F.A. PROJECT NO. BRNHP-0023(32)

22+50 23+00 23+50 24+00 24+50 25+00 25+50 26+00 26+50

(-)5.5318% (-)0.6429%

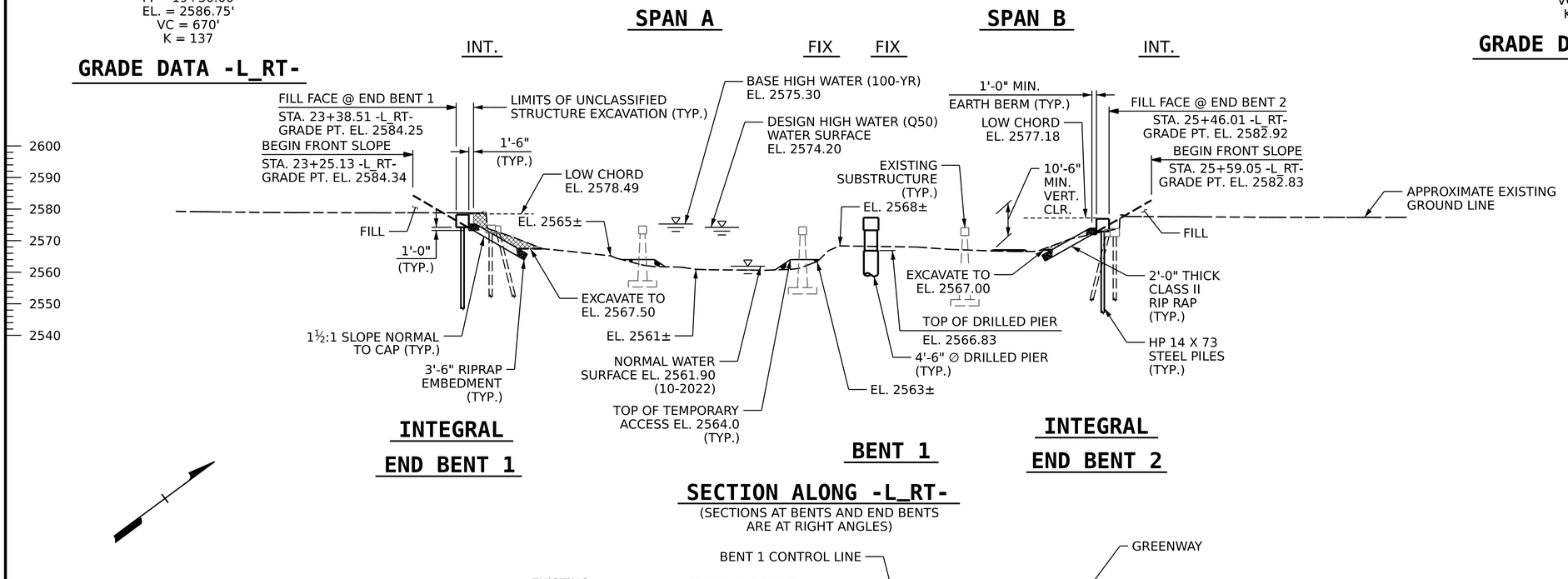
PI = 19+50.00
EL. = 2586.75'
VC = 670'
K = 137

GRADE DATA -L_RT-

(-)0.6429% (+)4.8851%

PI = 30+00.00
EL. = 2580.00'
VC = 755'
K = 137

GRADE DATA -L_RT-



SECTION ALONG -L_RT-

(SECTIONS AT BENTS AND END BENTS ARE AT RIGHT ANGLES)

PLAN

(DRILLED PIERS AND PILES NOT SHOWN FOR CLARITY)

HORIZONTAL CURVE (SPI) DATA -L_RT-

PI Sta. 27+29.91
Θs = 03°16'26.6" (RT)
Ls = 200'
LT = 133.36'
ST = 66.69'
R (EXIT) = 1750.00'

UNCLASSIFIED STRUCTURE EXCAVATION

HYDROGRAPHIC DATA

DESIGN DISCHARGE ..... = 8,700 CFS
FREQUENCY OF DESIGN FLOOD ..... = 50 YR.
DESIGN HIGH WATER ELEVATION ..... = 2574.2 FT.
DRAINAGE AREA ..... = 56.9 SQ. MI.
BASE DISCHARGE (Q100) ..... = 10,300 CFS
BASE HIGH WATER ELEVATION ..... = 2575.3 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE ..... = 42,000 CFS
FREQUENCY OF OVERTOPPING FLOOD ..... = + 500 YR.
OVERTOPPING FLOOD ELEVATION ..... = 2591.8 FT.
AT STA. 22+72.00 -L_LT-

NOTES

SEE BRIDGE 158 STRUCTURE 3 PLANS FOR DETAILS RELATED TO TEMPORARY OVERBUILDING OF BRIDGE 158 IN THE VICINITY OF BRIDGE 155.

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. B-3186 / B-5898
HAYWOOD COUNTY
STATION: 24+42.26 -L_RT-

SHEET 1 OF 4 REPLACES BRIDGE NO. 430155

DRAWN BY : A.R. VAN VUREN DATE : 03/2023
CHECKED BY : A.K. VASUDEVAN DATE : 04/2023
DESIGN ENGINEER OF RECORD: A.K. VASUDEVAN DATE : 06/2023

8/31/2023
c:\workingusnc\dms13605\402_001_B-5898-B3186_SMU_GD_S2-01_460155.DGN
austin.vanvuren

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AECOM License No, F-0342

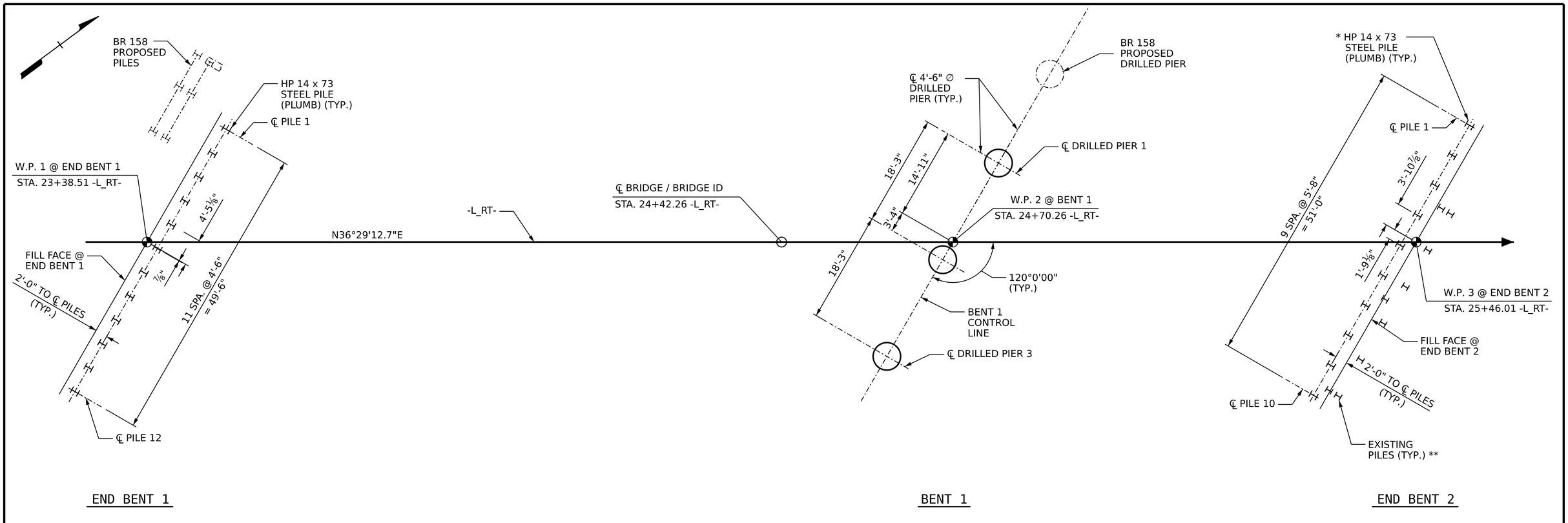
NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANURADHA K VASUDEVAN
DocuSigned by: BF206058AD65425...
10/18/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON US74 EB/ US23 NB OVER RICHLAND CREEK BETWEEN US276 AND US19

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-01
1			3			TOTAL SHEETS
2			4			31



END BENT 1 | BENT 1 | END BENT 2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES AND DRILLED PIERS ARE SHOWN TO THE CENTERLINE OF PILES AND DRILLED PIERS.

*THE PROPOSED PILES HAVE A MIN. HORIZONTAL CLEARANCE OF 10½" FROM THE EXISTING BRACE PILES AT END BENT 2

** EXISTING PILES SHALL BE CUT OR REMOVED TO AVOID ANY CONFLICTS WITH THE PROPOSED SUBSTRUCTURE AND PILES.

**EXISTING PILE LOCATIONS BASED ON BEST INFORMATION AVAILABLE. CONTRACTOR SHALL POSITIVELY LOCATE EXISTING PILES PRIOR TO INSTALLATION OF NEW PILES AND REPORT ANY DIFFERENCES TO THE ENGINEER.

FOUNDATION NOTES:

1. FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
2. FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
3. INSTALL PERMANENT STEEL CASINGS AT BENT NO. 1 BY VIBRATING, SCREWING, OR DRIVING PERMANENT CASINGS BEFORE EXCAVATING OR DISTURBING ANY MATERIAL BELOW THE PERMANENT CASING TIP ELEVATIONS OF 2548 FT, 2548.5 FT, AND 2549 FT FOR PIER 1, PIER 2, AND PIER 3, RESPECTIVELY.

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+42.26 -L_RT-

SHEET 2 OF 4

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Docusigned by: Anantha K. Vasudevan BF206058AD65425...

10/18/2023

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON US74 EB/ US23 NB OVER RICHLAND CREEK BETWEEN US276 AND US19

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-02
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : A.R. VAN VUREN DATE : 03/2023
CHECKED BY : A.K. VASUDEVAN DATE : 03/2023
DESIGN ENGINEER OF RECORD: A.K. VASUDEVAN DATE : 06/2023

8/22/2023
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caterm

SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Resistance per Pile TONS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles*			Drilled-In Piles		
					Min Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)** per Pile TONS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile Lin FT	Pile Exc In Soil per Pile Lin FT
End Bent 1, Piles 1-12	120	2576.28	30	NA		200	11						
End Bent 2, Piles 1-2	115	2574.97	25	NA		195							
End Bent 2, Piles 3-4	115	2574.97	35	NA		195							
End Bent 2, Piles 5-10	115	2574.97	45	NA		195							

*Predrilling for Piles is required for end bents/bents with a predrilling length and at the Contractor's option for end bents/bents with predrilling information but no predrilling length.

$$^{**}RDR = \frac{Factored\ Resistance + Factored\ Downdrag\ Load + Factored\ Dead\ Load}{Dynamic\ Resistance\ Factor} + Nominal\ Downdrag\ Resistance + \frac{Nominal\ Scour\ Resistance}{Scour\ Resistance\ Factor}$$

SUMMARY OF PDA/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Pile Driving Analyzer (PDA)				Pile Order Lengths	
End Bent/ Bent No	PDA Testing Required? YES or MAYBE	PDA Test Pile Length FT	Total PDA Testing Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis* EST or PDA
End Bent 1, Piles 1-12	MAYBE	35	1		
End Bent 2, Piles 1-2	MAYBE	30			
End Bent 2, Piles 3-4	MAYBE	40			
End Bent 2, Piles 5-10	MAYBE	50			

*EST = Pile order lengths from estimated pile lengths; PDA = Pile order lengths based on PDA testing. For groups of end bents/bents with pile order lengths based on PDA testing, the first end bent/bent no. listed for each group is the representative end bent/bent with the PDA.

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile TONS	Factored Downdrag Load per Pile TONS	Factored Dead Load* per Pile TONS	Dynamic Resistance Factor	Nominal Downdrag Resistance per Pile TONS	Nominal Scour Resistance per Pile TONS	Scour Resistance Factor (Default = 1.00)
End Bent 1, Piles 1-12	120			0.60			NA
End Bent 2, Piles 1-10	115			0.60			NA

*Factored Dead Load is factored weight of pile above the ground line.

SUMMARY OF PILE ACCESSORIES

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates Required? YES or MAYBE	Steel Pile Points			Steel Pile Tips Required? YES
		Pipe Pile Cutting Shoes Required? YES	Pipe Pile Conical Points Required? YES	H-Pile Points Required? YES	
End Bent 1, Piles 1-12				YES	
End Bent 2, Piles 1-10				YES	
TOTAL QTY:				22	

SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Factored Resistance per Pier TONS	Minimum Pier Tip (Tip No Higher Than) Elevation FT	Required Tip Resistance per Pier TSF	Scour Critical Elevation FT	Minimum Drilled Pier Penetration Into Rock per Pier Lin FT	Drilled Pier Length* per Pier Lin FT	Drilled Pier Length Not In Soil* per Pier Lin FT	Drilled Pier Length In Soil* per Pier Lin FT	Permanent Steel Casing Required? YES or MAYBE	Permanent Steel Casing Tip Elevation (Elev Not To Extend Casing Below) FT	Permanent Steel Casing Length** per Pier Lin FT
Bent 1, Pier 1	715	2529.83	100.0	2541.0			9.0	28.0	MAYBE	2548.0	18.8
Bent 1, Pier 2	715	2536.33	100.0	2546.0			8.5	22.0	MAYBE	2548.5	18.3
Bent 1, Pier 3	715	2542.83	100.0	2551.0			8.1	15.9	MAYBE	2549.0	17.8
TOTAL QTY:							25.6	65.9	3		54.9

*Drilled Pier Length, Drilled Pier Length Not in Soil and Drilled Pier Length in Soil represent estimated drilled pier quantities and are measured and paid for as either "____ Dia. Drilled Piers" or "____ Dia. Drilled Piers Not in Soil" and "____ Dia. Drilled Piers in Soil" in accordance with Article 411-7 of the *NCDOT Standard Specifications*.

**Permanent Steel Casing Length equals the difference between the ground line or top of drilled pier elevation, whichever is higher, and the permanent casing tip elevation and is measured and paid for as "Permanent Steel Casting for ____ Dia. Drilled Pier" in accordance with Article 411-7 of the *NCDOT Standard Specifications*.

SUMMARY OF DRILLED PIER TESTING

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pier(s) #(-#) (e.g., "Bent 1, Piers 1-3")	Standard Penetration Test (SPT) Required? YES or MAYBE	Crosshole Sonic Logging (CSL) Required?* YES or MAYBE	Total CSL Tube Length (For All Tubes) per Pier Lin FT	Shaft Inspection Device (SID) Required? YES or MAYBE	Pile Integrity Test (PIT) Required? MAYBE
Bent 1, Pier 1		MAYBE	192.7	MAYBE	
Bent 1, Pier 2		MAYBE	156.7	MAYBE	
Bent 1, Pier 3		MAYBE	127.7	MAYBE	
TOTAL QTY:		3	477.1	3	

*CSL Tubes are required if CSL Testing is or may be required. The number of CSL Tubes per drilled pier is equal to one tube per foot of design pier diameter with at least 4 tubes per pier. The length of each CSL Tube is equal to the drilled pier length plus 1.5 ft.

NOTES:

1. The Pile and Drilled Pier Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Ryan P. Doyle, PE#045161) on 08-29-2023.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
3. The Engineer will determine the need for PDA Testing, Permanent Steel Casing, SPTs, CSL Testing, and SID Inspections when these items may be required.

PROJECT NO. B-5898/B-3186

Haywood COUNTY

STATION: 24+42.26 -L RT-

SHEET 3 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER VASUDEVAN

Document ID: BF208058AD65425...

10/18/2023

SIGNATURE DATE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE AND DRILLED PIER FOUNDATION TABLES

REVISIONS

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

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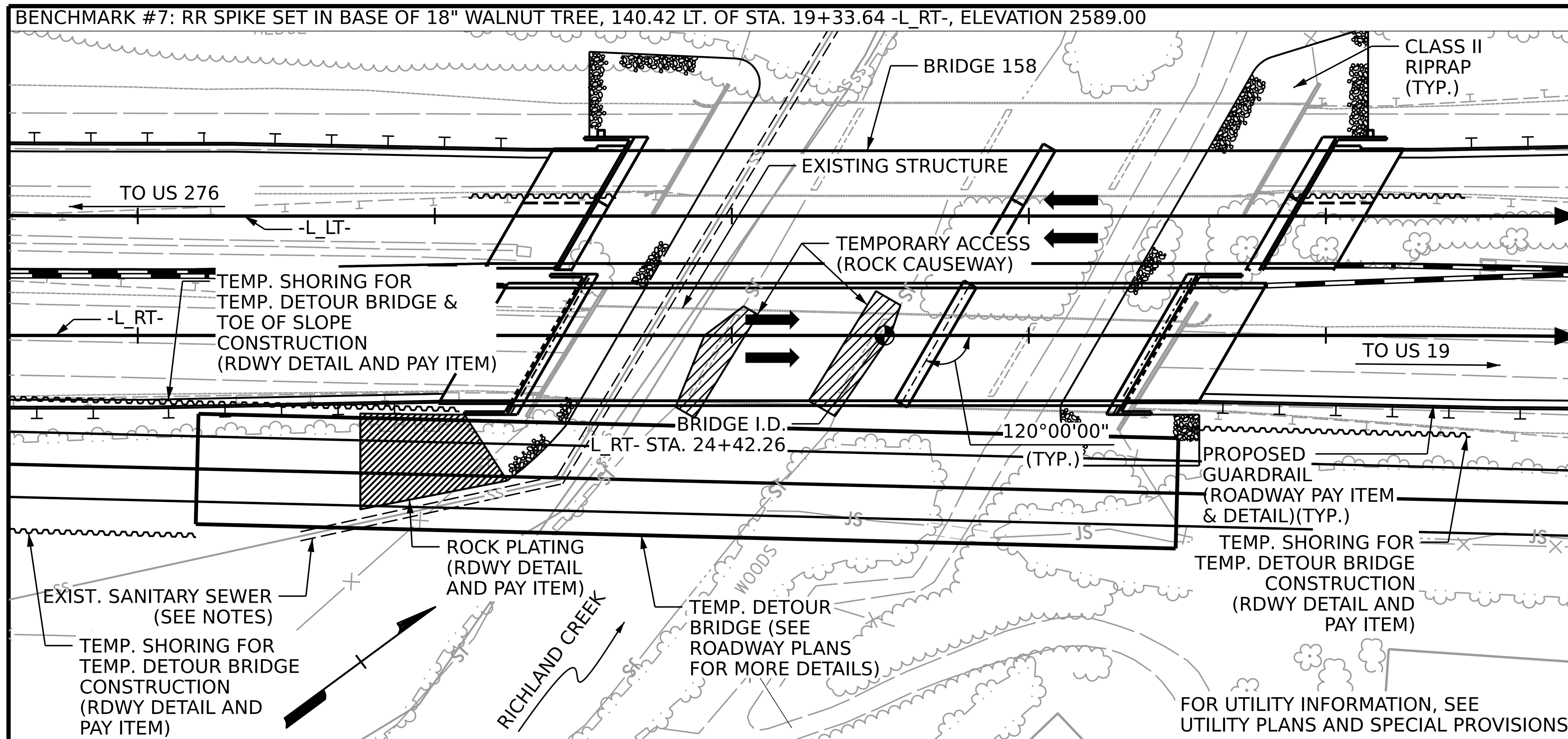
SHEET NO. S2-03

TOTAL SHEETS 31

BENCHMARK #7: RR SPIKE SET IN BASE OF 18" WALNUT TREE, 140.42 LT. OF STA. 19+33.64 -L_RT-, ELEVATION 2589.00



LOCATION SKETCH

REMOVE AFTER EXISTING BENT DEMOLITION

GENERAL NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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.

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

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 LEFT SIDE AND RIGHT SIDE ARE 2541 FT AND 2551 FT. RESPECTIVELY. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE ELEVATIONS AND CLEARANCES SHOWN ON THE PLANS AT THE POINTS OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATIONS ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD FOR THE EXISTING STRUCTURE, 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 AT STATION 24+42.26 -L_RT-".

AT CONTRACTOR'S OPTION, THE EXISTING STRUCTURE CONCRETE MAY BE RUBBLIZED DURING REMOVAL AND USED AS STABILIZATION/ABCM.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET 1 OF 4 SHALL BE EXCAVATED FOR A DISTANCE OF 25 FT. LEFT OF CENTERLINE -L_RT- AND 59 FT. RIGHT OF CENTERLINE -L_RT- AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

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

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED 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.

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 ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

THE LOCATION OF THE ABOVE GROUND SANITARY SEWER SHOWN IS BASED ON AN APPROXIMATE SURVEY. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, CONTRACTOR SHALL VERIFY THE LOCATION OF THE SANITARY SEWER AND ENSURE THAT THE UTILITY IS PROTECTED DURING THE REMOVAL OF THE EXISITNG STRUCTURE AND DURING THE CONSTRUCTION OF THE PROPOSED STRUCTURES.

THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN, AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 24+42.26 -L_RT- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.

THE BRIDGE RAILS ON THE TEMPORARY STRUCTURE SHALL BE DESIGNED FOR THE AASHTO LRFD TEST LEVEL 3 (TL-3) CRASH TEST CRITERIA. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.

THE CONTRACTOR'S ATTENTION SHALL BE DRAWN TO THE FACT THAT ONLY 50% OF THE CHANNEL WILL BE ALLOWED TO BE BLOCKED AT ANY TIME.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

NOTES CONT'D:

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS AT STATION 24+42.26 -L_RT-

THE EXISTING STRUCTURE CONSISTING OF 4 SPANS AT 50FT OF CONCRETE DECK ON ROLLED STEEL W-SHAPE GIRDERS, WITH 28.0 FT CLEAR ROADWAY WIDTH, SUPPORTED BY PILE BENT CONCRETE END BENTS AND CONCRETE POST AND BEAM BENTS ON ISOLATED SPREAD FOOTINGS, AND LOCATED AT THE PROPOSED STRUCTURE 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.

SAMPLE BAR REPLACMENT

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

NOTE:

SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" (SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND fy = 60ksi. BAR LENGTHS IN THIS TABLE ARE A GUIDE. THE ENGINEER SHALL APPROVE FINAL LENGTHS BASED ON TYPE AND LOCATION OF SAMPLE BAR.

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINT., AND REMOVAL OF TEMPORARY STRUCTURE AT STA. 24+42.26 -L_RT-	CONSTRUCTION, MAINT., AND REMOVAL OF TEMPORARY ACCESS AT STA. 24+42.26 -L_RT-	REMOVAL OF EXISTING STRUCTURE AT STA. 24+42.26 -L_RT-	ASEBESTOS ASSESSMENT	4'-6" ∅ DRILLED PIERS IN SOIL	4'-6" ∅ DRILLED PIERS NOT IN SOIL	PERMANENT STEEL CASING FOR 4'-6" ∅ DRILLED PIER	PDA TESTING	SID TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 24+42.26
	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	LUMP SUM
SUPERSTRUCTURE											
END BENT 1											
BENT 1					65.9	25.6	54.9		3	3	
END BENT 2											
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	65.9	25.6	54.9	1	3	3	LUMP SUM

TOTAL BILL OF MATERIAL

	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	54" F.I.B. PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 14X73 STEEL PILES	HP 14X73 STEEL PILES		STEEL PILE POINTS	PILE REDRIVES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS
	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	EACH	NO.	LIN. FT.	EACH	EACH	LIN. FT.	TON	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE	8,480	8,911					12	1,223.8						461.1			
END BENT 1			47.7		7,529				12	12	360	12			174	193	
BENT 1			50.9		16,847	3,167											
END BENT 2			47.7		7,618				10	10	390	10			287	318	
TOTAL	8,480	8,911	146.3	LUMP SUM	31,994	3,167	12	1,223.8	22	22	750	22	11	461.1	461	511	LUMP SUM

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+42.26 -L_RT-

SHEET 4 OF 4

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AECOM License No. F-0342

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 054212 ANIRUDH K. VASUDEVAN

12/4/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON US74 EB/US23 NB OVER RICHLAND CREEK BETWEEN US276 AND US19

REVISIONS								SHEET NO.
NO.	BY:	DATE:		NO.	BY:	DATE:		S2-04
1				3				TOTAL SHEETS
2				4				31

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DRAWN BY : A.R. VAN VUREN DATE : 03/2023
CHECKED BY : A.K. VASUDEVAN DATE : 04/2023
DESIGN ENGINEER OF RECORD: A.K. VASUDEVAN DATE : 06/2023

12/4/2023
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vasudevana

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	1.21	--	1.75	0.640	1.60	A	EL	64.1	0.820	1.69	A	I	25.2	0.80	0.640	1.21	A	EL	64.1	
		HL-93 (OPERATING)	N/A		2.08	--	1.35	0.640	2.08	A	EL	64.1	0.820	2.25	A	I	25.2	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	2	1.81	65.16	1.75	0.640	2.39	A	EL	64.1	0.810	2.19	B	I	58.3	0.80	0.640	1.81	A	EL	64.1	
		HS-20 (OPERATING)	36.000		2.88	103.68	1.35	0.640	3.10	A	EL	64.1	0.810	2.88	B	I	58.3	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		4.43	59.81	1.40	0.640	7.44	A	EL	64.1	0.810	6.78	B	I	58.3	0.80	0.640	4.43	A	EL	64.1	
		SNGARBS2	20.000		3.14	62.80	1.40	0.640	5.28	A	EL	64.1	0.810	4.81	B	I	58.3	0.80	0.640	3.14	A	EL	64.1	
		SNAGRIS2	22.000		2.91	64.02	1.40	0.640	4.89	A	EL	64.1	0.810	4.47	B	I	58.3	0.80	0.640	2.91	A	EL	64.1	
		SNCOTTS3	27.250		2.19	59.68	1.40	0.640	3.68	A	EL	64.1	0.810	3.30	B	I	58.3	0.80	0.640	2.19	A	EL	64.1	
		SNAGGRS4	34.925		1.77	61.82	1.40	0.640	2.98	A	EL	64.1	0.810	2.76	B	I	58.3	0.80	0.640	1.77	A	EL	64.1	
		SNS5A	35.550		1.74	61.86	1.40	0.640	2.92	A	EL	64.1	0.810	2.80	B	I	58.3	0.80	0.640	1.74	A	EL	64.1	
		SNS6A	39.950		1.57	62.72	1.40	0.640	2.64	A	EL	64.1	0.810	2.56	B	I	58.3	0.80	0.640	1.57	A	EL	64.1	
		SNS7B	42.000		1.50	63.00	1.40	0.640	2.51	A	EL	64.1	0.810	2.52	B	I	58.3	0.80	0.640	1.50	A	EL	64.1	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.91	63.03	1.40	0.640	3.21	A	EL	64.1	0.810	3.06	B	I	58.3	0.80	0.640	1.91	A	EL	64.1	
		TNT4A	33.075		1.91	63.17	1.40	0.640	3.22	A	EL	64.1	0.810	2.97	B	I	58.3	0.80	0.640	1.91	A	EL	64.1	
		TNT6A	41.600		1.54	64.06	1.40	0.640	2.59	A	EL	64.1	0.810	2.72	B	I	58.3	0.80	0.640	1.54	A	EL	64.1	
		TNT7A	42.000		1.54	64.68	1.40	0.640	2.59	A	EL	64.1	0.810	2.63	B	I	58.3	0.80	0.640	1.54	A	EL	64.1	
		TNT7B	42.000		1.56	65.52	1.40	0.640	2.63	A	EL	64.1	0.810	2.45	B	I	58.3	0.80	0.640	1.56	A	EL	64.1	
		TNAGRIT4	43.000		1.51	64.93	1.40	0.640	2.53	A	EL	64.1	0.810	2.37	B	I	58.3	0.80	0.640	1.51	A	EL	64.1	
		TNAGT5A	45.000		1.43	64.35	1.40	0.640	2.40	A	EL	64.1	0.810	2.36	B	I	58.3	0.80	0.640	1.43	A	EL	64.1	
		TNAGT5B	45.000	3	1.42	63.90	1.40	0.640	2.39	A	EL	64.1	0.810	2.24	B	I	58.3	0.80	0.640	1.42	A	EL	64.1	
EMERGENCY VEHICLE (EV)		EV2	28.750		2.20	63.25	1.30	0.640	3.93	A	EL	64.1	0.810	3.53	B	I	58.3	0.80	0.640	2.20	A	EL	64.1	
		EV3	43.000	4	1.46	62.78	1.30	0.640	2.60	A	EL	64.1	0.810	2.36	B	I	58.3	0.80	0.640	1.46	A	EL	64.1	

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

(#) CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

2 DESIGN LOAD RATING (HS-20)

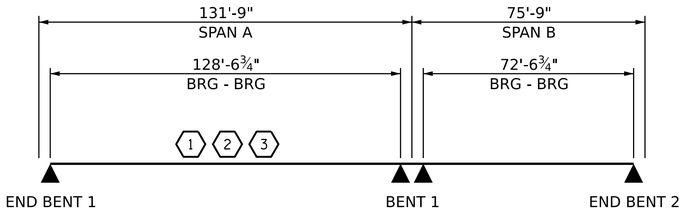
3 LEGAL LOAD RATING * *

4 EMERGENCY VEHICLE LOAD RATING * *

* * SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+42.26 -L_RT-

AECOM
AECOM TECHNICAL SERVICES OF NC, INC.
5438 WADE PARK BOULEVARD, SUITE 200
RALEIGH, NC 27607
(919) 854-6200 www.aecom.com
AECOM License No, F-0342

NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANNALEIGH K. VASUDEVAN

Docusigned by: Annalleigh K. Vasudevan BF206058AD65425...

