

09/08/2020

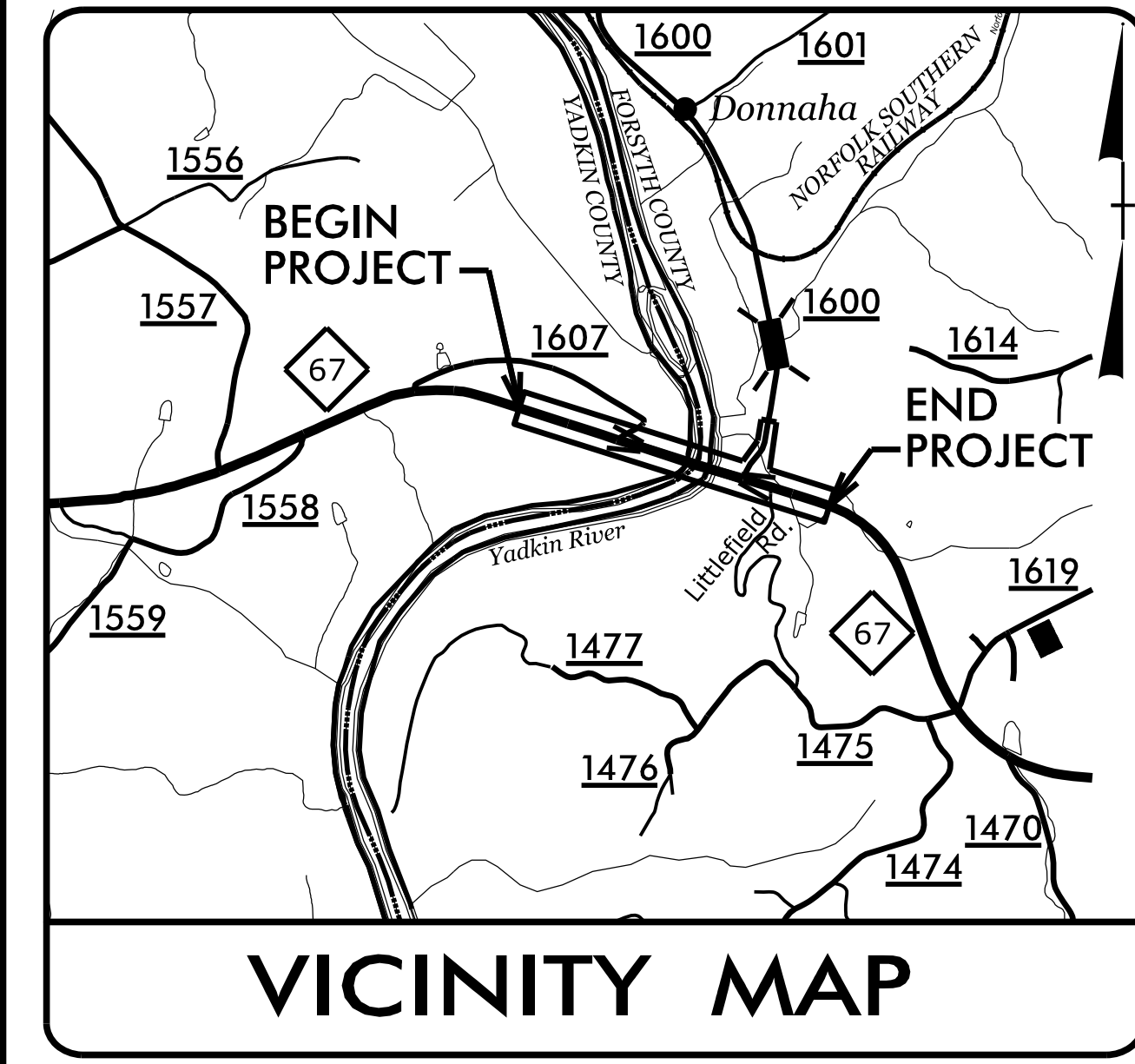
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5825		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
45778.1.1	N/A	PE	
45778.2.1	N/A	R/W & UTIL	
45778.3.1	N/A	CONSTR.	

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

YADKIN & FORSYTH COUNTIES

LOCATION: REPLACE BRIDGE NO. 35 OVER THE
YADKIN RIVER ON NC 67

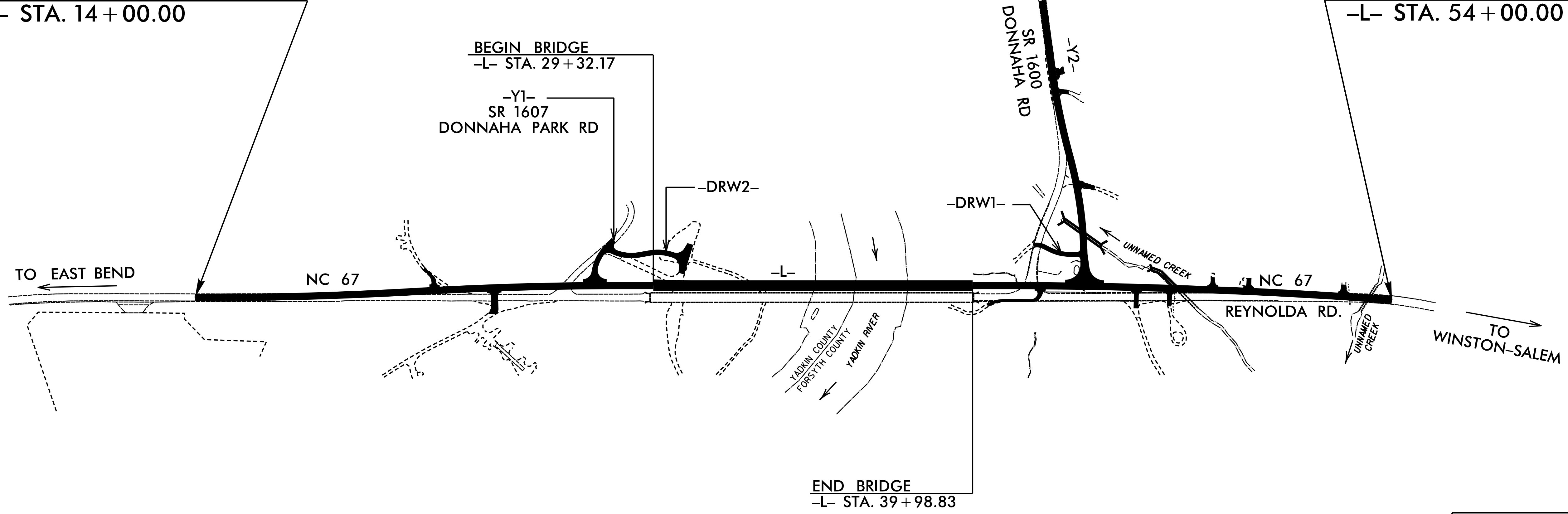
TYPE OF WORK: GRADING, DRAINAGE, PAVING,
AND STRUCTURES



VICINITY MAP

BEGIN TIP PROJECT B-5825
-L- STA. 14 + 00.00

STRUCTURES



END TIP PROJECT B-5825
-L- STA. 54 + 00.00

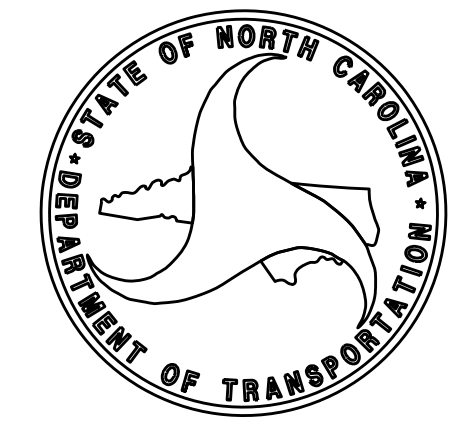
END BRIDGE
-L- STA. 39 + 98.83



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

TIP PROJECT: B-5825

CONTRACT: C204490



DESIGN DATA

ADT 2020 =	5100
ADT 2040 =	5600
K =	12 %
D =	80 %
T =	4 % *
V =	60 MPH
* TTST = 1% DUAL 3%	
FUNC CLASS =	
MINOR ARTERIAL	
REGIONAL TIER	

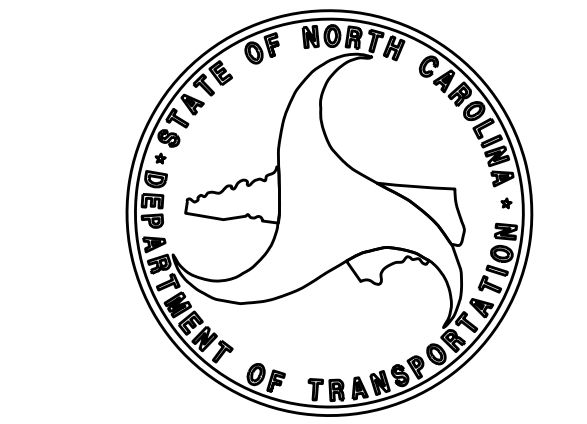
PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5825	=	0.556 mile
LENGTH STRUCTURES TIP PROJECT B-5825	=	0.202 mile
TOTAL LENGTH TIP PROJECT B-5825	=	0.758 mile

NCDOT CONTACT:	DAVID STUTTS, PE
PLANS PREPARED BY:	PLANS PREPARED FOR:
TGS ENGINEERS 706 HILLSBOROUGH ST SUITE 200 RALEIGH, NC 27603	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION 1000 Birch Ridge Dr. Raleigh NC, 27610
LETTING DATE: FEBRUARY 16, 2021	MARC CHEEK, PE STRUCTURES DESIGN ENGINEER
2018 STANDARD SPECIFICATIONS	

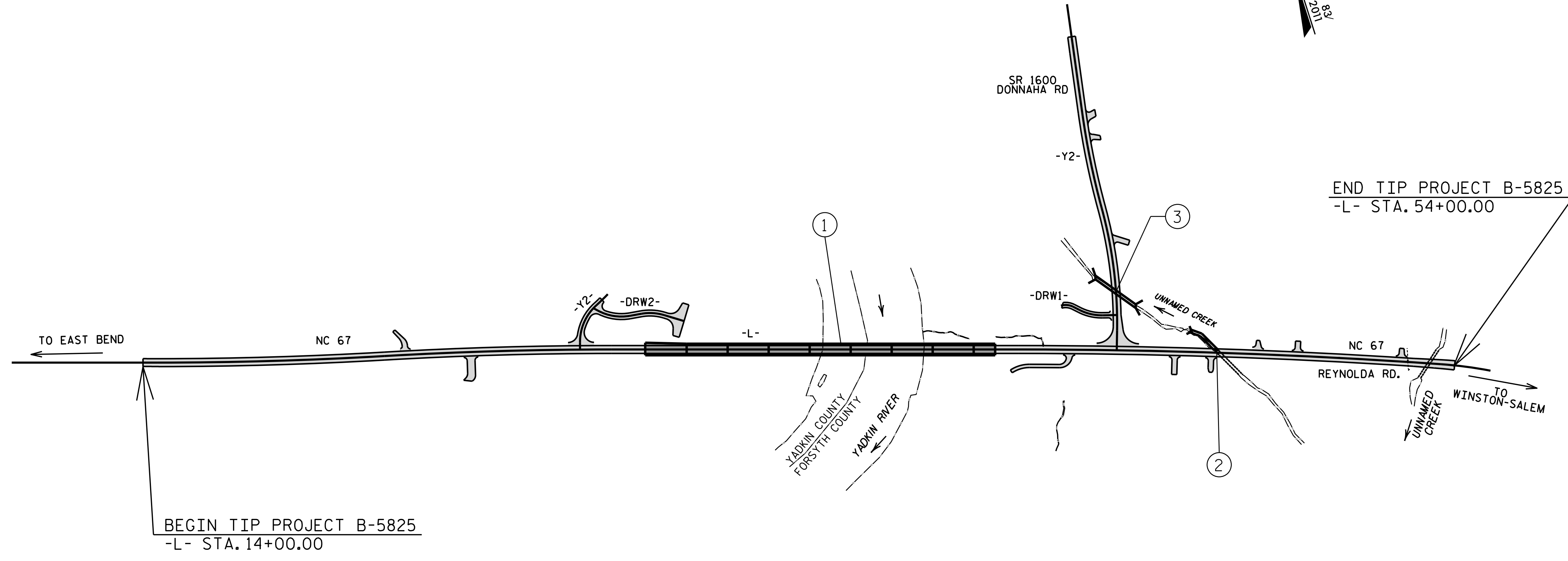
STRUCTURES DESIGN ENGINEER

Signature: Marshall G. Cheek Jr. 12/8/2020
P.E.

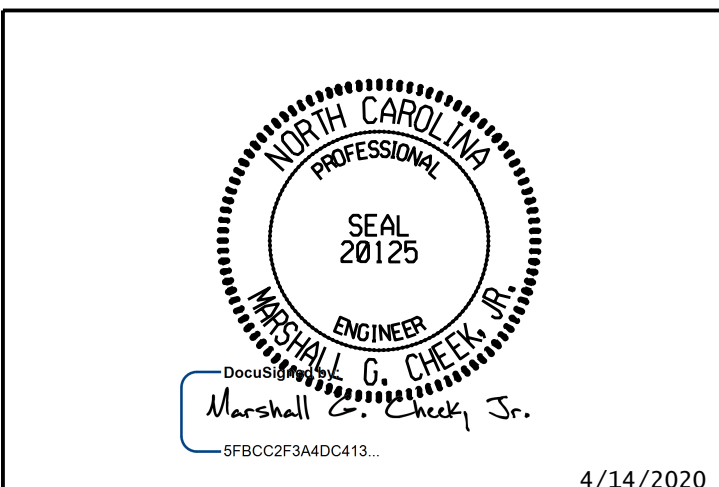


12/7/2020
\$\$\$\$\$\$\$\$DCN\$\$\$\$\$\$\$\$
User: tsdwil@dm

— INDEX —			
STR.	STATION	DESCRIPTION	SHEETS
1	34+65.50 -L-	BRIDGE NO.35 OVER THE YADKIN RIVER ON NC 67	S-1 THRU S-60
2	46+80.60 -L-	SINGLE 9' X 9' RCBC LEFT EXTENSION	C1-1 THRU C1-7
3	19+90.69 -Y2-	SINGLE 9' X 10' RCBC	C2-1 THRU C2-6



PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY

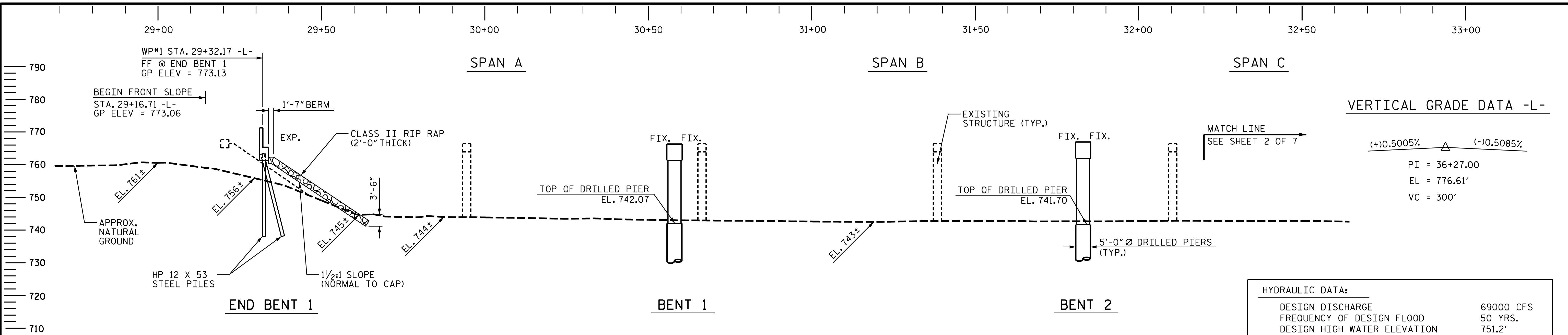


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STRUCTURE INDEX

DRAWN BY : ZCS DATE : 11/19
 CHECKED BY : MGC DATE : 1/20

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED					
TGS ENGINEERS 706 HILLSBOROUGH STREET SUITE 200 RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO.
					TOTAL SHEETS



VERTICAL GRADE DATA -L-

(+)0.5005%	(-)0.5085%
PI = 36+27.00	
EL = 776.61'	
VC = 300'	

HYDRAULIC DATA:

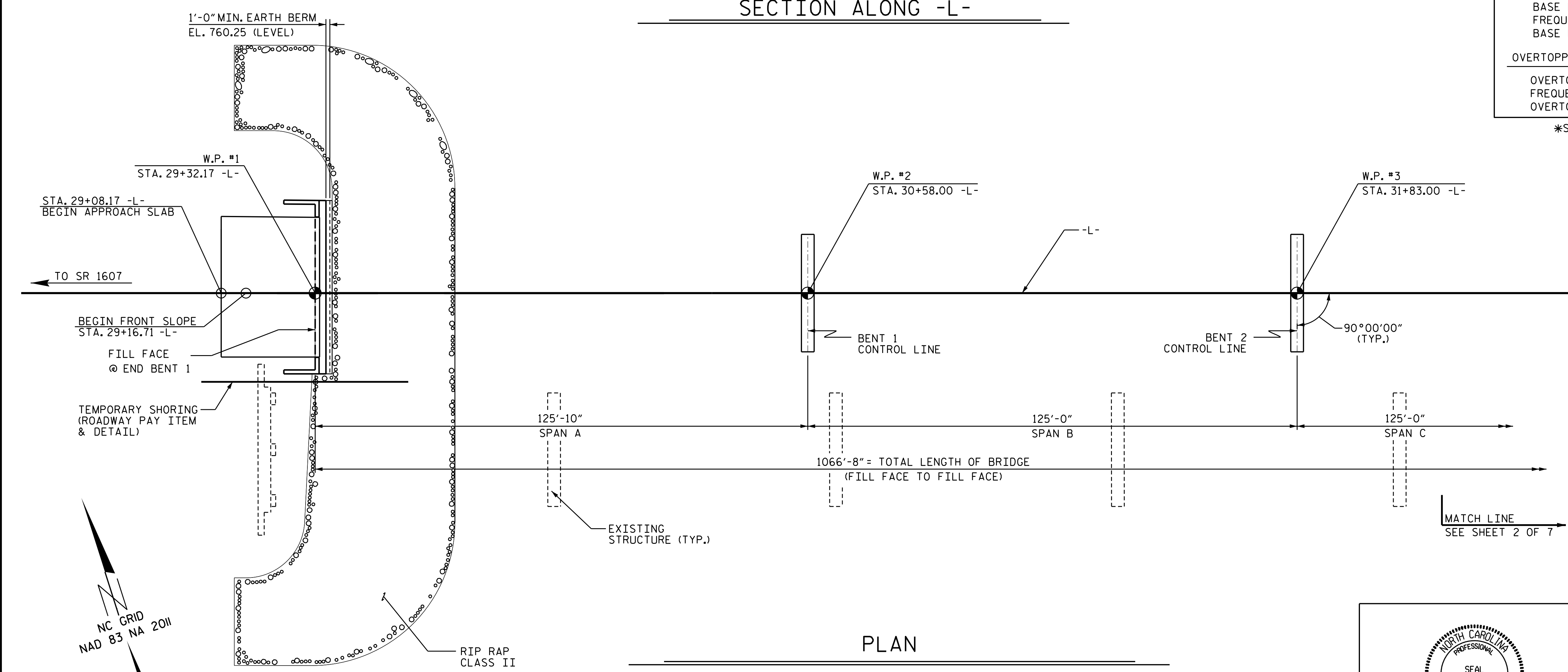
DESIGN DISCHARGE	69000 CFS
FREQUENCY OF DESIGN FLOOD	50 YRS.
DESIGN HIGH WATER ELEVATION	751.2'
DRAINAGE AREA	1660 SQ. MI.
BASE DISCHARGE	77050 CFS
FREQUENCY OF BASE DISCHARGE	100 YRS.
BASE HIGH WATER ELEVATION	752.4'

OVERTOPPING FLOOD DATA:

OVERTOPPING DISCHARGE	N/A
FREQUENCY OF OVERTOPPING FLOOD	500+ YRS.
OVERTOPPING FLOOD ELEVATION	772.8'*

*SAG AT STA. 28+26.00 -L-.

SECTION ALONG -L-



LOW CHORD ELEVATION

EB1	765.59	EB2	767.24
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I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-
 SHEET 1 OF 7 REPLACES BRIDGE #980035

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING FOR BRIDGE OVER YADKIN RIVER ON NC 67 BETWEEN SR 1607 AND SR 1600

2/6/2020
 X:\NCDOT\B-5825\Structures\Str. #1 - 34+65.50 -L-\Final Plans\DCNs\401.005.B-5825.SMU.GD1.980035.dgn
 User:ZSmitH

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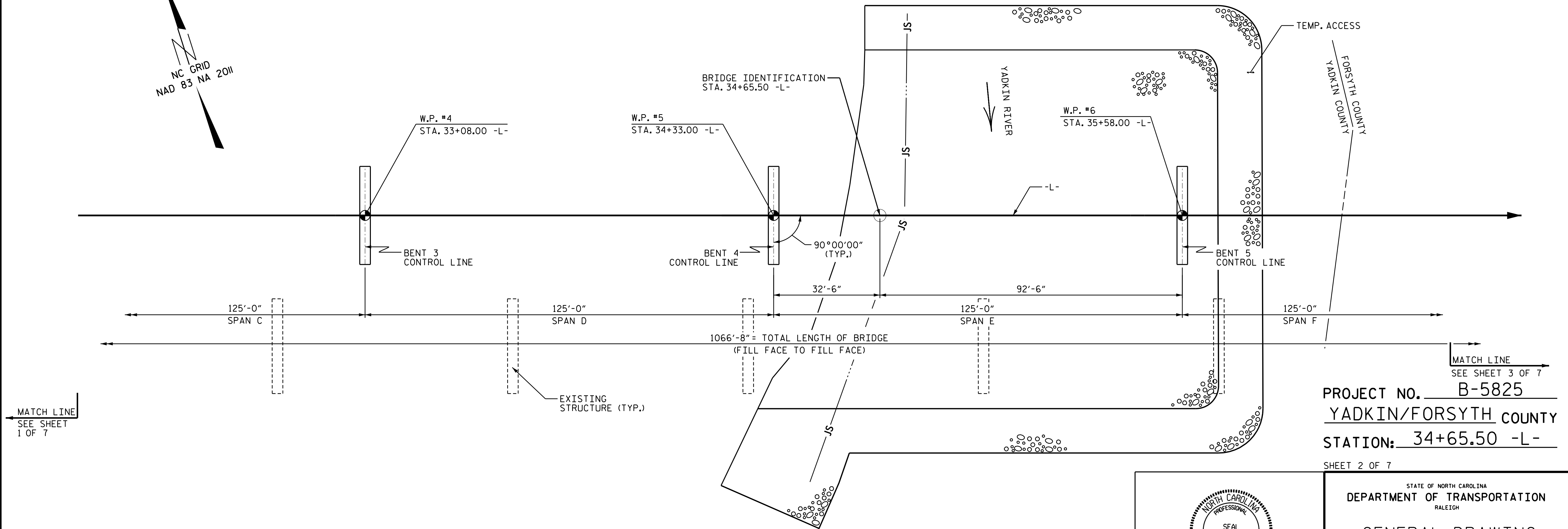
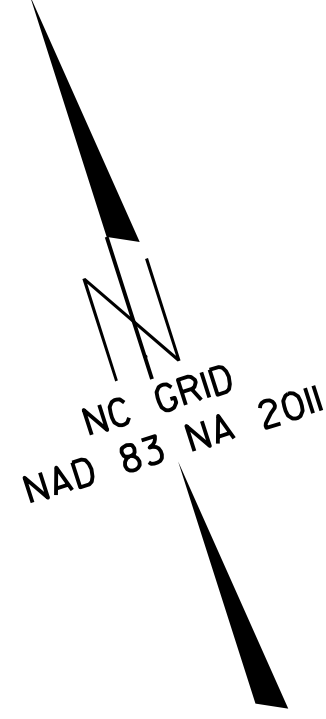
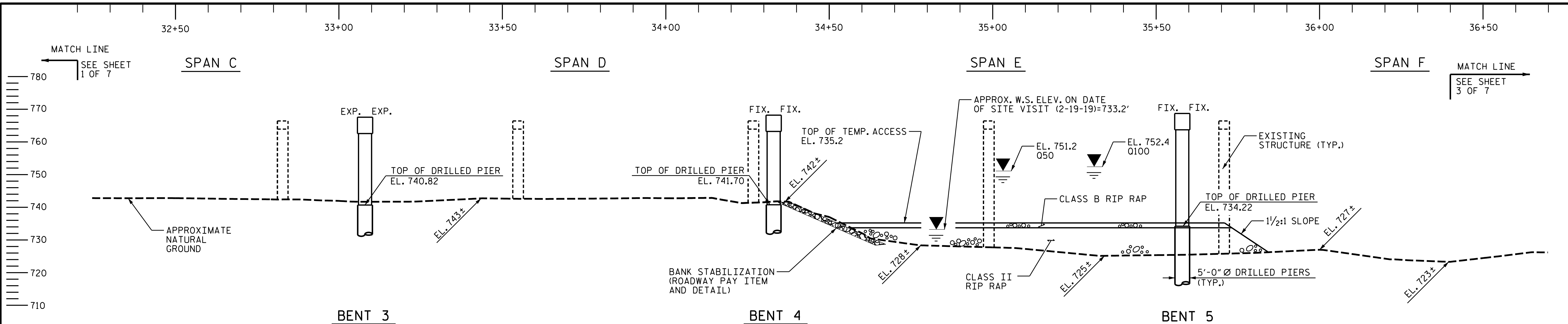
TGS ENGINEERS
 706 HILLSBOROUGH STREET SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

REVISIONS

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

SHEET NO. S-1
 TOTAL SHEETS 60

DRAWN BY :	ZCS	DATE :	12/19
CHECKED BY :	MGC	DATE :	12/19
DESIGN ENGINEER OF RECORD:	MGC	DATE :	1/20



PILES AND COLUMNS NOT SHOWN IN PLAN VIEW FOR CLARITY.

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-
 SHEET 2 OF 7

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER
 YADKIN RIVER ON
 NC 67
 BETWEEN SR 1607 AND SR 1600

2/6/2020
 X:\NCDOT\B-5825\Structures\Str. #1 - 34+65.50 -L-\Final Plans\DCNs\401.007.B-5825.SMU.GD2.980035.dgn
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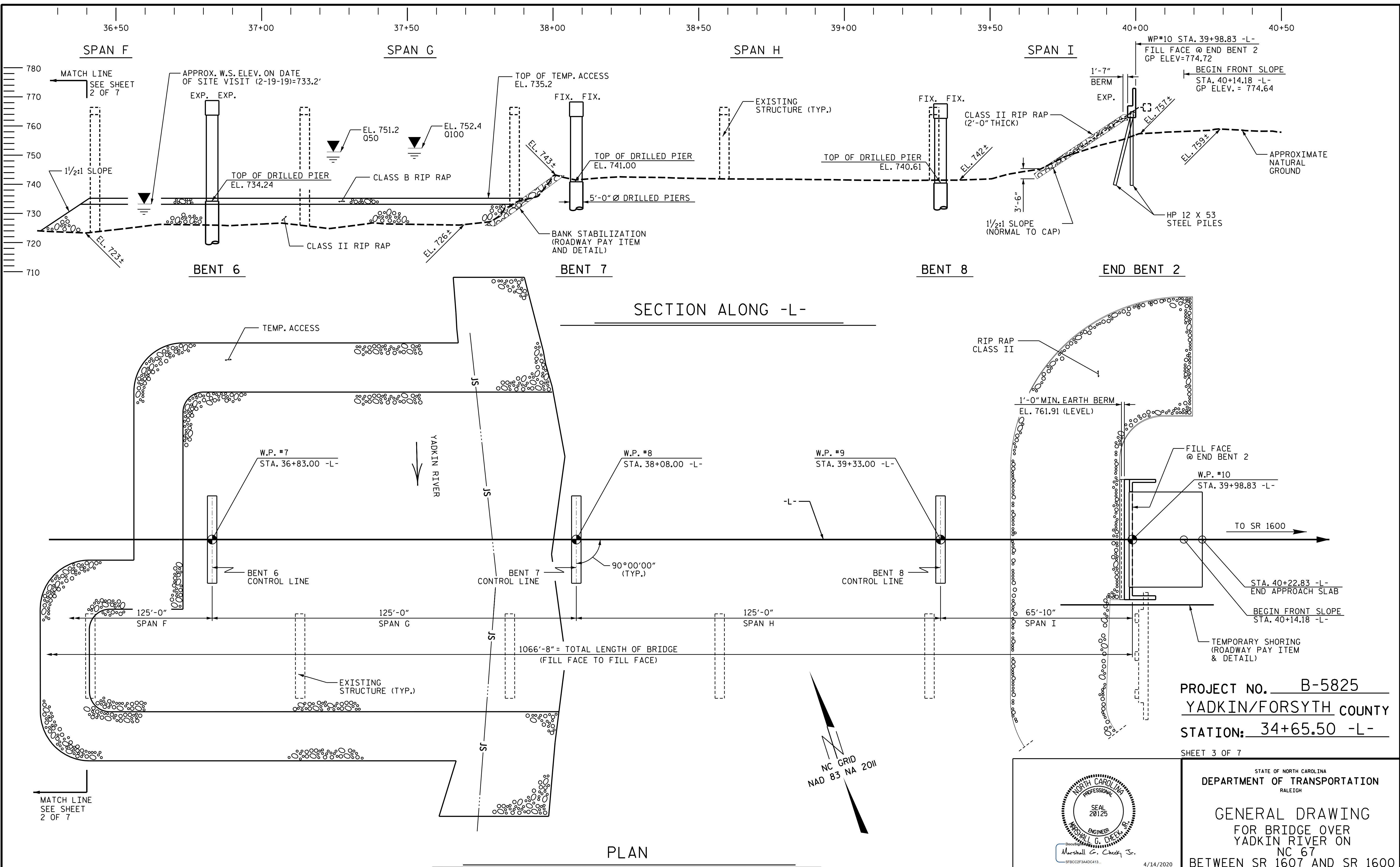
TGS ENGINEERS
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 SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

REVISIONS

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

SHEET NO. S-2
 TOTAL SHEETS 60

DRAWN BY: ZCS DATE: 12/19
 CHECKED BY: MGC DATE: 12/19
 DESIGN ENGINEER OF RECORD: MGC DATE: 1/20



DRAWN BY : ZCS DATE : 12/19
 CHECKED BY : MGC DATE : 12/19
 DESIGN ENGINEER OF RECORD: MGC DATE : 1/20

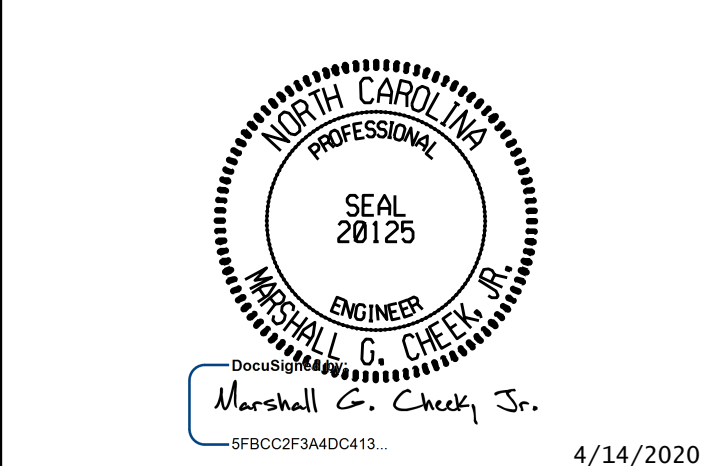
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 User:rsbilliams

PILES AND COLUMNS NOT SHOWN IN PLAN VIEW FOR CLARITY.

PLAN

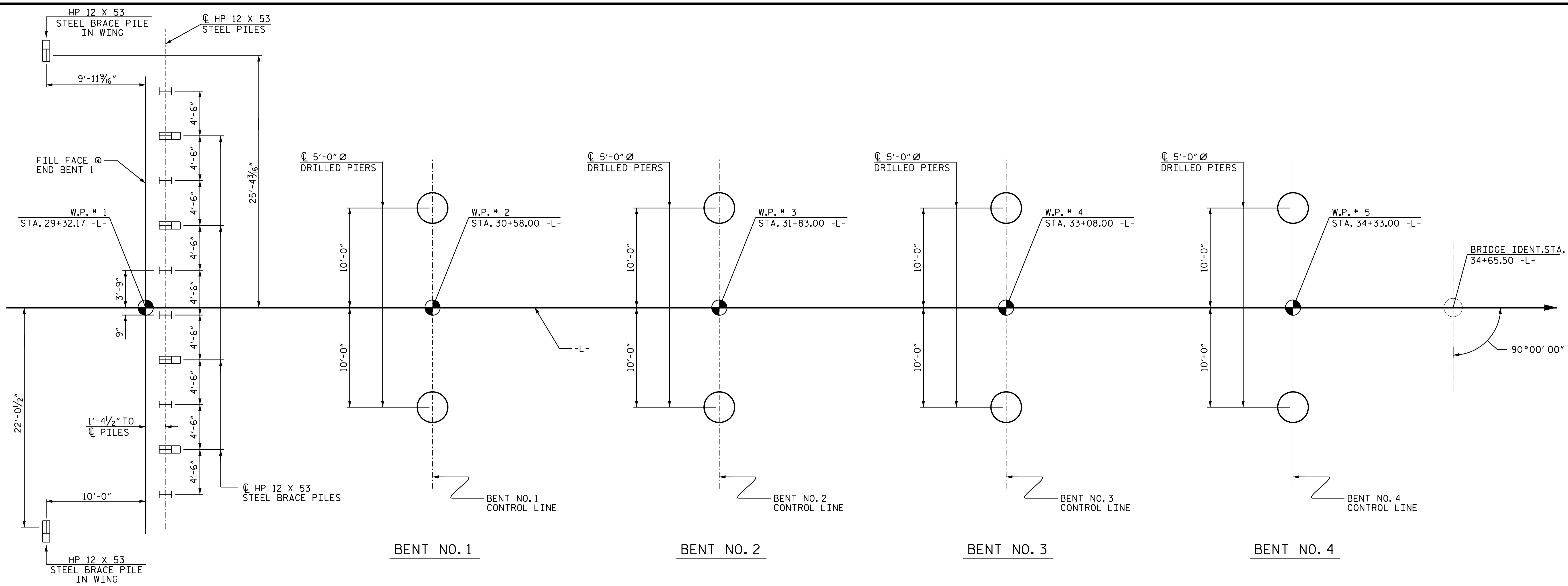
PROJECT NO. B-5825
 YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-

SHEET 3 OF 7
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE OVER
 YADKIN RIVER ON
 NC 67
 BETWEEN SR 1607 AND SR 1600



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 SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			60



FOUNDATION LAYOUT

ALL END BENT PILES ARE HP 12 X 53. DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE AT THE BOTTOM OF THE CAP. END BENT BRACE PILES ARE BATTERED 3:12.

NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
 FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
 PILES AT END BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 95 TONS PER PILE.
 DRIVE PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 158 TONS PER PILE.
 DRILLED PIERS AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 784.0 TONS PER PIER.
 INSTALL DRILLED PIERS AT BENT NO. 1 TO A TIP ELEVATION NO HIGHER THAN 698.0 FEET (LT) AND 687 FEET (RT) WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 20 FEET OF WEATHERED ROCK OR 12 FEET OF ROCK AS DEFINED BY ARTICLE 411 OF THE STANDARD SPECIFICATIONS.
 THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 IS ELEVATION 718.0 FEET. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
 DRILLED PIERS AT BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 784.0 TONS PER PIER.
 INSTALL DRILLED PIERS AT BENT NO. 2 TO A TIP ELEVATION NO HIGHER THAN 705.5 FEET WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 20 FEET INTO WEATHERED ROCK.
 THE SCOUR CRITICAL ELEVATION FOR BENT NO. 2 IS ELEVATION 724.0 FEET. THE SCOUR CRITICAL ELEVATION ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

TO VERIFY BEARING STRATA, STANDARD PENETRATION TESTING (SPT) IS REQUIRED FOR DRILLED PIERS AT BENT NO. 2. PERFORM SPTs AT ELEVATION 725.5 FEET TO VERIFY TOP OF PARTIALLY WEATHERED ROCK AND AGAIN AT THE FINAL TIP ELEVATION INDICATED. FOR SPT TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
 DRILLED PIERS AT BENT NO. 3 ARE DESIGNED FOR A FACTORED RESISTANCE OF 784.0 TONS PER PIER.
 INSTALL DRILLED PIERS AT BENT NO. 3 TO A TIP ELEVATION NO HIGHER THAN 712.0 FEET WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 12 FEET OF ROCK AS DEFINED BY ARTICLE 411 OF THE STANDARD SPECIFICATIONS.
 THE SCOUR CRITICAL ELEVATION OF BENT NO. 3 IS ELEVATION 724.0 FEET. SCOUR CRITICAL ELEVATION ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
 PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT NO. 4. DO NOT EXTEND PERMANENT CASING BELOW ELEVATION 726.0 FEET WITHOUT PRIOR APPROVAL FROM THE ENGINEER.
 DRILLED PIERS AT BENT NO. 4 ARE DESIGNED FOR A FACTORED RESISTANCE OF 784.0 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 95.0 TSF.
 INSTALL DRILLED PIERS AT BENT NO. 4 TO A TIP ELEVATION NO HIGHER THAN 712.0 FEET WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 12 FEET OF ROCK AS DEFINED BY ARTICLE 411 OF THE STANDARD SPECIFICATIONS.
 THE SCOUR CRITICAL ELEVATION FOR BENT NO. 4 IS ELEVATION 724.0 FEET. SCOUR CRITICAL ELEVATION ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-
 SHEET 4 OF 7

4/14/2020

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
 RALEIGH

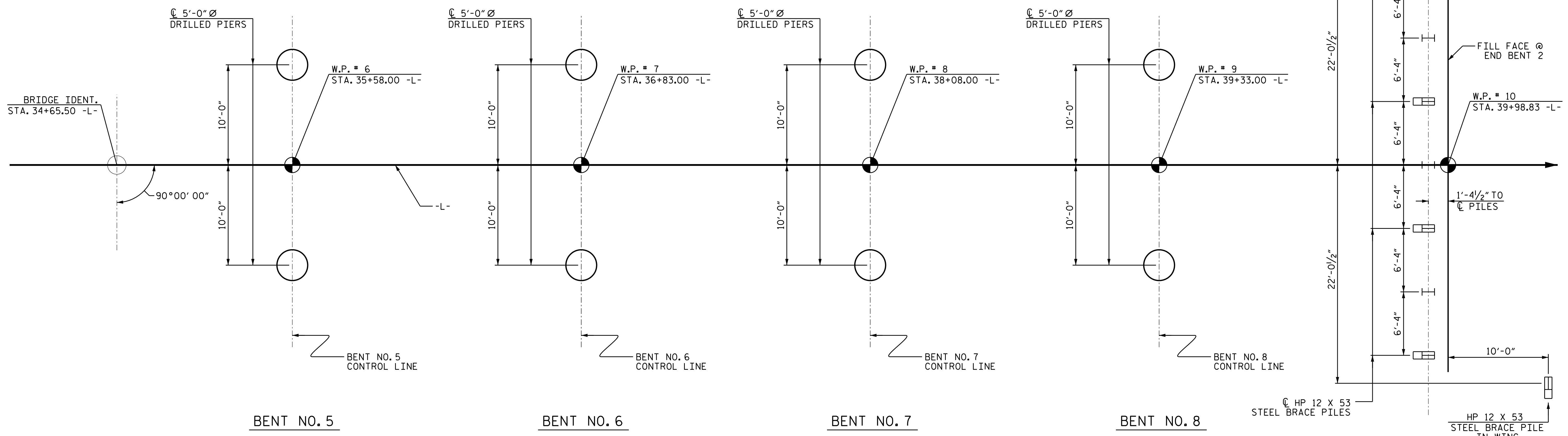
GENERAL DRAWING
 FOR BRIDGE OVER
 YADKIN RIVER ON
 NC 67
 BETWEEN SR 1607 AND SR 1600

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TGS ENGINEERS
 706 HILLSBOROUGH STREET
 SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

DRAWN BY : <u>ZCS</u> DATE : <u>12/19</u>	SHEET NO. <u>S-4</u>
CHECKED BY : <u>MGC</u> DATE : <u>1/20</u>	TOTAL SHEETS <u>60</u>
DESIGN ENGINEER OF RECORD: <u>TBE</u> DATE : <u>2/20</u>	

2/19/2020
 X:\NCDOT\B-5825\Structures\Str. #1 - 34+65.50 -L-\Final Plans\DCNs\401.011.B-5825.SMU.FL01.980035.dgn
 User:ZSmit



FOUNDATION LAYOUT

ALL END BENT PILES ARE HP 12 X 53. DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE AT THE BOTTOM OF THE CAP. END BENT BRACE PILES ARE BATTERED 3:12.

NOTES

DRILLED PIERS AT BENT NO. 5 ARE DESIGNED FOR A FACTORED RESISTANCE OF 776.0 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 95.0 TSF.

INSTALL DRILLED PIERS AT BENT NO. 5 TO A TIP ELEVATION NO HIGHER THAN 712.0 FEET WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 12 FEET OF ROCK AS DEFINED BY ARTICLE 411 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 5 IS ELEVATION 722.0 FEET. THE SCOUR CRITICAL ELEVATION ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

PERMANENT STEEL CASINGS ARE REQUIRED FOR DRILLED PIERS AT BENT NO. 5. DO NOT EXTEND PERMANENT CASING BELOW ELEVATION 725.0 FEET WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

DRILLED PIERS AT BENT NO. 6 ARE DESIGNED FOR A FACTORED RESISTANCE OF 776.0 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 95.0 TSF.

INSTALL DRILLED PIERS AT BENT NO. 6 TO A TIP ELEVATION NO HIGHER THAN 712.0 FEET WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 12 FEET OF ROCK AS DEFINED BY ARTICLE 411 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 6 IS ELEVATION 724.0 FEET. SCOUR CRITICAL ELEVATION ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT NO. 6. DO NOT EXTEND CASING BELOW ELEVATION 726.0 FEET WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

DRILLED PIERS AT BENT NO. 7 ARE DESIGNED FOR A FACTORED RESISTANCE OF 784.0 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 95.0 TSF.

INSTALL DRILLED PIERS AT BENT NO. 7 TO A TIP ELEVATION NO HIGHER THAN 712.5 FEET WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 12 FEET OF ROCK AS DEFINED BY ARTICLE 411 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 7 IS ELEVATION 724.0 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

PERMANENT STEEL CASING IS REQUIRED FOR DRILLED PIERS AT BENT NO. 7. DO NOT EXTEND CASING BELOW ELEVATION 725.0 FEET WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

DRILLED PIERS AT BENT NO. 8 ARE DESIGNED FOR A FACTORED RESISTANCE OF 670.0 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 95.0 TSF.

INSTALL DRILLED PIERS AT BENT NO. 8 TO A TIP ELEVATION NO HIGHER THAN 715.4 FEET WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 12 FEET OF ROCK AS DEFINED BY ARTICLE 411 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 8 IS ELEVATION 726.0 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTION. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

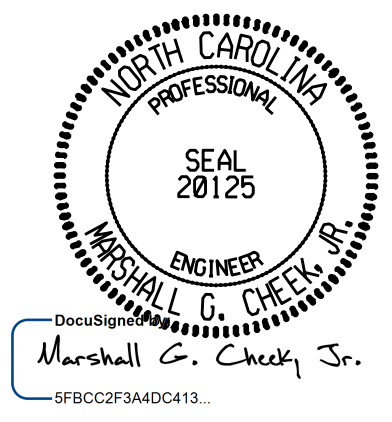
OBSERVE A THREE MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN TWO FEET OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO. 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 90 TONS PER PILE.

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

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-

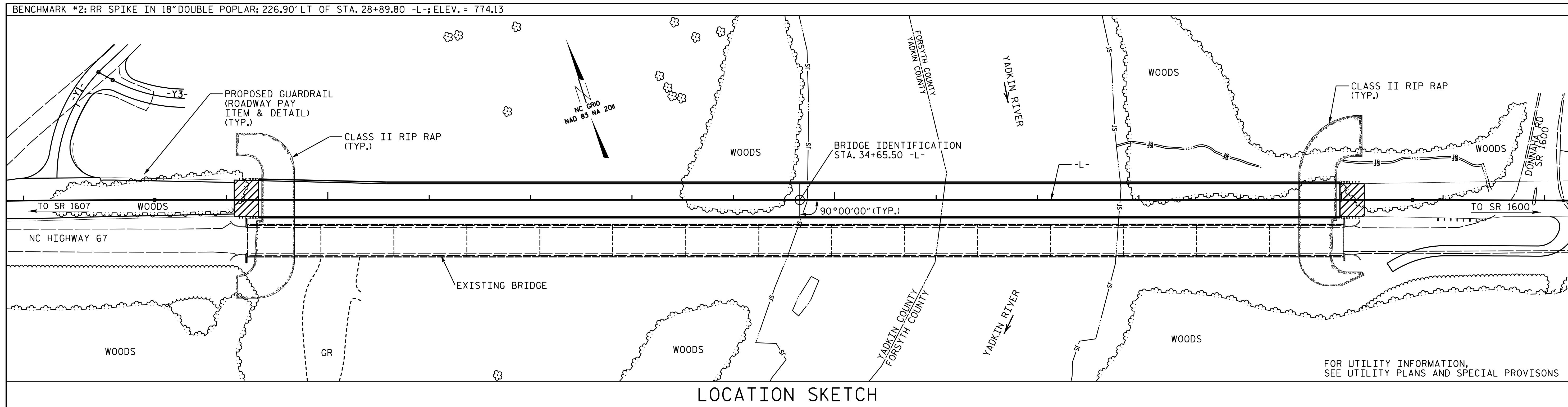
SHEET 5 OF 7



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER
 YADKIN RIVER ON
 NC 67
 BETWEEN SR 1607 AND SR 1600

DRAWN BY :	ZCS	DATE :	12/19
CHECKED BY :	MGC	DATE :	1/20
DESIGN ENGINEER OF RECORD:	TBE	DATE :	2/20

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED						REVISIONS		SHEET NO.				
TGS ENGINEERS 706 HILLSBOROUGH STREET SUITE 200 RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275						NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
						1			3			TOTAL SHEETS
						2			4			60



NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
 THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
 FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
 PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
 REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
 NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
 THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY ACCESS FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISIONS.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
 AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RTP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS.
 INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE."
 THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.
 THE EXISTING STRUCTURE CONSISTING OF 15 SPANS (1 @ 74'-0", 13 @ 72'-0", 1 @ 74'-0") WITH A REINFORCED CONCRETE DECK ON STEEL BEAMS WITH A CLEAR ROADWAY WIDTH OF 26'-0" AND A SUBSTRUCTURE CONSISTING OF REINFORCED CONCRETE CAPS/STEEL PILES ABUTMENTS AND REINFORCED CONCRETE POST-AND-BEAM BENTS AND LOCATED DOWNSTREAM FROM THE PROPOSED BRIDGE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT. FOR REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. 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.
 THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."
 FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
 FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.
 FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.
 ALL GRADING REQUIRED FOR ACCESS TO THE TEMPORARY ACCESS SHALL BE INCLUDED IN THE LUMP SUM BID PRICE FOR "CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS."
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LOCATION AND PROFILE OF THE TEMPORARY ACCESS SHOWN ON THE PLANS IS FOR ESTIMATING PURPOSES ONLY. THE ACTUAL LOCATION AND PROFILE SHALL BE DETERMINED IN THE FIELD WITH THE APPROVAL OF THE ENGINEER.
 FOR CLASS II RIP RAP AND CLASS B RIP RAP, SEE SPECIAL PROVISION, "CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS."

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-
 SHEET 6 OF 7

DRAWN BY : ZCS DATE : 12/19
 CHECKED BY : MGC DATE : 12/19
 DESIGN ENGINEER OF RECORD: MGC DATE : 2/20

4/13/2020
 X:\NCDOT\B-5825\Structures\Str. #1 - 34+65.50 -L-\Final Plans\DCNs\401.015_B-5825_SMU.G06_980035.dgn
 User:rsb\lilions

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER
 YADKIN RIVER ON
 NC 67
 BETWEEN SR 1607 AND SR 1600

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S-6
2			4			60

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
 706 HILLSBOROUGH STREET
 SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

TOTAL BILL OF MATERIAL																	
ITEM	CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	5'-0" Ø DRILLED PIERS IN SOIL	5'-0" Ø DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 5'-0" Ø DRILLED PIERS	SID INSPECTIONS	SPT TESTING	CSL TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS "A" CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	MODIFIED 72" PRESTRESSED CONCRETE GIRDERS	
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	SO. FT.	SO. FT.	C.Y.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.
SUPERSTRUCTURE	LUMP SUM									37,716	32,437					36	4,246.04
END BENT 1												45.7		5,919			
BENT 1				67.16	32.00							57.1		18,867	4,536		
BENT 2				32.50	40.00		4					58.3		16,140	3,742		
BENT 3				30.66	27.00							60.1		15,134	3,361		
BENT 4				31.50	28.00	31.40						59.8		15,247	3,398		
BENT 5				18.50	26.00	18.44						69.2		15,332	3,466		
BENT 6				15.50	29.00	16.48						69.2		15,332	3,466		
BENT 7				33.00	24.00	32.00						60.6		15,162	3,369		
BENT 8				25.50	25.00							60.3		14,567	3,135		
END BENT 2												43.0		5,447			
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	254.32	231.00	98.32	2	4	1	37,716	32,437	583.3	LUMP SUM	137,147	28,473	36	4,246.04

TOTAL BILL OF MATERIAL								
ITEM	PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	HP 12x53 STEEL PILES		CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THK.)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	FOAM JOINT SEALS
	EACH	NO.	LIN. FT.	LIN. FT.	TONS	SO. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE				2,129.18			LUMP SUM	LUMP SUM
END BENT 1	12	12	690		810	900		
BENT 1								
BENT 2								
BENT 3								
BENT 4								
BENT 5								
BENT 6								
BENT 7								
BENT 8								
END BENT 2	9	9	340		835	930		
TOTAL	21	21	1,030	2,129.18	1,645	1,830	LUMP SUM	LUMP SUM

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-

SHEET 7 OF 7

4/14/2020

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER
 YADKIN RIVER ON
 NC 67
 BETWEEN SR 1607 AND SR 1600

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			60

DRAWN BY : ZCS DATE : 12/19
 CHECKED BY : MGC DATE : 1/20
 DESIGN ENGINEER OF RECORD: MGC DATE : 2/20

LOAD FACTORS:

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

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																								
LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.07	--	1.75	0.917	1.44	A	EL	61.50	0.978	1.34	A	I	11.73	0.80	0.917	1.07	A	EL	61.50		
	HL-93 (OPERATING)	N/A		1.78	--	1.35	0.917	1.87	A	EL	61.50	0.978	1.78	A	I	11.73	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.58	56.88	1.75	0.894	1.96	I	EL	31.50	0.968	1.90	A	I	24.60	0.80	0.917	1.58	A	EL	61.50		
	HS-20 (OPERATING)	36.000		2.52	90.72	1.35	0.894	2.55	I	EL	31.50	0.968	2.52	A	I	24.60	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.84	51.84	1.40	0.894	5.37	I	EL	31.50	0.968	6.29	A	I	24.60	0.80	0.917	3.84	A	EL	61.50	
		SNGARBS2	20.000		2.74	54.80	1.40	0.894	4.07	I	EL	31.50	0.968	4.33	A	I	24.60	0.80	0.917	2.74	A	EL	61.50	
		SNAGRIS2	22.000		2.55	56.10	1.40	0.894	3.89	I	EL	31.50	0.968	3.98	A	I	24.60	0.80	0.917	2.55	A	EL	61.50	
		SNCOTTS3	27.250		1.91	52.05	1.40	0.894	2.67	I	EL	31.50	0.968	3.03	A	I	24.60	0.80	0.917	1.91	A	EL	61.50	
		SNAGGRS4	34.925		1.55	54.13	1.40	0.894	2.26	I	EL	31.50	0.968	2.43	A	I	24.60	0.80	0.917	1.55	A	EL	61.50	
		SNS5A	35.550		1.52	54.04	1.40	0.894	2.21	I	EL	31.50	0.968	2.43	A	I	24.60	0.80	0.917	1.52	A	EL	61.50	
		SNS6A	39.950		1.37	54.73	1.40	0.894	2.04	I	EL	31.50	0.968	2.17	A	I	24.60	0.80	0.917	1.37	A	EL	61.50	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.67	55.11	1.40	0.894	2.49	I	EL	31.50	0.968	2.65	A	I	24.60	0.80	0.917	1.67	A	EL	61.50	
		TNT4A	33.075		1.67	55.24	1.40	0.894	2.50	I	EL	31.50	0.968	2.60	A	I	24.60	0.80	0.917	1.67	A	EL	61.50	
		TNT6A	41.600		1.35	56.16	1.40	0.894	2.06	I	EL	31.50	0.968	2.21	A	I	24.60	0.80	0.917	1.35	A	EL	61.50	
		TNT7A	42.000		1.35	56.70	1.40	0.894	2.08	I	EL	31.50	0.968	2.16	A	I	24.60	0.80	0.917	1.35	A	EL	61.50	
		TNT7B	42.000		1.37	57.54	1.40	0.894	2.16	I	EL	31.50	0.968	2.07	A	I	24.60	0.80	0.917	1.37	A	EL	61.50	
		TNAGRIT4	43.000		1.32	56.76	1.40	0.894	2.05	I	EL	31.50	0.968	2.02	A	I	24.60	0.80	0.917	1.32	A	EL	61.50	
		TNAGT5A	45.000		1.25	56.25	1.40	0.894	1.92	I	EL	31.50	0.968	1.97	A	I	24.60	0.80	0.917	1.25	A	EL	61.50	
TNAGT5B	45.000	③	1.24	55.80	1.40	0.894	1.90	I	EL	31.50	0.968	1.91	A	I	24.60	0.80	0.917	1.24	A	EL	61.50			

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.

③ CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

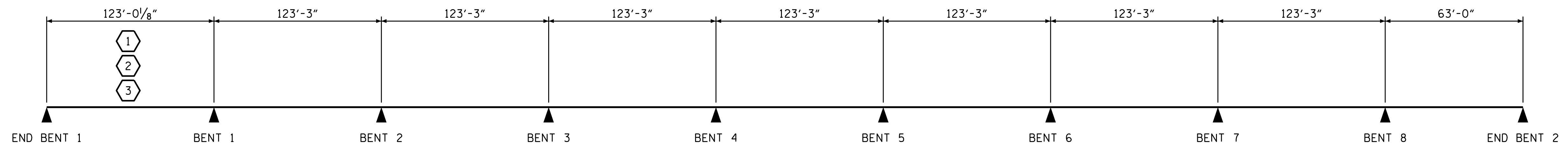
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY
 SPAN LENGTHS SHOWN ARE BEARING TO BEARING.

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-

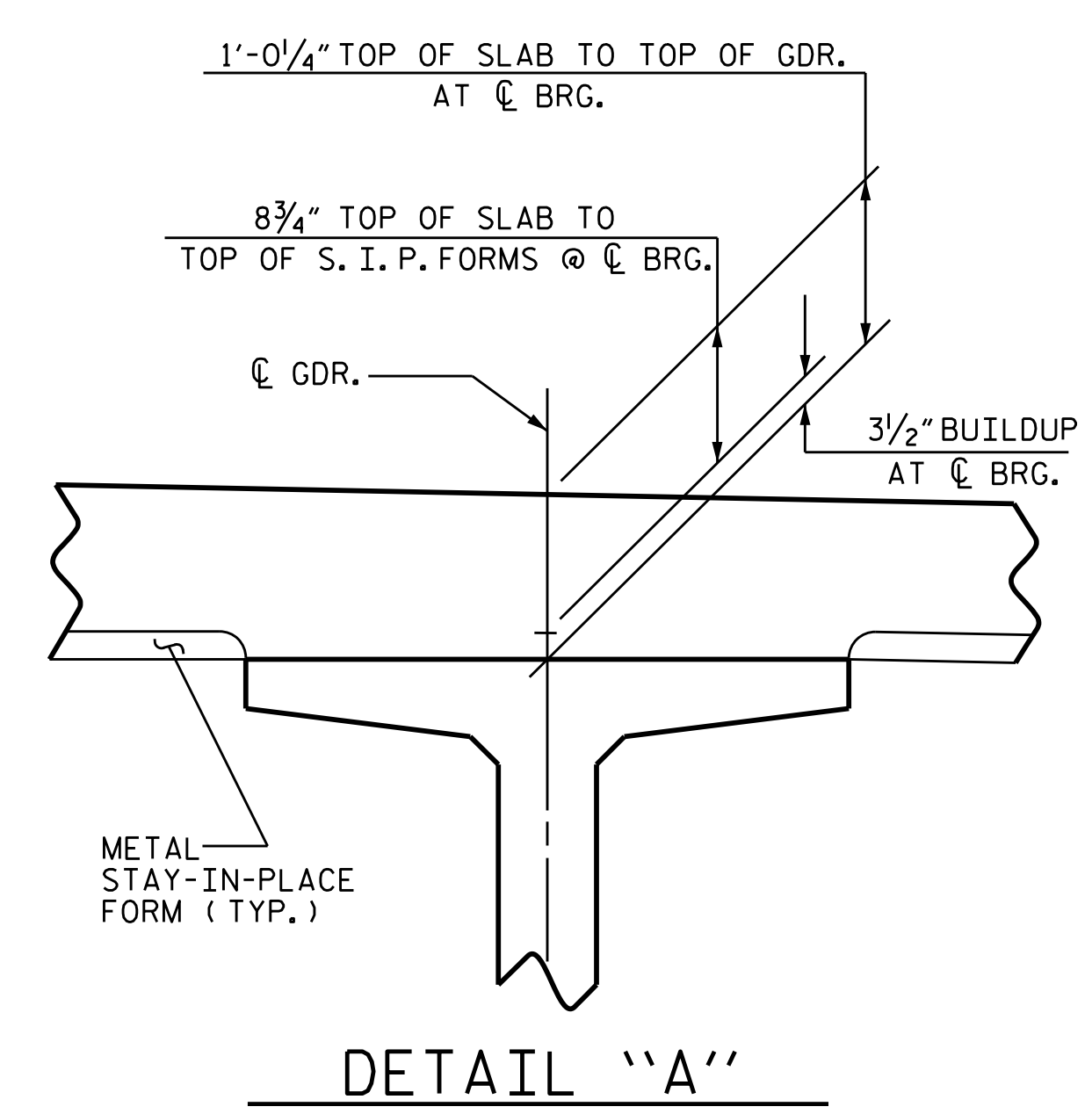
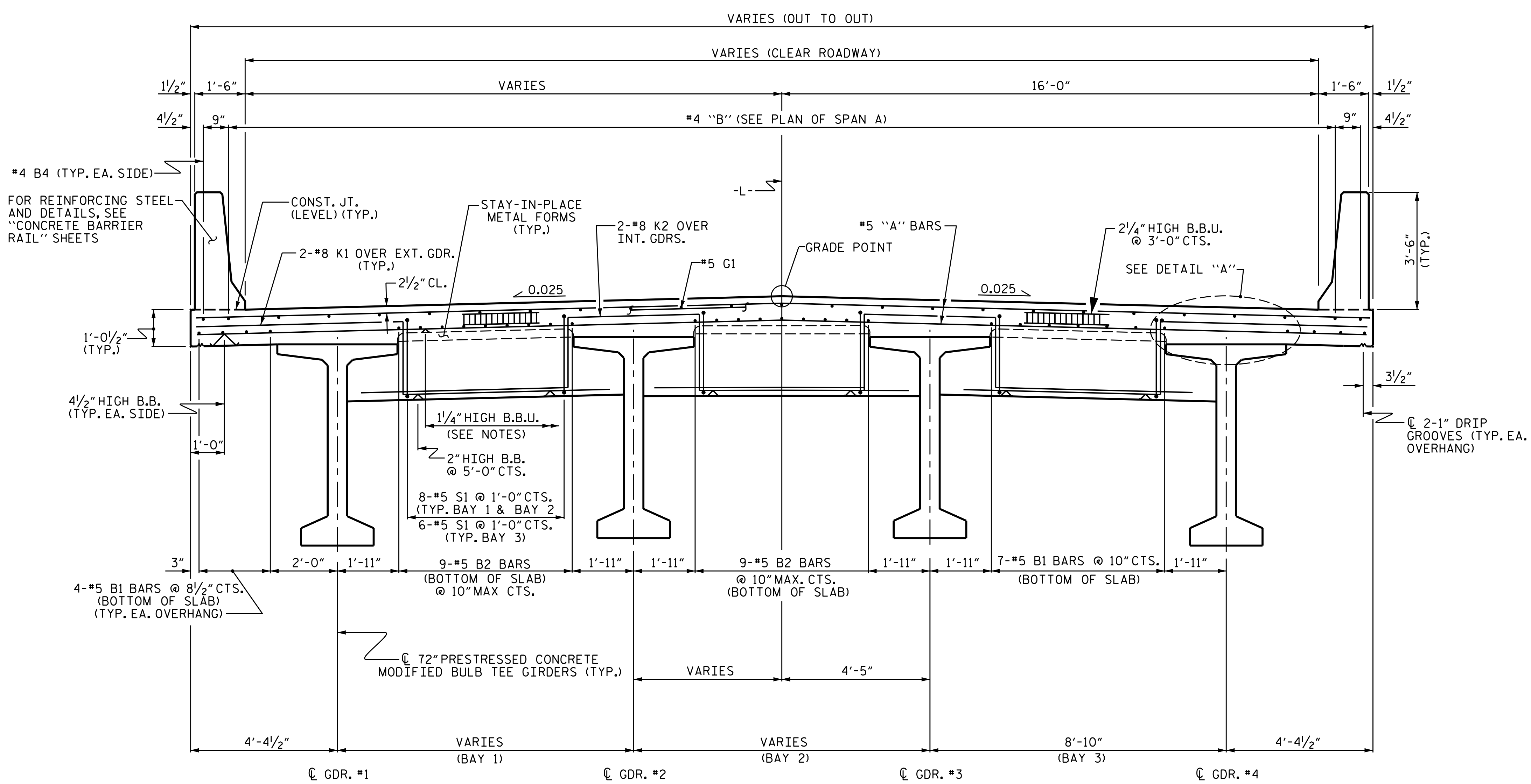
ASSEMBLED BY : TBE	DATE : 01/20
CHECKED BY : MCC	DATE : 01/20
DRAWN BY : MAA 1/08	REV. 11/2/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

NORTH CAROLINA PROFESSIONAL ENGINEER
 SEAL 20125
 MARSHALL G. CHECK JR.
 4/14/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
 706 HILLSBOROUGH STREET SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

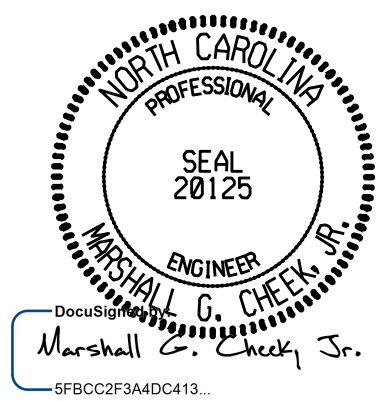
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS (NON-INTERSTATE TRAFFIC)					
SHEET NO. S-8					
TOTAL SHEETS 60					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		



TYPICAL SECTION
(SHOWING END BENT #1 DIAPHRAGMS)

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
STATION: 34+65.50 -L-

SHEET 1 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

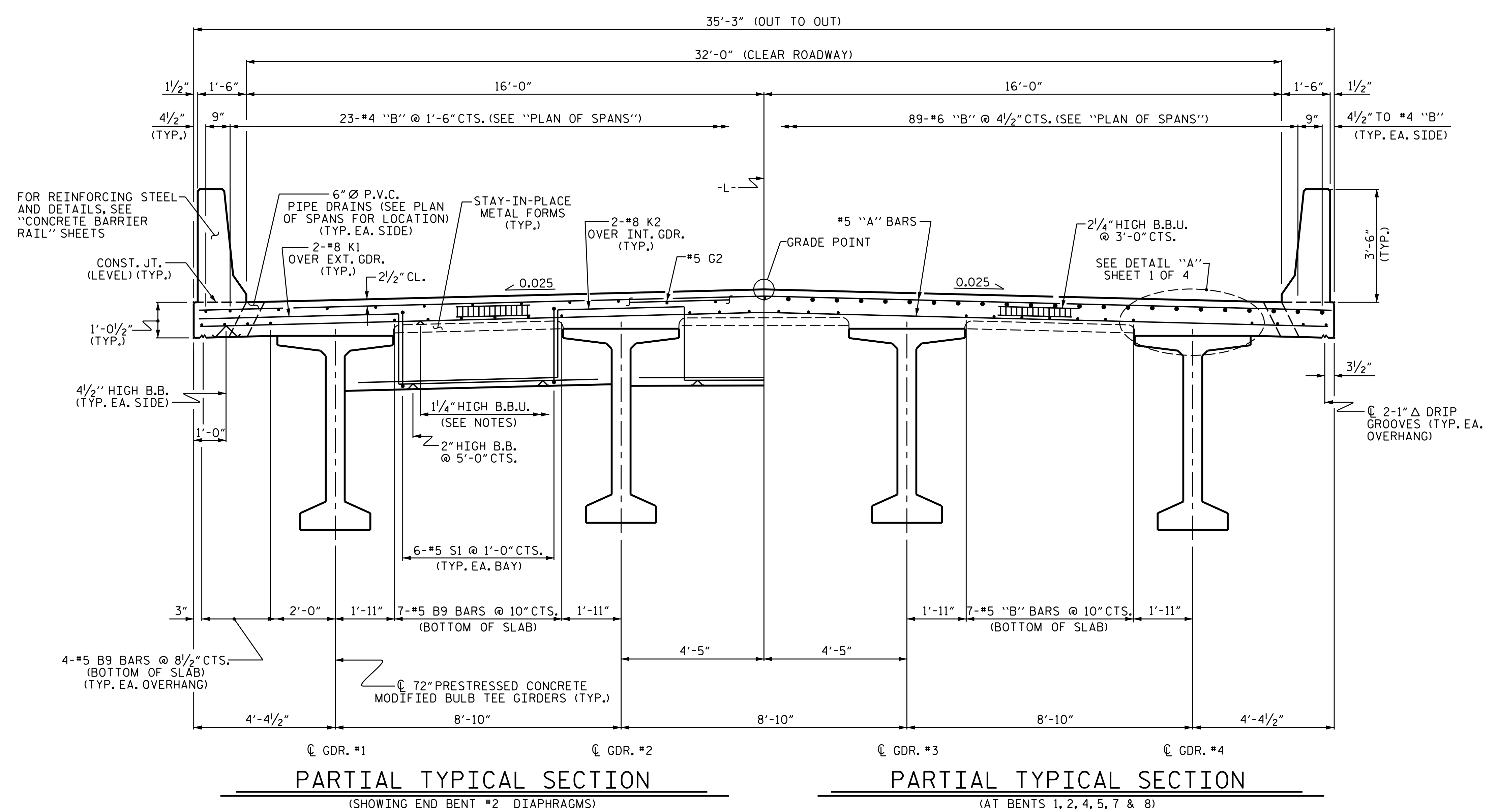
SUPERSTRUCTURE
TYPICAL SECTION

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706 HILLSBOROUGH STREET
SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

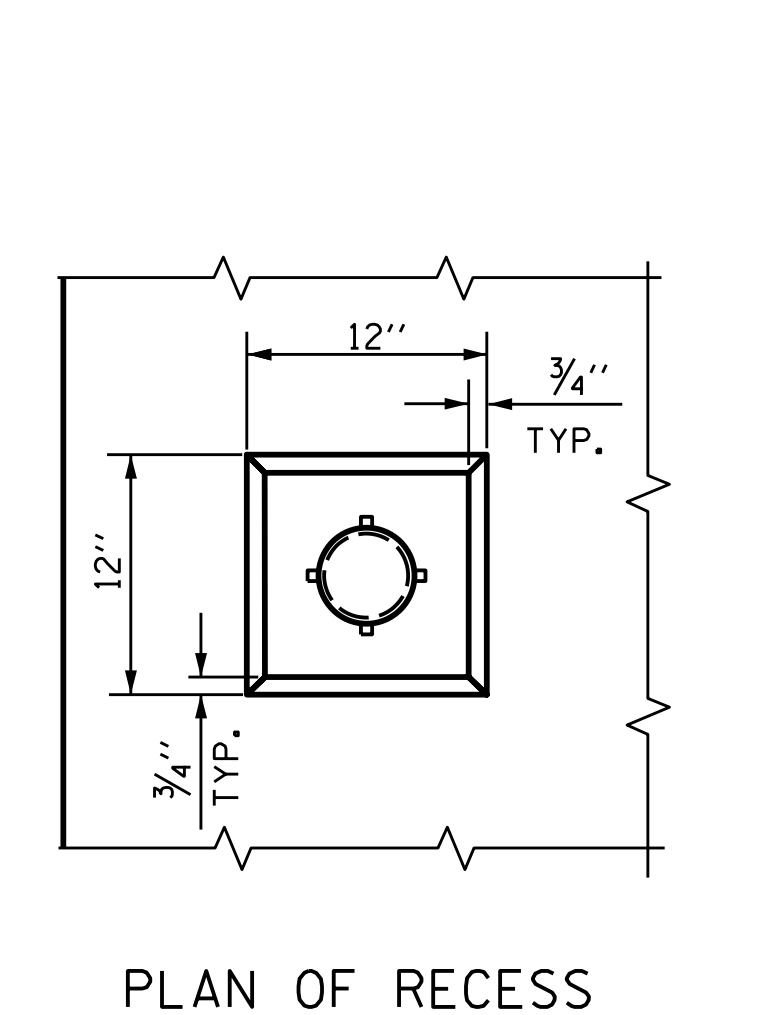
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-9
2			4			TOTAL SHEETS 60

DRAWN BY : S. B. WILLIAMS DATE : 10-19
CHECKED BY : MGC DATE : 1-20
DESIGN ENGINEER OF RECORD: TBE DATE : 2-20

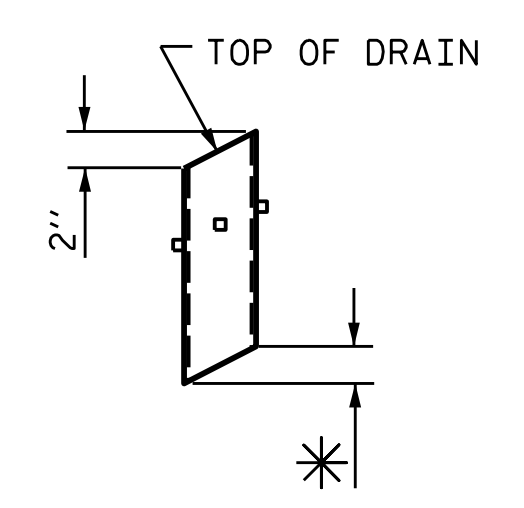


PARTIAL TYPICAL SECTION
(SHOWING END BENT #2 DIAPHRAGMS)

PARTIAL TYPICAL SECTION
(AT BENTS 1, 2, 4, 5, 7 & 8)

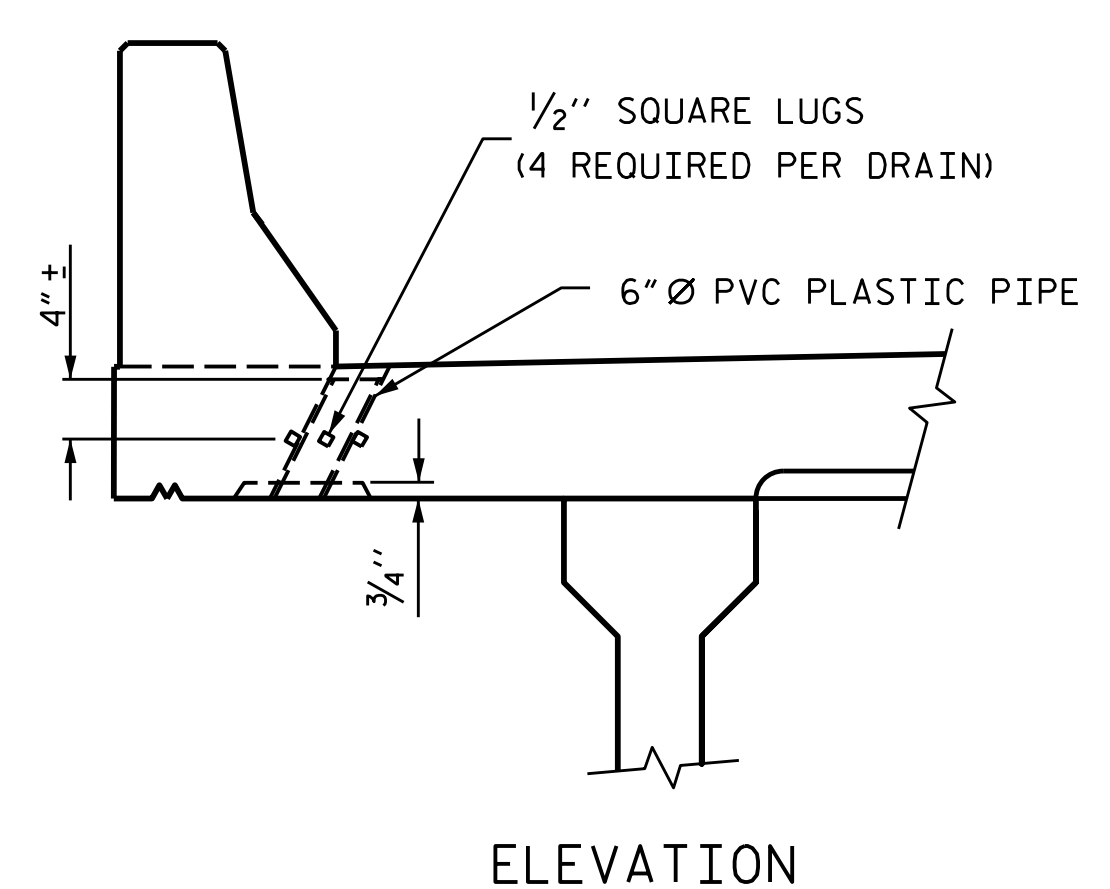


PLAN OF RECESS



* TO BE SET TO MATCH SLOPE OF BOTTOM OF OVERHANG (130 DRAINS REQUIRED)

PIPE DETAIL



ELEVATION

TOP OF FLOOR DRAINS TO BE SET 3/8" BELOW SURFACE OF SLAB.
4 - 1/2" SQUARE LUGS TO BE GLUED TO THE P.V.C. PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN APPROXIMATELY 4" FROM THE TOP OF THE PIPE.
THE 6" Ø PVC PLASTIC PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND CONFORM TO ASTM D1785.

DRAIN DETAILS

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
STATION: 34+65.50 -L-
SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUPERSTRUCTURE
TYPICAL SECTION**

Professional Engineer Seal: Marshall G. Cheek, Jr., No. 20125, Exp. 4/14/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
706 HILLSBOROUGH STREET
SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			60

DRAWN BY :	S. B. WILLIAMS	DATE :	10-19
CHECKED BY :	MGC	DATE :	1-20
DESIGN ENGINEER OF RECORD:	TBE	DATE :	2-20

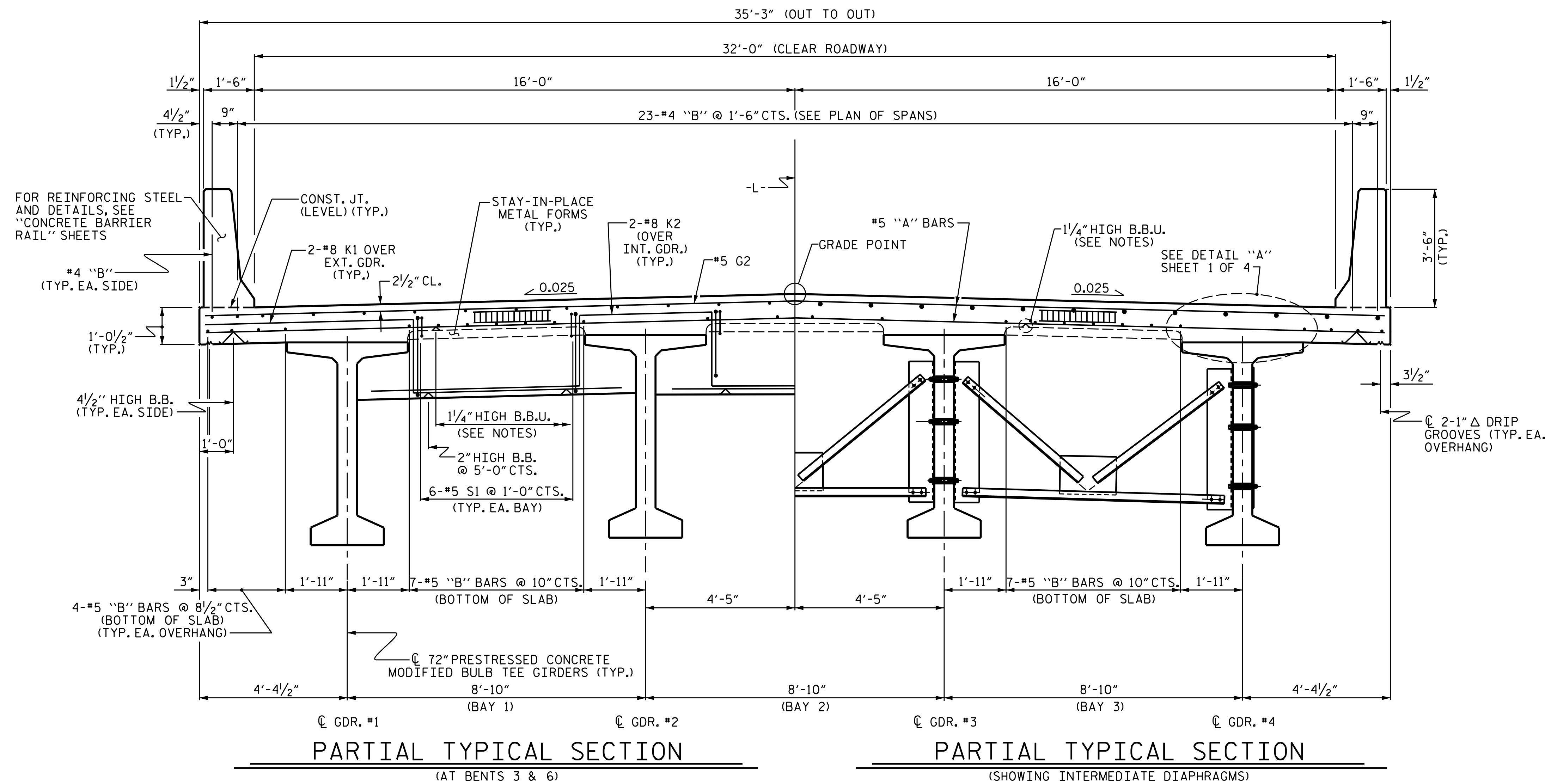
NOTES

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

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

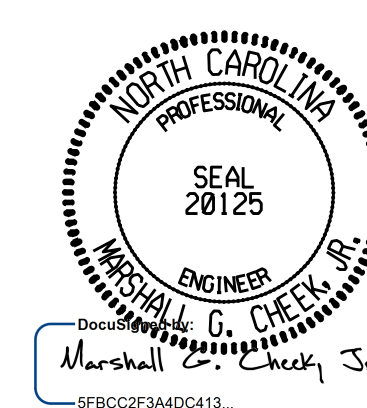
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

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



PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-

SHEET 3 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

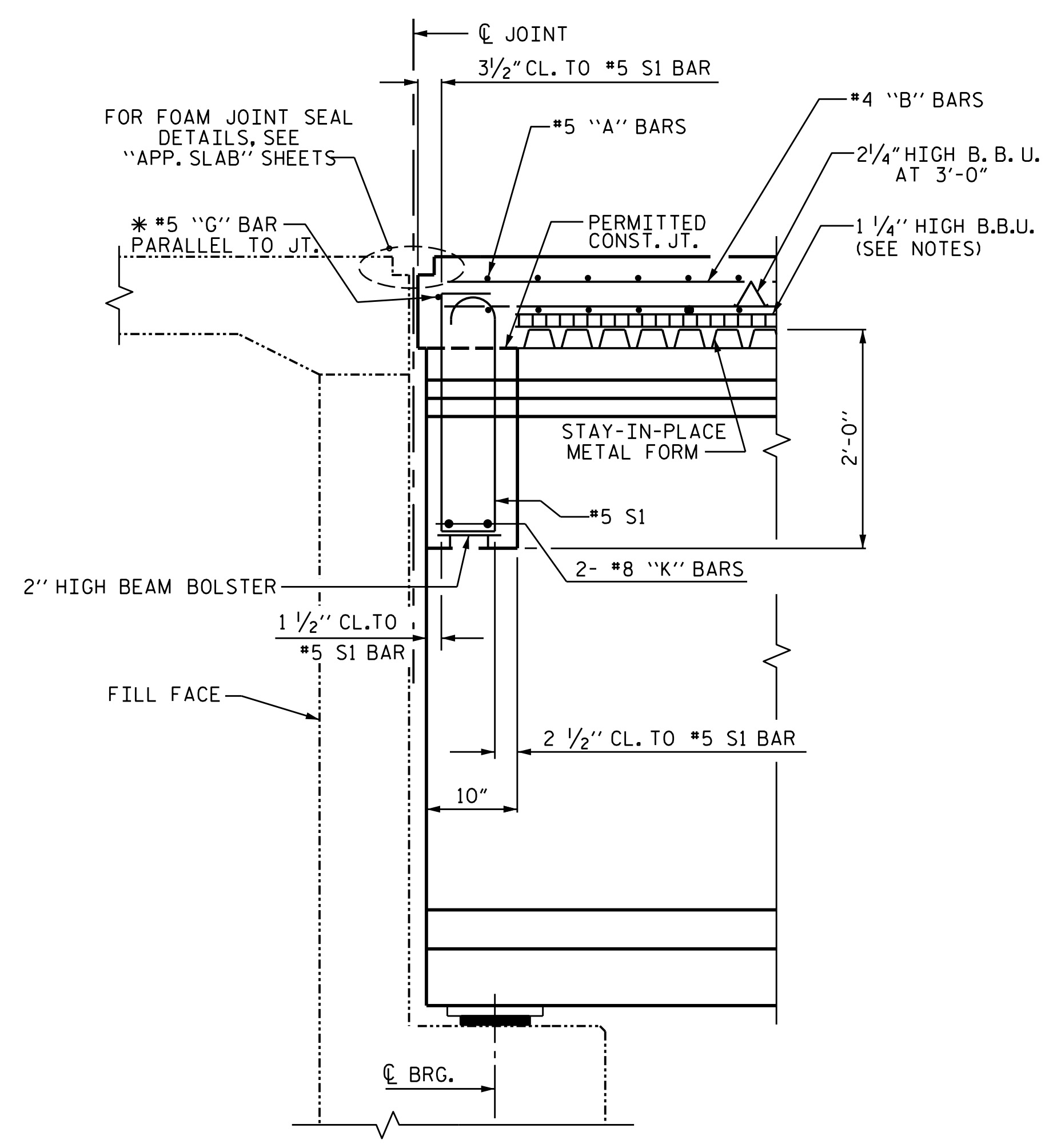
SUPERSTRUCTURE
 TYPICAL SECTION

DOCUMENT NOT CONSIDERED FINAL
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TGS ENGINEERS
 706 HILLSBOROUGH STREET
 SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

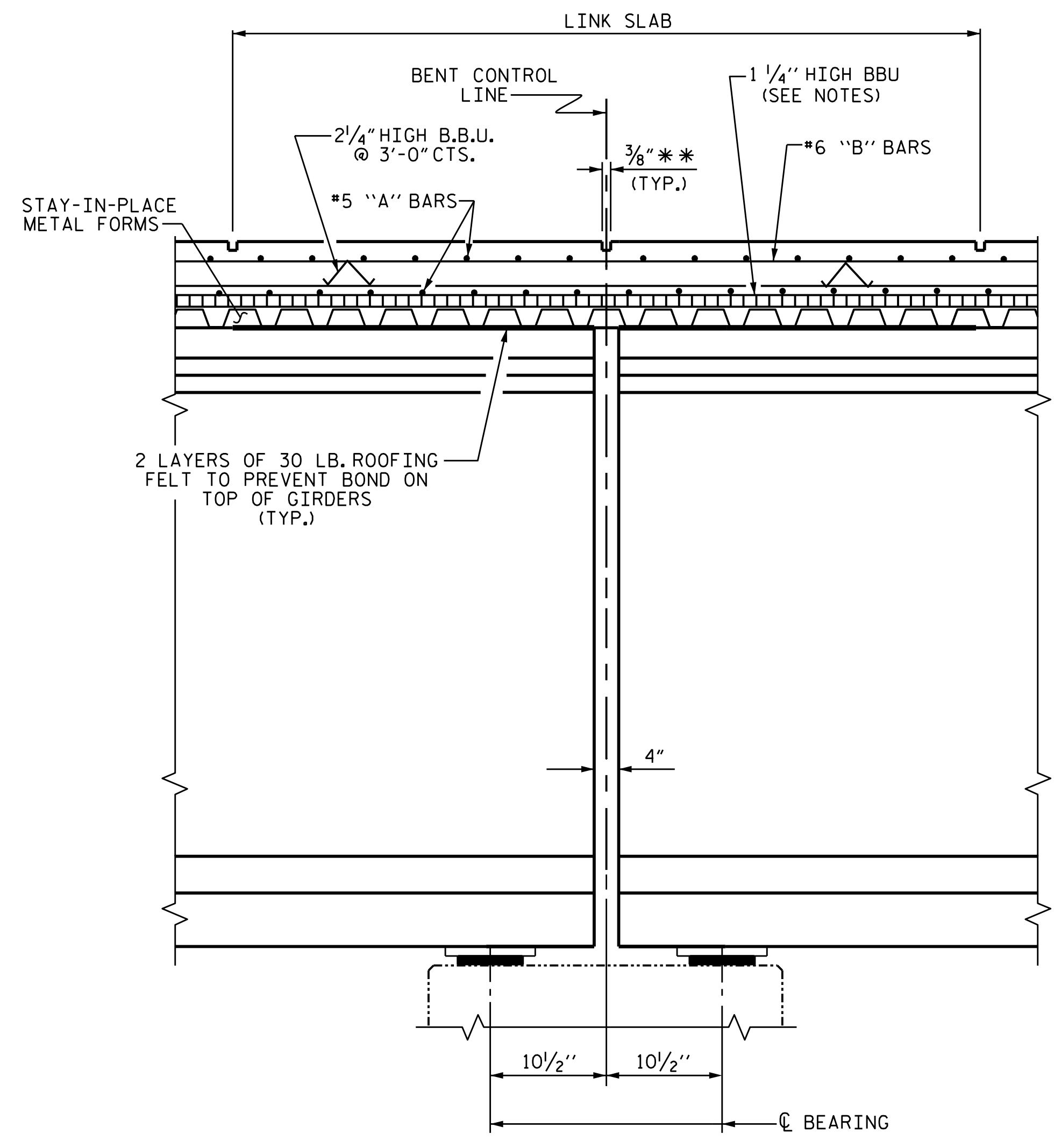
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-11
2			4			TOTAL SHEETS 60

DRAWN BY : S. B. WILLIAMS DATE : 10-19
 CHECKED BY : MGC DATE : 1-20
 DESIGN ENGINEER OF RECORD: TBE DATE : 2-20



SECTION THRU END BENT

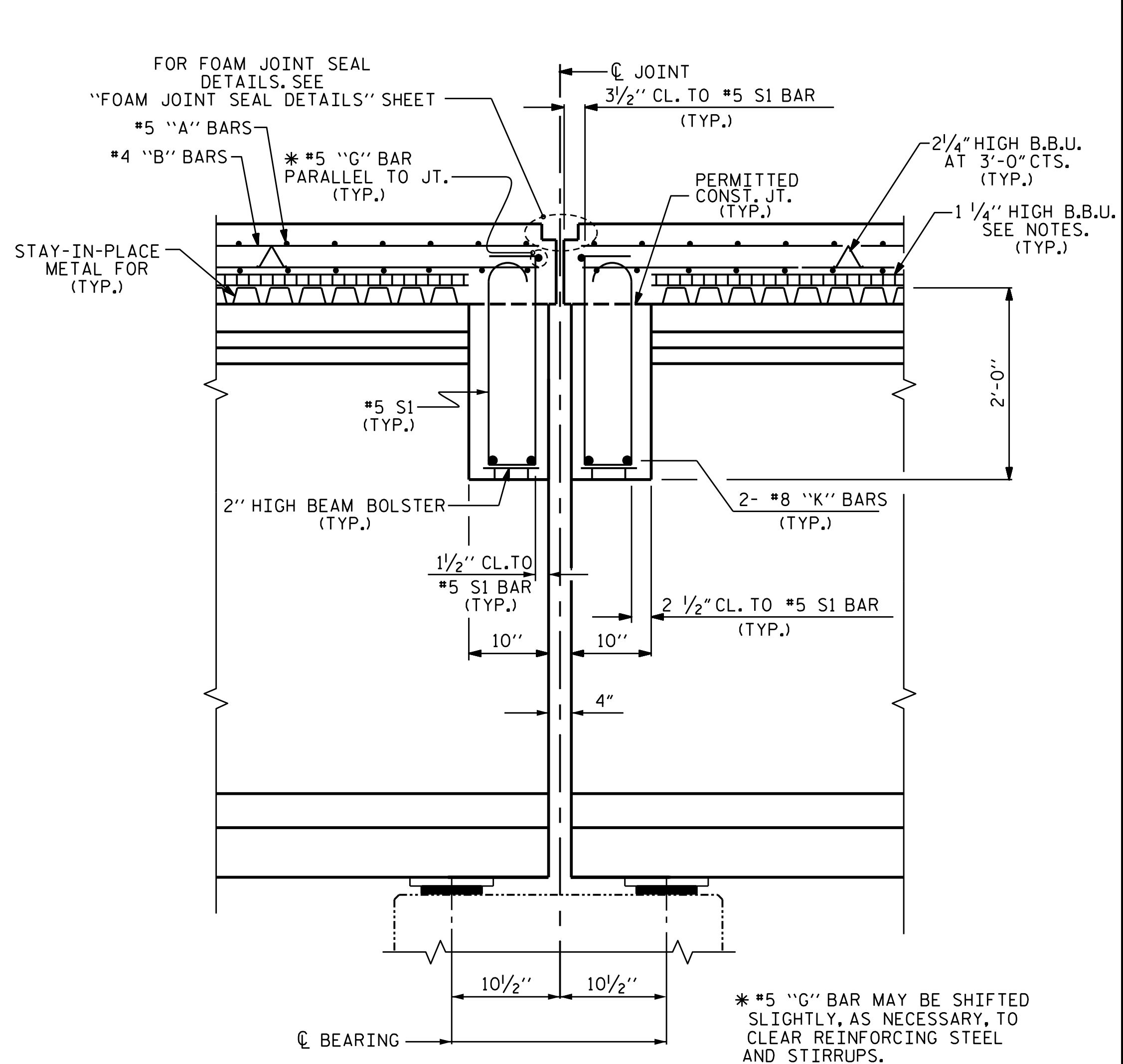
*#5 "G" BAR MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR DIAPHRAGM AND REINFORCING STEEL.



SECTION THRU LINK SLAB

(LOCATED @ BENTS 1, 2, 4, 5, 7 & 8)

** THE 3/8" WIDE X 1/2" DEEP CONTRACTION JOINTS SHALL BE SAWED WITHIN 24 HOURS OF POURING THE DECK. THE JOINTS SHALL BE FILLED WITH JOINT SEALER. THE JOINT SEALER SHALL CONFORM TO THE REQUIREMENTS OF TYPE B LOW MODULUS SILICONE SEALANT, SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.



SECTION THRU BENT DIAPHRAGM

(BENTS 3 & 6)

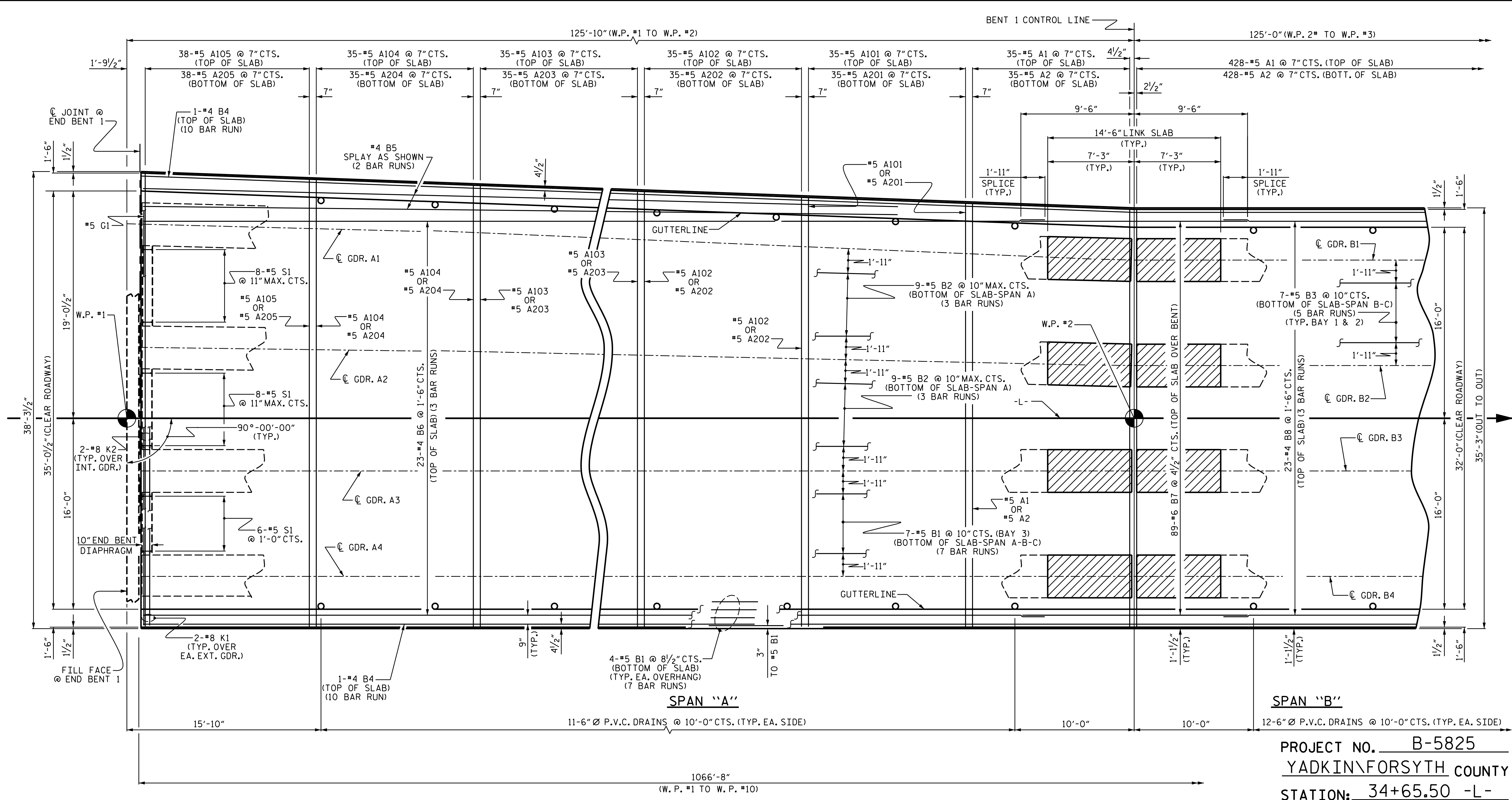
*#5 "G" BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-

SHEET 4 OF 4

		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE TYPICAL SECTION DETAILS			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED					
TGS ENGINEERS 706 HILLSBOROUGH STREET SUITE 200 RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275		REVISIONS			
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
			SHEET NO.		S-12
			TOTAL SHEETS		60

DRAWN BY :	S. B. WILLIAMS	DATE :	10-19
CHECKED BY :	MCC	DATE :	1-20
DESIGN ENGINEER OF RECORD:	TBE	DATE :	2-20

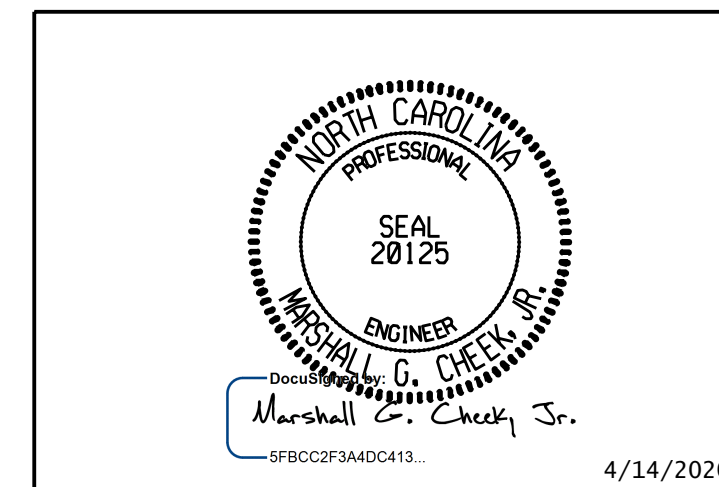


PLAN OF SPANS "A-B"

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

PROJECT NO. B-5825
YADKIN\FORSYTH COUNTY
 STATION: 34+65.50 -L-

SHEET 1 OF 5



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

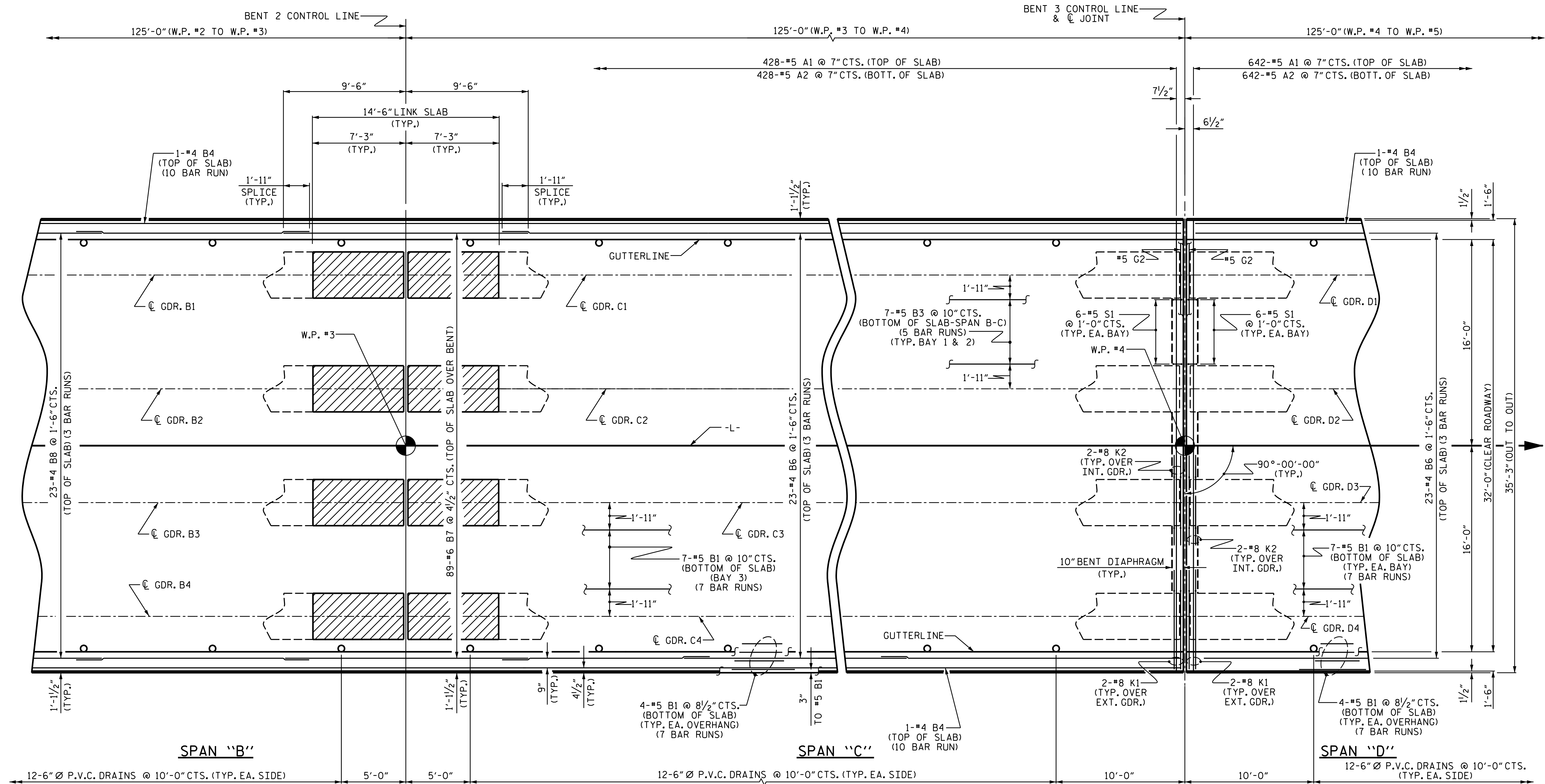
DRAWN BY :	S. B. WILLIAMS	DATE :	10-19
CHECKED BY :	MCC	DATE :	1-20
DESIGN ENGINEER OF RECORD:	TBE	DATE :	2-20

2/19/2020
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 User:sbwilliams

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 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-13
2			4			TOTAL SHEETS 60



SPAN "B"

SPAN "C"

SPAN "D"

PLAN OF SPANS "B-C-D"

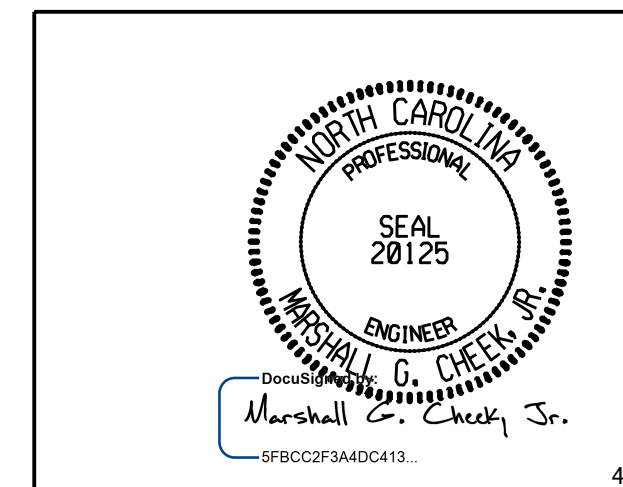
FOR BARRIER RAIL DETAILS AND REINFORCING STEEL, SEE "CONCRETE BARRIER RAIL" SHEETS.

