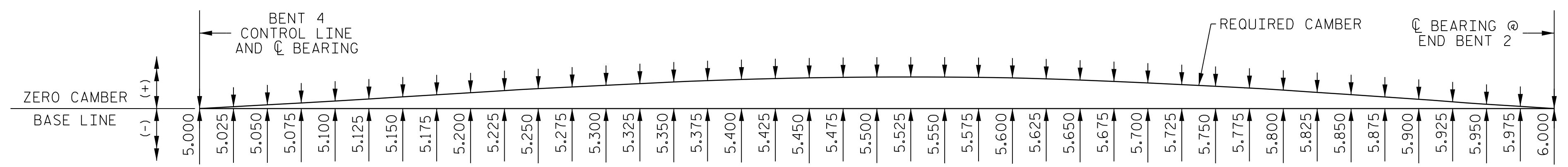


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NOTES
FOR NOTES, SEE SHEET 1 OF 10.

GIRDER E1																					
40TH POINTS	5.000	5.025	5.050	5.075	5.100	5.125	5.150	5.175	5.200	5.225	5.250	5.275	5.300	5.325	5.350	5.375	5.400	5.425	5.450	5.475	5.500
DEFLECTION DUE TO WEIGHT OF STEEL	0	0.000	-0.001	-0.002	-0.003	-0.004	-0.006	-0.007	-0.009	-0.011	-0.013	-0.015	-0.017	-0.019	-0.021	-0.023	-0.025	-0.027	-0.028	-0.029	-0.030
DEFLECTION DUE TO WEIGHT OF SLAB(*)	0	-0.001	-0.003	-0.005	-0.008	-0.012	-0.016	-0.021	-0.026	-0.032	-0.038	-0.045	-0.051	-0.057	-0.063	-0.070	-0.075	-0.080	-0.085	-0.089	-0.092
DEFLECTION DUE TO WEIGHT OF RAIL	0	0.000	0.000	-0.001	-0.001	-0.002	-0.002	-0.003	-0.003	-0.004	-0.005	-0.006	-0.006	-0.007	-0.008	-0.009	-0.010	-0.010	-0.011	-0.011	-0.011
TOTAL DEAD LOAD DEFLECTION	0	-0.002	-0.004	-0.008	-0.012	-0.017	-0.023	-0.031	-0.039	-0.047	-0.055	-0.066	-0.074	-0.083	-0.092	-0.102	-0.109	-0.116	-0.123	-0.129	-0.133
VERTICAL CURVE ORDINATE	0	0.017	0.033	0.048	0.062	0.075	0.088	0.099	0.110	0.120	0.129	0.137	0.144	0.151	0.156	0.161	0.165	0.168	0.170	0.171	0.172
REQUIRED CAMBER	0	1/4	7/16	1 1/16	7/8	1 1/8	1 5/16	1 3/8	1 7/8	2	2 1/16	2 1/8	2 1/4	2 5/8	3	3 1/8	3 1/16	3 1/8	3 1/2	3 5/8	3 11/16

GIRDER E1																					
40TH POINTS	5.500	5.525	5.550	5.575	5.600	5.625	5.650	5.675	5.700	5.725	5.750	5.775	5.800	5.825	5.850	5.875	5.900	5.925	5.950	5.975	6.000
DEFLECTION DUE TO WEIGHT OF STEEL	-0.030	-0.031	-0.032	-0.032	-0.032	-0.032	-0.031	-0.031	-0.030	-0.028	-0.027	-0.025	-0.023	-0.020	-0.018	-0.015	-0.012	-0.009	-0.006	-0.003	0
DEFLECTION DUE TO WEIGHT OF SLAB(*)	-0.092	-0.094	-0.096	-0.097	-0.097	-0.097	-0.095	-0.093	-0.089	-0.086	-0.081	-0.075	-0.069	-0.062	-0.054	-0.046	-0.037	-0.029	-0.019	-0.010	0
DEFLECTION DUE TO WEIGHT OF RAIL	-0.011	-0.011	-0.011	-0.012	-0.012	-0.011	-0.011	-0.011	-0.010	-0.010	-0.009	-0.009	-0.008	-0.007	-0.006	-0.005	-0.004	-0.003	-0.002	-0.001	0
TOTAL DEAD LOAD DEFLECTION	-0.133	-0.137	-0.139	-0.141	-0.141	-0.140	-0.138	-0.134	-0.130	-0.124	-0.117	-0.108	-0.099	-0.089	-0.078	-0.066	-0.054	-0.041	-0.028	-0.014	0
VERTICAL CURVE ORDINATE	0.172	0.171	0.170	0.168	0.165	0.161	0.156	0.151	0.144	0.137	0.129	0.120	0.110	0.099	0.087	0.075	0.062	0.048	0.033	0.017	0
REQUIRED CAMBER	3 11/16	3 11/16	3 11/16	3 11/16	3 11/16	3 5/8	3 1/2	3 1/16	3 3/16	3 1/8	2 15/16	2 3/4	2 1/2	2 1/4	2	1 11/16	1 3/8	1 1/16	3/4	3/8	0

GIRDER E2																					
40TH POINTS	5.000	5.025	5.050	5.075	5.100	5.125	5.150	5.175	5.200	5.225	5.250	5.275	5.300	5.325	5.350	5.375	5.400	5.425	5.450	5.475	5.500
DEFLECTION DUE TO WEIGHT OF STEEL	0	-0.001	-0.001	-0.002	-0.003	-0.005	-0.006	-0.008	-0.010	-0.012	-0.015	-0.017	-0.019	-0.021	-0.024	-0.026	-0.028	-0.029	-0.031	-0.033	-0.034
DEFLECTION DUE TO WEIGHT OF SLAB(*)	0	-0.001	-0.004	-0.006	-0.010	-0.014	-0.019	-0.024	-0.030	-0.036	-0.044	-0.051	-0.057	-0.064	-0.072	-0.078	-0.084	-0.090	-0.095	-0.099	-0.102
DEFLECTION DUE TO WEIGHT OF RAIL	0	0.000	-0.001	-0.001	-0.001	-0.002	-0.002	-0.003	-0.004	-0.005	-0.006	-0.006	-0.007	-0.008	-0.009	-0.010	-0.011	-0.011	-0.012	-0.012	-0.012
TOTAL DEAD LOAD DEFLECTION	0	-0.002	-0.005	-0.009	-0.014	-0.021	-0.027	-0.036	-0.044	-0.053	-0.064	-0.074	-0.084	-0.093	-0.104	-0.114	-0.122	-0.130	-0.137	-0.143	-0.148
VERTICAL CURVE ORDINATE	0	0.017	0.033	0.048	0.062	0.075	0.088	0.099	0.110	0.120	0.129	0.137	0.144	0.150	0.156	0.161	0.165	0.168	0.170	0.171	0.172
REQUIRED CAMBER	0	1/4	7/16	1 1/16	1 5/16	1 1/8	1 3/8	1 5/8	1 7/8	2 1/16	2 5/16	2 1/2	2 3/4	2 15/16	3 1/8	3 3/16	3 1/16	3 3/16	3 11/16	3 3/4	3 13/16

GIRDER E2																					
40TH POINTS	5.500	5.525	5.550	5.575	5.600	5.625	5.650	5.675	5.700	5.725	5.750	5.775	5.800	5.825	5.850	5.875	5.900	5.925	5.950	5.975	6.000
DEFLECTION DUE TO WEIGHT OF STEEL	-0.034	-0.034	-0.035	-0.035	-0.035	-0.035	-0.035	-0.034	-0.033	-0.031	-0.029	-0.027	-0.025	-0.023	-0.020	-0.017	-0.014	-0.010	-0.007	-0.004	0
DEFLECTION DUE TO WEIGHT OF SLAB(*)	-0.102	-0.105	-0.107	-0.108	-0.108	-0.107	-0.105	-0.103	-0.099	-0.095	-0.089	-0.083	-0.076	-0.068	-0.059	-0.051	-0.041	-0.032	-0.021	-0.011	0
DEFLECTION DUE TO WEIGHT OF RAIL	-0.012	-0.012	-0.013	-0.013	-0.013	-0.013	-0.012	-0.012	-0.012	-0.011	-0.010	-0.010	-0.009	-0.008	-0.007	-0.006	-0.005	-0.004	-0.002	-0.001	0
TOTAL DEAD LOAD DEFLECTION	-0.148	-0.152	-0.154	-0.156	-0.156	-0.155	-0.152	-0.148	-0.143	-0.137	-0.129	-0.120	-0.110	-0.099	-0.086	-0.073	-0.060	-0.046	-0.031	-0.016	0
VERTICAL CURVE ORDINATE	0.172	0.171	0.170	0.168	0.165	0.161	0.156	0.151	0.144	0.137	0.129	0.120	0.110	0.099	0.087	0.075	0.062	0.048	0.033	0.017	0
REQUIRED CAMBER	3 13/16	3 7/8	3 7/8	3 7/8	3 7/8	3 13/16	3 11/16	3 3/16	3 1/16	3 5/16	3 1/16	2 7/8	2 5/8	2 3/8	2 1/16	1 3/4	1 1/16	1/8	3/4	3/8	0

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-
 SHEET 9 OF 10

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PLANS PREPARED BY:
PARSONS
 5540 CenterView Drive, Suite 217
 Raleigh, NC 27606-3386
 NC LICENSE No. F-0246
 FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY: J. CAYETANO DATE: 9-21
 CHECKED BY: J. B. TAYLOR DATE: 9-21
 DESIGN ENGINEER: J. B. TAYLOR DATE: 9-21

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE DEAD LOAD DEFLECTIONS AND CAMBER ORDINATES SPAN "E"					
REVISIONS					SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					84

GIRDER E3

Table with 21 columns (40th Points to 5,500) and 6 rows (Deflection due to weight of steel, slab, rail, total dead load deflection, vertical curve ordinate, required camber).

GIRDER E3

Table with 21 columns (40th Points to 6,000) and 6 rows (Deflection due to weight of steel, slab, rail, total dead load deflection, vertical curve ordinate, required camber).

GIRDER E4

Table with 21 columns (40th Points to 5,500) and 6 rows (Deflection due to weight of steel, slab, rail, total dead load deflection, vertical curve ordinate, required camber).

GIRDER E4

Table with 21 columns (40th Points to 6,000) and 6 rows (Deflection due to weight of steel, slab, rail, total dead load deflection, vertical curve ordinate, required camber).

GIRDER E5

Table with 21 columns (40th Points to 5,500) and 6 rows (Deflection due to weight of steel, slab, rail, total dead load deflection, vertical curve ordinate, required camber).

GIRDER E5

Table with 21 columns (40th Points to 6,000) and 6 rows (Deflection due to weight of steel, slab, rail, total dead load deflection, vertical curve ordinate, required camber).

NOTES

FOR NOTES, SEE SHEET 1 OF 10.

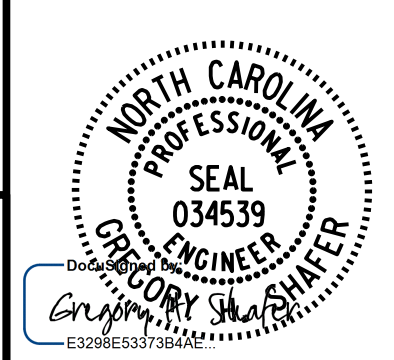
PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-

SHEET 10 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
DEAD LOAD DEFLECTIONS
AND CAMBER ORDINATES
SPAN "E"

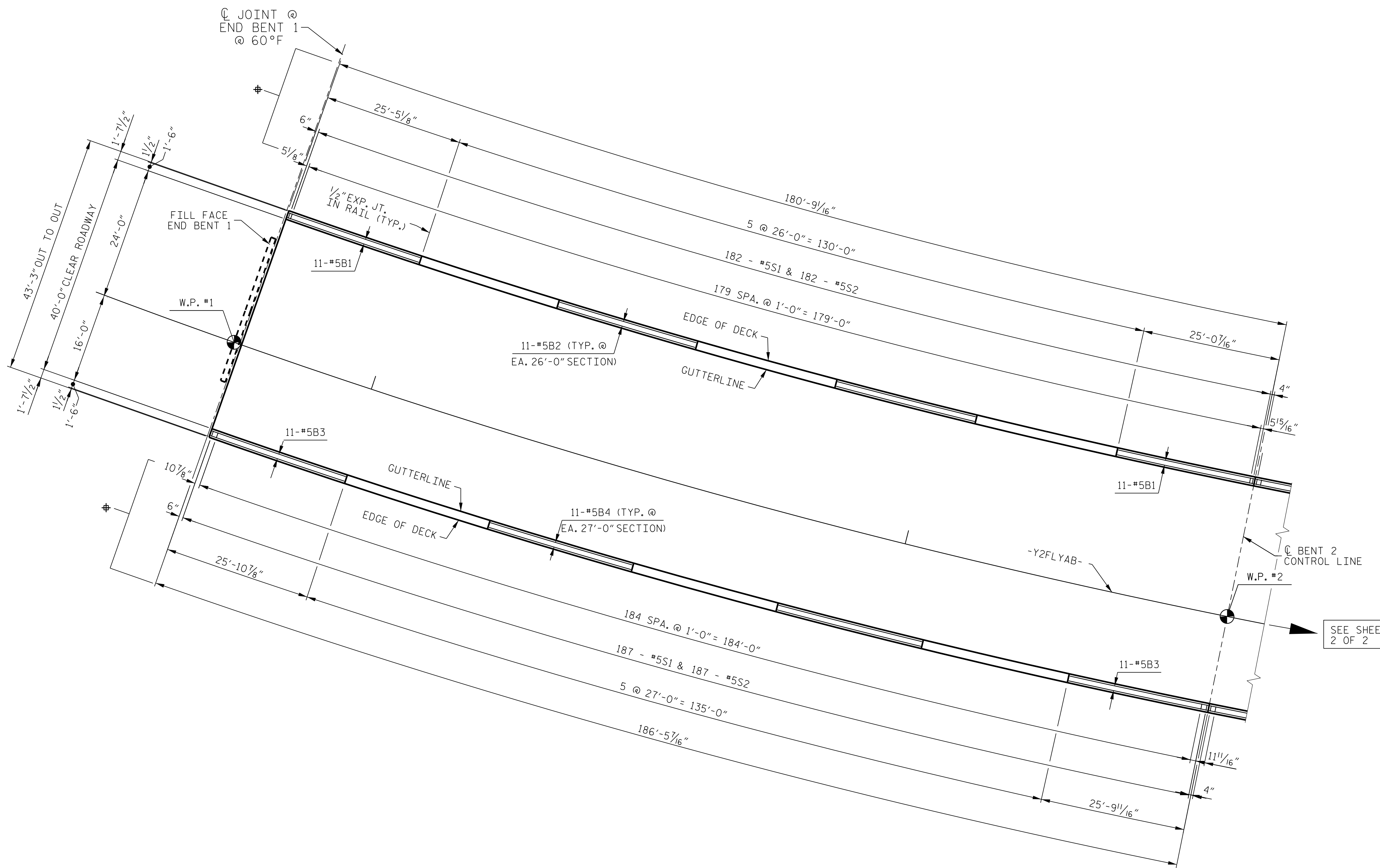
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NC LICENSE No. F-0246

DRAWN BY: J. CAYETANO DATE: 9-21
CHECKED BY: J. B. TAYLOR DATE: 9-21
DESIGN ENGINEER: J. B. TAYLOR DATE: 9-21

Table with 2 columns: REVISIONS (No., BY, DATE) and SHEET No. (S5-45, TOTAL SHEETS 84).



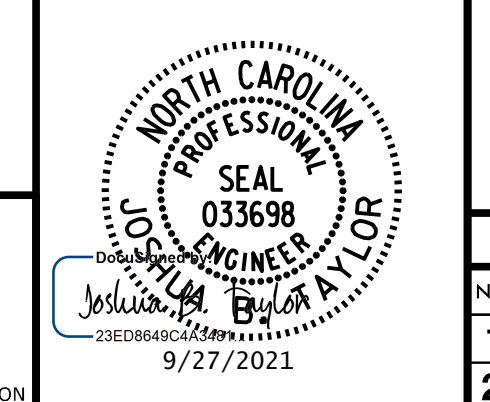
PARTIAL PLAN OF BARRIER RAIL – UNIT 1 – SPAN A

⊕ = DIMENSIONS MEASURED ALONG OUTSIDE FACE OF BARRIER RAIL.

PROJECT NO. U-2579AA
FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-
 SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
**CONCRETE BARRIER RAIL
 UNIT 1**

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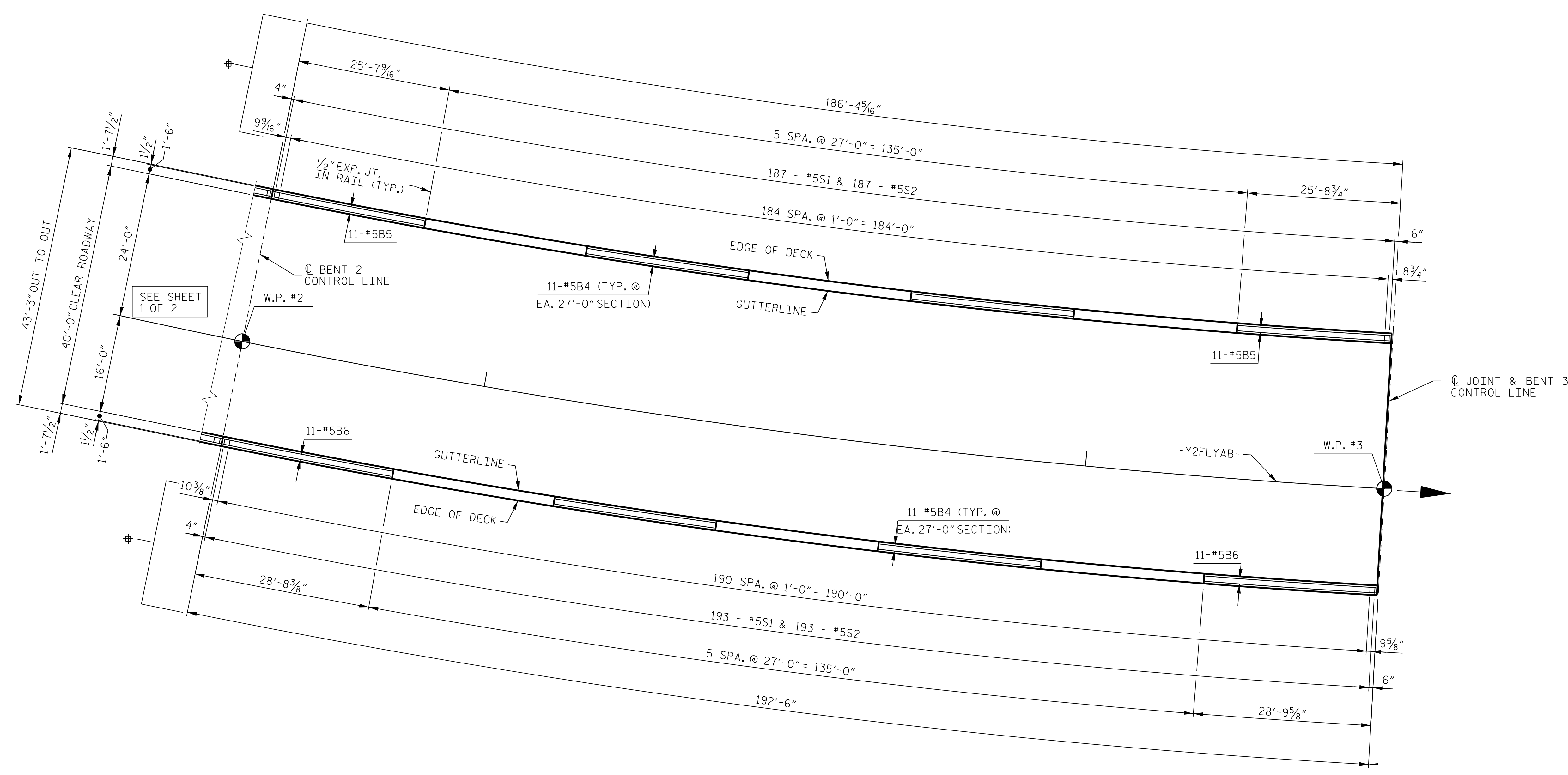


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 Raleigh, NC 27606-3386
 NC LICENSE No. F-0246
 FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY : J. CAYETANO DATE : 9-21
 CHECKED BY : J. B. TAYLOR DATE : 9-21
 DESIGN ENGINEER : J. B. TAYLOR DATE : 9-21

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	TOTAL SHEETS
1			3			84
2			4			

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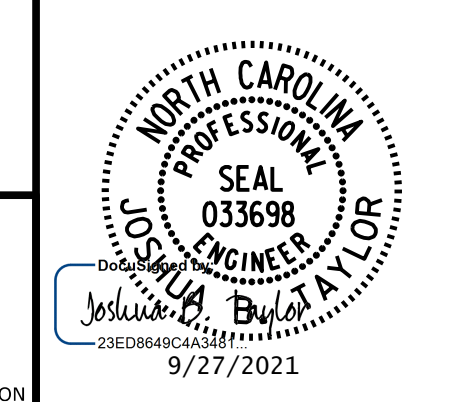


PARTIAL PLAN OF BARRIER RAIL - UNIT 1 - SPAN B

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-
 SHEET 2 OF 2

⊕ = DIMENSIONS MEASURED ALONG
 OUTSIDE FACE OF BARRIER RAIL.

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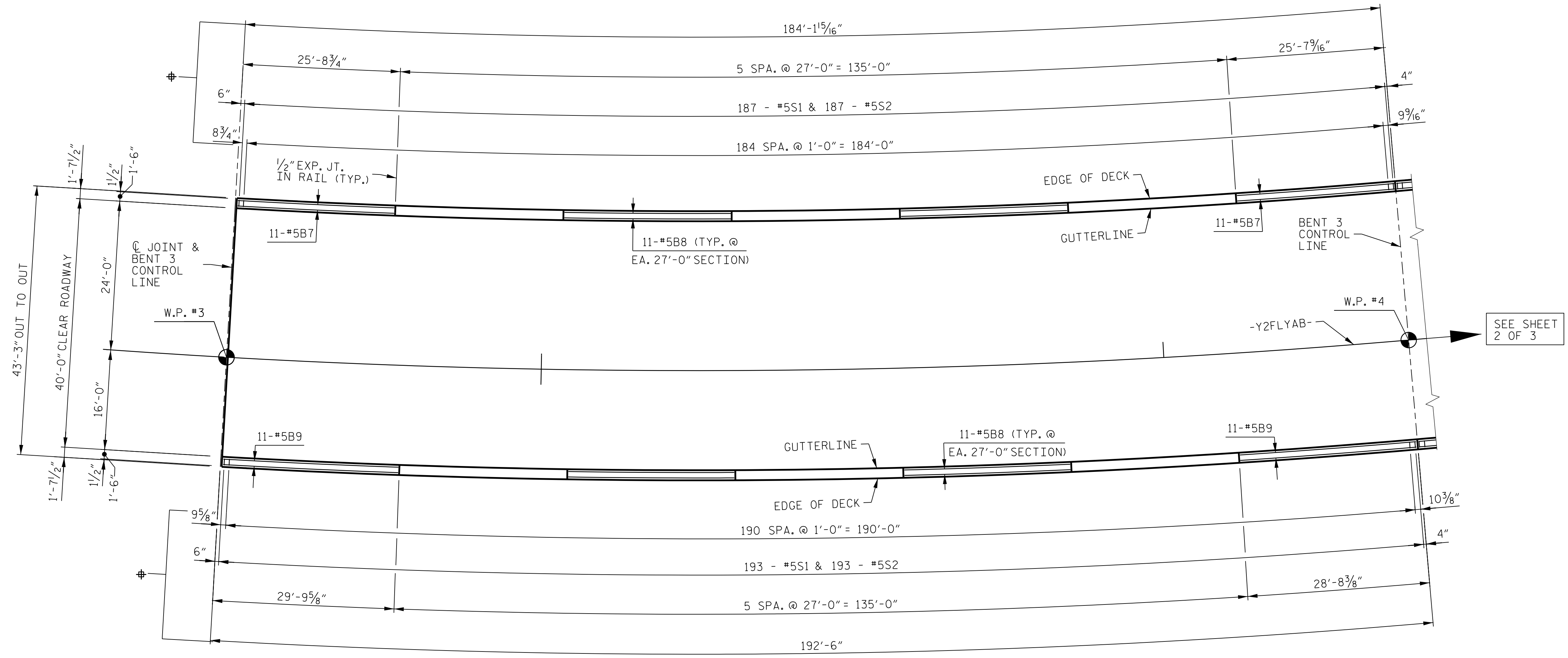
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 Raleigh, NC 27606-3386
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 FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY : J. CAYETANO DATE : 9-21
 CHECKED BY : J. B. TAYLOR DATE : 9-21
 DESIGN ENGINEER : J. B. TAYLOR DATE : 9-21

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
**CONCRETE BARRIER RAIL
 UNIT 1**

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	TOTAL SHEETS
1			3			84
2			4			

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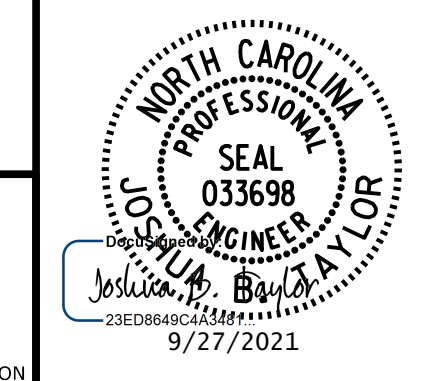
PARTIAL PLAN OF BARRIER RAIL - UNIT 2 - SPAN C

⊕ = DIMENSIONS MEASURED ALONG OUTSIDE FACE OF BARRIER RAIL.

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-
 SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CONCRETE BARRIER RAIL
 UNIT 2

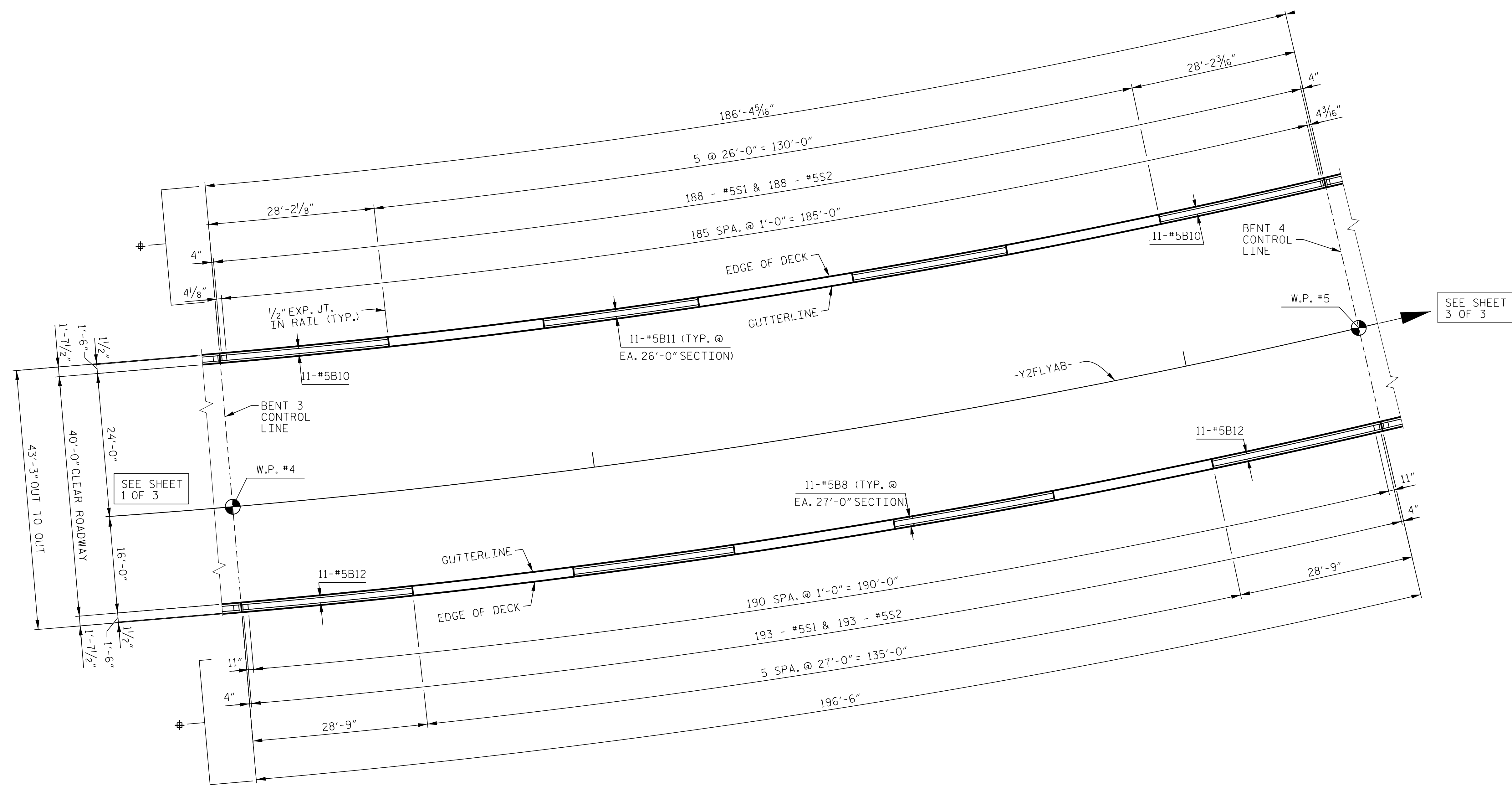
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 CHECKED BY : J. B. TAYLOR DATE : 9-21
 DESIGN ENGINEER : J. B. TAYLOR DATE : 9-21

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	TOTAL SHEETS
1			3			84
2			4			



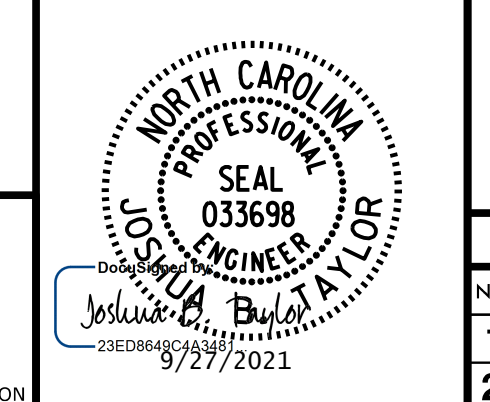
PARTIAL PLAN OF BARRIER RAIL - UNIT 2 - SPAN D

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-
 SHEET 2 OF 3

⊕ = DIMENSIONS MEASURED ALONG
 OUTSIDE FACE OF BARRIER RAIL.

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CONCRETE BARRIER RAIL
 UNIT 2

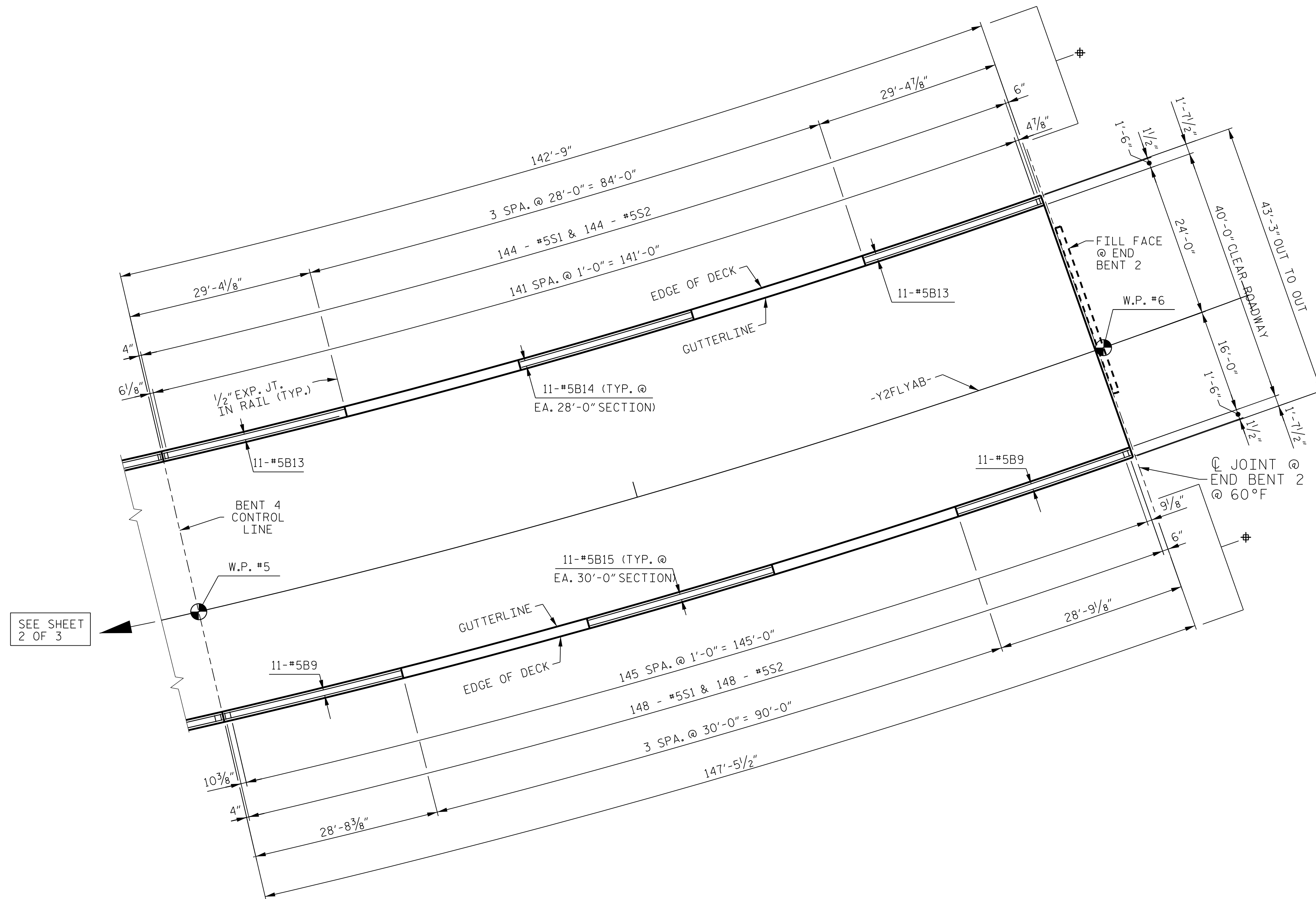
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 CHECKED BY : J. B. TAYLOR DATE : 9-21
 DESIGN ENGINEER : J. B. TAYLOR DATE : 9-21

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	TOTAL SHEETS
1			3			84
2			4			



SEE SHEET 2 OF 3

PARTIAL PLAN OF BARRIER RAIL - UNIT 2 - SPAN E

⊕ = DIMENSIONS MEASURED ALONG OUTSIDE FACE OF BARRIER RAIL.

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-

SHEET 3 OF 3

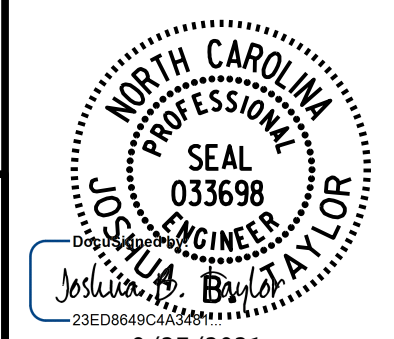
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

**CONCRETE BARRIER RAIL
UNIT 2**

REVISIONS						SHEET No.
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2			4			

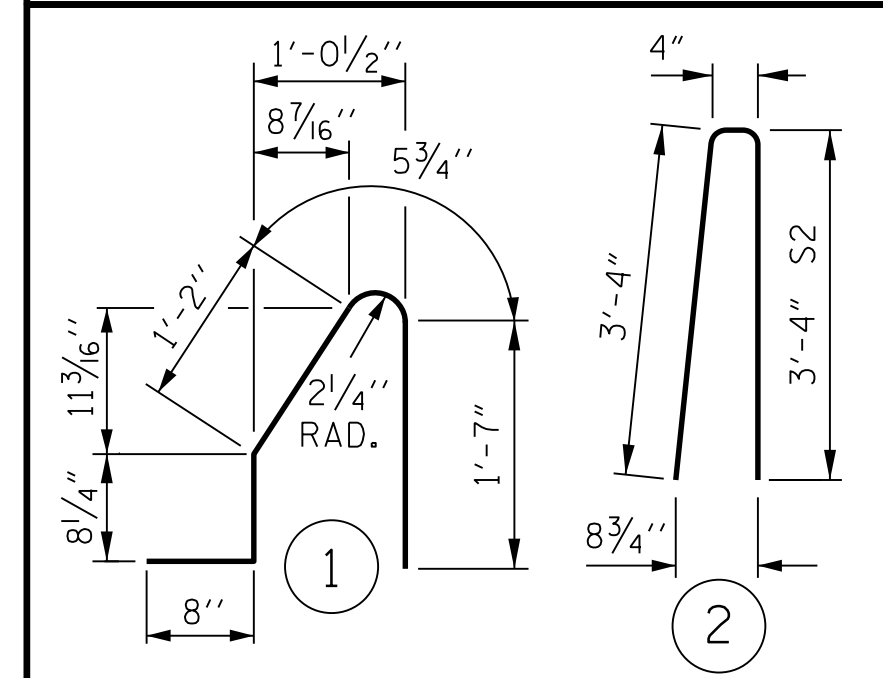
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DESIGN ENGINEER: J. B. TAYLOR DATE: 9-21

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

CONCRETE BARRIER RAIL - UNIT 1

BAR No.	SIZE	TYPE	LENGTH	WEIGHT
* S1	749 #5	1	4'-7"	3,581
* S2	749 #5	2	7'-0"	5,468
* B1	22 #5	STR	24'-11"	572
* B2	55 #5	STR	25'-7"	1,468
* B3	22 #5	STR	25'-5"	583
* B4	165 #5	STR	26'-7"	4,575
* B5	22 #5	STR	25'-3"	579
* B6	22 #5	STR	28'-3"	648

EPOXY COATED REINFORCING STEEL	17,474
CLASS "AA" CONCRETE	101.5 CU. YDS.
CONCRETE BARRIER RAIL LENGTH	746.3 LIN. FT.

BILL OF MATERIAL

CONCRETE BARRIER RAIL - UNIT 2

BAR No.	SIZE	TYPE	LENGTH	WEIGHT
* S1	1053 #5	1	4'-7"	5,034
* S2	1053 #5	2	7'-0"	7,688
* B7	22 #5	STR	25'-3"	579
* B8	165 #5	STR	26'-7"	4,575
* B9	44 #5	STR	28'-3"	1,296
* B10	22 #5	STR	27'-9"	637
* B11	55 #5	STR	25'-7"	1,468
* B12	22 #5	STR	28'-4"	650
* B13	22 #5	STR	28'-11"	664
* B14	33 #5	STR	27'-7"	949
* B15	33 #5	STR	29'-7"	1,018

EPOXY COATED REINFORCING STEEL	24,558
CLASS "AA" CONCRETE	142.6 CU. YDS.
CONCRETE BARRIER RAIL LENGTH	1,047.9 LIN. FT.

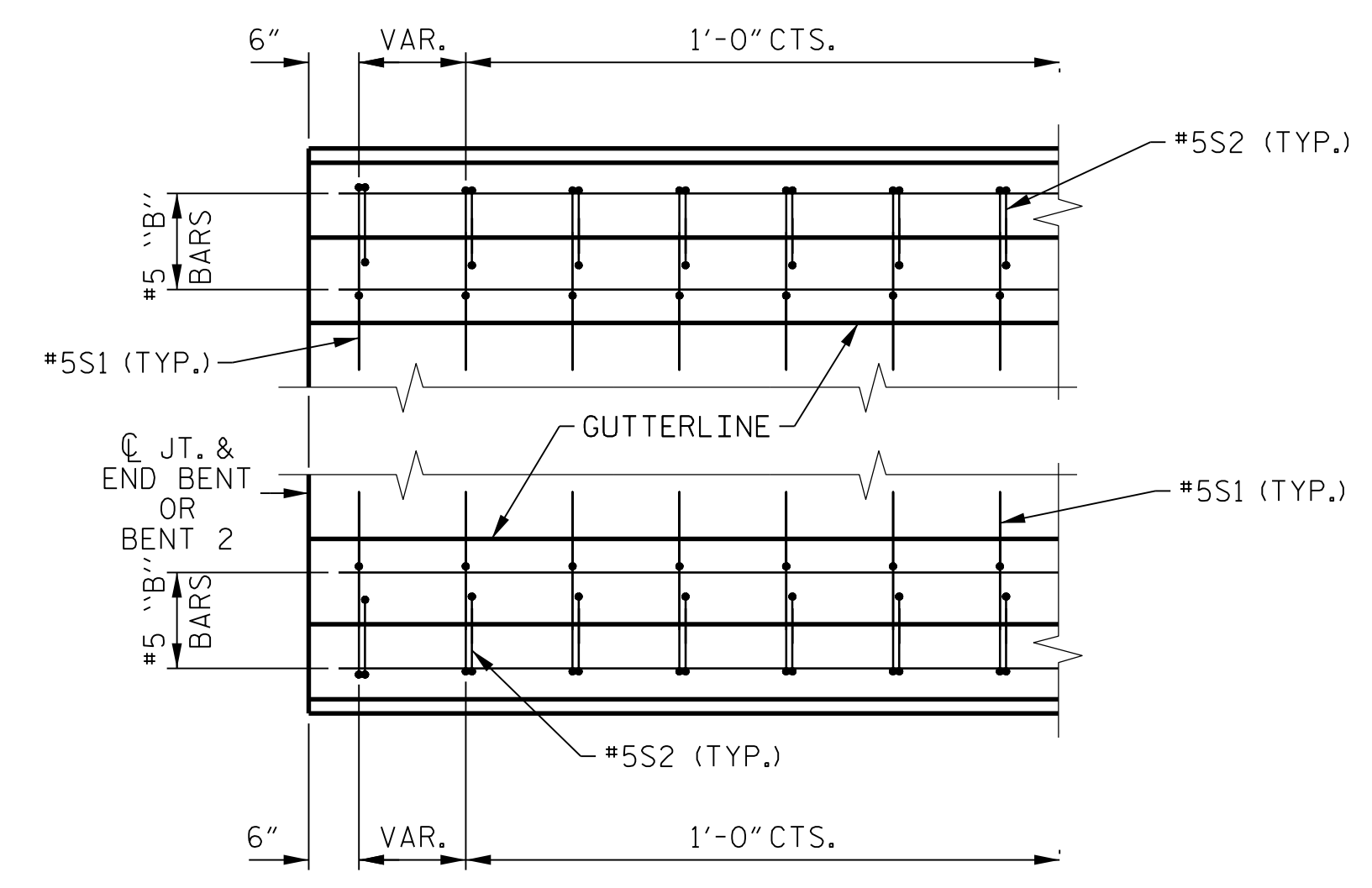
NOTES

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

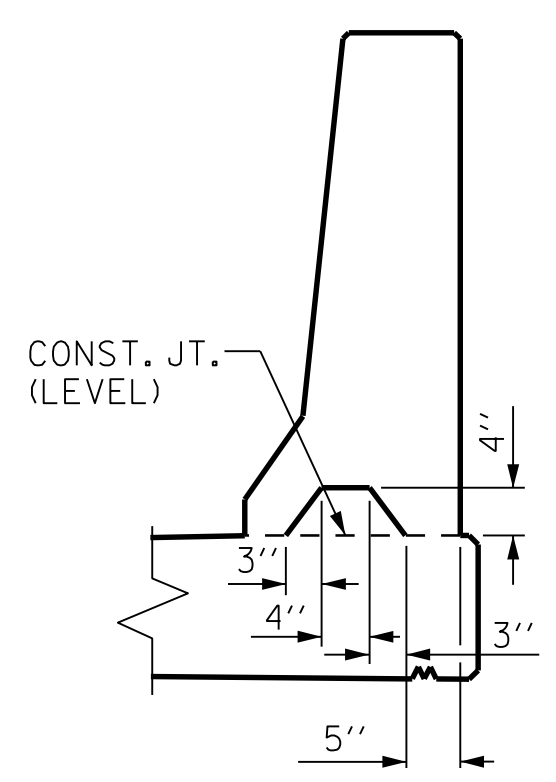
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS, THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS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

SEE BRIDGE APPROACH SLAB SHEETS FOR BARRIER RAIL CONSTRUCTED ON APPROACH SLABS AND END OF RAIL DETAILS.



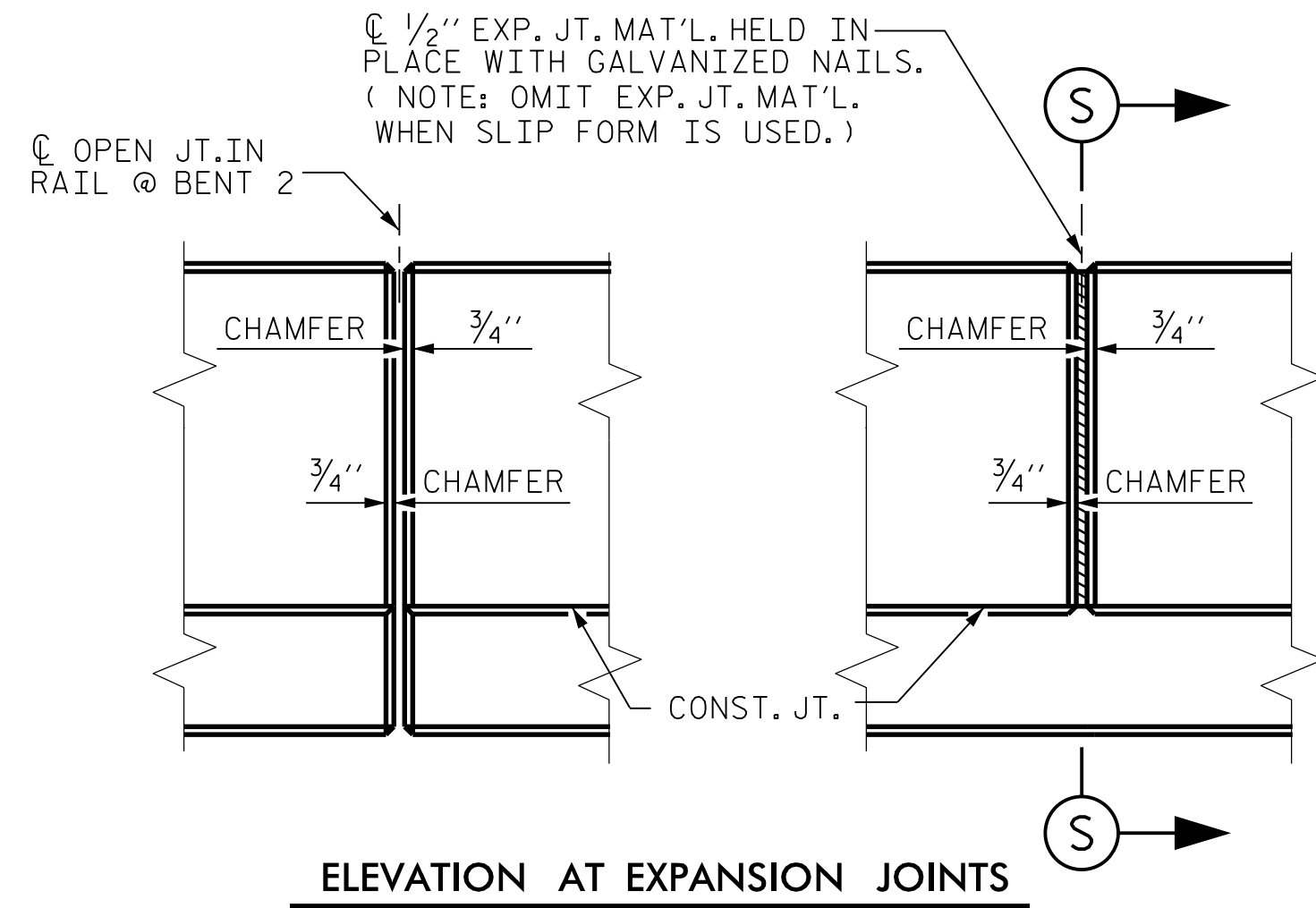
PLAN

END OF RAIL DETAILS



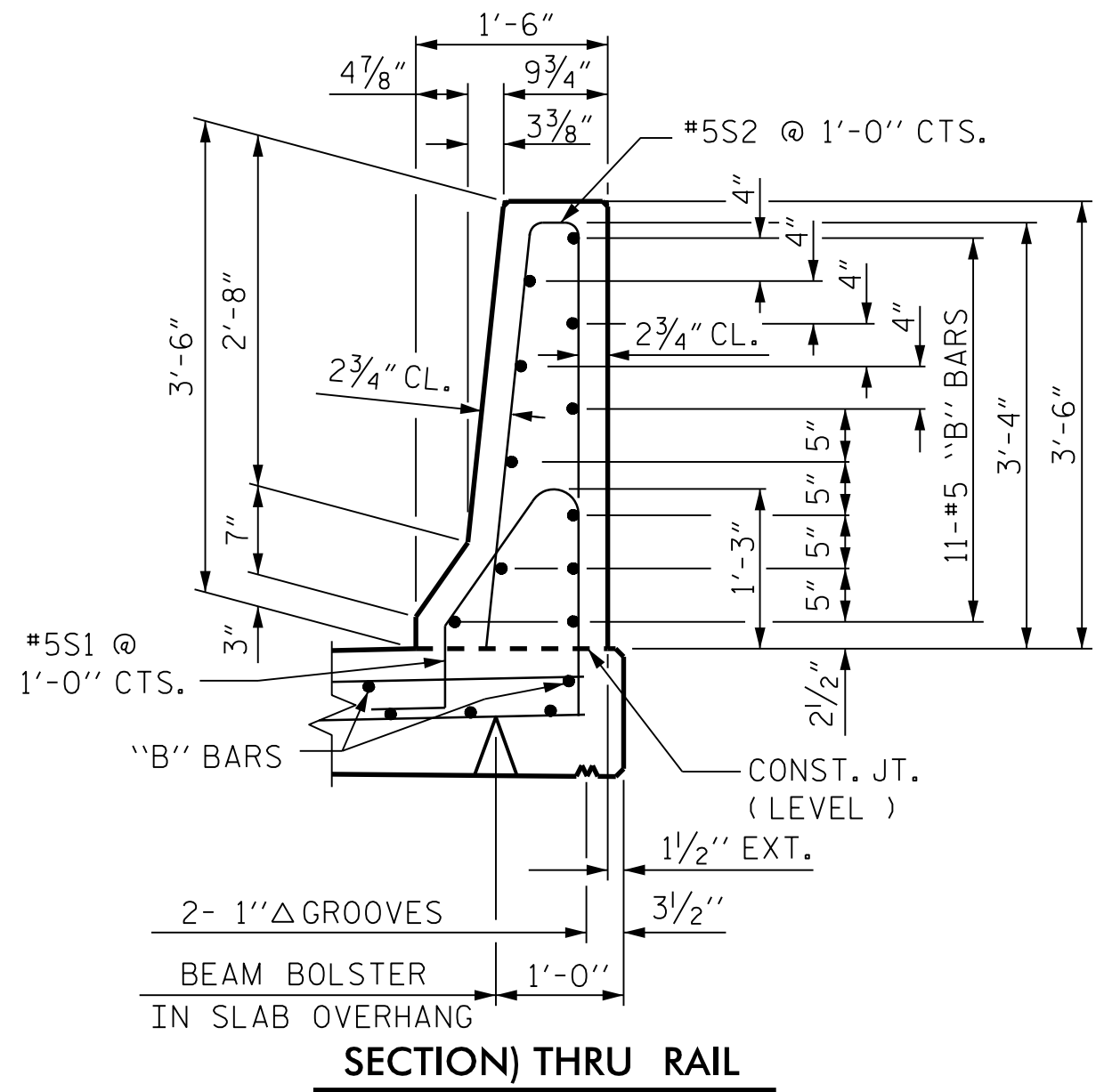
SECTION) S-S

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



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

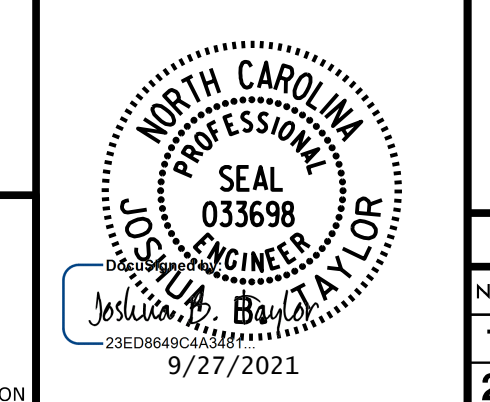


SECTION) THRU RAIL

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-

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

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED



PLANS PREPARED BY:
PARSONS
 5540 CenterView Drive, Suite 217
 Raleigh, NC 27606-3386
 NC LICENSE No. F-0246
 FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY :	J. CAYETANO	DATE :	9-21
CHECKED BY :	J. B. TAYLOR	DATE :	9-21
DESIGN ENGINEER :	J. B. TAYLOR	DATE :	9-21

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	TOTAL SHEETS
1			3			84
2			4			

STD. No. CBRI

DRAWN BY :	ARB 587	REV. 712	MAAGM
CHECKED BY :	SJD 587	REV. 613	MAAGM
		REV. 1217	MAATHC

NOTES

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

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

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

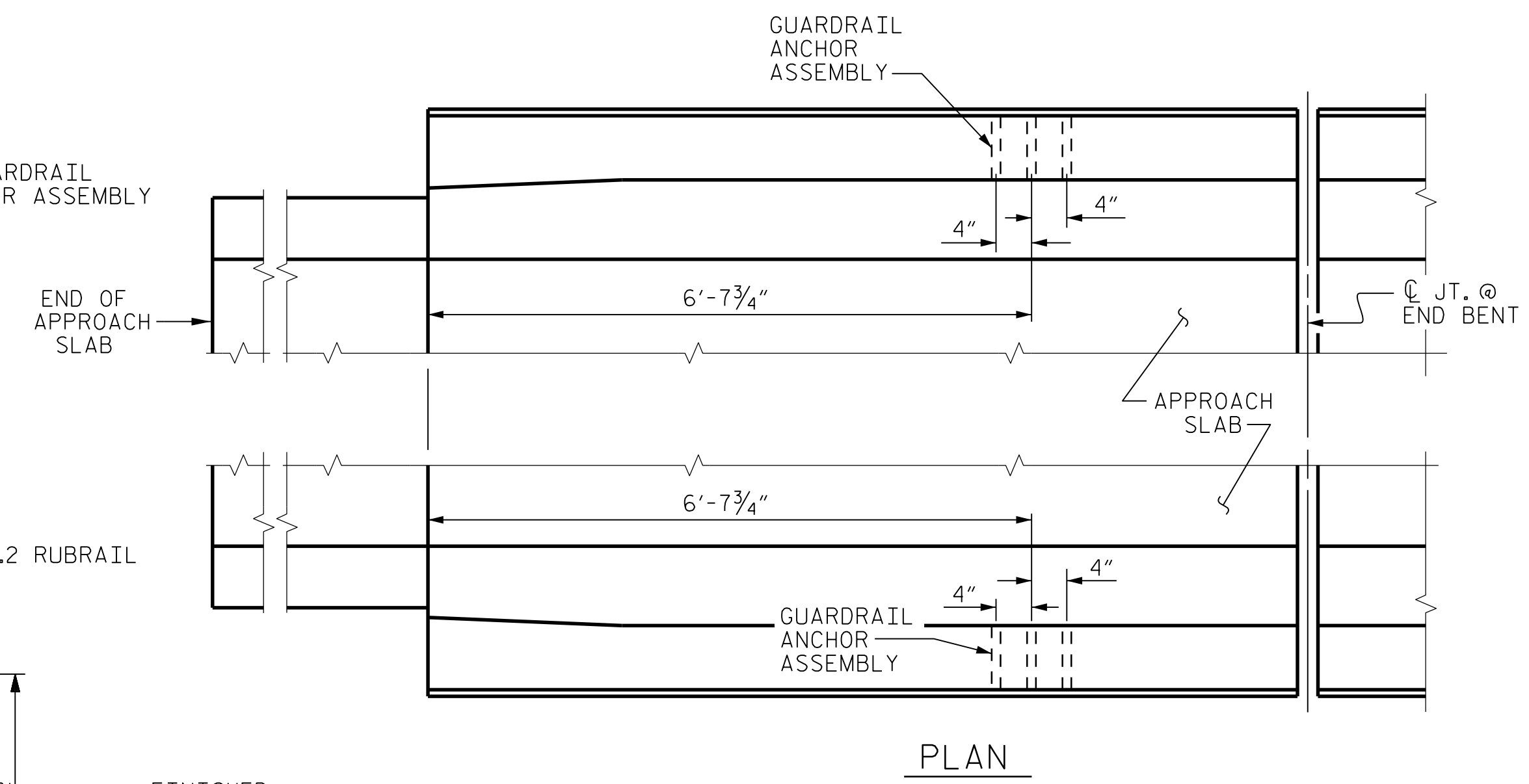
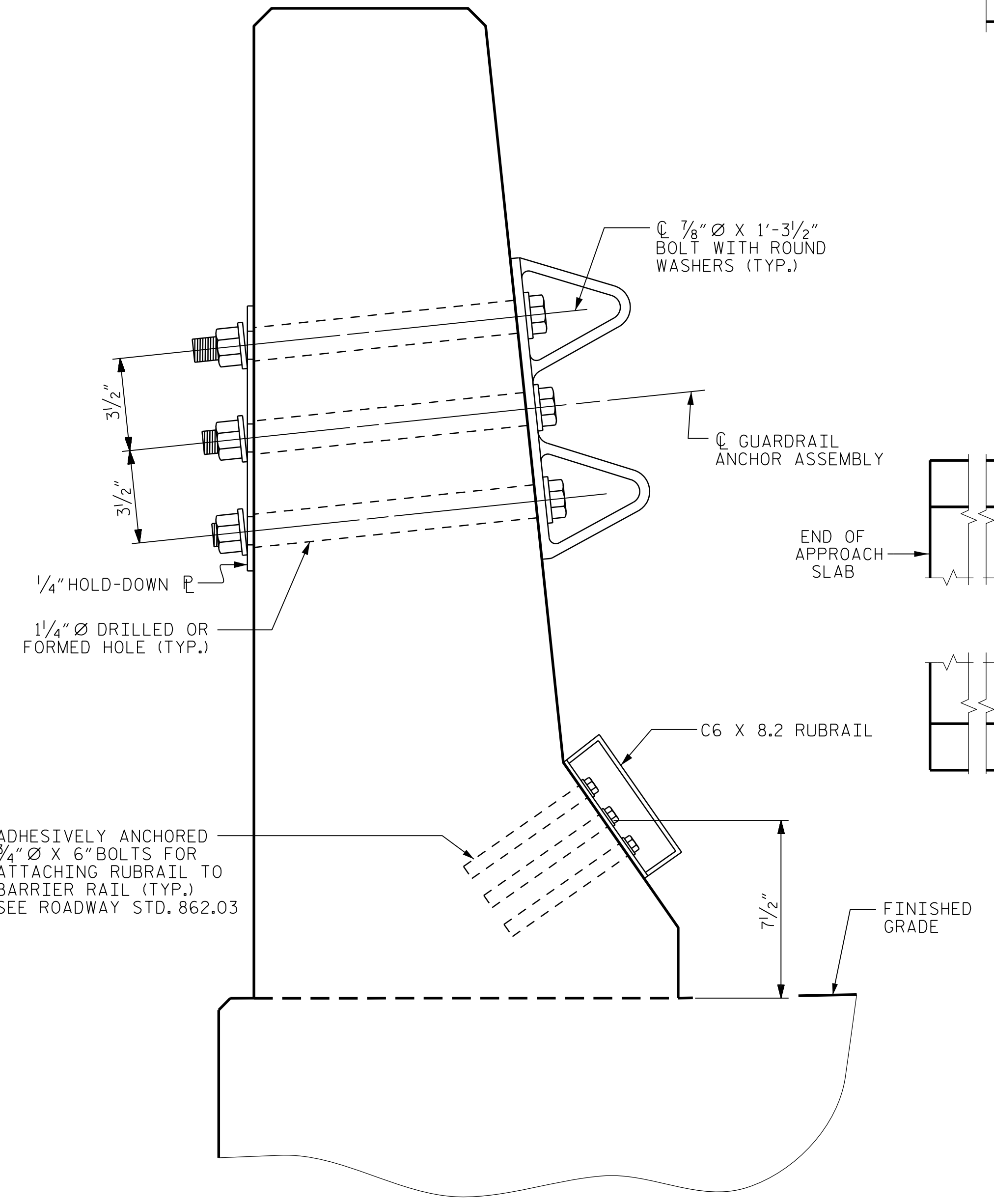
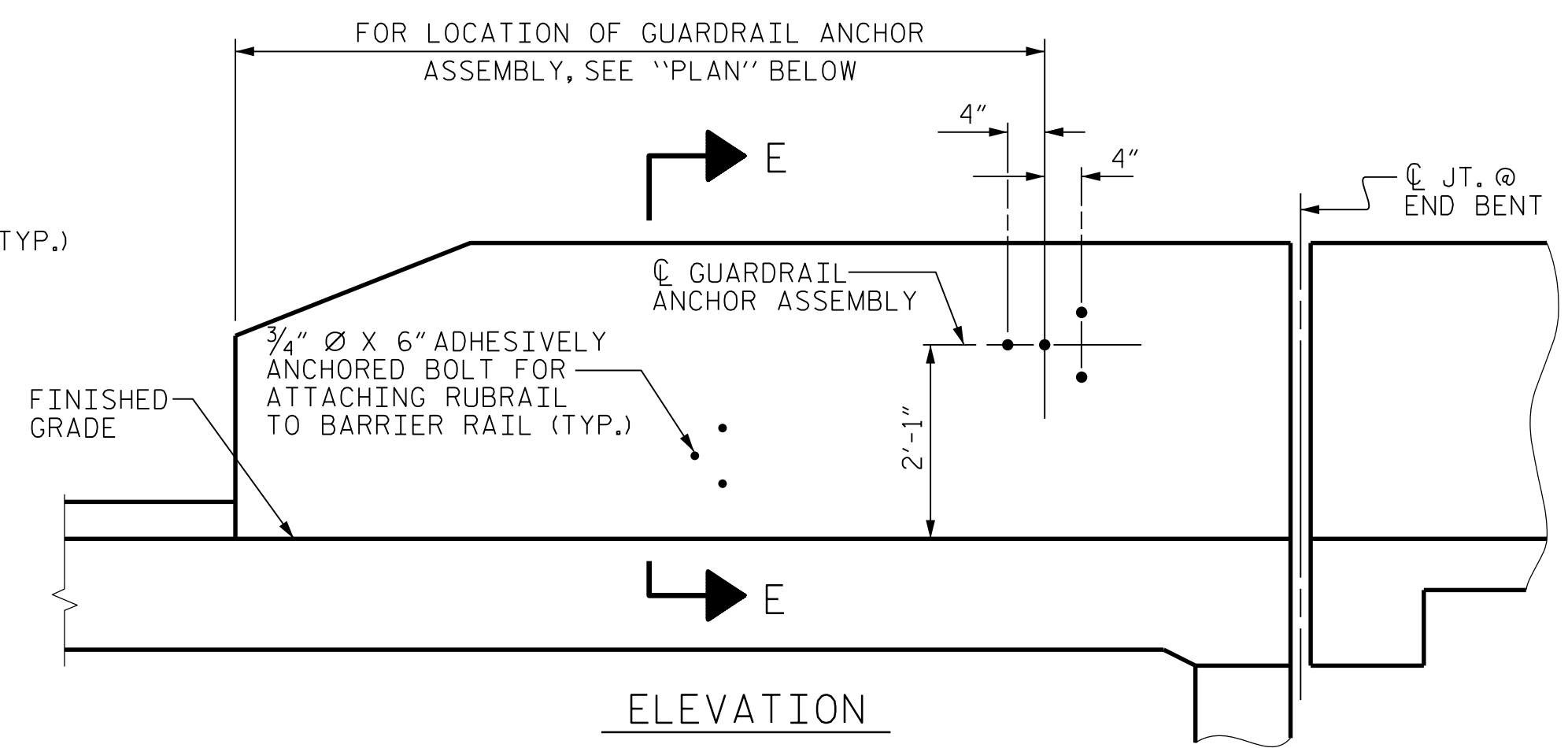
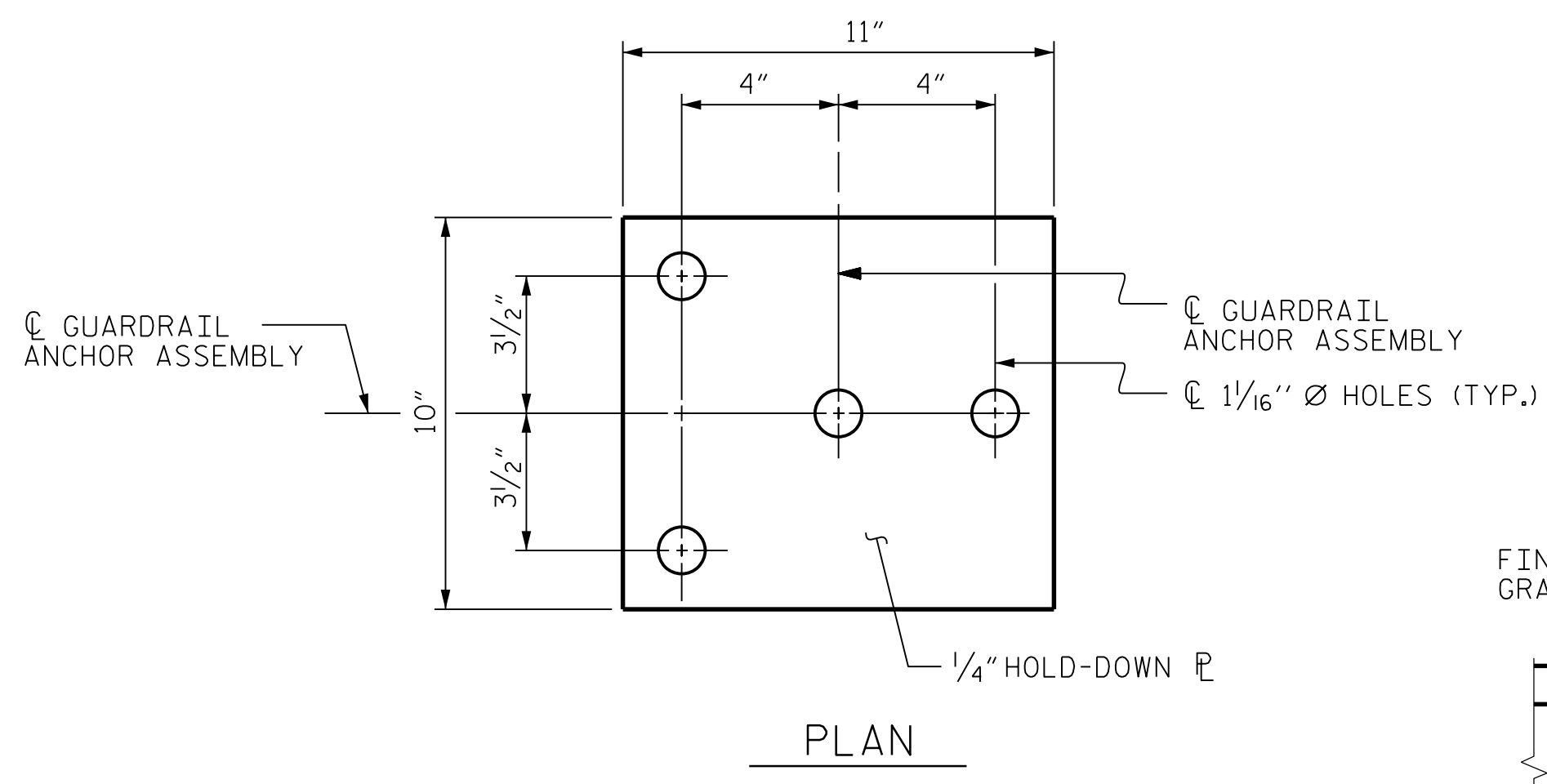
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

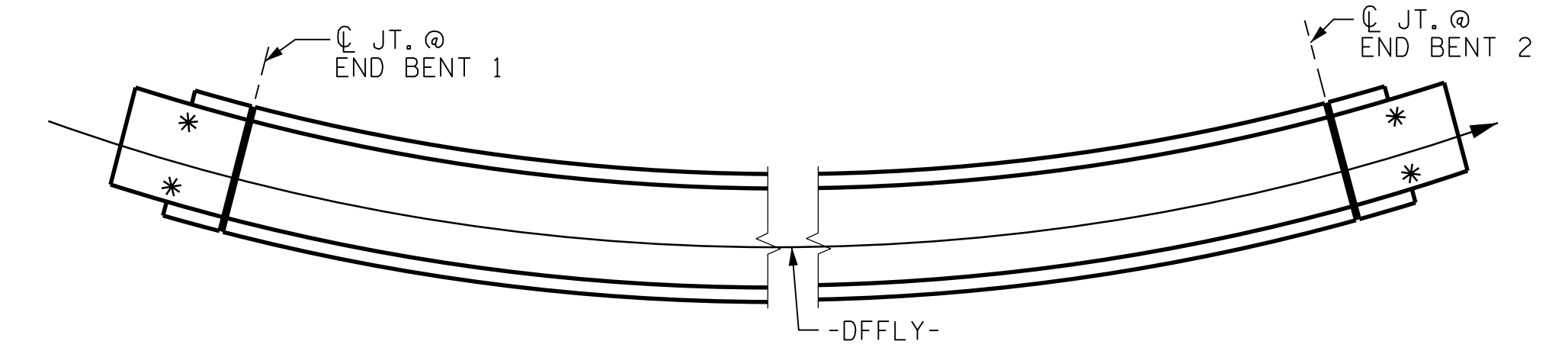
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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

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



LOCATION OF ANCHORS FOR GUARDRAIL
END BENT 1 SHOWN, END BENT 2 SIMILAR.



* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. U-2579AA
FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-

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

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

PARSONS
 5540 CenterView Drive, Suite 217
 Raleigh, NC 27606-3386
 NC LICENSE No. F-0246
 9/27/2021

REVISIONS						SHEET No. S5-52
No.	BY:	DATE:	No.	BY:	DATE:	
1			3			TOTAL SHEETS 84
2			4			

FILE: I:\U-2579AA (Structure Drawings)\U-2579aa_Site_5.dwg, p1.dgn
 DATE: 09/24/2021 3:38:00 PM

DRAWN BY : TLA 5/06
 CHECKED BY : GM 5/06
 REV. 7/12 MAA/GM
 REV. 6/13 MAA/GM
 REV. 12/17 MAA/THC

PLANS PREPARED BY :
PARSONS
 5540 CenterView Drive, Suite 217
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 FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

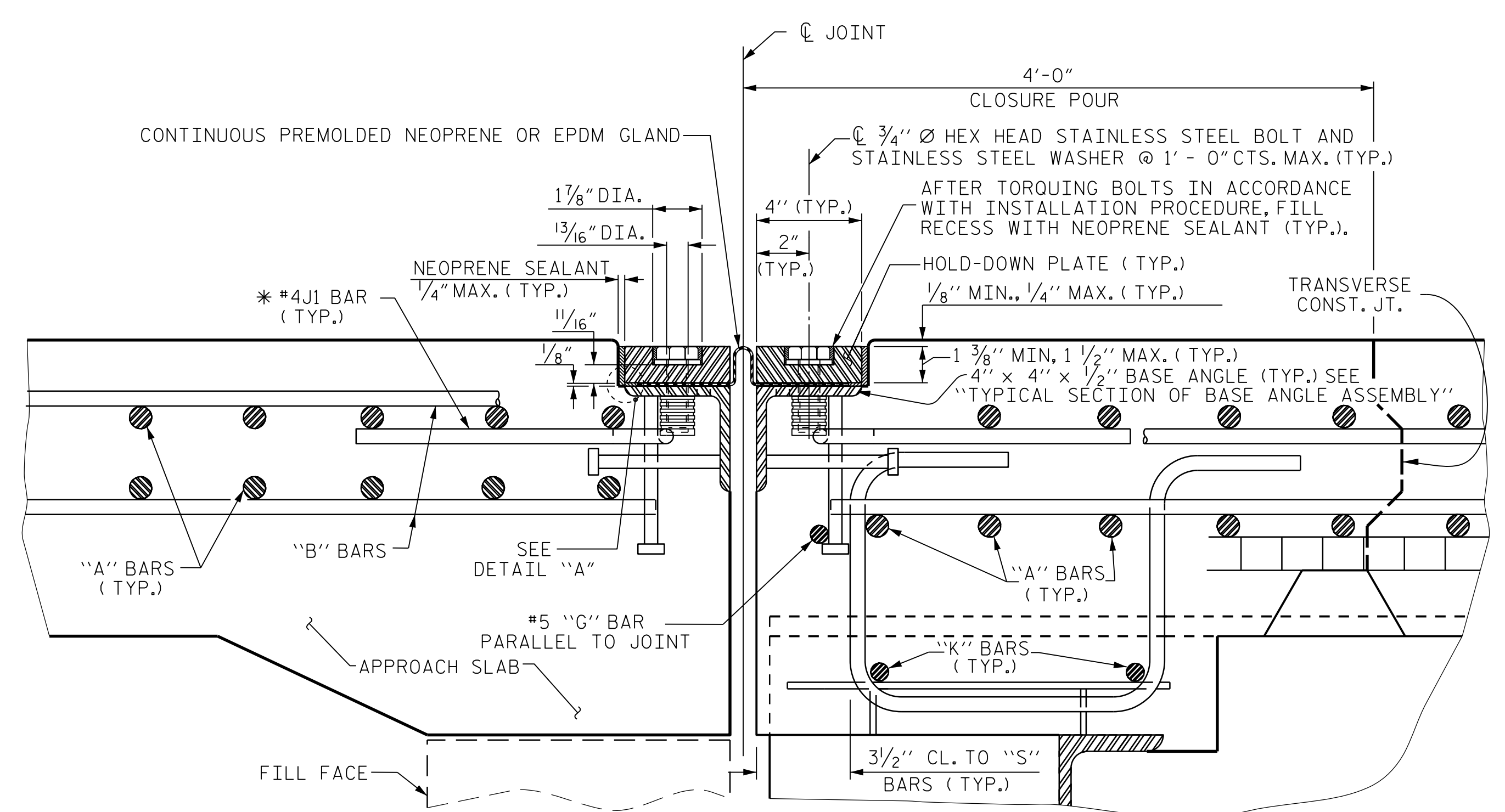
DRAWN BY : J. CAYETANO DATE : 9-21
 CHECKED BY : J. B. TAYLOR DATE : 9-21
 DESIGN ENGINEER : J. B. TAYLOR DATE : 9-21

INSTALLATION PROCEDURE

GENERAL NOTES

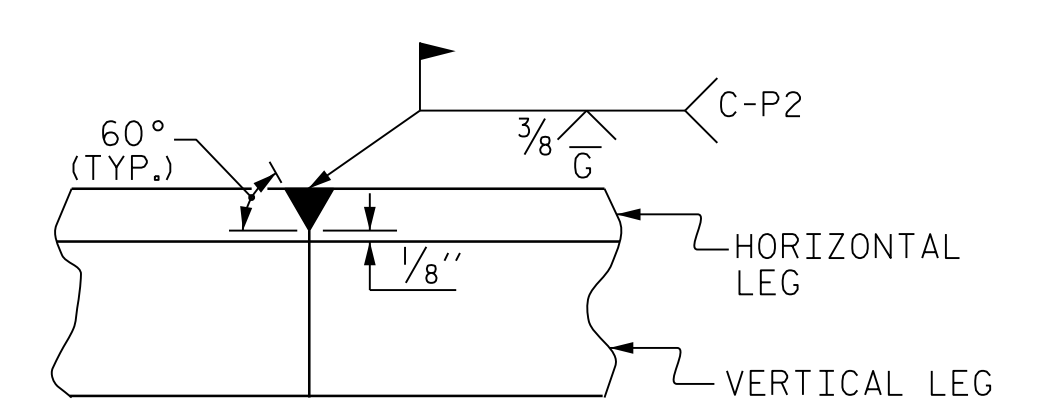
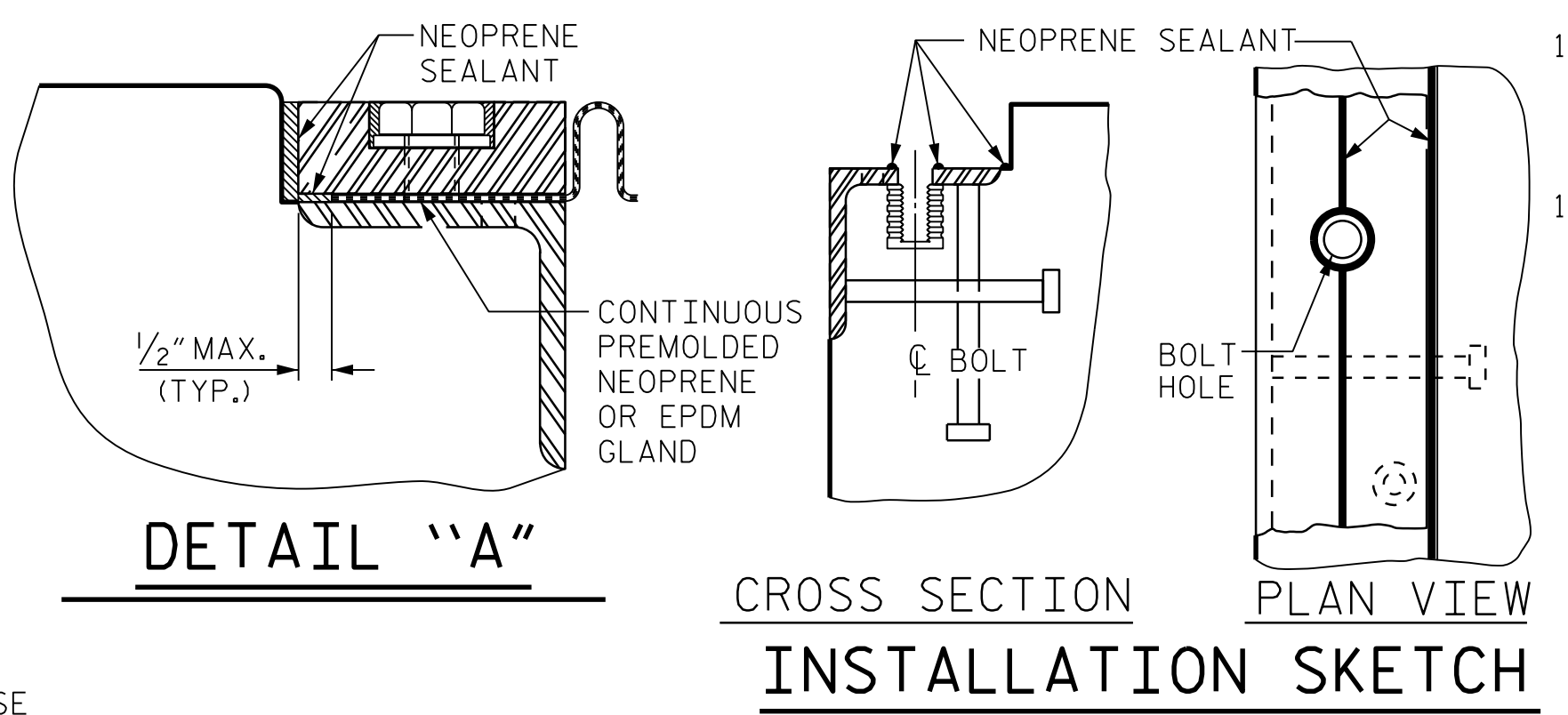
1. A TEMPLATE OR OTHER SUITABLE DEVICE SHALL BE USED TO FORM THE TOP OF THE EXPANSION JOINT SEAL BLOCKOUT TO THE PROPER DEPTH AND WIDTH. THE TEMPLATE SHALL BE 4/8" TO 4/4" WIDE AND OF SUCH THICKNESS AS TO PROVIDE FOR CORRECT FINAL ELEVATION OF TOP OF HOLD-DOWN PLATES. THE TEMPLATE SHALL BE ATTACHED TO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

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

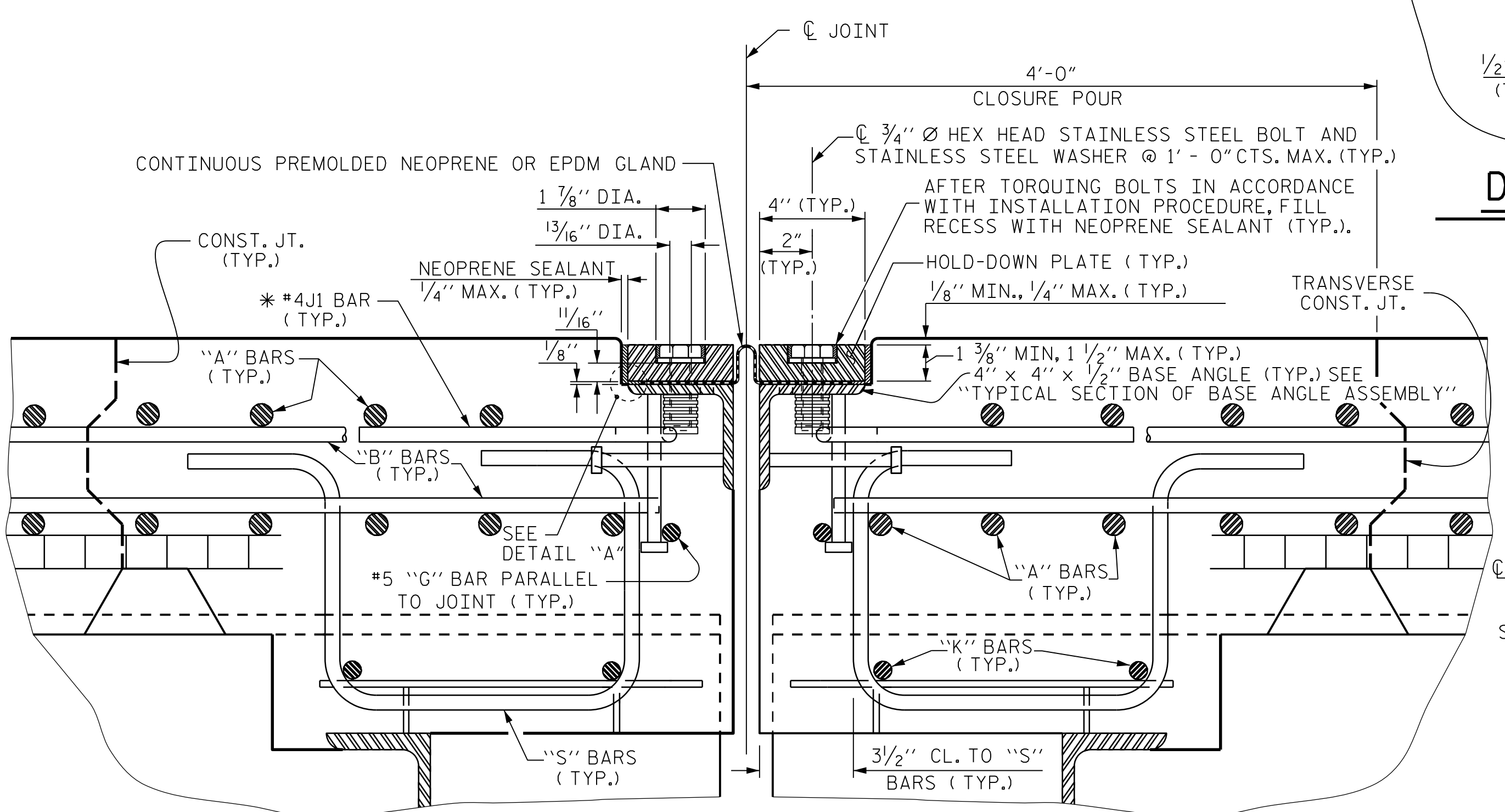


EXPANSION JOINT DETAILS - END BENTS

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



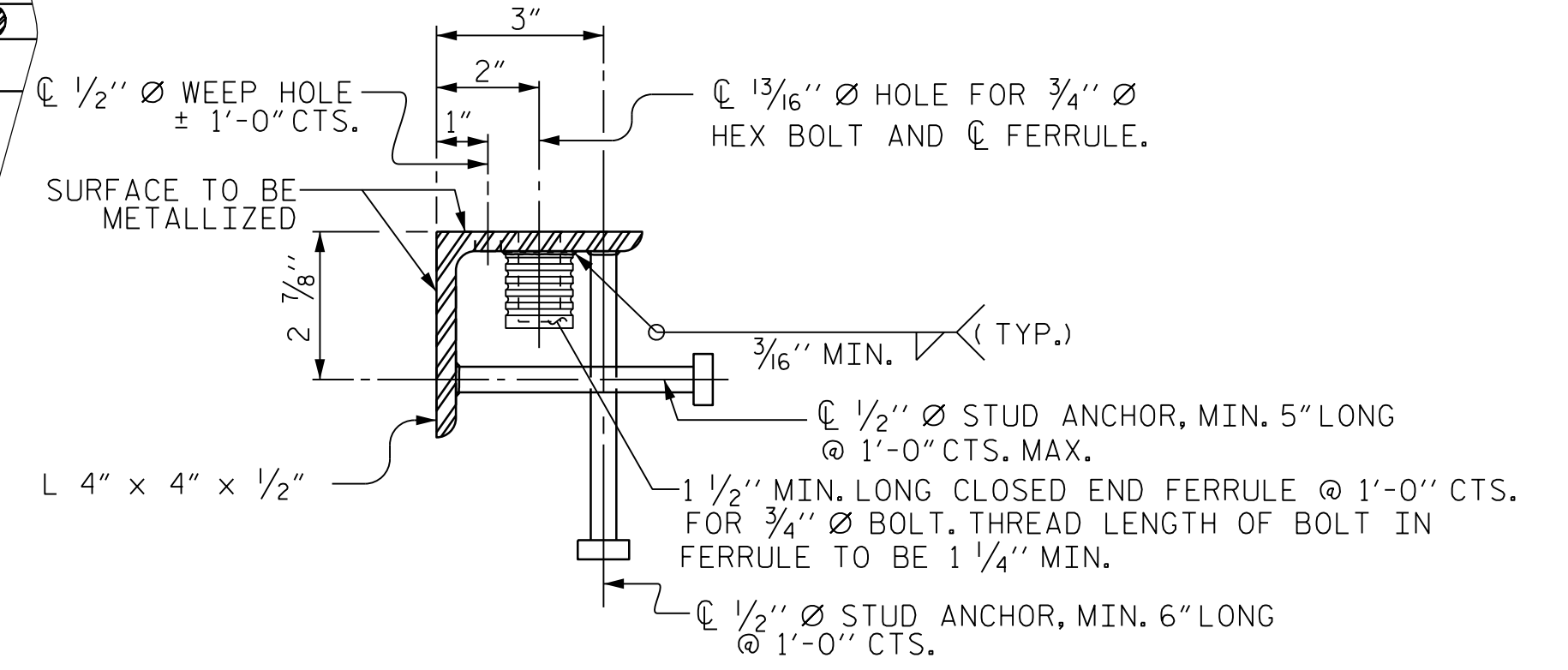
DETAIL - FIELD WELD SPLICE OF BASE ANGLE



EXPANSION JOINT DETAILS - BENT 2

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

MOVEMENT AND SETTING AT JOINT					
LOCATION	SKEW ANGLE	TOTAL MOVEMENT (ALONG C RDWY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
END BENT 1	90°00'00"	2 7/8"	2 7/8"	2 7/16"	1 9/16"
BENT 2	90°00'00"	2 15/16"	2 7/8"	2 7/16"	1 9/16"
END BENT 2	90°00'00"	1 1/8"	1 3/4"	1 9/16"	1 1/4"



TYPICAL SECTION OF BASE ANGLE ASSEMBLY

FILE: J:\U-2579AA\Drawings\Drawings\U-2579AA_She_5.dwg, 3/28/08 10:41 AM
 DATE: 09/21/2011

ASSEMBLED BY :	J. CAYETANO	DATE :	09/21
CHECKED BY :	J. B. TAYLOR	DATE :	09/21
DRAWN BY :	REK 9/8/7	REV. 10/1/11	MAA/GM
CHECKED BY :	CRK 10/8/7	REV. 10/17	MAA/THC
		REV. 6/18	MAA/THC

DRAWN BY :	J. CAYETANO	DATE :	9-21
CHECKED BY :	J. B. TAYLOR	DATE :	9-21
DESIGN ENGINEER :	J. B. TAYLOR	DATE :	9-21

PLANS PREPARED BY :
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 5540 Centerview Drive, Suite 217
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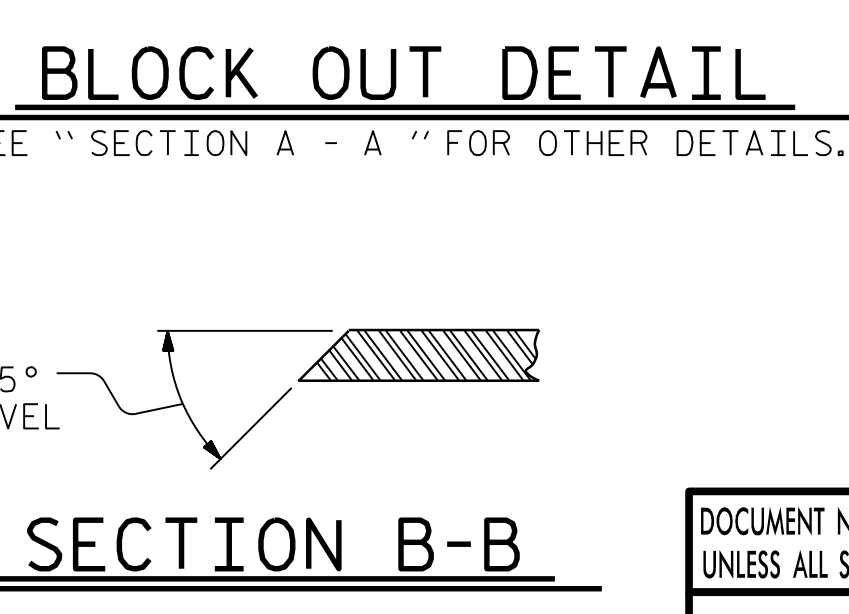
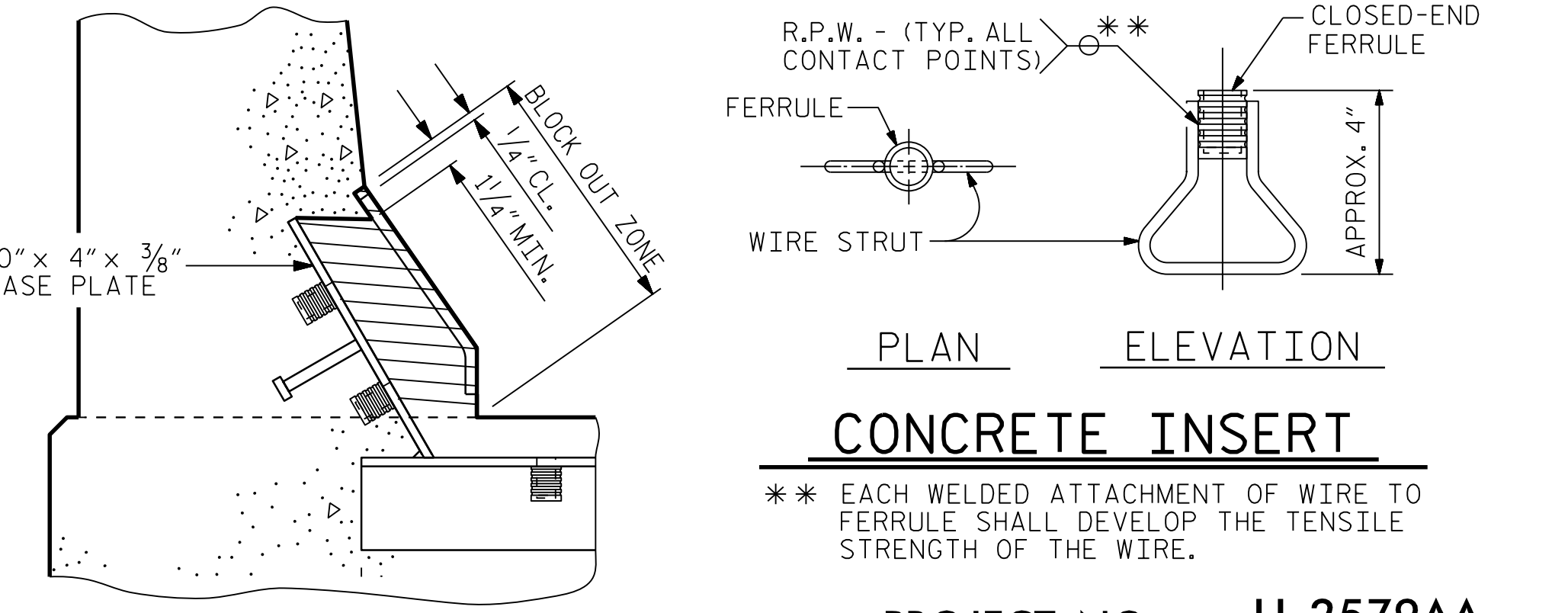
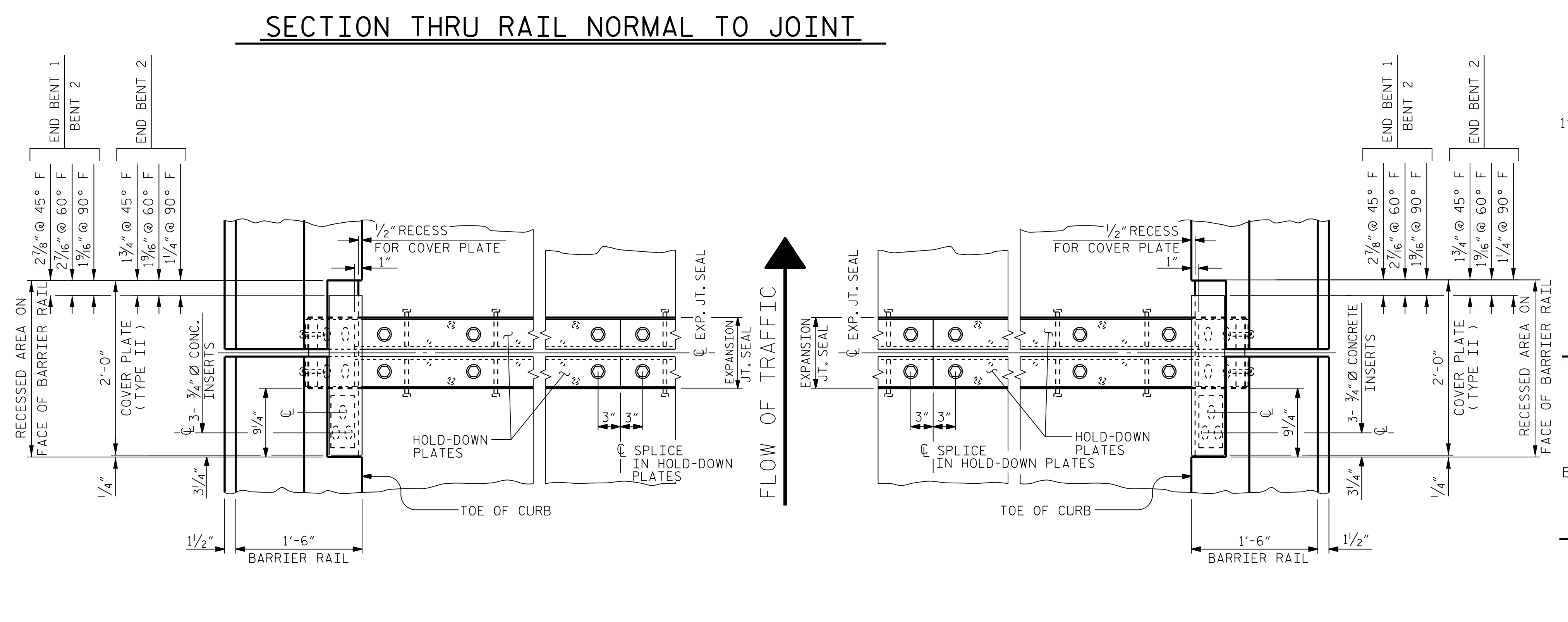
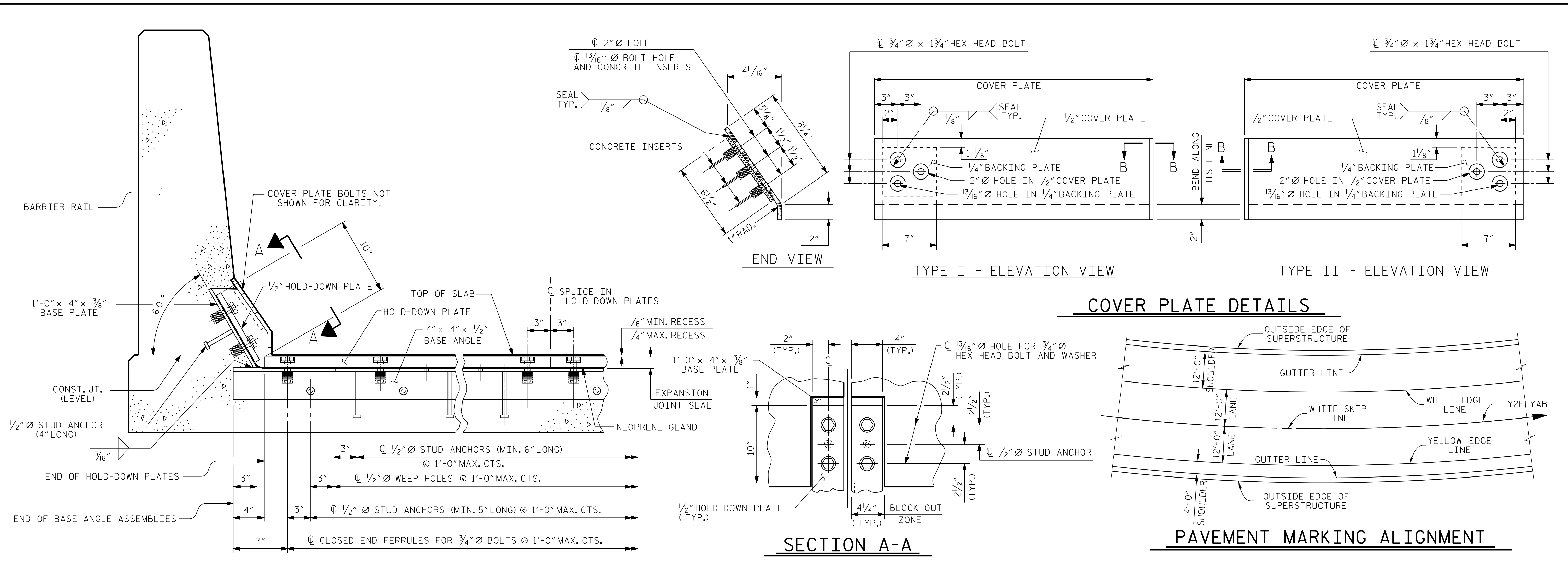
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. **U-2579AA**
FORSYTH COUNTY
 STATION: **28 + 33.21 -Y2FLYAB-**
41 + 07.80 -L-

SHEET 1 OF 2

REVISIONS						SHEET No. S5-53
No.	BY:	DATE:	No.	BY:	DATE:	
1			3			TOTAL SHEETS 84
2			4			

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
STANDARD
EXPANSION JOINT SEAL DETAILS



PROJECT NO. **U-2579AA**
FORSYTH COUNTY
 STATION: **28 + 33.21 -Y2FLYAB-**
41 + 07.80 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
EXPANSION JOINT SEAL DETAILS FOR BARRIER RAIL					
REVISIONS					
No.	BY:	DATE:	No.	BY:	DATE:
1			3		
2			4		
SHEET No. S5-54					TOTAL SHEETS 84

ASSEMBLED BY : J. CAYETANO DATE : 9/21
 CHECKED BY : J. B. TAYLOR DATE : 9/21
 DRAWN BY : REK 9/8/17 REV. 7/12 MAA/GM
 CHECKED BY : CRK 10/8/17 REV. 6/13 MAA/GM
 DATE : 9/21/2021 REV. 12/17 MAA/THC

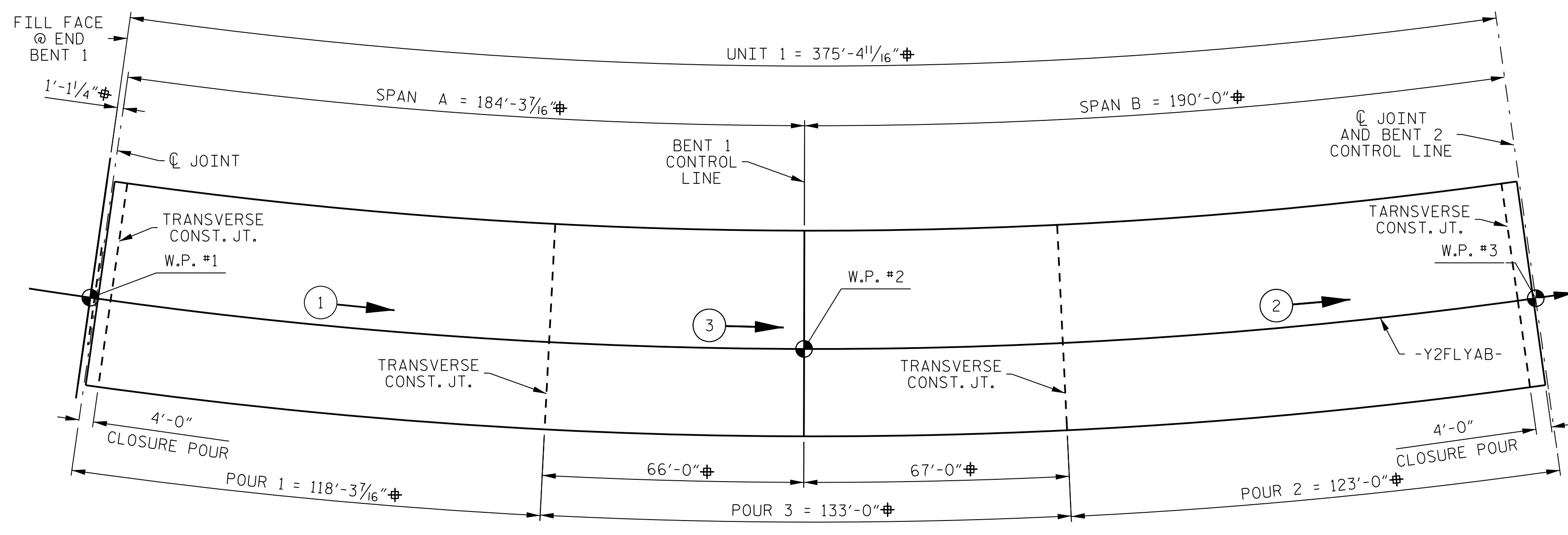
DRAWN BY : J. CAYETANO DATE : 9-21
 CHECKED BY : J. B. TAYLOR DATE : 9-21
 DESIGN ENGINEER : J. B. TAYLOR DATE : 9-21

PLANS PREPARED BY :
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 5540 CenterView Drive, Suite 217
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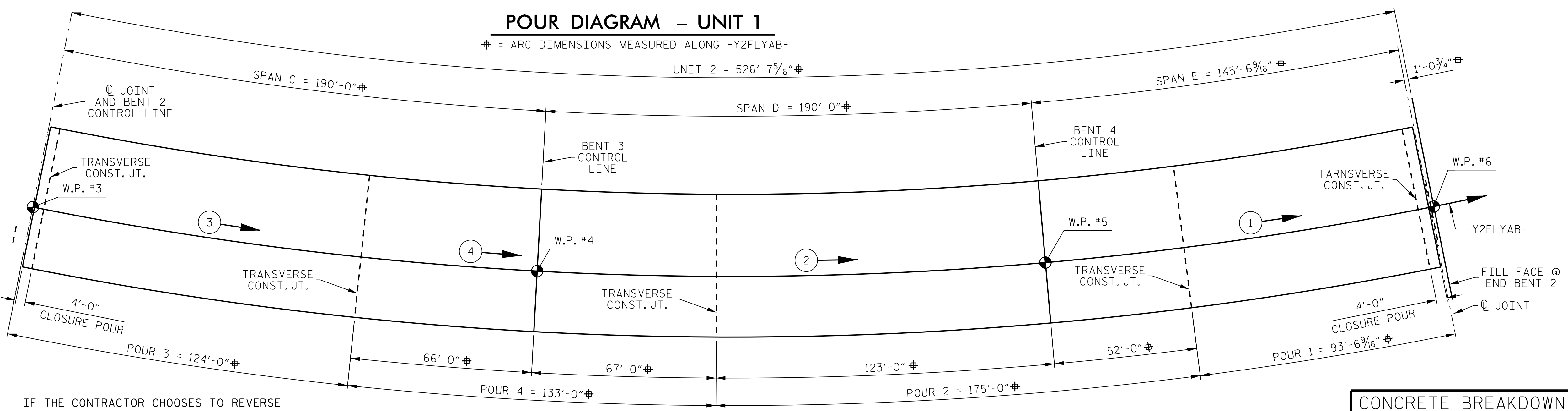
**NORTH CAROLINA
 PROFESSIONAL
 SEAL
 033698
 J. B. TAYLOR
 ENGINEER
 9/27/2021**

IF THE CONTRACTOR CHOOSES TO REVERSE THE DIRECTION OF UNIT 1 POUR #2, A CONSTRUCTION JOINT WILL BE REQUIRED 4'-0" FROM THE JOINT SEAL.



POUR DIAGRAM - UNIT 1

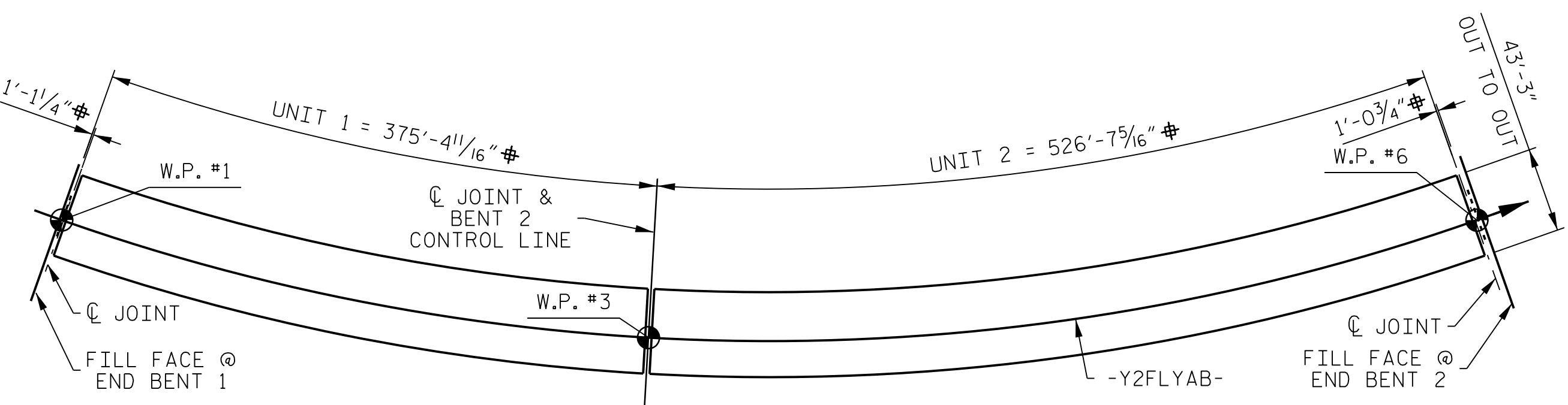
= ARC DIMENSIONS MEASURED ALONG -Y2FLYAB-



POUR DIAGRAM - UNIT 2

= ARC DIMENSIONS MEASURED ALONG -Y2FLYAB-

IF THE CONTRACTOR CHOOSES TO REVERSE THE DIRECTION OF UNIT 2 POUR #1, A CONSTRUCTION JOINT WILL BE REQUIRED 4'-0" FROM THE JOINT SEAL.



BILL OF MATERIAL
 DECK & DIAPHRAGM - UNIT 1

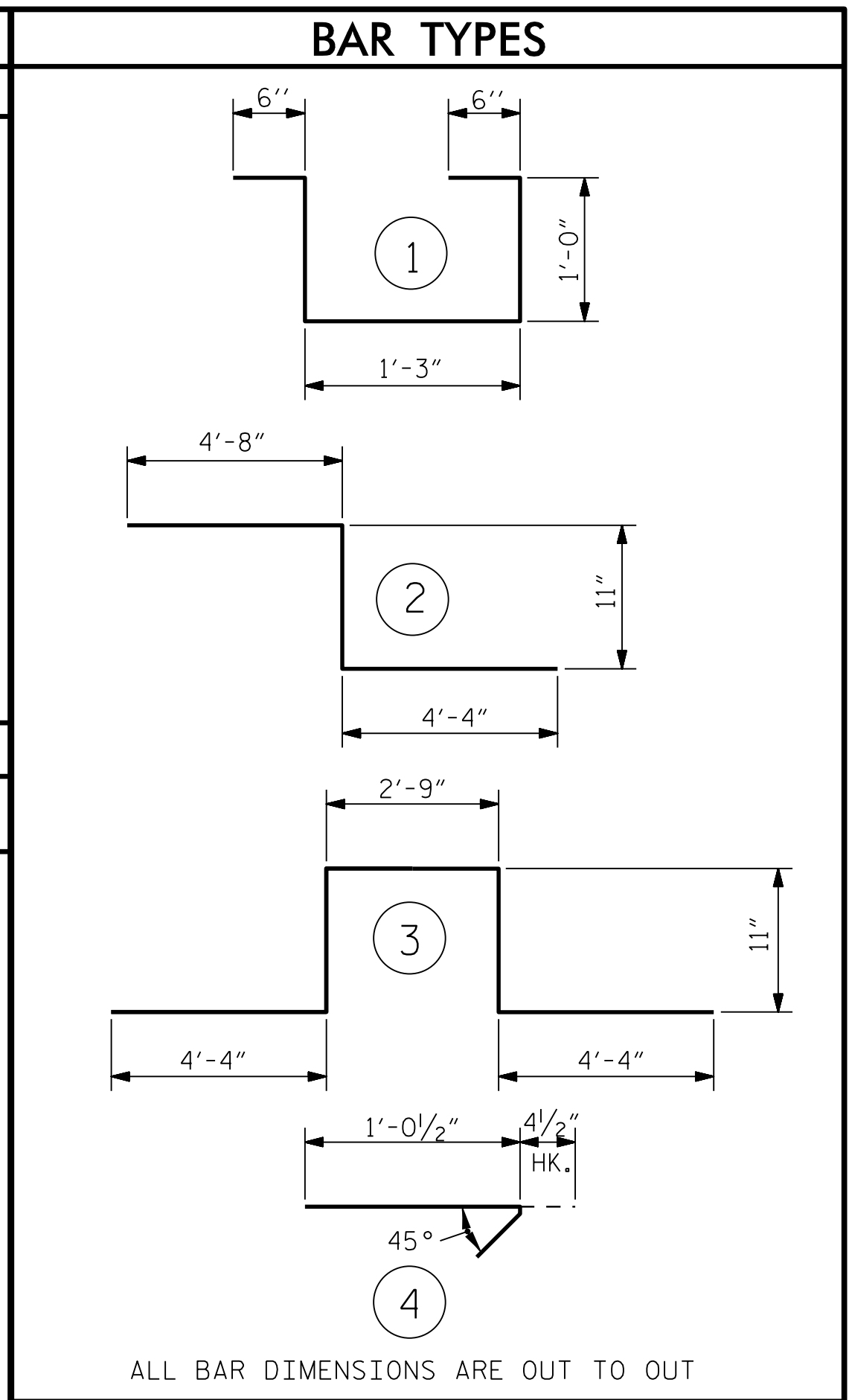
BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
* A1	757	#5	STR	42'-11"	33,885
A2	757	#5	STR	42'-11"	33,885
B1	378	#5	STR	55'-10"	22,013
* B2	120	#4	STR	33'-4"	2,672
* B3	90	#6	STR	44'-5"	6,005
* B4	58	#6	STR	57'-0"	4,966
* B5	120	#4	STR	34'-4"	2,752
* G1	2	#5	STR	42'-11"	90
* J1	41	#4	4	1'-5"	39
* K1	8	#5	2	9'-11"	83
* K2	12	#5	3	13'-3"	166
* S1	64	#4	1	4'-3"	182

BILL OF MATERIAL
 DECK & DIAPHRAGM - UNIT 2

BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
* A1	1079	#5	STR	42'-11"	48,296
A2	1079	#5	STR	42'-11"	48,296
B6	540	#5	STR	55'-0"	30,977
* B7	120	#4	STR	34'-4"	2,752
* B8	90	#6	STR	45'-0"	6,084
* B9	58	#6	STR	57'-10"	5,039
* B10	60	#4	STR	36'-5"	1,460
* B11	90	#6	STR	40'-6"	5,475
* B12	58	#6	STR	51'-1"	4,451
* B13	90	#4	STR	34'-7"	2,079
* G1	2	#5	STR	42'-11"	90
* J1	41	#4	4	1'-5"	39
* K1	8	#5	2	9'-11"	83
* K2	12	#5	3	13'-3"	166
* S1	64	#4	1	4'-3"	182

REINFORCING STEEL LBS. 55,898
 EPOXY COATED REINFORCING STEEL LBS. 50,840

REINFORCING STEEL LBS. 79,275
 EPOXY COATED REINFORCING STEEL LBS. 76,196



SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE (CU.YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
UNIT 1	514.9	55,898	50,840
UNIT 2	723.1	79,275	76,196
TOTALS**	1238.0	135,173	127,036

* DENOTES EPOXY COATED REINFORCING STEEL.
 ** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED.
 PERFORM BRIDGE DECK GROOVING IN ACCORDANCE WITH STANDARD SPECIFICATIONS ITEM 420-14
 CLOSURE POUR MAY BE MADE ANYTIME AFTER ADJACENT POUR HAS REACHED 3000 PSI.

CONCRETE BREAKDOWN

POUR	UNIT 1	UNIT 2
1	162.7	128.7
2	169.2	240.8
3	183.0	170.6
4	-	183.0
TOTAL	514.9	723.1

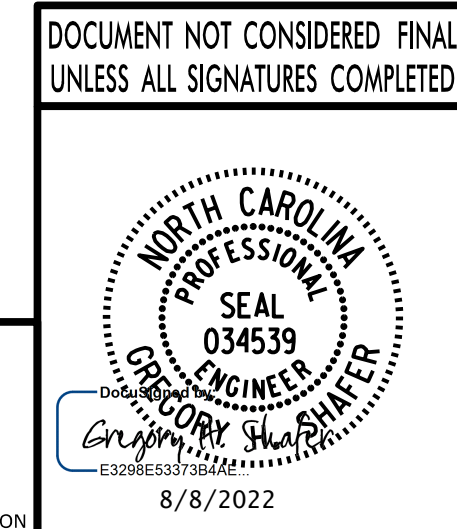
GROOVING BRIDGE FLOORS

	SO.FT.
APPROACH SLABS	1,746
BRIDGE DECK	33,105
TOTAL	34,851

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-

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

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPETS, AND BARRIER RAILS		APPROACH SLABS		PARAPETS AND BARRIER RAILS
	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"			



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 8/8/2022

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 CHECKED BY: J. B. TAYLOR DATE: 9-21
 DESIGN ENGINEER: J. B. TAYLOR DATE: 9-21

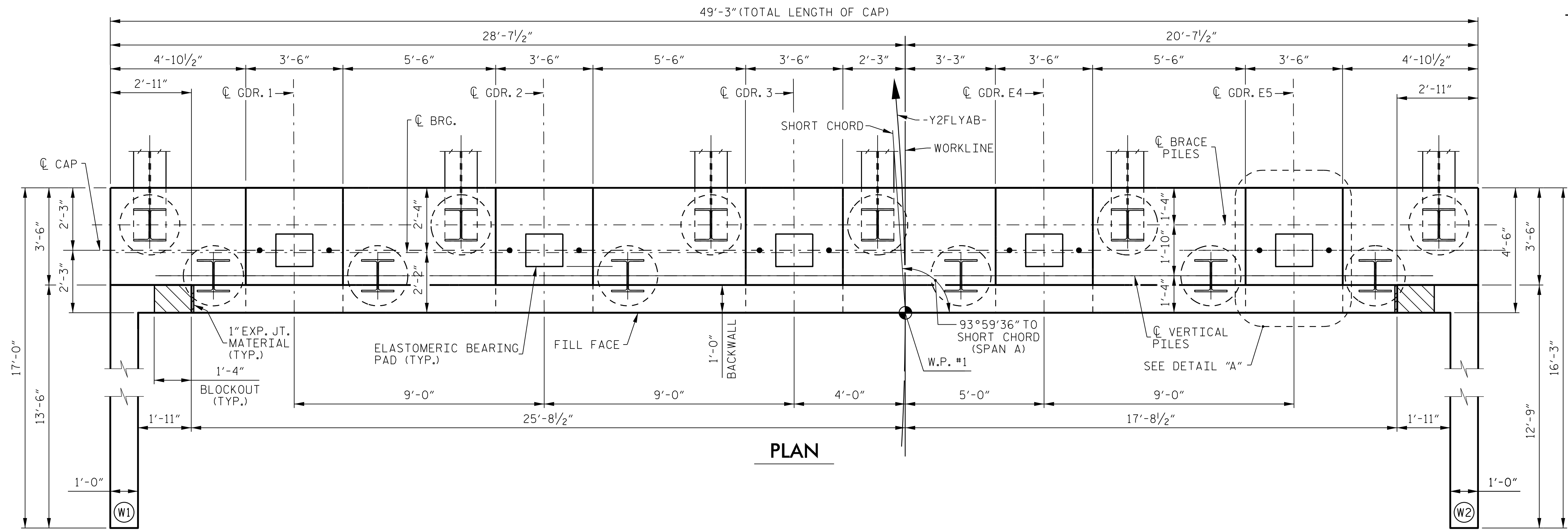
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE

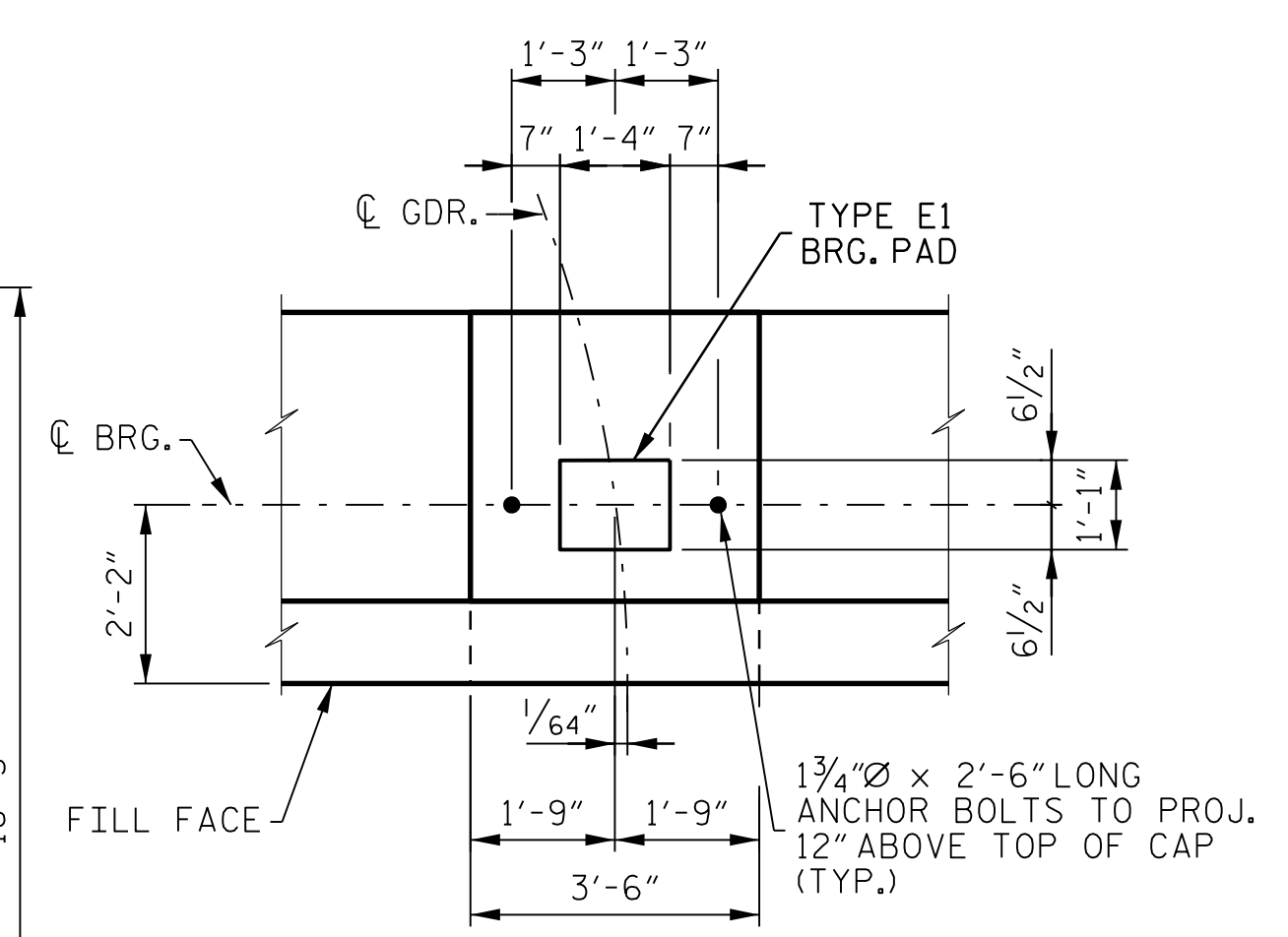
BILL OF MATERIALS

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	TOTAL SHEETS
1			3			84
2			4			

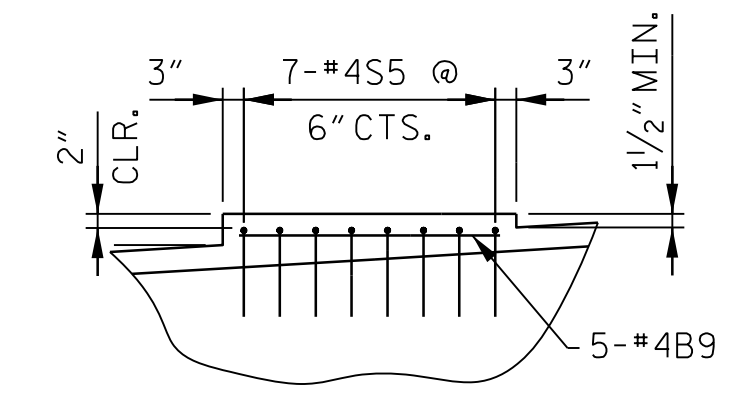
NOTES
 FOR SECTIONS A-A & B-B, SEE SHEET 3 OF 3.
 FOR ADDITIONAL NOTES, SEE SHEET 3 OF 3.



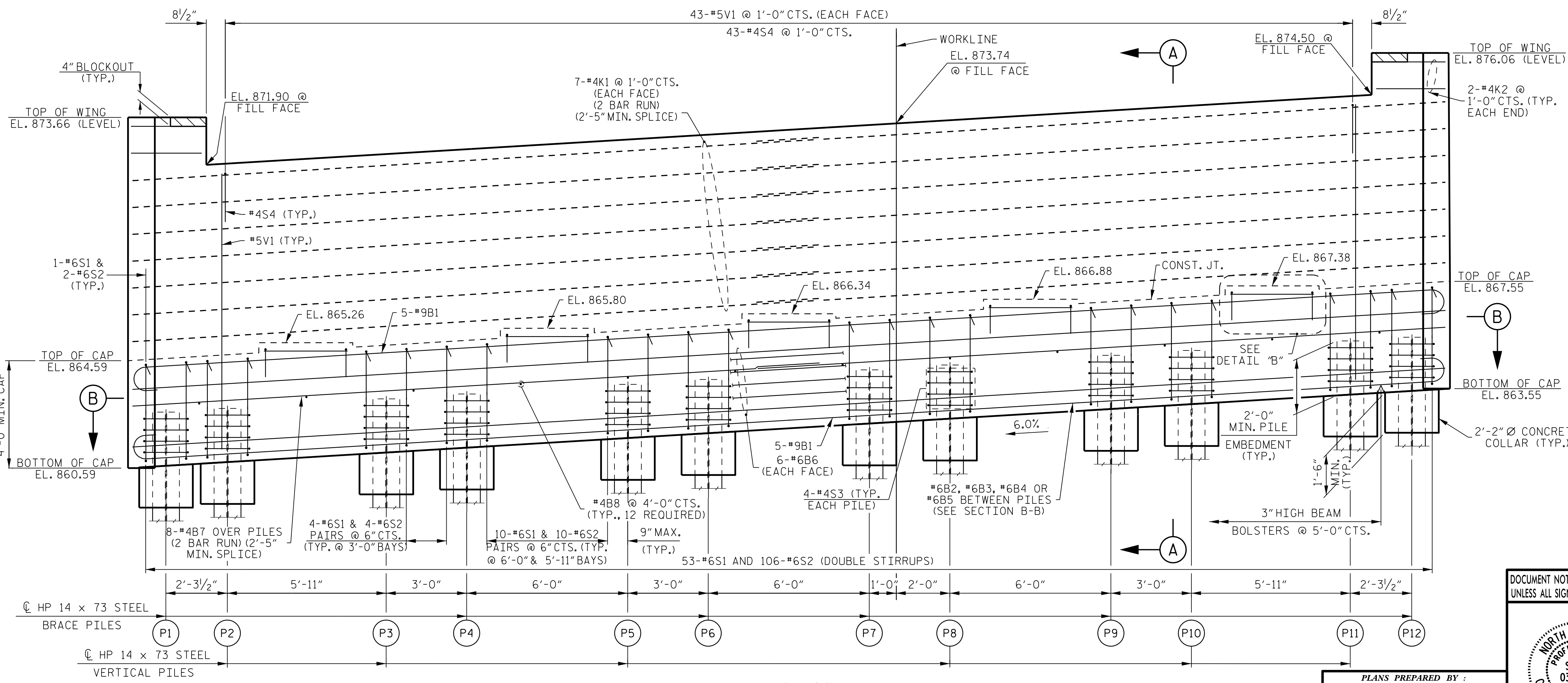
PLAN



DETAIL "A"



DETAIL "B"



ELEVATION

PILE	TOP OF PILE ELEVATION
P1	862.68
P2	862.81
P3	863.17
P4	863.35
P5	863.75
P6	863.89
P7	864.25
P8	864.43
P9	864.79
P10	864.97
P11	865.33
P12	865.46

PROJECT NO. **U-2579AA**
 FORSYTH COUNTY
 STATION: **28 + 33.21 -Y2FLYAB-41 + 07.80 -L-**
 SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1
 PLAN AND ELEVATION

DOCUMENT NOT CONSIDERED FINAL
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NORTH CAROLINA
 PROFESSIONAL ENGINEER
 SEAL 034539
 CHANDLER H. SWINER

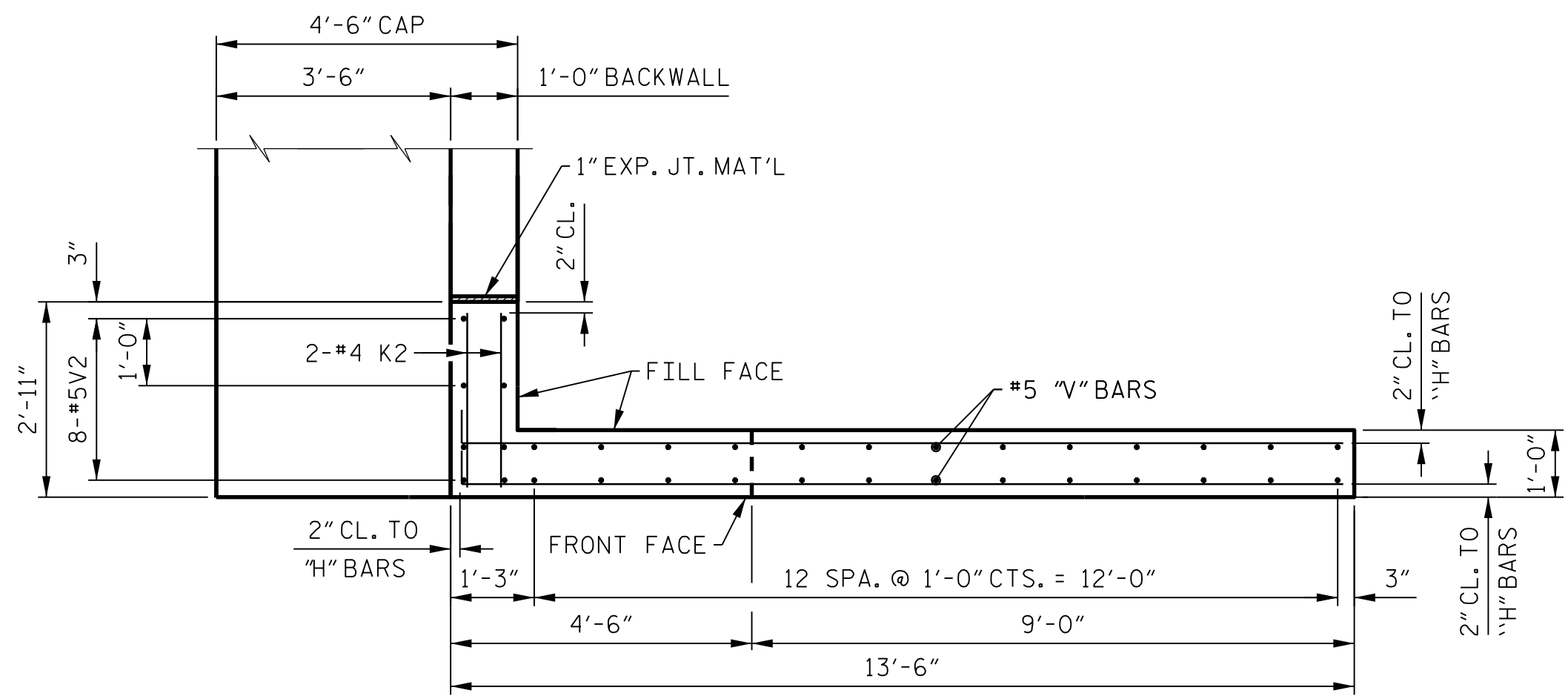
9/29/2022

DRAWN BY: J. CAYETANO DATE: 9-21
 CHECKED BY: J. B. TAYLOR DATE: 9-21
 DESIGN ENGINEER: J. B. TAYLOR DATE: 9-21

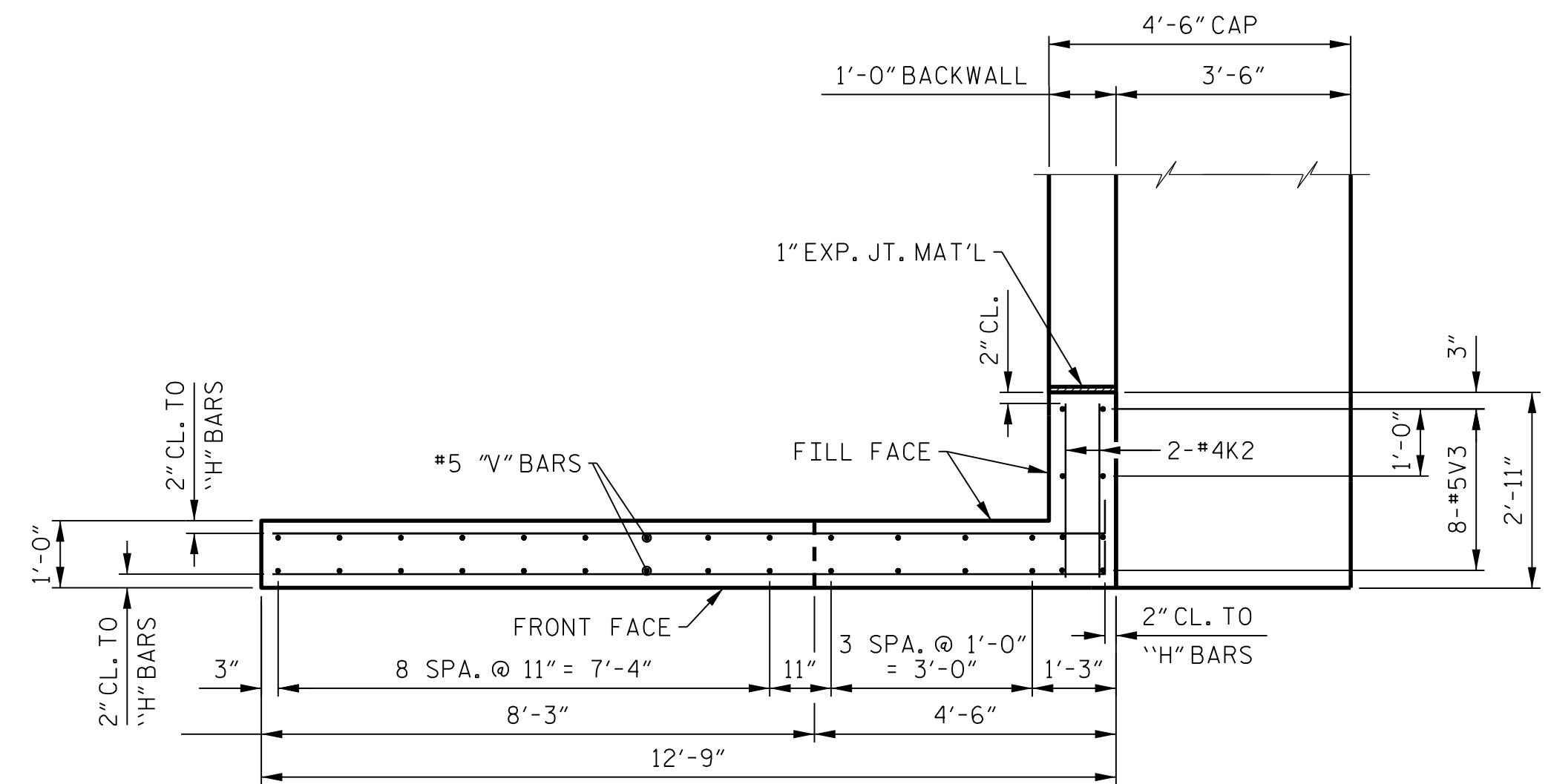
PLANS PREPARED BY:
PARSONS
 5540 CenterView Drive, Suite 217
 Raleigh, NC 27606-3386
 NC LICENSE NO. F-0246

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S5-56
1			3			TOTAL SHEETS
2			4			84

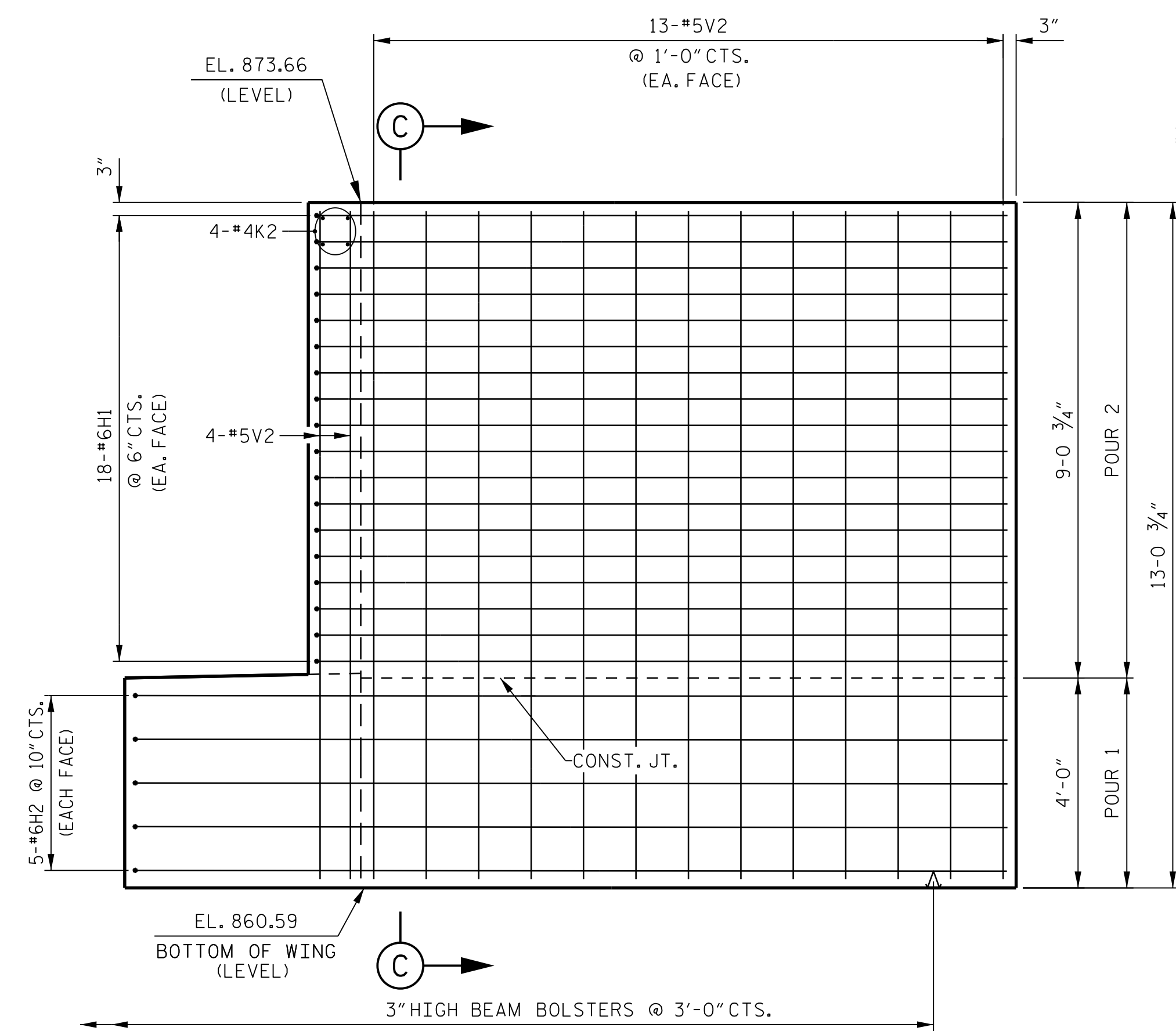
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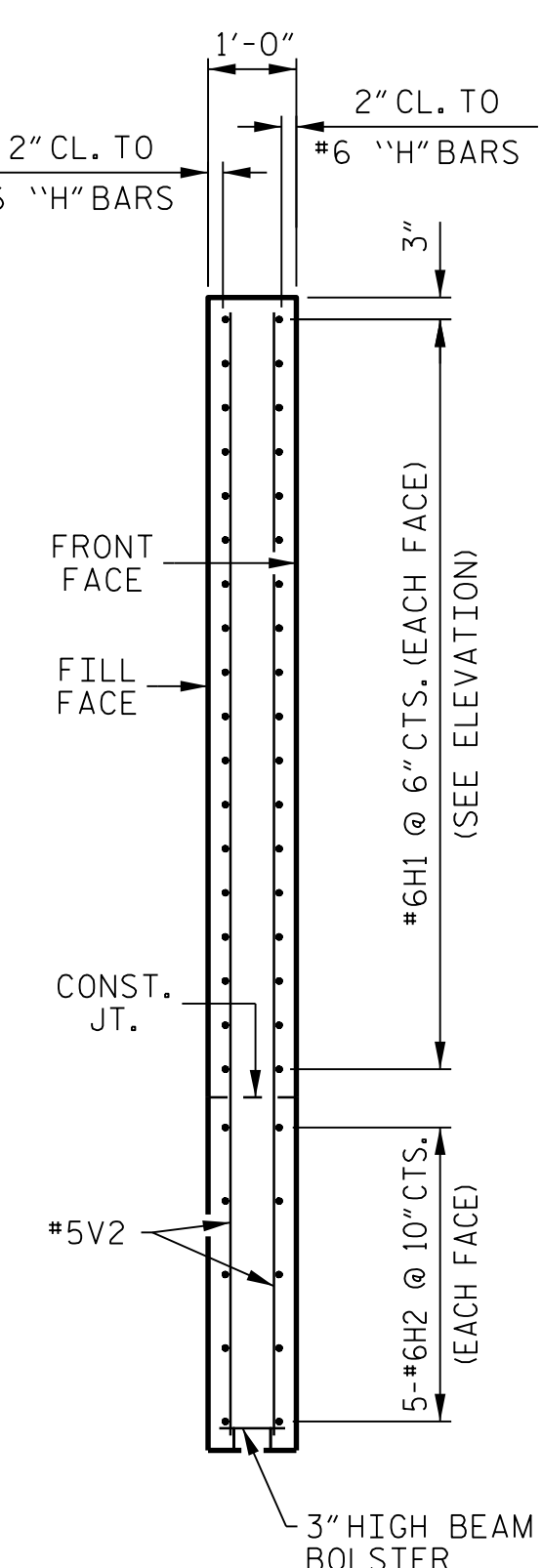
PLAN OF WING W1



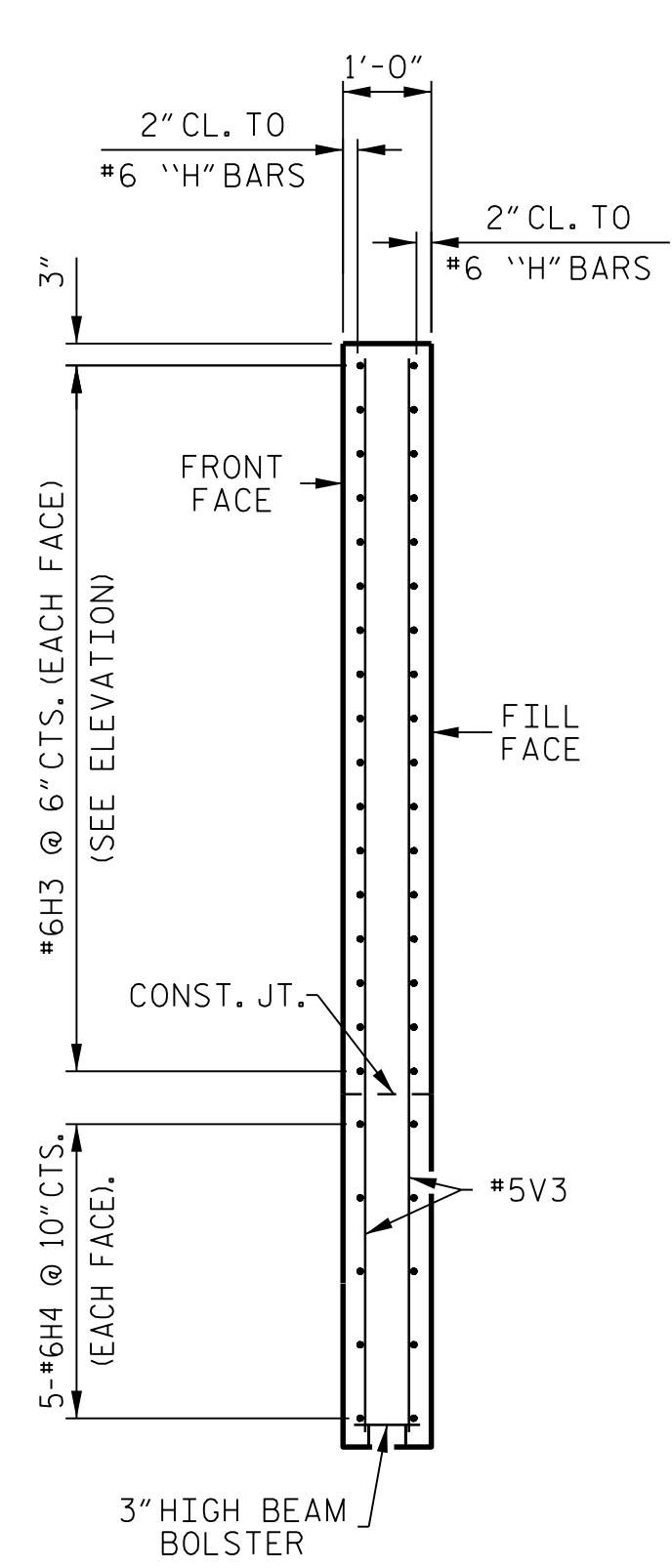
PLAN OF WING W2



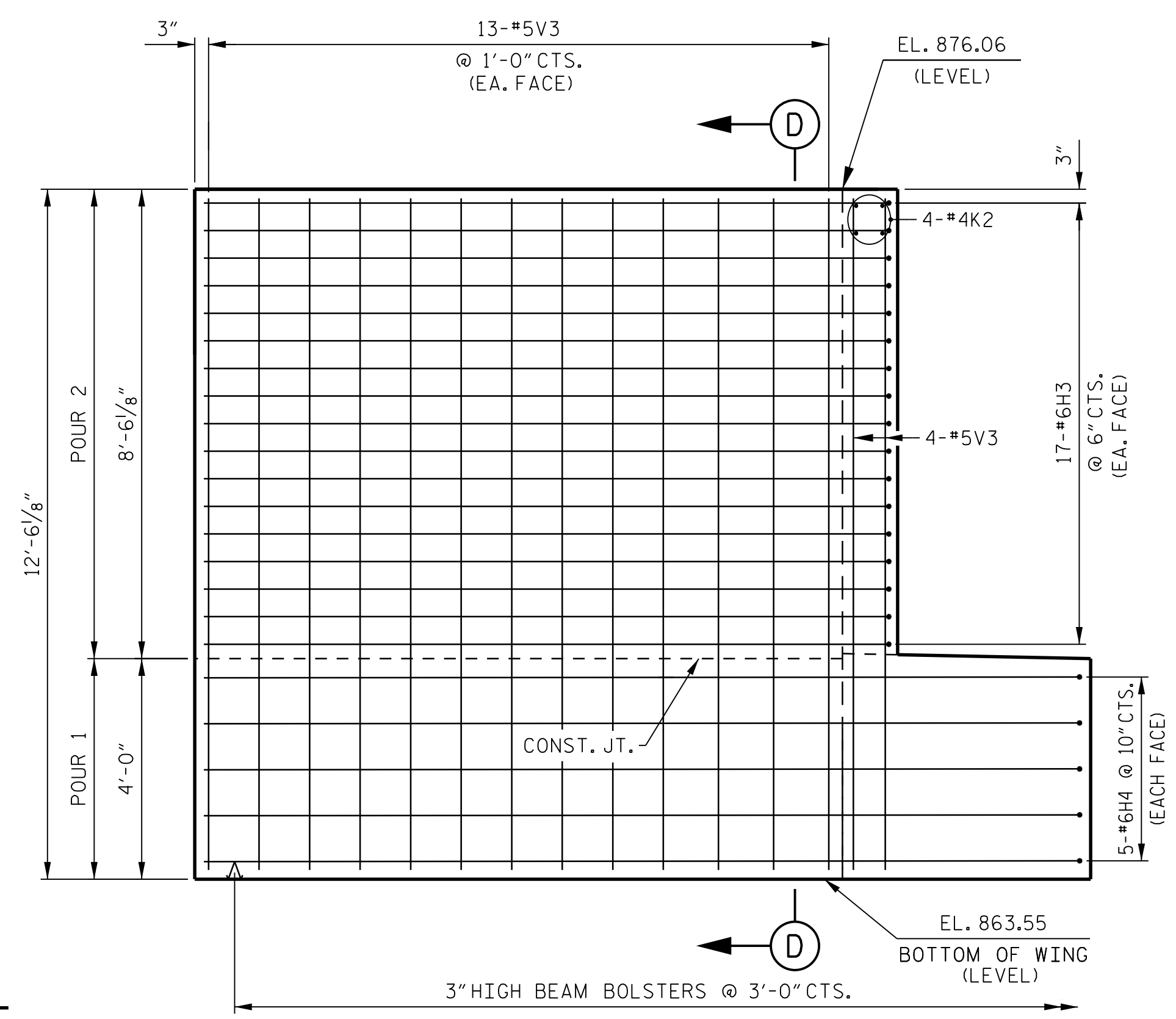
ELEVATION OF WING W1



SECTION C-C



SECTION D-D

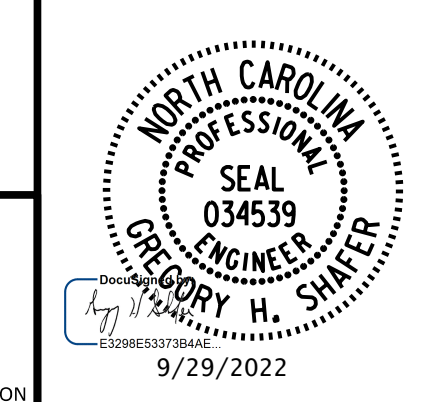


ELEVATION OF WING W2

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-
 SHEET 2 OF 3

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

DOCUMENT NOT CONSIDERED FINAL
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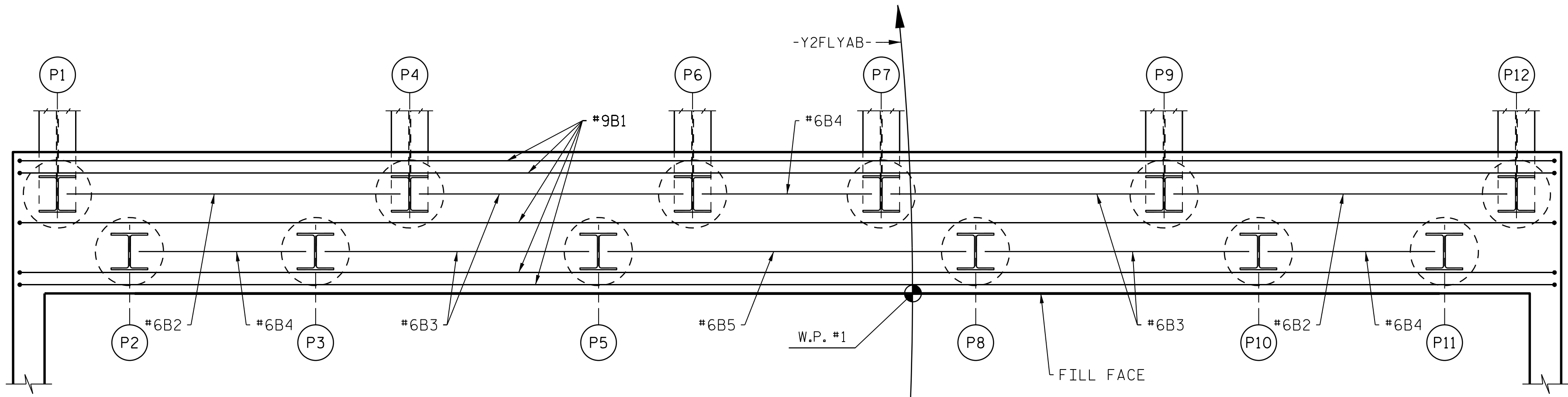


PLANS PREPARED BY:
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 5540 CenterView Drive, Suite 217
 Raleigh, NC 27606-3386
 NC LICENSE No. F-0246
 9/29/2022

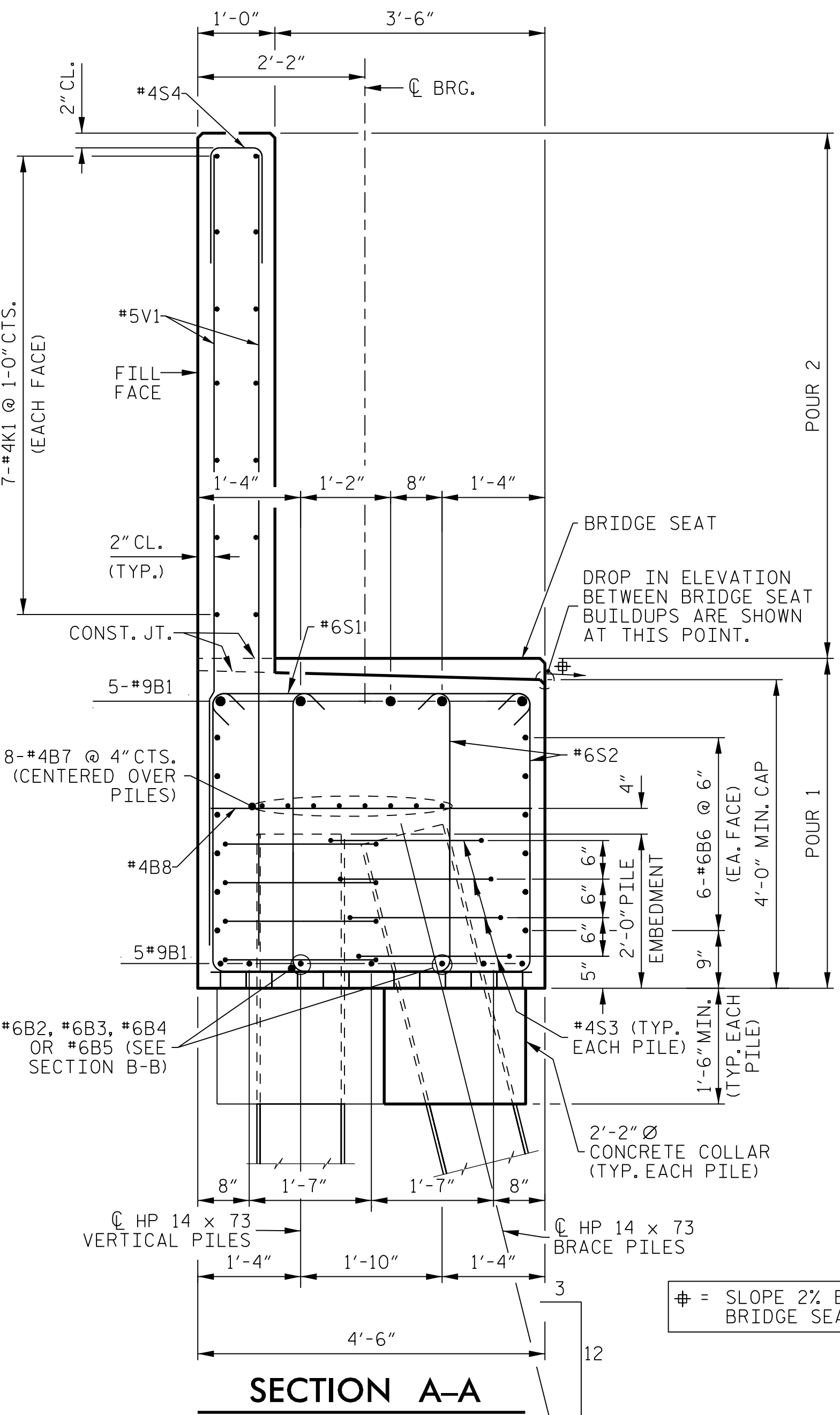
DRAWN BY: J. CAYETANO DATE: 9-21
 CHECKED BY: J. B. TAYLOR DATE: 9-21
 DESIGN ENGINEER: J. B. TAYLOR DATE: 9-21

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	TOTAL SHEETS
1			3			84
2			4			

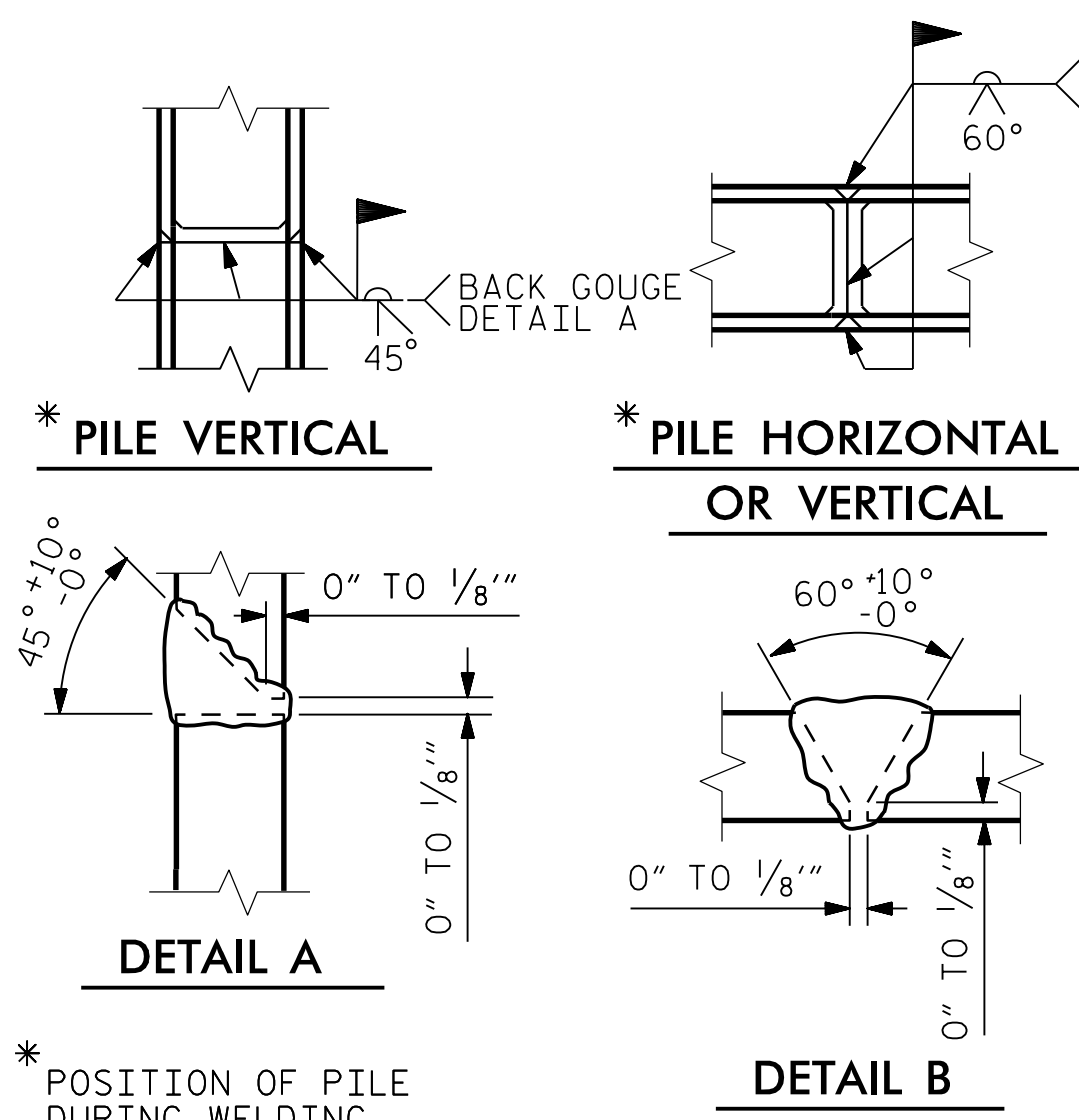
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SECTION B-B



SECTION A-A



PILE SPICE DETAILS

NOTES

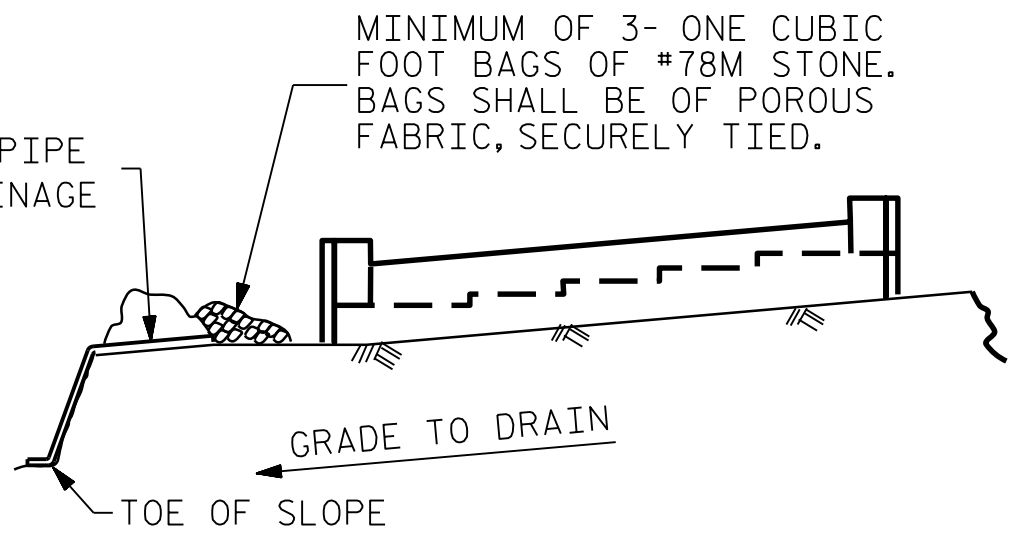
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILD-UPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE FRONT FACE AT THE RATE OF 2%.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL (PARAPET AND END POST) ARE CAST IF SLIP FORMING IS USED.