10/18/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-05
1			3			TOTAL SHEETS
2			4			31

STD. NO. LRFR1

ASSEMBLED BY : A.R. VAN VUREN DATE : 04/2023
CHECKED BY : A.K. VASUDEVAN DATE : 04/2023

DRAWN BY : MAA 1/08
CHECKED BY : GM/DI 2/08

REV. 11/12/08RR MAA/GM
REV. 10/1/11 MAA/GM
REV. 12/17 MAA/THC

7/26/2023
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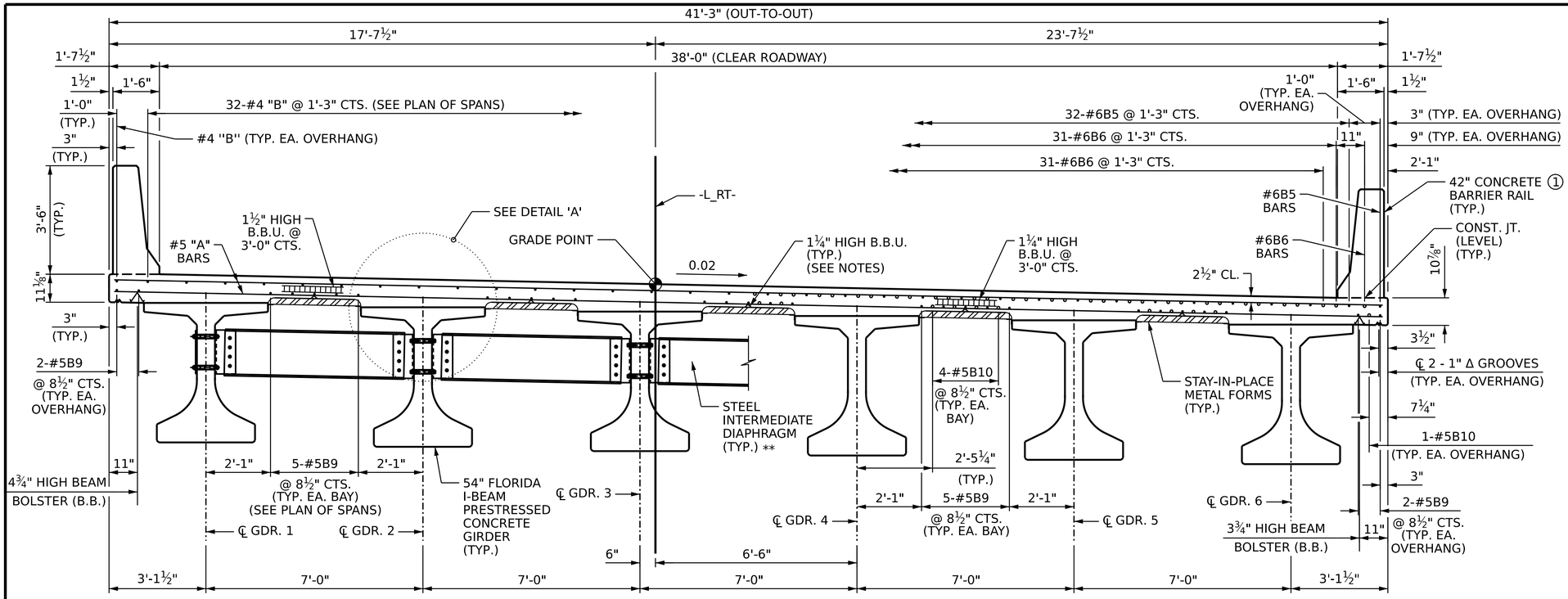
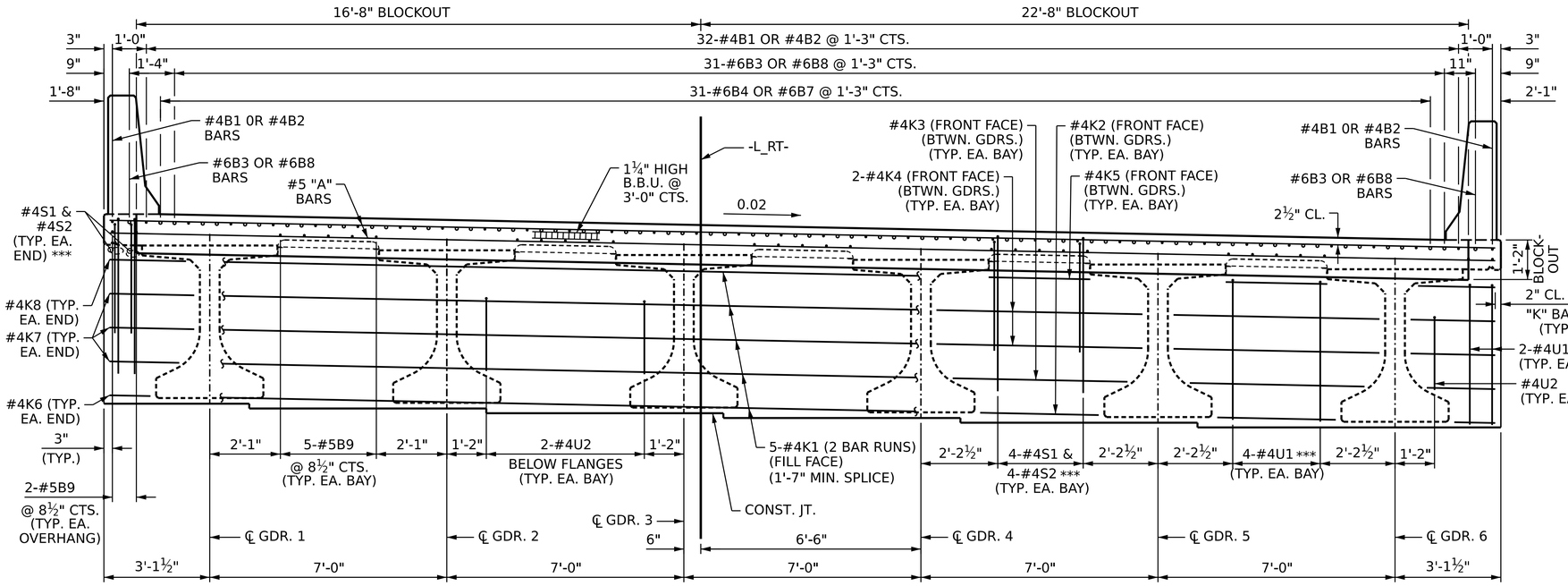


HALF SECTION AT MIDSPAN

HALF SECTION AT BENT LINK SLAB

TYPICAL SECTION



TYPICAL SECTION AT INTEGRAL END BENT

END BENT 1 SHOWN, END BENT 2 SIMILAR

NOTES

PROVIDE 1¼" 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.) AT 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2½" 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.

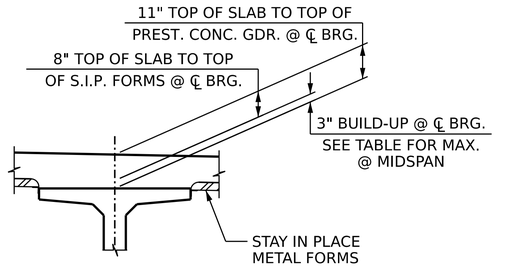
BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL UNLESS OTHERWISE NOTED.

** FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 54" FLORIDA I-BEAMS" SHEET.

*** #4S1, #4S2, AND #4U1 BARS TO MATCH WITH #4 "V" BARS IN INTEGRAL END BENT CAP

① FOR BARRIER RAIL REINFORCING STEEL & DETAILS, SEE "CONCRETE BARRIER RAIL" SHEETS.



SPAN	MAX. MIDSPAN BUILD-UP (INCHES)*	CONTROLLING GIRDER
1	1⅞"	2
2	2⅛"	2

* BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS

DETAIL 'A'

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+42.26 -L_RT-

SHEET 1 OF 2

DRAWN BY : A.R. VAN VUREN DATE : 03/2023

CHECKED BY : A.K. VASUDEVAN DATE : 05/2023

DESIGN ENGINEER OF RECORD: A.K. VASUDEVAN DATE : 06/2023

7/28/2023
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AECOM License No. F-0342

NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANANDHA KUMAR VASUDEVAN

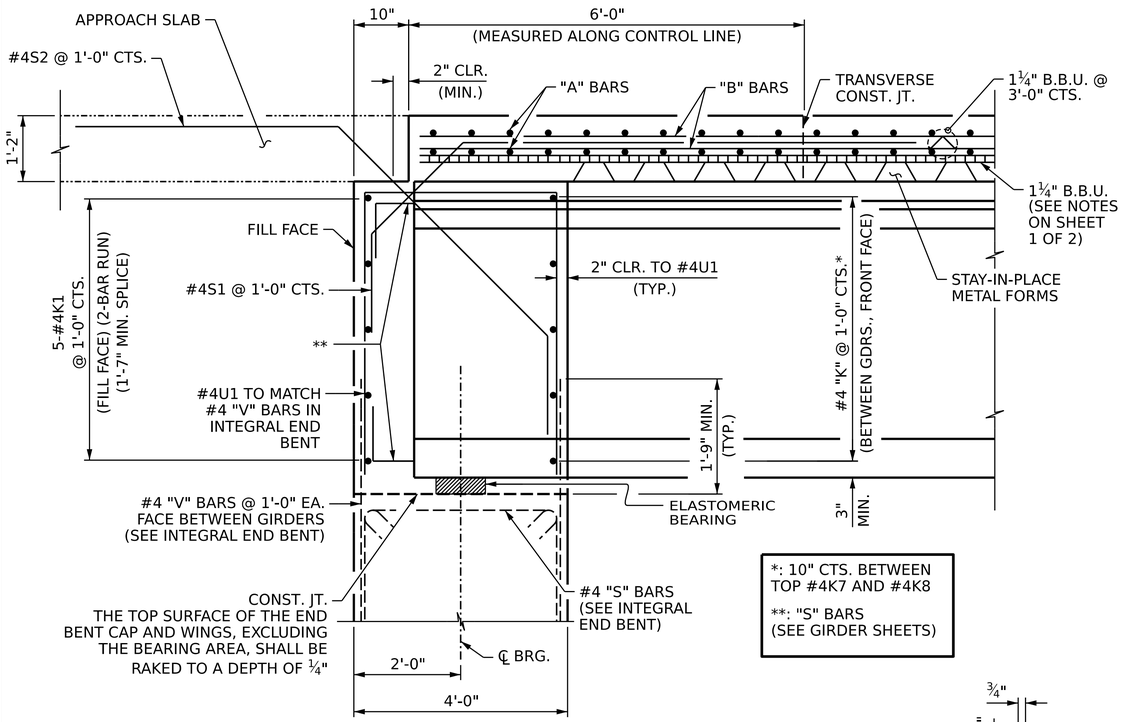
Document ID: BF206058AD65425...

10/18/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

TYPICAL SECTION DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-06
1			3			TOTAL SHEETS
2			4			31

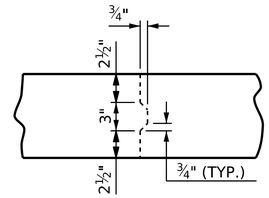


*: 10" CTS. BETWEEN TOP #4K7 AND #4K8

**: "S" BARS (SEE GIRDER SHEETS)

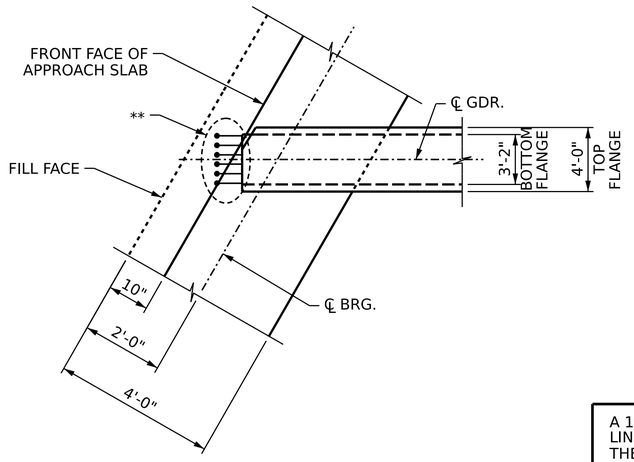
SECTION @ INTEGRAL END BENT

SECTION SHOWN NORMAL TO END BENT EXCEPT AS NOTED

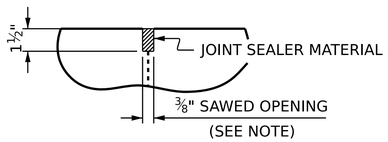


TRANSVERSE CONSTRUCTION JOINT IN DECK SLAB

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

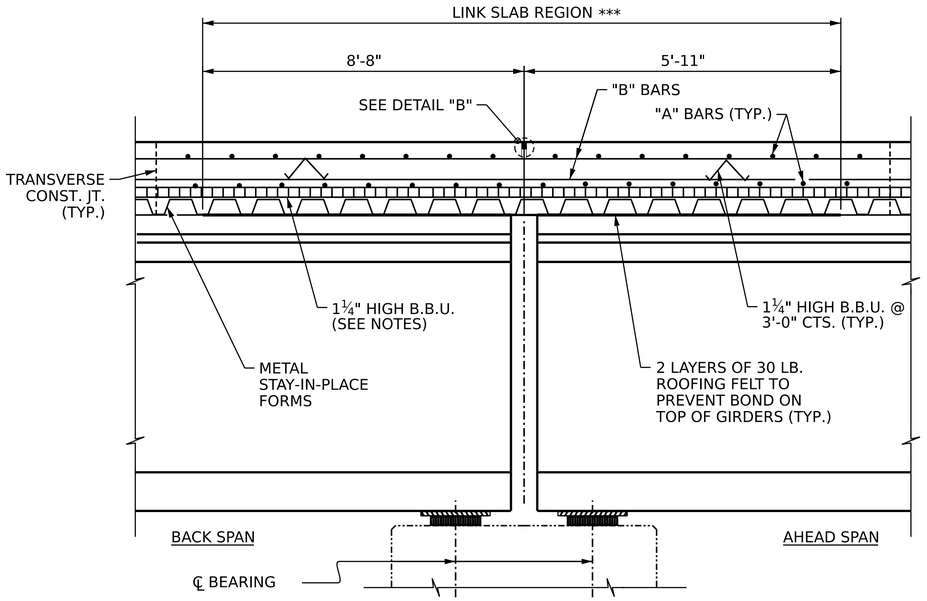


PLAN @ INTEGRAL END BENT



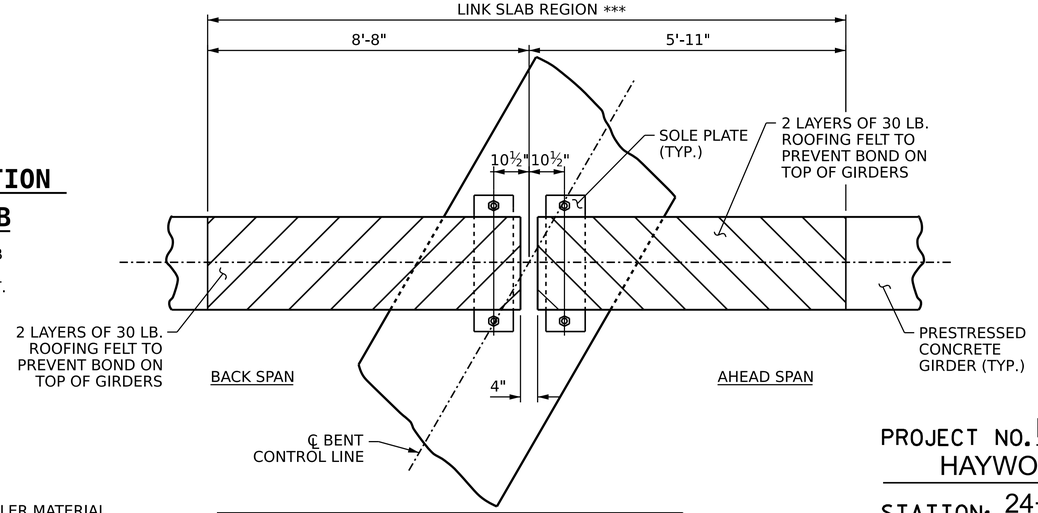
A 1½" DEEP, ⅜" WIDE CONTRACTION JOINT AT BENT CONTROL LINE SHALL BE SAWN WITHIN 24 HOURS OF POURING THE DECK. THE JOINT SHALL BE FILLED WITH JOINT SEALER MATERIAL. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

DETAIL "B"



SECTION @ LINK SLAB

SECTION SHOWN ALONG GIRDER



***: THE TOP OF GIRDER IN THE REGION OF THE LINK SLAB SHALL BE SMOOTH (NOT RAKED) AND FREE OF STIRRUPS, ANCHOR STUDS, DECK FORMWORK ATTACHMENTS, AND OVERHANG FALSEWORK/FORMWORK ATTACHMENTS.

METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO THE GIRDER FLANGES IN THE REGION OF THE LINK SLAB.

PLAN @ BENT

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PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+42.26 -L_RT-

SHEET 2 OF 2

AECOM
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AECOM License No. F-0342

NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANURADHA K VASUDEVAN

Document ID: BF206058AD65425...

10/18/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

TYPICAL SECTION DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-07
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : A.R. VAN VUREN DATE : 03/2023
CHECKED BY : A.K. VASUDEVAN DATE : 05/2023
DESIGN ENGINEER OF RECORD: A.K. VASUDEVAN DATE : 06/2023

7/26/2023
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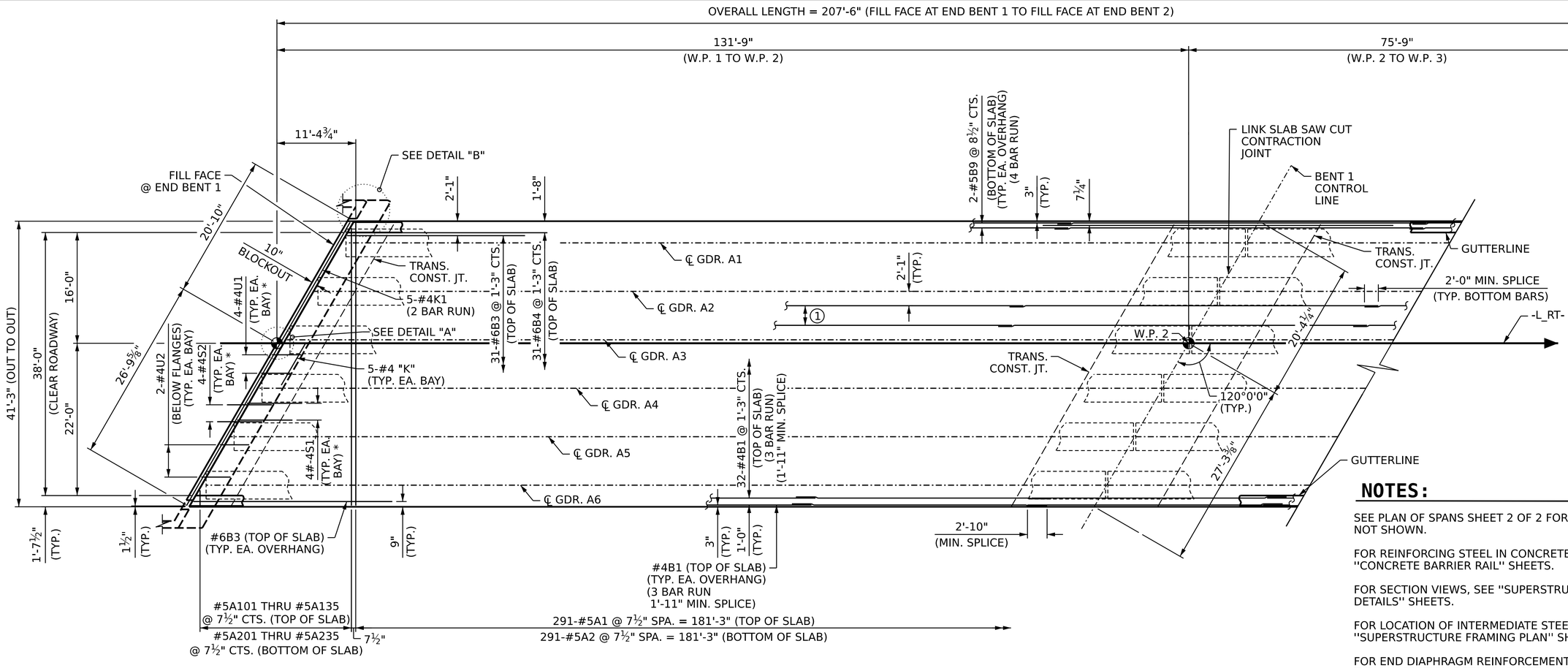


SPAN A

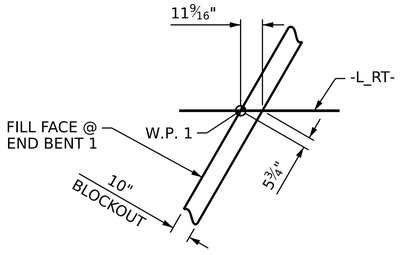
SPAN B

PARTIAL PLAN OF SPAN

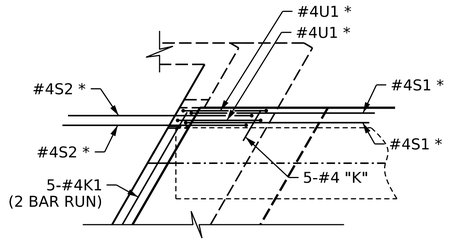
(LINK SLAB REINFORCEMENT NOT SHOWN FOR CLARITY)

① 5-#5B9 @ 8½" CTS.
(BOTTOM OF SLAB)
(TYP. EA. BAY)
(4 BAR RUN)

* #4S1, #4S2, & #4U1 TO MATCH WITH #4 "V" BARS IN INTEGRAL END BENT CAP



DETAIL "A"



DETAIL "B"

(ALL BARS ARE TYPICAL AT BOTH ENDS OF END BENT)

NOTES:

SEE PLAN OF SPANS SHEET 2 OF 2 FOR REINFORCEMENT NOT SHOWN.

FOR REINFORCING STEEL IN CONCRETE BARRIER RAIL, SEE ''CONCRETE BARRIER RAIL'' SHEETS.

FOR SECTION VIEWS, SEE ''SUPERSTRUCTURE TYPICAL SECTION DETAILS'' SHEETS.

FOR LOCATION OF INTERMEDIATE STEEL DIAPHRAGMS, SEE ''SUPERSTRUCTURE FRAMING PLAN'' SHEET.

FOR END DIAPHRAGM REINFORCEMENT, SEE "SUPERSTRUCTURE TYPICAL SECTION DETAILS, SHEET 1 OF 2''.

FOR TRANSVERSE CONSTRUCTION JOINT DETAIL, SEE ''SUPERSTRUCTURE TYPICAL SECTION DETAILS, SHEET 2 OF 2''.

FOR LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE POURING SEQUENCE ON ''SUPERSTRUCTURE BILL OF MATERIAL'' SHEET.

LINK SLAB SAW CUT CONTRACTION JOINTS EXTEND TO THE EDGE OF DECK ON BOTH SIDES.

FOR SPLICE LENGTHS NOT SHOWN, REFER TO MINIMUM SPLICE LENGTH TABLE ON "SUPERSTRUCTURE BILL OF MATERIAL".

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+42.26 -L_RT-

SHEET 1 OF 2

DRAWN BY : A.R. VAN VUREN DATE : 04/2023
CHECKED BY : A.K. VASUDEVAN DATE : 05/2023
DESIGN ENGINEER OF RECORD: A.K. VASUDEVAN DATE : 06/2023

8/22/2023
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RALEIGH, NC 27607
(919) 854-6200 www.aecom.com
AECOM License No. F-0342

NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANANTHA K VASUDEVAN
Docusigned by: Ananthavasudevan BF206058AD65425...
10/18/2023

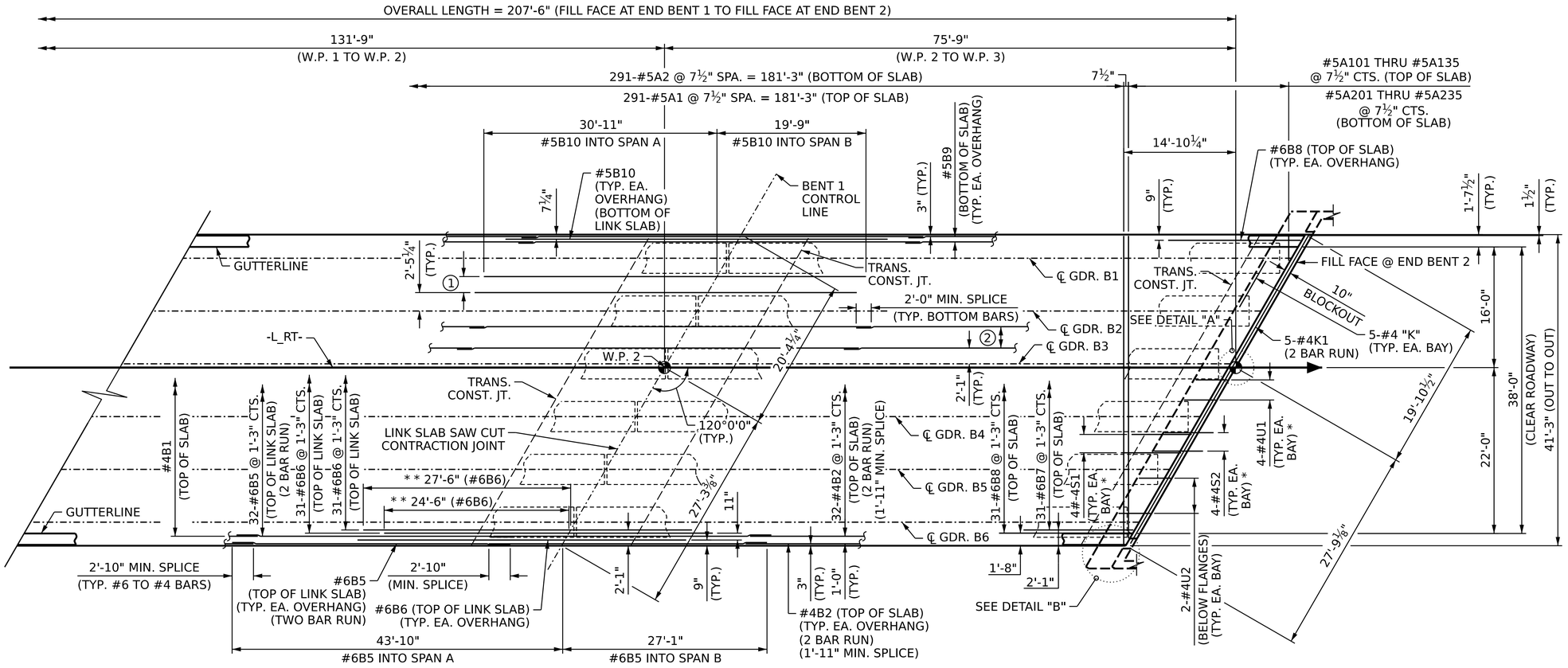
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

SPAN A

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-08
1			3			TOTAL SHEETS
2			4			31



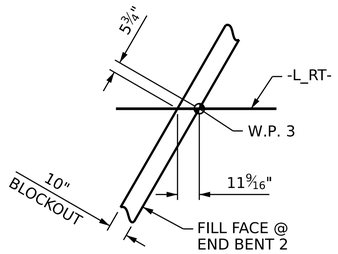
PARTIAL PLAN OF SPAN

① 4-#5B10 @ 8½" CTS.
(BOTTOM OF LINK SLAB)
(TYP. EA. BAY)

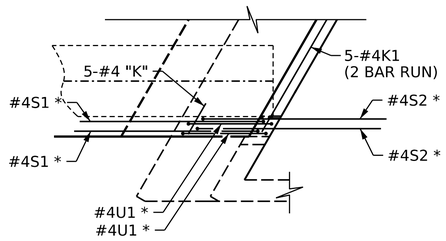
② #5B9
(BOTTOM OF SLAB)
(TYP. EA. BAY)

* #4S1, #4S2, & #4U1 TO MATCH WITH
#4 "V" BARS IN INTEGRAL END BENT CAP

* * STAGGER #6B6 BARS 3'-0" IN LINK SLAB REGION



DETAIL "A"



DETAIL "B"

(ALL BARS ARE TYPICAL AT BOTH ENDS OF END BENT)

NOTES:

SEE PLANS OF SPANS SHEET 1 OF 1 FOR NOTES AND REINFORCEMENT NOT SHOWN.

PROJECT NO. B-3186 / B-5898
HAYWOOD COUNTY
STATION: 24+42.26 -L_RT-

SHEET 2 OF 2

AECOM
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RALEIGH, NC 27607
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www.aecom.com
AECOM License No. F-0342

NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANURADHA K VASUDEVAN
Document ID: BF206058AD65425...
Anuradha K Vasudevan
10/18/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

PLAN OF SPANS

SPAN B

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-09
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : A.R. VAN VUREN DATE : 04/2023
CHECKED BY : A.K. VASUDEVAN DATE : 05/2023
DESIGN ENGINEER OF RECORD: A.K. VASUDEVAN DATE : 06/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

8/22/2023
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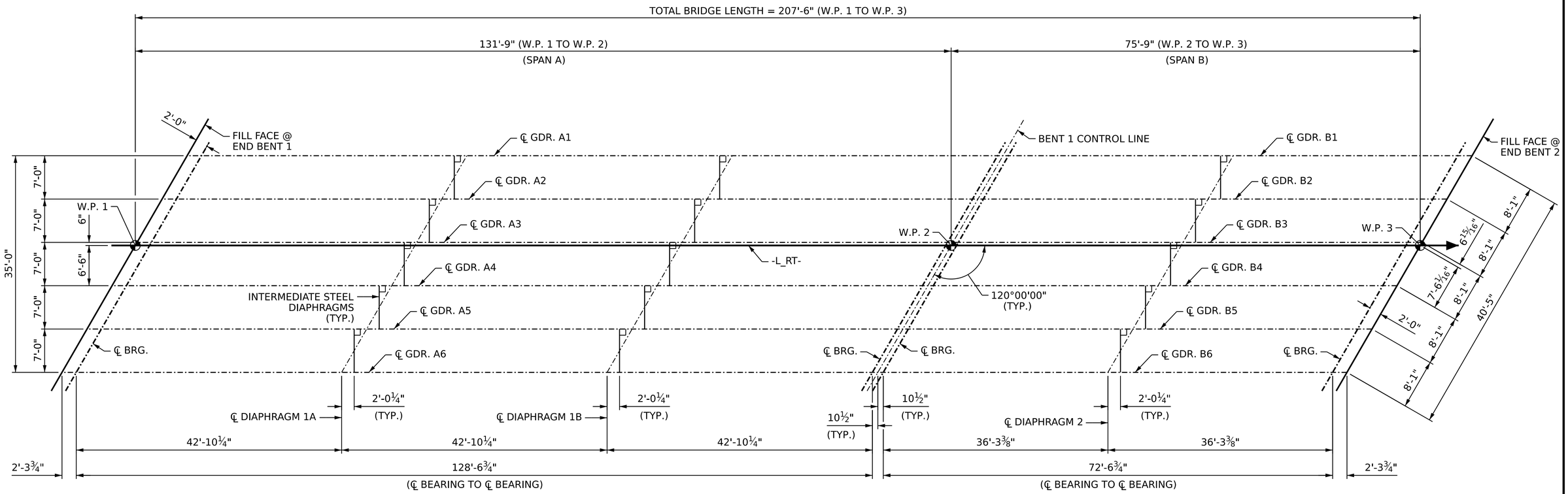
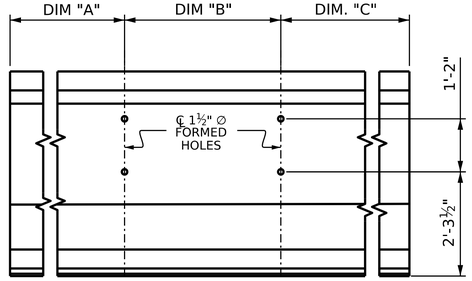


FRAMING PLAN

FORMED HOLE LOCATIONS (DIAPH 1A)			
GIRDER	DIM "A"	DIM "B"	DIM "C"
A1	41'-6½"	-	88'-5¼"
A2 - A5	41'-6½"	4'-0½"	84'-4¾"
A6	45'-7"	-	84'-4¾"

FORMED HOLE LOCATIONS (DIAPH 1B)			
GIRDER	DIM "A"	DIM "B"	DIM "C"
A1	84'-4¾"	-	45'-7"
A2 - A5	84'-4¾"	4'-0½"	41'-6½"
A6	88'-5¼"	-	41'-6½"

FORMED HOLE LOCATIONS (DIAPH 2)			
GIRDER	DIM "A"	DIM "B"	DIM "C"
B1	34'-11⅝"	-	39'-0⅛"
B2 - B5	34'-11⅝"	4'-0½"	34'-11⅝"
B6	39'-0⅛"	-	34'-11⅝"



PARTIAL ELEVATION

(SEE TABLE FOR FORMED HOLE LOCATIONS)

NOTES

FOR ELASTOMERIC BEARING AND SOLE PLATE DETAILS, SEE " SUPERSTRUCTURE ELASTOMERIC BEARING DETAILS" SHEET.