PROJECT NO. B-5825
 YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-

SHEET 2 OF 5

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CHECKED BY :	MGC	DATE :	1-20
DESIGN ENGINEER OF RECORD:	TBE	DATE :	2-20

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 User:rsbwilliams



4/14/2020

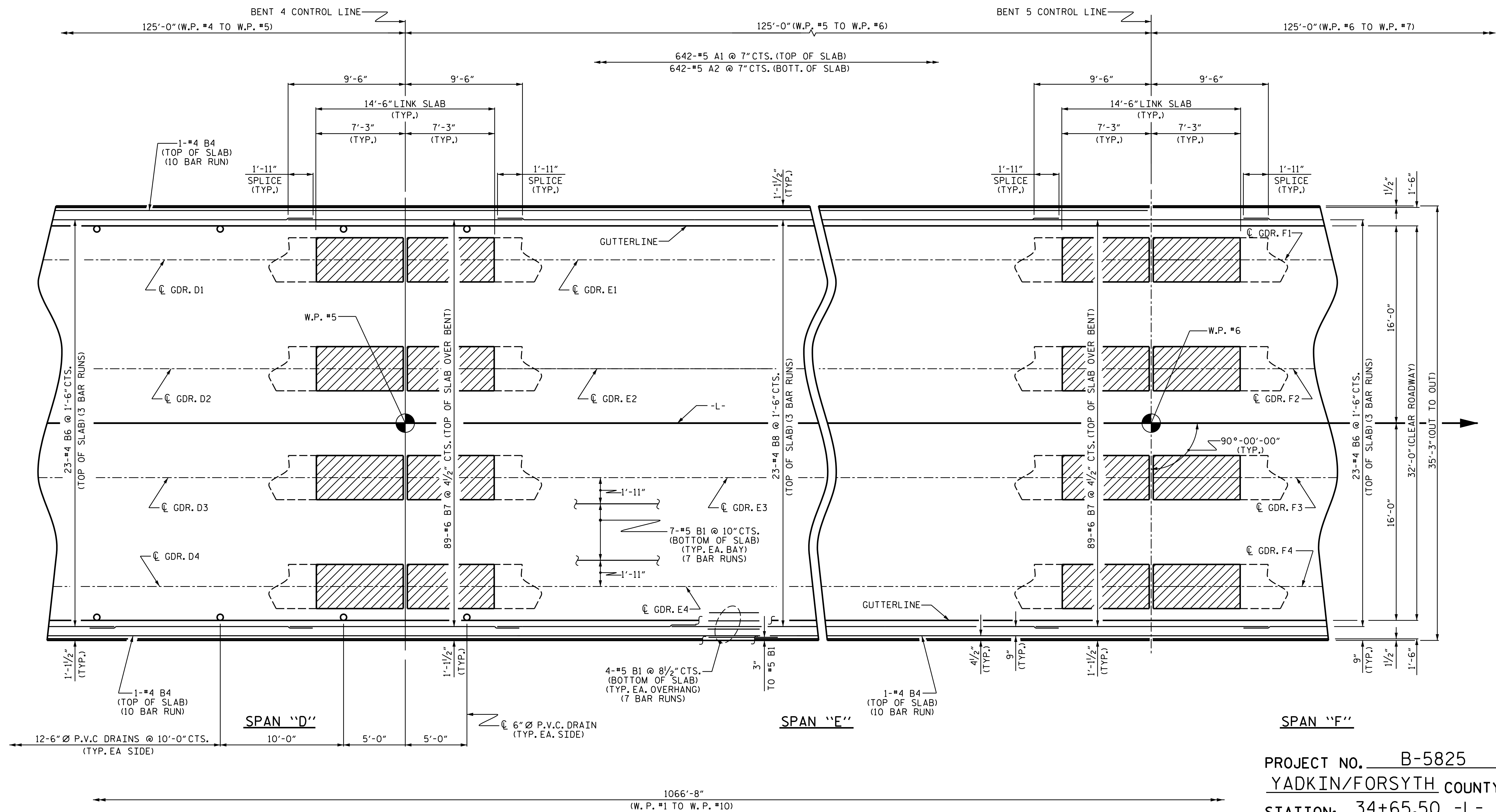
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 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-14
2			4			60

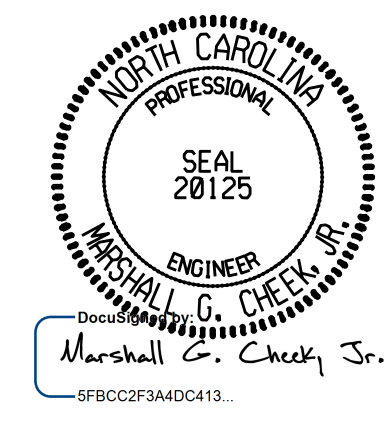


PLAN OF SPANS "D-E-F"

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

PROJECT NO. B-5825
 YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-

SHEET 3 OF 5

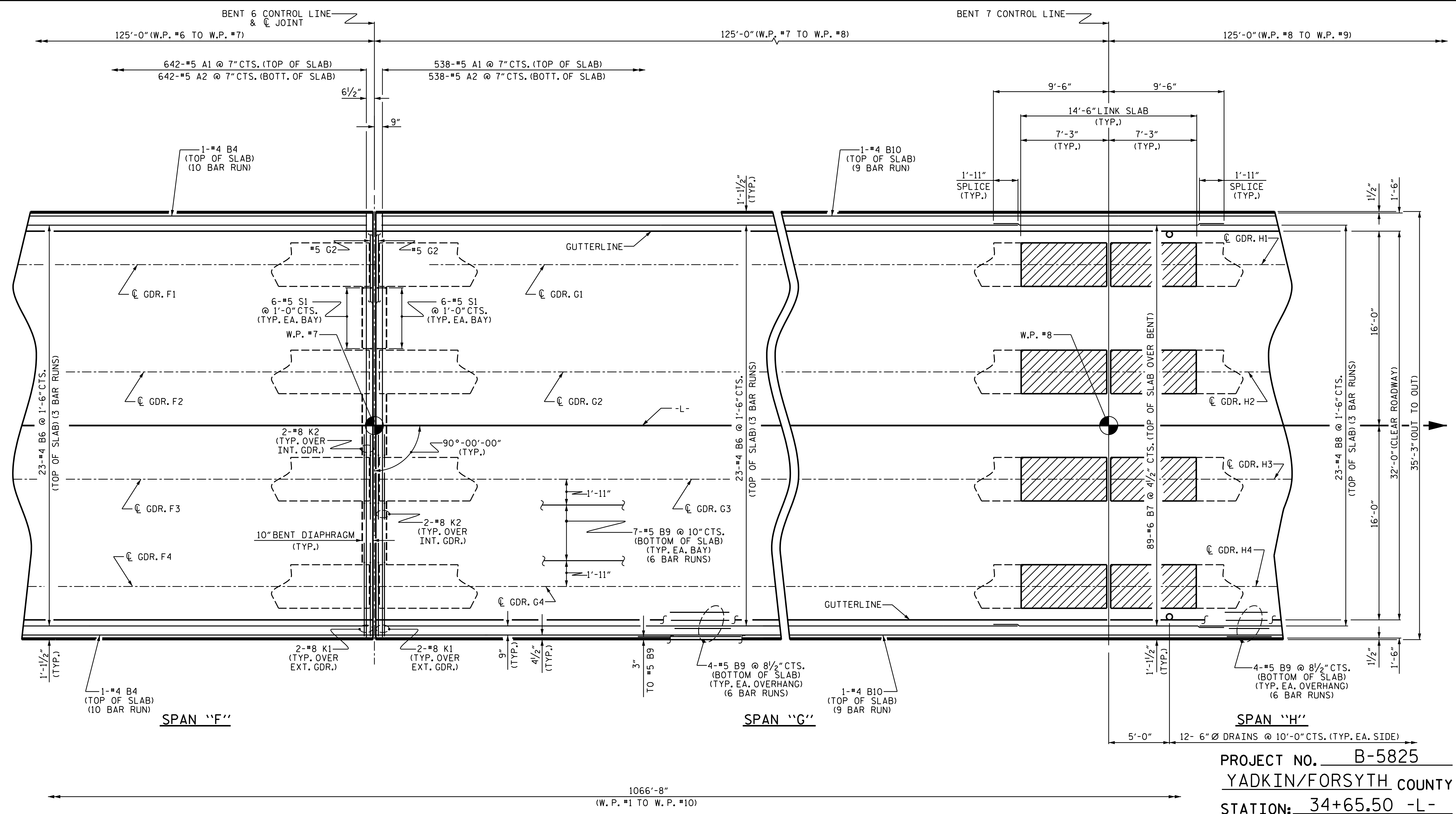


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN

DRAWN BY :	S. B. WILLIAMS	DATE :	10-19
CHECKED BY :	MCC	DATE :	1-20
DESIGN ENGINEER OF RECORD:	TBE	DATE :	2-20

2/19/2020
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TGS ENGINEERS 706 HILLSBOROUGH STREET SUITE 200 RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275				NO.	BY:	DATE:	S-15
1			3				TOTAL SHEETS
2			4				60

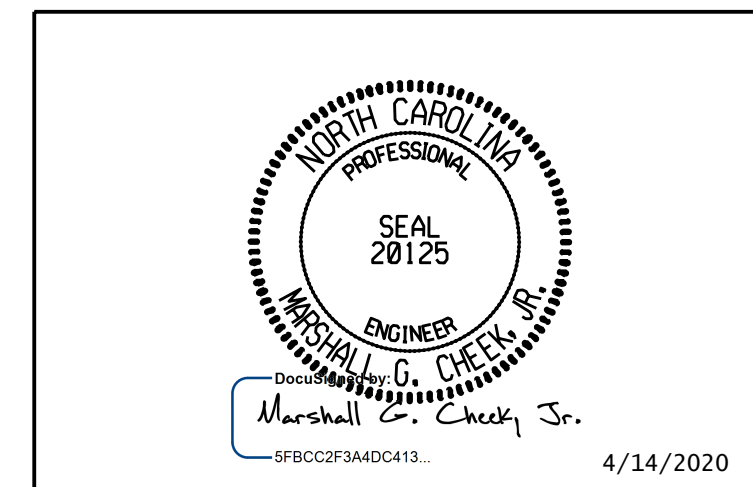


PLAN OF SPANS "F-G-H"

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

PROJECT NO. B-5825
 YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-

SHEET 4 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
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**SUPERSTRUCTURE
 PLAN OF SPAN**

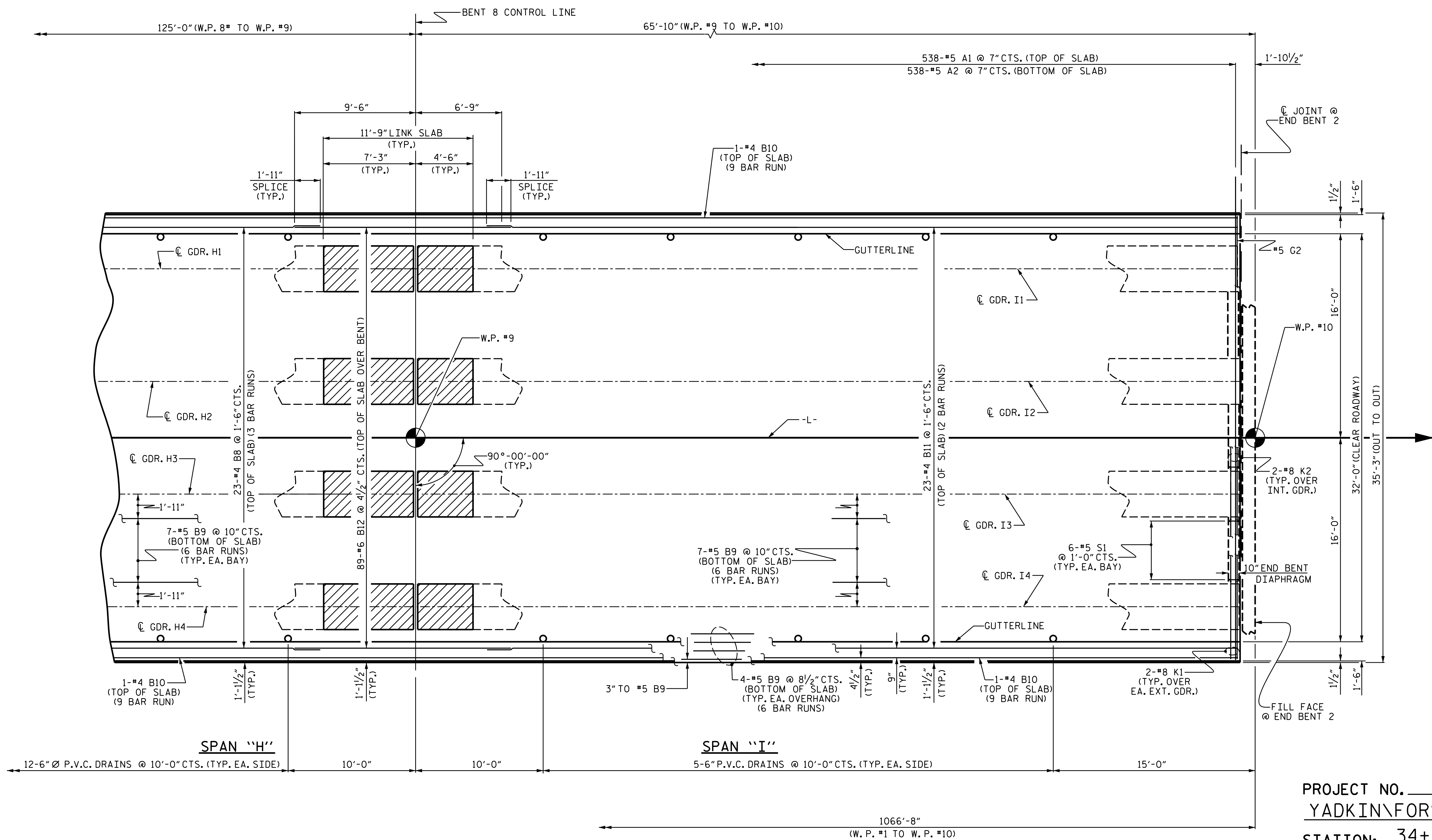
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CHECKED BY :	MGC	DATE :	1-20
DESIGN ENGINEER OF RECORD:	TBE	DATE :	2-20

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1			3			S-16
2			4			TOTAL SHEETS 60



PROJECT NO. B-5825
YADKIN\FORSYTH COUNTY
 STATION: 34+65.50 -L-

PLAN OF SPANS "H-I"

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

SHEET 5 OF 5

DRAWN BY :	S. B. WILLIAMS	DATE :	10-19
CHECKED BY :	MGC	DATE :	1-20
DESIGN ENGINEER OF RECORD:	TBE	DATE :	2-20

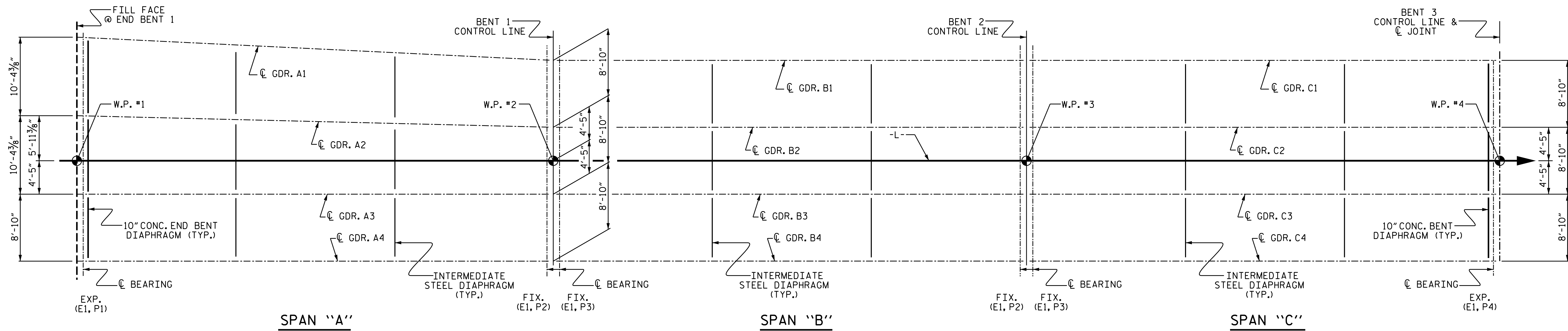
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 User:rsbwilliams

Marshall G. Chesky Jr.
 4/14/2020

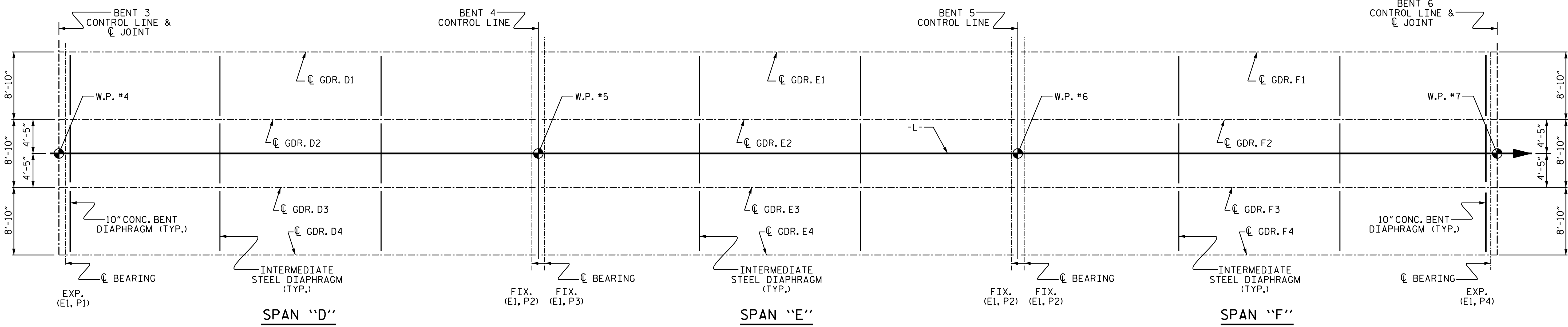
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN					
SHEET NO. S-17					
TOTAL SHEETS 60					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		



SPANS "A-B-C" FRAMING PLAN



SPANS "D-E-F" FRAMING PLAN

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-

SHEET 1 OF 2

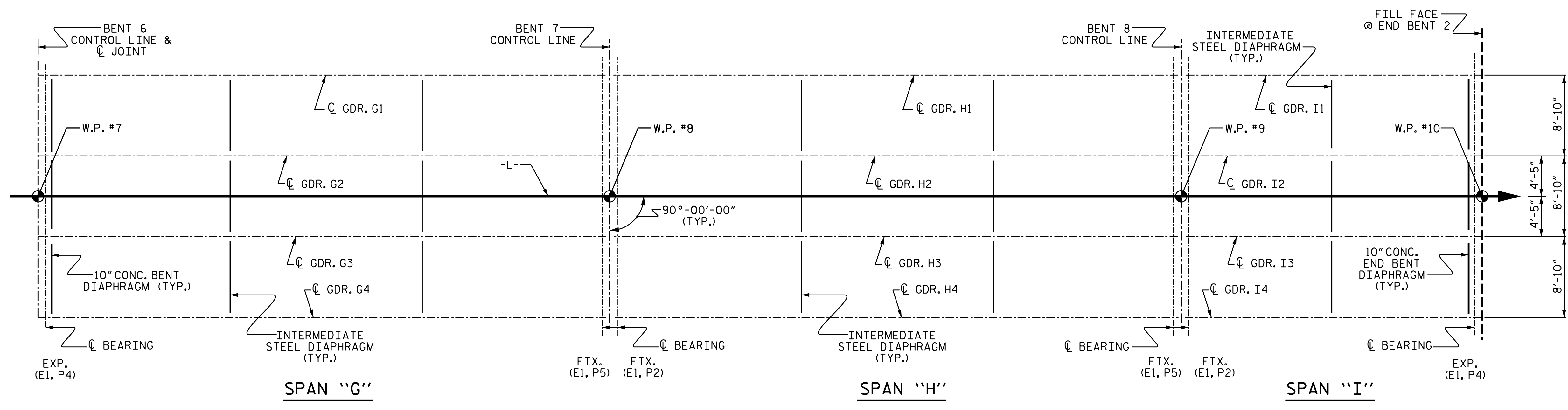
DRAWN BY :	S. B. WILLIAMS	DATE :	1/20
CHECKED BY :	MCC	DATE :	1/20
DESIGN ENGINEER OF RECORD:	TBE	DATE :	2/20

2/19/2020
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 User:rsbwilliams

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STATE OF NORTH CAROLINA
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 RALEIGH
 SUPERSTRUCTURE
 FRAMING PLAN

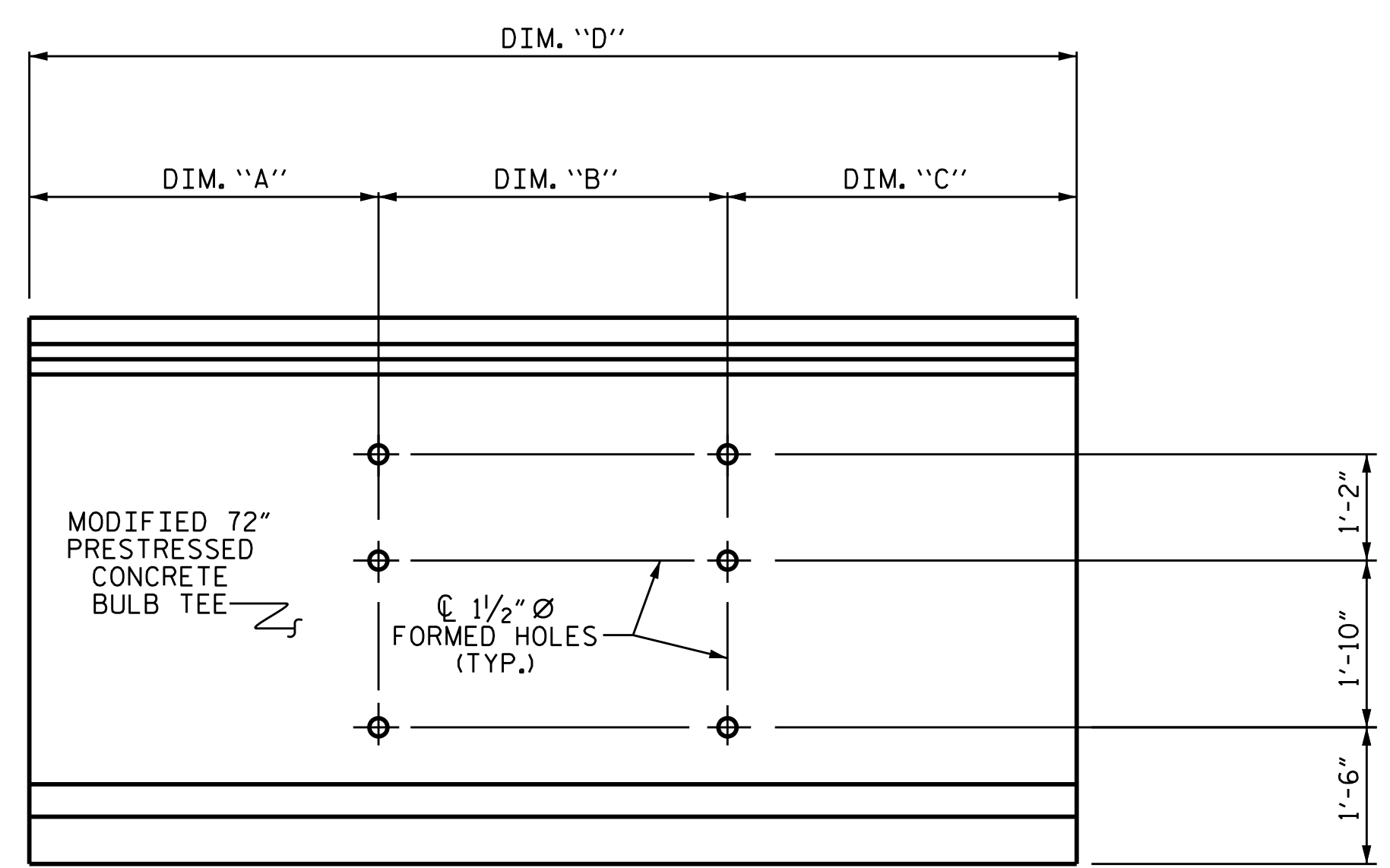
NO.		BY:		DATE:		NO.		BY:		DATE:		SHEET NO.
1						3						S-18
2						4						TOTAL SHEETS 60



SPANS "G-H-I" FRAMING PLAN

GIRDER	"A"	"B"	"C"	"D"
A1	41'-8 ⁵ / ₈ "	41'-0 ¹ / ₈ "	41'-8 ⁵ / ₈ "	124'-5 ³ / ₈ "
A2	41'-8 ⁵ / ₁₆ "	41'-0 ¹ / ₁₆ "	41'-8 ¹ / ₂ "	124'-5 ¹ / ₈ "
A3	41'-8 ¹ / ₂ "	41'-0"	41'-8 ¹ / ₂ "	124'-5"
A4	41'-8 ¹ / ₂ "	41'-0"	41'-8 ¹ / ₂ "	124'-5"
B1 THRU B4	41'-9 ¹ / ₂ "	41'-1"	41'-9 ¹ / ₂ "	124'-8"
C1 THRU C4	41'-9 ¹ / ₂ "	41'-1"	41'-9 ¹ / ₂ "	124'-8"
D1 THRU D4	41'-9 ¹ / ₂ "	41'-1"	41'-9 ¹ / ₂ "	124'-8"
E1 THRU E4	41'-9 ¹ / ₂ "	41'-1"	41'-9 ¹ / ₂ "	124'-8"
F1 THRU F4	41'-9 ¹ / ₂ "	41'-1"	41'-9 ¹ / ₂ "	124'-8"
G1 THRU G4	41'-9 ¹ / ₂ "	41'-1"	41'-9 ¹ / ₂ "	124'-8"
H1 THRU H4	41'-9 ¹ / ₂ "	41'-1"	41'-9 ¹ / ₂ "	124'-8"
I1 THRU I4	32'-2 ¹ / ₂ "	-	32'-2 ¹ / ₂ "	64'-5"

1 1/2" Ø HOLE LOCATION



ELEVATION- 1 1/2" Ø HOLE LOCATION

PROJECT NO. B-5825
 YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-

SHEET 2 OF 2

DRAWN BY : S. B. WILLIAMS DATE : 1-20
 CHECKED BY : MGC DATE : 1-20
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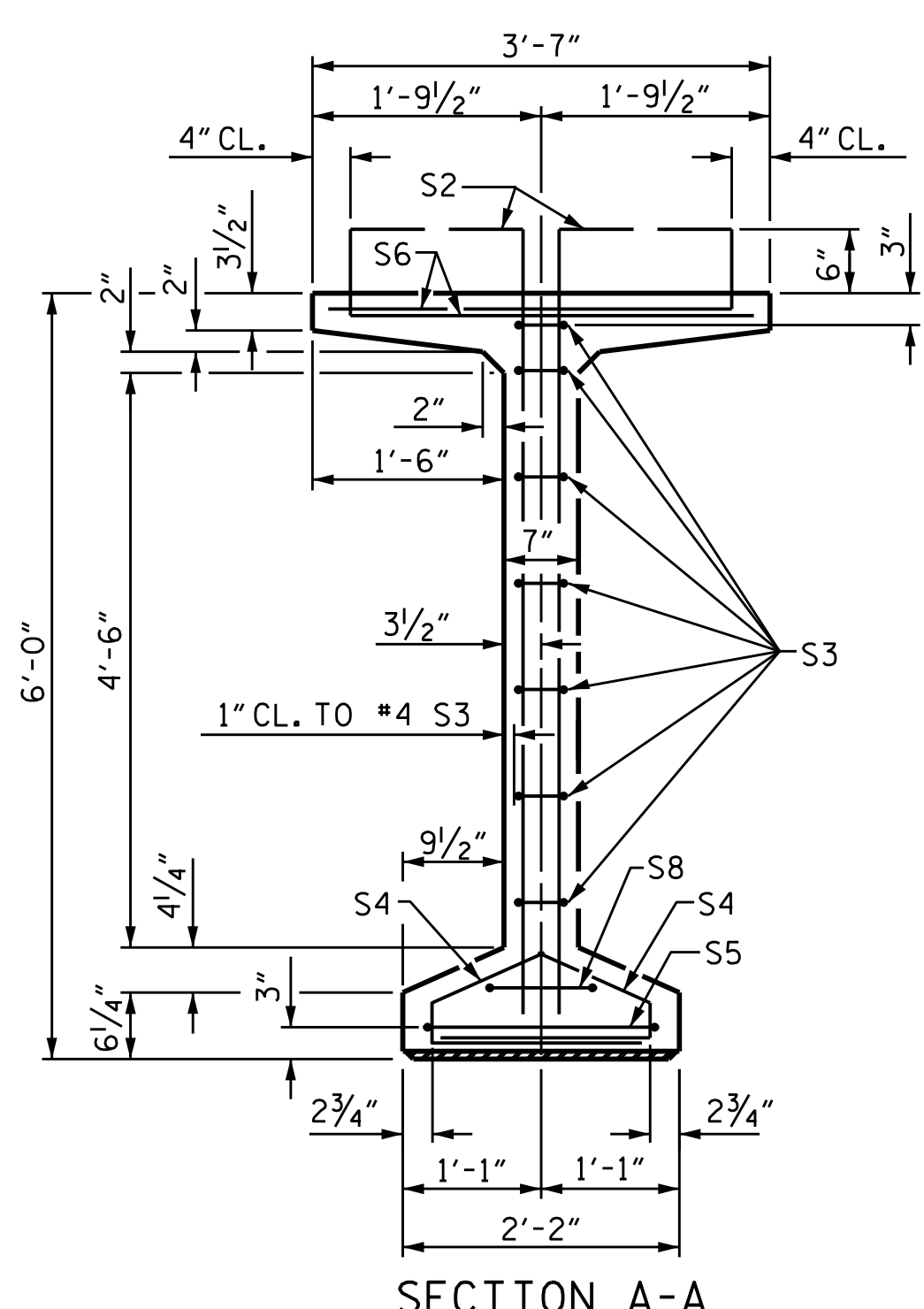
Professional Engineer Seal for Marshall G. Chesky Jr., State of North Carolina, License No. 58002, Seal No. 20125, dated 4/14/2020.

TCG ENGINEERS
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 CORP. LICENSE NO.: C-0275

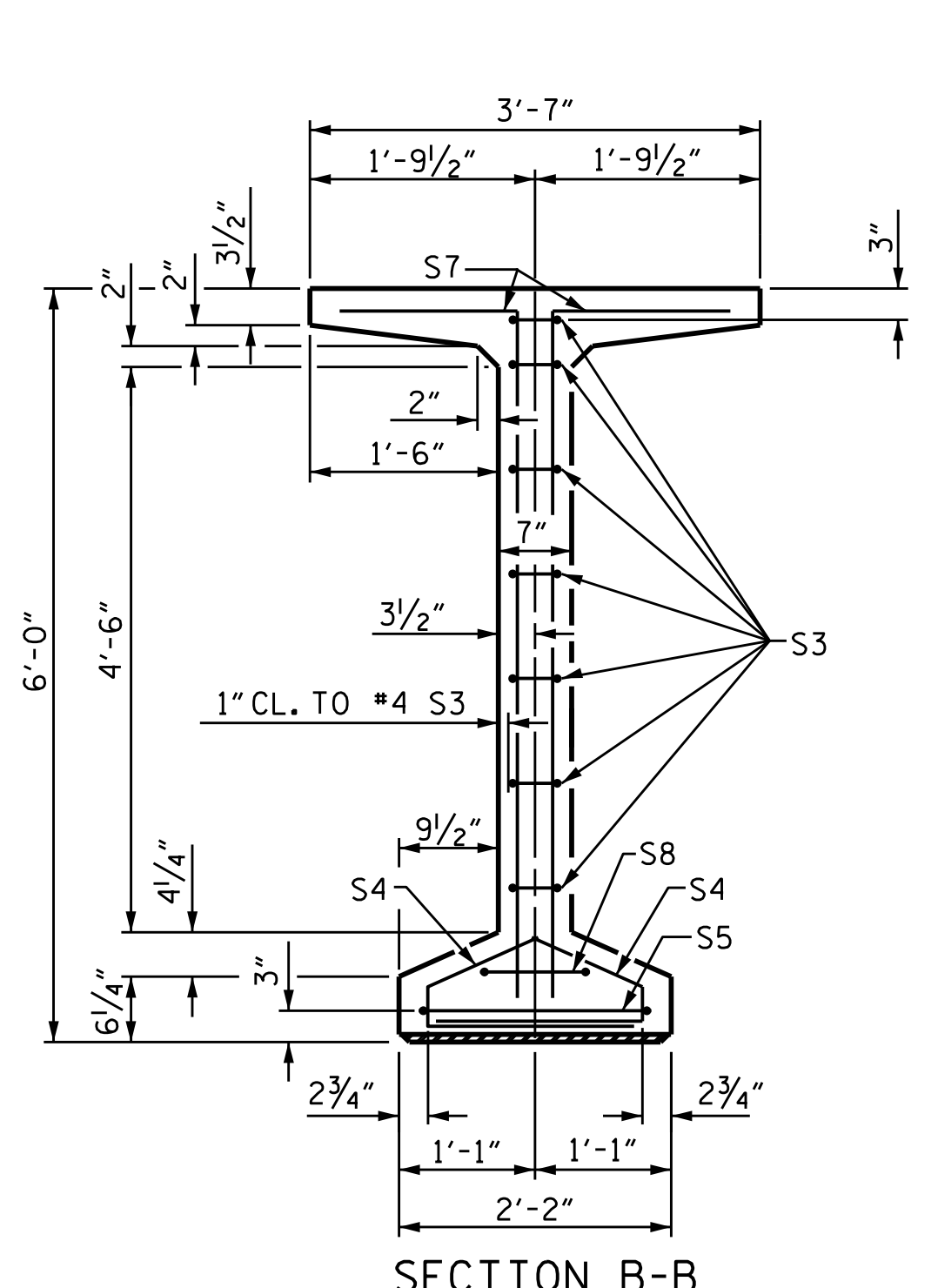
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 FRAMING PLAN

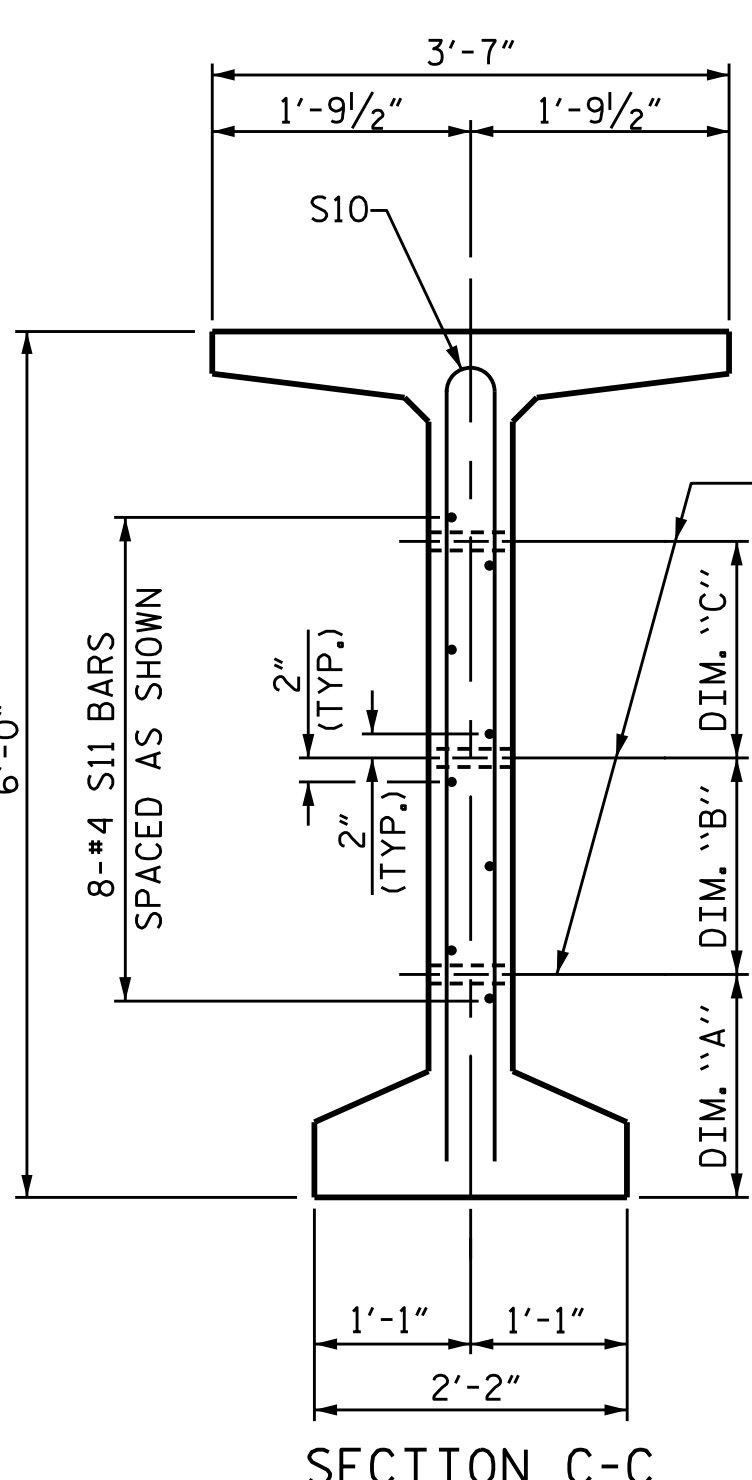
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	
1			3			S-19
2			4			TOTAL SHEETS 60



SECTION A-A



SECTION B-B

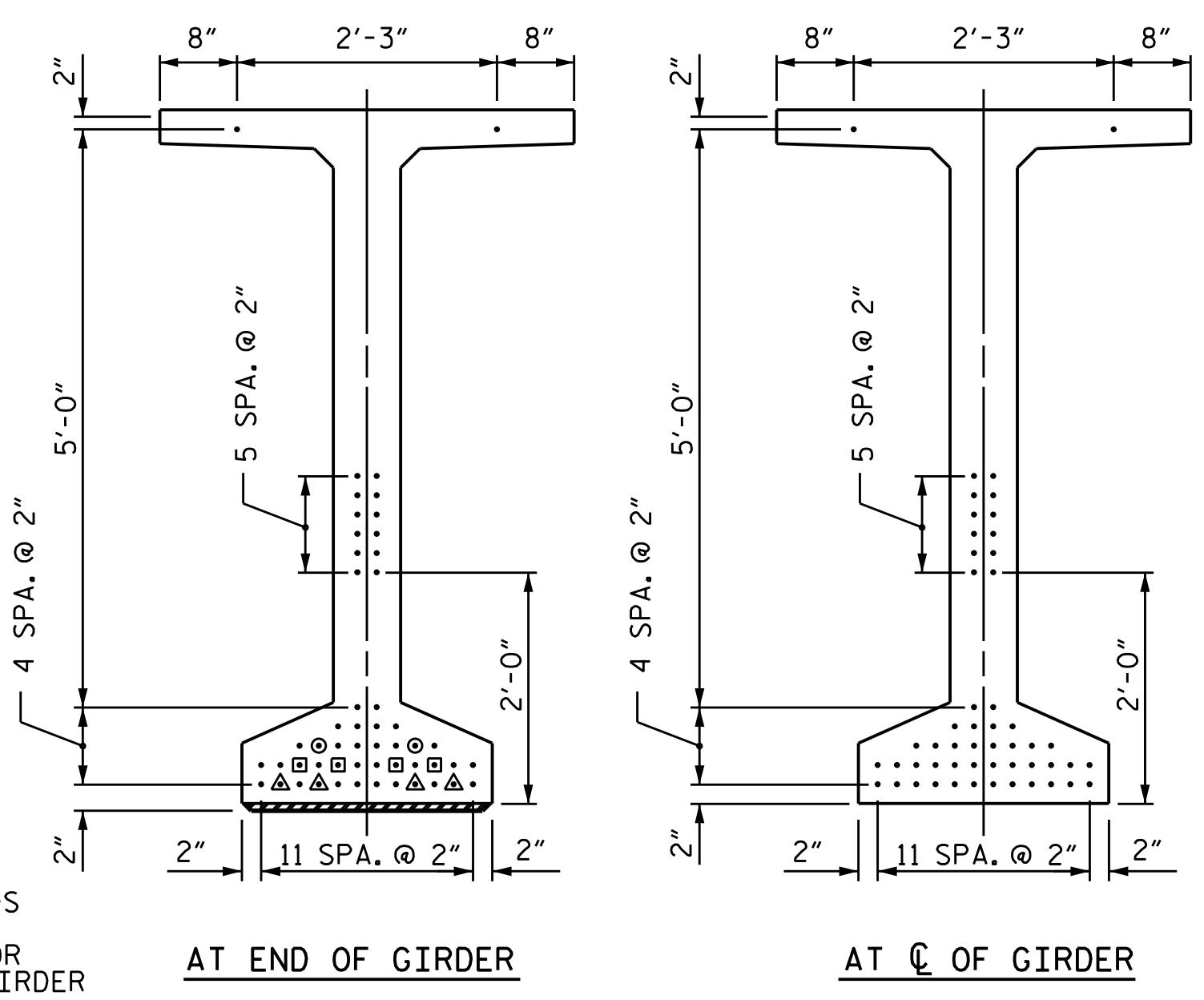


SECTION C-C

(S1, S6 AND S9 BARS NOT SHOWN)

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

- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - STRANDS DEBONDED FOR 26'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 18'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER



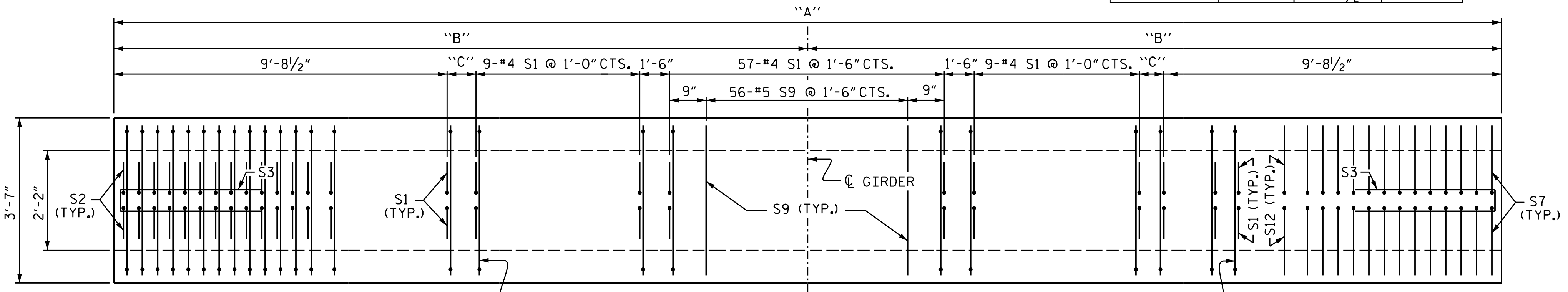
AT END OF GIRDER

AT C OF GIRDER

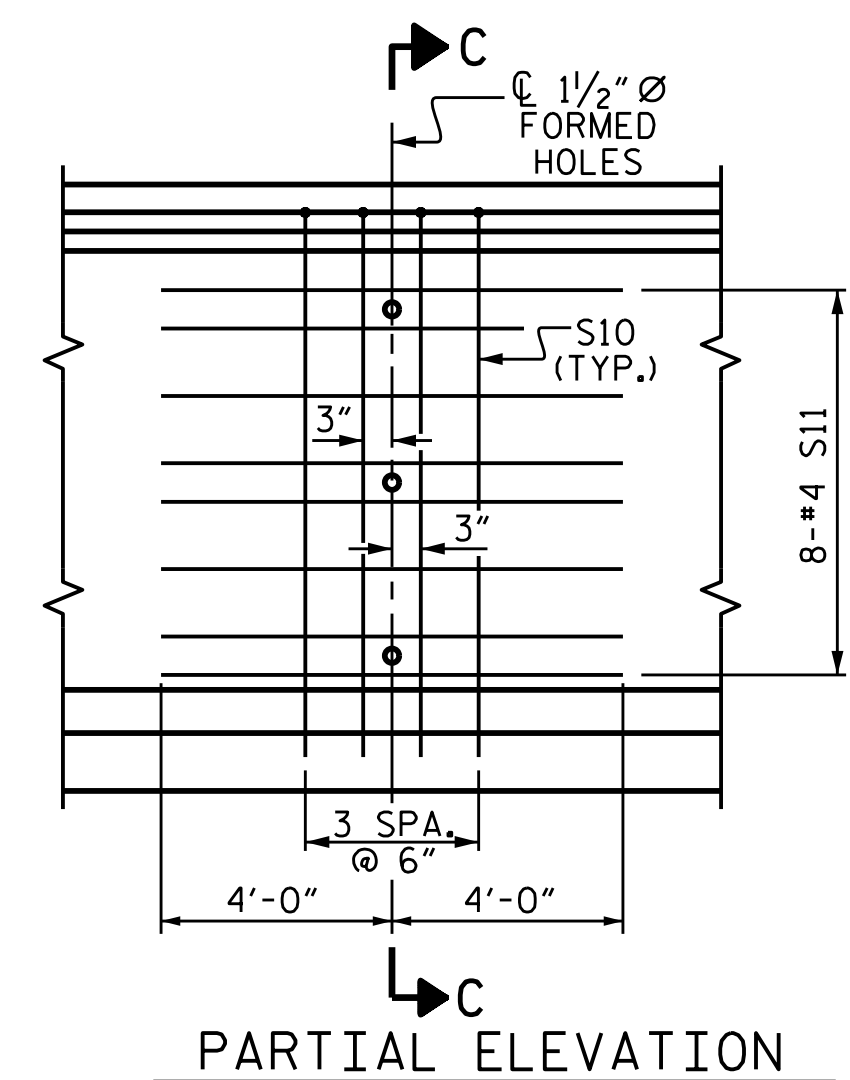
0.6" Ø LOW RELAXATION STRAND LAYOUT

TABLE OF DIMENSIONS

	"A"	"B"	"C"
GDR. A1	124'-5 3/8"	62'-2 1/16"	1'-0 3/16"
GDR. A2	124'-5 1/8"	62'-2 3/16"	1'-0 1/16"
GDR. A3 & A4	124'-5"	62'-2 1/2"	1'-0"

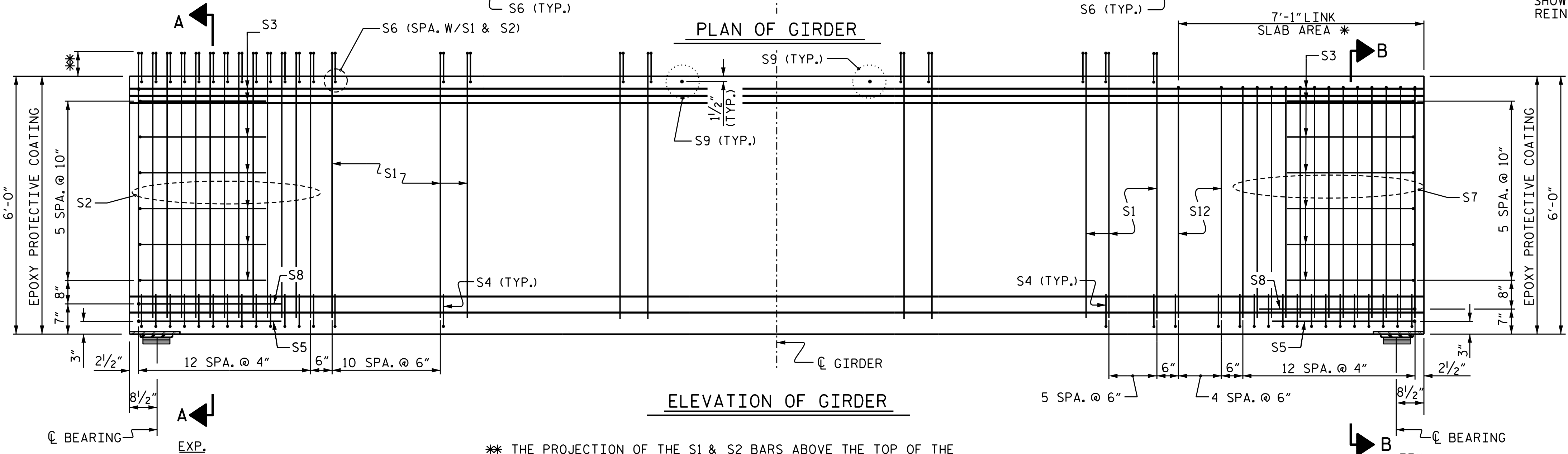


PLAN OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1-4.



ELEVATION OF GIRDER

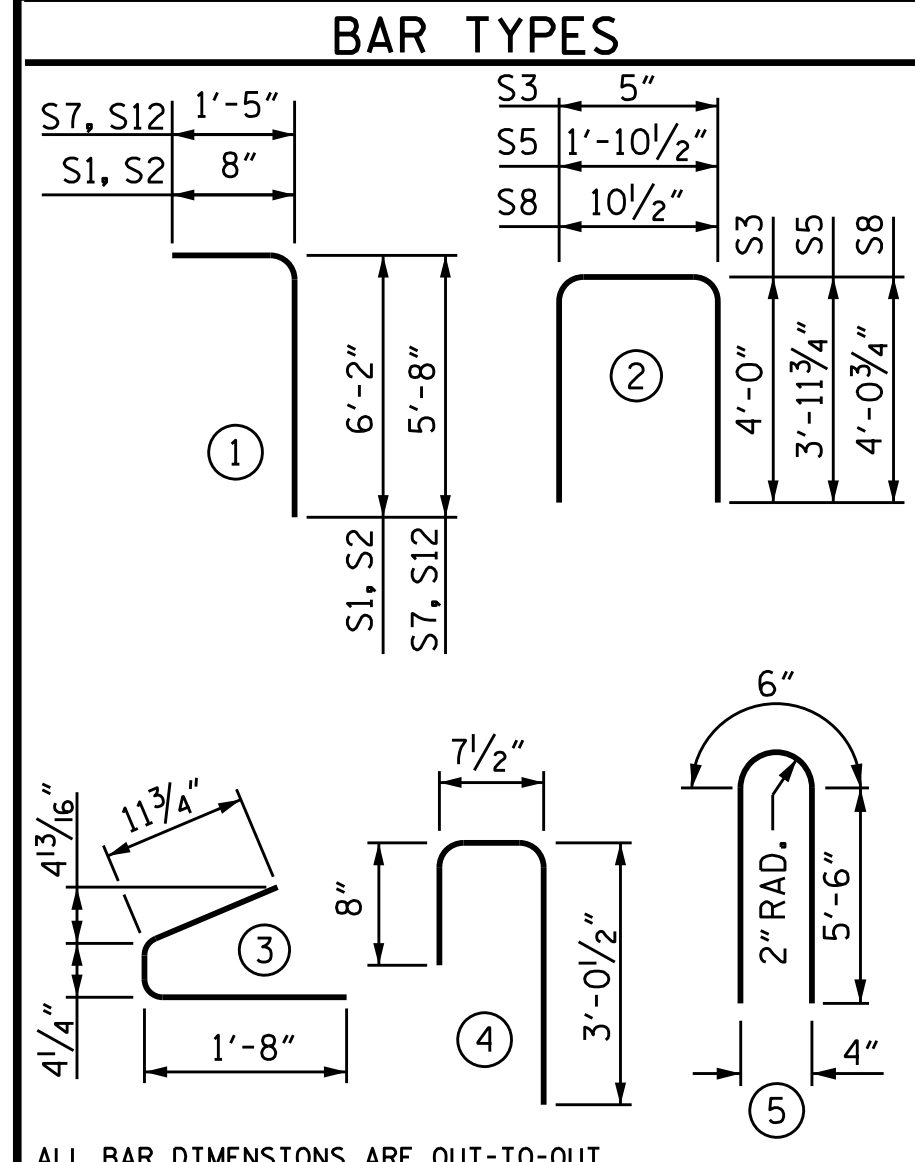
* THE PROJECTION OF THE S1 & S2 BARS ABOVE THE TOP OF THE GIRDER VARIES FROM 7" AT THE ENDS OF THE GIRDER TO 6" AT THE CENTERLINE OF THE GIRDER.

0.6" Ø L. R. GRADE 270 STRANDS

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

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	184	#4	1	6'-10"	840
S2	26	#5	1	6'-10"	185
S3	14	#4	2	8'-5"	79
S4	96	#4	3	3'-0"	192
S5	2	#5	2	9'-10"	21
S6	210	#5	4	4'-4"	949
S7	26	#5	1	7'-1"	192
S8	2	#5	2	9'-0"	19
S9	56	#5	STR	3'-3"	190
S10	8	#5	5	11'-6"	96
S11	16	#4	STR	8'-0"	86
S12	10	#4	1	7'-1"	47



QUANTITIES FOR ONE GIRDER

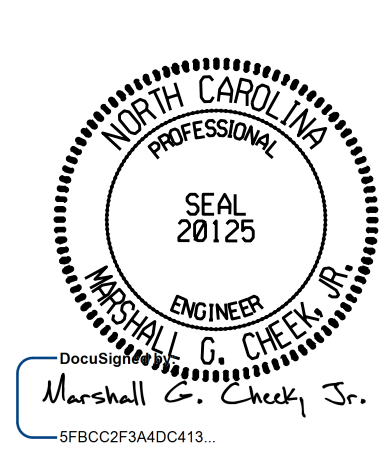
	REINFORCING STEEL		10,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.	No.
GIRDERS 1-4	2896	26.7		52

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
2	124'-5"	248'-10"
1	124'-5 3/8"	124'-5 3/8"
1	124'-5 1/8"	124'-5 1/8"

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-
 SHEET 1 OF 7

* DO NOT ROUGHEN TOP OF GIRDER IN THIS AREA



4/14/2020

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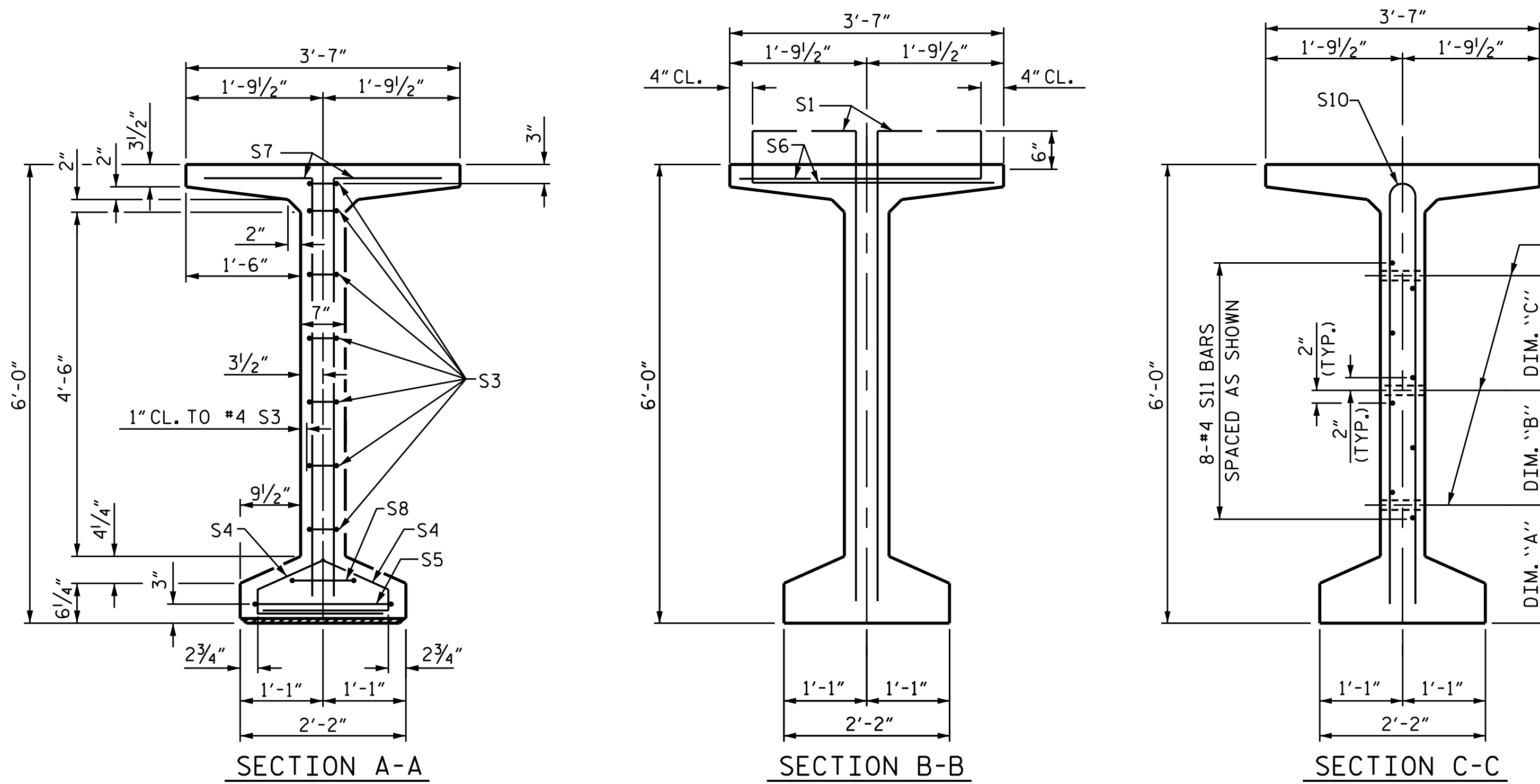
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 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

72" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD SPAN A

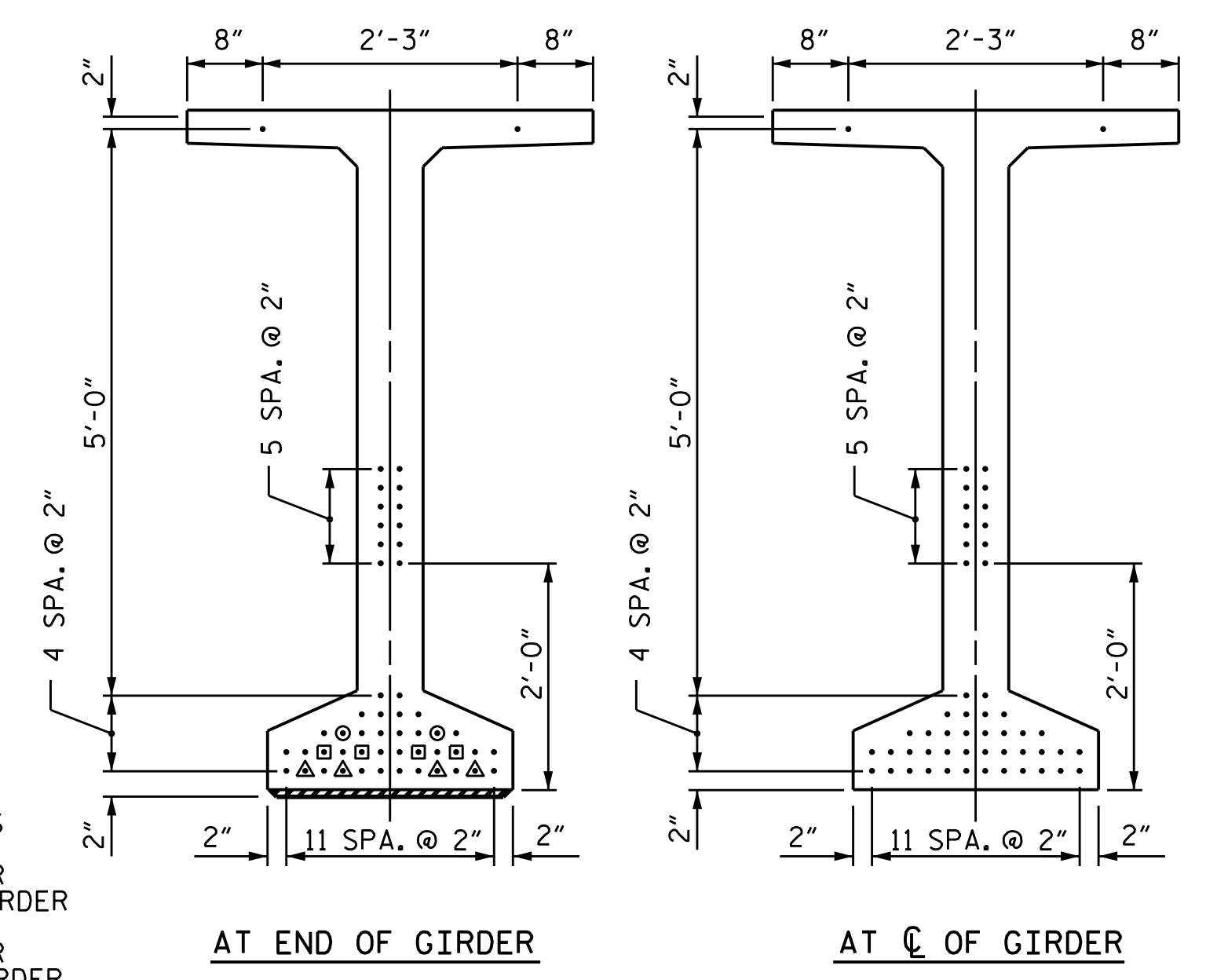
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			60
2			4			

DRAWN BY: ZCS DATE: 12/19
 CHECKED BY: MGC DATE: 1/20
 DESIGN ENGINEER OF RECORD: TBE DATE: 2/20



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

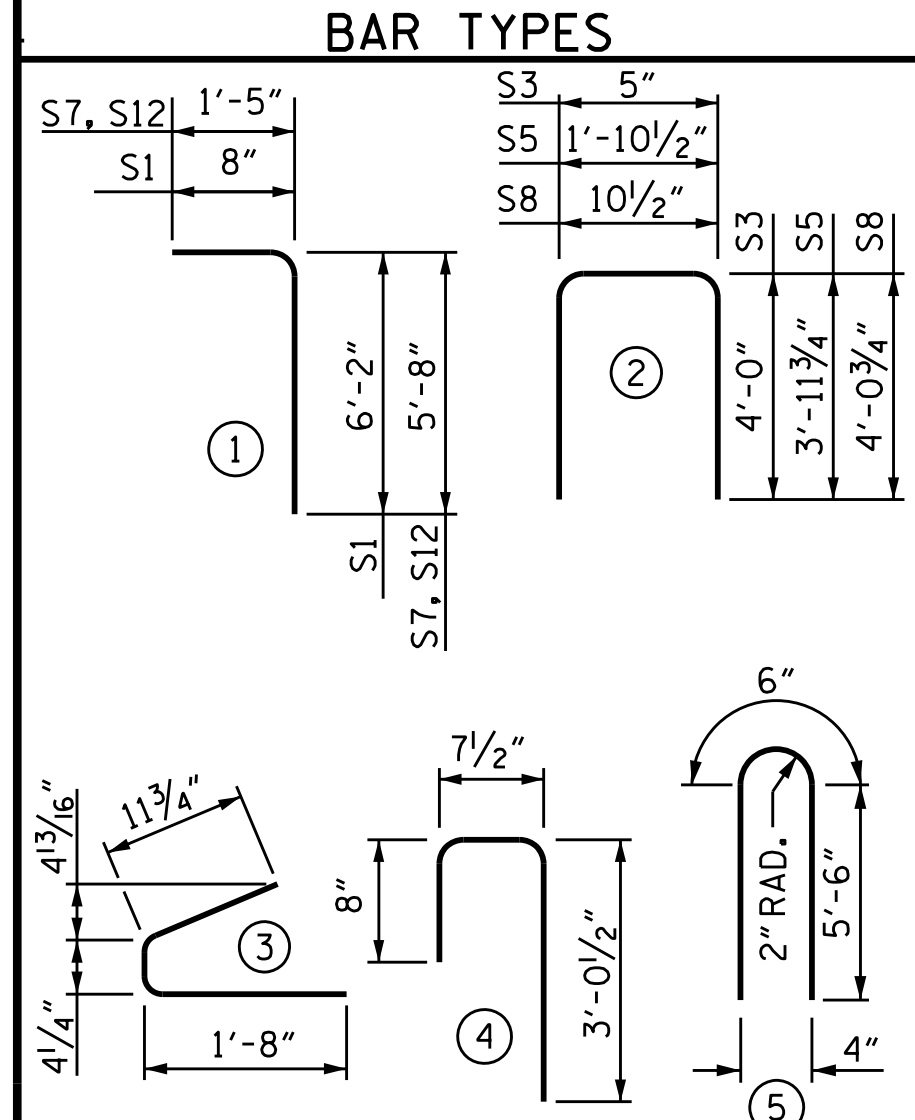
- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - ▲ STRANDS DEBONDED FOR 26'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 18'-0" FROM END OF GIRDER
 - ◎ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER



0.6" Ø LOW RELAXATION STRAND LAYOUT

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

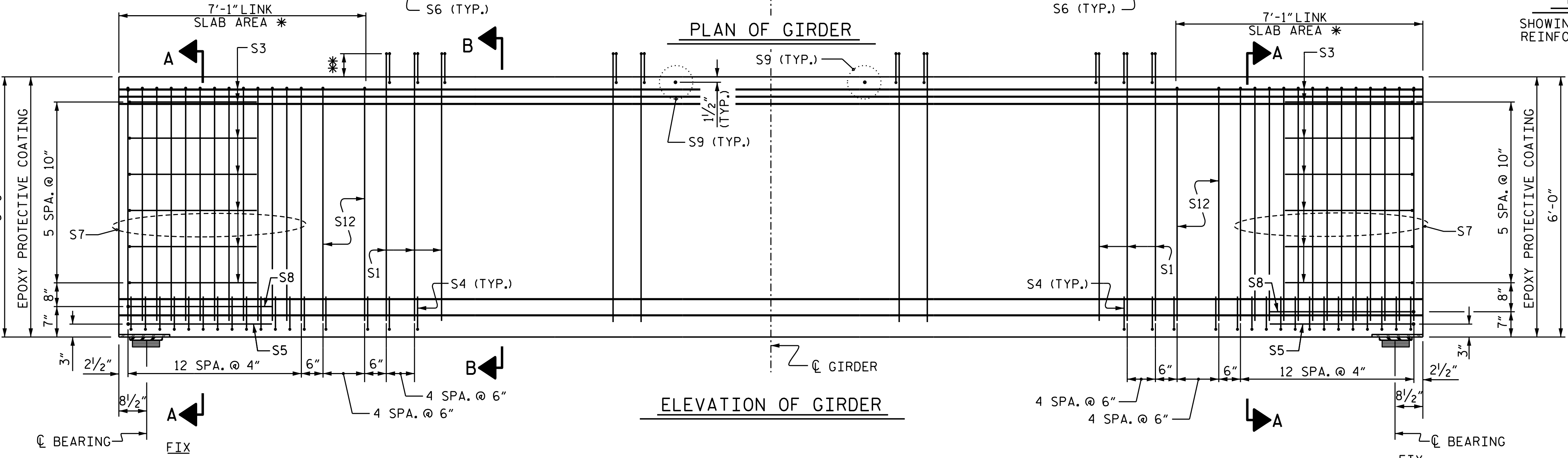
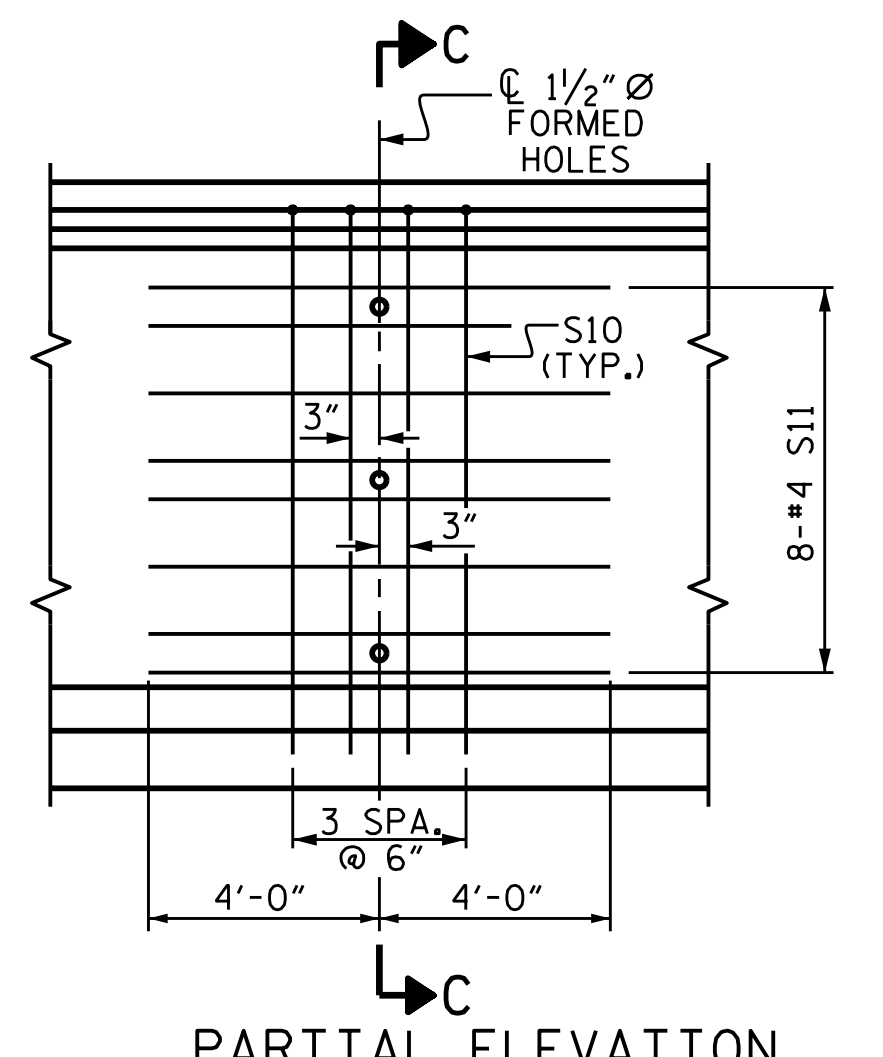
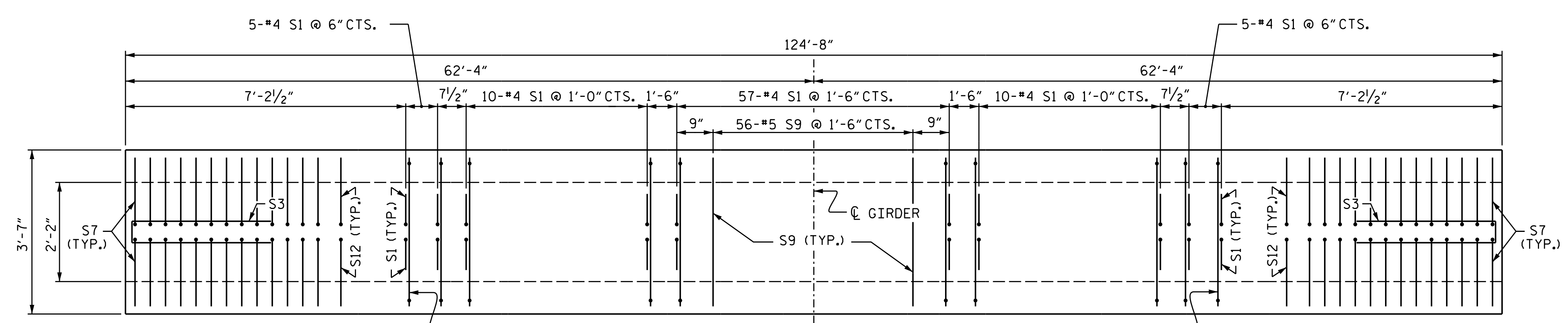
REINFORCING STEEL FOR ONE GDR						
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
S1	174	#4	1	6'-10"	794	
S3	14	#4	2	8'-5"	79	
S4	92	#4	3	3'-0"	184	
S5	2	#5	2	9'-10"	21	
S6	174	#5	4	4'-4"	786	
S7	52	#5	1	7'-1"	384	
S8	2	#5	2	9'-0"	19	
S9	56	#5	STR	3'-3"	190	
S10	8	#5	5	11'-6"	96	
S11	16	#4	STR	8'-0"	86	
S12	20	#4	1	7'-1"	95	



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	10,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
GIRDERS 1-4	2734	26.7	52

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
12	124'-8"	1496'-0"



* DO NOT ROUGHEN TOP OF GIRDER IN THIS AREA

* THE PROJECTION OF THE S1 BARS ABOVE THE TOP OF THE GIRDER VARIES FROM 7" AT THE ENDS OF THE GIRDER TO 6" AT THE CENTERLINE OF THE GIRDER.

DRAWN BY: ZCS DATE: 12/19
 CHECKED BY: MGC DATE: 1/20
 DESIGN ENGINEER OF RECORD: TBE DATE: 2/20

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

72" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD SPANS B, E & H

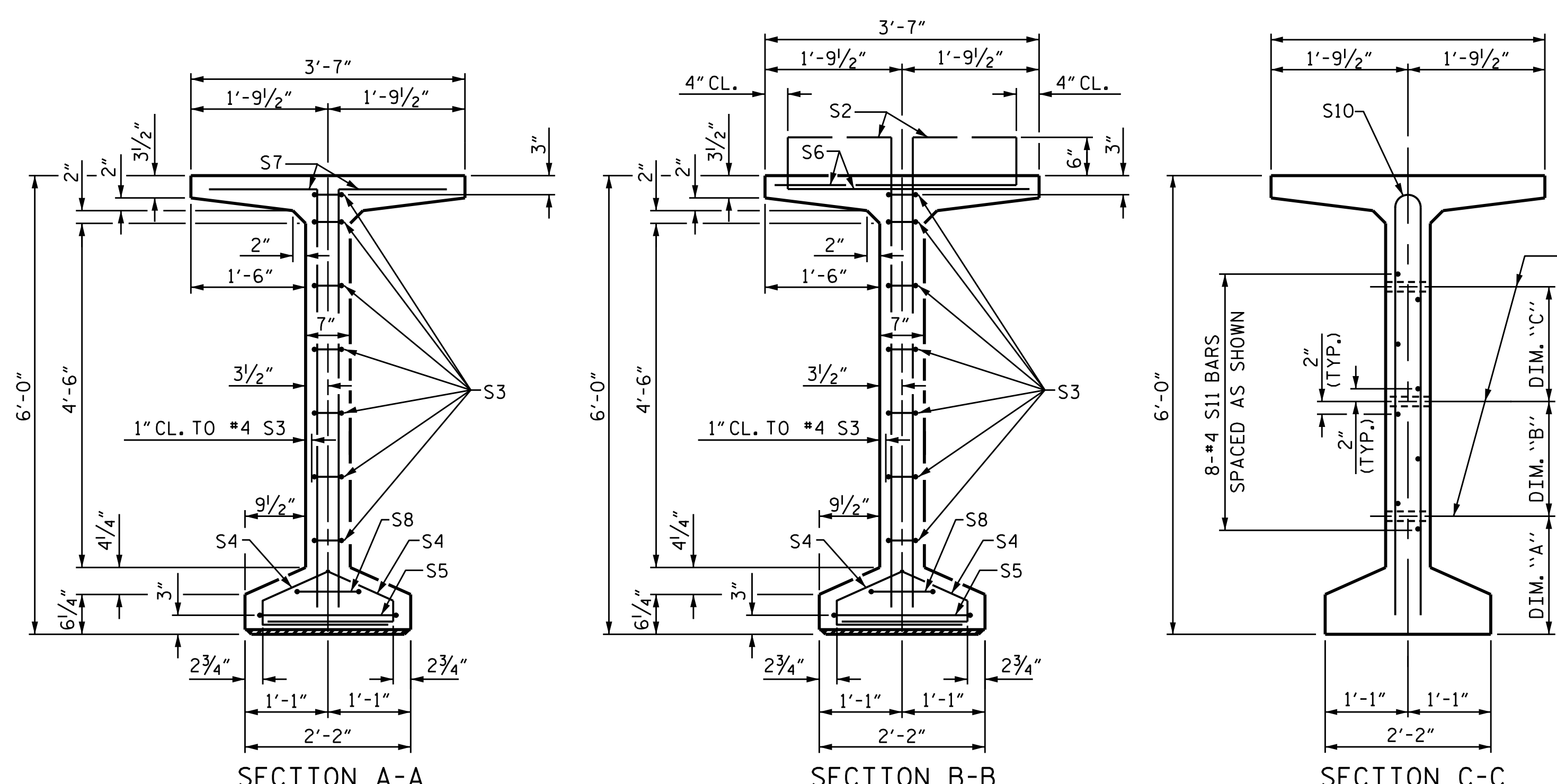
4/14/2020

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 CORP. LICENSE NO.: C-0275

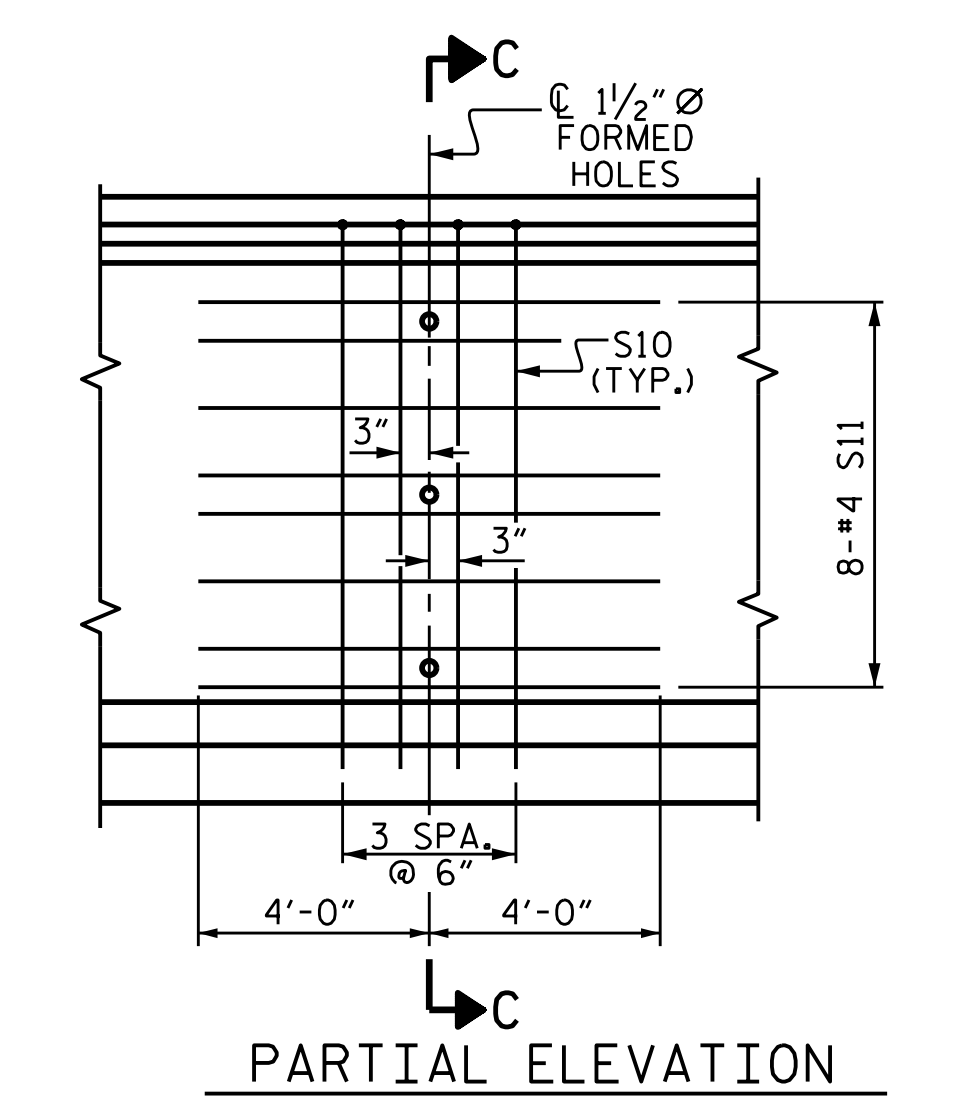
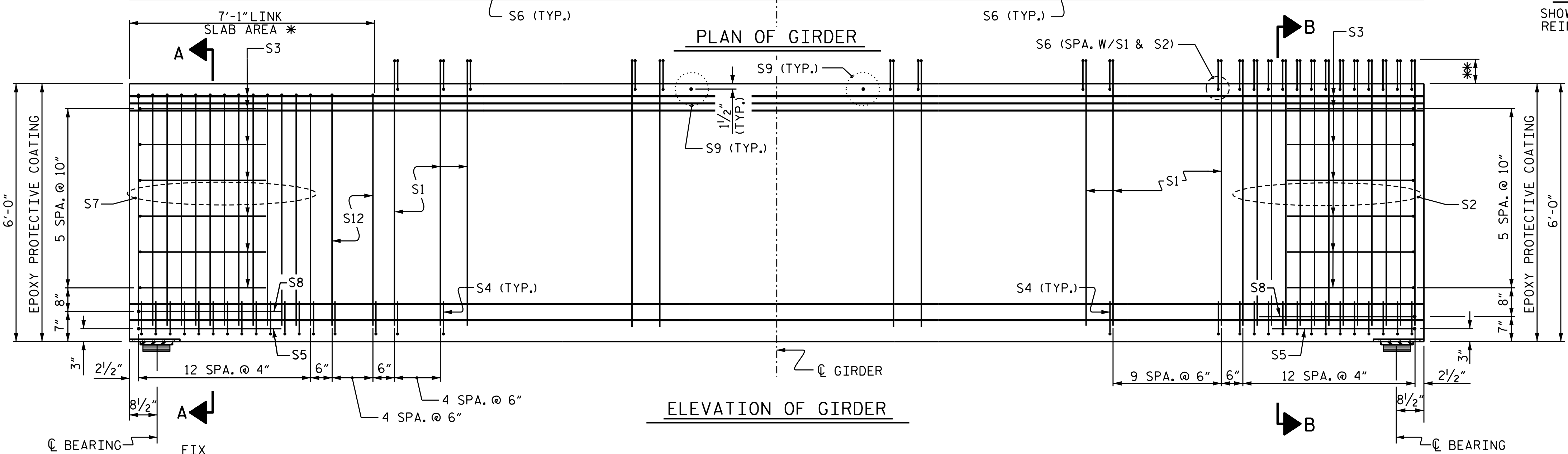
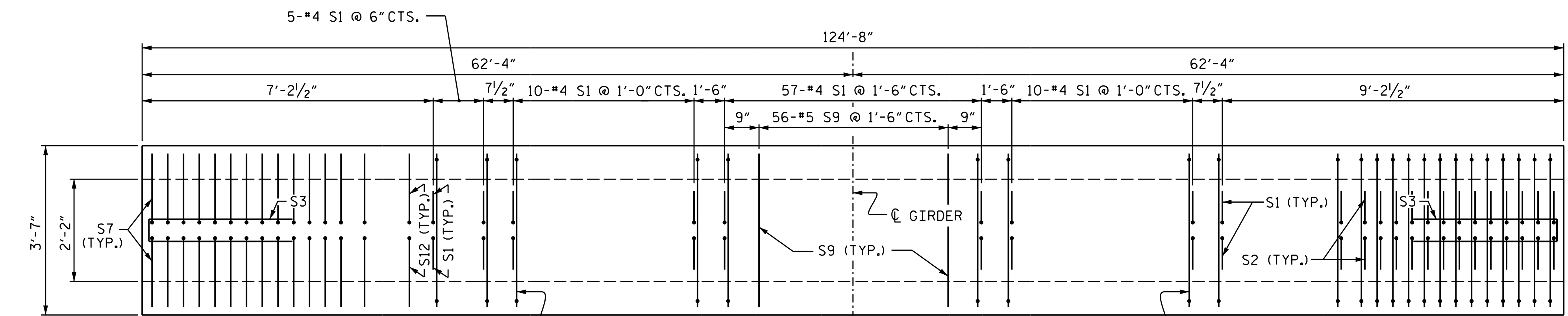
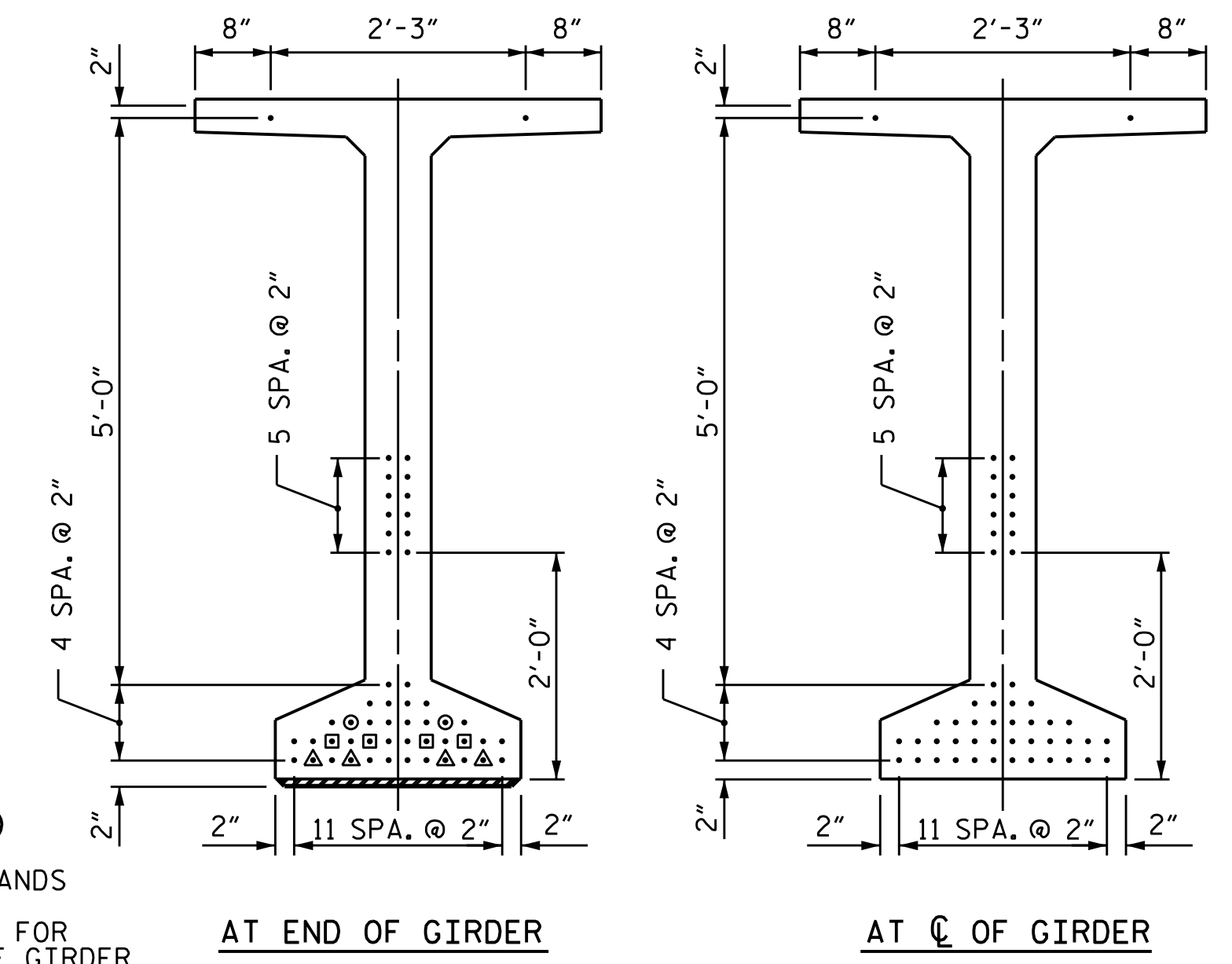
PROJECT NO. B-5825
 YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-
 SHEET 2 OF 7

REVISIONS						SHEET NO. S-21
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 60
2			4			



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

- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - STRANDS DEBONDED FOR 26'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 18'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

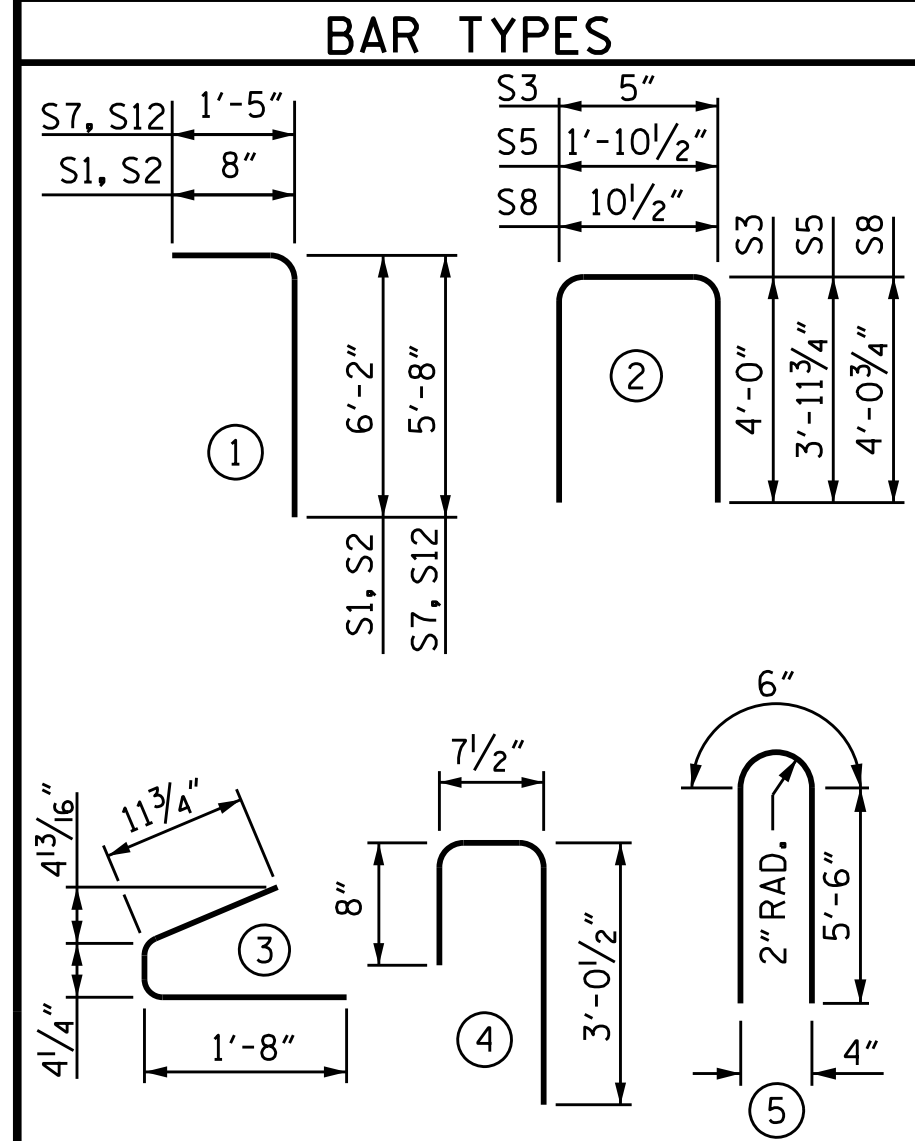


0.6" Ø L. R. GRADE 270 STRANDS

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

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	184	#4	1	6'-10"	840
S2	26	#5	1	6'-10"	185
S3	14	#4	2	8'-5"	79
S4	92	#4	3	3'-0"	184
S5	2	#5	2	9'-10"	21
S6	210	#5	4	4'-4"	949
S7	26	#5	1	7'-1"	192
S8	2	#5	2	9'-0"	19
S9	56	#5	STR	3'-3"	190
S10	8	#5	5	11'-6"	96
S11	16	#4	STR	8'-0"	86
S12	10	#4	1	7'-1"	47



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL		10,000 PSI CONCRETE		0.6" Ø L.R. STRANDS	
	LB.	C.Y.			No.	
GIRDERS 1-4	2888	26.7			52	

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
8	124'-8"	997'-4"

* DO NOT ROUGHEN TOP OF GIRDER IN THIS AREA

PROJECT NO. B-5825
 YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-
 SHEET 3 OF 7

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
 706 HILLSBOROUGH STREET
 SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

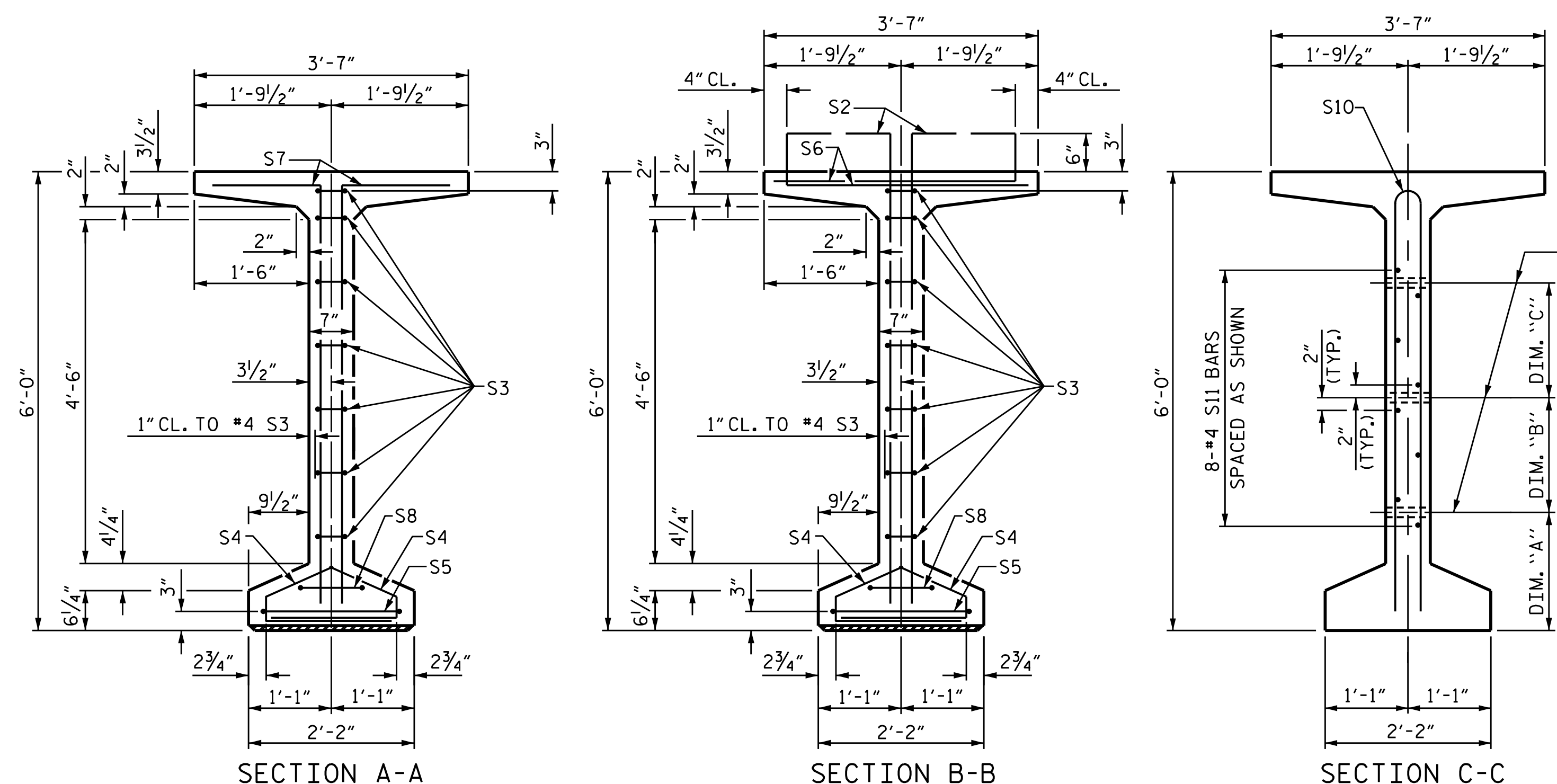
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

72" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD SPANS C & F

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-22
2			4			60

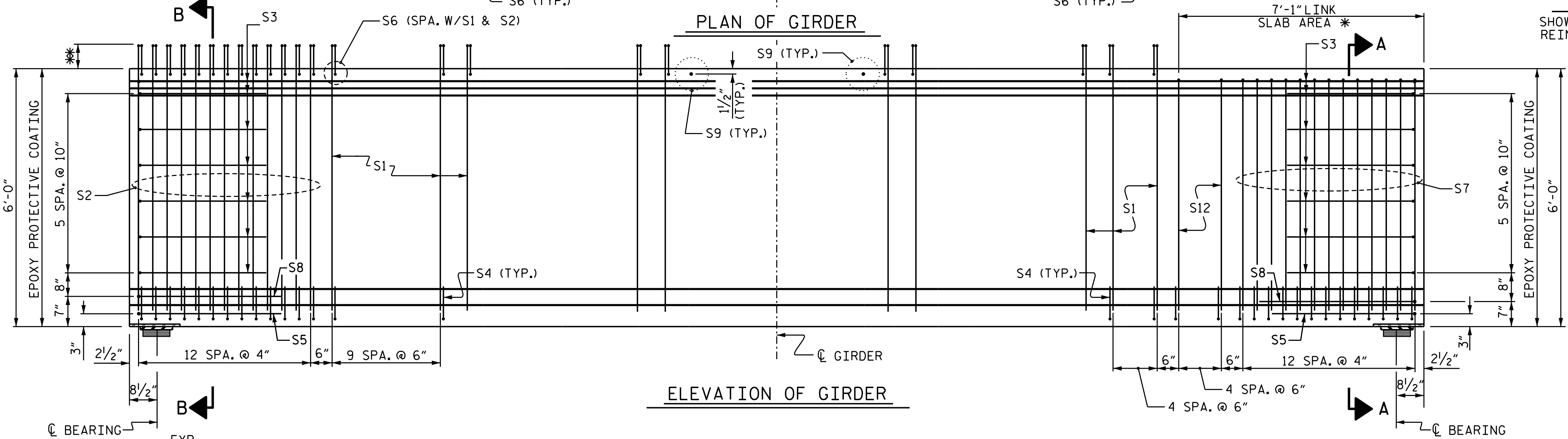
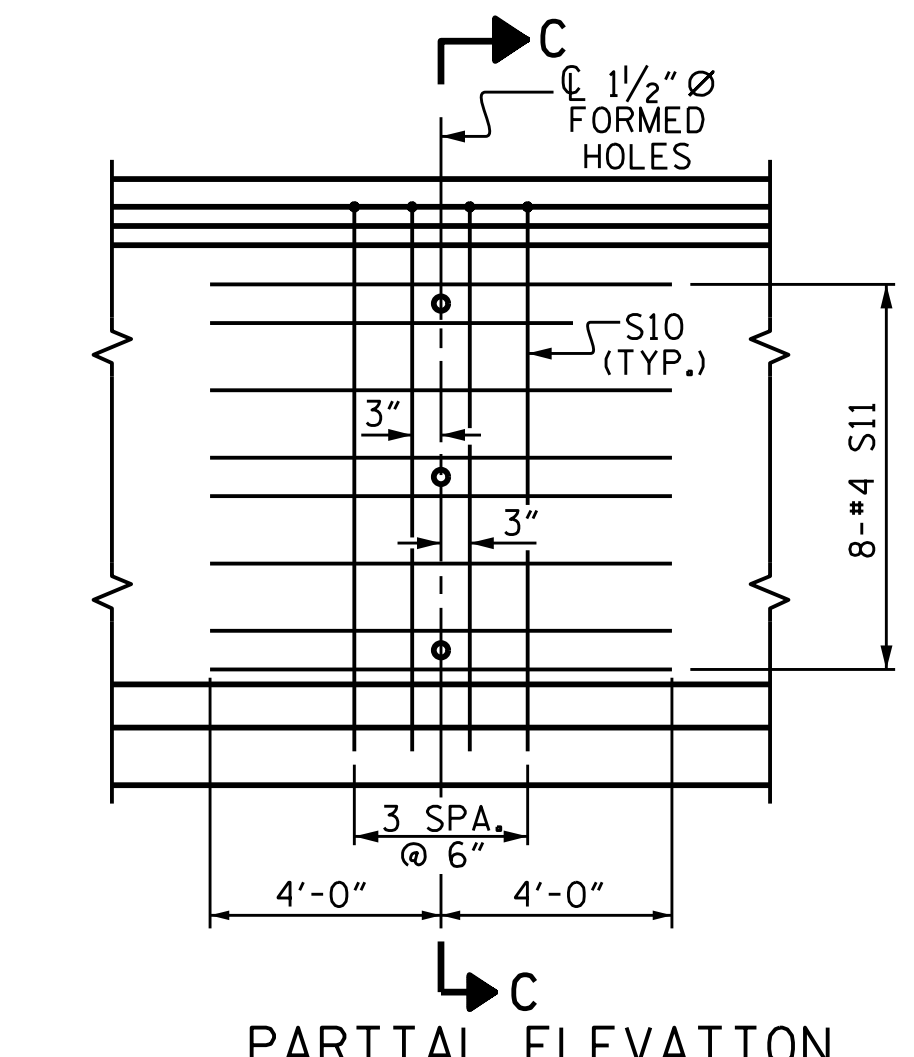
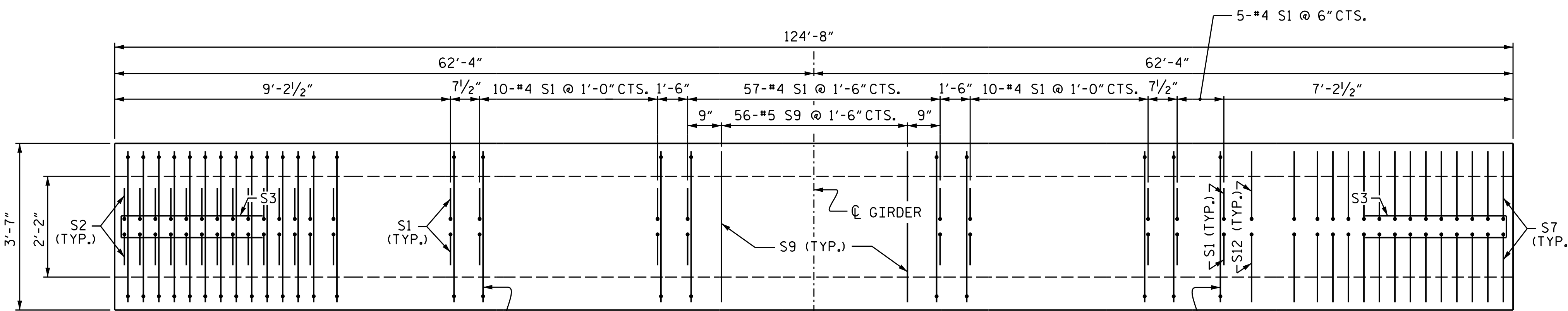
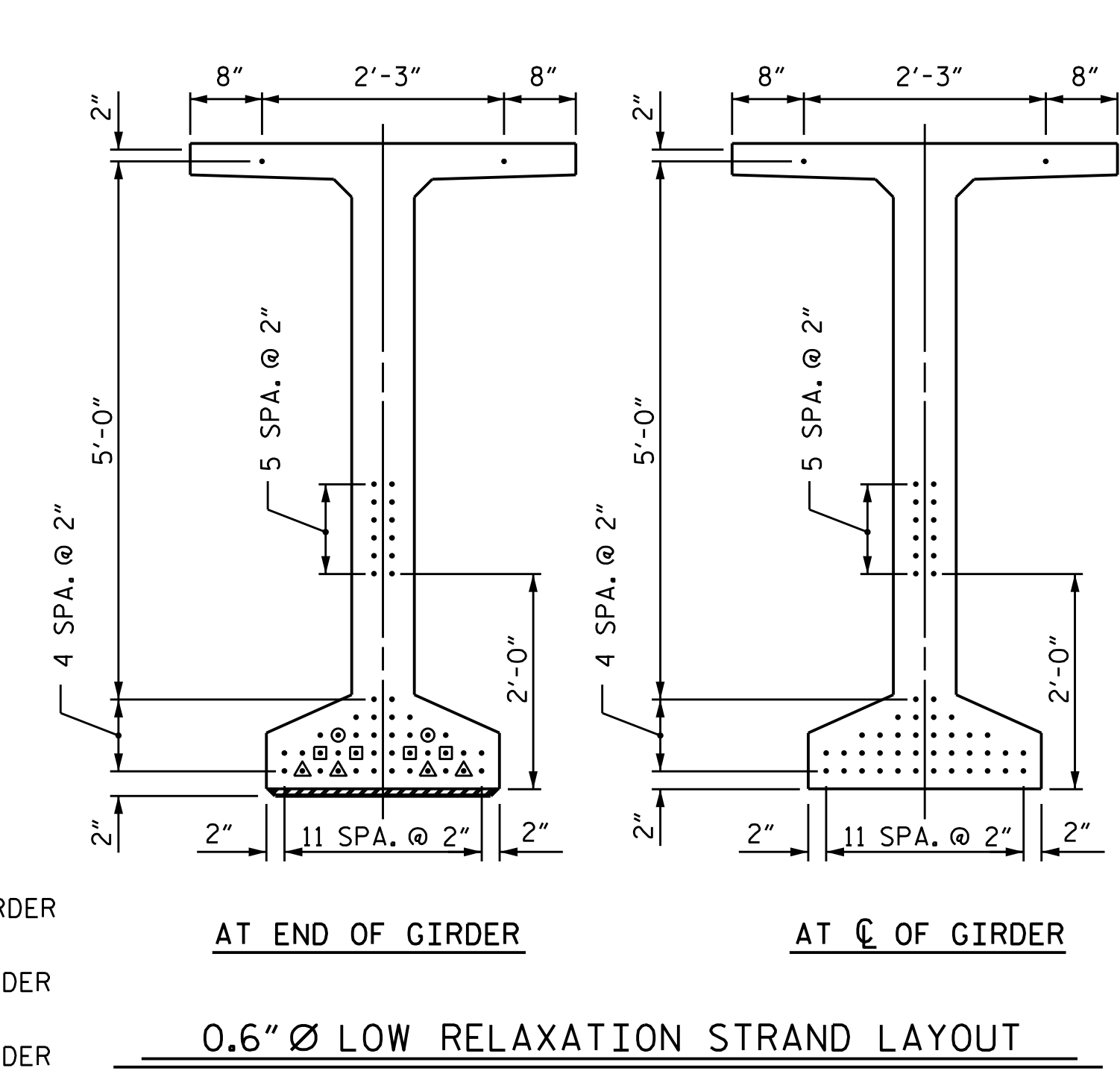
DRAWN BY: ZCS DATE: 12/19
 CHECKED BY: MGC DATE: 1/20
 DESIGN ENGINEER OF RECORD: TBE DATE: 2/20

* THE PROJECTION OF THE S1 & S2 BARS ABOVE THE TOP OF THE GIRDER VARIES FROM 7" AT THE ENDS OF THE GIRDER TO 6" AT THE CENTERLINE OF THE GIRDER.