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.

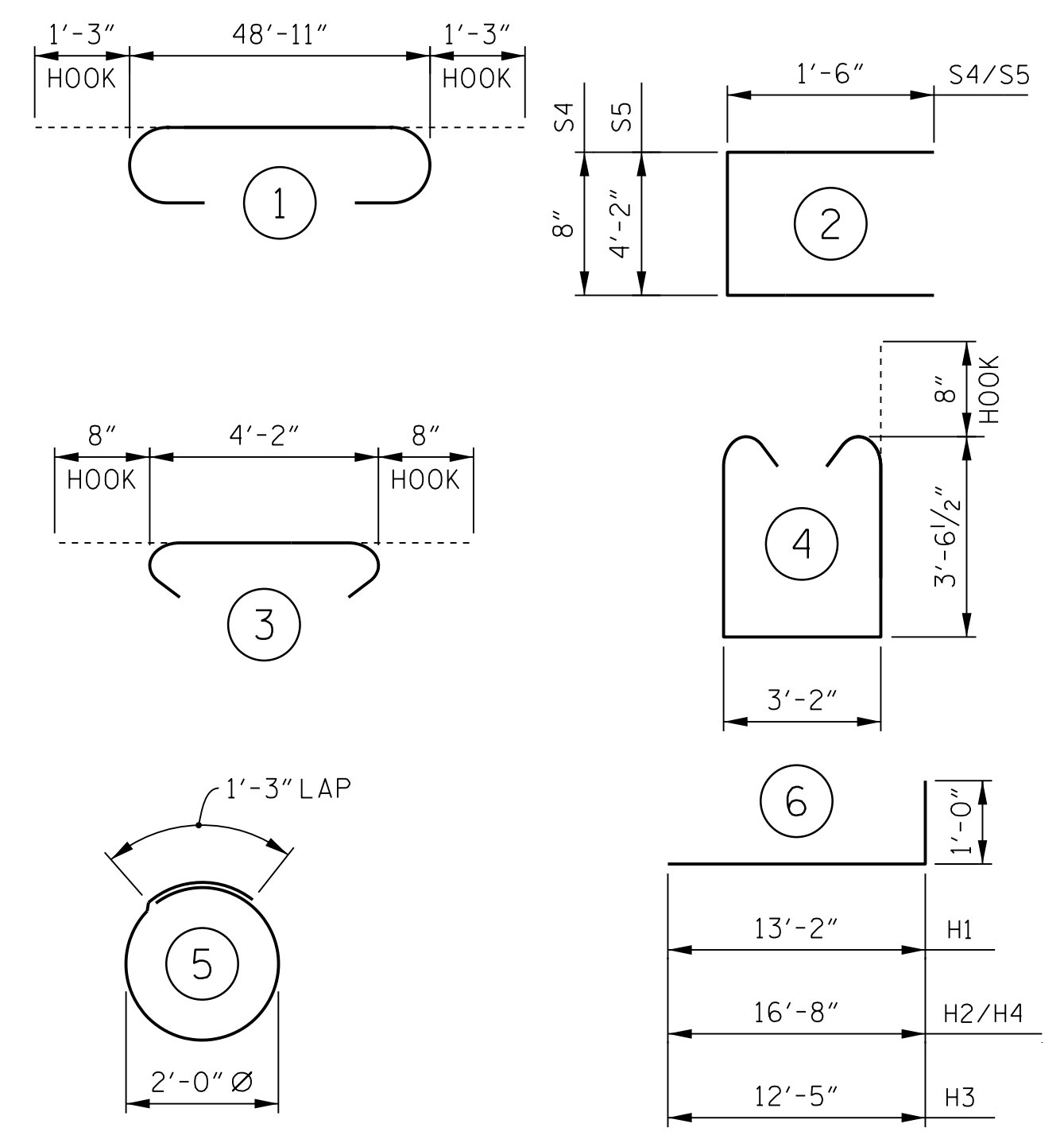
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

**BILL OF MATERIAL
END BENT 1**

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
BI	10	#9	I	51'- 5"	1,748
B2	2	#6	STR	10'- 7"	32
B3	4	#6	STR	8'- 5"	51
B4	3	#6	STR	5'- 4"	24
B5	1	#6	STR	11'- 5"	17
B6	12	#6	STR	48'- 11"	882
B7	16	#4	STR	25'- 8"	274
B8	12	#4	STR	4'- 2"	33
B9	25	#4	STR	3'- 2"	53
H1	36	#6	6	14'- 2"	767
H2	10	#6	6	17'- 8"	266
H3	36	#6	6	13'- 5"	726
H4	10	#6	6	17'- 8"	266
K1	14	#4	STR	25'- 8"	240
K2	8	#4	STR	2'- 7"	14
S1	53	#6	3	5'- 6"	438
S2	106	#6	4	11'- 7"	1,844
S3	48	#4	5	7'- 7"	243
S4	43	#4	2	3'- 8"	105
S5	35	#4	2	7'- 2"	168
V1	86	#5	STR	10'- 9"	964
V2	34	#5	STR	12'- 8"	450
V3	34	#5	STR	12'- 1"	429
REINFORCING STEEL					LBS. 10,034
CLASS 'A' CONCRETE					
POUR #1					CU. YDS. 39.3
POUR #2					CU. YDS. 22.0
TOTAL					CU. YDS. 61.3
HPI4x73 STEEL PILES					
NO. 12					LIN. FT. 660.0
PILE DRIVING					
EQUIPMENT SETUP FOR					
HP 14 x 13 STEEL PILES					12 EACH

BAR TYPES

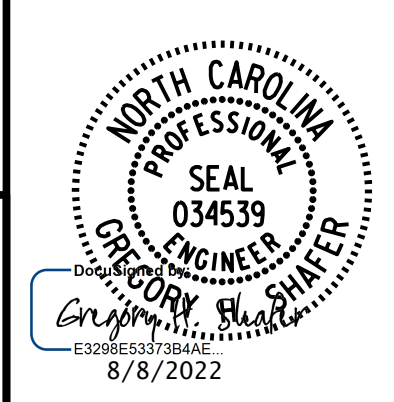


ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-
 SHEET 3 OF 3

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

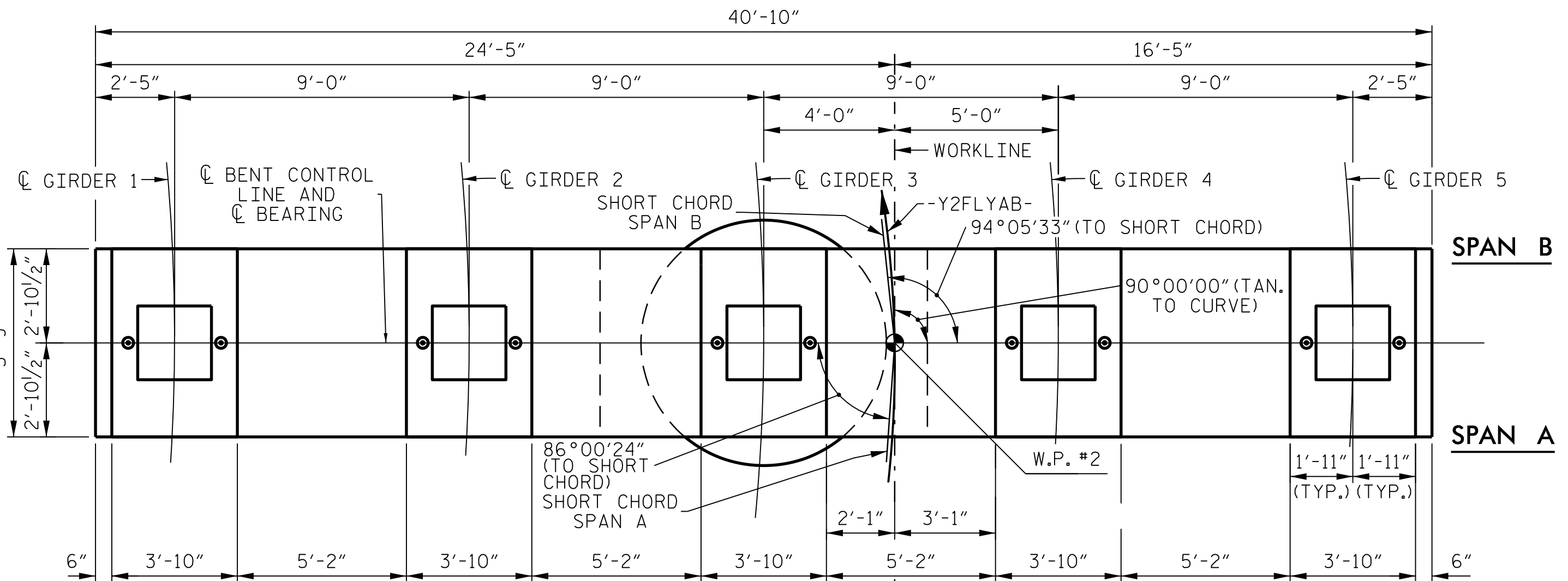
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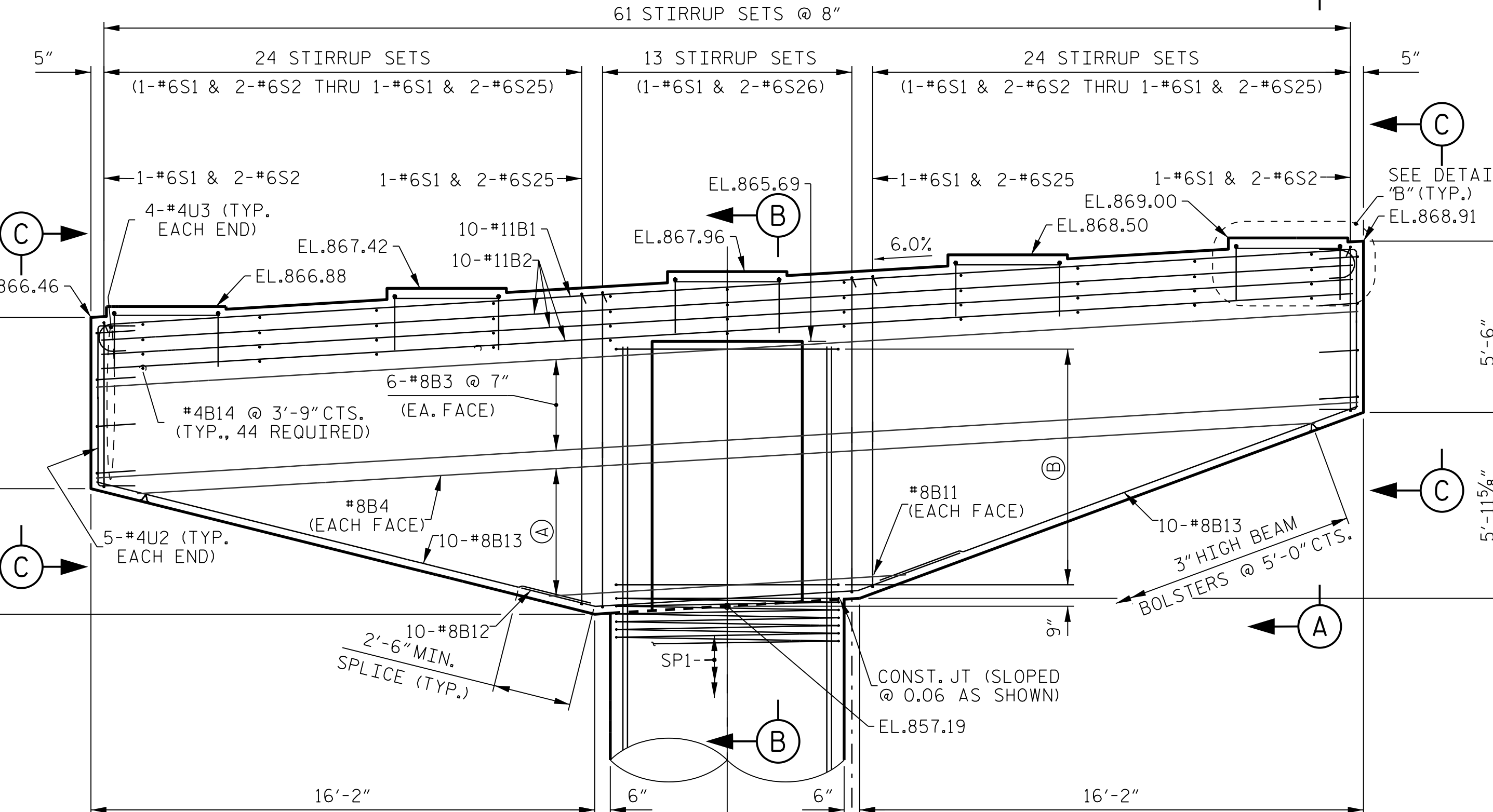
PLANS PREPARED BY:
PARSONS
 5540 CenterView Drive, Suite 217
 Raleigh, NC 27606-3386
 NC LICENSE No. F-0246
 FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY : J. CAYETANO DATE : 9-21
 CHECKED BY : J. B. TAYLOR DATE : 9-21
 DESIGN ENGINEER : J. B. TAYLOR DATE : 9-21

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S5-58
1			3			TOTAL SHEETS
2			4			84

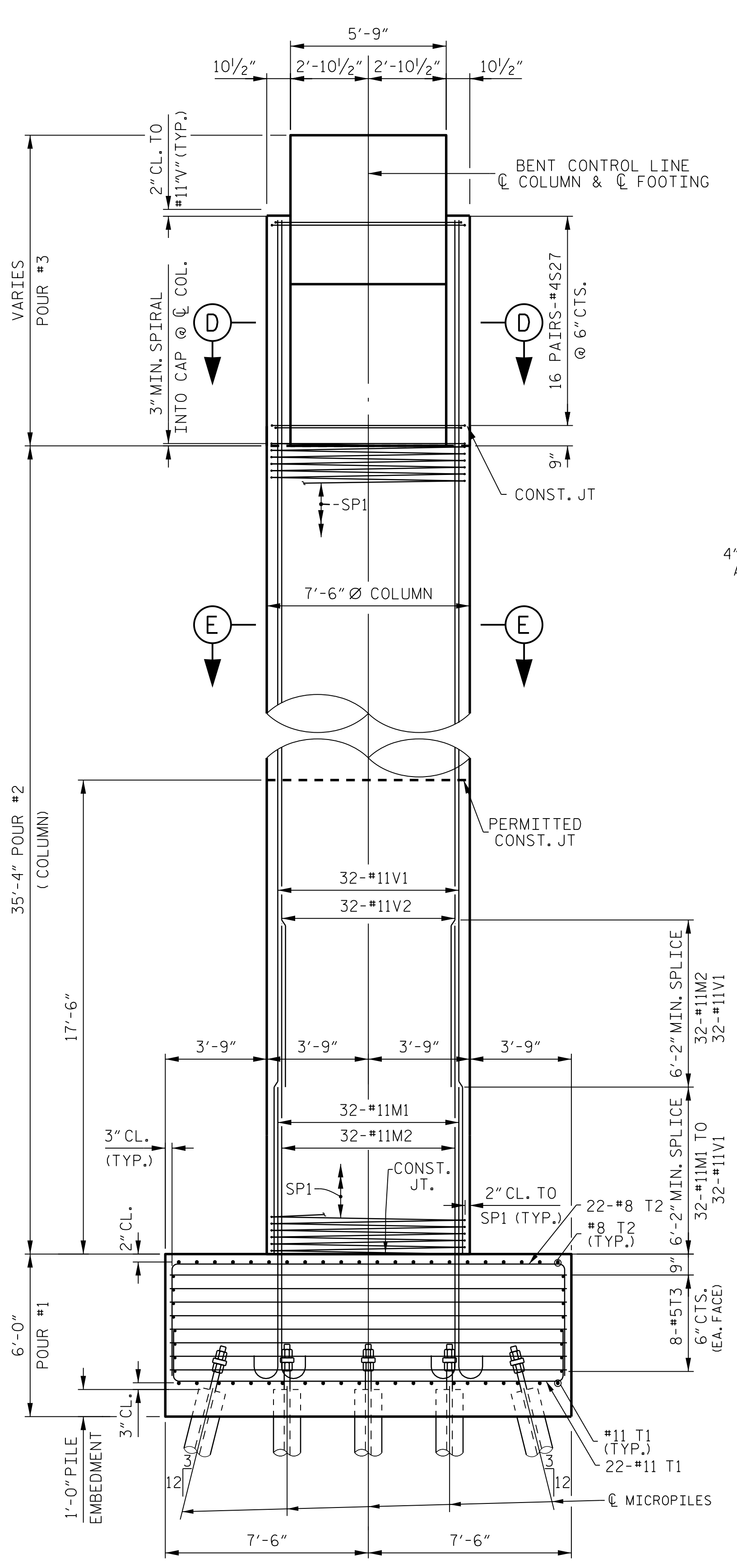


PLAN



ELEVATION

- (A) #8B4 THRU #8B11 @ 7" CTS (EA. FACE)
- (B) 16 PAIRS-#4S27 @ 6" CTS



END ELEVATION

NOTES

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

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

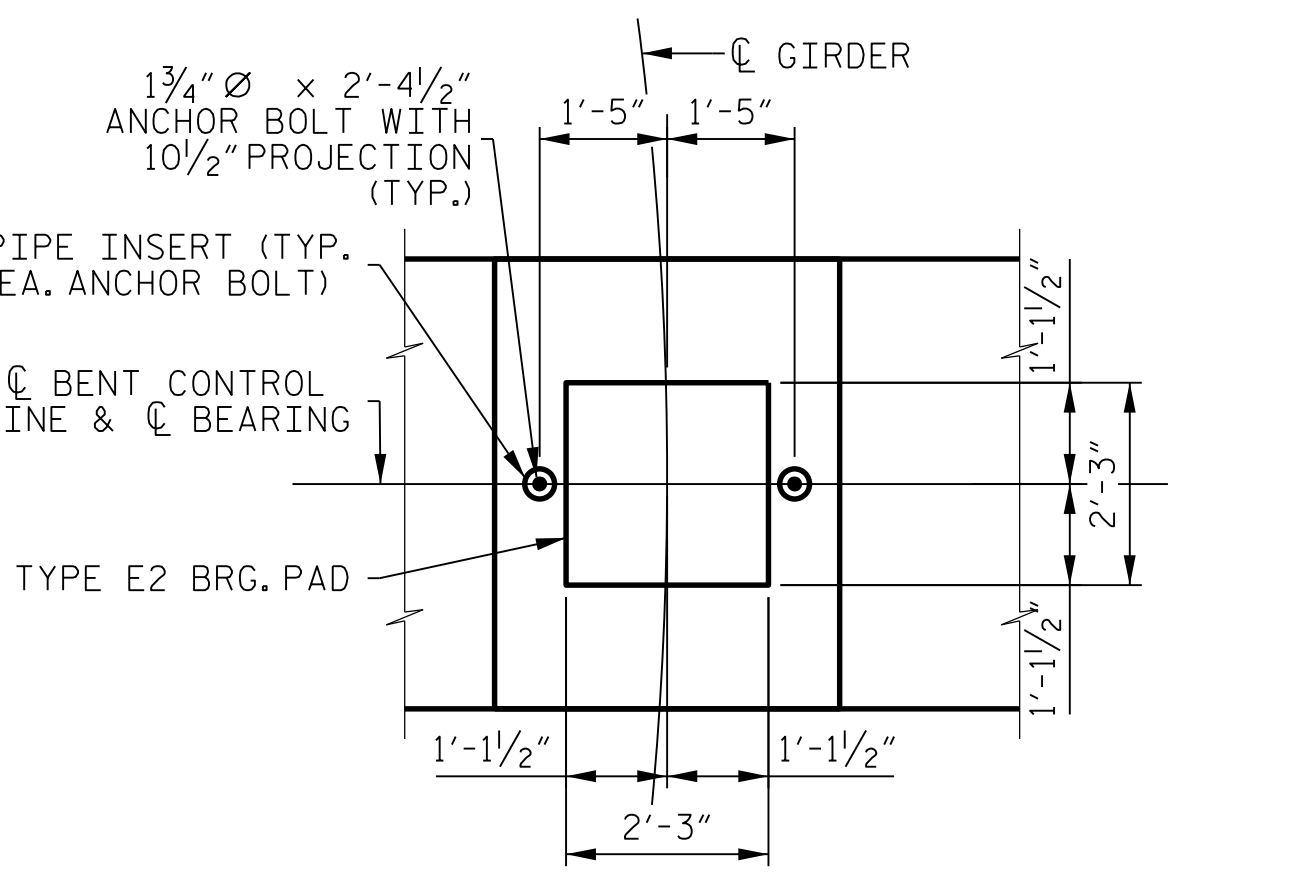
DETAILED DRAWINGS FOR FALSEWORK AND FORMS FOR THIS HAMMERHEAD BENT SHALL BE SUBMITTED. SEE SHEET SN.

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

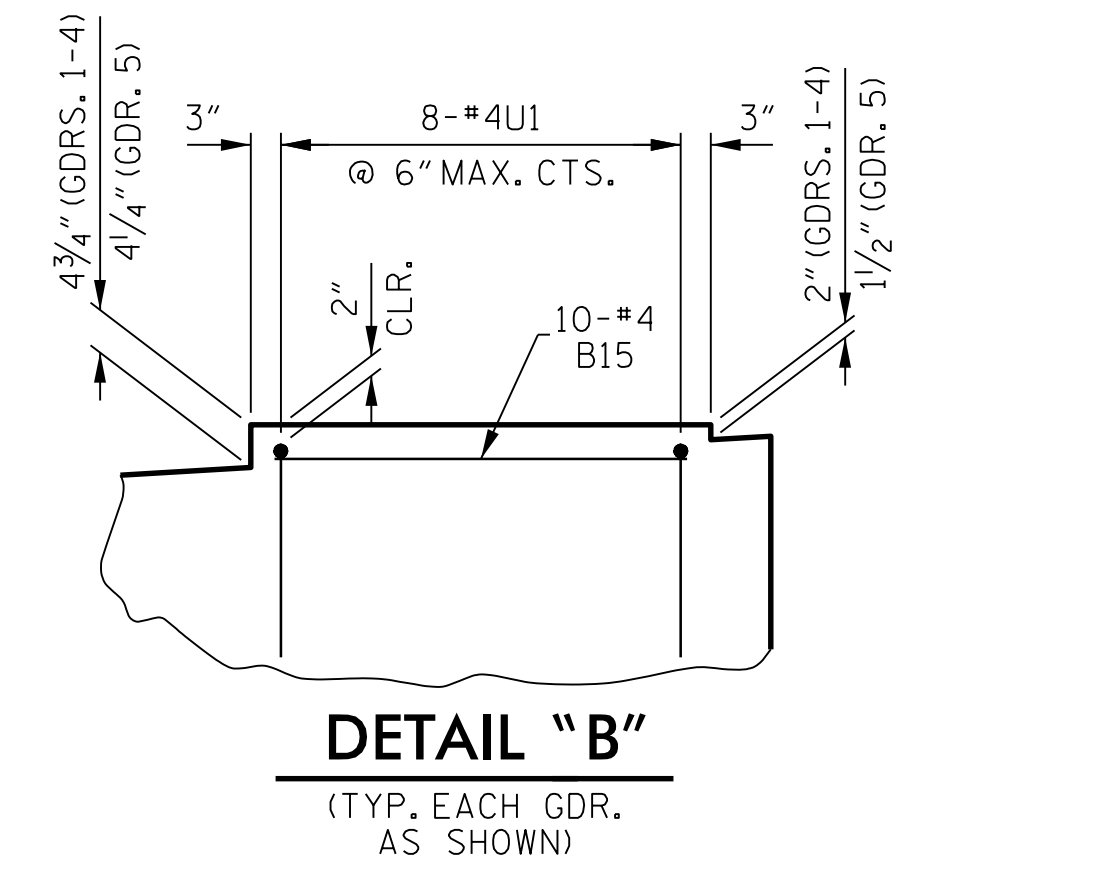
FOR VIEW C-C, SEE SHEET 2 OF 3.

FOR MICROPILE DETAILS, SEE SHEET 2 OF 3.

THE CAP AND COLUMN SHALL BE CONSIDERED MASS CONCRETE, SEE SPECIAL PROVISIONS.



DETAIL "A"



DETAIL "B"

(TYP. EACH GDR. AS SHOWN)

PROJECT NO. U-2579AA

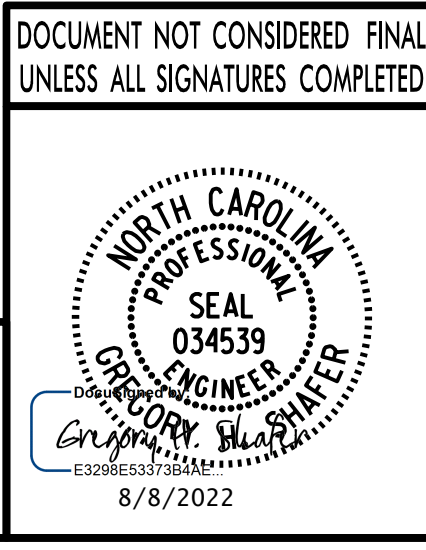
FORSYTH COUNTY

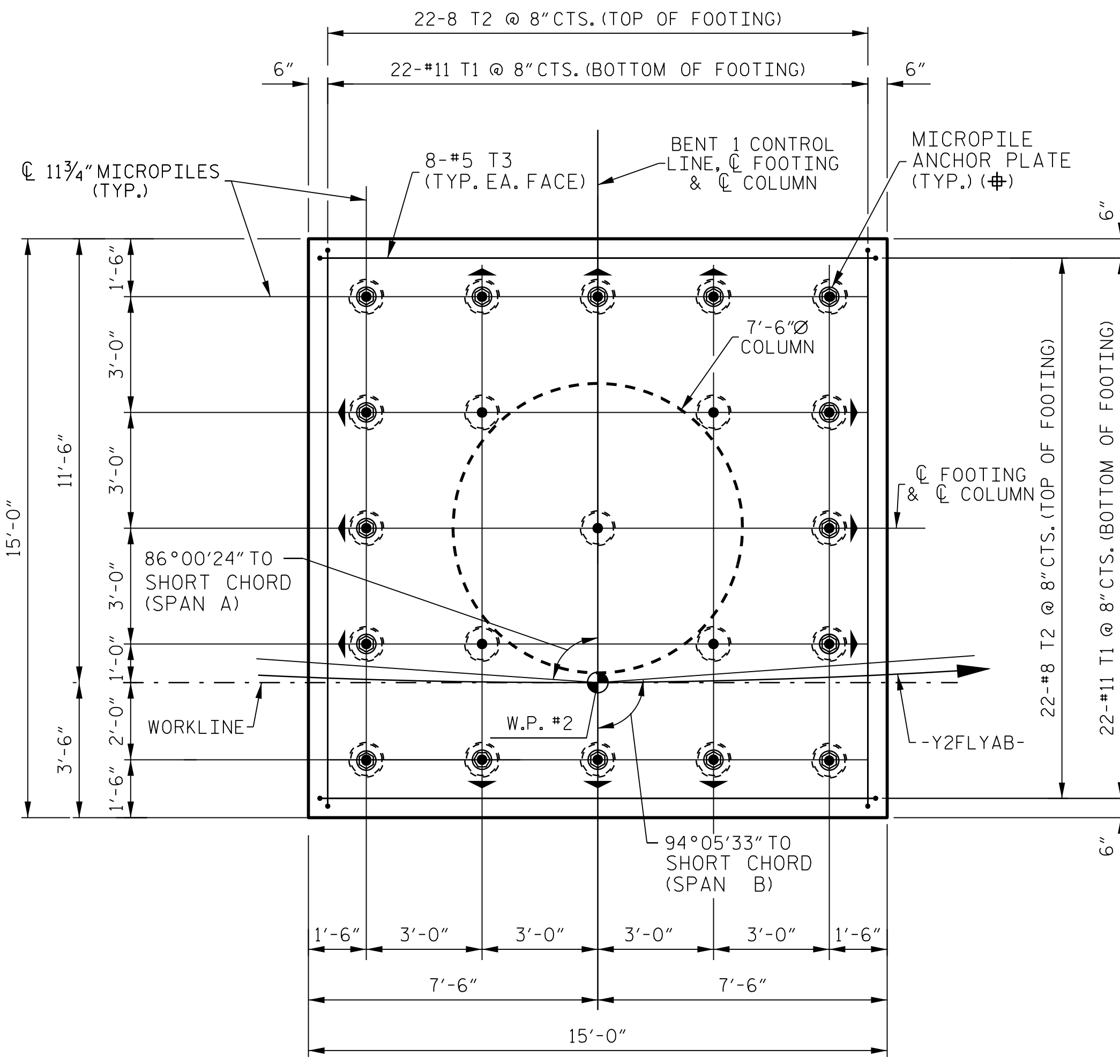
STATION: 28+33.21 -Y2FLYAB-
41+07.80 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		SUBSTRUCTURE BENT 1 PLAN & ELEVATION	
REVISIONS		SHEET No. S5-59	
No.	BY:	DATE:	TOTAL SHEETS
1		3	84
2		4	

DRAWN BY : J. CAYETANO DATE : 9-21
 CHECKED BY : J. B. TAYLOR DATE : 9-21
 DESIGN ENGINEER : J. B. TAYLOR DATE : 9-21

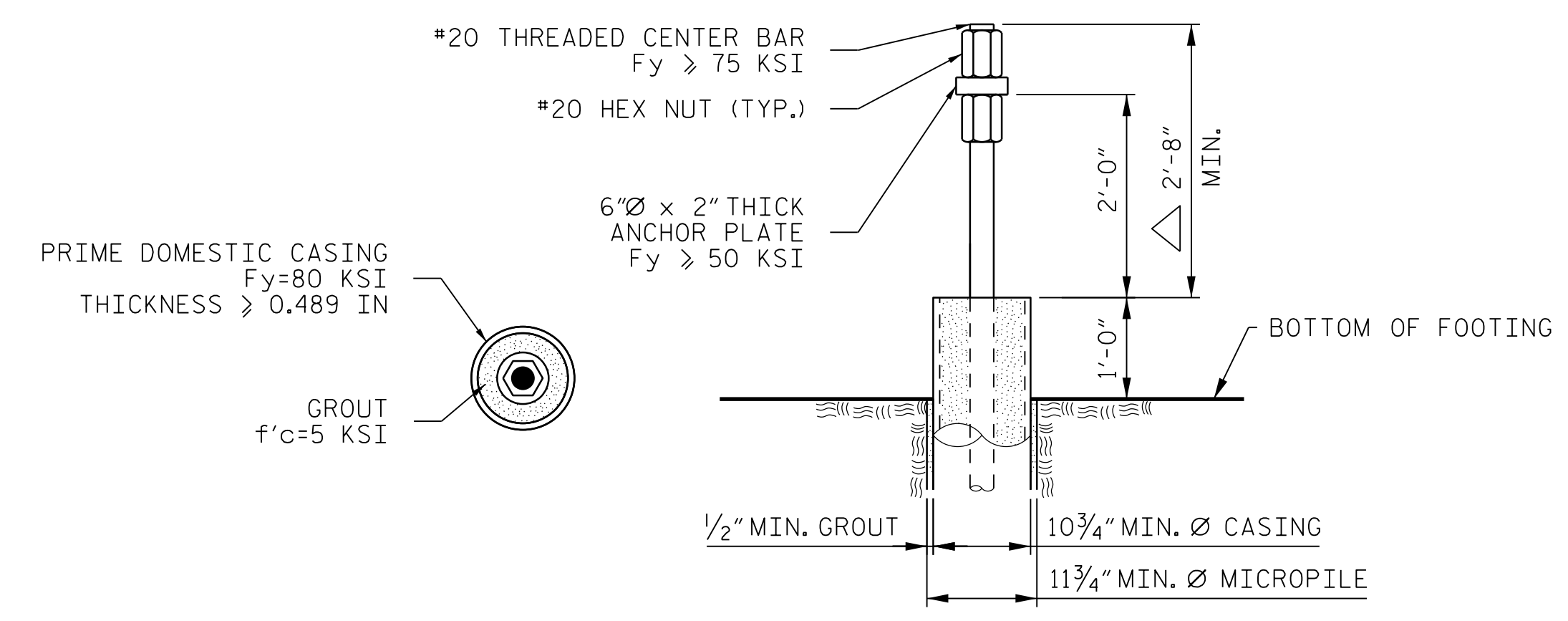




▲ DENOTES BATTER PILE 3:12 IN DIRECTION OF ARROW

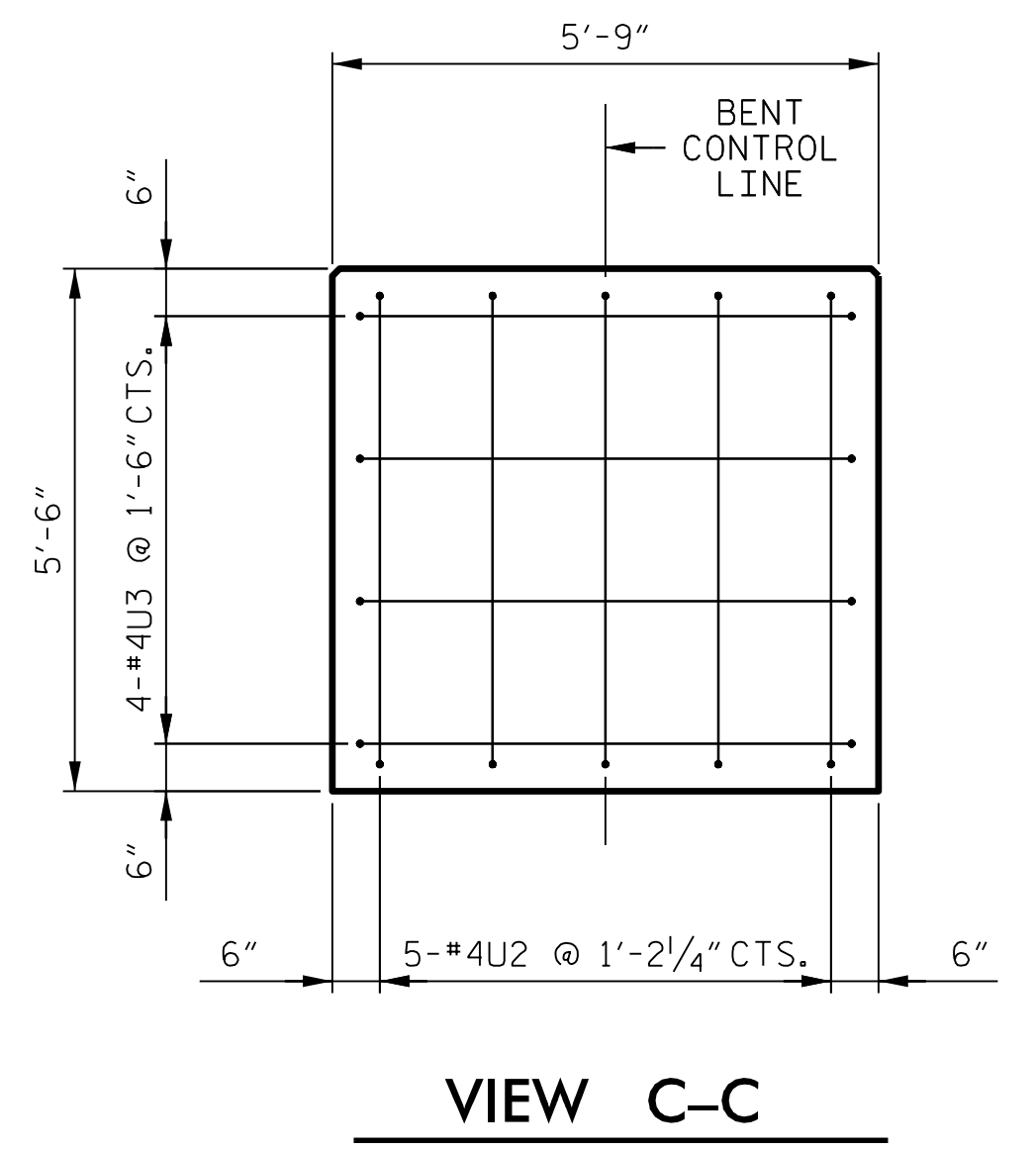
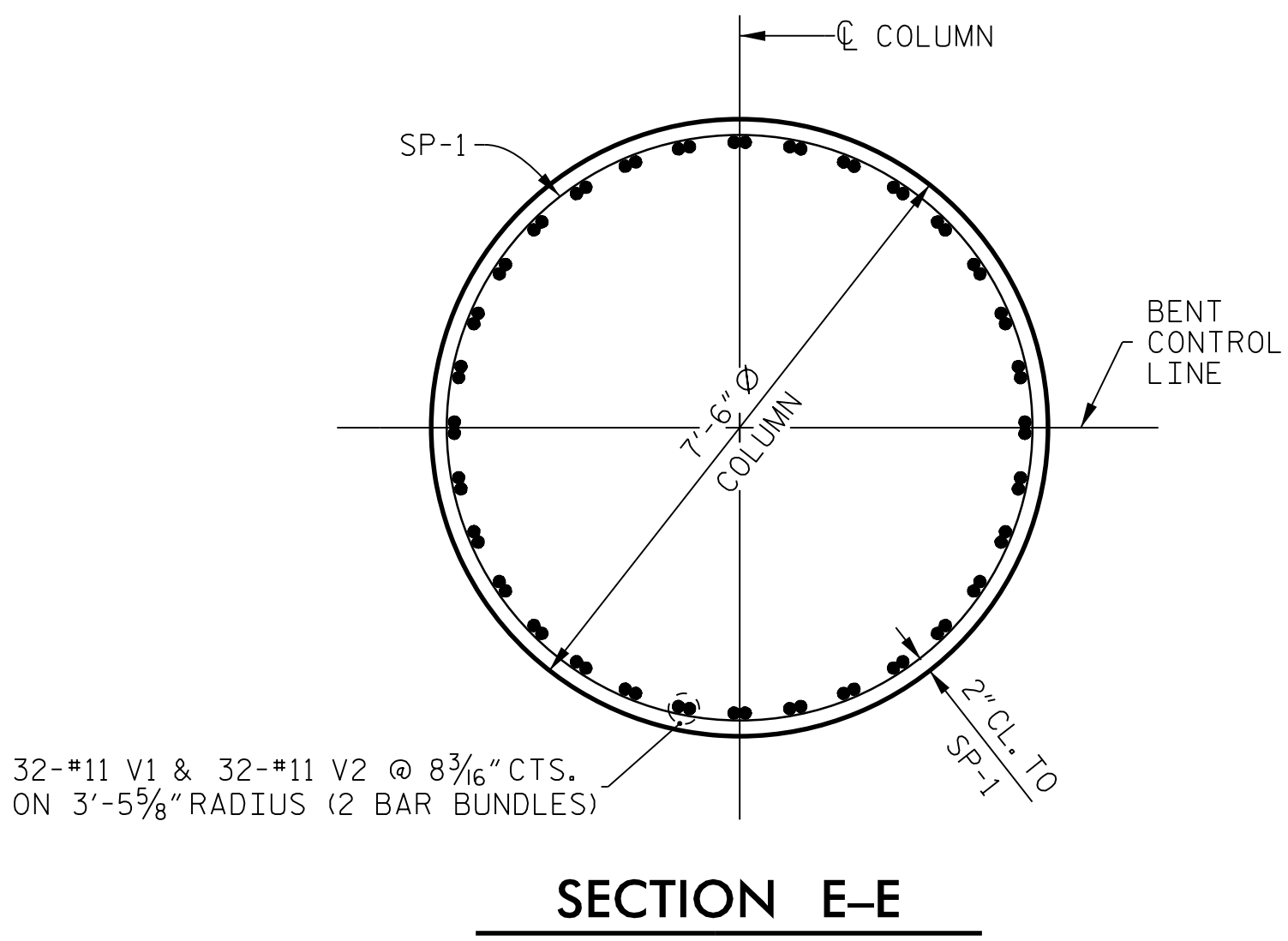
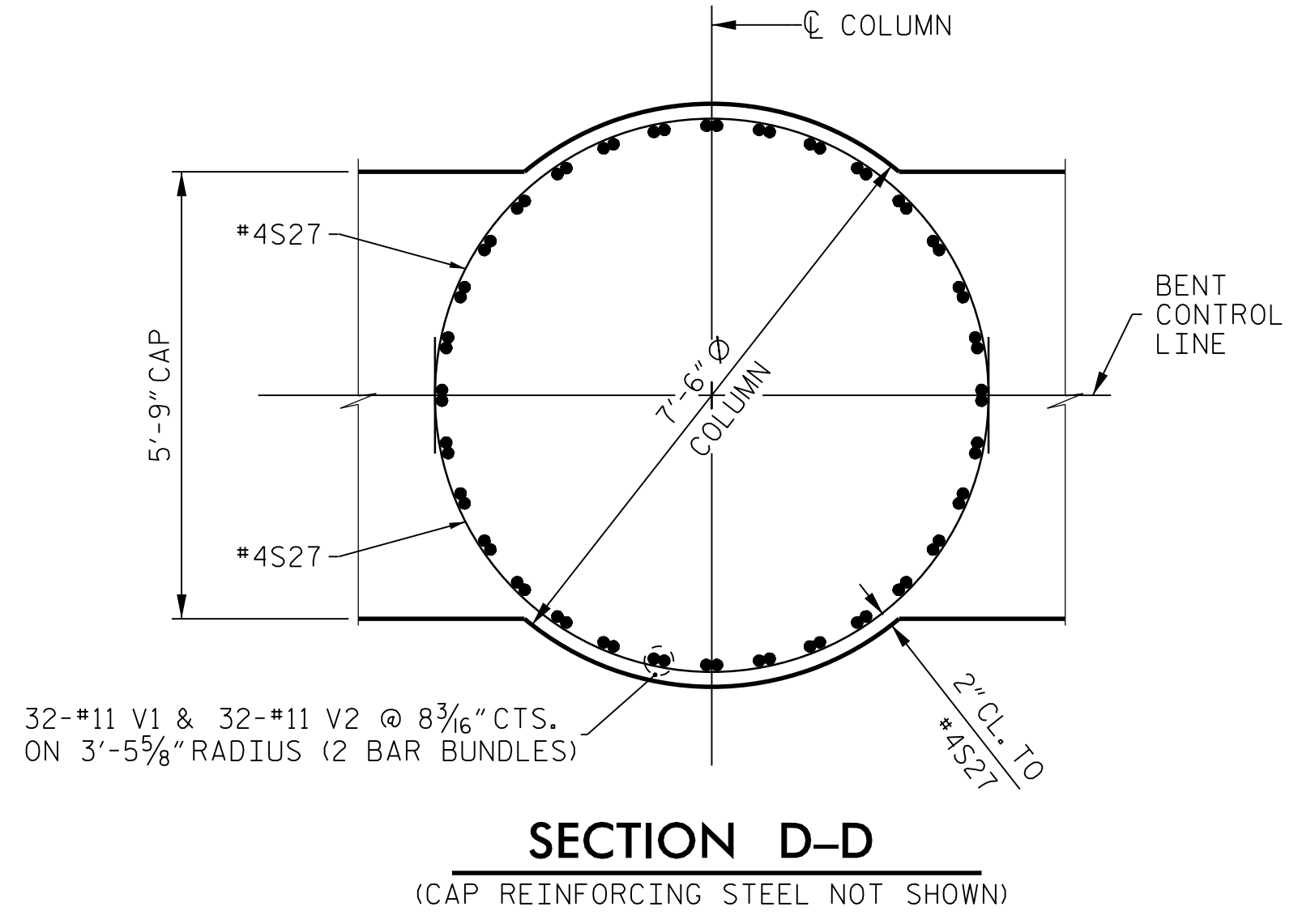
⊕ = UPLIFT ANCHOR PLATE REQUIRED AT EACH PERIMETER PILE

FOOTING PLAN



PILE UPLIFT ANCHOR DETAILS

△ = MINIMUM CENTER BAR PROJECTION NOTED APPLIES TO ALL PILES IN THE PILE FOOTING

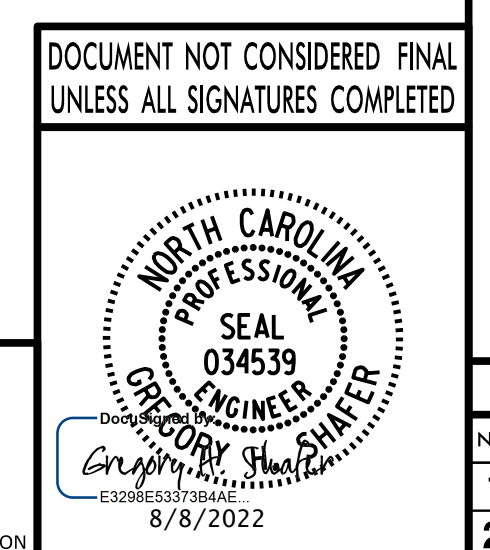


PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
BENT 1
 SECTIONS AND DETAILS

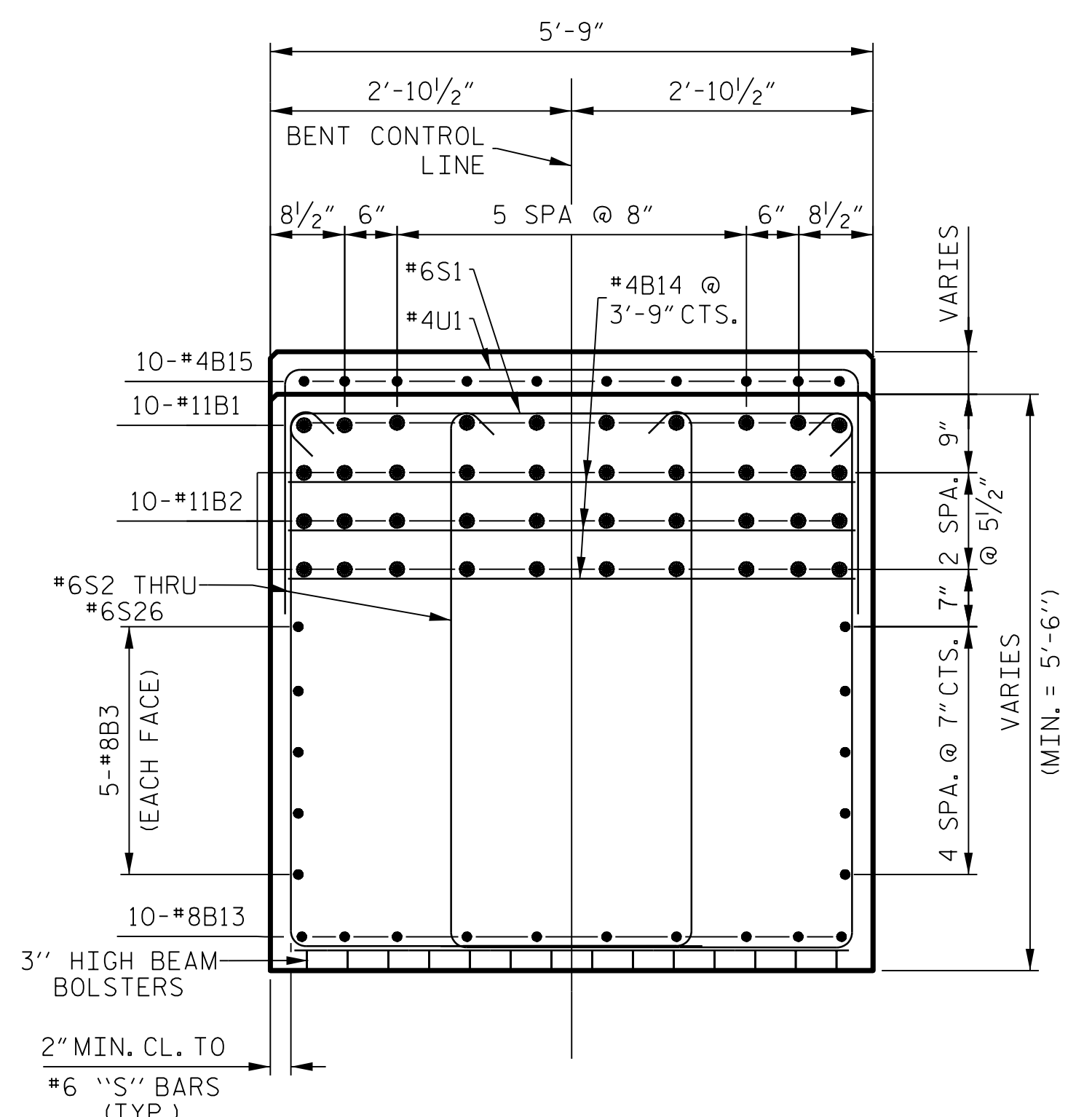


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 5540 CenterView Drive, Suite 217
 Raleigh, NC 27606-3386
 NC LICENSE No. F-0246
 FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

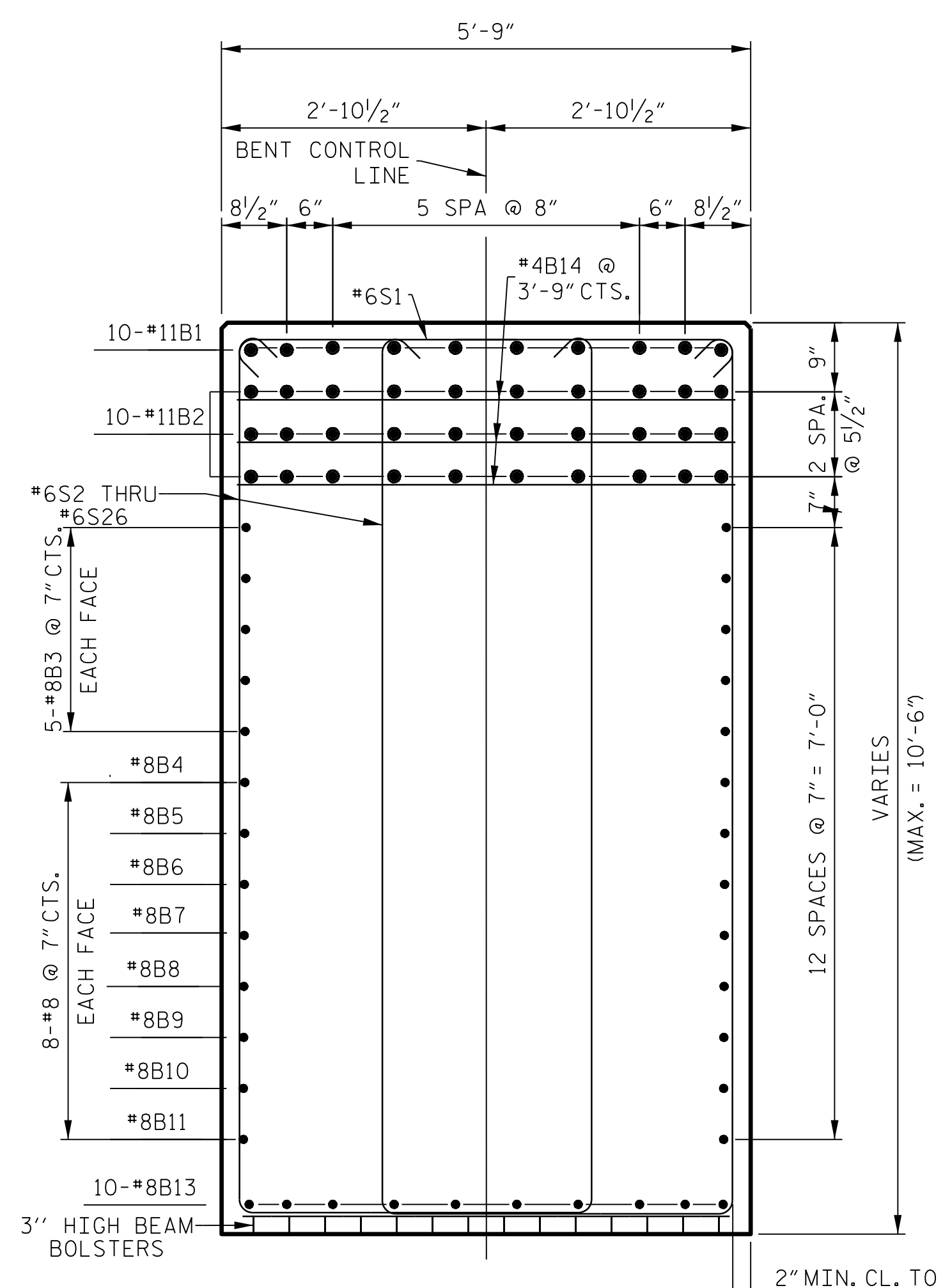
DRAWN BY: J. CAYETANO DATE: 9-21
 CHECKED BY: J. B. TAYLOR DATE: 9-21
 DESIGN ENGINEER: J. B. TAYLOR DATE: 9-21

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	TOTAL SHEETS
1			3			84
2			4			

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SECTION A-A

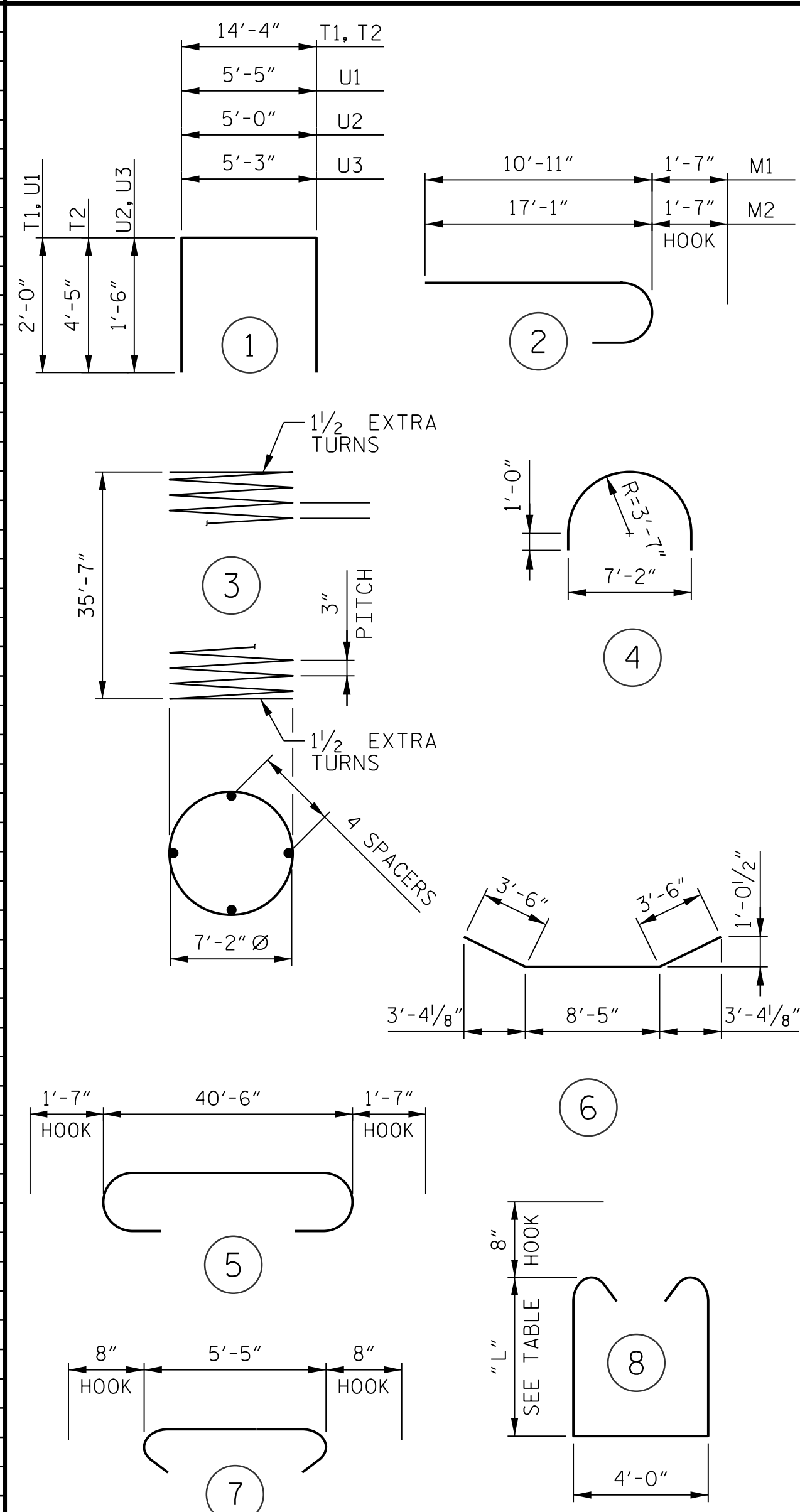


SECTION B-B

BAR	DIM "L"
S2	5'-3 1/2"
S3	5'-6"
S4	5'-8 1/2"
S5	6'-11"
S6	6'-1 1/2"
S7	6'-4"
S8	6'-6 1/2"
S9	6'-9"
S10	6'-11 1/2"
S11	7'-1 1/2"
S12	7'-4"
S13	7'-6 1/2"
S14	7'-9"
S15	7'-11 1/2"
S16	8'-2"
S17	8'-4 1/2"
S18	8'-7"
S19	8'-9 1/2"
S20	9'-0"
S21	9'-2 1/2"
S22	9'-5"
S23	9'-7 1/2"
S24	9'-10"
S25	10'-0 1/2"
S26	10'-2"

BILL OF MATERIAL - BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	# 11		43' - 8"	2,320
B2	30	# 11	STR	40' - 2"	6,402
B3	12	# 8	STR	40' - 6"	1,298
B4	2	# 8	STR	37' - 10"	202
B5	2	# 8	STR	34' - 1"	182
B6	2	# 8	STR	30' - 3"	162
B7	2	# 8	STR	26' - 6"	142
B8	2	# 8	STR	22' - 9"	121
B9	2	# 8	STR	18' - 18"	104
B10	2	# 8	STR	15' - 2"	81
B11	2	# 8	STR	11' - 5"	61
B12	10	# 8		15' - 5"	412
B13	20	# 8	STR	16' - 4"	872
B14	44	# 4	STR	5' - 5"	159
B15	50	# 4	STR	3' - 6"	117
M1	32	# 11	2	12' - 6"	2,125
M2	32	# 11	2	18' - 8"	3,174
S1	61	# 6	7	6' - 9"	618
S2	4	# 6	8	15' - 11"	96
S3	4	# 6	8	16' - 4"	98
S4	4	# 6	8	16' - 9"	101
S5	4	# 6	8	17' - 2"	103
S6	4	# 6	8	17' - 7"	106
S7	4	# 6	8	18' - 0"	108
S8	4	# 6	8	18' - 5"	111
S9	4	# 6	8	18' - 10"	113
S10	4	# 6	8	19' - 3"	116
S11	4	# 6	8	19' - 7"	118
S12	4	# 6	8	20' - 6"	123
S13	4	# 6	8	20' - 5"	123
S14	4	# 6	8	20' - 10"	125
S15	4	# 6	8	21' - 3"	128
S16	4	# 6	8	21' - 8"	130
S17	4	# 6	8	22' - 1"	133
S18	4	# 6	8	22' - 6"	135
S19	4	# 6	8	22' - 11"	138
S20	4	# 6	8	23' - 4"	140
S21	4	# 6	8	23' - 9"	143
S22	4	# 6	8	24' - 2"	145
S23	4	# 6	8	24' - 7"	148
S24	4	# 6	8	25' - 0"	150
S25	4	# 6	8	25' - 5"	153
S26	26	# 6	8	25' - 8"	1,002
S27	32	# 4	4	13' - 3"	283
T1	44	# 11	1	18' - 4"	4,286
T2	44	# 8	1	23' - 2"	2,722
T3	32	# 5	STR	14' - 6"	484
U1	40	# 4	1	9' - 5"	252
U2	10	# 4	1	8' - 0"	53
U3	8	# 4	1	8' - 3"	44
V1	32	# 11	STR	43' - 8"	7,424
V2	32	# 11	STR	37' - 6"	6,376
SP1	1	# 4	3	3253' - 3"	2,173
REINFORCING STEEL				LBS.	44,459
SPIRAL COLUMN REINFORCING STEEL				LBS.	2,173
CLASS 'A' CONCRETE					
POUR #1				CU. YDS.	50.0
POUR #2				CU. YDS.	57.8
POUR #3				CU. YDS.	77.0
TOTAL				CU. YDS.	184.8
MICROPILES					
NO.	21	LIN. FT.	1155		

BAR TYPES



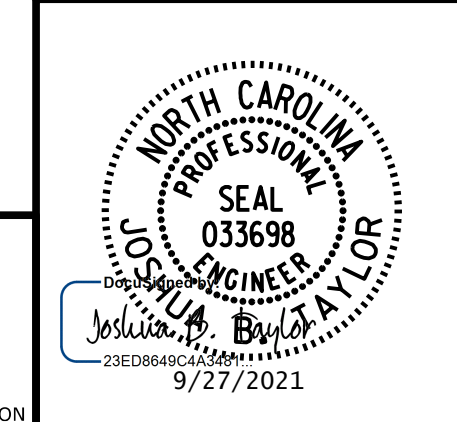
ALL BAR DIMENSIONS ARE OUT TO OUT.

V1	32	# 11	STR	43' - 8"	7,424
V2	32	# 11	STR	37' - 6"	6,376
SP1	1	# 4	3	3253' - 3"	2,173
REINFORCING STEEL				LBS.	44,459
SPIRAL COLUMN REINFORCING STEEL				LBS.	2,173
CLASS 'A' CONCRETE					
POUR #1				CU. YDS.	50.0
POUR #2				CU. YDS.	57.8
POUR #3				CU. YDS.	77.0
TOTAL				CU. YDS.	184.8
MICROPILES					
NO.	21	LIN. FT.	1155		

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-

SHEET 3 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1
 SECTIONS AND DETAILS

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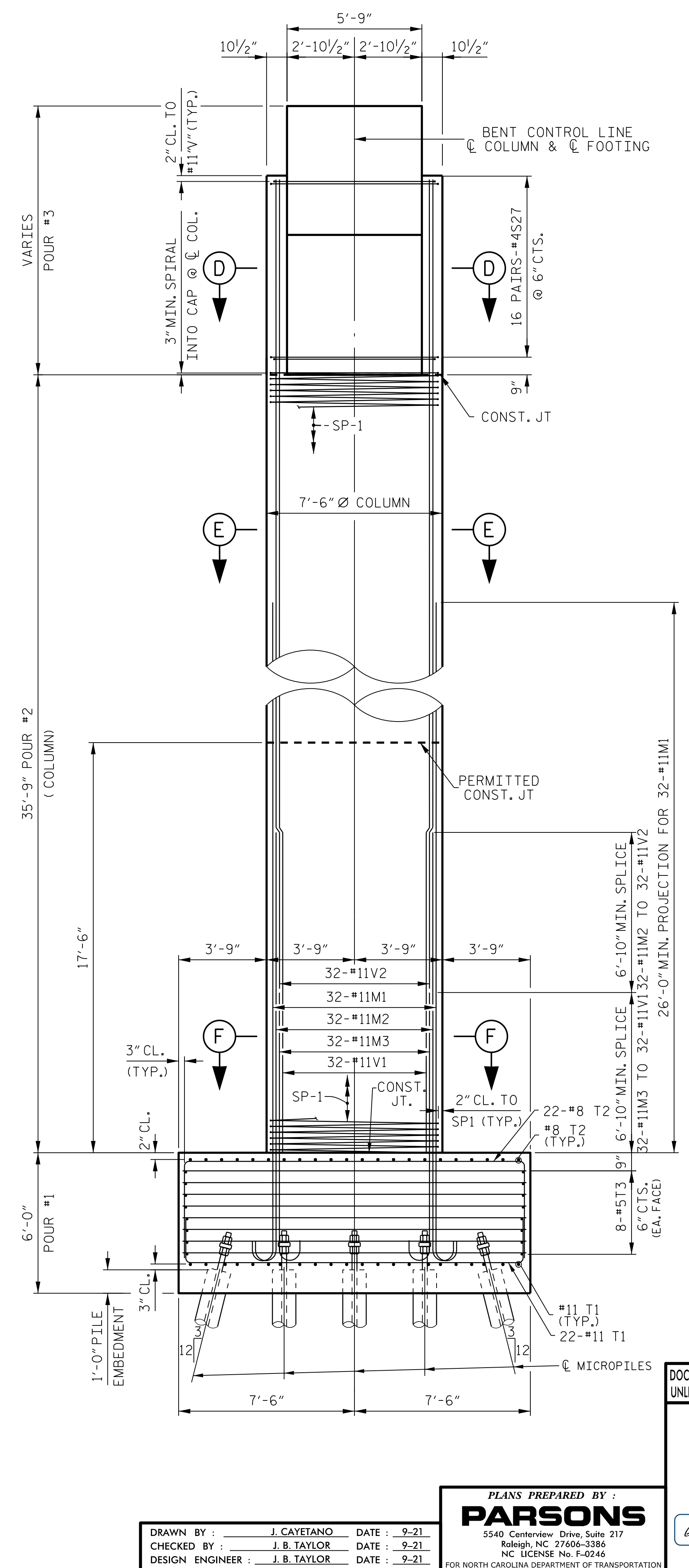
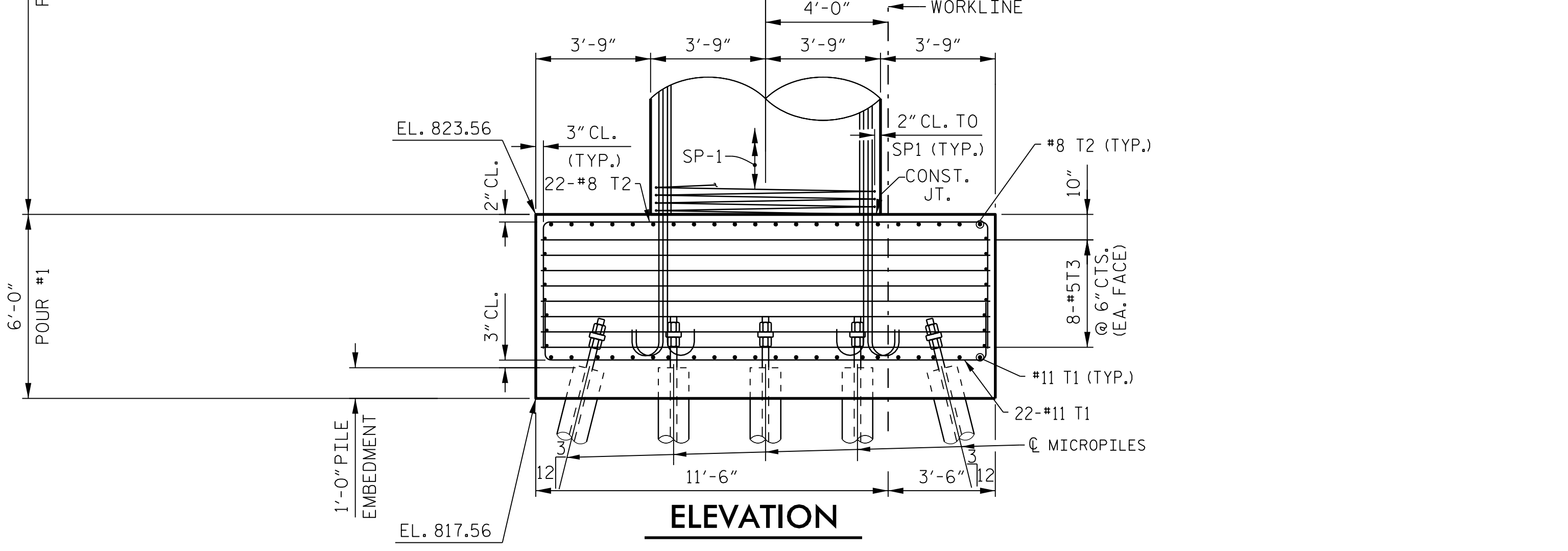
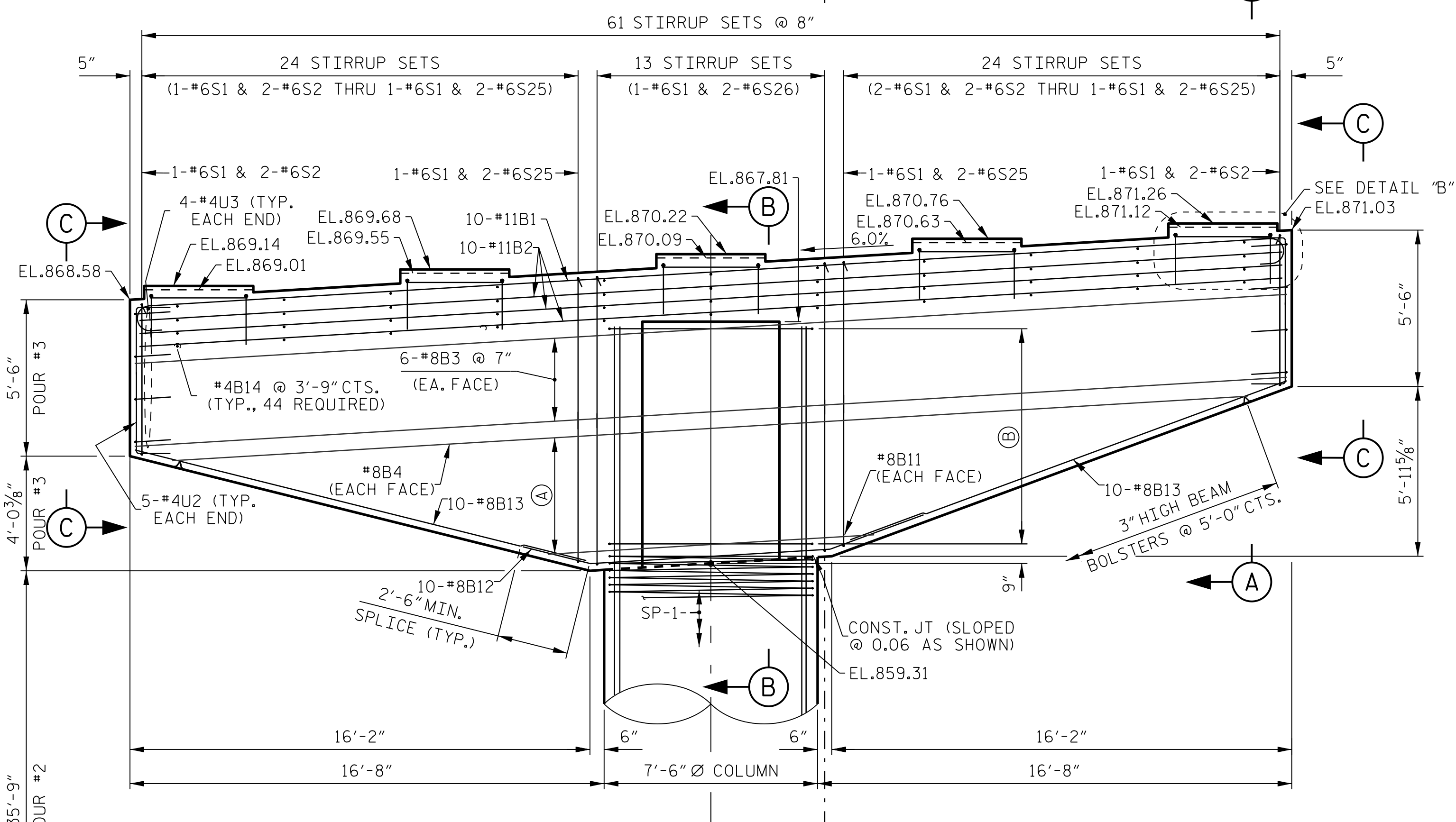
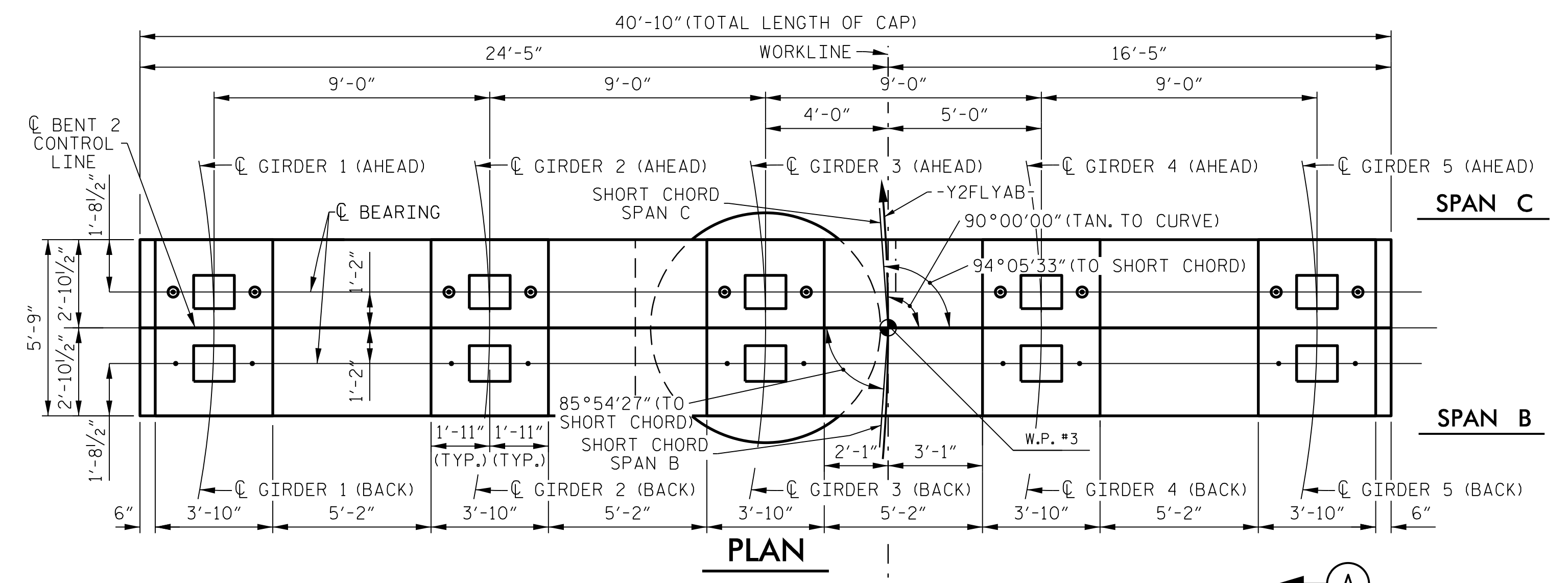


PLANS PREPARED BY:
PARSONS
 5540 CenterView Drive, Suite 217
 Raleigh, NC 27606-3386
 NC LICENSE No. F-0246
 9/27/2021

DRAWN BY: J. CAYETANO DATE: 9-21
 CHECKED BY: J. B. TAYLOR DATE: 9-21
 DESIGN ENGINEER: J. B. TAYLOR DATE: 9-21

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

SHEET No.
S5-61
 TOTAL SHEETS
84



NOTES

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

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

DETAILED DRAWINGS FOR FALSEWORK AND FORMS FOR THIS HAMMERHEAD BENT SHALL BE SUBMITTED. SEE SHEET "SN".

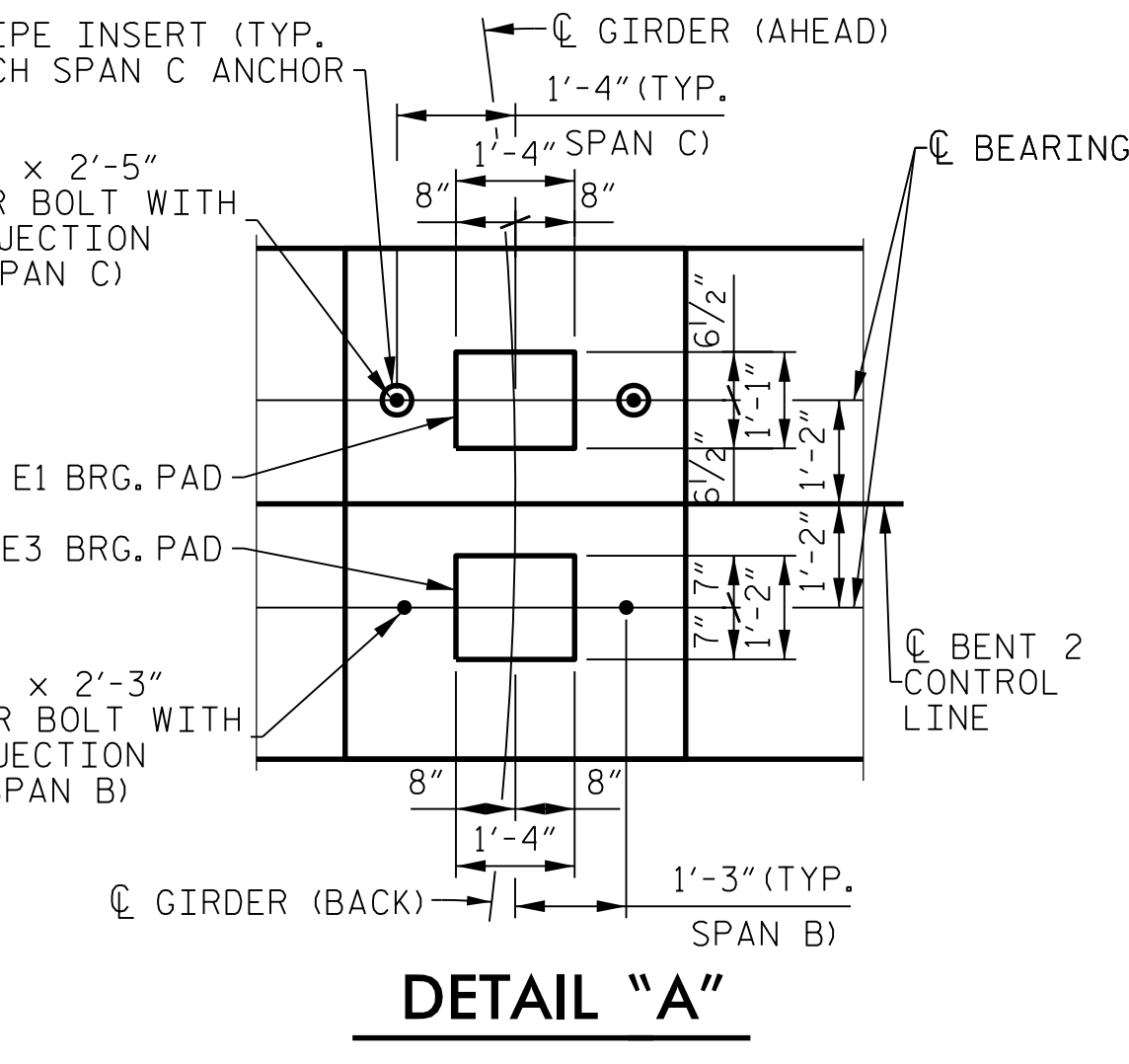
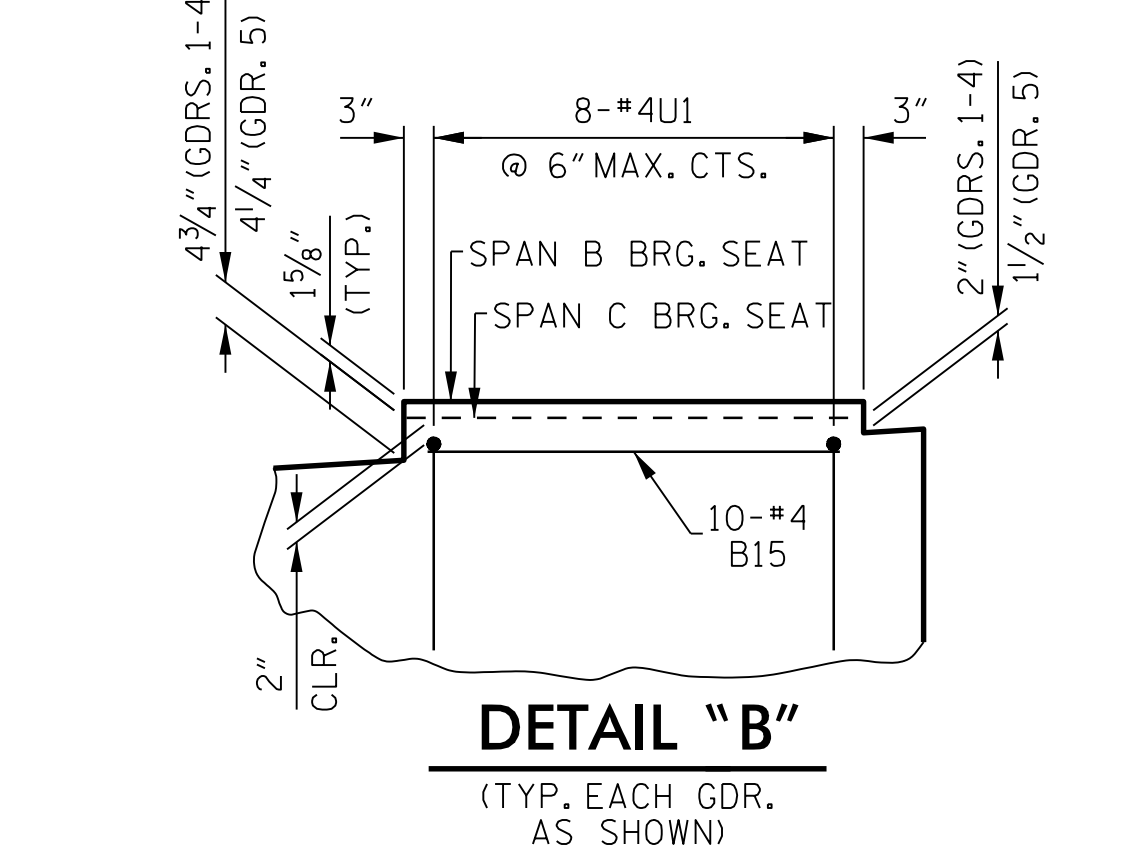
FOR SECTION A-A AND SECTION B-B, SEE SHEET 3 OF 3.

FOR VIEW C-C, SECTION D-D, SECTION E-E AND SECTION F-F, SEE SHEET 2 OF 3.

FOR MICROPILE DETAILS, SEE SHEET 2 OF 3.

FOR PIPE INSERT DETAILS, SEE "SUPERSTRUCTURE BEARING DETAILS" SHEET.

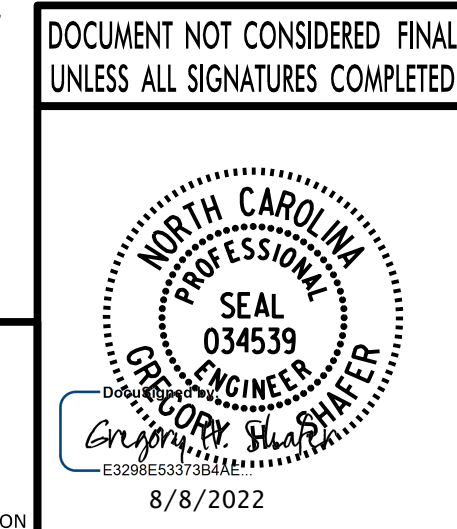
THE CAP AND COLUMN SHALL BE CONSIDERED MASS CONCRETE, SEE SPECIAL PROVISIONS.



PROJECT NO. **U-2579AA**
FORSYTH COUNTY
 STATION: **28 + 33.21 -Y2FLYAB-**
41 + 07.80 -L-

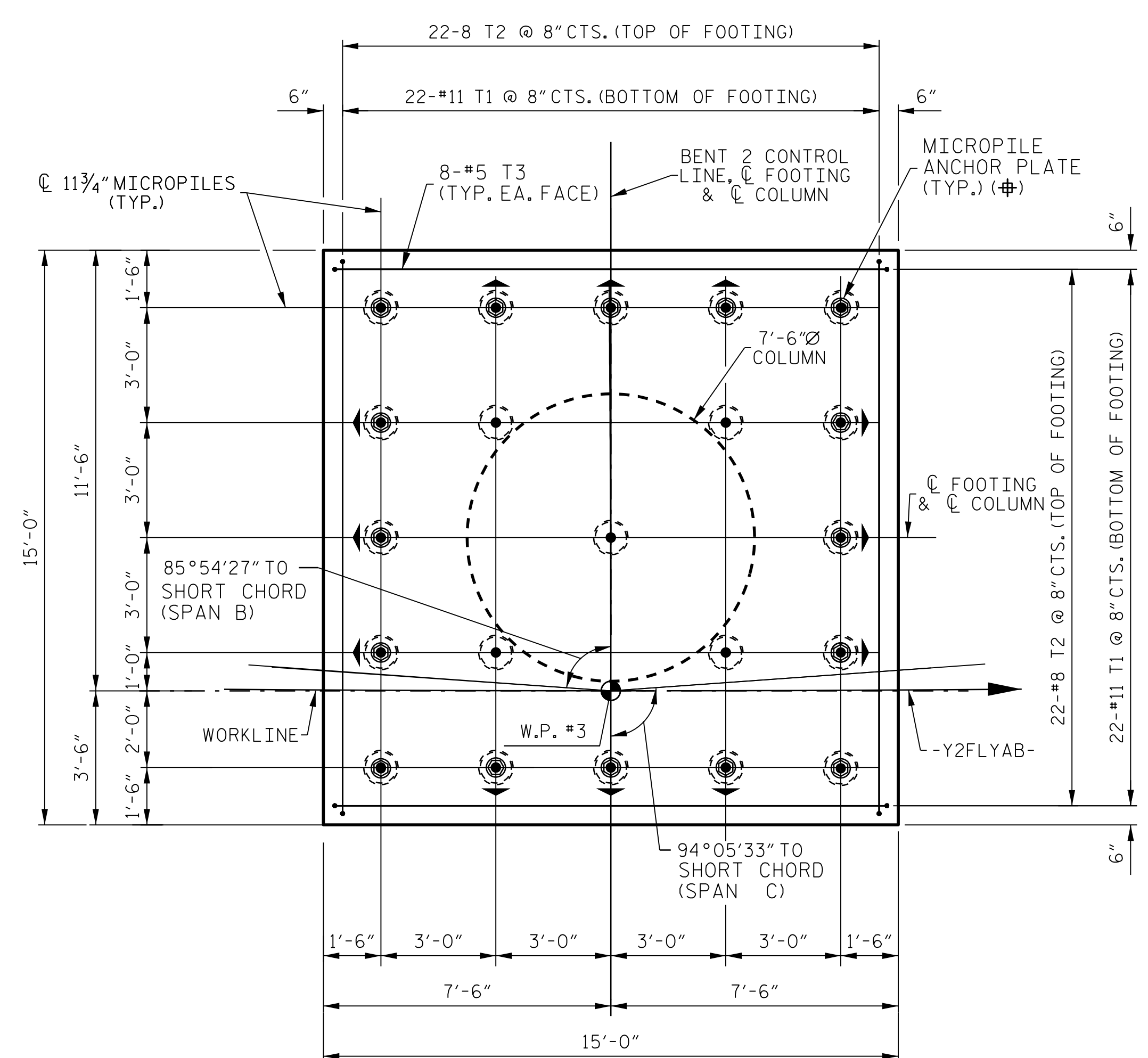
SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
BENT 2 PLAN & ELEVATION					
REVISIONS					SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					84



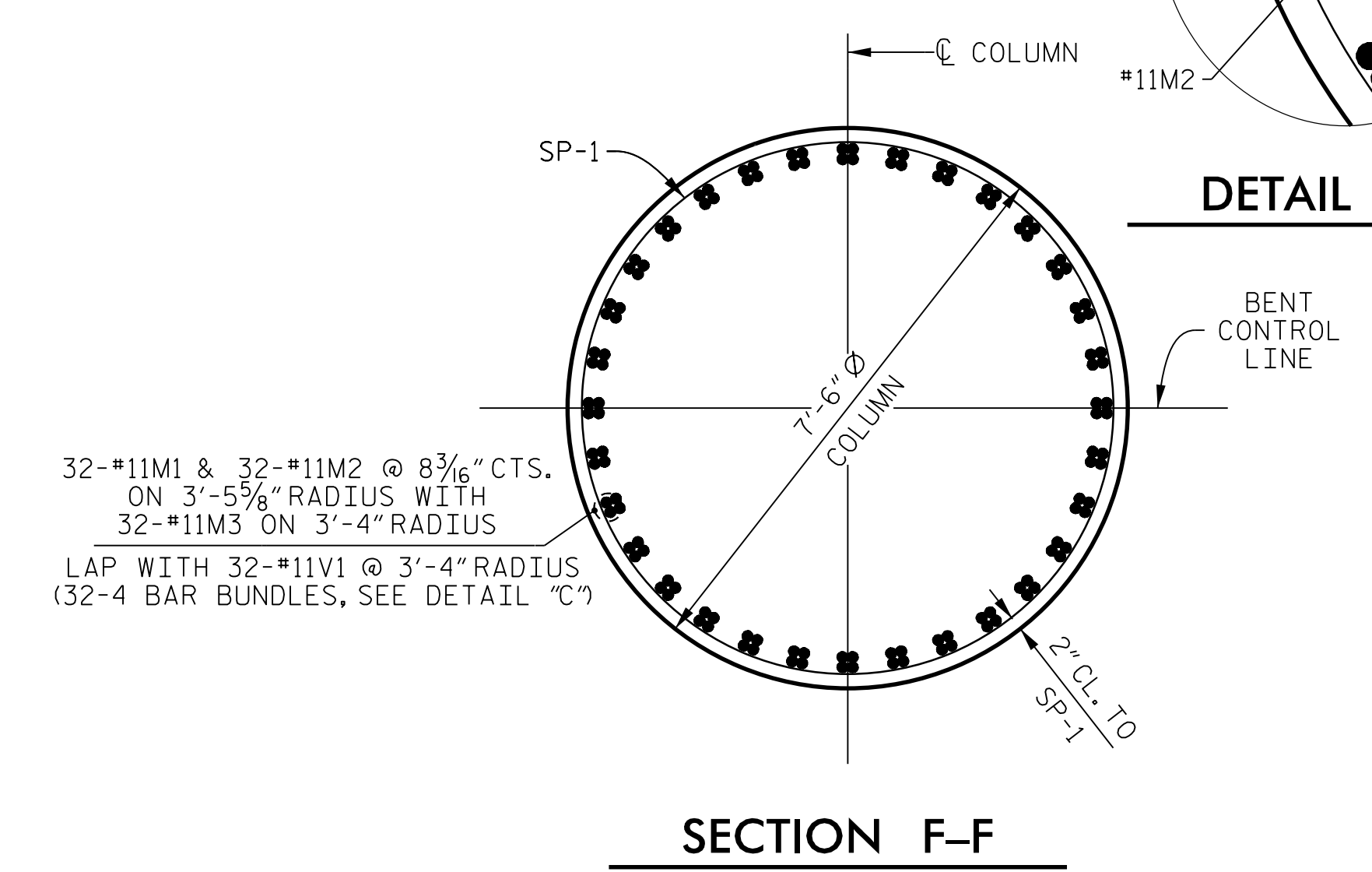
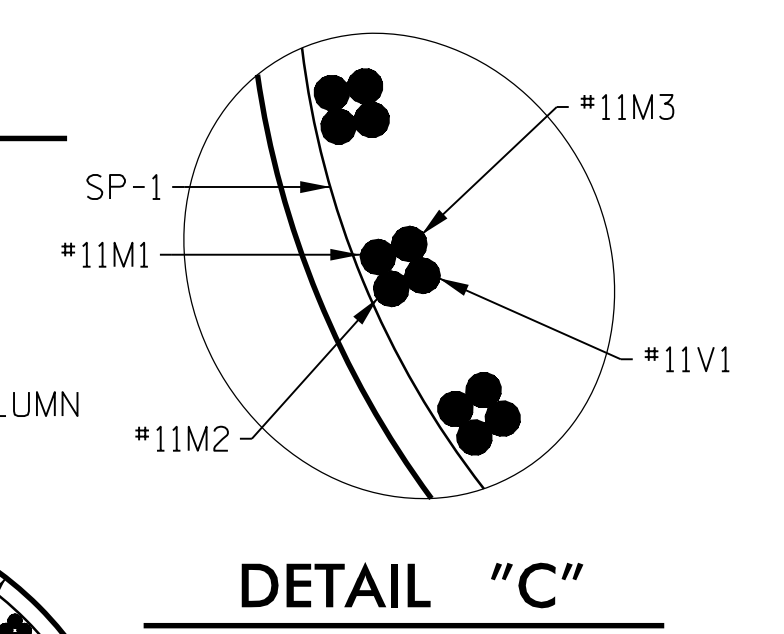
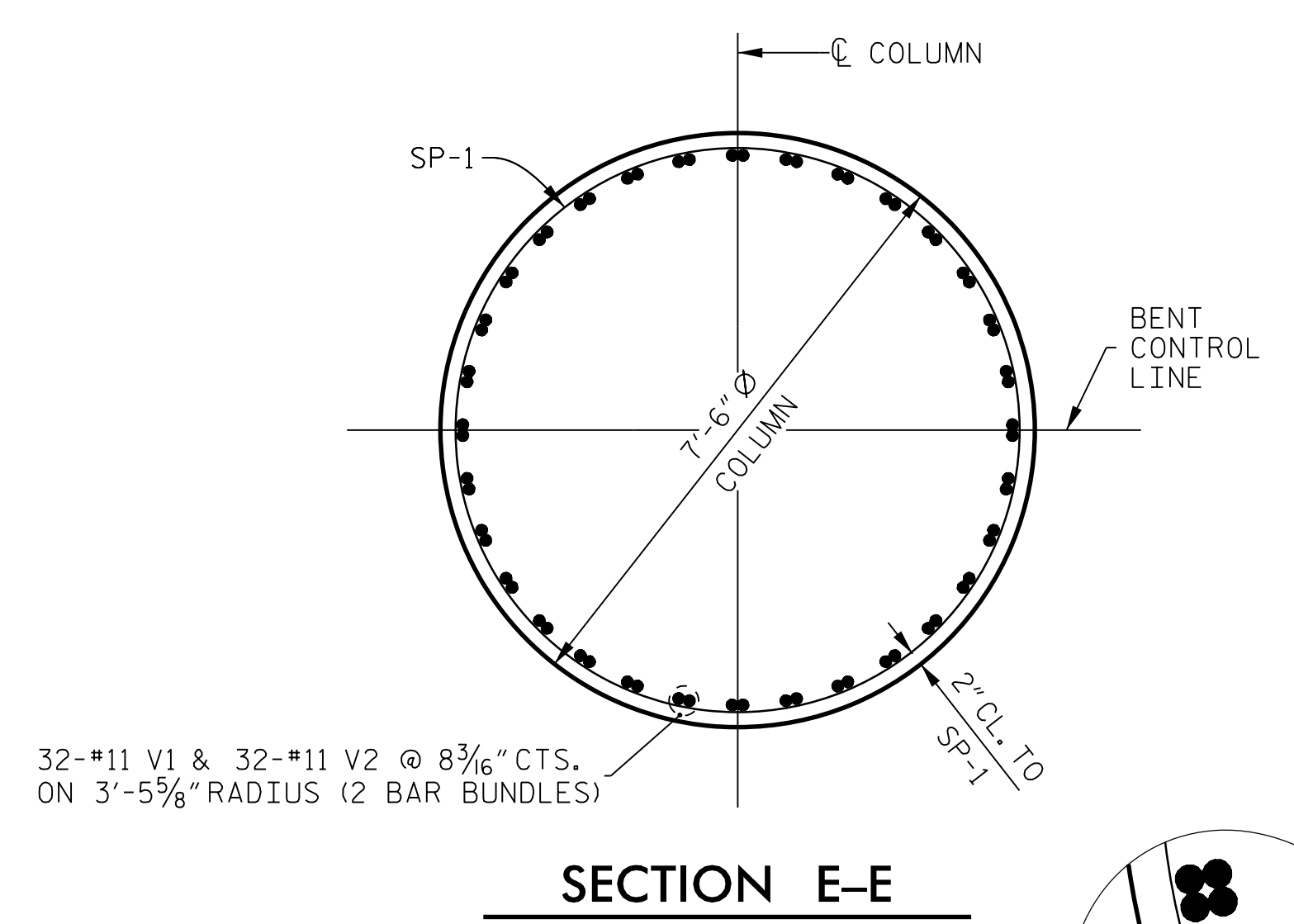
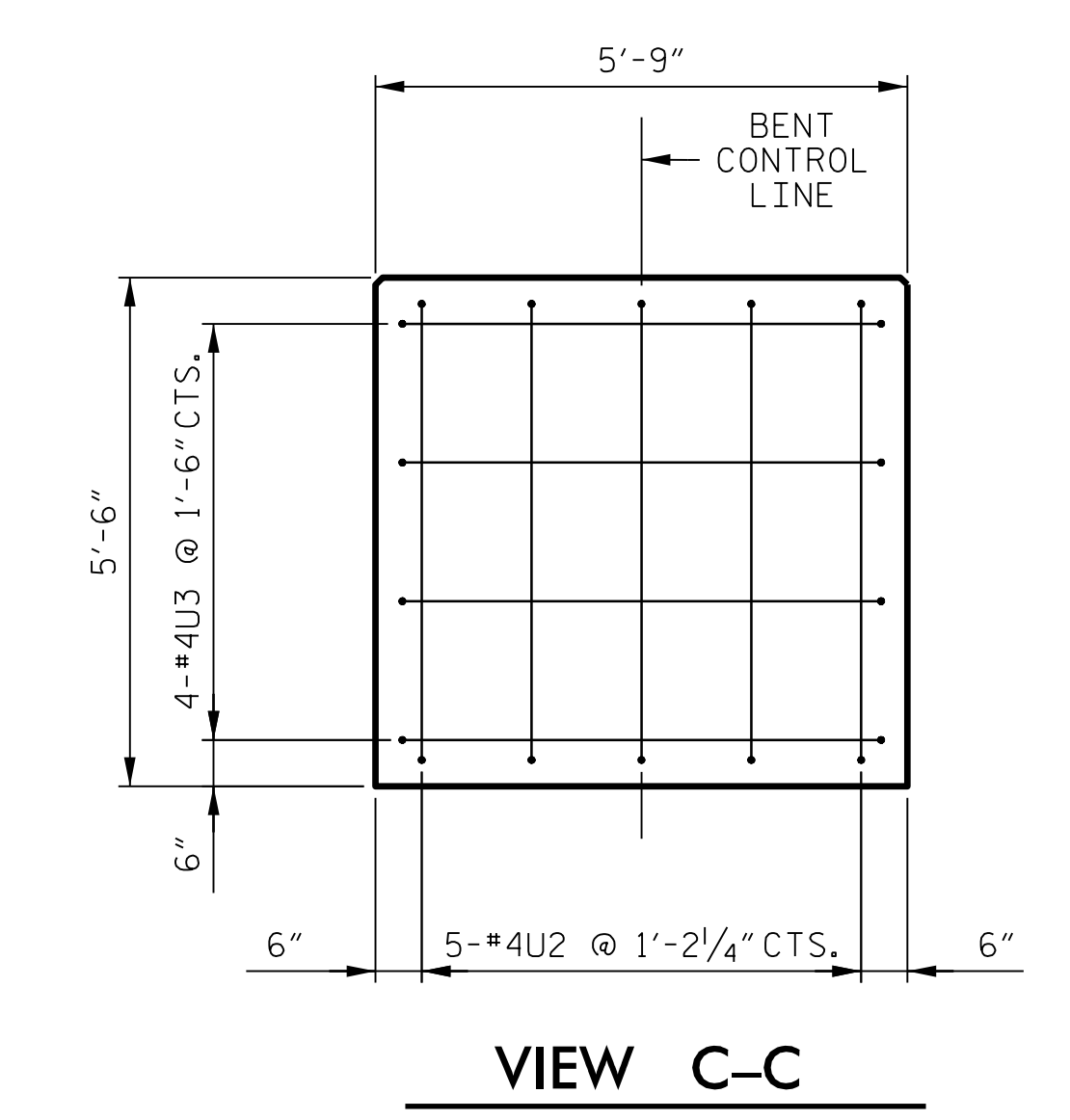
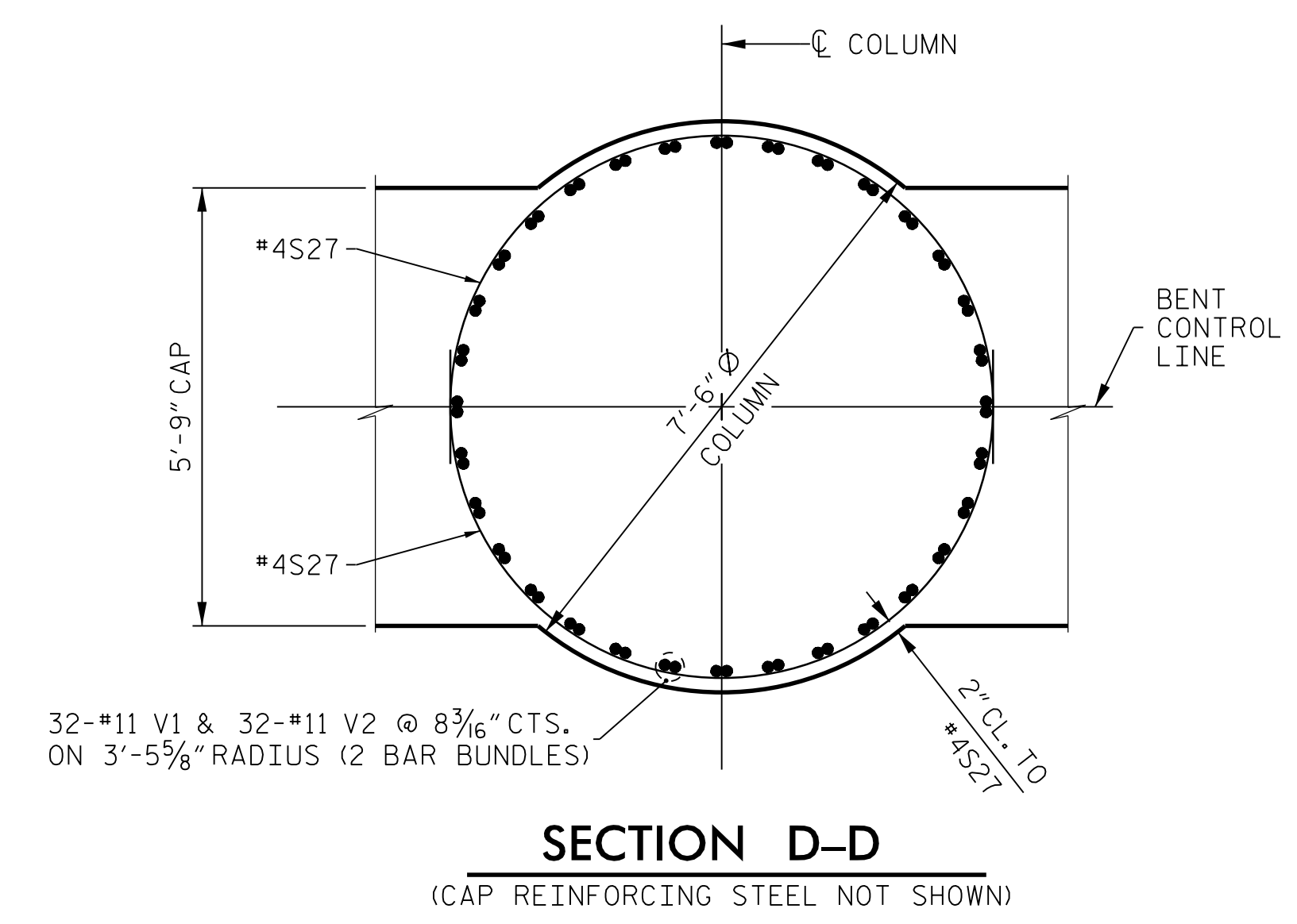
PLANS PREPARED BY:
PARSONS
 5540 Centerview Drive, Suite 217
 Raleigh, NC 27606-3386
 NC LICENSE No. F-0246
 FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY: J. CAYETANO DATE: 9-21
 CHECKED BY: J. B. TAYLOR DATE: 9-21
 DESIGN ENGINEER: J. B. TAYLOR DATE: 9-21



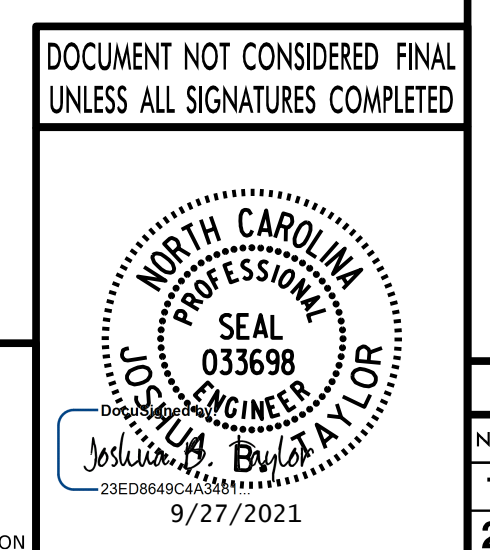
▲ DENOTES BATTER PILE 3:12 IN DIRECTION OF ARROW

⊕ = UPLIFT ANCHOR PLATE REQUIRED AT EACH PERIMETER PILE, FOR DETAILS, SEE "SUBSTRUCTURE BENT 1 (SHEET 2 OF 3)"



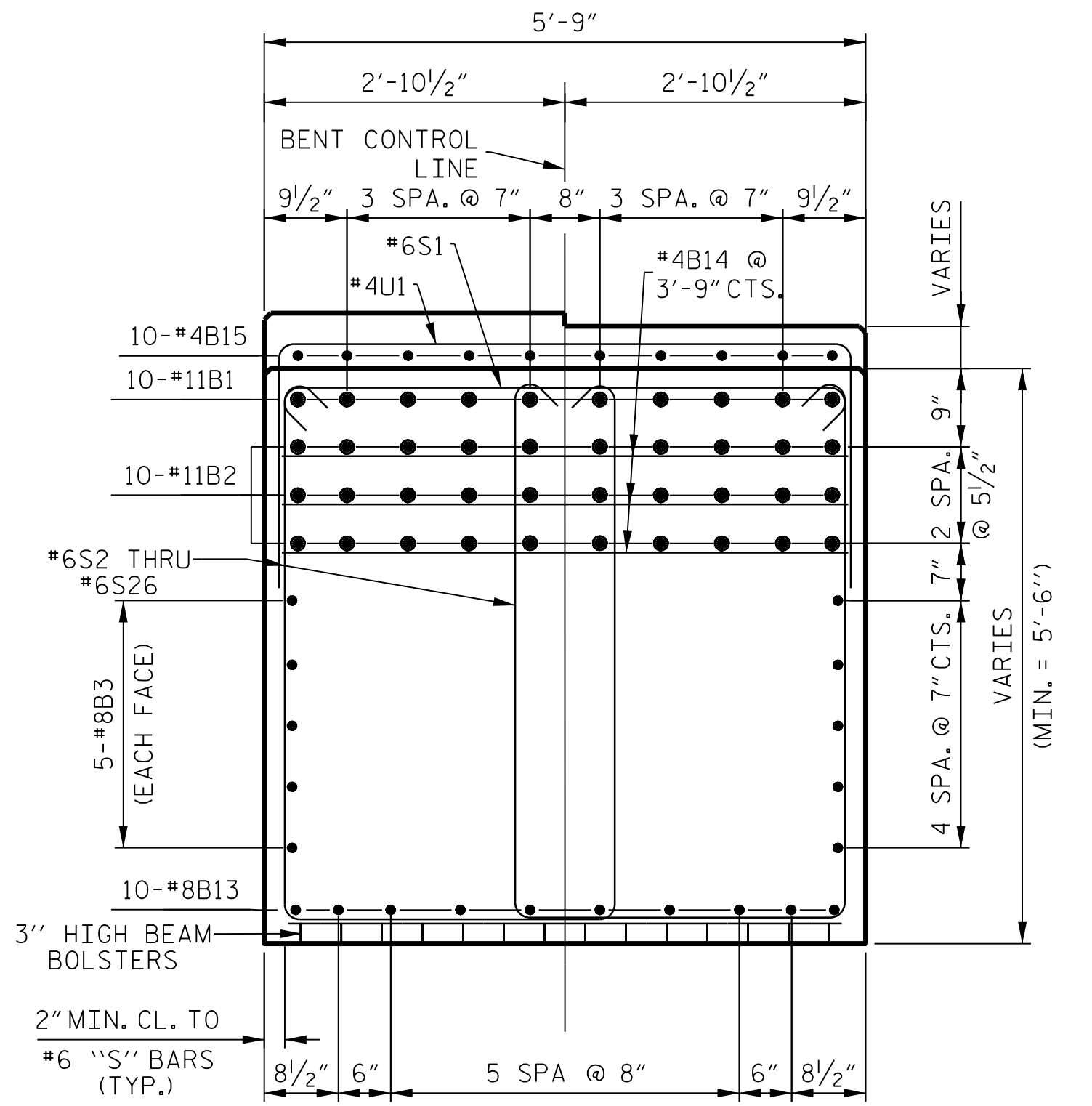
PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-
 SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 2 SECTIONS AND DETAILS					
REVISIONS					
No.	BY:	DATE:	No.	BY:	DATE:
1			3		
2			4		

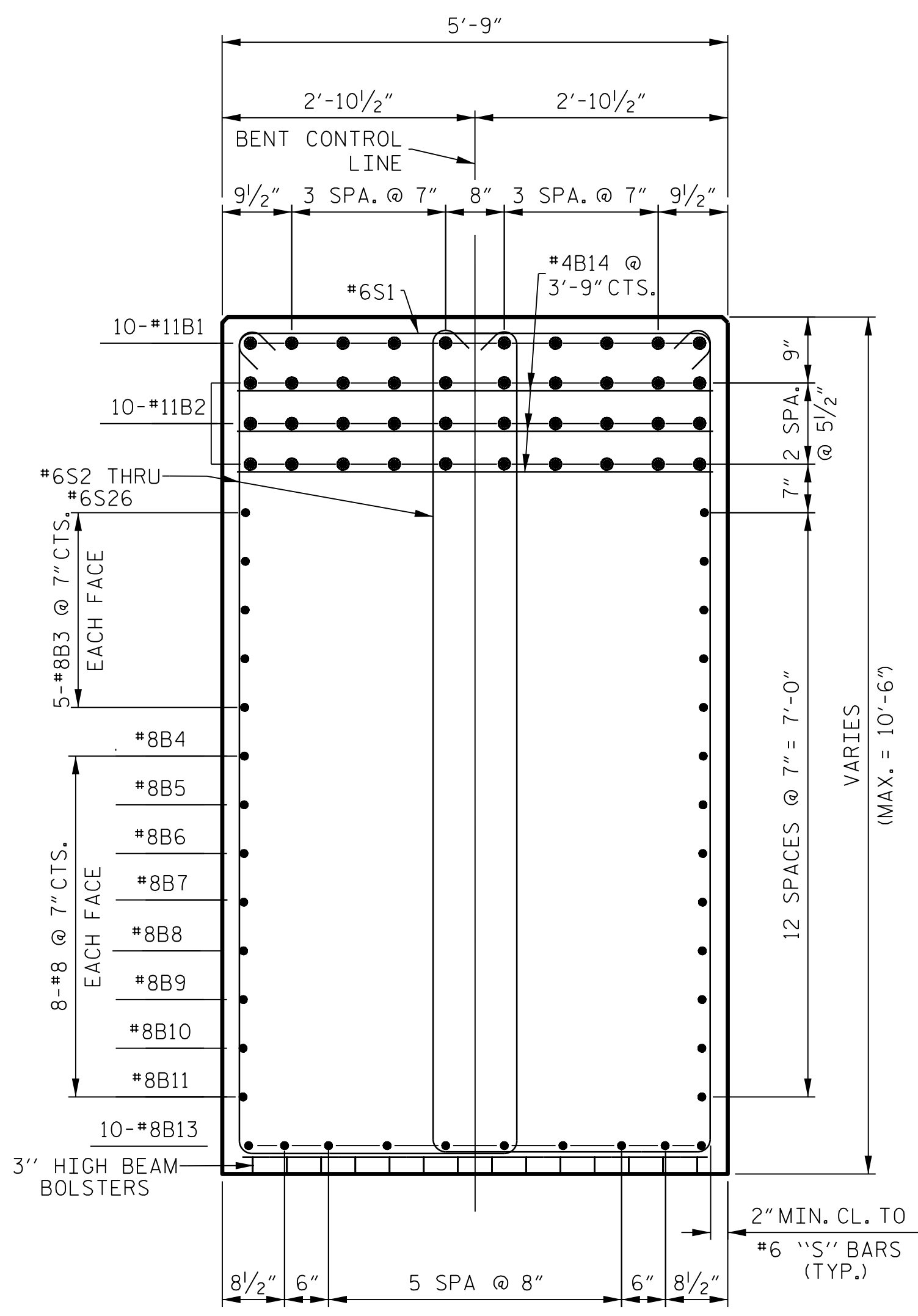


PLANS PREPARED BY:
PARSONS
 5540 CenterView Drive, Suite 217
 Raleigh, NC 27606-3386
 NC LICENSE No. F-0246
 FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY: J. CAYETANO DATE: 9-21
 CHECKED BY: J. B. TAYLOR DATE: 9-21
 DESIGN ENGINEER: J. B. TAYLOR DATE: 9-21



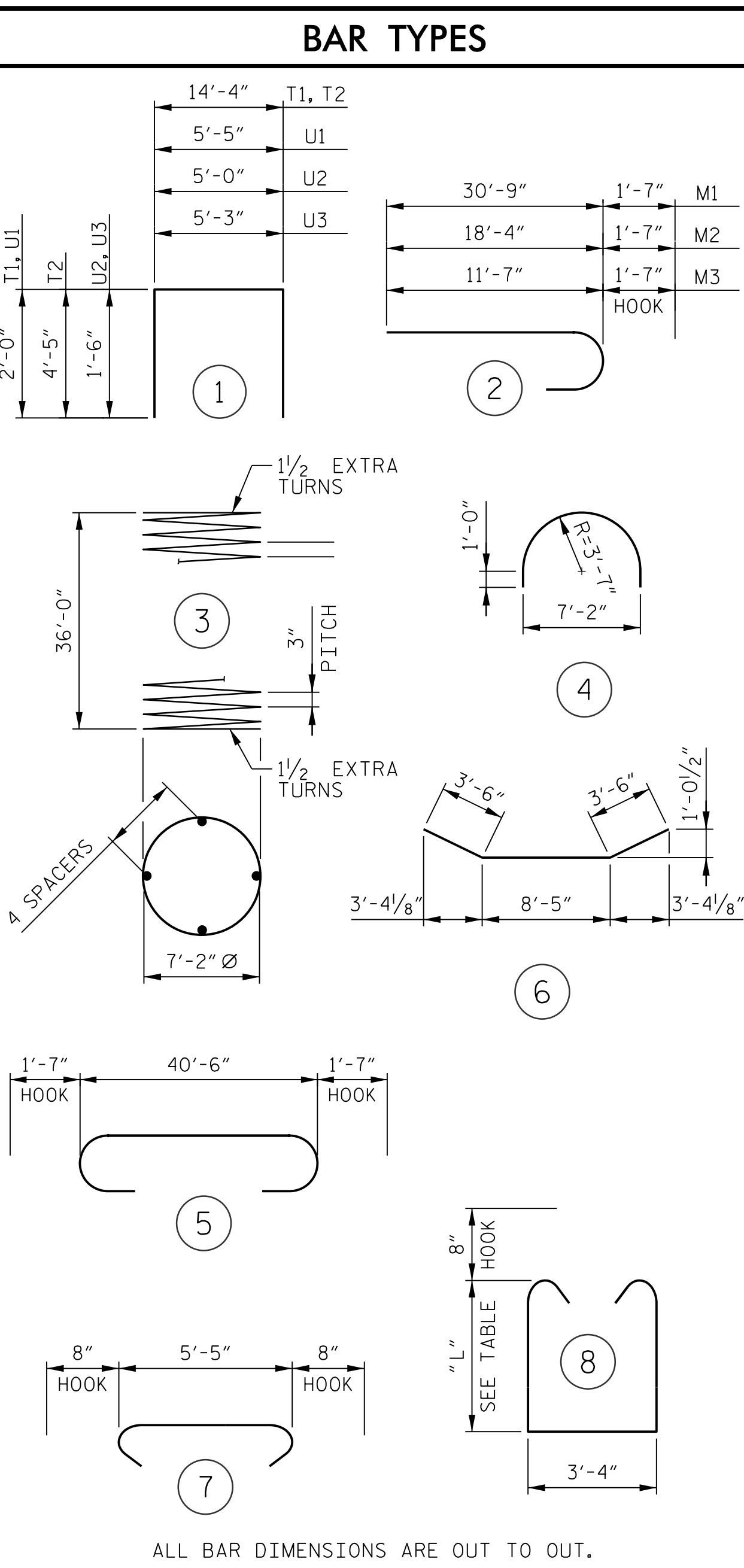
SECTION A-A



SECTION B-B

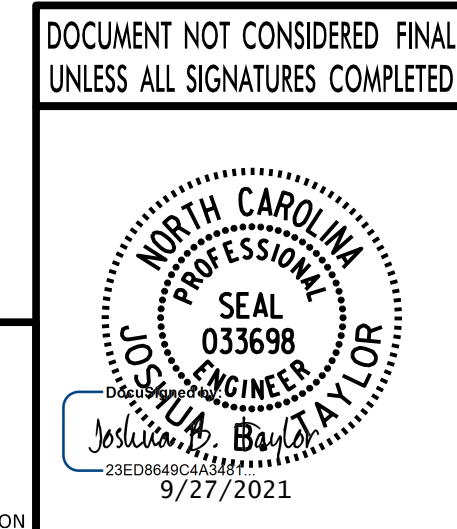
STIRRUP HEIGHT TABLE	
BAR	DIM "L"
S2	5'-3 1/2"
S3	5'-6"
S4	5'-8 1/2"
S5	6'-11"
S6	6'-1 1/2"
S7	6'-4"
S8	6'-6 1/2"
S9	6'-9"
S10	6'-11 1/2"
S11	7'-1 1/2"
S12	7'-4"
S13	7'-6 1/2"
S14	7'-9"
S15	7'-11 1/2"
S16	8'-2"
S17	8'-4 1/2"
S18	8'-7"
S19	8'-9 1/2"
S20	9'-0"
S21	9'-2 1/2"
S22	9'-5"
S23	9'-7 1/2"
S24	9'-10"
S25	10'-0 1/2"
S26	10'-2"

BILL OF MATERIAL - BENT 2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	10	# 11	5	43'-8"	2,320	
B2	30	# 11	STR	40'-2"	6,402	
B3	12	# 8	STR	40'-6"	1,298	
B4	2	# 8	STR	37'-10"	202	
B5	2	# 8	STR	34'-1"	182	
B6	2	# 8	STR	30'-3"	162	
B7	2	# 8	STR	26'-6"	142	
B8	2	# 8	STR	22'-9"	121	
B9	2	# 8	STR	18'-18"	104	
B10	2	# 8	STR	15'-2"	81	
B11	2	# 8	STR	11'-5"	61	
B12	10	# 8	6	15'-5"	412	
B13	20	# 8	STR	16'-4"	872	
B14	44	# 4	STR	5'-5"	159	
B15	50	# 4	STR	3'-6"	117	
M1	32	# 11	2	32'-4"	5,497	
M2	32	# 11	2	19'-11"	3,386	
M3	32	# 11	2	13'-2"	2,239	
S1	61	# 6	7	6'-9"	618	
S2	4	# 6	3	15'-3"	92	
S3	4	# 6	3	15'-8"	94	
S4	4	# 6	3	16'-1"	97	
S5	4	# 6	3	16'-6"	99	
S6	4	# 6	3	16'-11"	102	
S7	4	# 6	3	17'-4"	104	
S8	4	# 6	3	17'-9"	107	
S9	4	# 6	3	18'-2"	109	
S10	4	# 6	3	18'-7"	112	
S11	4	# 6	3	18'-11"	114	
S12	4	# 6	3	19'-4"	116	
S13	4	# 6	3	19'-9"	119	
S14	4	# 6	3	20'-2"	121	
S15	4	# 6	3	20'-7"	124	
S16	4	# 6	3	21'-0"	126	
S17	4	# 6	3	21'-5"	129	
S18	4	# 6	3	21'-10"	131	
S19	4	# 6	3	22'-3"	134	
S20	4	# 6	3	22'-8"	136	
S21	4	# 6	3	23'-1"	139	
S22	4	# 6	3	23'-6"	141	
S23	4	# 6	3	23'-11"	144	
S24	4	# 6	3	24'-4"	146	
S25	4	# 6	3	24'-9"	149	
S26	4	# 6	3	25'-0"	150	
T1	44	# 11	1	18'-4"	4,286	
T2	44	# 8	1	23'-2"	2,722	
T3	32	# 5	STR	14'-6"	484	
U1	40	# 4	1	9'-5"	252	
U2	10	# 4	1	8'-0"	53	
U3	8	# 4	1	8'-3"	44	
V1	32	# 11	STR	44'-3"	7,523	
V2	32	# 11	STR	37'-5"	6,361	
SP-1	1	# 4	6	3290'-8"	2,198	
REINFORCING STEEL					LBS.	49,135
SPIRAL COLUMN REINFORCING STEEL					LBS.	2,198
CLASS 'A' CONCRETE						
POUR #1					CU. YDS.	50.0
POUR #2					CU. YDS.	58.5
POUR #3					CU. YDS.	77.3
TOTAL					CU. YDS.	185.8
MICROPILES					21 LIN. FT.	945
NO.						



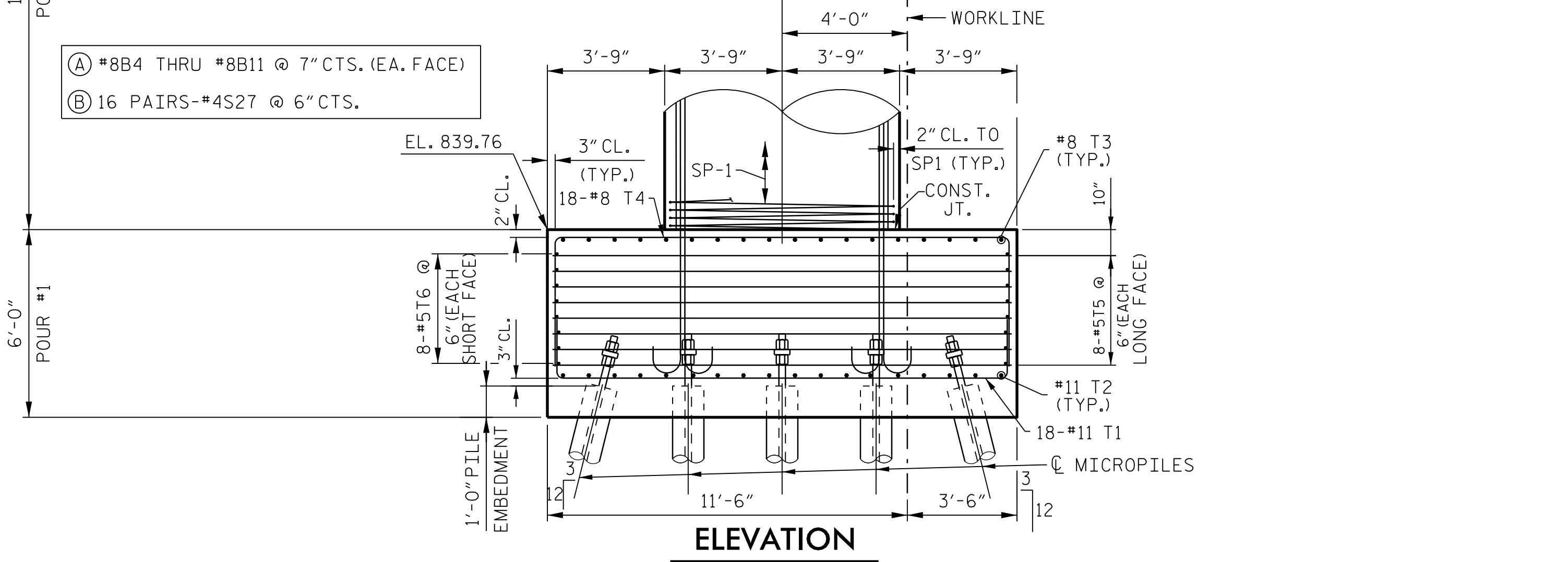
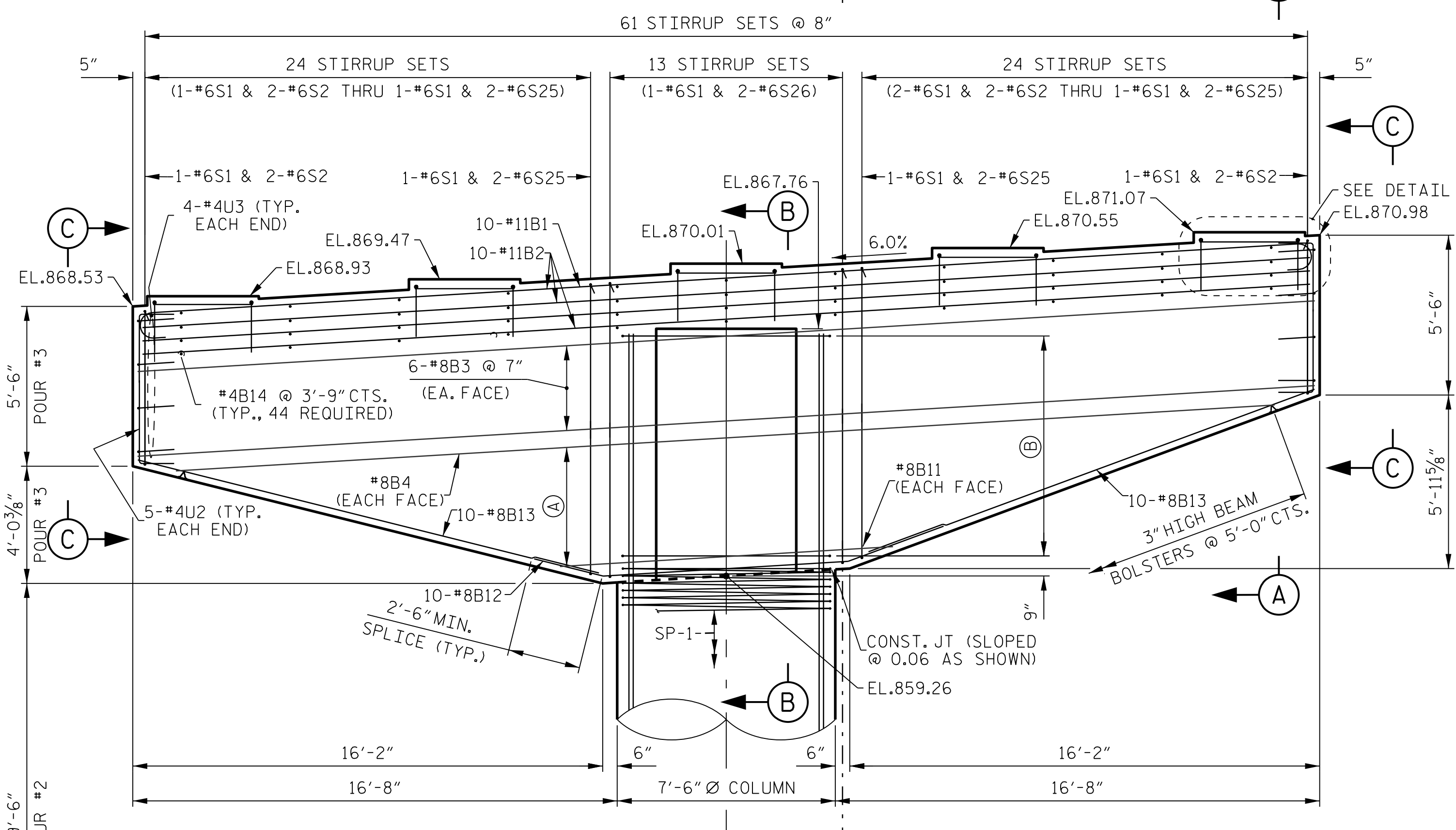
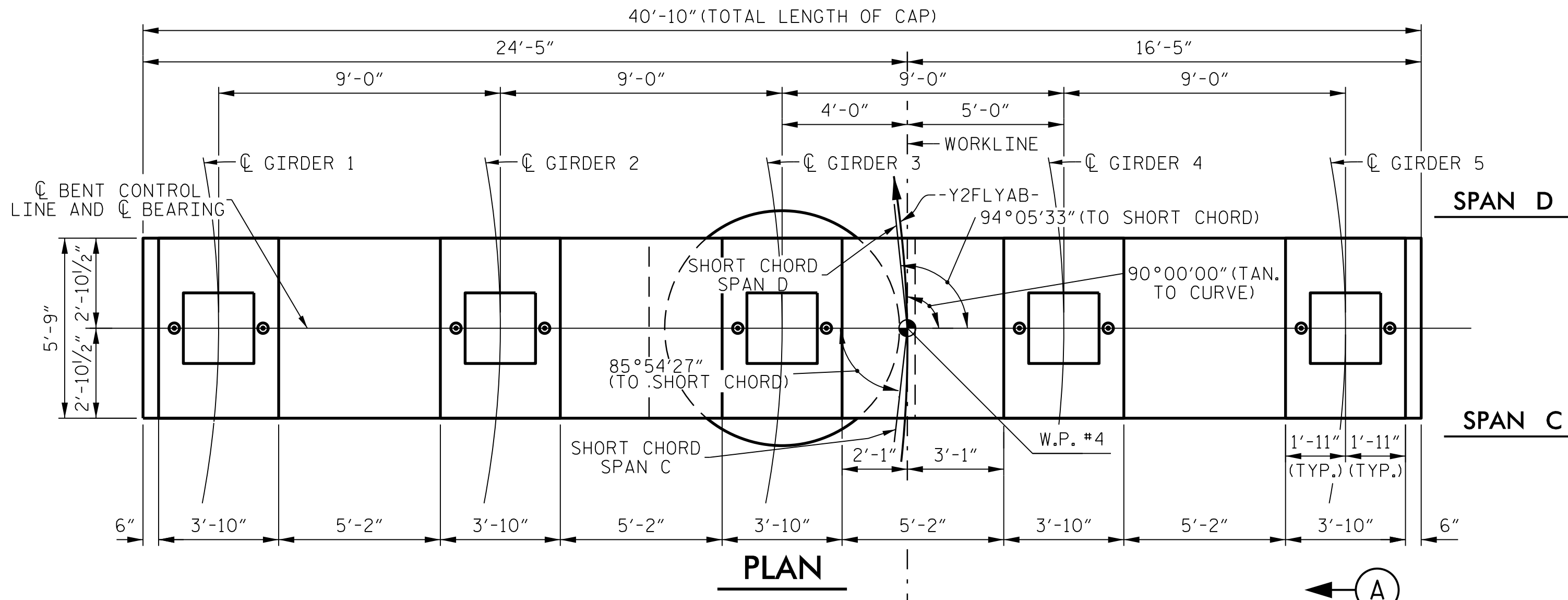
PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-
 SHEET 3 OF 3

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



PLANS PREPARED BY:
PARSONS
 5540 CenterView Drive, Suite 217
 Raleigh, NC 27606-3286
 NC LICENSE No. F-0246
 9/27/2021
 FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY: J. CAYETANO DATE: 9-21
 CHECKED BY: J. B. TAYLOR DATE: 9-21
 DESIGN ENGINEER: J. B. TAYLOR DATE: 9-21



NOTES

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

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

DETAILED DRAWINGS FOR FALSEWORK AND FORMS FOR THIS HAMMERHEAD BENT SHALL BE SUBMITTED. SEE SHEET SN.

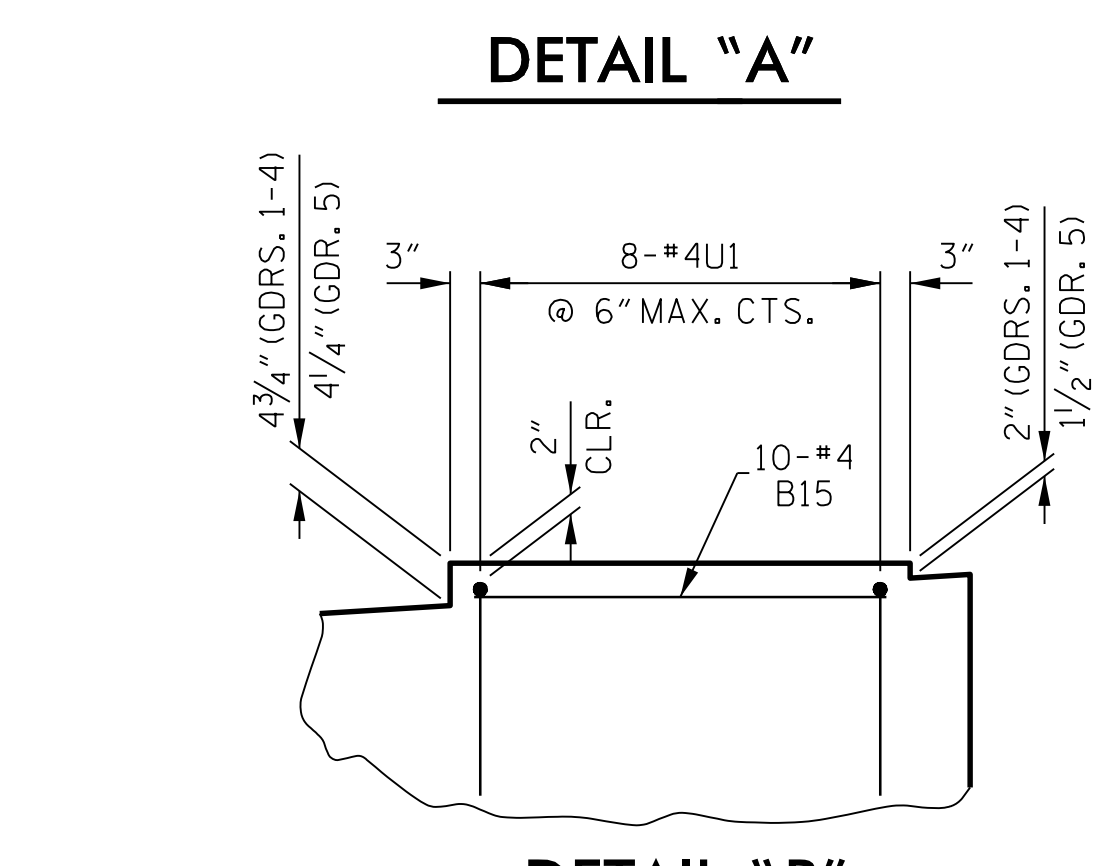
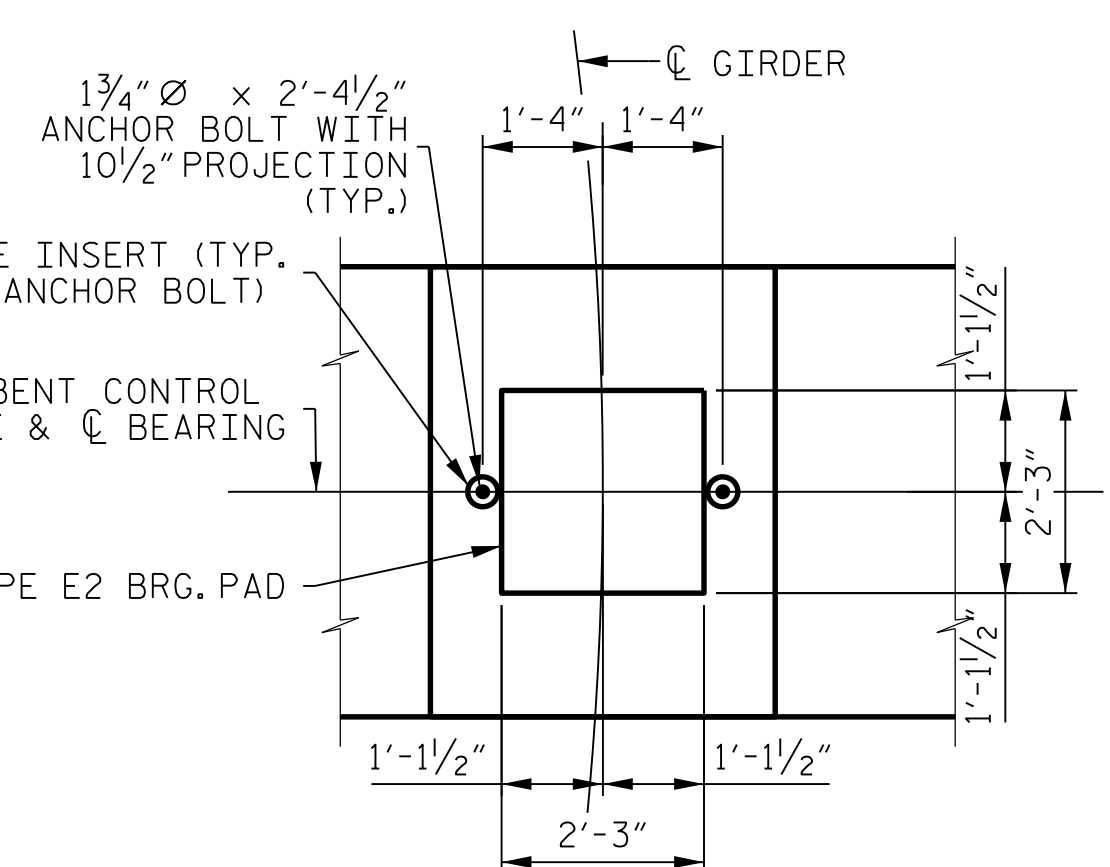
FOR SECTION A-A AND SECTION B-B, SEE SHEET 3 OF 3.

FOR VIEW C-C, SECTION D-D, AND SECTION E-E, SEE SHEET 2 OF 3.

FOR MICROPILE DETAILS, SEE "SUBSTRUCTURE BENT 1 (SHEET 2 OF 3)".

FOR PIPE INSERT DETAILS, SEE "SUPERSTRUCTURE BEARING DETAILS" SHEET.

THE CAP AND COLUMN SHALL BE CONSIDERED MASS CONCRETE, SEE SPECIAL PROVISIONS.