FOR DIAPHRAGM DETAILS, SEE "SUPERSTRUCTURE INTERMEDIATE STEEL DIAPHRAGMS" SHEET.

FOR END BENT DIAPHRAGM DETAILS, SEE "SUPERSTRUCTURE TYPICAL SECTION DETAILS" SHEETS.

PROJECT NO. B-3186 / B-5898
HAYWOOD COUNTY
STATION: 24+42.26 -L_RT-

AECOM
AECOM TECHNICAL SERVICES OF NC, INC.
5438 WADE PARK BOULEVARD, SUITE 200
RALEIGH, NC 27607
(919) 854-6200 www.aecom.com
AECOM License No. F-0342

NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANURADHA K VASUDEVAN

Document ID: BF206058AD65425...
Anuradha K Vasudevan
10/18/2023

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
FRAMING PLAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-10
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : A.R. VAN VUREN DATE : 04/2023
CHECKED BY : A.K. VASUDEVAN DATE : 04/2023
DESIGN ENGINEER OF RECORD: A.K. VASUDEVAN DATE : 06/2023

7/27/2023
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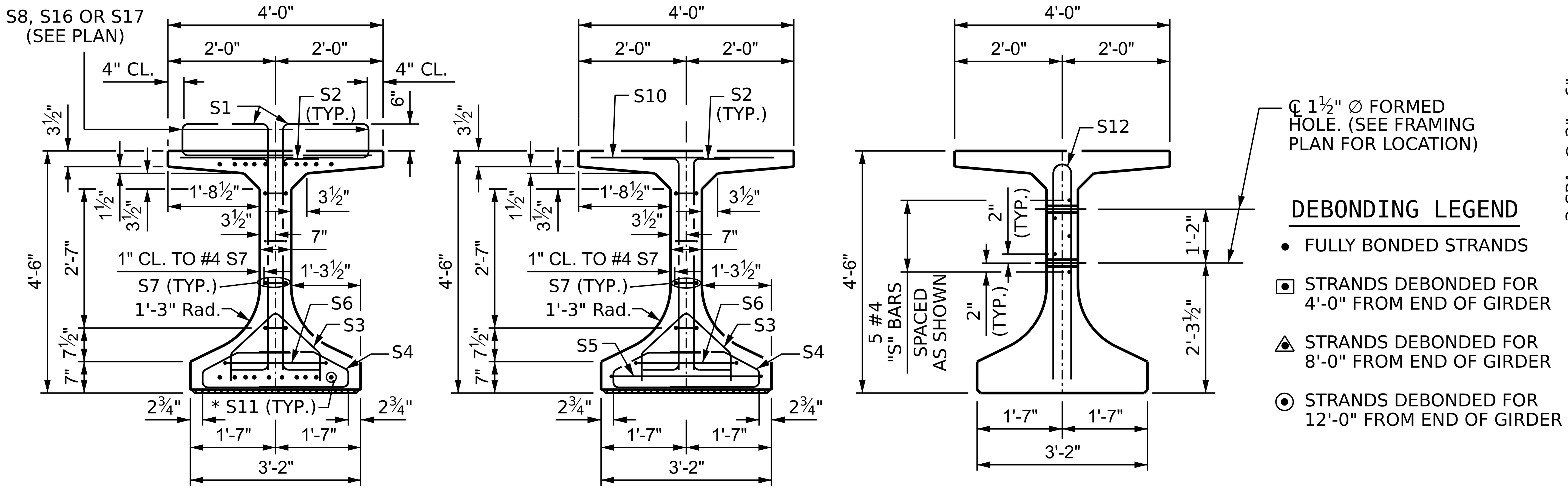


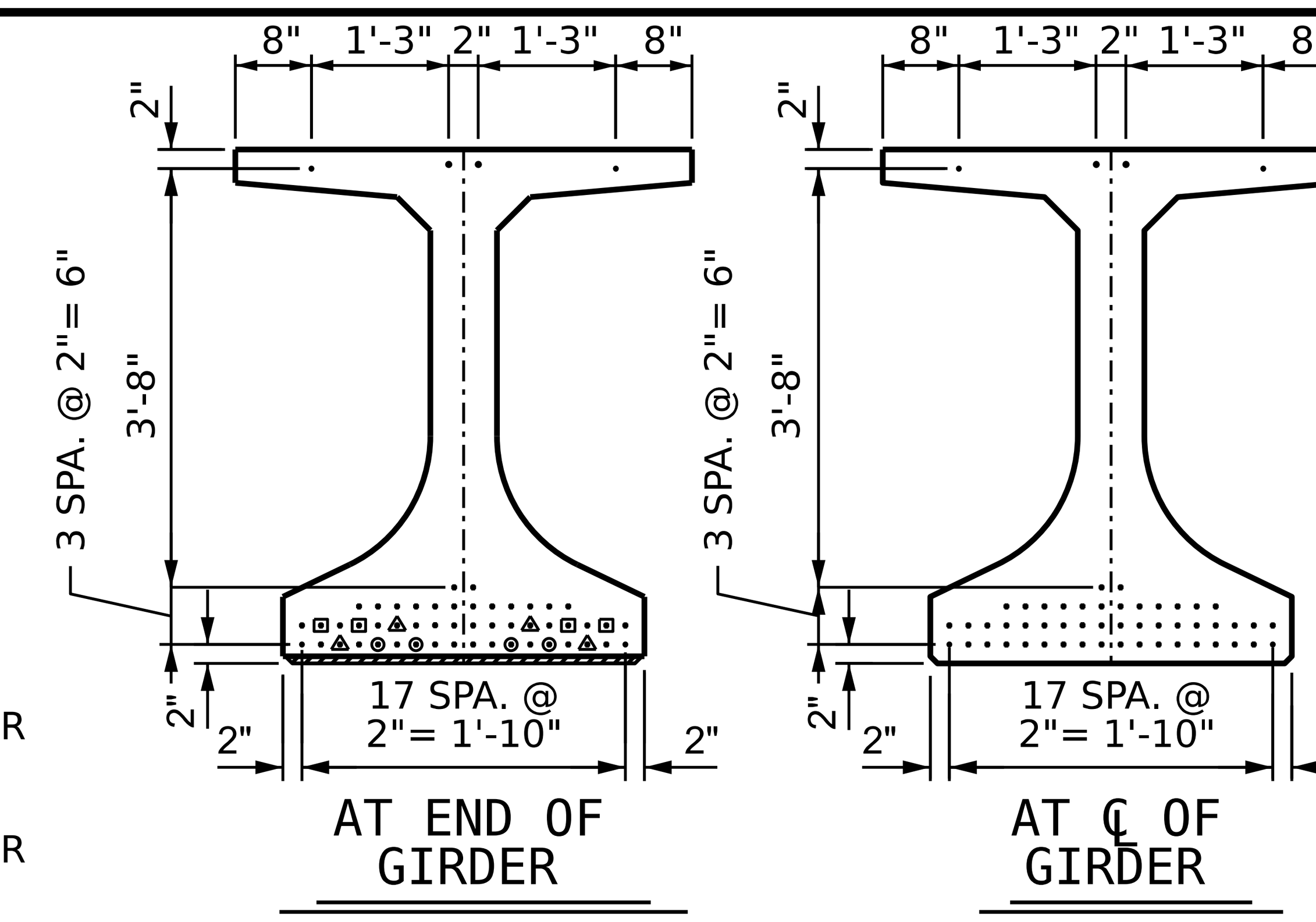
SECTION A-A

* FOR S11 BARS, SEE DETAIL "C" OF PRESTRESSED CONCRETE GIRDER INTEGRAL DETAILS SHEET

SECTION B-B

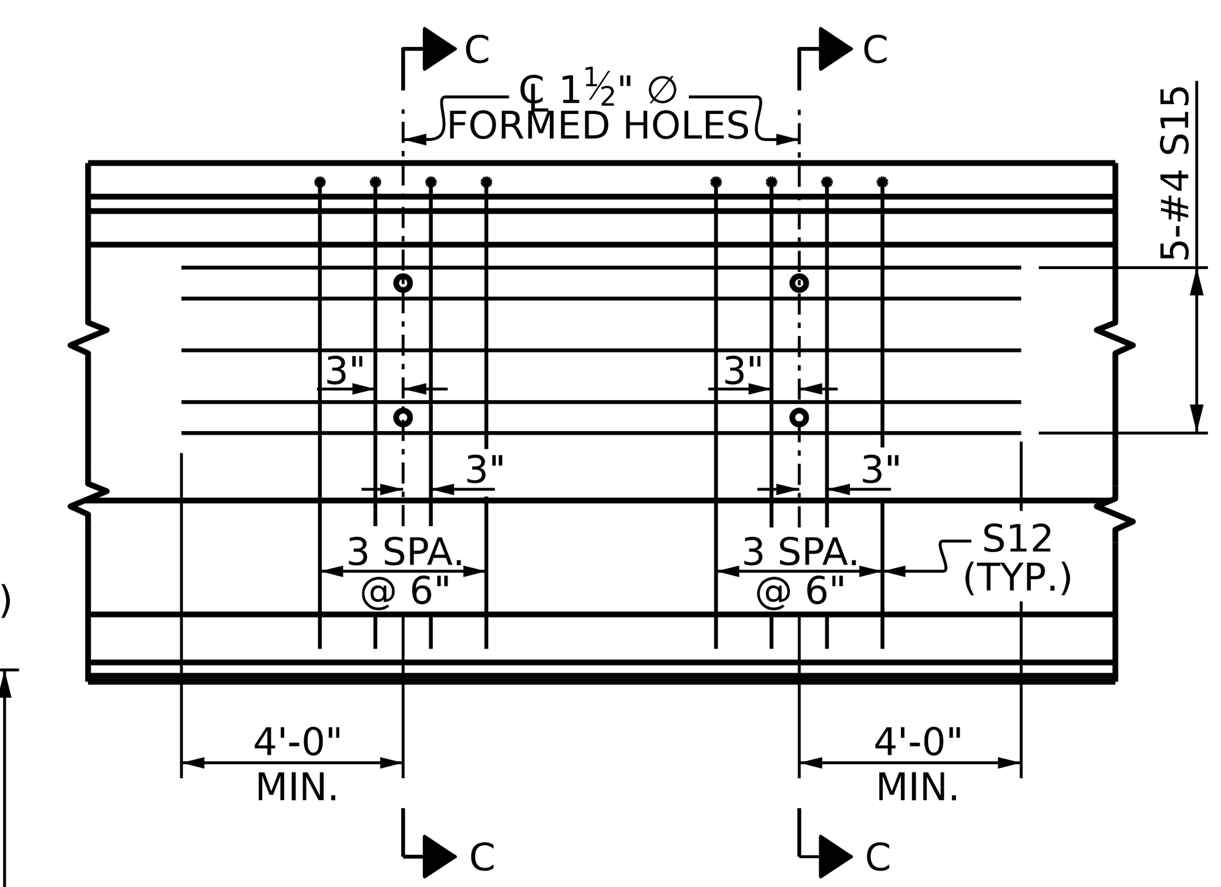
SECTION C-C

(S8, S9 AND S10 BARS NOT SHOWN)



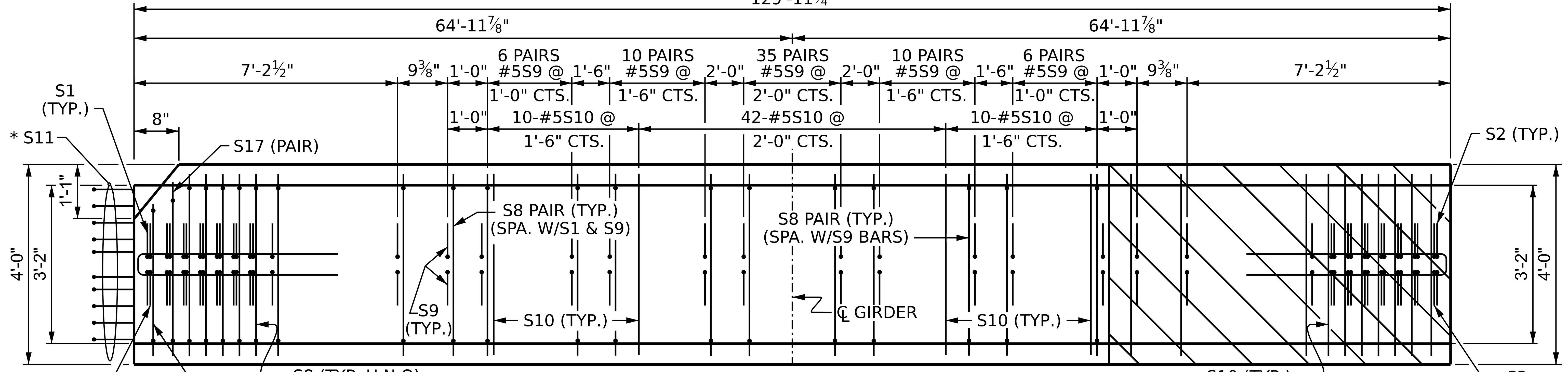
0.6" ⌀ LOW RELAXATION STRAND LAYOUT

(50 STRANDS REQUIRED AT BOTTOM OF BEAM)



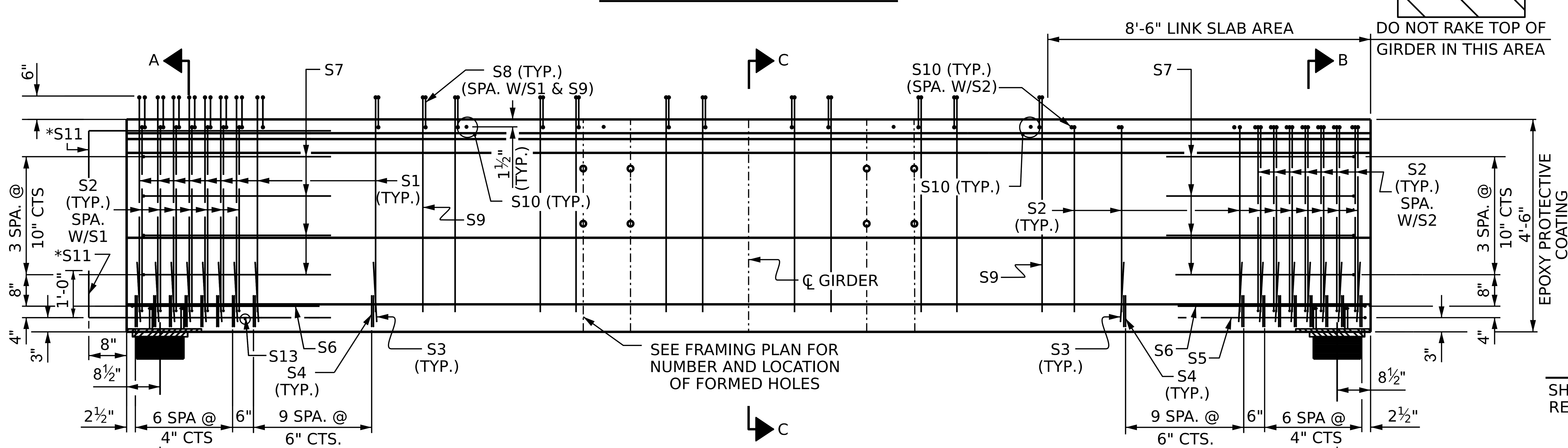
PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 2 THRU 5



PLAN OF GIRDER

DO NOT RAKE TOP OF GIRDER IN THIS AREA

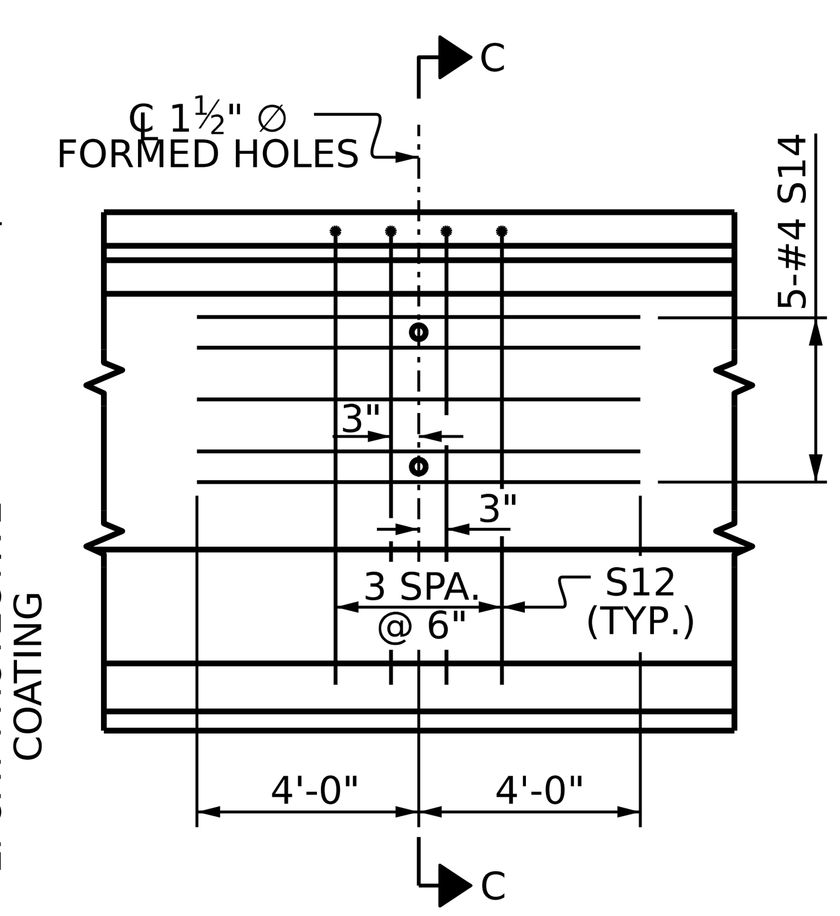


ELEVATION OF GIRDER

* NOTE:

S11 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

SEE DETAIL "C" ON SHEET 3 OF 4



PARTIAL ELEVATION

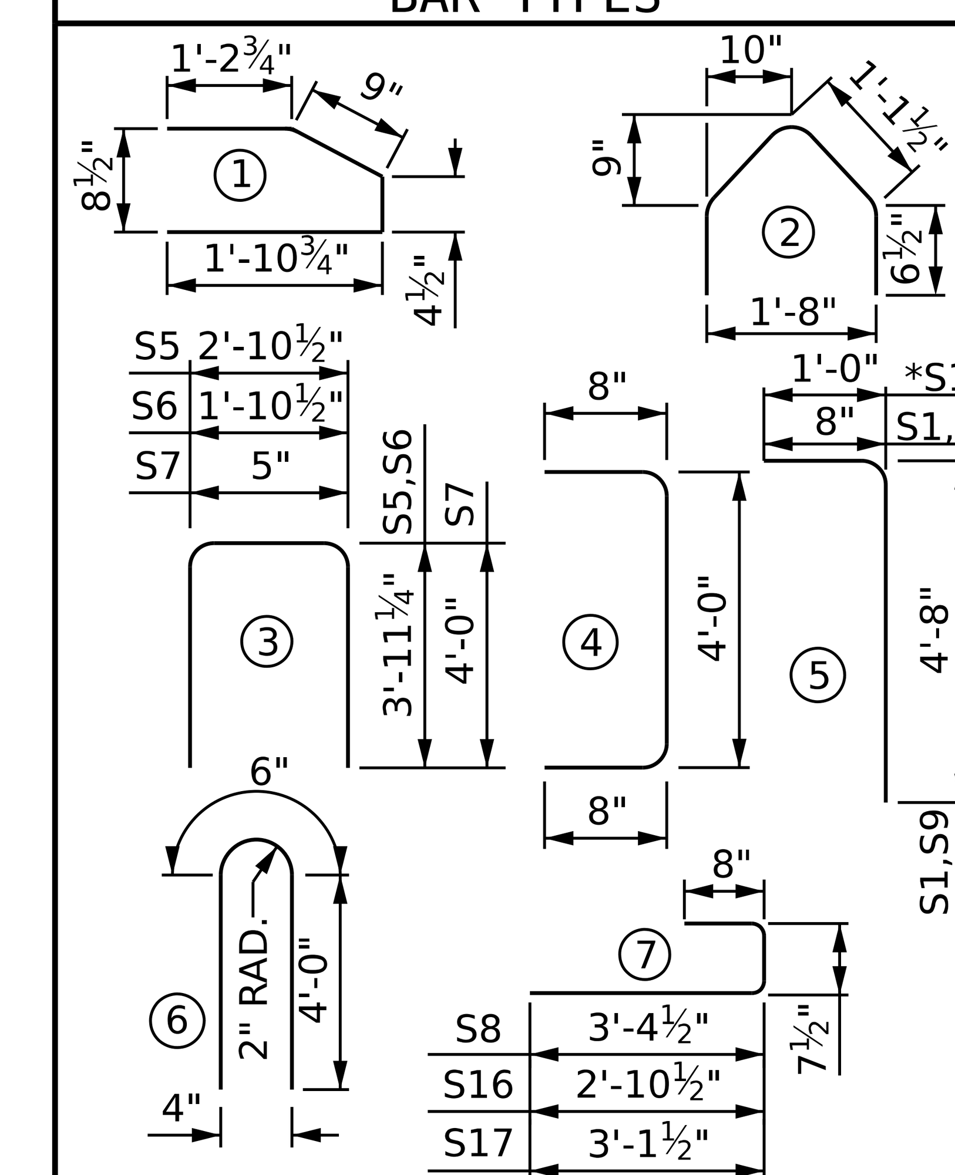
SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1 & 6

0.6"⌀ 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	34	#5	5	5'-4"	189
	S2	64	#5	4	5'-4"	356
	S3	34	#3	2	3'-4"	43
	S4	68	#3	1	4'-3"	109
	S5	1	#5	3	10'-9"	11
	S6	2	#5	3	9'-9"	20
	S7	8	#4	3	8'-5"	45
	S8	166	#5	7	4'-8"	809
	S9	136	#5	5	5'-4"	756
	S10	80	#5	STR	3'-8"	306
	* S11	20	#6	5	5'-8"	170
EXTERIOR GDR.	S12	8	#5	6	8'-6"	71
INTERIOR GDR.	S12	16	#5	6	8'-6"	142
	S13	1	#4	STR	2'-10"	2
EXTERIOR GDR.	S14	10	#4	STR	8'-0"	53
INTERIOR GDR.	S15	10	#4	STR	12'-1"	81
	S16	2	#5	7	4'-2"	9
	S17	2	#5	7	4'-5"	9

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	8,000 PSI CONCRETE	0.6" ⌀ L.R. STRANDS
	LB.	C.Y.	No.
EXTERIOR GDR.	2,958	31.2	54
INTERIOR GDR.	3,057	31.2	54

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
6	129'-11¾"	779'-10½"

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+42.26 -L_RT-

SHEET 1 OF 4

AECOM
AECOM TECHNICAL SERVICES OF NC, INC.
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AECOM License No. F-0342

NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANIRUDHA K. VASUDEVAN

10/18/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

54" FLORIDA I-BEAM (FIB)

PRESTRESSED CONCRETE GIRDER

SPAN A

REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		S2-11
1			3				TOTAL SHEETS
2			4				31

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : A.R. VAN VUREN	DATE : 03/2023	DRAWN BY :	BNB 09/21
CHECKED BY : J.C. MORRISON	DATE : 04/2023	CHECKED BY :	AAI 09/22

8/22/2023
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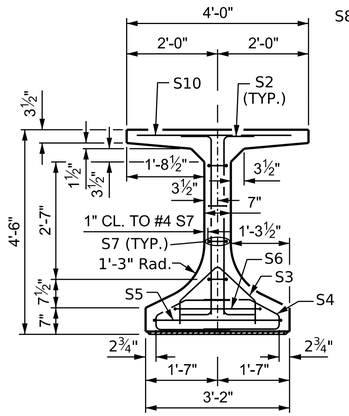
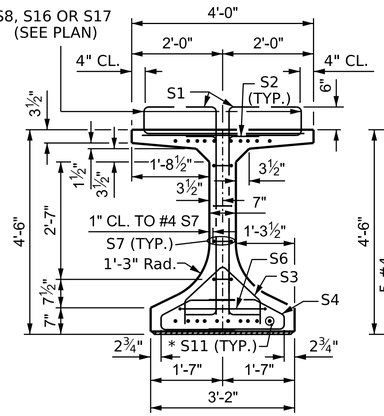
STD. NO. FIB54

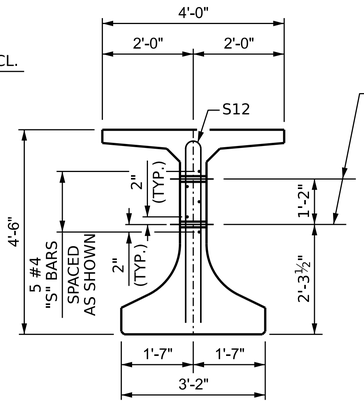


SECTION A-A



SECTION B-B

* FOR S11 BARS, SEE DETAIL "C" OF PRESTRESSED CONCRETE GIRDER INTEGRAL DETAILS SHEET



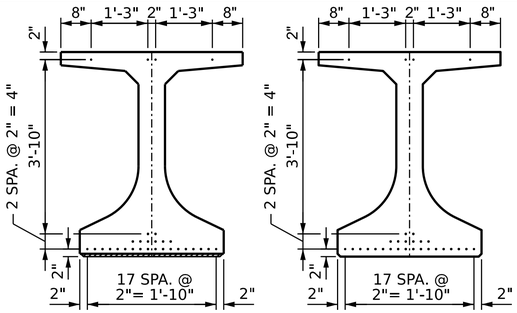
SECTION C-C

(S8, S9 AND S10 BARS NOT SHOWN)

℄ 1½" ∅ FORMED HOLE. (SEE FRAMING PLAN FOR LOCATION)

DEBONDING LEGEND

- FULLY BONDED STRANDS

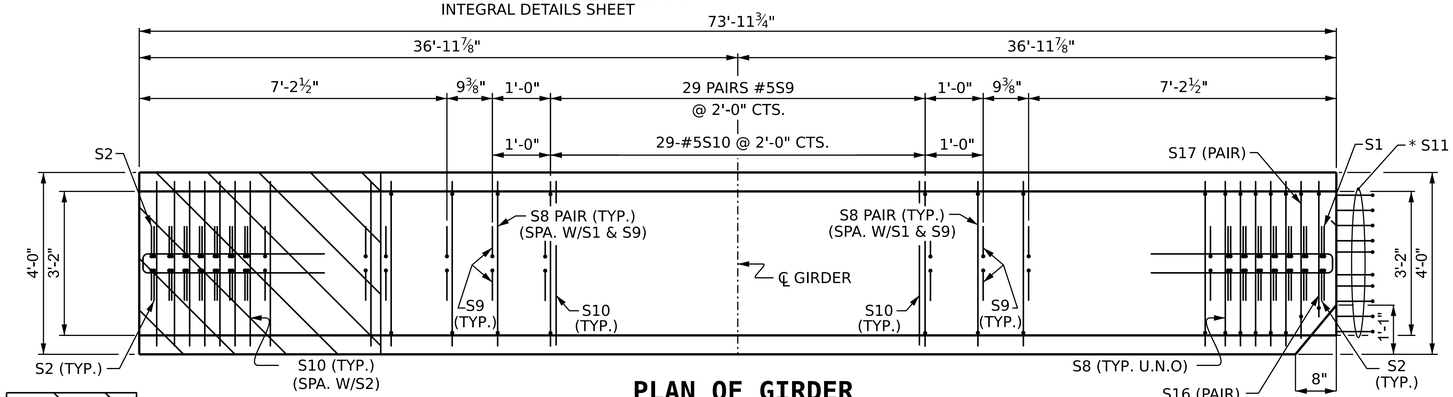


AT END OF GIRDER

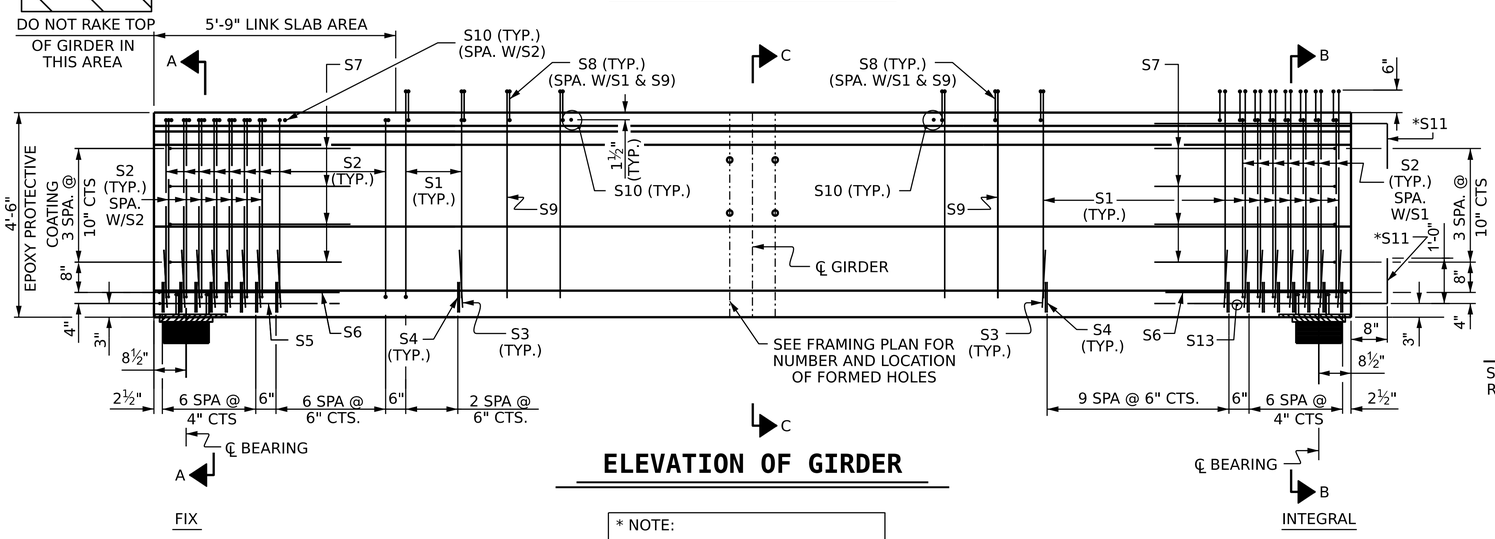
AT ℄ OF GIRDER

0.6" ∅ LOW RELAXATION STRAND LAYOUT

(26 STRANDS REQUIRED AT BOTTOM OF BEAM)



