

TIP PROJECT: R-2707E

CONTRACT: C204851

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

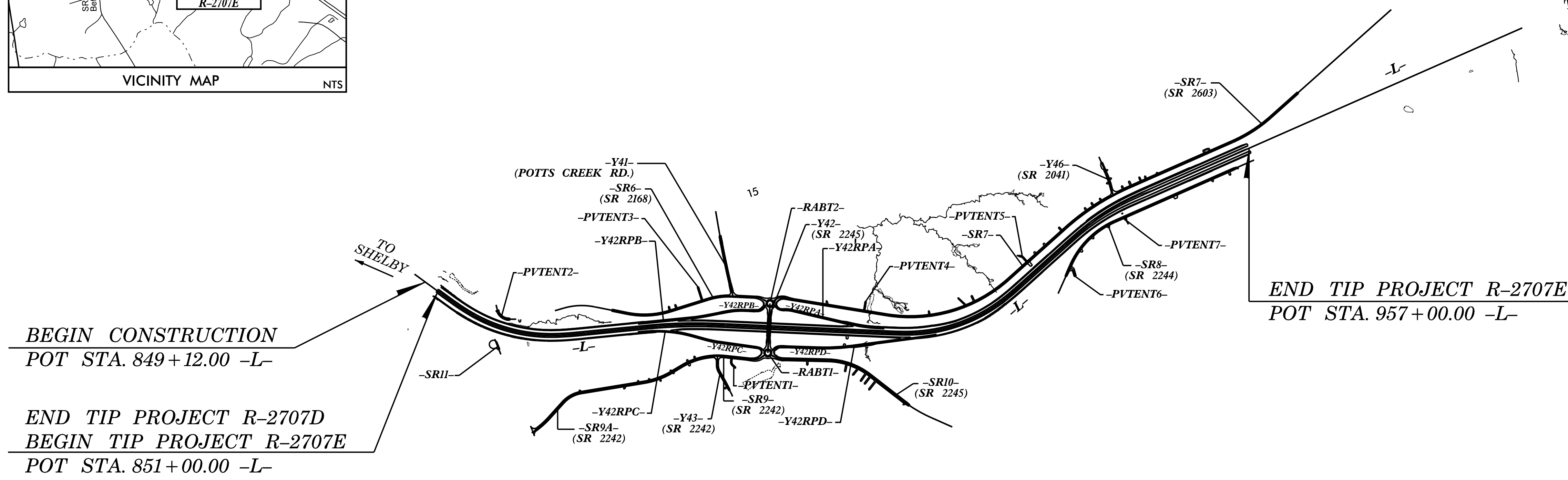
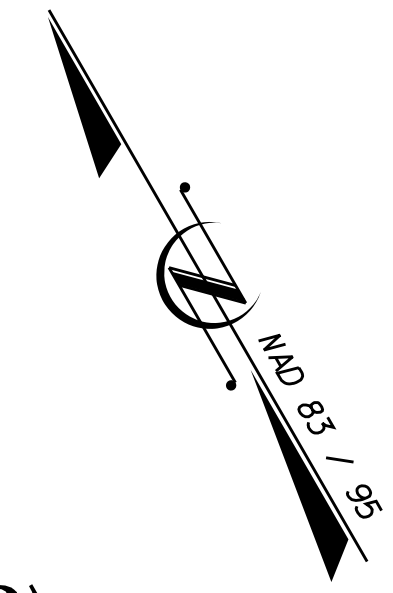
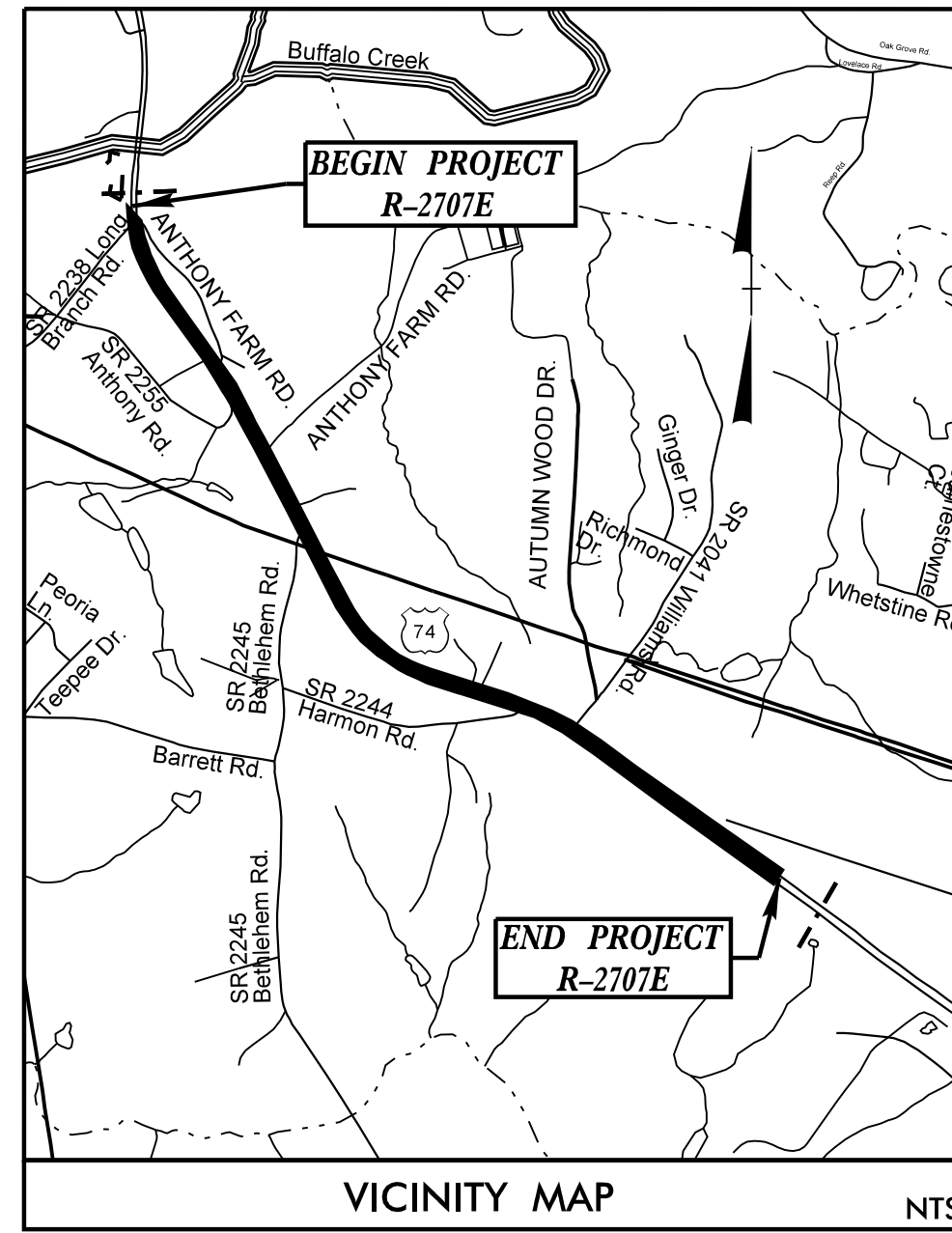
CLEVELAND COUNTY

LOCATION: US 74 FROM EXISTING US 74 WEST OF SR 2238
(LONG BRANCH RD) TO WEST OF SR 1001 (STONEY POINT RD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE, SIGNING, &
NOISE WALL

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2707E	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34497.1.FS7	NHS-0074(165)	P.E.	
34497.2.15	N/A	RW & UTIL.	
34497.3.12	N/A	CONST.	

PART 2



STRUCTURES

THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES

DESIGN DATA

ADT 2019 =	41,600
ADT 2043 =	61,700
K =	11 %
D =	55 %
T =	15 % *
V =	70 MPH
* TTST =	10% DUAL 5%
FUNC CLASS =	FREWAY
STATEWIDE TIER	

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT R-2707E	=	2.008 MI.
TOTAL LENGTH OF TIP PROJECT R-2707E	=	2.008 MI.

PREPARED IN THE OFFICE OF:
Stantec Consulting Services Inc. Tel. (919) 851-8866
801 Jones Franklin Road Fax. (919) 851-7024
Suite 300 www.stantec.com
Raleigh, NC 27606 License No. F-0672

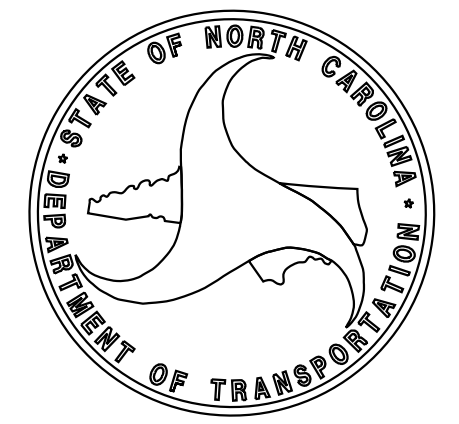
FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
01 / 10 / 2019

LETTING DATE:
07 / 18 / 2023

JOSEPH T. KELVINGTON, P.E.
PROJECT ENGINEER

BRYAN SOWELL, P.E.
NCDOT DIVISION 12



STRUCTURE INDEX

END PROJECT R-2707D/
BEGIN PROJECT R-2707E
POT STA. 851+00 -L-

BRIDGE B7
BRIDGE ON -Y42-
OVER -L-

NOISE WALL 10A

END PROJECT R-2707E
POT STA. 957+00.00 -L-

STRUCTURE I.D. NO.	STRUCTURE STATION	INTERSECTION FEATURE/STATION	SHEET NO.
BRIDGE B7	13+08.49 -Y42-	892+44.19 -L-	S7-01 THRU S7-34
NOISE WALL 10A	10+00 -NW10A-	935+69.92 -L-	SW10A-1 THRU SW10A-4

PROJECT NO. R-2707E
CLEVELAND COUNTY

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STRUCTURE INDEX

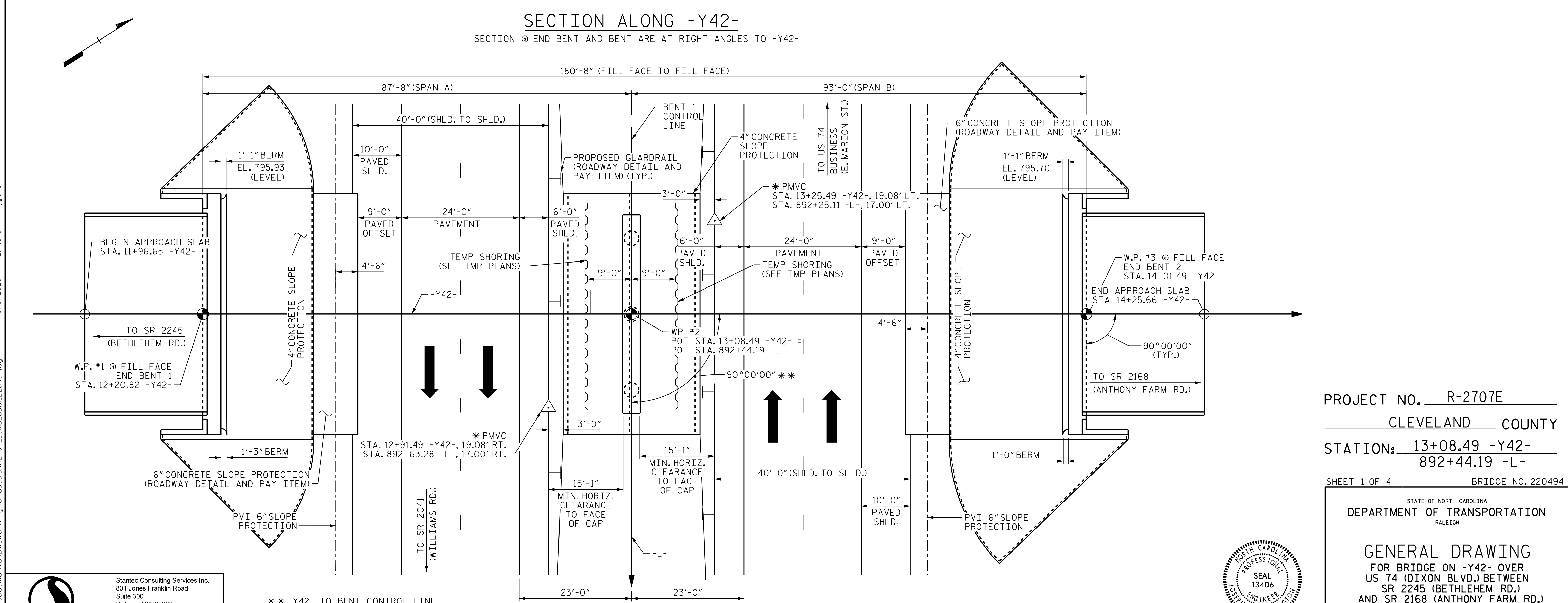
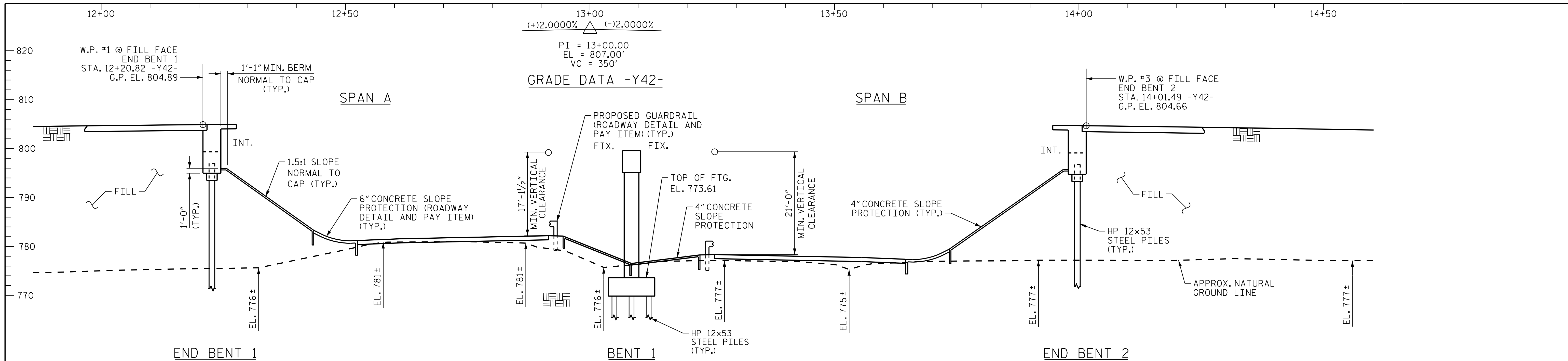


DRAWN BY : S. S. POOLE DATE : 09/27/18
CHECKED BY : A. L. BOYKIN DATE : 02/17/23
DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE : XX/XX/XX

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-00
1			3			TOTAL SHEETS
2			4			

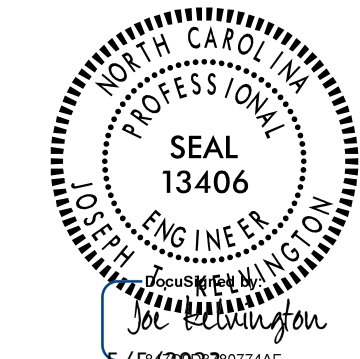
c:\users\jgelle\documents\p\working\dms5522\structures.index.sheet.dgn 5/10/2023 10:59:39 AM jgelle



PROJECT NO. R-2707E
CLEVELAND COUNTY
STATION: 13+08.49 -Y42-
892+44.19 -L-
SHEET 1 OF 4 BRIDGE NO. 220494

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON -Y42- OVER
US 74 (DIXON BLVD.) BETWEEN
SR 2245 (BETHLEHEM RD.)
AND SR 2168 (ANTHONY FARM RD.)



Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

DRAWN BY: J. E. HAGENBUSH DATE: 10/13/17
CHECKED BY: A. L. BOYKIN DATE: 02/17/23

DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE: 05/05/23

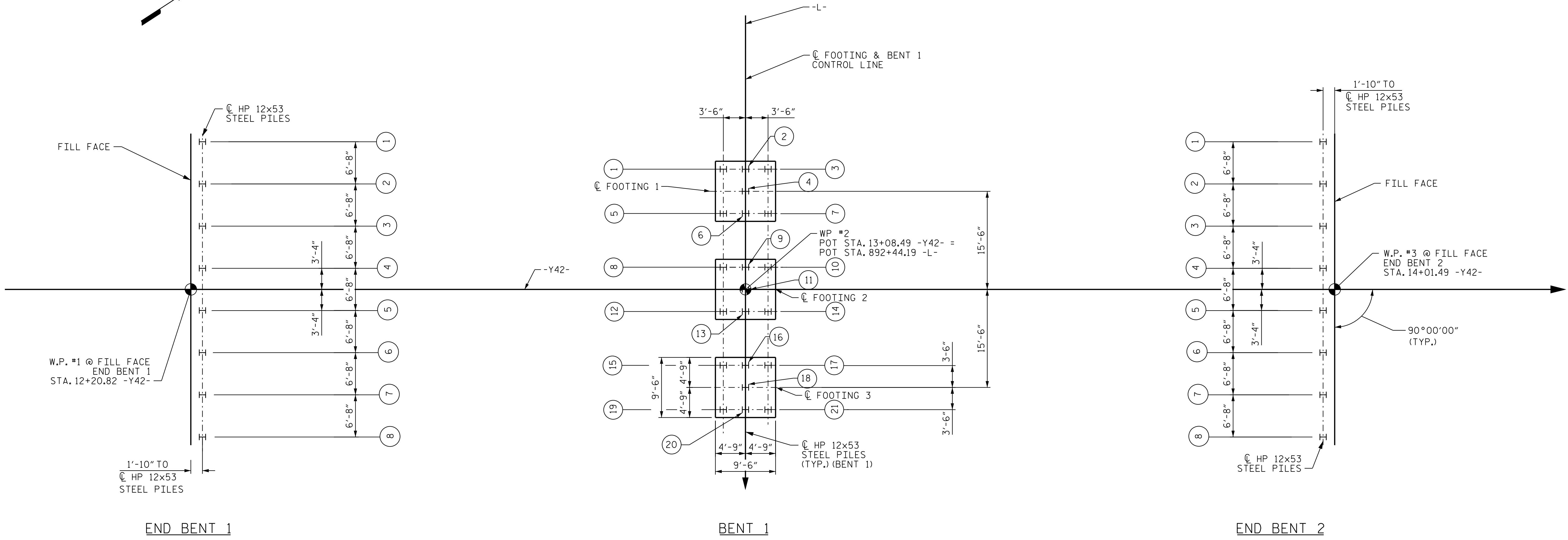
** -Y42- TO BENT CONTROL LINE
SKEW = 90°00'00"
-Y42- TO -L- SKEW = 90°00'20"

* PMVC DENOTES PT. OF MIN. VERTICAL CLEARANCE

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-01
1			3			TOTAL SHEETS 34
2			4			

c:\users\jgelle\documents\p_w_working\ms5559\R2707E-SMU-FL01-220494.dgn 5/5/2023 12:41:08 PM jgelle



FOUNDATION LAYOUT

ALL SUBSTRUCTURE WORK LINES PASS THROUGH WORK POINTS.
 DIMENSIONS AND PILE LAYOUTS AT BENT 1 ARE TYPICAL FOR EACH FOOTING.
 # DENOTES PILE NUMBER

NOTE: -L- AND C FOOTING AND BENT CONTROL LINE ARE NOT COLLINEAR.
 INTERSECTION SKEW ANGLE BETWEEN -Y42- AND -L- IS 90°00'20"
 C FOOTING AND BENT 1 CONTROL LINE COINCIDES WITH -L- @ WORK POINT 2.

PROJECT NO. R-2707E
CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-

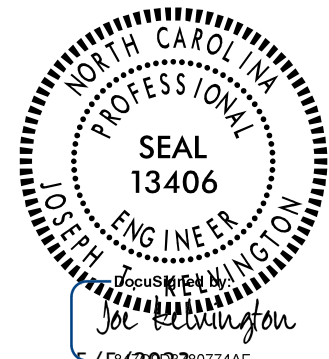
SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON -Y42- OVER
 US 74 (DIXON BLVD.) BETWEEN
 SR 2245 (BETHLEHEM RD.)
 AND SR 2168 (ANTHONY FARM RD.)

Stantec
 Stantec Consulting Services Inc.
 801 Jones Franklin Road
 Suite 300
 Raleigh, NC 27606
 Tel. (919) 851-6866
 Fax. (919) 851-7024
 www.stantec.com
 License No. F-0672

DRAWN BY : J. E. HAGENBUSH DATE : 10/11/18
 CHECKED BY : A. L. BOYKIN DATE : 02/17/23
 DESIGN ENGINEER OF RECORD : J. T. KELVINGTON DATE : 05/05/23



DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-02	
1			3			TOTAL SHEETS	34
2			4				

SUMMARY OF PILE INFORMATION/ INSTALLATION

(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

END BENT/ BENT NO. PILE (S) *-# (e.g., BENT 1, PILES 1-5')	FACTORED RESISTANCE PER PILE TONS	PILE CUT-OFF (TOP OF PILE) ELEVATION FT	ESTIMATED PILE LENGTH PER PILE FT	SCOUR CRITICAL ELEVATION FT	DRIVEN PILES			PREDRILLING FOR PILES *			DRILLED-IN PILES		
					MIN. PILE TIP (TIP NO HIGHER THAN) ELEV FT	REQUIRED DRIVING RESISTANCE (RDR)** PER PILE TONS	TOTAL PILE REDRIVES QUANTITY EACH	PREDRILLING LENGTH PER PILE LIN FT	PREDRILLING ELEVATION (ELEV NOT TO PREDRILL BELOW) FT	MAXIMUM PREDRILLING DIA INCHES	PILE EXCAVATION (BOTTOM OF HOLE) ELEV FT	PILE EXC NOT IN SOIL PER PILE LIN FT	PILE EXC IN SOIL PER PILE LIN FT
END BENT 1, PILES 1-8	120	796.93	75			200							
END BENT 2, PILES 1-8	120	796.70	70			200							
BENT 1, PILES 1-21	110	770.86	65			185							

*PREDRILLING FOR PILES IS REQUIRED FOR END BENTS/ BENT WITH A PREDRILLING LENGTH AND AT THE CONTRACTOR'S OPTION FOR END BENTS/ BENTS WITH PREDRILLING INFORMATION BUT NO PREDRILLING LENGTH.

** RDR = $\frac{\text{FACTORED RESISTANCE} + \text{FACTORED DOWNDRAW LOAD} + \text{FACTORED DEAD LOAD}}{\text{DYNAMIC RESISTANCE FACTOR}} + \frac{\text{NORMAL DOWNDRAW RESISTANCE} + \text{NORMAL SCOUR RESISTANCE}}{\text{SCOUR RESISTANCE FACTOR}}$

SUMMARY OF PDA/ PILE ORDER LENGTHS

(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

PILE DRIVING ANALYZER (PDA)			PILE ORDER LENGTHS		
END BENT/ BENT NO	PDA TESTING REQUIRED? YES OR MAYBE	PDA TEST PILE LENGTH FT	TOTAL PDA TESTING QUALITY EACH	END BENT/ BENT NO(S)	PILE ORDER LENGTH BASIS EST OR PDA

* EST = PILE ORDER LENGTHS FROM ESTIMATED PILE LENGTHS; PDA = PILE ORDER LENGTHS BASED ON PDA TESTING. FOR GROUPS OF END BENTS/ BENTS WITH PILE ORDER LENGTHS BASED ON PDA TESTING, THE FIRST END BENT/ BENT NO. LISTED FOR EACH GROUP IS THE REPRESENTATIVE END BENT/ BENT WITH THE PDA.

FOUNDATION NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
OBSERVE A 1 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT. 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 SECTION 235 OF THE STANDARD SPECIFICATIONS.

NOTES:

1. THE PILE FOUNDATION TABLES ARE BASED ON THE BRIDGE SUBSTRUCTURE DESIGN AND FOUNDATION RECOMMENDATIONS SEALED BY A NORTH CAROLINA PROFESSIONAL ENGINEER (STEPHEN C. CROCKETT, 048207) ON 2/23/23.
2. TOTAL PILE DRIVING EQUIPMENT SETUP QUANTITY (NOT SHOWN IN PILE FOUNDATION TABLES) EQUALS THE NUMBER OF DRIVEN PILES, I.E., THE NUMBER OF PILES WITH A REQUIRED DRIVING RESISTANCE.
3. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING WHEN PDAs MAY BE REQUIRED.

PILE DESIGN INFORMATION

(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

END BENT/ BENT NO. PILE (S) *-# (e.g., BENT 1, PILES 1-5')	FACTORED AXIAL LOAD PER PILE TONS	FACTORED DOWNDRAW LOAD PER PILE TONS	FACTORED DEAD LOAD* PER PILE TONS	DYNAMIC RESISTANCE FACTOR	NOMINAL DOWNDRAW RESISTANCE PER PILE TONS	NOMINAL SCOUR RESISTANCE PER PILE TONS	SCOUR RESISTANCE FACTOR (DEFAULT=1.00)
END BENT 1, PILES 1-8	120			0.60			
END BENT 2, PILES 1-8	120			0.60			
BENT 1, PILES 1-21	110			0.60			

* FACTORED DEAD LOAD IS FACTORED WEIGHT OF PILE ABOVE THE GROUND LINE.

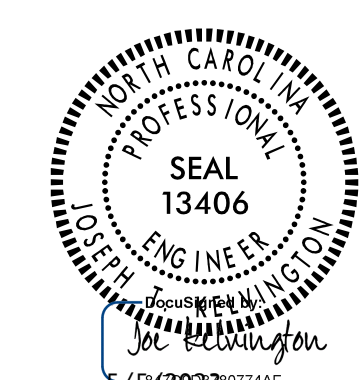
SUMMARY OF PILE ACCESSORIES

(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

END BENT/ BENT NO. PILE (S) *-# (e.g., BENT 1, PILES 1-5')	PIPE PILE PLATES REQUIRED YES OR MAYBE	STEEL PILE POINTS			STEEL PILE TIPS REQUIRED? YES
		PIPE PILE CUTTING SHOES REQUIRED? YES	PIPE PILE CONICAL POINTS REQUIRED? YES	H-PILE POINTS REQUIRED? YES	
TOTAL QTY.					

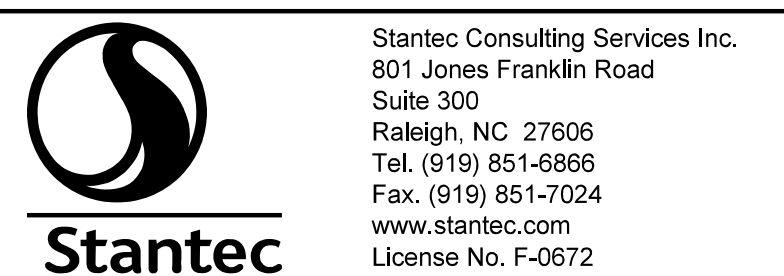
PROJECT NO. R-2707E
CLEVELAND COUNTY
STATION: 13+08.49 -Y42-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
PILE FOUNDATION TABLES



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

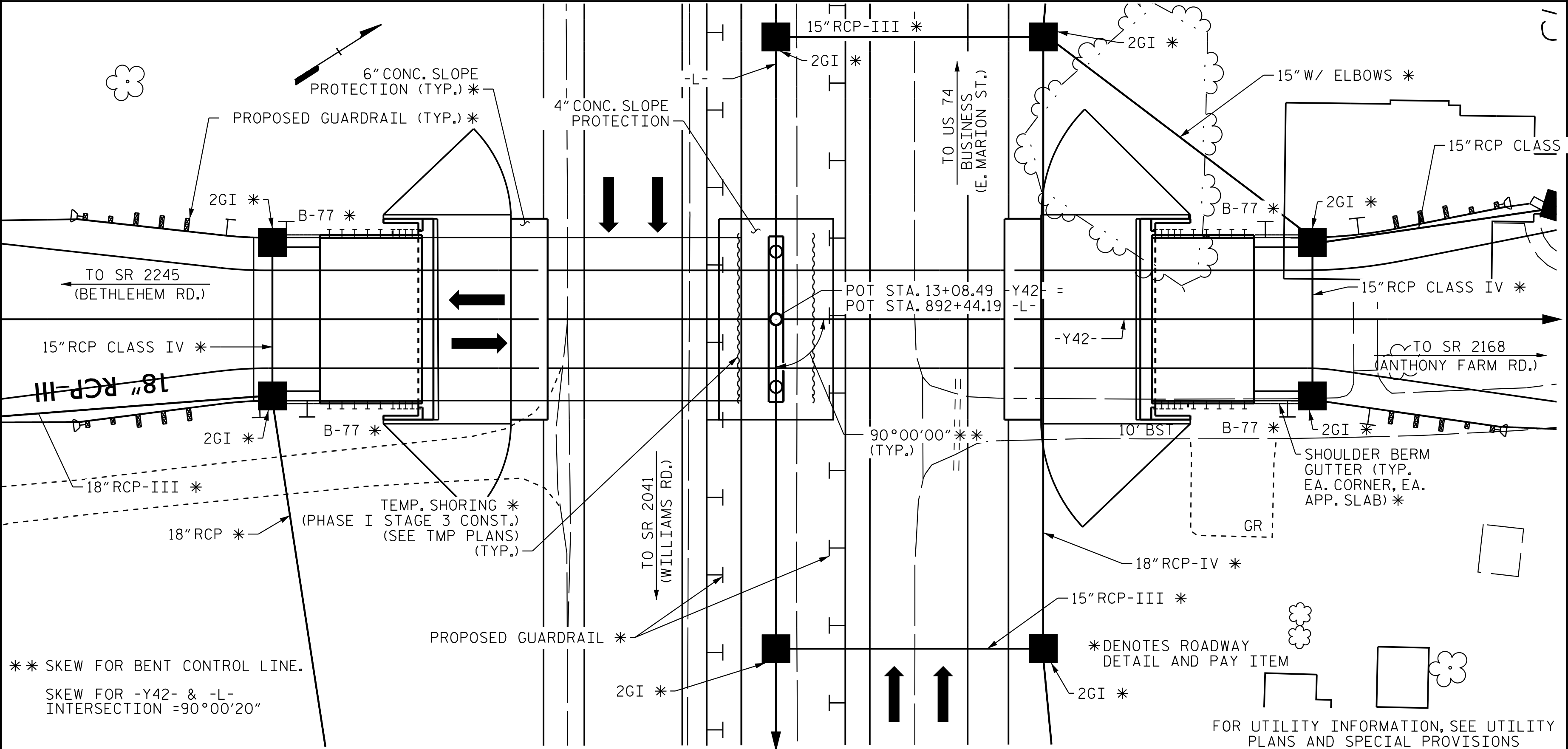
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	34
1			3			
2			4			



DRAWN BY : J. B. GEILE DATE : 02/13/23
CHECKED BY : A. L. BOYKIN DATE : 02/17/23
DESIGN ENGINEER OF RECORD : J. T. KELVINGTON DATE : 05/05/23

5/5/2023 12:45:11 PM jgeile c:\users\jgeile\documents\p_w_working\ams5559\R2707E.SML - FT. 220494.dgn

BM #4: 5"x5" CONCRETE MONUMENT 1.0' ABOVE THE GROUND ALONG US 74 AND AT THE CENTER OF HIGH TENSION POWER TOWER, STA. 901+48.71 -L-, 117.94' RT. EL. 788.94



LOCATION SKETCH

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.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- TEMPORARY SHORING WILL BE REQUIRED IN THE AREAS INDICATED IN THE PLAN VIEW.
- STEEL SHEET PILING REQUIRED FOR SHORING SHALL BE HOT ROLLED.
- FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRANSPORTATION MANAGEMENT PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.
- THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- FOR MODIFIED 54" PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.
- FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.
- PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE W/ ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

TOTAL BILL OF MATERIAL

	FOUNDATION EXCAVATION BENT NO.1	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	HP 12X53 STEEL PILES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	MODIFIED 54" PRESTRESSED CONC. GIRDER		
	LUMP SUM	SQ.FT.	SQ.FT.	CU.YDS.	LUMP SUM	LBS.	LBS.	EA.	NO.	LIN.FT.	LIN.FT.	SQ.YDS.	LUMP SUM	NO.	LIN.FT.
SUPERSTRUCTURE		7,814	8,460		LUMP SUM					358.0		LUMP SUM	8	710.33	
END BENT NO.1				36.0		6,271		8	8	600	160				
BENT NO.1	LUMP SUM			78.0		13,731	1,488	21	21	1,365	158				
END BENT NO.2				36.2		6,305		8	8	560	209				
TOTAL	LUMP SUM	7,814	8,460	150.2	LUMP SUM	26,307	1,488	37	37	2,525	358.0	527	LUMP SUM	8	710.33

PROJECT NO. R-2707E
CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON -Y42- OVER
 US 74 (DIXON BLVD.) BETWEEN
 SR 2245 (BETHLEHEM RD.)
 AND SR 2168 (ANTHONY FARM RD.)



Stantec
 Stantec Consulting Services Inc.
 801 Jones Franklin Road
 Suite 300
 Raleigh, NC 27606
 Tel. (919) 851-6866
 Fax. (919) 851-7024
 www.stantec.com
 License No. F-0672

DRAWN BY: J.E. HAGENBUSH DATE: 10/11/18
 CHECKED BY: A. L. BOYKIN DATE: 02/17/23
 DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE: 05/08/23

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-04
1			3			TOTAL SHEETS
2			4			34

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/8/2023 3:44:08 PM jHagenbush

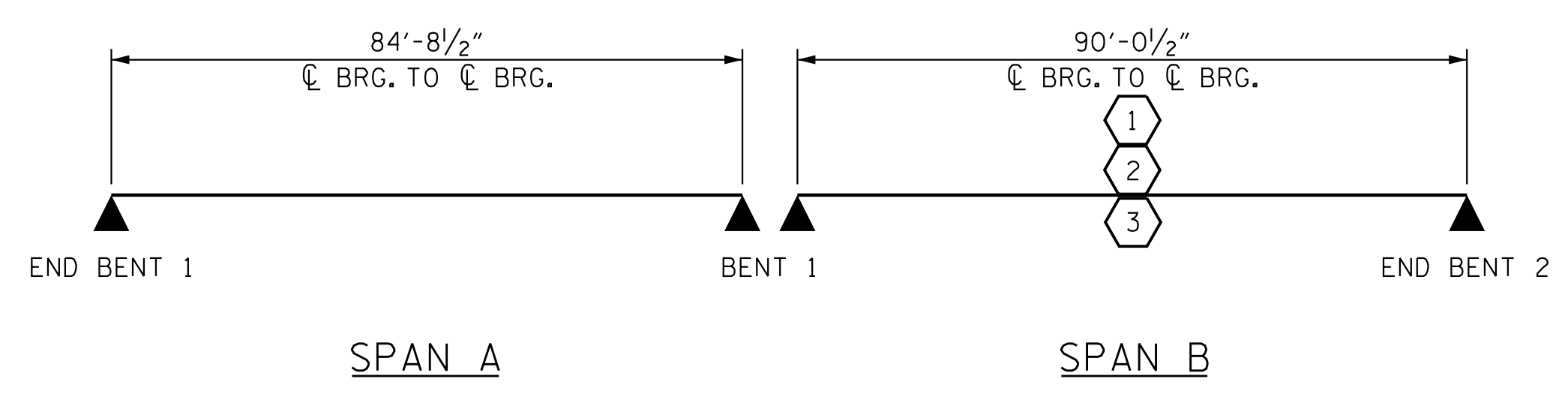
LOAD FACTORS:

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	1.40	--	1.75	.950	1.46	B	EL	45.0	.950	1.48	B	I	81.60	0.80	.950	1.40	B	I	45.0	
	HL-93 (OPERATING)	N/A		1.90	--	1.35	.950	1.90	B	EL	45.0	.950	1.95	B	I	81.60	N/A	--	--	--	--	--	
	HS-20 (INVENTORY)	36.000	2	1.90	68.4	1.75	.950	2.00	B	EL	45.0	.950	1.97	B	I	81.60	0.80	.950	1.90	B	I	45.0	
	HS-20 (OPERATING)	36.000		2.58	92.9	1.35	.950	2.60	B	EL	45.0	.950	2.58	B	I	81.60	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH		1.84	24.8	1.40	.950	2.40	B	EL	45.0	.950	2.50	B	I	81.60	0.80	.950	1.84	B	I	45.0	
		SNGARBS2	20.000		1.64	32.8	1.40	.950	2.14	B	EL	45.0	.950	2.27	B	I	81.60	0.80	.950	1.64	B	I	45.0
		SNAGRIS2	22.000		3.28	72.2	1.40	.950	4.29	B	EL	45.0	.950	4.38	B	I	81.60	0.80	.950	3.28	B	I	45.0
		SNCOTTS3	27.250		1.80	49.1	1.40	.950	2.35	B	EL	45.0	.950	2.51	B	I	81.60	0.80	.950	1.80	B	I	45.0
		SNAGGRS4	34.925		2.23	77.9	1.40	.950	2.91	B	EL	45.0	.950	3.07	B	I	81.60	0.80	.950	2.23	B	I	45.0
		SNS5A	35.550		1.56	55.5	1.40	.950	2.04	B	EL	45.0	.950	2.21	B	I	81.60	0.80	.950	1.56	B	I	45.0
		SNS6A	39.950		4.52	180.6	1.40	.950	5.91	B	EL	45.0	.950	6.27	B	I	81.60	0.80	.950	4.52	B	I	45.0
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.00	66.0	1.40	.950	2.61	B	EL	45.0	.950	2.73	B	I	81.60	0.80	.950	2.00	B	I	45.0
		TNT4A	33.075		2.00	66.2	1.40	.950	2.62	B	EL	45.0	.950	2.67	B	I	81.60	0.80	.950	2.00	B	I	45.0
		TNT6A	41.600		1.62	67.4	1.40	.950	2.12	B	EL	45.0	.950	2.33	B	I	81.60	0.80	.950	1.62	B	I	45.0
		TNT7A	42.000		1.63	68.5	1.40	.950	2.13	B	EL	45.0	.950	2.29	B	I	81.60	0.80	.950	1.63	B	I	45.0
		TNT7B	42.000		1.66	69.7	1.40	.950	2.17	B	EL	45.0	.950	2.17	B	I	81.60	0.80	.950	1.66	B	I	45.0
		TNAGRIT4	43.000		1.60	68.8	1.40	.950	2.09	B	EL	45.0	.950	2.10	B	I	81.60	0.80	.950	1.60	B	I	45.0
		TNAGT5A	45.000		1.51	68.0	1.40	.950	1.97	B	EL	45.0	.950	2.07	B	I	81.60	0.80	.950	1.51	B	I	45.0
TNAGT5B	45.000	3	1.50	67.5	1.40	.950	1.96	B	EL	45.0	.950	2.00	B	I	81.60	0.80	.950	1.50	B	I	45.0		

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.
 SPAN LENGTHS IN LRFR SUMMARY SKETCH BELOW ARE THOSE USED IN ANALYSIS MODEL FOR COMPOSITE DEAD LOAD AND LIVE LOAD.

#	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
 (CONTINUOUS FOR LIVE LOAD)

PROJECT NO. R-2707E
 CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-

SHEET 4 OF 4

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

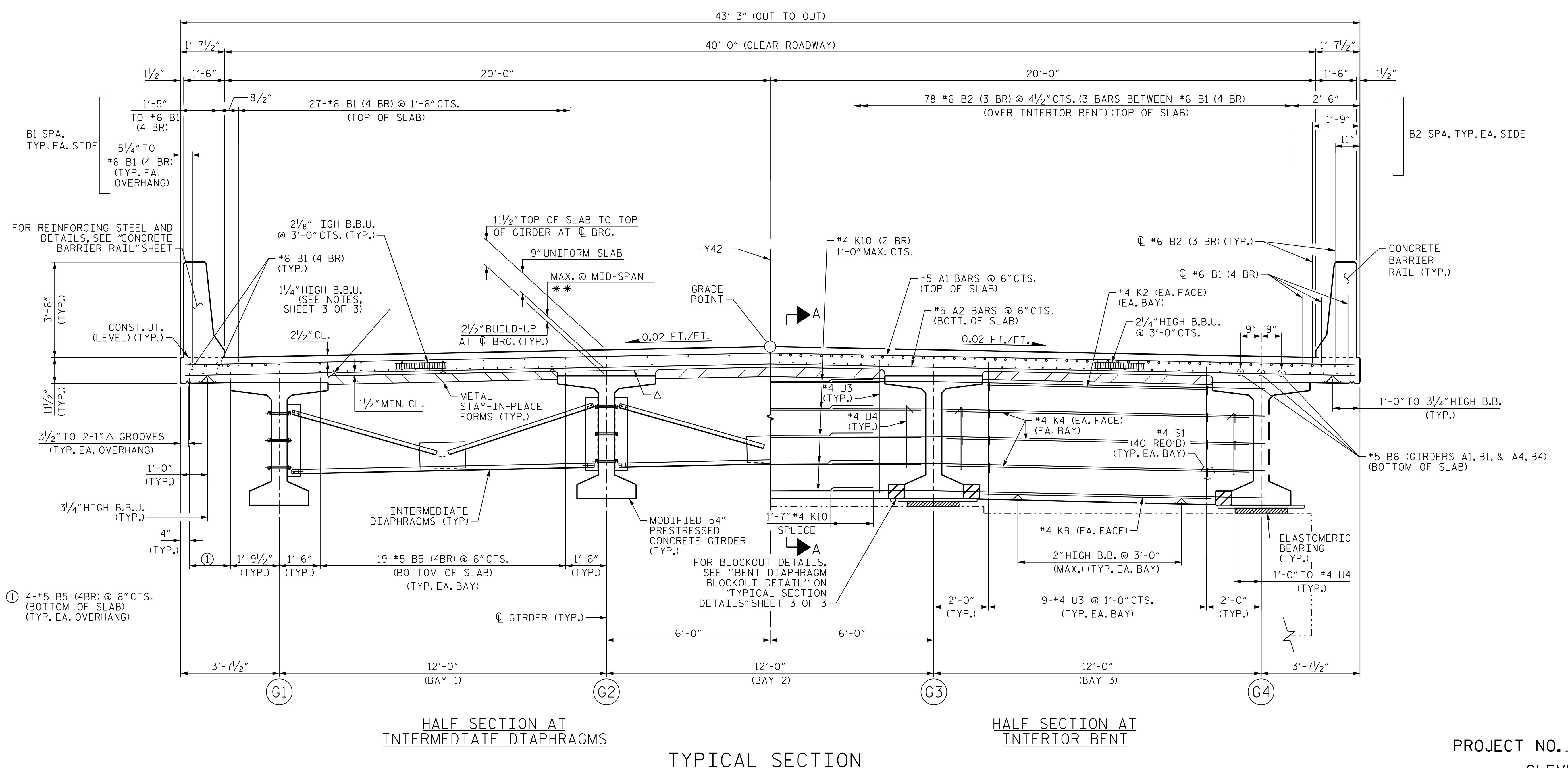


Stantec
 Stantec Consulting Services Inc.
 801 Jones Franklin Road
 Suite 300
 Raleigh, NC 27606
 Tel. (919) 851-6866
 Fax. (919) 851-7024
 www.stantec.com
 License No. F-0672

ASSEMBLED BY : J. B. GEILE	DATE : 1/11/23	DESIGN ENGINEER OF RECORD: J. T. KELVINGTON	DATE : 05/05/23
CHECKED BY : A. L. BOYKIN	DATE : 02/17/23		
DRAWN BY : MAA	1/08	REV. 11/2/08RR	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				REVISIONS		SHEET NO. S7-05	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1			3			34	
2			4				

5/5/2023 12:43:38 PM jgelle



TYPICAL SECTION

NOTES:

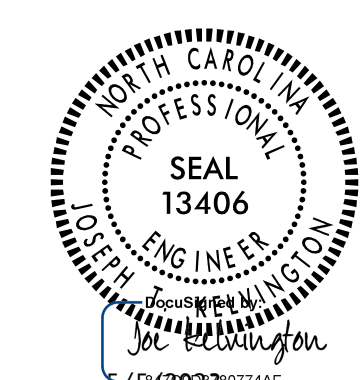
- FOR SECTION A-A, SEE "SUPERSTRUCTURE TYPICAL SECTION", SHEET 3 OF 3.
- SEE "SUPERSTRUCTURE TYPICAL SECTION", SHEET 3 OF 3 FOR NOTES.
- SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR MODIFIED 54" PRESTRESSED CONCRETE GIRDERS" FOR INTERMEDIATE DIAPHRAGM DETAILS AND DIMENSIONS.
- (2 BR) DENOTES 2 BAR RUN.
(3 BR) DENOTES 3 BAR RUN.
(4 BR) DENOTES 4 BAR RUN.
- DENOTES CONTINUOUS LONGITUDINAL DECK REINFORCEMENT.
- DENOTES NON-CONTINUOUS LONGITUDINAL DECK REINFORCEMENT.
- * FOR BAR DETAILS SEE "PLAN OF SPANS", SHEET 1 OF 2.
- ** SEE DETAIL "A" ON "TYPICAL SECTION DETAILS", SHT. 3 OF 3.
- △ TOP OF METAL SIP FORM TO MATCH REQUIRED BOTT. OF SLAB.

PROJECT NO. R-2707E
CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

TYPICAL SECTION



Stantec Consulting Services Inc.
 801 Jones Franklin Road
 Suite 300
 Raleigh, NC 27606
 Tel. (919) 851-6866
 Fax. (919) 851-7024
 www.stantec.com
 License No. F-0672

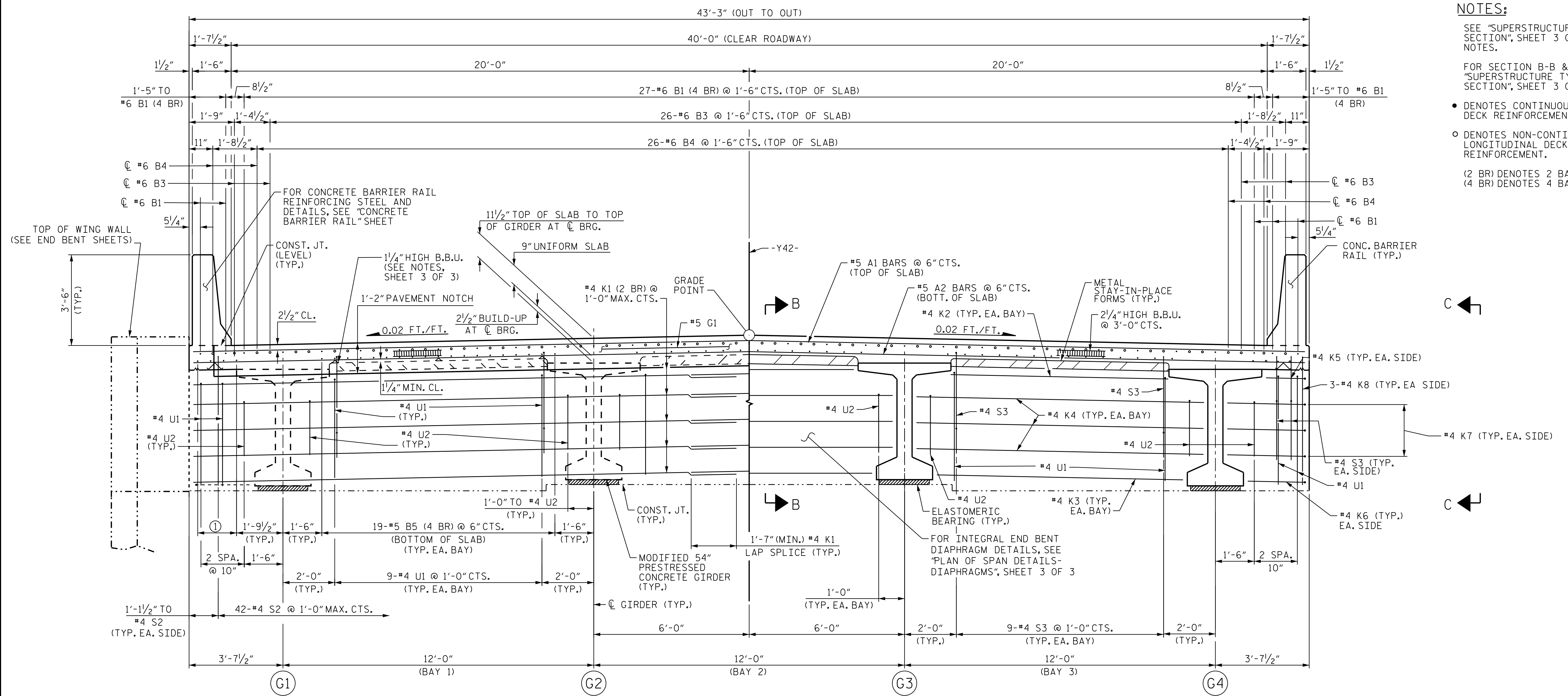
DRAWN BY : J.E. HAGENBUSH DATE : 10/12/18
 CHECKED BY : A. L. BOYKIN DATE : 02/17/23
 DESIGN ENGINEER OF RECORD : J. T. KELVINGTON DATE : 05/05/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-06
1			3			TOTAL SHEETS
2			4			34

NOTES:

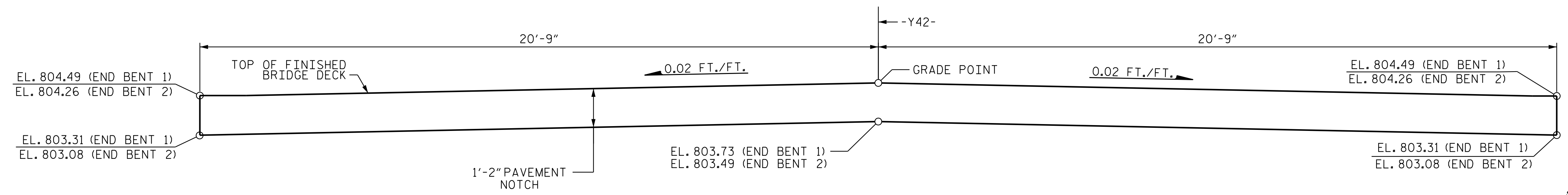
- SEE "SUPERSTRUCTURE TYPICAL SECTION", SHEET 3 OF 3 FOR NOTES.
- FOR SECTION B-B & C-C SEE "SUPERSTRUCTURE TYPICAL SECTION", SHEET 3 OF 3.
- DENOTES CONTINUOUS LONGITUDINAL DECK REINFORCEMENT.
- DENOTES NON-CONTINUOUS LONGITUDINAL DECK REINFORCEMENT.
- (2 BR) DENOTES 2 BAR RUN.
- (4 BR) DENOTES 4 BAR RUN.



INTEGRAL DIAPHRAGM HALF-SECTION REINFORCEMENT AT FILL FACE TYPICAL SECTION INTEGRAL DIAPHRAGM HALF-SECTION REINFORCEMENT AT FRONT FACE

(AS VIEWED AT END BENT 1, LOOKING UP-STATION) (END BENT 2 DETAILS SIMILAR BY ROTATION)
 FOR SECTION THROUGH END BENT AND END VIEW OF END BENT DIAPHRAGM, SEE SECTIONS B-B & C-C ON SHT. 3 OF 3.

① 4-#5 B5 (4BR) @ 6" CTS. (BOTTOM OF SLAB) (TYP. EA. OVERHANG)



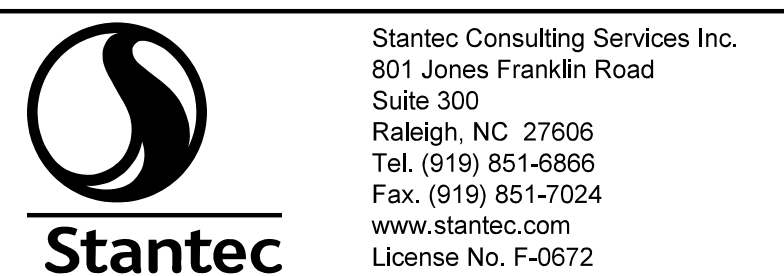
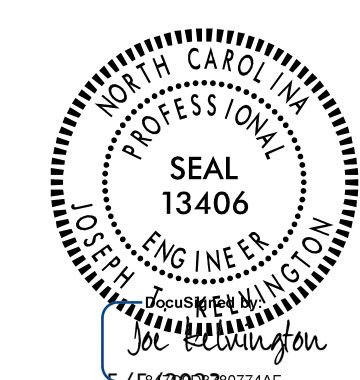
APPROACH SLAB PAVEMENT NOTCH DETAIL

PROJECT NO. R-2707E
 CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

TYPICAL SECTION



DRAWN BY: J.E. HAGENBUSH DATE: 10/17/18
 CHECKED BY: A. L. BOYKIN DATE: 02/17/23
 DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE: 05/05/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO. S7-07
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

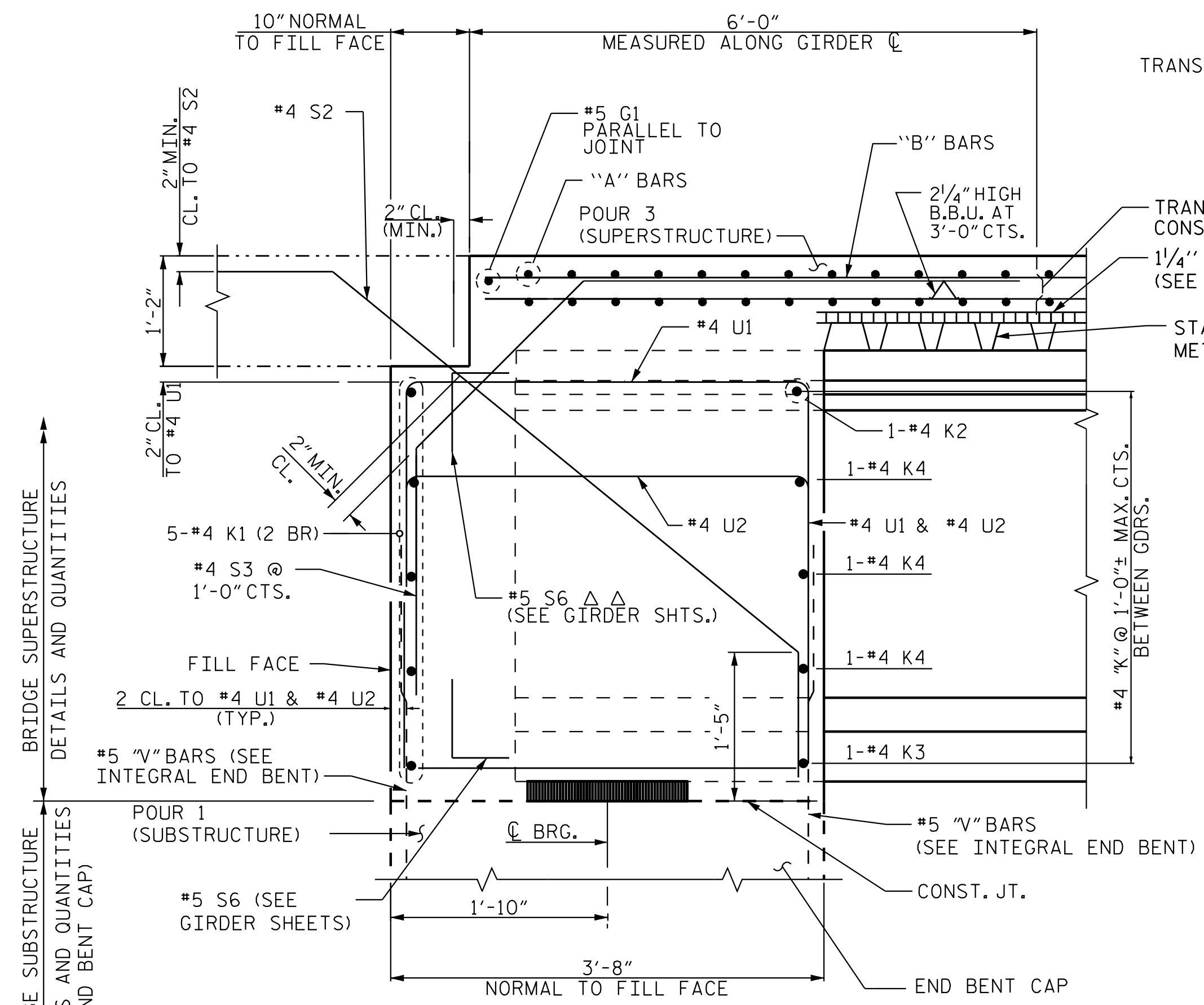
NOTES

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.

NO CHAMFER IS REQUIRED ON CORNERS OF GIRDER BUILDS.

