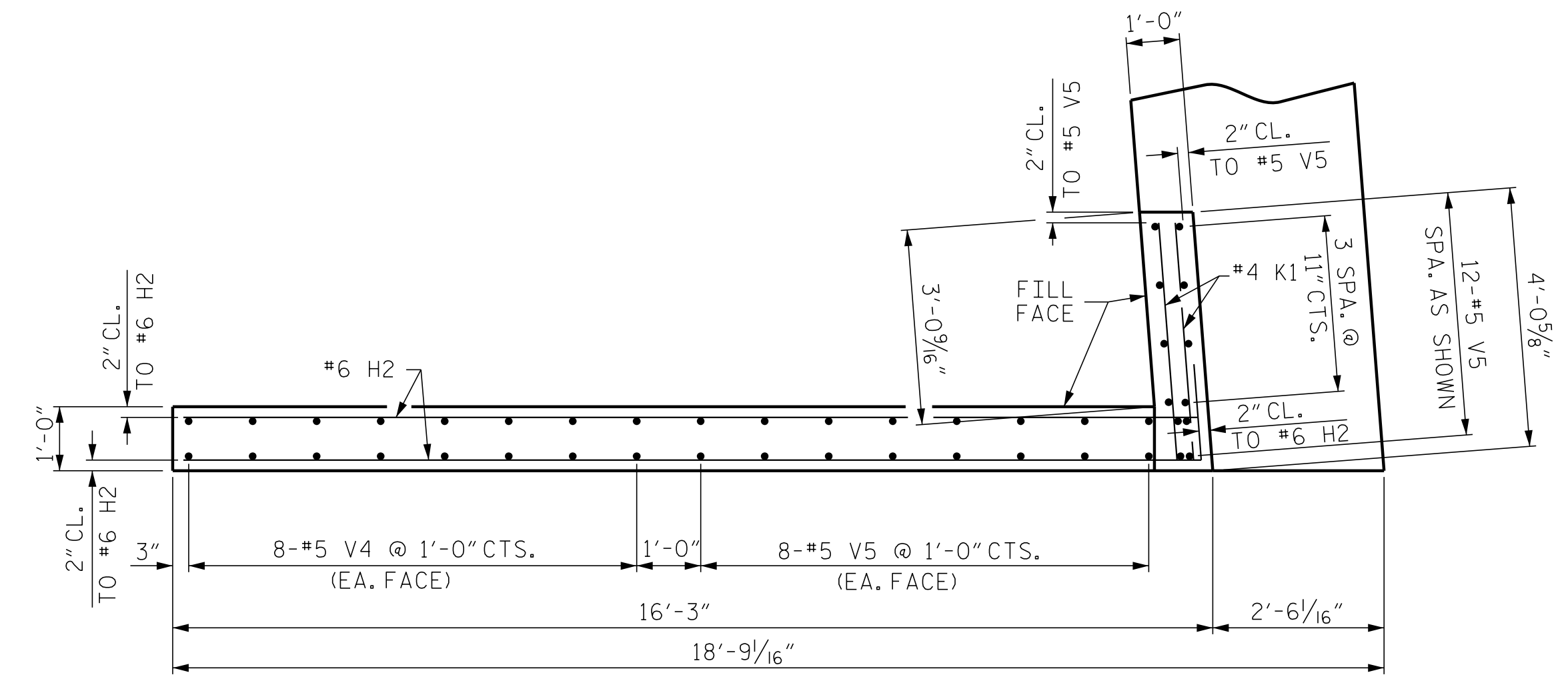
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 CHECKED BY: G.M. GILLAND DATE: 11/18

FOR SECTION A-A & B-B, SEE SHEET 3 OF 3.

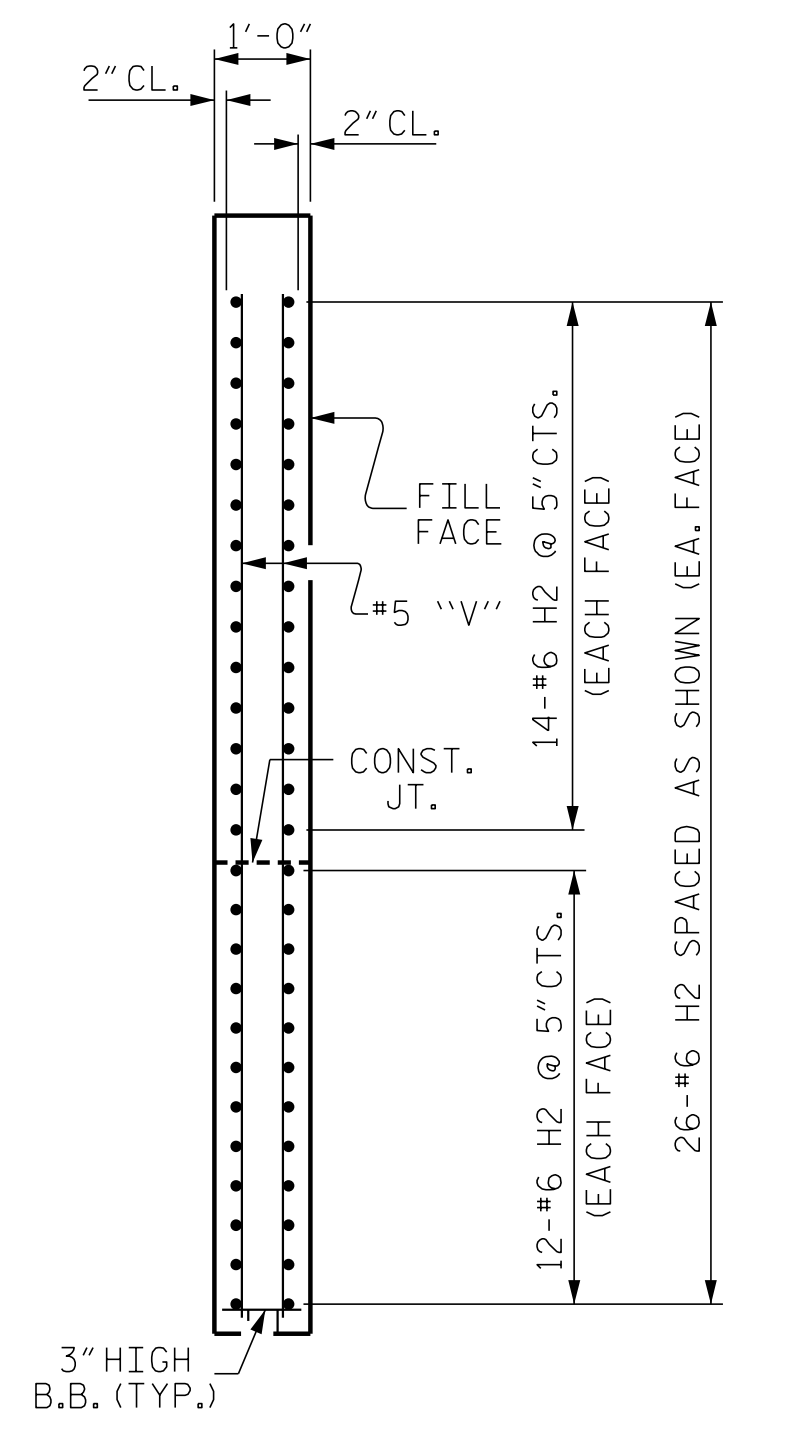
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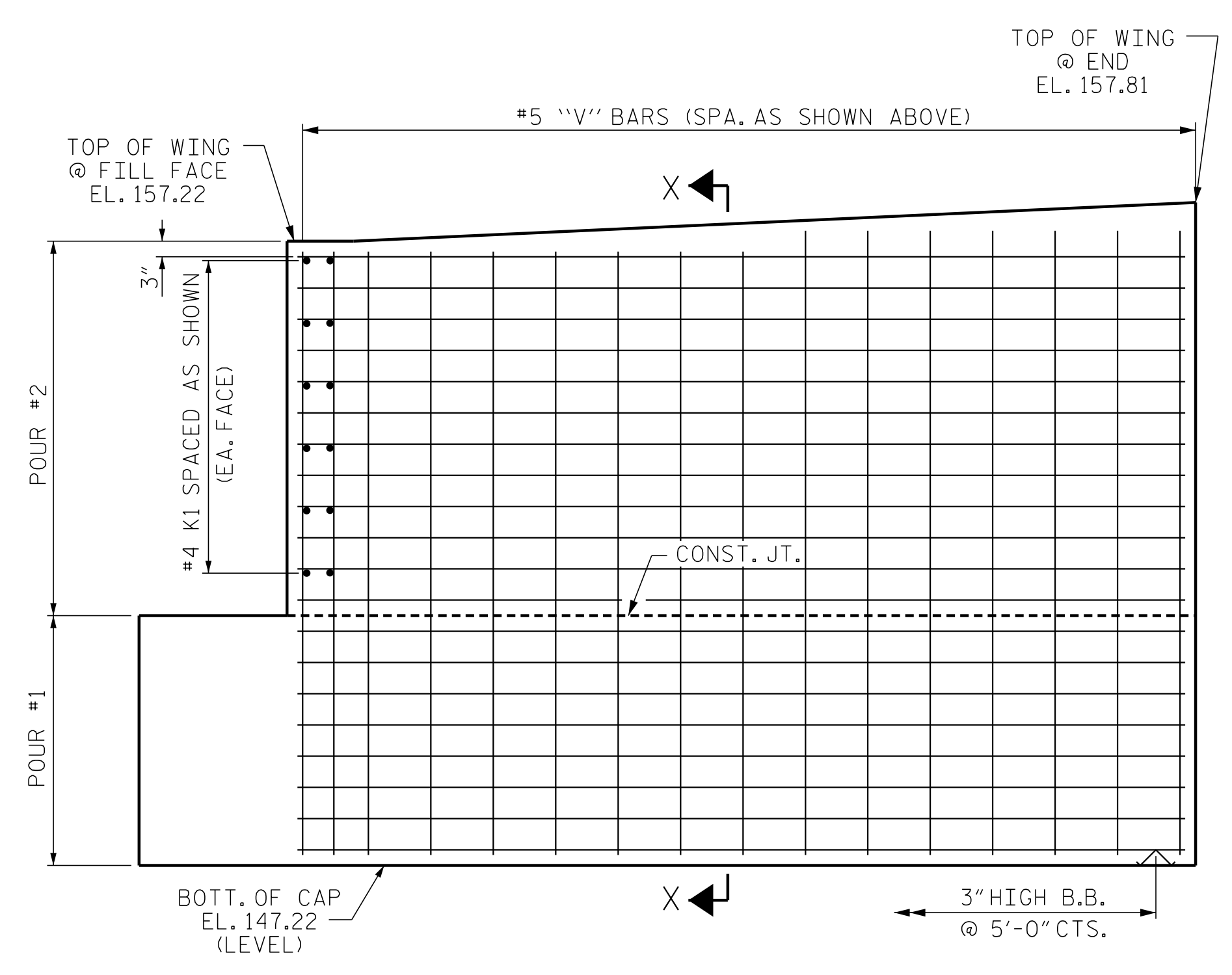
PLAN OF WING - (W1)



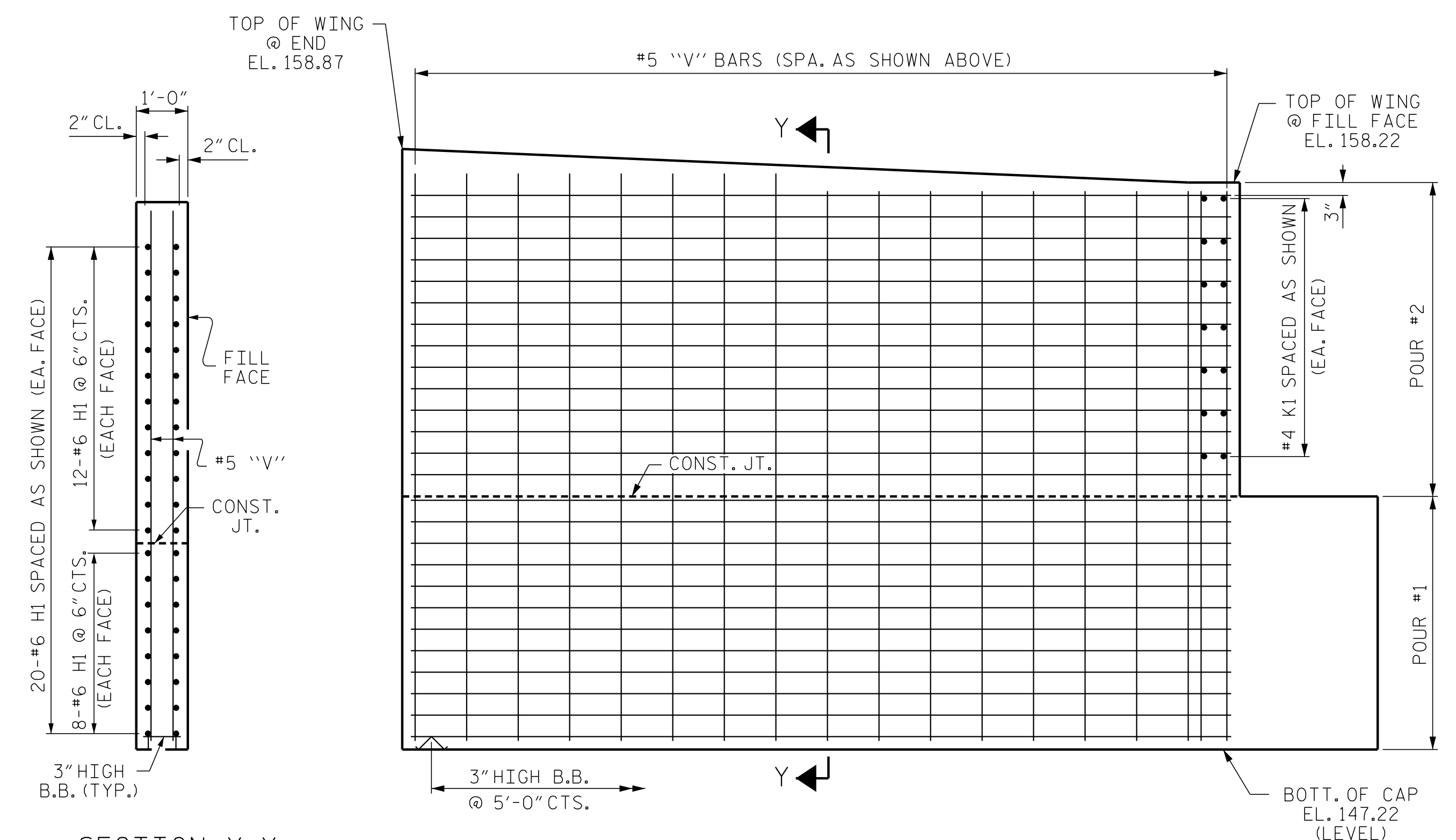
PLAN OF WING - (W2)



SECTION Y-Y



ELEVATION OF WING - (W1)



ELEVATION OF WING - (W2)

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 2 OF 3

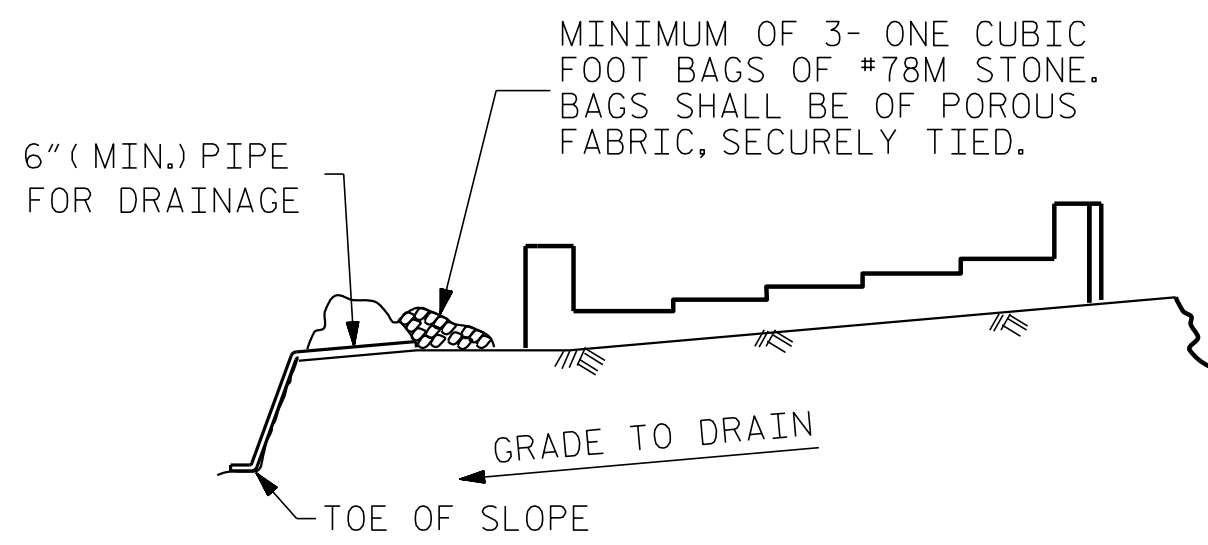
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DRAWN BY: D. HODGE DATE: 11/18
 CHECKED BY: G.M. GILLAND DATE: 11/18

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ENGINEER OF RECORD:
 3/26/2019
 NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 37400
 GREGORY M. GILLAND
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 LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		SUBSTRUCTURE END BENT No. 1 (LEFT LANE)	
REVISIONS			
NO.	BY:	DATE:	SHEET NO.
1			38
2			38

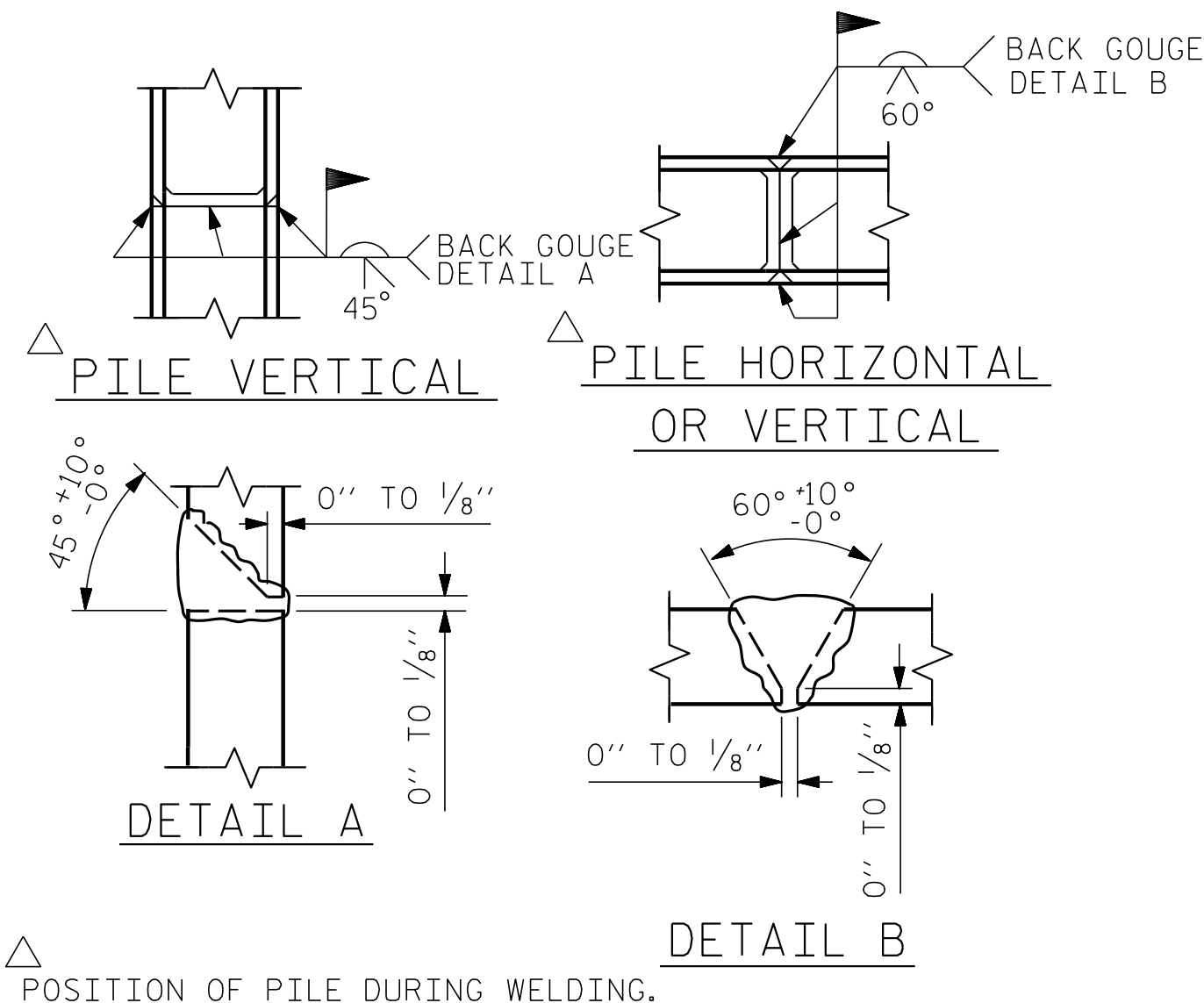


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

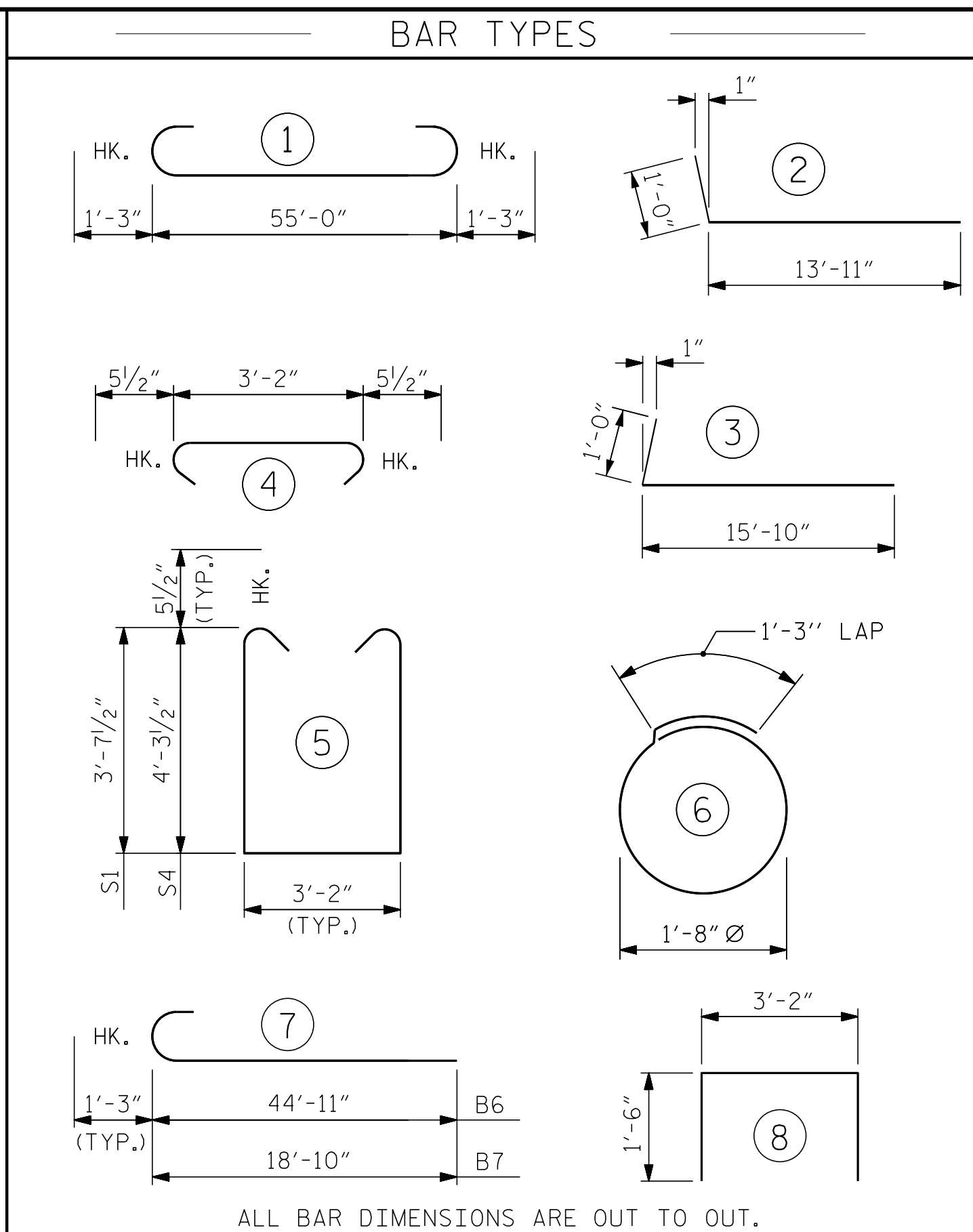
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS



BILL OF MATERIAL

END BENT No. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9		57'-6"	782
B2	6	#5	STR	55'-2"	345
B3	8	#4	STR	28'-10"	154
B4	17	#4	STR	3'-2"	36
B5	2	#5	STR	13'-2"	27
B6	4	#9	7	46'-2"	628
B7	4	#9	7	20'-1"	273
B8	8	#4	STR	10'-6"	56
B9	4	#4	STR	8'-1"	22
H1	40	#6	2	14'-11"	896
H2	52	#6	3	16'-10"	1315
K1	26	#4	STR	3'-7"	62
S1	58	#5	5	11'-4"	686
S2	88	#5	4	4'-1"	375
S3	36	#4	6	6'-6"	156
S4	30	#5	5	12'-8"	396
U1	20	#4	8	6'-2"	82
V1	82	#4	STR	6'-8"	365
V2	26	#5	STR	9'-8"	262
V3	14	#5	STR	10'-0"	146
V4	16	#5	STR	11'-0"	184
V5	28	#5	STR	10'-8"	312

REINFORCING STEEL 7,560 LBS.

CLASS A CONCRETE BREAKDOWN

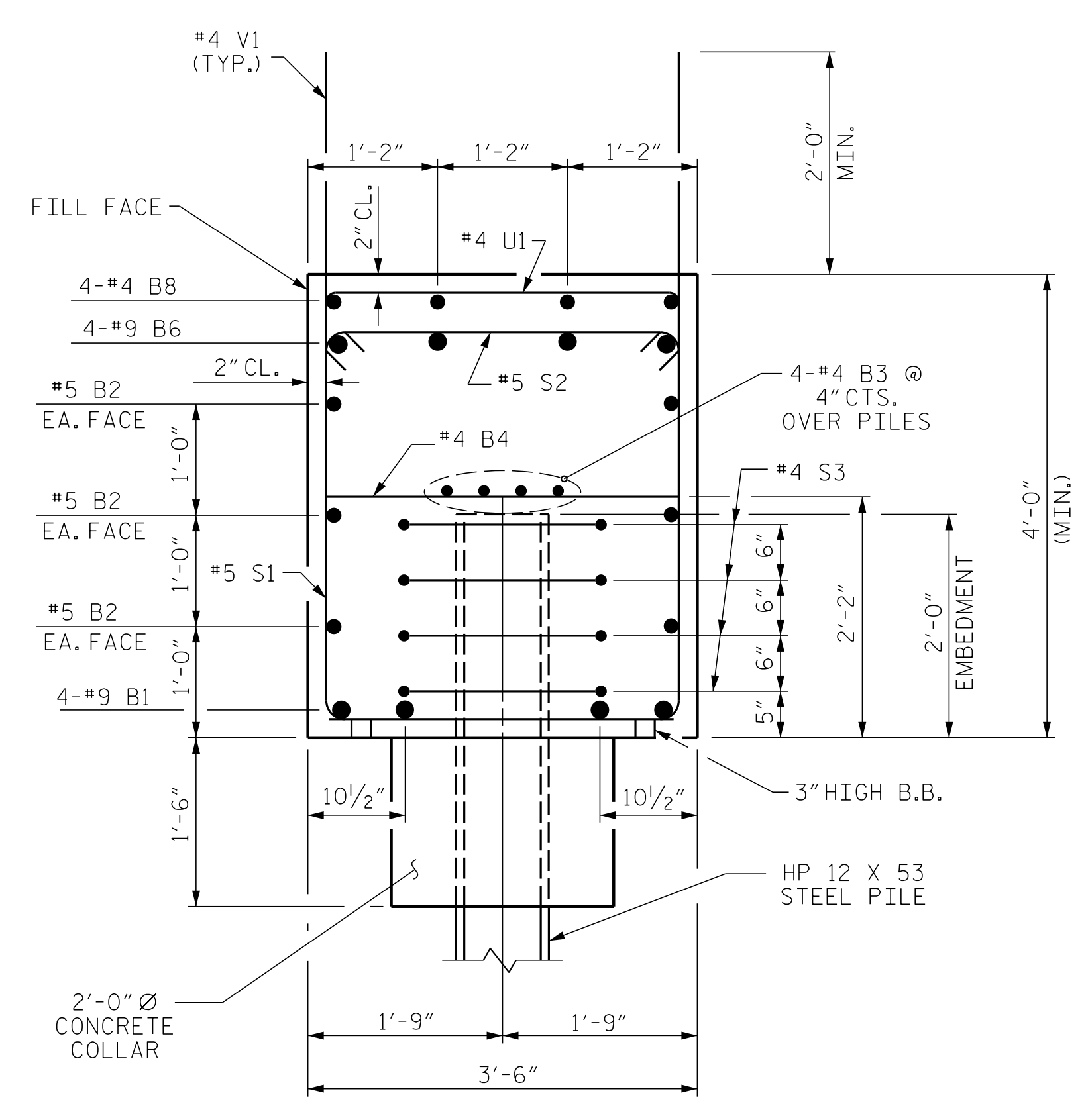
POUR #1	CAP, LOWER PART OF WINGS AND CONCRETE COLLARS	38.0 C.Y.
POUR #2	UPPER PART OF WINGS	8.5 C.Y.
TOTAL CLASS A CONCRETE		46.5 C.Y.

HP 12 X 53 STEEL PILES

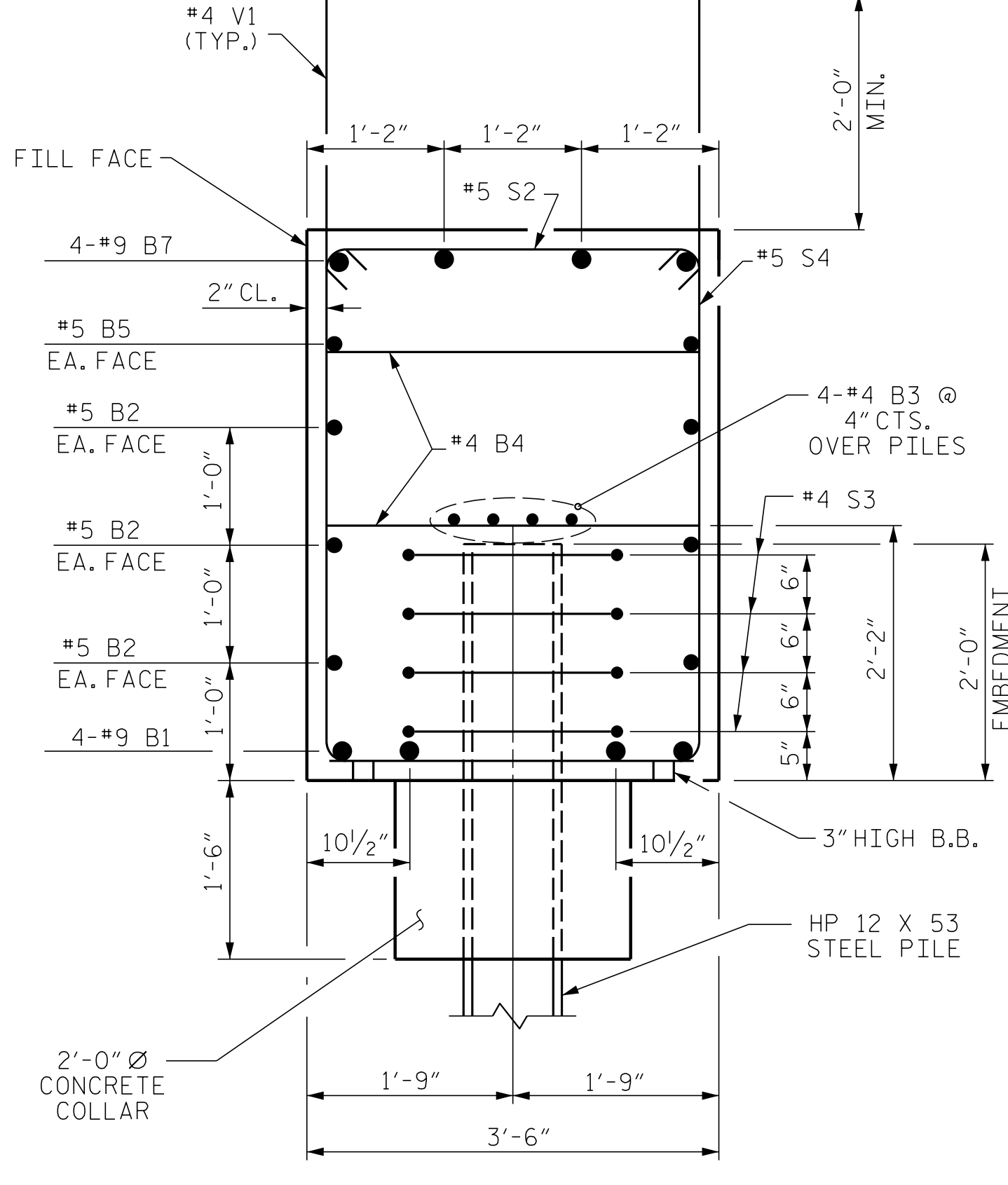
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PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES 9 EA.

PILE REDRIVES 5 EA.



SECTION A-A



SECTION B-B

NOTES
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAILS ARE CAST IF SLIP FORMING IS USED.
 THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCEPT THE BEARING AREA AND THE AREA OUTSIDE THE EDGE OF SUPERSTRUCTURE, SHALL BE RAKED TO A DEPTH OF 1/4\"/>

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
END BENT No. 1
 (LEFT LANE)

REVISIONS

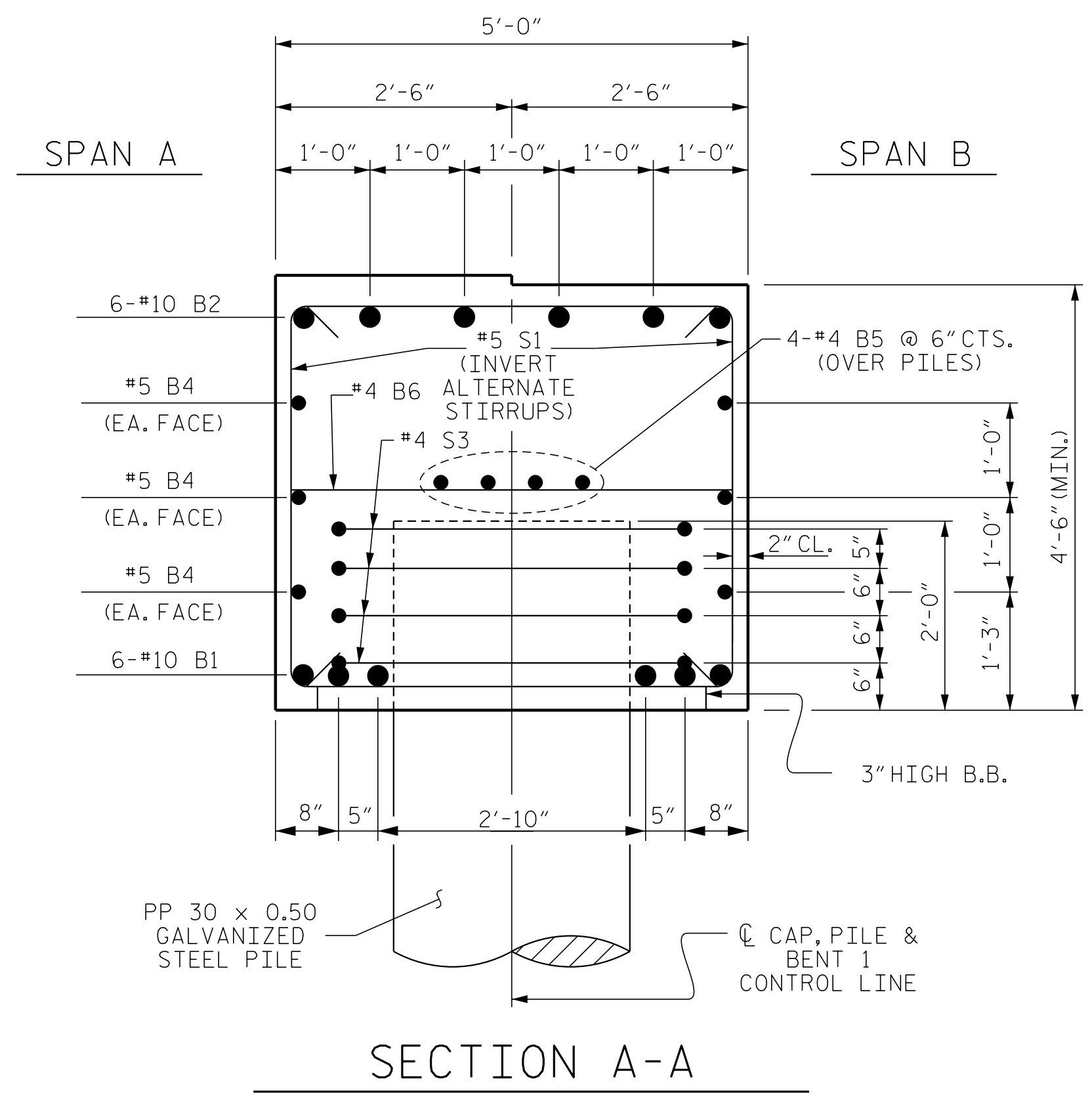
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SHEET NO.
S3-26
 TOTAL SHEETS
38

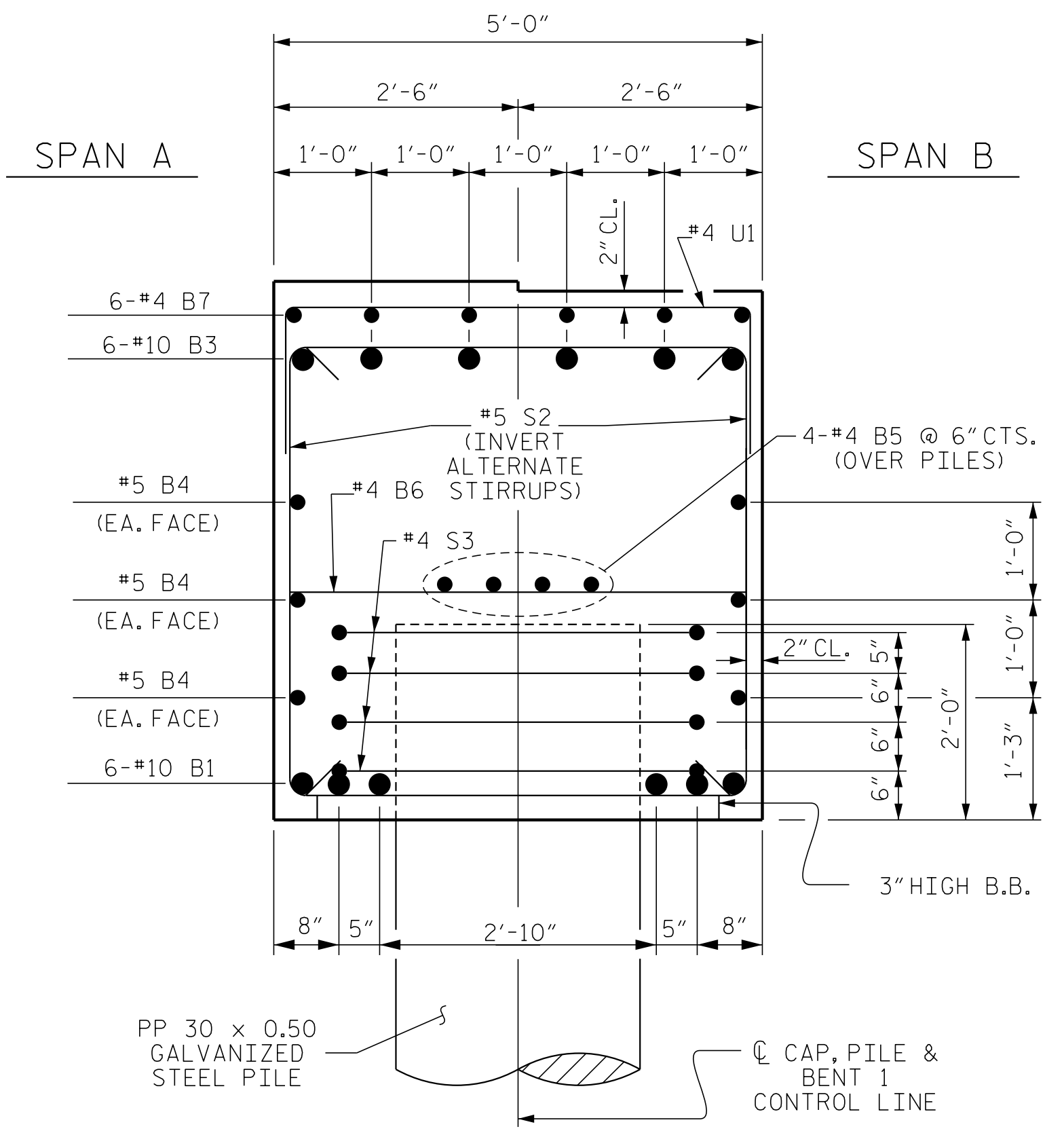
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DRAWN BY: D. HODGE DATE: 11/18
 CHECKED BY: G.M. GILLAND DATE: 11/18

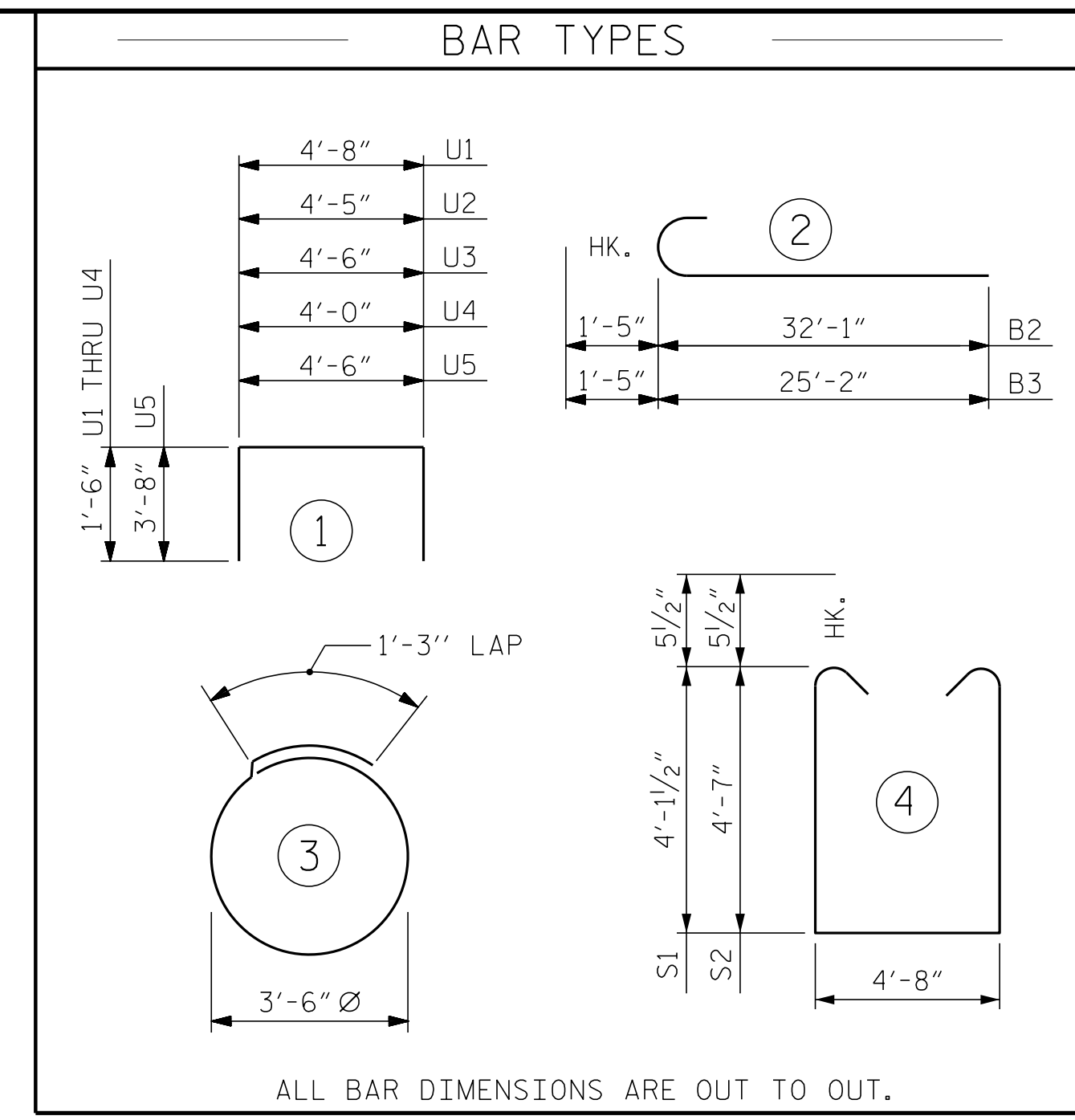
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SECTION A-A

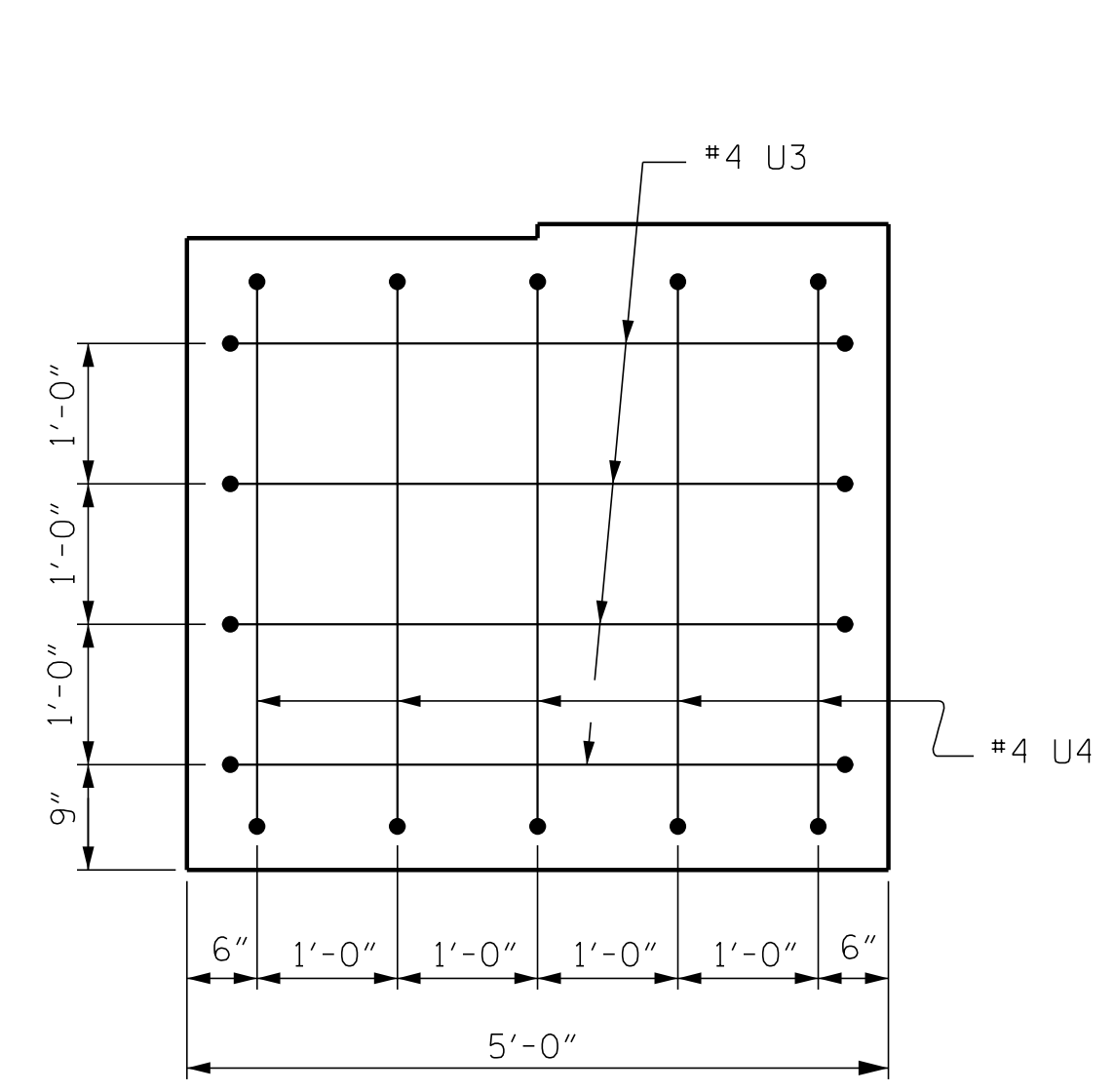


SECTION B-B

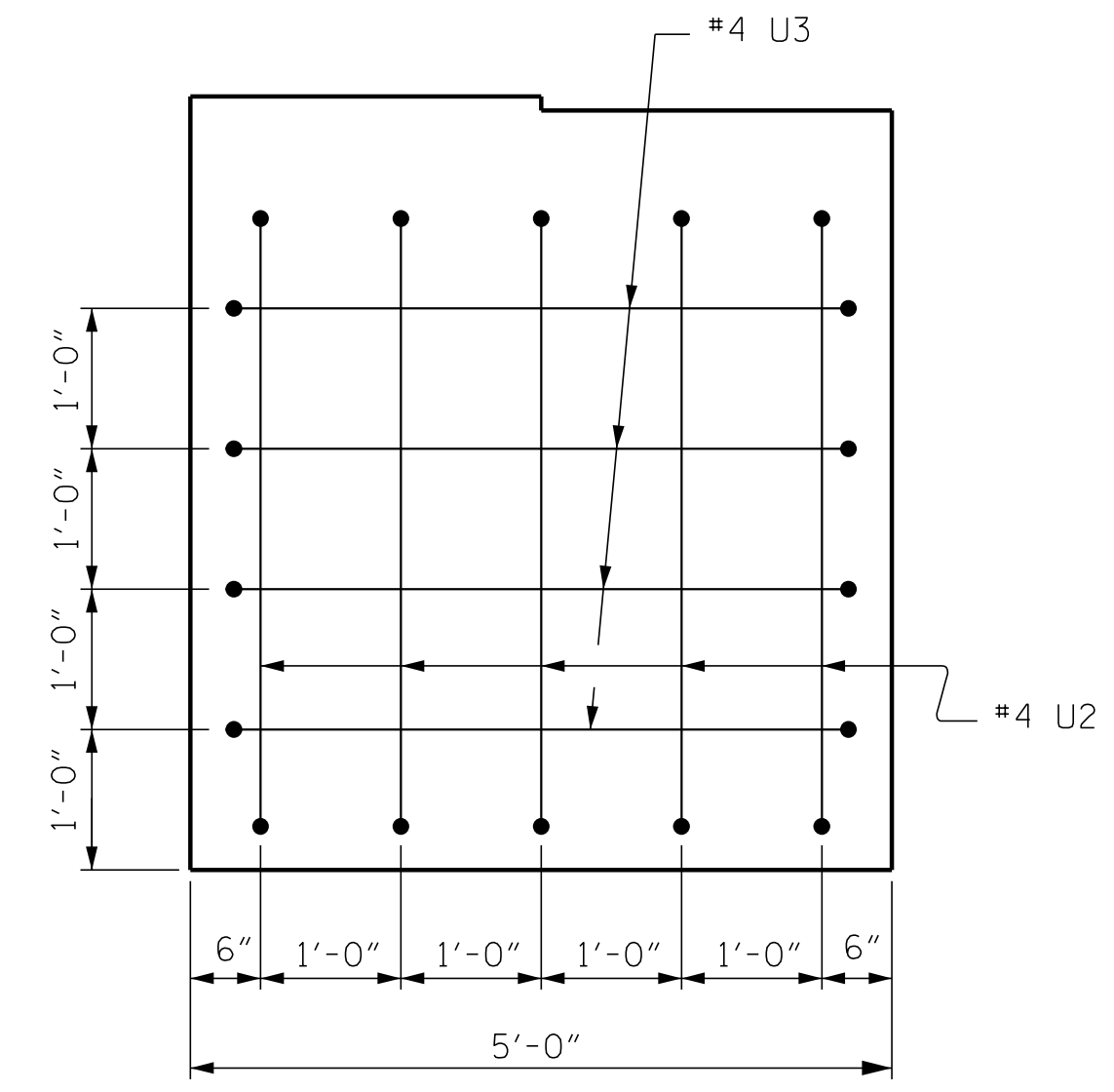


NOTES:
 STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 GALVANIZE THE TOP 58 FEET OF EACH BENT No.1 PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

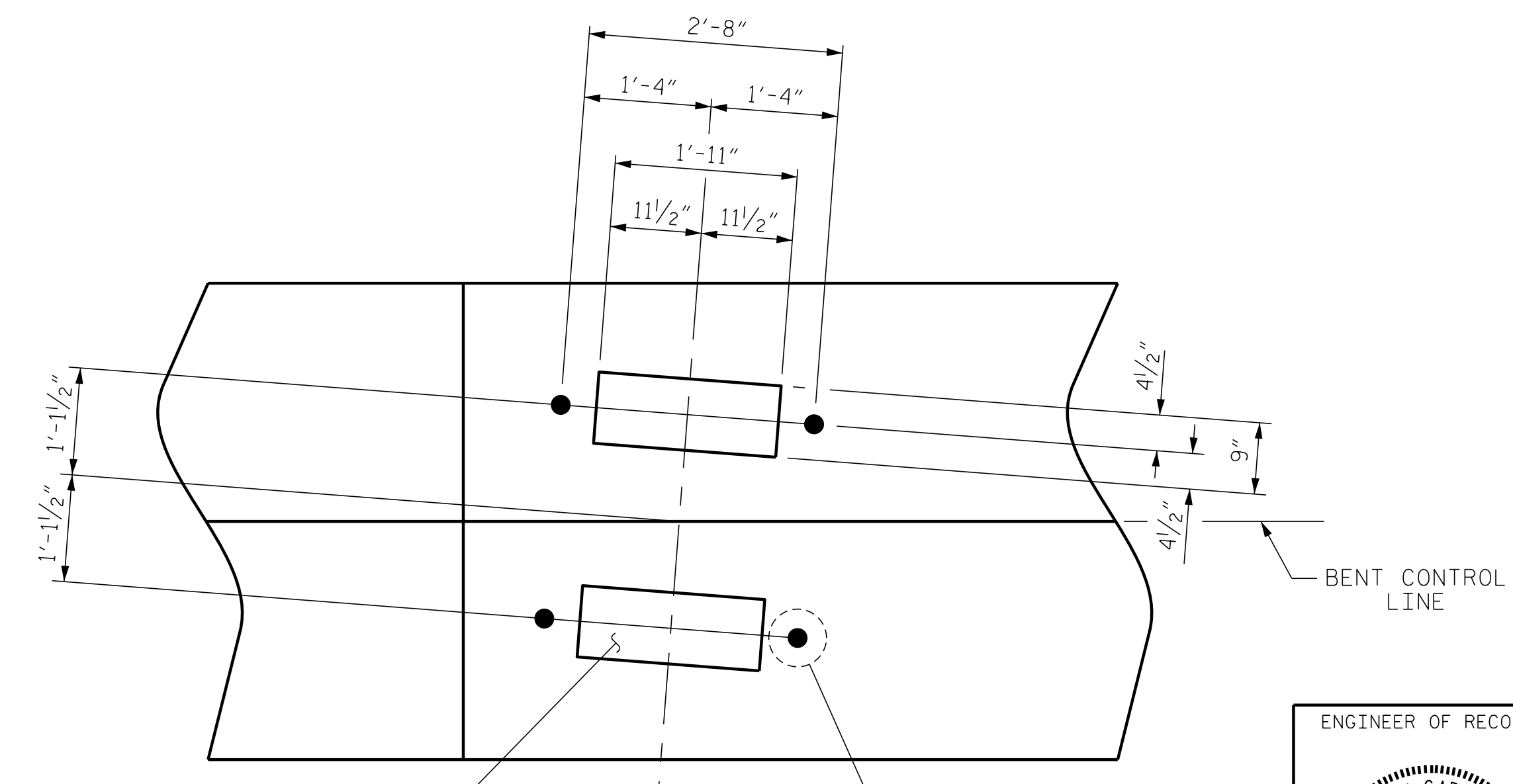
BILL OF MATERIAL					
BENT No. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	46'-2"	1192
B2	6	#10	2	33'-6"	865
B3	6	#10	2	26'-7"	686
B4	6	#5	STR	46'-2"	289
B5	8	#4	STR	24'-4"	130
B6	15	#4	STR	4'-8"	47
B7	6	#4	STR	4'-2"	17
S1	18	#5	4	13'-10"	260
S2	20	#5	4	14'-9"	308
S3	28	#4	3	12'-3"	229
U1	35	#4	1	7'-8"	179
U2	5	#4	1	7'-5"	25
U3	8	#4	1	7'-6"	40
U4	5	#4	1	7'-0"	23
U5	2	#9	1	11'-10"	80
REINFORCING STEEL					4,370 LBS.
CLASS A CONCRETE					40.0 C.Y.
NOTE: THE VOLUME OF CONCRETE DISPLACED BY THE PIPE PILES HAS BEEN DEDUCTED FROM THE TOTAL.					
PP 30" x 0.50 GALVANIZED STEEL PILES					
NO: 7					LIN. FT. = 819
PILE REDRIVES					4 EA.
PILE DRIVING EQUIPMENT SETUP FOR PP 30 x 0.50 STEEL PILES					7 EA.



VIEW X-X

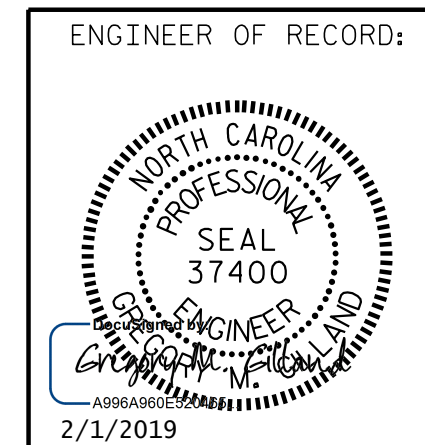


VIEW Y-Y



DETAIL "A"
(TYP. EACH GIRDER)

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT No. 1
 (LEFT LANE)

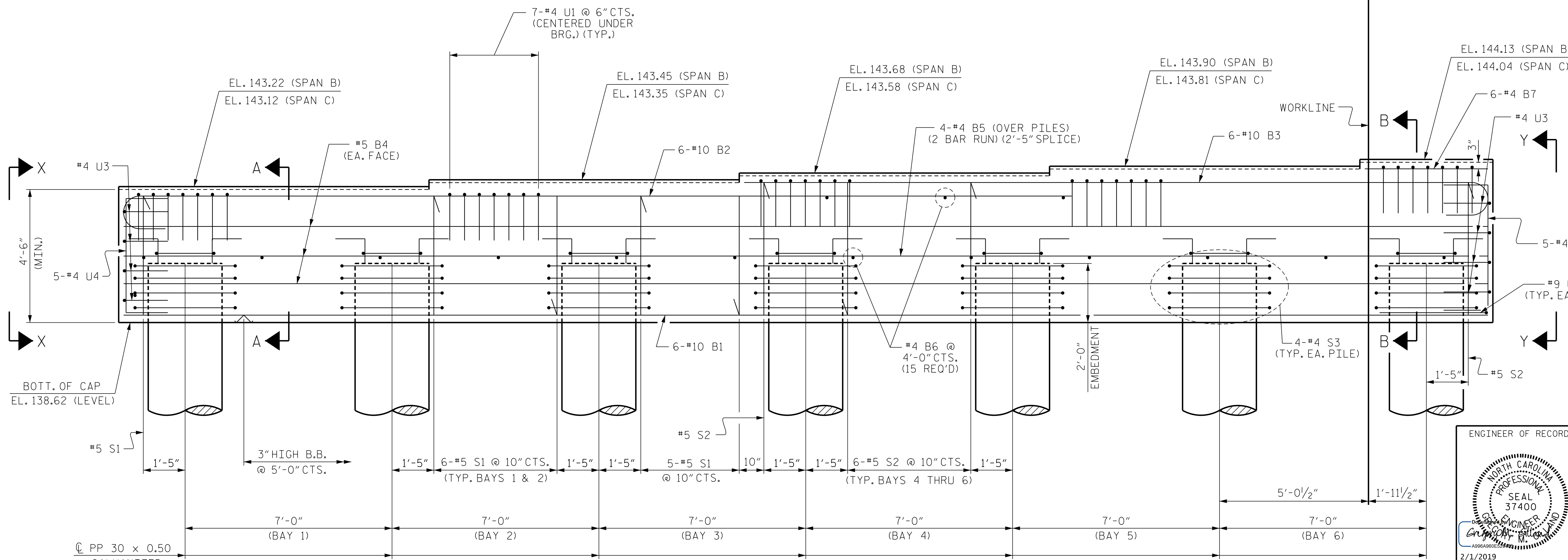
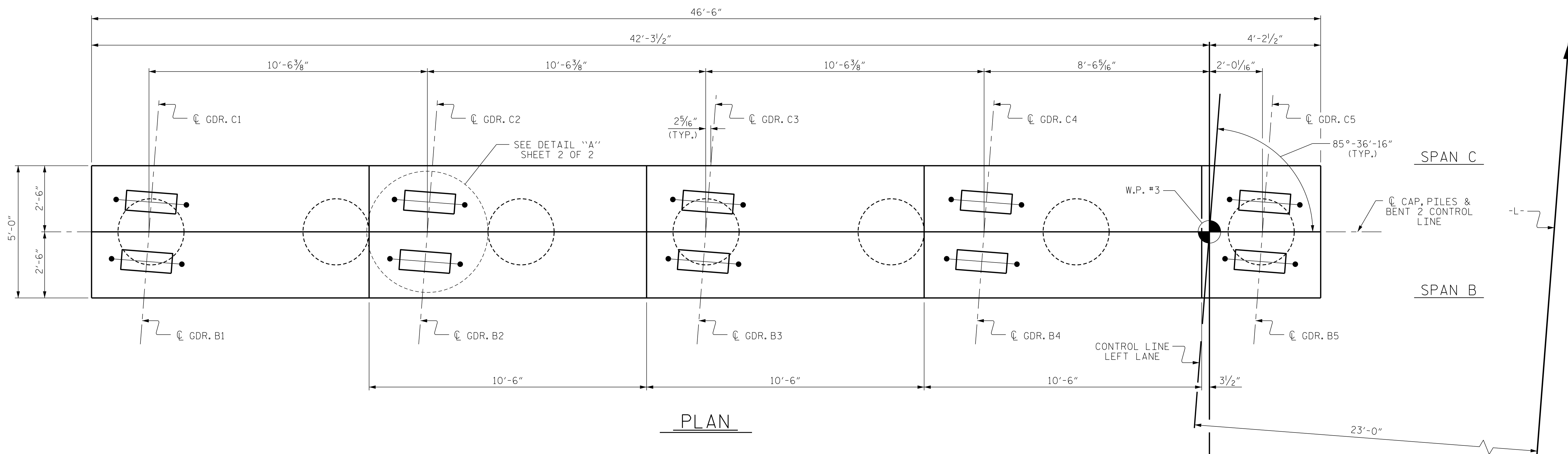
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			38

DRAWN BY: D. HODGE DATE: 11/18
 CHECKED BY: G.M. GILLAND DATE: 12/18

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

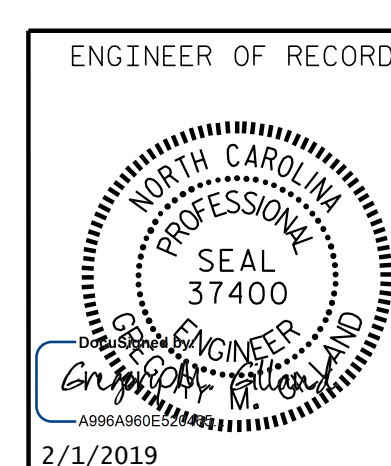
1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
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 LICENSE NO. F-0377

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 1/31/2019 11:40:57 AM



NOTE: INVERT ALTERNATE STIRRUPS

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 192+85.76 -L-
SHEET 1 OF 2



ENGINEER OF RECORD:
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT No. 2
(LEFT LANE)

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

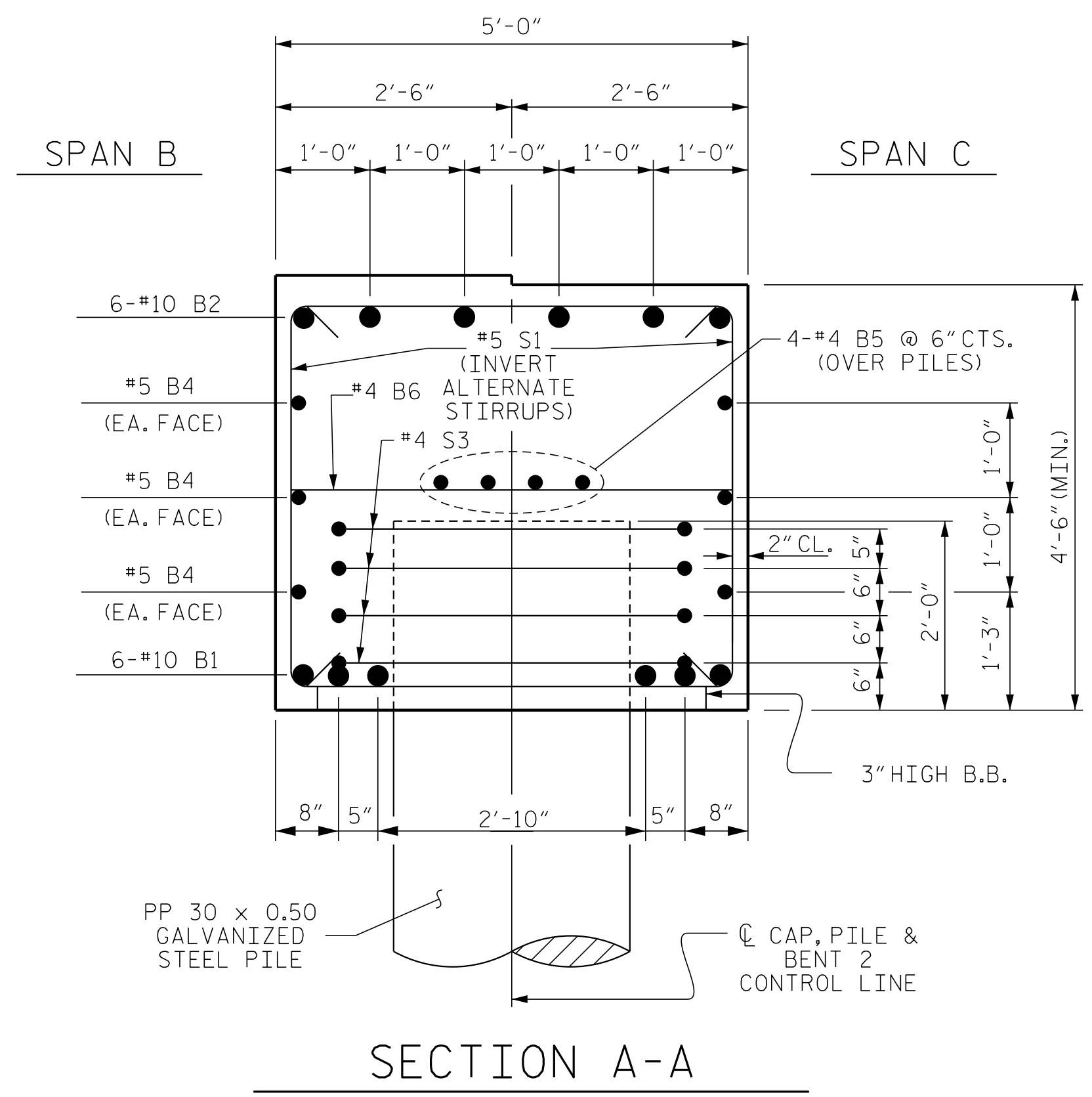
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DRAWN BY: D. HODGE DATE: 1/19
 CHECKED BY: G.M. GILLAND DATE: 1/19

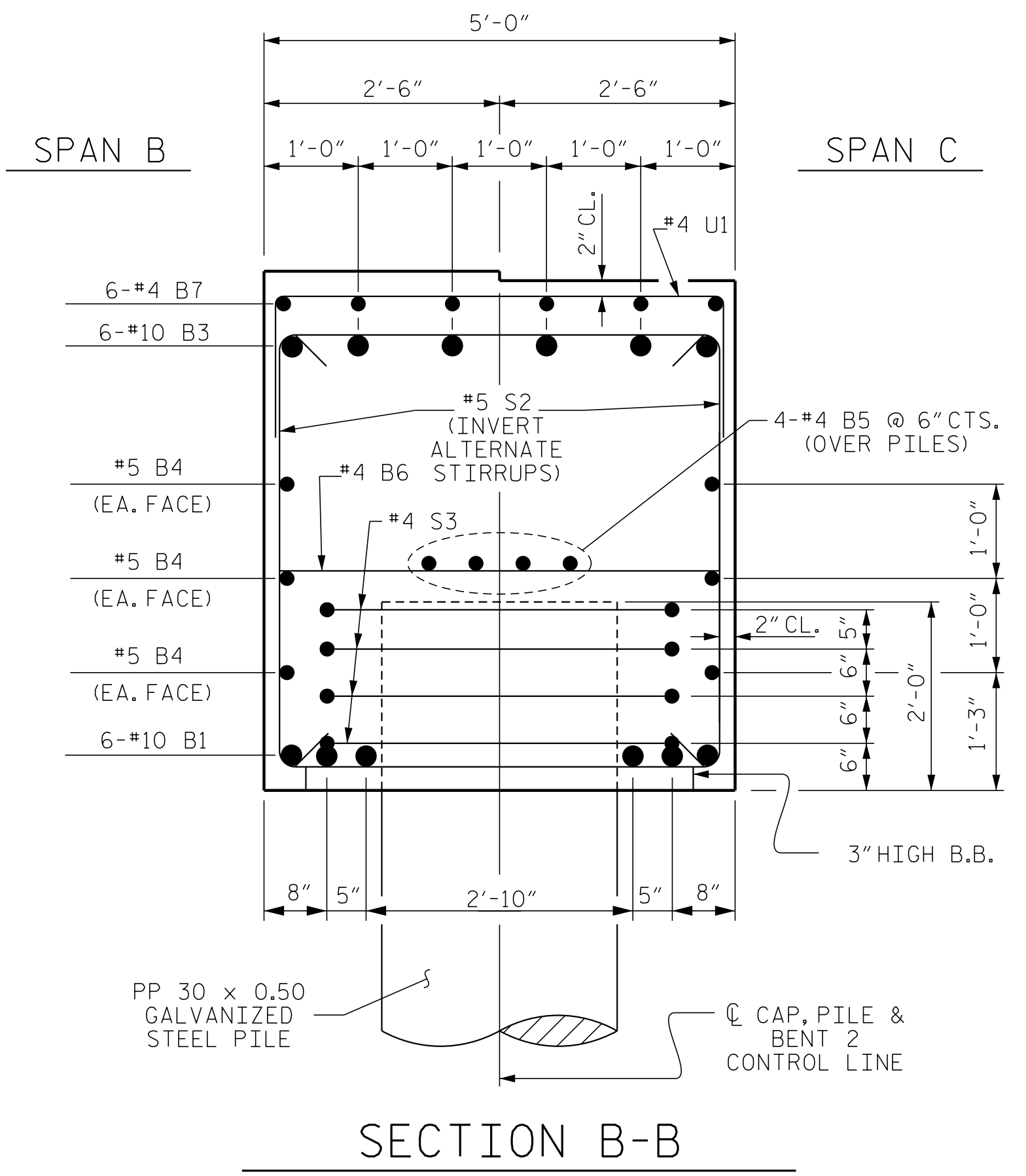
FOR STEEL PIPE PILE REINFORCING STEEL, CONCRETE
 QUANTITIES & SPLICE DETAIL, SEE "30" STEEL PIPE PILE" STANDARD,
 FOR SECTION A-A, SECTION B-B AND DETAIL "A", SEE SHEET 2 OF 2

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

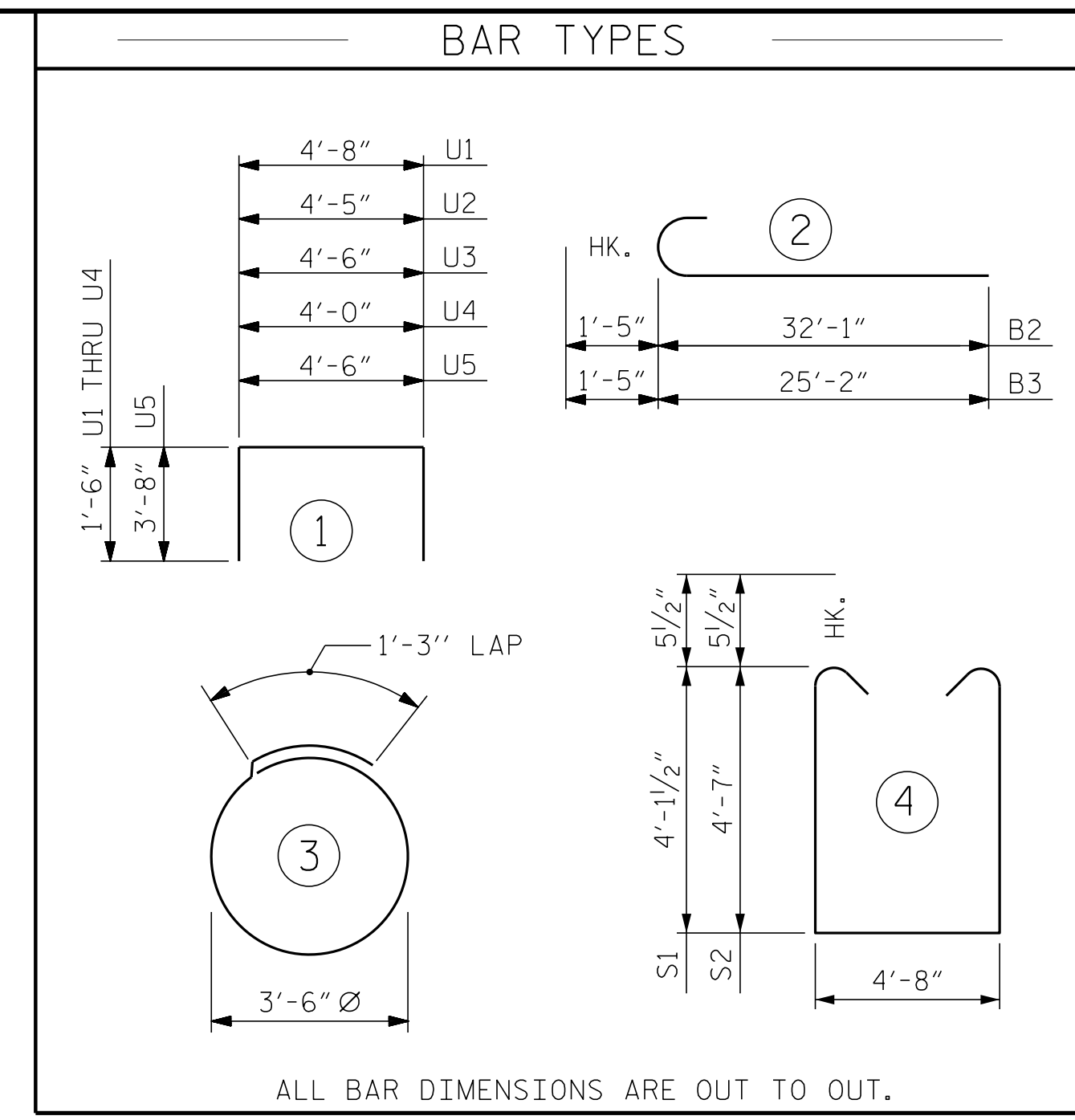
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SECTION A-A

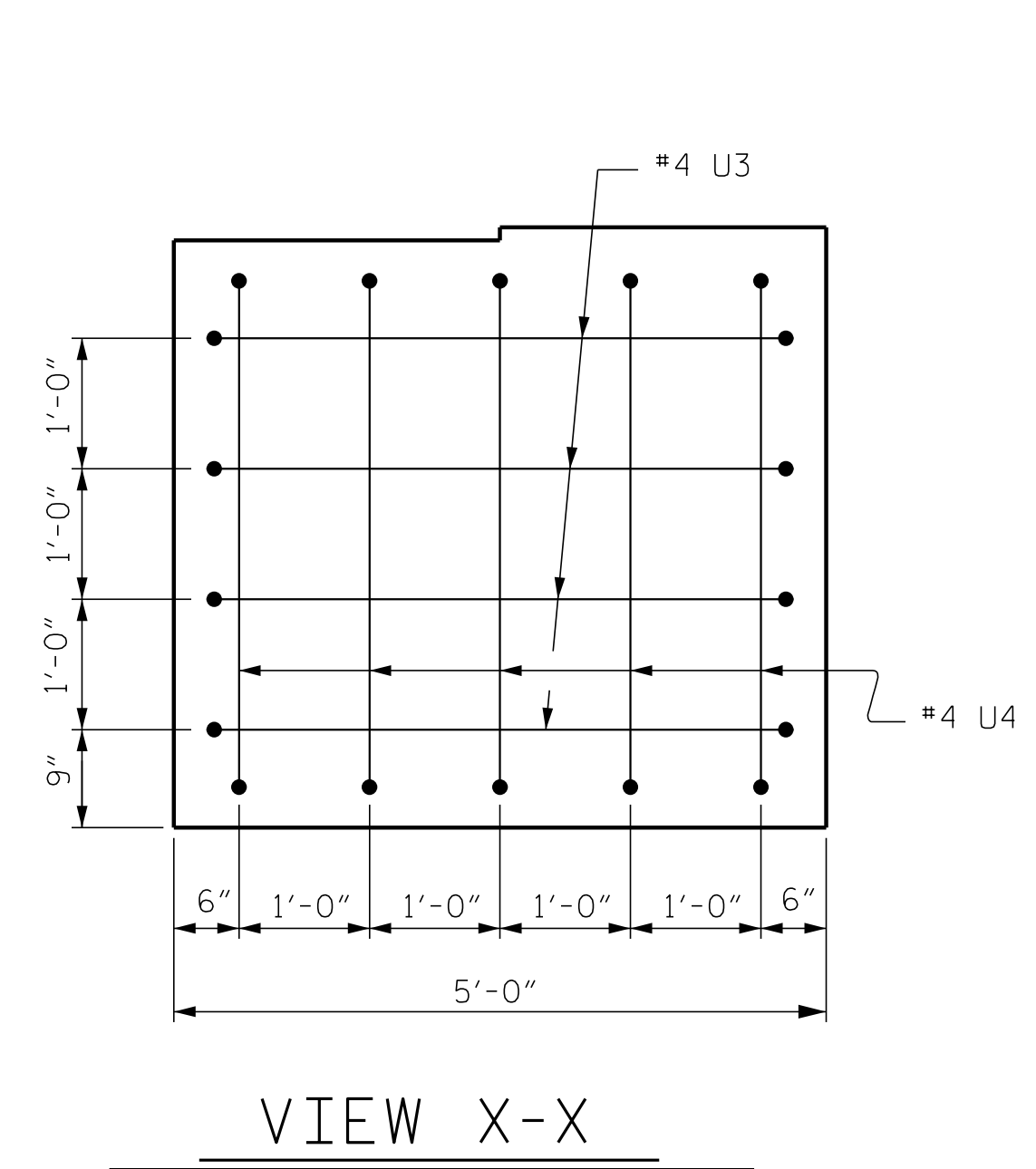


SECTION B-B

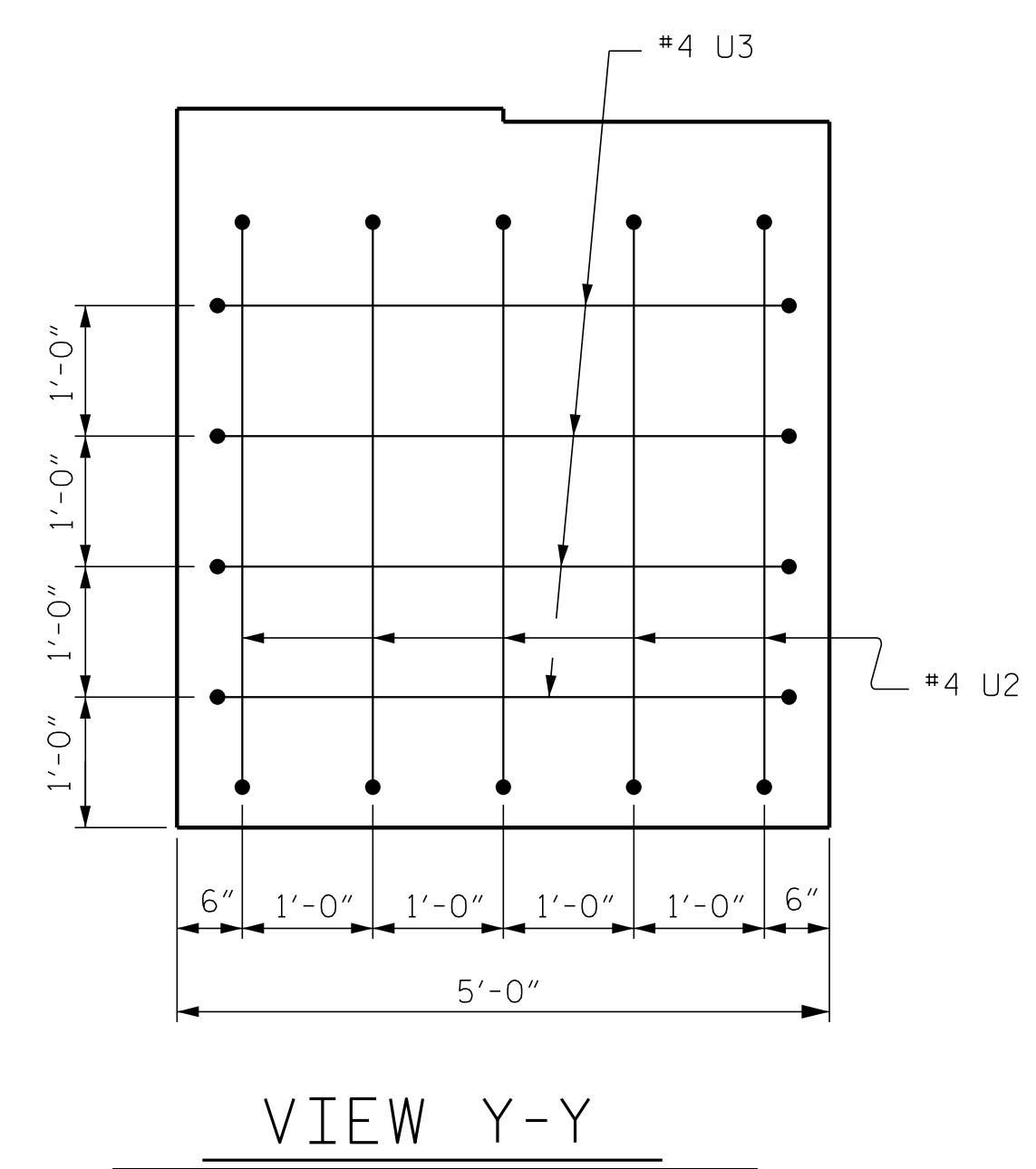


NOTES:
 STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 GALVANIZE THE TOP 54 FEET OF EACH BENT No. 2 PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

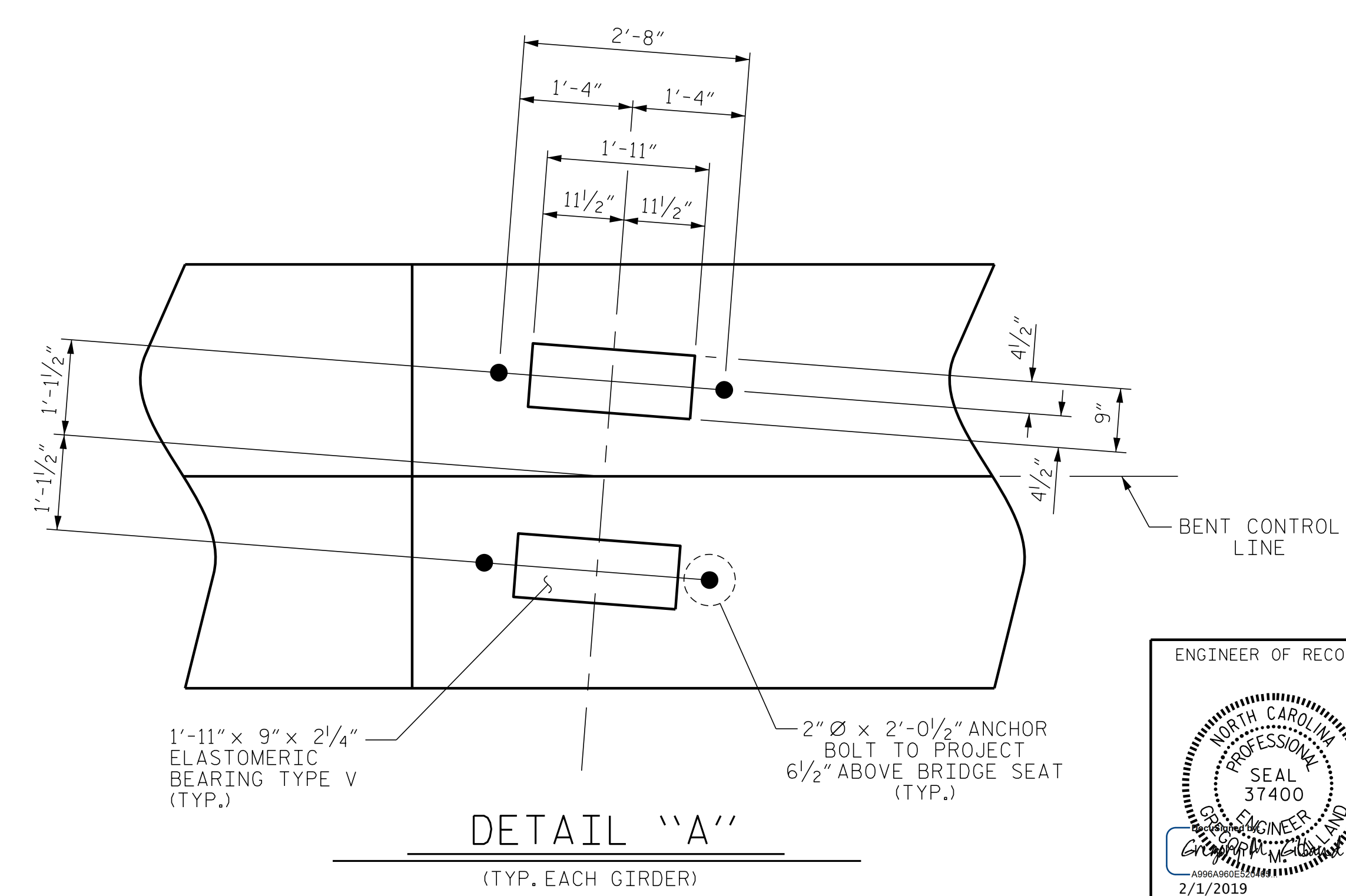
BILL OF MATERIAL					
BENT No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	46'-2"	1192
B2	6	#10	2	33'-6"	865
B3	6	#10	2	26'-7"	686
B4	6	#5	STR	46'-2"	289
B5	8	#4	STR	24'-4"	130
B6	15	#4	STR	4'-8"	47
B7	6	#4	STR	4'-2"	17
S1	18	#5	4	13'-10"	260
S2	20	#5	4	14'-9"	308
S3	28	#4	3	12'-3"	229
U1	35	#4	1	7'-8"	179
U2	5	#4	1	7'-5"	25
U3	8	#4	1	7'-6"	40
U4	5	#4	1	7'-0"	23
U5	2	#9	1	11'-10"	80
REINFORCING STEEL					4,370 LBS.
CLASS A CONCRETE					40.0 C.Y.
NOTE: THE VOLUME OF CONCRETE DISPLACED BY THE PIPE PILES HAS BEEN DEDUCTED FROM THE TOTAL.					
PP 30" x 0.50 GALVANIZED STEEL PILES					
NO: 7					LIN. FT. = 854
PILE REDRIVES					4 EA.
PILE DRIVING EQUIPMENT SETUP FOR PP 30" x 0.50 STEEL PILES					7 EA.