PROJECT NO. **U-2579AA**

FORSYTH COUNTY

STATION: **28 + 33.21 -Y2FLYAB- 41 + 07.80 -L-**

SHEET 1 OF 3

STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
SUBSTRUCTURE					
BENT 3					
PLAN & ELEVATION					
REVISIONS					SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					84

DRAWN BY : J. CAYETANO DATE : 9-21

CHECKED BY : J. B. TAYLOR DATE : 9-21

DESIGN ENGINEER : J. B. TAYLOR DATE : 9-21

PLANS PREPARED BY :

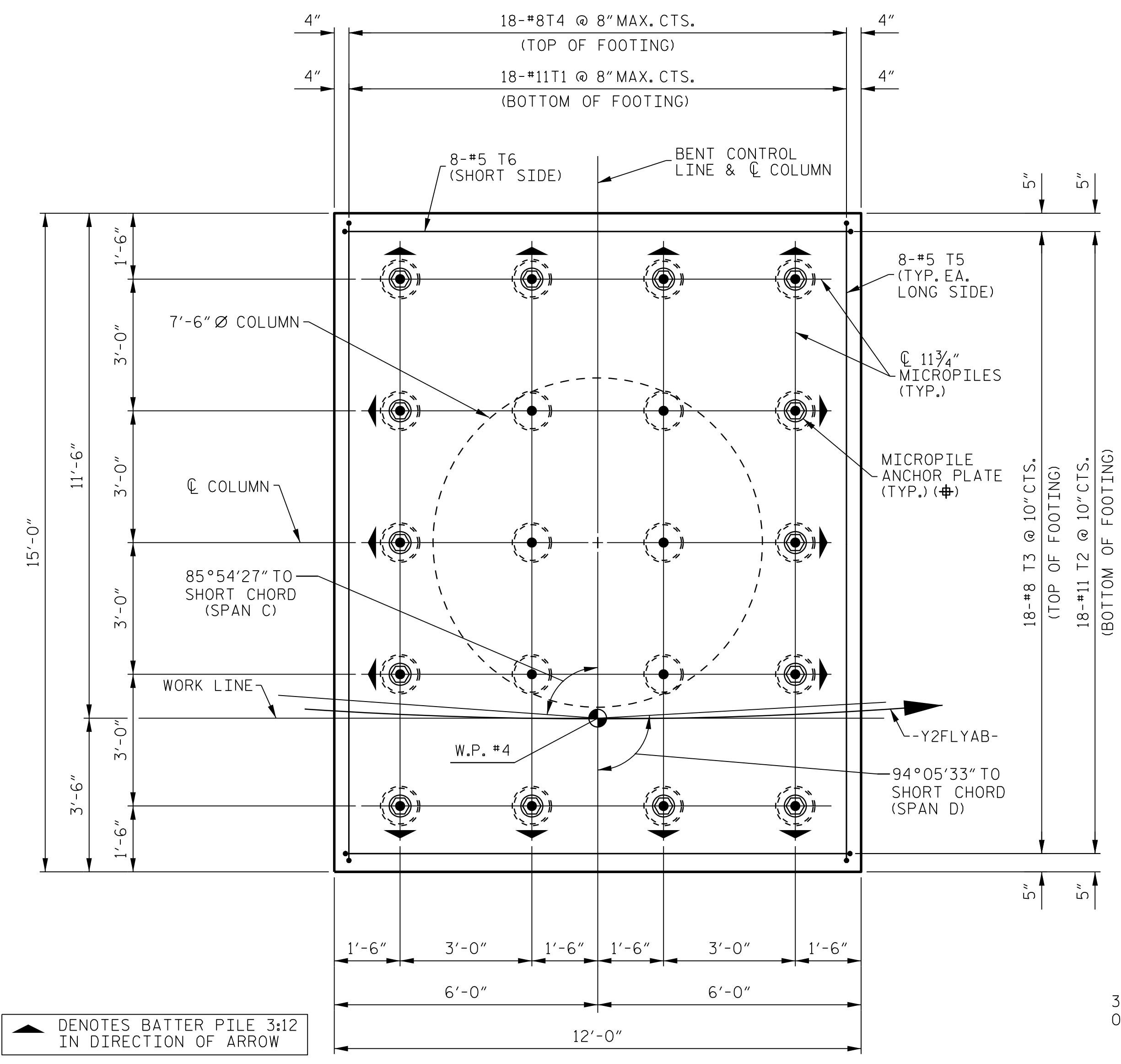
PARSONS

5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246

FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

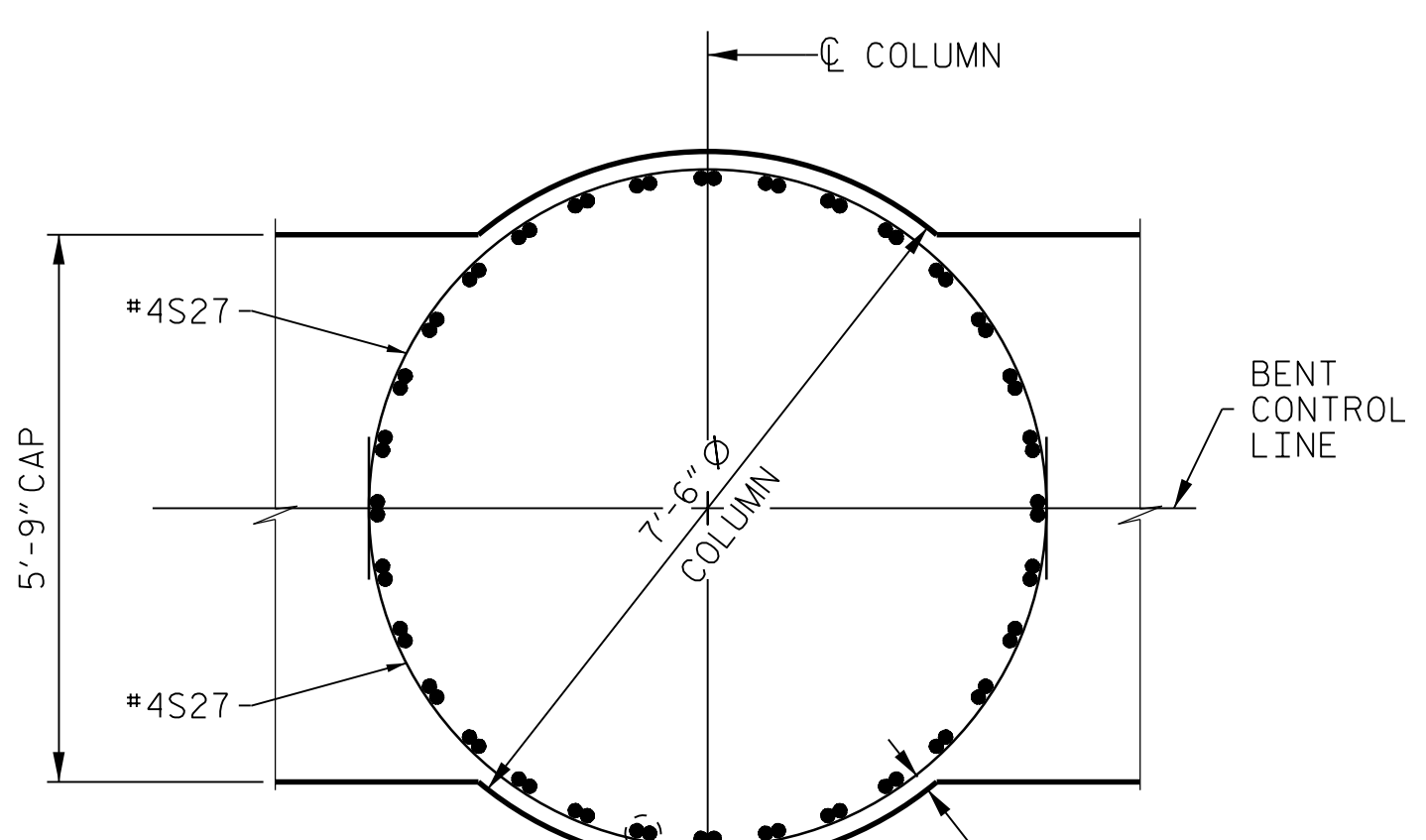
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL
034539
J. B. TAYLOR
8/8/2022



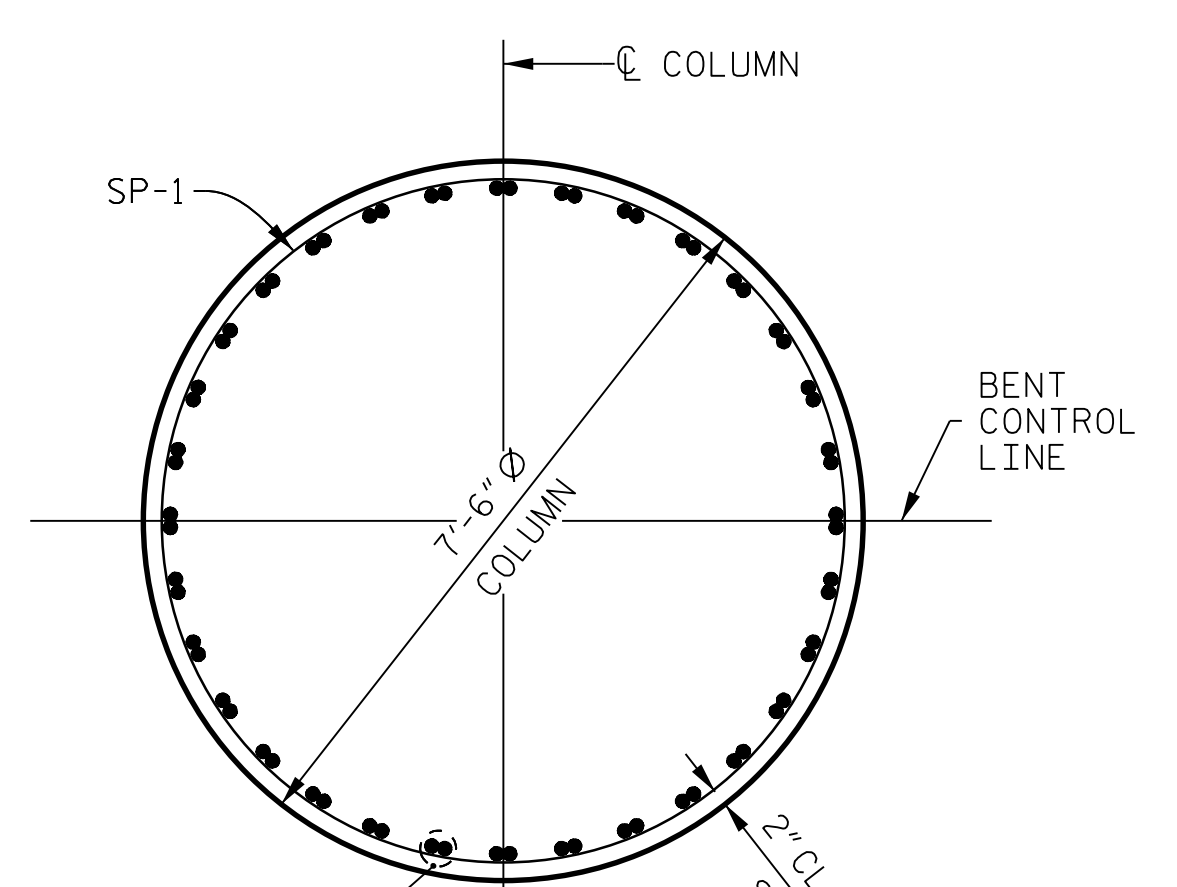
FOOTING PLAN

▲ DENOTES BATTER PILE 3:12 IN DIRECTION OF ARROW

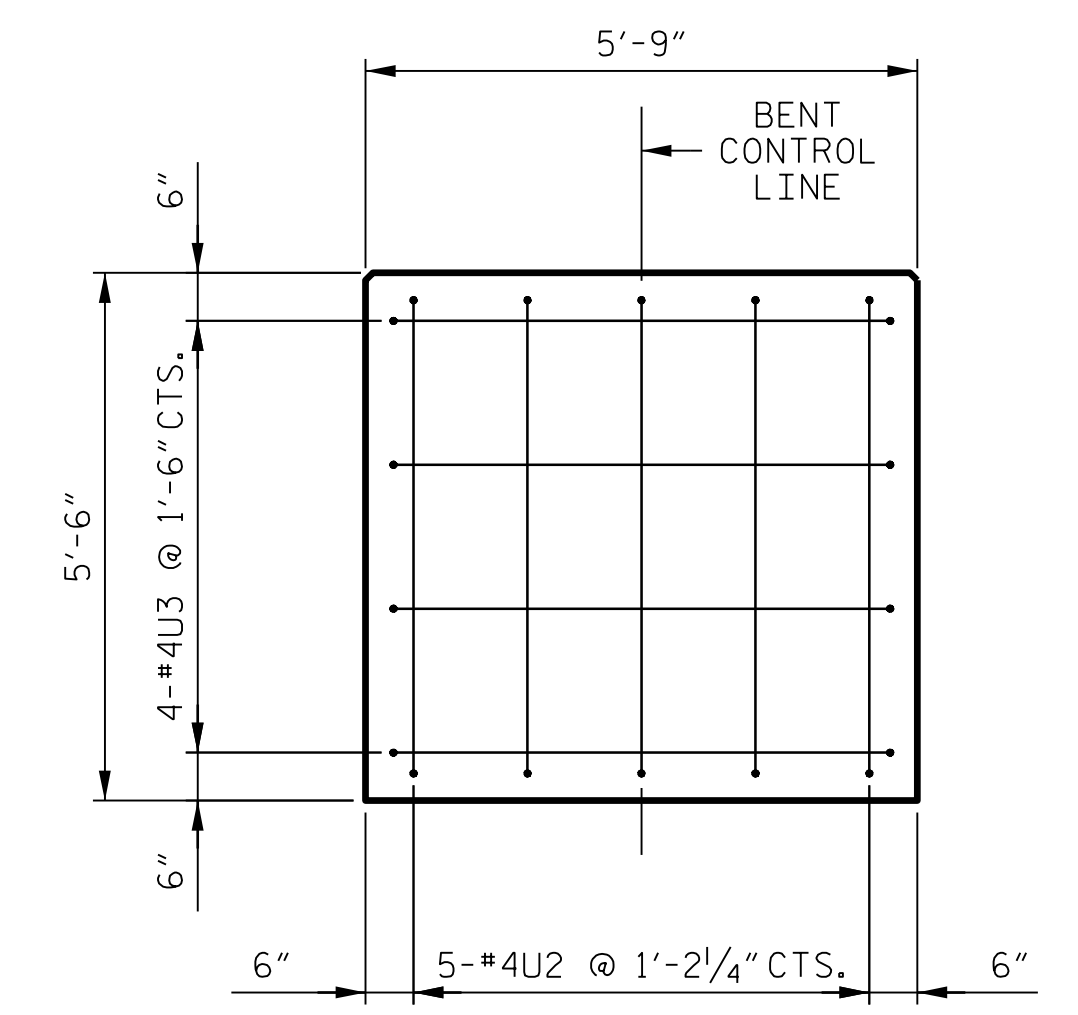
⊕ = UPLIFT ANCHOR PLATE REQUIRED AT EACH PERIMETER PILE. FOR DETAILS, SEE "SUBSTRUCTURE BENT 1 (SHEET 2 OF 3)"



SECTION D-D
(CAP REINFORCING STEEL NOT SHOWN)



SECTION E-E

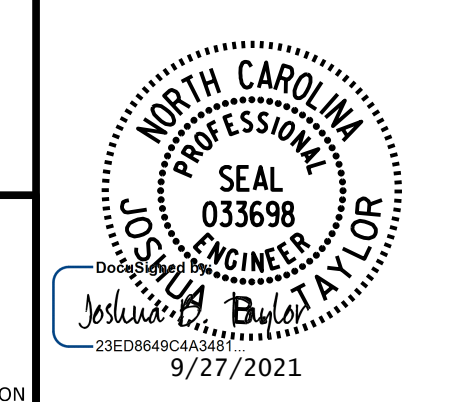


VIEW C-C

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-
 SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
BENT 3
 SECTIONS AND DETAILS

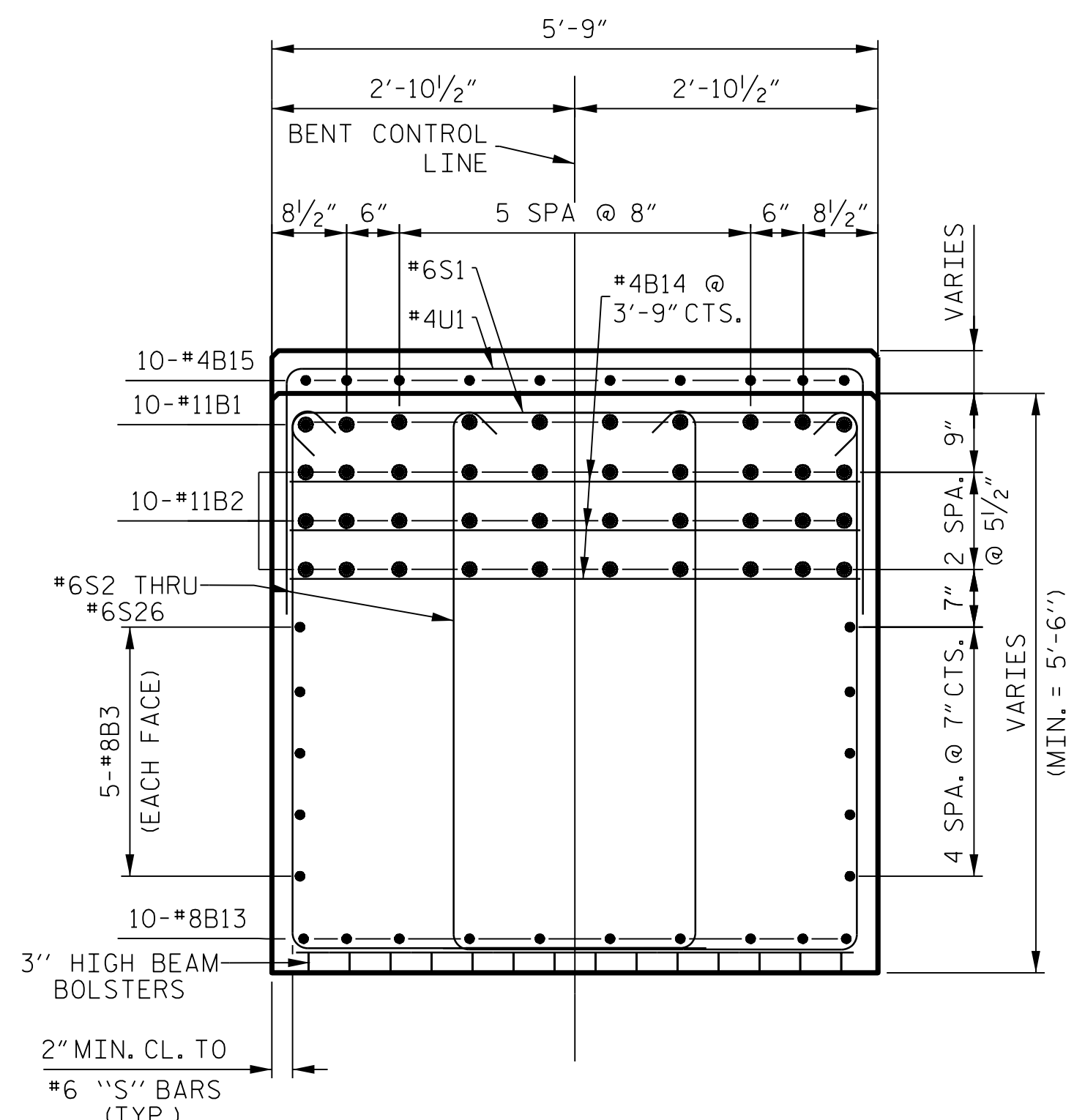
DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED



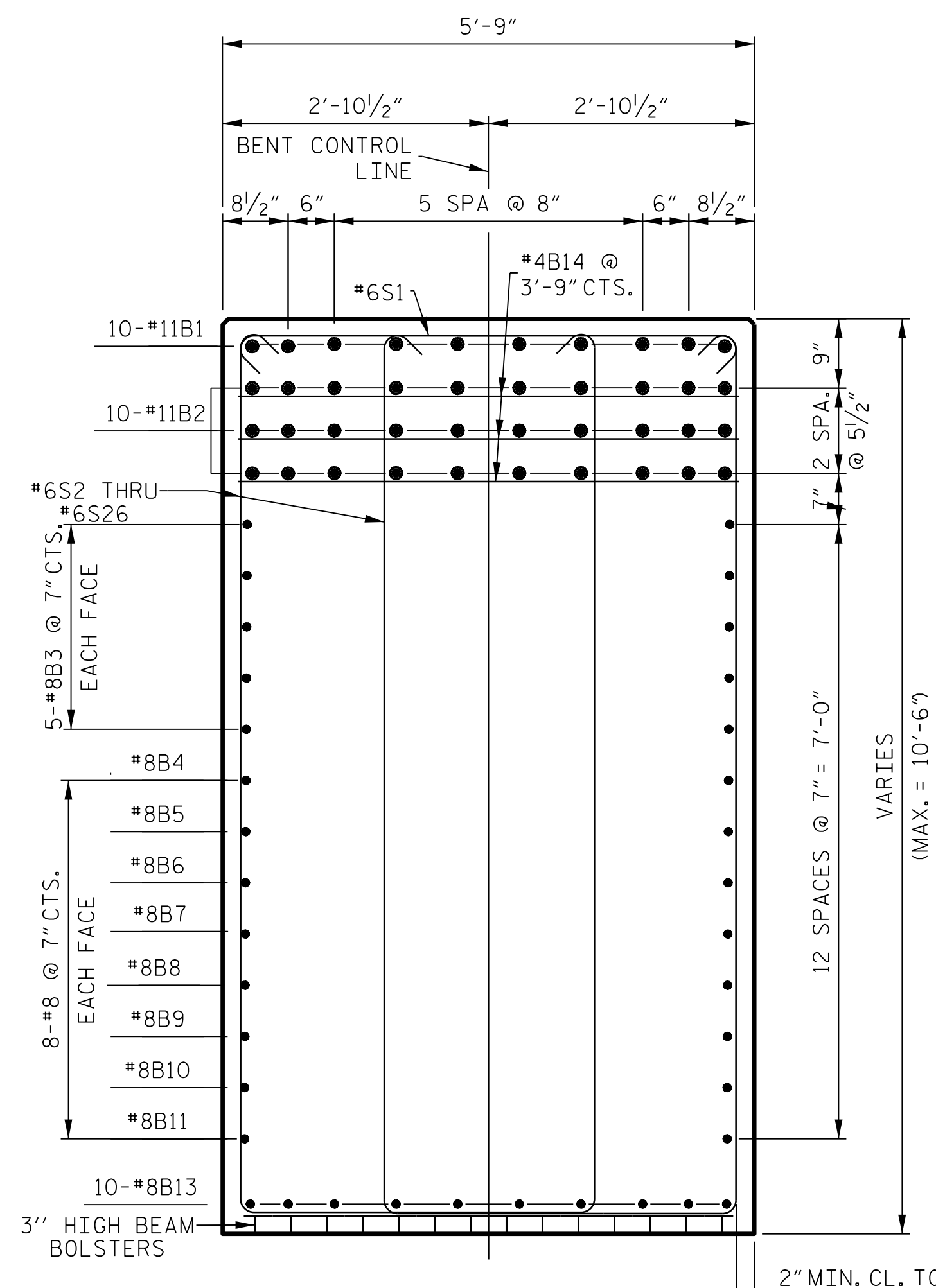
PLANS PREPARED BY:
PARSONS
 5540 CenterView Drive, Suite 217
 Raleigh, NC 27606-3386
 NC LICENSE No. F-0246
 FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY : J. CAYETANO DATE : 9-21
 CHECKED BY : J. B. TAYLOR DATE : 9-21
 DESIGN ENGINEER : J. B. TAYLOR DATE : 9-21

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	TOTAL SHEETS
1			3			84
2			4			



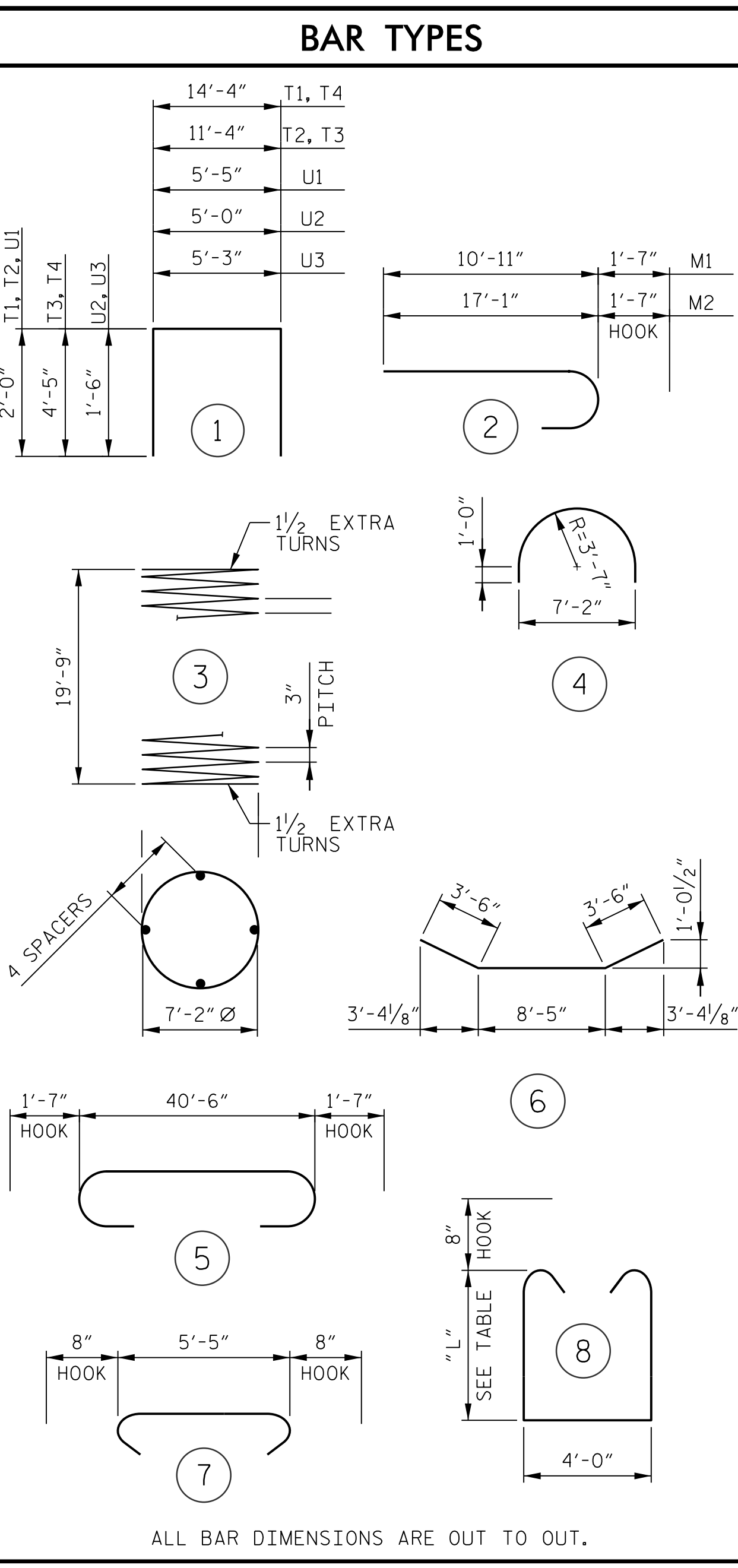
SECTION A-A



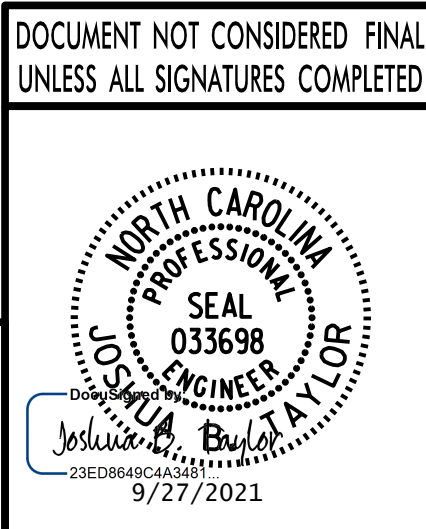
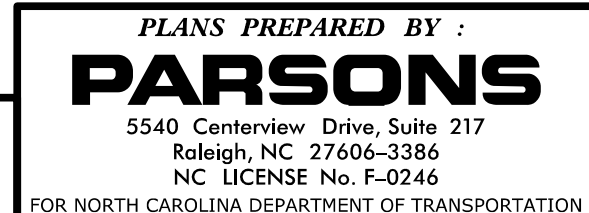
SECTION B-B

BAR	DIM "L"
S2	5'-3 1/2"
S3	5'-6"
S4	5'-8 1/2"
S5	6'-11"
S6	6'-1 1/2"
S7	6'-4"
S8	6'-6 1/2"
S9	6'-9"
S10	6'-11 1/2"
S11	7'-1 1/2"
S12	7'-4"
S13	7'-6 1/2"
S14	7'-9"
S15	7'-11 1/2"
S16	8'-2"
S17	8'-4 1/2"
S18	8'-7"
S19	8'-9 1/2"
S20	9'-0"
S21	9'-2 1/2"
S22	9'-5"
S23	9'-7 1/2"
S24	9'-10"
S25	10'-0 1/2"
S26	10'-2"

BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	# 11	5	43'-8"	2,320
B2	30	# 11	STR	40'-2"	6,402
B3	12	# 8	STR	40'-6"	1,298
B4	2	# 8	STR	37'-10"	202
B5	2	# 8	STR	34'-1"	182
B6	2	# 8	STR	30'-3"	162
B7	2	# 8	STR	26'-6"	142
B8	2	# 8	STR	22'-9"	121
B9	2	# 8	STR	18'-18"	104
B10	2	# 8	STR	15'-2"	81
B11	2	# 8	STR	11'-5"	61
B12	10	# 8	6	15'-5"	412
B13	20	# 8	STR	16'-4"	872
B14	44	# 4	STR	5'-5"	159
B15	50	# 4	STR	3'-6"	117
M1	32	# 11	2	12'-6"	2,125
M2	32	# 11	2	18'-8"	3,174
S1	61	# 6	7	6'-9"	618
S2	4	# 6	8	15'-11"	96
S3	4	# 6	8	16'-4"	98
S4	4	# 6	8	16'-9"	101
S5	4	# 6	8	17'-2"	103
S6	4	# 6	8	17'-7"	106
S7	4	# 6	8	18'-0"	108
S8	4	# 6	8	18'-5"	111
S9	4	# 6	8	18'-10"	113
S10	4	# 6	8	19'-3"	116
S11	4	# 6	8	19'-7"	118
S12	4	# 6	8	20'-0"	120
S13	4	# 6	8	20'-5"	123
S14	4	# 6	8	20'-10"	125
S15	4	# 6	8	21'-3"	128
S16	4	# 6	8	21'-8"	130
S17	4	# 6	8	22'-1"	133
S18	4	# 6	8	22'-6"	135
S19	4	# 6	8	22'-11"	138
S20	4	# 6	8	23'-4"	140
S21	4	# 6	8	23'-9"	143
S22	4	# 6	8	24'-2"	145
S23	4	# 6	8	24'-7"	148
S24	4	# 6	8	25'-0"	150
S25	4	# 6	8	25'-5"	153
S26	26	# 6	8	25'-8"	1,002
S27	32	# 4	4	13'-3"	283
T1	18	# 11	1	18'-4"	1,753
T2	18	# 11	1	15'-4"	1,466
T3	18	# 8	1	20'-2"	969
T4	18	# 8	1	23'-2"	1,113
T5	16	# 5	STR	14'-6"	242
T6	16	# 5	STR	11'-6"	192
U1	40	# 4	1	9'-5"	252
U2	10	# 4	1	8'-0"	53
U3	8	# 4	1	8'-3"	44
V1	32	# 11	STR	27'-10"	4,732
V2	32	# 11	STR	21'-8"	3,684
SP-1	1	# 4	3	1835'-8"	1,226
REINFORCING STEEL					LBS. 1,226
SPIRAL COLUMN					
REINFORCING STEEL					LBS. 37,318
CLASS 'A' CONCRETE					
POUR #1				CU. YDS. 40.0	
POUR #2				CU. YDS. 31.9	
POUR #3				CU. YDS. 77.0	
TOTAL				CU. YDS. 148.9	
MICROPILES					
NO.	20			LIN. FT. 1,100	

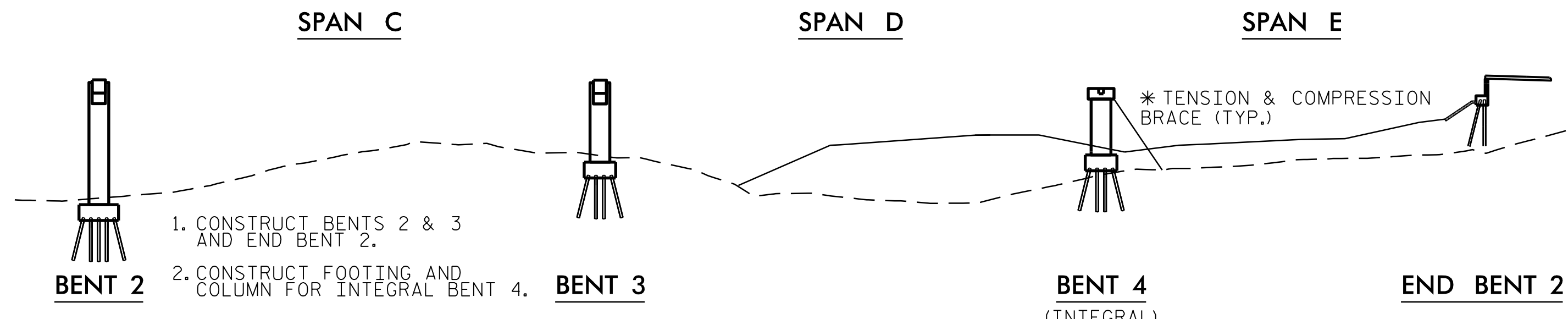


DRAWN BY: J. CAYETANO DATE: 9-21
 CHECKED BY: J. B. TAYLOR DATE: 9-21
 DESIGN ENGINEER: J. B. TAYLOR DATE: 9-21

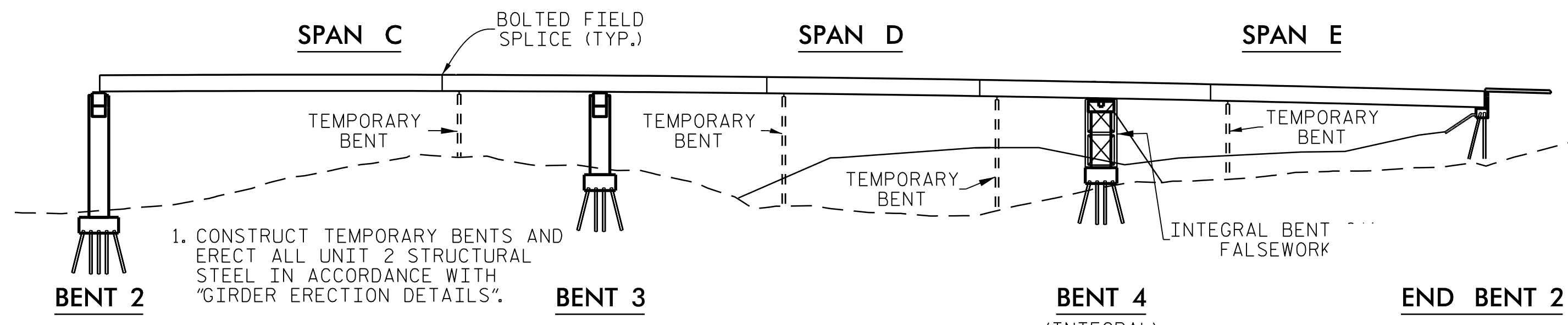


PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
 41 + 07.80 -L-
 SHEET 3 OF 3

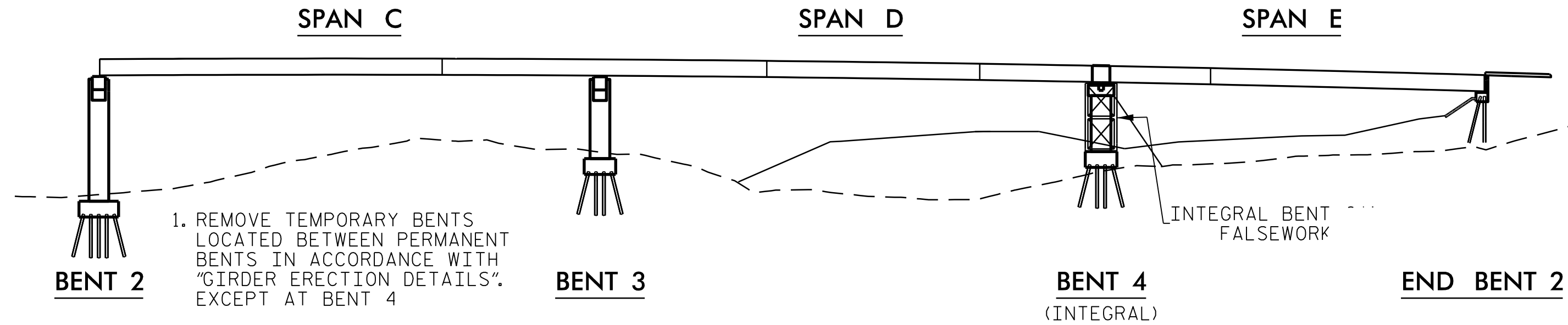
REVISIONS						SHEET No. S5-67
No.	BY:	DATE:	No.	BY:	DATE:	
1			3			TOTAL SHEETS 84
2			4			



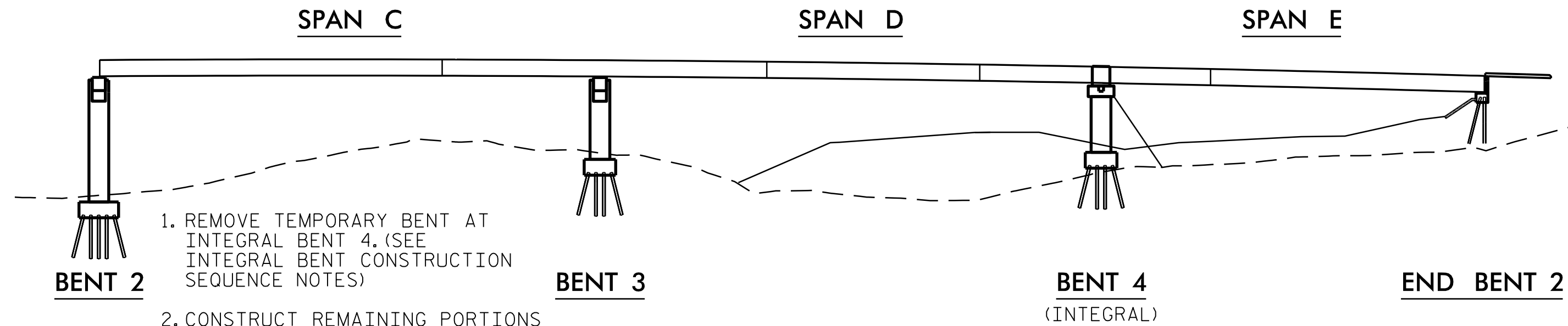
STAGE 1



STAGE 2



STAGE 3



STAGE 4

INTEGRAL BENT CONSTRUCTION SEQUENCE

THIS BRIDGE IS DESIGNED FOR THE CONSTRUCTION SEQUENCE SHOWN. IF THE CONTRACTOR USES AN ALTERNATE DESIGN AS ALLOWED BY THE SPECIAL PROVISION FOR POST-TENSIONING TENDONS, THE CONTRACTOR BECOMES RESPONSIBLE FOR CHANGES TO THE CONSTRUCTION SEQUENCE. THE REVISED CONSTRUCTION SEQUENCE SHALL BE SUBMITTED FOR APPROVAL WITH THE ALTERNATE POST-TENSIONING DESIGN. THE FOLLOWING CONSTRUCTION SEQUENCE SHALL APPLY UNLESS OTHERWISE APPROVED IN WRITING BY THE ENGINEER.

1. CONSTRUCT FOOTING, COLUMN AND LOWER-HINGE IN ACCORDANCE WITH THE PLANS.
2. ERECT TEMPORARY FALSEWORK. TEMPORARY FALSEWORK SHALL SUPPORT GIRDERS ON BOTH SIDES OF INTEGRAL CAP. GIRDER SUPPORT SHALL BE WITHIN 5'-0" OF CENTERLINE BENT.
3. ERECT ALL STRUCTURAL STEEL IN SPANS C THRU E. STRUCTURAL STEEL SHALL BE SUPPORTED BY TEMPORARY FALSEWORK AT BENT 4.
4. WHEN FOOTING, COLUMN AND LOWER-HINGE CONCRETE HAS ATTAINED THE SPECIFIED COMPRESSIVE STRENGTH VALUE (f'c), CONSTRUCT INTEGRAL CAP, INCLUDING POST-TENSIONING DUCTS, GROUT TUBES AND ANCHORAGES REQUIRED FOR CAP, IN ACCORDANCE WITH THE PLANS.
5. WHEN CAP CONCRETE HAS ATTAINED THE SPECIFIED INITIAL COMPRESSIVE STRENGTH VALUE (f'ci), INSTALL POST-TENSIONING TENDONS IN THE CAP (T1-T7) AND TENSION IN THE ORDER SHOWN BELOW.
6. WHEN TENSIONING OF THE CAP TENDONS (T1-T7) IS COMPLETE, TENDONS SHALL BE GROUTED AND ANCHORAGES SHALL BE PROTECTED. SEE POST-TENSIONING SPECIAL PROVISION FOR PROTECTION OF END ANCHORAGES.
7. REMOVE TEMPORARY FALSEWORK AFTER COMPLETION OF INTEGRAL CAP.
8. CAST DECK AND RAILS AS SPECIFIED IN THE SUPERSTRUCTURE PLANS.

POST-TENSION DATA

CONCRETE
 CAP & UPPER HINGE
 STRENGTH AT 28 DAYS (f'c) = 6.0 KSI
 STRENGTH AT POST-TENSIONING (f'c) = 4.5 KSI

LOWER HINGE
 STRENGTH AT 28 DAYS (f'c) = 6.0 KSI

FOOTING AND COLUMN
 STRENGTH AT 28 DAYS (f'c) = 3.0 KSI

TENDONS IN BENT CAP 4
 T1, T2, T3: 22-0.6" DIA., GRADE 270, SEVEN WIRE, LOW RELAXATION STRANDS PER TENDON
 T4, T5: 22-0.6" DIA., GRADE 270, SEVEN WIRE, LOW RELAXATION STRANDS PER TENDON
 T6, T7: 9-0.6" DIA., GRADE 270, SEVEN WIRE, LOW RELAXATION STRANDS PER TENDON

FRICTION (μ) = 0.20
 WOBBLE (K) = 0.0002/FT
 ANCHOR SET = 0.25"
 MODULUS OF ELASTICITY (Es) = 28,500 KSI
 JACKING FORCE BEFORE ANCHOR SET = 205 KSI (ALL TENDONS)

DUCTS
 T1-T5: MINIMUM 4 1/2" NOMINAL DIAMETER GALVANIZED RIGID OR SEMI-RIGID DUCTS
 T6 & T7: MINIMUM 3" NOMINAL DIAMETER GALVANIZED RIGID OR SEMI-RIGID DUCTS

TENDON STRESSING NOTES

STRESS ALL CAP TENDONS (T1-T7) FROM THE SAME END.
 DURING STRESSING NO PERSONS SHALL BE DIRECTLY BEHIND EITHER END OF TENDONS.

INTEGRAL BENT NOTES

NO CONCRETE SHALL BE PLACED IN ANY PORTION OF THE BENT UNTIL REVIEW OF THE POST-TENSIONING SYSTEM SUBMITTED BY THE CONTRACTOR HAS BEEN COMPLETED.

POST-TENSIONING BEARING PLATES FOR CAP TENDONS (T1-T7) SHALL BE FABRICATED OF HOT-ROLLED STEEL CONFORMING TO ASTM A588 AND APPROVED BY THE ENGINEER. BEARING PLATES SHALL FIT FLAT AGAINST THE GIRDER WEB AND RECEIVE AN ANSI 500 FINISH ON THE SURFACE IN CONTACT WITH THE WEB. CENTERLINE OF THE TENDONS IS TO BE NORMAL TO OUTSIDE FACE OF BEARING PLATE.

POST-TENSIONING ANCHORAGE DETAILS SHALL BE DETERMINED BY THE POST-TENSIONING MATERIALS SUPPLIER. DETAILS SHALL BE SHOWN ON THE SHOP DRAWINGS AND SUBMITTED TO THE ENGINEER FOR APPROVAL. THE ANCHORAGE SYSTEM AND LENGTH OF PROJECTING PRESTRESSING STEEL AT THE DEAD END ANCHORAGES SHALL PERMIT JACKING WITH THE SAME JACKING EQUIPMENT USED ON THE LIVE END. SEE SPECIAL PROVISION FOR POST-TENSIONING TENDONS.

BAR REINFORCEMENT INTERFERING WITH DUCT ALIGNMENT SHALL BE ADJUSTED AS APPROVED BY THE ENGINEER.

SPECIAL CARE SHALL BE TAKEN TO ENSURE PROPER CONSOLIDATION OF CONCRETE UNDER THE TOP FLANGE OF THE GIRDERS DURING PLACEMENT OF CONCRETE FOR INTEGRAL CAP AND ANCHORAGE ENCASUREMENTS TO ELIMINATE FORMATION OF VOIDS BENEATH TOP FLANGE.

AFTER CASTING CAP BUT PRIOR TO TENSIONING OF THE CAP, THE ENGINEER SHALL THOROUGHLY INSPECT THE INTERFACE BETWEEN THE GIRDER FLANGES AND CONCRETE TO LOCATE ANY VOIDS DUE TO INCOMPLETE CONSOLIDATION DURING PLACEMENT OF CONCRETE. IF VOIDS ARE DETECTED OR AS DIRECTED BY THE ENGINEER, THE CONTRACTOR SHALL REMOVE A SUFFICIENT VOLUME OF CONCRETE AND REPLACE WITH NON-SHRINK GROUT.

ENCASEMENT OF THE POST-TENSIONING ANCHORAGES SHALL BE SUBJECT TO THE SAME INSPECTION AND REPAIR CRITERIA AS SPECIFIED FOR THE CAP ABOVE.

TOP SURFACE OF THE CAP SHALL BE INTENTIONALLY ROUGHENED WITH A WIRE BRUSH WHEN CAST AND THOROUGHLY CLEANED PRIOR TO PLACING DECK CONCRETE.

THE DUCTS AND STRANDS SHALL BE FREE OF DIRT, LOOSE RUST AND OTHER DELETERIOUS SUBSTANCE BEFORE INSTALLING TENDONS. POST-TENSIONING DUCTS SHALL BE FILLED WITH GROUT AFTER STRESSING HAS BEEN COMPLETED. SEE SPECIAL PROVISION FOR POST-TENSIONING TENDONS.

THERE IS NO PAYMENT FOR THE TEMPORARY FALSEWORK AS THE TEMPORARY FALSEWORK IS CONSIDERED INCIDENTAL TO THE CONSTRUCTION OF BENT 4.

(*PROVIDE BRACING TO RESTRAIN THE SUPERSTRUCTURE AT THE TOP OF BENT 4 AFTER THE COLUMNS ARE CONSTRUCTED. BRACING TO REMAIN IN PLACE UNTIL INTEGRAL BENT CAP CONSTRUCTION IS COMPLETE.

PROJECT NO. **U-2579AA**
FORSYTH COUNTY
 STATION: **28 + 33.21 -Y2FLYAB-**
41 + 07.80 -L-

SHEET 1 OF 9

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
BENT 4
SCHEMATIC SEQUENCE OF CONSTRUCTION AND NOTES

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

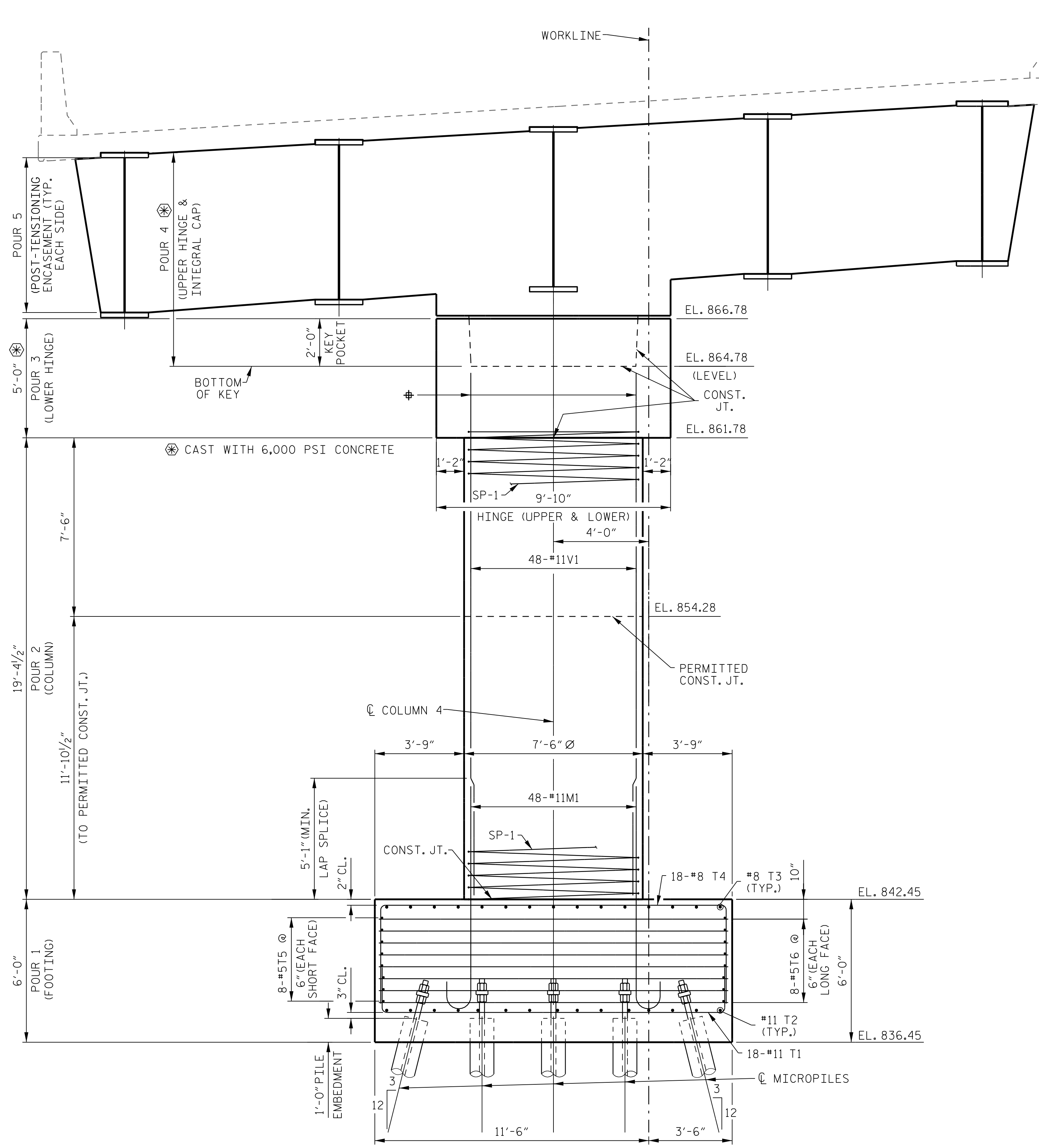
TENDON STRESSING DATA					
TENDON	LOCATION	STRESSING SEQUENCE	JACKING FORCE	ELONGATION BEFORE	ELONGATION AFTER
			BEFORE ANCHOR SET	ANCHOR SET	ANCHOR SET
			KIPS	IN.	IN.
T1	CAP	6	978	3.10	2.85
T2	CAP	3	978	3.10	2.85
T3	CAP	7	978	3.10	2.85
T4	CAP	1	978	2.97	2.72
T5	CAP	2	978	2.97	2.72
T6	CAP	4	400	3.10	2.85
T7	CAP	5	400	3.10	2.85

DRAWN BY : J. CAYETANO DATE : 9-21
 CHECKED BY : J. B. TAYLOR DATE : 9-21
 DESIGN ENGINEER : J. B. TAYLOR DATE : 9-21

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 5540 CenterView Drive, Suite 217
 Raleigh, NC 27606-3386
 NC LICENSE No. F-0246
 9/29/2022

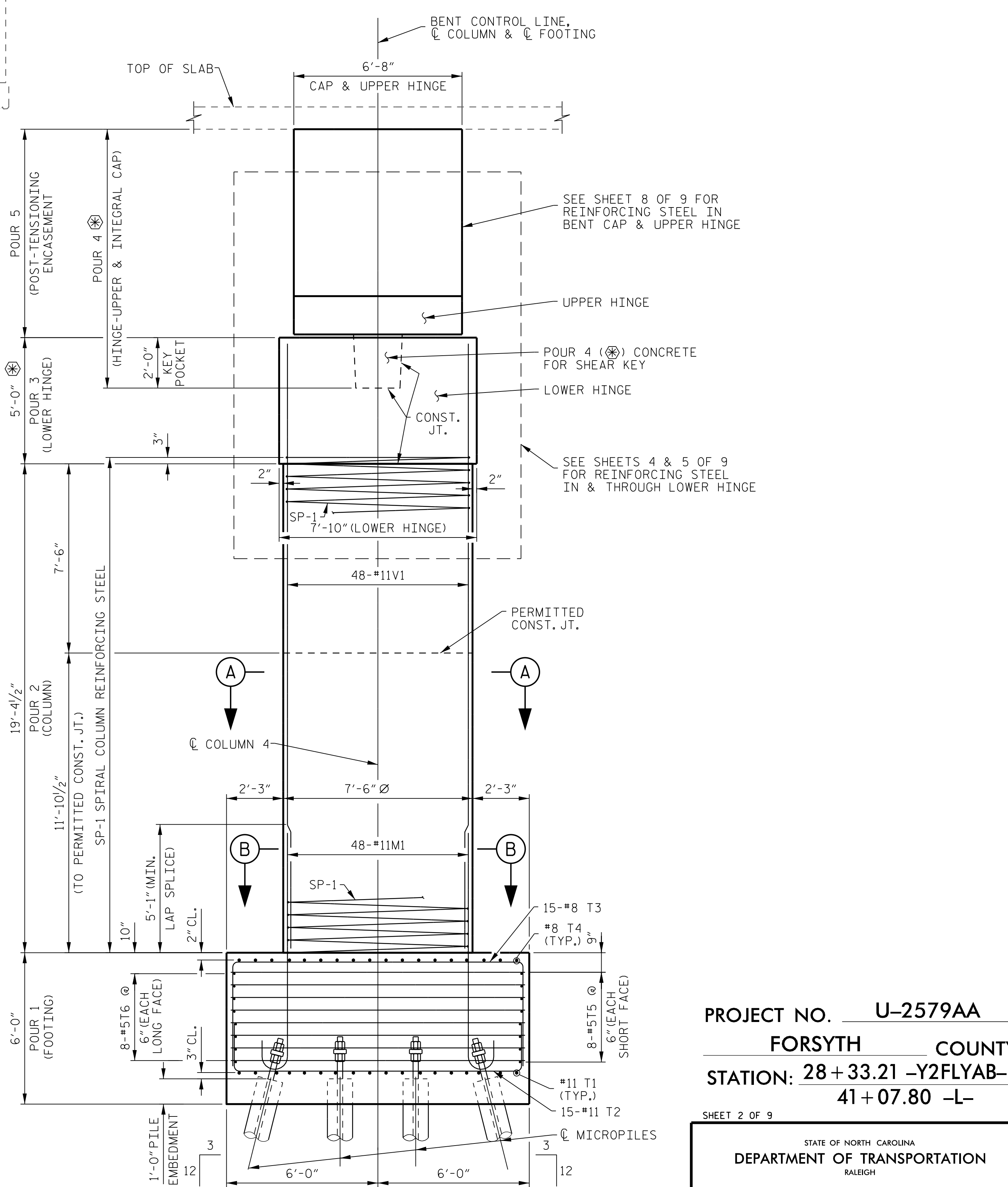
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No.	BY:	DATE:	No.	BY:	DATE:	
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2			4			84

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ELEVATION

⊕ = 4-#11 V1 PROJECTING FROM COLUMN AT LEFT AND RIGHT EDGES OF POCKET FIELD CUT TO PROVIDE 2" CLEAR TO BOTTOM OF POCKET. FOR DETAILS, SEE SHEET 4 OF 9.



END ELEVATION

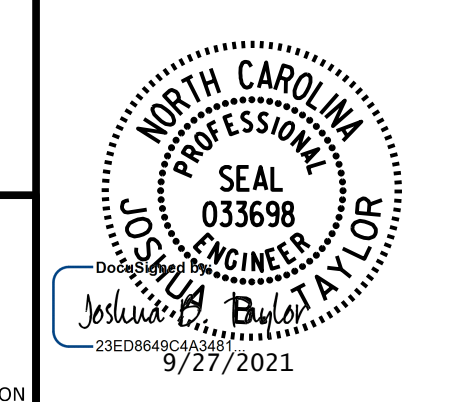
PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
 41 + 07.80 -L-

SHEET 2 OF 9

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT 4
 ELEVATIONS

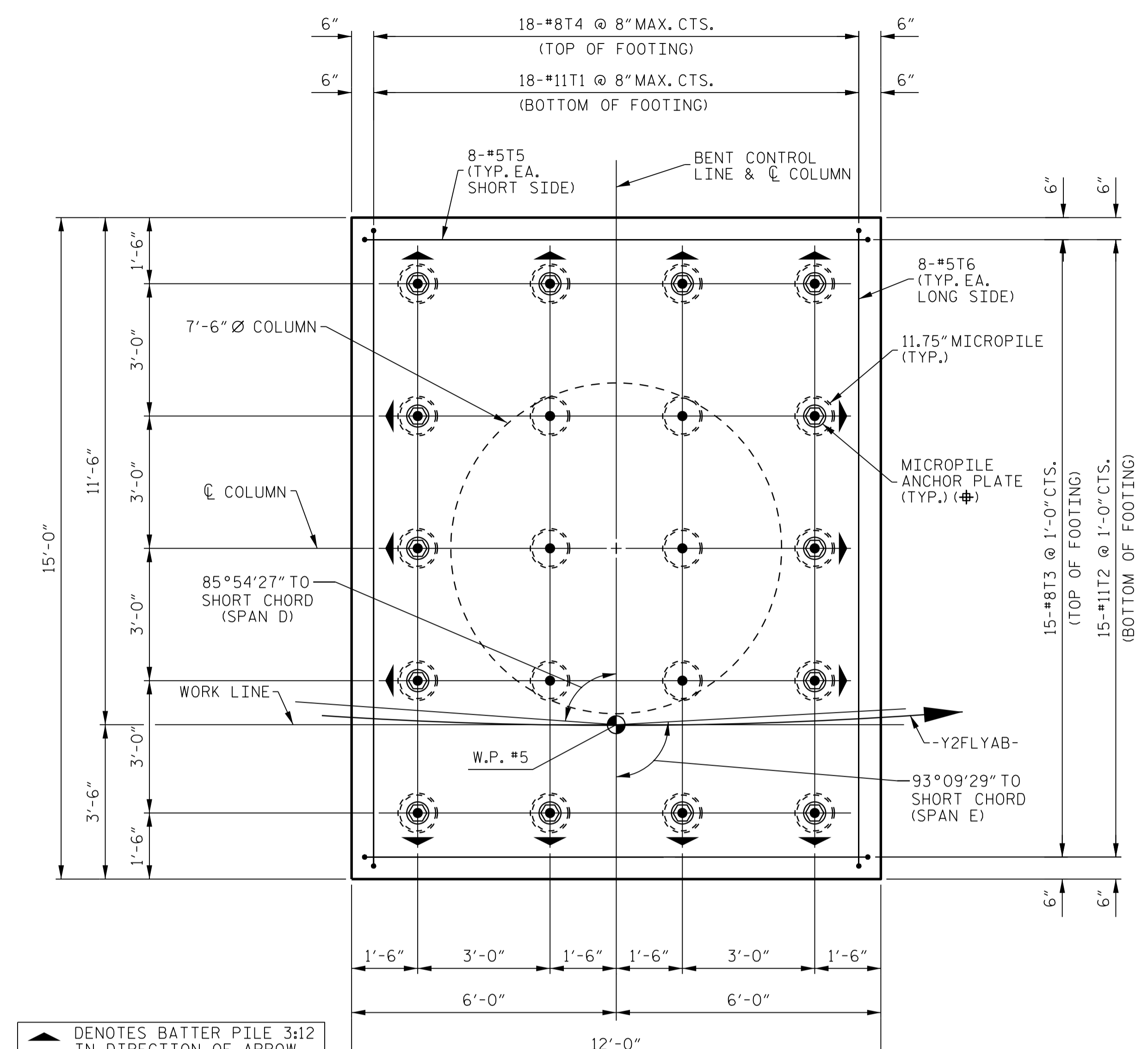
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DRAWN BY: J. CAYETANO DATE: 9-21
 CHECKED BY: J. B. TAYLOR DATE: 9-21
 DESIGN ENGINEER: J. B. TAYLOR DATE: 9-21

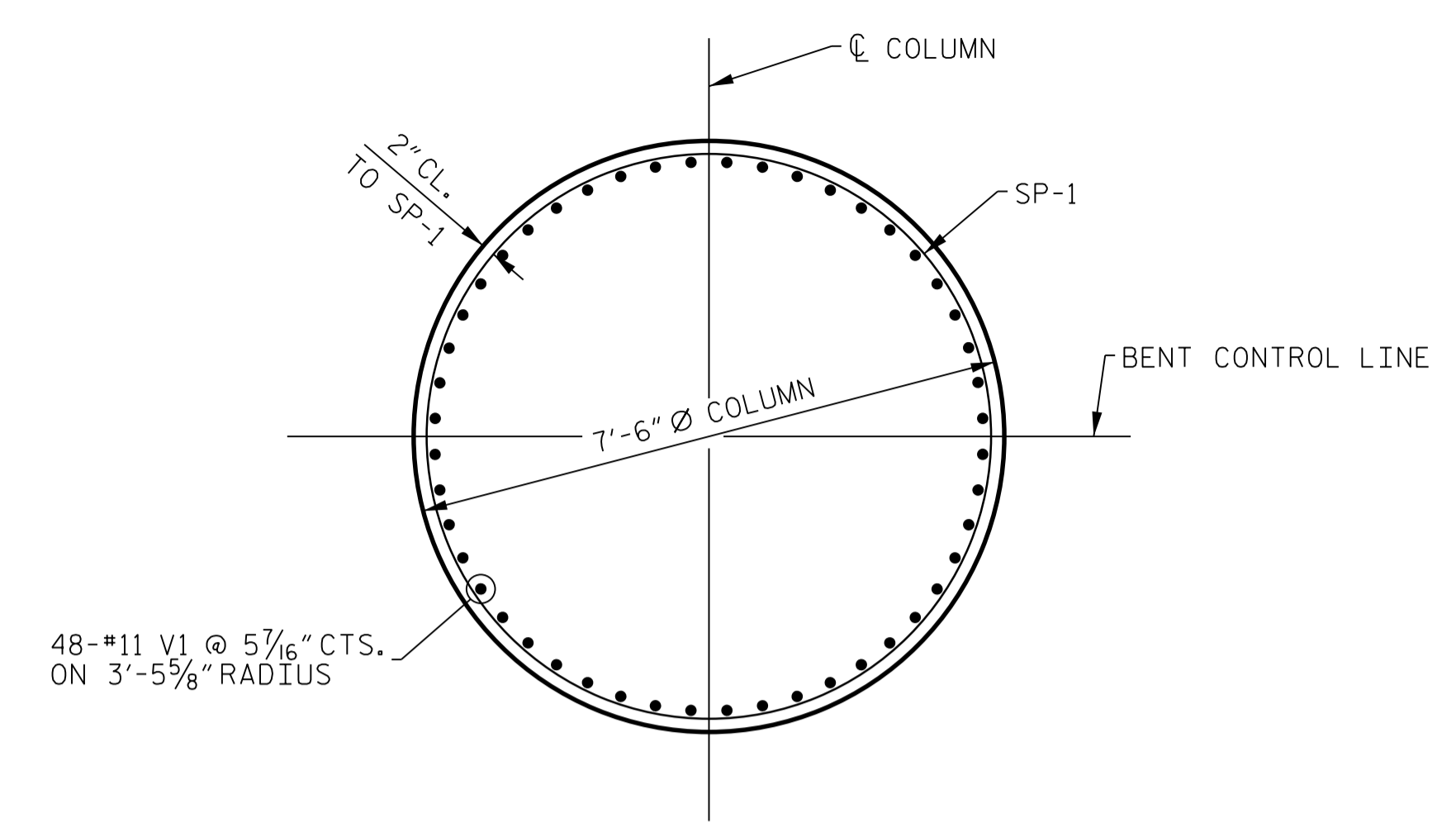
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No.	BY:	DATE:	No.	BY:	DATE:	TOTAL SHEETS
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2			4			



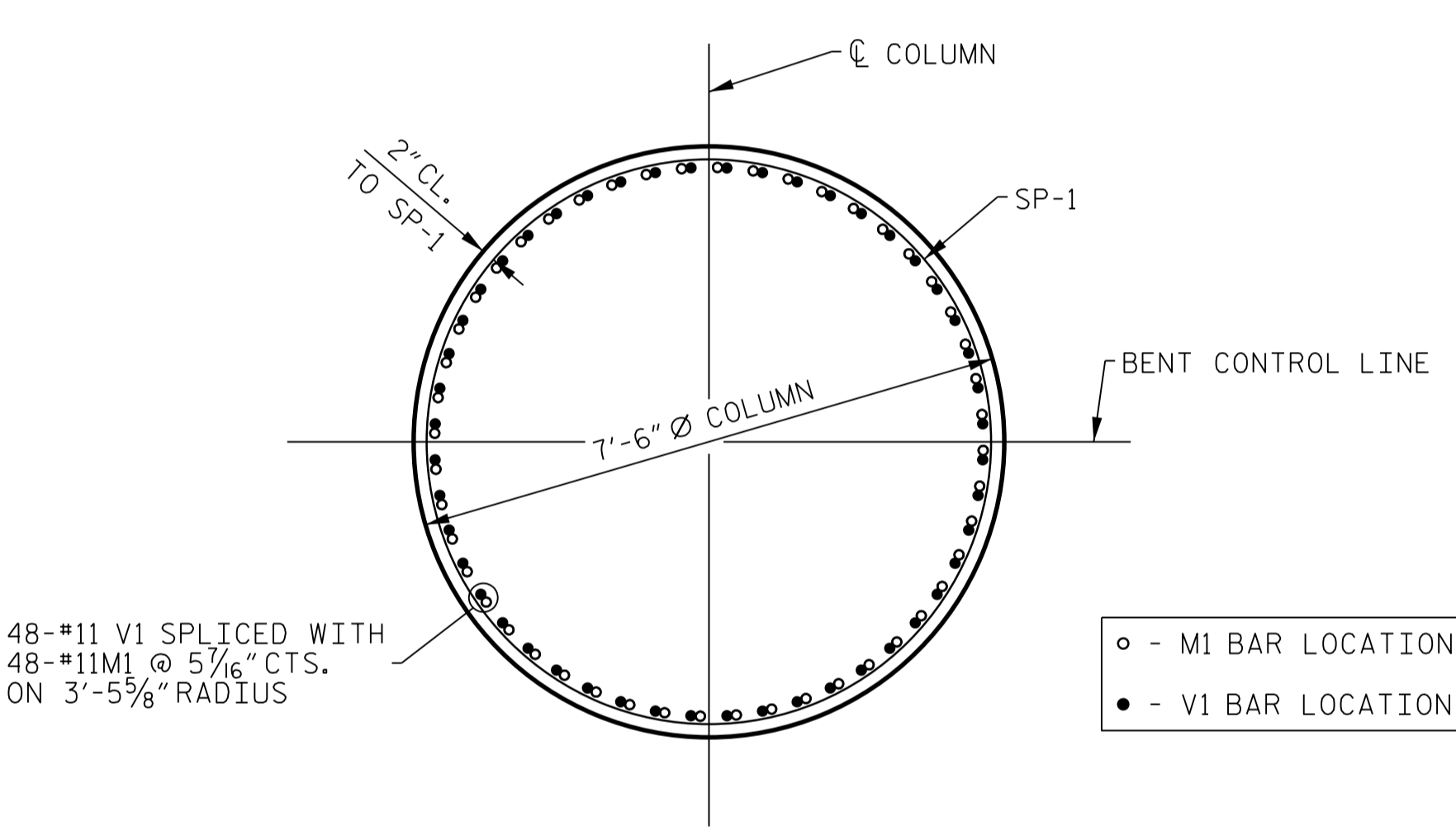
▲ DENOTES BATTER PILE 3:1:2 IN DIRECTION OF ARROW

⊕ = UPLIFT ANCHOR PLATE REQUIRED AT EACH BATTER PILE. FOR DETAILS, SEE "SUBSTRUCTURE BENT 1 (SHEET 3 OF 3)"

FOOTING PLAN



SECTION A-A



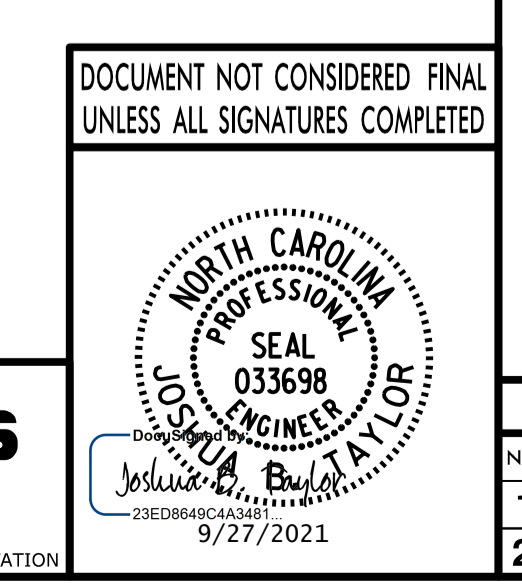
SECTION B-B

○ - M1 BAR LOCATION
● - V1 BAR LOCATION

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 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-
 SHEET 3 OF 9

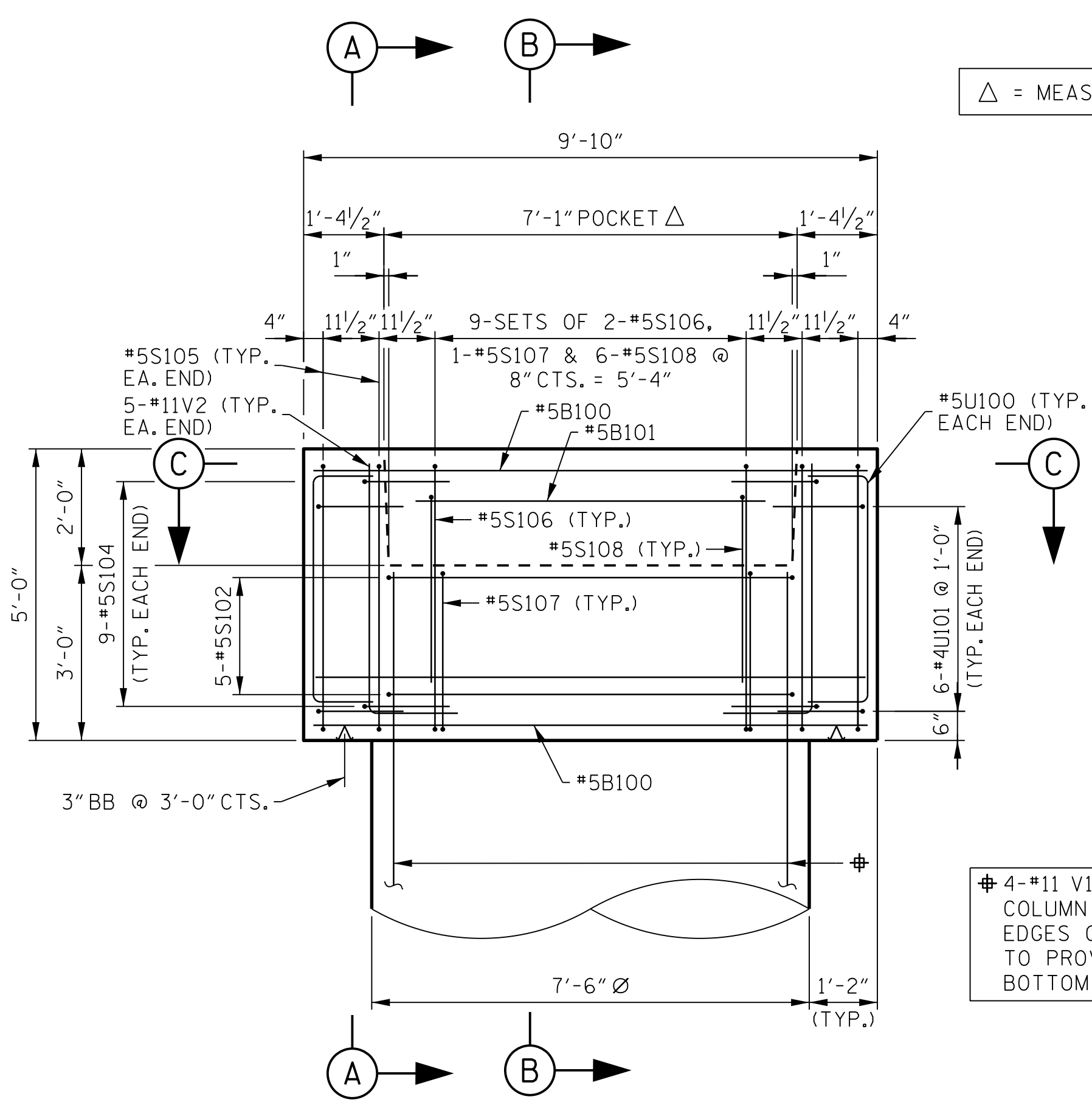
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
BENT 4
 SECTIONS AND DETAILS

REVISIONS						SHEET No.
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1			3			TOTAL SHEETS
2			4			84

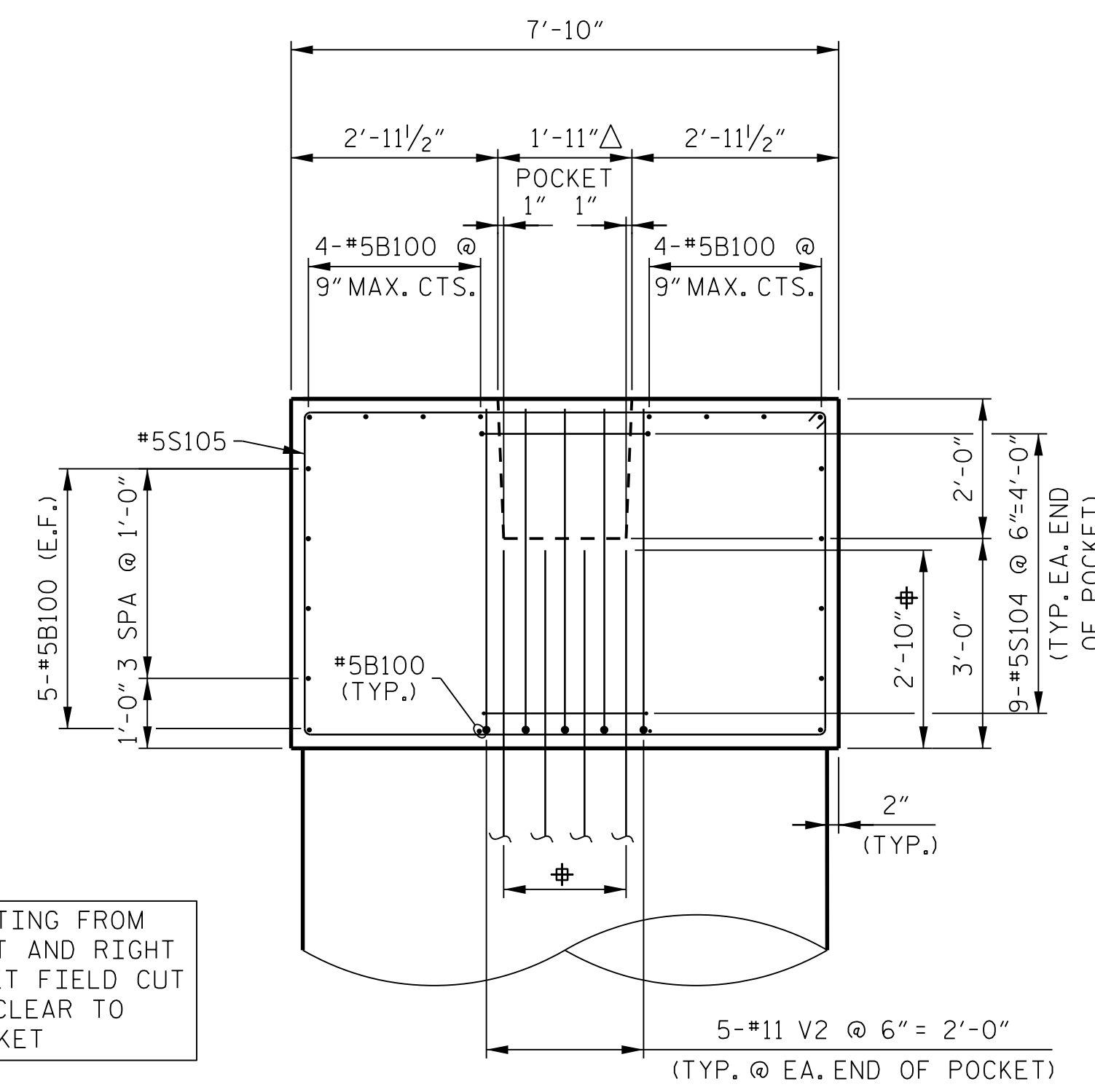


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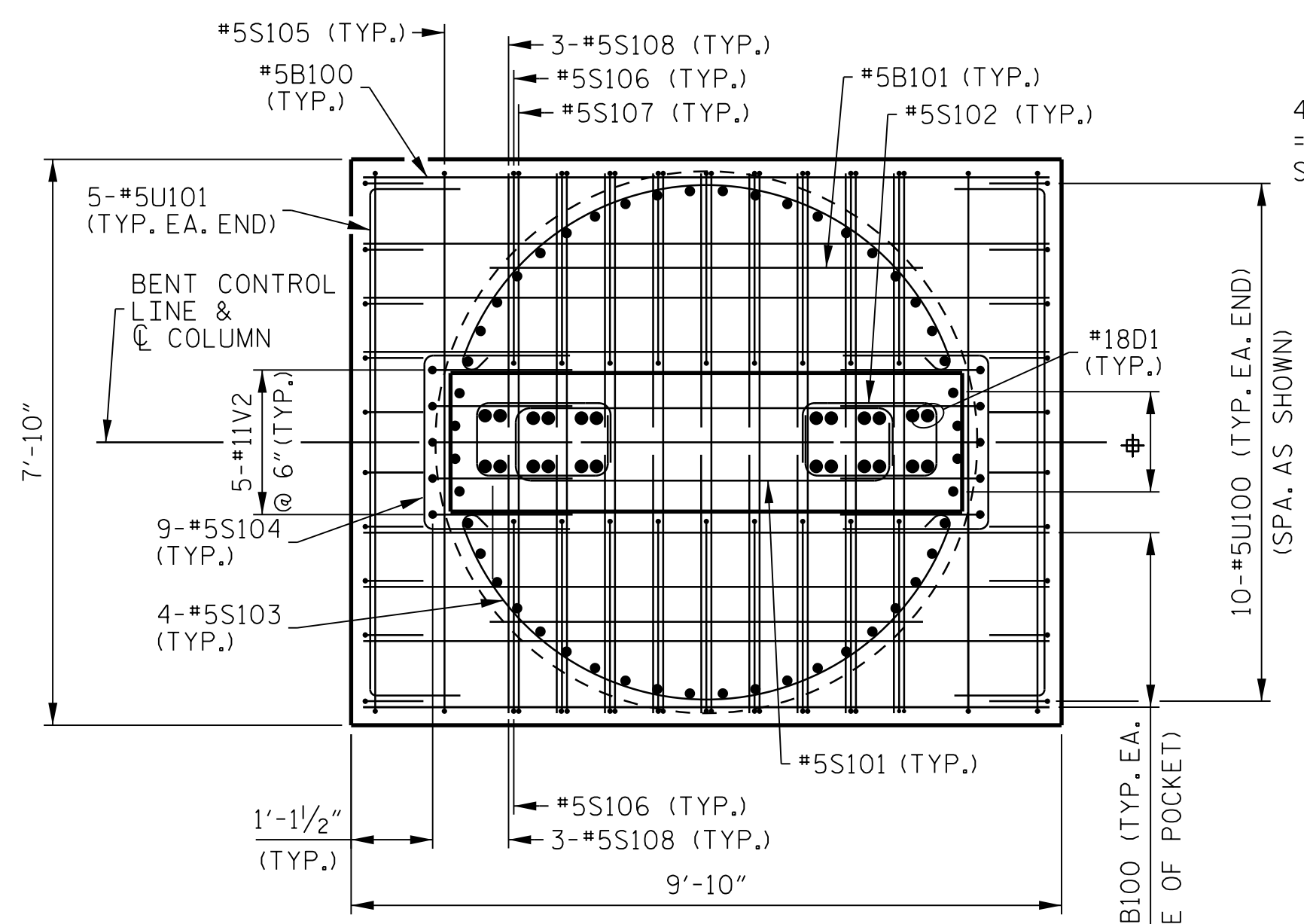
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 CHECKED BY : J. B. TAYLOR DATE : 9-21
 DESIGN ENGINEER : J. B. TAYLOR DATE : 9-21



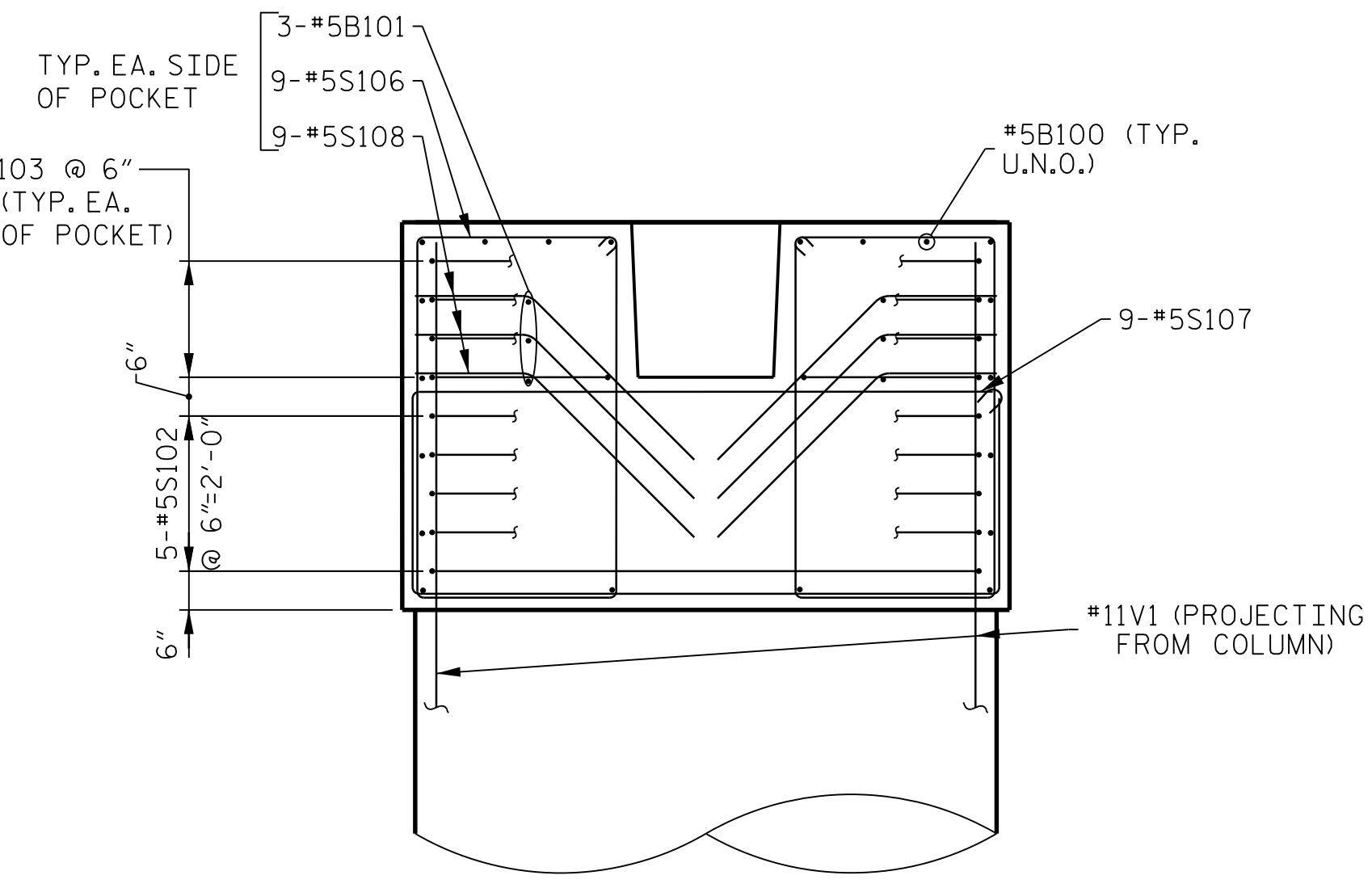
LOWER HINGE ELEVATION
 (#18D1, #5S101, #5S102 & #5S103 NOT SHOWN FOR CLARITY)



SECTION A-A



SECTION C-C
 (FOR #18D1 PLACEMENT, SEE VIEW D-D ON SHEET 5 OF 9)



SECTION B-B

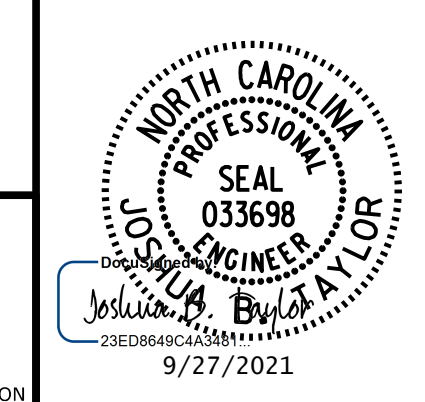
(SEE SECTIONS E-E & F-F ON SHEETS 5 OF 9 FOR #18D1, #5S101 & #5S102 BARS NOT SHOWN)

NOTES
 TOP OF LOWER HINGE SHALL RECEIVE A TROWELLED FINISH.
 SIDE SURFACE OF KEY POCKET SHALL BE SMOOTH.
 BOTTOM SURFACE OF KEY POCKET SHALL BE SMOOTH.

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
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 SHEET 4 OF 9

STATE OF NORTH CAROLINA
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 RALEIGH
 SUBSTRUCTURE
BENT4
LOWER HINGE & KEY DETAILS

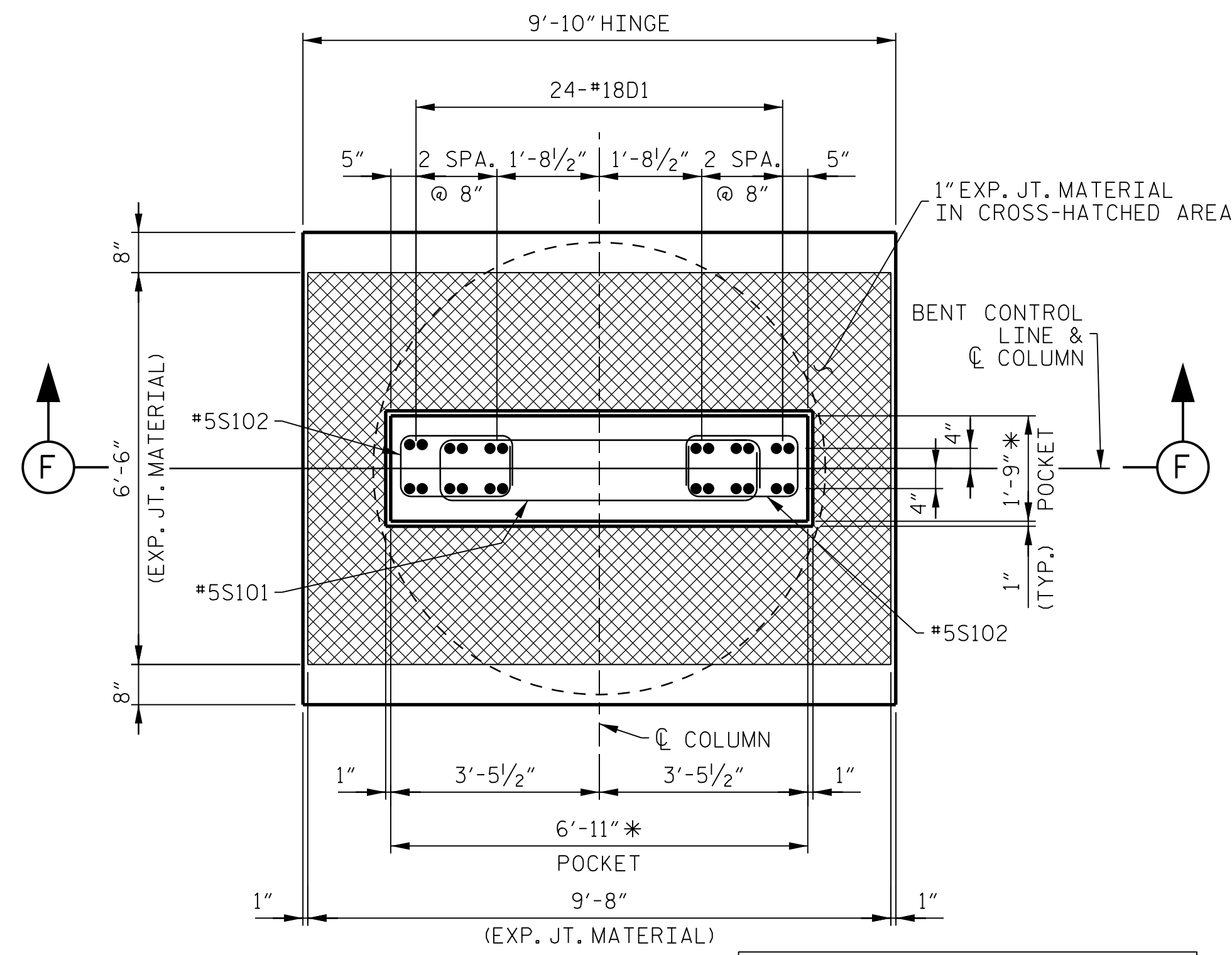
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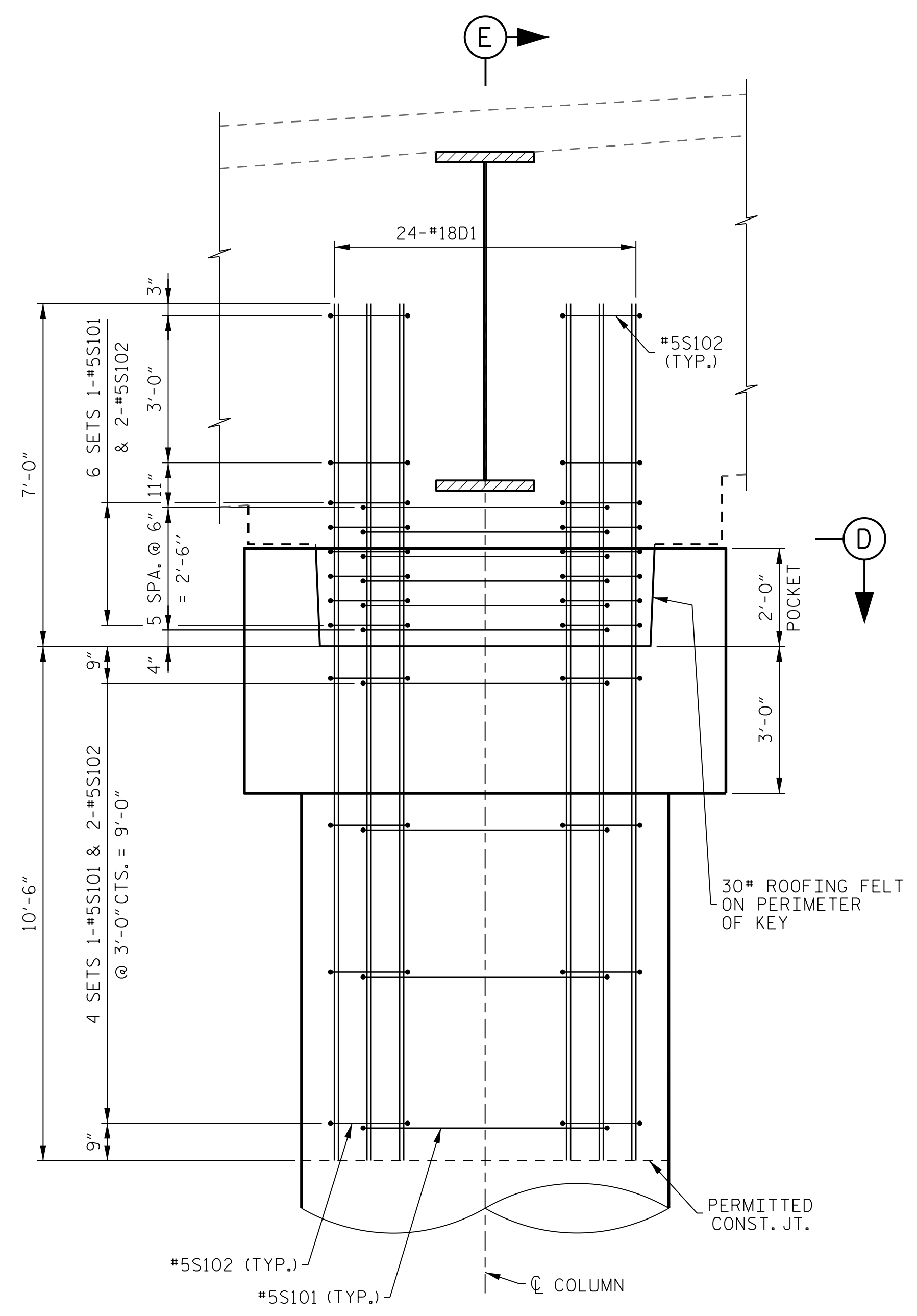
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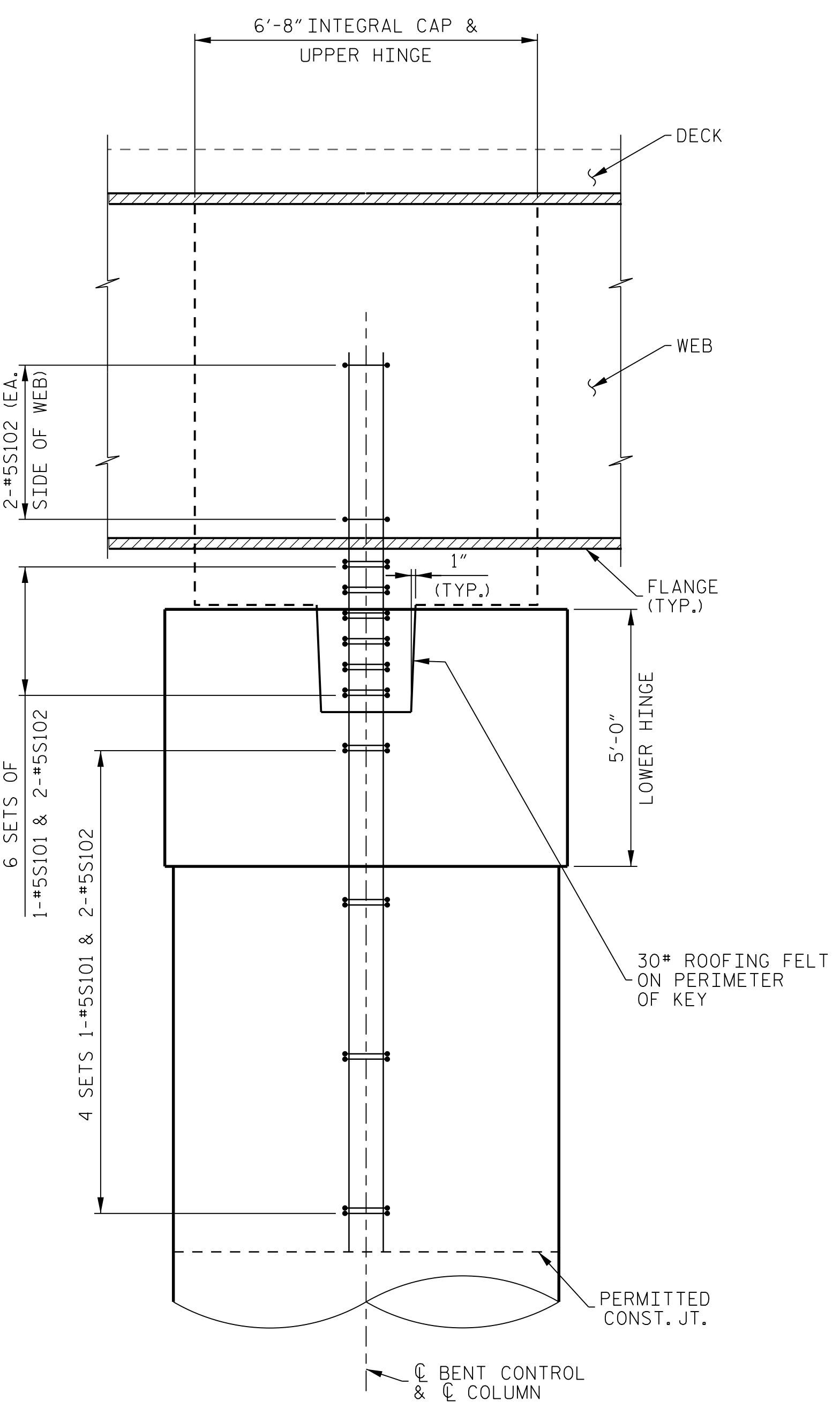
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No.	BY:	DATE:	No.	BY:	DATE:	S5-71	
1			3			TOTAL SHEETS	
2			4			84	



VIEW D-D * MEASURED AT BOTTOM OF POCKET



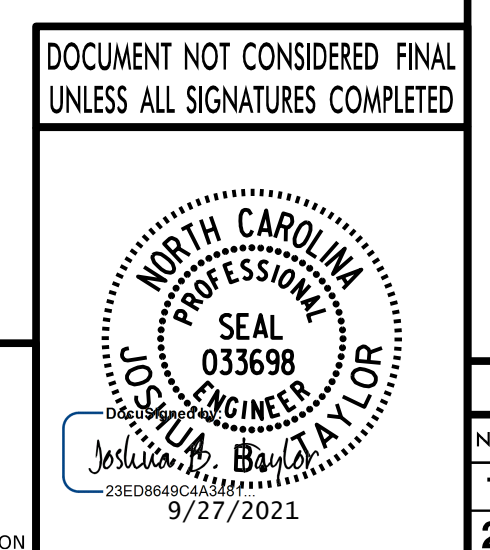
SECTION F-F
(SHOWING HINGE DOWELS & DOWEL TIES)



SECTION E-E
(SHOWING HINGE DOWELS & DOWEL TIES)

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
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 SHEET 5 OF 9

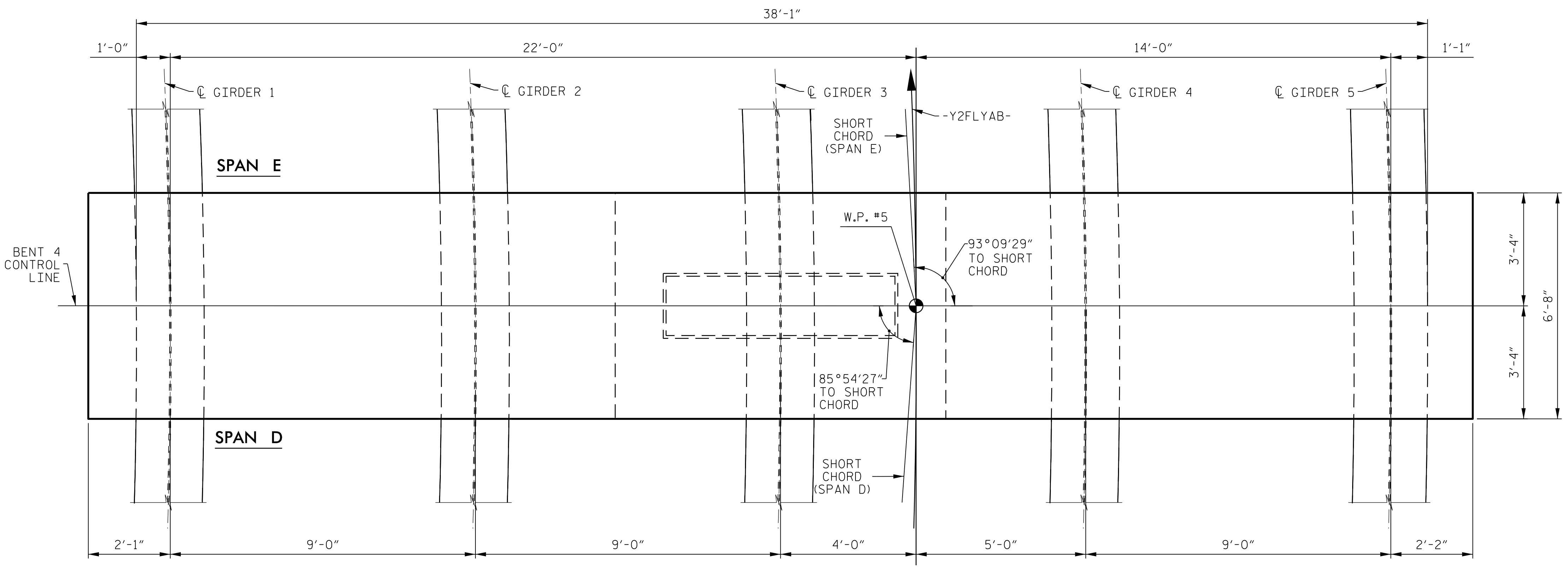
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
BENT4
LOWER HINGE & KEY DETAILS



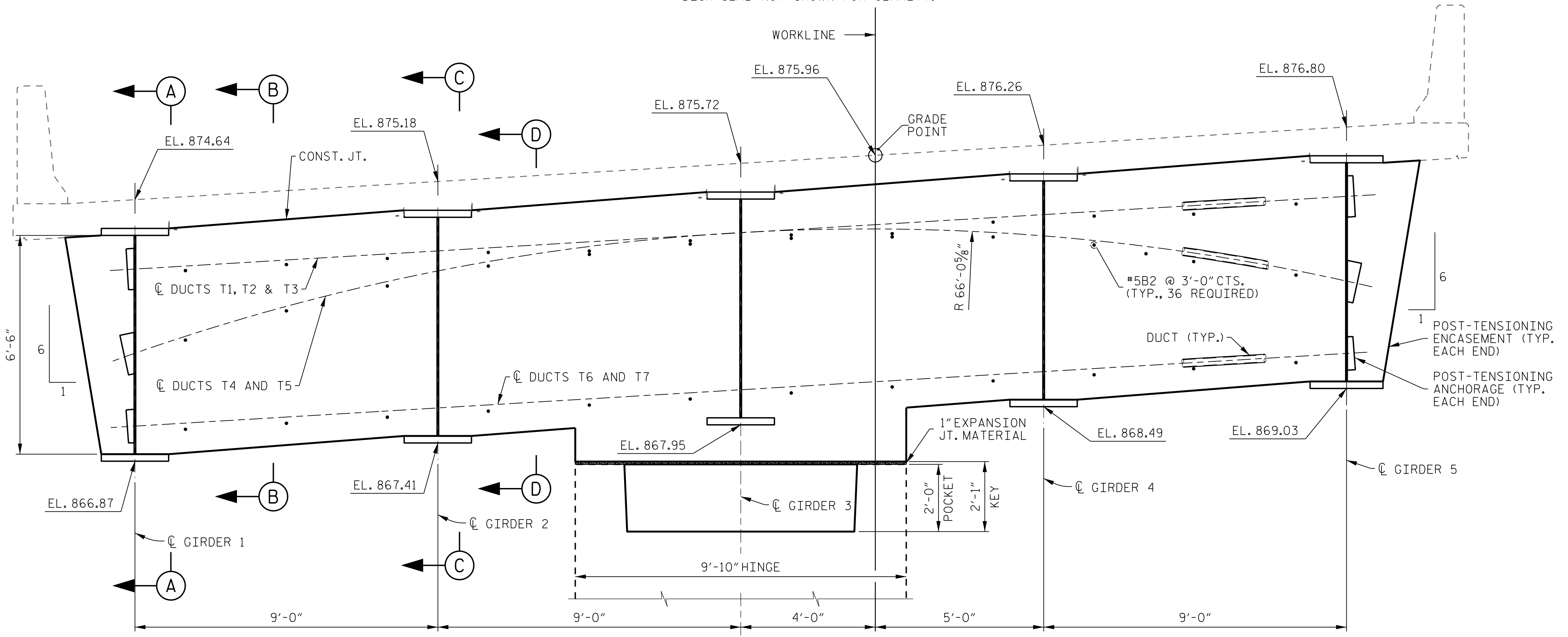
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 DESIGN ENGINEER : J. B. TAYLOR DATE : 9-21

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	TOTAL SHEETS
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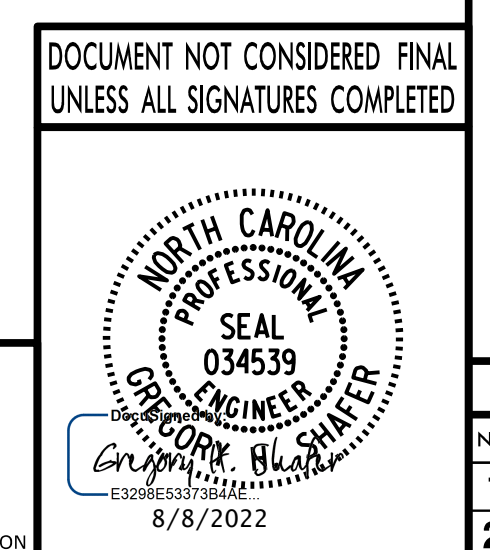


NOTES
FOR SECTIONS A-A, B-B, C-C & D-D, SEE SHEET 8 OF 9.
FOR STRUCTURAL STEEL DETAILS IN INTEGRAL BENT CAP SEE "SUPERSTRUCTURE GIRDER DETAILS - UNIT 2" SHEETS.



PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-
 SHEET 6 OF 9

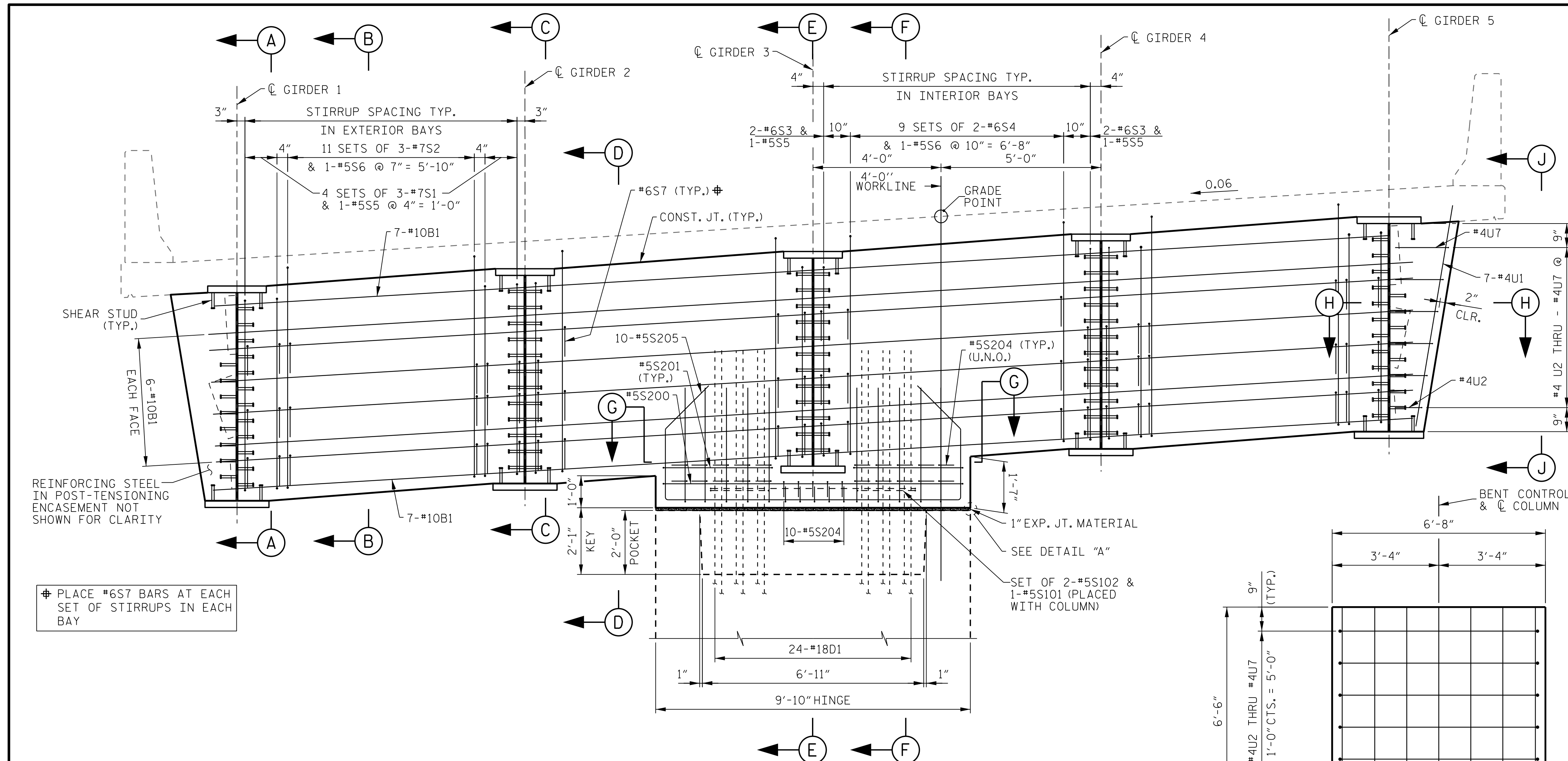
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 4 CAP DETAILS					
REVISIONS					
No.	BY:	DATE:	No.	BY:	DATE:
1			3		
2			4		
					SHEET No. S5-73
					TOTAL SHEETS 84



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 CHECKED BY: J. B. TAYLOR DATE: 9-21
 DESIGN ENGINEER: J. B. TAYLOR DATE: 9-21

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BENT CAP & UPPER HINGE ELEVATION
(POST-TENSIONING TENDONS NOT SHOWN)

NOTES

THE UPPER HINGE REGION AND KEY SHALL BE POURED MONOLITHICALLY WITH THE INTEGRAL CAP CONCRETE (f'c = 6KSI).

TOP OF LOWER HINGE SHALL BE THOROUGHLY CLEANED PRIOR TO PLACEMENT OF EXPANSION JOINT MATERIAL AND POUR #4 CONCRETE.

SIDE SURFACE OF KEY POCKET SHALL BE THOROUGHLY CLEANED PRIOR TO PLACEMENT OF ROOFING FELT (BOND BREAKER) AND POUR #4 CONCRETE.

FOR ROOFING FELT (BOND BREAKER) PLACEMENT, SEE SHEET 5 OF 9.

BOTTOM SURFACE OF KEY POCKET SHALL THOROUGHLY CLEANED AND FREE FROM STANDING WATER PRIOR TO PLACEMENT OF POUR #4 CONCRETE.

THE 1" EXPANSION JOINT MATERIAL AND LOW MODULUS SILICONE SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS AND SHALL BE CONSIDERED INCIDENTAL TO THE PRICE BID FOR 6KSI CONCRETE.

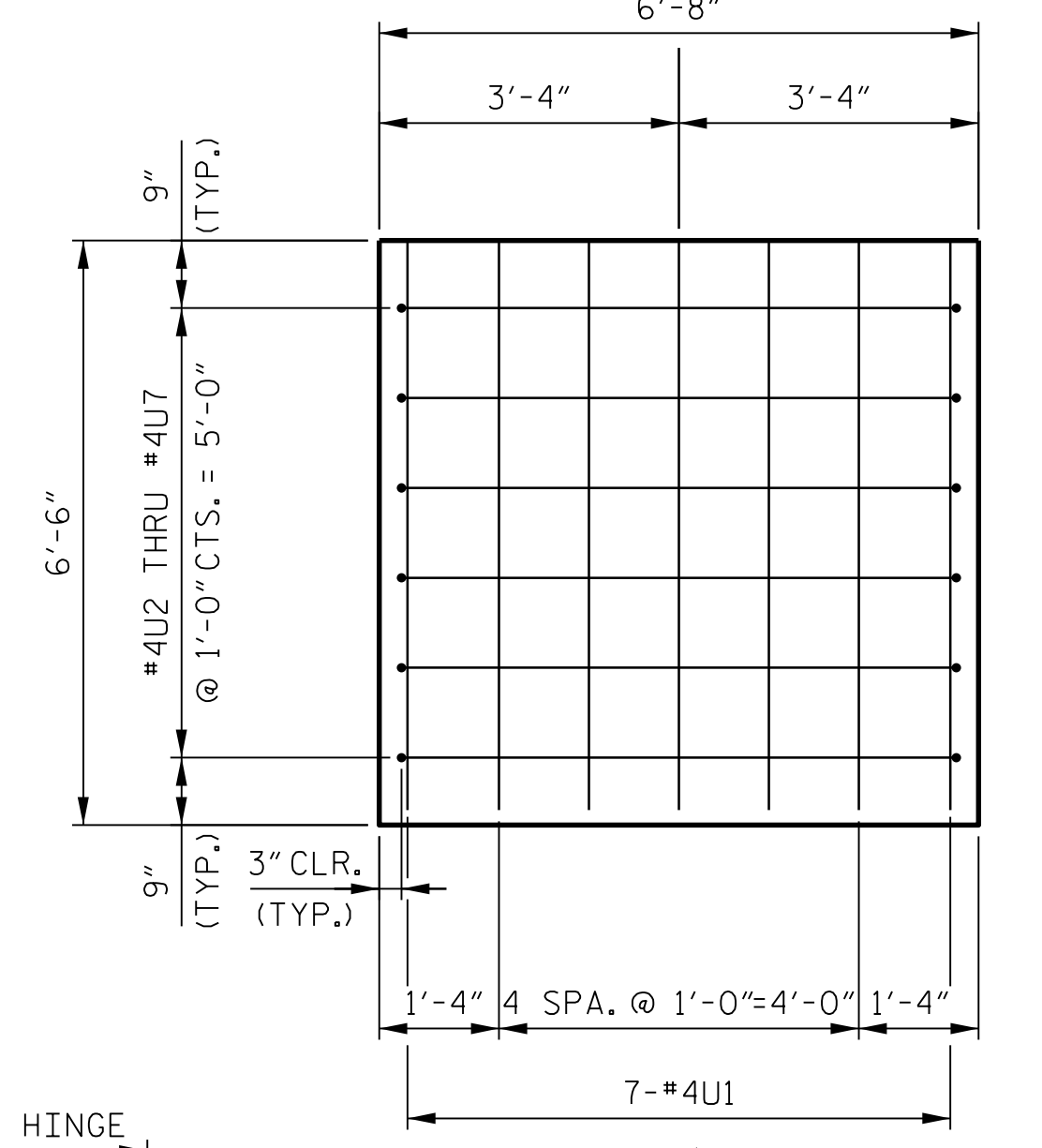
REINFORCING IN THE HINGE REGION MAY BE SHIFTED SLIGHTLY AS DIRECTED BY THE ENGINEER.

LOCATION OF U2-U7 BARS MAY BE SHIFTED SLIGHTLY TO TIE TO B1 BARS IN CAP.

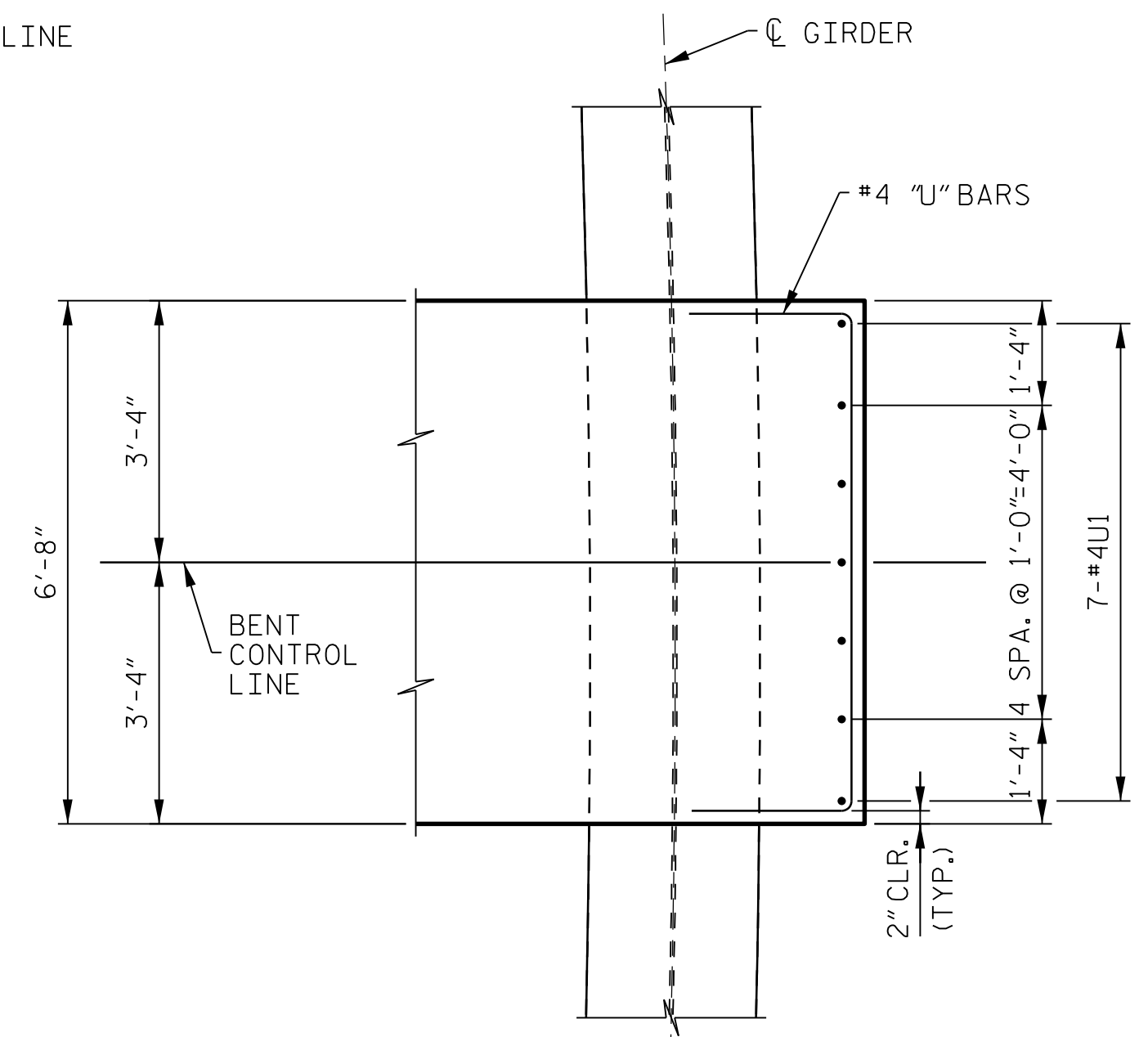
B1 BARS AT BEARING PLATES MAY BE CUT AS APPROVED BY ENGINEER TO AVOID INTERFERING WITH POST TENSIONING EQUIPMENT.

S7 BARS IN CAP MAY BE SHIFTED AND BUNDLED AS NECESSARY AND APPROVED BY ENGINEER TO CLEAR POST TENSIONING DUCTS.

FOR SECTIONS A-A, B-B, C-C & D-D, SEE SHEET 8 OF 9.



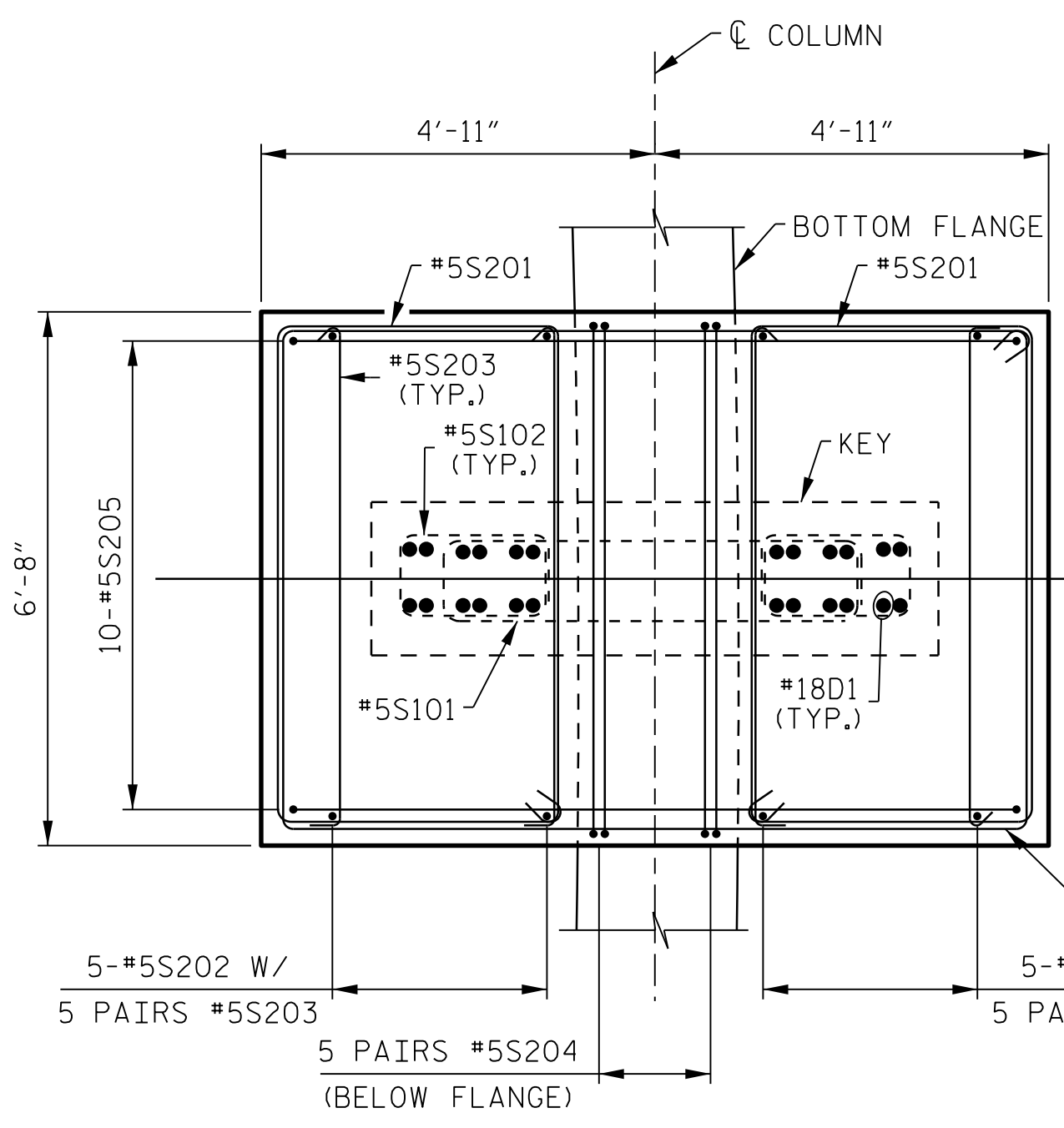
VIEW J-J



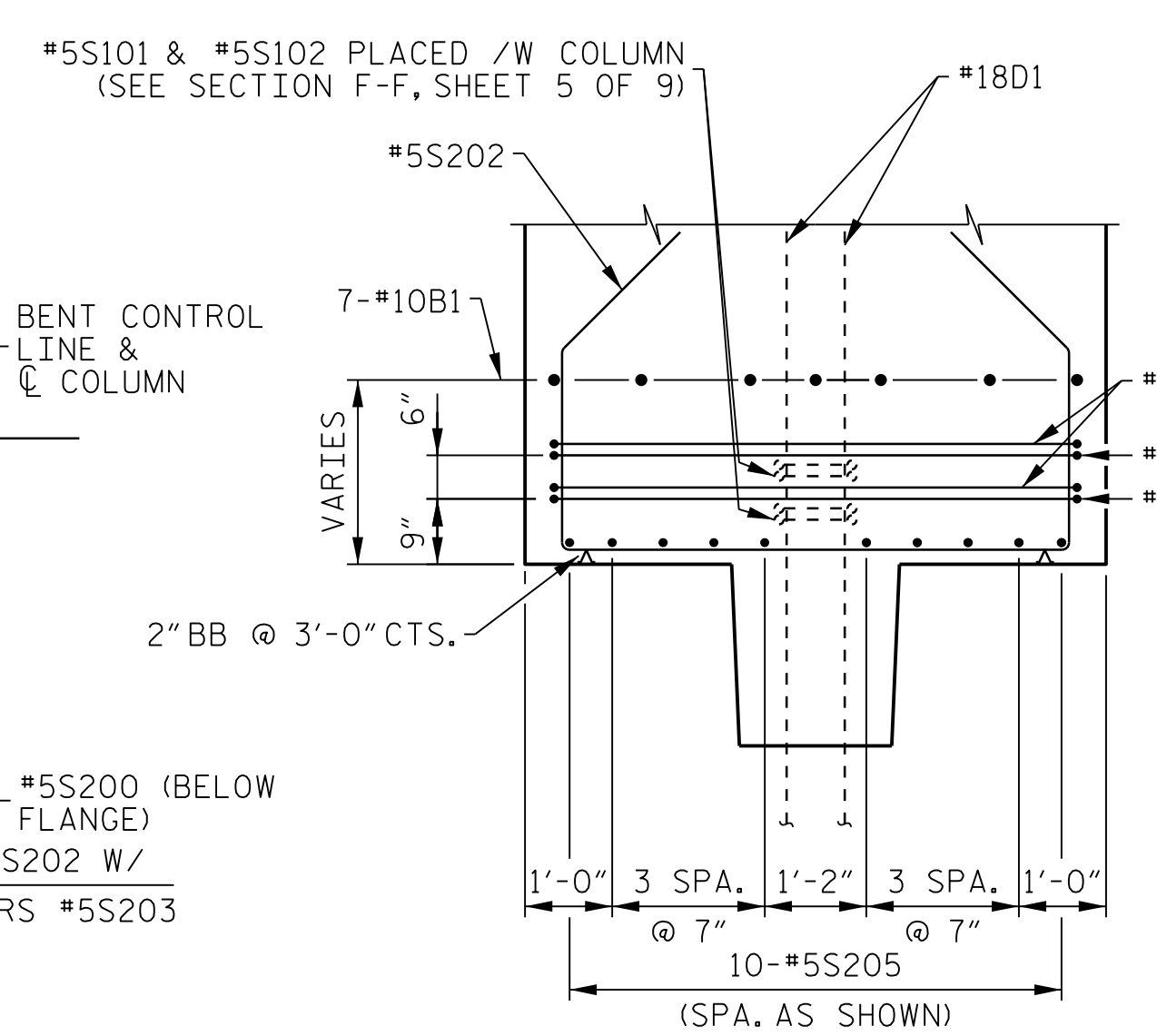
SECTION H-H

(SHEAR STUDS NOT SHOWN FOR CLARITY)

PROJECT NO. **U-2579AA**
FORSYTH COUNTY
 STATION: **28 + 33.21 -Y2FLYAB-**
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 SHEET 7 OF 9

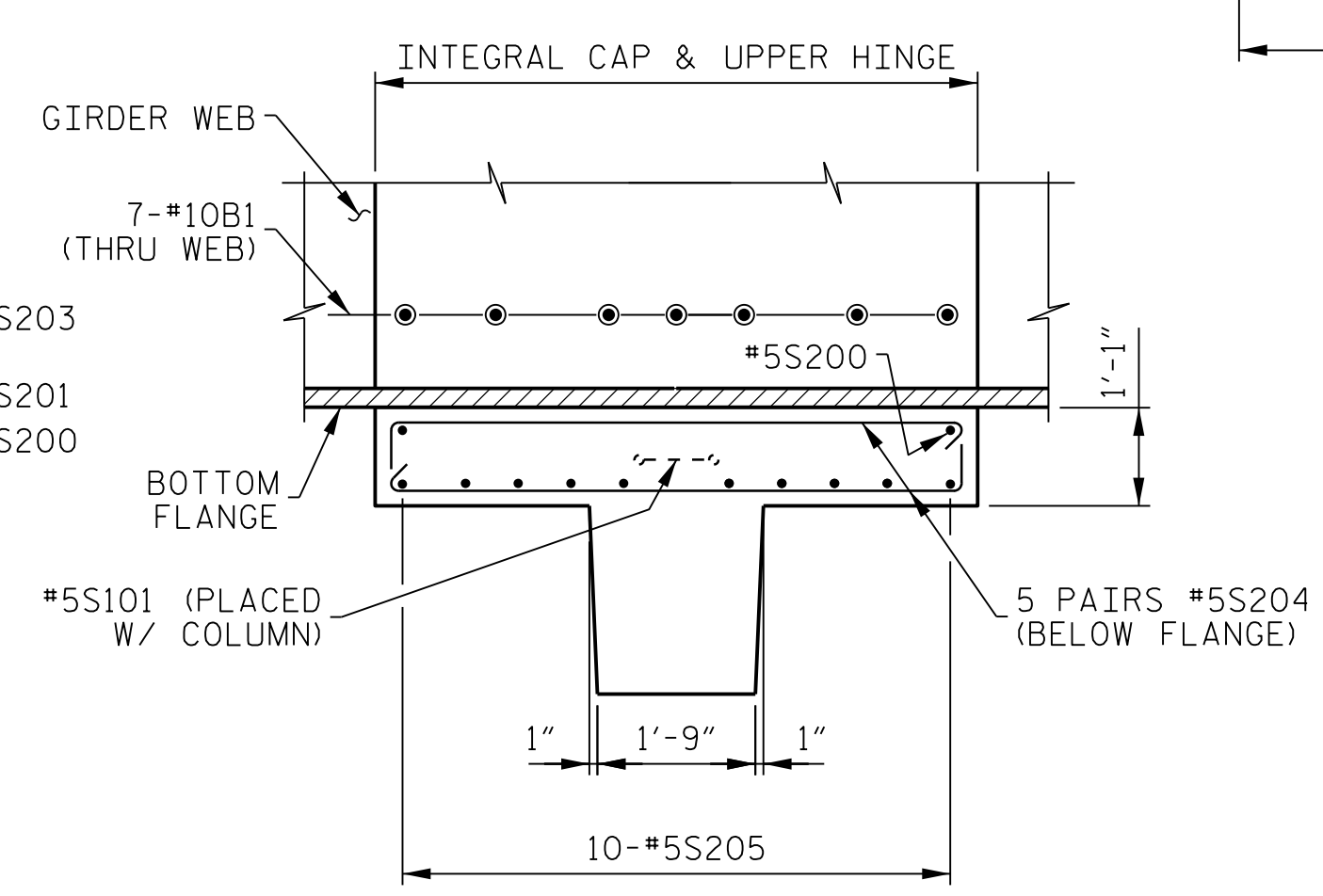


SECTION G-G

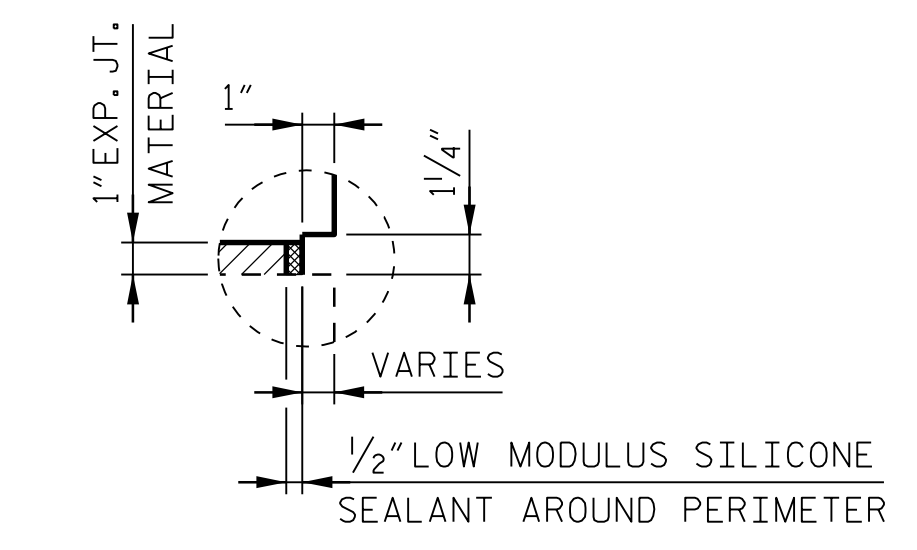


SECTION F-F

(CAP STIRRUPS NOT SHOWN FOR CLARITY)



SECTION E-E



DETAIL "A"

(TYP. AROUND PERIMETER)

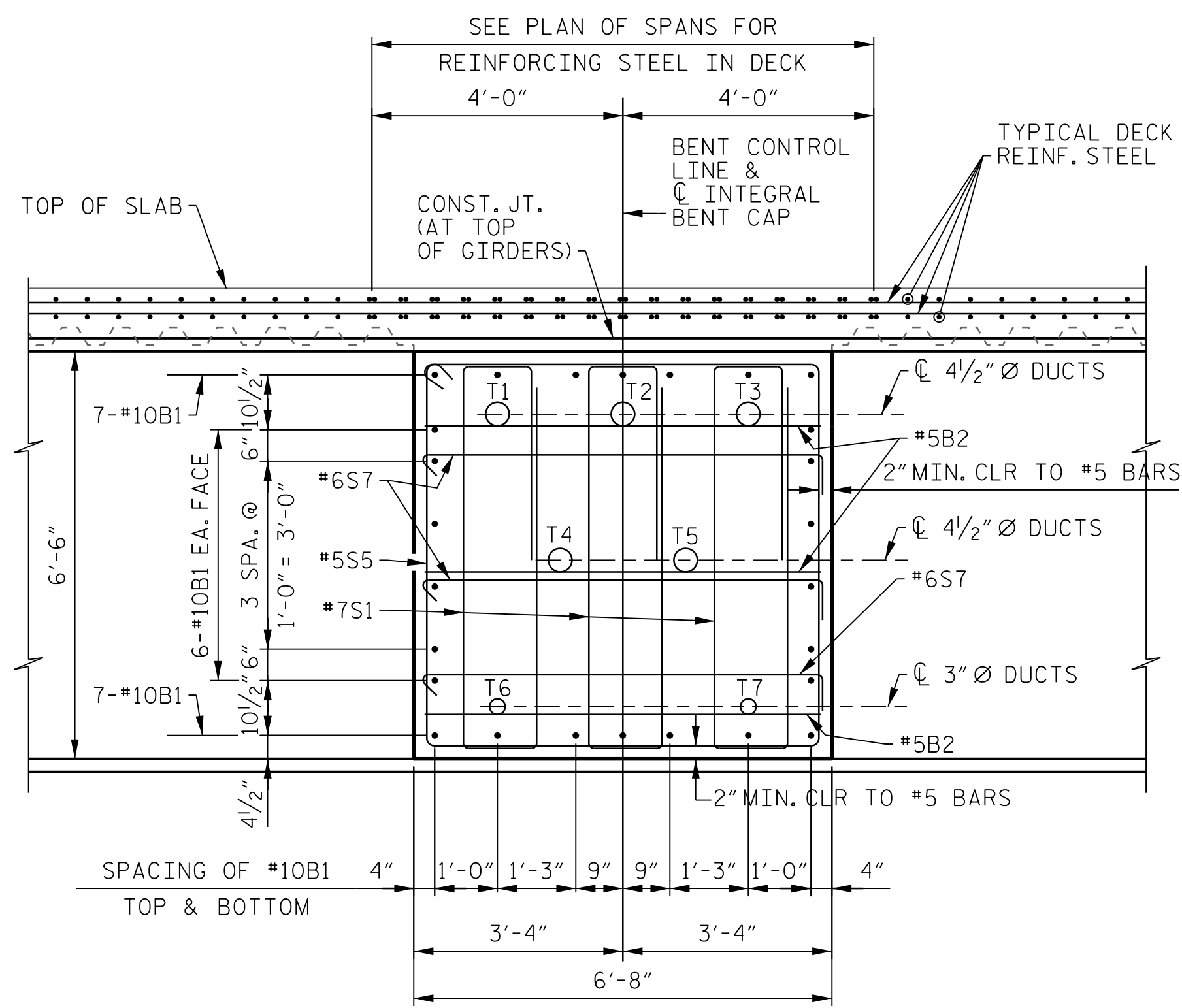
DRAWN BY : J. CAYETANO DATE : 9-21
 CHECKED BY : J. B. TAYLOR DATE : 9-21
 DESIGN ENGINEER : J. B. TAYLOR DATE : 9-21

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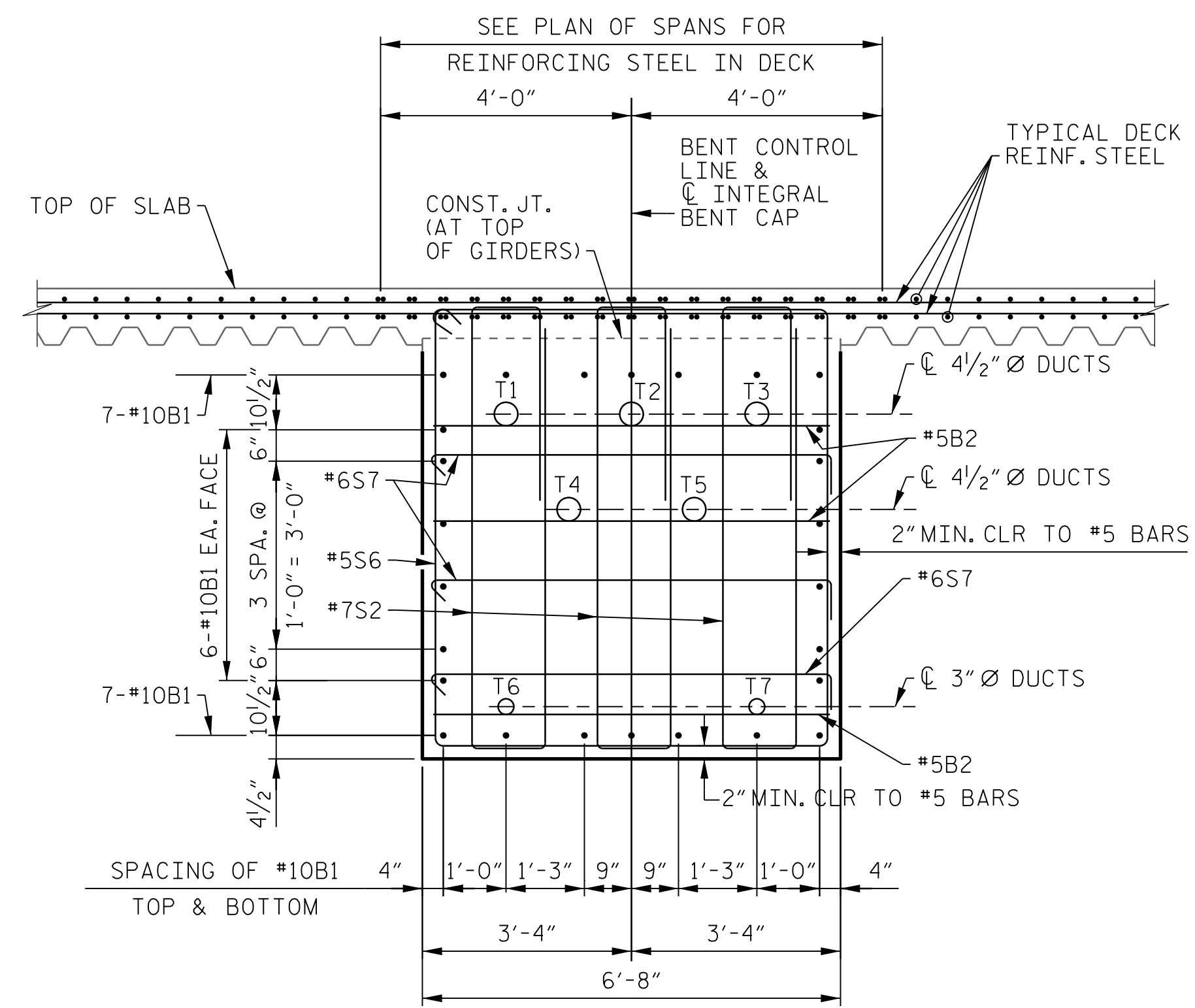
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		SUPERSTRUCTURE		SHEET No. S5-74	
BENT4 UPPER HINGE & CAP DETAILS		REVISIONS		TOTAL SHEETS 84	
No.	BY:	DATE:	No.	BY:	DATE:
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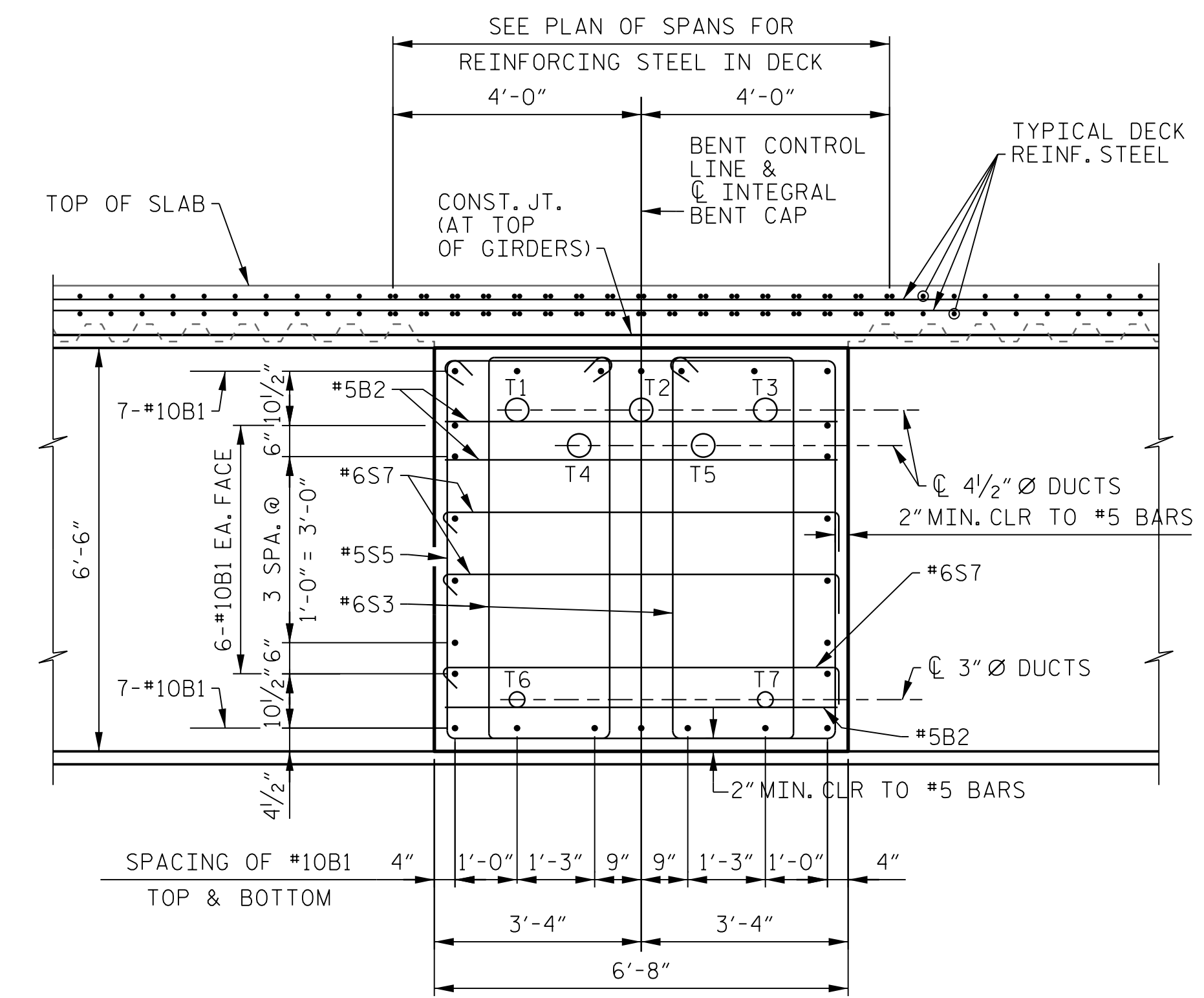
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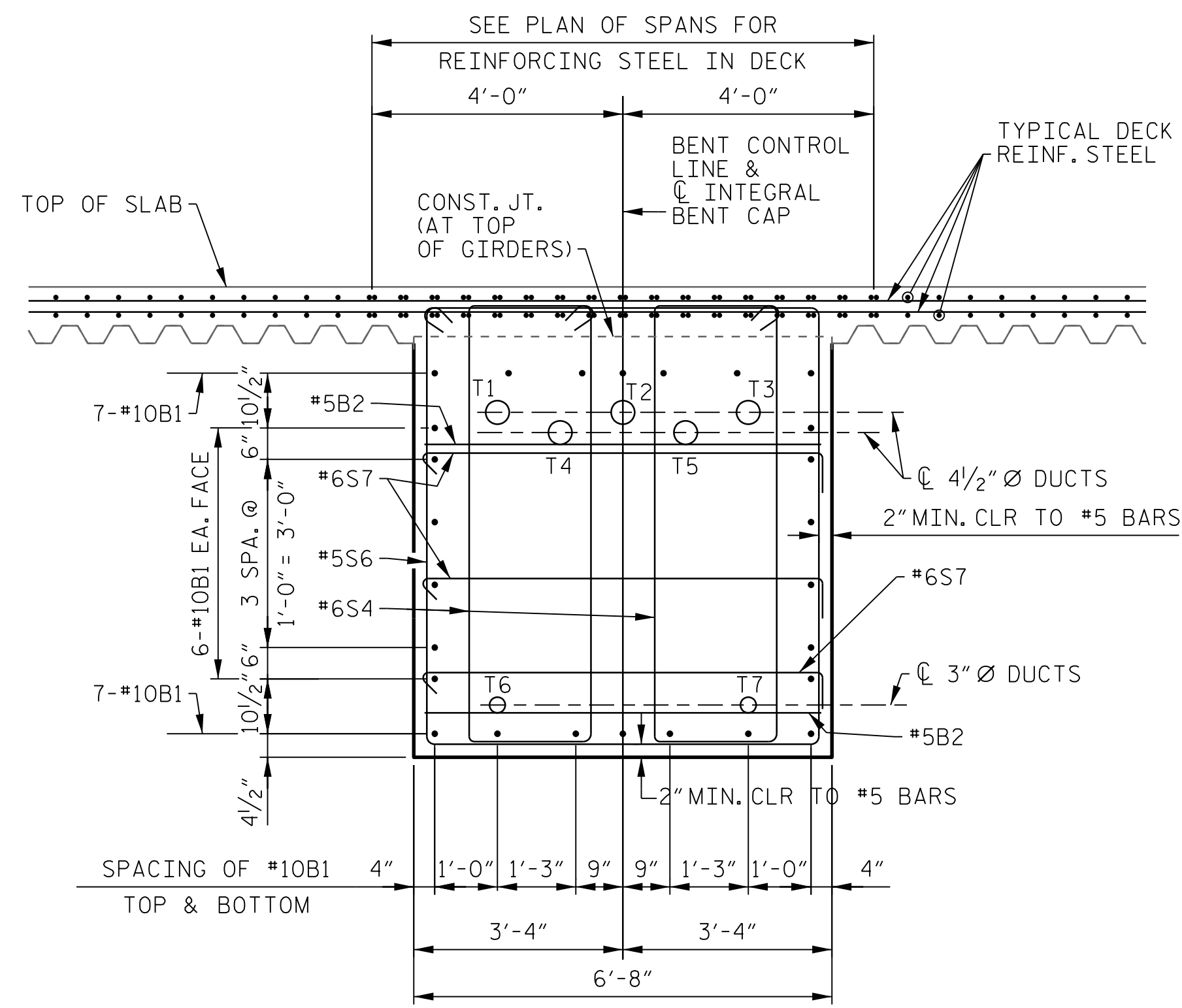
SECTION A-A



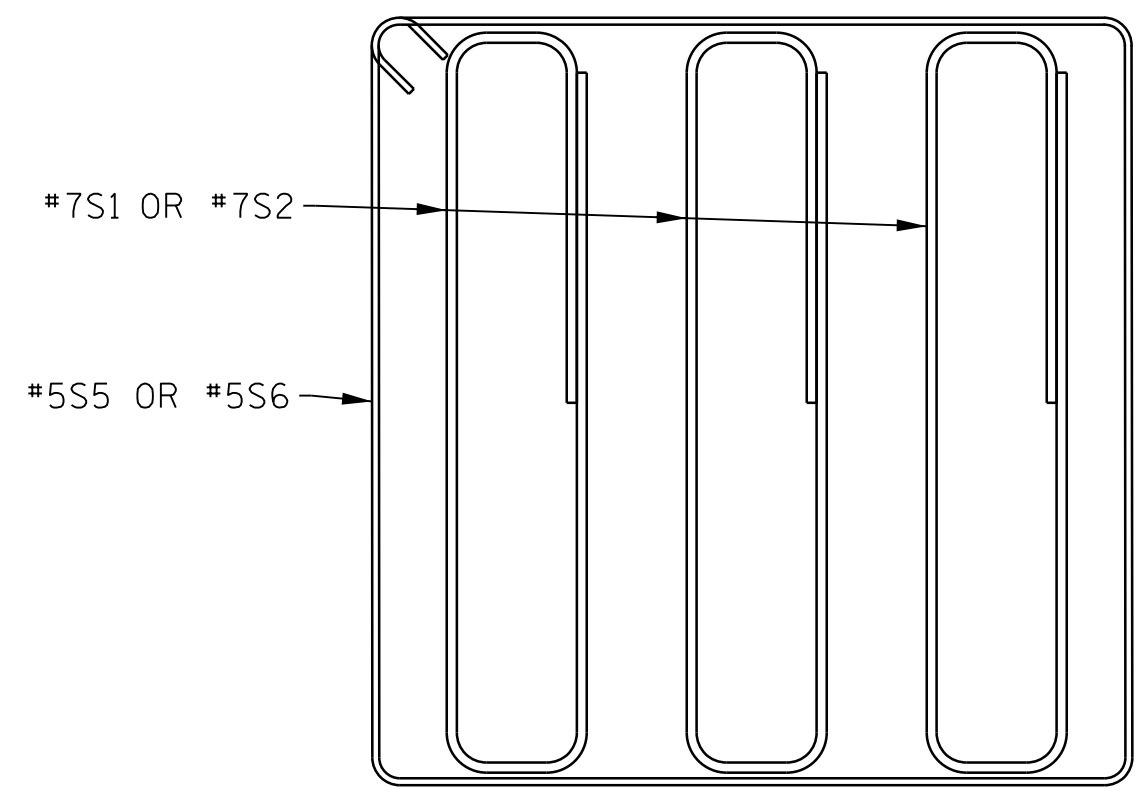
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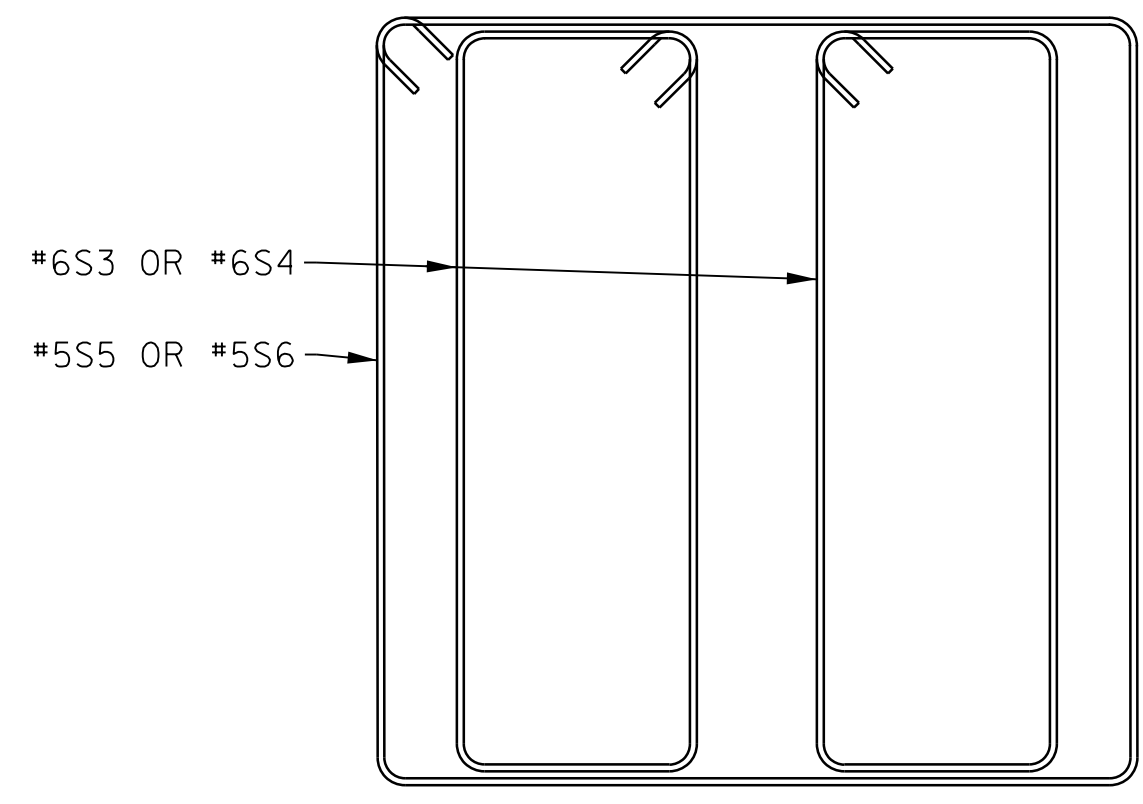
SECTION C-C



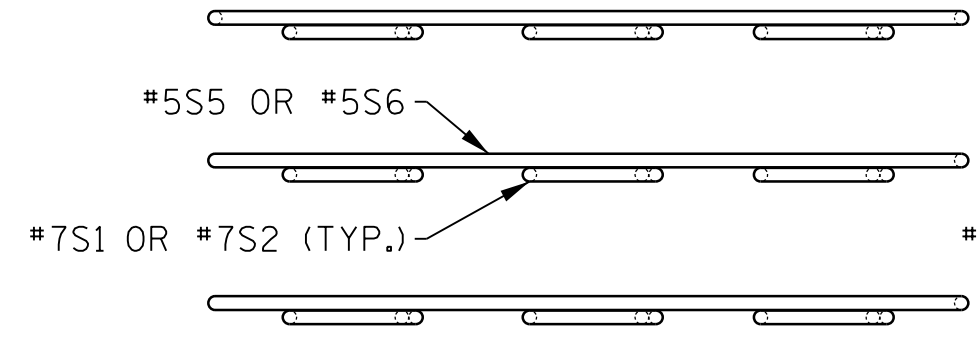
SECTION D-D



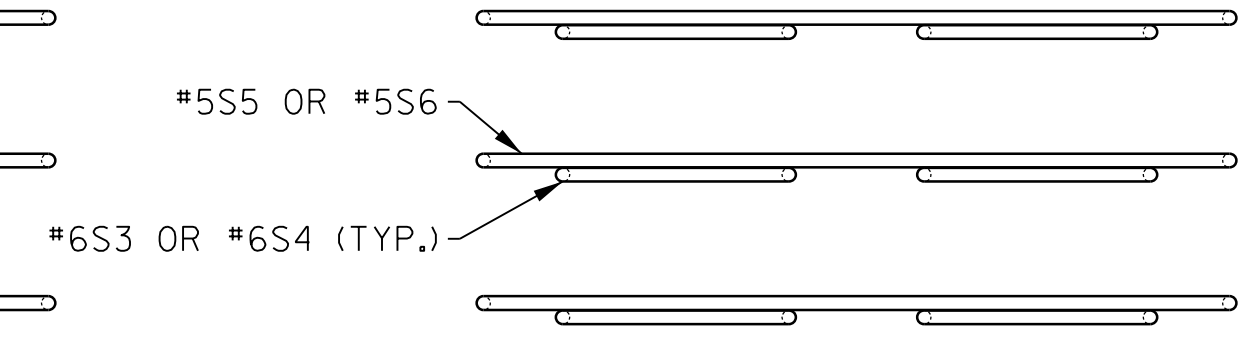
ELEVATION (SCHEMATIC)



ELEVATION (SCHEMATIC)



PLAN (SHOWING BAR WIDTHS AND REQUIRED PLACEMENT)

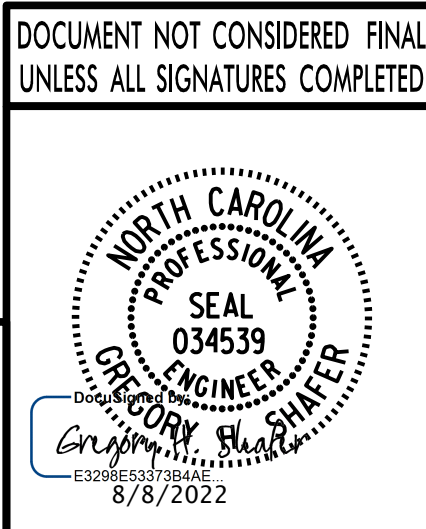


PLAN (SHOWING BAR WIDTHS AND REQUIRED PLACEMENT)

STIRRUPS DIAGRAM

DRAWN BY : J. CAYETANO DATE : 9-21
 CHECKED BY : J. B. TAYLOR DATE : 9-21
 DESIGN ENGINEER : J. B. TAYLOR DATE : 9-21

PLANS PREPARED BY :
PARSONS
 5540 CenterView Drive, Suite 217
 Raleigh, NC 27606-3386
 NC LICENSE No. F-0246



PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28+33.21 -Y2FLYAB-
41+07.80 -L-
 SHEET 8 OF 9