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

- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - STRANDS DEBONDED FOR 26'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 18'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

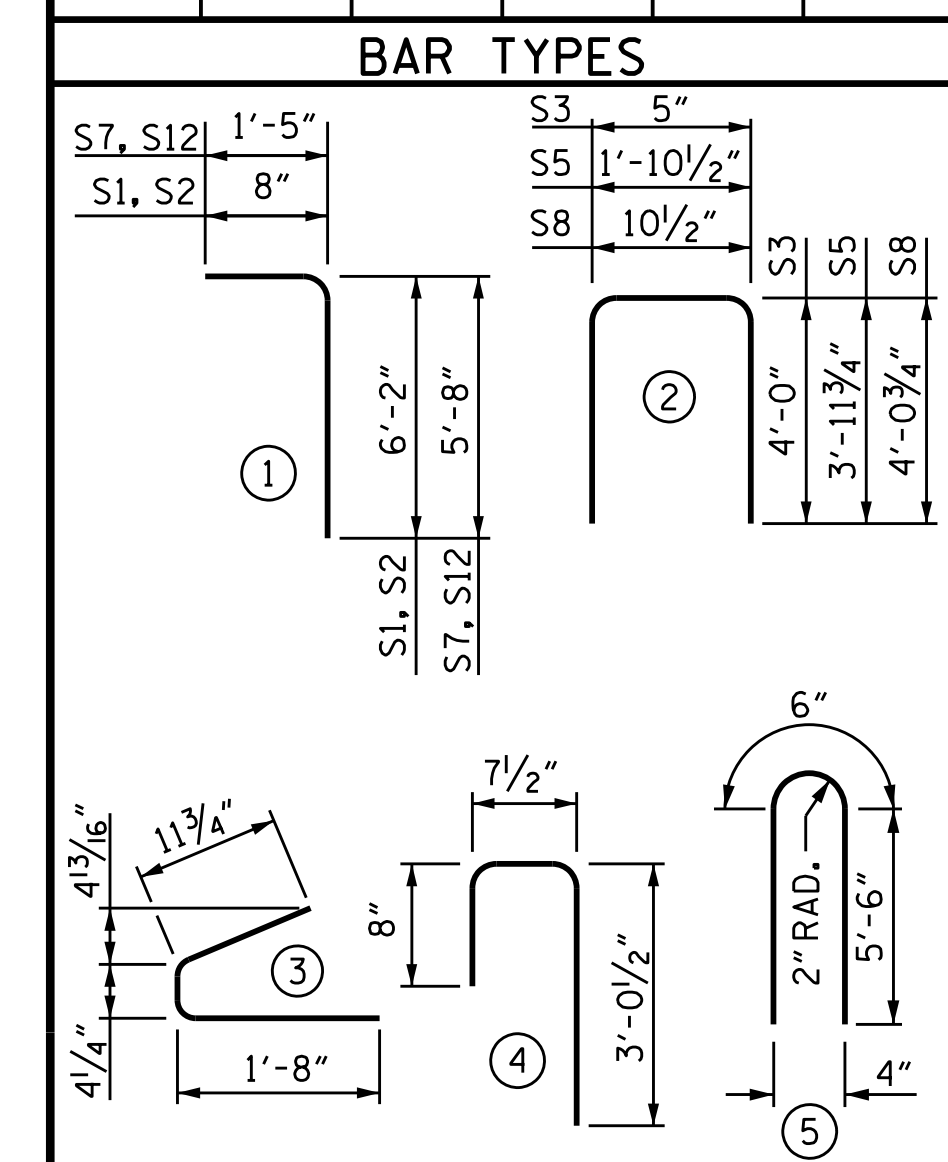


0.6" Ø L. R. GRADE 270 STRANDS

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

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	184	#4	1	6'-10"	840
S2	26	#5	1	6'-10"	185
S3	14	#4	2	8'-5"	79
S4	92	#4	3	3'-0"	184
S5	2	#5	2	9'-10"	21
S6	210	#5	4	4'-4"	949
S7	26	#5	1	7'-1"	192
S8	2	#5	2	9'-0"	19
S9	56	#5	STR	3'-3"	190
S10	8	#5	5	11'-6"	96
S11	16	#4	STR	8'-0"	86
S12	10	#4	1	7'-1"	47



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL		10,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.	No.
GIRDERS 1-4	2888	26.7		52

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
8	124'-8"	997'-4"

* DO NOT ROUGHEN TOP OF GIRDER IN THIS AREA

PROJECT NO. B-5825
 YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-
 SHEET 4 OF 7

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

72" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD SPANS D & G

2/19/2020
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

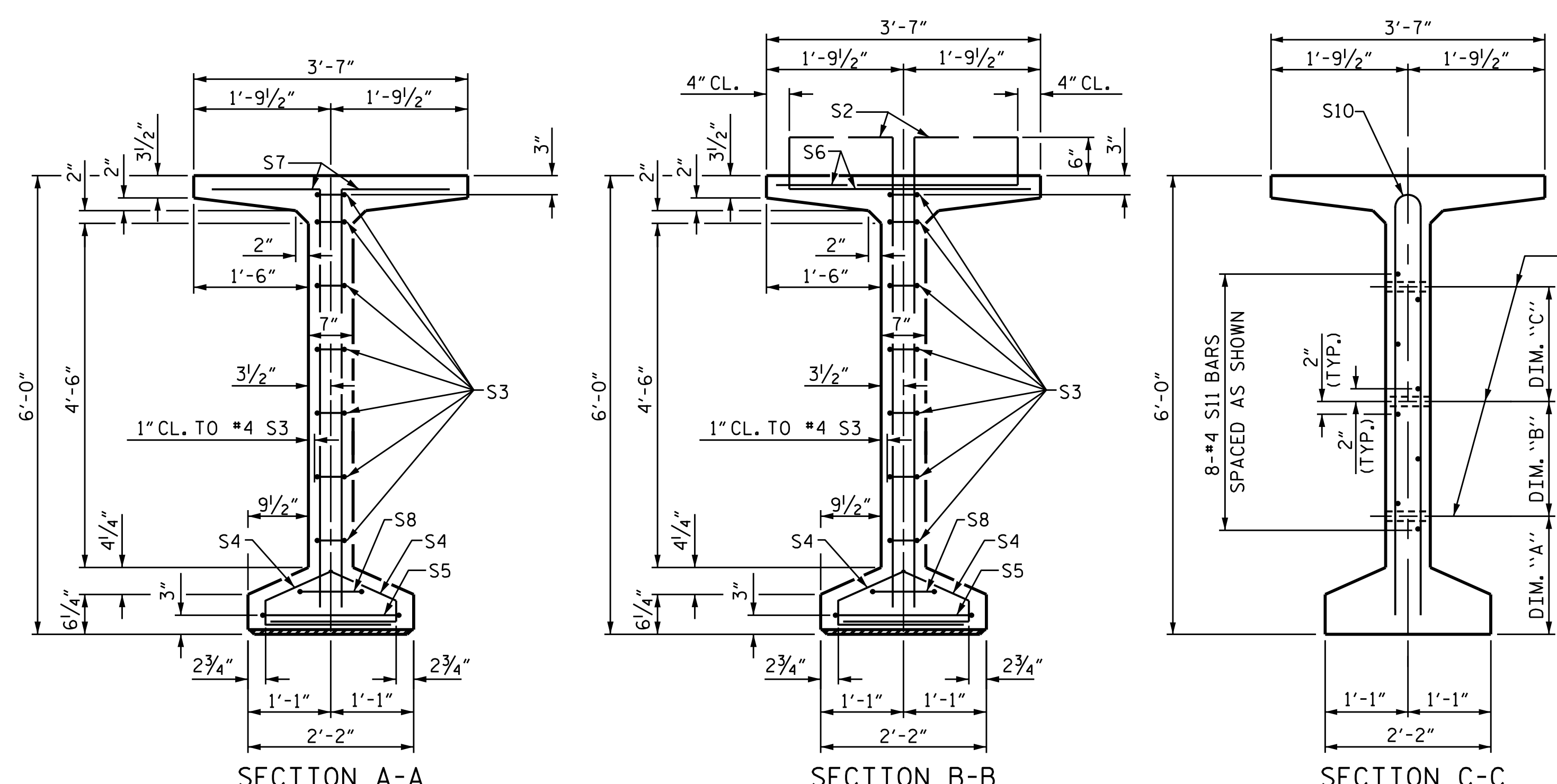
REVISIONS

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

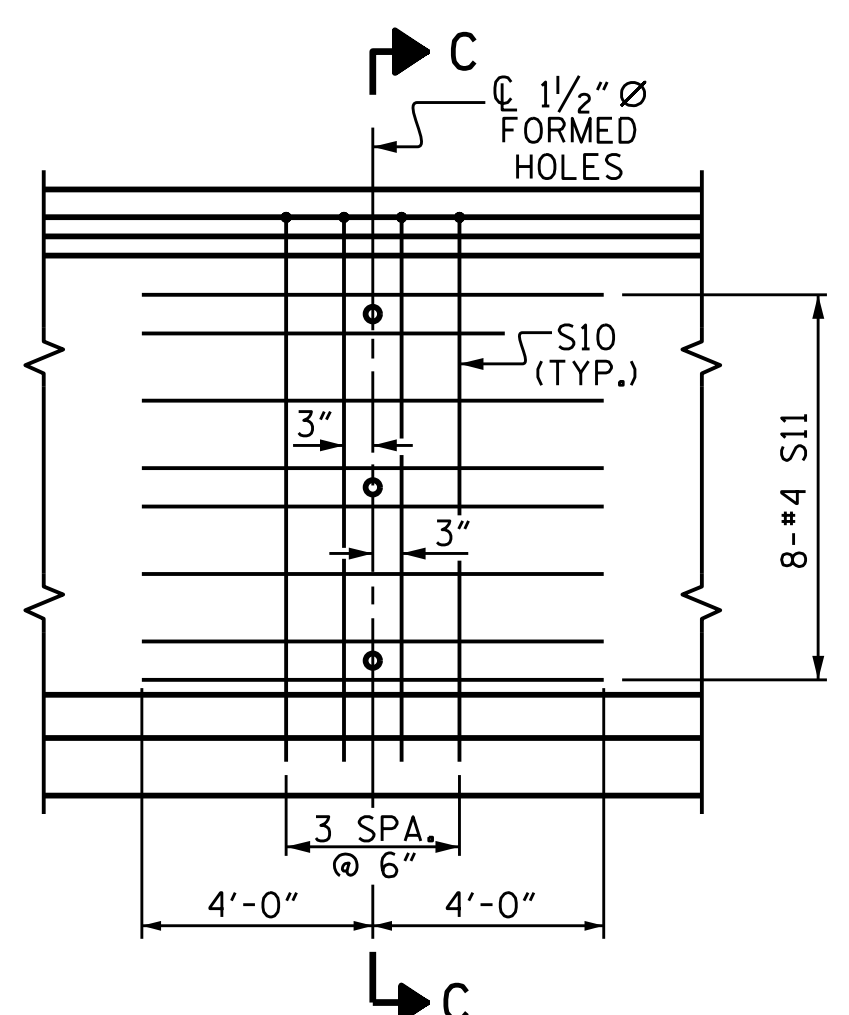
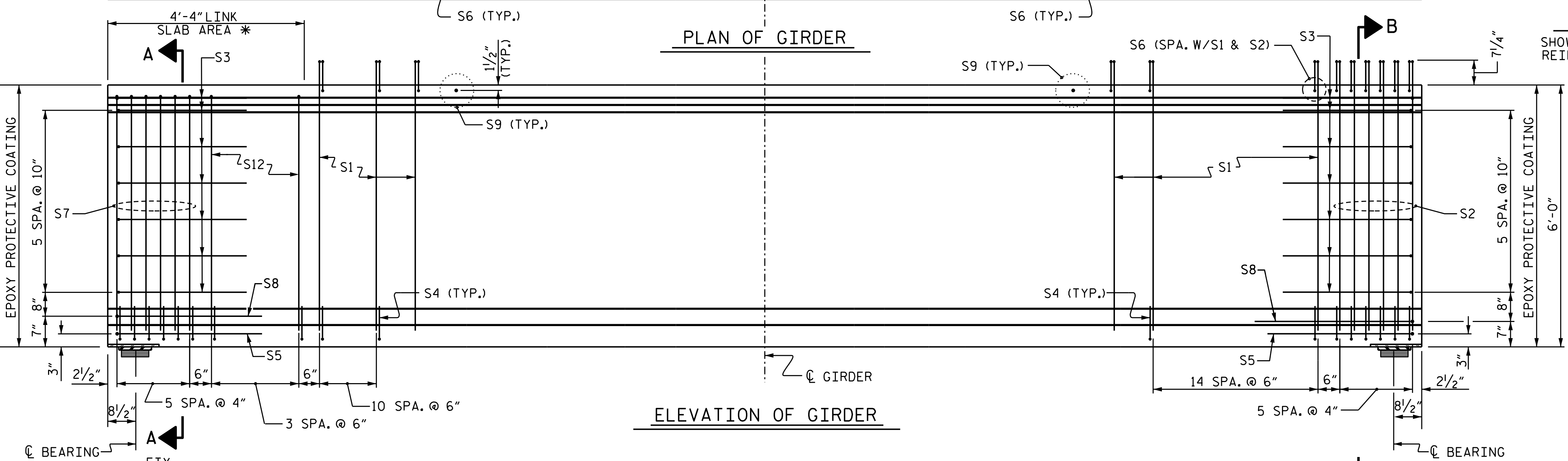
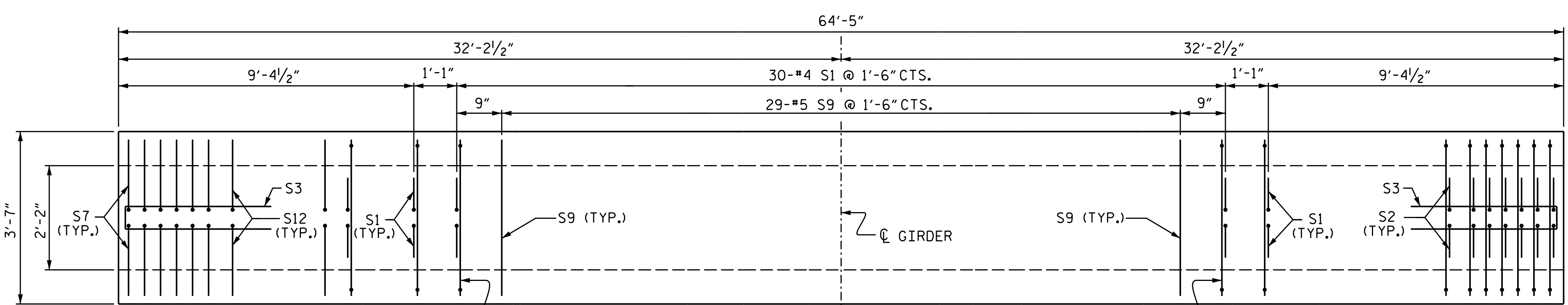
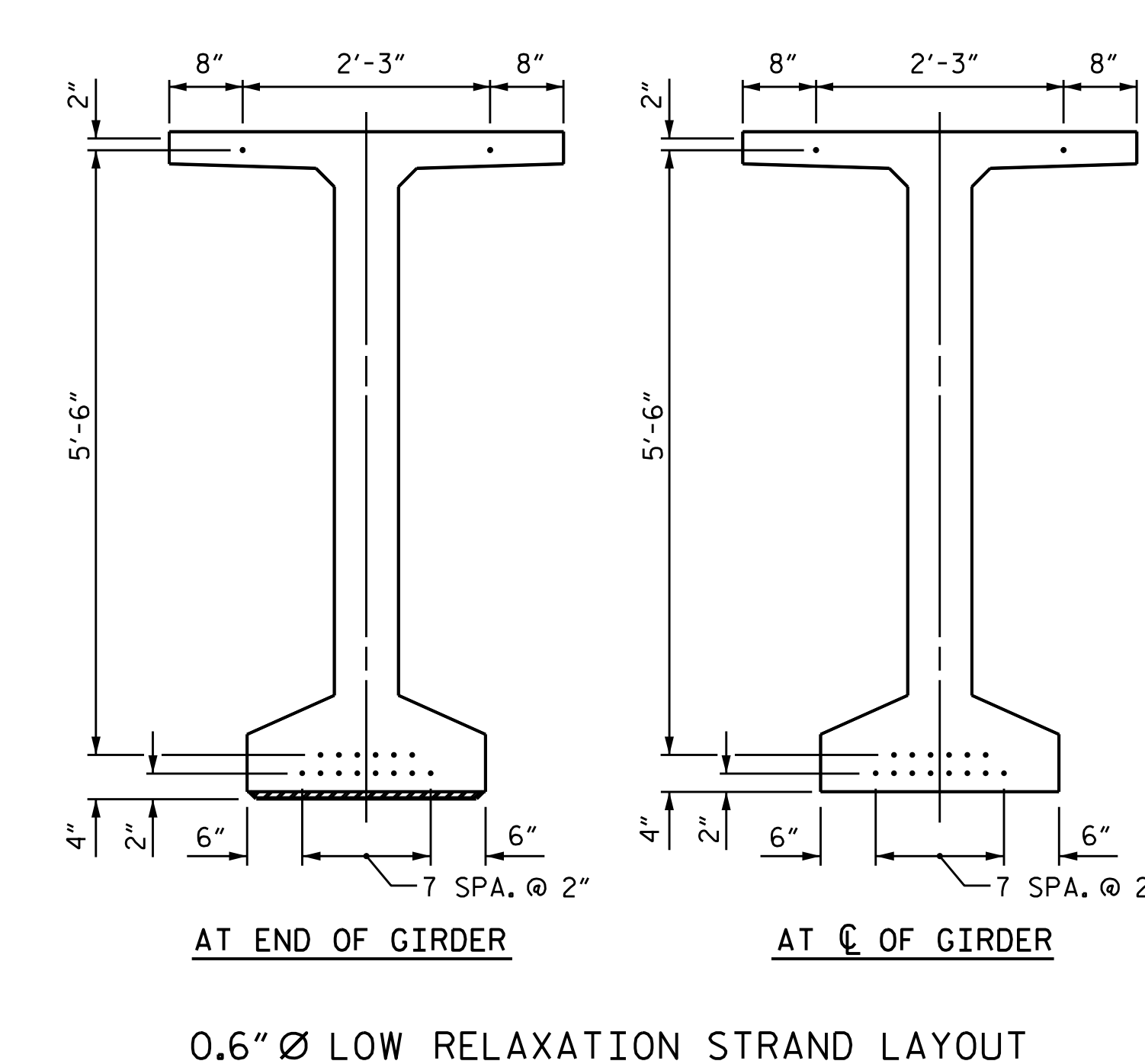
SHEET NO. S-23
 TOTAL SHEETS 60

DRAWN BY: ZCS DATE: 12/19
 CHECKED BY: MGC DATE: 1/20
 DESIGN ENGINEER OF RECORD: TBE DATE: 2/20

* THE PROJECTION OF THE S1 & S2 BARS ABOVE THE TOP OF THE GIRDER VARIES FROM 7" AT THE ENDS OF THE GIRDER TO 6" AT THE CENTERLINE OF THE GIRDER.

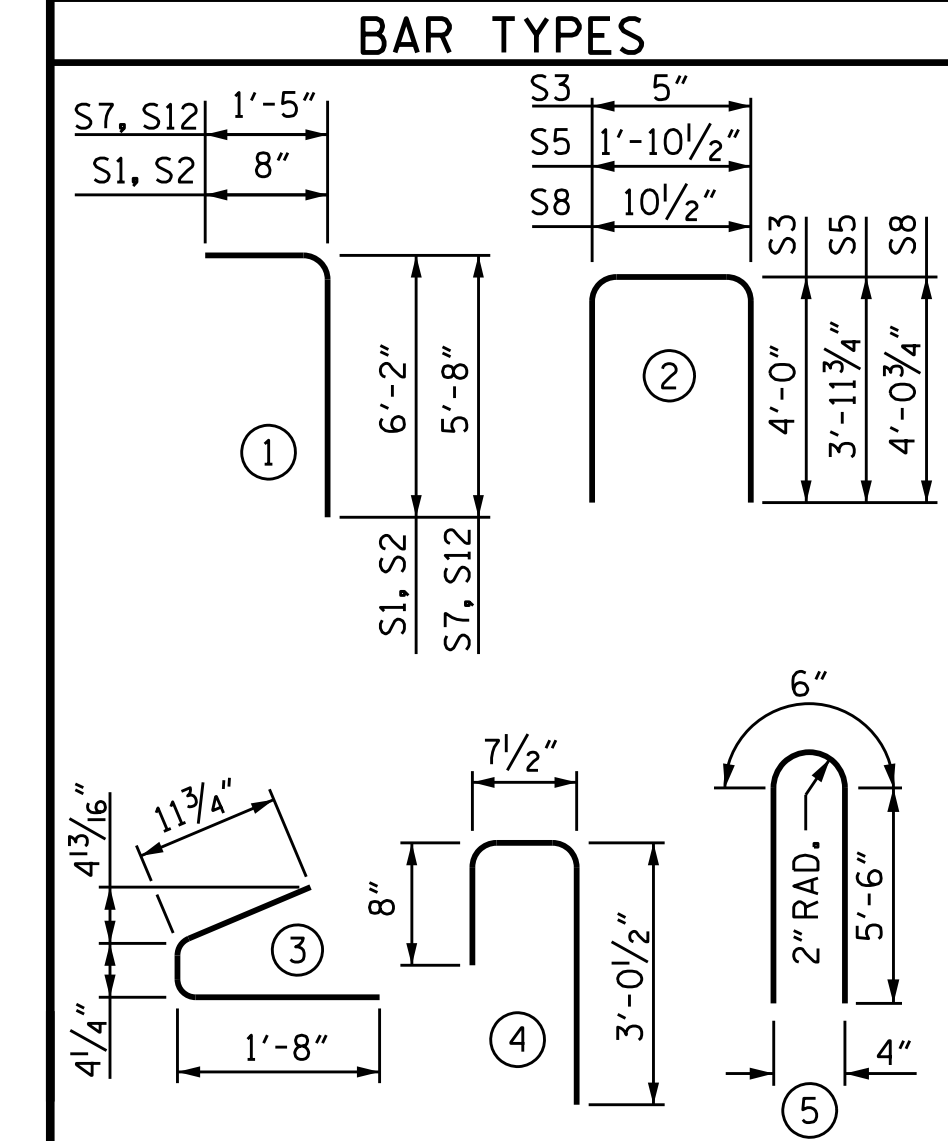


1/2" Ø FORMED HOLE. SEE ELEVATION FOR LOCATION. FOR DIM. "A", "B" & "C" SEE "INTERMEDIATE STEEL DIAPHRAGM" SHEET.)



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

REINFORCING STEEL FOR ONE GDR						
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
S1	112	#4	1	6'-10"	511	
S2	12	#5	1	6'-10"	86	
S3	14	#4	2	8'-5"	79	
S4	84	#4	3	3'-0"	168	
S5	2	#5	2	9'-10"	21	
S6	124	#5	4	4'-4"	560	
S7	12	#5	1	7'-1"	89	
S8	2	#5	2	9'-0"	19	
S9	29	#5	STR	3'-3"	98	
S10	4	#5	5	11'-6"	48	
S11	8	#4	STR	8'-0"	43	
S12	8	#4	1	7'-1"	38	

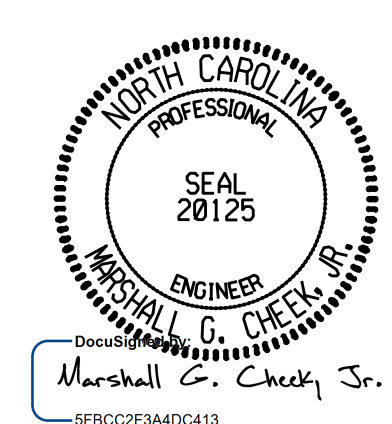


QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	7000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
GIRDERS 1-4	1760	13.8	16

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
4	64'-5"	257'-8"

* DO NOT ROUGHEN TOP OF GIRDER IN THIS AREA

PROJECT NO. B-5825
 YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-
 SHEET 5 OF 7



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
 706 HILLSBOROUGH STREET
 SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS 60
2			4			

DRAWN BY: ZCS DATE: 12/19
 CHECKED BY: MGC DATE: 1/20
 DESIGN ENGINEER OF RECORD: TBE DATE: 2/20

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" Ø LOW RELAXATION STRANDS	SPAN A GIRDER 1																					
	CL BRG.	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	CL BRG.	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.050	0.099	0.144	0.187	0.224	0.255	0.281	0.299	0.310	0.314	0.310	0.299	0.281	0.255	0.224	0.187	0.144	0.099	0.050	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.033	0.067	0.098	0.130	0.155	0.180	0.196	0.211	0.217	0.222	0.217	0.211	0.196	0.180	0.155	0.130	0.098	0.067	0.033	0.000
FINAL CAMBER	↑	0	3/16"	3/8"	9/16"	1 1/16"	1 3/16"	1 5/16"	1"	1 1/16"	1 1/8"	1 1/8"	1 1/8"	1 1/16"	1"	1 5/16"	1 3/16"	1 1/16"	9/16"	3/8"	3/16"	0

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" Ø LOW RELAXATION STRANDS	SPAN A GIRDER 2																					
	CL BRG.	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	CL BRG.	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.050	0.099	0.144	0.187	0.224	0.255	0.281	0.299	0.310	0.314	0.310	0.299	0.281	0.255	0.224	0.187	0.144	0.099	0.050	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.033	0.067	0.099	0.131	0.156	0.181	0.196	0.212	0.218	0.223	0.218	0.212	0.196	0.180	0.155	0.131	0.099	0.067	0.033	0.000
FINAL CAMBER	↑	0	3/16"	3/8"	9/16"	1 1/16"	1 3/16"	7/8"	1"	1 1/16"	1 1/8"	1 1/8"	1 1/8"	1 1/16"	1"	7/8"	1 3/16"	1 1/16"	9/16"	3/8"	3/16"	0

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" Ø LOW RELAXATION STRANDS	SPAN A GIRDER 3																					
	CL BRG.	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	CL BRG.	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.050	0.099	0.144	0.187	0.224	0.255	0.281	0.299	0.310	0.314	0.310	0.299	0.281	0.255	0.224	0.187	0.144	0.099	0.050	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.032	0.065	0.096	0.127	0.151	0.175	0.191	0.206	0.211	0.215	0.211	0.206	0.191	0.175	0.151	0.127	0.096	0.065	0.032	0.000
FINAL CAMBER	↑	0	3/16"	3/8"	9/16"	1 1/16"	7/8"	1 5/16"	1 1/16"	1 1/8"	1 3/16"	1 3/16"	1 3/16"	1 1/8"	1 1/16"	1 5/16"	7/8"	1 1/16"	9/16"	3/8"	3/16"	0

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" Ø LOW RELAXATION STRANDS	SPAN A GIRDER 4																					
	CL BRG.	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	CL BRG.	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.050	0.099	0.144	0.187	0.224	0.255	0.281	0.299	0.310	0.314	0.310	0.299	0.281	0.255	0.224	0.187	0.144	0.099	0.050	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.032	0.065	0.096	0.126	0.151	0.175	0.190	0.205	0.211	0.216	0.211	0.205	0.190	0.175	0.151	0.126	0.096	0.065	0.032	0.000
FINAL CAMBER	↑	0	3/16"	3/8"	9/16"	3/4"	7/8"	1 5/16"	1 1/16"	1 1/8"	1 3/16"	1 3/16"	1 3/16"	1 1/8"	1 1/16"	1 5/16"	7/8"	1 1/16"	9/16"	3/8"	3/16"	0

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" Ø LOW RELAXATION STRANDS	SPANS B - H GIRDERS 1 & 4																					
	CL BRG.	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	CL BRG.	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.050	0.099	0.145	0.187	0.224	0.256	0.281	0.300	0.311	0.315	0.311	0.300	0.281	0.256	0.224	0.187	0.145	0.099	0.050	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.035	0.068	0.100	0.129	0.154	0.176	0.194	0.206	0.214	0.217	0.214	.206	0.194	0.176	0.154	0.129	0.100	0.068	0.035	0.000
FINAL CAMBER	↑	0	3/16"	3/8"	9/16"	1 1/16"	1 3/16"	1 5/16"	1 1/16"	1 1/8"	1 3/16"	1 3/16"	1 3/16"	1 1/8"	1 1/16"	1 5/16"	1 3/16"	1 1/16"	9/16"	3/8"	3/16"	0

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

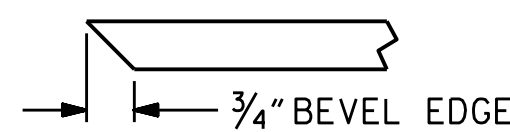
0.6" Ø LOW RELAXATION STRANDS	SPANS B - H GIRDERS 2 & 3																					
	CL BRG.	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	CL BRG.	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.050	0.099	0.145	0.187	0.224	0.256	0.281	0.300	0.311	0.315	0.311	0.300	0.281	0.256	0.224	0.187	0.145	0.099	0.050	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.034	0.066	0.097	0.125	0.150	0.172	0.189	0.201	0.209	0.211	0.209	0.201	0.189	0.172	0.150	0.125	0.097	0.066	0.034	0.000
FINAL CAMBER	↑	0	3/16"	3/8"	9/16"	3/4"	7/8"	1"	1 1/8"	1 3/16"	1 1/4"	1 1/4"	1 1/4"	1 3/16"	1 1/8"	1"	7/8"	3/4"	9/16"	3/8"	3/16"	0

SPAN I GIRDERS 1 & 4

0.6" Ø LOW RELAXATION STRANDS	SPAN I GIRDERS 1 & 4											
	CL BRG.	.10	.20	.30	.40	.50	.60	.70	.80	.90	CL BRG.	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.016	0.030	0.041	0.048	0.050	0.048	0.041	0.030	0.016	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.005	0.010	0.013	0.016	0.017	0.016	0.013	0.010	0.005	0.000
FINAL CAMBER	↑	0	1/8"	1/4"	5/16"	3/8"	3/8"	3/8"	5/16"	1/4"	1/8"	0

SPAN I GIRDERS 2 & 3

0.6" Ø LOW RELAXATION STRANDS	SPAN I GIRDERS 2 & 3											
	CL BRG.	.10	.20	.30	.40	.50	.60	.70	.80	.90	CL BRG.	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.016	0.030	0.041	0.048	0.050	0.048	0.041	0.030	0.016	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.005	0.009	0.013	0.015	0.016	0.015	0.013	0.009	0.005	0.000
FINAL CAMBER	↑	0	1/8"	1/4"	5/16"	3/8"	3/8"	3/8"	5/16"	1/4"	1/8"	0



SECTION "F"

(SEE NOTES)

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

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

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

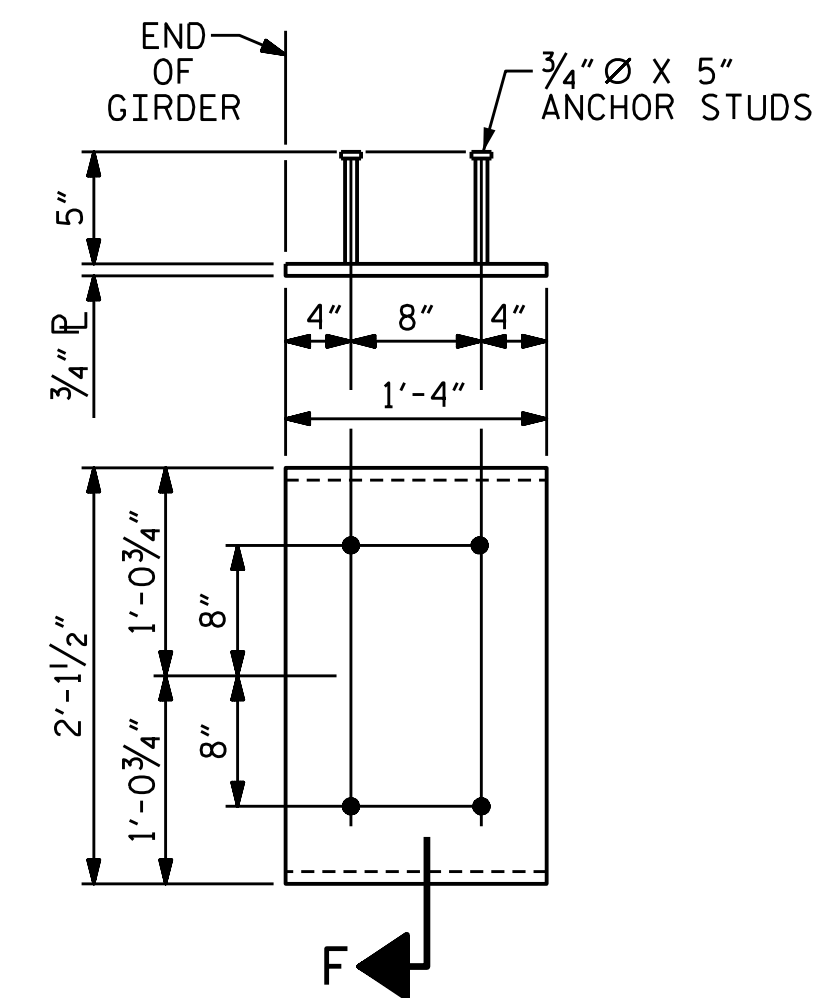
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 8,000 PSI FOR SPANS A-H AND NOT LESS THAN 5,000 PSI FOR SPAN I.

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

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4", EXCEPT AS NOTED IN THE LINK SLAB AREAS.

A 2" x 2" CHAMFER IS ALLOWED AT THE INTERSECTION OF THE WEB AND THE BOTTOM FLANGE OF THE 63" AND 72" MODIFIED BULB TEES ONLY.

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



EMBEDDED PLATE "B-1" DETAIL

(2 REQ'D PER GIRDER)

PROJECT NO. B-5825

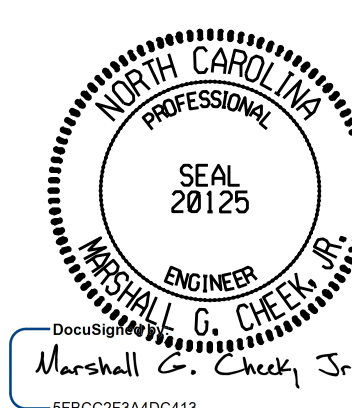
YADKIN/FORSYTH COUNTY

STATION: 34+65.50-L-

SHEET 6 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DEAD LOAD DEFLECTIONS

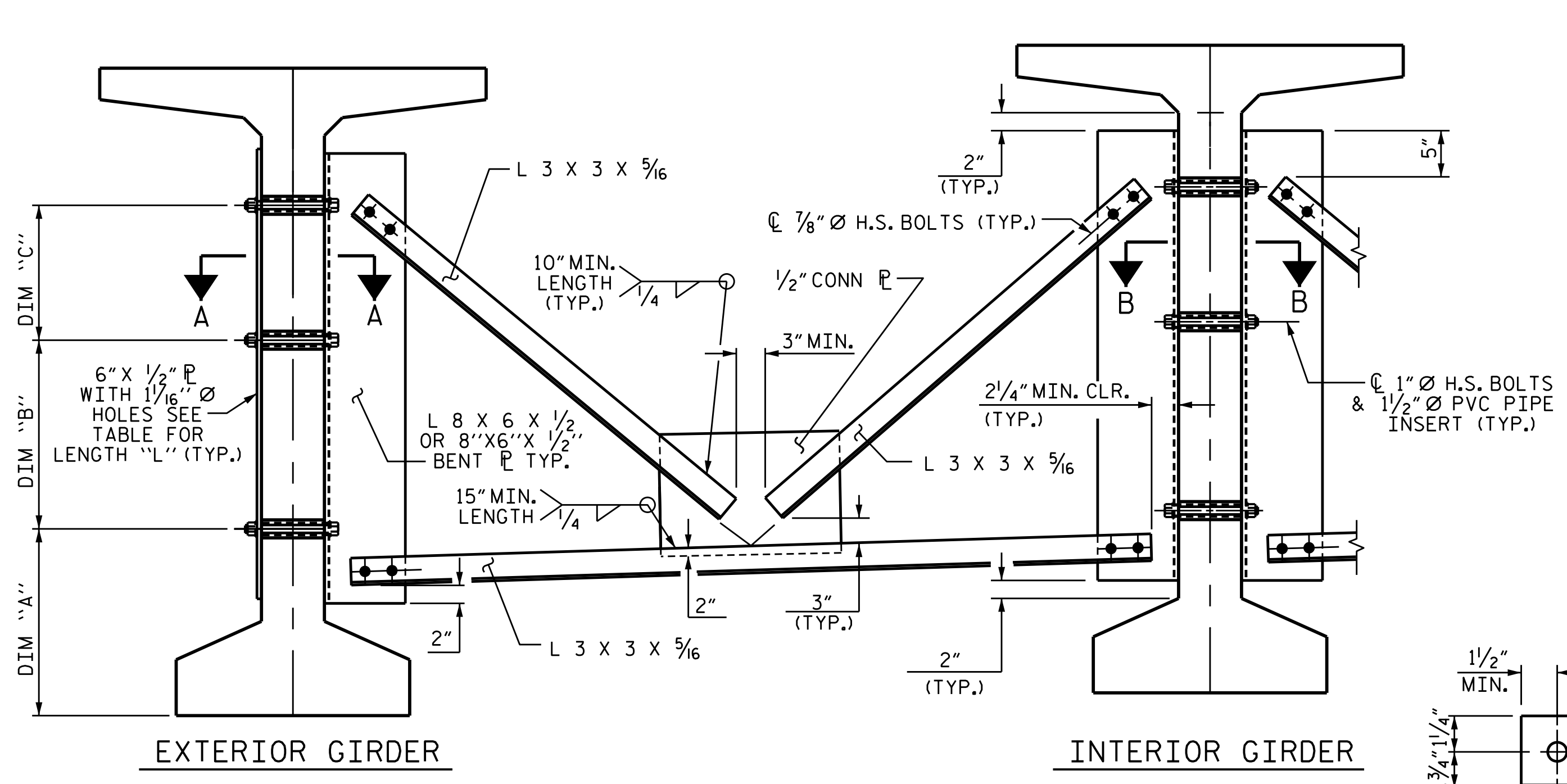


4/14/2020

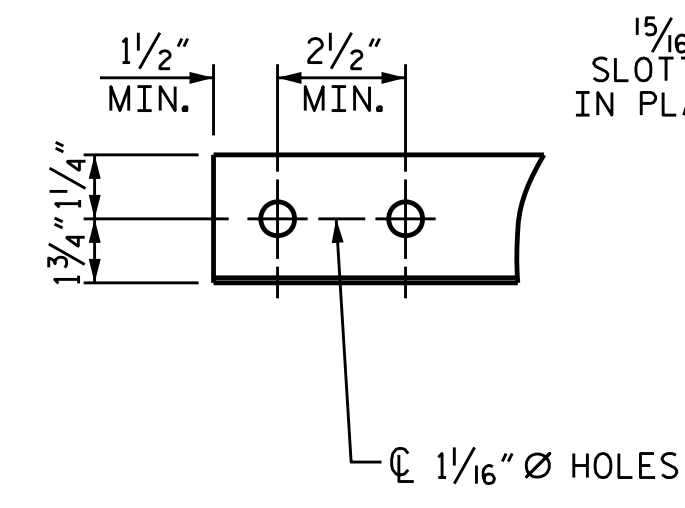
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
TGS ENGINEERS
706 HILLSBOROUGH STREET
SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			60

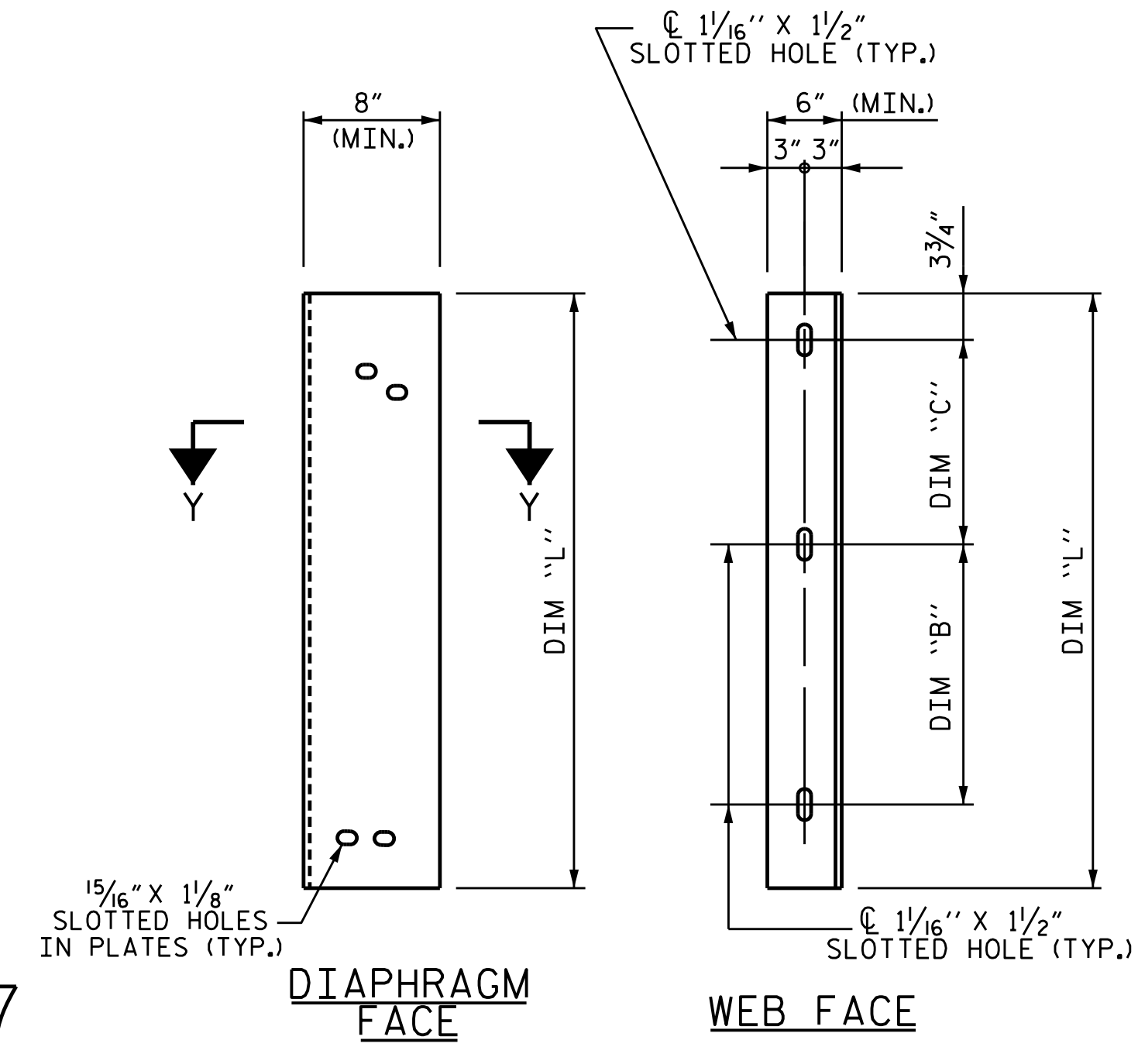
DRAWN BY : TBE DATE : 1/20
CHECKED BY : MGC DATE : 1/20
DESIGN ENGINEER OF RECORD : TBE DATE : 2/20



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



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



CONNECTOR PLATE DETAIL

STRUCTURAL STEEL NOTES

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

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

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

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

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

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

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

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

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

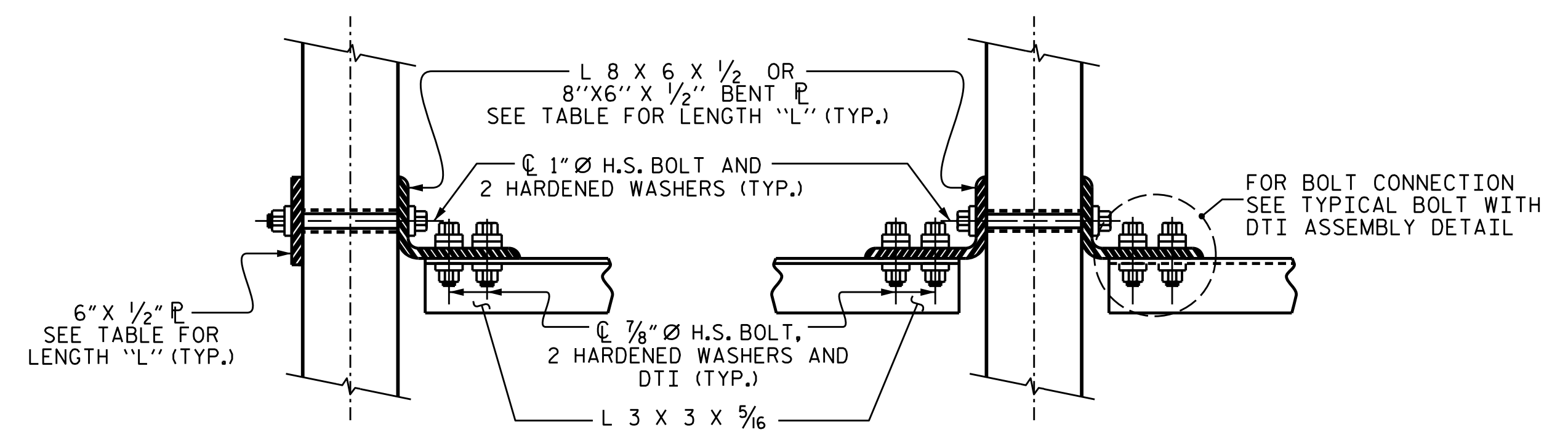
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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

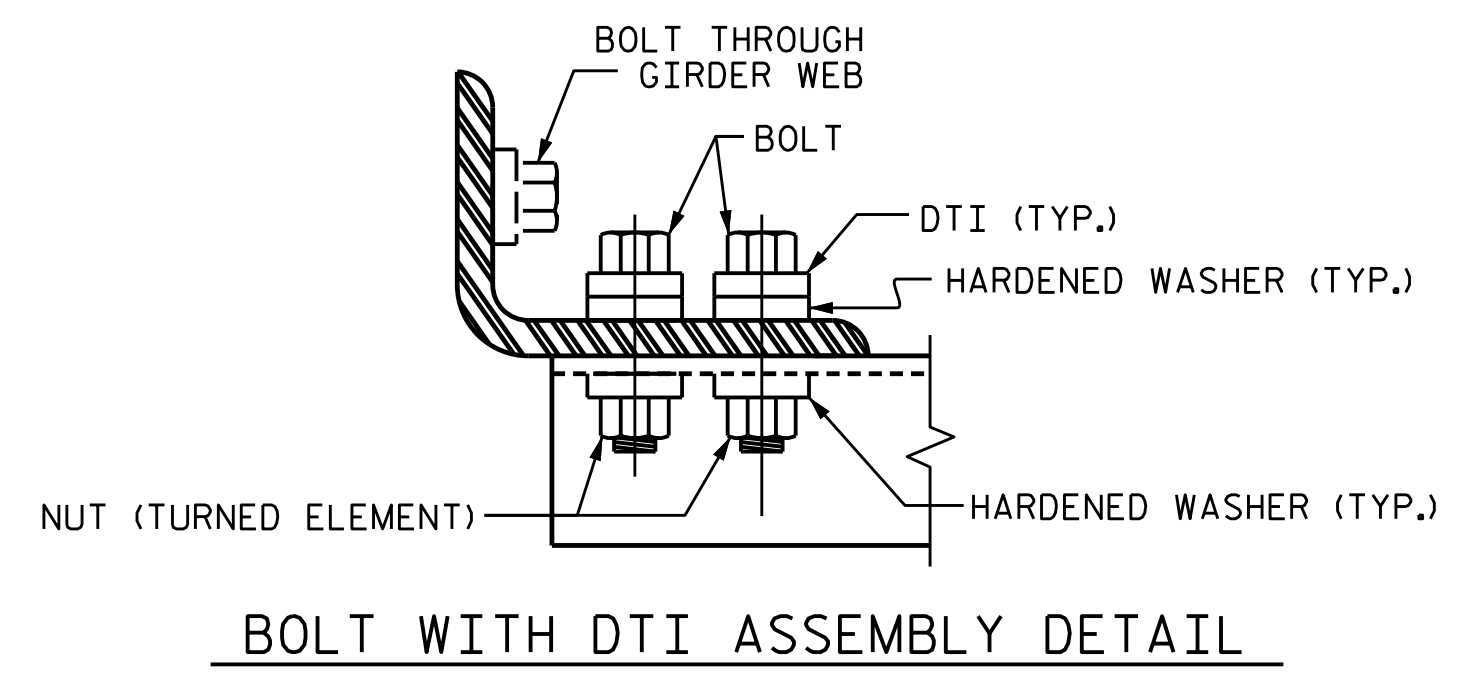
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

TABLE

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
72" BULB TEE	1'-6"	1'-10"	1'-2"	4'-2"



CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-

SHEET 7 OF 7

ASSEMBLED BY : ZCS	DATE : 1/20
CHECKED BY : MGC	DATE : 1/20
DRAWN BY : RWW 11/09	REV. 10/11
CHECKED BY : GM 11/09	REV. 12/17
	MAA/GM
	MAA/THC

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SEAL
 20125
 PROFESSIONAL ENGINEER
 MARSHALL G. CHECK, JR.
 4/14/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
 706 HILLSBOROUGH STREET
 SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

STANDARD INTERMEDIATE STEEL DIAPHRAGMS FOR 63" & 72" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-26
TOTAL SHEETS					60

NOTES

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

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

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

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

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

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

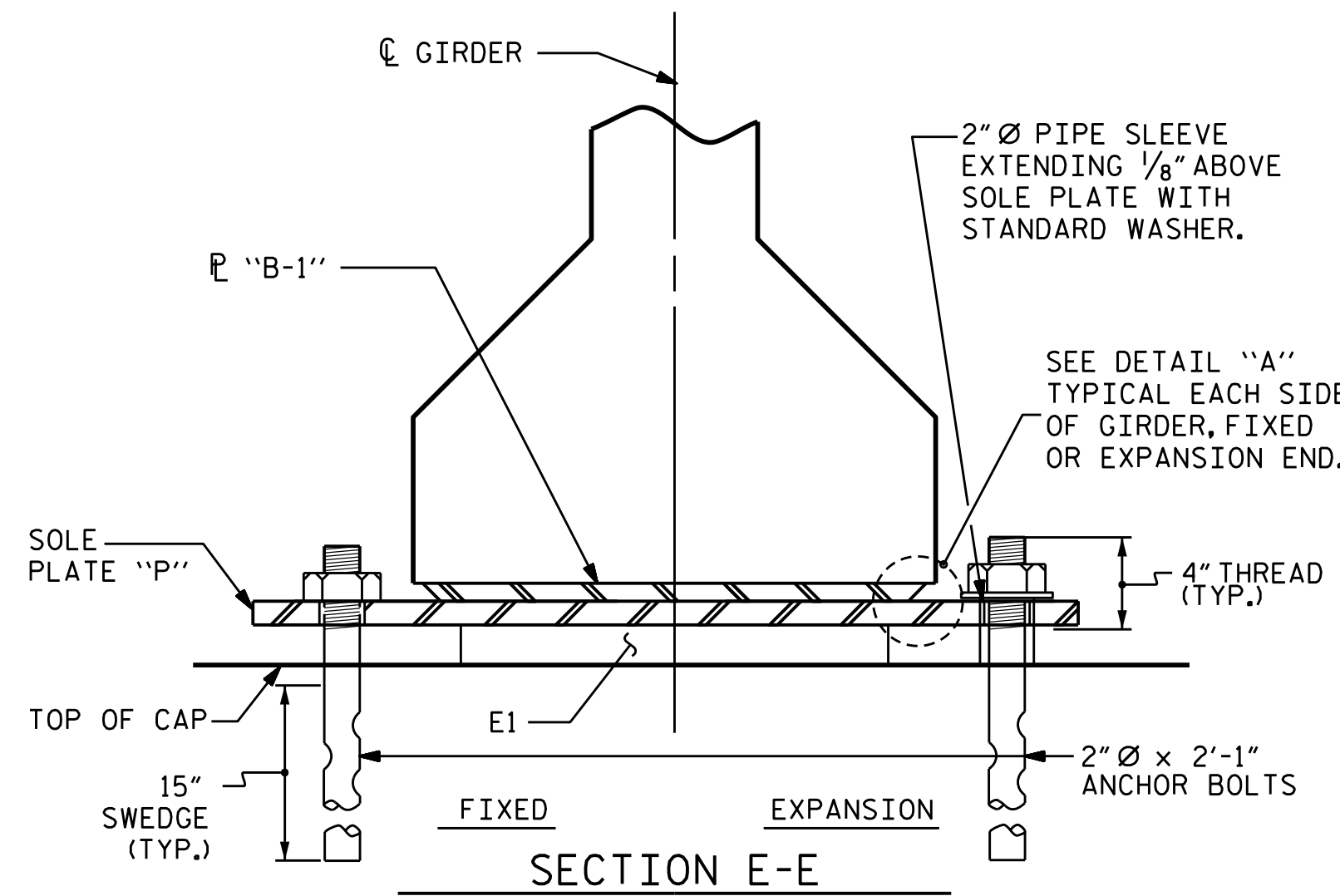
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

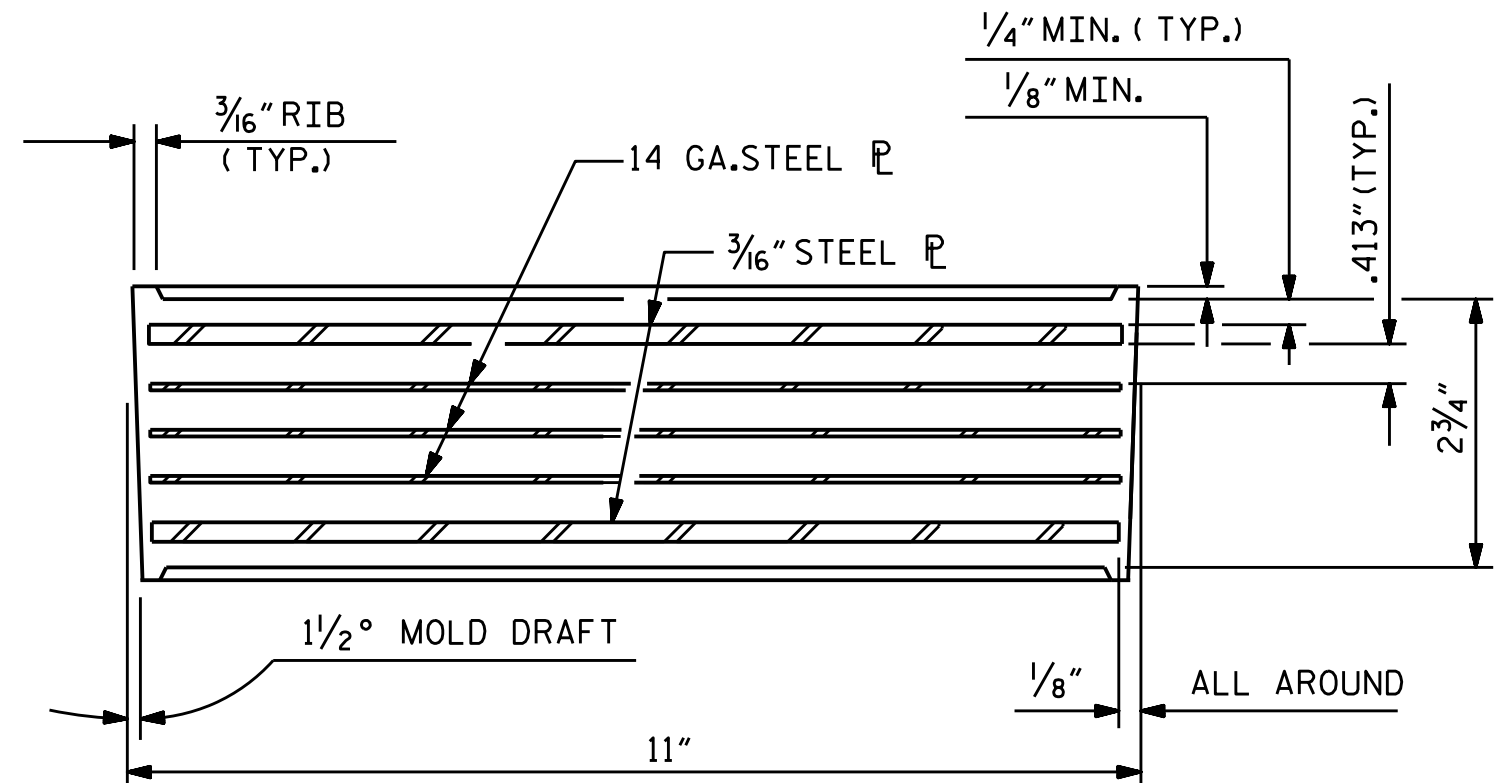
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

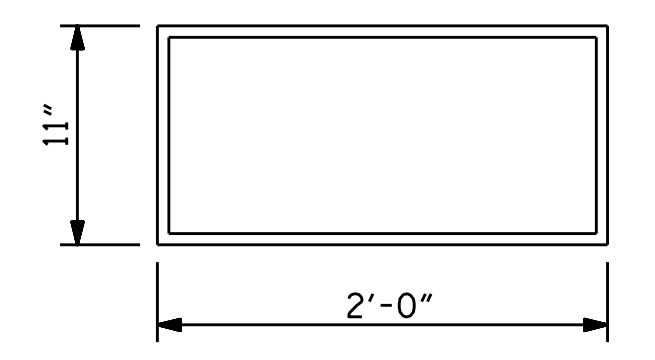
ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE VII	470 K

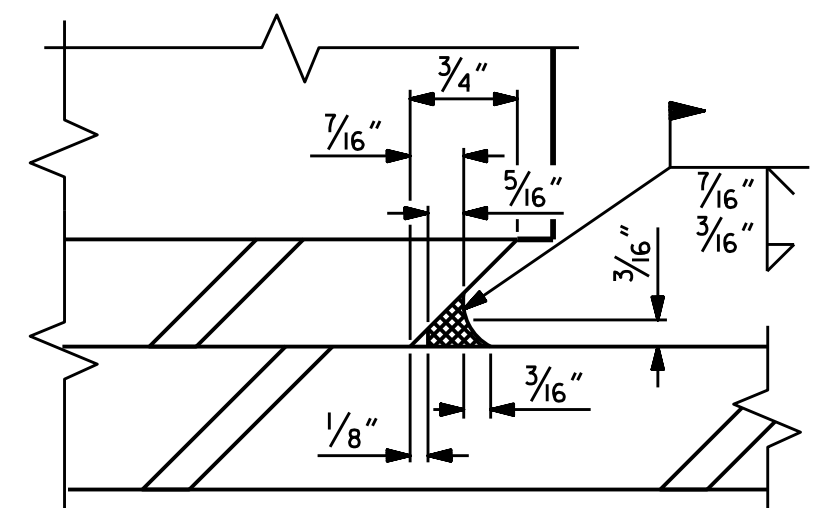


TYPICAL SECTION OF ELASTOMERIC BEARINGS



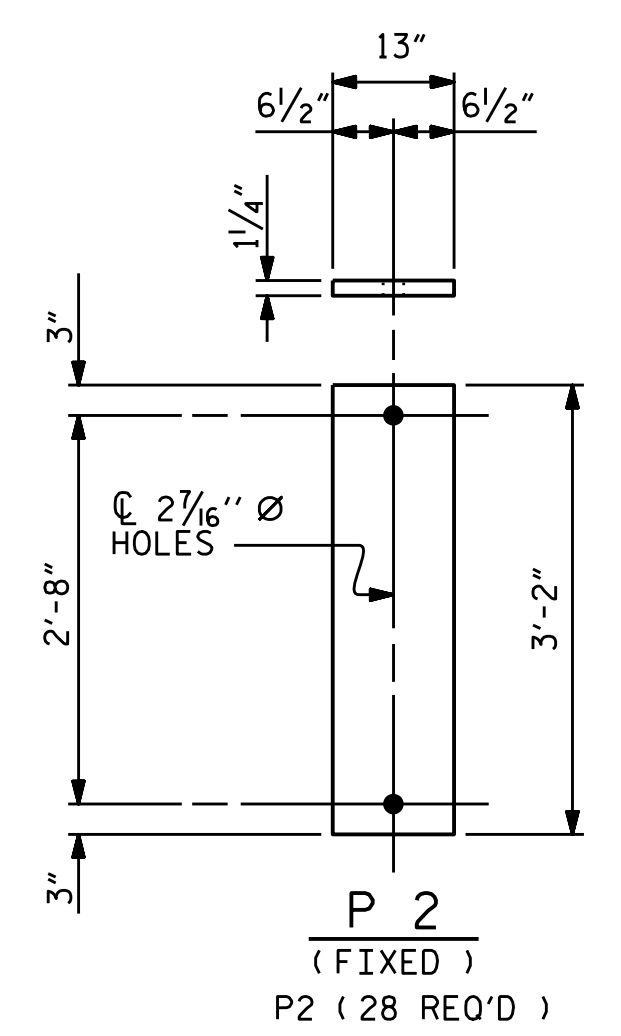
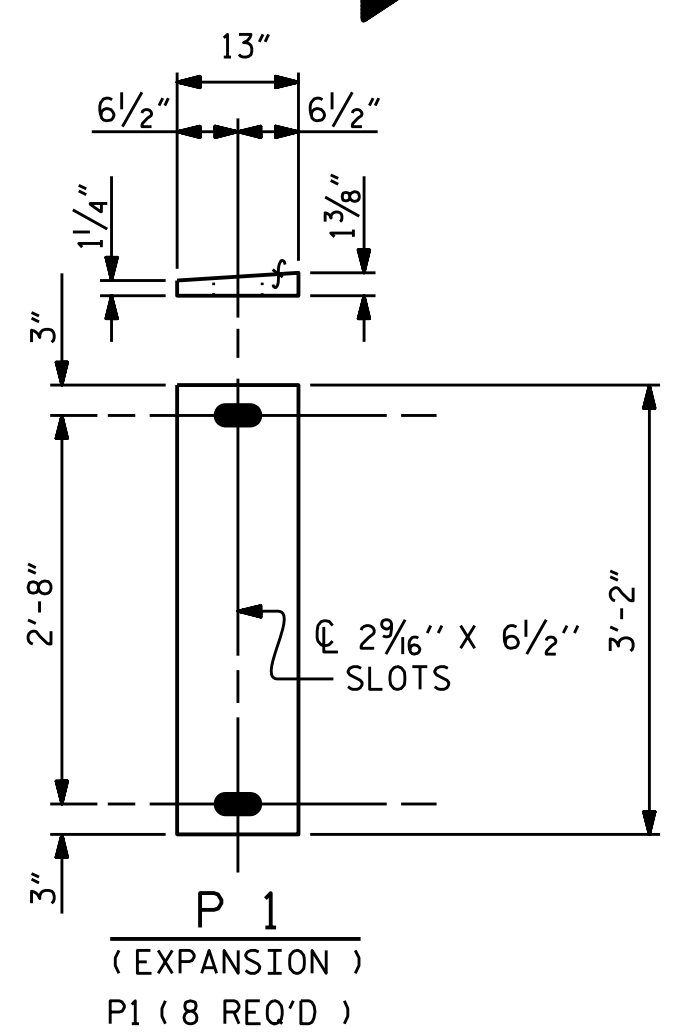
E1 (72 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING

TYPE VII

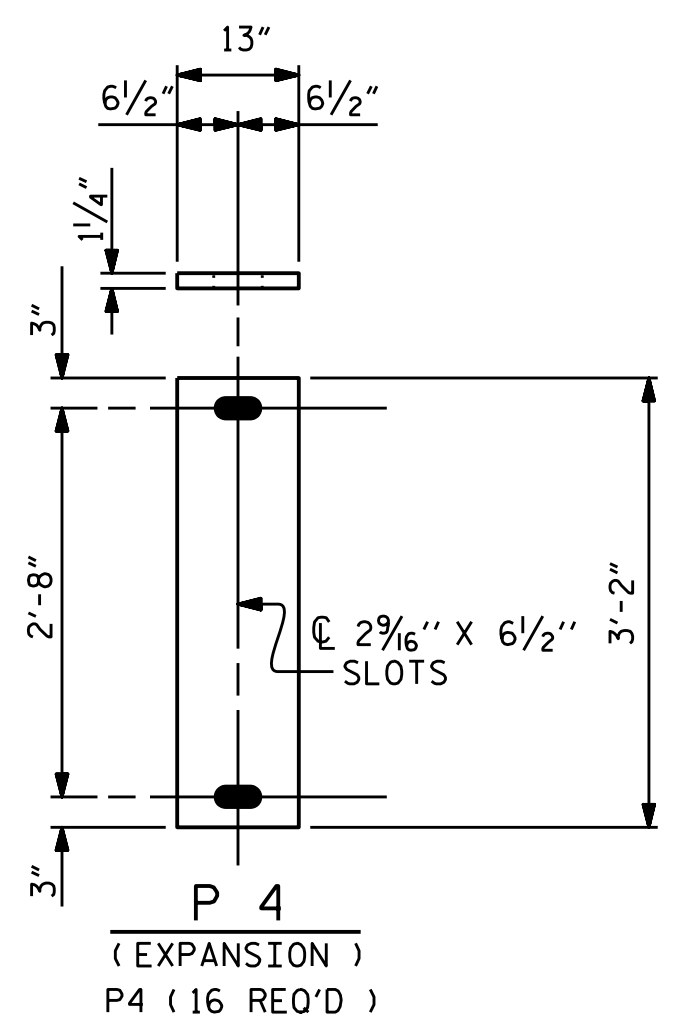
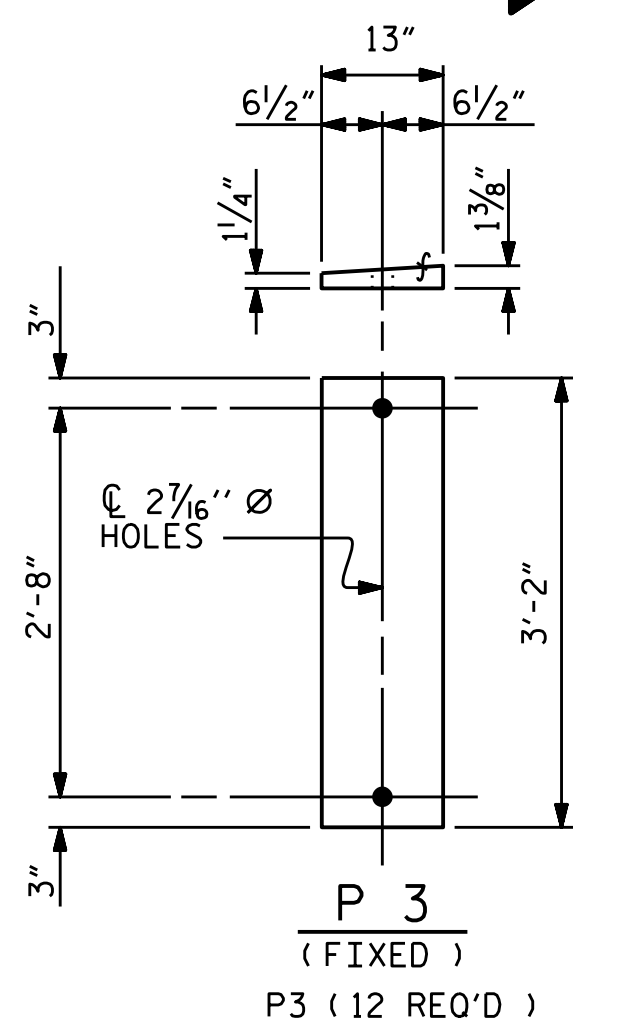


DETAIL "A"

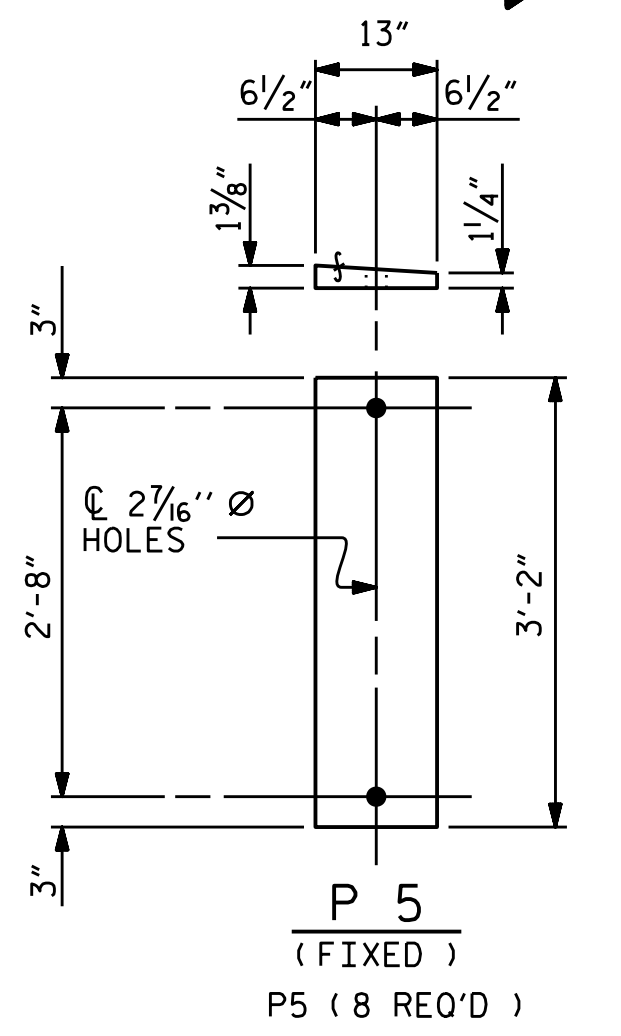
UP-STATION →



UP-STATION →

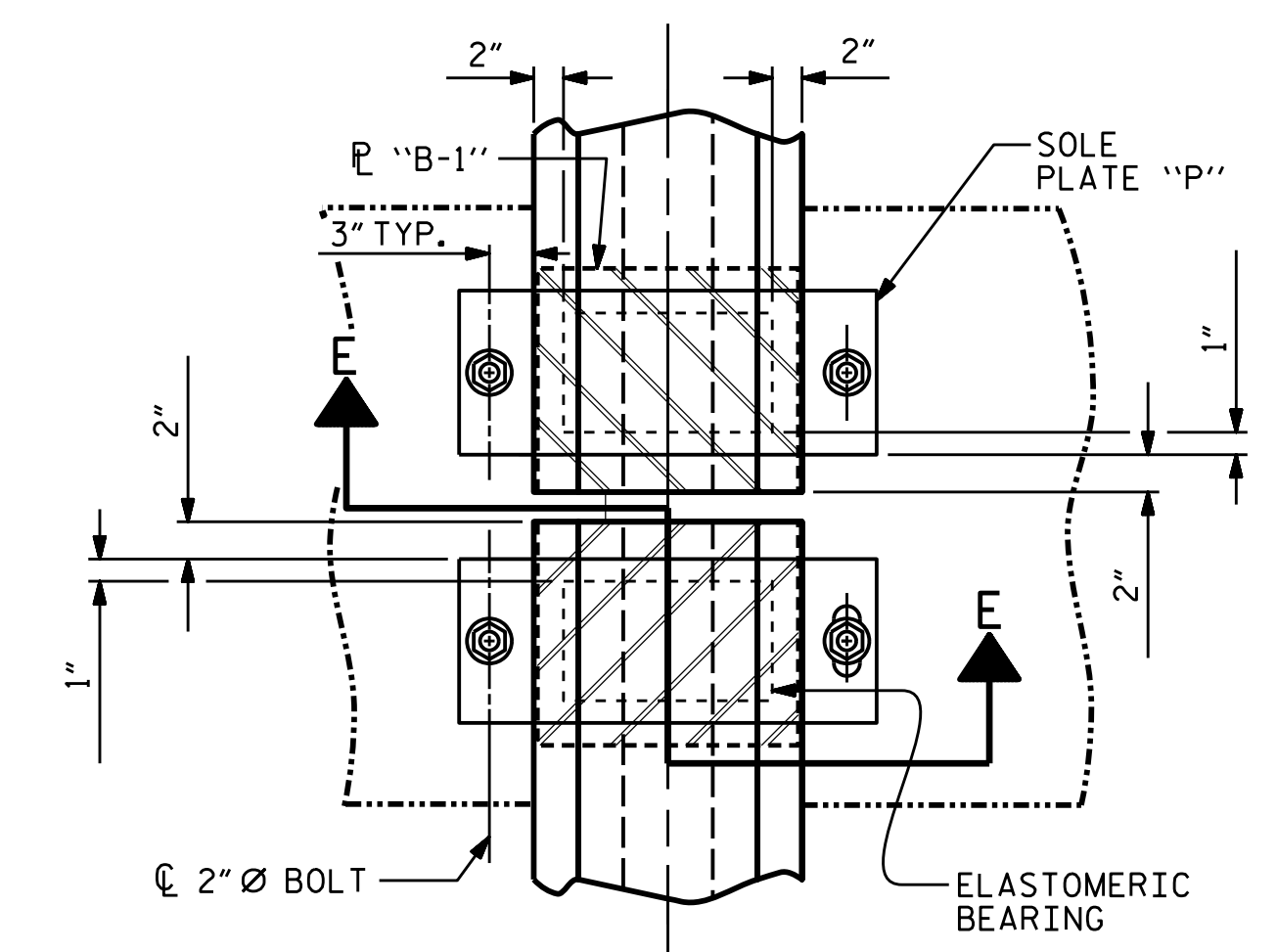


UP-STATION →



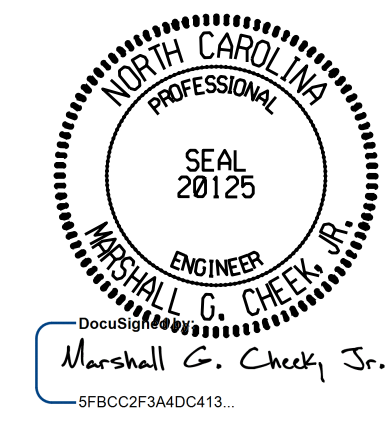
SOLE PLATE DETAILS ("P")

FOR SOLE PLATE LOCATIONS, SEE "FRAMING PLAN" SHEET.



TYPICAL HALF-PLAN (SHOWING FIXED BEARING)
TYPICAL HALF-PLAN (SHOWING EXPANSION BEARING)

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
STATION: 34+65.50 -L-



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

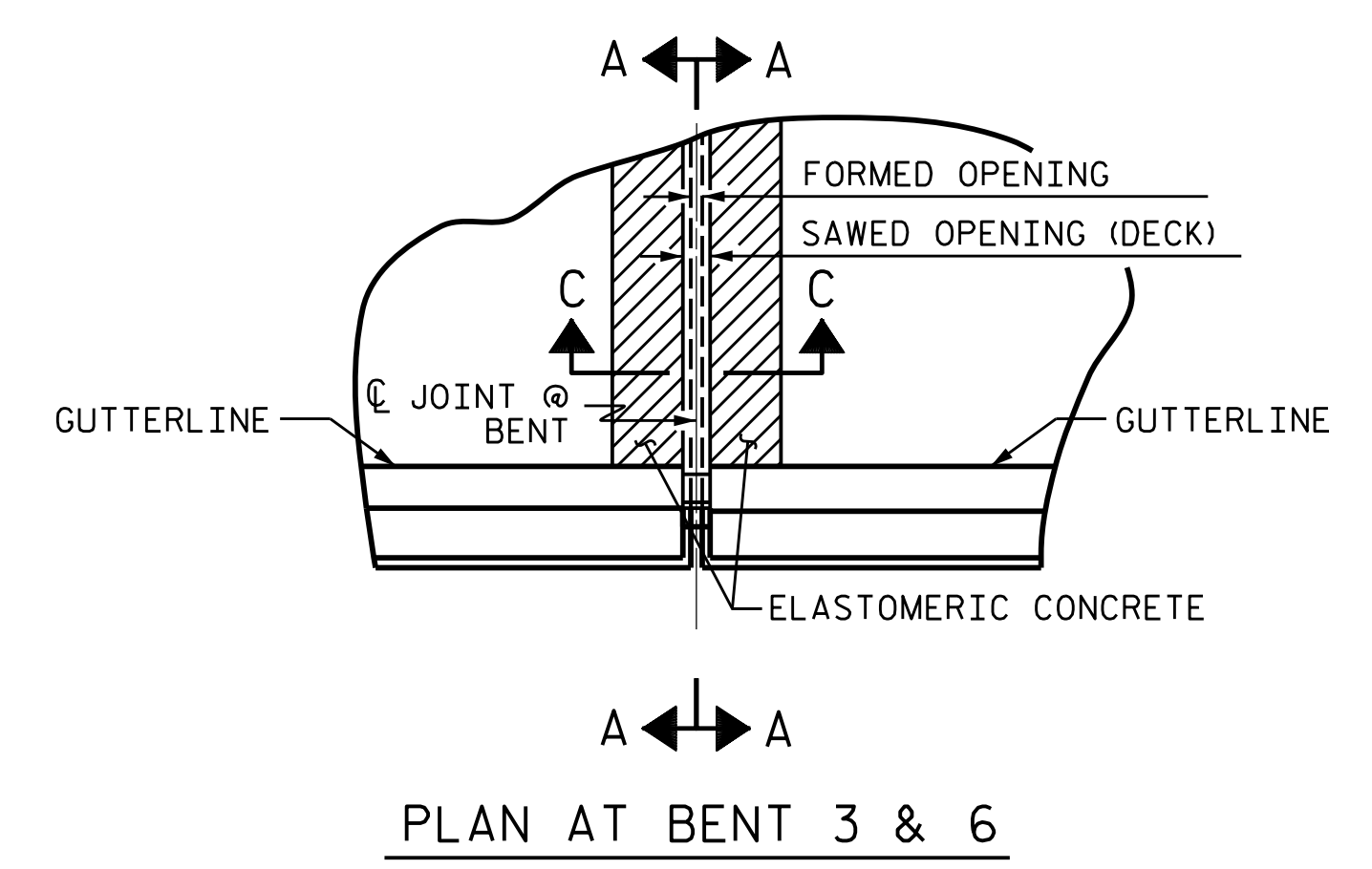
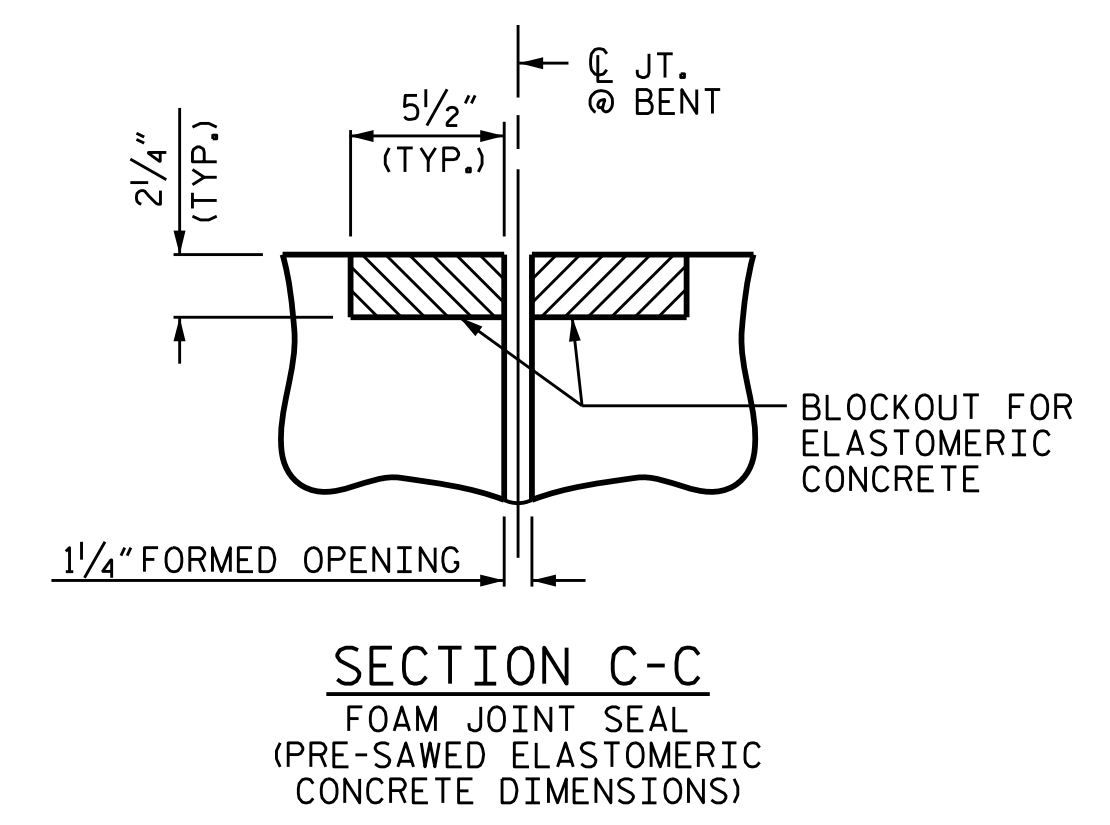
ASSEMBLED BY : ZCS	DATE : 11/19
CHECKED BY : MGC	DATE : 12/19
DRAWN BY : EEM 2/97	REV. 6/13 AAC/MAA
CHECKED BY : VAP 2/97	REV. 1/15 MAA/TMC
	REV. 12/17 MAA/THC

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706 HILLSBOROUGH STREET SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			60

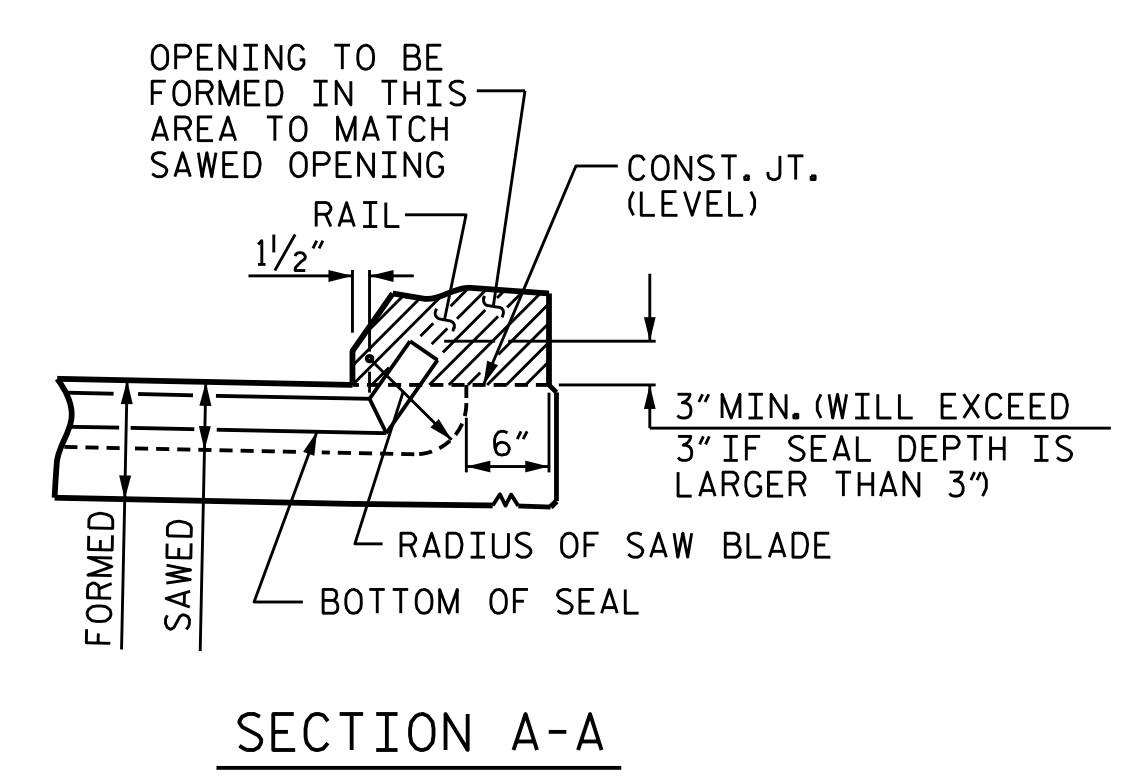
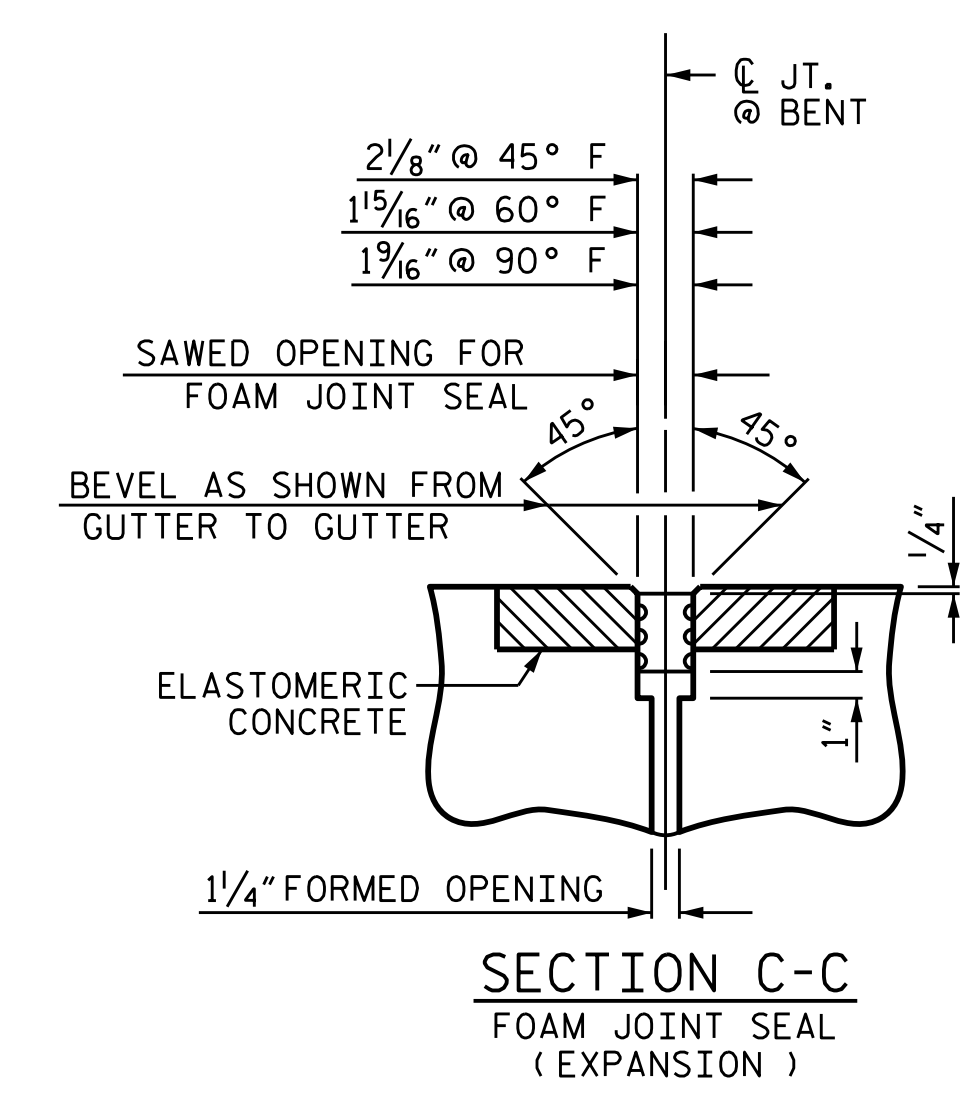
NOTES

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.
 THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2 1/2".
 FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

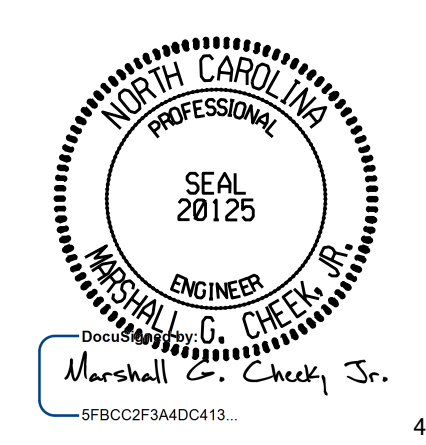


ELASTOMERIC CONCRETE	
BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
3	5.50
6	5.50
TOTAL	11.00

* BASED ON THE MINIMUM BLOCKOUT SHOWN.



PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

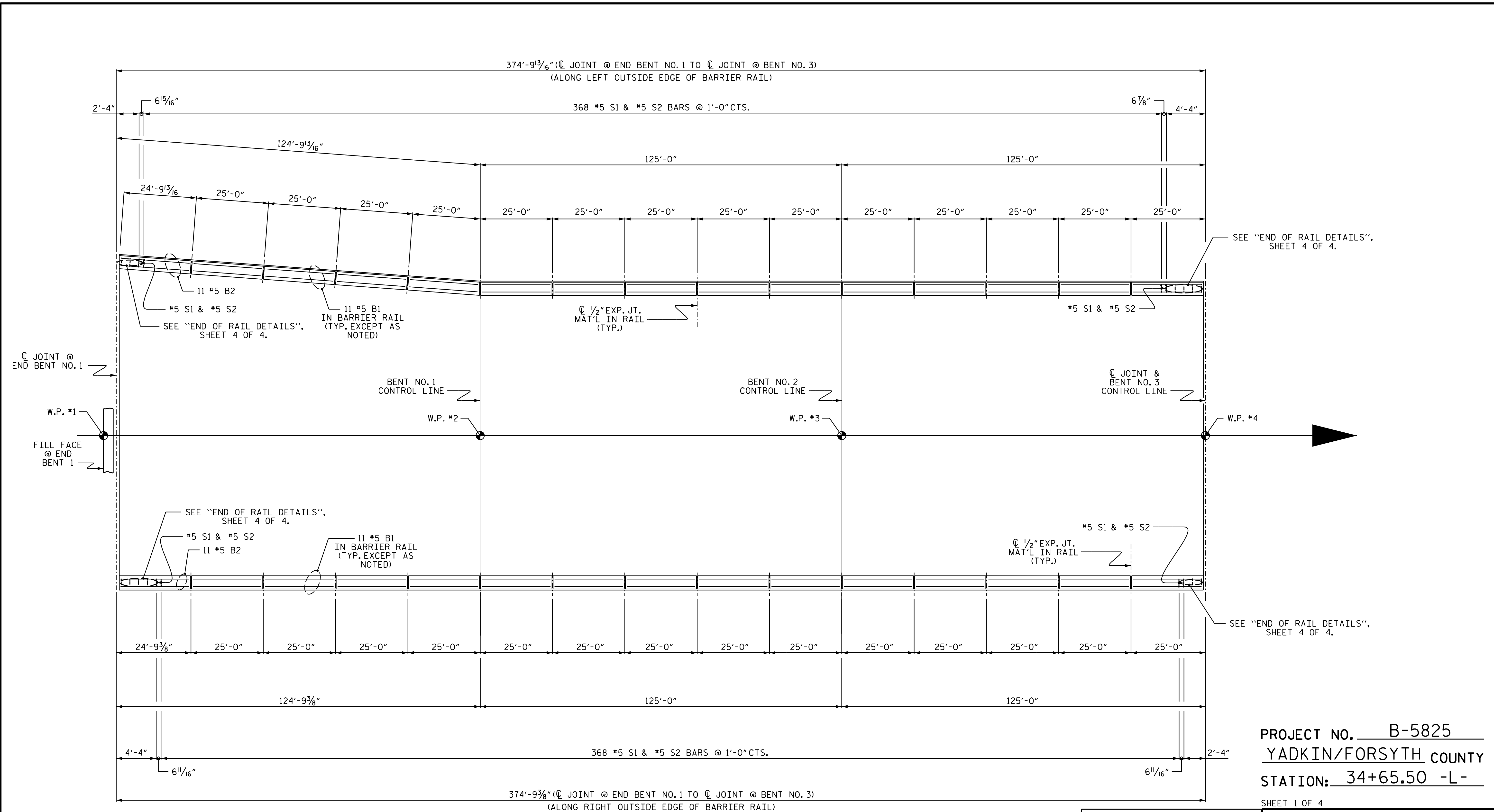
FOAM JOINT SEAL DETAILS

DRAWN BY : ZCS DATE : 1/20
 CHECKED BY : MGC DATE : 1/20
 DESIGN ENGINEER OF RECORD: TBE DATE : 02/20

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 UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
 706 HILLSBOROUGH STREET
 SUITE 200
 RALEIGH, NC 27603
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			60



PLAN OF BARRIER RAIL (SPAN A-C)

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-
 SHEET 1 OF 4

4/14/2020

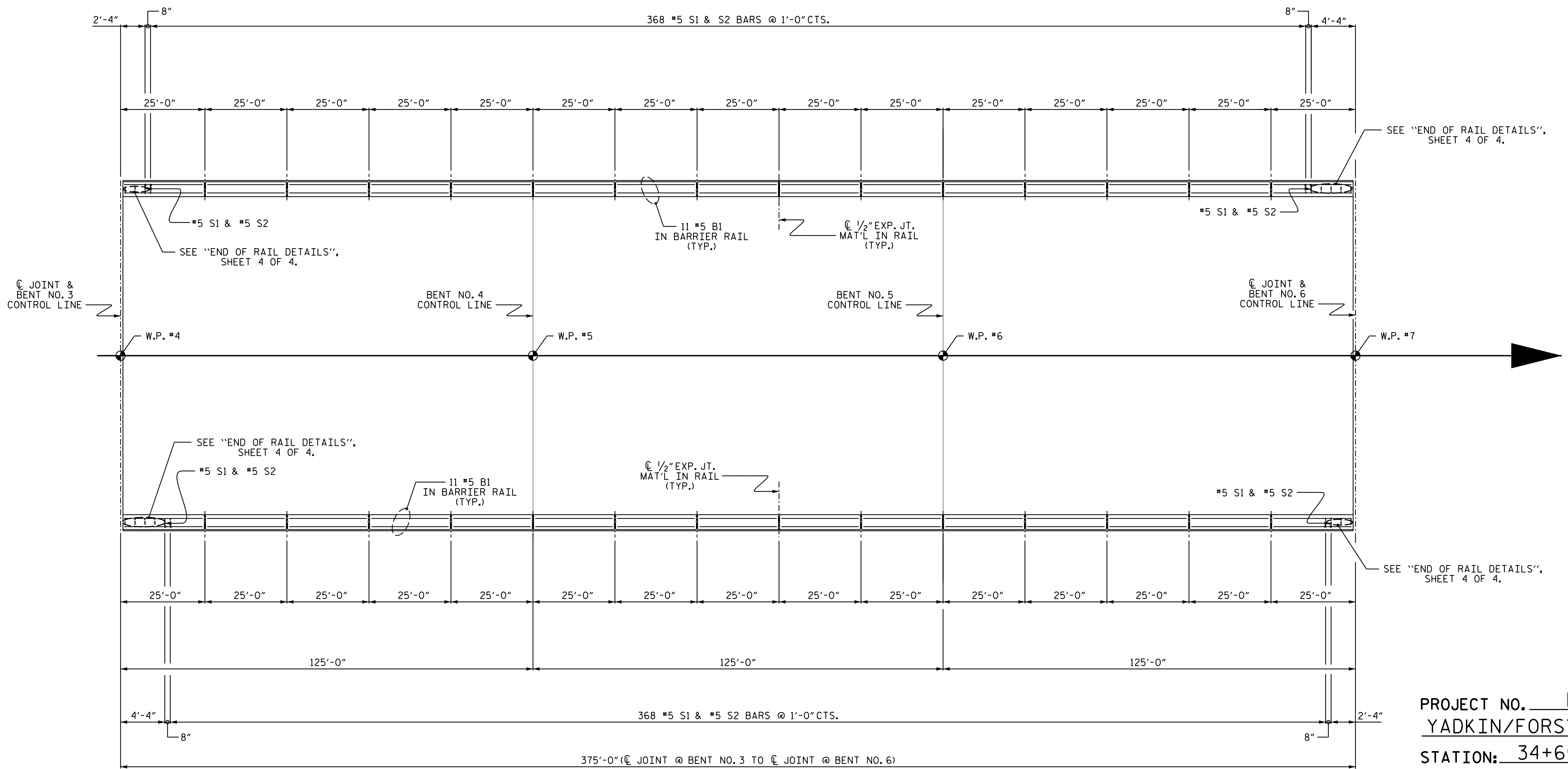
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE

CONCRETE
 BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-29
1			3			TOTAL SHEETS
2			4			60

DRAWN BY : STM DATE : 12/19
 CHECKED BY : MGC DATE : 01/20
 DESIGN ENGINEER OF RECORD: TBE DATE : 02/20



PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-

SHEET 2 OF 4

PLAN OF BARRIER RAIL (SPAN D-F)

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

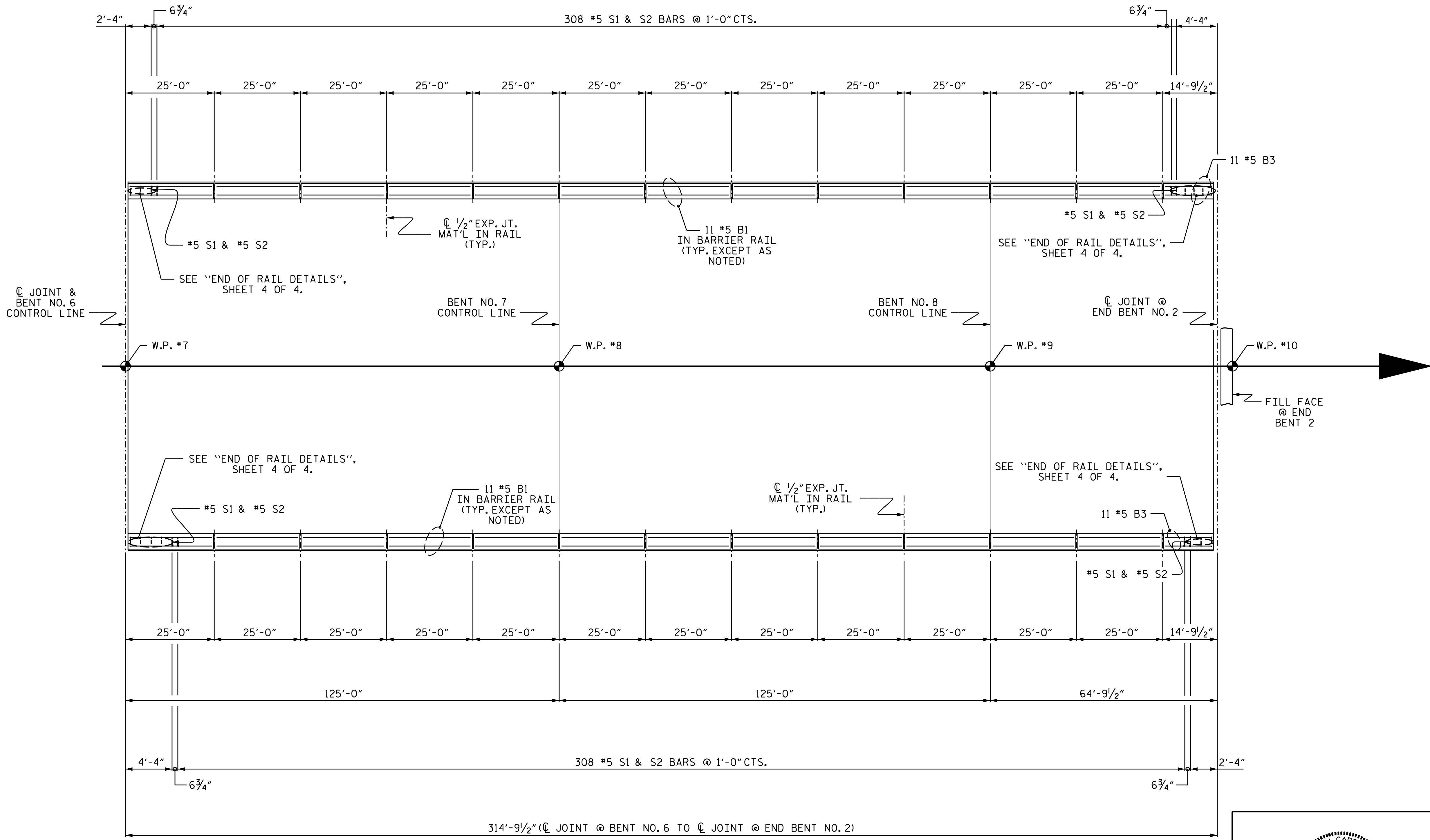
SEAL
 20125
 ENGINEER
 Marshall G. Check, Jr.
 4/14/2020

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TGS ENGINEERS
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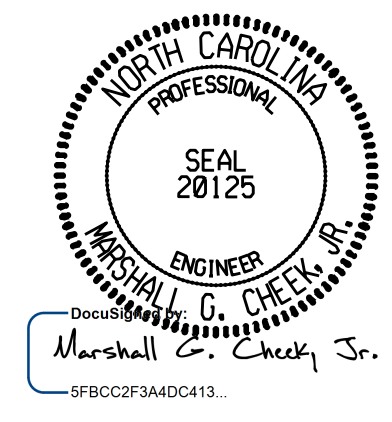
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			60

DRAWN BY :	STM	DATE :	12/19
CHECKED BY :	MGC	DATE :	01/20
DESIGN ENGINEER OF RECORD:	TBE	DATE :	02/20



PLAN OF BARRIER RAIL (SPAN G-I)

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-
 SHEET 3 OF 4



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

DRAWN BY : STM DATE : 12/19
 CHECKED BY : MGC DATE : 01/20
 DESIGN ENGINEER OF RECORD: TBE DATE : 02/20

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED						REVISIONS						SHEET NO.	
TGS ENGINEERS 706 HILLSBOROUGH STREET SUITE 200 RALEIGH, NC 27603 PH (919) 773-8887 CORP. LICENSE NO.: C-0275						NO.	BY:	DATE:	NO.	BY:	DATE:	S-31	
						1			3			TOTAL SHEETS	
						2			4			60	

NOTES

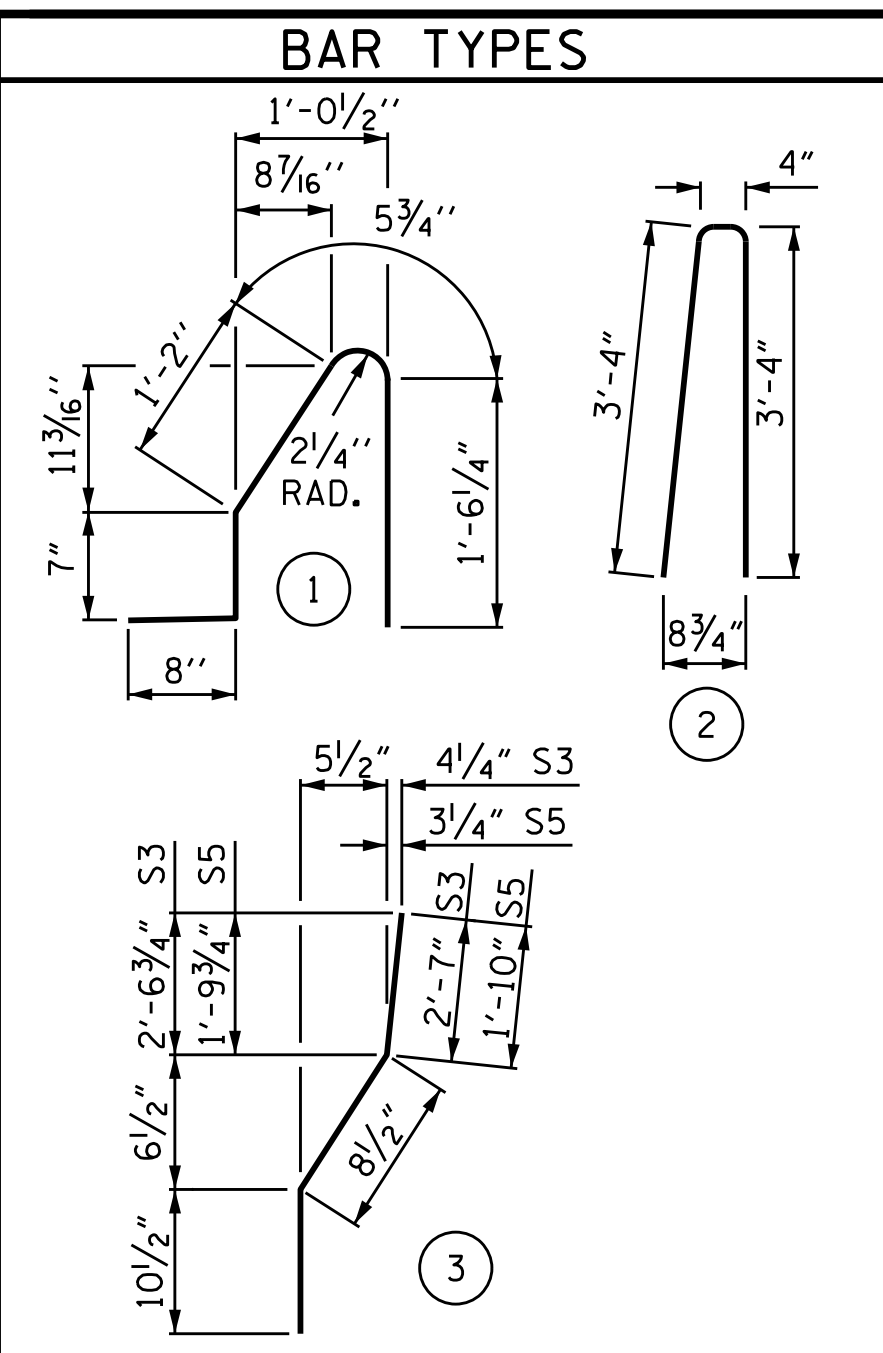
THE BARRIER RAIL IN EACH CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

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.

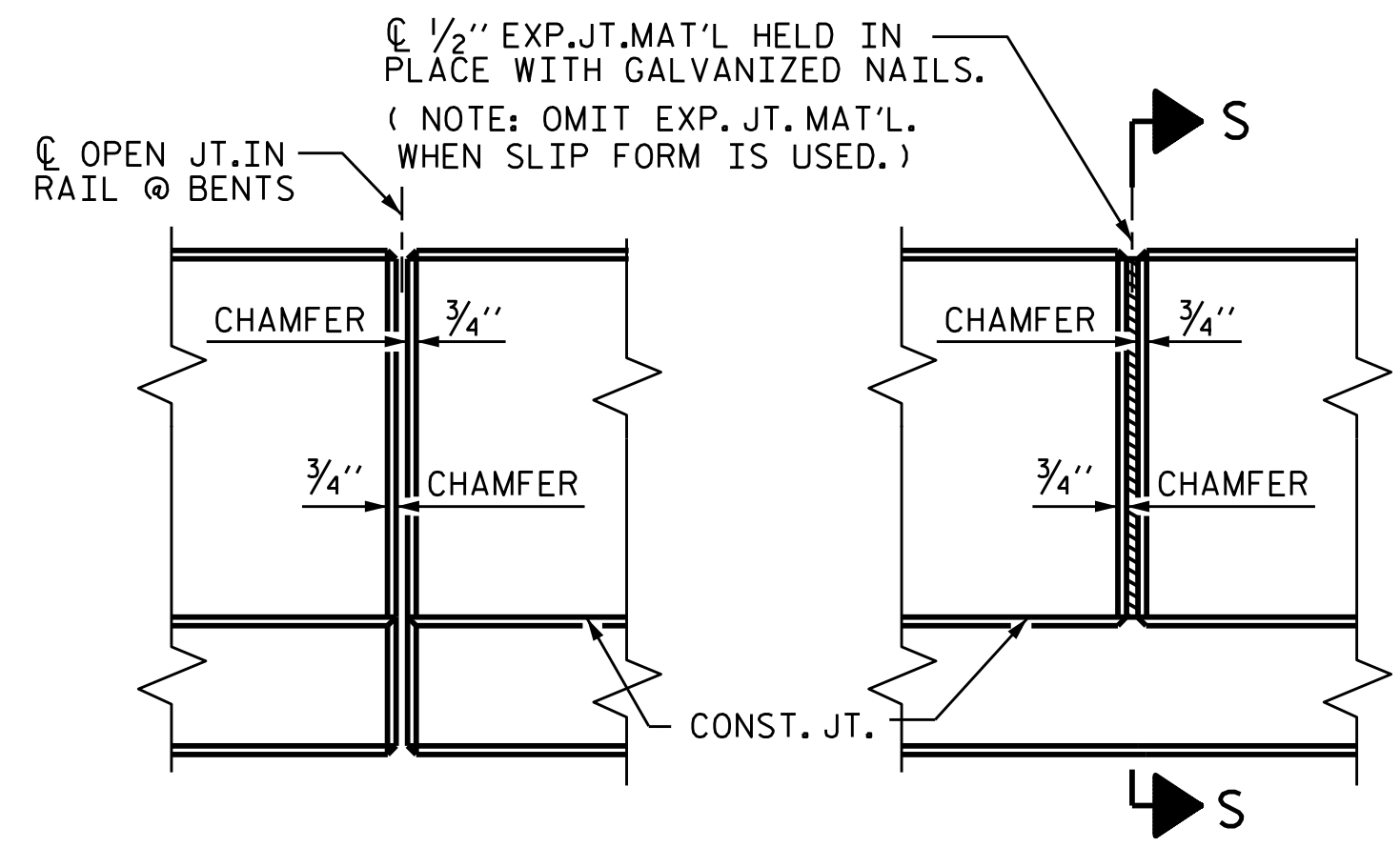


ALL BAR DIMENSIONS ARE OUT TO OUT

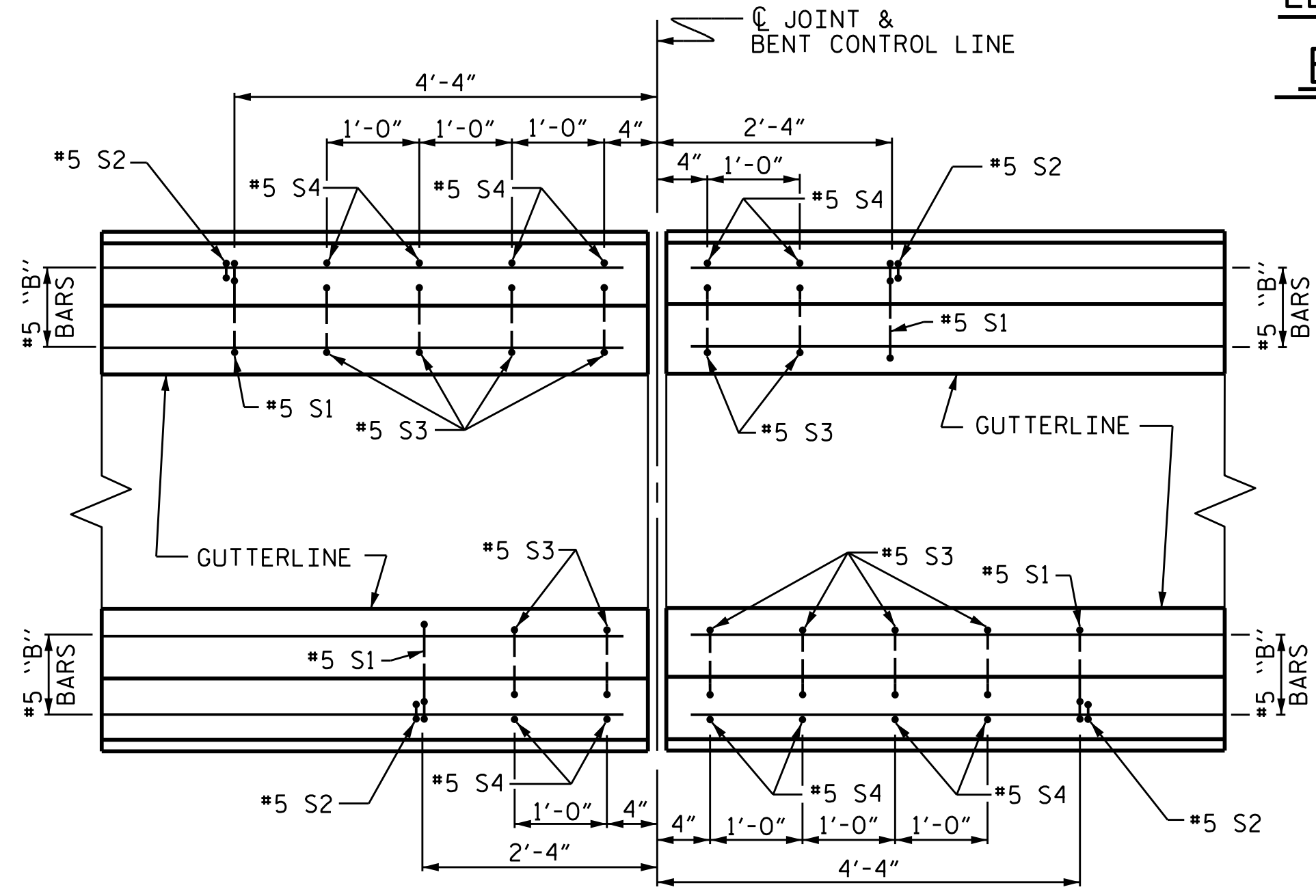
BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

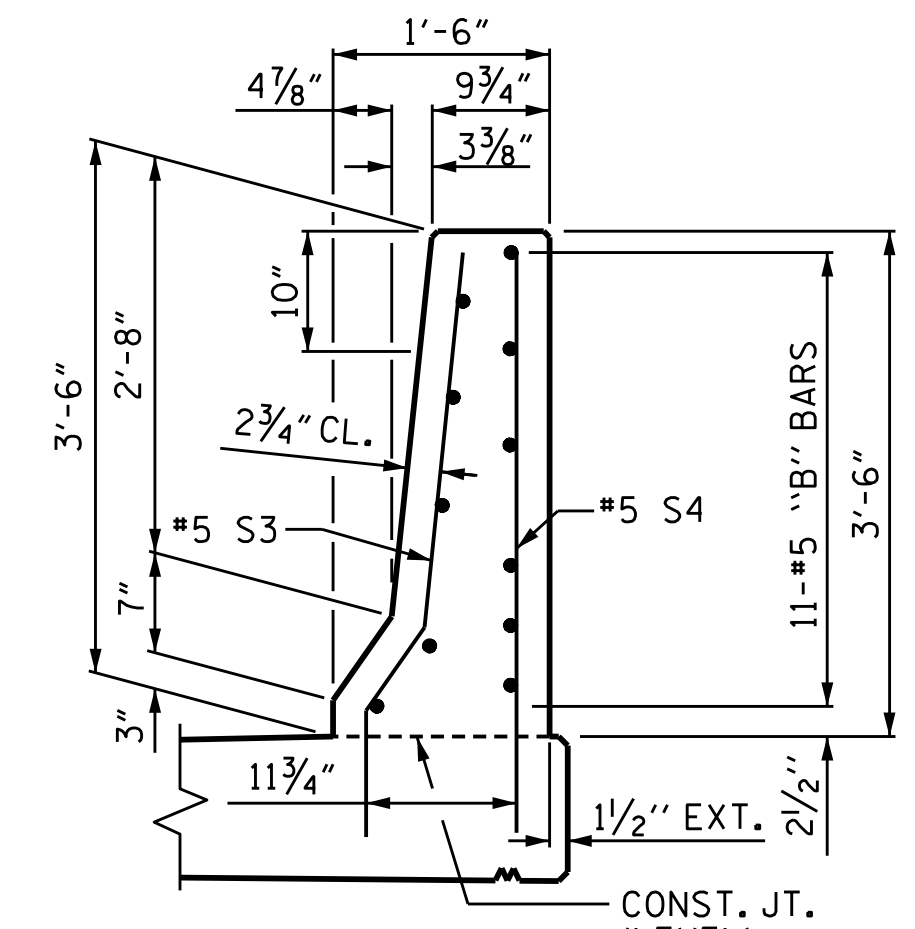
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	902	#5	STR.	24'-7"	23128
* B2	22	#5	STR.	24'-4"	558
* B3	22	#5	STR.	14'-4"	329
* S1	2100	#5	1	4'-5"	9674
* S2	2100	#5	2	7'-0"	15332
* S3	28	#5	3	4'-2"	122
* S4	28	#5	STR	4'-0"	117
* S5	8	#5	3	3'-5"	29
* S6	8	#5	STR	3'-3"	27
* EPOXY COATED REINFORCING STEEL					49316 LBS.
CLASS AA CONCRETE					289.7 CU. YDS.
CONCRETE BARRIER RAIL					2129.18 LIN. FT.



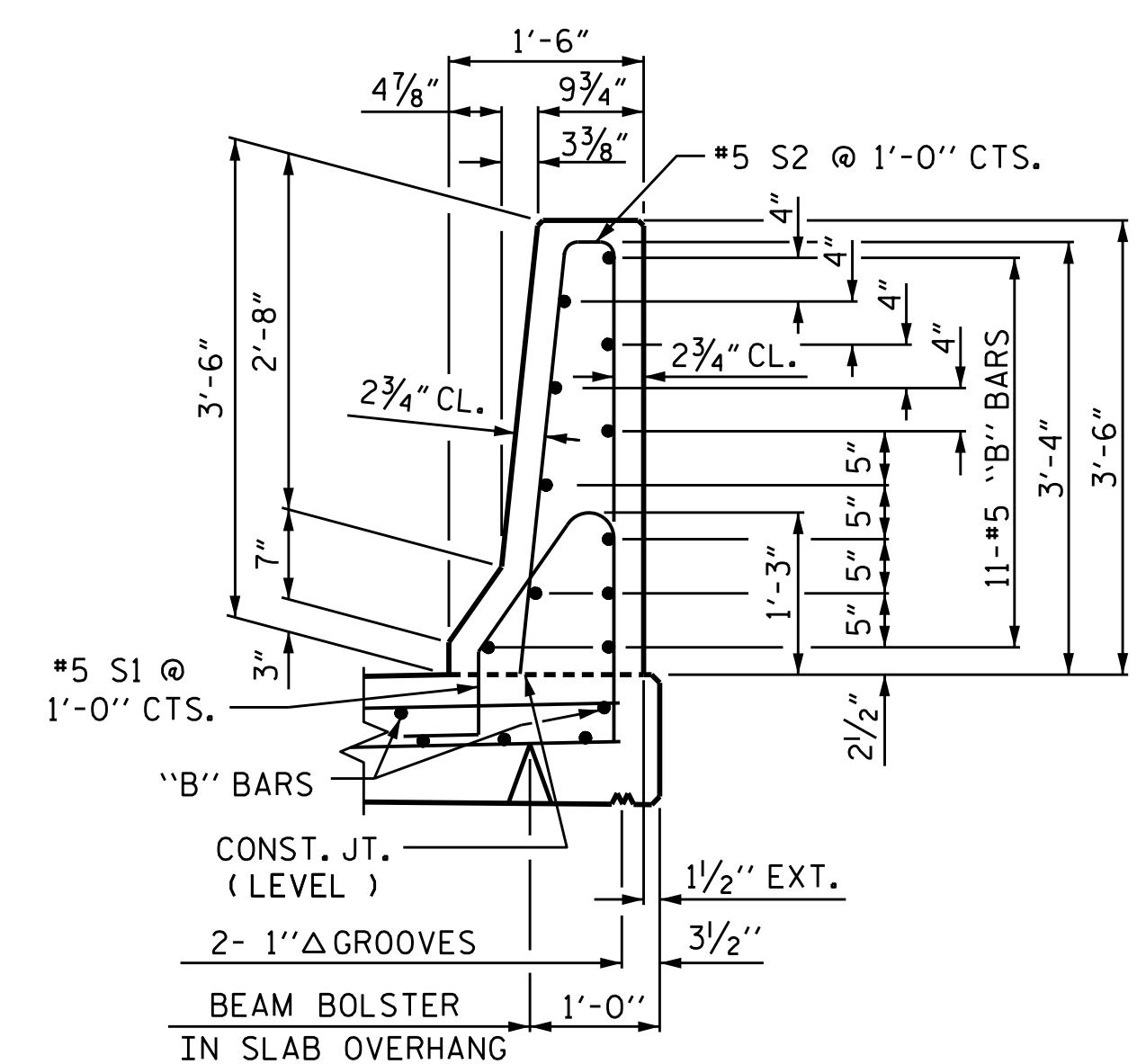
**ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS**



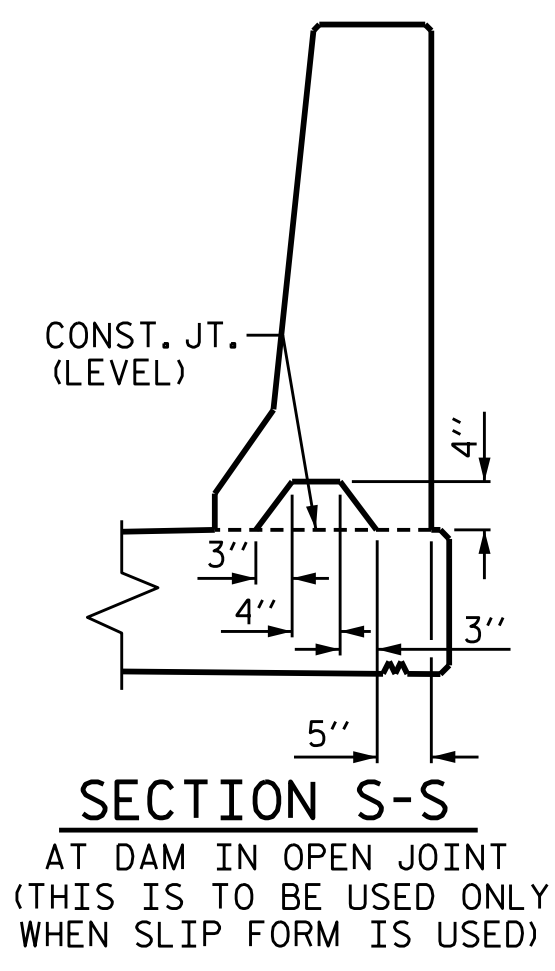
PLAN @ BENTS 3 & 6



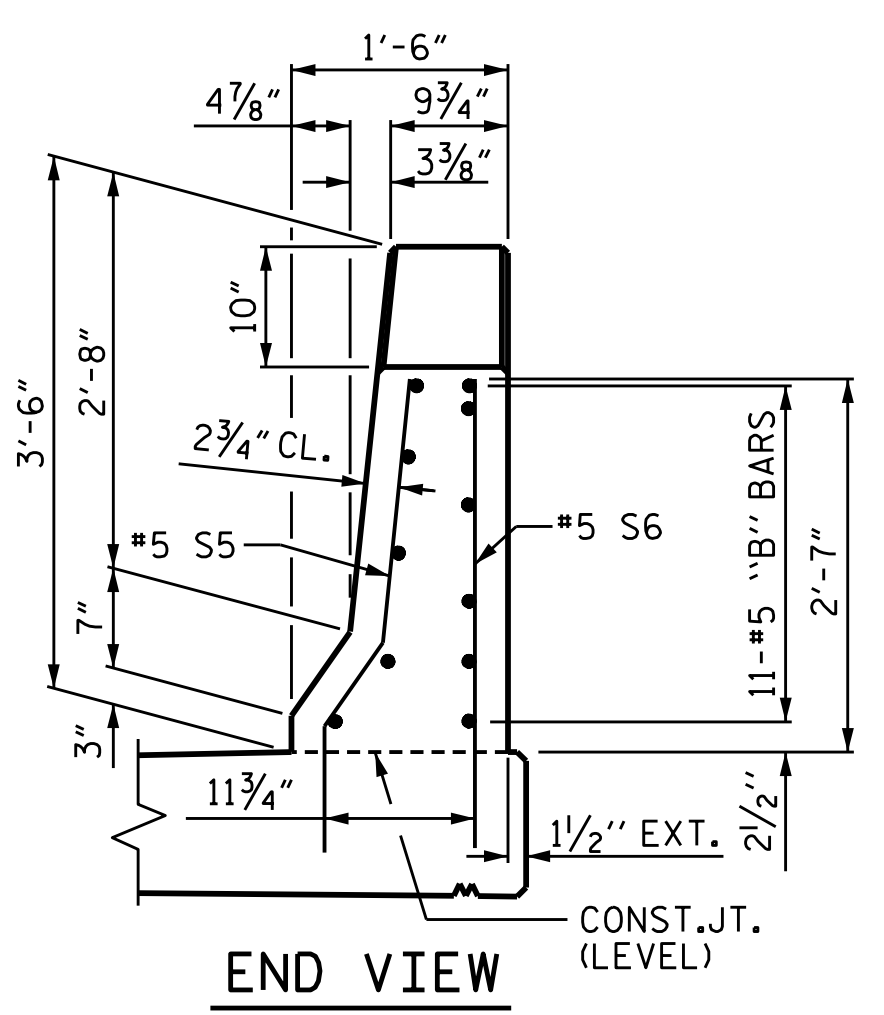
END VIEW @ BENTS 3 & 6



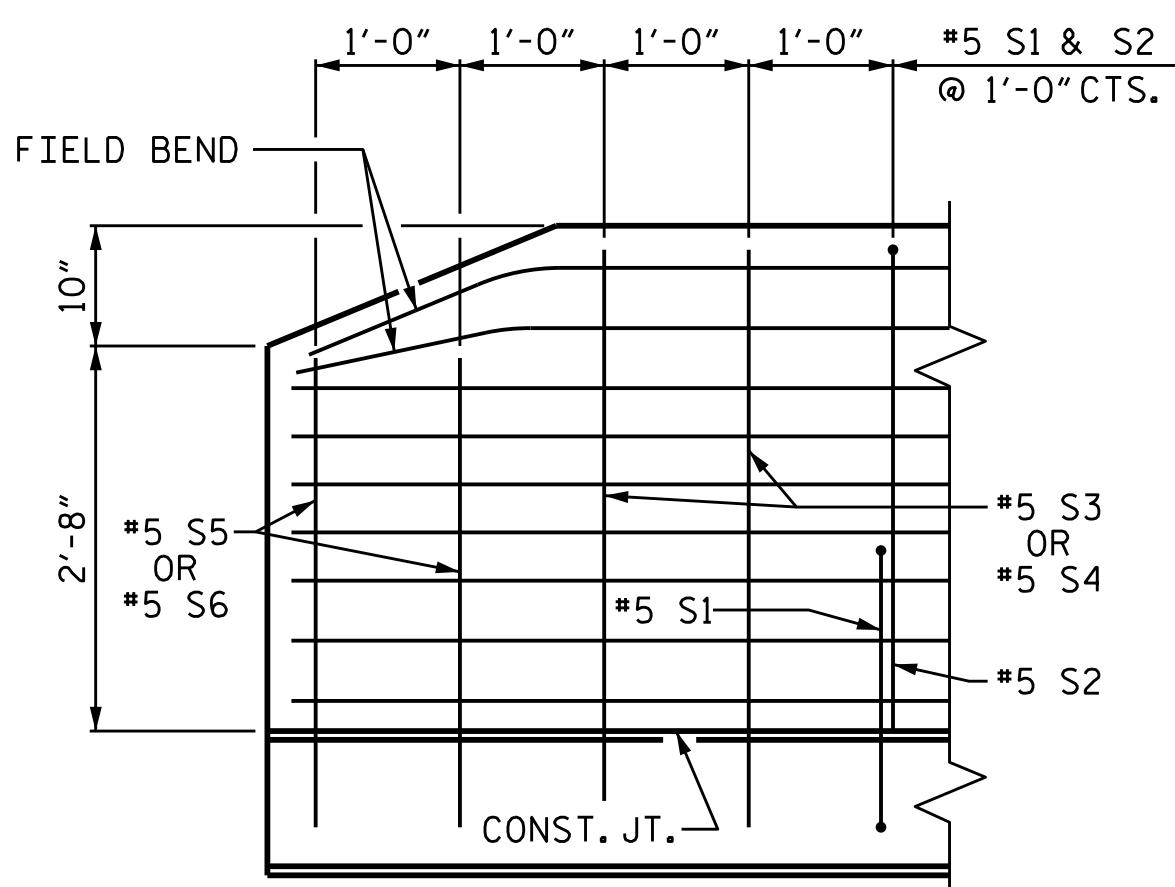
SECTION THRU RAIL



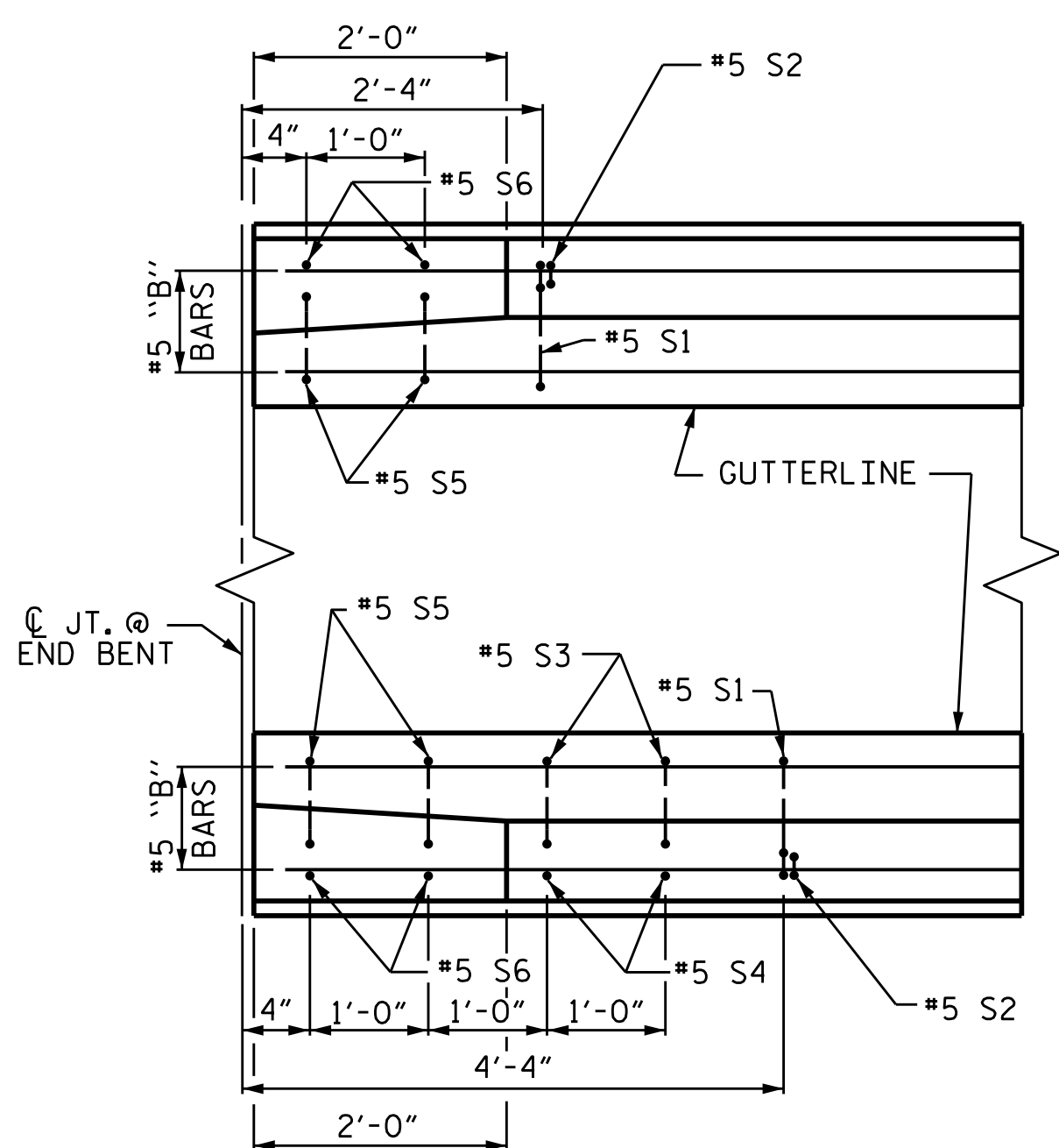
**SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY
WHEN SLIP FORM IS USED)**



END VIEW



SIDE VIEW



PLAN @ END BENTS

**END OF RAIL DETAILS
FOR ADHESIVE ANCHORING AT SAWED JOINTS**

ASSEMBLED BY :	STM	DATE :	12/19
CHECKED BY :	MGC	DATE :	01/20
DRAWN BY :	ARB 5/87	REV. 7/12	MAA/GM
CHECKED BY :	SJD 9/87	REV. 6/13	MAA/GM
		REV. 12/17	MAA/THC

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TGS ENGINEERS
706 HILLSBOROUGH STREET
SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

Professional Engineer Seal: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20125, MARSHALL G. CHECK, JR., 4/14/2020

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
STATION: 34+65.50 -L-
SHEET 4 OF 4

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			60

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

NOTES

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

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

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

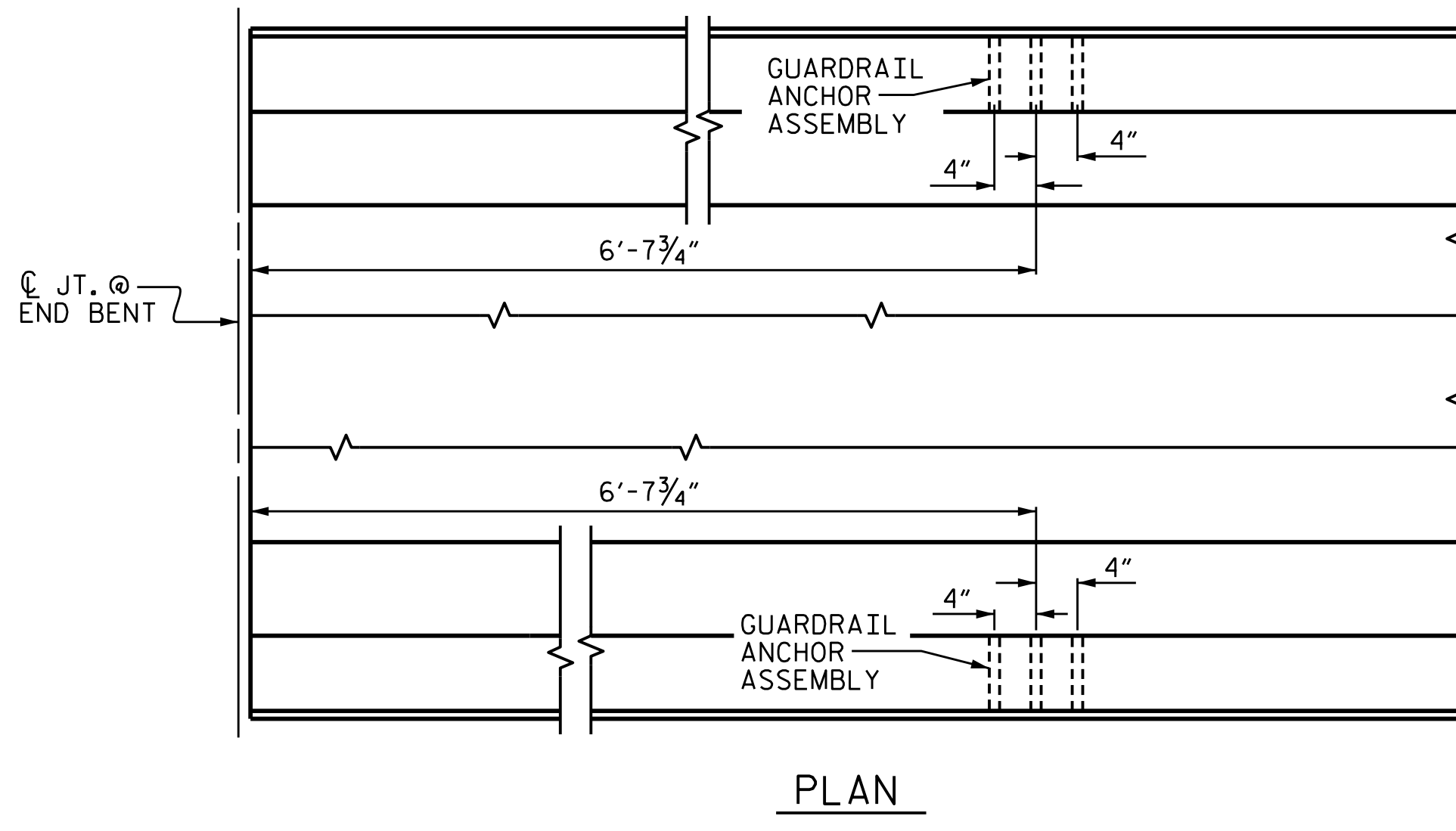
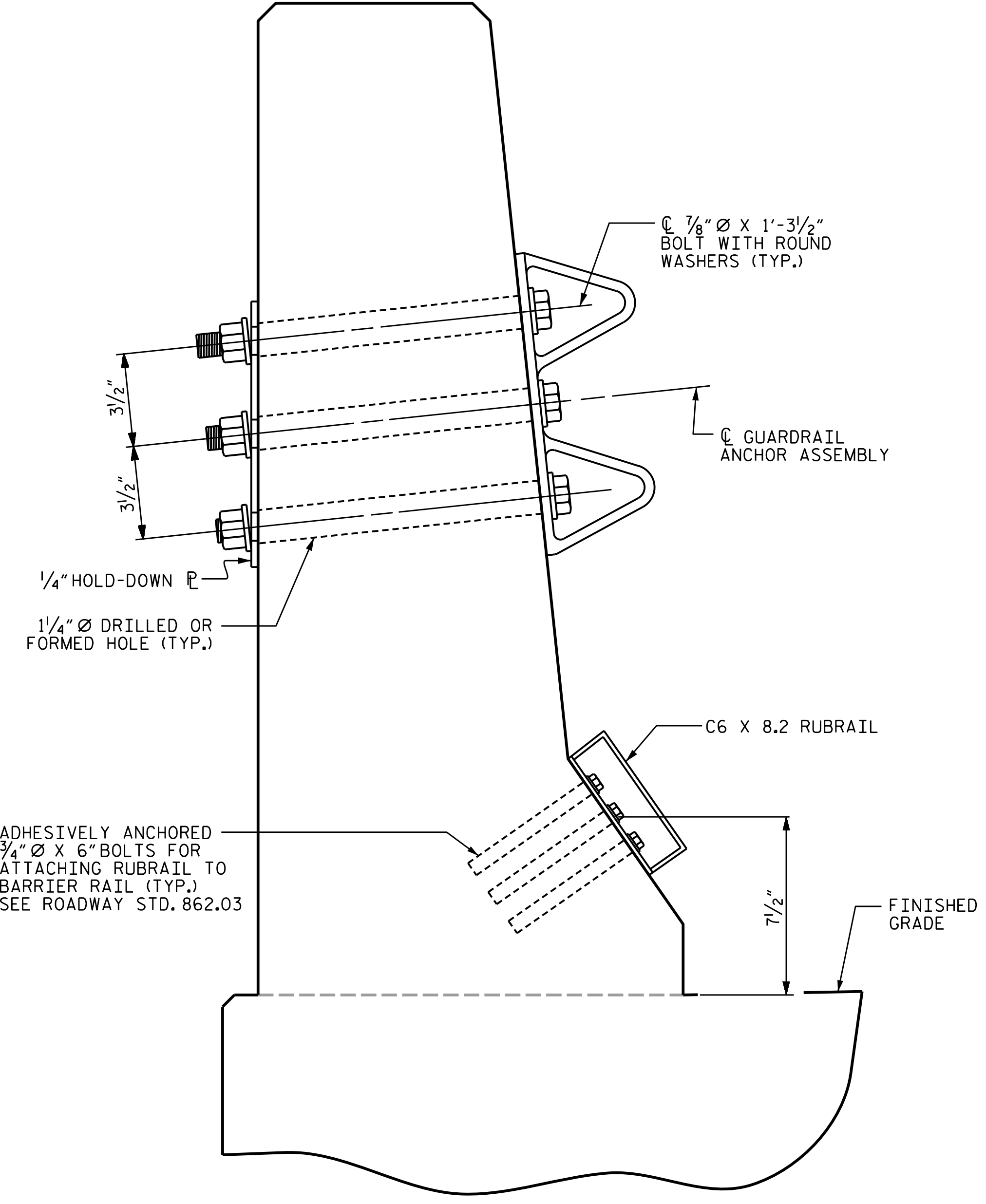
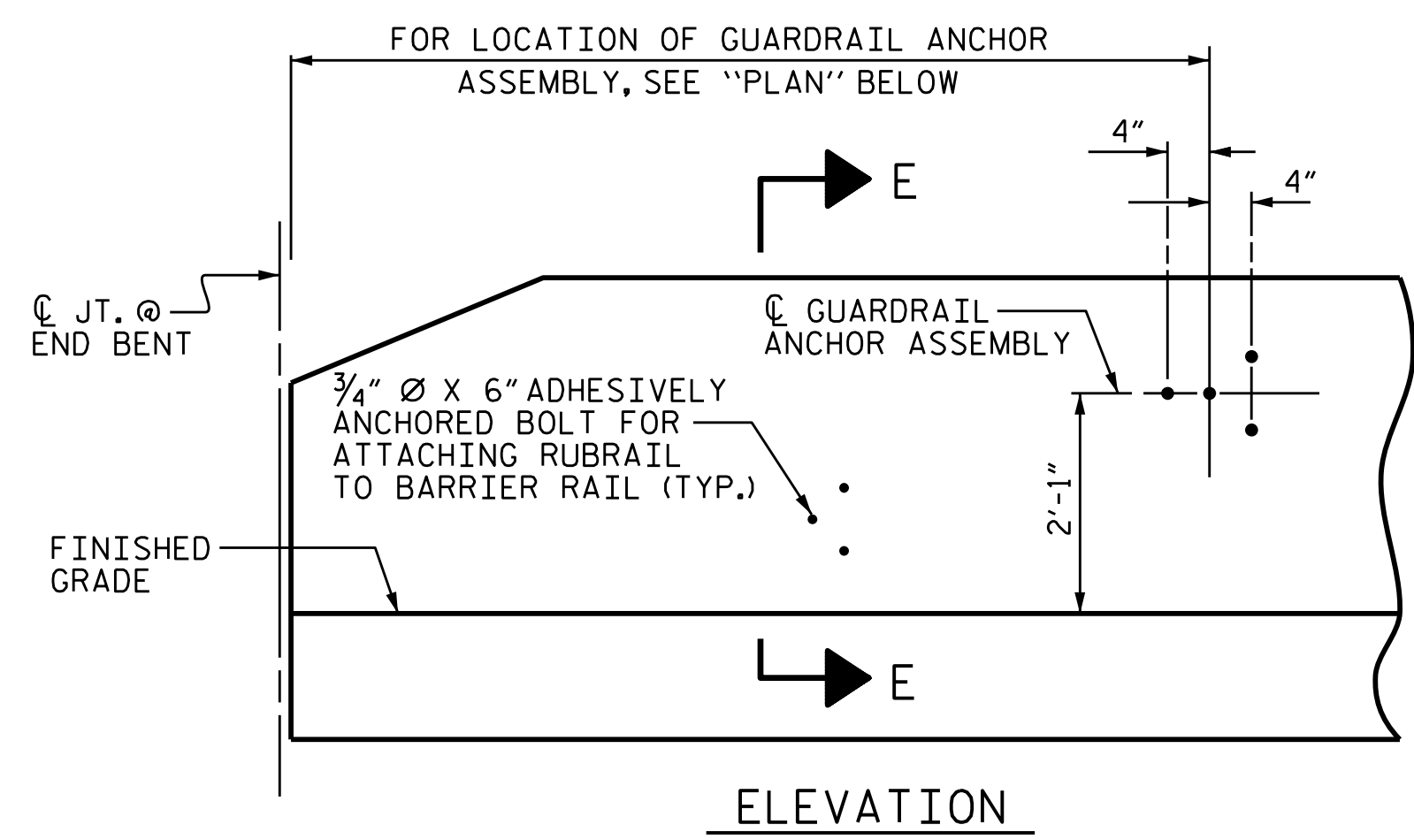
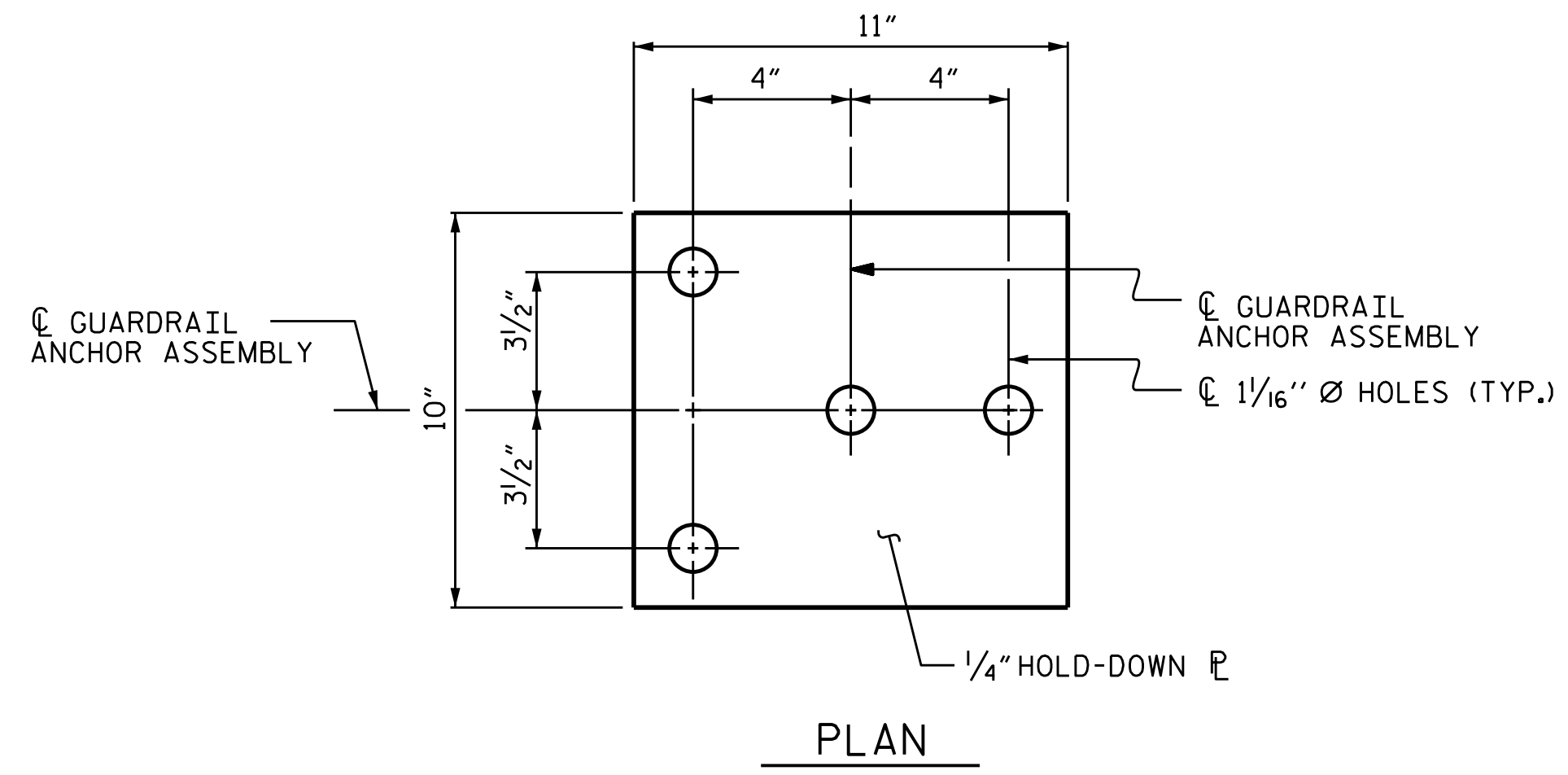
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

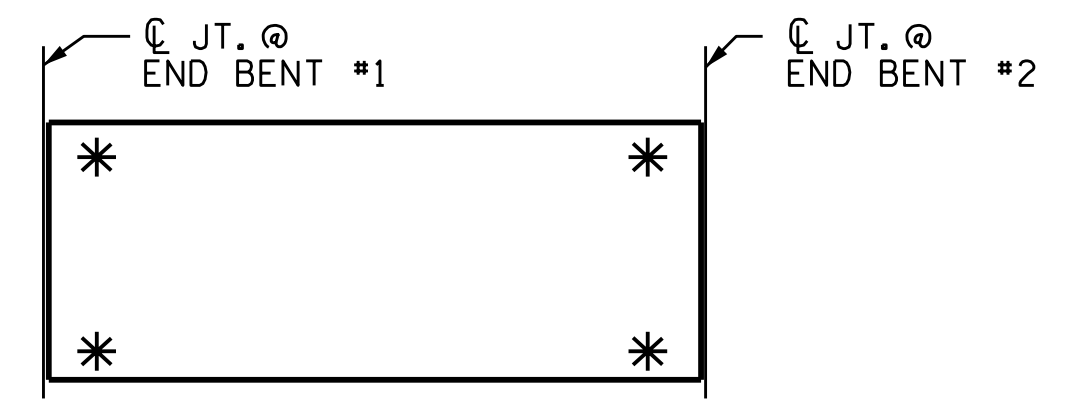
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

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



LOCATION OF ANCHORS FOR GUARDRAIL

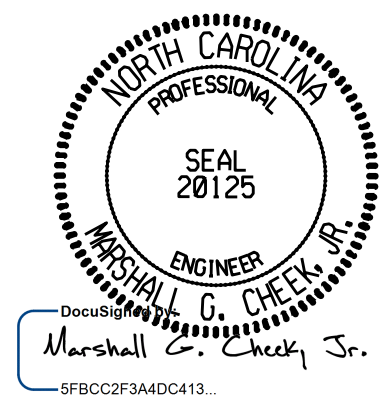
END BENT #1 SHOWN, END BENT #2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-



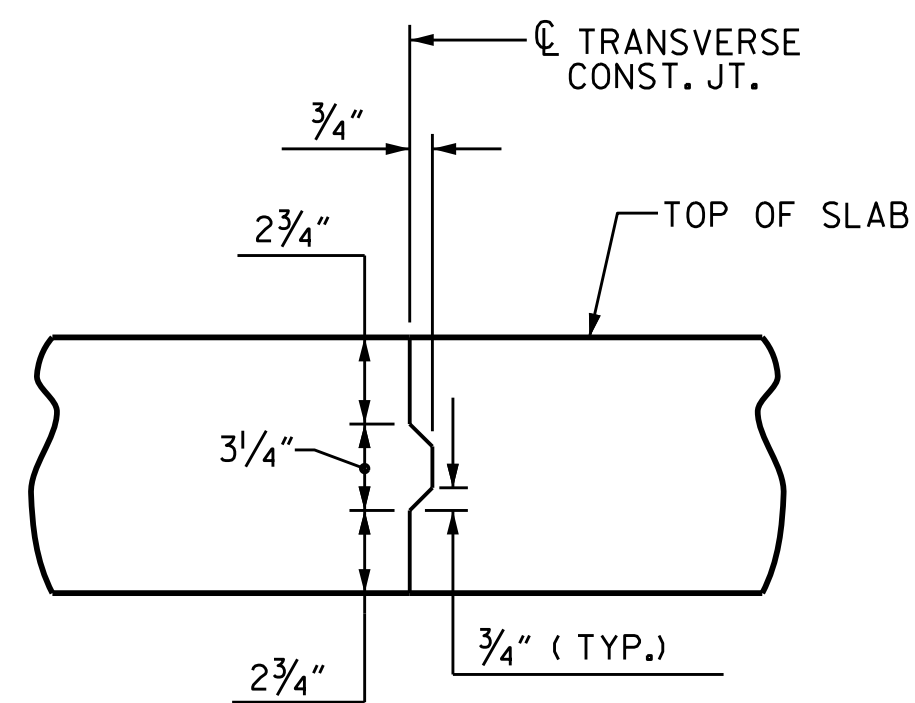
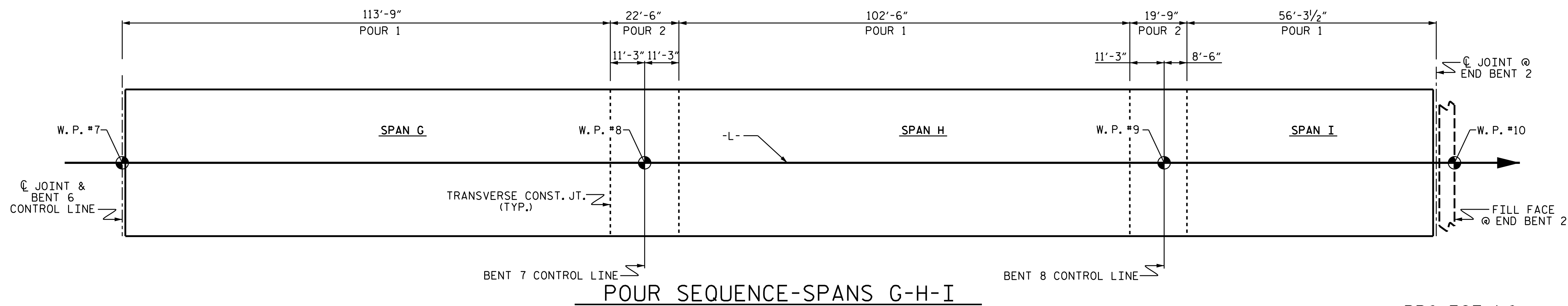
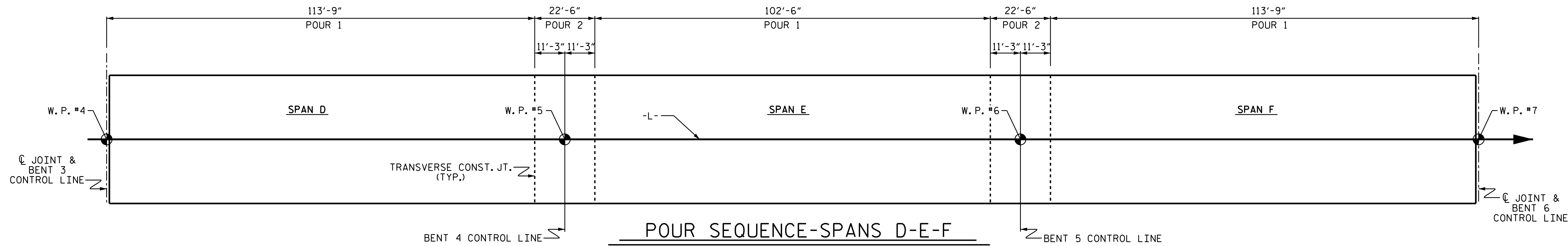
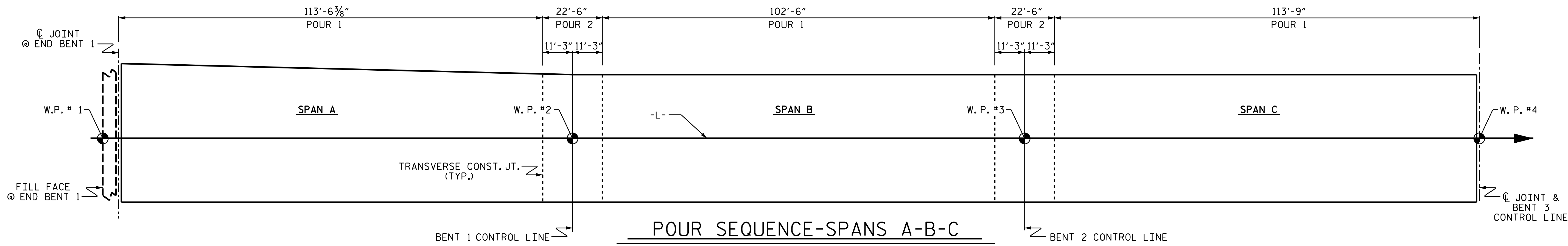
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 FOR BARRIER RAIL

ASSEMBLED BY :	STM	DATE :	01/20
CHECKED BY :	MGC	DATE :	01/20
DRAWN BY :	TLA 5/06	REV. 7/12	MAA/GM
CHECKED BY :	GM 5/06	REV. 6/13	MAA/GM
		REV. 12/17	MAA/THC

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 706 HILLSBOROUGH STREET SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

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

SHEET NO.	S-33
TOTAL SHEETS	60



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
STATION: 34+65.50 -L-

DRAWN BY: S. B. WILLIAMS DATE: 1/20
CHECKED BY: MGC DATE: 1/20
DESIGN ENGINEER OF RECORD: TBE DATE: 2-20

2/20/2020
X:\NC\001\B-5825\Structures\Str. *1 - 34+65.50 -L-\Final Plans\DCNs\401.071.B-5825.SMU.BM1.980035.dgn
User:rsbwilliams

Marshall G. Cheek Jr.
4/14/2020

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SUITE 200
RALEIGH, NC 27603
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CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		SUPERSTRUCTURE CONCRETE DECK POUR DETAILS			
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-34			TOTAL SHEETS 60		

REINFORCING BAR SCHEDULE

SPANS A-B-C						SPANS D-E-F						SPANS G-H-I					
BAR No.	SIZE	TYPE	LENGTH	WEIGHT		BAR No.	SIZE	TYPE	LENGTH	WEIGHT		BAR No.	SIZE	TYPE	LENGTH	WEIGHT	
* A1	463	#5	STR.	34'-11"	16,862	* A1	642	#5	STR.	34'-11"	23,380	* A1	538	#5	STR.	34'-11"	19,593
A2	463	#5	STR.	34'-11"	16,862	A2	642	#5	STR.	34'-11"	23,380	A2	538	#5	STR.	34'-11"	19,593
* A101	35	#5	STR.	35'- 5"	1,293	B1	203	#5	STR.	55'- 4"	11,716	* B6	69	#4	STR.	40'- 5"	1,863
* A102	35	#5	STR.	35'-11"	1,311	* B4	20	#4	STR.	39'-3"	524	* B7	89	#6	STR.	19'- 0"	2,540
* A103	35	#5	STR.	36'- 5"	1,329	* B6	138	#4	STR.	40'-5"	3,726	* B8	69	#4	STR.	37'-11"	1,748
* A104	35	#5	STR.	36'-11"	1,348	* B7	178	#6	STR.	19'-0"	5,080	B9	174	#5	STR.	54'- 3"	9,845
* A105	38	#5	STR.	37'- 5"	1,483	* B8	69	#4	STR.	37'-11"	1,748	* B10	18	#4	STR.	36'- 7"	440
A201	35	#5	STR.	35'- 5"	1,293	* G2	2	#5	STR.	34'-11"	73	* B11	46	#4	STR.	30'-11"	950
A202	35	#5	STR.	35'-11"	1,311	* K1	8	#8	1	14'-0"	299	* B12	89	#6	STR.	16'- 3"	2172
A203	35	#5	STR.	36'- 5"	1,329	* K2	8	#8	2	20'-5"	436	* G2	2	#5	STR.	34'-11"	73
A204	35	#5	STR.	36'-11"	1,348	* S1	36	#5	3	6'-0"	225	* K1	8	#8	1	14'-0"	299
A205	38	#5	STR.	37'- 5"	1,483							* K2	8	#8	2	20'-5"	436
B1	105	#5	STR.	55'- 4"	6,060							* S1	36	#5	3	6'-0"	225
B2	54	#5	STR.	42'- 8"	2,403	REINFORCING STEEL				35,096 LBS.							
B3	70	#5	STR.	51'- 7"	3,766							REINFORCING STEEL					29,438 LBS.
* B4	20	#4	STR.	39'-3"	524	* EPOXY COATED REINFORCING STEEL				35,491 LBS.		* EPOXY COATED REINFORCING STEEL					30,339 LBS.
* B5	4	#4	STR.	47'-8"	127												
* B6	138	#4	STR.	40'-5"	3,726												
* B7	178	#6	STR.	19'-0"	5,080												
* B8	69	#4	STR.	37'-11"	1,748												
* G1	1	#5	STR.	37'-11"	40												
* G2	1	#5	STR.	34'-11"	36												
* K1	8	#8	1	14'-0"	299												
* K2	8	#8	2	20'-5"	436												
* S1	40	#5	3	6'-0"	250												
REINFORCING STEEL					35,855 LBS.												
* EPOXY COATED REINFORCING STEEL					35,892 LBS.												

CLASS AA CONCRETE BREAKDOWN

POUR #1

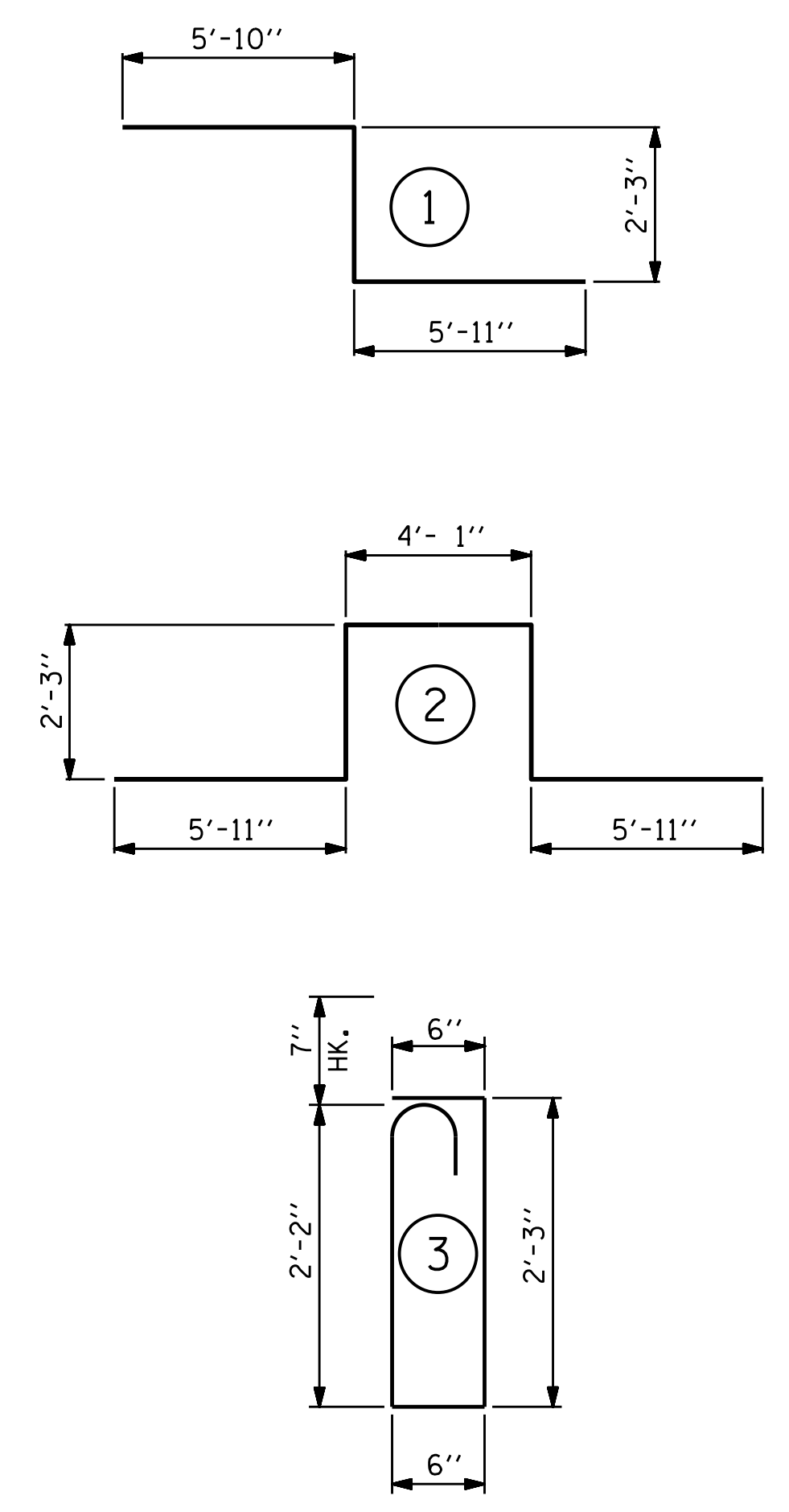
SPAN A	146.0	CU. YDS.
SPAN B	124.5	CU. YDS.
SPAN C	139.8	CU. YDS.
SPAN D	139.8	CU. YDS.
SPAN E	124.5	CU. YDS.
SPAN F	139.8	CU. YDS.
SPAN G	139.8	CU. YDS.
SPAN H	124.5	CU. YDS.
SPAN I	70.0	CU. YDS.
TOTAL POUR #1	1,148.7	CU. YDS.

POUR #2

@ W. P. #2	27.4	CU. YDS.
@ W. P. #3	27.3	CU. YDS.
@ W. P. #5	27.3	CU. YDS.
@ W. P. #6	27.3	CU. YDS.
@ W. P. #8	27.3	CU. YDS.
@ W. P. #9	24.0	CU. YDS.
TOTAL POUR #2	160.6	CU. YDS.
TOTAL	1,309.3	CU. YDS.

FOR LOCATION OF POURS, SEE "CONCRETE DECK POUR DETAILS" SHEET

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
SPANS A-B-C	465.0	35,855	35,892
SPANS D-E-F	458.7	35,096	35,491
SPANS G-H-I	385.6	29,438	30,339
TOTALS**	1309.3	100,389	101,722

**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

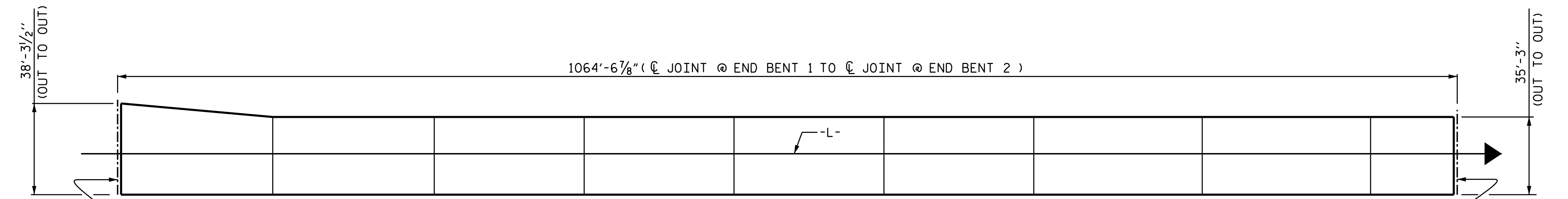
PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-

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

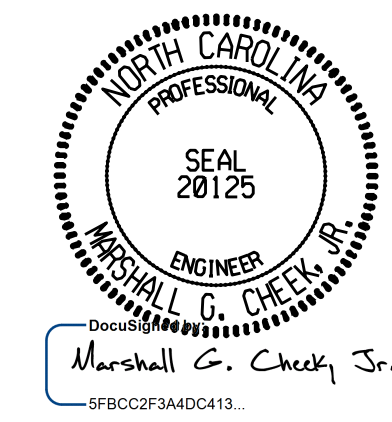
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPETS, AND BARRIER RAILS		APPROACH SLABS		PARAPETS AND BARRIER RAILS
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	1'-11"	1'-7"	1'-11"	1'-7"	2'-6"
#5	2'-5"	2'-0"	2'-5"	2'-0"	3'-1"
#6	2'-10"	2'-5"	3'-7"	2'-5"	3'-8"
#7	4'-2"	2'-9"			
#8	4'-9"	3'-2"			

GROOVING BRIDGE FLOORS

APPROACH SLABS	1,454	SO.FT.
BRIDGE DECK	30,983	SO.FT.
TOTAL	32,437	SO.FT.



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 37,716)



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

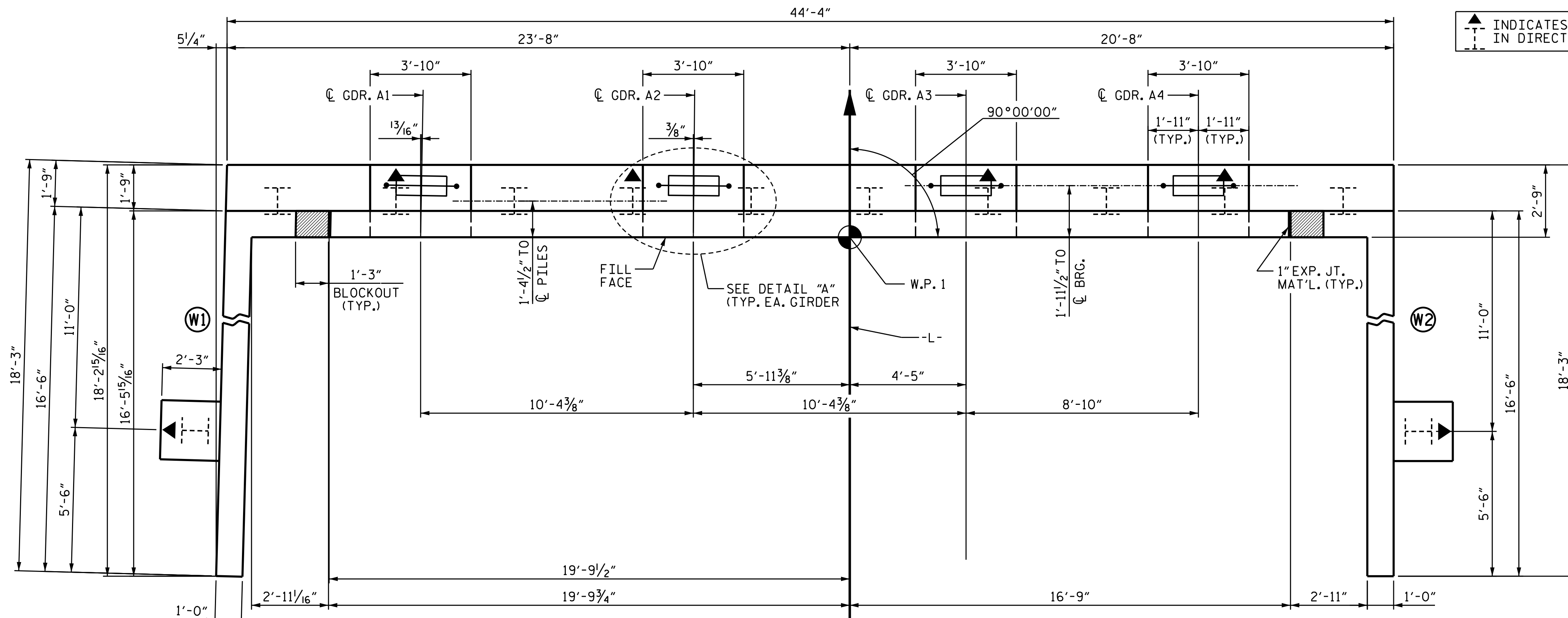
SUPERSTRUCTURE BILL OF MATERIAL

ASSEMBLED BY : S. B. WILLIAMS	DATE : 10/19
CHECKED BY : MGC	DATE : 1/20
DRAWN BY : JMB 5/87	REV. 10/1/11 MAA/GM
CHECKED BY : SJD 9/87	REV. 12/17 MAA/THC
	REV. 06/19 BNB/THC

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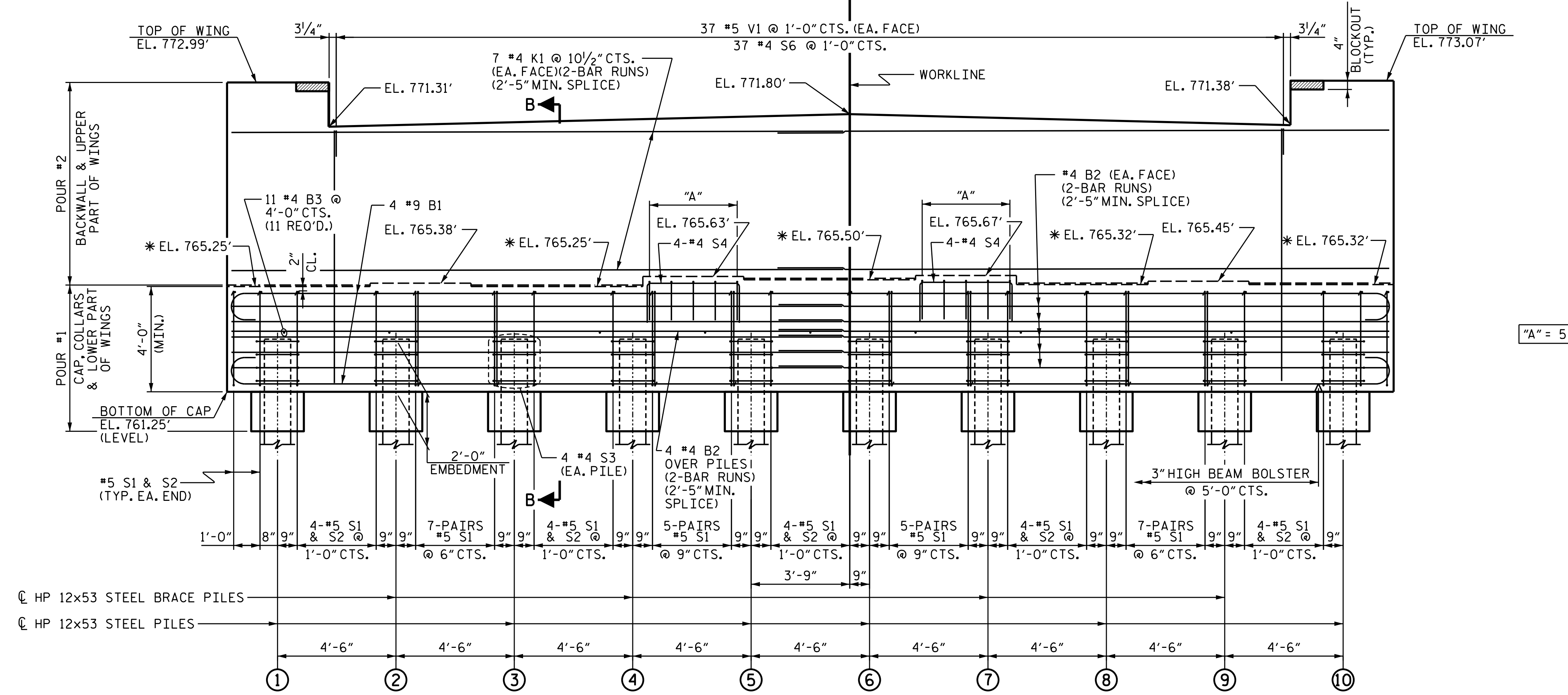
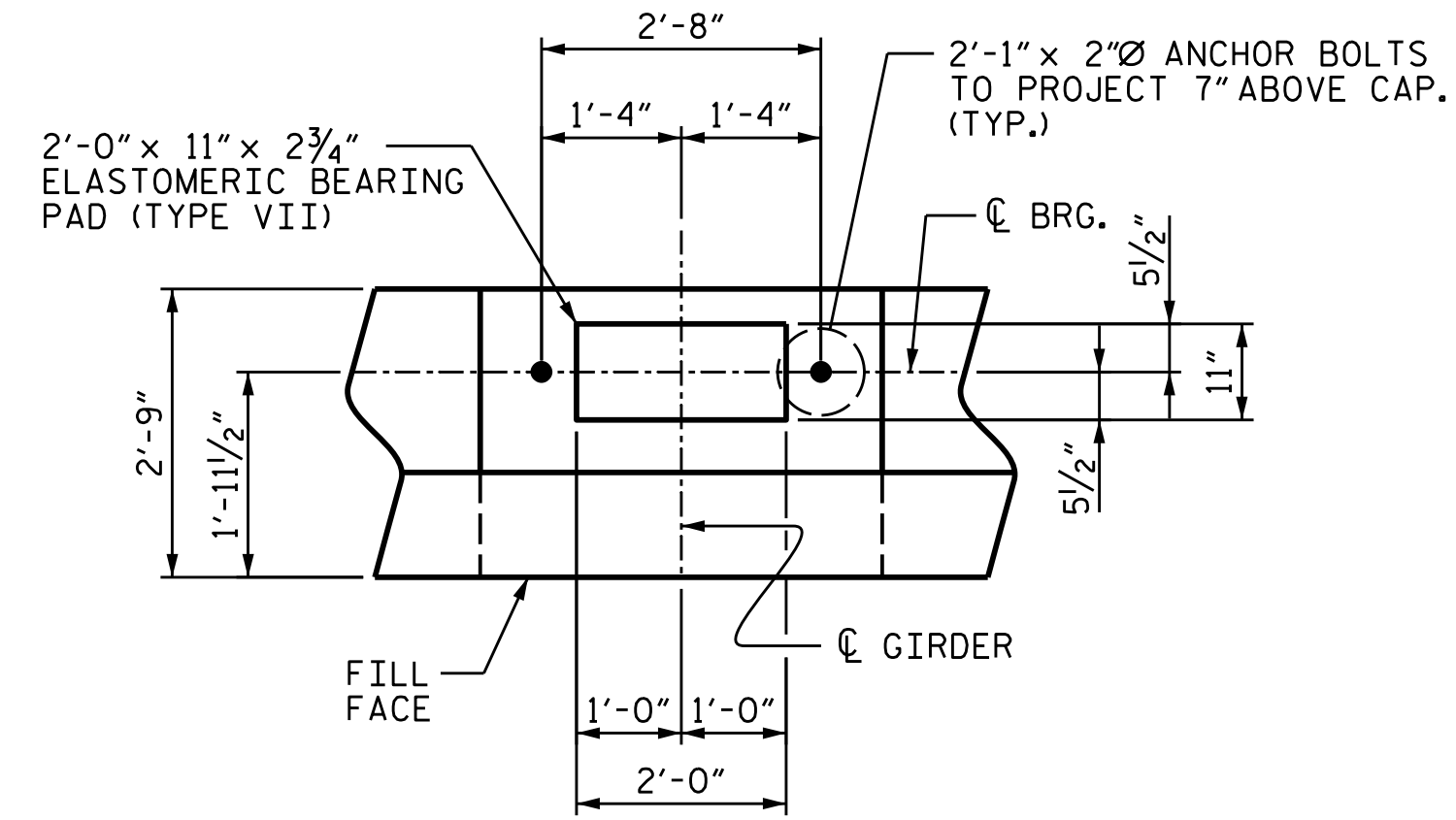
TGS ENGINEERS
 706 HILLSBOROUGH STREET
 SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO. : C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			60
2			4			



▲ INDICATES 3:12 PILE BATTER IN DIRECTION SHOWN.

NOTES :
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
 FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.
 FOR WING DETAILS, SEE SHEET 2 OF 3.
 BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
 THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
 THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT GIRDERS 1 & 2 ARE SLIGHTLY SKEWED.



"A" = 5 #4 S5 @ 10" CTS.

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50-L-
 SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

END BENT No. 1

4/14/2020

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 CORP. LICENSE NO.: C-0275

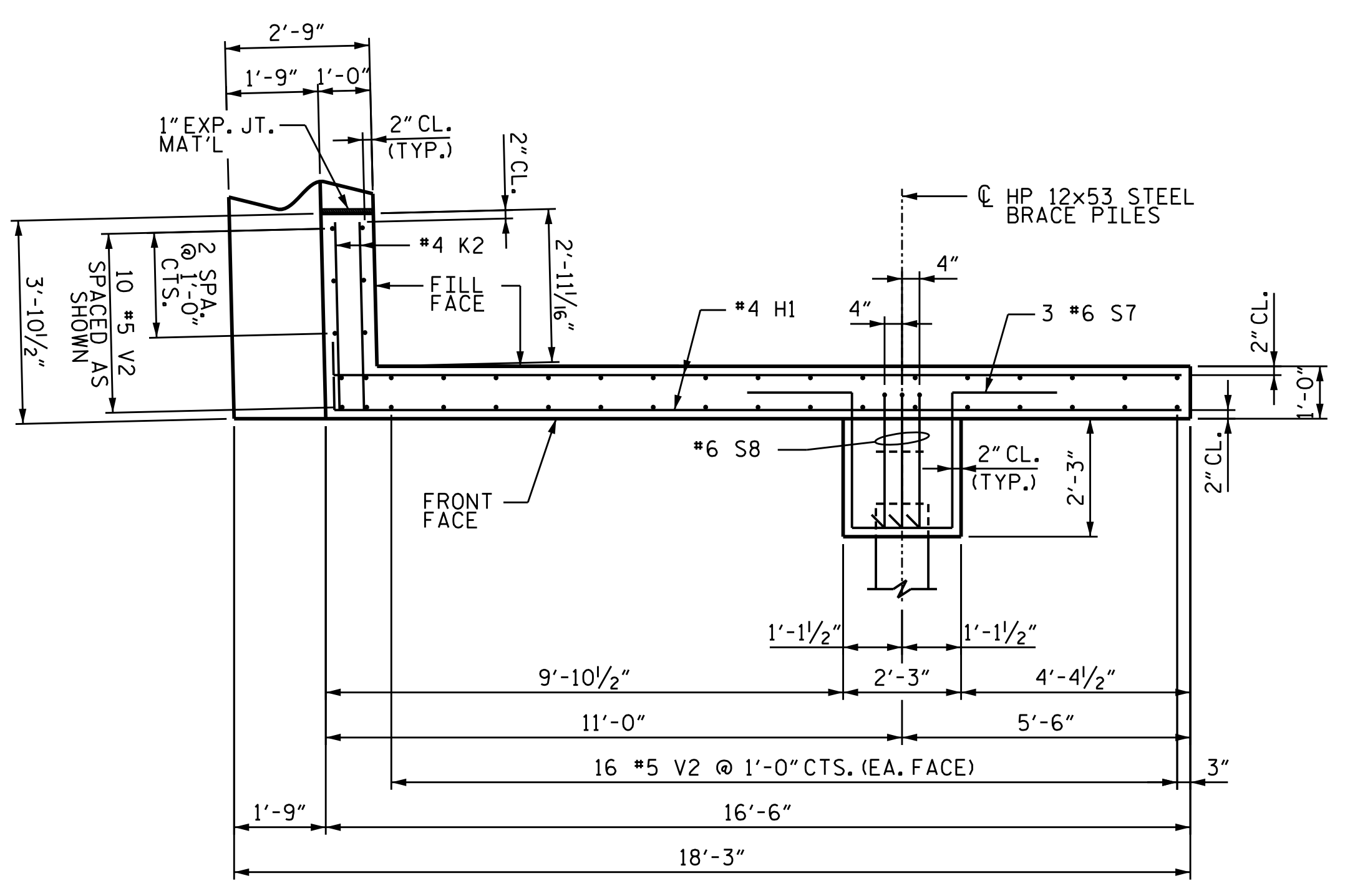
REVISIONS		SHEET NO.
NO.	BY:	DATE:
1		
2		

NO.	BY:	DATE:	NO.	BY:	DATE:
3			4		

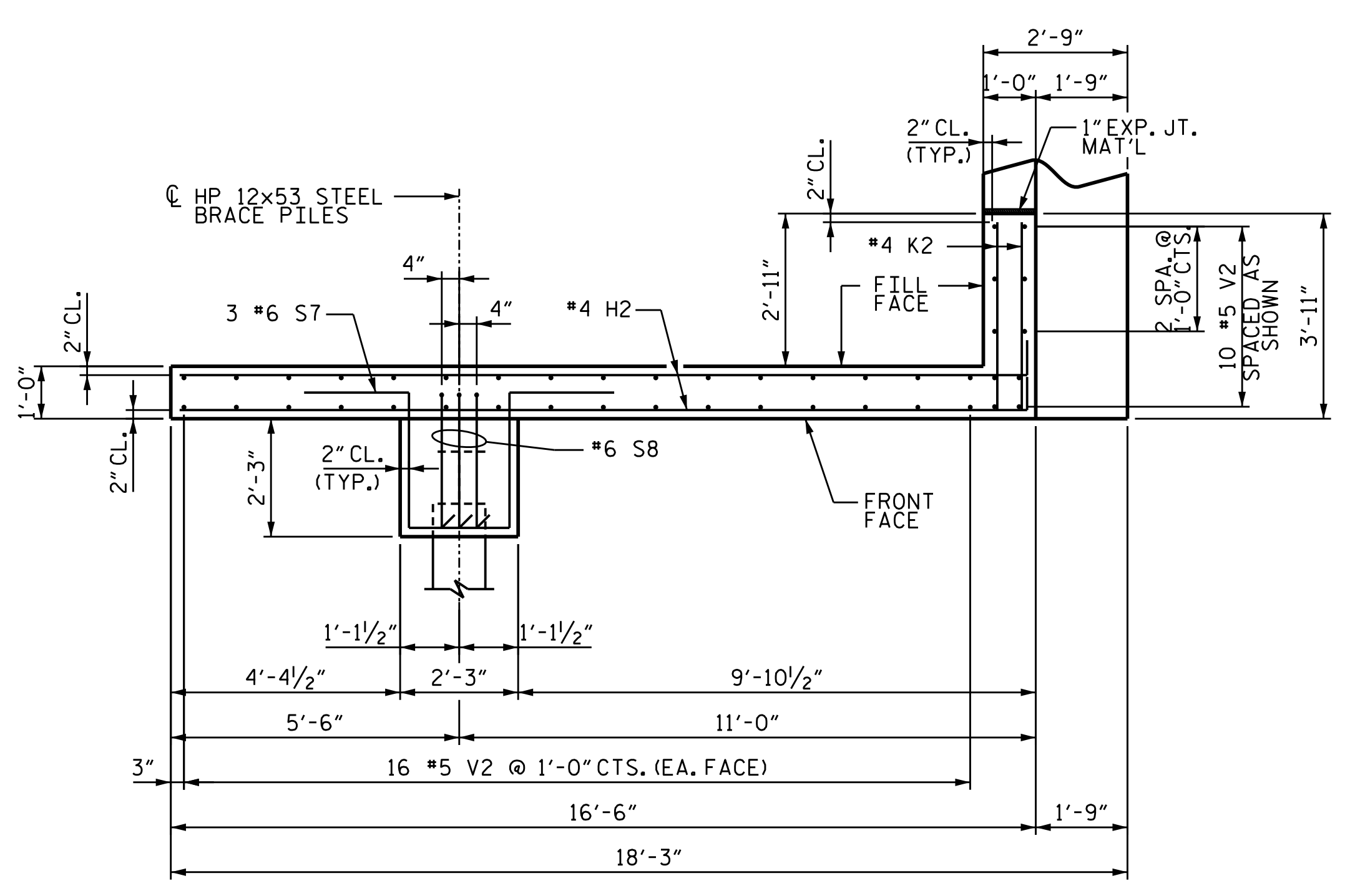
SHEET NO. S-36
 TOTAL SHEETS 60

DRAWN BY : JLA DATE : 11/19
 CHECKED BY : RAR DATE : 12/19
 DESIGN ENGINEER OF RECORD : TBE DATE : 2/20

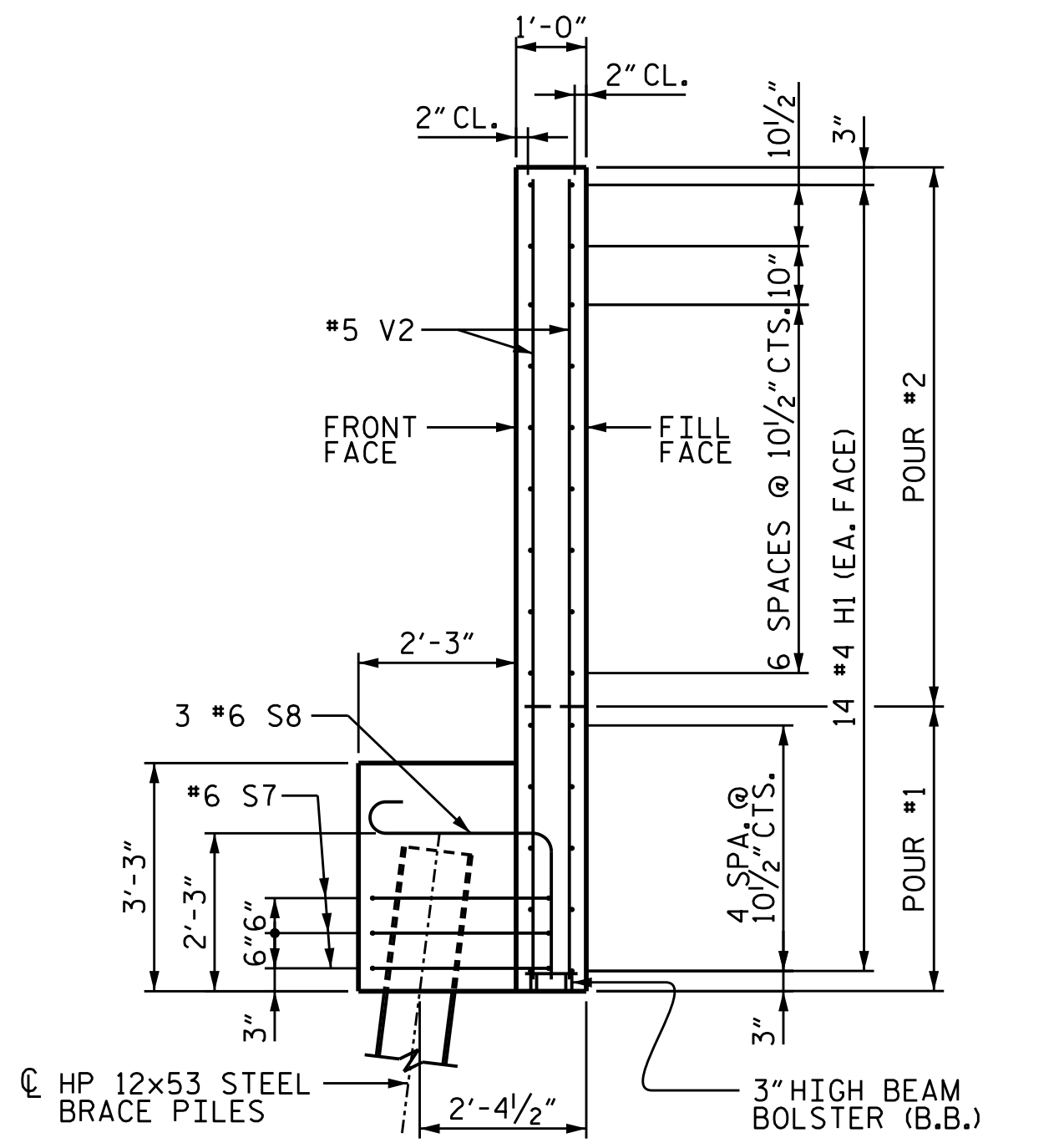
FOR BRIDGE SEAT REINFORCING STEEL SEE SHEET 3 OF 3, FOR SECTION B-B SEE SHEET 3 OF 3
 * FOR LOCATION OF ELEVATION BETWEEN BRIDGE SEAT BUILDUPS, SEE TYPICAL SECTION



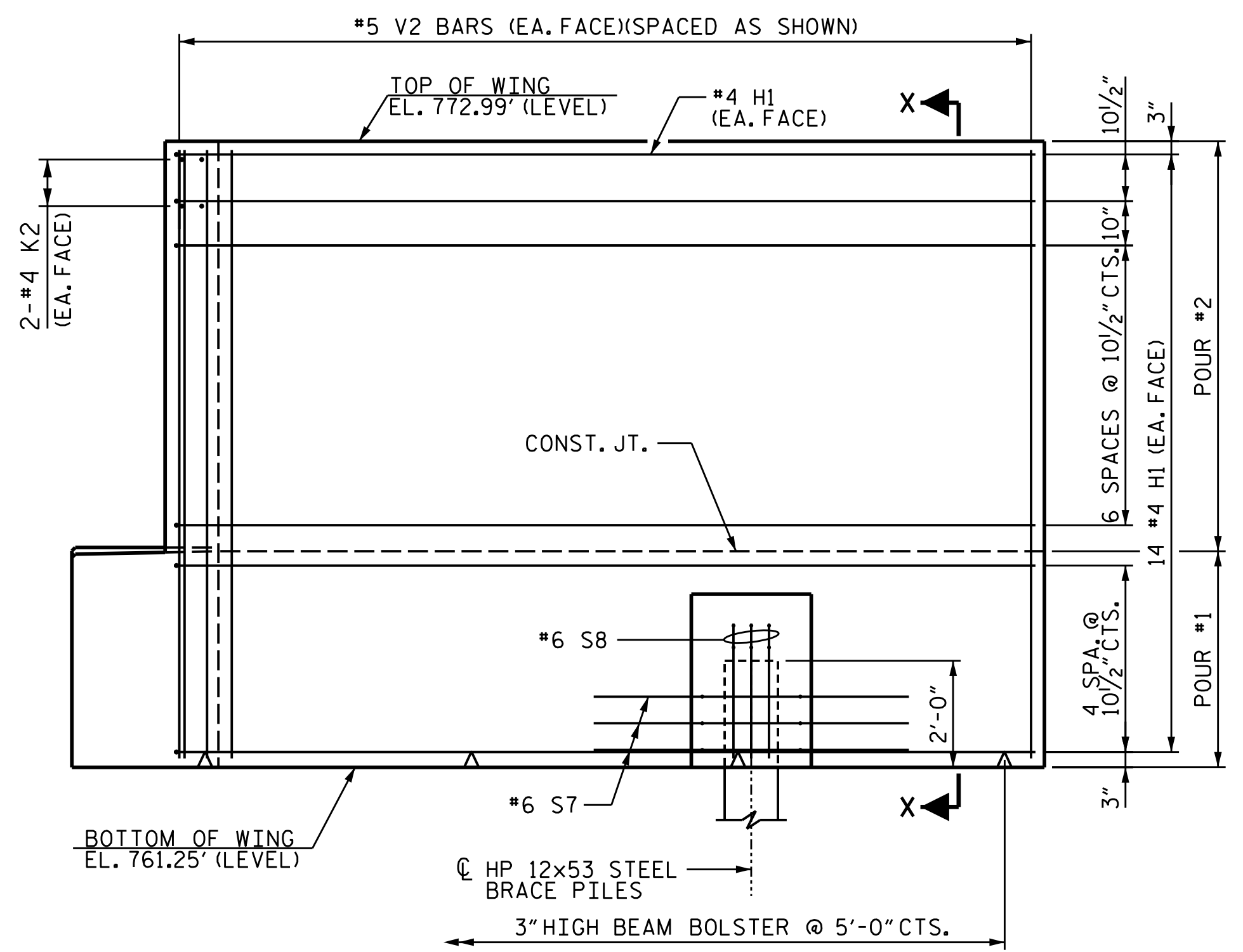
PLAN OF WING (W1)