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

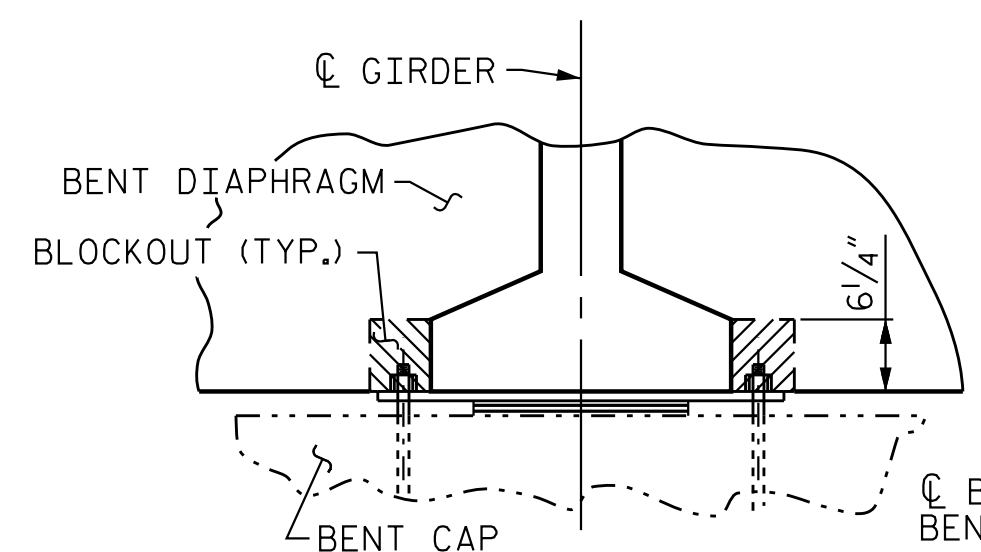


SECTION B-B

SECTION THRU INTEGRAL END BENT DIAPHRAGM SEE "PLAN OF SPANS - DIAPHRAGMS", SHEET 3 OF 3

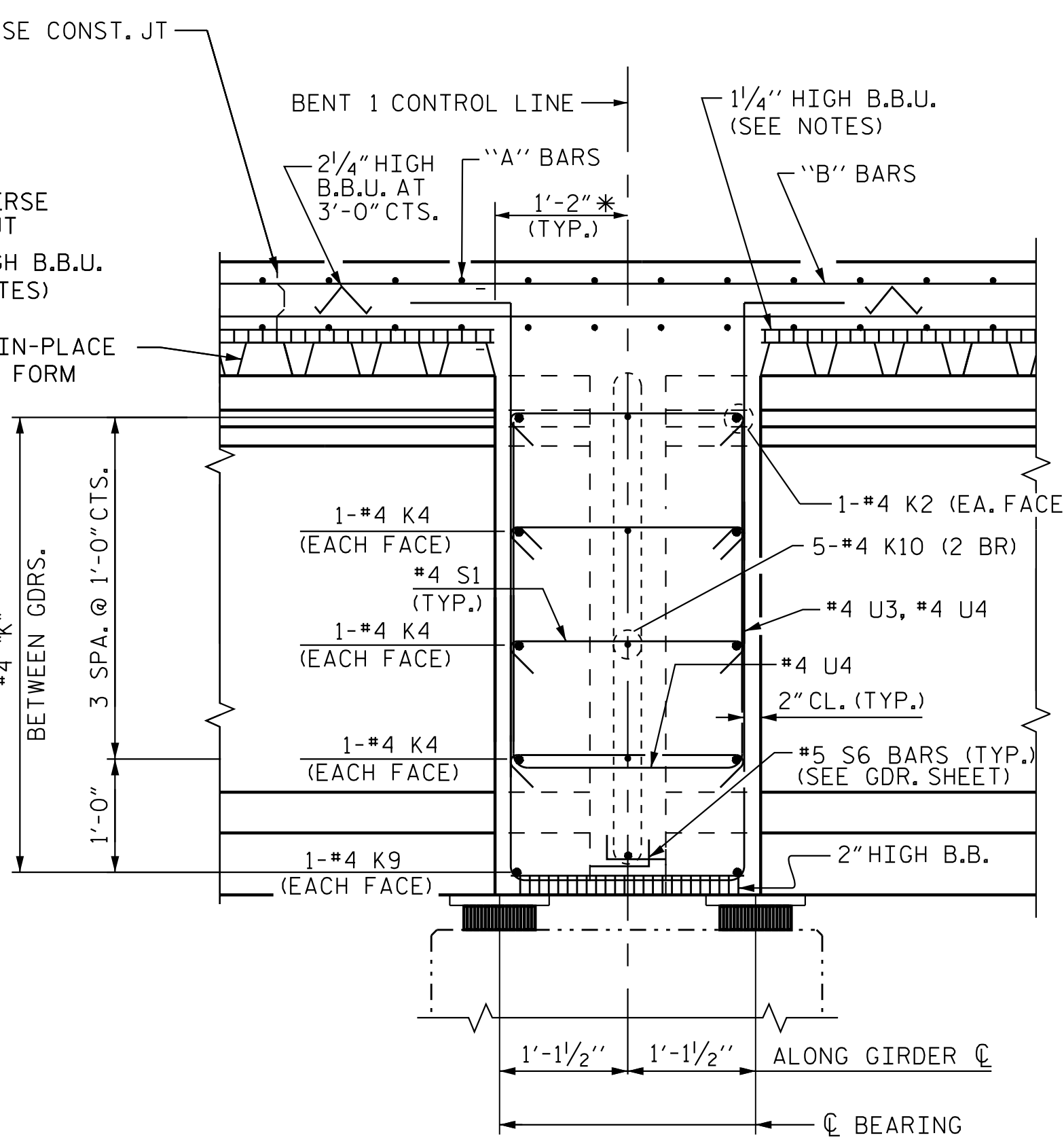
#4 S2 & S3 BARS MAY BE REPOSITIONED AS NECESSARY TO CLEAR SLAB REINFORCING STEEL AND GIRDERS.

NOTE: (2 BR) DENOTES 2 BAR RUN



BENT DIAPHRAGM BLOCKOUT DETAIL

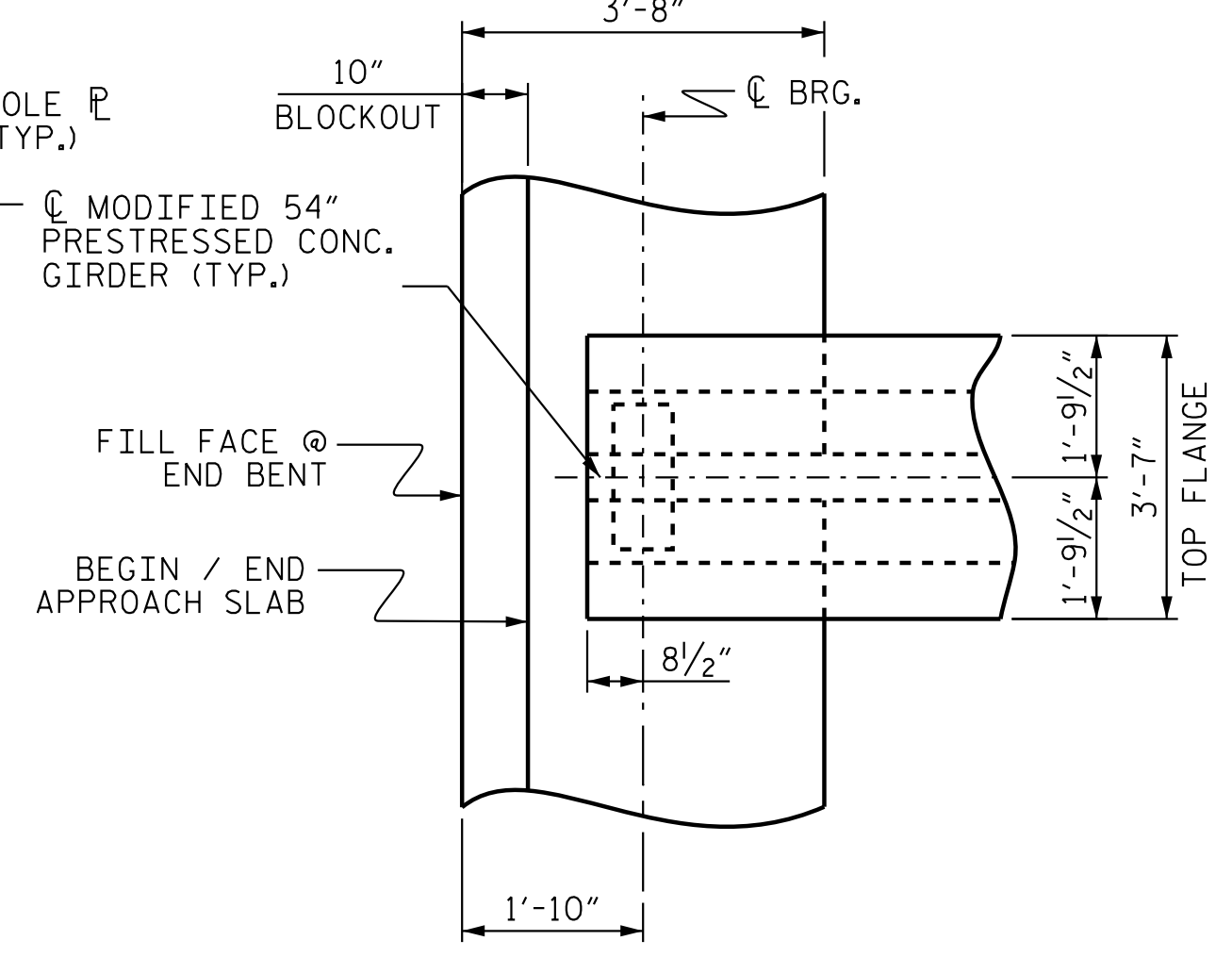
△△ #5 S6 TOP OF GIRDER MAY BE FIELD BENT AS NECESSARY TO CLEAR 1'-2" DEEP PAV'T. NOTCH



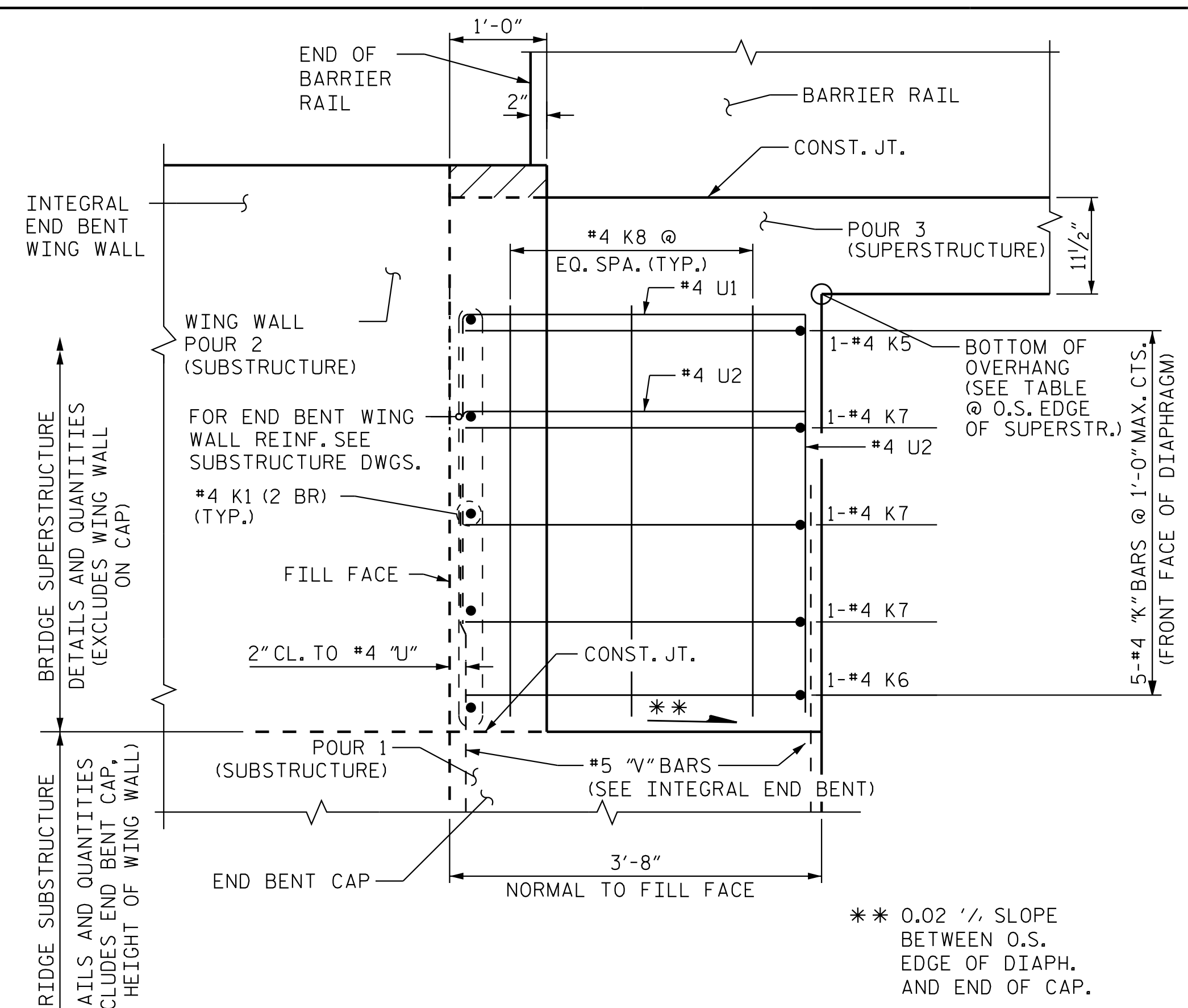
SECTION A-A

SECTION THRU DIAPHRAGM @ INTERIOR BENT SEE "PLAN OF SPANS DETAILS - DIAPHRAGMS", SHEET 3 OF 3

*NORMAL TO C BENT



PLAN OF INTEGRAL END BENT

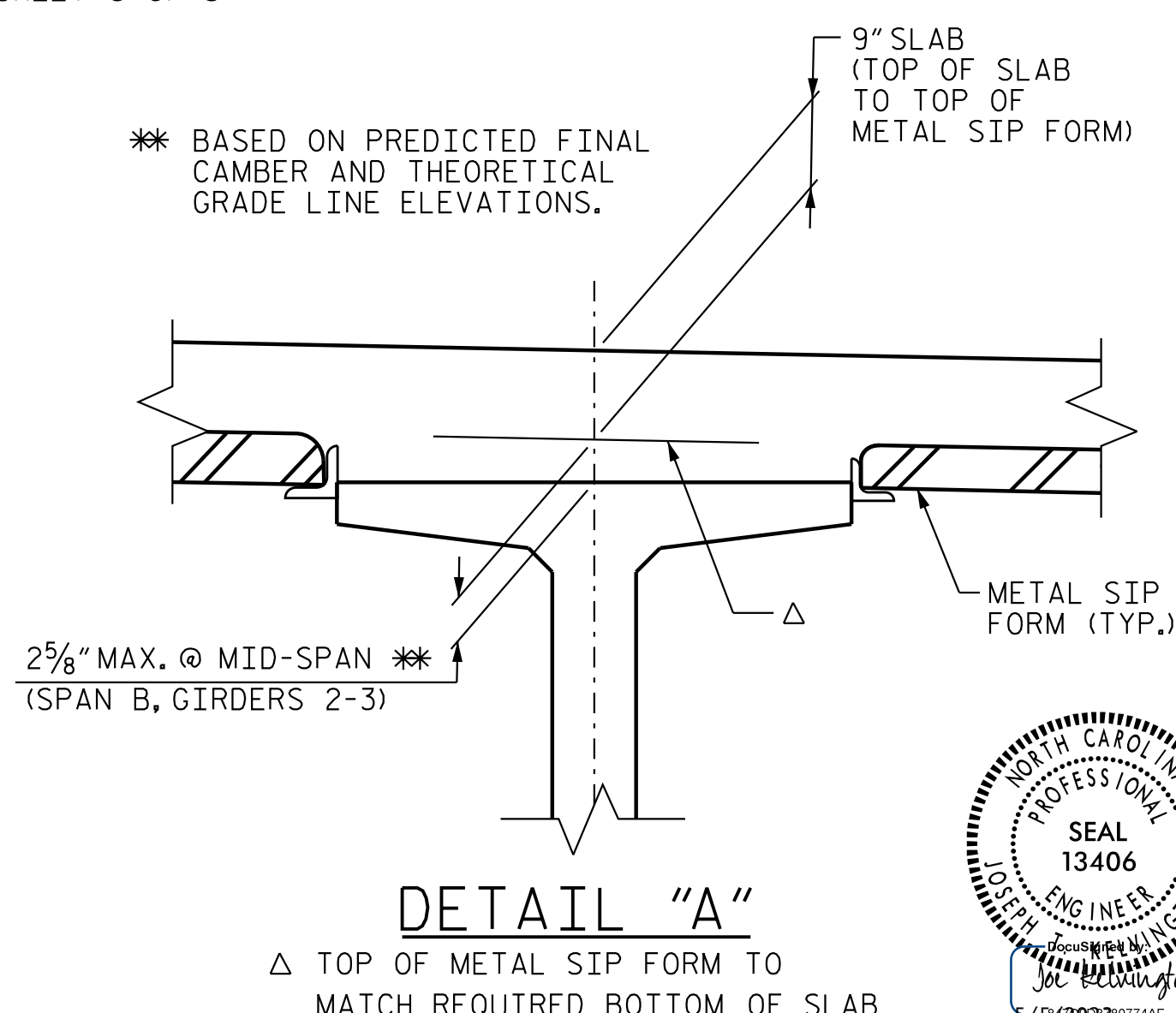


ELEVATION C-C

VIEW OF INTEGRAL END BENT BACKWALL AND DIAPHRAGM BEYOND O.S. EDGE OF DECK SLAB. SEE "PLAN OF SPAN DETAILS - DIAPHRAGMS", SHEET 3 OF 3

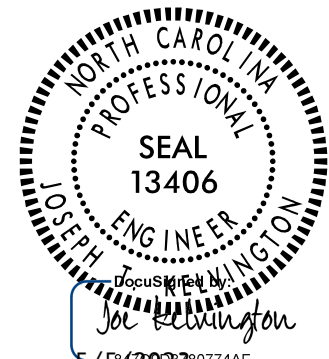
BOTTOM OF OVERHANG ELEV. @ OUTSIDE EDGE OF SUPERSTR.

OVERHANG	END BENT	ELEV.
LEFT SIDE	1	803.55
RIGHT SIDE	1	803.55
LEFT SIDE	2	803.32
RIGHT SIDE	2	803.32



DETAIL "A"

△ TOP OF METAL SIP FORM TO MATCH REQUIRED BOTTOM OF SLAB



PROJECT NO. R-2707E
CLEVELAND COUNTY
STATION: 13+08.49 -Y42-

SHEET 3 OF 3

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

REVISIONS						SHEET NO. S7-08
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DRAWN BY: J. B. GEILE DATE: 01/11/23
CHECKED BY: A. L. BOYKIN DATE: 02/17/23
DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE: 05/05/23

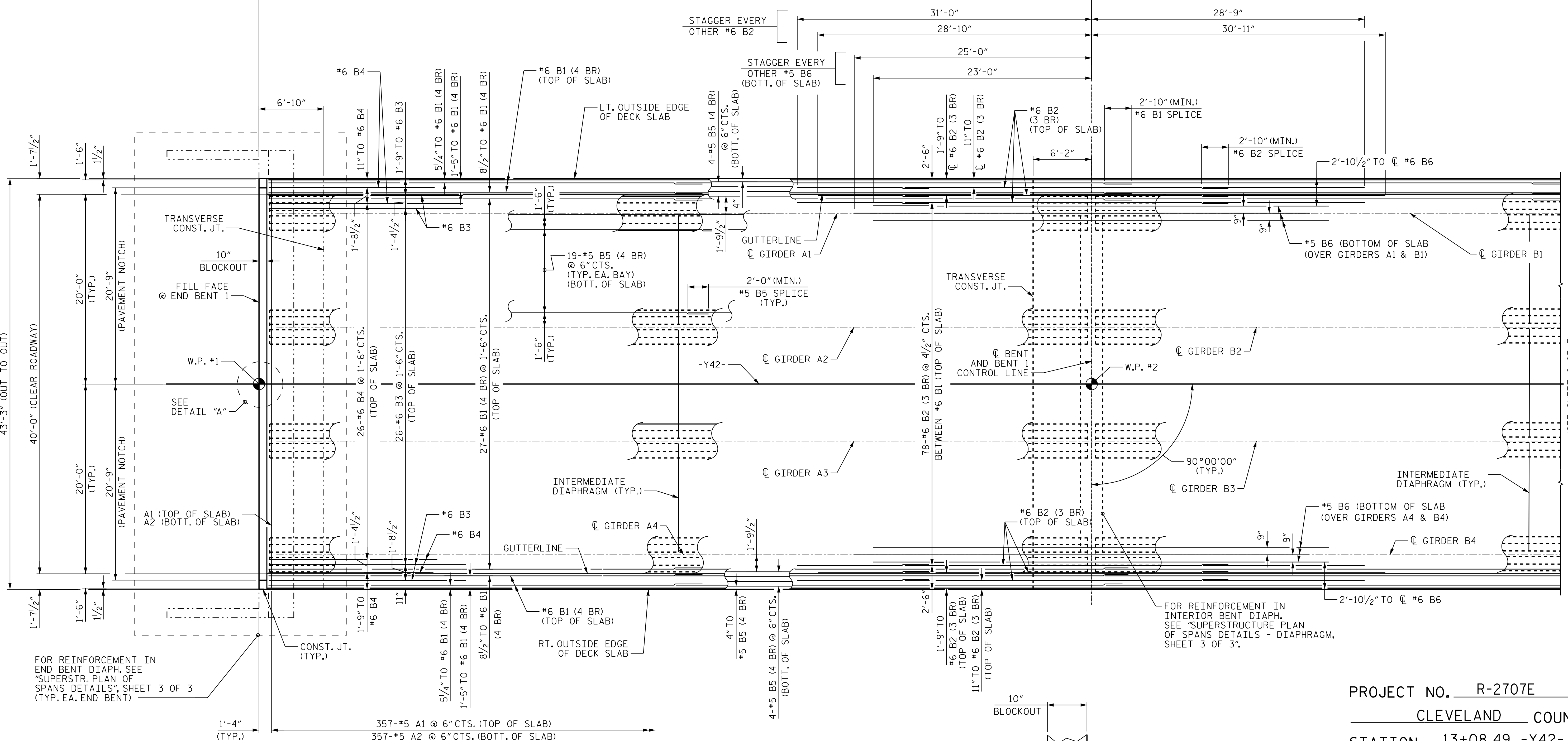
5/5/2023 12:44:44 PM jgeile c:\users\jgeile\documents\p_wor\king\dms5559\R2707E.SML.IS03.220494.dgn

5/5/2023 12:45:08 PM jgelle

TOTAL LENGTH OF BRIDGE = 180'-8" (FILL FACE TO FILL FACE)

87'-8" (W.P.#1 TO W.P.#2)

93'-0" (W.P.#2 TO W.P.#3)



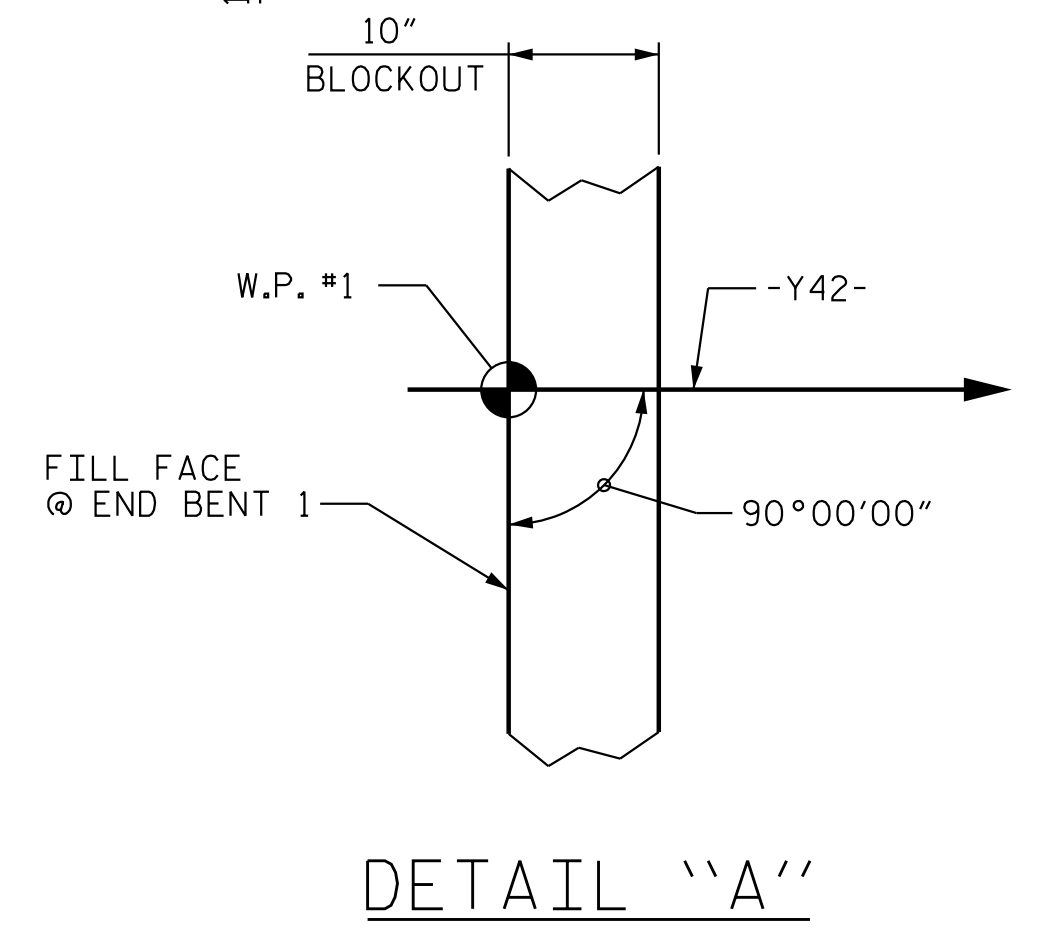
PLAN OF SPANS
(SPAN A AND PART SPAN B)

FOR BARRIER RAIL DETAILS AND REINFORCING STEEL, SEE "CONCRETE BARRIER RAIL" SHEET S7-19.

FOR TRANSVERSE CONSTRUCTION JOINT DETAIL, SEE "PLAN OF SPANS, SHEET S7-10."

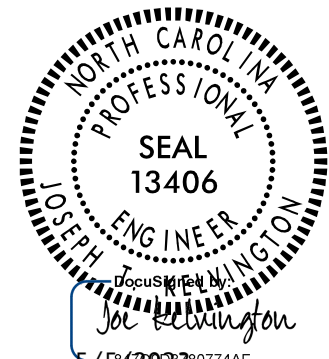
FOR POUR SEQUENCE, SEE SHEET "SUPERSTRUCTURE BILL OF MATERIALS" SHEET S7-22.

PLACE #6 B3 AND #6 B4 2" CLEAR OF 10" BLOCKOUT.
(3 BR) DENOTES THREE BAR RUN
(4 BR) DENOTES FOUR BAR RUN



PROJECT NO. R-2707E
CLEVELAND COUNTY
STATION: 13+08.49 -Y42-

SHEET 1 OF 3
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
PLAN OF SPANS

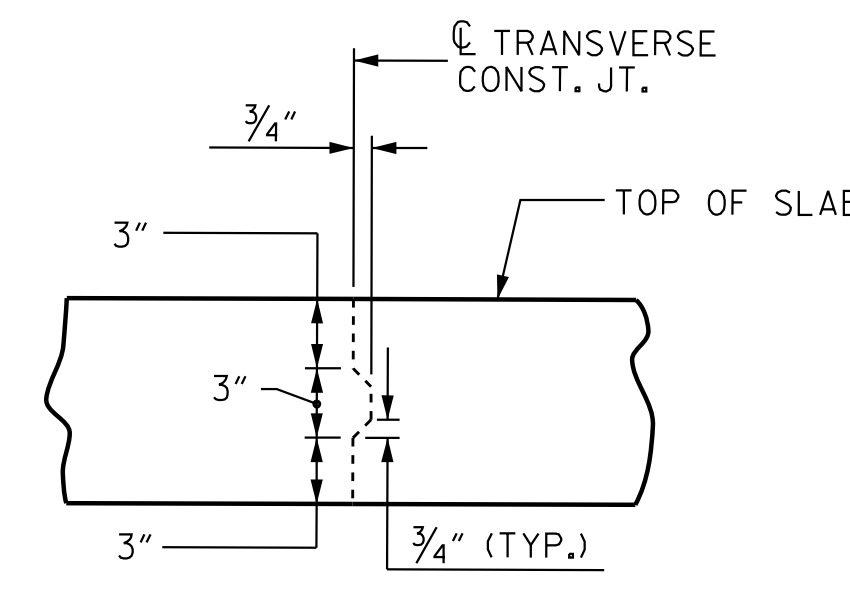
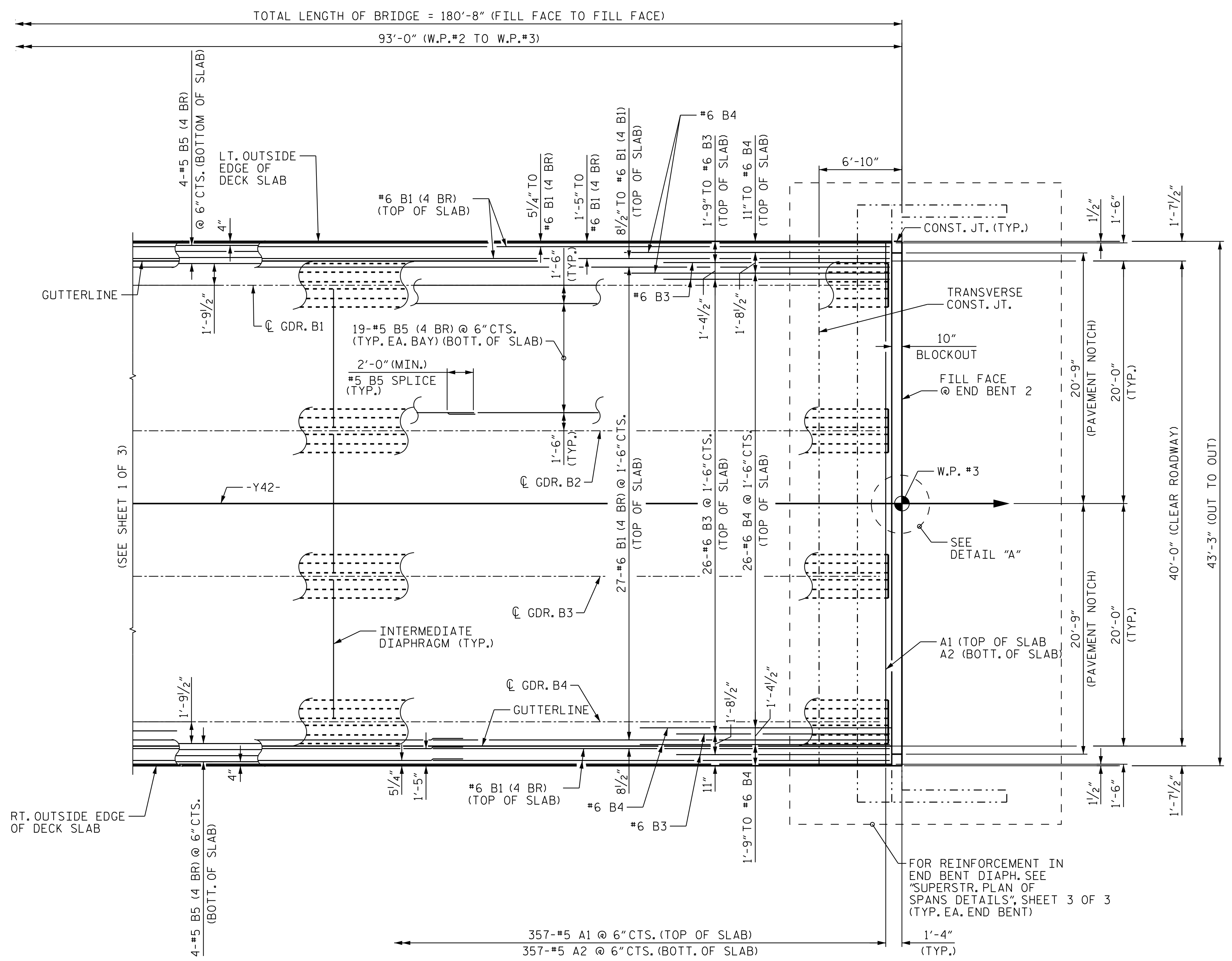


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-09
1			3			TOTAL SHEETS
2			4			34

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

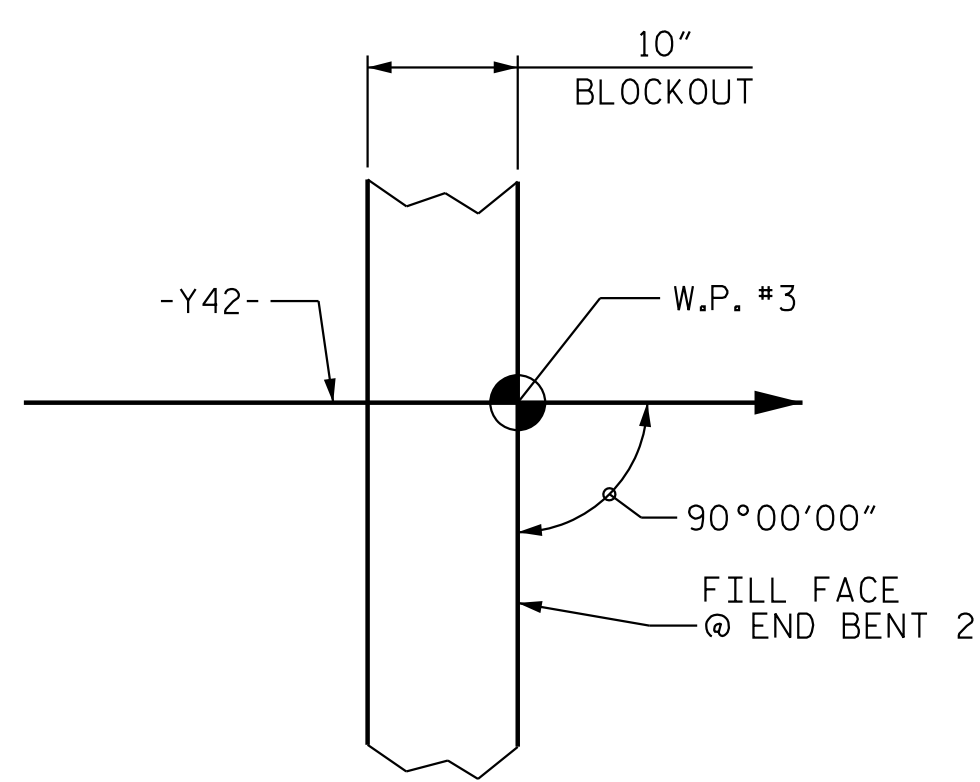
Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

DRAWN BY: J. B. GEILE DATE: 12/06/18
CHECKED BY: A. L. BOYKIN DATE: 02/17/23
DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE: 05/05/23



TRANSVERSE CONSTRUCTION JOINT DETAIL

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



DETAIL "A"

PLAN OF SPANS (PART OF SPAN B)

NOTES:
 FOR BARRIER RAIL DETAILS AND REINFORCING STEEL, SEE "CONCRETE BARRIER RAIL" SHEET S7-19.
 FOR POUR SEQUENCE, SEE SHEET "SUPERSTRUCTURE BILL OF MATERIALS" SHEET S7-22.
 FOR NON-CONTINUOUS REINF. OVER BENT, SEE PLAN OF SPANS SHEET 1 OF 3.
 PLACE #6 B3 AND #6 B4 BARS 2" CLEAR OF 10" BLOCKOUT.
 (4 BR) DENOTES FOUR BAR RUN

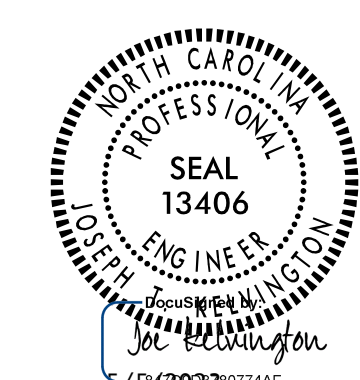
PROJECT NO. R-2707E
CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE

PLAN OF SPANS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-10
1			3			TOTAL SHEETS
2			4			34



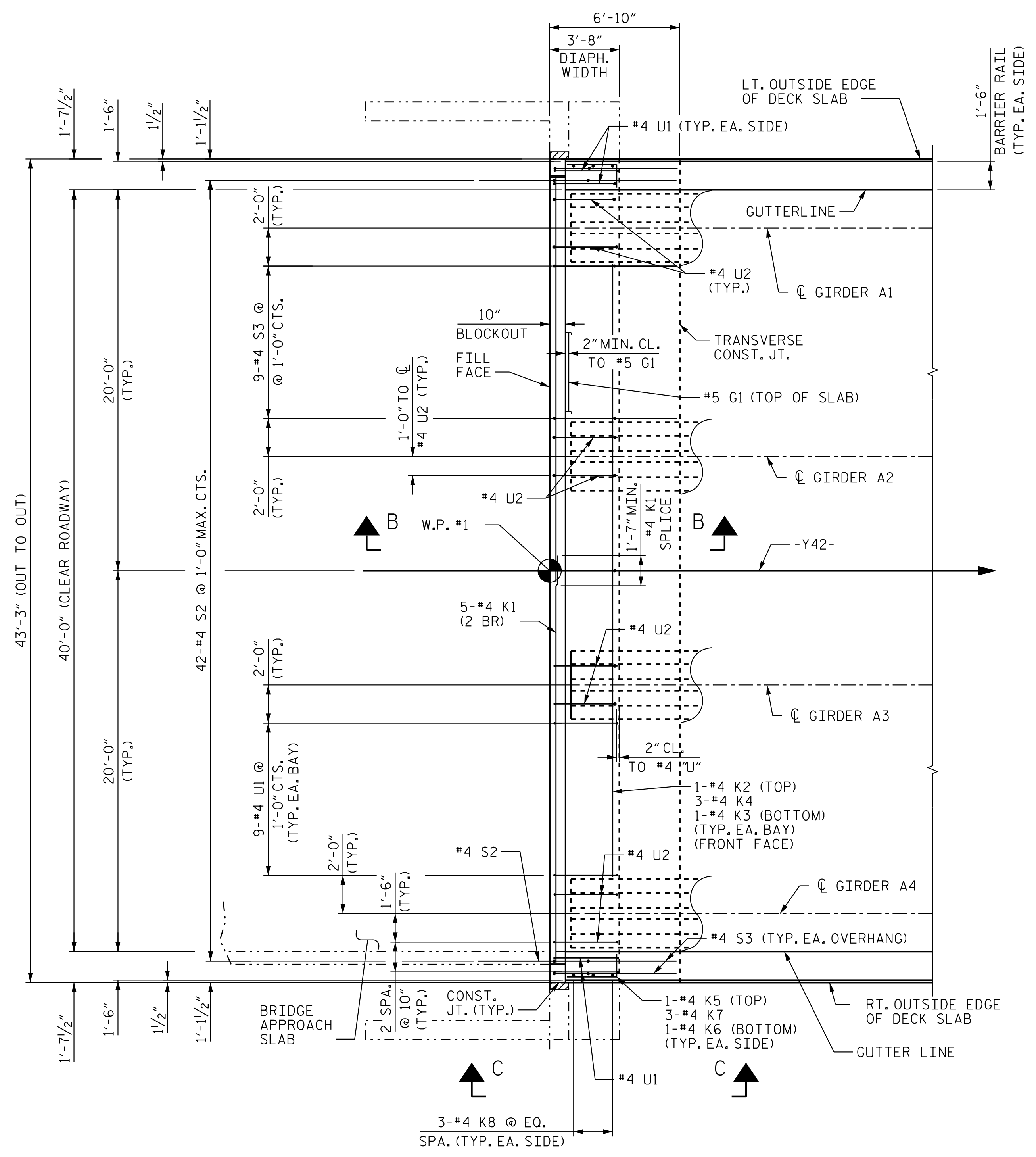
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/5/2023 12:45:54 PM jgeille
 C:\Users\jgeille\documents\pwr\working\smu\S02-220494.dgn.DGN

Stantec Consulting Services Inc.
 801 Jones Franklin Road
 Suite 300
 Raleigh, NC 27606
 Tel. (919) 851-6866
 Fax. (919) 851-7024
 www.stantec.com
 License No. F-0672

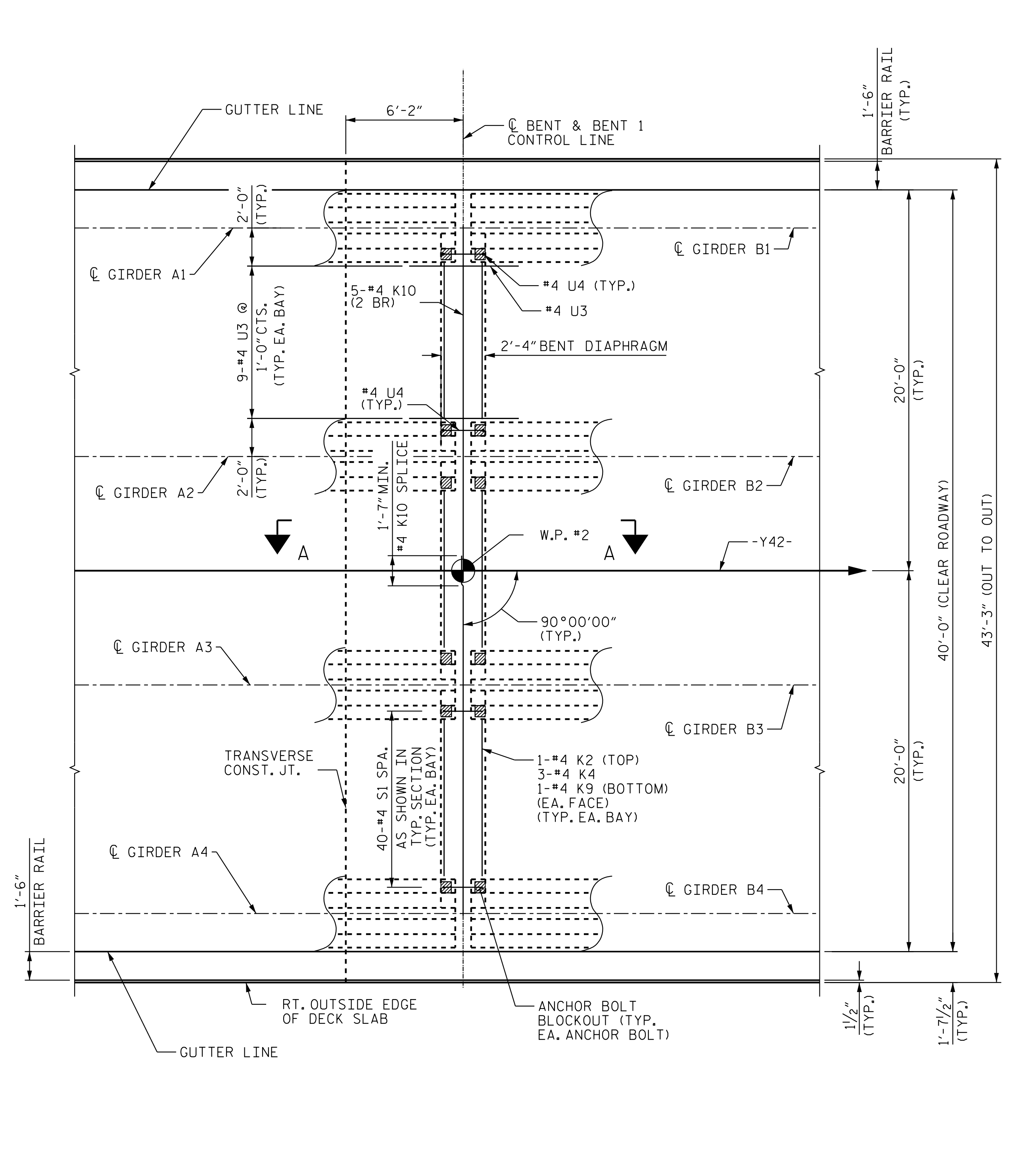
DRAWN BY : J. B. GEILE DATE : 12/06/18
 CHECKED BY : A. L. BOYKIN DATE : 02/17/23
 DESIGN ENGINEER OF RECORD : J. T. KELVINGTON DATE : 05/05/23

5/5/2023 12:46:16 PM jgelle
c:\users\jgelle\documents\p_w\working\dms5559\R2707E.SMU.S03.220494.dgn.DGN



**TYPICAL END BENT
DIAPHRAGM REINFORCING
DETAIL**

DETAIL AT END BENT 1 SHOWN.
 DETAILS AT END BENT 2 SIMILAR BY ROTATION.
 SEE 'END BENT 1 DETAILS - WING WALLS' AND
 'END BENT 2 DETAILS - WING WALLS' FOR REINFORCEMENT IN WINGS.



**BENT 1 DIAPHRAGM
REINFORCING DETAIL**

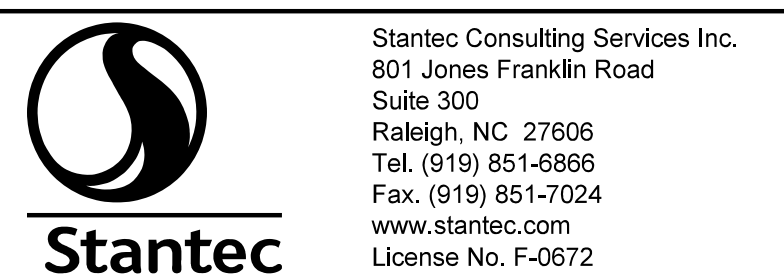
NOTES:
 #4 "S" BARS MAY BE REPOSITIONED AS
 FOUND NECESSARY TO CLEAR PRESTRESSED GIRDERS.
 "A" BARS, "B" BARS & BARRIER RAIL REINFORCEMENT
 ARE NOT SHOWN IN DECK SLAB FOR CLARITY.
 FOR SECTION A-A, SECTION B-B AND SECTION C-C
 SEE SUPERSTRUCTURE "TYPICAL SECTION DETAILS", SHT 3 OF 3.
 (2 BR) DENOTES 2 BAR RUN.
 [Hatched Box] DENOTES CONC. BLOCKOUT SEE END BENT SHEETS,
 AND SUPERSTRUCTURE TYPICAL SECTION DETAILS.

PROJECT NO. R-2707E
CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SUPERSTRUCTURE
 PLAN OF SPANS
 DETAILS -
 DIAPHRAGMS**

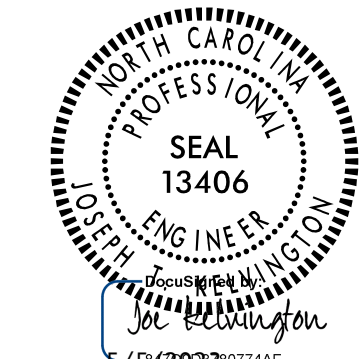
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-11	
1			3			TOTAL SHEETS	
2			4			34	



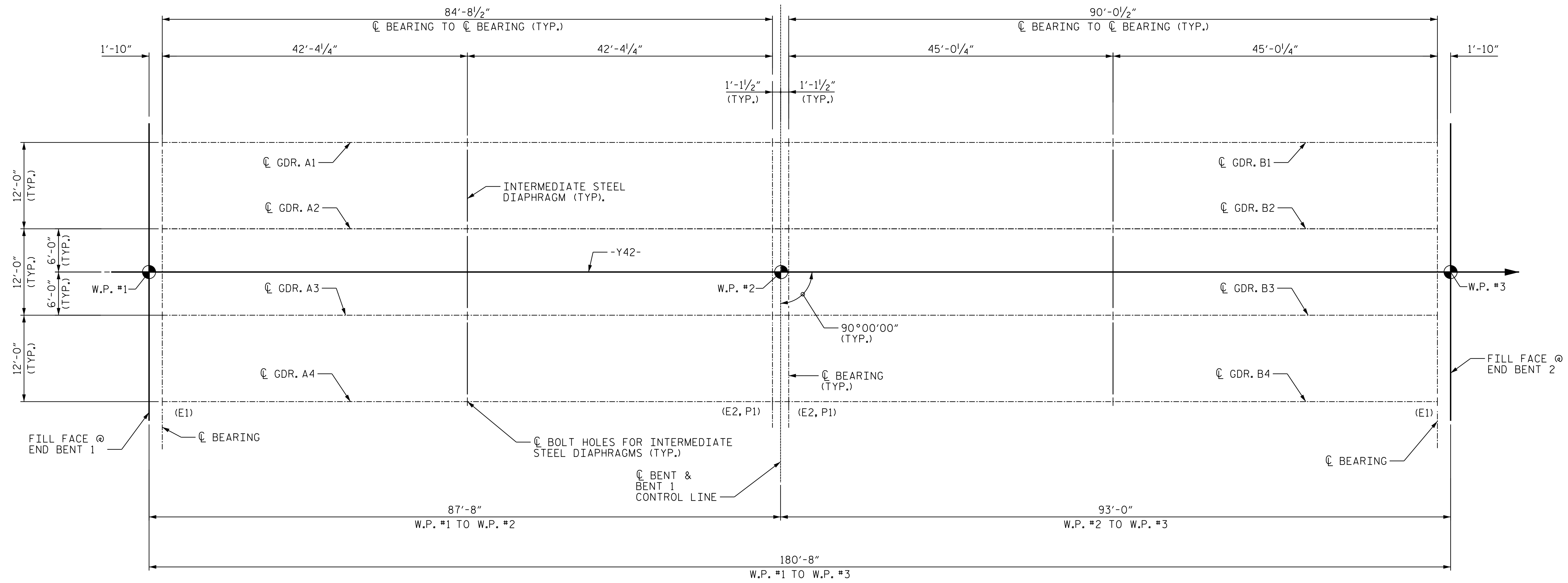
Stantec Consulting Services Inc.
 801 Jones Franklin Road
 Suite 300
 Raleigh, NC 27606
 Tel. (919) 851-6866
 Fax. (919) 851-7024
 www.stantec.com
 License No. F-0672

DRAWN BY : J. B. GEILE DATE : 12/08/18
 CHECKED BY : A. L. BOYKIN DATE : 02/17/23

DESIGN ENGINEER OF RECORD : J. T. KELVINGTON DATE : 05/05/23



DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED



SPAN A

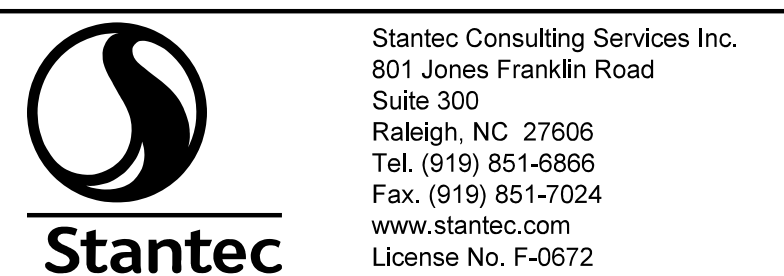
SPAN B

FRAMING PLAN

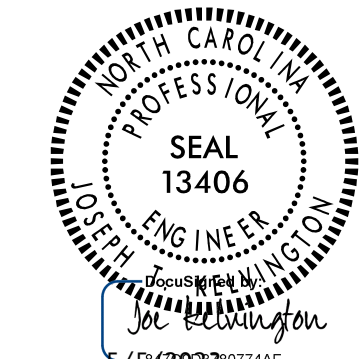
NOTES:

- (E1, E2, P1) DENOTES ELASTOMERIC BEARING OR SOLE PLATE. SEE "ELASTOMERIC BEARING DETAILS".
- SEE "PLAN OF SPANS DETAILS - DIAPHRAGMS" FOR END BENT DIAPHRAGM AND INTERIOR BENT DIAPHRAGM DETAILS.
- ALL DIMENSIONS ARE HORIZONTAL.