VIEW X-X

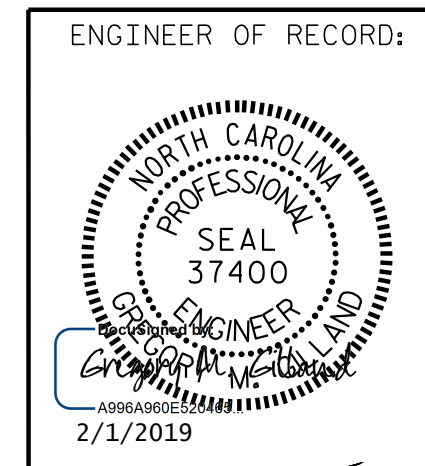


VIEW Y-Y



DETAIL "A"
(TYP. EACH GIRDER)

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 2 OF 2



ENGINEER OF RECORD:
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT No. 2
 (LEFT LANE)

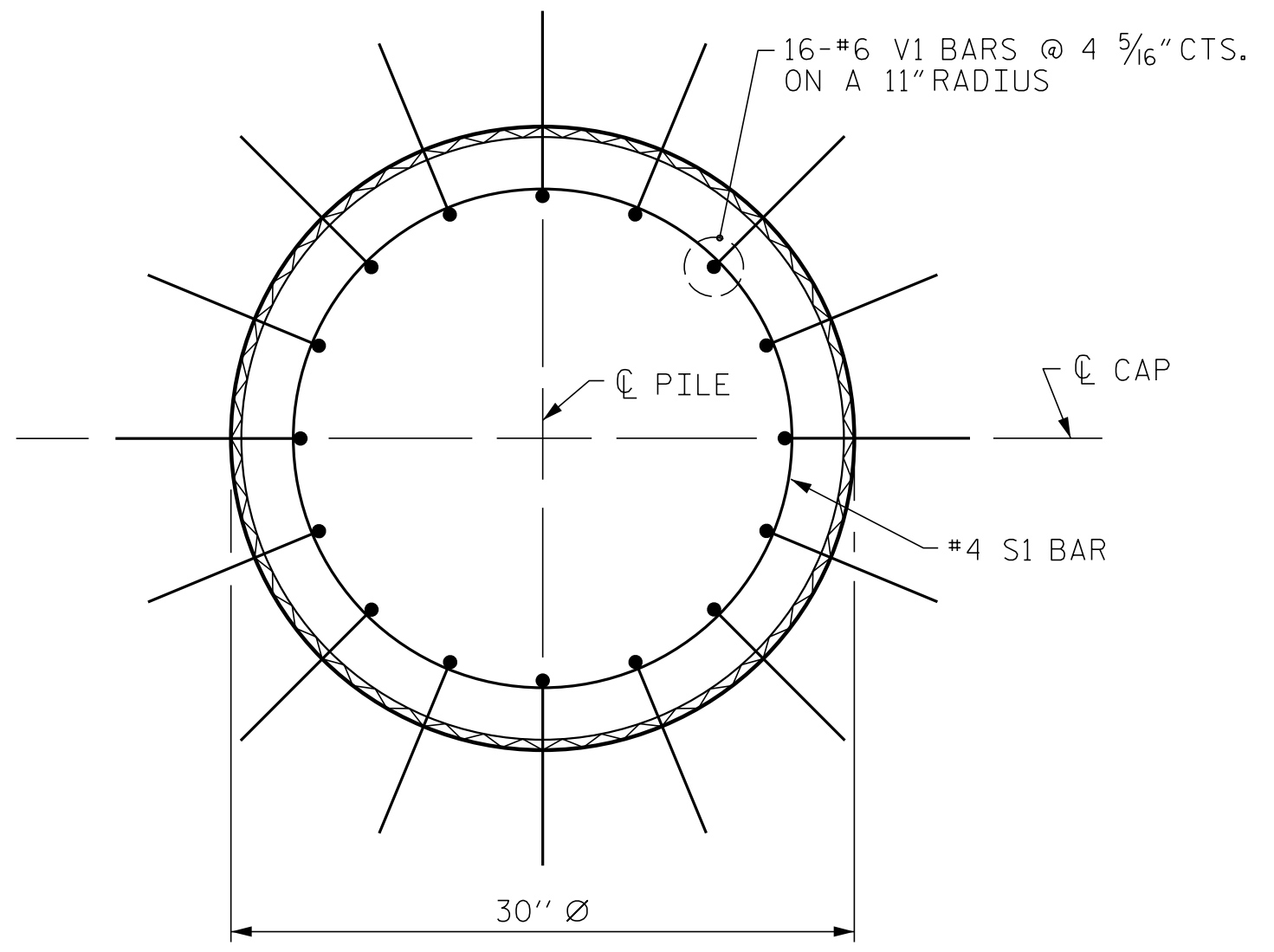
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NO.	BY:	DATE:	NO.	BY:	DATE:	S3-30
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2			4			38

DRAWN BY: D. HODGE DATE: 1/19
 CHECKED BY: G.M. GILLAND DATE: 1/19

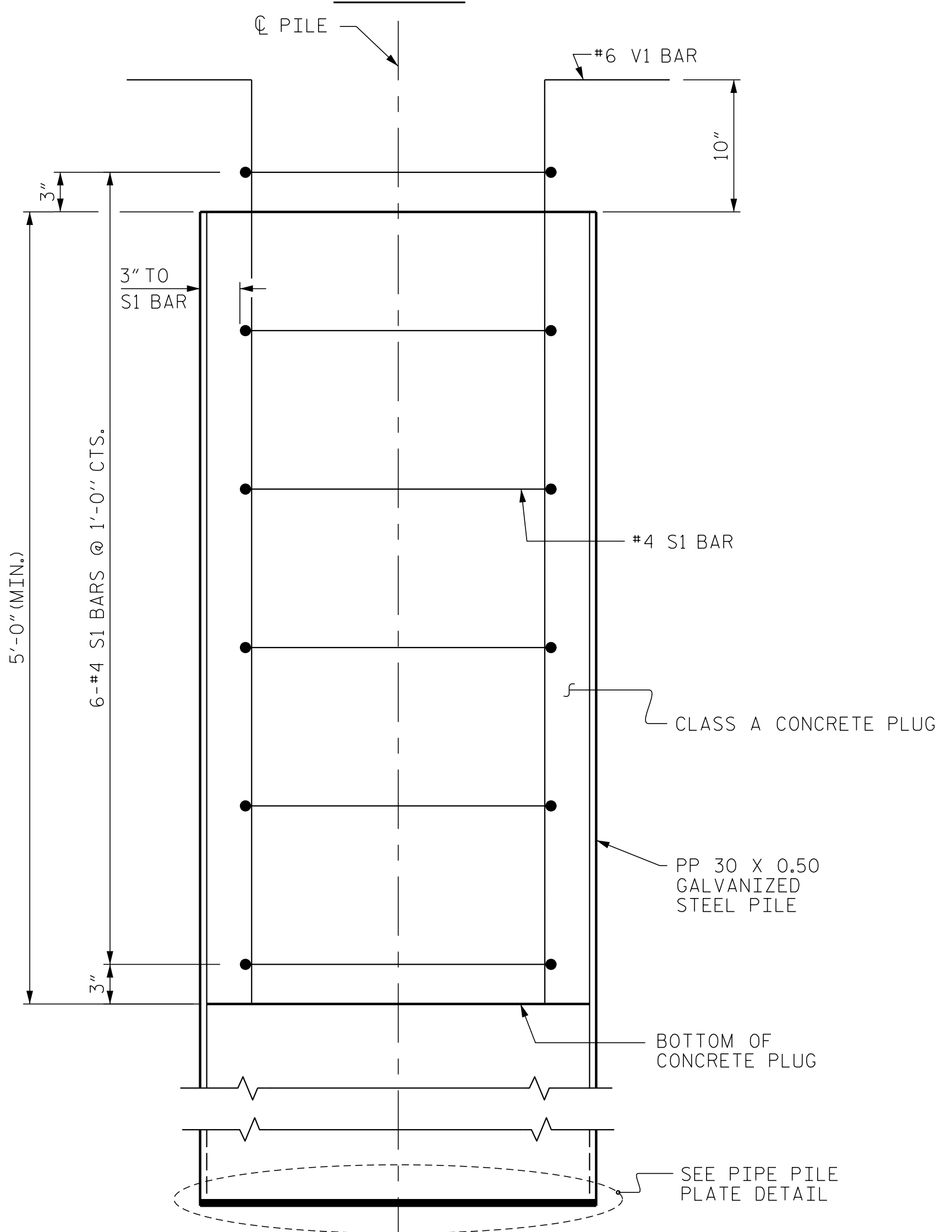
DOCUMENT NOT CONSIDERED FINAL
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 LICENSE NO. F-0377

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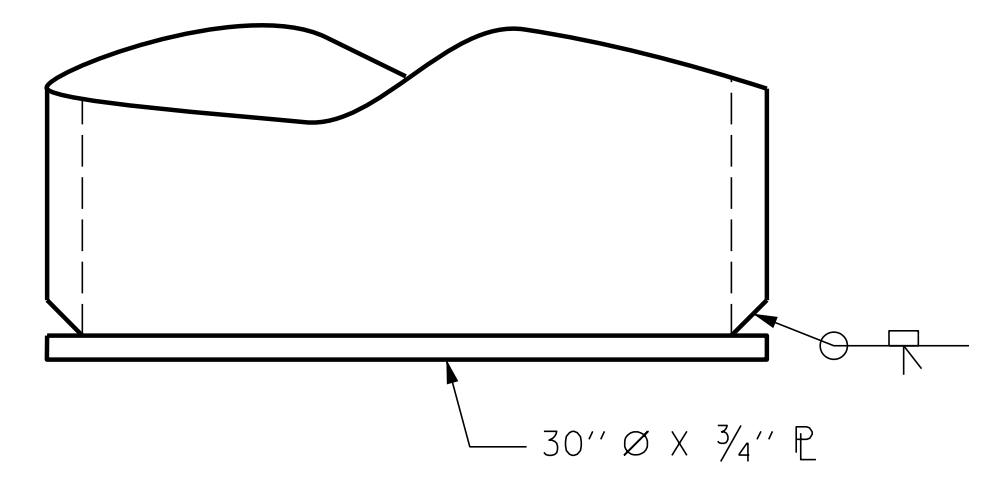


PLAN

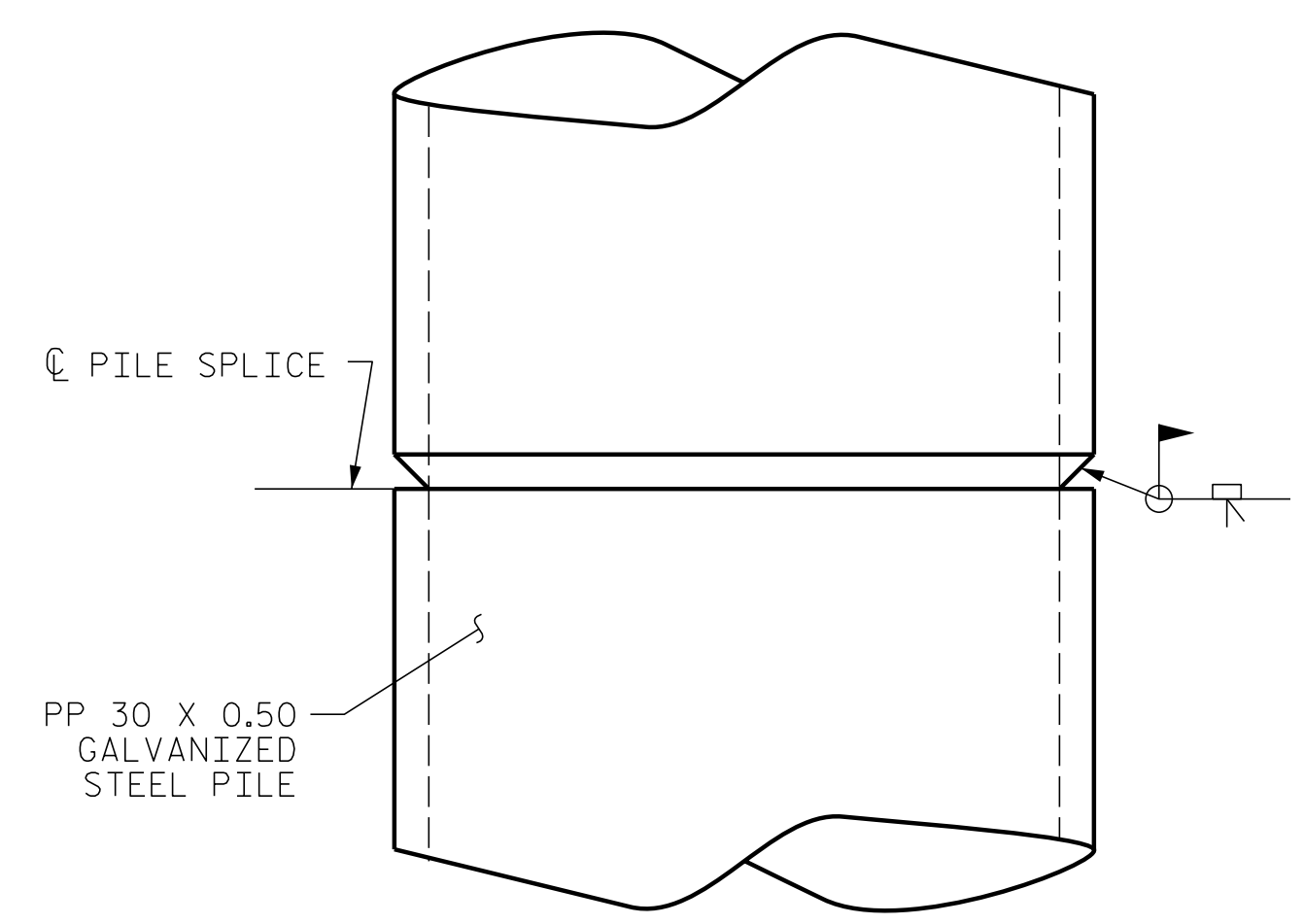


ELEVATION

PP 30 X 0.50 GALVANIZED STEEL PILE
(CLOSED END)



PIPE PILE PLATE DETAIL



PIPE PILE SPLICE DETAIL

NOTES

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

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

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

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

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

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

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

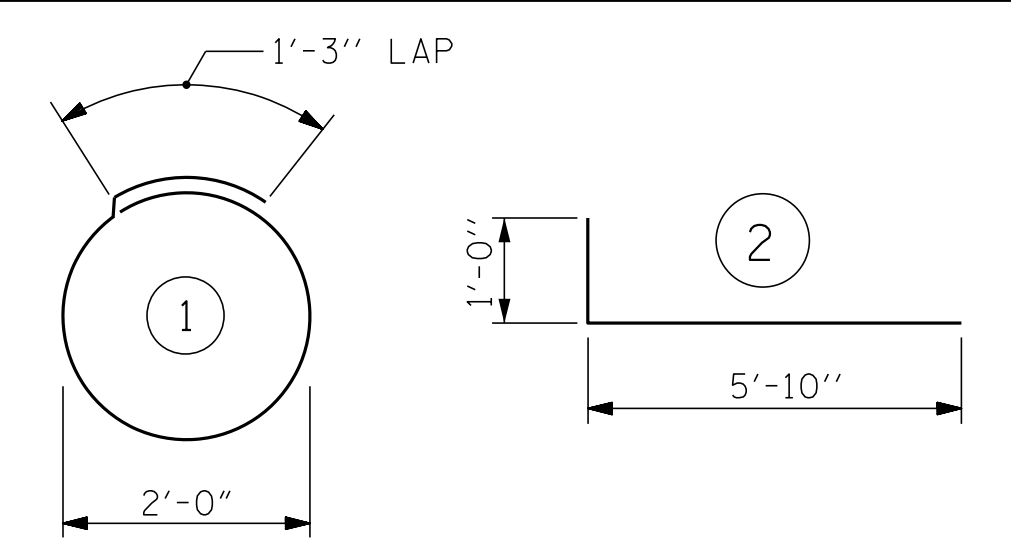
THE REINFORCING STEEL, CLASS A CONCRETE, AND GALVANIZING ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR PP 30 X 0.50 GALVANIZED STEEL PILES.

BILL OF MATERIAL FOR ONE PP 30 X 0.50 GALVANIZED STEEL PILE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	6	#4	1	7'-7"	30
V1	16	#6	2	6'-10"	164
REINFORCING STEEL =				194	lbs

CLASS A CONCRETE
5'-0" MINIMUM PLUG 0.8 CY

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 192+85.76 -L-

ENGINEER OF RECORD:

ETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

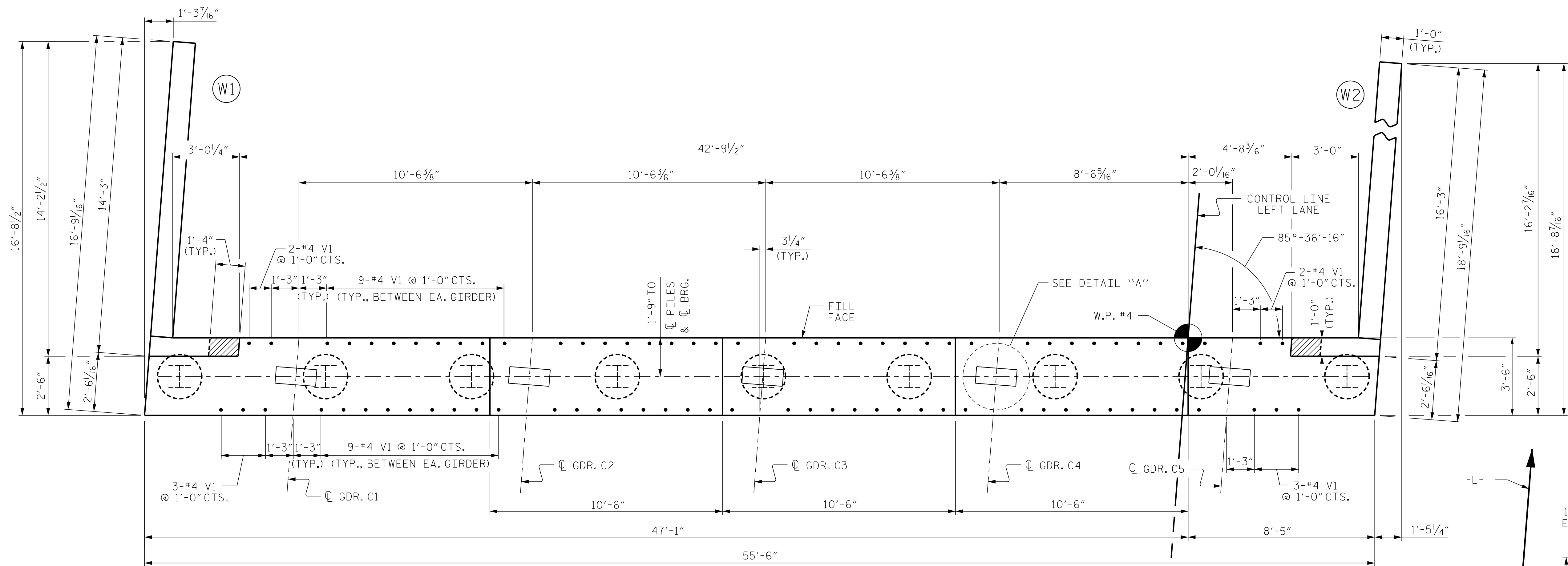
STANDARD
30" STEEL PIPE PILE
(LEFT LANE)

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

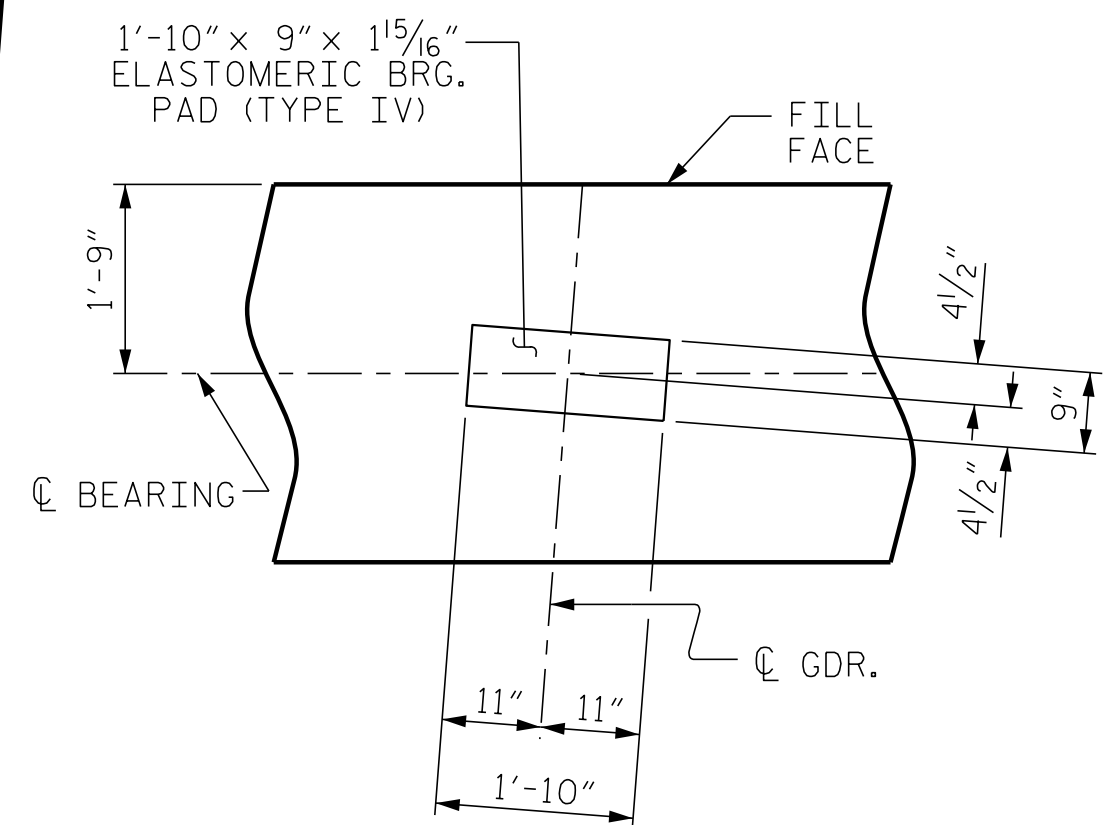
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 1/31/2019 11:42:59 AM

ASSEMBLED BY : D. HODGE	DATE : 11/18
CHECKED BY : G.M. GILLAND	DATE : 1/19
DRAWN BY : TLA 8/05	REV. 5/1/06R MAA/KMM
CHECKED BY : GM 9/05	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC



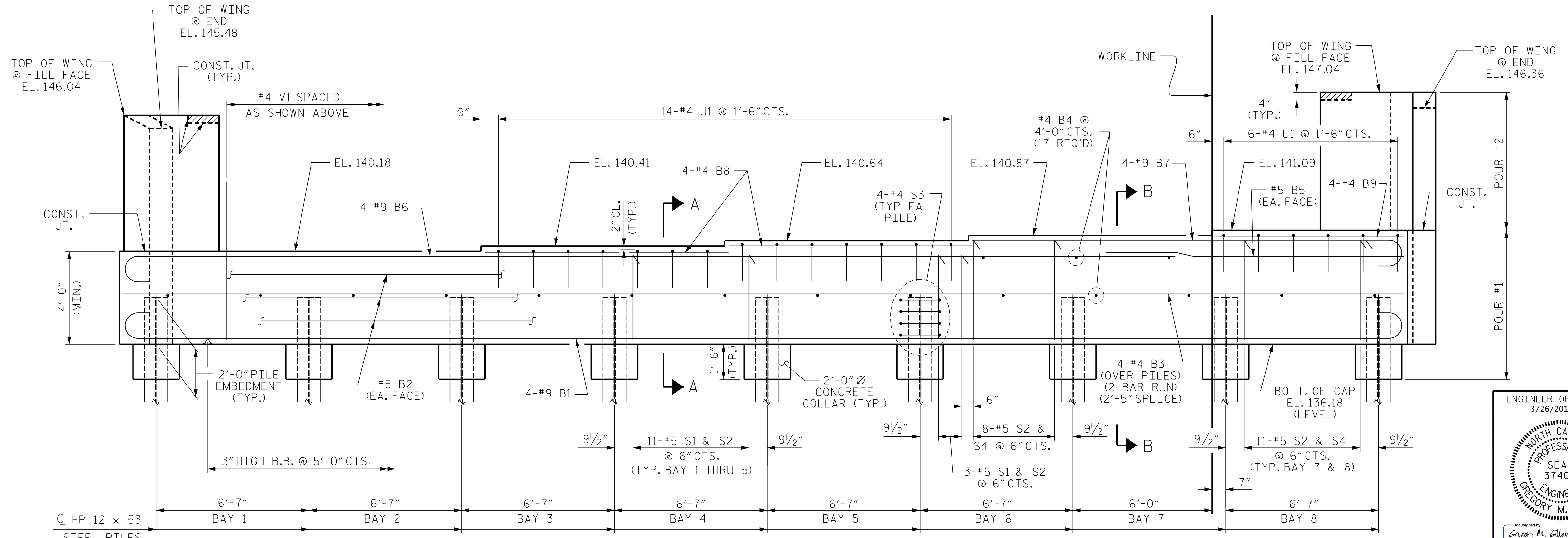
PLAN



DETAIL "A"

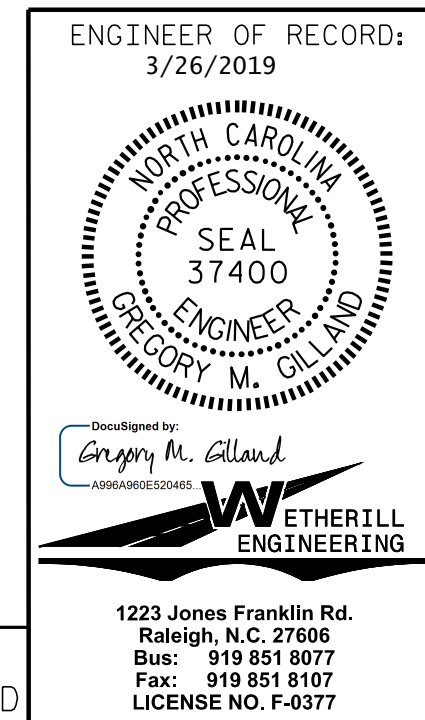
(TYP. EACH GIRDER)

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 1 OF 3



ELEVATION

FOR SECTION A-A & B-B, SEE SHEET 3 OF 3.

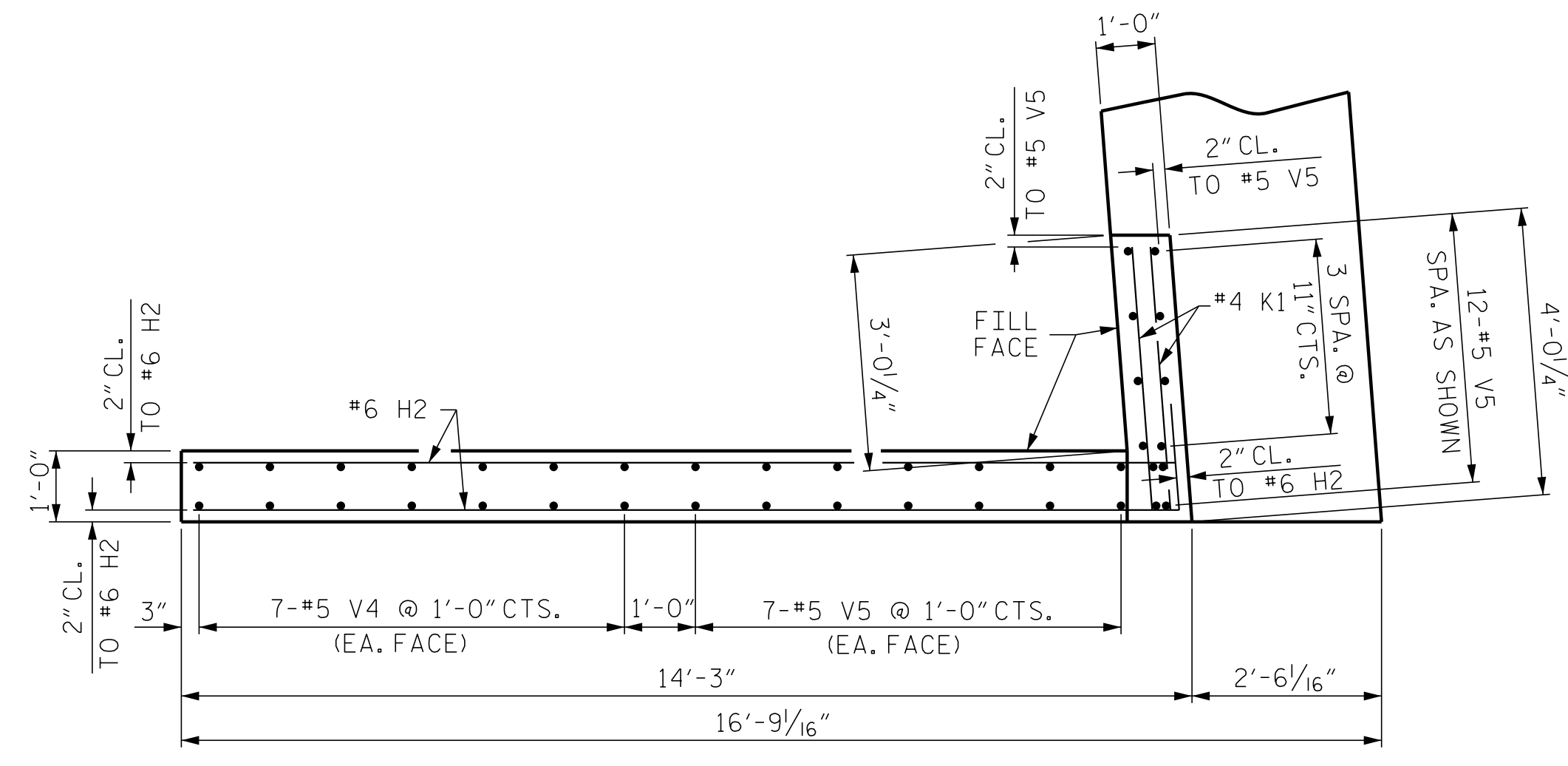


ENGINEER OF RECORD: 3/26/2019 NORTH CAROLINA PROFESSIONAL SEAL 37400 GREGORY M. GILLAND		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH	
SUBSTRUCTURE END BENT No. 2 (LEFT LANE)			
REVISIONS			
NO.	BY:	DATE:	SHEET NO.
1			38
2			38
3			38
4			38

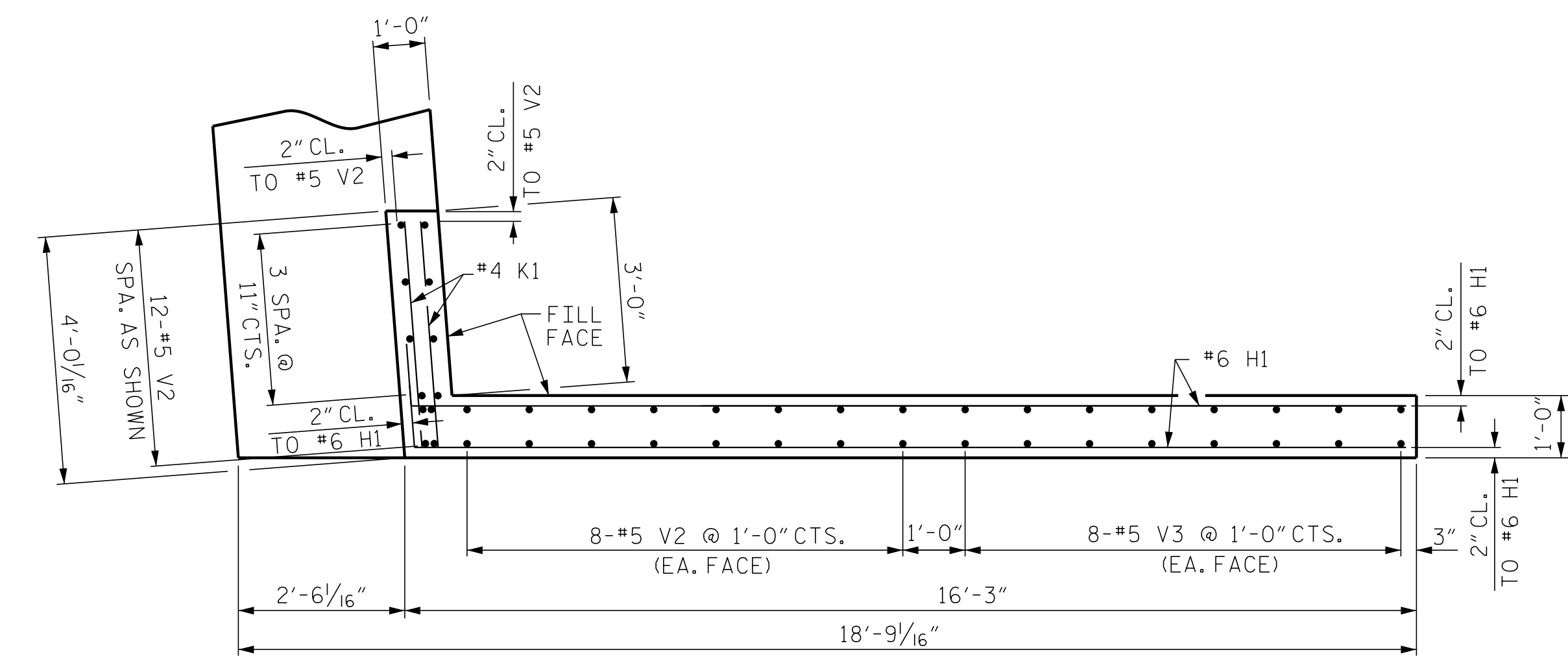
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DRAWN BY: D. HODGE DATE: 11/18
 CHECKED BY: G.M. GILLAND DATE: 11/18

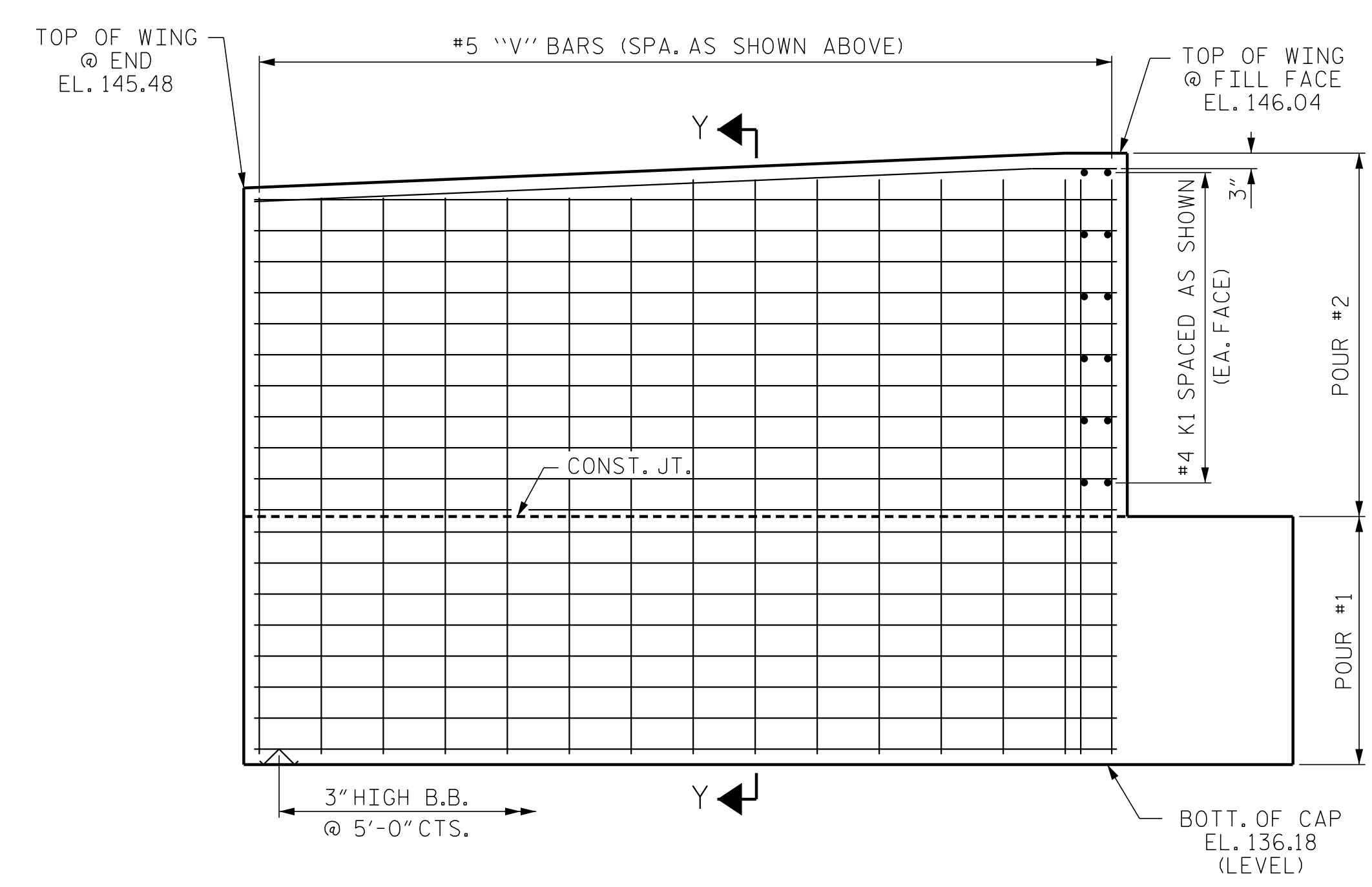
DOCUMENT NOT CONSIDERED FINAL
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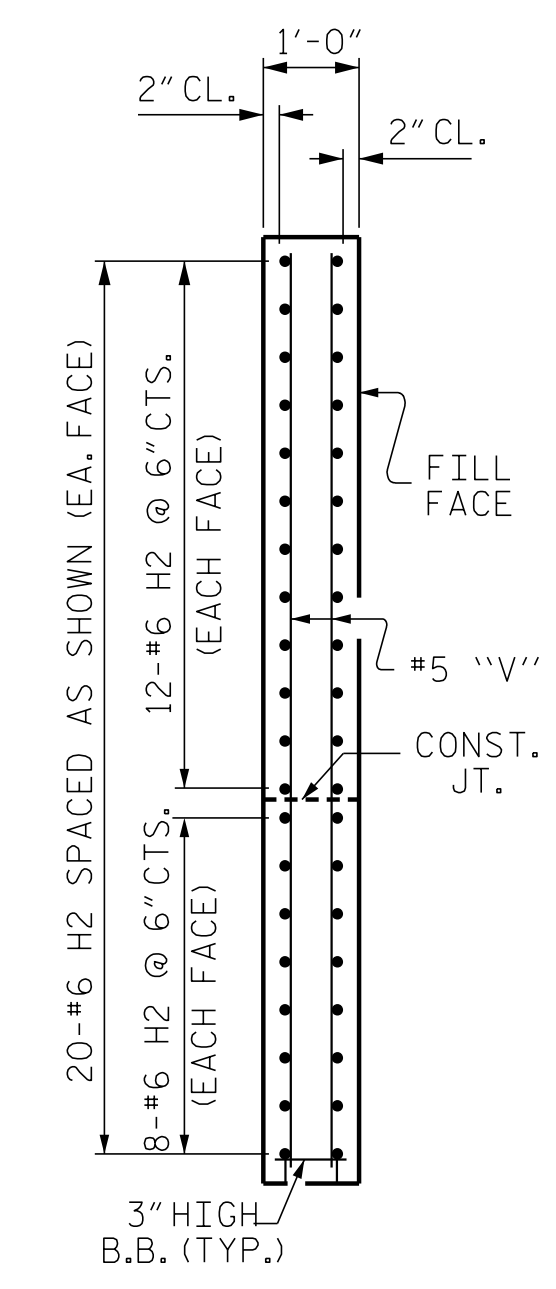
PLAN OF WING - (W1)



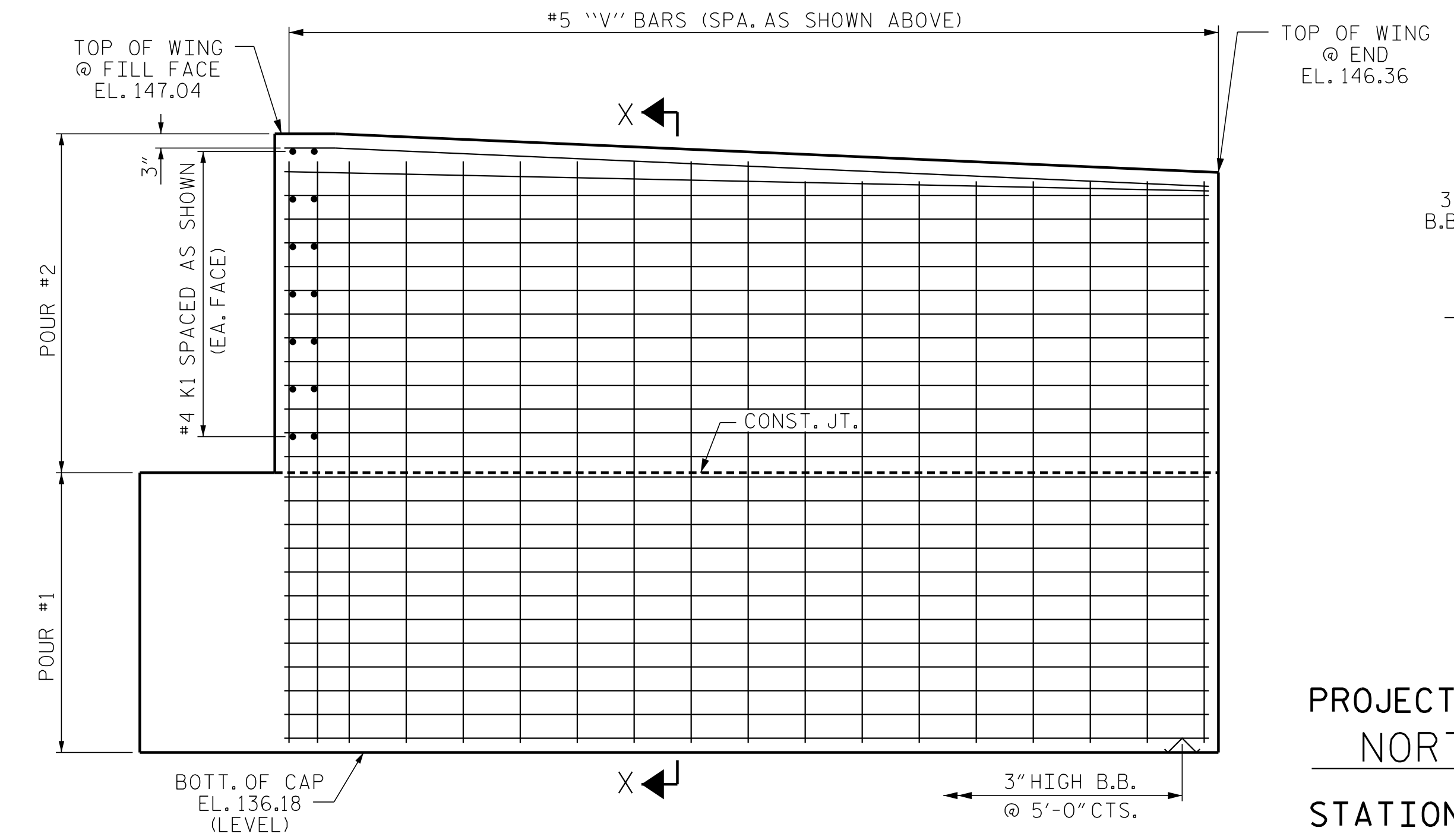
PLAN OF WING - (W2)



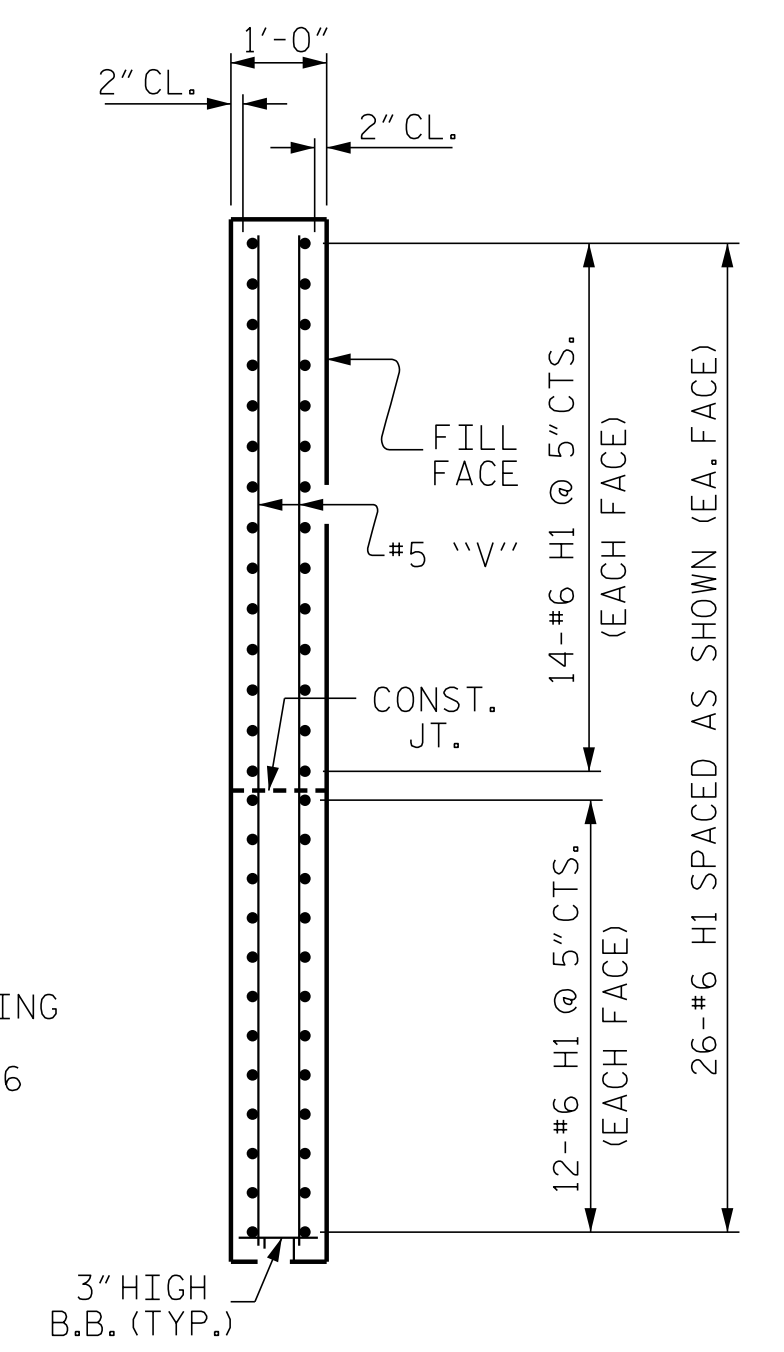
ELEVATION OF WING - (W1)



SECTION Y-Y



ELEVATION OF WING - (W2)



SECTION X-X

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-

SHEET 2 OF 3

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 CHECKED BY: G.M. GILLAND DATE: 11/18

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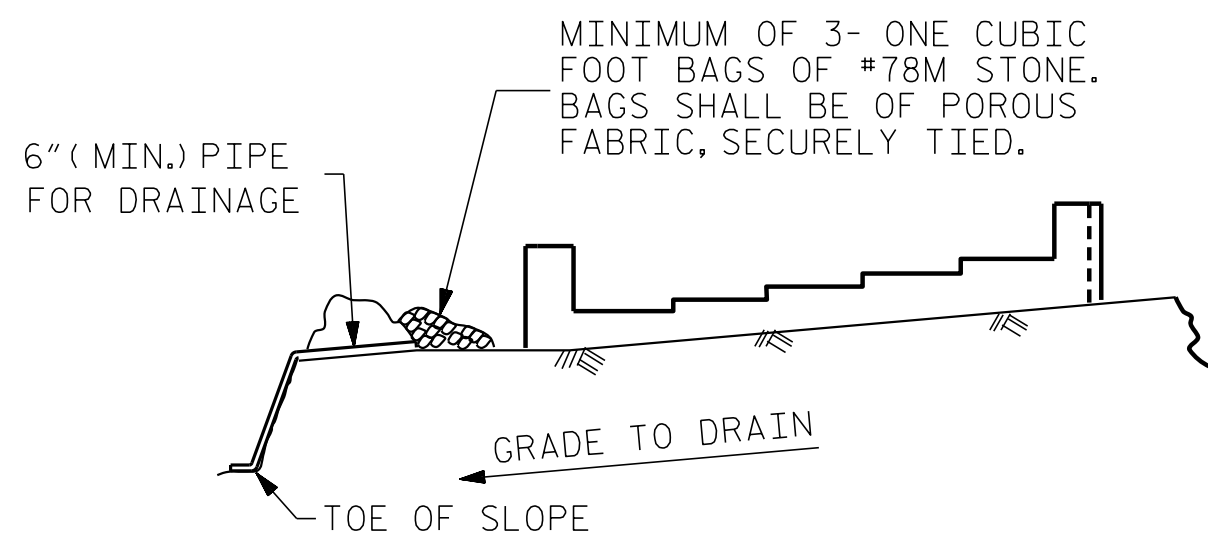
ENGINEER OF RECORD:
 3/26/2019

 GREGORY M. GILLAND
 ENGINEER
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 2
 (LEFT LANE)

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

SHEET NO. S3-33
 TOTAL SHEETS 38

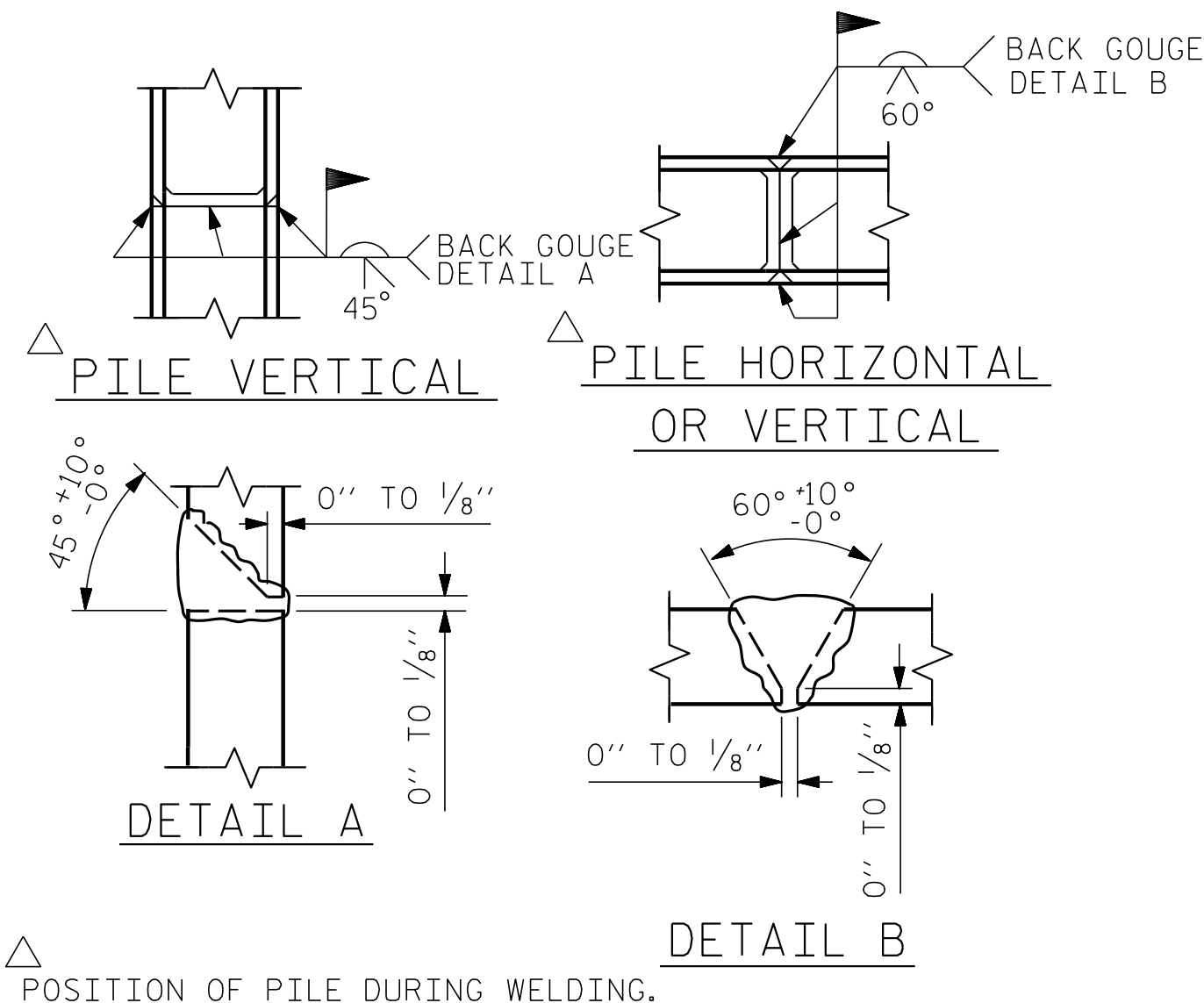


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

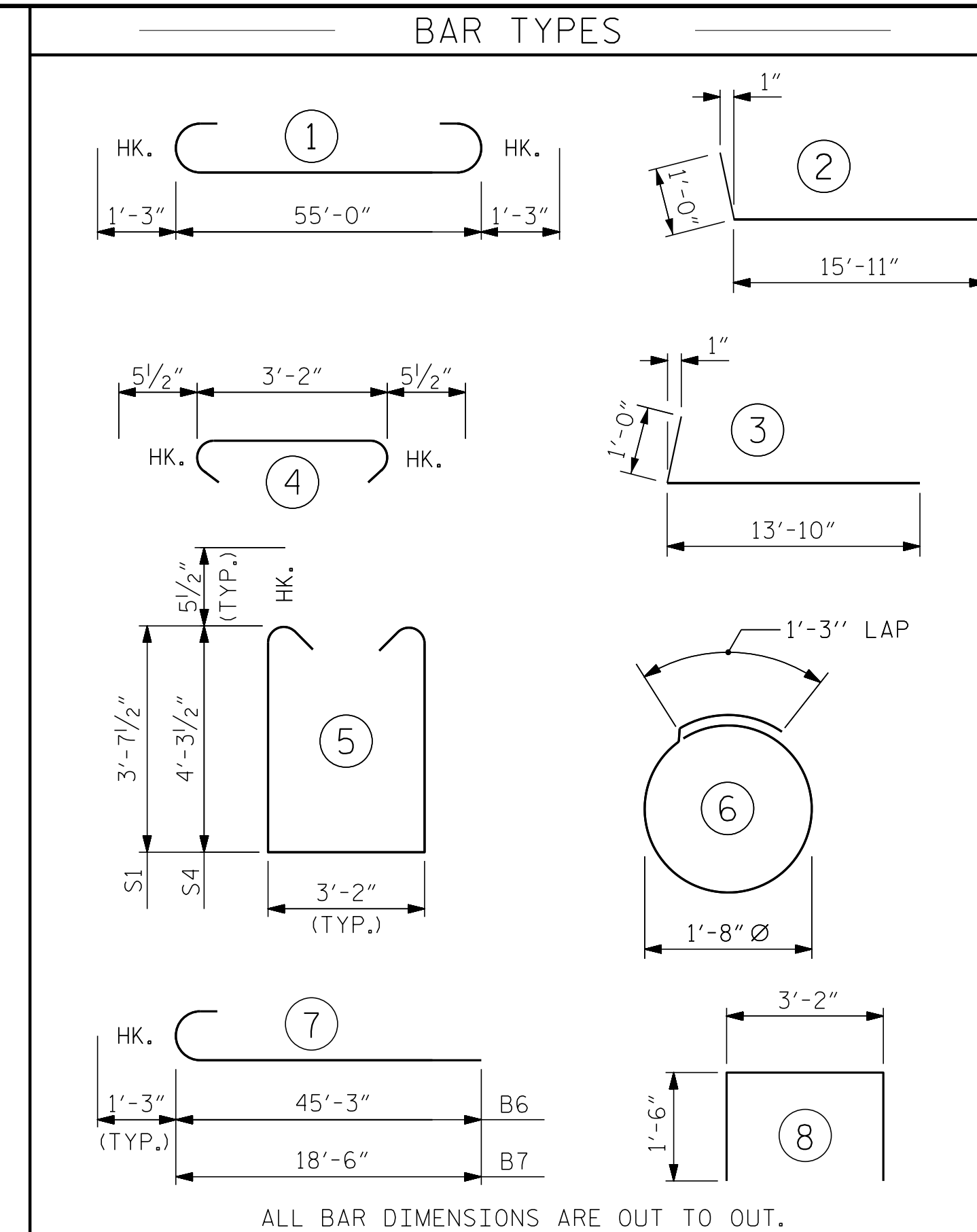
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

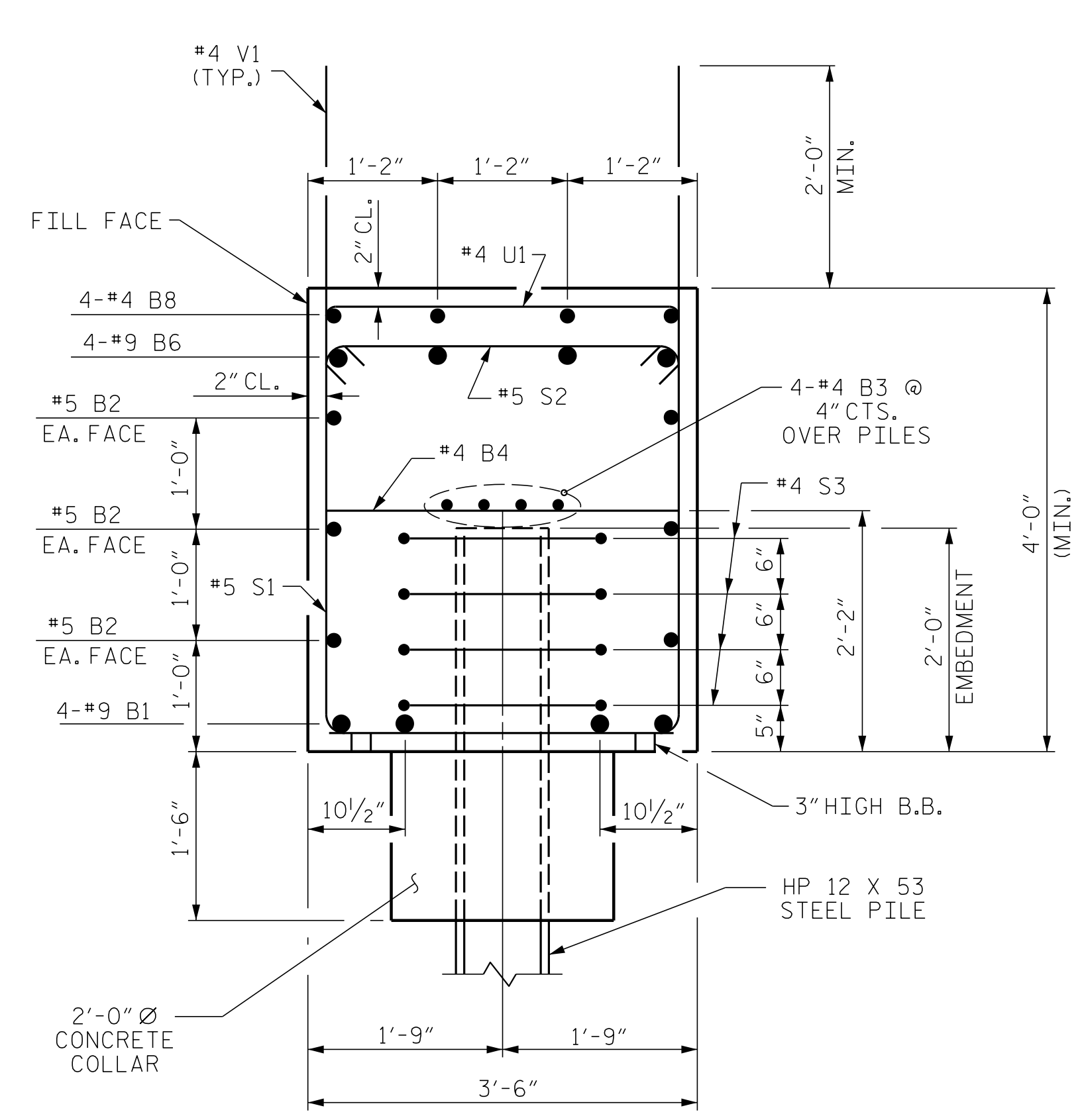


BILL OF MATERIAL					
END BENT No. 2					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9		57'-6"	782
B2	6	#5	STR	55'-2"	345
B3	8	#4	STR	28'-10"	154
B4	17	#4	STR	3'-2"	36
B5	2	#5	STR	13'-2"	27
B6	4	#9		46'-6"	632
B7	4	#9		19'-9"	269
B8	8	#4	STR	10'-2"	56
B9	4	#4	STR	8'-1"	22
H1	52	#6		16'-11"	1321
H2	40	#6		14'-10"	891
K1	26	#4	STR	3'-7"	62
S1	58	#5		11'-4"	686
S2	88	#5		4'-1"	375
S3	36	#4		6'-6"	156
S4	30	#5		12'-8"	396
U1	20	#4		6'-2"	82
V1	82	#4	STR	6'-8"	365
V2	28	#5	STR	10'-2"	297
V3	16	#5	STR	9'-10"	164
V4	14	#5	STR	8'-11"	130
V5	26	#5	STR	9'-3"	251
REINFORCING STEEL					7,499 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP, LOWER PART OF WINGS AND CONCRETE COLLARS				37.9 C.Y.	
POUR #2 UPPER PART OF WINGS				7.6 C.Y.	
TOTAL CLASS A CONCRETE				45.5 C.Y.	
HP 12 X 53 STEEL PILES					
NO: 9				900 L.F.	
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES				9 EA.	
PILE REDRIVES				5 EA.	

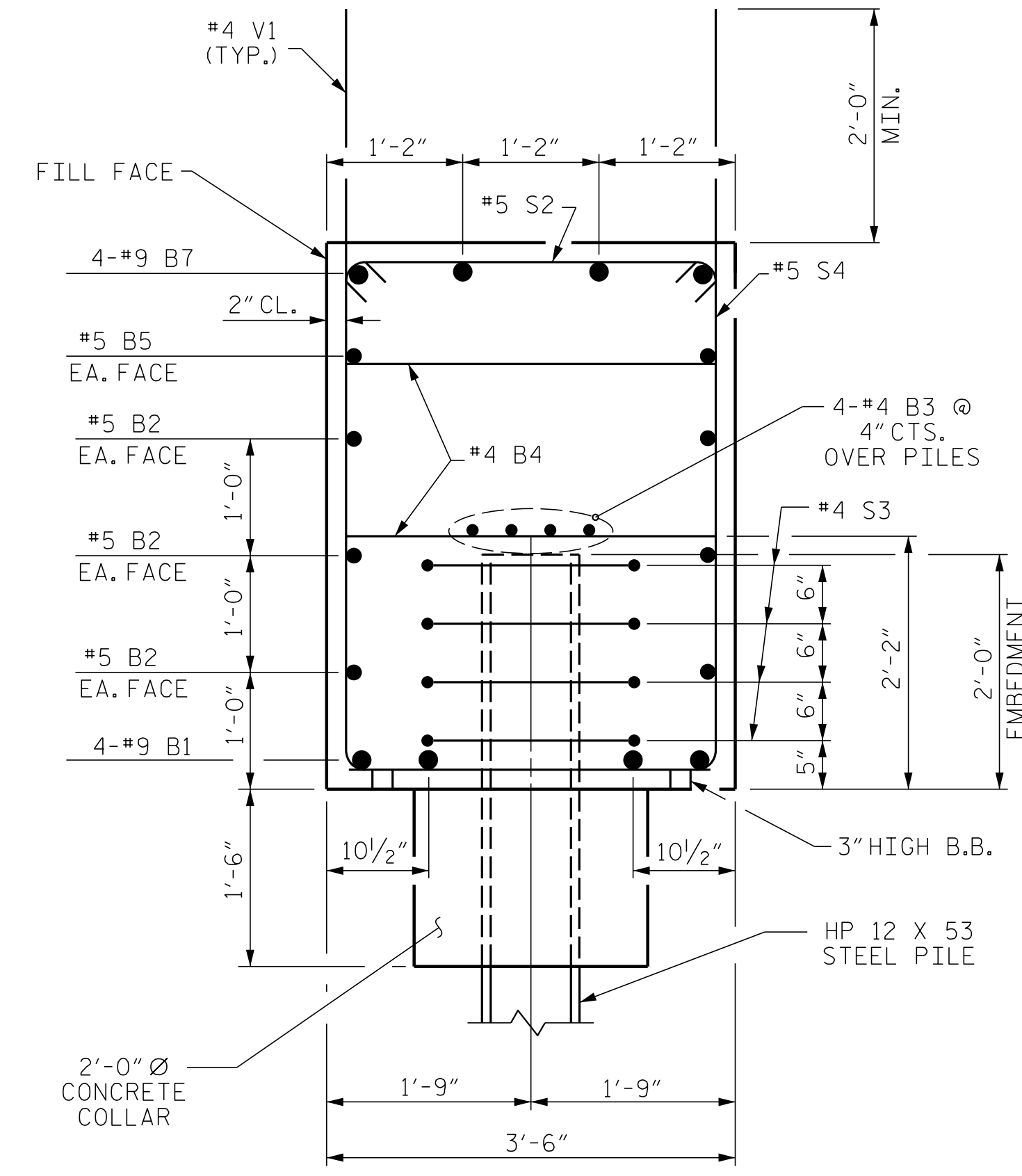
NOTES

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

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



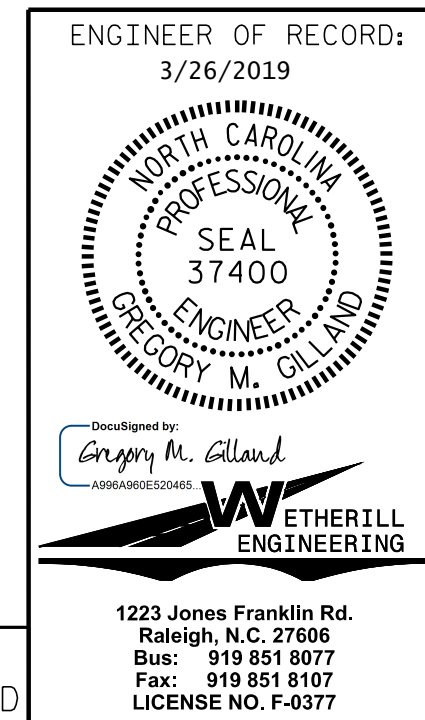
SECTION A-A



SECTION B-B

DRAWN BY: D. HODGE DATE: 11/18
 CHECKED BY: G.M. GILLAND DATE: 11/18

DOCUMENT NOT CONSIDERED FINAL
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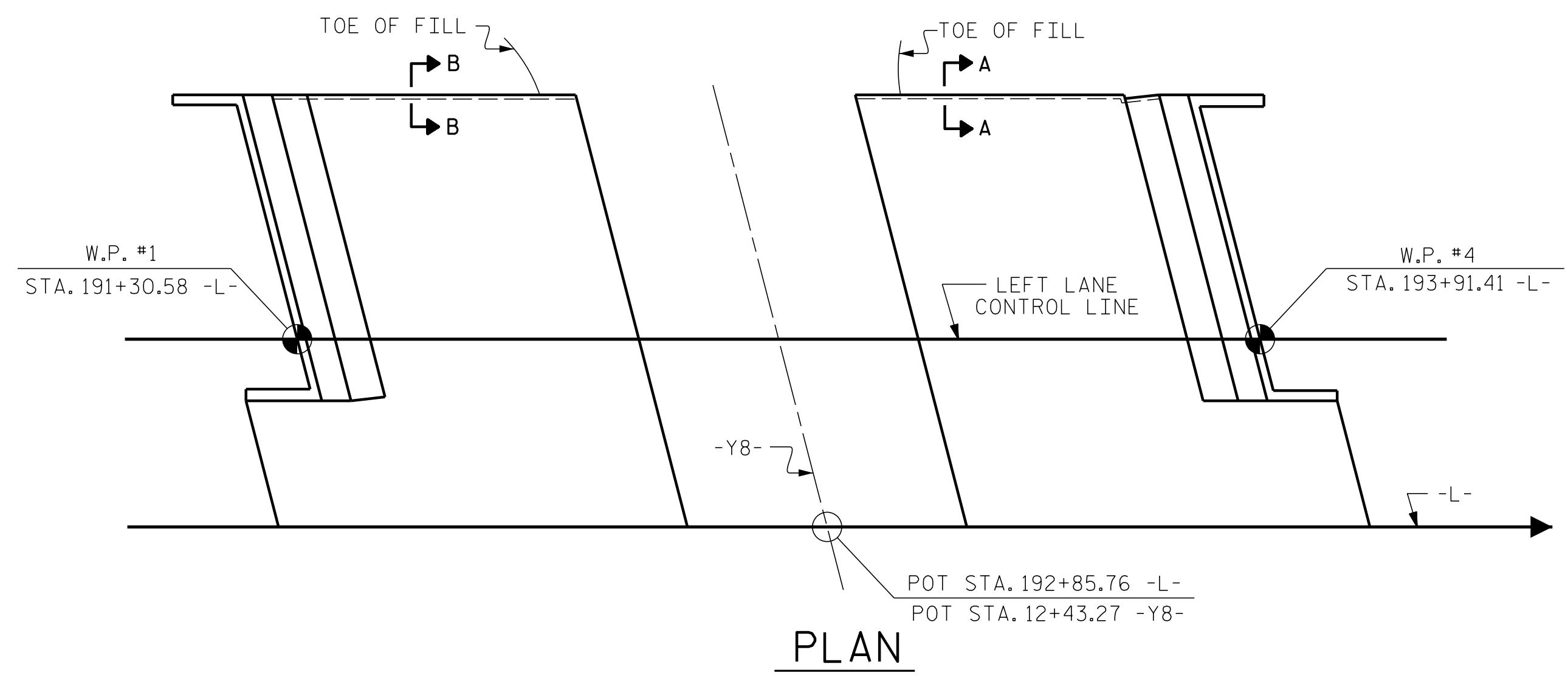


PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 3 OF 3

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

SHEET NO. S3-34
 TOTAL SHEETS 38

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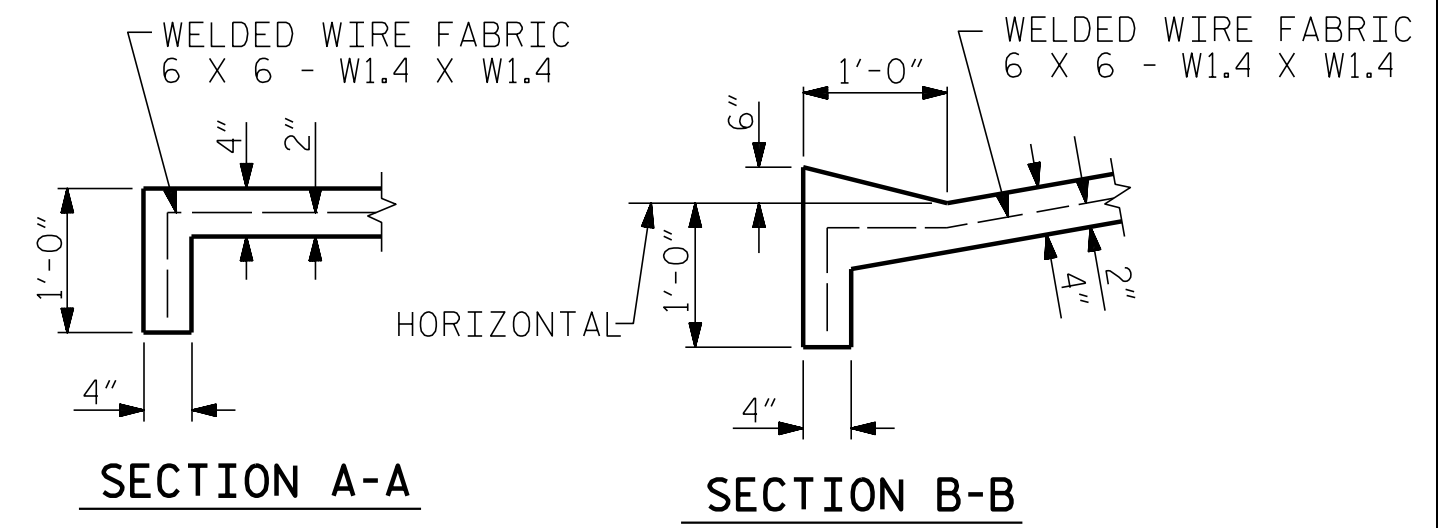
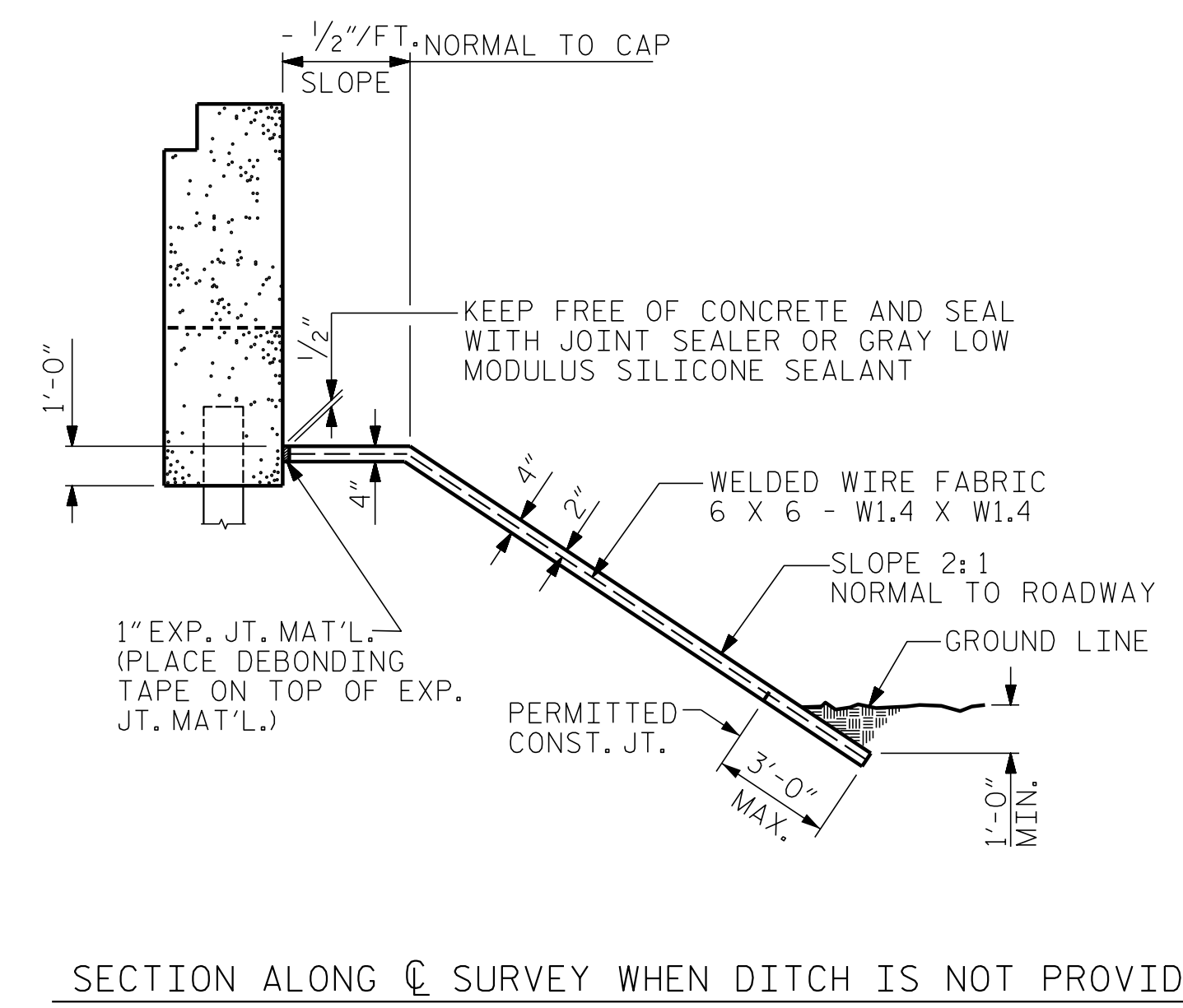
GENERAL NOTES

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING.

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

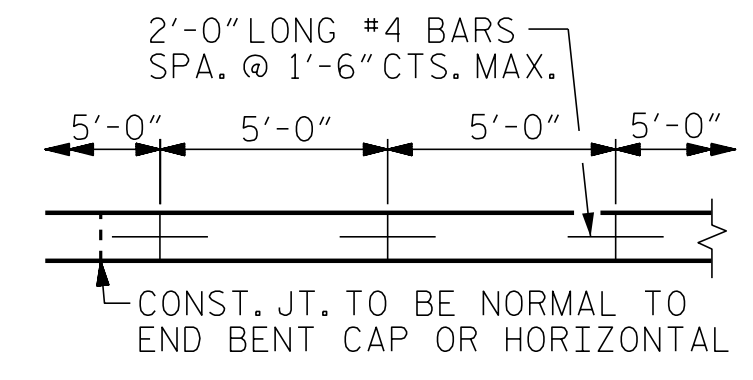
BRIDGE @ STA. 192+85.76 -L-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	815	1,430
END BENT 2	625	1,095

* QUANTITY SHOWN IS BASED ON 5' POURS.

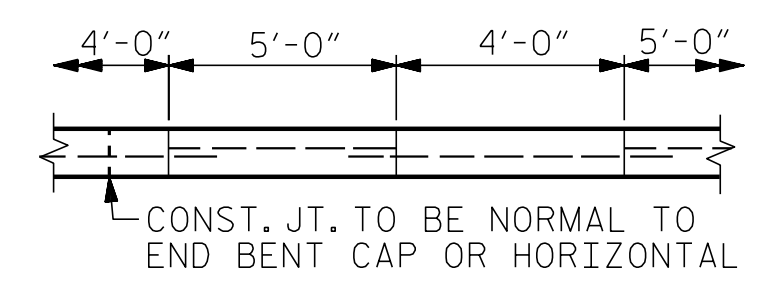


PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-

SHEET 1 OF 2



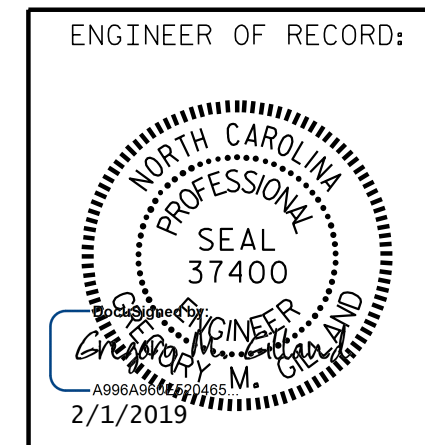
POURING DETAIL



OPTIONAL POURING DETAIL

STRIP WIDTHS MAY VARY IN CURVED PORTION.