PLAN OF GIRDER

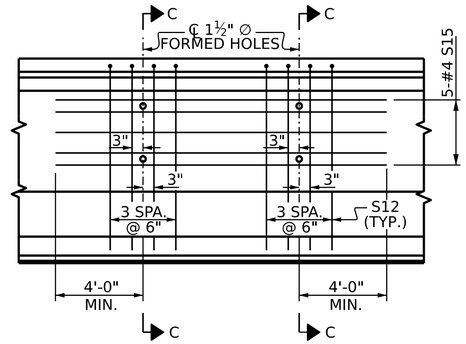


ELEVATION OF GIRDER

* NOTE:

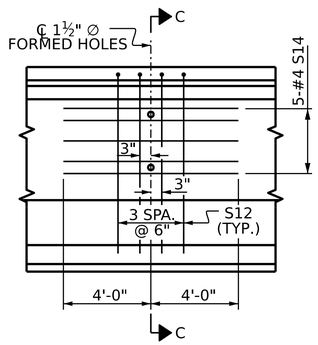
S11 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

SEE DETAIL "C" ON SHEET 3 OF 4



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 2 THRU 5



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1 & 6

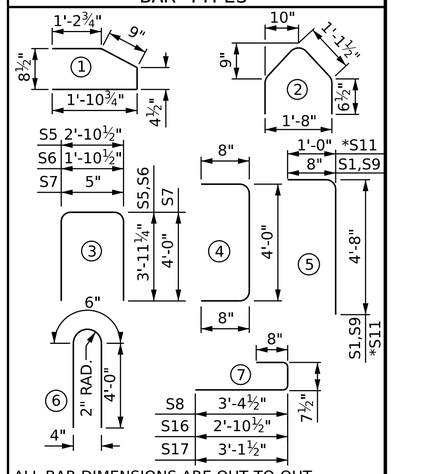
0.6"ø L. R. GRADE 270 STRANDS

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	40	#5	5	5'-4"	223
	S2	56	#5	4	5'-4"	311
	S3	34	#3	2	3'-4"	43
	S4	68	#3	1	4'-3"	109
	S5	1	#5	3	10'-9"	11
	S6	2	#5	3	9'-9"	20
	S7	8	#4	3	8'-5"	45
	S8	98	#5	7	4'-8"	477
	S9	62	#5	5	5'-4"	345
	S10	43	#5	STR	3'-8"	164
	* S11	20	#6	5	5'-8"	170
EXTERIOR GDR.	S12	8	#5	6	8'-6"	71
INTERIOR GDR.	S12	16	#5	6	8'-6"	142
	S13	1	#3	STR	2'-10"	2
EXTERIOR GDR.	S14	5	#4	STR	8'-0"	27
INTERIOR GDR.	S15	5	#4	STR	12'-0"	40
	S16	2	#5	7	4'-2"	9
	S17	2	#5	7	4'-5"	9

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	8000 PSI CONCRETE	0.6" ∅ L.R. STRANDS
	LB.	C.Y.	No.
EXTERIOR GDR.	2,036	17.7	30
INTERIOR GDR.	2,120	17.7	30

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
6	73'-11¾"	443'-10½"

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+42.26 -L_RT-

SHEET 2 OF 4

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NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANUPRIYA K. VASUDEVAN

Document ID: BF206058AD65420...

10/18/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

54" FLORIDA I-BEAM (FIB)

PRESTRESSED CONCRETE GIRDER

SPAN B

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-12
1			3			TOTAL SHEETS
2			4			31

ASSEMBLED BY : A.R. VAN VUREN	DATE : 03/2023
CHECKED BY : J.C. MORRISON	DATE : 04/2023
DRAWN BY : BNB 09/21	
CHECKED BY : AAI 09/22	

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vasudevana

STD. NO. FIB54

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" ⌀ LOW RELAXATION STRANDS	SPAN A																					
	GIRDERS 1 & 6																					
40TH POINTS	0.000	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500
CAMBER (GIRDER IN PLACE) ↑	0.000	0.041	0.083	0.124	0.165	0.193	0.220	0.247	0.274	0.291	0.308	0.325	0.342	0.352	0.361	0.370	0.379	0.382	0.385	0.388	0.391
* DEFLECTION DUE TO SUPERIMPOSED DL ↓	0.000	0.023	0.047	0.069	0.087	0.114	0.135	0.155	0.171	0.192	0.209	0.224	0.236	0.251	0.262	0.271	0.278	0.285	0.289	0.292	0.293
FINAL CAMBER ↑	0"	3/16"	7/16"	11/16"	15/16"	15/16"	1"	1 1/8"	1 1/4"	1 3/16"	1 3/16"	1 3/16"	1 1/4"	1 3/16"	1 3/16"	1 3/16"	1 3/16"	1 3/16"	1 1/8"	1 1/8"	1 3/16"
40TH POINTS		0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	1.000
CAMBER (GIRDER IN PLACE) ↑		0.388	0.385	0.382	0.379	0.370	0.361	0.352	0.342	0.325	0.308	0.291	0.274	0.247	0.220	0.193	0.165	0.124	0.083	0.041	0.000
* DEFLECTION DUE TO SUPERIMPOSED DL ↓		0.292	0.289	0.284	0.279	0.271	0.262	0.251	0.237	0.224	0.209	0.192	0.172	0.155	0.135	0.114	0.088	0.069	0.047	0.023	0.000
FINAL CAMBER ↑		1 1/8"	1 1/8"	1 3/16"	1 3/16"	1 3/16"	1 3/16"	1 3/16"	1 1/4"	1 3/16"	1 3/16"	1 3/16"	1 1/4"	1 1/8"	1"	15/16"	15/16"	11/16"	7/16"	3/16"	0"
0.6" ⌀ LOW RELAXATION STRANDS	SPAN A																					
	GIRDERS 2-5																					
40TH POINTS	0.000	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500
CAMBER (GIRDER IN PLACE) ↑	0.000	0.041	0.083	0.124	0.165	0.193	0.220	0.247	0.274	0.291	0.308	0.325	0.342	0.352	0.361	0.370	0.379	0.382	0.385	0.388	0.391
* DEFLECTION DUE TO SUPERIMPOSED DL ↓	0.000	0.024	0.047	0.070	0.088	0.115	0.137	0.157	0.173	0.194	0.212	0.227	0.240	0.254	0.265	0.275	0.282	0.285	0.293	0.296	0.297
FINAL CAMBER ↑	0"	3/16"	7/16"	5/8"	15/16"	15/16"	1"	1 1/16"	1 3/16"	1 3/16"	1 3/16"	1 3/16"	1 1/4"	1 3/16"	1 1/8"	1 1/8"	1 3/16"	1 1/8"	1 1/8"	1 1/8"	1 1/8"
40TH POINTS		0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	1.000
CAMBER (GIRDER IN PLACE) ↑		0.388	0.385	0.382	0.379	0.370	0.361	0.352	0.342	0.325	0.308	0.291	0.274	0.247	0.220	0.193	0.165	0.124	0.083	0.041	0.000
* DEFLECTION DUE TO SUPERIMPOSED DL ↓		0.296	0.293	0.288	0.283	0.275	0.265	0.254	0.241	0.227	0.312	0.194	0.174	0.157	0.137	0.115	0.090	0.070	0.047	0.024	0.000
FINAL CAMBER ↑		1 1/8"	1 1/8"	1 1/8"	1 3/16"	1 1/8"	1 1/8"	1 3/16"	1 1/4"	1 3/16"	1 3/16"	1 3/16"	1 1/16"	1 3/16"	1"	15/16"	15/16"	5/8"	7/16"	3/16"	0"
0.6" ⌀ LOW RELAXATION STRANDS	SPAN B																					
	GIRDERS 1 & 6																					
20TH POINTS	0.000	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER IN PLACE) ↑	0.000	0.019	0.039	0.053	0.067	0.077	0.086	0.092	0.097	0.099	0.101	0.099	0.097	0.092	0.086	0.077	0.067	0.053	0.039	0.019	0.000
* DEFLECTION DUE TO SUPERIMPOSED DL ↓	0.000	0.005	0.009	0.014	0.017	0.021	0.024	0.027	0.028	0.029	0.030	0.029	0.028	0.027	0.024	0.021	0.017	0.014	0.008	0.005	0.000
FINAL CAMBER ↑	0"	3/16"	3/8"	1/2"	5/8"	11/16"	3/4"	3/4"	13/16"	13/16"	7/8"	13/16"	13/16"	3/4"	3/4"	11/16"	5/8"	1/2"	3/8"	3/16"	0"
0.6" ⌀ LOW RELAXATION STRANDS	SPAN B																					
	GIRDERS 2-5																					
20TH POINTS	0.000	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER IN PLACE) ↑	0.000	0.019	0.039	0.053	0.067	0.077	0.086	0.092	0.097	0.099	0.101	0.099	0.097	0.092	0.086	0.077	0.067	0.053	0.039	0.019	0.000
* DEFLECTION DUE TO SUPERIMPOSED DL ↓	0.000	0.005	0.009	0.014	0.018	0.021	0.024	0.027	0.029	0.030	0.030	0.029	0.029	0.027	0.024	0.021	0.017	0.014	0.009	0.005	0.000
FINAL CAMBER ↑	0"	3/16"	3/8"	7/16"	5/8"	11/16"	3/4"	3/4"	13/16"	13/16"	7/8"	13/16"	13/16"	3/4"	3/4"	11/16"	5/8"	7/16"	3/8"	3/16"	0"

* INCLUDES FUTURE WEARING SURFACE IN SUPERIMPOSED DEAD LOAD
ALL VALUES ARE SHOWN 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 STELL SHALL BE GRADE 60.

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

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

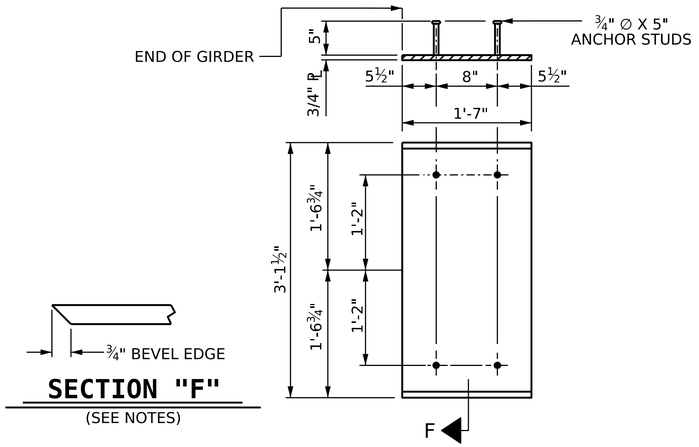
ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBJECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

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 6400 PSI.

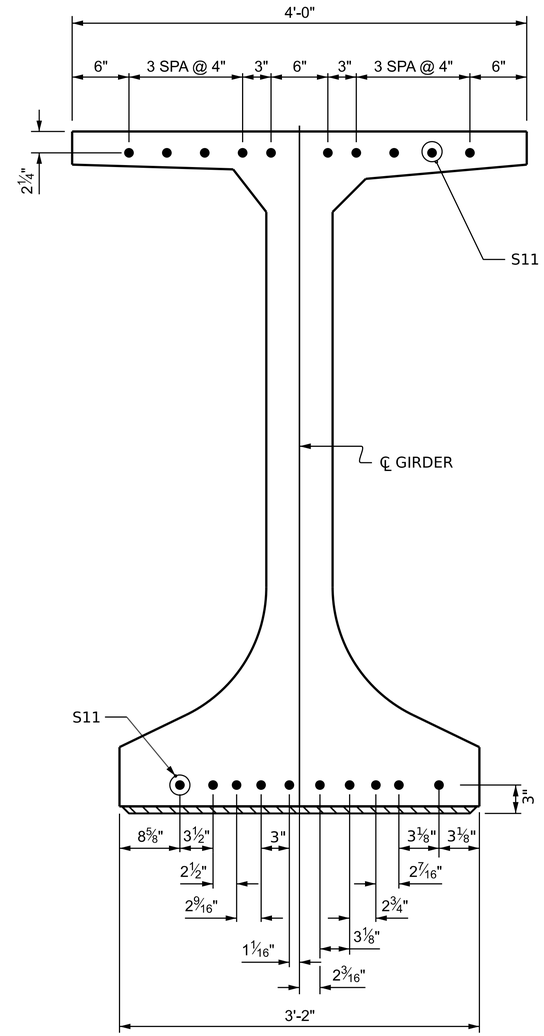
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4" AND SHADED AREA NEAR BENT, SHALL BE RAKED TO A DEPTH OF ¼".



SECTION "F"
(SEE NOTES)

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



DETAIL "C"
(FLORIDA I BEAM)

PROJECT NO. B-3186 / B-5898
HAYWOOD COUNTY
STATION: 24+42.26 -L_RT-

SHEET 3 OF 4

DRAWN BY : A.R. VAN VUREN DATE : 04/2023
CHECKED BY : A.k. VASUDEVAN DATE : 04/2023
DESIGN ENGINEER OF RECORD: A.k. VASUDEVAN DATE : 06/2023

8/22/2023
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vasudevana

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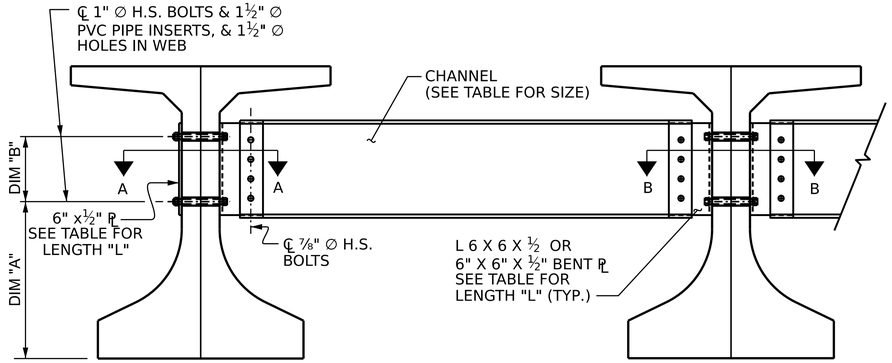
NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANDROMACHI K VASUDEVAN
DocuSigned by: Andromachi K Vasudevan BF206058AD65425...
10/18/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

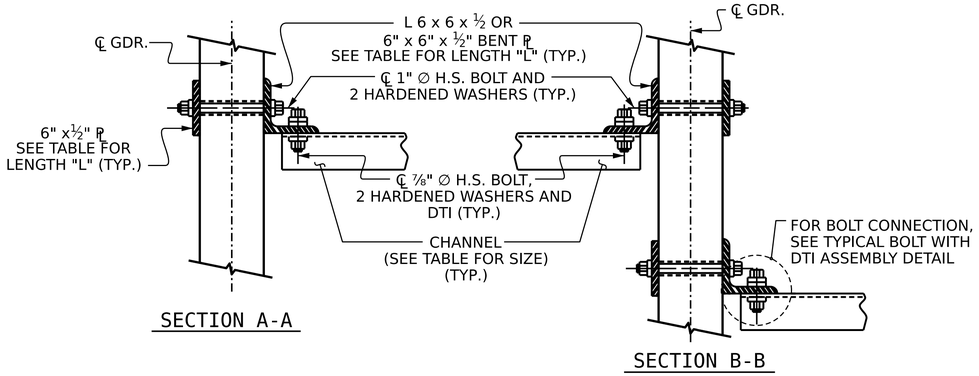
PRESTRESSED CONCRETE GIRDER DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-13
1			3			TOTAL SHEETS
2			4			31



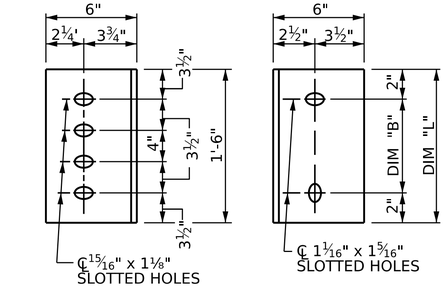
EXTERIOR GIRDER INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM



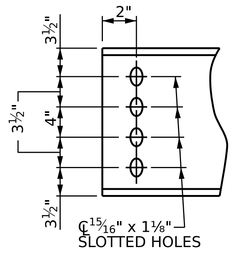
SECTION A-A SECTION B-B

CONNECTION DETAILS



DIAPHRAGM FACE WEB FACE

CONNECTOR PLATE DETAILS



CHANNEL END

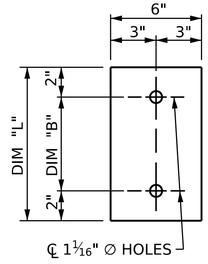
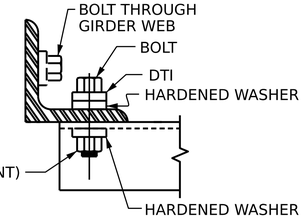


PLATE DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

STRUCTURAL STEEL NOTES

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

TENSION ON THE ASTM A325 BOLTS THROUGH THE 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 ¼ 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 ¼" PROJECTION BEYOND THE NUT.

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

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

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

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

TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
54" FIB	MC 18 x 42.7	2'-3½"	1'-2"	1'-6"

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+42.26 -L_RT-

SHEET 4 OF 4

ASSEMBLED BY : A.R. VAN VUREN	DATE : 04/2023
CHECKED BY : A.K. VASUDEVAN	DATE : 04/2023
DRAWN BY : BNB 01/21	REV. --/--
CHECKED BY : AAI 01/21	REV. --/--

7/27/2023
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NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANNAMALAI K VASUDEVAN

Document ID: BF200658AD65423...

10/18/2023

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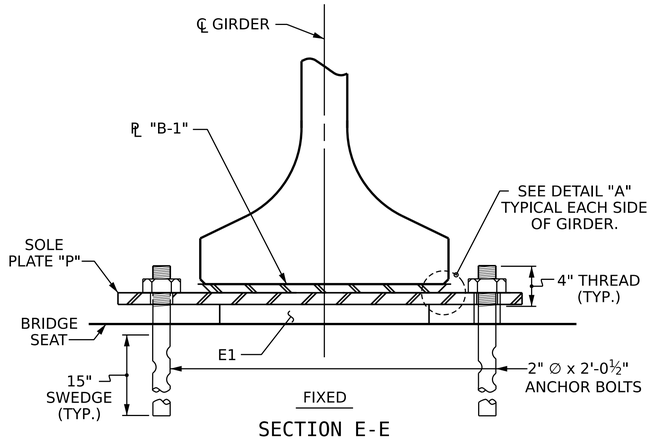
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

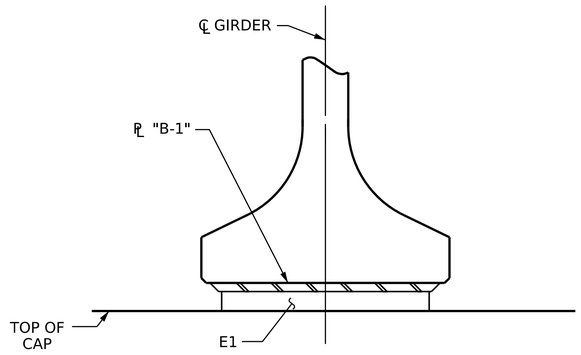
INTERMEDIATE STEEL DIAPHRAGMS FOR 54" FLORIDA I-BEAMS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-14
1			3			TOTAL SHEETS
2			4			31

STD. NO. FIB45/54



SECTION E-E



SECTION F-F

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF ½ TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

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

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

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

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

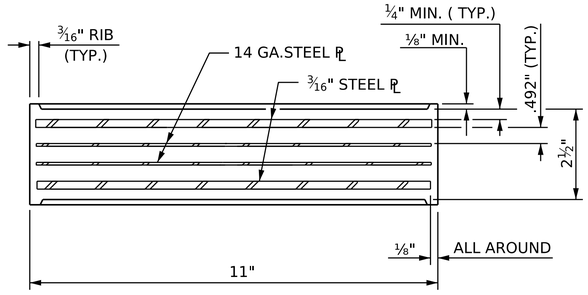
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

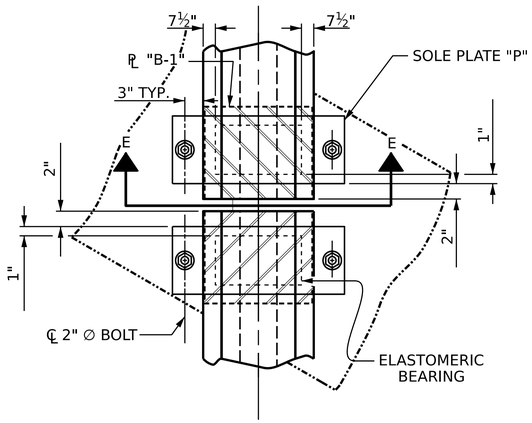
FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.

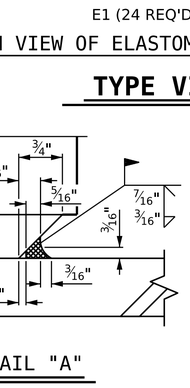


TYPICAL SECTION OF ELASTOMERIC BEARINGS

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE VI	420 K

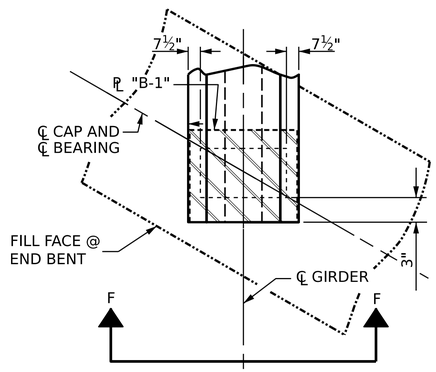


BEARING PLAN AT BENT



E1 (24 REQ'D)

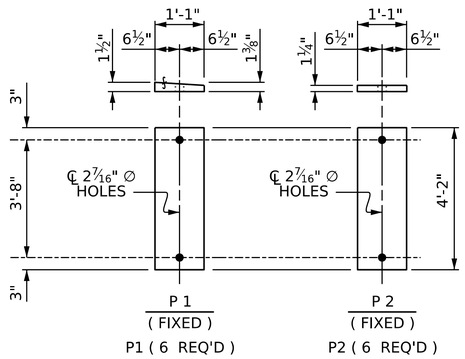
PLAN VIEW OF ELASTOMERIC BEARING



SOLE ℄ PLACEMENT DETAIL

TYPE VI

DETAIL "A"



SOLE PLATE DETAILS ("P")

BEARING PLAN AT END BENT

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+42.26 -L_RT-

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NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANURADHA K. VASUDEVAN

Docusigned by: Anuradha K. Vasudevan BF206058AD65426...

10/18/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

ELASTOMERIC BEARING DETAILS

PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE

ASSEMBLED BY : A.R. VAN VUREN	DATE : 04/2023
CHECKED BY : A.K. VASUDEVAN	DATE : 04/2023

DRAWN BY : WJH 8/89	REV. 1/15 MAA/TMG
CHECKED BY : CRK 8/89	REV. 12/17 MAA/THC
	REV. 10/21 BNB/AAI

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-15
1			3			TOTAL SHEETS
2			4			31

STD. NO. EB4

7/27/2023
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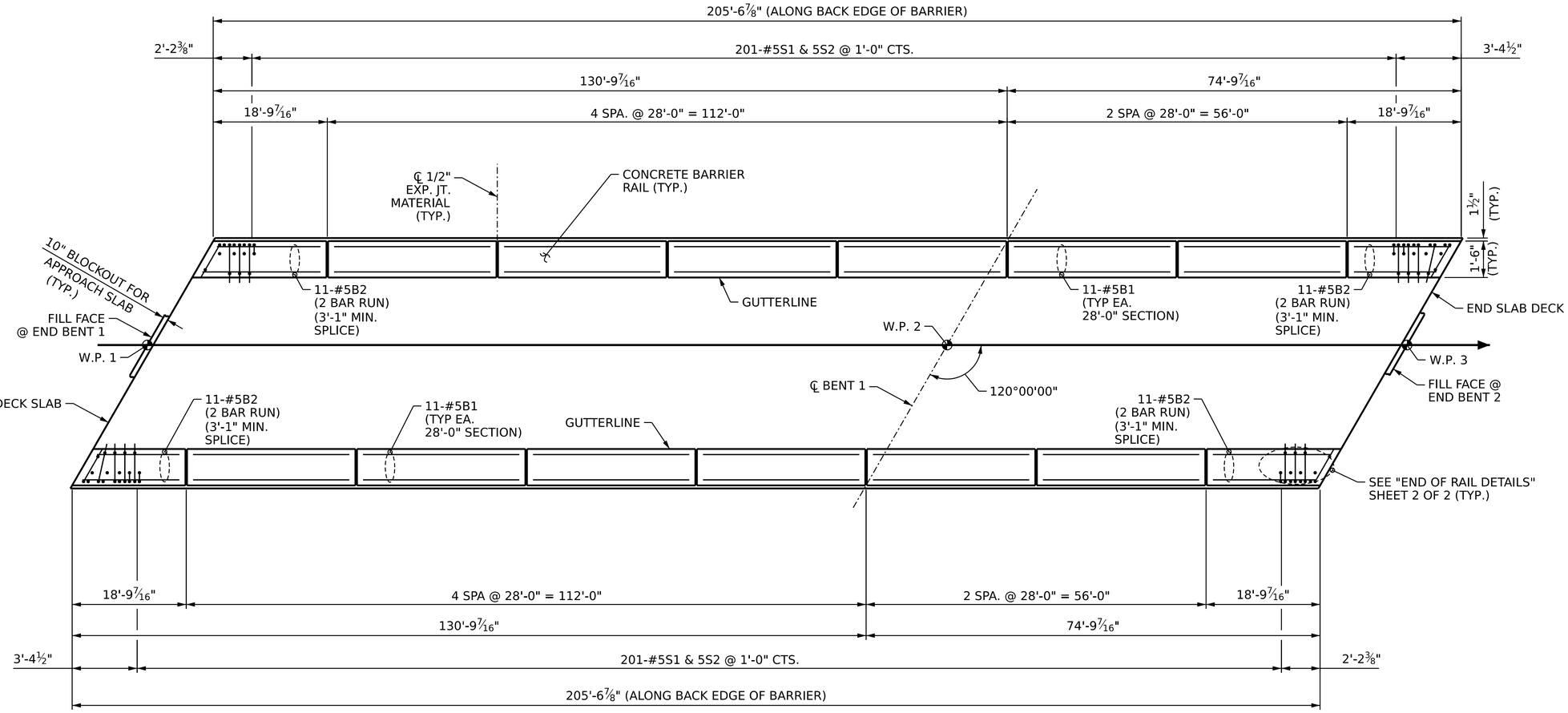
NOTES

FOR REINFORCING STEEL IN BARRIER RAIL, SEE CONCRETE BARRIER RAIL SHEET 2 OF 2.

FOR ANCHOR ASSEMBLY PLACEMENT, SEE "GUARDRAIL ANCHORAGE FOR BARRIER RAIL" SHEET.



PLAN

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+42.26 -L_RT-

SHEET 1 OF 2

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NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANUPAMA K VASUDEVAN

Docusigned by: Anupama K Vasudevan BF206058AD65425...