PROJECT NO. R-2707E
CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-



DRAWN BY : J. B. GEILE DATE : 12/06/18
 CHECKED BY : A. L. BOYKIN DATE : 02/17/23
 DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE : 05/05/23

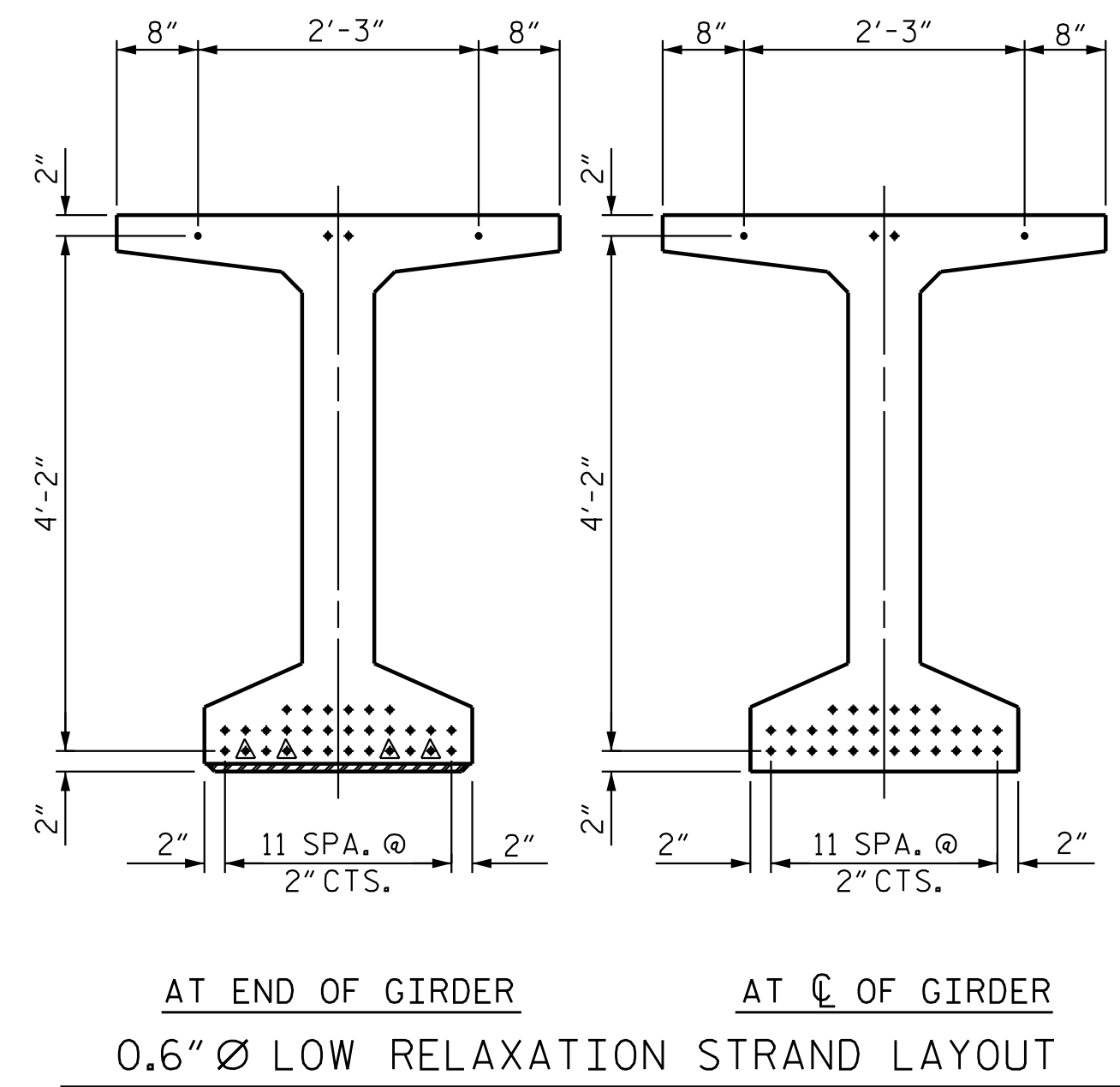
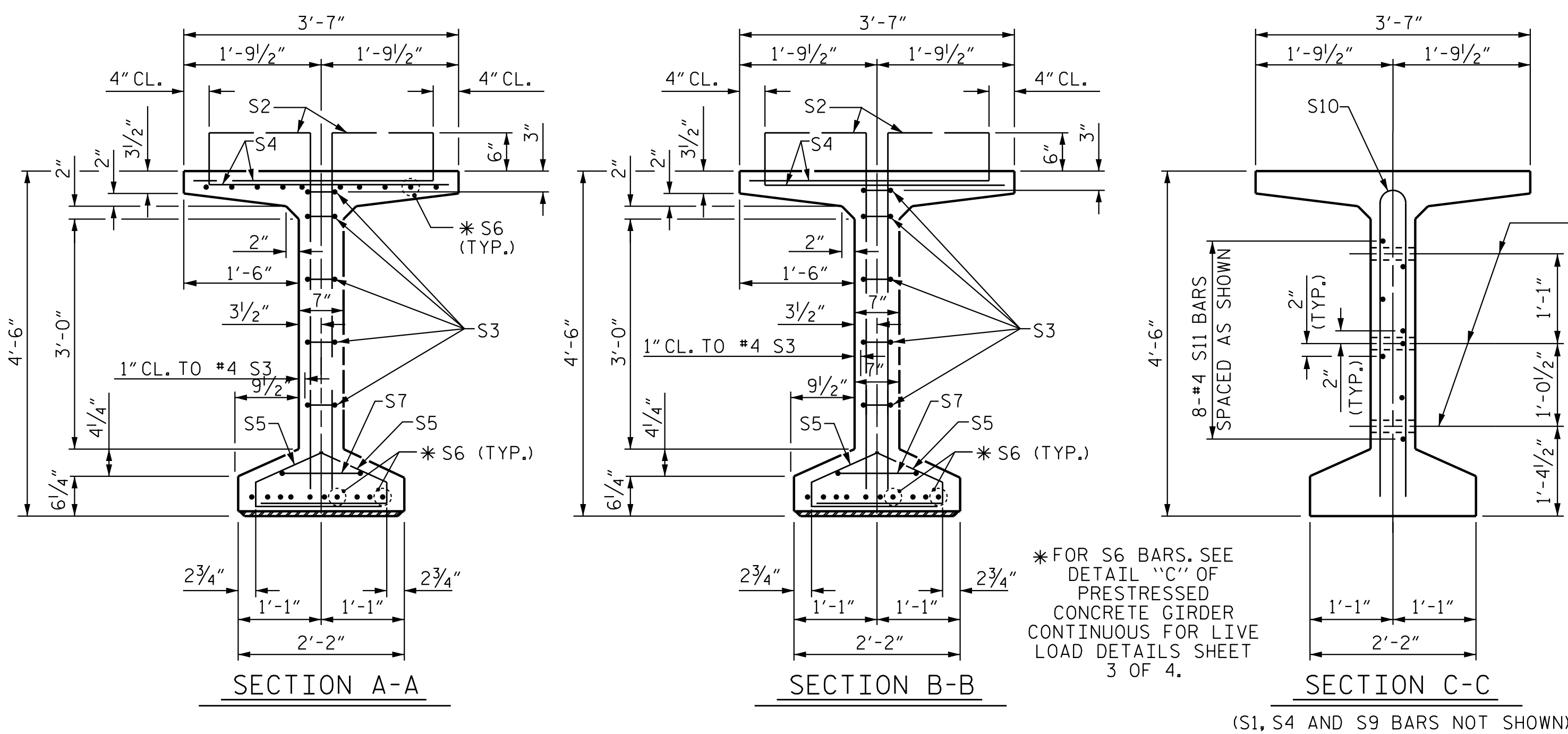


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 FRAMING PLAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-12
1			3			TOTAL SHEETS
2			4			34

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

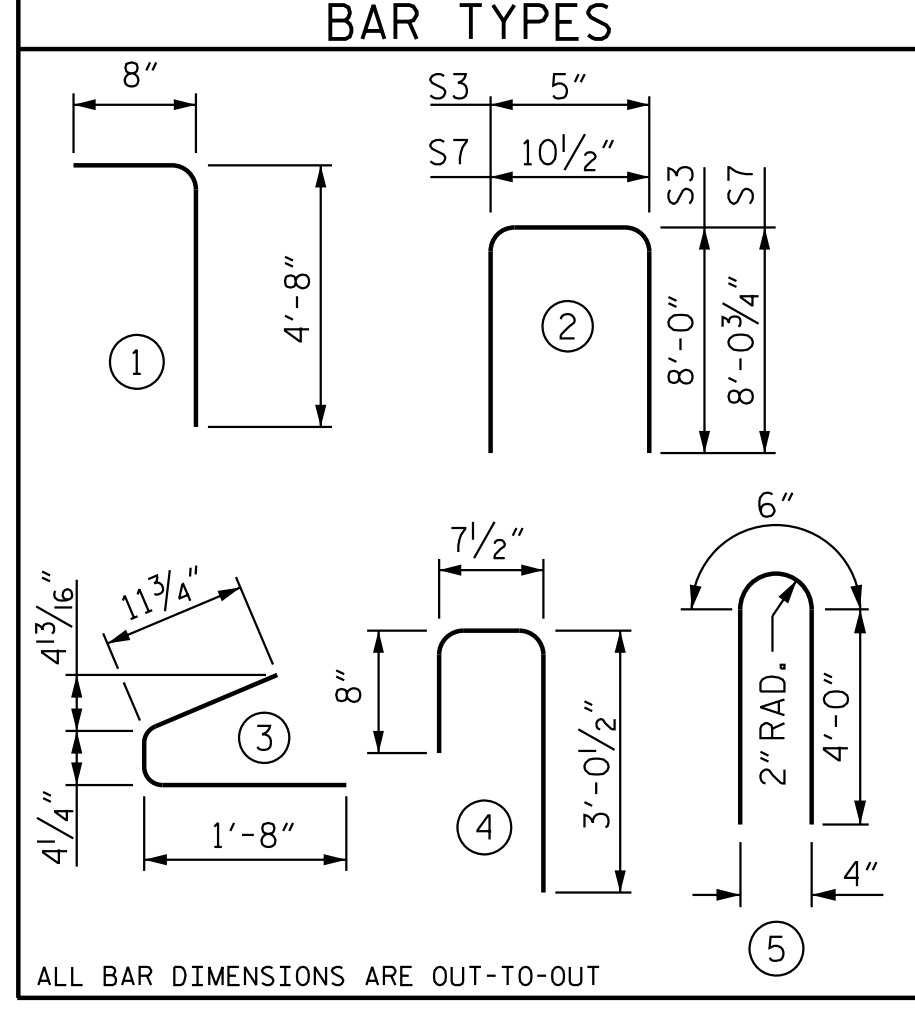
C:\Users\jgeile\documents\p_w_working\ms55919\R2707E-SMU.FP_220494.dgn.DGN 5/5/2023 12:46:37 PM jgeile



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

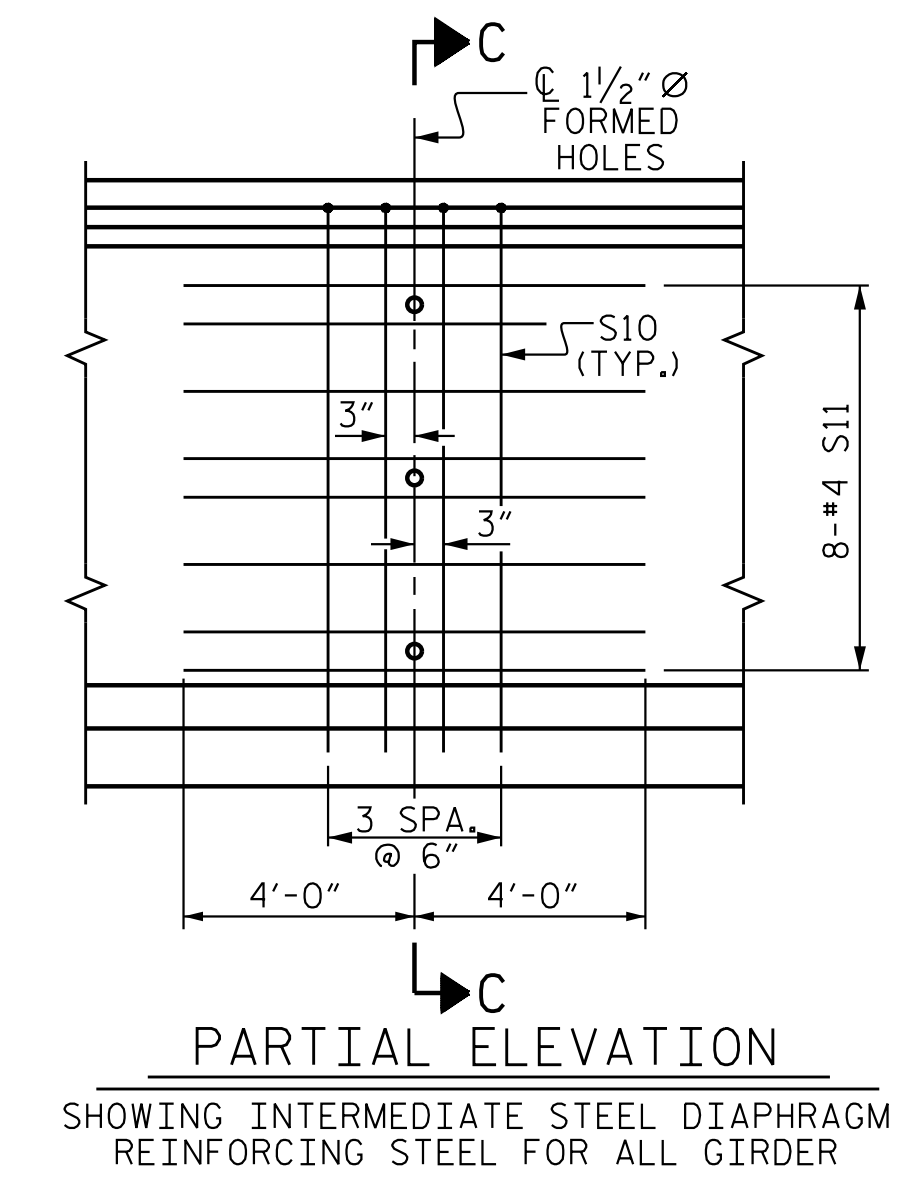
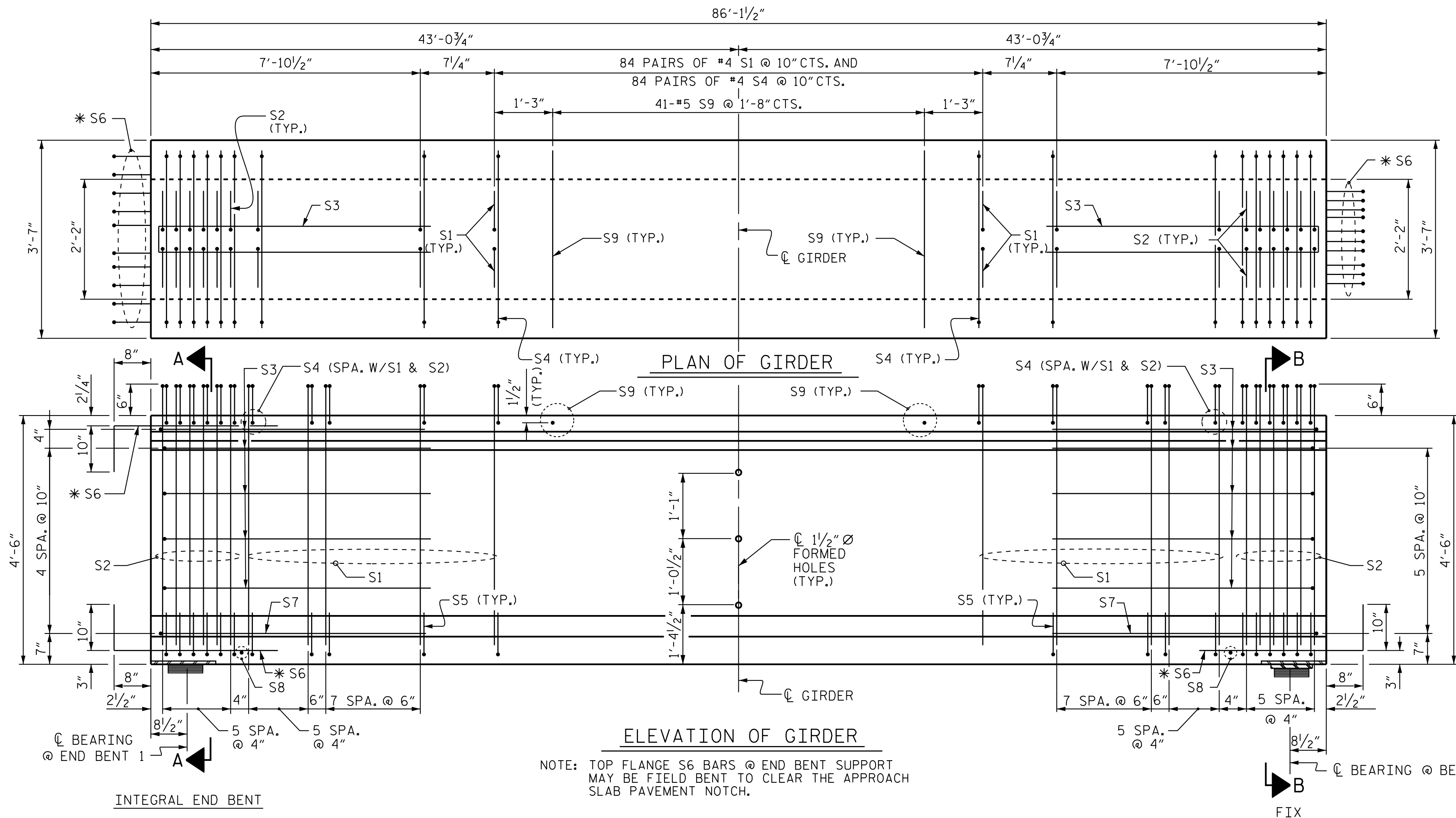
REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	224	#4	1	5'-4"	799
S2	24	#6	1	5'-4"	193
S3	10	#4	2	16'-5"	110
S4	248	#4	4	4'-4"	718
S5	80	#4	3	3'-0"	161
*S6	30	#5	STR	3'-8"	115
S7	2	#5	2	17'-0"	36
S8	2	#3	STR	1'-10"	2
S9	41	#5	STR	3'-3"	139
S10	4	#5	5	8'-6"	36
S11	8	#4	STR	8'-0"	43

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



QUANTITIES FOR ONE GIRDER		
REINFORCING STEEL	9000 PSI CONCRETE	0.6" \bar{O} L.R. STRANDS
LB.	C.Y.	No.
2352	15.7	34

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
4	86'-1 1/2"	344'-6"



PROJECT NO. R-2707E
 CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 MODIFIED 54" PRESTRESSED
 CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD

REVISIONS						SHEET NO. S7-13
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

SEAL 13406

ENGINEER

J. T. KELVINGTON

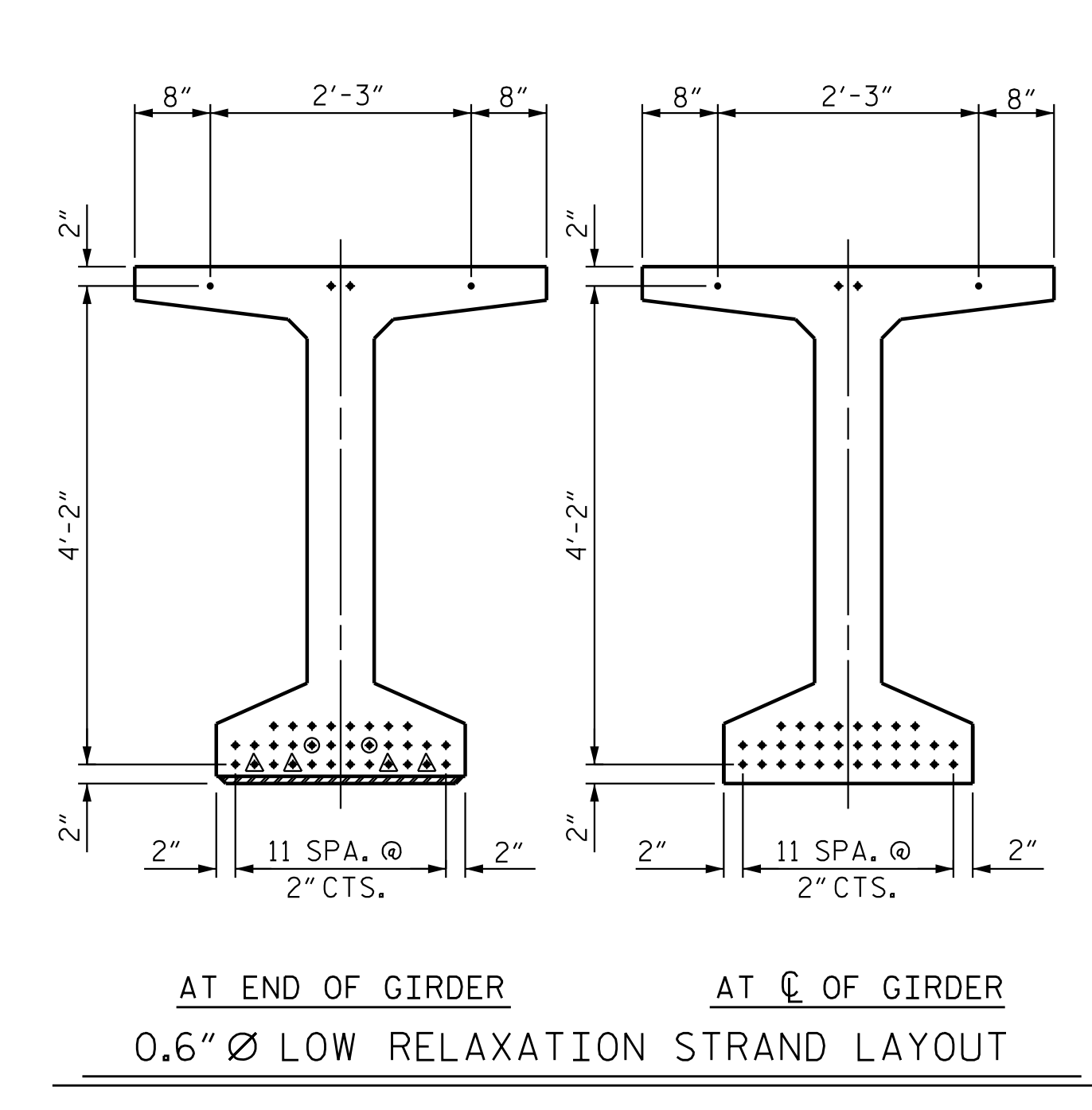
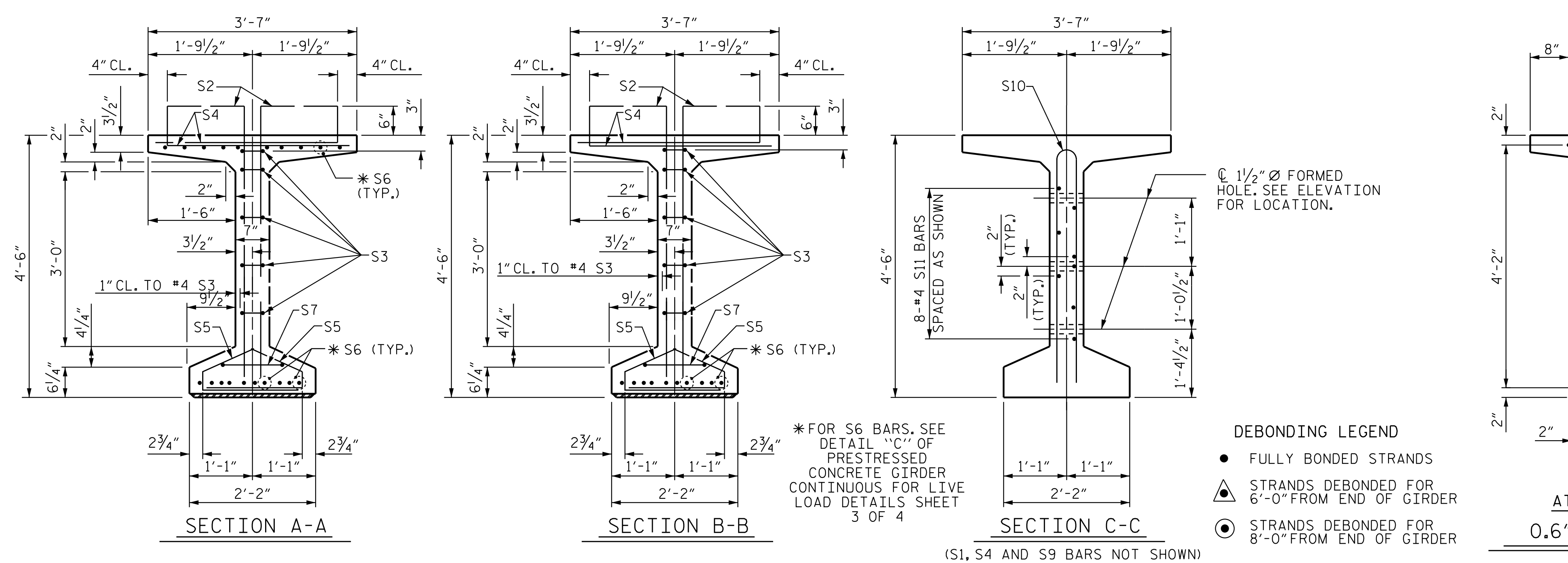
5/5/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Stantec Consulting Services Inc.
 801 Jones Franklin Road
 Suite 300
 Raleigh, NC 27606
 Tel. (919) 851-6866
 Fax. (919) 851-7024
 www.stantec.com
 License No. F-0672

DRAWN BY: J. B. GEILE DATE: 12/07/18
 CHECKED BY: A. L. BOYKIN DATE: 02/17/23
 DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE: 05/05/23

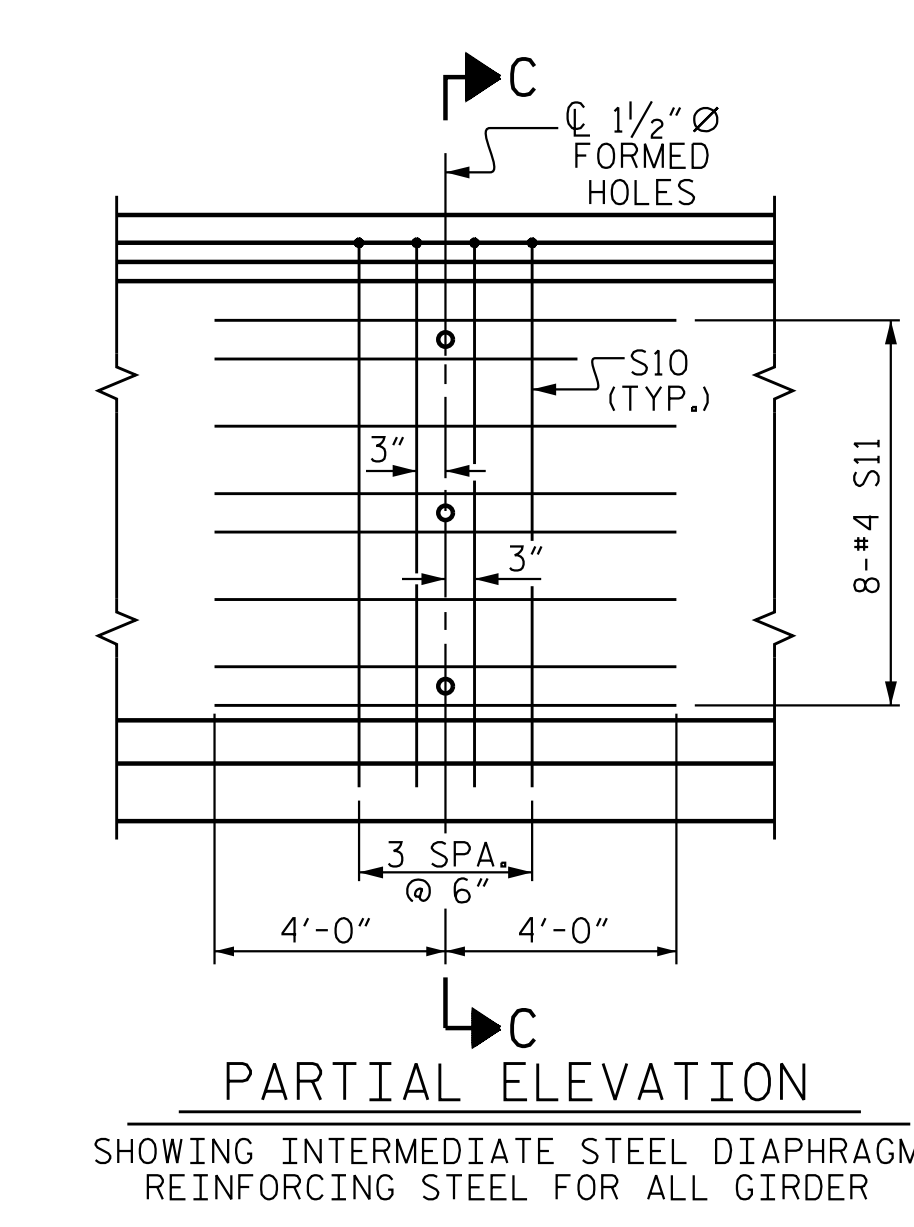
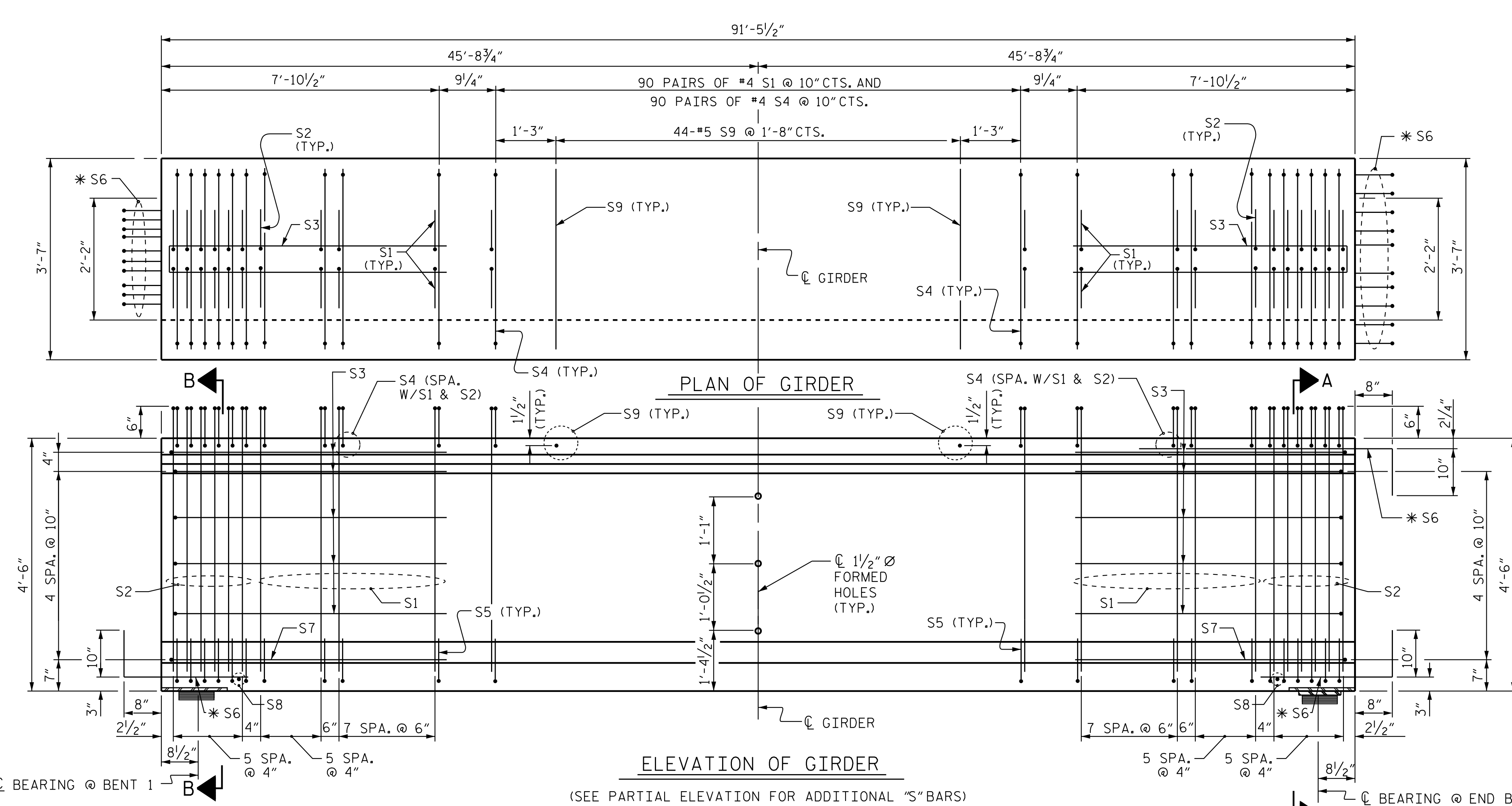
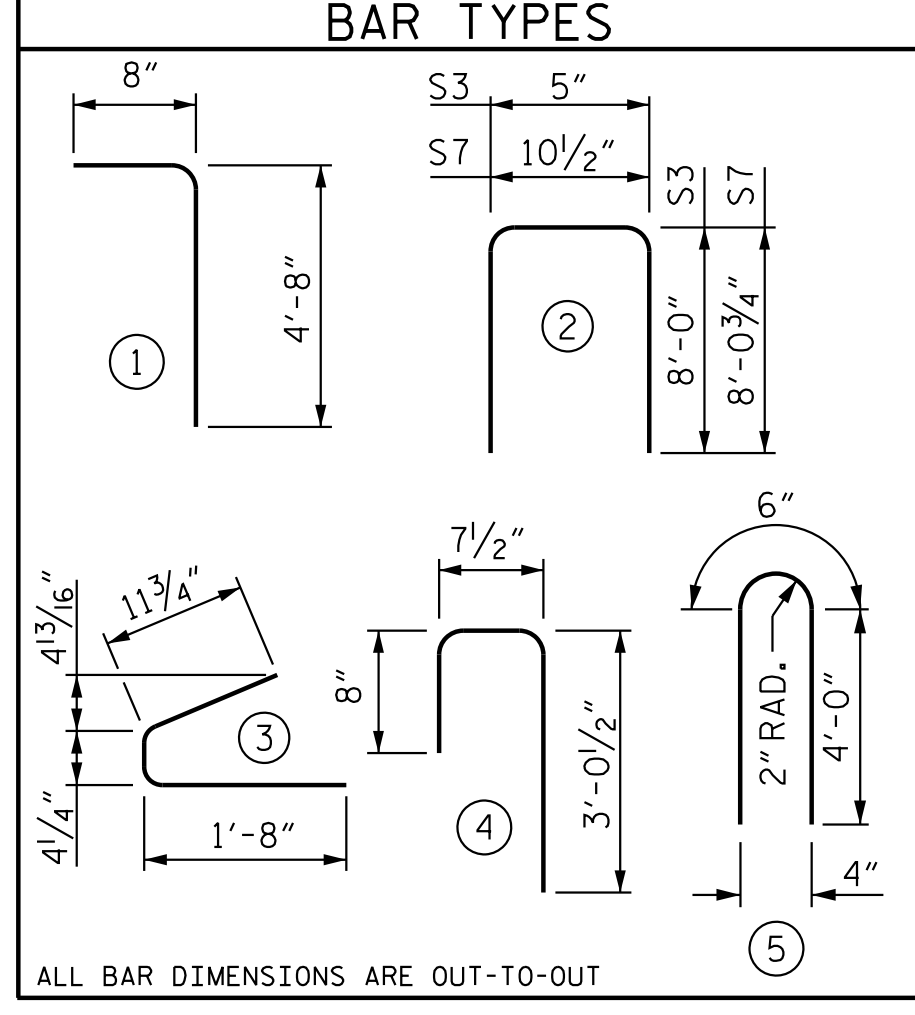
5/5/2023 12:46:56 PM jgelle
 C:\Users\jgelle\documents\p_wor\king\mms5559\R2707E.SMU.LOJ.220494.dgn.DGN



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	236	#4	1	5'-4"	841
S2	24	#6	1	5'-4"	193
S3	10	#4	2	16'-5"	110
S4	260	#4	4	4'-4"	753
S5	80	#4	3	3'-0"	161
*S6	30	#5	STR	3'-8"	115
S7	2	#5	2	17'-0"	36
S8	2	#3	STR	1'-10"	2
S9	44	#5	STR	3'-3"	150
S10	4	#5	5	8'-6"	36
S11	8	#4	STR	8'-0"	43

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

- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - ▲ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
 - ⊙ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER



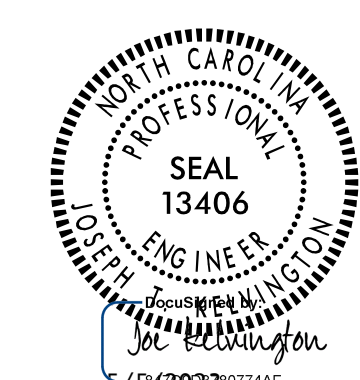
QUANTITIES FOR ONE GIRDER			
REINFORCING STEEL	9000 PSI CONCRETE		0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
	2440	16.6	36
GIRDERS REQUIRED			
NUMBER	LENGTH	TOTAL LENGTH	
4	91'-5 1/2"	365'-10"	

PROJECT NO. R-2707E
CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-

SHEET 2 OF 4

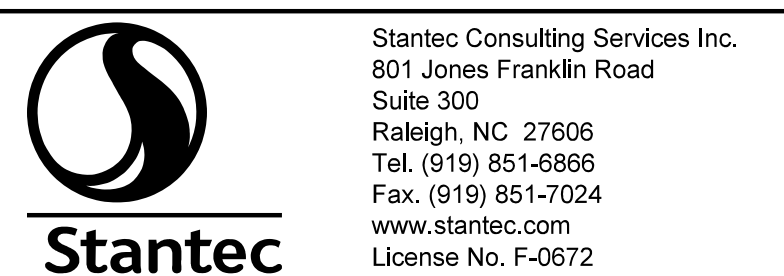
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 MODIFIED 54" PRESTRESSED
 CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD

SPAN B



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO. S7-14
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			



DRAWN BY: J. B. GEILE DATE: 12/07/18
 CHECKED BY: A. L. BOYKIN DATE: 02/17/23
 DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE: 05/05/23

5/5/2023 12:47:16 PM jgelle
 C:\Users\jgelle\documents\pwworking\dms5559\R2707E.SML\02-220494.dgn.DGN

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.

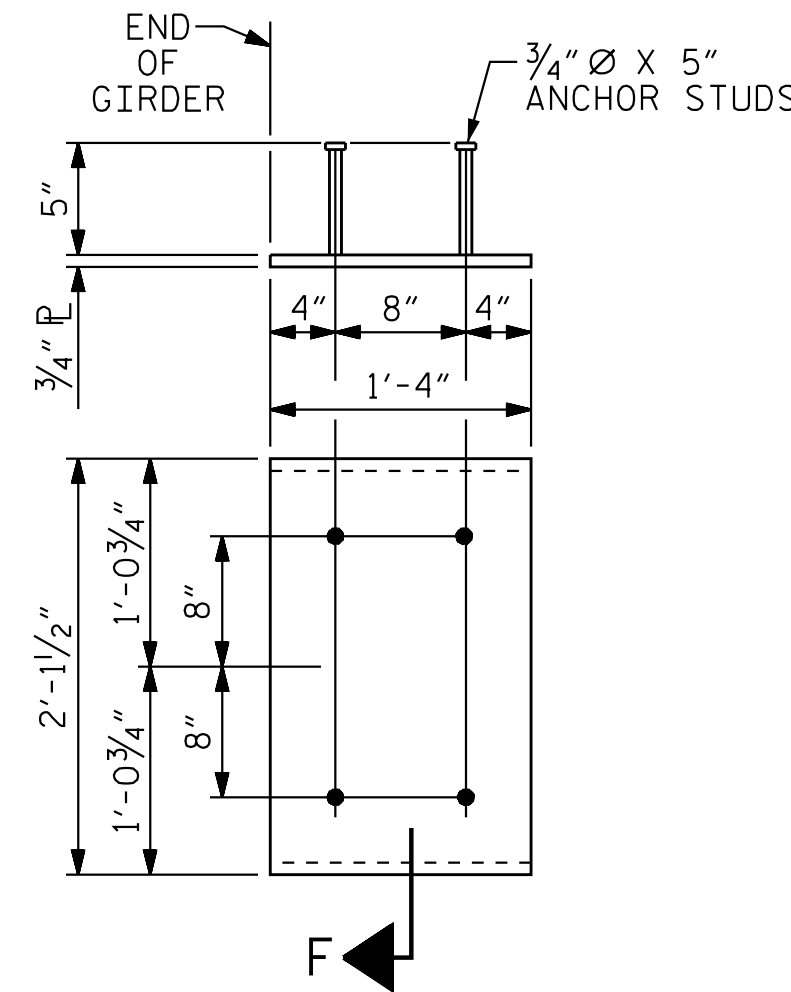
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 7000 PSI.

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

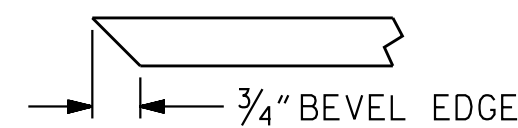
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

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

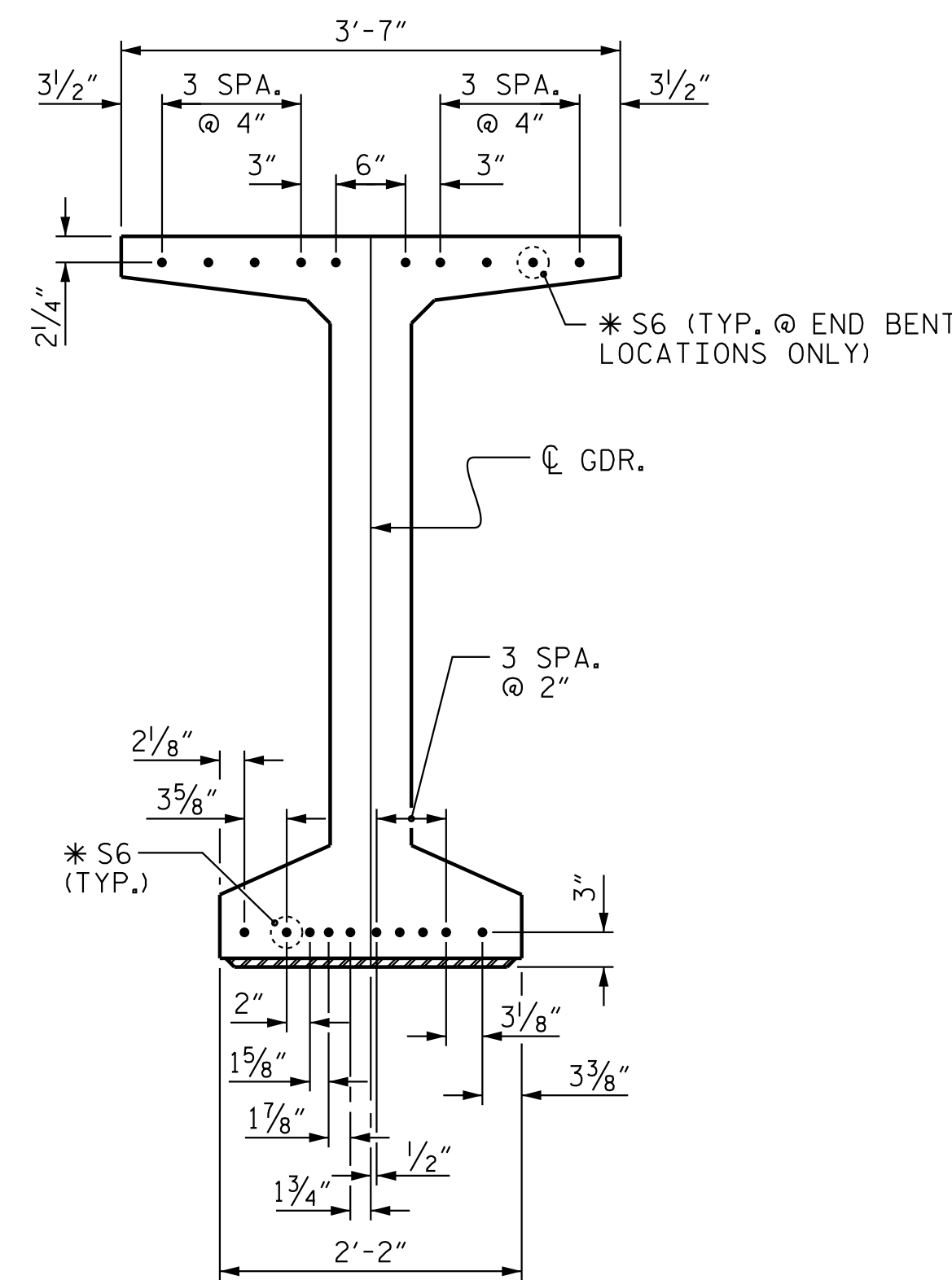
THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.



EMBEDDED PLATE "B-1" DETAILS
 MODIFIED 54" PRESTRESSED CONCRETE GIRDER
 (2 REQ'D PER GIRDER)



SECTION "F"
 (SEE NOTES)



DETAIL "C"

(FOR MODIFIED 54" PRESTRESSED CONCRETE GIRDER)

S6 BARS IN BOTTOM FLANGE MAY BE ADJUSTED SLIGHTLY AS NECESSARY TO CLEAR 3/4" X 5" ANCHOR STUDS MOUNTED ON EMBEDDED PLATE "B-1".

FIELD BEND #5 S6 AT TOP OF GIRDER TO CLEAR THE APPROACH SLAB PAV'T NOTCH AT END BENT SUPPORT LOCATIONS.

PROJECT NO. R-2707E
 CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 MODIFIED 54"
 PRESTRESSED CONC. GIRDER
 CONTINUOUS FOR LIVE LOAD
 DETAILS



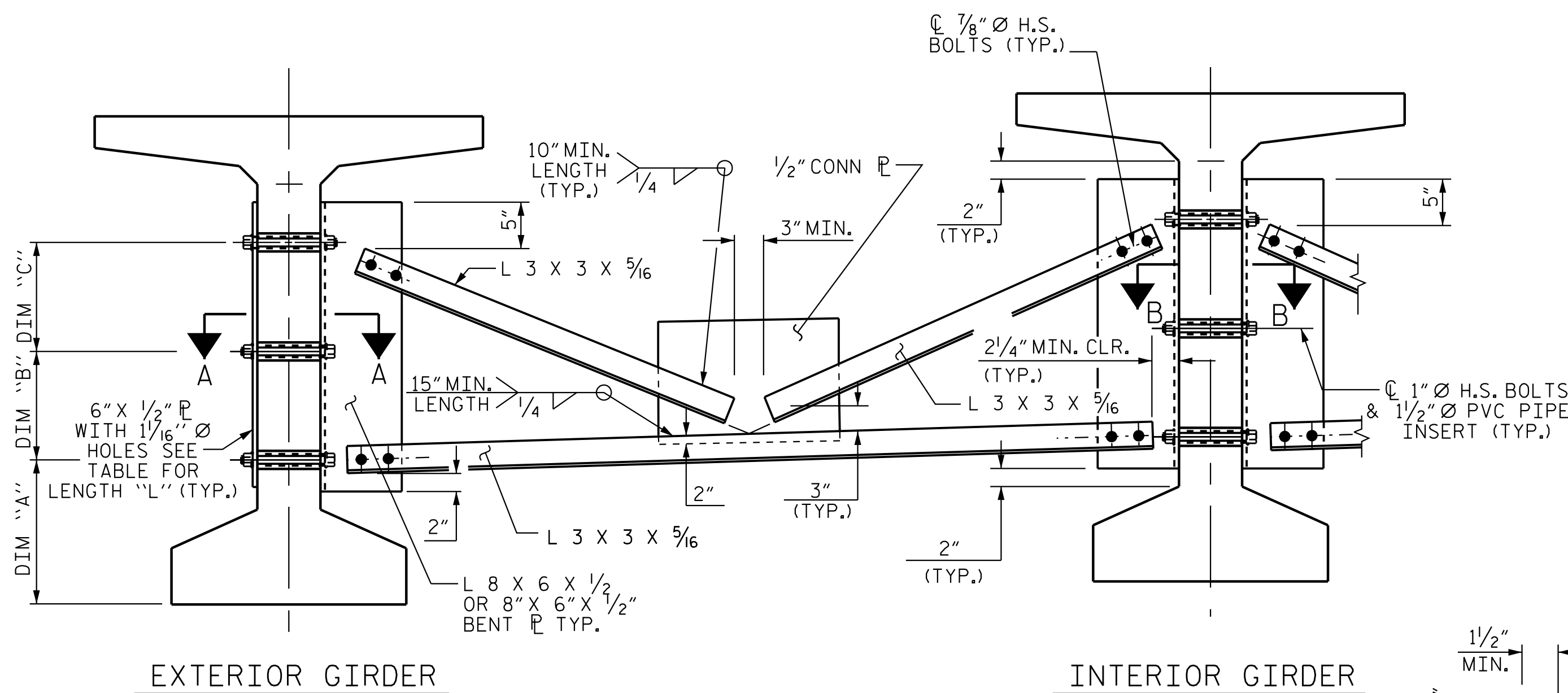
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-15
1			3			TOTAL SHEETS
2			4			34

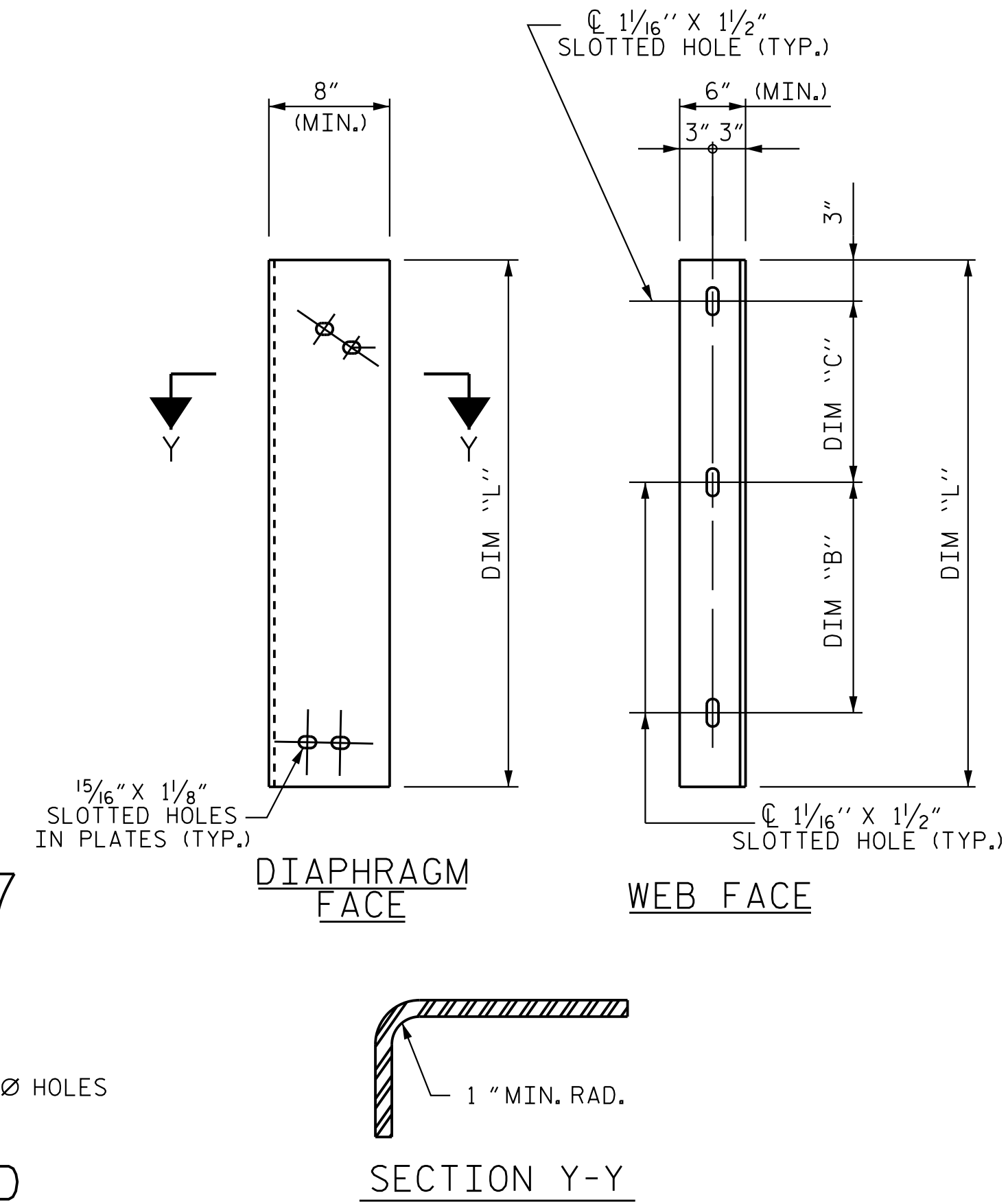
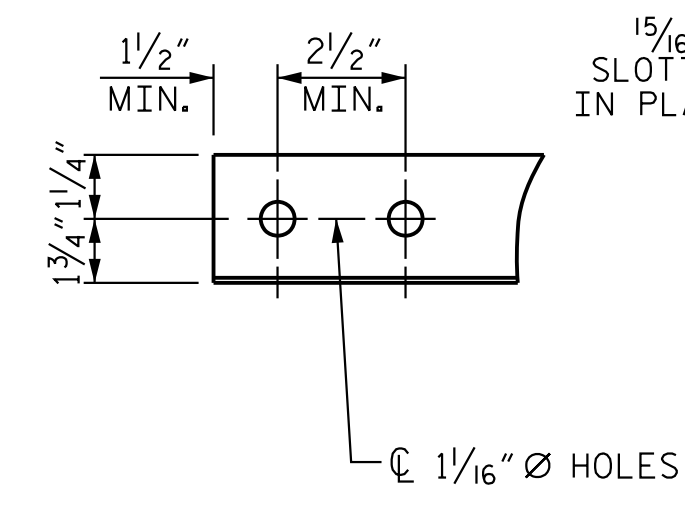


DRAWN BY : J. B. GEILE DATE : 12/11/18
 CHECKED BY : A. L. BOYKIN DATE : 02/17/23
 DESIGN ENGINEER OF RECORD : J. T. KELVINGTON DATE : 05/05/23

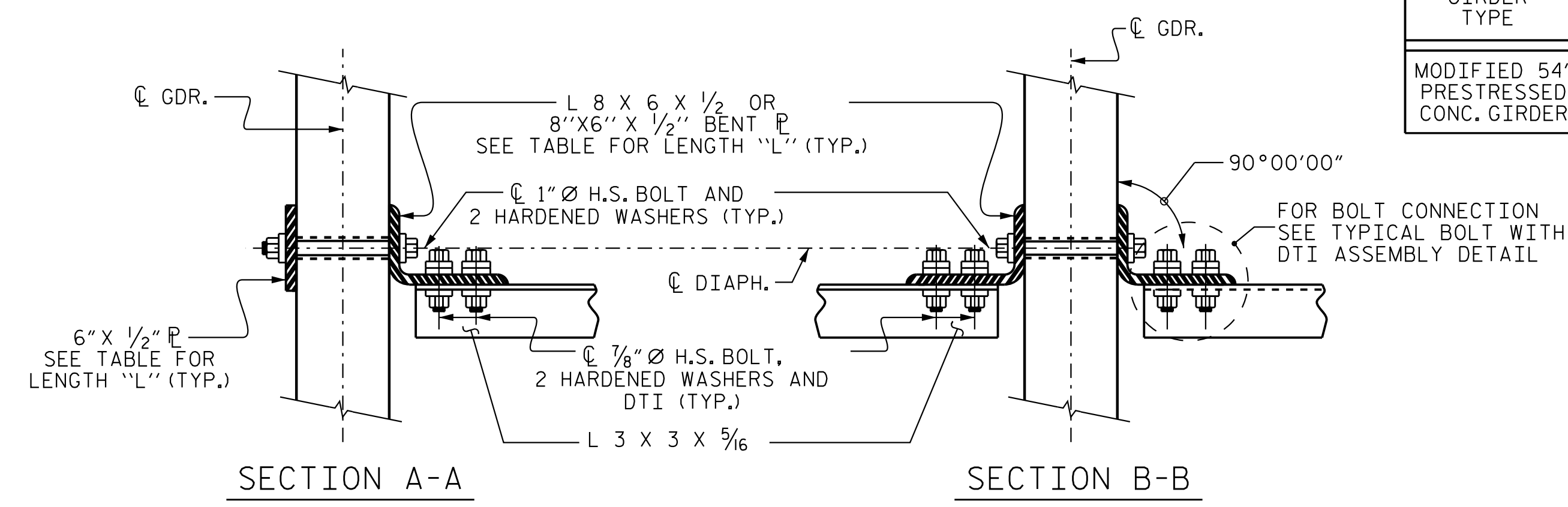
C:\Users\jgelle\documents\pwr_working\mms5559\R2707E-SMU.CO3-220494.dgn.DGN 5/5/2023 12:47:37 PM jgelle



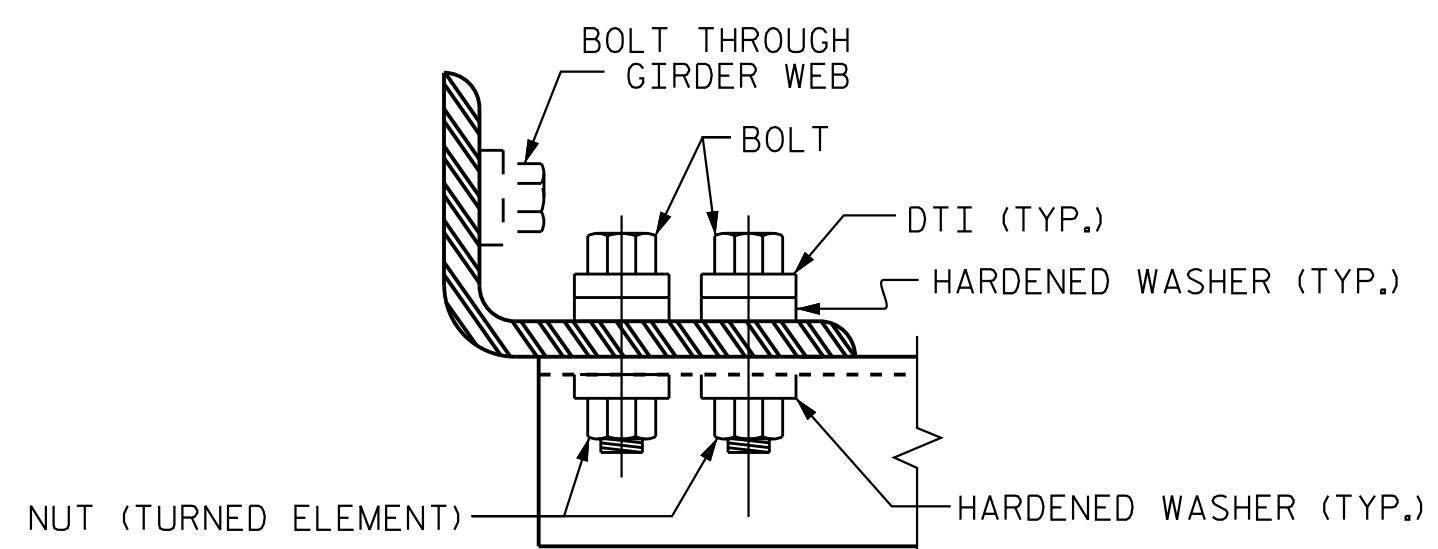
PART SECTION AT INTERMEDIATE DIAPHRAGM
(MODIFIED 54" PRESTRESSED CONC. GIRDER SHOWN)



CONNECTOR PLATE DETAIL



CONNECTION DETAILS



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 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.

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.