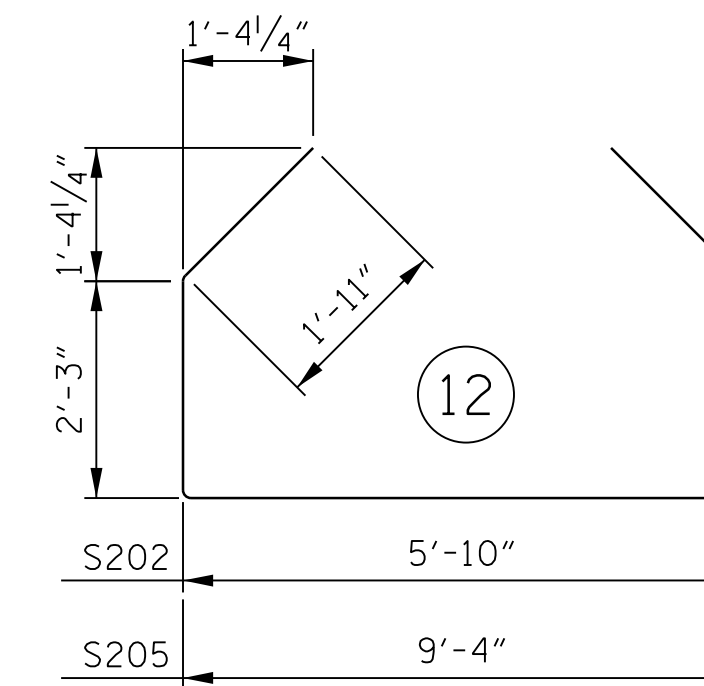
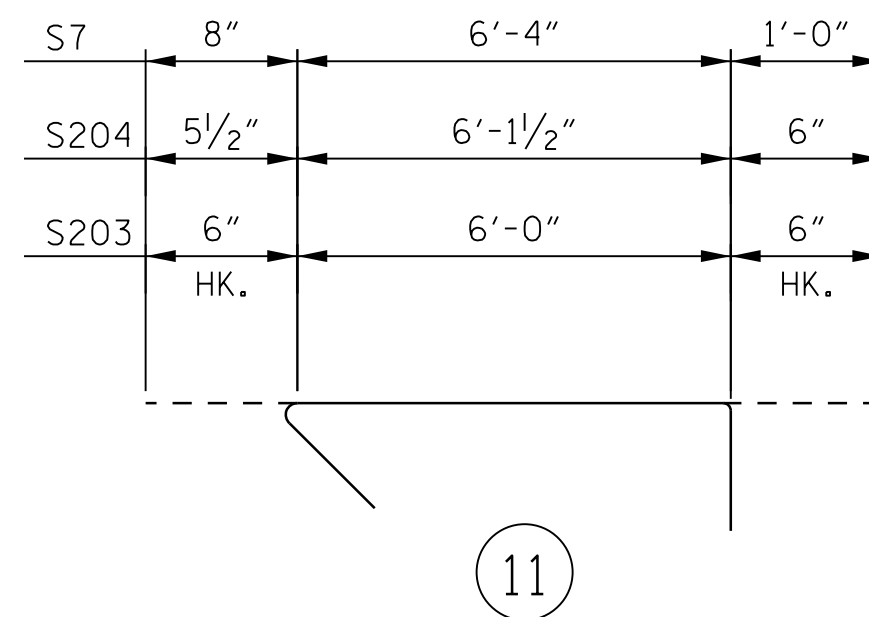
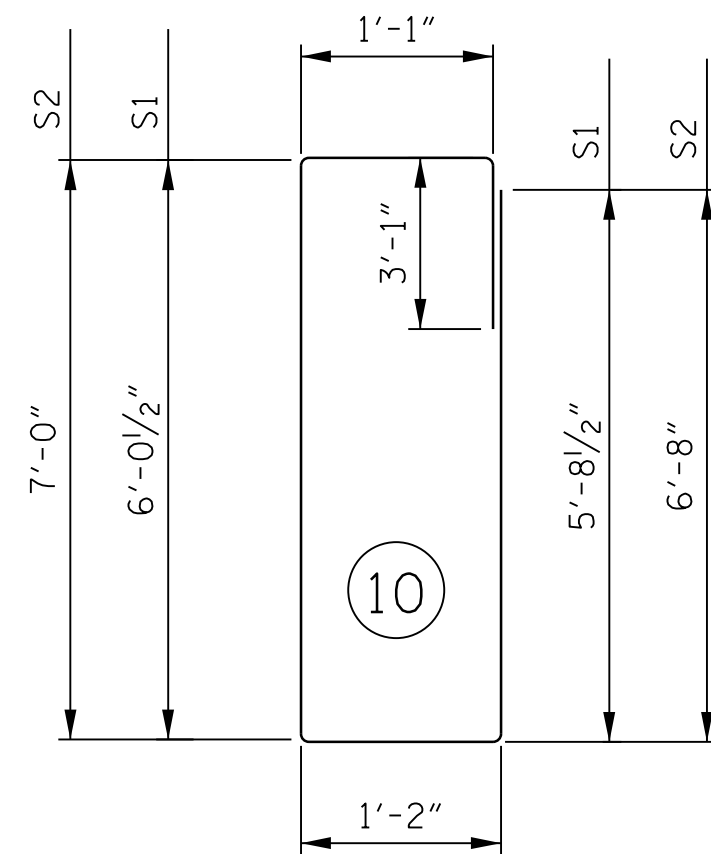
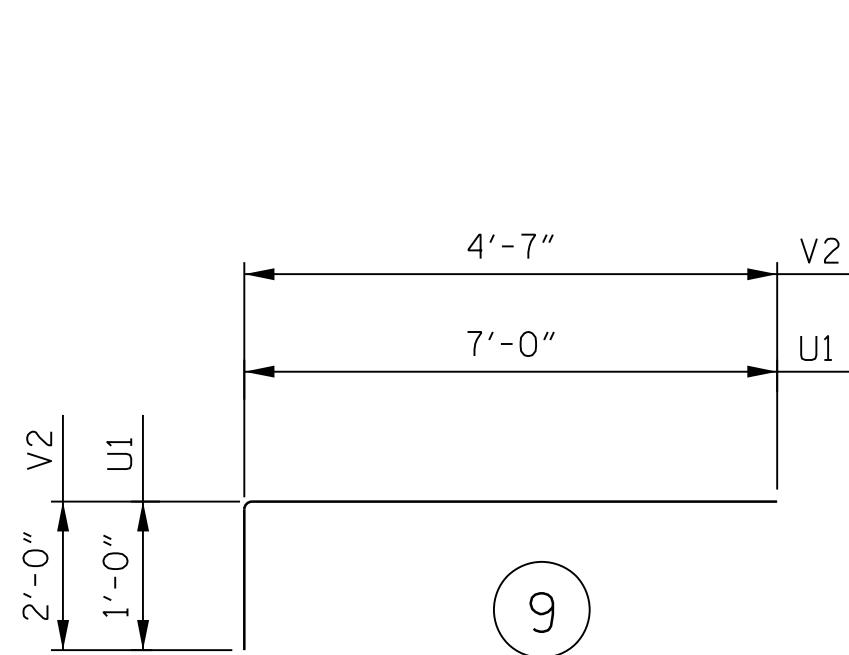
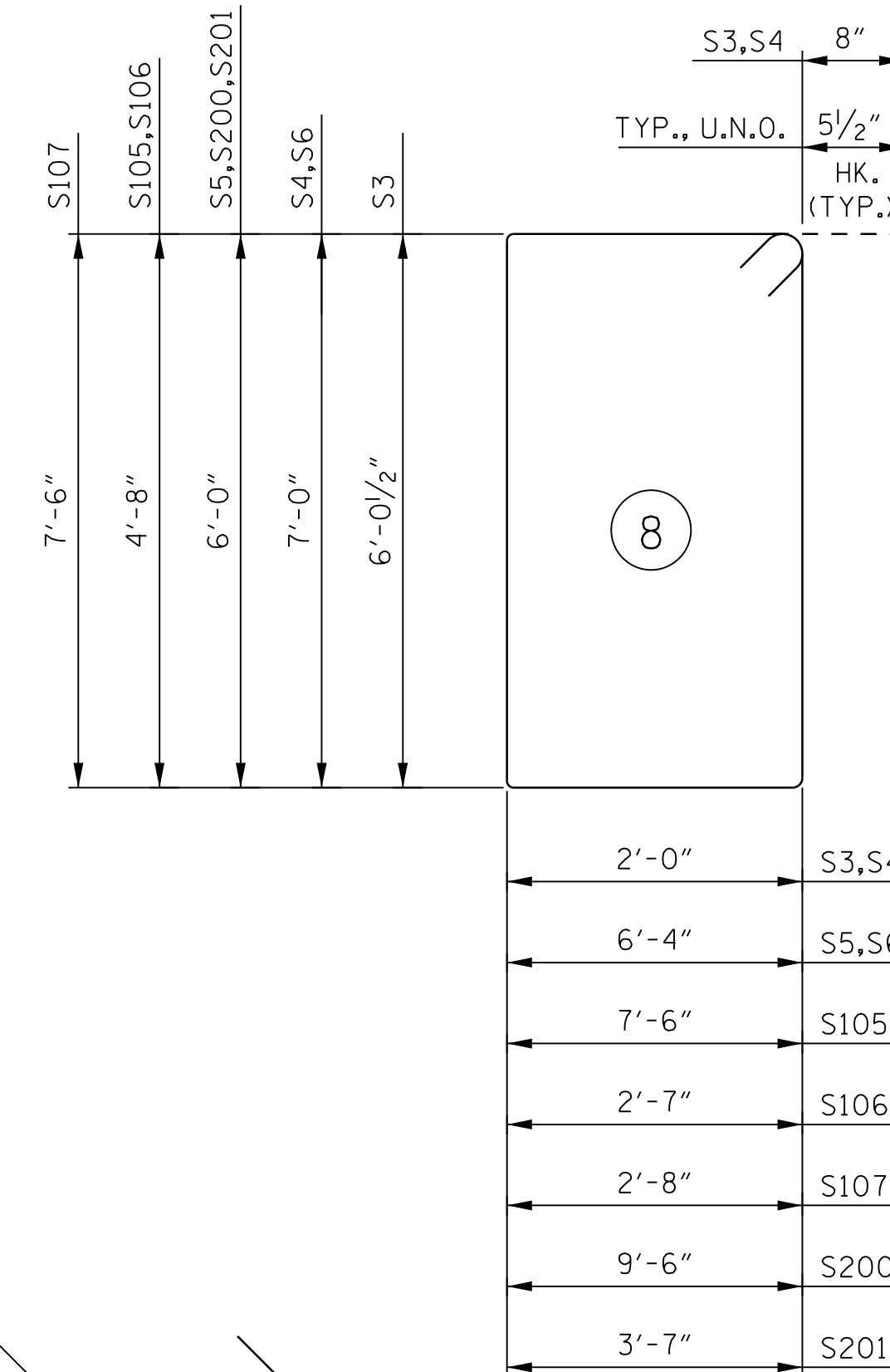
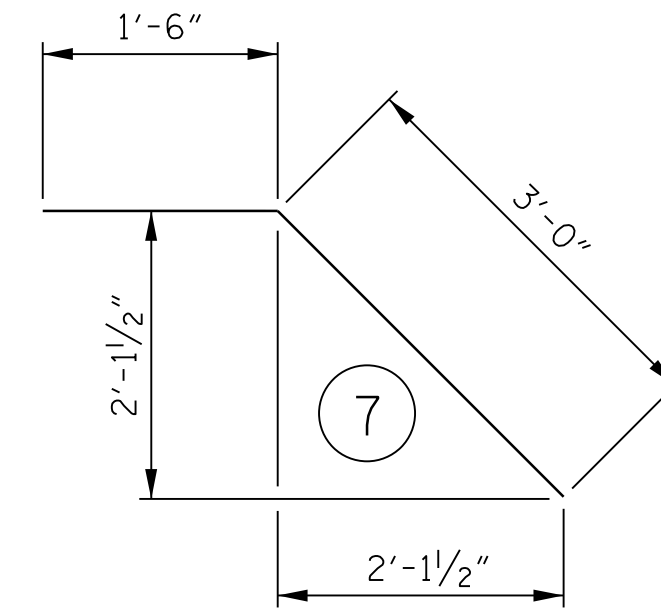
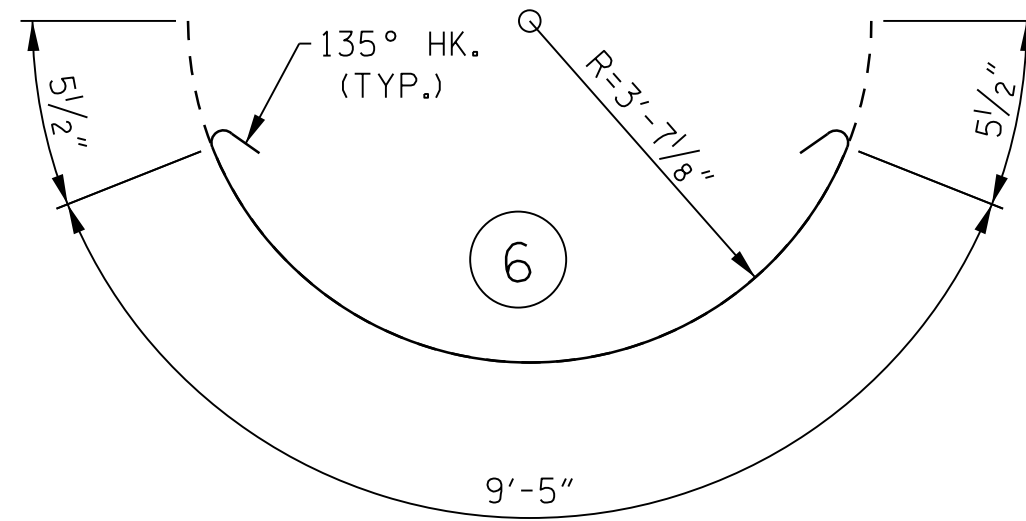
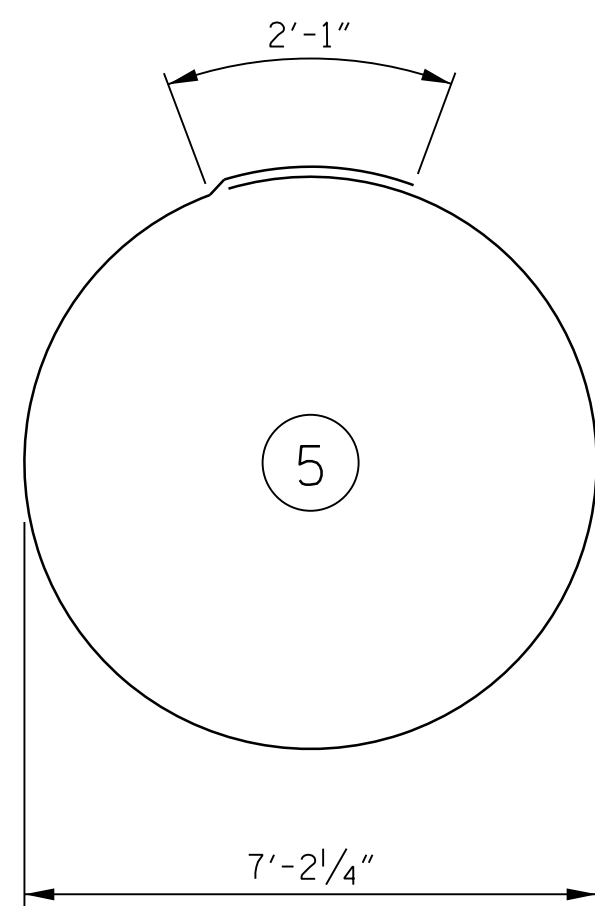
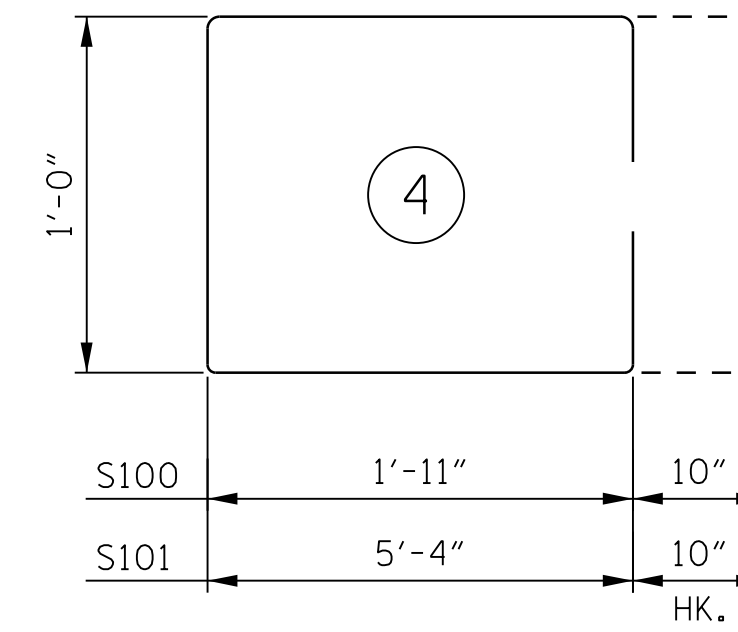
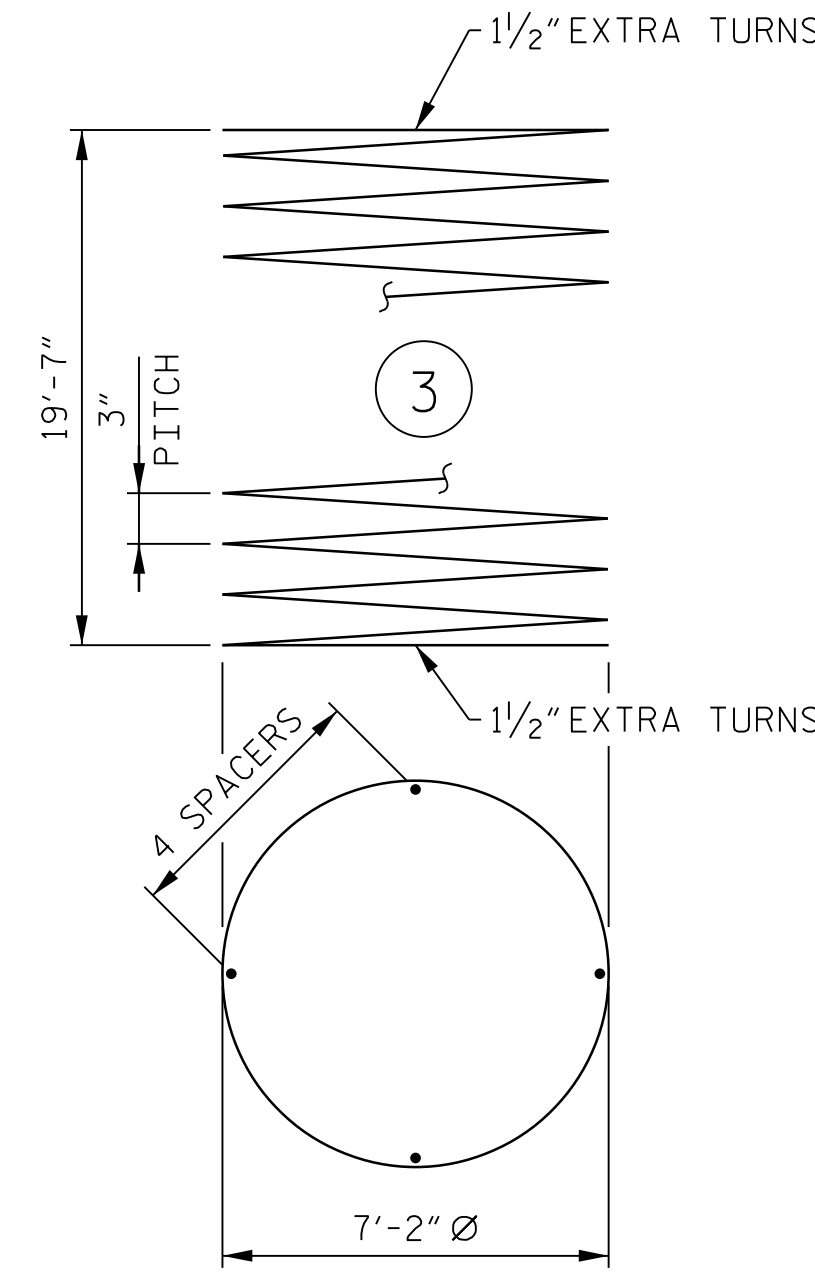
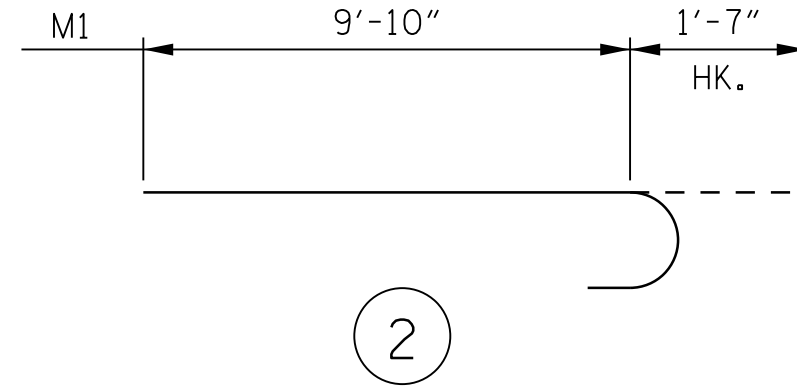
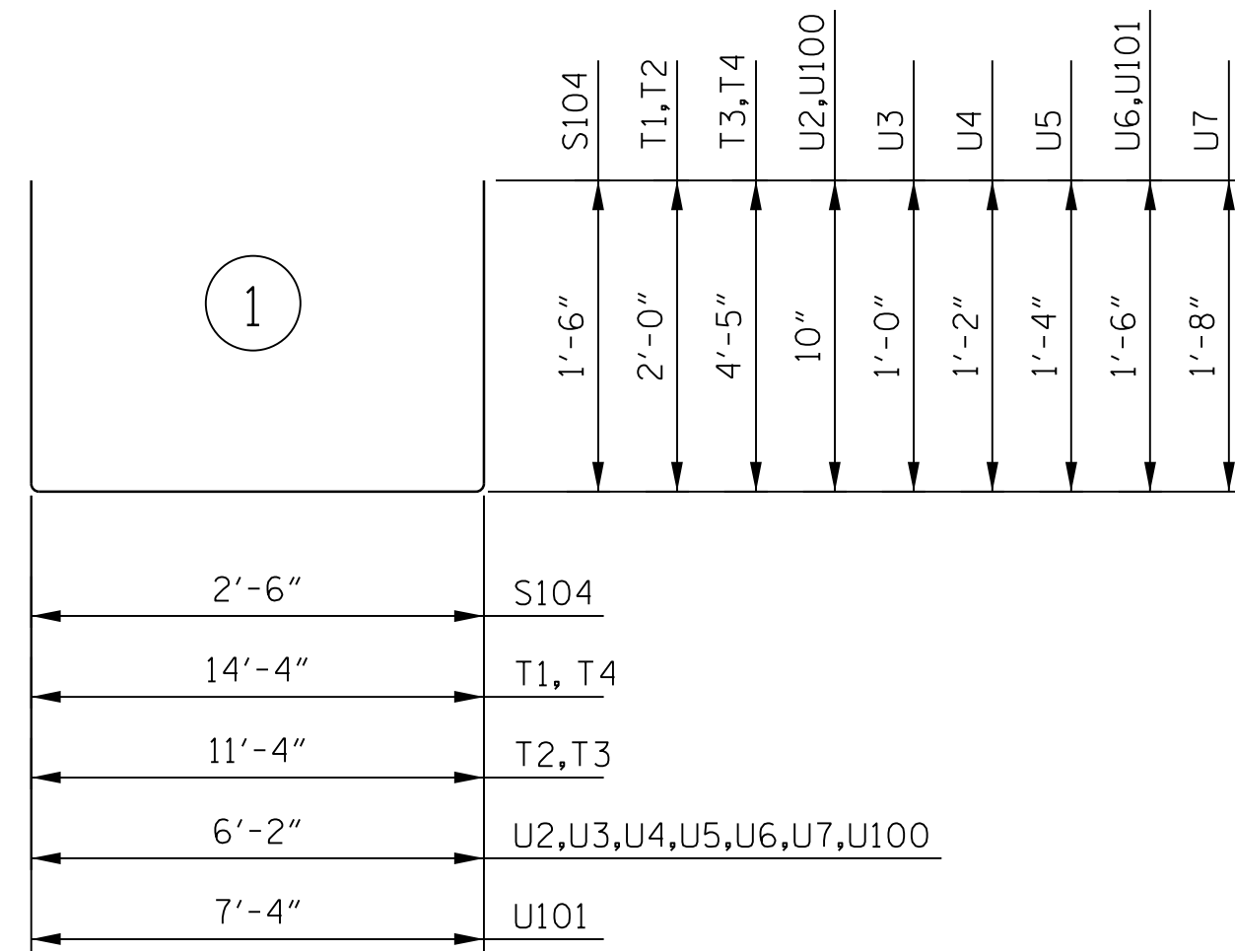
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
BENT4 CAP DETAILS					
SHEET No. S5-75					
REVISIONS					
No.	BY:	DATE:	No.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 84

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BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT

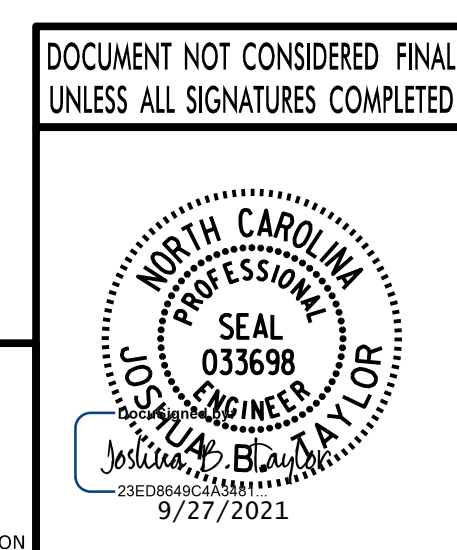
BILL OF MATERIAL



BENT 4					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	26	#10	STR	37' - 6"	4,195
B2	36	#5	STR	6' - 4"	238
B100	20	#5	STR	9' - 6"	198
B101	6	#5	STR	5' - 0"	31
D1	24	#18	STR	17' - 6"	5,712
M1	48	#11	2	11' - 5"	2,912
S1	48	#7	10	17' - 1"	1,676
S2	66	#7	10	19' - 0"	2,563
S3	8	#6	8	17' - 5"	209
S4	36	#6	8	19' - 4"	1,045
S5	20	#5	8	25' - 7"	534
S6	40	#5	8	27' - 7"	1,151
S7	180	#6	11	8' - 0"	2,163
S100	24	#5	4	6' - 6"	163
S101	10	#5	4	13' - 4"	139
S102	5	#5	5	24' - 8"	129
S103	8	#5	6	10' - 4"	86
S104	18	#5	1	5' - 6"	103
S105	4	#5	8	25' - 3"	105
S106	18	#5	8	15' - 5"	289
S107	9	#5	8	21' - 3"	199
S108	54	#5	7	4' - 6"	253
S200	2	#5	8	31' - 11"	67
S201	2	#5	8	20' - 1"	42
S202	12	#5	12	14' - 2"	177
S203	20	#5	11	7' - 0"	146
S204	10	#5	11	7' - 1"	74
S205	10	#5	12	17' - 8"	184
T1	18	#11	1	18' - 4"	1,753
T2	15	#11	1	15' - 4"	1,222
T3	15	#8	1	20' - 2"	808
T4	18	#8	1	23' - 2"	1,113
T5	16	#5	STR	11' - 6"	192
T6	16	#5	STR	14' - 6"	242
U1	14	#4	9	8' - 0"	75
U2	2	#4	1	7' - 10"	10
U3	2	#4	1	8' - 2"	11
U4	2	#4	1	8' - 6"	11
U5	2	#4	1	8' - 10"	12
U6	2	#4	1	9' - 2"	12
U7	2	#4	1	9' - 6"	13
U100	20	#5	1	6' - 2"	129
U101	12	#5	1	10' - 4"	129
V1	48	#11	STR	23' - 2"	5,908
V2	10	#11	9	6' - 7"	350
SP-1	1	#4	3	1813' - 3"	1,211
REINFORCING STEEL					LBS. 36,733
SPIRAL COLUMN REINFORCING STEEL					LBS. 1,211
CLASS 'A' CONCRETE					
POUR #1-FOOTING					CU. YDS. 40.0
POUR #2-COLUMN					CU. YDS. 31.6
TOTAL					71.6
6000 PSI CONCRETE					
POUR #3-HINGE-LOWER					CU. YDS. 13.3
POUR #4-INTEGRAL CAP & HINGE-UPPER					CU. YDS. 61.9
TOTAL					75.2
ELASTOMERIC CONCRETE					
POUR #5-PT ENCASEMENT					CU. YDS. 5.1
MICROPILES					
NO. 20					LIN. FT. 1400.0

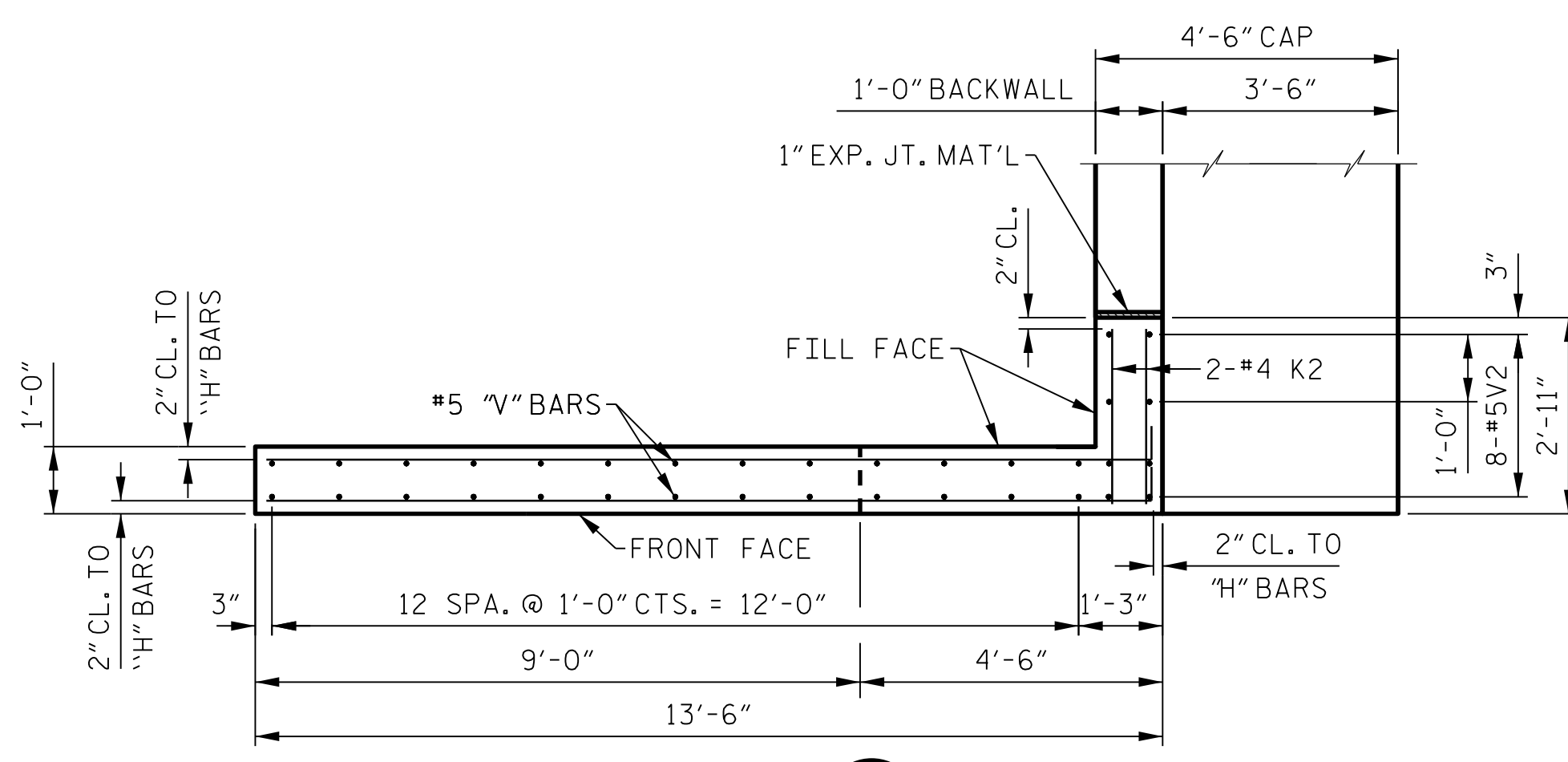
PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-
 SHEET 9 OF 9

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
BENT4					
BILL OF MATERIAL					
REVISIONS					
No.	BY:	DATE:	No.	BY:	DATE:
1			3		
2			4		
					SHEET No. S5-76
					TOTAL SHEETS 84

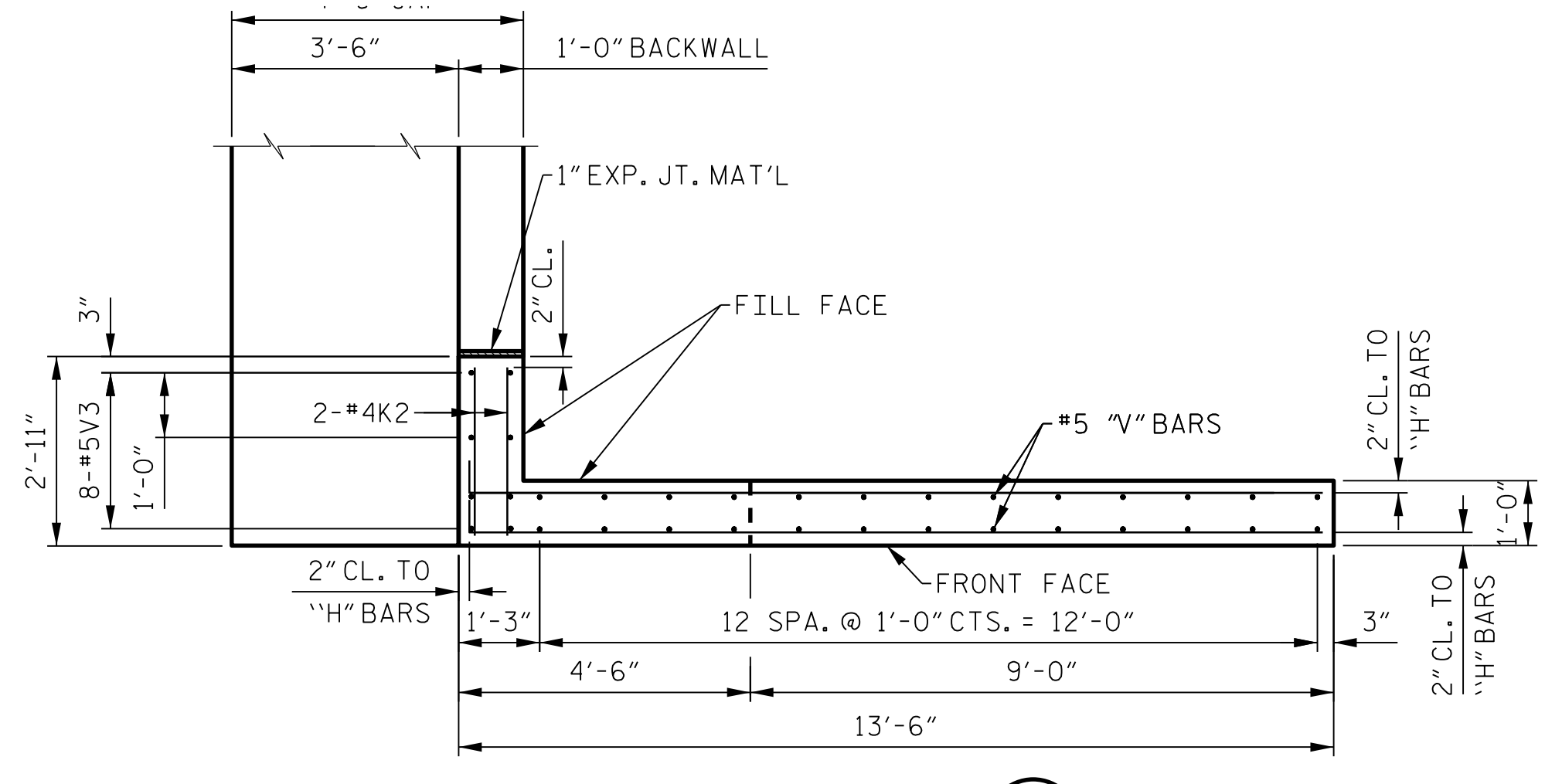


PLANS PREPARED BY:
PARSONS
 5540 CenterView Drive, Suite 217
 Raleigh, NC 27606-3386
 NC LICENSE No. F-0246
 9/27/2021
 FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

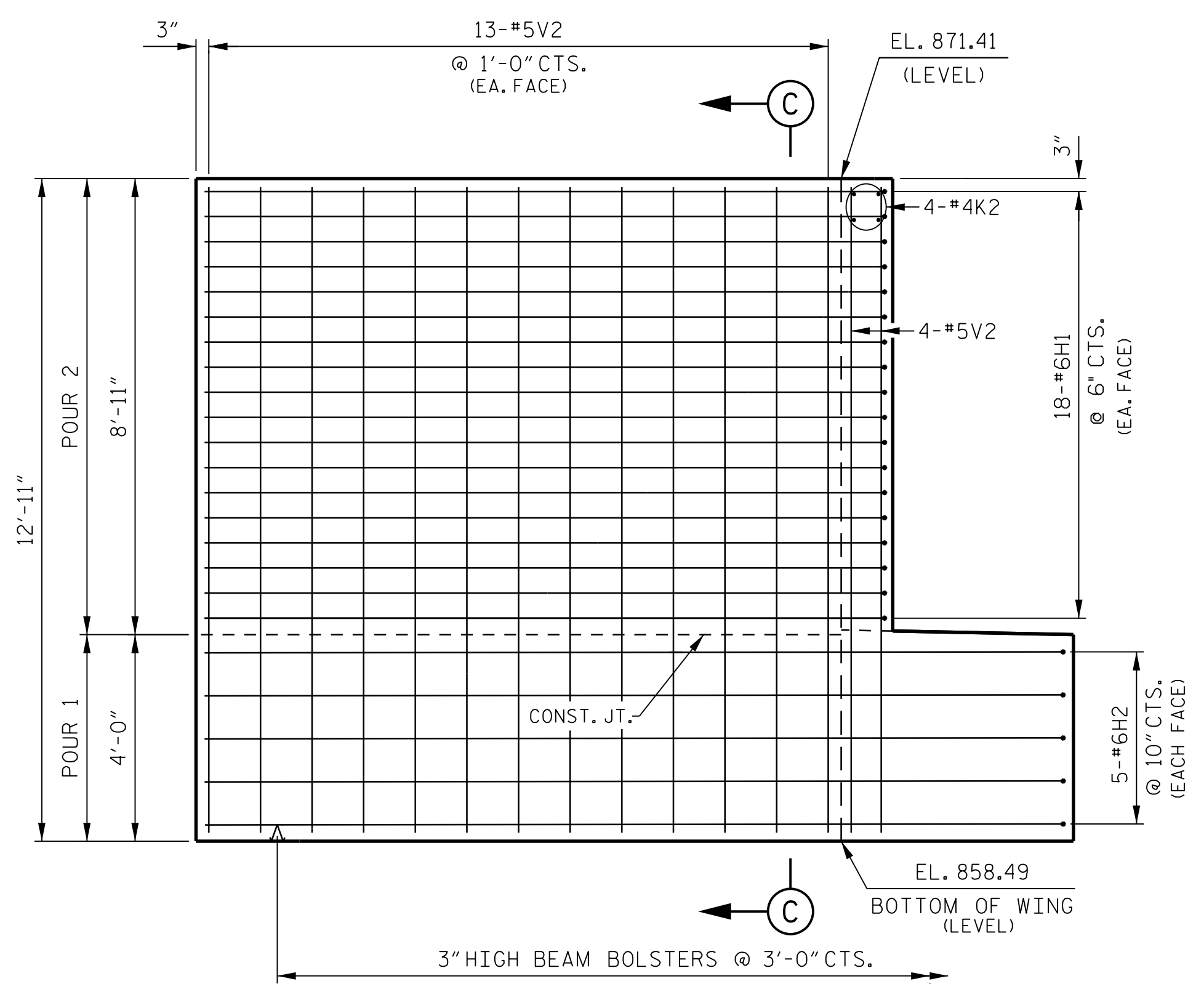
DRAWN BY : J. CAYETANO DATE : 9-21
 CHECKED BY : J. B. TAYLOR DATE : 9-21
 DESIGN ENGINEER : J. B. TAYLOR DATE : 9-21



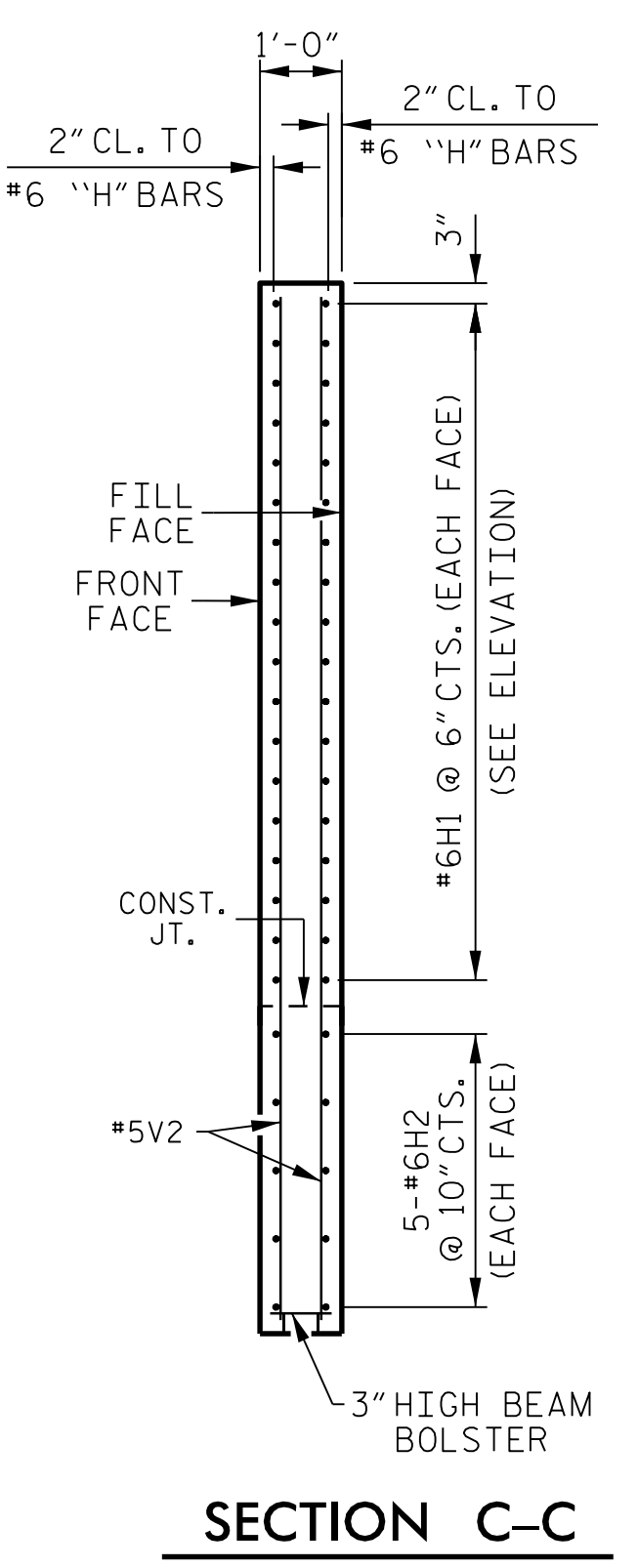
PLAN OF WING W3



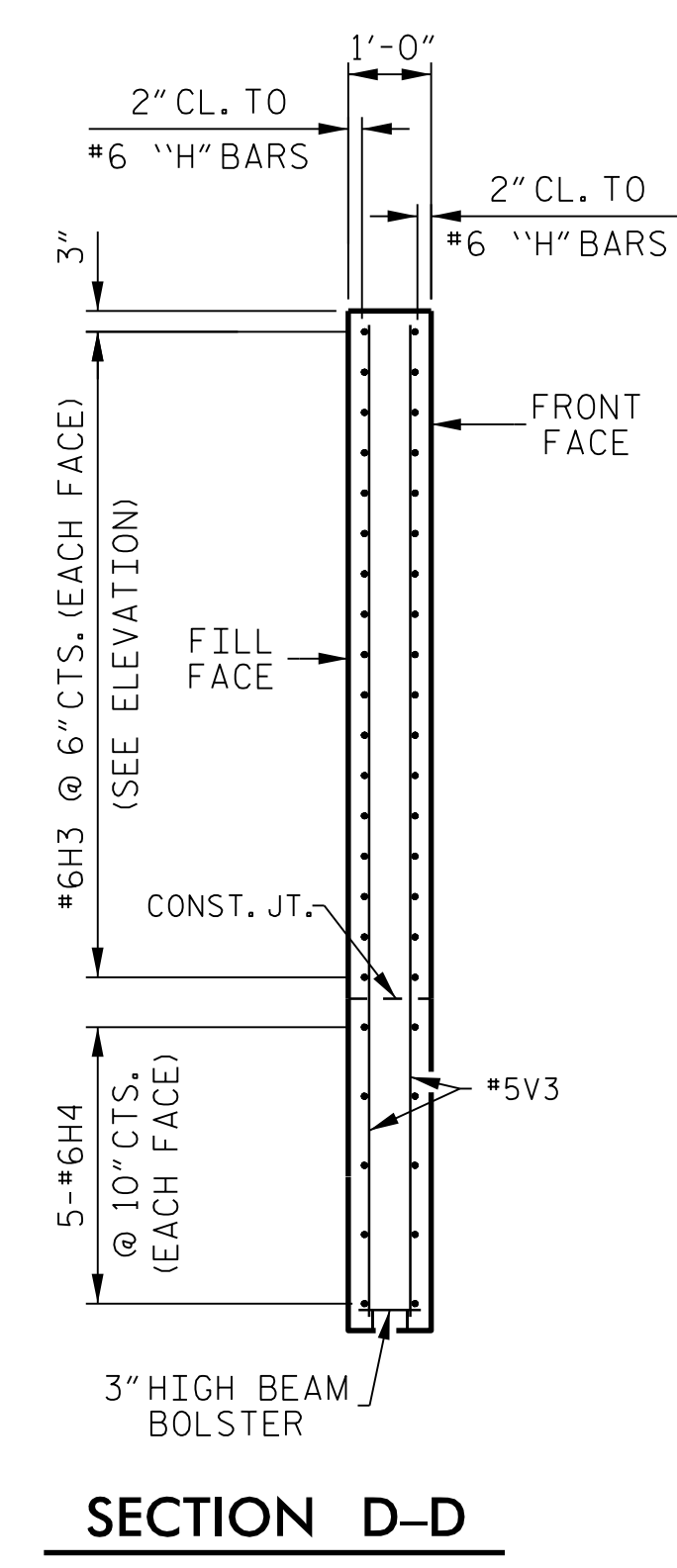
PLAN OF WING W4



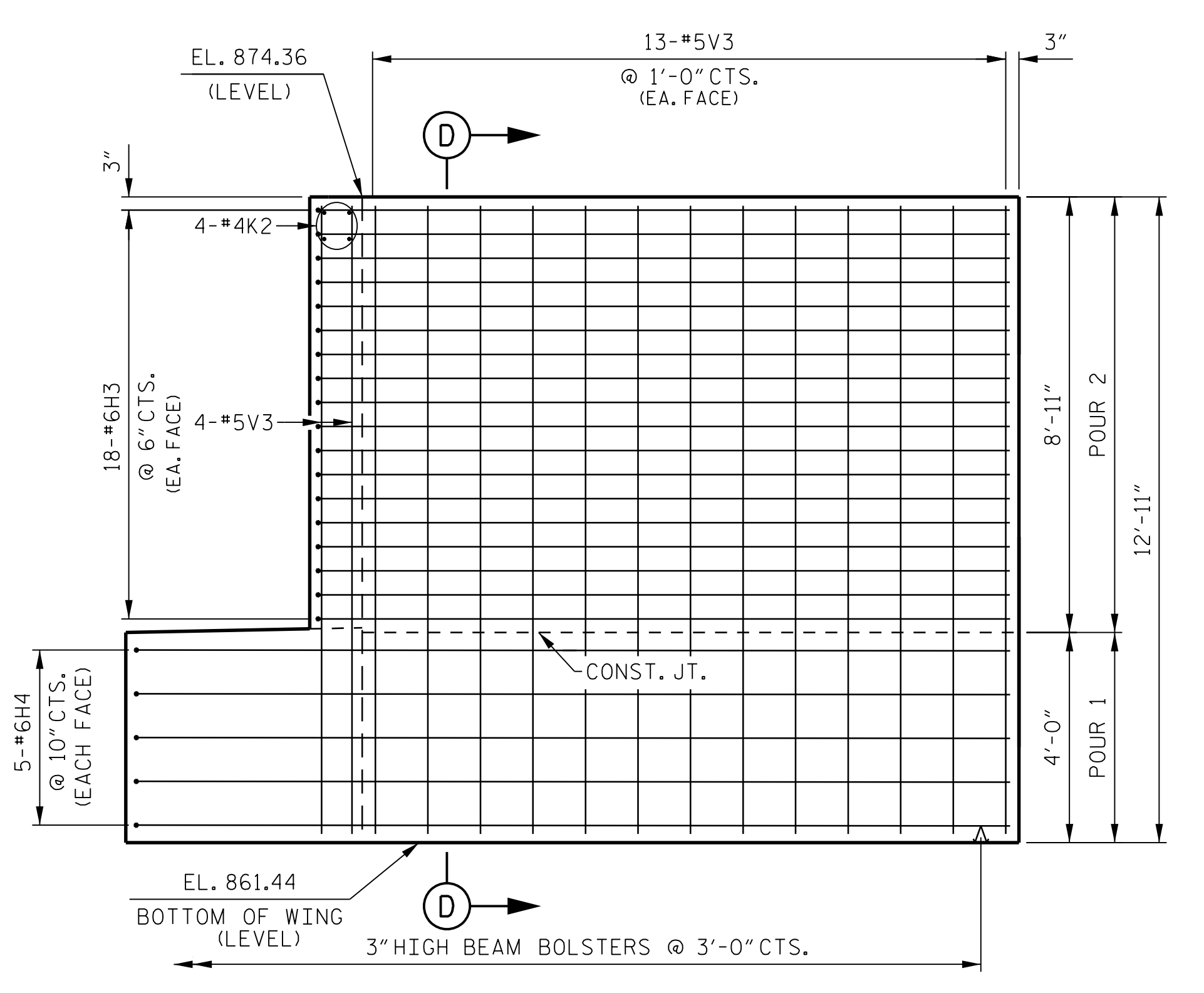
ELEVATION OF WING W3



SECTION C-C



SECTION D-D

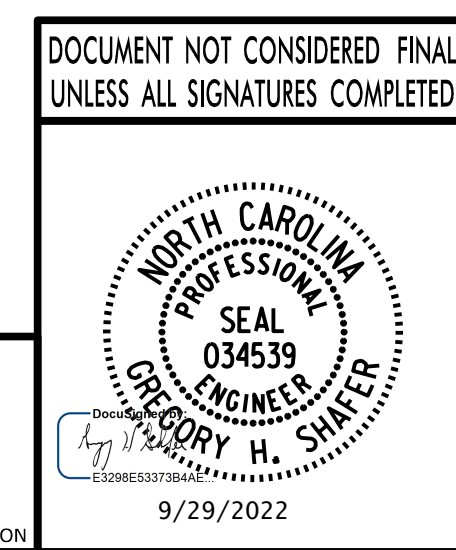


ELEVATION OF WING W4

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-

SHEET 2 OF 3

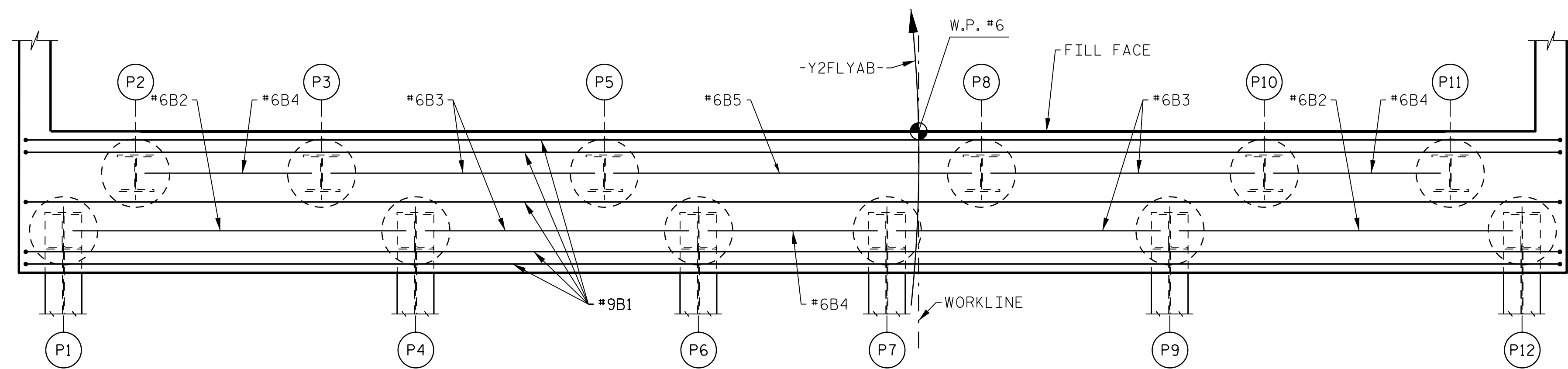
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 2 WINGWALL DETAILS					
REVISIONS					
No.	BY:	DATE:	No.	BY:	DATE:
1			3		
2			4		
SHEET No. S5-78					TOTAL SHEETS 84



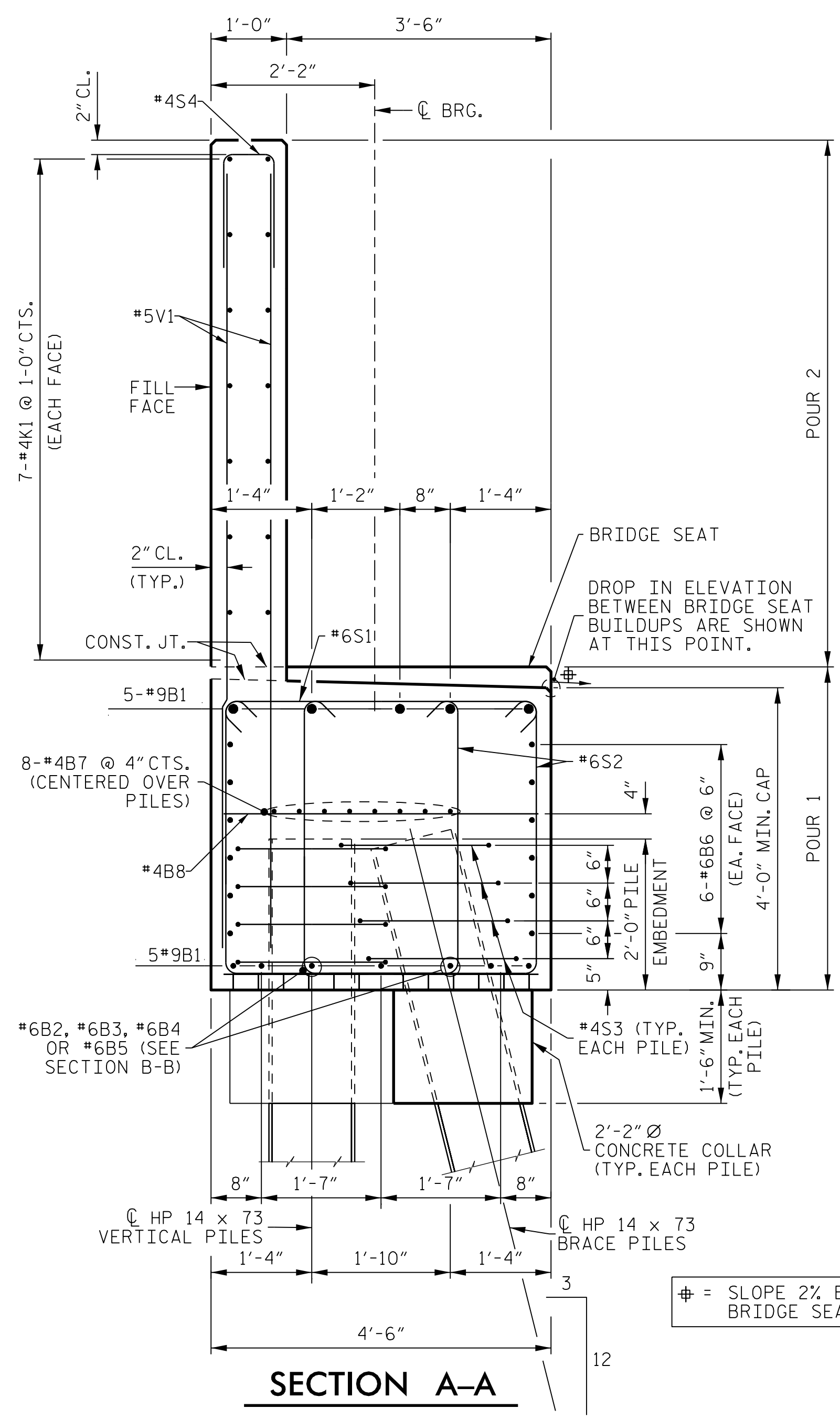
PLANS PREPARED BY:
PARSONS
 5540 CenterView Drive, Suite 217
 Raleigh, NC 27606-3386
 NC LICENSE No. F-0246
 9/29/2022

DRAWN BY: J. CAYETANO DATE: 9-21
 CHECKED BY: J. B. TAYLOR DATE: 9-21
 DESIGN ENGINEER: J. B. TAYLOR DATE: 9-21

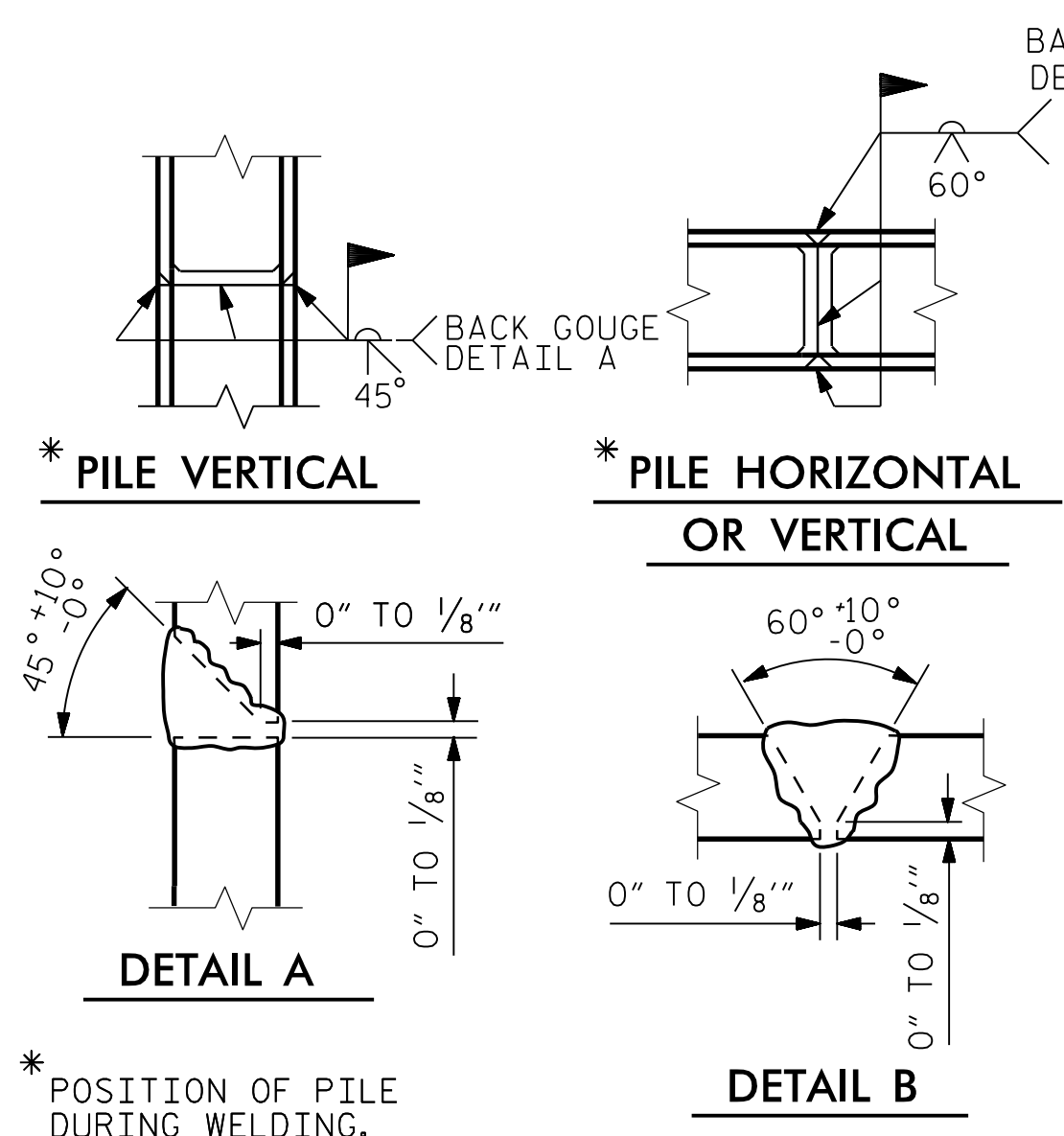
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SECTION B-B



SECTION A-A



NOTES

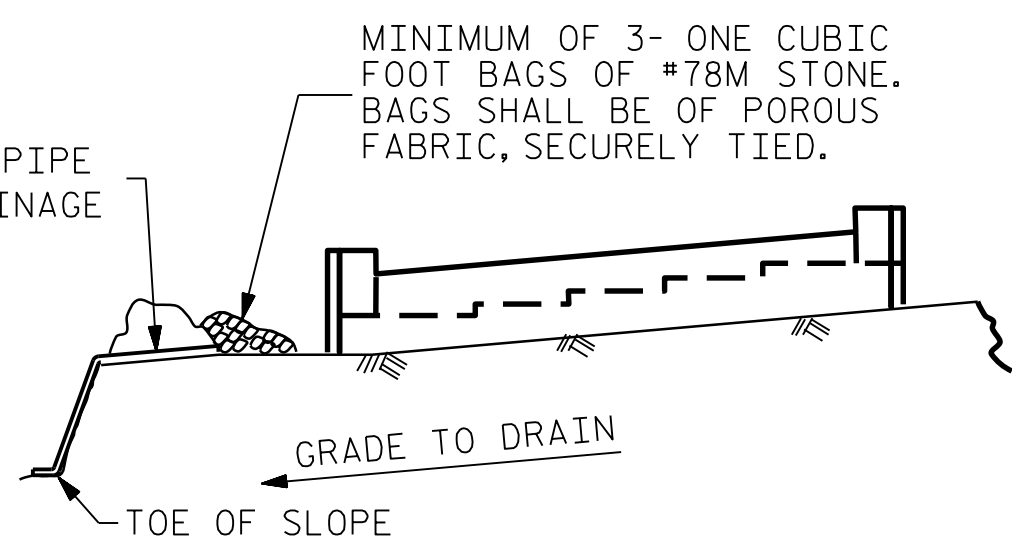
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILD-UPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE FRONT FACE AT THE RATE OF 2%.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL (PARAPET AND END POST) ARE CAST IF SLIP FORMING IS USED.



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

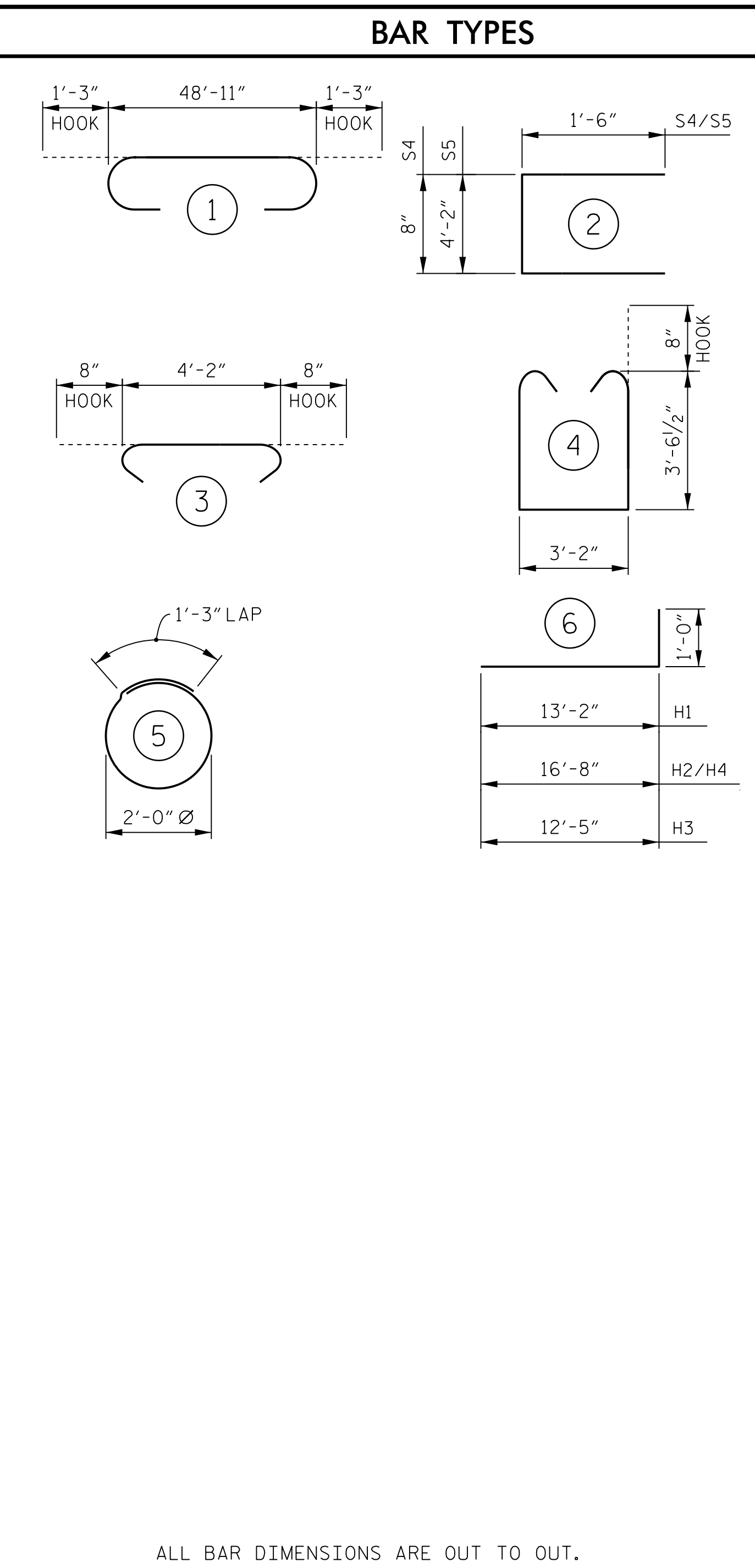
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT

BILL OF MATERIAL END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	#9	I	51'- 5"	1,748
B2	2	#6	STR	10'- 7"	32
B3	4	#6	STR	8'- 5"	51
B4	3	#6	STR	5'- 4"	24
B5	1	#6	STR	11'- 5"	17
B6	12	#6	STR	48'- 11"	882
B7	16	#4	STR	25'- 8"	274
B8	12	#4	STR	4'- 2"	33
B9	25	#4	STR	3'- 2"	53
H1	36	#6	6	14'- 2"	766
H2	10	#6	6	17'- 8"	265
H3	36	#6	6	14'- 2"	766
H4	10	#6	6	17'- 8"	265
K1	14	#4	STR	25'- 8"	240
K2	8	#4	STR	2'- 7"	14
S1	53	#6	3	5'- 6"	438
S2	106	#6	4	11'- 7"	1,844
S3	48	#4	5	7'- 7"	243
S4	43	#4	2	3'- 8"	105
S5	35	#4	2	7'- 2"	168
V1	86	#5	STR	10'- 7"	942
V2	34	#5	STR	12'- 7"	446
V3	34	#5	STR	12'- 7"	446
REINFORCING STEEL				LBS. 10,062	
CLASS 'A' CONCRETE					
POUR #1				CU. YDS.	36.7
POUR #2				CU. YDS.	24.7
TOTAL				CU. YDS.	61.4
HP14x73 STEEL PILES					
NO. 12				LIN. FT.	480.0
PILE DRIVING EQUIPMENT SETUP FOR HP 14 x 73 STEEL PILES				12 EACH	



PROJECT NO. U-2579AA
FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-
 SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 2
 DETAILS**

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

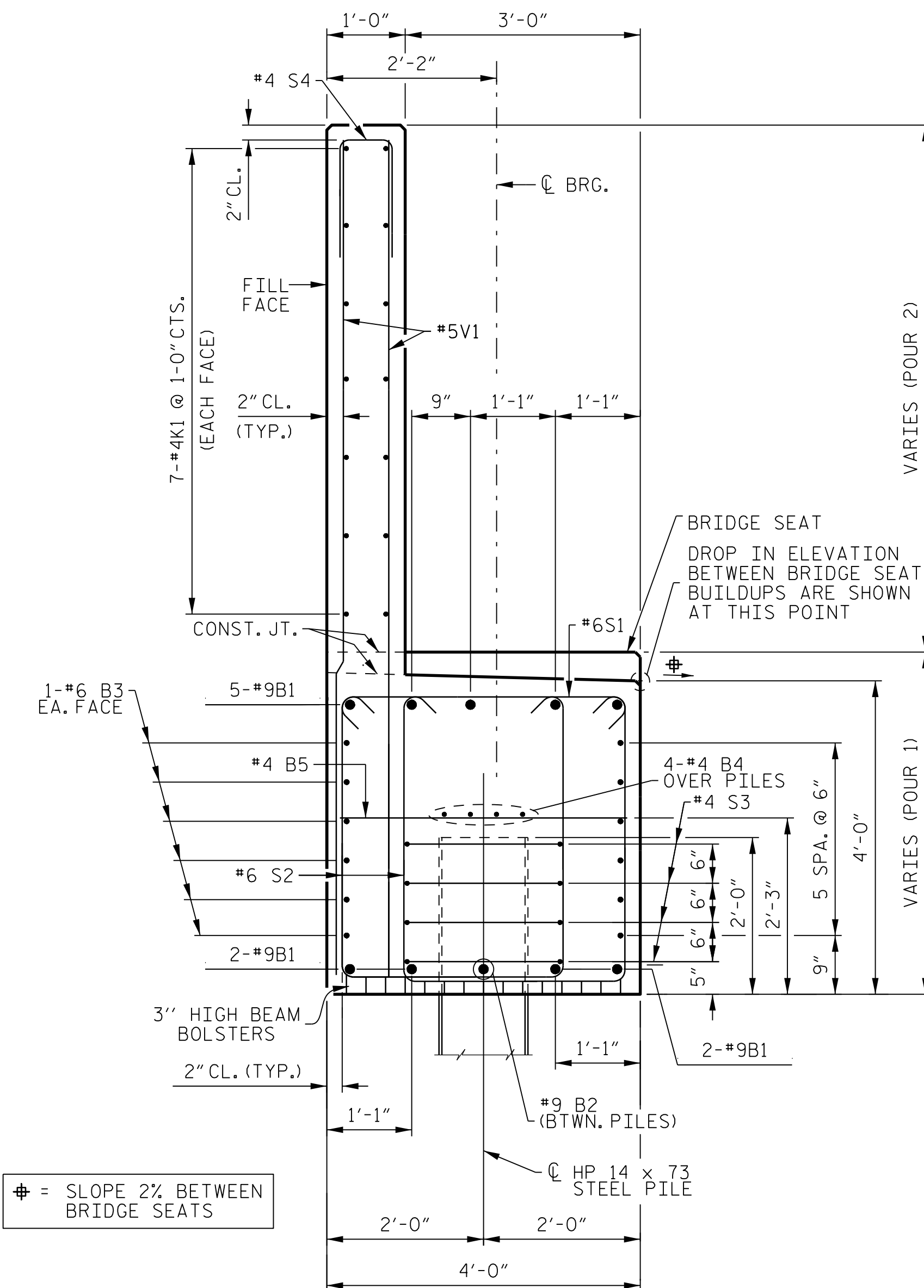
**NORTH CAROLINA
 PROFESSIONAL
 SEAL
 034539
 CIVIL ENGINEER
 GREGORY H. SHEPHERD
 9/29/2022**

DRAWN BY : J. CAYETANO DATE : 9-21
 CHECKED BY : J. B. TAYLOR DATE : 9-21
 DESIGN ENGINEER : J. B. TAYLOR DATE : 9-21

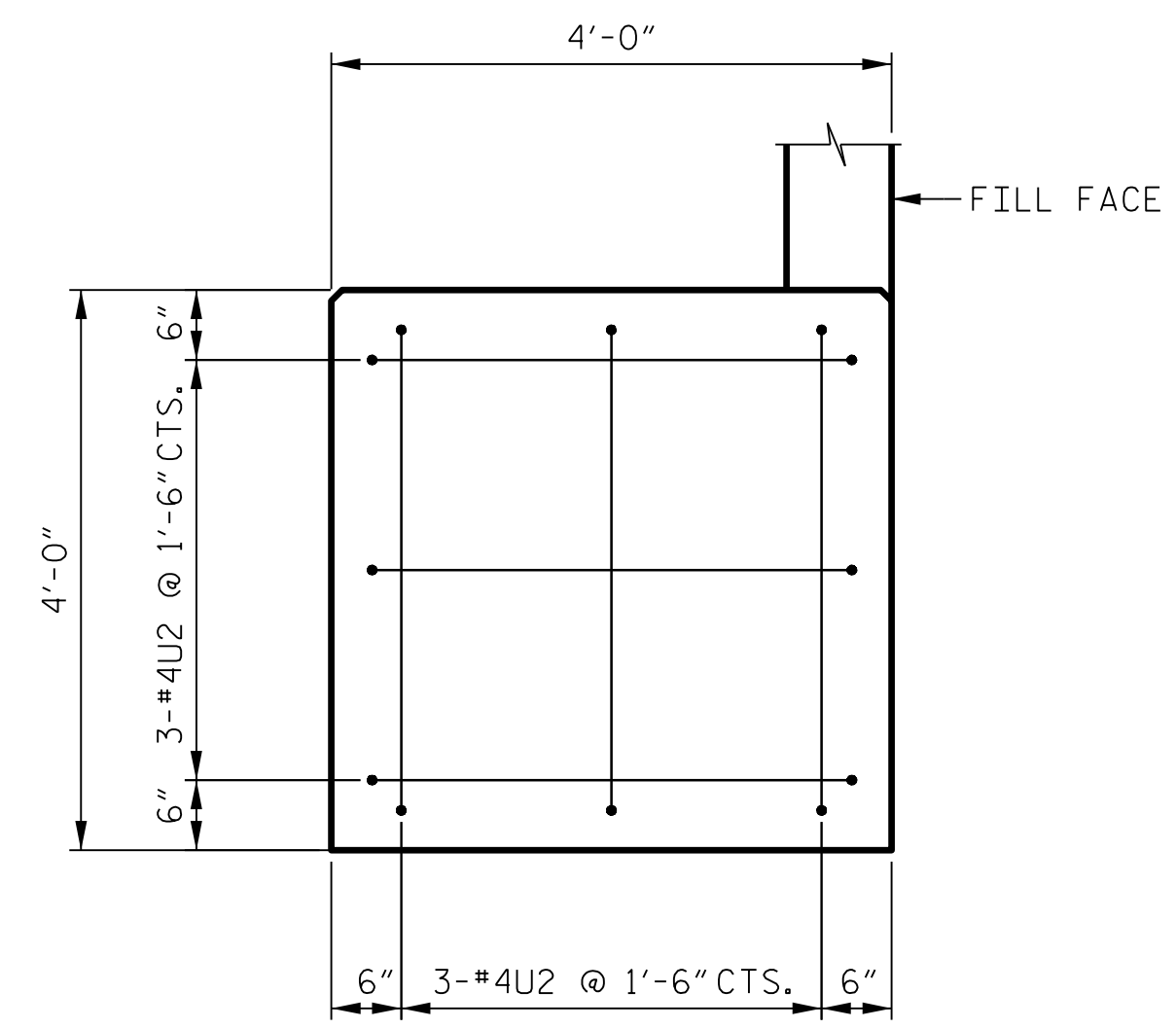
PLANS PREPARED BY :
PARSONS
 5540 Centerview Drive, Suite 217
 Raleigh, NC 27606-3386
 NC LICENSE No. T-0246

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S5-79
1			3			TOTAL SHEETS
2			4			84

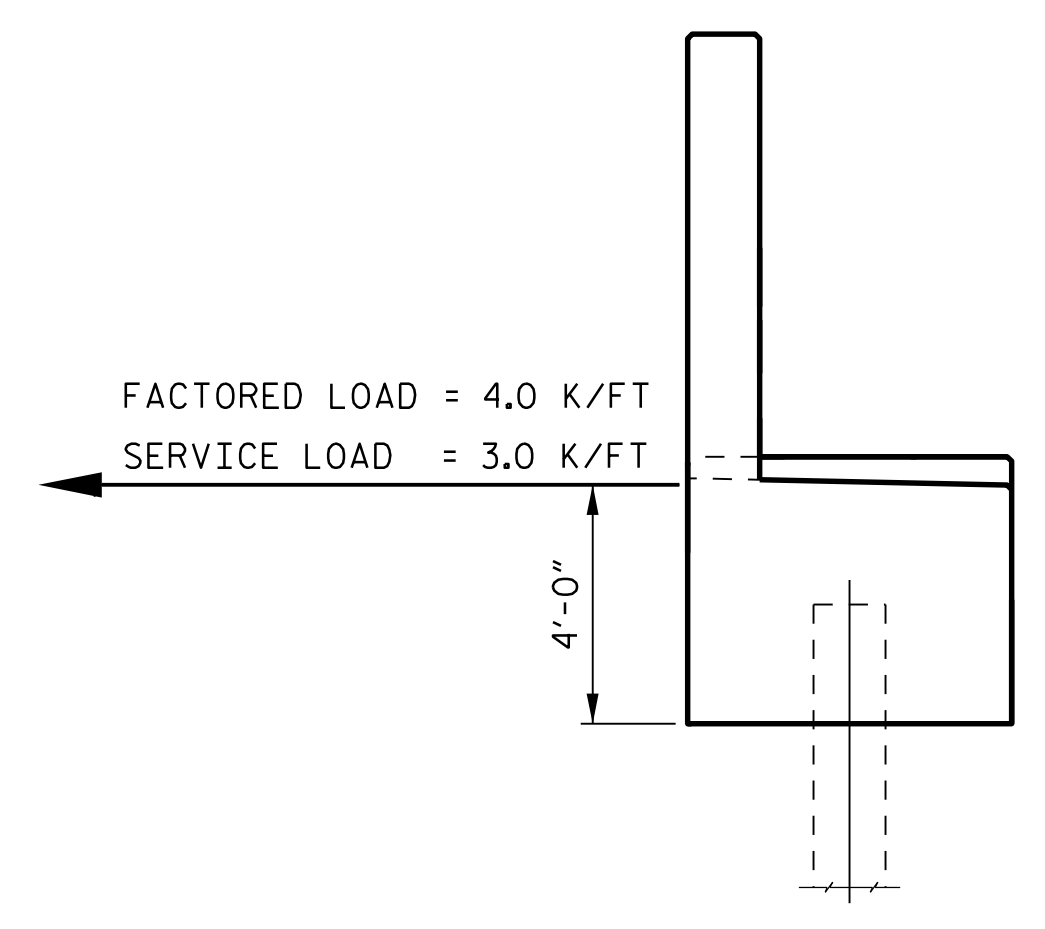
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SECTION A-A



VIEW C-C



END BENT TIEBACK FORCE

NOTES

* = WINGWALL EXTENSION DISTANCE TO BE FIELD ADJUSTED AS REQUIRED TO PROVIDE 1" EXP. JT. BETWEEN THE MSE WALL COPING AND THE EXTENDED WINGWALL.

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

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

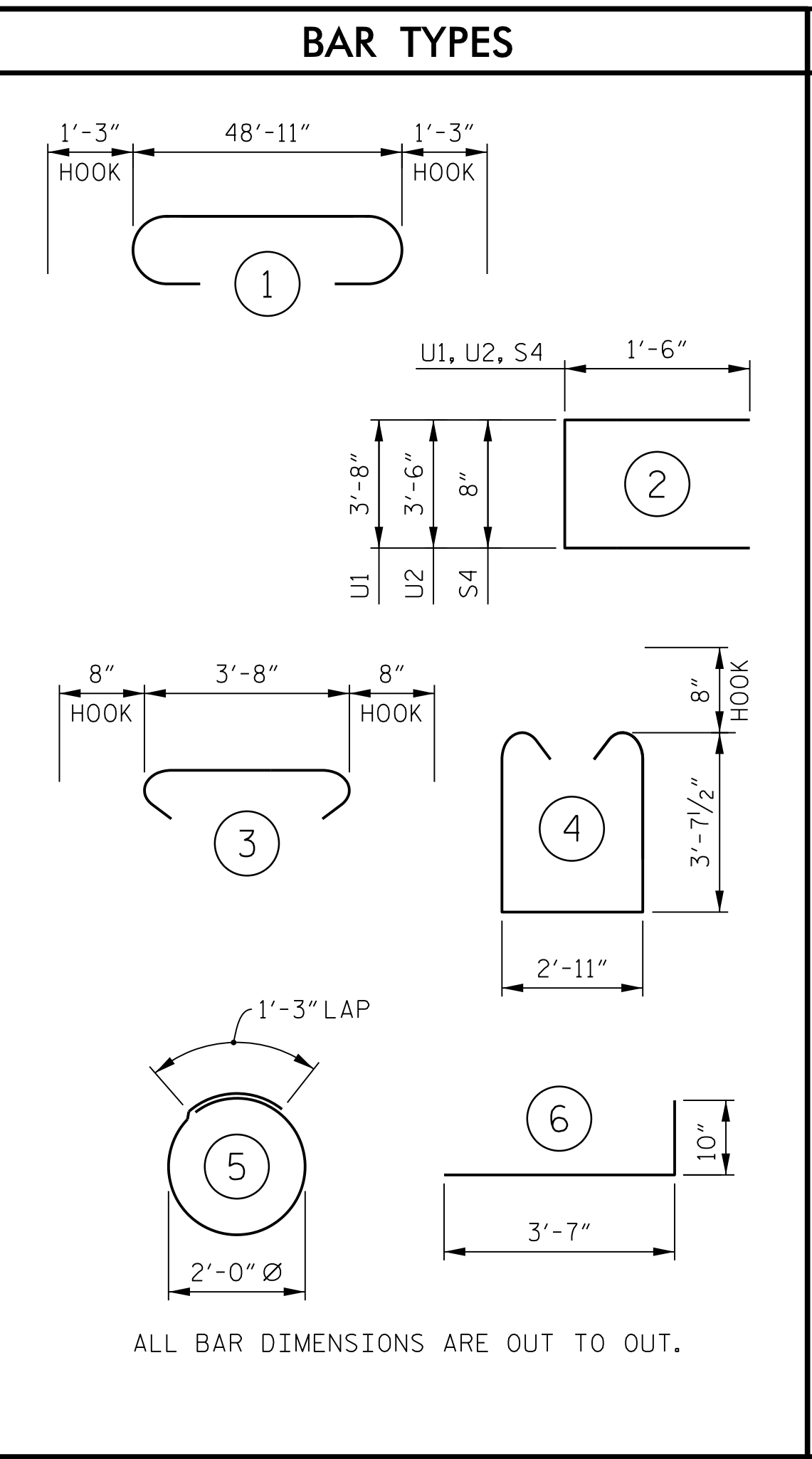
THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILD-UPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE FRONT FACE AT THE RATE OF 2%.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL (PARAPET AND END POST) ARE CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE "SUBSTRUCTURE END BENT 1 (SHEET 3 OF 3)".

FOR TEMPORARY DRAINAGE AT END BENT, SEE "SUBSTRUCTURE END BENT 1 (SHEET 3 OF 3)".

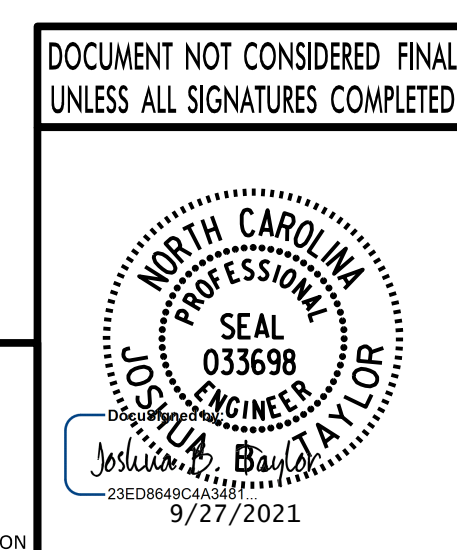
BILL OF MATERIAL					
END BENT 2					
BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
B1	9	# 9	1	51'-5"	1,573
B2	7	# 9	STR	5'-11"	141
B3	12	# 6	STR	48'-11"	882
B4	8	# 4	STR	25'-8"	137
B5	12	# 4	STR	3'-8"	29
B6	25	# 4	STR	2'-11"	49
H1	28	# 5	6	4'-5"	129
H2	28	# 5	STR	4'-7"	134
K1	14	# 4	STR	25'-8"	240
K2	8	# 4	STR	2'-7"	14
S1	53	# 6	3	5'-0"	398
S2	106	# 6	4	11'-6"	1,831
S3	32	# 4	5	7'-7"	162
S4	43	# 4	2	3'-8"	105
U1	35	# 4	2	6'-8"	156
U2	6	# 4	2	6'-6"	26
V1	86	# 5	STR	10'-5"	934
V2	4	# 5	STR	12'-2"	51
V3	14	# 5	STR	12'-4"	180
V4	8	# 5	STR	12'-0"	100
REINFORCING STEEL				LBS. 7,271	
CLASS "A" CONCRETE					
POUR 1 CAP AND LOWER WING				29.8 CU. YDS.	
POUR 2 BACKWALL AND UPPER WING				15.2 CU. YDS.	
TOTAL				45.0 CU. YDS.	
HP 14 x 73 STEEL PILES					
8 REQUIRED				297 LIN. FT.	
PILE DRIVING EQUIPMENT SETUP FOR HP 14 x 73 STEEL PILES				8 EACH	



PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28+33.21 -Y2FLYAB-
41+07.80 -L-
 SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 2
 DETAILS**

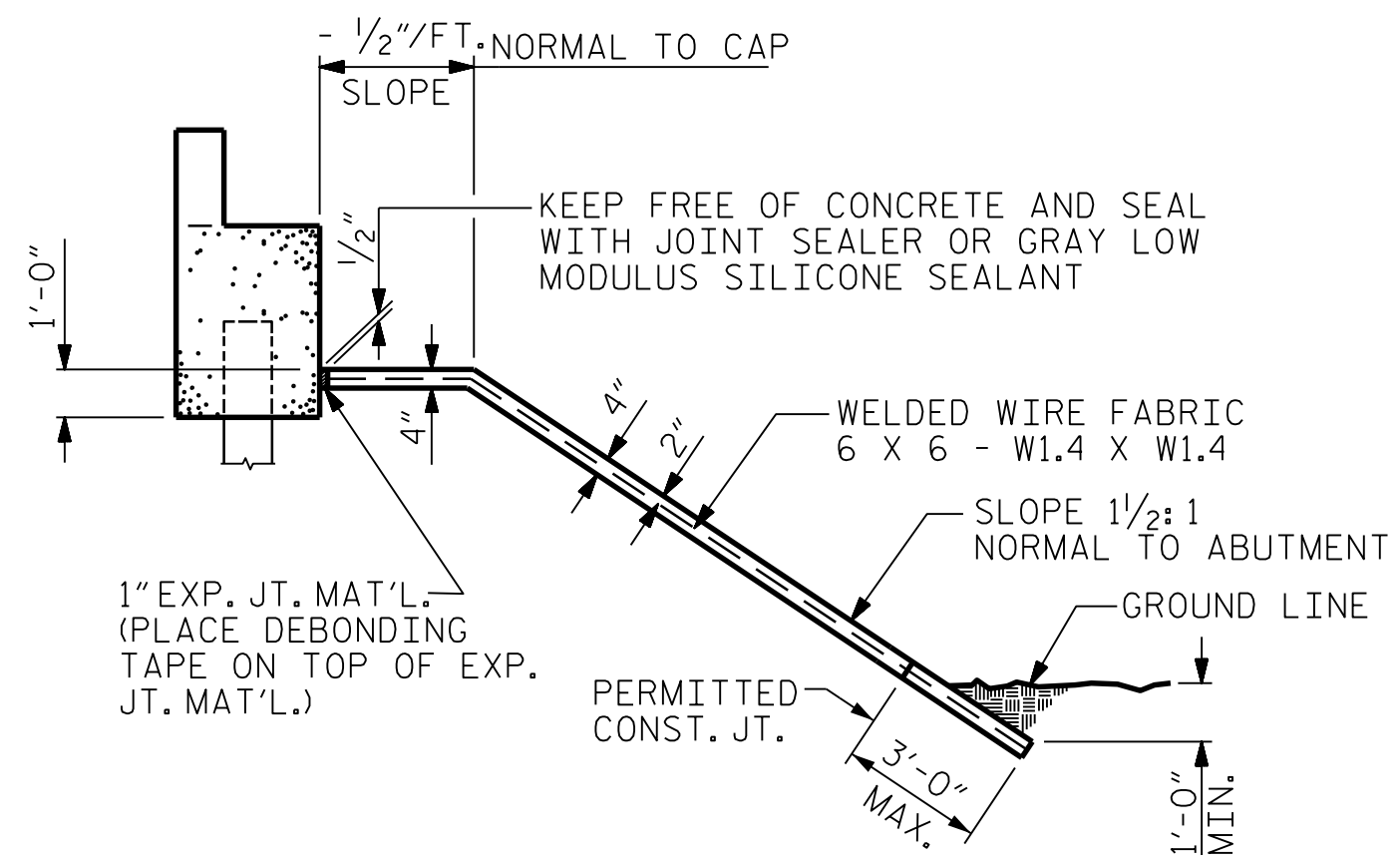


PLANS PREPARED BY:
PARSONS
 5540 CenterView Drive, Suite 217
 Raleigh, NC 27606-3386
 NC LICENSE No. F-0246

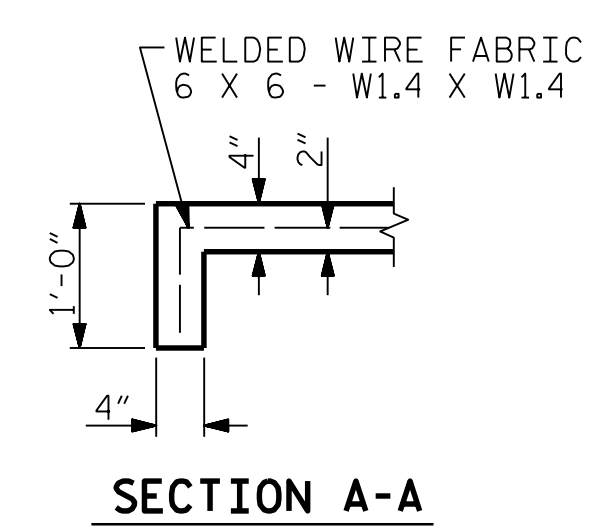
DRAWN BY :	J. CAYETANO	DATE :	9-21
CHECKED BY :	J. B. TAYLOR	DATE :	9-21
DESIGN ENGINEER :	J. B. TAYLOR	DATE :	9-21

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

TOTAL SHEETS: 84



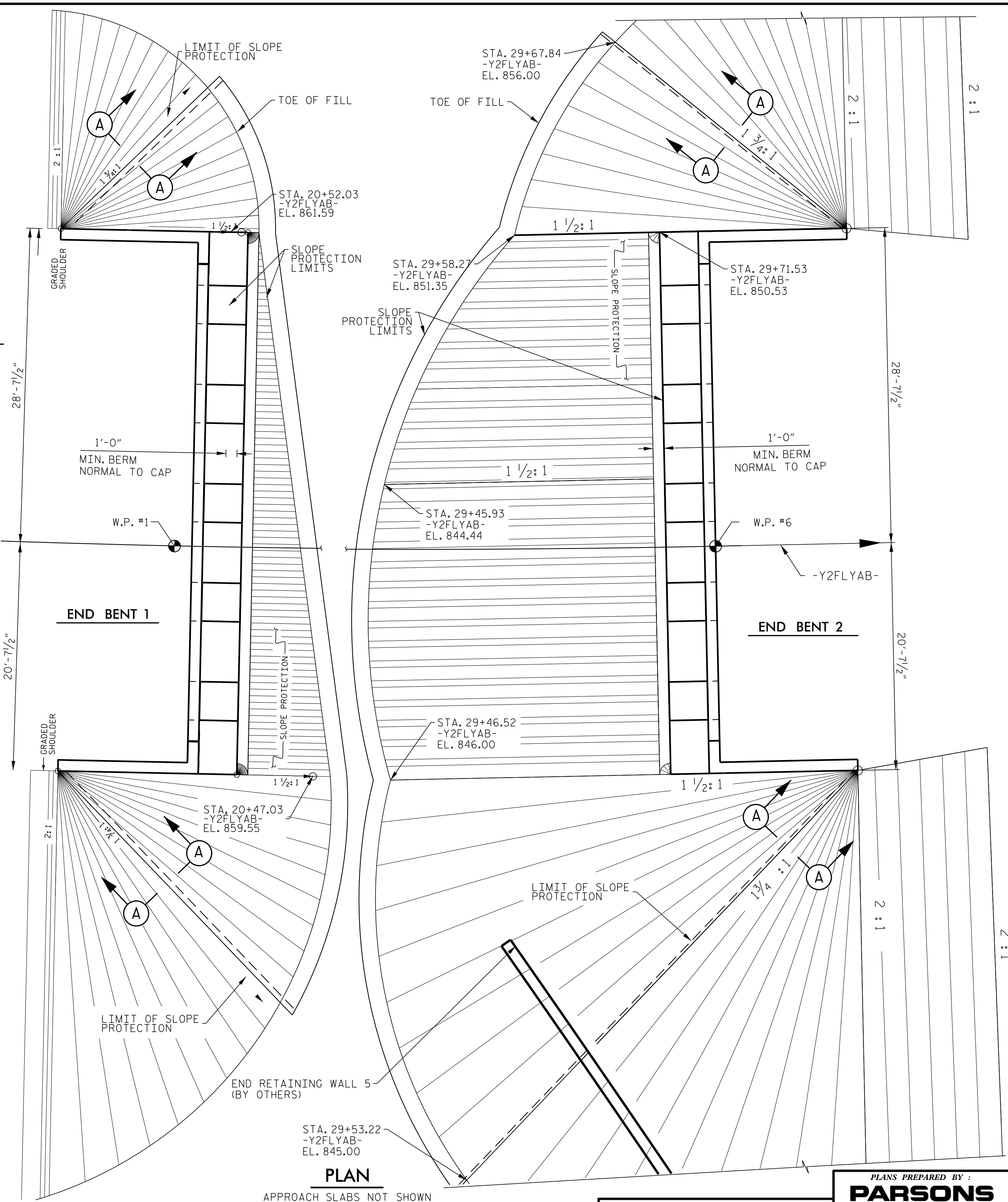
SECTION ALONG C SURVEY WHEN DITCH IS NOT PROVIDED



SECTION A-A

BRIDGE AT STA.28 + 33.21 -Y2FLYAB-	4" SLOPE PROTECTION	WELDED WIRE FABRIC 60" WIDE *
	SQUARE YARDS	APPROX. LINEAR FEET
END BENT 1	100	180
END BENT 2	300	540

* QUANTITY SHOWN IS BASED ON 5' POURS.



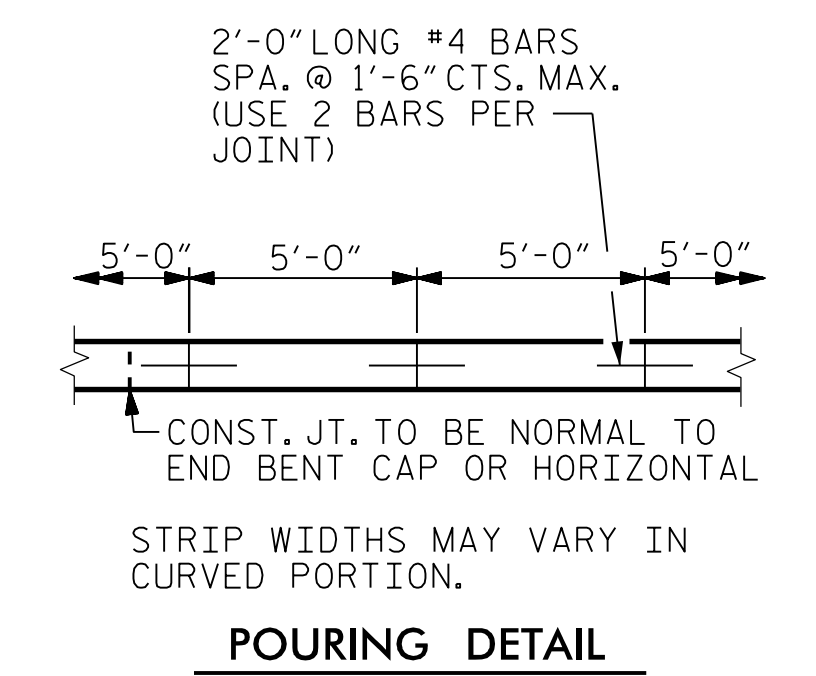
PLAN

APPROACH SLABS NOT SHOWN

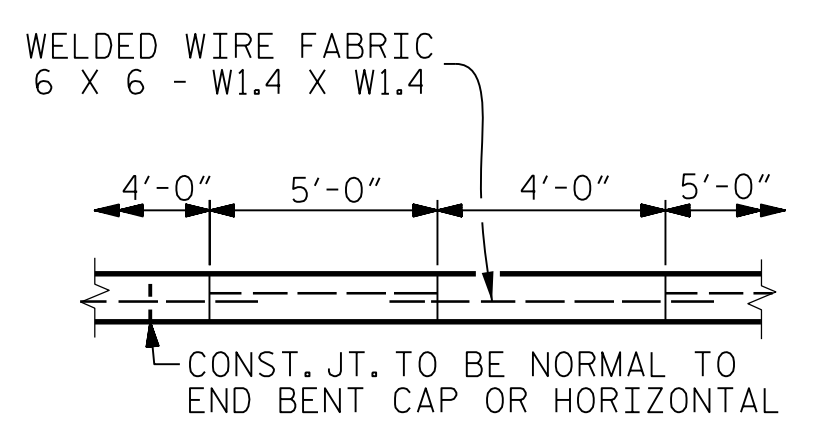
GENERAL NOTES

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

SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 x 6 - W1.4 x W1.4. 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.



POURING DETAIL



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

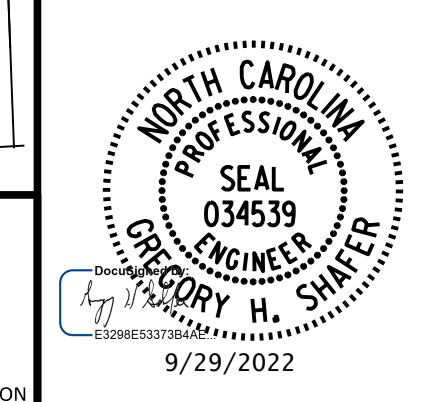
OPTIONAL POURING DETAIL

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-
 BRIDGE No. 330733

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SLOPE PROTECTION DETAILS

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

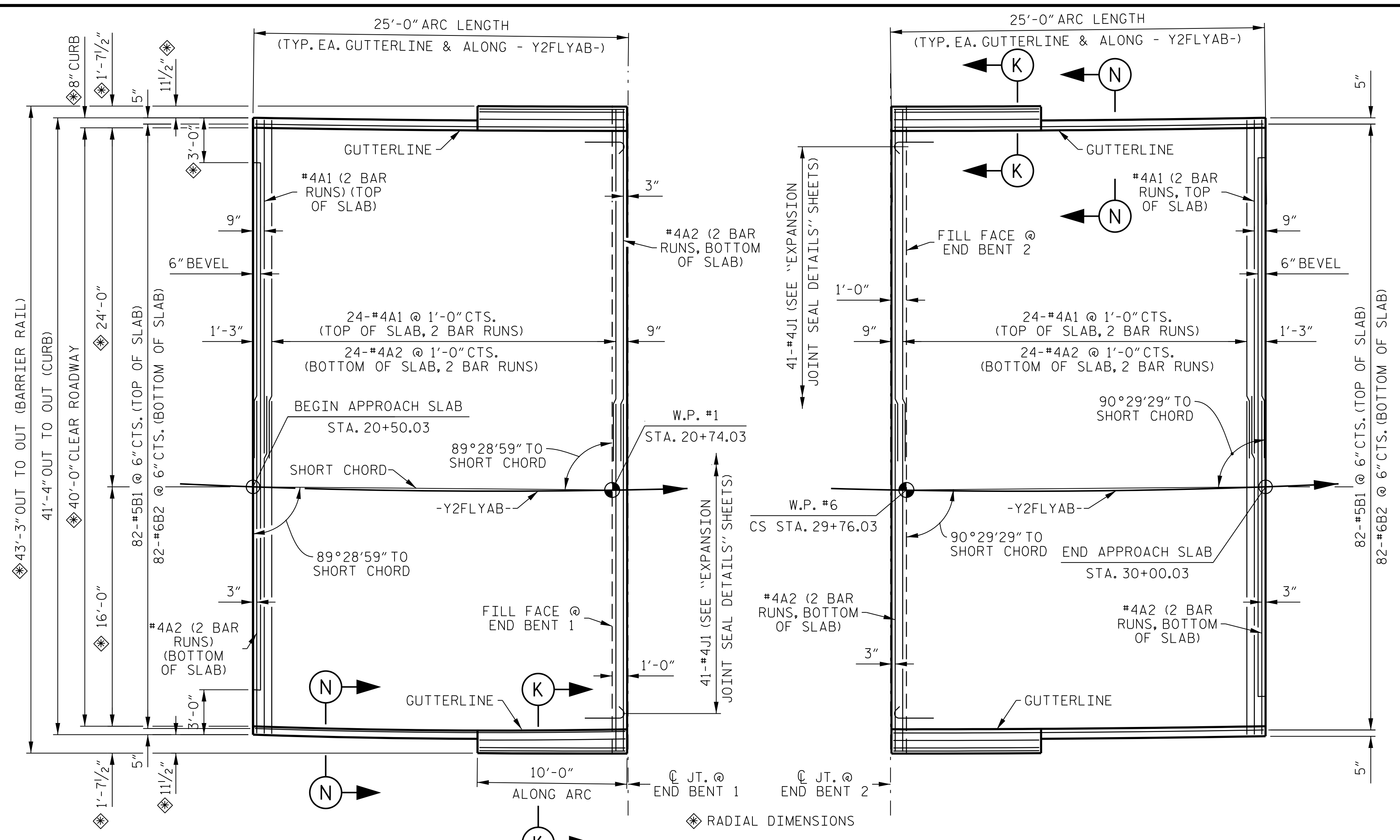


PLANS PREPARED BY:
PARSONS
 5540 CenterView Drive, Suite 217
 Raleigh, NC 27606-3386
 NC LICENSE No. F-0246
 FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY : J. CAYETANO DATE : 9-21
 CHECKED BY : J. B. TAYLOR DATE : 9-21
 DESIGN ENGINEER : J. B. TAYLOR DATE : 9-21

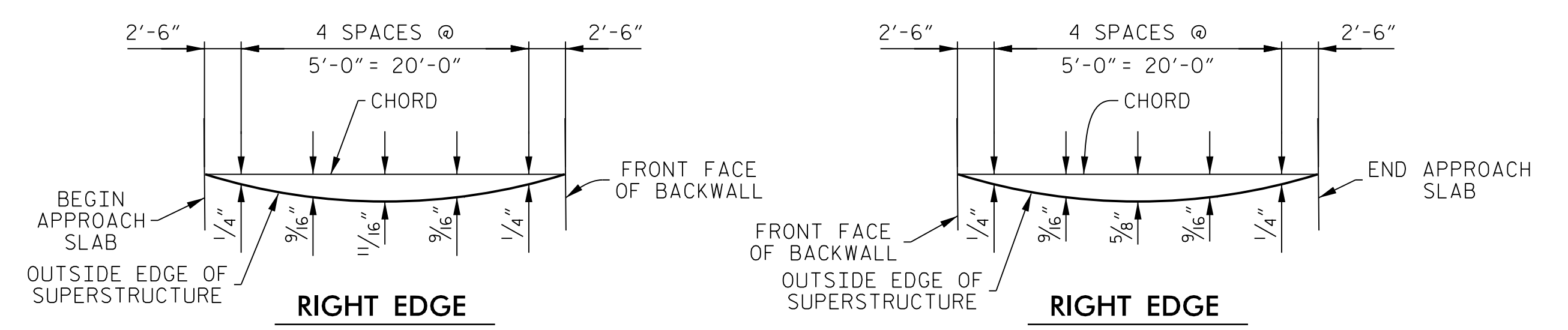
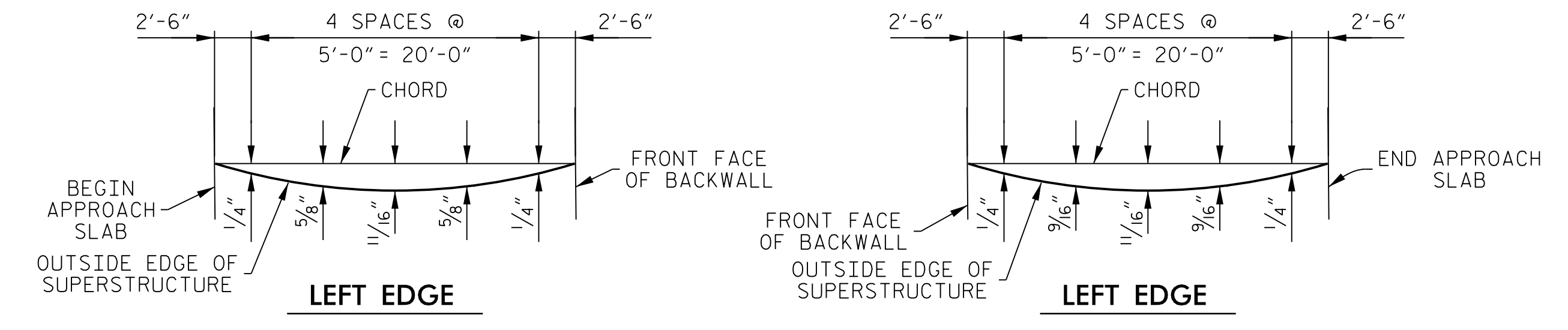
REVISIONS						SHEET No. 55-80
No.	BY:	DATE:	No.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			84

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 DATE: 9/29/2022 8:22:24 AM



PLAN OF APPROACH SLAB AT END BENT 1

PLAN OF APPROACH SLAB AT END BENT 2



APPROACH SLAB @ END BENT 1 APPROACH SLAB @ END BENT 2

ARC OFFSETS

NOTES

FOR END BENT 1 BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

FOR END BENT 2 BRIDGE APPROACH INCLUDING GEOTEXTILE AND MSE WALL REINFORCED ZONE AGGREGATE, SEE MSE WALL 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.

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

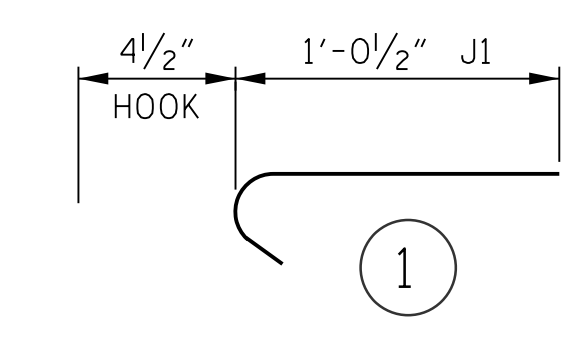
FOR THE 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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.

BILL OF MATERIAL

PER APPROACH SLAB (2 REQUIRED)					
BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
* A1	50	#4	STR	22'-5"	749
A2	52	#4	STR	22'-3"	773
* B1	82	#5	STR	24'-0"	2,053
B2	82	#6	STR	24'-8"	3,038
B3	4	#6	STR	9'-4"	56
B4	4	#6	STR	9'-6"	57
* J1	41	#4		1'-5"	39
* REINFORCING STEEL					3,868 LBS.
EPOXY COATED REINFORCING STEEL					2,897 LBS.
CLASS AA CONCRETE					45.8 C. YDS.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

SPLICE LENGTHS

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

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD

BRIDGE APPROACH SLAB
 FOR FLEXIBLE PAVEMENT

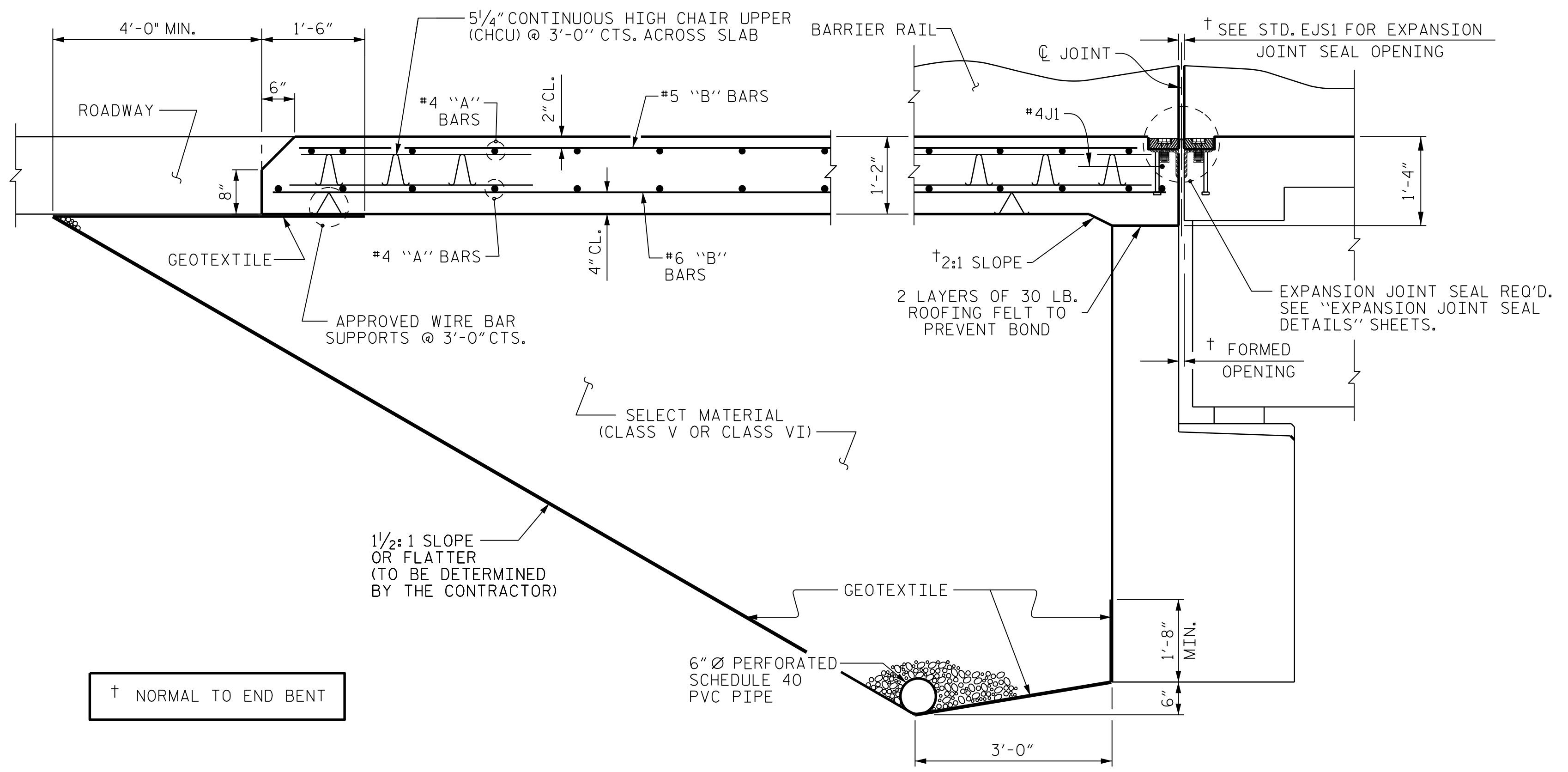
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PLANS PREPARED BY:
PARSONS
 5540 CenterView Drive, Suite 217
 Raleigh, NC 27606-3386
 NC LICENSE No. F-0246
 FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

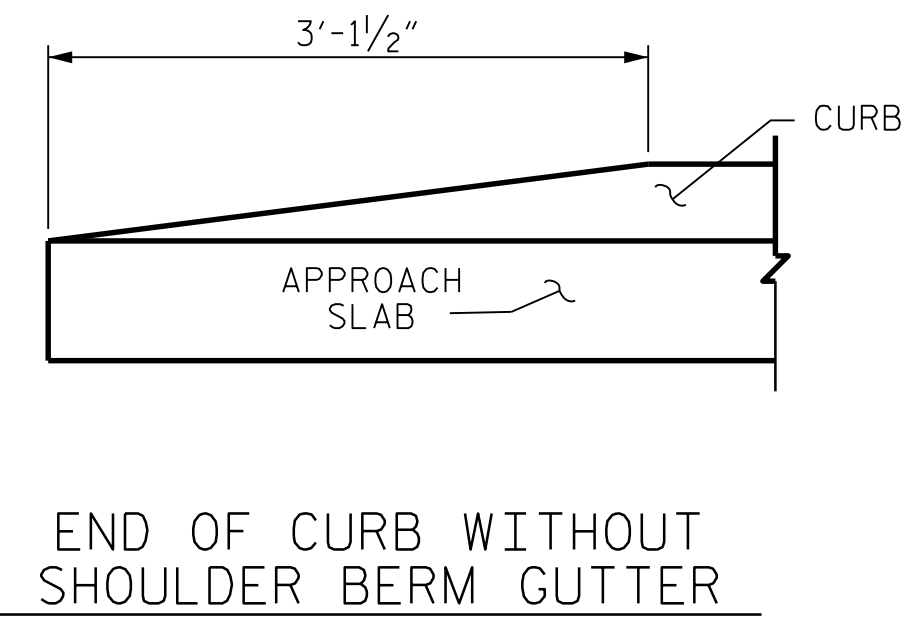
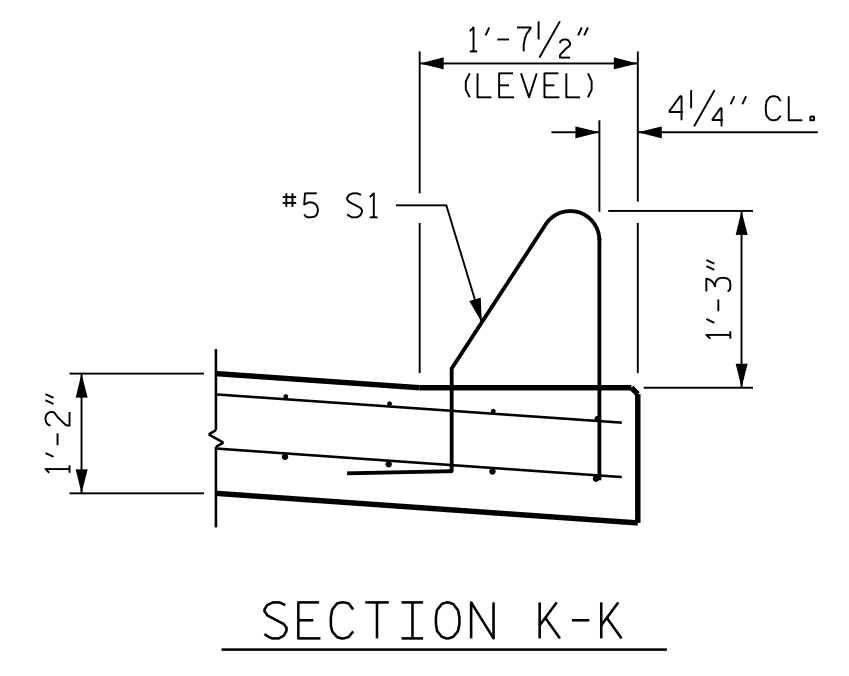
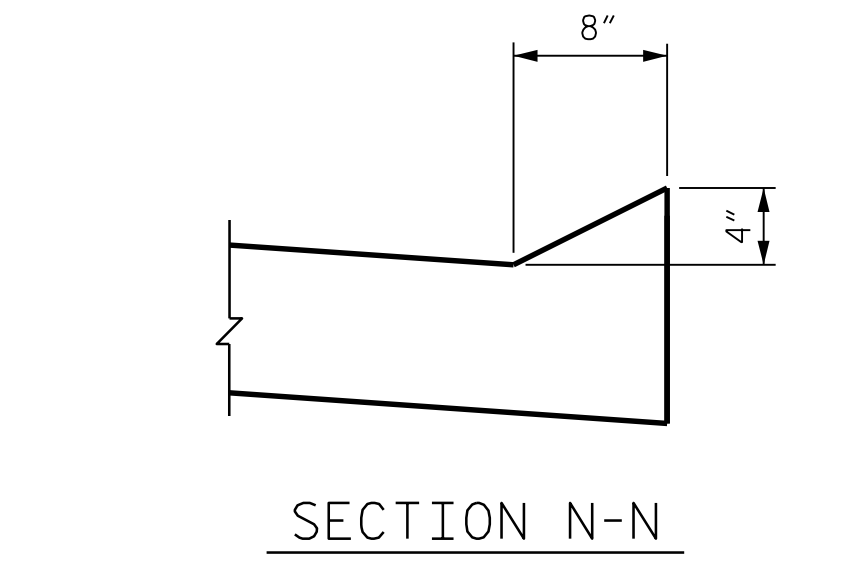
DRAWN BY :	J. CAYETANO	DATE :	9-21
CHECKED BY :	J. B. TAYLOR	DATE :	9-21
DESIGN ENGINEER :	J. B. TAYLOR	DATE :	9-21

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	TOTAL SHEETS
1			3			84
2			4			

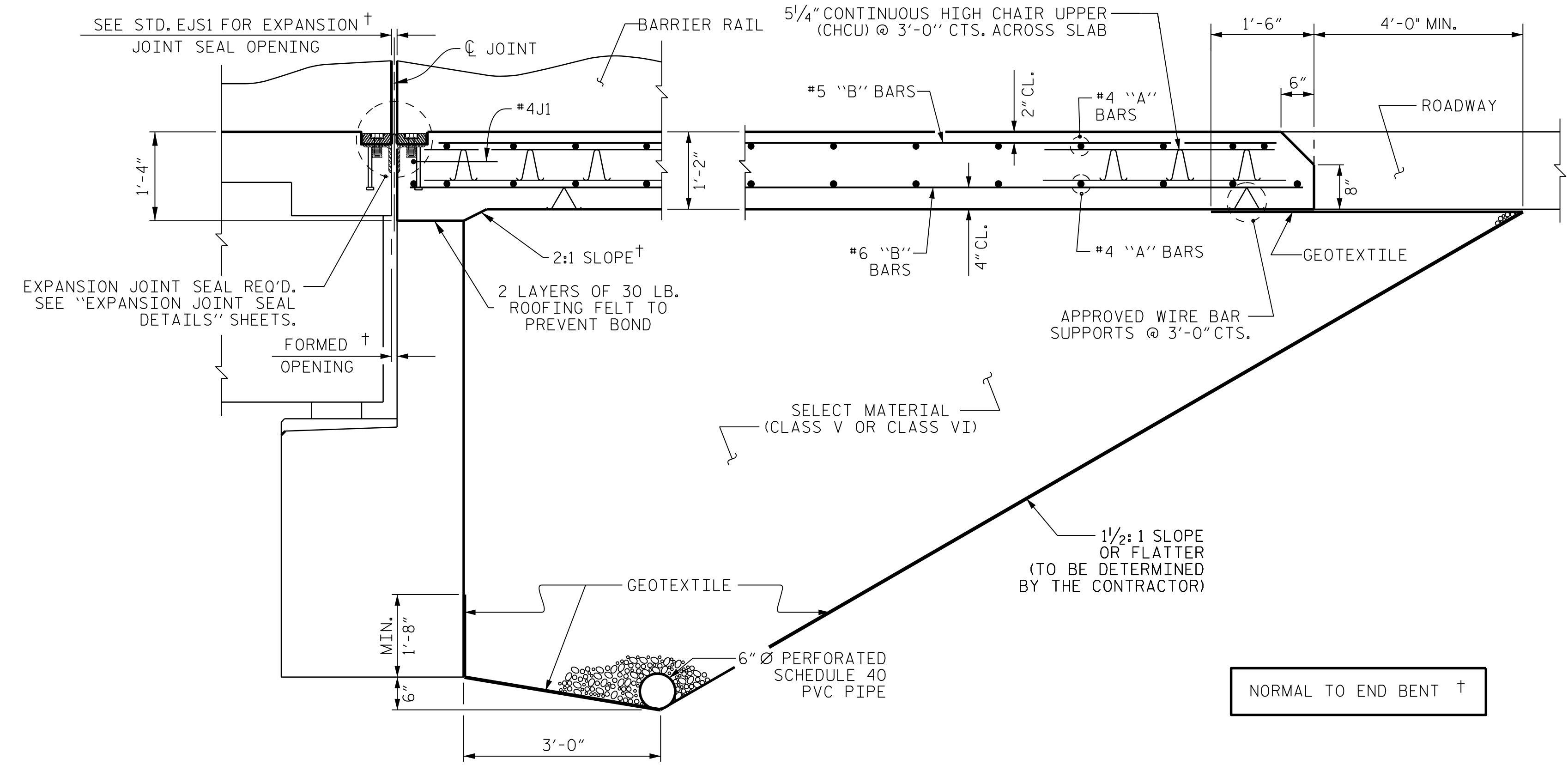
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SECTION THRU SLAB @ END BENT 1
(TYPE I - BRIDGE APPROACH FILL)



CURB DETAILS



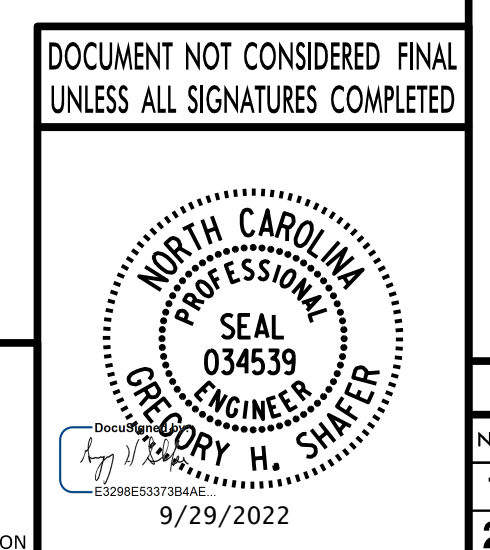
SECTION THRU SLAB @ END BENT 2
(TYPE I - BRIDGE APPROACH FILL)

PROJECT NO. U-2579AA
FORSYTH COUNTY
 STATION: 28 + 33.21 -Y2FLYAB-
41 + 07.80 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD

**BRIDGE APPROACH SLAB
 FOR FLEXIBLE PAVEMENT**

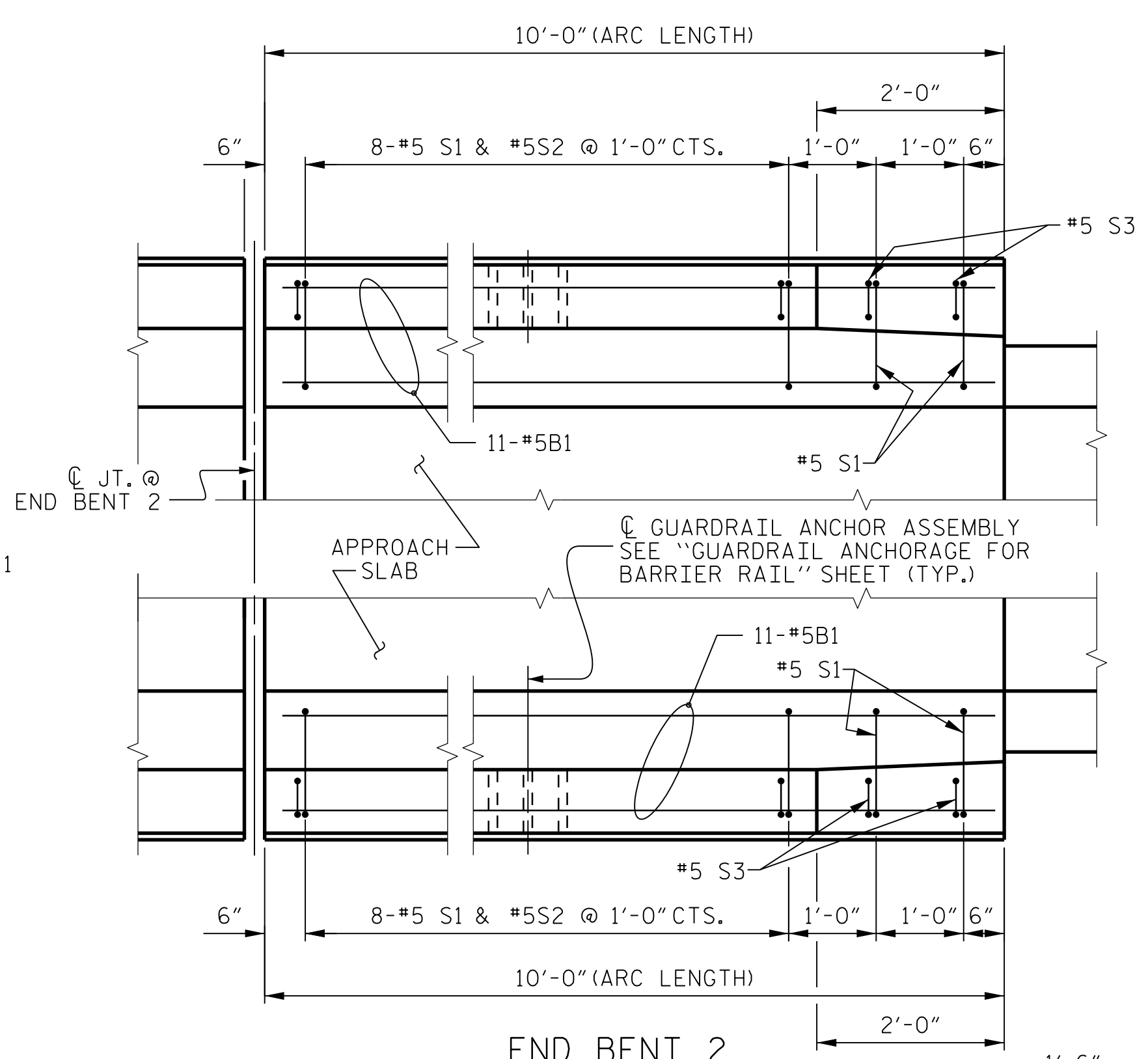
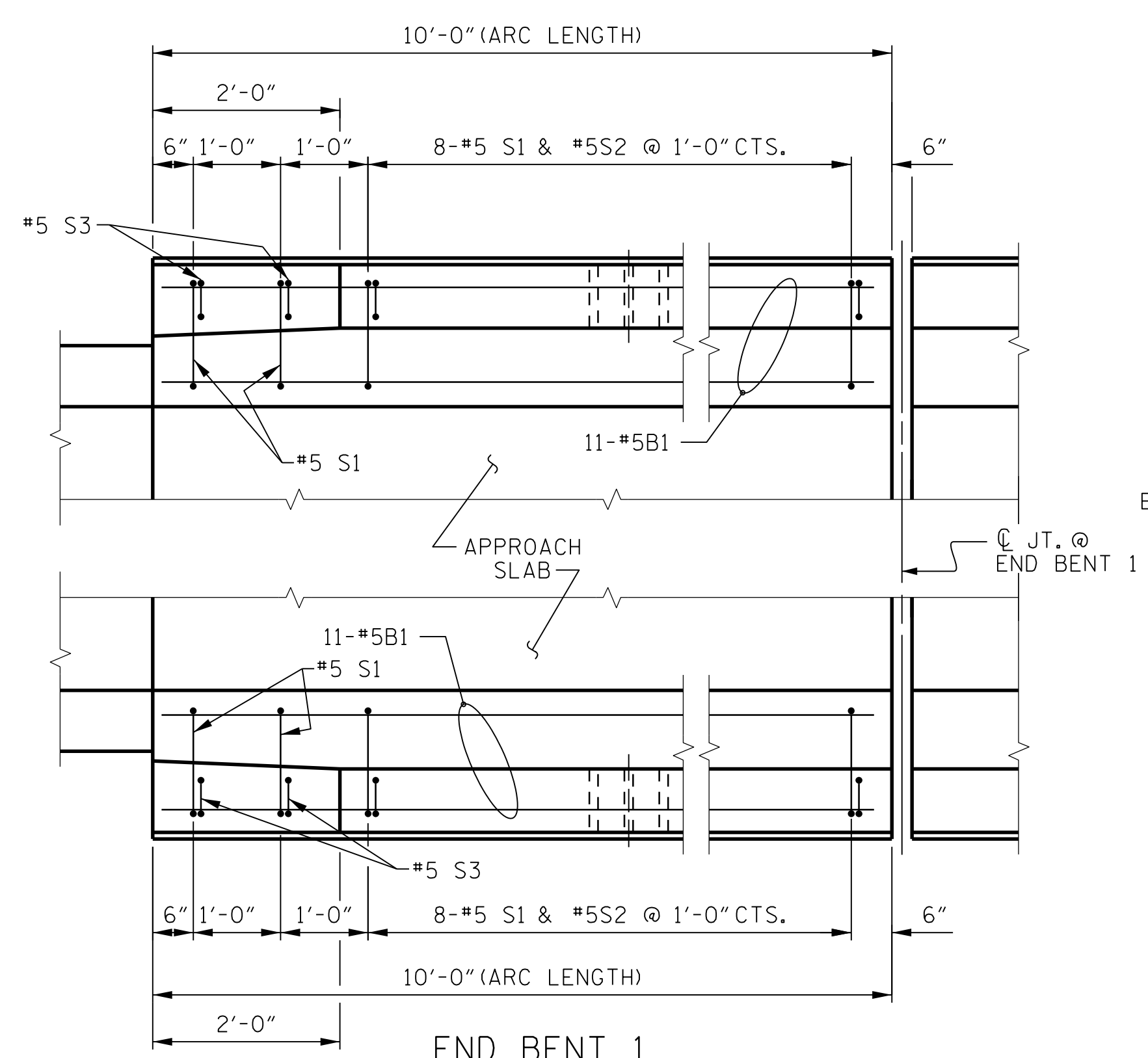


PLANS PREPARED BY:
PARSONS
 5540 CenterView Drive, Suite 217
 Raleigh, NC 27606-3386
 NC LICENSE No. F-0246
 FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DRAWN BY : J. CAYETANO DATE : 9-21
 CHECKED BY : J. B. TAYLOR DATE : 9-21
 DESIGN ENGINEER : J. B. TAYLOR DATE : 9-21

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	TOTAL SHEETS
1			3			84
2			4			

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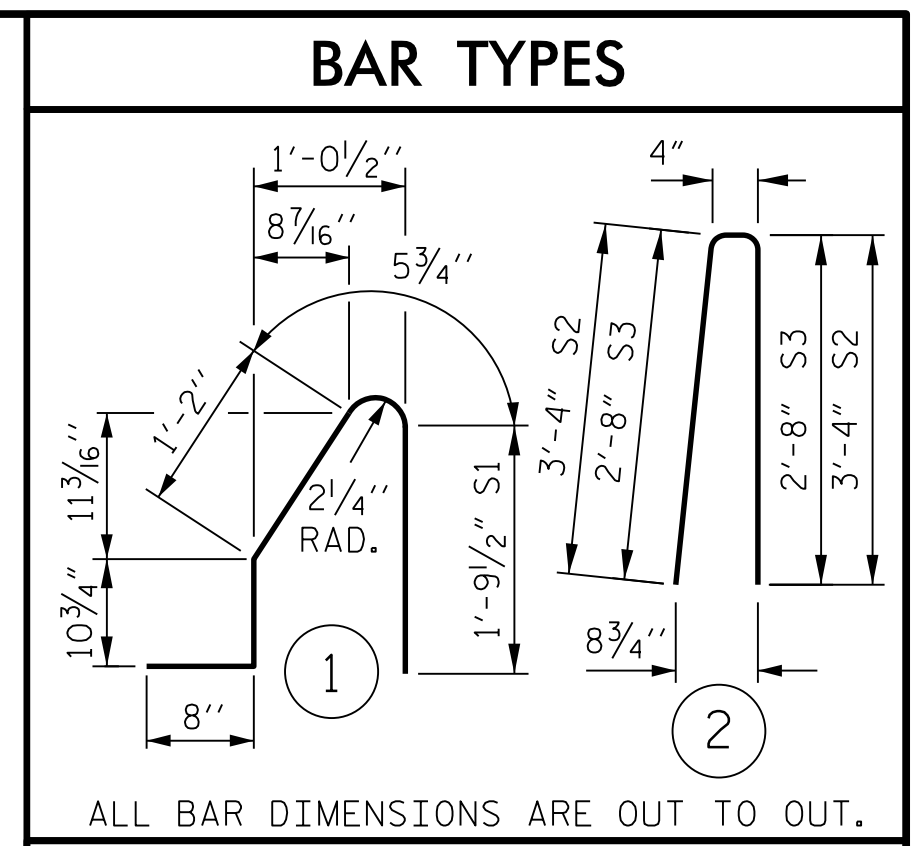
PLAN OF BARRIER RAIL

NOTES

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

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.



BILL OF MATERIAL

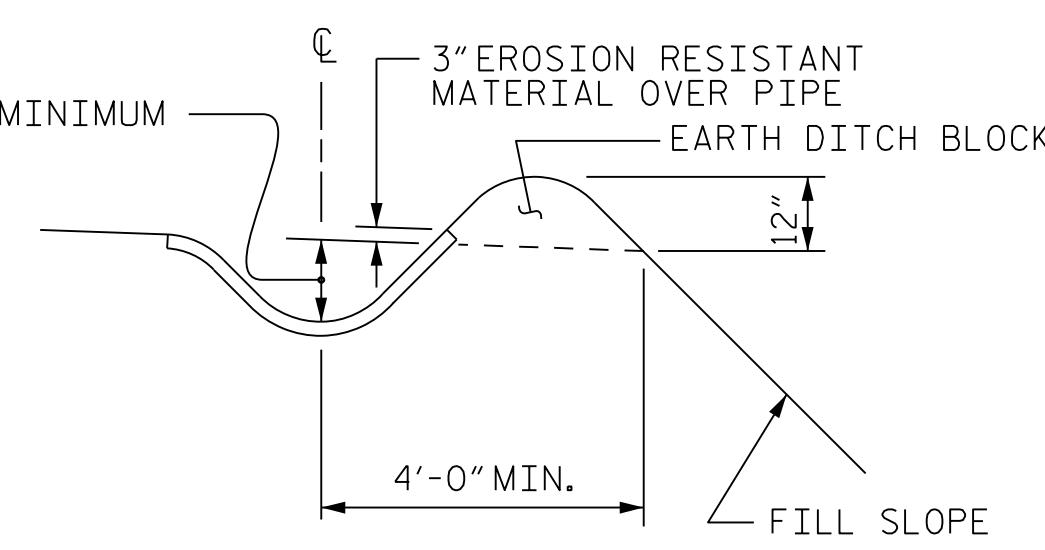
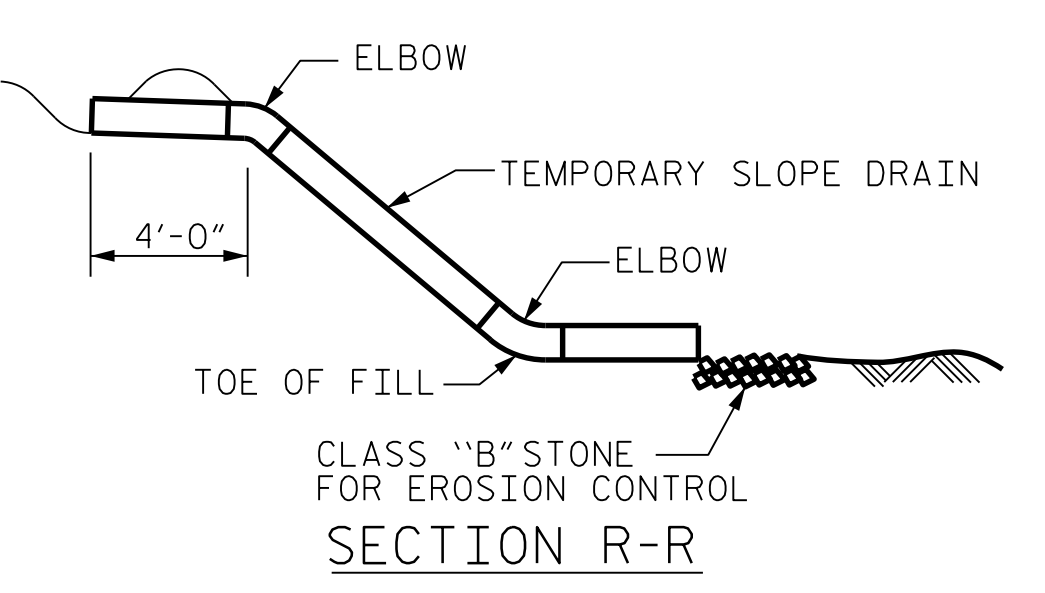
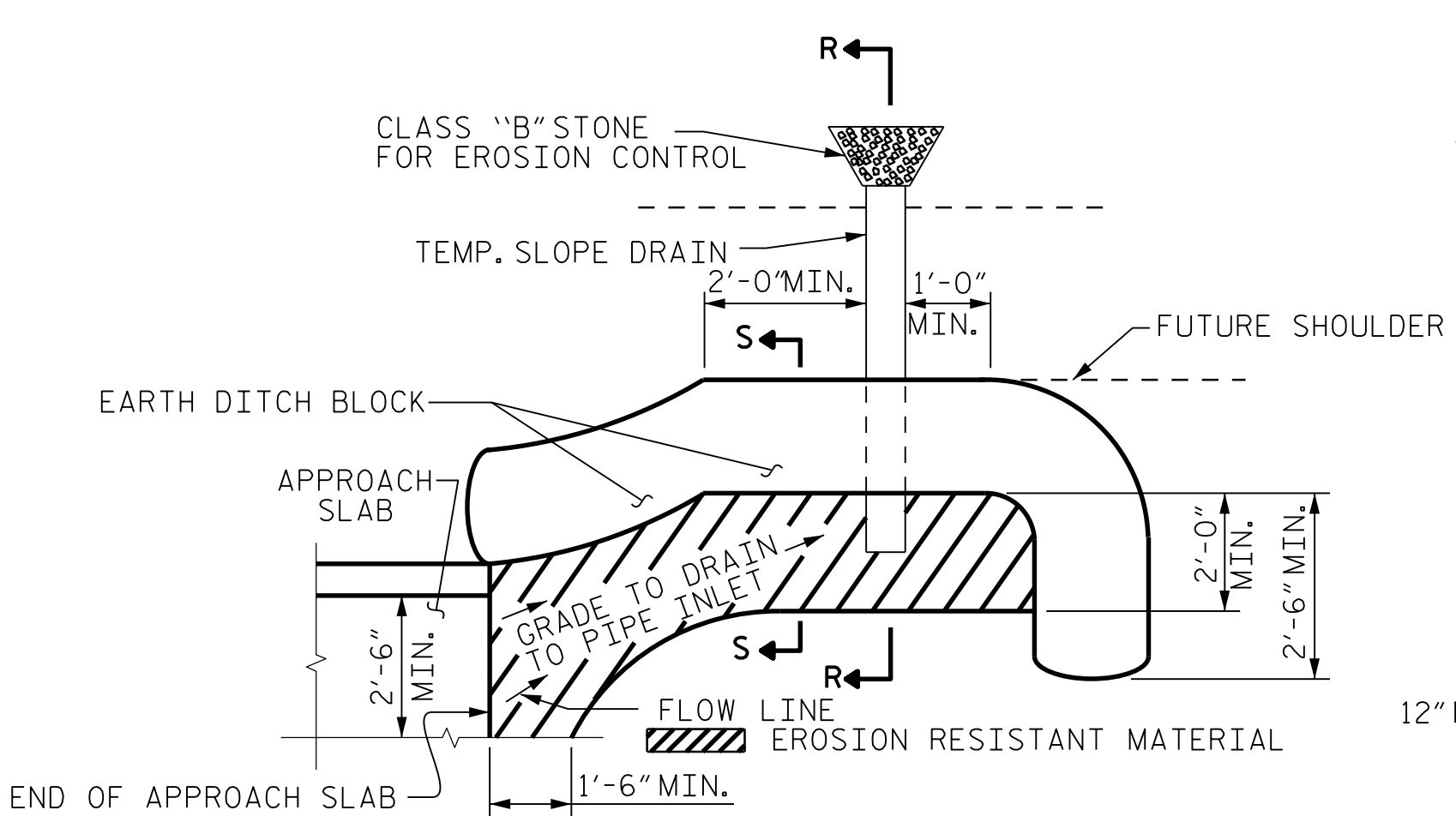
FOR CONC. BARRIER ON APPR. SLABS

BAR No.	SIZE	TYPE	LENGTH	WEIGHT	
* B1	44	#5	STR	9'-4"	428
* S1	40	#5	1	5'-0"	209
* S2	32	#5	2	7'-0"	234
* S3	8	#5	3	5'-8"	47

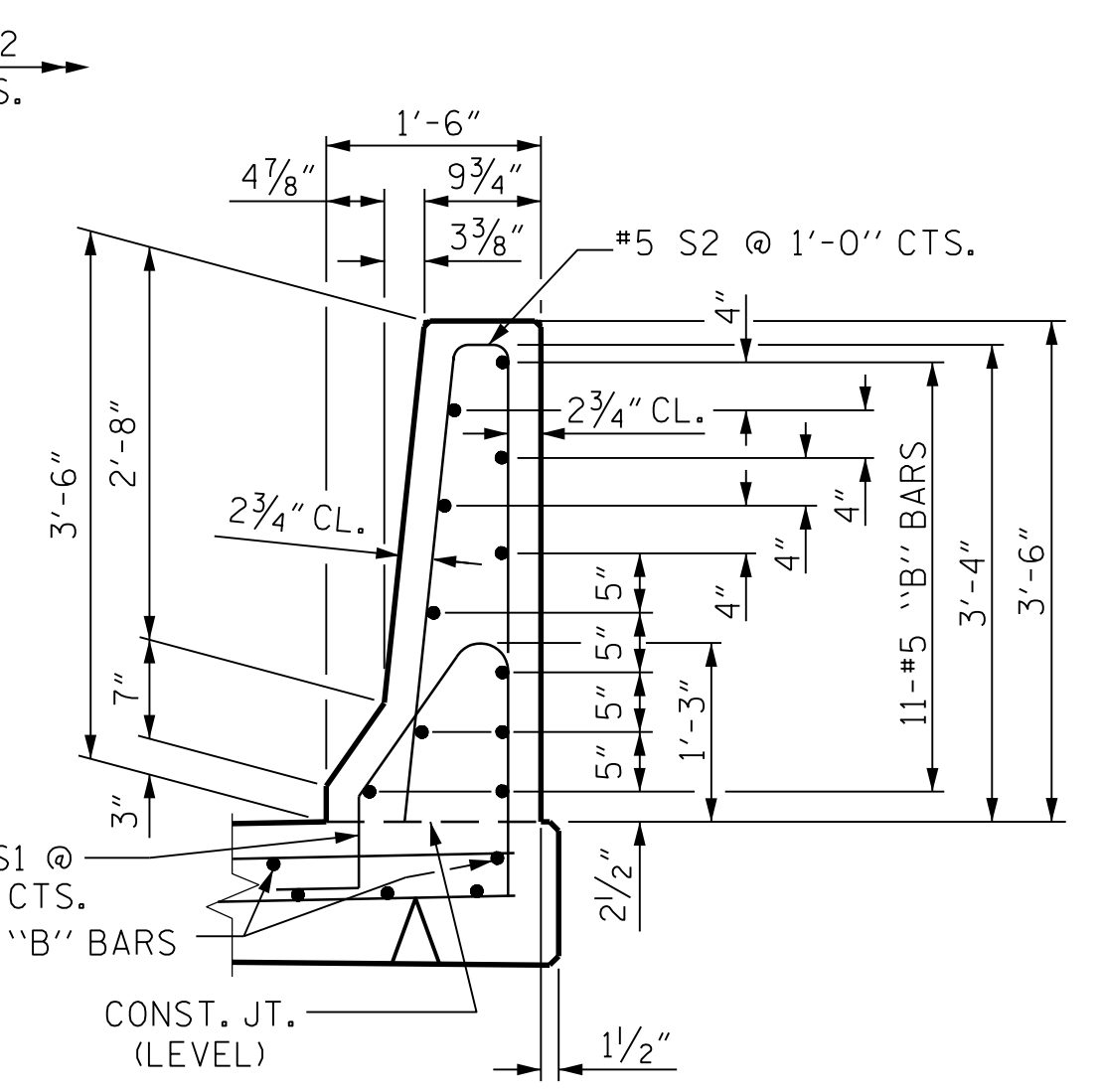
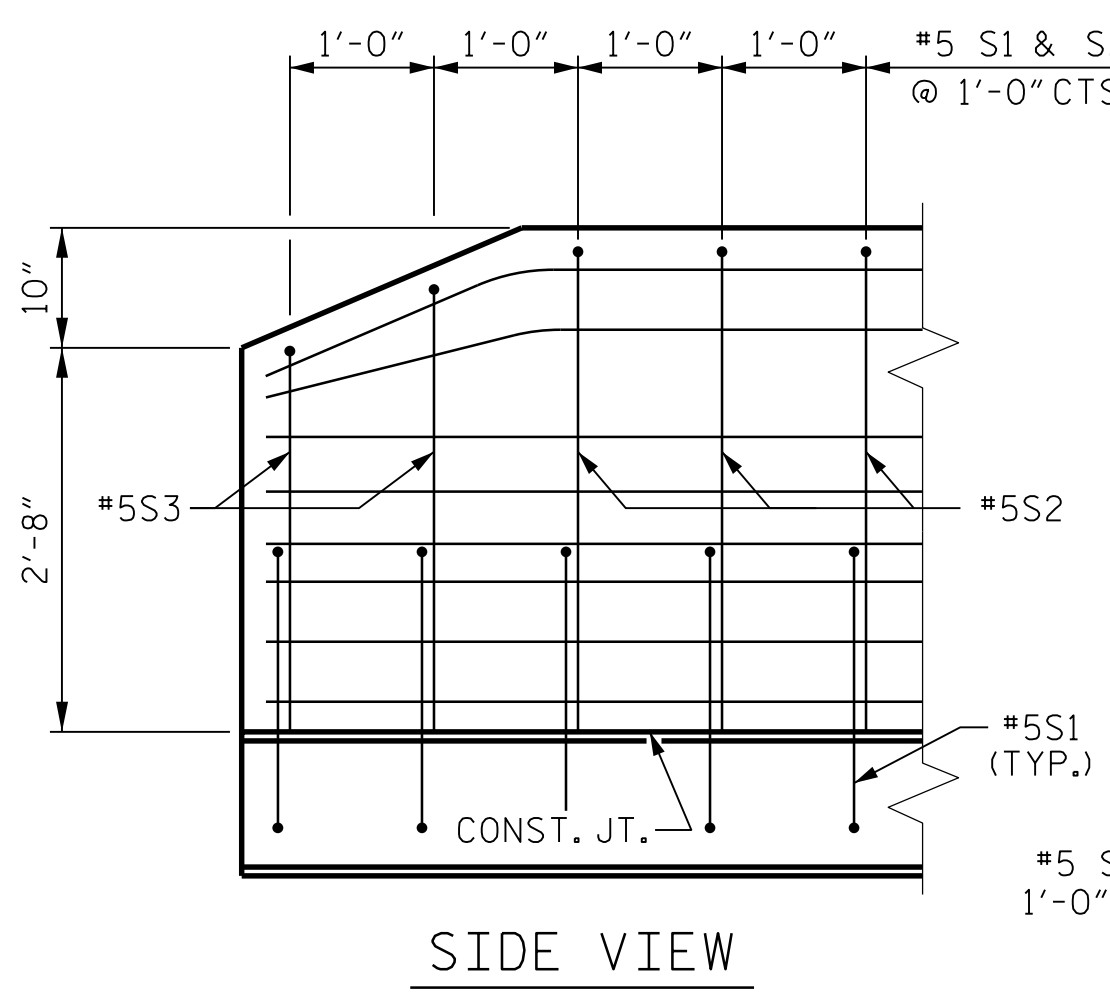
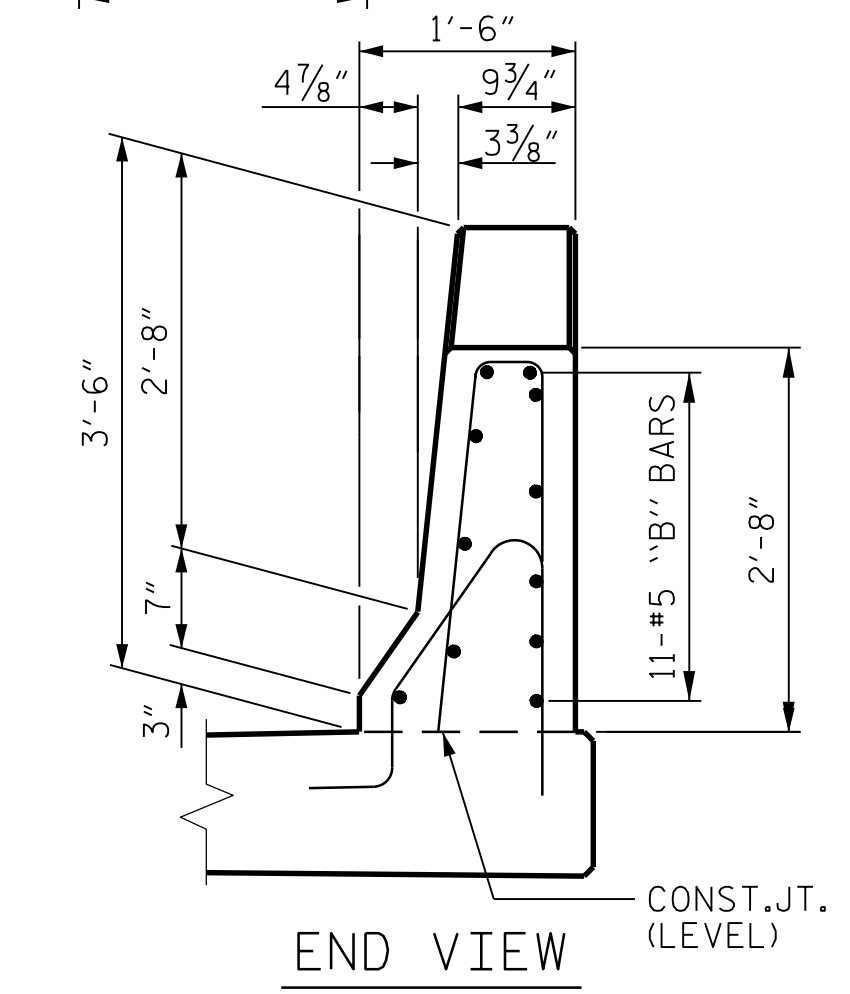
* EPOXY COATED REINFORCING STEEL 918 LBS.

CLASS "AA" CONCRETE 5.4 CU. YDS.

CONCRETE BARRIER RAIL LENGTH 40.0 LIN. FT.

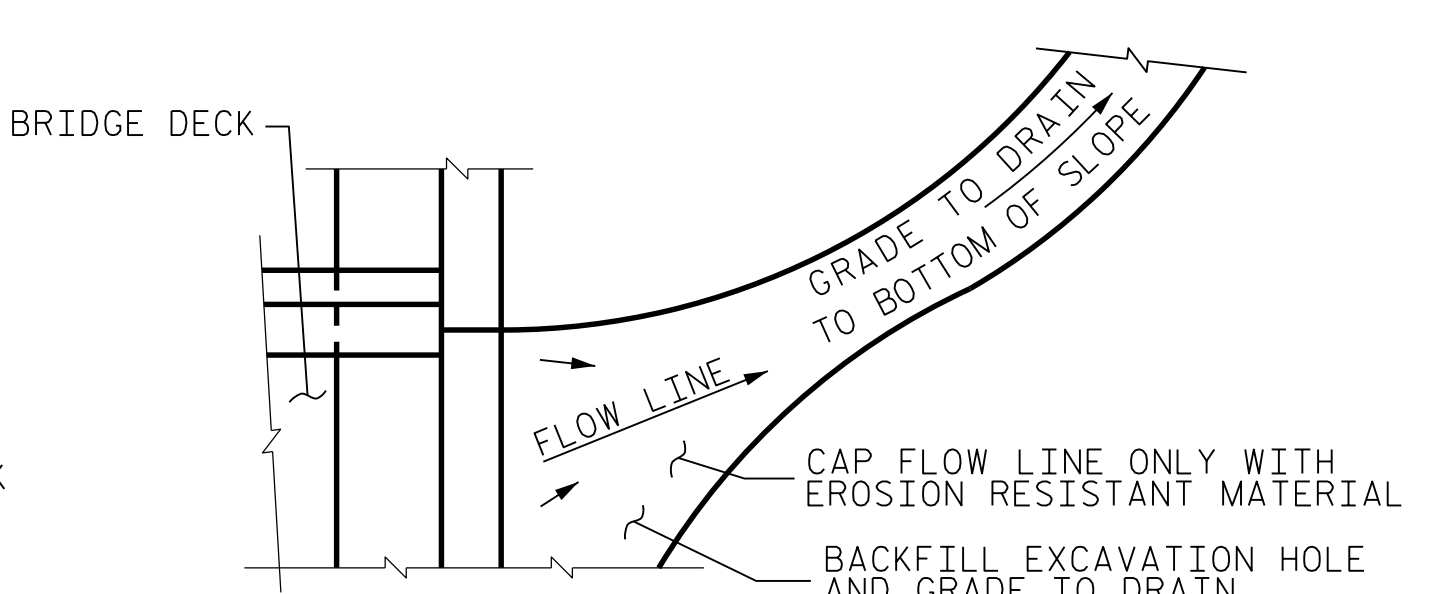


TEMPORARY BERM AND SLOPE DRAIN DETAILS



END OF RAIL DETAILS

SECTION THRU RAIL



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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. **U-2579AA**

FORSYTH COUNTY

STATION: **28 + 33.21 -Y2FLYAB-**

41 + 07.80 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
PARSONS
5540 Centerview Drive, Suite 217
Raleigh, NC 27606-3386
NC LICENSE No. F-0246
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

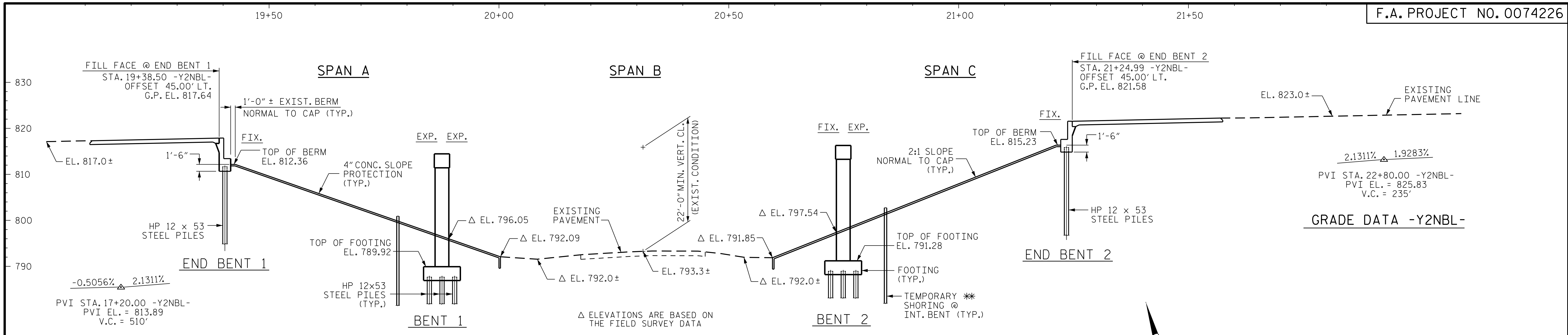
DRAWN BY :	J. CAYETANO	DATE :	9-21
CHECKED BY :	J. B. TAYLOR	DATE :	9-21
DESIGN ENGINEER :	J. B. TAYLOR	DATE :	9-21

REVISIONS						SHEET No.
No.	BY:	DATE:	No.	BY:	DATE:	S5-83
1			3			TOTAL SHEETS
2			4			84

FILE: J:\U-2579AA (Structure Drawings)\U-2579App_Shp_5_smu.dwg
DATE: 09/24/2021 3:42:24 PM

DRAWN BY :	FCJ 11/88	REV. 6/13	MAA/GM
CHECKED BY :	ARB 11/88	REV. 12/17	MAA/THC
		REV. 5/18	MAA/THC

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

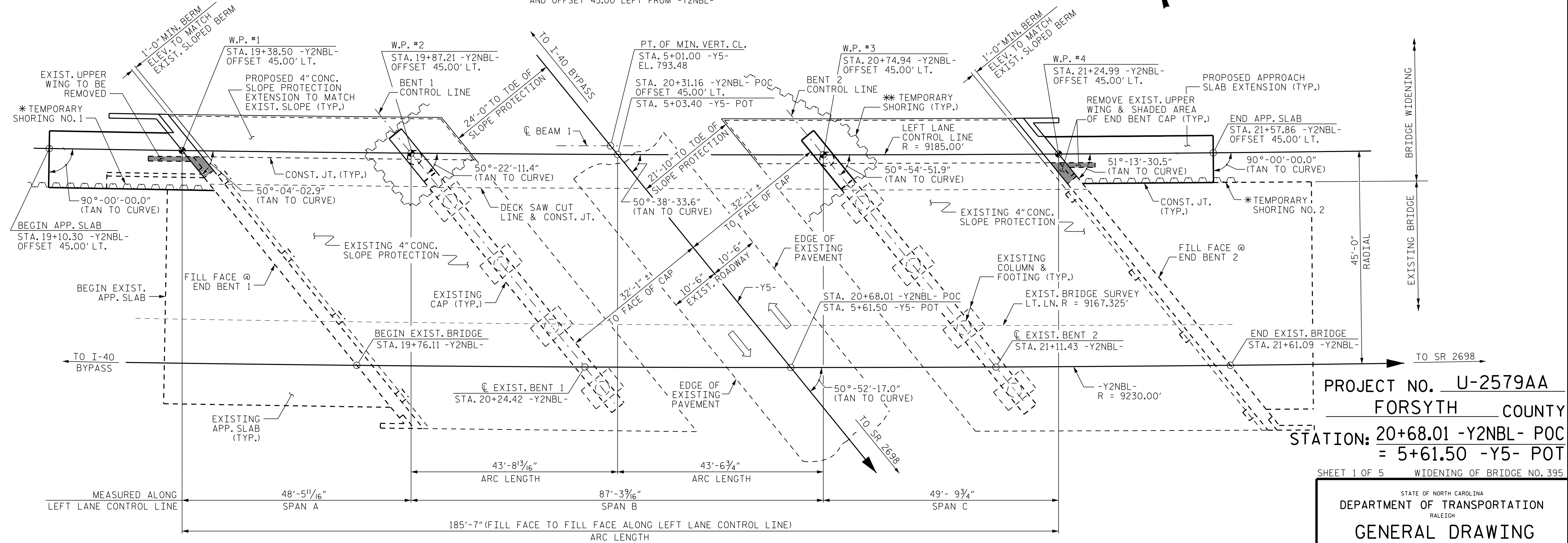


SECTION ALONG LEFT LANE CONTROL LINE

SECTIONS @ BENTS AND END BENTS ARE AT RIGHT ANGLES AND OFFSET 45.00' LEFT FROM -Y2NBL-

GRADE DATA -Y2NBL-
PVI STA. 17+20.00 -Y2NBL-
PVI EL. = 813.89
V.C. = 510'

GRADE DATA -Y2NBL-
PVI STA. 22+80.00 -Y2NBL-
PVI EL. = 825.83
V.C. = 235'



HORIZONTAL CURVE DATA -Y2NBL- (US 311 NBL)

P.I. STA. = 31+28.12 -Y2NBL-
 $\Delta = 23^\circ-24'-46.5''$ (LT.)
 $D = 0^\circ-37'-14.7''$
 $L = 3,771.68$ FT.
 $T = 1,912.53$ FT.
 $R = 9,230.00$ FT.