10/18/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-16
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : A.R. VAN VUREN DATE : 04/2023
CHECKED BY : A.K. VASUDEVAN DATE : 04/2023
DESIGN ENGINEER OF RECORD: A.K. VASUDEVAN DATE : 06/2023

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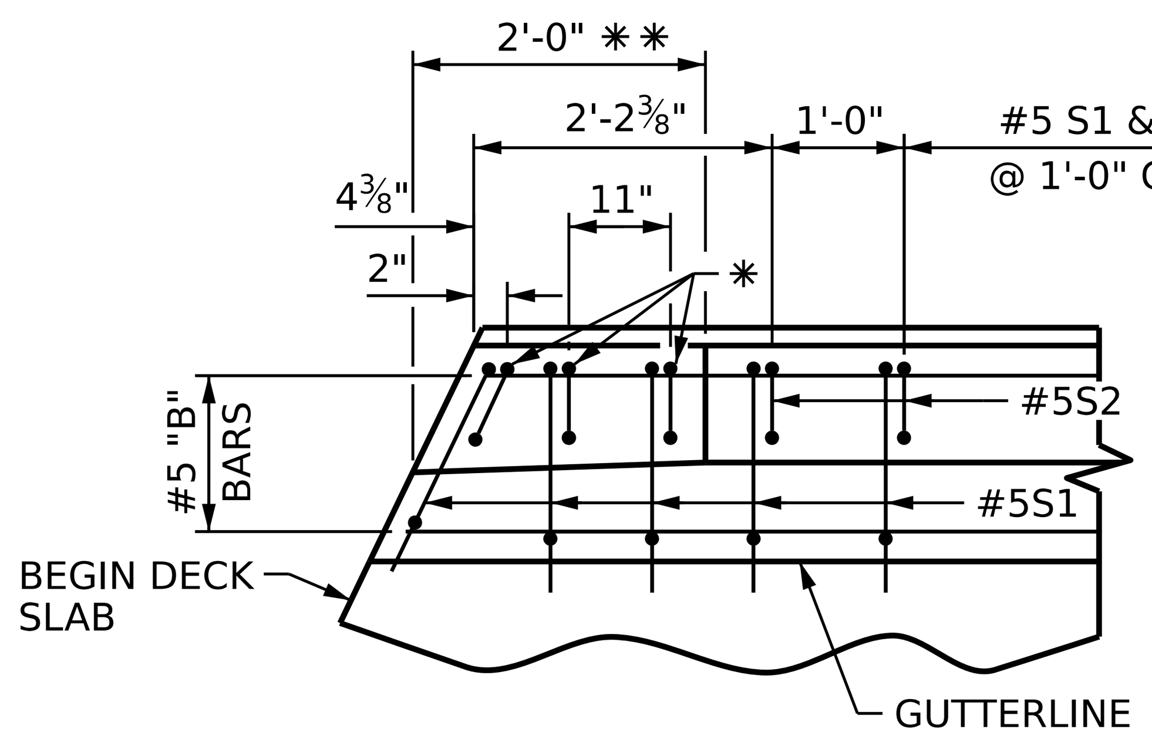
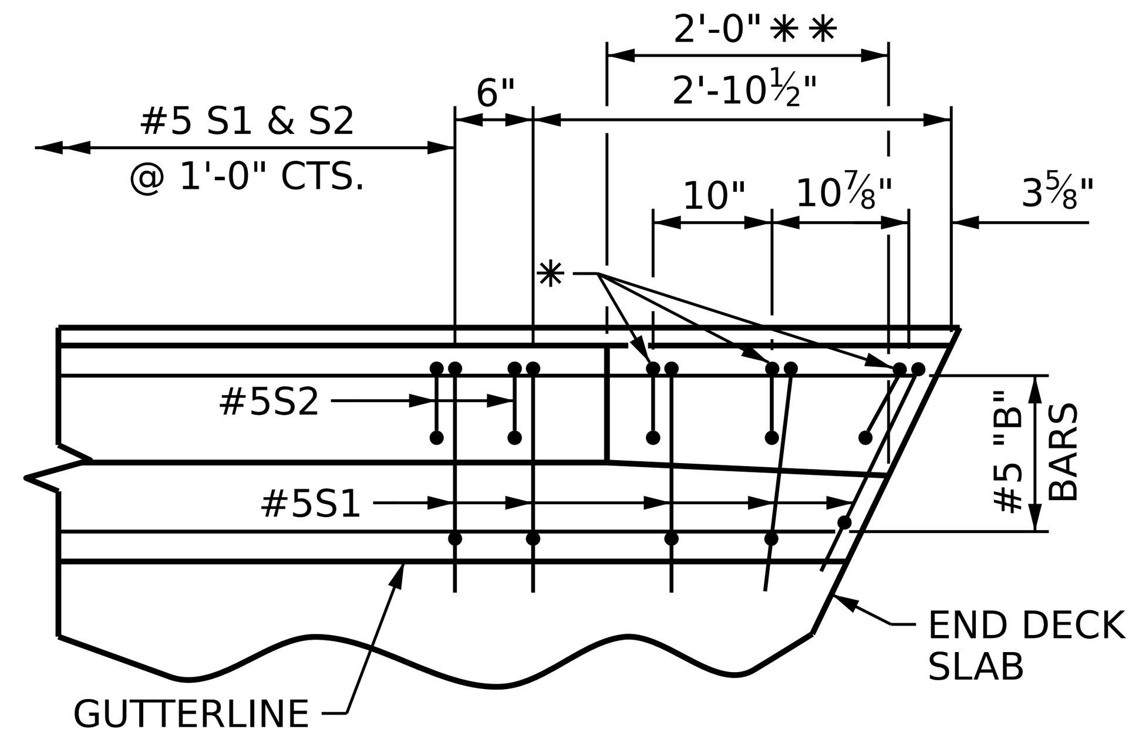


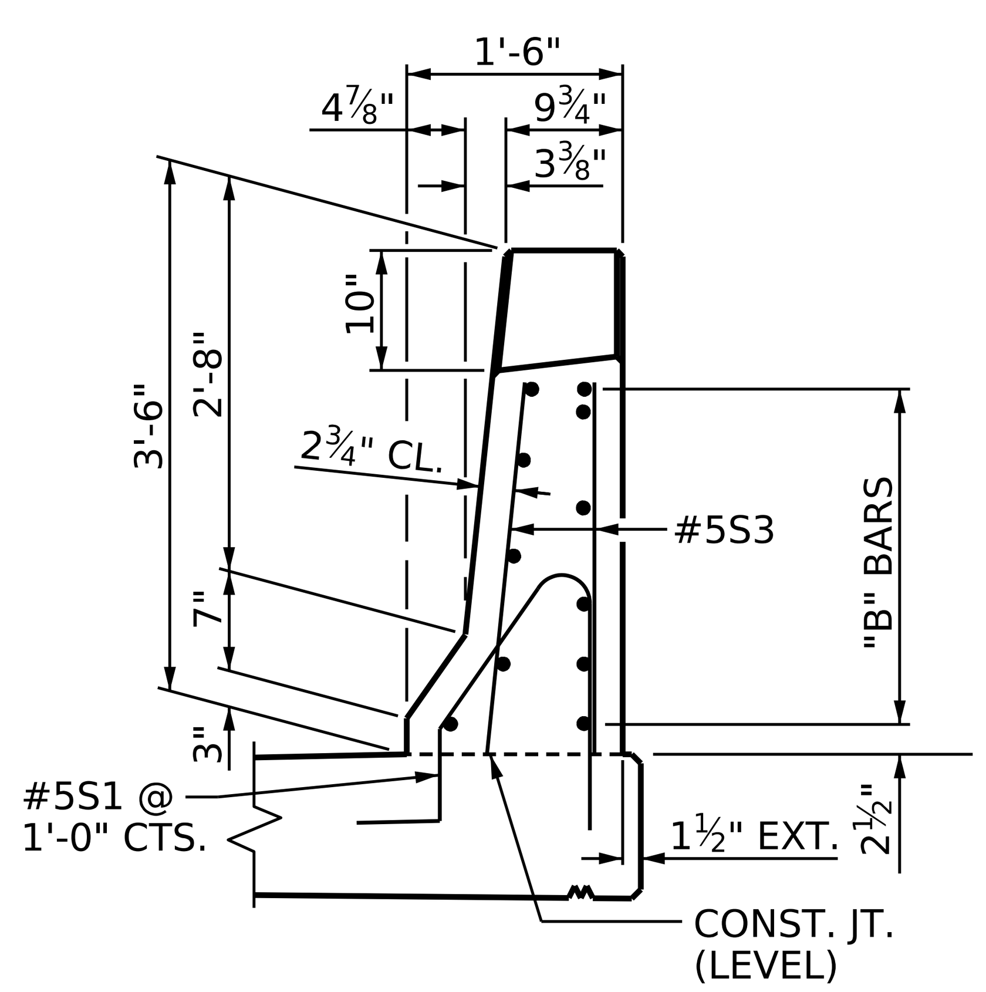
PLAN @ END BENT 1
(END BENT 2 SIMILAR BUT MIRRORED)



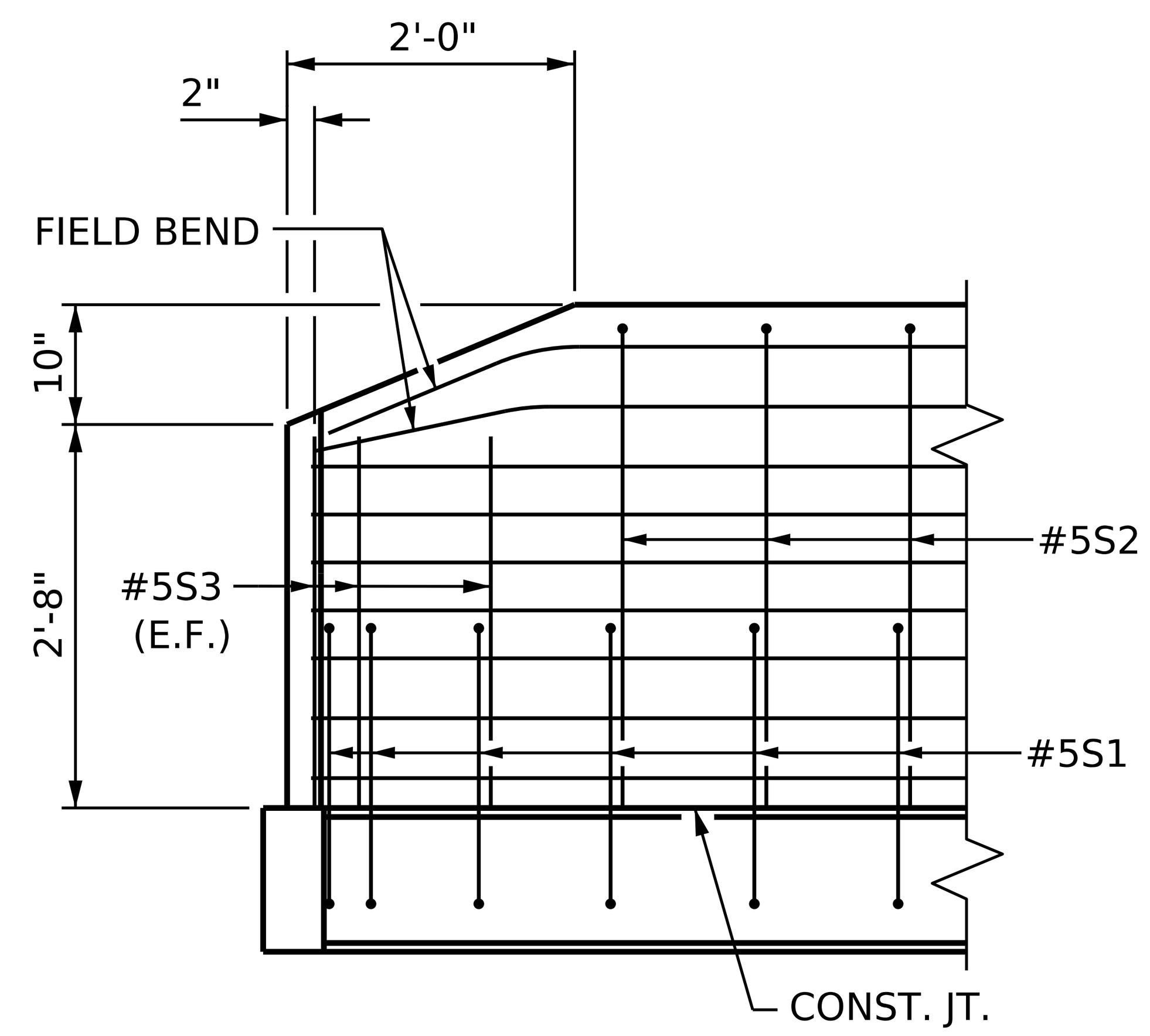
PLAN @ END BENT 2
(END BENT 1 SIMILAR BUT MIRRORED)

✱ #5S2 AT LEFT SIDE, #5S3 (PAIRS) AT RIGHT SIDE
#5S2 SHOWN

✱✱ TRANSITION AT RIGHT SIDE ONLY



END VIEW



SIDE VIEW

END OF RAIL DETAILS

(TRANSITION TO 2'-8" HEIGHT APPLIES TO RIGHT SIDE ONLY)

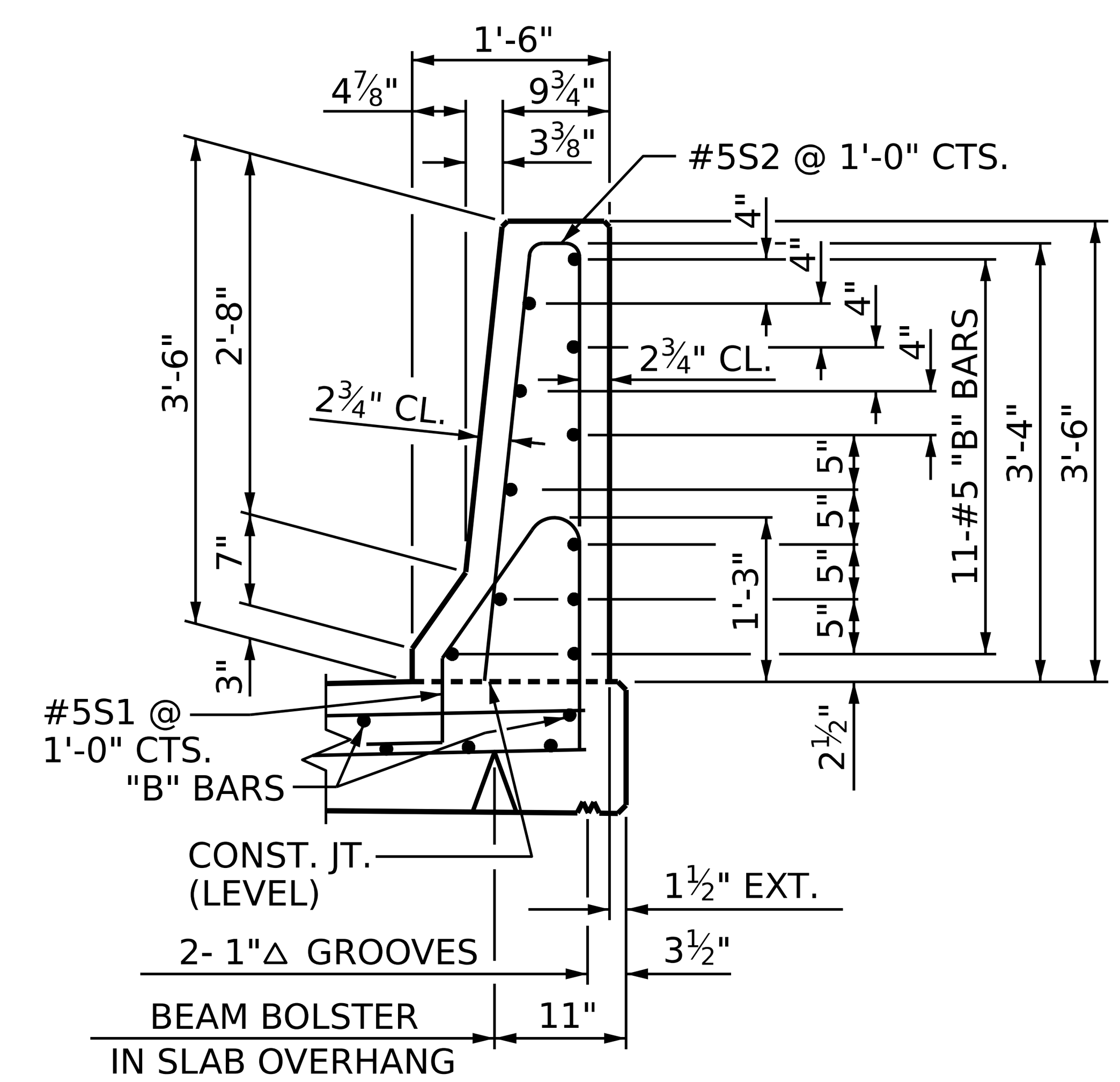
NOTES:

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

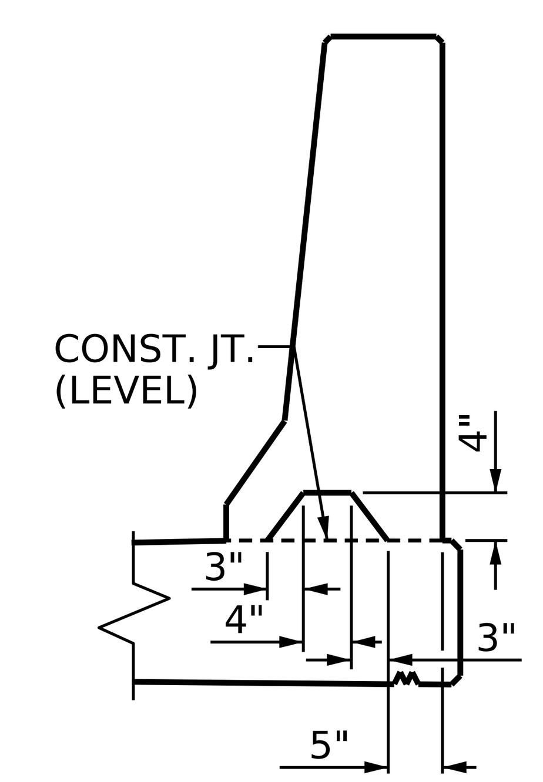
GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT THE 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 REINFORCING STEEL IN THE CONCRETE BARRIER RAILS SHALL BE EPOXY COATED.

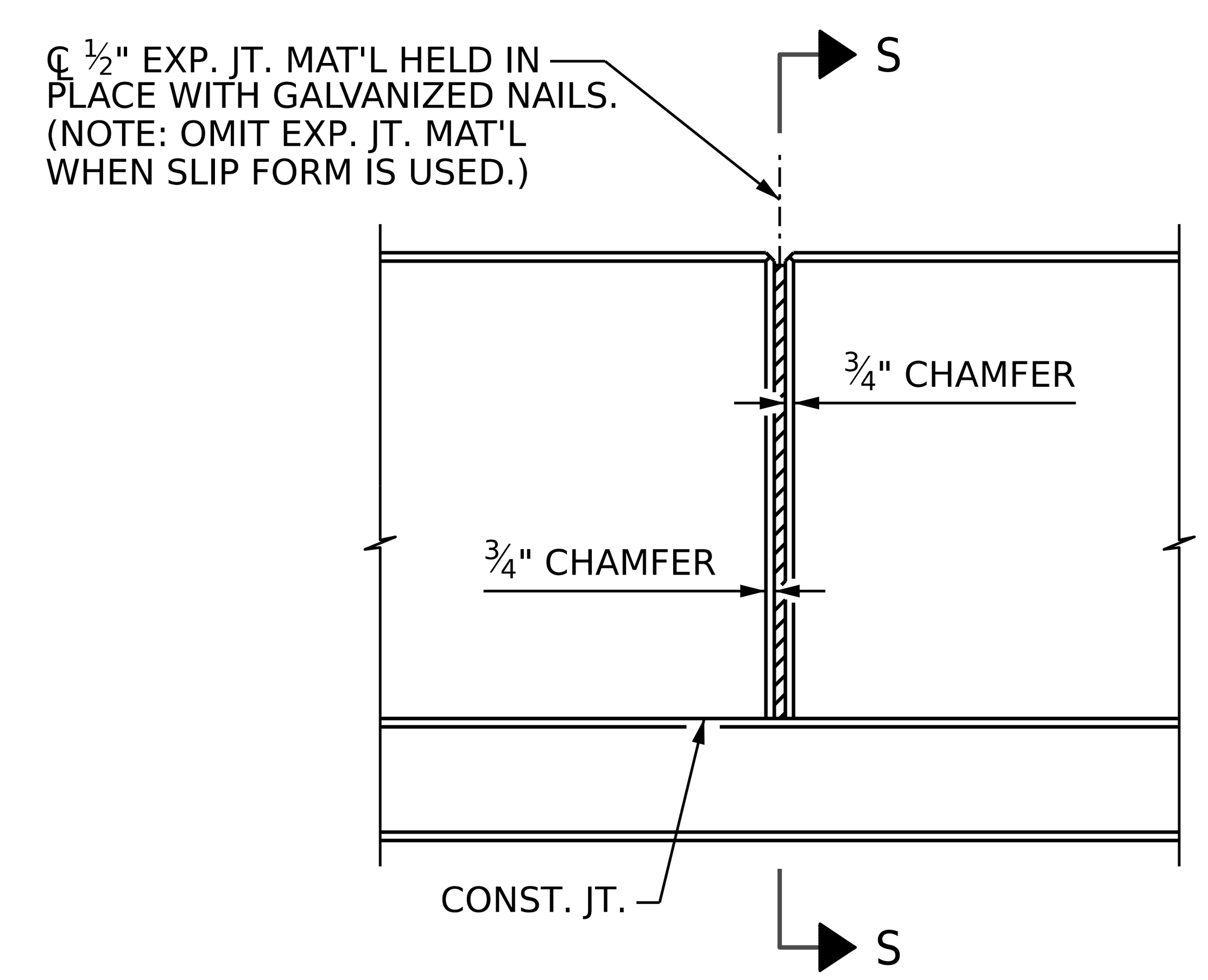
THE #5S1 AND #5S2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MIN. CLEARANCE TO THE ½" EXPANSION JOINT MATERIAL IN THE PARAPET.



SECTION THRU RAIL



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



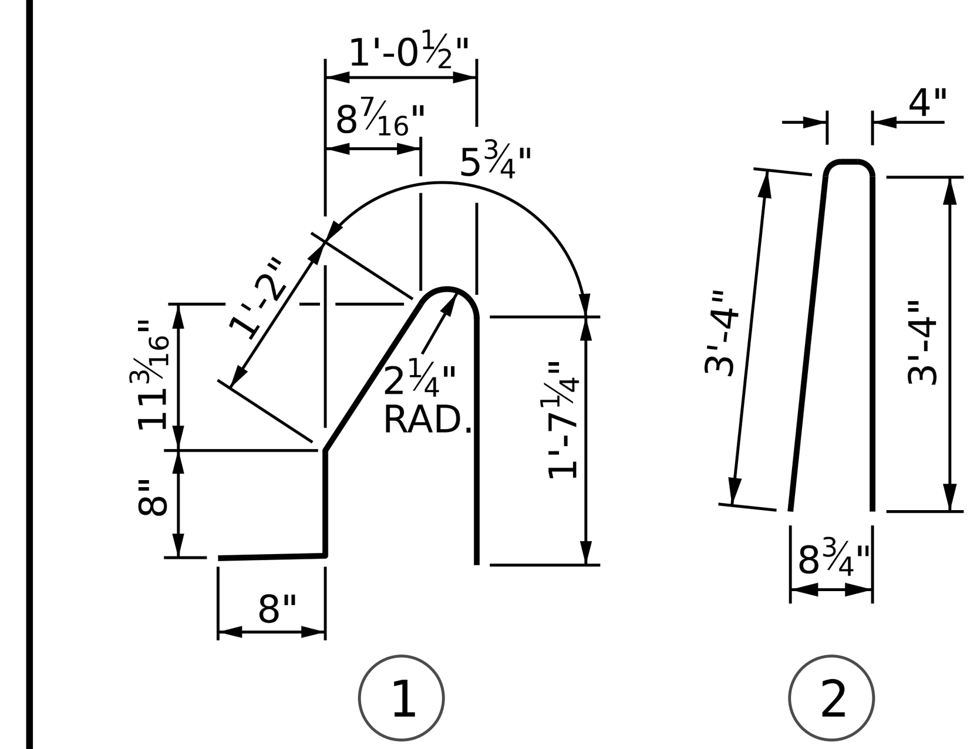
ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

BILL OF MATERIAL
FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✱ B1	132	5	STR	27'-7"	3,798
✱ B2	88	5	STR	11'-3"	1,033
✱ S1	416	5	1	4'-7"	1,989
✱ S2	410	5	2	7'-0"	2,993
✱ S3	12	5	STR	2'-6"	31
✱ EPOXY COATED REINFORCING STEEL					9,844 LBS.
CLASS AA CONCRETE					55.9 C.Y.
CONCRETE BARRIER RAIL					411.1 L.F.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. B-3186 / B-5898
HAYWOOD COUNTY
STATION: 24+42.26 -L_RT-
SHEET 2 OF 2

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 054212 ANIRUDHA K. VASUDEVAN
10/18/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

CONCRETE BARRIER RAIL

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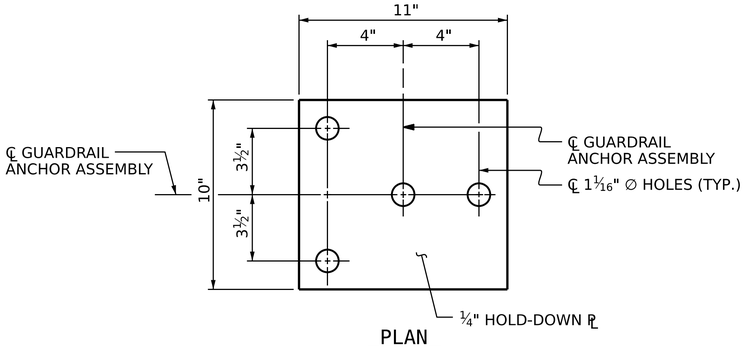
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-17
1			3			TOTAL SHEETS
2			4			31

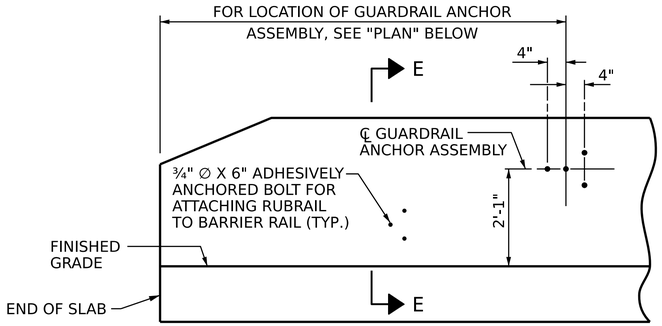
ASSEMBLED BY : A.R. VAN VUREN	DATE : 04/2023
CHECKED BY : A.K. VASUDEVAN	DATE : 04/2023
DRAWN BY : ARB 5/87	REV. 7/12 MAA/GM
CHECKED BY : SJD 9/87	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

8/22/2023
c:\pwworking\usnc\dms13605\402_033_B-5898-B-3186_SMU_CBR2_S2-17_460155.dgn
austin.vanvuren

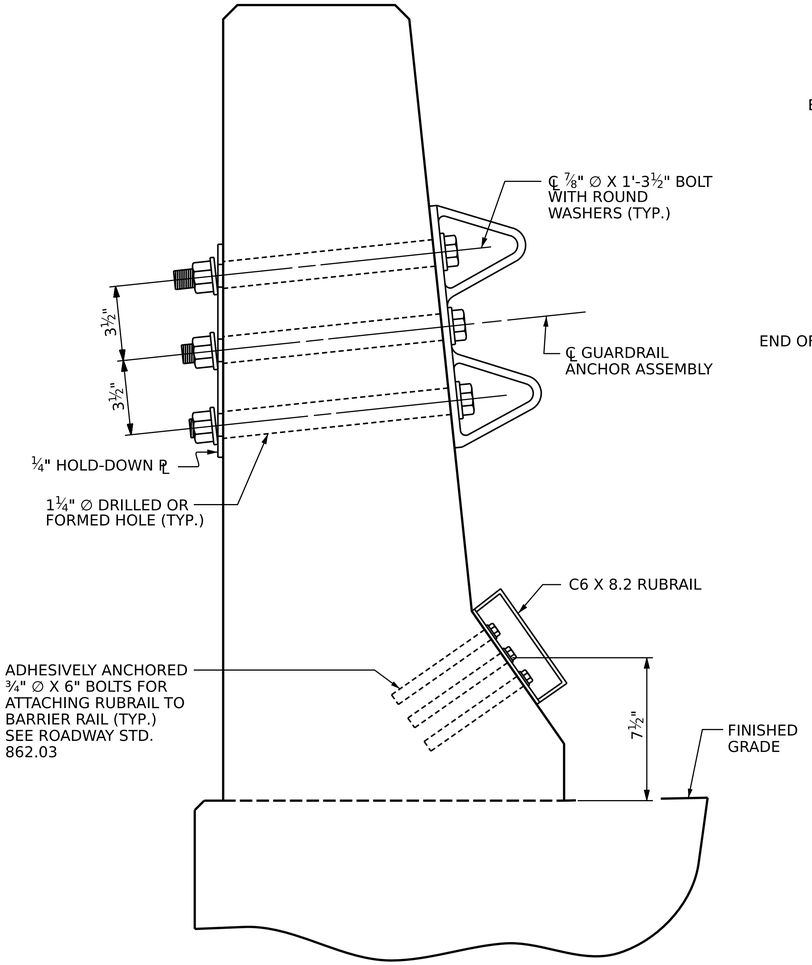
STD. NO. CBR1



PLAN

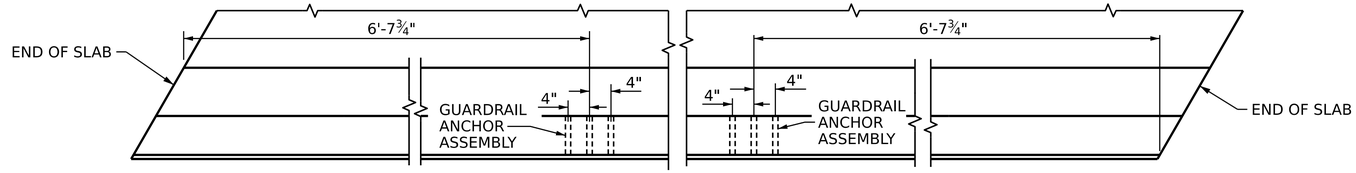


ELEVATION



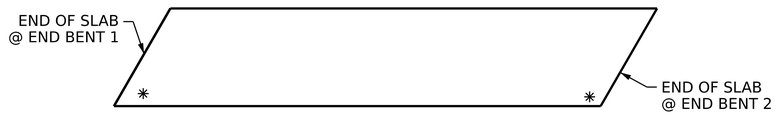
SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼'' HOLD-DOWN PLATE AND 4 - ⅞'' ∅ 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 ⅞'' ∅ 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 ¼'' ∅ 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 ¾" ∅ X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE ¾" ∅ 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.

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+42.26 -L_RT-

ASSEMBLED BY : A.R. VAN VUREN	DATE : 04/2023		
CHECKED BY : A.K. VASUDEVAN	DATE : 04/2023		
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	

7/27/2023
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NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANANTHAVINAYAK K VASUDEVAN

Docusigned by: Ananthavinayak K Vasudevan
BF206058AD65425...