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

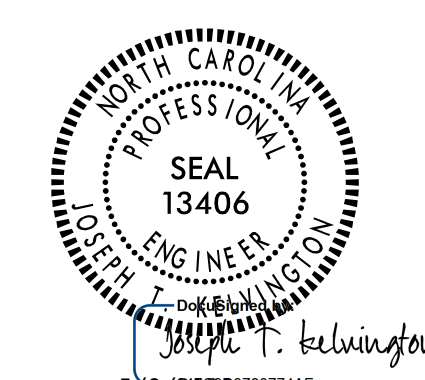
TABLE

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
MODIFIED 54" PRESTRESSED CONC. GIRDER	1'-4 1/2"	1'-0 1/2"	1'-1"	2'-9"

PROJECT NO. R-2707E
CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 INTERMEDIATE
 STEEL DIAPHRAGMS
 FOR 54" MODIFIED
 PRESTRESSED CONCRETE
 GIRDERS



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-16
1			3			TOTAL SHEETS
2			4			34

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

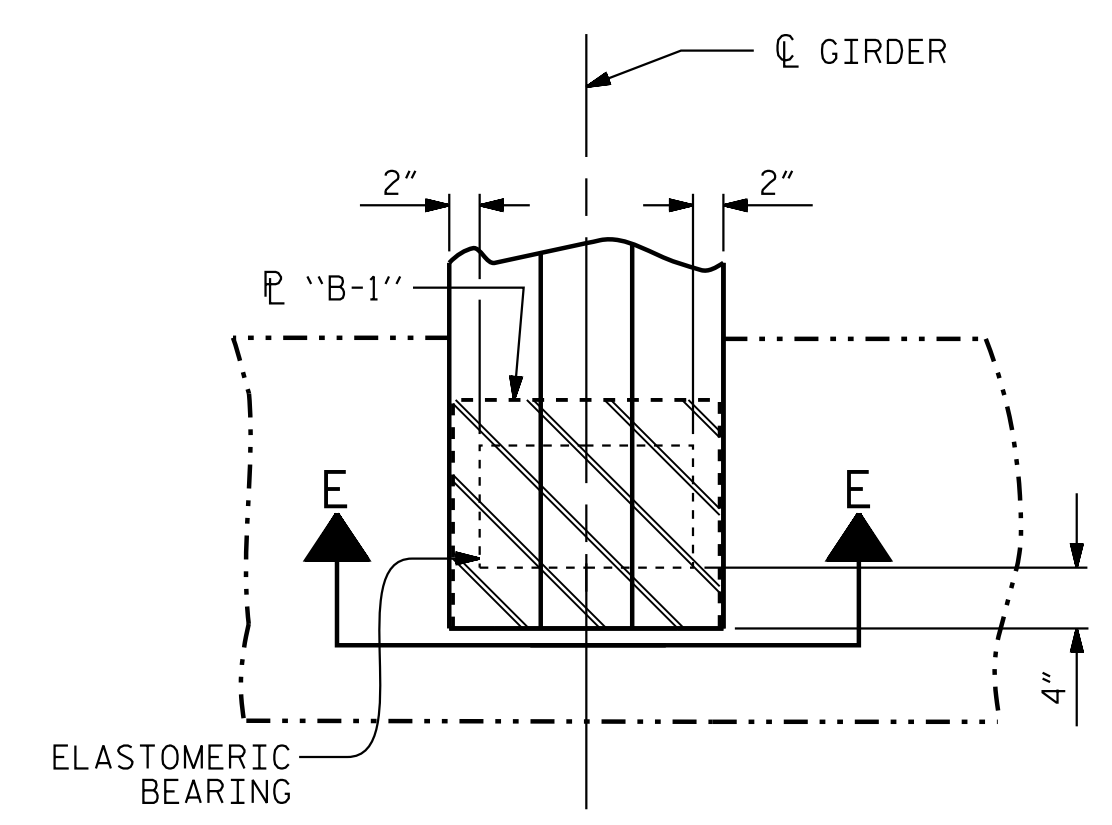
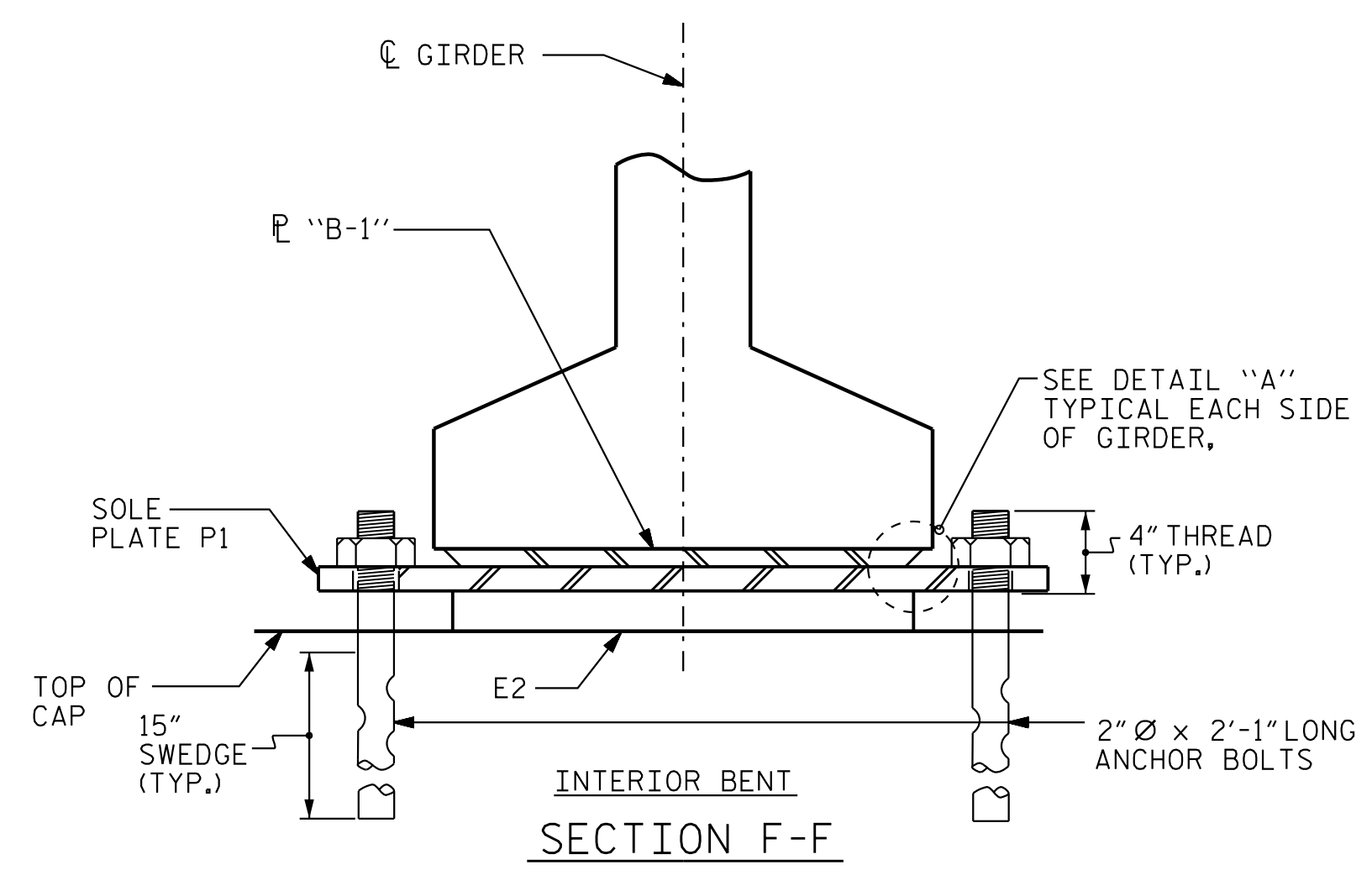
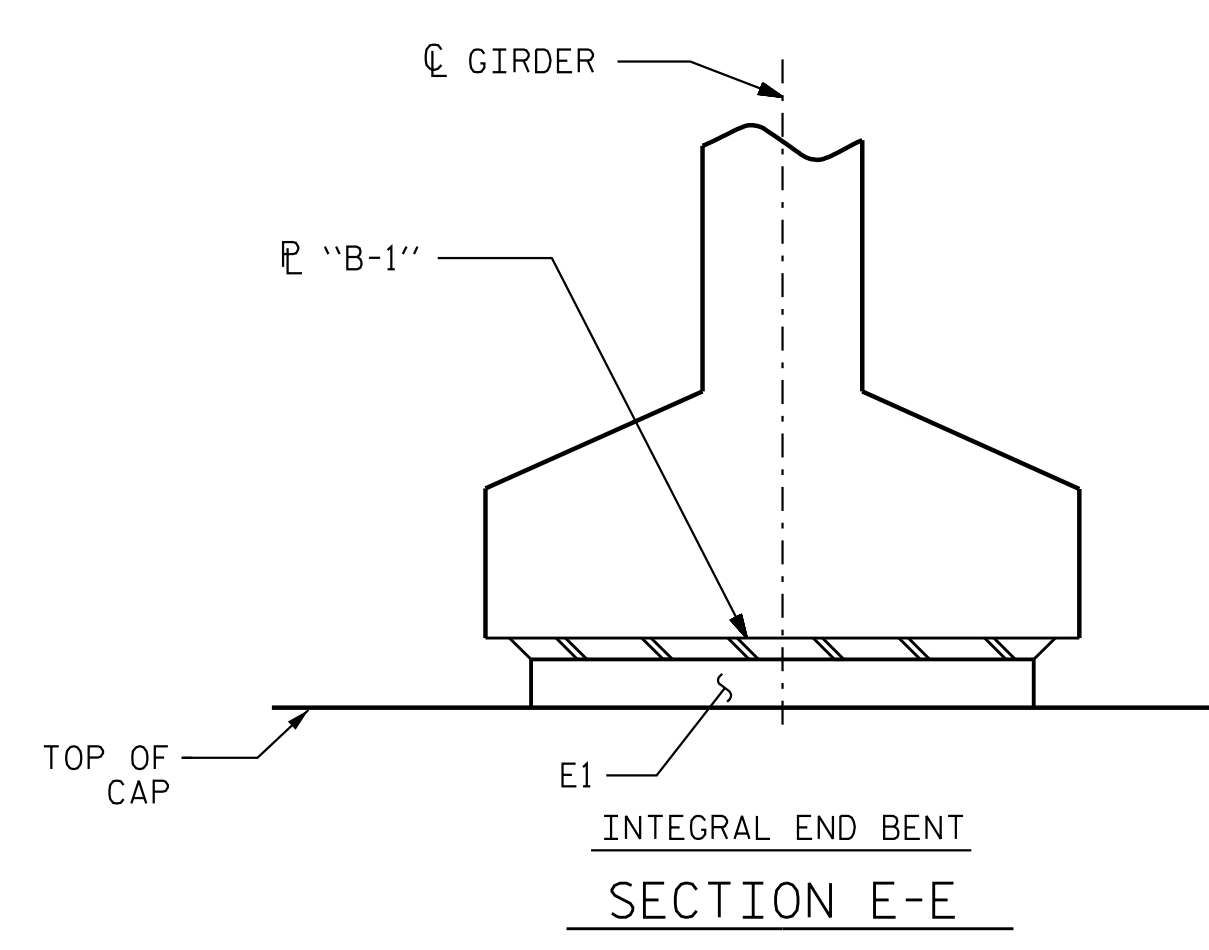
Stantec Consulting Services Inc.
 801 Jones Franklin Road
 Suite 300
 Raleigh, NC 27606
 Tel. (919) 851-6866
 Fax. (919) 851-7024
 www.stantec.com
 License No. F-0672

ASSEMBLED BY : J. B. GEILE DATE : 12/11/18
 CHECKED BY : A. L. BOYKIN DATE : 02/17/23

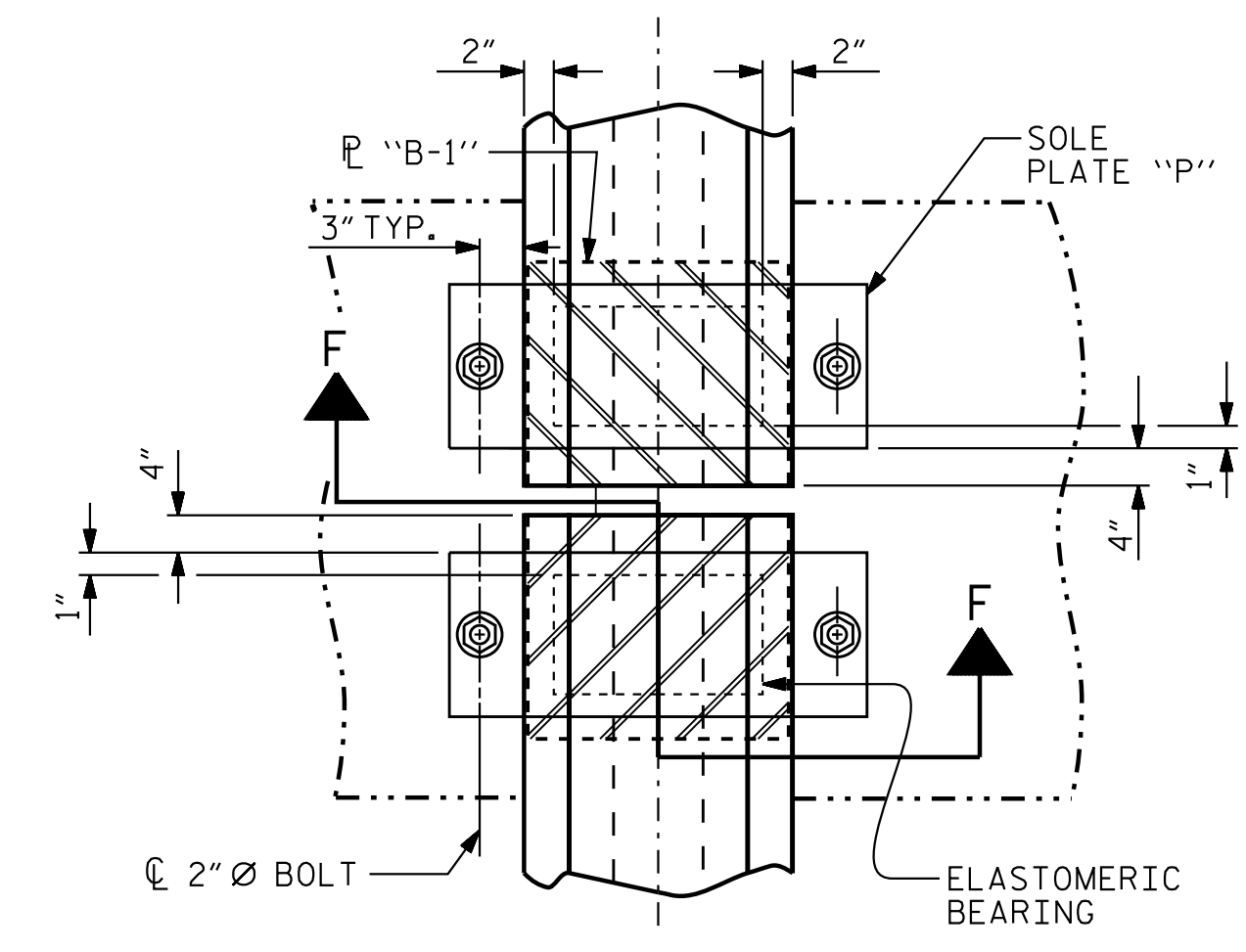
DRAWN BY : RWW 11/09 REV. 10/11/11 MAA/GM
 CHECKED BY : GM 11/09 REV. 12/17 MAA/THC

DESIGN ENGINEER OF RECORD: A. L. BOYKIN DATE : 05/05/23

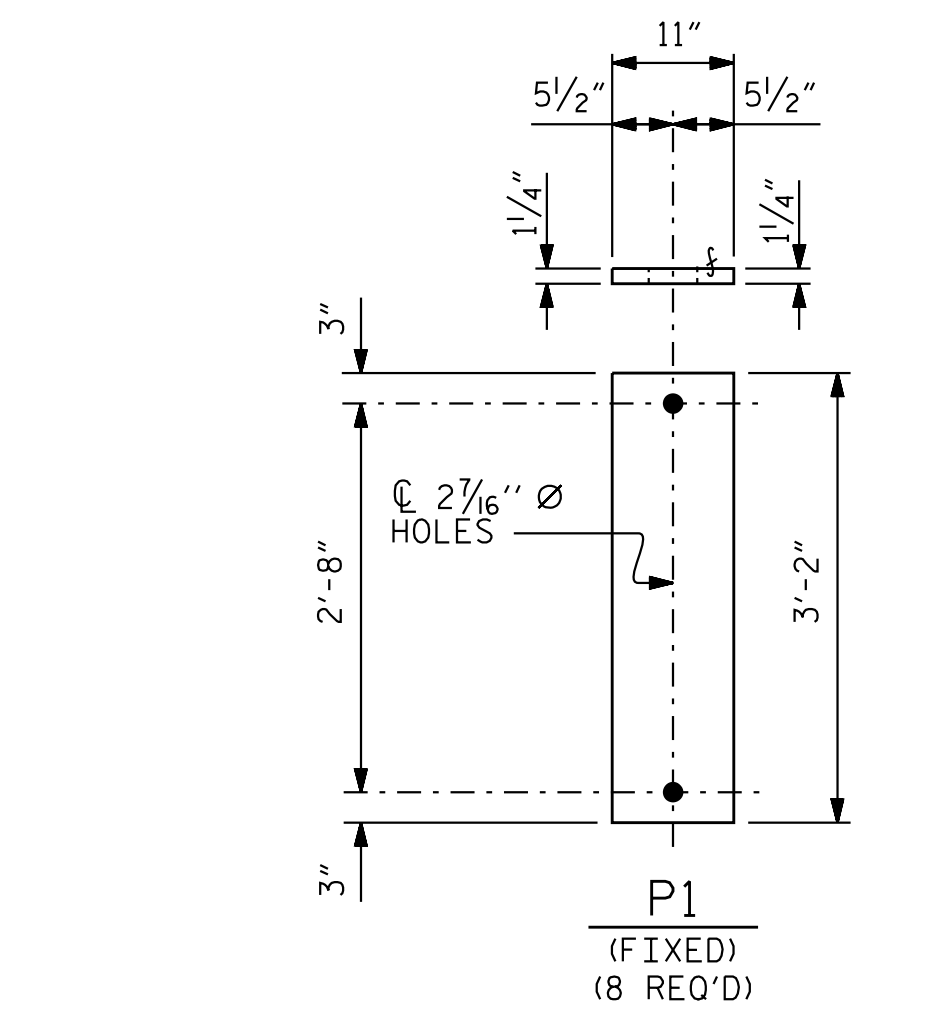
5/8/2023 3:44:25 PM jHogenbush c:\pvt\work\king\dms555919\R2707E-SMU-C04-220494.dgn.DGN



TYPICAL PLAN
SHOWING BOTTOM FLANGE @ INTEGRAL END BENT
DIRECTION OF INCREASING STATIONS



TYPICAL PLAN
(SHOWING BOTTOM FLANGE @ CONTINUOUS BENT)



SOLE PLATE DETAILS ("P")

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 SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

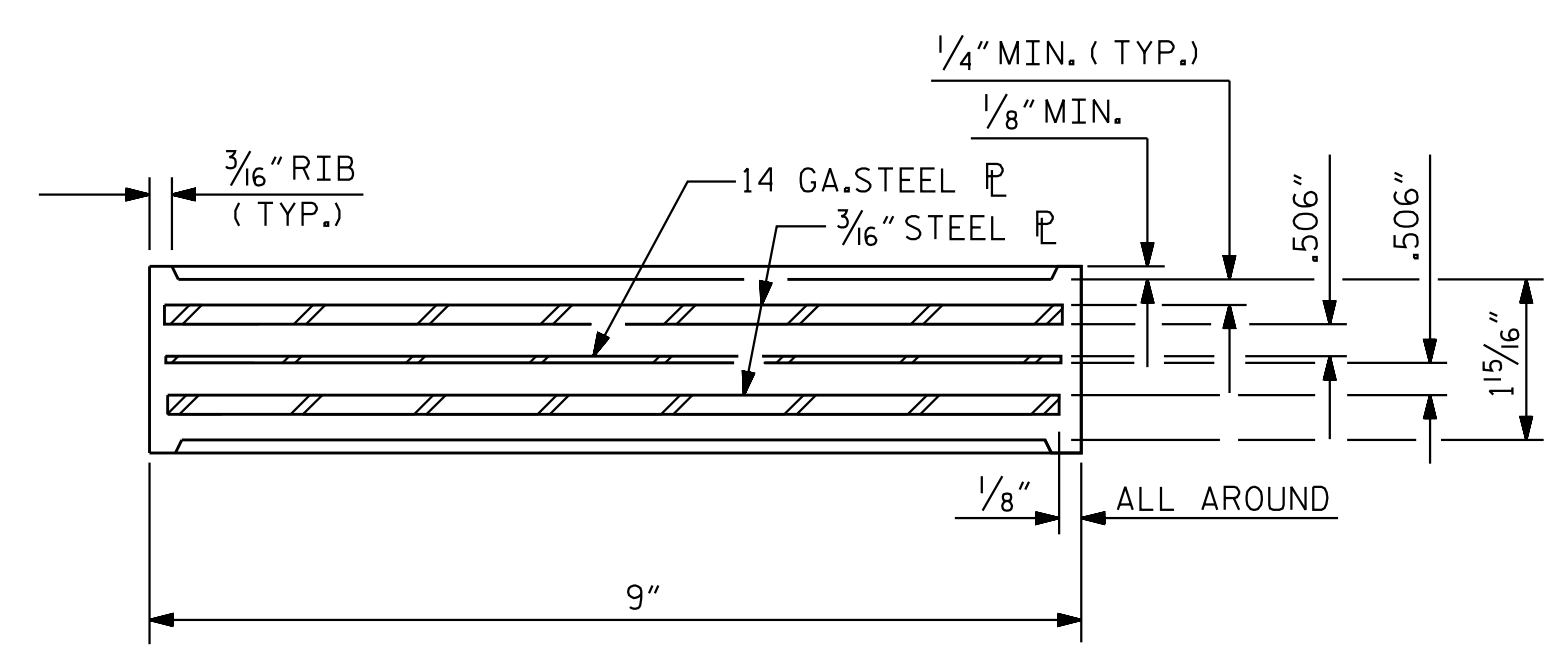
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

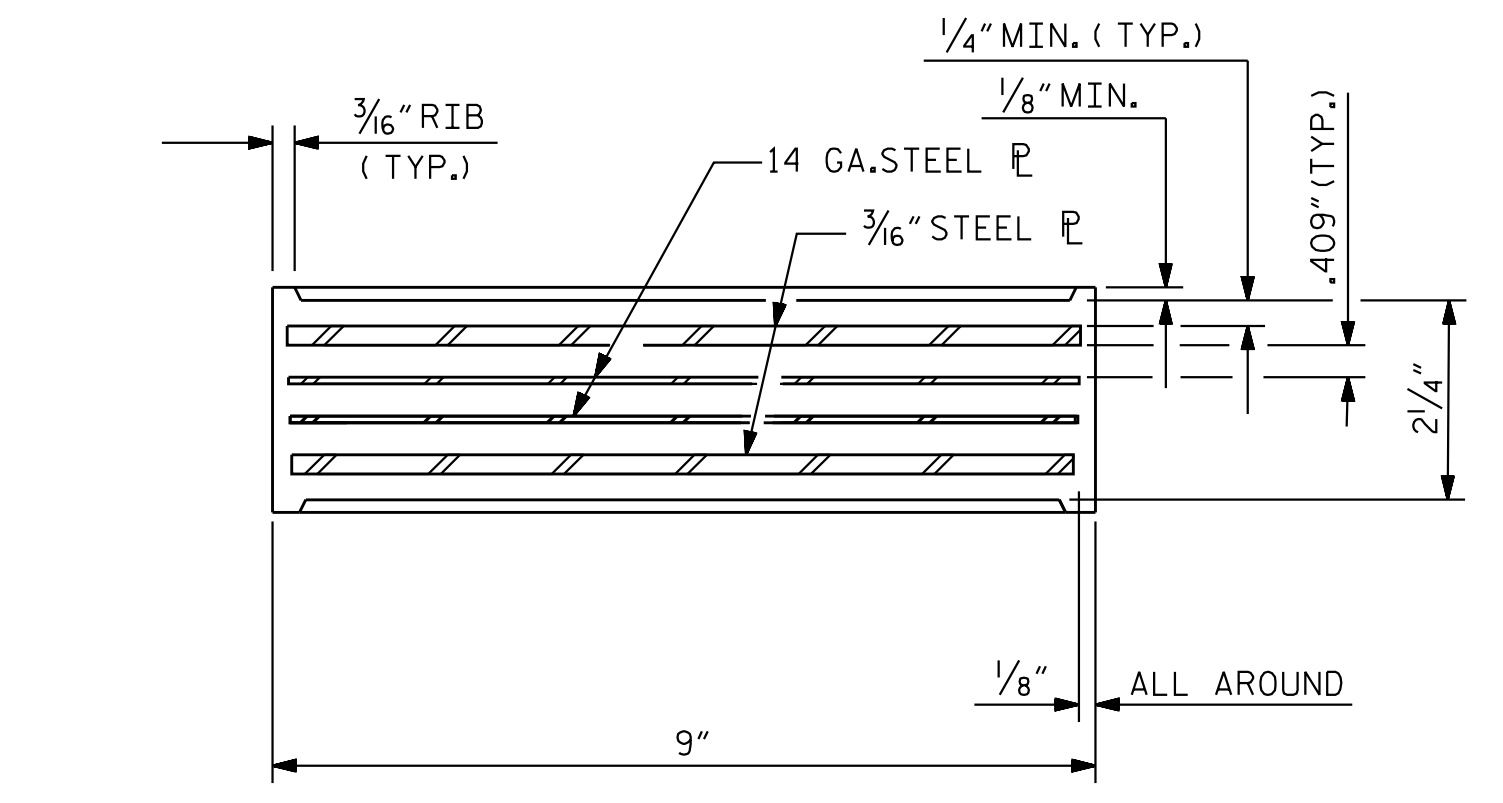
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

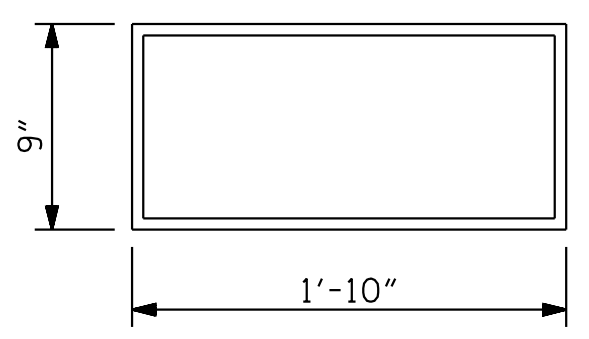
ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



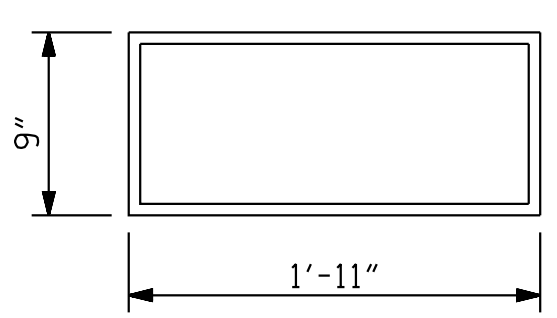
TYPICAL SECTION OF ELASTOMERIC BEARINGS



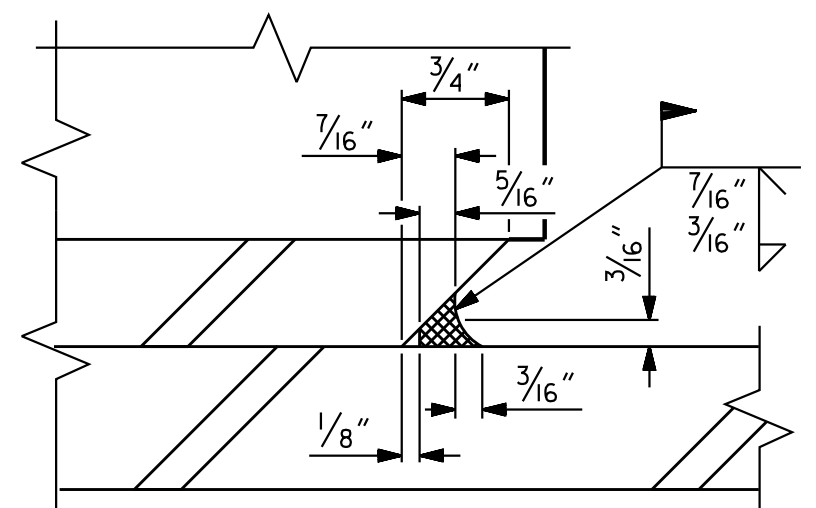
TYPICAL SECTION OF ELASTOMERIC BEARINGS



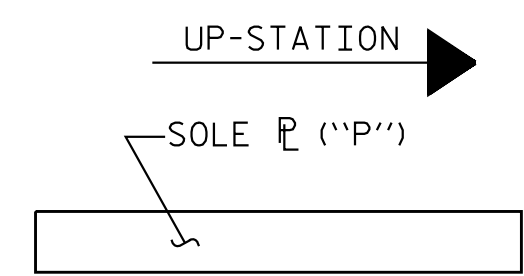
E1 (8 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE IV



E2 (8 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE V



DETAIL "A"

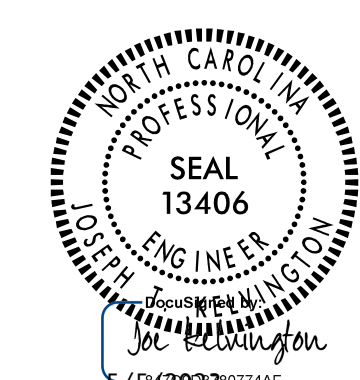


SOLE PLATE PLACEMENT DETAIL

SOLE PLATE DETAILS (P1)

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

PROJECT NO. R-2707E
CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-



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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-17
1			3			TOTAL SHEETS
2			4			34

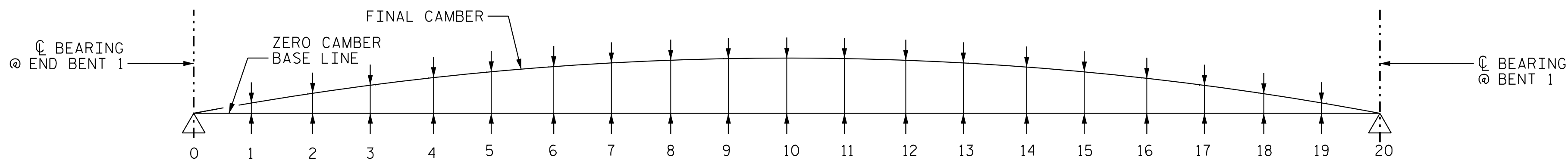
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/5/2023 12:48:11 PM jgelle
 C:\Users\jgelle\documents\p_w_working\ms5559\R2707E\SMU_B01_220494.dgn



ASSEMBLED BY : J. B. GETLE DATE : 01/17/23
 CHECKED BY : A. L. BOYKIN DATE : 02/17/23

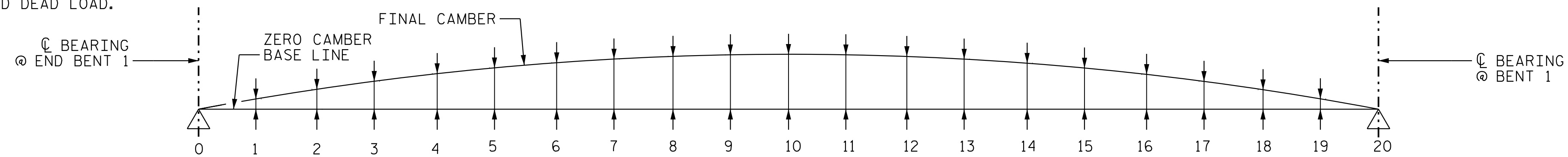
DRAWN BY : EEM 2/97 REV. 6/13 AAC/MAA DESIGN ENGINEER
 CHECKED BY : VAP 2/97 REV. 1/15 MAA/TMC OF RECORD: J. T. KELVINGTON DATE : 05/05/23
 REV. 12/17 MAA/THC



GIRDERS 1 & 4 - SPAN A

TWENTIETH PTS. BTWN. BRGS.	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.032	0.064	0.093	0.120	0.144	0.165	0.181	0.193	0.200	0.203	0.200	0.193	0.181	0.165	0.144	0.120	0.093	0.064	0.032	0.000
DEFLEC. DUE TO SUPERIMPOSED DL ** ↓	0.000	0.014	0.026	0.040	0.051	0.062	0.070	0.077	0.083	0.085	0.086	0.085	0.083	0.077	0.070	0.062	0.051	0.040	0.026	0.014	0.000
FINAL CAMBER ↑	0"	3/16"	7/16"	5/8"	13/16"	1"	1 1/8"	1 1/4"	1 5/16"	1 3/8"	1 3/8"	1 3/8"	1 5/16"	1 1/4"	1 1/8"	1"	13/16"	5/8"	7/16"	3/16"	0"

** INCLUDES FUTURE WEARING SURFACE IN SUPERIMPOSED DEAD LOAD.

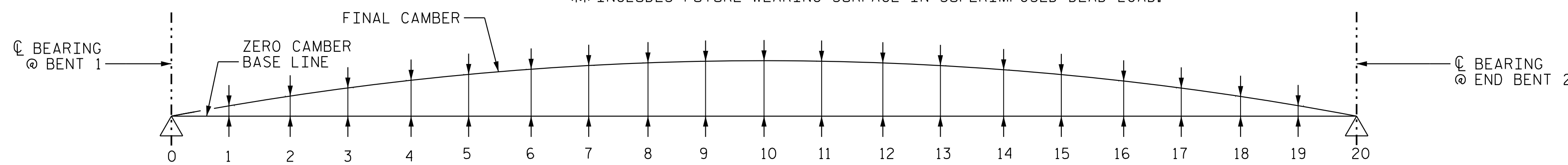


SPAN A

GIRDERS 2 & 3 - SPAN A

TWENTIETH PTS. BTWN. BRGS.	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.032	0.064	0.093	0.120	0.144	0.165	0.181	0.193	0.200	0.203	0.200	0.193	0.181	0.165	0.144	0.120	0.093	0.064	0.032	0.000
DEFLEC. DUE TO SUPERIMPOSED DL ** ↓	0.000	0.017	0.032	0.049	0.062	0.076	0.086	0.095	0.101	0.105	0.106	0.105	0.101	0.095	0.086	0.076	0.062	0.049	0.032	0.017	0.000
FINAL CAMBER ↑	0"	3/16"	3/8"	1/2"	11/16"	13/16"	15/16"	1 1/16"	1 1/8"	1 1/8"	1 3/16"	1 1/8"	1 1/8"	1 1/16"	1 5/16"	13/16"	11/16"	1/2"	3/8"	3/16"	0"

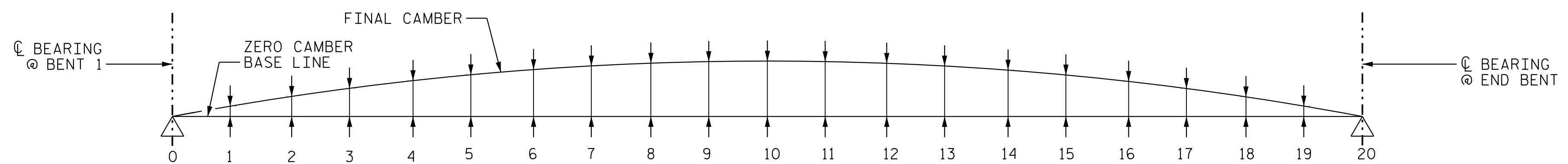
** INCLUDES FUTURE WEARING SURFACE IN SUPERIMPOSED DEAD LOAD.



GIRDERS 1 & 4 - SPAN B

TWENTIETH PTS. BTWN. BRGS.	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.039	0.076	0.112	0.144	0.173	0.197	0.217	0.231	0.240	0.243	0.240	0.231	0.217	0.197	0.173	0.144	0.112	0.076	0.039	0.000
DEFLEC. DUE TO SUPERIMPOSED DL ** ↓	0.000	0.018	0.032	0.051	0.061	0.079	0.088	0.099	0.105	0.110	0.111	0.110	0.105	0.099	0.088	0.079	0.061	0.051	0.032	0.018	0.000
FINAL CAMBER ↑	0"	1/4"	1/2"	3/4"	1"	1 1/8"	1 5/16"	1 7/16"	1 1/2"	1 9/16"	1 9/16"	1 9/16"	1 1/2"	1 7/16"	1 5/16"	1 1/8"	1"	3/4"	1/2"	1/4"	0"

** INCLUDES FUTURE WEARING SURFACE IN SUPERIMPOSED DEAD LOAD.



SPAN B

GIRDERS 2 & 3 - SPAN B

TWENTIETH PTS. BTWN. BRGS.	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.039	0.076	0.112	0.144	0.173	0.197	0.217	0.231	0.240	0.243	0.240	0.231	0.217	0.197	0.173	0.144	0.112	0.076	0.039	0.000
DEFLEC. DUE TO SUPERIMPOSED DL ** ↓	0.000	0.022	0.039	0.063	0.078	0.097	0.109	0.122	0.129	0.135	0.136	0.135	0.129	0.122	0.109	0.097	0.078	0.063	0.039	0.022	0.000
FINAL CAMBER ↑	0"	3/16"	7/16"	9/16"	13/16"	15/16"	1 1/16"	1 1/8"	1 1/4"	1 1/4"	1 5/16"	1 1/4"	1 1/4"	1 1/8"	1 1/16"	1 5/16"	1 3/16"	9/16"	7/16"	3/16"	0"

** INCLUDES FUTURE WEARING SURFACE IN SUPERIMPOSED DEAD LOAD.

PROJECT NO. R-2707E
CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

DEAD LOAD DEFLECTIONS

SCHEMATIC CAMBER ORDINATES

ALL VALUES ARE SHOWN IN DECIMALS OF A FOOT EXCEPT "FINAL CAMBER" WHICH IS SHOWN IN INCHES.



DRAWN BY: J. GEILE DATE: 01/23/18
 CHECKED BY: A. L. BOYKIN DATE: 02/17/23

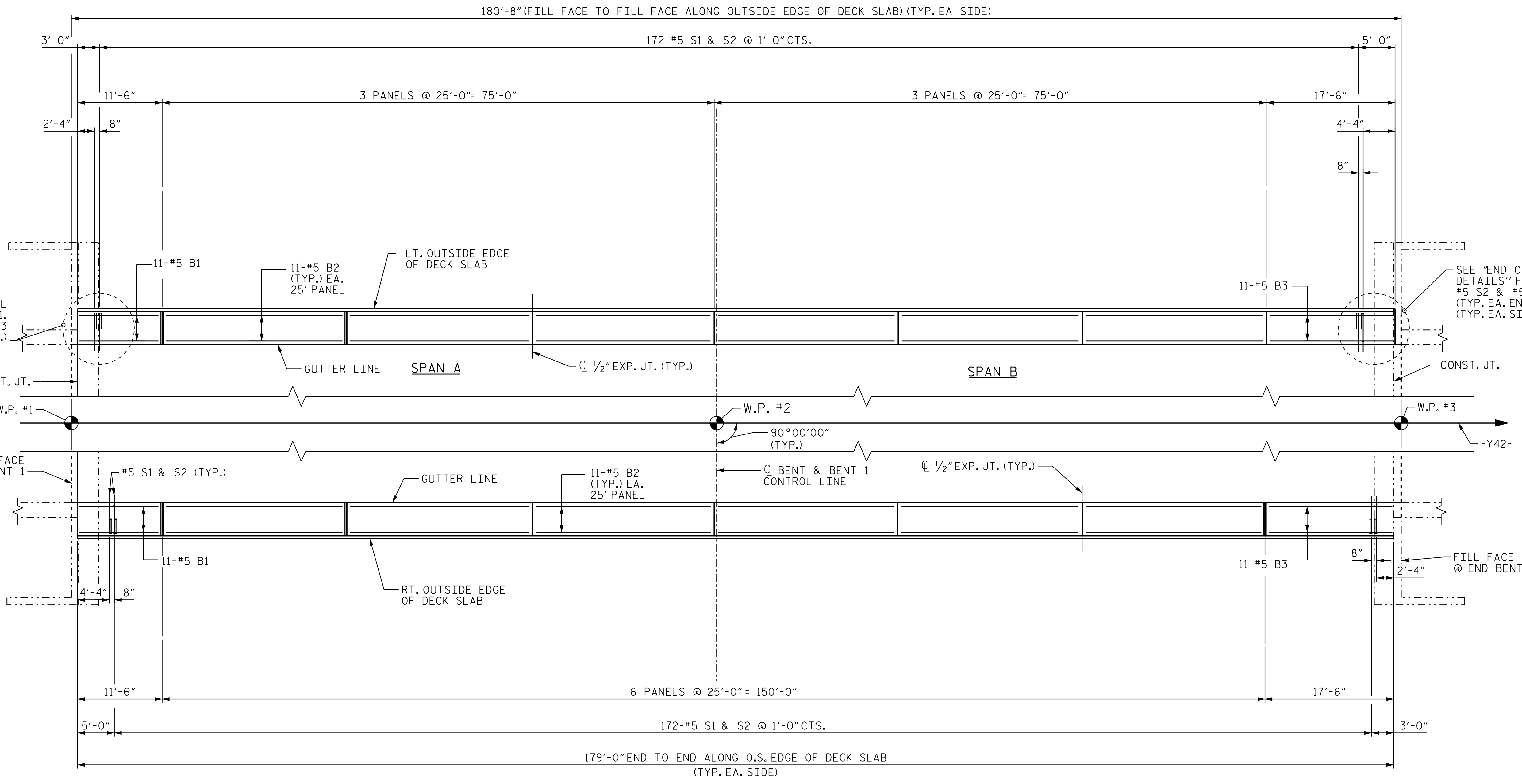
DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE: 05/05/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-18
1			3			TOTAL SHEETS
2			4			34

5/5/2023 12:48:27 PM jgeile c:\users\jgeile\documents\p_wor\king\ms5559\R2707E-SMJ-DL01-220494.dgn

5/5/2023 12:48:44 PM jgeille
c:\users\jgeille\documents\p.w. working\ms559\270707E-SMU-BR01-220494.dgn

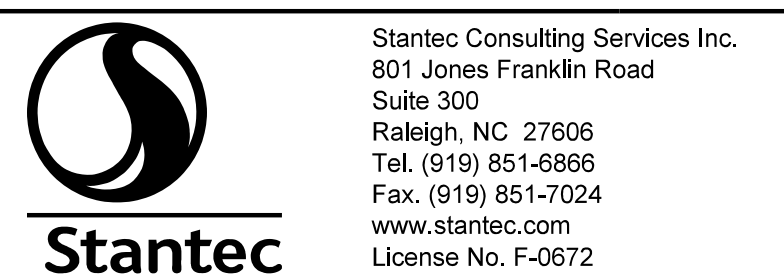


BARRIER RAIL PLAN

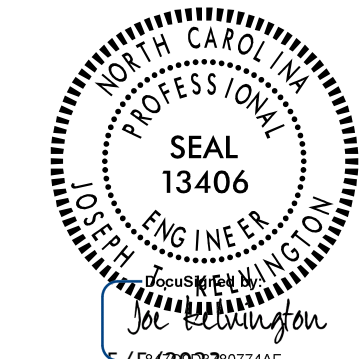
(FOR REINFORCEMENT BILL OF MATERIALS, NOTES AND BARRIER RAIL DETAILS SEE "CONCRETE BARRIER RAIL", SHEET 2 OF 2)

PROJECT NO. R-2707E
CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-

SHEET 1 OF 2



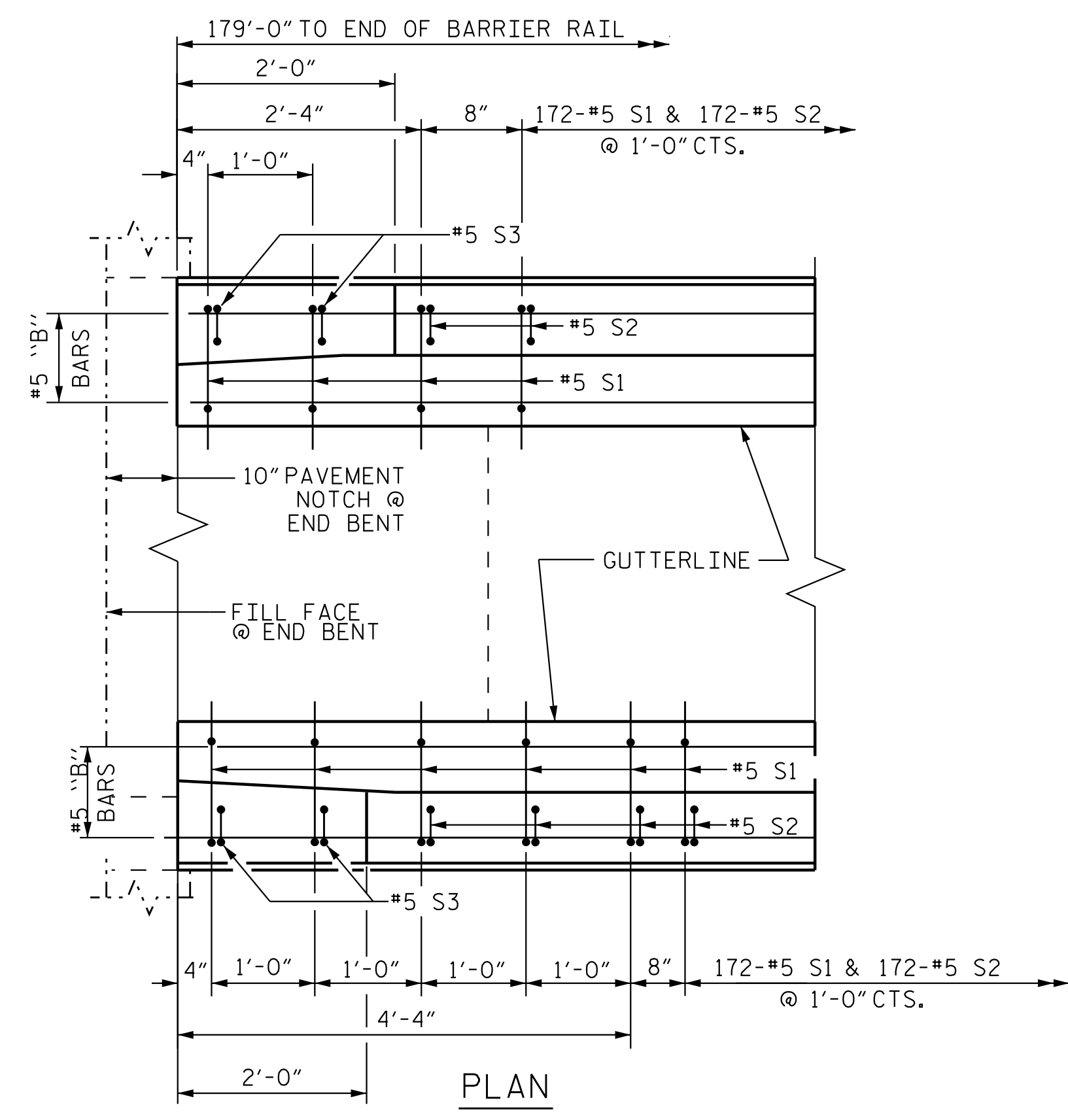
DRAWN BY : J. B. GEILE DATE : 12/12/18
 CHECKED BY : A. L. BOYKIN DATE : 02/17/23
 DESIGN ENGINEER OF RECORD : J. T. KELVINGTON DATE : 05/05/23



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

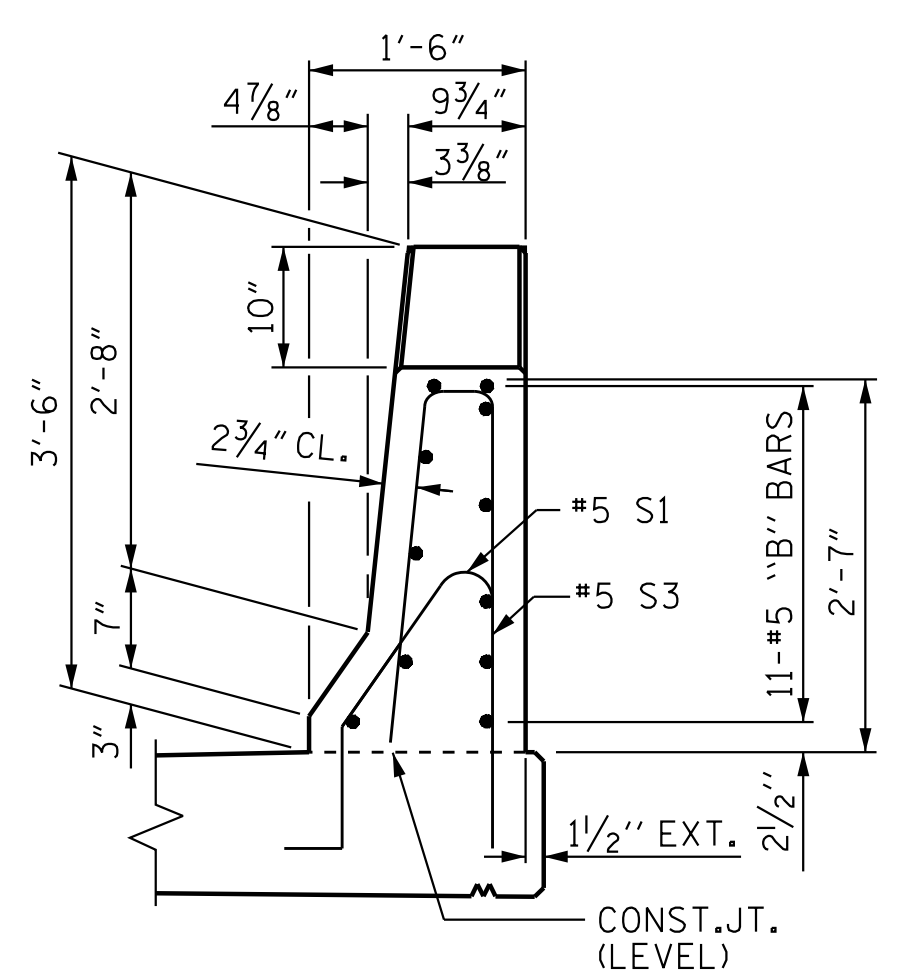
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE CONCRETE BARRIER RAIL					
REVISIONS					SHEET NO. S7-19
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					34

c:\users\jgeille\documents\p.w. working\dms5559\1270707E-SMU_BR02_220494.dgn 5/5/2023 12:49:01 PM jgeille



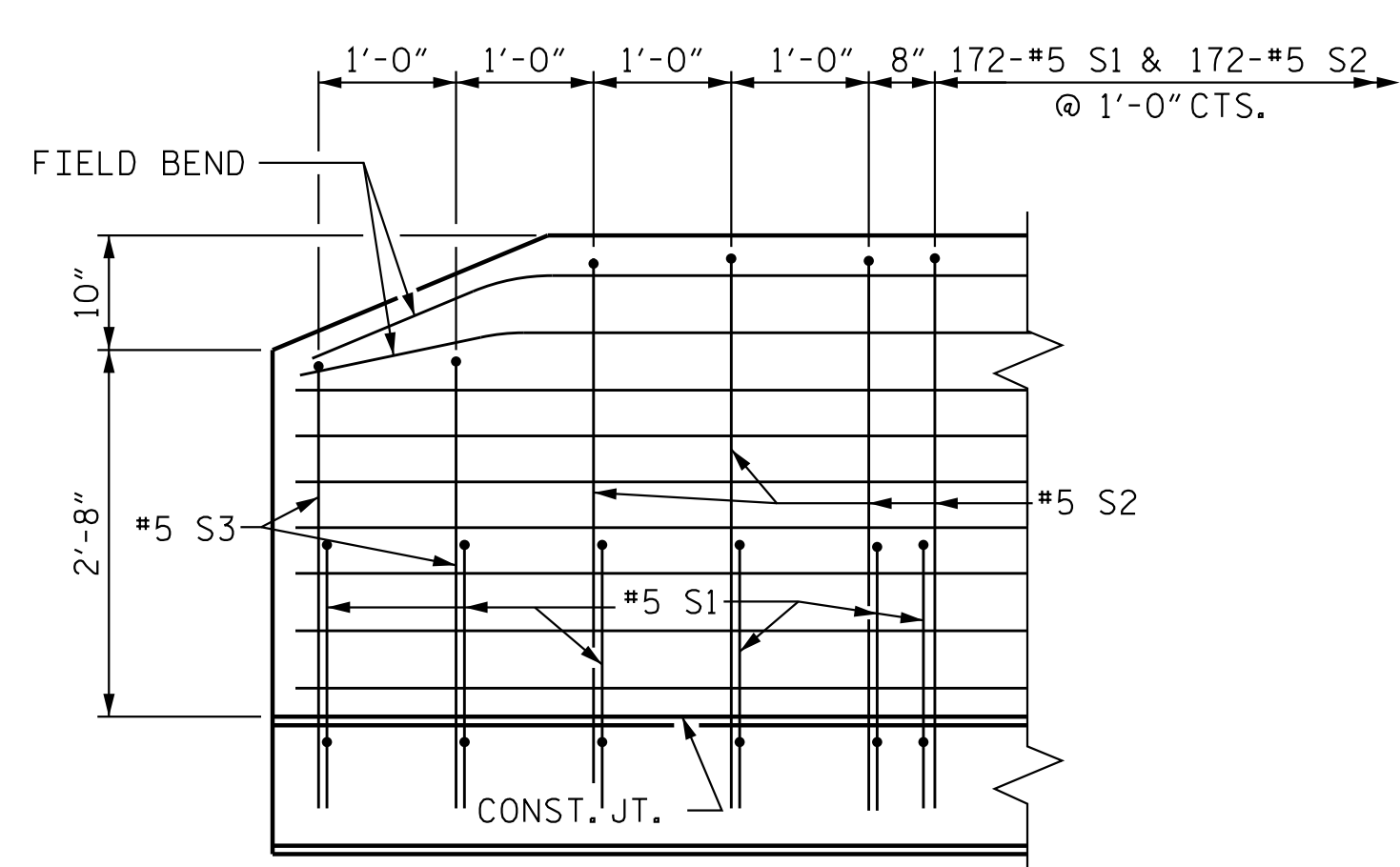
DETAIL @ END BENT

END BENT 1 SHOWN, END BENT 2 TYP. BY ROTATION

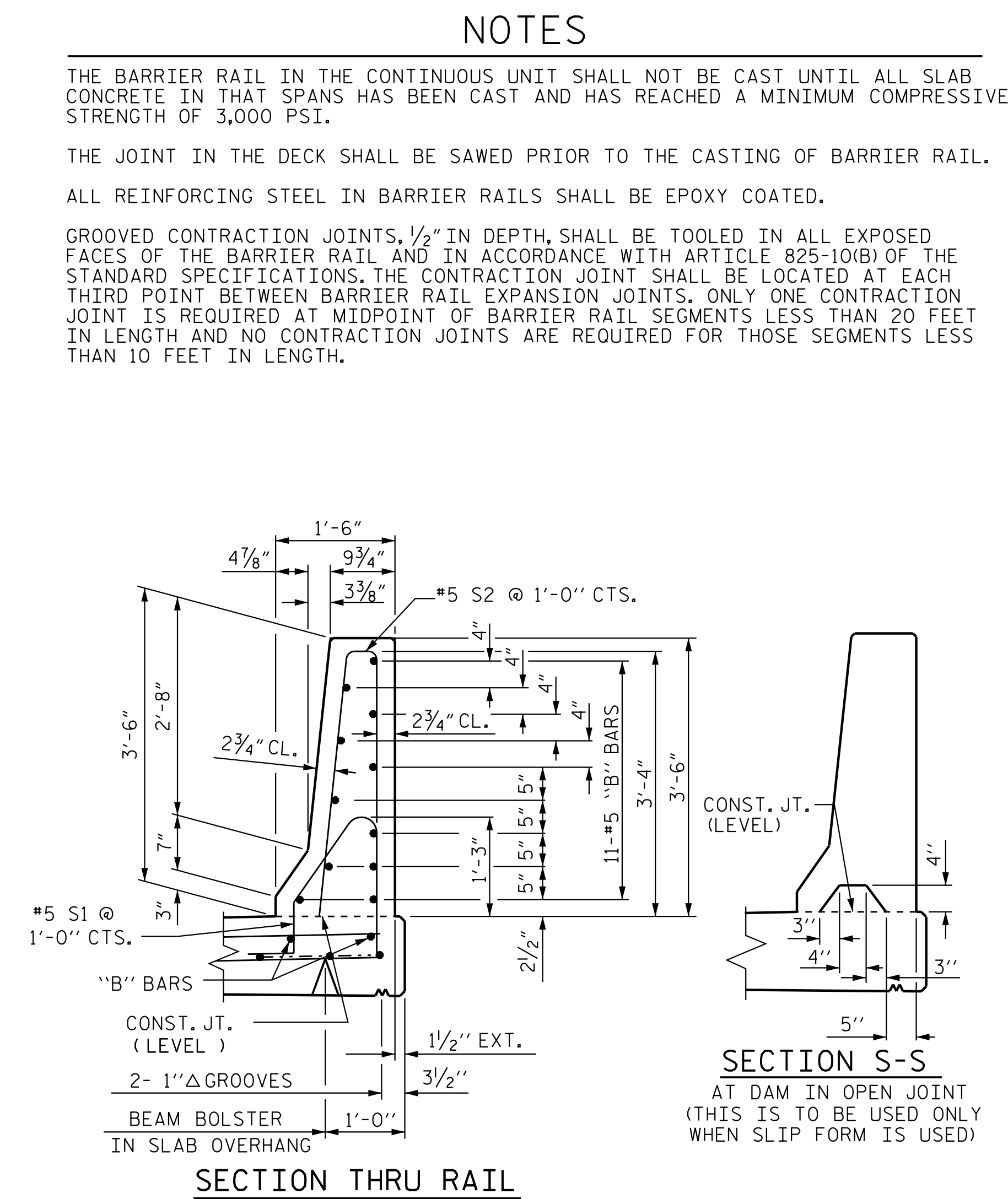


END VIEW

END OF RAIL DETAILS

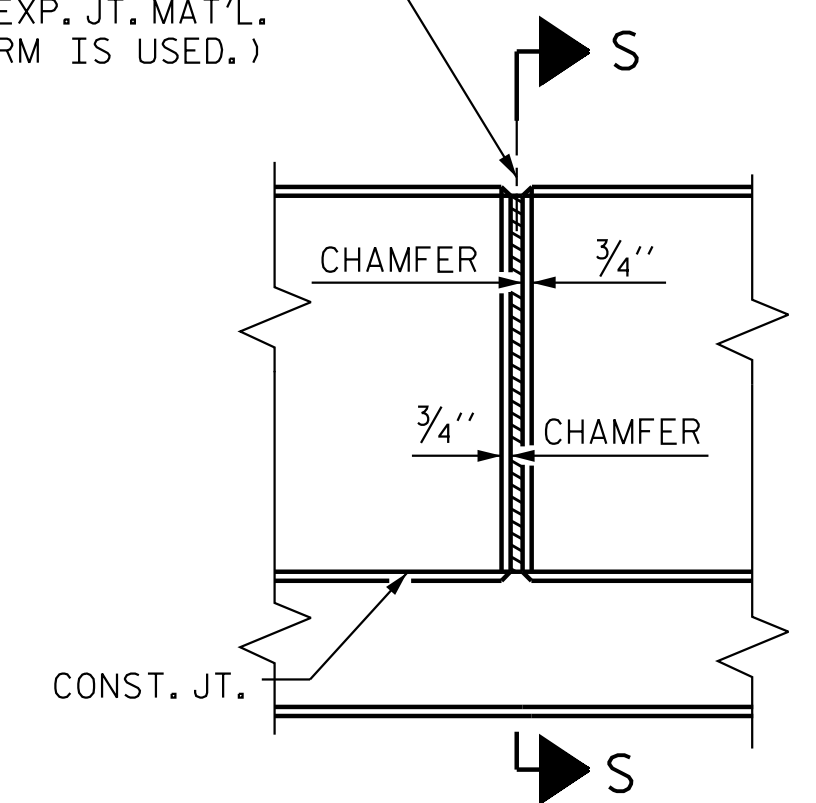


SIDE VIEW



SECTION THRU RAIL

① 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

NOTES

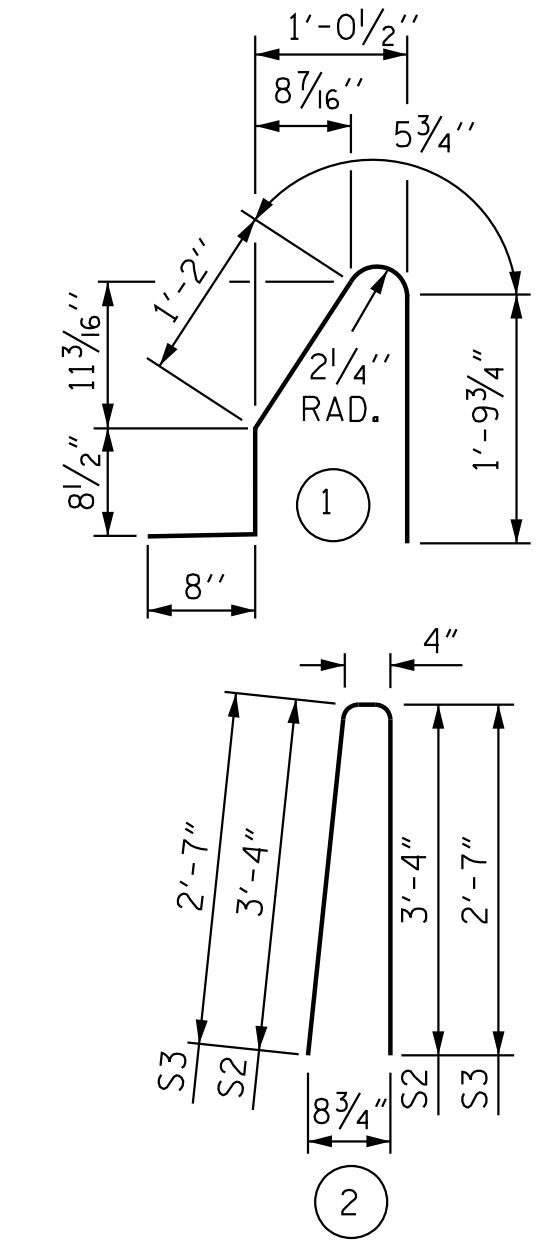
THE BARRIER RAIL IN THE CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPANS HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF BARRIER RAIL.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

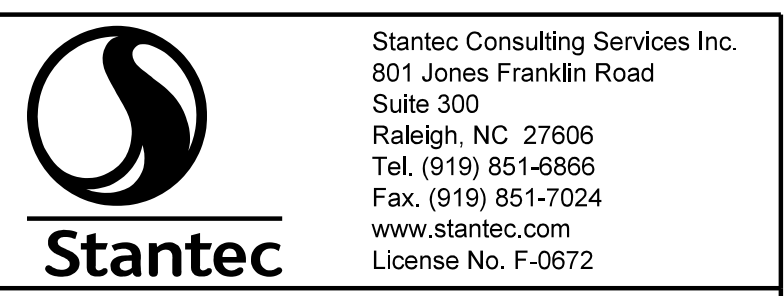
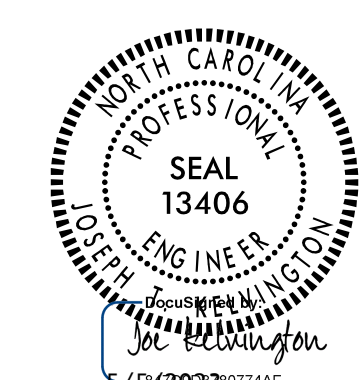
BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	22	#5	STR	11'-2"	256
* B2	132	#5	STR	24'-8"	3396
* B3	22	#5	STR	17'-2"	394
* S1	360	#5	1	4'-10"	1815
* S2	352	#5	2	7'-0"	2570
* S3	8	#5	2	5'-6"	46
* EPOXY COATED REINFORCING STEEL					8477 LBS.
CLASS AA CONCRETE					48.5 CU. YDS.
CONCRETE BARRIER RAIL					358.00 LIN. FT.