POUR A 4'-0" STRIP FIRST. STRIP WIDTHS MAY VARY IN CURVED PORTION.



1223 Jones Franklin Rd.
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 SLOPE PROTECTION
 DETAILS
 (LEFT LANE)

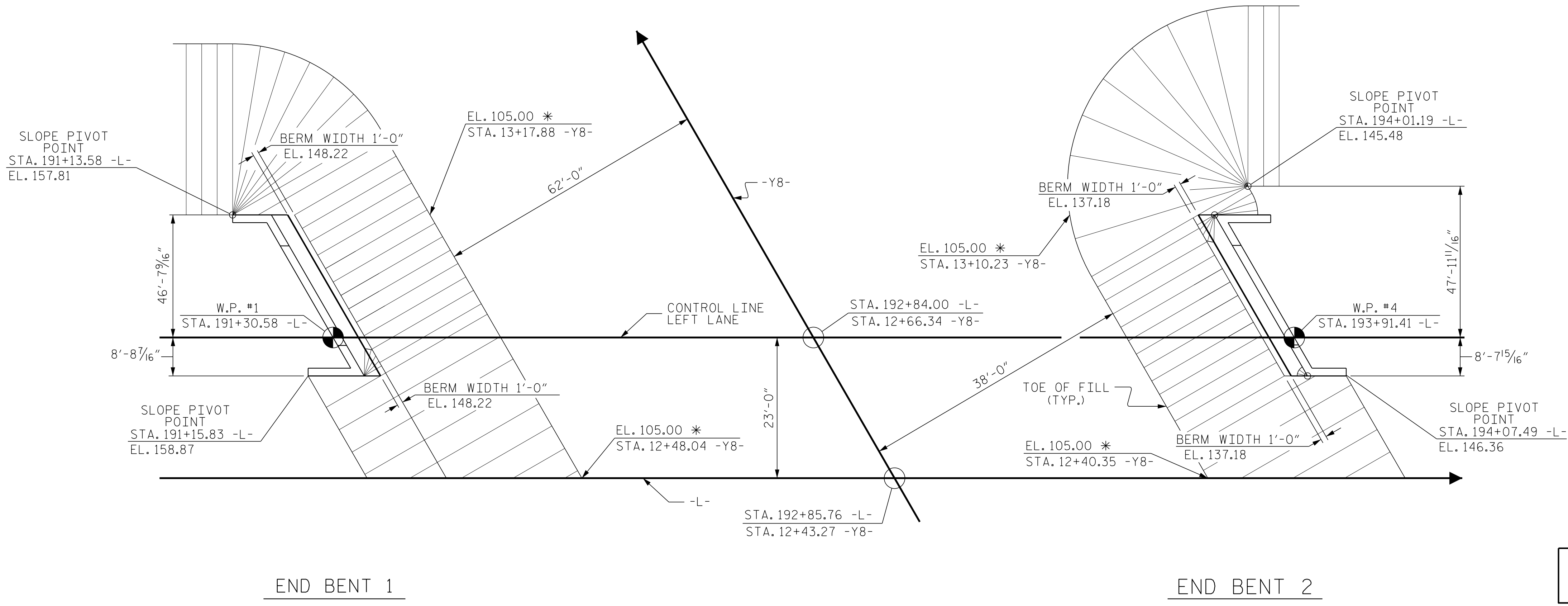
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NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 38

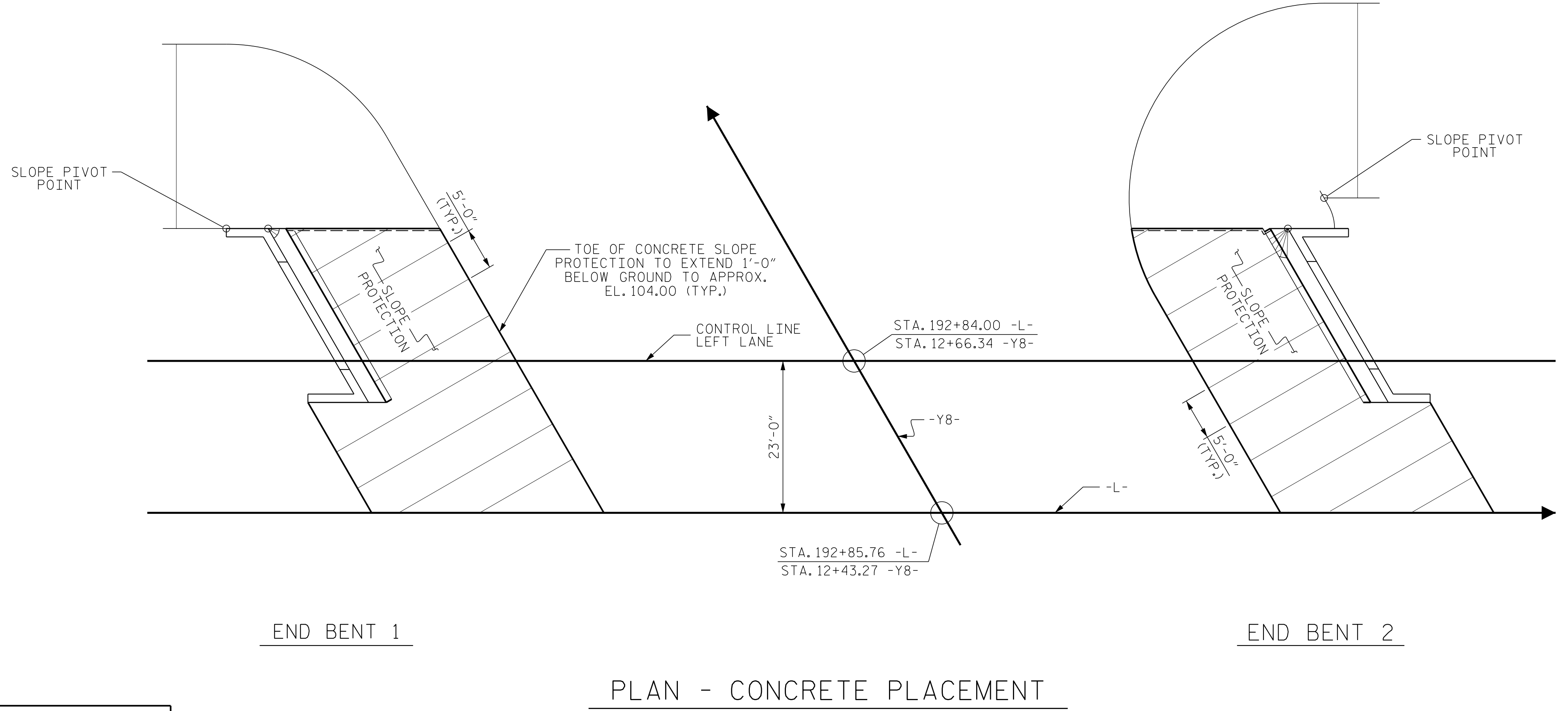
DOCUMENT NOT CONSIDERED FINAL
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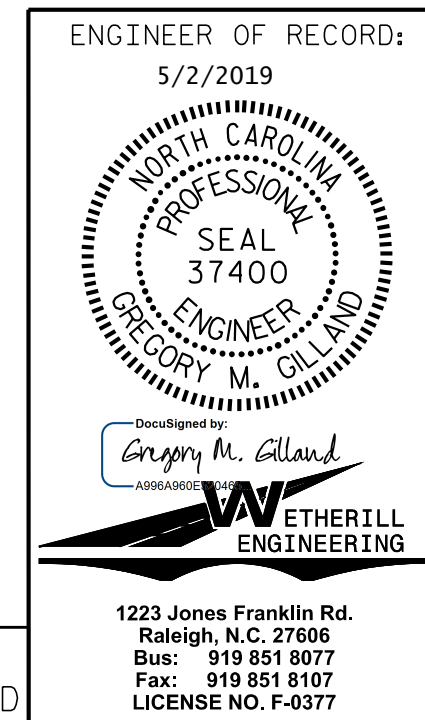
ASSEMBLED BY : D. HODGE	DATE : 10/18
CHECKED BY : G.M. GILLAND	DATE : 12/18
DRAWN BY : ELR 5/92	REV. 12/21/11 MAA/GM
CHECKED BY : GRP 6/92	REV. 1/16 MAA/TMG
	REV. 12/17 MAA/THC



* ELEVATIONS AT APPROXIMATE EXISTING GROUND IS BASED ON BEST INFORMATION AVAILABLE.



PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 2 OF 2



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD SLOPE PROTECTION DETAILS (LEFT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S3-36
					TOTAL SHEETS 38

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ASSEMBLED BY : D. HODGE	DATE : 11/18
CHECKED BY : G.M. GILLAND	DATE : 12/18
DRAWN BY : WJH 10/88	REV. 10/1/11 MAA/GM
CHECKED BY : FCJ 10/88	REV. 1/16 MAA/TMG
	REV. 12/17 MAA/THC

NOTES

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

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

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

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

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

FOR THE 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

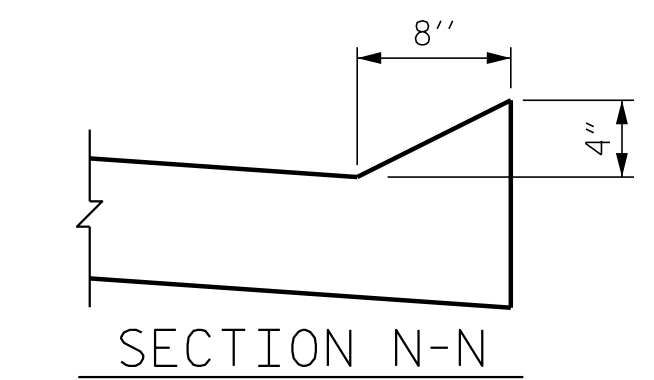
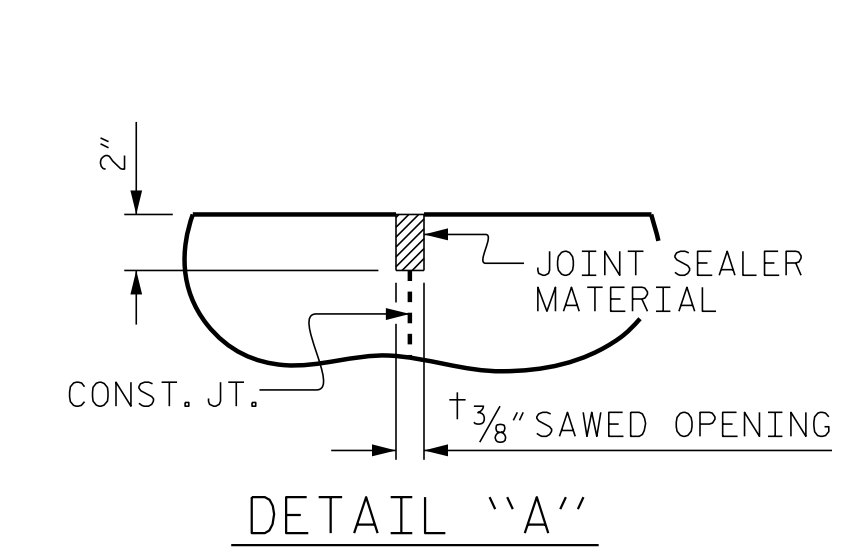
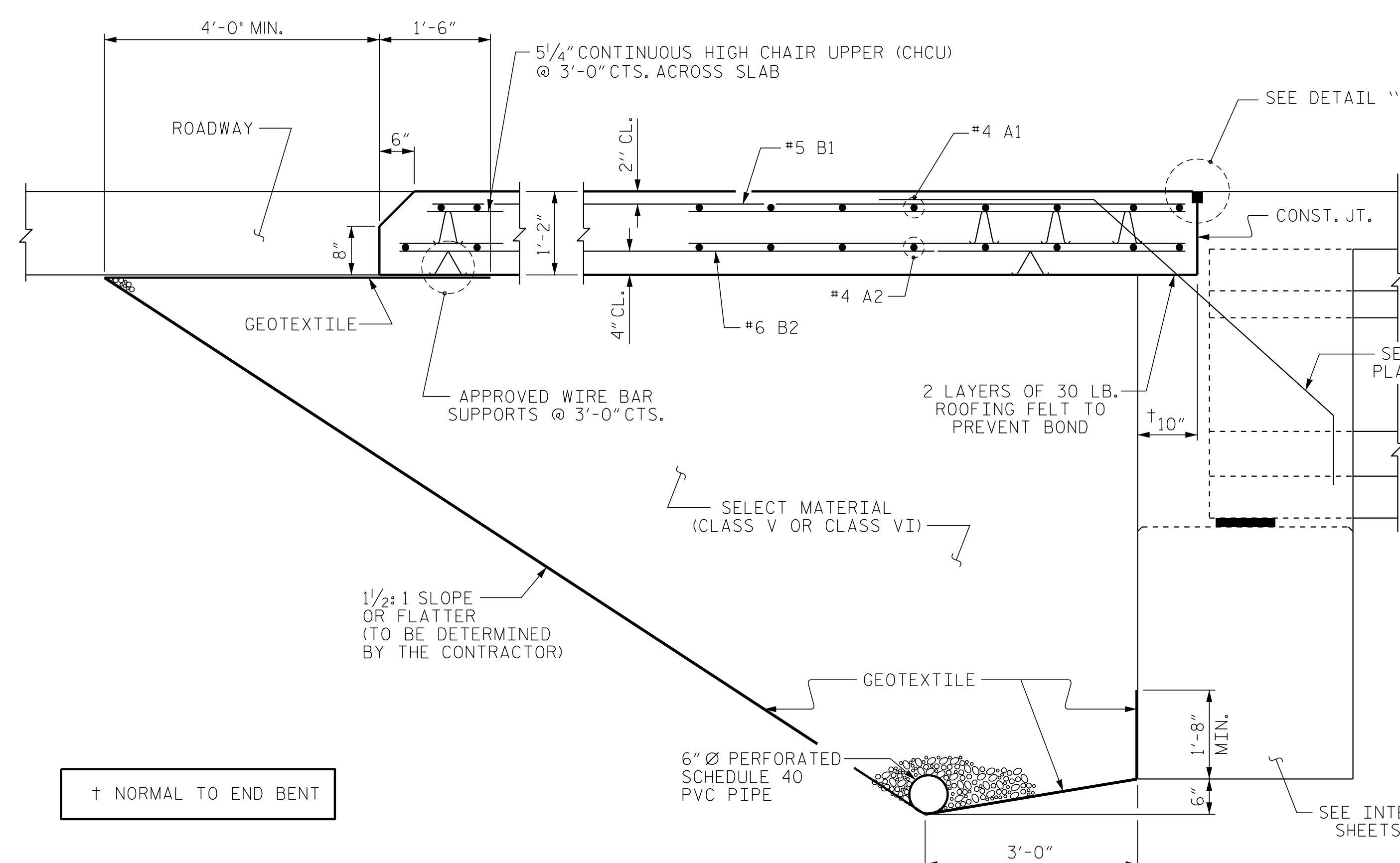
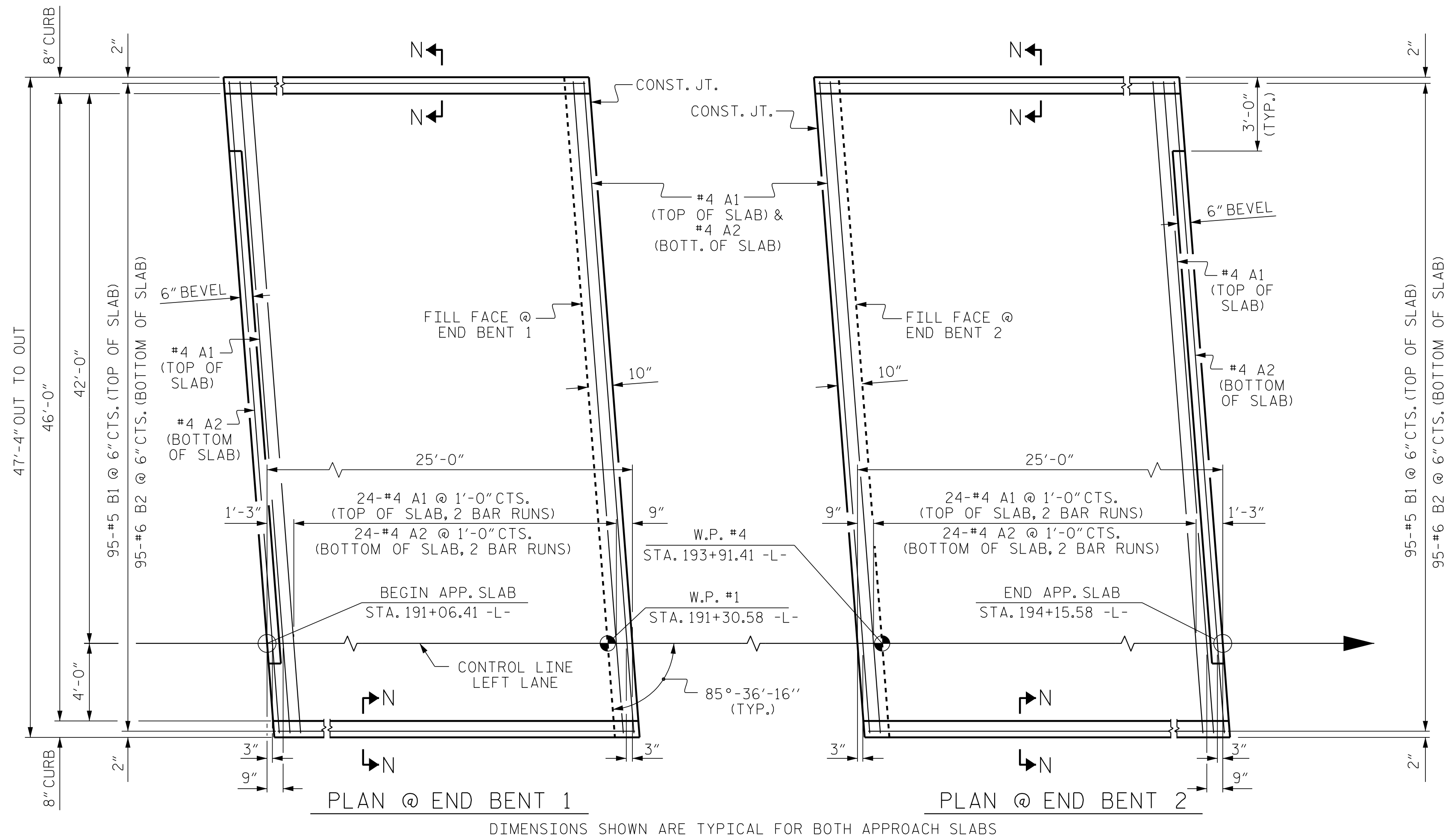
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE 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.

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

BILL OF MATERIAL					
FOR ONE APPROACH SLAB (2 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	52	#4	STR	24'-7"	854
A2	52	#4	STR	24'-6"	851
* B1	95	#5	STR	24'-2"	2395
B2	95	#6	STR	24'-8"	3520
REINFORCING STEEL				LBS.	4371
* EPOXY COATED REINFORCING STEEL				LBS.	3249
CLASS AA CONCRETE				C. Y.	51.1

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



PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 1 OF 2

ENGINEER OF RECORD:

W. ETHERILL
 ENGINEERING

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 Fax: 919 851 8107
 LICENSE NO. F-0377

2/1/2019

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT WITH FLEXIBLE PAVEMENT (LEFT LANE)					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S3-37
					TOTAL SHEETS 38

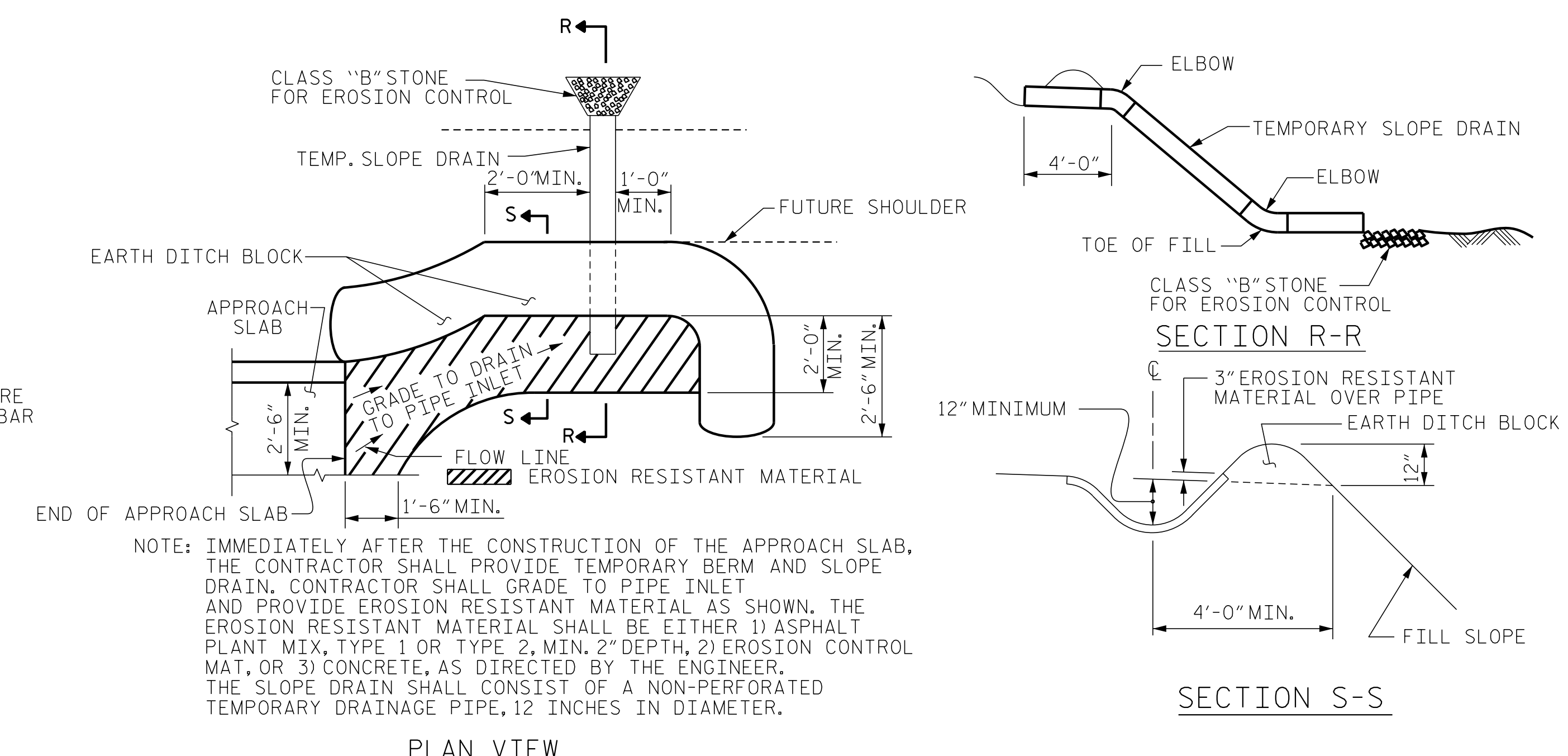
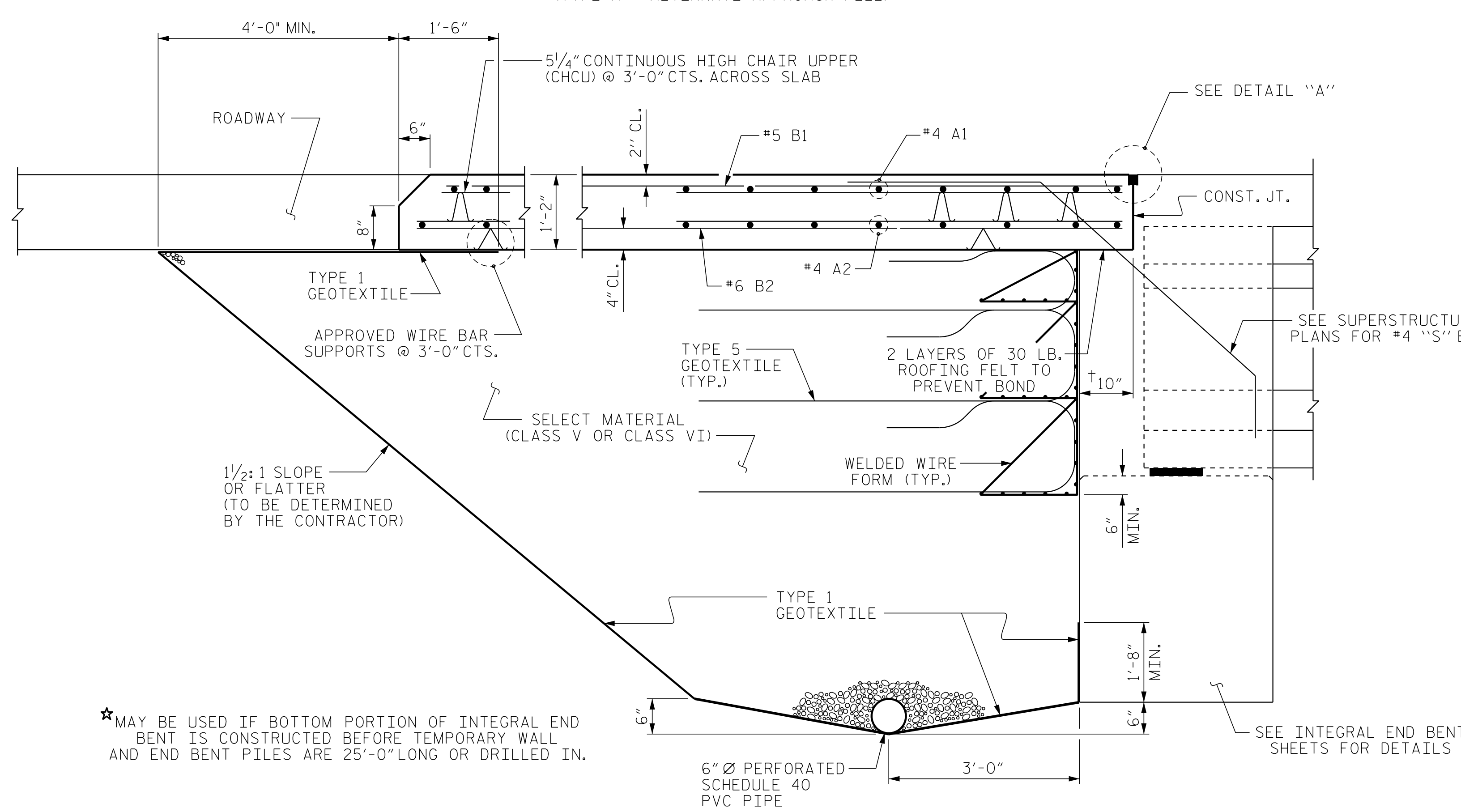
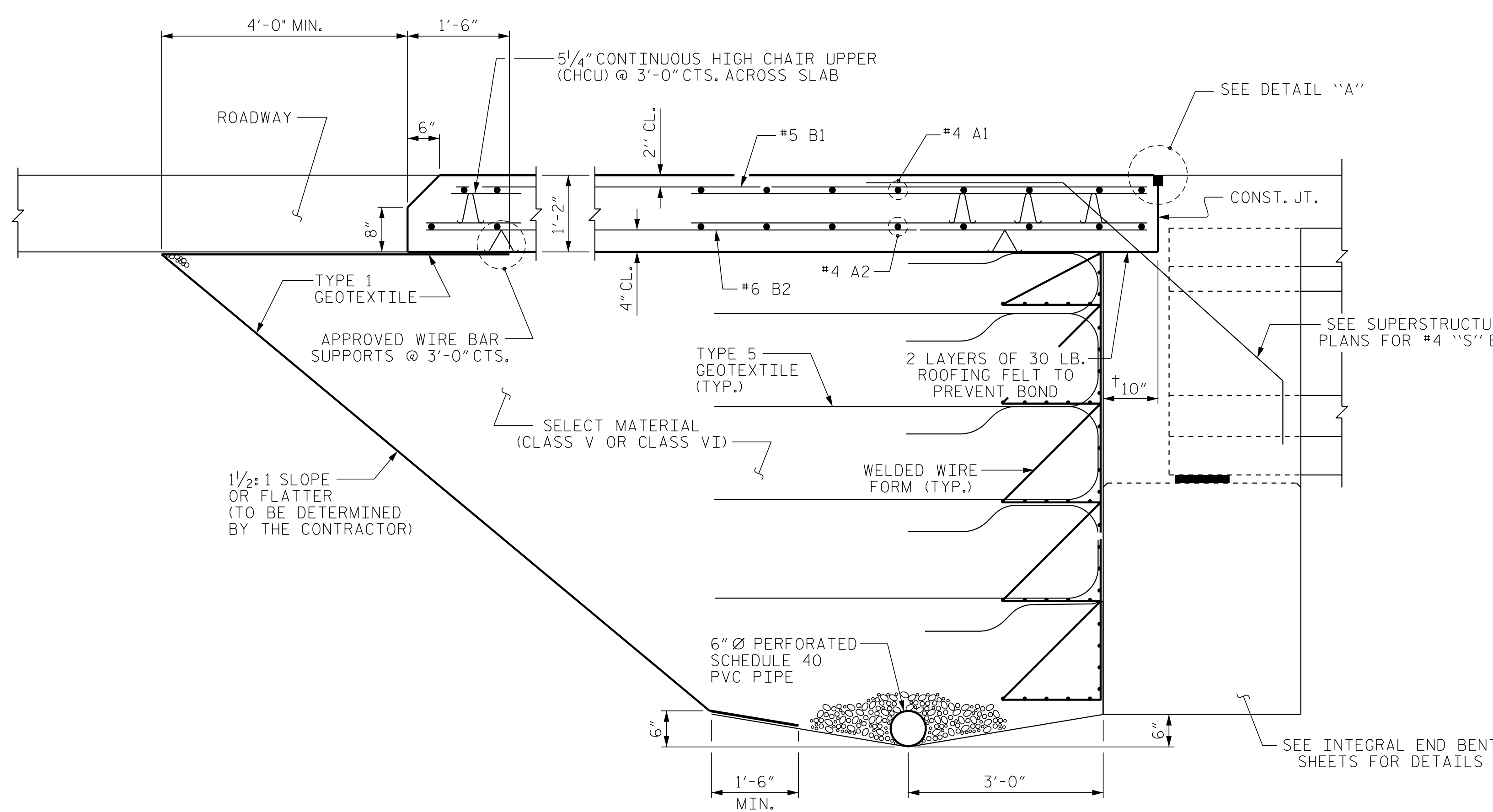
ASSEMBLED BY : D. HODGE	DATE : 10/18
CHECKED BY : G.M. GILLAND	DATE : 11/18
DRAWN BY : TLA	10/05
CHECKED BY : GM	5/06
REV. 12/21/11	MAA/GM
REV. 6/13	MAA/GM
REV. 12/17	MAA/THC

SECTION THRU SLAB

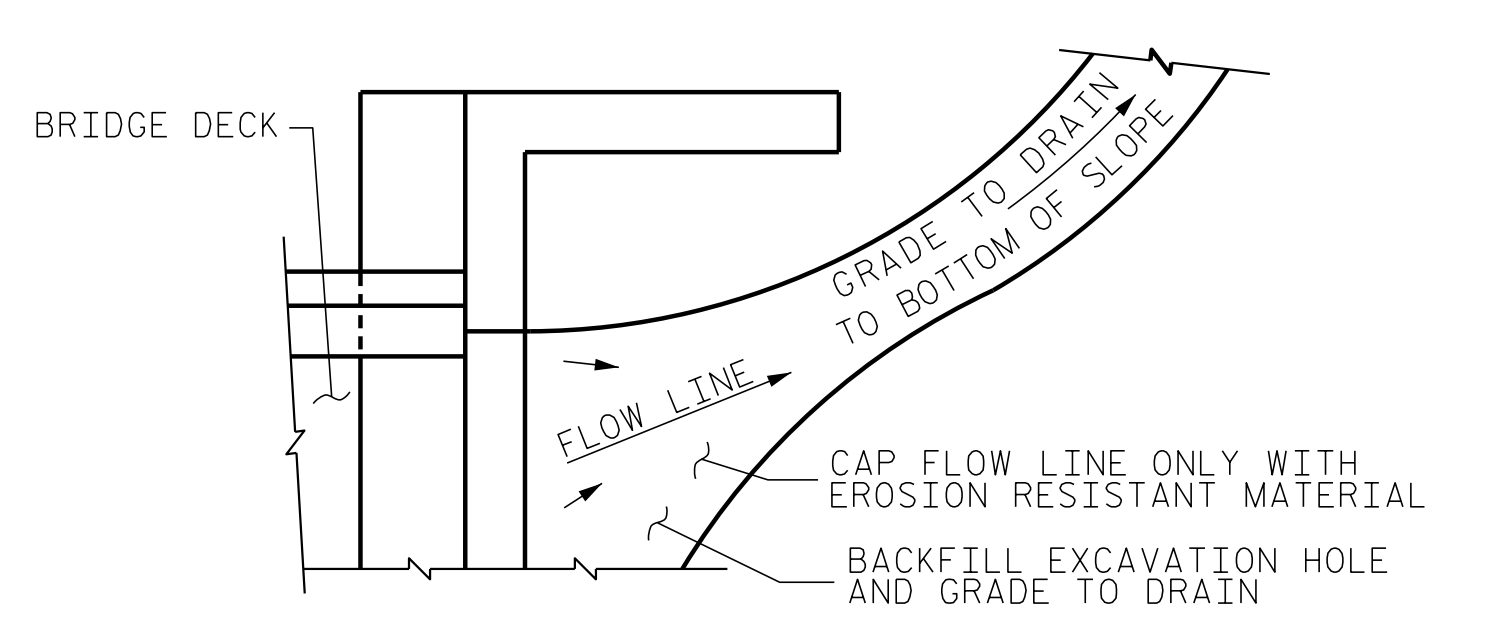
(TYPE I - STANDARD APPROACH FILL)

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TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

NOTES

- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
- FOR TEMPORARY GEOTEXTILE WALL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.
- GEOTEXTILE (TYPE 1 OR TYPE 5) SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.
- SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.
- SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.
- FOR THE 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.
- AREA BETWEEN THE WINGWALL AND APPROACH SLAB/DECK SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
- THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 192+85.76 -L-
SHEET 2 OF 2

ENGINEER OF RECORD:

1223 Jones Franklin Rd.
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LICENSE NO. F-0377

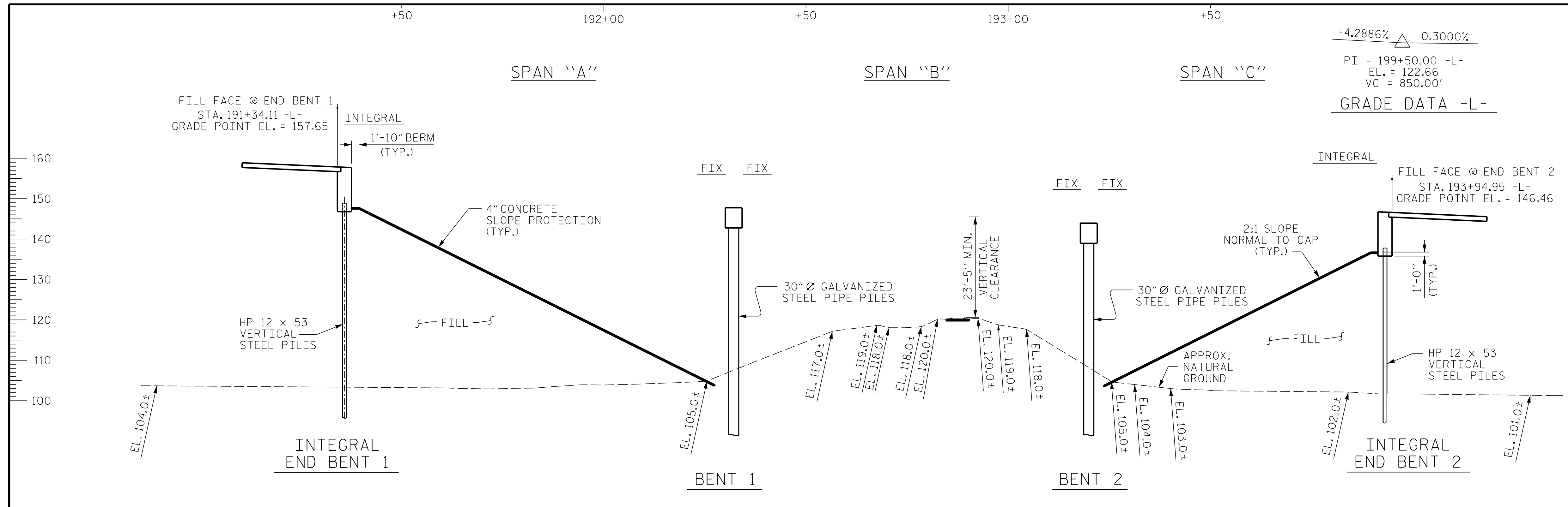
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB DETAILS (LEFT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S3-38
TOTAL SHEETS					38

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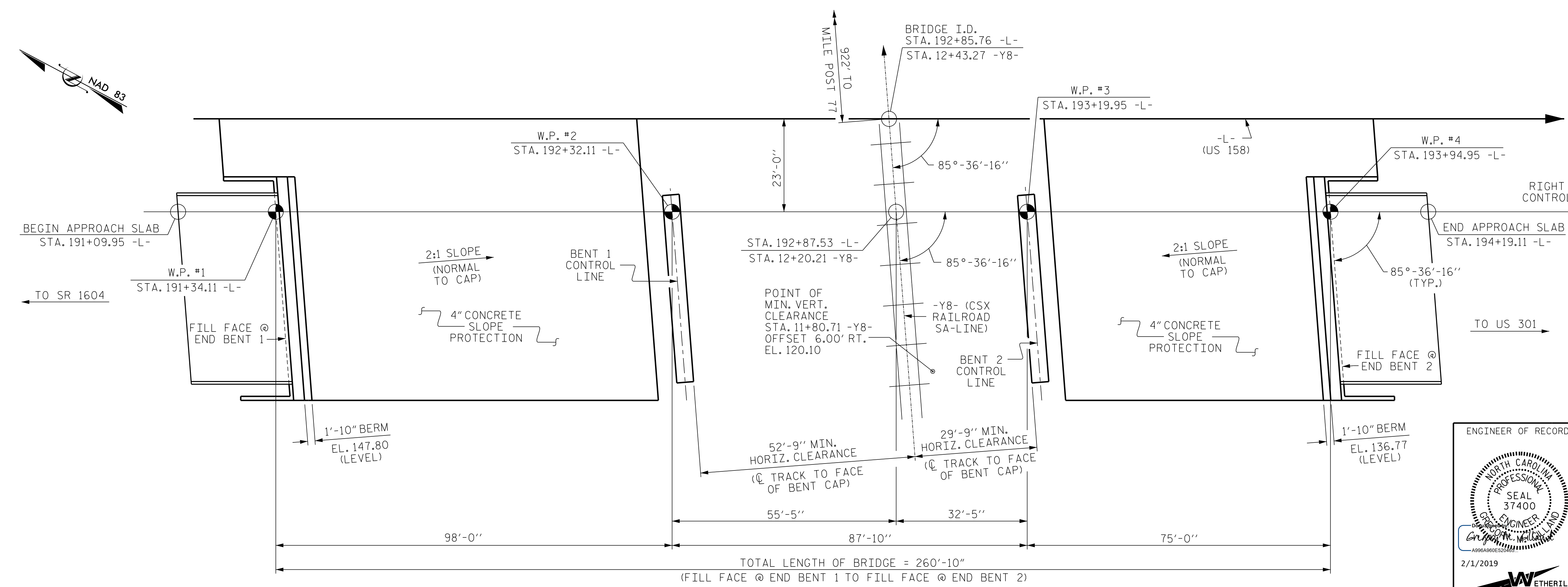
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ASSEMBLED BY : D. HODGE	DATE : 10/18
CHECKED BY : G.M. GILLAND	DATE : 11/18
DRAWN BY : TLA 10/05	REV. 12/21/11 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

SECTION THRU SLAB
(TYPE A - ALTERNATE APPROACH FILL)



SECTION ALONG RIGHT LANE CONTROL LINE
(SECTIONS AT END BENTS AND BENTS TAKEN AT RIGHT ANGLES)



PLAN
(PILES NOT SHOWN IN PLAN VIEW)

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
12+43.27 -Y8-
 SHEET 1 OF 4
 MILE POST 77.17 BRIDGE No. 129

ENGINEER OF RECORD:

 2/1/2019

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 LICENSE NO. F-0377

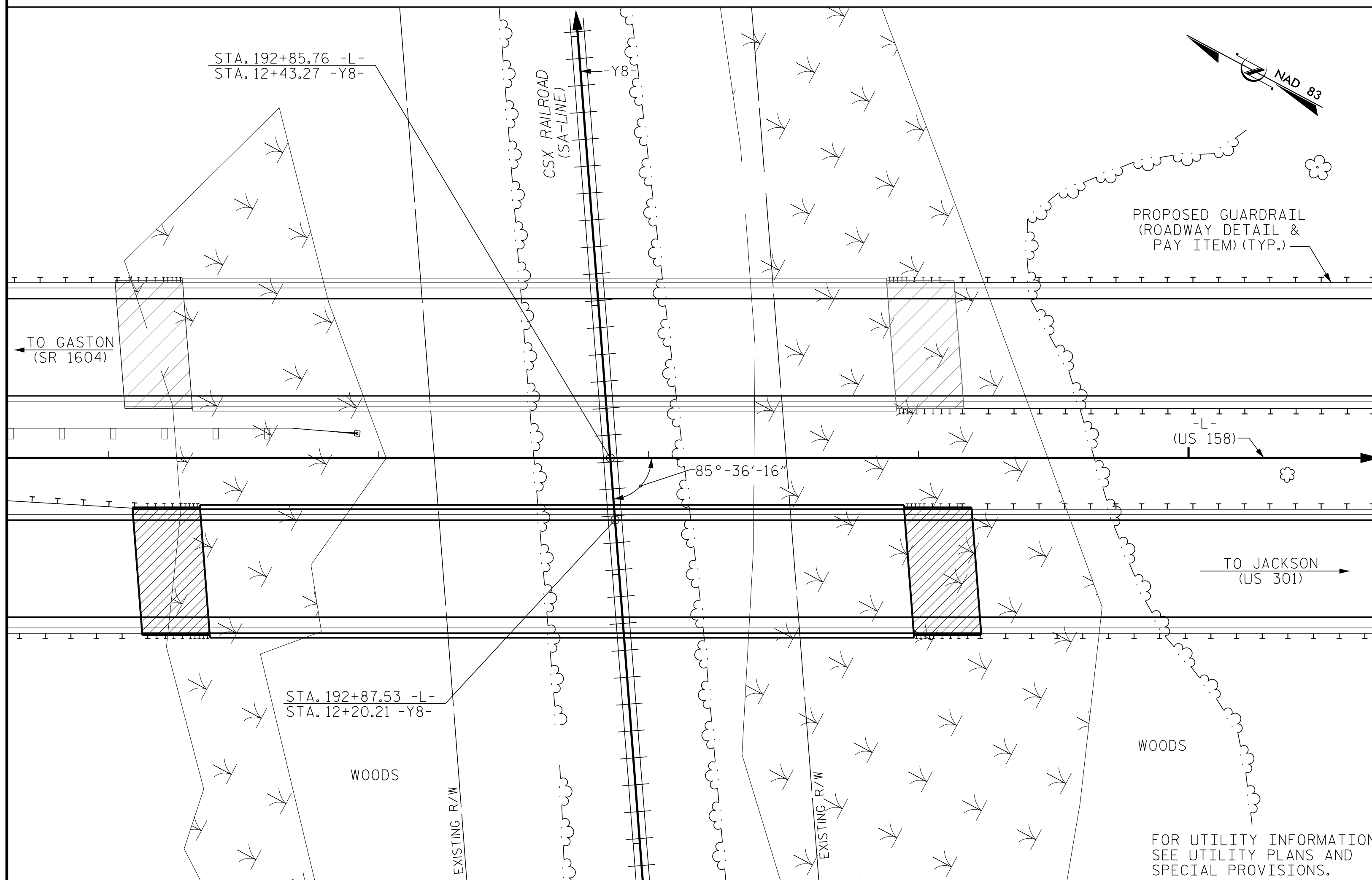
STATE OF NORTH CAROLINA		DEPARTMENT OF TRANSPORTATION		RALEIGH	
GENERAL DRAWING					
RIGHT LANE BRIDGE ON US 158 OVER CSX SA-LINE BETWEEN SR 1604 & US 301					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S4-1
TOTAL SHEETS					38

DRAWN BY: D. HODGE DATE: 10/18
 CHECKED BY: G.M. GILLAND DATE: 10/18

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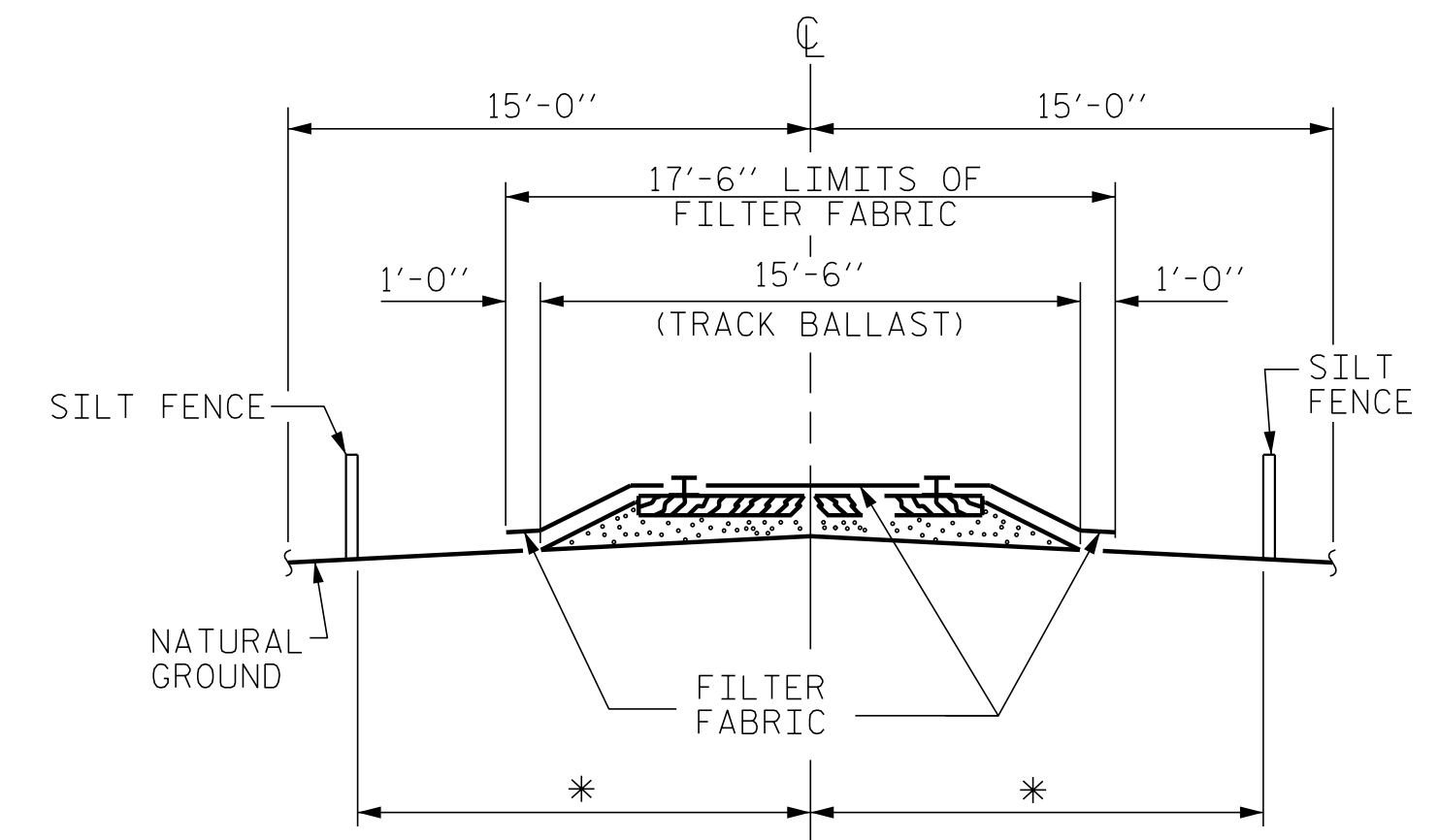
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BM #4: R/R SPIKE IN 24" SWEET GUM, 450' LT. OF STA. 197+65 -L-, ELEV. = 102.47



LOCATION SKETCH

RAILROAD EROSION CONTROL DETAIL



* TO BE DETERMINED BY THE RESIDENT ENGINEER IN CONSULTATION WITH THE RAILROAD ENGINEER.

NOTES

RAILROAD EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO PERFORMING ANY WORK IN THE RAILROAD RIGHT-OF-WAY.

ADDITIONAL EROSION CONTROL MEASURES FOR PROTECTION OF RAILROAD DITCHES MAY BE REQUIRED AS DIRECTED BY THE ENGINEER.

NO SEPARATE PAYMENT WILL BE MADE FOR RAILROAD EROSION CONTROL MEASURES.

LIMITS OF SILT FENCE AND FILTER FABRIC PARALLEL TO RAILROAD SHALL EXTEND A MINIMUM OF 25'-0" OUTSIDE EDGE OF SUPERSTRUCTURE OR TOE OF SLOPE ON CONSTRUCTION. A GREATER LENGTH OF SILT FENCE OR FILTER FABRIC MAY BE REQUIRED IF SO DIRECTED BY THE ENGINEER.

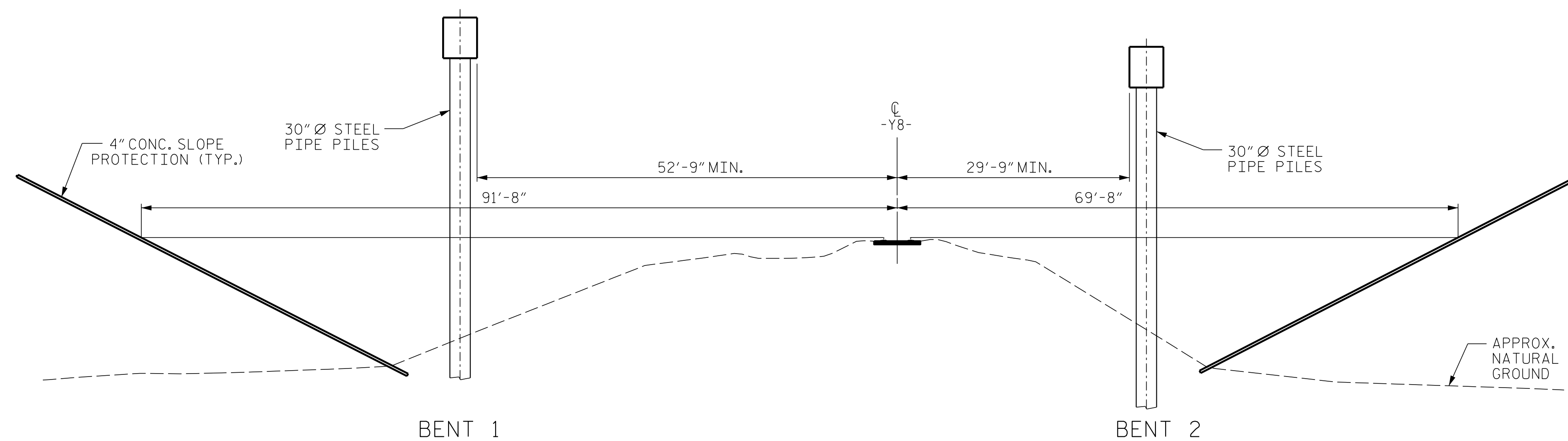
FILTER FABRIC TO BE NAILED TO TIMBER RAIL TIES WITH PRIME SOURCE "GRIP CAP" OR EQUIVALENT. FILTER FABRIC ON SHOULDER TO BE SECURED AS DIRECTED BY THE ENGINEER AND RAILROAD.

TOP OF RAIL ELEVATIONS

-Y8- (CSX SA-LINE)		
STATION	LEFT RAIL	RIGHT RAIL
8+20.29	117.74	117.71
9+01.53	118.26	118.26
9+82.26	118.72	118.73
10+00.00	118.63	118.63
10+87.93	119.31	---
11+02.75	---	119.46
12+11.80	120.37	120.34
12+96.15	121.04	121.04
13+89.68	121.81	121.81
14+76.35	122.48	122.46
15+65.81	123.25	123.24
15+79.35	123.54	123.54
16+33.02	124.04	124.07

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-

SHEET 2 OF 4



SECTION THROUGH RAILROAD

LOOKING IN DIRECTION OF INCREASING STATIONS ON RAILROAD
 (SPAN LENGTH BASED ON THIS SECTION)

DRAWN BY : D. HODGE DATE : 10/18
 CHECKED BY : G.M. GILLAND DATE : 10/18

ENGINEER OF RECORD:

 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
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 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

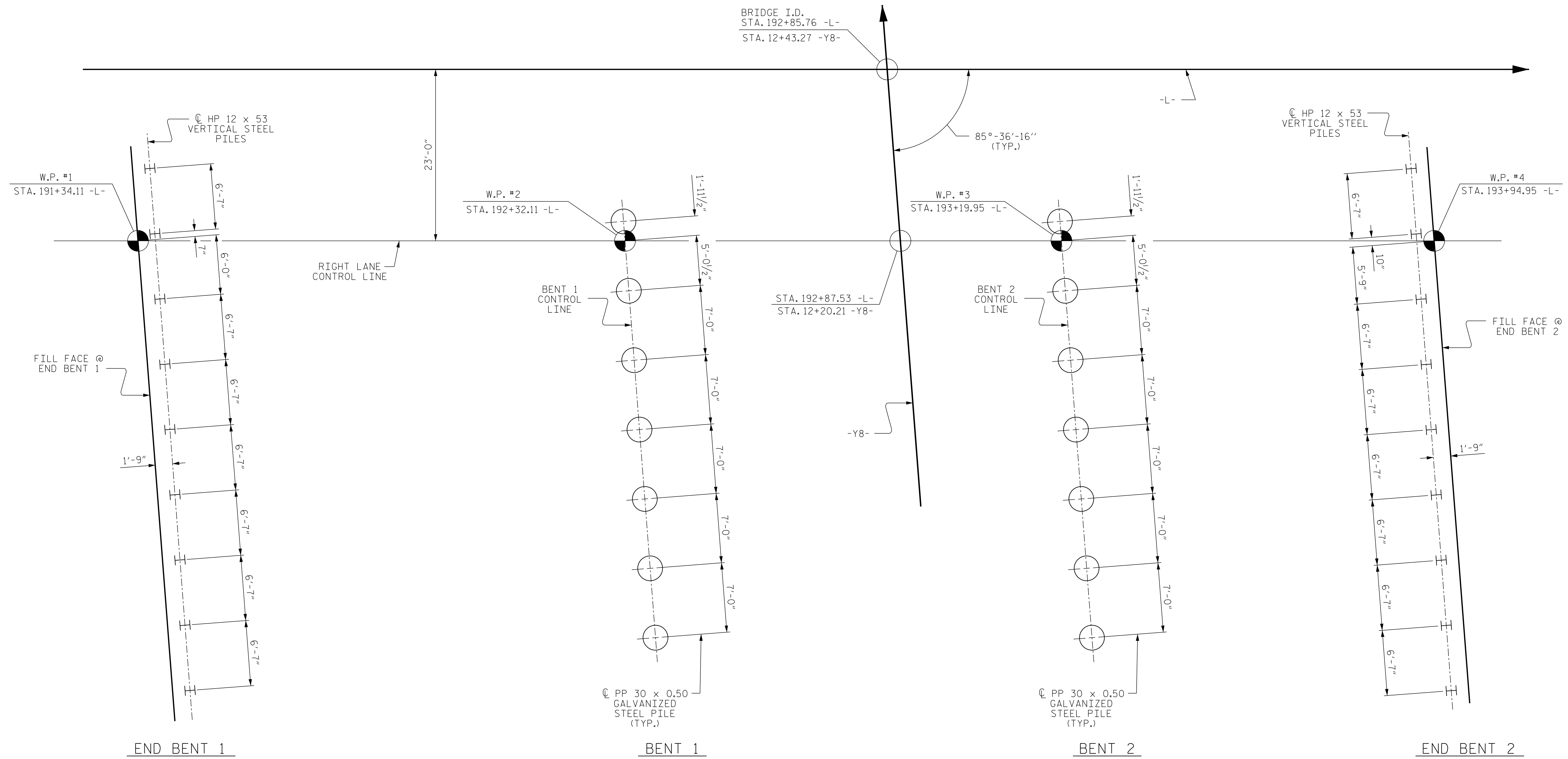
GENERAL DRAWING
 RIGHT LANE BRIDGE
 ON US 158 OVER CSX SA-LINE
 BETWEEN SR 1604 & US 301

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

S4-2
 TOTAL SHEETS: 38

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FOUNDATION LAYOUT

FOUNDATION NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENTS NO. 1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE.

DRIVE PILES AT END BENTS NO. 1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 185 TONS PER PILE.

PILES AT BENTS NO. 1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 245 TONS PER PILE.

DRIVE PILES AT BENTS NO. 1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 330 TONS PER PILE.

INSTALL PILES AT BENT NO. 1 TO A TIP ELEVATION NO HIGHER THAN 78.5 FT.

INSTALL PILES AT BENT NO. 2 TO A TIP ELEVATION NO HIGHER THAN 70.5 FT.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 66,300 TO 107,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENTS NO. 1 & 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

OBSERVE A 5 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENTS NO. 1 & 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

OBSERVE A 5 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT OF FINISHED GRADE AT THE APPROACHES OF THE BOTH END BENTS BEFORE BEGINNING CONSTRUCTION AT BENTS NO. 1 & 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT BENTS NO. 1 OR 2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED AT END BENTS 1 & 2. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PIPE PILE PLATES ARE REQUIRED FOR STEEL PIPE PILES AT BENTS NO. 1 & 2. USE PIPE PILE PLATES WITH A DIAMETER EQUAL TO THE PIPE PILE DIAMETER. FOR STEEL PIPE PILE PLATES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS FOR THE SETTLEMENT GAUGES REQUIRED AT END BENT NO. 1, END BENT NO. 2, INTERIOR BENT NO. 1, AND INTERIOR BENT NO. 2.

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 3 OF 4

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DRAWN BY : D. HODGE DATE : 11/18
 CHECKED BY : G.M. GILLAND DATE : 12/18

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ENGINEER OF RECORD:

1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

RIGHT LANE BRIDGE
 ON US 158 OVER CSX SA-LINE
 BETWEEN SR 1604 & US 301

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-3
1			3			TOTAL SHEETS
2			4			38

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF 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.

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

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

THE RAILROAD TRACK TOP OF RAIL ELEVATIONS ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE TOP OF RAIL ELEVATIONS AND REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

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

FOR INTERIOR BENTS, ONLY PARTIAL GALVANIZING OF THE PILES IS REQUIRED. SEE INTERIOR BENT SHEETS FOR REQUIRED GALVANIZED LENGTHS. PAYMENT FOR PARTIALLY GALVANIZED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR GALVANIZED STEEL PILES.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR RAILROAD PROVISIONS, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	PILE DRIVING EQUIPMENT SETUP FOR PP 30 X 0.50 GALVANIZED STEEL PILES	HP 12 x 53 STEEL PILES		PP 30 x 0.50 GALVANIZED STEEL PILES		PIPE PILE PLATES	PILE REDRIVES	CONCRETE BARRIER RAIL	72" CHAIN LINK FENCE	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS
	EACH	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	No.	LIN. FT.	EACH	EACH	No.	LIN. FT.	No.	LIN. FT.	EACH	EACH	LIN. FT.	LIN. FT.	SO. YDS.	LUMP SUM
SUPERSTRUCTURE		12,846	13,236		LUMP SUM		15	1,285.42									518.33	504.0		LUMP SUM
END BENT No. 1				47.3		7,535			9		9	810				5			815	
BENT No. 1				40.0		4,370				7			7	819	7	4				
BENT No. 2				40.0		4,370				7			7	854	7	4				
END BENT No. 2				46.2		7,406			9		9	900				5			620	
TOTAL	2	12,846	13,236	173.5	LUMP SUM	23,681	15	1,285.42	18	14	18	1,710	14	1,673	14	18	518.33	504.0	1435	LUMP SUM

PROJECT NO. R-2582A

NORTHAMPTON COUNTY

STATION: 192+85.76 -L-

SHEET 4 OF 4

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DRAWN BY : D. HODGE DATE : 10/18
 CHECKED BY : G.M. GILLAND DATE : 1/19

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ENGINEER OF RECORD:
 3/26/2019

Gregory M. Gilland
 REGISTERED PROFESSIONAL ENGINEER
 WETHERILL ENGINEERING

1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
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 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 RIGHT LANE BRIDGE
 ON US 158 OVER CSX SA-LINE
 BETWEEN SR 1604 & US 301

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-4
1			3			TOTAL SHEETS
2			4			38

LOAD FACTORS:

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

LOAD AND RESISTANCE FACTOR RATING (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	1.06	--	1.75	0.80	1.37	B	I	42.79	1.01	1.06	B	I	60.19	0.80	0.80	1.08	A	I	47.56	1 & 2			
	HL-93 (OPERATING)	N/A		1.76	--	1.35	0.80	1.78	B	I	42.79	1.01	1.76	A	I	86.18	N/A	0.80	--	--	--	--	1 & 2			
	HS-20 (INVENTORY)	36.000	②	1.49	53.64	1.75	0.80	1.85	B	I	42.79	1.01	1.78	B	I	77.59	0.80	0.80	1.49	A	I	47.56	1 & 2			
	HS-20 (OPERATING)	36.000		2.33	83.88	1.35	0.80	2.40	B	I	42.79	1.01	2.33	B	I	77.59	N/A	0.80	--	--	--	--	1 & 2			
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.52	47.52	1.40	0.80	5.37	B	I	42.79	1.01	5.57	B	I	77.59	0.80	0.80	3.52	A	I	47.56	1 & 2		
		SNGARBS2	20.000		2.55	51.00	1.40	0.80	3.93	B	I	42.79	1.01	3.90	B	I	77.59	0.80	0.80	2.55	A	I	47.56	1 & 2		
		SNAGRIS2	22.000		2.39	52.58	1.40	0.80	3.70	B	I	42.79	1.01	3.60	B	I	77.59	0.80	0.80	2.39	A	I	47.56	1 & 2		
		SNCOTTS3	27.250		1.75	47.69	1.40	0.80	2.67	B	I	42.79	1.01	2.73	B	I	77.59	0.80	0.80	1.75	A	I	47.56	1 & 2		
		SNAGGRS4	34.925		1.44	50.29	1.40	0.80	2.20	B	I	42.79	1.01	2.23	B	I	77.59	0.80	0.80	1.44	A	I	47.56	1 & 2		
		SNS5A	35.550		1.40	49.77	1.40	0.80	2.16	B	I	42.79	1.01	2.25	B	I	77.59	0.80	0.80	1.40	A	I	47.56	1 & 2		
		SNS6A	39.950		1.28	51.14	1.40	0.80	1.97	B	I	42.79	1.01	2.03	B	I	77.59	0.80	0.80	1.28	A	I	47.56	1 & 2		
		SNS7B	42.000		1.22	51.24	1.40	0.80	1.88	B	I	42.79	1.01	1.98	B	I	77.59	0.80	0.80	1.22	A	I	47.56	1 & 2		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.56	51.48	1.40	0.80	2.40	B	I	42.79	1.01	2.43	B	I	77.59	0.80	0.80	1.56	A	I	47.56	1 & 2		
		TNT4A	33.075		1.56	51.60	1.40	0.80	2.41	B	I	42.79	1.01	2.39	B	I	77.59	0.80	0.80	1.56	A	I	47.56	1 & 2		
		TNT6A	41.600		1.27	52.83	1.40	0.80	1.96	B	I	42.79	1.01	2.10	B	I	77.59	0.80	0.80	1.27	A	I	47.56	1 & 2		
		TNT7A	42.000		1.27	53.34	1.40	0.80	1.96	B	I	42.79	1.01	2.06	B	I	77.59	0.80	0.80	1.27	A	I	47.56	1 & 2		
		TNT7B	42.000		1.30	54.60	1.40	0.80	2.02	B	I	42.79	1.01	1.94	B	I	77.59	0.80	0.80	1.30	A	I	47.56	1 & 2		
		TNAGRIT4	43.000		1.24	53.32	1.40	0.80	1.93	B	I	42.79	1.01	1.88	B	I	77.59	0.80	0.80	1.24	A	I	47.56	1 & 2		
TNAGT5A	45.000		1.18	53.10	1.40	0.80	1.82	B	I	42.79	1.01	1.84	B	I	77.59	0.80	0.80	1.18	A	I	47.56	1 & 2				
TNAGT5B	45.000		③	1.17	52.65	1.40	0.80	1.80	B	I	42.79	1.01	1.78	B	I	77.59	0.80	0.80	1.17	A	I	47.56	1 & 2			

NOTES:

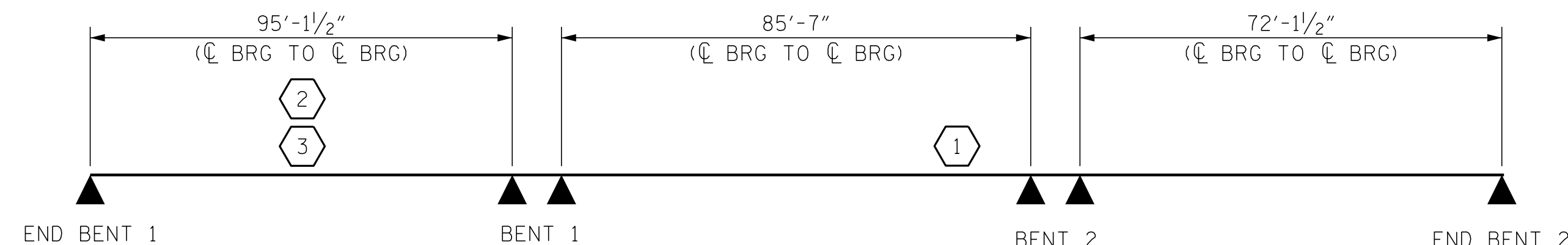
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

COMMENTS:

- END RESTRAINT FOR INTEGRAL END BENTS IS NOT CONSIDERED FOR LOAD RATING ANALYSIS.
- LOAD RATING ASSUMES SIMPLE SPAN CONDITIONS PER NCDOT BRIDGE DESIGN MANUAL, CHAPTER 6.

#	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	
E - EXTERIOR LEFT AND RIGHT GIRDER	



LRFR SUMMARY

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-

ENGINEER OF RECORD:

1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

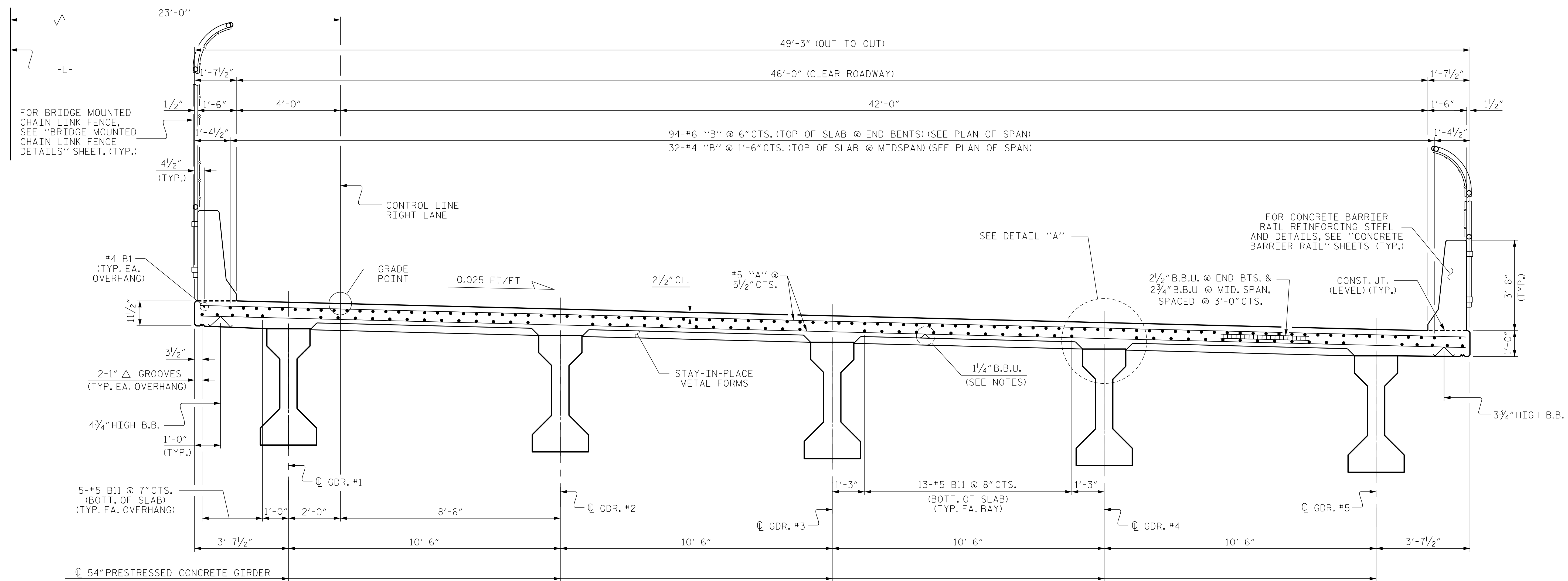
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE GIRDERS
 (NON-INTERSTATE TRAFFIC)
 (RIGHT LANE)

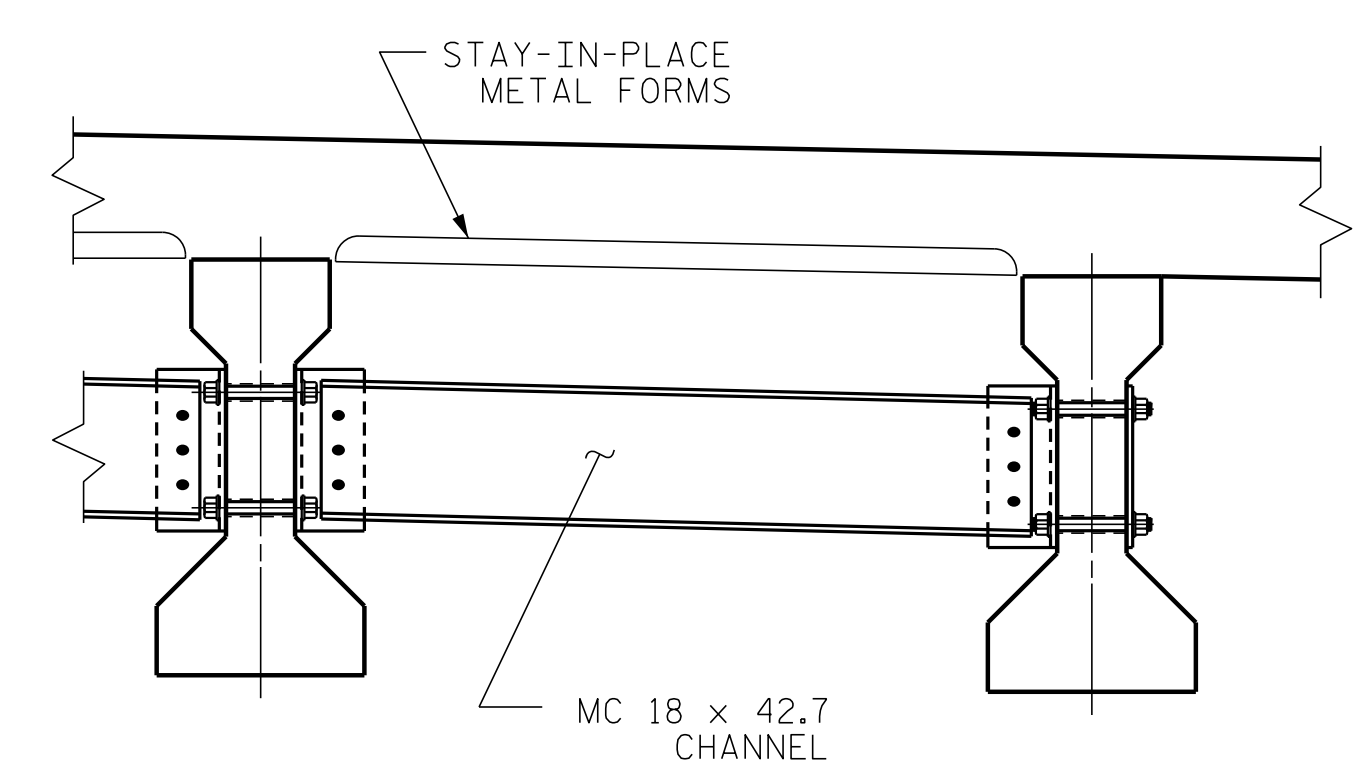
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-5
1			3			TOTAL SHEETS
2			4			38

ASSEMBLED BY : G.M. GILLAND	DATE : 11-18
CHECKED BY : B.C. HUNT	DATE : 11-18
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

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TYPICAL SECTION

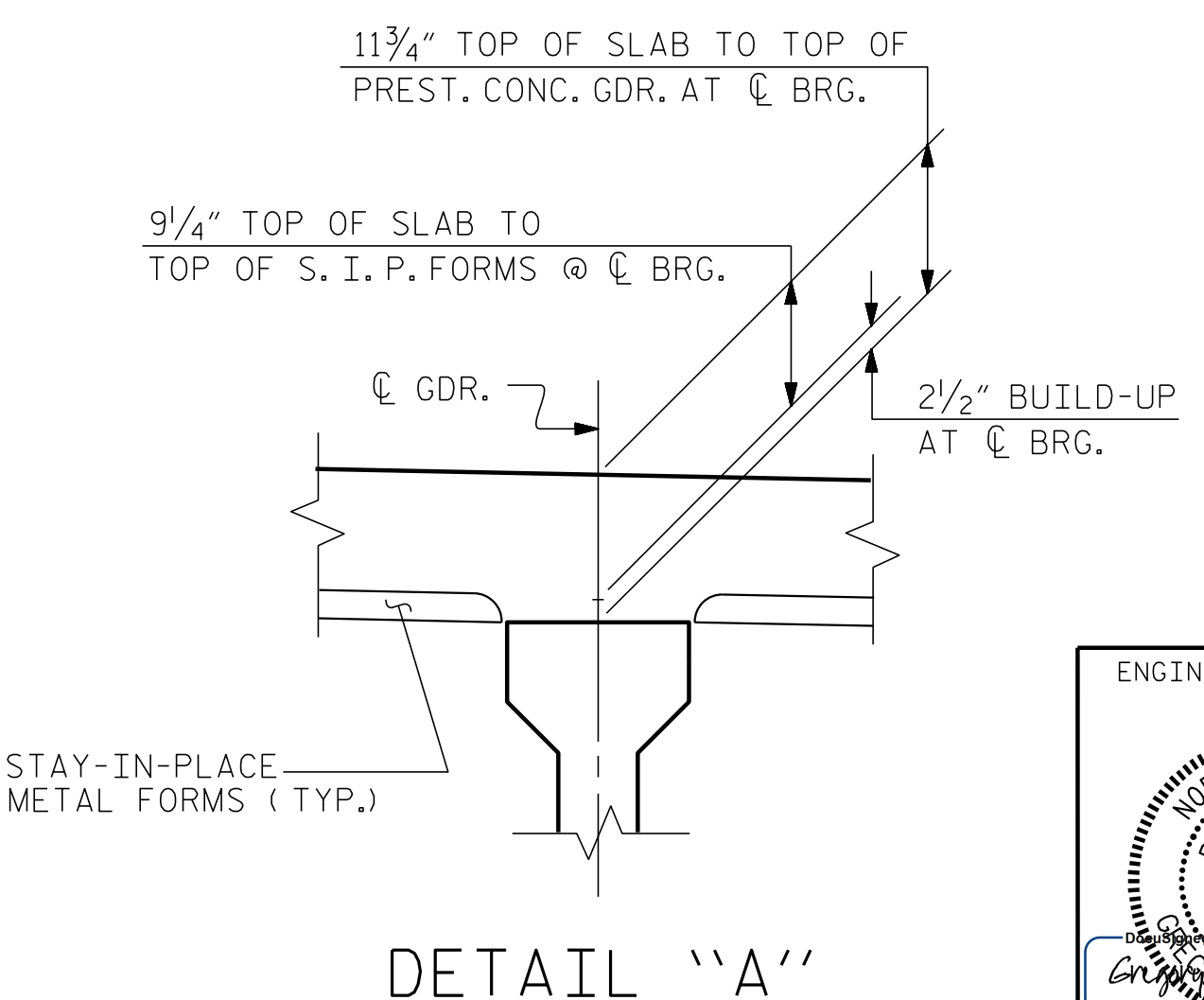


TYPICAL INTERMEDIATE DIAPHRAGM

SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDER" SHEET FOR DETAILS

NOTES

- PROVIDE 1 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.
- BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.
- PREVIOUSLY CAST CONCRETE SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE SLAB.