PLAN

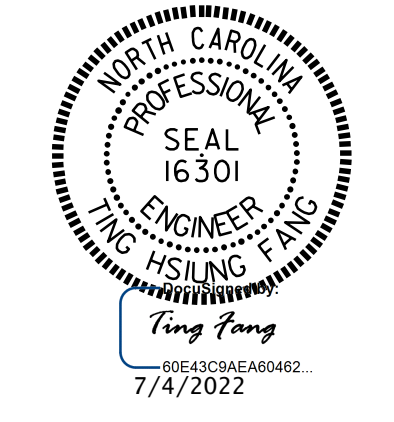
PILES NOT SHOWN FOR CLARITY
 * TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC (SEE TRANSPORTATION MANAGEMENT PLANS AND ROADWAY PAY ITEM)
 * TEMPORARY SHORING AT INTERIOR BENTS ARE INCIDENTAL TO THE "FOUNDATION EXCAVATION FOR BENT" PAY ITEM. FOR DETAILS OF TEMPORARY SHORINGS, SEE SHEET 3 OF 5,

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CDM Smith
 CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
 NC COA No. F-1255

DRAWN BY: VDK DATE: 9/18
 CHECKED BY: THF DATE: 9/18
 DESIGN ENGINEER: VDK DATE: 9/18

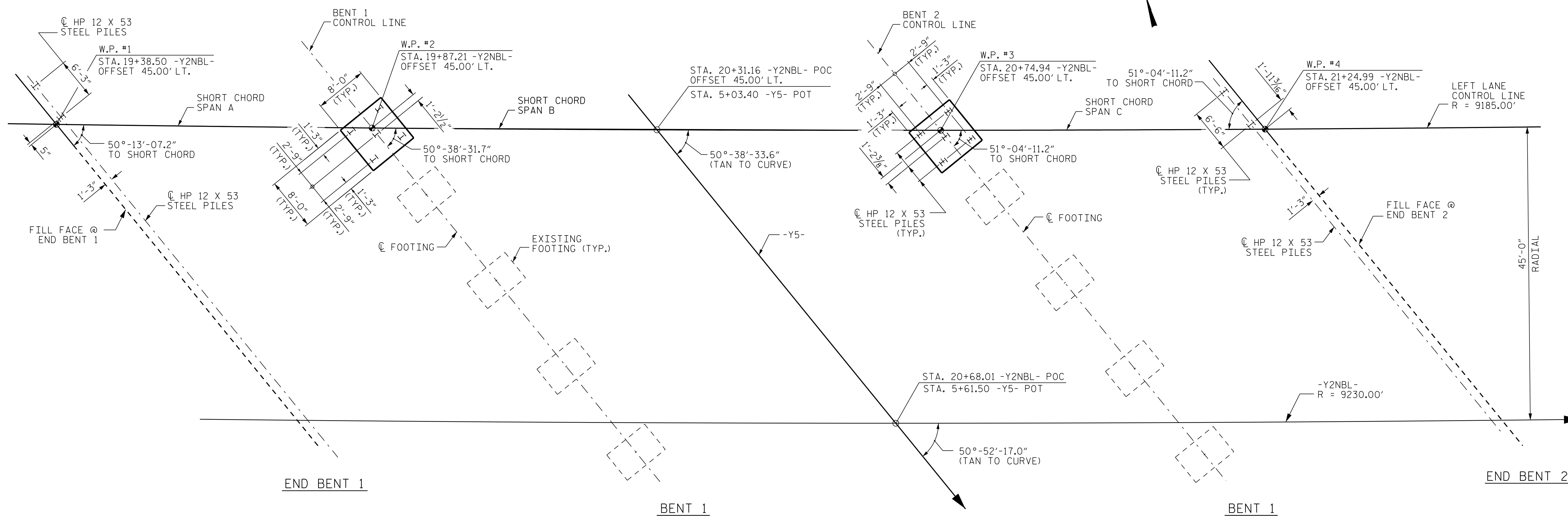
DWG. No.



PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 20+68.01 -Y2NBL- POC
 = 5+61.50 -Y5- POT

SHEET 1 OF 5 WIDENING OF BRIDGE NO. 395

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GENERAL DRAWING					
BRIDGE ON US 311 (FUTURE I-74) OVER SR 2699 BETWEEN I-40 BYPASS AND SR 2698					
LEFT LANE (NBL)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S06-01
					TOTAL SHEETS 31



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE AT THE BOTTOM OF CAPS OR FOOTINGS.
 ALL DIMENSIONS ARE PARALLEL OR NORMAL TO BENT CONTROL LINES AND FILL FACES.
 DIMENSIONS FOR FOOTING AND PILES ARE TYPICAL FOR EACH INTERIOR BENT.
 ALL HP 12 X 53 STEEL PILES ARE VERTICAL.

NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
 PILES AT END BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 80 TONS PER PILE.
 DRIVE PILES AT END BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 133 TONS PER PILE.
 PILES AT BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 70 TONS PER PILE.
 DRIVE PILES AT BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 117 TONS PER PILE.
 PILES AT BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 70 TONS PER PILE.
 DRIVE PILES AT BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 117 TONS PER PILE.
 PILES AT END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 80 TONS PER PILE.
 DRIVE PILES AT END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 133 TONS PER PILE.

PROJECT NO. U-2579AA
FORSYTH COUNTY
 STATION: 20+68.01 -Y2NBL-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE ON US 311 (FUTURE I-74)
 OVER SR 2699 BETWEEN
 I-40 BYPASS AND SR 2698

LEFT LANE (NBL)

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

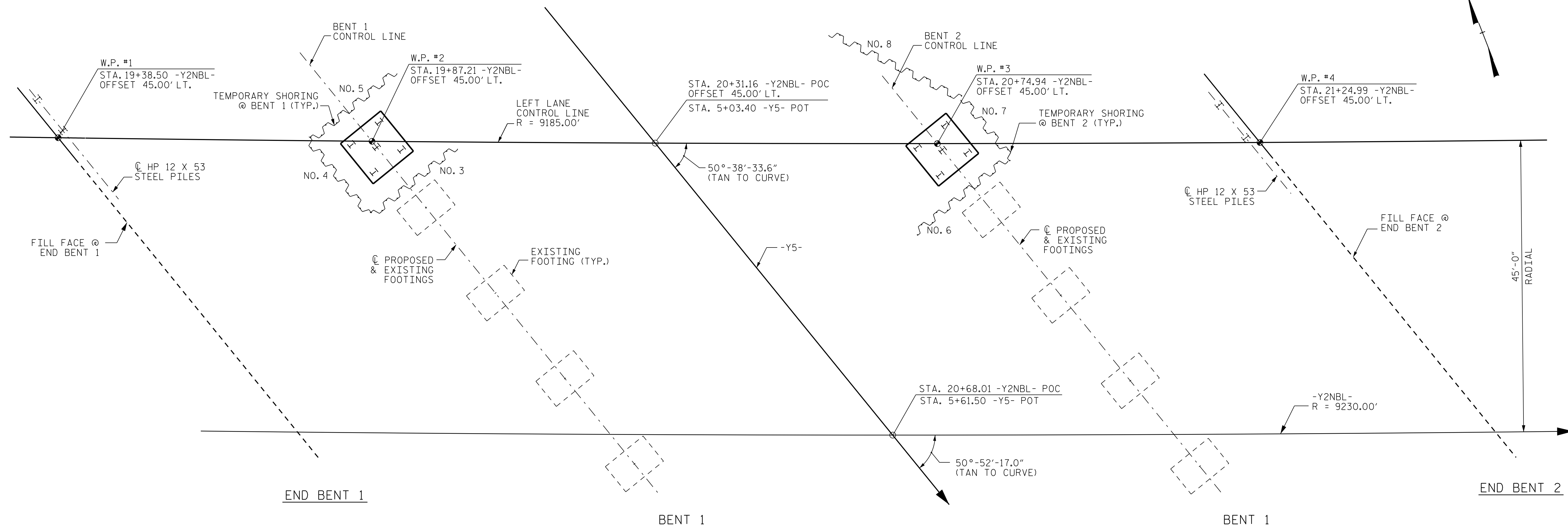
CDM Smith
 CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
 NC COA No. F-1255



DRAWN BY : VDK DATE : 9/18
 CHECKED BY : THF DATE : 9/18
 DESIGN ENGINEER : VDK DATE : 9/18

DWG. No.
 80621303AE00462
 7/13/2022

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S06-02	
1			3			TOTAL SHEETS	
2			4			31	



TEMPORARY SHORING LAYOUT

TEMPORARY SHORINGS AT END BENTS 1 & 2 NOT SHOWN FOR CLARITY.
 FOR LIMITS, DETAILS AND PAY ITEM OF TEMPORARY SHORINGS NO. 1 & NO. 2 ON SHEET S06-01, SEE TRANSPORTATION MANAGEMENT PLANS,

TEMPORARY SHORING REQUIREMENT TABLE FOR CONSTRUCTION OF BENTS 1 & 2										
TEMPORARY SHORING NO.	BEGIN STATION & OFFSET	END STATION & OFFSET	ESTIMATED AVERAGE HEIGHT	ESTIMATED MAXIMUM HEIGHT	SHORING LOCATION	SHORING TYPE	GROUND WATER ELEVATION	SOIL PARAMETERS		
								UNIT WEIGHT (r)	FRICTION ANGLE (φ)	COHESION (c)
NO. 3	4+85± -Y5-24' RIGHT	4+85± -Y5-41.8' RIGHT	10.4'	14.7'	BENT 1	CUT	785'	120 LB/CF	30°	0 LB/SF
NO. 4	4+85± -Y5-41.8' RIGHT	4+69± -Y5-41.7' RIGHT	14.7'	14.7'	BENT 1	CUT	785'	120 LB/CF	30°	0 LB/SF
NO. 5	4+69± -Y5-41.7' RIGHT	4+69± -Y5-24.5' RIGHT	10.6'	14.7'	BENT 1	CUT	785'	120 LB/CF	30°	0 LB/SF
NO. 6	5+40± -Y5-21.8' LEFT	5+40± -Y5-41.7' LEFT	7.0'	11.0'	BENT 2	CUT	785'	120 LB/CF	30°	0 LB/SF
NO. 7	5+40± -Y5-41.7' LEFT	5+28± -Y5-41.7' LEFT	11.0'	11.0'	BENT 2	CUT	785'	120 LB/CF	30°	0 LB/SF
NO. 8	5+28± -Y5-41.7' LEFT	5+07± -Y5-32.1' LEFT	6.3'	11.0'	BENT 2	CUT	785'	120 LB/CF	30°	0 LB/SF

THE CONTRACTOR SHALL VERIFY THE OFFSET DISTANCE OF EACH TEMPORARY SHORING PRIOR TO DRIVING SHEET PILES AND NOTIFY THE ENGINEER IF THE OFFSET DISTANCE MAY BE ADJUSTED AS NECESSARY TO CLEAR EXISTING BENT FOOTINGS.

ESTIMATED QUANTITY	
TEMPORARY SHORING NO.	EXPOSED AREA (SF)
NO. 3	185
NO. 4	235
NO. 5	182
NO. 6	139
NO. 7	132
NO. 8	145
TOTAL	1,019

NOTES

- BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.
- FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISION.
- FOR THE LIMITS OF EACH TEMPORARY SHORING FOR BENTS 1 & 2 CONSTRUCTION, SEE TEMPORARY SHORING TABLE.
- FOR ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION OF EACH TEMPORARY SHORING, SEE TEMPORARY SHORING TABLE.
- DRIVEN PILING FOR TEMPORARY SHORINGS NO. 3, NO. 4 AND NO. 5 MAY NOT PENETRATE BELOW ELEVATION 770 FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.
- DO NOT USE A TEMPORARY WALL FOR ALL TEMPORARY SHORINGS.
- AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORINGS NO. 6, NO. 7 AND NO. 8, SEE STANDARD DETAIL NO. 1801.01 FOR STANDARD TEMPORARY SHORING.
- IT MAY BE PREFERRED TO USE A TEMPORARY SOIL NAIL WALL FOR TEMPORARY SHORINGS NO. 3 THRU NO. 8. FOR TEMPORARY SOIL NAIL WALLS, SEE TEMPORARY SOIL NAIL WALLS PROVISION.

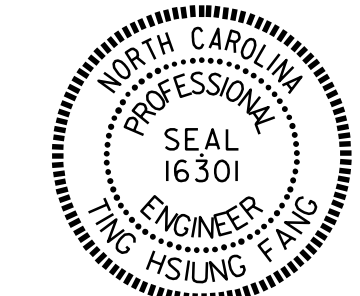
PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 20+68.01 -Y2NBL-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE ON US 311 (FUTURE I-74)
 OVER SR 2699 BETWEEN
 I-40 BYPASS AND SR 2698
 TEMPORARY SHORING
 LEFT LANE (NBL)

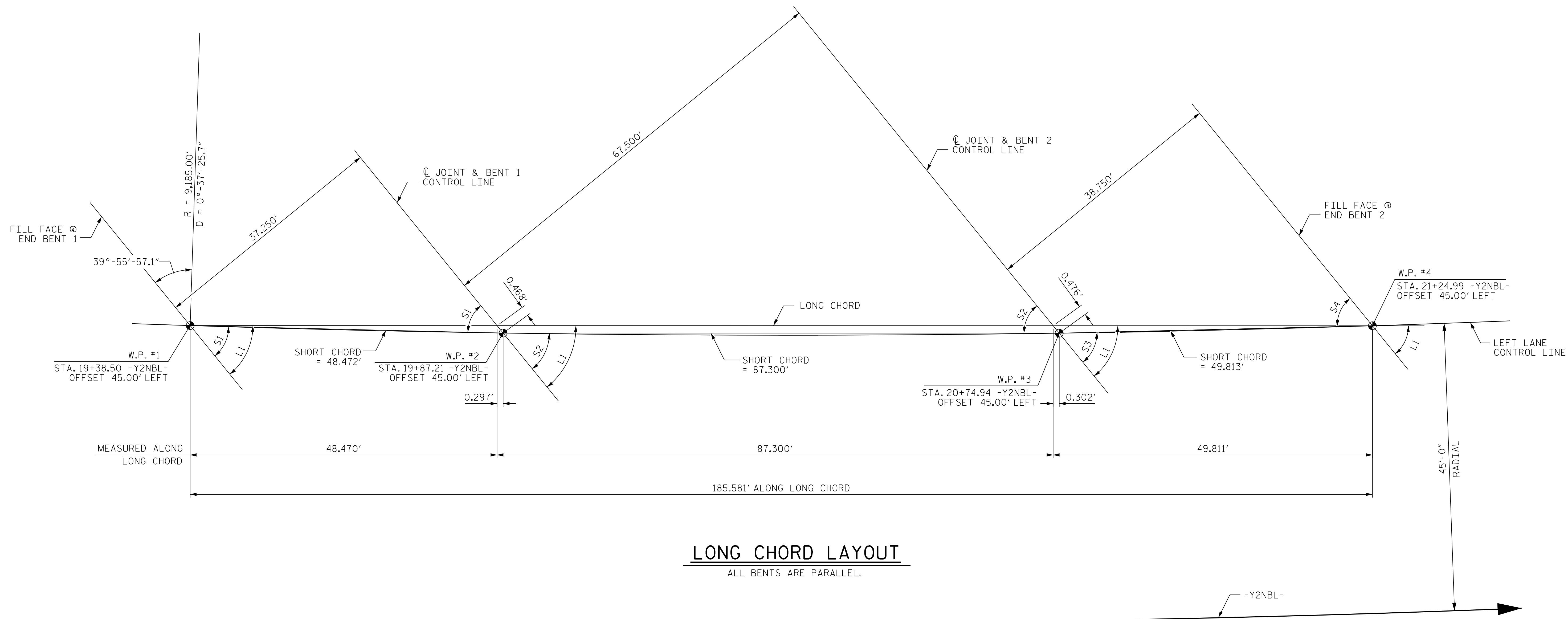
DOCUMENT NOT CONSIDERED
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 SIGNATURES COMPLETED

CDM Smith
 CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
 NC COA No. F-1255



DWG. No. _____
 DRAWN BY: _____ DATE: 06/22
 CHECKED BY: THF DATE: 06/22
 DESIGN ENGINEER: THF DATE: 06/22

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S06-03
1			3			TOTAL SHEETS
2			4			31



LONG CHORD LAYOUT
ALL BENTS ARE PARALLEL.

ANGLES			
LONG CHORD		SHORT CHORD	
L1	50°-38'-46.7"	S1	50°-13'-07.2"
		S2	50°-38'-31.7"
		S3	51°-04'-11.2"
		S4	51°-04'-11.2"

HORIZONTAL CURVE DATA -Y2NBL-
 P.I. STA. = 31+28.12 -Y2NBL-
 Δ = 23°-24'-46.5" (LT.)
 D = 0°-37'-14.7"
 L = 3,771.68 FT.
 T = 1,912.53 FT.
 R = 9,230.00 FT.

PROJECT NO. U-2579AA
FORSYTH COUNTY
 STATION: 20+68.01 -Y2NBL-
 SHEET 4 OF 5

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CDM Smith
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 5400 Glenwood Avenue, Suite 400
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 NC COA No. F-1255

DRAWN BY : VDK DATE : 9/18
 CHECKED BY : THF DATE : 9/18
 DESIGN ENGINEER : VDK DATE : 9/18

DWG. No.



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE ON US 311 (FUTURE I-74)
 OVER SR 2699 BETWEEN
 I-40 BYPASS AND SR 2698
 LEFT LANE (NBL)

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

SHEET NO. **S06-04**
 TOTAL SHEETS 31

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	FOUNDATION EXCAVATION FOR END BENT	FOUNDATION EXCAVATION FOR BENT	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	APPROX. 65,901 LBS. STRUCTURAL STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	FOAM JOINT SEALS FOR PRESERVATION	POURABLE SILICONE JOINT SEALANT	POLYESTER POLYMER CONCRETE MATERIALS	EPOXY POLYMER CONCRETE MATERIALS (ALTERNATE)	BRIDGE JOINT DEMOLITION	SCARIFYING BRIDGE DECK	SHOTBLASTING BRIDGE DECK	PLACING & FINISHING OF POLYMER CONCRETE	
	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	LUMP SUM	EACH	NO.	LIN. FT.	LIN. FT.	SQ. YDS.	LUMP SUM	LIN. FT.	LIN. FT.	CU. YDS.	CU. YDS.	SQ. FT.	SQ. YDS.	SQ. YDS.	SQ. YDS.
SUPERSTRUCTURE		LUMP SUM			2,206	13,474					LUMP SUM			185.65		LUMP SUM	153.17	153.14	15.50	15.50	121	1,276	1,276	1,592	
END BENT 1			LUMP SUM				9.0		1,358			2	2	90		63									
BENT 1				LUMP SUM			19.6		3,257	515		5	5	125											
BENT 2				LUMP SUM			19.8		3,278	526		5	5	100											
END BENT 2			LUMP SUM				8.0		1,290			2	2	90		81									
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	2,206	13,474	56.4	LUMP SUM	9,183	1,041	LUMP SUM	14	14	405	185.65	144	LUMP SUM	153.17	153.14	15.50	15.50	121	1,276	1,276	1,592

NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC PERFORMANCE ZONE 1.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

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

THE EXISTING BRIDGE SHALL BE PARTIALLY REMOVED BY SAWING AND/OR NON-SHATTERING METHODS SUCH THAT DEBRIS WILL NOT FALL INTO THE TRAVEL WAY. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

FOR LIMITS OF PARTIAL REMOVAL OF EXISTING STRUCTURE, SEE APPLICABLE SUPERSTRUCTURE AND SUBSTRUCTURE PLAN SHEETS.

FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.

DIMENSIONS AND ELEVATIONS GIVEN FOR THE EXISTING STRUCTURE ARE FROM THE BEST INFORMATION AVAILABLE. IF FIELD CONDITIONS VARY FROM THE PLANS, MODIFICATIONS WILL BE MADE AS NECESSARY AND AS DIRECTED BY THE ENGINEER.

IF FIELD CONDITIONS VARY FROM THE PLANS, MODIFICATIONS WILL BE MADE AS NECESSARY AND AS DIRECTED BY THE ENGINEER.

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

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

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

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 5 OR SYSTEM 6 OF THE STRUCTURAL STEEL SHOP COATINGS PROGRAM AND SECTION 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

IN ORDER TO FACILITATE A SMOOTH TRANSITION FROM THE EXISTING BRIDGE DECK TO THE PROPOSED DECK WIDENING, THE CONTRACTOR SHALL NOT BEGIN THE FINISHING PROCESS FOR THE DECK WIDENING UNTIL ALL CONCRETE HAS BEEN PLACED IN THAT SPAN. THIS DECK POUR PROCESS WILL BE REQUIRED FOR ALL SPANS.

FOR CONTROL OF TRAFFIC AND LIMITS ON STAGING OF CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLAN.

FOR OVERLAY SURFACE PREPARATION FOR POLYMER CONCRETE, SEE SPECIAL PROVISIONS.

FOR PLACING AND FINISHING POLYMER CONCRETE OVERLAY AND POLYESTER POLYMER CONCRETE MATERIALS USED FOR JOINT HEADER REPAIRS, SEE "POLYMER CONCRETE BRIDGE DECK OVERLAY" SPECIAL PROVISIONS.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

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

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRANSPORTATION MANAGEMENT PLANS, FOR TEMPORARY SHORING PAY ITEM FOR END BENTS 1 AND 2, SEE ROADWAY PLANS.

WHEN REFERENCING THE EXISTING BRIDGE PLANS THE CONVERSION FACTOR $-0.83 \pm$ SHALL BE USED TO CONVERT ELEVATIONS ON THE EXISTING BRIDGE PLANS TO MATCH THE DATUM FOR THE PROPOSED BRIDGE.

SAMPLE BAR REPLACEMENT	
SIZE	LENGTH
#3	6'-2"
#4	7'-4"
#5	8'-6"
#6	9'-8"
#7	10'-10"
#8	12'-0"
#9	13'-2"
#10	14'-6"
#11	15'-10"

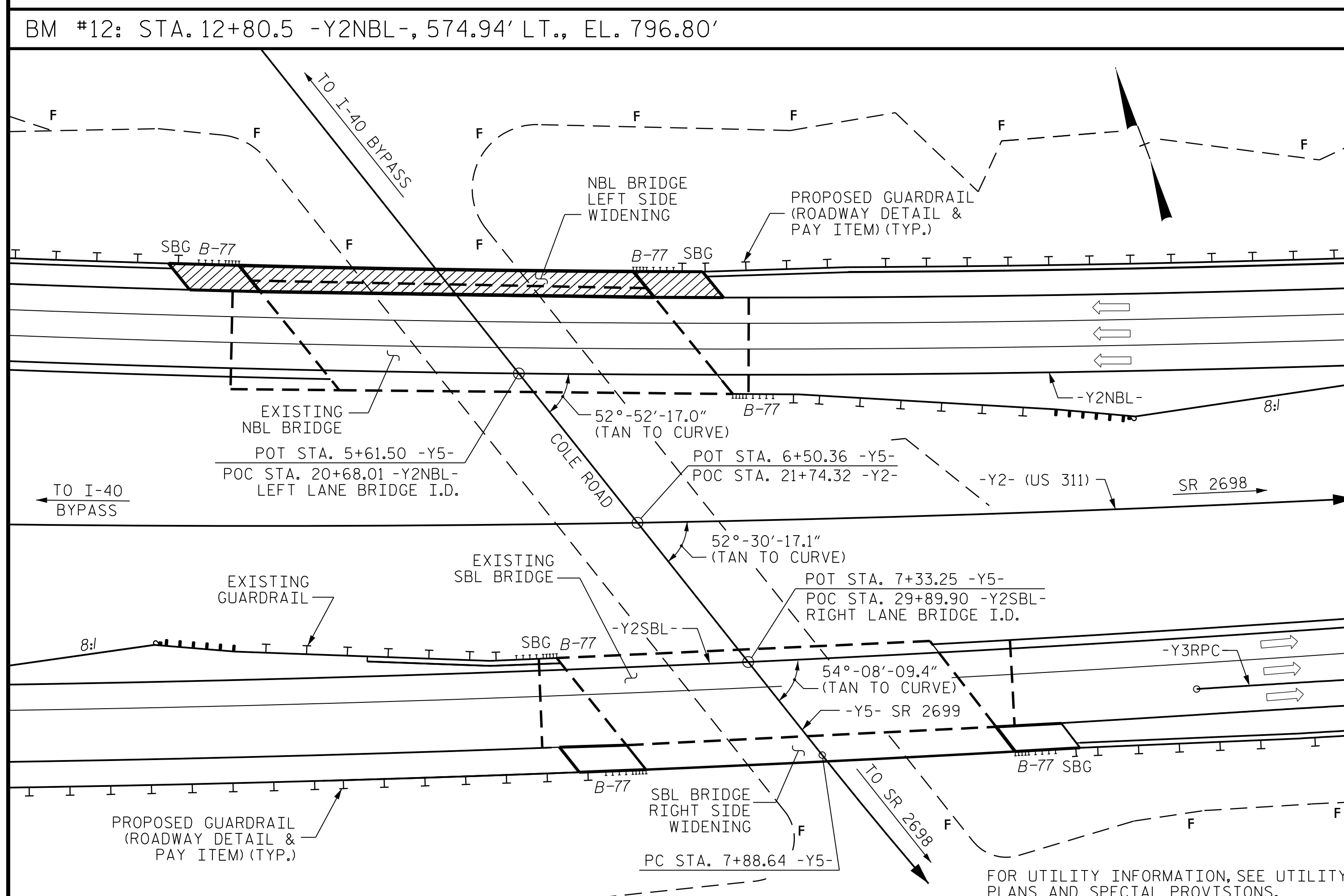
NOTE: SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" (SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND $f_y = 60$ ksi.

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 20+68.01 -Y2NBL-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE ON US 311 (FUTURE I-74)
 OVER SR 2699 BETWEEN
 I-40 BYPASS AND SR 2698
 LEFT LANE (NBL)

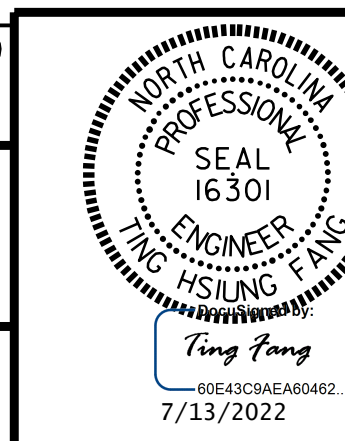
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S06-05
1			3			TOTAL SHEETS
2			4			31



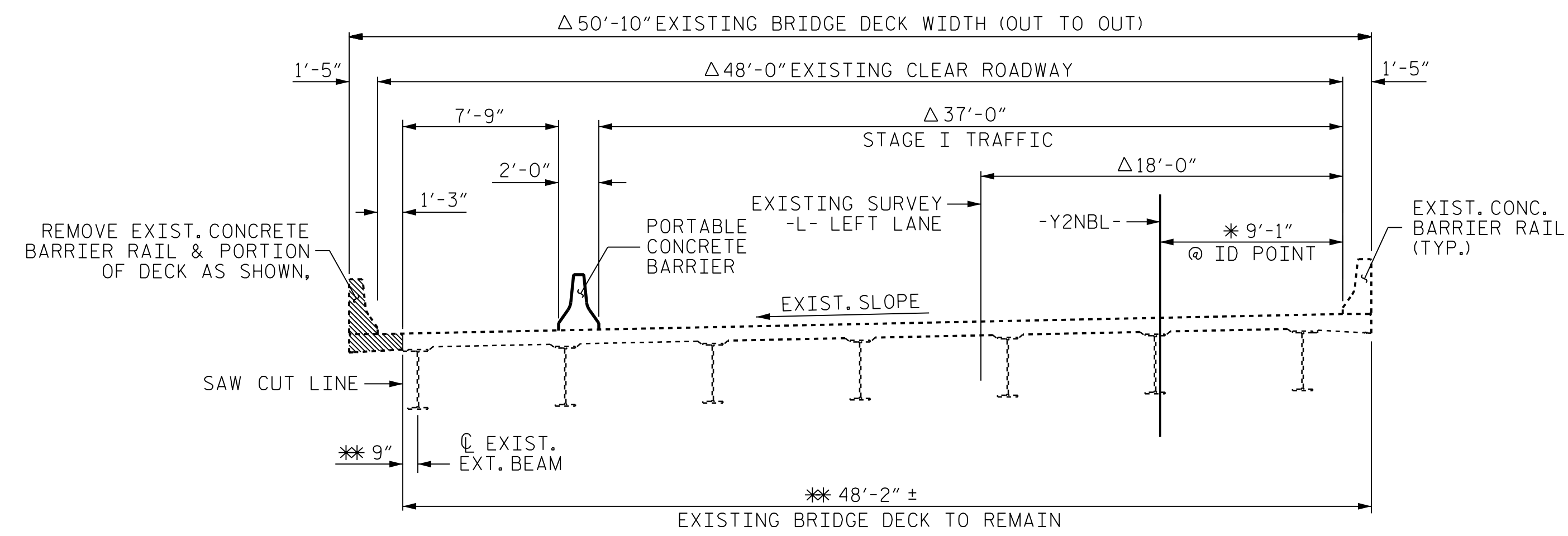
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 CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
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 DRAWN BY: VDK DATE: 9/18
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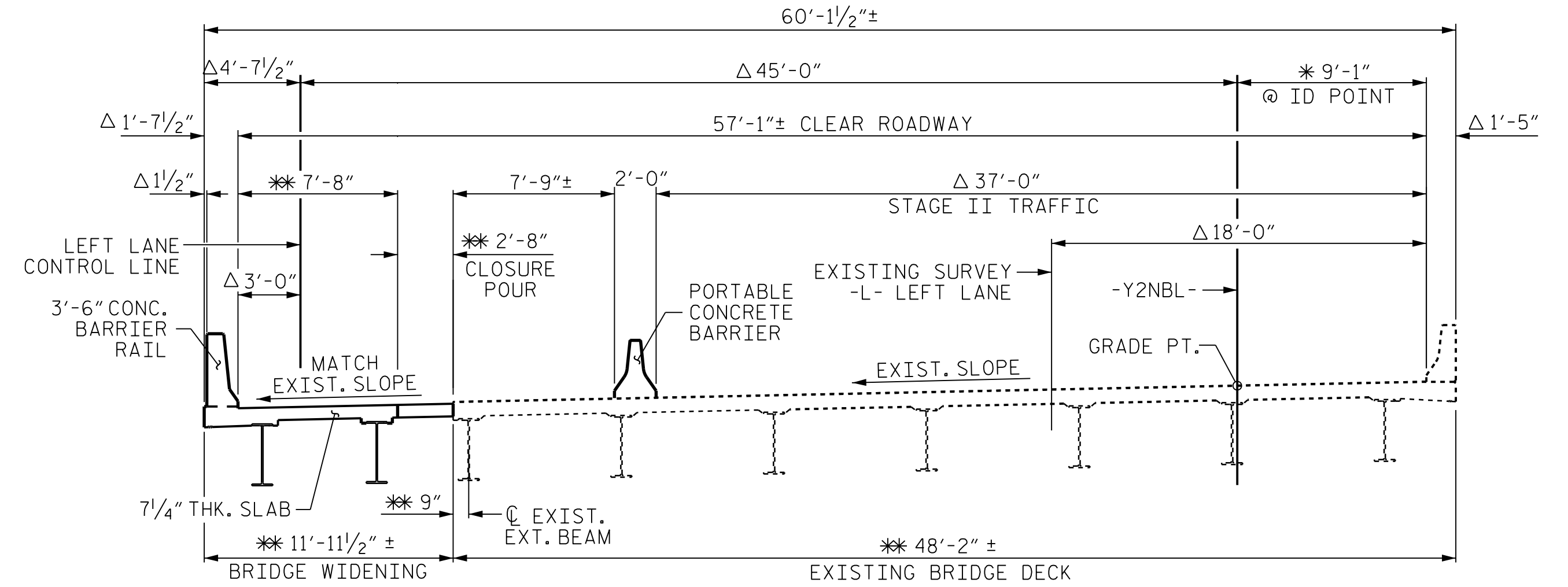
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NOTE: DIMENSIONS SHOWN ARE FROM EXISTING PLANS.

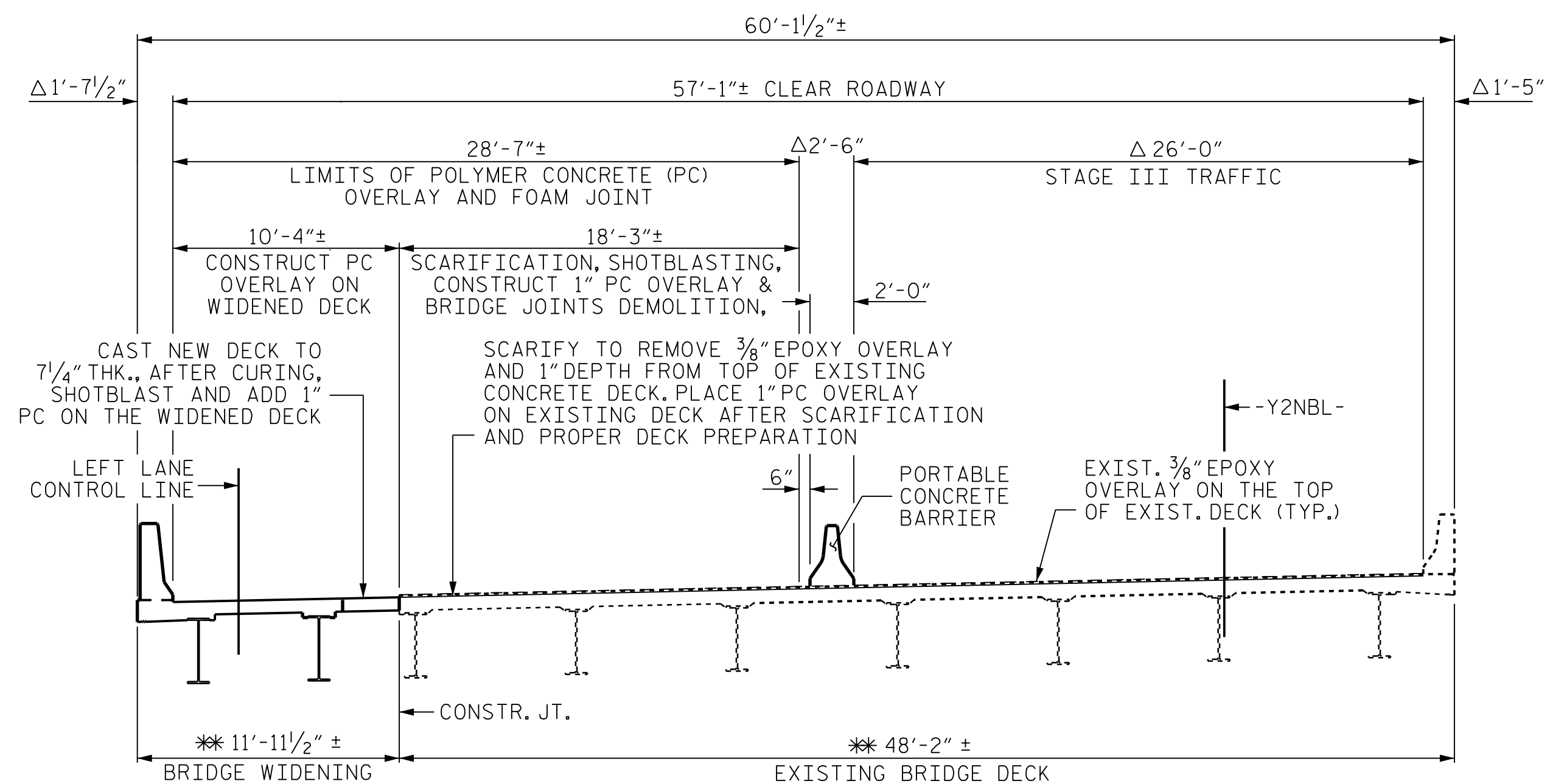
STAGE I CONSTRUCTION

REMOVE EXISTING LEFT SIDE RAIL & PARTIAL DECK AS SHOWN, REMOVE EXISTING LEFT SIDE END BENT WINGS AND PORTION OF TOP CAPS.



STAGE II CONSTRUCTION

CONSTRUCT LEFT SIDE DECK WIDENING, CLOSURE POUR AND CONCRETE RAIL, CONSTRUCT LEFT SIDE APPROACH SLABS WIDENING, FOR CASTING OF DECK TO 7/4" THICK, SEE TYPICAL SECTION ON SHEET S06-09.



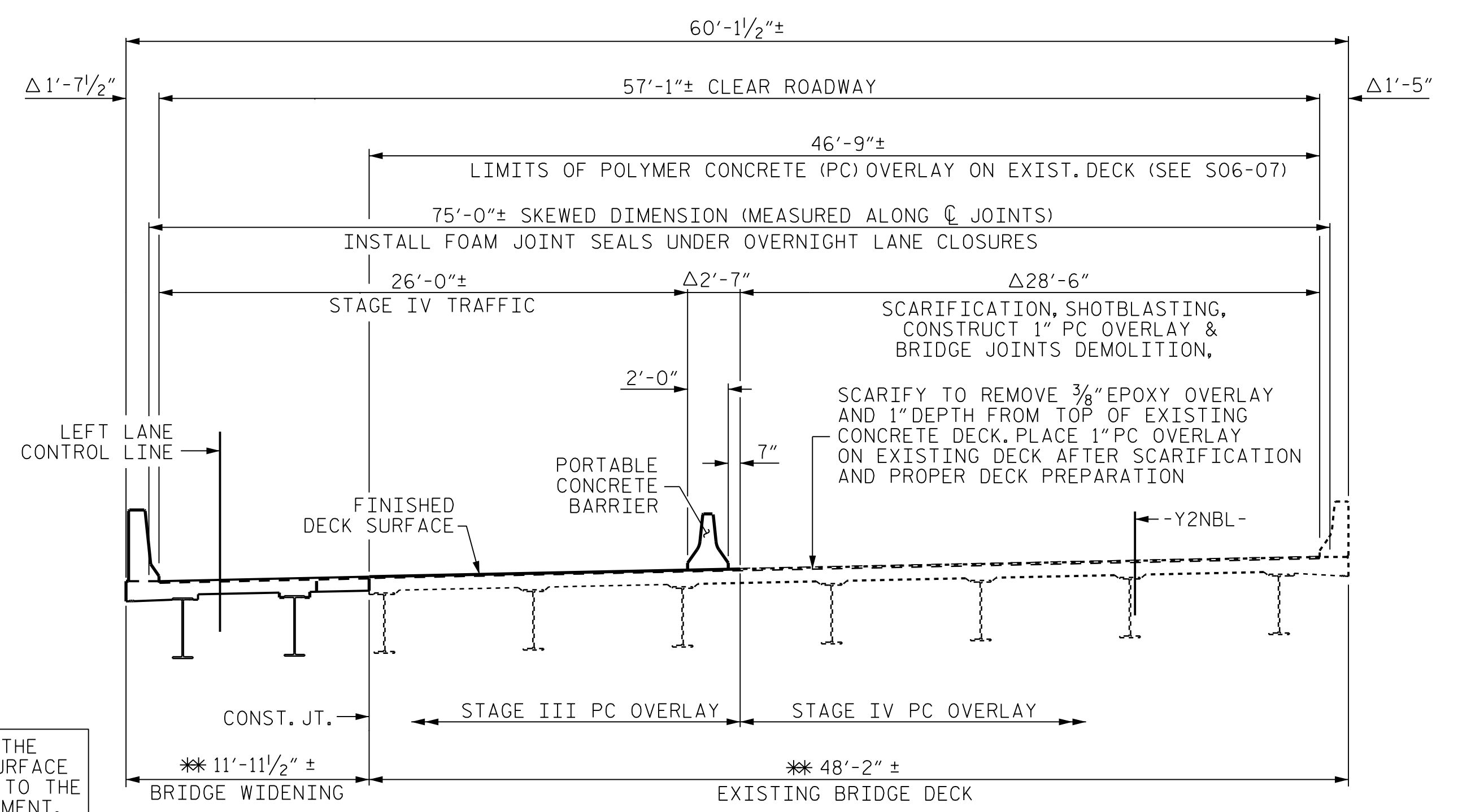
STAGE III CONSTRUCTION

PERFORM SCARIFICATION AND SHOTBLASTING TO LEFT SIDE OF EXISTING DECK AND APPROACH SLABS AS SHOWN.
 REMOVE EXISTING FOAM JOINT SEALS, DEMOLISH EXISTING ELASTOMERIC CONCRETE HEADERS ON BOTH SIDES OF JOINTS, REPAIR DEMOLISHED JOINT HEADERS WITH POLYESTER POLYMER CONCRETE (PPC) MATERIALS TO BOTTOM OF PC OVERLAY ELEVATION.
 SHOTBLAST WIDENED PORTION OF BRIDGE DECK & APPROACH SLABS
 CONSTRUCT 1" POLYMER CONCRETE (PC) OVERLAY ON LEFT SIDE OF EXISTING DECK AND EXISTING APPROACH SLABS AND ON THE WIDENED DECK AND APPROACH SLABS

NO TRAFFIC WILL BE ALLOWED ON THE WIDENED DECK AND THE SCARIFIED SURFACE OF THE EXISTING BRIDGE DECK PRIOR TO THE COMPLETION OF 1" PC OVERLAY PLACEMENT.

NOTES

- FOR MAINTENANCE OF TRAFFIC, SEE TRANSPORTATION MANAGEMENT PLANS.
- SEE TRANSPORTATION MANAGEMENT PLANS, FOR LOCATION AND PAY LIMIT OF THE ANCHORED PORTABLE CONCRETE BARRIER.
- CARE SHALL BE TAKEN DURING THE PARTIAL REMOVAL OF THE EXISTING STRUCTURE. DAMAGE TO THE REMAINING STRUCTURE SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE DEPARTMENT. THE METHOD OF REPAIR SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER.
- ALL DIMENSIONS ARE MEASURED RADIAL, U.O.N.
- * BRIDGE ID POINT AT:
STA. 20+68.01 -Y2NBL- POC = STA. 5+61.50 -Y5- POT
- DIMENSION VARIES DUE TO DIFFERENT RADII:
EXISTING SURVEY -L- LEFT LANE RADIUS = 9167.325'
PROPOSED -Y2NBL- RADIUS = 9230.00'
LEFT LANE CONTROL LINE RADIUS = 9185.00'
- * DIMENSIONS ARE VARIES DUE TO MEASURE TO THE PARALLEL LINE OFF THE $\text{\textcircled{C}}$ OF EXISTING EXTERIOR BEAM.



STAGE IV CONSTRUCTION

PERFORM SCARIFICATION AND SHOTBLASTING TO RIGHT SIDE OF EXISTING DECK AND APPROACH SLABS AS SHOWN.
 REMOVE EXISTING FOAM JOINT SEALS, DEMOLISH EXISTING ELASTOMERIC CONCRETE HEADERS ON BOTH SIDES OF JOINTS, REPAIR DEMOLISHED JOINT HEADERS WITH POLYESTER POLYMER CONCRETE (PPC) MATERIALS TO BOTTOM OF PC OVERLAY ELEVATION.
 CONSTRUCT 1" POLYMER CONCRETE (PC) OVERLAY ON RIGHT SIDE OF EXISTING DECK AND EXISTING APPROACH SLABS UNDER OVERNIGHT LANE CLOSURES.
 INSTALL FOAM JOINT SEALS FOR ENTIRE BRIDGE (AS SHOWN) UNDER OVERNIGHT LANE CLOSURES.

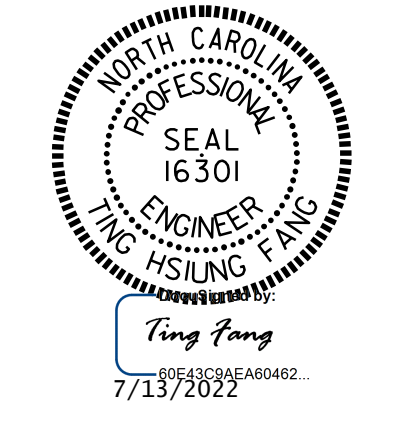
PROJECT NO. U-2579AA
FORSYTH COUNTY
 STATION: 20+68.01 -Y2NBL-

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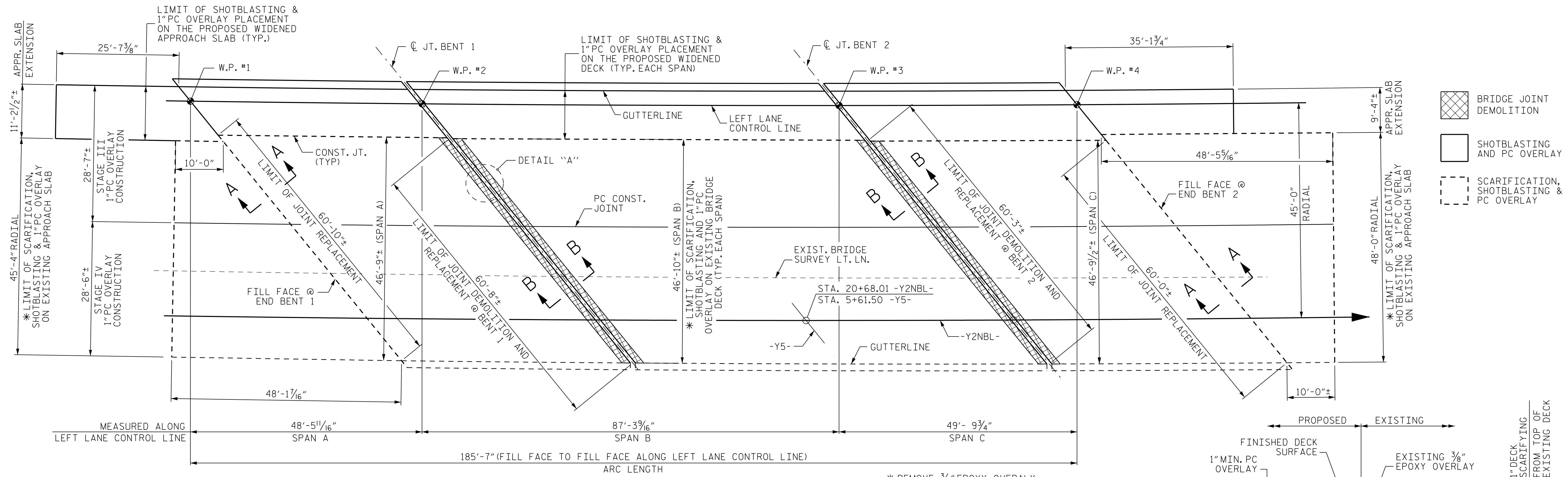
CDM Smith
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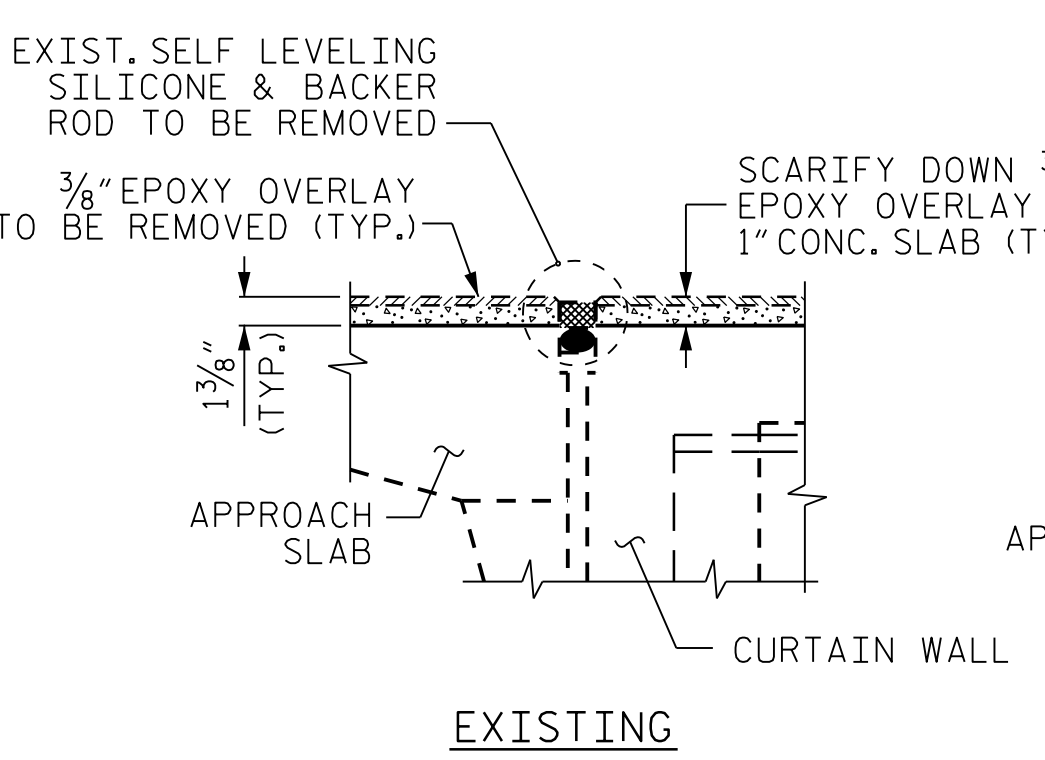
DWG. No.



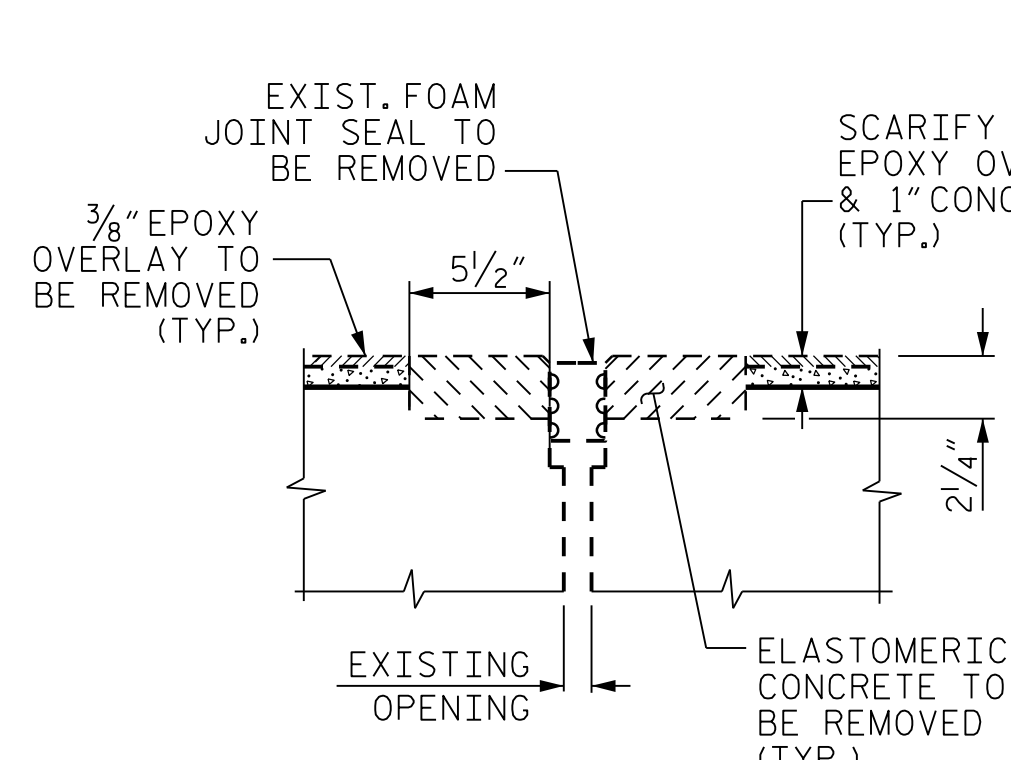
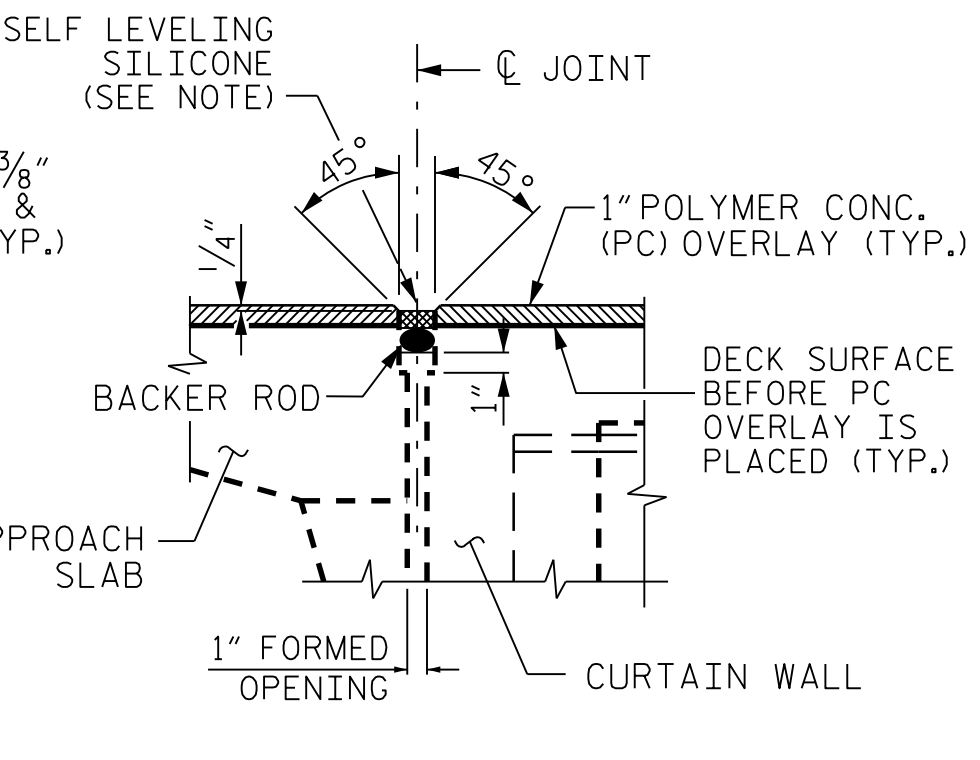
STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
SUPERSTRUCTURE					
CONSTRUCTION SEQUENCE					
LEFT LANE (NBL)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S06-06
TOTAL SHEETS					31



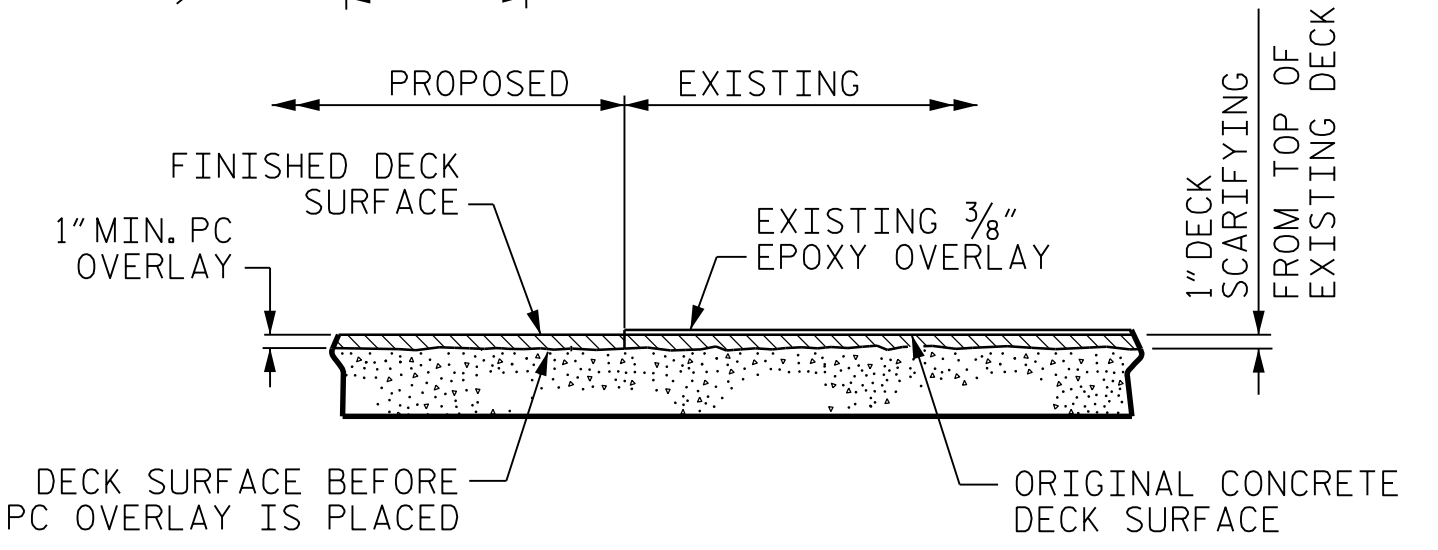
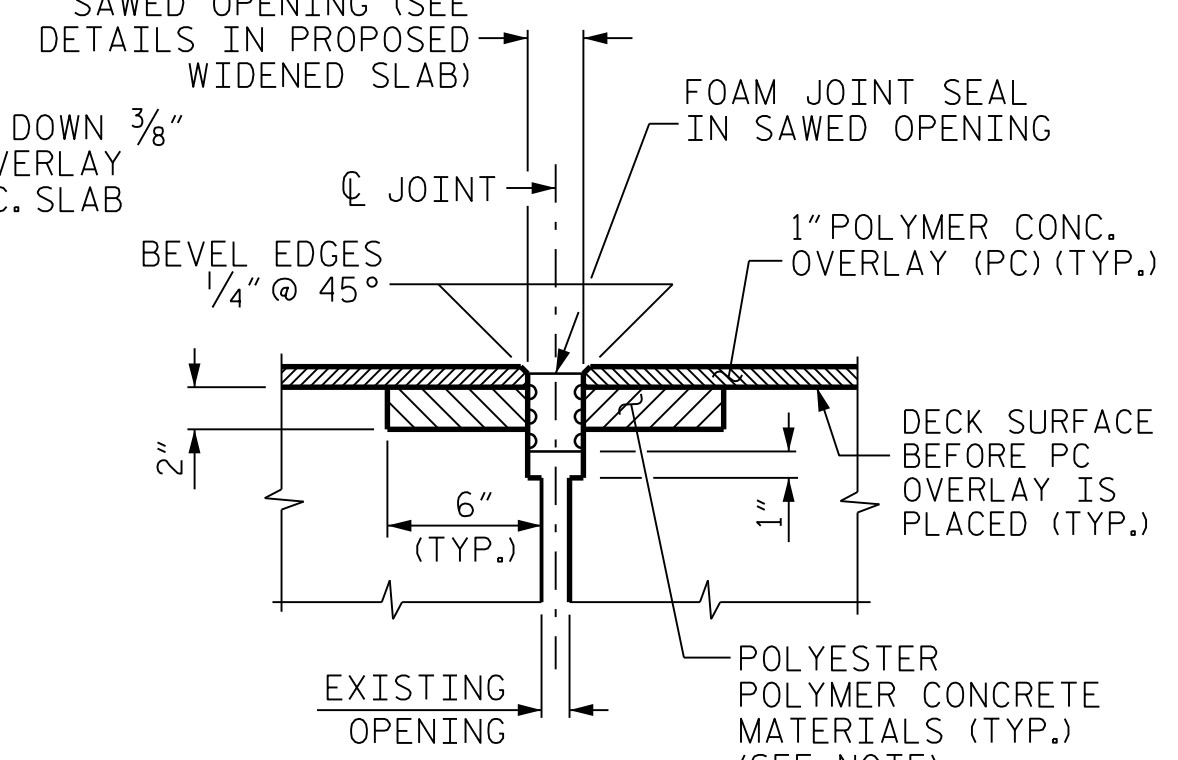
PLAN
TOTAL 1" PC OVERLAY AREA FOR DECKS & APPROACH SLABS = 14,492 SQ. FT.



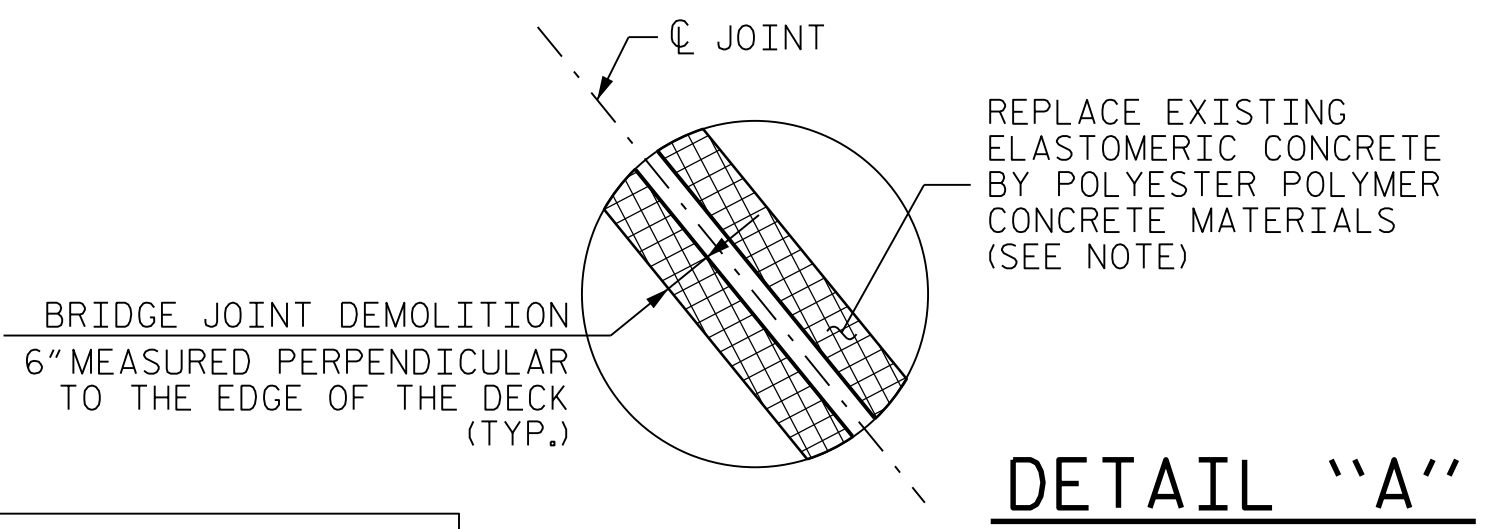
SECTION A-A
AT END BENT



SECTION B-B
AT BENT



DETAIL FOR PC OVERLAY ON EXISTING DECK
FOR STAGED PC OVERLAY QUANTITIES SEE SHEET S06-21.



DETAIL "A"

NOTES

FOR SELF LEVELING SILICONE AND BACKER ROD USED AT END BENTS, SEE "POURABLE SILICONE JOINT SEALANT" SPECIAL PROVISIONS.

EXISTING DIMENSIONS AND BRIDGE CONDITION ARE FROM THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL FIELD VERIFY THE INFORMATION SHOWN ON THE PLANS AND NOTIFY THE ENGINEER IF ACTUAL DIMENSIONS AND CONDITIONS DIFFER.

EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.

DEMOLISH EXISTING BRIDGE JOINT AREA TO THE NECESSARY DEPTH SUCH THAT CONCRETE REPAIR SHALL BE FOUNDED ON FLAT AND LEVEL SOUND CONCRETE SUBSTRATE.

FOR POLYMER CONCRETE (PC) OVERLAY ON BRIDGE DECKS AND POLYESTER POLYMER CONCRETE (PPC) MATERIALS USED FOR JOINT HEADER REPAIR, SEE "POLYMER CONCRETE BRIDGE DECK OVERLAY" SPECIAL PROVISIONS.

RETAIN ALL EXISTING REINFORCING STEEL. CLEAN AND REPAIR AS NEEDED.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL VERIFY THE EXISTING BRIDGE JOINT OPENING PRIOR TO ORDERING JOINT SEAL MATERIAL. IF THE ACTUAL JOINT OPENING VARIES FROM THE OPENING INDICATED IN THE DETAILS BY MORE THAN 1/4", NOTIFY THE ENGINEER.

THE MANUFACTURER SHALL PROVIDE THE MINIMAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL FOR THE SIZE OF THE OPENING INDICATED ON THE PLANS AND TO ACCOMMODATE THE MINIMUM EXPANSION INDICATED ON THE PLANS.

FOAM JOINTS SHALL BE INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS.

THE CONTRACTOR SHALL TAKE CARE DURING JOINT REHABILITATION OPERATIONS TO NOT DROP ANY MATERIAL BELOW THE BRIDGE WITHOUT PROTECTIVE DEVICES BELOW TO CATCH THE MATERIAL. ANY MATERIAL THAT FALLS BELOW THE BRIDGE SHALL BE CONTAINED, REMOVED, AND DISPOSED OF BY THE CONTRACTOR AT NO EXTRA COST TO THE DEPARTMENT. IF THE ENGINEER DETERMINES THAT THE PROTECTIVE DEVICES ARE NOT ADEQUATE OR BEING EMPLOYED, THE WORK SHALL BE SUSPENDED UNTIL ADEQUATE PROTECTION IS PROVIDED.

THE CONTRACTOR WILL NOT BE ALLOWED TO FORM THE JOINTS IN LIEU OF SAW CUTTING THE JOINT.

THE INSTALLED JOINT SEALS SHALL BE WATERTIGHT.

FOR DETAILS OF JOINT REPAIR FOR THE EXISTING CONCRETE RAIL, SEE SHEET S06-10.

POLYESTER POLYMER CONC. MATERIALS FOR EXISTING JOINT HEADER REPAIRS	
JOINT AT	QUANTITY (CU. YD.)
BENT 1	0.375
BENT 2	0.375
TOTAL	0.75

BASED ON THE MINIMUM BLOCKOUT SHOWN AT INT. BENTS ON EXISTING BRIDGE DECKS

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DWG. No.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 16301
Yong Peng
7/18/2022

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 20+68.01 -Y2NBL-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
PC OVERLAY & JOINT REPLACEMENT DETAILS ON EXISTING SLAB
LEFT LANE (NBL)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S06-07
1			3			TOTAL SHEETS
2			4			31

SITE 6NBL

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	φ _c	φ _w
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR STEEL ROLLED BEAMS																								
LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE										SERVICE II LIMIT STATE						COMMENT NUMBER		
						LIVE-LOAD FACTORS (φ _L)	MOMENT					SHEAR					LIVE-LOAD FACTORS (φ _L)	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	1.05	--	1.75	0.57	1.05	B	ER	42.9	0.93	3.04	B	I	0.0	1.30	0.57	1.63	B	ER	42.9		
	HL-93 (OPERATING)	N/A	--	1.36	--	1.35	0.57	1.36	B	ER	42.9	0.93	3.95	B	I	0.0	1.00	0.57	2.11	B	ER	42.9		
	HS-20 (INVENTORY)	36.000	②	1.42	51.120	1.75	0.57	1.42	B	ER	42.9	0.93	4.03	B	I	0.0	1.30	0.57	2.20	B	ER	42.9		
	HS-20 (OPERATING)	36.000	--	1.84	66.240	1.35	0.57	1.84	B	ER	42.9	0.93	5.22	B	I	0.0	1.00	0.57	2.86	B	ER	42.9		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500	--	4.12	55.620	1.40	0.57	4.12	B	ER	42.9	0.93	12.32	B	I	0.0	1.30	0.57	5.10	B	ER	42.9	
		SNGARBS2	20.000	--	3.02	60.400	1.40	0.57	3.02	B	ER	42.9	0.93	8.65	B	I	0.0	1.30	0.57	3.74	B	ER	42.9	
		SNAGRIS2	22.000	--	2.84	62.480	1.40	0.57	2.84	B	ER	42.9	0.93	7.99	B	I	0.0	1.30	0.57	3.51	B	ER	42.9	
		SNCOTTS3	27.250	--	2.05	55.860	1.40	0.57	2.05	B	ER	42.9	0.93	5.26	B	I	0.0	1.30	0.57	2.54	B	ER	42.9	
		SNAGGRS4	34.925	--	1.69	59.020	1.40	0.57	1.69	B	ER	42.9	0.93	4.29	B	I	0.0	1.30	0.57	2.10	B	ER	42.9	
		SNS5A	35.550	--	1.65	58.660	1.40	0.57	1.65	B	ER	42.9	0.93	4.31	B	I	0.0	1.30	0.57	2.05	B	ER	42.9	
		SNS6A	39.950	--	1.51	60.320	1.40	0.57	1.51	B	ER	42.9	0.93	3.91	B	I	0.0	1.30	0.57	1.87	B	ER	42.9	
	SNS7B	42.000	--	1.44	60.480	1.40	0.57	1.44	B	ER	42.9	0.93	3.81	B	I	0.0	1.30	0.57	1.78	B	ER	42.9		
	TRUCK TRACTOR SEMI-TRAILER (TTS1)	TNAGRIT3	33.000	--	1.84	60.720	1.40	0.57	1.84	B	ER	42.9	0.93	5.46	B	I	0.0	1.30	0.57	2.28	B	ER	42.9	
		TNT4A	33.075	--	1.85	61.190	1.40	0.57	1.85	B	ER	42.9	0.93	4.58	B	I	0.0	1.30	0.57	2.29	B	ER	42.9	
		TNT6A	41.600	--	1.50	62.400	1.40	0.57	1.50	B	ER	42.9	0.93	3.99	B	I	0.0	1.30	0.57	1.86	B	ER	42.9	
		TNT7A	42.000	--	1.50	63.000	1.40	0.57	1.50	B	ER	42.9	0.93	3.93	B	I	0.0	1.30	0.57	1.86	B	ER	42.9	
		TNT7B	42.000	--	1.55	65.100	1.40	0.57	1.55	B	ER	42.9	0.93	3.74	B	I	0.0	1.30	0.57	1.92	B	ER	42.9	
		TNAGRIT4	43.000	--	1.48	63.640	1.40	0.57	1.48	B	ER	42.9	0.93	3.63	B	I	0.0	1.30	0.57	1.83	B	ER	42.9	
TNAGT5A		45.000	--	1.40	63.000	1.40	0.57	1.40	B	ER	42.9	0.93	3.57	B	I	0.0	1.30	0.57	1.73	B	ER	42.9		
TNAGT5B	45.000	③	1.38	62.100	1.40	0.57	1.38	B	ER	42.9	0.93	3.45	B	I	0.0	1.30	0.57	1.72	B	ER	42.9			

NOTES:
 MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.
 ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:
 1. RATING IS CONTROLLED BY EXISTING BEAMS.
 2.
 3.
 4.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

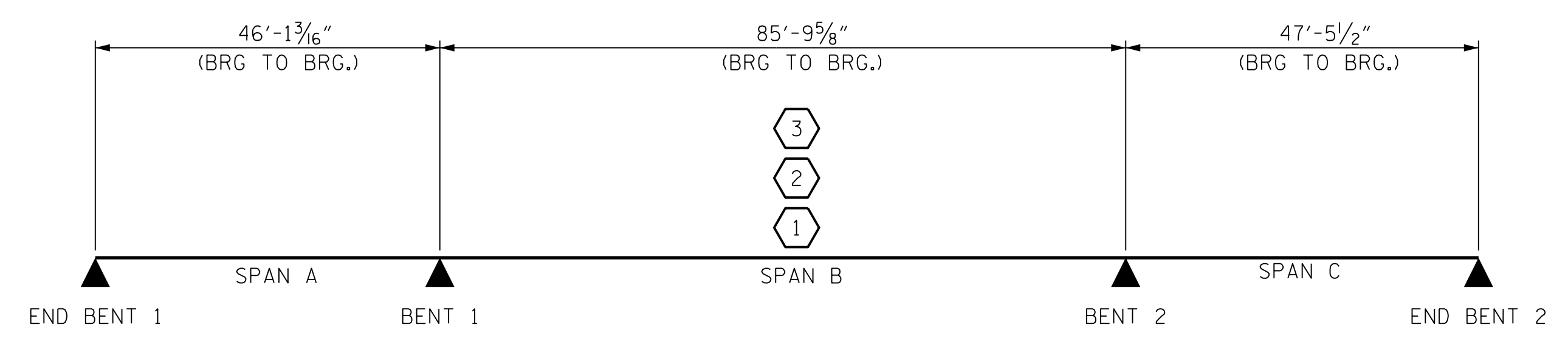
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - EXISTING INTERIOR BEAM
 EL - EXISTING EXTERIOR LEFT BEAM
 ER - EXISTING EXTERIOR RIGHT BEAM



LRFR SUMMARY

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 20+68.01 - Y2NBL-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH STANDARD

LRFR SUMMARY FOR
 STEEL ROLLED BEAMS
 (NON-INTERSTATE TRAFFIC)
 LEFT LANE (NBL)

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

TOTAL SHEETS: **31**

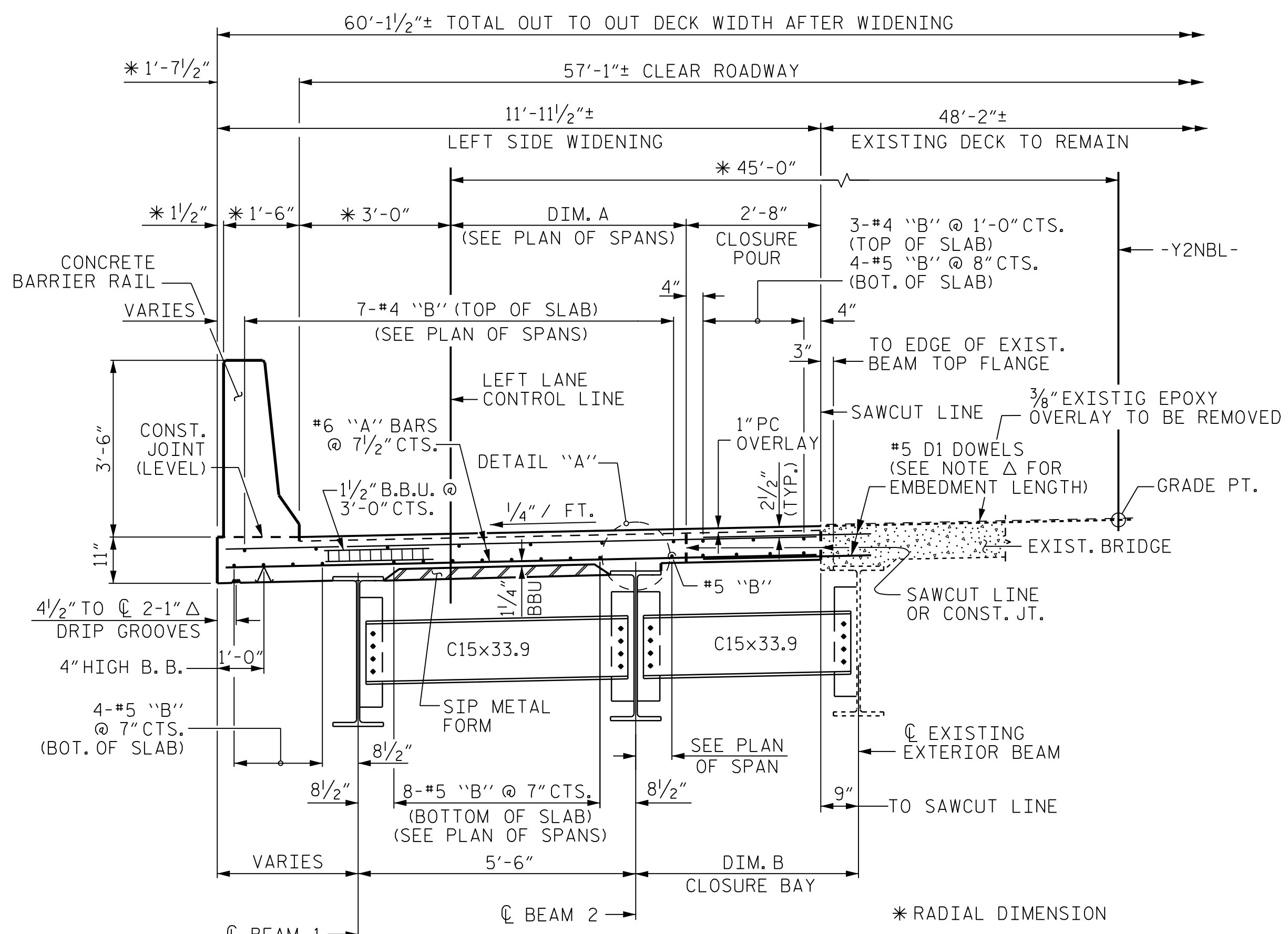
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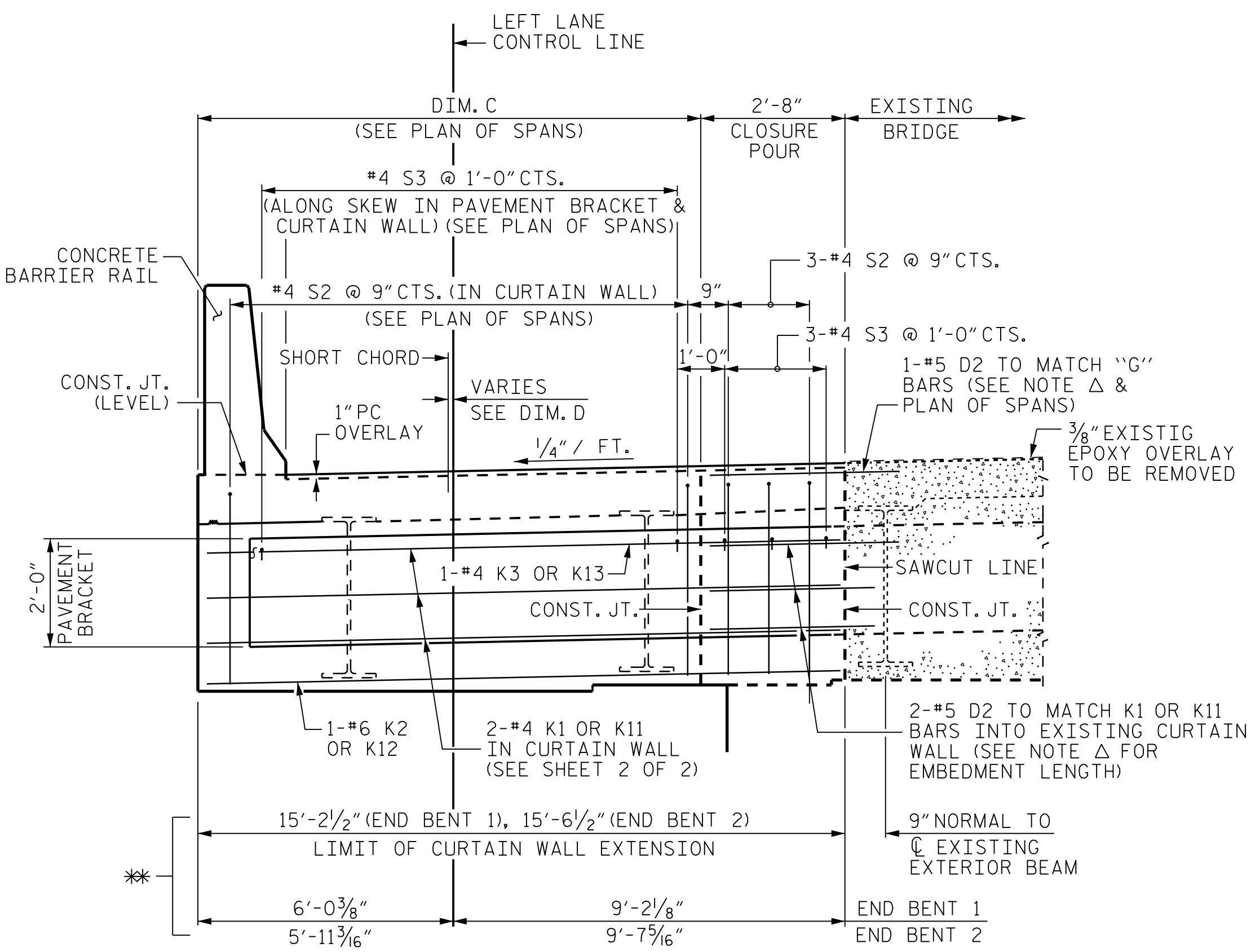
DWG. No.





TYPICAL SECTION
SHOWING INTERMEDIATE DIAPHRAGM AND SLAB REINFORCING STEEL DETAILS

EXISTING SUPERSTRUCTURE USES CHORDED BEAMS UNDER A CAST-IN-PLACE CURVED CONCRETE DECK. THE SAWCUT LINE IS TO BE 9" OFF THE \bar{C} EXISTING BEAM.



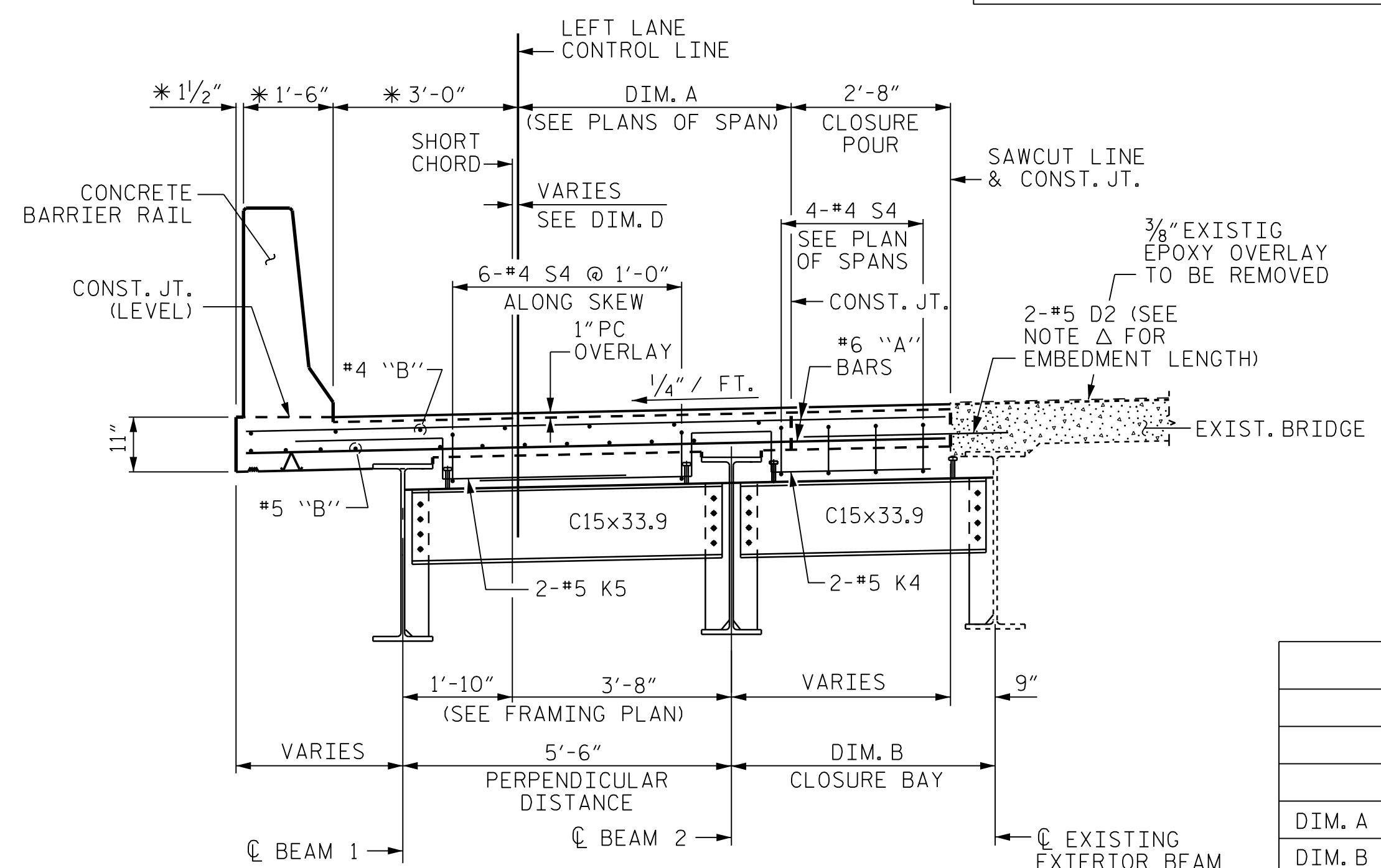
CURTAIN WALL DETAILS
SHOWING CURTAIN WALL REINFORCING STEEL IN SLAB NOT SHOWN FOR CLARITY.
* MEASURED ALONG FILL FACE @ END BENTS 1 & 2

SPAN A	SPAN B	SPAN C
W36X135	W36X150	W36X135

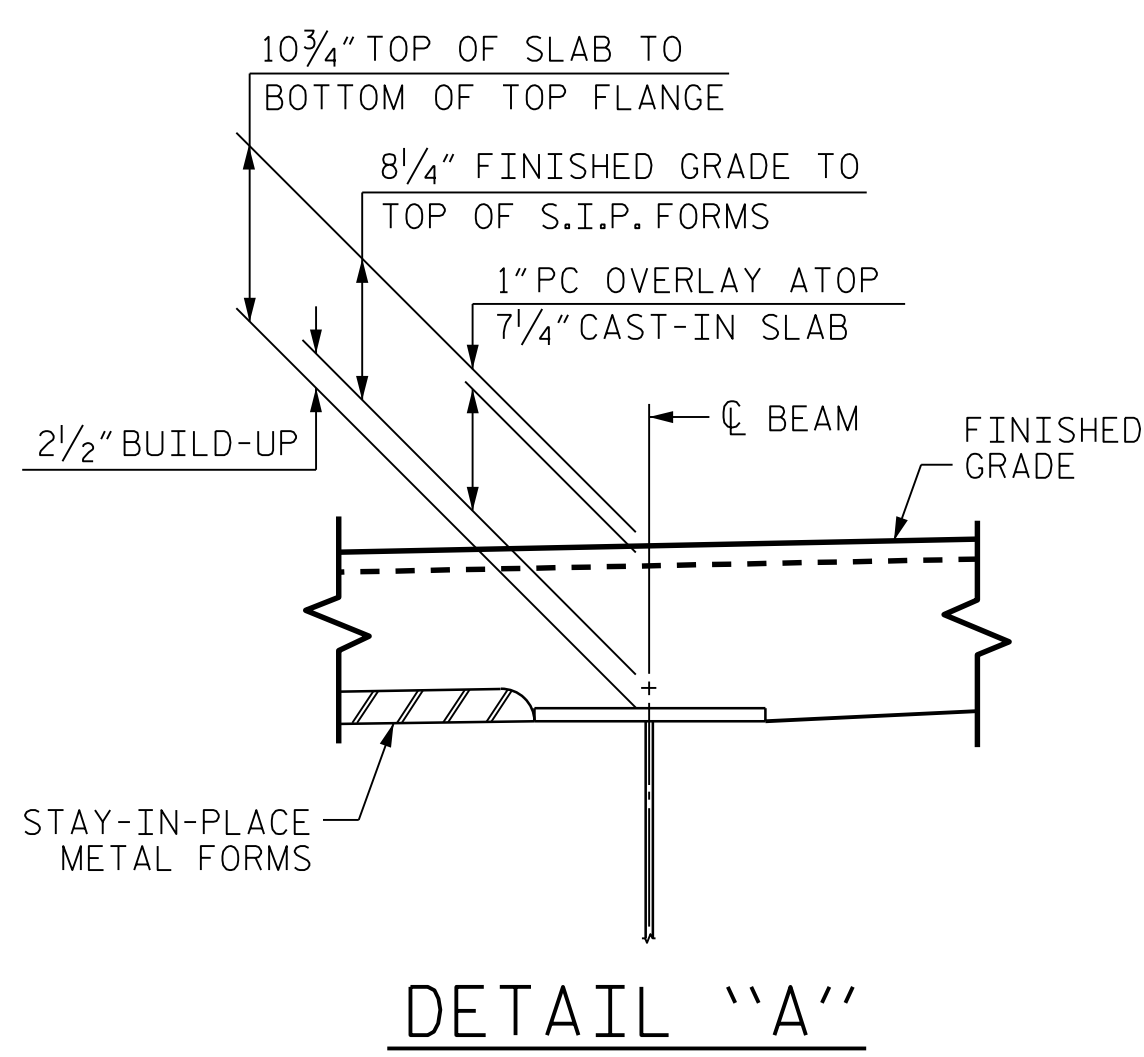
SPAN	@ WORK PT.	MID-SPAN	@ WORK PT.
A	0"	3/8"	0"
B	0"	1 1/4"	0"
C	0"	3/8"	0"

	SPAN A		SPAN B		SPAN C	
	NEAR END	FAR END	NEAR END	FAR END	NEAR END	FAR END
FILL FACE						
DIM. A	5'-8 1/2"	5'-8 7/16"	5'-11 7/16"	5'-11 5/16"	6'-2 1/4"	6'-2 3/16"
DIM. B	5'-4 9/16"	5'-4 1/2"	5'-7 9/16"	5'-7 7/16"	5'-10 7/16"	5'-10 5/16"
DIM. C	11'-8 7/8"	11'-8 1/2"	11'-11 1/2"	11'-10 3/16"	12'-1 3/4"	12'-1 3/8"
DIM. D	SEE TABLE "OFFSET DIMENSION D" ABOVE					

DIMENSIONS IN THE TABLE ARE MEASURED ALONG SKEW AT FILL FACES OR \bar{C} JOINT AT BENTS, SEE "PLAN OF SPANS" SHEET



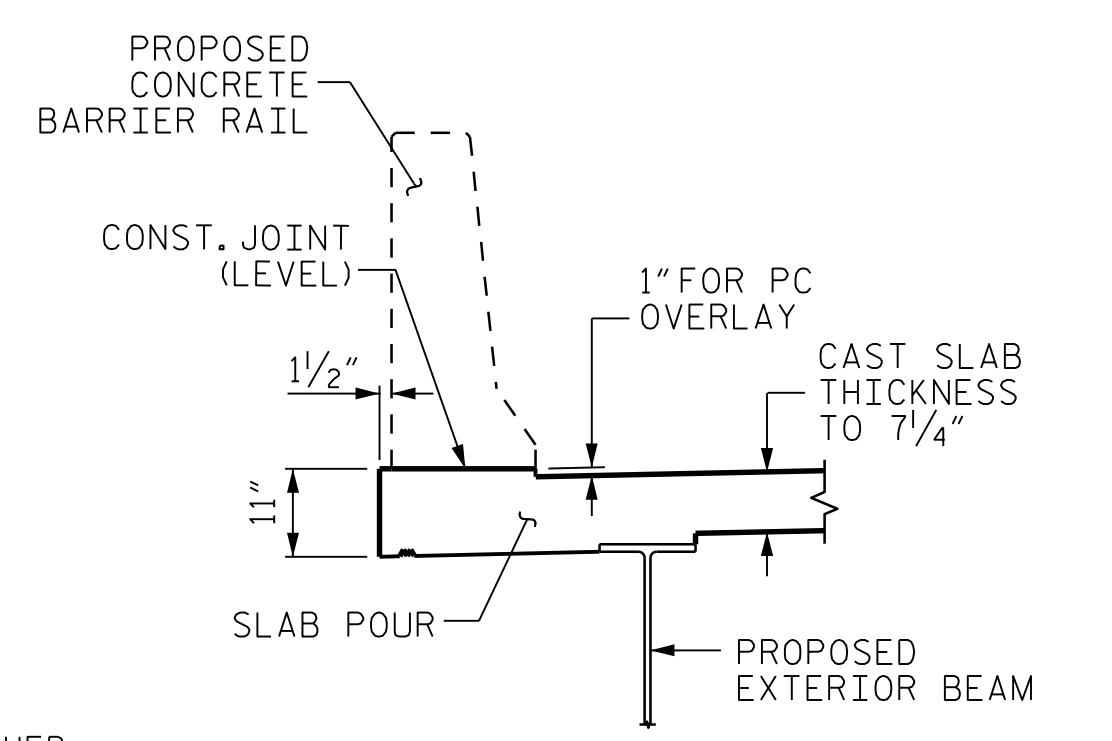
TYPICAL SECTION
SHOWING BENT DIAPHRAGM
PROPOSED \bar{C} BEAMS 1 & 2 ARE PARALLEL TO THE SHORT CHORD IN EACH SPAN



DETAIL "A"

NOTES

- PROVIDE 1 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.
- METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO BEAM OR GIRDER FLANGES IN THE ZONES REQUIRING CHARPY V-NOTCH TEST. SEE STRUCTURAL STEEL DETAIL SHEETS.
- THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND BEAM/GIRDER STIFFENERS OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE METAL STAY-IN-PLACE FORM WORKING DRAWINGS.
- A FULL DEPTH SAW CUT SHALL BE MADE IN THE SLAB AND EXISTING CONCRETE REMOVED IN ACCORDANCE WITH PLAN DETAILS.
- DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE TOP AND BOTTOM SLAB REINFORCING STEEL.
- THE "D" DOWELS PLACED IN THE EXISTING DECK, CURTAIN WALLS, AND BENT DIAPHRAGMS SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM. LEVEL 1 FIELD TESTING IS REQUIRED AND THE YIELD LOAD FOR #5 D1 AND D2 DOWELS ARE 18.6 KIPS. THE EMBEDMENT LENGTH TO BE VERIFIED BY THE MANUFACTURER OF ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SECTION 420-13 OF THE STANDARD SPECIFICATIONS.
- PREVIOUSLY CAST CONCRETE IN EACH SPAN SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI BEFORE DECK CONCRETE IS CAST IN THE SPAN.
- THE 1" PC OVERLAY SHALL NOT BE PLACED UNTIL ALL SLAB CONCRETE IN THAT SPAN AND APPROACH SLABS HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI, A MINIMUM 28 DAYS OLD, AND MINIMUM 3 DAYS OPEN AIR DRY CURING AFTER WET CURE.



SLAB POUR DETAIL

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 20+68.01 -Y2NBL-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION
LEFT LANE (NBL)

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

TOTAL SHEETS: 31
SITE 6NBL

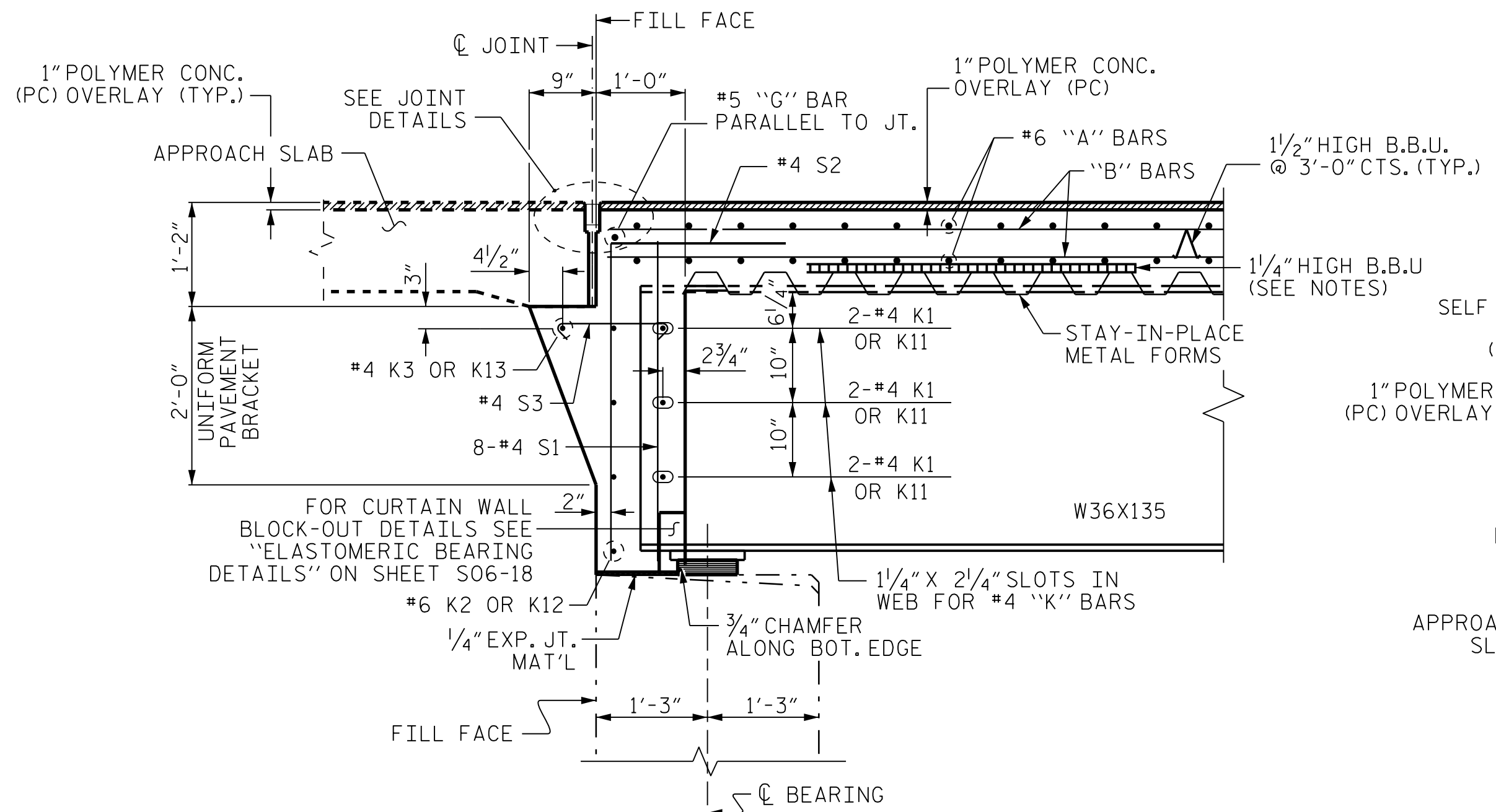
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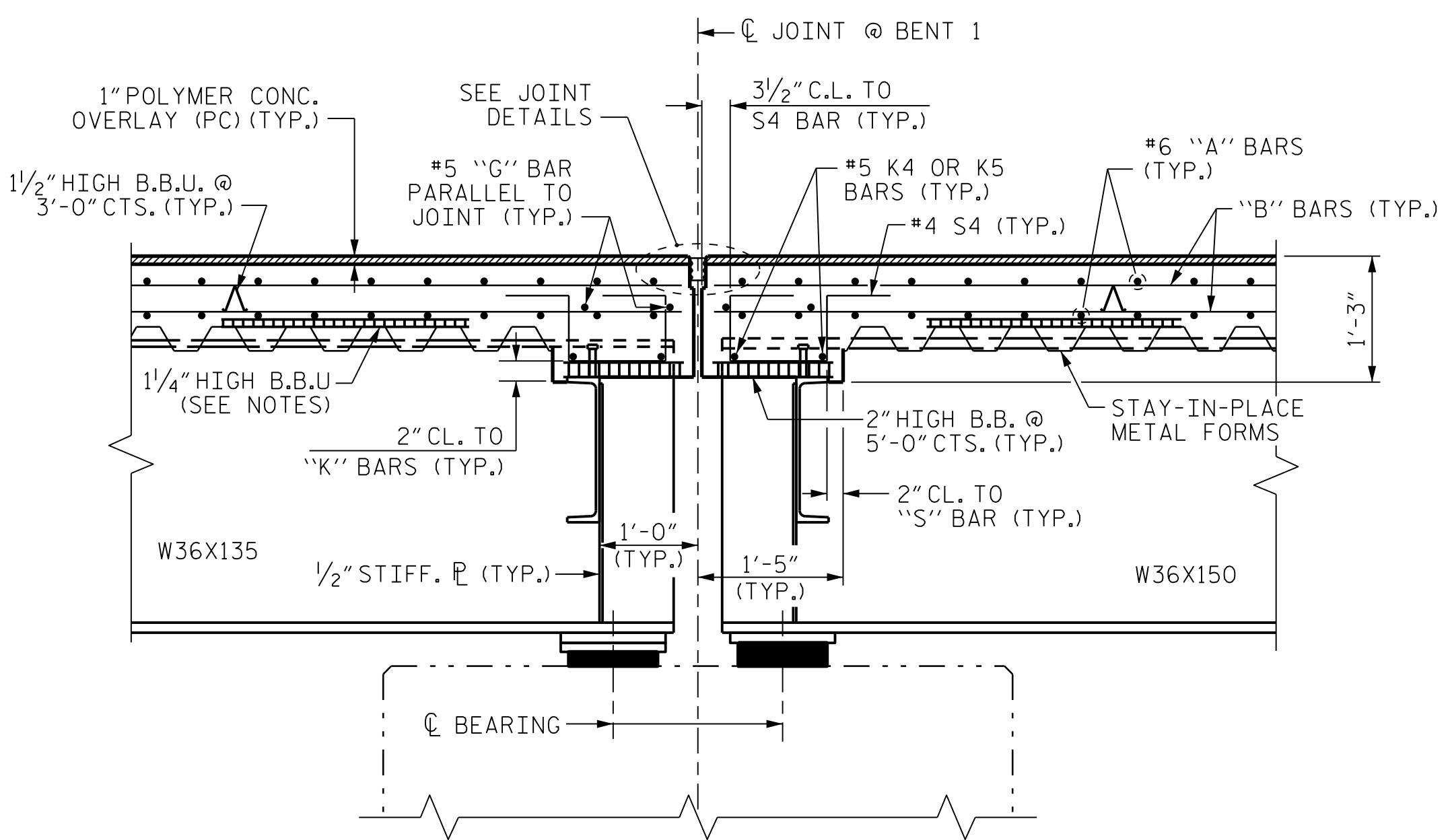
DWG. No.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 16301
Ting Fang
7/13/2022



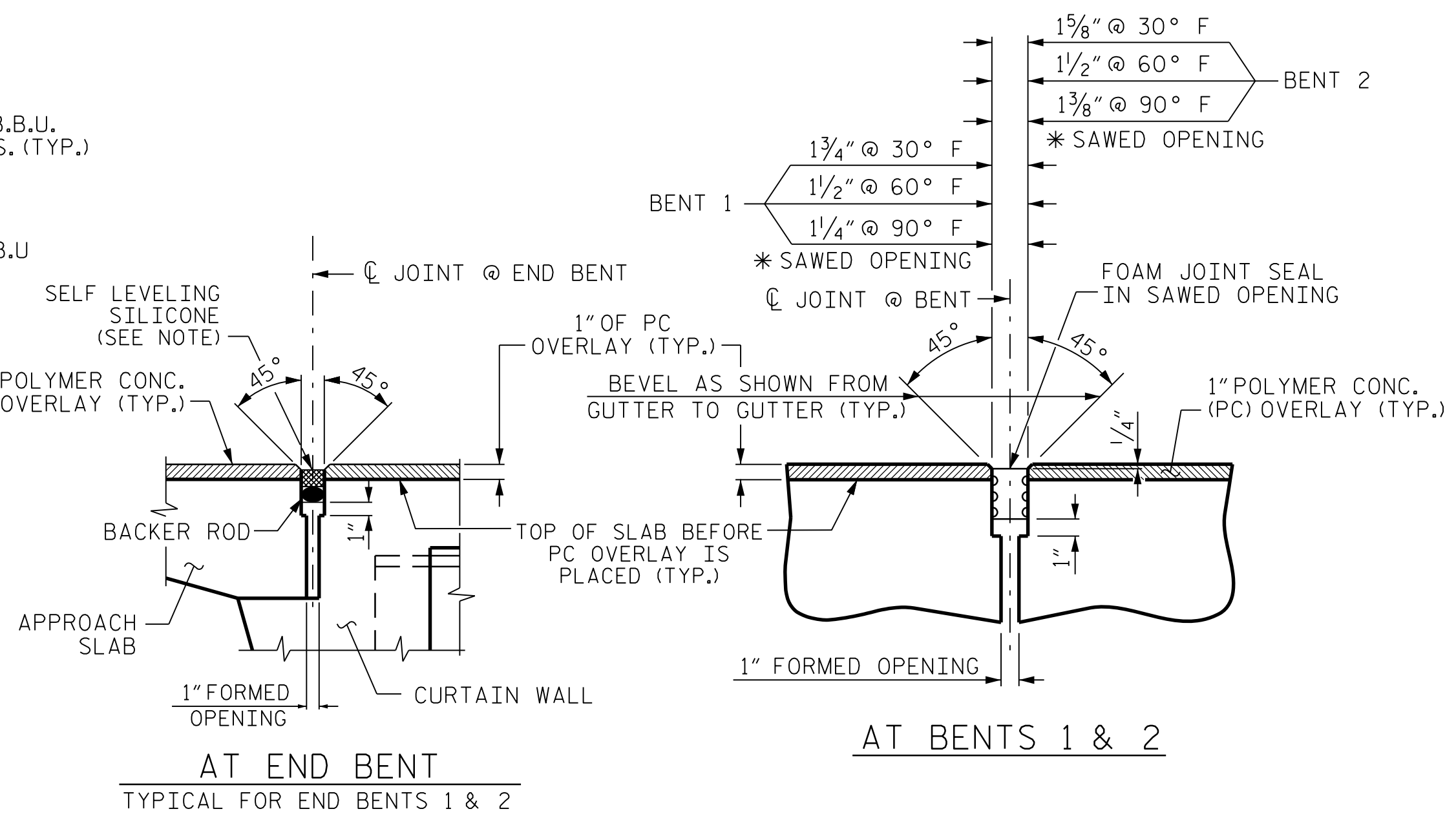
SECTION THRU END BENT

#5 "G" BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL
END BENT 1 SHOWN, END BENT 2 SIMILAR



SECTION THRU BENT

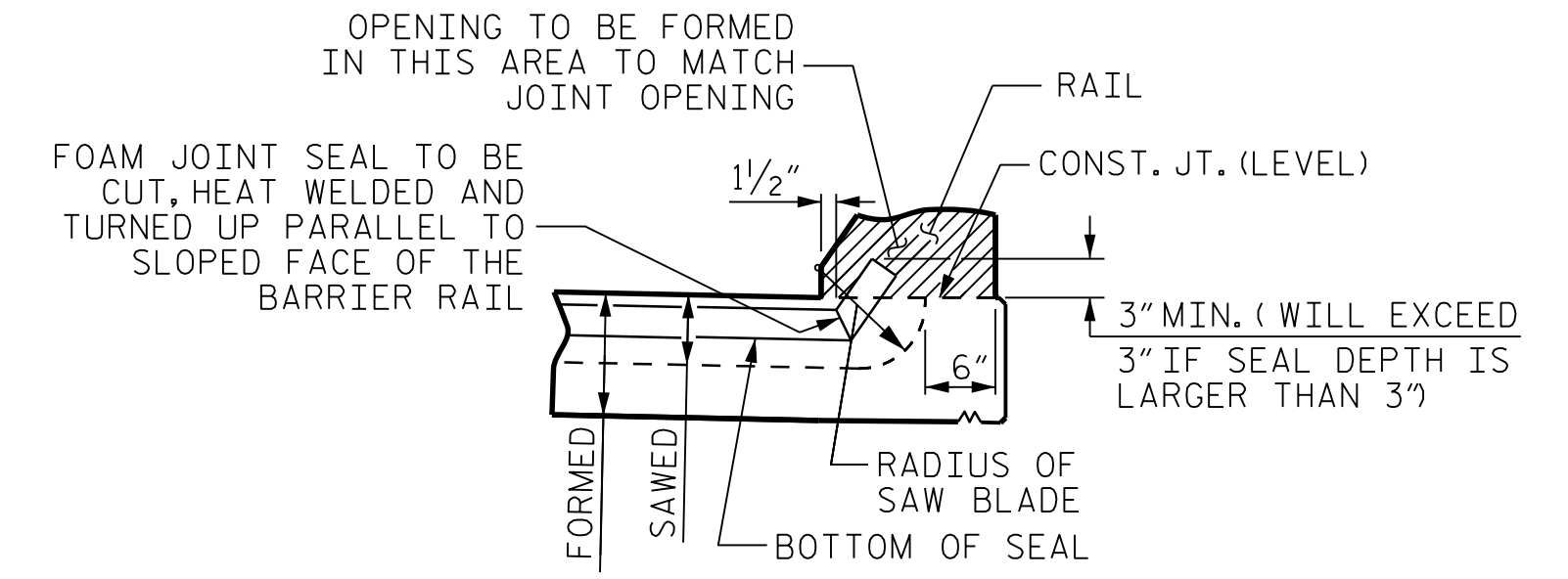
#5 "G" BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY TO CLEAR REINFORCING STEEL
BENT 1 SHOWN, BENT 2 SIMILAR



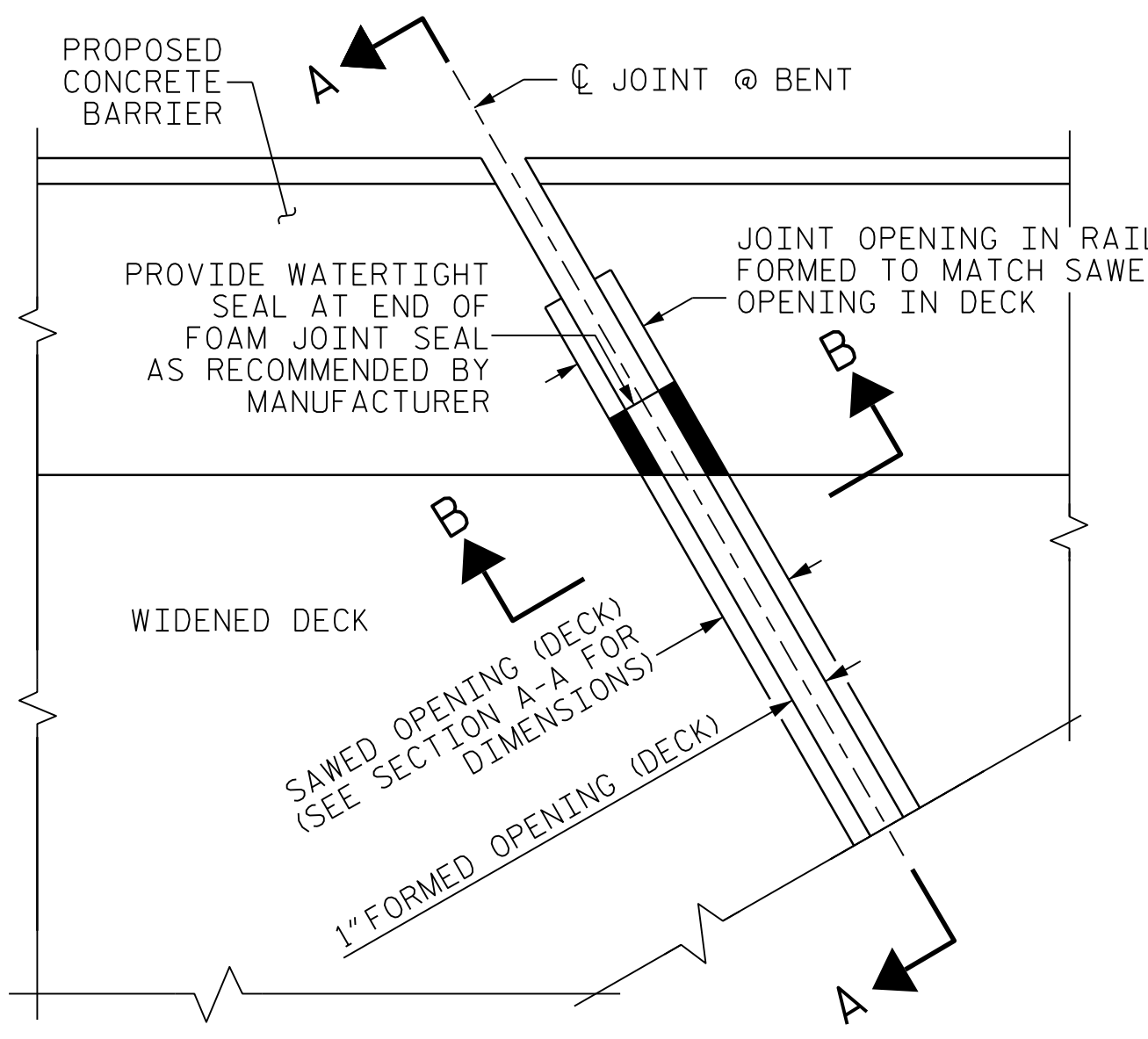
JOINT DETAILS ON PROPOSED WIDENED SLAB

NOTES

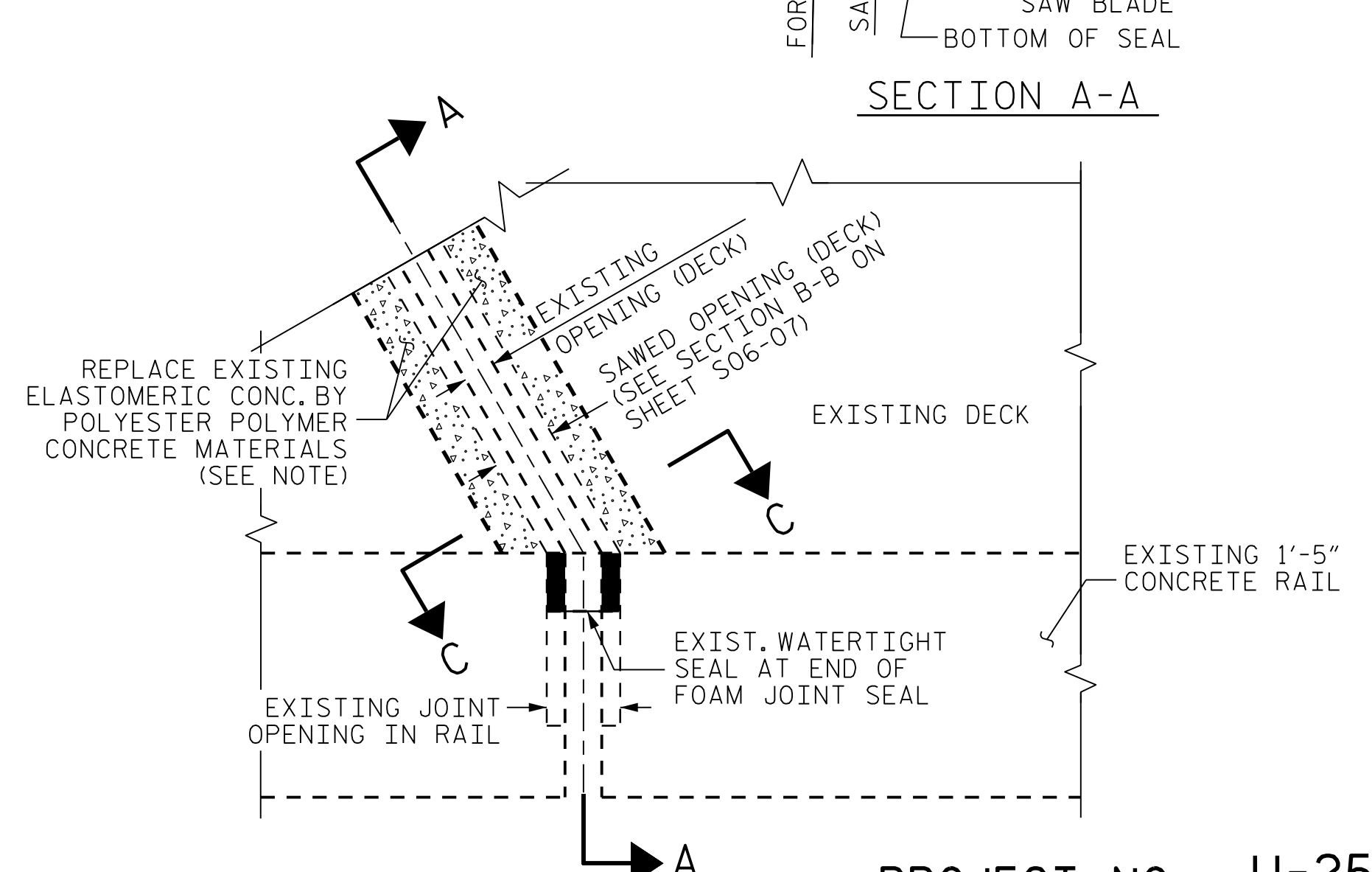
- FOR SELF LEVELING SILICONE AND BACKER ROD USED AT END BENTS, SEE "POURABLE SILICONE JOINT SEALANT" SPECIAL PROVISIONS.
- * CONTRACTOR SHALL FIELD VERIFY THE EXISTING FORMED OPENING AND THE SAWED JOINT OPENINGS FOR THE EXISTING JOINTS AND SHALL APPROPRIATELY SIZE ALL SAWED OPENINGS TO MATCH PRIOR TO OBTAINING JOINT MATERIAL.
- THE MANUFACTURER SHALL PROVIDE THE MINIMAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL FOR THE SIZE OF THE OPENING INDICATED ON THE PLANS OR AS MEASURED IN THE FIELD AND TO ACCOMMODATE THE MINIMUM EXPANSION INDICATED ON THE PLANS.
- FOAM JOINTS SHALL BE INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS.
- THE CONTRACTOR WILL NOT BE PERMITTED TO FORM THE JOINTS IN LIEU OF SAWING THE JOINT.
- DURING THE JOINT INSTALLATION PROCEDURE, THE JOINT AND SURROUNDING AREA SHALL BE KEPT CLEAN AND FREE OF DEBRIS.
- FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.
- FOR FOAM JOINT SEALS USED FOR JOINT AT BENTS 1 AND 2, SEE "FOAM JOINT SEALS FOR PRESERVATION" SPECIAL PROVISIONS.
- FOR POLYMER CONCRETE (PC) OVERLAY ON BRIDGE DECKS AND POLYESTER POLYMER CONCRETE (PPC) MATERIALS USED FOR JOINT HEADER REPAIR, SEE "POLYMER CONCRETE BRIDGE DECK OVERLAY" SPECIAL PROVISIONS.



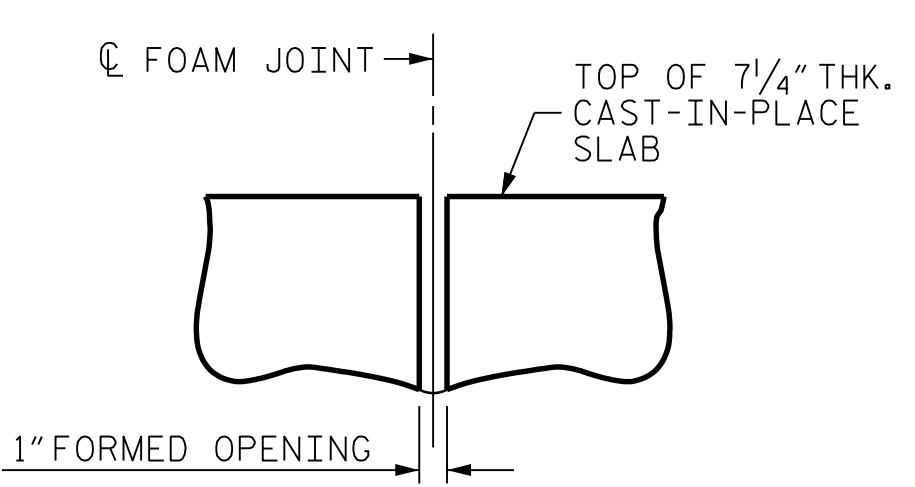
SECTION A-A



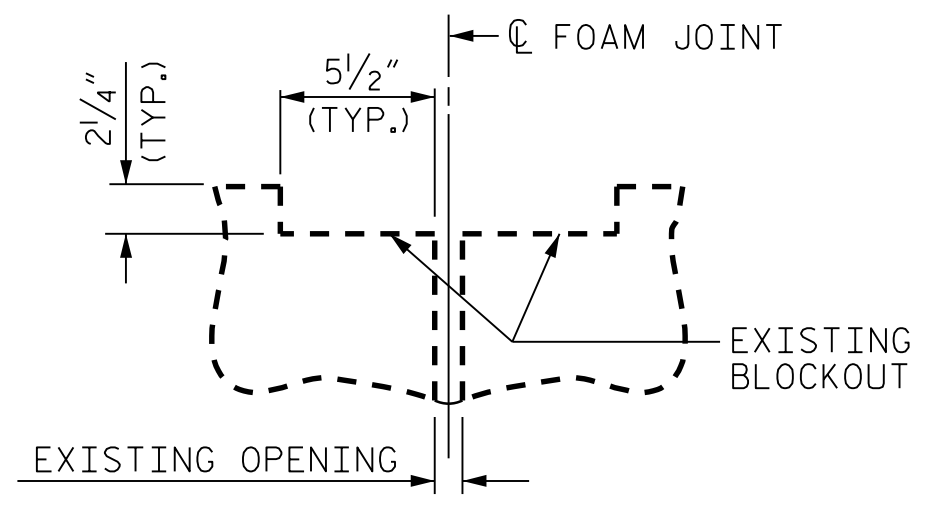
PLAN
PROPOSED RAIL DETAILS ON WIDENED DECK (LEFT SIDE)



PLAN
EXISTING RAIL DETAILS ON EXISTING DECK (RIGHT SIDE)



SECTION B-B
PRE-SAWED FOAM JOINT



SECTION C-C
EXISTING ELASTOMERIC CONC. OR POLYESTER POLYMER CONCRETE MATERIALS NOT SHOWN FOR CLARITY

JOINT SEAL DETAILS FOR RAILS AT BENT

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 20+68.01 -Y2NBL-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION
AND JOINT DETAILS
ON WIDENED SLAB
LEFT LANE (NBL)

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S06-10	
1			3			TOTAL SHEETS	
2			4			31	

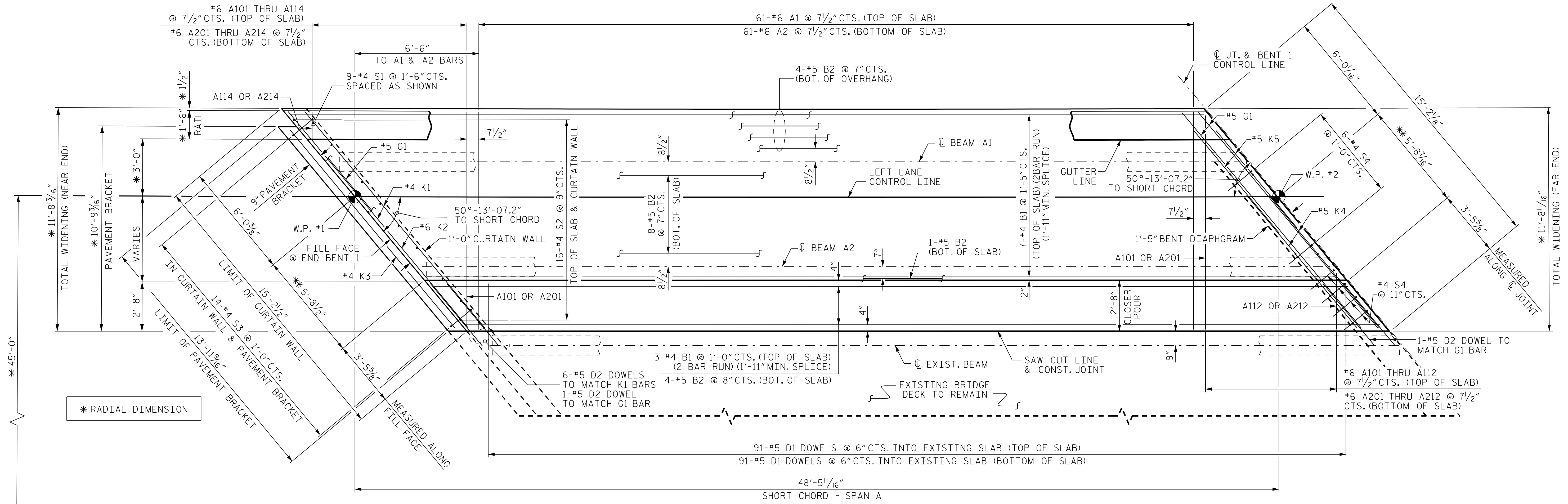
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NC COA No. F-1255

CHECKED BY: THF DATE: 9/18
DESIGN ENGINEER: VDK DATE: 9/18

DWG. No.

NORTH CAROLINA PROFESSIONAL SEAL 16301
ENGINEER
TING FANG
7/18/2022



SPAN A

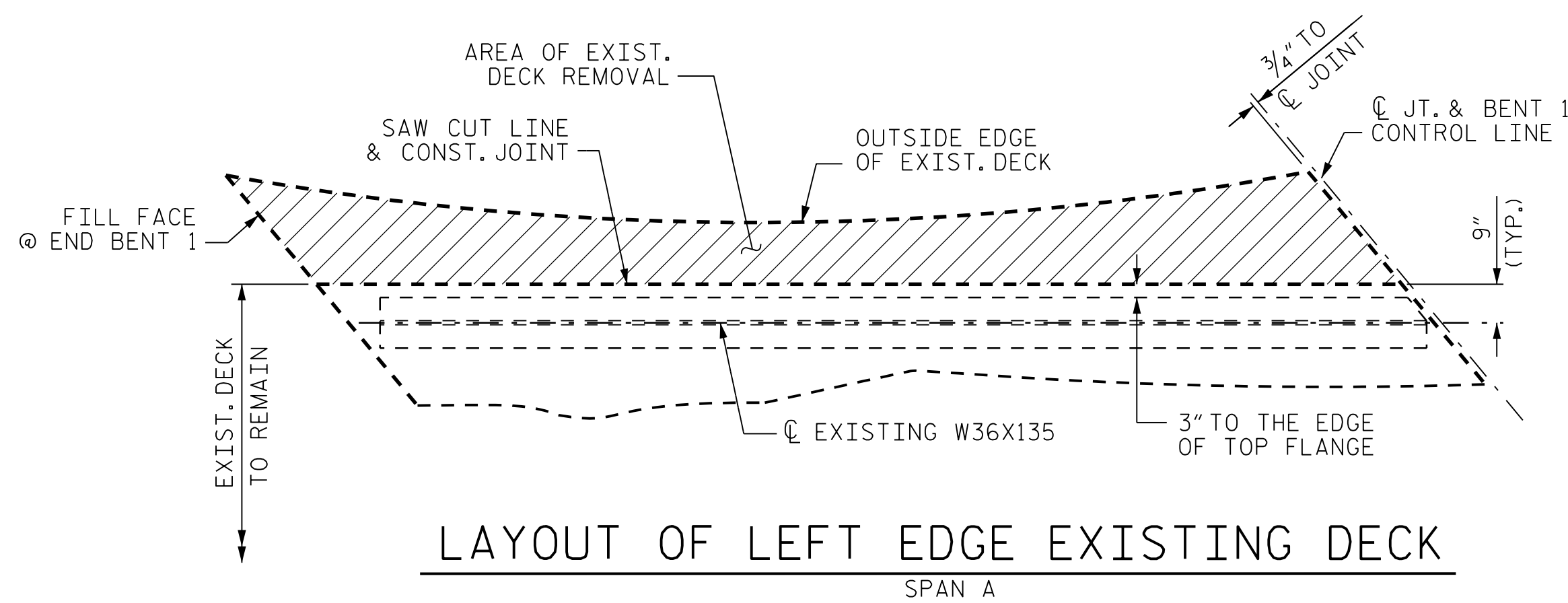
* DIMENSION BASED ON THE BEST AVAILABLE INFORMATION FOR THE EXISTING BRIDGE. FIELD ADJUSTMENT MAY BE REQUIRED AS APPROVED BY THE ENGINEER.

NOTES

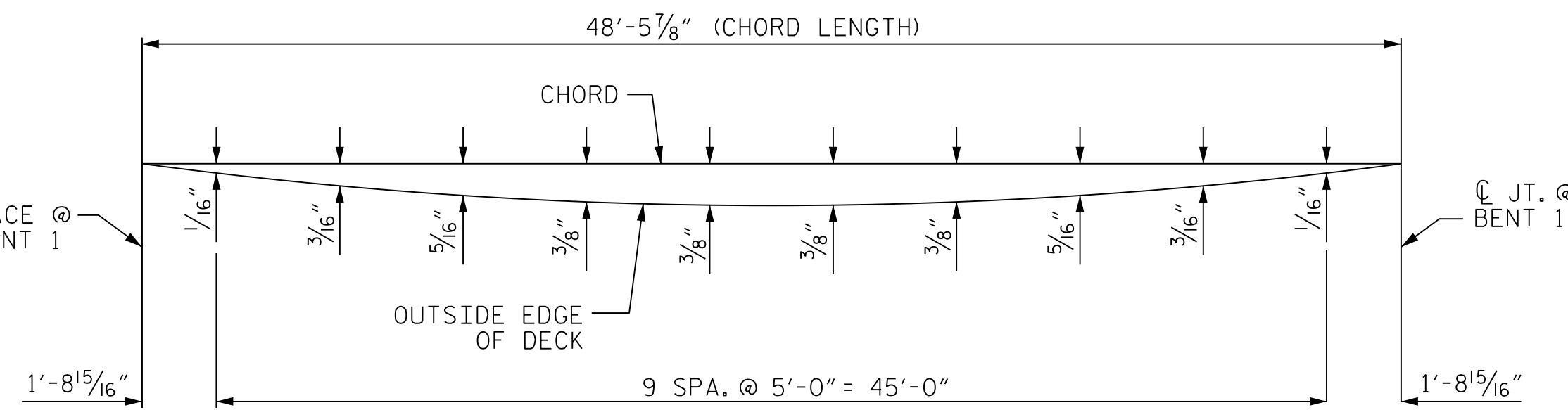
ALL "A" BARS SHALL BE PLACED PERPENDICULAR TO THE SHORT CHORD.

MAINTAIN MINIMUM 2" CLEARANCE TO SLAB STEEL AT OUTSIDE EDGE AND JOINT EDGES OF THE PROPOSED WIDENING DECK SLAB.

THE #5 D1 AND D2 DOWELS PLACED INTO THE EXISTING DECK, CURTAIN WALL AND PAVEMENT BRACKET SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM. LEVEL 1 FIELD TESTING IS REQUIRED AND THE YIELD LOAD FOR #5 D1 AND D2 DOWELS ARE 18.6 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SECTION 420-13 OF THE STANDARD SPECIFICATIONS.



LAYOUT OF LEFT EDGE EXISTING DECK



ARC OFFSETS - LEFT EDGE

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 20+68.01 -Y2NBL-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE

PLAN OF SPAN A
 LEFT LANE (NBL)

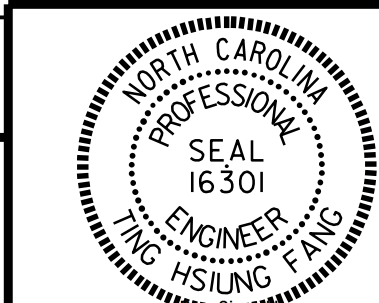
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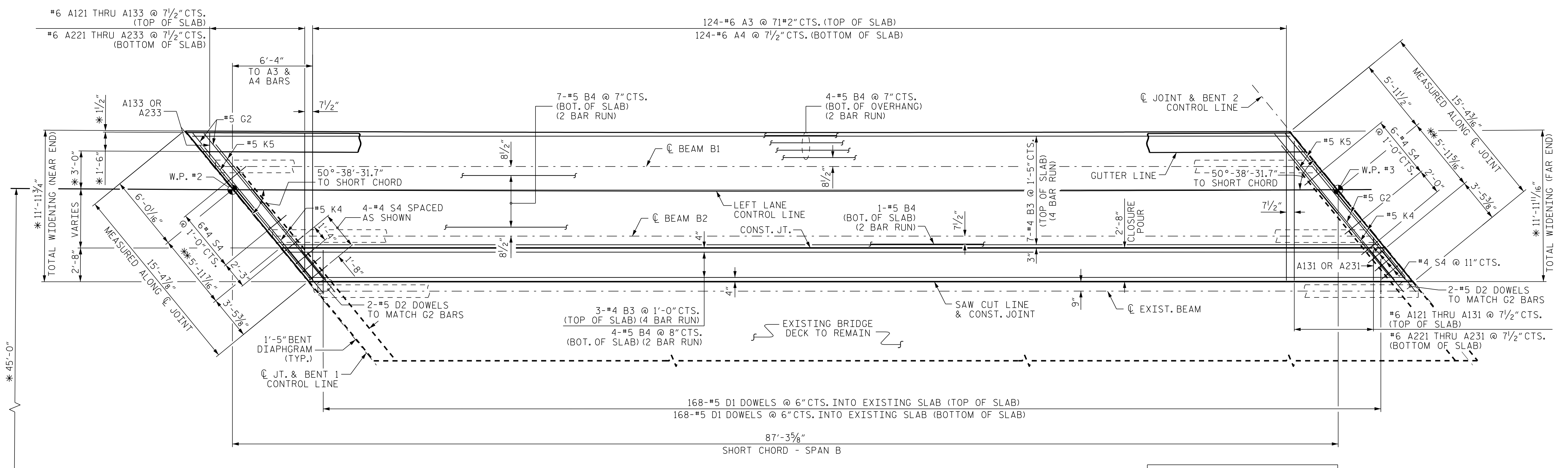
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S06-II
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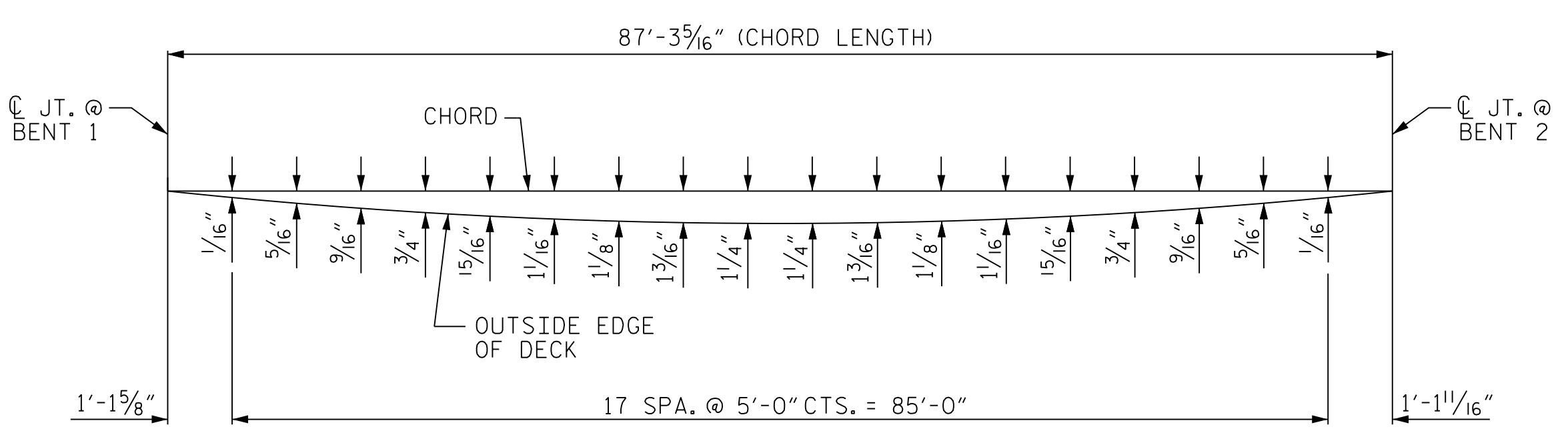
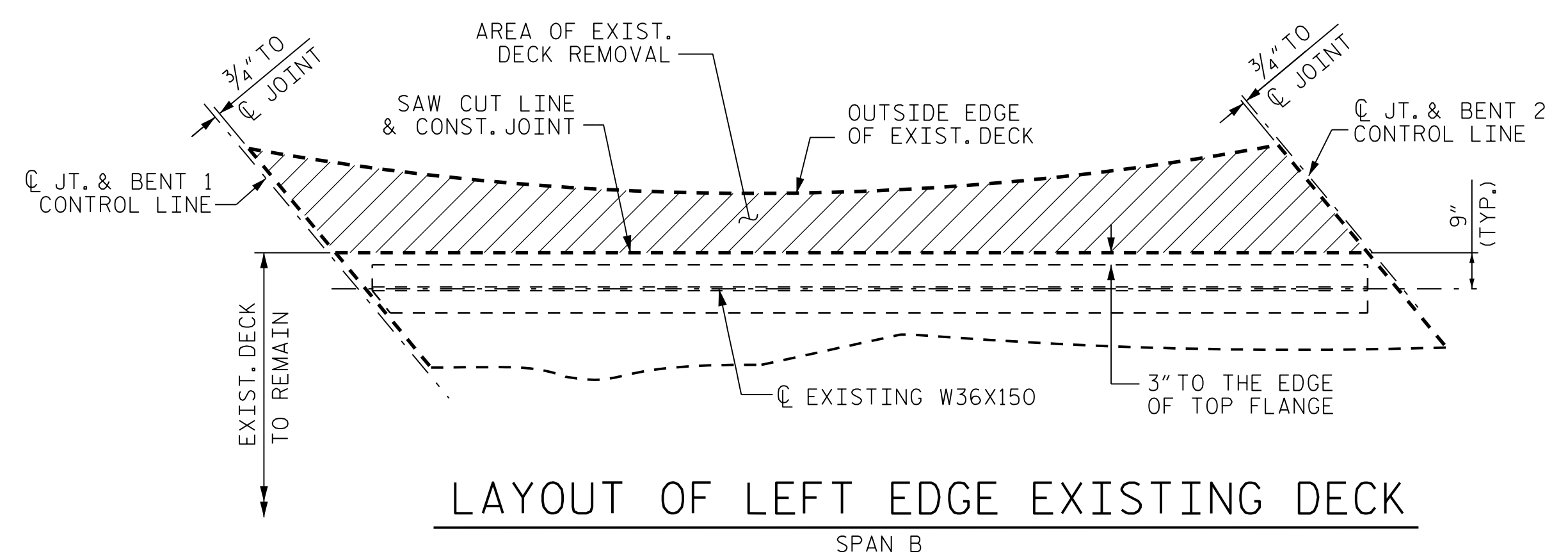
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 DRAWN BY : VDK DATE : 9/18
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 DESIGN ENGINEER : VDK DATE : 9/18



* RADIAL DIMENSION

SPAN B
 * DIMENSION BASED ON THE BEST AVAILABLE INFORMATION FOR THE EXISTING BRIDGE. FIELD ADJUSTMENT MAY BE REQUIRED AS APPROVED BY THE ENGINEER.

#4 B3 MIN. SPLICE LENGTH = 1'-11"
 #5 B4 MIN. SPLICE LENGTH = 2'-0"



PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 20+68.01 -Y2NBL-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE

PLAN OF SPAN B

LEFT LANE (NBL)

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

SHEET NO. **S06-12**
 TOTAL SHEETS **31**

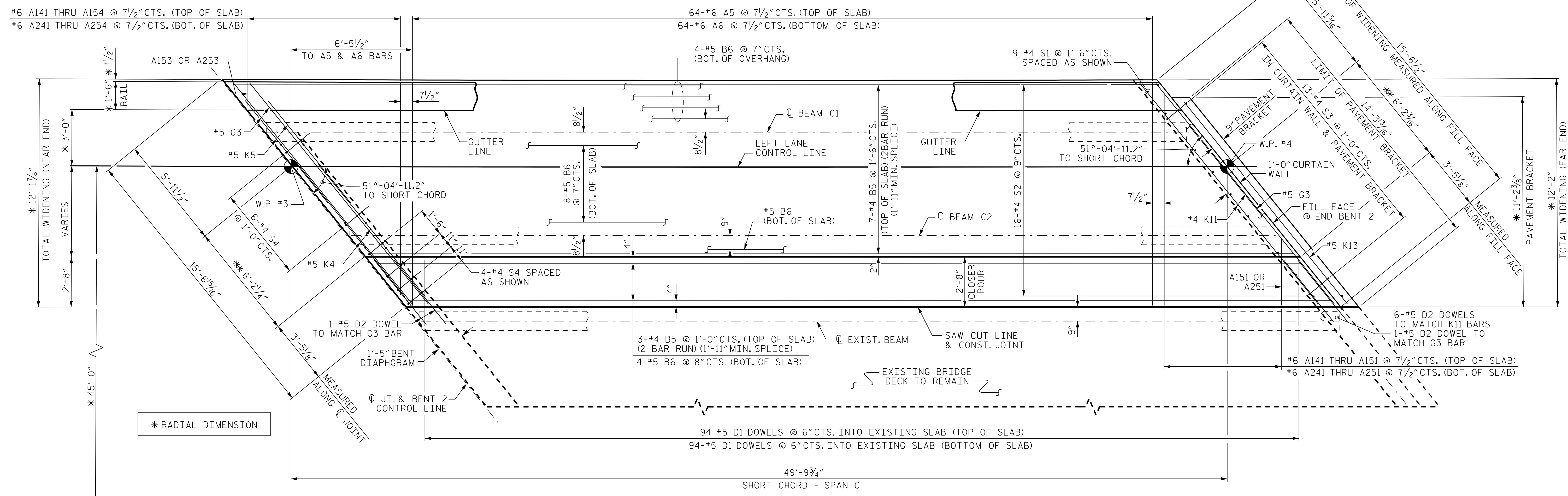
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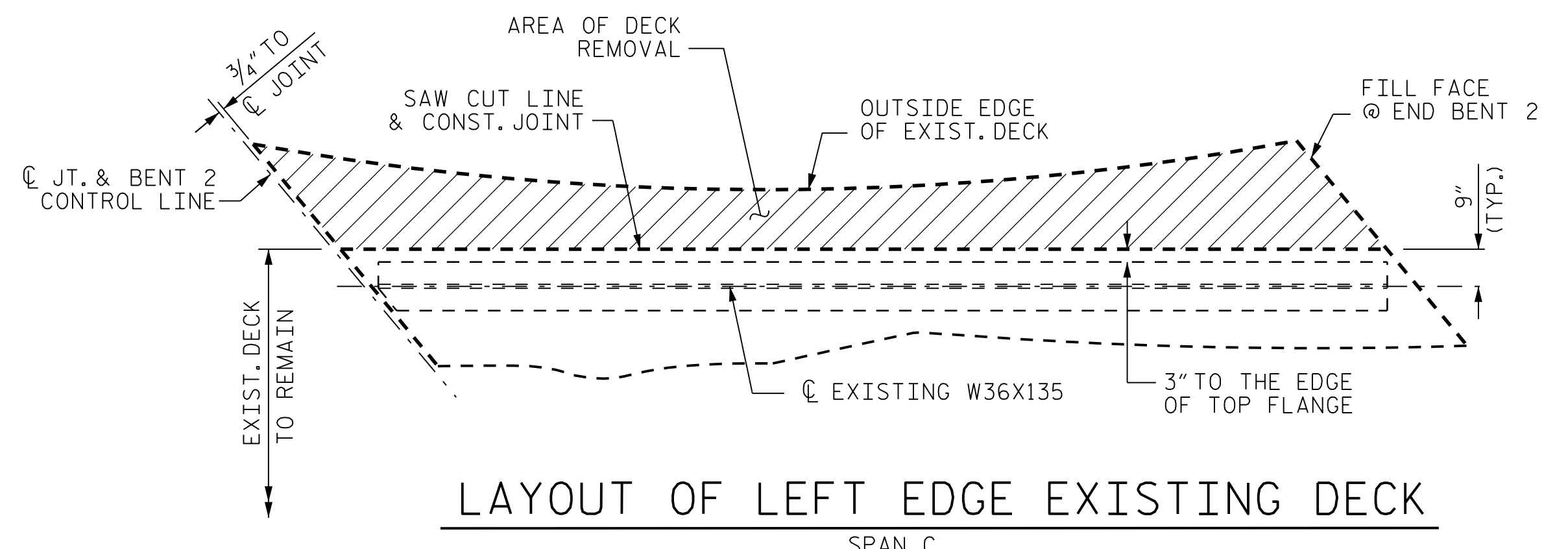
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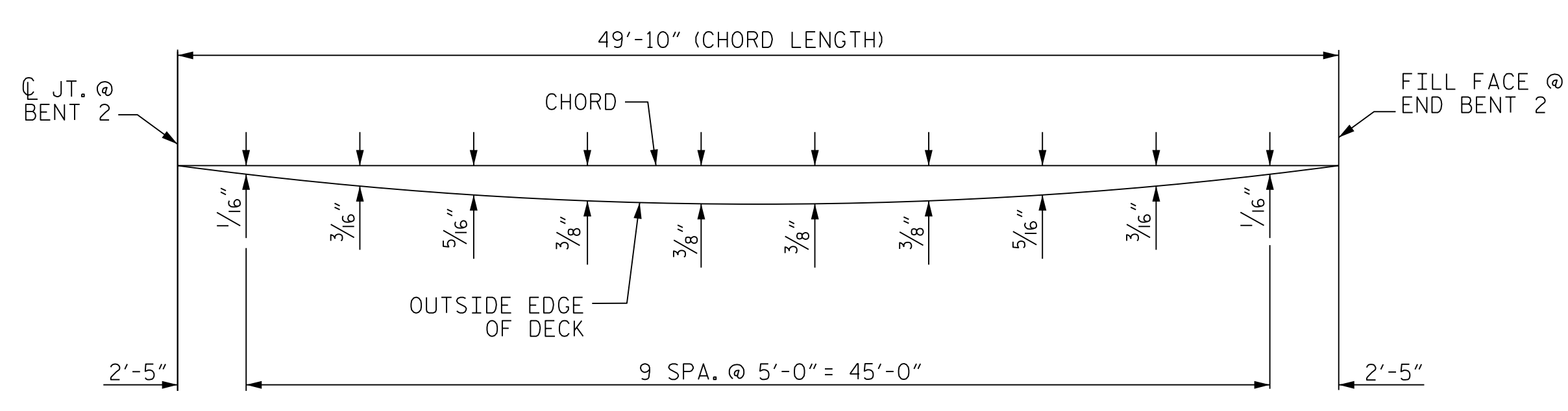
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 16301
 TING FANG
 7788202200462



SPAN C
 **DIMENSION BASED ON THE BEST AVAILABLE INFORMATION FOR THE EXISTING BRIDGE. FIELD ADJUSTMENT MAY BE REQUIRED AS APPROVED BY THE ENGINEER.



LAYOUT OF LEFT EDGE EXISTING DECK
 SPAN C



ARC OFFSETS - LEFT EDGE
 SPAN C

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 20+68.01 -Y2NBL-

SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
PLAN OF SPAN C					
LEFT LANE (NBL)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S06-13
TOTAL SHEETS					31

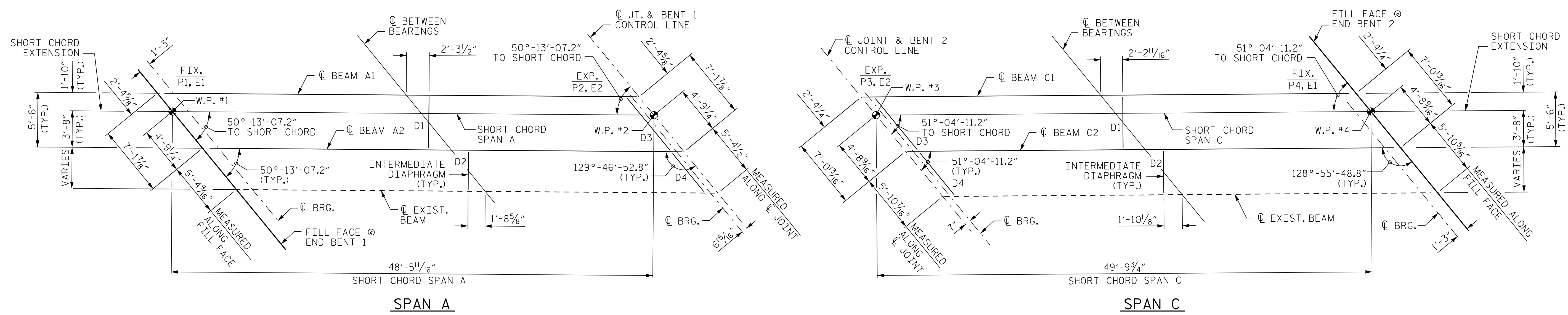
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FILL FACE AND BENT 1 CONTROL LINE ARE PARALLEL.
 PROPOSED BEAMS A1 & A2 ARE PARALLEL TO SHORT CHORD SPAN A.
 INTERMEDIATE DIAPHRAGMS D1 & D2 ARE PERPENDICULAR TO CL BEAMS A1 & A2.

BENT 2 CONTROL LINE AND FILL FACE ARE PARALLEL.
 PROPOSED BEAM C1 & C2 ARE PARALLEL TO SHORT CHORD SPAN C.
 INTERMEDIATE DIAPHRAGMS D1 & D2 ARE PERPENDICULAR TO CL BEAMS C1 & C2.