PROJECT NO. R-2707E
CLEVELAND COUNTY
STATION: 13+08.49 -Y42-

SHEET 2 OF 2

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



ASSEMBLED BY : J. B. GEILLE DATE : 12/12/18
CHECKED BY : A. L. BOYKIN DATE : 02/17/23

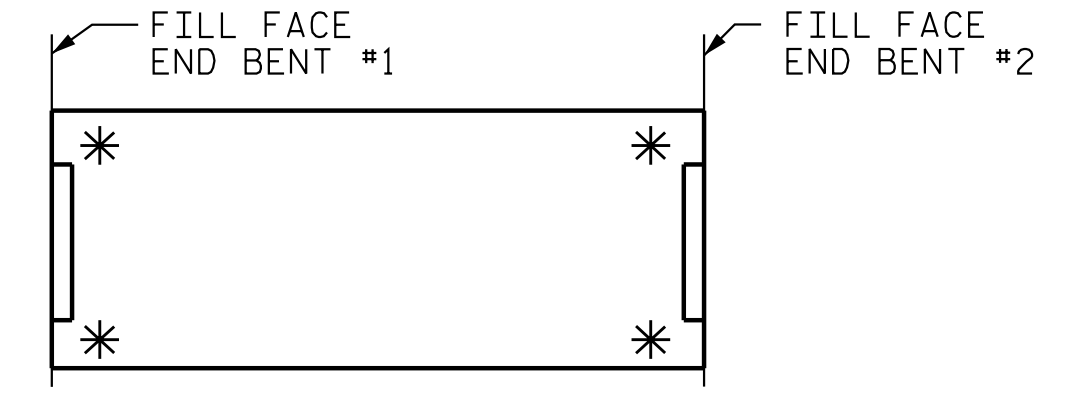
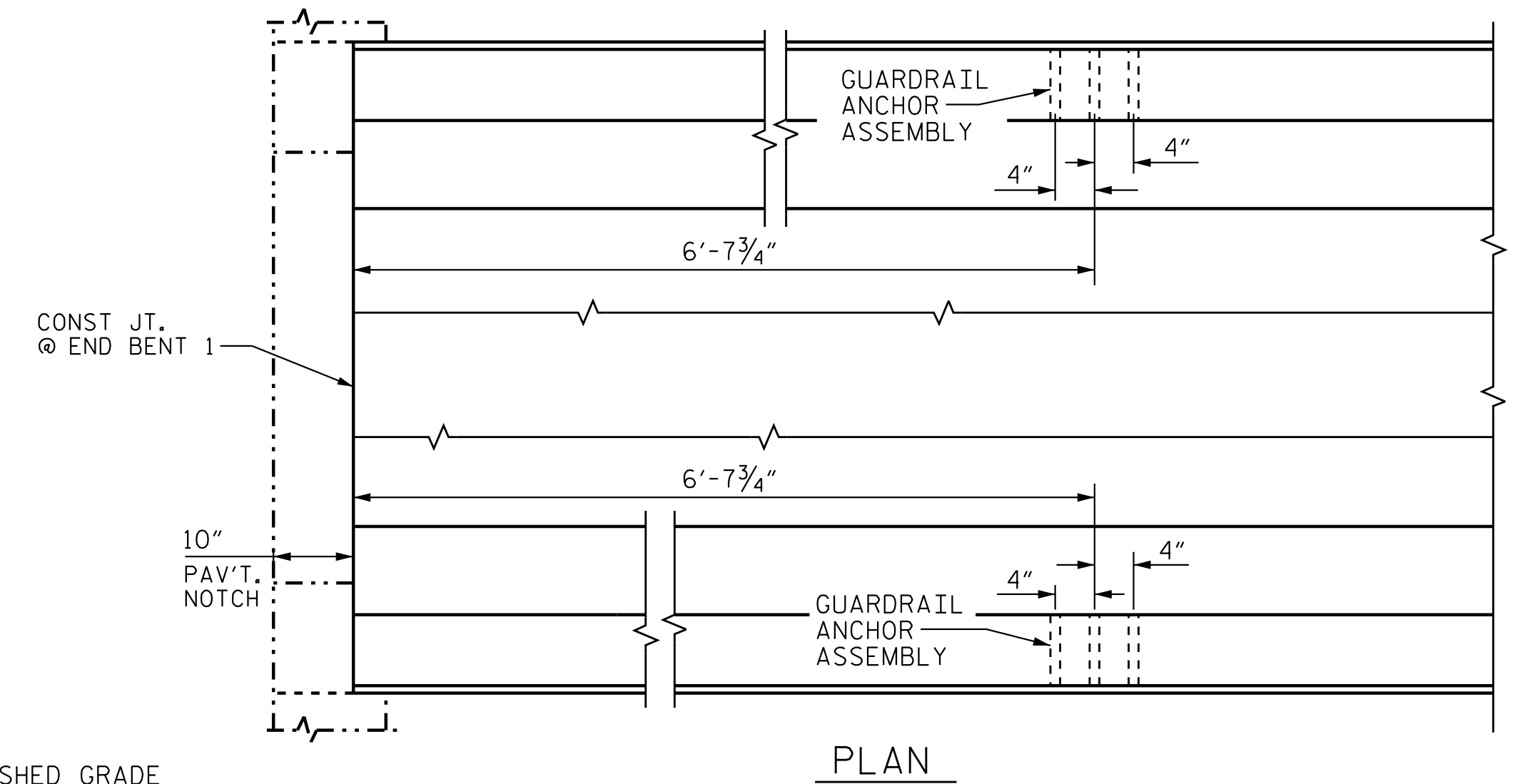
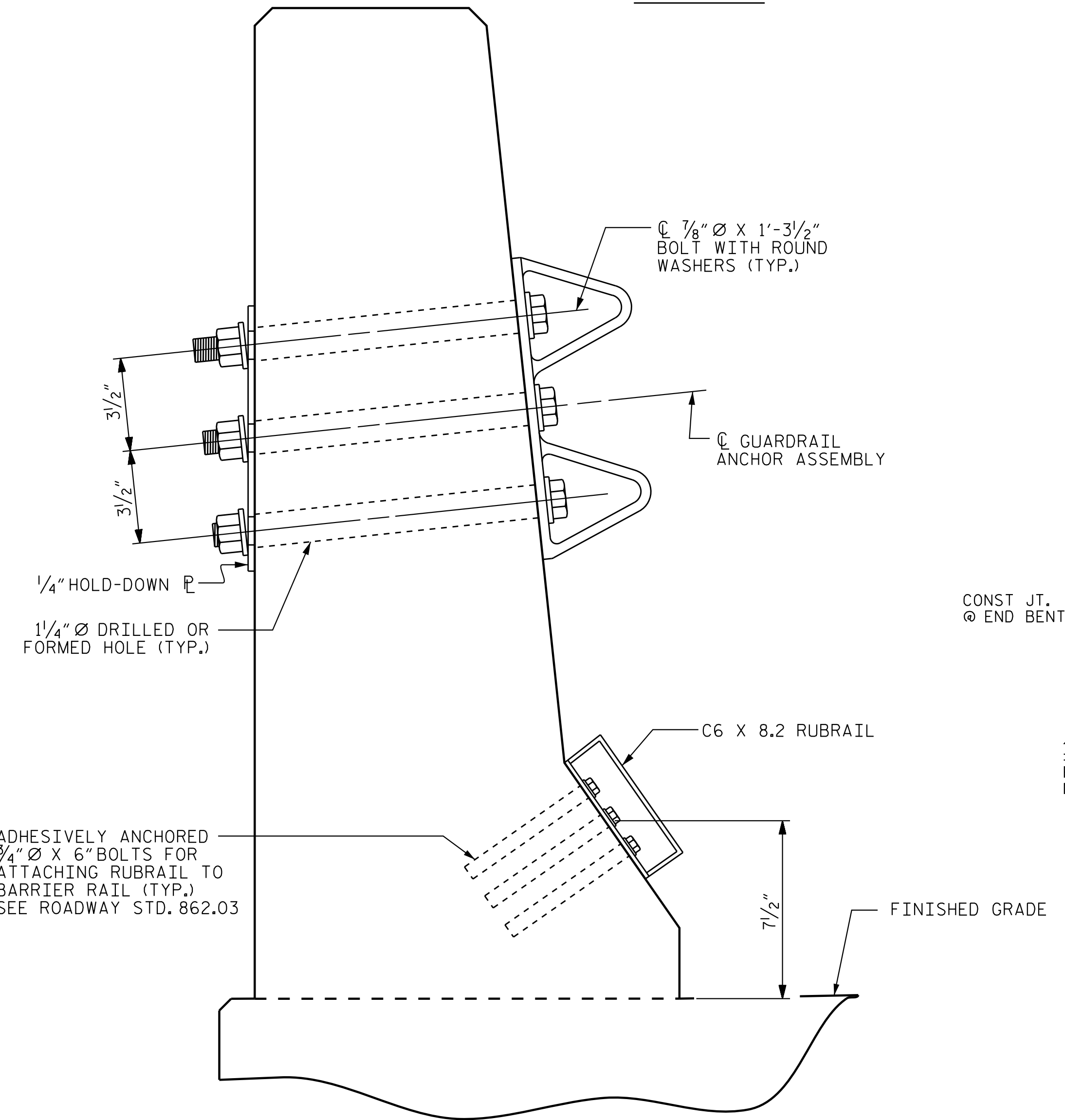
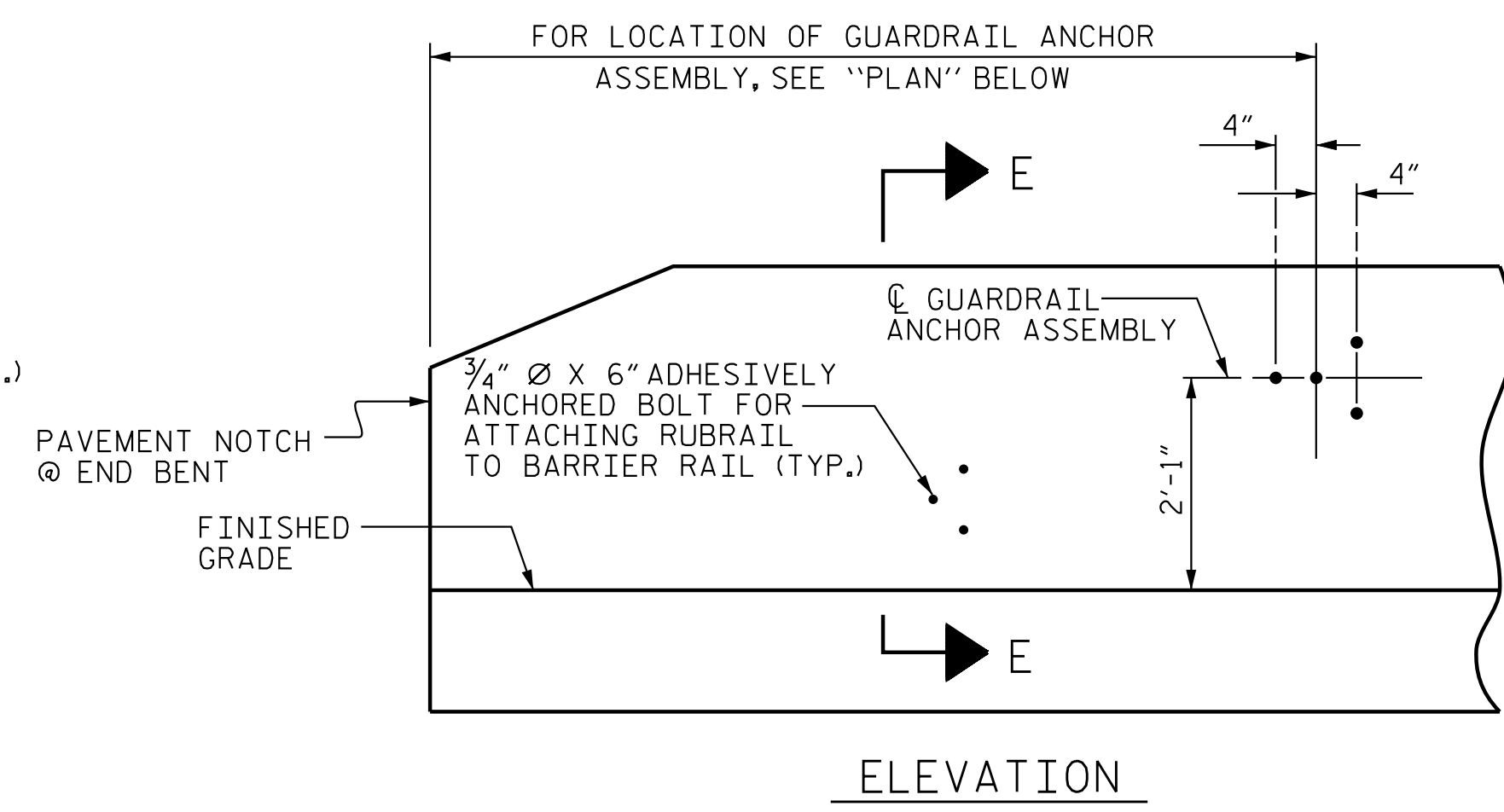
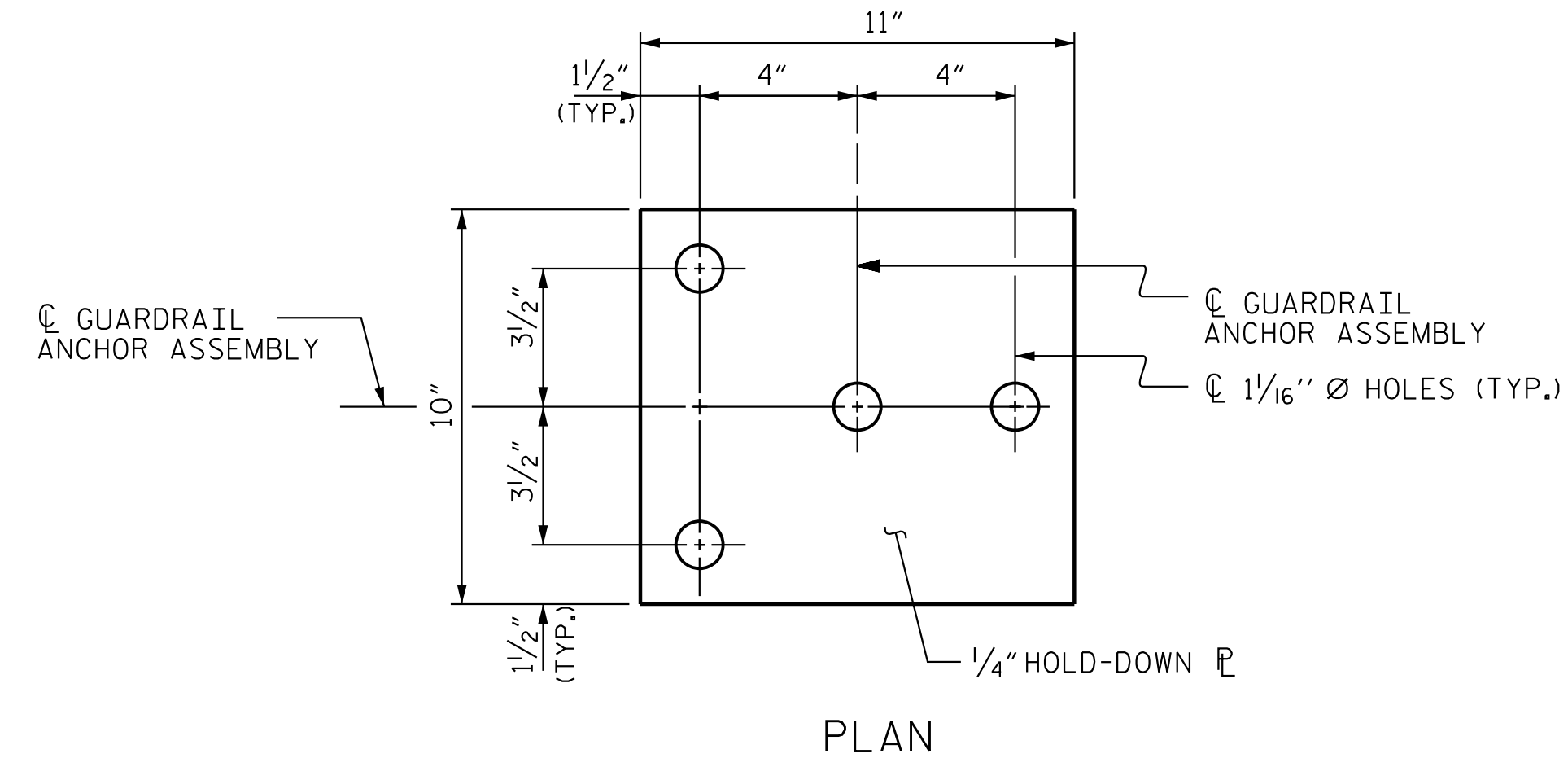
DRAWN BY : ARB 5/87
CHECKED BY : SJD 9/87

REV. 7/12 MAA/GM
REV. 6/13 MAA/GM
REV. 12/17 MAA/THC

DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE : 05/05/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-20
1			3			TOTAL SHEETS
2			4			34



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.

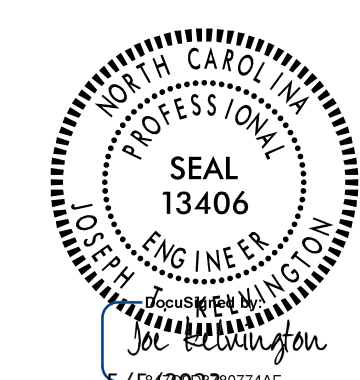
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR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

LOCATION OF ANCHORS FOR GUARDRAIL

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

PROJECT NO. R-2707E
CLEVELAND COUNTY
STATION: 13+08.49 -Y42-

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



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-21	
1			3			TOTAL SHEETS	
2			4			34	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/5/2023 12:49:18 PM jgeille

Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

DRAWN BY: J. B. GEILE DATE: 12/07/18
CHECKED BY: A. L. BOYKIN DATE: 02/17/23
DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE: 05/05/23

—SUPERSTRUCTURE BILL OF MATERIAL—

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
POUR #1	103.1		
POUR #2	141.1		
POUR #3	68.1		
TOTALS**	312.3	30,734	37,031

**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

GROOVING BRIDGE FLOORS

APPROACH SLABS	1,788	SQ.FT.
BRIDGE DECK	6,672	SQ.FT.
TOTAL	8,460	SQ.FT.

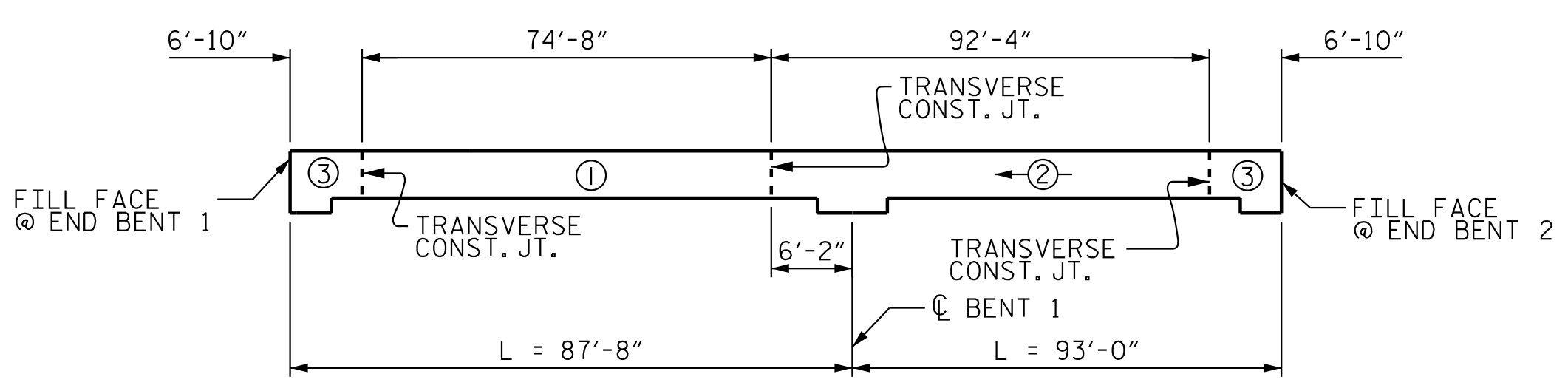
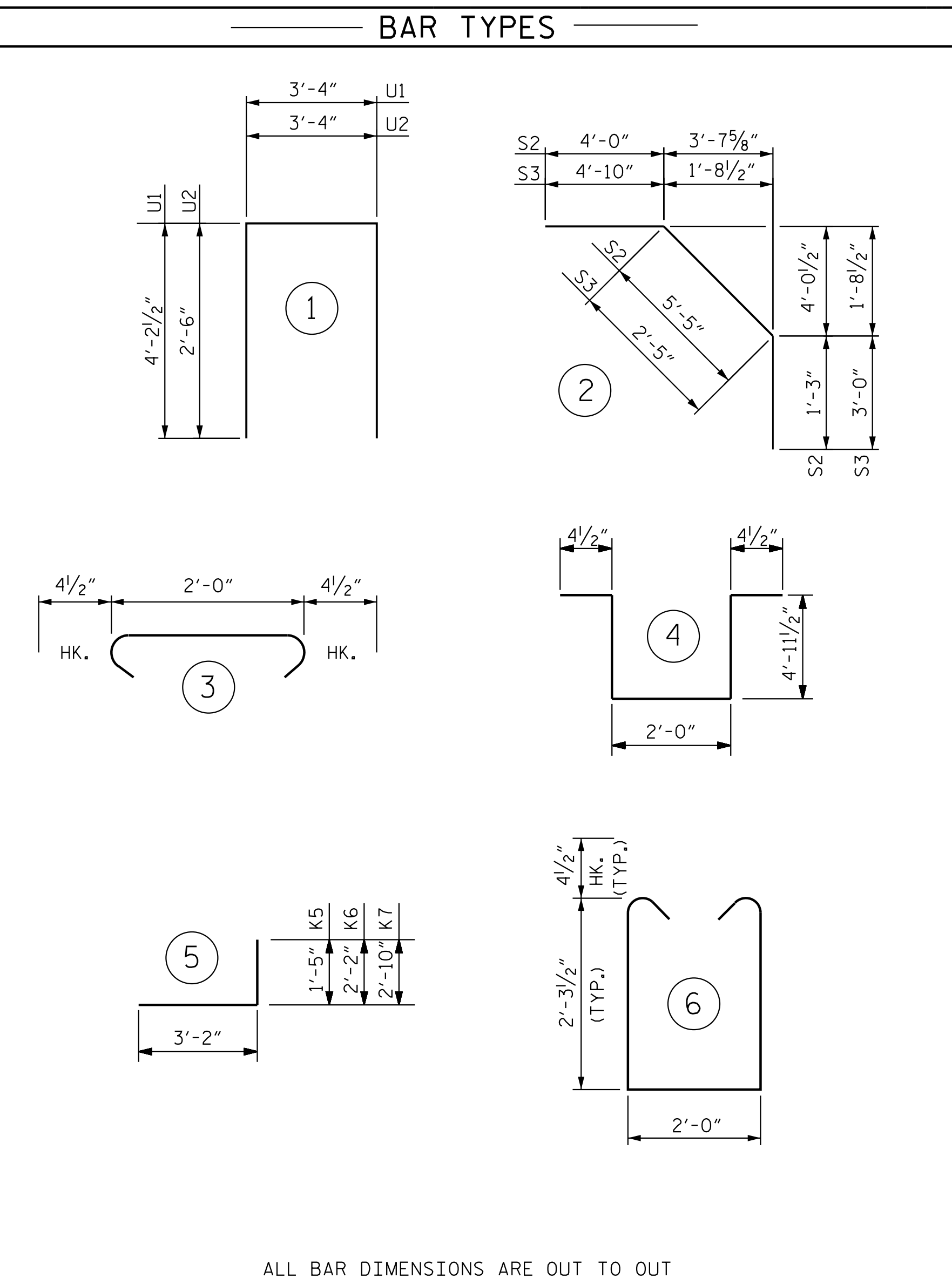
SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	1'-11"	1'-7"	1'-11"	1'-7"	2'-6"
#5	2'-5"	2'-0"	2'-5"	2'-0"	3'-1"
#6	2'-10"	2'-5"	3'-7"	2'-5"	3'-8"
#7	4'-2"	2'-9"			
#8	4'-9"	3'-2"			

REIN. BAR SCHEDULE (DECK AND DIAPHRAGM)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	357	#5	STR	42'-9"	15,918
A2	357	#5	STR	42'-9"	15,918
*B1	124	#6	STR	46'-10"	8723
*B2	246	#6	STR	21'-10"	8067
*B3	56	#6	STR	17'-8"	1486
*B4	56	#6	STR	20'-6"	1724
B5	260	#5	STR	46'-2"	12519
B6	6	#5	STR	50'-0"	313
*G1	2	#5	STR	42'-9"	89
K1	20	#4	STR	22'-3"	297
K2	12	#4	STR	8'-0"	64
K3	6	#4	STR	9'-6"	38
K4	36	#4	STR	10'-10"	260
K5	4	#4	5	4'-7"	12
K6	4	#4	5	5'-4"	14
K7	12	#4	5	6'-0"	48
K8	12	#4	STR	4'-10"	39
K9	6	#4	STR	8'-4"	33
K10	10	#4	STR	18'-10"	126
S1	120	#4	3	2'-9"	220
*S2	84	#4	2	10'-8"	599
*S3	62	#4	2	10'-3"	425
U1	62	#4	1	11'-9"	487
U2	16	#4	1	8'-4"	89
U3	27	#4	4	12'-8"	228
U4	6	#4	6	7'-4"	29

REINFORCING STEEL 30,734 LBS.
EPOXY COATED REINFORCING STEEL 37,031 LBS.

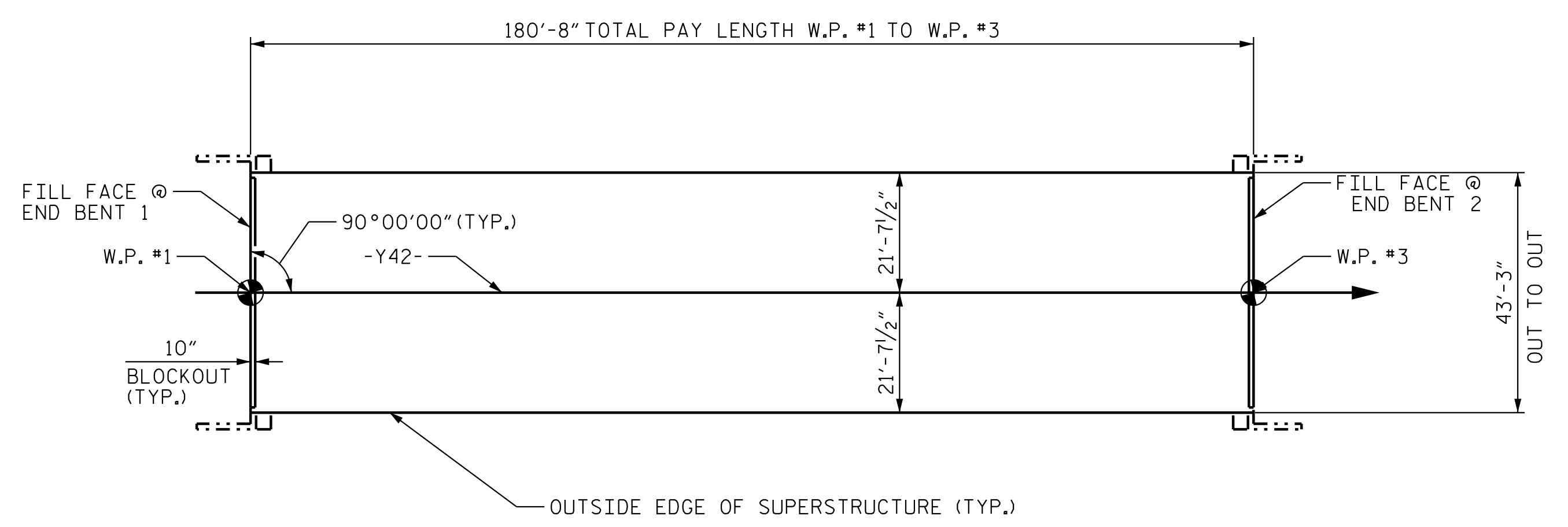


POURING SEQUENCE

POUR ② CAN NOT BE STARTED UNTIL ADJACENT ① POUR CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI

POUR ③ CAN NOT BE STARTED UNTIL ADJACENT ① OR ② POUR CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI

① → = INDICATES POUR NUMBER AND DIRECTION OF POUR



PROJECT NO. R-2707E
CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-

Stantec Consulting Services Inc.
 801 Jones Franklin Road
 Suite 300
 Raleigh, NC 27606
 Tel. (919) 851-6866
 Fax. (919) 851-7024
 www.stantec.com
 License No. F-0672

DRAWN BY: J. B. GEILE DATE: 10/11/18
 CHECKED BY: A. L. BOYKIN DATE: 02/17/23
 DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE: 06/22/23

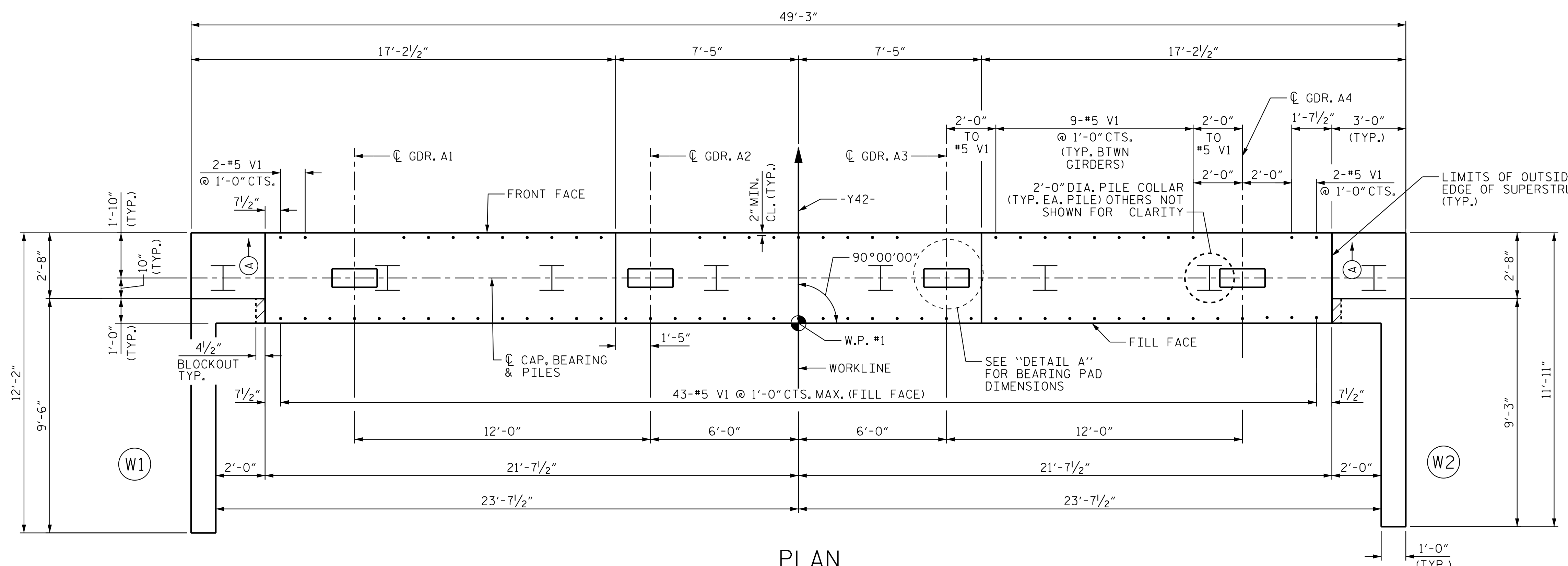
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE BILL OF MATERIAL

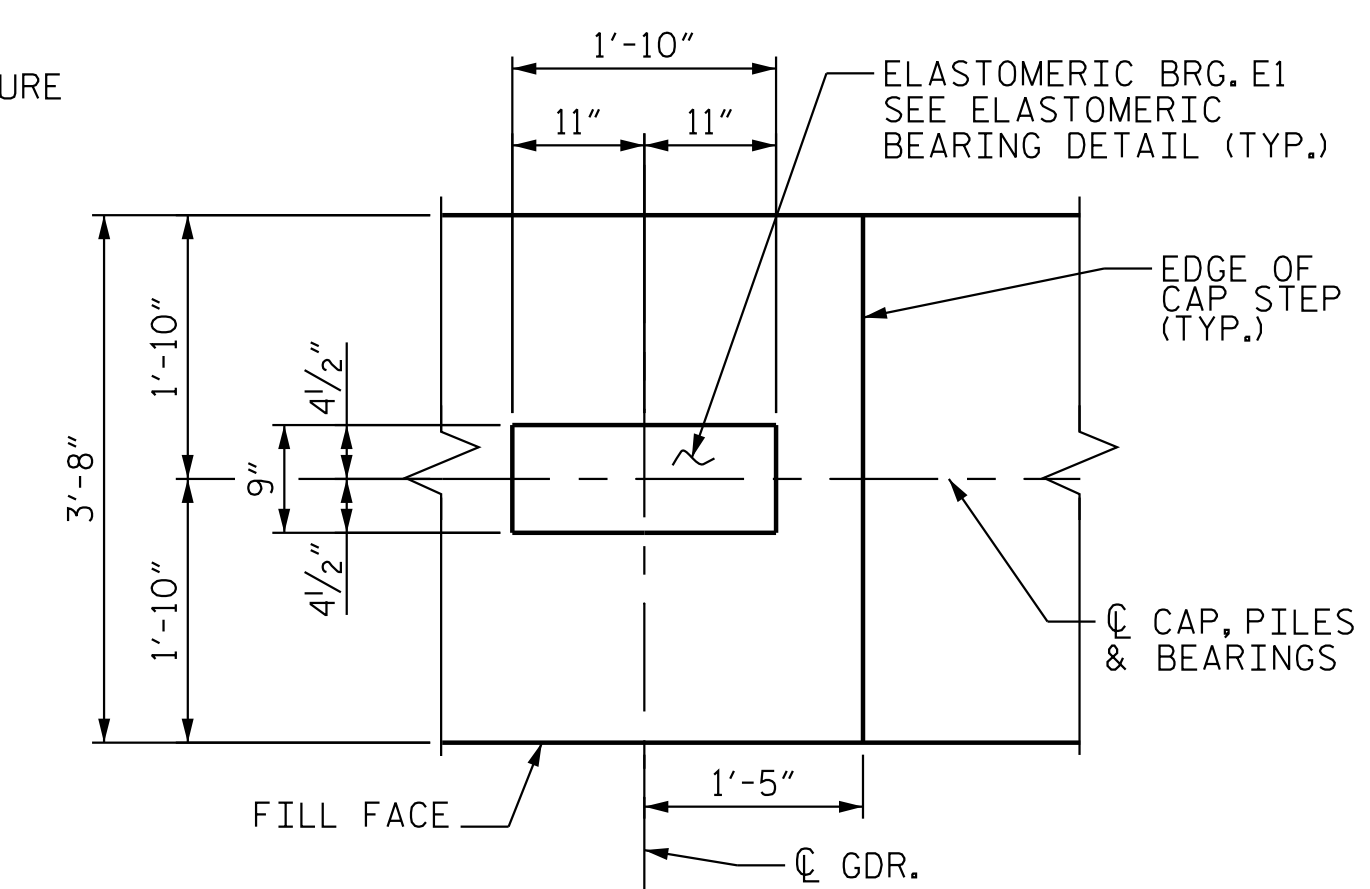
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S7-22
2			4			TOTAL SHEETS 34

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

6/22/2023 4:24:48 PM jHogenbush c:\p\w\king\dms5559\N2707E-SMU-BM-220494.dgn



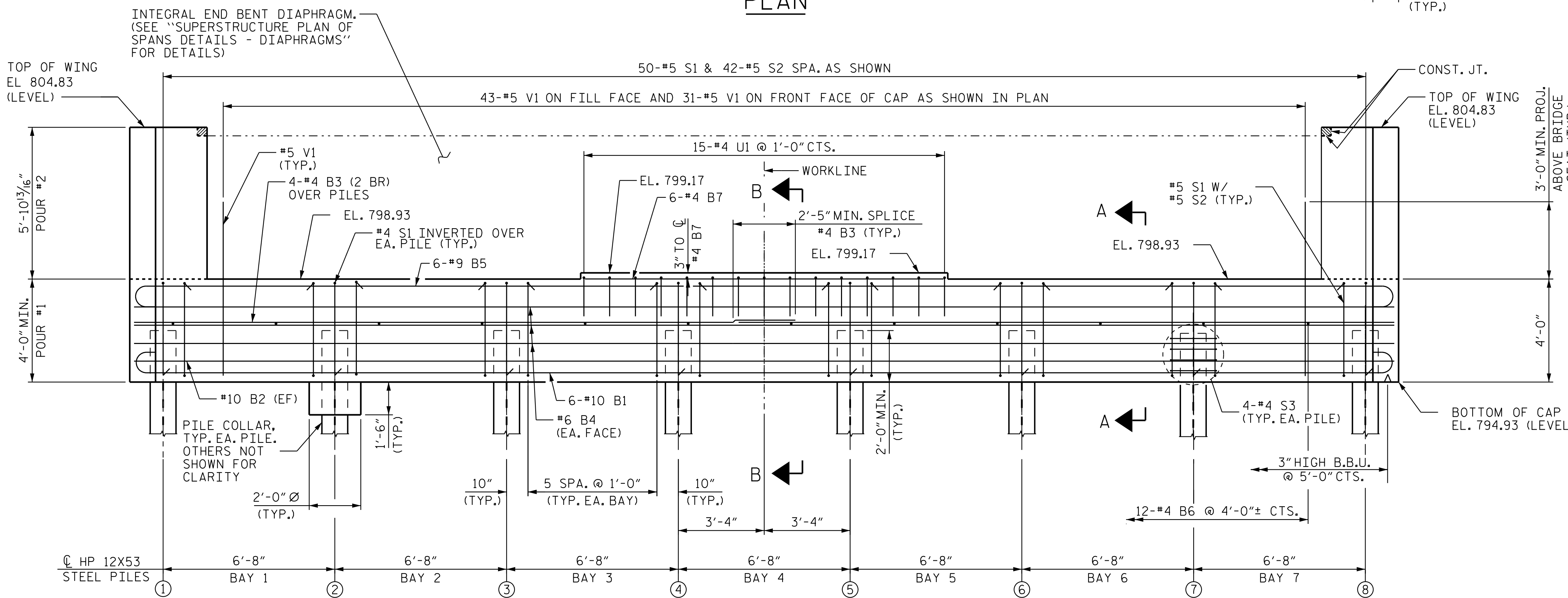
PLAN



DETAIL A
DIMENSIONS TYPICAL FOR EACH BEARING

NOTES

- THE TOP SURFACE OF THE CAP OUTSIDE OF THE LIMITS OF THE INTEGRAL END BENT DIAPHRAGM SHALL BE CURED IN ACCORDANCE WITH THE SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- FOR WING WALL DETAILS, SEE "END BENT 1, DETAILS - WING WALLS" SHT. 2 OF 3.
- (2 BR) DENOTES 2 BAR RUN.
- (EF) DENOTES EACH FACE
- CHAMFERS ARE NOT REQUIRED EXCEPT AS NOTED.
- (A) SLOPED CAP SURFACE BEYOND LIMIT OF THE INTEGRAL DIAPHRAGM SEE END BENT 1 DETAILS, SHT. 2 OF 2.
- FOR SECTION A-A & SECTION B-B, SEE END BENT 1, SHT. 3 OF 3.

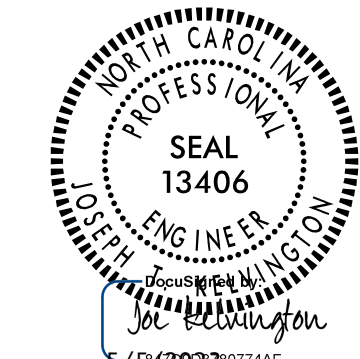


ELEVATION

PROJECT NO. R-2707E
CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-

SHEET 1 OF 3

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



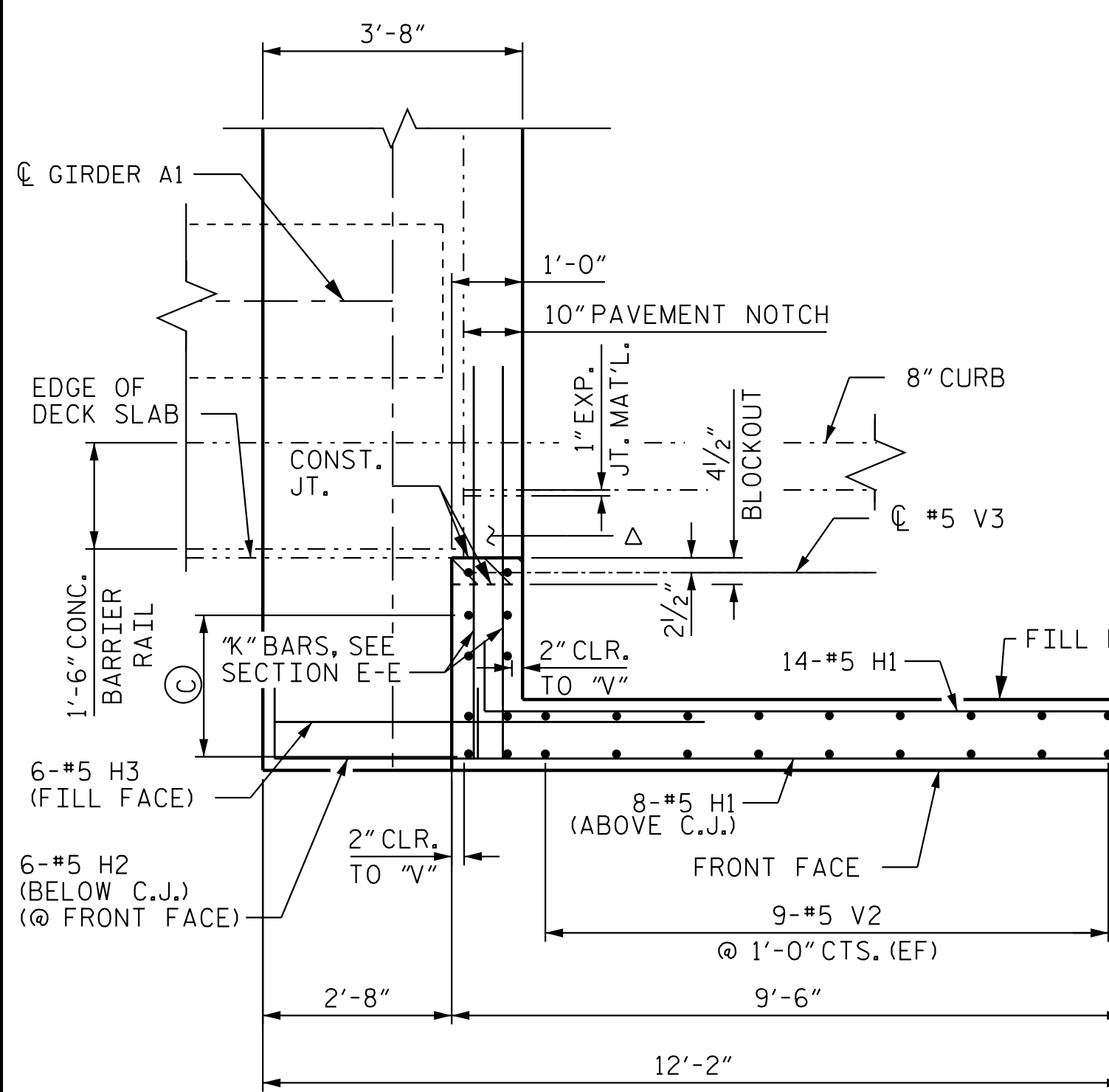
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-23	
1			3			TOTAL SHEETS	
2			4			34	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Stantec Consulting Services Inc.
 801 Jones Franklin Road
 Suite 300
 Raleigh, NC 27606
 Tel. (919) 851-6866
 Fax. (919) 851-7024
 www.stantec.com
 License No. F-0672

DRAWN BY: J. B. GEILE DATE: 01/17/23
 CHECKED BY: A. L. BOYKIN DATE: 02/17/23
 DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE: 05/05/23

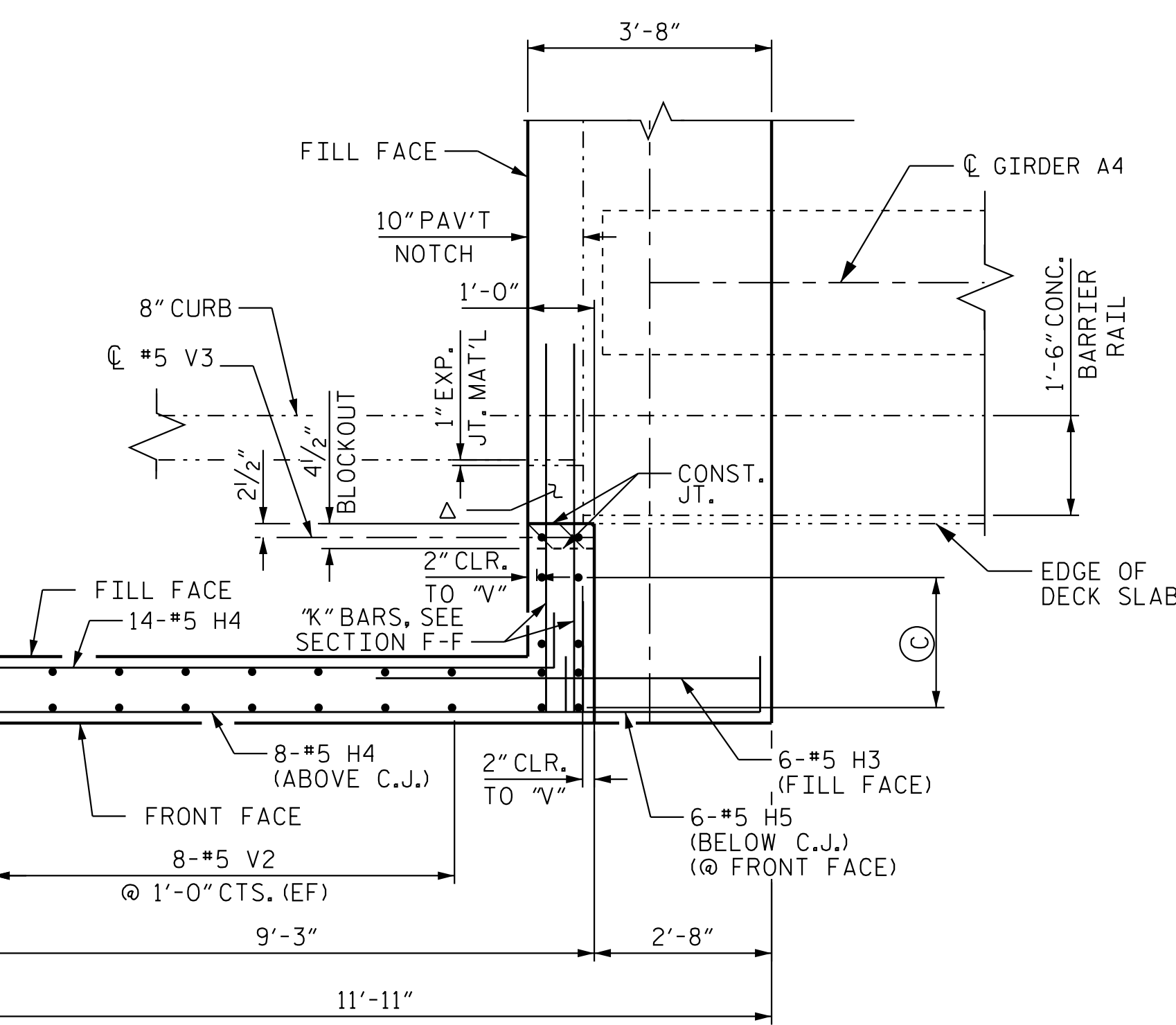
c:\users\jgeile\documents\p_working\mms5559\132707E-SMU-E01-2200494.DGN 5/5/2023 12:50:02 PM jgeile



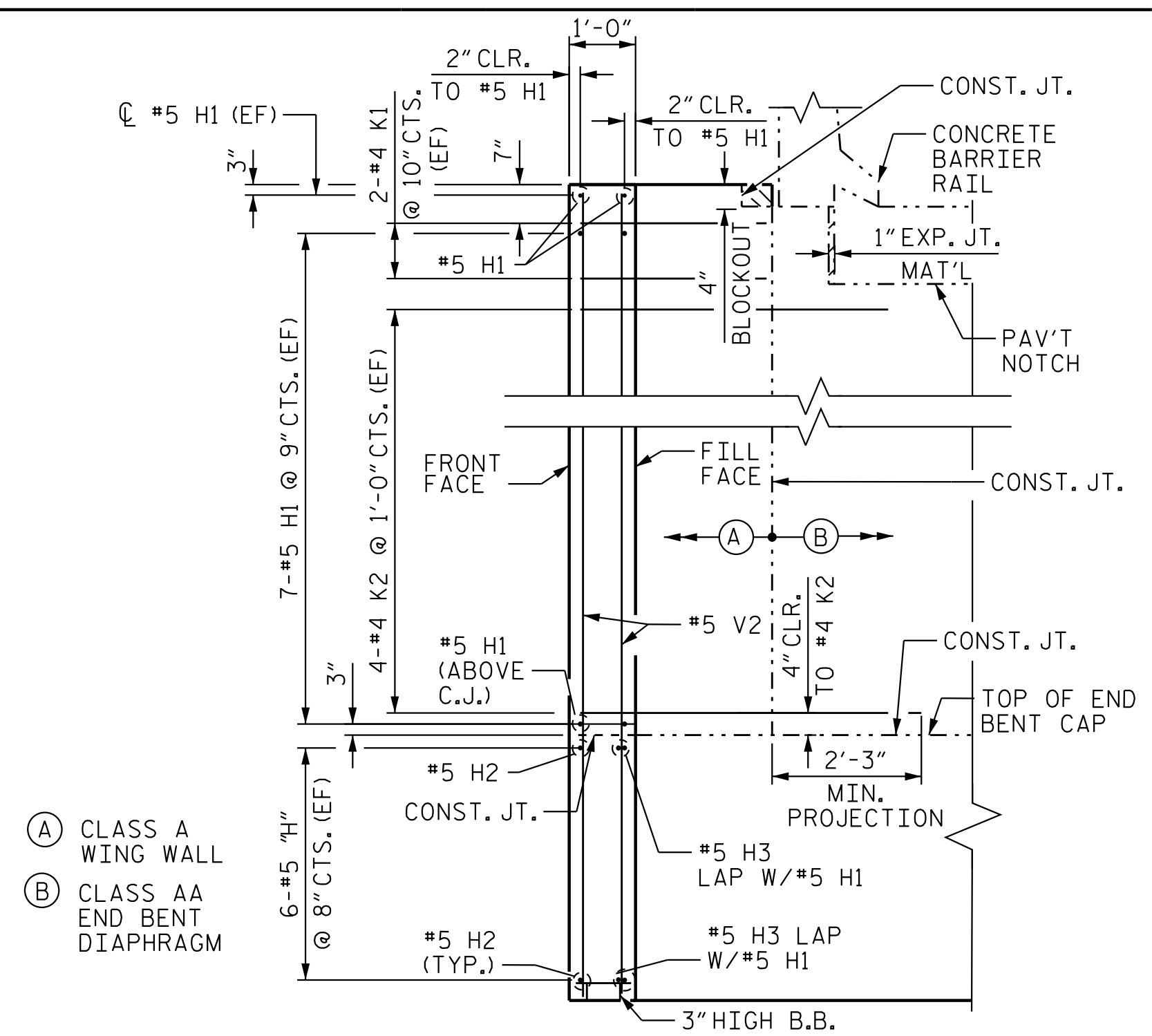
PLAN OF LEFT WING (W1)

NOTES:
 Δ AREA BETWEEN APPROACH SLAB CURB AND BLOCKOUT SHALL MATCH THE FINISHED SURFACE OF THE BRIDGE DECK.
 CONCRETE TO BE POURED IN THE HATCHED AREA TO MATCH THE TOP OF THE CURB AND THE INTEGRAL END BENT WING ELEVATION.
 THE CONCRETE IN THE HATCHED AREA OF THE WING IS TO BE POURED AFTER THE JOINT BETWEEN THE BRIDGE DECK AND THE APPROACH SLAB HAS BEEN SAWed AND IF SLIP FORMING IS USED, THE BARRIER HAS BEEN CAST.
 #5 H3 BARS MAY BE REPOSITIONED SLIGHTLY, VERTICALLY TO CLEAR CAP REINFORCEMENT AND HORIZONTALLY TO CLEAR THE PILE.