DETAIL "A"

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 1 OF 3

ENGINEER OF RECORD:

 GREGORY M. ETHERILL
 2/17/2013

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTION
 (RIGHT LANE)

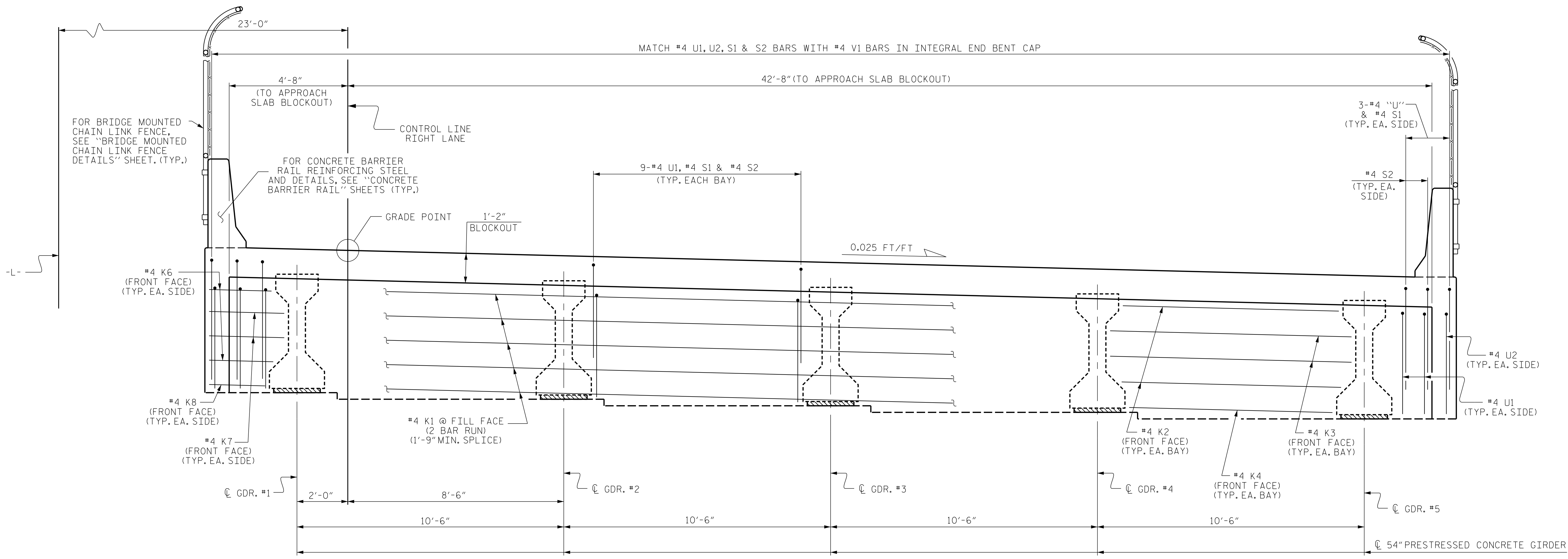
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NO.	BY:	DATE:	NO.	BY:	DATE:	S4-6
1			3			TOTAL SHEETS
2			4			38

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 CHECKED BY: G.M. GILLAND DATE: 11/18

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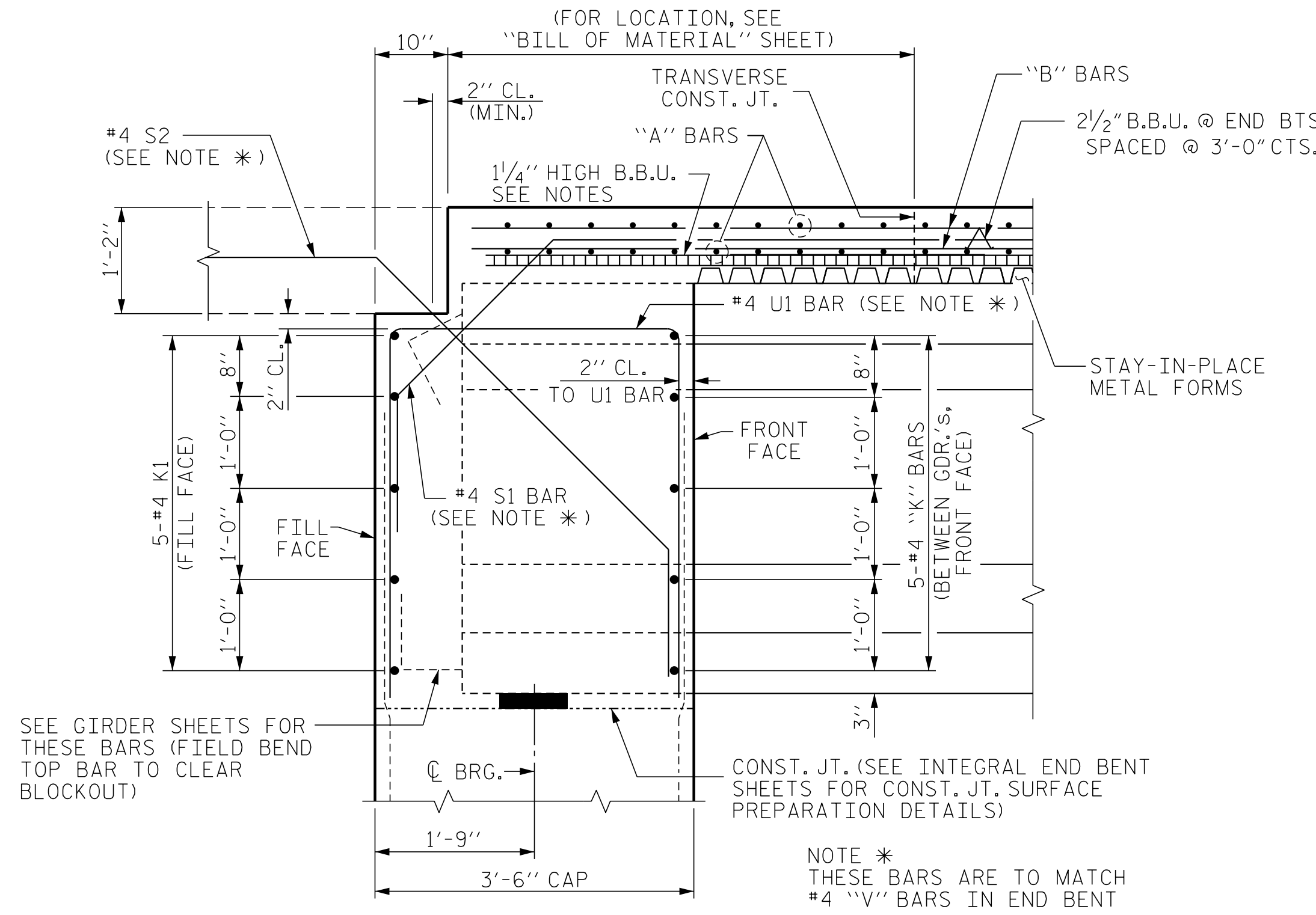
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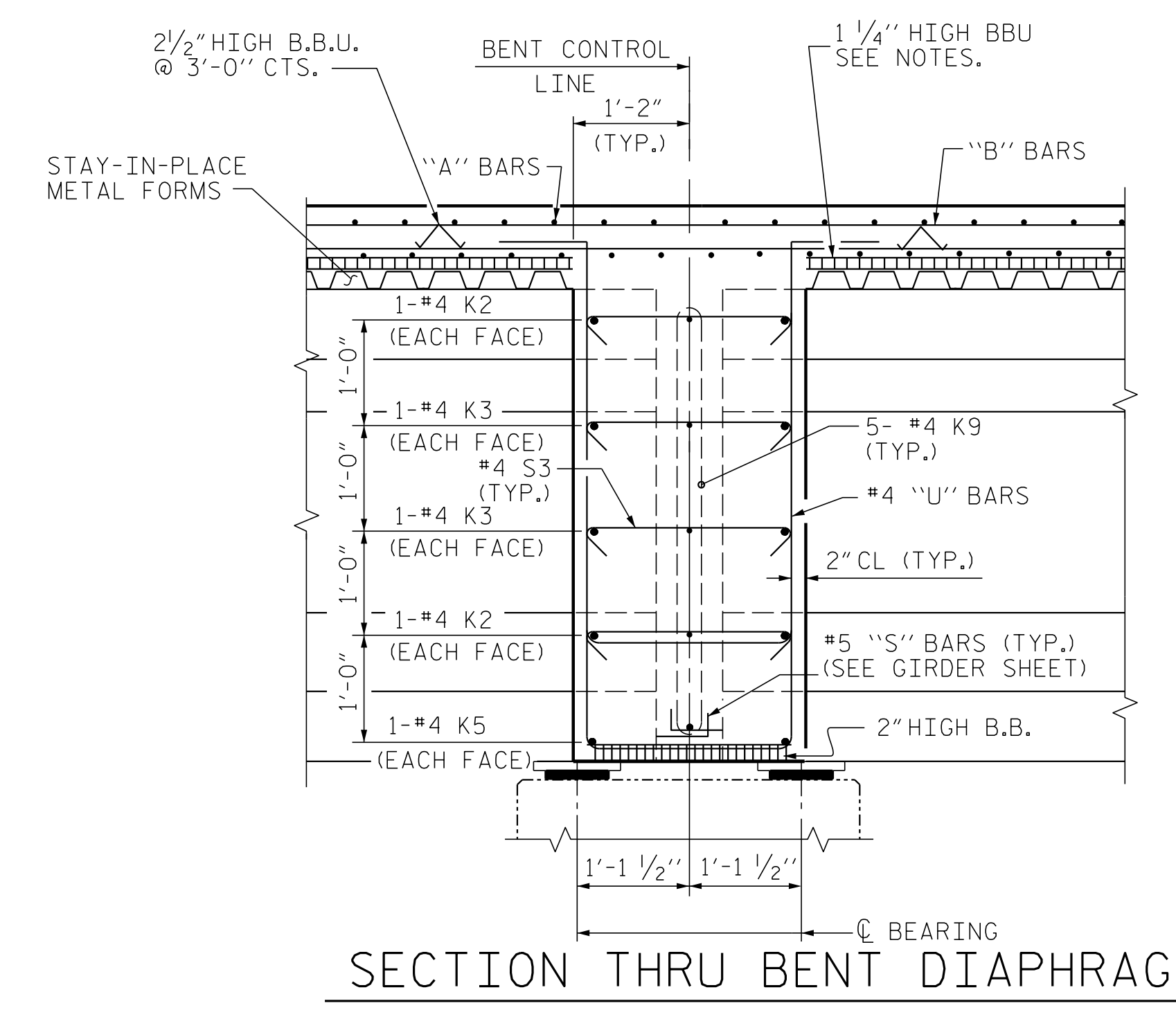


TYPICAL SECTION THROUGH INTEGRAL END BENT

DECK REINFORCEMENT NOT SHOWN FOR CLARITY

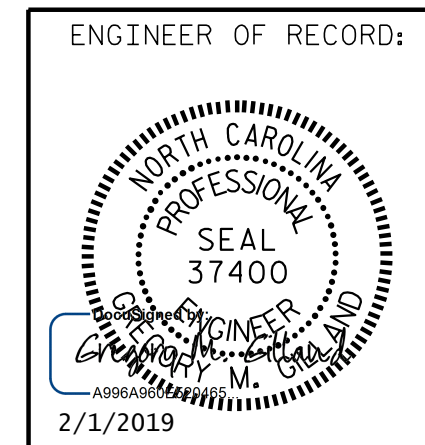


SECTION THRU INTEGRAL END BENT



SECTION THRU BENT DIAPHRAGM

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 2 OF 3



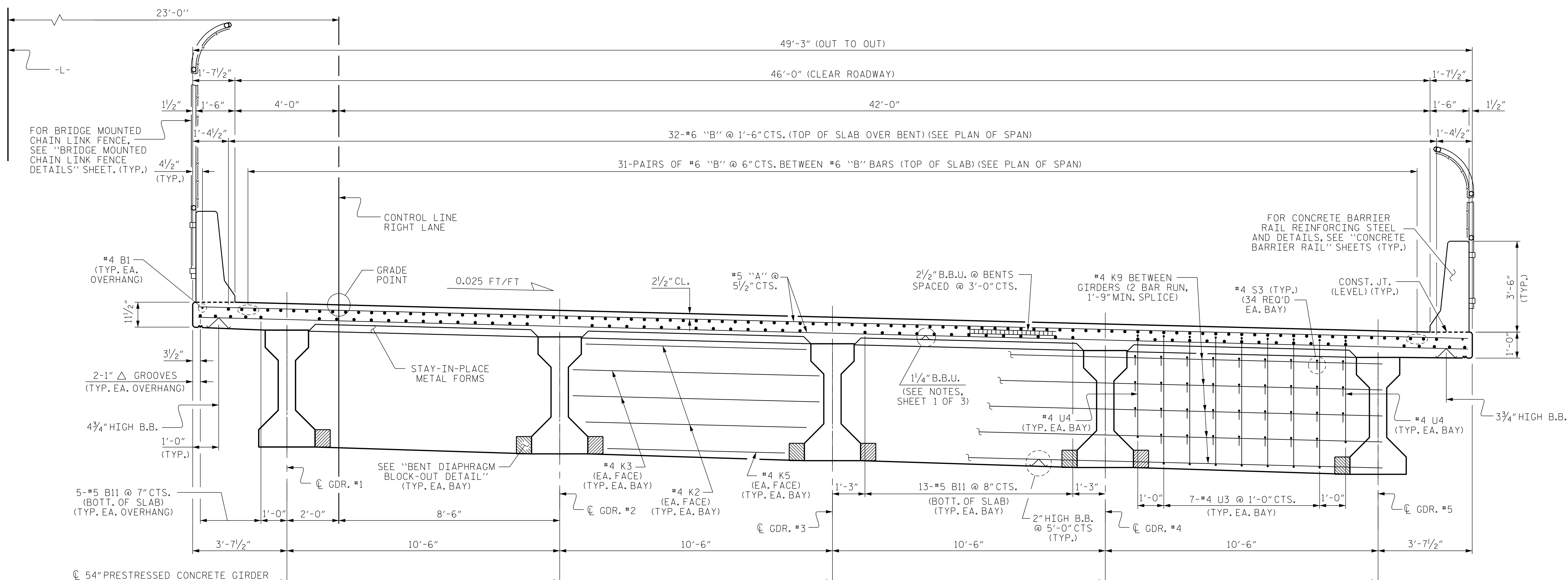
ENGINEER OF RECORD:
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
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 Fax: 919 851 8107
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE TYPICAL SECTION (RIGHT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S4-7
TOTAL SHEETS					38

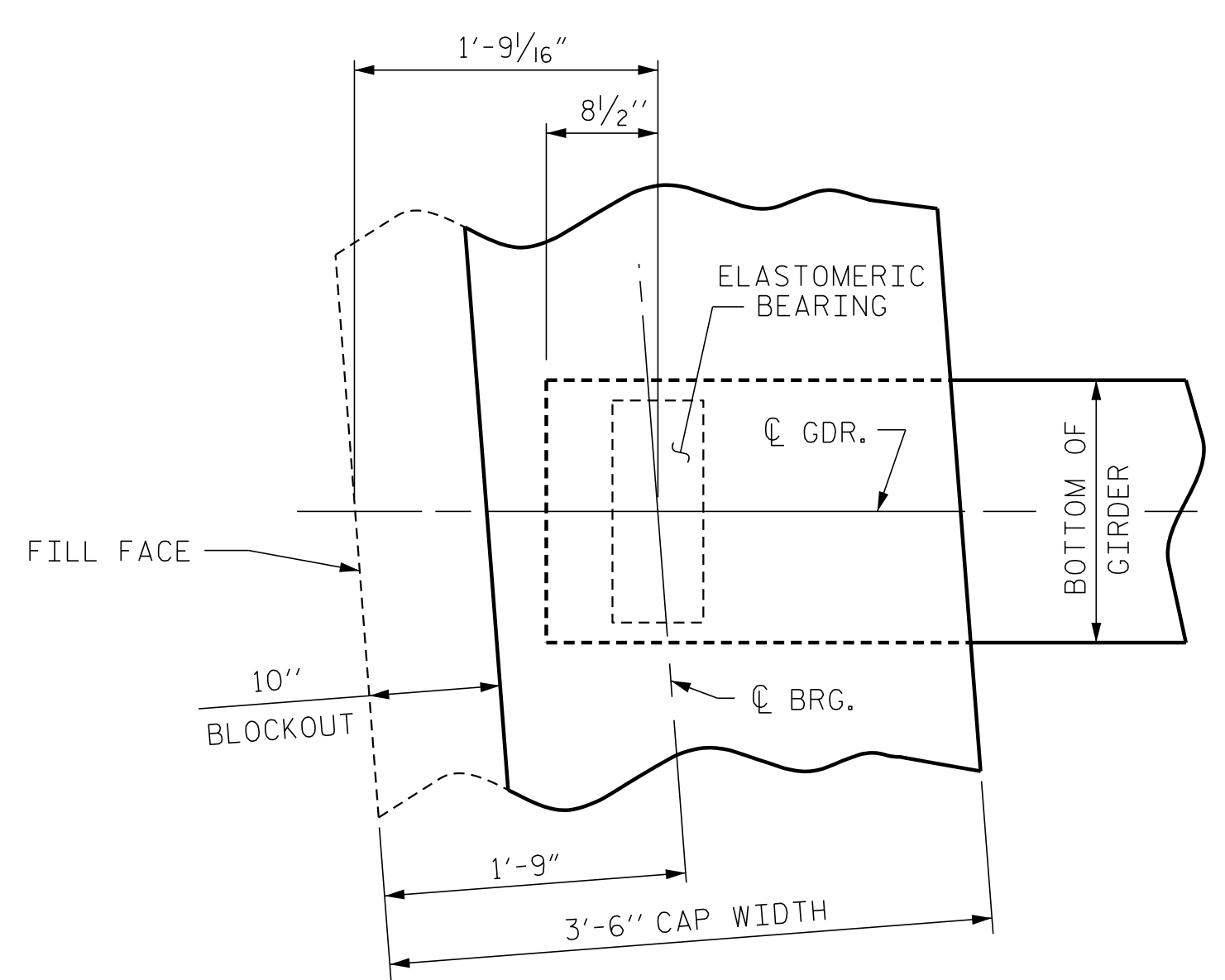
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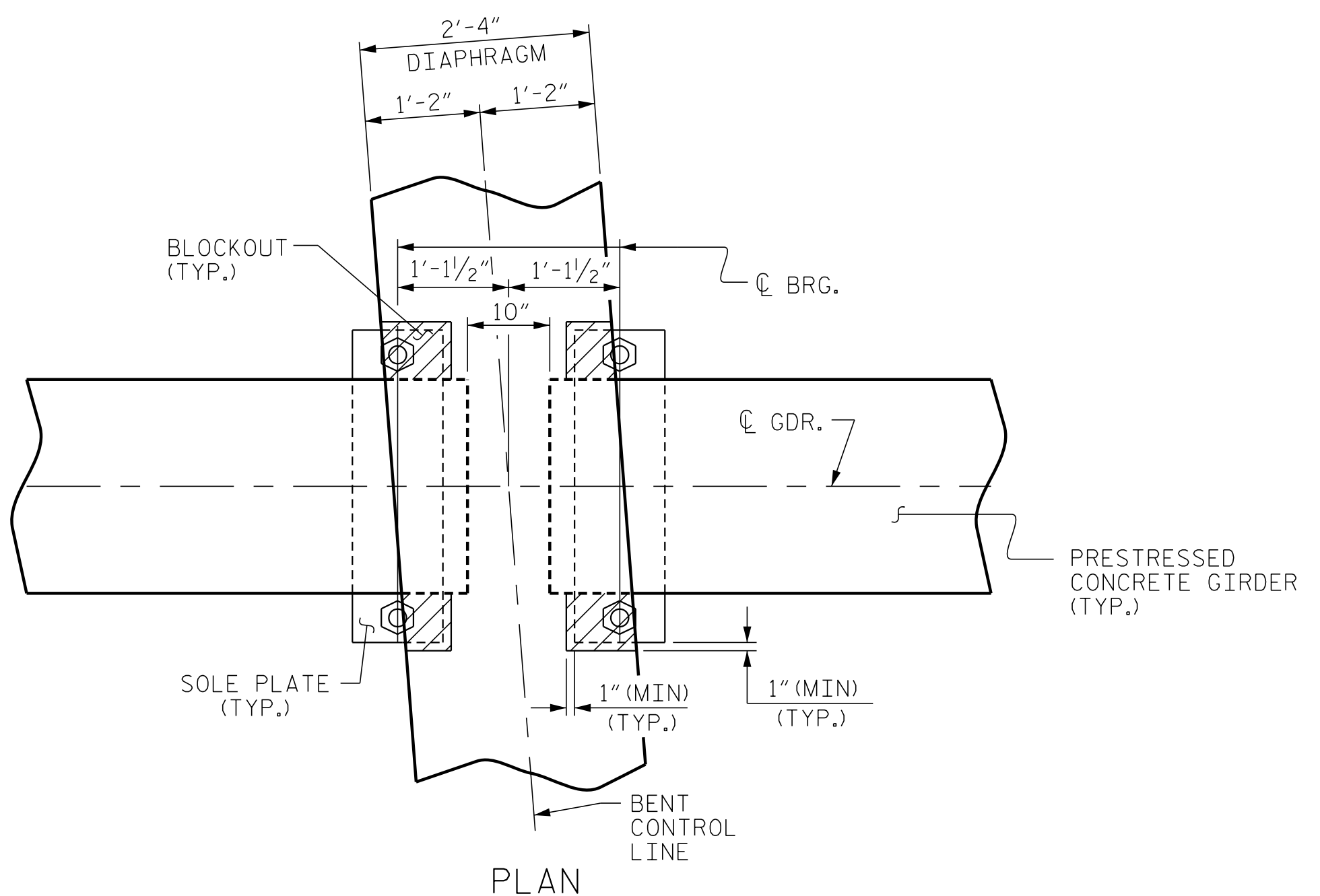
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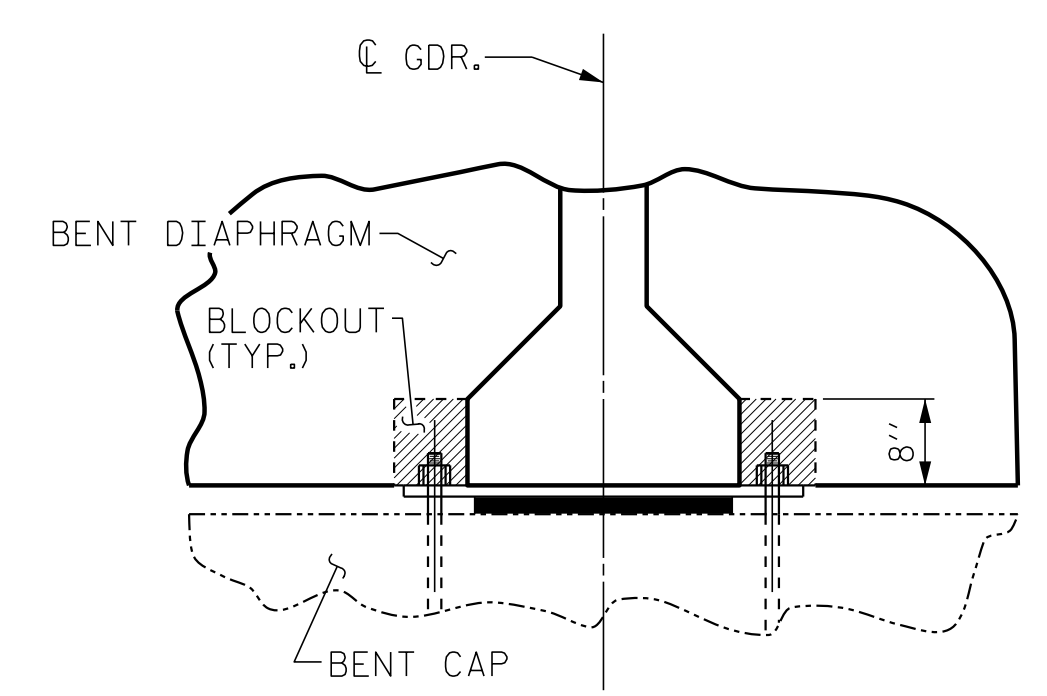
TYPICAL SECTION AT BENTS



PLAN OF GIRDER @ INTEGRAL END BENT

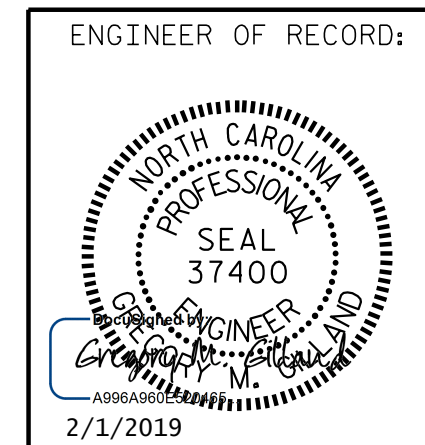


BENT DIAPHRAGM BLOCK-OUT DETAIL



SECTION

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 3 OF 3



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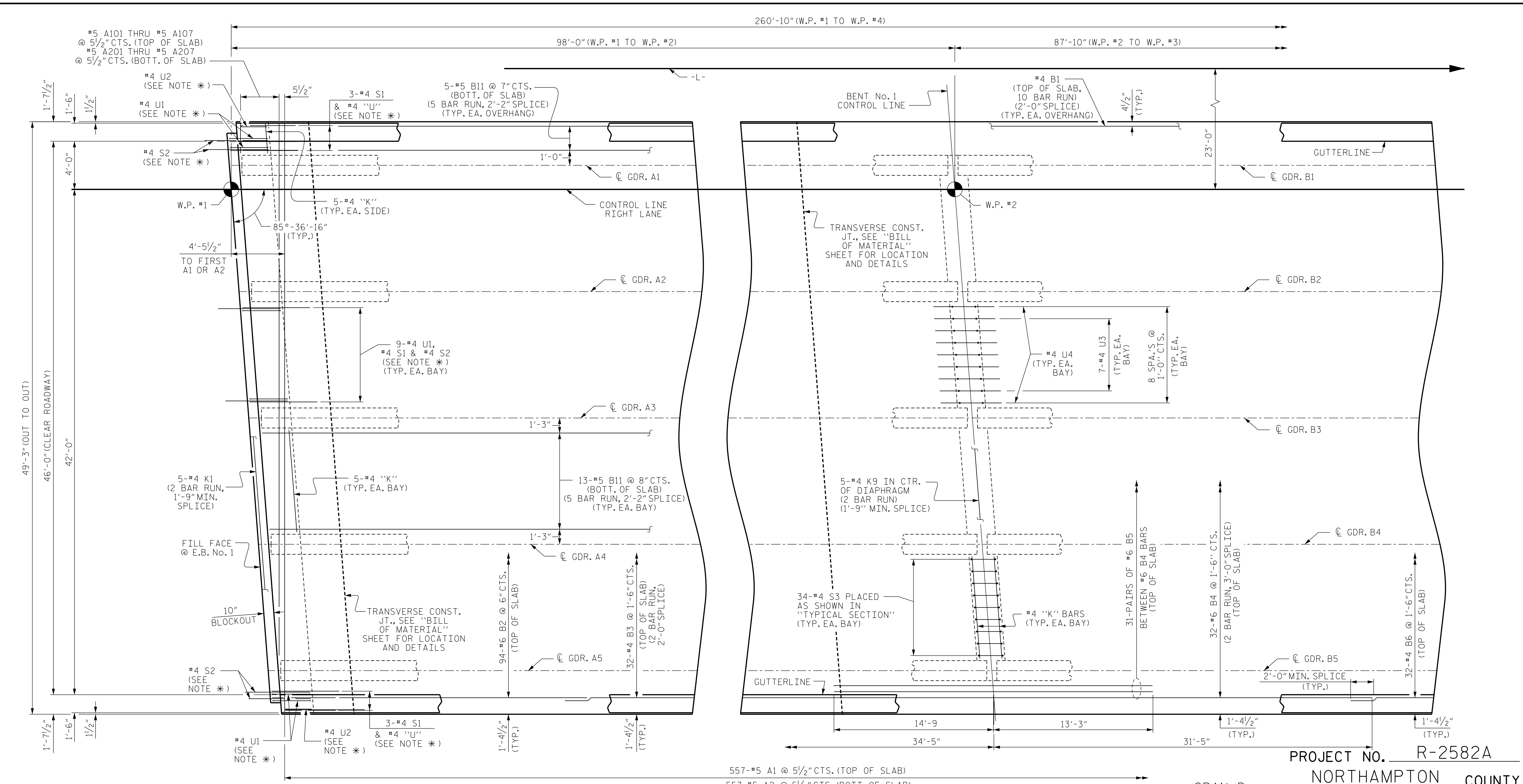
STATE OF NORTH CAROLINA		DEPARTMENT OF TRANSPORTATION		RALEIGH	
SUPERSTRUCTURE					
TYPICAL SECTION					
(RIGHT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S4-8
TOTAL SHEETS					38

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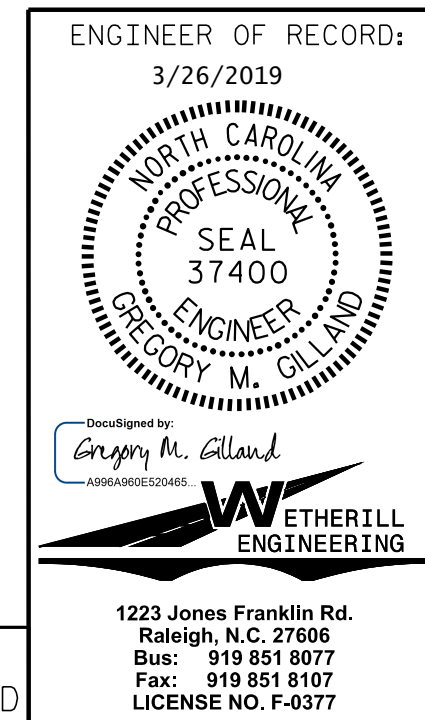
PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 1 OF 3

PARTIAL PLAN OF SPAN

FOR LOCATION OF INTERMEDIATE DIAPHRAGMS, SEE "FRAMING PLAN" SHEET.

FOR CONCRETE BARRIER RAIL DETAILS AND REINFORCING STEEL, SEE "CONCRETE BARRIER RAIL" SHEETS.

* THESE BARS ARE TO MATCH SPACING OF THE #4 "V" BARS IN END BENT.

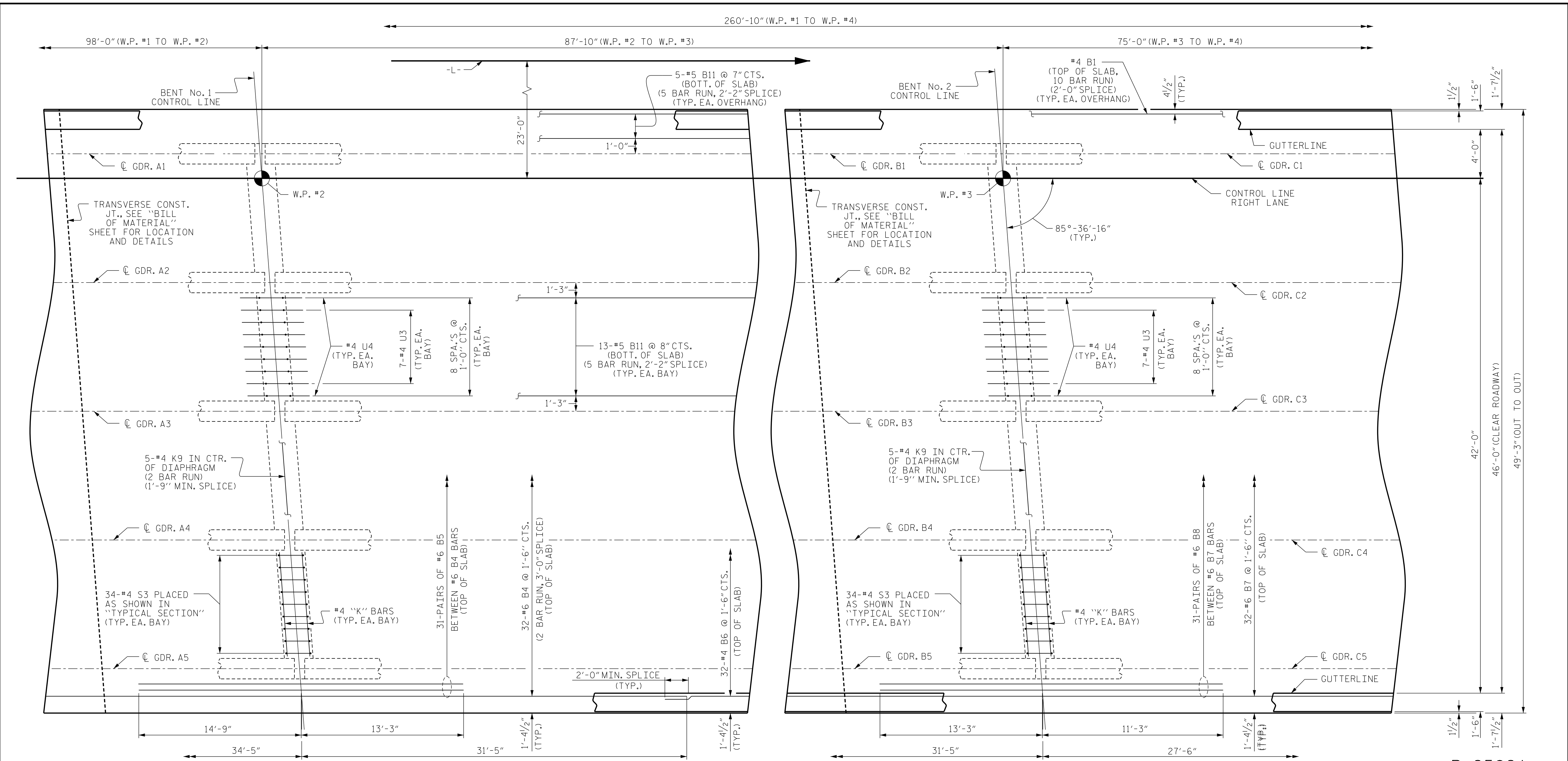


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPANS (RIGHT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S4-9
TOTAL SHEETS					38

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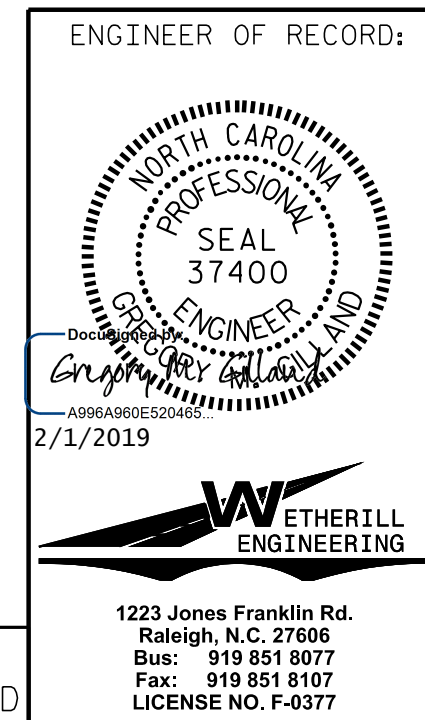
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2/11/2019 7:57:19 AM



PARTIAL PLAN OF SPAN

FOR LOCATION OF INTERMEDIATE DIAPHRAGMS, SEE "FRAMING PLAN" SHEET.
FOR CONCRETE BARRIER RAIL DETAILS AND REINFORCING STEEL, SEE "CONCRETE BARRIER RAIL" SHEETS.

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 192+85.76 -L-
SHEET 2 OF 3



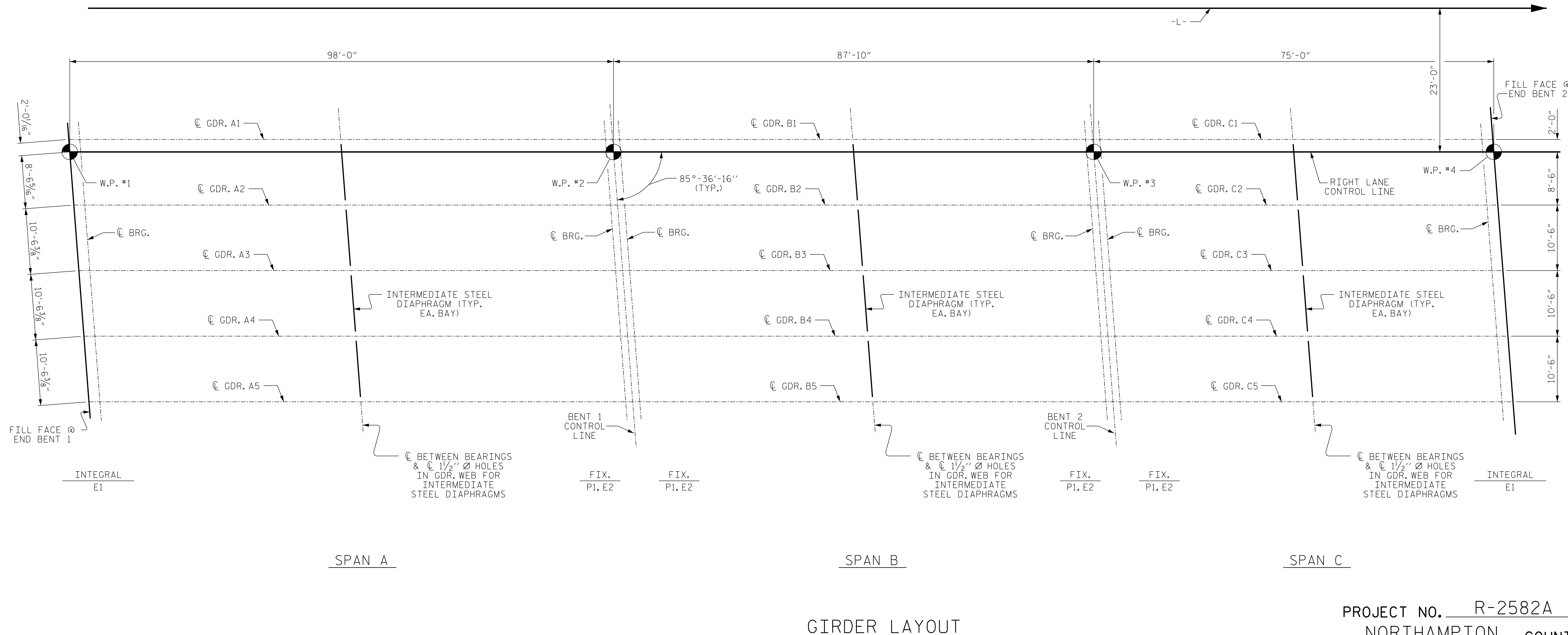
ENGINEER OF RECORD:		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH	
		SUPERSTRUCTURE PLAN OF SPANS (RIGHT LANE)	
		REVISIONS	
NO.	BY:	DATE:	SHEET NO.
1			S4-10
2			TOTAL SHEETS 38

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PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-

DRAWN BY : D. HODGE DATE : 10/18
 CHECKED BY : G.M. GILLAND DATE : 11/18

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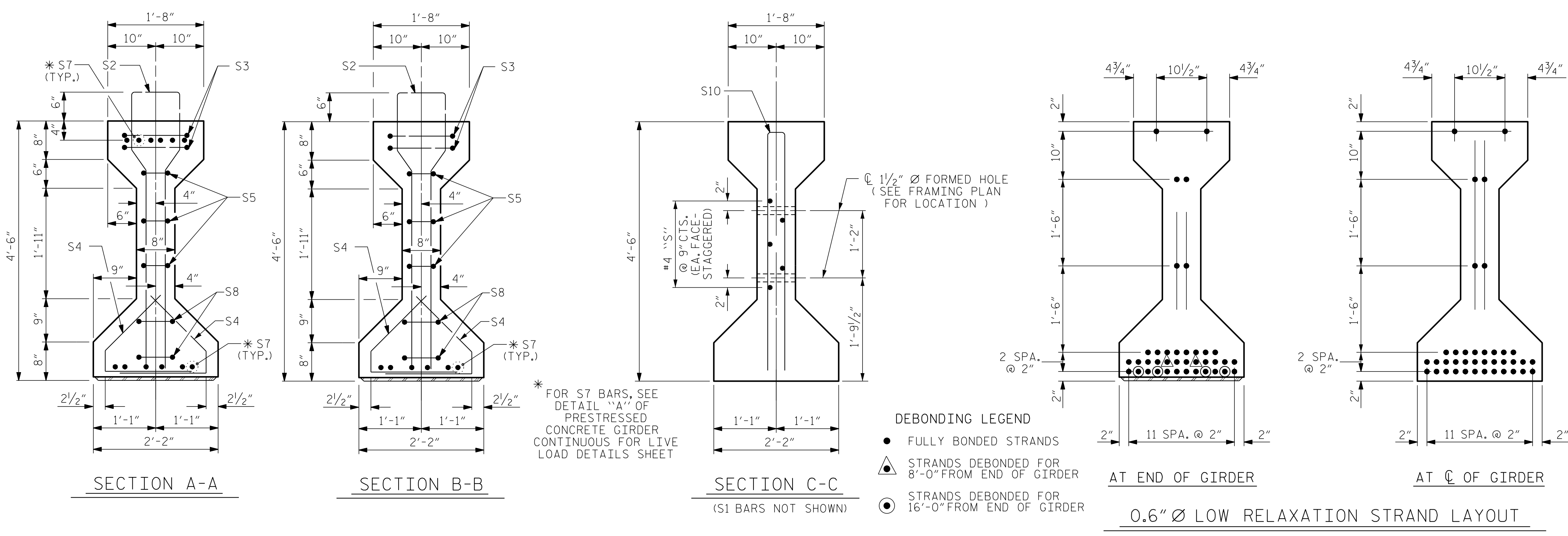
ENGINEER OF RECORD:

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
GIRDER LAYOUT
(RIGHT LANE)

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

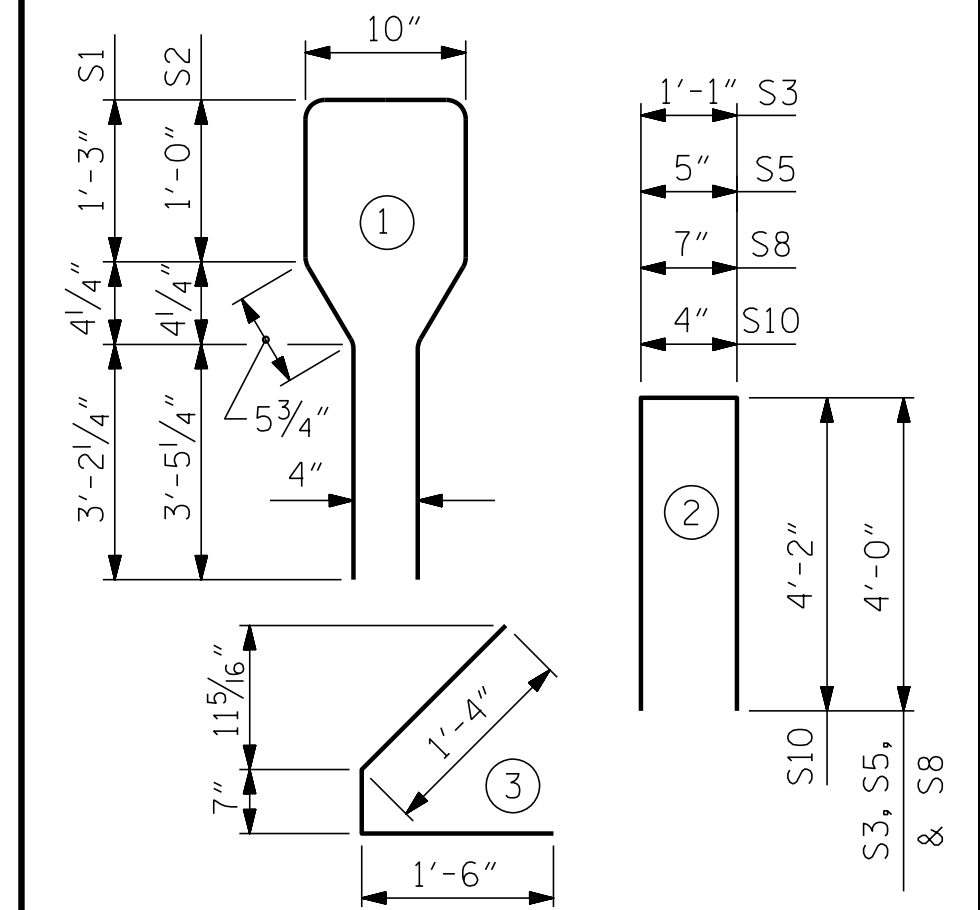


0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	74	#4	1	10'-8"	527
S2	14	#6	1	10'-8"	224
S3	4	#4	2	9'-1"	24
S4	68	#4	3	3'-5"	155
S5	6	#4	2	8'-5"	34
* S7	18	#5	STR	3'-8"	69
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23
S13	1	#3	STR	1'-4"	1

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

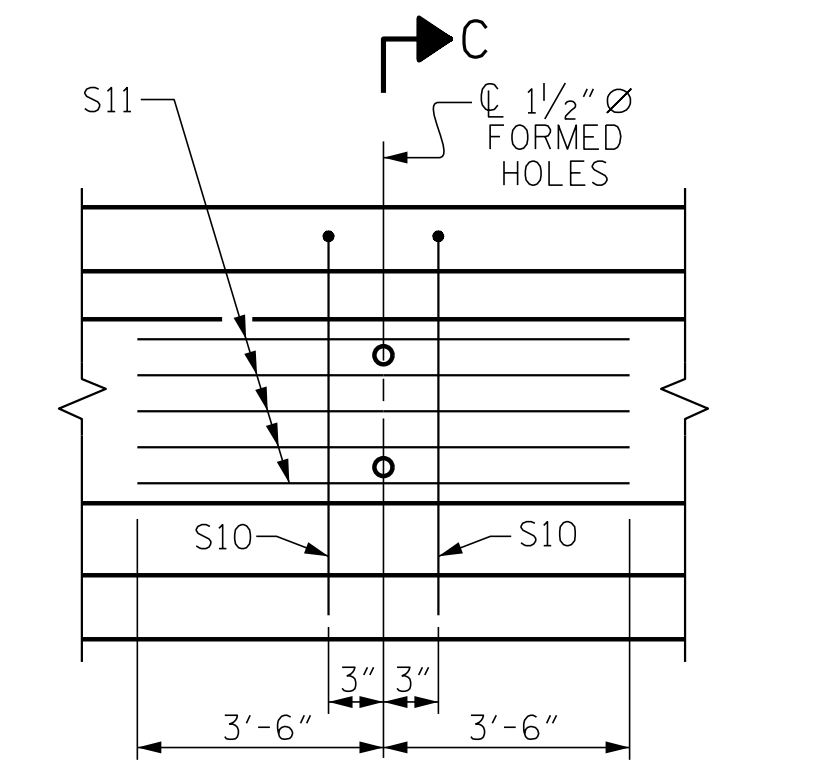
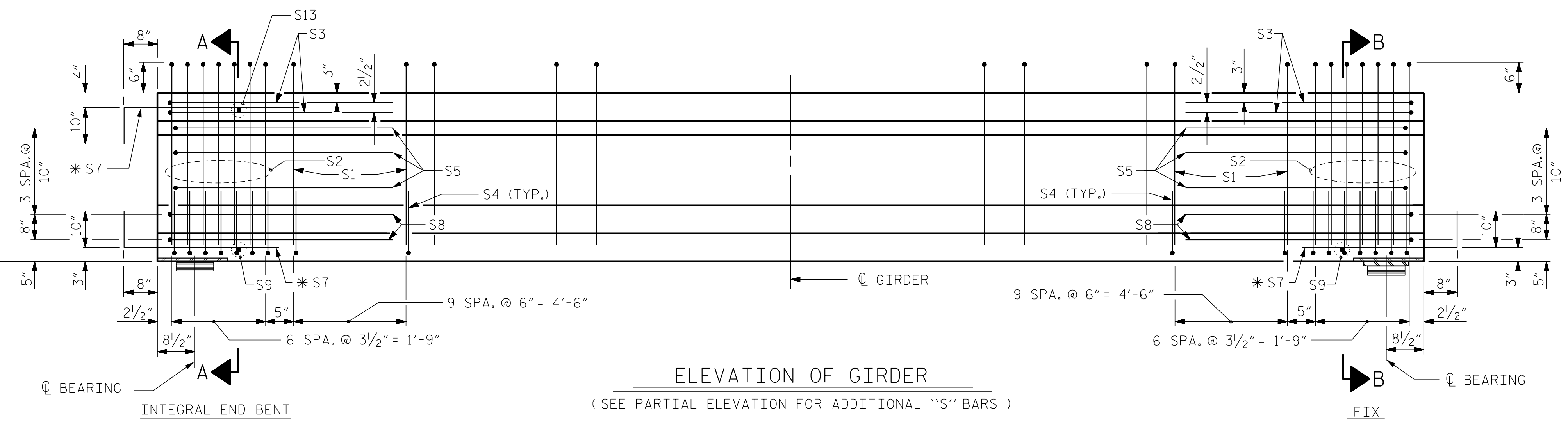
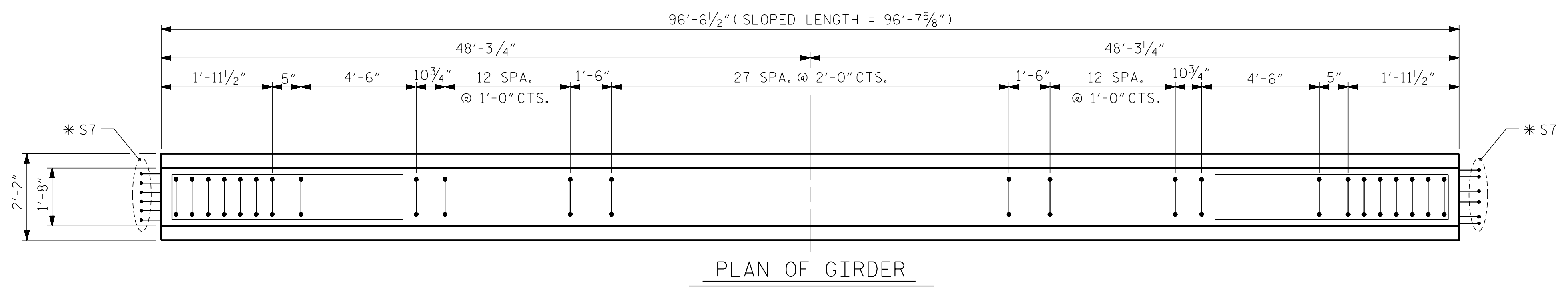
BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	9000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
	1,099	19.6	38
GIRDERS REQUIRED			
NUMBER	LENGTH	TOTAL LENGTH	
5	96'-6 1/2"	482.71	

- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - ▲ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 16'-0" FROM END OF GIRDER

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



PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 1 OF 5

ENGINEER OF RECORD:

 GREGORY W. WILLIAMS
 2/1/2019

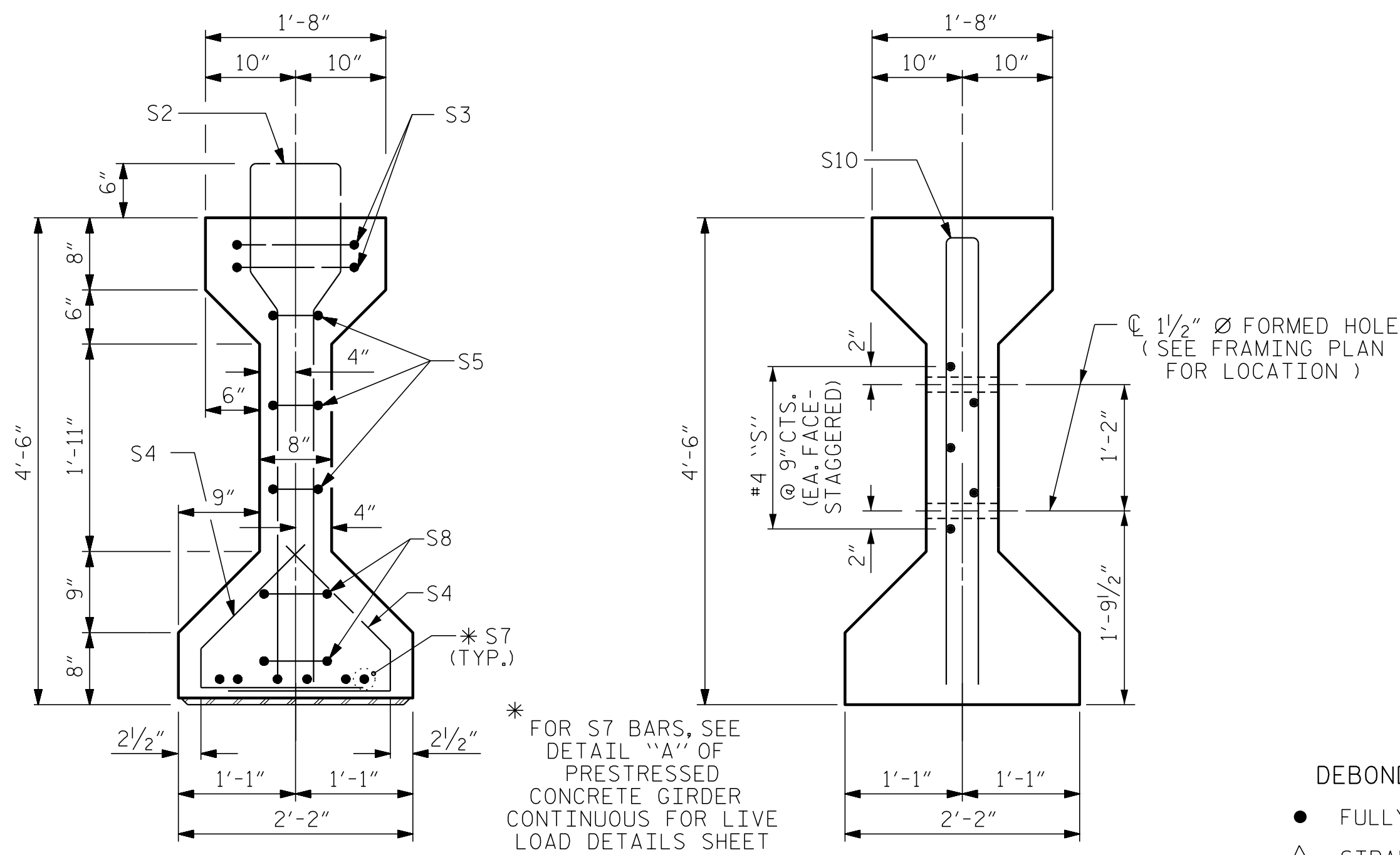
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD AASHTO TYPE IV PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD (RIGHT LANE) (SPAN A)					
REVISIONS			SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S4-13
					TOTAL SHEETS 38

ASSEMBLED BY : D. HODGE	DATE : 11/18
CHECKED BY : G.M. GILLAND	DATE : 11/18
DRAWN BY : ELR 8/91	REV. 10/1/11 MAA/CM
CHECKED BY : GRP 8/91	REV. 1/15 MAA/TMG
	REV. 12/17 MAA/THC

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

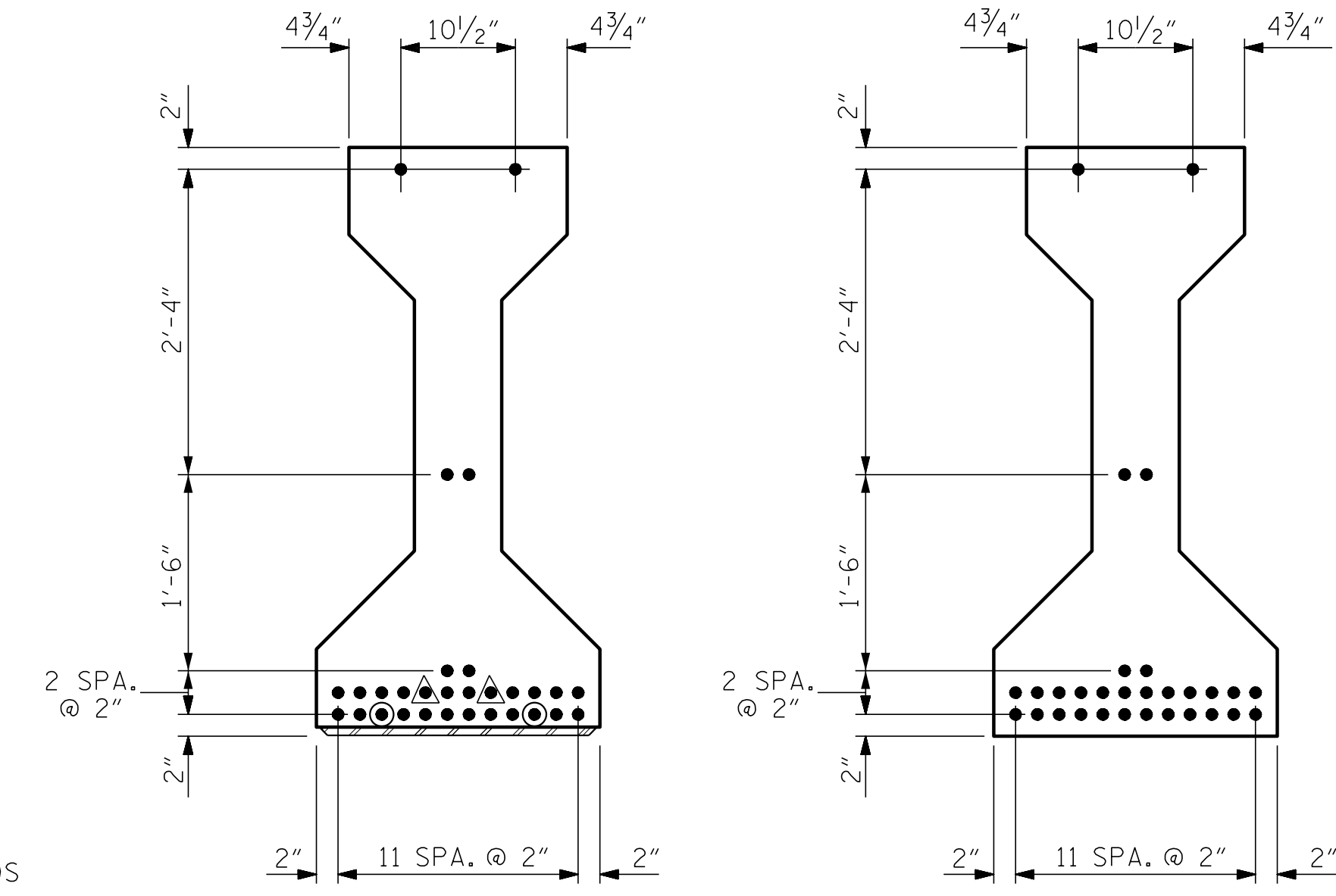
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SECTION B-B

SECTION C-C
(S1 BARS NOT SHOWN)

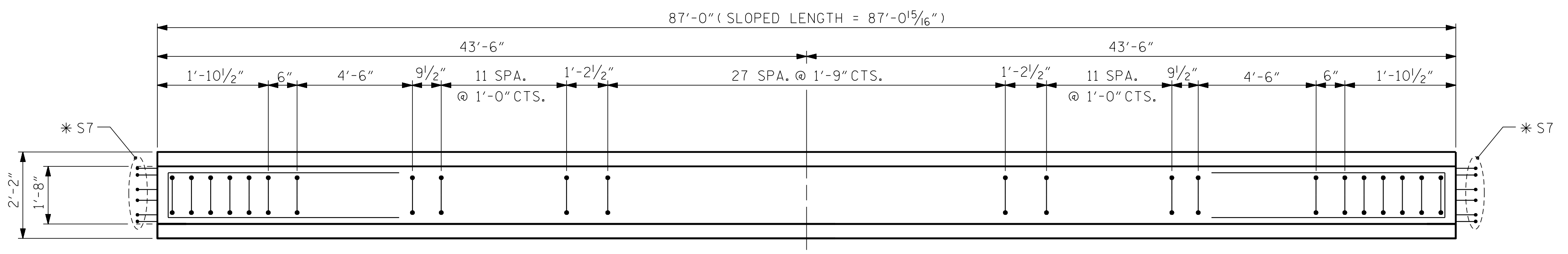
- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - ▲ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
 - ⊙ STRANDS DEBONDED FOR 16'-0" FROM END OF GIRDER



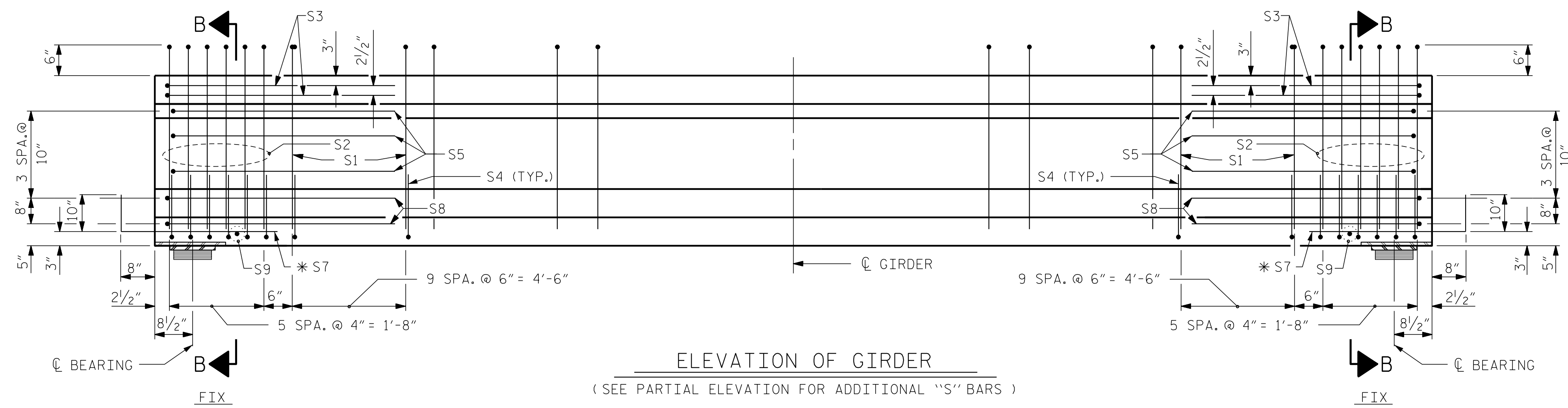
AT END OF GIRDER

AT CL OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

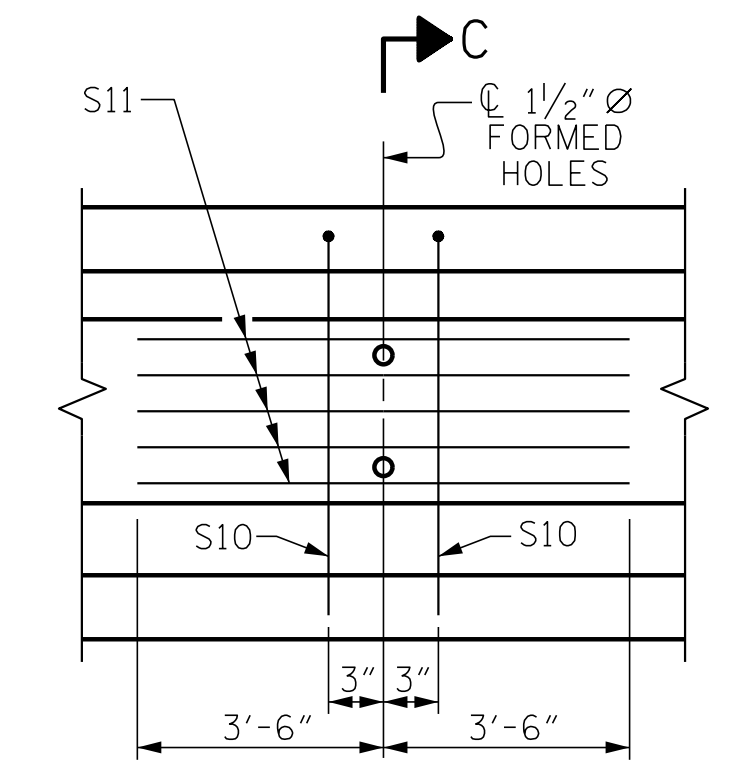


PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDERS

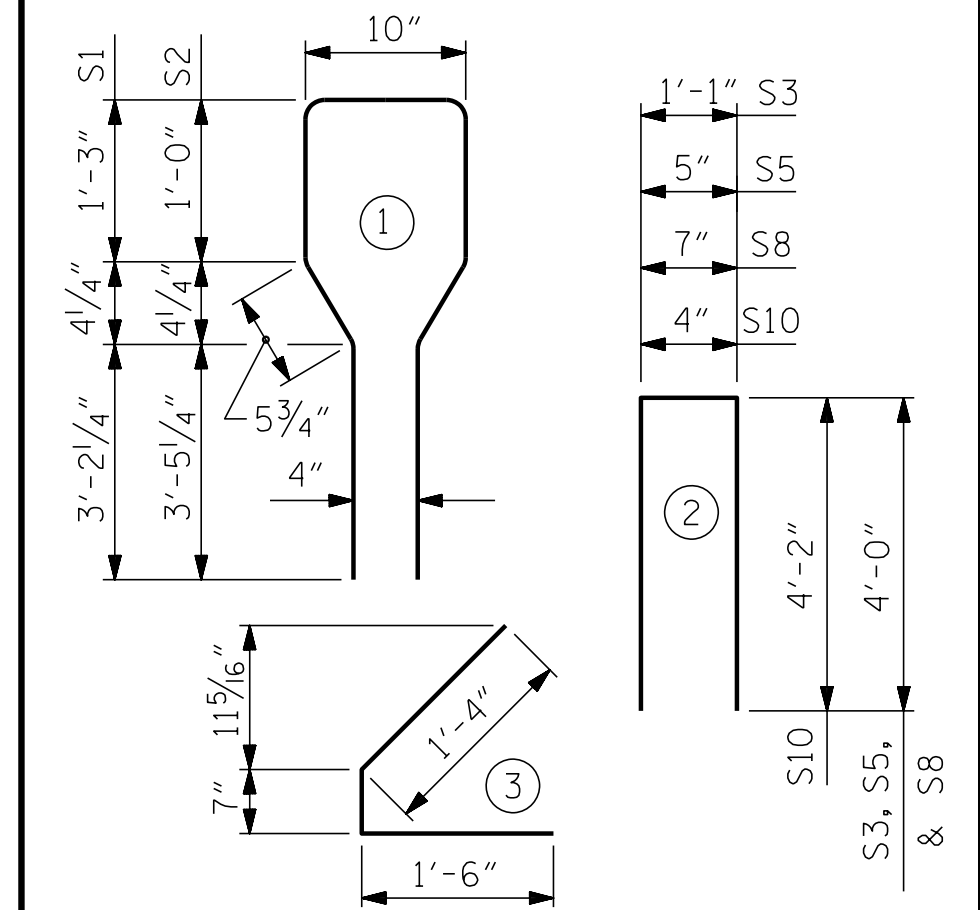
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	72	#4	1	10'-8"	513
S2	12	#6	1	10'-8"	192
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
* S7	12	#5	STR	3'-8"	46
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23

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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

REINFORCING STEEL	7000 PSI CONCRETE	0.6" Ø L. R. STRANDS
LB.	C.Y.	No.
1020	17.7	30

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5	87'-0"	435.00

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 192+85.76 -L-

SHEET 2 OF 5



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
(RIGHT LANE)
(SPAN B)

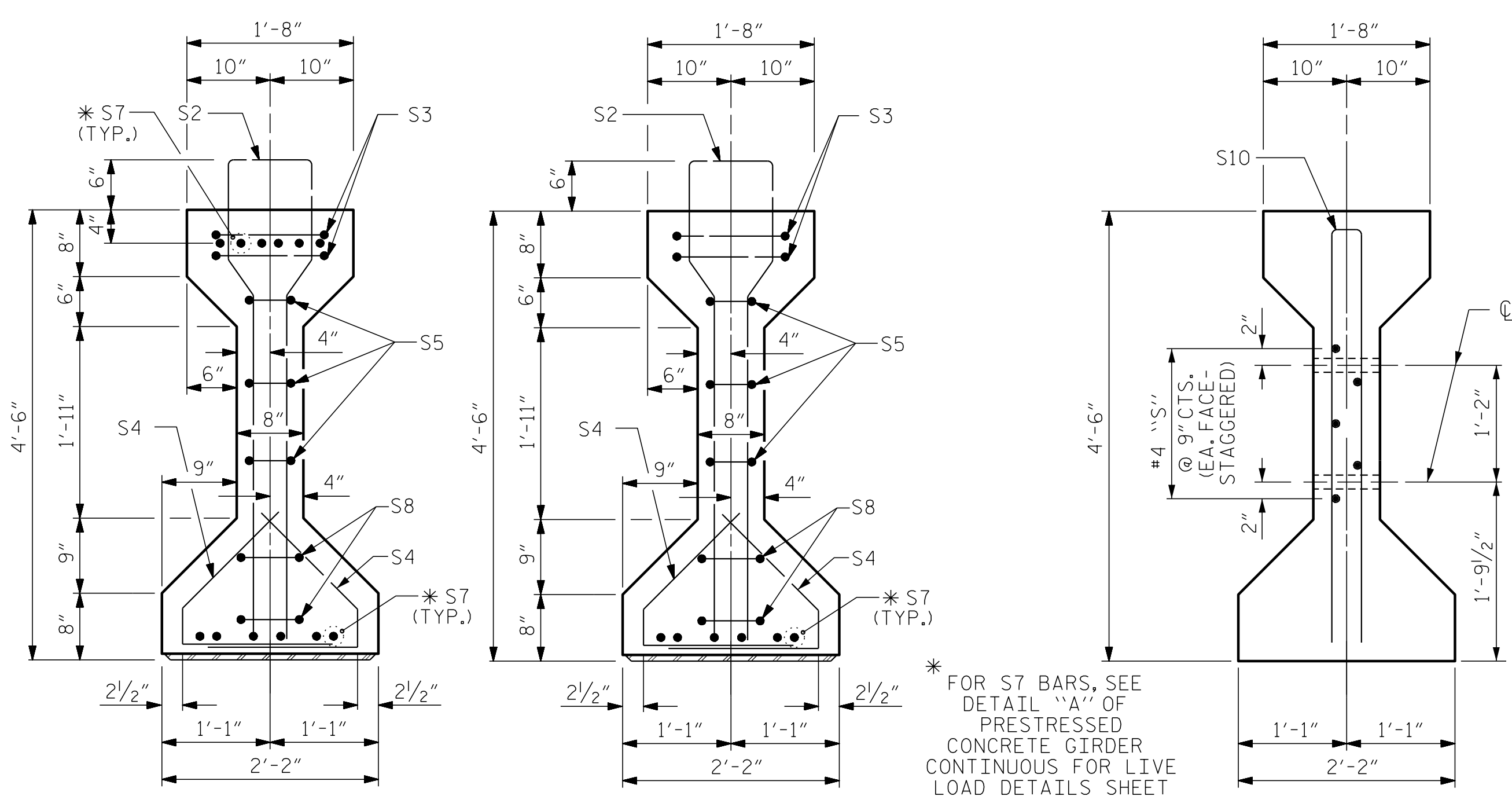
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NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS 38

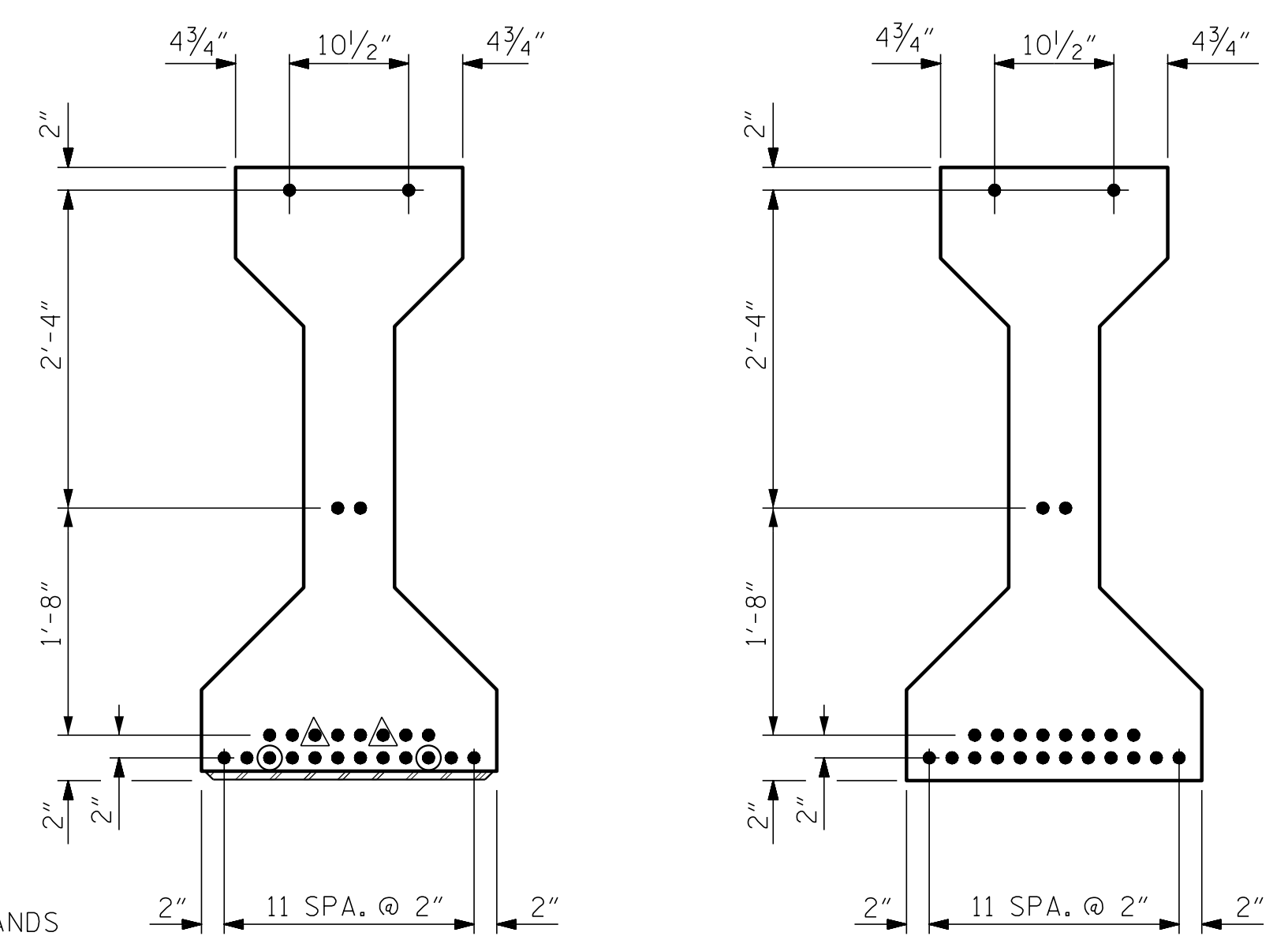
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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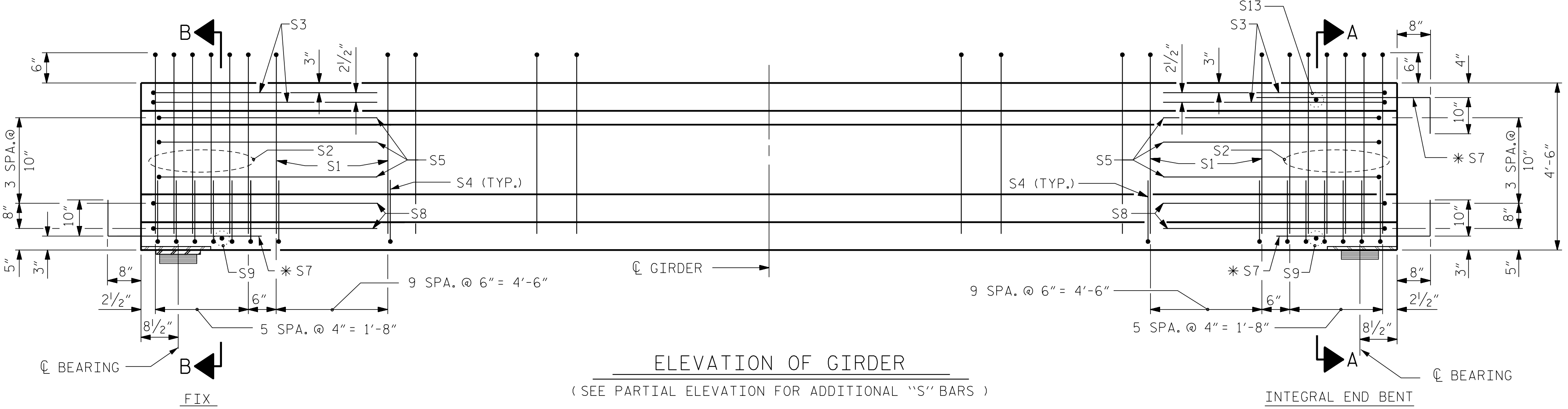
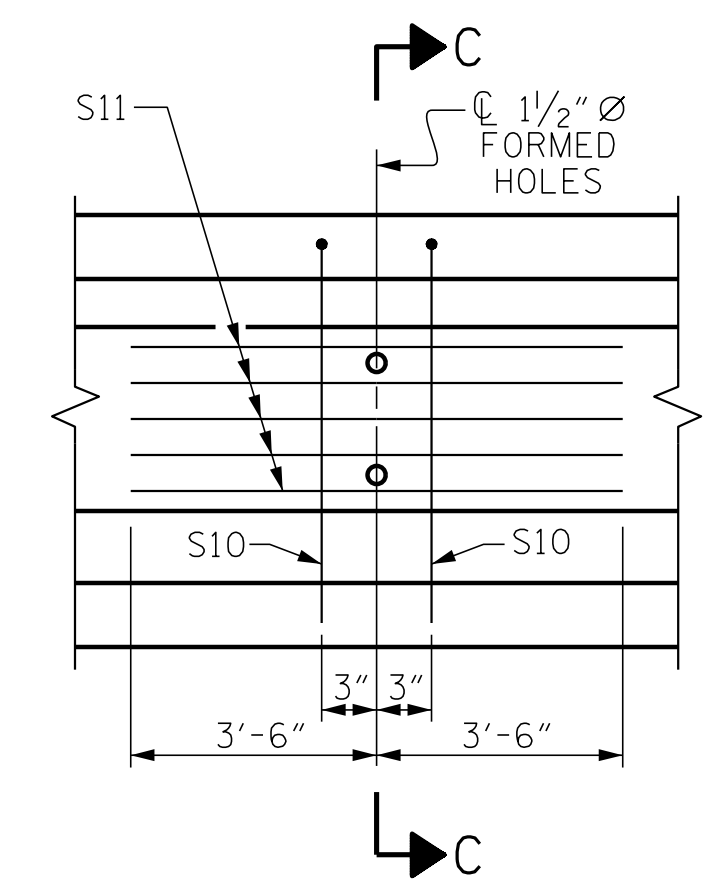
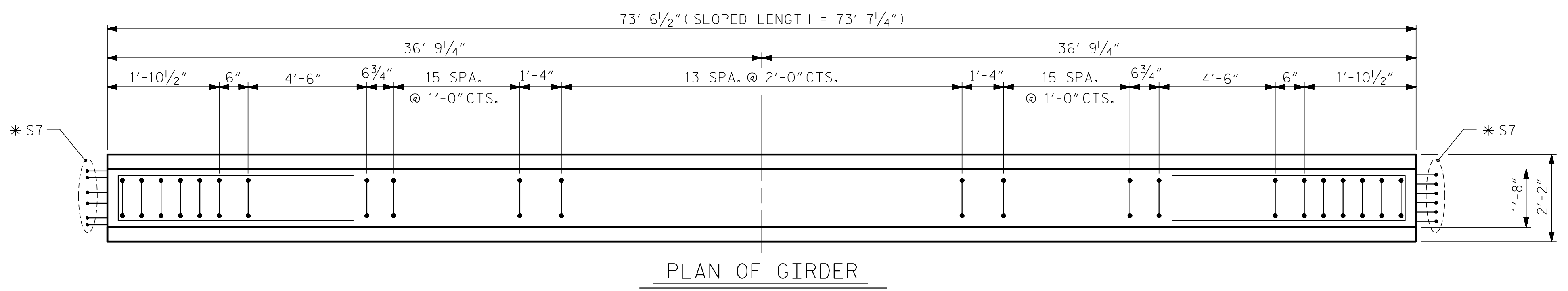
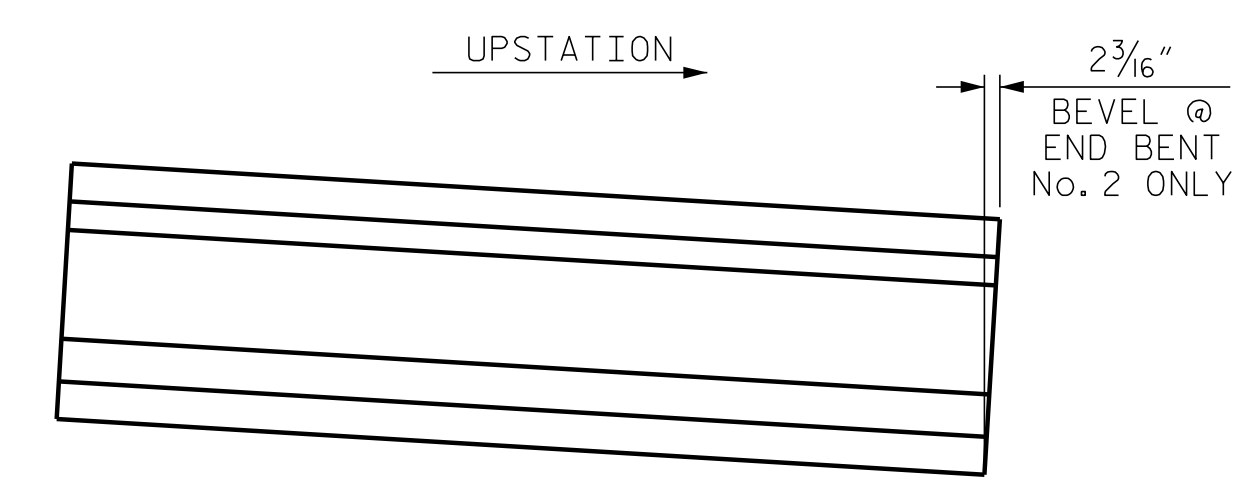
ASSEMBLED BY : D. HODGE	DATE : 11/18
CHECKED BY : G.M. GILLAND	DATE : 11/18
DRAWN BY : ELR 8/91	REV. 10/1/11 MAA/GM
CHECKED BY : GRP 8/91	REV. 1/15 MAA/TMG
	REV. 12/17 MAA/THC



- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - ▲ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 16'-0" FROM END OF GIRDER



0.6" Ø LOW RELAXATION STRAND LAYOUT



0.6" Ø L. R. GRADE 270 STRANDS

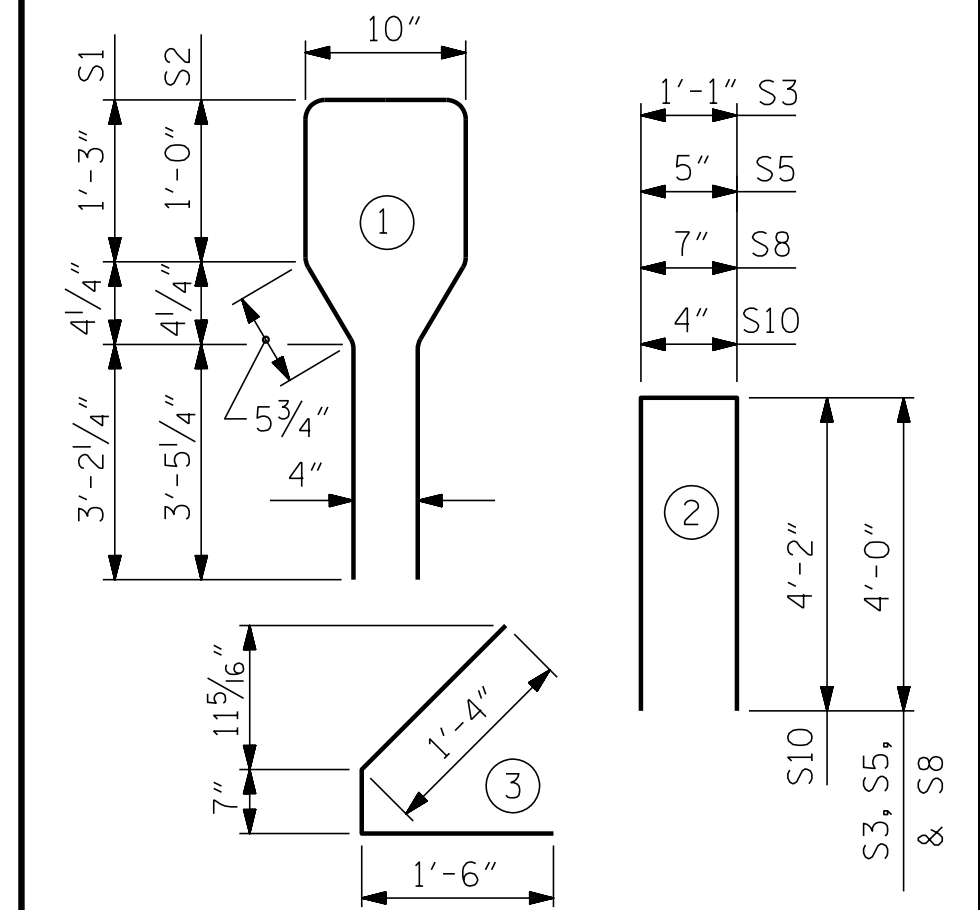
AREA (SQ. INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	66	#4	1	10'-8"	470
S2	12	#6	1	10'-8"	192
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
* S7	18	#5	STR	3'-8"	69
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23
S13	1	#3	STR	1'-4"	1

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

BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT



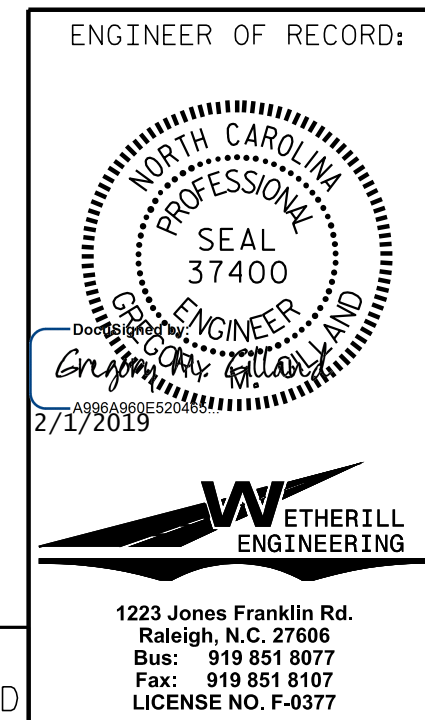
QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL (LB.)	5000 PSI CONCRETE (C.Y.)	0.6" Ø L. R. STRANDS (No.)
	1,001	14.9	24

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5	73'-6 1/2"	367.71

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 192+85.76 -L-
SHEET 3 OF 5



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

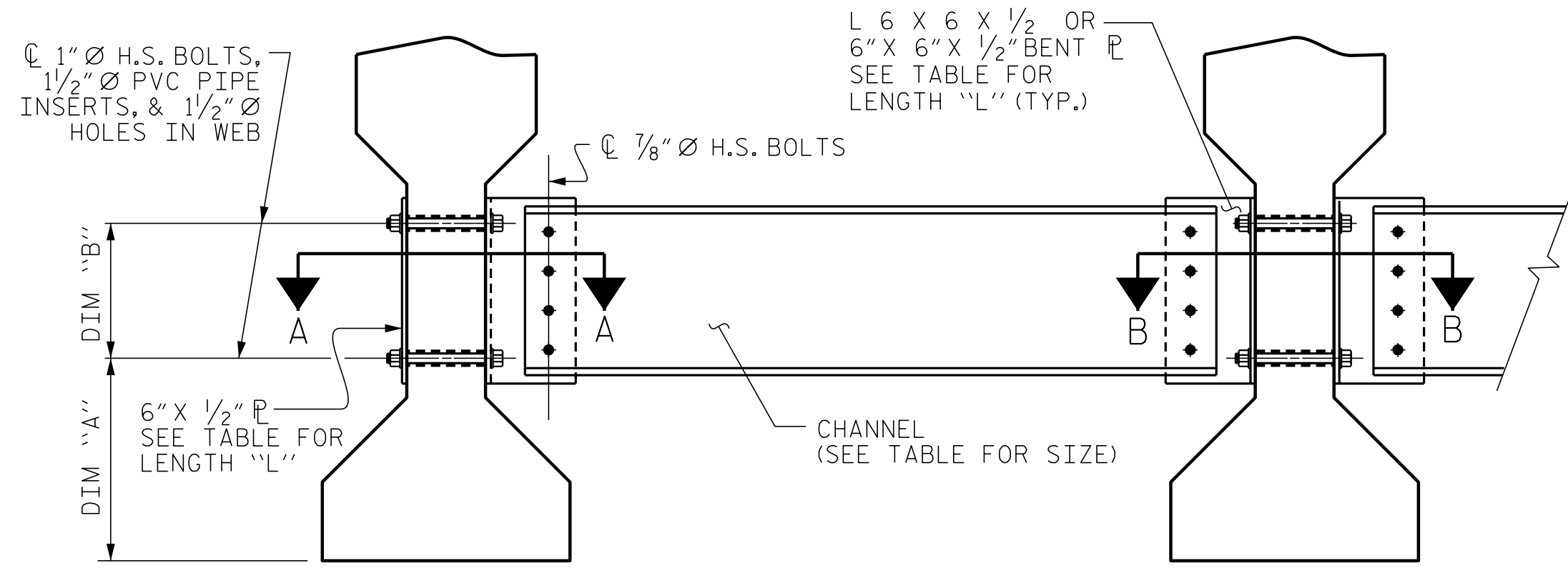
S4-15
TOTAL SHEETS 38

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

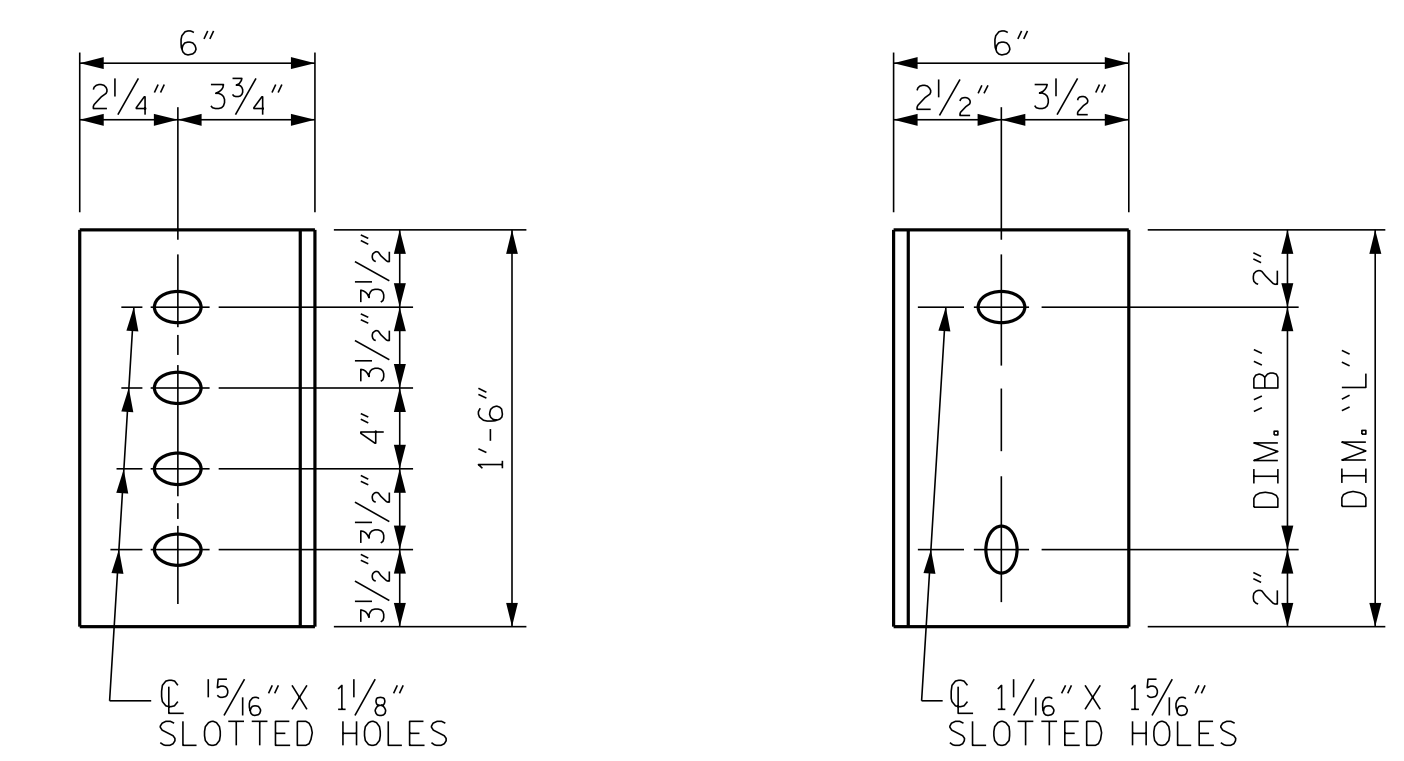
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
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Fax: 919 851 8107
LICENSE NO. F-0377

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ASSEMBLED BY : D. HODGE	DATE : 11/18
CHECKED BY : G.M. GILLAND	DATE : 11/18
DRAWN BY : ELR 8/91	REV. 10/1/11 MAA/GM
CHECKED BY : GRP 8/91	REV. 1/15 MAA/TMG
	REV. 12/17 MAA/THC



EXTERIOR GIRDER INTERIOR GIRDER
PART SECTION AT INTERMEDIATE DIAPHRAGM
(TYPE IV GIRDER SHOWN)



DIAPHRAGM FACE WEB FACE
CONNECTOR PLATE DETAILS

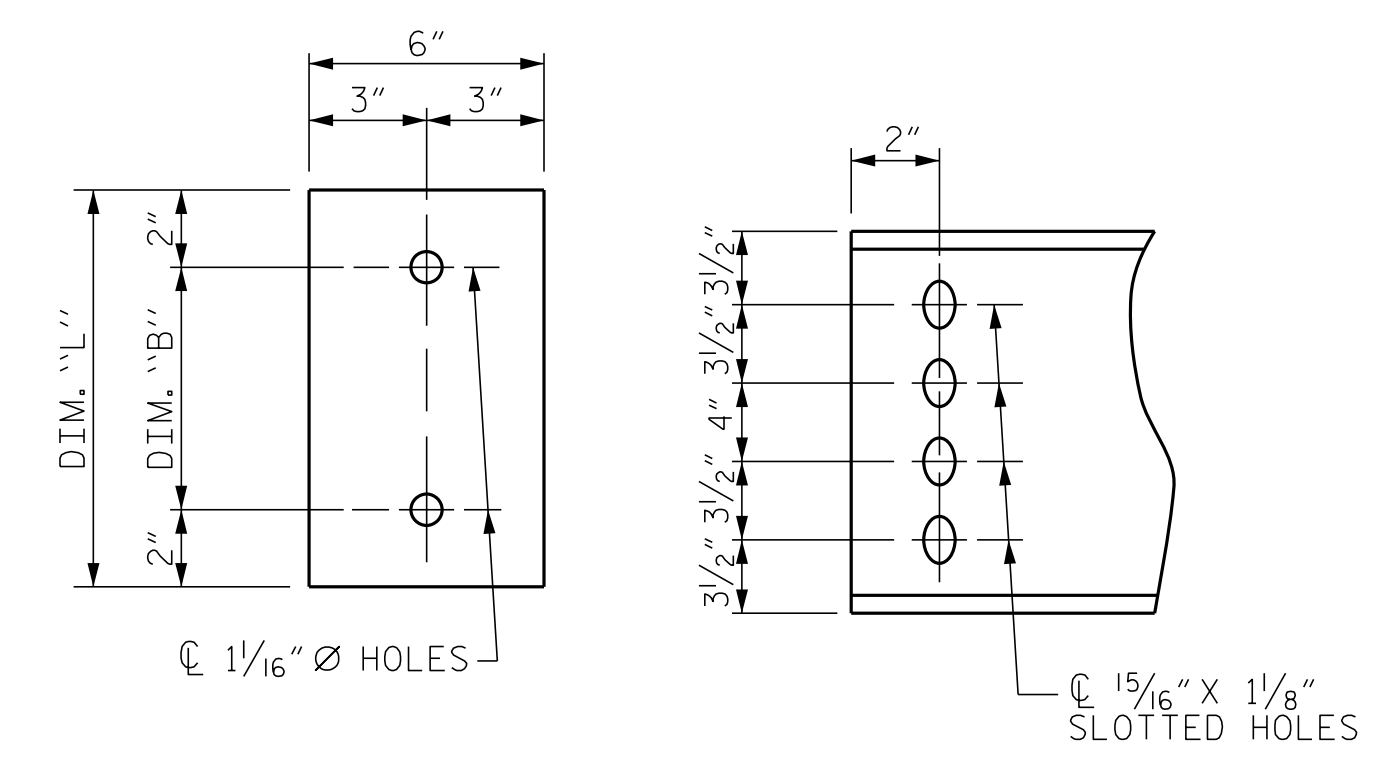
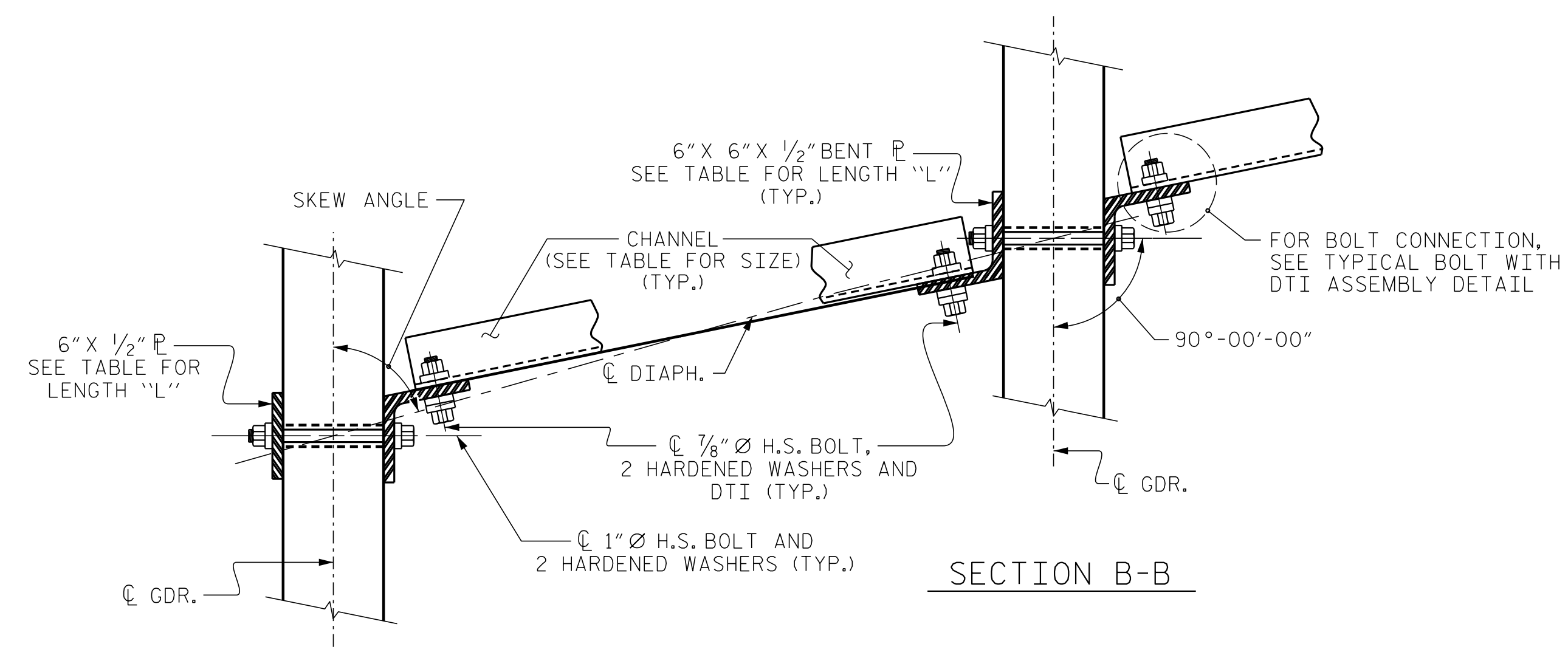
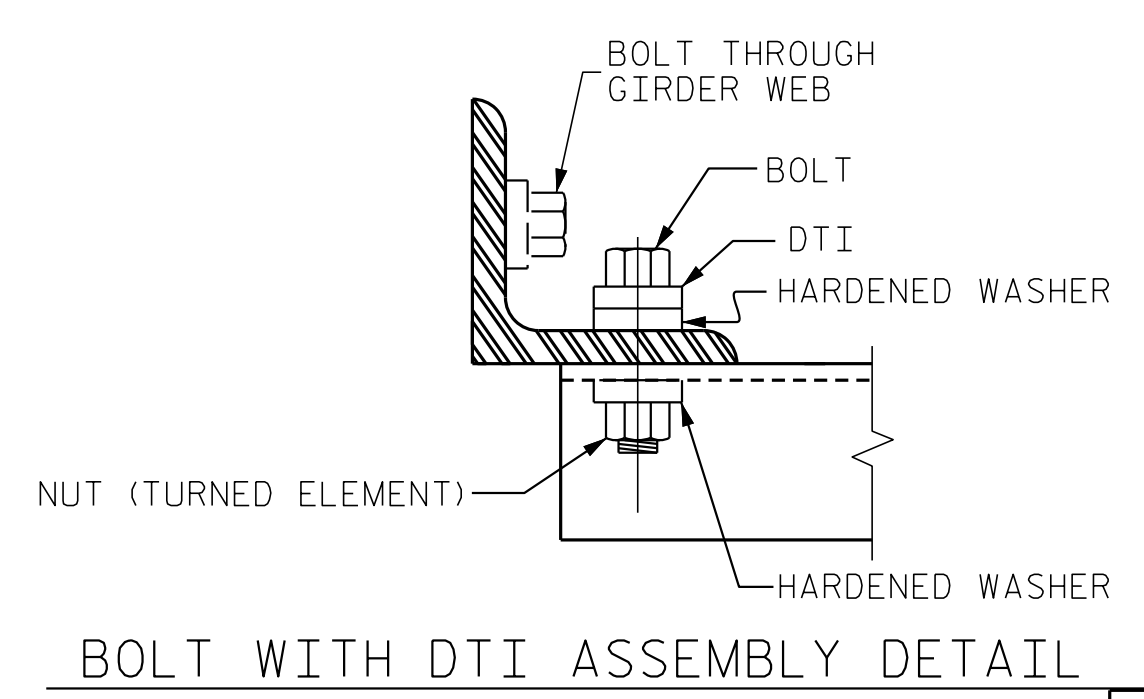


PLATE DETAILS CHANNEL END
(TYPE IV GDR.)