FRAMING PLAN

DEAD LOAD DEFLECTION TABLE

SPAN A - BEAM 1																					
TWENTIETH POINTS	CL BRG.	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	CL BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.001	0.002	0.003	0.004	0.005	0.005	0.006	0.006	0.006	0.007	0.006	0.006	0.006	0.005	0.005	0.004	0.003	0.002	0.001	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.006	0.011	0.016	0.021	0.025	0.029	0.032	0.034	0.035	0.036	0.035	0.034	0.032	0.029	0.025	0.021	0.016	0.011	0.006	0
DEFLECTION DUE TO WEIGHT OF RAIL	0	0.002	0.003	0.005	0.006	0.007	0.008	0.009	0.010	0.010	0.010	0.010	0.010	0.009	0.008	0.007	0.006	0.005	0.003	0.002	0
TOTAL DEAD LOAD DEFLECTION	0	0.008	0.017	0.024	0.031	0.037	0.043	0.046	0.050	0.051	0.053	0.051	0.050	0.046	0.043	0.037	0.031	0.024	0.017	0.008	0
VERTICAL CURVE ORDINATE	0	0.003	0.005	0.007	0.008	0.013	0.011	0.012	0.012	0.013	0.013	0.013	0.012	0.012	0.011	0.013	0.008	0.007	0.005	0.003	0
ORDINATE DUE TO SUPERELEVATION	0	0.000	0.000	0.000	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	0.000	0.000	0.000	0.000	0
REQUIRED CAMBER	0	1/8"	1/4"	3/8"	7/16"	9/16"	5/8"	11/16"	3/4"	3/4"	3/4"	3/4"	3/4"	1/2"	5/8"	9/16"	7/16"	3/8"	1/4"	1/8"	0

SPAN A - BEAM 2																					
TWENTIETH POINTS	CL BRG.	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	CL BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.001	0.002	0.003	0.004	0.005	0.005	0.006	0.006	0.006	0.007	0.006	0.006	0.006	0.005	0.005	0.004	0.003	0.002	0.001	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.005	0.010	0.014	0.019	0.022	0.026	0.028	0.030	0.031	0.031	0.031	0.030	0.028	0.026	0.022	0.019	0.014	0.010	0.005	0
DEFLECTION DUE TO WEIGHT OF RAIL	0	0.001	0.003	0.004	0.005	0.006	0.007	0.008	0.008	0.009	0.009	0.009	0.008	0.008	0.007	0.006	0.005	0.004	0.003	0.001	0
TOTAL DEAD LOAD DEFLECTION	0	0.007	0.015	0.021	0.028	0.033	0.038	0.041	0.045	0.046	0.047	0.046	0.045	0.041	0.038	0.033	0.028	0.021	0.015	0.007	0
VERTICAL CURVE ORDINATE	0	0.002	0.004	0.006	0.008	0.009	0.010	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.010	0.009	0.008	0.006	0.004	0.002	0
ORDINATE DUE TO SUPERELEVATION	0	0.000	0.000	0.000	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	0.000	0.000	0.000	0.000	0
REQUIRED CAMBER	0	1/8"	1/4"	5/16"	7/16"	1/2"	9/16"	5/8"	5/8"	11/16"	11/16"	11/16"	5/8"	5/8"	9/16"	1/2"	7/16"	5/16"	1/4"	1/8"	0

SPAN C - BEAM 1																					
TWENTIETH POINTS	CL BRG.	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	CL BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.001	0.002	0.003	0.004	0.005	0.005	0.006	0.006	0.006	0.007	0.006	0.006	0.006	0.005	0.005	0.004	0.003	0.002	0.001	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.006	0.011	0.016	0.021	0.025	0.029	0.032	0.034	0.035	0.036	0.035	0.034	0.032	0.029	0.025	0.021	0.016	0.011	0.006	0
DEFLECTION DUE TO WEIGHT OF RAIL	0	0.002	0.003	0.005	0.006	0.007	0.008	0.009	0.010	0.010	0.010	0.010	0.010	0.009	0.008	0.007	0.006	0.005	0.003	0.002	0
TOTAL DEAD LOAD DEFLECTION	0	0.008	0.017	0.024	0.031	0.037	0.043	0.046	0.050	0.051	0.053	0.051	0.050	0.046	0.043	0.037	0.031	0.024	0.017	0.008	0
VERTICAL CURVE ORDINATE	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
ORDINATE DUE TO SUPERELEVATION	0	0.000	0.000	0.000	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	0.000	0.000	0.000	0.000	0
REQUIRED CAMBER	0	1/8"	3/16"	1/4"	3/8"	7/16"	1/2"	9/16"	5/8"	5/8"	5/8"	5/8"	9/16"	9/16"	1/2"	7/16"	3/8"	1/4"	3/16"	1/8"	0

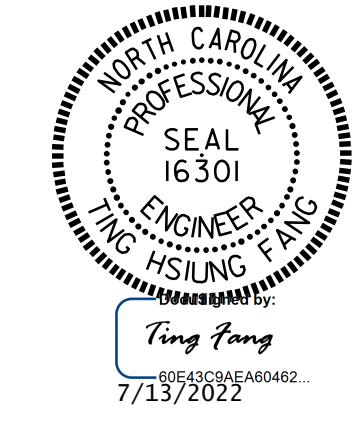
SPAN C - BEAM 2																					
TWENTIETH POINTS	CL BRG.	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	CL BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.001	0.002	0.003	0.004	0.005	0.005	0.006	0.006	0.006	0.007	0.006	0.006	0.006	0.005	0.005	0.004	0.003	0.002	0.001	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.005	0.010	0.014	0.019	0.022	0.026	0.028	0.030	0.031	0.031	0.031	0.030	0.028	0.026	0.022	0.019	0.014	0.010	0.005	0
DEFLECTION DUE TO WEIGHT OF RAIL	0	0.001	0.003	0.004	0.005	0.006	0.007	0.008	0.008	0.009	0.009	0.009	0.008	0.008	0.007	0.006	0.005	0.004	0.003	0.001	0
TOTAL DEAD LOAD DEFLECTION	0	0.007	0.015	0.021	0.028	0.033	0.038	0.041	0.045	0.046	0.047	0.046	0.045	0.041	0.038	0.033	0.028	0.021	0.015	0.007	0
VERTICAL CURVE ORDINATE	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
ORDINATE DUE TO SUPERELEVATION	0	0.000	0.000	0.000	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	0.000	0.000	0.000	0.000	0
REQUIRED CAMBER	0	1/16"	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	1/2"	9/16"	9/16"	9/16"	1/2"	1/2"	7/16"	3/8"	5/16"	1/4"	3/16"	1/16"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
 ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 20+68.01 -Y2NBL-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
**FRAMING PLAN AND
 DEAD LOAD DEFLECTIONS**
 SPANS A & C
 LEFT LANE (NBL)



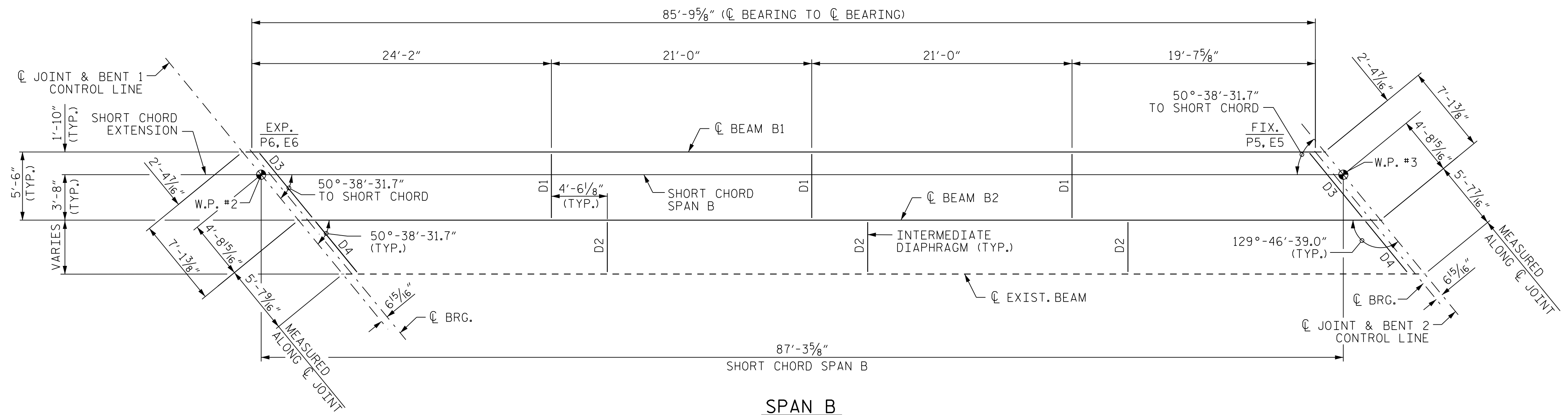
CDM Smith
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
 NC COA No. F-1255

DRAWN BY: VDK DATE: 9/18
 CHECKED BY: THF DATE: 9/18
 DESIGN ENGINEER: VDK DATE: 9/18

DWG. No. _____

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NO.	BY:	DATE:	NO.	BY:	DATE:	S06-14	
1			3			TOTAL SHEETS	
2			4			31	



ALL BENT CONTROL LINES ARE PARALLEL.
 PROPOSED BEAM B1 & B2 ARE PARALLEL TO SHORT CHORD SPAN B.
 INTERMEDIATE DIAPHRAGMS D1 & D2 ARE PERPENDICULAR TO CL BEAMS B1 & B2.

FRAMING PLAN

DEAD LOAD DEFLECTION TABLE																					
SPAN B - BEAM 1																					
TWENTIETH POINTS	CL BRG.	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	CL BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.010	0.019	0.027	0.035	0.042	0.048	0.052	0.056	0.058	0.059	0.058	0.056	0.052	0.048	0.042	0.035	0.027	0.019	0.010	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.038	0.077	0.110	0.143	0.169	0.194	0.211	0.227	0.232	0.238	0.232	0.227	0.211	0.194	0.169	0.143	0.110	0.077	0.038	0
DEFLECTION DUE TO WEIGHT OF RAIL	0	0.011	0.022	0.031	0.041	0.048	0.055	0.060	0.065	0.066	0.068	0.066	0.065	0.060	0.055	0.048	0.041	0.031	0.022	0.011	0
TOTAL DEAD LOAD DEFLECTION	0	0.059	0.118	0.168	0.219	0.258	0.298	0.323	0.348	0.356	0.365	0.356	0.348	0.323	0.298	0.258	0.219	0.168	0.118	0.059	0
VERTICAL CURVE ORDINATE	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
ORDINATE DUE TO SUPERELEVATION	0	0.000	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.001	-0.001	-0.001	-0.001	0.000	0.000	0
REQUIRED CAMBER	0	1/16"	1/16"	2	2 5/8"	3/16"	3/16"	3 7/8"	4 1/8"	4 1/4"	4 3/8"	4 1/4"	4 1/8"	3 7/8"	3 3/16"	3 1/16"	2 5/8"	2	1 7/16"	1 1/16"	0
SPAN B - BEAM 2																					
TWENTIETH POINTS	CL BRG.	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	CL BRG.
DEFLECTION DUE TO WEIGHT OF GIRDER	0	0.010	0.019	0.027	0.035	0.042	0.048	0.052	0.056	0.058	0.059	0.058	0.056	0.052	0.048	0.042	0.035	0.027	0.019	0.010	0
DEFLECTION DUE TO WEIGHT OF SLAB *	0	0.033	0.067	0.095	0.124	0.146	0.169	0.183	0.197	0.202	0.207	0.202	0.197	0.183	0.169	0.146	0.124	0.095	0.067	0.033	0
DEFLECTION DUE TO WEIGHT OF RAIL	0	0.010	0.019	0.027	0.036	0.042	0.048	0.052	0.057	0.058	0.059	0.058	0.057	0.052	0.048	0.042	0.036	0.027	0.019	0.010	0
TOTAL DEAD LOAD DEFLECTION	0	0.015	0.105	0.150	0.195	0.230	0.265	0.287	0.310	0.317	0.325	0.317	0.310	0.287	0.265	0.230	0.195	0.150	0.105	0.015	0
VERTICAL CURVE ORDINATE	0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0
ORDINATE DUE TO SUPERELEVATION	0	0.000	0.000	-0.001	-0.001	-0.001	-0.001	-0.001	-0.002	-0.002	-0.002	-0.002	-0.002	-0.002	-0.001	-0.001	-0.001	-0.001	0.000	0.000	0
REQUIRED CAMBER	0	5/8"	1 1/4"	1 13/16"	2 5/16"	2 3/4"	3 3/16"	3 7/16"	3 11/16"	3 13/16"	3 7/8"	3 3/16"	3 11/16"	3 7/16"	3 3/16"	2 3/4"	2 5/16"	1 13/16"	1 1/4"	5/8"	0

* INCLUDES SLAB, BUILDUPS & STAY-IN-PLACE FORMS.
 ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 20+68.01 -Y2NBL-

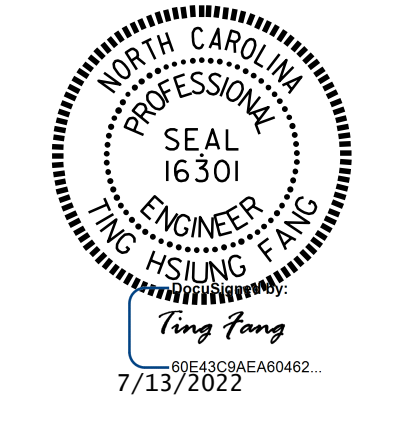
SHEET 2 OF 2

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CDM Smith
 CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
 NC COA No. F-1255

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 DESIGN ENGINEER : VDK DATE : 9/18

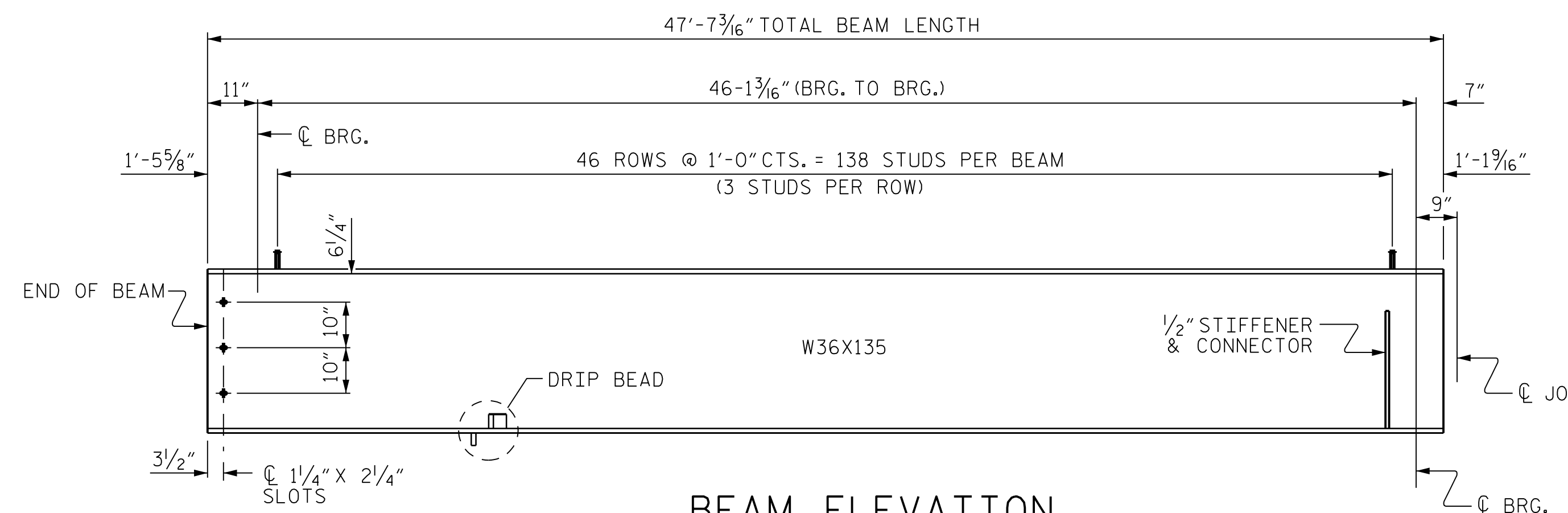
DWG. No.



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
**FRAMING PLAN AND
 DEAD LOAD DEFLECTIONS**
 SPAN B
 LEFT LANE (NBL)

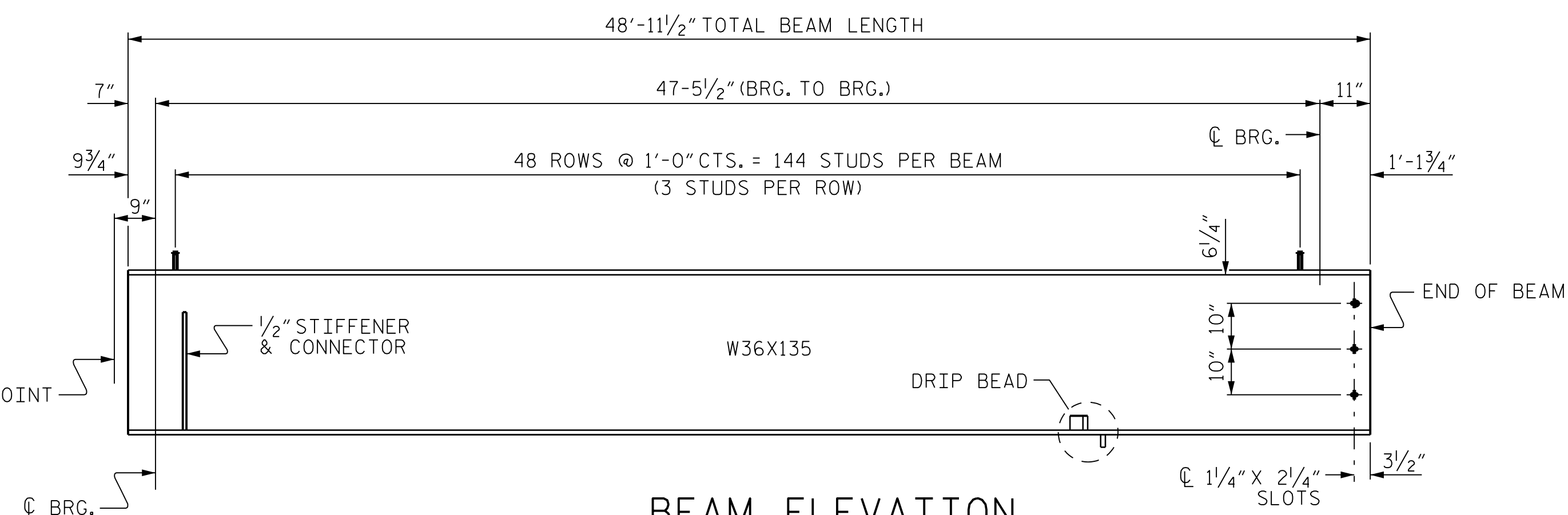
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NO.	BY:	DATE:	NO.	BY:	DATE:
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SHEET NO.
S06-15
 TOTAL SHEETS
31



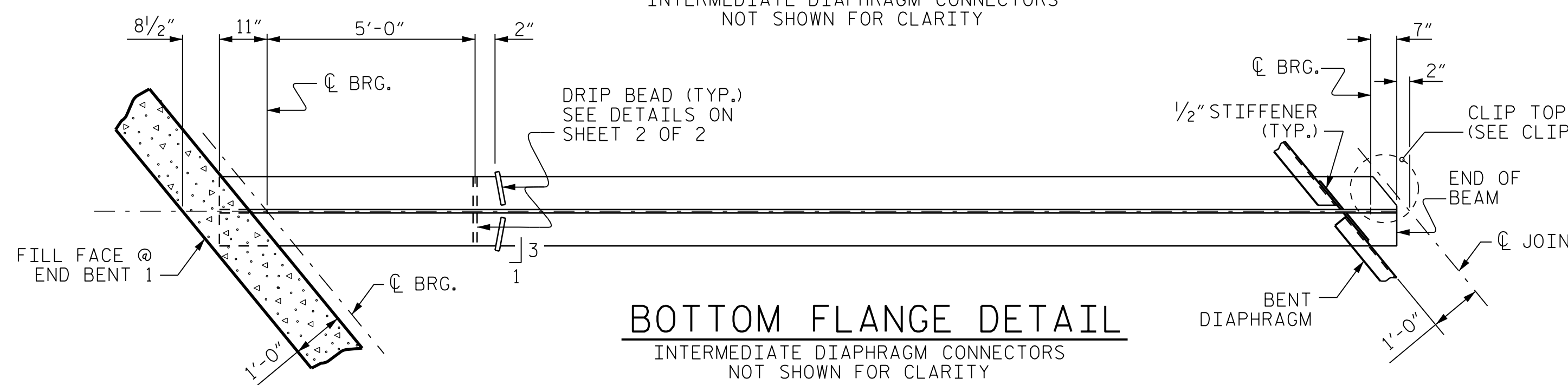
BEAM ELEVATION

INTERMEDIATE DIAPHRAGM CONNECTORS NOT SHOWN FOR CLARITY



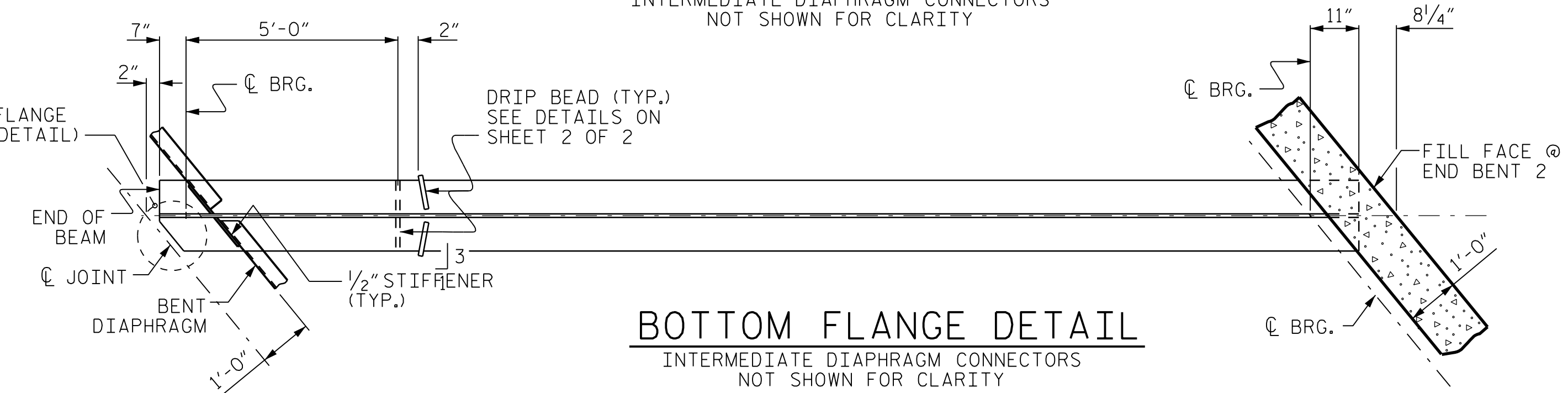
BEAM ELEVATION

INTERMEDIATE DIAPHRAGM CONNECTORS NOT SHOWN FOR CLARITY



BOTTOM FLANGE DETAIL

INTERMEDIATE DIAPHRAGM CONNECTORS NOT SHOWN FOR CLARITY

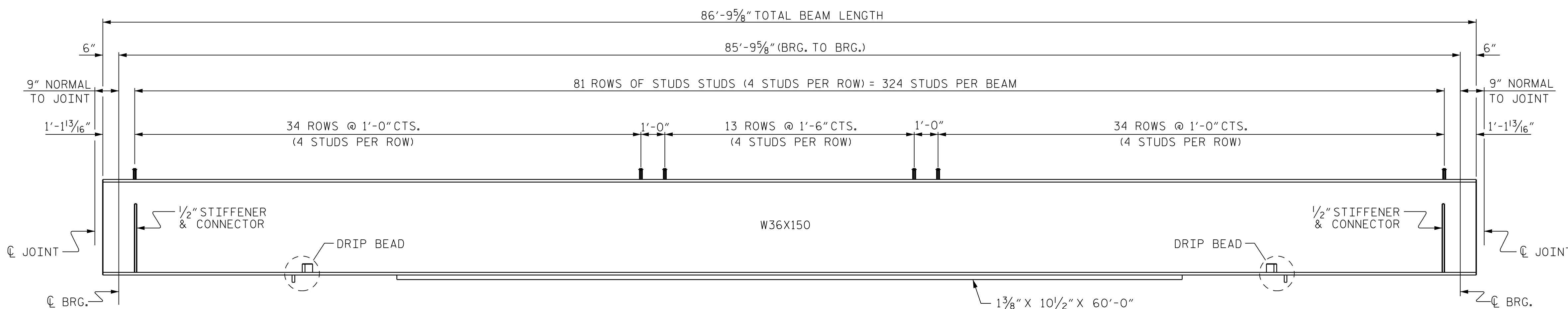


BOTTOM FLANGE DETAIL

INTERMEDIATE DIAPHRAGM CONNECTORS NOT SHOWN FOR CLARITY

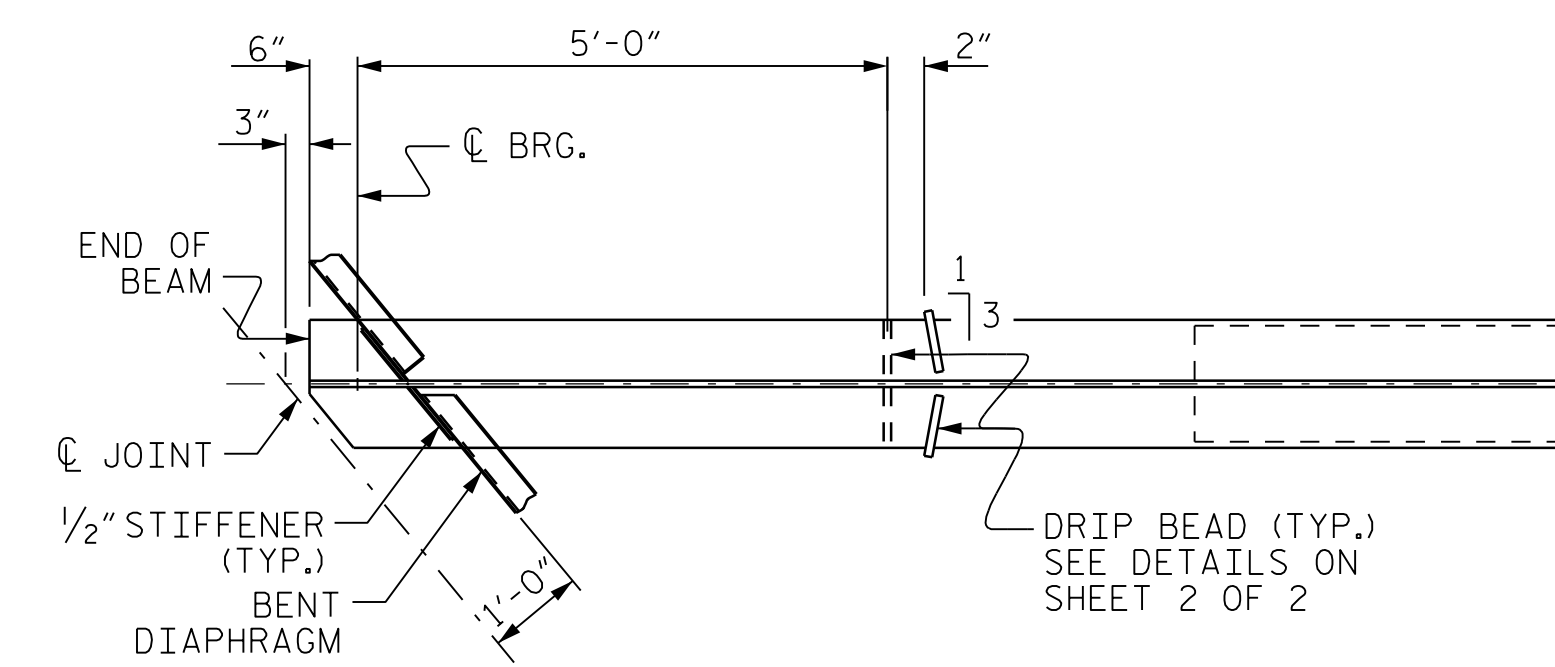
SPAN A

SPAN C



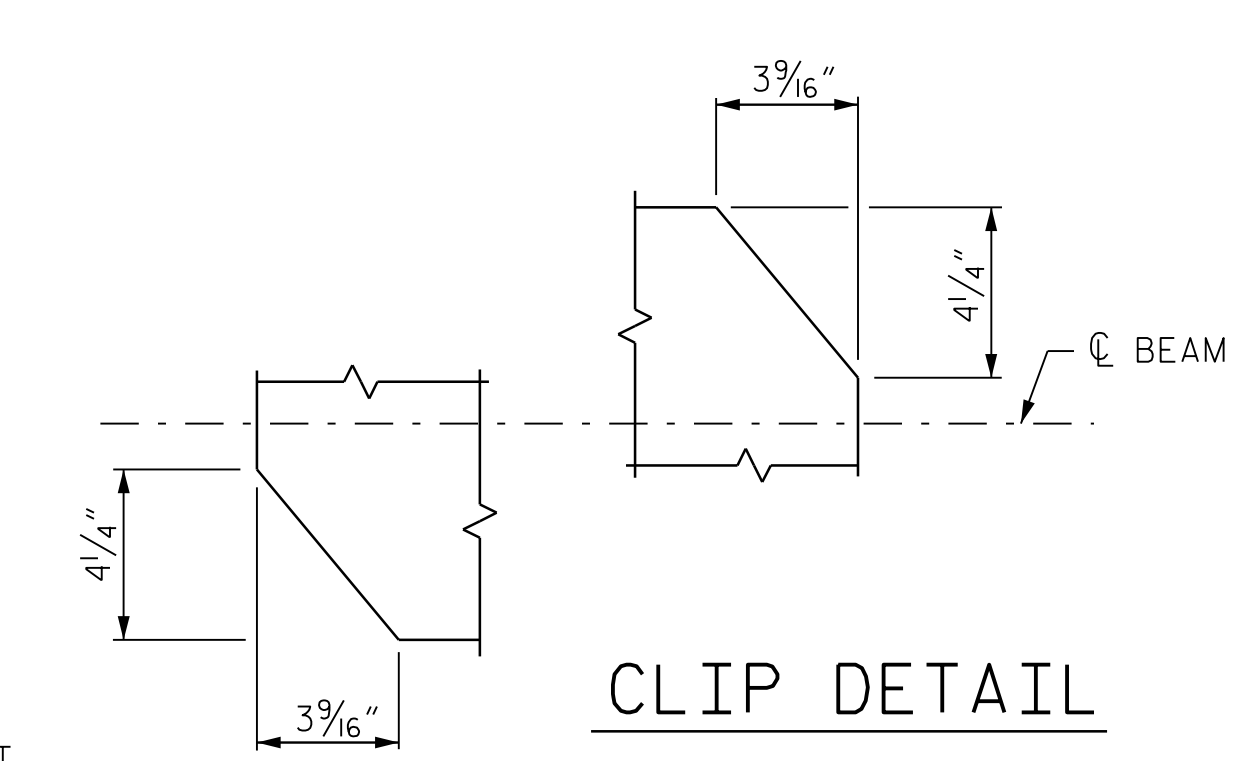
BEAM ELEVATION

INTERMEDIATE DIAPHRAGM CONNECTORS NOT SHOWN FOR CLARITY



BOTTOM FLANGE DETAIL

INTERMEDIATE DIAPHRAGM CONNECTORS NOT SHOWN FOR CLARITY



CLIP DETAIL

SPAN B

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 20+68.01 - Y2NBL -

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
STRUCTURAL STEEL
DETAILS
SPANS A, B & C
LEFT LANE (NBL)

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

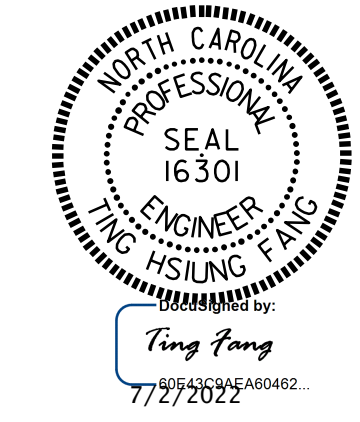
TOTAL SHEETS: 31

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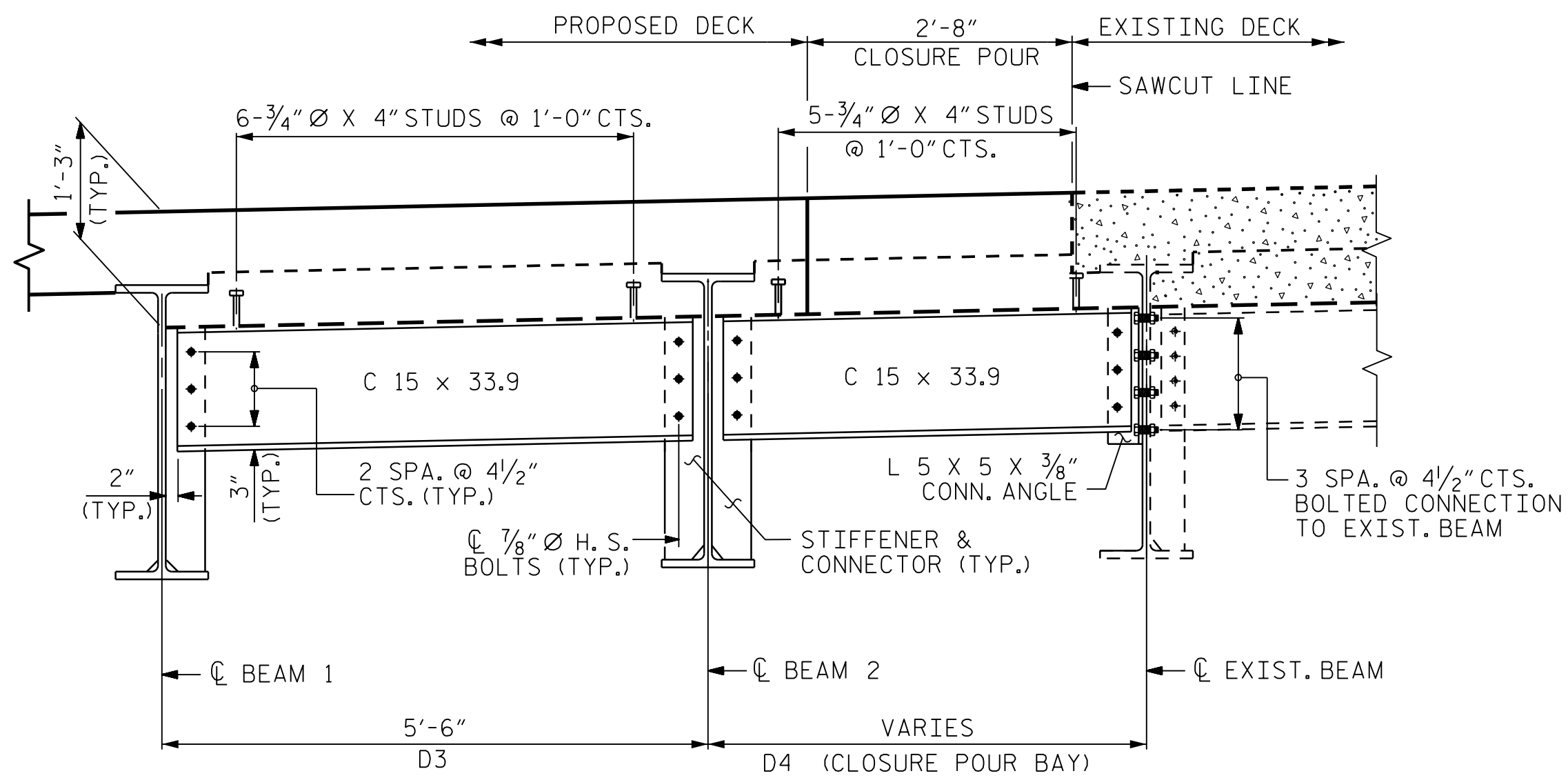
CDM Smith
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5400 Glenwood Avenue, Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

DWG. No. _____

DRAWN BY: VDK DATE: 9/18
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DESIGN ENGINEER: VDK DATE: 9/18

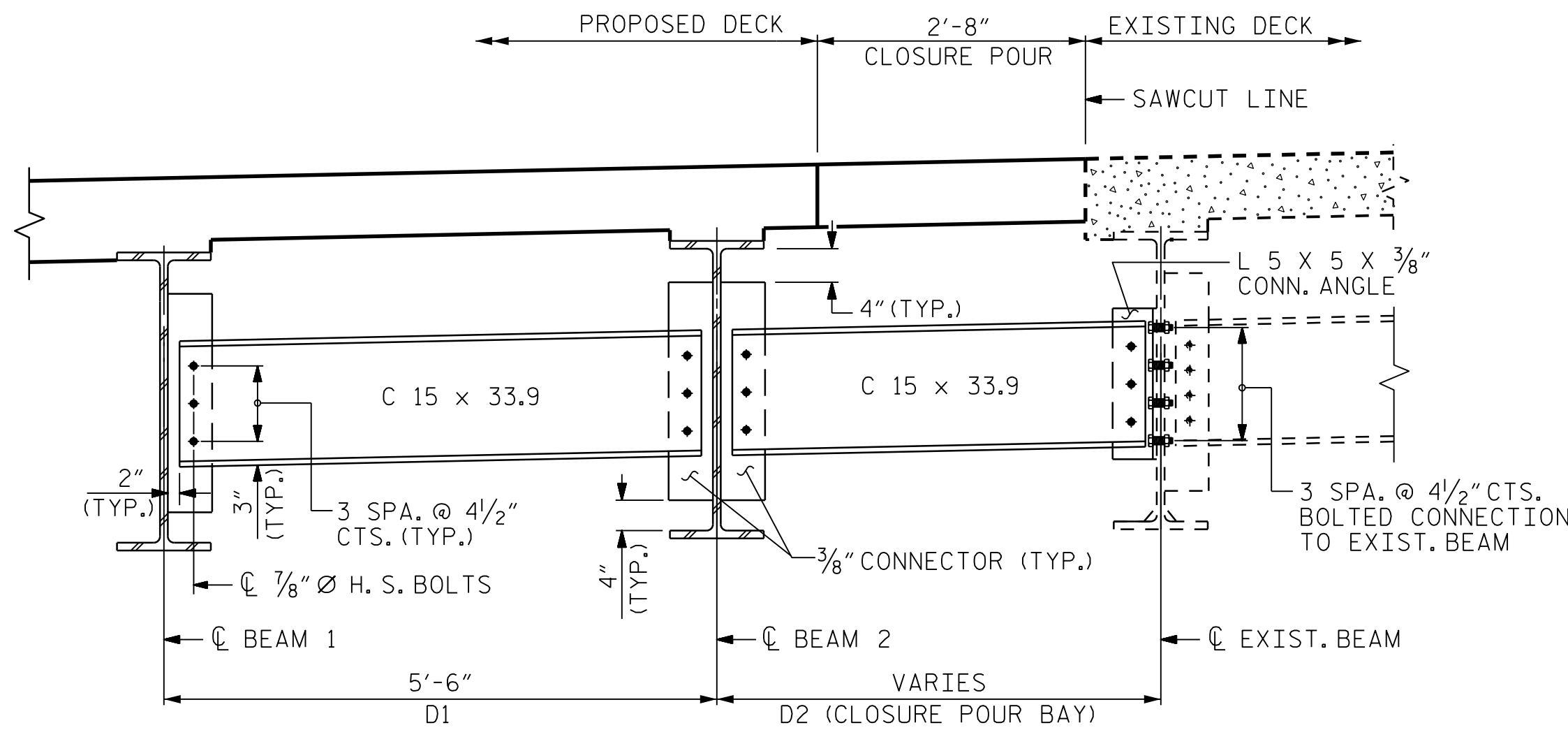


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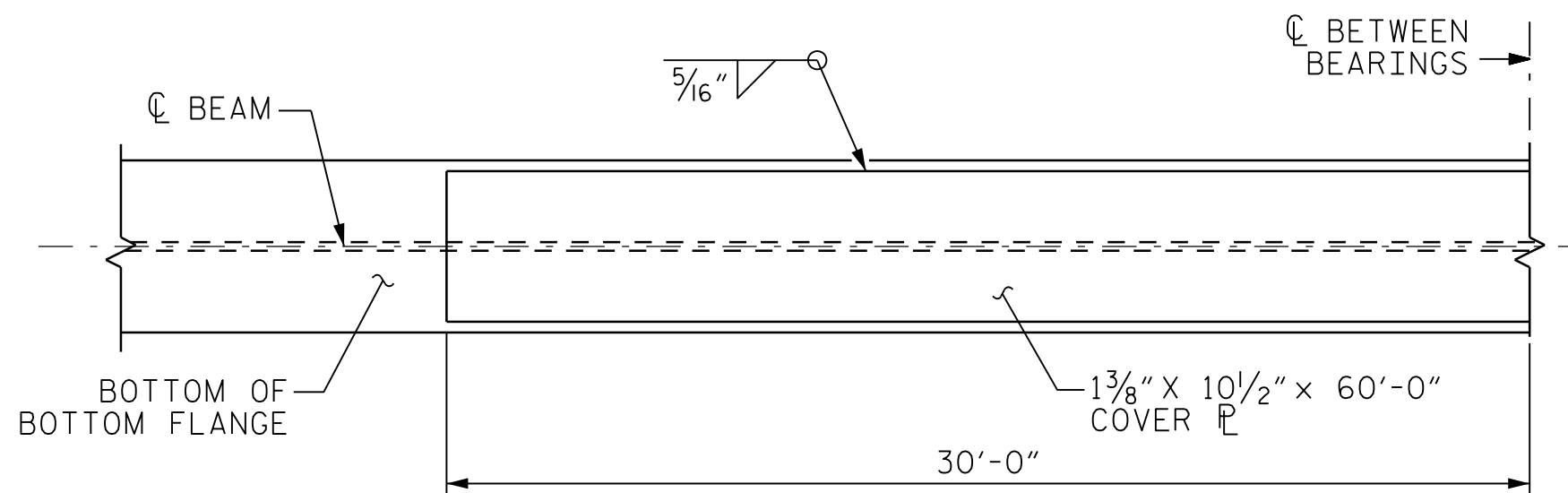
TYPICAL BENT DIAPHRAGM

BOLT HOLES FOR BENT DIAPHRAGM IN THE CLOSURE POUR BAY SHALL BE FIELD DRILLED

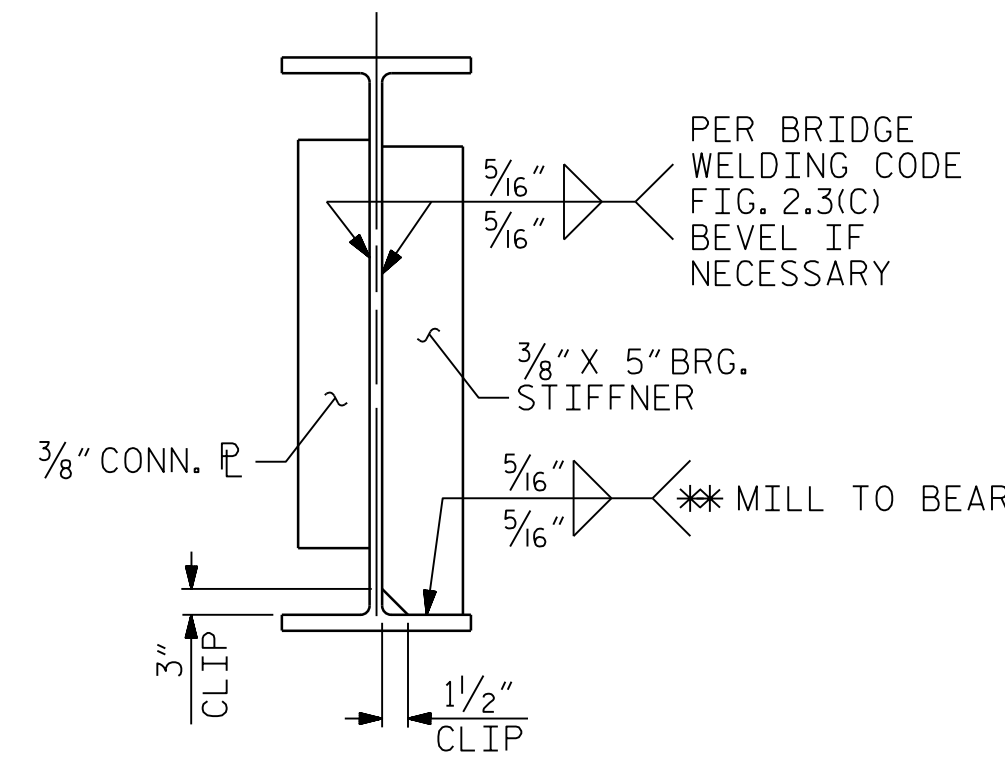


TYPICAL INTERMEDIATE DIAPHRAGM

BOLT HOLES FOR INTERMEDIATE DIAPHRAGM IN THE CLOSURE POUR BAY SHALL BE FIELD DRILLED

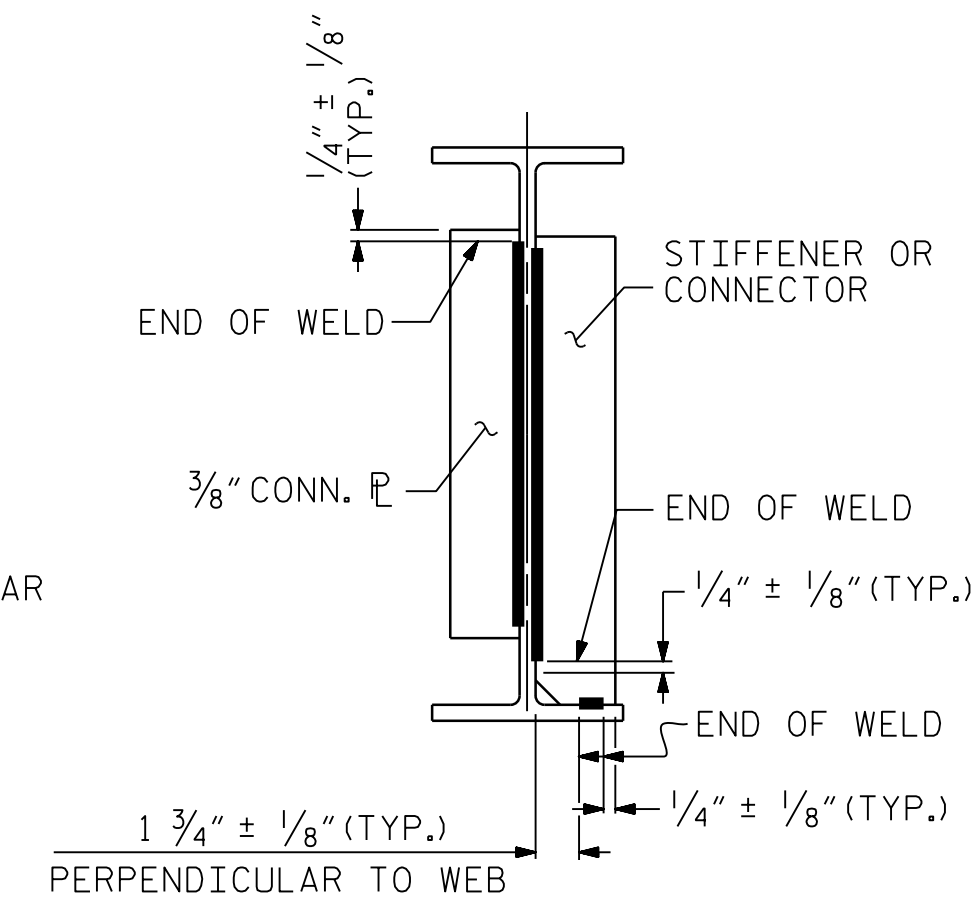


COVER PLATE DETAIL



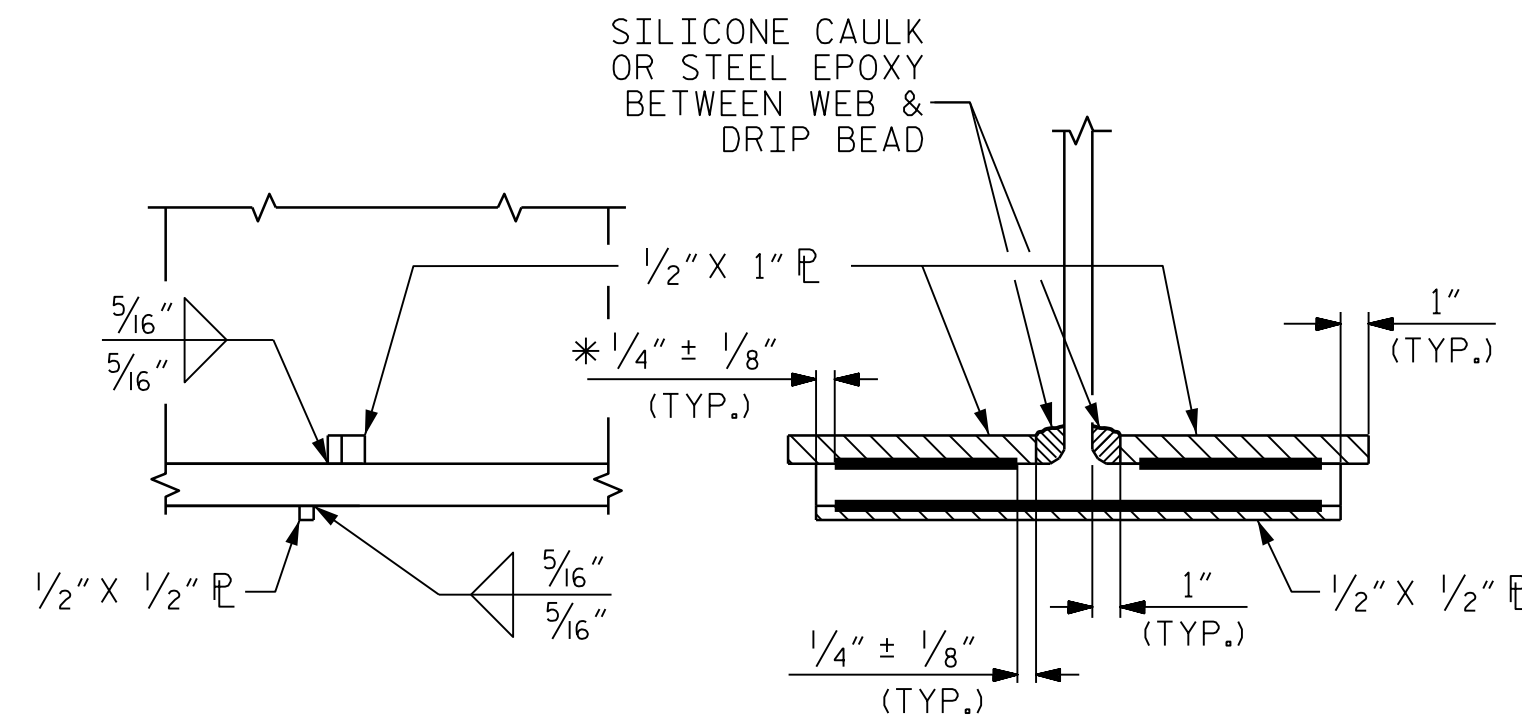
STIFFENER & CONNECTOR DETAIL

** WELD TO BOTTOM FLANGE IS ONLY REQUIRED WHEN BEARING STIFFENER IS ALSO CONNECTOR PLATE



TYPICAL STIFFENER OR CONNECTOR CONNECTIONS

WELD TERMINATION DETAILS

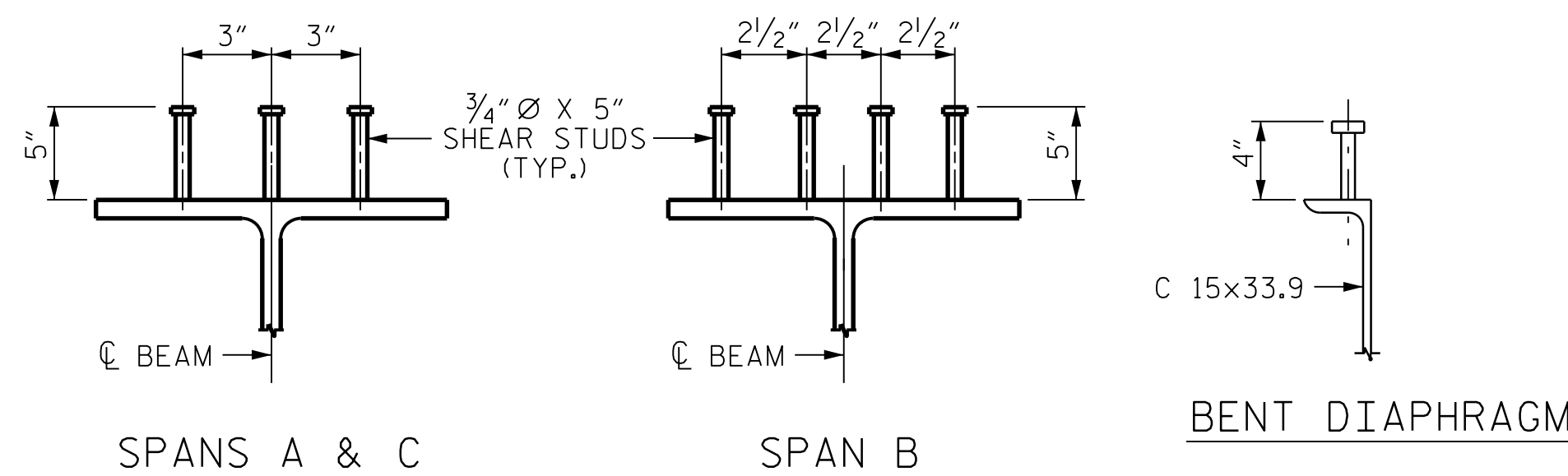


SIDE VIEW

SECTION

DRIP BEAD DETAILS

* TO WELD TERMINATION



SPANS A & C

SPAN B

BENT DIAPHRAGM

SHEAR STUD DETAILS

NOTES

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 5 OR SYSTEM 6 OF THE STRUCTURAL STEEL SHOP COATINGS PROGRAM AND SECTION 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

ALL FIELD CONNECTIONS TO BE 7/8" DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED.

TENSION ON THE AASHTO A325 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.

STIFFENER AND CONNECTOR PLATES ARE NOT REQUIRED ON THE END BENT END OF SPAN A AND SPAN C BEAMS OR ON THE OUTSIDE OF EXTERIOR BEAMS.

END STIFFENER AND CONNECTOR PLATES ARE TO BE PLACED ALONG THE SKEW AND SHALL BE PLUMB.

FABRICATORS SHALL DETAIL DIAPHRAGM MEMBERS AND CONNECTIONS FOR FULL DEAD LOAD FIT UP. BEAMS SHALL BE PLUMB AFTER THE FULL AMOUNT OF DEAD LOAD IS APPLIED.

BEARING STIFFENER MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE TO AVOID INTERFERENCE WITH THE ANCHOR BOLT.

END OF BEAMS SHALL BE PLUMB.

A CHАРY V-NOTCH TEST IS REQUIRED ON ALL BEAM SECTIONS, COVER PLATES AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH ARTICLE 1072-7 OF THE STANDARD SPECIFICATIONS.

WHERE DIAPHRAGMS ARE TO BE BOLTED TO EXISTING STEEL BEAMS, DO NOT REMOVE PAINT FROM THE CONTACT SURFACE.

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 20+68.01 -Y2NBL-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

STRUCTURAL STEEL
DETAILS

LEFT LANE (NBL)

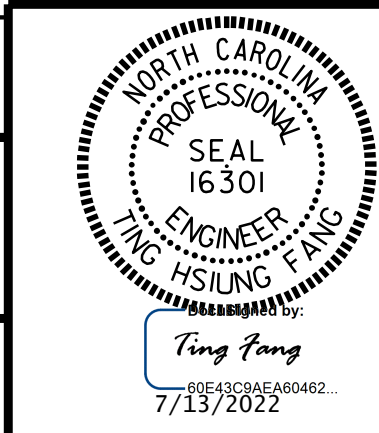
REVISIONS

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2			4			TOTAL SHEETS 31

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CDM Smith
CDM SMITH
5400 Glenwood Avenue, Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

DWG. No.
DRAWN BY: VDK DATE: 9/18
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DESIGN ENGINEER: VDK DATE: 9/18



NOTES

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

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

THE PAYMENT FOR THE PIPE SLEEVES SHALL BE INCLUDED IN THE SEVERAL PAY ITEMS.

FOR PAINTED STRUCTURAL STEEL (EXCLUDING AASHTO M270 GRADE 50W), SOLE PLATES, ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

FOR AASHTO M270 GRADE 50W STRUCTURAL STEEL, SOLE PLATE SHALL BE AASHTO M270 GRADE 50W AND SHALL NOT BE GALVANIZED. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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

WHEN FIELD WELDING THE SOLE PLATE TO THE GIRDER FLANGE, 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.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

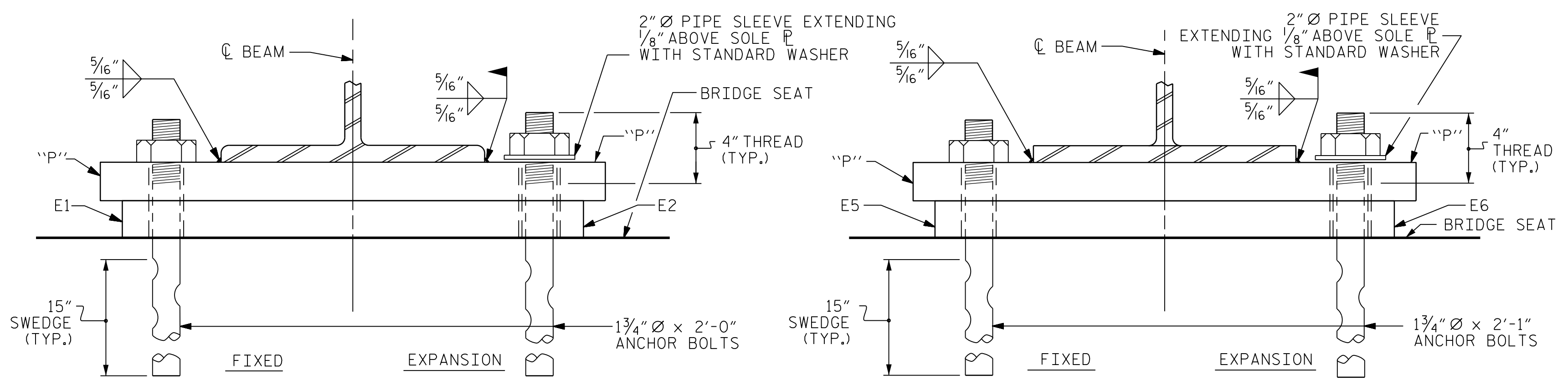
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FOLLOWING PROCEDURE, WHICH MAY BE REQUIRED BY THE ENGINEER, TO RESET ELASTOMERIC BEARINGS DUE TO GIRDER TRANSLATION AND END ROTATION:

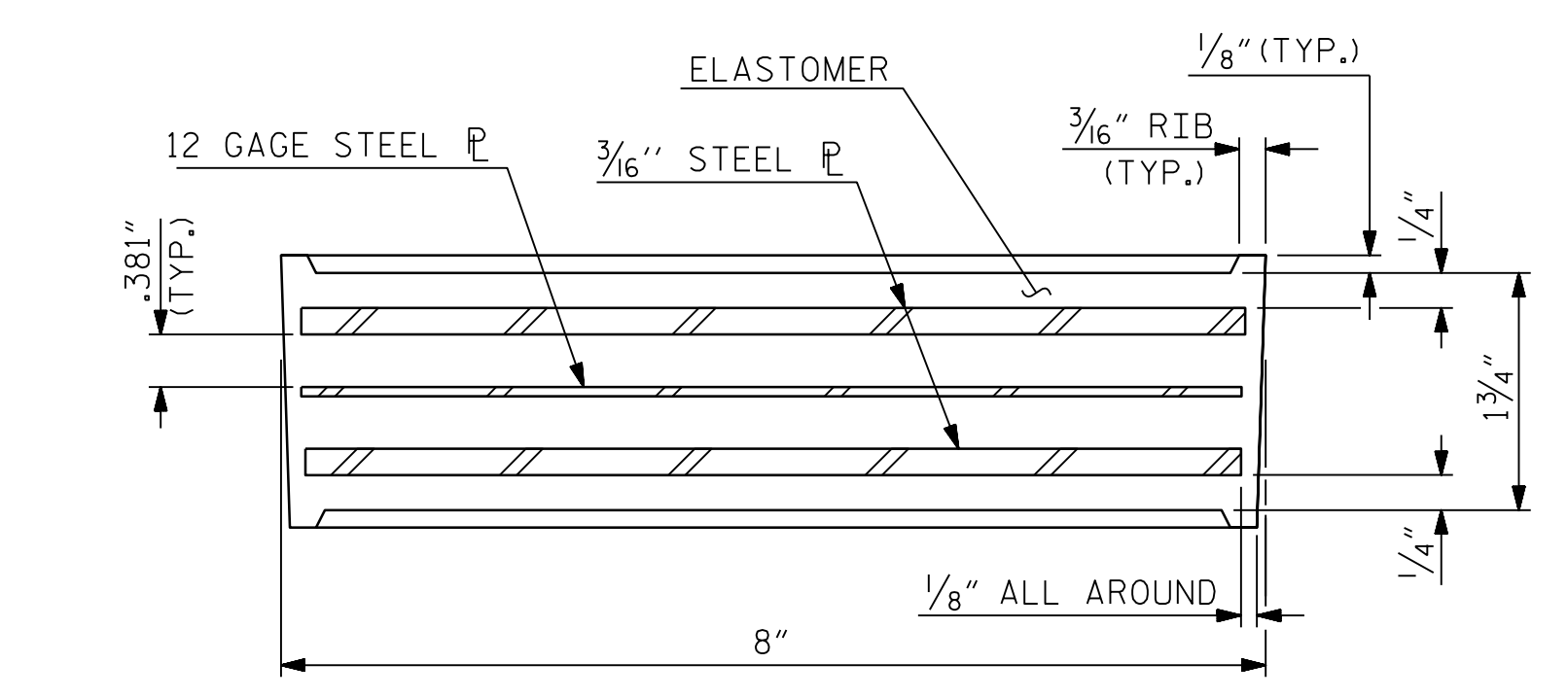
1. ONCE THE DECK HAS CURED, THE GIRDERS SHALL BE JACKED AND THE ELASTOMERIC BEARING SLOTS CENTERED AS NEARLY AS PRACTICAL ABOUT THE BEARING STIFFENER. THIS OPERATION SHALL BE PERFORMED AT APPROXIMATELY 60° F.

THE CONTRACTOR MAY PROPOSE ALTERNATE METHODS, PROVIDED DETAILS ARE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL.

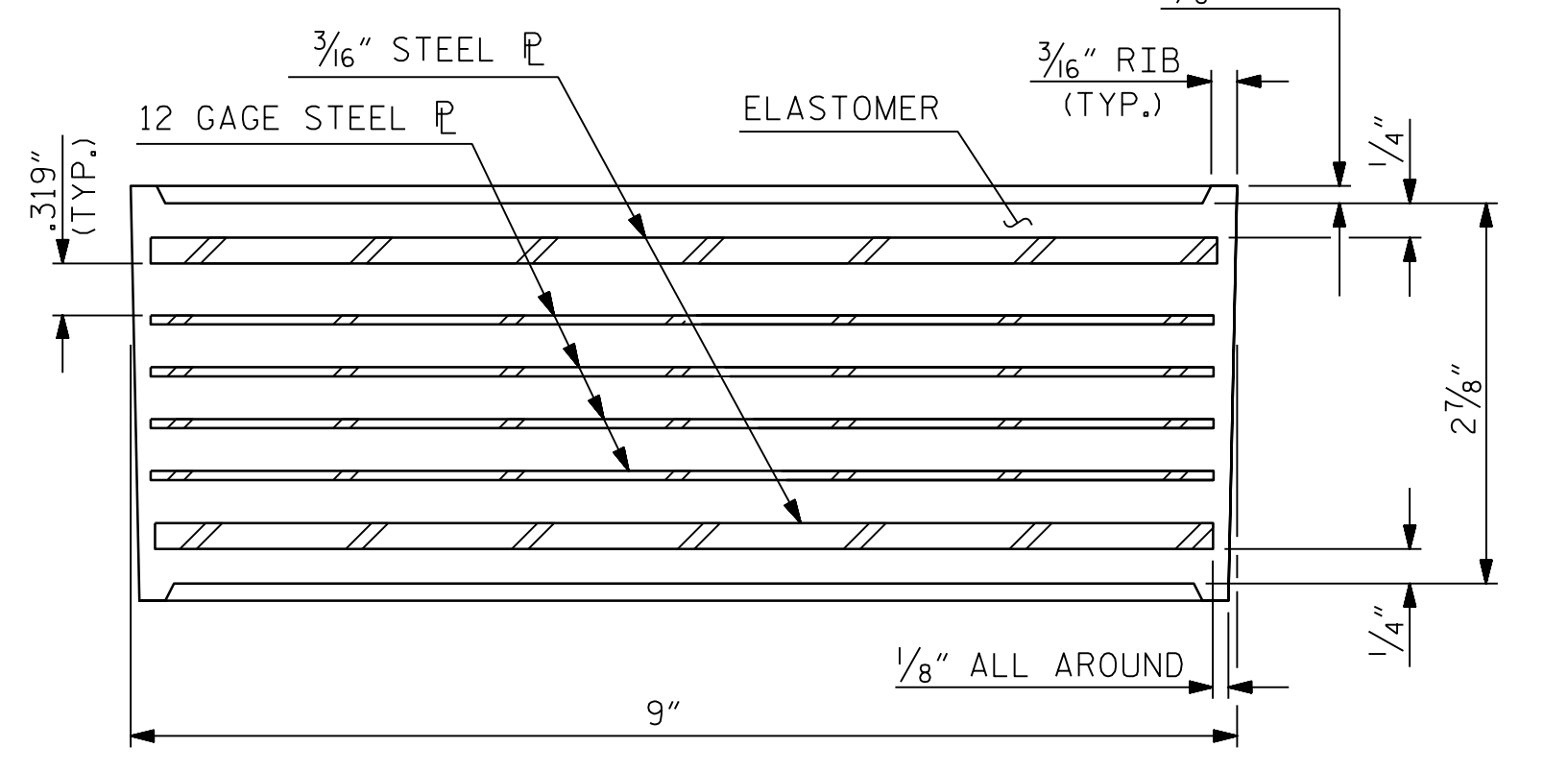


END VIEW

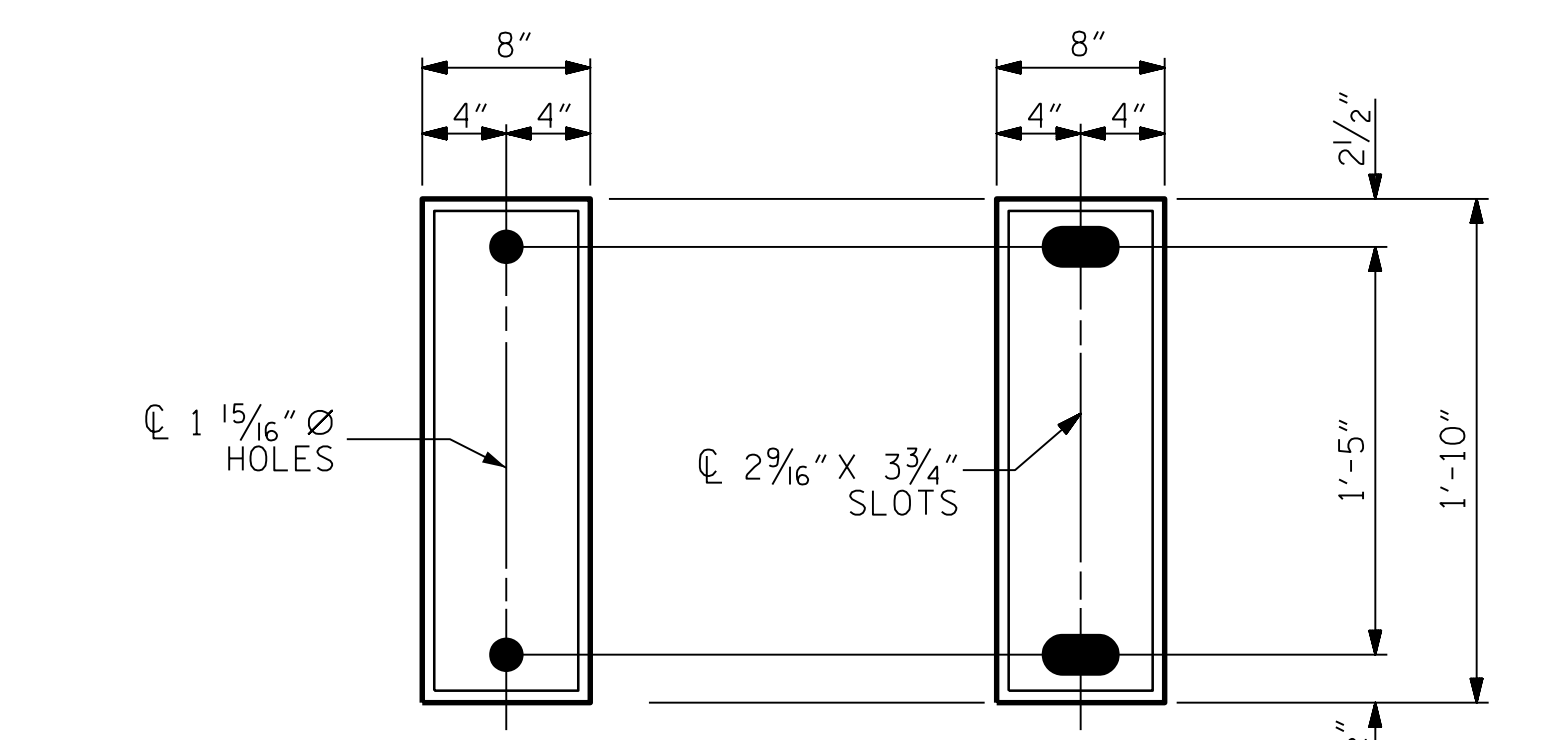
END VIEW



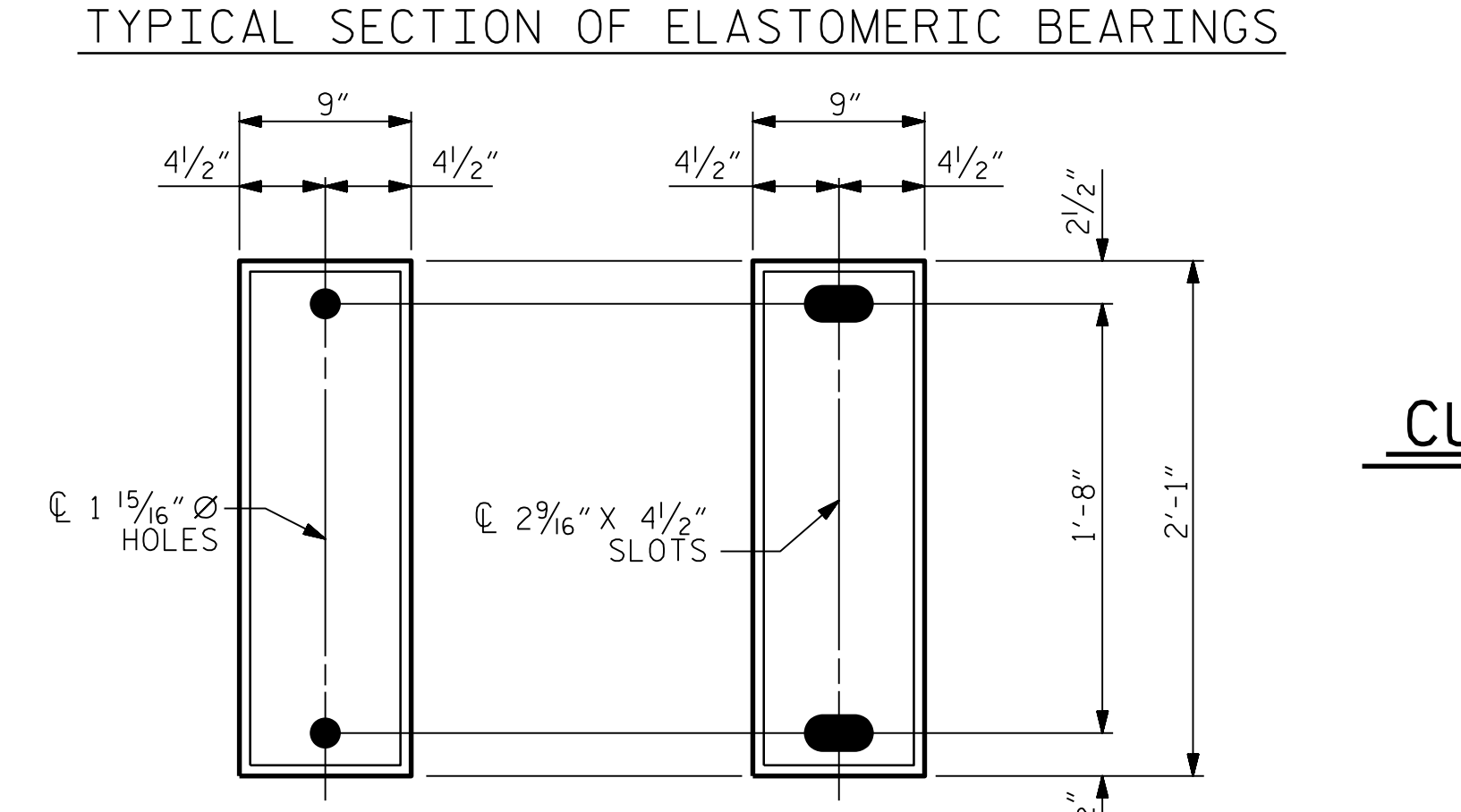
TYPICAL SECTION OF ELASTOMERIC BEARINGS



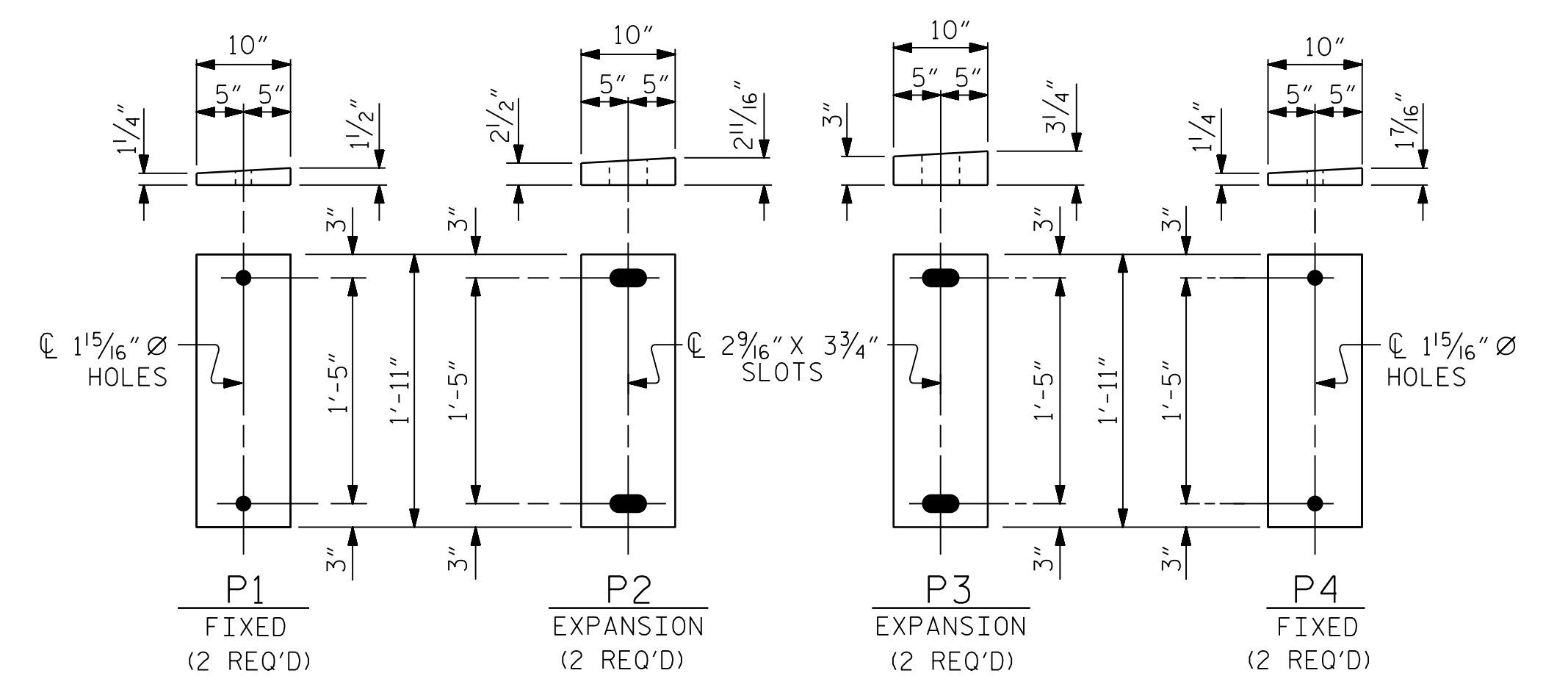
TYPICAL SECTION OF ELASTOMERIC BEARINGS



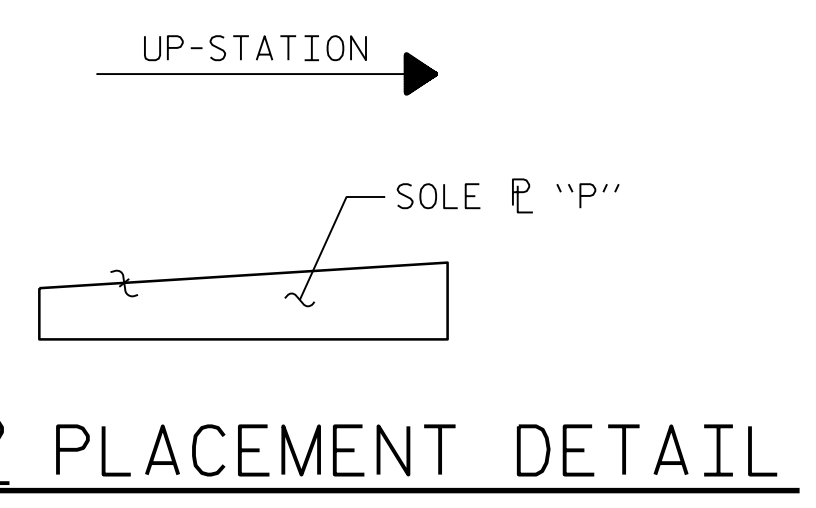
PLAN VIEW OF ELASTOMERIC BEARING TYPE I



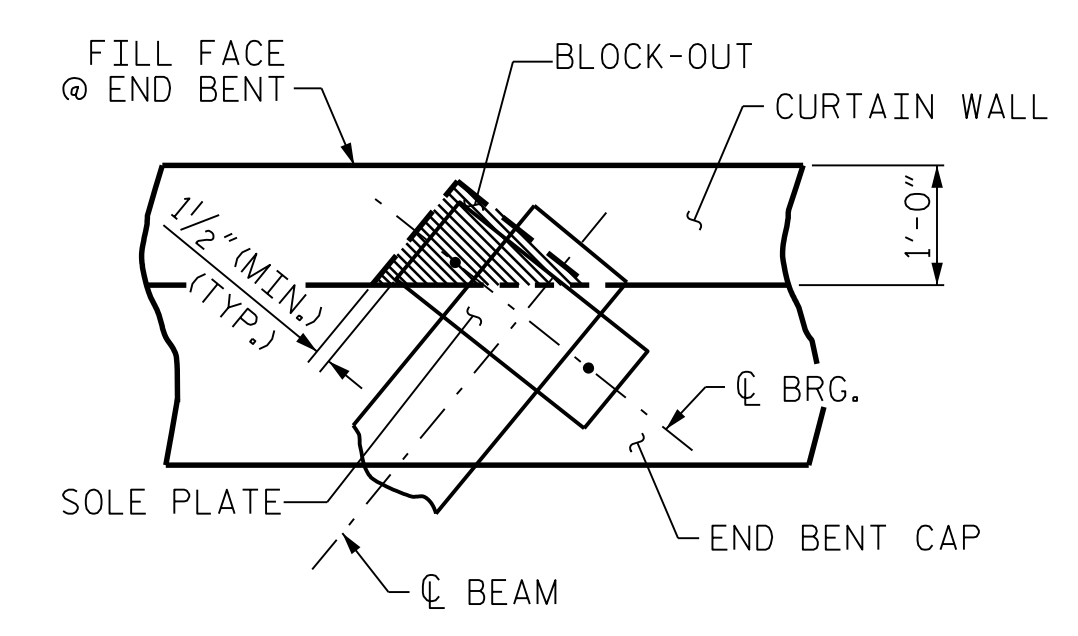
PLAN VIEW OF ELASTOMERIC BEARING TYPE III



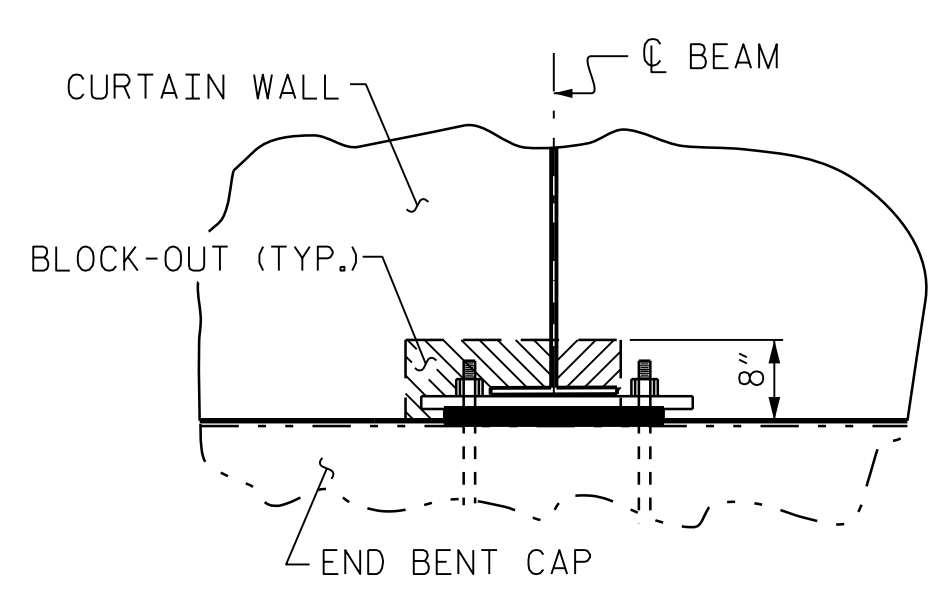
SOLE PLATE DETAILS "P" IN SPANS A & C



SOLE PLATE PLACEMENT DETAIL



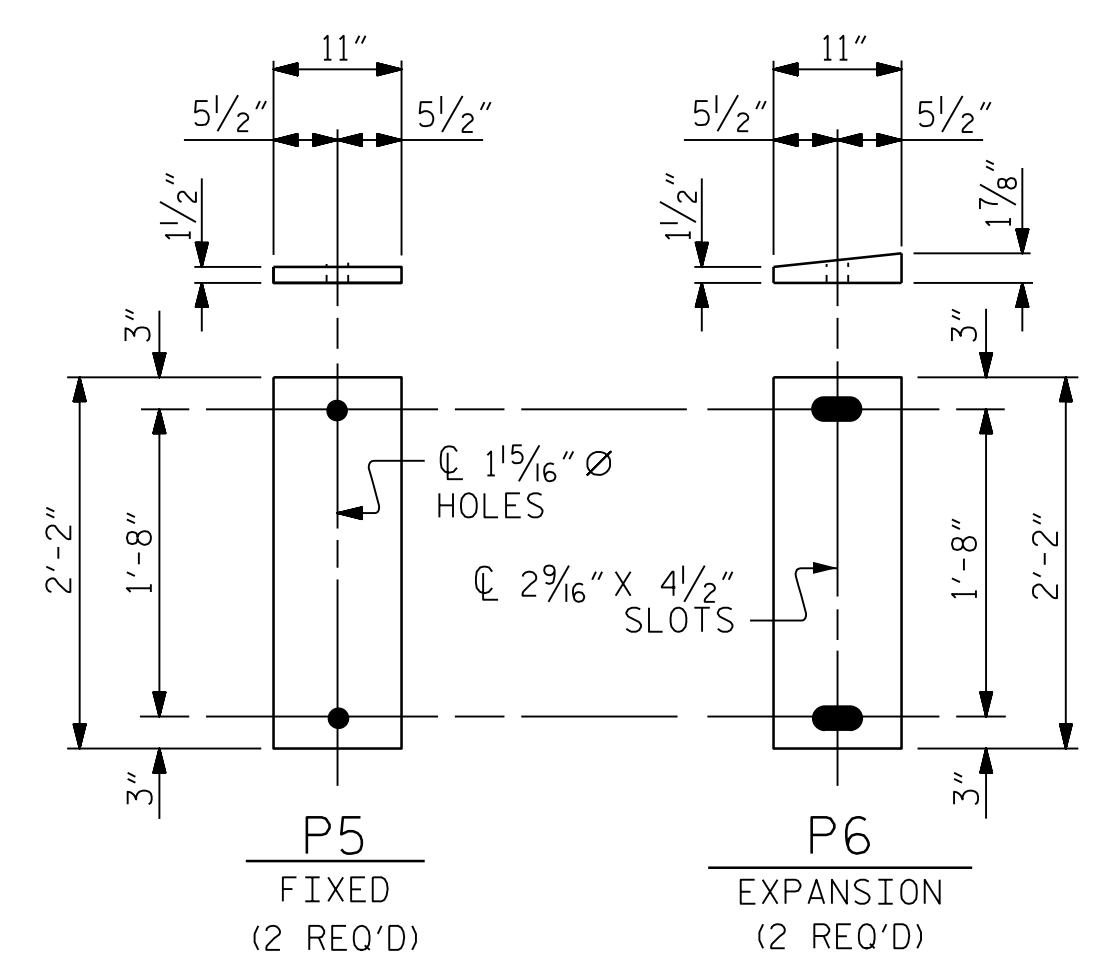
PLAN VIEW



ELEVATION VIEW

CURTAIN WALL BLOCK-OUT DETAILS

END BENT 1 SHOWN, END BENT 2 SIMILAR.



SOLE PLATE DETAILS "P" IN SPAN B

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE I	140 k
TYPE III	255 k

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 20+68.01 -Y2NBL-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
ELASTOMERIC BEARING DETAILS
 (STEEL SUPERSTRUCTURE)

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

TOTAL SHEETS: 31

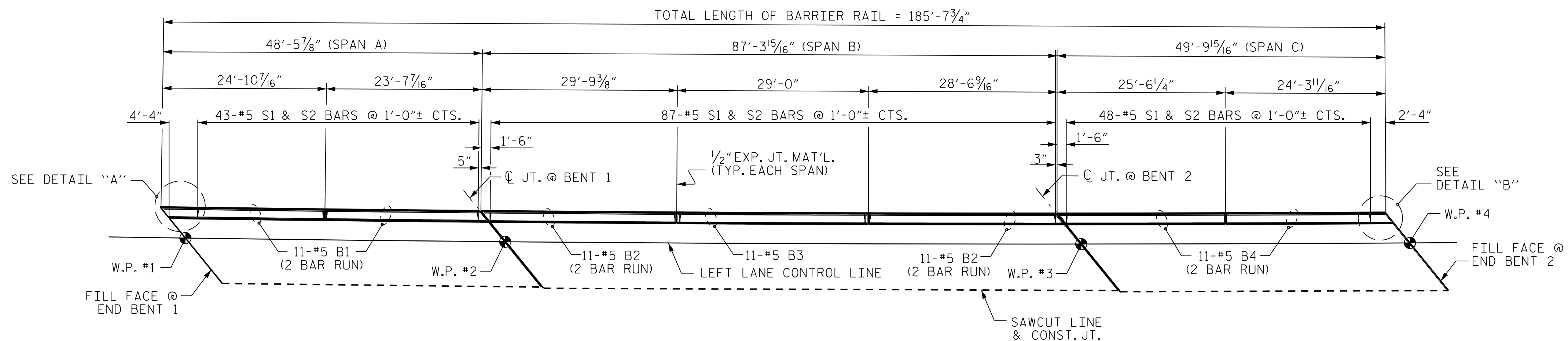
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 CDM SMITH
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 Raleigh, NC 27612-3228
 NC COA No. F-1255

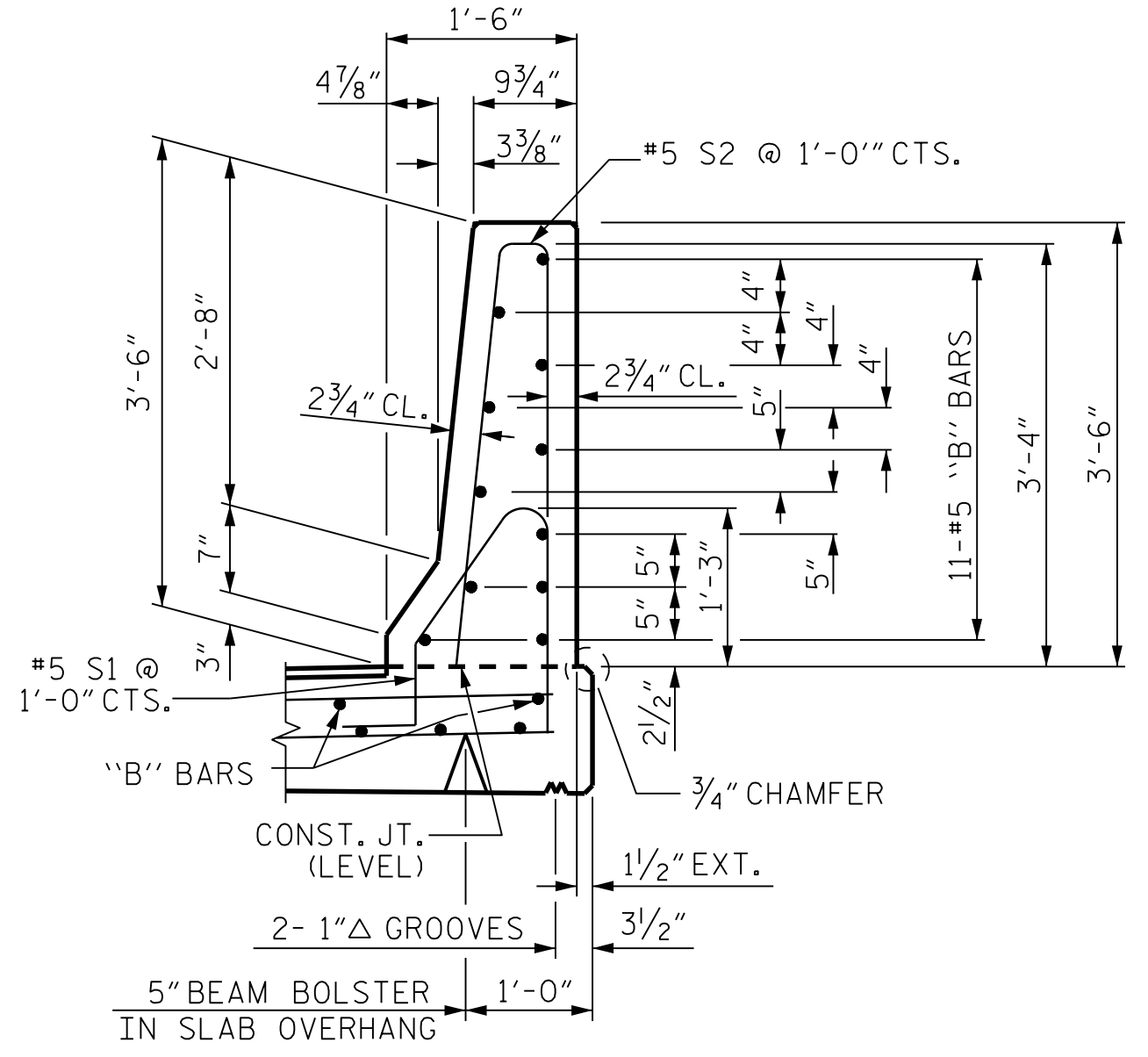
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DWG. No.

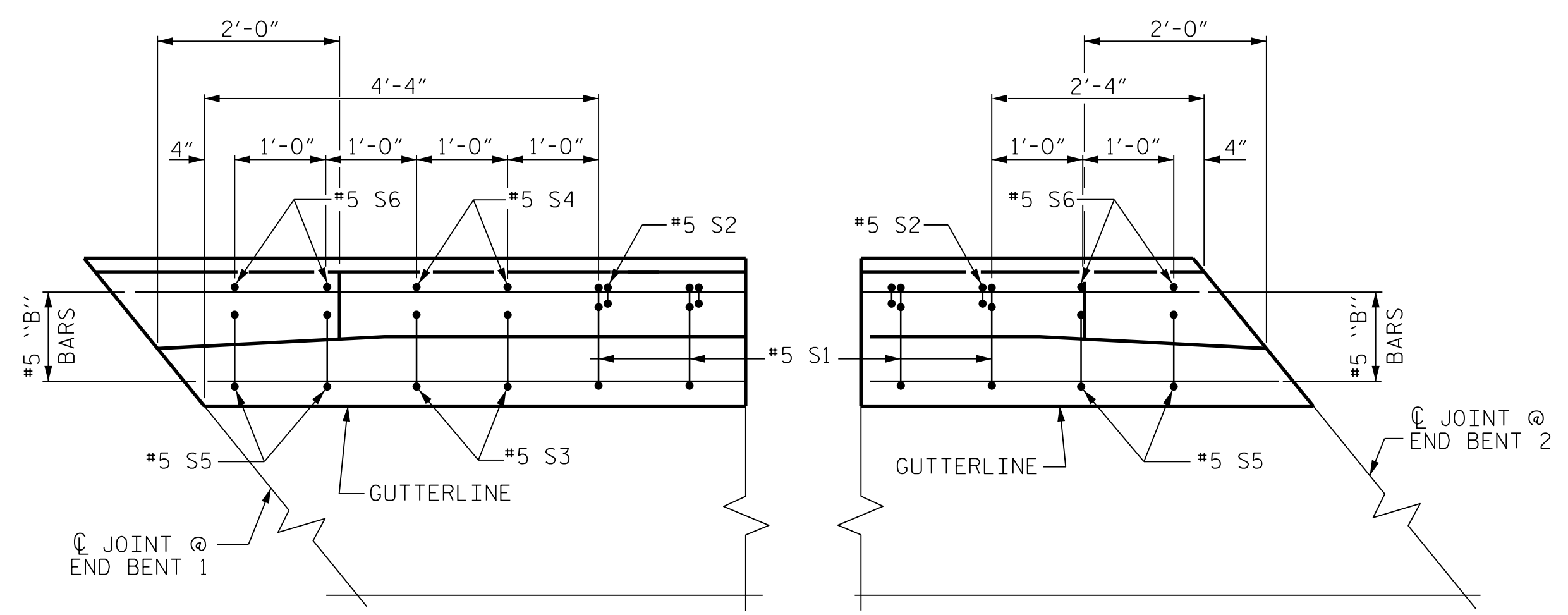




PLAN OF BARRIER RAIL
ALL DIMENSIONS ARE MEASURED ALONG OUTSIDE FACE OF RAIL



SECTION THRU RAIL

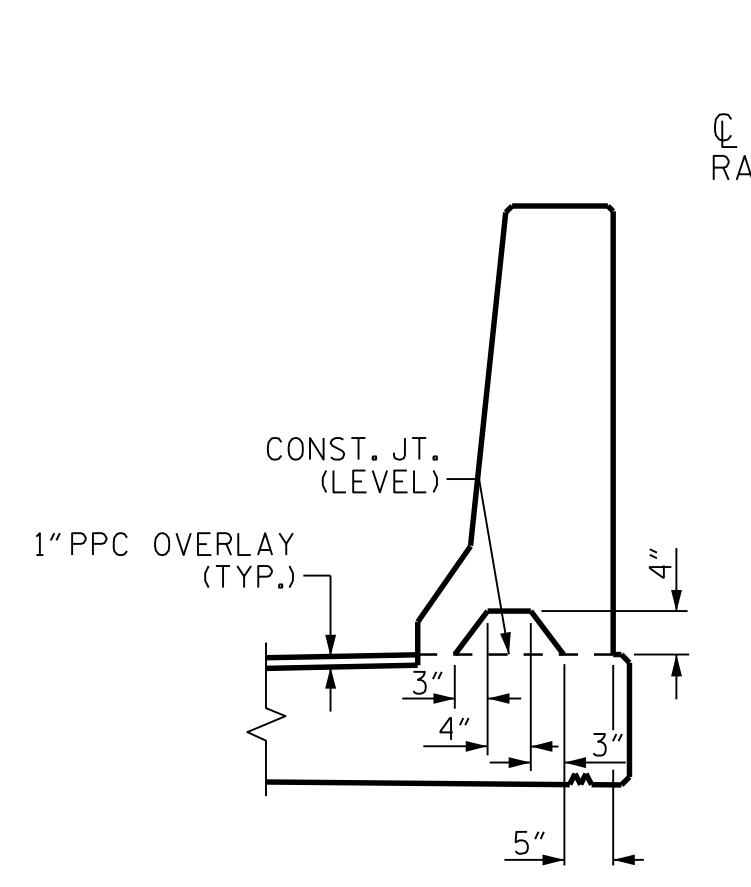


DETAIL "A"

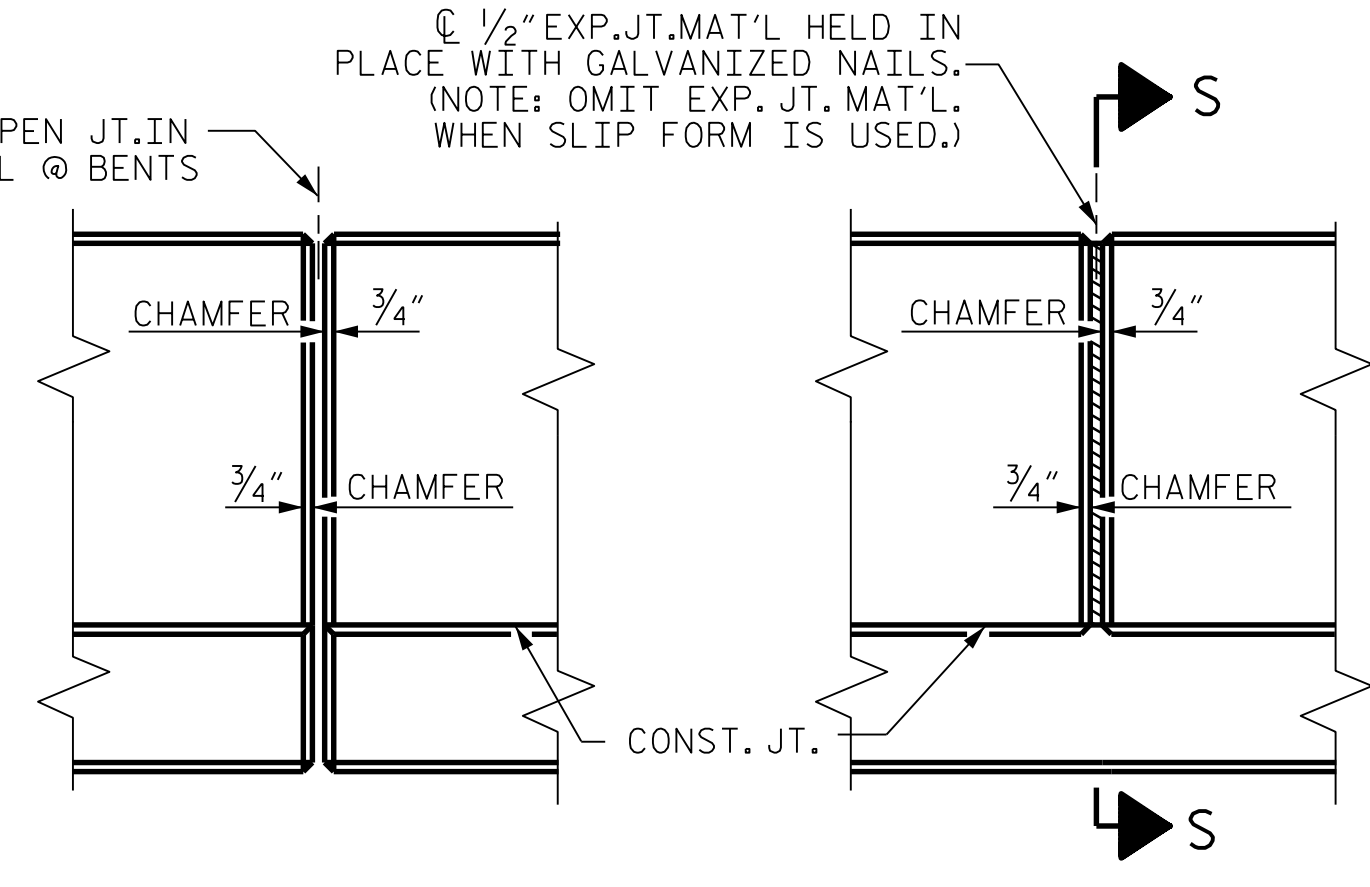
DETAIL "B"

PLAN

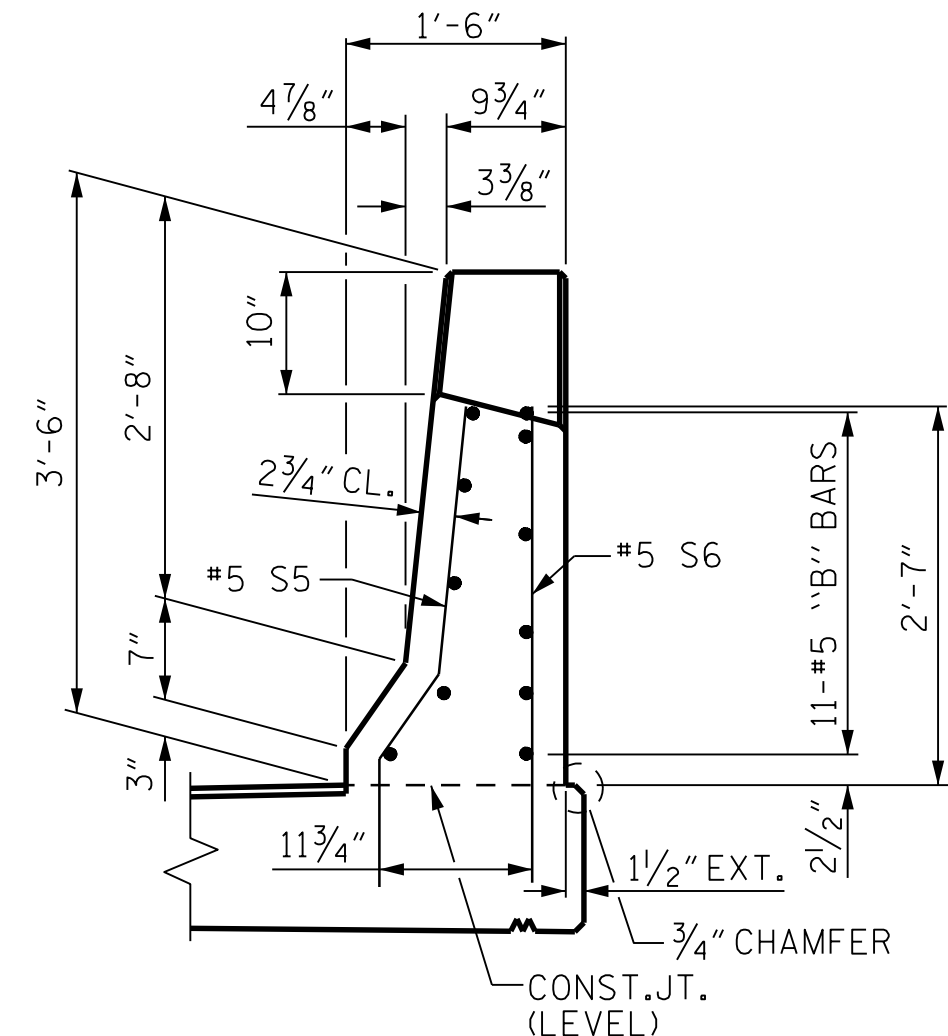
END OF RAIL DETAILS
FOR ADHESIVE ANCHORING AT SAWED JOINTS



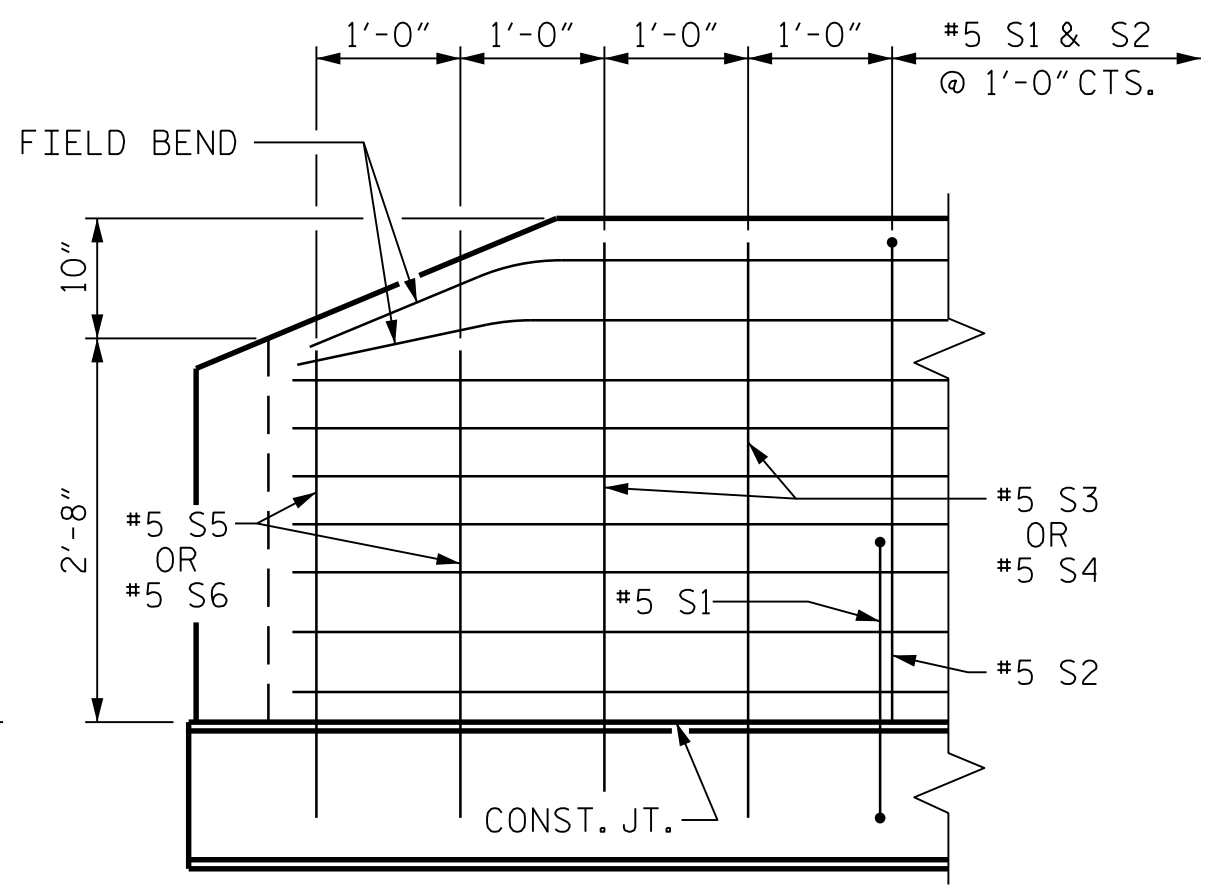
SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS



END VIEW



SIDE VIEW

NOTES

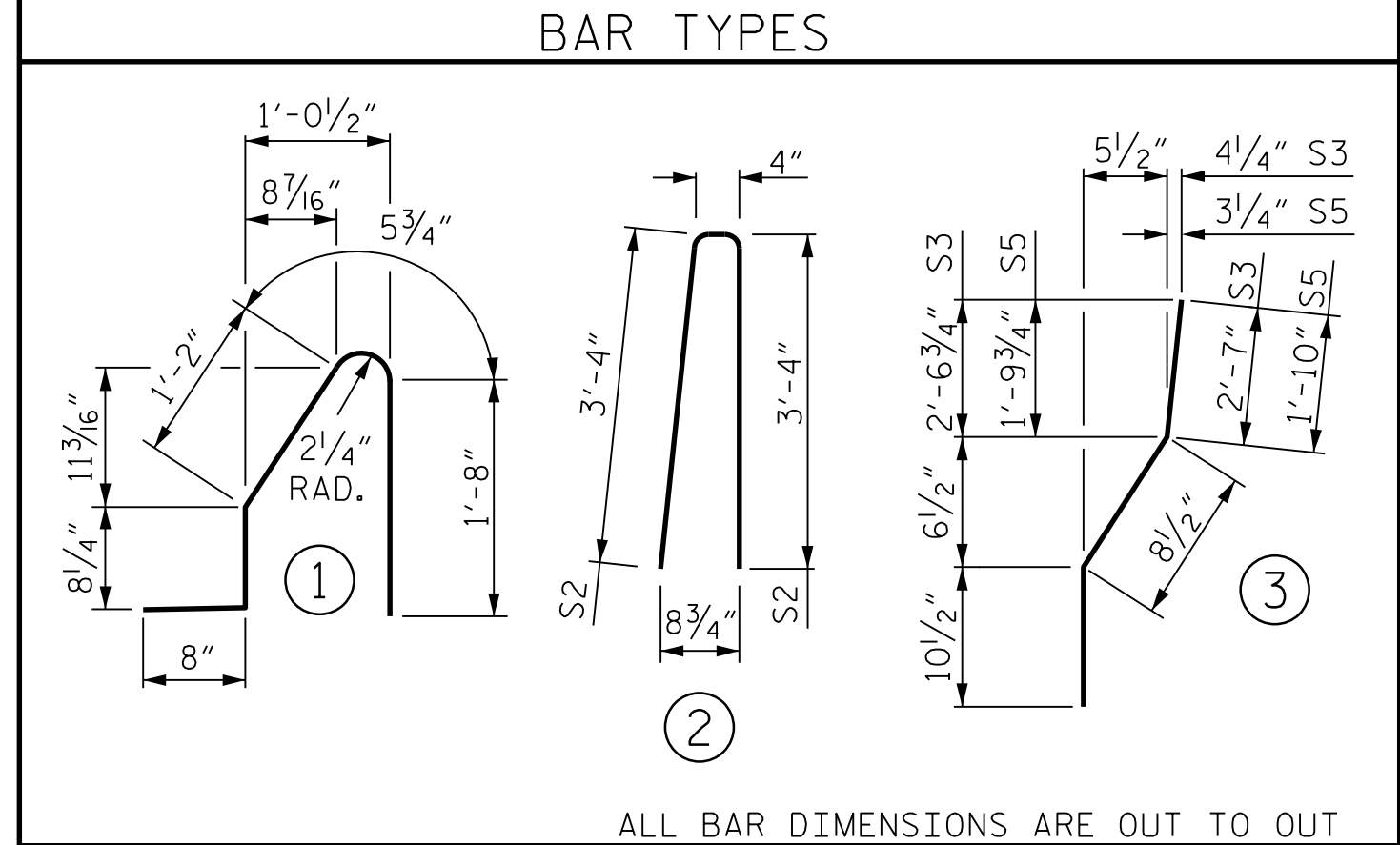
THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

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



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL
FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	44	#5	STR	14'-0"	642
* B2	44	#5	STR	16'-5"	753
* B3	11	#5	STR	28'-7"	328
* B4	44	#5	STR	14'-4"	658
* S1	178	#5	1	4'-8"	866
* S2	178	#5	2	7'-0"	1299
* S3	2	#5	3	4'-2"	9
* S4	2	#5	STR	4'-0"	8
* S5	4	#5	3	3'-5"	14
* S6	4	#5	STR	3'-3"	14
* EPOXY COATED REINFORCING STEEL					4,592
CLASS AA CONCRETE				25.2 CU. YDS.	
CONCRETE BARRIER RAIL					185.65 LIN. FT.

PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 20+68.01 -Y2NBL-

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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NC COA No. F-1255

DRAWN BY: VDK DATE: 9/18
CHECKED BY: THF DATE: 9/18
DESIGN ENGINEER: VDK DATE: 9/18

DWG. No.

NORTH CAROLINA PROFESSIONAL SEAL 16301
TUNG FANG ENGINEER
7/2/2022

REVISIONS

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

SHEET NO. **S06-19**
TOTAL SHEETS 31

NOTES

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

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

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

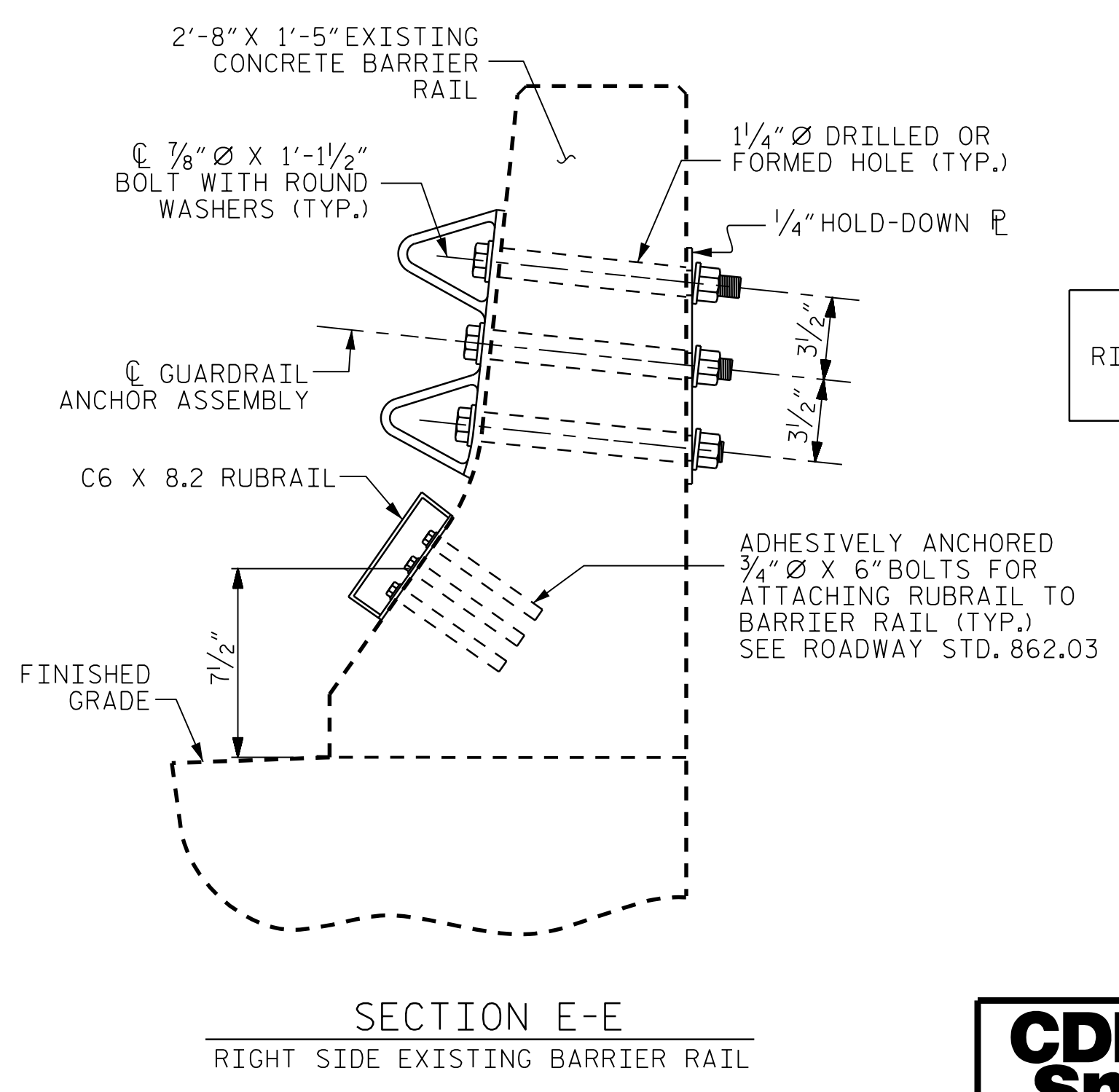
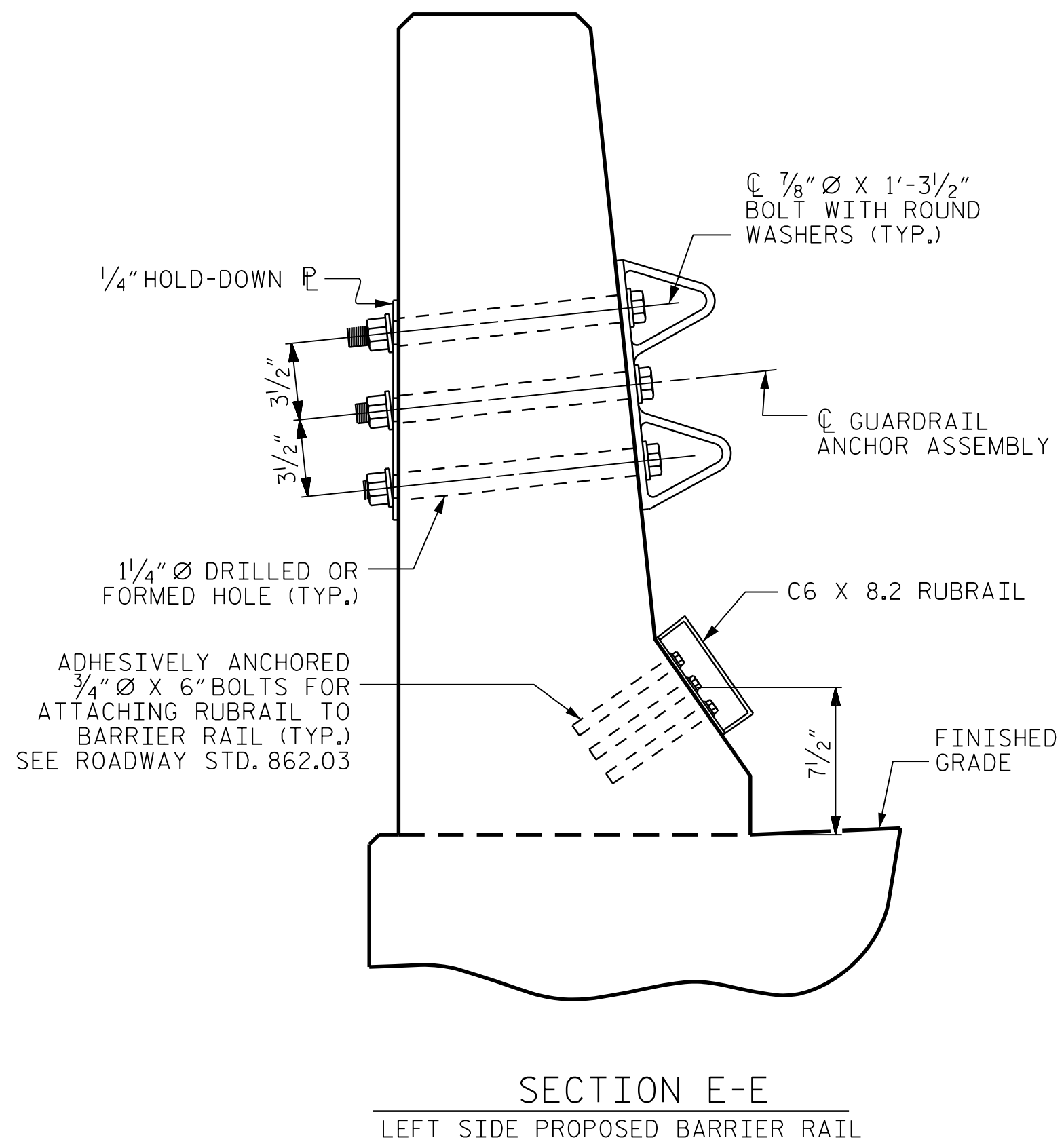
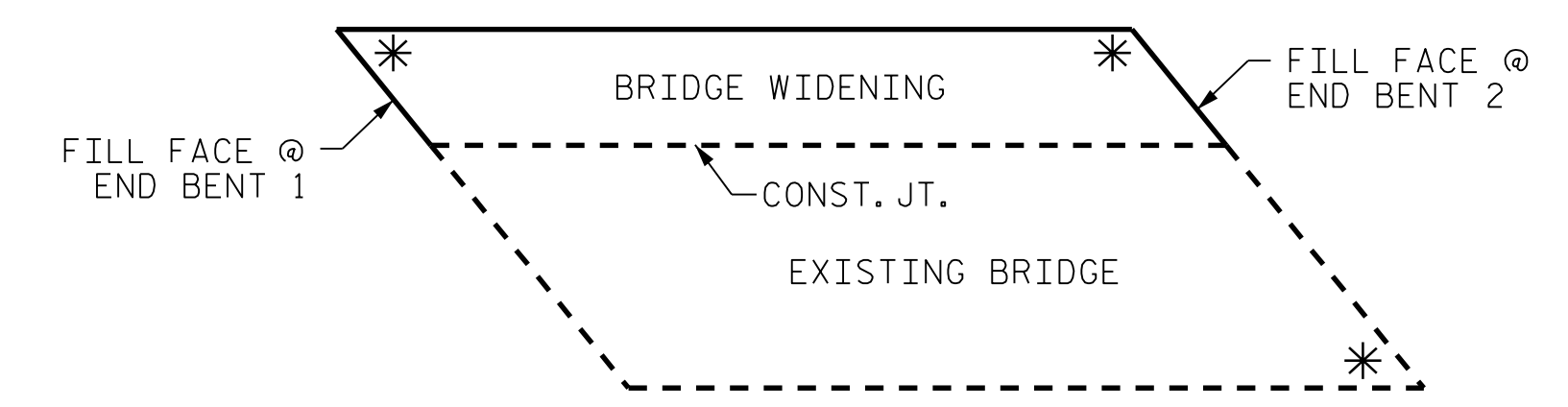
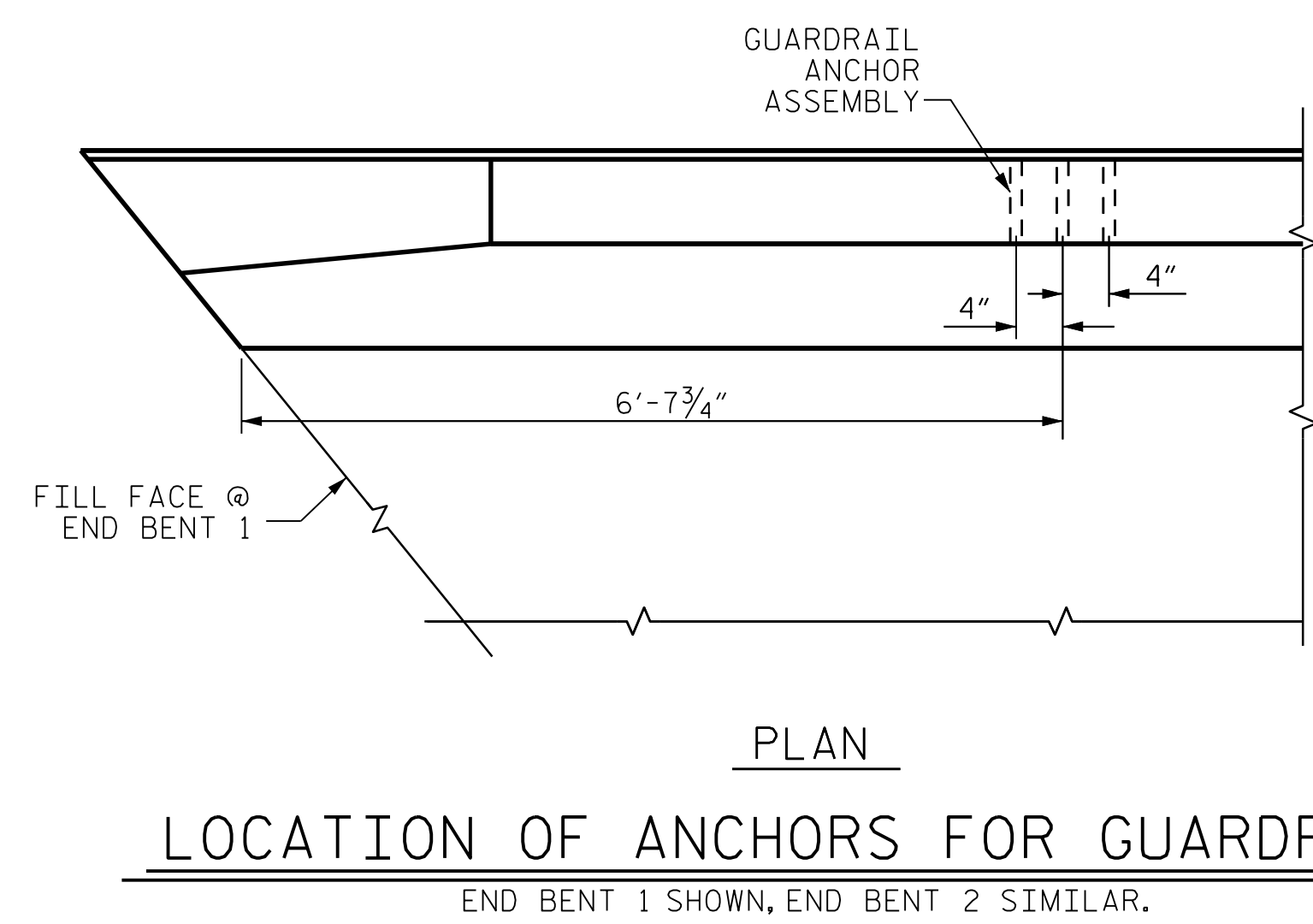
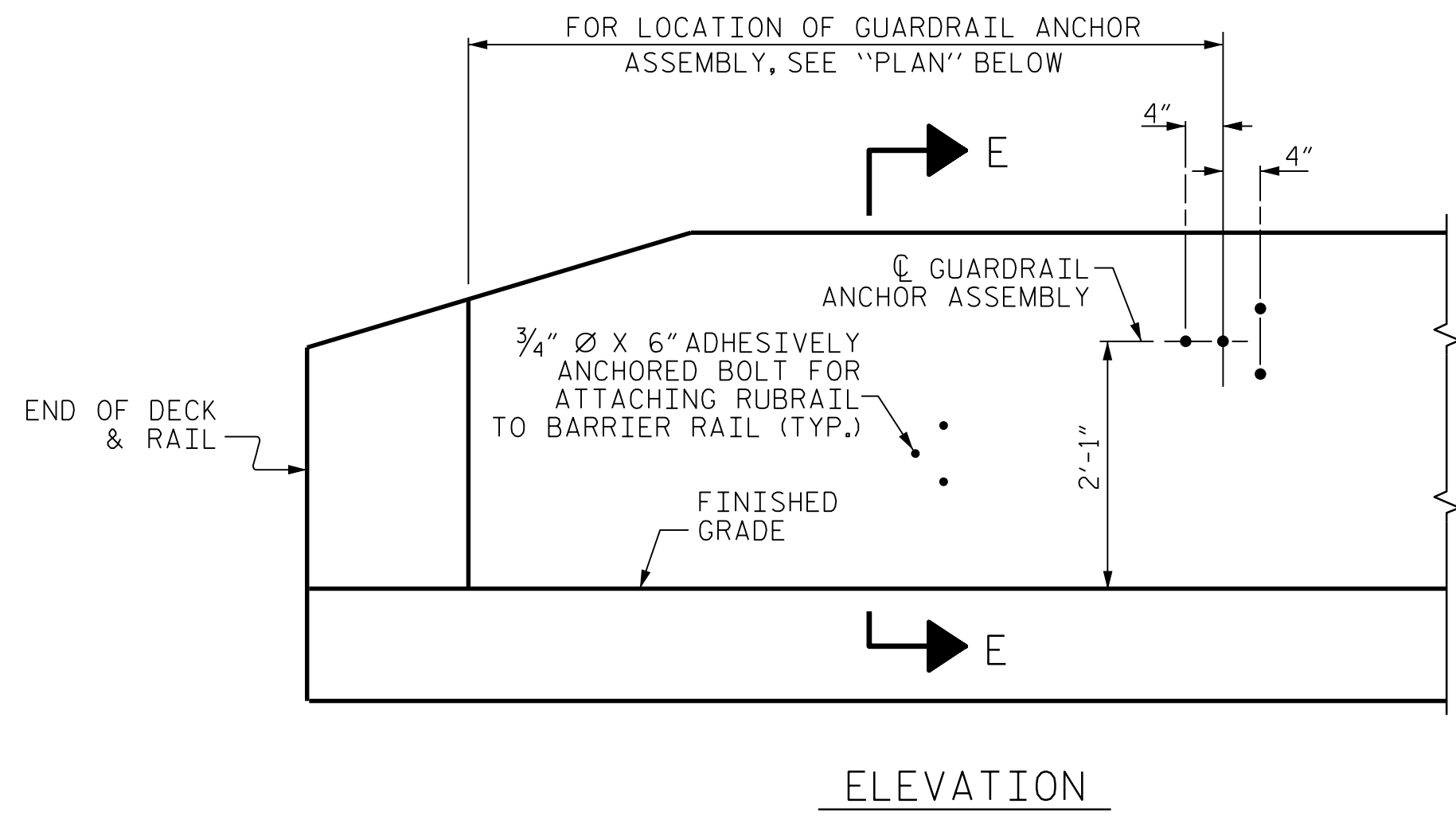
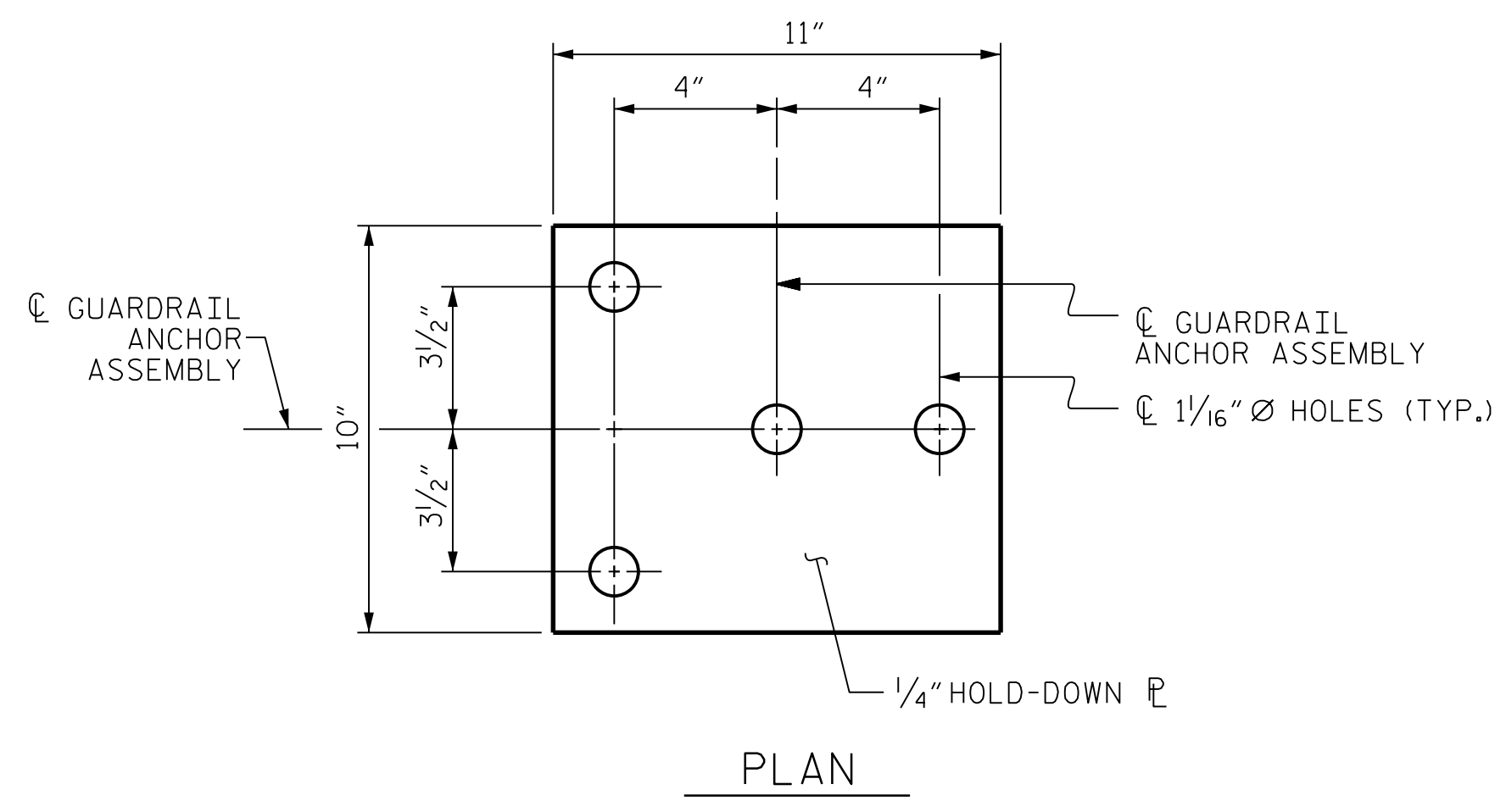
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

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



CONTRACTOR SHALL FIELD VERIFY THE EXISTING RIGHT SIDE BARRIER RAIL PRIOR TO INSTALLATION OF GUARDRAIL ANCHOR ASSEMBLY.

GUARDRAIL ANCHOR ASSEMBLY DETAILS

SKETCH SHOWING POINTS OF ATTACHMENTS

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 20+68.01 - Y2NBL -

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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DRAWN BY : VDK DATE : 9/18
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			31
2			4			

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS					
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPETS, AND BARRIER RAILS		APPROACH SLABS		PARAPETS AND BARRIER RAILS
	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"			

GROOVING BRIDGE FLOORS	
STAGE III	
APPROACH SLABS	1,602 SQ.FT.
BRIDGE DECK	4,982 SQ.FT.
TOTAL	6,584 SQ.FT.
STAGE IV	
APPROACH SLABS	1,636 SQ.FT.
BRIDGE DECK	5,254 SQ.FT.
TOTAL	6,890 SQ.FT.
TOTAL	
APPROACH SLABS	3,238 SQ.FT.
BRIDGE DECK	10,236 SQ.FT.
TOTAL	13,474 SQ.FT.

SUPERSTRUCTURE BILL OF MATERIAL				
CLASS AA CONCRETE (CU. YD.)				
POUR	SPAN A	SPAN B	SPAN C	TOTAL
DECK	14.03	23.03	15.18	52.24
CLOSURE POUR	3.54	5.53	3.67	12.74
TOTAL	17.57	28.56	18.85	64.98
TOTAL CLASS AA CONCRETE (CU. YD.)				64.98
REINFORCING STEEL (LBS)				
LEFT WIDENING INCLUDES CLOSURE POUR	SPAN A	SPAN B	SPAN C	TOTAL
	2,450	4,105	2,556	9,111
EPOXY COATED REINFORCING STEEL (LBS)				
LEFT WIDENING INCLUDES CLOSURE POUR	SPAN A	SPAN B	SPAN C	TOTAL
	2,350	4,295	2,459	9,104

JOINT QUANTITIES		
JOINT AT	POURABLE SILICONE JOINT SEALANT LIN. FT.	FOAM JOINT SEALS FOR PRESERVATION LIN. FT.
END BENT 1	76.82	
BENT 1		76.71
BENT 2		76.46
END BENT 2	76.32	
TOTAL	153.14	153.17

POUR IN SPANS A AND C INCLUDES CURTAIN WALL AND PAVEMENT BRACKET. QUANTITIES FOR BARRIER RAIL IN EACH SPAN ARE NOT INCLUDED.

DECK & JOINT REHABILITATION BILL OF MATERIAL						
	POLYESTER POLYMER CONC. MATERIALS	BRIDGE JOINT DEMOLITION	SCARIFYING BRIDGE DECK	SHOTBLASTING BRIDGE DECK	PLACING AND FINISHING OF PC OVERLAY	
	CU. YDS.	SQ. FT.	SQ. YDS.	SQ. YDS.	SQ. YDS.	
STAGE III						
BRIDGE DECKS	5.45	49	343	343	588	
APPROACH SLABS	1.77		120	120	191	
TOTAL (III) (a)	7.22	49	463	463	779	
STAGE IV						
BRIDGE DECKS	5.74	72	620	620	620	
APPROACH SLABS	1.79		193	193	193	
TOTAL (IV) (b)	7.53	72	813	813	813	
*** PPC IN JOINTS (c)	0.75					
TOTAL (a)+(b)+(c)	15.50	121	1276	1276	1592	

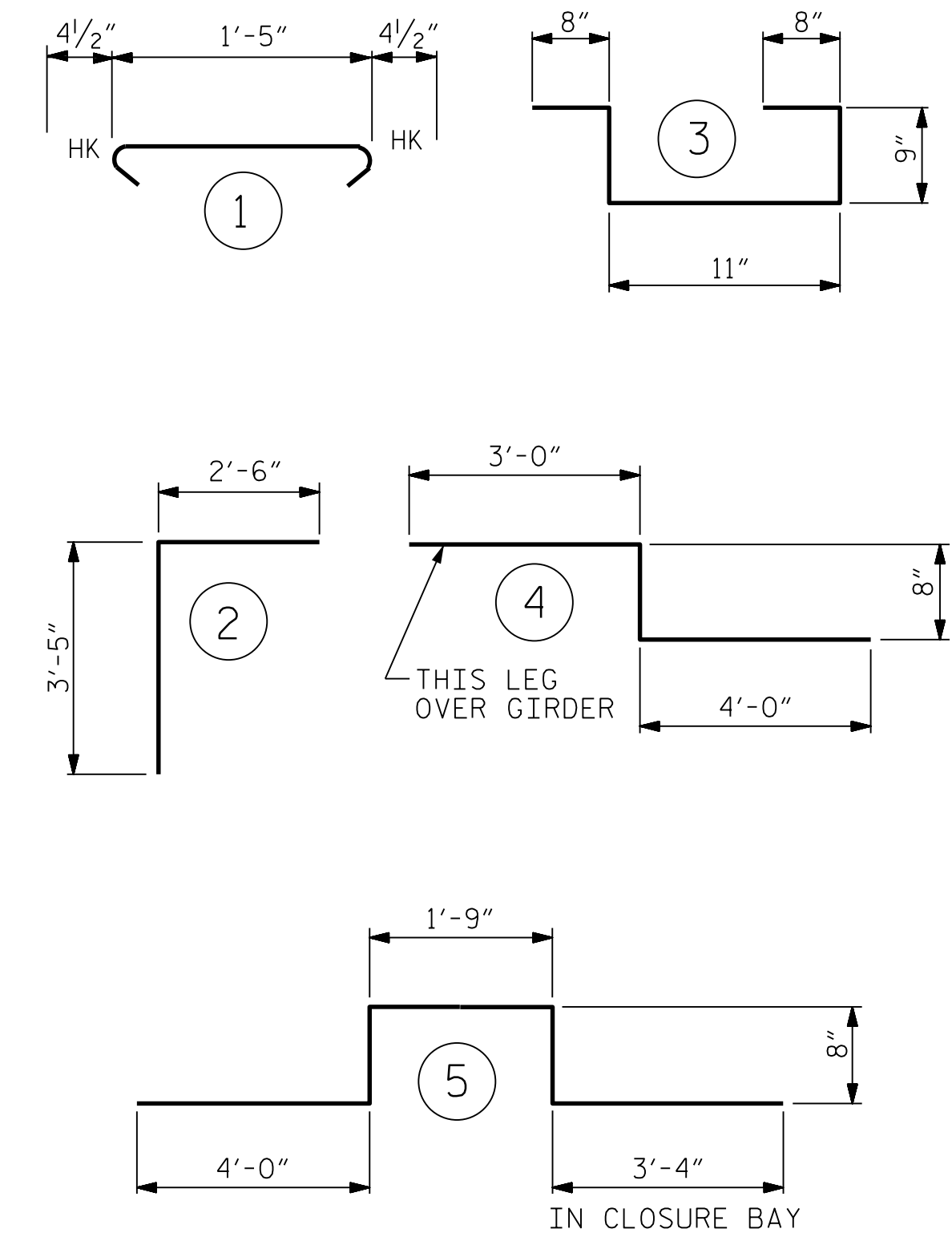
*** POLYESTER POLYMER CONCRETE MATERIALS IN JOINT HEADER REPAIRS, SEE SHEET S06-07.

BILL OF MATERIAL

SPAN A					SPAN B					SPAN C							
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	61	#6	STR	11'-5"	1046	*A3	124	#6	STR	11'-6"	2142	*A5	64	#6	STR	11'-9"	1130
A2	61	#6	STR	11'-5"	1046	A4	124	#6	STR	11'-6"	2142	A6	64	#6	STR	11'-9"	1130
*A101	2	#6	STR	11'-3"	34	*A121	2	#6	STR	11'-0"	33	*A141	2	#6	STR	11'-3"	34
*A102	2	#6	STR	10'-5"	31	*A122	2	#6	STR	10'-3"	31	*A142	2	#6	STR	10'-6"	32
*A103	2	#6	STR	9'-8"	29	*A123	2	#6	STR	9'-6"	29	*A143	2	#6	STR	9'-9"	29
*A104	2	#6	STR	8'-11"	27	*A124	2	#6	STR	8'-9"	26	*A144	2	#6	STR	8'-11"	27
*A105	2	#6	STR	8'-2"	25	*A125	2	#6	STR	8'-0"	24	*A145	2	#6	STR	8'-2"	25
*A106	2	#6	STR	7'-5"	22	*A126	2	#6	STR	7'-3"	22	*A146	2	#6	STR	7'-5"	22
*A107	2	#6	STR	6'-8"	20	*A127	2	#6	STR	6'-5"	19	*A147	2	#6	STR	6'-8"	20
*A108	2	#6	STR	5'-11"	18	*A128	2	#6	STR	5'-8"	17	*A148	2	#6	STR	5'-10"	18
*A109	2	#6	STR	5'-2"	16	*A129	2	#6	STR	4'-11"	15	*A149	2	#6	STR	5'-1"	15
*A110	2	#6	STR	4'-5"	13	*A130	2	#6	STR	4'-2"	13	*A150	2	#6	STR	4'-4"	13
*A111	2	#6	STR	3'-8"	11	*A131	2	#6	STR	3'-5"	10	*A151	2	#6	STR	3'-6"	11
*A112	2	#6	STR	2'-11"	9	*A132	1	#6	STR	2'-8"	4	*A152	1	#6	STR	2'-9"	4
*A113	1	#6	STR	2'-3"	3	*A133	1	#6	STR	1'-11"	3	*A153	1	#6	STR	2'-0"	3
*A114	1	#6	STR	1'-6"	2							*A154	1	#6	STR	1'-3"	2
A201	2	#6	STR	11'-3"	34	A221	2	#6	STR	11'-0"	33	A241	2	#6	STR	11'-3"	34
A202	2	#6	STR	10'-5"	31	A222	2	#6	STR	10'-3"	31	A242	2	#6	STR	10'-6"	32
A203	2	#6	STR	9'-8"	29	A223	2	#6	STR	9'-6"	29	A243	2	#6	STR	9'-9"	29
A204	2	#6	STR	8'-11"	27	A224	2	#6	STR	8'-9"	26	A244	2	#6	STR	8'-11"	27
A205	2	#6	STR	8'-2"	25	A225	2	#6	STR	8'-0"	24	A245	2	#6	STR	8'-2"	25
A206	2	#6	STR	7'-5"	22	A226	2	#6	STR	7'-3"	22	A246	2	#6	STR	7'-5"	22
A207	2	#6	STR	6'-8"	20	A227	2	#6	STR	6'-5"	19	A247	2	#6	STR	6'-8"	20
A208	2	#6	STR	5'-11"	18	A228	2	#6	STR	5'-8"	17	A248	2	#6	STR	5'-10"	18
A209	2	#6	STR	5'-2"	16	A229	2	#6	STR	4'-11"	15	A249	2	#6	STR	5'-1"	15
A210	2	#6	STR	4'-5"	13	A230	2	#6	STR	4'-2"	13	A250	2	#6	STR	4'-4"	13
A211	2	#6	STR	3'-8"	11	A231	2	#6	STR	3'-5"	10	A251	2	#6	STR	3'-6"	11
A212	2	#6	STR	2'-11"	9	A232	1	#6	STR	2'-8"	4	A252	1	#6	STR	2'-9"	4
A213	1	#6	STR	2'-3"	3	A233	1	#6	STR	1'-11"	3	A253	1	#6	STR	2'-0"	3
A214	1	#6	STR	1'-6"	2							A254	1	#6	STR	1'-3"	2
*B1	20	#4	STR	25'-0"	334	*B3	40	#4	STR	23'-2"	619	*B5	20	#4	STR	25'-8"	343
B2	17	#5	STR	48'-0"	851	B4	34	#5	STR	44'-5"	1575	B6	17	#5	STR	49'-4"	875
*D1	182	#5	STR	3'-6"	664	*D1	336	#5	STR	3'-6"	1227	*D1	188	#5	STR	3'-6"	686
D2	9	#5	STR	4'-3"	40	D2	4	#5	STR	4'-3"	18	D2	9	#5	STR	4'-3"	40
*G1	3	#5	STR	14'-8"	46	*G2	4	#5	STR	14'-11"	62	*G3	3	#5	STR	15'-0"	47
K1	6	#4	STR	14'-9"	59	K4	4	#5	5	10'-5"	43	K11	6	#4	STR	15'-1"	60
K2	1	#6	STR	14'-9"	22	K5	4	#5	4	7'-8"	32	K12	1	#6	STR	15'-1"	23
K3	1	#4	STR	13'-6"	9	S4	20	#4	3	3'-9"	50	K4	2	#5	5	10'-5"	22
K4	2	#5	5	10'-5"	22						K5	2	#5	4	7'-8"	16	
K5	2	#5	4	7'-8"	16												
S1	9	#4	STR	3'-6"	21						S1	9	#4	STR	3'-6"	21	
S2	15	#4	2	5'-11"	59						S2	16	#4	2	5'-11"	63	
S3	14	#4	1	2'-2"	20						S3	13	#4	1	2'-2"	19	
S4	10	#4	3	3'-9"	25						S4	10	#4	3	3'-9"	25	
REINFORCING STEEL LBS. =	2,450	REINFORCING STEEL LBS. =	4,105	REINFORCING STEEL LBS. =	2,556												
* EPOXY COATED REINFORCING STEEL LBS. =	2,350	* EPOXY COATED REINFORCING STEEL LBS. =	4,295	* EPOXY COATED REINFORCING STEEL LBS. =	2,459												
*** CLASS AA CONCRETE C.Y. =	17.96	*** CLASS AA CONCRETE C.Y. =	28.56	*** CLASS AA CONCRETE C.Y. =	19.24												

* QUANTITIES FOR BARRIER RAIL IN EACH SPAN ARE NOT INCLUDED.

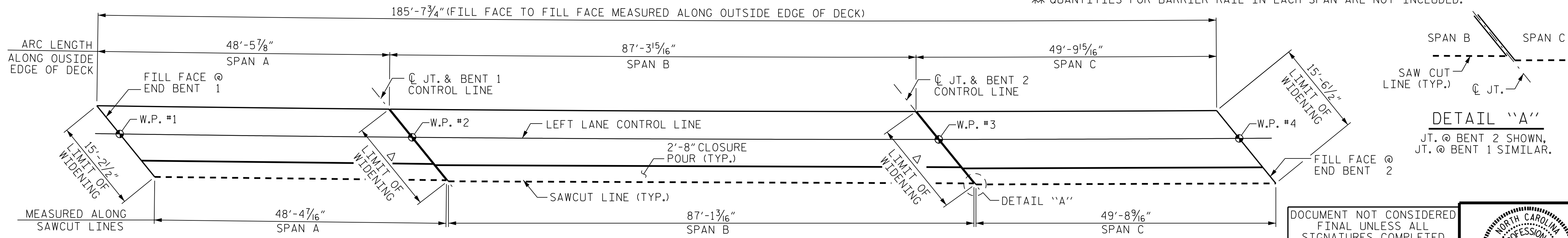
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

JOINT LENGTH ON WIDENED DECK (MEASURED ALONG CL OF JT. OR FILL FACE)		
	NEAR	FAR
SPAN A	15'-2 1/2"	Δ 15'-2 1/8"
SPAN B	Δ 15'-4 7/8"	Δ 15'-4 3/16"
SPAN C	Δ 15'-6 5/16"	15'-6 1/2"

Δ THE DISCREPANCY BETWEEN JOINT LENGTHS AT BENTS 1 & 2 IS DUE TO SAW CUT LINE PARALLEL TO CHORDED CL EXIST. EXTERIOR BEAM IN EACH SPAN. SEE DETAIL "A".



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK (DECK WIDENING AREA = 2,206 SQ. FT.)

PROJECT NO. U-2579AA
FORSYTH COUNTY
 STATION: 20+68.01 - Y2NBL -

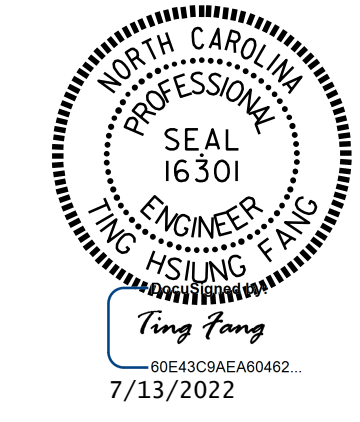
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD			
SUPERSTRUCTURE BILL OF MATERIAL			
LEFT LANE (NBL)			
REVISIONS			
NO.	BY:	DATE:	SHEET NO.
1			S06-21
2			TOTAL SHEETS 31

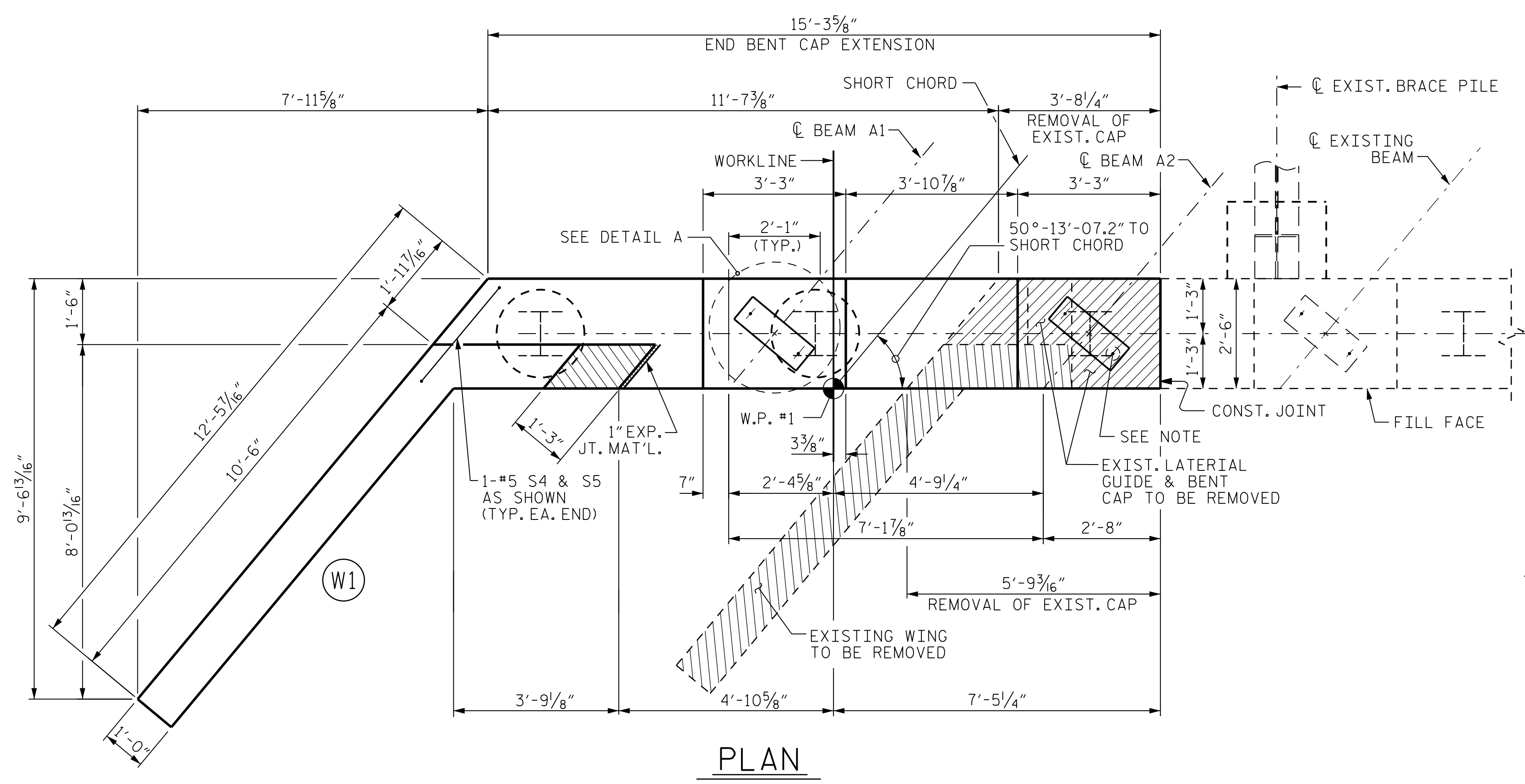
CDM Smith
 CDM SMITH
 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
 NC COA No. F-1255

DRAWN BY: VDK DATE: 9/18
 CHECKED BY: THF DATE: 9/18
 DESIGN ENGINEER: VDK DATE: 9/18

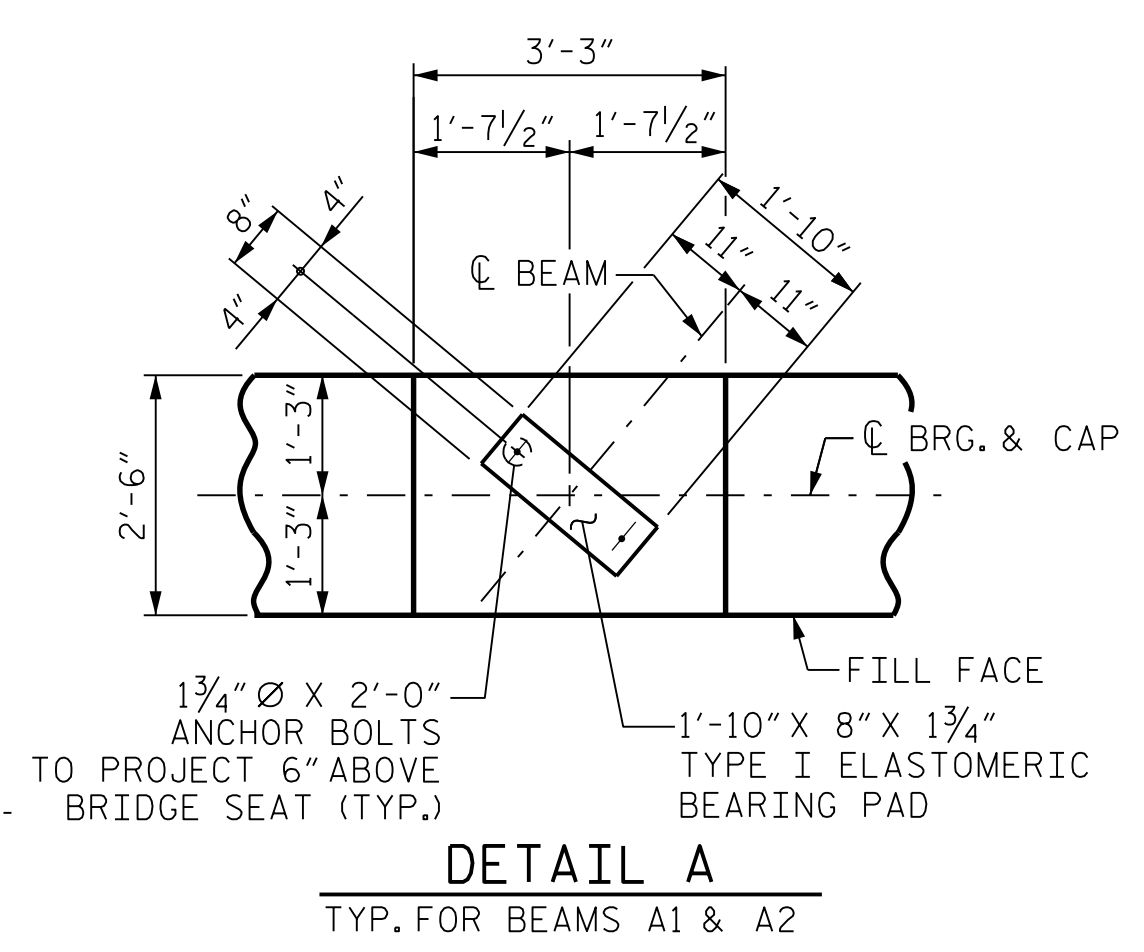
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DWG. No.