10/18/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-18
1			3			TOTAL SHEETS
2			4			31

STD. NO. GRA2

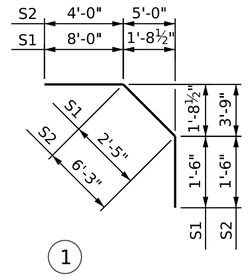
REINFORCING BAR SCHEDULE

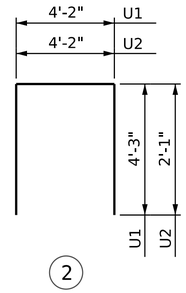
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	291	5	STR	40'-11"	12,419	✳A126	2	5	STR	13'-0"	27	A218	2	5	STR	21'-8"	45	B10	22	5	STR	50'-8"	1,163
A2	291	5	STR	40'-11"	12,419	✳A127	2	5	STR	11'-11"	25	A219	2	5	STR	20'-7"	43						
						✳A128	2	5	STR	10'-10"	23	A220	2	5	STR	19'-6"	41	K1	20	4	STR	24'-5"	326
✳A101	2	5	STR	40'-1"	84	✳A129	2	5	STR	9'-9"	20	A221	2	5	STR	18'-5"	38	K2	10	4	STR	4'-0"	27
✳A102	2	5	STR	39'-0"	81	✳A130	2	5	STR	8'-8"	18	A222	2	5	STR	17'-4"	36	K3	10	4	STR	6'-11"	46
✳A103	2	5	STR	37'-11"	79	✳A131	2	5	STR	7'-7"	16	A223	2	5	STR	16'-3"	34	K4	20	4	STR	7'-0"	94
✳A104	2	5	STR	36'-10"	77	✳A132	2	5	STR	6'-6"	14	A224	2	5	STR	15'-2"	32	K5	10	4	STR	3'-0"	20
✳A105	2	5	STR	35'-9"	75	✳A133	2	5	STR	5'-5"	11	A225	2	5	STR	14'-1"	29	K6	4	4	STR	1'-4"	4
✳A106	2	5	STR	34'-8"	72	✳A134	2	5	STR	4'-4"	9	A226	2	5	STR	13'-0"	27	K7	12	4	STR	2'-10"	23
✳A107	2	5	STR	33'-7"	70	✳A135	2	5	STR	3'-3"	7	A227	2	5	STR	11'-11"	25	K8	4	4	STR	2'-5"	6
✳A108	2	5	STR	32'-6"	68							A228	2	5	STR	10'-10"	23						
✳A109	2	5	STR	31'-5"	66	A201	2	5	STR	40'-1"	84	A229	2	5	STR	9'-9"	20	✳ S1	48	4	1	11'-11"	382
✳A110	2	5	STR	30'-4"	63	A202	2	5	STR	39'-0"	81	A230	2	5	STR	8'-8"	18	✳ S2	48	4	1	11'-9"	377
✳A111	2	5	STR	29'-3"	61	A203	2	5	STR	37'-11"	79	A231	2	5	STR	7'-7"	16						
✳A112	2	5	STR	28'-2"	59	A204	2	5	STR	36'-10"	77	A232	2	5	STR	6'-6"	14	U1	48	4	2	12'-8"	406
✳A113	2	5	STR	27'-1"	56	A205	2	5	STR	35'-9"	75	A233	2	5	STR	5'-5"	11	U2	24	4	2	8'-4"	134
✳A114	2	5	STR	26'-0"	54	A206	2	5	STR	34'-8"	72	A234	2	5	STR	4'-4"	9						
✳A115	2	5	STR	24'-11"	52	A207	2	5	STR	33'-7"	70	A235	2	5	STR	3'-3"	7						
✳A116	2	5	STR	23'-10"	50	A208	2	5	STR	32'-6"	68												
✳A117	2	5	STR	22'-9"	47	A209	2	5	STR	31'-5"	66	✳ B1	102	4	STR	31'-3"	2,129						
✳A118	2	5	STR	21'-8"	45	A210	2	5	STR	30'-4"	63	✳ B2	68	4	STR	26'-3"	1,192						
✳A119	2	5	STR	20'-7"	43	A211	2	5	STR	29'-3"	61	✳ B3	33	6	STR	28'-9"	1,425						
✳A120	2	5	STR	19'-6"	41	A212	2	5	STR	28'-2"	59	✳ B4	31	6	STR	25'-9"	1,199						
✳A121	2	5	STR	18'-5"	38	A213	2	5	STR	27'-1"	56	✳ B5	68	6	STR	36'-11"	3,766						
✳A122	2	5	STR	17'-4"	36	A214	2	5	STR	26'-0"	54	✳ B6	64	6	STR	43'-7"	4,190						
✳A123	2	5	STR	16'-3"	34	A215	2	5	STR	24'-11"	52	✳ B7	31	6	STR	14'-7"	679						
✳A124	2	5	STR	15'-2"	32	A216	2	5	STR	23'-10"	50	✳ B8	33	6	STR	17'-7"	872						
✳A125	2	5	STR	14'-1"	29	A217	2	5	STR	22'-9"	47	B9	116	5	STR	52'-11"	6,402						

✳ EPOXY COATED REINFORCING STEEL 30,212 LBS.

REINFORCING STEEL 22,518 LBS.

BAR TYPES





ALL BAR DIMENSIONS ARE OUT TO OUT.

GROOVING BRIDGE FLOORS

APPROACH SLABS	1,715 SQ. FT.
BRIDGE DECK	7,196 SQ. FT.
TOTAL	8,911 SQ. FT.

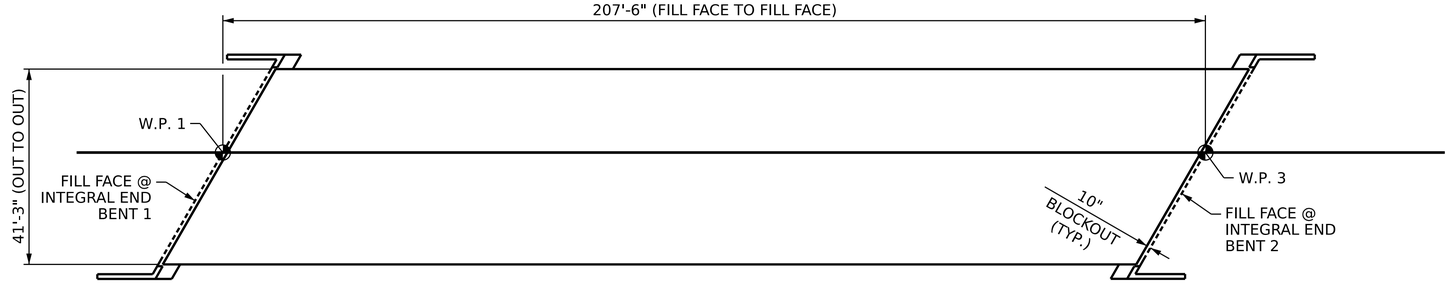
SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MIN. SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		BARRIER RAILS
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	EPOXY COATED
#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"	-	-	-

SUPERSTRUCTURE BILL OF MATERIAL

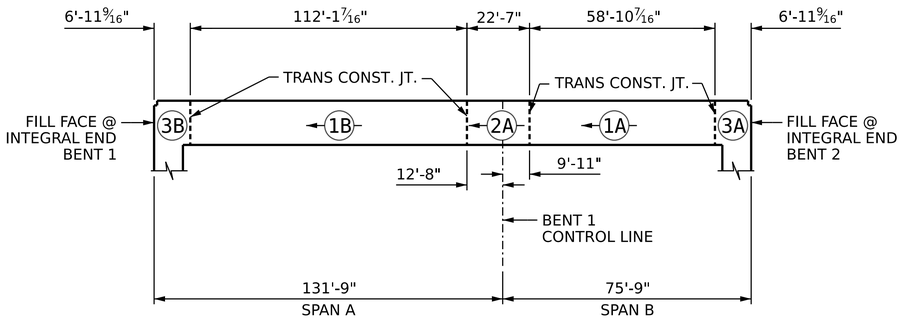
	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
SPANS A-B		22,518	28,182
POUR #1A	77.0	-	-
POUR #1B	146.6	-	-
POUR #2A	29.5	-	-
POUR #3A	36.8	-	-
POUR #3B	36.8	-	-
TOTALS ✳✳	326.7	22,518	28,182

✳✳ QUANTITIES FOR BARRIER RAILS ARE NOT INCLUDED



LAYOUT OF COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB

(SQ. FT. = 8,480)



POURING SEQUENCE

(#) INDICATES POUR NUMBER AND POUR DIRECTION

POUR (2) SHALL NOT BE STARTED UNTIL BOTH ADJACENT POURS (1) REACH A MINIMUM OF 3,000 PSI

ALL DIMENSIONS MEASURED ALONG -L_RT-

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+42.26 -L_RT-

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NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANURADHA K VASUDEVAN

Document ID: BF206058AD65425...

10/18/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

BILL OF MATERIAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-19
1			3			TOTAL SHEETS
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DRAWN BY : A.R. VAN VUREN DATE : 04/2023
CHECKED BY : A.K. VASUDEVAN DATE : 05/2023
DESIGN ENGINEER OF RECORD: A.K. VASUDEVAN DATE : 06/2023

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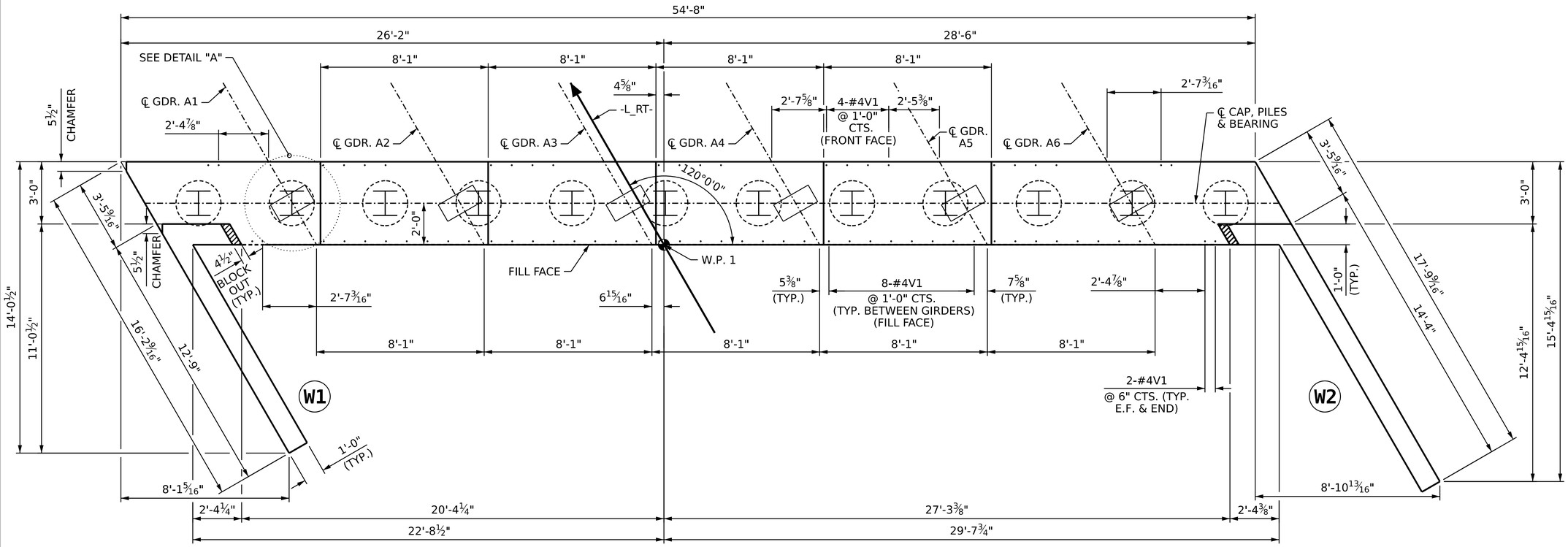

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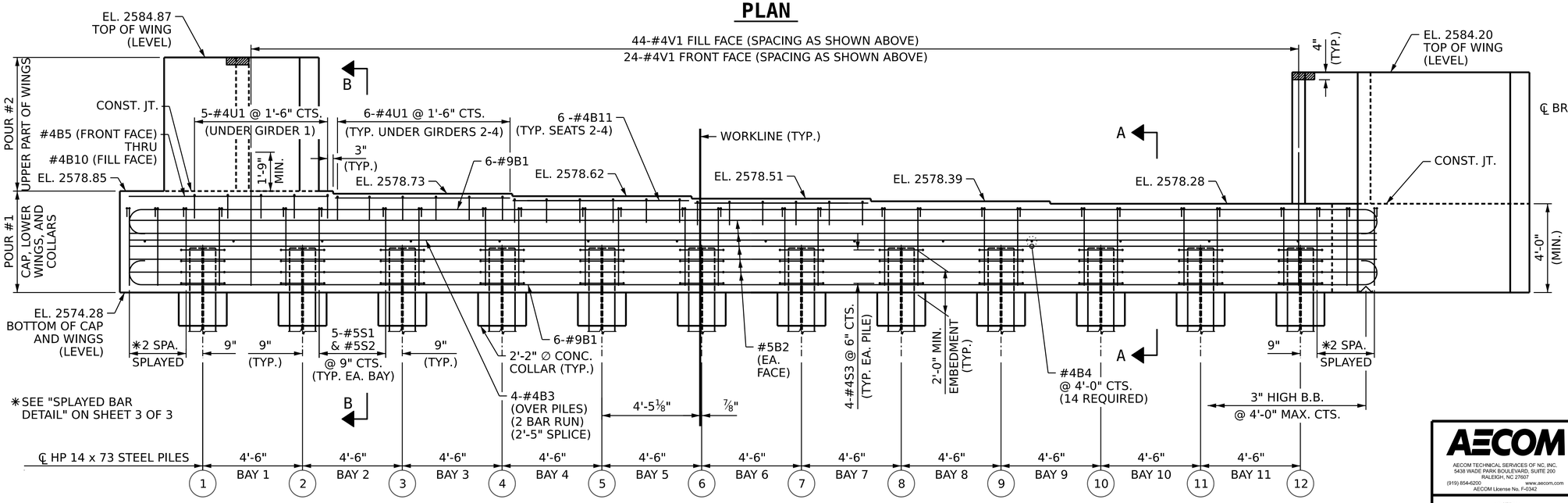
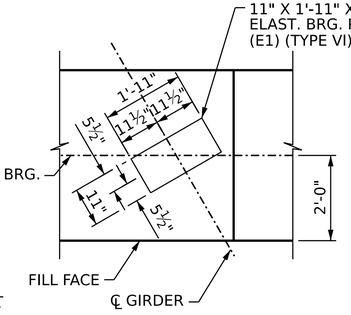


ELEVATION



DETAIL "A"

NOTES:

THE TOP SURFACE OF THE END BENT CAP AND WINGS EXCEPT THE BEARING AREA AND AREA BEYOND THE LIMITS OF THE DECK SHALL BE RAKED TO A DEPTH OF ¼".

THE TOP SURFACE OF THE INTEGRAL END BENT CAP, BEYOND THE LIMITS OF THE DECK, SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE FRONT FACE AT THE RATE OF 2%.

FOR WING DETAILS AND BLOCKOUT, SEE SHEET 2 OF 3.

FOR SECTION A-A, SECTION B-B, PILE SPLICE DETAILS, AND TEMPORARY DRAINAGE DETAILS, SEE SHEET 3 OF 3.

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+42.26 -L_RT-

SHEET 1 OF 3

DRAWN BY : A.R. VAN VUREN DATE : 04/2023

CHECKED BY : A.K. VASUDEVAN DATE : 05/2023

DESIGN ENGINEER OF RECORD: A.K. VASUDEVAN DATE : 06/2023

7/28/2023
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NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANUPAMA K VASUDEVAN

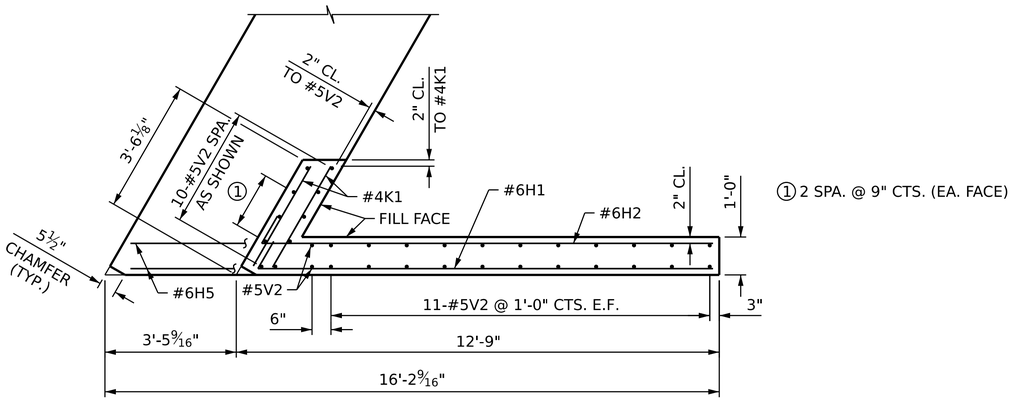
Docusigned by: Anupama K Vasudevan BF206058AD65425...

10/18/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

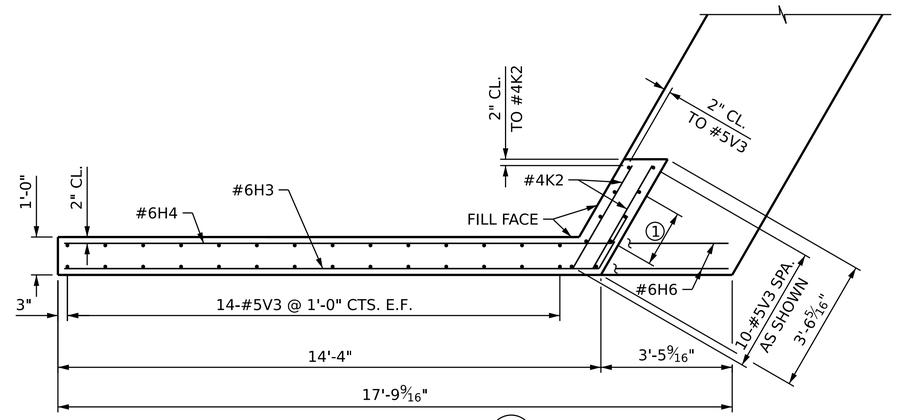
INTEGRAL END BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-20
1			3			TOTAL SHEETS
2			4			31

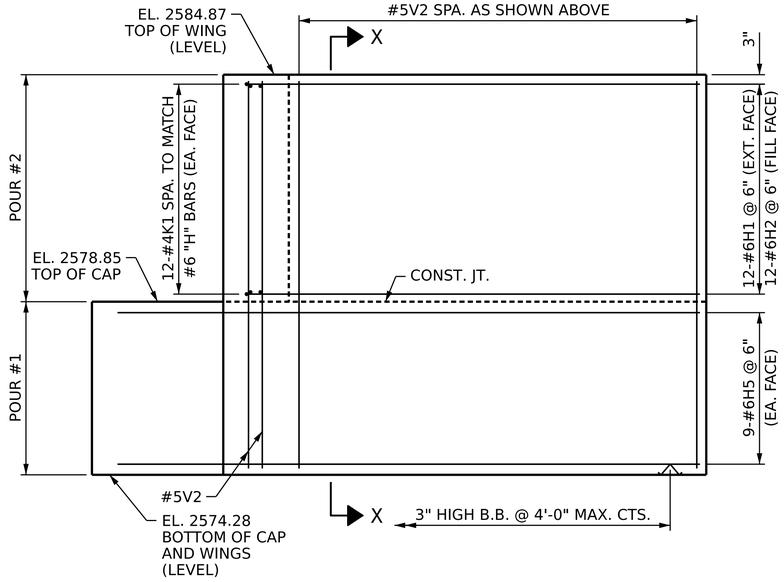


① 2 SPA. @ 9" CTS. (EA. FACE)

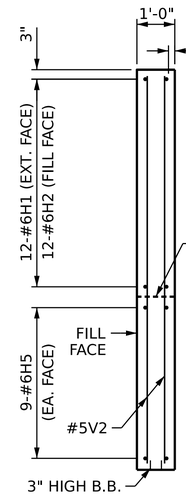
PLAN OF WING W1



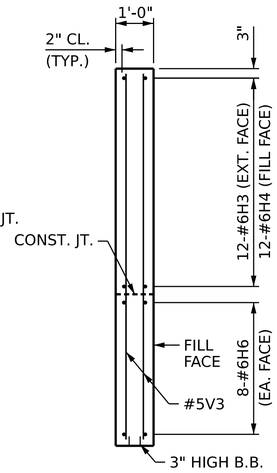
PLAN OF WING W2



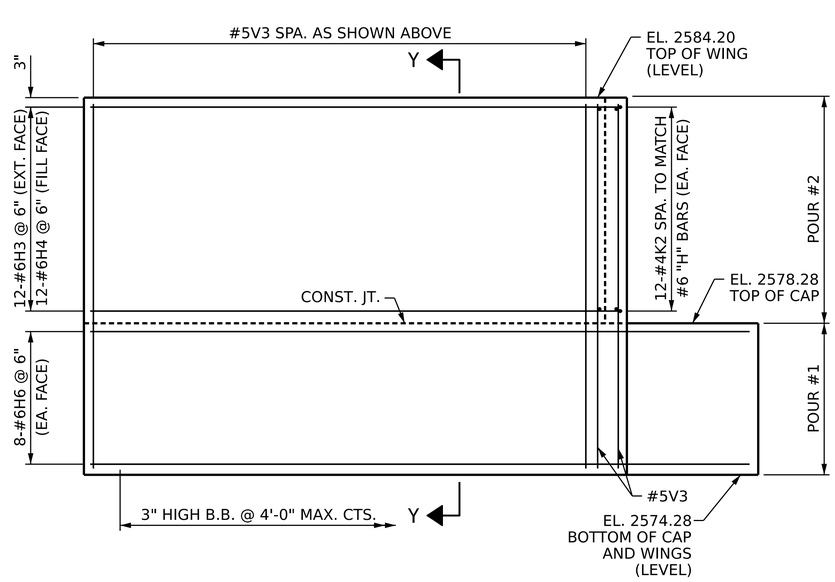
ELEVATION OF WING W1



SECTION X-X



SECTION Y-Y

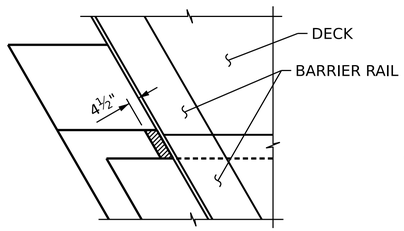


ELEVATION OF WING W2

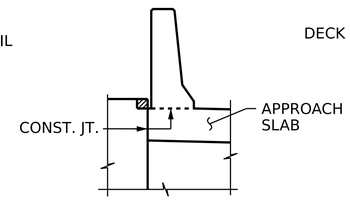
NOTES:

CONCRETE SHALL BE POURED IN THE HATCHED AREA TO MATCH THE TOP OF CURB AND INTEGRAL END BENT WING ELEVATION.

THE CONCRETE IN THE HATCHED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

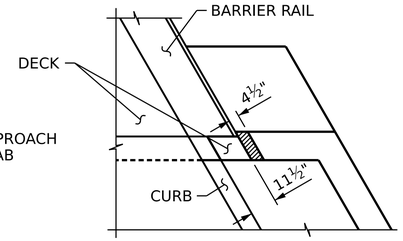


PLAN



ELEVATION

BLOCKOUT IN WINGWALL W1



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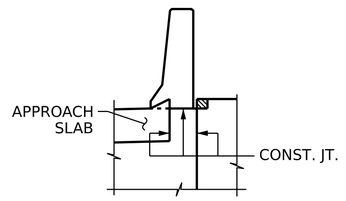

ELEVATION

BLOCKOUT IN WINGWALL W2

DRAWN BY : A.R. VAN VUREN DATE : 04/2023
CHECKED BY : A.K. VASUDEVAN DATE : 05/2023
DESIGN ENGINEER OF RECORD: A.K. VASUDEVAN DATE : 06/2023

8/22/2023
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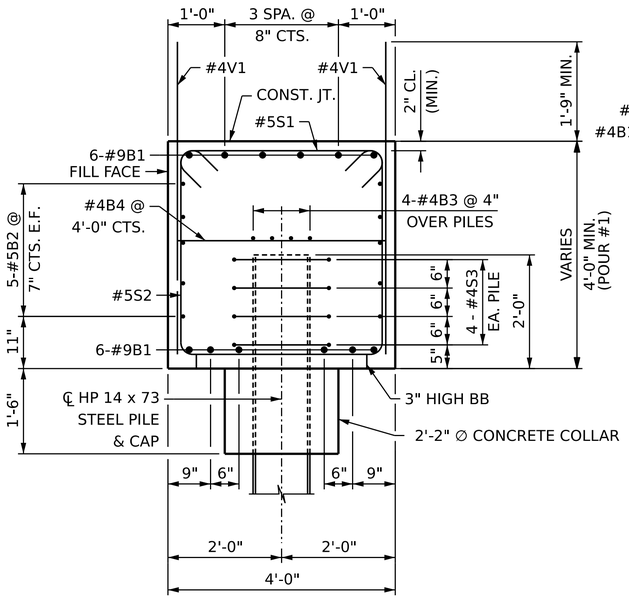
NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANUPAMA K. VASUDEVAN
Document Id: BF206058AD65425...
10/18/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

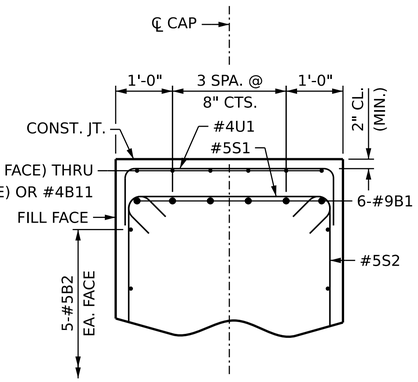
INTEGRAL END BENT 1

PROJECT NO. B-3186 / B-5898
HAYWOOD COUNTY
STATION: 24+42.26 -L_RT-
SHEET 2 OF 3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-21
1			3			TOTAL SHEETS
2			4			31

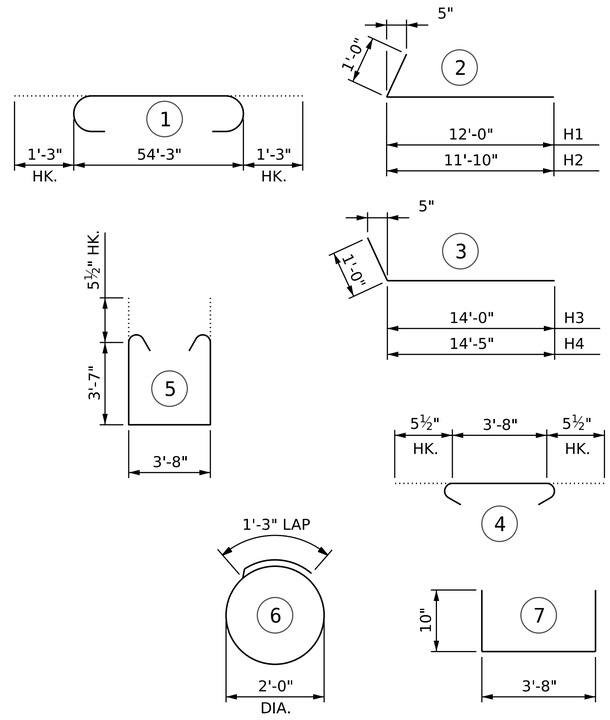


SECTION A-A



PARTIAL SECTION B-B

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

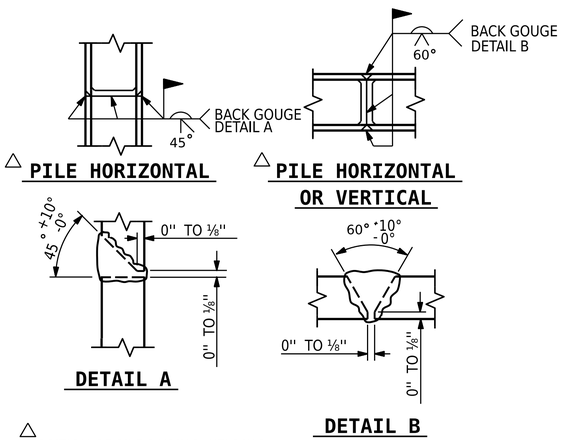
INTEGRAL END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	9	1	56'-9"	2,315
B2	10	5	STR	54'-3"	566
B3	8	4	STR	28'-6"	152
B4	14	4	STR	3'-8"	34
B5	1	4	STR	9'-0"	6
B6	1	4	STR	8'-8"	6
B7	1	4	STR	8'-3"	6
B8	1	4	STR	7'-10"	5
B9	1	4	STR	7'-6"	5
B10	1	4	STR	7'-1"	5
B11	18	4	STR	7'-11"	95
H1	12	6	2	13'-0"	234
H2	12	6	2	12'-10"	231
H3	12	6	3	15'-0"	270
H4	12	6	3	15'-5"	278
H5	18	6	STR	15'-4"	415
H6	16	6	STR	17'-6"	421
K1	24	4	STR	3'-0"	48
K2	24	4	STR	3'-1"	49
S1	61	5	4	4'-7"	292
S2	61	5	5	11'-9"	748
S3	48	4	6	7'-7"	243
U1	23	4	7	5'-4"	82
V1	68	4	STR	6'-2"	280
V2	34	5	STR	10'-3"	363
V3	38	5	STR	9'-7"	380

REINFORCING STEEL 7,529 LBS.

CLASS A CONCRETE

POUR #1 (CAP, COLLARS, & LOWER WINGWALLS)	40.7 C.Y.
POUR #2 (UPPER WINGWALL)	7.0 C.Y.
TOTAL = 47.7 C.Y.	



△ PILE HORIZONTAL

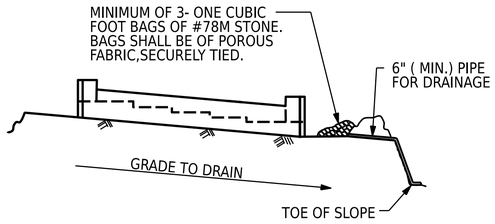
△ PILE HORIZONTAL OR VERTICAL

DETAIL A

DETAIL B

△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

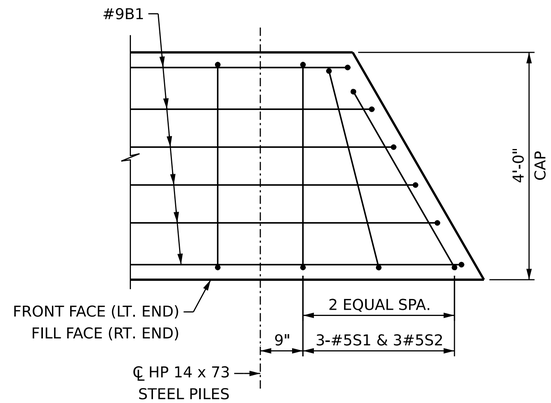


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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



SPLAYED BAR DETAIL

PLAN VIEW SHOWN AT RIGHT END, LEFT END SIMILAR BY ROTATION (WINGWALL NOT SHOWN FOR CLARITY)

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NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANURADHA K VASUDEVAN

Docusigned by: Anuradha Vasudevan BF206058AD65426...