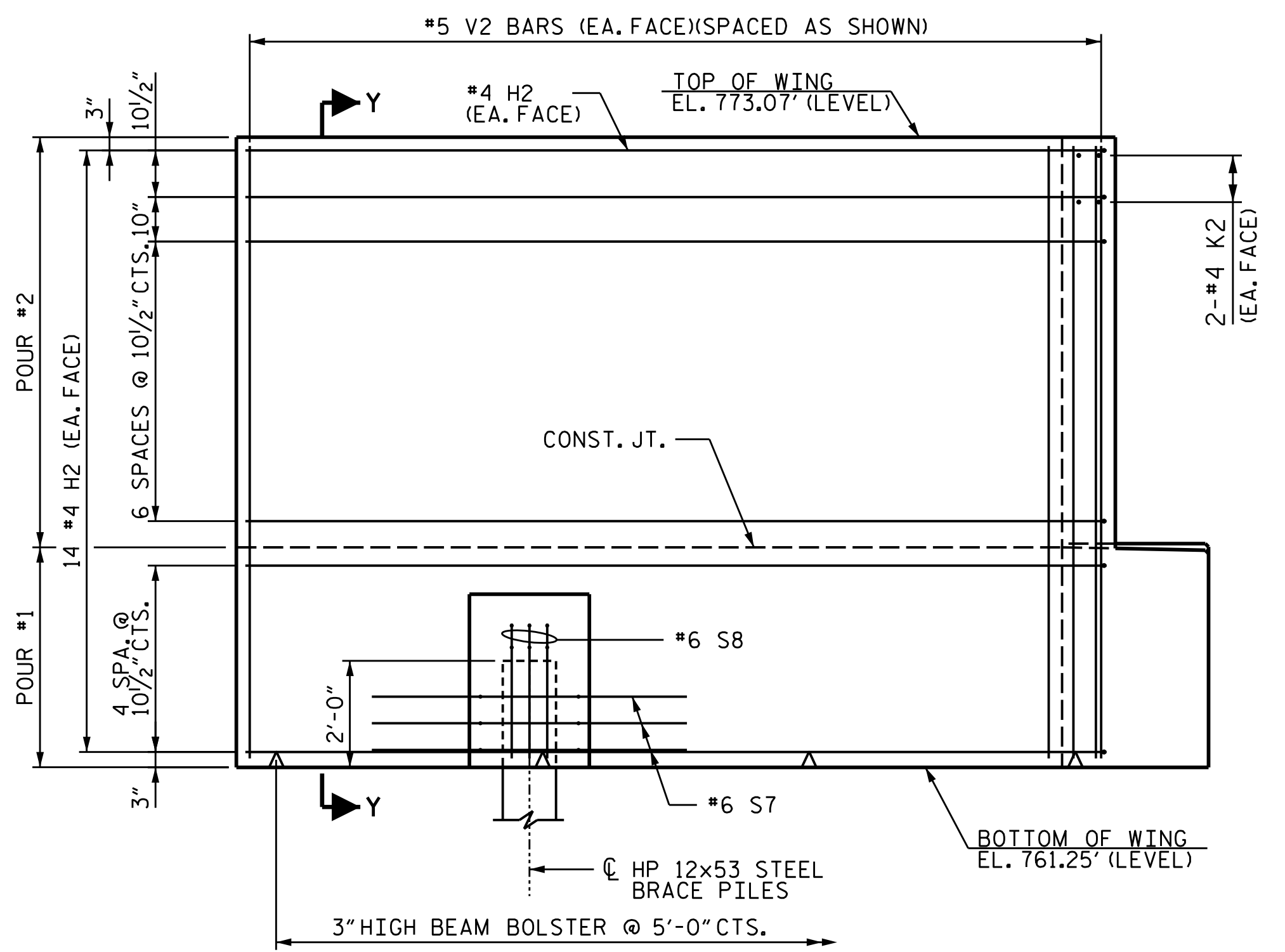
PLAN OF WING (W2)



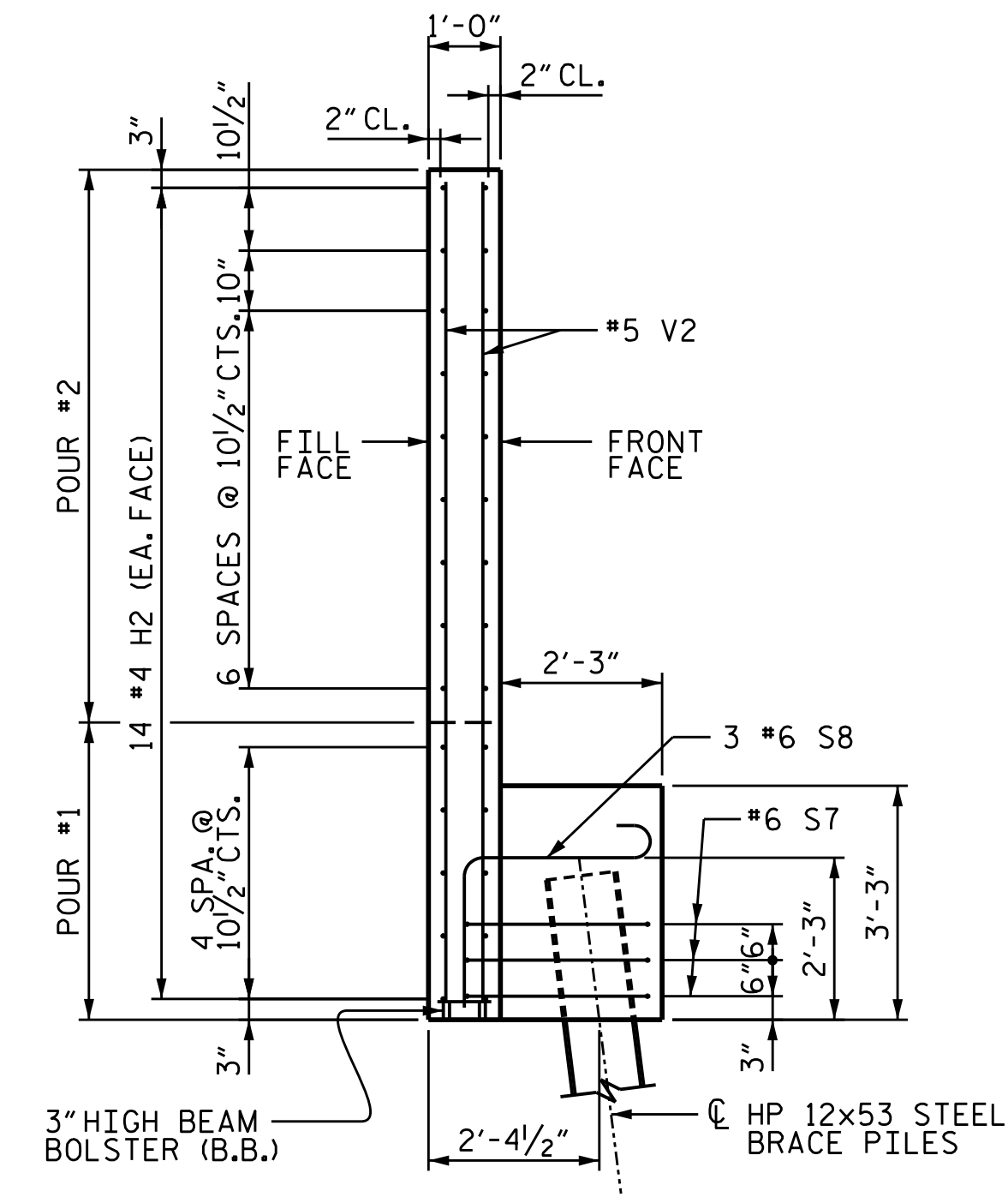
SECTION X-X



ELEVATION OF WING (W1)

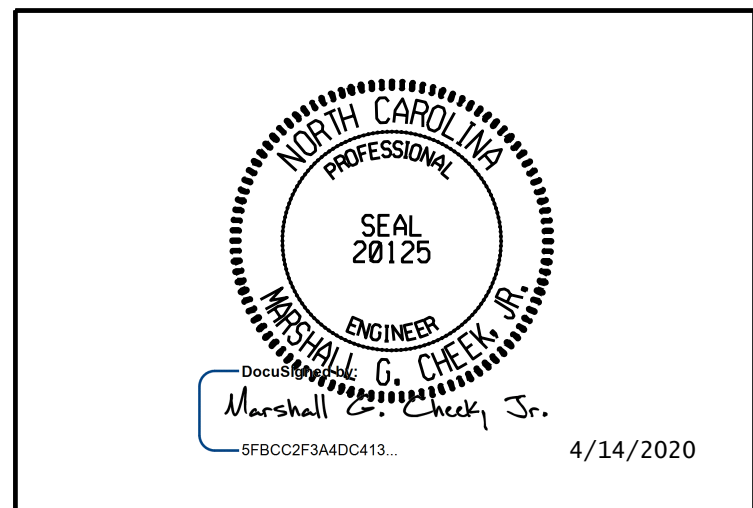


ELEVATION OF WING (W2)



SECTION Y-Y

PROJECT NO. B-5825
 YADKIN/FORSYTH COUNTY
 STATION: 34+65.50-L-
 SHEET 2 OF 3

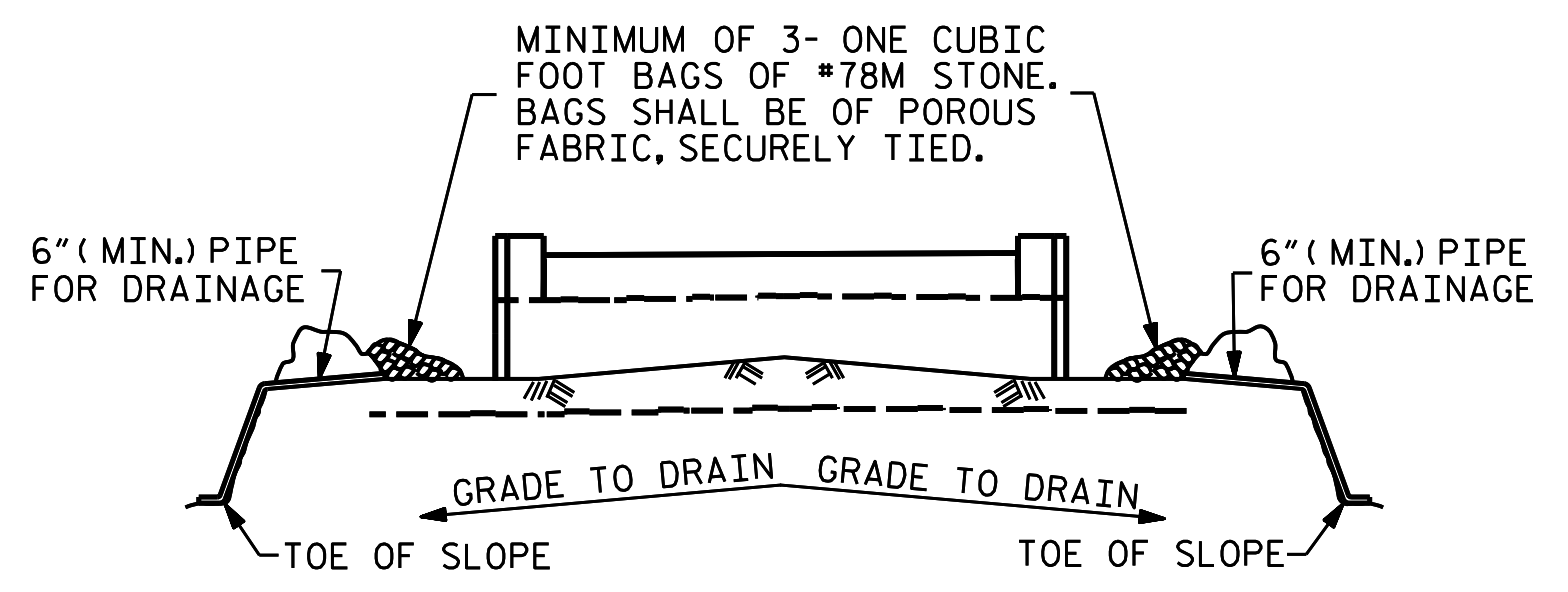


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 END BENT No. 1
 WING DETAILS

DRAWN BY: JLA DATE: 11/19
 CHECKED BY: RAR DATE: 12/19
 DESIGN ENGINEER OF RECORD: TBE DATE: 2/20

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 SHELBY, NC 28150
 PH (704) 476-0003
 CORP. LICENSE NO.: C-0275

REVISIONS		SHEET NO.
NO.	DATE	
1		S-37
2		TOTAL SHEETS 60

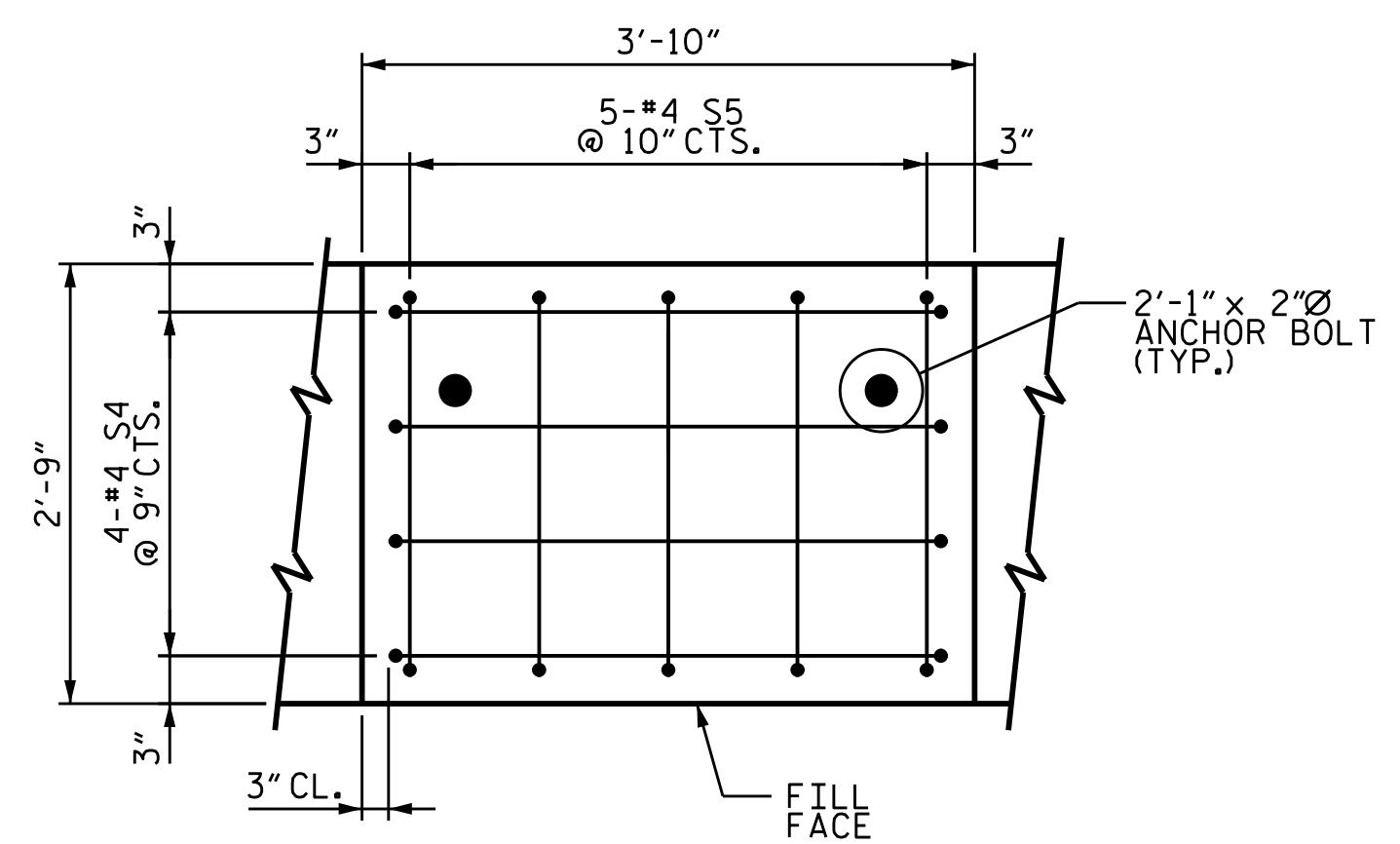


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

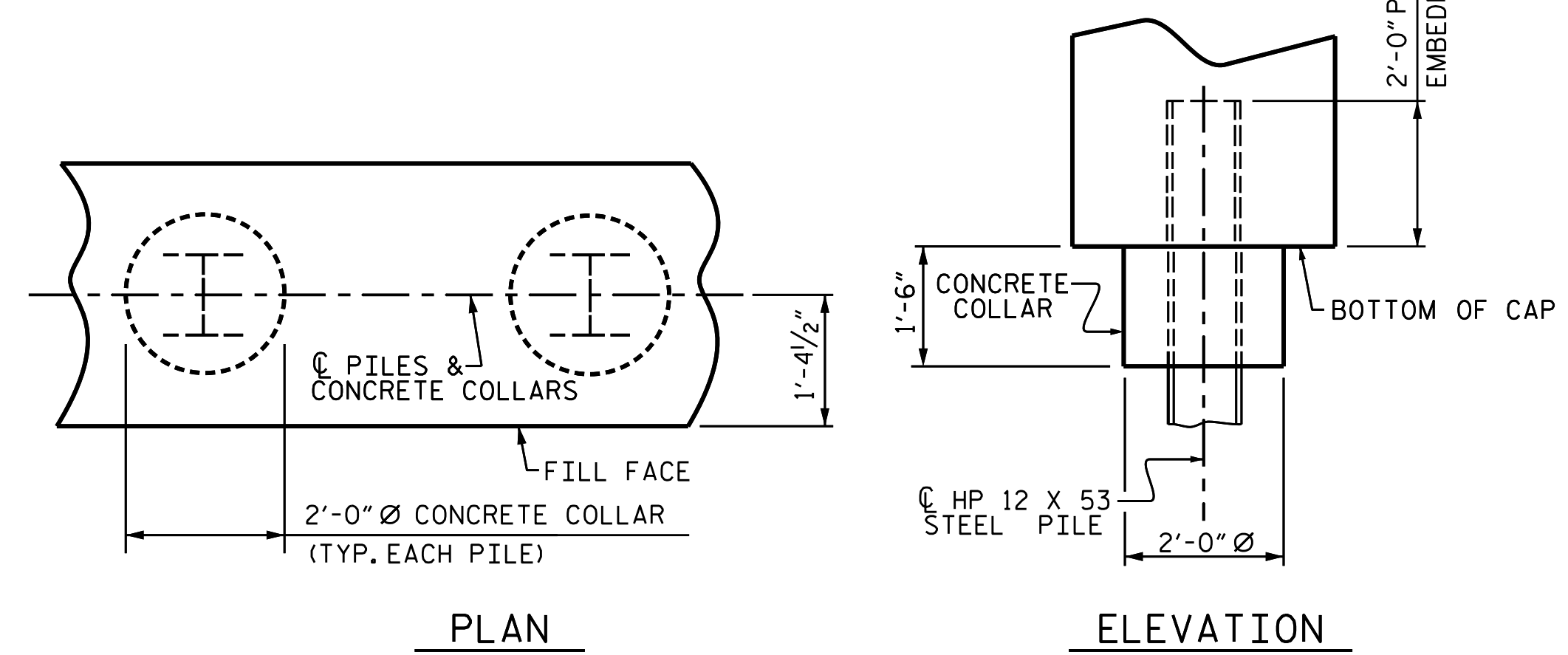
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

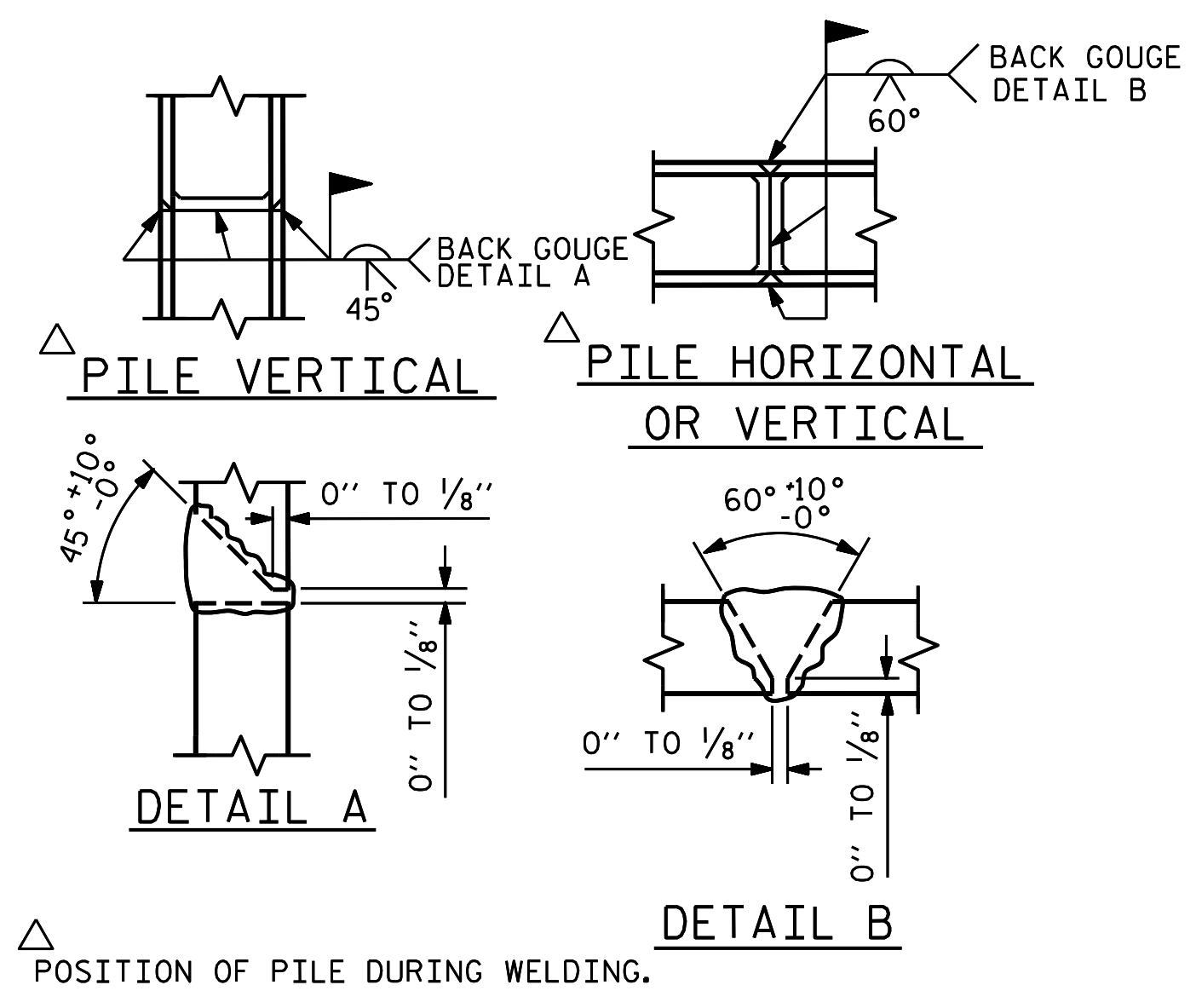


BRIDGE SEAT REINFORCING DETAIL

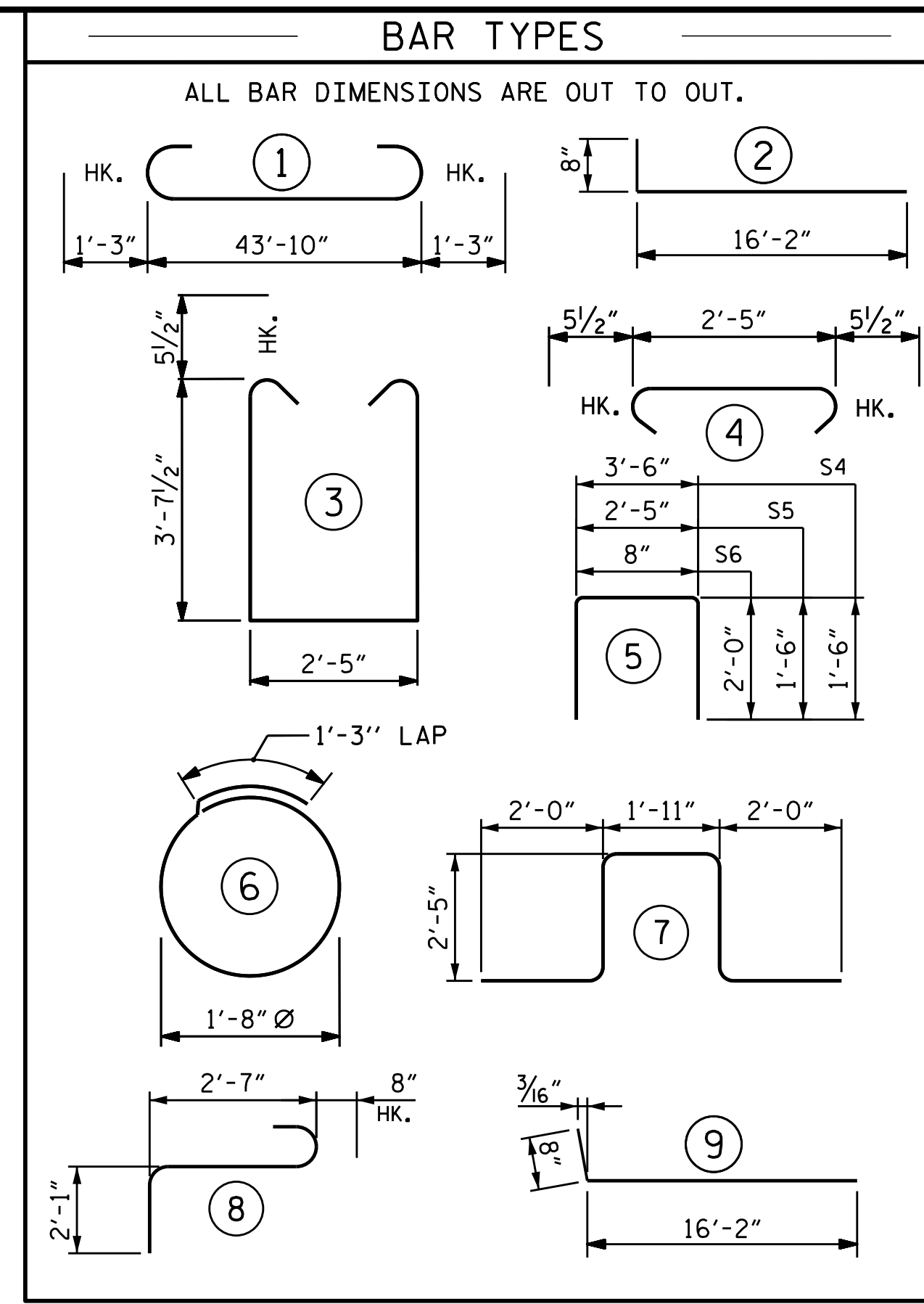
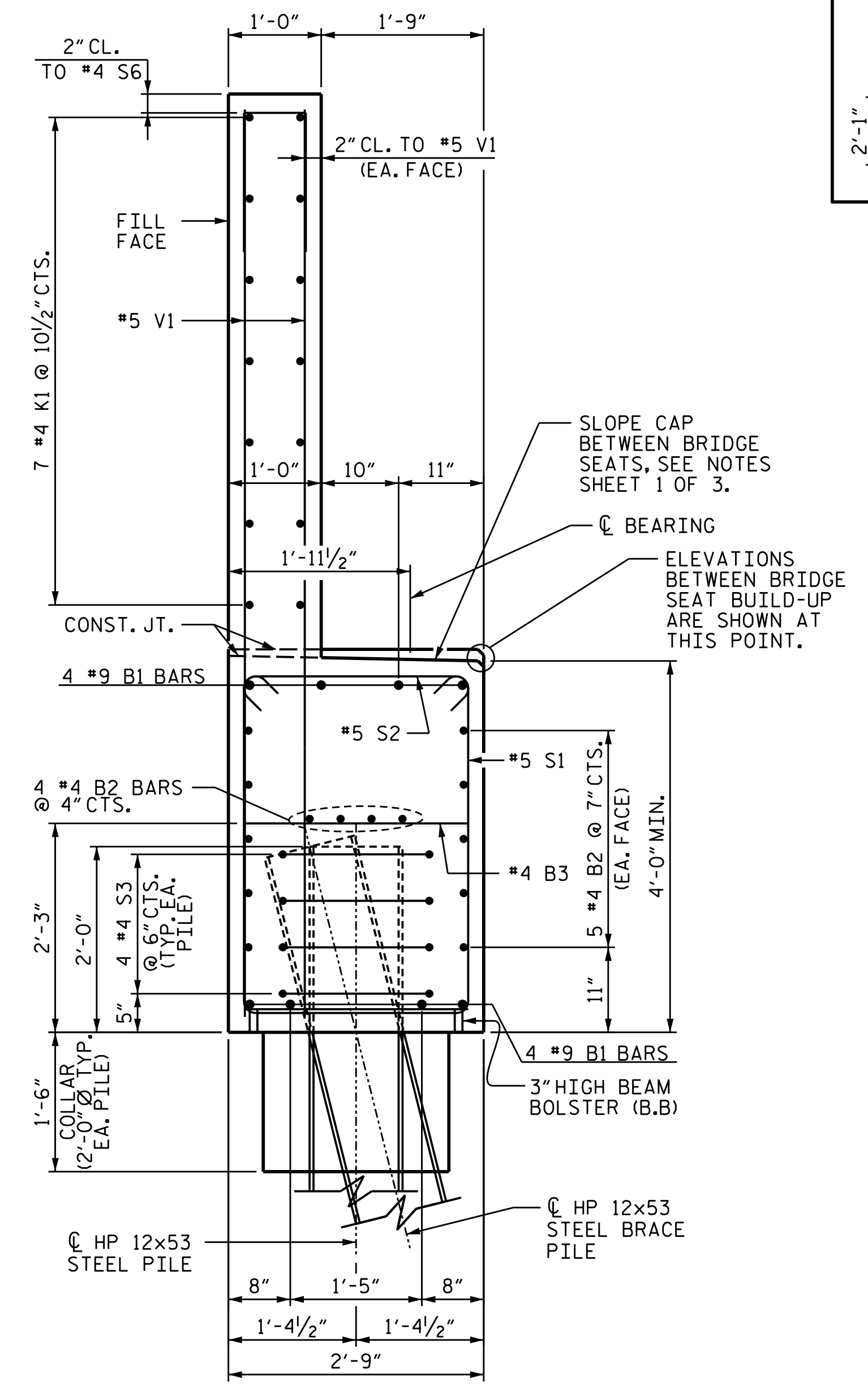
(TYPICAL FOR GIRDERS 2 AND 3 SEATS)



CORROSION PROTECTION FOR STEEL PILES DETAIL



PILE SPLICE DETAILS



BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	46'-4"	1,260
B2	28	#4	STR	23'-3"	435
B3	11	#4	STR	2'-5"	18
H1	28	#4	9	16'-10"	315
H2	28	#4	2	16'-10"	315
K1	28	#4	STR.	23'-3"	435
K2	8	#4	STR.	3'-6"	19
S1	72	#5	3	10'-7"	795
S2	24	#5	4	3'-4"	83
S3	40	#4	6	6'-6"	174
S4	8	#4	5	6'-6"	35
S5	10	#4	5	5'-5"	36
S6	37	#4	STR.	4'-8"	115
S7	6	#6	7	10'-9"	97
S8	6	#6	8	5'-4"	48
V1	74	#5	STR.	9'-8"	746
V2	84	#5	STR.	11'-4"	993
REINFORCING STEEL					5,919 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #1	CAP, LOWER PART OF WINGS & COLLARS			26.5 C.Y.	
POUR #2	BACKWALL AND UPPER PART OF WINGS			19.2 C.Y.	
TOTAL CLASS A CONCRETE				45.7 C.Y.	
HP 12 X 53 STEEL PILES					
NO: 12		LIN. FT. = 690			
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES					
EACH = 12					

PROJECT NO. B-5825

YADKIN/FORSYTH COUNTY

STATION: 34+65.50-L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT No. 1
DETAILS

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SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

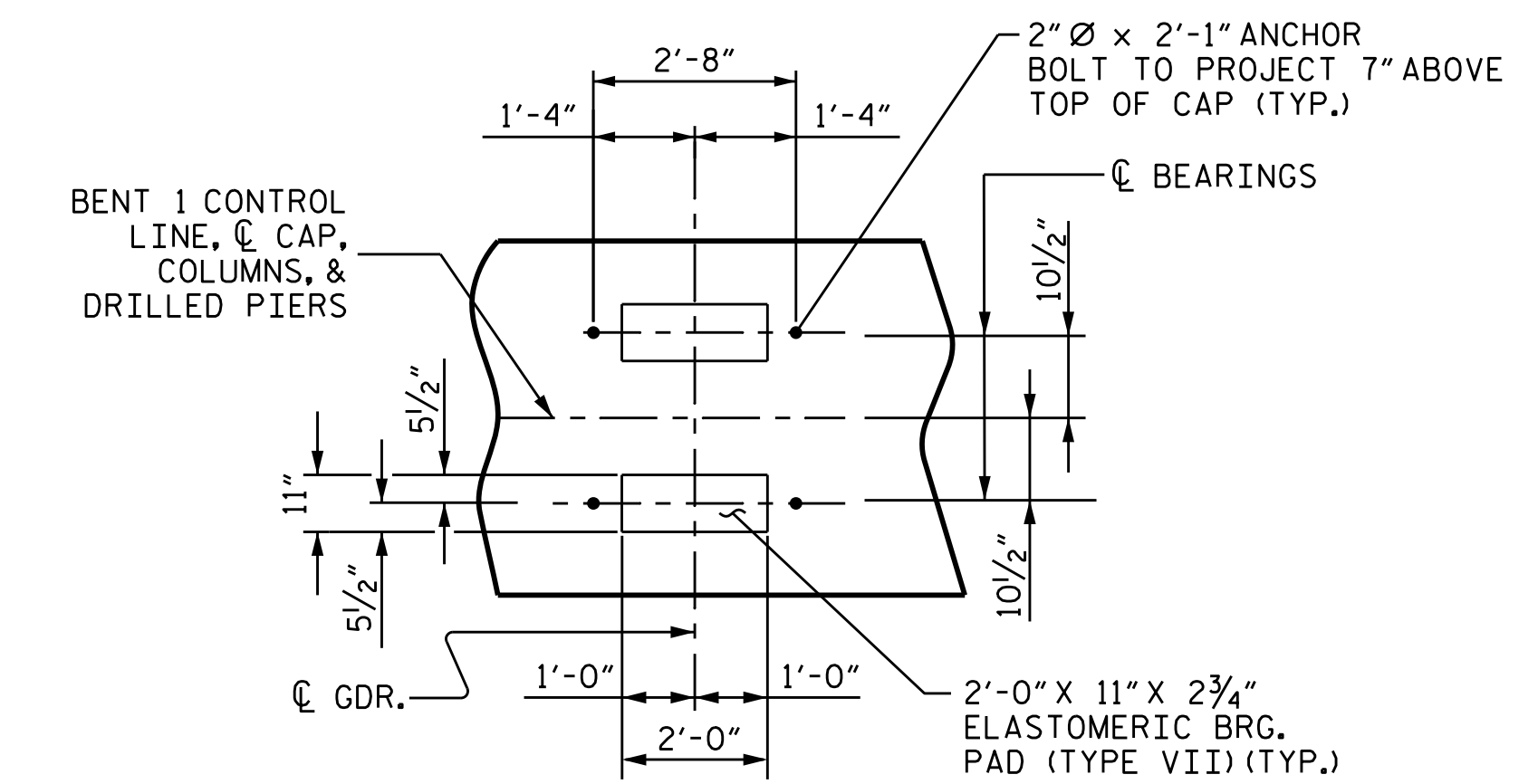
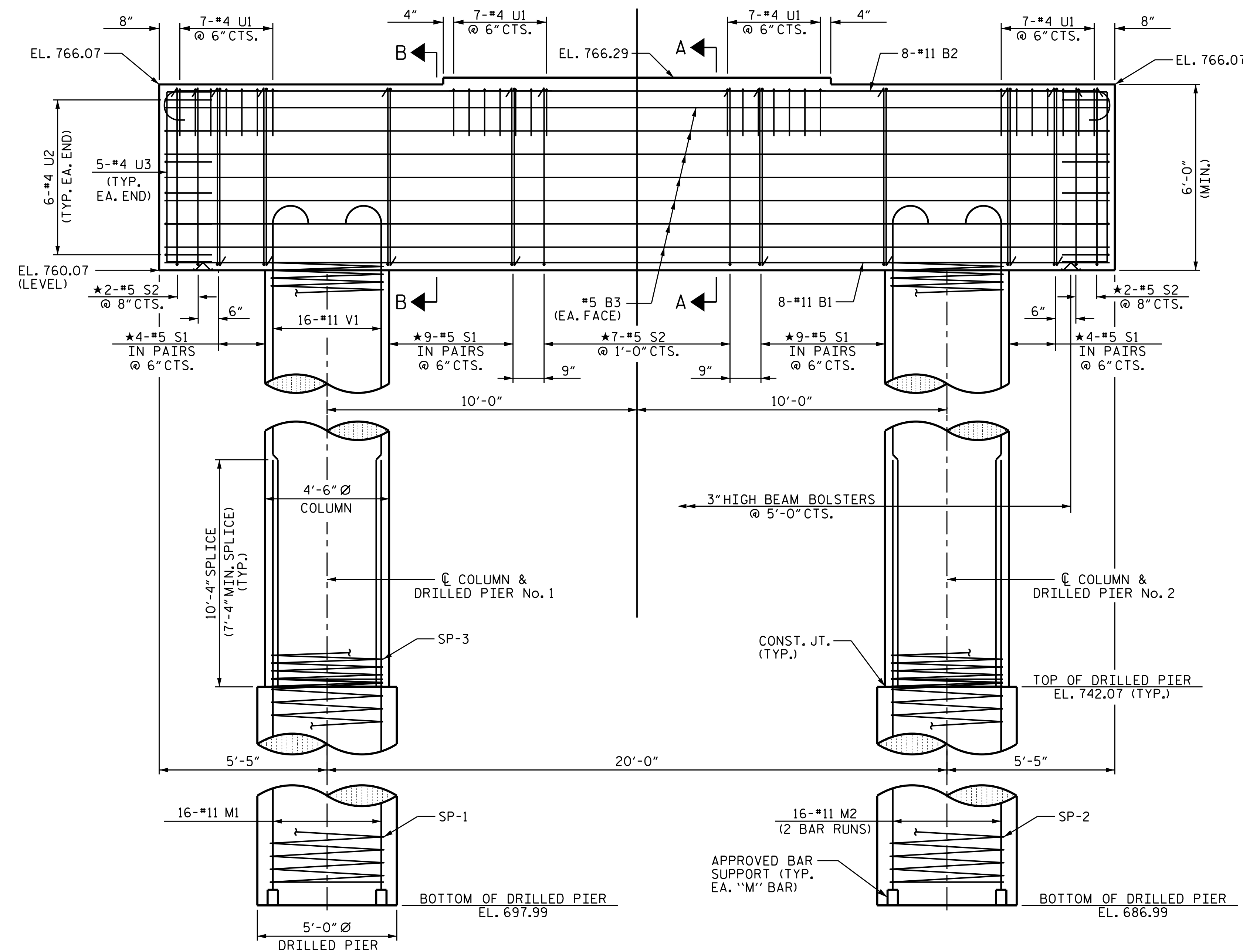
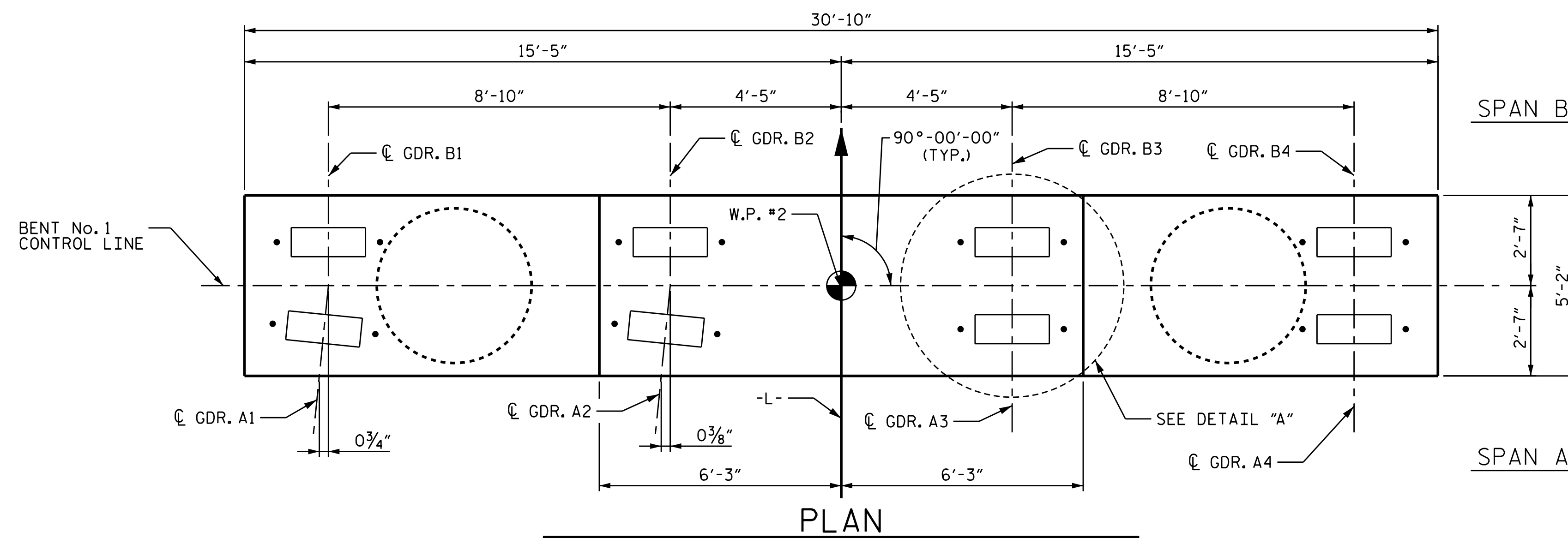
REVISIONS

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

SHEET NO. S-38

TOTAL SHEETS 60

DRAWN BY: JLA DATE: 11/19
 CHECKED BY: RAR DATE: 12/19
 DESIGN ENGINEER OF RECORD: TBE DATE: 2/20



NOTES

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

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

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

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

★ INVERT ALTERNATE STIRRUPS.

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

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

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT GIRDERS 1 & 2 ARE SLIGHTLY SKEWED.

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50-L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 PROFESSIONAL ENGINEER
 SEAL 20125
 MARSHALL G. CHEEK JR.
 4/14/2020

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IGS ENGINEERS
 804-C N. LAFAYETTE ST
 SHELBY, NC 28150
 PH (704) 476-0003
 CORP. LICENSE NO.: C-0275

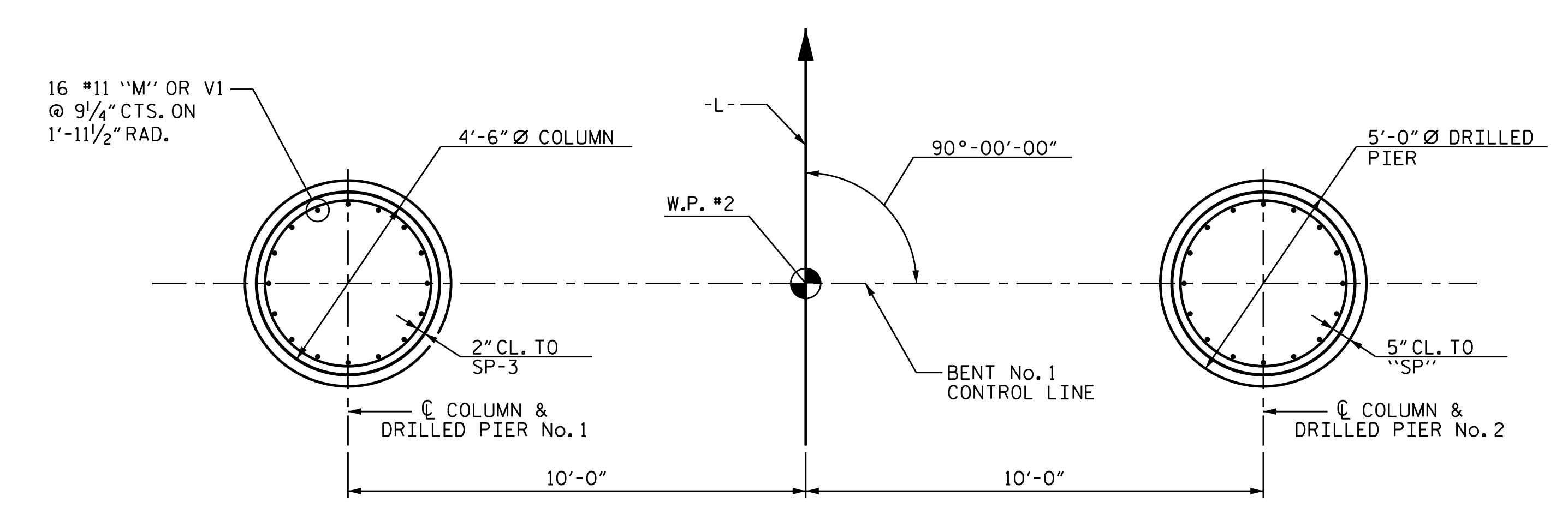
DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 1

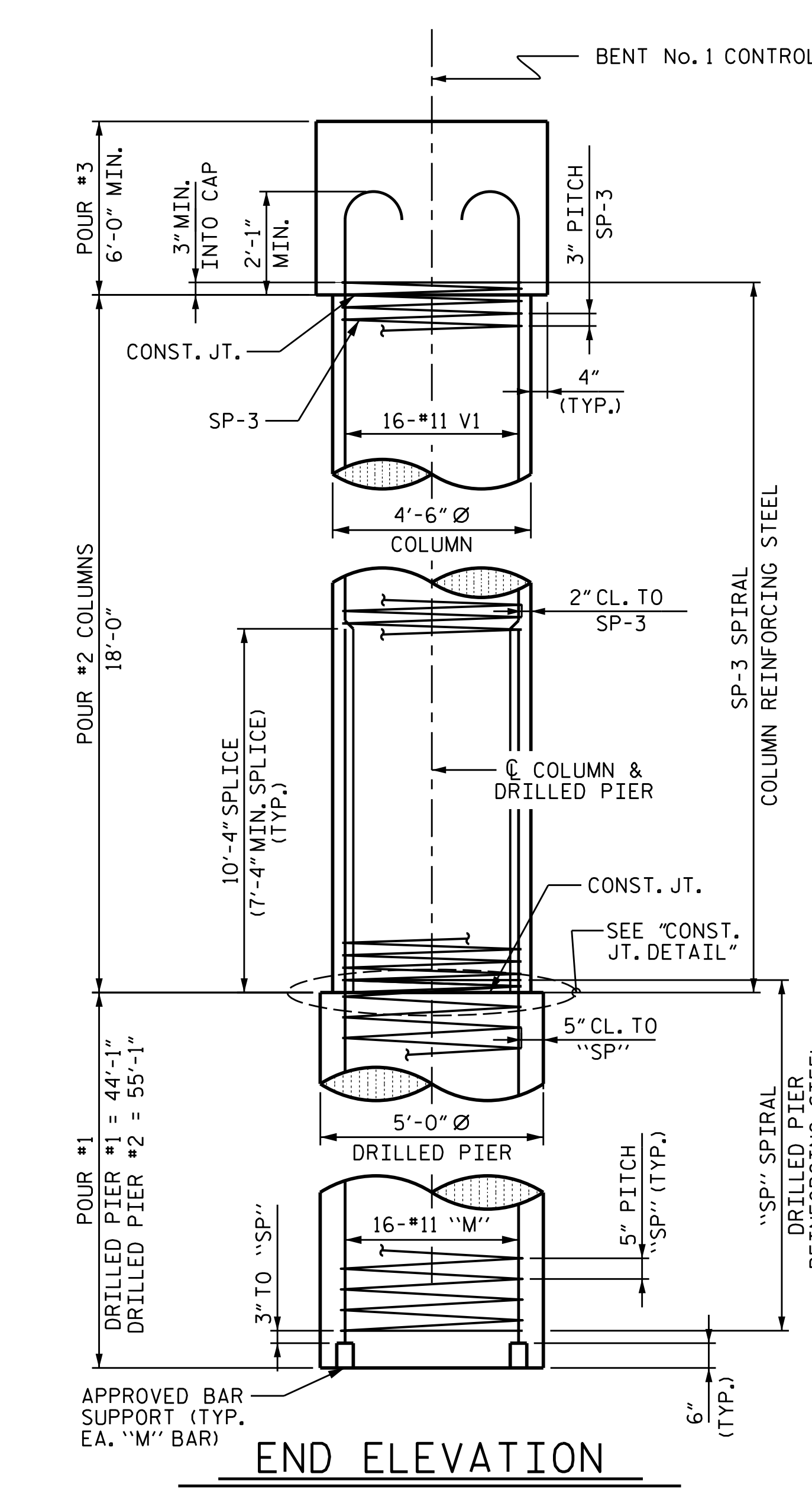
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-39
1			3			TOTAL SHEETS
2			4			60

DRAWN BY : TBE DATE : 10/19
 CHECKED BY : MGC DATE : 1/20
 DESIGN ENGINEER OF RECORD: TBE DATE : 2/20

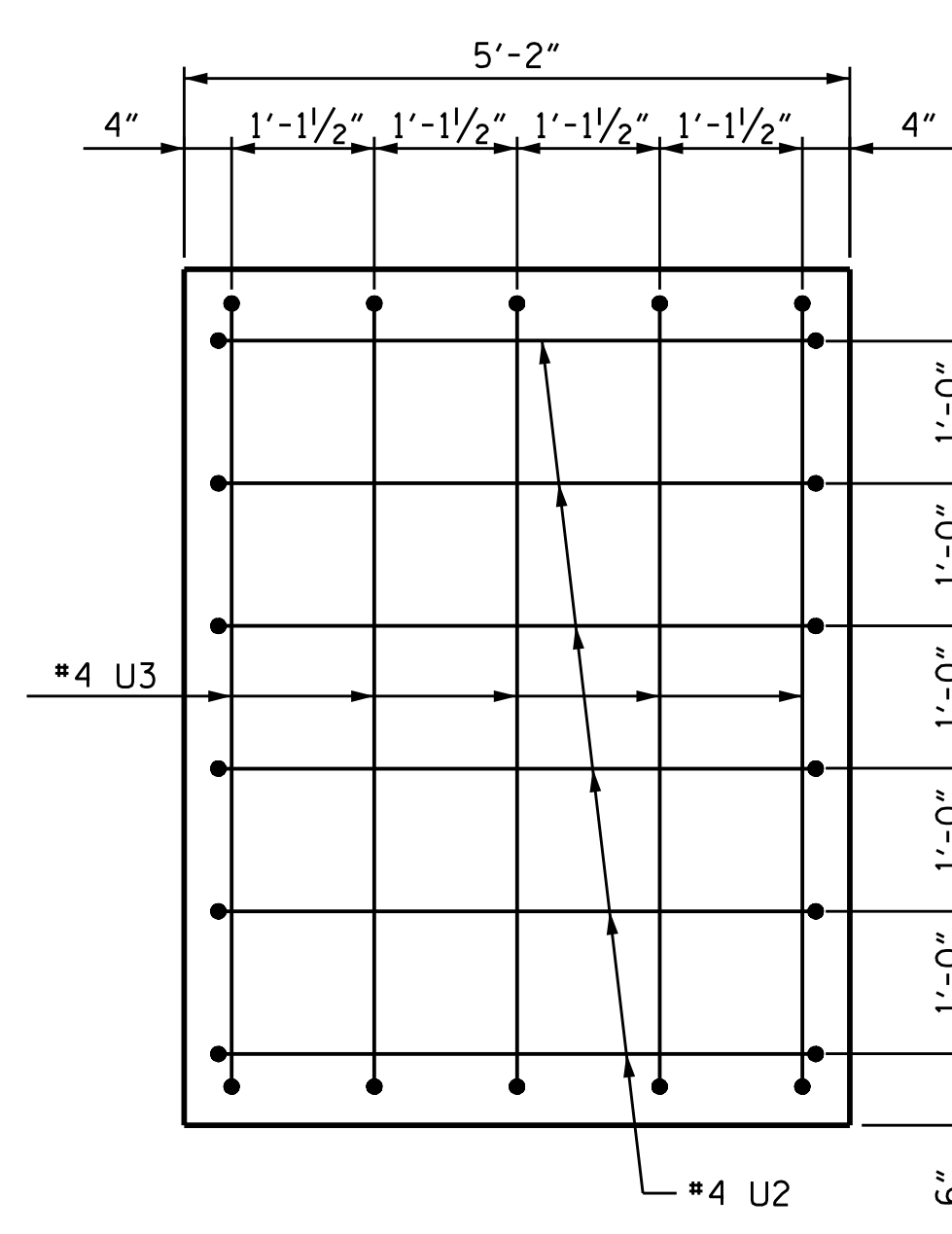
DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER EXCEPT AS NOTED.



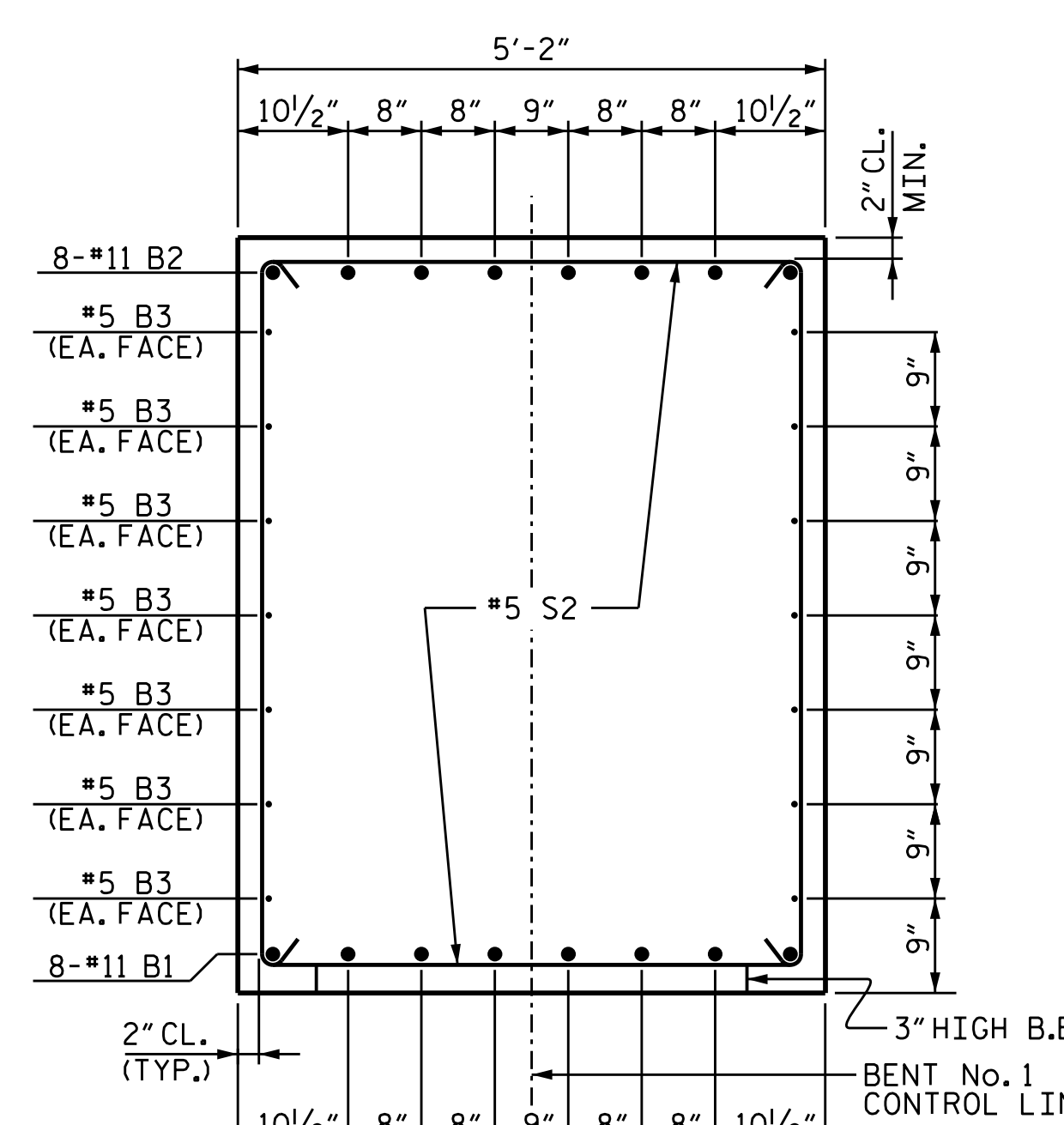
PLAN OF DRILLED PIERS & COLUMNS
DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER.



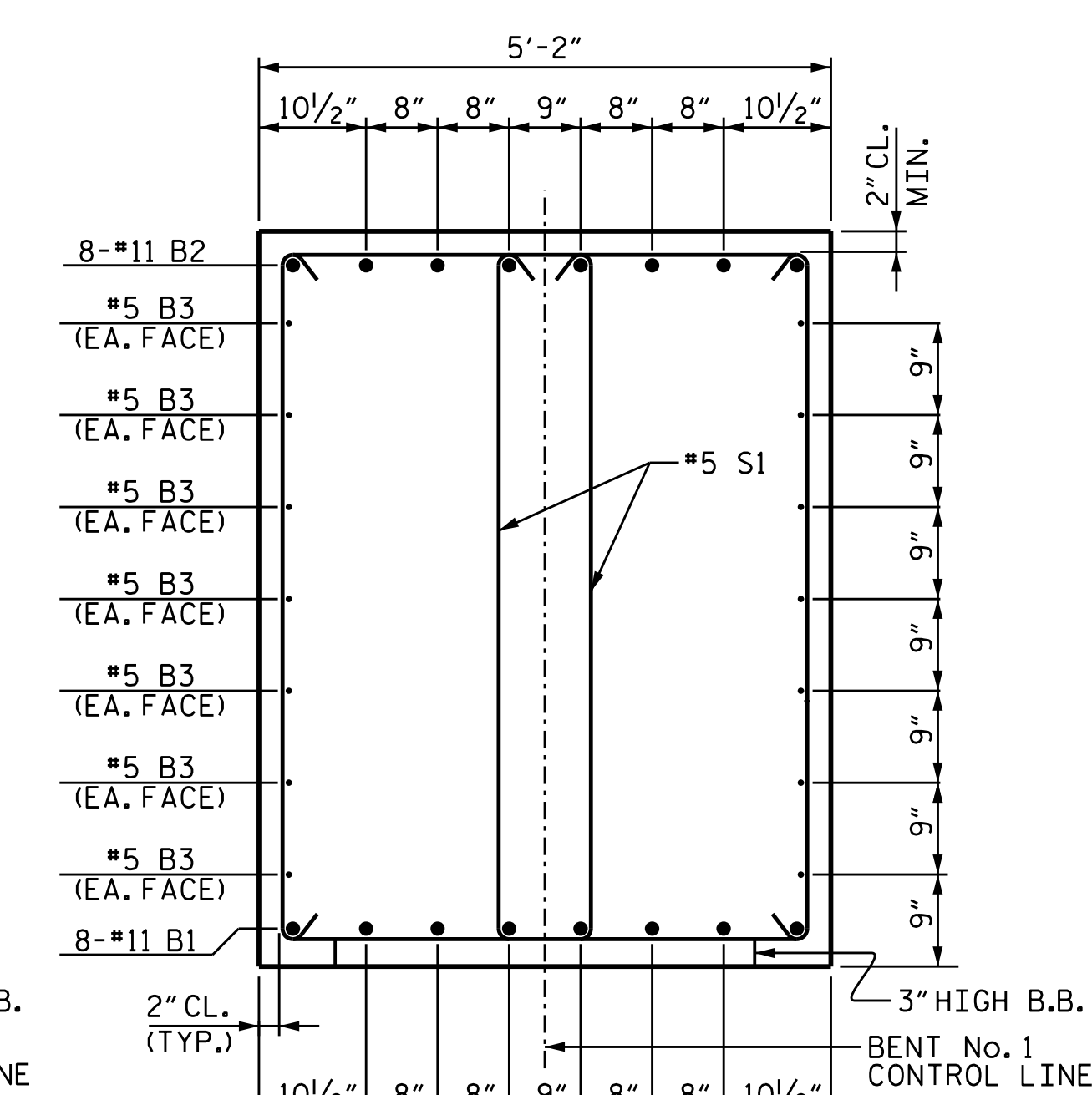
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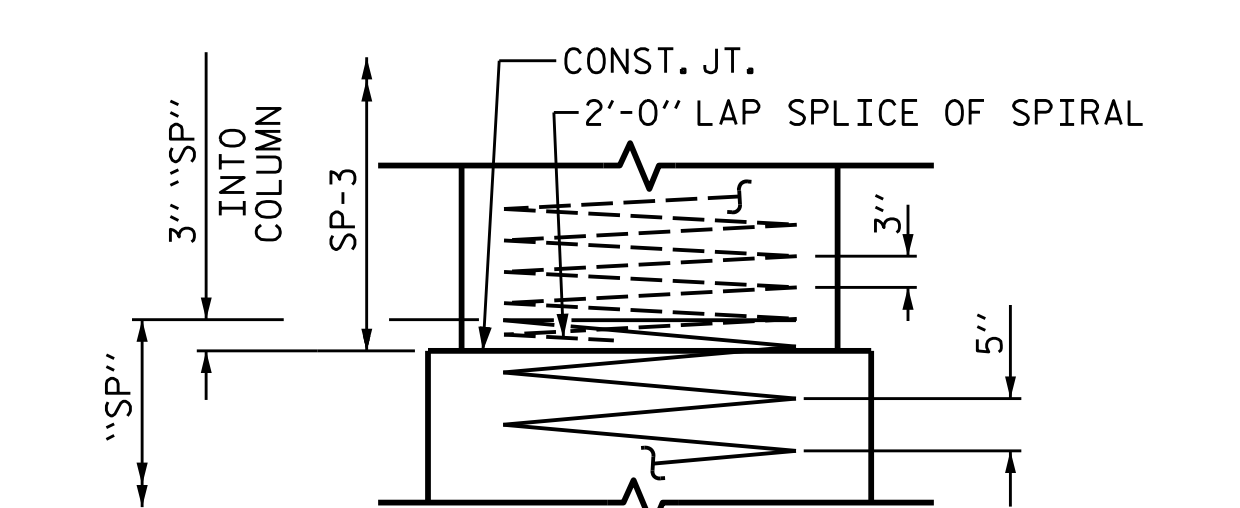
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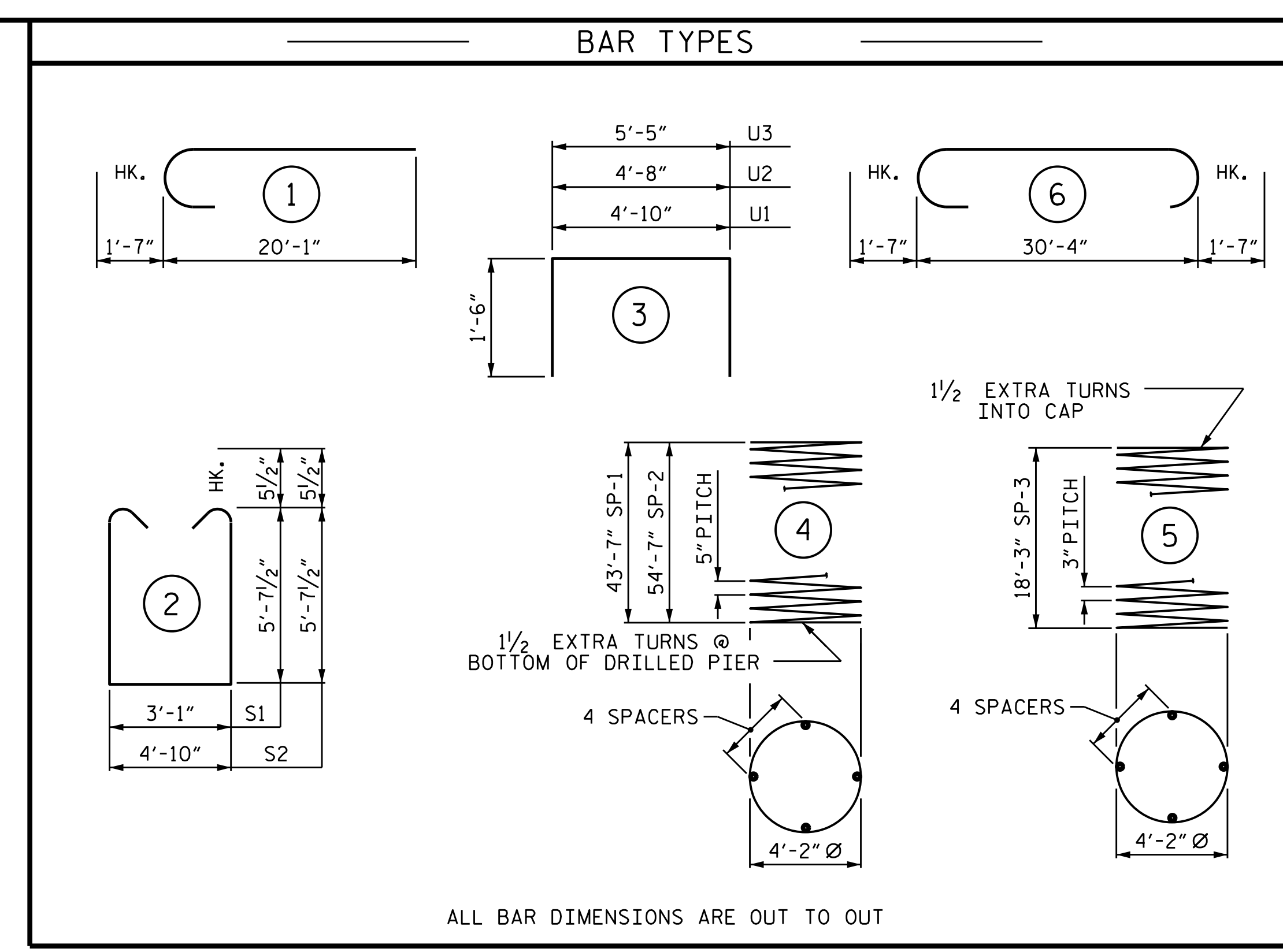
SECTION A-A



SECTION B-B



CONSTRUCTION JOINT DETAIL



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR BENT No. 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#11	STR	30'-6"	1,296
B2	8	#11	6	33'-6"	1,424
B3	14	#5	STR	30'-6"	445
M1	16	#11	STR	53'-11"	4,583
M2	32	#11	STR	36'-2"	6,149
S1	52	#5	2	15'-3"	827
S2	11	#5	2	17'-0"	195
U1	28	#4	3	7'-10"	147
U2	12	#4	3	7'-8"	61
U3	10	#4	3	8'-5"	56
V1	32	#11	1	21'-8"	3,684

REINFORCING STEEL 18,867 LBS.

SP	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-1	1	*	4	1383'-11"	1,443
SP-2	1	*	4	1720'-2"	1,794
SP-3	2	**	5	972'-2"	1,299

SPIRAL COLUMN REINFORCING STEEL 4,536 LBS.

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

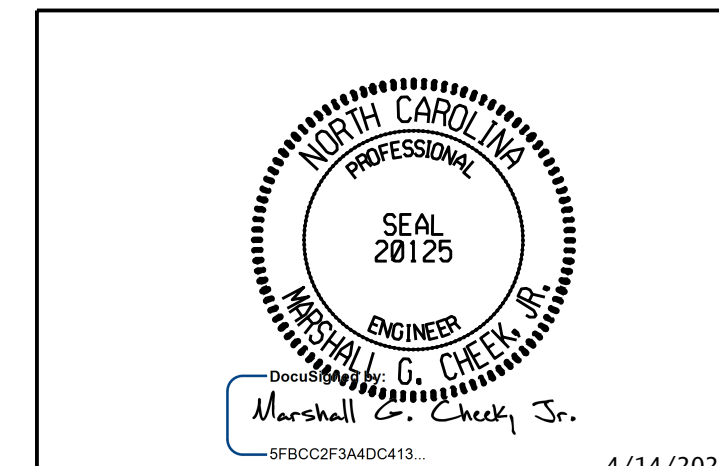
CLASS A CONCRETE BREAKDOWN

POUR #2 (COLUMNS)	21.2 C.Y.
POUR #3 (CAP)	35.9 C.Y.
TOTAL CLASS A CONCRETE	57.1 C.Y.

DRILLED PIERS:

DRILLED PIER CONCRETE POUR #1	72.1 C.Y.
5'-0" Ø DRILLED PIERS IN SOIL	67.16 LIN. FT.
5'-0" Ø DRILLED PIERS NOT IN SOIL	32.00 LIN. FT.
CSL TUBES	510.83 LIN. FT.

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
STATION: 34+65.50-L-
SHEET 2 OF 2

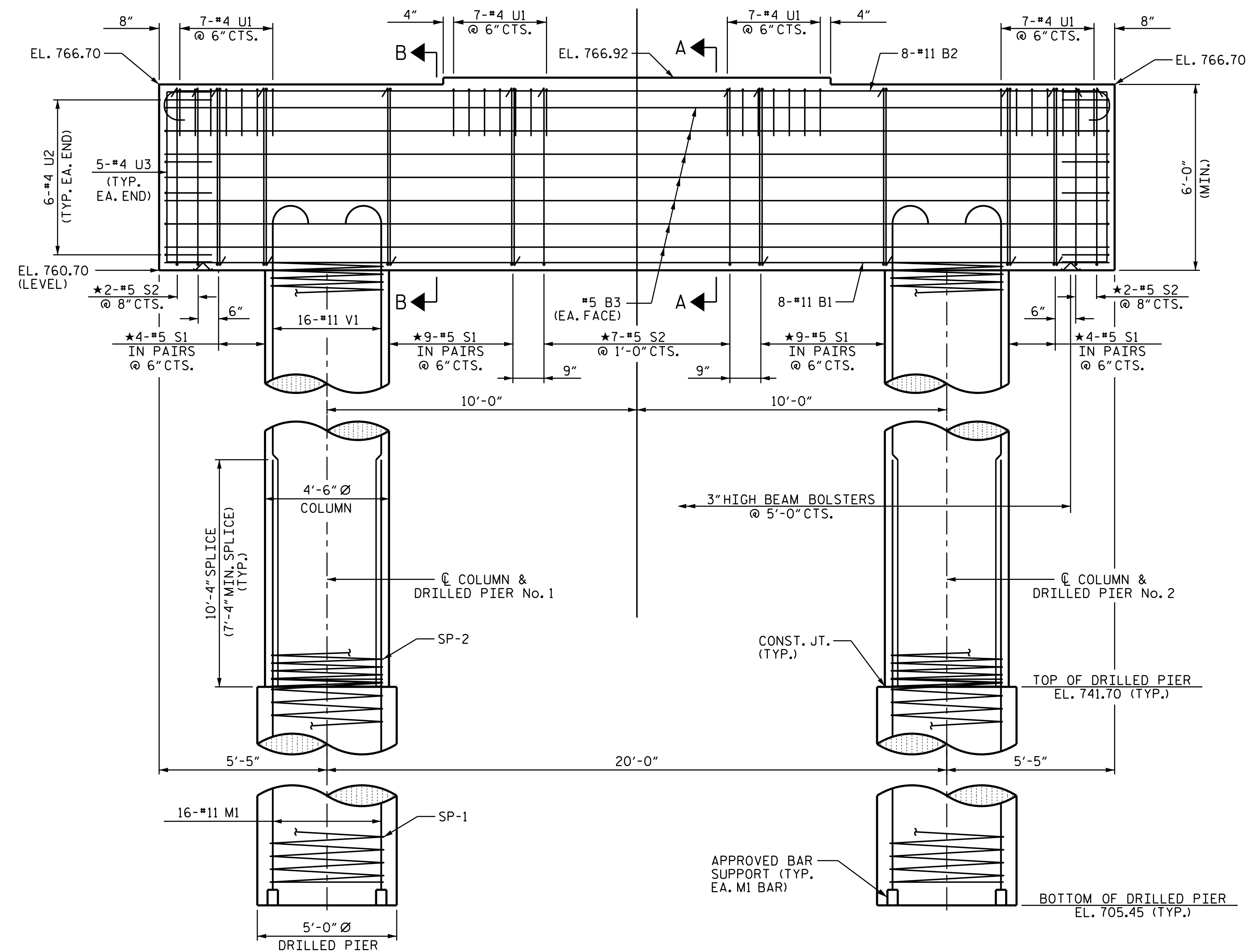
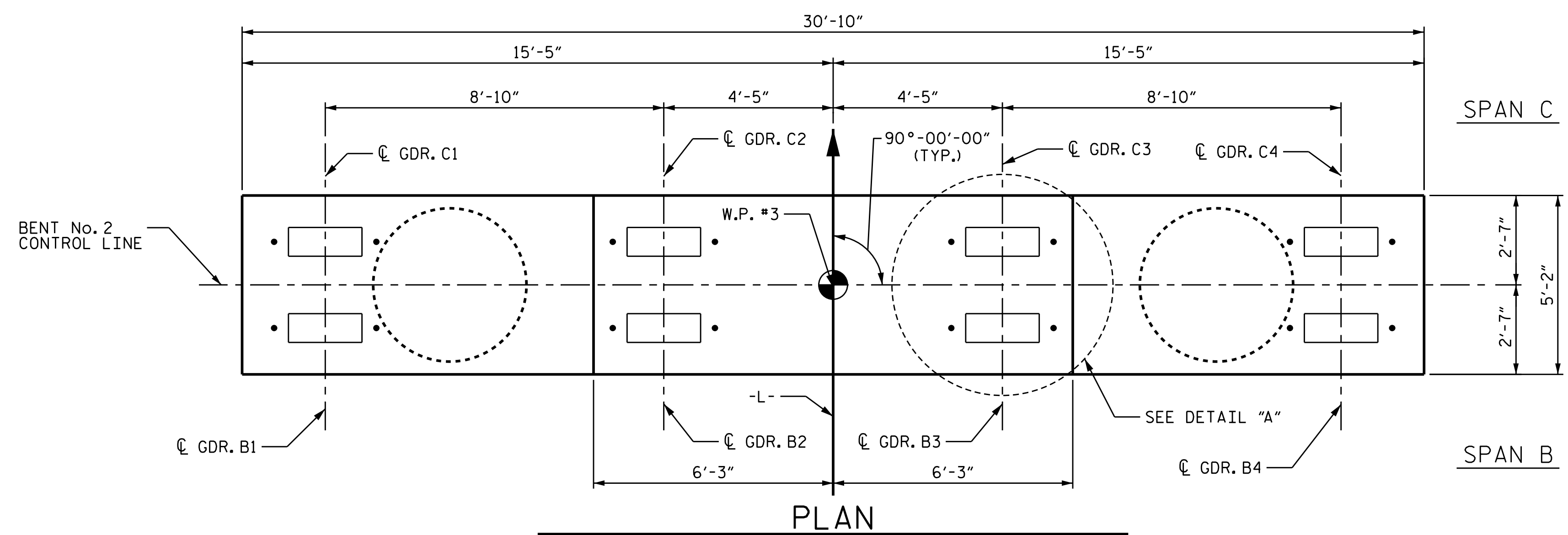


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT No. 1

DRAWN BY :	TBE	DATE :	10/19
CHECKED BY :	MGC	DATE :	1/20
DESIGN ENGINEER OF RECORD:	TBE	DATE :	2/20

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TGS ENGINEERS
706 HILLSBOROUGH STREET
SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-40
1			3			TOTAL SHEETS
2			4			60

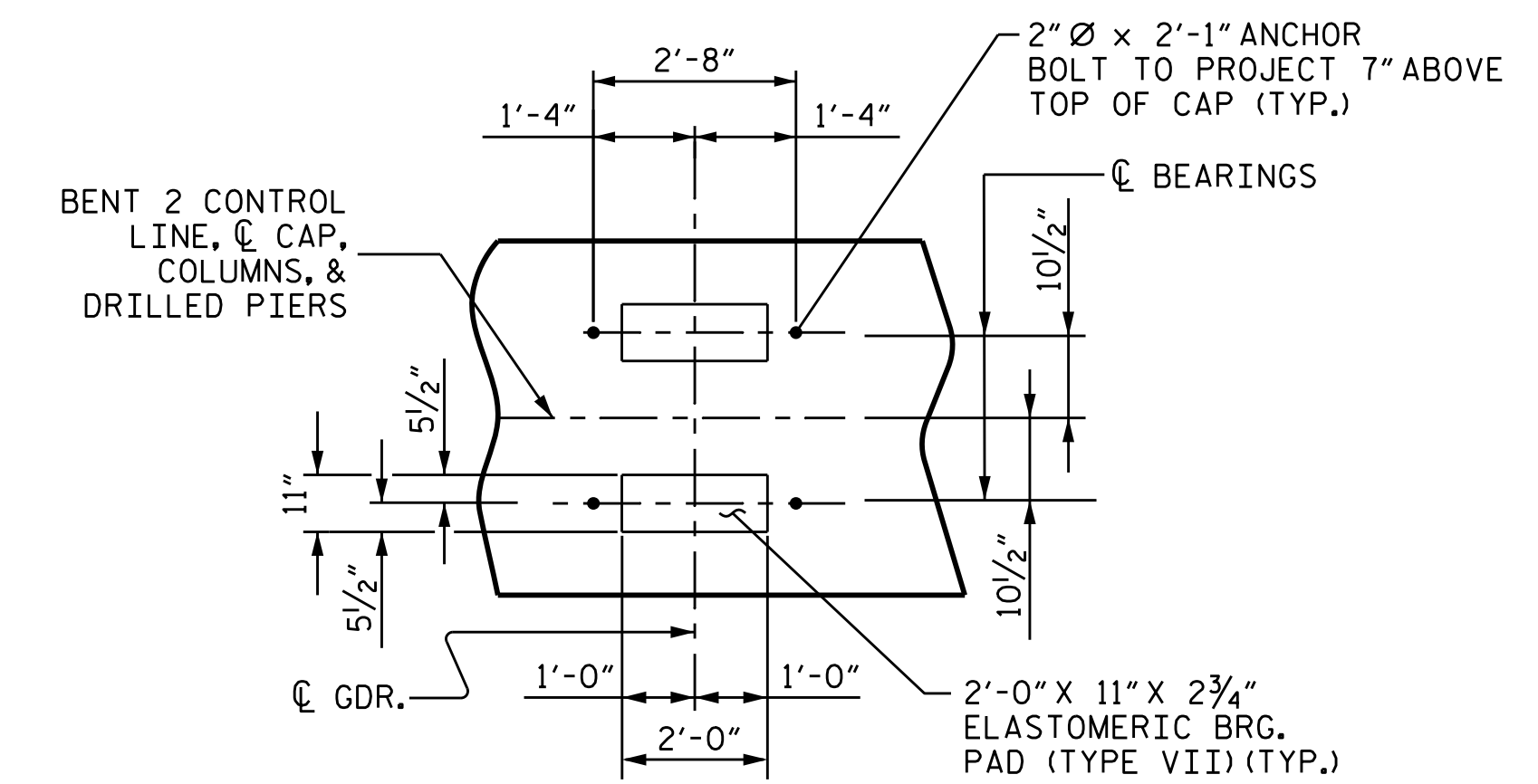


ELEVATION

DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER EXCEPT AS NOTED.

NOTES

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



DETAIL "A"

DIMENSIONS ARE TYPICAL FOR EACH BEARING.

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50-L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
BENT No. 2

2/13/2020
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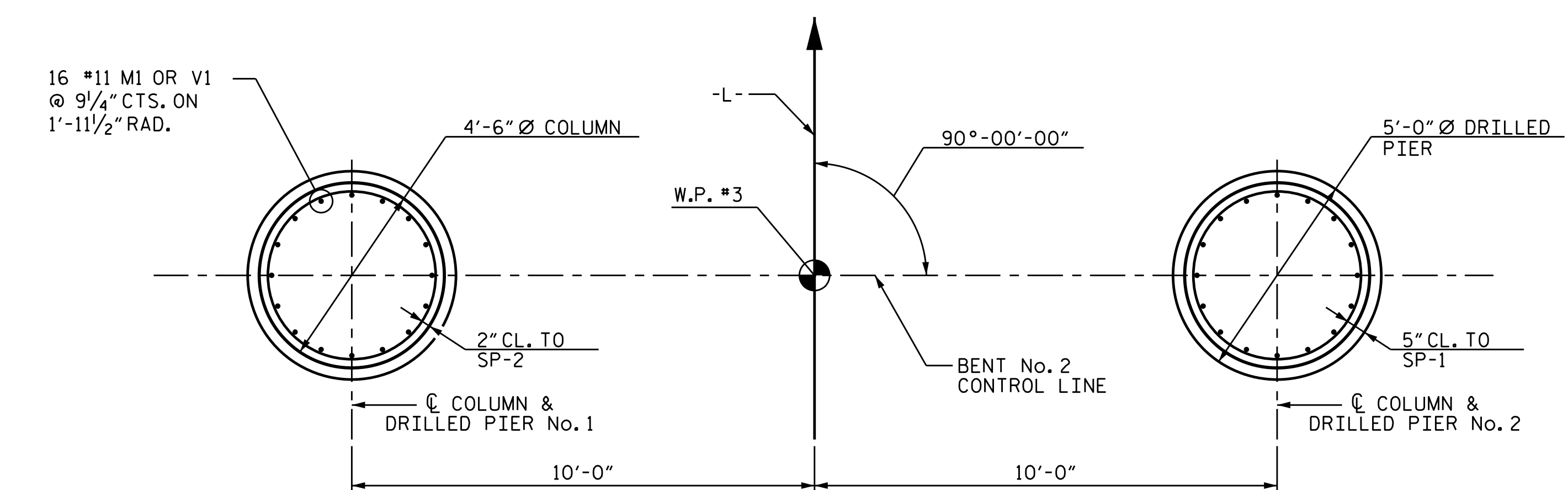
2015 PROFESSIONAL SEAL
 MARSHALL G. CREECH JR.
 ENGINEER
 4/14/2020
 SFB0223400413

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

IGS ENGINEERS
 804-C N. LAFAYETTE ST
 SHELBY, NC 28150
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 CORP. LICENSE NO.: C-0275

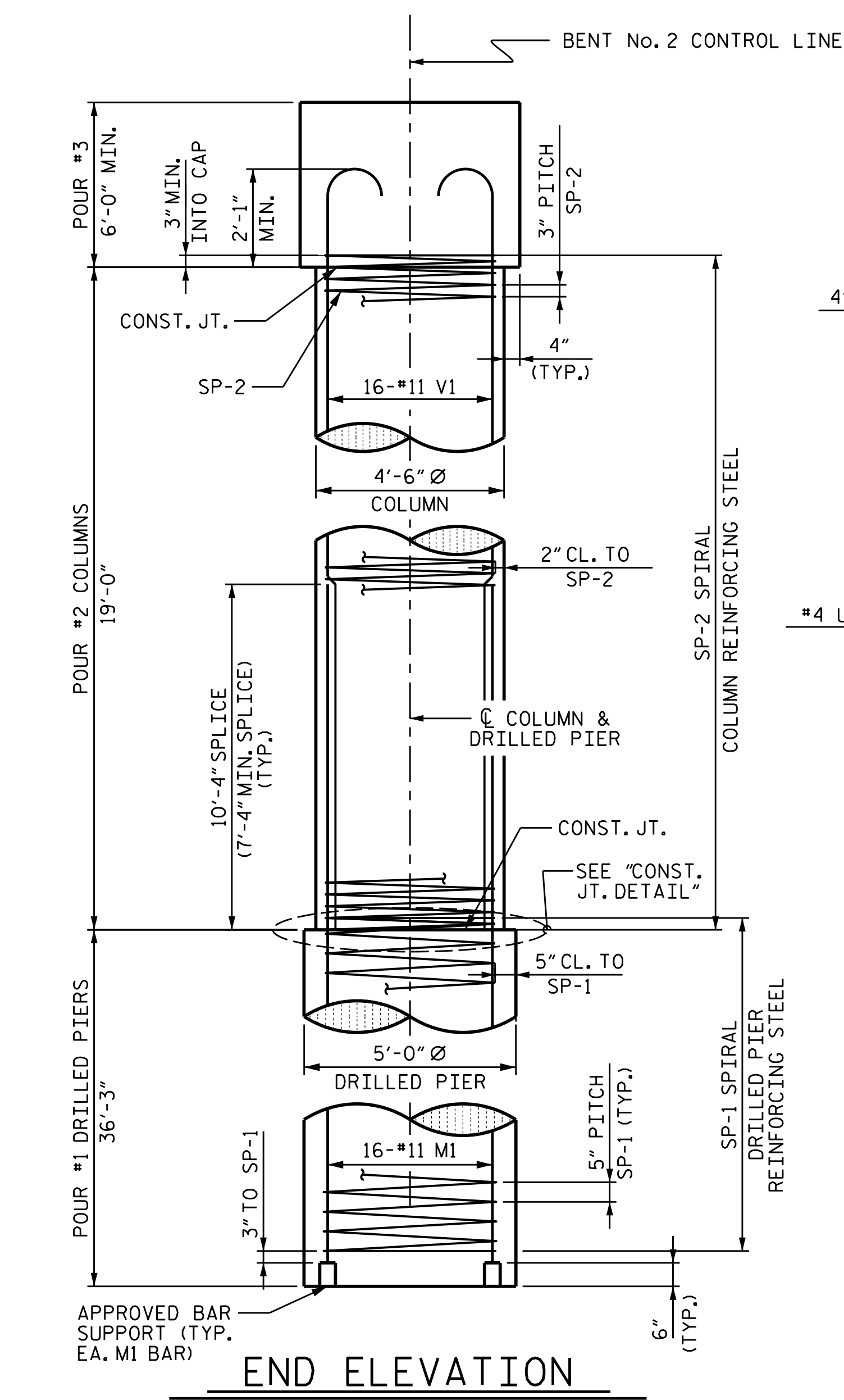
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-41
1			3			TOTAL SHEETS
2			4			60

DRAWN BY : TBE DATE : 10/19
 CHECKED BY : MGC DATE : 1/20
 DESIGN ENGINEER OF RECORD: TBE DATE : 2/20

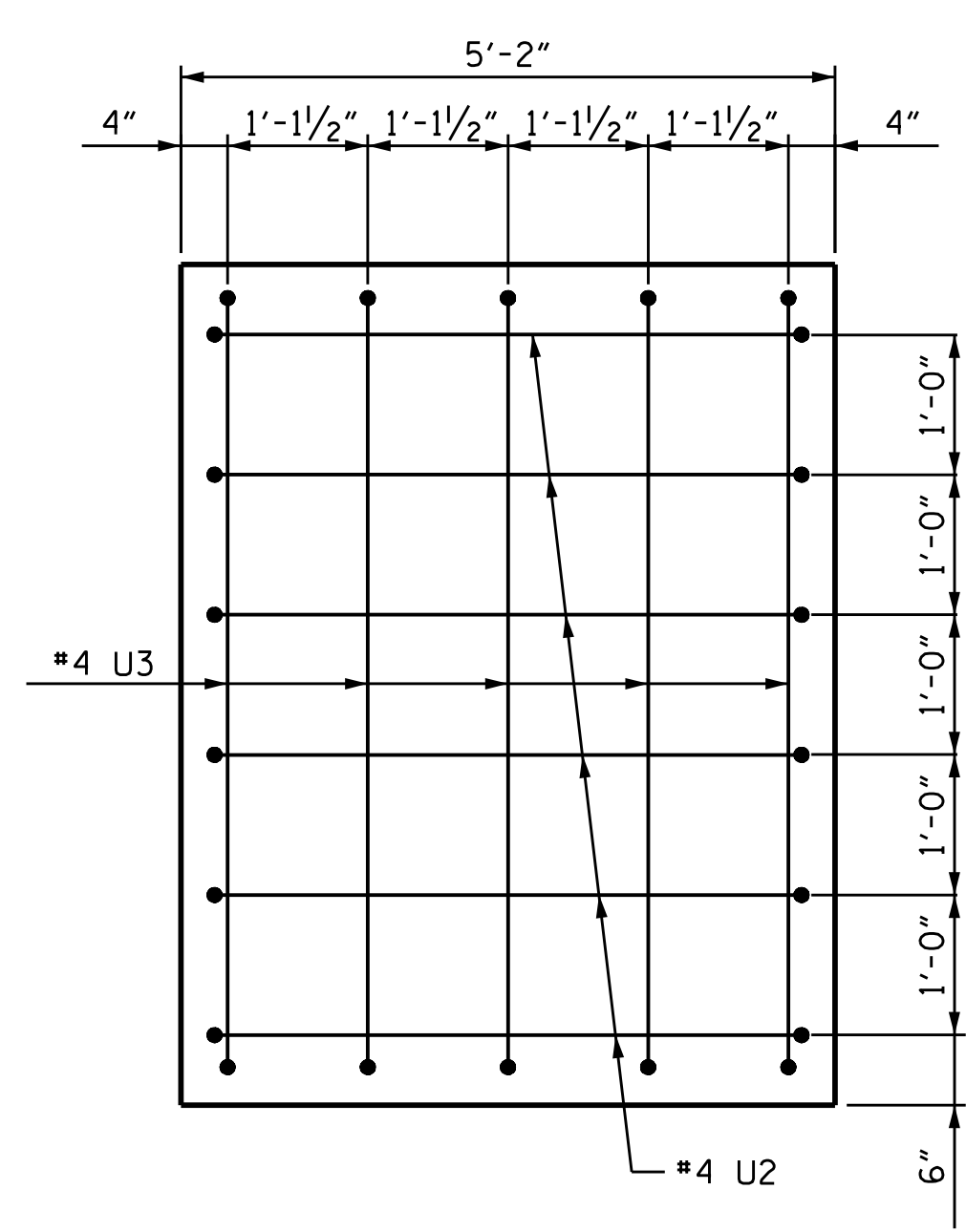


PLAN OF DRILLED PIERS & COLUMNS

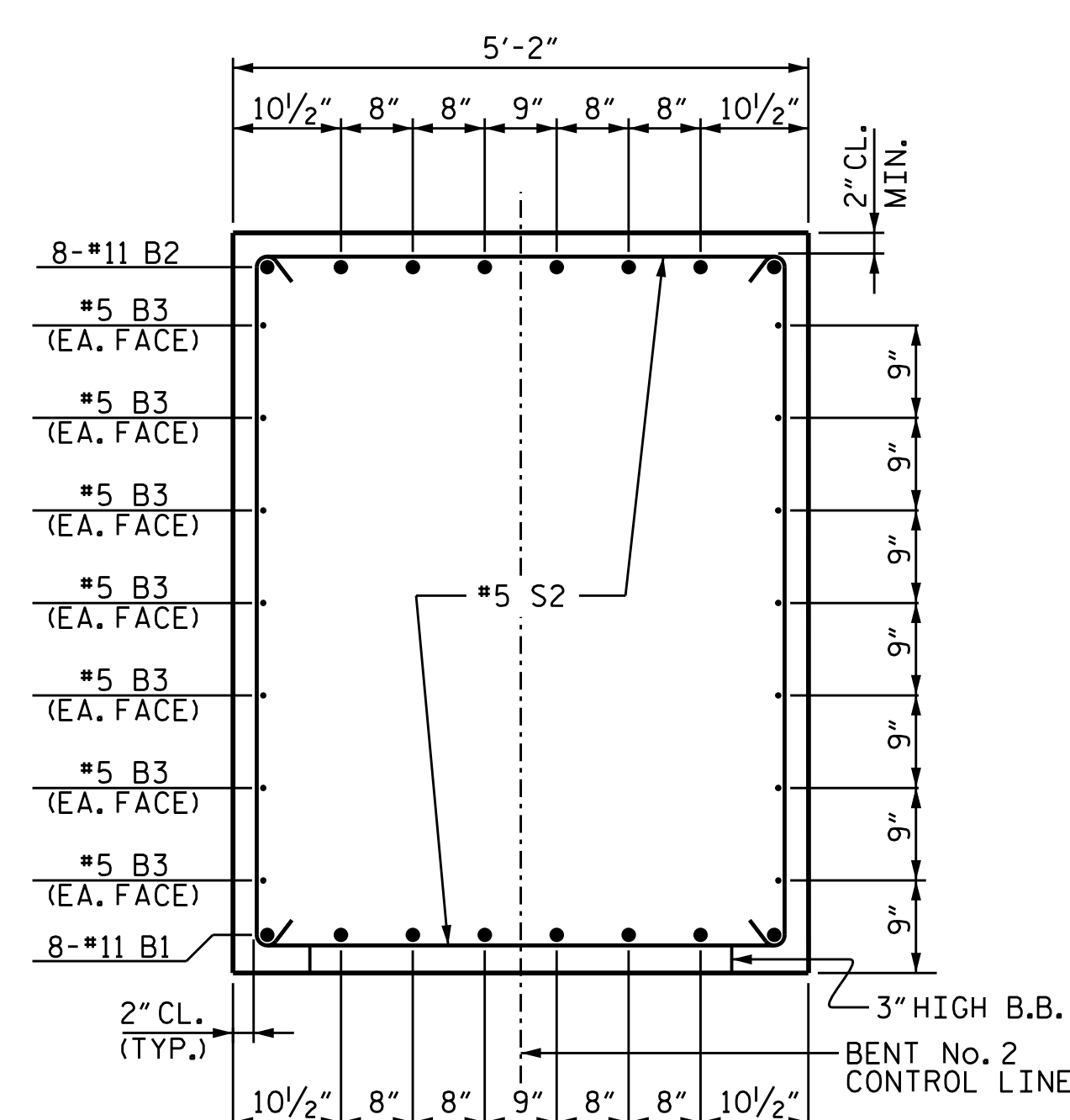
DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER.



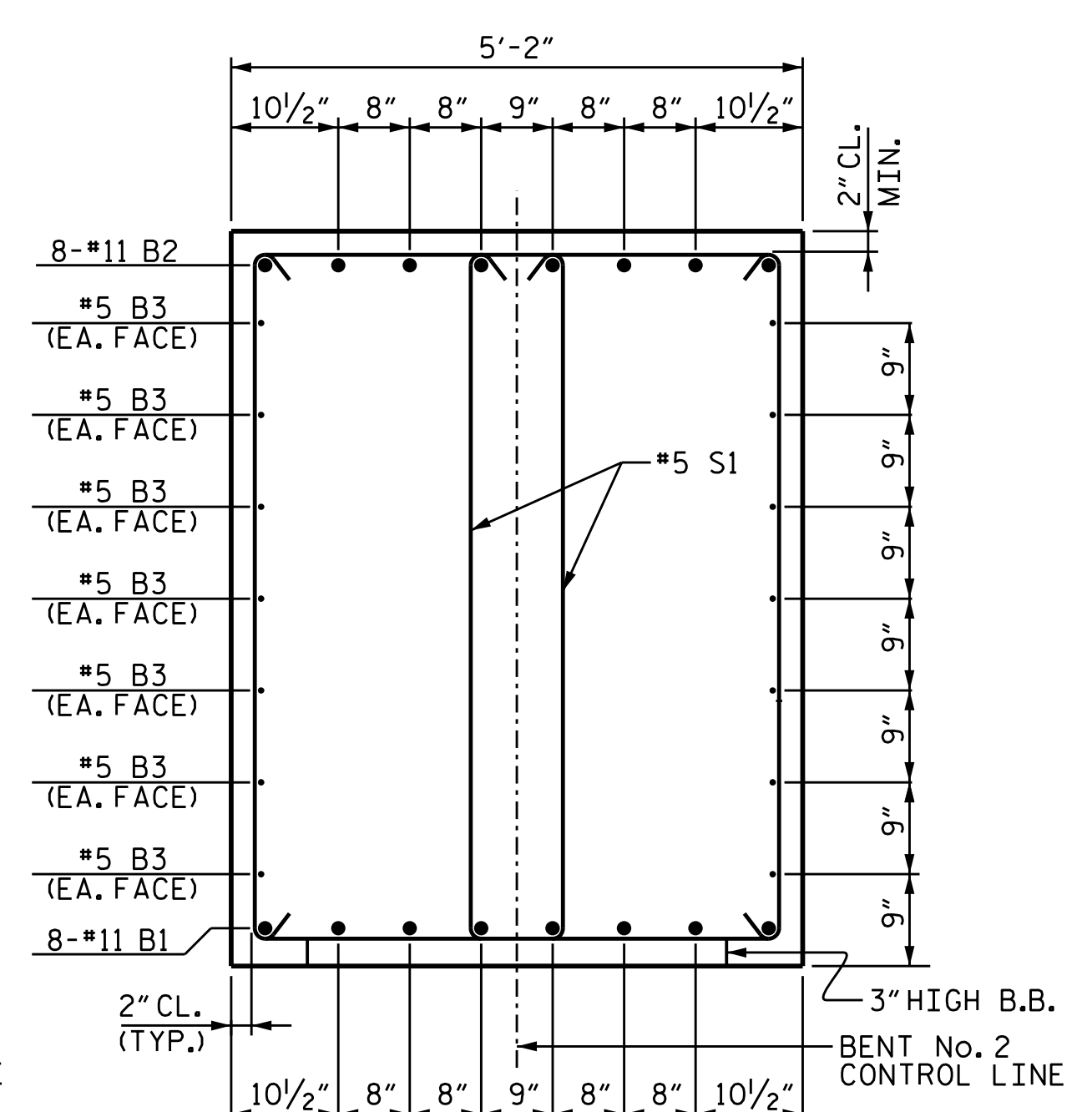
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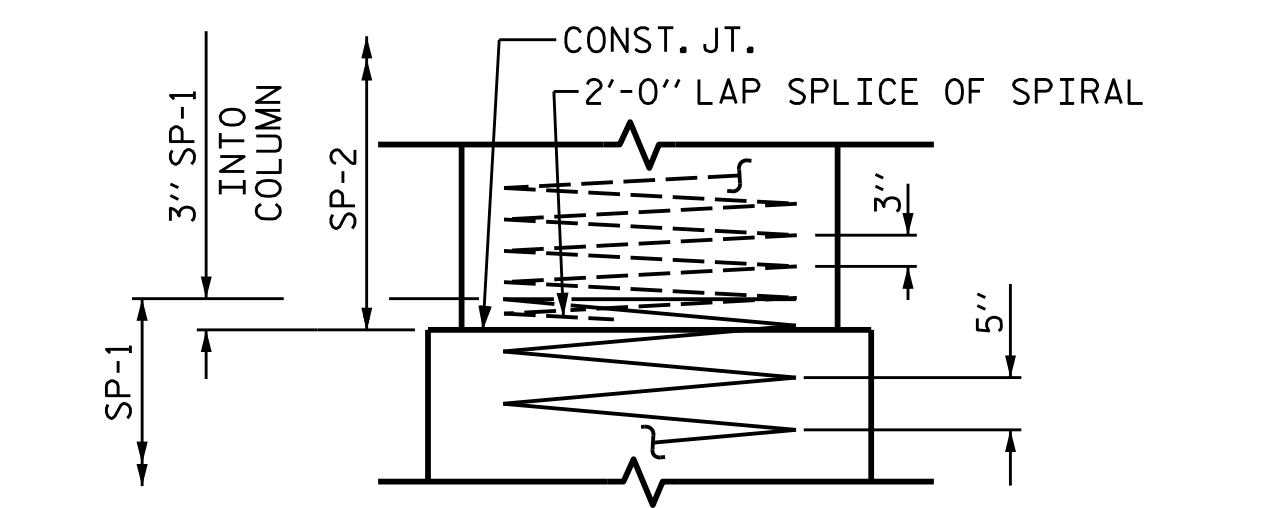
END VIEW



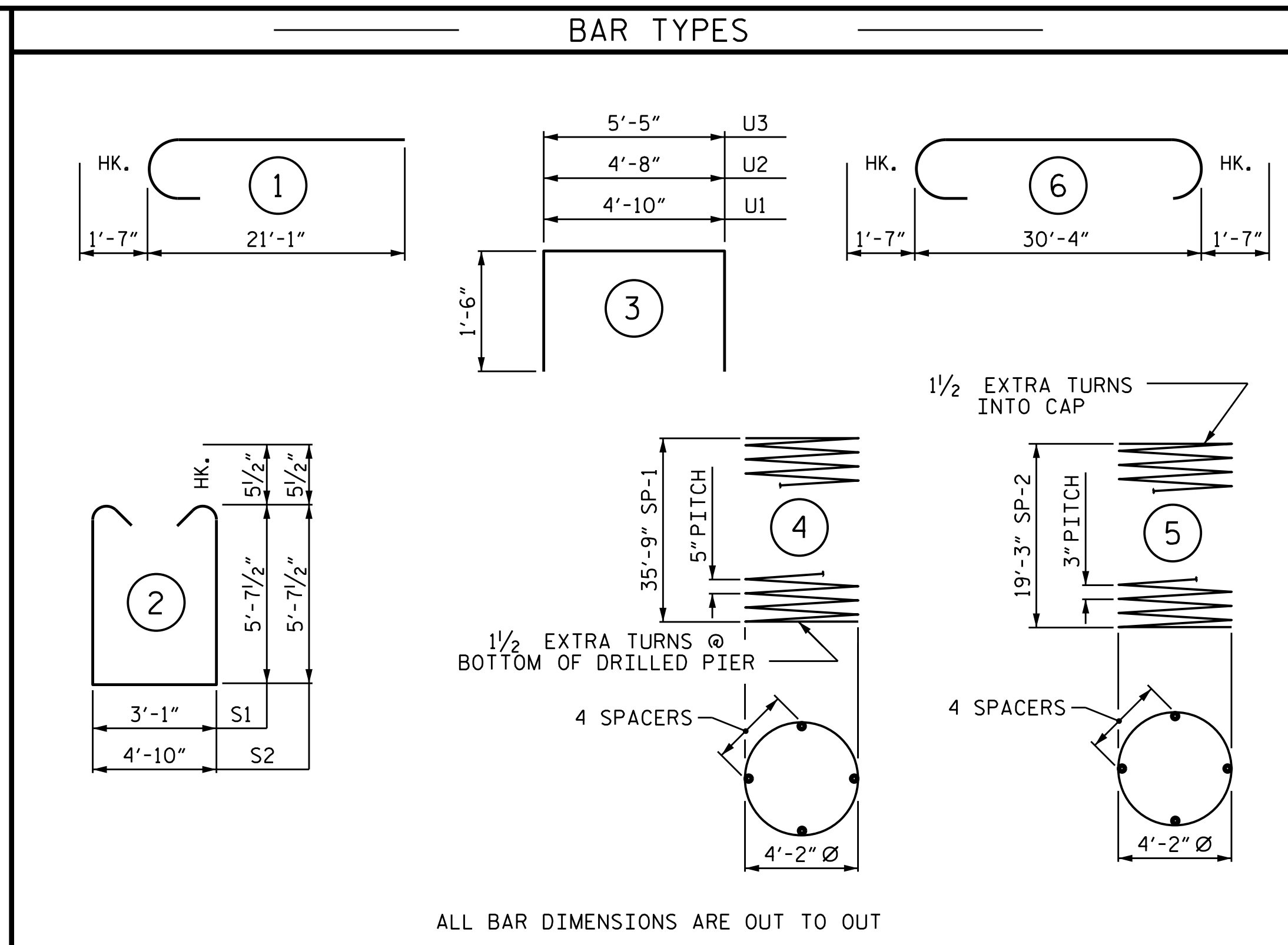
SECTION A-A



SECTION B-B



CONSTRUCTION JOINT DETAIL



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR BENT No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#11	STR	30'-6"	1,296
B2	8	#11	6	33'-6"	1,424
B3	14	#5	STR	30'-6"	445
M1	32	#11	STR	46'-1"	7,835
S1	52	#5	2	15'-3"	827
S2	11	#5	2	17'-0"	195
U1	28	#4	3	7'-10"	147
U2	12	#4	3	7'-8"	61
U3	10	#4	3	8'-5"	56
V1	32	#11	1	22'-8"	3,854
REINFORCING STEEL					16,140 LBS.
SP-1	2	*	4	1138'-2"	2,374
SP-2	2	**	5	1024'-0"	1,368
SPIRAL COLUMN REINFORCING STEEL					3,742 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR					
CLASS A CONCRETE BREAKDOWN					
POUR #2 (COLUMNS)					22.4 C.Y.
POUR #3 (CAP)					35.9 C.Y.
TOTAL CLASS A CONCRETE					58.3 C.Y.
DRILLED PIERS:					
DRILLED PIER CONCRETE POUR #1					52.7 C.Y.
5'-0" Ø DRILLED PIERS IN SOIL					32.50 LIN. FT.
5'-0" Ø DRILLED PIERS NOT IN SOIL					40.00 LIN. FT.
CSL TUBES					377.50 LIN. FT.