SECTION A-A SECTION B-B
CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

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

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

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

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

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

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

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

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

TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
IV	MC 18 x 42.7	1'-9 1/2"	1'-2"	1'-6"

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 192+85.76 -L-

SHEET 4 OF 5

ENGINEER OF RECORD:

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
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Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
INTERMEDIATE
STEEL DIAPHRAGMS
FOR TYPE IV PRESTRESSED
CONCRETE GIRDERS
(RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-16
1			3			TOTAL SHEETS
2			4			38

ASSEMBLED BY : D. HODGE	DATE : 11/18
CHECKED BY : G.M. GILLAND	DATE : 11/18
DRAWN BY : TLA 6/05	REV. 5/1/06RRR KMM/GM
CHECKED BY : VC 6/05	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

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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.

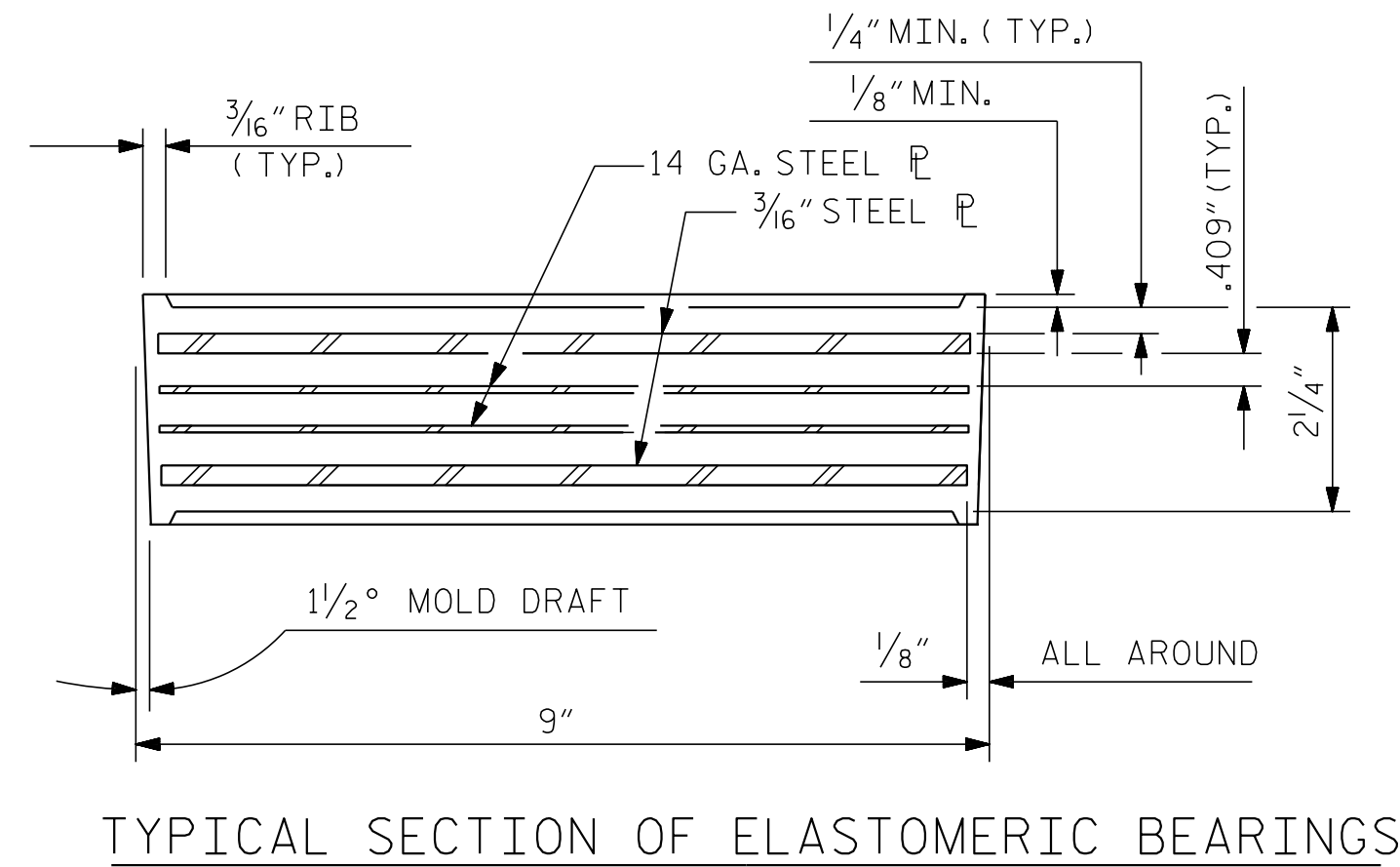
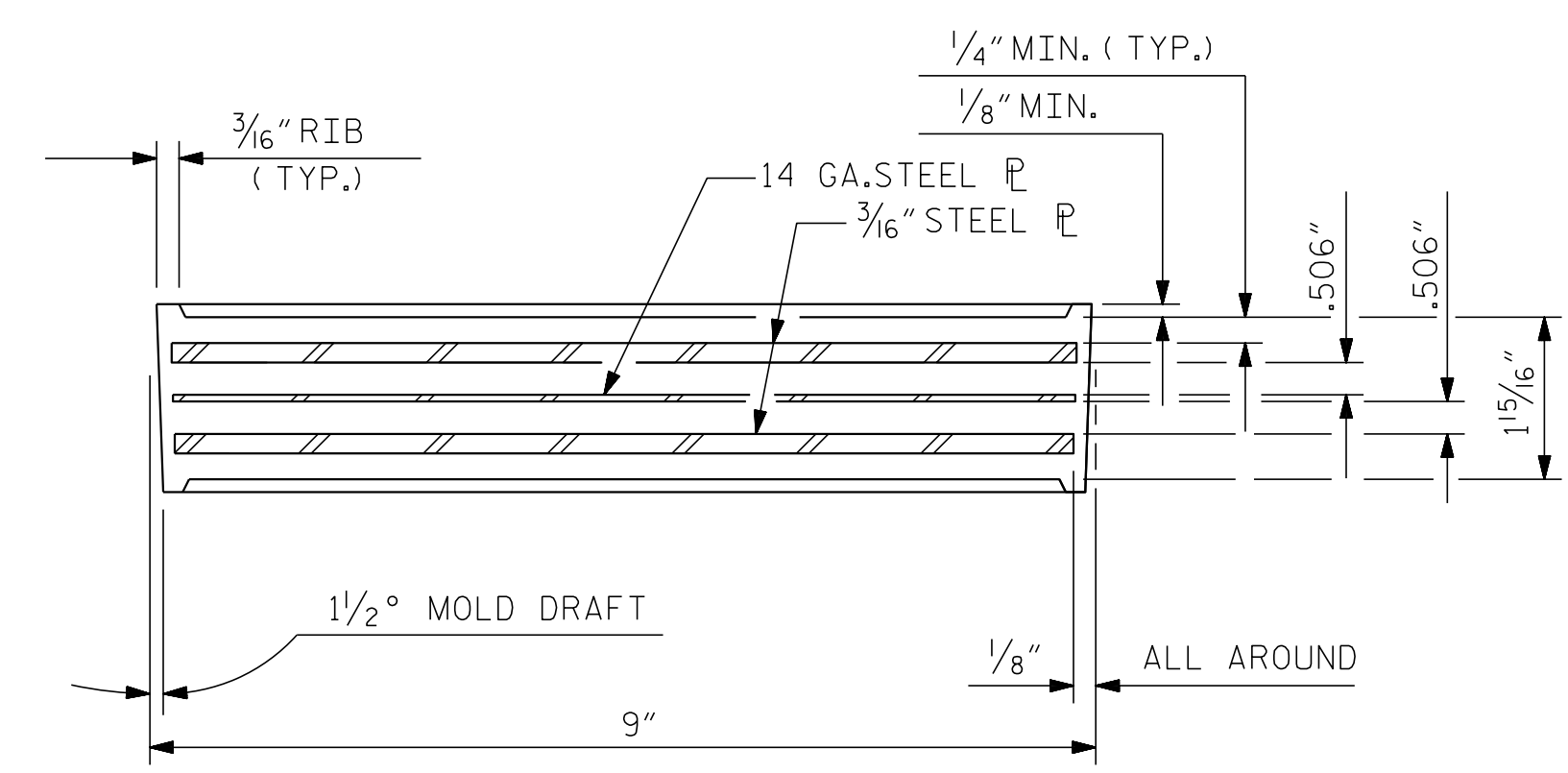
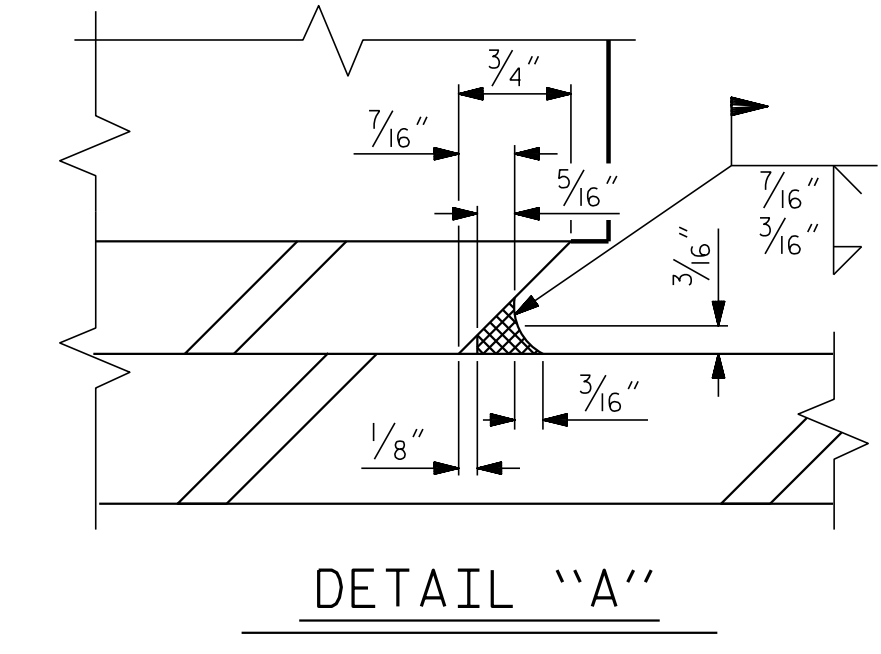
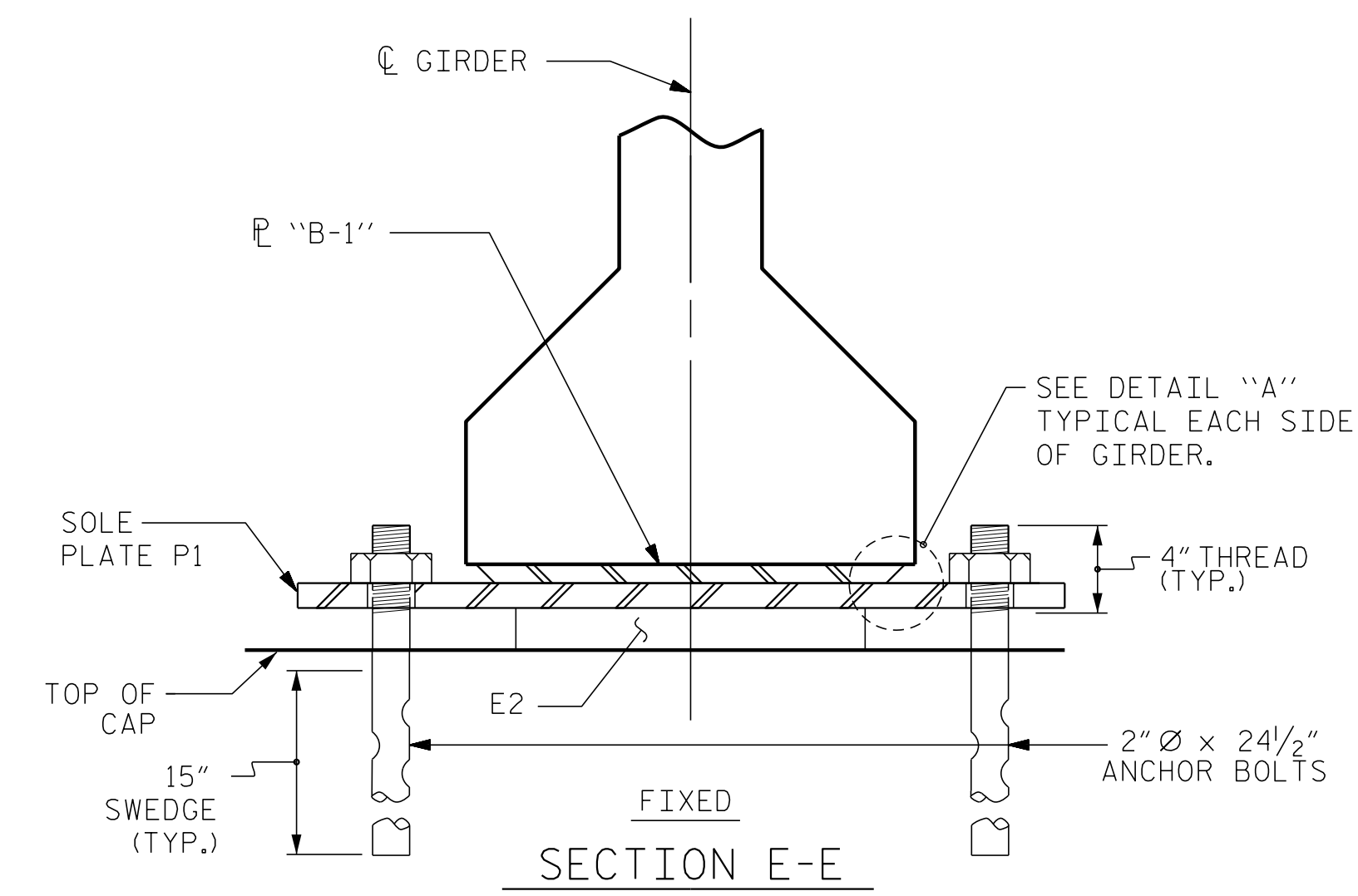
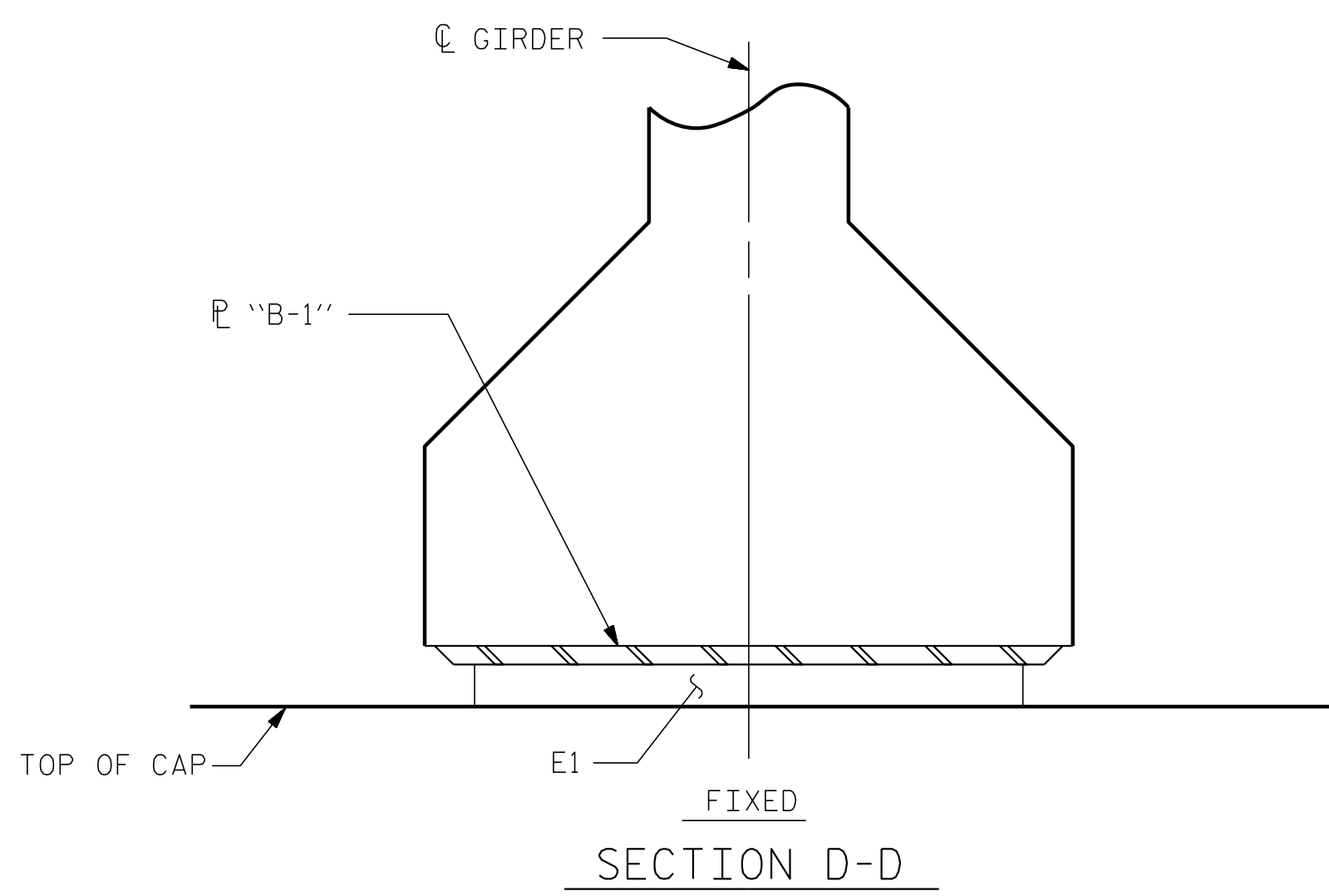
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

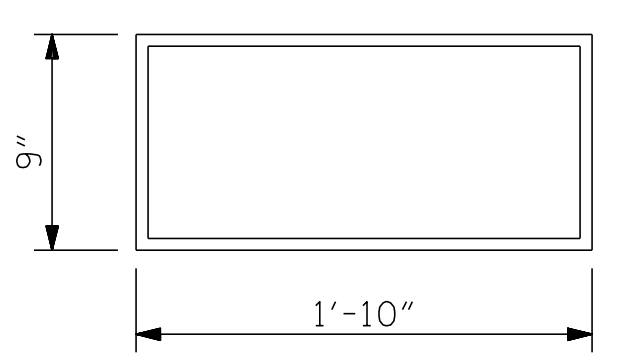
FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.

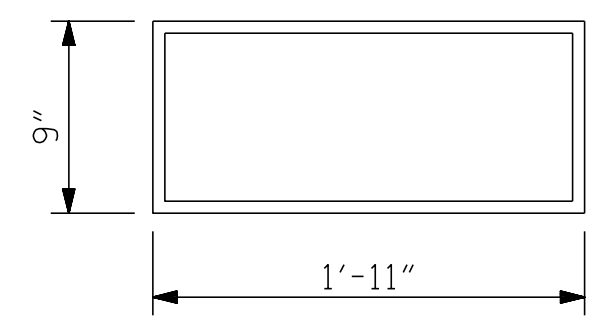


TYPICAL SECTION OF ELASTOMERIC BEARINGS

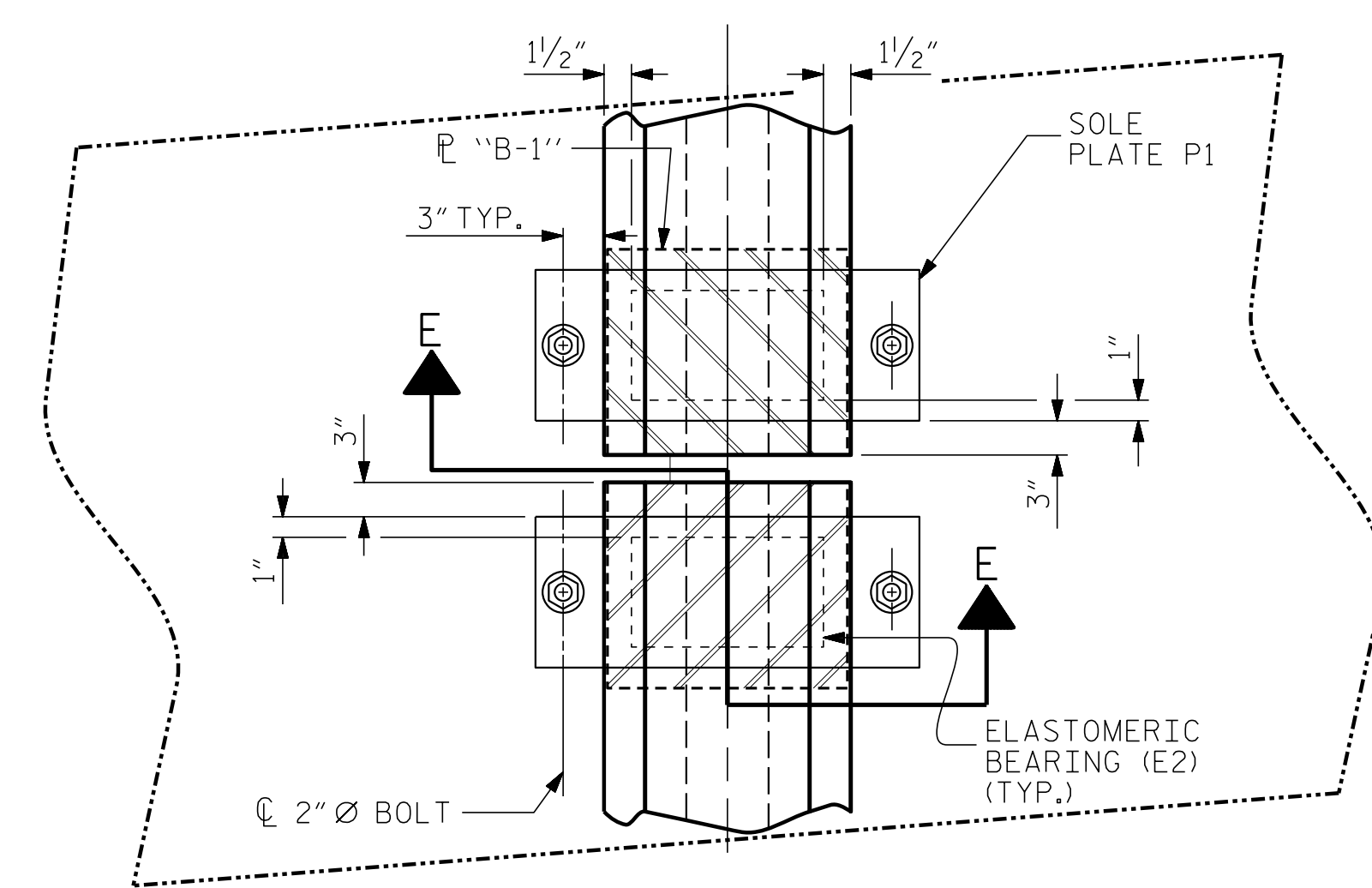
TYPICAL SECTION OF ELASTOMERIC BEARINGS



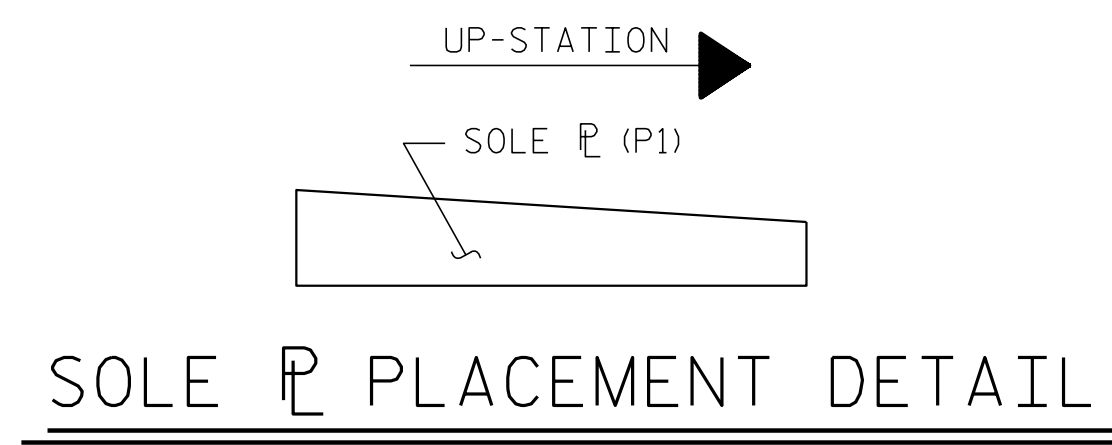
E1 (10 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE IV



E2 (20 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE V



TYPICAL PLAN
(SHOWING CONTINUOUS BENT)



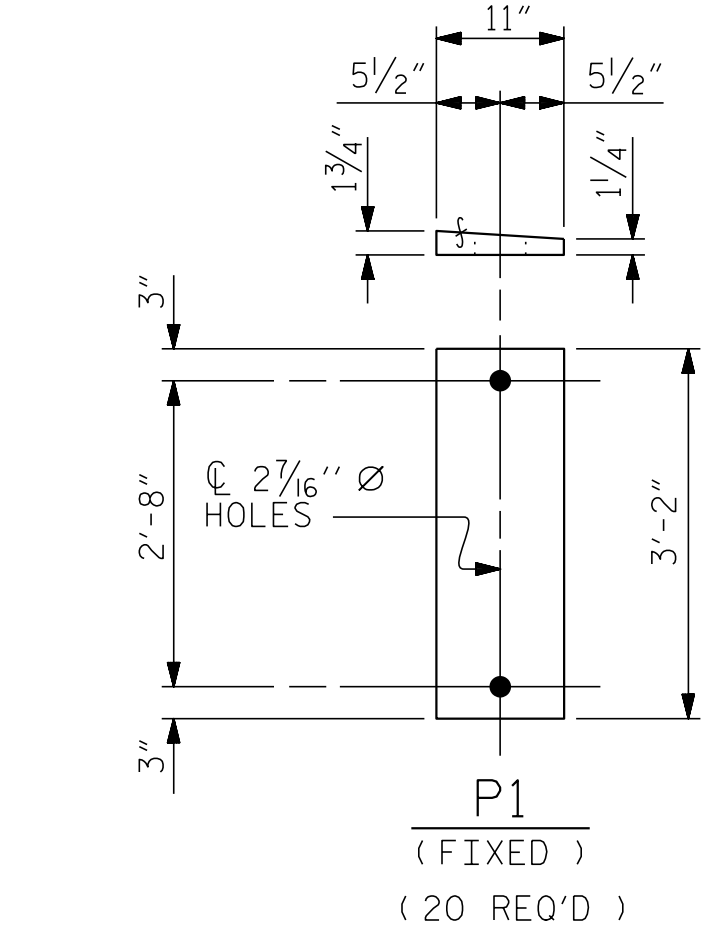
SOLE PLATE P1 PLACEMENT DETAIL

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE IV	225 k
TYPE V	365 k

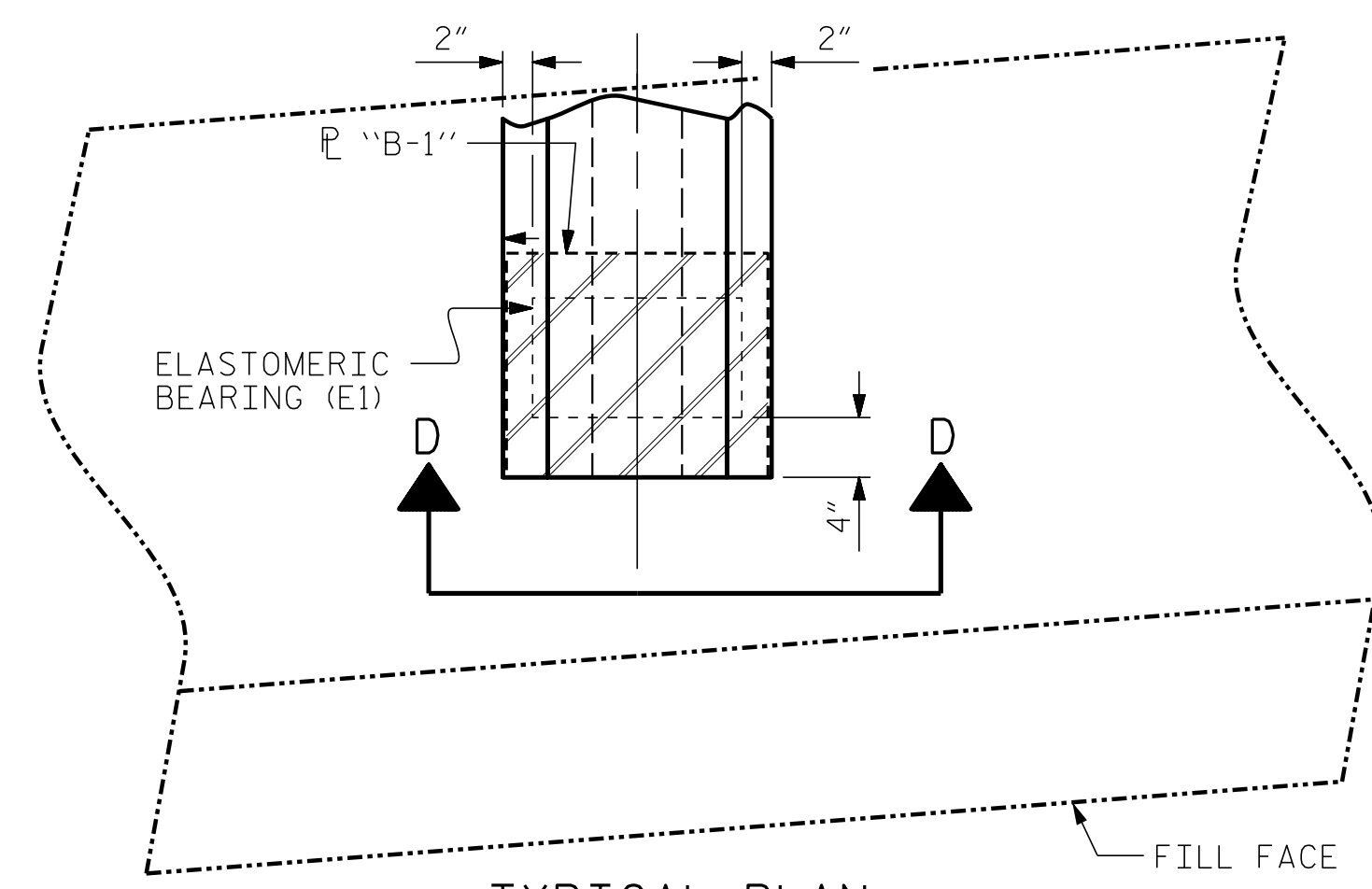
PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 192+85.76 -L-

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 2/11/2019 8:01:28 AM

DRAWN BY: D. HODGE DATE: 11/18
CHECKED BY: G.M. GILLAND DATE: 11/18



SOLE PLATE DETAILS (P1)



TYPICAL PLAN
(SHOWING END BENT)

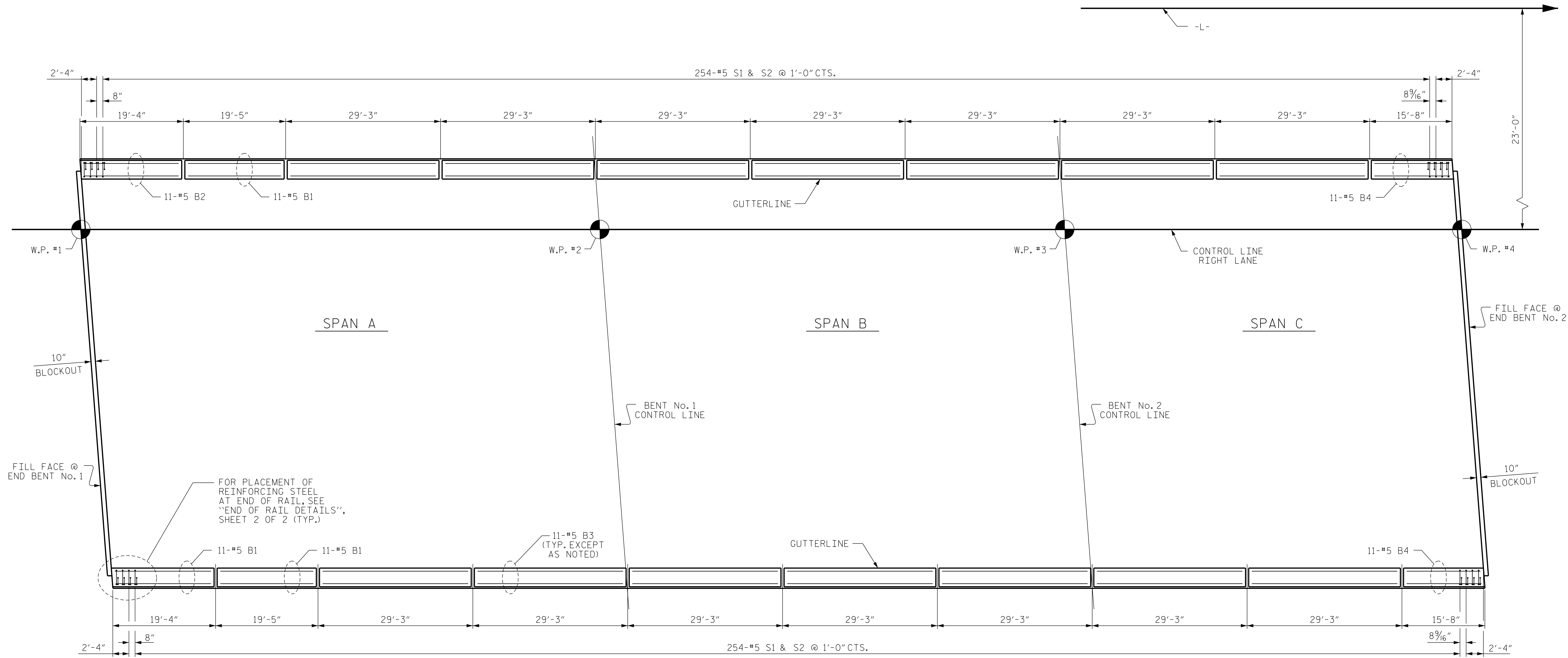
DOCUMENT NOT CONSIDERED FINAL
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ENGINEER OF RECORD:

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
ELASTOMERIC BEARING
DETAILS
PRESTRESSED CONCRETE GIRDER
SUPERSTRUCTURE
(RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-18
1			3			TOTAL SHEETS
2			4			38



PLAN OF CONCRETE BARRIER RAIL

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 1 OF 2

P:\2018\18127.02_R-2582A\Structures\Revision (Site 2)\Site 2\DG\NR\TGH\LANE\R2582A_SMU_BR_650129.rxdgn
 2/11/2019 8:02:11 AM

DRAWN BY: D. HODGE DATE: 10/18
 CHECKED BY: G.M. GILLAND DATE: 11/18

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ENGINEER OF RECORD:

ETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**CONCRETE BARRIER RAIL
 (RIGHT LANE)**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-19
1			3			TOTAL SHEETS
2			4			38

NOTES

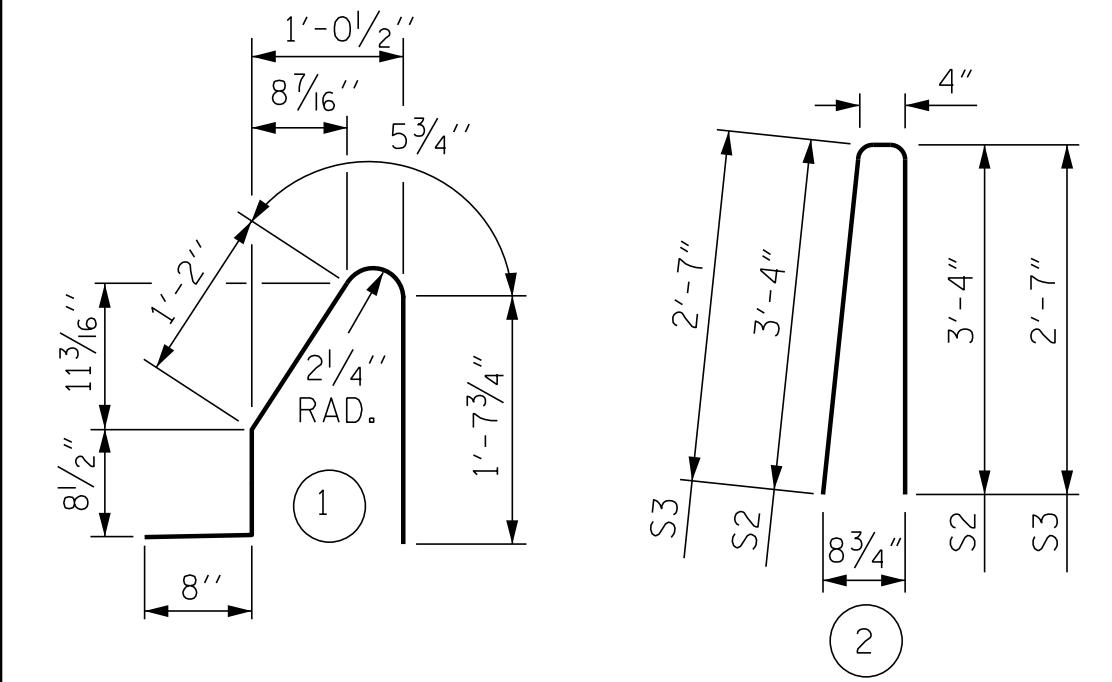
THE BARRIER RAIL SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

THE #5 S1 & S2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN THE BARRIER RAIL.

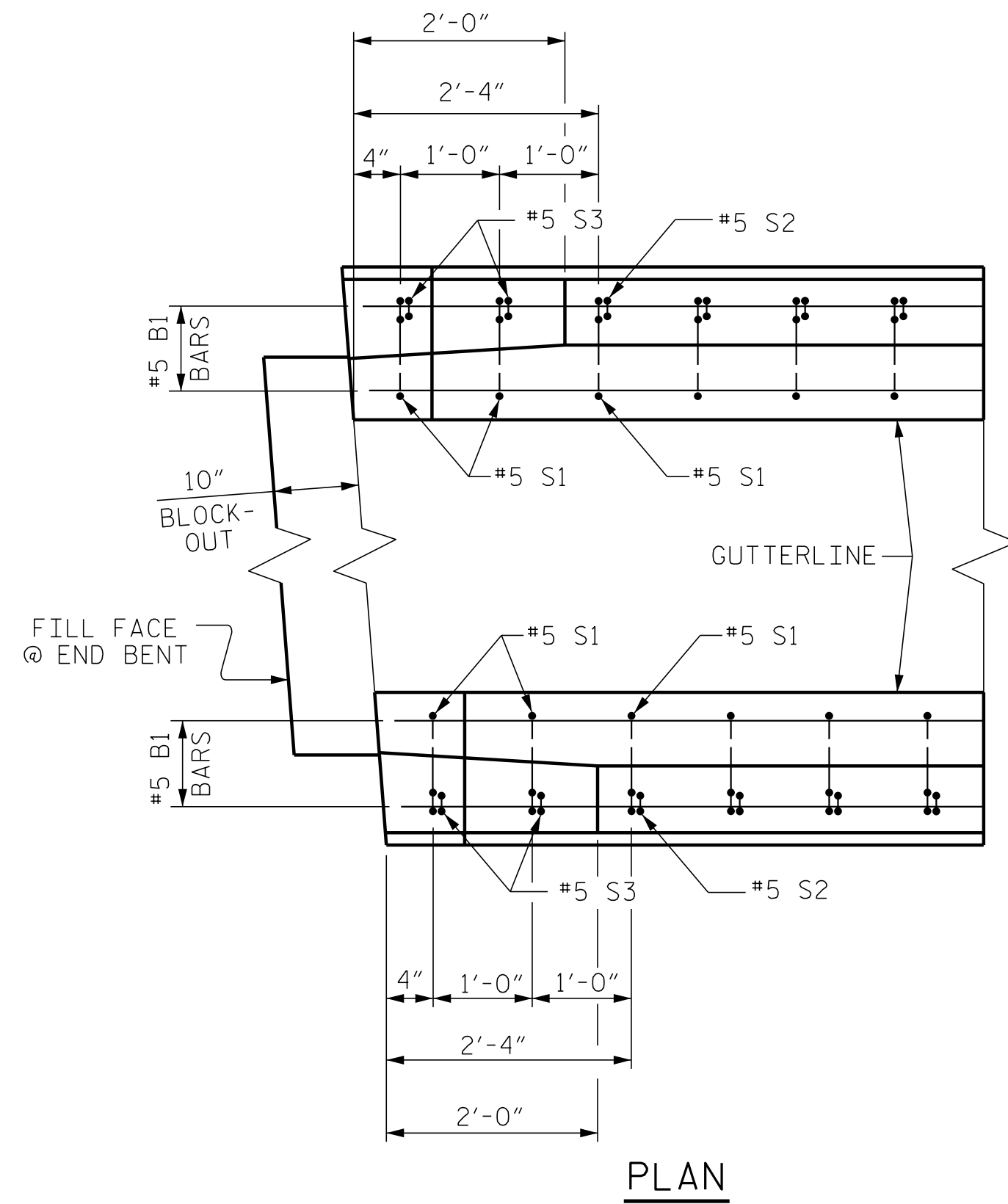
BAR TYPES



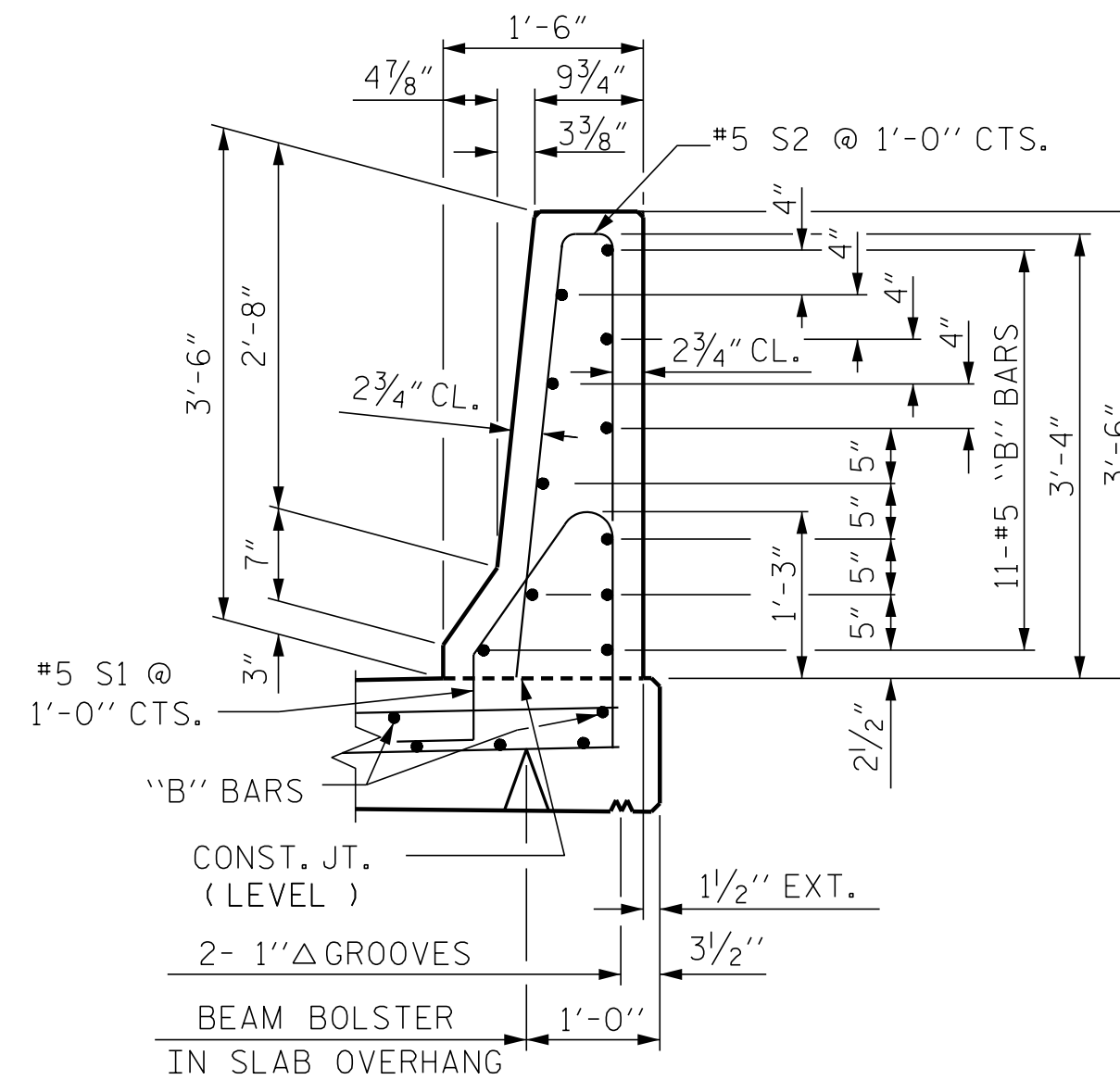
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

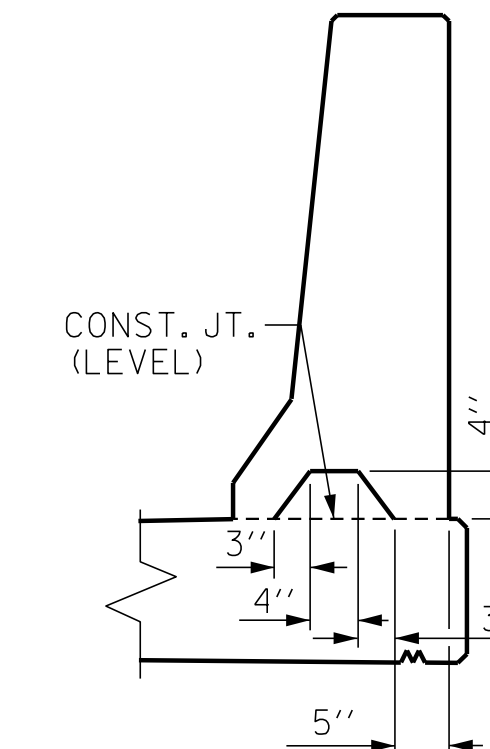
FOR CONCRETE BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* S1	520	#5	1	4'-8"	2531
* S2	512	#5	2	7'-0"	3738
* S3	8	#5	2	5'-6"	46
* B1	33	#5	STR	19'-0"	654
* B2	11	#5	STR	18'-10"	216
* B3	154	#5	STR	28'-10"	4631
* B4	22	#5	STR	15'-2"	348
* EPOXY COATED REINFORCING STEEL					12,164 LBS.
CLASS AA CONCRETE					70.4 CU. YDS.
CONCRETE BARRIER RAIL					518.33 LIN. FT.



PLAN

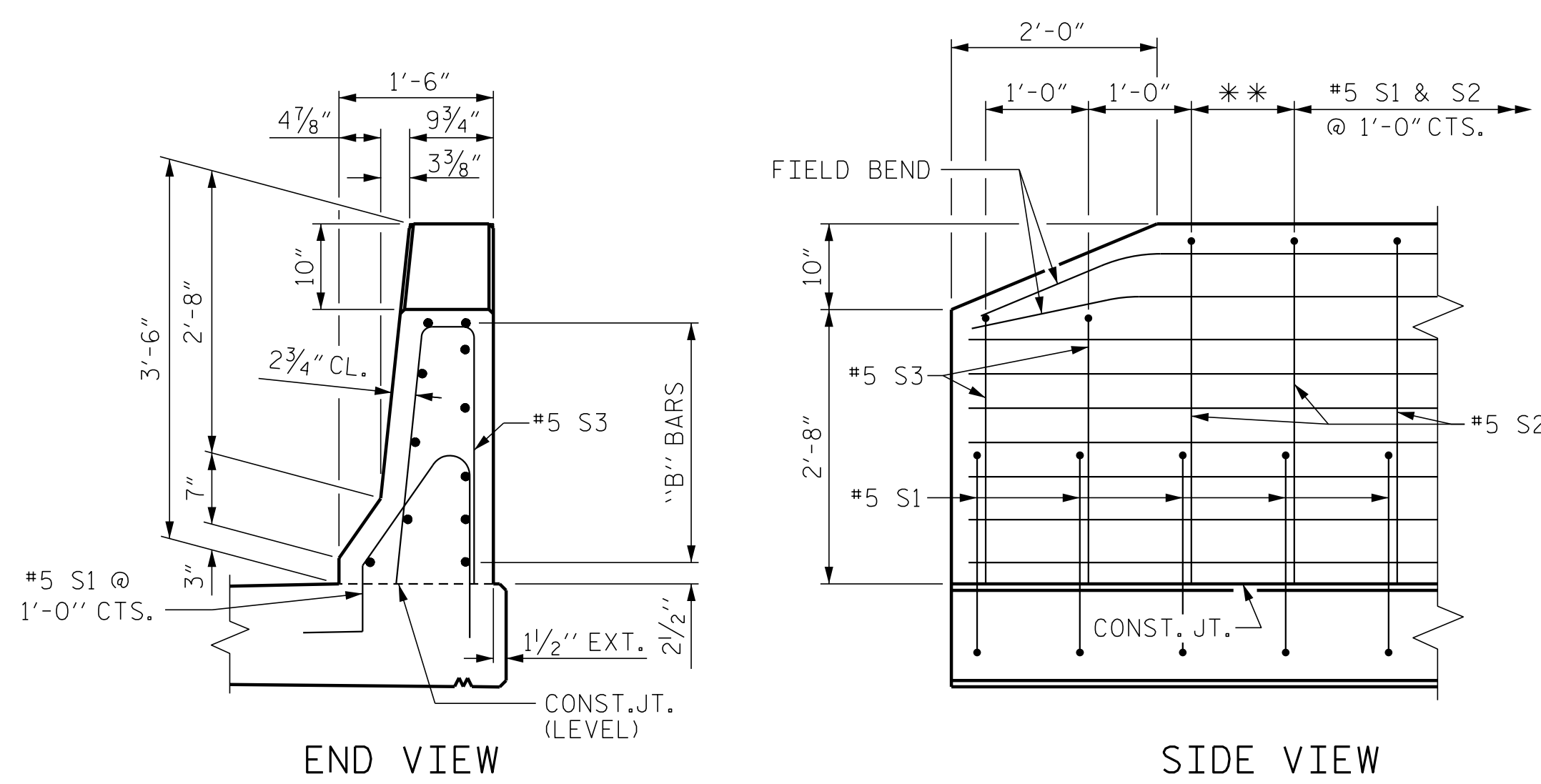


SECTION THRU RAIL



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

** VARIES, SEE "PLAN", SHEET 1 OF 2

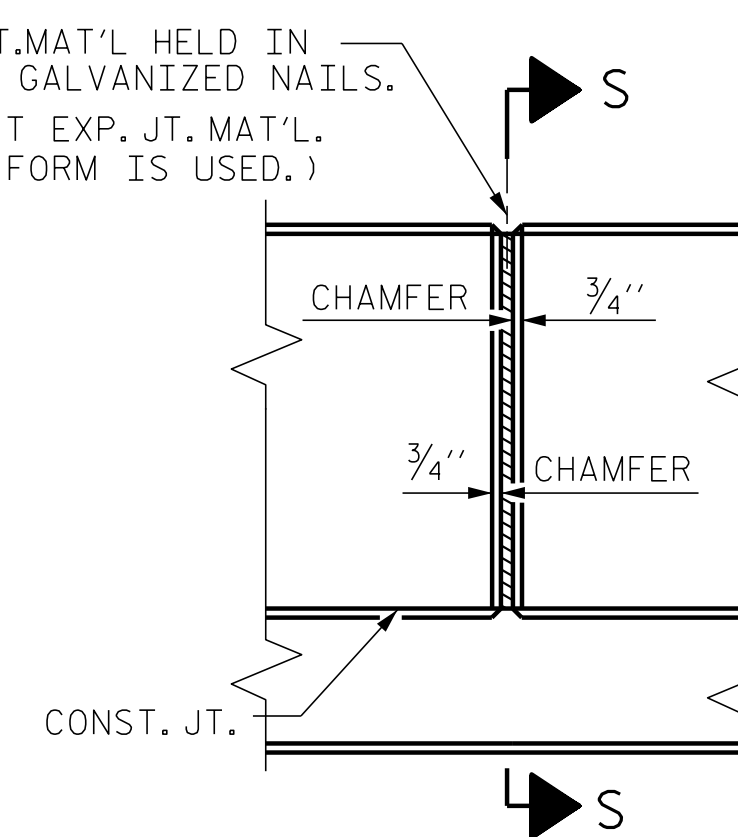


END VIEW

SIDE VIEW

END OF RAIL DETAILS

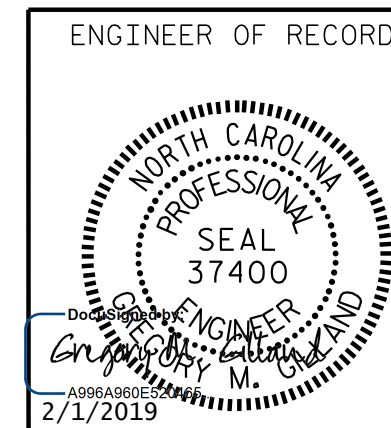
1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS.
(NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED.)



ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 192+85.76 -L-

SHEET 2 OF 2



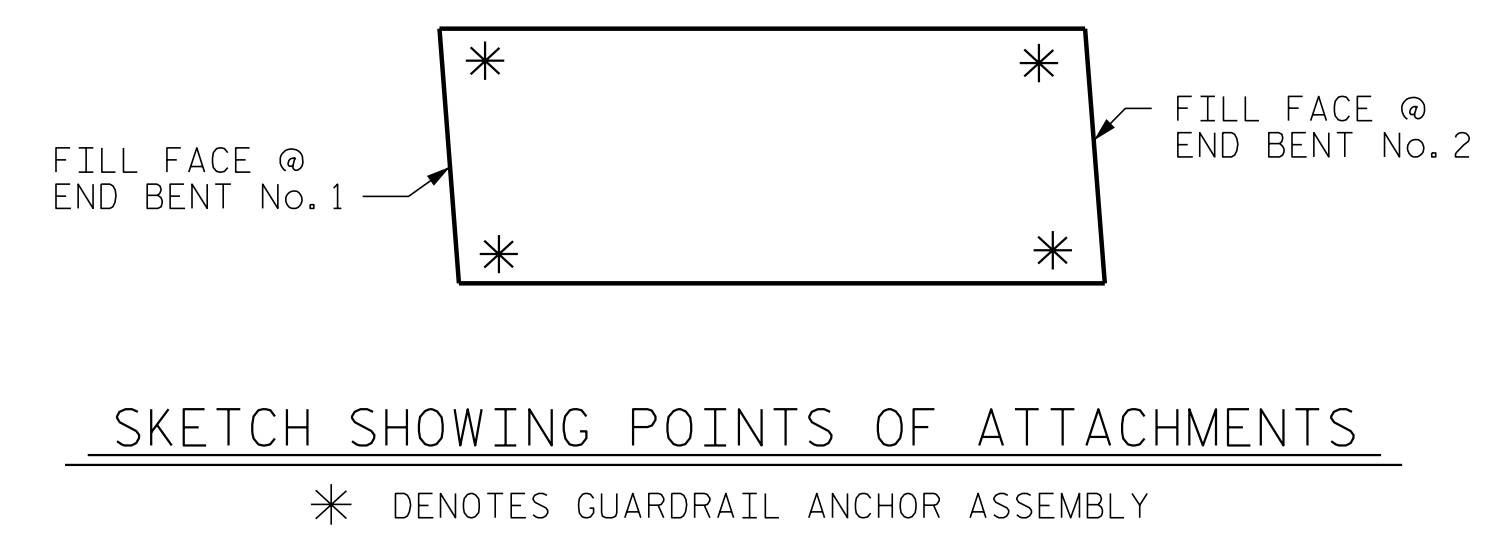
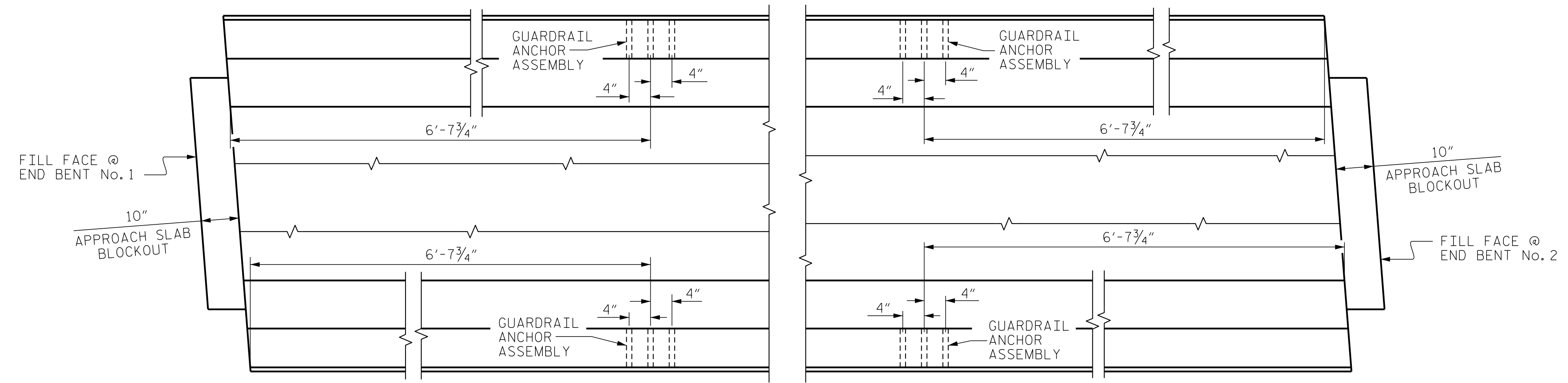
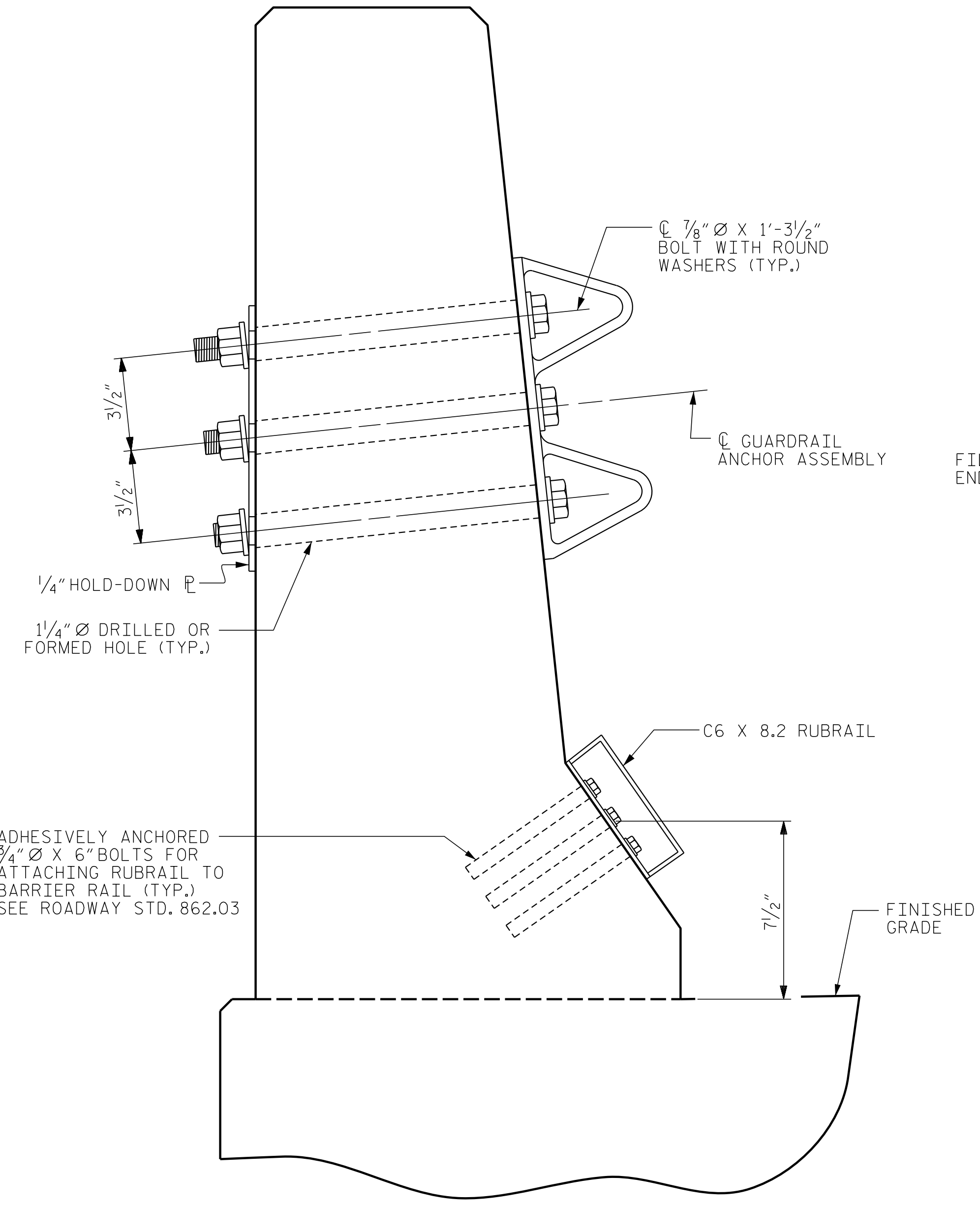
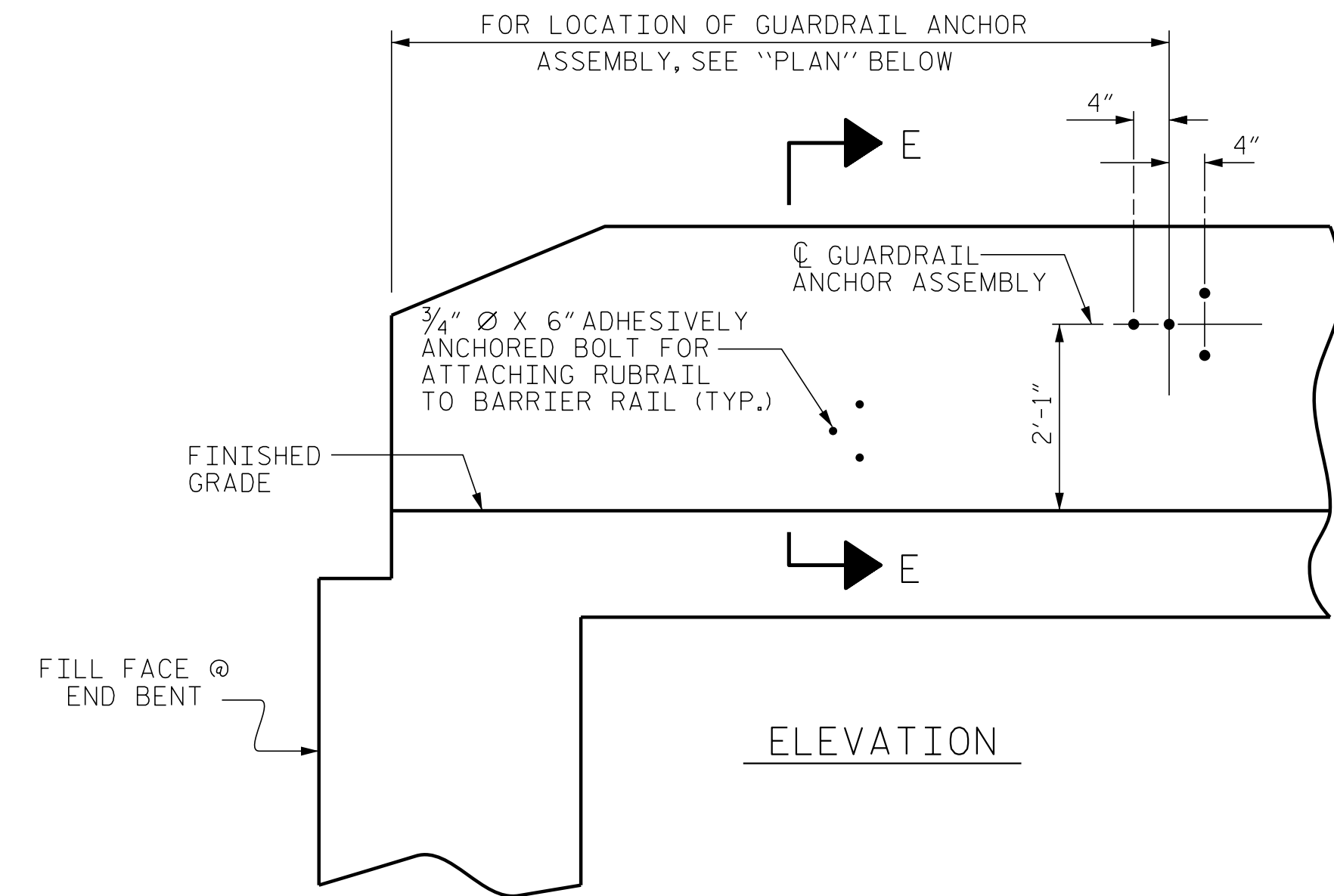
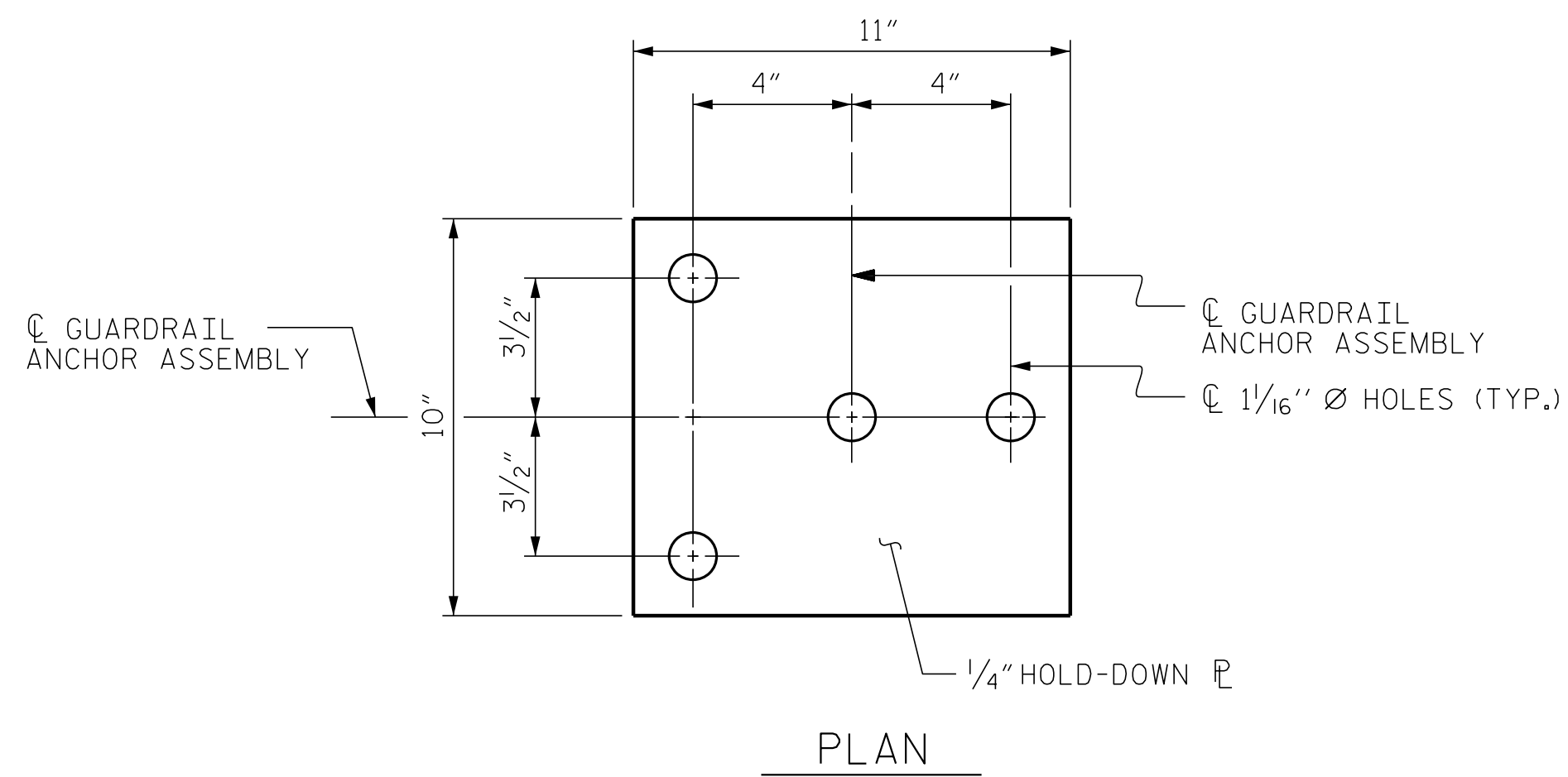
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
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Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
CONCRETE
BARRIER RAIL
(RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-20
1			3			TOTAL SHEETS
2			4			38

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ASSEMBLED BY : D. HODGE	DATE : 10/18
CHECKED BY : G.M. GILLAND	DATE : 11/18
DRAWN BY : ARB 5/87	REV. 7/12 MAA/GM
CHECKED BY : SJD 9/87	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC



NOTES

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

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

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

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

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

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

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

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

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PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-

ENGINEER OF RECORD:

ETHERILL ENGINEERING
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 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

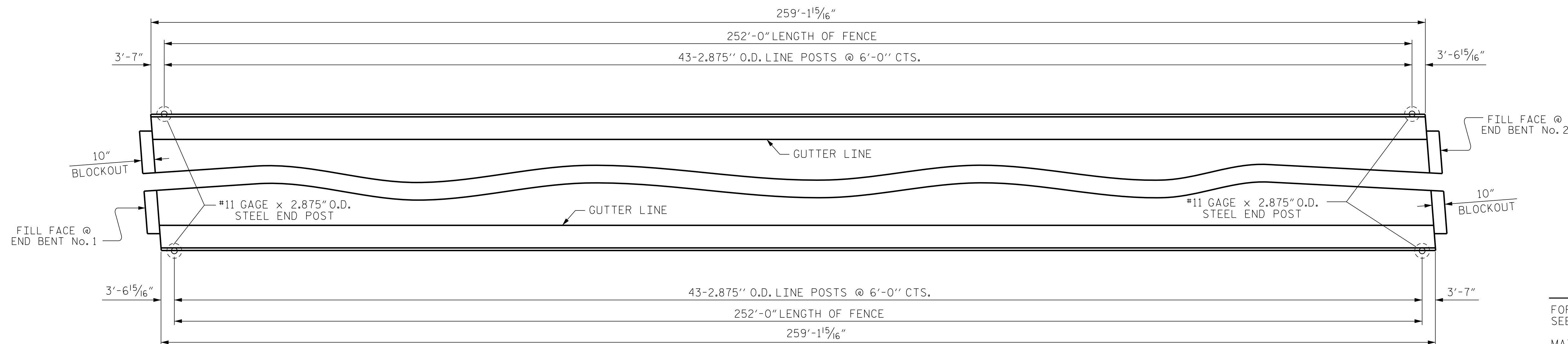
GUARDRAIL ANCHORAGE
 FOR BARRIER RAIL
 (RIGHT LANE)

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

TOTAL SHEETS: 38

DRAWN BY: D. HODGE DATE: 11/18
 CHECKED BY: G.M. GILLAND DATE: 11/18

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PLAN OF FENCE POST SPACING

NOTES

FOR BRIDGE MOUNTED CHAIN LINK FENCE, SEE SPECIAL PROVISIONS.

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

FOR SETTING ANCHOR BOLTS, THE CONTRACTOR SHALL USE AN ADHESIVE BONDING SYSTEM. LEVEL ONE FIELD TESTING OF BONDING SYSTEM IS REQUIRED.

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

ALL FENCE COMPONENTS SHALL BE VINYL COATED - BLACK.