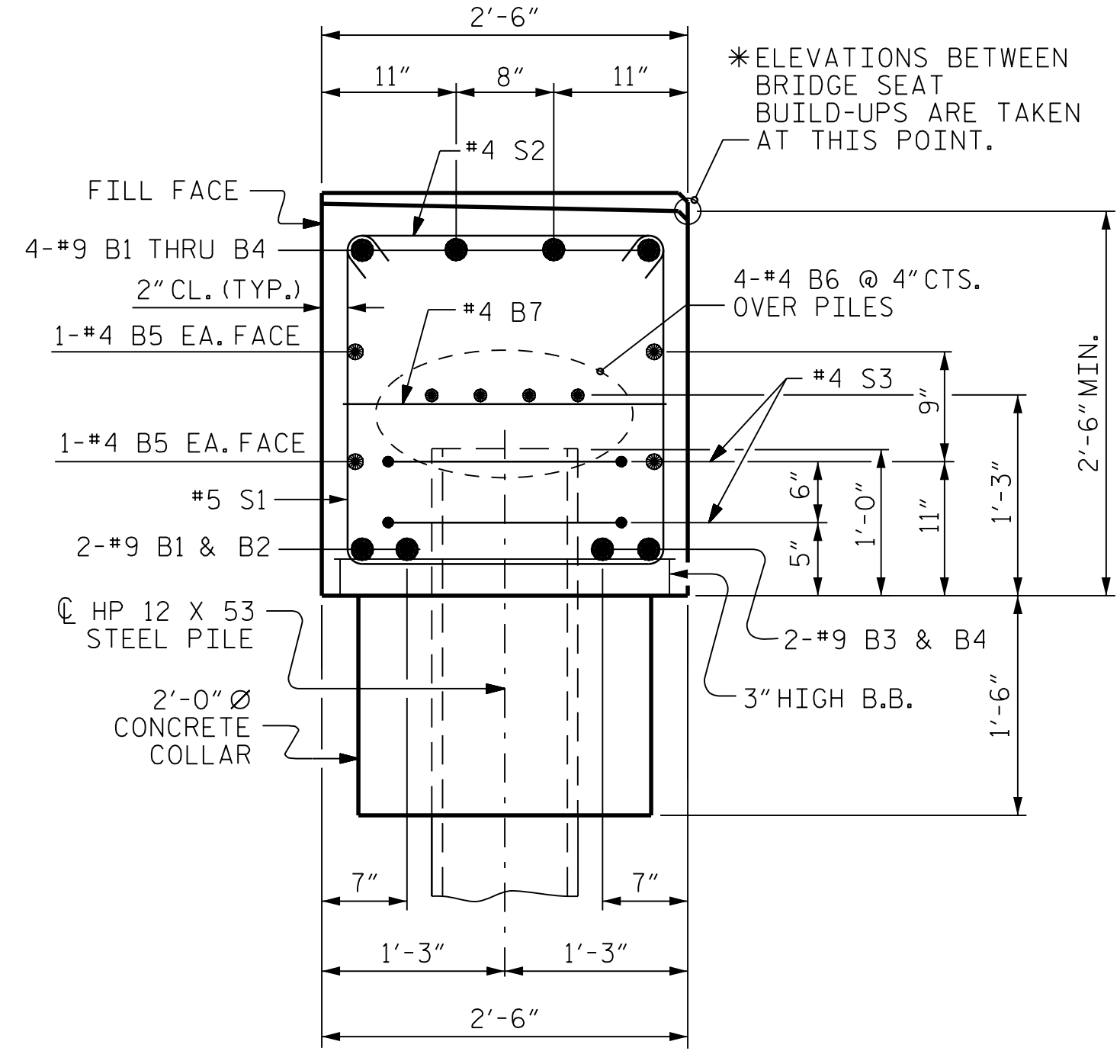




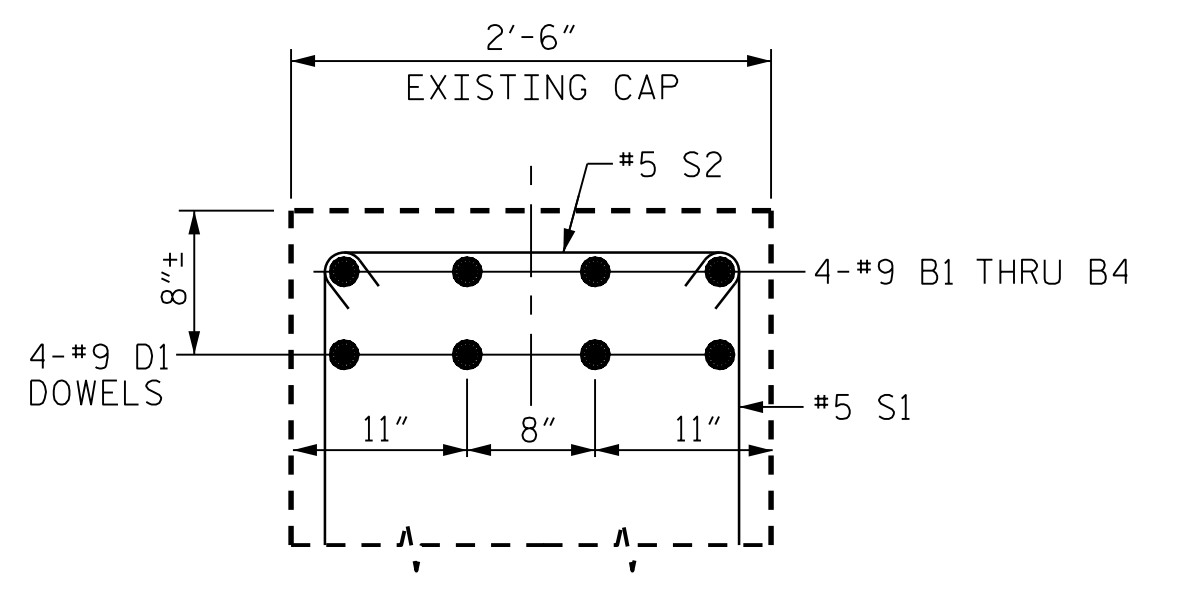
PLAN



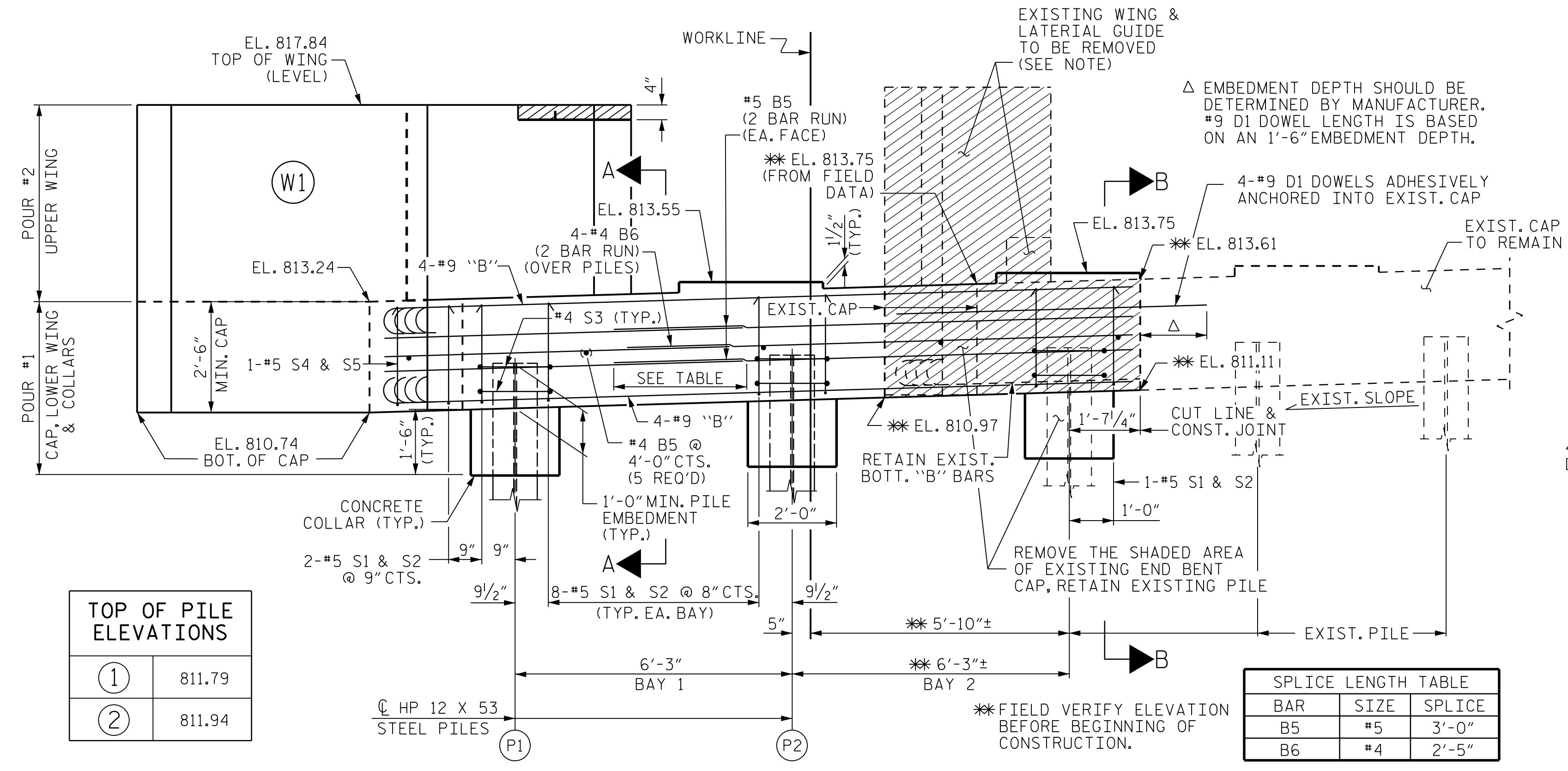
DETAIL A
TYP. FOR BEAMS A1 & A2



SECTION A-A



PARTIAL SECTION B-B
SHOWING #9 D1 DOWEL LOCATION



ELEVATION

PARTIAL OF EXISTING WING NOT SHOWN FOR CLARITY.

TOP OF PILE ELEVATIONS	
①	811.79
②	811.94

SPLICE LENGTH TABLE		
BAR	SIZE	SPLICE
B5	#5	3'-0"
B6	#4	2'-5"

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- * THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.
- THE CONTRACTOR MAY, BUT IS NOT REQUIRED TO COAT THE TOP SURFACE AREA COVERED BY THE CURTAIN WALL.
- THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAIL ARE CAST IF SLIP FORMING IS USED.

EXISTING EXTERIOR BRIDGE SEAT ELEVATIONS SHALL BE VERIFIED BY THE ENGINEER PRIOR TO FABRICATION OF THE SOLE PLATES. IF THE EXISTING BRIDGE SEAT ELEVATION IS MORE THAN 1/4" HIGHER OR LOWER THAN THE ELEVATION DETAILED IN THE PLANS, INCORPORATE THAT DIFFERENCE INTO THE SOLE PLATE HEIGHT AND ANCHOR BOLT LENGTH.

EXISTING LEFT WING, LATERAL GUIDE AND THE SHADED AREA OF END BENT CAP SHALL BE REMOVED IN ACCORDANCE WITH PLAN DETAILS. THE CONTRACTOR IS REQUIRED TO RETAIN EXISTING BOTTOM "B" BARS OF END BENT CAP. THE EXISTING STEEL PILE SHALL BE REMAINED AND SURROUNDING AREA SHALL BE KEPT CLEAN AND FREE OF DEBRIS. THE REMOVAL SHALL BE INCLUDED IN THE LUMP SUM PRICE BID FOR "REMOVAL OF EXISTING STRUCTURE AT STA. 20+68.01 -Y2NBL-".

THE #9 D1 DOWELS PLACED INTO THE EXISTING CAP SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM. LEVEL 1 FIELD TESTING IS REQUIRED, THE YIELD LOAD OF #9 D1 DOWELS IS 60.0 KIPS AND THE YIELD LOAD OF 1 3/4" ANCHOR BOLTS IS 144.3 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE ARTICLE 420-13 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 20+68.01 -Y2NBL-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1
 LEFT LANE (NBL)

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

TOTAL SHEETS: 31

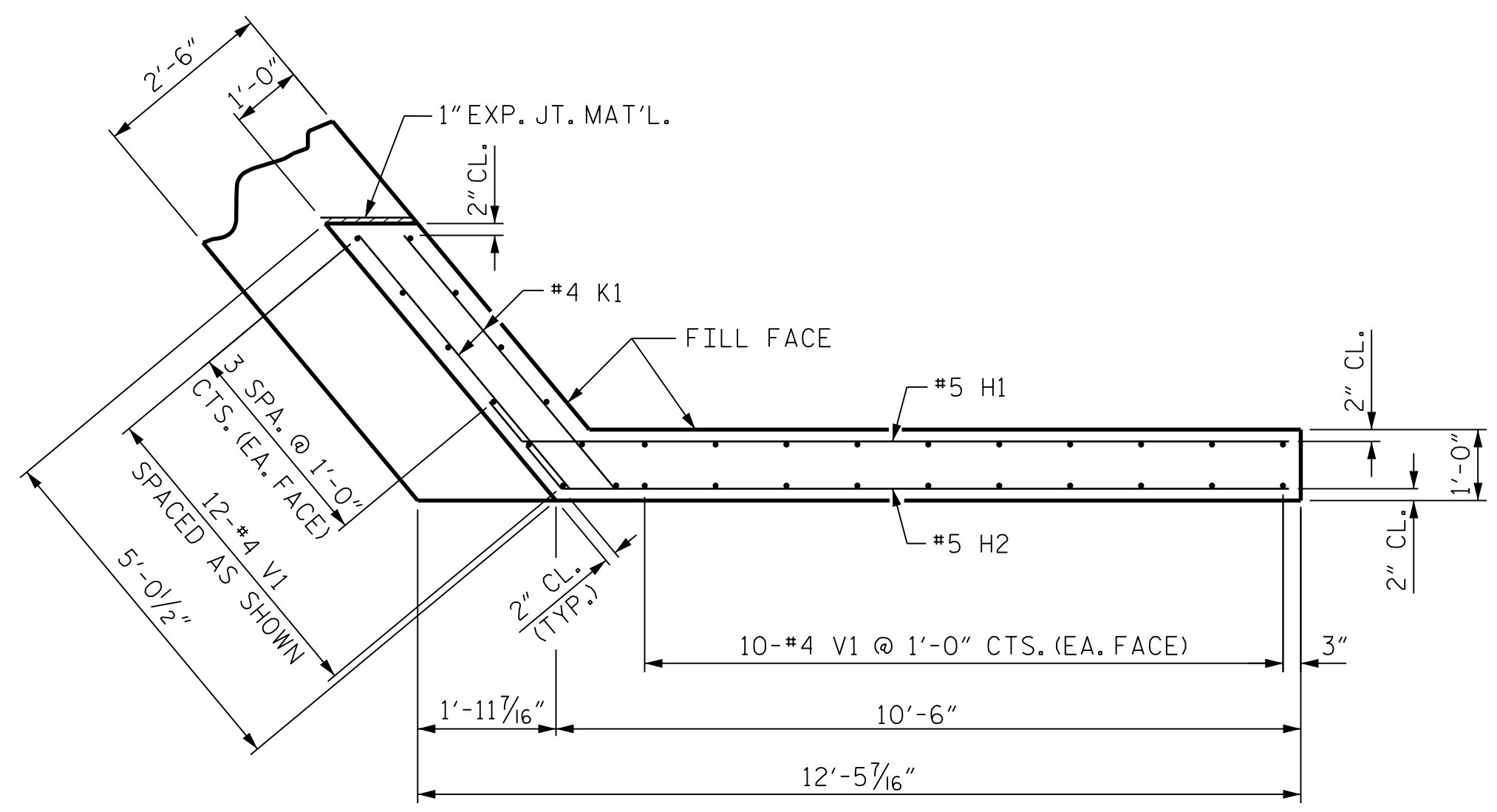
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 NC COA No. F-1255

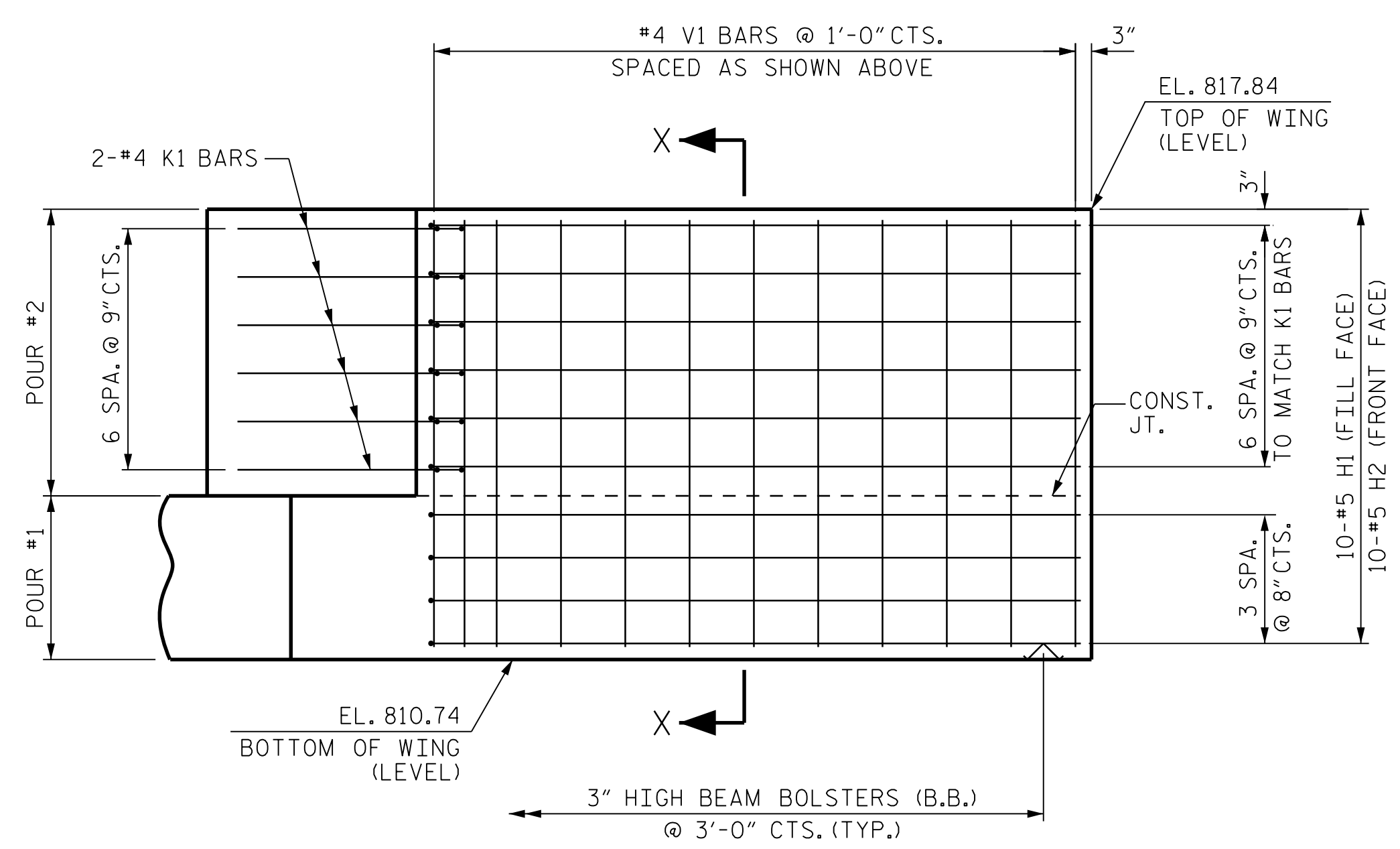
DRAWN BY: VDK DATE: 9/18
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 DESIGN ENGINEER: VDK DATE: 9/18

DWG. No.

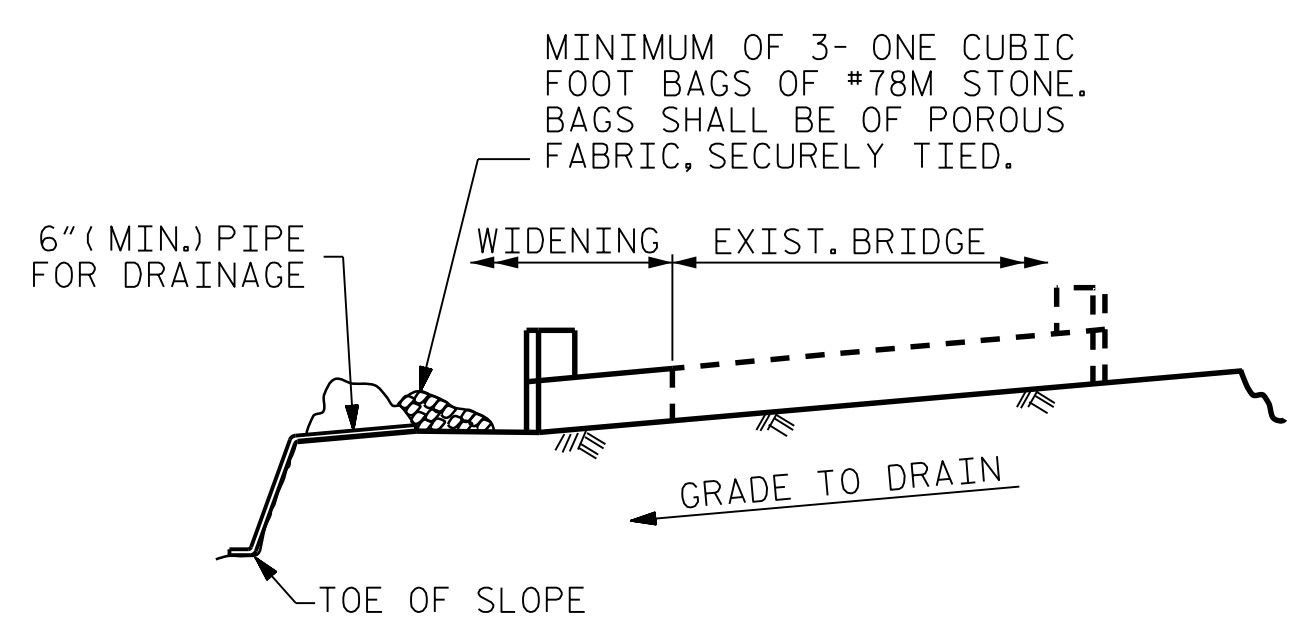




PLAN OF WING - (W1)



ELEVATION OF WING - (W1)

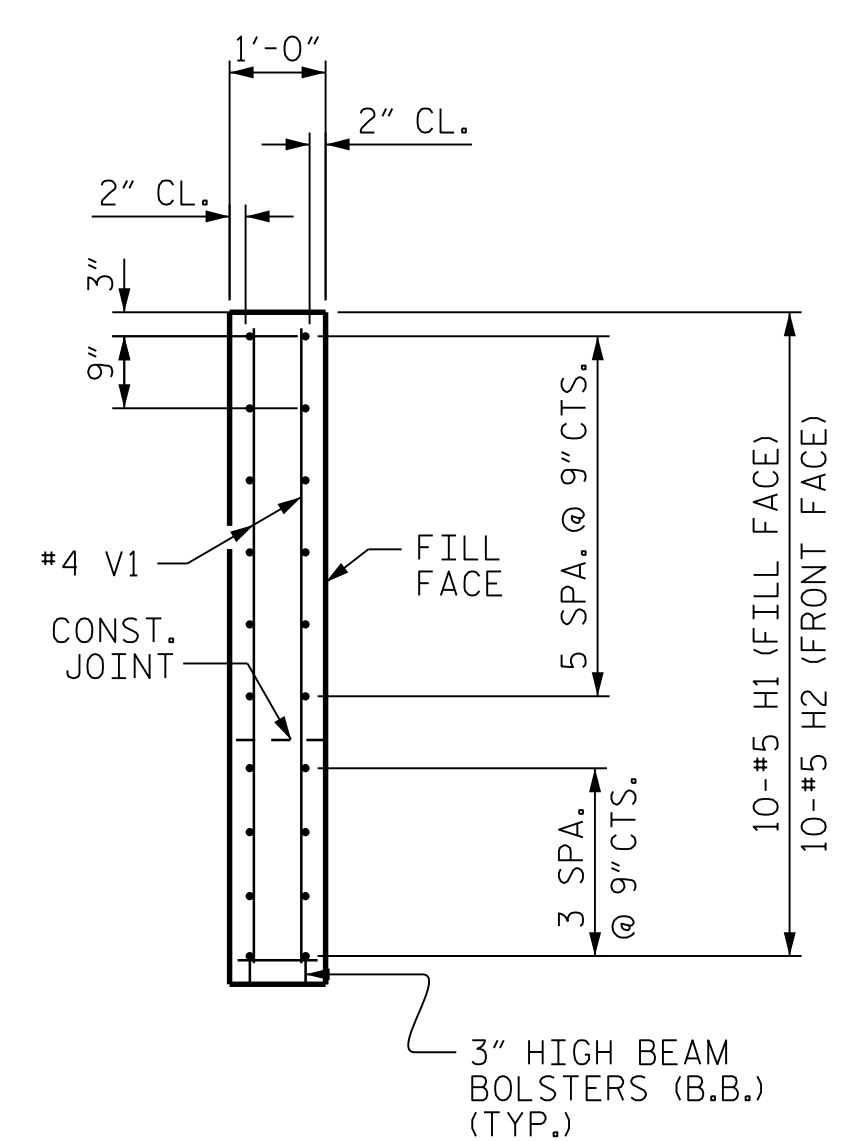


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

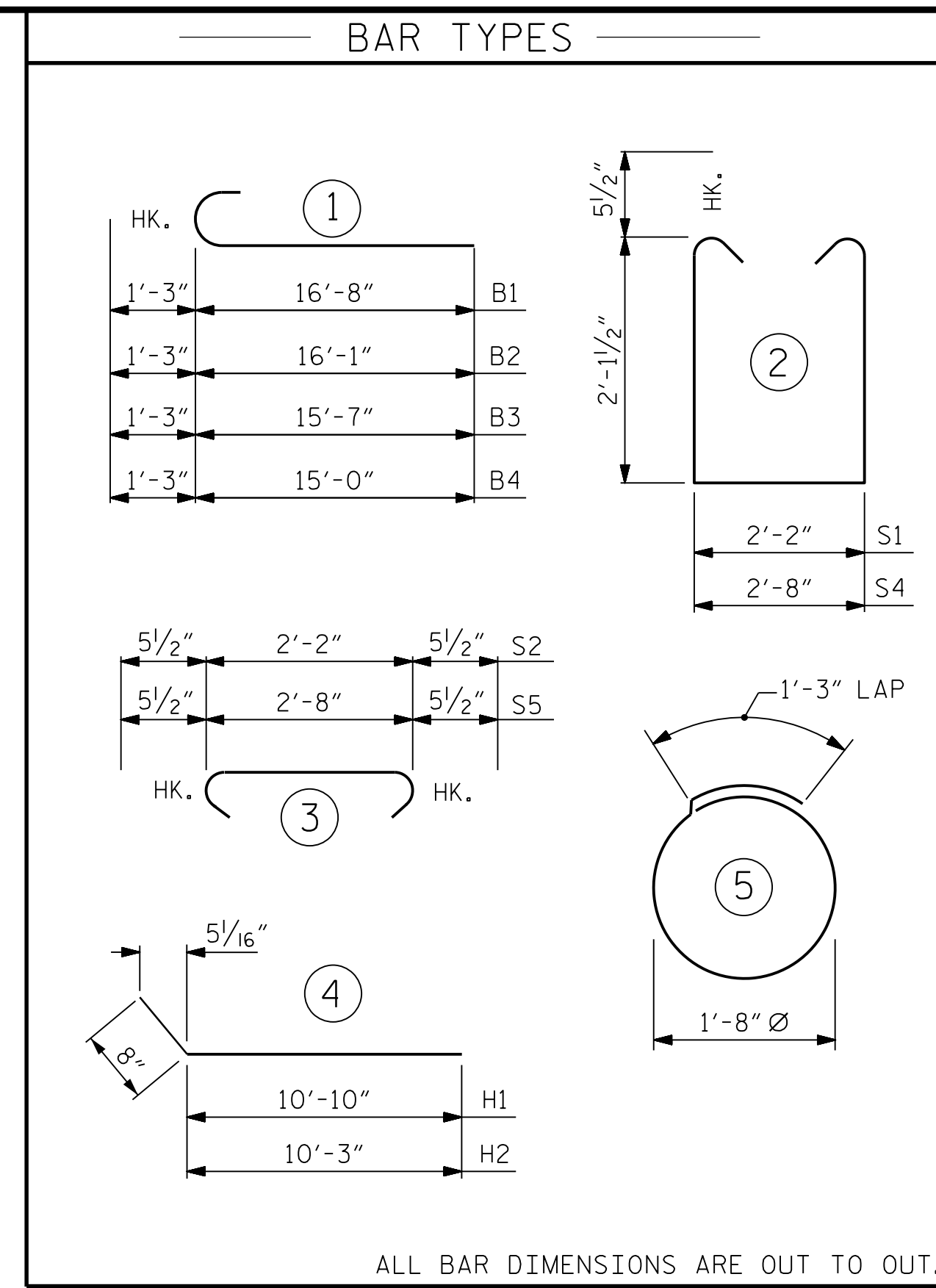
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT

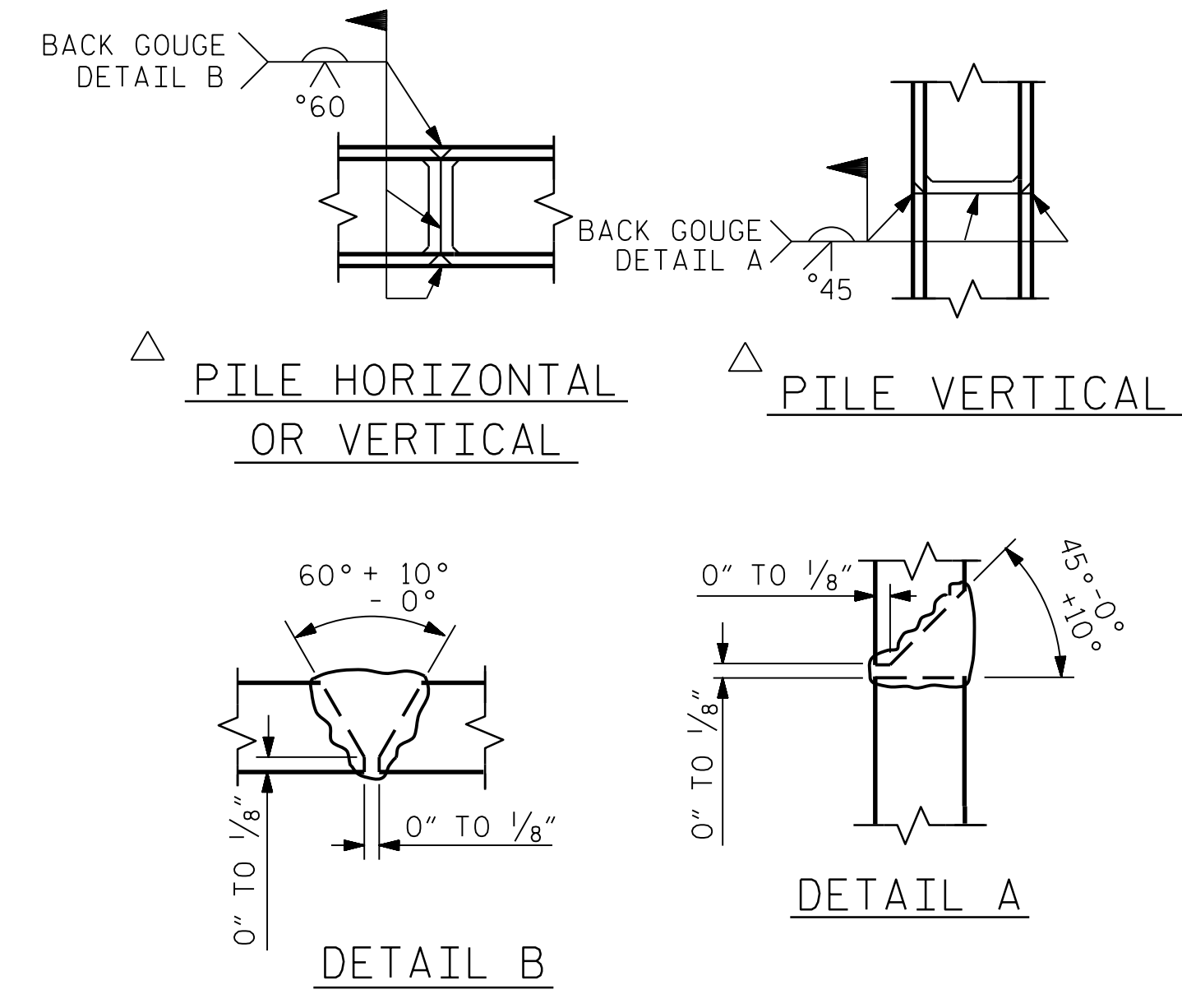


SECTION X-X



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#9	1	17'-11"	122
B2	2	#9	1	17'-4"	118
B3	2	#9	1	16'-10"	114
B4	2	#9	1	16'-3"	111
B5	8	#5	STR	9'-11"	83
B6	8	#4	STR	9'-5"	50
B7	5	#4	STR	2'-2"	7
D1	4	#9	STR	7'-0"	95
H1	10	#5	4	11'-6"	120
H2	10	#5	4	10'-11"	114
K1	12	#4	STR	4'-8"	37
S1	19	#5	2	7'-4"	145
S2	19	#5	3	3'-1"	61
S3	6	#4	5	6'-6"	26
S4	1	#5	2	7'-10"	8
S5	1	#5	3	3'-7"	4
V1	32	#4	STR	6'-8"	143
REINFORCING STEEL					1358 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP, LOWER PART OF LT. WINGS & COLLARS					5.3 C.Y.
POUR #2 UPPER PART OF LEFT WING					3.7 C.Y.
TOTAL CLASS A CONCRETE					9.0 C.Y.
HP 12 X 53 STEEL PILES					
NO: 2					LIN. FT. = 90
PILE DRIVING EQUIP. SETUP FOR HP 12 X 53 STEEL PILES					EA. 2
FOUNDATION EXCAVATION					LUMP SUM



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 20+68.01 -Y2NBL-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1
 DETAILS
 LEFT LANE (NBL)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 5400 Glenwood Avenue, Suite 400
 Raleigh, NC 27612-3228
 NC COA No. F-1255

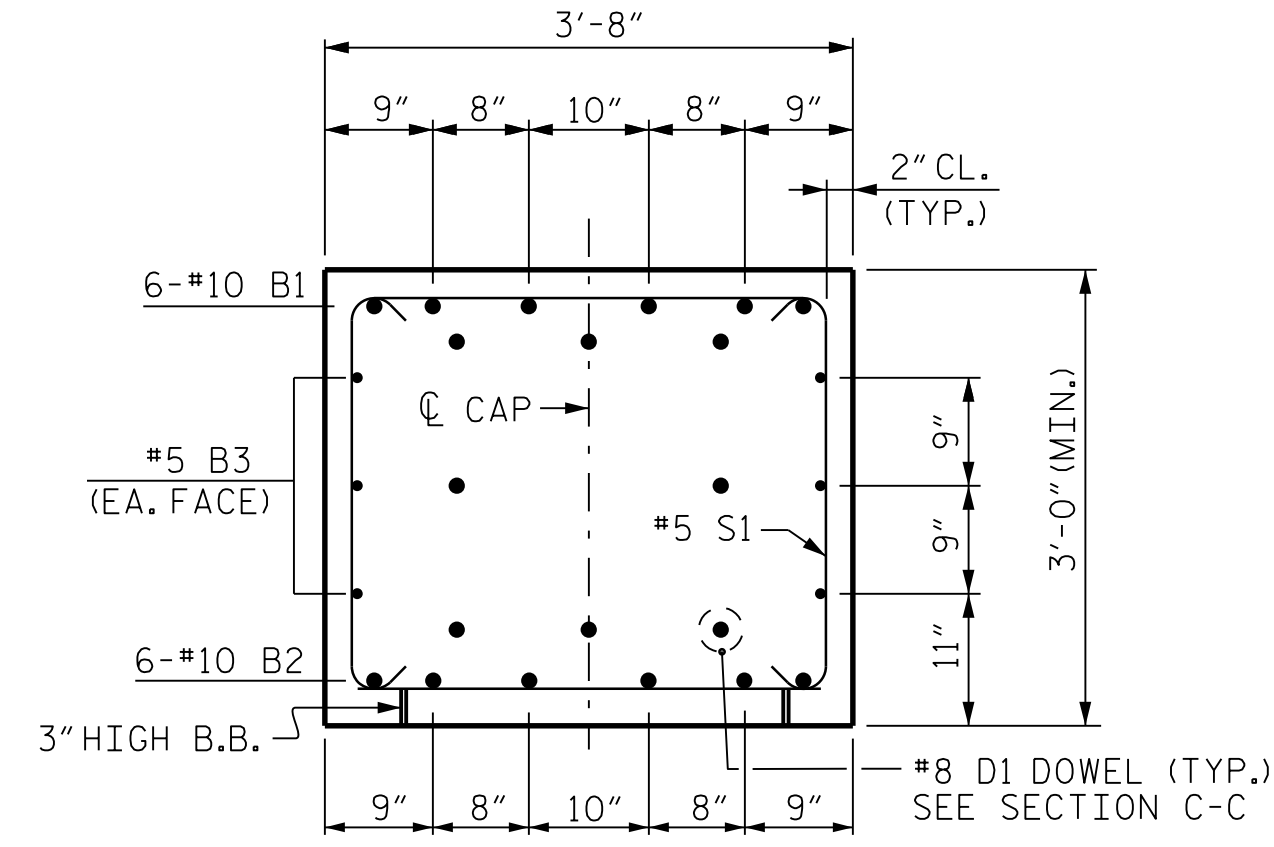
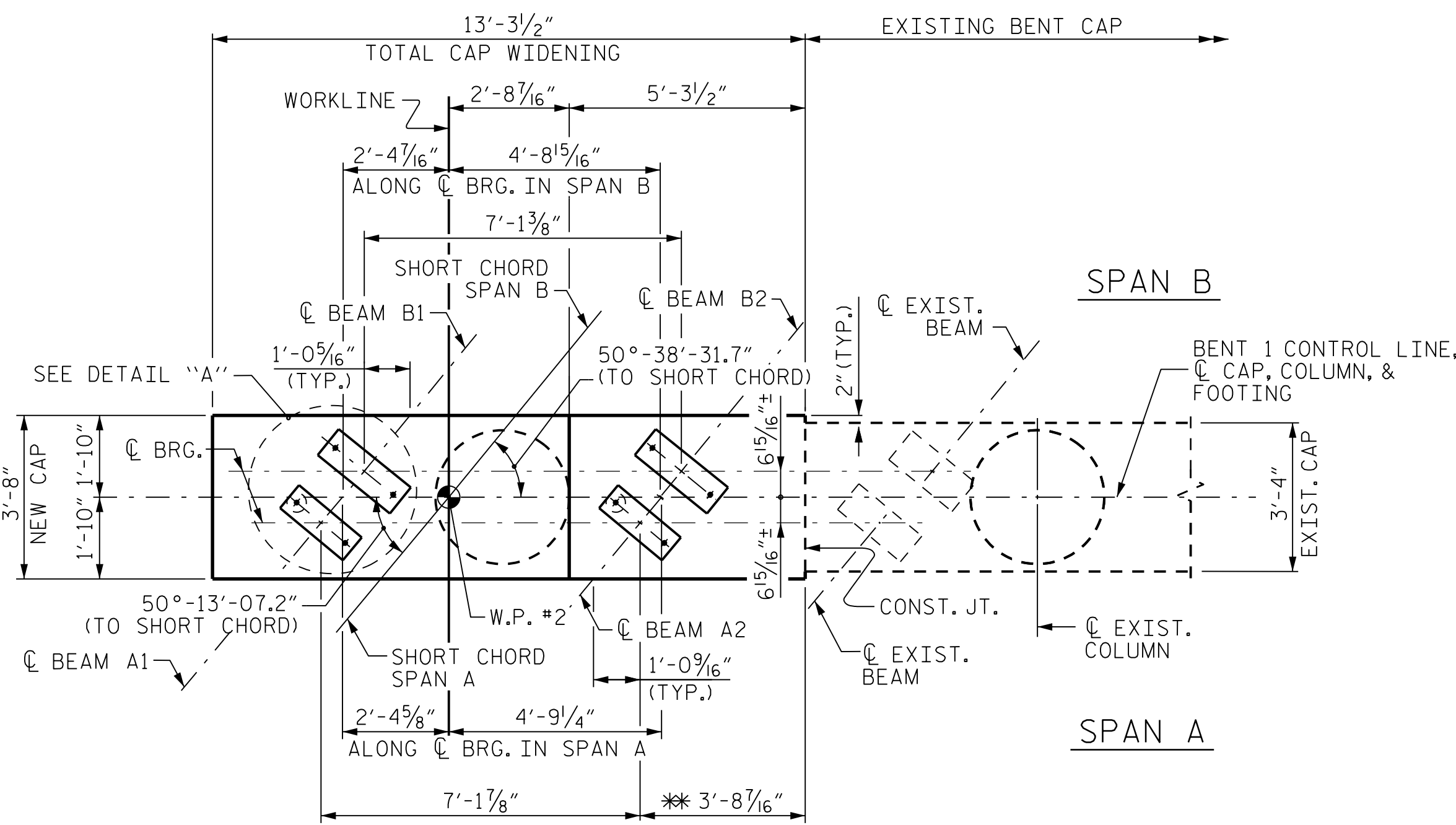
DRAWN BY: VDK DATE: 9/18
 CHECKED BY: THF DATE: 9/18
 DESIGN ENGINEER: VDK DATE: 9/18

DWG. No.

Professional Engineer Seal for Ting Pang, No. 16301, State of North Carolina.

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

SHEET NO. **S06-23**
 TOTAL SHEETS **31**
 SITE 6NBL



SECTION B-B

DOWELS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO AVOID INTERFERENCE WITH REINFORCING STEEL IN EXISTING CAP. #4 UI BAR NOT SHOWN FOR CLARITY.

NOTES:

STIRRUPS AND UI BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS

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

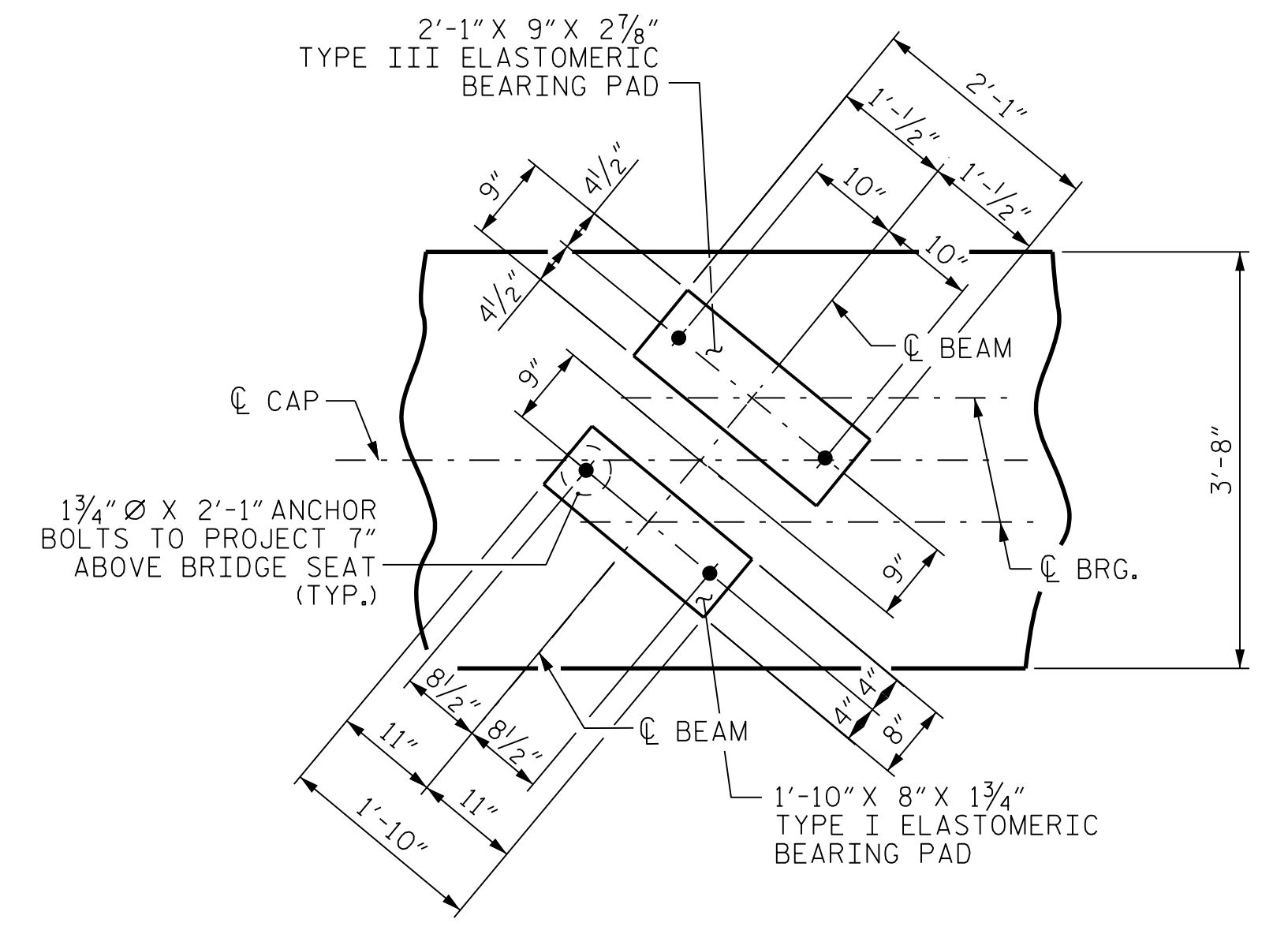
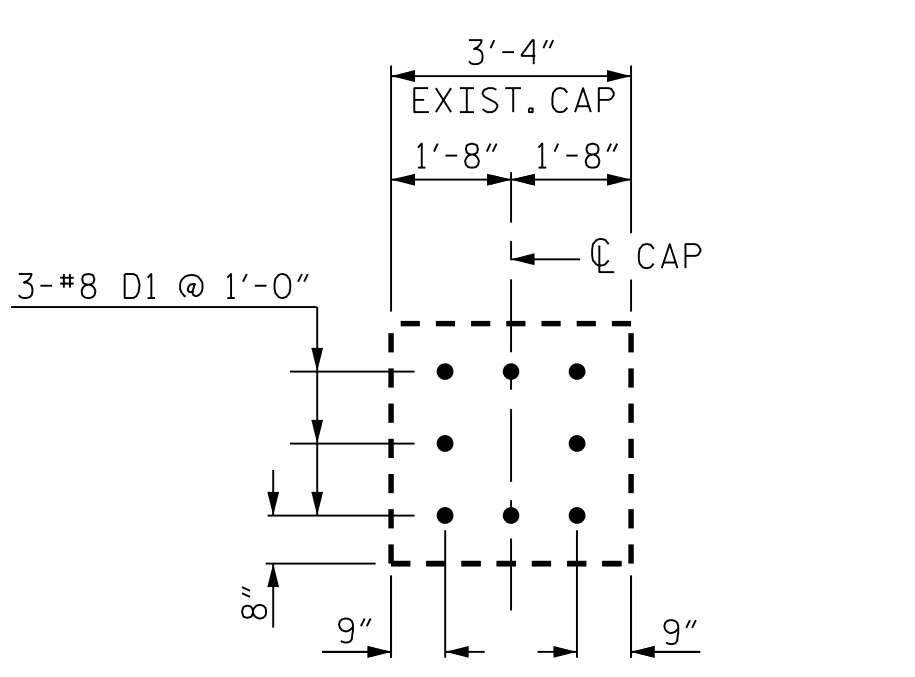
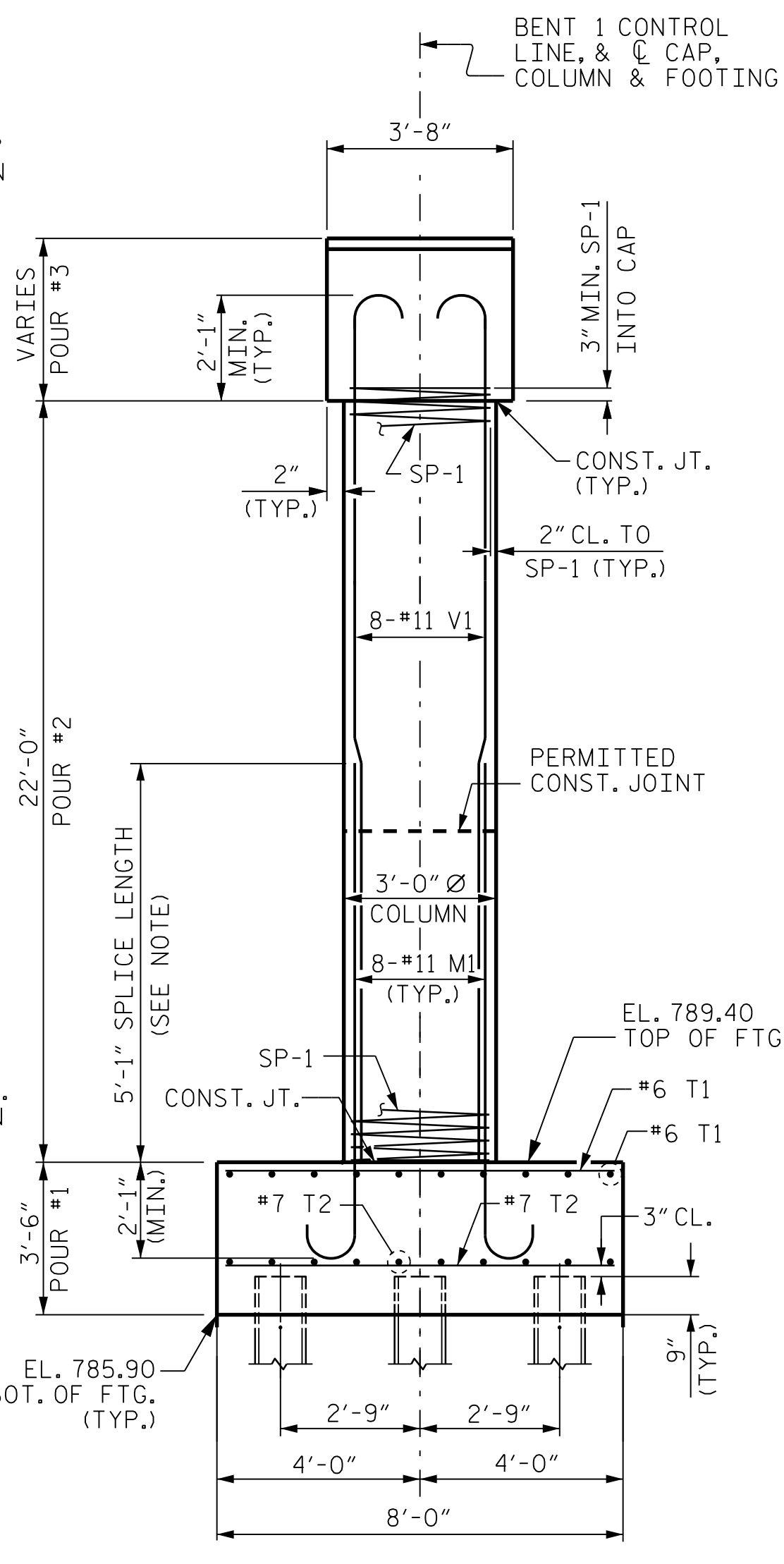
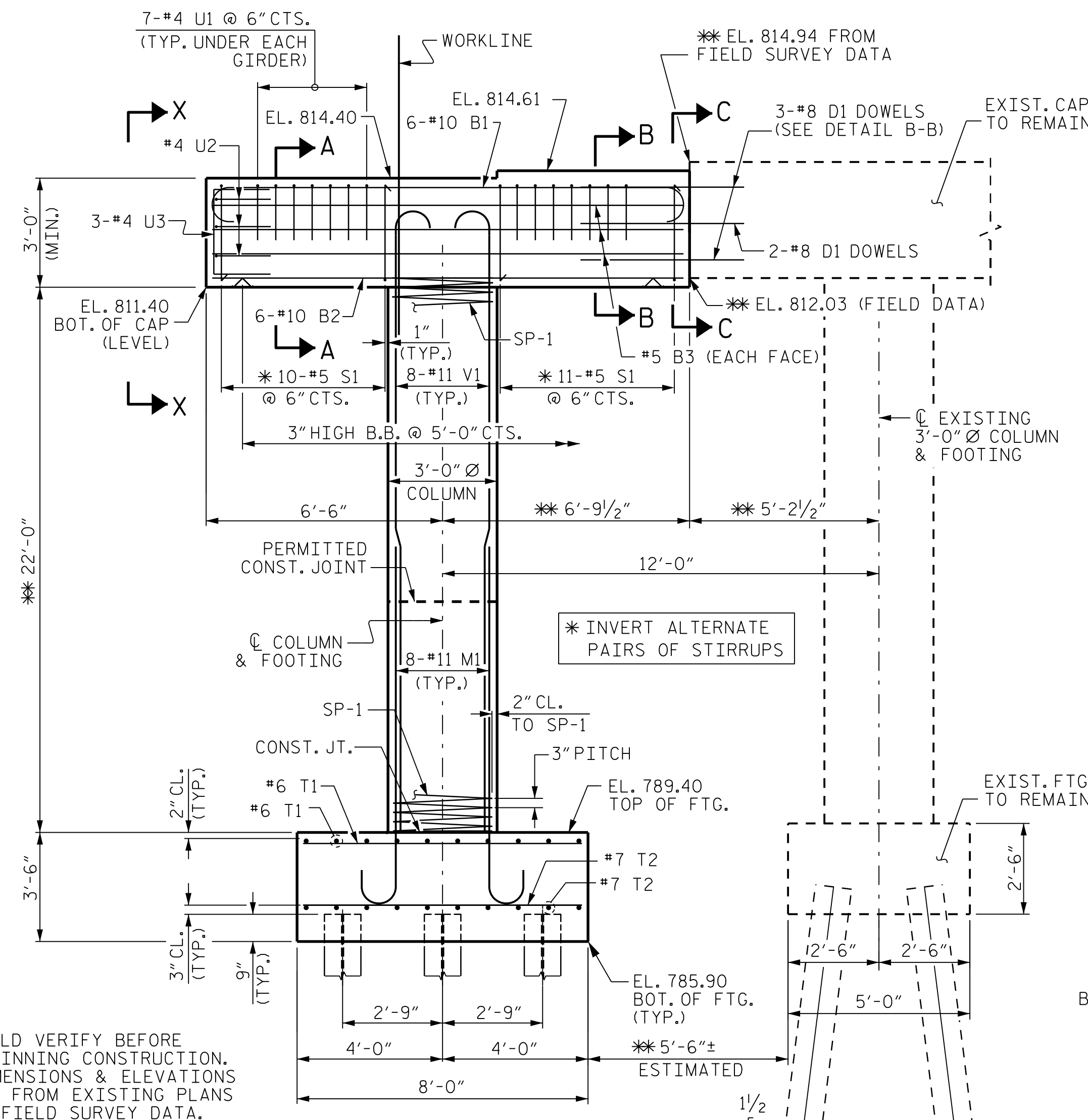
THE CONTRACTOR SHALL ALIGN THE V1 & M1 BARS AS SHOWN IN THE PLAN OF COLUMNS. HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE #11 M1 BARS ARE DETAILED WITH ONE FOOT OF EXTRA LENGTH.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

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

THE #8 DOWEL IN EXISTING CAP SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM. LEVEL 1 FIELD TESTING IS REQUIRED AND THE YIELD LOAD OF THE DOWELS IS 26.4 KIPS. DOWEL EMBEDMENT LENGTH TO BE VERIFIED BY THE MANUFACTURER OF THE ADHESIVE ANCHORING SYSTEM. SEE SECTION 420-13 OF THE STANDARD SPECIFICATIONS FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS.



PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 20+68.01 -Y2NBL-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

BENT 1

LEFT LANE (NBL)

REVISIONS

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

SHEET NO. S06-24

TOTAL SHEETS 31

SITE 6NBL

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5400 Glenwood Avenue, Suite 400
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NC COA No. F-1255

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DESIGN ENGINEER: VDK DATE: 9/18

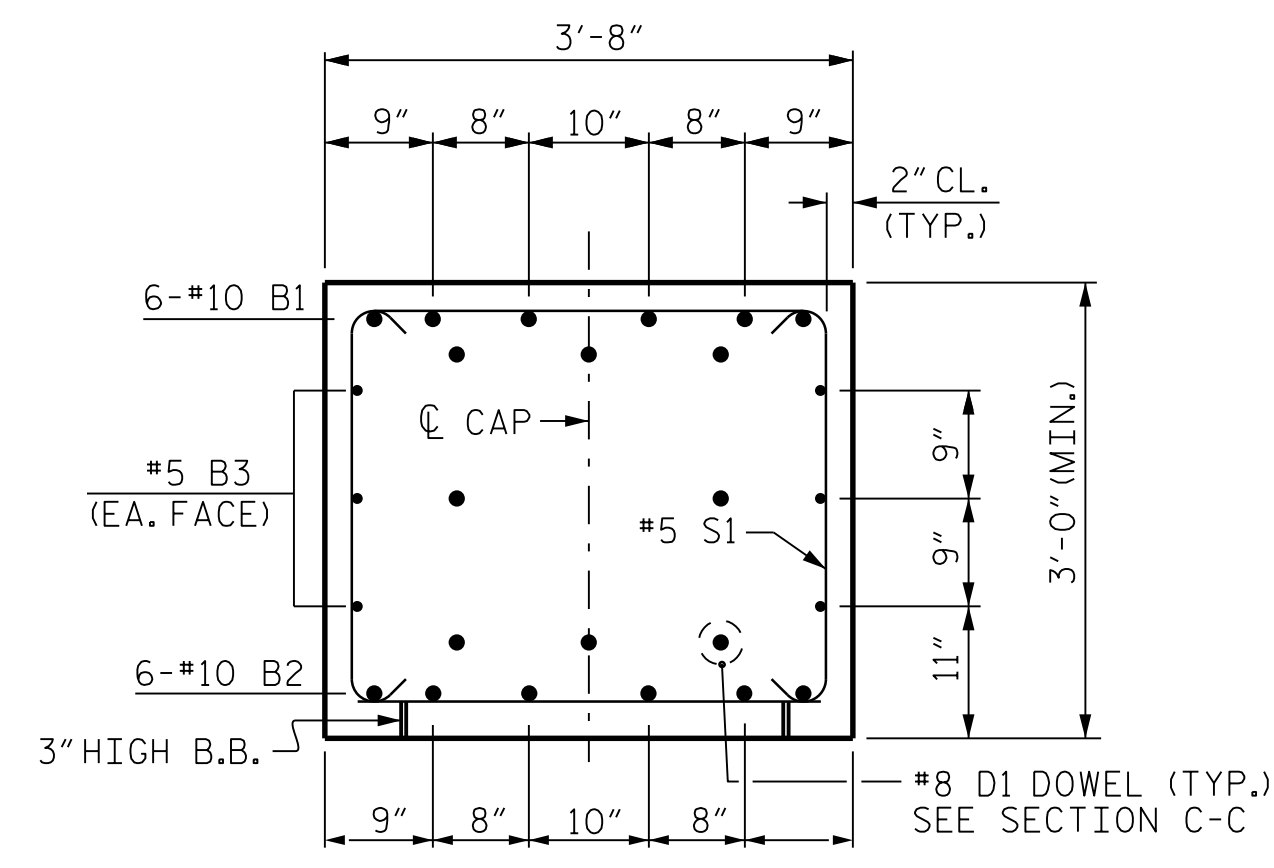
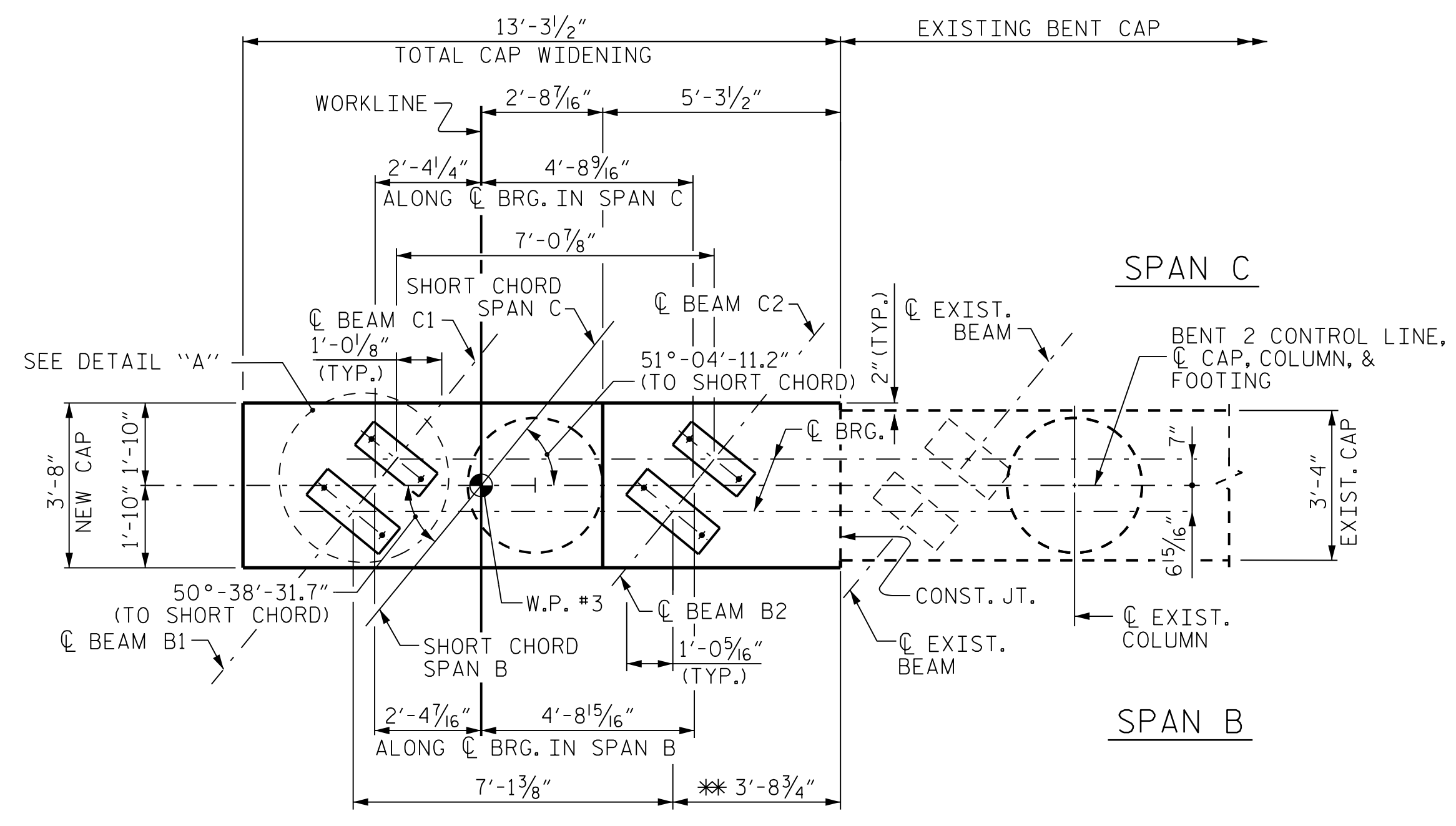
DWG. No.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 16301

TING FANG

7/13/2022

** FIELD VERIFY BEFORE BEGINNING CONSTRUCTION. DIMENSIONS & ELEVATIONS ARE FROM EXISTING PLANS OR FIELD SURVEY DATA.



SECTION B-B

DOWELS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO AVOID INTERFERENCE WITH REINFORCING STEEL IN EXISTING CAP. #4 UI BAR NOT SHOWN FOR CLARITY.

NOTES:

STIRRUPS AND UI BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS

HOOCS ON V2 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

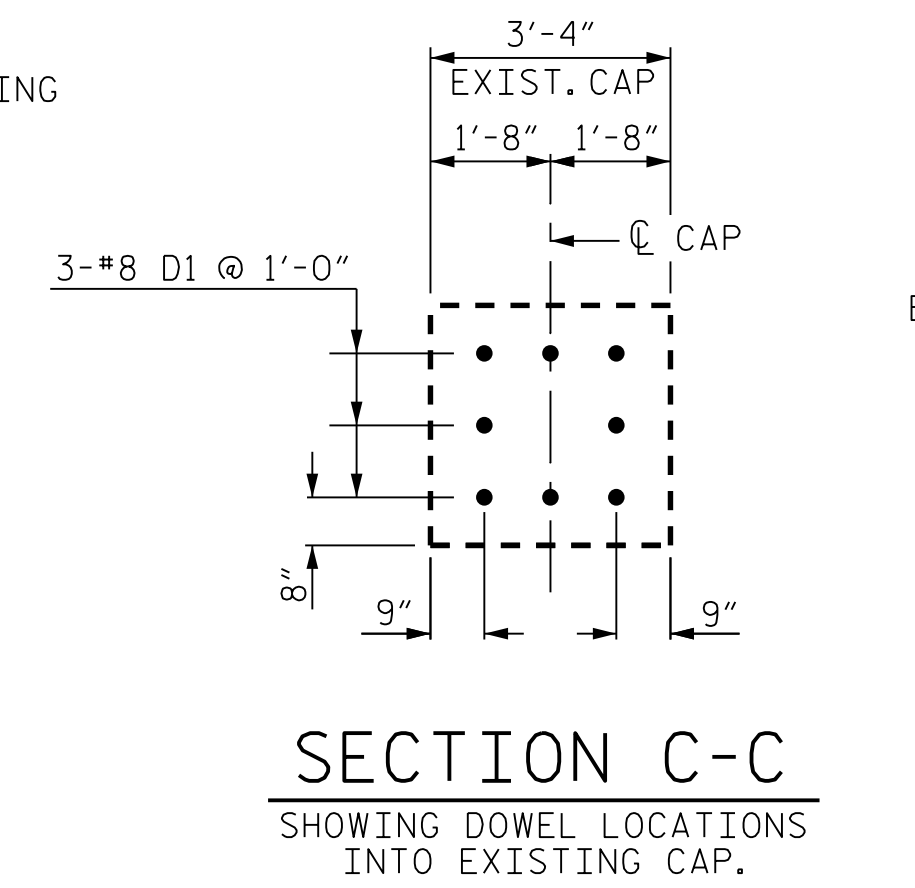
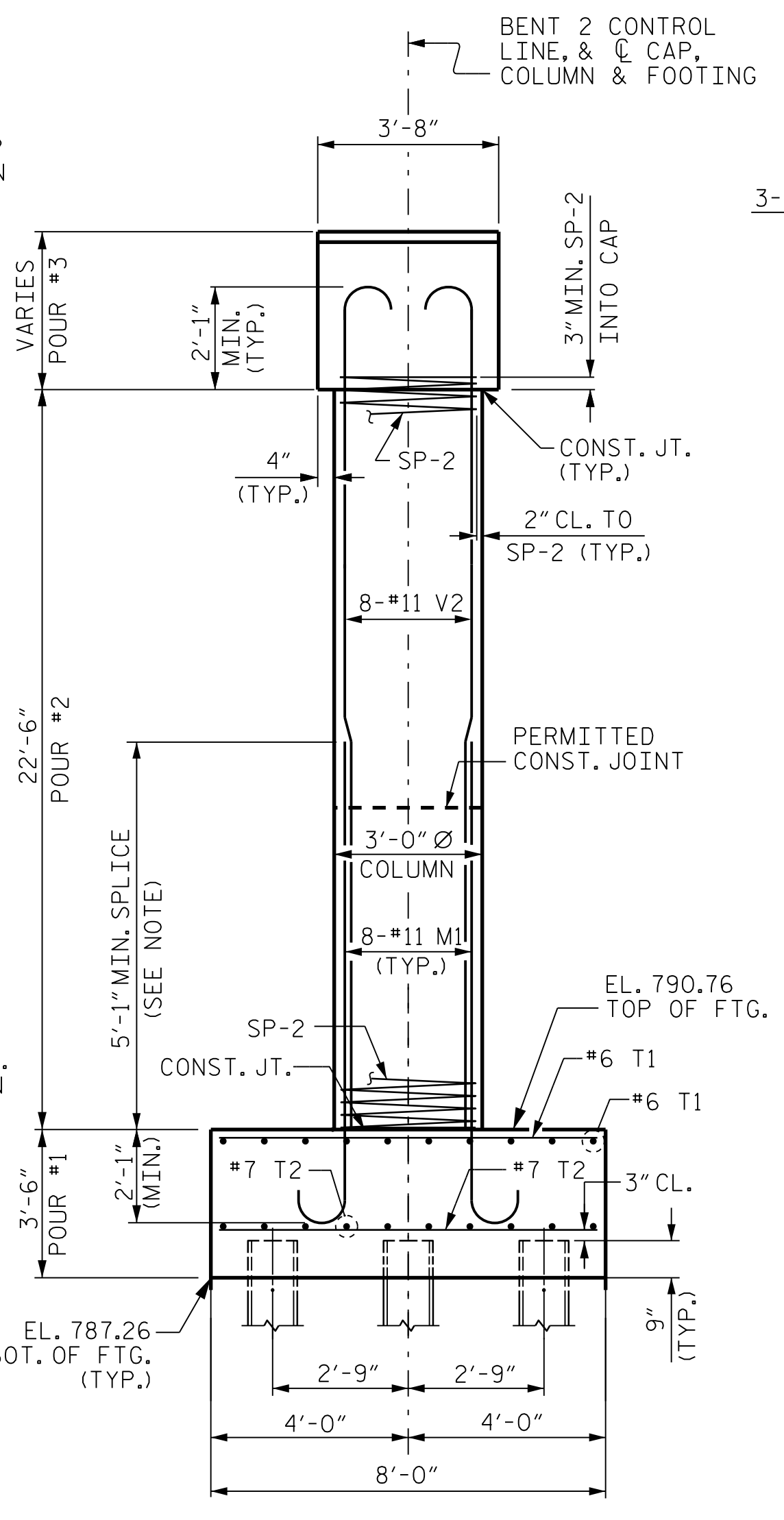
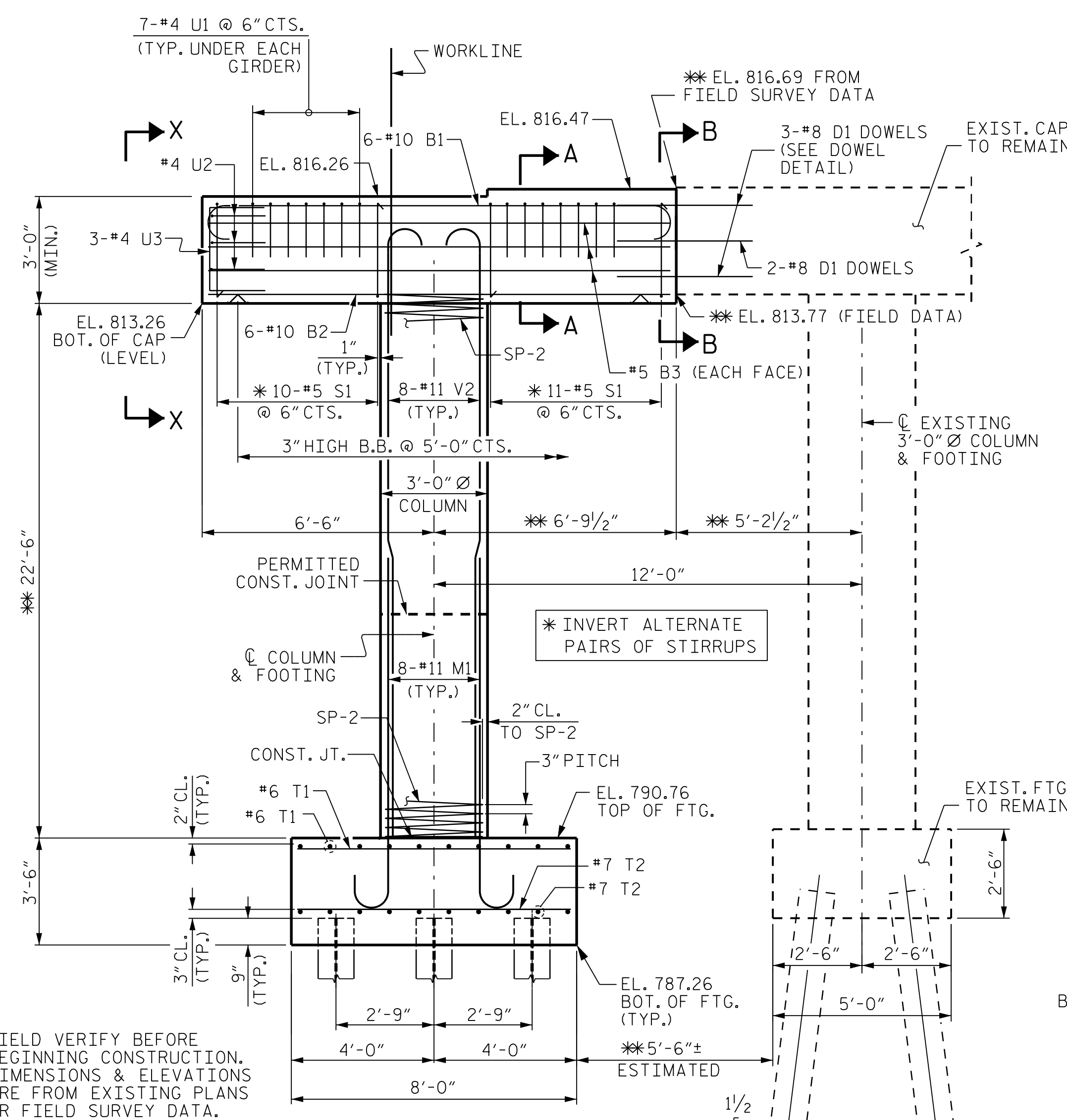
THE CONTRACTOR SHALL ALIGN THE V2 & M1 BARS AS SHOWN IN THE PLAN OF COLUMNS. HOOKS ON V2 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE #11 M1 BARS ARE DETAILED WITH ONE FOOT OF EXTRA LENGTH.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

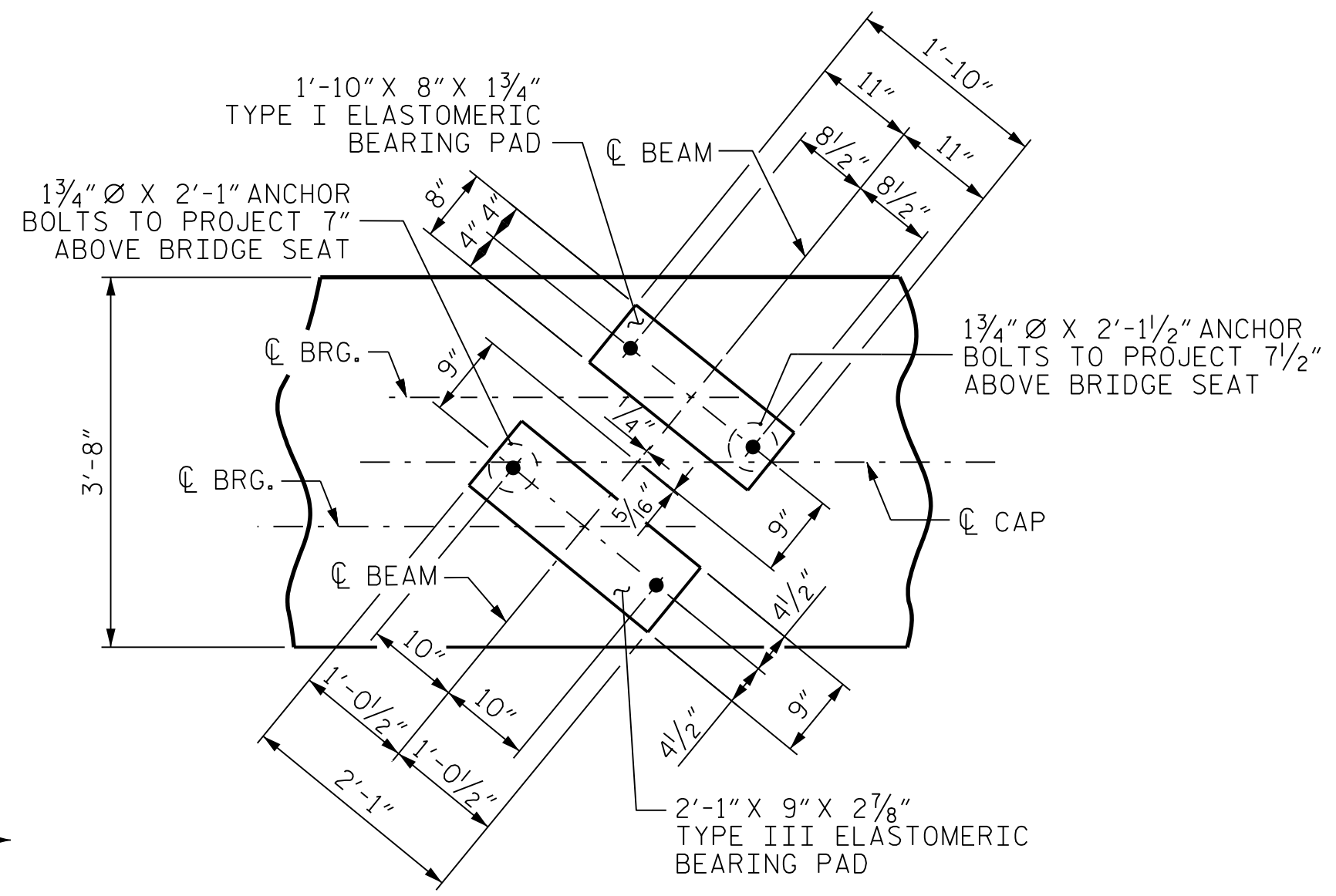
THE TOP SURFACE AREAS OF THE BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE #8 D1 DOWEL IN EXISTING CAP SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM. LEVEL 1 FIELD TESTING IS REQUIRED AND THE YIELD LOAD OF THE DOWELS IS 26.4 KIPS. DOWEL EMBEDMENT LENGTH TO BE VERIFIED BY THE MANUFACTURER OF THE ADHESIVE ANCHORING SYSTEM. SEE SECTION 420-13 OF THE STANDARD SPECIFICATIONS FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS.



DOWEL DETAIL

ANCHOR THE #8 DOWEL WITH EPOXY ADHESIVE IN ACCORDANCE WITH ADHESIVE MANUFACTURER'S RECOMMENDATIONS. DETAILS OF THE ANCHORING SYSTEM SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CDM Smith

CDM SMITH
5400 Glenwood Avenue, Suite 400
Raleigh, NC 27612-3228
NC COA No. F-1255

DRAWN BY: VDK DATE: 9/18
CHECKED BY: THF DATE: 9/18
DESIGN ENGINEER: VDK DATE: 9/18

DWG. No.

North Carolina Professional Engineer

SEAL 16301

TING FANG

7/13/2022

PROJECT NO. U-2579AA

FORSYTH COUNTY

STATION: 20+68.01 -Y2NBL-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

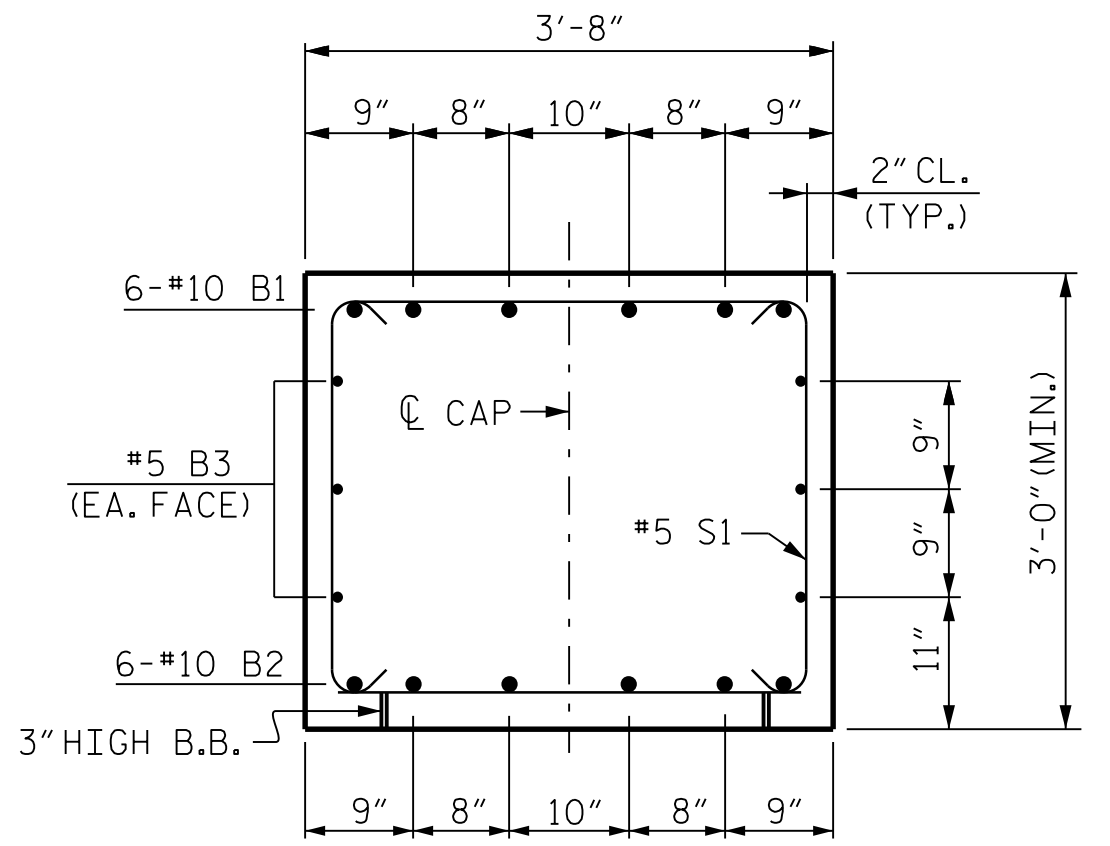
BENT 2

LEFT LANE (NBL)

REVISIONS						SHEET NO. S06-25
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 31
2			4			

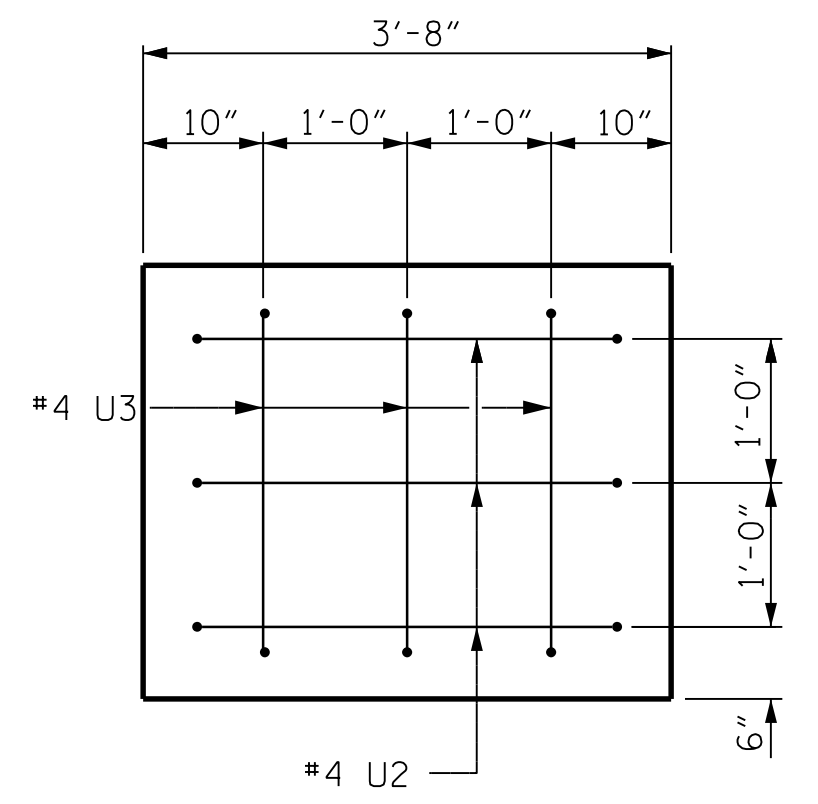
SITE 6NBL

FILE: SP1ES DATE: 5/24/25

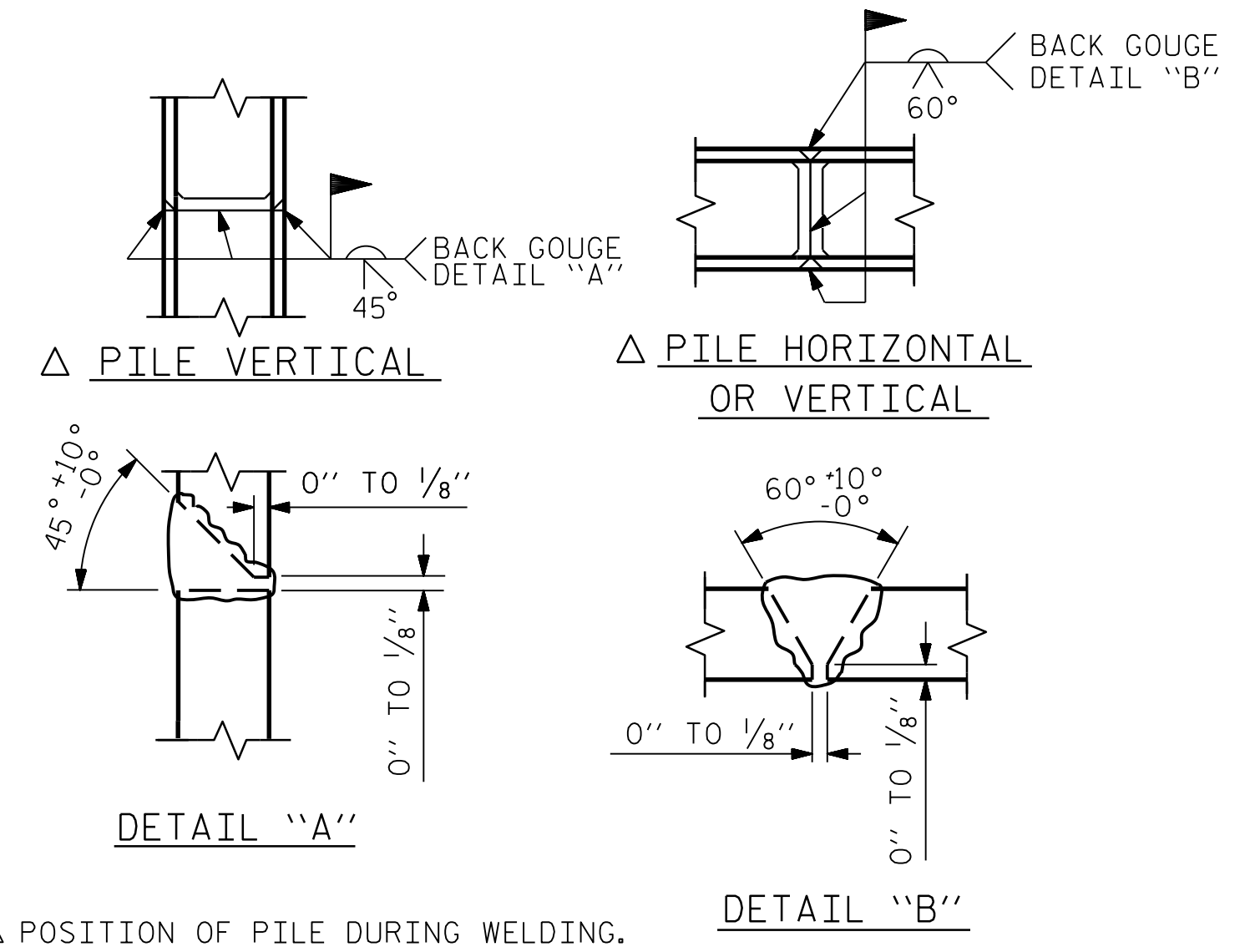


SECTION A-A

#4 U1 BAR NOT SHOWN FOR CLARITY.

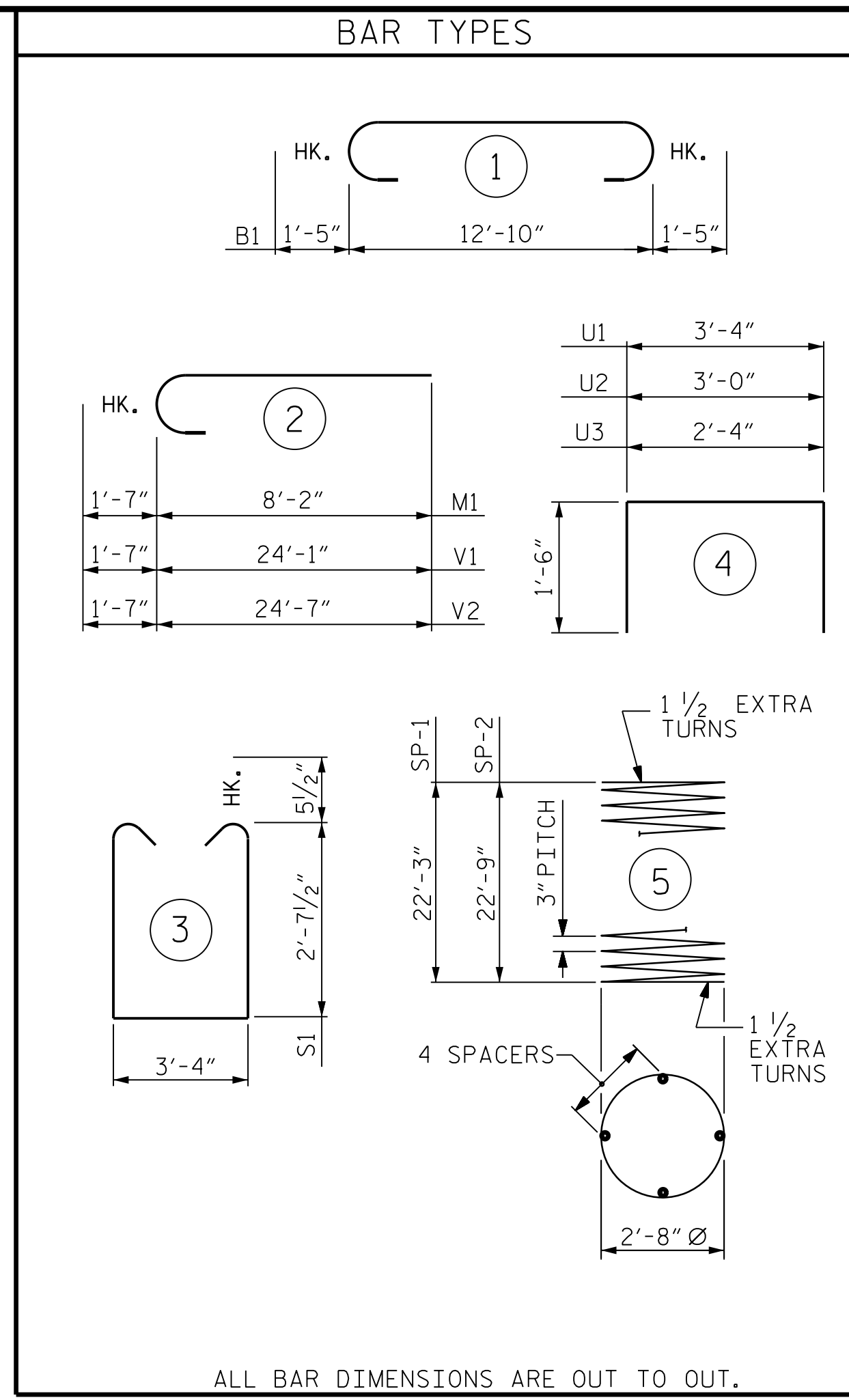


VIEW X-X



PILE SPLICE DETAILS

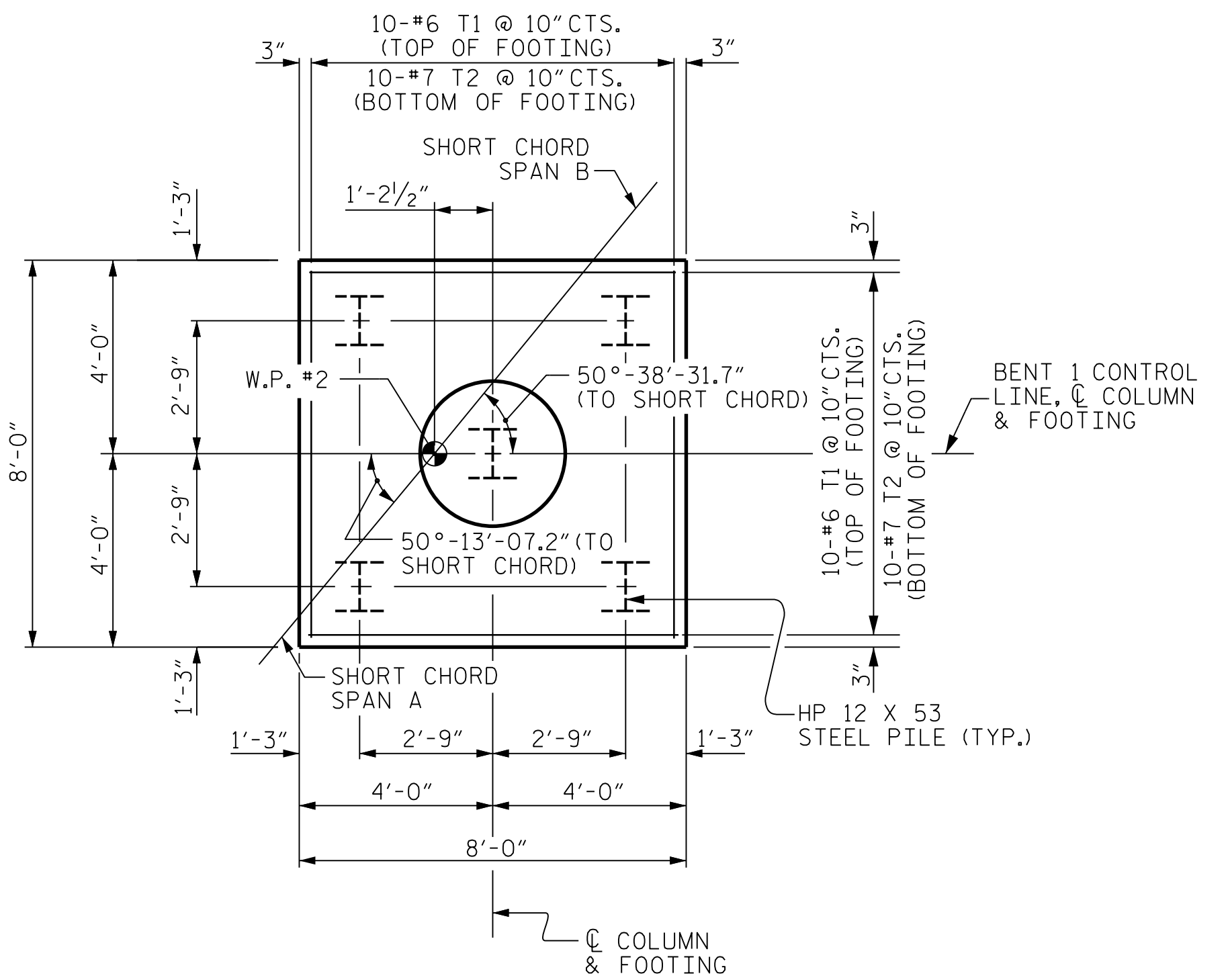
△ POSITION OF PILE DURING WELDING.



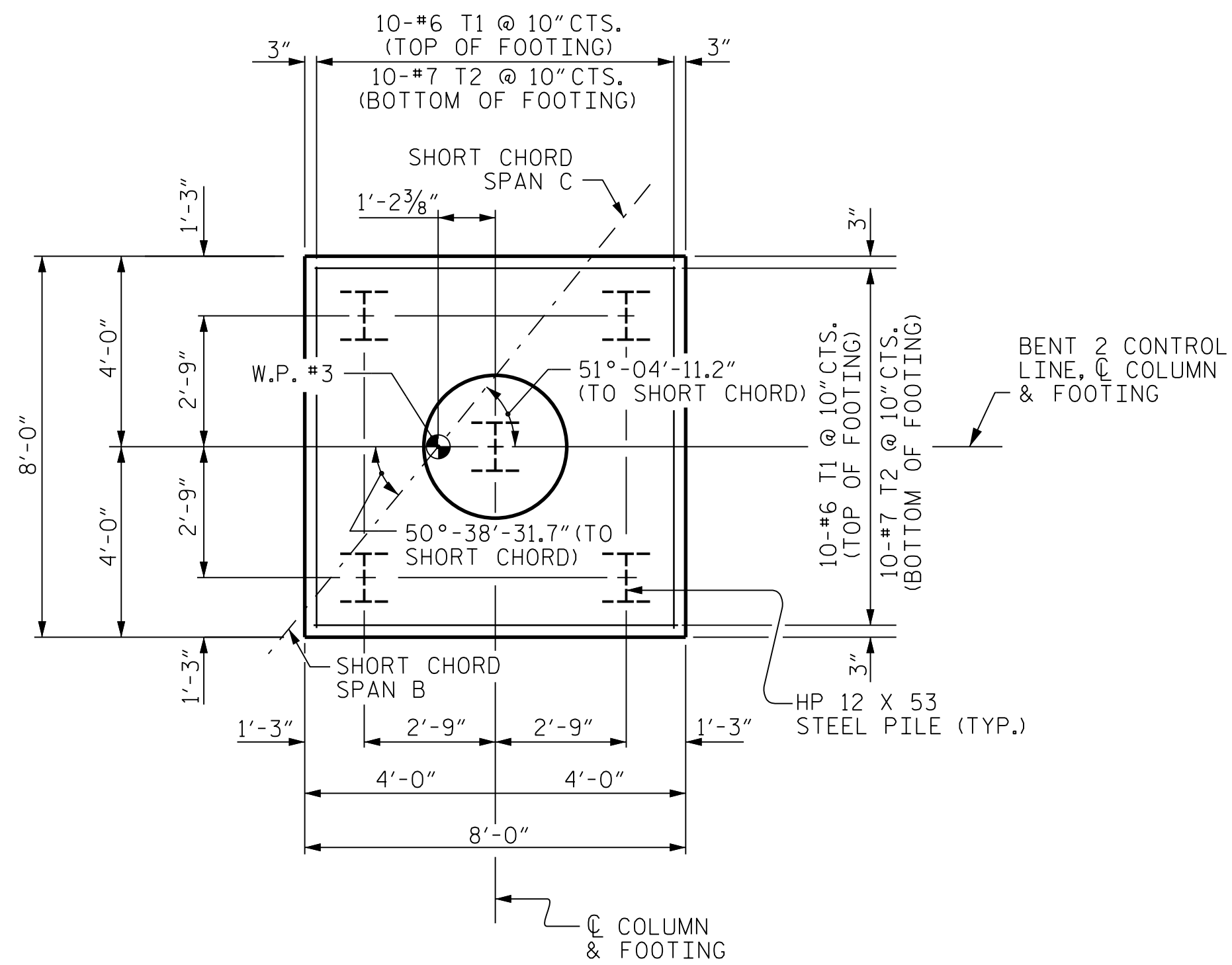
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL											
BENT 1					BENT 2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	1	15'-8"	404	B1	6	#10	1	15'-8"	404
B2	6	#10	STR	13'-0"	336	B2	6	#10	STR	13'-0"	336
B3	6	#5	STR	13'-0"	81	B3	6	#5	STR	13'-0"	81
D1	8	#8	STR	4'-6"	96	D1	8	#8	STR	4'-6"	96
M1	8	#11	2	9'-9"	414	M1	8	#11	2	9'-9"	414
S1	21	#5	3	9'-6"	208	S1	21	#5	3	9'-6"	208
T1	20	#6	STR	7'-8"	230	T1	20	#6	STR	7'-8"	230
T2	20	#7	STR	7'-8"	313	T2	20	#7	STR	7'-8"	313
U1	14	#4	4	6'-4"	59	U1	14	#4	4	6'-4"	59
U2	3	#4	4	6'-0"	12	U2	3	#4	4	6'-0"	12
U3	3	#4	4	5'-4"	11	U3	3	#4	4	5'-4"	11
V1	8	#11	2	25'-8"	1091	V2	8	#11	2	26'-2"	1112
REINFORCING STEEL = 3,257 LBS					REINFORCING STEEL = 3,278 LBS						
SP-1	1	**	5	771'-1"	515	SP-2	1	**	5	787'-10"	526
SPIRAL COLUMN REINFORCING STEEL = 515 LBS					SPIRAL COLUMN REINFORCING STEEL = 526 LBS						
CLASS A CONCRETE:					CLASS A CONCRETE:						
POUR #1 (FOOTING) = 8.3 C.Y.					POUR #1 (FOOTING) = 8.3 C.Y.						
POUR #2 (COLUMN) = 5.8 C.Y.					POUR #2 (COLUMN) = 5.9 C.Y.						
POUR #3 (CAP) = 5.6 C.Y.					POUR #3 (CAP) = 5.6 C.Y.						
TOTAL CLASS A CONCRETE 19.7 C.Y.					TOTAL CLASS A CONCRETE 19.8 C.Y.						
HP 12 X 53 STEEL PILES					HP 12 X 53 STEEL PILES						
No. 5 LIN. FT. 125					No. 5 LIN. FT. 100						
PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES EA. 5					PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES EA. 5						
FOUNDATION EXCAVATION LUMP SUM					FOUNDATION EXCAVATION LUMP SUM						

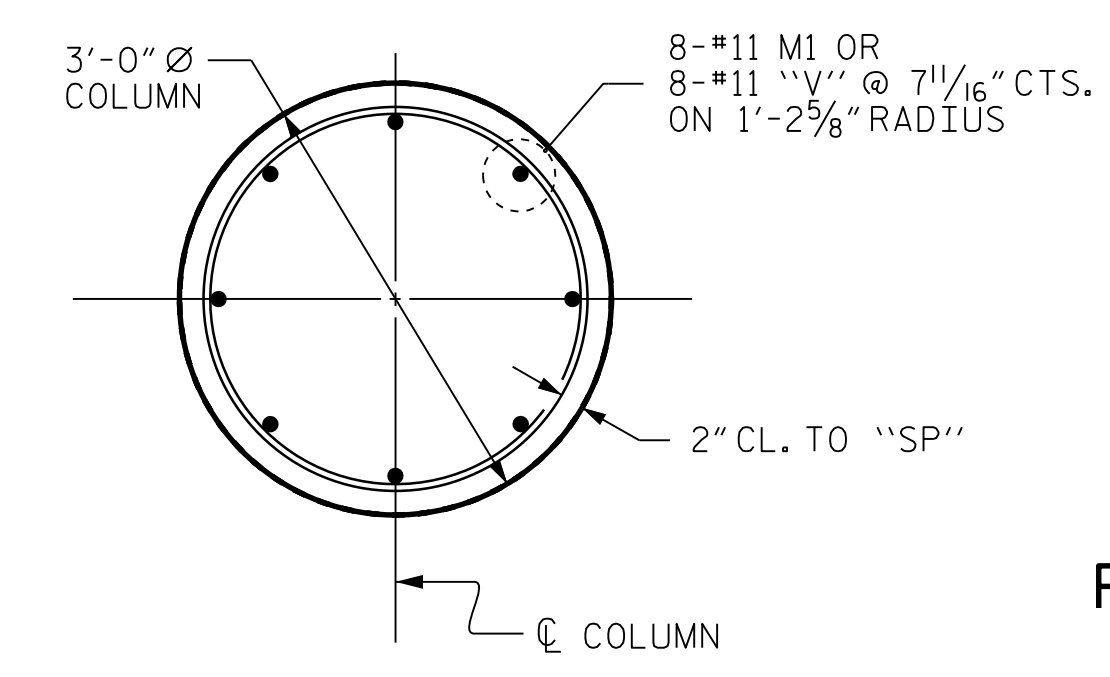
*THE "SP" SPIRAL REINFORCING STEEL SHALL BE W-20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.



PLAN OF FOOTING AT BENT 1



PLAN OF FOOTING AT BENT 2



COLUMN DETAILS TYPICAL FOR BOTH BENTS

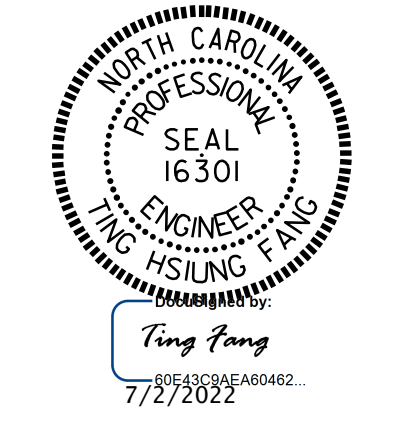
PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 20+68.01 -Y2NBL-
 SHEET 3 OF 3

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 NC COA No. F-1255

DRAWN BY: VDK DATE: 9/18
 CHECKED BY: THF DATE: 9/18
 DESIGN ENGINEER: VDK DATE: 9/18

DWG. No.

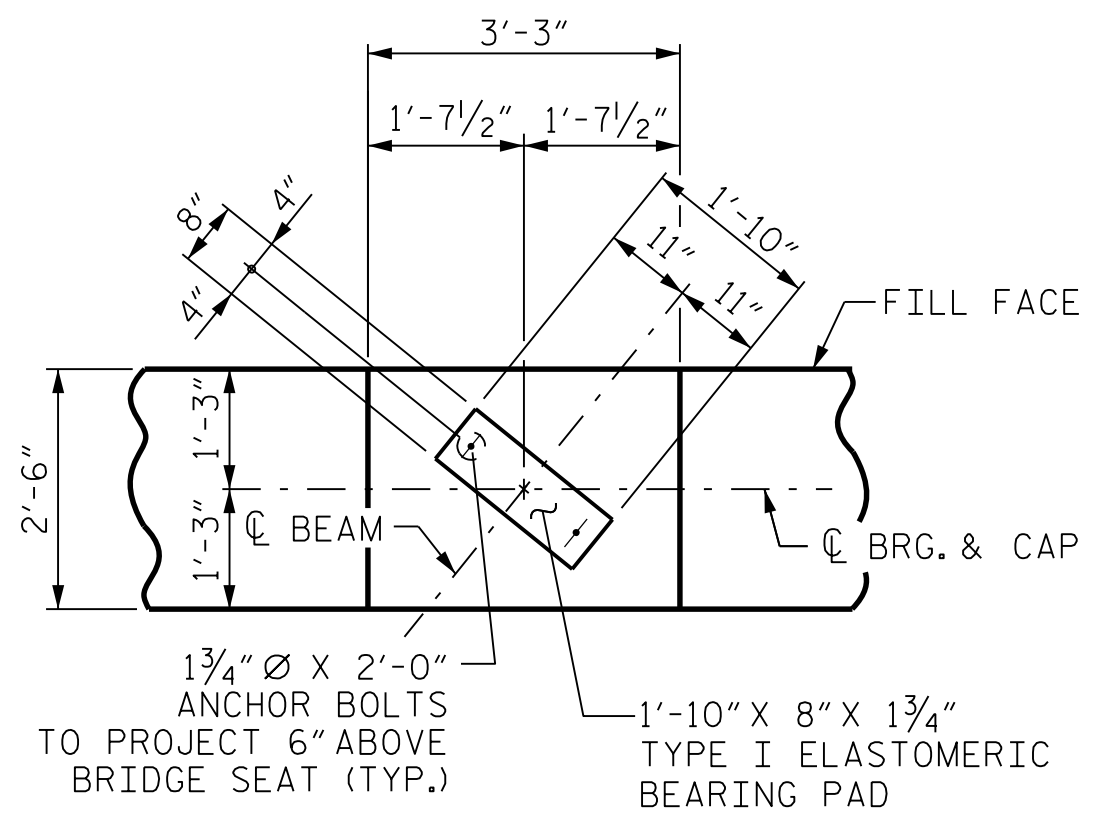


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
BENTS 1 & 2					
LEFT LANE (NBL)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

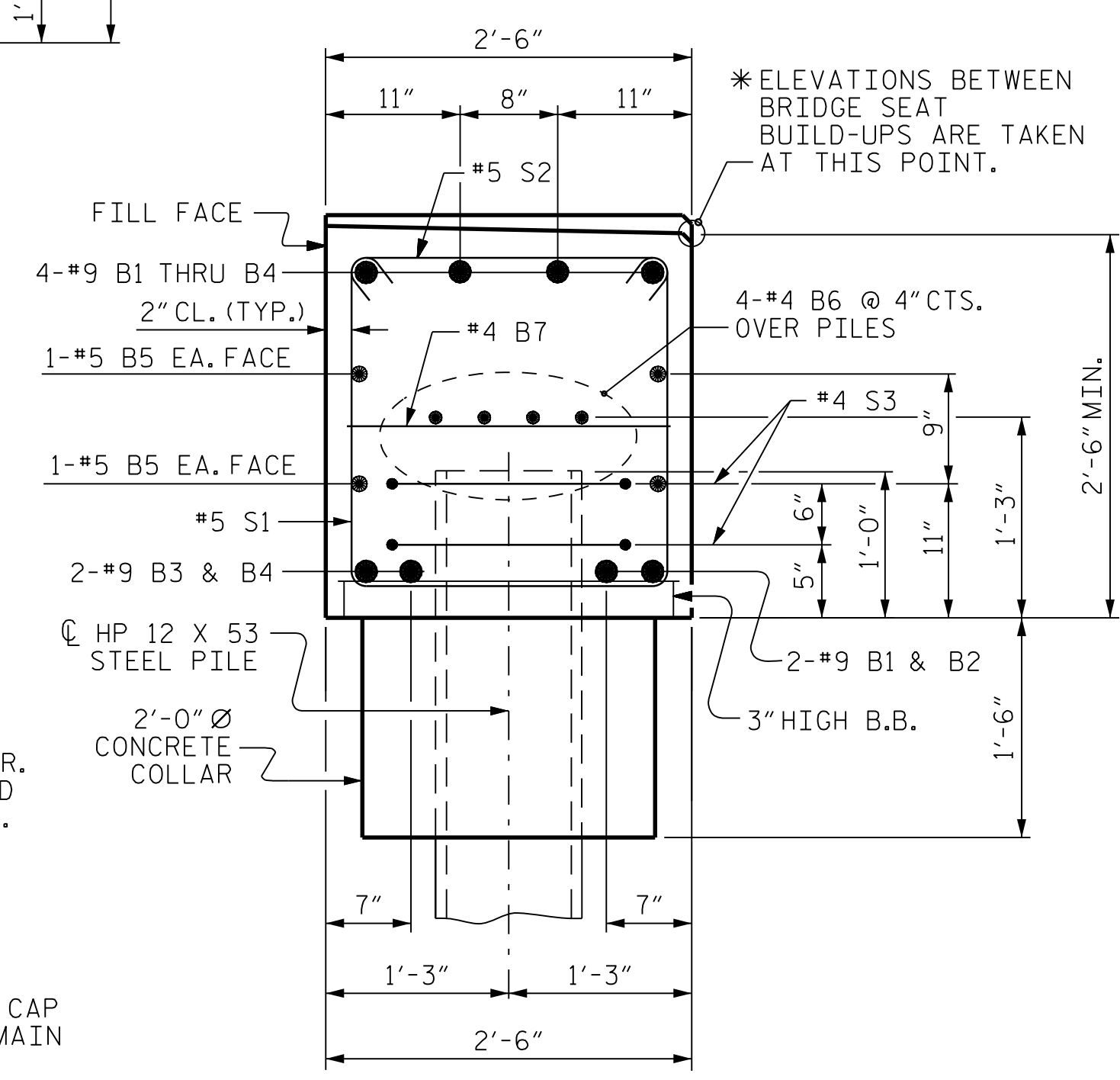
SHEET NO. **S06-26**
 TOTAL SHEETS **31**

NOTES

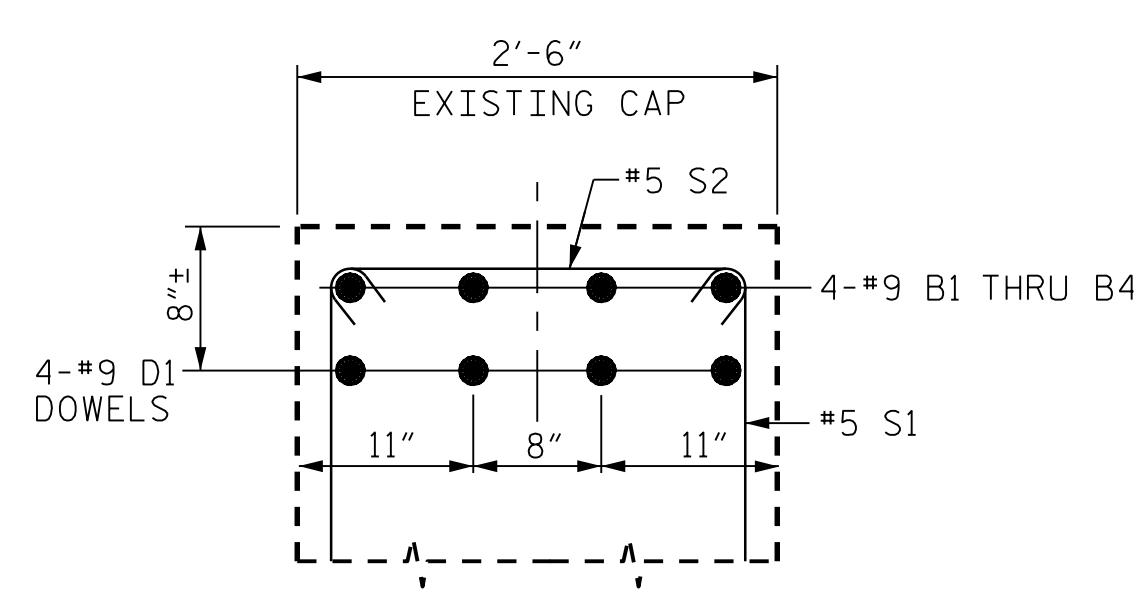
- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- * THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.
- THE CONTRACTOR MAY, BUT IS NOT REQUIRED TO COAT THE TOP SURFACE AREA COVERED BY THE CURTAIN WALL.
- THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAIL ARE CAST IF SLIP FORMING IS USED.



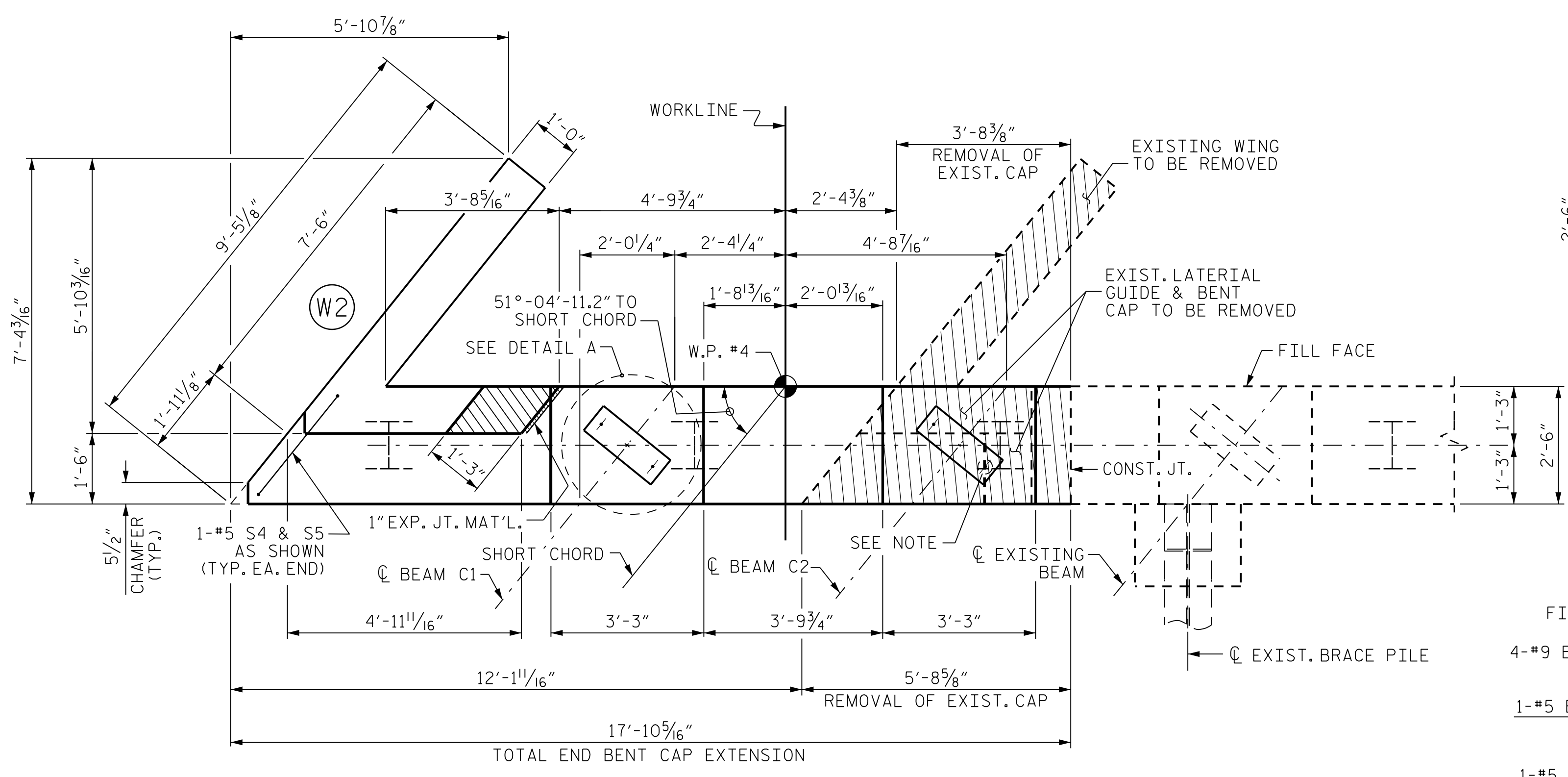
DETAIL A
TYP. FOR BEAMS C1 & C2



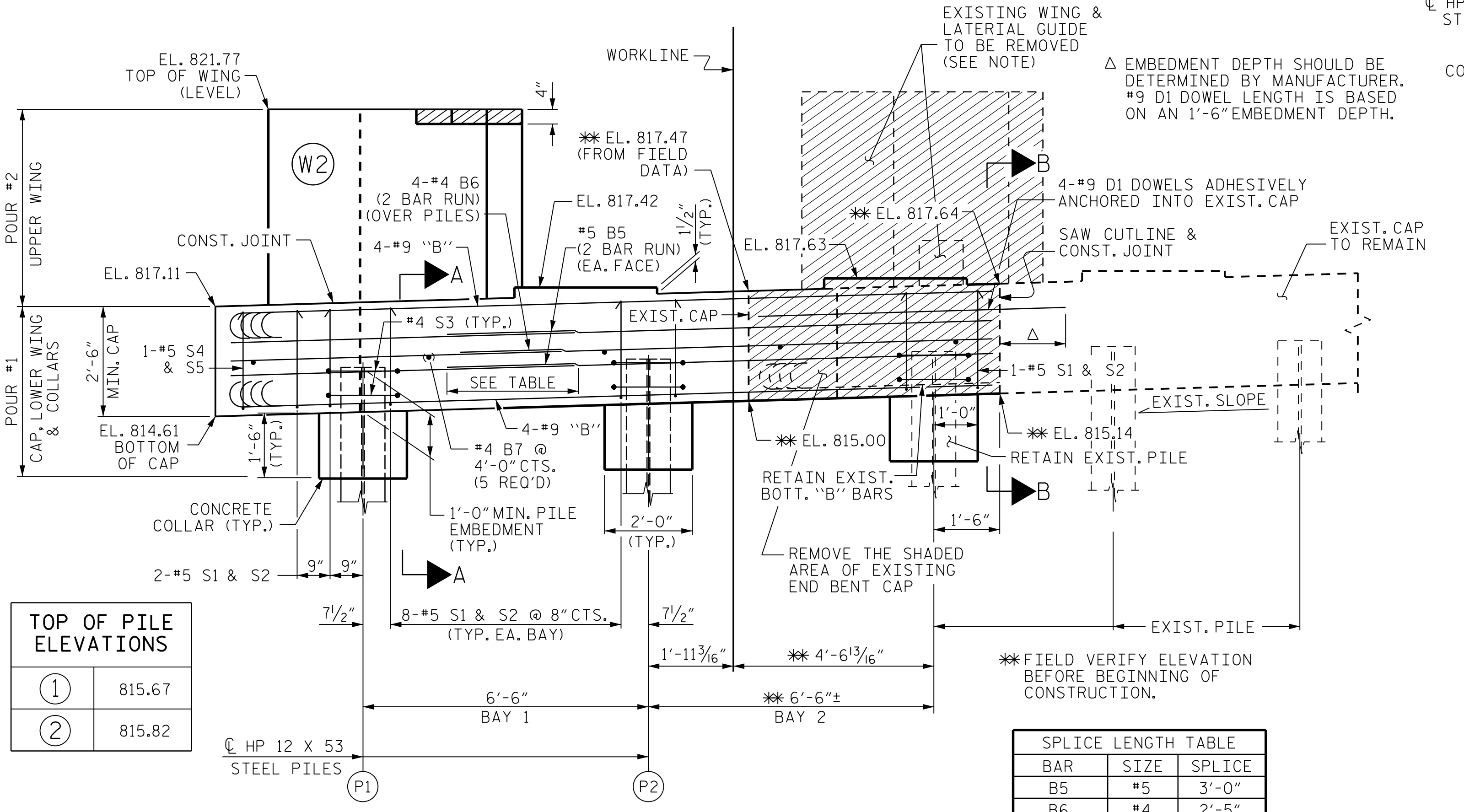
SECTION A-A



PARTIAL SECTION B-B
SHOWING #9 D1 DOWEL LOCATION



PLAN



ELEVATION

TOP OF PILE ELEVATIONS	
①	815.67
②	815.82

SPlice LENGTH TABLE		
BAR	SIZE	SPlice
B5	#5	3'-0"
B6	#4	2'-5"

PROJECT NO. U-2579AA
FORSYTH COUNTY
 STATION: 20+68.01 -Y2NBL-

SHEET 1 OF 2

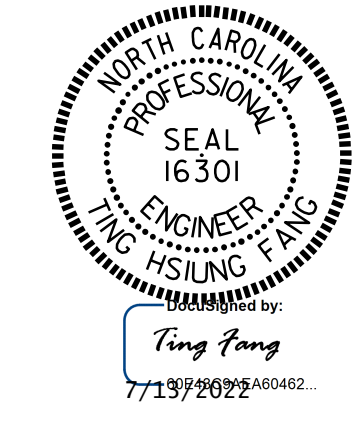
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
END BENT 2
 LEFT LANE (NBL)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 NC COA No. F-1255

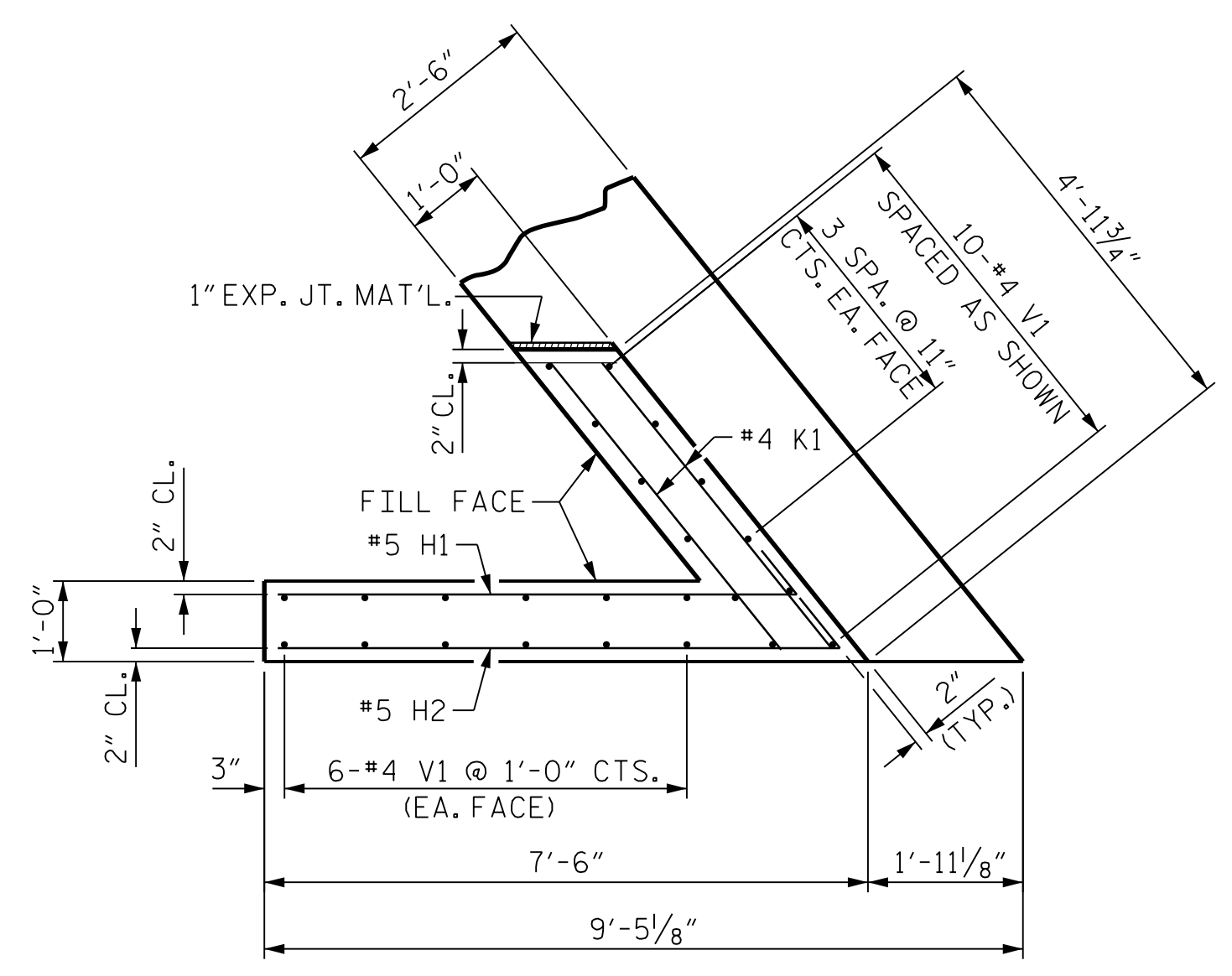
DRAWN BY: VDK DATE: 9/18
 CHECKED BY: THF DATE: 9/18
 DESIGN ENGINEER: VDK DATE: 9/18

DWG. No.

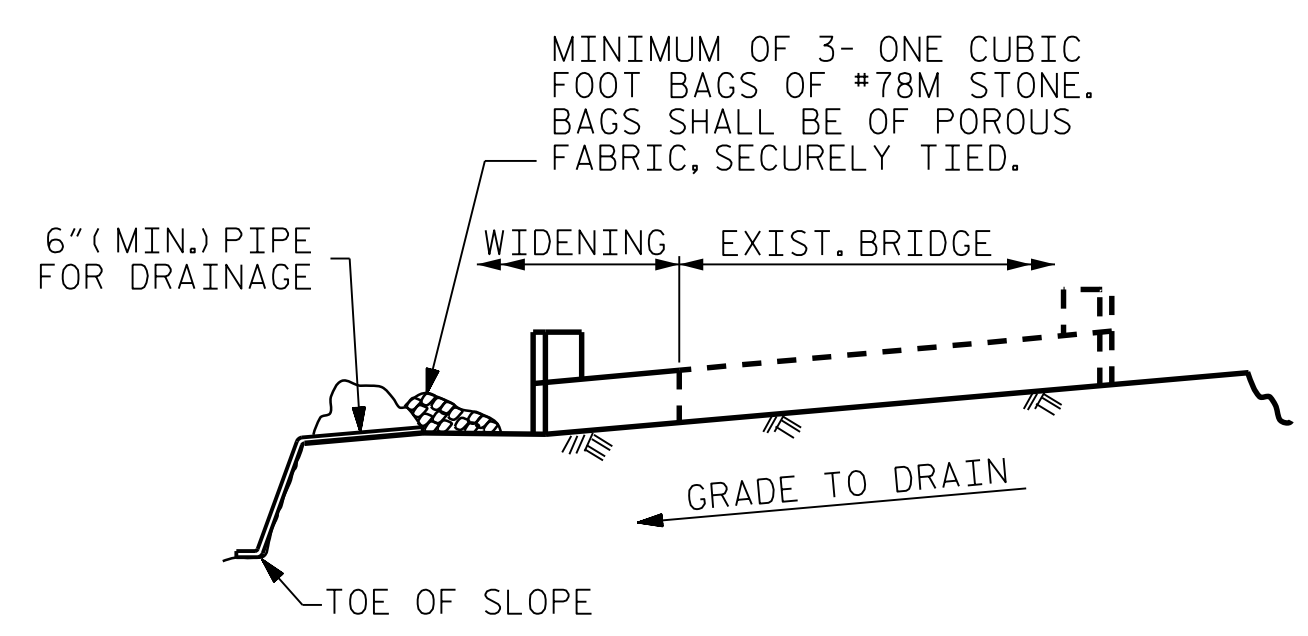


REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 31



PLAN OF WING - (W2)



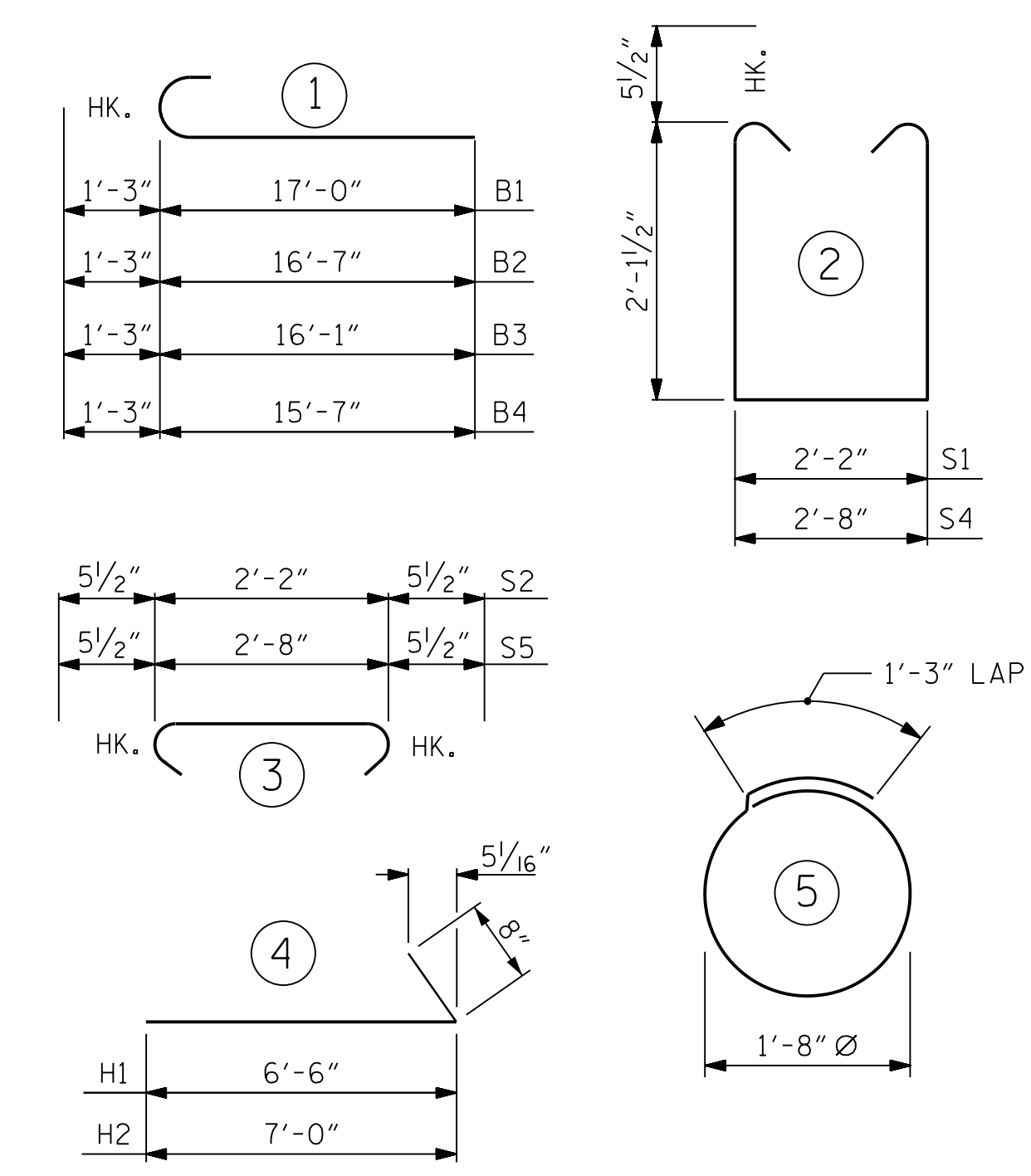
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

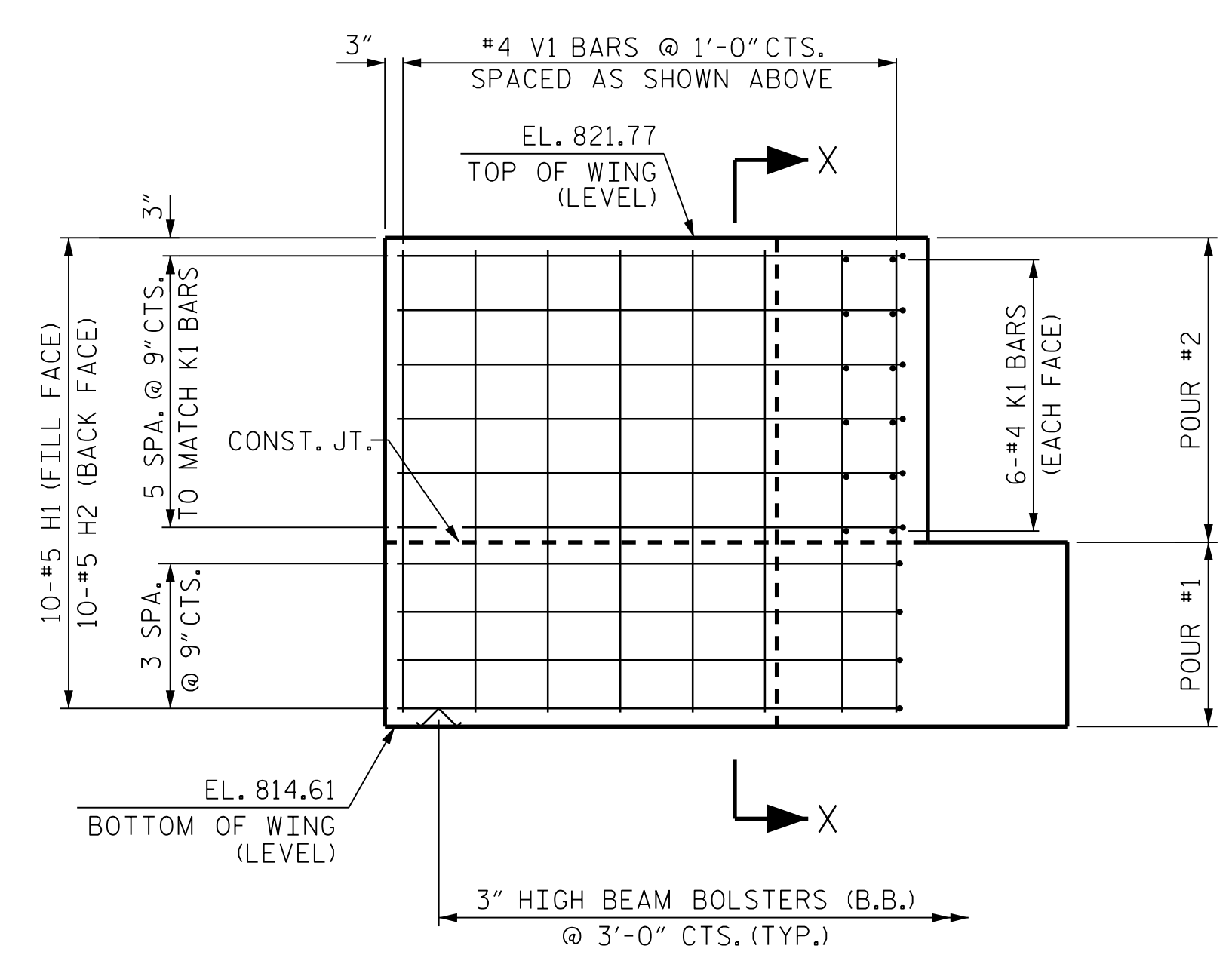
TEMPORARY DRAINAGE AT END BENT

BAR TYPES

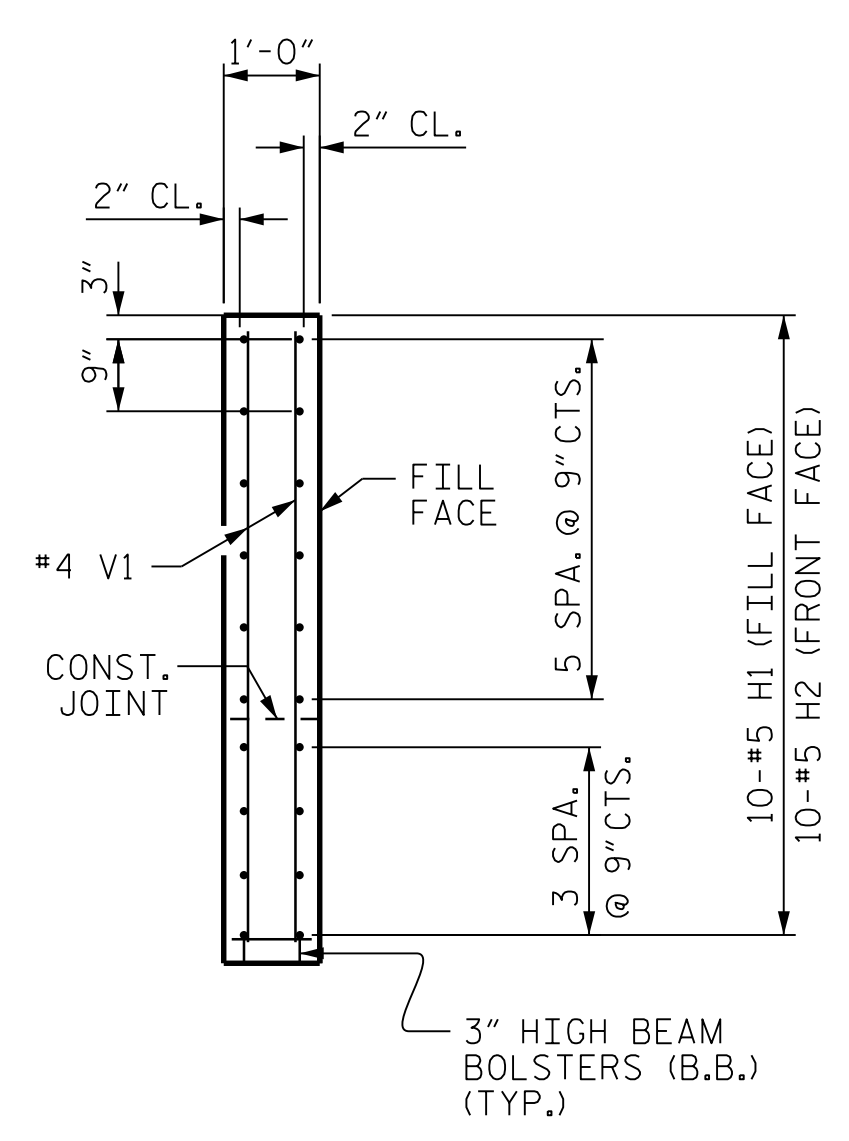


ALL BAR DIMENSIONS ARE OUT TO OUT.

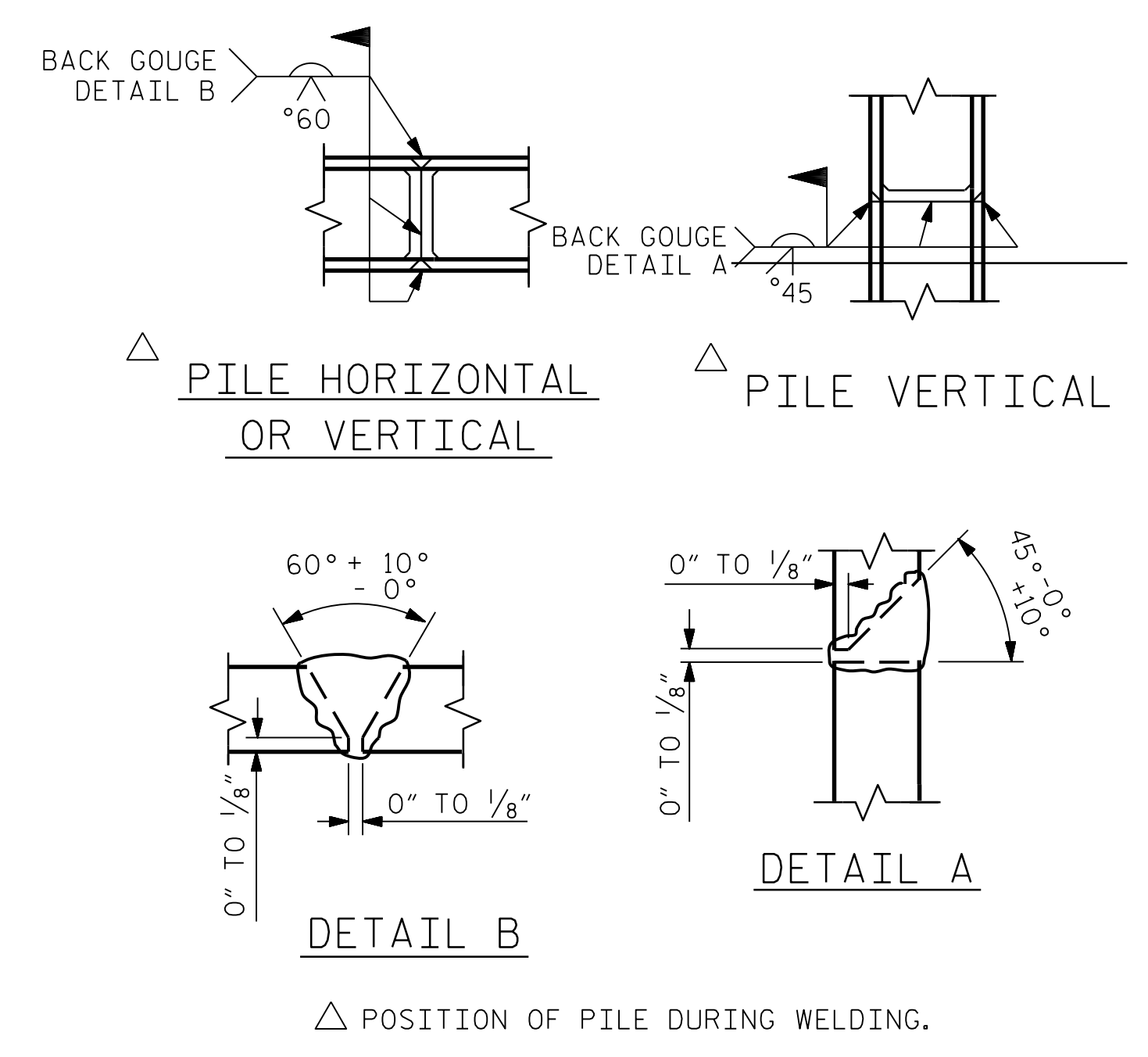
BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#9	1	18'-3"	124
B2	2	#9	1	17'-10"	121
B3	2	#9	1	17'-4"	118
B4	2	#9	1	16'-10"	114
B5	8	#5	STR	10'-1"	84
B6	8	#4	STR	9'-7"	51
B7	5	#4	STR	2'-2"	4
D1	4	#9	STR	7'-0"	95
H1	10	#5	4	7'-2"	75
H2	10	#5	4	7'-8"	80
K1	22	#4	STR	4'-7"	67
S1	19	#5	2	7'-4"	145
S2	19	#5	3	3'-1"	61
S3	6	#4	5	6'-6"	26
S4	1	#5	2	7'-10"	8
S5	1	#5	3	3'-7"	4
V1	24	#4	STR	6'-9"	108
REINFORCING STEEL					1290
CLASS A CONCRETE BREAKDOWN					
POUR #1	CAP, LOWER PART OF LT. WING & COLLARS			5.1	C.Y.
POUR #2	UPPER PART OF LEFT WING			2.9	C.Y.
TOTAL CLASS A CONCRETE				8.0	C.Y.
HP 12 X 53 STEEL PILES					
NO: 2				LIN. FT. = 90	
PILE DRIVING EQUIP. SETUP FOR HP 12 X 53 STEEL PILES					
				EA. 2	
FOUNDATION EXCAVATION					LUMP SUM



ELEVATION OF WING - (W2)



SECTION X-X



PILE SPLICE DETAILS

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 20+68.01 -Y2NBL-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
SUBSTRUCTURE					
END BENT 2					
DETAILS					
LEFT LANE (NBL)					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S06-28
					TOTAL SHEETS
					31

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 NC COA No. F-1255

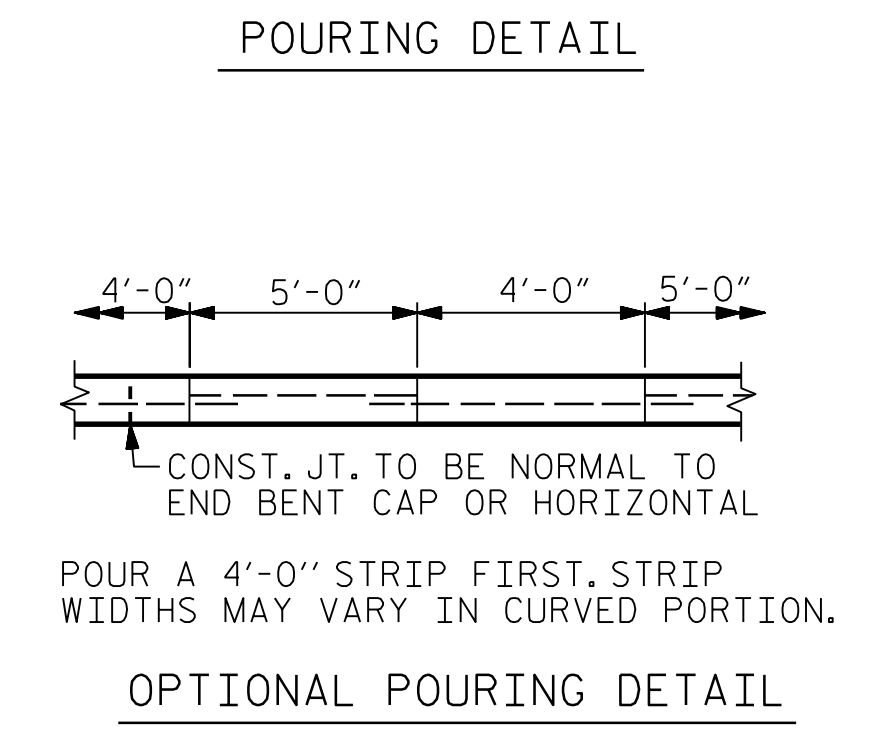
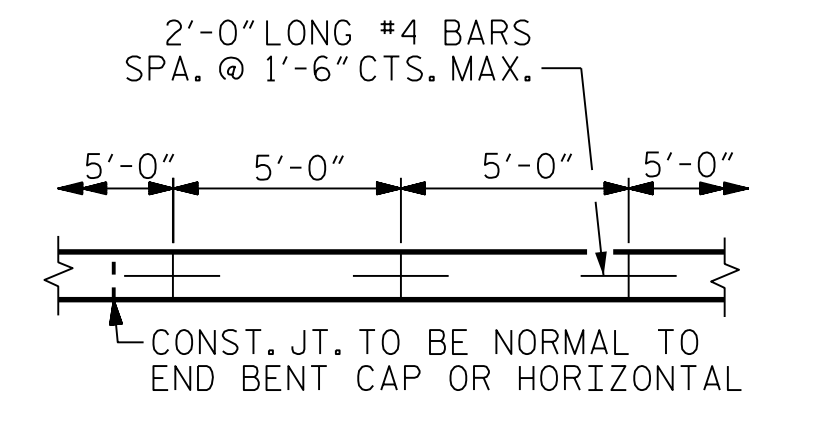
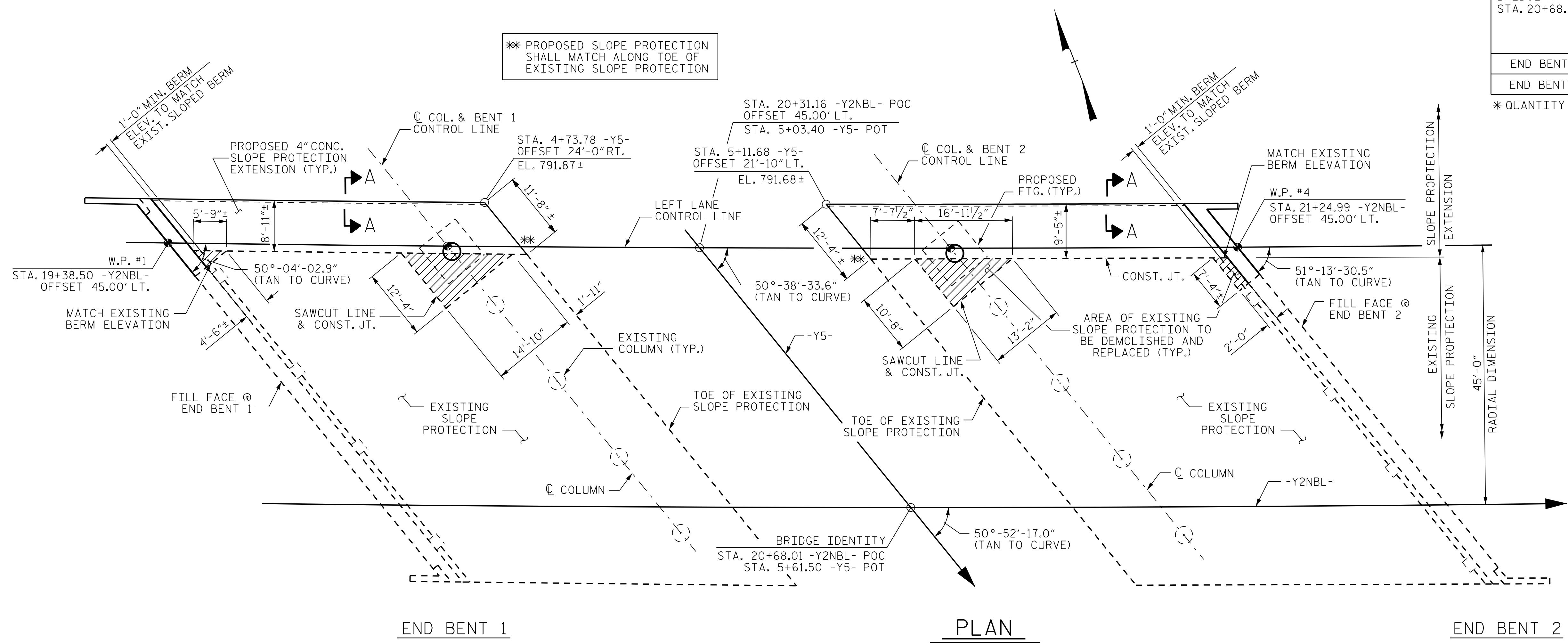
DRAWN BY: VDK DATE: 9/18
 CHECKED BY: THF DATE: 9/18
 DESIGN ENGINEER: VDK DATE: 9/18

DWG. No.

NORTH CAROLINA PROFESSIONAL SEAL 16301
 ENGINEER
 TING FANG
 7/27/2012

BRIDGE AT STA. 20+68.01 -Y2NBL-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	63	126
END BENT 2	81	162

* QUANTITY SHOWN IS BASED ON 5' POURS.