ⓐ 8-#5 V2 @ 9" MAX. SPA., 4 ON EA. FACE (SPA. AS SHOWN)

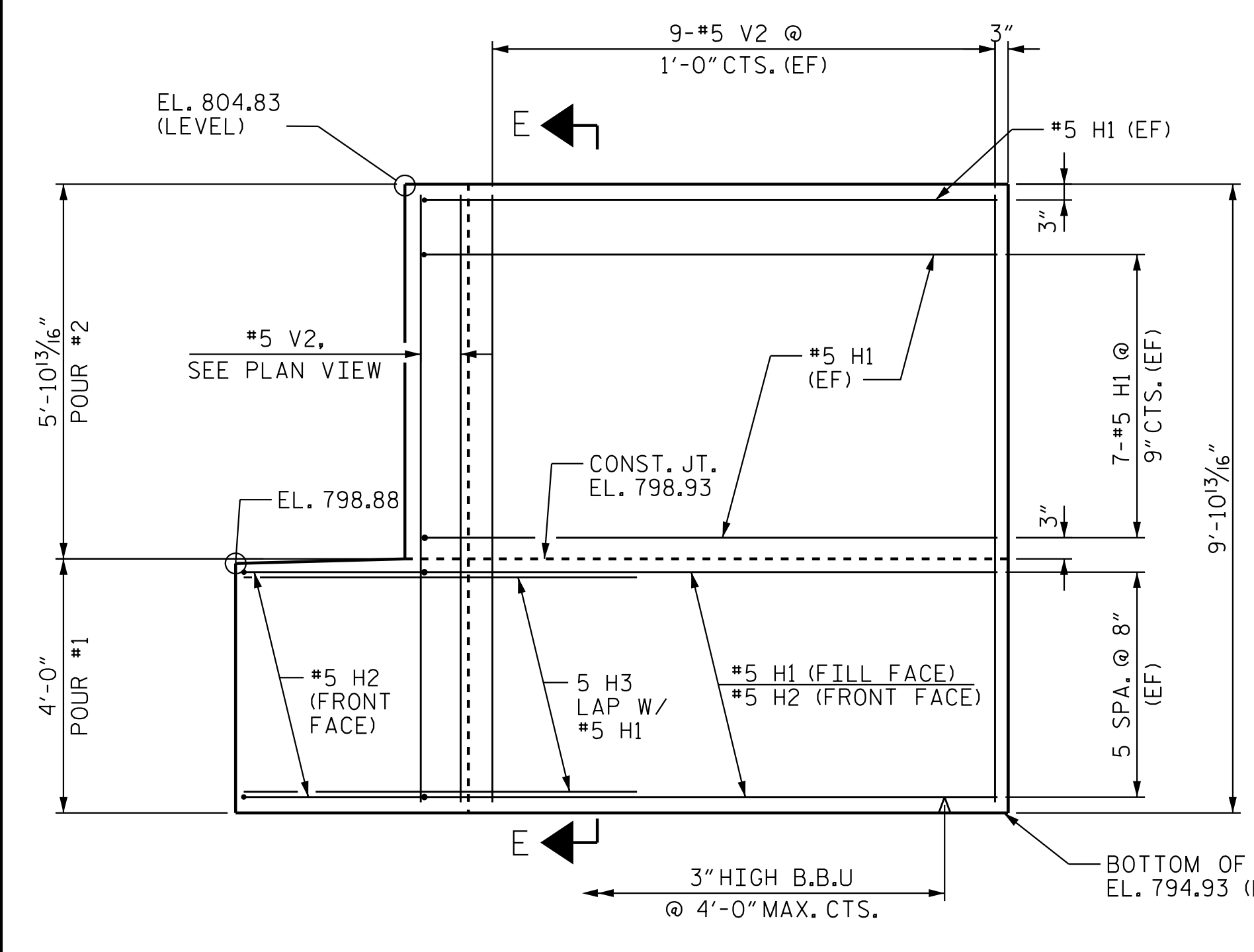


PLAN OF RIGHT WING (W2)

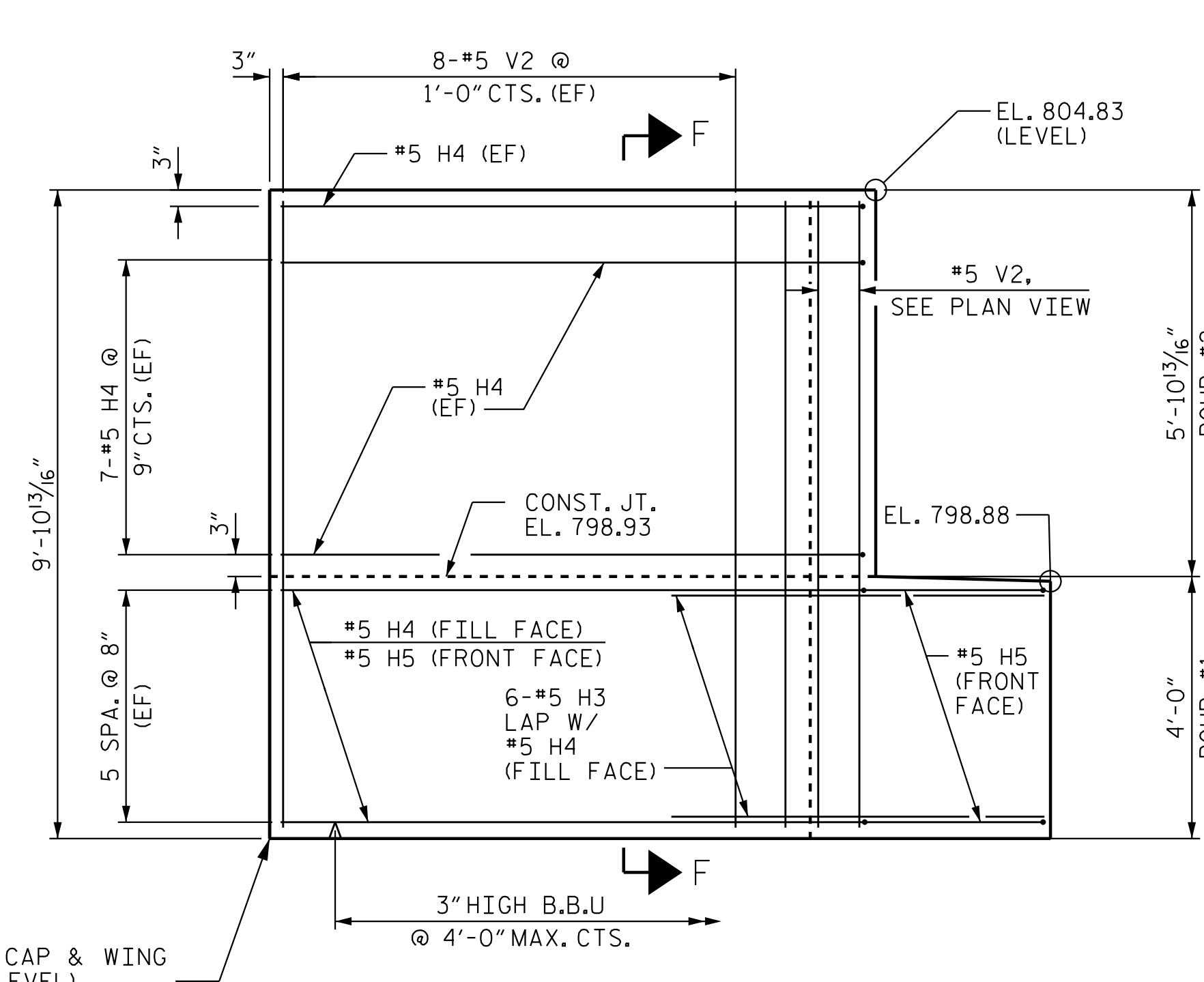


SECTION E-E

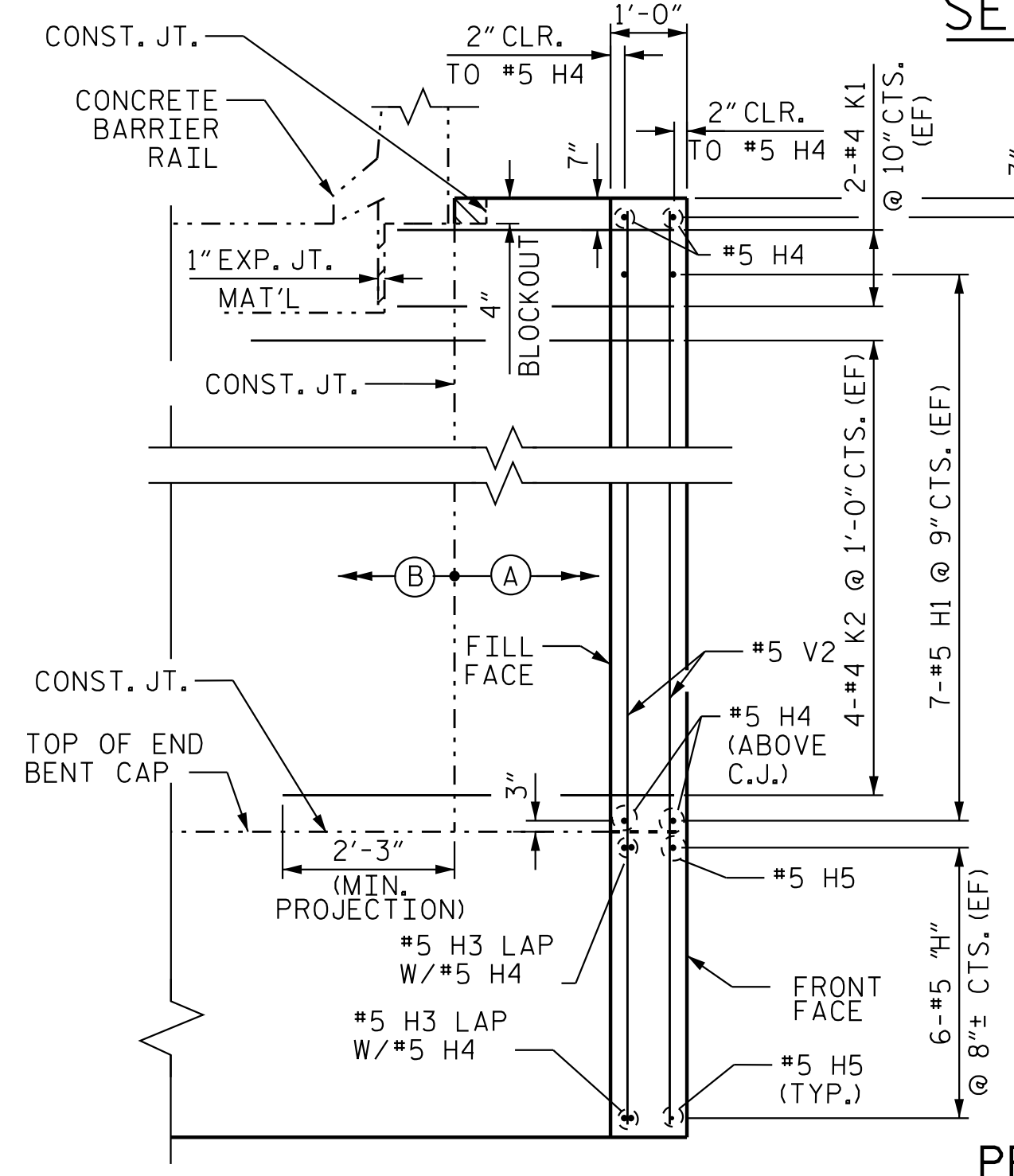
Ⓐ CLASS A WING WALL
 Ⓑ CLASS AA END BENT DIAPHRAGM



ELEVATION OF LEFT WING (W1)



ELEVATION OF RIGHT WING (W2)

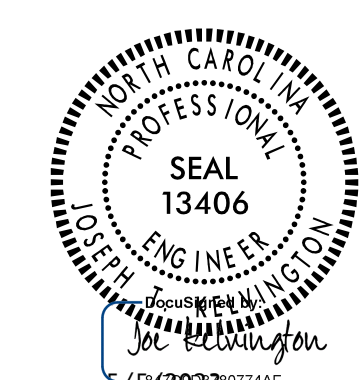


SECTION F-F

PROJECT NO. R-2707E
 CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1 WING
 DETAILS



REVISIONS						SHEET NO. S7-24
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

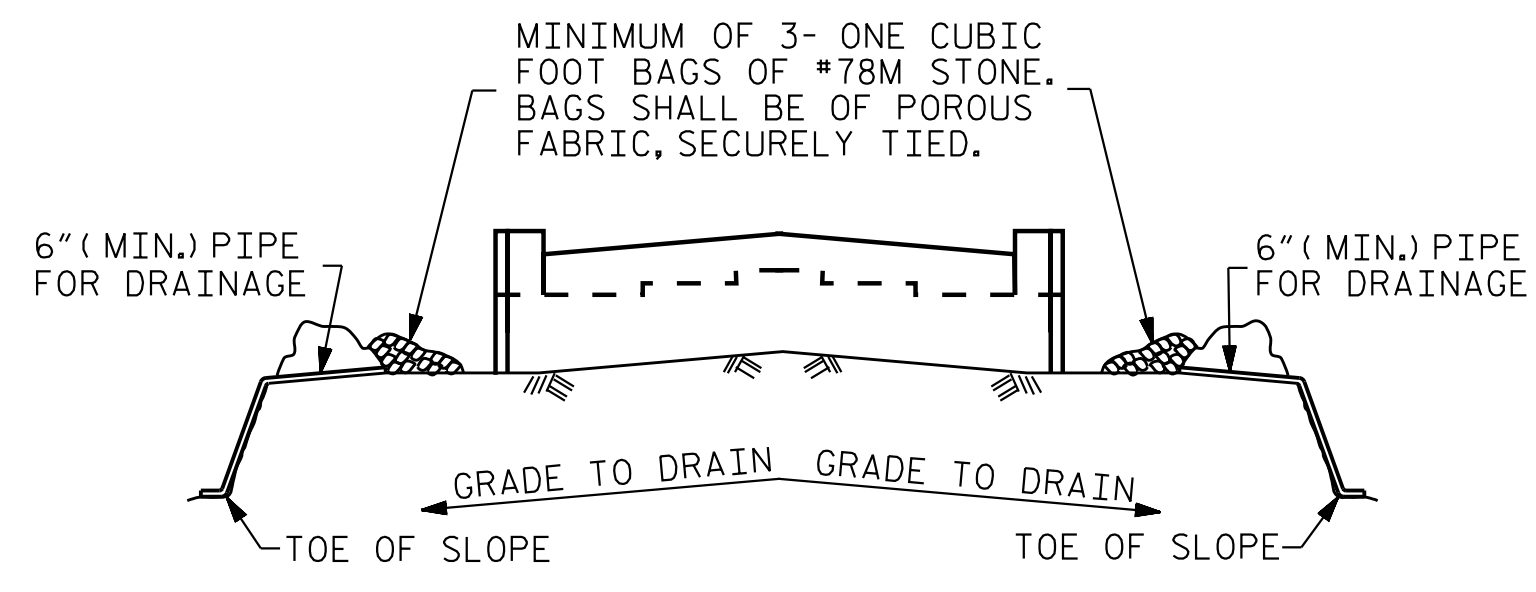
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTE: TOP SURFACE OF END BENT CAP BETWEEN EDGE OF DECK SLAB AND END OF CAP SHALL BE SLOPED TRANSVERSELY FROM EXPOSED FACE OF THE WING TO FRONT FACE AT A RATE OF 1/4" / FT.
 (EF) DENOTES EACH FACE.

Stantec
 Stantec Consulting Services Inc.
 801 Jones Franklin Road
 Suite 300
 Raleigh, NC 27606
 Tel. (919) 851-6866
 Fax. (919) 851-7024
 www.stantec.com
 License No. F-0672

DRAWN BY: J. B. GEILE DATE: 01/17/23
 CHECKED BY: A. L. BOYKIN DATE: 02/17/23
 DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE: 05/05/23

c:\users\jgelle\documents\p\w\working\ms5559\R2707E.SMU.E02.220494.dgn.DCN 5/5/2023 12:50:23 PM jgelle

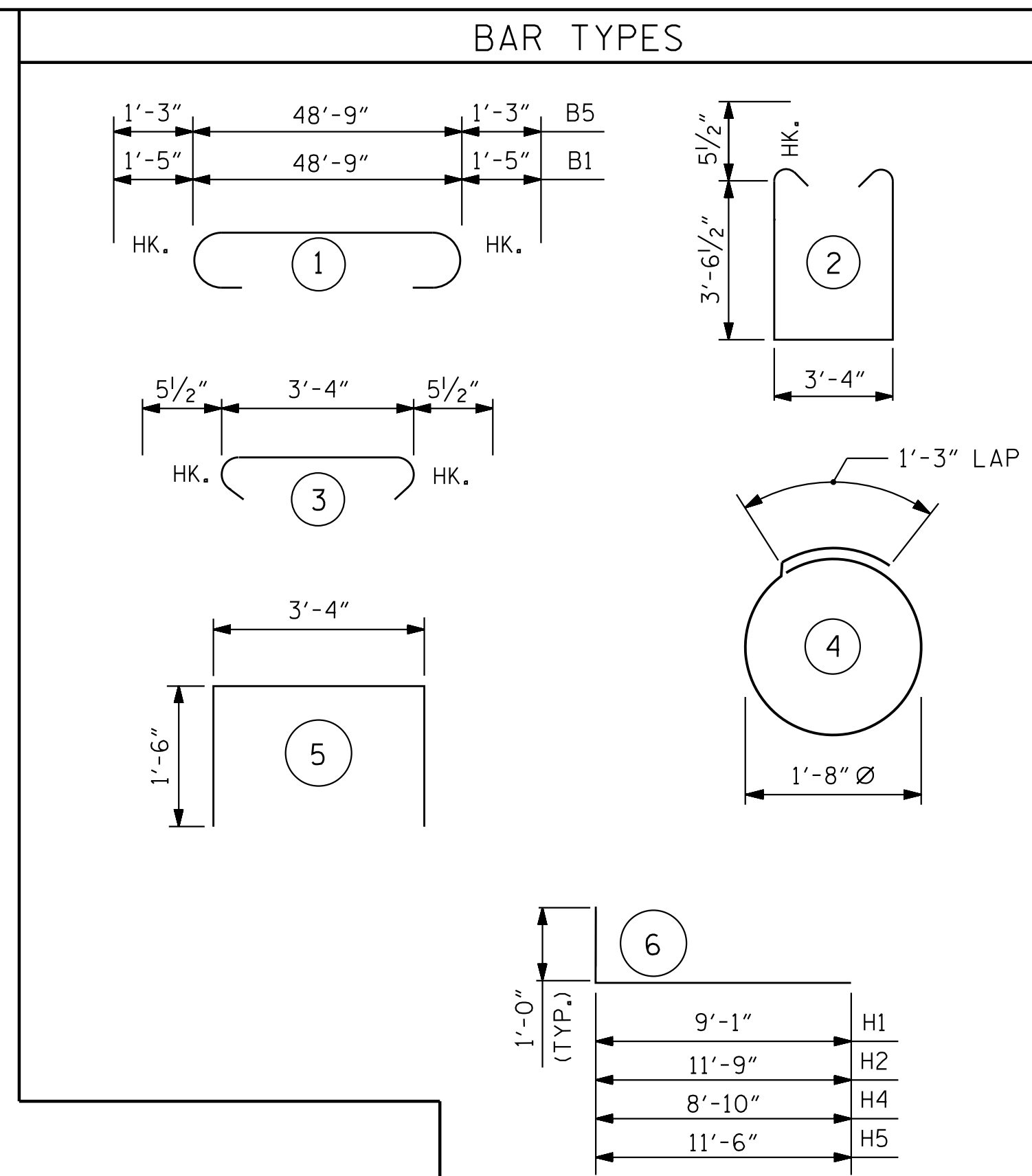
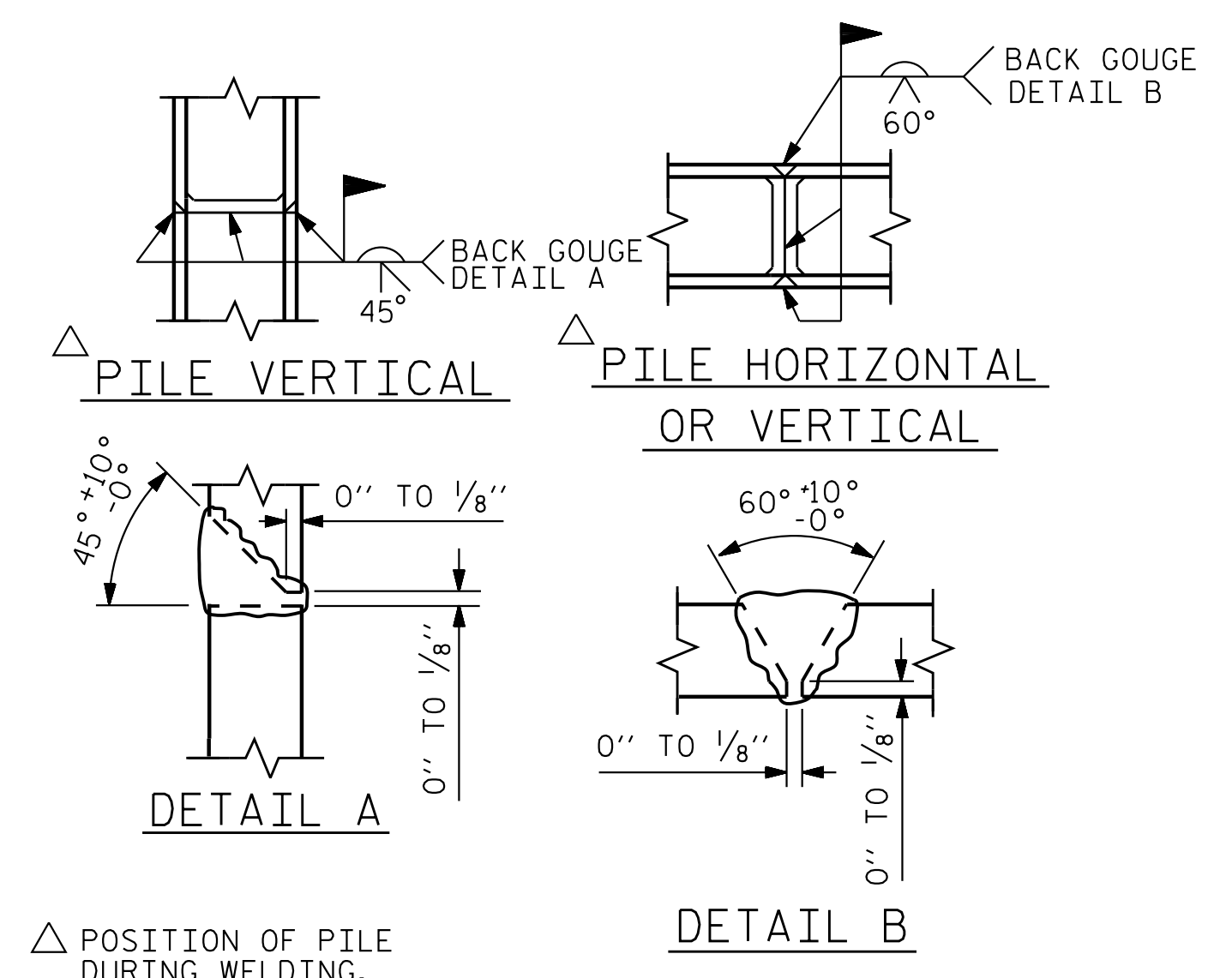


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

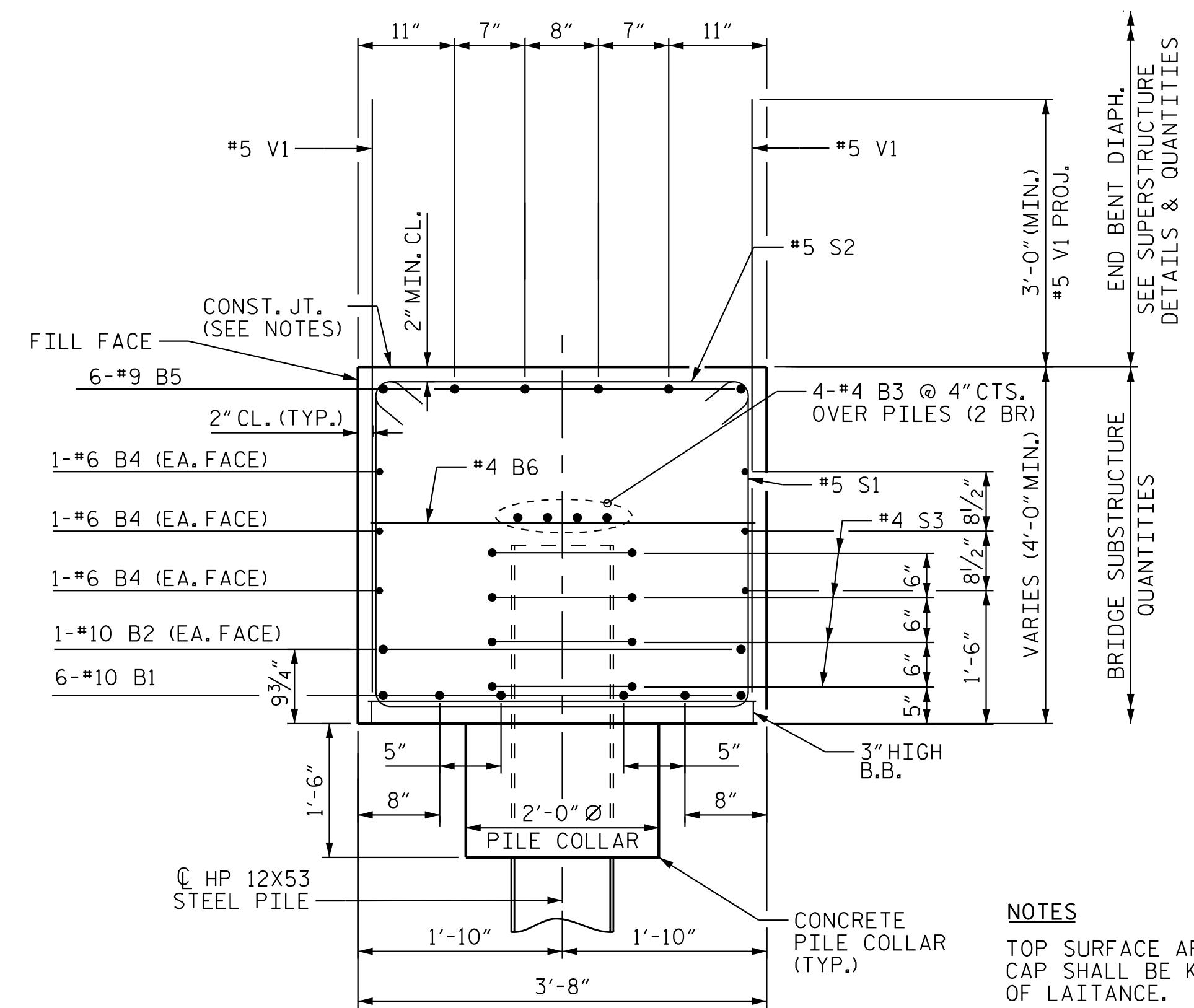
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

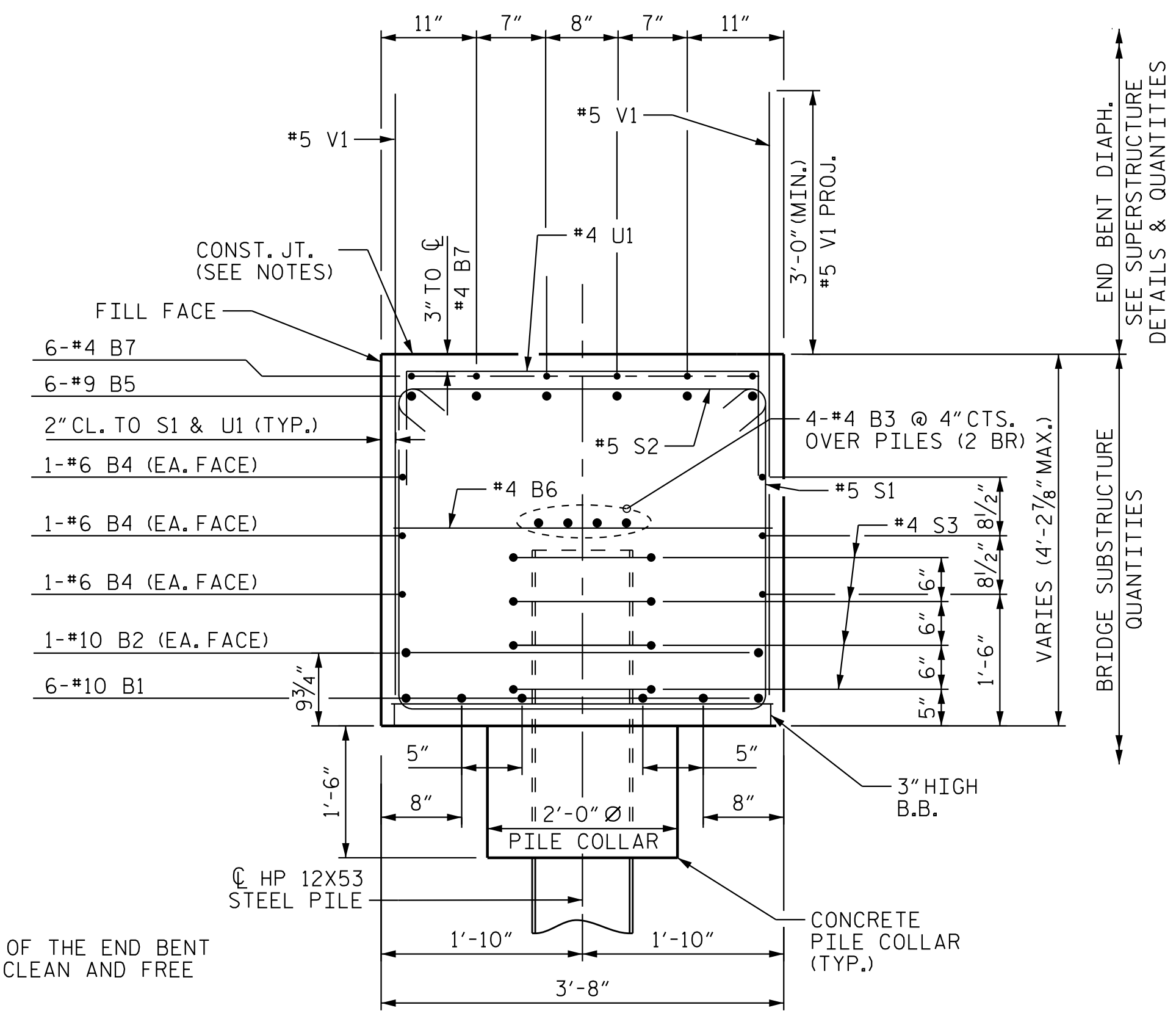


BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	1	51'-7"	1332
B2	2	#10	STR	48'-3"	415
B3	8	#4	STR	25'-4"	135
B4	6	#6	STR	48'-9"	439
B5	6	#9	1	51'-3"	1046
B6	12	#4	STR	3'-4"	27
B7	6	#4	STR	14'-6"	58
H1	22	#5	6	10'-1"	231
H2	6	#5	6	12'-9"	80
H3	12	#5	STR	6'-10"	86
H4	22	#5	6	9'-10"	226
H5	6	#5	6	12'-6"	78
K1	8	#4	STR	2'-3"	12
K2	16	#4	STR	5'-1"	54
S1	50	#5	2	11'-4"	591
S2	42	#5	3	4'-3"	186
S3	32	#4	4	6'-6"	139
U1	15	#4	5	6'-4"	63
V1	74	#5	STR	7'-0"	540
V2	50	#5	STR	9'-6"	495
V3	4	#5	STR	9'-2"	38
REINFORCING STEEL					6271
CLASS A CONCRETE BREAKDOWN:					
POUR #1: CAP, COLLARS, ETC.					C.Y. 31.0
POUR #2: UPPER WINGS					C.Y. 5.0
CLASS A CONCRETE TOTAL					C.Y. 36.0

ALL BAR DIMENSIONS ARE OUT TO OUT.



SECTION A-A
SEE "END BENT 1", SHEET 1 OF 3.



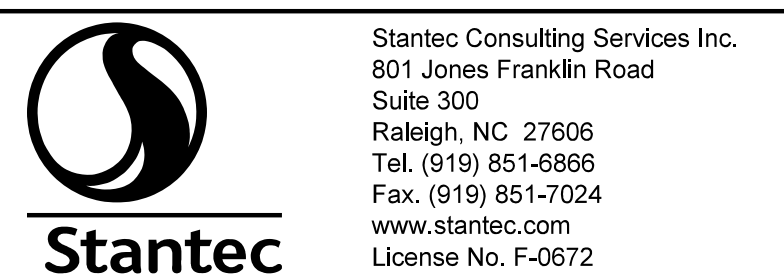
SECTION B-B
SEE "END BENT 1", SHEET 1 OF 3.

NOTES

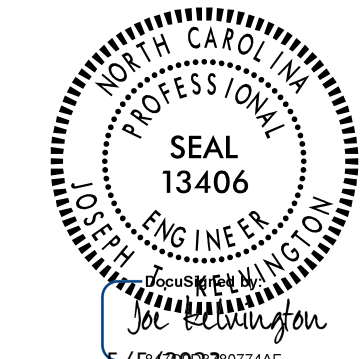
TOP SURFACE AREAS OF THE END BENT CAP SHALL BE KEPT CLEAN AND FREE OF LAITANCE.

ROUGH FLOAT AND ROUGHEN THE TOP OF THE END BENT CAP TO PROVIDE MIN. SURFACE AMPLITUDE OF 1/4", EXCEPT UNDER BEARING AREAS.

(2 BR) DENOTES 2 BAR RUN.



DRAWN BY: J. B. GEILE DATE: 01/18/23
CHECKED BY: A. L. BOYKIN DATE: 02/17/23
DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE: 05/05/23



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. R-2707E
CLEVELAND COUNTY
STATION: 13+08.49 -Y42-

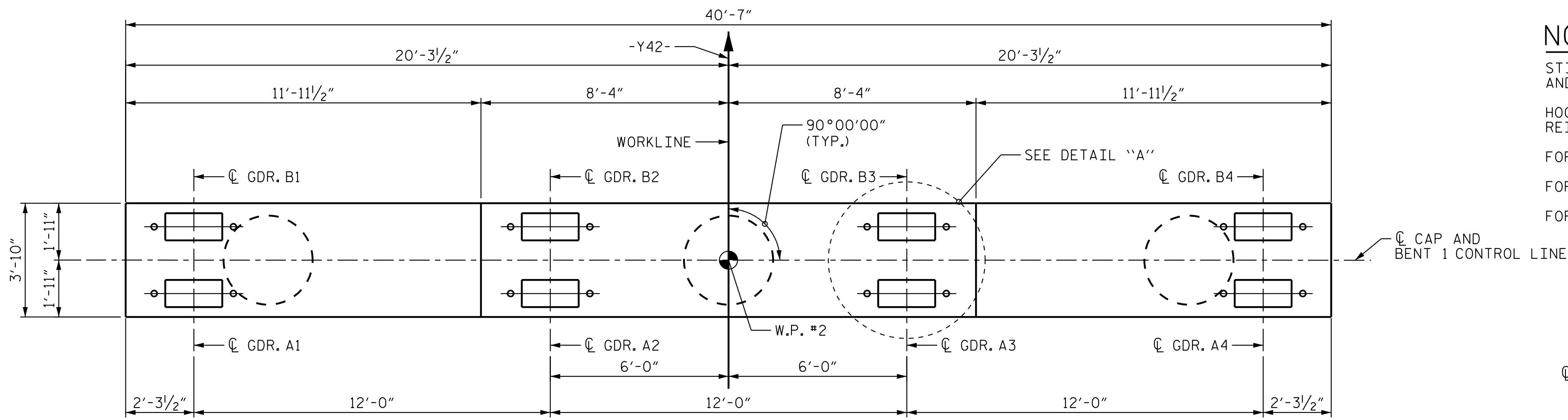
SHEET 3 OF 3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-25
1			3			TOTAL SHEETS
2			4			34

DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT 1 DETAILS

SPAN B

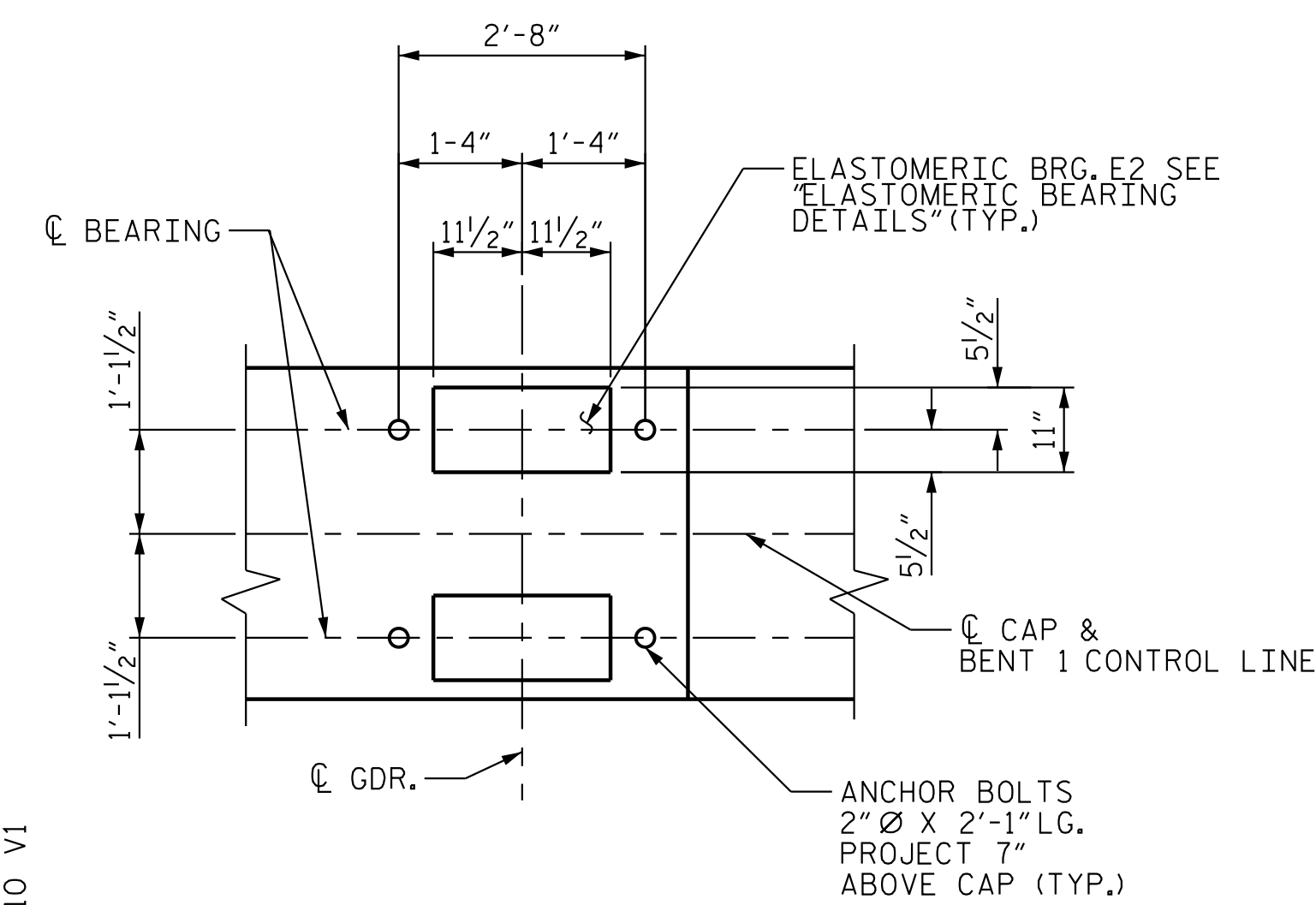
SPAN A



PLAN

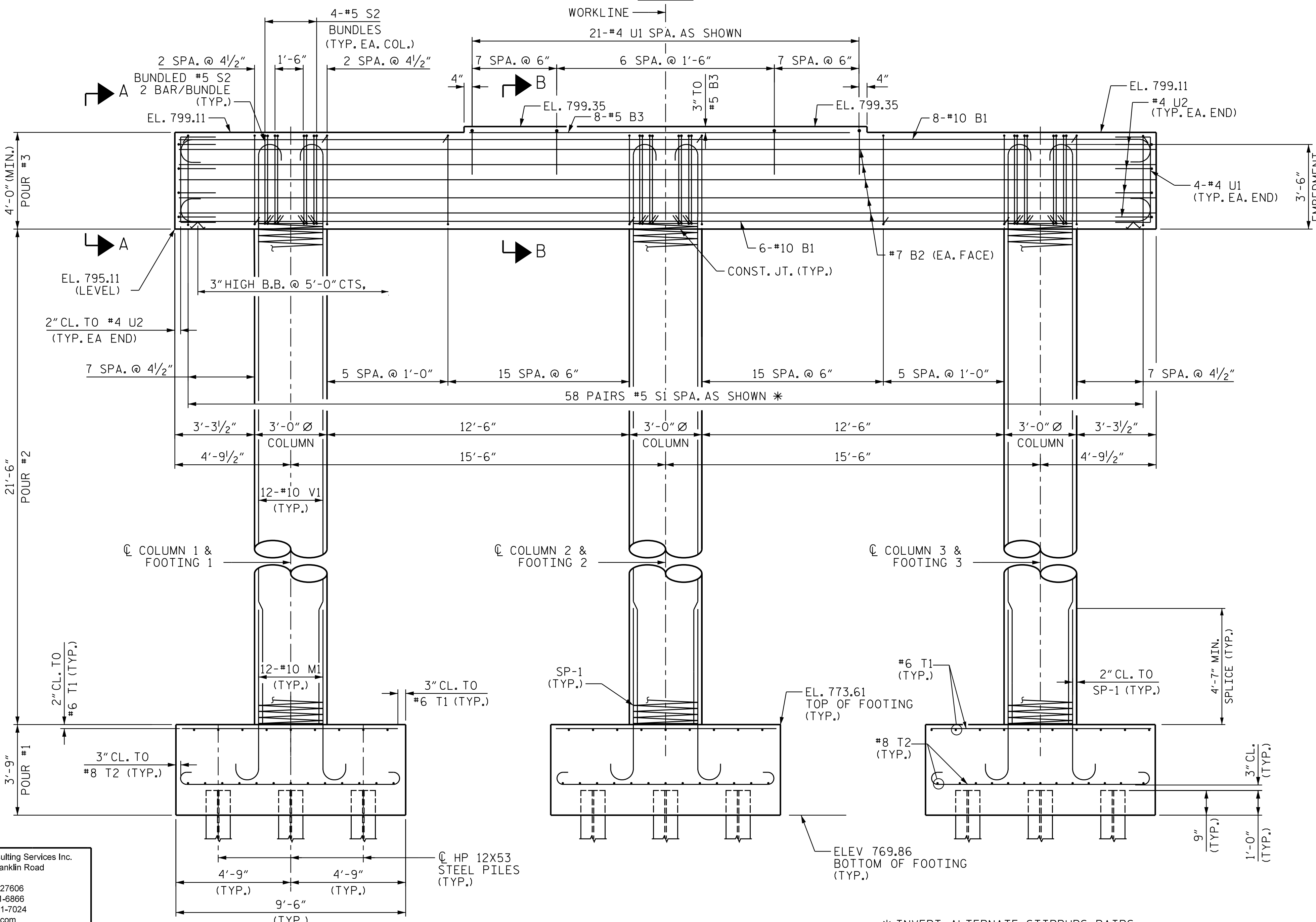
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS AND COLUMN REINFORCEMENT.
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 FOR VIEW A-A, SEE "BENT 1 DETAILS", SHEET 2 OF 2.
 FOR PILE SPLICE DETAILS, SEE "END BENT 1 DETAILS", SHEET 3 OF 3.
 FOR SECTION B-B, SEE "BENT 1 DETAILS", SHEET 2 OF 2.



DETAIL "A"

NOTE: DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR EA. BEARING @ EA. GIRDER.



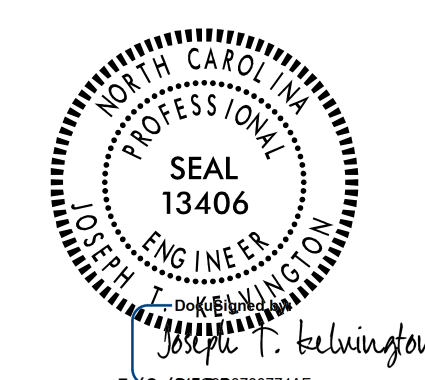
ELEVATION

* INVERT ALTERNATE STIRRUPS PAIRS

PROJECT NO. R-2707E
 CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1



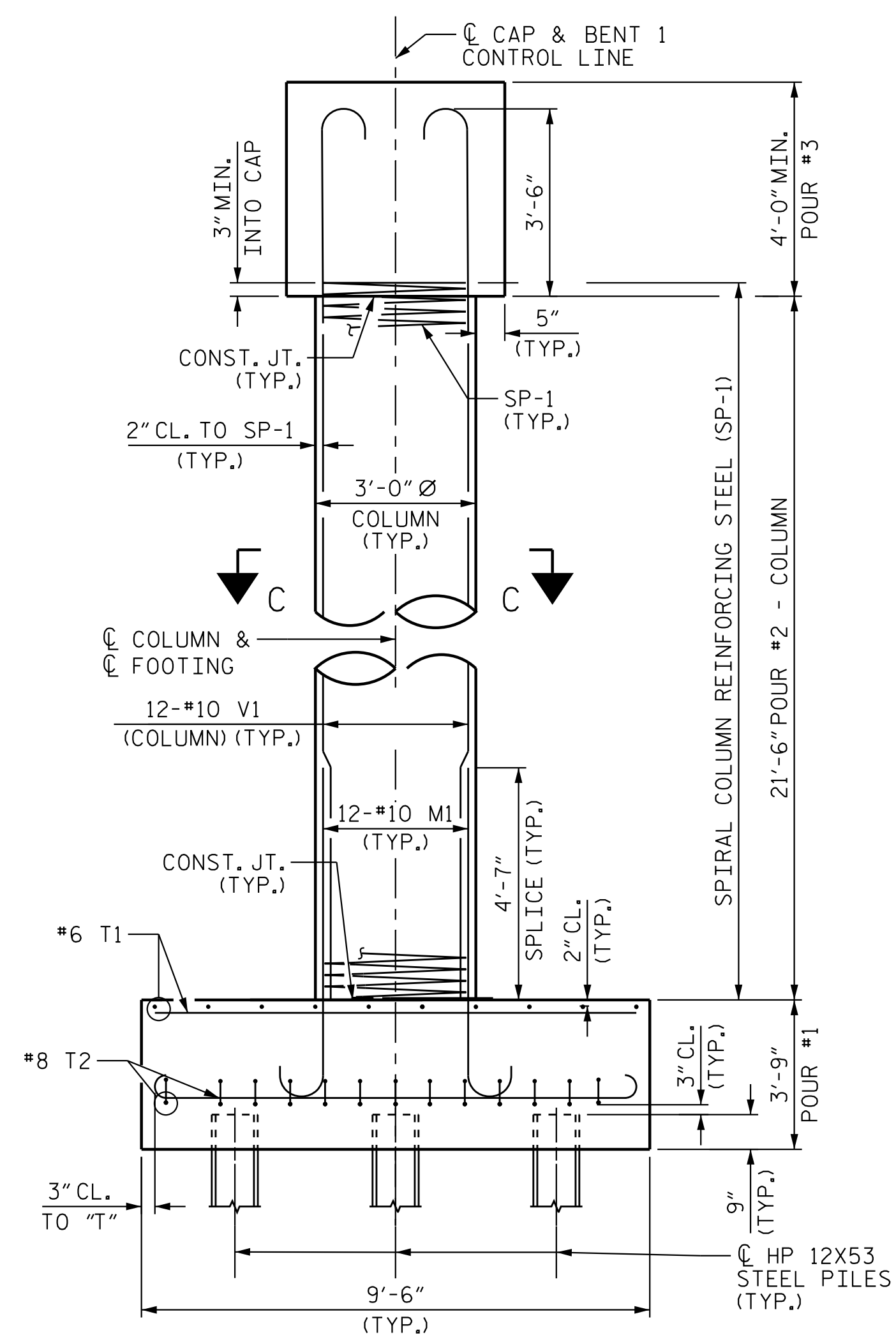
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-26	
1			3			TOTAL SHEETS	
2			4			34	

Stantec Consulting Services Inc.
 801 Jones Franklin Road
 Suite 300
 Raleigh, NC 27606
 Tel. (919) 851-6866
 Fax. (919) 851-7024
 www.stantec.com
 License No. F-0672

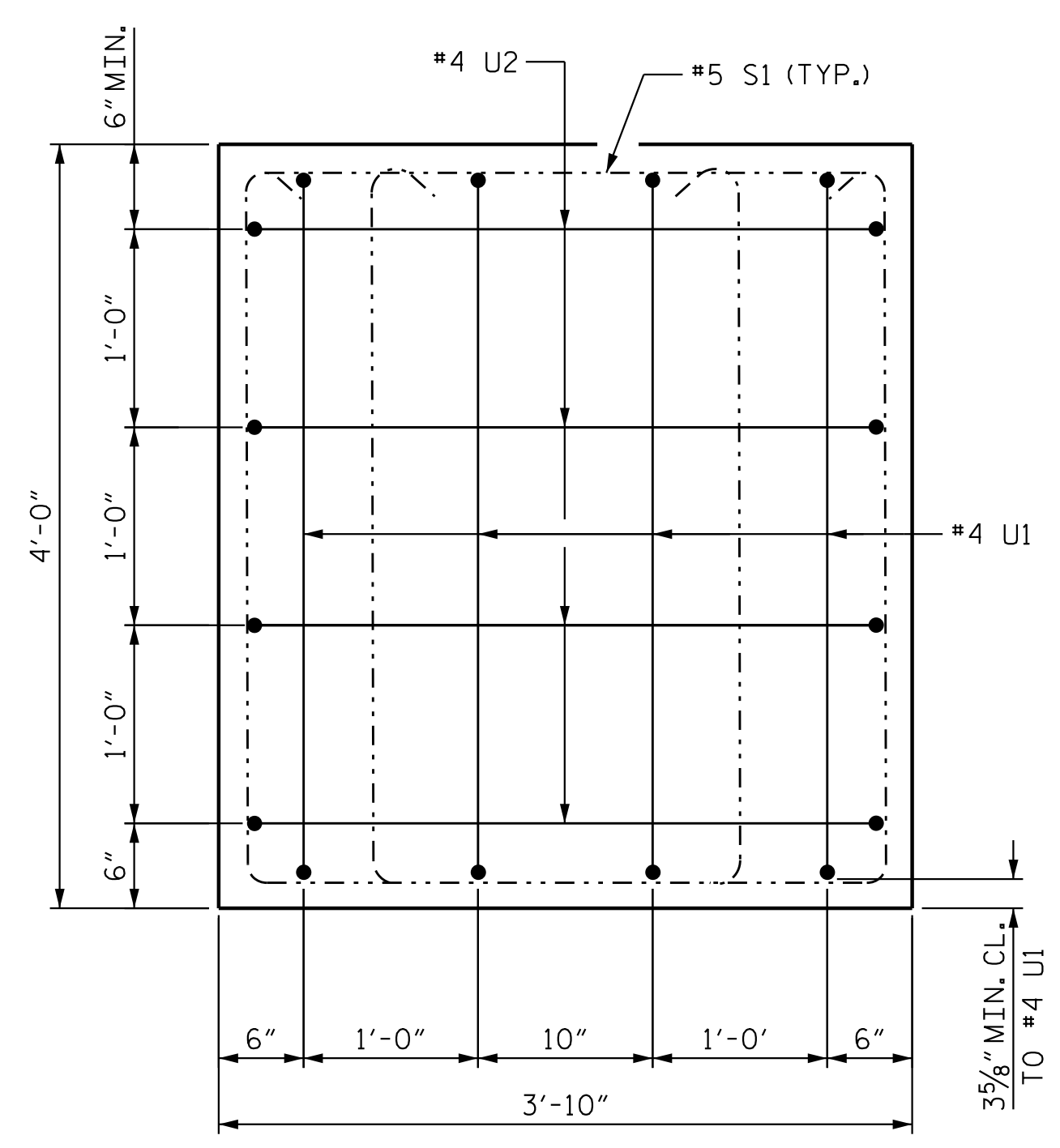
DRAWN BY: J. B. GEILE DATE: 01/19/23
 CHECKED BY: A. L. BOYKIN DATE: 02/17/23
 DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE: 05/08/23

5/8/2023 3:44:48 PM jHagenbush

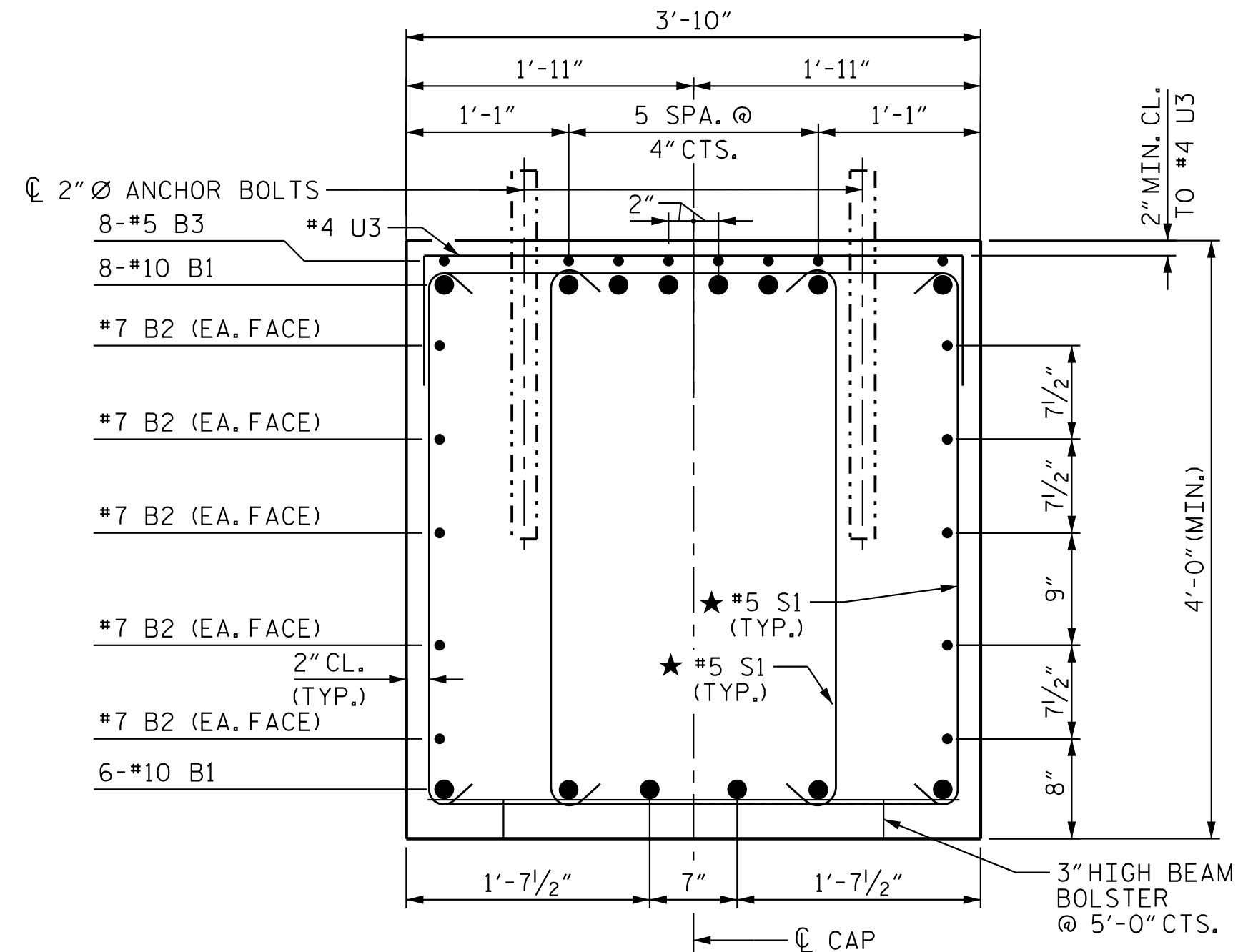
SPAN A SPAN B



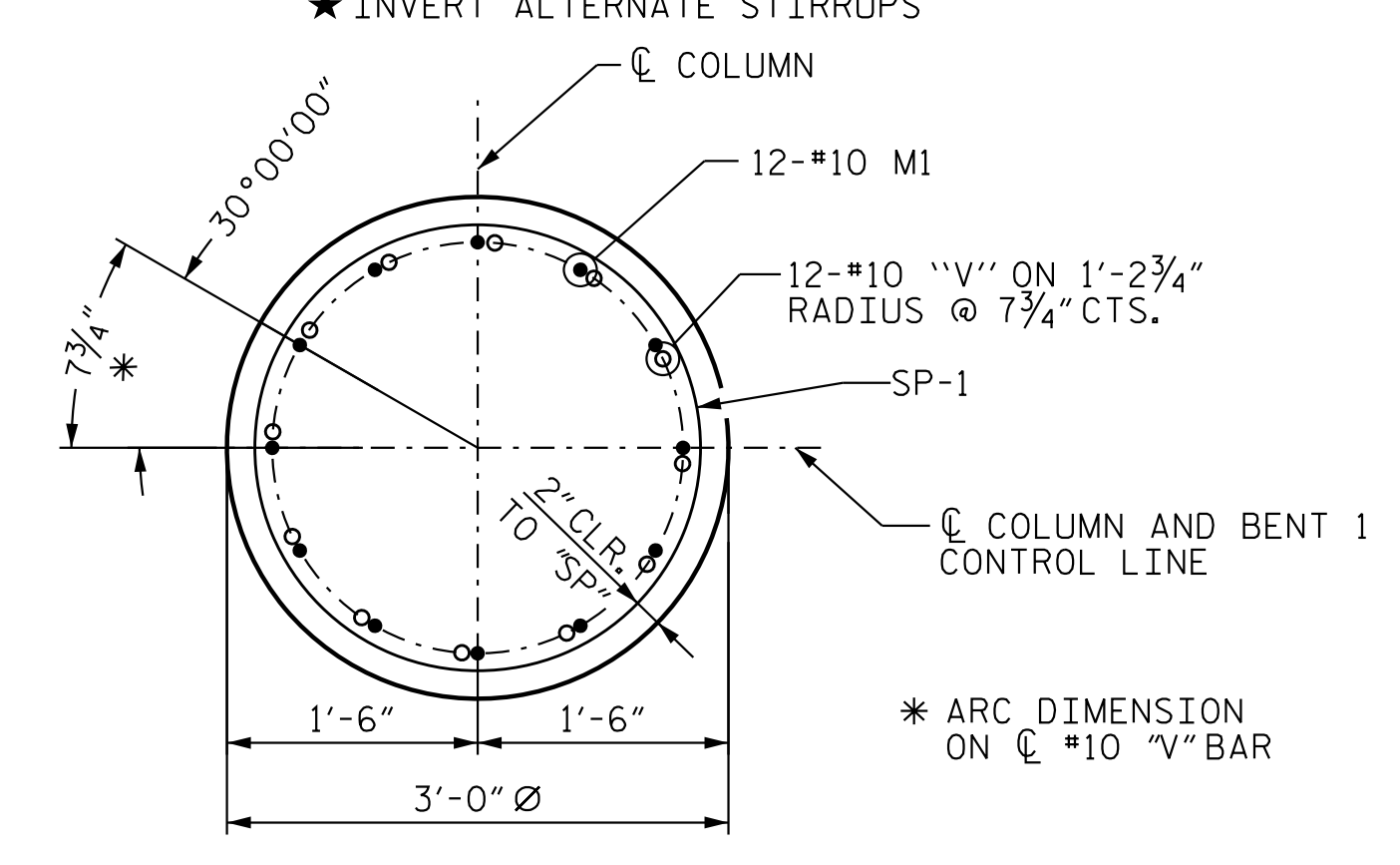
END ELEVATION



VIEW A-A

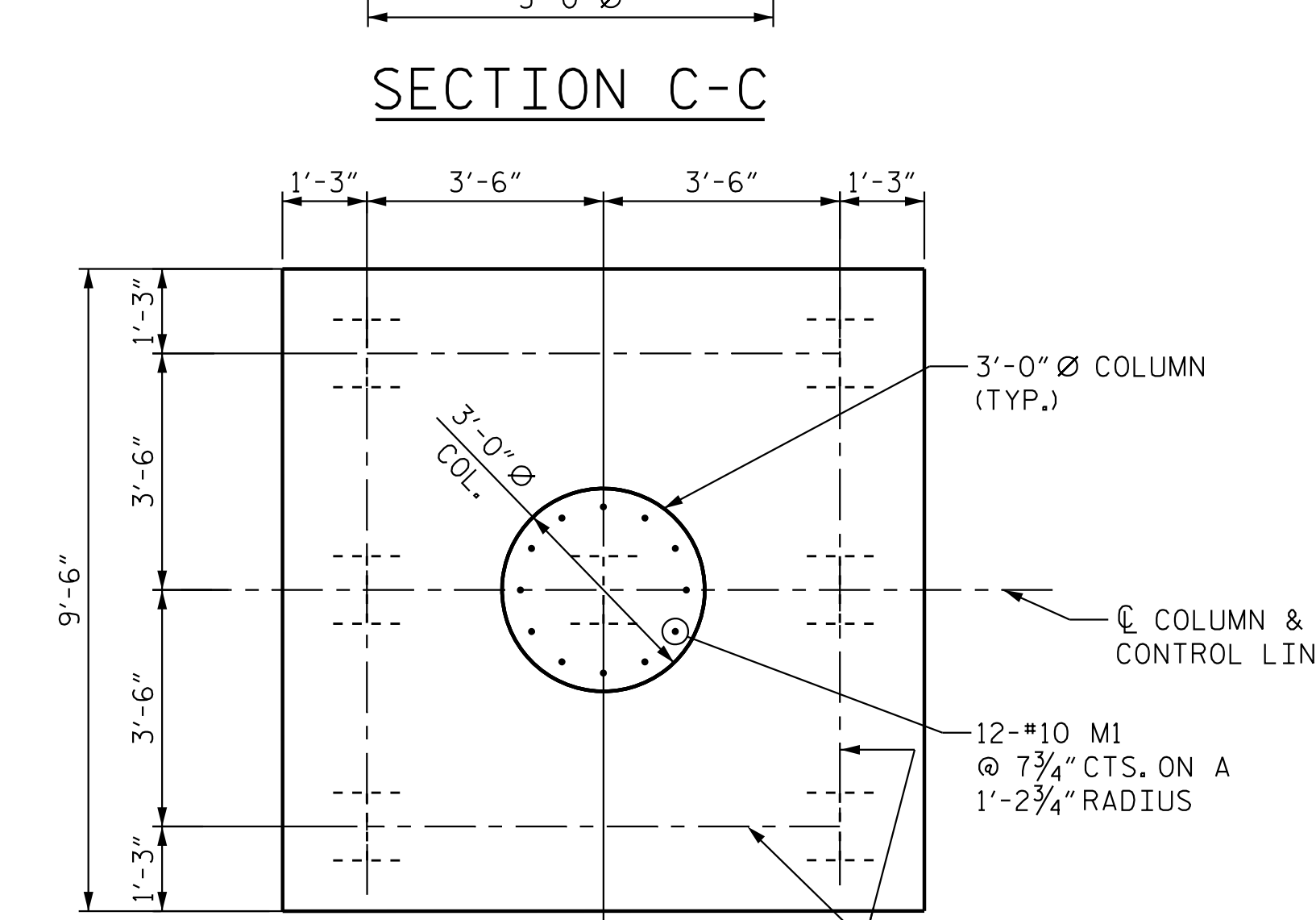
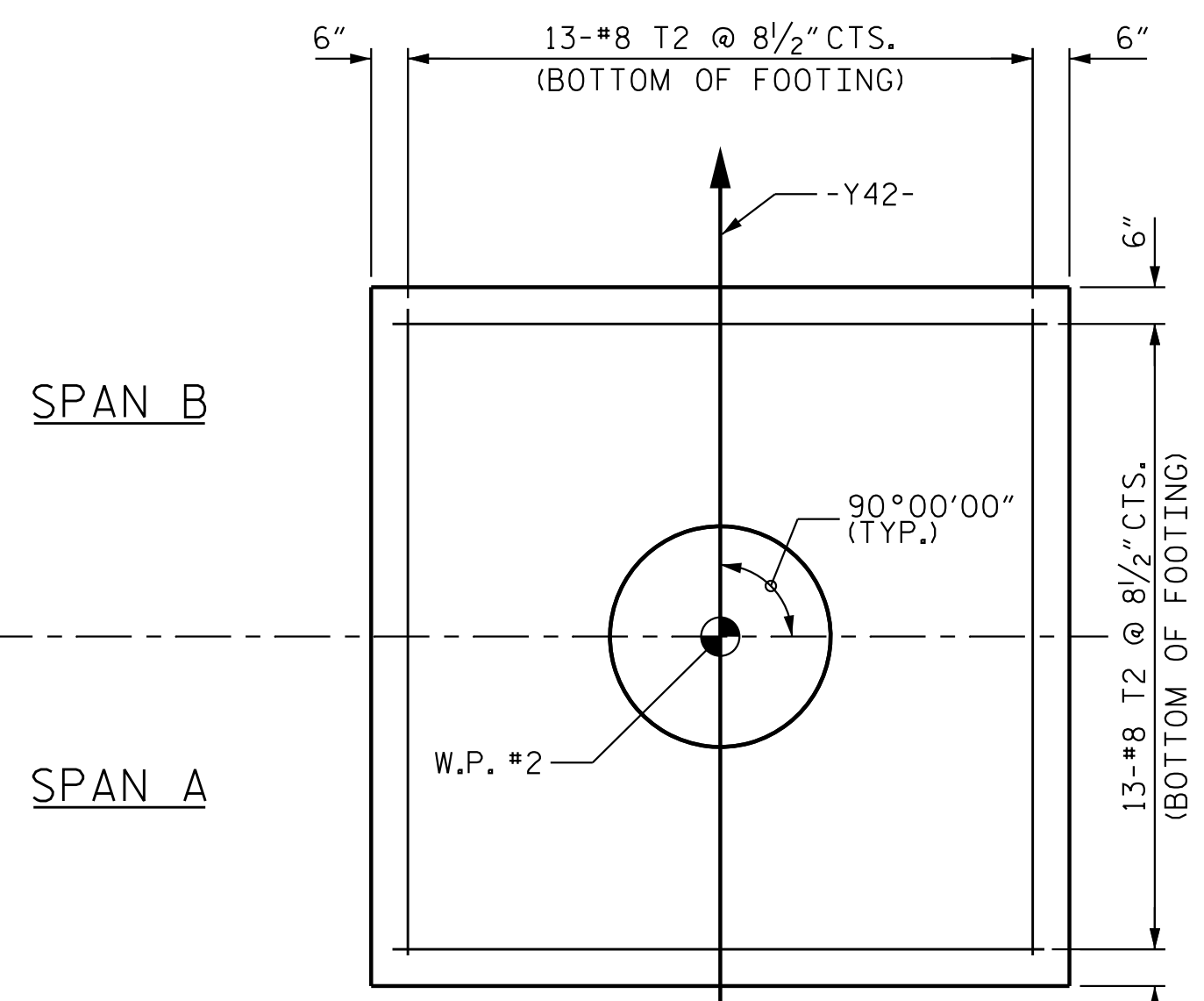
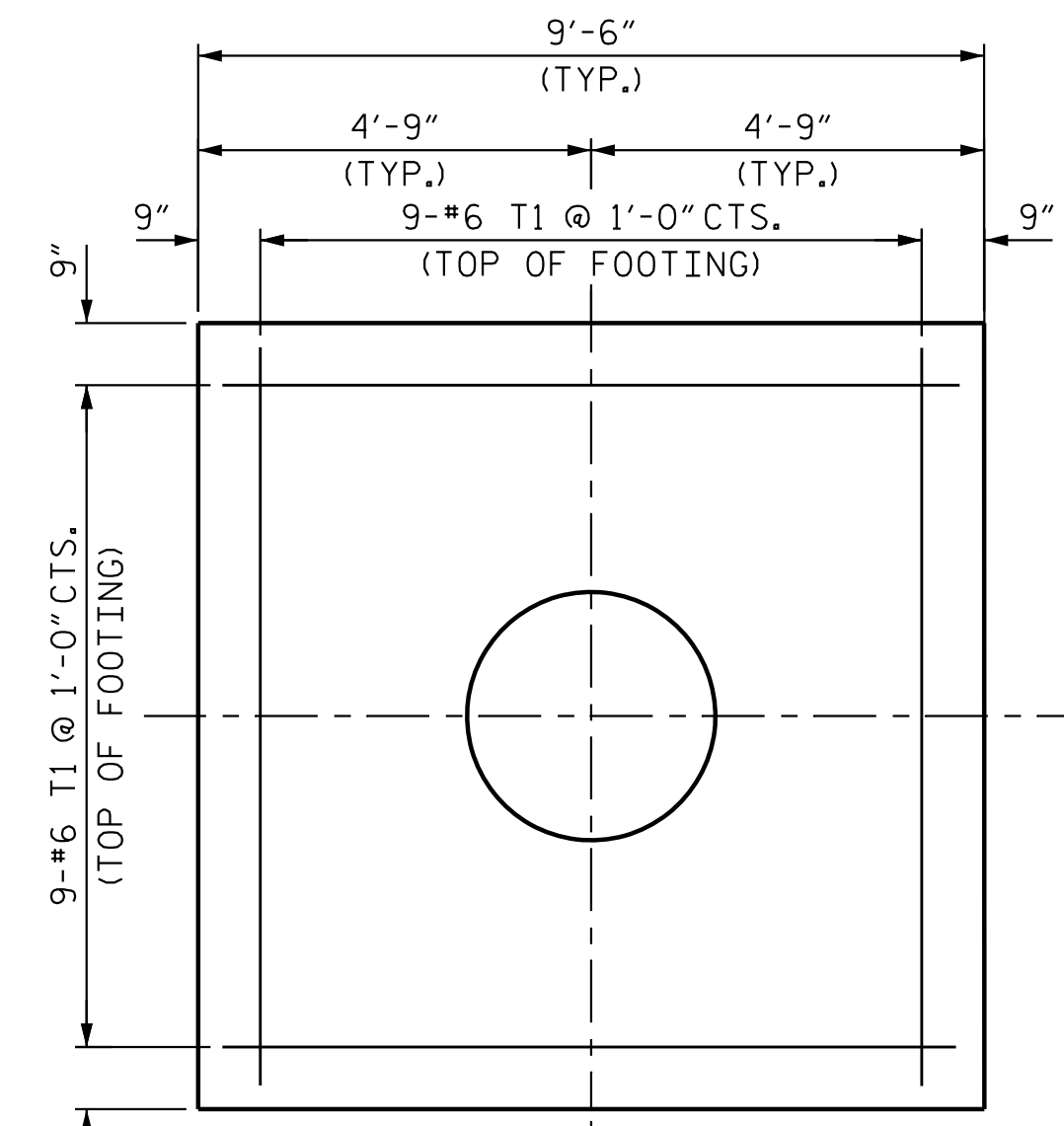


SECTION B-B



SECTION C-C

BAR TYPES		BILL OF MATERIAL				
		BENT 1				
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	14	#10		42'-11"	2585	
B2	10	#7	STR	39'-9"	813	
B3	8	#5	STR	16'-4"	136	
M1	36	#10		8'-7"	1330	
S1	116	#5		10'-11"	1321	
S2	24	#5		11'-8"	292	
T1	54	#6	STR	9'-0"	730	
T2	78	#8		10'-10"	2256	
U1	29	#4		6'-6"	126	
U2	12	#4		6'-4"	51	
V1	36	#10		26'-5"	4092	
REINFORCING STEEL				LBS.	13,731	
SP-1	3	**	4	742'-7"	1,488	
** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W-20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.						
SPIRAL COLUMN REINFORCING STEEL				LBS.	1,488	
CLASS A CONCRETE BREAKDOWN:						
POUR #1 (FOOTINGS)				C.Y.	37.6	
POUR #2 (COLUMNS)				C.Y.	16.8	
POUR #3 (CAP)				C.Y.	23.6	
TOTAL CLASS A CONCRETE				C.Y.	78.0	

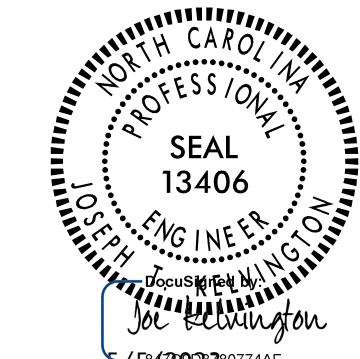


PLAN OF FOOTING AND COLUMNS

NOTE: DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR EACH FOOTING.

Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

DRAWN BY: J. B. GEILE DATE: 01/19/23
CHECKED BY: A. L. BOYKIN DATE: 02/17/23
DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE: 05/05/23



PROJECT NO. R-2707E
CLEVELAND COUNTY
STATION: 13+08.49 -Y42-

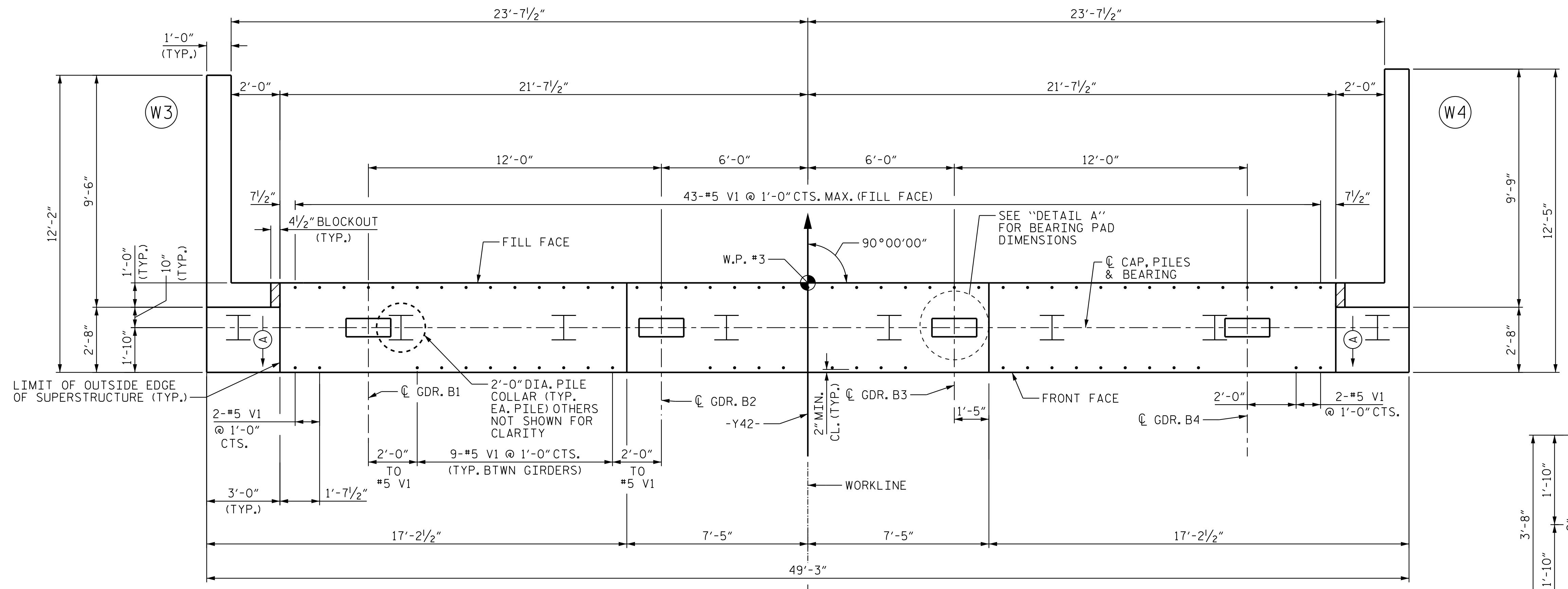
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 1 DETAILS

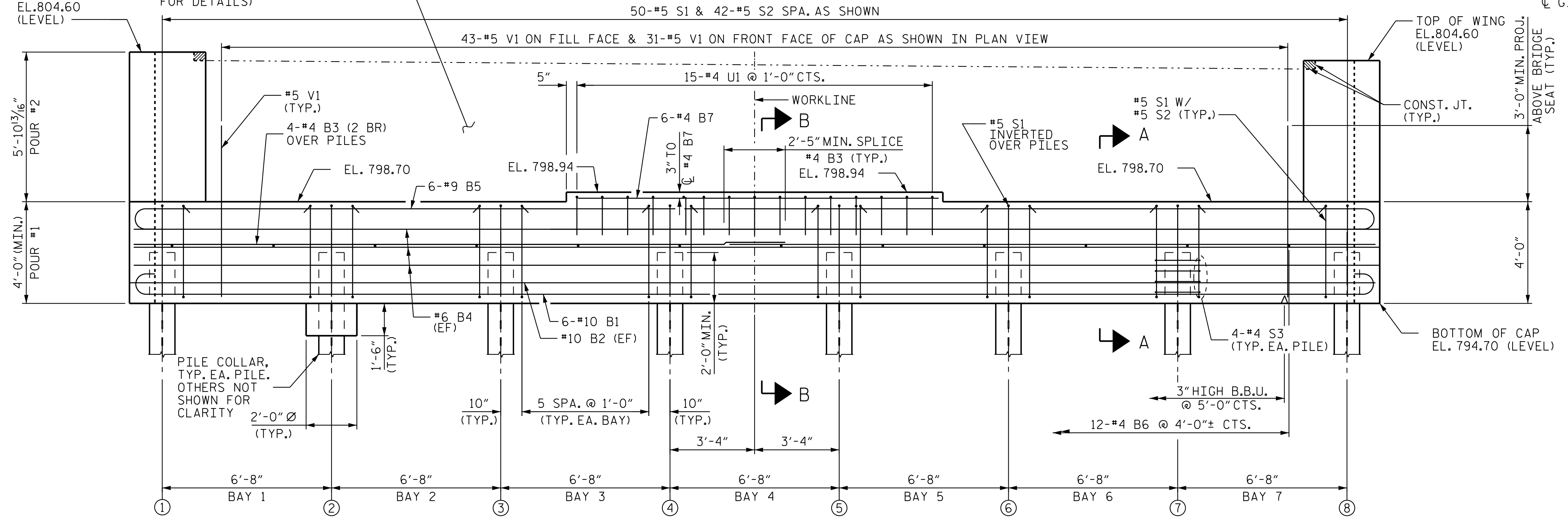
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-27	
1			3			TOTAL SHEETS 34	
2			4				

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/5/2023 12:51:41 PM jgeile c:\users\jgeile\documents\p\working\dms5559\R2707E\SMU_B02_220494.dgn



PLAN



ELEVATION

NOTES

THE TOP SURFACE OF THE CAP OUTSIDE OF THE LIMITS OF THE INTEGRAL END BENT DIAPHRAGM SHALL BE CURED IN ACCORDANCE WITH THE SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

FOR WING WALL DETAILS, SEE "END BENT 2, DETAILS - WING WALLS" SHT. 2 OF 3.

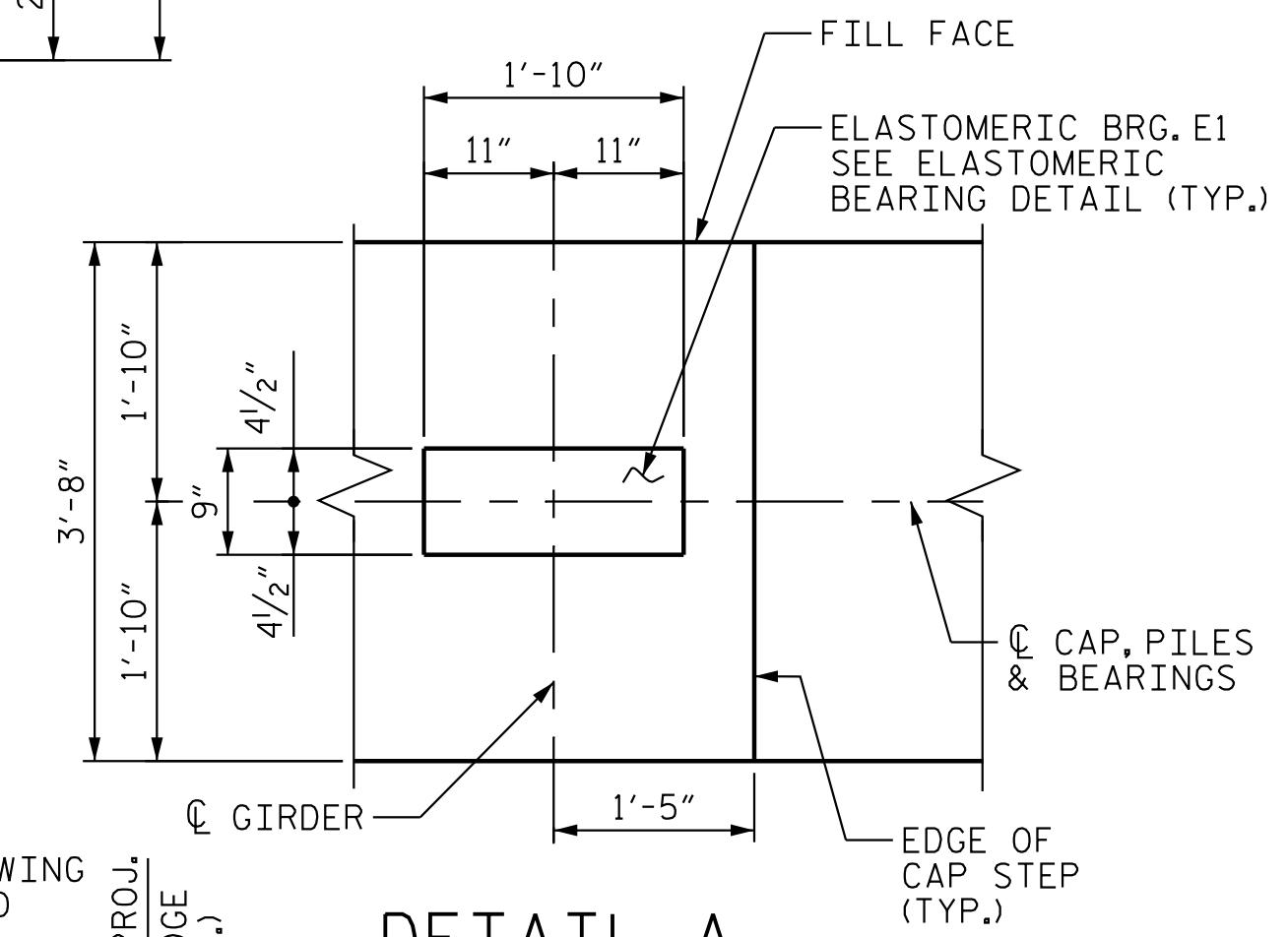
(2 BR) DENOTES 2 BAR RUN.

CHAMFERS ARE NOT REQUIRED EXCEPT AS NOTED.

(EF) DENOTES EACH FACE.

(A) SLOPED CAP SURFACE BEYOND LIMIT OF THE INTEGRAL DIAPHRAGM SEE END BENT 2 DETAILS, SHT. 2 OF 2.

FOR SECTION A-A & SECTION B-B, SEE END BENT 2, SHT. 3 OF 3.



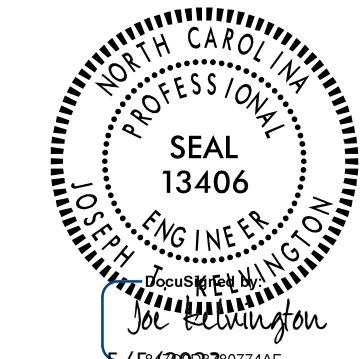
DETAIL A
DIMENSIONS TYPICAL FOR EACH BEARING

PROJECT NO. R-2707E
 CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-

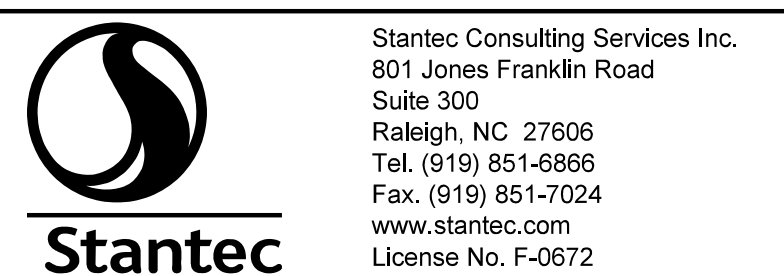
SHEET 1 OF 3

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-28
1			3			TOTAL SHEETS
2			4			34



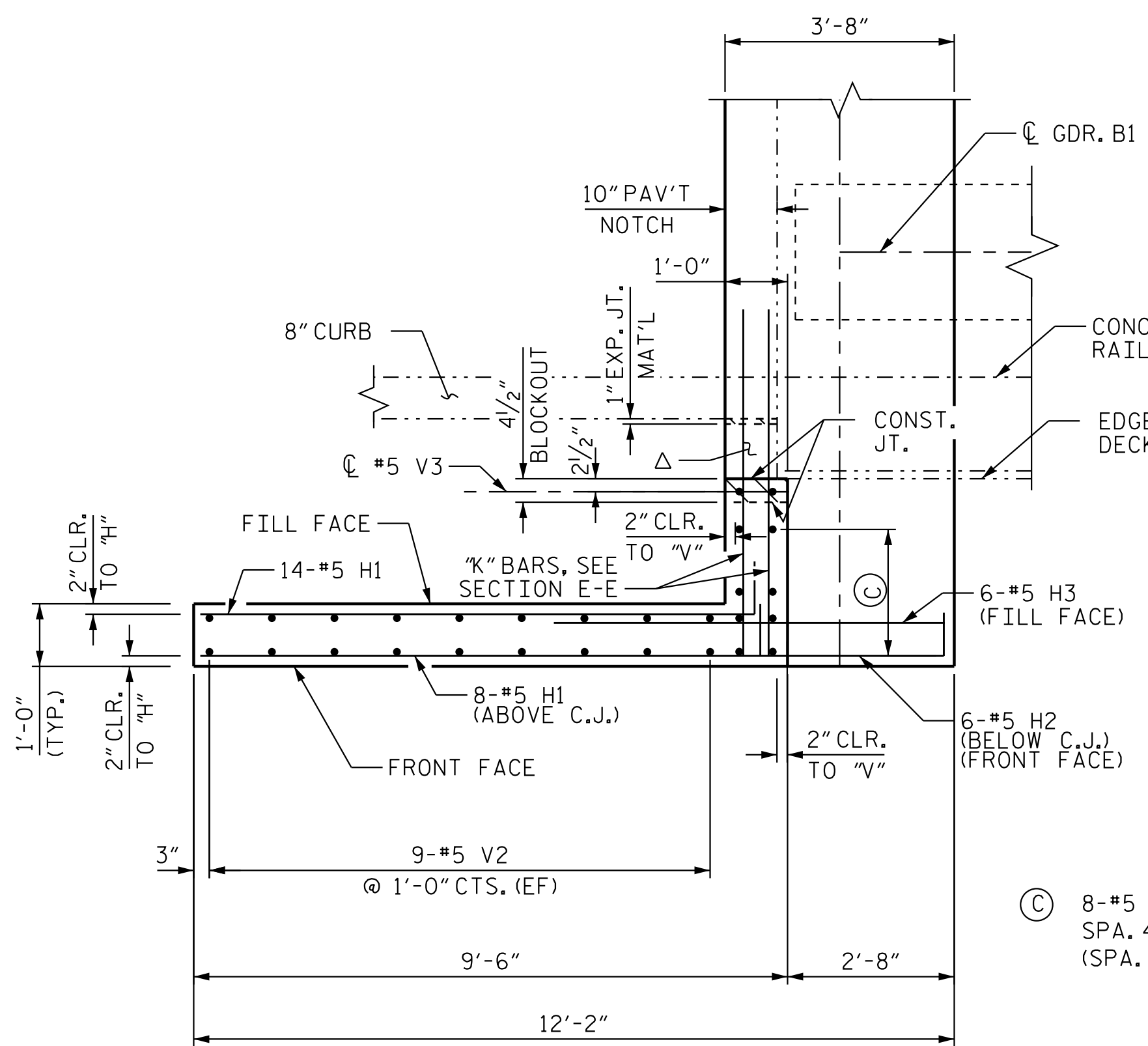
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



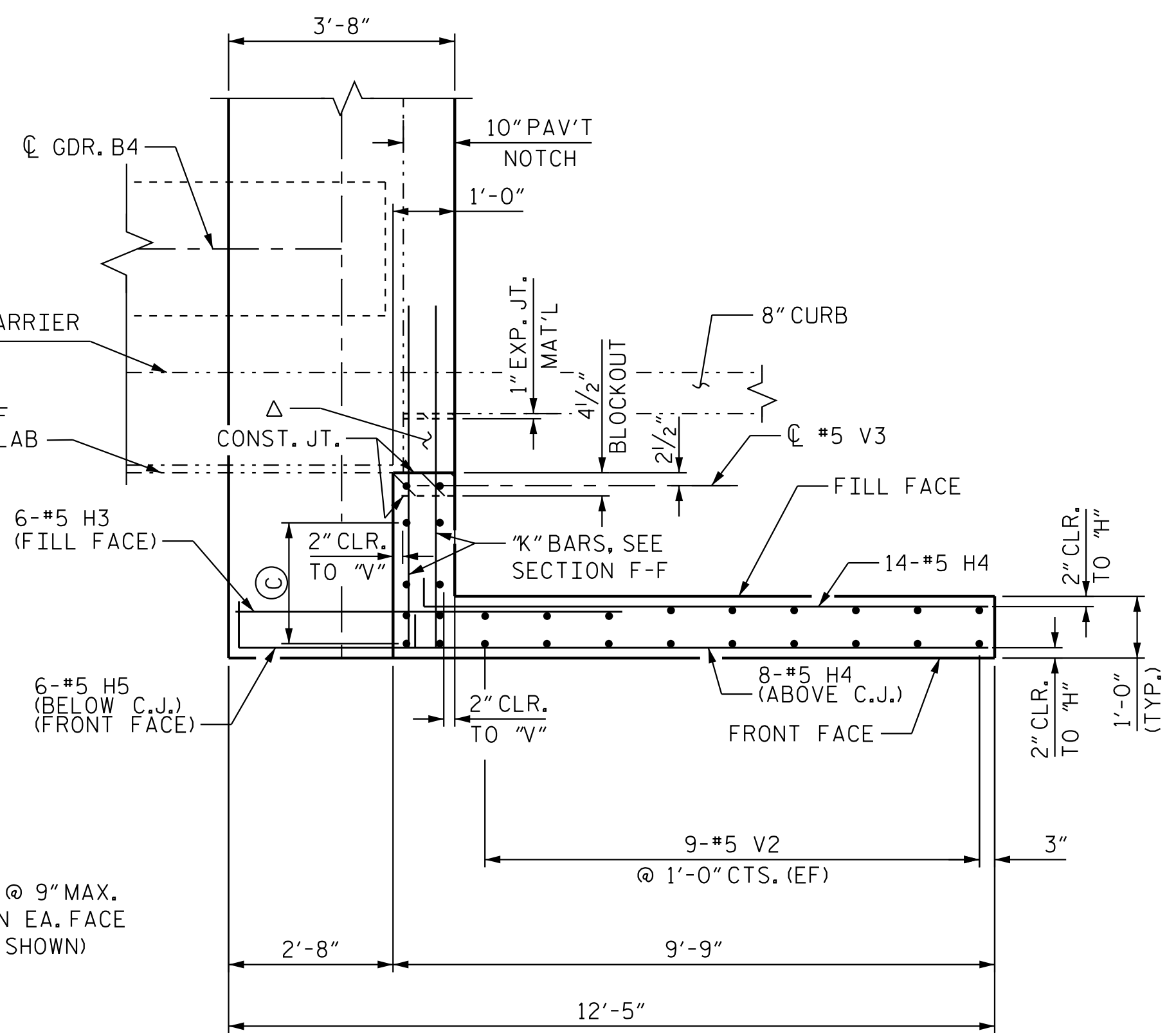
DRAWN BY: J. B. GEILE DATE: 01/13/23
 CHECKED BY: A. L. BOYKIN DATE: 02/17/23
 DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE: 05/05/23

5/5/2023 12:51:59 PM jgeile
 C:\Users\jgeile\documents\pwworking\mms5559\132707E-SMU-E201-220494.dgn.DCN

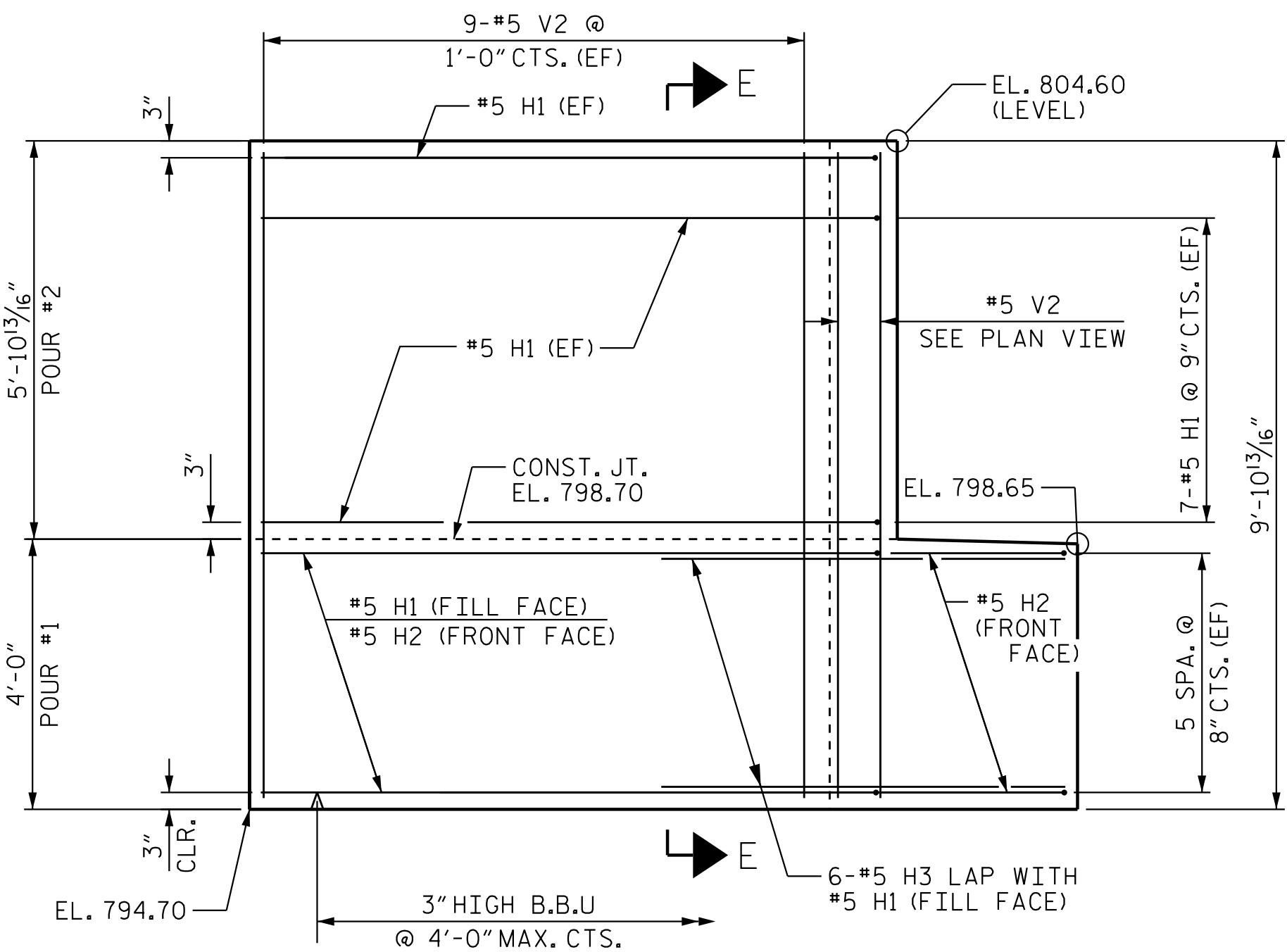
C:\Users\jgelle\documents\p_wor\king\ms55591\R2707E.SMU.E202.220494.dgn.DGN 5/5/2023 12:52:16 PM jgelle



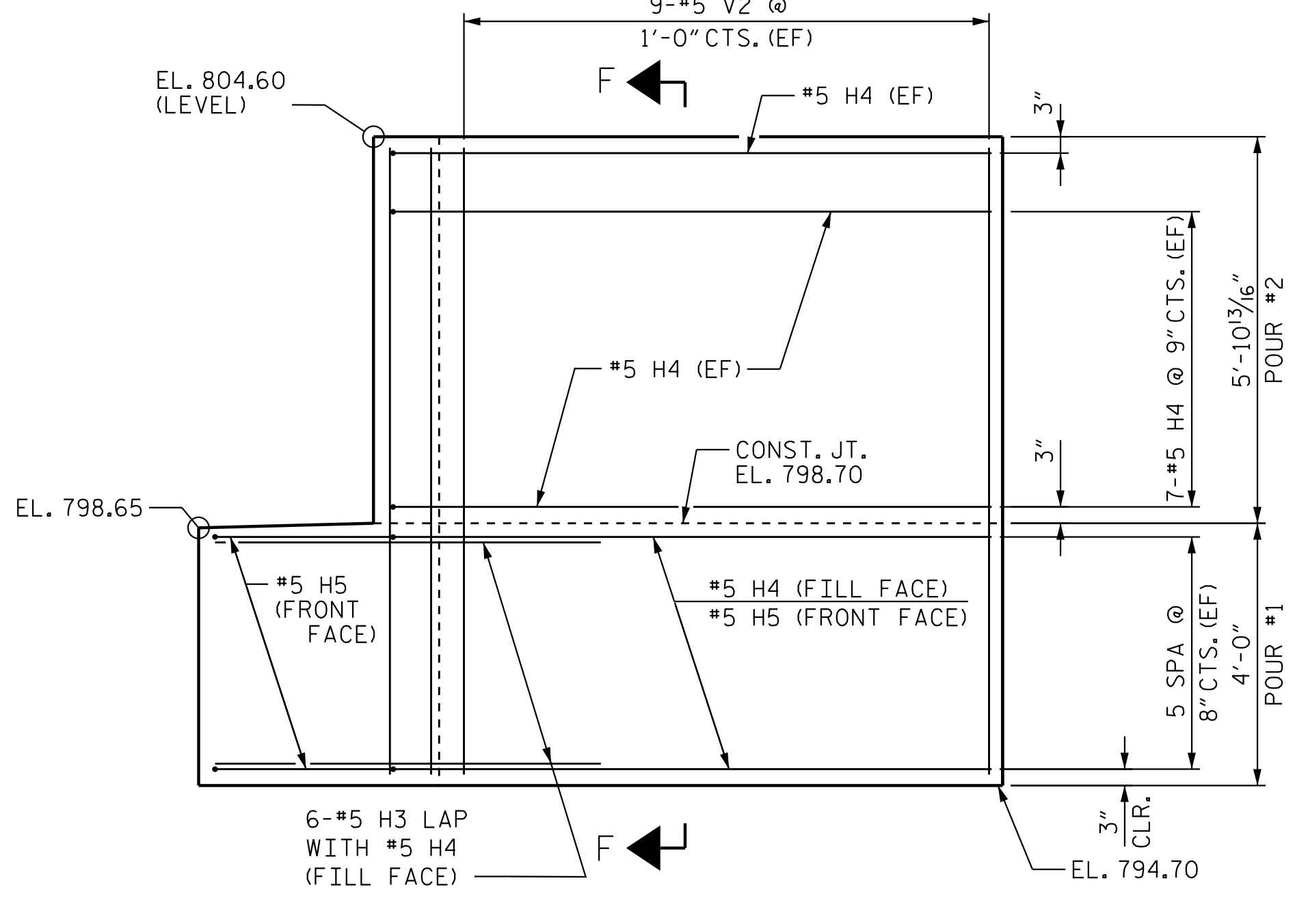
PLAN OF LEFT WING (W3)



PLAN OF RIGHT WING (W4)



ELEVATION OF LEFT WING (W3)

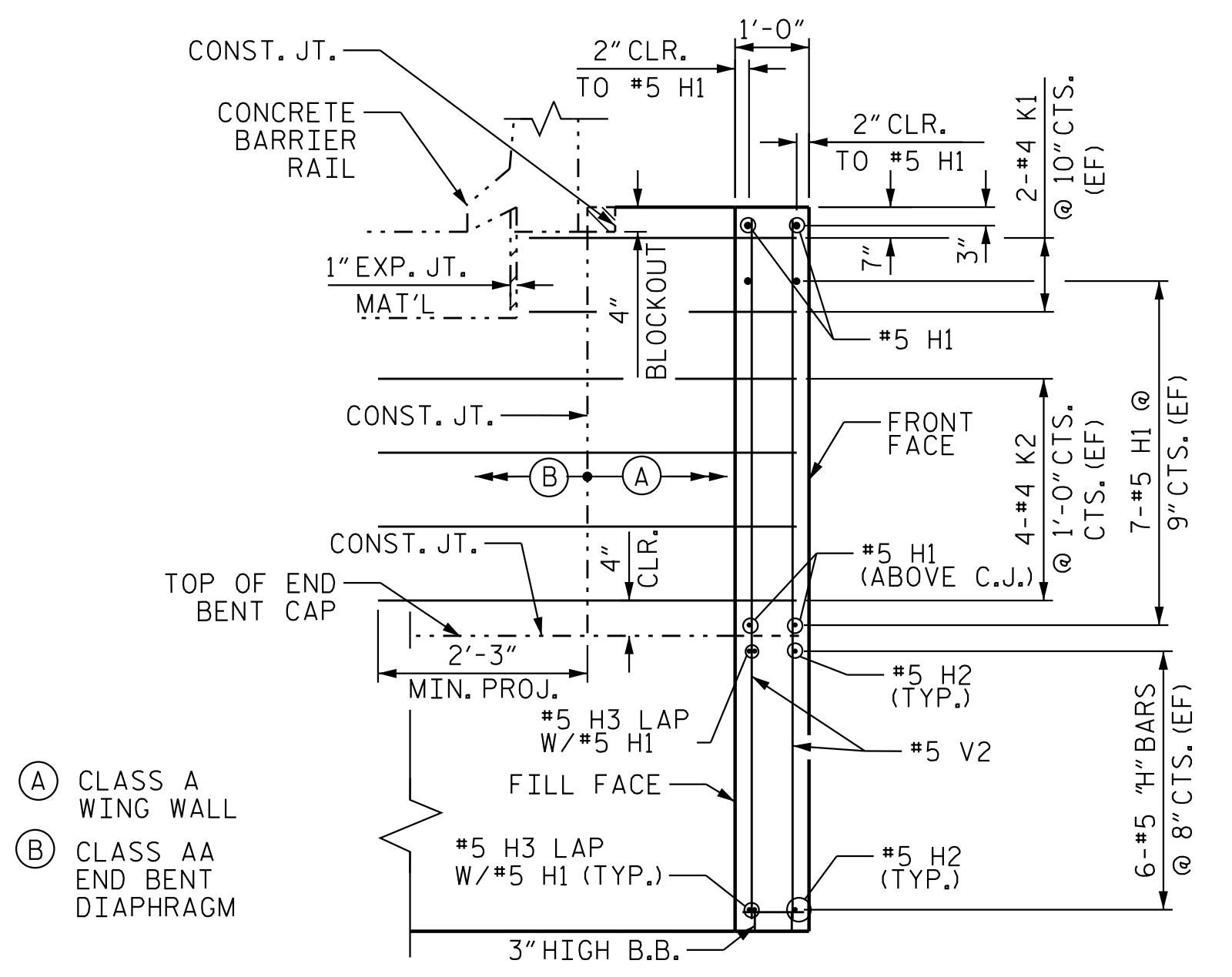


ELEVATION OF RIGHT WING (W4)

NOTES:

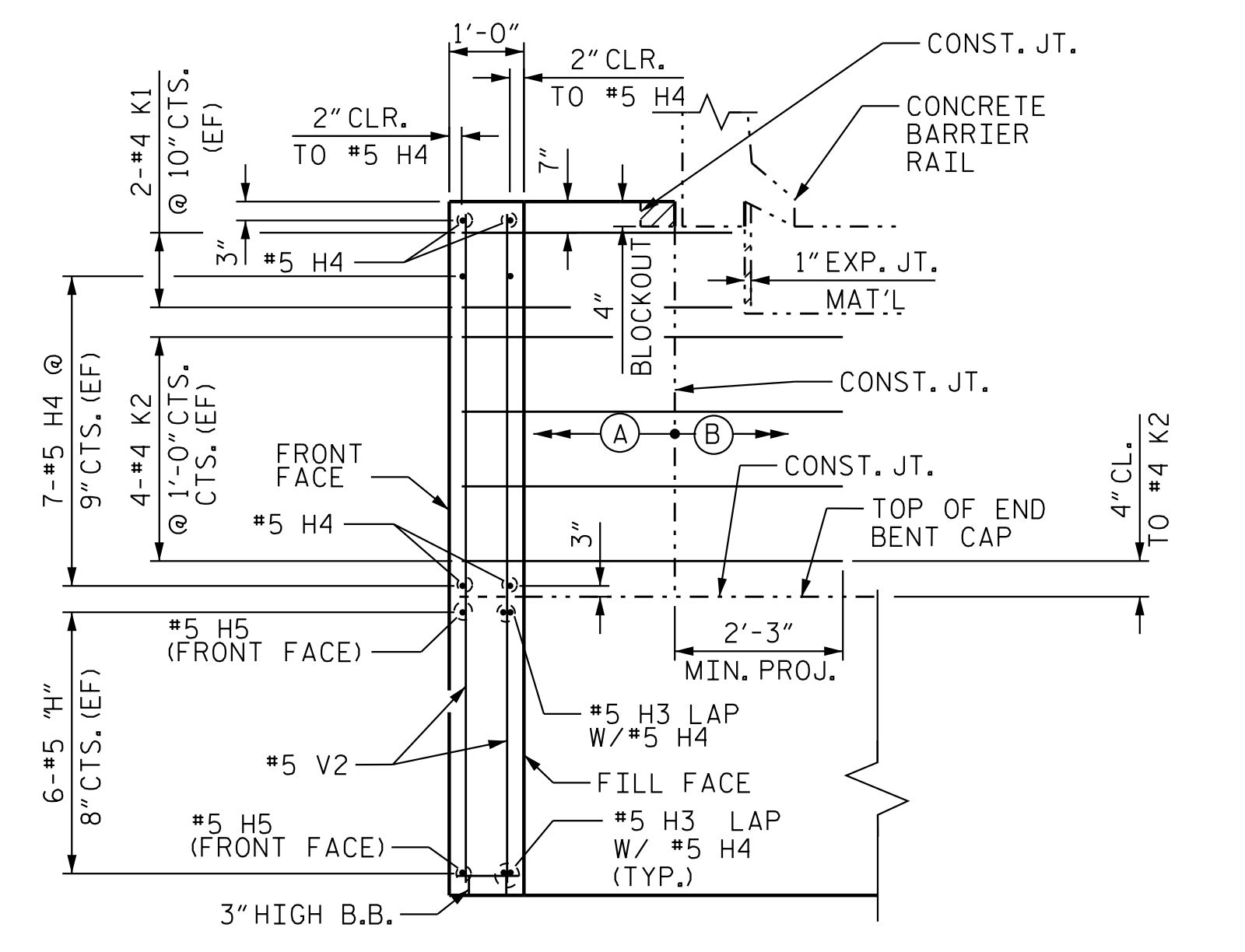
- △ AREA BETWEEN APPROACH SLAB CURB AND BLOCKOUT SHALL MATCH THE FINISHED SURFACE OF THE BRIDGE DECK.
- CONCRETE TO BE POURED IN THE HATCHED AREA TO MATCH THE TOP OF THE CURB AND THE INTEGRAL END BENT WING ELEVATION.
- THE CONCRETE IN THE HATCHED AREA OF THE WING IS TO BE POURED AFTER THE JOINT BETWEEN THE BRIDGE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND IF SLIP FORMING IS USED, THE BARRIER HAS BEEN CAST.
- #5 H2 BARS MAY BE REPOSITIONED SLIGHTLY, VERTICALLY TO CLEAR CAP REINFORCEMENT AND HORIZONTALLY TO CLEAR THE PILE.

TOP SURFACE OF END BENT CAP BETWEEN EDGE OF DECK SLAB AND END OF CAP SHALL BE SLOPED TRANSVERSELY FROM EXPOSED FACE OF THE WING TO FRONT FACE AT A RATE OF 1/4\"/>



SECTION E-E

- (A) CLASS A WING WALL
- (B) CLASS AA END BENT DIAPHRAGM



SECTION F-F

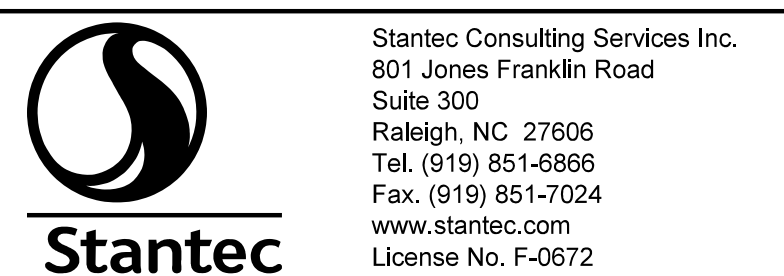
PROJECT NO. R-2707E
 CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE

END BENT 2 WING
 DETAILS

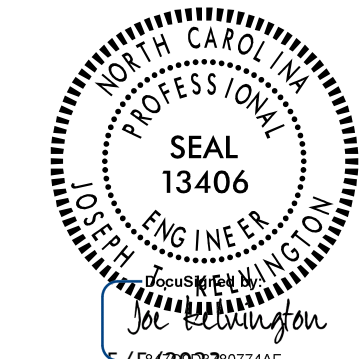
REVISIONS						SHEET NO. S7-29
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			



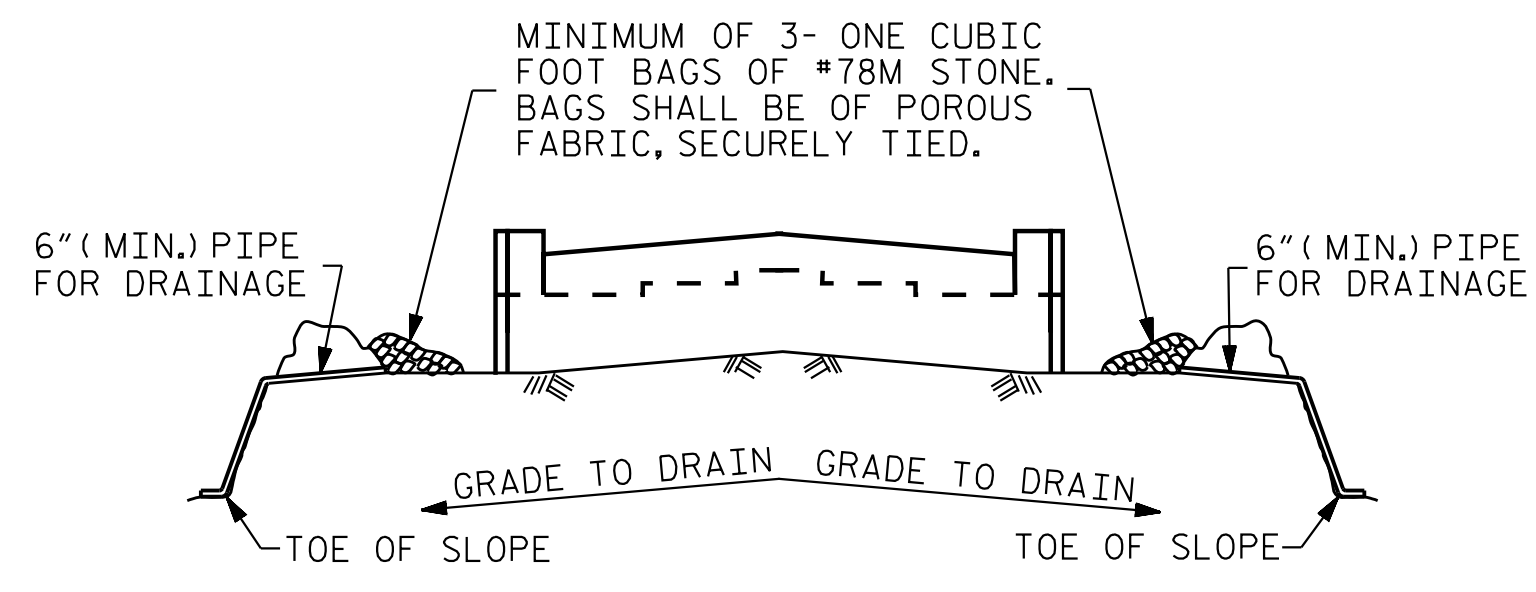
Stantec Consulting Services Inc.
 801 Jones Franklin Road
 Suite 300
 Raleigh, NC 27606
 Tel. (919) 851-6866
 Fax. (919) 851-7024
 www.stantec.com
 License No. F-0672

DRAWN BY: J. B. GEILE DATE: 01/23/23
 CHECKED BY: A. L. BOYKIN DATE: 02/17/23

DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE: 05/05/23



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

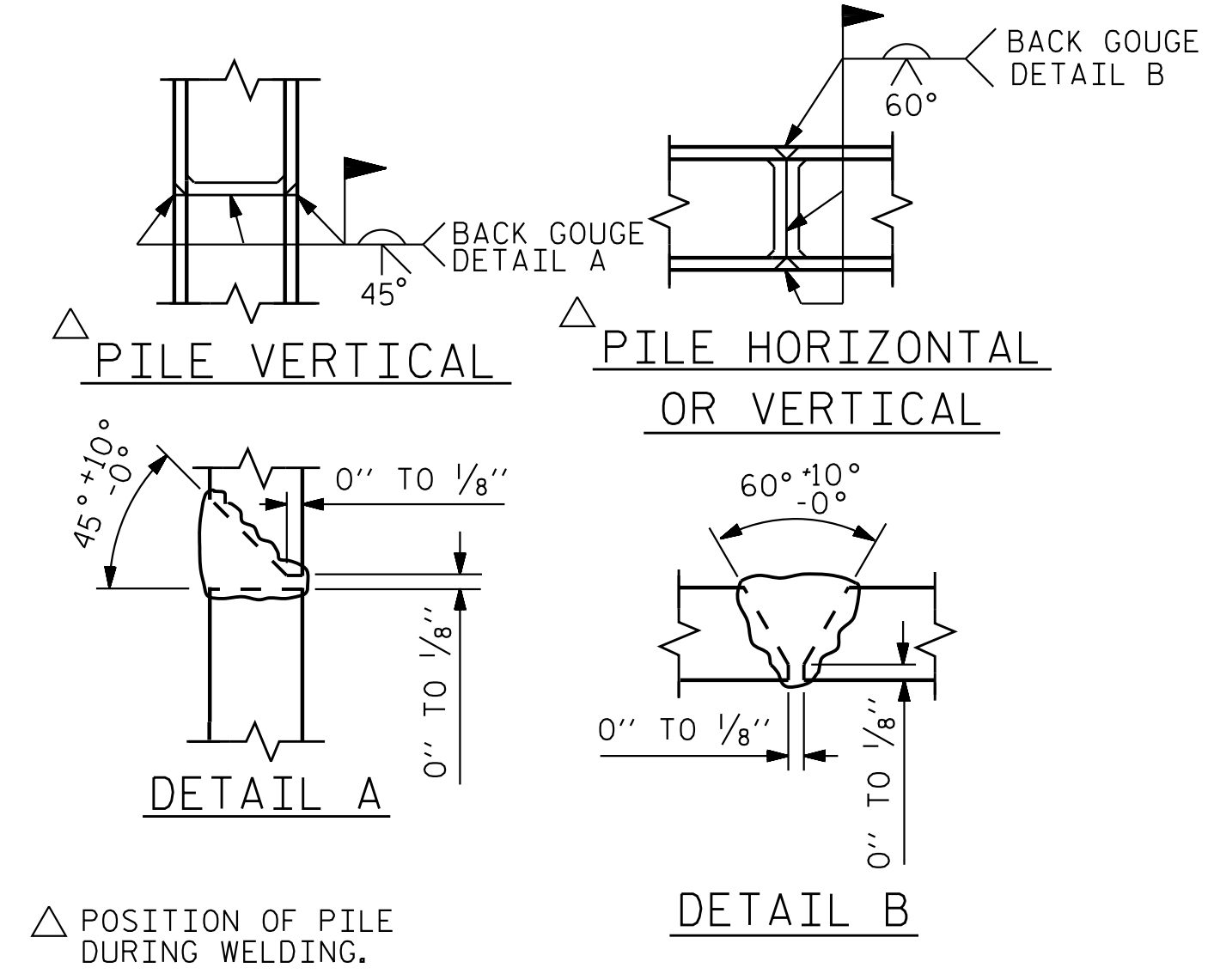


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

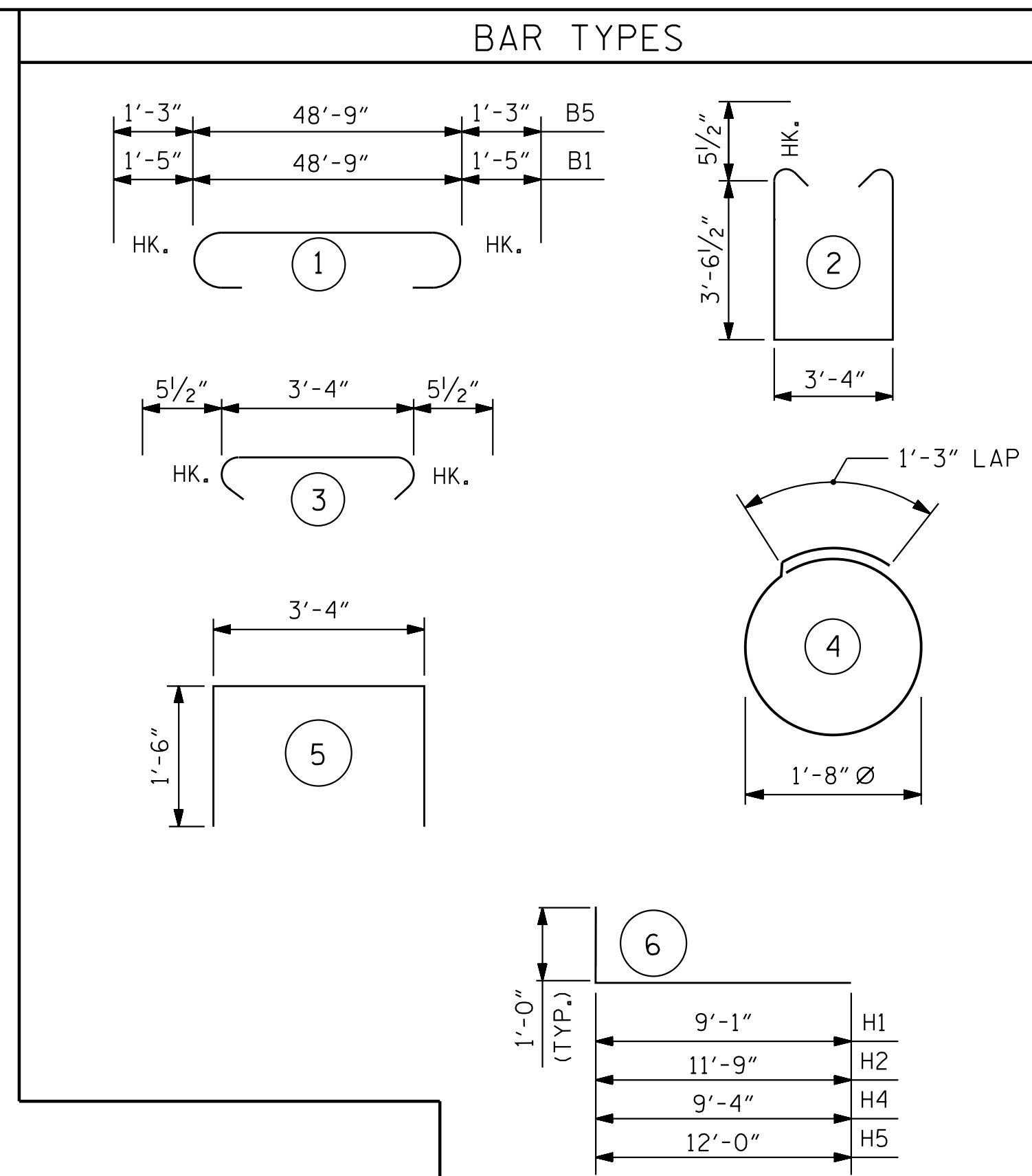
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT

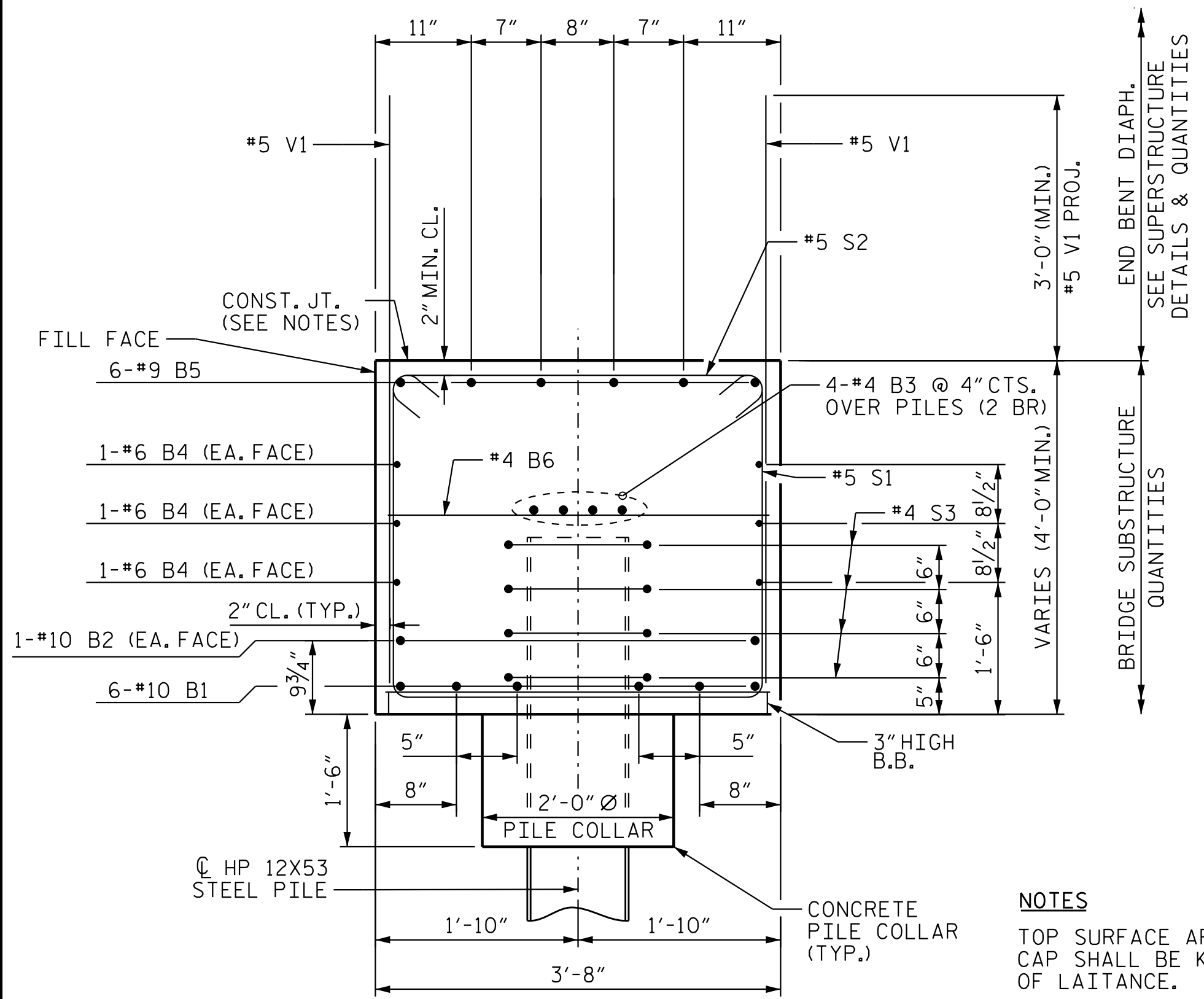


PILE SPLICE DETAILS

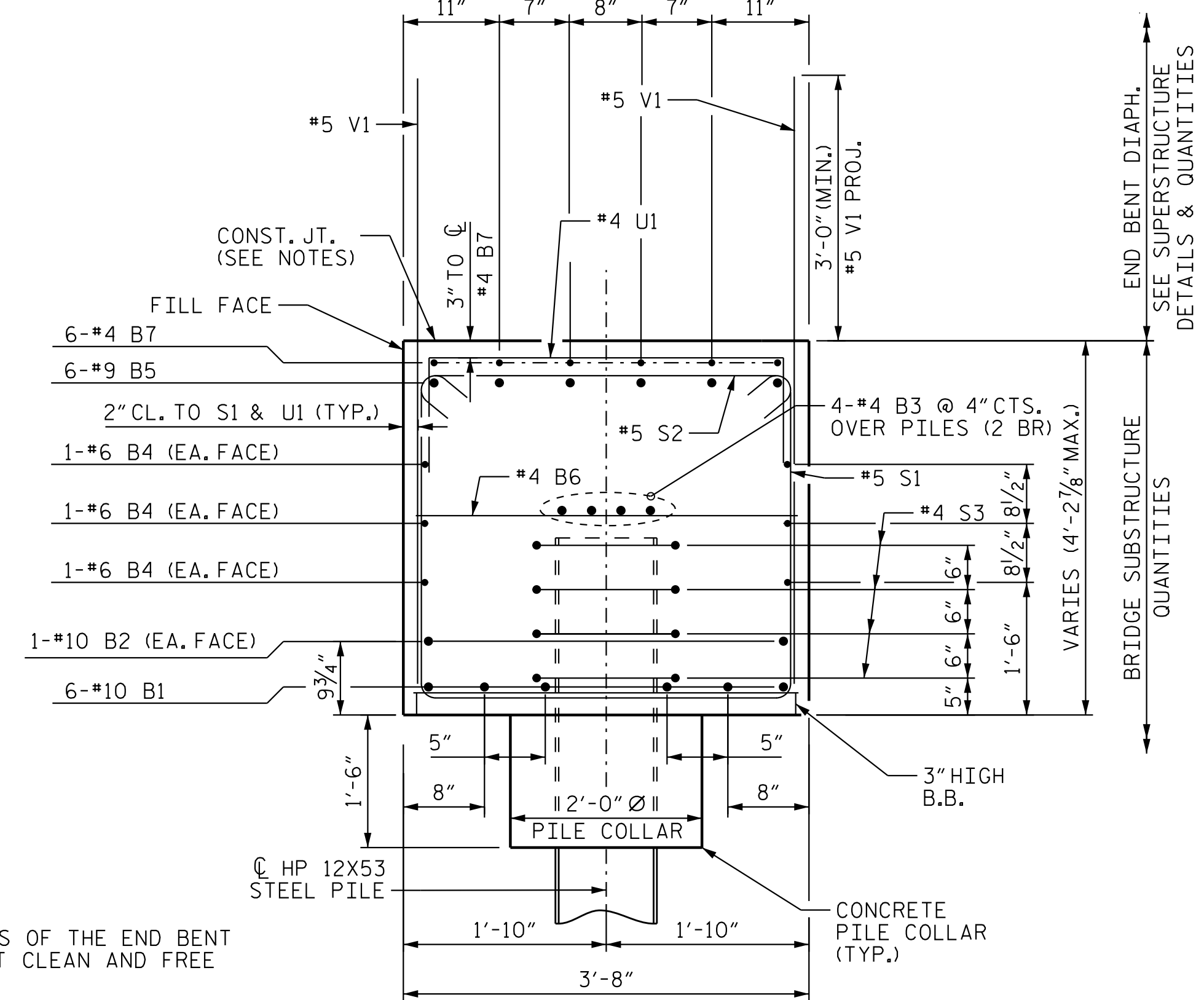


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT 2					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	1	51'-7"	1332
B2	2	#10	STR	48'-3"	415
B3	8	#4	STR	25'-4"	135
B4	6	#6	STR	48'-9"	439
B5	6	#9	1	51'-3"	1046
B6	12	#4	STR	3'-4"	27
B7	6	#4	STR	14'-6"	58
H1	22	#5	6	10'-1"	231
H2	6	#5	6	12'-9"	80
H3	12	#5	STR.	6'-10"	86
H4	22	#5	6	10'-4"	237
H5	6	#5	6	13'-0"	81
K1	8	#4	STR	2'-3"	12
K2	16	#4	STR	5'-1"	54
S1	50	#5	2	11'-4"	591
S2	42	#5	3	4'-3"	186
S3	32	#4	4	6'-6"	139
U1	15	#4	5	6'-4"	63
V1	74	#5	STR	7'-0"	540
V2	52	#5	STR	9'-6"	515
V3	4	#5	STR	9'-2"	38
REINFORCING STEEL					6305
CLASS A CONCRETE BREAKDOWN:					
POUR #1: CAP, COLLARS, ETC.					C.Y. 31.1
POUR #2: UPPER WINGS					C.Y. 5.1
CLASS A CONCRETE TOTAL					C.Y. 36.2



SECTION A-A
SEE "END BENT 2", SHEET 1 OF 3.