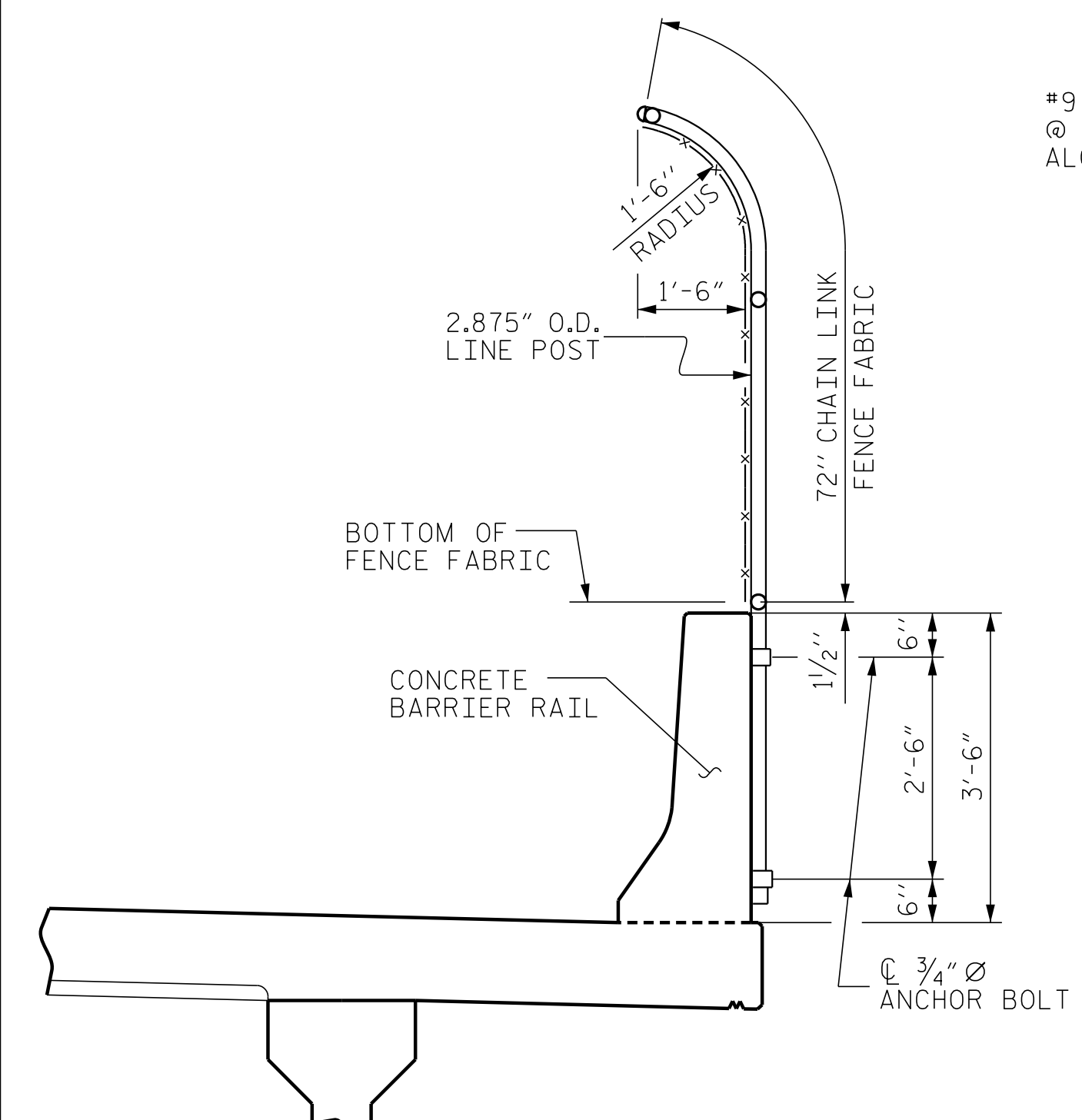
FENCE POST LOCATIONS SHALL BE SHIFTED, AS NECESSARY, TO MAINTAIN A 6" MINIMUM DISTANCE FROM ANCHOR BOLT TO JOINTS IN BARRIER RAIL.

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

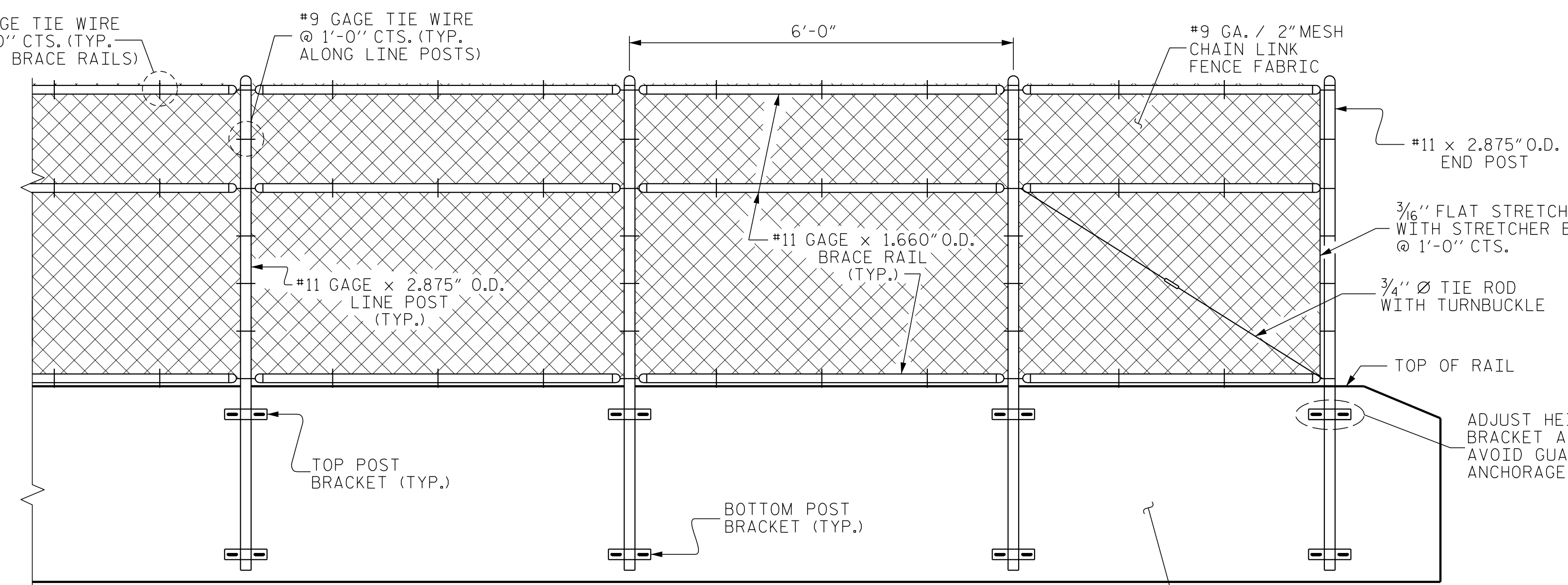
ADHESIVE BONDING SYSTEM SHALL HAVE MINIMUM PULLOUT STRENGTH OF 10 KIPS. THE ADHESIVE BONDING SYSTEM SHALL BE CHOSEN FROM THOSE ON THE NCDOT APPROVED PRODUCTS LIST.

72" CHAIN LINK FENCE
 TOTAL PAY LENGTH 504.0 LIN. FT.

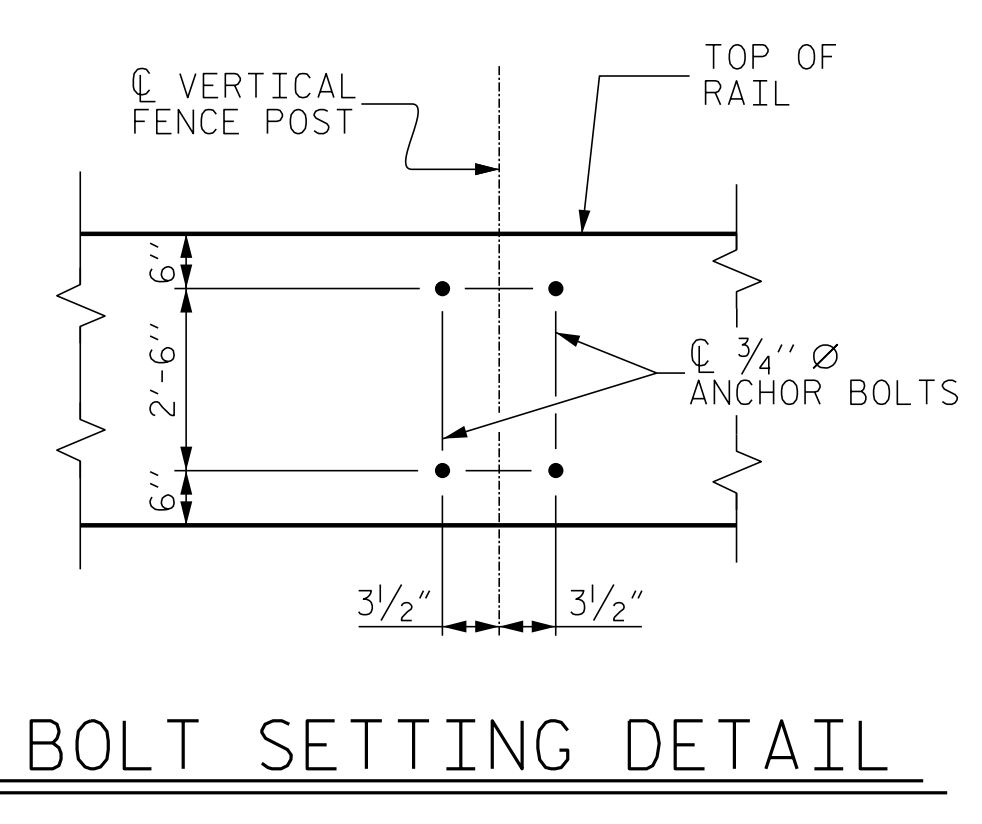
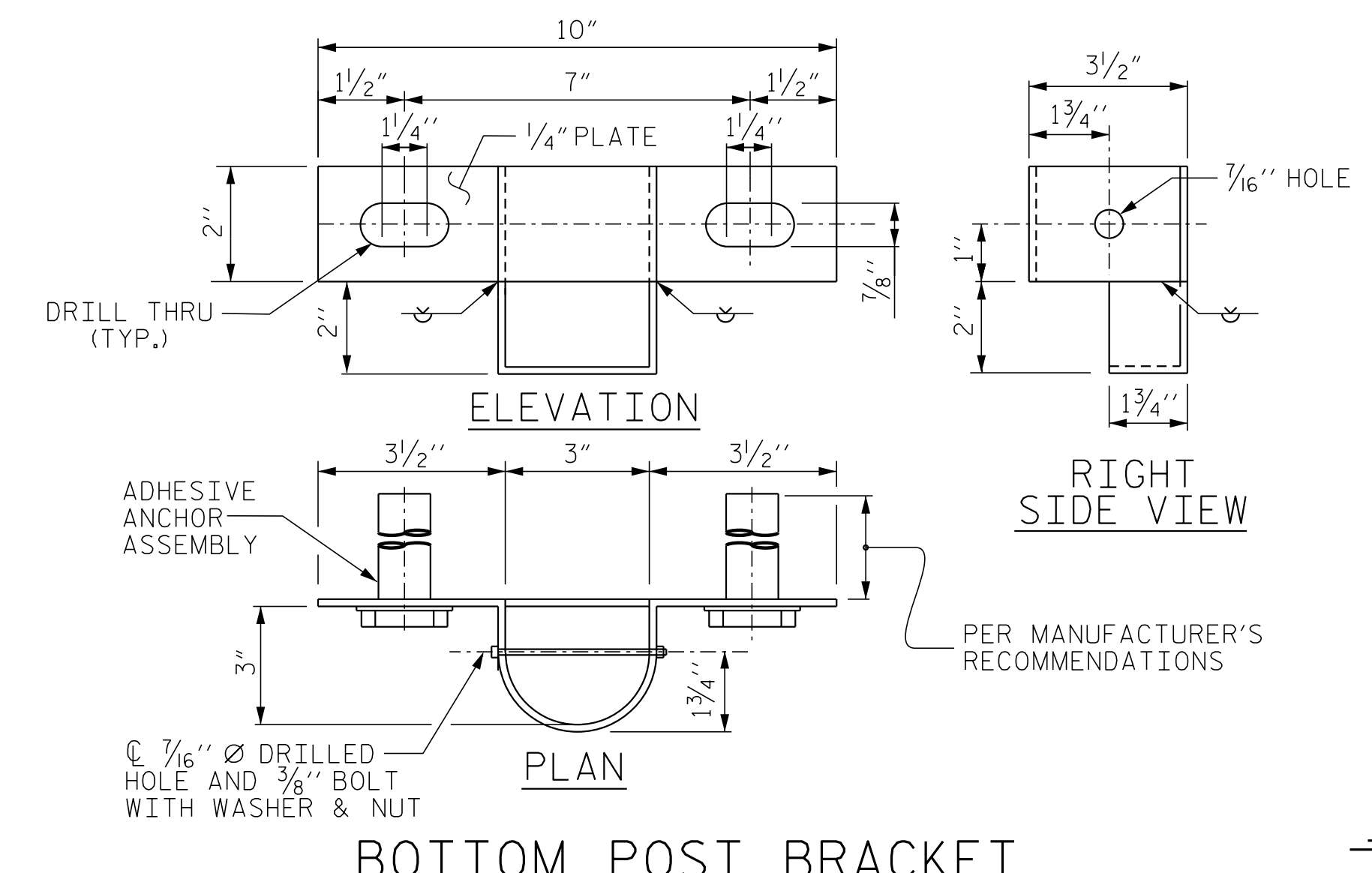
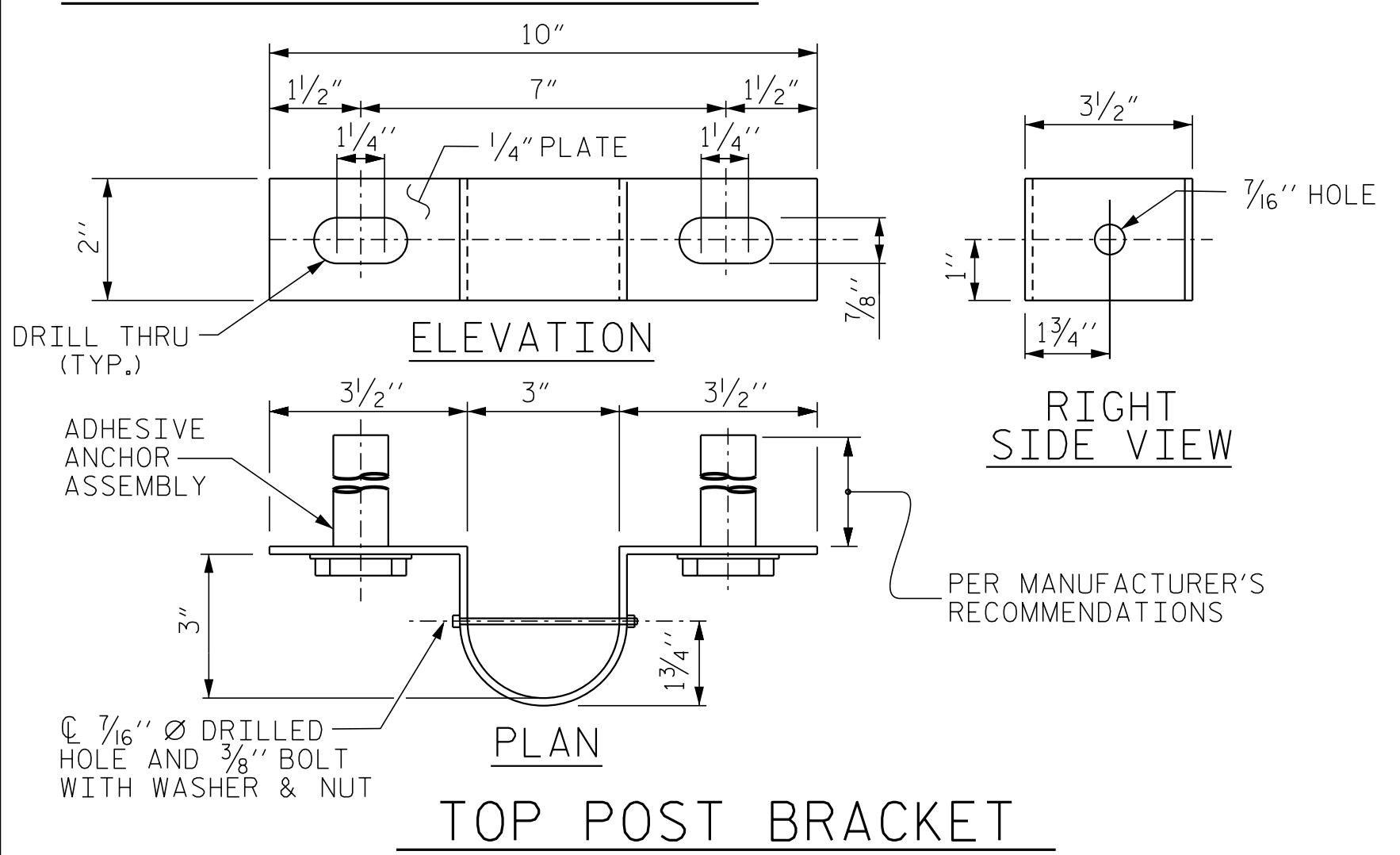
PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-



SECTION THRU FENCE



PARTIAL ELEVATION



BOLT SETTING DETAIL

ENGINEER OF RECORD:

 WETHERILL ENGINEERING
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 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
BRIDGE MOUNTED CHAIN LINK FENCE DETAILS
 (RIGHT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-22
1			3			TOTAL SHEETS
2			4			38

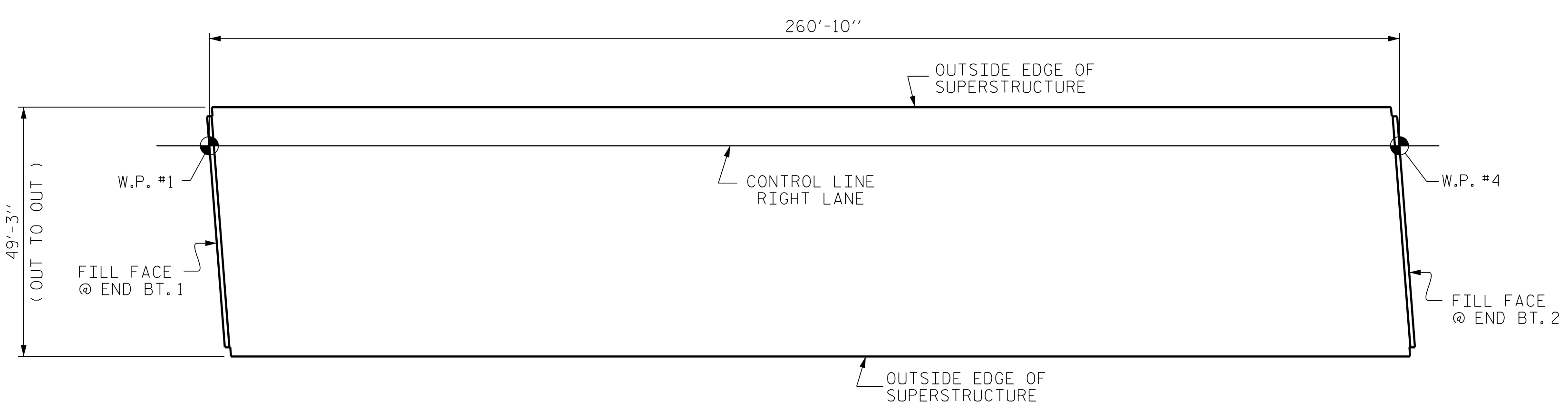
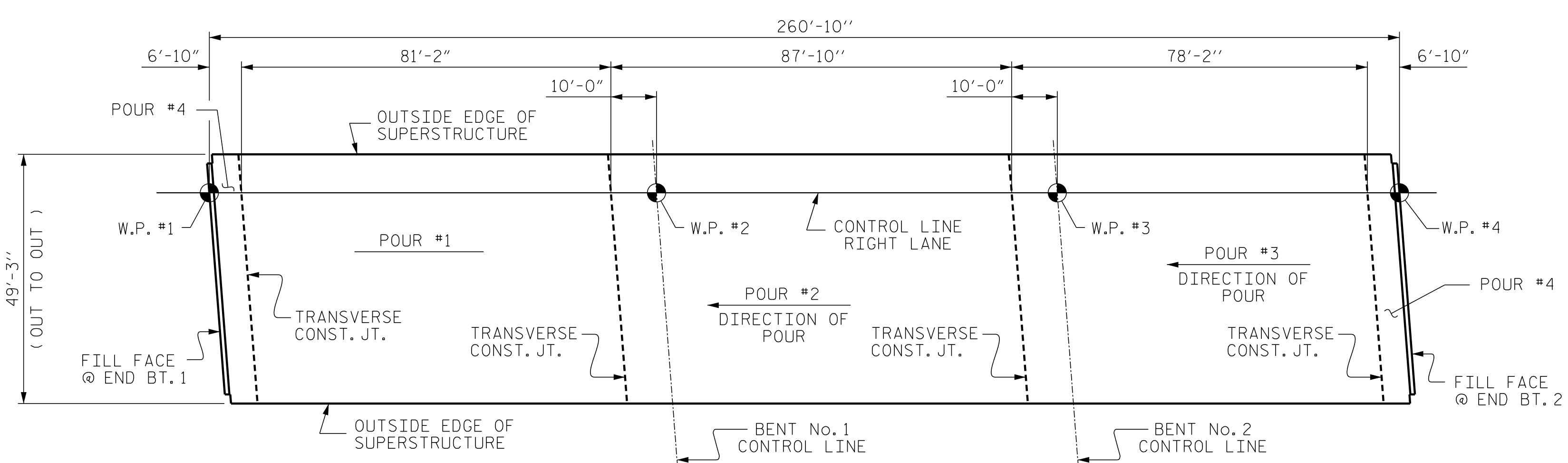
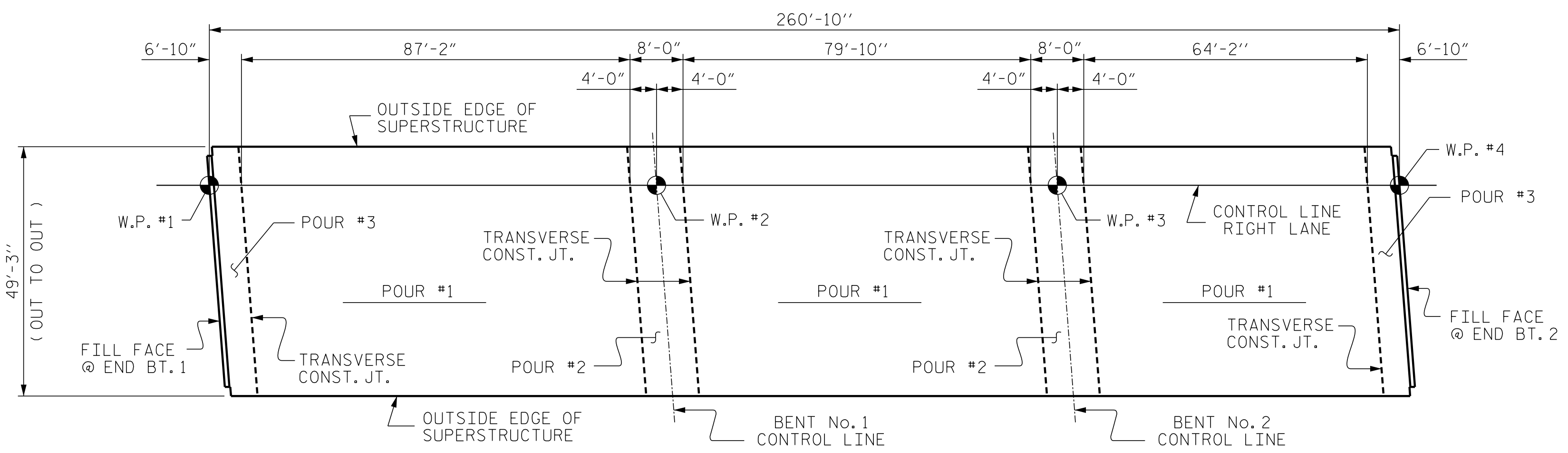
DRAWN BY: D. HODGE DATE: 11/18
 CHECKED BY: G.M. GILLAND DATE: 11/18

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

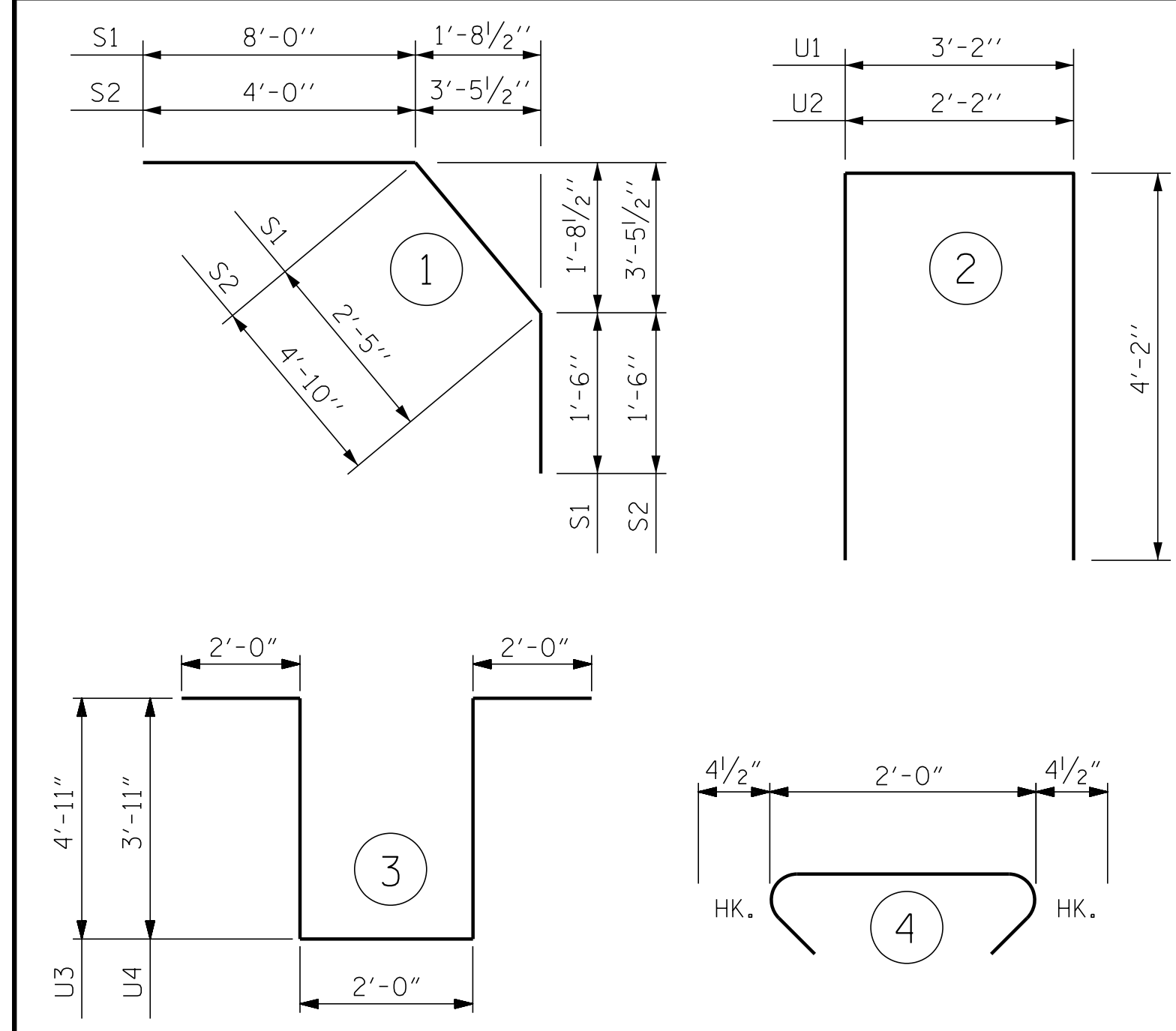
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 2/11/2019 8:03:43 AM

GROOVING BRIDGE FLOORS	
APPROACH SLABS	2,092 SQ.FT.
BRIDGE DECK	11,144 SQ.FT.
TOTAL	13,236 SQ.FT.

CLASS AA CONCRETE BREAKDOWN		
POUR #1	133.5	CY
POUR #2	160.2	CY
POUR #3	144.3	CY
POUR #4	75.0	CY
CLASS AA CONCRETE BREAKDOWN TOTAL		513.0



BAR TYPES



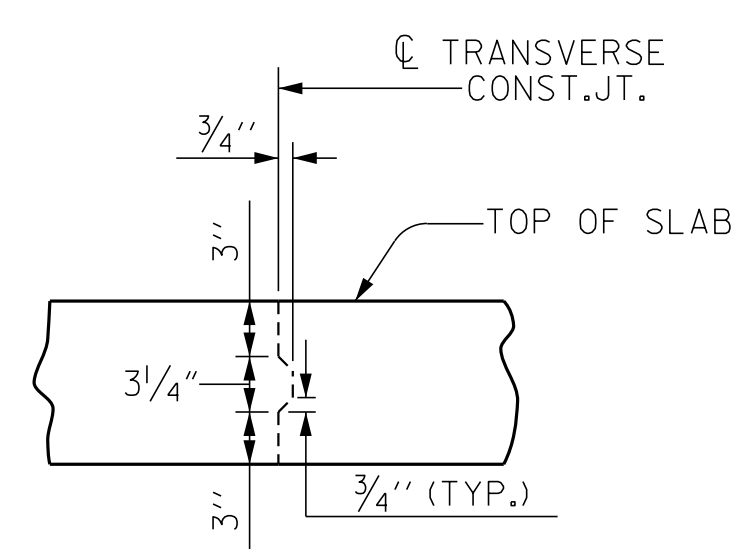
SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	* EPOXY COATED REINFORCING STEEL (LBS.)
TOTALS **	513.0	49,338	48,831

** QUANTITIES FOR CONCRETE BARRIER RAIL ARE NOT INCLUDED

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"			



BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	557	#5	STR	48'-11"	28,418
A2	557	#5	STR	48'-11"	28,418
* A101	2	#5	STR	44'-6"	93
* A102	2	#5	STR	38'-6"	80
* A103	2	#5	STR	32'-7"	68
* A104	2	#5	STR	26'-7"	55
* A105	2	#5	STR	20'-7"	43
* A106	2	#5	STR	14'-8"	31
* A107	2	#5	STR	8'-8"	18
A201	2	#5	STR	44'-6"	93
A202	2	#5	STR	38'-6"	80
A203	2	#5	STR	32'-7"	68
A204	2	#5	STR	26'-7"	55
A205	2	#5	STR	20'-7"	43
A206	2	#5	STR	14'-8"	31
A207	2	#5	STR	8'-8"	18
* B1	20	#4	STR	27'-9"	371
* B2	94	#6	STR	20'-0"	2824
* B3	64	#4	STR	24'-4"	1040
* B4	64	#6	STR	34'-5"	3308
* B5	62	#6	STR	28'-0"	2607
* B6	32	#4	STR	29'-0"	620
* B7	32	#6	STR	58'-11"	2832
* B8	62	#6	STR	24'-6"	2282
* B9	64	#4	STR	18'-9"	802
* B10	94	#6	STR	15'-0"	2118
B11	310	#5	STR	53'-6"	17,298
K1	20	#4	STR	24'-6"	327
K2	48	#4	STR	8'-6"	273
K3	48	#4	STR	9'-6"	305
K4	8	#4	STR	8'-0"	43
K5	16	#4	STR	6'-10"	73
K6	8	#4	STR	2'-5"	13
K7	8	#4	STR	2'-10"	15
K8	4	#4	STR	2'-1"	6
K9	20	#4	STR	22'-2"	296
* S1	84	#4	1	11'-11"	669
* S2	80	#4	1	10'-4"	552
S3	272	#4	4	2'-9"	500
U1	80	#4	2	11'-6"	615
U2	4	#4	2	10'-6"	28
U3	56	#4	3	15'-10"	592
U4	16	#4	3	13'-10"	148
REINFORCING STEEL				LBS.	49,338
* EPOXY COATED REINFORCING STEEL				LBS.	48,831

* THESE BARS ARE EPOXY COATED.

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 192+85.76 -L-

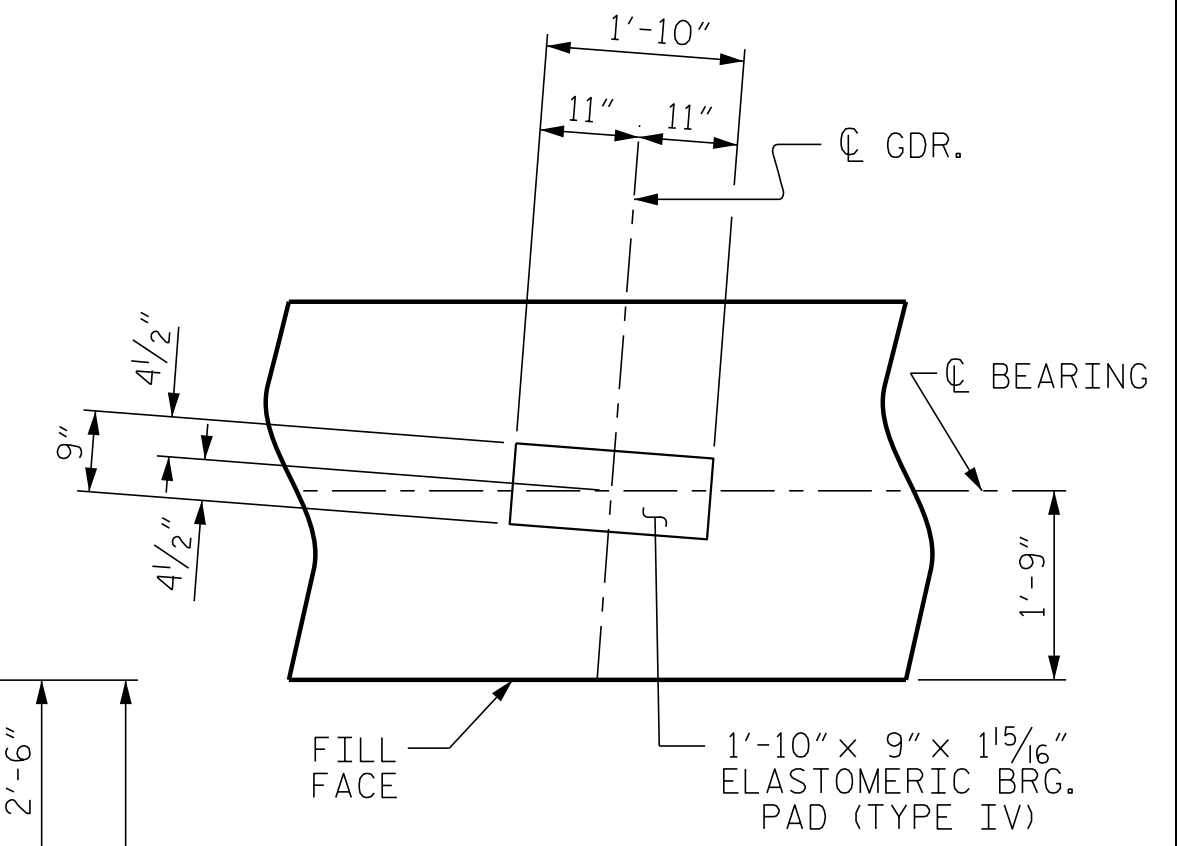
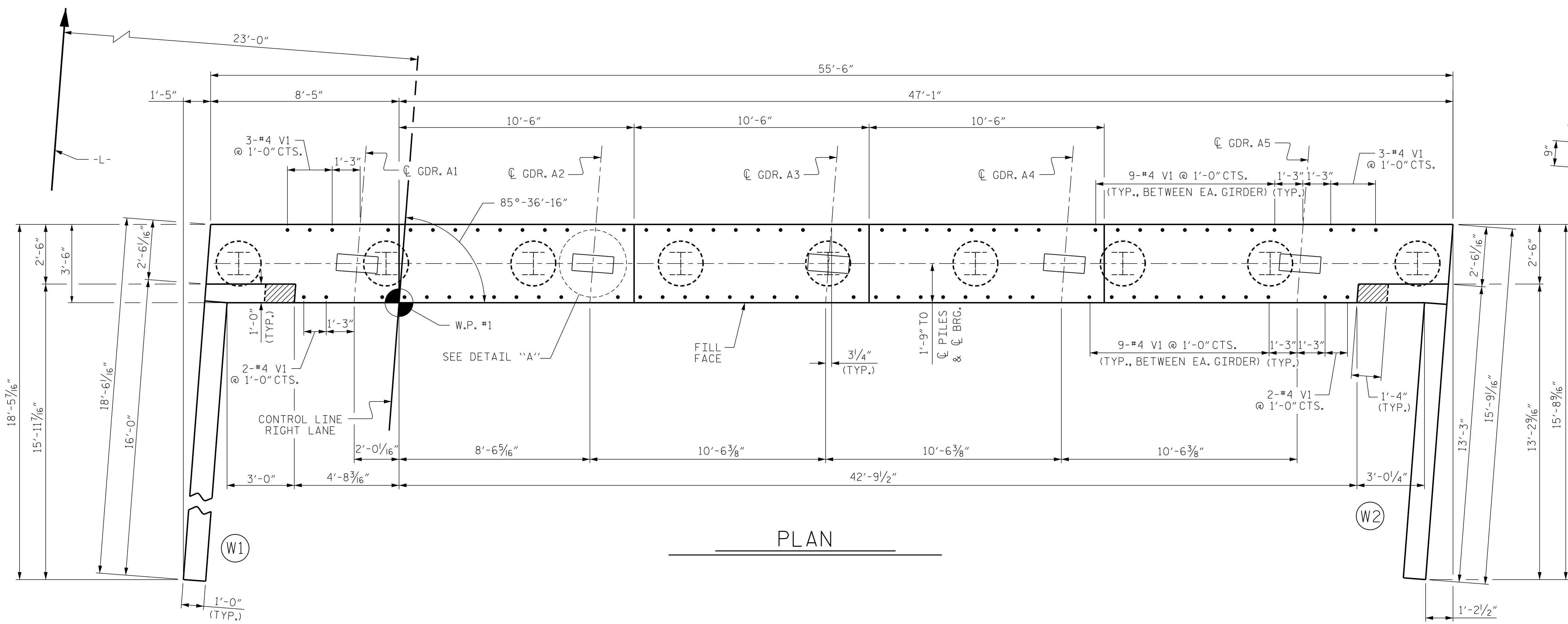
ENGINEER OF RECORD:
3/26/2019
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 37400
GREGORY M. GILLAND
Gregory M. Gilland
ETHERILL ENGINEERING
1223 Jones Franklin Rd.
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Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE BILL OF MATERIAL (RIGHT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S4-23
					TOTAL SHEETS 38

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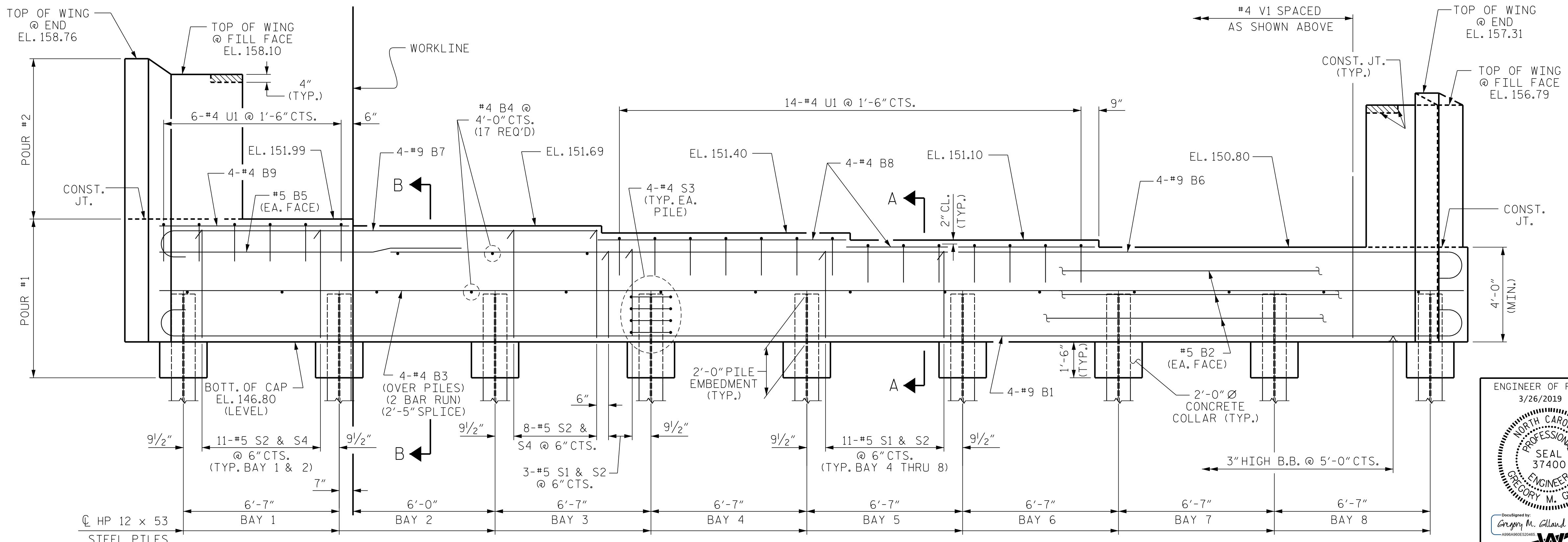
DRAWN BY: D. HODGE DATE: 10/18
CHECKED BY: G.M. GILLAND DATE: 11/18

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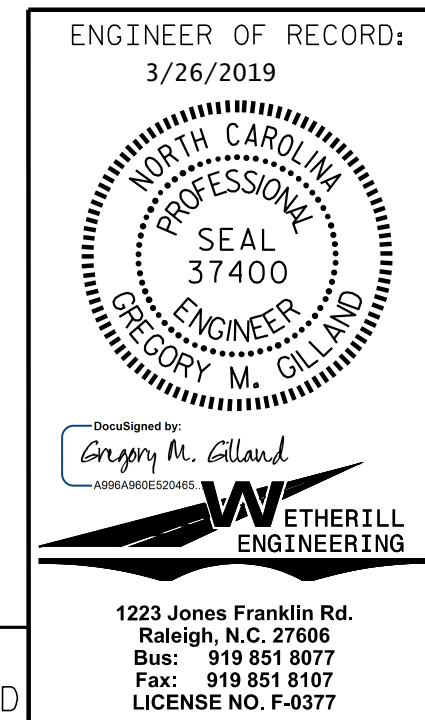
DETAIL "A"
(TYP. EACH GIRDER)

PLAN



ELEVATION

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 192+85.76 -L-
SHEET 1 OF 3

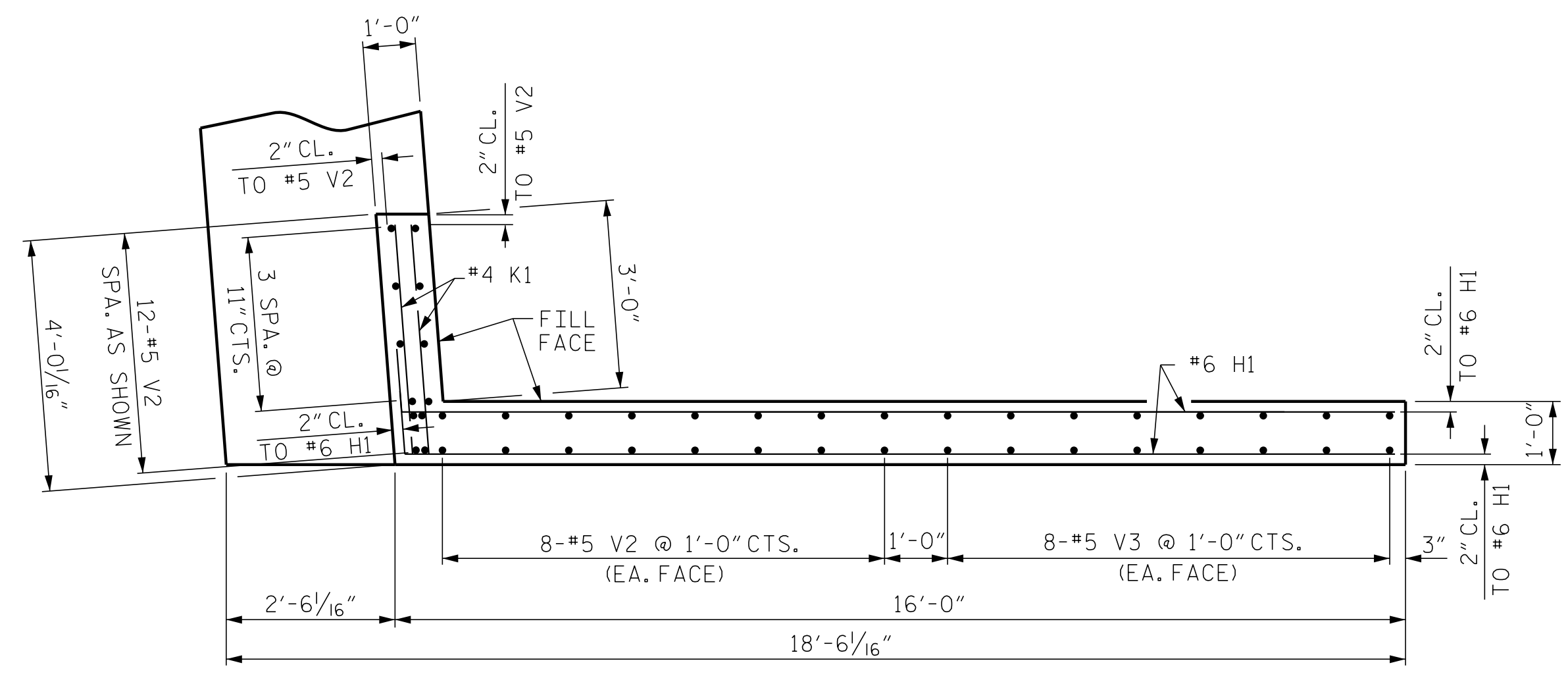


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		SUBSTRUCTURE END BENT No. 1 (RIGHT LANE)	
REVISIONS			
NO.	BY:	DATE:	SHEET NO.
1			S4-24
2			TOTAL SHEETS 38

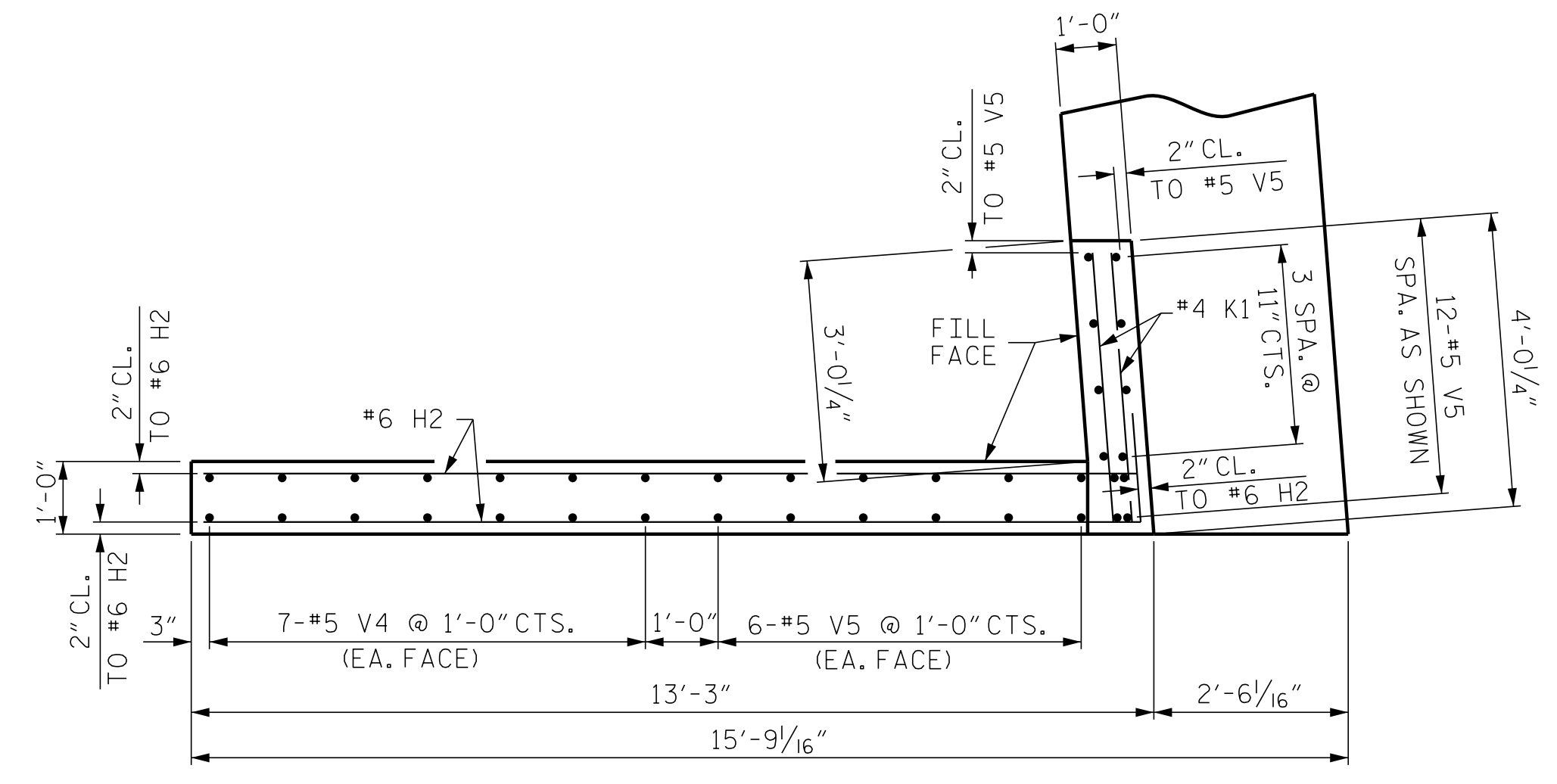
DRAWN BY: D. HODGE DATE: 11/18
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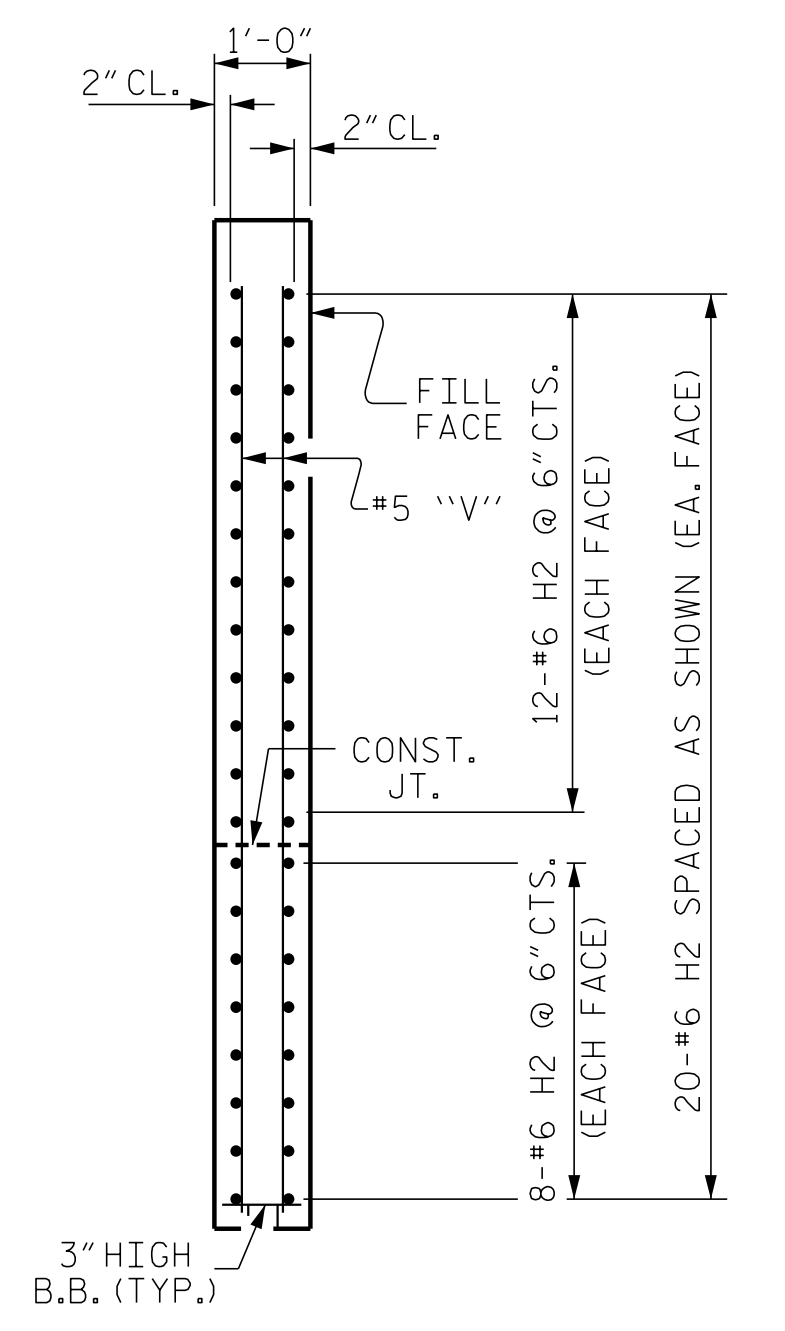
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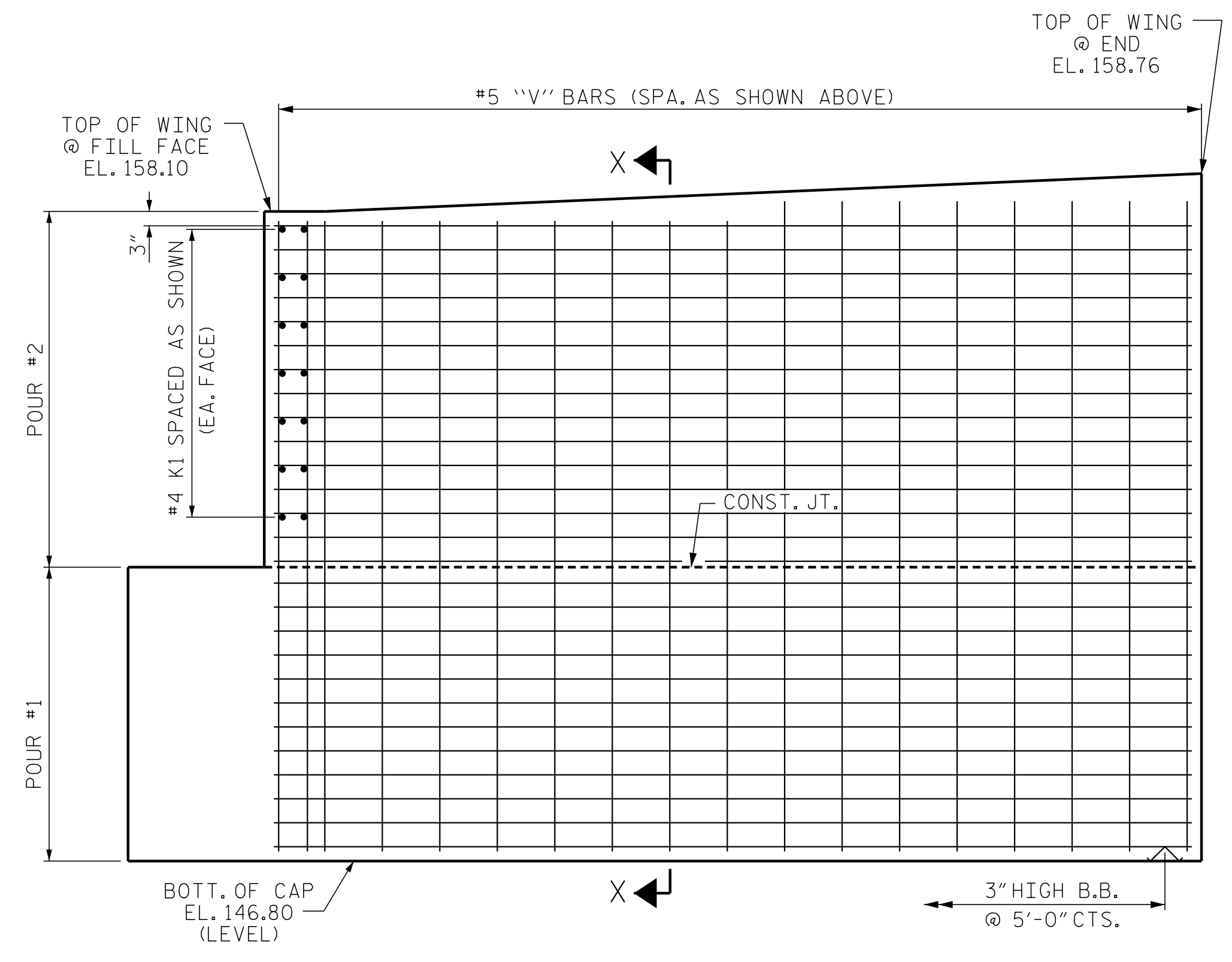
PLAN OF WING - (W1)



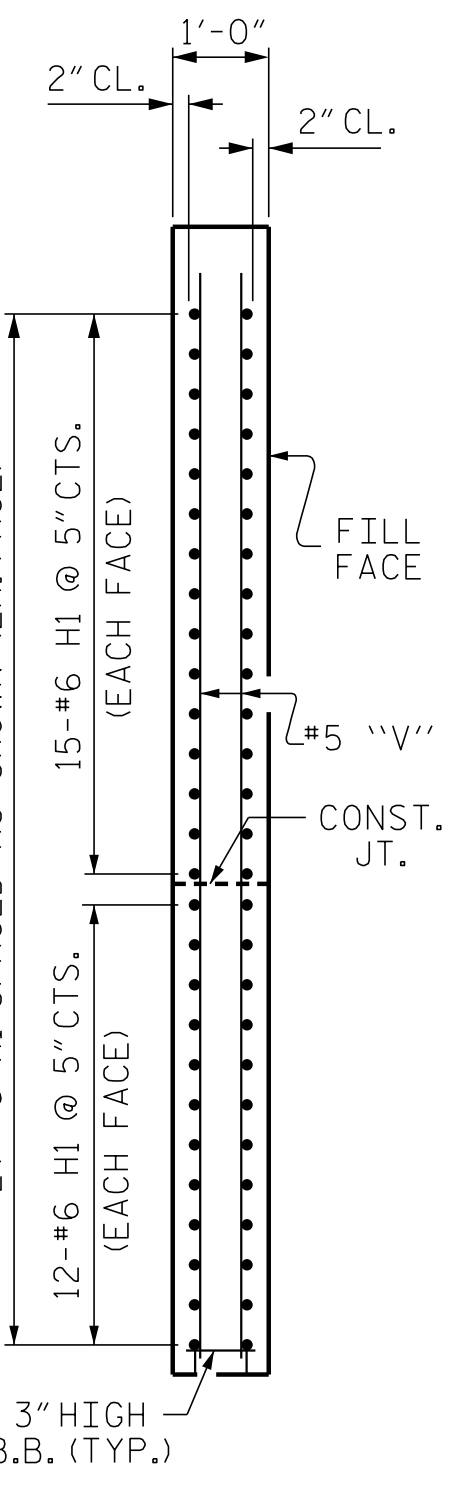
PLAN OF WING - (W2)



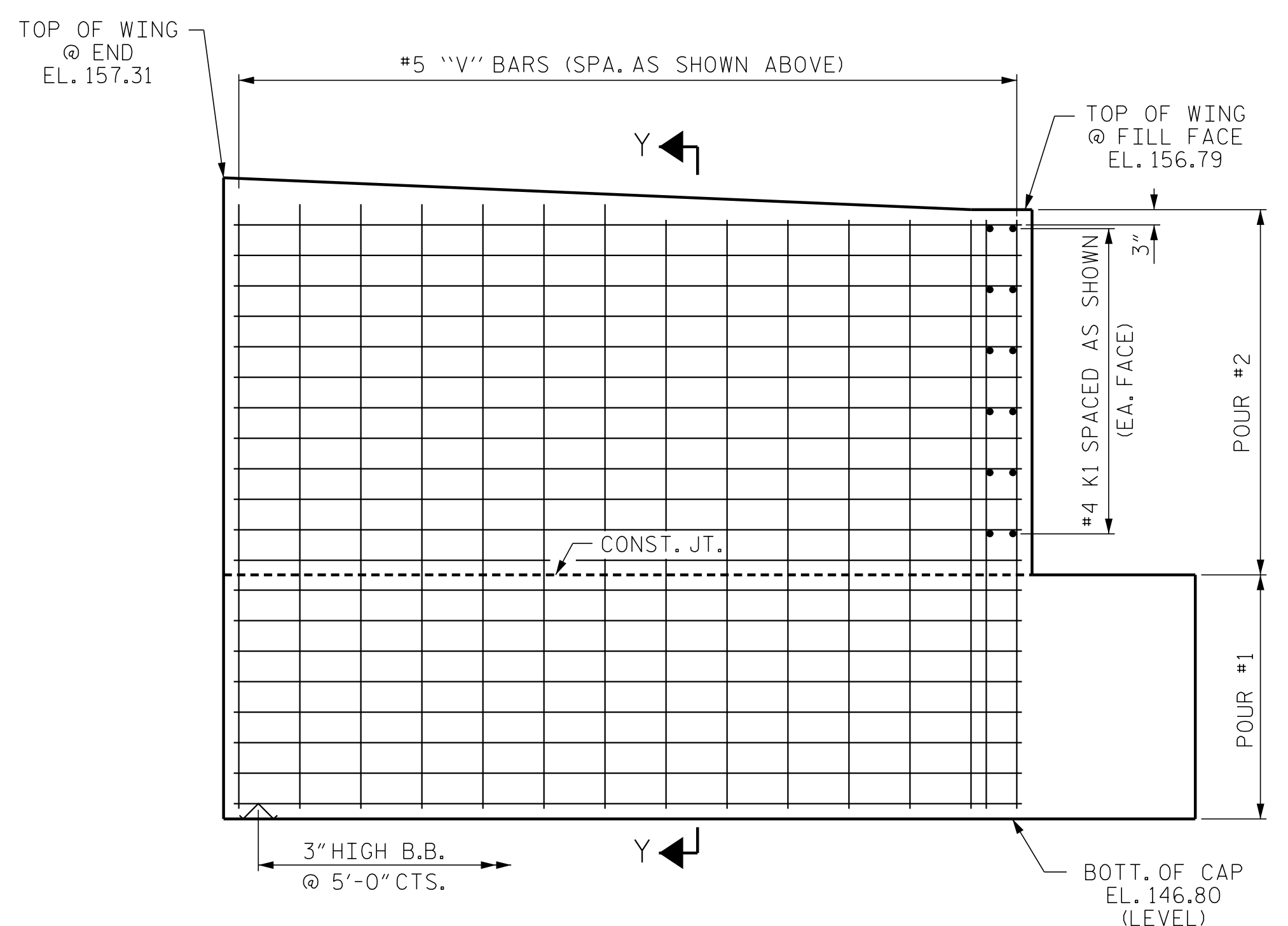
SECTION Y-Y



ELEVATION OF WING - (W1)



SECTION X-X



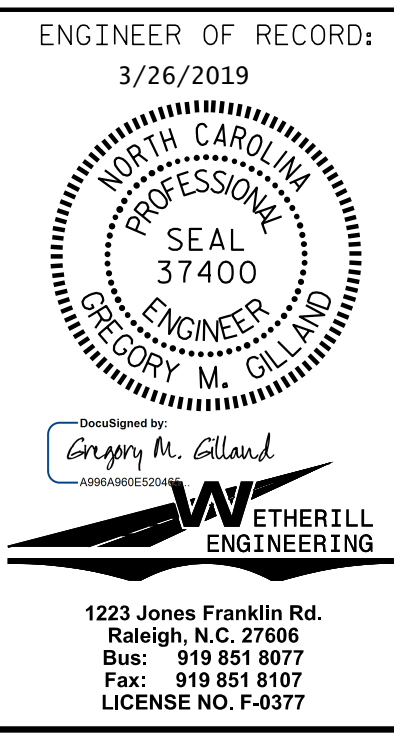
ELEVATION OF WING - (W2)

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 2 OF 3

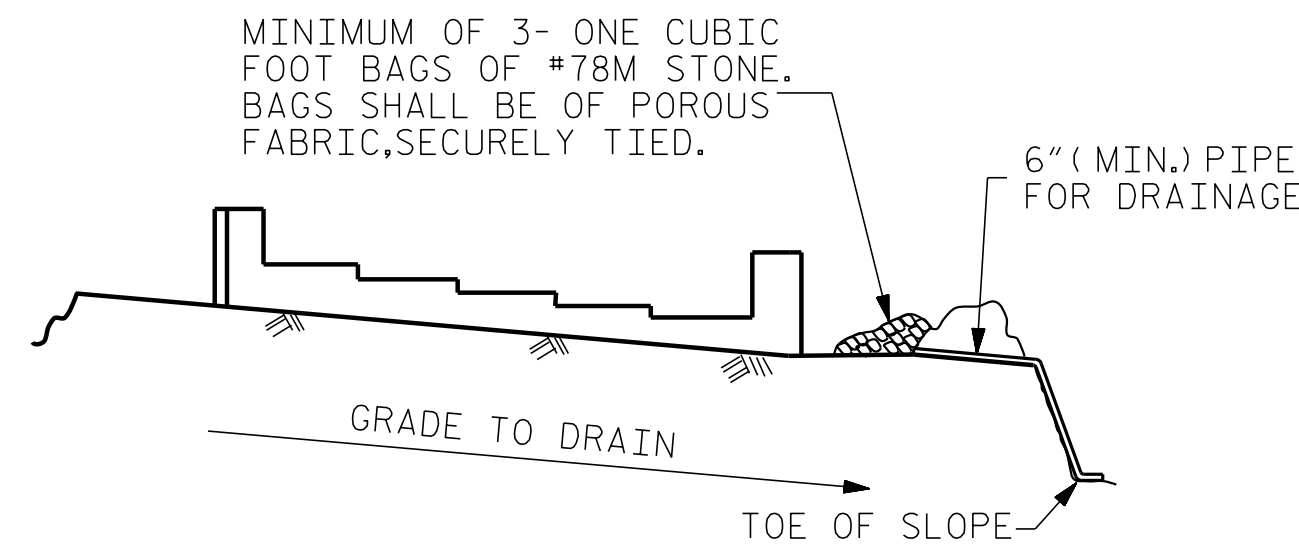
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DRAWN BY: D. HODGE DATE: 11/18
 CHECKED BY: G.M. GILLAND DATE: 11/18

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ENGINEER OF RECORD: 3/26/2019 NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 37400 GREGORY M. GILLAND		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH	
SUBSTRUCTURE END BENT No. 1 (RIGHT LANE)			
REVISIONS			
NO.	BY:	DATE:	SHEET NO.
1			S4-25
2			TOTAL SHEETS 38

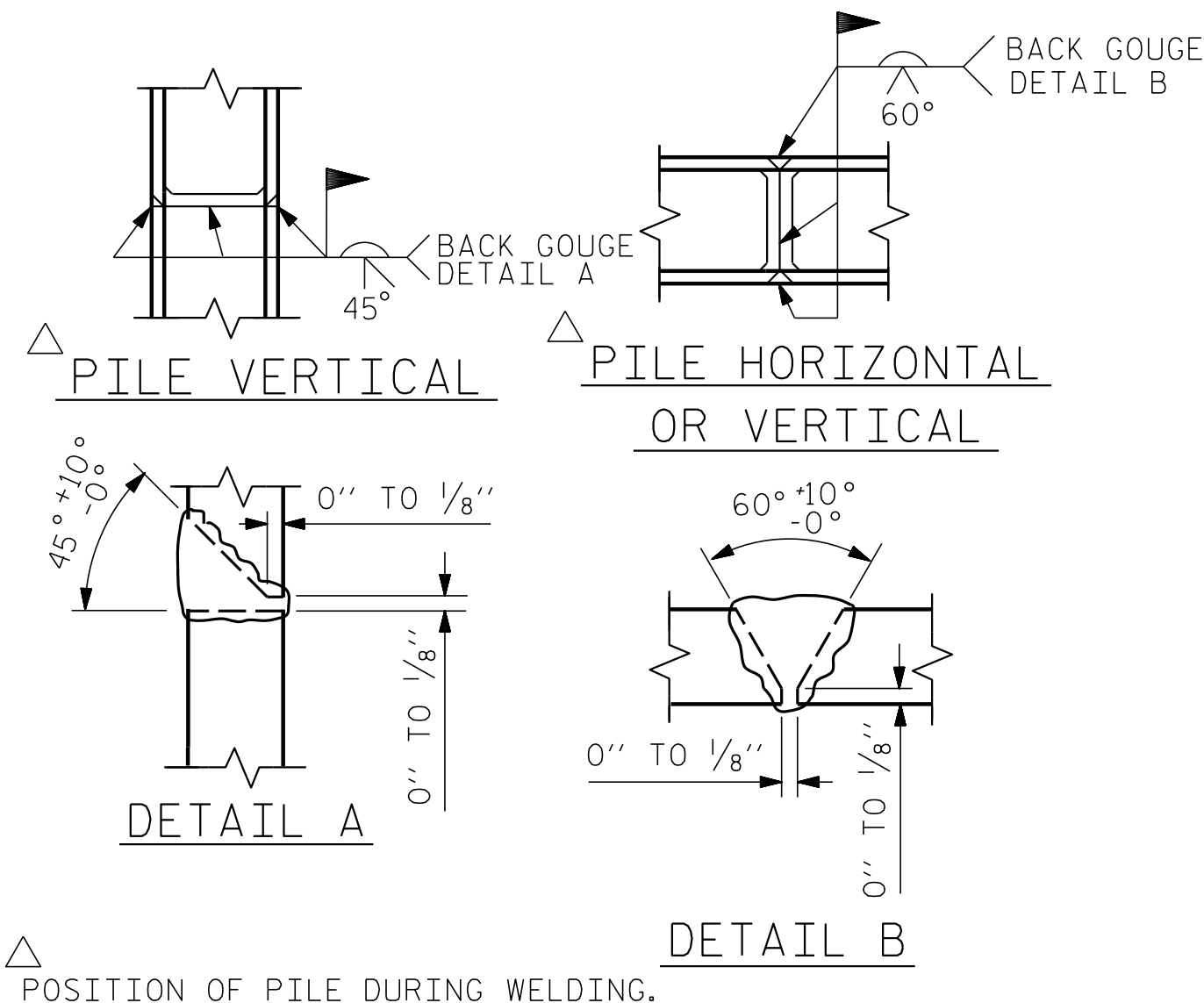


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

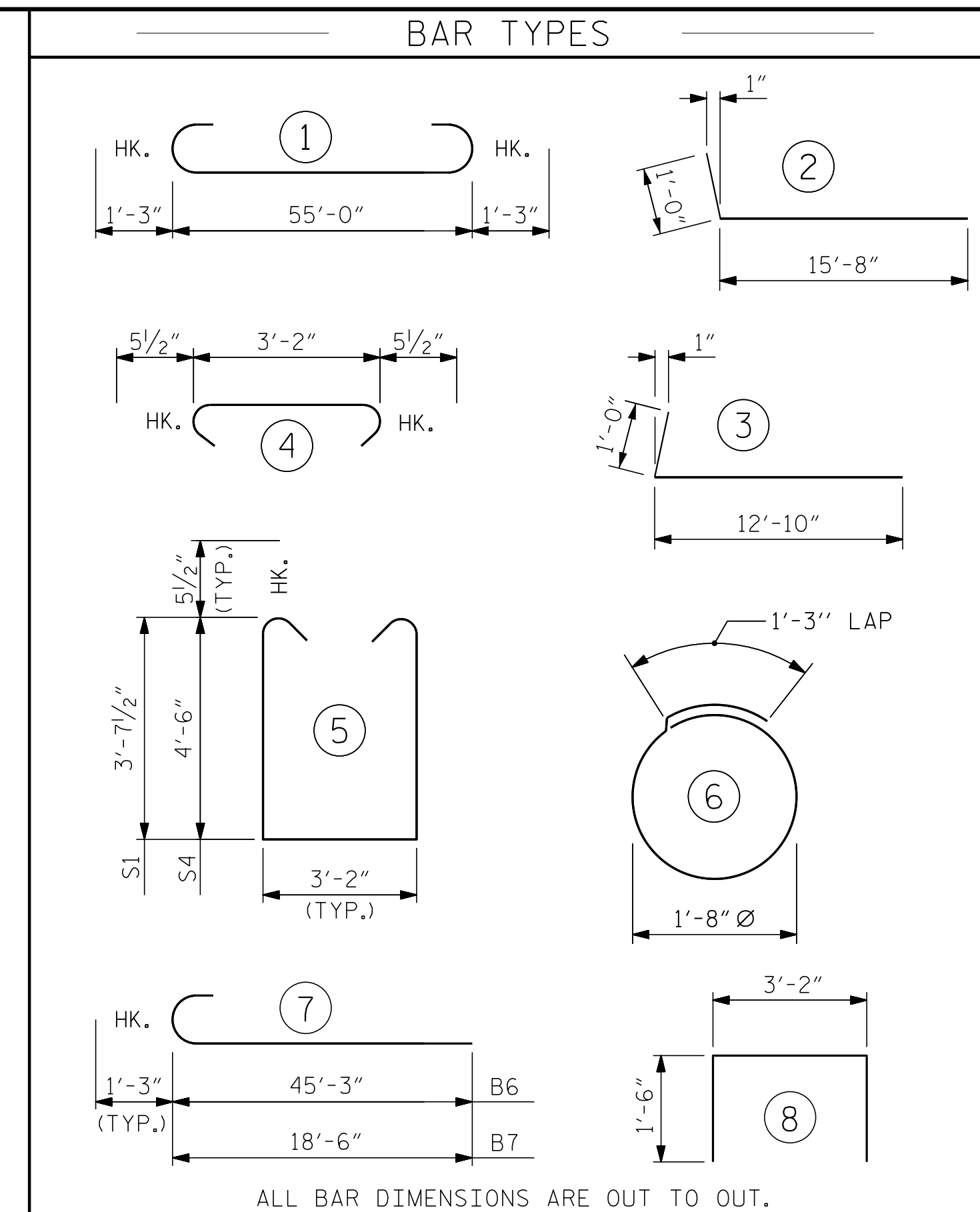
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

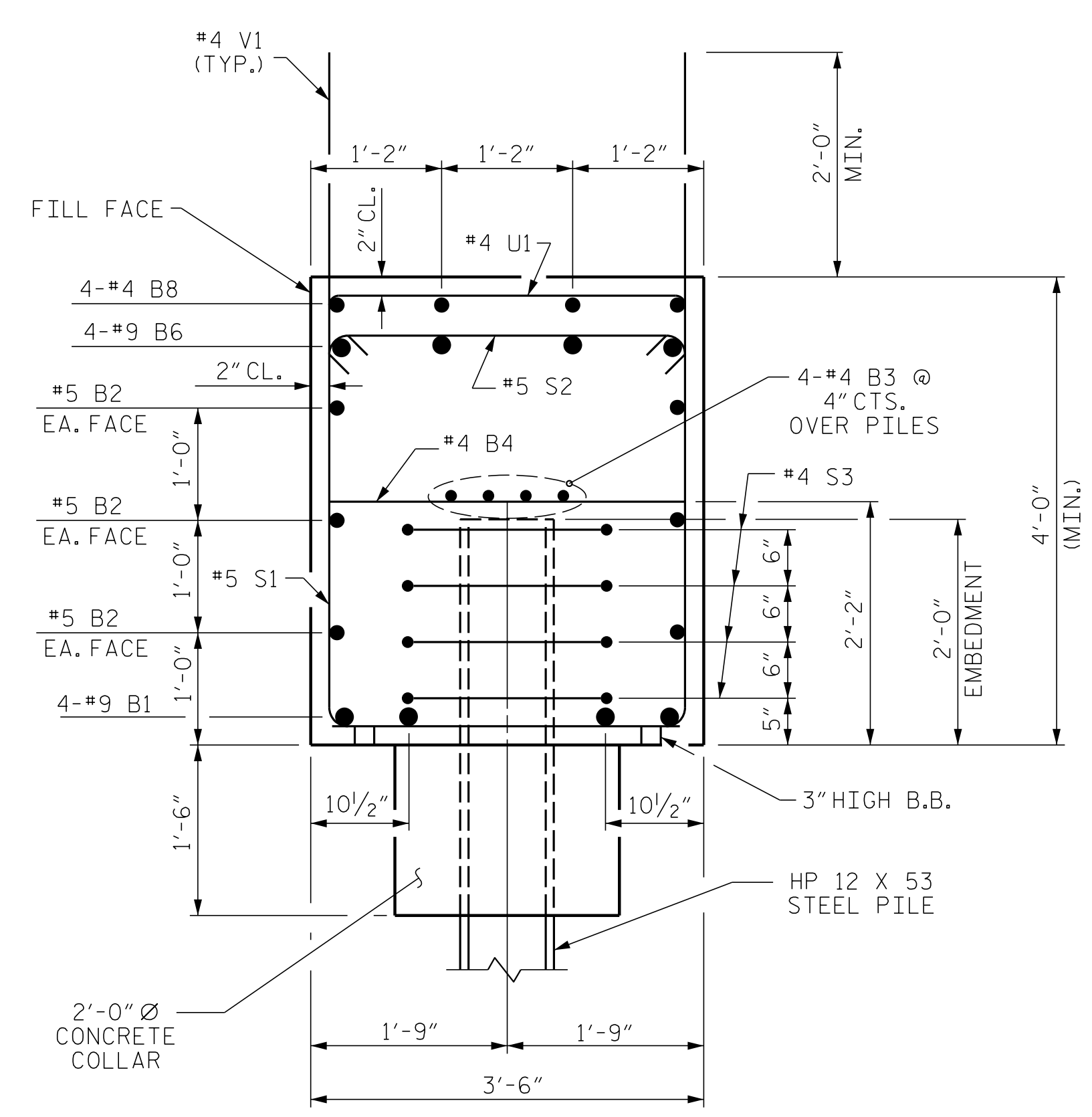


BILL OF MATERIAL					
END BENT No. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9		57'-6"	782
B2	6	#5	STR	55'-2"	345
B3	8	#4	STR	28'-10"	154
B4	17	#4	STR	3'-2"	36
B5	2	#5	STR	13'-1"	27
B6	4	#9		46'-6"	632
B7	4	#9		19'-9"	269
B8	8	#4	STR	10'-6"	56
B9	4	#4	STR	8'-1"	22
H1	54	#6		16'-8"	1352
H2	40	#6		13'-10"	831
K1	26	#4	STR	3'-7"	62
S1	58	#5		11'-4"	686
S2	88	#5		4'-1"	375
S3	36	#4		6'-6"	156
S4	30	#5		13'-1"	409
U1	20	#4		6'-2"	82
V1	82	#4	STR	6'-8"	365
V2	28	#5	STR	10'-11"	319
V3	16	#5	STR	11'-3"	188
V4	14	#5	STR	9'-11"	145
V5	24	#5	STR	9'-8"	242
REINFORCING STEEL					7,535 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP, LOWER PART OF WINGS AND CONCRETE COLLARS					39.1 C.Y.
POUR #2 UPPER PART OF WINGS					8.2 C.Y.
TOTAL CLASS A CONCRETE					47.3 C.Y.
HP 12 X 53 STEEL PILES					
NO: 9					810 L.F.
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES					9 EA.
PILE REDRIVES					5 EA.