GENERAL NOTES

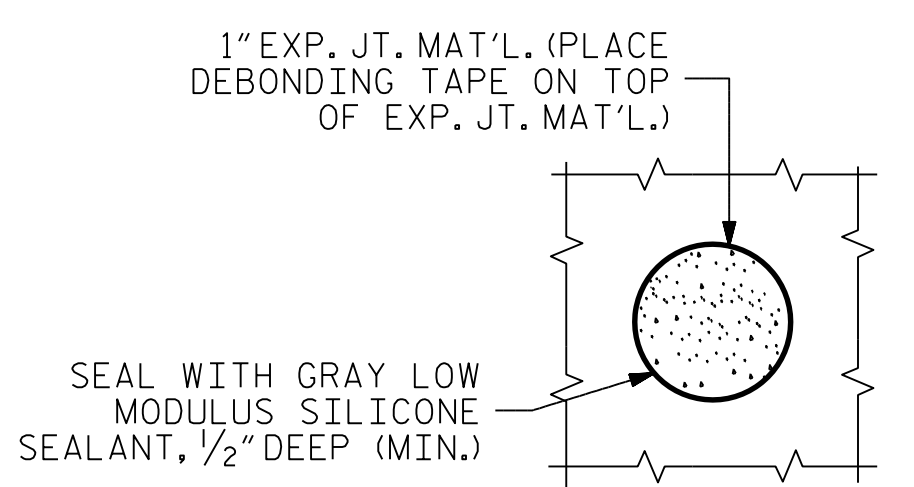
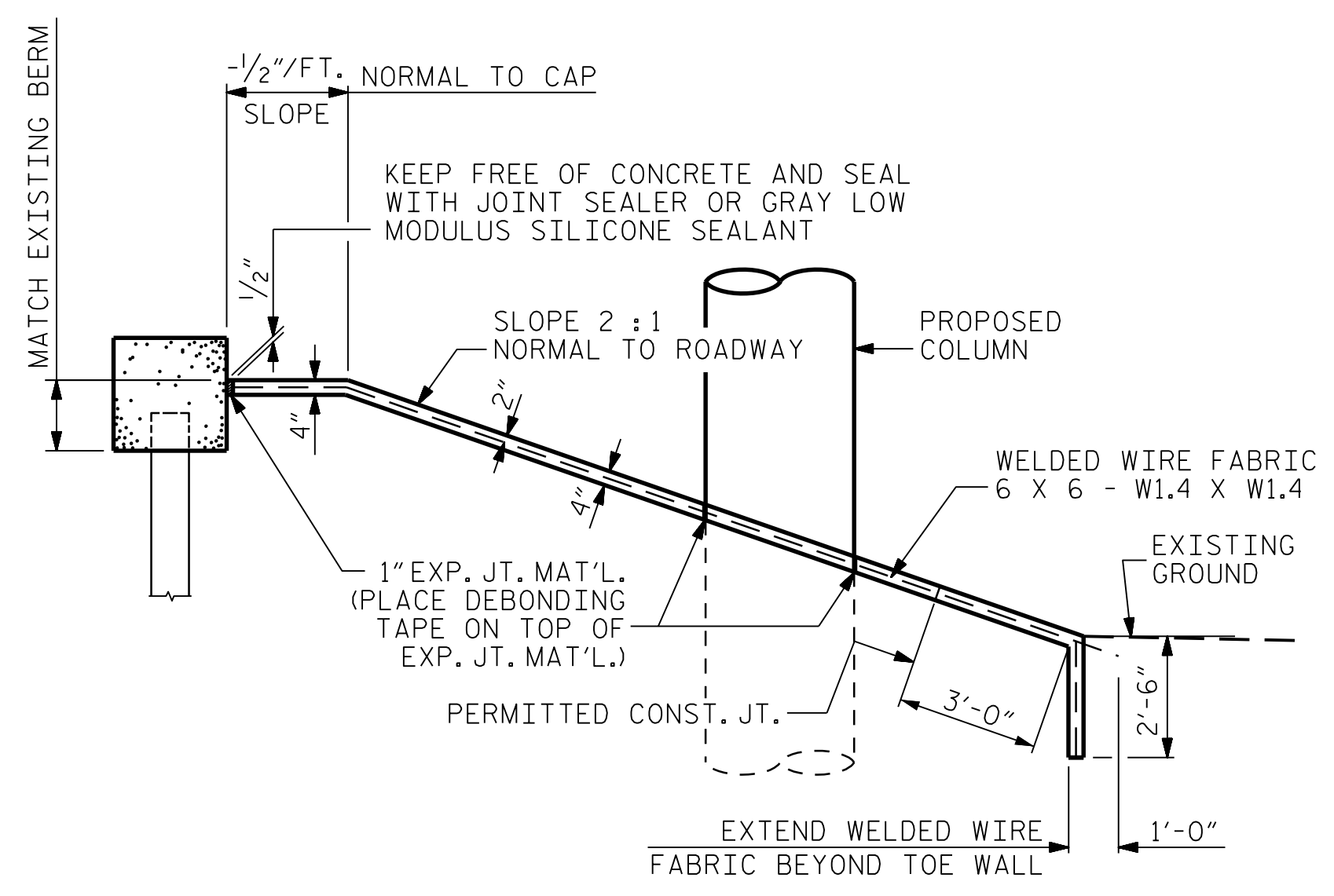
SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL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

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS.

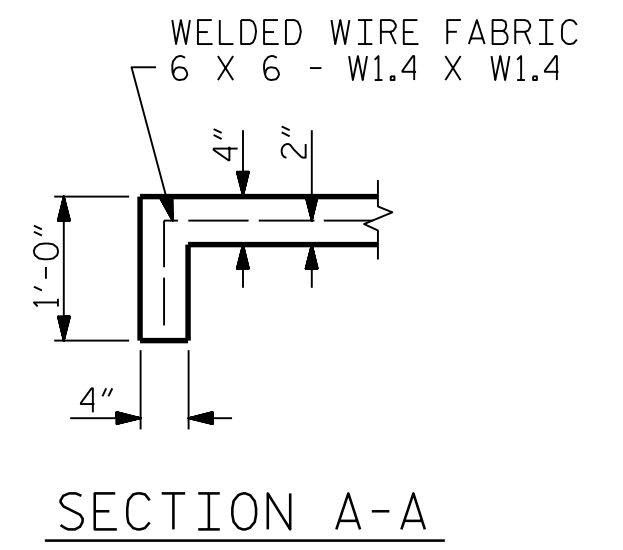
EXISTING SLOPE PROTECTION SHALL BE CUT ALONG EXISTING JOINT LINE.

EXISTING SLOPE PROTECTION TO REMAIN AND ANY THAT WAS DAMAGED DURING CONSTRUCTION SHALL BE REPLACED.

MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.



PLAN WHERE CONCRETE SLOPE PROTECTION MUST BE PLACED AROUND A BENT COLUMN



PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 20+68.01 -Y2NBL-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SLOPE PROTECTION DETAILS					
LEFT LANE (NBL)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1		9/18	3		
2		9/18	4		
					SHEET NO. S06-29
					TOTAL SHEETS 31

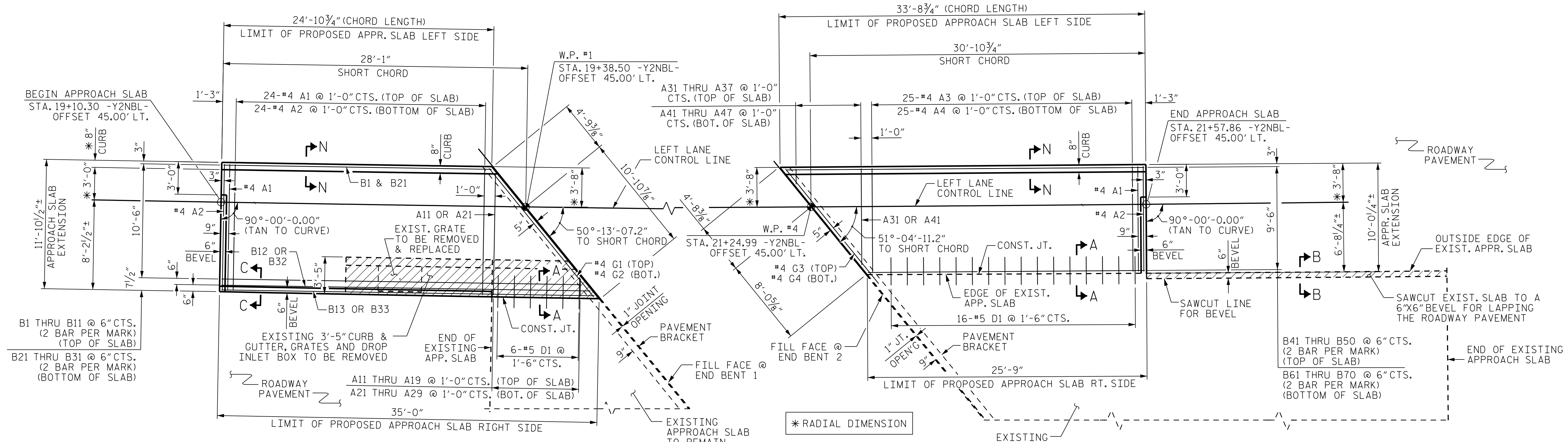
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NC COA No. F-1255

DRAWN BY : VDK DATE : 9/18
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DWG. No.

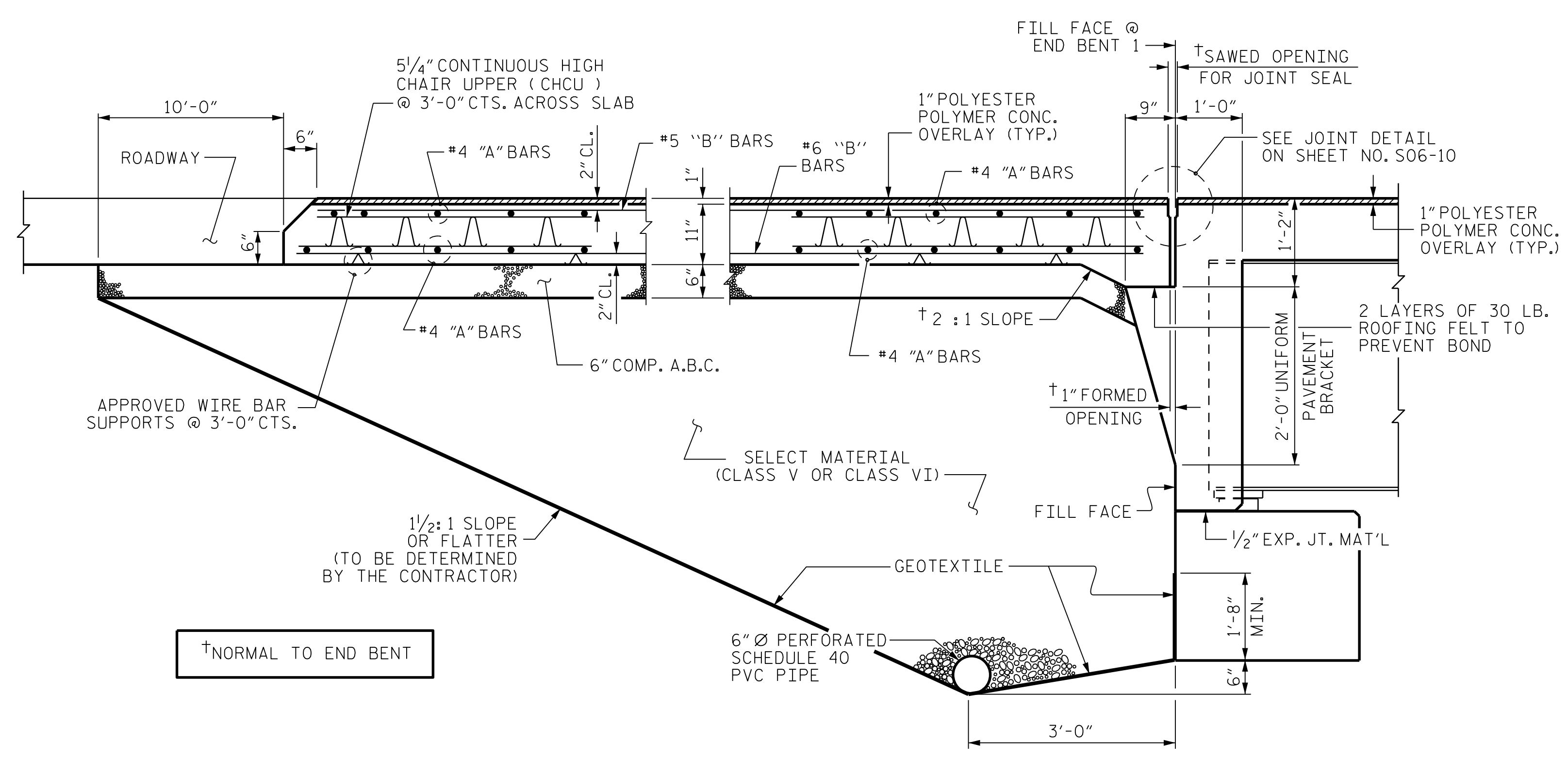
Ting Fang
7/27/2022



AT END BENT 1

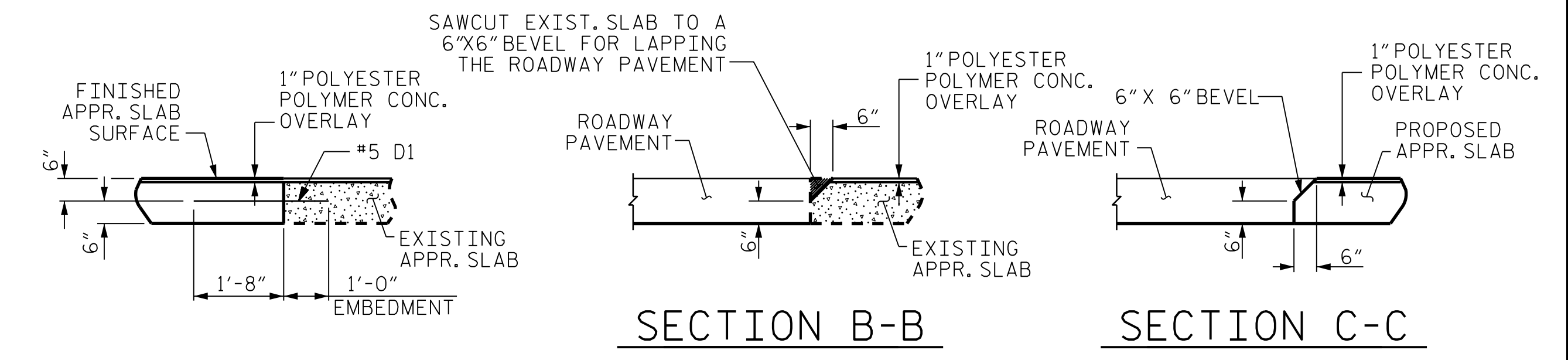
AT END BENT 2

PLAN



SECTION THRU SLAB

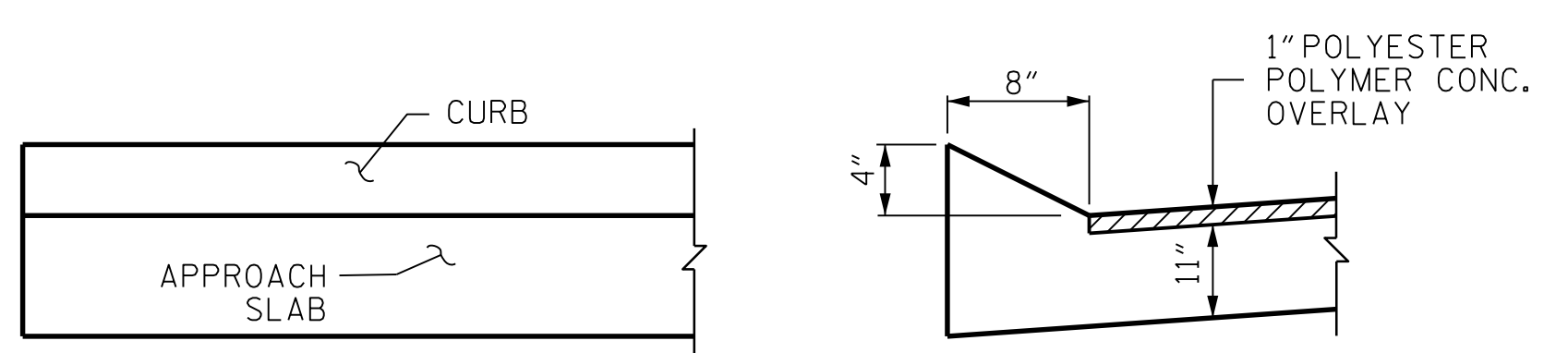
(TYPE I - STANDARD APPROACH FILL)
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE 6\"/>



SECTION A-A

SECTION B-B

SECTION C-C



END OF CURB WITH SHOULDER BERM GUTTER AT BOTH END BENTS

CURB DETAILS

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 20+68.01 -Y2NBL-

SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT	
LEFT LANE (NBL)		REVISIONS	
NO.	BY:	DATE:	SHEET NO.
1			S06-30
2			TOTAL SHEETS
			31

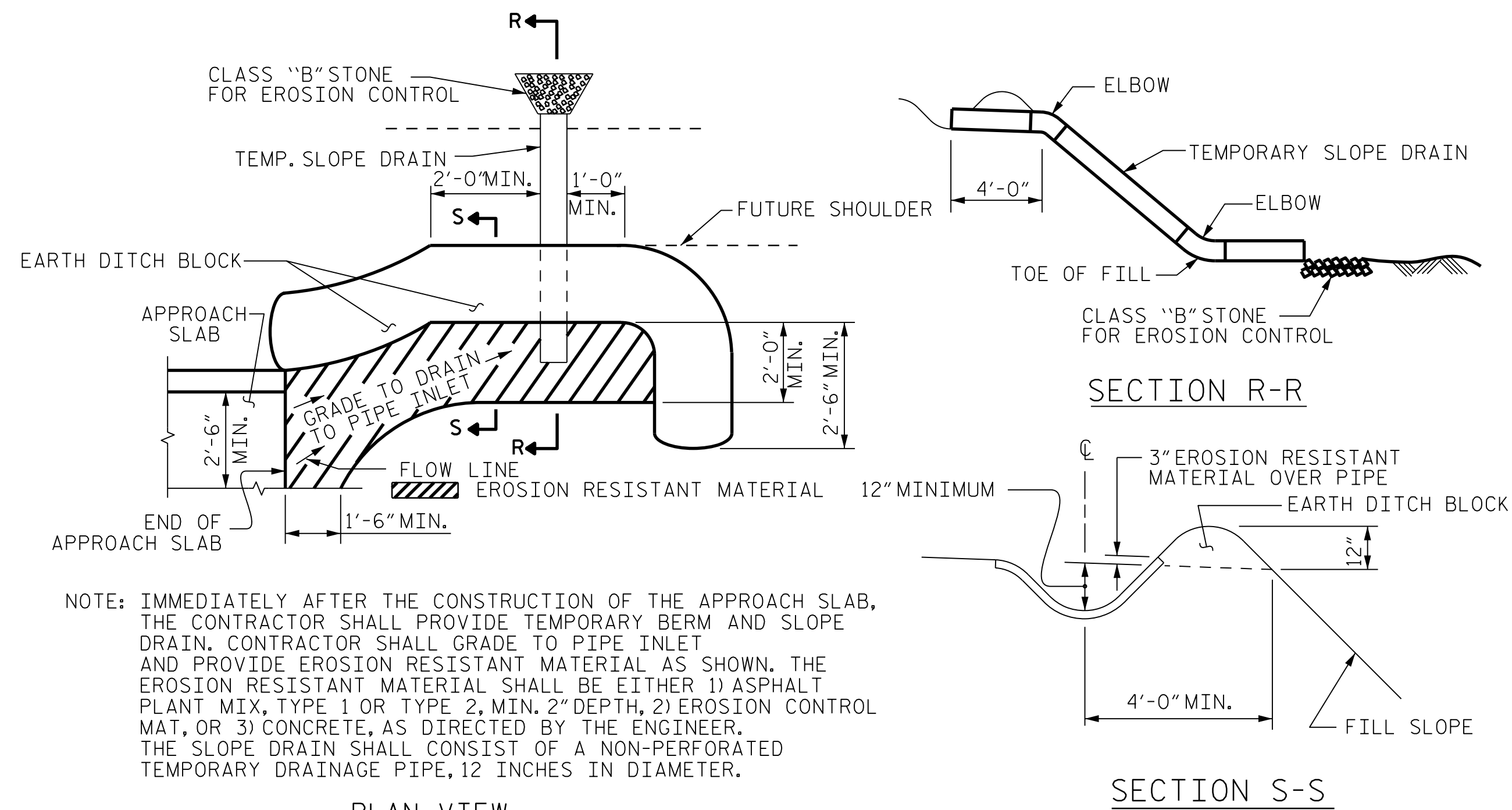
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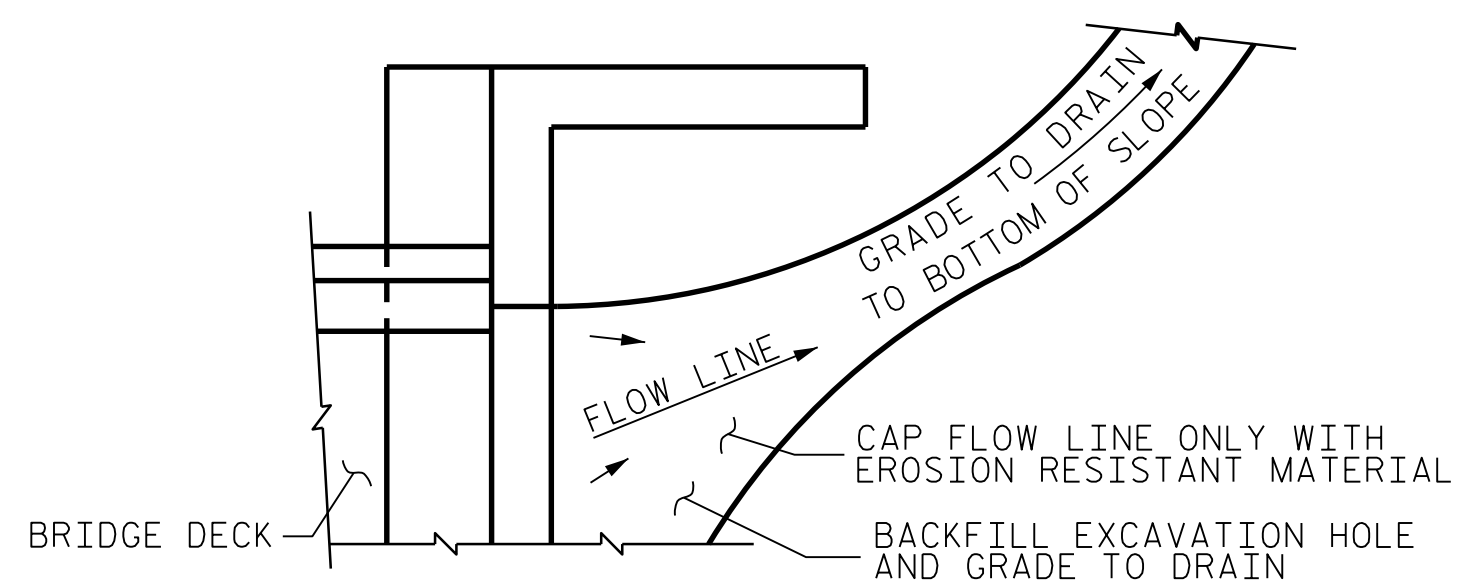
DWG. No.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 16301
 TING TANG
 11/27/2022



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

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



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

BILL OF MATERIAL

APPROACH SLAB AT EBT 1					APPROACH SLAB AT EBT 2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	25	#4	STR	11'-7"	193	*A3	26	#4	STR	9'-8"	168
A2	25	#4	STR	11'-7"	193	A4	26	#4	STR	9'-8"	168
*A11	1	#4	STR	11'-2"	7	*A31	1	#4	STR	8'-11"	6
*A12	1	#4	STR	10'-0"	7	*A32	1	#4	STR	7'-8"	5
*A13	1	#4	STR	8'-9"	6	*A33	1	#4	STR	6'-5"	4
*A14	1	#4	STR	7'-7"	5	*A34	1	#4	STR	5'-2"	3
*A15	1	#4	STR	6'-5"	4	*A35	1	#4	STR	3'-11"	3
*A16	1	#4	STR	5'-3"	4	*A36	1	#4	STR	2'-8"	2
*A17	1	#4	STR	4'-0"	3	*A37	1	#4	STR	1'-5"	1
*A18	1	#4	STR	2'-10"	2						
*A19	1	#4	STR	1'-8"	1						
A21	1	#4	STR	11'-2"	7	A41	1	#4	STR	8'-11"	6
A22	1	#4	STR	10'-0"	7	A42	1	#4	STR	7'-8"	5
A23	1	#4	STR	8'-9"	6	A43	1	#4	STR	6'-5"	4
A24	1	#4	STR	7'-7"	5	A44	1	#4	STR	5'-2"	3
A25	1	#4	STR	6'-5"	4	A45	1	#4	STR	3'-11"	3
A26	1	#4	STR	5'-3"	4	A46	1	#4	STR	2'-8"	2
A27	1	#4	STR	4'-0"	3	A47	1	#4	STR	1'-5"	1
A28	1	#4	STR	2'-10"	2						
A29	1	#4	STR	1'-8"	1						
*B1	2	#5	STR	24'-2"	50	*B41	2	#5	STR	32'-3"	67
*B2	2	#5	STR	25'-1"	52	*B42	2	#5	STR	31'-6"	66
*B3	2	#5	STR	25'-11"	54	*B43	2	#5	STR	30'-8"	64
*B4	2	#5	STR	26'-9"	56	*B44	2	#5	STR	29'-10"	62
*B5	2	#5	STR	27'-7"	58	*B45	2	#5	STR	29'-1"	61
*B6	2	#5	STR	28'-5"	59	*B46	2	#5	STR	28'-3"	59
*B7	2	#5	STR	29'-3"	61	*B47	2	#5	STR	27'-5"	57
*B8	2	#5	STR	30'-1"	63	*B48	2	#5	STR	26'-8"	56
*B9	2	#5	STR	30'-11"	64	*B49	2	#5	STR	25'-10"	54
*B10	2	#5	STR	31'-9"	66	*B50	2	#5	STR	25'-0"	52
*B11	2	#5	STR	32'-8"	68						
*B12	1	#5	STR	33'-6"	35						
*B13	1	#5	STR	33'-11"	35						
B21	2	#6	STR	24'-8"	52	B61	2	#6	STR	32'-9"	69
B22	2	#6	STR	25'-7"	54	B62	2	#6	STR	32'-0"	67
B23	2	#6	STR	26'-5"	56	B63	2	#6	STR	31'-2"	66
B24	2	#6	STR	27'-3"	57	B64	2	#6	STR	30'-4"	64
B25	2	#6	STR	28'-1"	59	B65	2	#6	STR	29'-7"	62
B26	2	#6	STR	28'-11"	61	B66	2	#6	STR	28'-9"	60
B27	2	#6	STR	29'-9"	63	B67	2	#6	STR	27'-11"	59
B28	2	#6	STR	30'-7"	64	B68	2	#6	STR	27'-2"	57
B29	2	#6	STR	31'-5"	66	B69	2	#6	STR	26'-4"	55
B30	2	#6	STR	32'-3"	68	B70	2	#6	STR	25'-6"	54
B31	2	#6	STR	33'-2"	70						
B32	1	#6	STR	34'-0"	36						
B33	1	#6	STR	34'-5"	36						
D1	6	#5	STR	2'-8"	17	D1	16	#5	STR	2'-8"	45
*G1	1	#4	STR	15'-4"	10	*G3	1	#4	STR	12'-5"	8
G2	1	#4	STR	15'-4"	10	G4	1	#4	STR	12'-5"	8
REINFORCING STEEL LBS. = 1,000					REINFORCING STEEL LBS. = 858						
* EPOXY COATED REINFORCING STEEL LBS. = 965					* EPOXY COATED REINFORCING STEEL LBS. = 798						
CLASS AA CONCRETE C.Y. = 12.22					CLASS AA CONCRETE C.Y. = 10.29						

QUANTITIES FOR PLACING AND FINISHING OF POLYMER CONCRETE OVERLAY IS SHOWN ON THE SUPERSTRUCTURE BILL OF MATERIAL.

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, 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 CONSTRUCTION JOINT TO LEFT OUTSIDE EDGE OF APPROACH SLAB.

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

THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE LEFT SIDE BARRIER RAIL.

FOR JOINT DETAIL, SEE SUPERSTRUCTURE TYPICAL SECTION DETAILS.

FOR THE 6" Ø DRAINAGE PIPE OUTLET, 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 6" COMP. A.B.C. SHALL EXTEND 10 FEET BEYOND THE END OF THE APPROACH SLAB AND 1'-0" OUTSIDE OF EACH EDGE OF THE SLAB.

THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL EXTEND 1'-0" BEYOND THE END OF THE APPROACH SLAB AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

DURING THE CONSTRUCTION OF APPROACH SLAB EXTENSION, THE LEFT EDGE OF EXISTING APPROACH SLABS SHALL BE KEPT CLEAN AND FREE OF DEBRIS.

INSTALL #5 D1 DOWELS IN EXISTING APPROACH SLABS USING AN ADHESIVE ANCHORING SYSTEM. NO FIELD TESTING OF THE ADHESIVE ANCHORING SYSTEM IS REQUIRED.

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

PROJECT NO. U-2579AA
FORSYTH COUNTY
 STATION: 20+68.01 - Y2NBL-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

LEFT LANE (NBL)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S06-31
1			3			TOTAL SHEETS
2			4			31

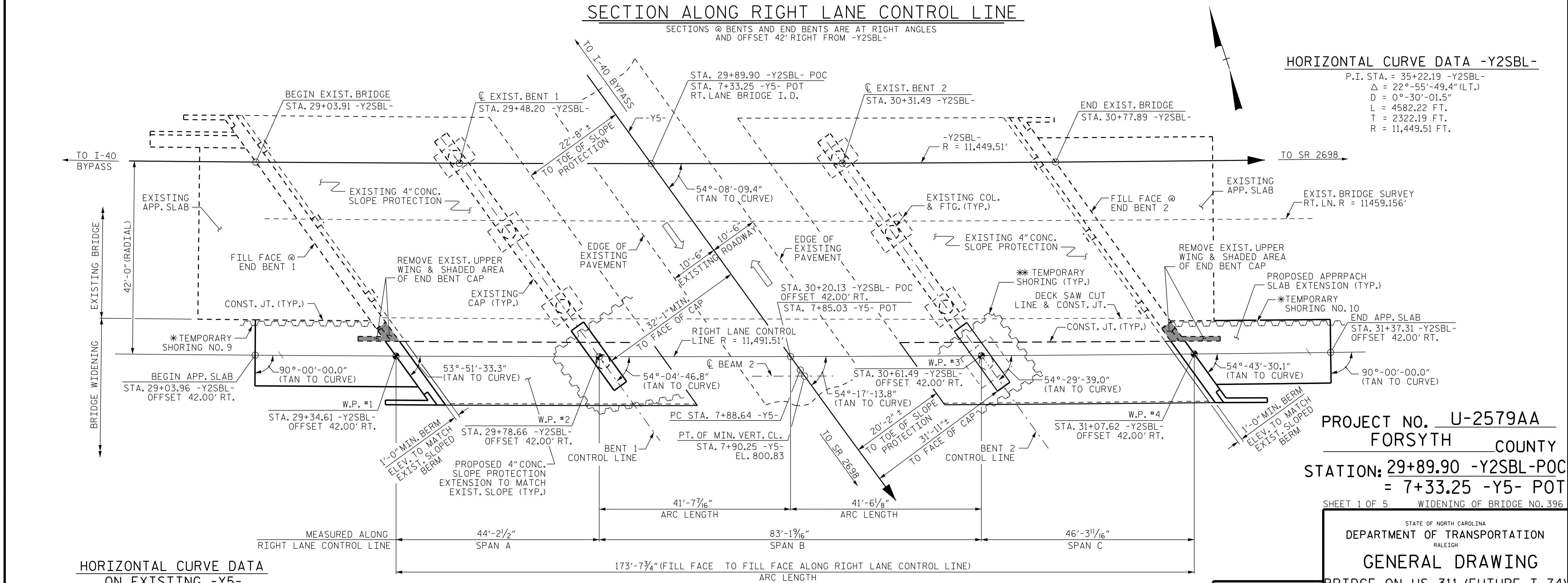
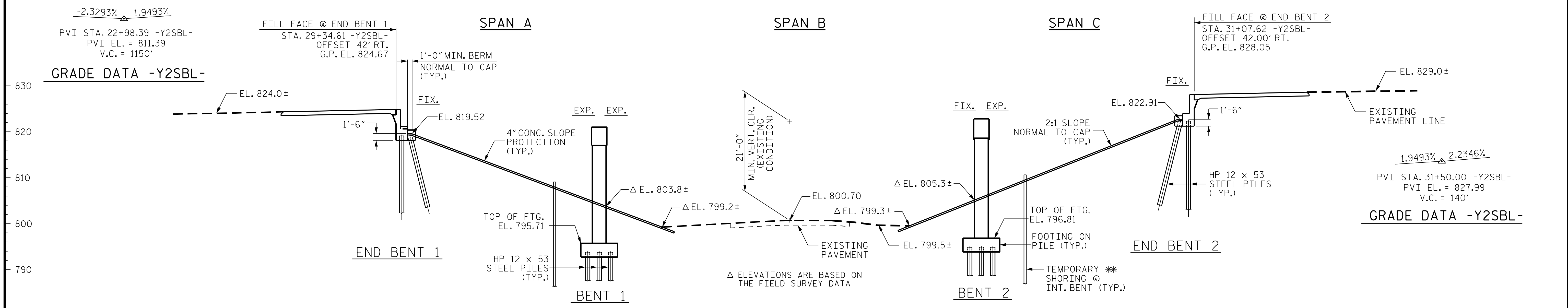
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 NC COA No. F-1255

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 CHECKED BY: THF DATE: 9/18
 DESIGN ENGINEER: VDK DATE: 9/18

DWG. No.

NORTH CAROLINA PROFESSIONAL SEAL 16301
 ENGINEER
 TING FANG
 7/13/2022



PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 29+89.90 -Y2SBL-POC
= 7+33.25 -Y5- POT
 SHEET 1 OF 5 WIDENING OF BRIDGE NO. 396

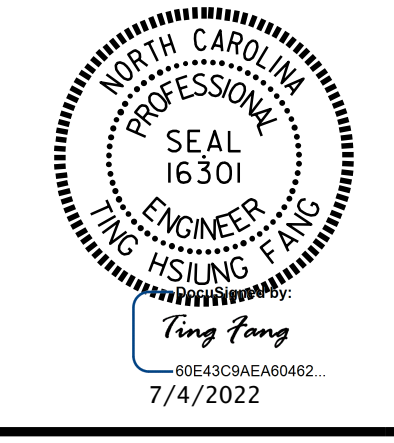
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE ON US 311 (FUTURE I-74)
 OVER SR 2699 BETWEEN
 I-40 BYPASS AND SR 2698
 RIGHT LANE (SBL)

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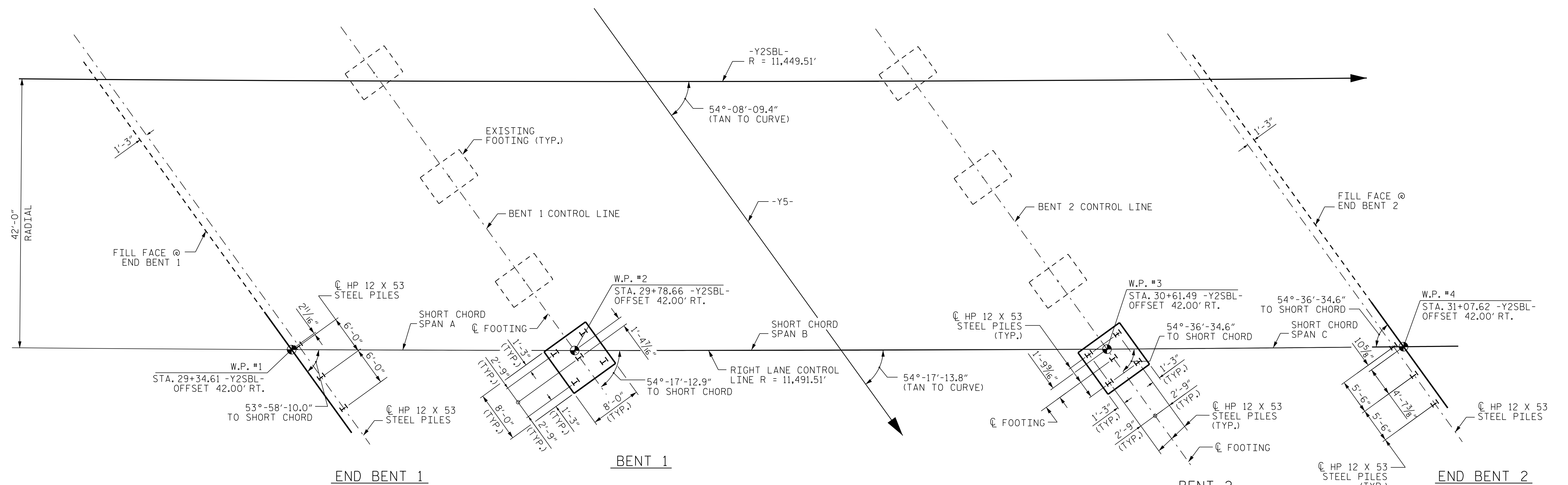
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 NC COA No. F-1255

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DWG. No.



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S07-01	
1			3			TOTAL SHEETS	
2			4			32	



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE AT THE BOTTOM OF CAPS OR FOOTINGS.
 DIMENSIONS FOR FOOTING AND PILES ARE TYPICAL FOR EACH INTERIOR BENT.
 ALL HP 12 X 53 STEEL PILES ARE VERTICAL.

NOTES

- FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- PILES AT END BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 55 TONS PER PILE. DRIVE PILES AT END BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 92 TONS PER PILE.
- PILES AT BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 70 TONS PER PILE. DRIVE PILES AT BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 117 TONS PER PILE.
- PILES AT BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 70 TONS PER PILE. DRIVE PILES AT BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 117 TONS PER PILE.
- PILES AT END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 55 TONS PER PILE. DRIVE PILES AT END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 92 TONS PER PILE.

PROJECT NO. U-2579AA
FORSYTH COUNTY
 STATION: 29+89.90 -Y2SBL-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE ON US 311 (FUTURE I-74)
 OVER SR 2699 AND SR 2698
 RIGHT LANE (SBL)

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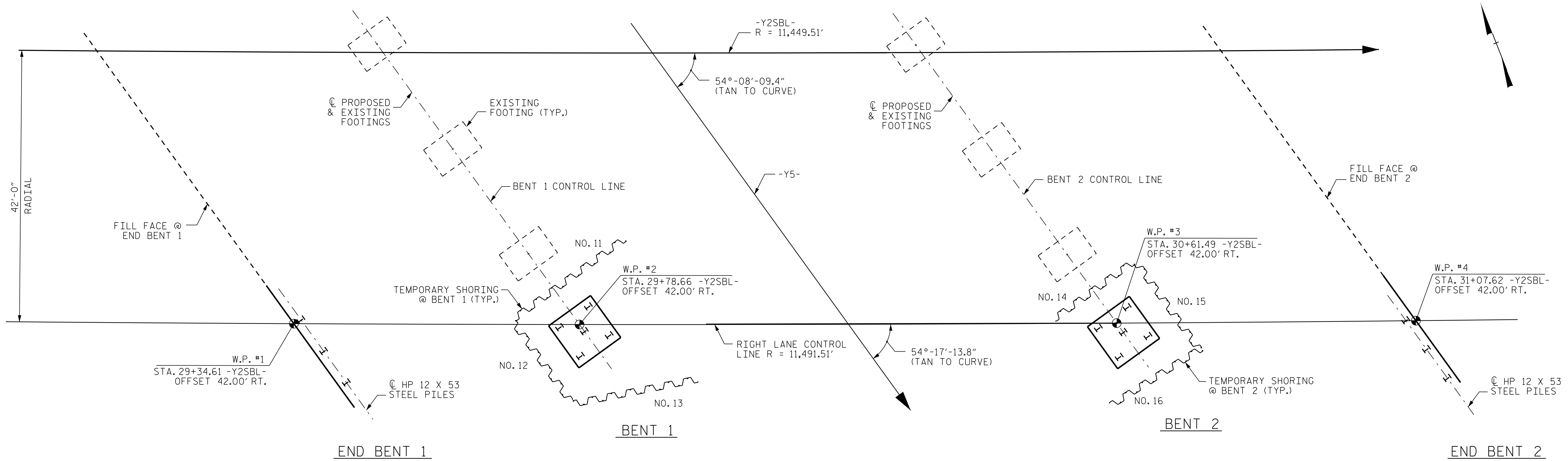
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CHECKED BY : THF	DATE : 10/19	
DESIGN ENGINEER : VDK	DATE : 11/19	

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

FILE: SPILES
 DATE: 02/05/2019
 STIMES



TEMPORARY SHORING LAYOUT

TEMPORARY SHORINGS AT END BENTS 1 & 2 NOT SHOWN FOR CLARITY.
 FOR LIMITS, DETAILS AND PAY ITEM OF TEMPORARY SHORINGS NO. 9 & NO. 10 ON SHEET S07-01, SEE TRANSPORTATION MANAGEMENT PLANS.

ESTIMATED TEMPORARY SHORING NO.	QUANTITY EXPOSED AREA (SF)
NO. 11	226
NO. 12	245
NO. 13	216
NO. 14	195
NO. 15	277
NO. 16	253
TOTAL	1,423

TEMPORARY SHORING REQUIREMENT TABLE										
FOR CONSTRUCTION OF BENTS 1 & 2										
TEMPORARY SHORING NO.	BEGIN STATION & OFFSET	END STATION & OFFSET	ESTIMATED AVERAGE HEIGHT	ESTIMATED MAXIMUM HEIGHT	SHORING LOCATION	SHORING TYPE	GROUND WATER ELEVATION	SOIL PARAMETERS		
								UNIT WEIGHT (r)	FRICTION ANGLE (φ)	COHESION (c)
NO. 11	7+54± -Y5-20.7' RIGHT	7+54± -Y5-41.8' RIGHT	11.2'	15.3'	BENT 1	CUT	790'	120 LB/CF	30°	0 LB/SF
NO. 12	7+54± -Y5-41.8' RIGHT	7+70± -Y5-41.8' RIGHT	15.3'	15.3'	BENT 1	CUT	790'	120 LB/CF	30°	0 LB/SF
NO. 13	7+70± -Y5-41.8' RIGHT	7+78± -Y5-24.4' RIGHT	11.3'	15.3'	BENT 1	CUT	790'	120 LB/CF	30°	0 LB/SF
NO. 14	8+03± -Y5-26.2' LEFT	8+03± -Y5-41.7' LEFT	12.6'	16.3'	BENT 2	CUT	790'	120 LB/CF	30°	0 LB/SF
NO. 15	8+03± -Y5-41.7' LEFT	8+20± -Y5-41.5' LEFT	16.3'	16.3'	BENT 2	CUT	790'	120 LB/CF	30°	0 LB/SF
NO. 16	8+20± -Y5-41.5' LEFT	8+19± -Y5-26.0' LEFT	12.6'	16.3'	BENT 2	CUT	790'	120 LB/CF	30°	0 LB/SF

THE CONTRACTOR SHALL VERIFY THE OFFSET DISTANCE OF EACH TEMPORARY SHORING PRIOR TO DRIVING SHEET PILES AND NOTIFY THE ENGINEER IF THE OFFSET DISTANCE MAY BE ADJUSTED AS NECESSARY TO CLEAR EXISTING BENT FOOTINGS.

NOTES

- BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.
- FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISION.
- FOR THE LIMITS OF EACH TEMPORARY SHORING FOR BENTS 1 & 2 CONSTRUCTION, SEE TEMPORARY SHORING REQUIREMENT TABLE.
- FOR ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION OF EACH TEMPORARY SHORING, SEE TEMPORARY SHORING REQUIREMENT TABLE.
- DRIVEN PILING FOR TEMPORARY SHORINGS NO. 11 THRU NO. 16 MAY NOT PENETRATE BELOW ELEVATION 770 FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.
- DO NOT USE A TEMPORARY WALL FOR ALL TEMPORARY SHORINGS.
- IT MAY BE PREFERRED TO USE A TEMPORARY SOIL NAIL WALL FOR TEMPORARY SHORINGS NO. 11 THRU NO. 16. FOR TEMPORARY SOIL NAIL WALLS, SEE TEMPORARY SOIL NAIL WALLS PROVISION.

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 29+89.90 -Y2SBL-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE ON US 311 (FUTURE I-74)
 OVER SR 2699 BETWEEN
 I-40 BYPASS AND SR 2698
 TEMPORARY SHORING
 RIGHT LANE (SBL)

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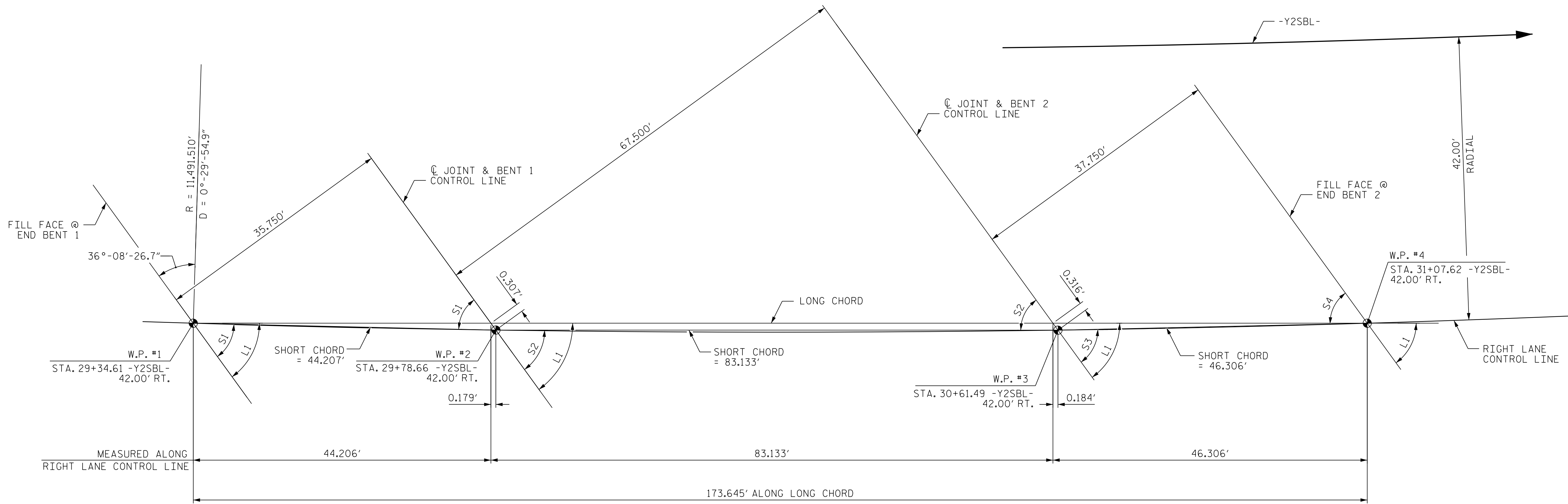
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 5400 Glenwood Avenue, Suite 400
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 NC COA No. F-1255

DRAWN BY: JJR DATE: 06/22
 CHECKED BY: THF DATE: 06/22
 DESIGN ENGINEER: THF DATE: 06/22

DWG. No.

STATE OF NORTH CAROLINA
 PROFESSIONAL ENGINEER
 SEAL 16301
 TING FANG
 7/16/2022

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



LONG CHORD LAYOUT
ALL BENTS ARE PARALLEL

ANGLES			
LONG CHORD		SHORT CHORD	
L1	54°-17'-31.7"	S1	53°-58'-10.0"
		S2	54°-17'-12.9"
		S3	54°-36'-34.6"
		S4	54°-36'-34.6"

HORIZONTAL CURVE DATA -Y2SBL-
 P.I. STA. = 35+22.19 -Y2SBL-
 Δ = 22°-55'-49.4" (LT.)
 D = 0°-30'-01.5"
 L = 4582.22 FT.
 T = 2322.19 FT.
 R = 11,449.51 FT.

PROJECT NO. U-2579AA
FORSYTH COUNTY
 STATION: 29+89.90 -Y2SBL-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE ON US 311 (FUTURE I-74)
 OVER SR 2699 BETWEEN
 I-40 BYPASS AND SR 2698
 RIGHT LANE (SBL)

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 NC COA No. F-1255

DRAWN BY : VDK DATE : 9/19
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 DESIGN ENGINEER : VDK DATE : 11/19

DWG. No.



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

FILE: SFILES
 DATE: SDATE
 STIMES

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	FOUNDATION EXCAVATION FOR END BENT	FOUNDATION EXCAVATION FOR BENT	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	APPROX. 60,855 LBS. STRUCTURAL STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	FOAM JOINT SEALS FOR PRESERVATION	POURABLE SILICONE JOINT SEALANT	POLYESTER POLYMER CONCRETE MATERIALS	EPOXY POLYMER CONCRETE MATERIALS (ALTERNATE)	BRIDGE JOINT DEMOLITION	SCARIFYING BRIDGE DECK	SHOTBLASTING BRIDGE DECK	PLACING & FINISHING OF POLYMER CONCRETE	
	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	LUMP SUM	EACH	NO.	LIN. FT.	LIN. FT.	SQ. YDS.	LUMP SUM	LIN. FT.	LIN. FT.	CU. YDS.	CU. YDS.	SQ. FT.	SQ. YDS.	SQ. YDS.	SQ. YDS.
SUPERSTRUCTURE		LUMP SUM			2,717	11,089					LUMP SUM			173.59		LUMP SUM	137.34	137.54	12.84	12.84	98	933	933	1,323	
END BENT 1			LUMP SUM				10.0		1,532			3	3	180		100									
BENT 1				LUMP SUM			23.3		3,564	498		5	5	175											
BENT 2				LUMP SUM			23.4		3,586	509		5	5	175											
END BENT 2			LUMP SUM				9.5		1,526			3	3	165		111									
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	2,717	11,089	66.2	LUMP SUM	10,208	1,007	LUMP SUM	16	16	695	173.59	211	LUMP SUM	137.34	137.54	12.84	12.84	98	933	933	1,323

NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC PERFORMANCE ZONE 1.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

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

THE EXISTING BRIDGE SHALL BE PARTIALLY REMOVED BY SAWING AND/OR NON-SHATTERING METHODS SUCH THAT DEBRIS WILL NOT FALL INTO THE TRAVEL WAY. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

FOR LIMITS OF PARTIAL REMOVAL OF EXISTING STRUCTURE, SEE APPLICABLE SUPERSTRUCTURE AND SUBSTRUCTURE PLAN SHEETS.

FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.

DIMENSIONS AND ELEVATIONS GIVEN FOR THE EXISTING STRUCTURE ARE FROM THE BEST INFORMATION AVAILABLE. IF FIELD CONDITIONS VARY FROM THE PLANS, MODIFICATIONS WILL BE MADE AS NECESSARY AND AS DIRECTED BY THE ENGINEER.

IF FIELD CONDITIONS VARY FROM THE PLANS, MODIFICATIONS WILL BE MADE AS NECESSARY AND AS DIRECTED BY THE ENGINEER.

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

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

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

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 5 OR SYSTEM 6 OF THE STRUCTURAL STEEL SHOP COATINGS PROGRAM AND SECTION 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

IN ORDER TO FACILITATE A SMOOTH TRANSITION FROM THE EXISTING BRIDGE DECK TO THE PROPOSED DECK WIDENING, THE CONTRACTOR SHALL NOT BEGIN THE FINISHING PROCESS FOR THE DECK WIDENING UNTIL ALL CONCRETE HAS BEEN PLACED IN THAT SPAN. THIS DECK POUR PROCESS WILL BE REQUIRED FOR ALL SPANS.

FOR CONTROL OF TRAFFIC AND LIMITS ON STAGING OF CONSTRUCTION, SEE TRANSPORTATION MANAGEMENT PLAN.

FOR OVERLAY SURFACE PREPARATION FOR POLYMER CONCRETE, SEE SPECIAL PROVISIONS.

FOR PLACING AND FINISHING POLYMER CONCRETE OVERLAY AND POLYESTER POLYMER CONCRETE MATERIALS USED FOR JOINT HEADER REPAIRS, SEE "POLYMER CONCRETE BRIDGE DECK OVERLAY" SPECIAL PROVISIONS.

FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.

FOR POURABLE SILICONE JOINT SEALANT, SEE SPECIAL PROVISIONS.

FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

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

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

WHEN REFERENCING THE EXISTING BRIDGE PLANS THE CONVERSION FACTOR -0.87'± SHALL BE USED TO CONVERT ELEVATIONS ON THE EXISTING BRIDGE PLANS TO MATCH THE DATUM FOR THE PROPOSED BRIDGE.

SAMPLE BAR REPLACEMENT	
SIZE	LENGTH
#3	6'-2"
#4	7'-4"
#5	8'-6"
#6	9'-8"
#7	10'-10"
#8	12'-0"
#9	13'-2"
#10	14'-6"
#11	15'-10"

NOTE: SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" (SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND fy = 60 ksi.

PROJECT NO. U-2579AA
 FORSYTH COUNTY
 STATION: 29+89.90 -Y2SBL-

SHEET 5 OF 5

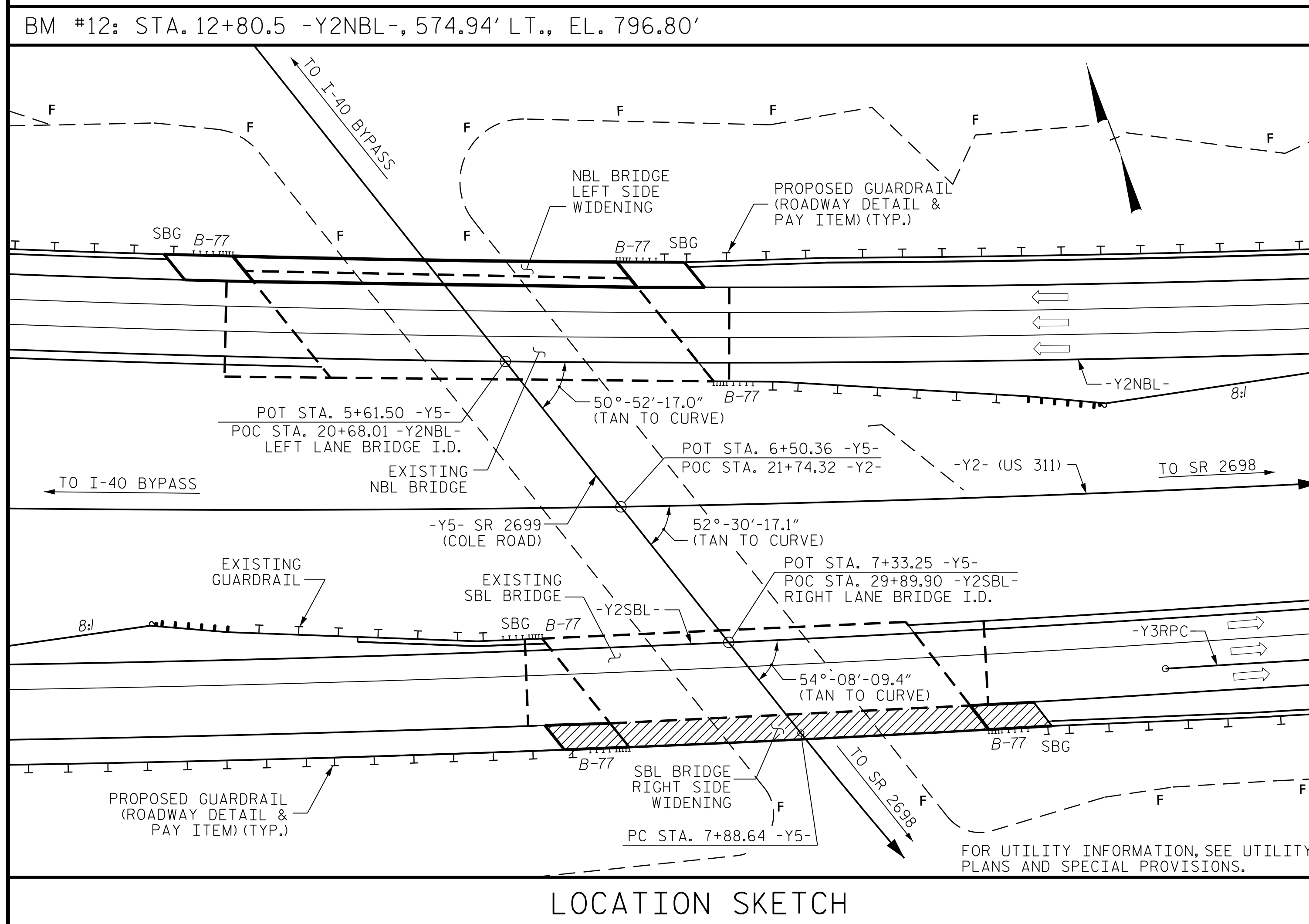
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

BRIDGE ON US 311 (FUTURE I-74)
 OVER SR 2699 BETWEEN
 I-40 BYPASS AND SR 2698

RIGHT LANE (SBL)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S07-05
2			4			TOTAL SHEETS 32



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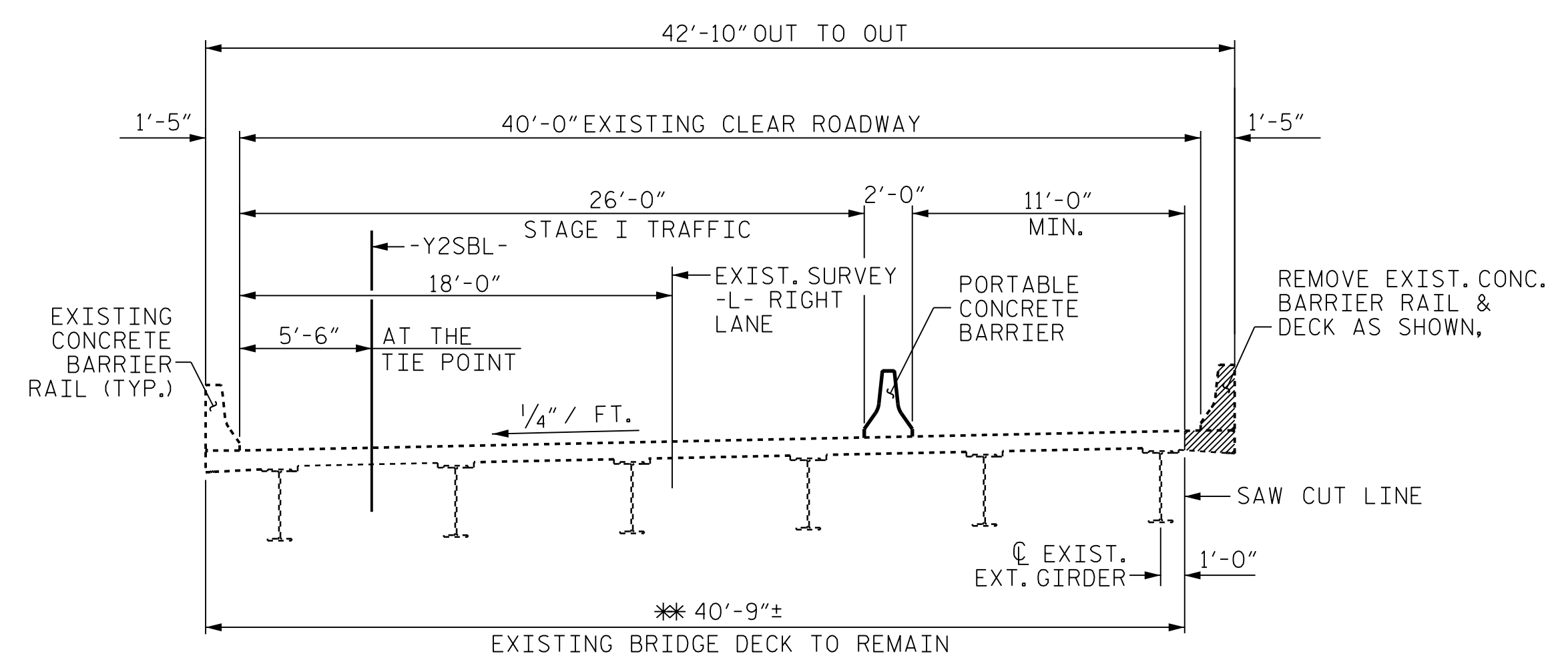
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 NC COA No. F-1255

DRAWN BY: VDK DATE: 9/19
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 DESIGN ENGINEER: VDK DATE: 11/19

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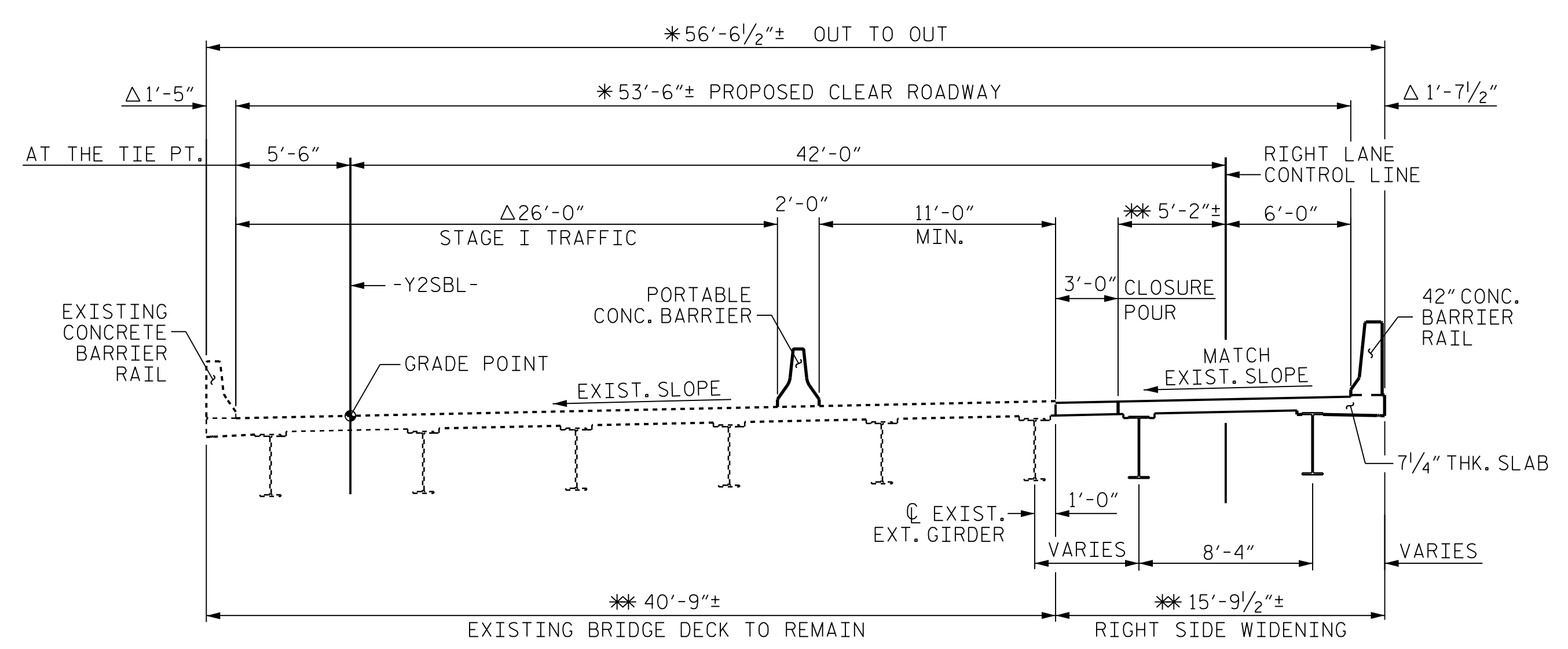
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 STAGES



NOTE: DIMENSIONS SHOWN ARE FROM EXISTING PLANS.

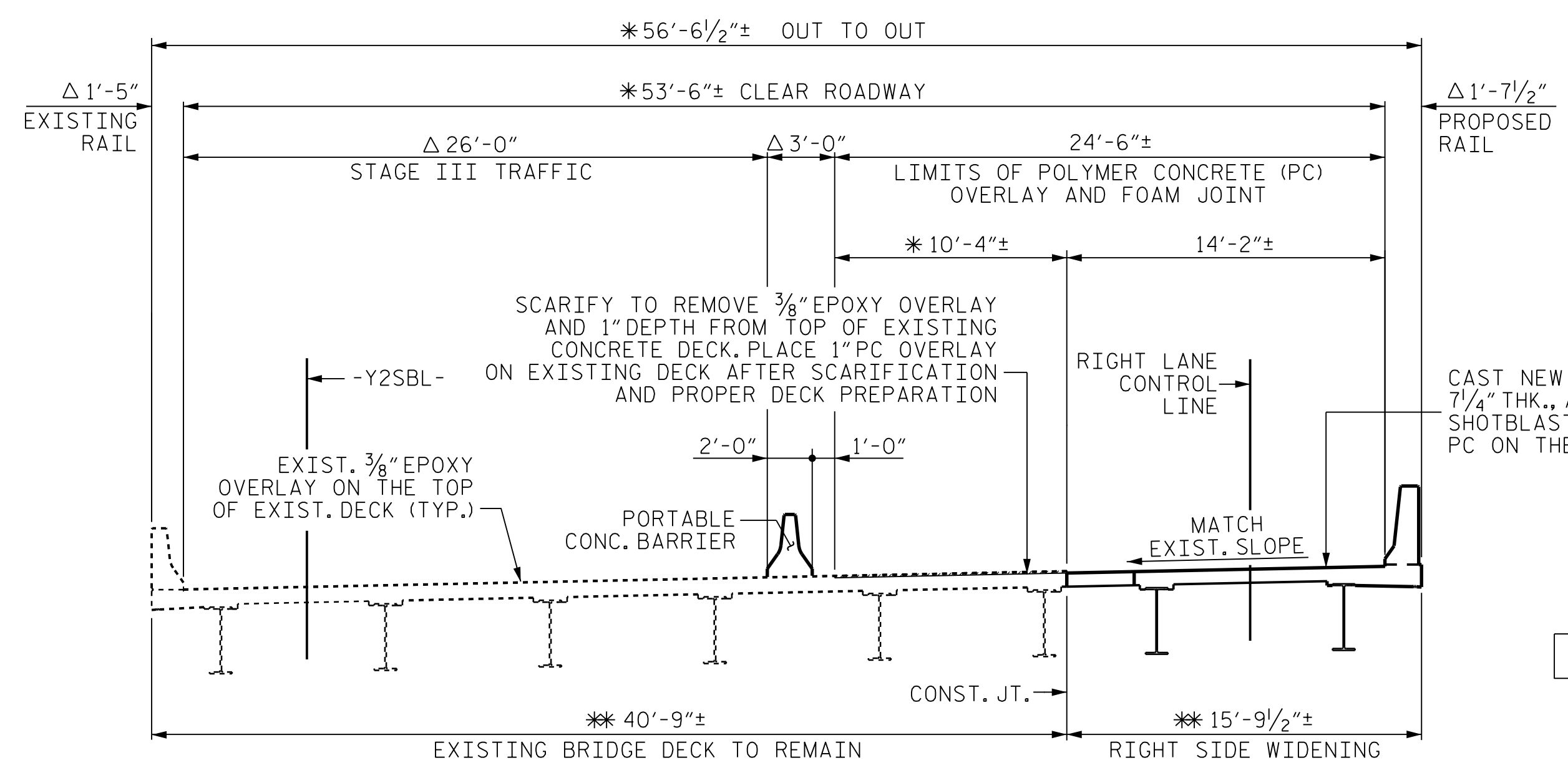
STAGE I CONSTRUCTION

REMOVE EXISTING RIGHT SIDE RAIL & PARTIAL DECK AS SHOWN. INSTALL THE PORTABLE CONCRETE BARRIER FOR MAINTAINING TRAFFIC. REMOVE EXISTING RIGHT SIDE END BENT WINGS & PORTION OF END BENTS.



STAGE II CONSTRUCTION

CONSTRUCT RIGHT SIDE DECK WIDENING, CLOSURE POUR AND CONCRETE RAIL. CONSTRUCT RIGHT SIDE APPROACH SLABS WIDENING, FOR CASTING OF DECK TO 7/4" THICK, SEE TYPICAL SECTION ON SHEET S07-08.

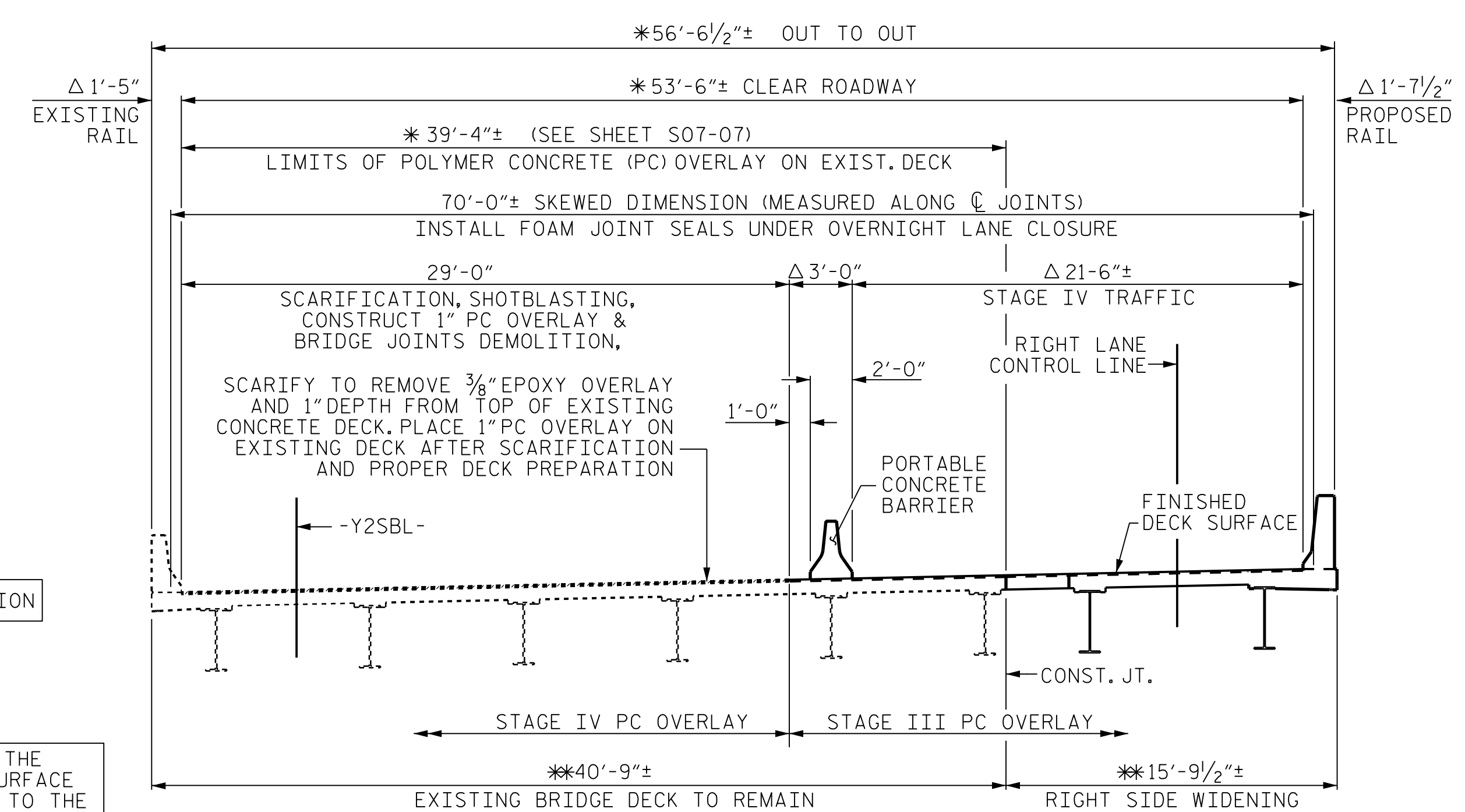


STAGE III CONSTRUCTION

PERFORM SCARIFICATION AND SHOTBLASTING TO RIGHT SIDE OF EXISTING DECK AND APPROACH SLABS AS SHOWN.

REMOVE EXISTING FOAM JOINT SEALS, DEMOLISH EXISTING ELASTOMERIC CONCRETE HEADERS ON BOTH SIDES OF JOINTS. REPAIR DEMOLISHED JOINT HEADERS WITH POLYESTER POLYMER CONCRETE MATERIALS TO THE BOTTOM OF PC OVERLAY ELEVATION. SHOTBLAST WIDENED PORTION OF BRIDGE DECK & APPROACH SLABS

CONSTRUCT 1" POLYMER CONCRETE (PC) OVERLAY ON RIGHT SIDE OF EXISTING DECK AND APPROACH SLABS AND ON THE WIDENED DECK AND APPROACH SLABS



STAGE IV CONSTRUCTION

PERFORM SCARIFICATION AND SHOTBLASTING TO LEFT SIDE OF EXISTING DECK AND APPROACH SLABS AS SHOWN.

REMOVE EXISTING FOAM JOINT SEALS, DEMOLISH EXISTING ELASTOMERIC CONCRETE HEADERS ON BOTH SIDES OF JOINTS. REPAIR DEMOLISHED JOINT HEADERS WITH POLYESTER POLYMER CONCRETE MATERIALS TO THE BOTTOM OF PC OVERLAY ELEVATION.

CONSTRUCT 1" POLYMER CONCRETE (PC) OVERLAY ON LEFT SIDE OF EXISTING DECK AND EXISTING APPROACH SLABS UNDER OVERNIGHT LANE CLOSURES.

INSTALL FOAM JOINT SEALS FOR ENTIRE BRIDGE (AS SHOWN) UNDER OVERNIGHT LANE CLOSURES.

NO TRAFFIC WILL BE ALLOWED ON THE WIDENED DECK AND THE SCARIFIED SURFACE OF THE EXISTING BRIDGE DECK PRIOR TO THE COMPLETION OF 1" PC OVERLAY PLACEMENT.

NOTES

FOR MAINTENANCE OF TRAFFIC, SEE TRANSPORTATION MANAGEMENT PLANS.

SEE TRANSPORTATION MANAGEMENT PLANS FOR LOCATION AND PAY LIMIT OF THE ANCHORED PORTABLE CONCRETE BARRIER.

CARE SHALL BE TAKEN DURING THE PARTIAL REMOVAL OF THE EXISTING STRUCTURE. DAMAGE TO THE REMAINING STRUCTURE SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE DEPARTMENT. THE METHOD OF REPAIR SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER.

ALL DIMENSIONS ARE MEASURED RADIAL, U.O.N.

BRIDGE ID POINT AT: STA. 28+89.90 -Y2SBL- POC = STA. 7+33.25 -Y5- POT

* DIMENSION VARIES DUE TO DIFFERENT RADII:

EXISTING SURVEY -L- RIGHT LANE RADIUS = 11,459.1559'
 PROPOSED -Y2SBL- RADIUS = 11,449.51'
 RIGHT LANE CONTROL LINE RADIUS = 11,491.51'

* DIMENSIONS ARE VARIES DUE TO MEASURE TO THE PARALLEL LINE OFF THE Δ OF EXISTING EXTERIOR BEAM.

PROJECT NO. U-2579AA
FORSYTH COUNTY
 STATION: 29+89.90 -Y2SBL

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CONSTRUCTION SEQUENCE
 RIGHT LANE (SBL)

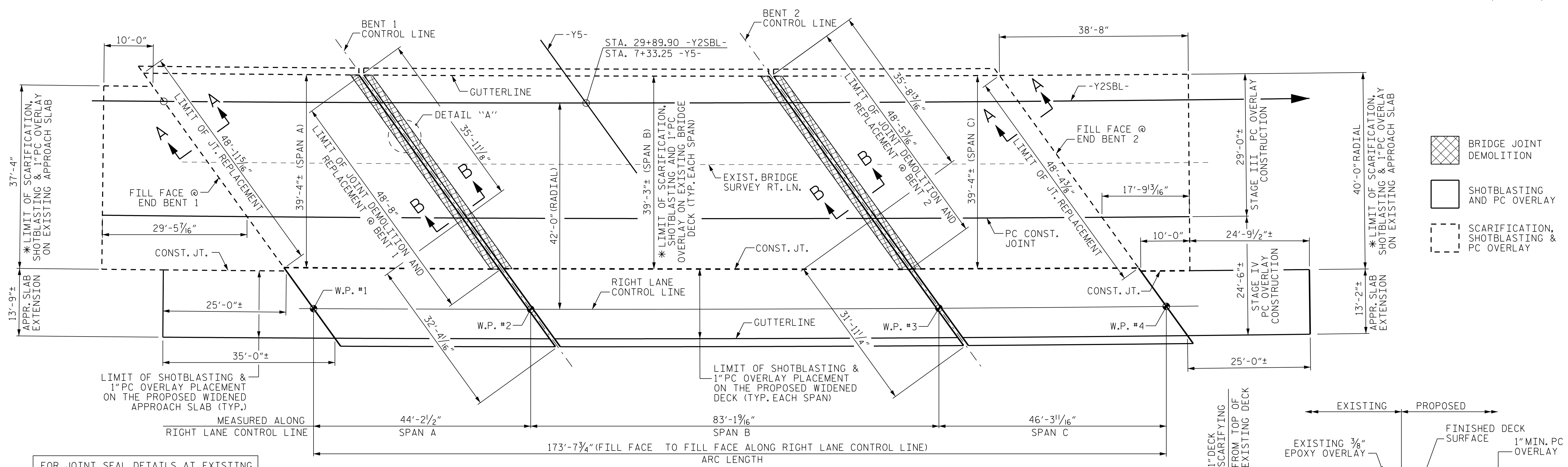
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S07-06	
1			3			TOTAL SHEETS	
2			4			32	

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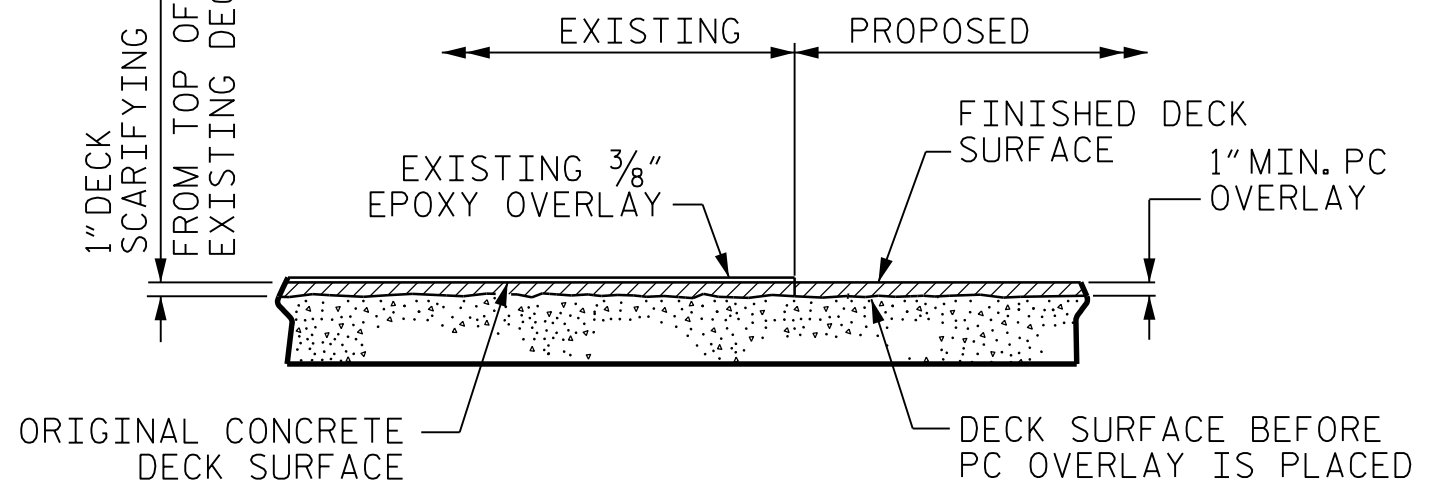
DRAWN BY: VDK DATE: 9/19
 CHECKED BY: THF DATE: 10/19
 DESIGN ENGINEER: VDK DATE: 11/19
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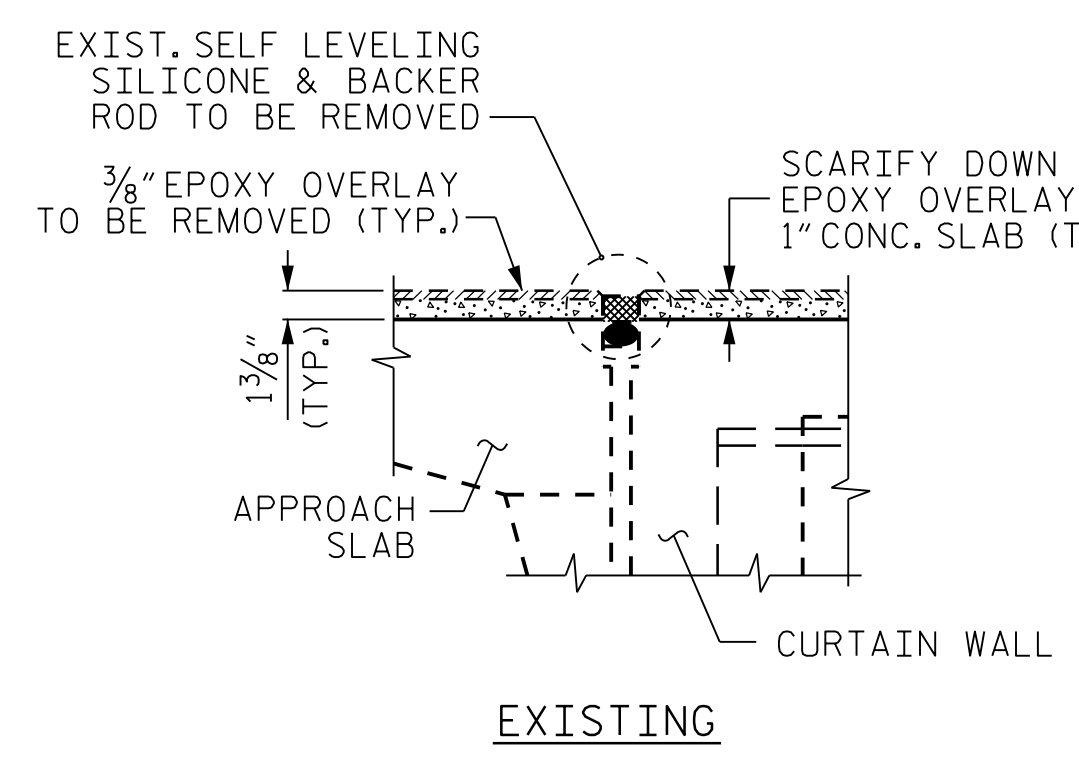
FOR JOINT SEAL DETAILS AT EXISTING RAIL, SEE SHEET S07-10.

* REMOVE 3/8" EPOXY OVERLAY AND 1" EXIST. CONCRETE DECK

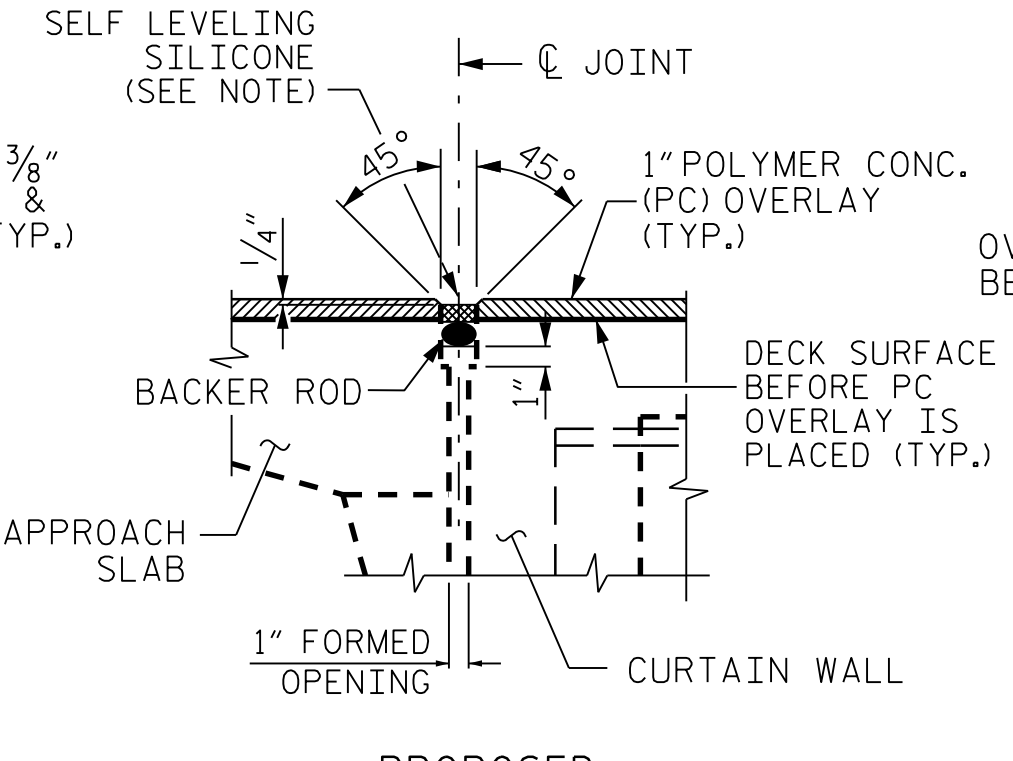
PLAN
TOTAL 1" PC OVERLAY AREA FOR DECKS & APPROACH SLABS = 14,492 SQ. FT.



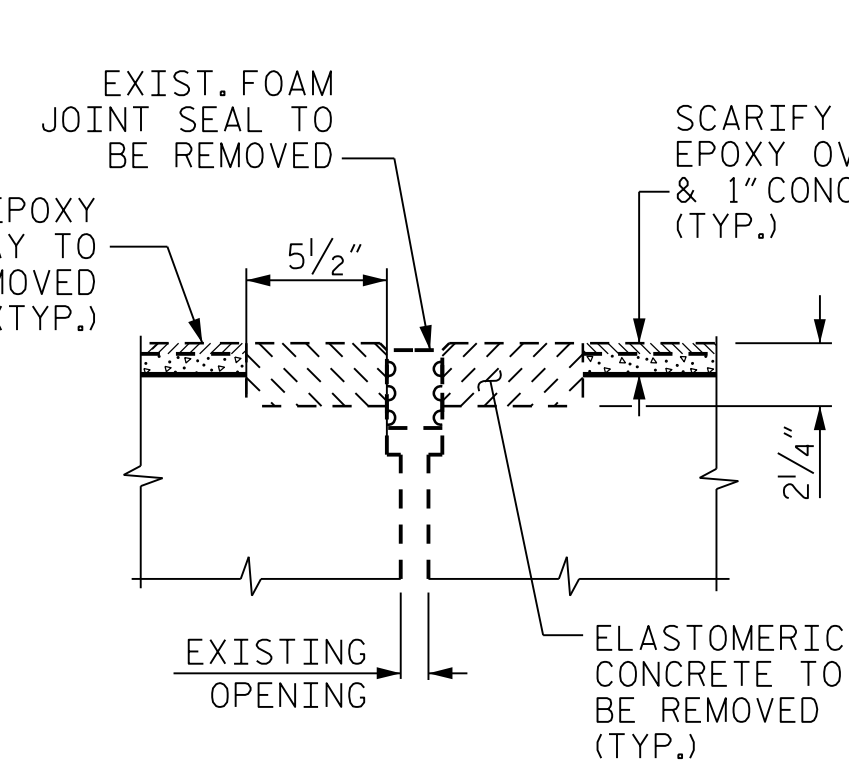
DETAIL FOR PC OVERLAY ON EXISTING DECK
FOR STAGED PC OVERLAY QUANTITIES SEE SHEET S07-22.



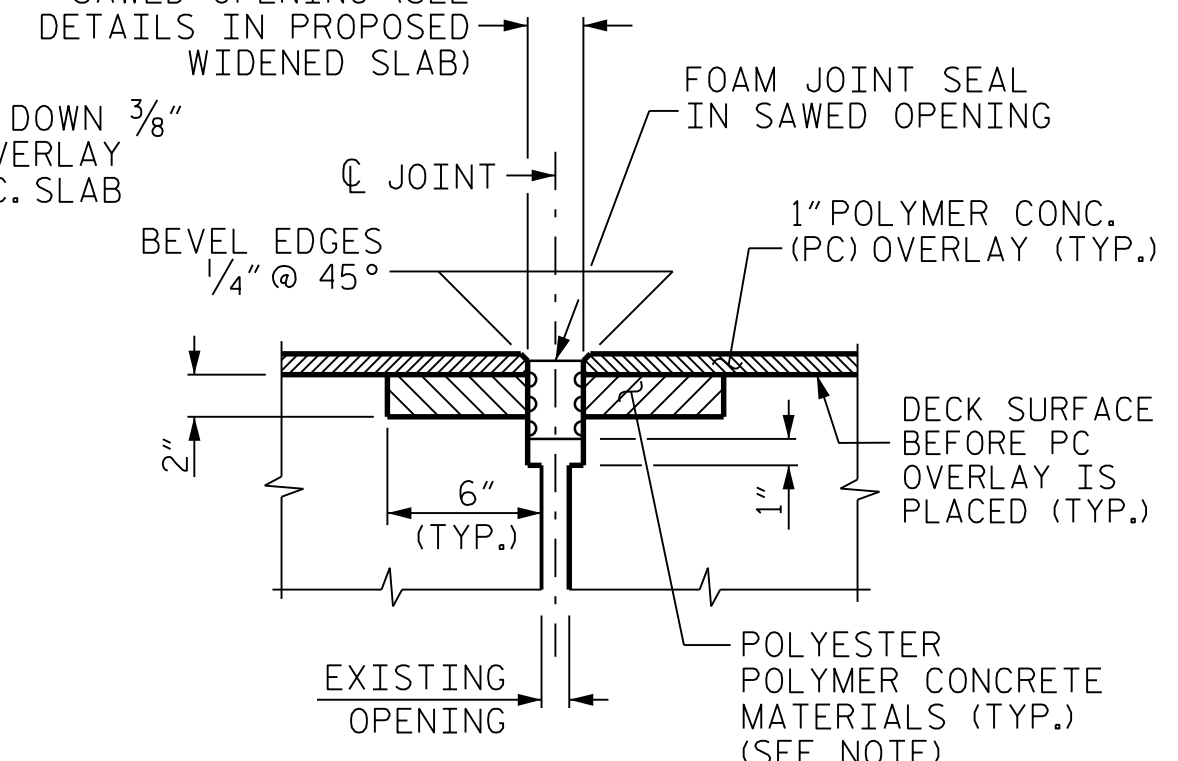
SECTION A-A
AT END BENT



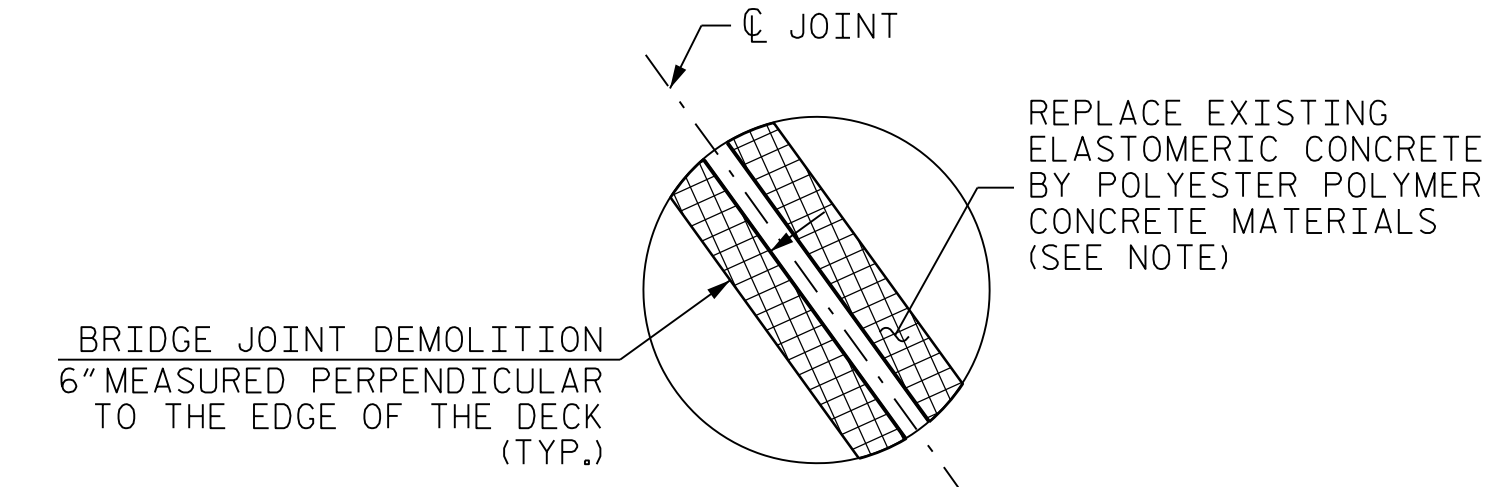
PROPOSED



EXISTING



PROPOSED



DETAIL "A"

NOTES

- FOR SELF LEVELING SILICONE AND BACKER ROD USED AT END BENTS, SEE "POURABLE SILICONE JOINT SEALANT" SPECIAL PROVISIONS.
- EXISTING DIMENSIONS AND BRIDGE CONDITION ARE FROM THE BEST INFORMATION AVAILABLE. THE CONTRACTOR SHALL FIELD VERIFY THE INFORMATION SHOWN ON THE PLANS AND NOTIFY THE ENGINEER IF ACTUAL DIMENSIONS AND CONDITIONS DIFFER.
- EXISTING JOINTS AND DECK DRAINS SHALL BE SEALED PRIOR TO BEGINNING SURFACE PREPARATION OF BRIDGE DECK.
- DEMOLISH EXISTING BRIDGE JOINT AREA TO THE NECESSARY DEPTH SUCH THAT CONCRETE REPAIR SHALL BE FOUNDED ON FLAT AND LEVEL SOUND CONCRETE SUBSTRATE.
- FOR POLYMER CONCRETE (PC) OVERLAY ON BRIDGE DECKS AND POLYESTER POLYMER CONCRETE (PPC) MATERIALS USED FOR JOINT HEADER REPAIR, SEE "POLYMER CONCRETE BRIDGE DECK OVERLAY" SPECIAL PROVISIONS.
- RETAIN ALL EXISTING REINFORCING STEEL. CLEAN AND REPAIR AS NEEDED.
- FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.
- FOR FOAM JOINT SEALS FOR PRESERVATION, SEE SPECIAL PROVISIONS.

- THE CONTRACTOR SHALL VERIFY THE EXISTING BRIDGE JOINT OPENING PRIOR TO ORDERING JOINT SEAL MATERIAL. IF THE ACTUAL JOINT OPENING VARIES FROM THE OPENING INDICATED IN THE DETAILS BY MORE THAN 1/4", NOTIFY THE ENGINEER.
- THE MANUFACTURER SHALL PROVIDE THE MINIMAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL FOR THE SIZE OF THE OPENING INDICATED ON THE PLANS AND TO ACCOMMODATE THE MINIMUM EXPANSION INDICATED ON THE PLANS.
- FOAM JOINTS SHALL BE INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS.
- THE CONTRACTOR SHALL TAKE CARE DURING JOINT REHABILITATION OPERATIONS TO NOT DROP ANY MATERIAL BELOW THE BRIDGE WITHOUT PROTECTIVE DEVICES BELOW TO CATCH THE MATERIAL. ANY MATERIAL THAT FALLS BELOW THE BRIDGE SHALL BE CONTAINED, REMOVED, AND DISPOSED OF BY THE CONTRACTOR AT NO EXTRA COST TO THE DEPARTMENT. IF THE ENGINEER DETERMINES THAT THE PROTECTIVE DEVICES ARE NOT ADEQUATE OR BEING EMPLOYED, THE WORK SHALL BE SUSPENDED UNTIL ADEQUATE PROTECTION IS PROVIDED.
- THE CONTRACTOR WILL NOT BE ALLOWED TO FORM THE JOINTS IN LIEU OF SAW CUTTING THE JOINT.
- THE INSTALLED JOINT SEALS SHALL BE WATERTIGHT.

FOR DETAILS OF JOINT REPAIR FOR THE EXISTING CONCRETE RAIL, SEE SHEET S07-10.

POLYESTER POLYMER CONC. MATERIALS FOR EXISTING JOINT HEADER REPAIRS	
JOINT AT	QUANTITY (CU. YD.)
BENT 1	0.3
BENT 2	0.3
TOTAL	0.6

BASED ON THE MINIMUM BLOCKOUT SHOWN AT INT. BENTS ON EXISTING BRIDGE DECKS

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NC COA No. F-1255

DRAWN BY: VDK DATE: 9/19
CHECKED BY: THF DATE: 10/19
DESIGN ENGINEER: VDK DATE: 11/19

DWG. No.



PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 29+89.90 -Y2SBL

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
PC OVERLAY & JOINT REPLACEMENT DETAILS ON EXISTING SLAB
RIGHT LANE (SBL)

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

TOTAL SHEETS: 32

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR STEEL ROLLED BEAMS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.17	--	1.75	0.71	1.17	B	EL	40.82	0.91	3.03	B	I	0.0	1.30	0.71	1.76	B	EL	40.82		
	HL-93 (OPERATING)	N/A	--	1.52	--	1.35	0.71	1.52	B	EL	40.82	0.91	3.92	B	I	0.0	1.00	0.71	2.29	B	EL	40.82		
	HS-20 (INVENTORY)	36.000	②	1.57	56.52	1.75	0.71	1.57	B	EL	40.82	0.91	3.96	B	I	81.63	1.30	0.71	2.36	B	EL	40.82		
	HS-20 (OPERATING)	36.000	--	2.03	73.08	1.35	0.71	2.03	B	EL	40.82	0.91	5.13	B	I	81.63	1.00	0.71	3.07	B	EL	40.82		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500	--	4.52	61.02	1.40	0.71	4.52	B	EL	40.82	0.91	12.07	B	I	81.63	1.30	0.71	5.43	B	EL	40.82	
		SNARBS2	20.000	--	3.33	66.60	1.40	0.71	3.33	B	EL	40.82	0.91	8.49	B	I	81.63	1.30	0.71	4.00	B	EL	40.82	
		SNAGRIS2	22.000	--	3.14	69.08	1.40	0.71	3.14	B	EL	40.82	0.91	7.85	B	I	81.63	1.30	0.71	3.77	B	EL	40.82	
		SNCOTTS3	27.250	--	2.25	61.31	1.40	0.71	2.25	B	EL	40.82	0.91	6.02	B	I	81.63	1.30	0.71	2.70	B	EL	40.82	
		SNAGGRS4	34.925	--	1.87	65.31	1.40	0.71	1.87	B	EL	40.82	0.91	4.29	B	I	81.63	1.30	0.71	2.24	B	EL	40.82	
		SNS5A	35.550	--	1.83	65.06	1.40	0.71	1.83	B	EL	40.82	0.91	4.32	B	I	81.63	1.30	0.71	2.19	B	EL	40.82	
		SNS6A	39.950	--	1.67	66.72	1.40	0.71	1.67	B	EL	40.82	0.91	3.91	B	I	81.63	1.30	0.71	2.00	B	EL	40.82	
	SNS7B	42.000	--	1.59	66.78	1.40	0.71	1.59	B	EL	40.82	0.91	3.82	B	I	81.63	1.30	0.71	1.91	B	EL	40.82		
	TRUCK TRACTOR SEMI-TRAILER (TTS1)	TNAGRIT3	33.000	--	2.03	66.99	1.40	0.71	2.03	B	EL	40.82	0.91	5.38	B	I	81.63	1.30	0.71	2.44	B	EL	40.82	
		TNT4A	33.075	--	2.04	67.47	1.40	0.71	2.04	B	EL	40.82	0.91	4.58	B	I	0.0	1.30	0.71	2.45	B	EL	40.82	
		TNT6A	41.600	--	1.66	69.06	1.40	0.71	1.66	B	EL	40.82	0.91	4.01	B	I	81.63	1.30	0.71	2.00	B	EL	40.82	
		TNT7A	42.000	--	1.66	69.72	1.40	0.71	1.66	B	EL	40.82	0.91	3.95	B	I	81.63	1.30	0.71	2.00	B	EL	40.82	
		TNT7B	42.000	--	1.72	72.24	1.40	0.71	1.72	B	EL	40.82	0.91	3.75	B	I	0.0	1.30	0.71	2.06	B	EL	40.82	
		TNAGRIT4	43.000	--	1.63	70.09	1.40	0.71	1.63	B	EL	40.82	0.91	3.63	B	I	81.63	1.30	0.71	1.97	B	EL	40.82	
TNAGT5A		45.000	--	1.55	69.75	1.40	0.71	1.55	B	EL	40.82	0.91	3.58	B	I	81.63	1.30	0.71	1.86	B	EL	40.82		
TNAGT5B	45.000	③	1.53	68.85	1.40	0.71	1.53	B	EL	40.82	0.91	3.46	B	I	81.63	1.30	0.71	1.84	B	EL	40.82			

LOAD FACTORS: _____

DESIGN LOAD RATING FACTORS	LIMIT STATE	φ _c	φ _w
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

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

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

COMMENTS:
 1. RATING IS CONTROLLED BY EXISTING BEAMS.
 2.
 3.
 4.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

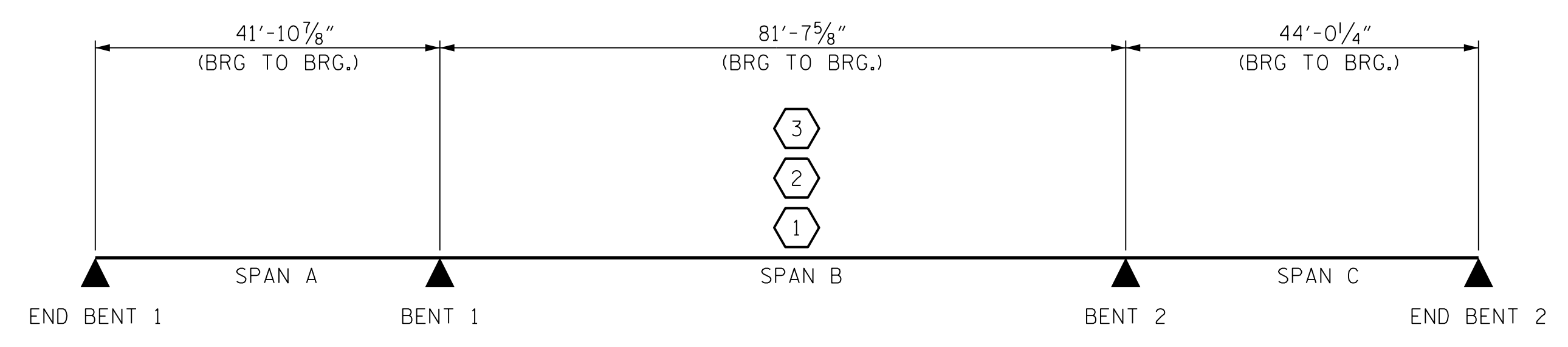
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - EXISTING INTERIOR BEAM
 EL - EXIST. EXTERIOR LEFT BEAM
 ER - EXIST. EXTERIOR RIGHT BEAM



LRFR SUMMARY

PROJECT NO. U-2579AA
FORSYTH COUNTY
 STATION: 29+89.90 -Y2SBL

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD

LRFR SUMMARY FOR
 STEEL ROLLED BEAMS

(NON-INTERSTATE TRAFFIC)
 RIGHT LANE (SBL)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S07-08 <small>TOTAL SHEETS 32</small>
1			3			
2			4			

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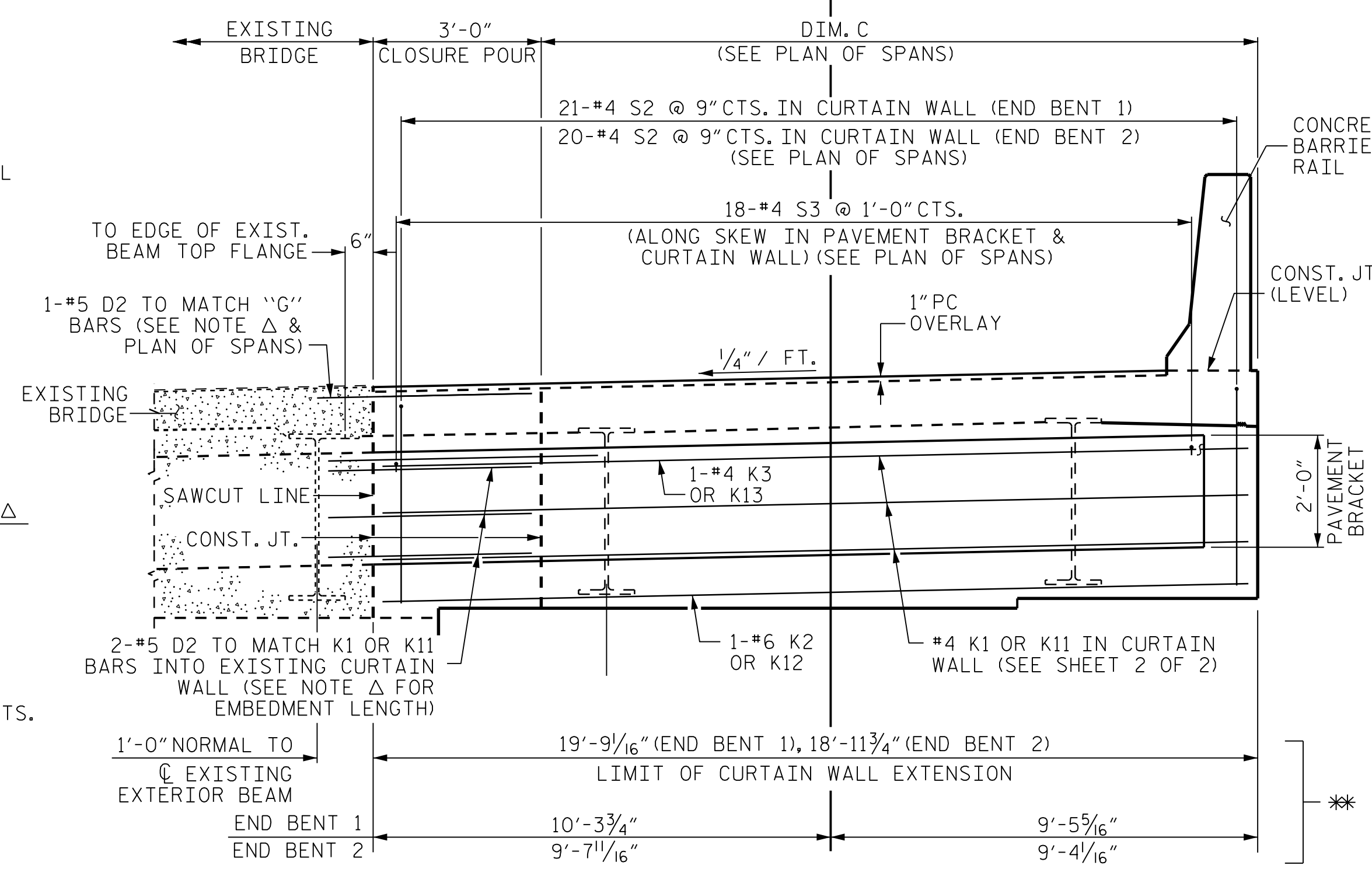
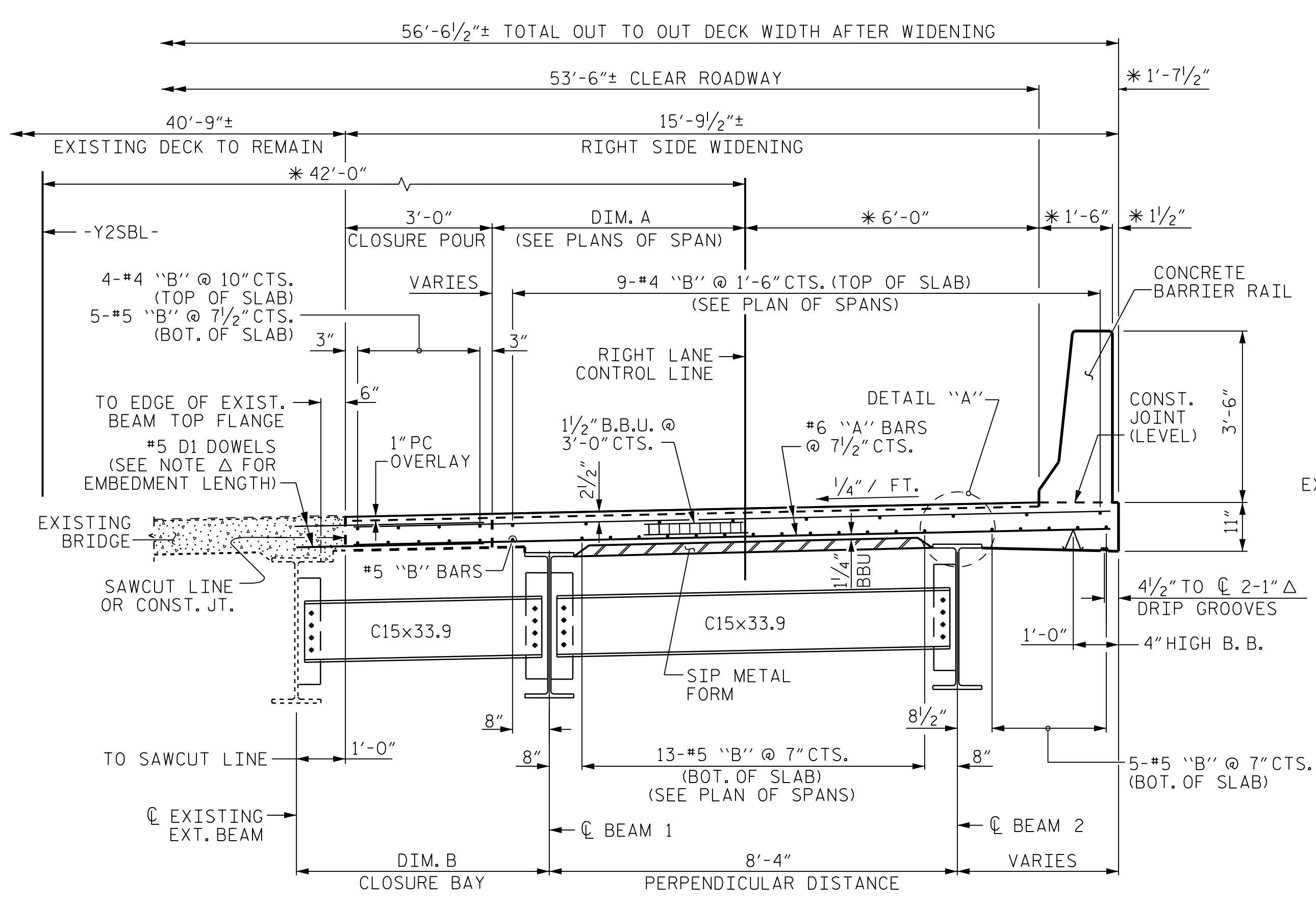
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DRAWN BY: VDK DATE: 9/19
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DWG. No.





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.

METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO BEAM OR GIRDER FLANGES IN THE ZONES REQUIRING CHARPY V-NOTCH TEST. SEE STRUCTURAL STEEL DETAIL SHEETS.

THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND BEAM/GIRDER STIFFENERS OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE METAL STAY-IN-PLACE FORM WORKING DRAWINGS.

A FULL DEPTH SAW CUT SHALL BE MADE IN THE SLAB AND EXISTING CONCRETE REMOVED IN ACCORDANCE WITH PLAN DETAILS.

DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE TOP AND BOTTOM SLAB REINFORCING STEEL.

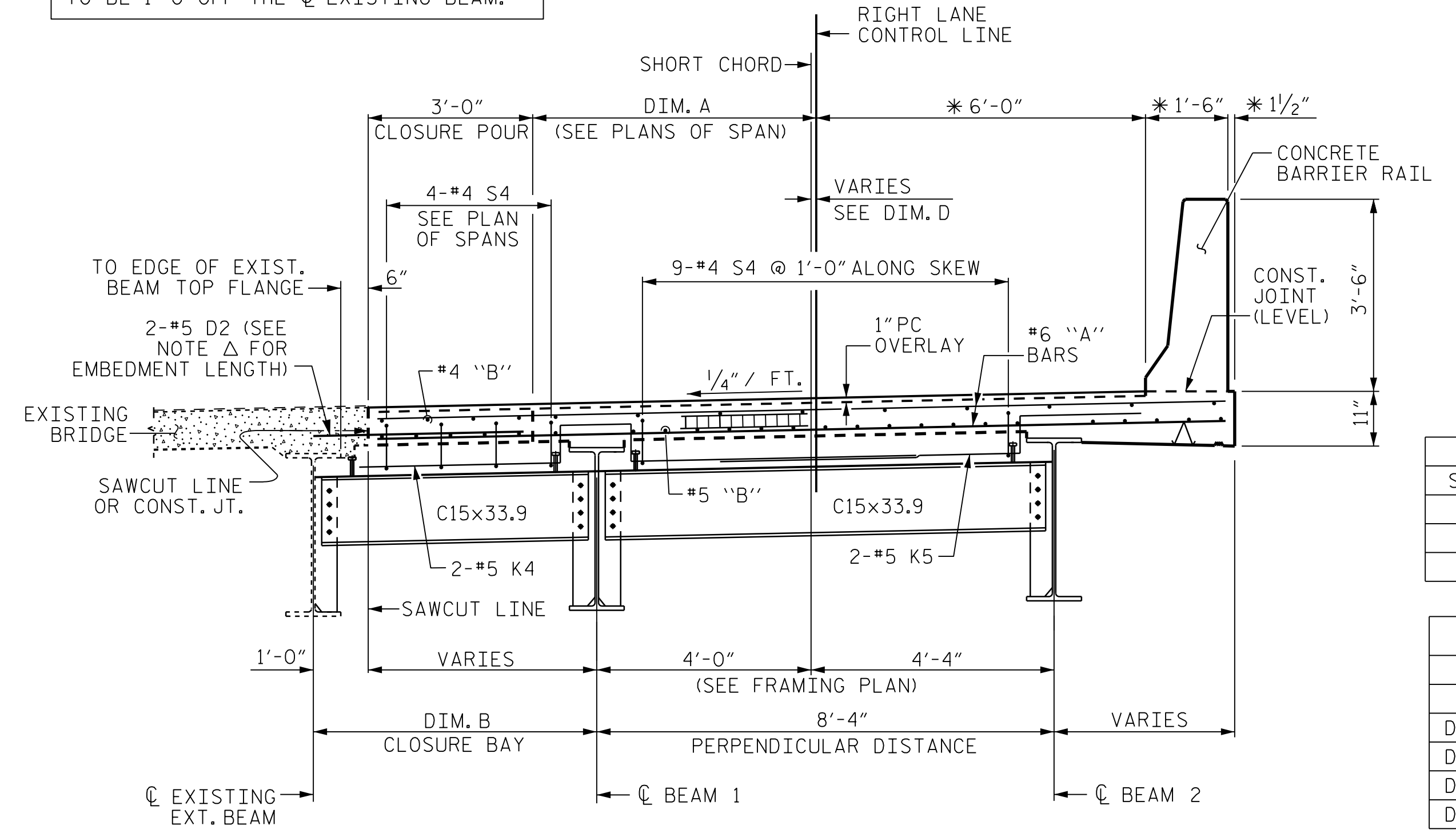
Δ THE "D" DOWELS PLACED IN THE EXISTING DECK, CURTAIN WALLS, AND BENT DIAPHRAGMS SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM. LEVEL 1 FIELD TESTING IS REQUIRED AND THE YIELD LOAD FOR #5 D1 AND D2 DOWELS ARE 18.6 KIPS. THE EMBEDMENT LENGTH TO BE VERIFIED BY THE MANUFACTURER OF ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SECTION 420-13 OF THE STANDARD SPECIFICATIONS.

PREVIOUSLY CAST CONCRETE IN EACH SPAN SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI BEFORE DECK CONCRETE IS CAST IN THE SPAN.

1" PC OVERLAY SHALL NOT BE PLACED UNTIL ALL SLAB CONCRETE IN THAT SPAN AND APPROACH SLABS HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI, A MINIMUM 28 DAYS OLD, AND MINIMUM 3 DAYS OPEN AIR DRY CURING AFTER WET CURE.

* RADIAL DIMENSION

EXISTING SUPERSTRUCTURE USES CHORDED GIRDERS UNDER A CAST-IN-PLACE CURVED CONCRETE DECK. THE SAWCUT LINE IS TO BE 1'-0" OFF THE C EXISTING BEAM.



PROPOSED BEAMS 1 & 2 SIZE

SPAN	SPAN A	SPAN B	SPAN C
W36X135	W36X135	W36X135	W36X135

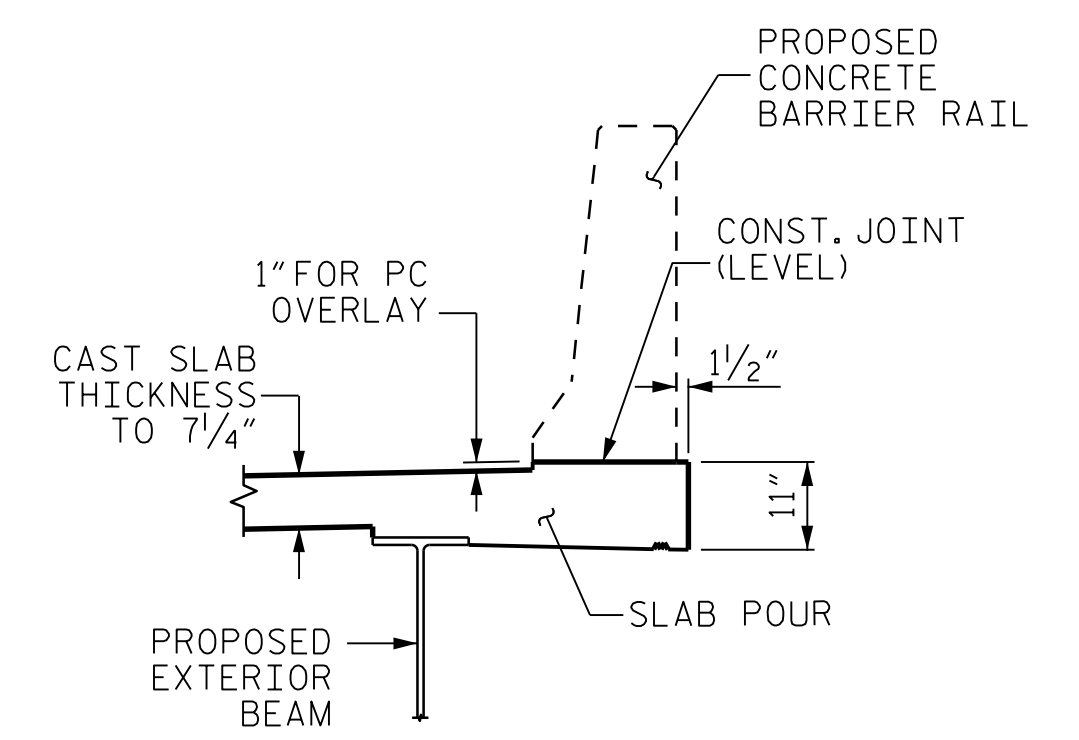
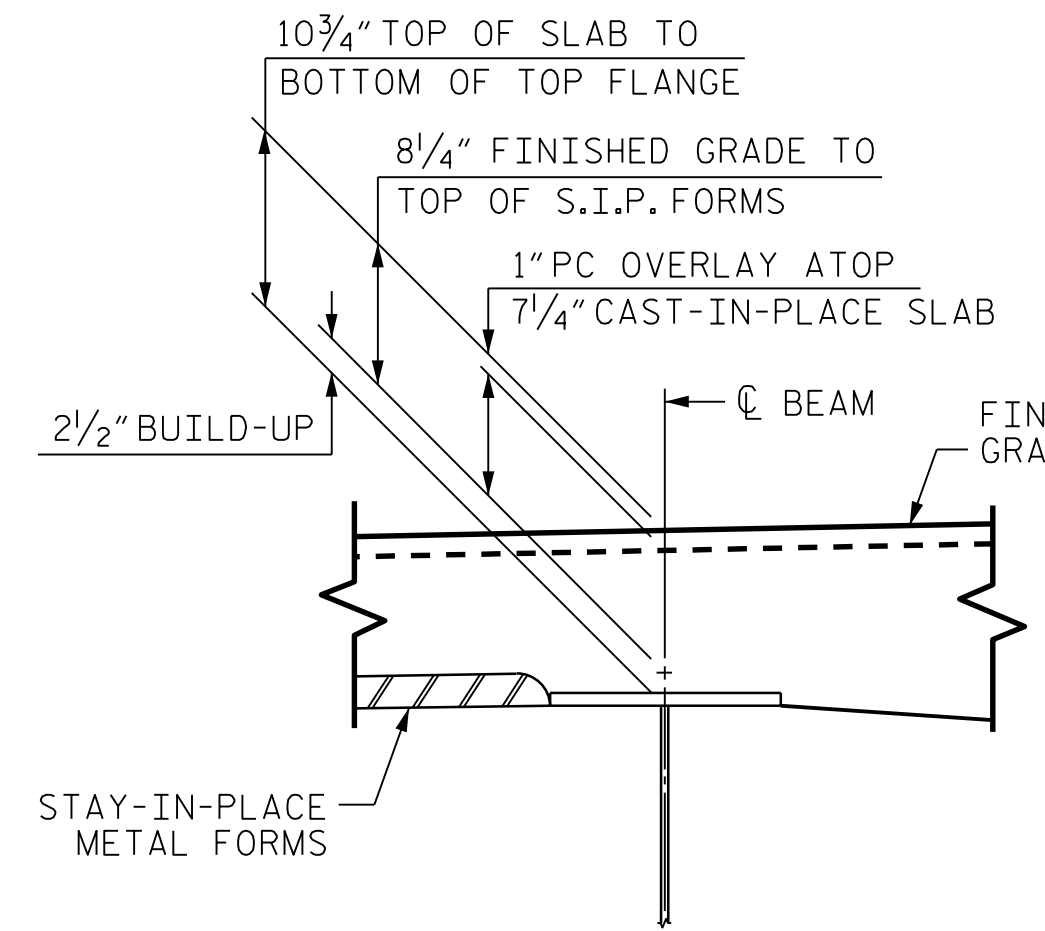
DIMENSION D

SPAN	@ WORK PT.	MID-SPAN	@ WORK PT.
A	0"	1/4"	0"
B	0"	7/8"	0"
C	0"	1/4"	0"

DIMENSION TABLE

	SPAN A		SPAN B		SPAN C	
	FILL FACE	C JOINT @ BENT 1	C JOINT @ BENT 2	FILL FACE	C JOINT @ BENT 2	FILL FACE
DIM. A	6'-7 7/8"	6'-4 3/8"	6'-5 13/16"	6'-0 3/4"	6'-2 3/16"	5'-11 3/8"
DIM. B	6'-7 7/16"	6'-4 9/16"	6'-6"	6'-0 1/8"	6'-2 3/8"	5'-11 9/16"
DIM. C	16'-0 1/16"	15'-9 5/16"	15'-10 3/4"	15'-5 1/8"	15'-6 9/16"	15'-3 7/16"
DIM. D	SEE TABLE "DIMENSION D" ABOVE					

DIMENSIONS IN THE TABLE ABOVE ARE MEASURED ALONG SKEW AT FILL FACE OR C JOINT, SEE "PLAN OF SPANS" SHEET



PROJECT NO. U-2579AA
FORSYTH COUNTY
STATION: 29+89.90 -Y2SBL

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

RIGHT LANE (SBL)

REVISIONS

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

SHEET NO. **S07-09**
TOTAL SHEETS **32**

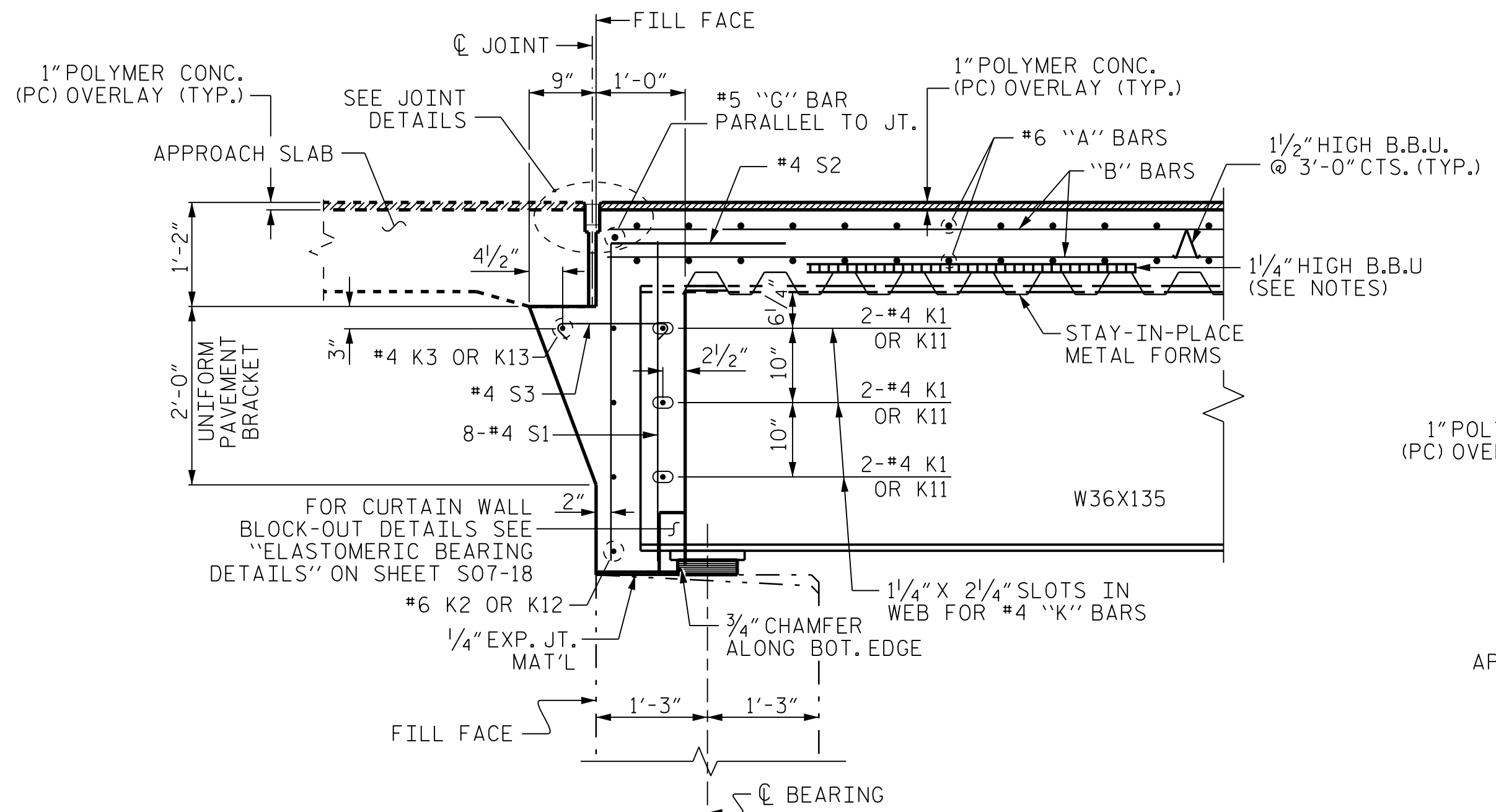
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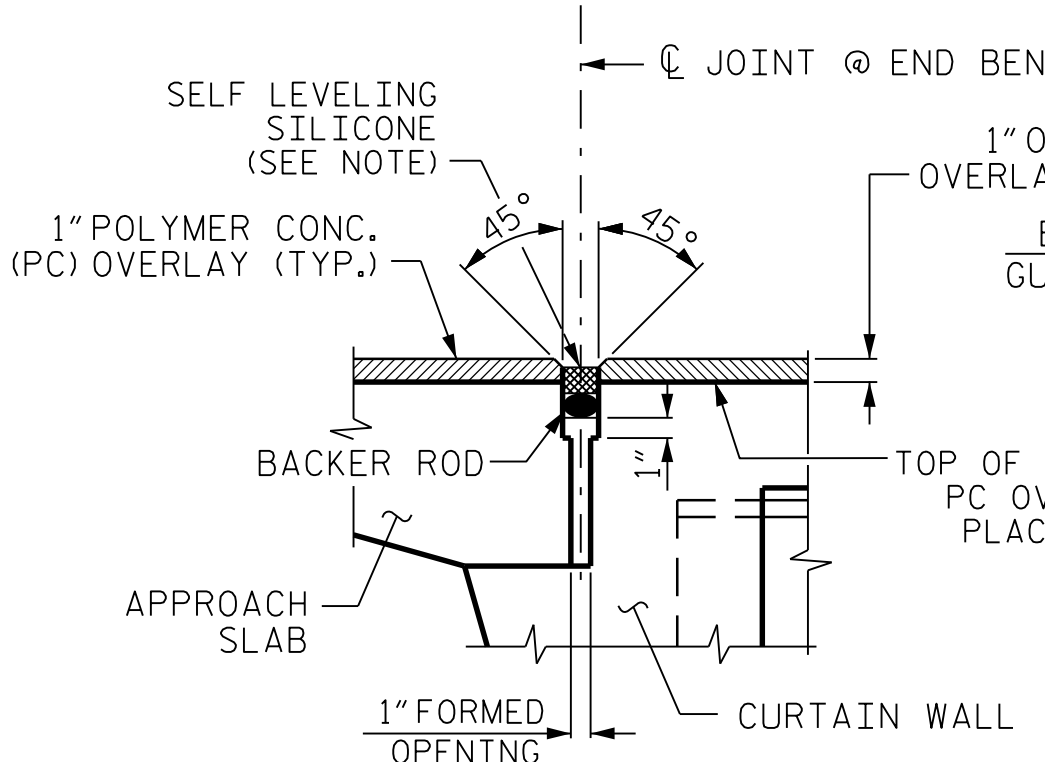
DWG. No.

NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 16301
TING HSIUNG FANG
7/16/2022

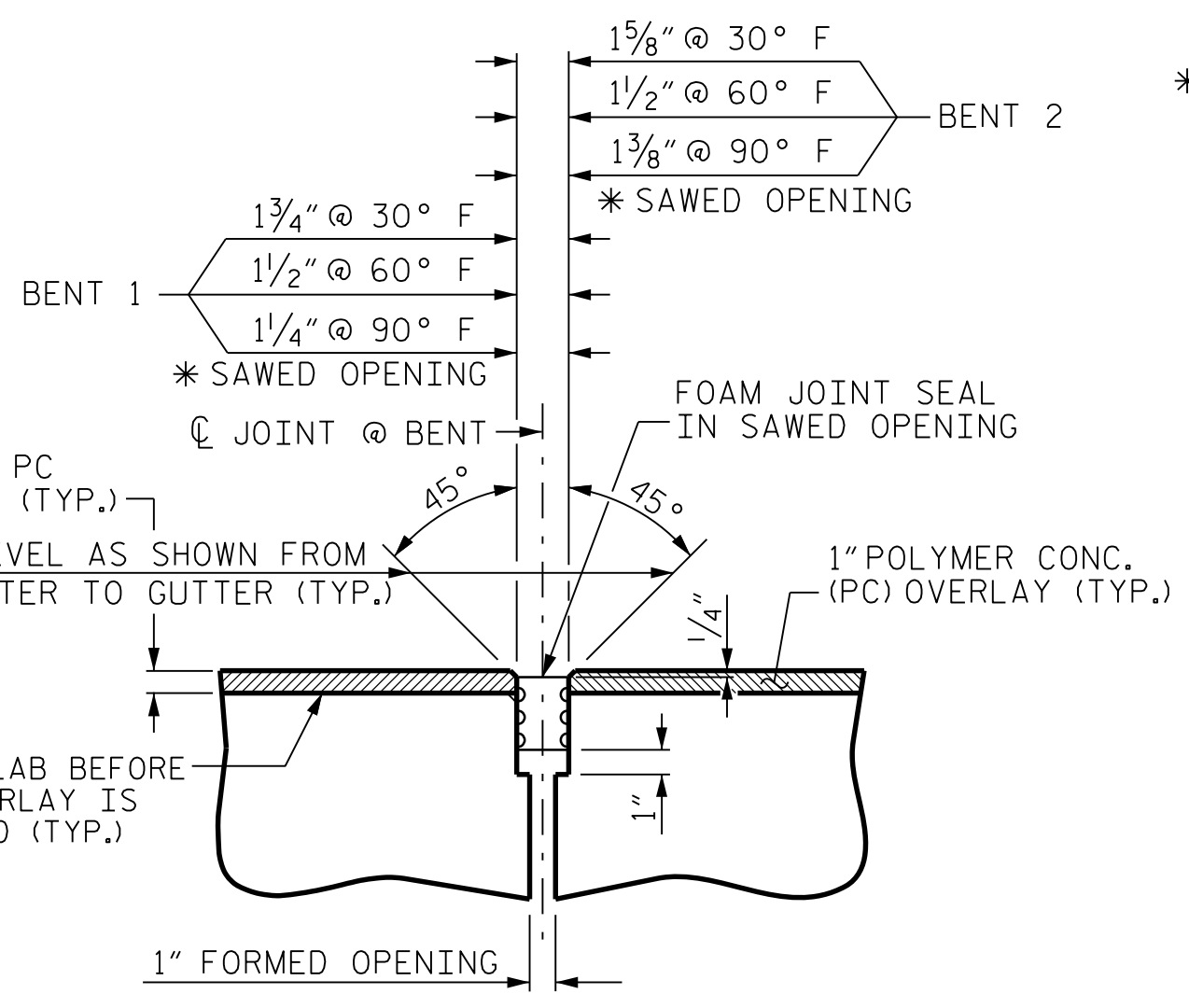


SECTION THRU END BENT

#5 "G" BAR MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR REINFORCING STEEL. END BENT 1 SHOWN, END BENT 2 SIMILAR

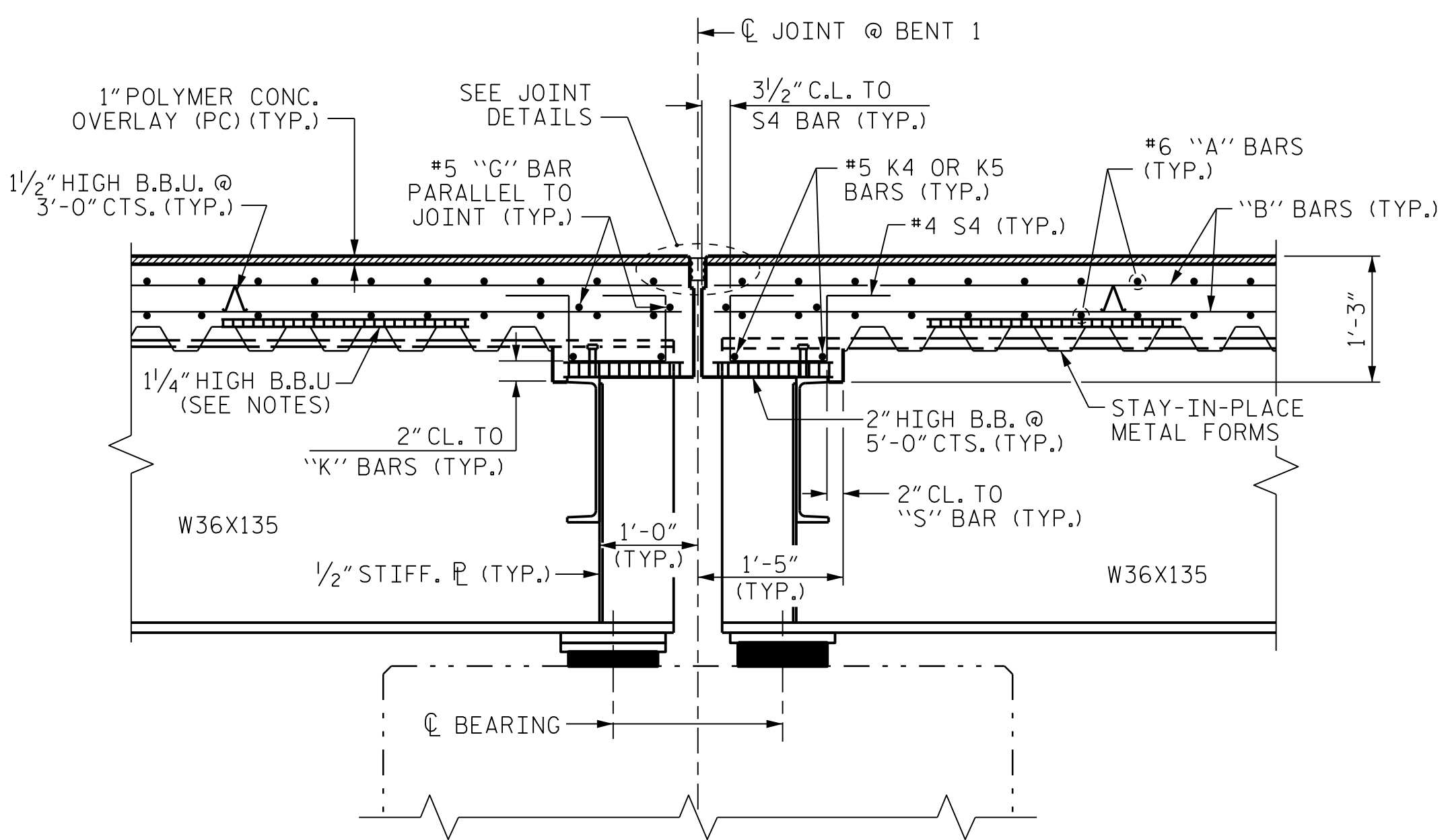


AT END BENT
TYPICAL FOR END BENTS 1 & 2



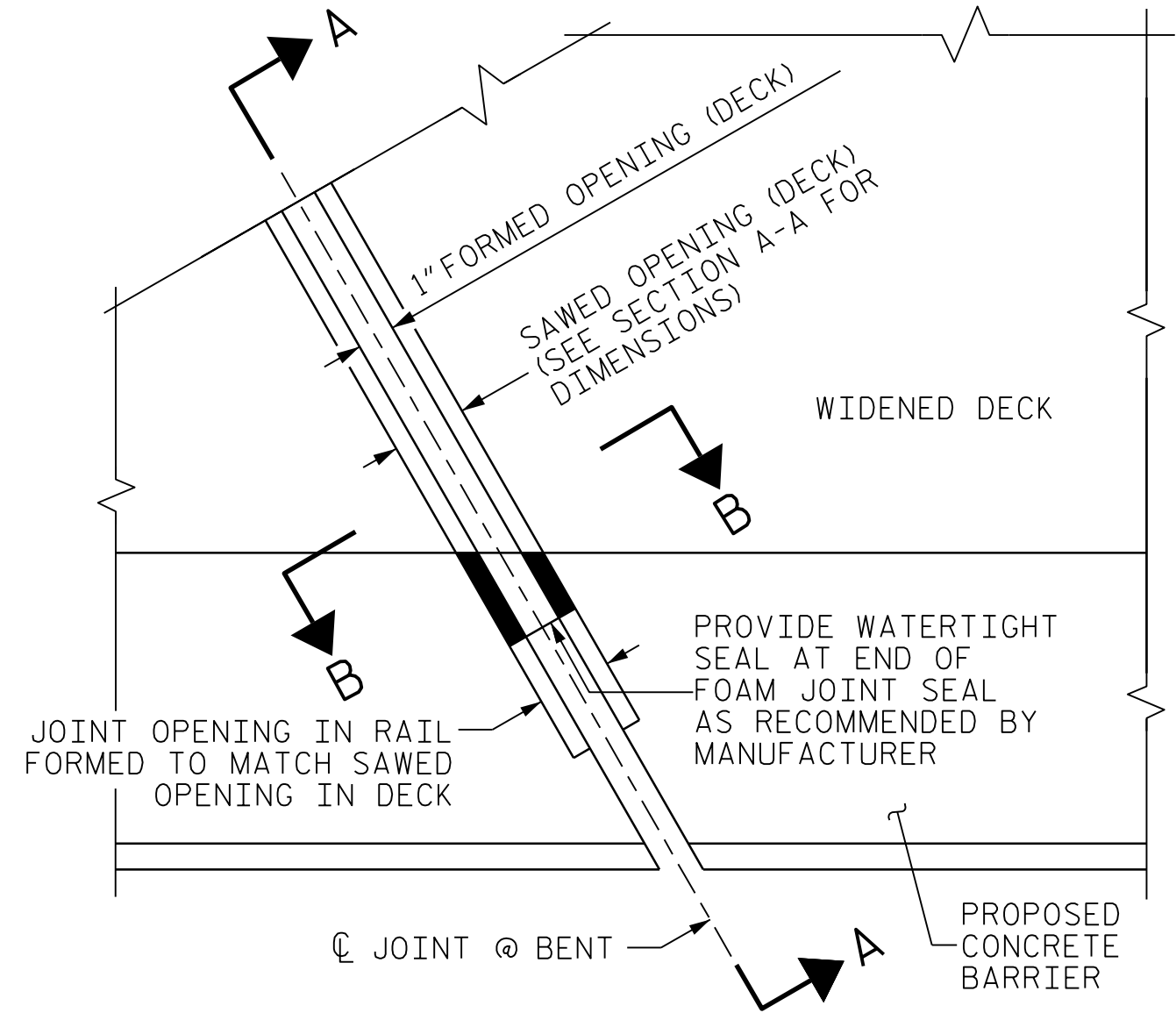
AT BENTS 1 & 2
* SAWED OPENING DIMENSIONS SHOWN ARE BASED ON THE EXISTING PLANS

JOINT DETAILS ON PROPOSED WIDENED SLAB

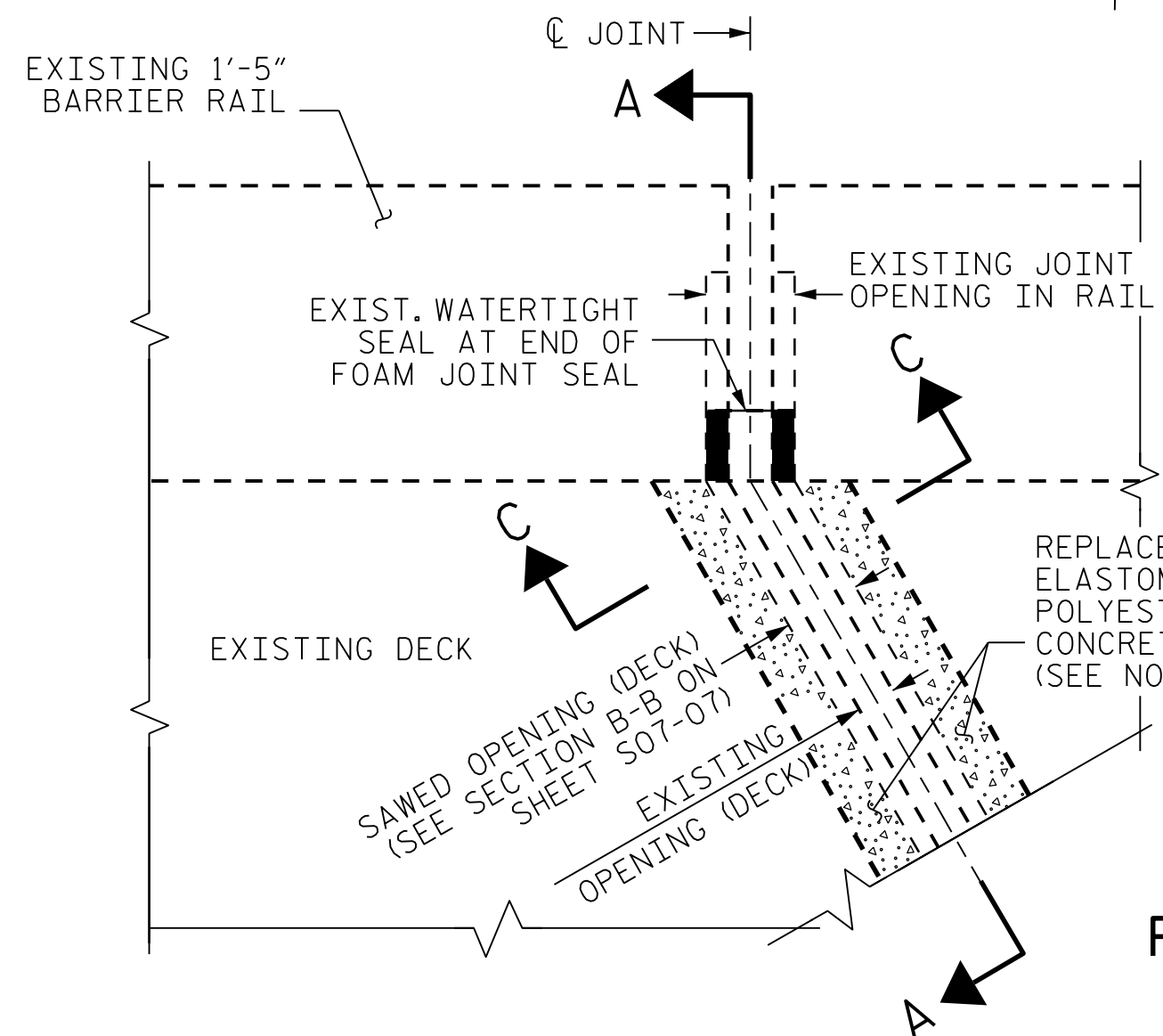


SECTION THRU BENT

#5 "G" BAR MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR REINFORCING STEEL. BENT 1 SHOWN, BENT 2 SIMILAR

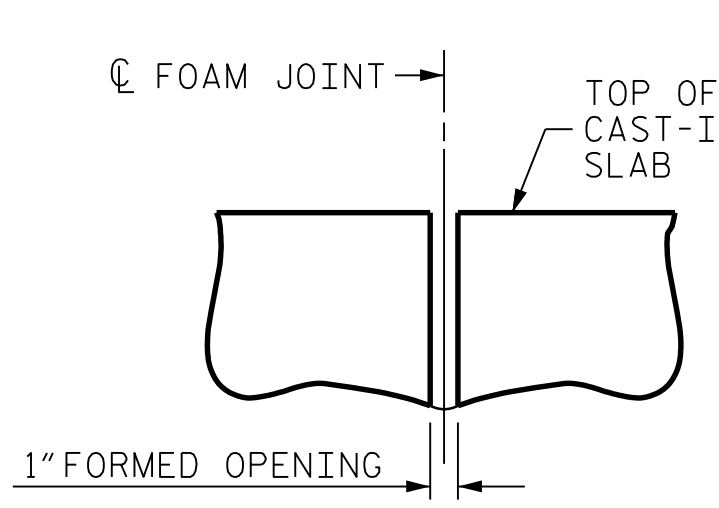


PLAN
PROPOSED RAIL DETAILS ON WIDENED DECK (RIGHT SIDE)

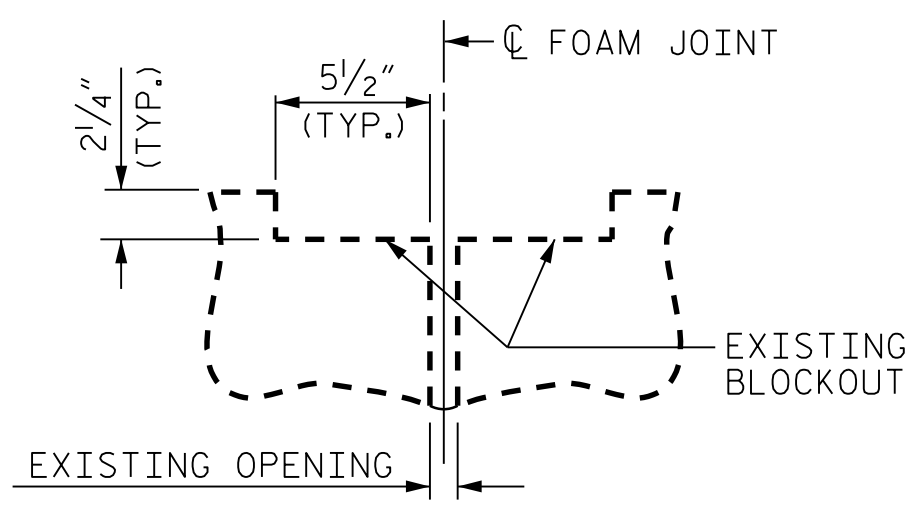


PLAN
EXISTING RAIL DETAILS ON EXISTING DECK (LEFT SIDE)

JOINT SEAL DETAILS FOR RAILS AT BENT



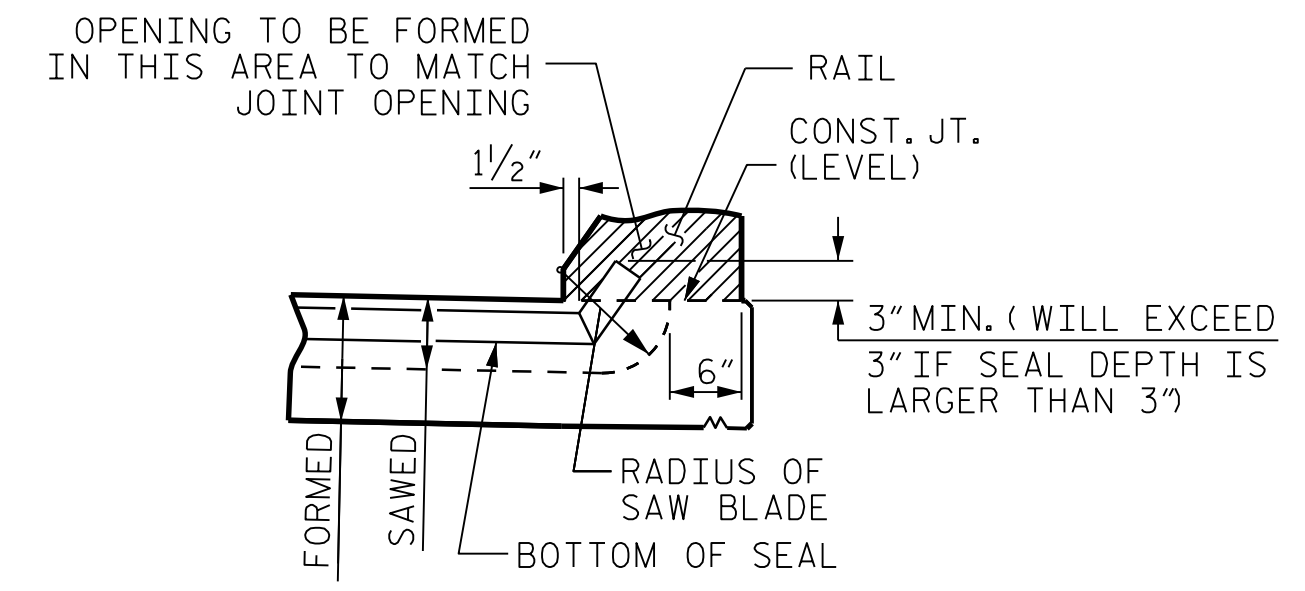
SECTION B-B
PRE-SAWED FOAM JOINT



SECTION C-C
EXISTING ELASTOMERIC CONC. NOT SHOWN FOR CLARITY

NOTES

- FOR SELF LEVELING SILICONE AND BACKER ROD USED AT END BENTS, SEE "POURABLE SILICONE JOINT SEALANT" SPECIAL PROVISIONS.
- * CONTRACTOR SHALL FIELD VERIFY THE EXISTING FORMED OPENING AND THE SAWED JOINT OPENINGS FOR THE EXISTING JOINTS AND SHALL APPROPRIATELY SIZE ALL SAWED OPENINGS TO MATCH PRIOR TO OBTAINING JOINT MATERIAL.
- THE MANUFACTURER SHALL PROVIDE THE MINIMAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL FOR THE SIZE OF THE OPENING INDICATED ON THE PLANS OR AS MEASURED IN THE FIELD AND TO ACCOMMODATE THE MINIMUM EXPANSION INDICATED ON THE PLANS.
- FOAM JOINTS SHALL BE INSTALLED AS PER THE MANUFACTURER'S RECOMMENDATIONS.
- THE CONTRACTOR WILL NOT BE PERMITTED TO FORM THE JOINTS IN LIEU OF SAWING THE JOINT.
- DURING THE JOINT INSTALLATION PROCEDURE, THE JOINT AND SURROUNDING AREA SHALL BE KEPT CLEAN AND FREE OF DEBRIS.
- FOR BRIDGE JOINT DEMOLITION, SEE SPECIAL PROVISIONS.
- FOR FOAM JOINT SEALS USED FOR JOINT AT BENTS 1 AND 2, SEE "FOAM JOINT SEALS FOR PRESERVATION" SPECIAL PROVISIONS.
- FOR POLYMER CONCRETE (PC) OVERLAY ON BRIDGE DECKS AND POLYESTER POLYMER CONCRETE (PPC) MATERIALS USED FOR JOINT HEADER REPAIR, SEE "POLYMER CONCRETE BRIDGE DECK OVERLAY" SPECIAL PROVISIONS.



SECTION A-A
FOAM JOINT SEAL TO BE CUT, HEAT WELDED AND TURNED UP PARALLEL TO SLOPED FACE OF THE BARRIER RAIL.

PROJECT NO. U-2579AA
FORSYTH COUNTY
 STATION: 29+89.90 -Y2SBL-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION
 AND JOINT DETAILS
 ON WIDENED SLAB
 RIGHT LANE (SBL)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 NC COA No. F-1255

DRAWN BY: VDK DATE: 9/19
 CHECKED BY: THF DATE: 10/19
 DESIGN ENGINEER: VDK DATE: 11/19

DWG. No.

North Carolina Professional Engineer
 SEAL 16301
 TING FANG
 7/16/2022

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S07-10	
1			3			TOTAL SHEETS	
2			4			32	