10/18/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

INTEGRAL END BENT 1

PROJECT NO. B-3186 / B-5898
HAYWOOD COUNTY
STATION: 24+42.26 -L_RT-

SHEET 3 OF 3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-22
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : A.R. VAN VUREN DATE : 05/2023
CHECKED BY : A.K. VASUDEVAN DATE : 05/2023
DESIGN ENGINEER OF RECORD: A.K. VASUDEVAN DATE : 06/2023

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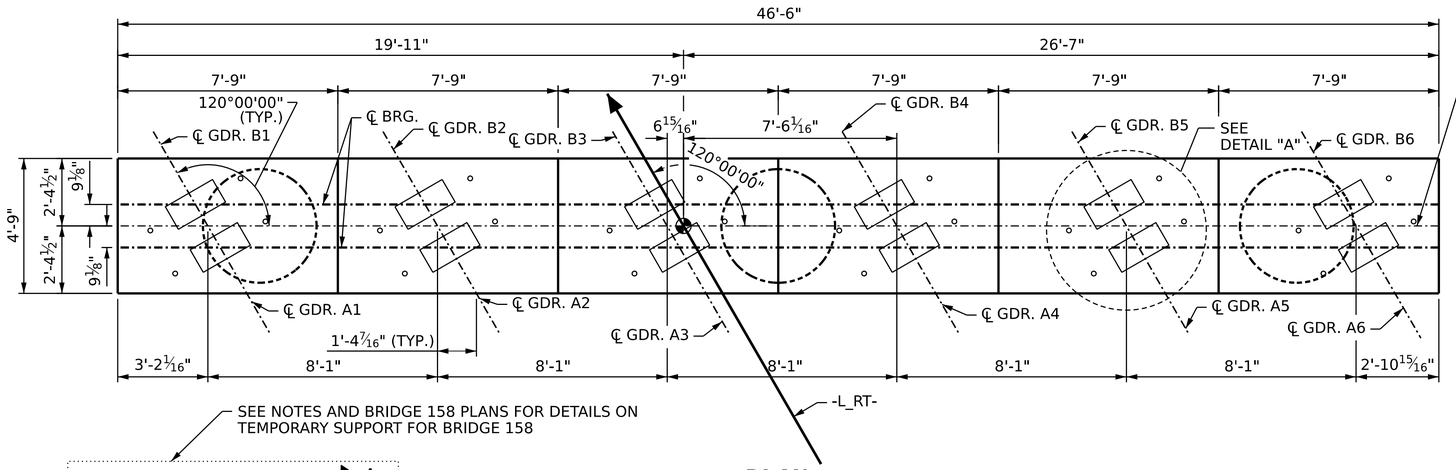
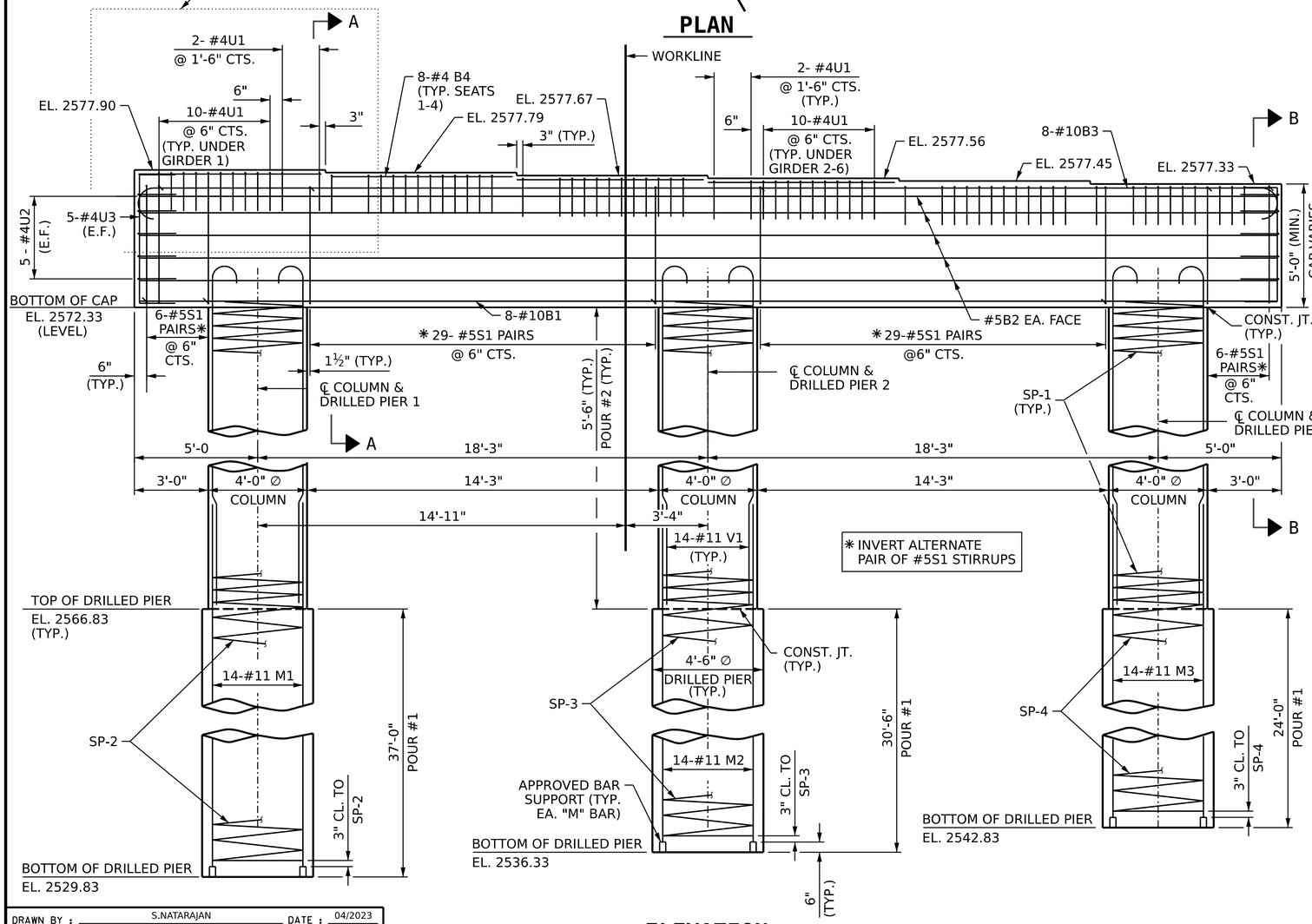


SPAN B

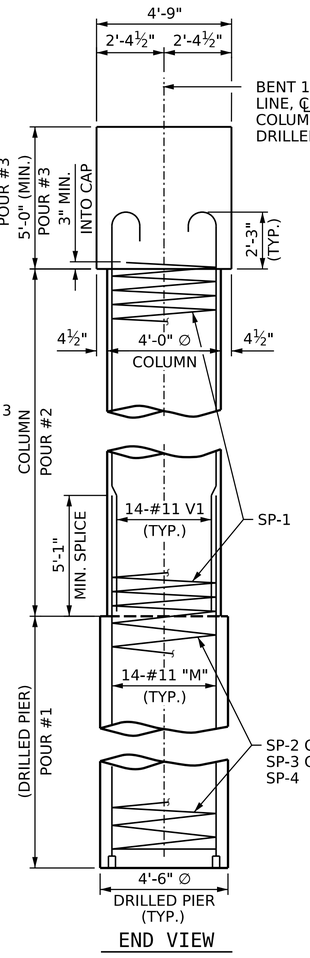
SPAN A

PLAN

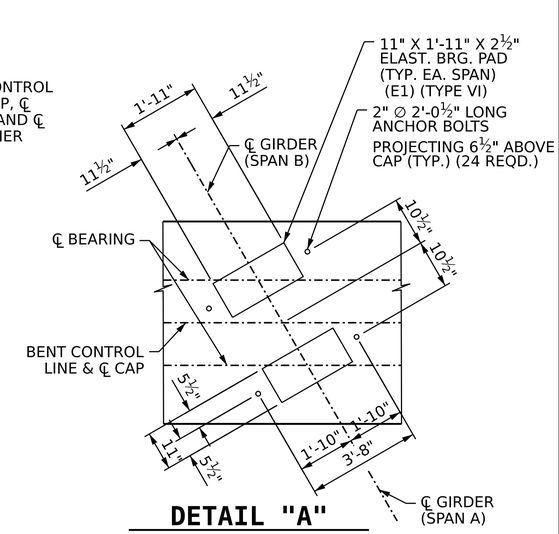
SEE NOTES AND BRIDGE 158 PLANS FOR DETAILS ON TEMPORARY SUPPORT FOR BRIDGE 158



ELEVATION



END VIEW



DETAIL "A"

DIMENSIONS ARE TYPICAL FOR EACH BEARING FOR EACH GIRDER

NOTES:

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

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

FOR DRILLED PIERS AND PERMANENT STEEL CASING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

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

SEE PILE AND DRILLED PIER FOUNDATION TABLES FOR DRILLED PIER FOUNDATION DATA.

FOR SECTION A-A, B-B AND CAP END VIEWS, SEE SHEET 2 OF 2.

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

SEE BRIDGE 158 PLANS FOR LOCATION AND LIMITS OF INTERIOR BENT OVERBUILD CONSTRUCTION AND DEMOLITION.

DURING THE CONSTRUCTION AND DEMOLITION OF BRIDGE 158 OVERBUILT PORTION OF BENT 1 OVER PROPOSED BRIDGE 155, THE CONTRACTOR SHALL ENSURE THAT NO DAMAGE SHALL OCCUR TO THE PROPOSED BENT 1 OF BRIDGE 155. THE TEMPORARY SUPPORT SHALL BE REMOVED PRIOR TO THE ERECTION OF GIRDERS. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE SPECIAL PROVISIONS.

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+42.26 -L_RT-

SHEET 1 OF 2

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NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANNELLEN K. VASUDEVAN

Docusigned by: Annellen K. Vasudevan BF206058AD65425...

10/18/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-23
1			3			TOTAL SHEETS
2			4			31

DRAWN BY :	S.NATARAJAN	DATE : 04/2023
CHECKED BY :	A.K.VASUDEVAN	DATE : 05/2023
DESIGN ENGINEER OF RECORD:	A.K.VASUDEVAN	DATE : 06/2023

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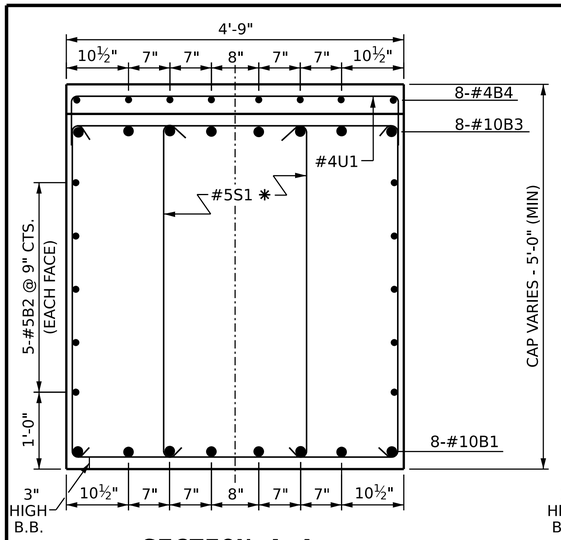
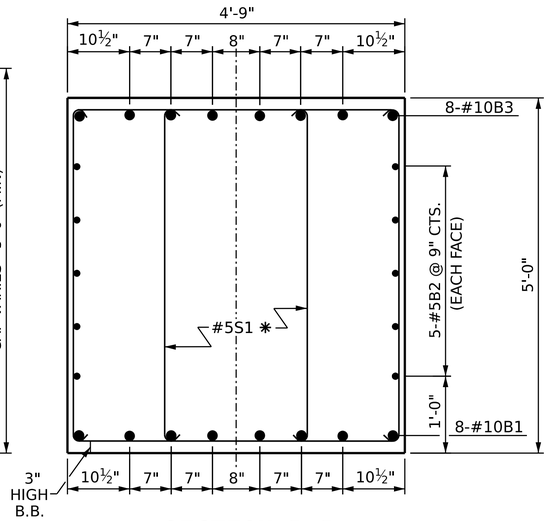
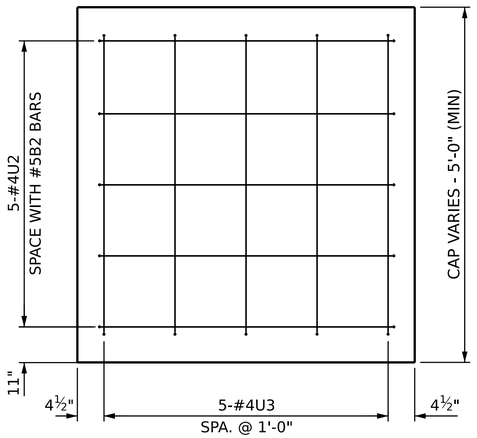


SECTION A-A



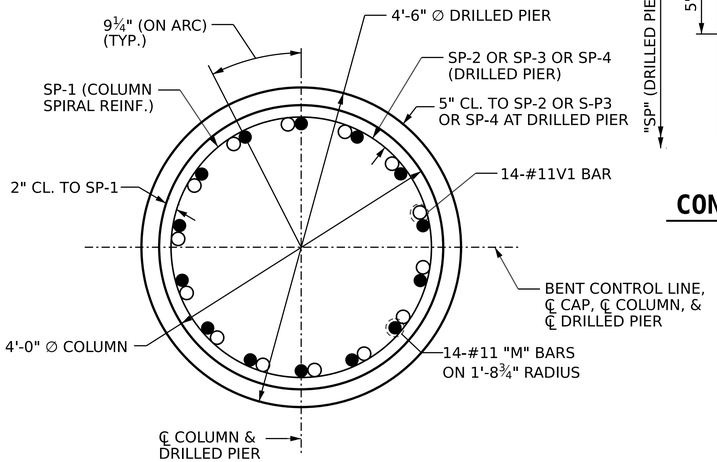
SECTION B-B

✱ INVERT ALTERNATIVE PAIR OF #5S1 STIRRUPS

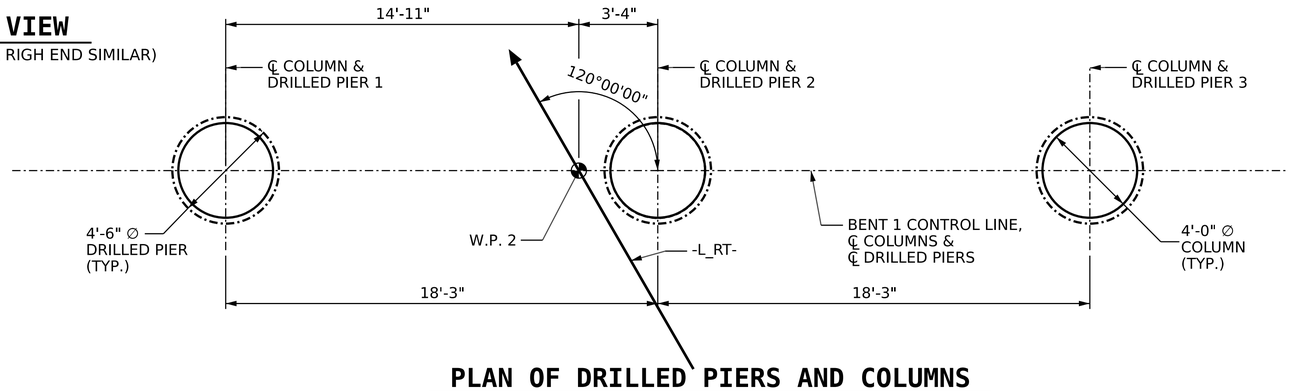


CAP END VIEW

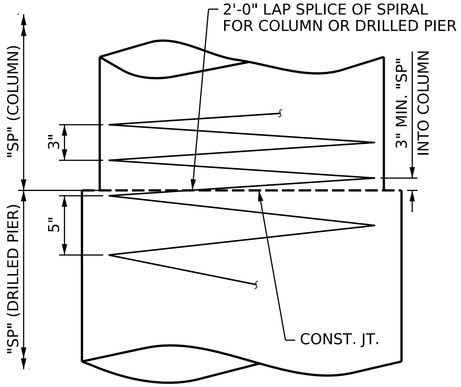
(LEFT END VIEW SHOWN, RIGH END SIMILAR)



SECTION THRU COLUMN & DRILLED PIER

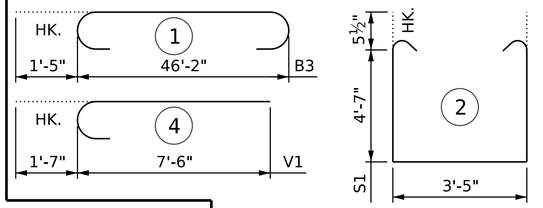


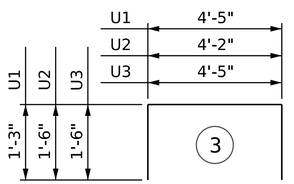
PLAN OF DRILLED PIERS AND COLUMNS

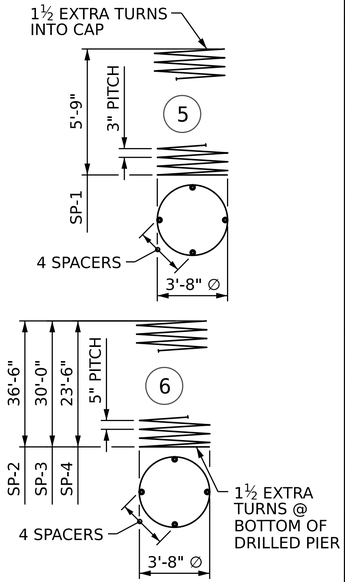


CONSTRUCTION JOINT DETAIL

BAR TYPES







ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	10	STR	46'-2"	1,589
B2	10	5	STR	46'-2"	482
B3	8	10	1	49'-0"	1,687
B4	32	4	STR	7'-7"	162
M1	14	11	STR	44'-7"	3,316
M2	14	11	STR	38'-1"	2,833
M3	14	11	STR	31'-7"	2,349
S1	140	5	2	13'-6"	1,971
U1	72	4	3	6'-11"	333
U2	10	4	3	7'-2"	48
U3	10	4	3	7'-5"	50
V1	42	11	4	9'-1"	2,027
REINFORCING STEEL					16,847 LBS.
SP-1	3	✱	5	278'-8"	558
SP-2	1	✱✱	6	1011'-0"	1,054
SP-3	1	✱✱	6	834'-0"	870
SP-4	1	✱✱	6	657'-0"	685
SPIRAL COLUMN REINFORCING STEEL					3,167 LBS.

✱ THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

✱✱ THE SP-2,SP-3 & SP-4 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN	
POUR #2 (COLUMNS)	7.7 C.Y.
POUR #3 (CAP)	43.2 C.Y.
TOTAL CLASS A CONCRETE	50.9 C.Y.
DRILLED PIERS:	
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	53.9 C.Y.

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+42.26 -L_RT-

SHEET 2 OF 2

DRAWN BY : S.NATARAJAN DATE : 04/2023
CHECKED BY : A.K.VASUDEVAN DATE : 05/2023
DESIGN ENGINEER OF RECORD: A.K.VASUDEVAN DATE : 06/2023

1/27/2023
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Docusigned by: Ananthan K. Vasudevan BF206058AD65425...

10/18/2023

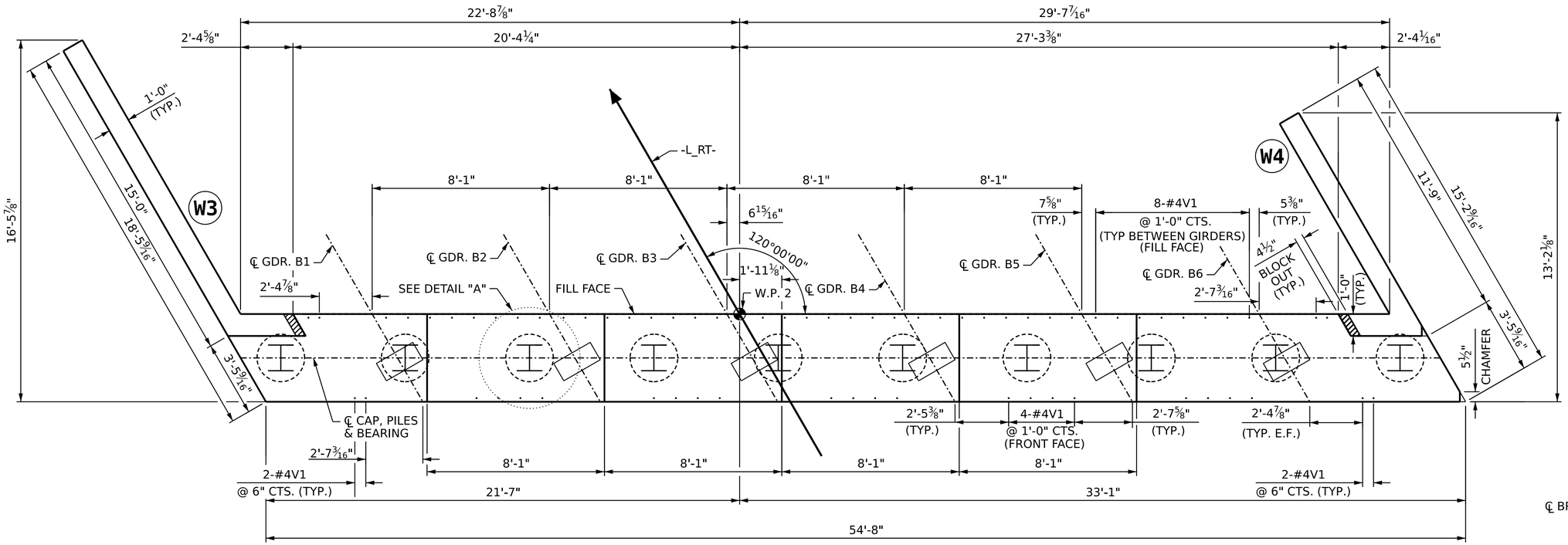
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-24
1			3			TOTAL SHEETS
2			4			31

PLAN



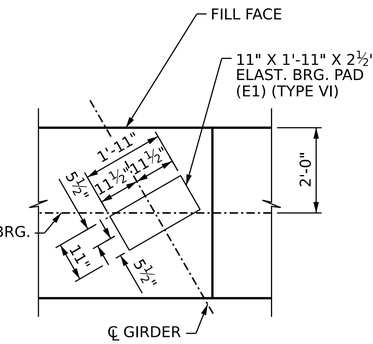
NOTES:

THE TOP SURFACE OF THE END BENT CAP AND WINGS EXCEPT THE BEARING AREA AND AREA BEYOND THE LIMITS OF THE DECK SHALL BE RAKED TO A DEPTH OF ¼".

THE TOP SURFACE OF THE INTEGRAL END BENT CAP, BEYOND THE LIMITS OF THE DECK, SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE FRONT FACE AT THE RATE OF 2%.

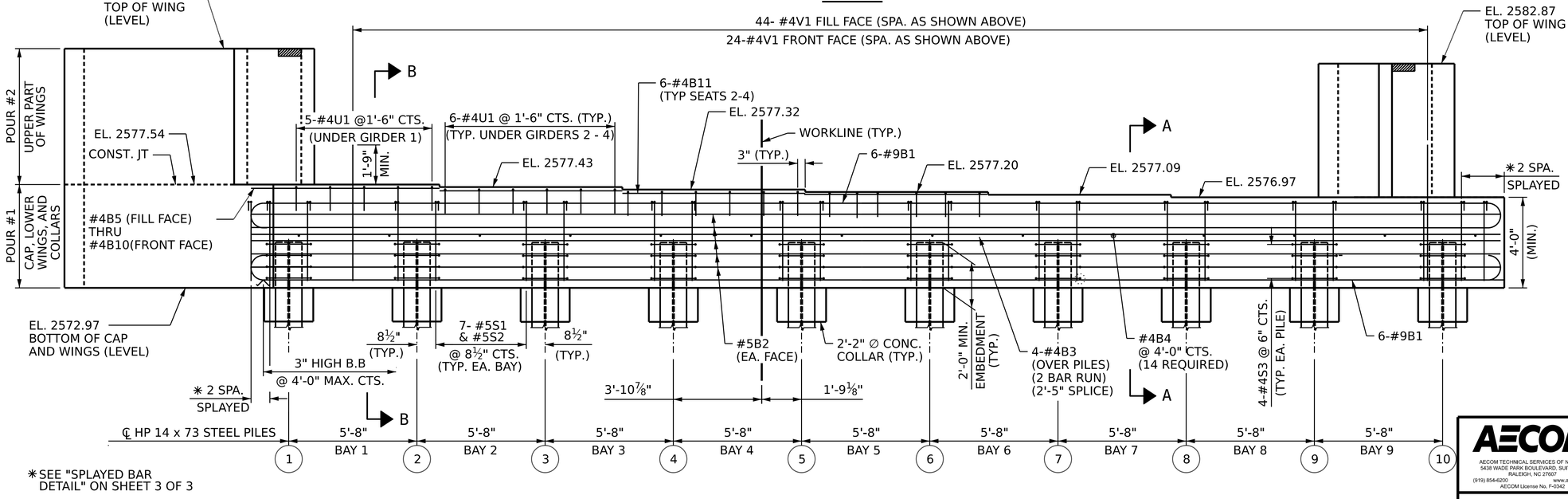
FOR WING DETAILS AND BLOCKOUT, SEE SHEET 2 OF 3.

FOR SECTION A-A, SECTION B-B, PILE SPLICE DETAILS, AND TEMPORARY DRAINAGE DETAILS, SEE SHEET 3 OF 3.



DETAIL "A"

ELEVATION



∗SEE "SPLAYED BAR DETAIL" ON SHEET 3 OF 3

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+42.26 -L_RT-

SHEET 1 OF 3

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Docusigned by: Anuradha K Vasudevan BF206058AD65420...

10/18/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

INTEGRAL END BENT 2

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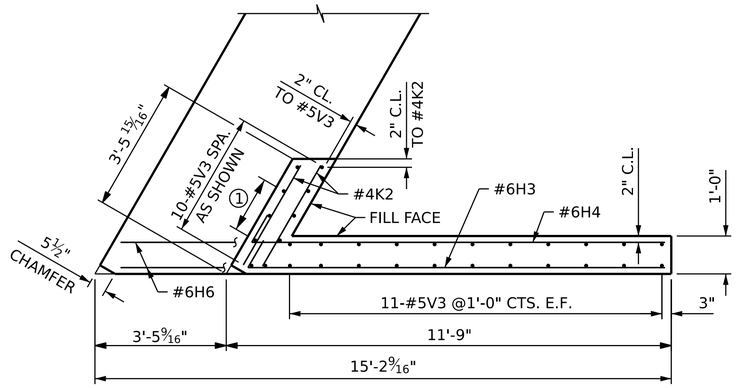
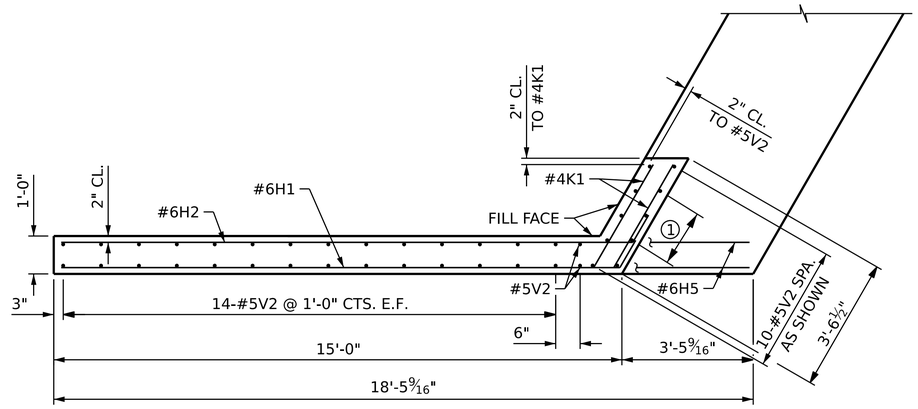
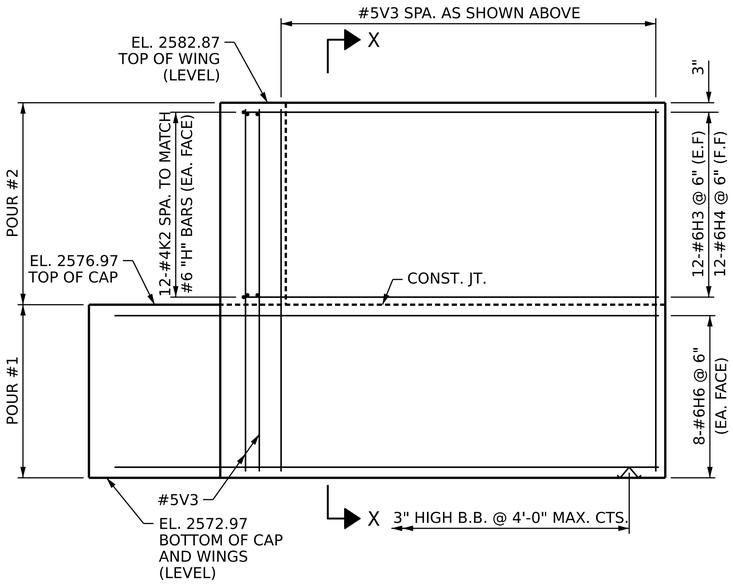


① 2 SPA. @ 9" CTS. (EA. FACE)

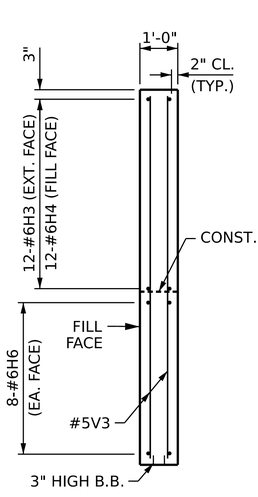
PLAN OF WING W4



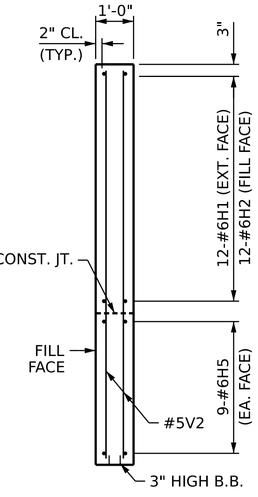
PLAN OF WING W3



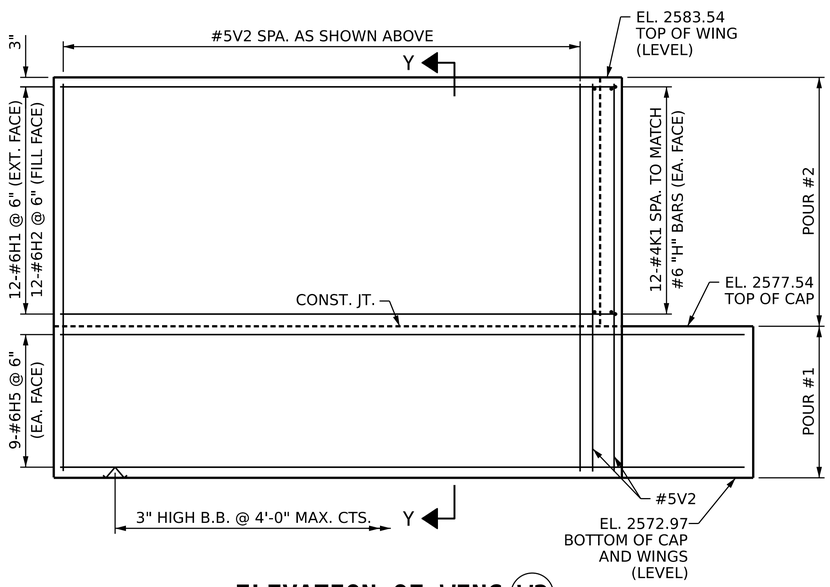
ELEVATION OF WING W4



SECTION X-X



SECTION Y-Y

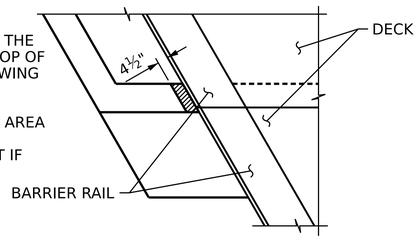


ELEVATION OF WING W3

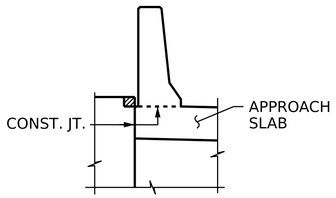
NOTES:

CONCRETE SHALL BE POURED IN THE HATCHED AREA TO MATCH THE TOP OF CURB AND INTEGRAL END BENT WING ELEVATION.