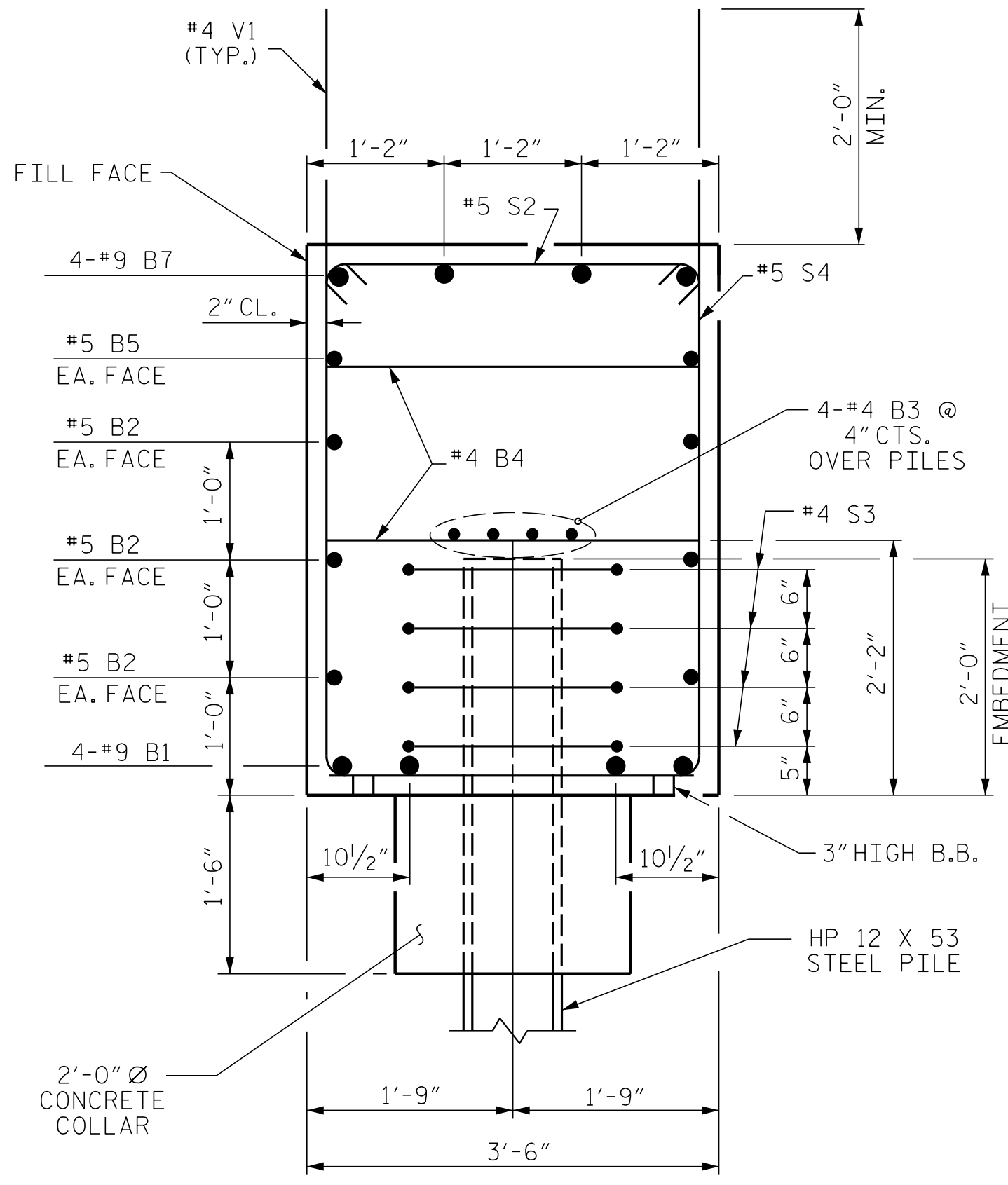
NOTES

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

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



SECTION A-A



SECTION B-B

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DRAWN BY: D. HODGE DATE: 11/18
 CHECKED BY: G.M. GILLAND DATE: 11/18

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ENGINEER OF RECORD:
3/26/2019

Gregory M. Gilland
ETHERILL ENGINEERING

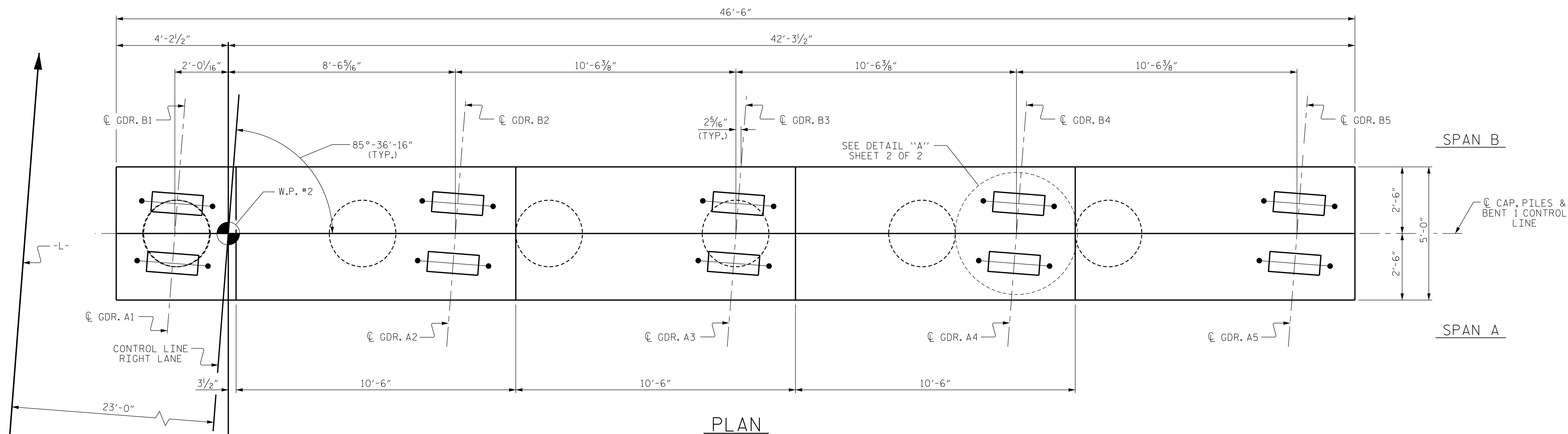
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 3 OF 3

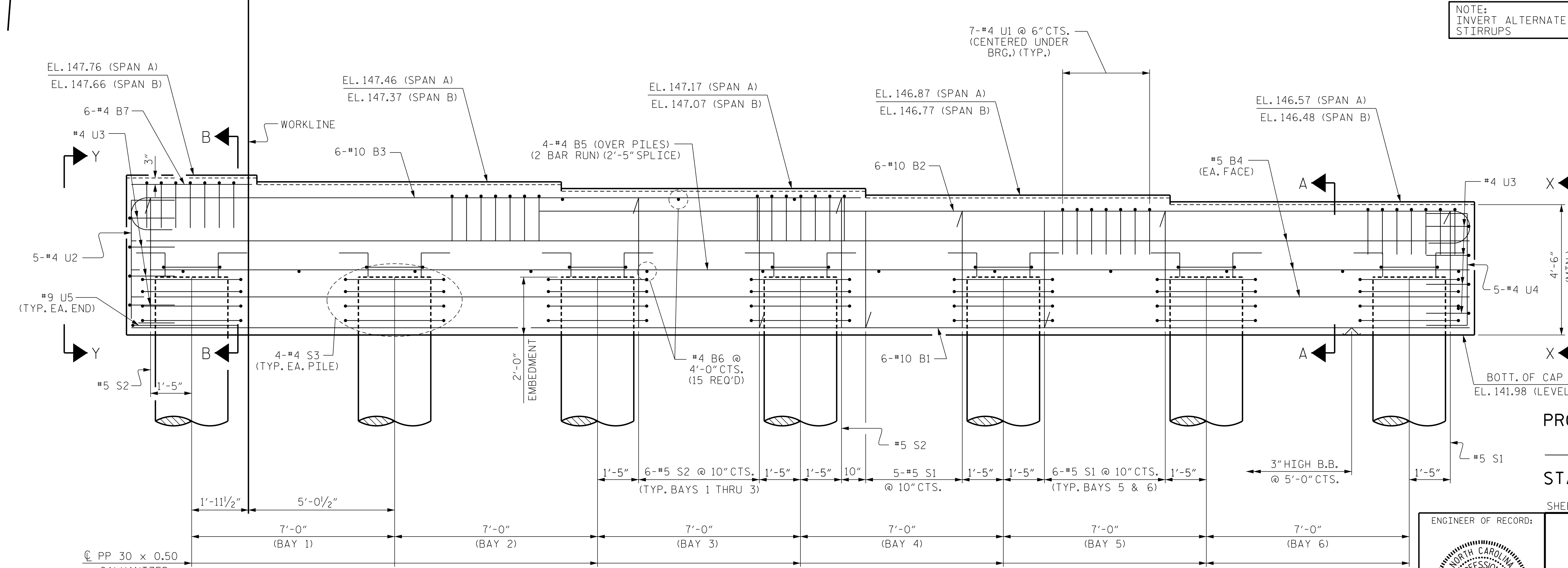
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SUBSTRUCTURE END BENT No. 1 (RIGHT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S4-26

TOTAL SHEETS 38



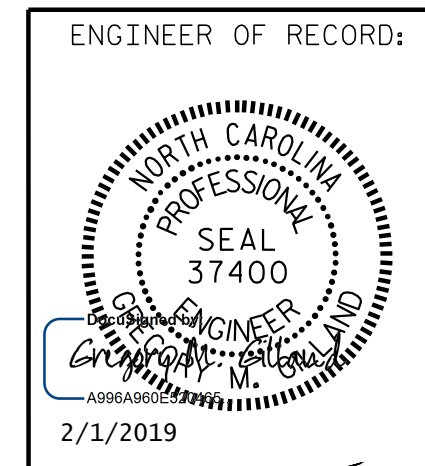
PLAN



ELEVATION

NOTE:
INVERT ALTERNATE
STIRRUPS

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 1 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 1
 (RIGHT LANE)

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 LICENSE NO. F-0377

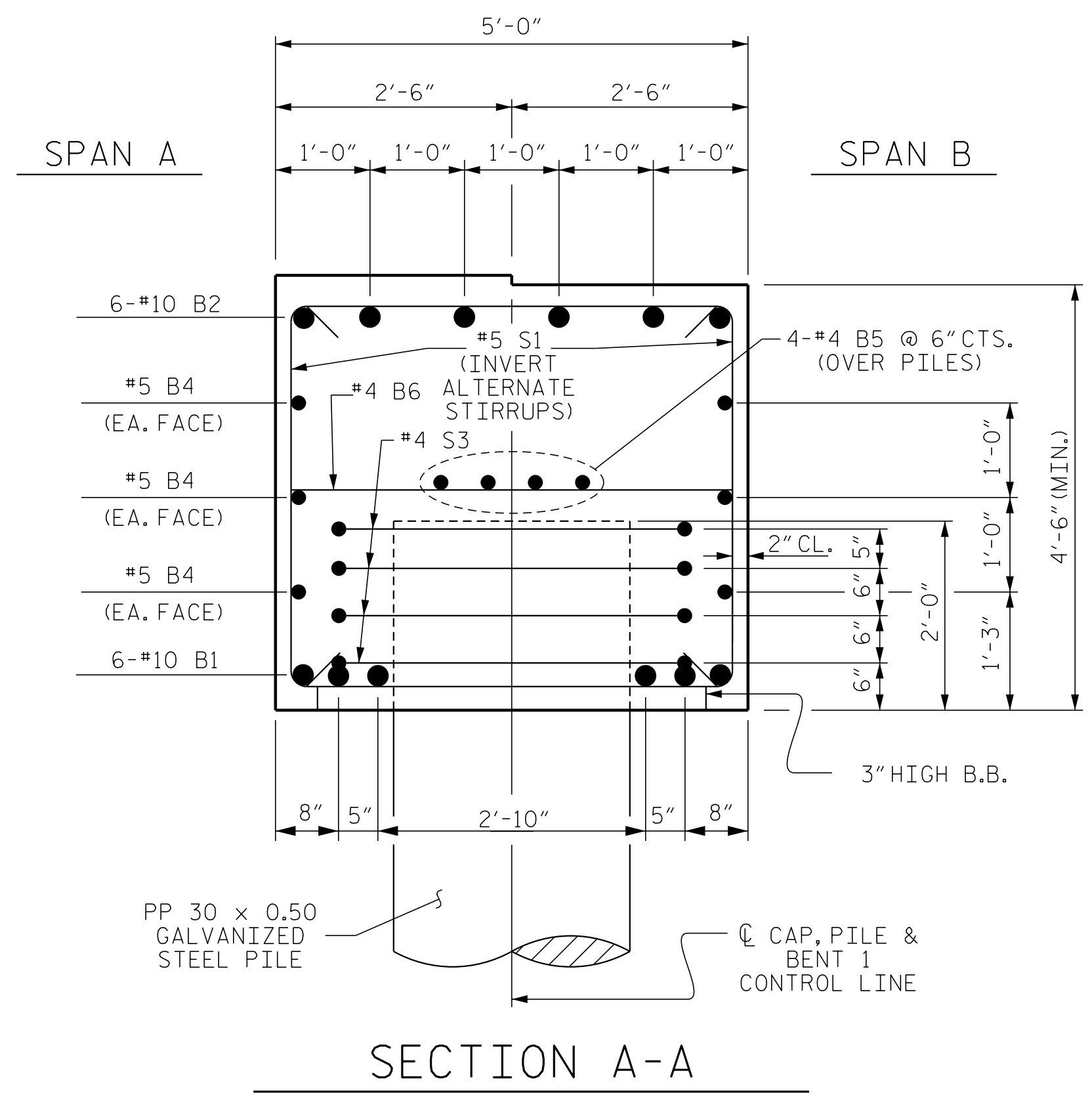
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1			3			TOTAL SHEETS	
2			4			38	

FOR STEEL PIPE PILE REINFORCING STEEL CONCRETE
 QUANTITIES & SPLICE DETAIL, SEE "30" STEEL PIPE PILE" STANDARD,
 FOR SECTION A-A, SECTION B-B AND DETAIL "A", SEE SHEET 2 OF 2

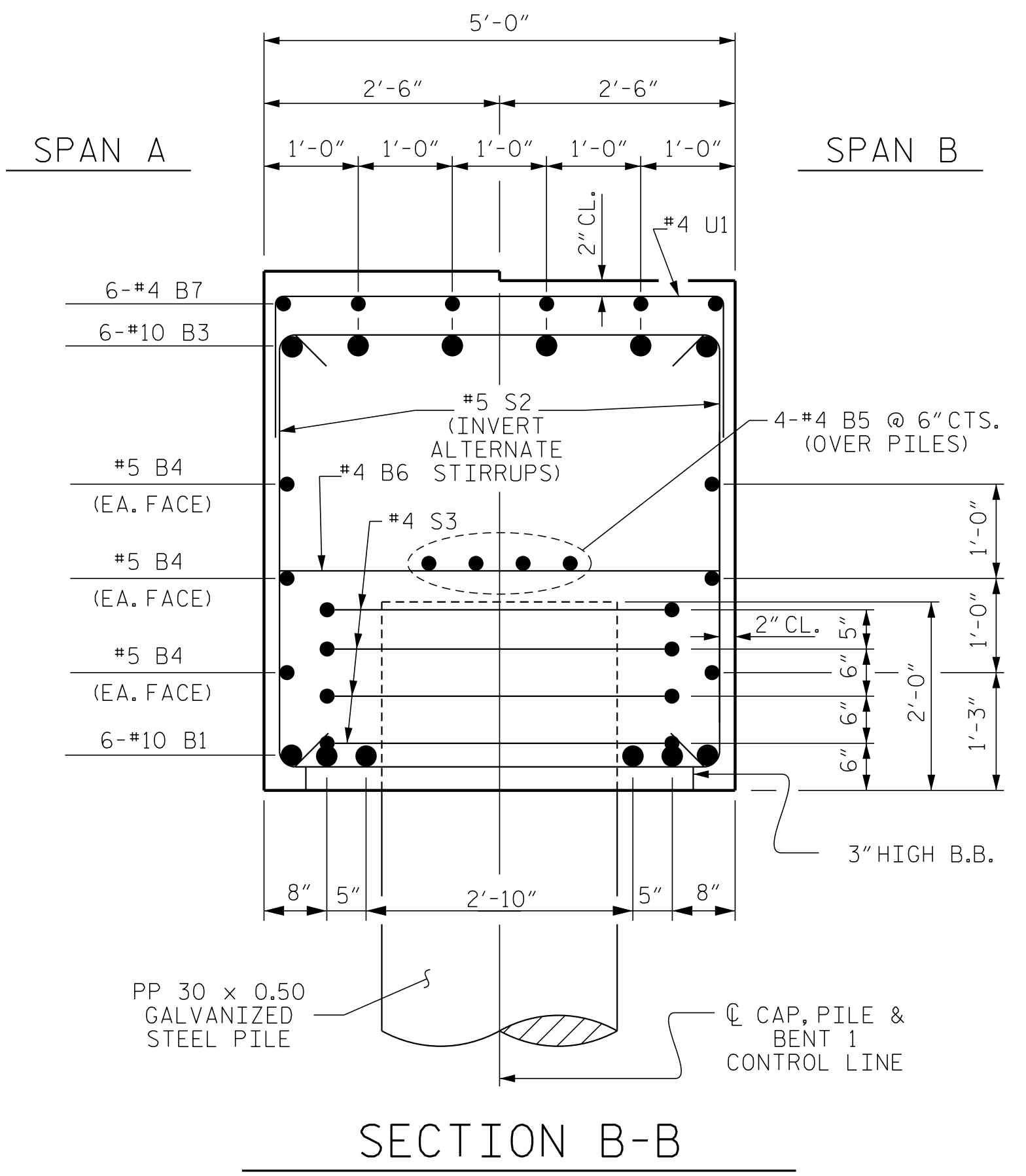
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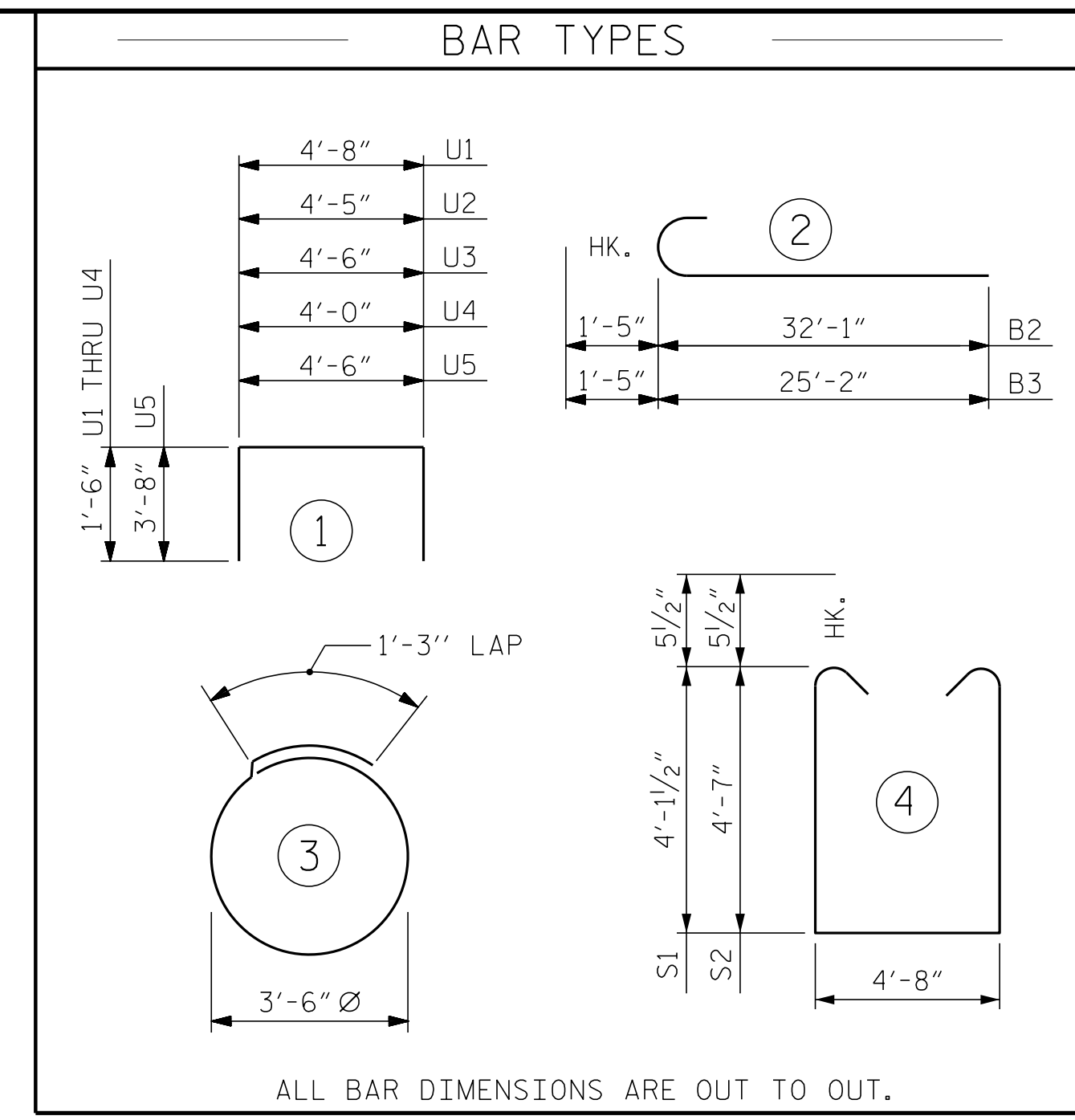
DRAWN BY: D. HODGE DATE: 1/19
 CHECKED BY: G.M. GILLAND DATE: 1/19



SECTION A-A

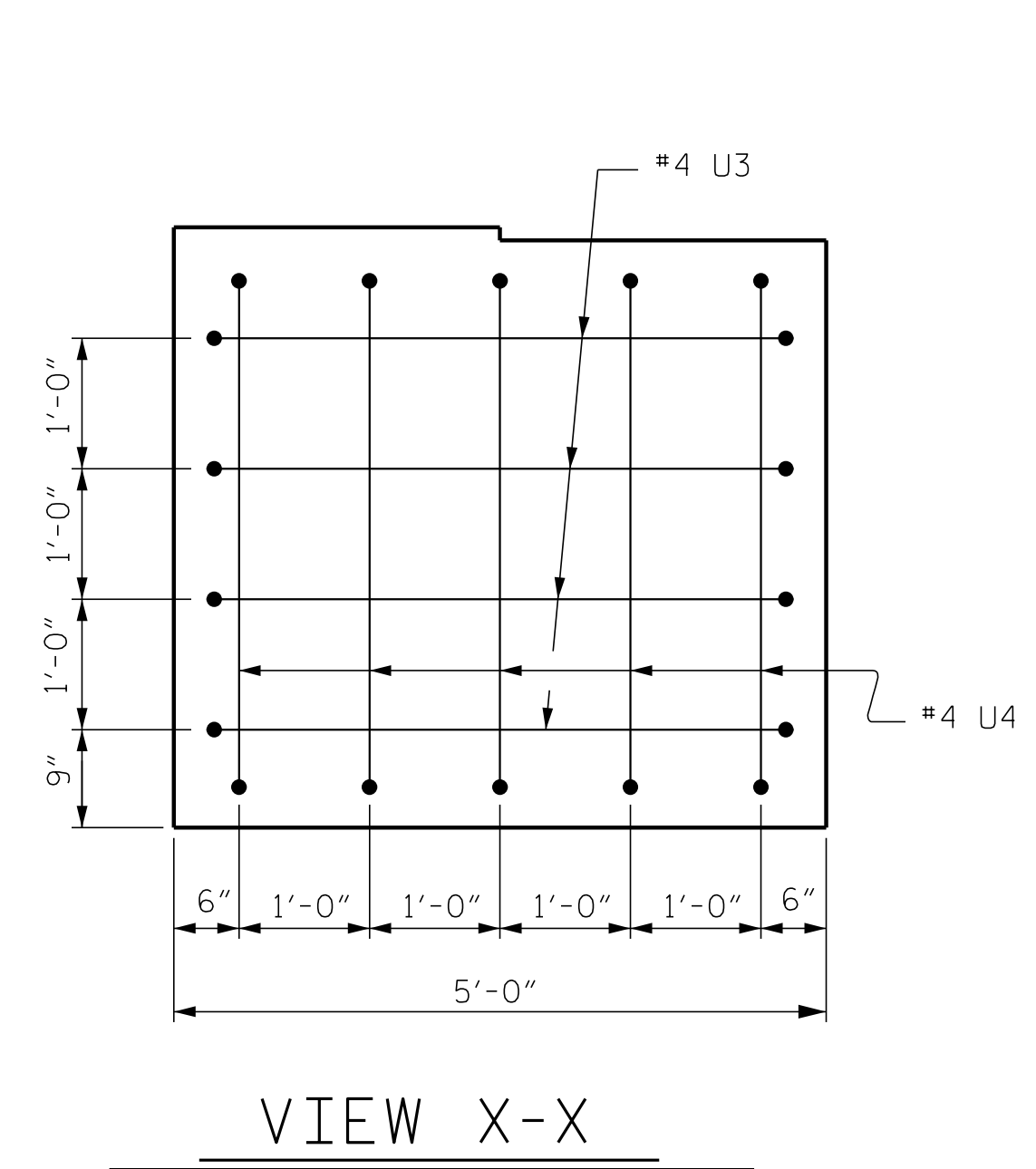


SECTION B-B

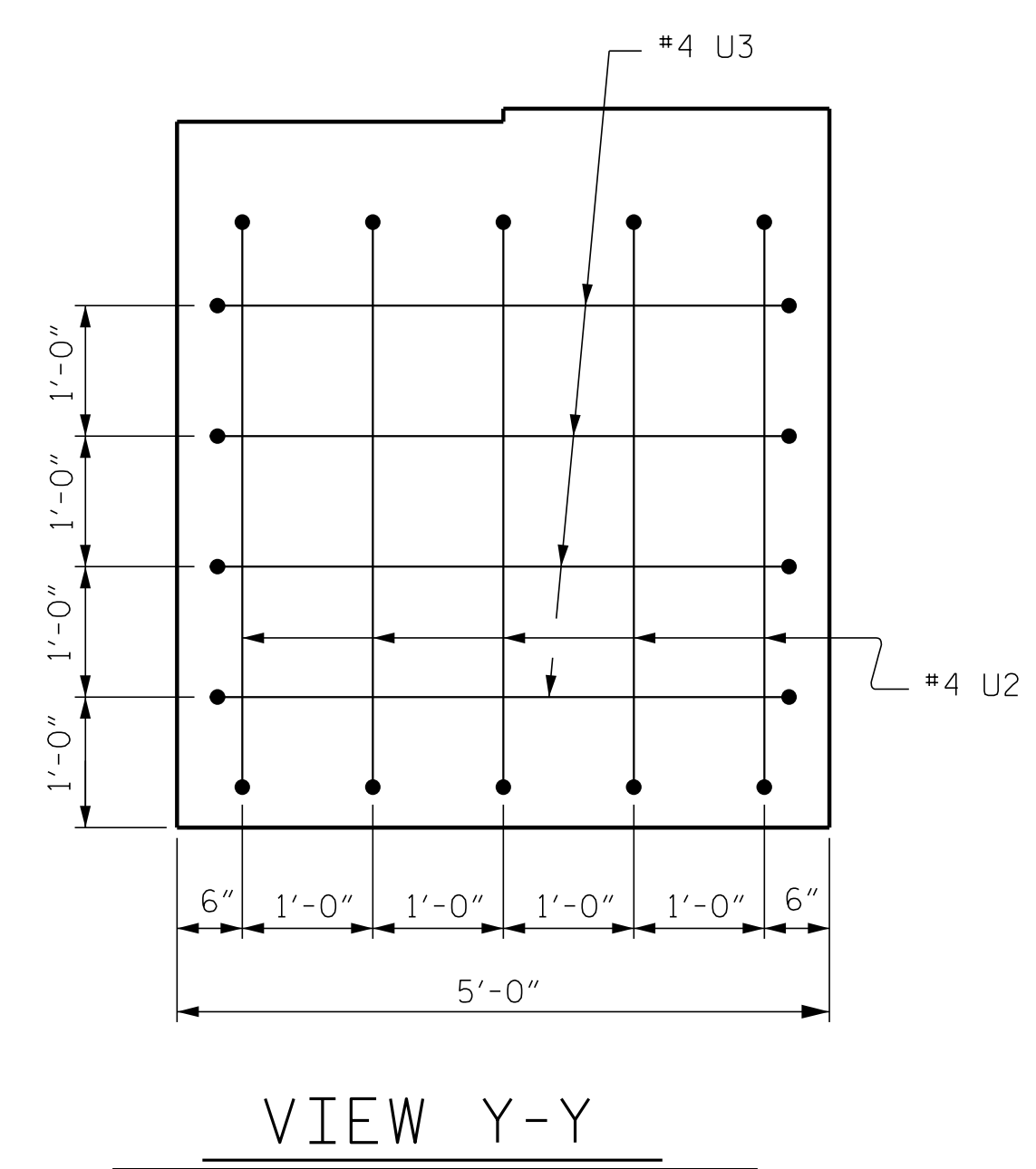


NOTES:
 STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 GALVANIZE THE TOP 58 FEET OF EACH BENT No.1 PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

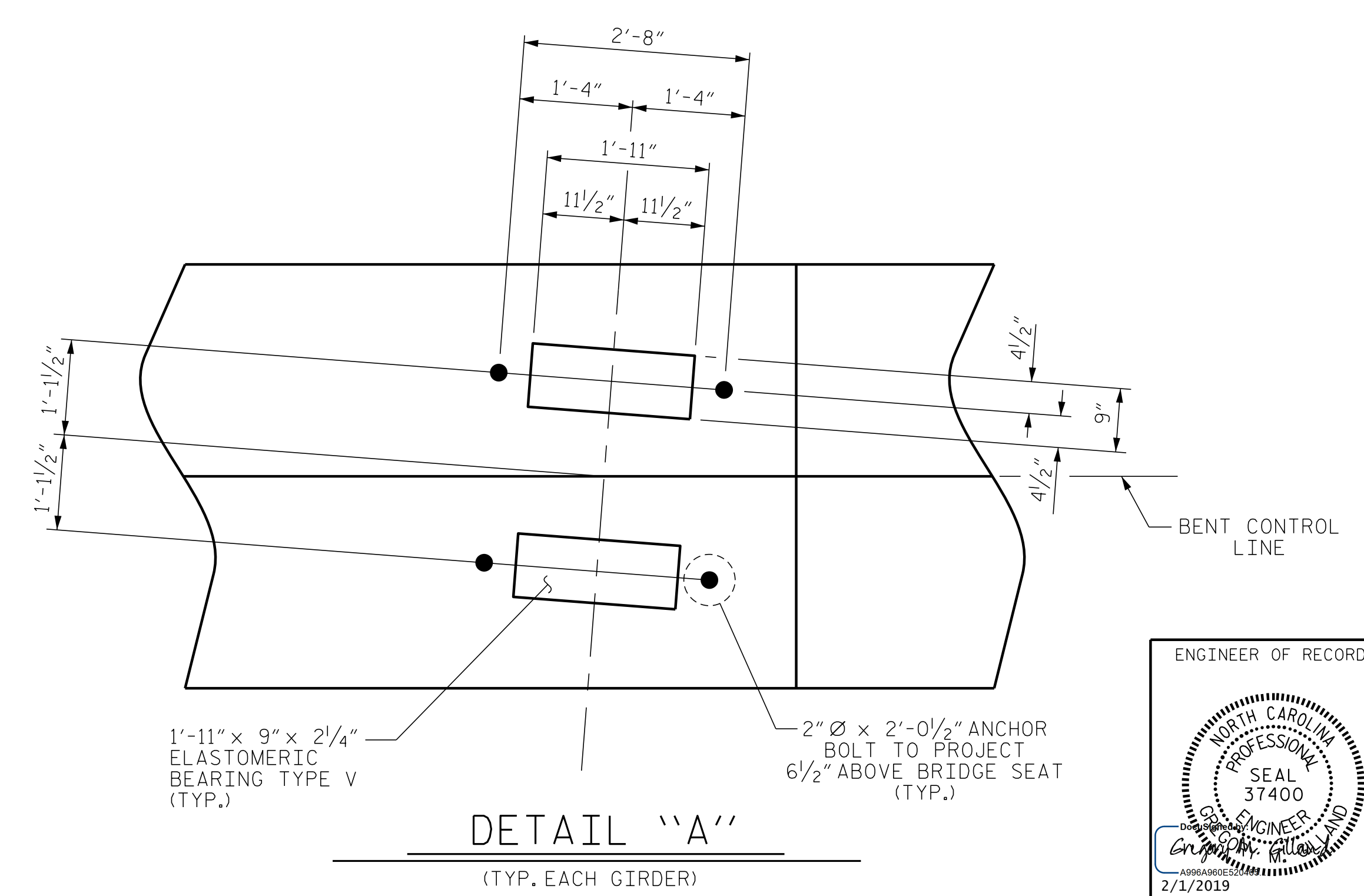
BILL OF MATERIAL					
BENT No. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	46'-2"	1192
B2	6	#10	2	33'-6"	865
B3	6	#10	2	26'-7"	686
B4	6	#5	STR	46'-2"	289
B5	8	#4	STR	24'-4"	130
B6	15	#4	STR	4'-8"	47
B7	6	#4	STR	4'-2"	17
S1	18	#5	4	13'-10"	260
S2	20	#5	4	14'-9"	308
S3	28	#4	3	12'-3"	229
U1	35	#4	1	7'-8"	179
U2	5	#4	1	7'-5"	25
U3	8	#4	1	7'-6"	40
U4	5	#4	1	7'-0"	23
U5	2	#9	1	11'-10"	80
REINFORCING STEEL					4,370 LBS.
CLASS A CONCRETE					40.0 C.Y.
NOTE: THE VOLUME OF CONCRETE DISPLACED BY THE PIPE PILES HAS BEEN DEDUCTED FROM THE TOTAL.					
PP 30" x 0.50 GALVANIZED STEEL PILES					
NO: 7					LIN. FT. = 819
PILE REDRIVES					4 EA.
PILE DRIVING EQUIPMENT SETUP FOR PP 30" x 0.50 STEEL PILES					7 EA.



VIEW X-X



VIEW Y-Y



DETAIL "A"
(TYP. EACH GIRDER)

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 2 OF 2

ENGINEER OF RECORD:

 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
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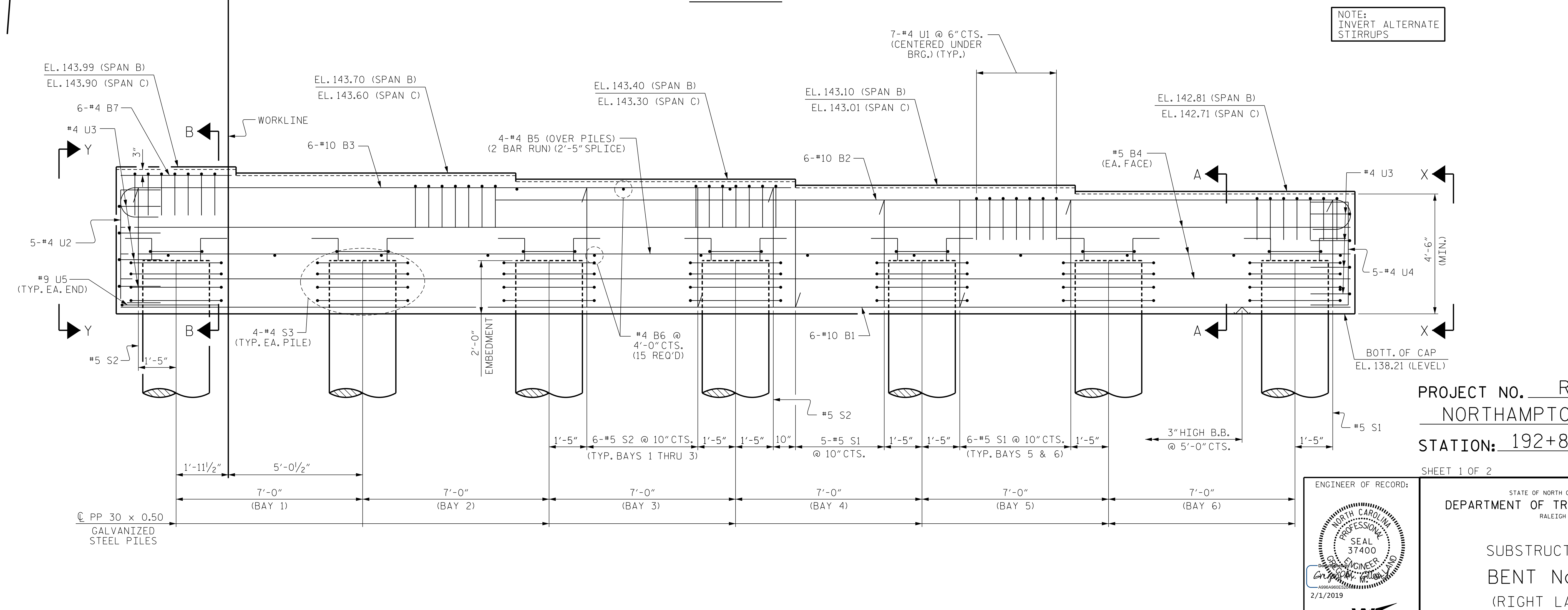
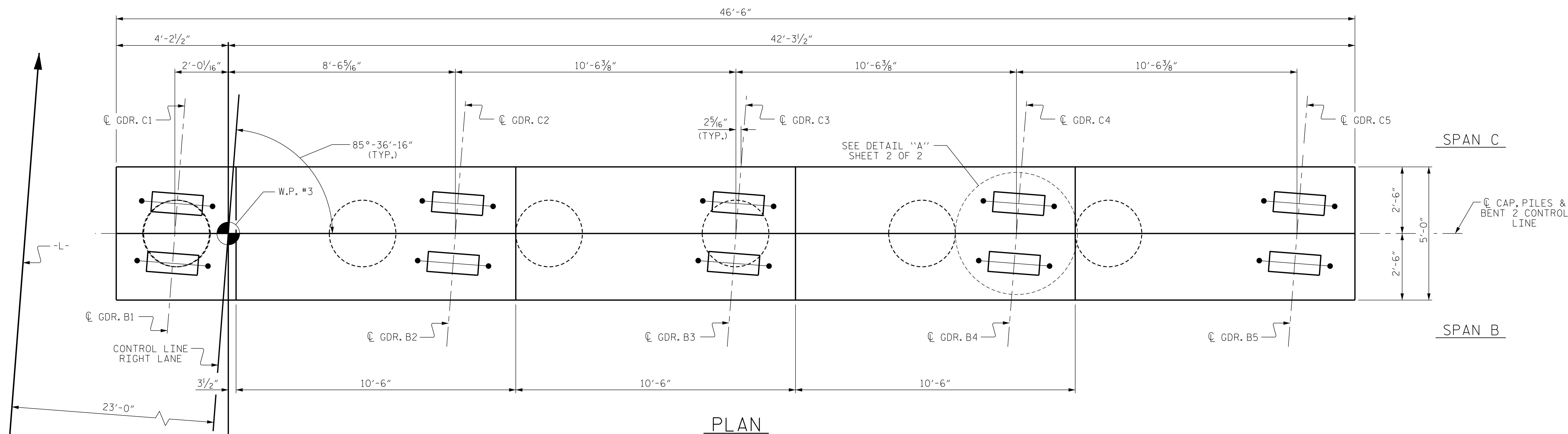
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT No. 1 (RIGHT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S4-28
 TOTAL SHEETS 38

DRAWN BY: D. HODGE DATE: 1/19
 CHECKED BY: G.M. GILLAND DATE: 1/19

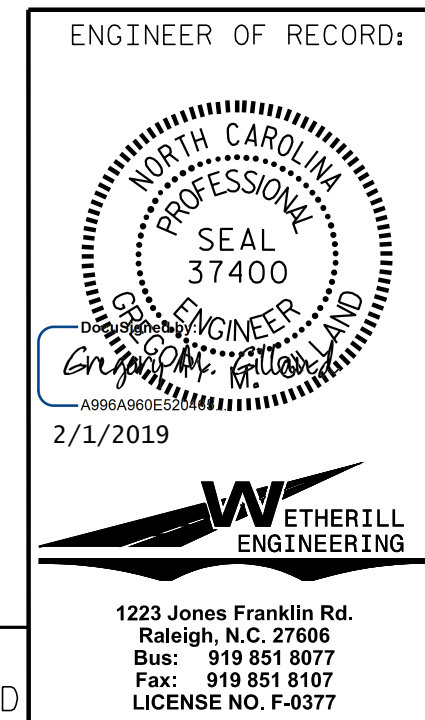
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NOTE:
INVERT ALTERNATE
STIRRUPS

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 1 OF 2



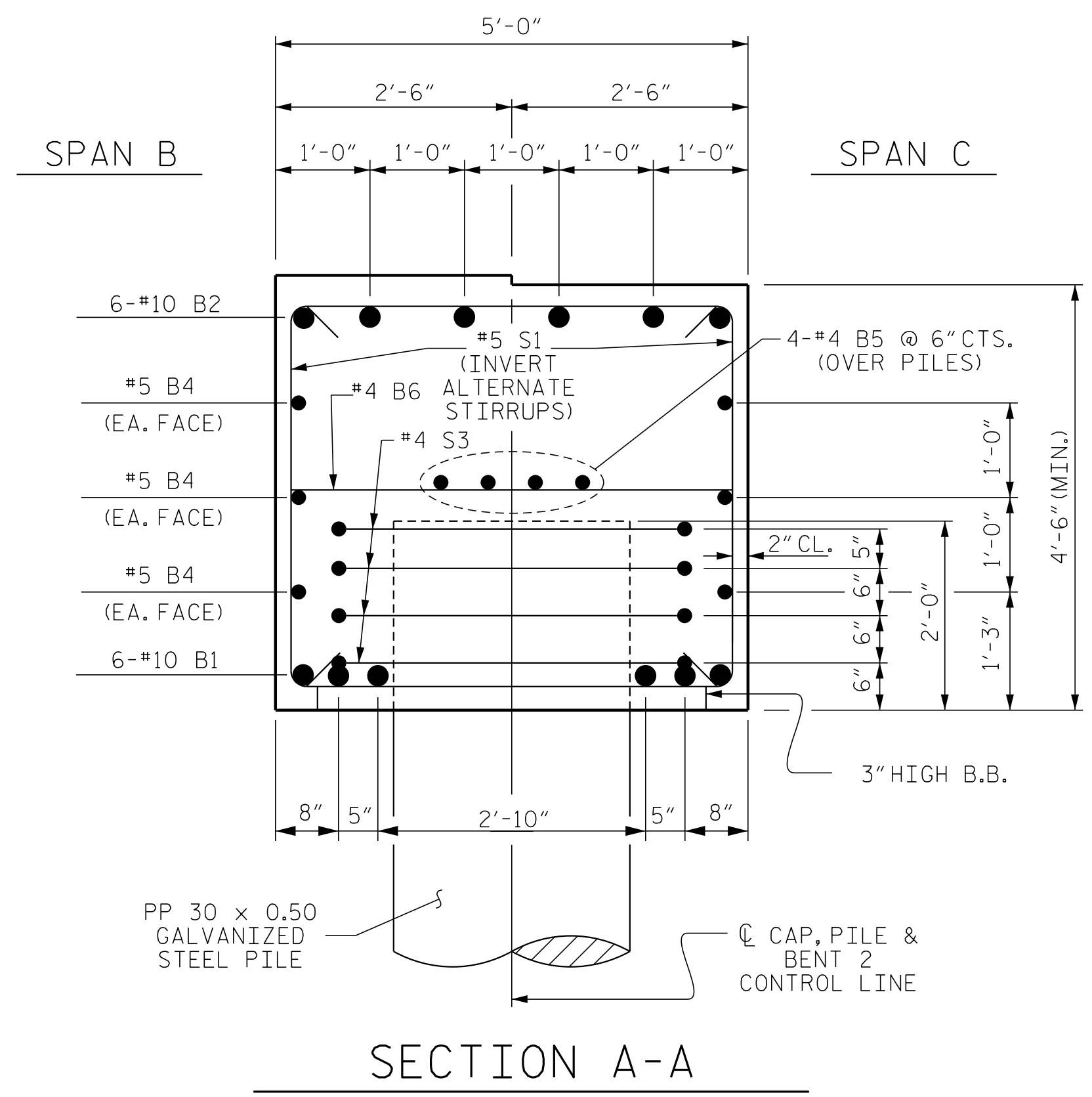
STATE OF NORTH CAROLINA		DEPARTMENT OF TRANSPORTATION		RALEIGH	
SUBSTRUCTURE					
BENT No. 2					
(RIGHT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S4-29
					TOTAL SHEETS 38

DRAWN BY: D. HODGE DATE: 1/19
 CHECKED BY: G.M. GILLAND DATE: 1/19

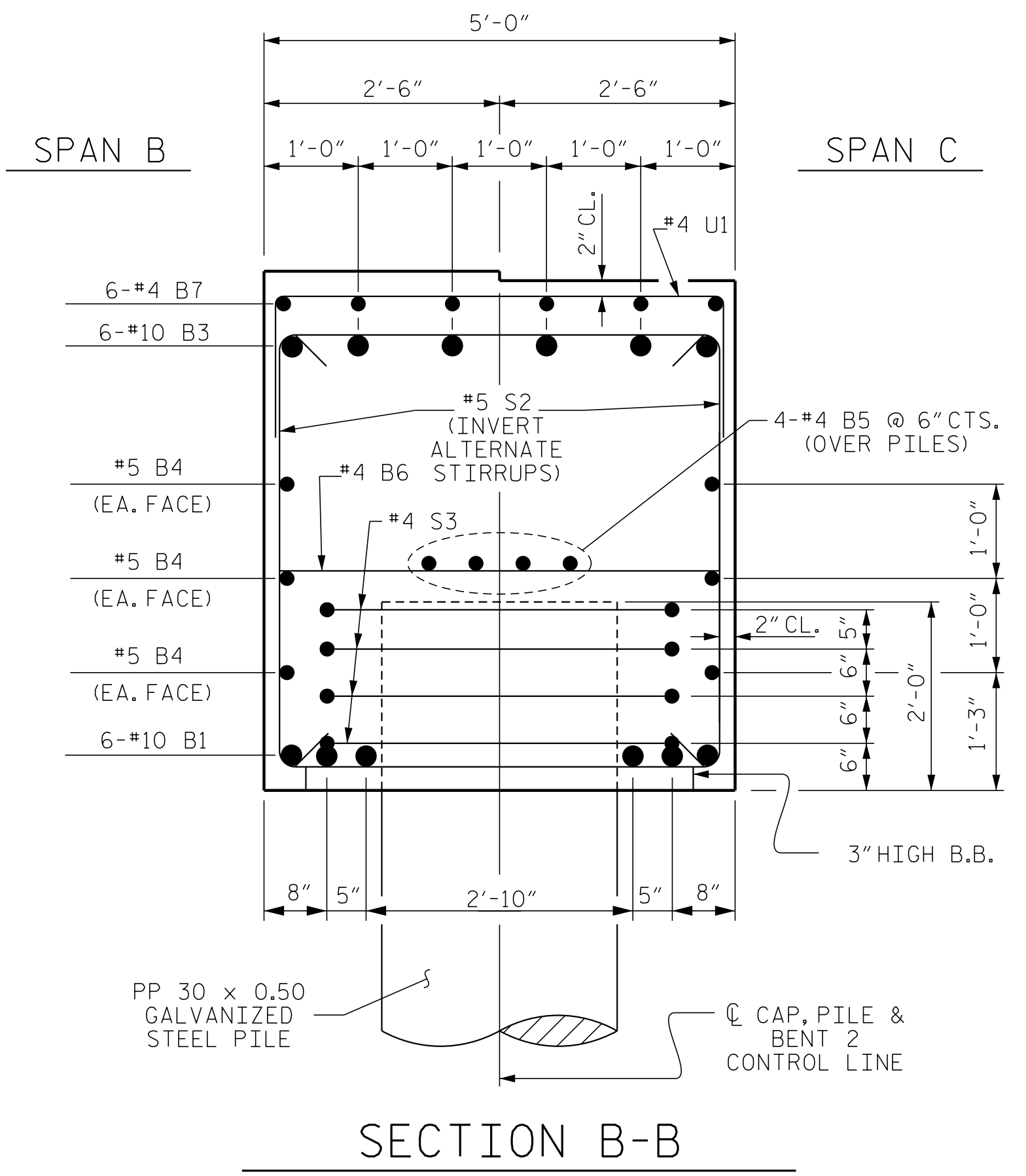
FOR STEEL PIPE PILE REINFORCING STEEL, CONCRETE QUANTITIES & SPLICE DETAIL, SEE "30" STEEL PIPE PILE" STANDARD, FOR SECTION A-A, SECTION B-B AND DETAIL "A", SEE SHEET 2 OF 2

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

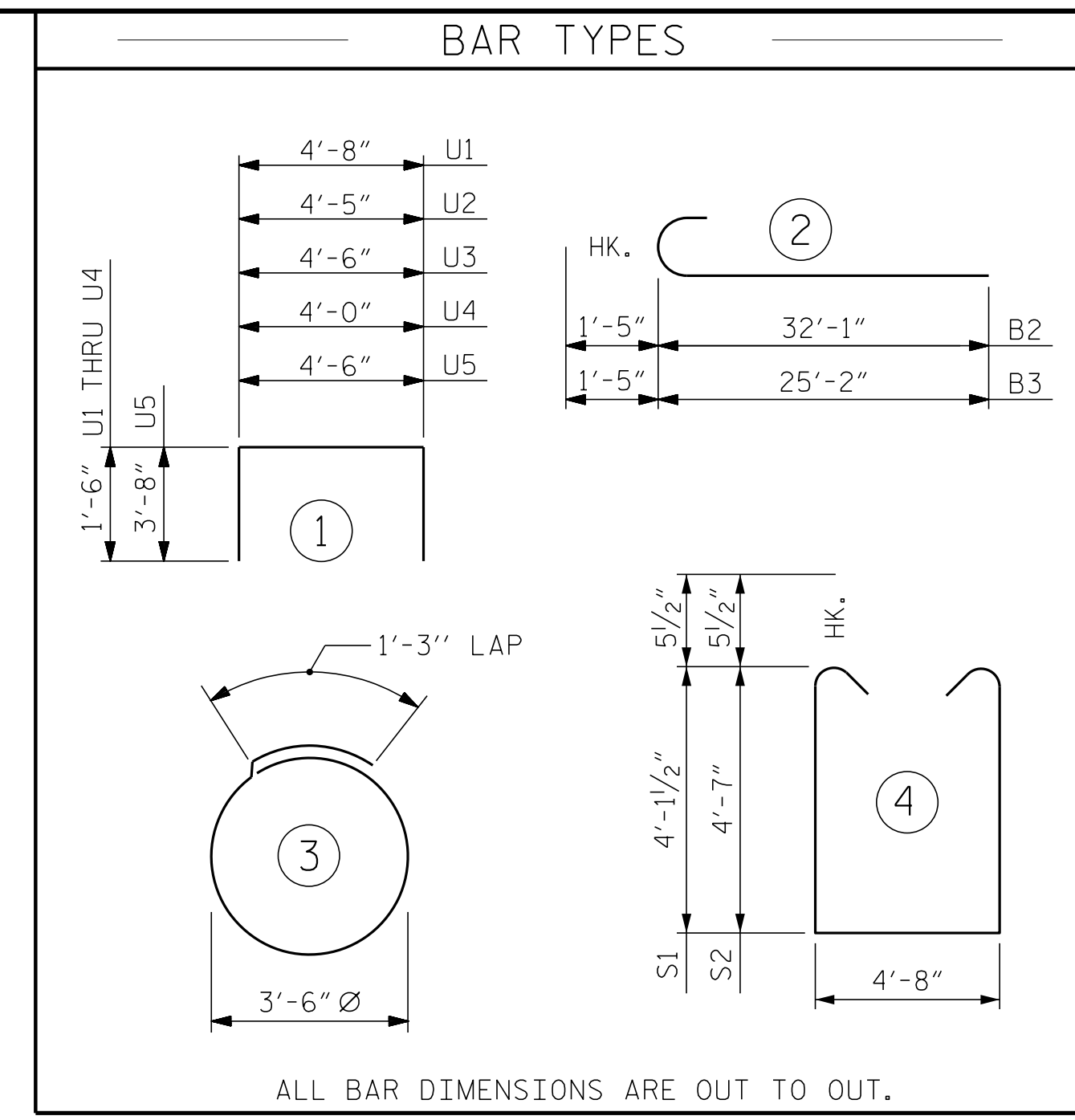
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SECTION A-A

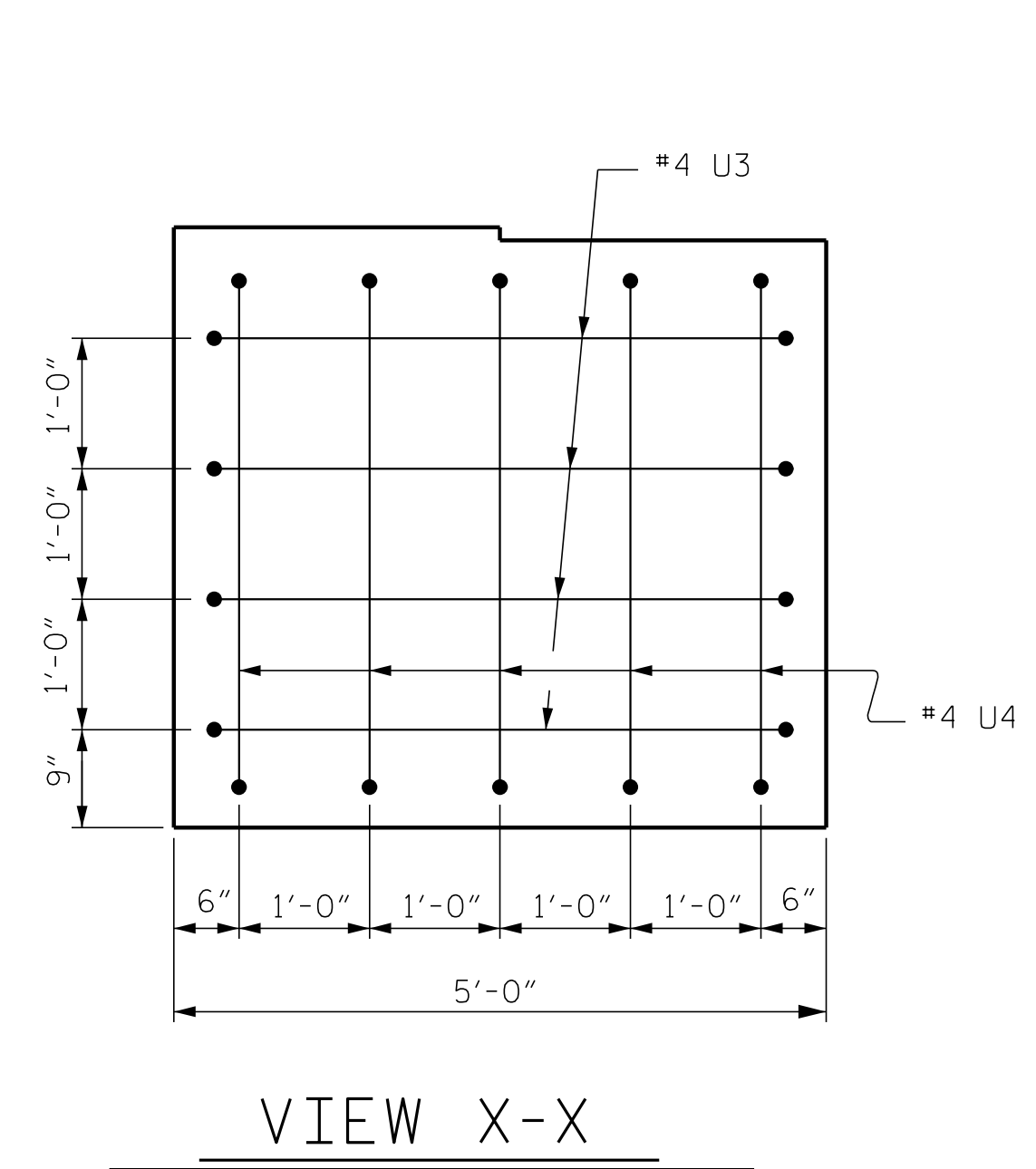


SECTION B-B

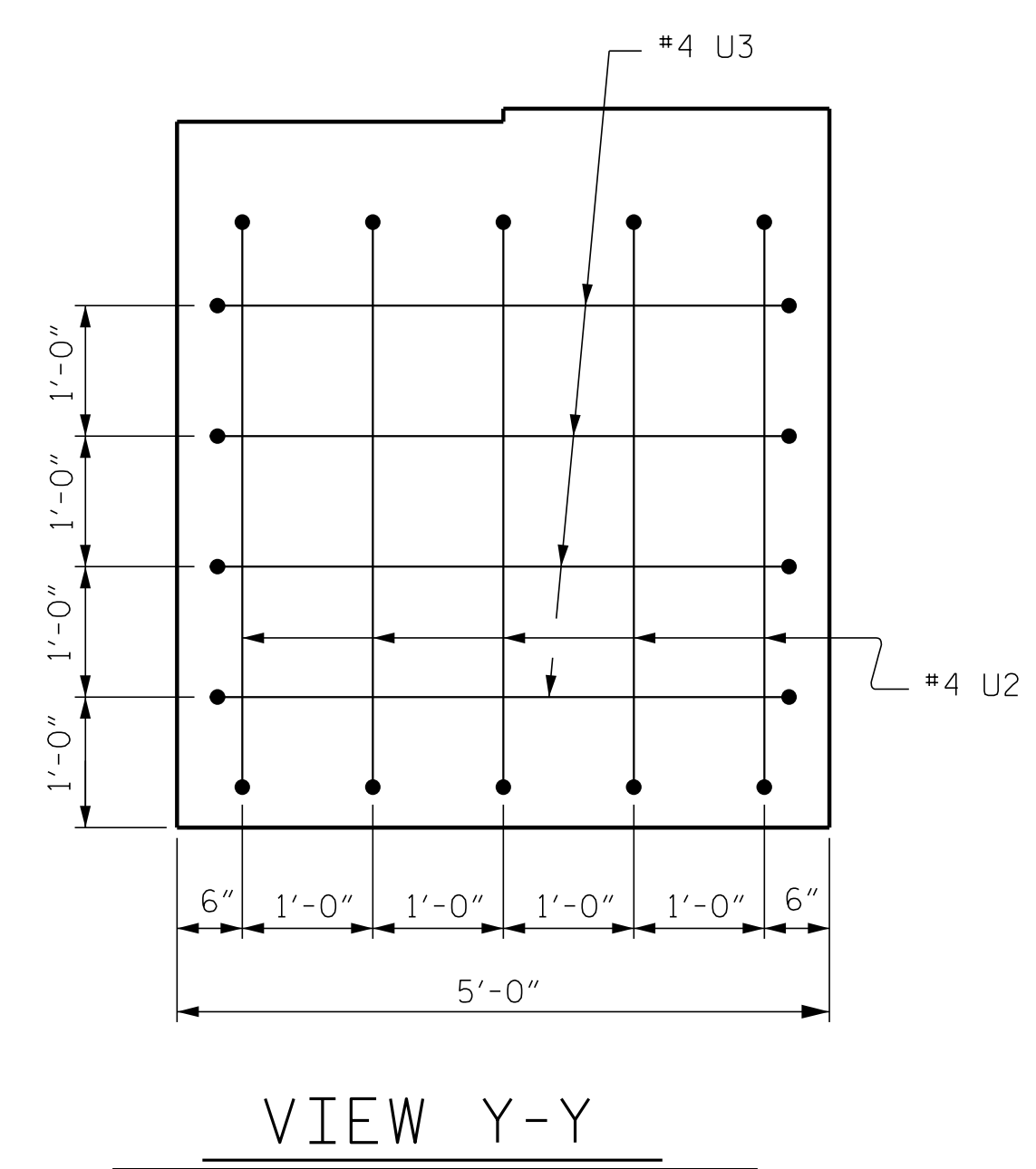


NOTES:
 STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 GALVANIZE THE TOP 54 FEET OF EACH BENT No. 2 PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

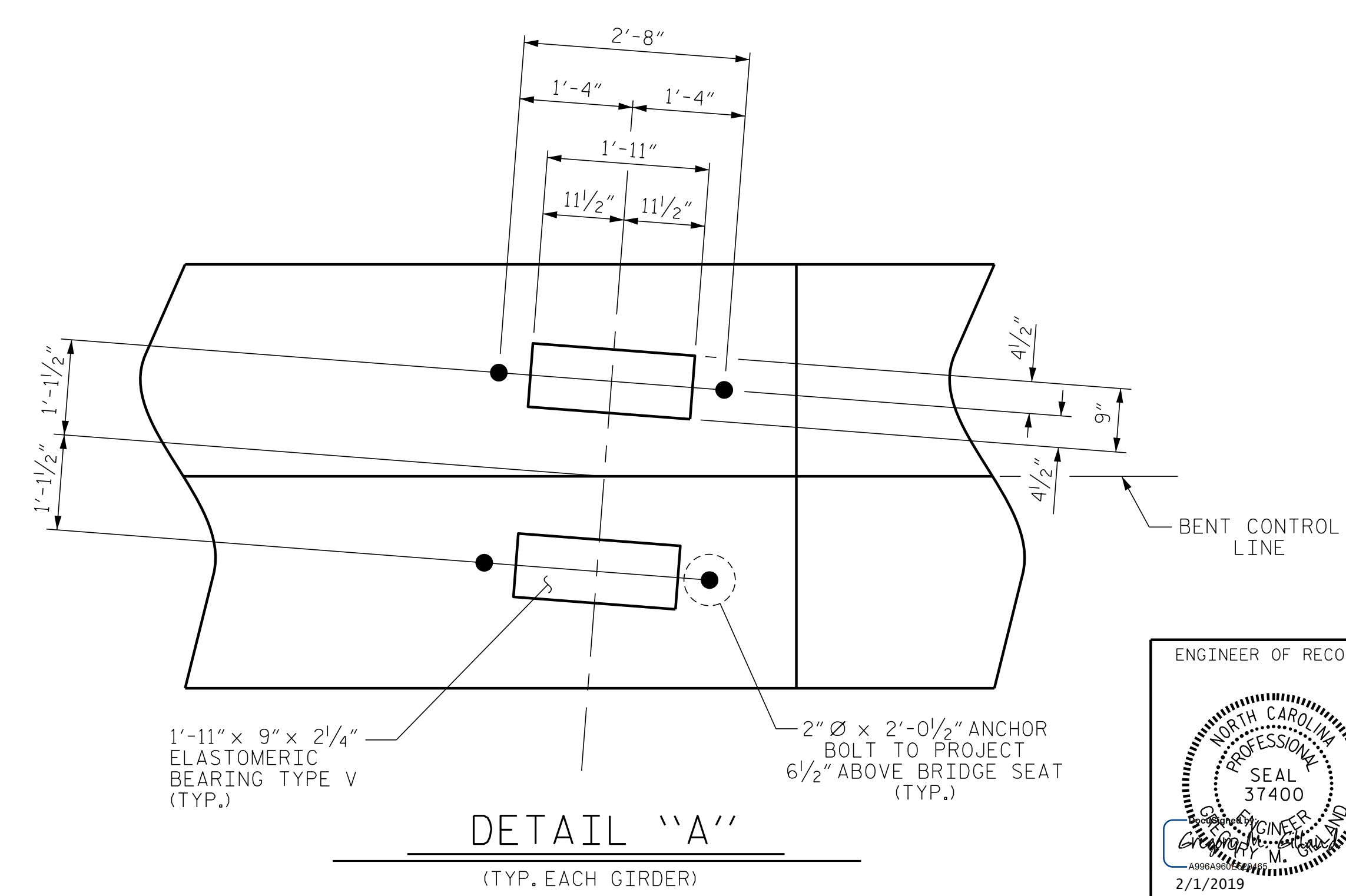
BILL OF MATERIAL					
BENT No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	46'-2"	1192
B2	6	#10	2	33'-6"	865
B3	6	#10	2	26'-7"	686
B4	6	#5	STR	46'-2"	289
B5	8	#4	STR	24'-4"	130
B6	15	#4	STR	4'-8"	47
B7	6	#4	STR	4'-2"	17
S1	18	#5	4	13'-10"	260
S2	20	#5	4	14'-9"	308
S3	28	#4	3	12'-3"	229
U1	35	#4	1	7'-8"	179
U2	5	#4	1	7'-5"	25
U3	8	#4	1	7'-6"	40
U4	5	#4	1	7'-0"	23
U5	2	#9	1	11'-10"	80
REINFORCING STEEL					4,370 LBS.
CLASS A CONCRETE					40.0 C.Y.
NOTE: THE VOLUME OF CONCRETE DISPLACED BY THE PIPE PILES HAS BEEN DEDUCTED FROM THE TOTAL.					
PP 30" x 0.50 GALVANIZED STEEL PILES					
NO: 7					LIN. FT. = 854
PILE REDRIVES					4 EA.
PILE DRIVING EQUIPMENT SETUP FOR PP 30" x 0.50 STEEL PILES					7 EA.



VIEW X-X

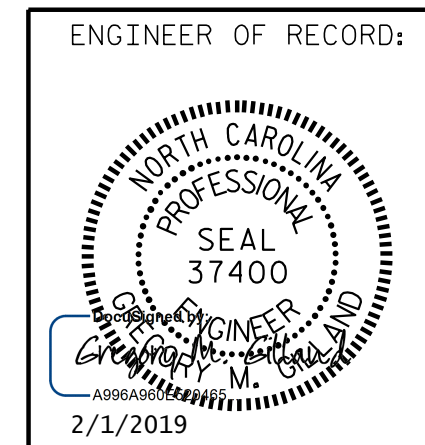


VIEW Y-Y



DETAIL "A"
(TYP. EACH GIRDER)

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 2
 (RIGHT LANE)

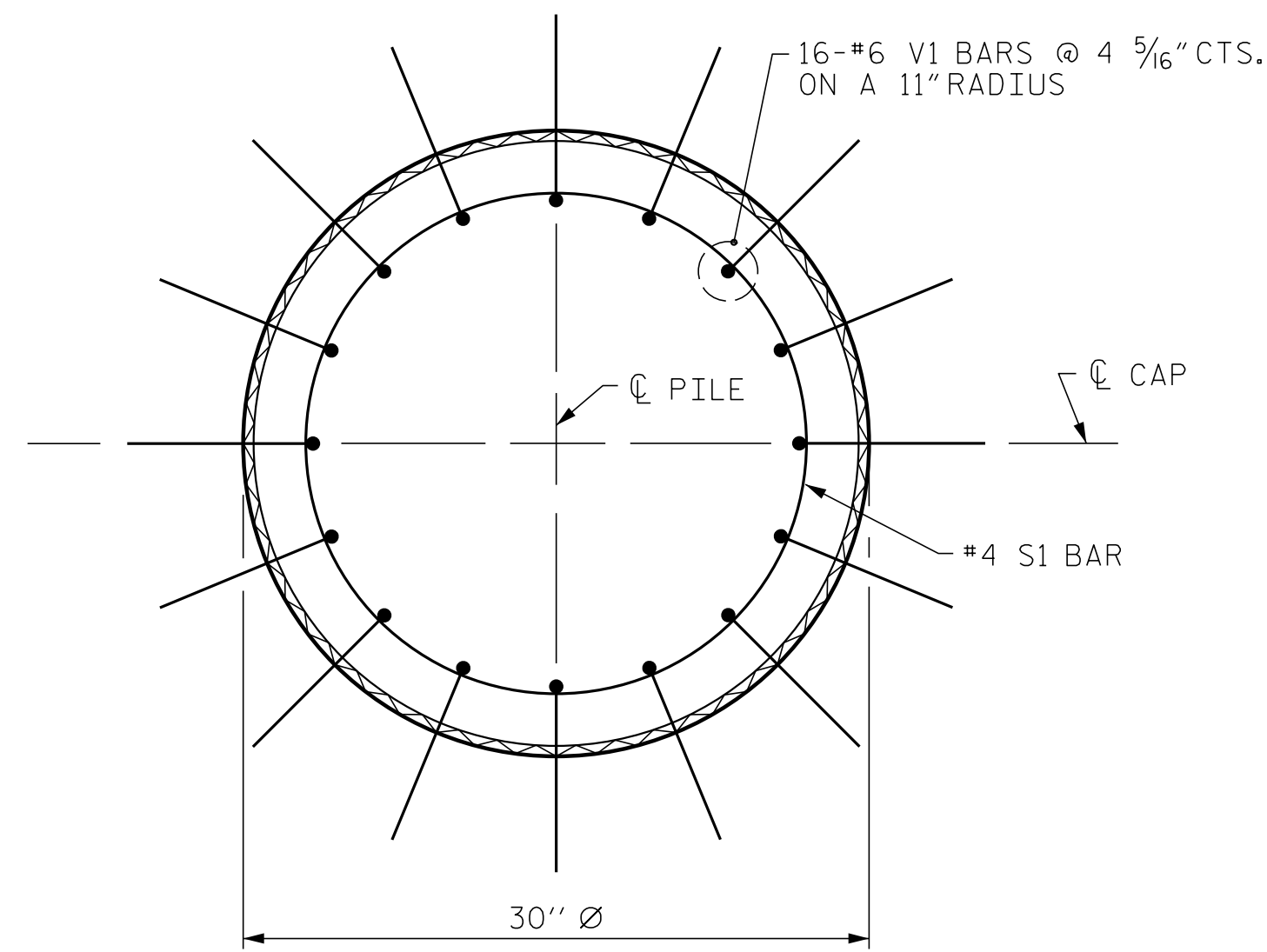
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			38

DRAWN BY: D. HODGE DATE: 1/19
 CHECKED BY: G.M. GILLAND DATE: 1/19

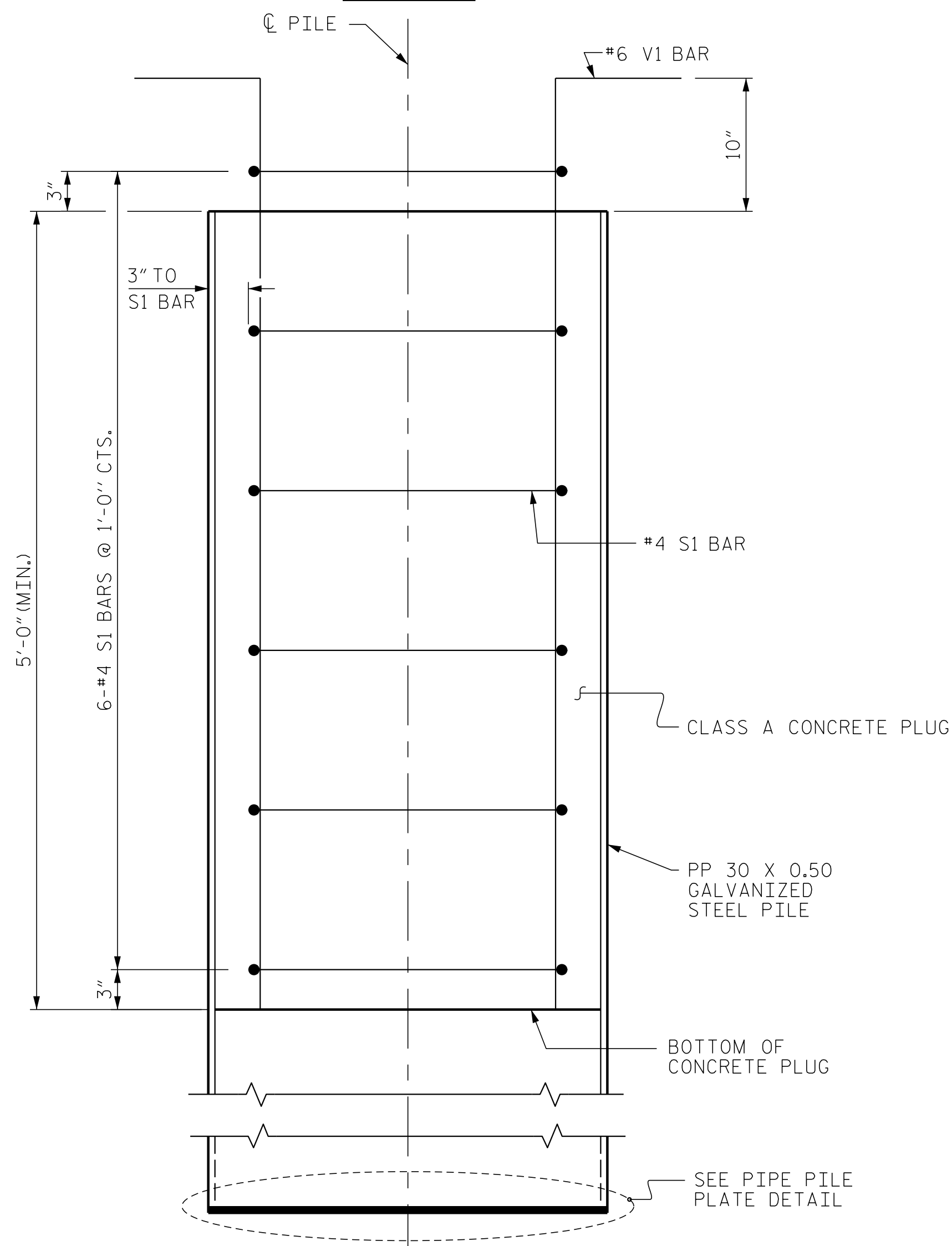
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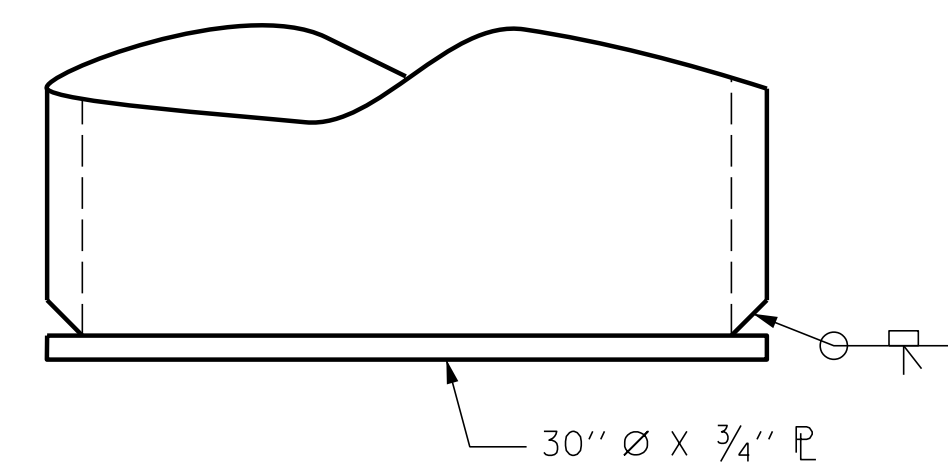


PLAN

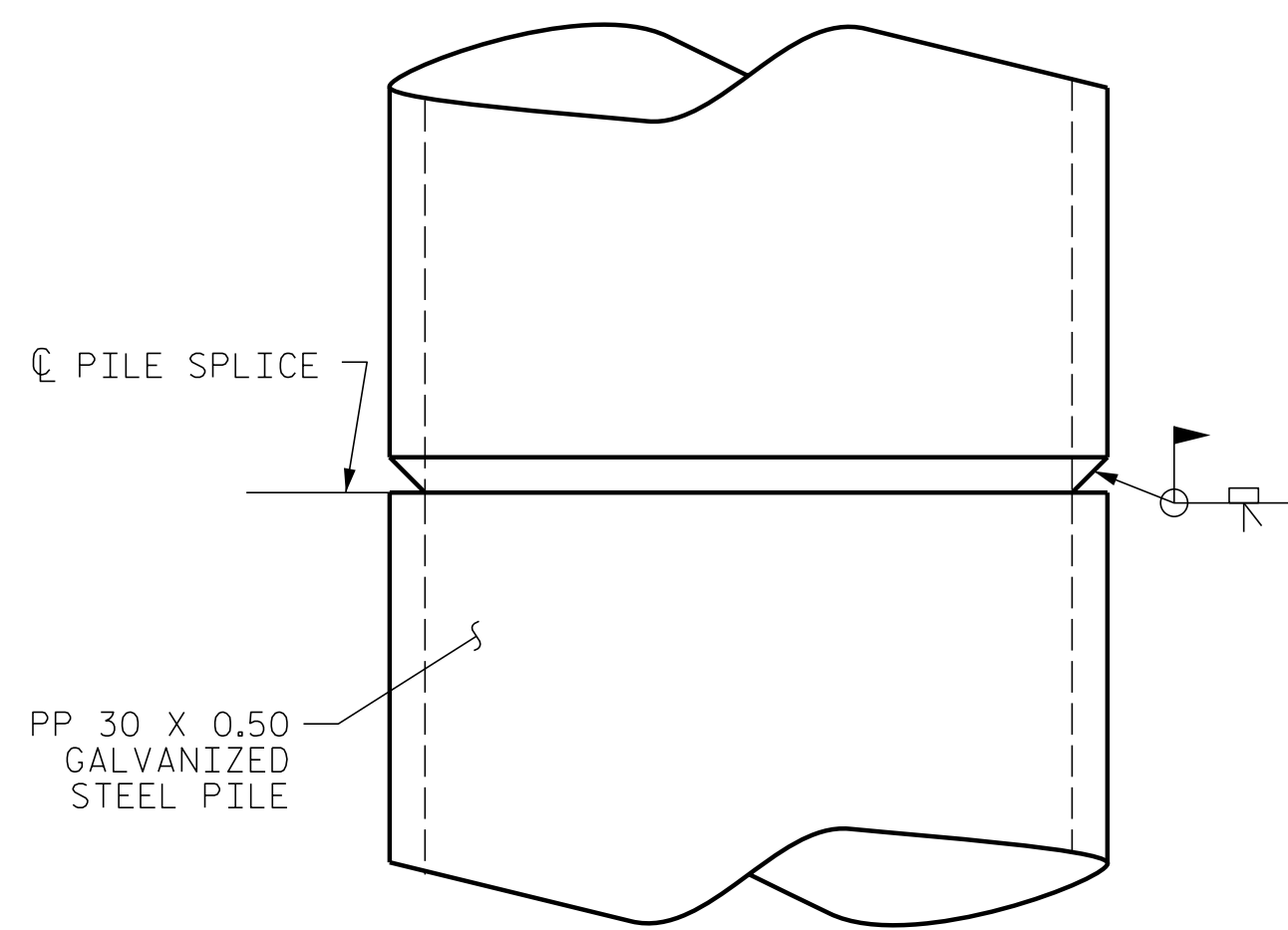


ELEVATION

PP 30 X 0.50 GALVANIZED STEEL PILE
(CLOSED END)



PIPE PILE PLATE DETAIL



PIPE PILE SPLICE DETAIL

NOTES

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

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

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

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

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

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

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

THE REINFORCING STEEL, CLASS A CONCRETE, AND GALVANIZING ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR PP 30 X 0.50 GALVANIZED STEEL PILES.