PROJECT NO. B-5825
 YADKIN/FORSYTH COUNTY
 STATION: 34+65.50-L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

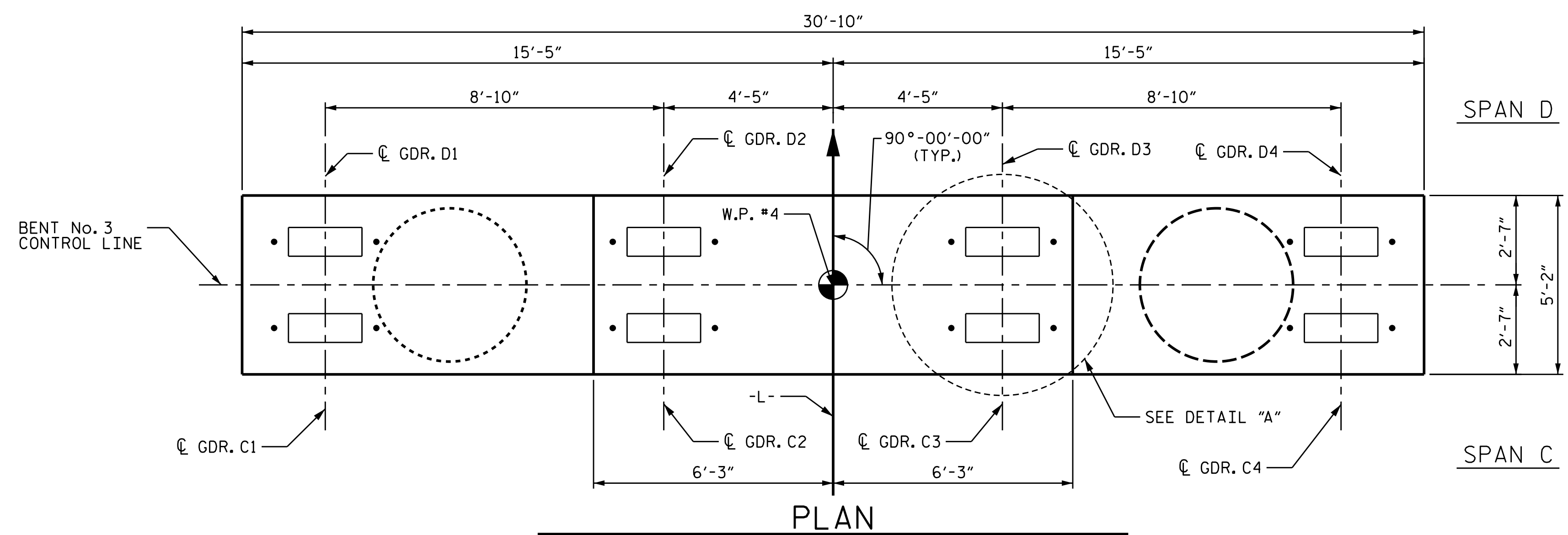
SEAL
 20125
 MARSHALL G. CHECK, JR.
 ENGINEER
 4/14/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
 706 HILLSBOROUGH STREET
 SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-42
1			3			TOTAL SHEETS
2			4			60

DRAWN BY :	TBE	DATE :	10/19
CHECKED BY :	MGC	DATE :	1/20
DESIGN ENGINEER OF RECORD:	TBE	DATE :	2/20



NOTES

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

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

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

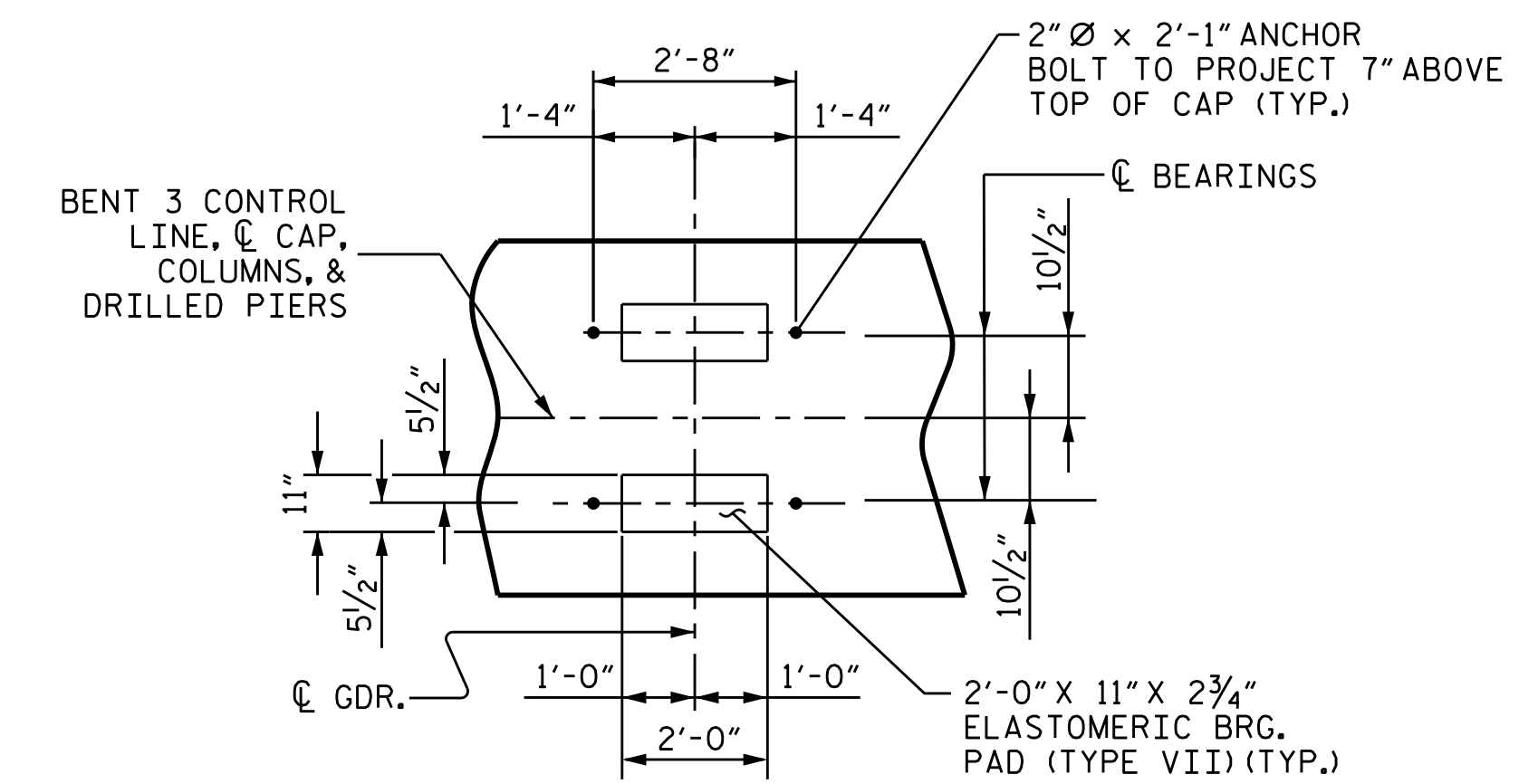
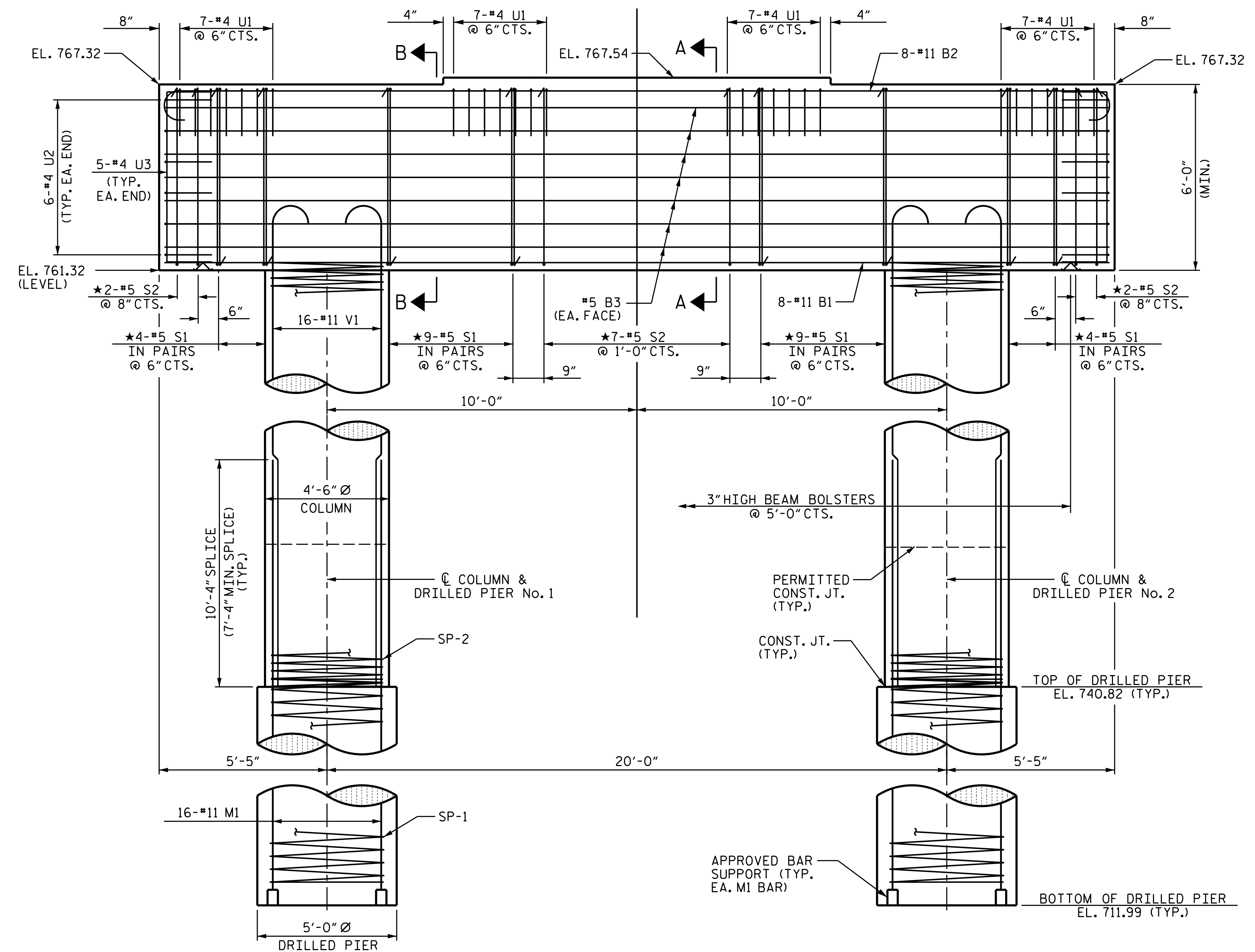
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

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

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

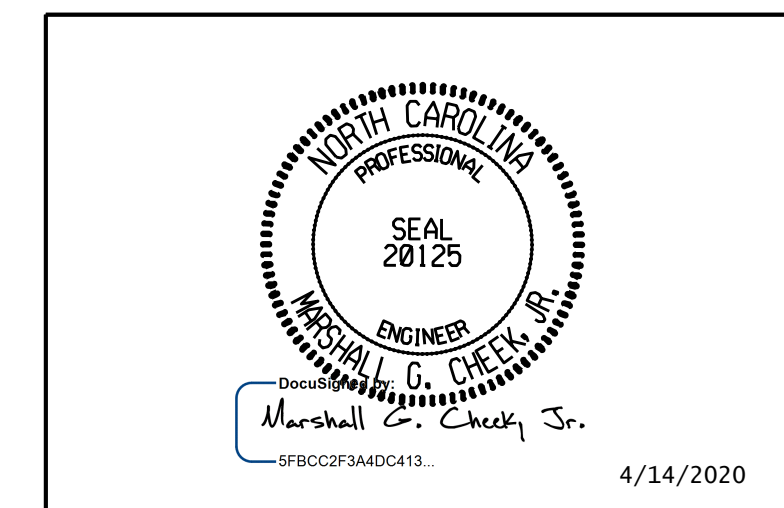
THE TOP SURFACE AREAS OF THE BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.



DIMENSIONS ARE TYPICAL FOR EACH BEARING.

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50-L-

SHEET 1 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
BENT No. 3

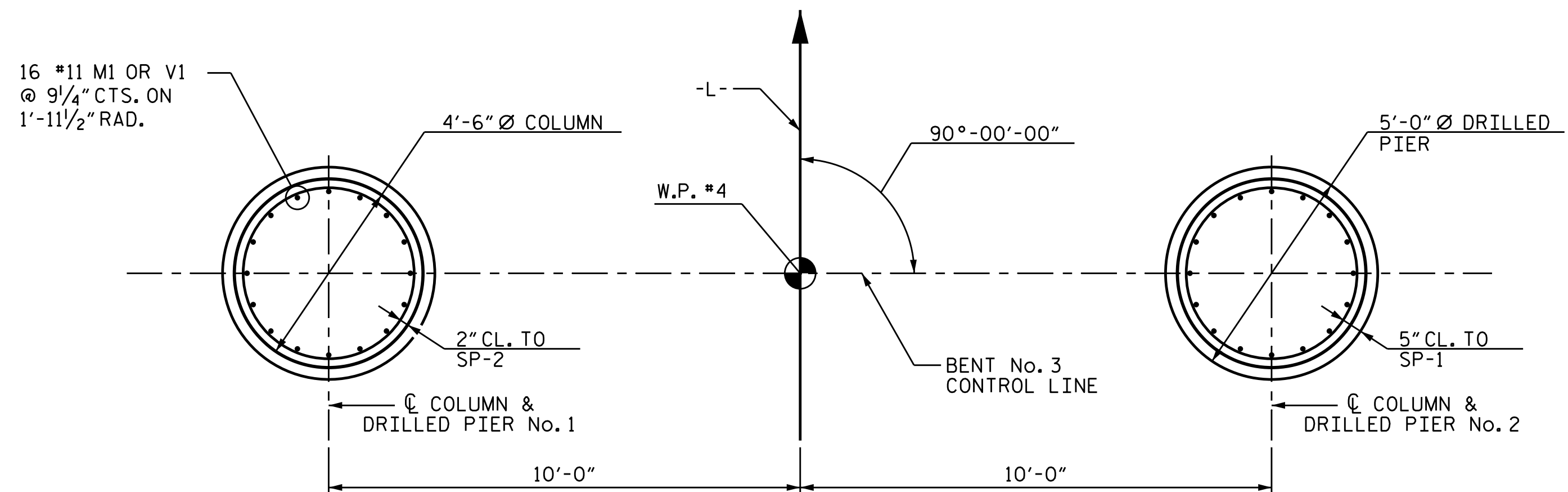
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

IGS ENGINEERS
 804-C N. LAFAYETTE ST
 SHELBY, NC 28150
 PH (704) 476-0003
 CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-43
1			3			TOTAL SHEETS
2			4			60

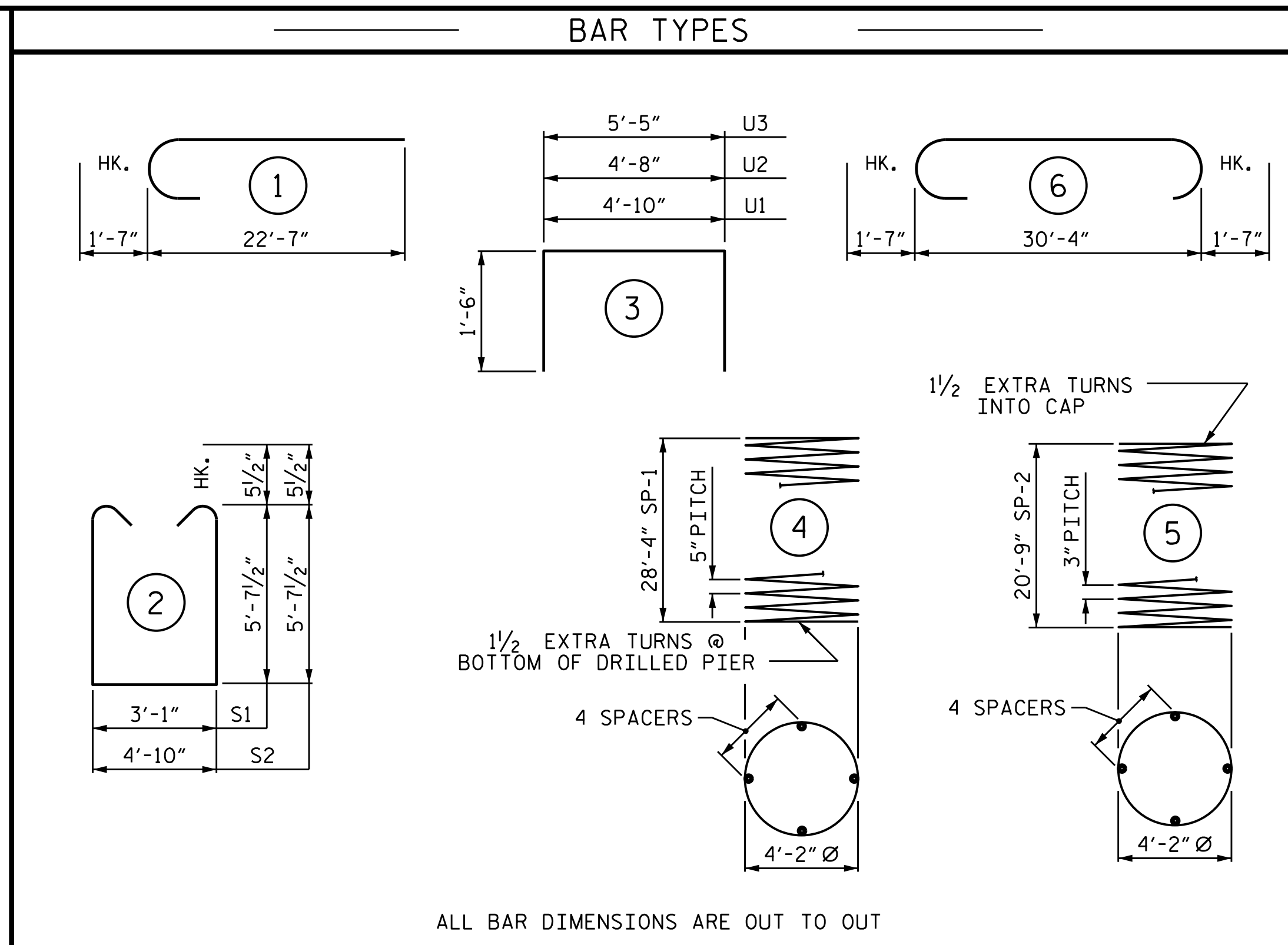
DRAWN BY : TBE DATE : 10/19
 CHECKED BY : MGC DATE : 1/20
 DESIGN ENGINEER OF RECORD: TBE DATE : 2/20

DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER EXCEPT AS NOTED.



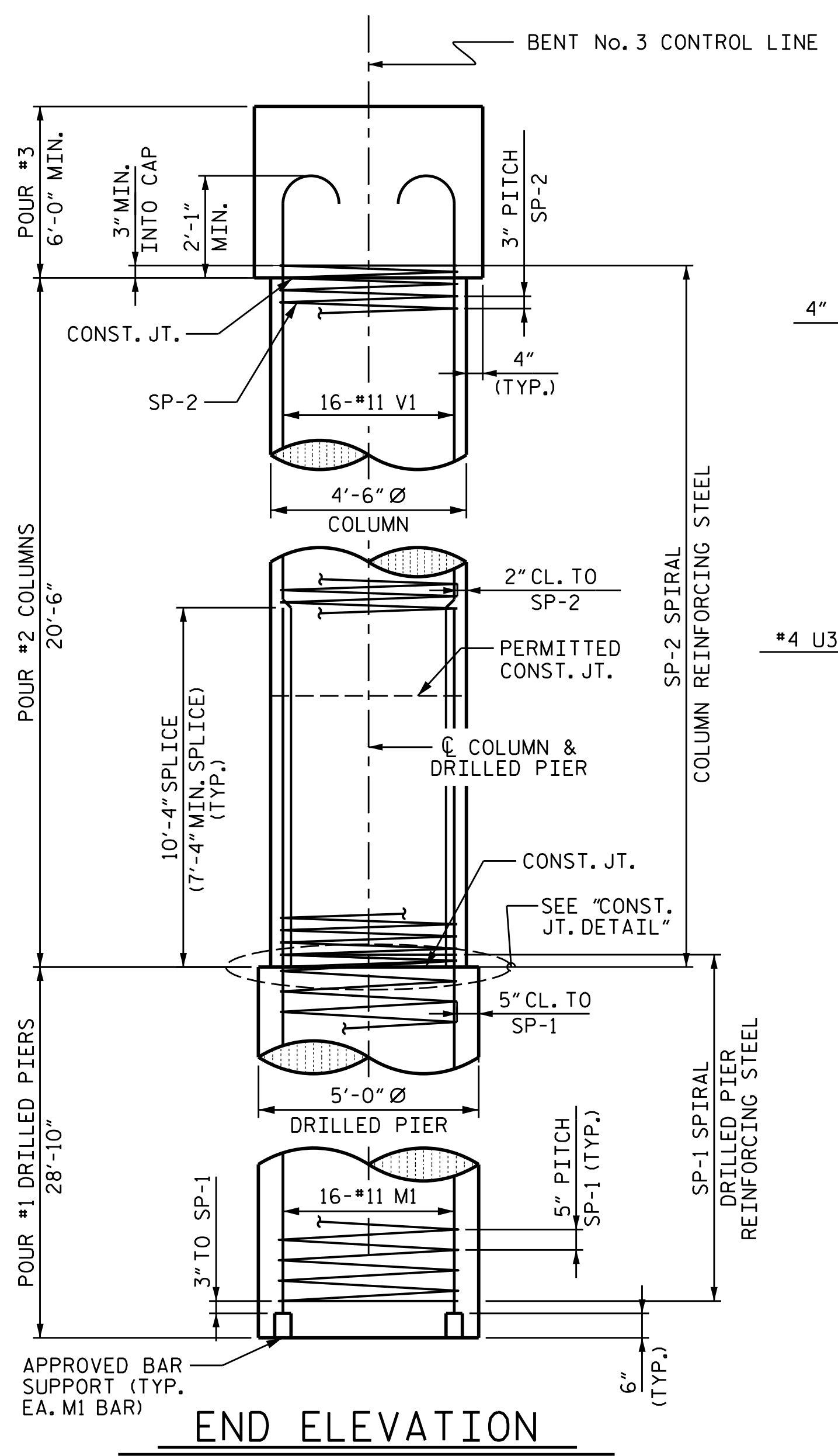
PLAN OF DRILLED PIERS & COLUMNS

DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER.

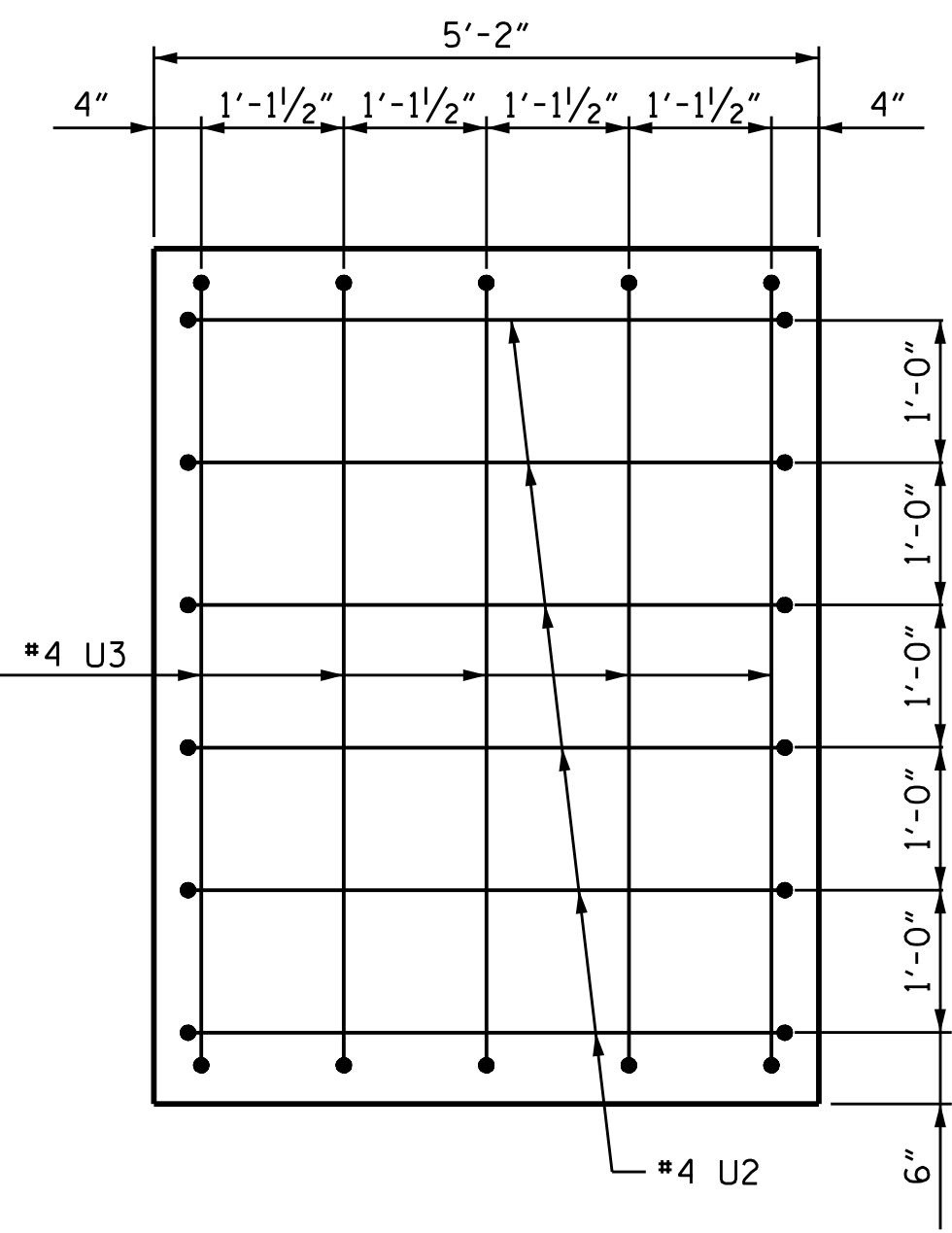


ALL BAR DIMENSIONS ARE OUT TO OUT

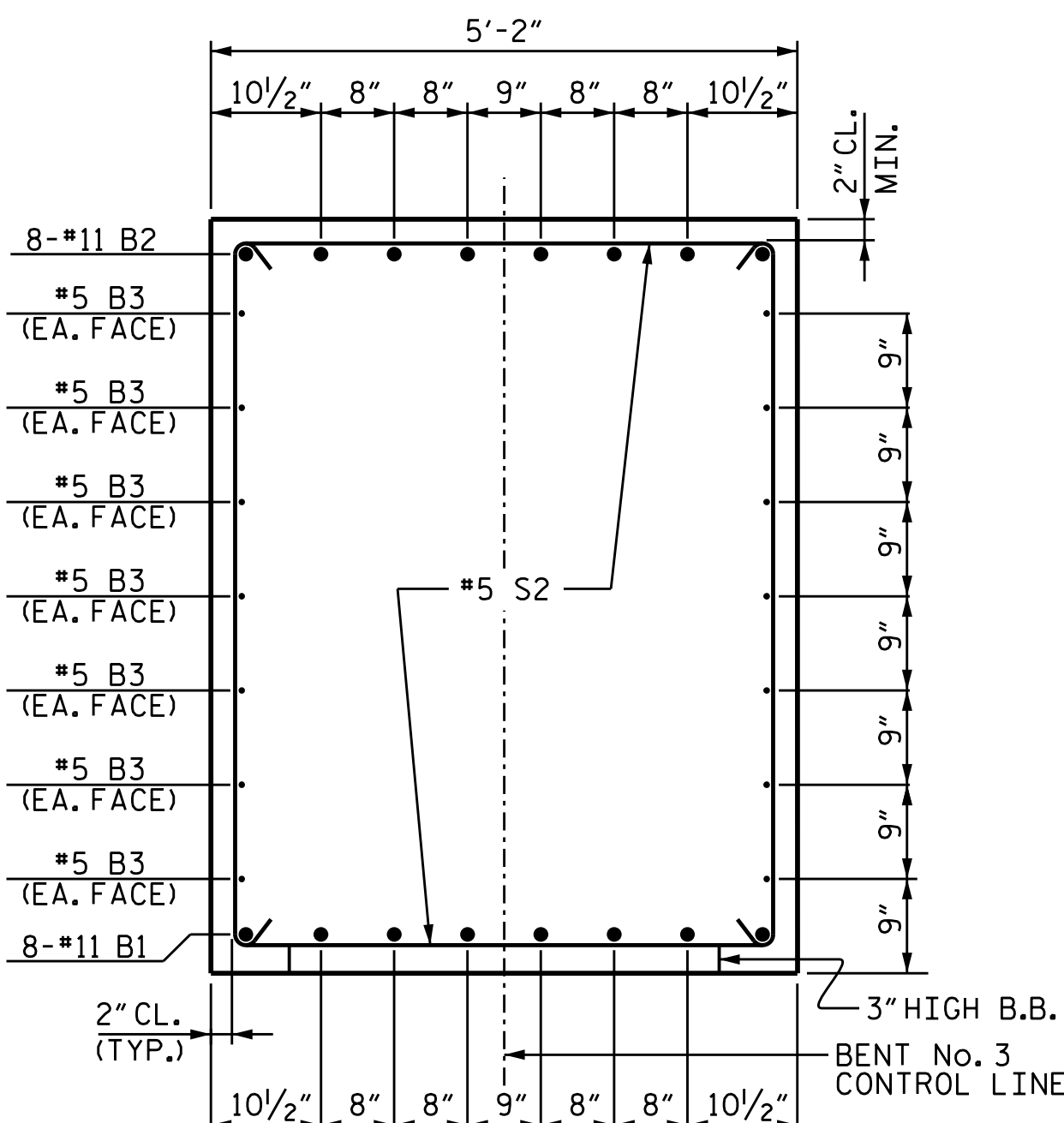
BILL OF MATERIAL FOR BENT No. 3					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#11	STR	30'-6"	1,296
B2	8	#11	6	33'-6"	1,424
B3	14	#5	STR	30'-6"	445
M1	32	#11	STR	38'-8"	6,574
S1	52	#5	2	15'-3"	827
S2	11	#5	2	17'-0"	195
U1	28	#4	3	7'-10"	147
U2	12	#4	3	7'-8"	61
U3	10	#4	3	8'-5"	56
V1	32	#11	1	24'-2"	4,109
REINFORCING STEEL					15,134 LBS.
SP-1	2	*	4	905'-4"	1,889
SP-2	2	**	5	1101'-9"	1,472
SPIRAL COLUMN REINFORCING STEEL					3,361 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR					



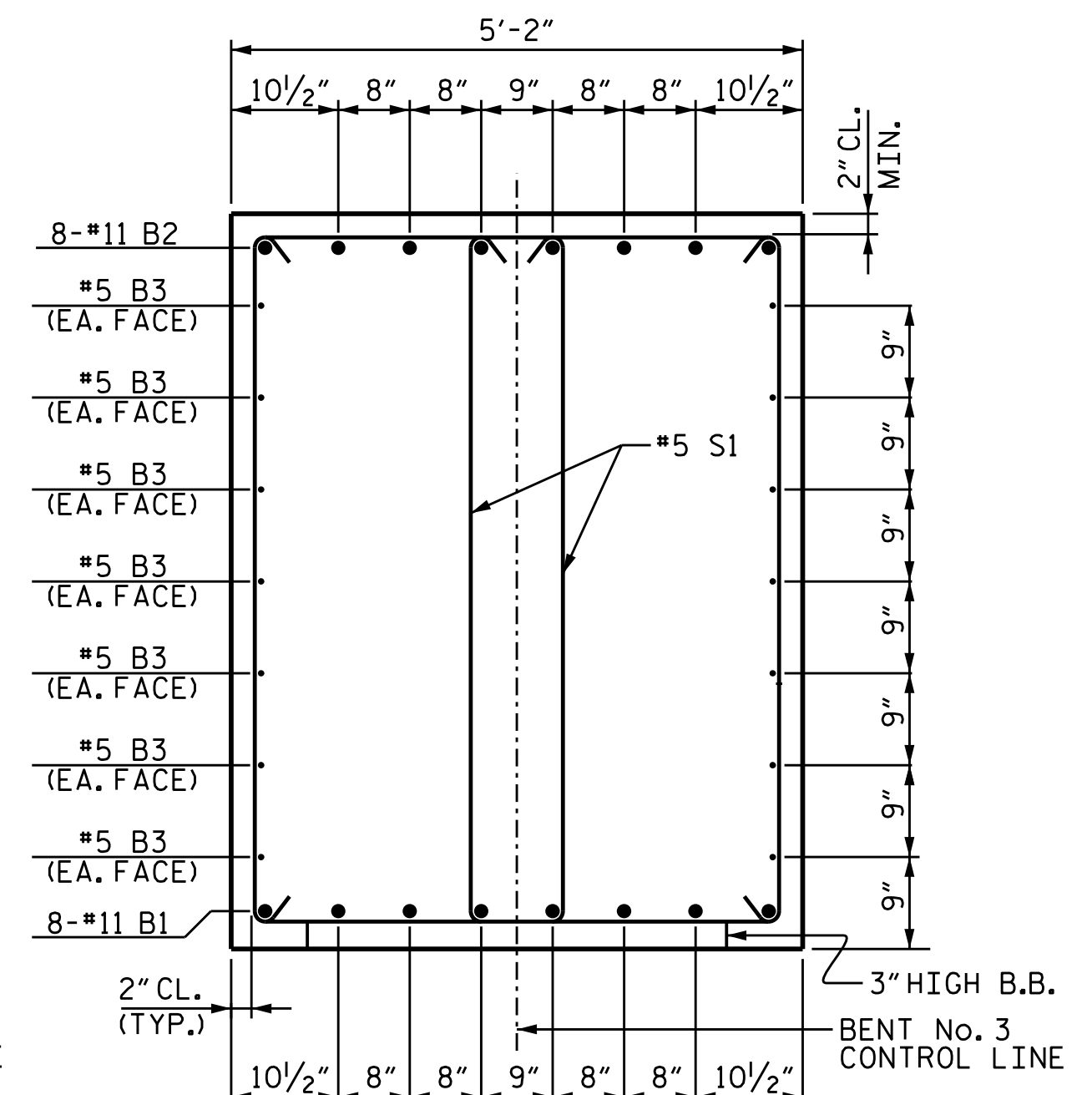
END ELEVATION



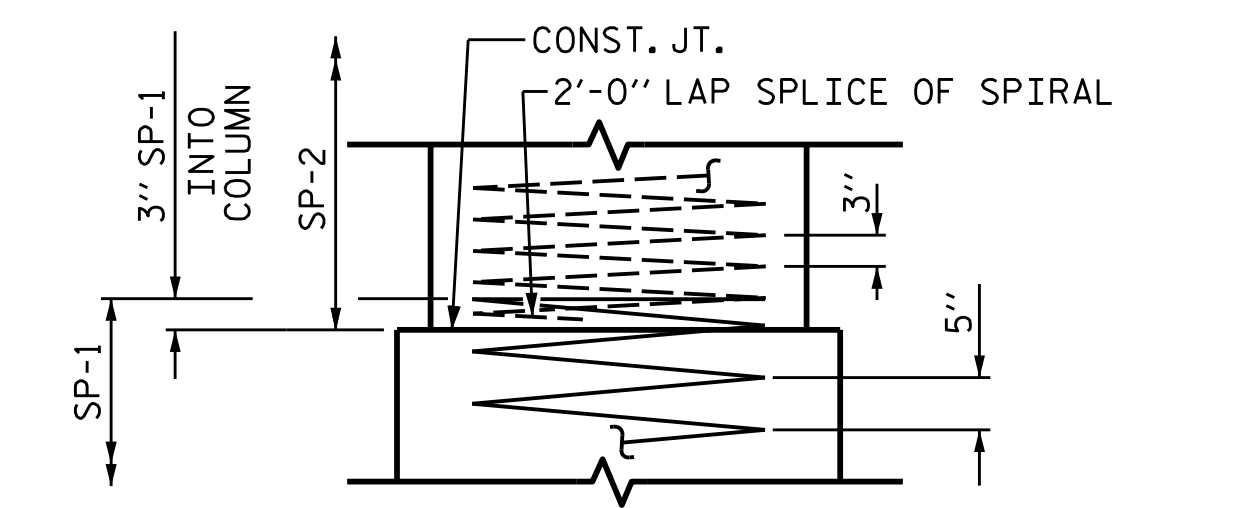
END VIEW



SECTION A-A



SECTION B-B



CONSTRUCTION JOINT DETAIL

CLASS A CONCRETE BREAKDOWN	
POUR #2 (COLUMNS)	24.2 C.Y.
POUR #3 (CAP)	35.9 C.Y.
TOTAL CLASS A CONCRETE	60.1 C.Y.
DRILLED PIERS:	
DRILLED PIER CONCRETE POUR #1	41.9 C.Y.
5'-0" Ø DRILLED PIERS IN SOIL	30.66 LIN. FT.
5'-0" Ø DRILLED PIERS NOT IN SOIL	27.00 LIN. FT.
CSL TUBES	303.30 LIN. FT.

PROJECT NO. B-5825
 YADKIN/FORSYTH COUNTY
 STATION: 34+65.50-L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

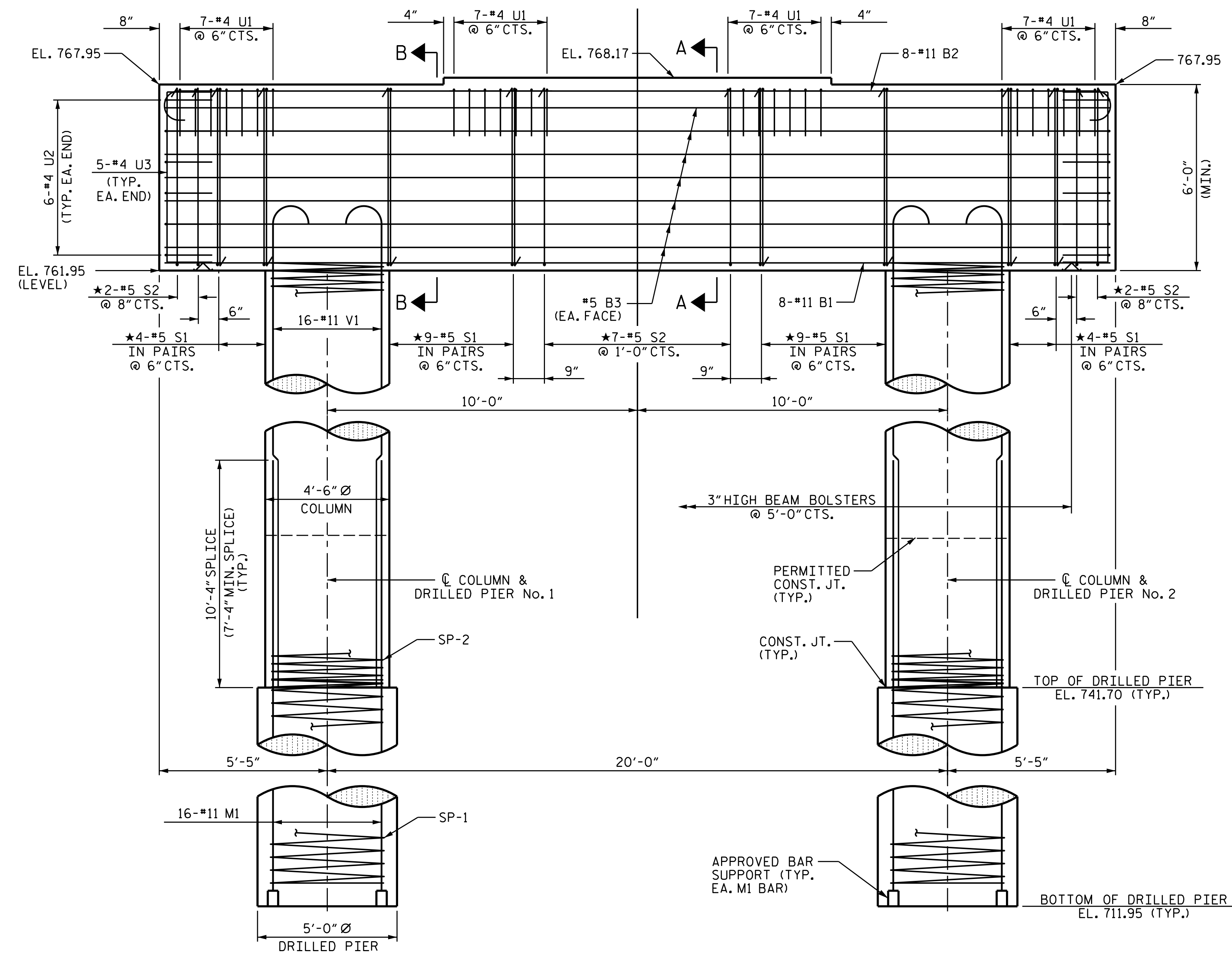
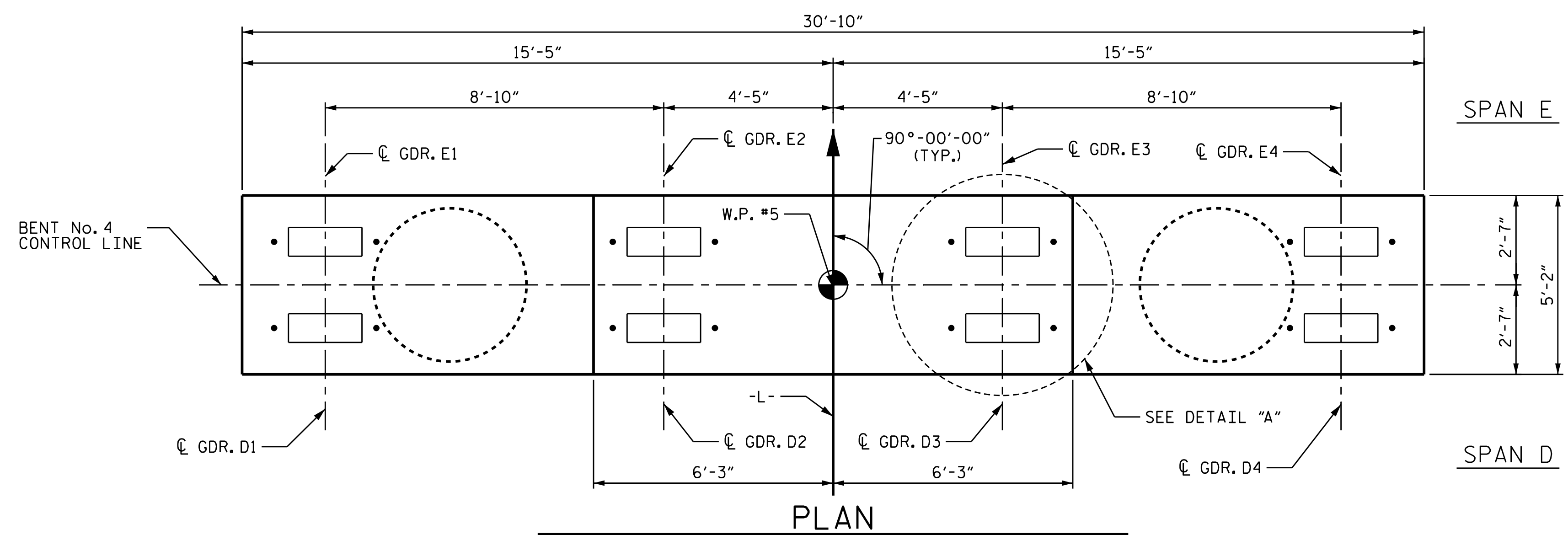
SEAL
 20125
 ENGINEER
 MARSHALL G. CHECK, JR.
 4/14/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 706 HILLSBOROUGH STREET
 SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-44
1			3			TOTAL SHEETS
2			4			60

DRAWN BY :	TBE	DATE :	10/19
CHECKED BY :	MGC	DATE :	1/20
DESIGN ENGINEER OF RECORD:	TBE	DATE :	2/20



NOTES

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

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

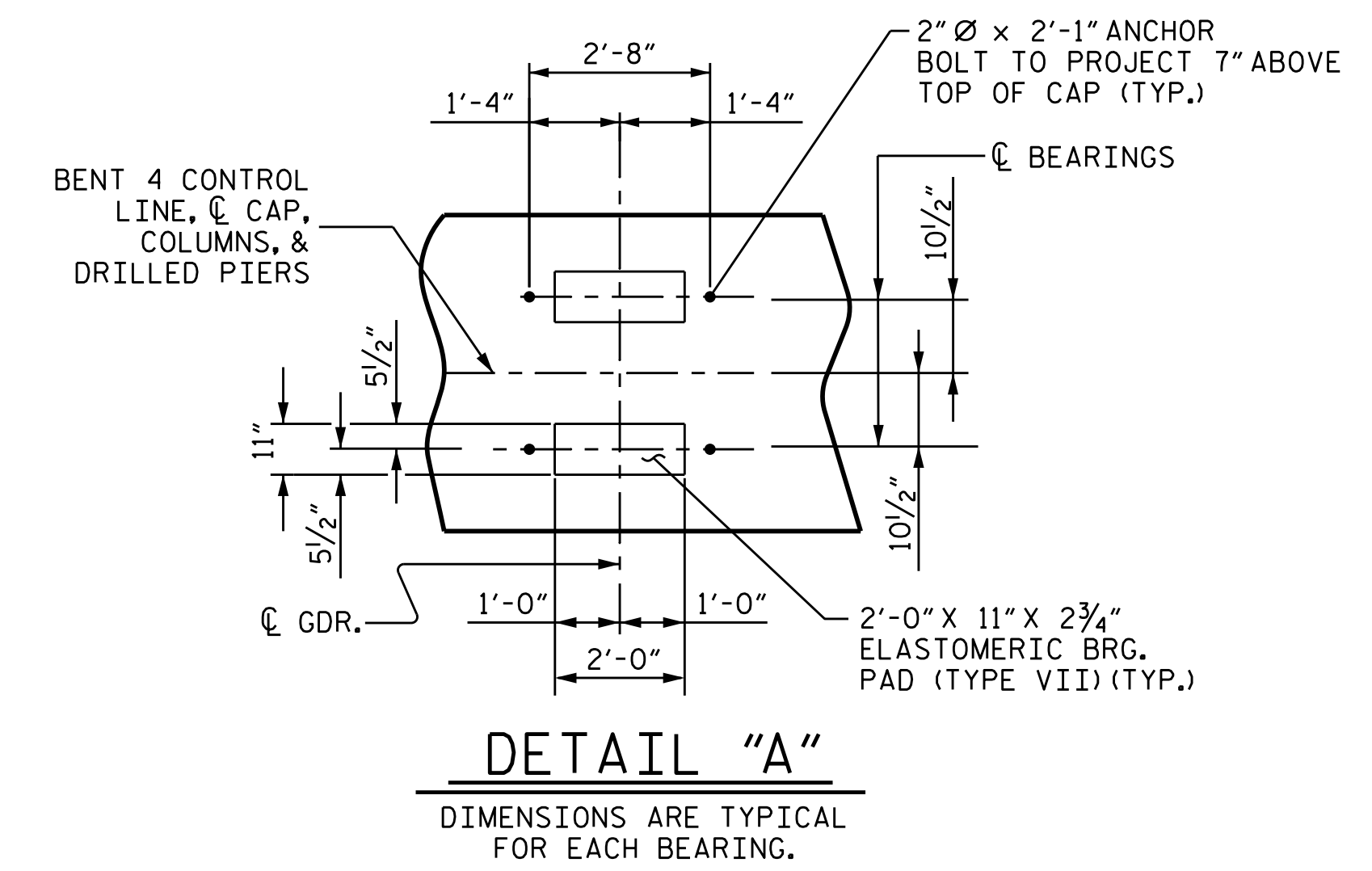
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

★ INVERT ALTERNATE STIRRUPS.

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

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



PROJECT NO. B-5825

YADKIN/FORSYTH COUNTY

STATION: 34+65.50-L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PROFESSIONAL ENGINEER
SEAL 20125
MARSHALL G. CREECH JR.
4/14/2020

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IGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

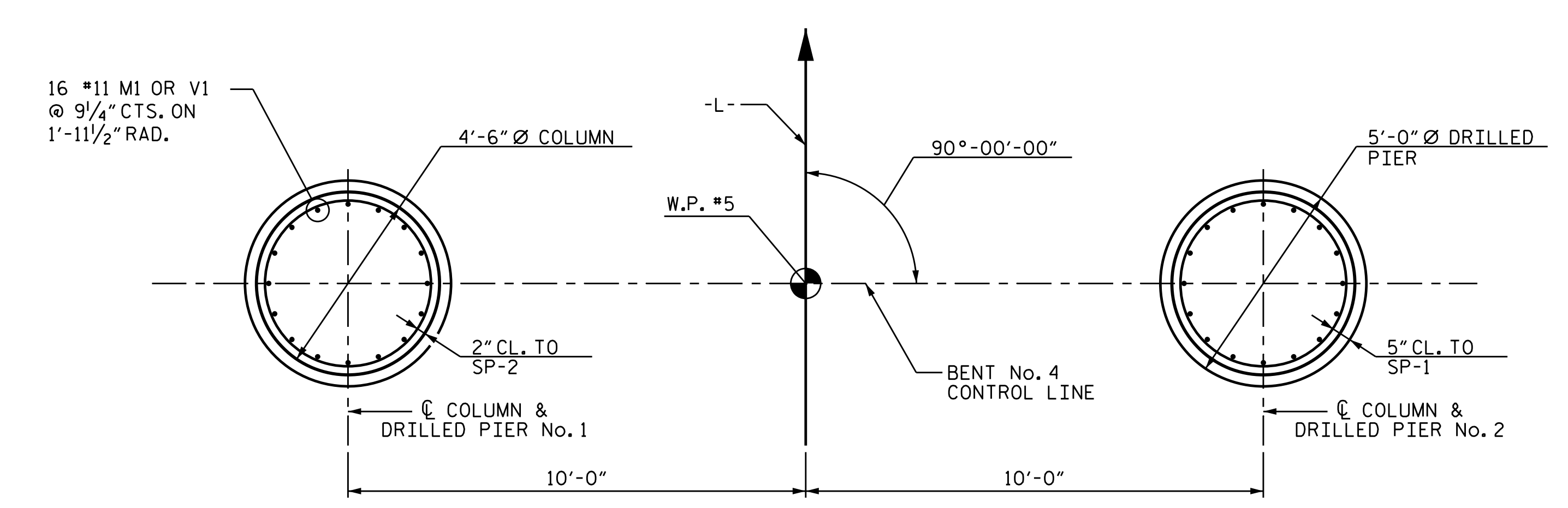
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-45
1			3			TOTAL SHEETS
2			4			60

DRAWN BY : TBE DATE : 10/19

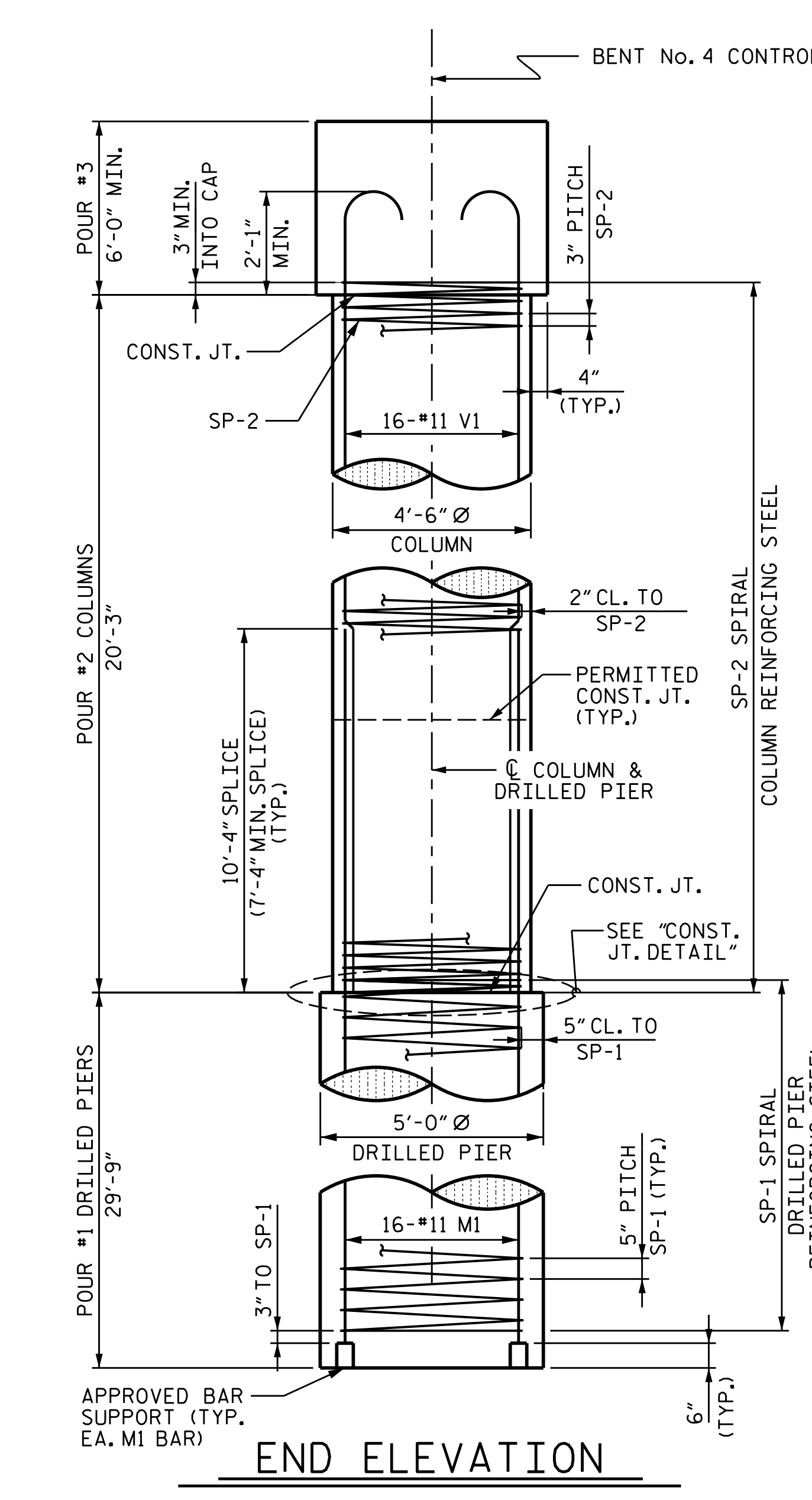
CHECKED BY : MGC DATE : 1/20

DESIGN ENGINEER OF RECORD: TBE DATE : 2/20

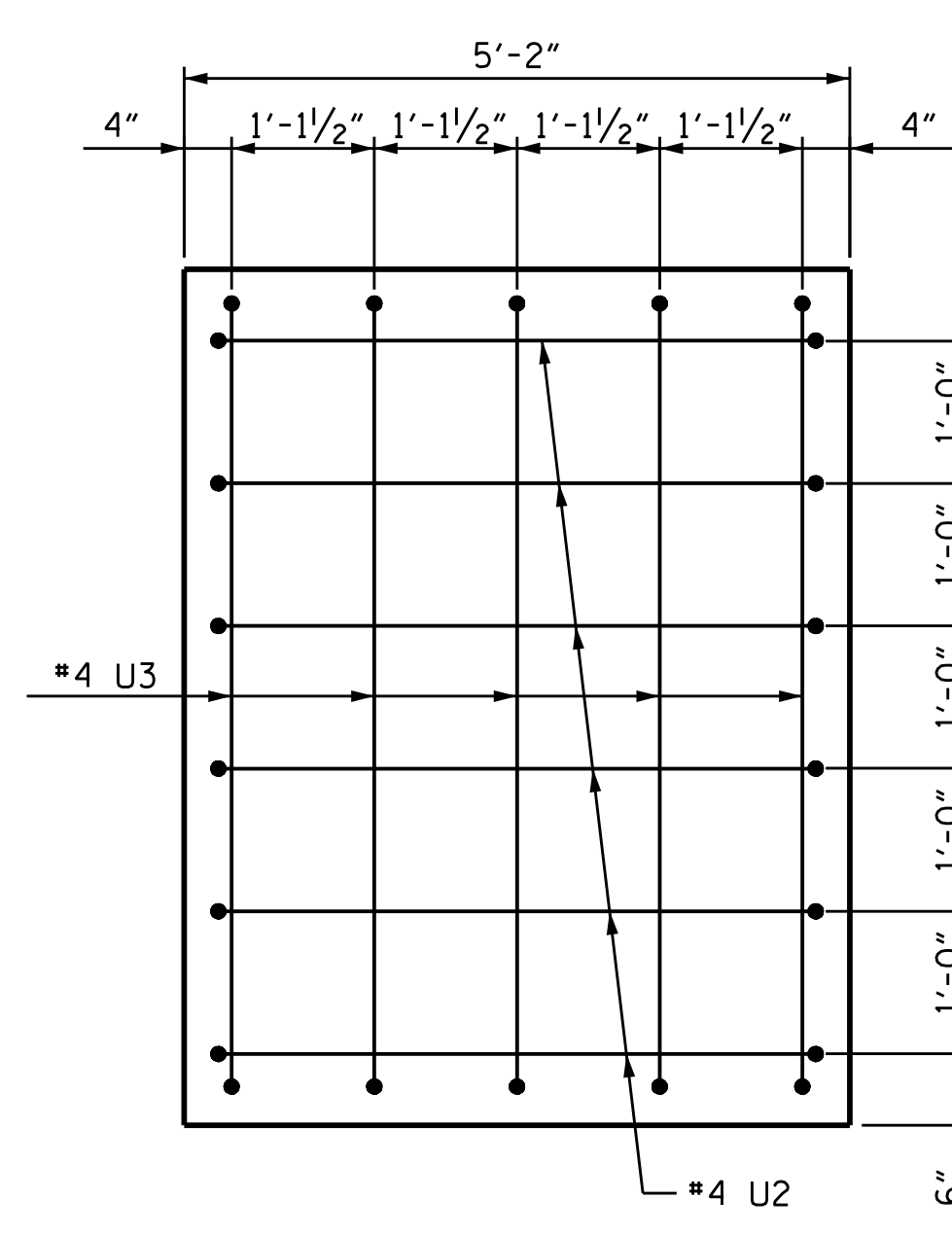
DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER EXCEPT AS NOTED.



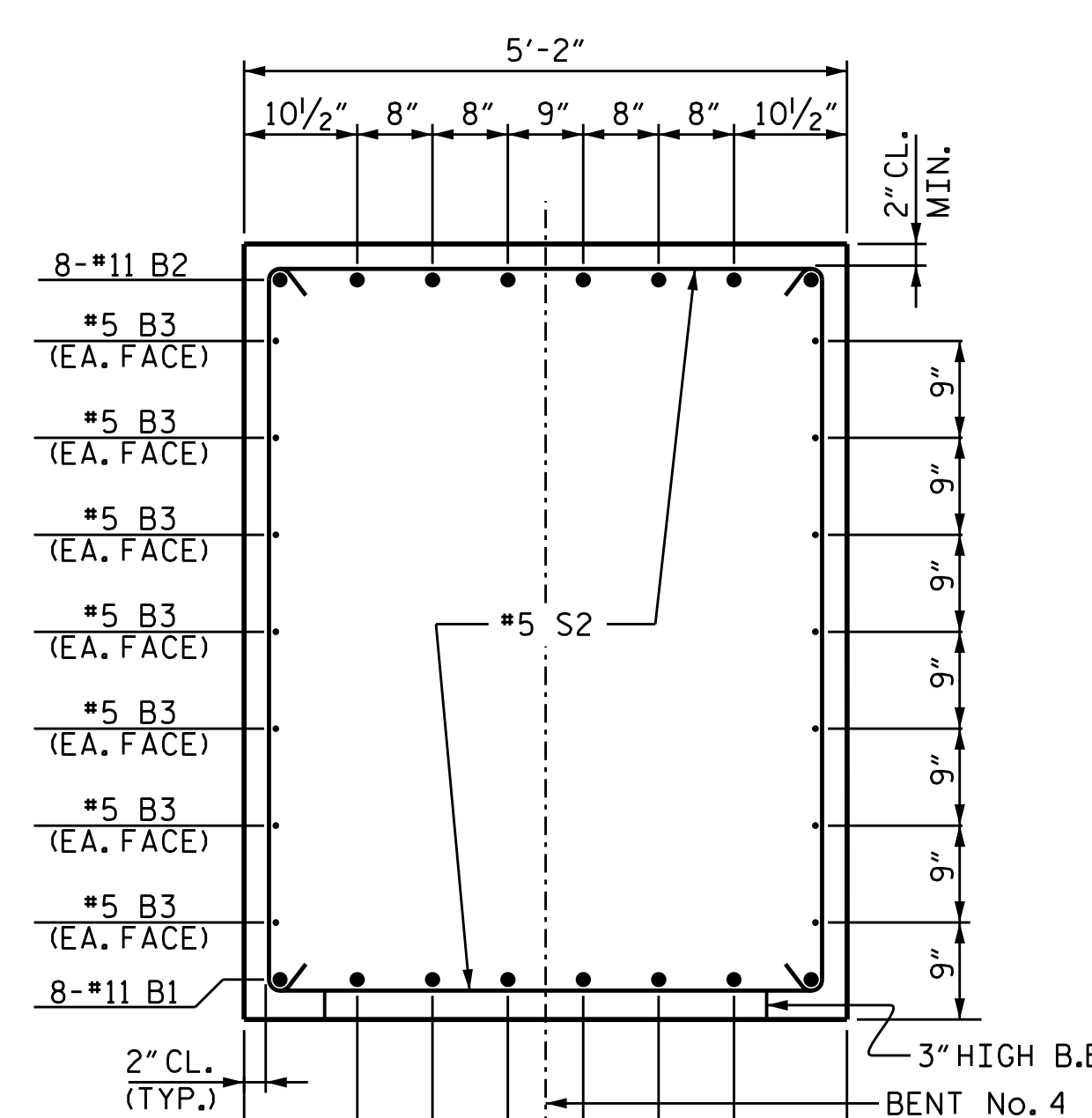
PLAN OF DRILLED PIERS & COLUMNS
DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER.



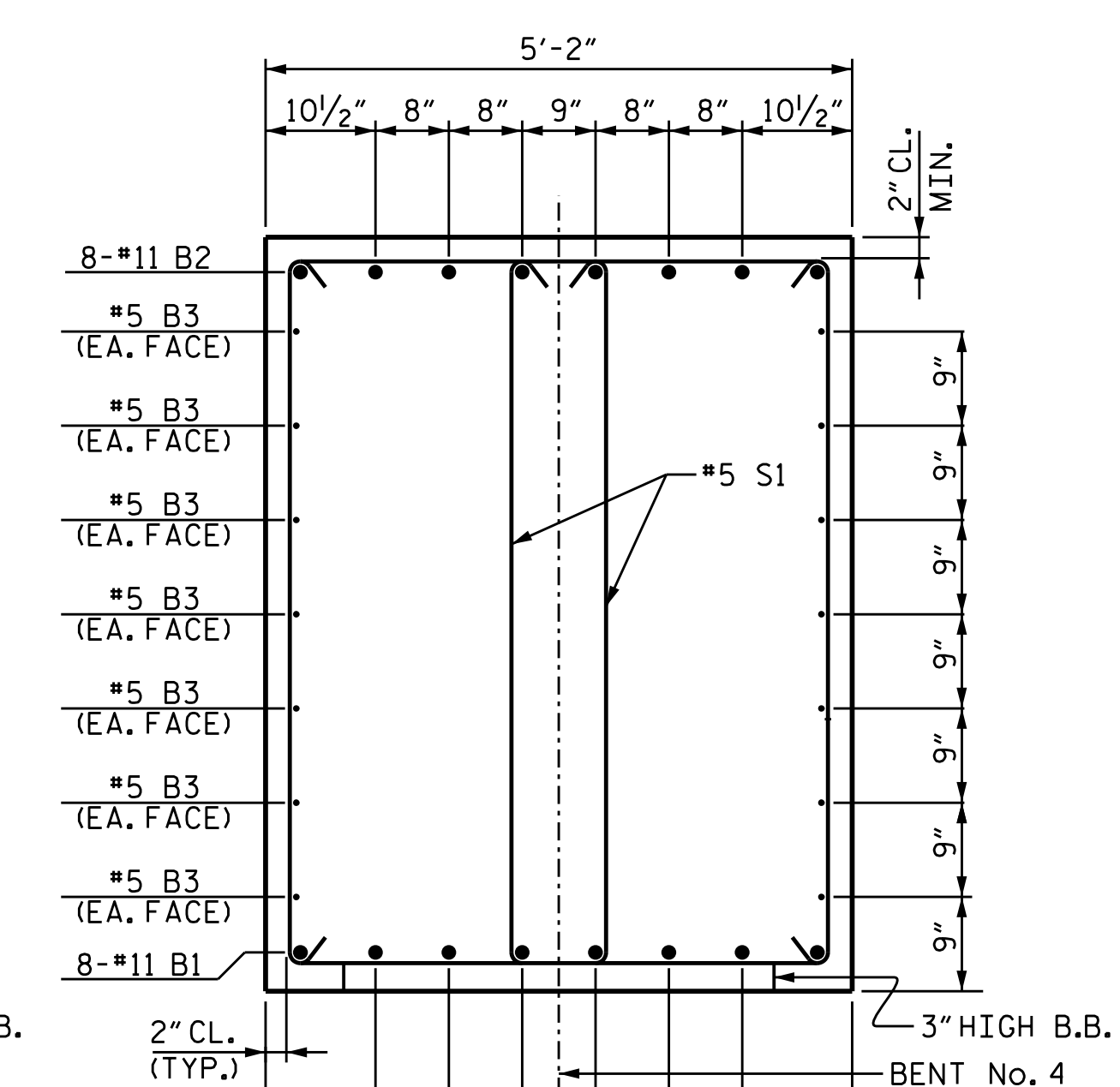
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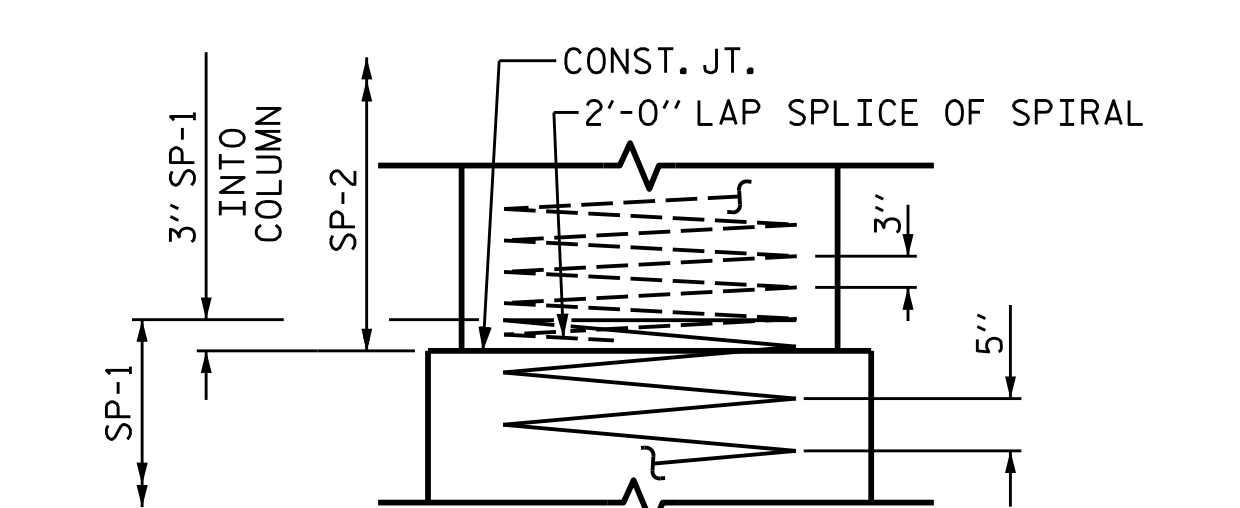
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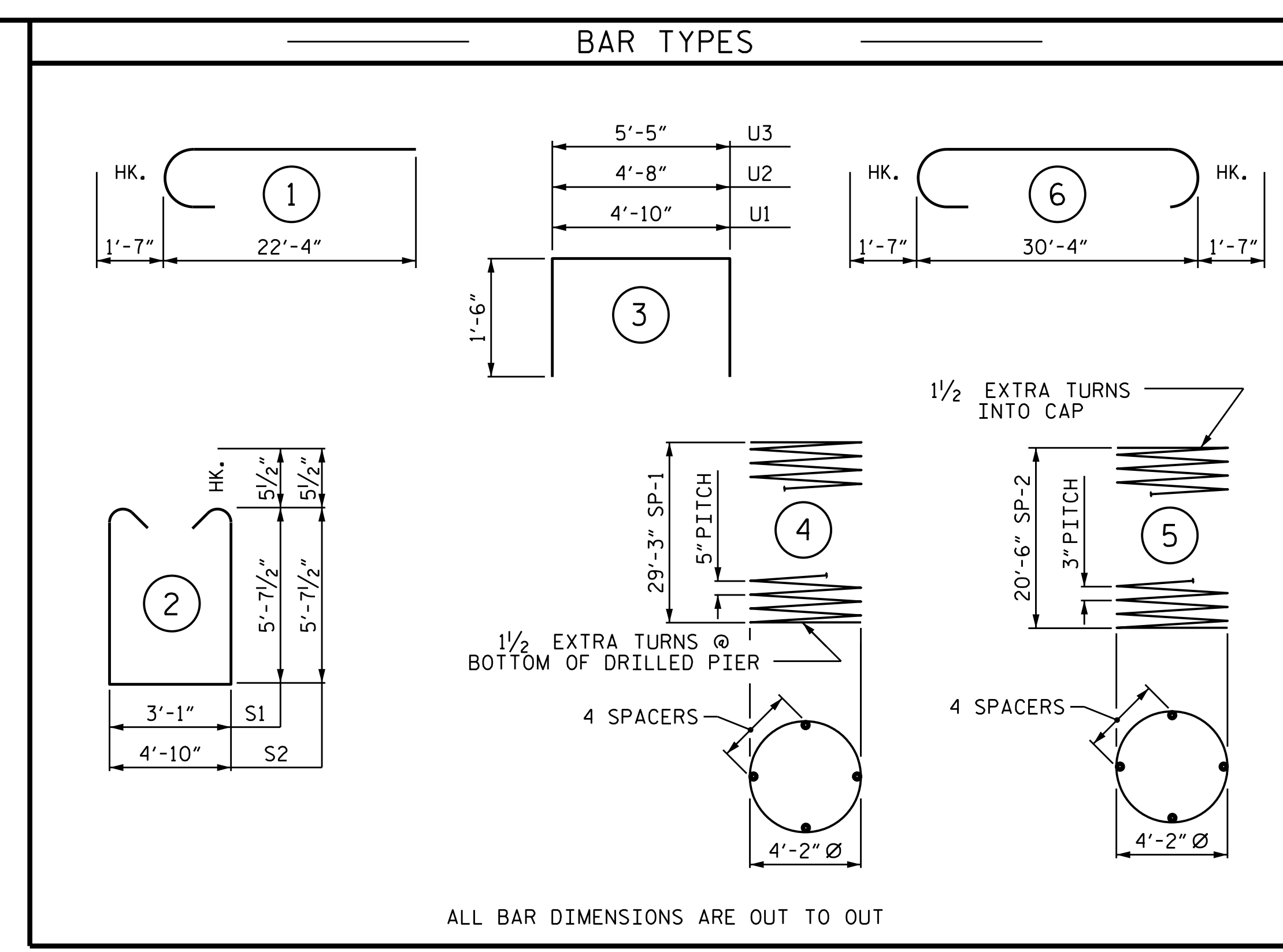
SECTION A-A



SECTION B-B



CONSTRUCTION JOINT DETAIL



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR BENT No. 4					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#11	STR	30'-6"	1,296
B2	8	#11	6	33'-6"	1,424
B3	14	#5	STR	30'-6"	445
M1	32	#11	STR	39'-7"	6,730
S1	52	#5	2	15'-3"	827
S2	11	#5	2	17'-0"	195
U1	28	#4	3	7'-10"	147
U2	12	#4	3	7'-8"	61
U3	10	#4	3	8'-5"	56
V1	32	#11	1	23'-11"	4,066
REINFORCING STEEL					15,247 LBS.
SP-1	2	*	4	931'-3"	1,943
SP-2	2	**	5	1,088'-10"	1,455
SPIRAL COLUMN REINFORCING STEEL					3,398 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR					
CLASS A CONCRETE BREAKDOWN					
POUR #2 (COLUMNS)					23.9 C.Y.
POUR #3 (CAP)					35.9 C.Y.
TOTAL CLASS A CONCRETE					59.8 C.Y.
DRILLED PIERS:					
DRILLED PIER CONCRETE POUR #1					43.3 C.Y.
5'-0" Ø DRILLED PIERS IN SOIL					31.50 LIN. FT.
5'-0" Ø DRILLED PIERS NOT IN SOIL					28.00 LIN. FT.
PERMANENT STEEL CASING FOR 5'-0" Ø DRILLED PIERS					31.40 LIN. FT.
CSL TUBES					312.50 LIN. FT.

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
STATION: 34+65.50-L-
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

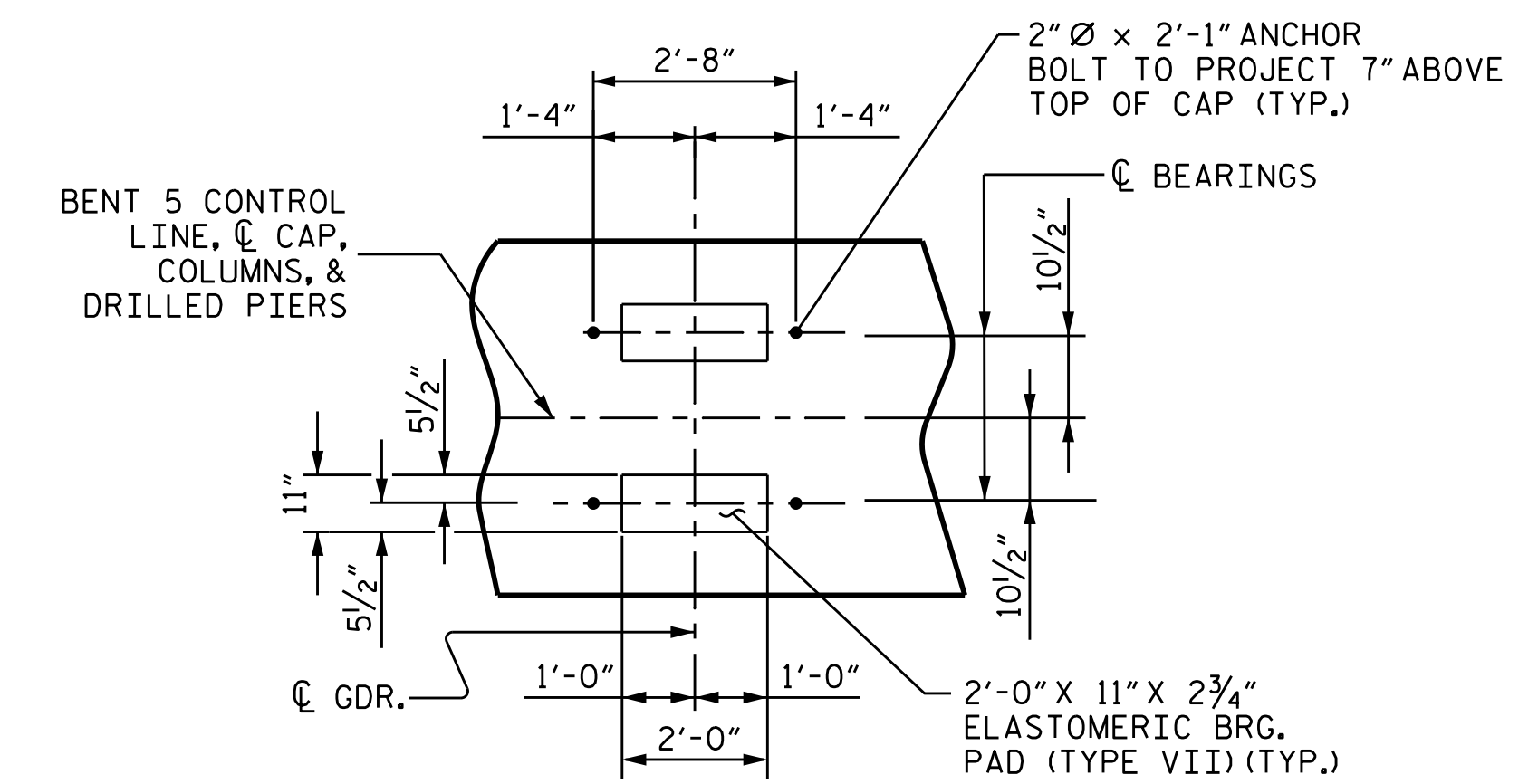
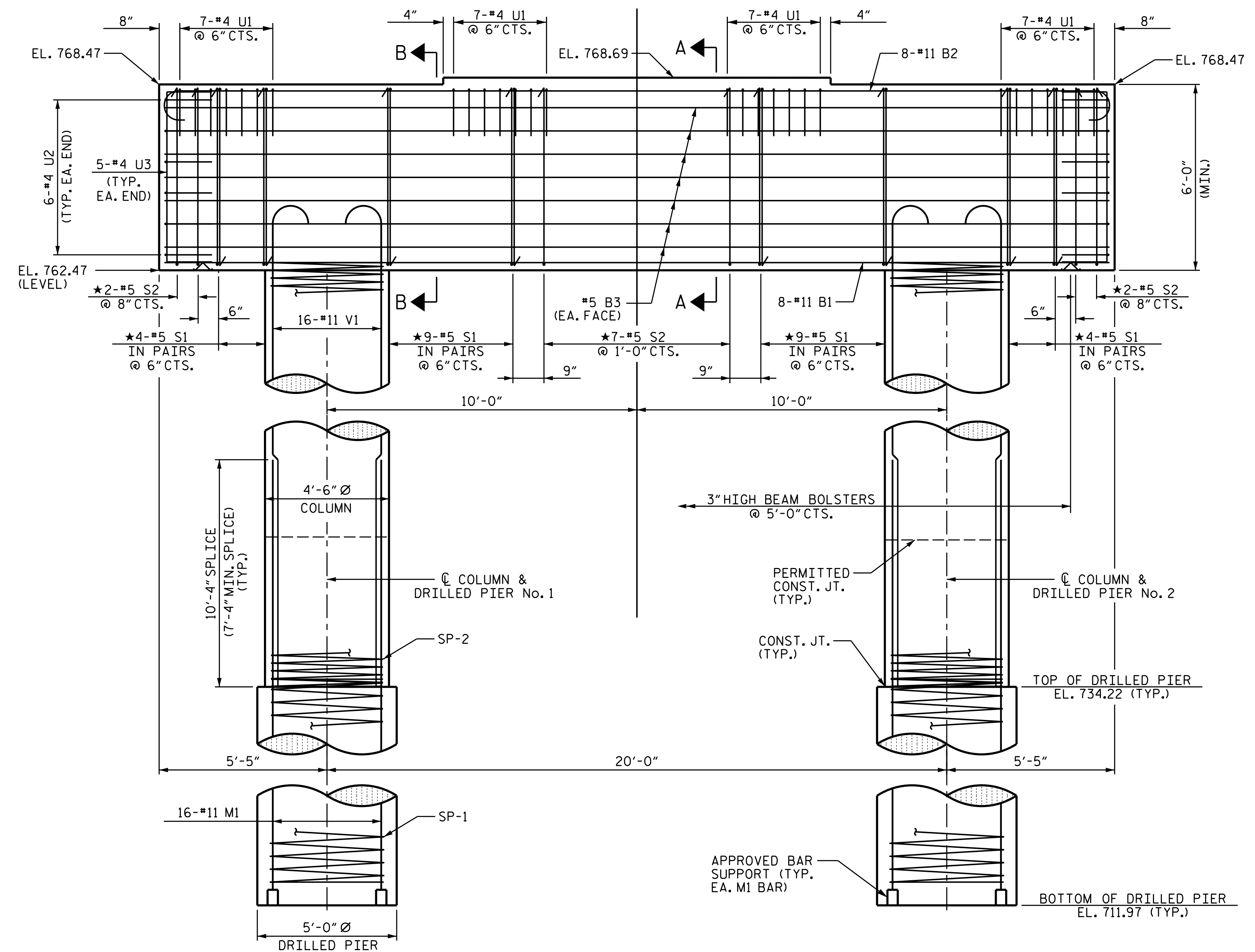
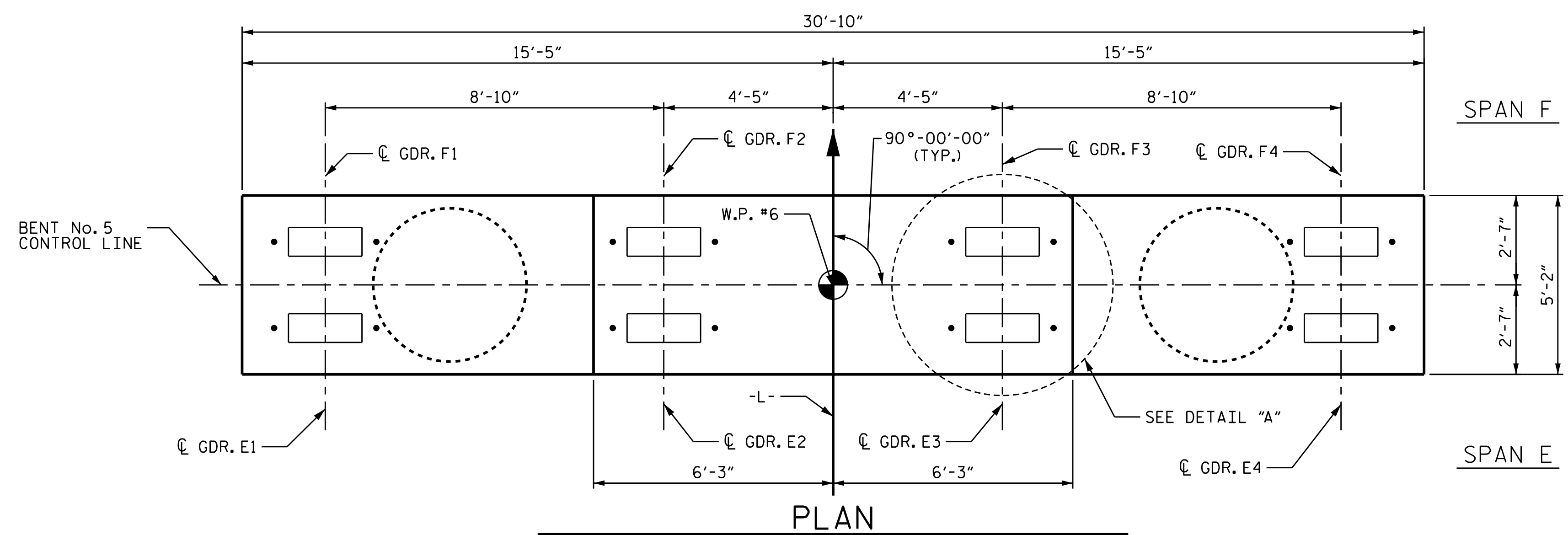
SEAL
20125
MARSHALL G. CHECK, JR.
ENGINEER
4/14/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
706 HILLSBOROUGH STREET
SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-46
1			3			TOTAL SHEETS
2			4			60

DRAWN BY :	TBE	DATE :	10/19
CHECKED BY :	MGC	DATE :	1/20
DESIGN ENGINEER OF RECORD:	TBE	DATE :	2/20



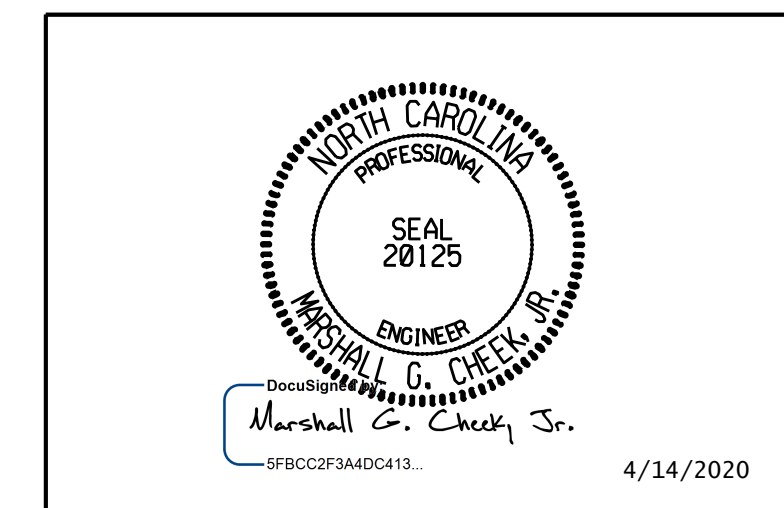
DETAIL "A"
DIMENSIONS ARE TYPICAL FOR EACH BEARING.

NOTES

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

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50-L-

SHEET 1 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT No. 5

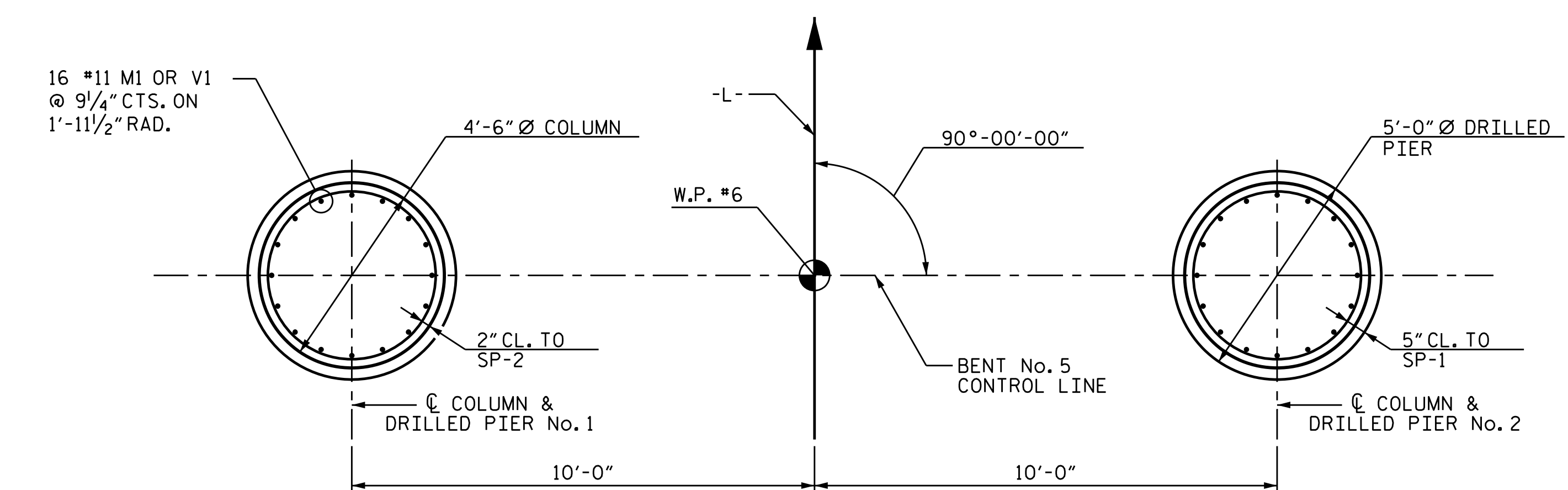
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
IGS ENGINEERS
 804-C N. LAFAYETTE ST
 SHELBY, NC 28150
 PH (704) 476-0003
 CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-47
1			3			TOTAL SHEETS
2			4			60

DRAWN BY : TBE DATE : 10/19
 CHECKED BY : MGC DATE : 1/20
 DESIGN ENGINEER OF RECORD: TBE DATE : 2/20

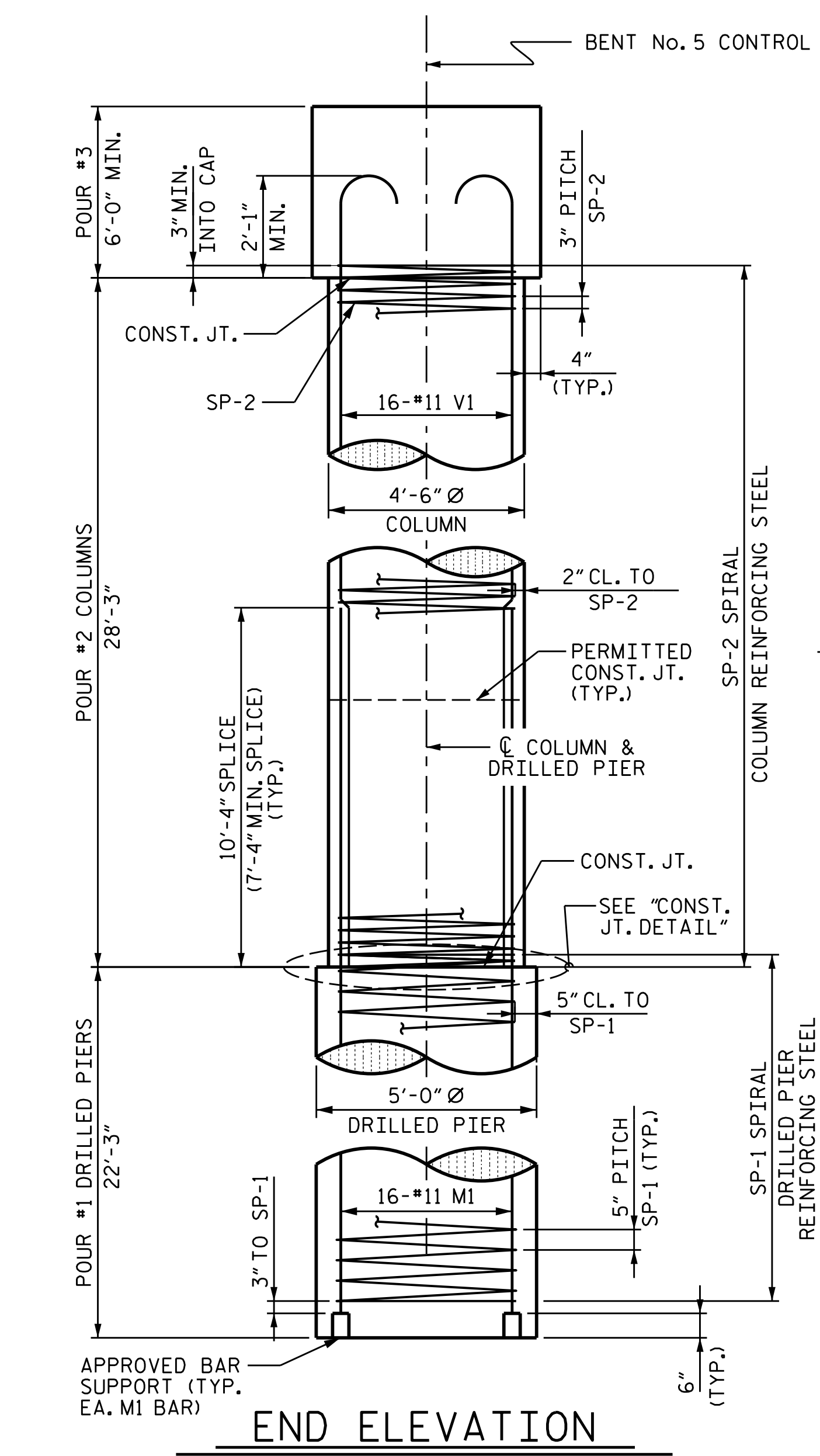
ELEVATION

DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER EXCEPT AS NOTED.

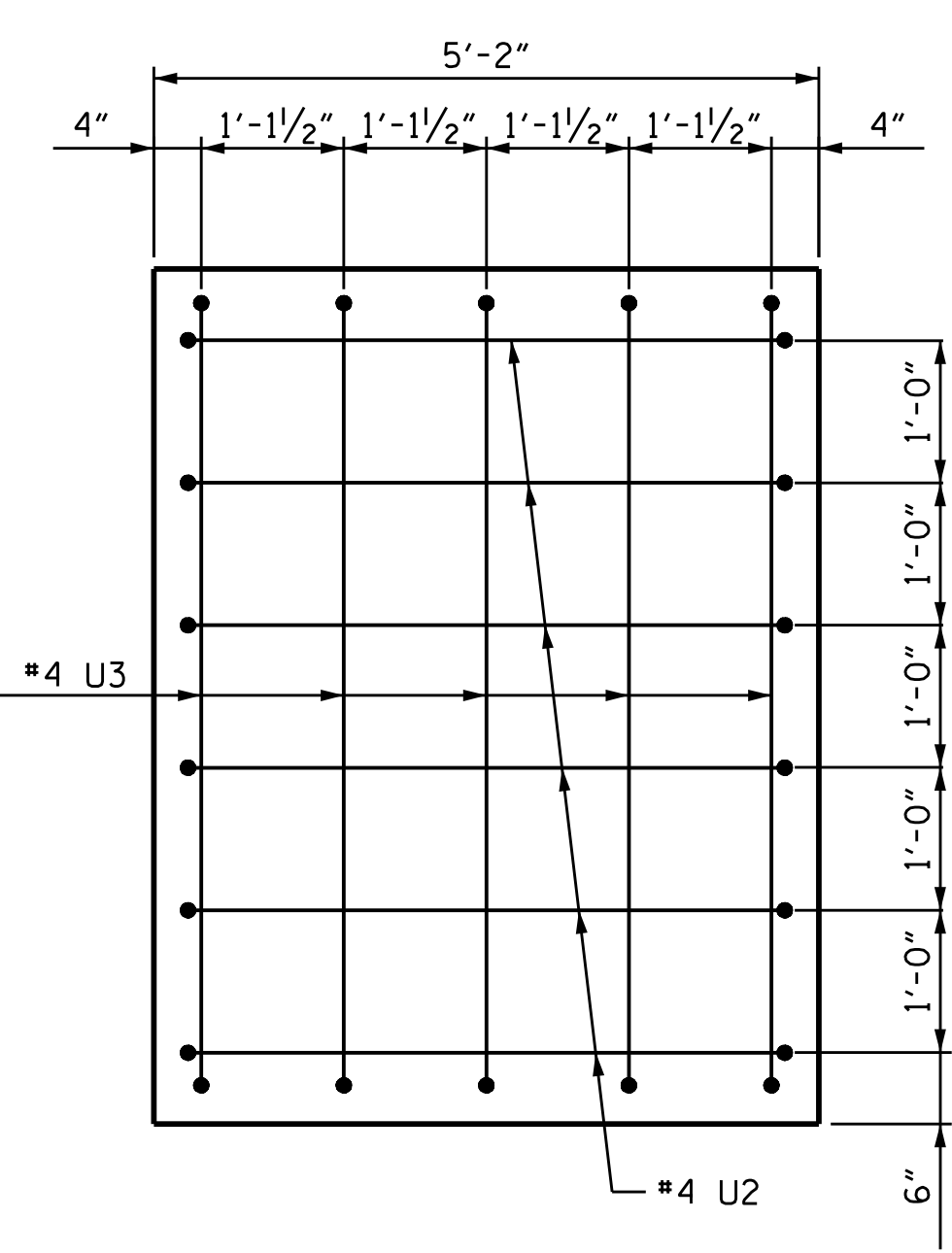


PLAN OF DRILLED PIERS & COLUMNS

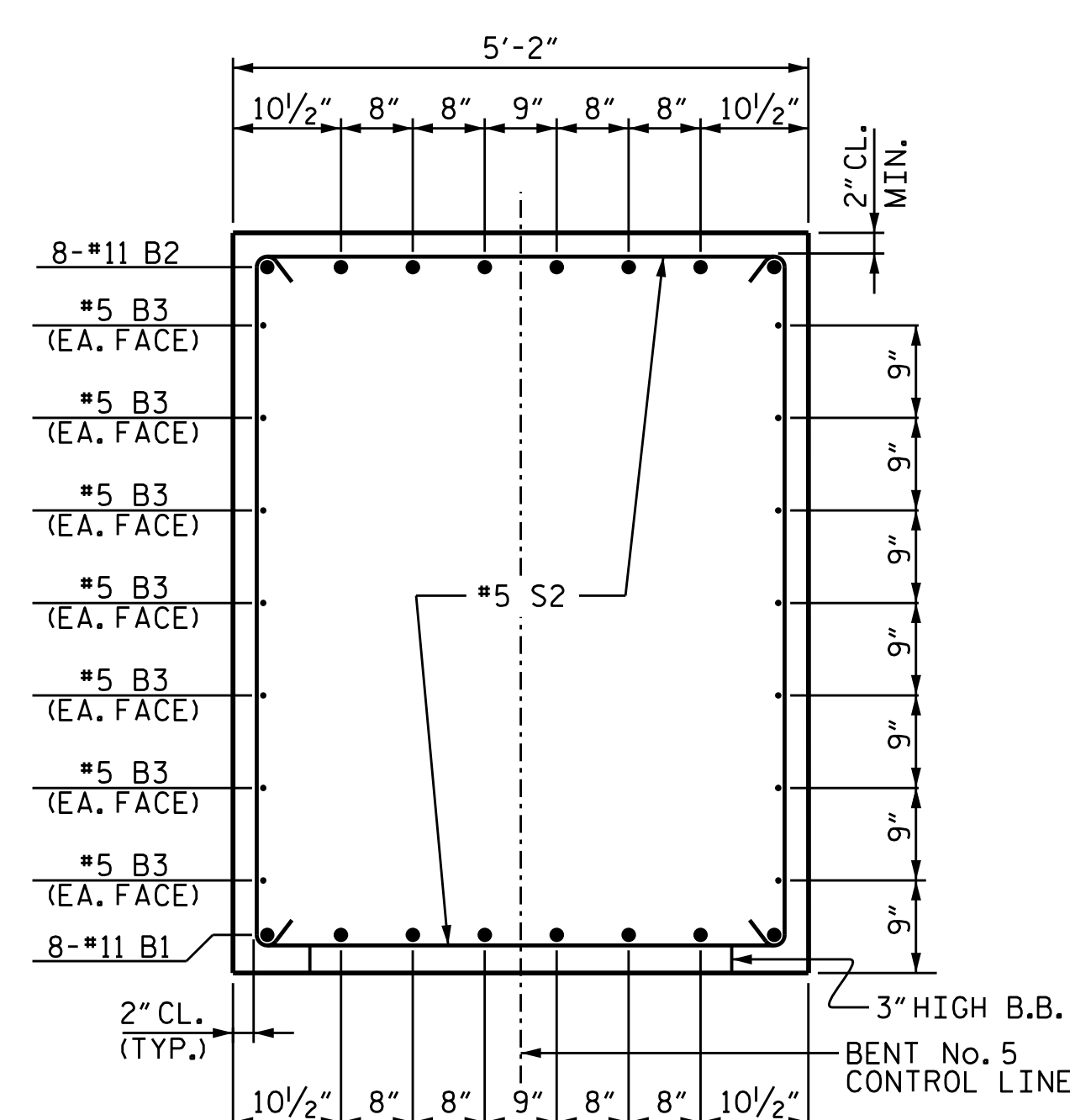
DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER.