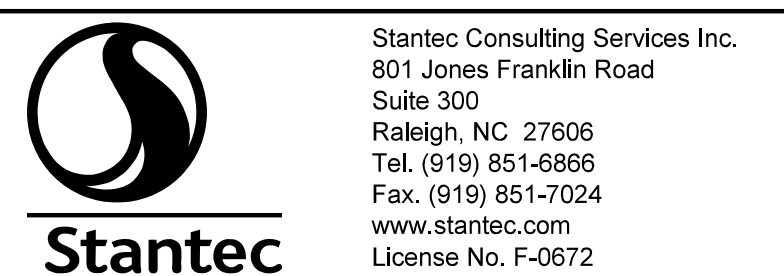
SECTION B-B
SEE "END BENT 2", SHEET 1 OF 3.

NOTES
TOP SURFACE AREAS OF THE END BENT CAP SHALL BE KEPT CLEAN AND FREE OF LAITANCE.

ROUGH FLOAT AND ROUGHEN THE TOP OF THE END BENT CAP TO PROVIDE MIN. SURFACE AMPLITUDE OF 1/4", EXCEPT UNDER BEARING AREAS.

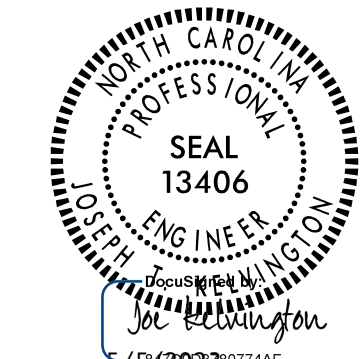
(2 BR) DENOTES 2 BAR RUN.

c:\users\jgeille\documents\p_wor\king\mms5559\R2707E.SMU.E203.22494.dgn 5/5/2023 12:52:34 PM jgeille



DRAWN BY: J. B. GEILLE DATE: 01/18/23
CHECKED BY: A. L. BOYKIN DATE: 02/17/23

DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE: 05/05/23

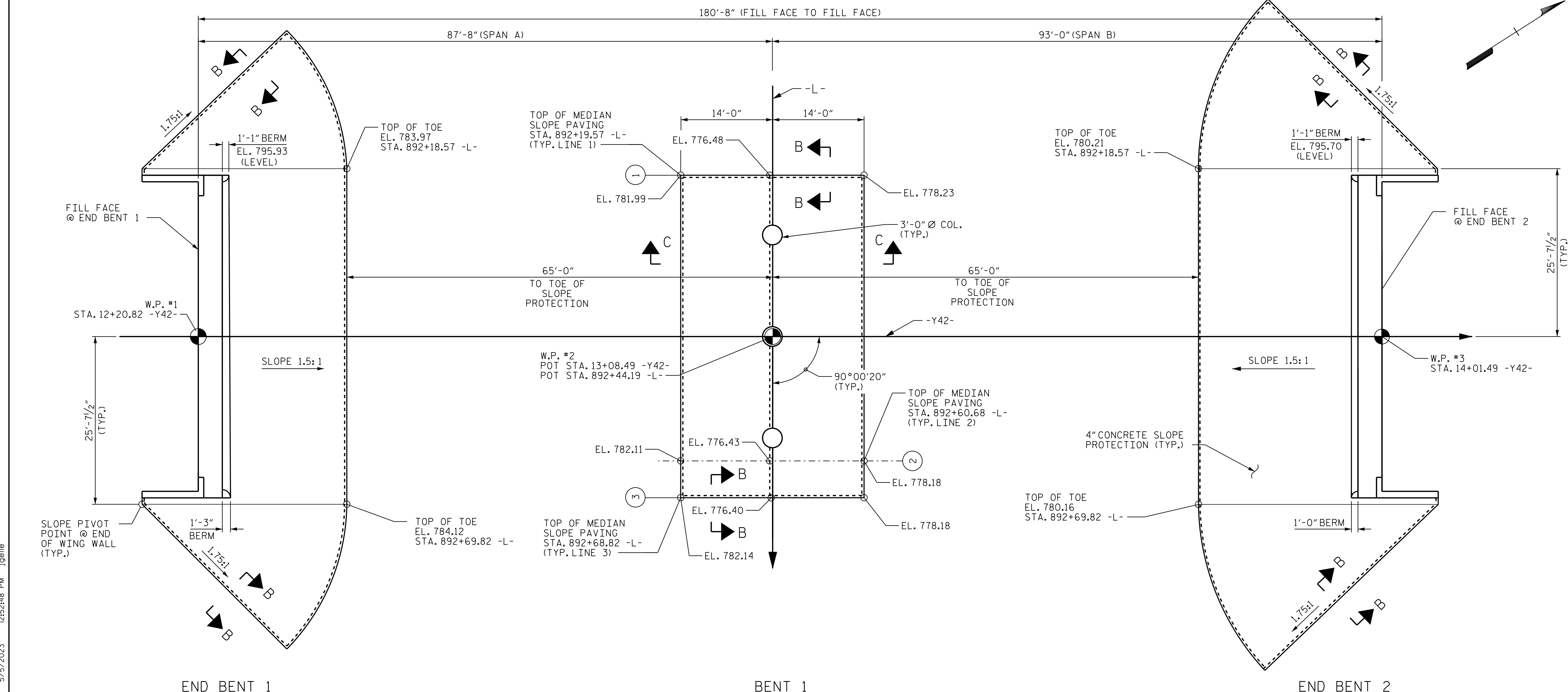


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. R-2707E
CLEVELAND COUNTY
STATION: 13+08.49 -Y42-

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

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-30	
1			3			TOTAL SHEETS	34
2			4				



SLOPE PROTECTION PLAN

GENERAL NOTES

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. THE CONTRACTOR, AT HIS OPTION, MAY USE ALTERNATE "B" ONLY FOR HIGHWAY OVER HIGHWAY GRADE SEPARATIONS WITH 2:1 END BENT SLOPE IN RURAL, UNPOPULATED AREAS. 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.

ALTERNATE "A"

ALTERNATE "A" 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. 13+08.49 -Y42- STA. 892+44.19 -L-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	160	320
BENT 1	158	316
END BENT 2	209	418

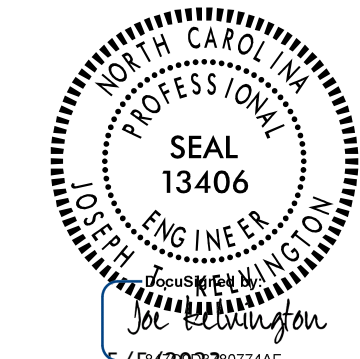
* QUANTITY SHOWN IS BASED ON 5' POURS.
FOR SECTION A-A, SECTION B-B, AND SECTION C-C
SEE "SLOPE PROTECTION DETAILS", SHT. 2 OF 2.

PROJECT NO. R-2707E
CLEVELAND COUNTY
STATION: 13+08.49 -Y42-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SLOPE PROTECTION
DETAILS**



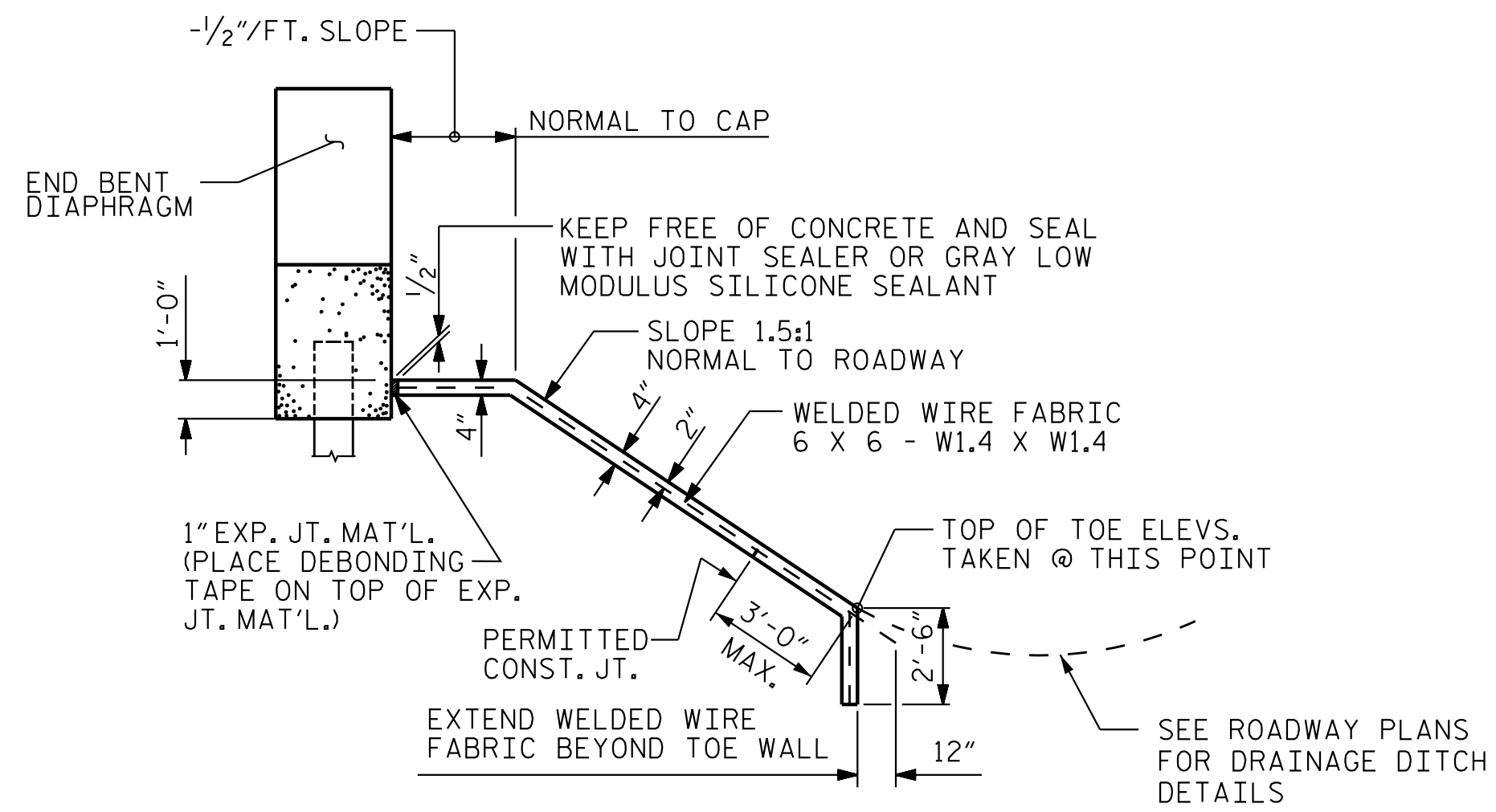
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-31
1			3			TOTAL SHEETS
2			4			34

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

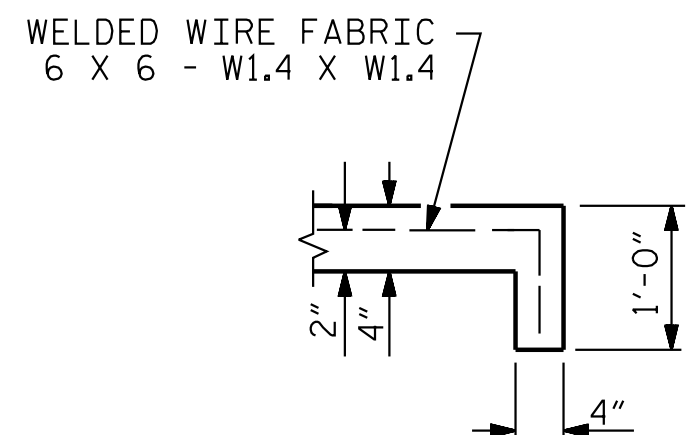
Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

DRAWN BY : J. B. GEILE DATE : 01/23/23
CHECKED BY : A. L. BOYKIN DATE : 02/17/23
DESIGN ENGINEER OF RECORD : J. T. KELVINGTON DATE : 05/05/23

5/5/2023 12:52:48 PM jgeile
c:\users\jgeile\documents\p_working\ms5559\R2707E\SMU_SP01_220494.dgn

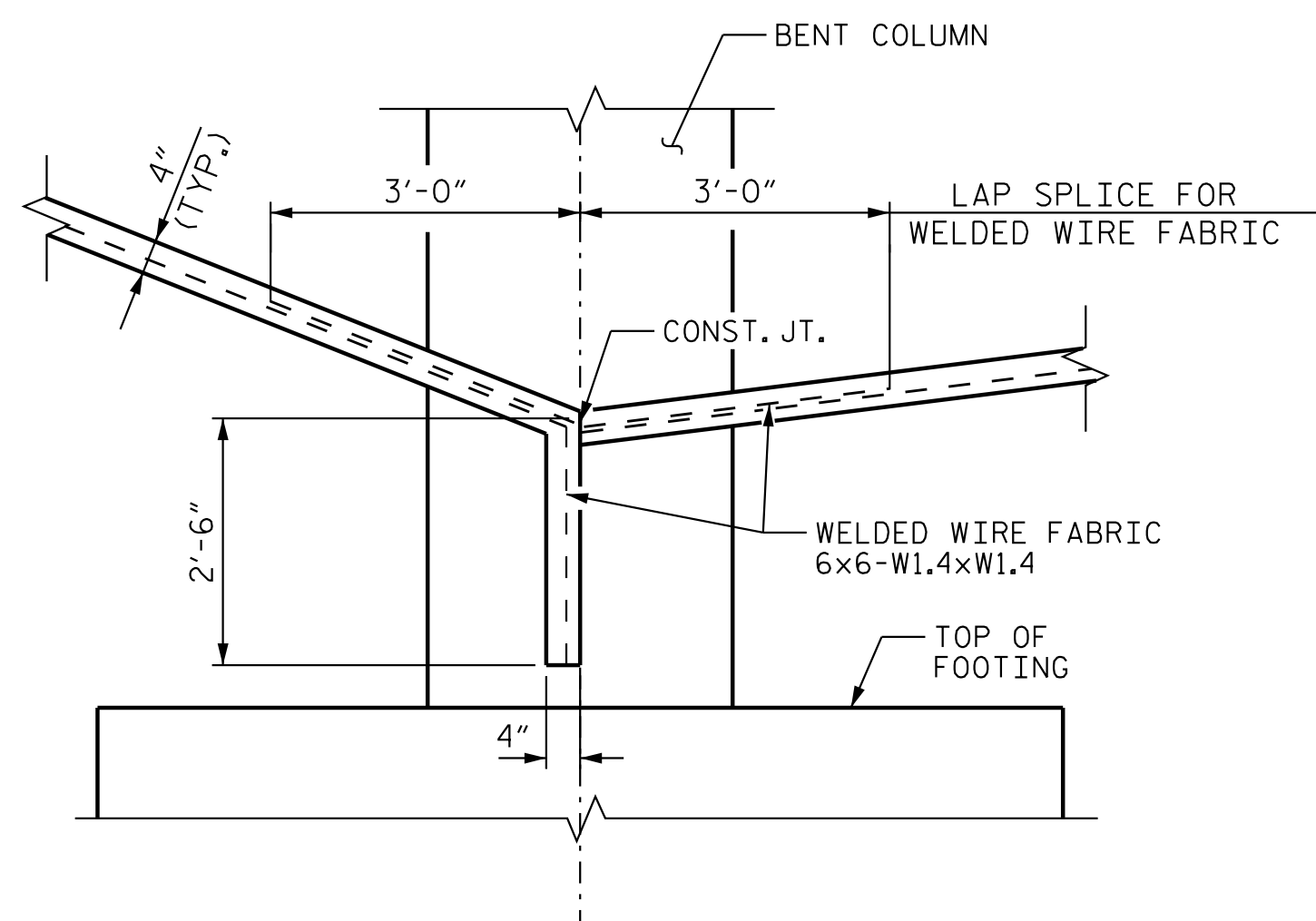


SECTION ALONG -Y42-

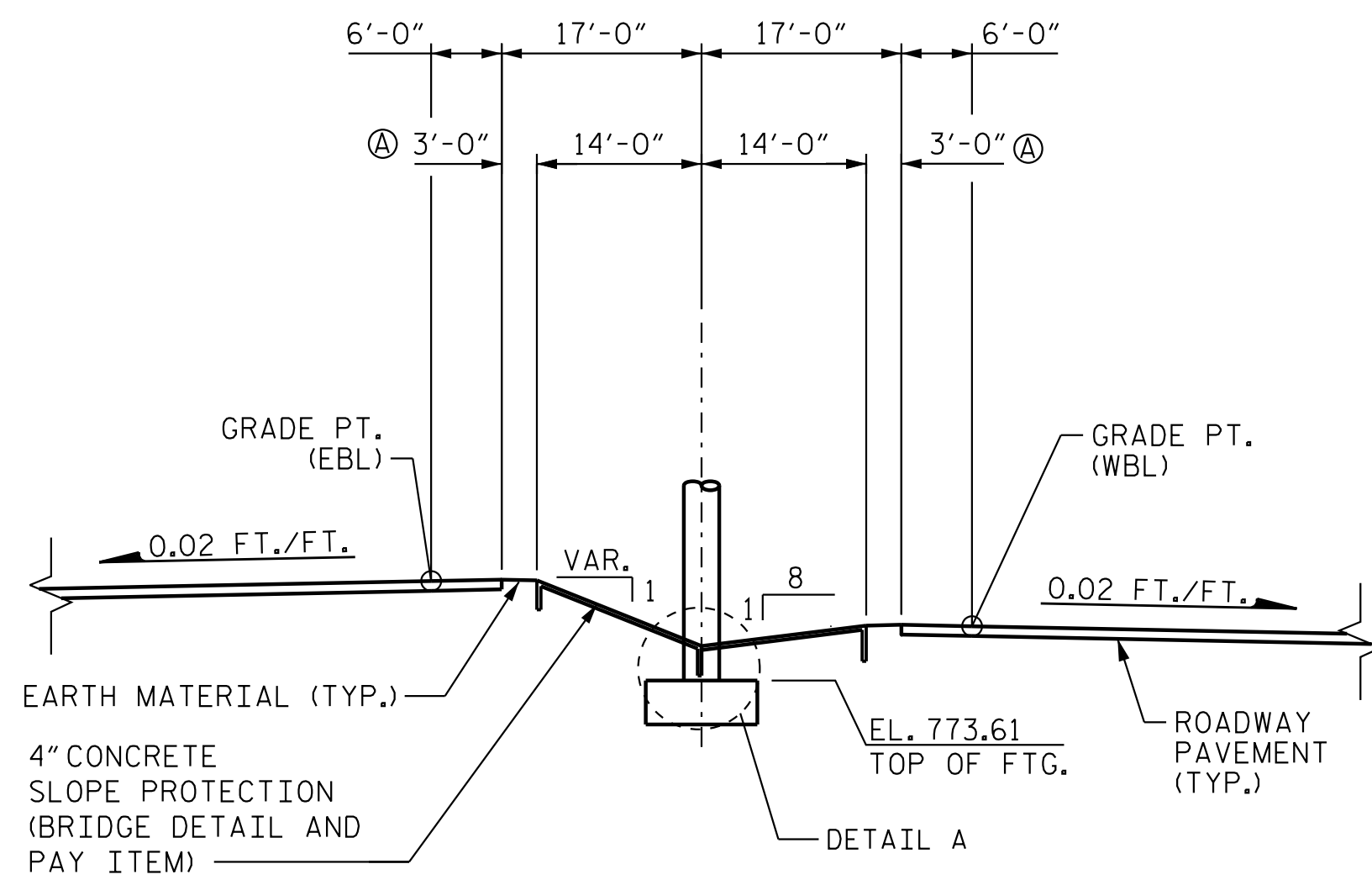


SECTION B-B

DETAILS FOR ALTERNATE "A"

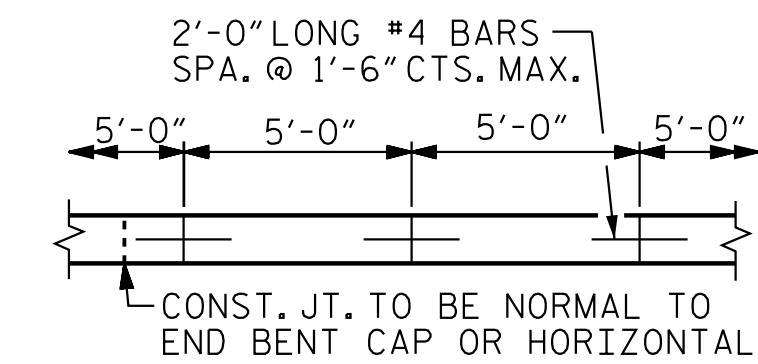


DETAIL "A"



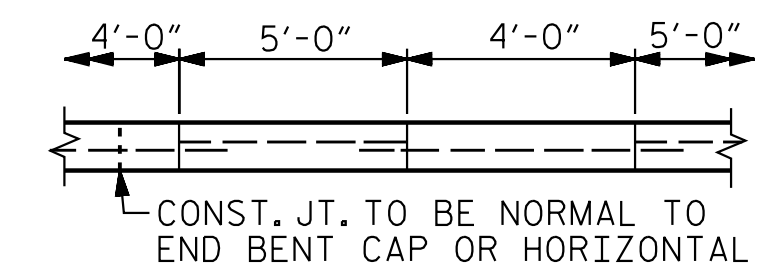
SECTION C-C

Ⓐ 3 FOOT WIDE STRIP FOR GUARDRAIL POSTS



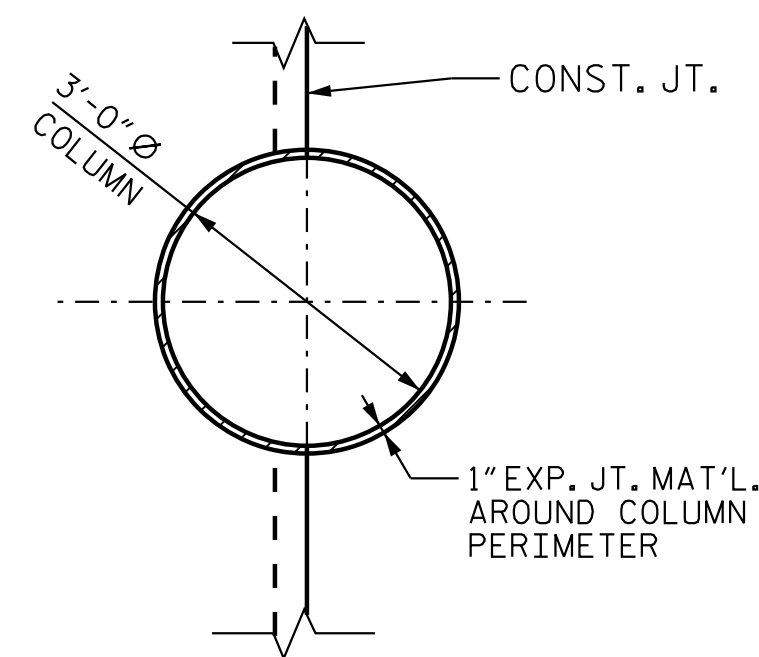
STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL



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

OPTIONAL POURING DETAIL



BENT COLUMN DETAIL

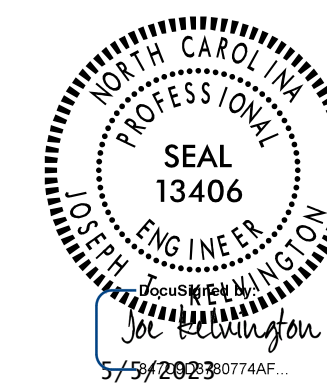
PROJECT NO. R-2707E
 CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-



Stantec Consulting Services Inc.
 801 Jones Franklin Road
 Suite 300
 Raleigh, NC 27606
 Tel. (919) 851-6866
 Fax. (919) 851-7024
 www.stantec.com
 License No. F-0672

DRAWN BY: J. B. GEILE DATE: 01/23/23
 CHECKED BY: A. L. BOYKIN DATE: 02/17/23

DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE: 05/05/23



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SLOPE PROTECTION DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S7-32
TOTAL SHEETS 34

C:\Users\jgeile\documents\pwworking\dms5559\132707E\SMU.SP02.220494.dgn 5/5/2023 12:53:05 PM jgeile

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	21'-6"	747
A2	52	#4	STR	21'-4"	741
* B1	82	#5	STR	24'-2"	2067
B2	82	#6	STR	24'-7"	3028

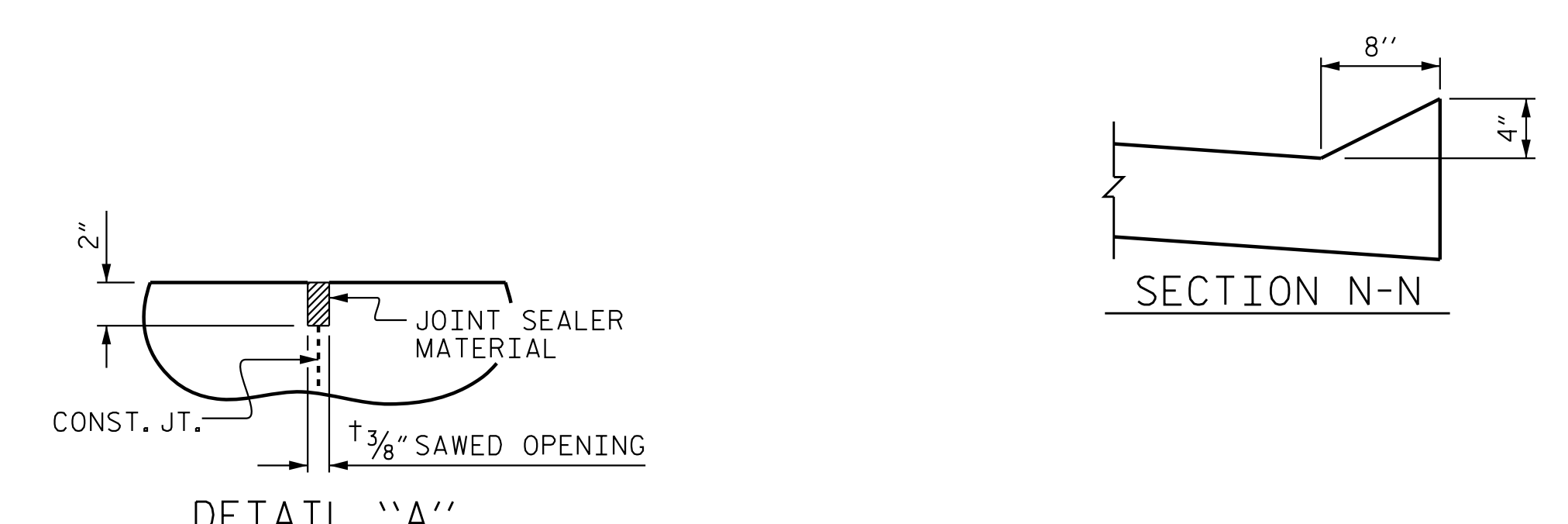
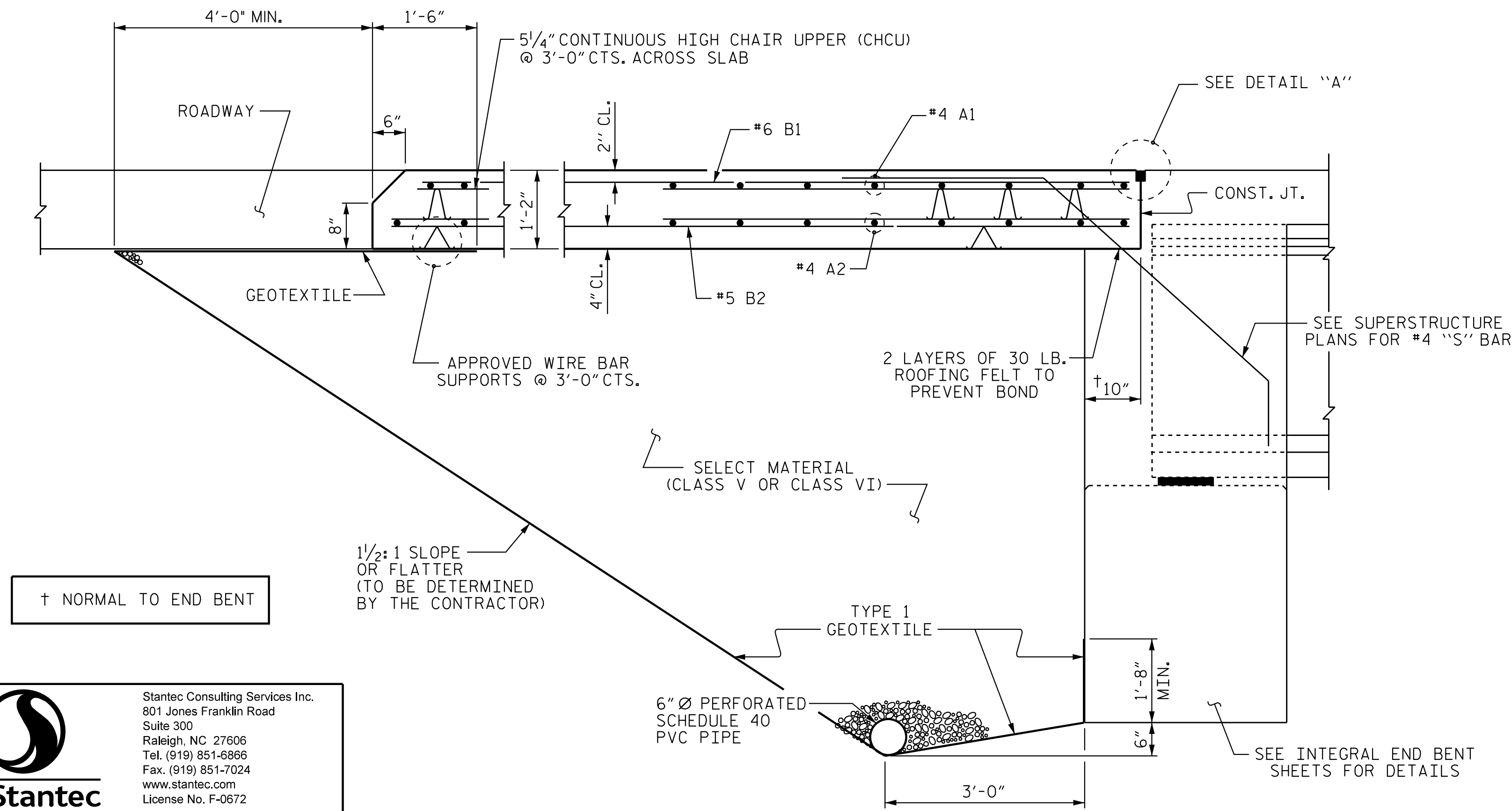
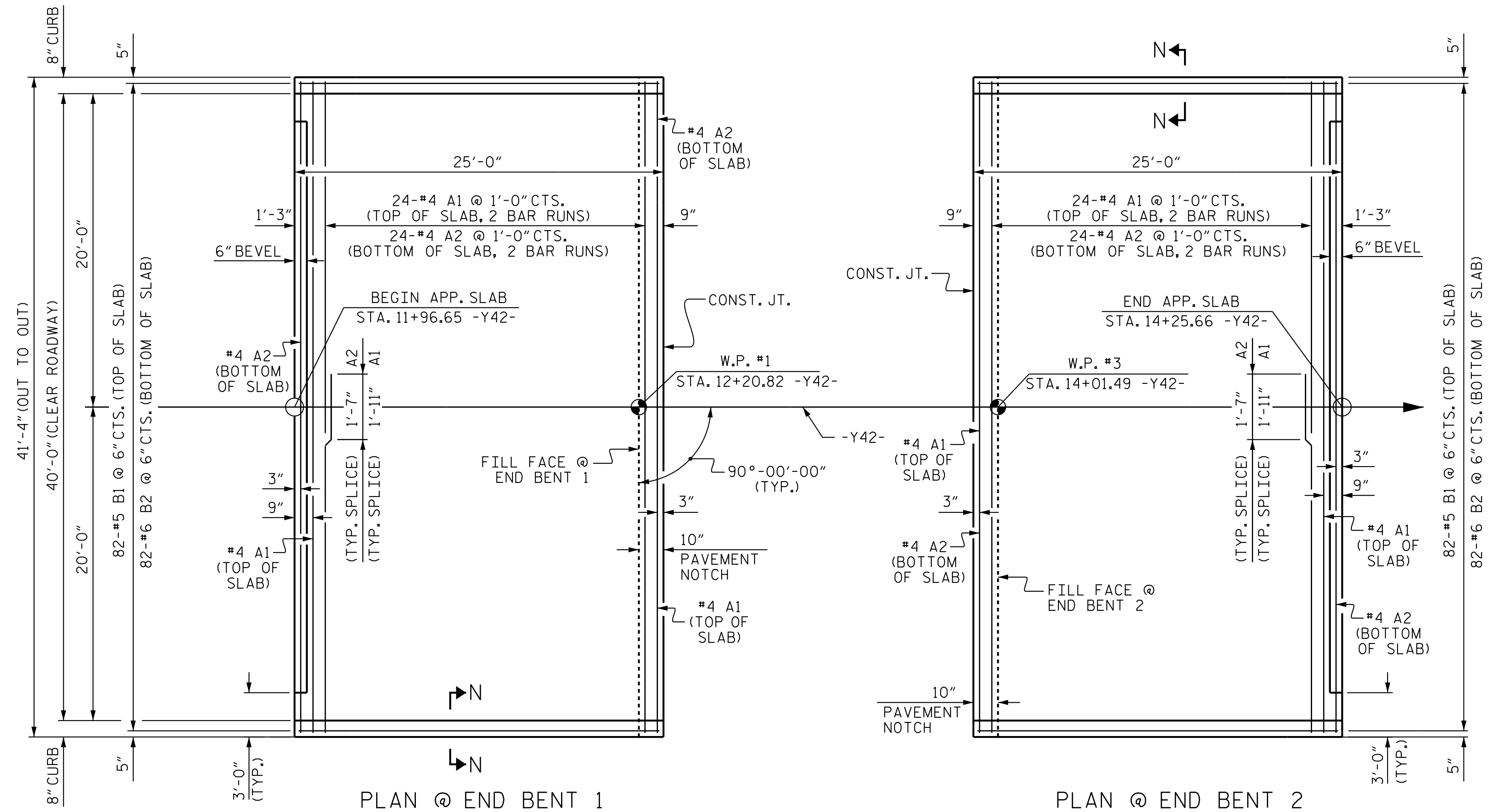
REINFORCING STEEL LBS. 3769

* EPOXY COATED REINFORCING STEEL LBS. 2814

CLASS AA CONCRETE C. Y. 44.7

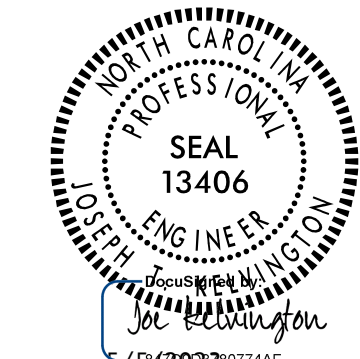
SPLICE LENGTHS

BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"



PROJECT NO. R-2707E
CLEVELAND COUNTY
 STATION: 13+08.49 -Y42-

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



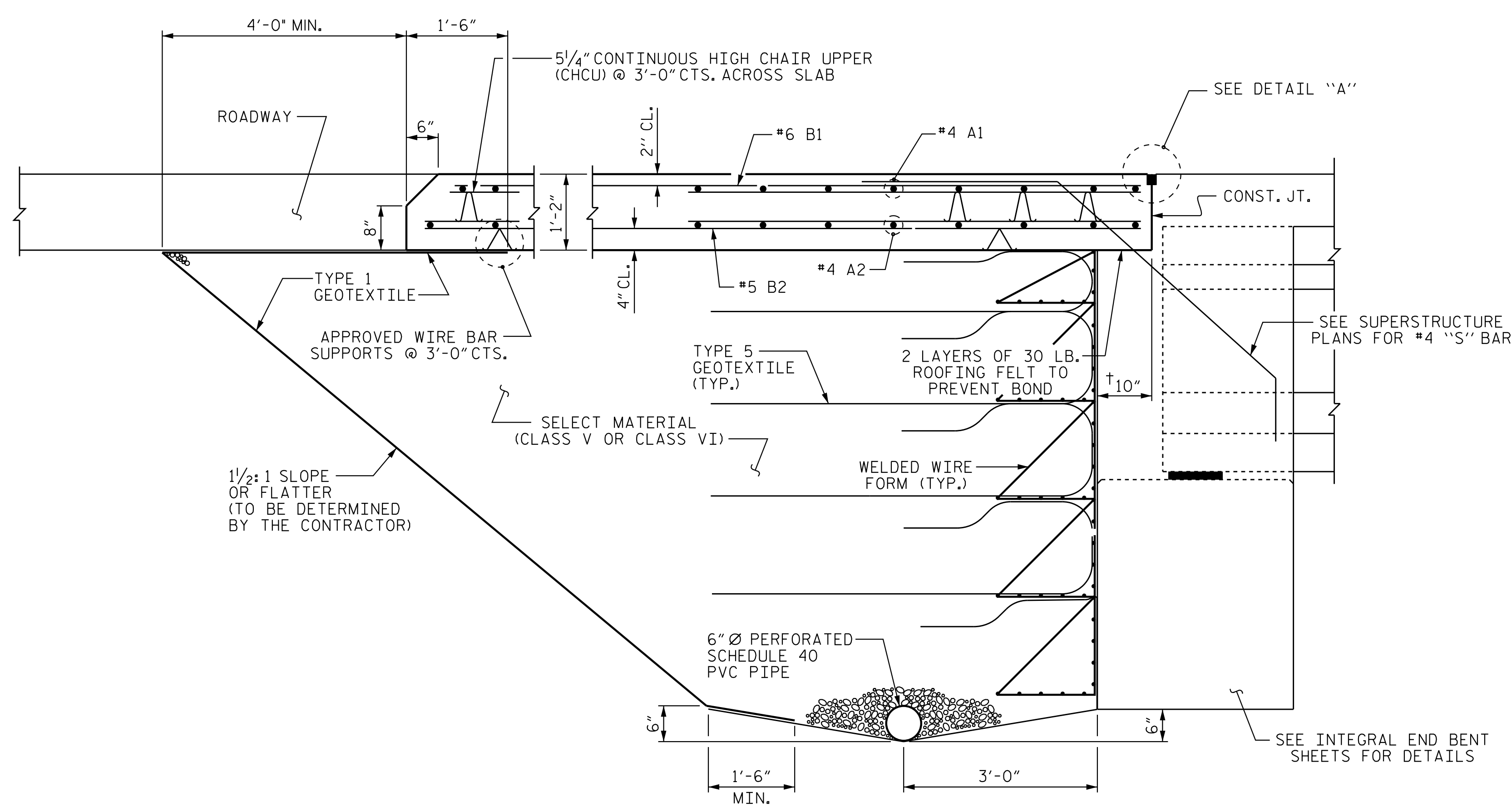
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-33	
1			3			TOTAL SHEETS	
2			4			34	

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

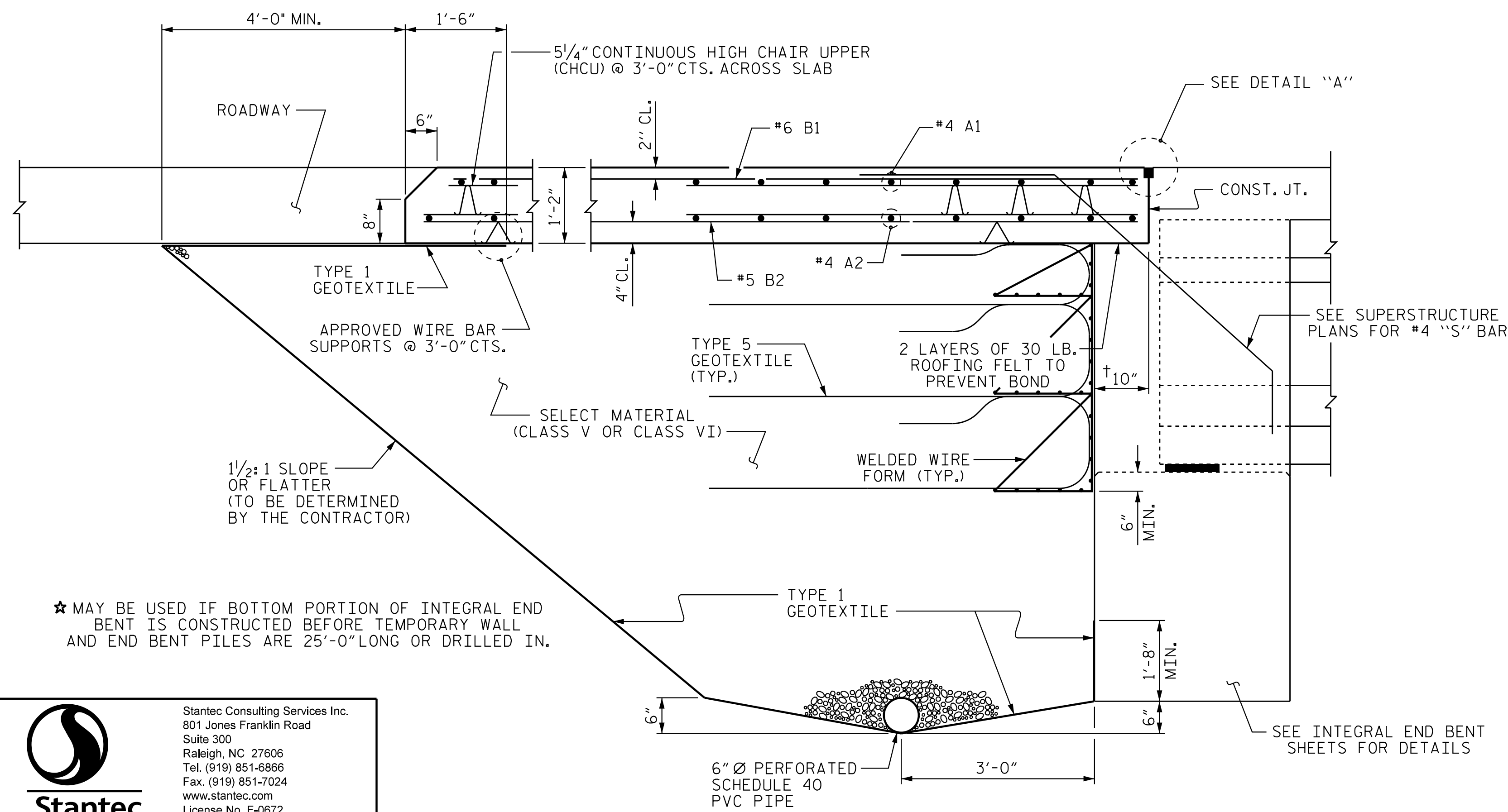
5/5/2023 12:53:23 PM jgelle
 C:\Users\jgelle\documents\pwworking\mms5559\R2707E\SMU_AS01_220494.dgn

Stantec Consulting Services Inc.
 801 Jones Franklin Road
 Suite 300
 Raleigh, NC 27606
 Tel. (919) 851-6866
 Fax. (919) 851-7024
 www.stantec.com
 License No. F-0672

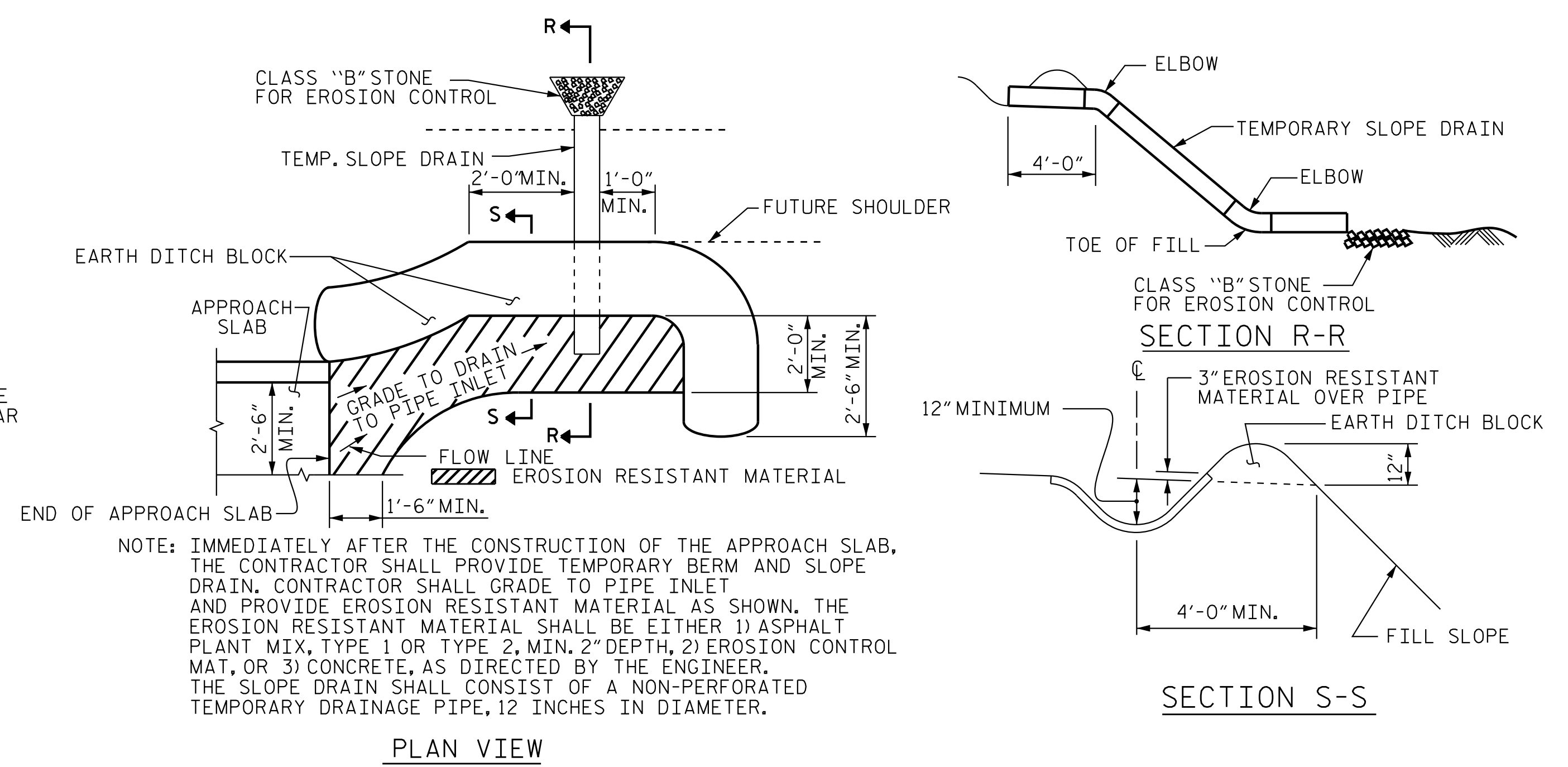
ASSEMBLED BY: J. B. GETLE DATE: 01/20/23
 CHECKED BY: A. L. BOYKIN DATE: 02/17/23
 DRAWN BY: TLA 10/05 REV. 12/21/11 MAA/GM
 CHECKED BY: GM 5/06 REV. 6/13 MAA/GM
 REV. 12/17 MAA/THC
 DESIGN ENGINEER OF RECORD: J. T. KELVINGTON DATE: 05/05/23



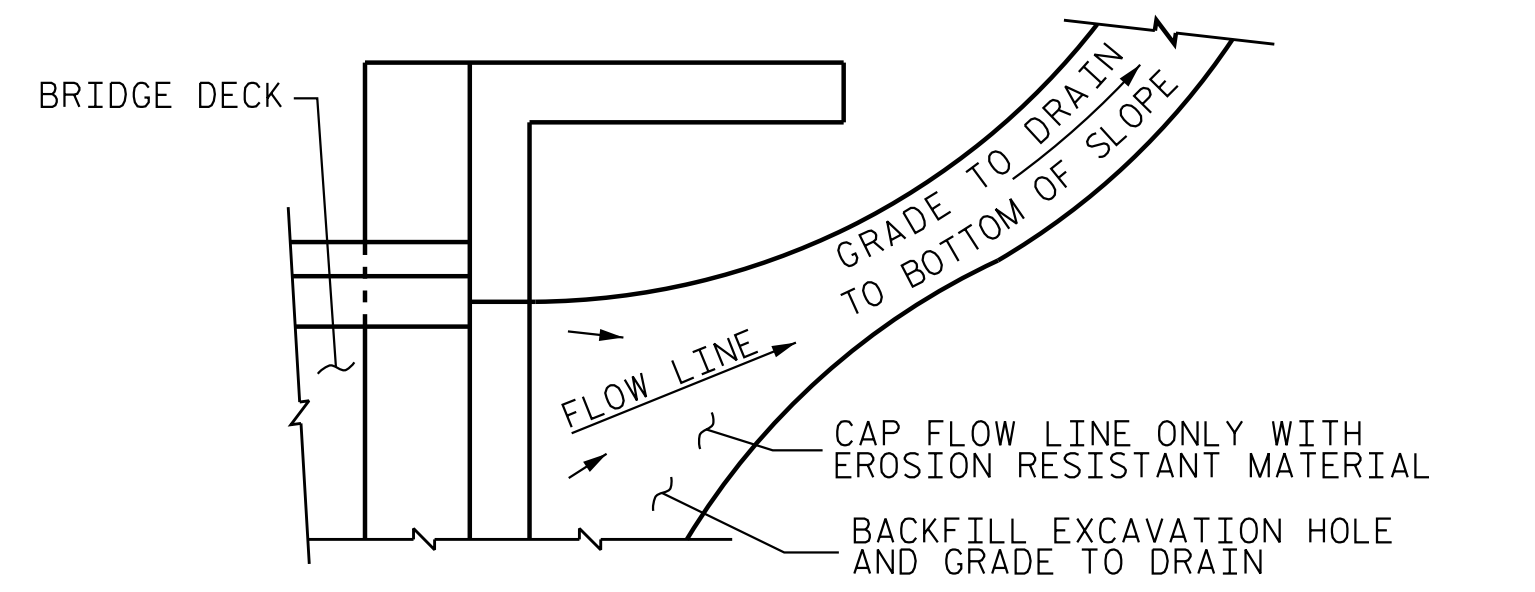
SECTION THRU SLAB
(TYPE A - ALTERNATE APPROACH FILL)



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.

TEMPORARY DRAINAGE DETAIL

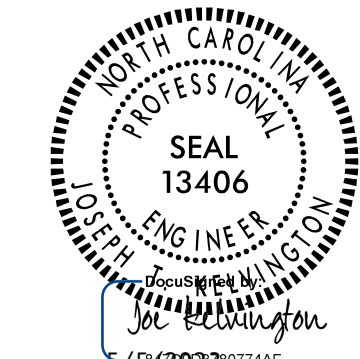
NOTES (TYPE A ALTERNATE)

- 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 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-2707E
CLEVELAND COUNTY
STATION: 13+08.49 -Y42-

SHEET 2 OF 2

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



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-34	
1			3			TOTAL SHEETS 34	
2			4				

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

5/5/2023 12:53:38 PM jgeille
 c:\users\jgeille\documents\pwr\working\mms5559\R2707E\SMU_AS02_220494.dgn

Stantec Consulting Services Inc.
801 Jones Franklin Road
Suite 300
Raleigh, NC 27606
Tel. (919) 851-6866
Fax. (919) 851-7024
www.stantec.com
License No. F-0672

ASSEMBLED BY : J. B. GEILE DATE : 01/20/23
CHECKED BY : V. E. FRAGA DATE : 01/XX/23
DRAWN BY : TLA 10/05 REV. 12/21/11 MAA/GM
CHECKED BY : GM 5/06 REV. 6/13 MAA/GM
DESIGN ENGINEER OF RECORD : J. T. KELVINGTON DATE : 05/05/23

★ MAY BE USED IF BOTTOM PORTION OF INTEGRAL END BENT IS CONSTRUCTED BEFORE TEMPORARY WALL AND END BENT PILES ARE 25'-0" LONG OR DRILLED IN.

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE $\frac{1}{8}$ " \emptyset SHEAR STUDS FOR THE $\frac{3}{4}$ " \emptyset STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - $\frac{1}{8}$ " \emptyset STUDS FOR 4 - $\frac{3}{4}$ " \emptyset STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF $\frac{1}{8}$ " \emptyset STUDS ALONG THE BEAM AS SHOWN FOR $\frac{3}{4}$ " \emptyset STUDS BASED ON THE RATIO OF 3 - $\frac{1}{8}$ " \emptyset STUDS FOR 4 - $\frac{3}{4}$ " \emptyset STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST $\frac{3}{16}$ " IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

STD. NO. SN