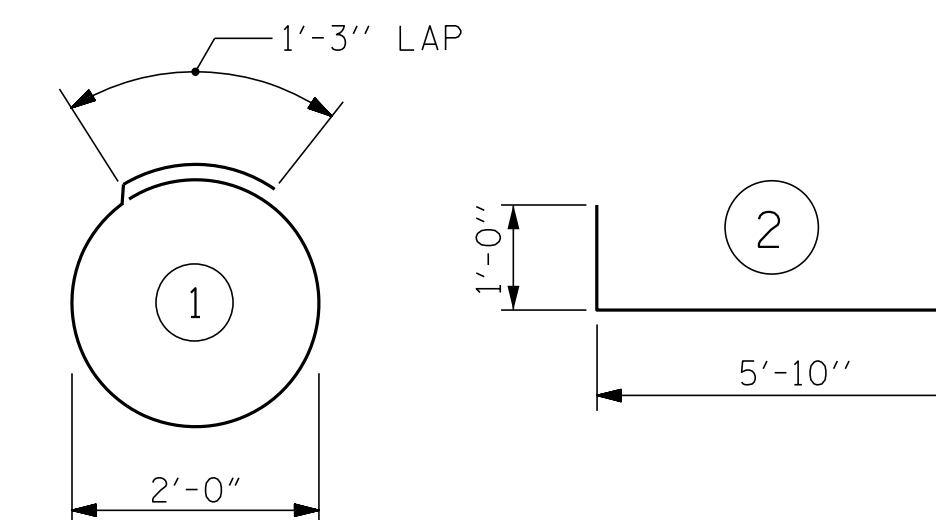
BILL OF MATERIAL FOR ONE
PP 30 X 0.50 GALVANIZED STEEL PILE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	6	#4	1	7'-7"	30
V1	16	#6	2	6'-10"	164
REINFORCING STEEL =				194	lbs

CLASS A CONCRETE

5'-0" MINIMUM PLUG 0.8 CY

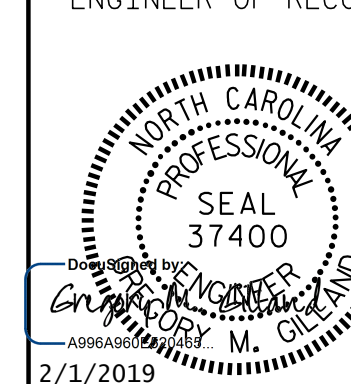
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 192+85.76 -L-

ENGINEER OF RECORD:



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Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
30" STEEL PIPE PILE
(RIGHT LANE)

REVISIONS

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

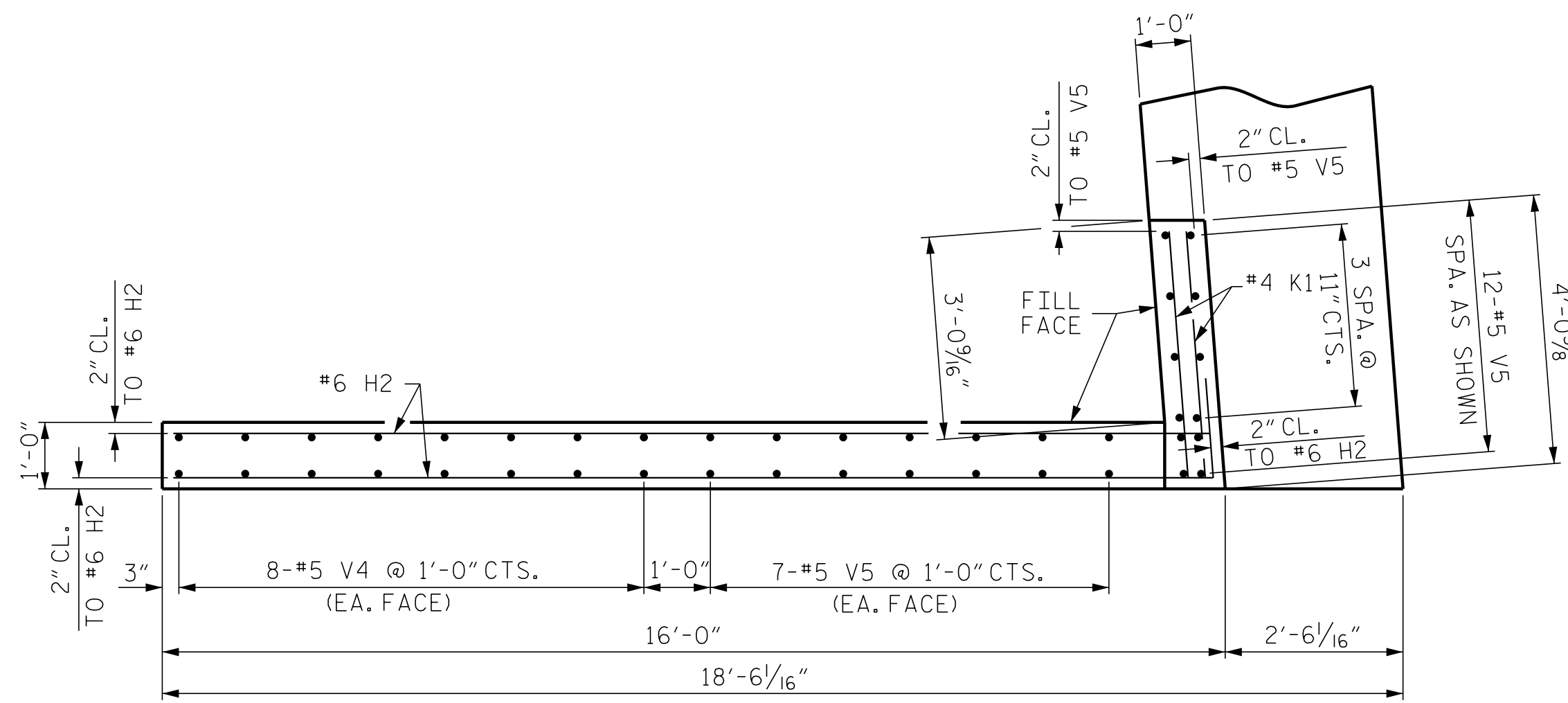
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S4-31	TOTAL SHEETS
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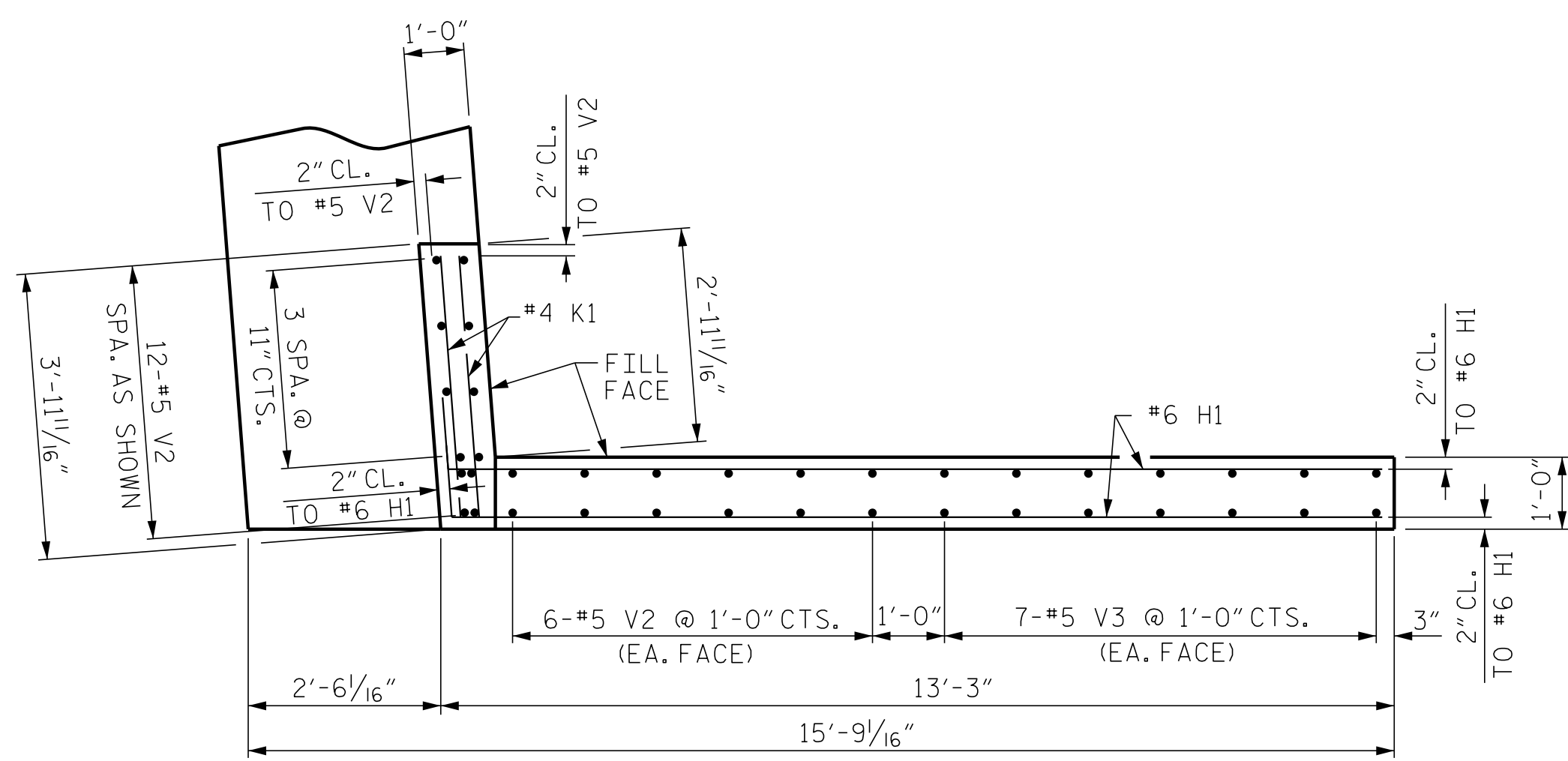
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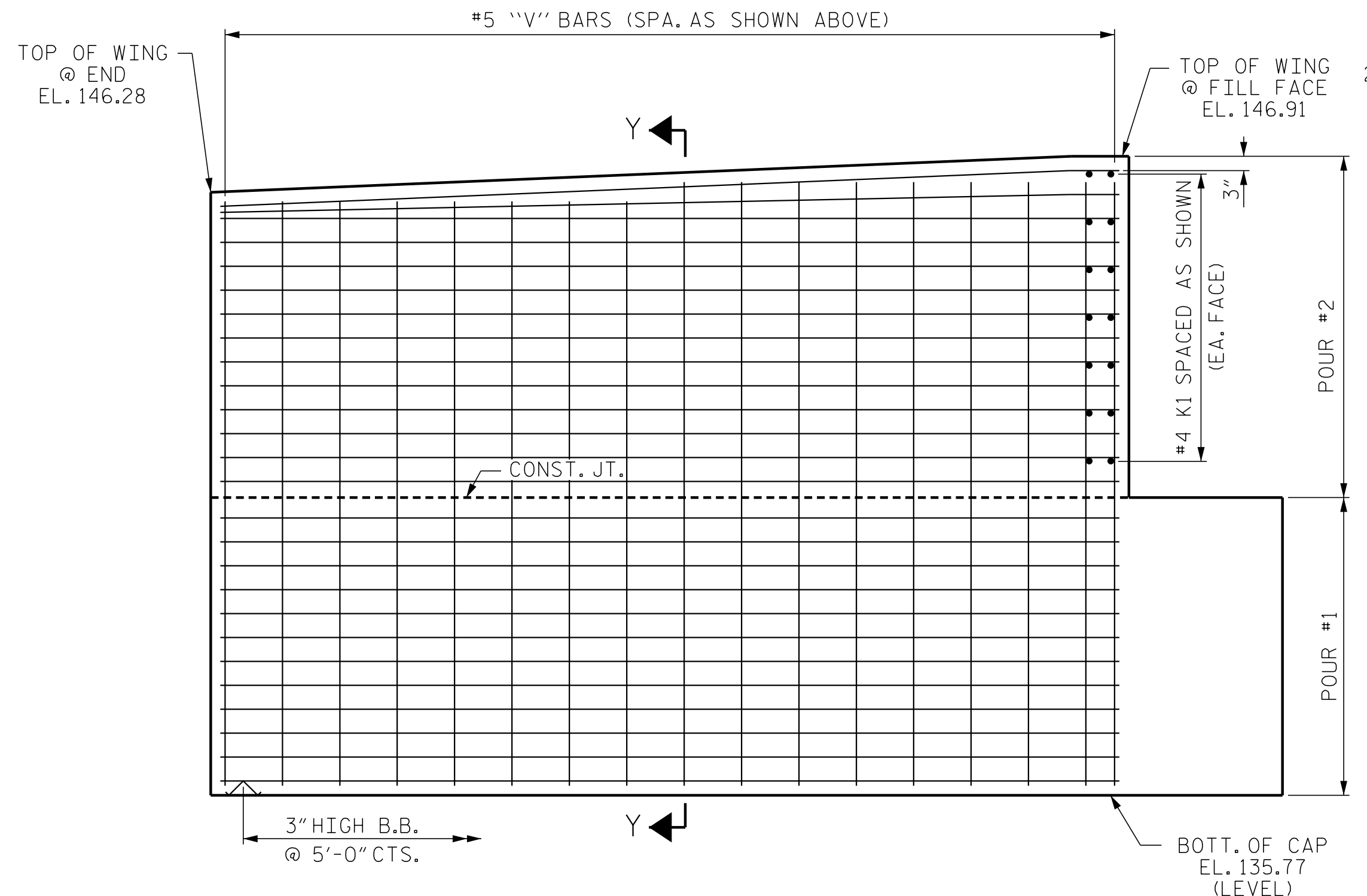
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CHECKED BY : G.M. GILLAND	DATE : 1/19
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CHECKED BY : GM 9/05	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC



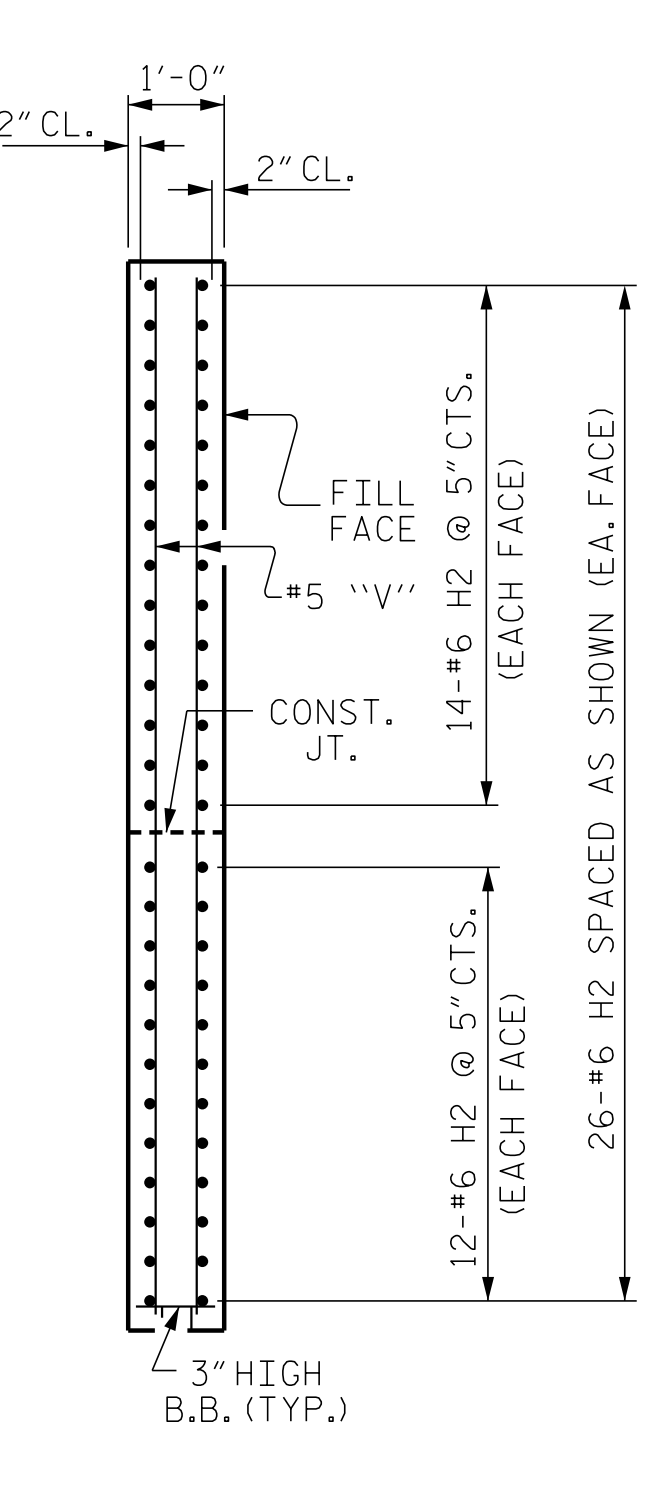
PLAN OF WING - (W1)



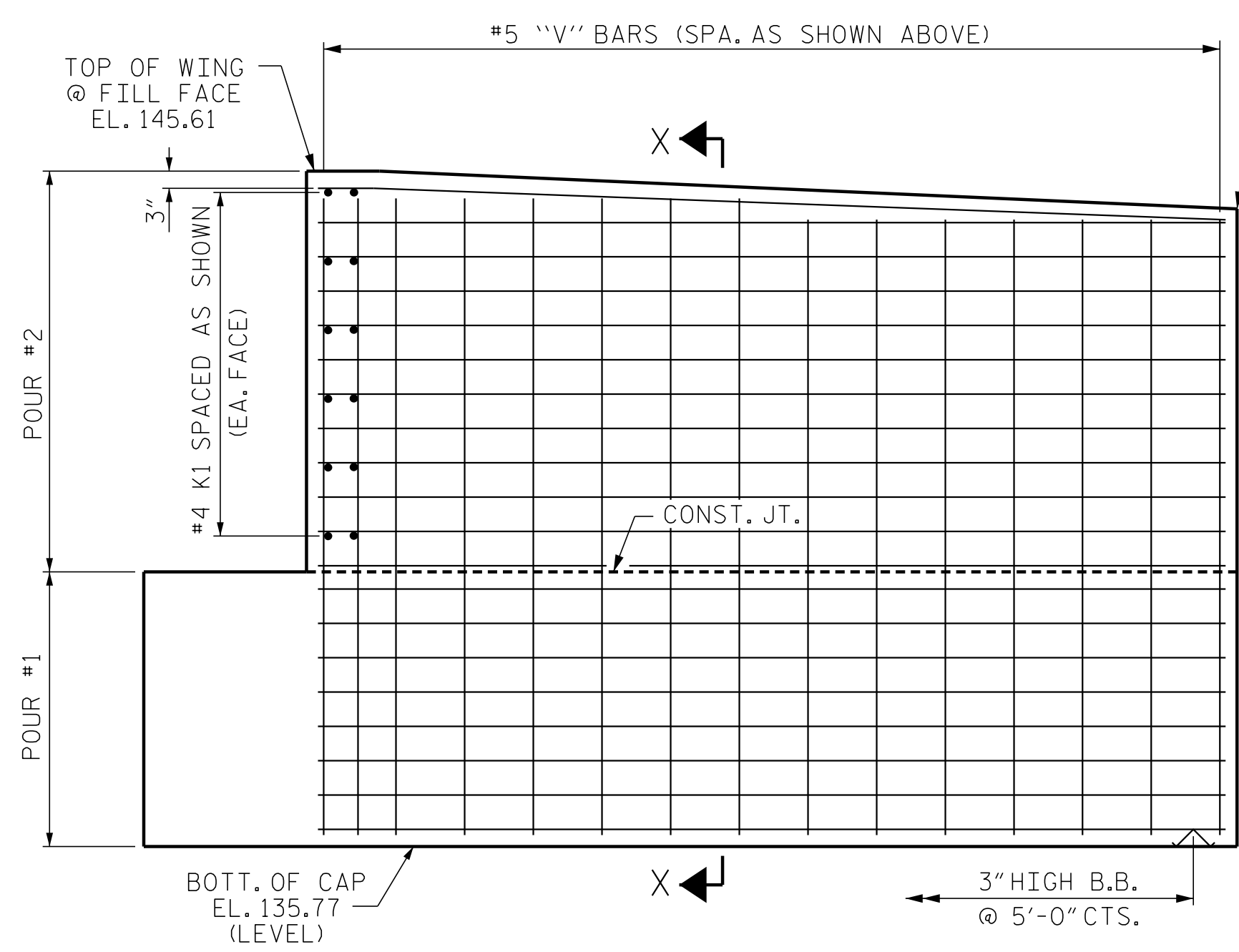
PLAN OF WING - (W2)



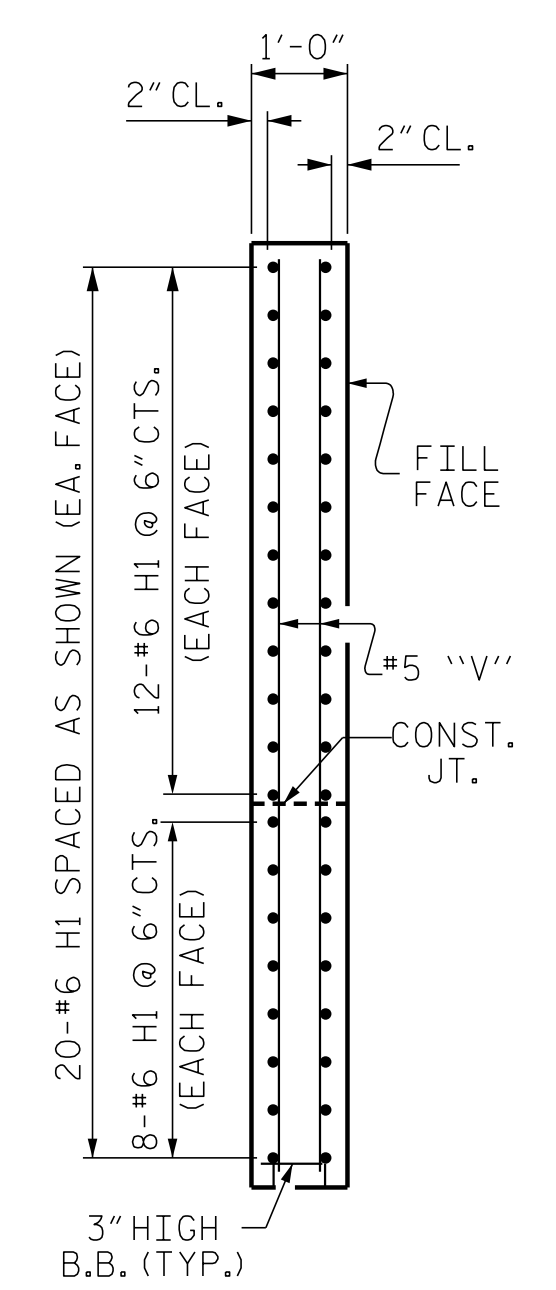
ELEVATION OF WING - (W1)



SECTION Y-Y



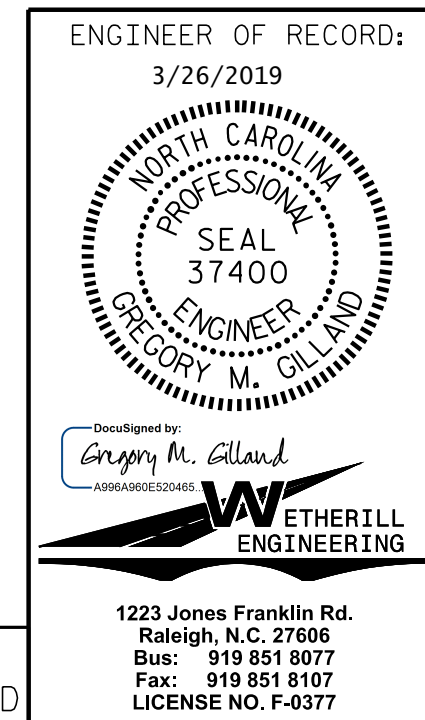
ELEVATION OF WING - (W2)



SECTION X-X

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-

SHEET 2 OF 3

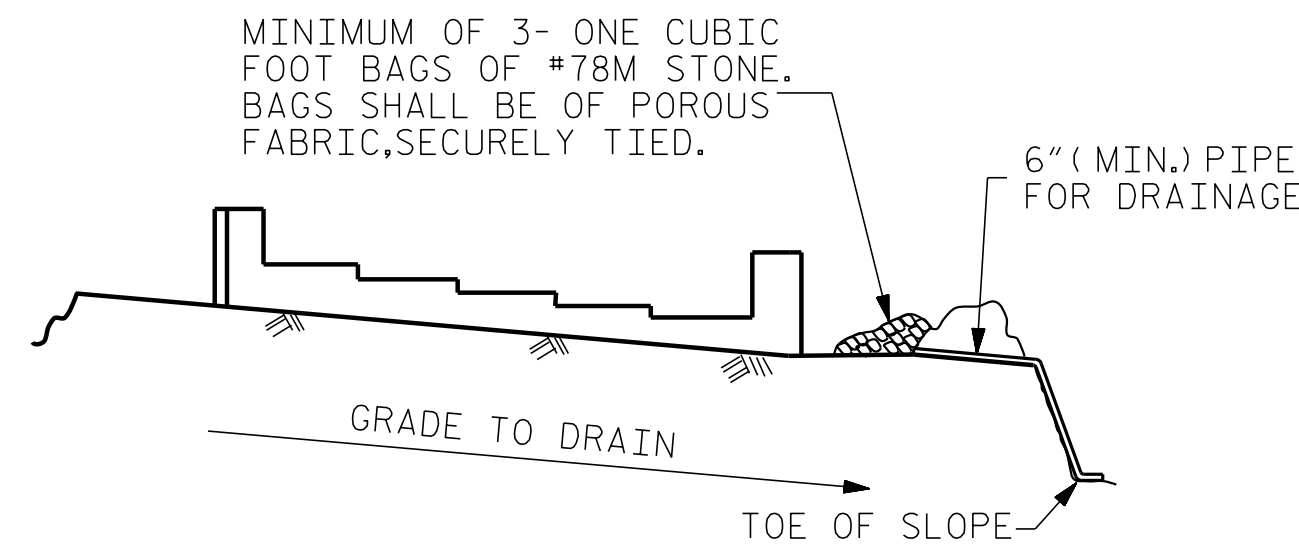


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		SUBSTRUCTURE END BENT No. 2 (RIGHT LANE)	
REVISIONS			
NO.	BY:	DATE:	SHEET NO.
1			S4-33
2			TOTAL SHEETS 38

DOCUMENT NOT CONSIDERED FINAL
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DRAWN BY: D. HODGE DATE: 11/18
 CHECKED BY: G.M. GILLAND DATE: 11/18

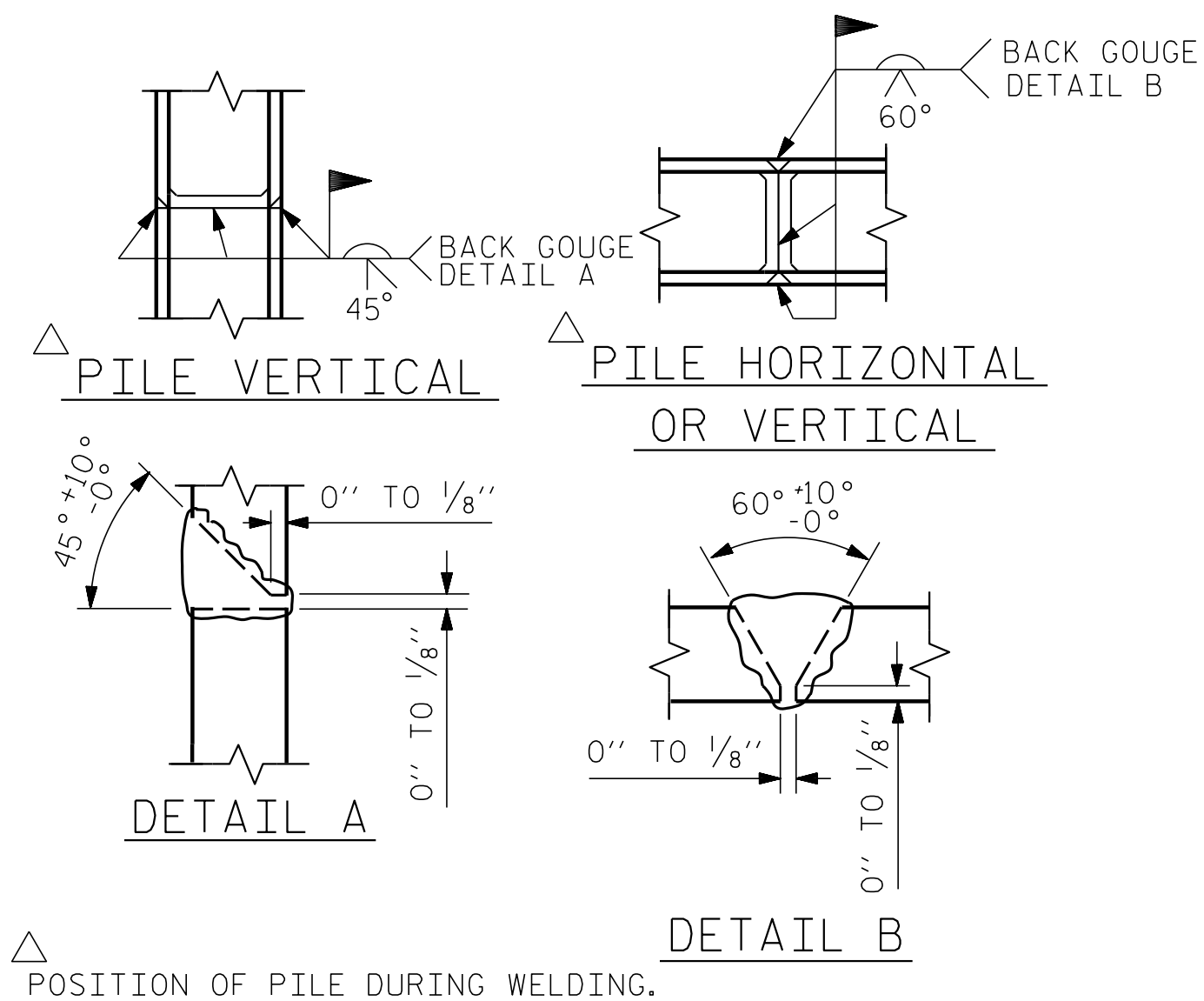


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

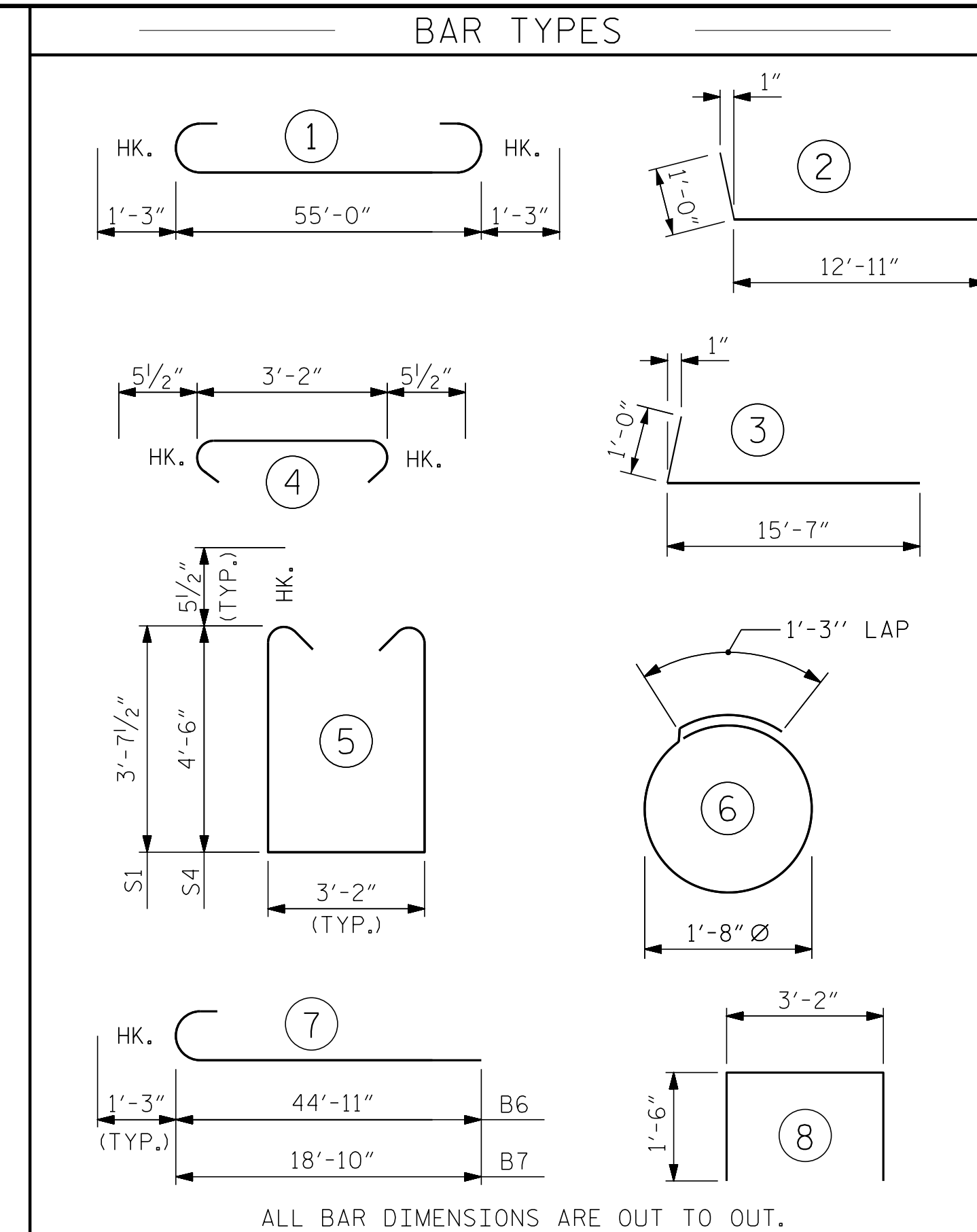
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS



BILL OF MATERIAL					
END BENT No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9		57'-6"	782
B2	6	#5	STR	55'-2"	345
B3	8	#4	STR	28'-10"	154
B4	17	#4	STR	3'-2"	36
B5	2	#5	STR	13'-1"	27
B6	4	#9		46'-2"	628
B7	4	#9		20'-1"	273
B8	8	#4	STR	10'-6"	56
B9	4	#4	STR	8'-4"	22
H1	40	#6		13'-11"	836
H2	52	#6		16'-7"	1295
K1	26	#4	STR	3'-7"	62
S1	58	#5		11'-4"	686
S2	88	#5		4'-1"	375
S3	36	#4		6'-6"	156
S4	30	#5		13'-1"	409
U1	20	#4		6'-2"	82
V1	82	#4	STR	6'-8"	365
V2	24	#5	STR	9'-3"	232
V3	14	#5	STR	8'-11"	130
V4	16	#5	STR	10'-2"	170
V5	26	#5	STR	10'-6"	285

REINFORCING STEEL 7,406 LBS.

CLASS A CONCRETE BREAKDOWN

POUR #1 CAP, LOWER PART OF WINGS AND CONCRETE COLLARS 38.8 C.Y.

POUR #2 UPPER PART OF WINGS 7.4 C.Y.

TOTAL CLASS A CONCRETE 46.2 C.Y.

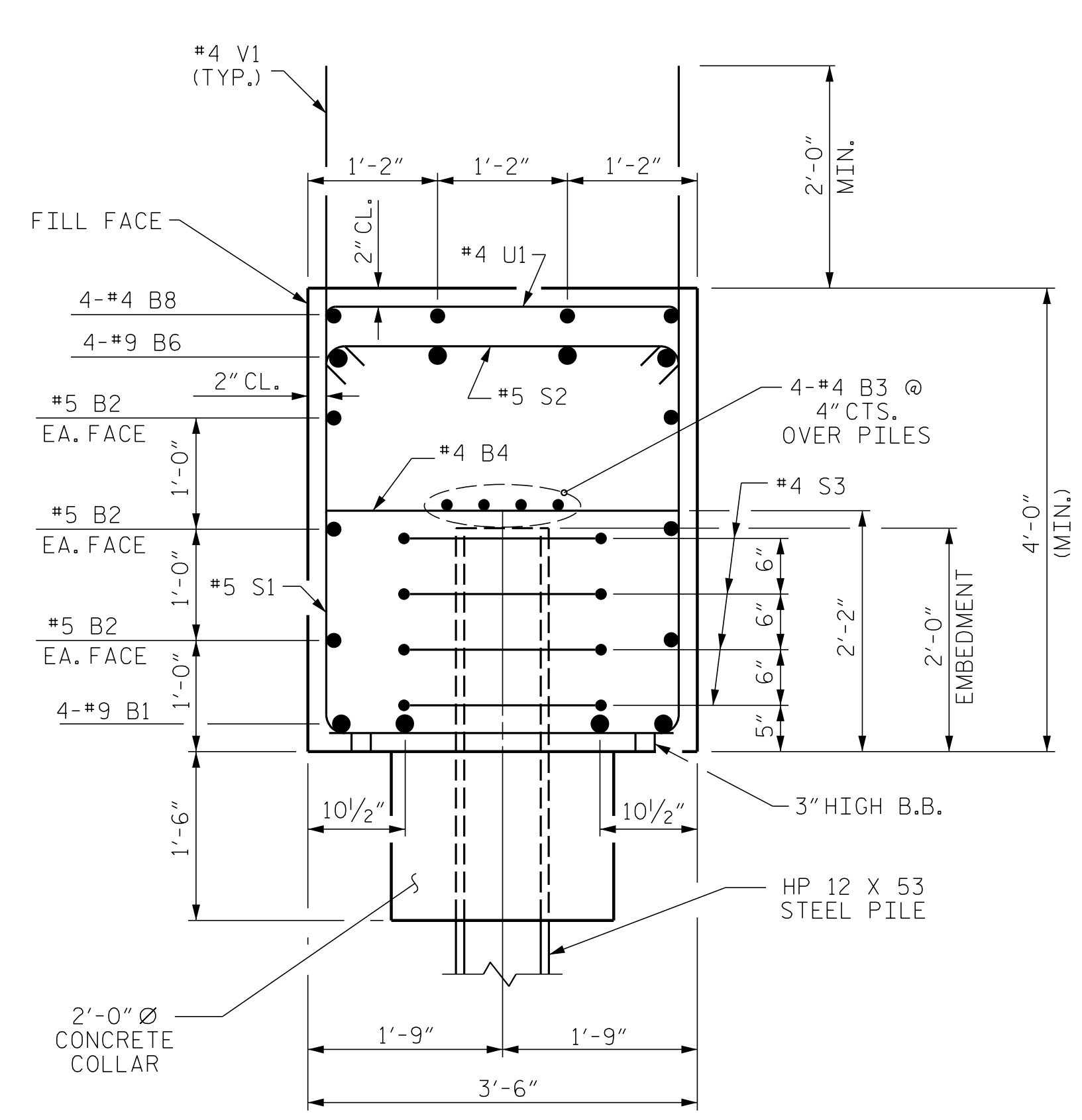
HP 12 X 53 STEEL PILES

NO: 9 900 L.F.

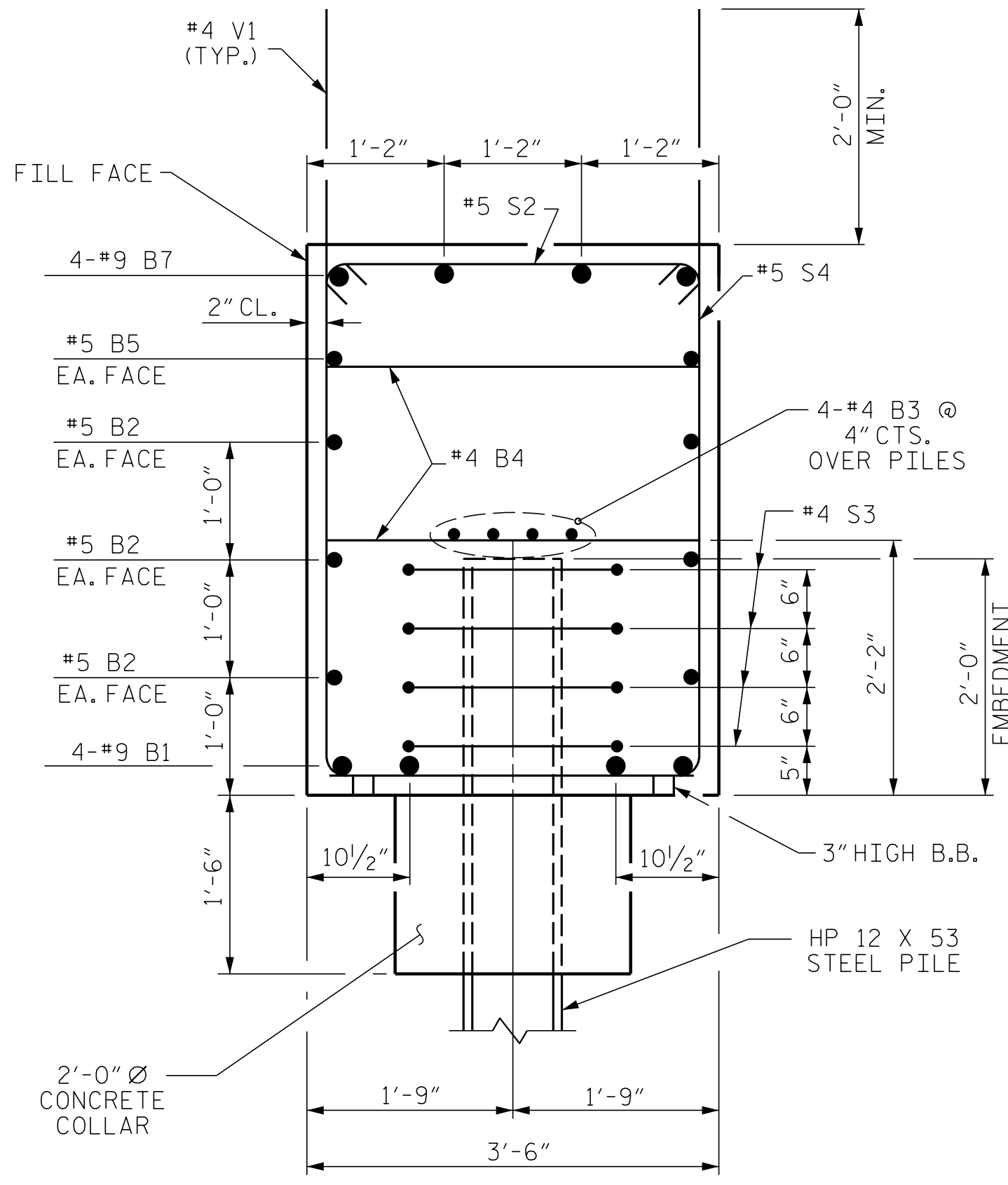
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES 9 EA.

PILE REDRIVES 5 EA.

NOTES
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAILS ARE CAST IF SLIP FORMING IS USED.
 THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCEPT THE BEARING AREA AND THE AREA OUTSIDE THE EDGE OF SUPERSTRUCTURE, SHALL BE RAKED TO A DEPTH OF 1/4".

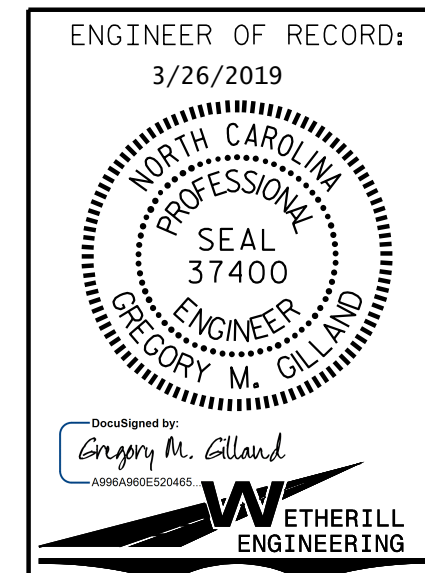


SECTION A-A



SECTION B-B

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 2
 (RIGHT LANE)

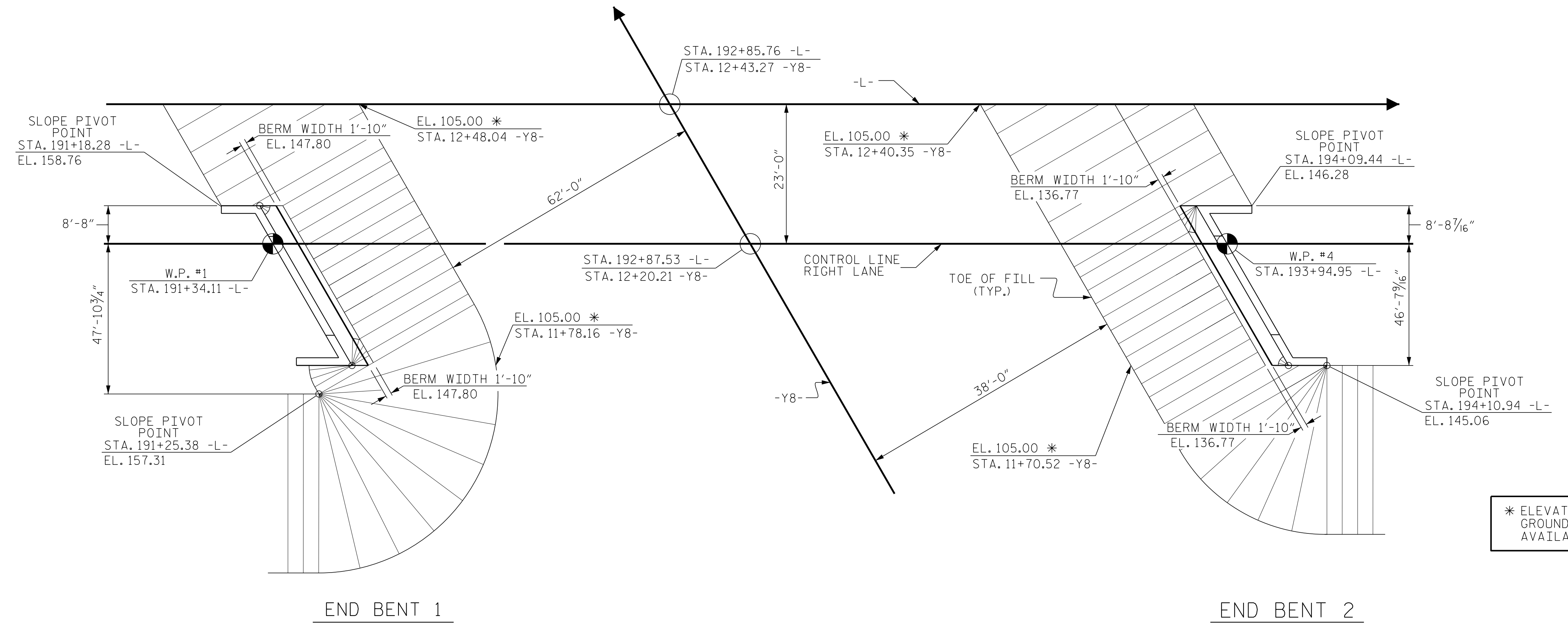
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

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1223 Jones Franklin Rd.
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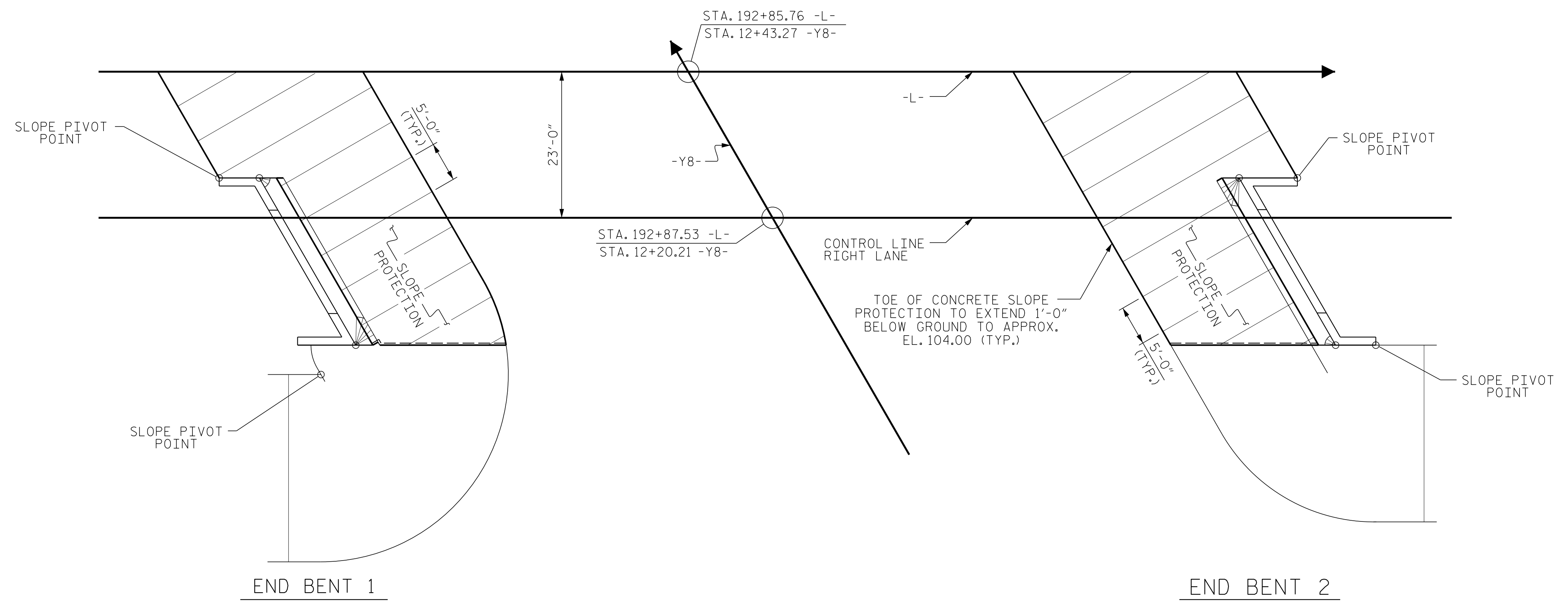
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DRAWN BY: D. HODGE DATE: 11/18
 CHECKED BY: G.M. GILLAND DATE: 11/18



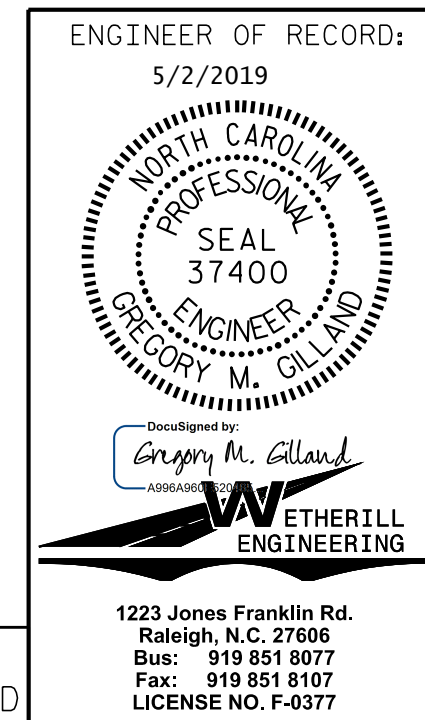
* ELEVATIONS AT APPROXIMATE EXISTING GROUND IS BASED ON BEST INFORMATION AVAILABLE.

PLAN - GRADING



PLAN - CONCRETE PLACEMENT

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 192+85.76 -L-
 SHEET 2 OF 2

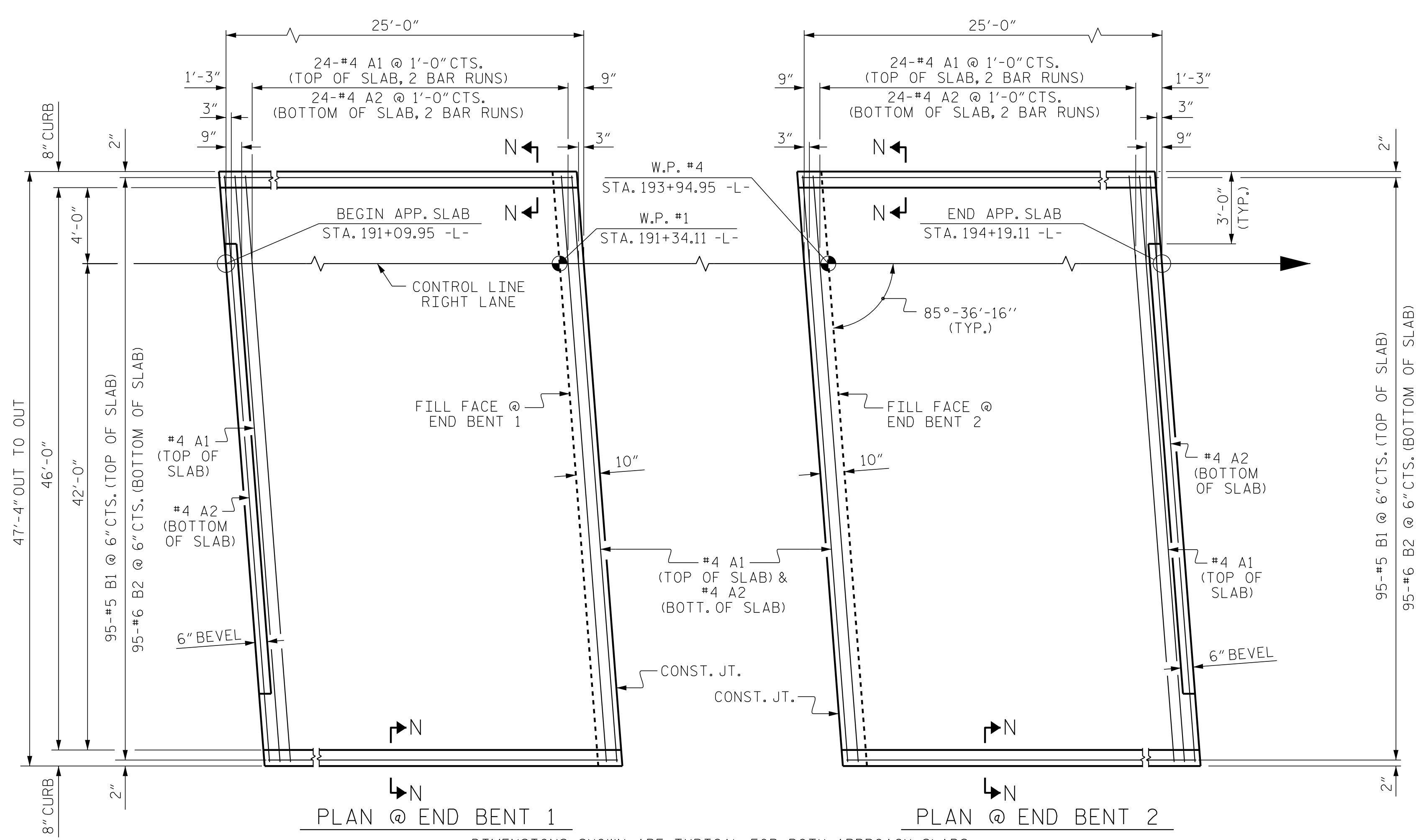


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD SLOPE PROTECTION DETAILS (RIGHT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S4-36
TOTAL SHEETS					38

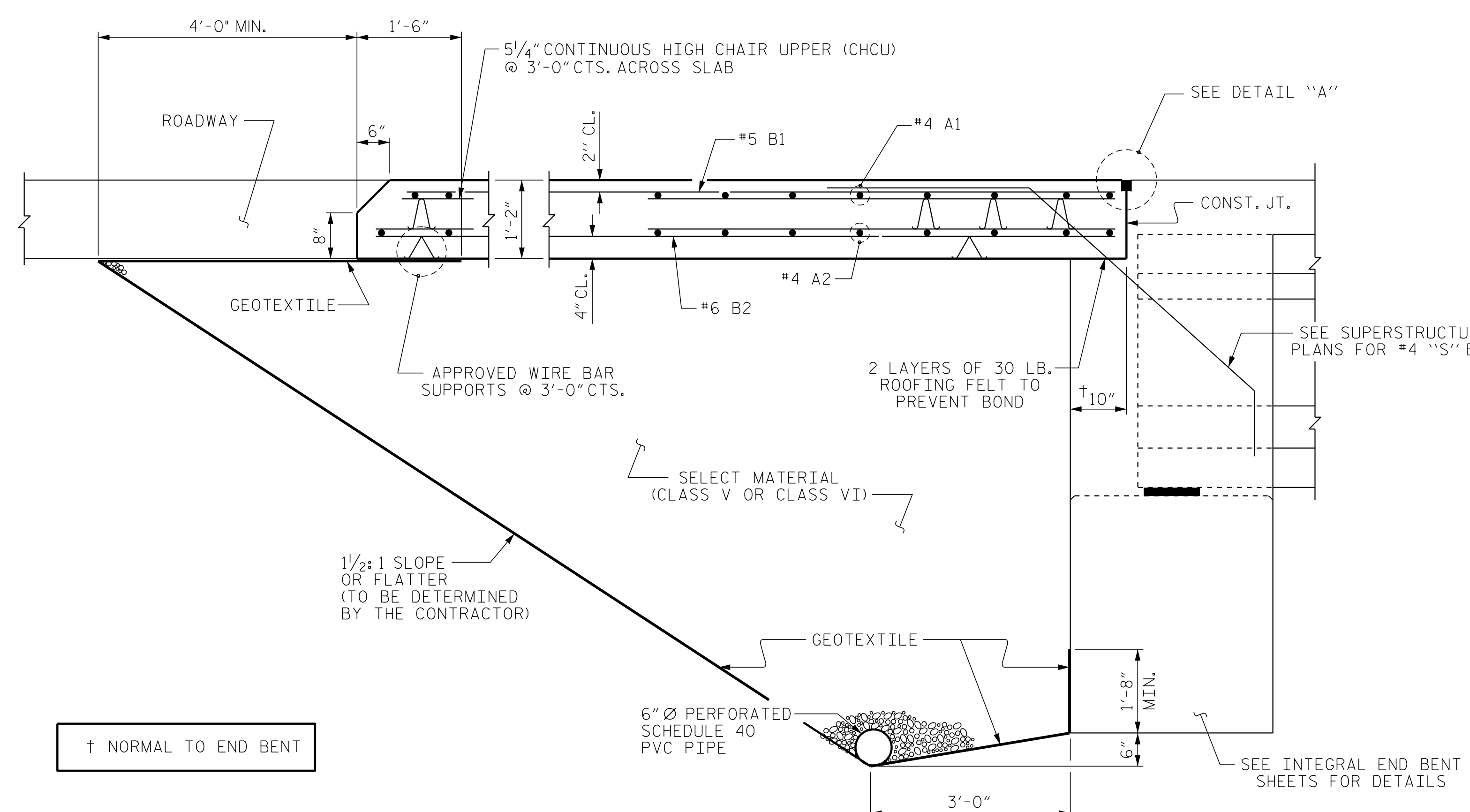
DOCUMENT NOT CONSIDERED FINAL
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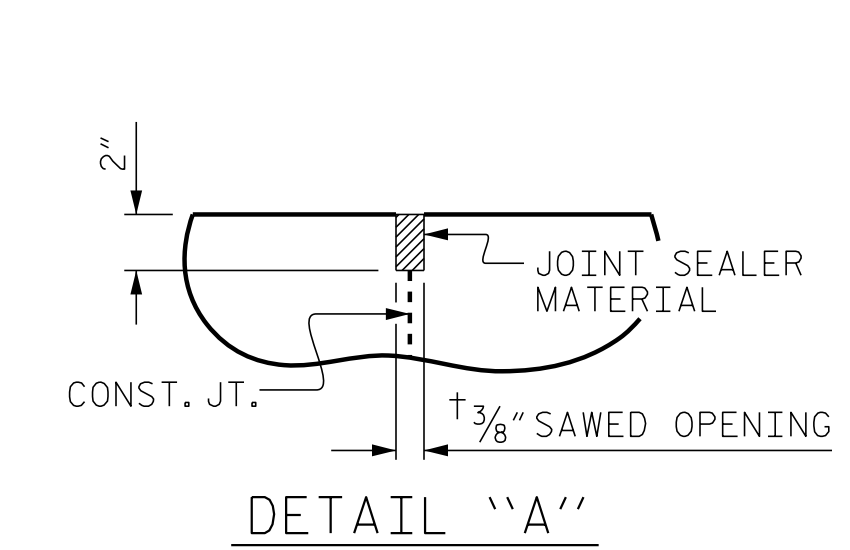
ASSEMBLED BY : D. HODGE	DATE : 11/18
CHECKED BY : G.M. GILLAND	DATE : 12/18
DRAWN BY : WJH 10/88	REV. 10/1/11 MAA/GM
CHECKED BY : FCJ 10/88	REV. 1/16 MAA/TMG
	REV. 12/17 MAA/THC



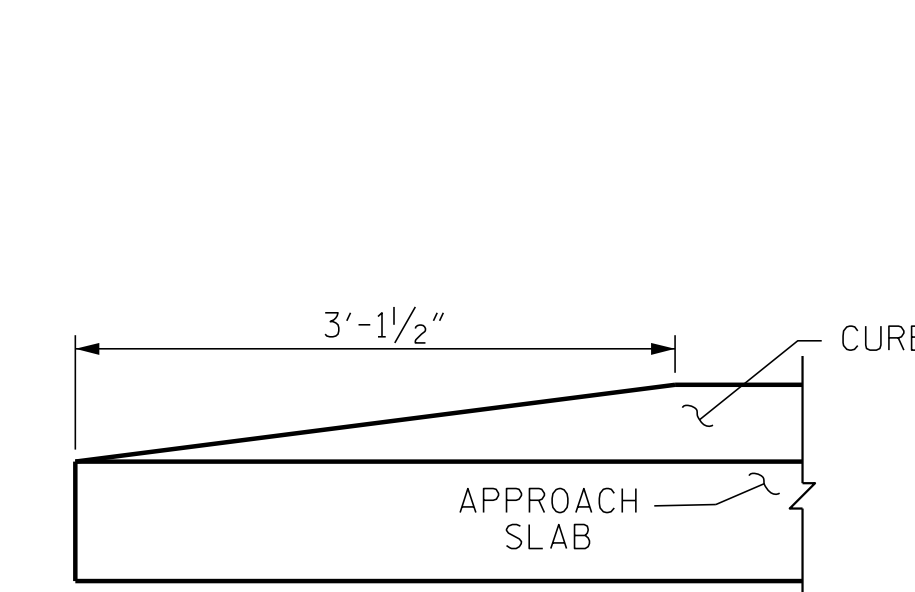
PLAN @ END BENT 1
PLAN @ END BENT 2
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB
(TYPE I - STANDARD APPROACH FILL)



DETAIL "A"



END OF CURB WITHOUT SHOULDER BERM GUTTER

NOTES

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

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

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

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

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

FOR THE 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE 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.

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

BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	52	#4	STR	24'-7"	854
A2	52	#4	STR	24'-6"	851
* B1	95	#5	STR	24'-2"	2395
B2	95	#6	STR	24'-8"	3520
REINFORCING STEEL				LBS.	4371
* EPOXY COATED REINFORCING STEEL				LBS.	3249
CLASS AA CONCRETE				C. Y.	51.1

SPLICE LENGTHS

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

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ASSEMBLED BY : D. HODGE	DATE : 10/18
CHECKED BY : G.M. GILLAND	DATE : 11/18
DRAWN BY : TLA	10/05
CHECKED BY : GM	5/06
REV. 12/21/11	MAA/GM
REV. 6/13	MAA/GM
REV. 12/17	MAA/THC

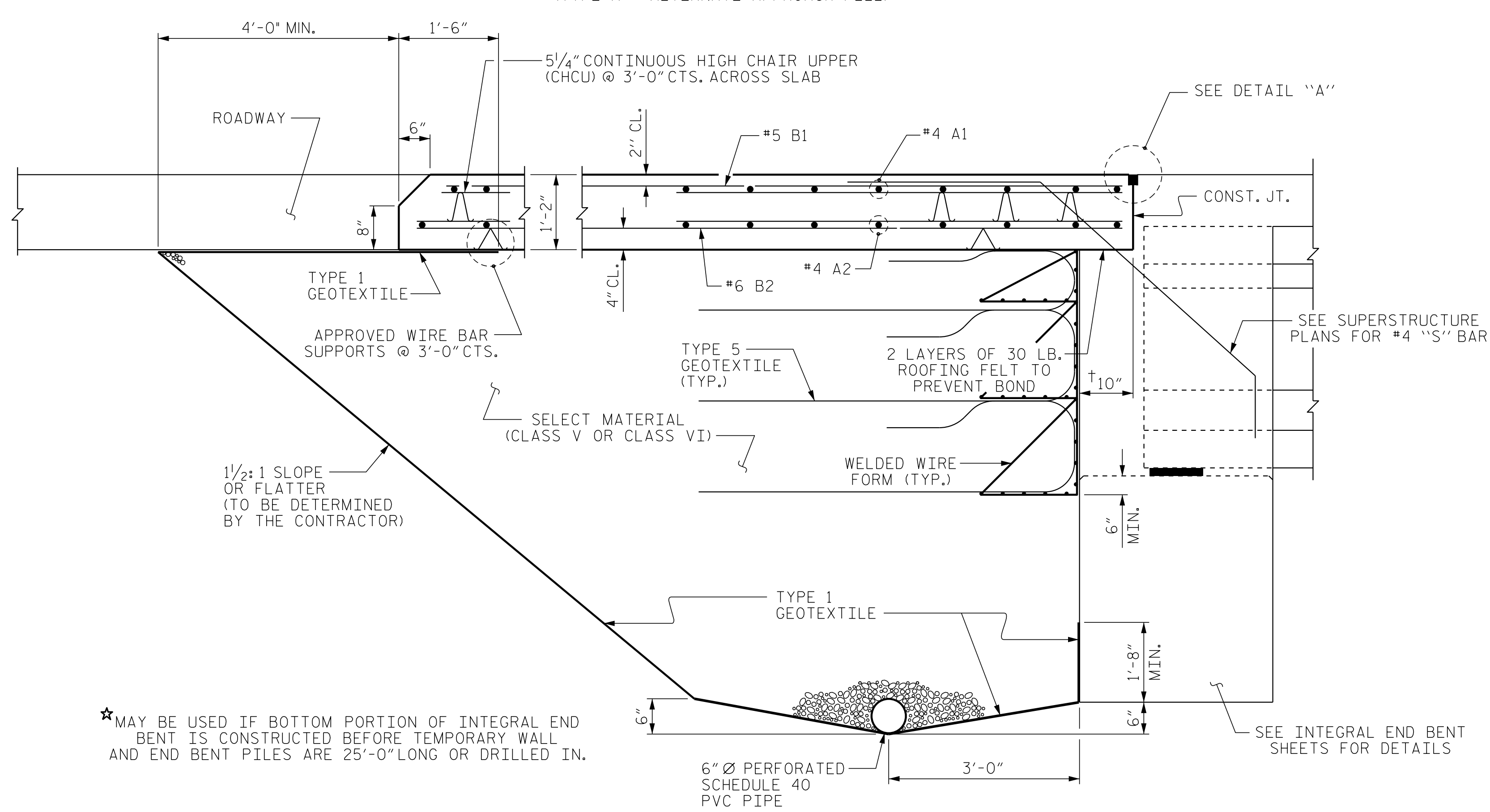
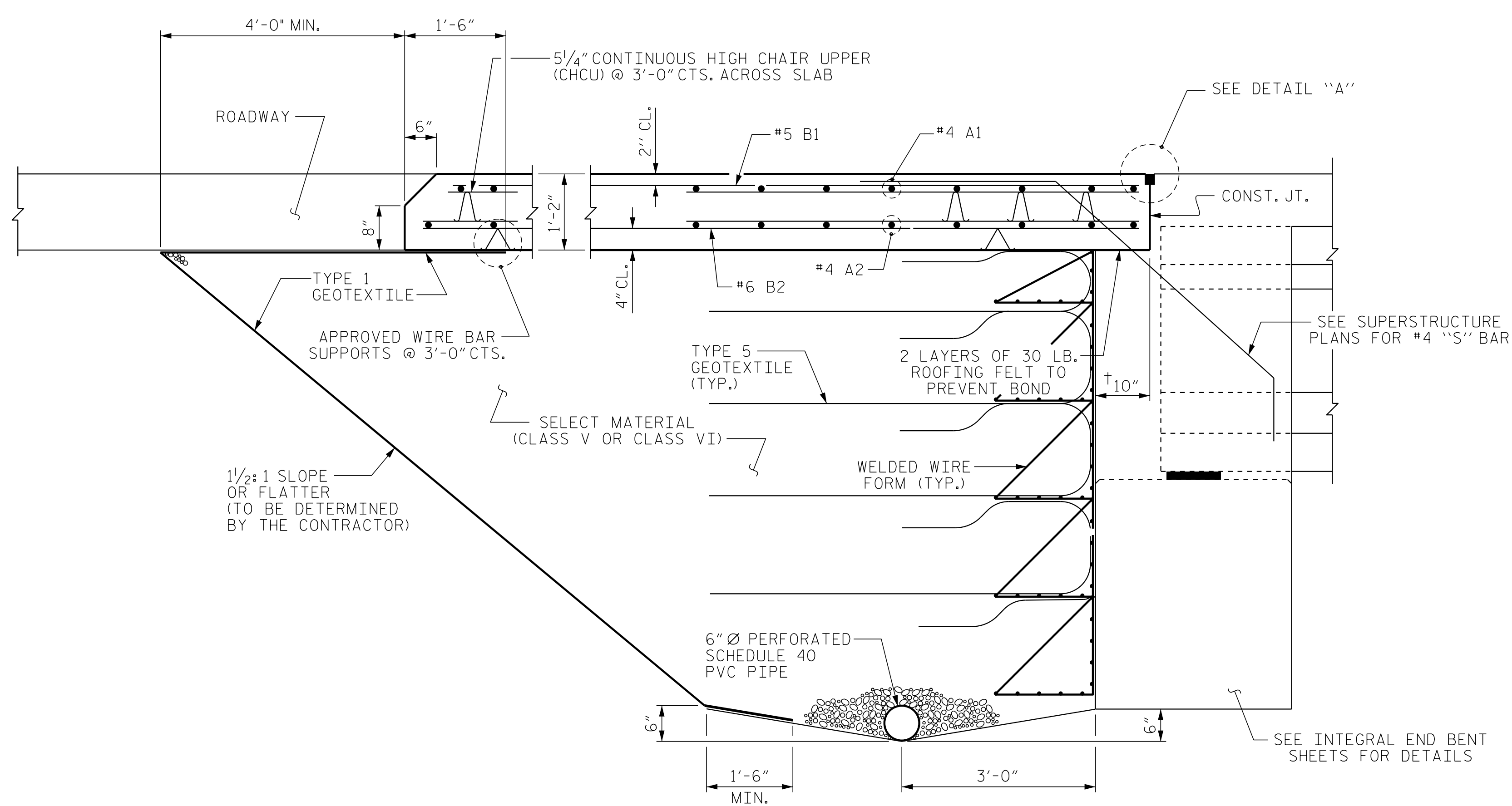
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ENGINEER OF RECORD:

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LICENSE NO. F-0377

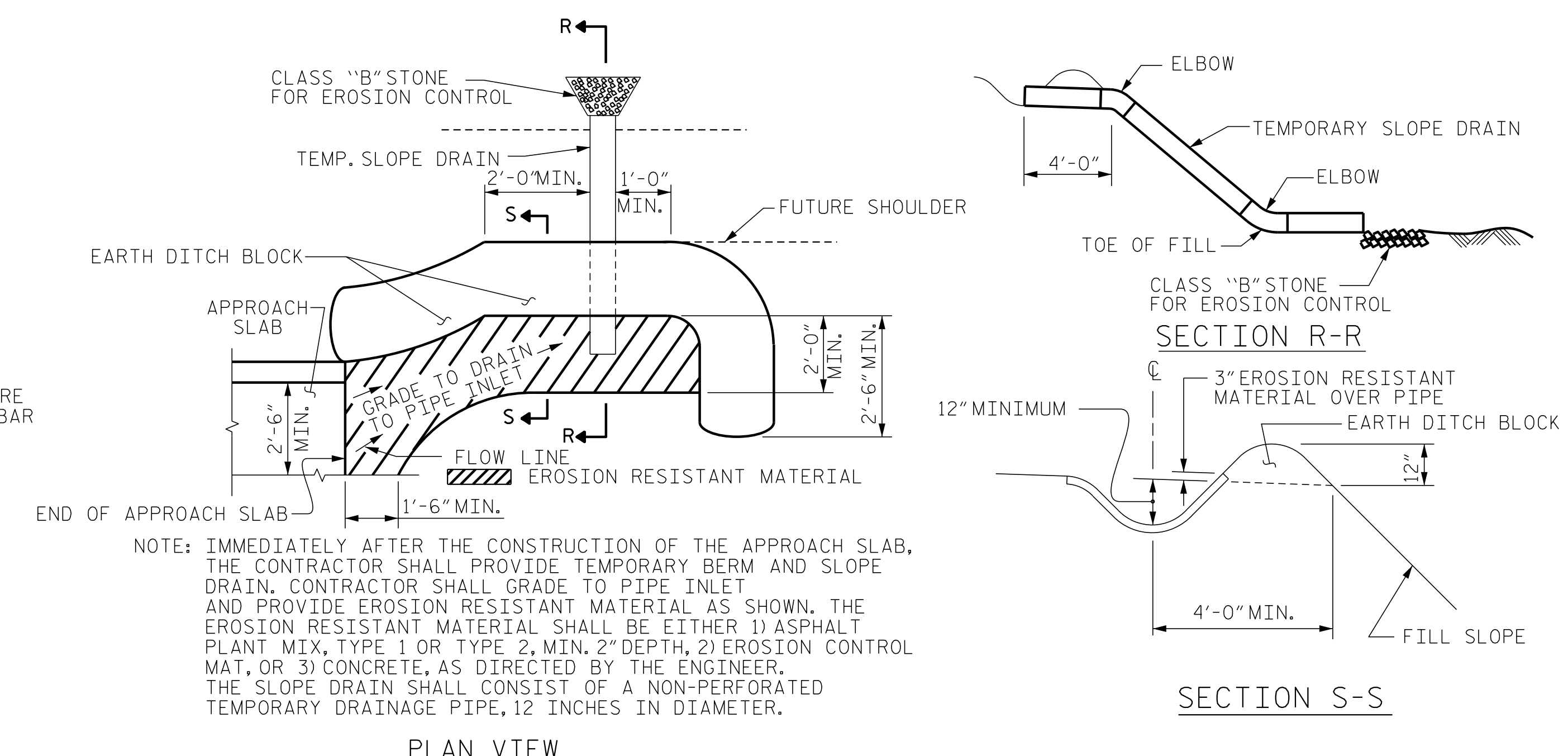
PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 192+85.76 -L-
SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT WITH FLEXIBLE PAVEMENT (RIGHT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S4-37
TOTAL SHEETS					38

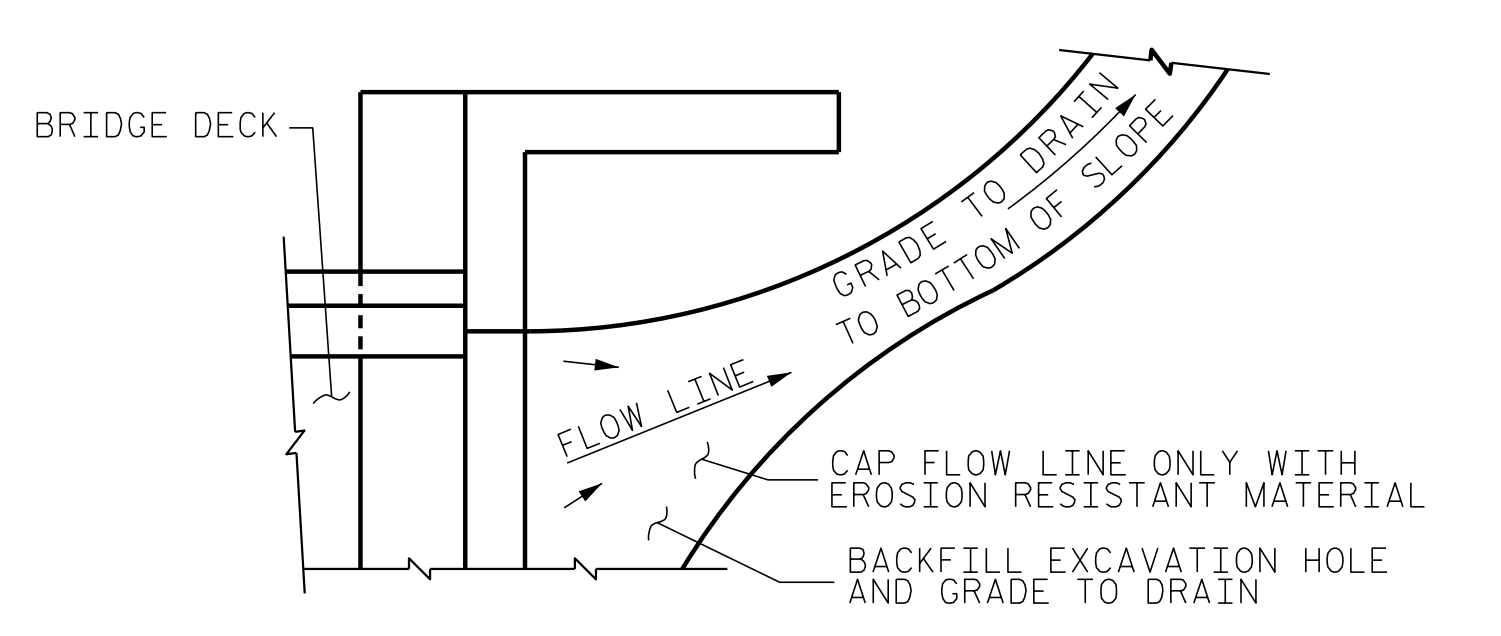


ASSEMBLED BY : D. HODGE	DATE : 10/18
CHECKED BY : G.M. GILLAND	DATE : 11/18
DRAWN BY : TLA 10/05	REV. 12/21/11 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

SECTION THRU SLAB
(TYPE A - ALTERNATE APPROACH FILL)



TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

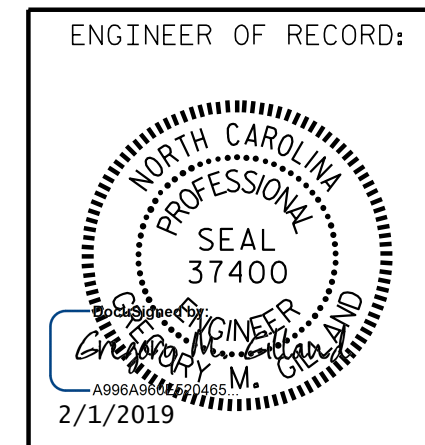


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

NOTES

- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
- FOR TEMPORARY GEOTEXTILE WALL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.
- GEOTEXTILE (TYPE 1 OR TYPE 5) SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.
- SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.
- SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.
- FOR THE 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.
- AREA BETWEEN THE WINGWALL AND APPROACH SLAB/DECK SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
- THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
STATION: 192+85.76 -L-
SHEET 2 OF 2

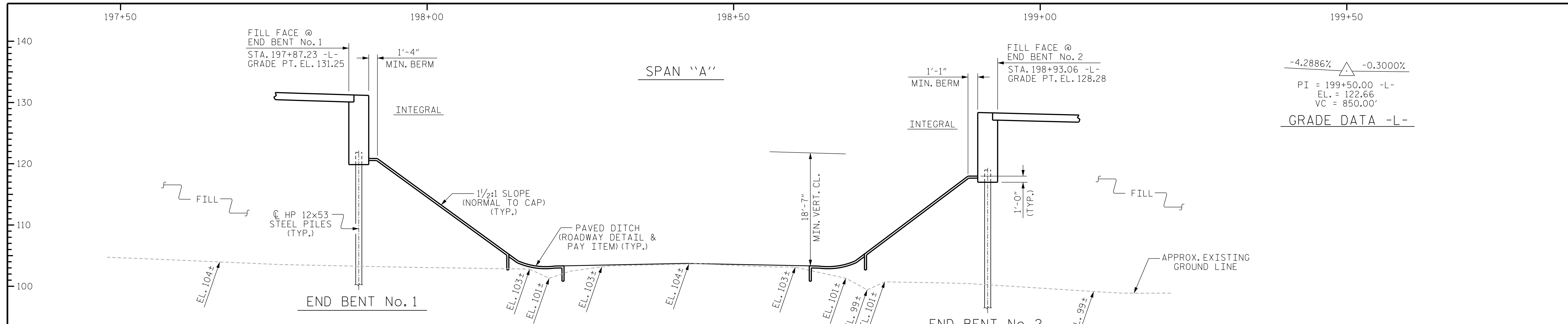


ETHERILL ENGINEERING
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LICENSE NO. F-0377

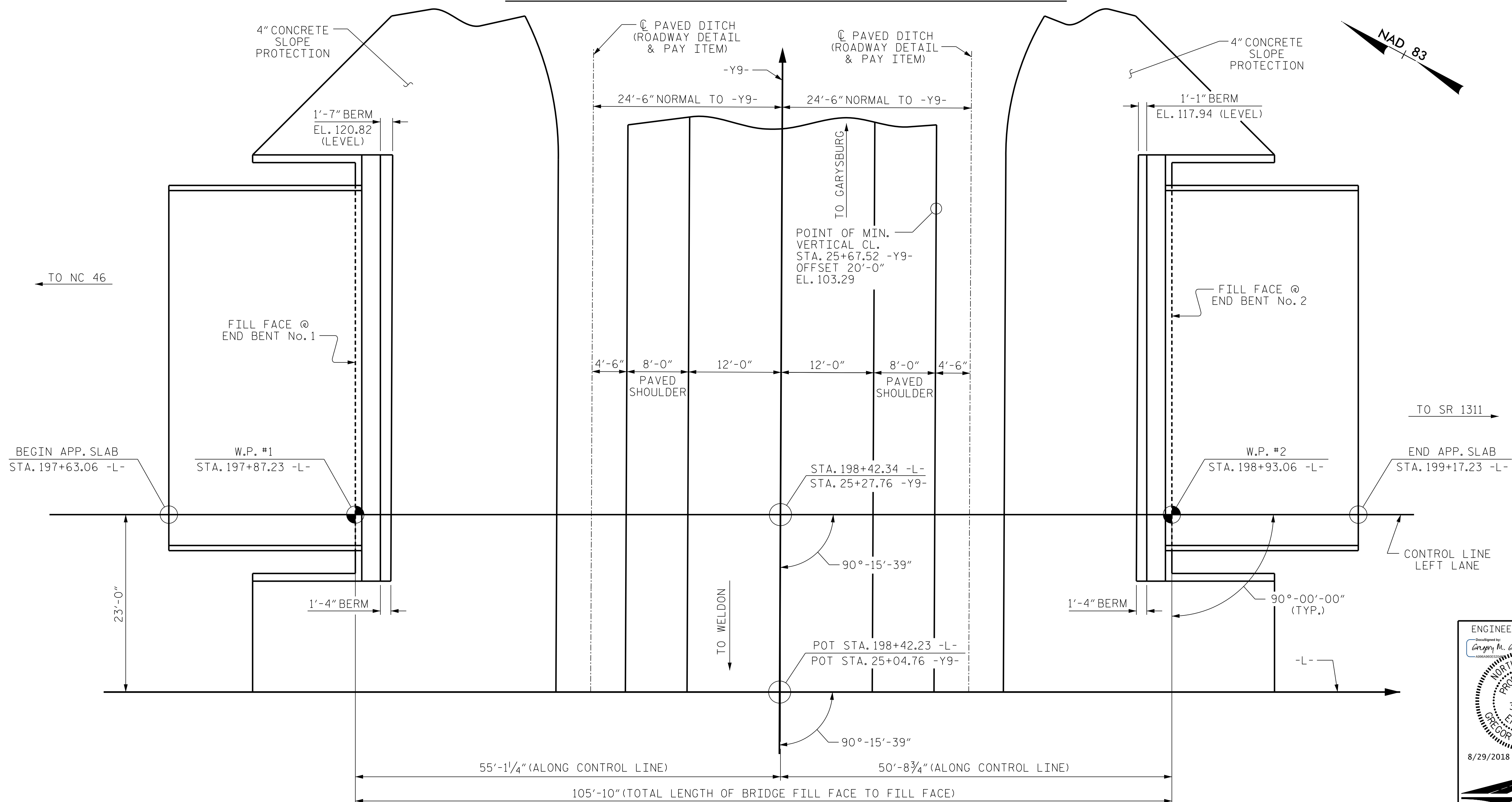
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		STANDARD BRIDGE APPROACH SLAB DETAILS (RIGHT LANE)	
REVISIONS			
NO.	BY:	DATE:	SHEET NO.
1			S4-38
2			TOTAL SHEETS 38

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SECTION ALONG LEFT LANE CONTROL LINE



PLAN
PILES NOT SHOWN FOR CLARITY

-4.2886% \triangle -0.3000%
 PI = 199+50.00 -L-
 EL. = 122.66
 VC = 850.00'
 GRADE DATA -L-

PROJECT NO. R-2582A
 NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-
 25+04.76 -Y9-
 SHEET 1 OF 3 BRIDGE No. 125



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		GENERAL DRAWING LEFT LANE BRIDGE ON US 158 OVER US 301 BETWEEN NC 46 & SR 1311	
REVISIONS			
NO.	BY:	DATE:	SHEET NO.
1			55-1
2			TOTAL SHEETS 26

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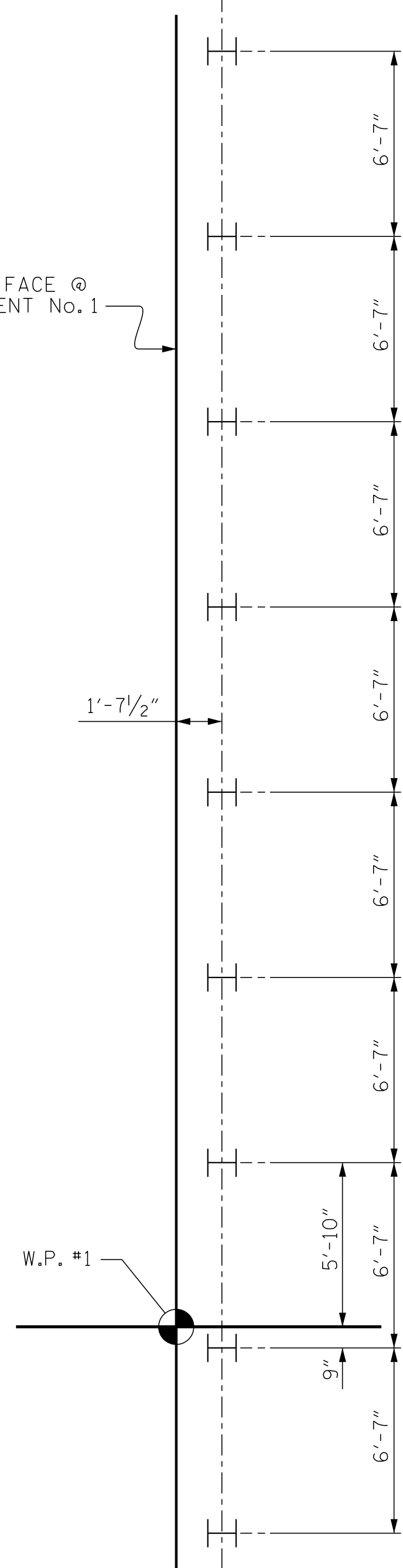
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DRAWN BY: D. HODGE DATE: 4/18
 CHECKED BY: G.M. GILLAND DATE: 5/18

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 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

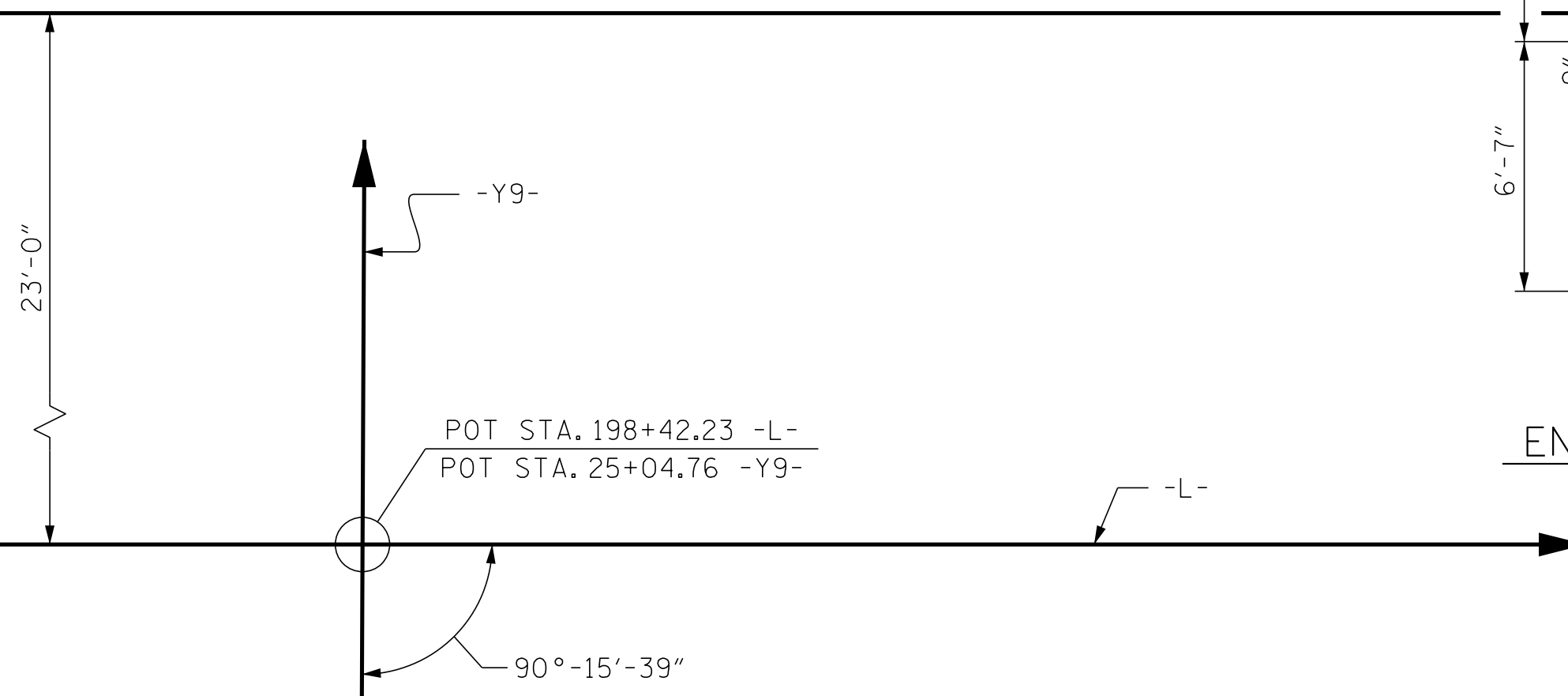
HP 12 X 53
VERTICAL STEEL
PILES

FILL FACE @
END BENT No. 1



END BENT No. 1

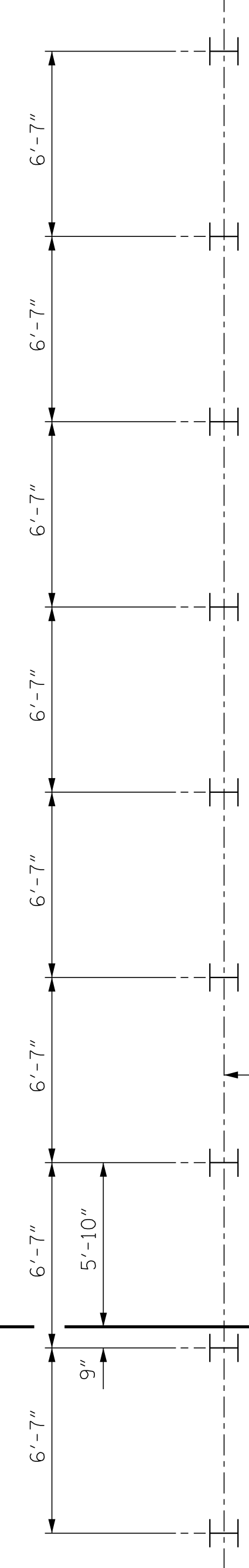
CONTROL LINE
LEFT LANE



FOUNDATION LAYOUT

HP 12 X 53
VERTICAL STEEL
PILES

FILL FACE @
END BENT No. 2



END BENT No. 2

NOTES:

- FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- PILES AT END BENT No. 1 AND END BENT No. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 120 TONS PER PILE.
- DRIVE PILES AT END BENT No. 1 AND END BENT No. 2 TO A REQUIRED DRIVING RESISTANCE OF 200 TONS PER PILE.
- TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING, OR REDRIVING IS REQUIRED AT END BENT No. 1 OR END BENT No. 2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- OBSERVE A FOUR MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FEET OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT No. 1 AND END BENT No. 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SPECIAL PROVISIONS.

PROJECT NO. R-2582A
NORTHAMPTON COUNTY
 STATION: 198+42.23 -L-

SHEET 2 OF 3

ENGINEER OF RECORD:
Gregory M. Gilland
 NORTH CAROLINA
 PROFESSIONAL
 SEAL
 37400
 ENGINEER
 GREGORY M. GILLAND
 8/29/2018
 WETHERILL
 ENGINEERING
 1223 Jones Franklin Rd.
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 LEFT LANE BRIDGE ON
 US 158 OVER US 301
 BETWEEN NC 46 & SR 1311

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-2
1			3			TOTAL SHEETS
2			4			26

DRAWN BY : D. HODGE DATE : 4/18
 CHECKED BY : G.M. GILLAND DATE : 5/18

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