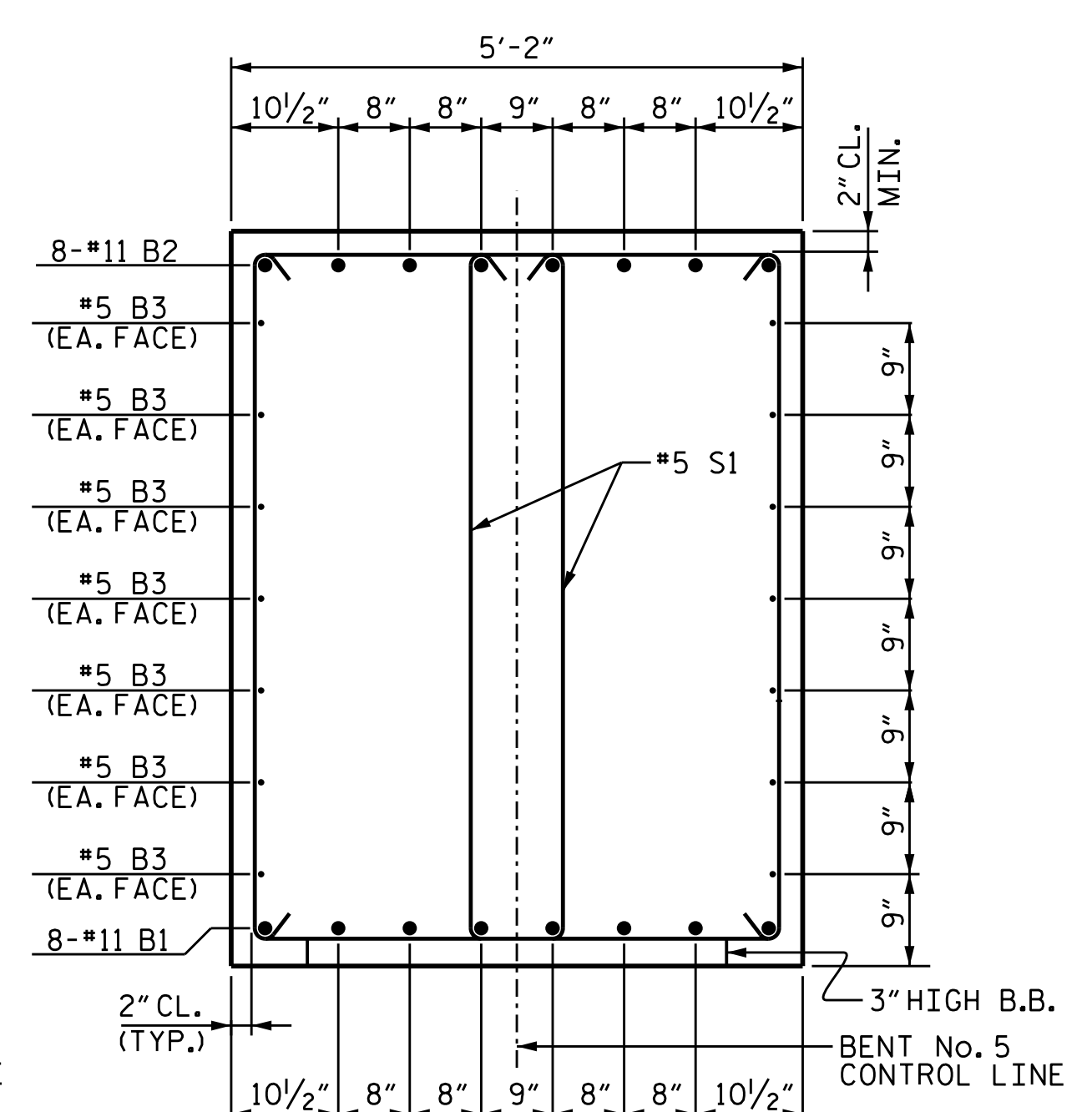
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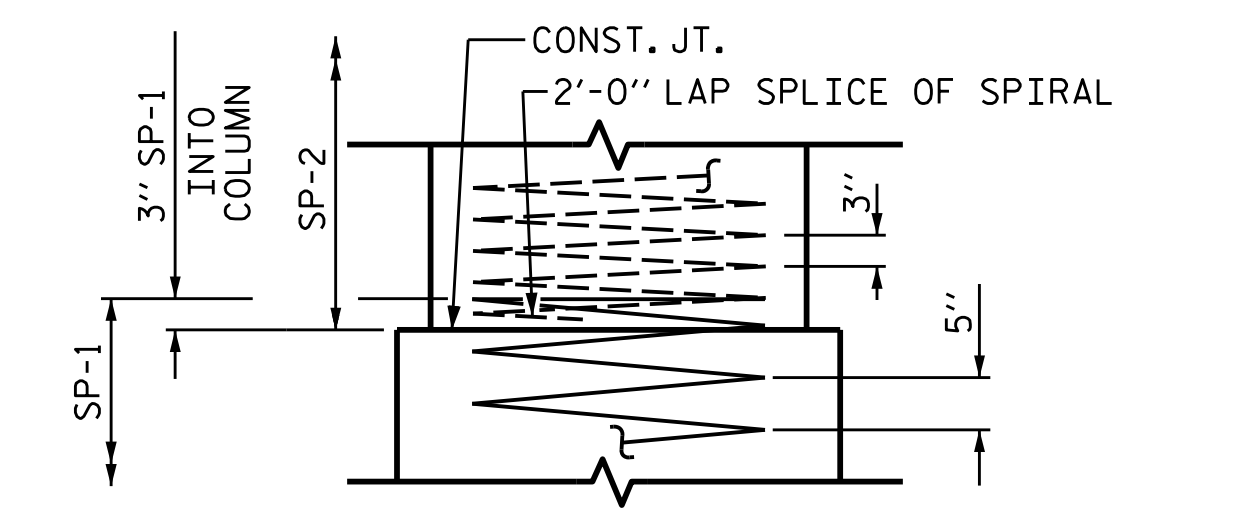
END VIEW



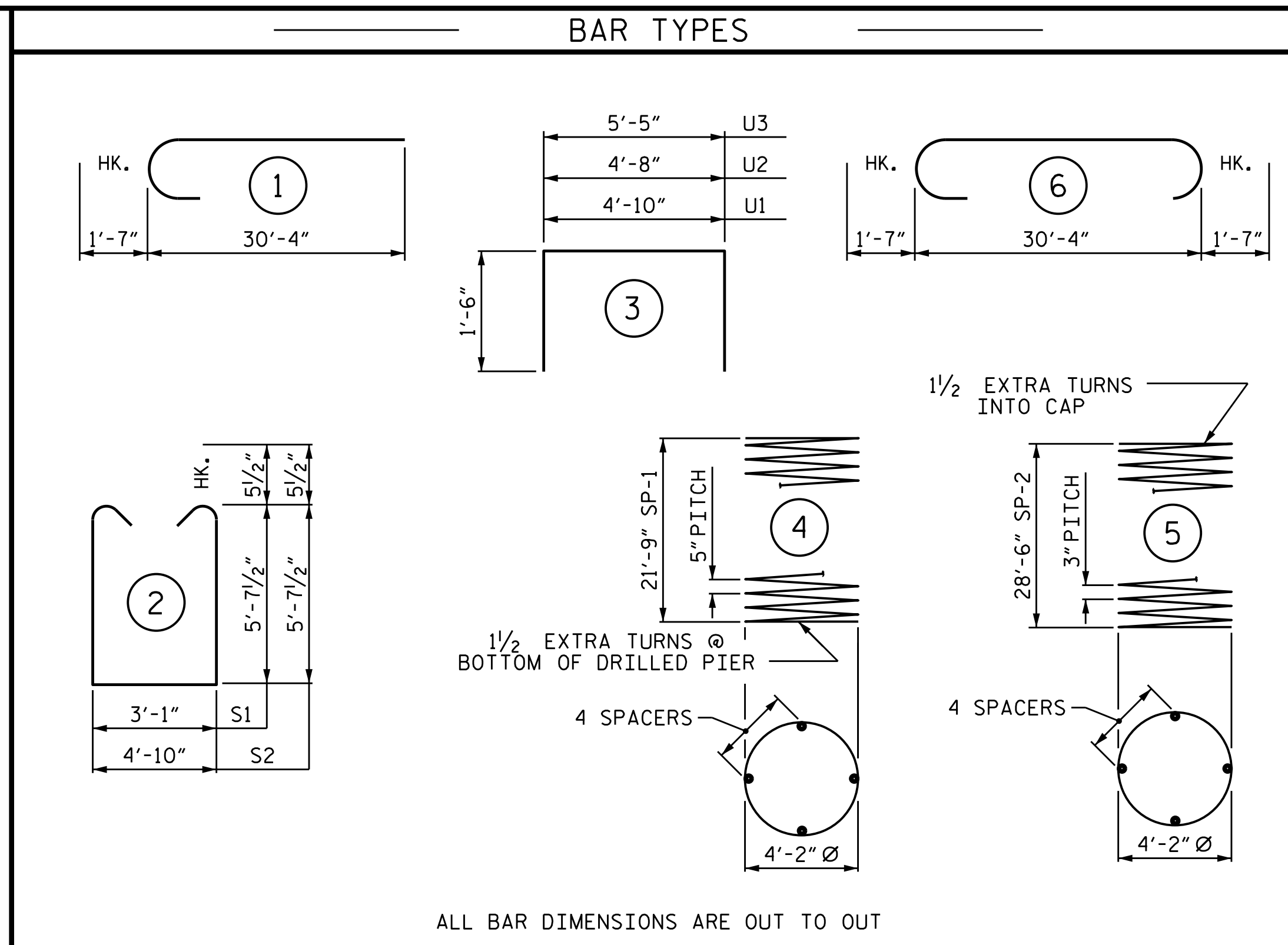
SECTION A-A



SECTION B-B



CONSTRUCTION JOINT DETAIL



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR BENT No. 5					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#11	STR	30'-6"	1,296
B2	8	#11	6	33'-6"	1,424
B3	14	#5	STR	30'-6"	445
M1	32	#11	STR	32'-1"	5,455
S1	52	#5	2	15'-3"	827
S2	11	#5	2	17'-0"	195
U1	28	#4	3	7'-10"	147
U2	12	#4	3	7'-8"	61
U3	10	#4	3	8'-5"	56
V1	32	#11	1	31'-11"	5,426
REINFORCING STEEL					15,332 LBS.
SP-1	2	*	4	698'-5"	1,457
SP-2	2	**	5	1,503'-7"	2,009
SPIRAL COLUMN REINFORCING STEEL					3,466 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR					

CLASS A CONCRETE BREAKDOWN	
POUR #2 (COLUMNS)	33.3 C.Y.
POUR #3 (CAP)	35.9 C.Y.
TOTAL CLASS A CONCRETE	69.2 C.Y.

DRILLED PIERS:	
DRILLED PIER CONCRETE POUR #1	32.4 C.Y.
5'-0" Ø DRILLED PIERS IN SOIL	18.50 LIN. FT.
5'-0" Ø DRILLED PIERS NOT IN SOIL	26.00 LIN. FT.
PERMANENT STEEL CASING FOR 5'-0" Ø DRILLED PIERS	18.44 LIN. FT.
CSL TUBES	237.50 LIN. FT.

PROJECT NO. B-5825
 YADKIN/FORSYTH COUNTY
 STATION: 34+65.50-L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

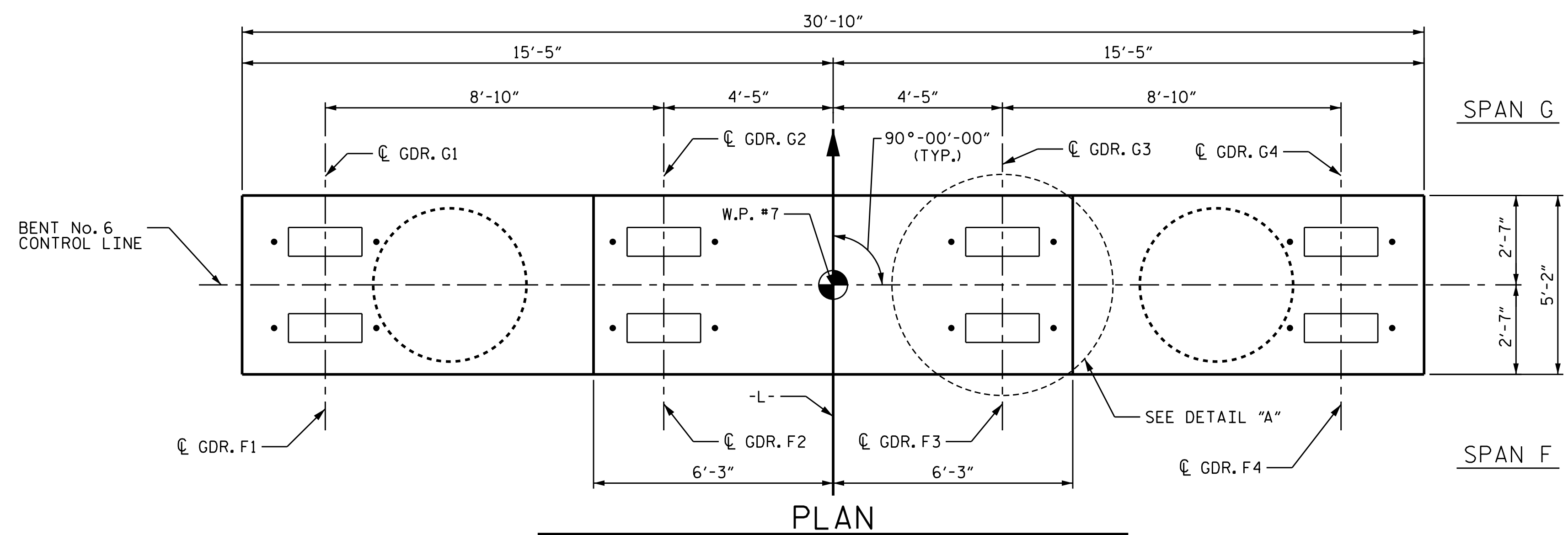
SEAL
 20125
 ENGINEER
 MARSHALL G. CHECK, JR.
 4/14/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
 706 HILLSBOROUGH STREET
 SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-48
1			3			TOTAL SHEETS
2			4			60

DRAWN BY :	TBE	DATE :	10/19
CHECKED BY :	MGC	DATE :	1/20
DESIGN ENGINEER OF RECORD:	TBE	DATE :	2/20



NOTES

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

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

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

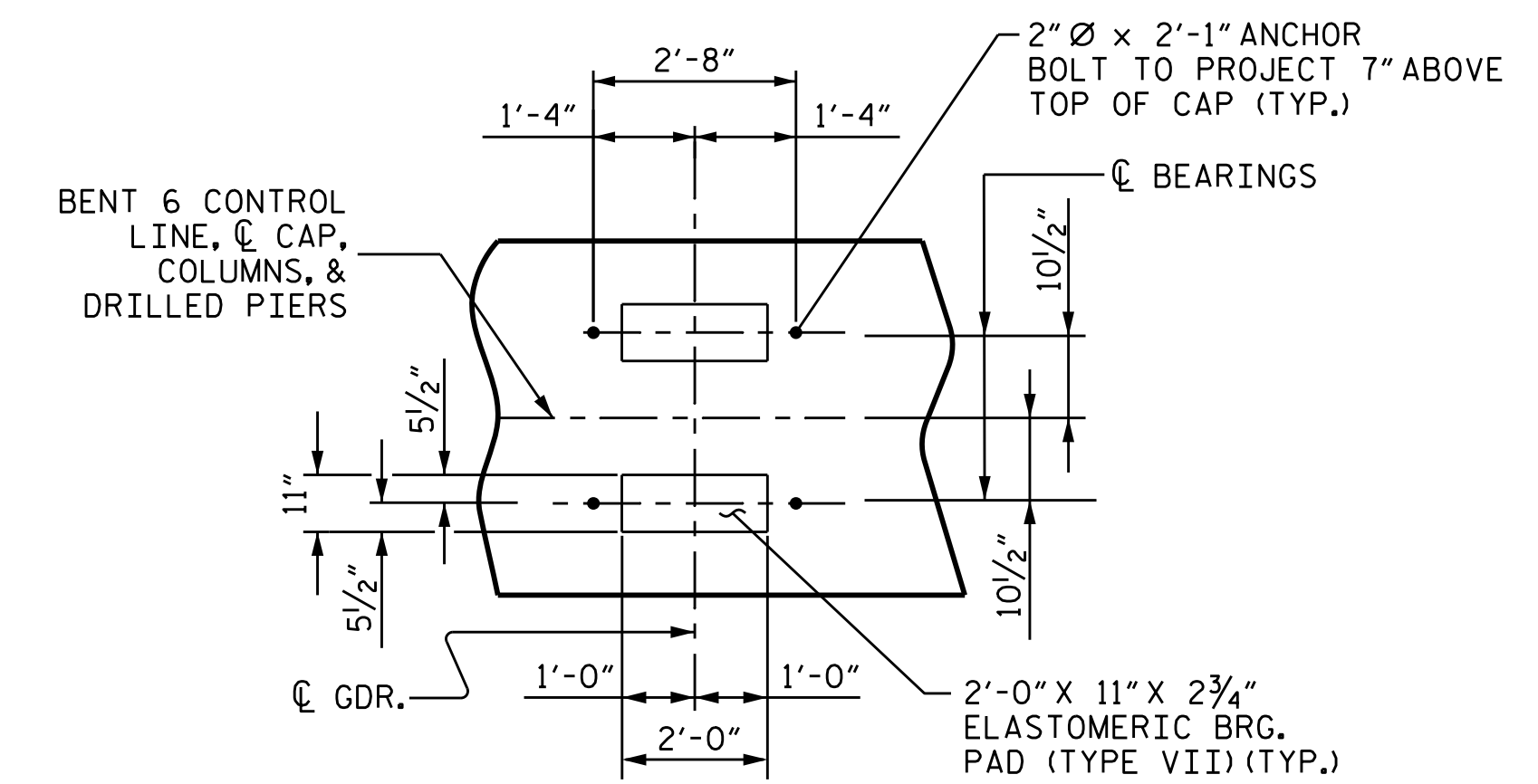
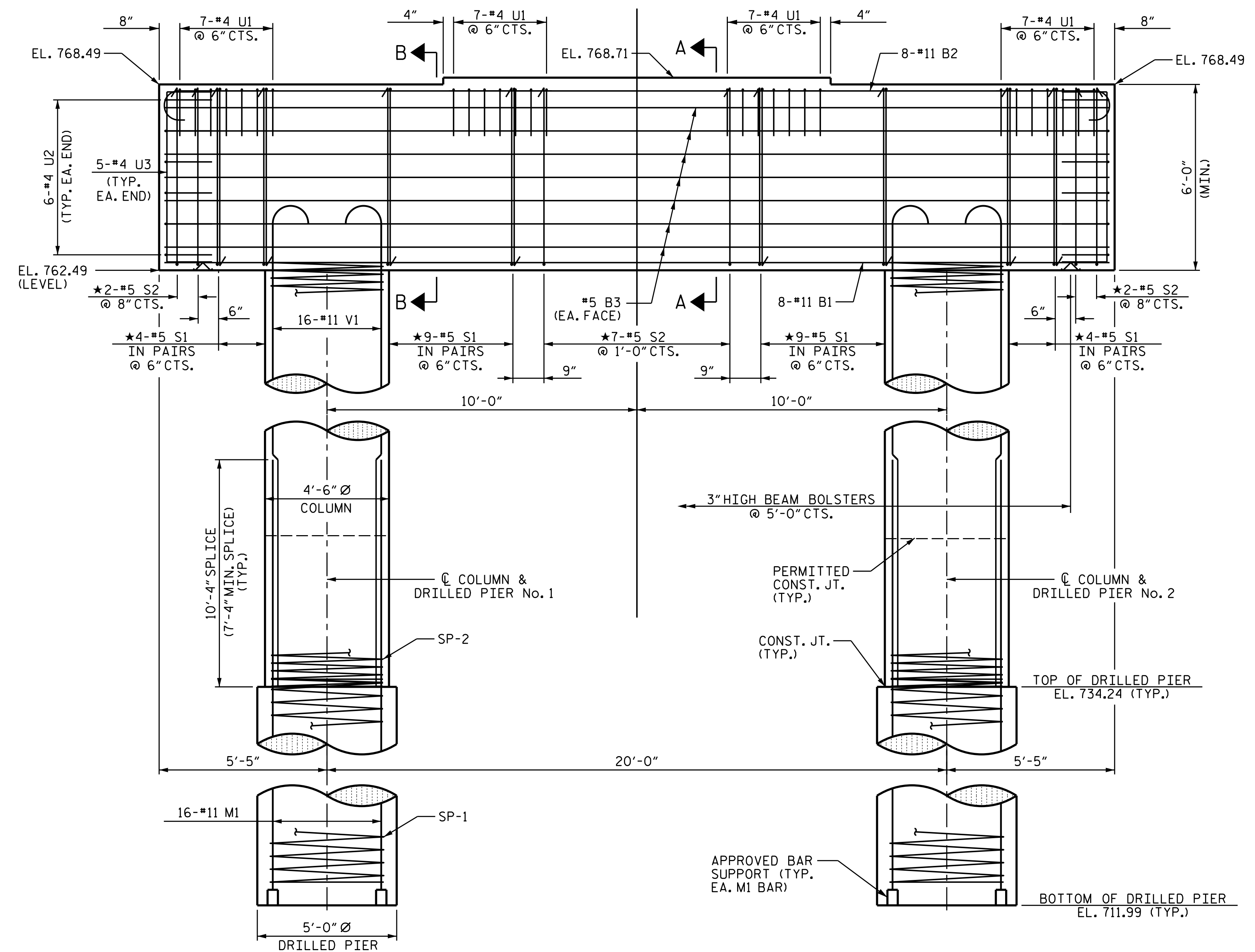
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

★ INVERT ALTERNATE STIRRUPS.

DRILLED PIERS SHALL BE TERMINATED ONE FOOT ± ABOVE WATER SURFACE FOR SHAFTS LOCATED IN WATER.

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

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



DETAIL "A"
DIMENSIONS ARE TYPICAL FOR EACH BEARING.

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50-L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT No. 6

Professional Engineer Seal for Marshall G. Cheek Jr., License No. 34000, dated 4/14/2020.

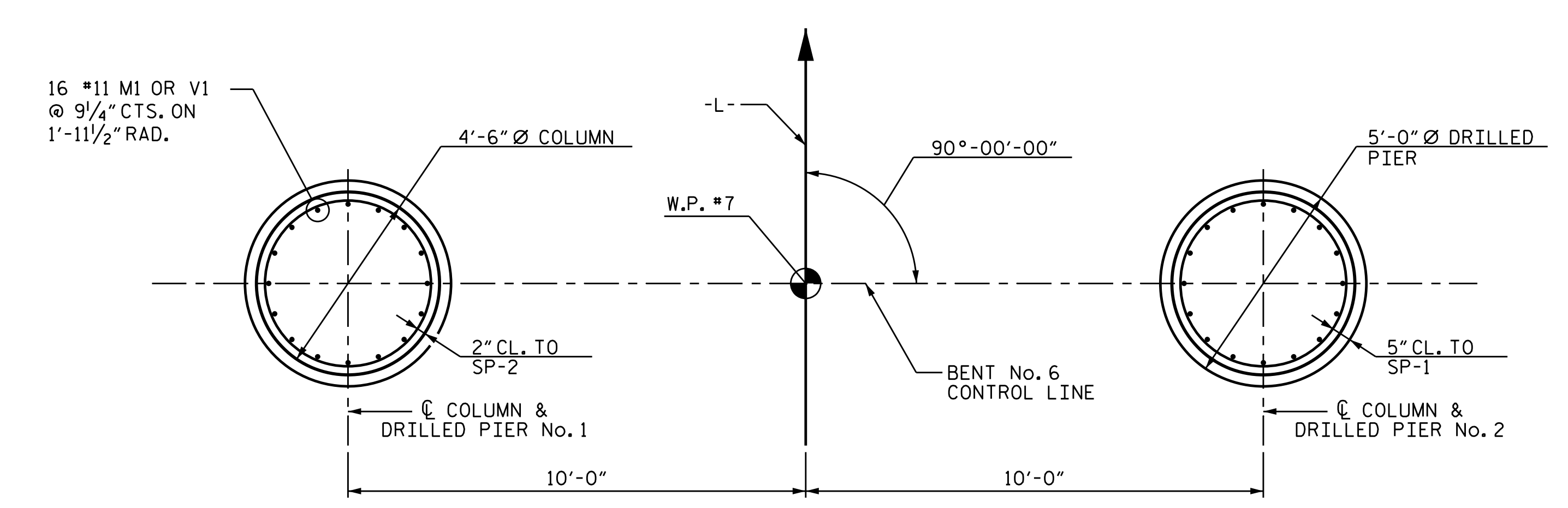
IGS ENGINEERS
 804-C N. LAFAYETTE ST
 SHELBY, NC 28150
 PH (704) 476-0003
 CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-49
1			3			TOTAL SHEETS
2			4			60

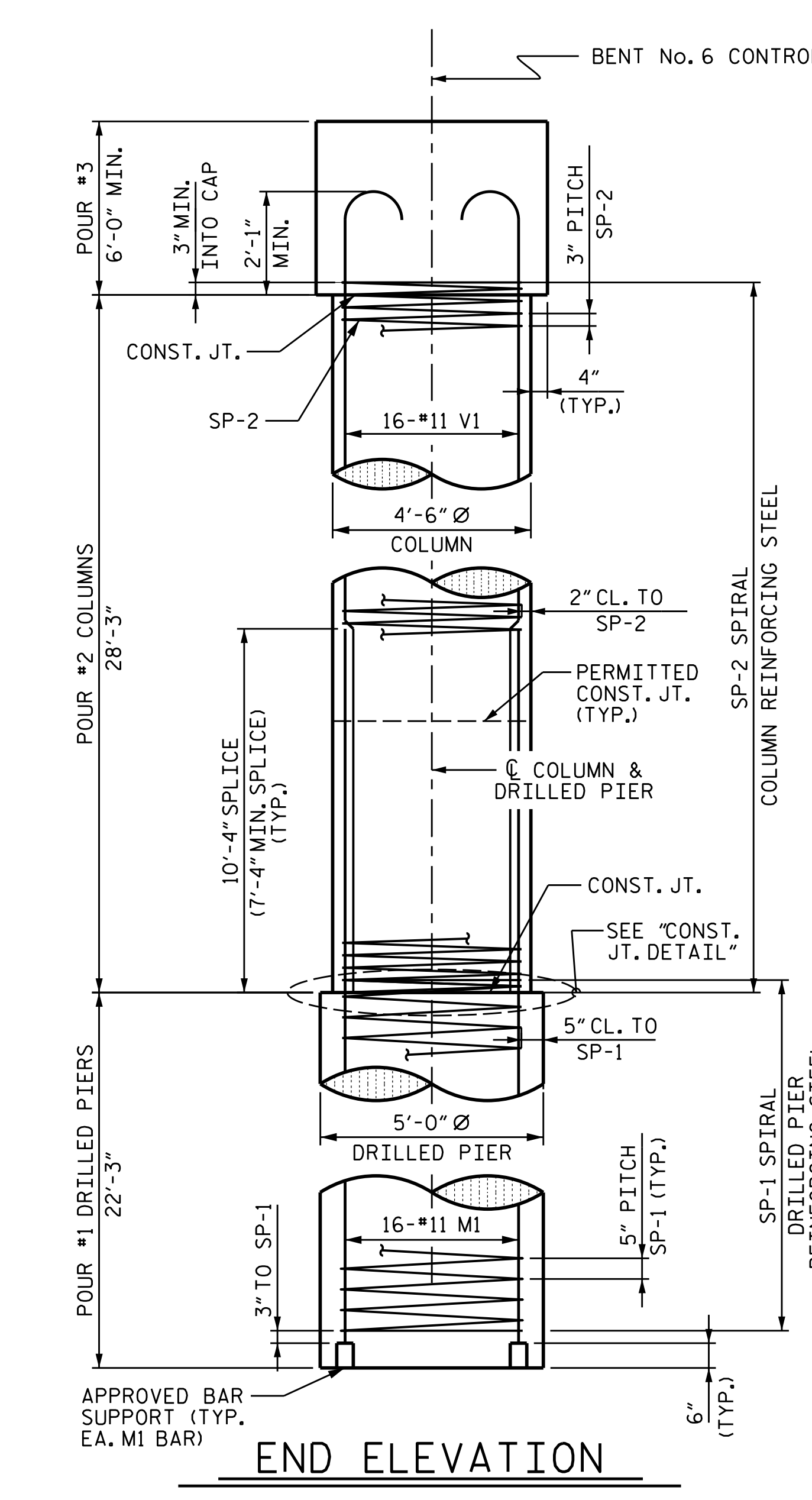
DRAWN BY : TBE DATE : 10/19
 CHECKED BY : MGC DATE : 1/20
 DESIGN ENGINEER OF RECORD: TBE DATE : 2/20

ELEVATION

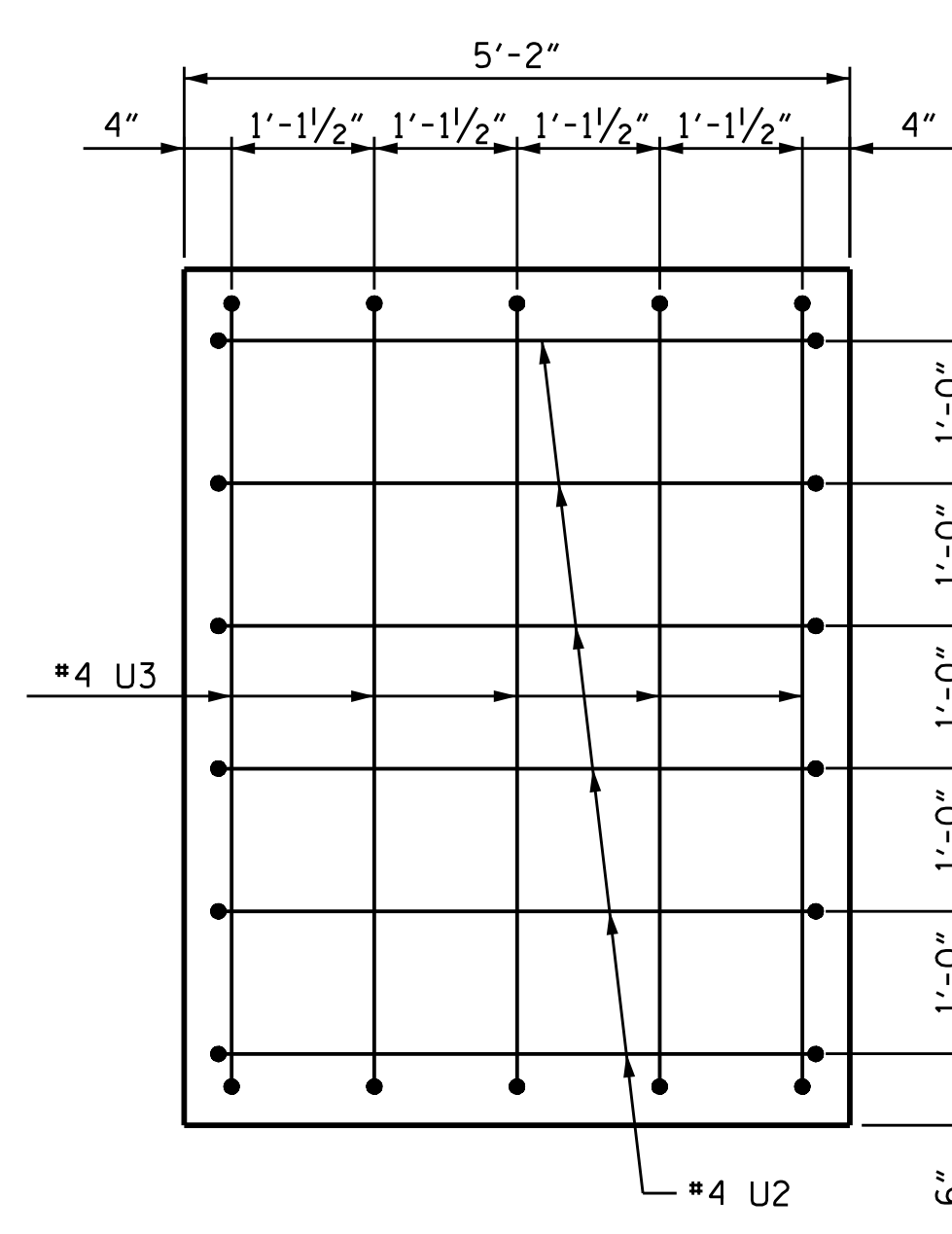
DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER EXCEPT AS NOTED.



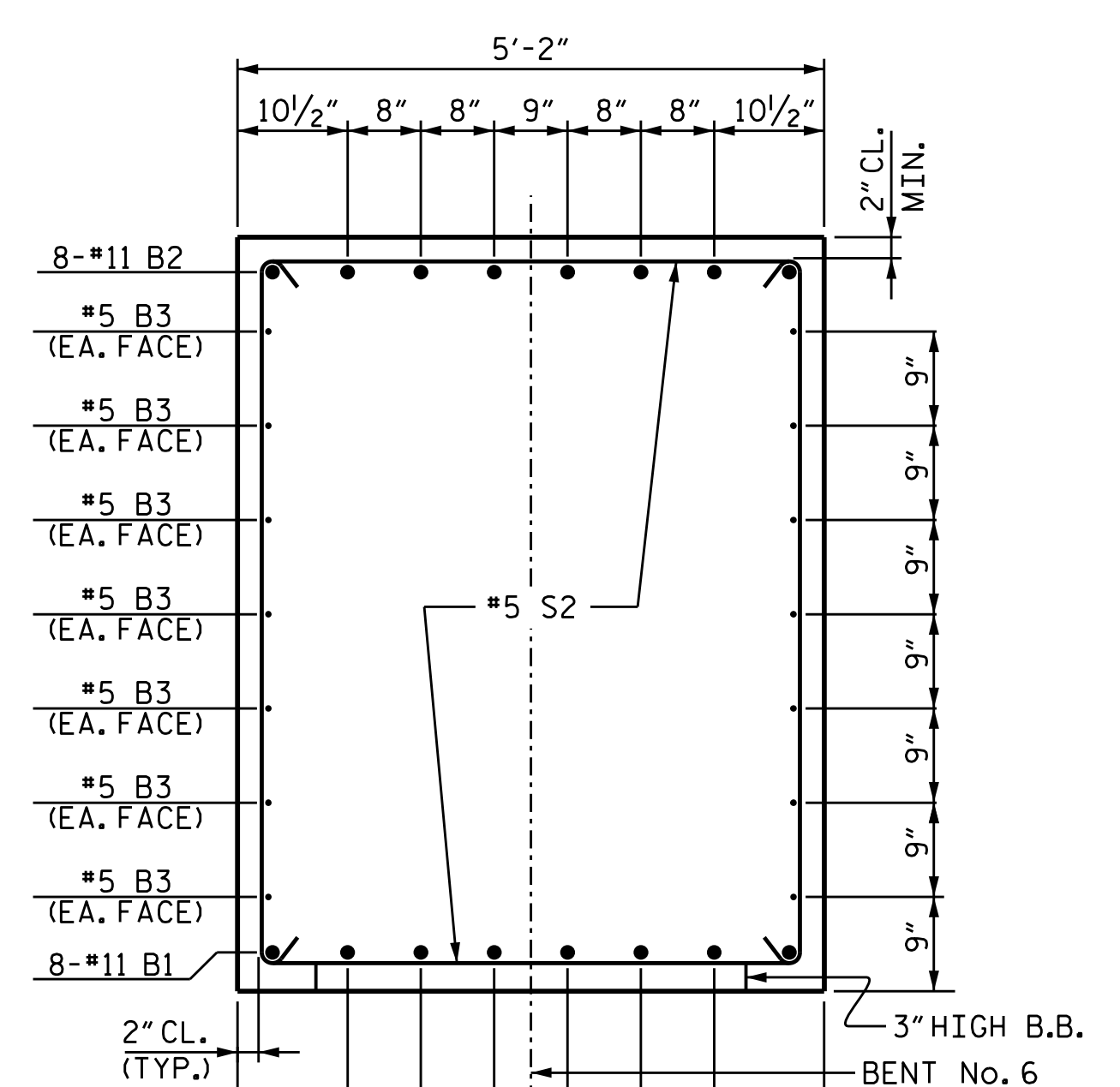
PLAN OF DRILLED PIERS & COLUMNS
DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER.



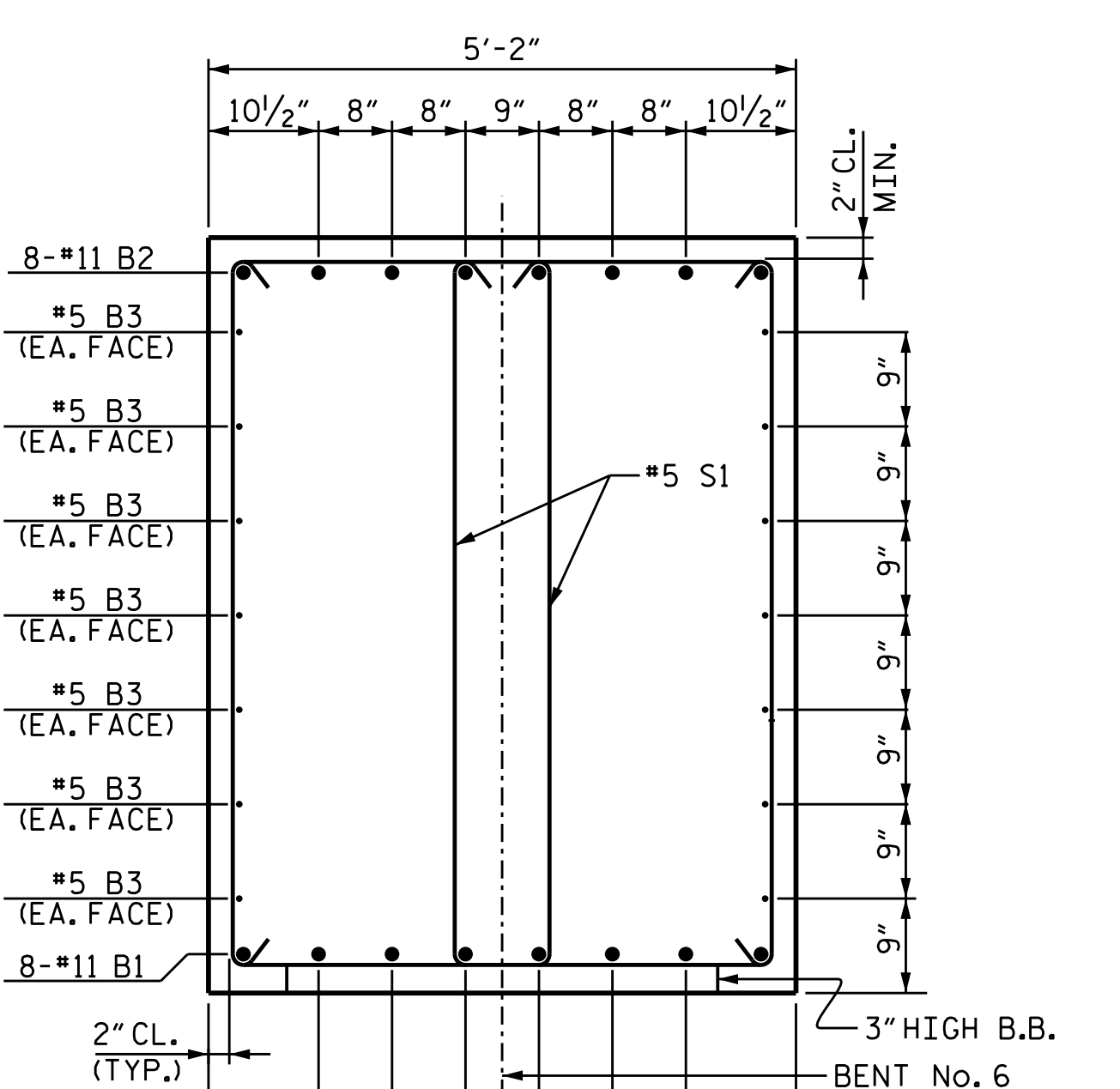
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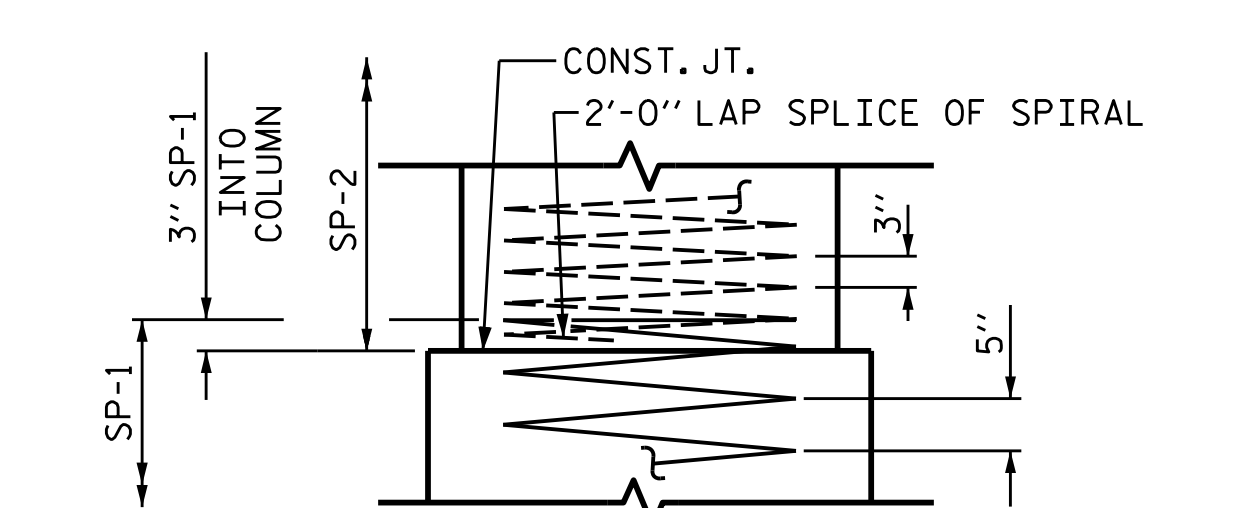
END VIEW



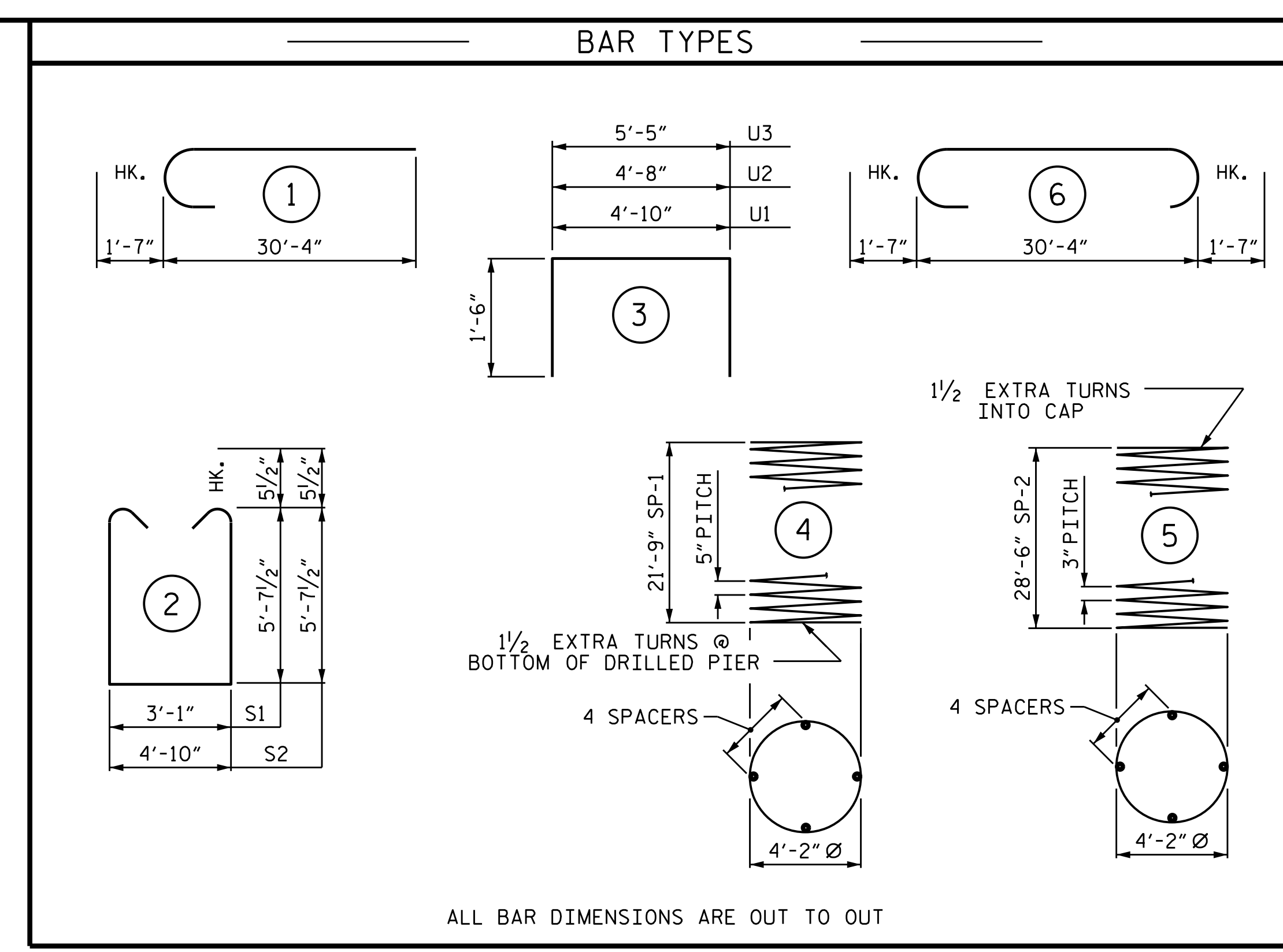
SECTION A-A



SECTION B-B



CONSTRUCTION JOINT DETAIL



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR BENT No. 6

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#11	STR	30'-6"	1,296
B2	8	#11	6	33'-6"	1,424
B3	14	#5	STR	30'-6"	445
M1	32	#11	STR	32'-1"	5,455
S1	52	#5	2	15'-3"	827
S2	11	#5	2	17'-0"	195
U1	28	#4	3	7'-10"	147
U2	12	#4	3	7'-8"	61
U3	10	#4	3	8'-5"	56
V1	32	#11	1	31'-11"	5,426

REINFORCING STEEL 15,332 LBS.

SP-1	2	*	4	698'-5"	1,457
SP-2	2	**	5	1,503'-7"	2,009

SPIRAL COLUMN REINFORCING STEEL 3,466 LBS.

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

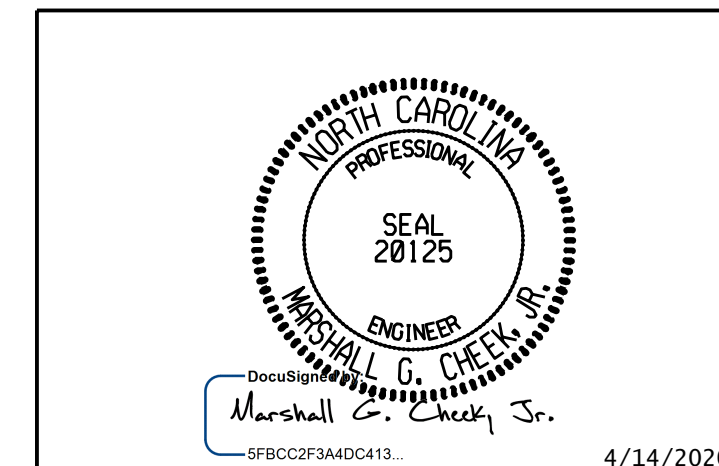
CLASS A CONCRETE BREAKDOWN

POUR #2 (COLUMNS)	33.3 C.Y.
POUR #3 (CAP)	35.9 C.Y.
TOTAL CLASS A CONCRETE	69.2 C.Y.

DRILLED PIERS:

DRILLED PIER CONCRETE POUR #1	32.4 C.Y.
5'-0" Ø DRILLED PIERS IN SOIL	15.50 LIN. FT.
5'-0" Ø DRILLED PIERS NOT IN SOIL	29.00 LIN. FT.
PERMANENT STEEL CASING FOR 5'-0" Ø DRILLED PIERS	16.48 LIN. FT.
CSL TUBES	237.50 LIN. FT.

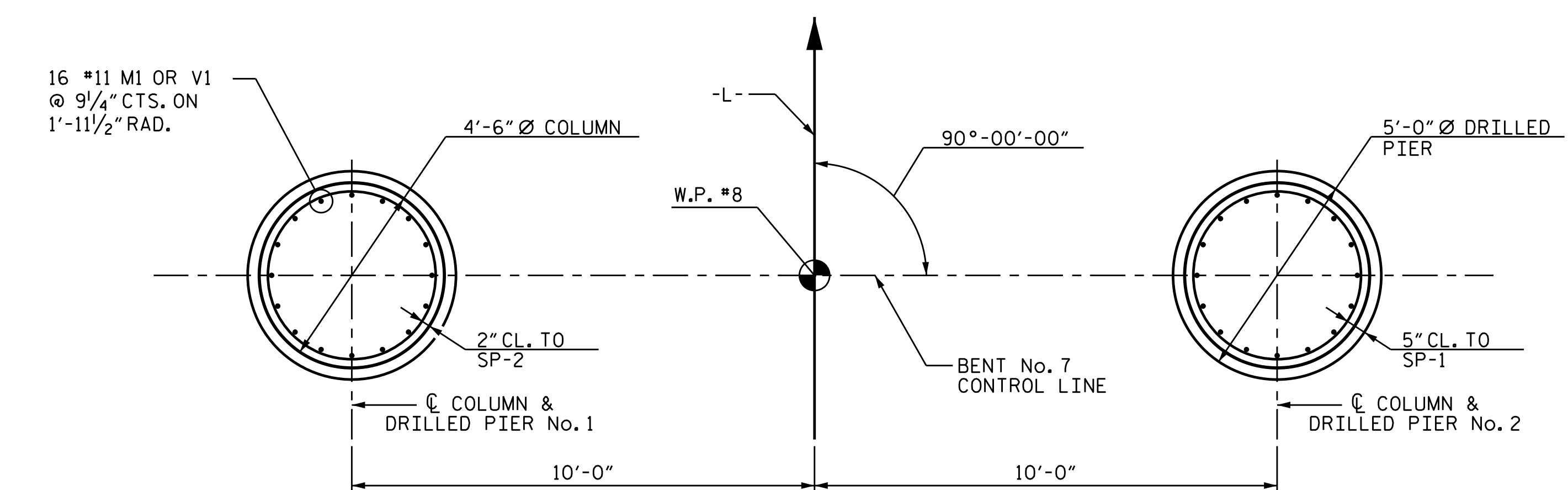
PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
STATION: 34+65.50-L-
SHEET 2 OF 2



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TGS ENGINEERS
706 HILLSBOROUGH STREET SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

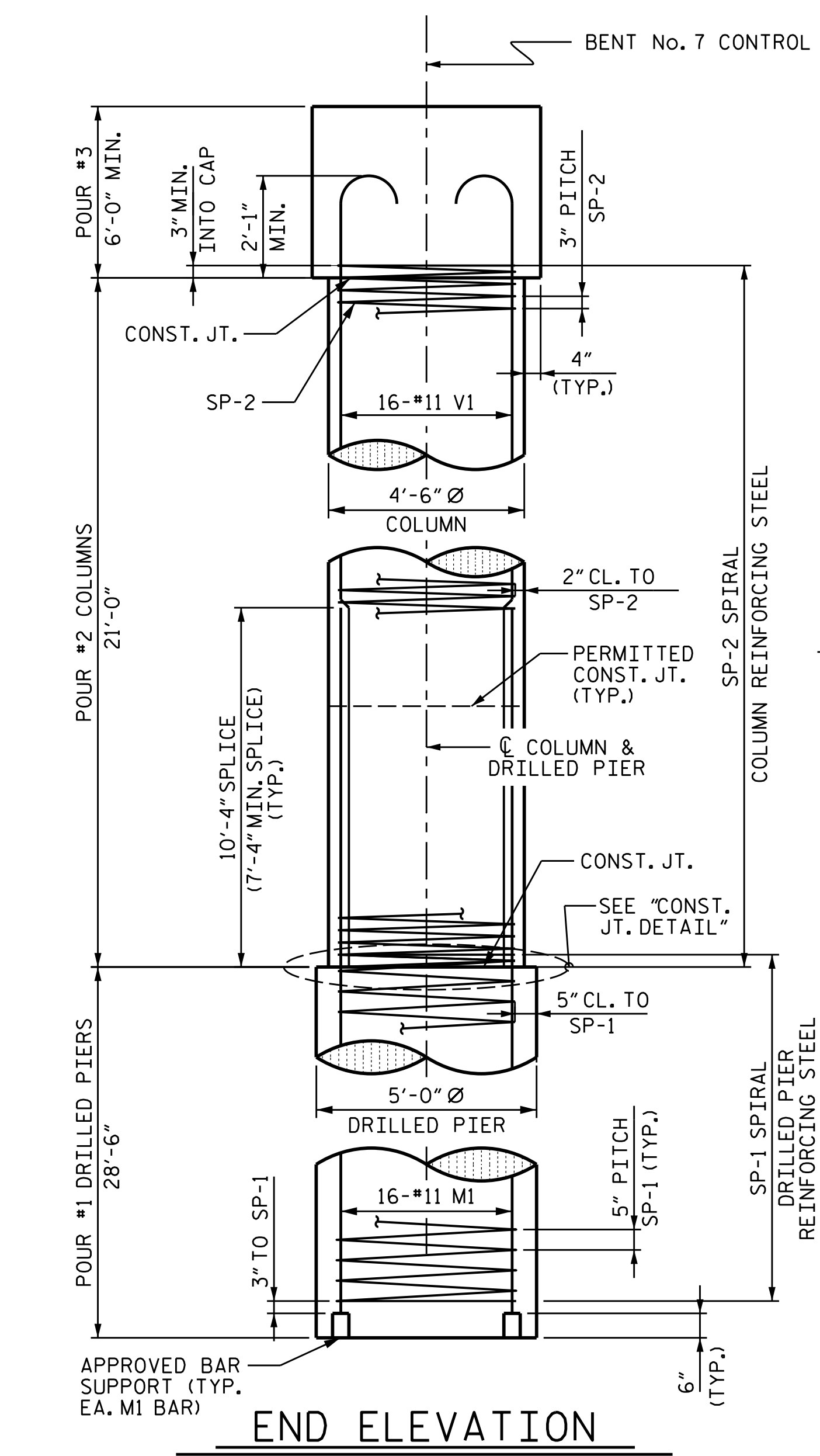
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-50
1			3			TOTAL SHEETS
2			4			60

DRAWN BY :	TBE	DATE :	10/19
CHECKED BY :	MGC	DATE :	1/20
DESIGN ENGINEER OF RECORD:	TBE	DATE :	2/20

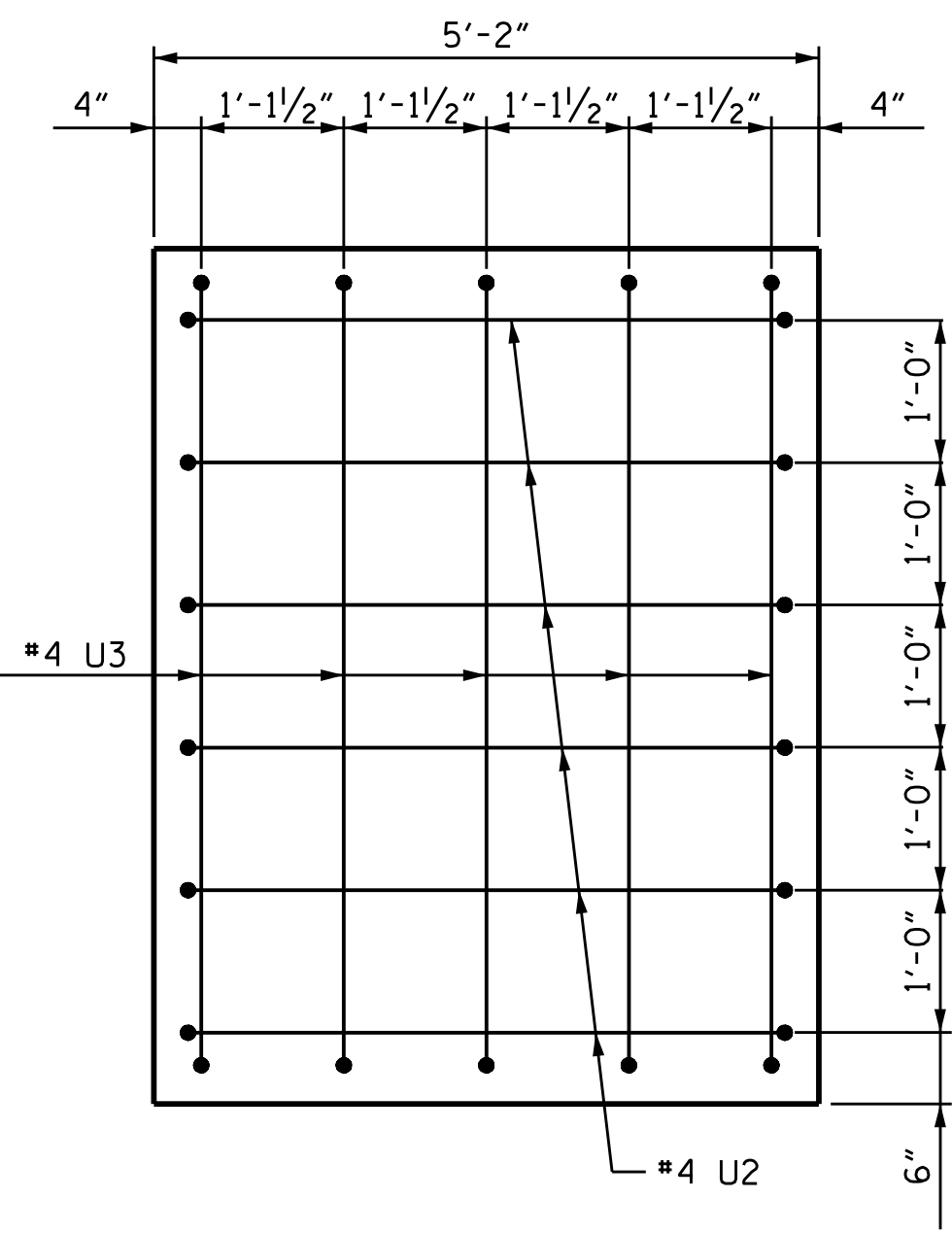


PLAN OF DRILLED PIERS & COLUMNS

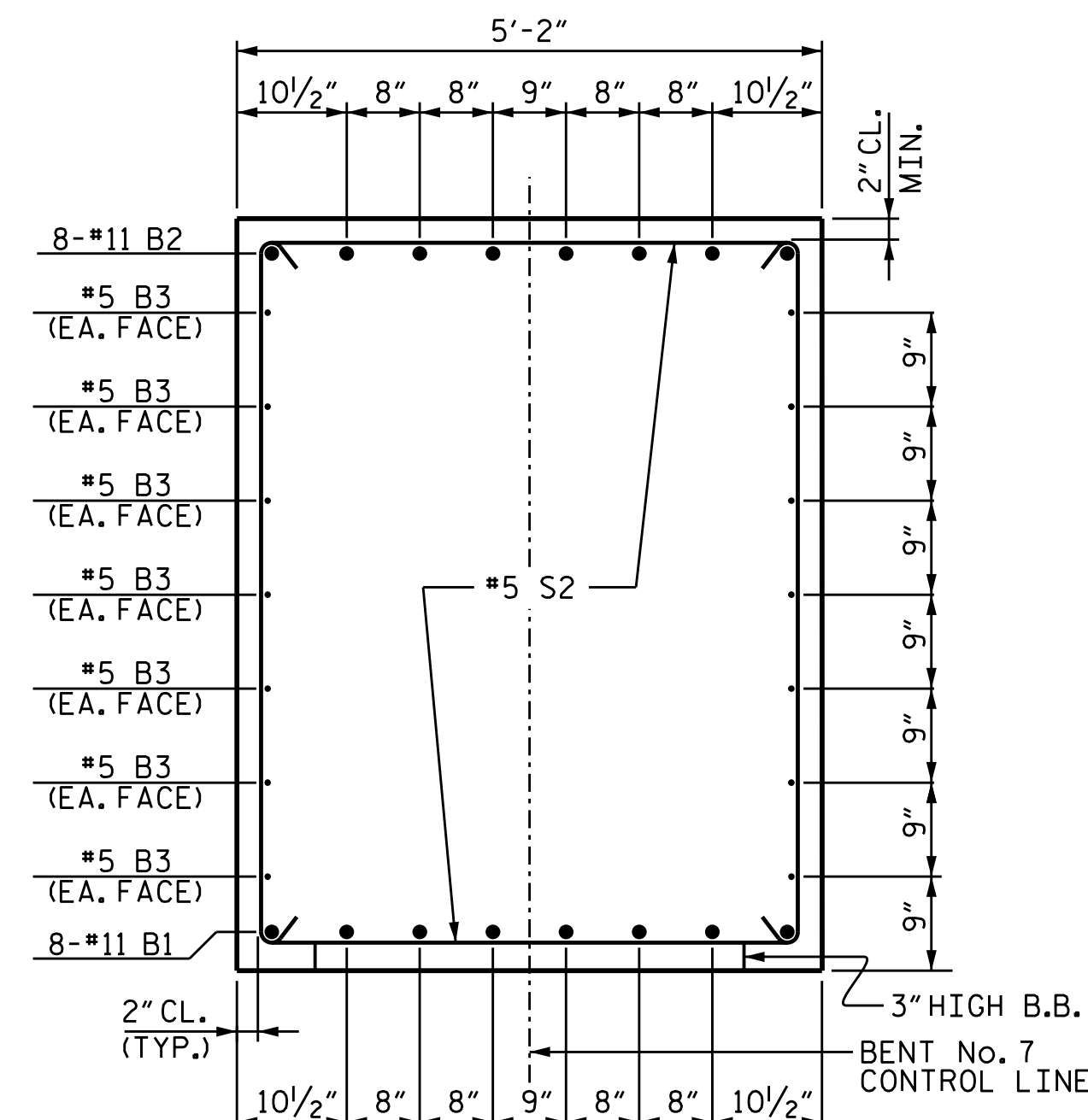
DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER.



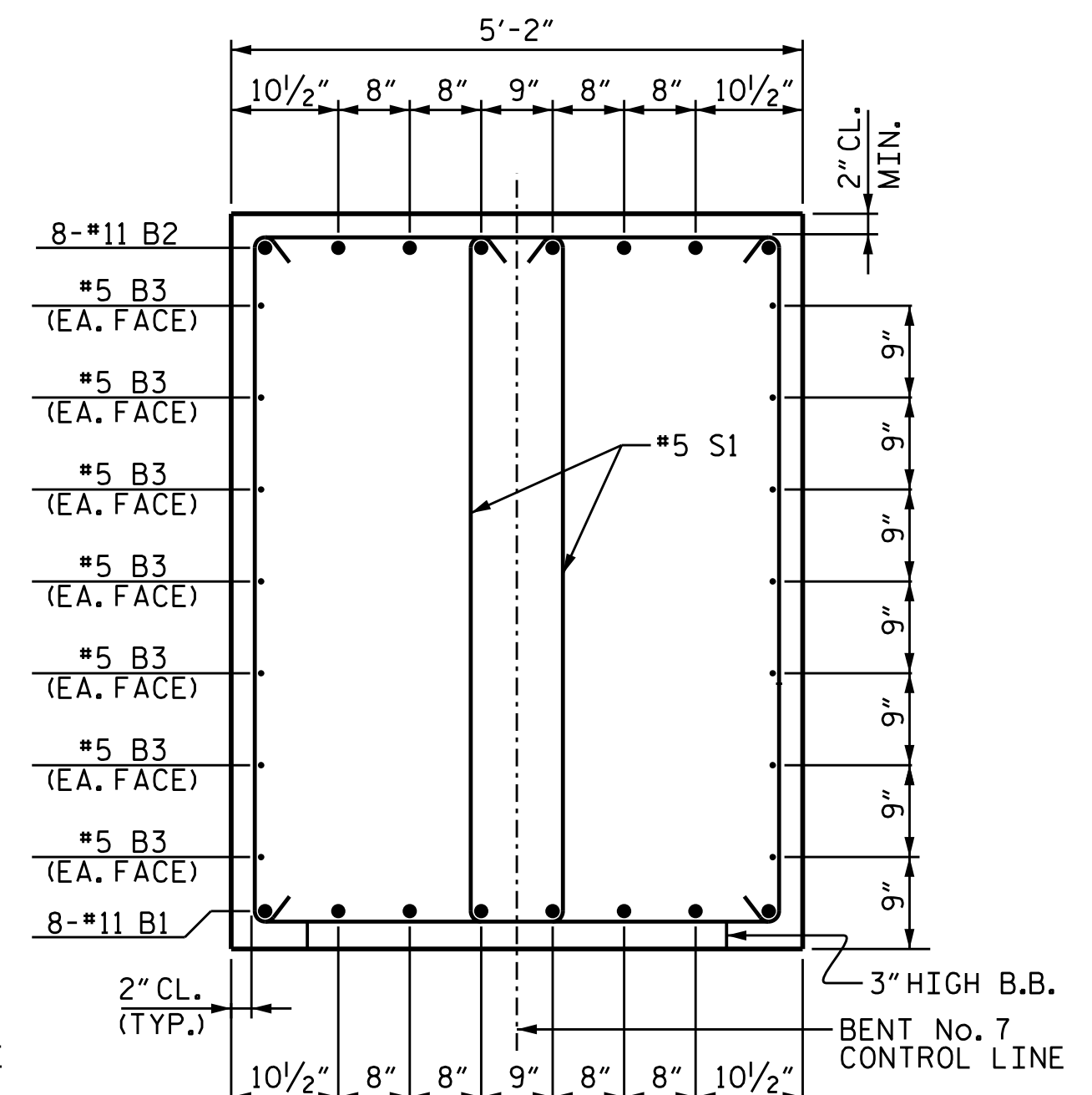
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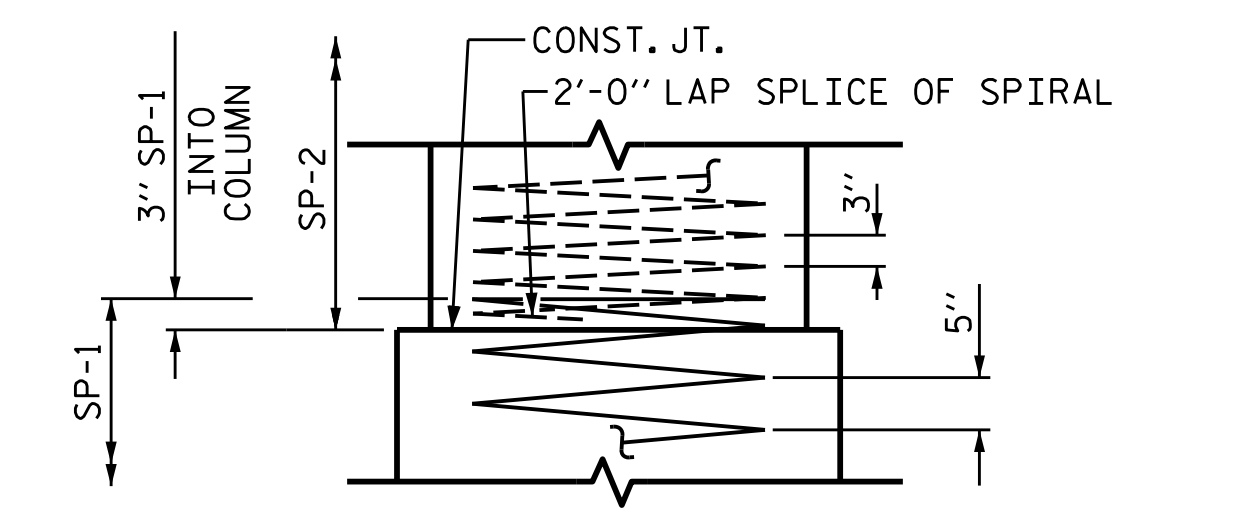
END VIEW



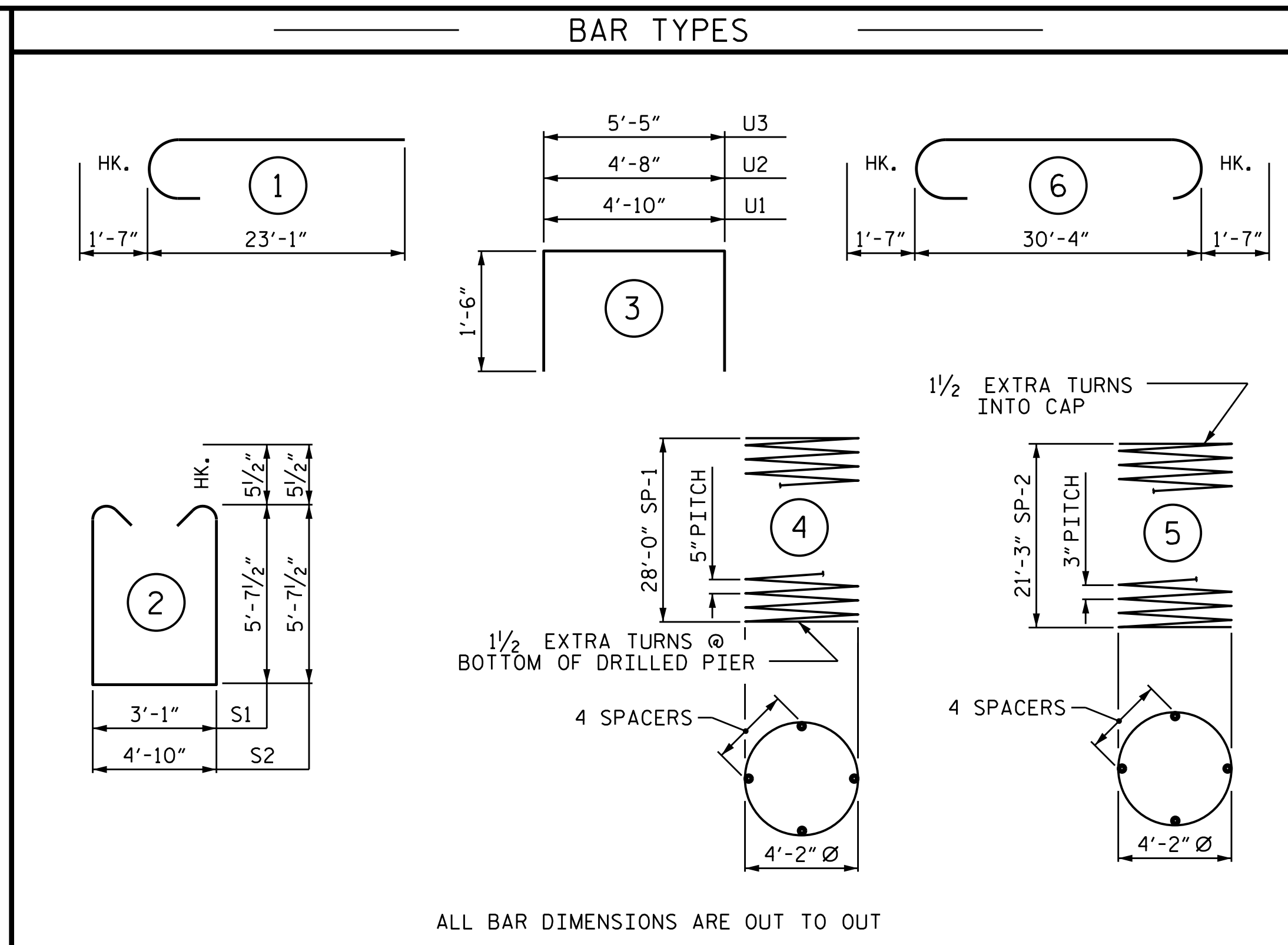
SECTION A-A



SECTION B-B



CONSTRUCTION JOINT DETAIL



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR BENT No. 7					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#11	STR	30'-6"	1,296
B2	8	#11	6	33'-6"	1,424
B3	14	#5	STR	30'-6"	445
M1	32	#11	STR	38'-4"	6,517
S1	52	#5	2	15'-3"	827
S2	11	#5	2	17'-0"	195
U1	28	#4	3	7'-10"	147
U2	12	#4	3	7'-8"	61
U3	10	#4	3	8'-5"	56
V1	32	#11	1	24'-8"	4,194
REINFORCING STEEL					15,162 LBS.
SP-1	2	*	4	892'-5"	1,862
SP-2	2	**	5	1,127'-8"	1,507
SPIRAL COLUMN REINFORCING STEEL					3,369 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR					
** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR					

CLASS A CONCRETE BREAKDOWN	
POUR #2 (COLUMNS)	24.7 C.Y.
POUR #3 (CAP)	35.9 C.Y.
TOTAL CLASS A CONCRETE	60.6 C.Y.

DRILLED PIERS:	
DRILLED PIER CONCRETE POUR #1	41.5 C.Y.
5'-0" Ø DRILLED PIERS IN SOIL	33.00 LIN. FT.
5'-0" Ø DRILLED PIERS NOT IN SOIL	24.00 LIN. FT.
PERMANENT STEEL CASING FOR 5'-0" Ø DRILLED PIERS	32.00 LIN. FT.
CSL TUBES	300.00 LIN. FT.

PROJECT NO. B-5825
 YADKIN/FORSYTH COUNTY
 STATION: 34+65.50-L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

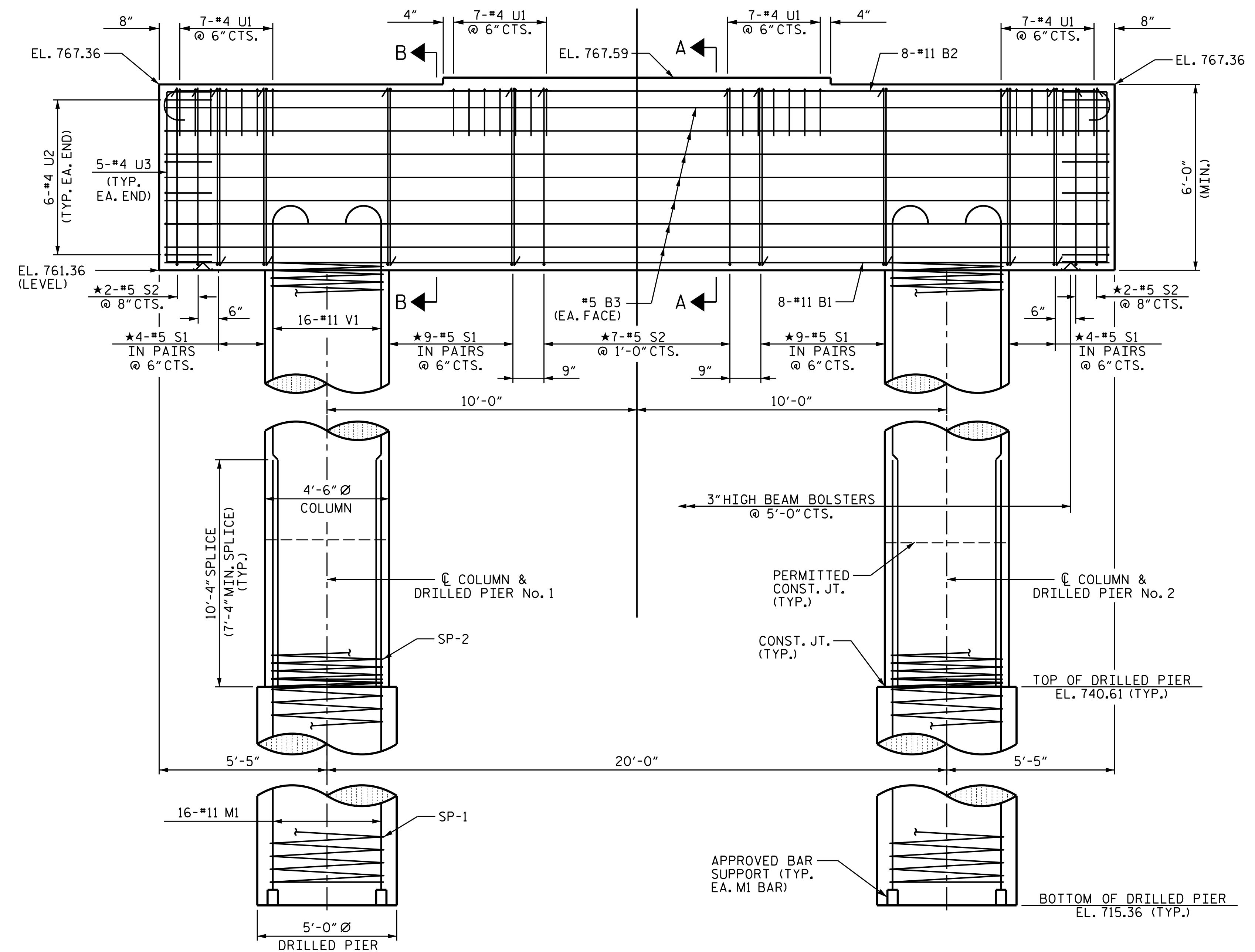
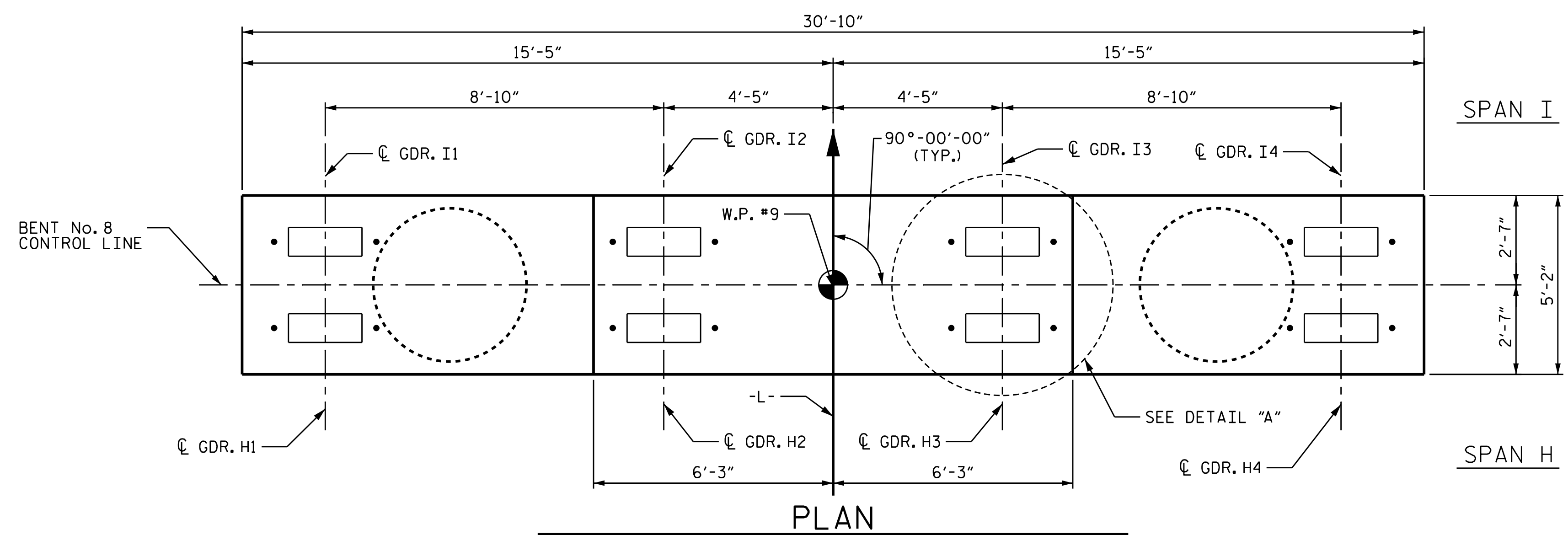
ENGINEER
 MARSHALL G. CHECKER, JR.
 SEAL 20125
 4/14/2020

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
 706 HILLSBOROUGH STREET
 SUITE 200
 RALEIGH, NC 27603
 PH (919) 773-8887
 CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-52
1			3			TOTAL SHEETS
2			4			60

DRAWN BY :	TBE	DATE :	10/19
CHECKED BY :	MGC	DATE :	1/20
DESIGN ENGINEER OF RECORD:	TBE	DATE :	2/20

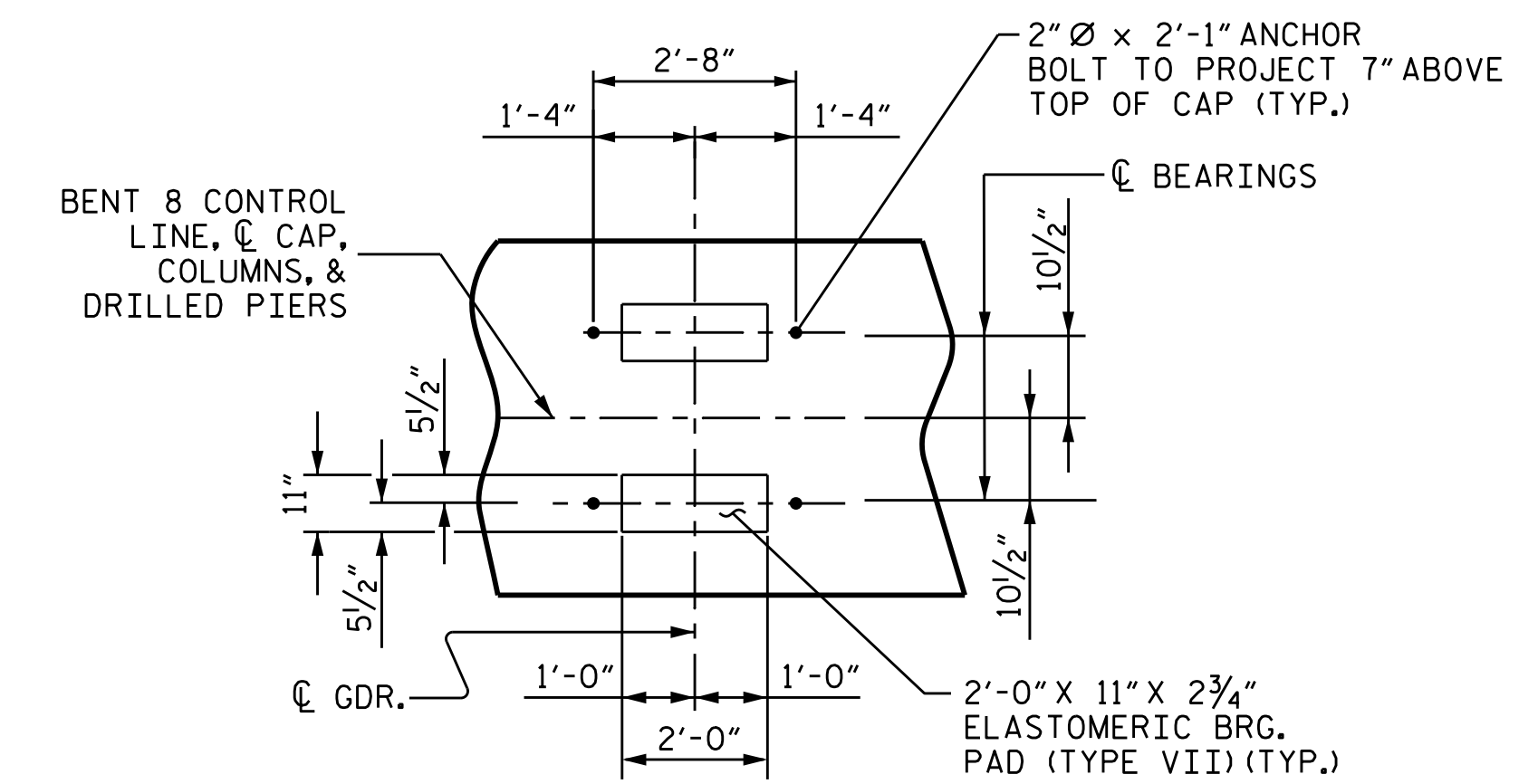


ELEVATION

DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER EXCEPT AS NOTED.

NOTES

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

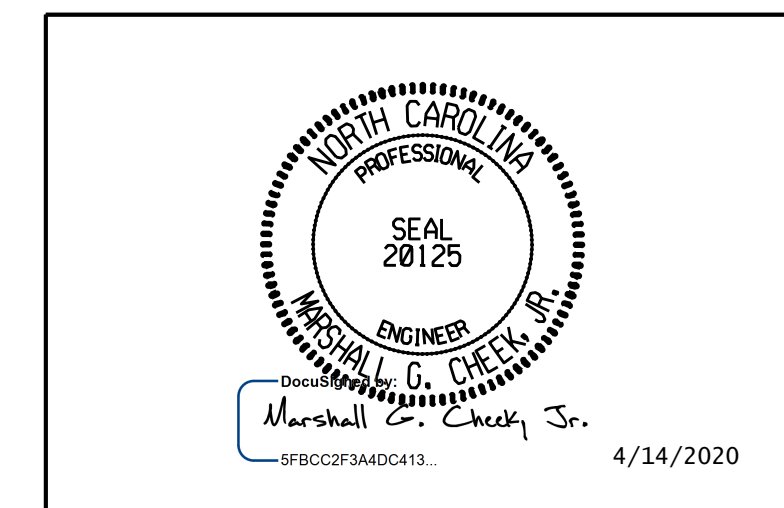


DETAIL "A"

DIMENSIONS ARE TYPICAL FOR EACH BEARING.

PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50-L-

SHEET 1 OF 2

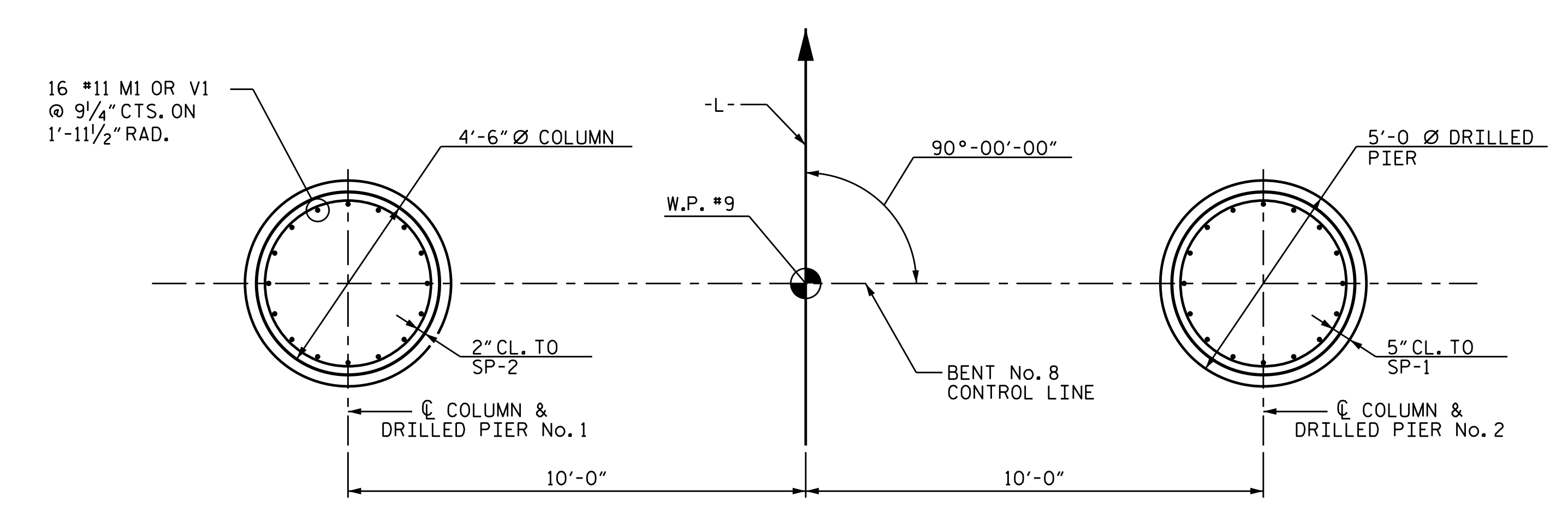


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT No. 8

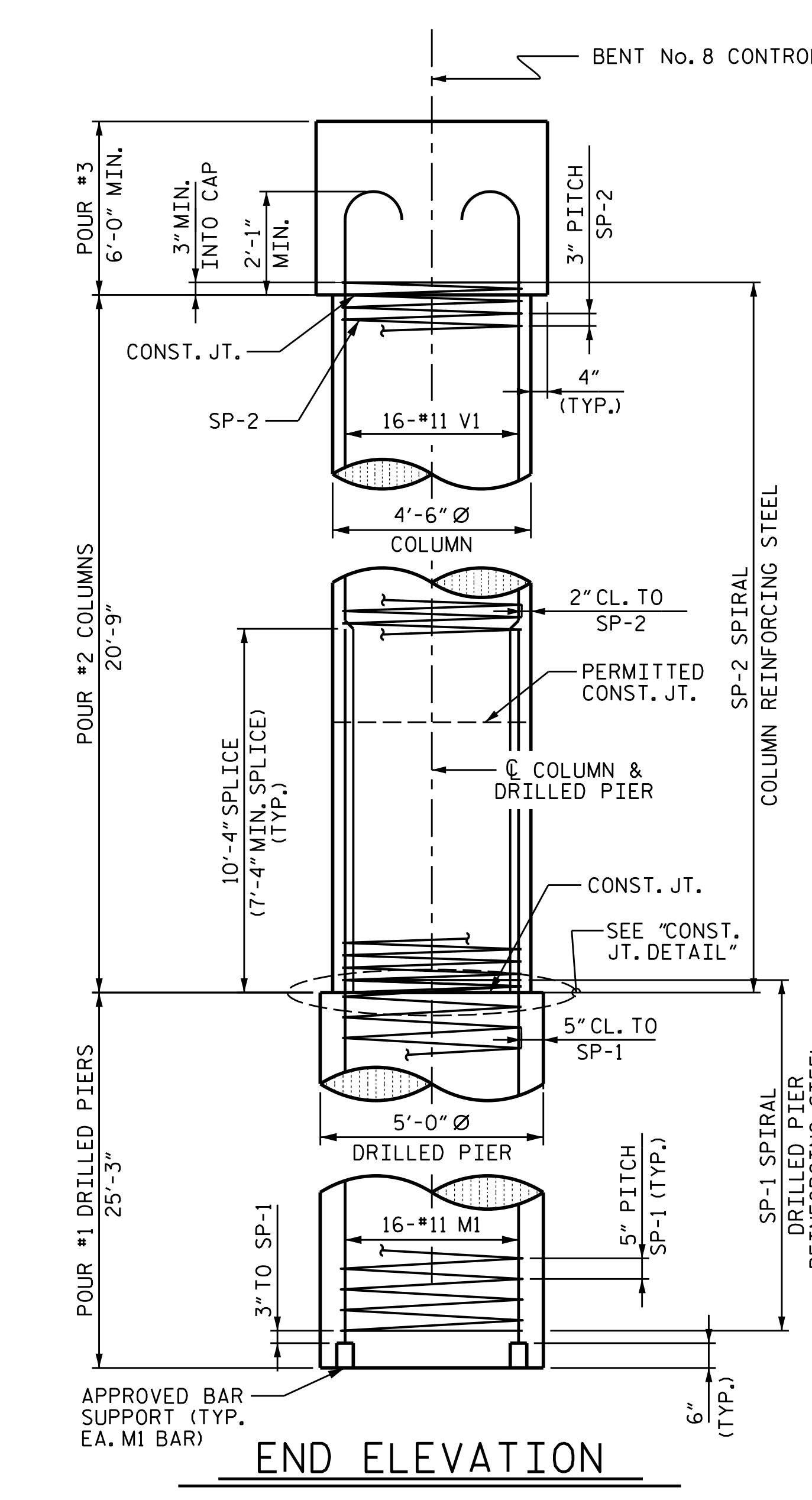
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CHECKED BY :	MGC	DATE :	1/20
DESIGN ENGINEER OF RECORD:	TBE	DATE :	2/20

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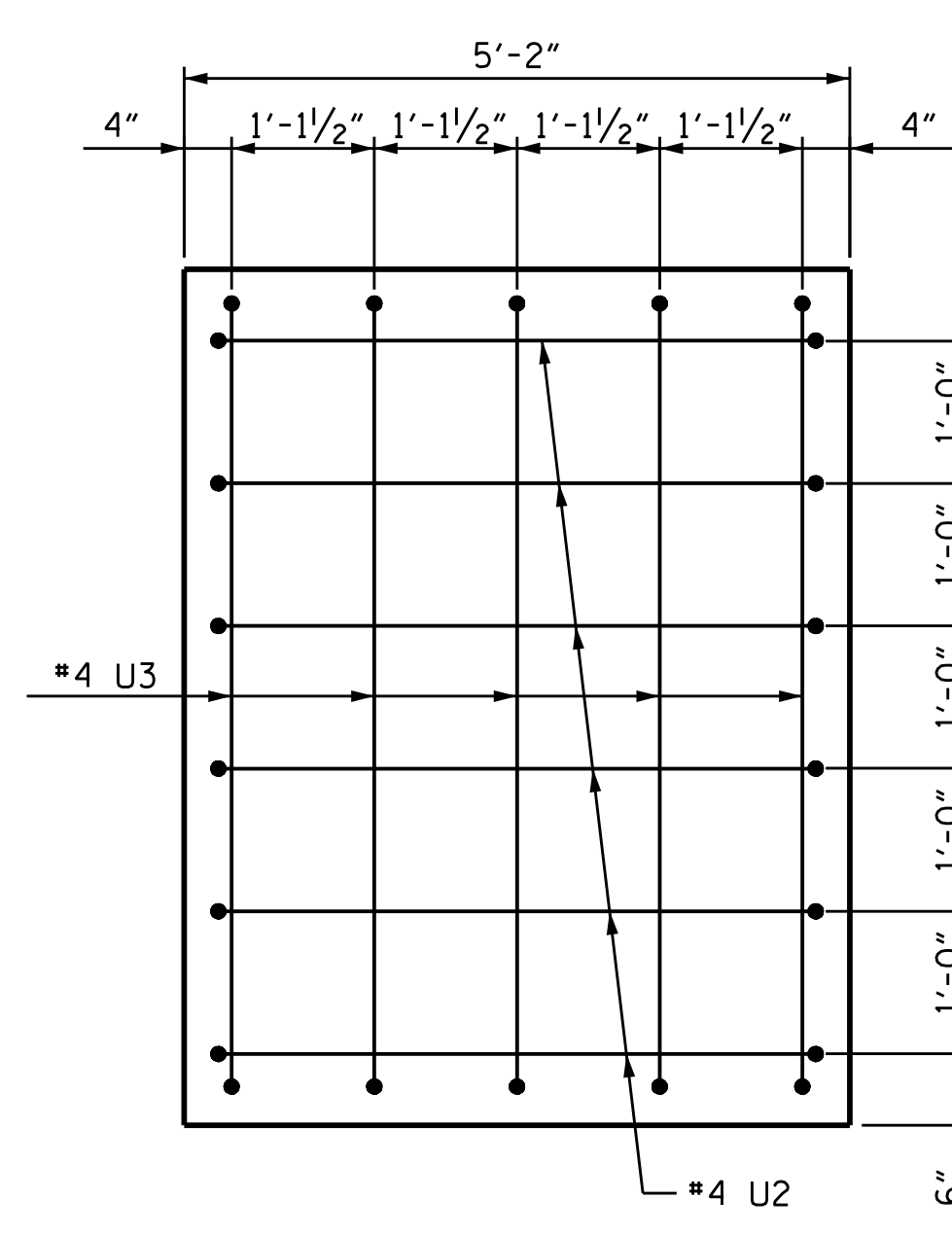
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-53
1			3			TOTAL SHEETS
2			4			60



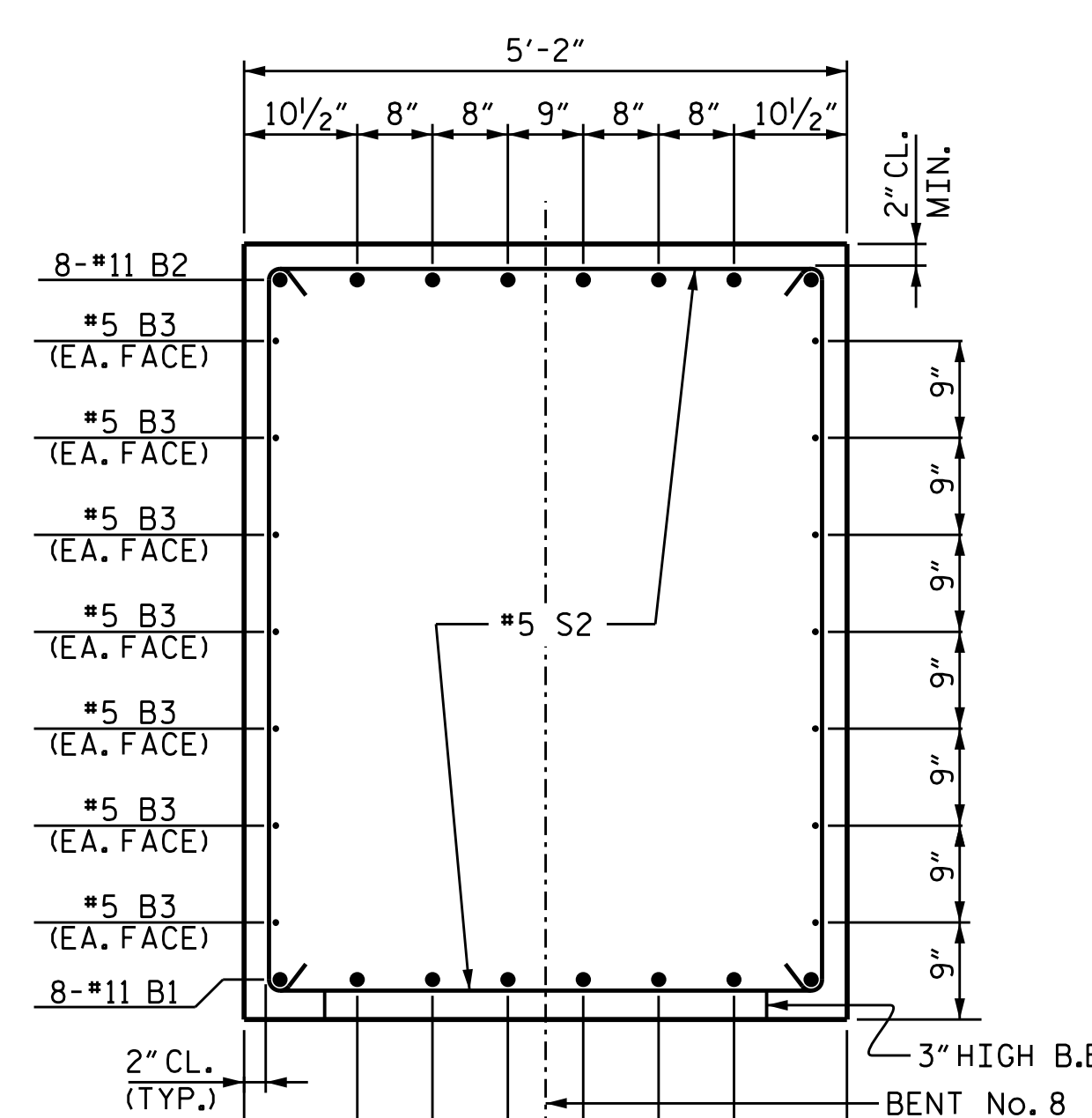
PLAN OF DRILLED PIERS & COLUMNS
DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN & DRILLED PIER.



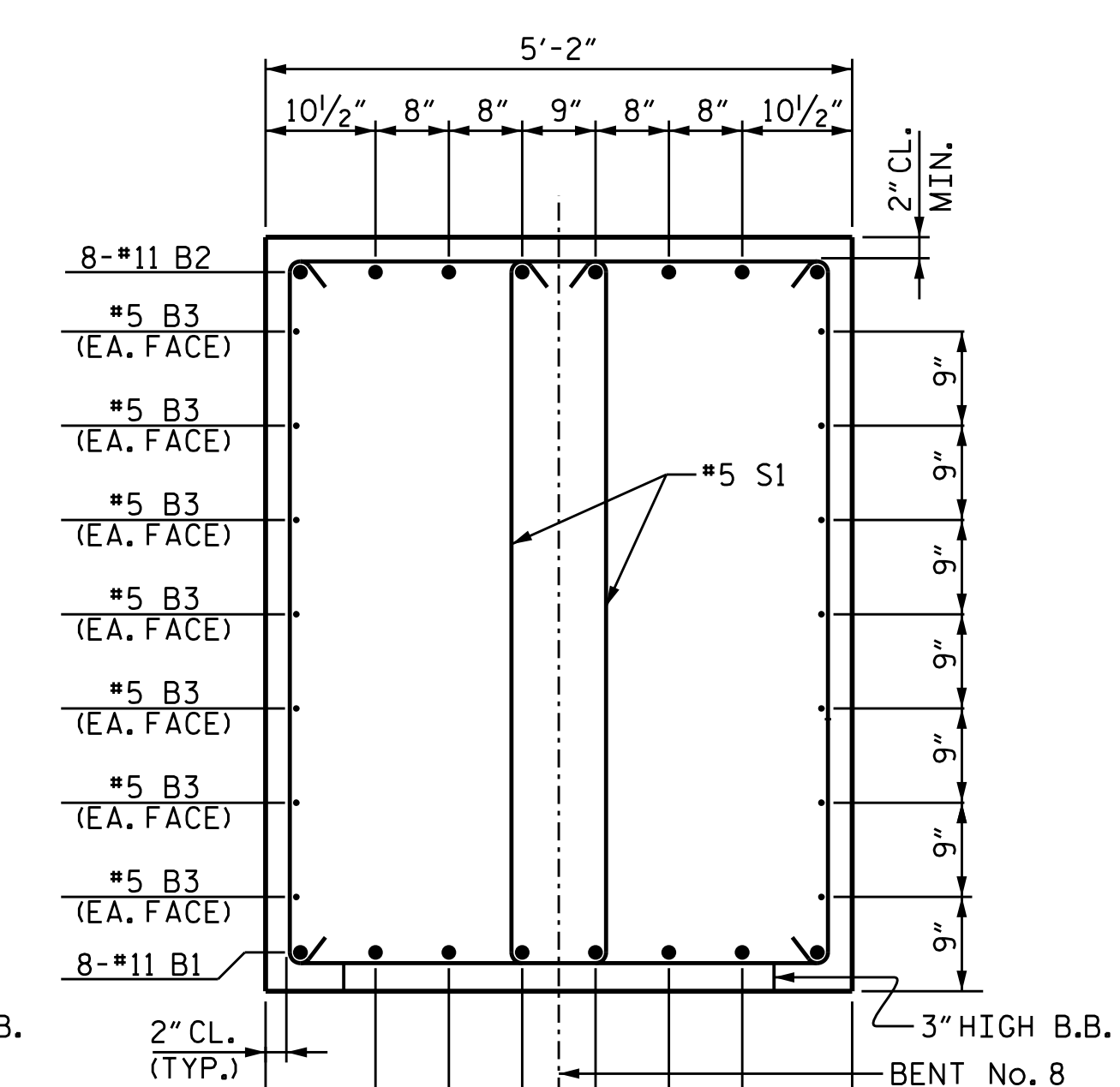
END ELEVATION



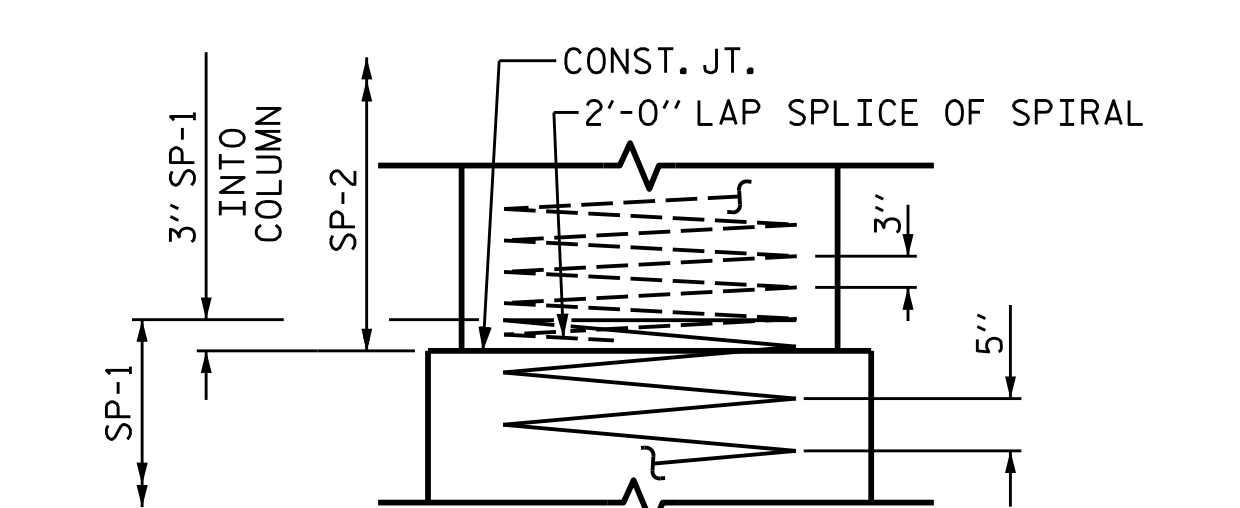
END VIEW



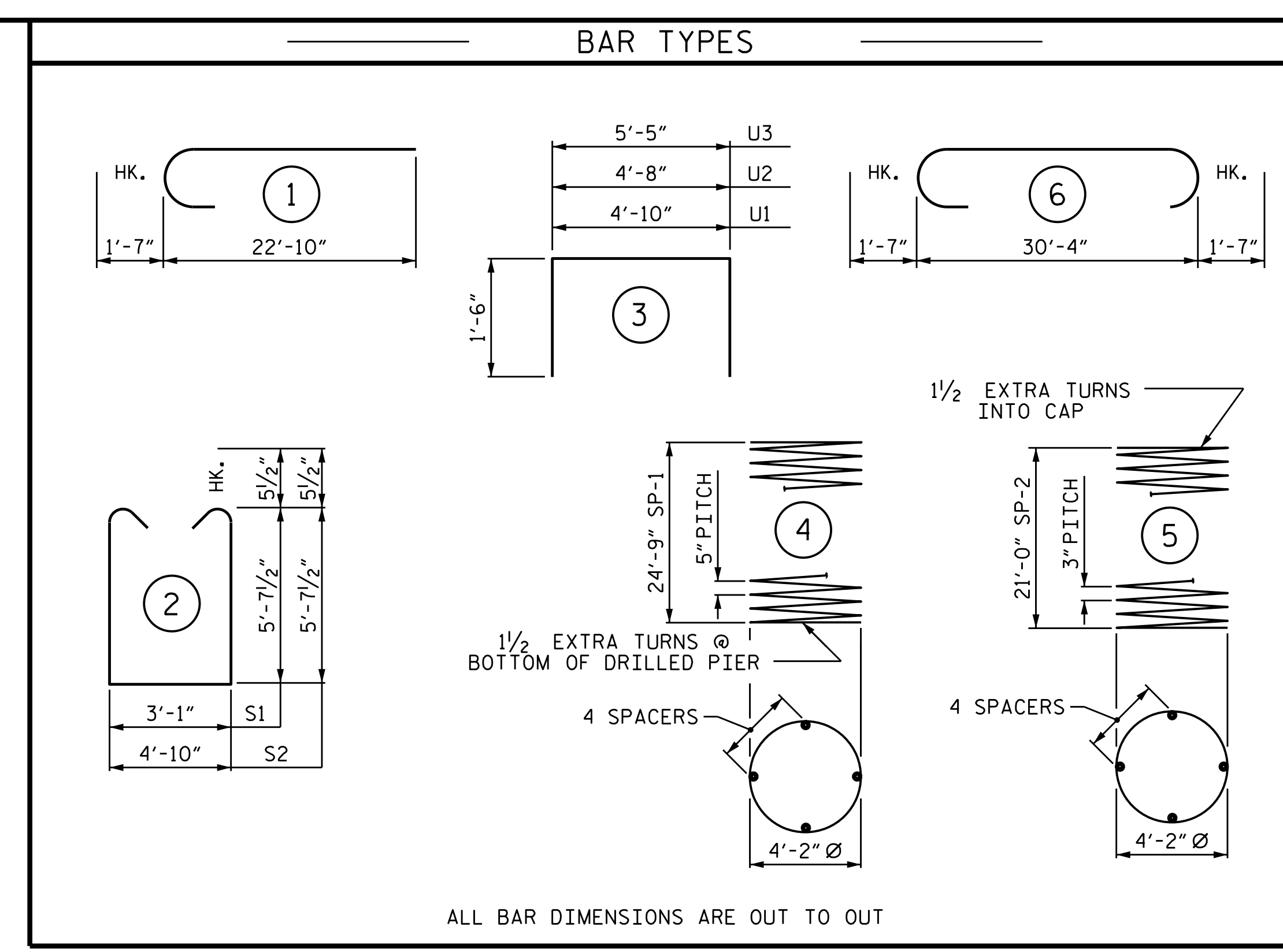
SECTION A-A



SECTION B-B



CONSTRUCTION JOINT DETAIL



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR BENT No. 8

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#11	STR	30'-6"	1,296
B2	8	#11	6	33'-6"	1,424
B3	14	#5	STR	30'-6"	445
M1	32	#11	STR	35'-1"	5,965
S1	52	#5	2	15'-3"	827
S2	11	#5	2	17'-0"	195
U1	28	#4	3	7'-10"	147
U2	12	#4	3	7'-8"	61
U3	10	#4	3	8'-5"	56
V1	32	#11	1	24'-5"	4,151

REINFORCING STEEL 14,567

SP-1	2	*	4	788'-11"	1,646
SP-2	2	**	5	1,114'-9"	1,489

SPIRAL COLUMN REINFORCING STEEL 3,135 LBS.

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

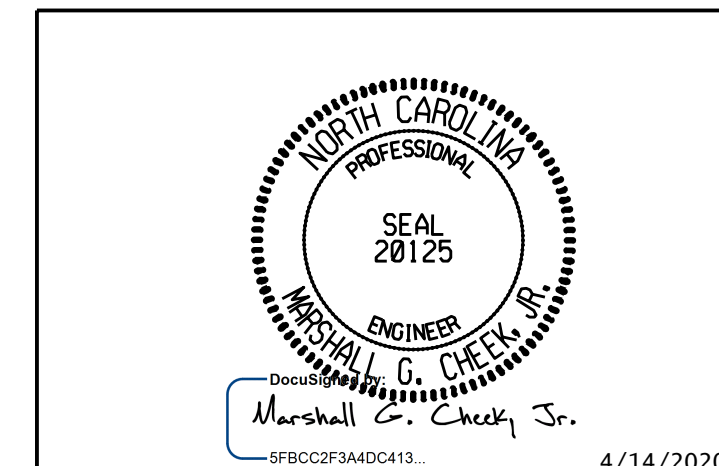
CLASS A CONCRETE BREAKDOWN

POUR #2 (COLUMNS)	24.4 C.Y.
POUR #3 (CAP)	35.9 C.Y.
TOTAL CLASS A CONCRETE	60.3 C.Y.

DRILLED PIERS:

DRILLED PIER CONCRETE POUR #1	36.7 C.Y.
5'-0" Ø DRILLED PIERS IN SOIL	25.50 LIN. FT.
5'-0" Ø DRILLED PIERS NOT IN SOIL	25.00 LIN. FT.
CSL TUBES	267.50 LIN. FT.

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SHEET 2 OF 2

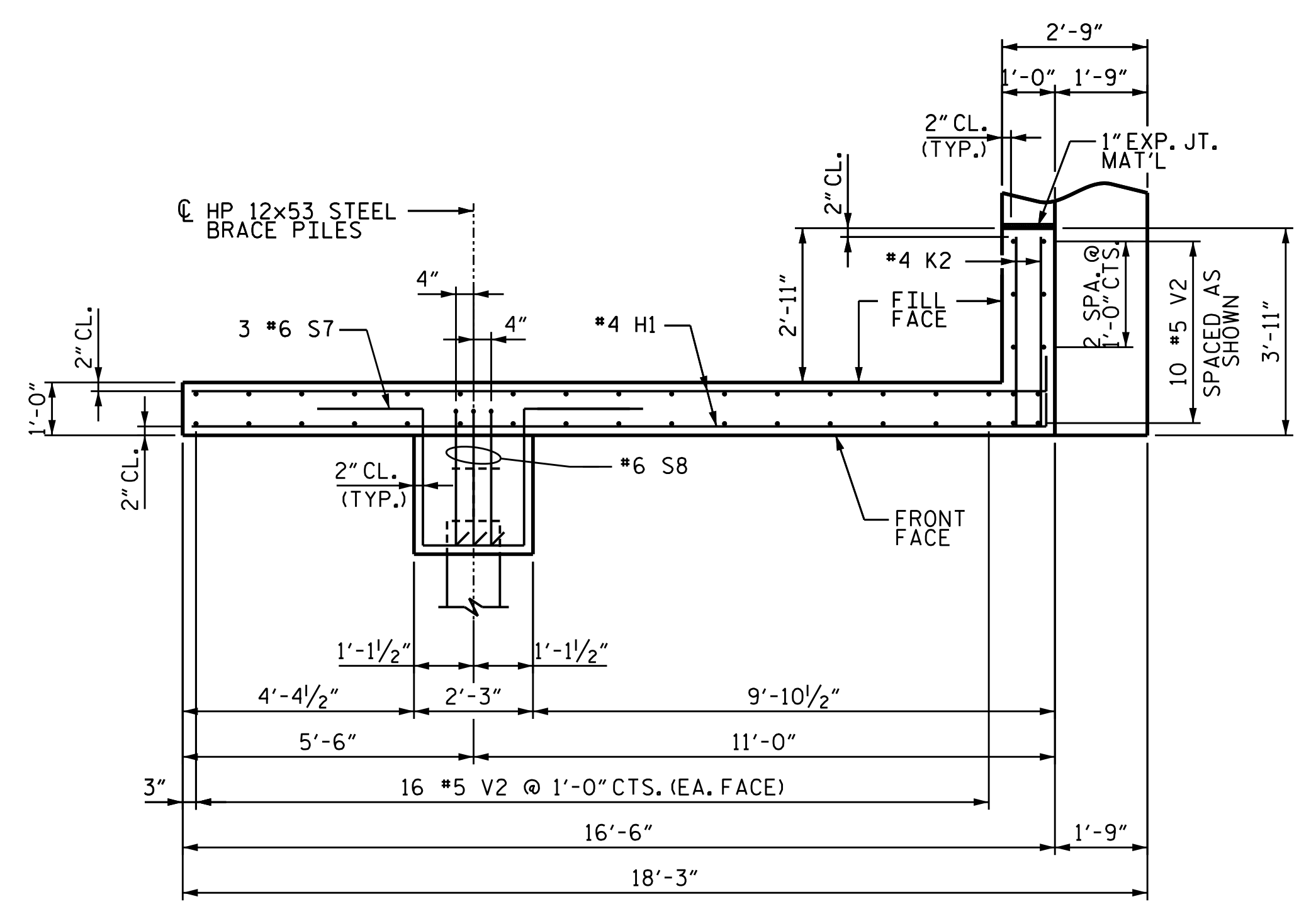


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT No. 8

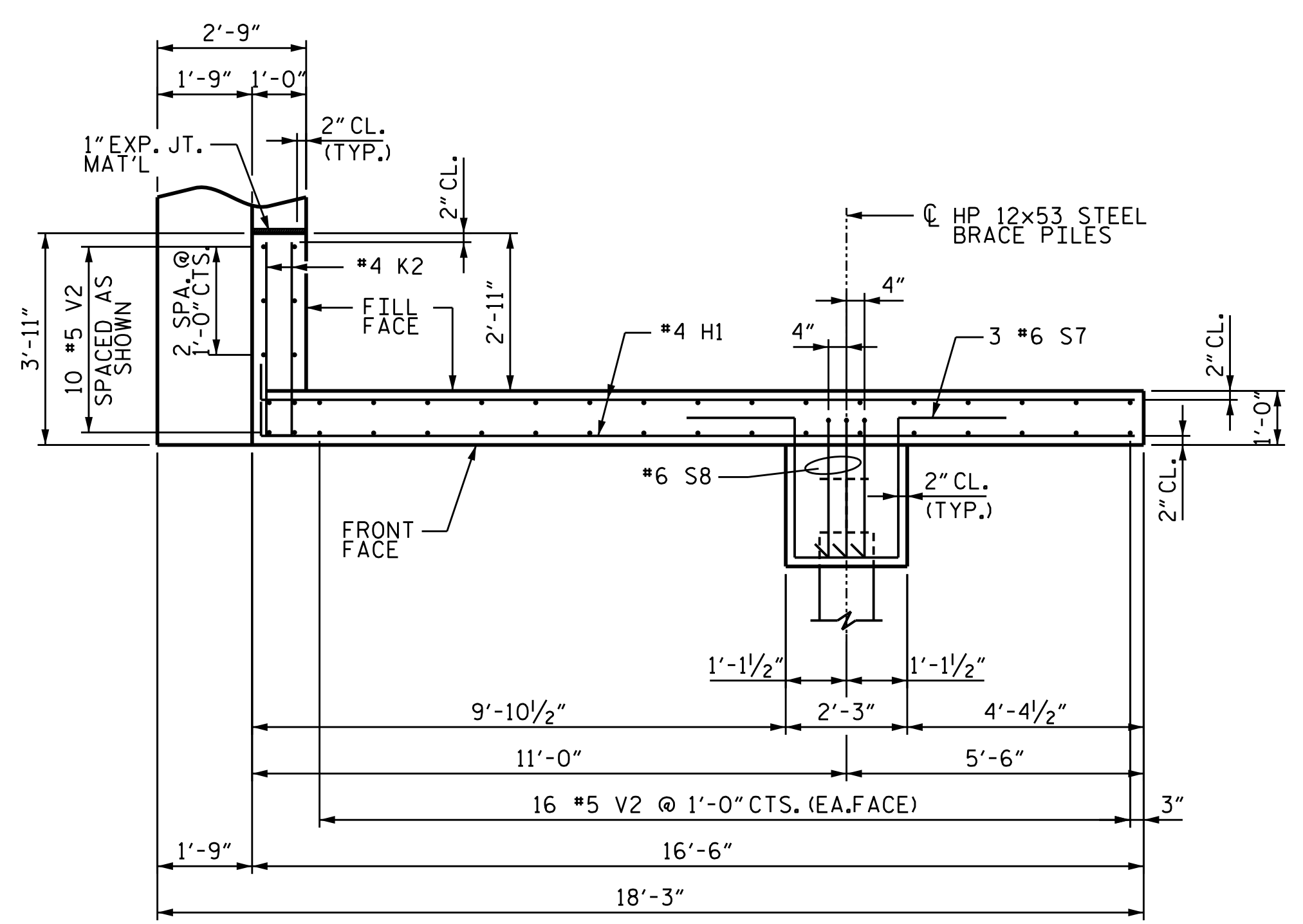
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RALEIGH, NC 27603
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CORP. LICENSE NO.: C-0275

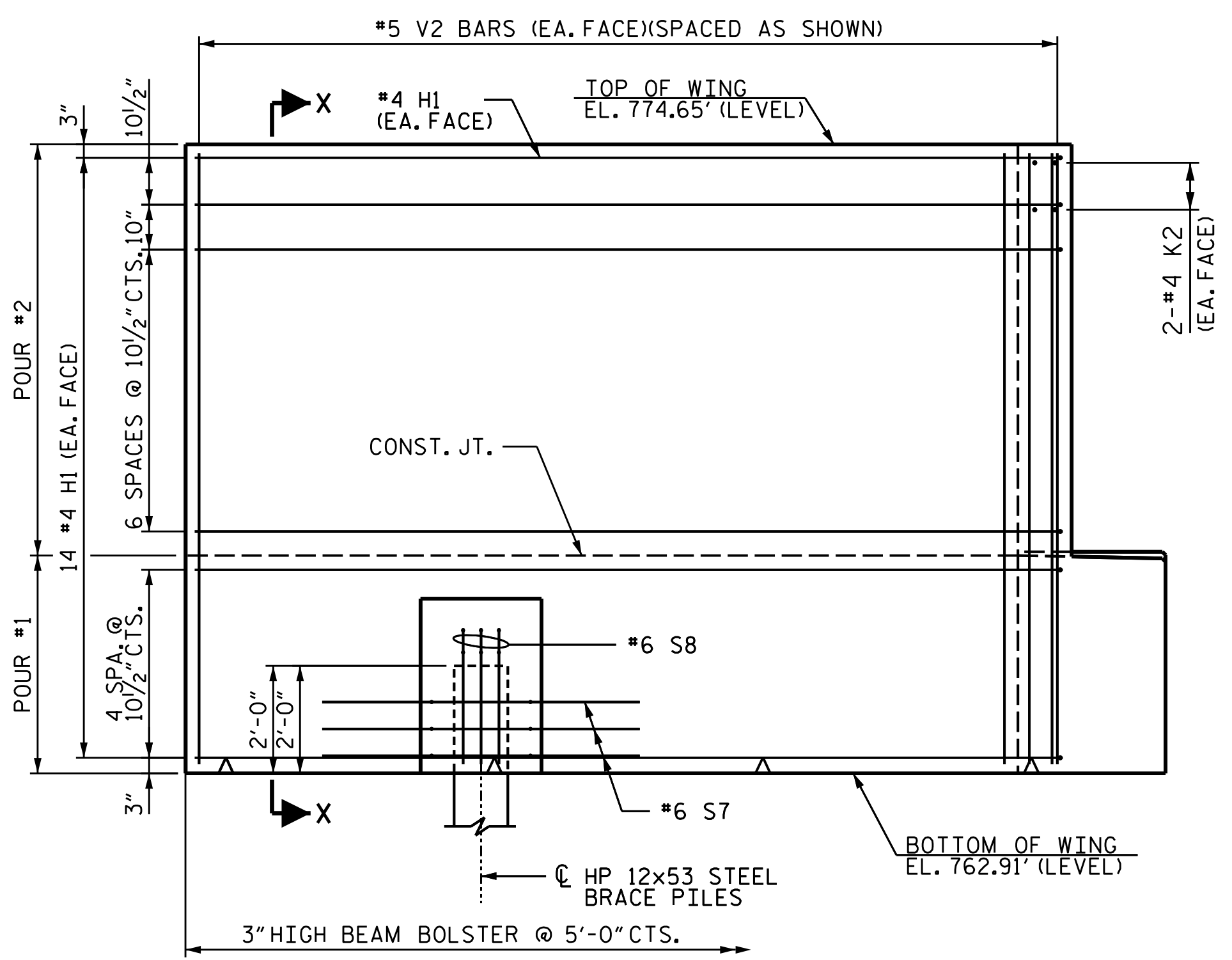
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-54
1			3			TOTAL SHEETS
2			4			60



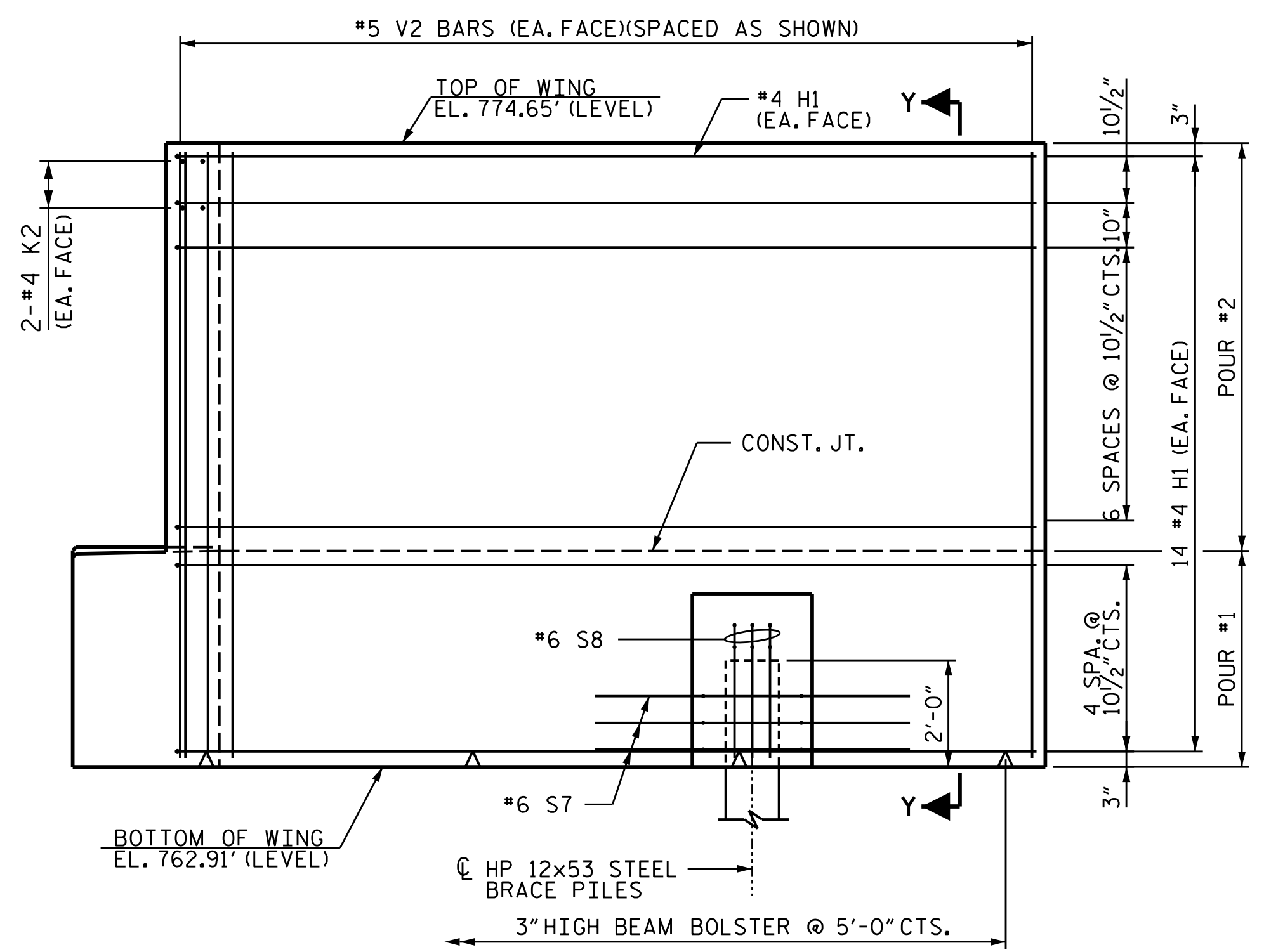
PLAN OF WING (W3)



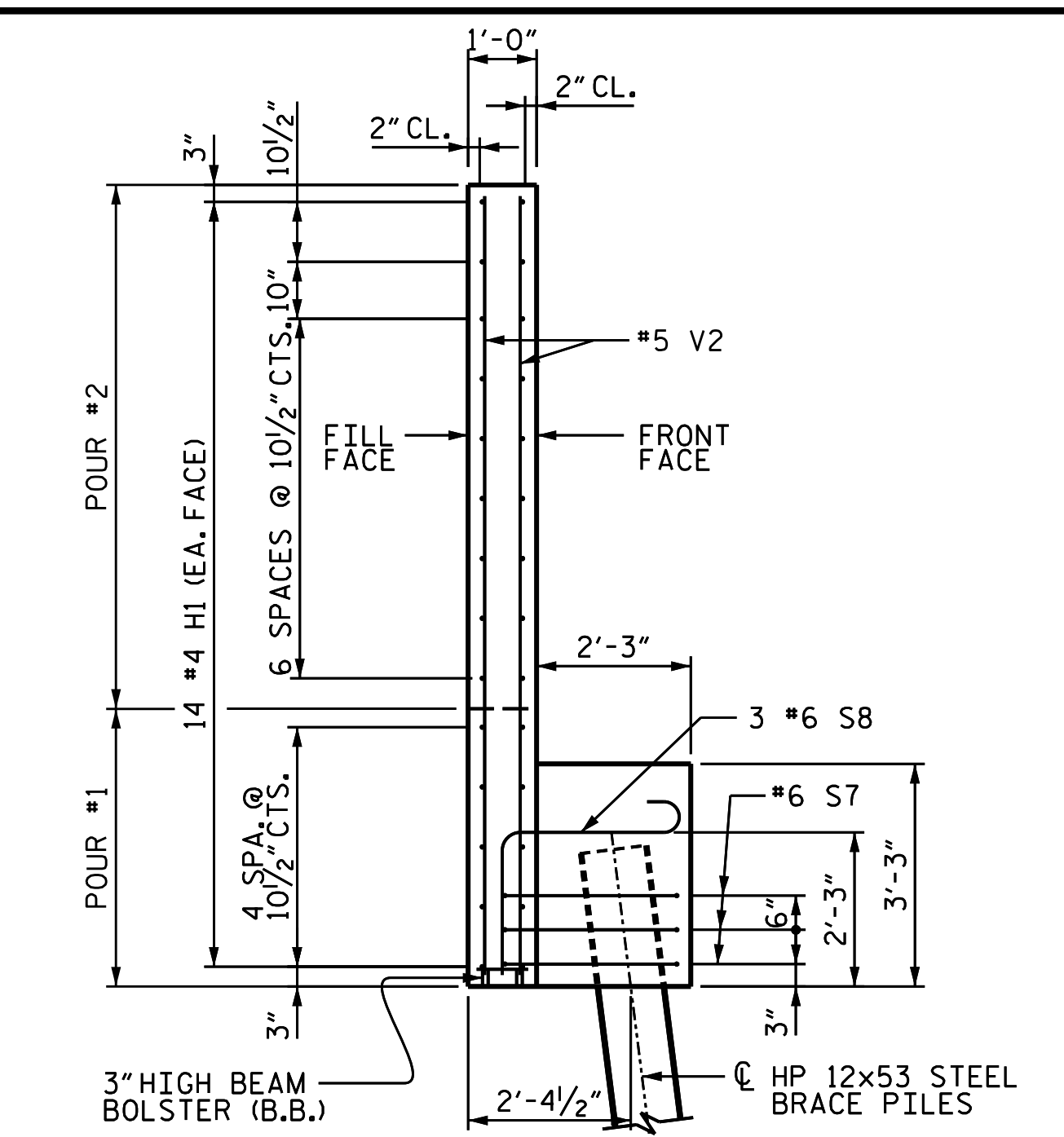
PLAN OF WING (W4)



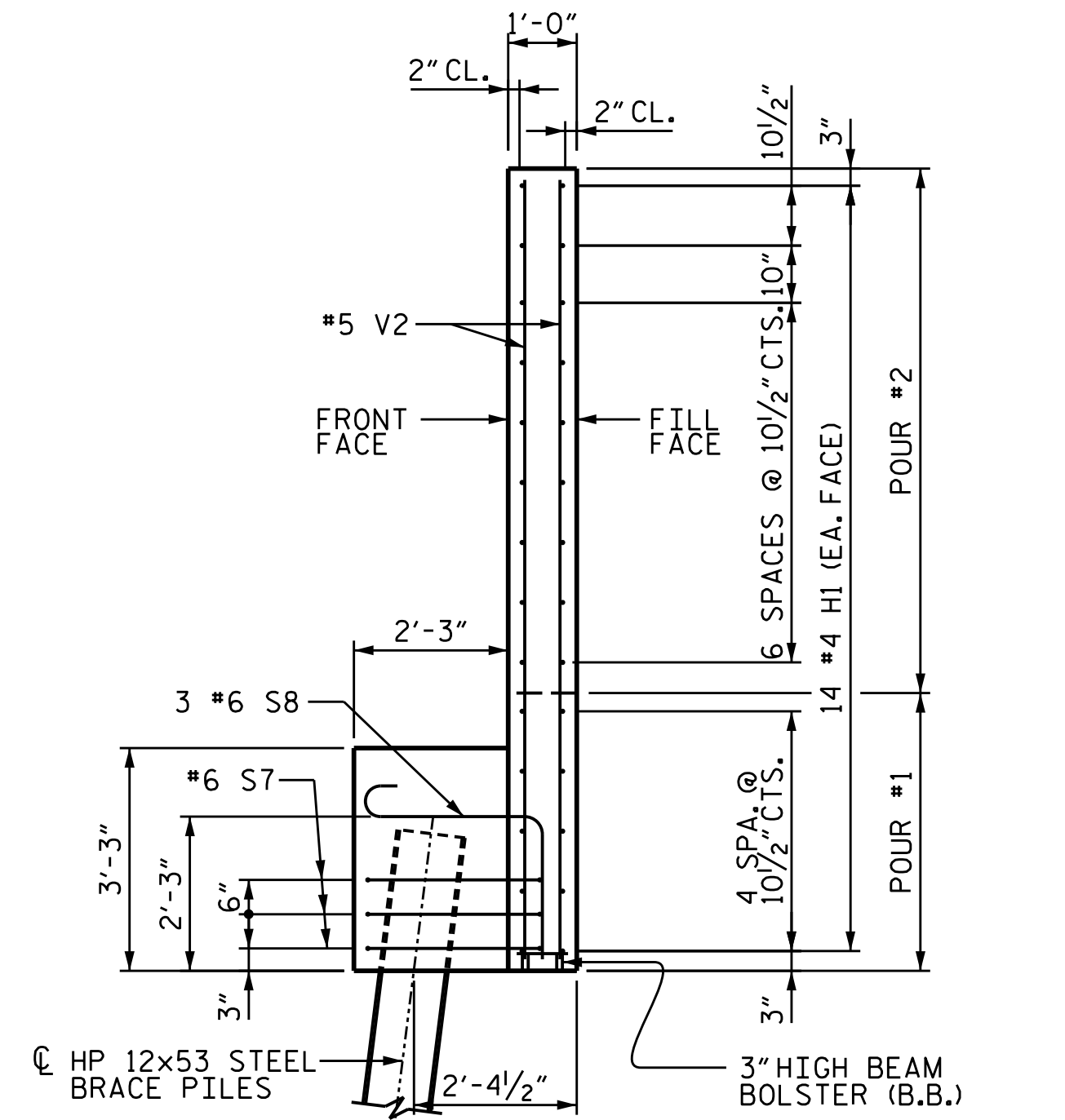
ELEVATION OF WING (W3)



ELEVATION OF WING (W4)



SECTION X-X



SECTION Y-Y

PROJECT NO. B-5825
 YADKIN/FORSYTH COUNTY
 STATION: 34+65.50-L-
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

END BENT No. 2
 WING DETAILS

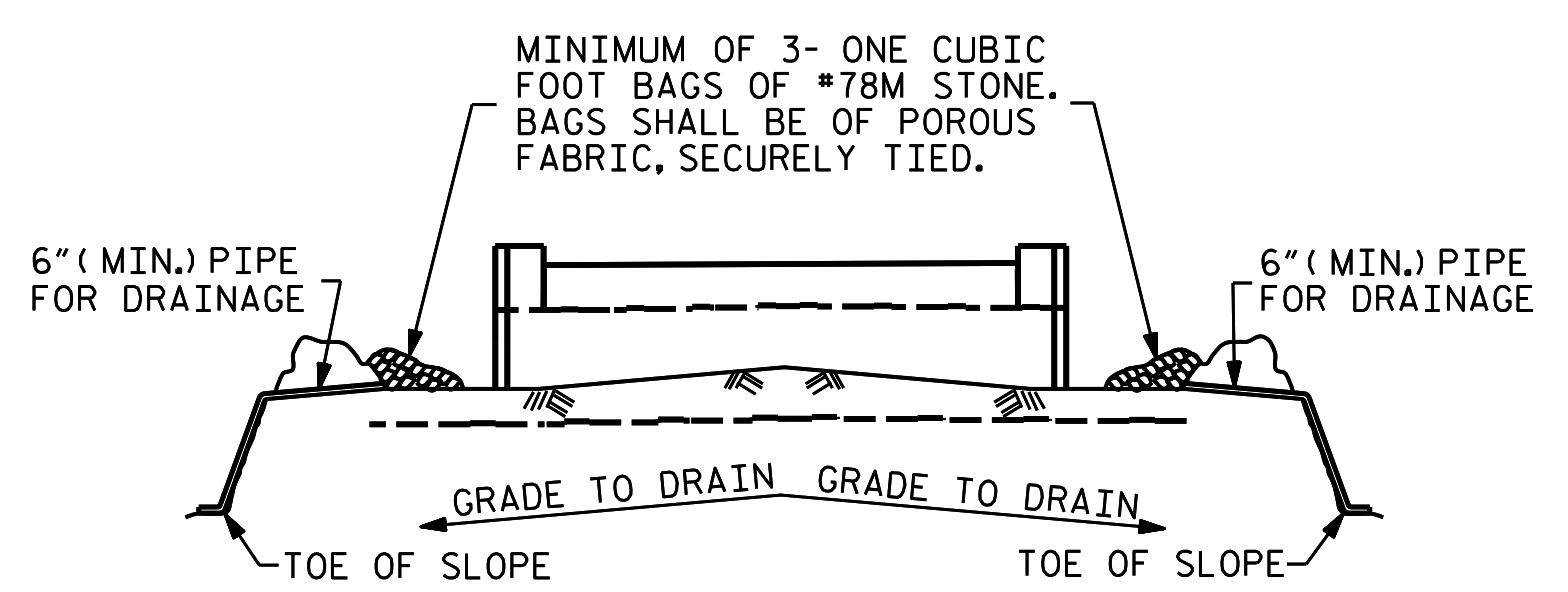
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1			3			TOTAL SHEETS
2			4			60

DRAWN BY: JLA DATE: 11/19
 CHECKED BY: RAR DATE: 12/19
 DESIGN ENGINEER OF RECORD: TBE DATE: 2/20

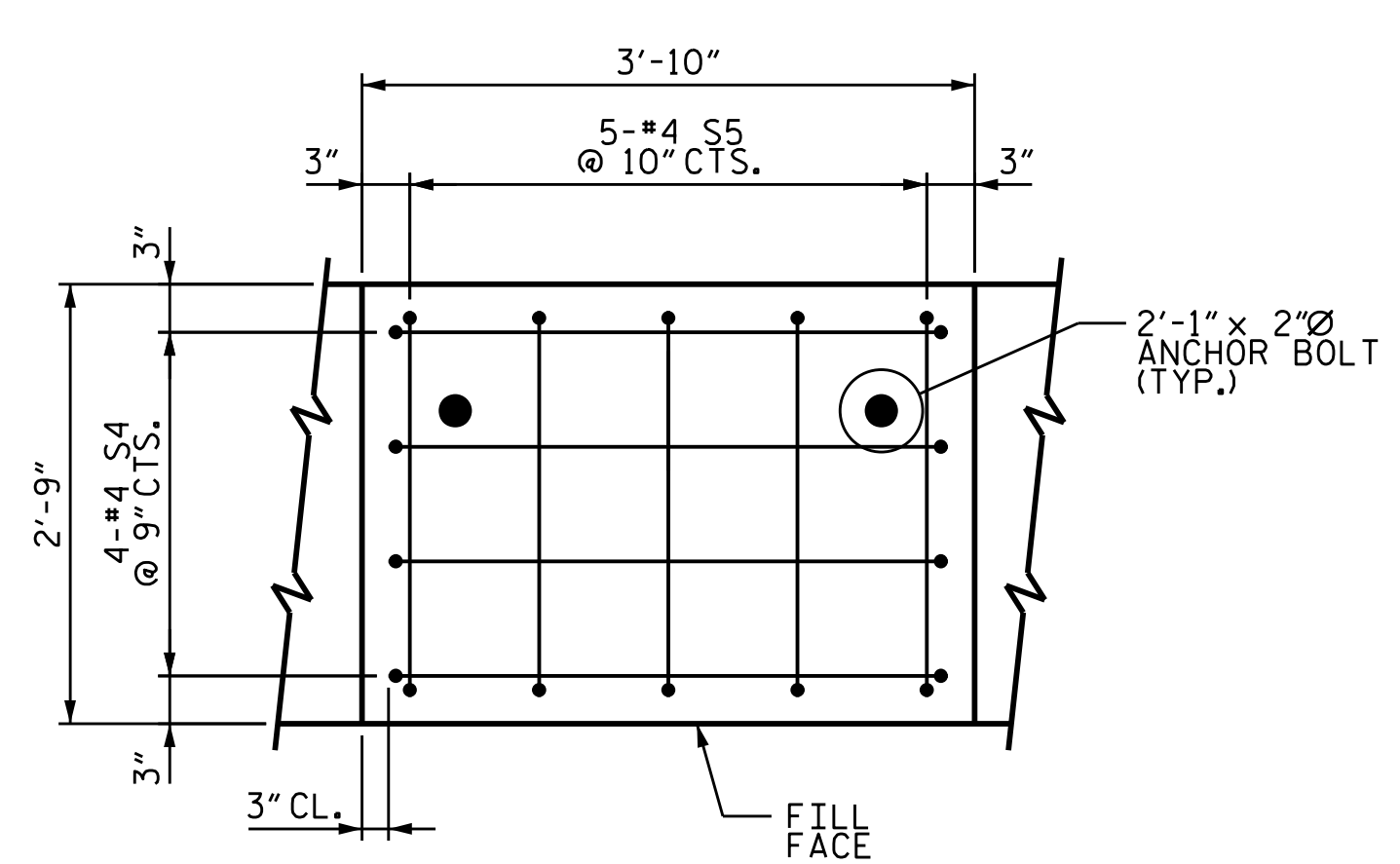


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

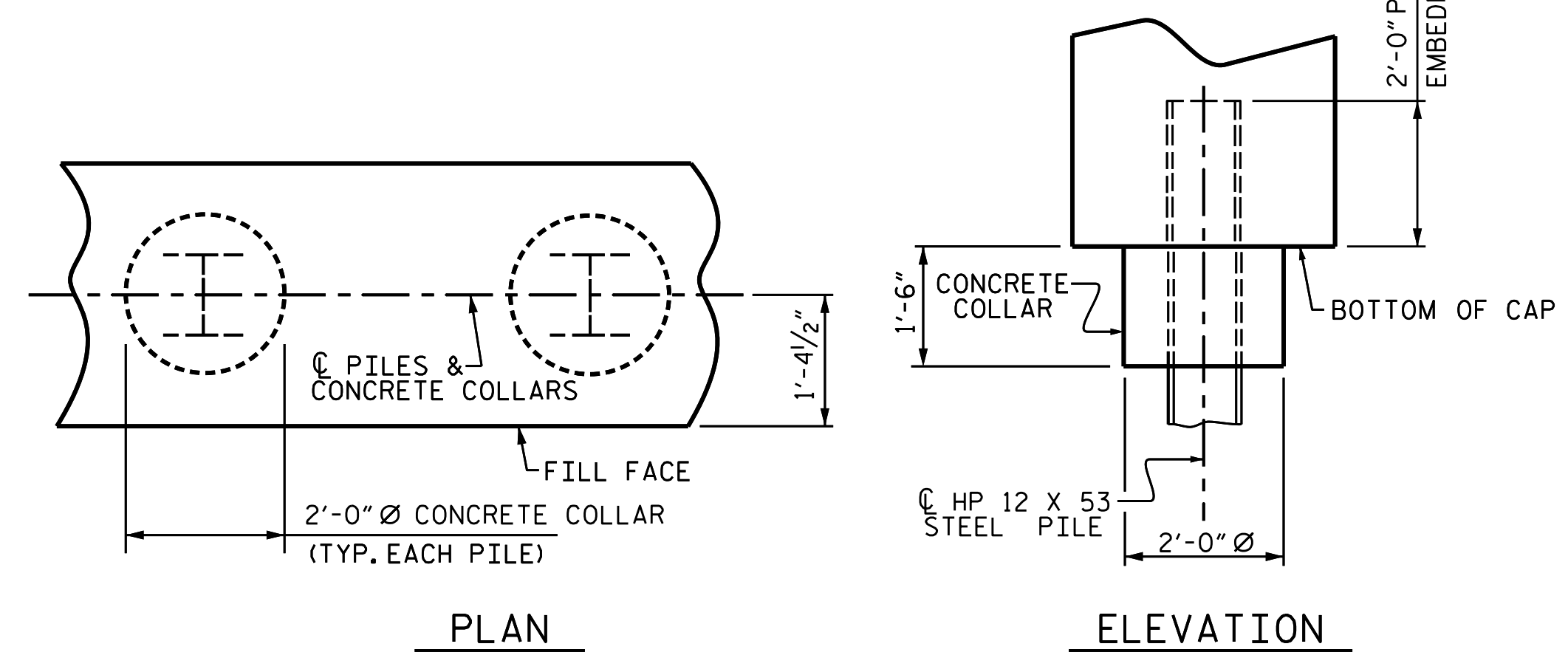
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



BRIDGE SEAT REINFORCING DETAIL

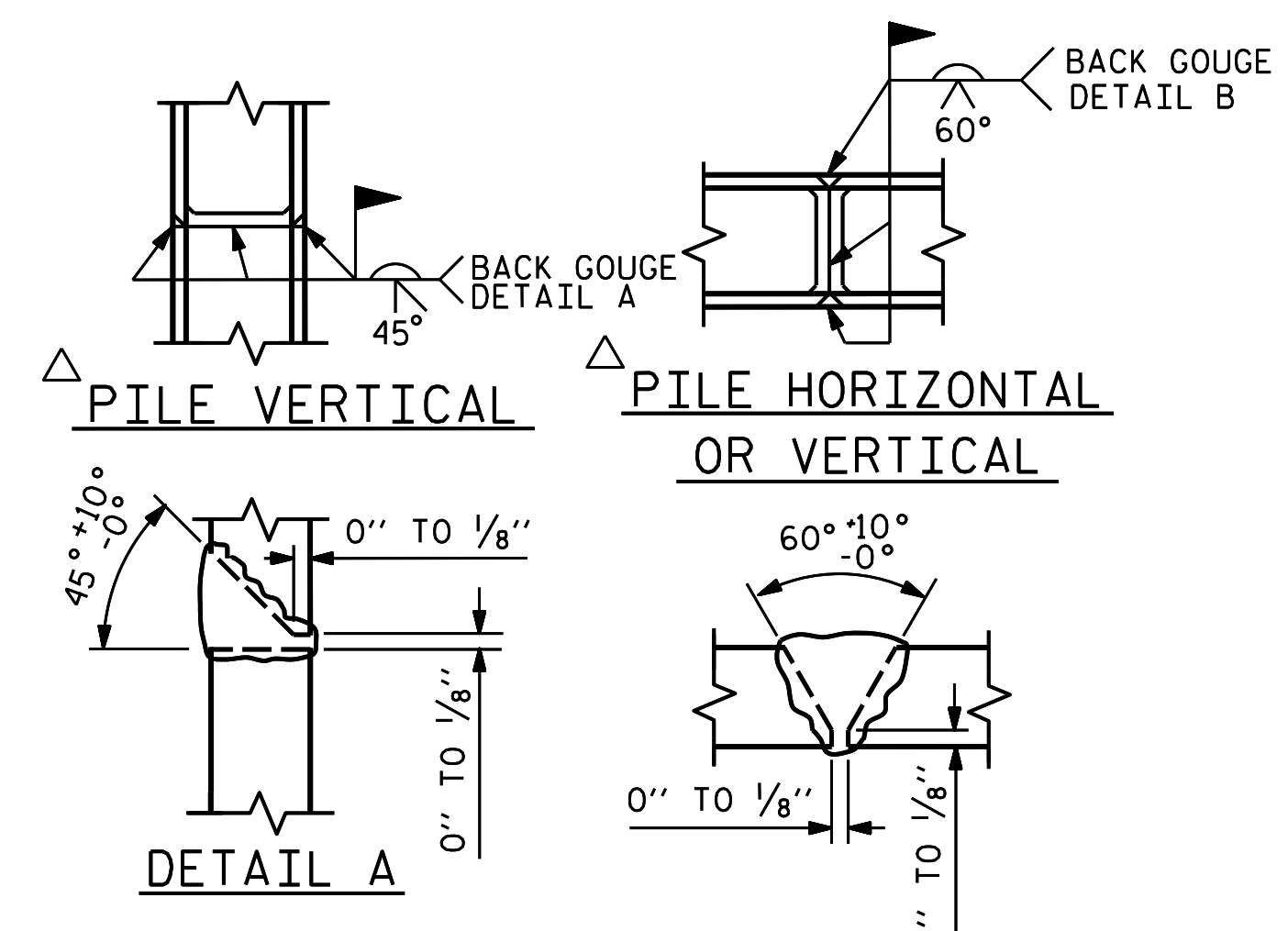
(TYPICAL FOR GIRDERS 2 AND 3 SEATS)



PLAN

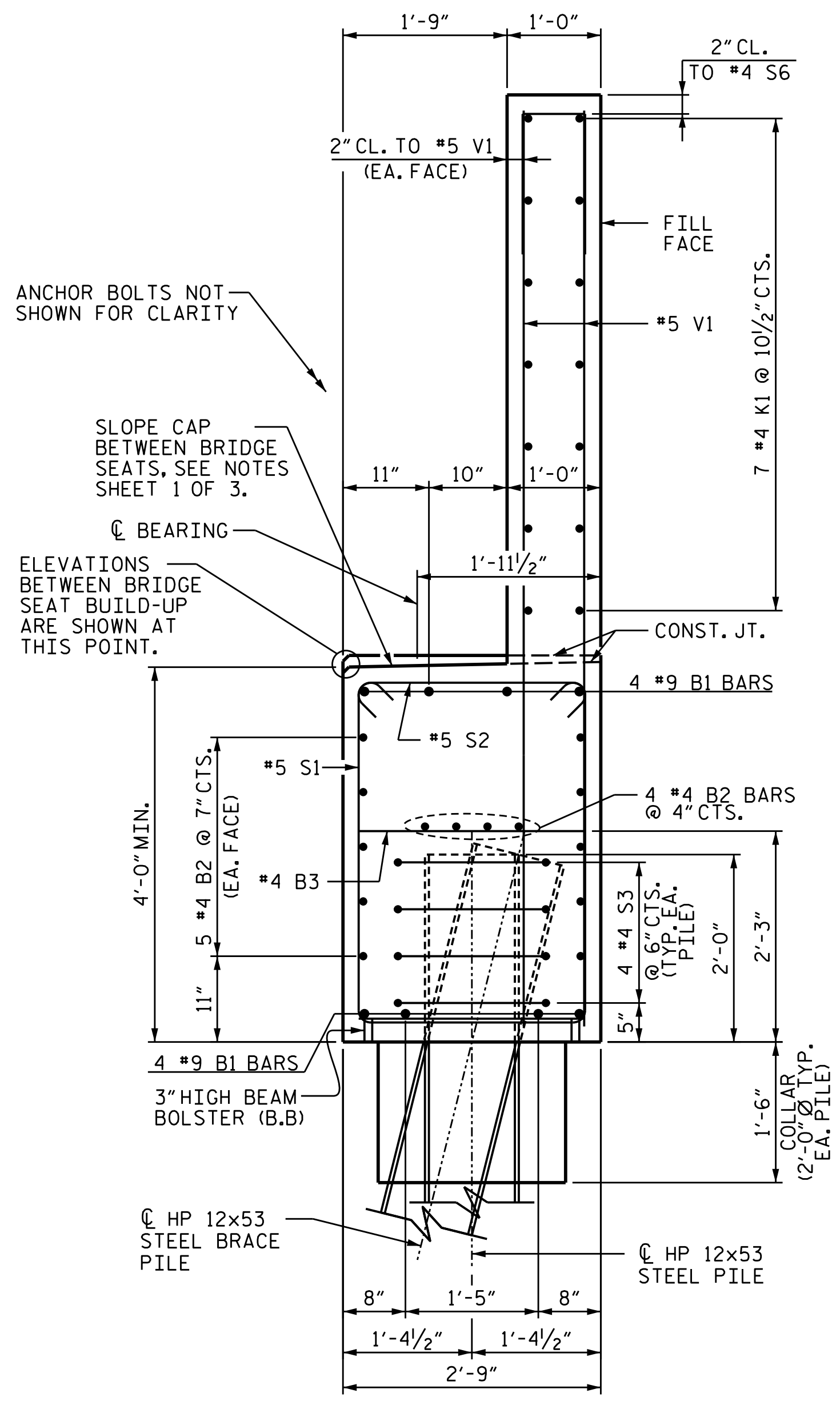
ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

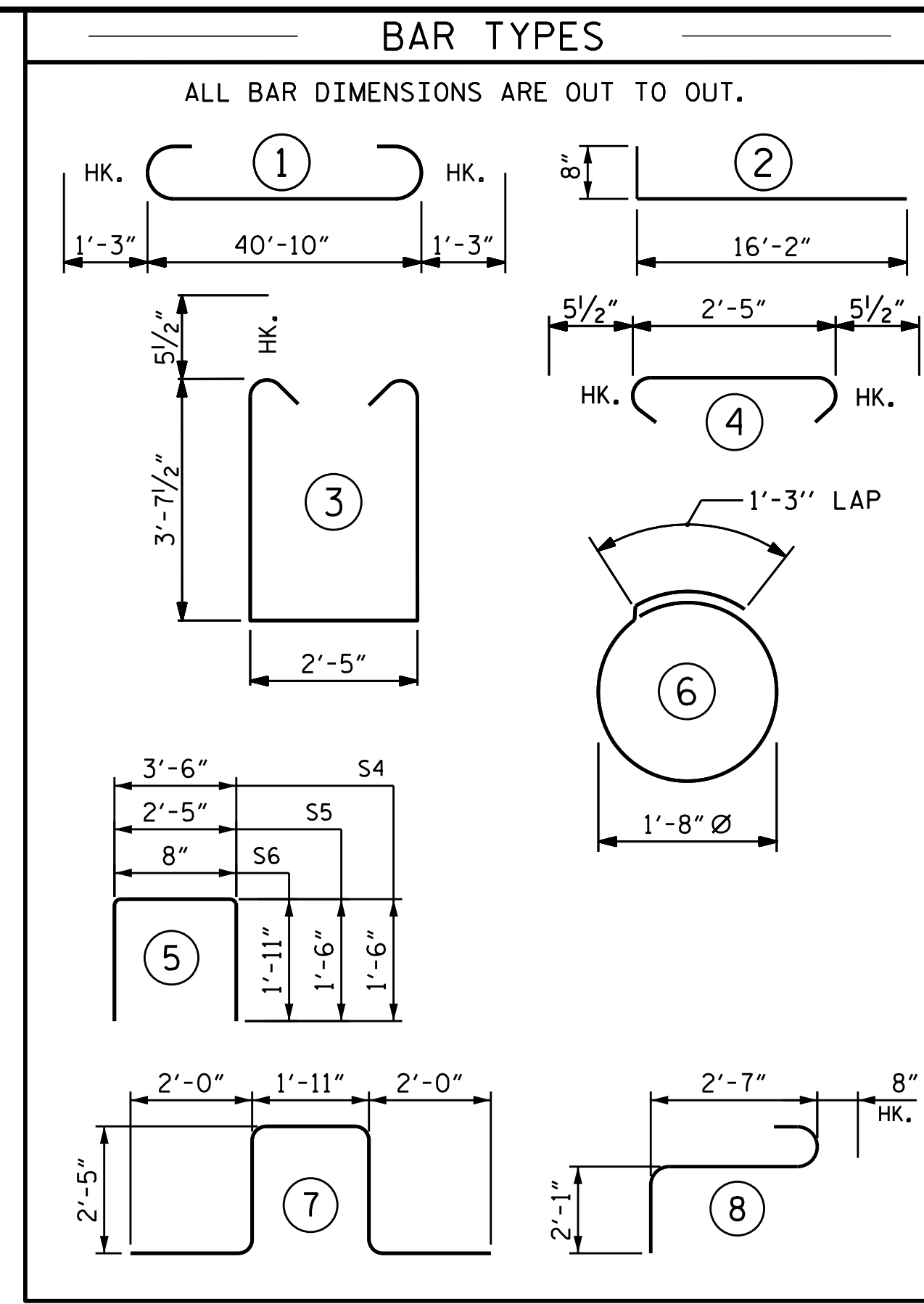


POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



SECTION B-B



BILL OF MATERIAL					
END BENT 2					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	#8		43'-4"	1,179	
B2	#28	#4 STR	21'-9"	407	
B3	#11	#4 STR	2'-5"	18	
H1	#56	#4	2	16'-10"	630
K1	#28	#4 STR.	21'-9"	407	
K2	#8	#4 STR	3'-7"	19	
S1	#46	#5	3	10'-7"	508
S2	#46	#5	4	3'-4"	160
S3	#28	#4	6	6'-6"	122
S4	#8	#4	5	6'-6"	35
S5	#10	#4	5	5'-5"	36
S6	#34	#4	5	4'-6"	102
S7	#6	#6	7	10'-9"	97
S8	#6	#6	8	5'-4"	48
V1	#68	#5 STR.	9'-8"	686	
V2	#84	#5 STR.	11'-4"	993	
REINFORCING STEEL				5,447	LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS				24.3	C.Y.
POUR #2 BACKWALL AND UPPER PART OF WINGS				18.7	C.Y.
TOTAL CLASS A CONCRETE				43.0	C.Y.
HP 12 X 53 STEEL PILES					
NO: 9		LIN. FT. = 340			
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES					
EACH = 9					

PROJECT NO. B-5825
 YADKIN/FORSYTH COUNTY
 STATION: 34+65.50-L-
 SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

END BENT No. 2
 DETAILS

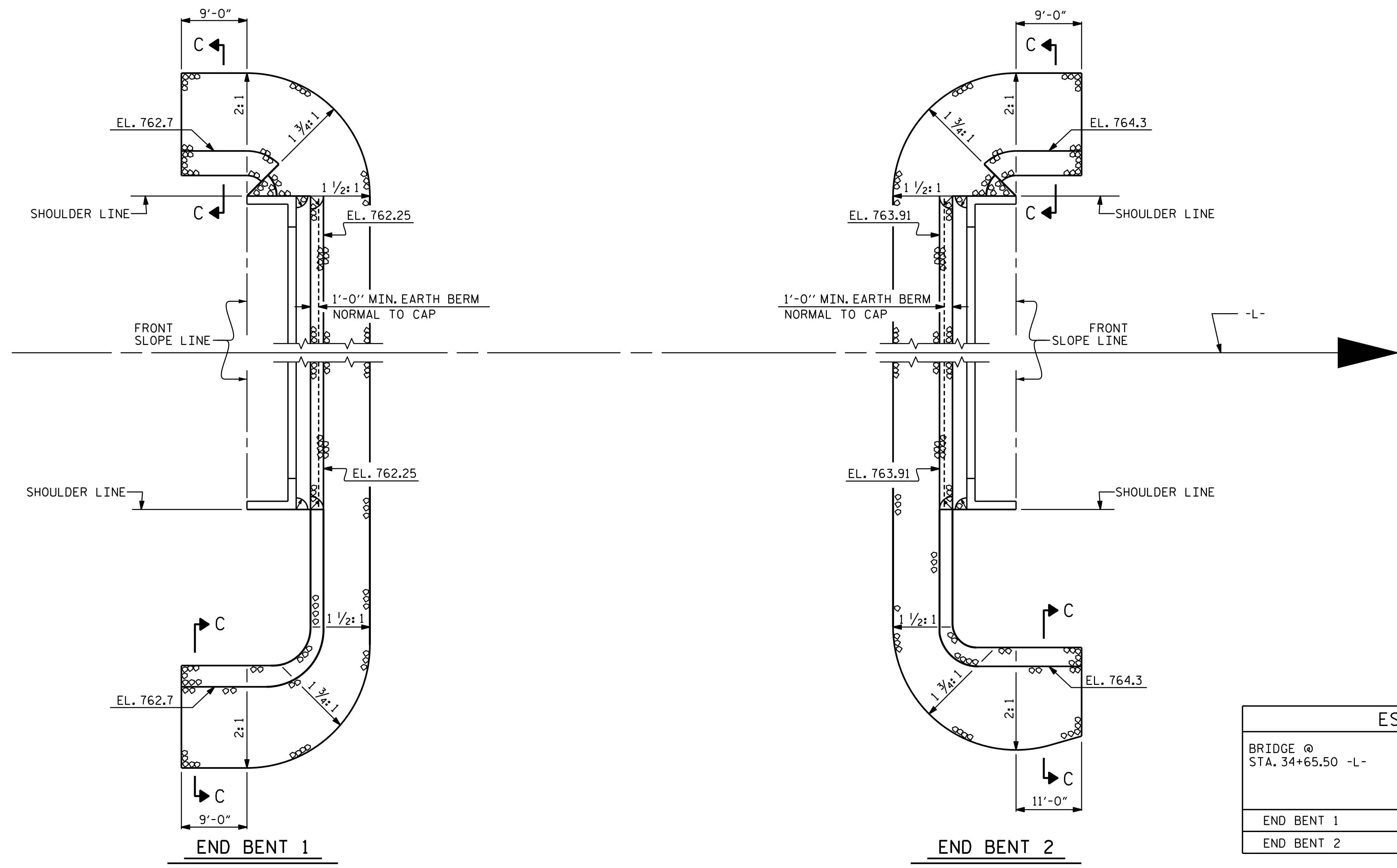
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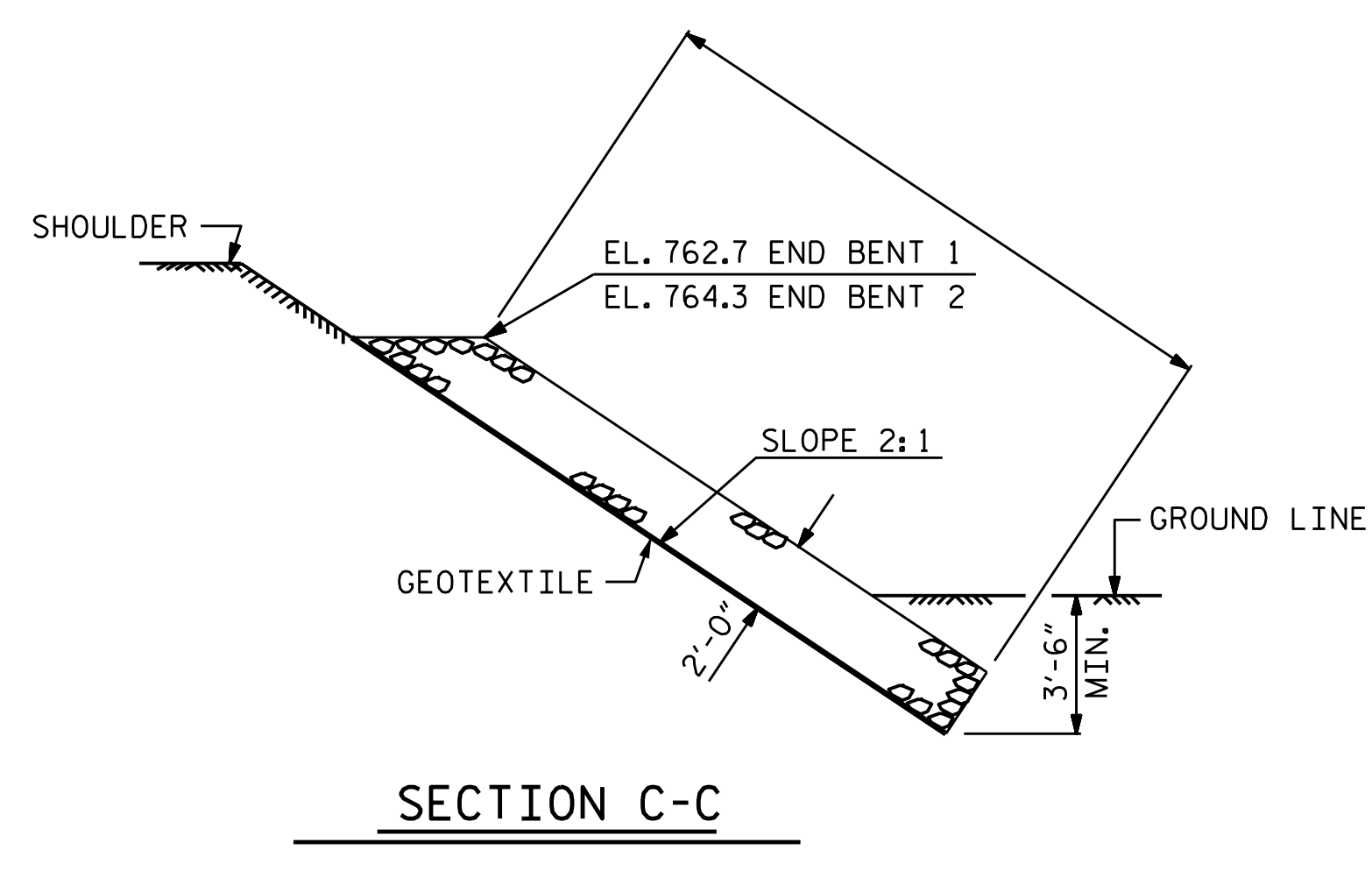
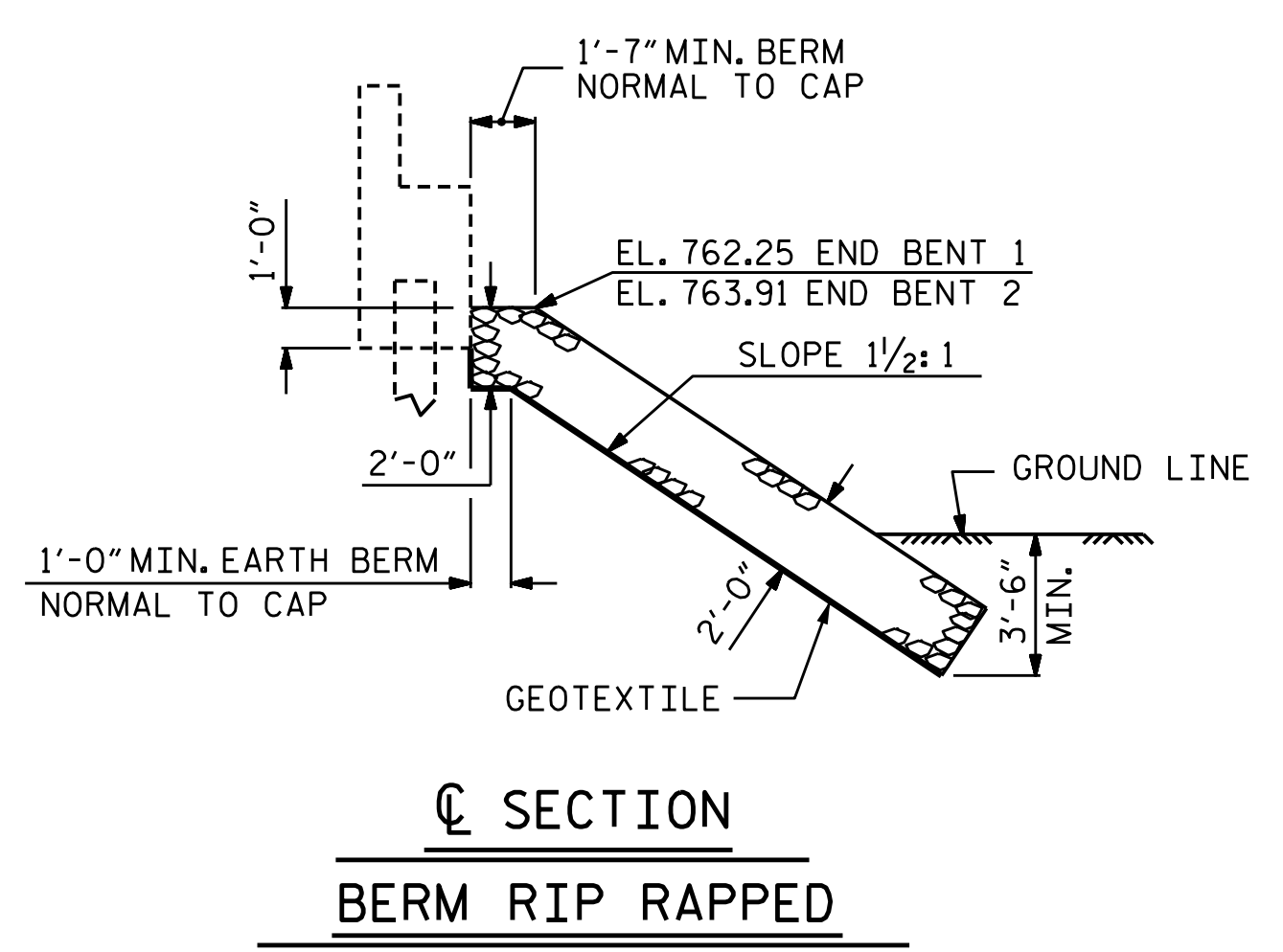
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1			3			TOTAL SHEETS 60
2			4			

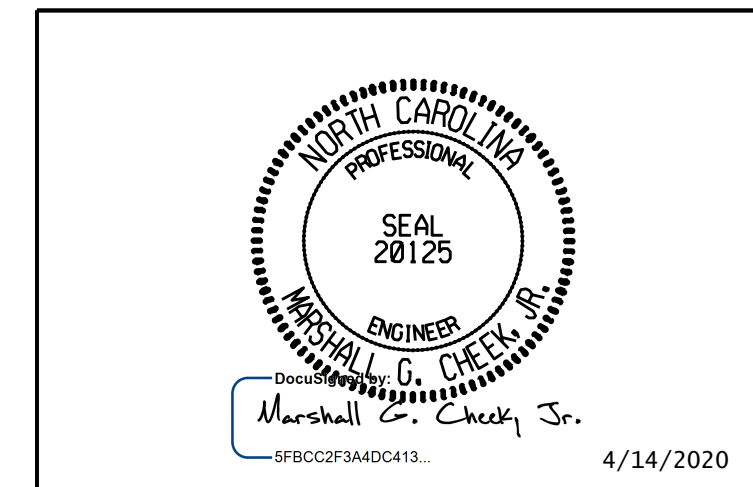
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ESTIMATED QUANTITIES		
BRIDGE @ STA. 34+65.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	810	900
END BENT 2	835	930



PROJECT NO. B-5825
YADKIN/FORSYTH COUNTY
 STATION: 34+65.50 -L-



STATE OF NORTH CAROLINA
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 RALEIGH
 STANDARD
 RIP RAP DETAILS

ASSEMBLED BY : STM	DATE : 01/20
CHECKED BY : MGC	DATE : 01/20
DRAWN BY : REK 1/84	REV. 10/1/11 MAA/GM
CHECKED BY : RDU 1/84	REV. 12/21/11 MAA/GM
	REV. 12/17 MAA/THC

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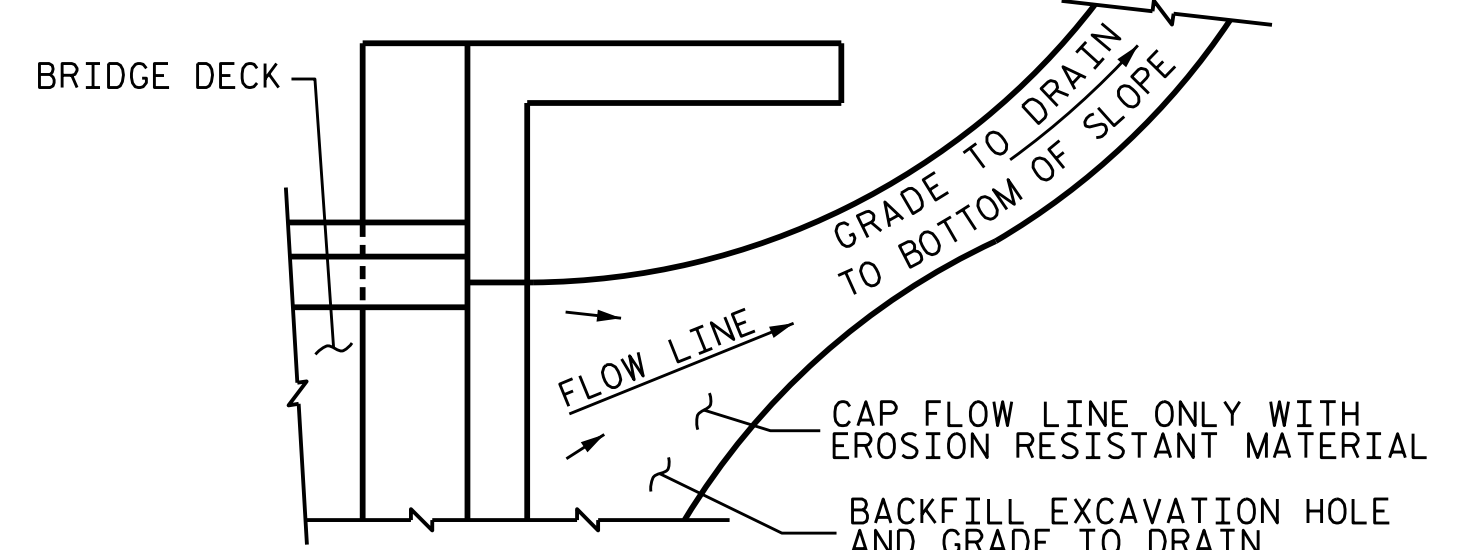
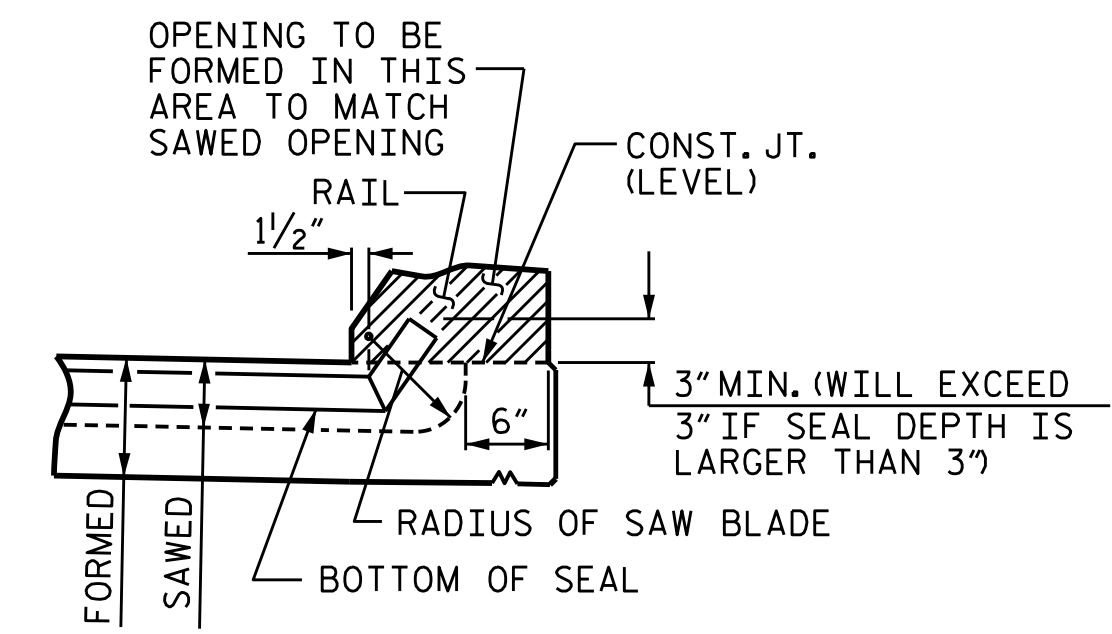
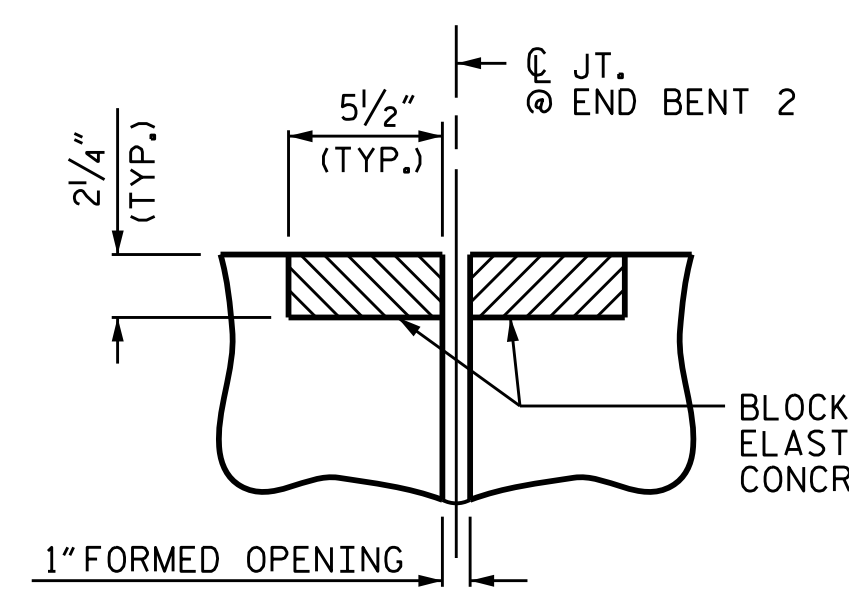
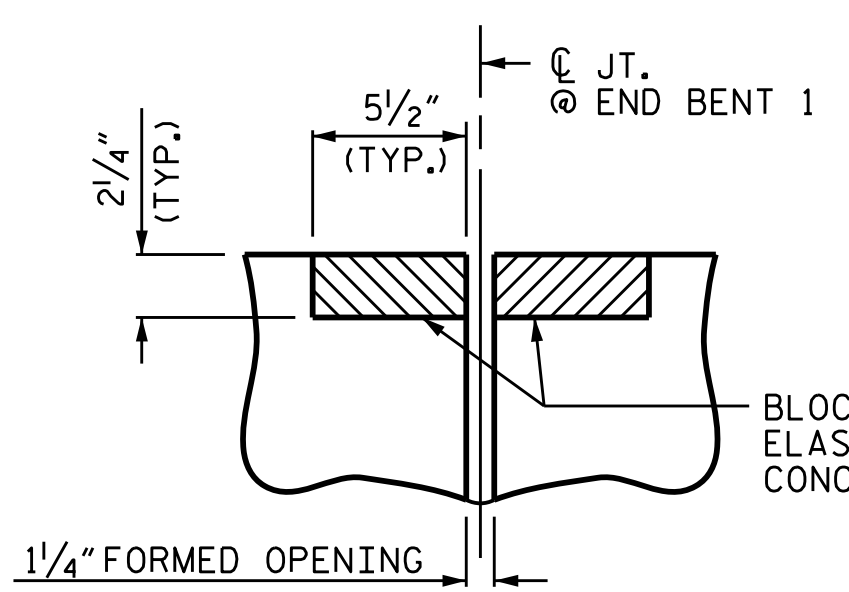
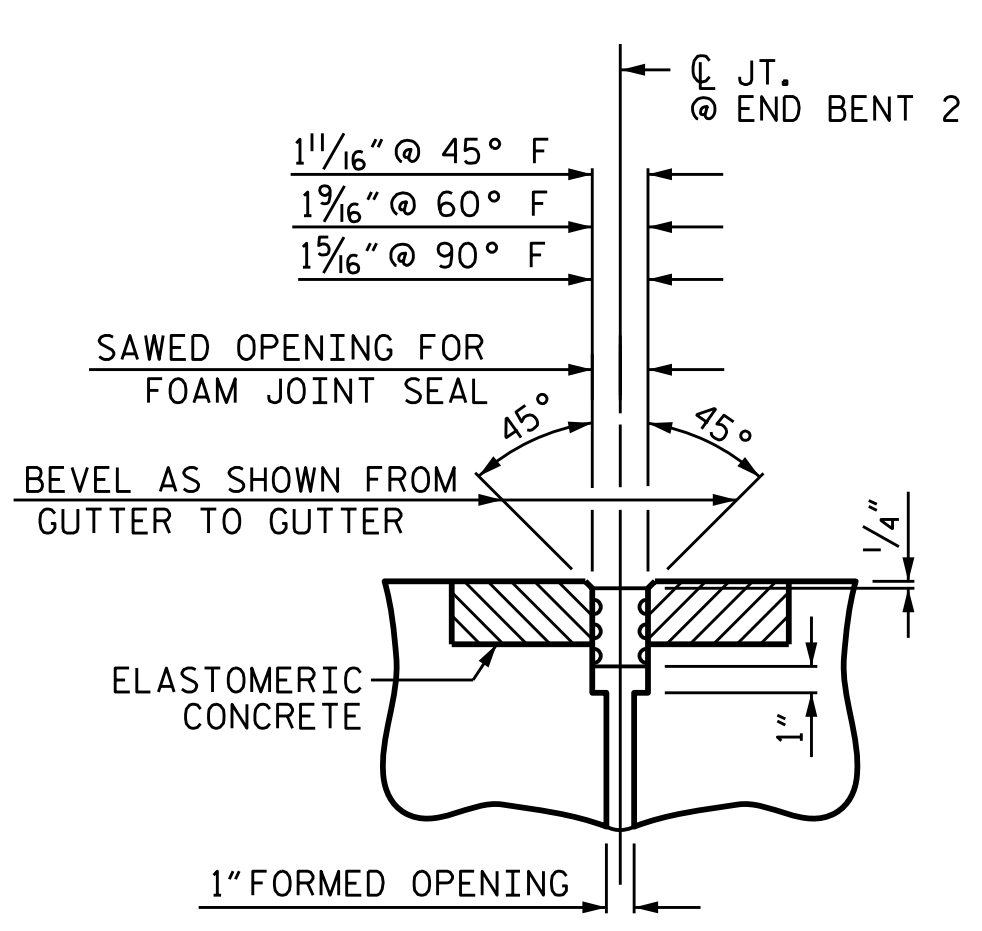
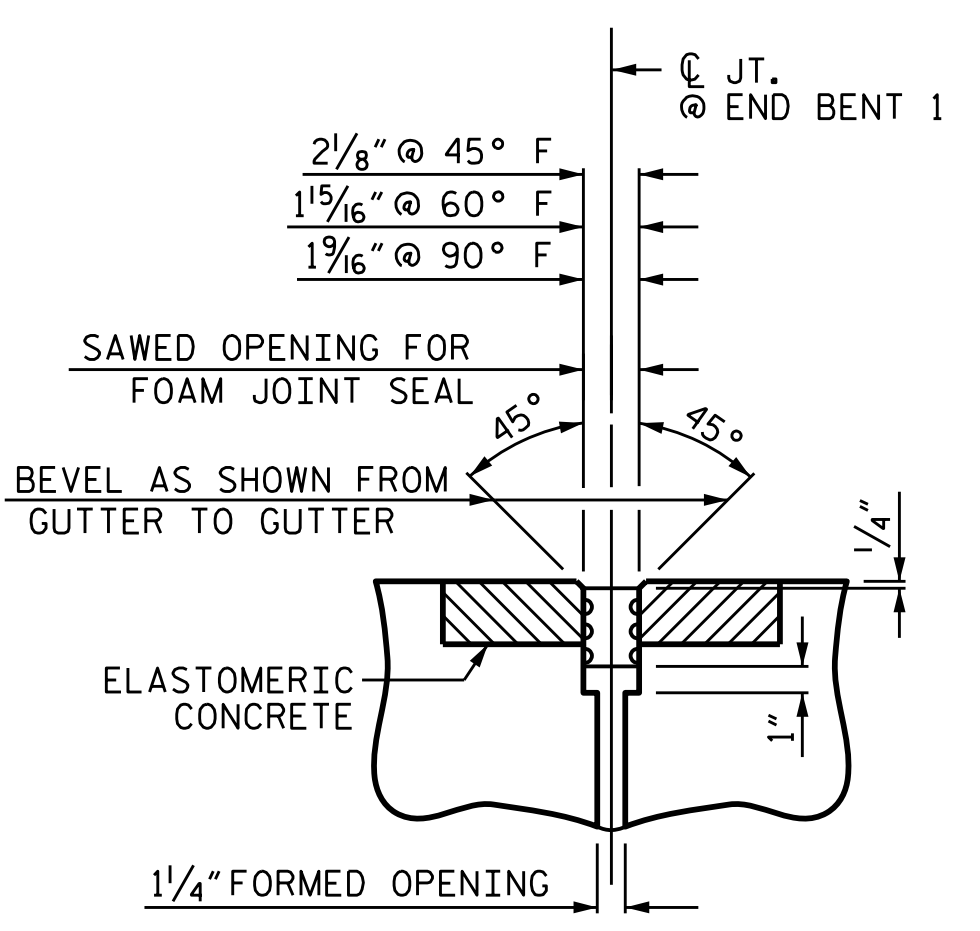
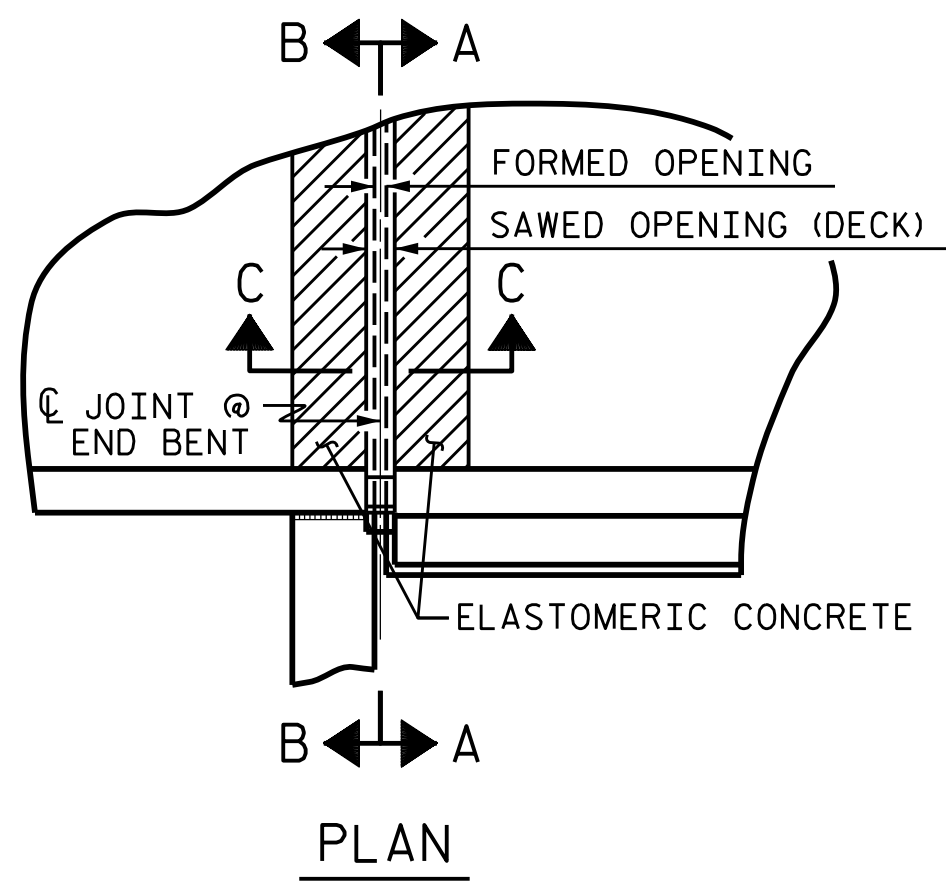
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2			4			60

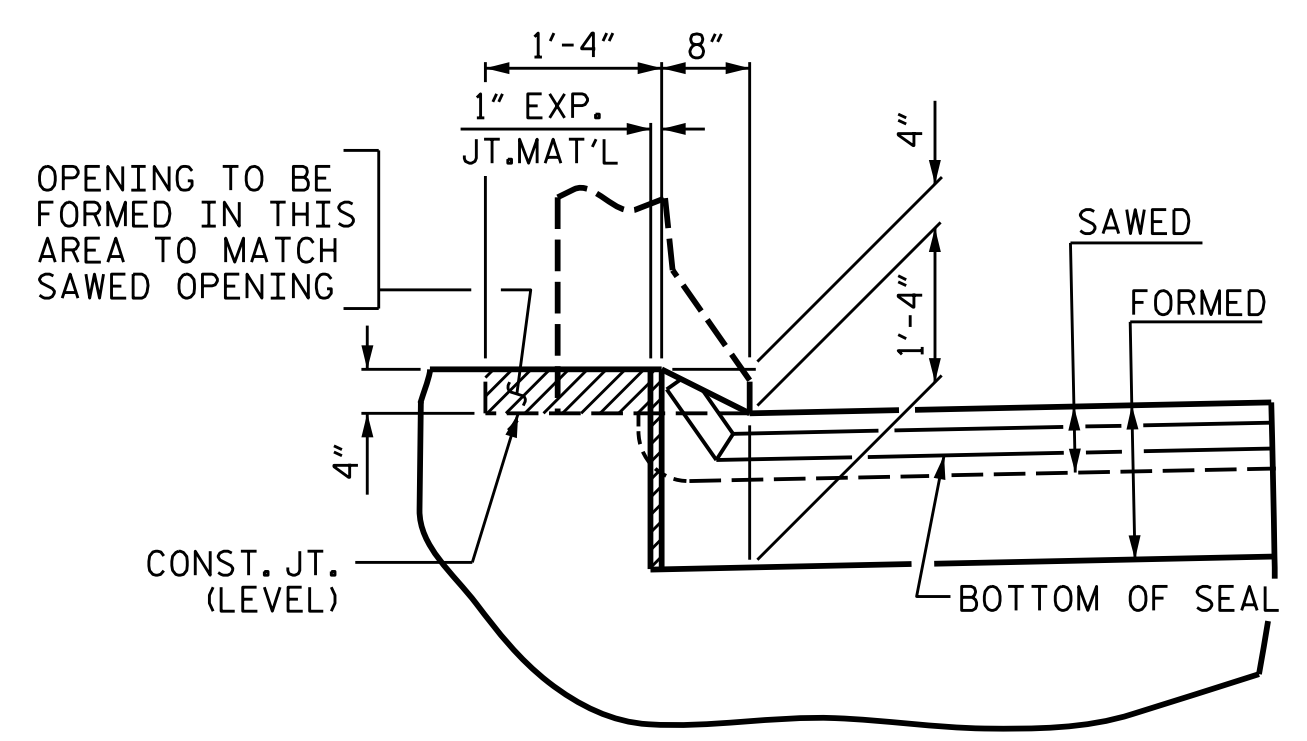
ELASTOMERIC CONCRETE

END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	6.02
2	5.50
TOTAL	11.52

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

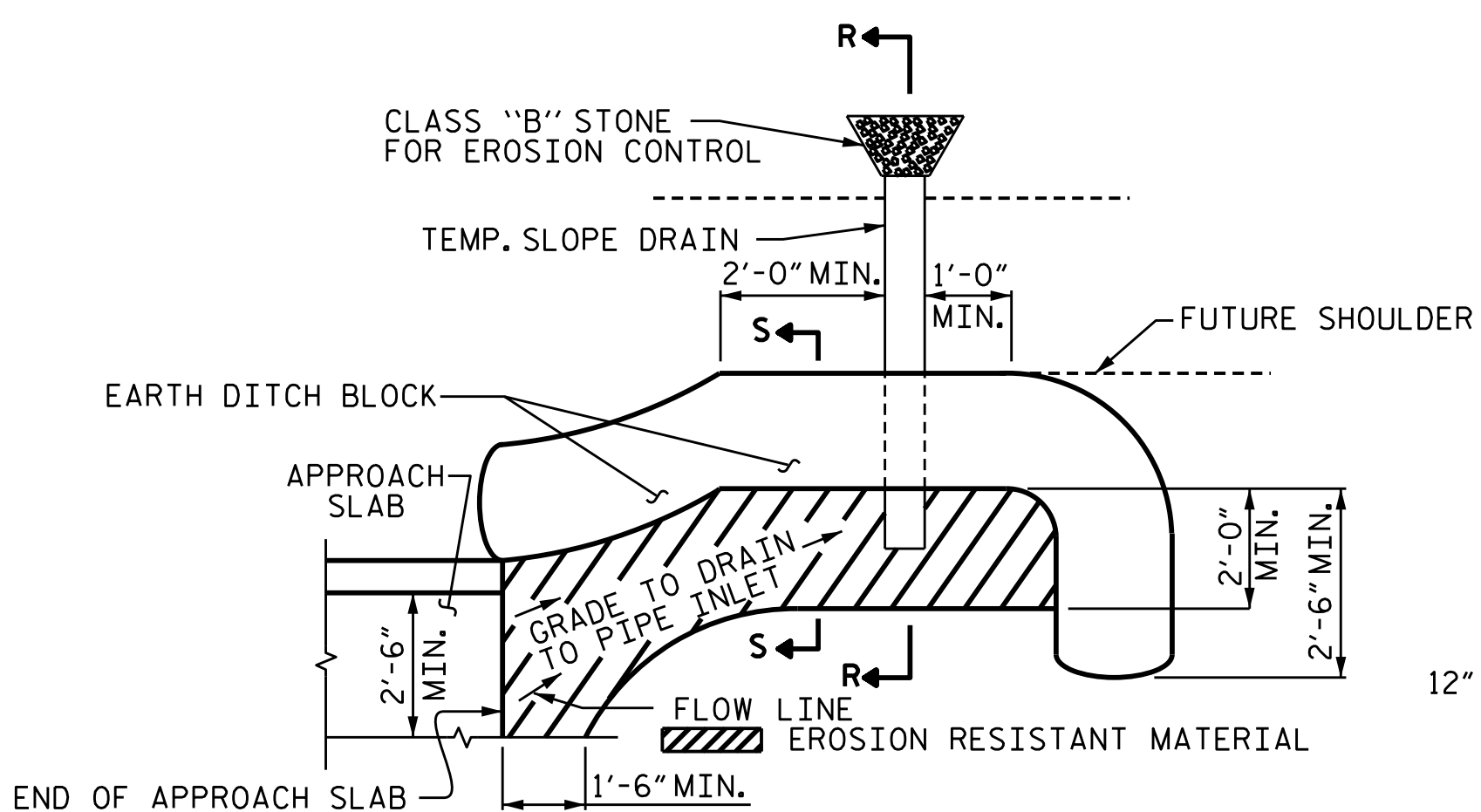


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

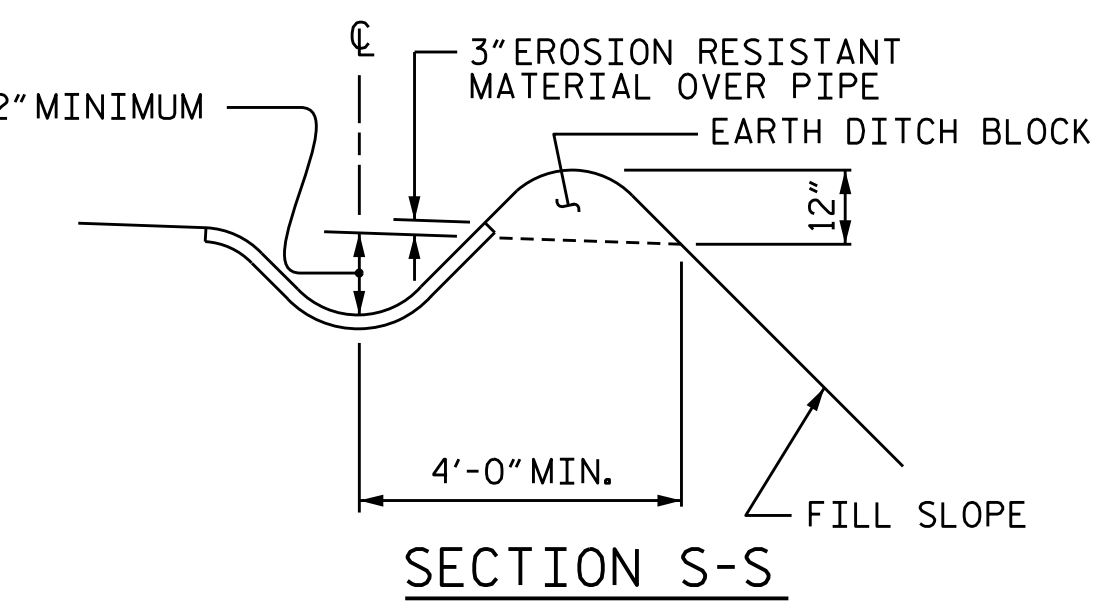
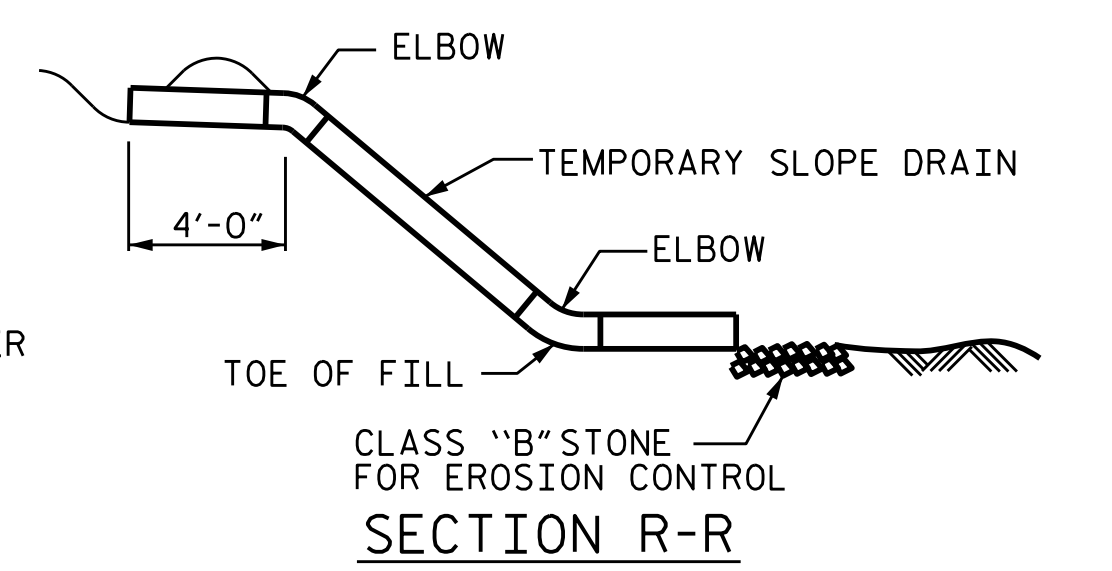


JOINT SEAL DETAILS @ END BENT

FOAM JOINT SEAL TO BE CUT, HEAT WELDED AND TURNED UP PARALLEL TO SLOPED FACE OF THE BARRIER RAIL.
THE JOINT SHALL BE SAWS PRIOR TO THE CASTING OF THE BARRIER RAIL.



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)

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 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.
FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.
FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.
THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL AT END BENT 1 SHALL BE 2 1/2".
THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL AT END BENT 2 SHALL BE 2".

BILL OF MATERIAL

APPROACH SLAB AT BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	50	#4	STR	19'-4"	646
A2	52	#4	STR	19'-3"	669
*B1	74	#5	STR	23'-9"	1833
B2	74	#6	STR	24'-8"	2742
REINFORCING STEEL					3411 LBS.
* EPOXY COATED REINFORCING STEEL					2479 LBS.
CLASS AA CONCRETE					39.3 C. Y.
APPROACH SLAB AT BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A3	25	#4	STR	33'-0"	551
A4	26	#4	STR	33'-0"	573
*B1	66	#5	STR	23'-9"	1635
B2	66	#6	STR	24'-8"	2445
REINFORCING STEEL					3018 LBS.
* EPOXY COATED REINFORCING STEEL					2186 LBS.
CLASS AA CONCRETE					36.0 C. Y.

ASSEMBLED BY :	STM	DATE :	11/19
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DRAWN BY :	FCJ	11/88	MAA/GM
CHECKED BY :	ARB	11/88	MAA/GM
		REV. 7/12	MAA/THC
		REV. 6/13	
		REV. 12/17	

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH
SLAB DETAILS

Professional Engineer Seal: Marshall G. Check, Jr., No. 20125, Exp. 12/19/2025.

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TGS ENGINEERS
706 HILLSBOROUGH STREET
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YADKIN/FORSYTH COUNTY
STATION: 34+65.50 -L-

SHEET 2 OF 2

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2			4			60