THE CONCRETE IN THE HATCHED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

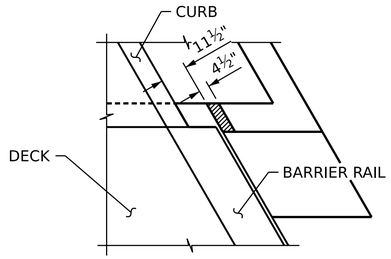


PLAN

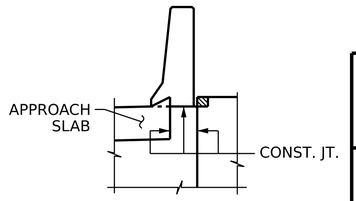


ELEVATION

BLOCKOUT IN WINGWALL W3



PLAN



ELEVATION

BLOCKOUT IN WINGWALL W4

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+42.26 -L_RT-

SHEET 2 OF 3

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AECOM License No. F-0342

NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER A.K. VASUDEVAN

Docusigned by: A.K. Vasudevan
BF206058AD65425...

10/18/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

INTEGRAL END BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-26
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : S.NATARAJAN DATE : 05/2023
CHECKED BY : A.K. VASUDEVAN DATE : 05/2023
DESIGN ENGINEER OF RECORD: A.K. VASUDEVAN DATE : 06/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

8/22/2023
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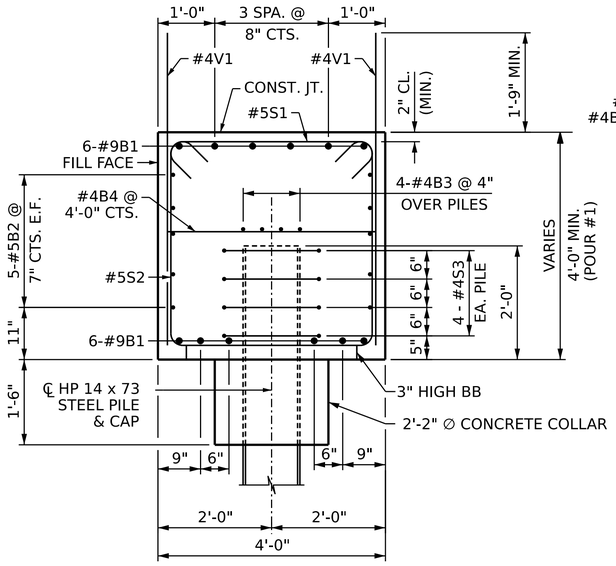
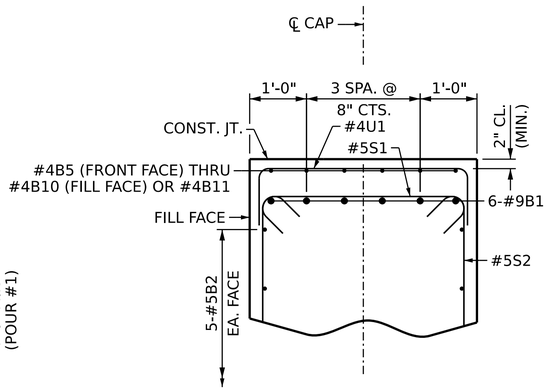
vasudevana

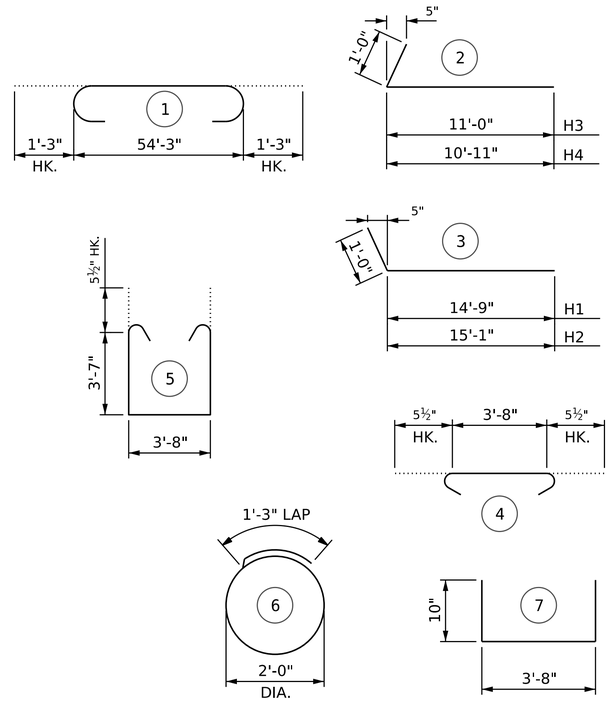


SECTION A-A



PARTIAL SECTION B-B

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

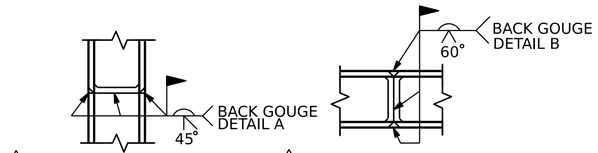
INTEGRAL END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	9	1	56'-9"	2,315
B2	10	5	STR	54'-3"	566
B3	8	4	STR	28'-6"	152
B4	14	4	STR	3'-8"	34
B5	1	4	STR	9'-0"	6
B6	1	4	STR	8'-6"	6
B7	1	4	STR	8'-2"	6
B8	1	4	STR	7'-9"	5
B9	1	4	STR	7'-5"	5
B10	1	4	STR	6'-11"	5
B11	18	4	STR	7'-11"	97
H1	12	6	3	15'-9"	284
H2	12	6	3	16'-1"	290
H3	12	6	2	12'-0"	216
H4	12	6	2	11'-11"	215
H5	18	6	STR	18'-2"	491
H6	16	6	STR	14'-5"	346
K1	24	4	STR	3'-1"	49
K2	24	4	STR	3'-0"	48
S1	69	5	4	4'-7"	330
S2	69	5	5	11'-9"	846
S3	40	4	6	7'-7"	203
U1	23	4	7	5'-4"	82
V1	68	4	STR	6'-2"	280
V2	40	5	STR	10'-2"	424
V3	32	5	STR	9'-6"	317

REINFORCING STEEL 7,618 LBS.

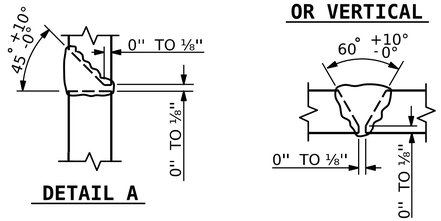
CLASS A CONCRETE

POUR #1 (CAP, COLLARS, & LOWER WINGWALLS)	40.8 C.Y.
POUR #2 (UPPER WINGWALL)	6.9 C.Y.
TOTAL = 47.7 C.Y.	



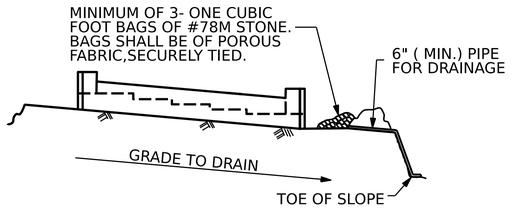
△ PILE HORIZONTAL

△ PILE HORIZONTAL OR VERTICAL



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

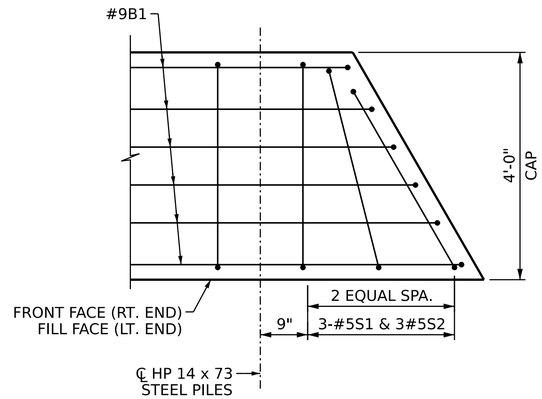


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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



SPLAYED BAR DETAIL

PLAN VIEW SHOWN AT RIGHT END, LEFT END SIMILAR BY ROTATION
WING WALL NOT SHOW FOR CLARITY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+42.26 -L_RT-

SHEET 3 OF 3

AECOM
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AECOM License No. F-0342

NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANURADHA K VASUDEVAN

Anuradha K Vasudevan
BF206058AD65420...

10/18/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

INTEGRAL END BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-27
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : S.NATARAJAN DATE : 05/2023
CHECKED BY : A.K. VASUDEVAN DATE : 05/2023
DESIGN ENGINEER OF RECORD: A.K. VASUDEVAN DATE : 06/2023

7/28/2023
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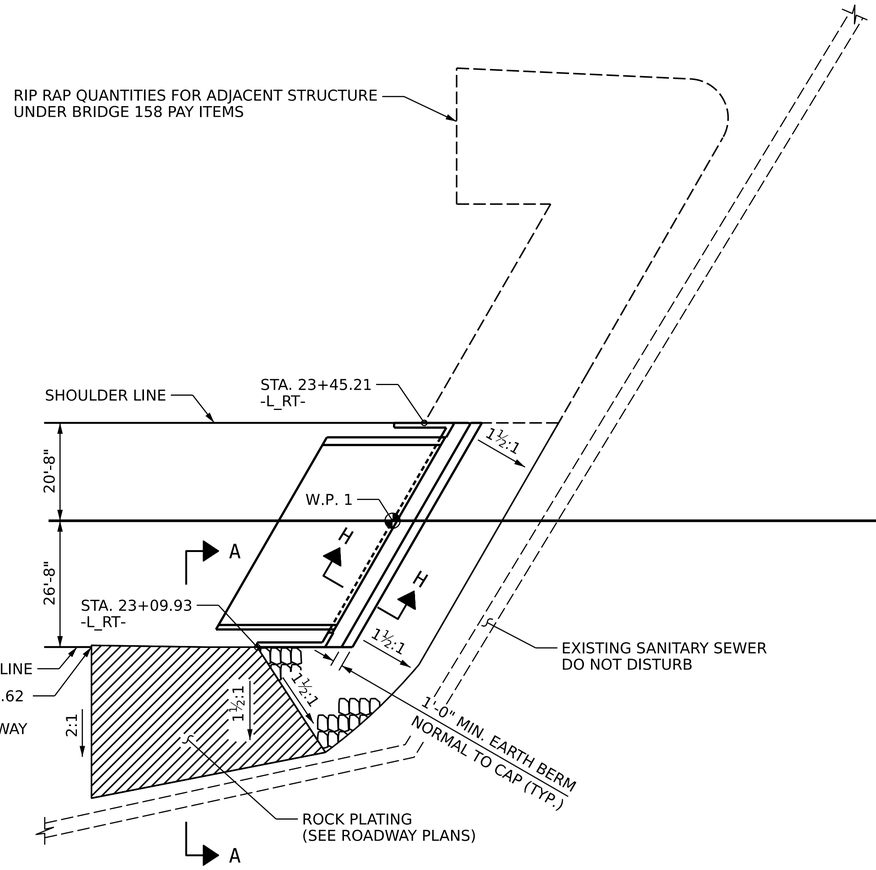
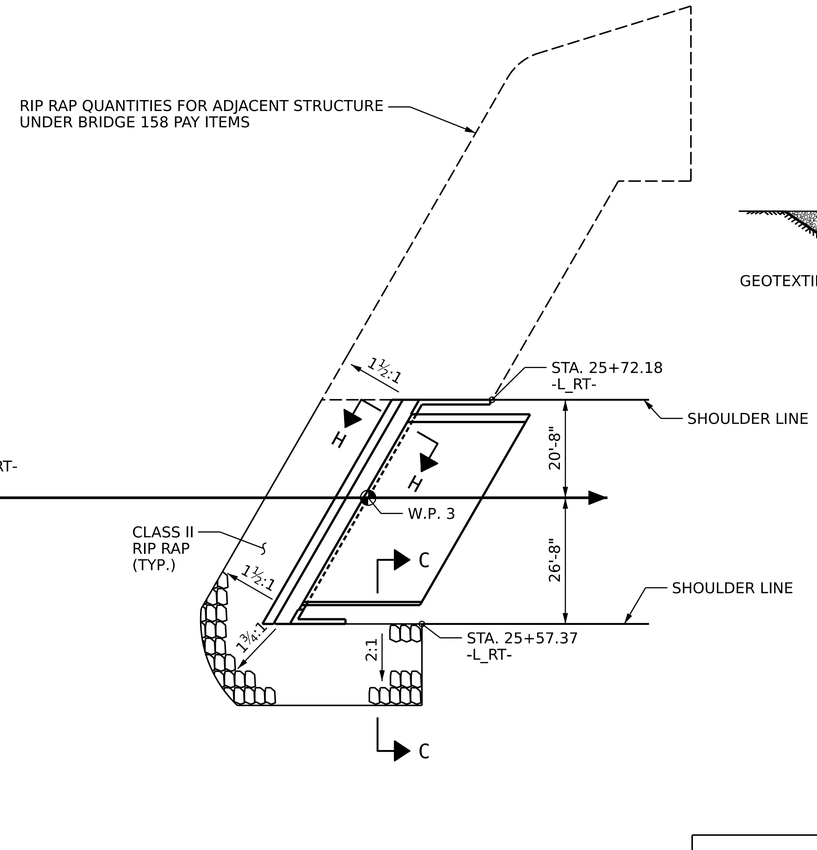
NealT



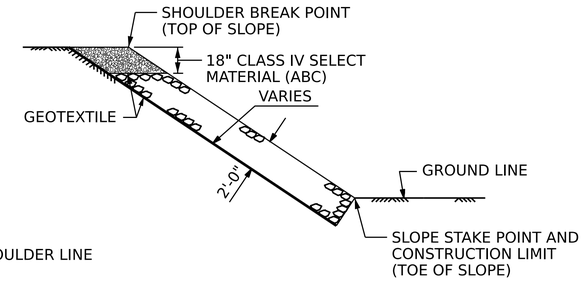
END BENT 1



END BENT 2

NOTES

FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

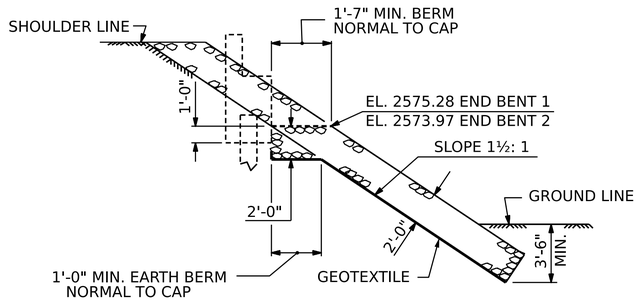


SECTION A-A

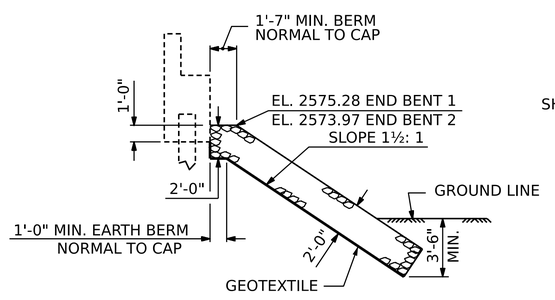
ESTIMATED QUANTITIES

BRIDGE @ STA. 24+42.26 -L_RT-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	174	193
END BENT 2	287	318

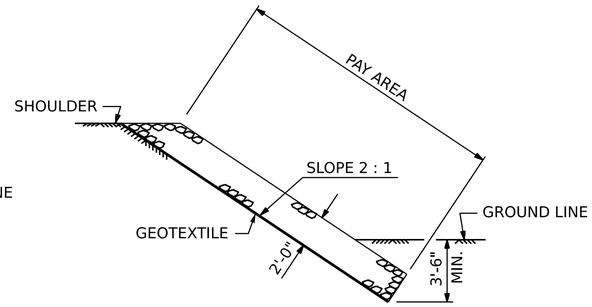
PLAN



SECTION H-H



℄ SECTION
BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-3186 / B-5898
HAYWOOD COUNTY
STATION: 24+42.26 -L_RT-

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AECOM License No. F-0342

NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANUPAMA K VASUDEVAN
Document ID: BF206058AD65425...
Anupama K Vasudevan
10/18/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
RIP RAP DETAILS

ASSEMBLED BY : A.R. VAN VUREN	DATE : 05/2023
CHECKED BY : A.K. VASUDEVAN	DATE : 05/2023
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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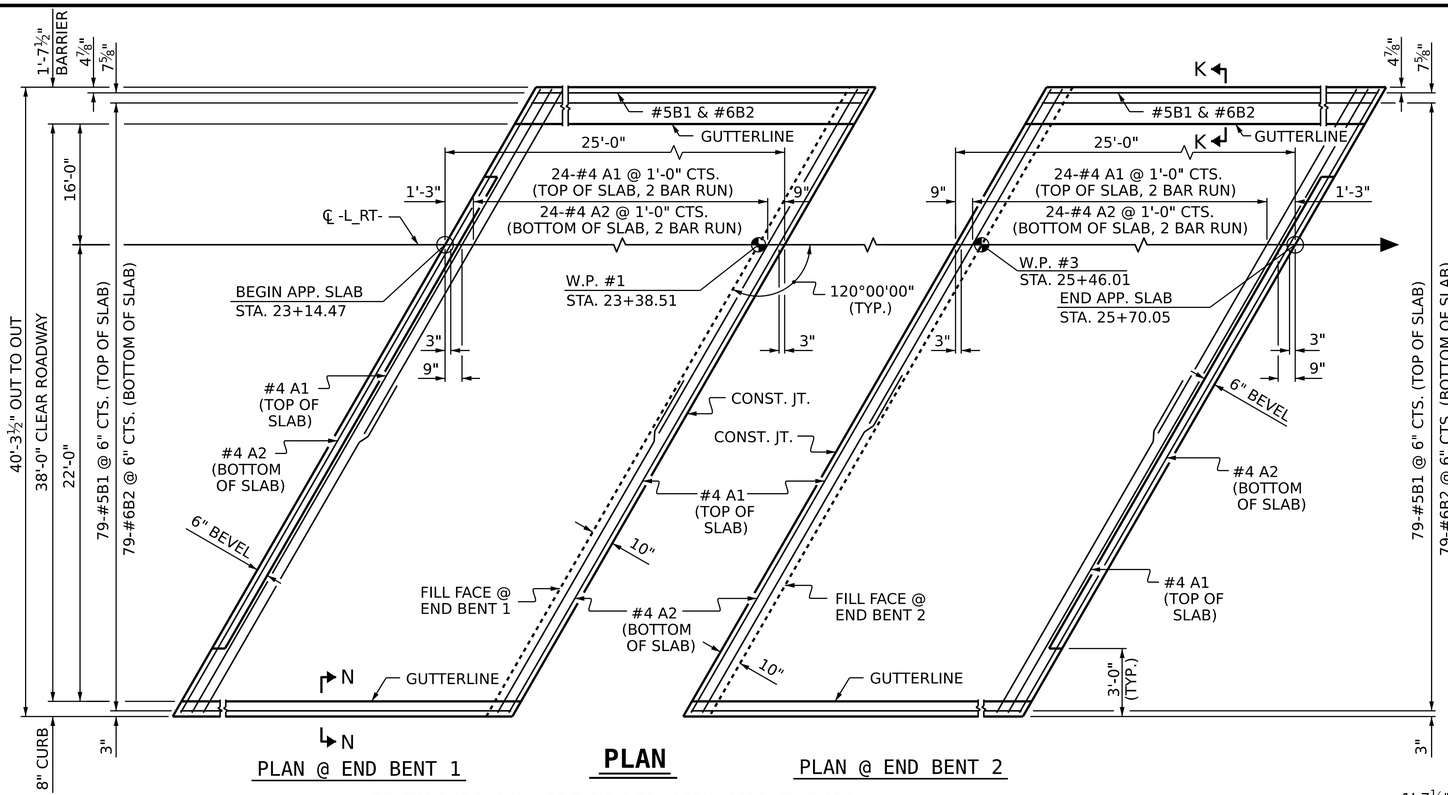
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-28
1			3			TOTAL SHEETS
2			4			31

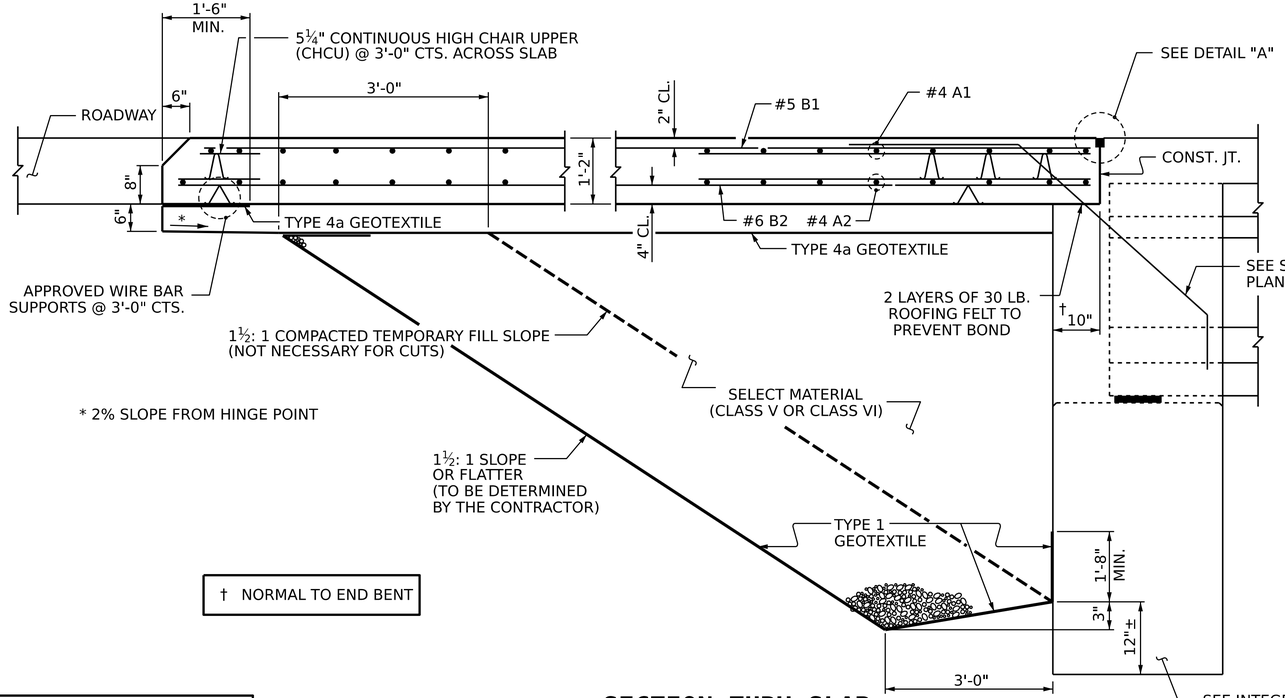
8/31/2023
c:\pwworking\usnc\dms13605\402_055_B-5898-B-3186_SMU_RR1_S2-28_460155.dgn
austin.vanvuren

STD. NO. RR1



PLAN @ END BENT 1 — **PLAN** — PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



* 2% SLOPE FROM HINGE POINT

† NORMAL TO END BENT

SECTION THRU SLAB

(TYPE I - STANDARD APPROACH FILL)

NOTES:

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

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE AND SELECT MATERIAL, SEE ROADWAY PLANS.

GEOTEXTILE (TYPE 1 OR TYPE 4a) SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

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

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

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

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

AT THE CONTRACTORS OPTION, "TYPE 1A FILL" IN LIEU OF "TYPE I FILL" MAY BE CONSTRUCTED AT NO ADDITIONAL COST TO THE DEPARTMENT.

SEE SHEET 2 OF 2 FOR DETAILS AND NOTES.

BILL OF MATERIAL

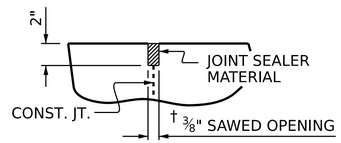
FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	52	#4	STR	24'-0"	834
A2	52	#4	STR	23'-10"	828
* B1	80	#5	STR	24'-0"	2,003
B2	80	#6	STR	24'-7"	2,954

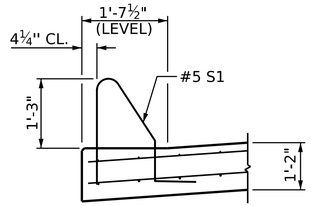
REINFORCING STEEL	3,782 LBS.
* EPOXY COATED REINFORCING STEEL	2,837 LBS.
CLASS AA CONCRETE	43.4 C. Y.

SPLICE LENGTHS

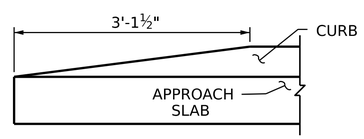
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"



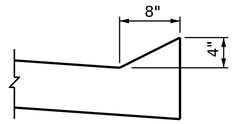
DETAIL "A"



SECTION K-K



END OF CURB WITHOUT SHOULDER BERM GUTTER



SECTION N-N

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+42.26 -L_RT-

SHEET 1 OF 3

ASSEMBLED BY : A.R. VAN VUREN	DATE : 05/2023					
CHECKED BY : A.K. VASUDEVAN	DATE : 06/2023					
DRAWN BY : TLA 10/05	REV. 6/13	MAA/GM				
CHECKED BY : GM 5/06	REV. 12/17	MAA/THC				
	REV. 06/19	BNB/THC				

10/18/2023
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AECOM License No. F-0342

NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANANTHA K. VASUDEVAN

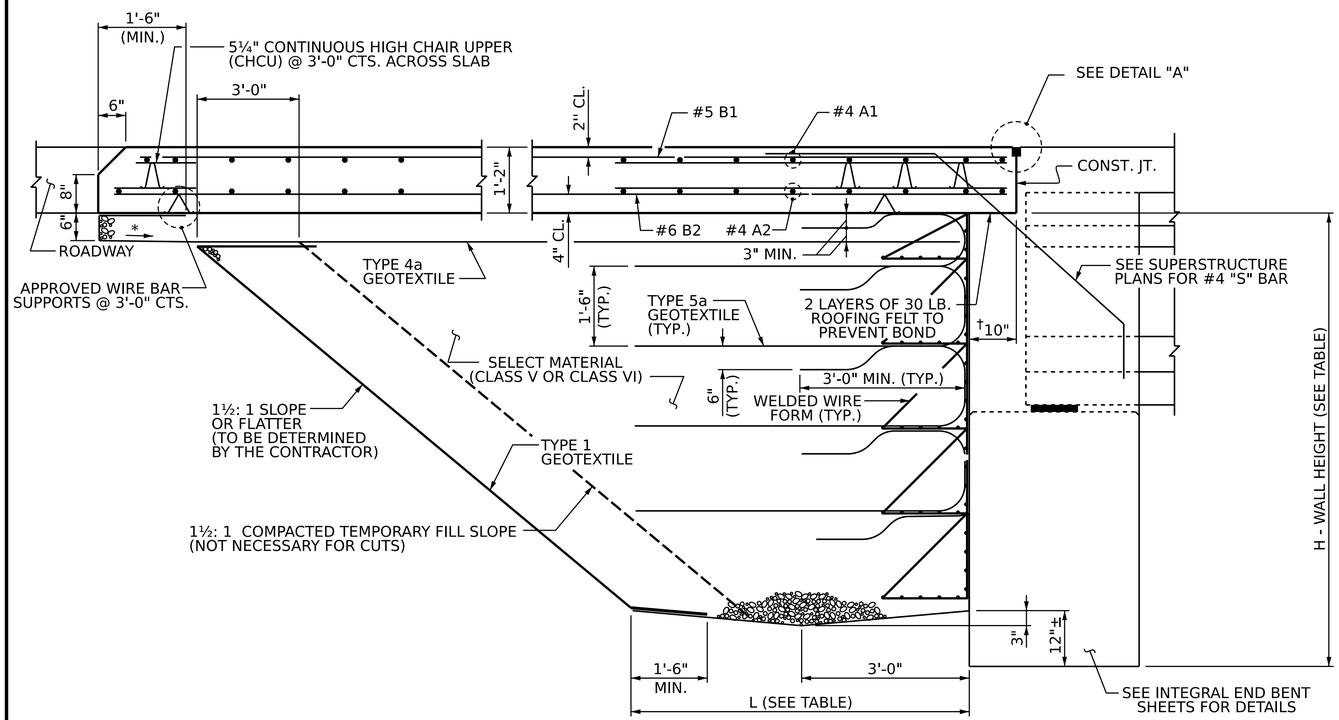
10/18/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT WITH FLEXIBLE PAVEMENT

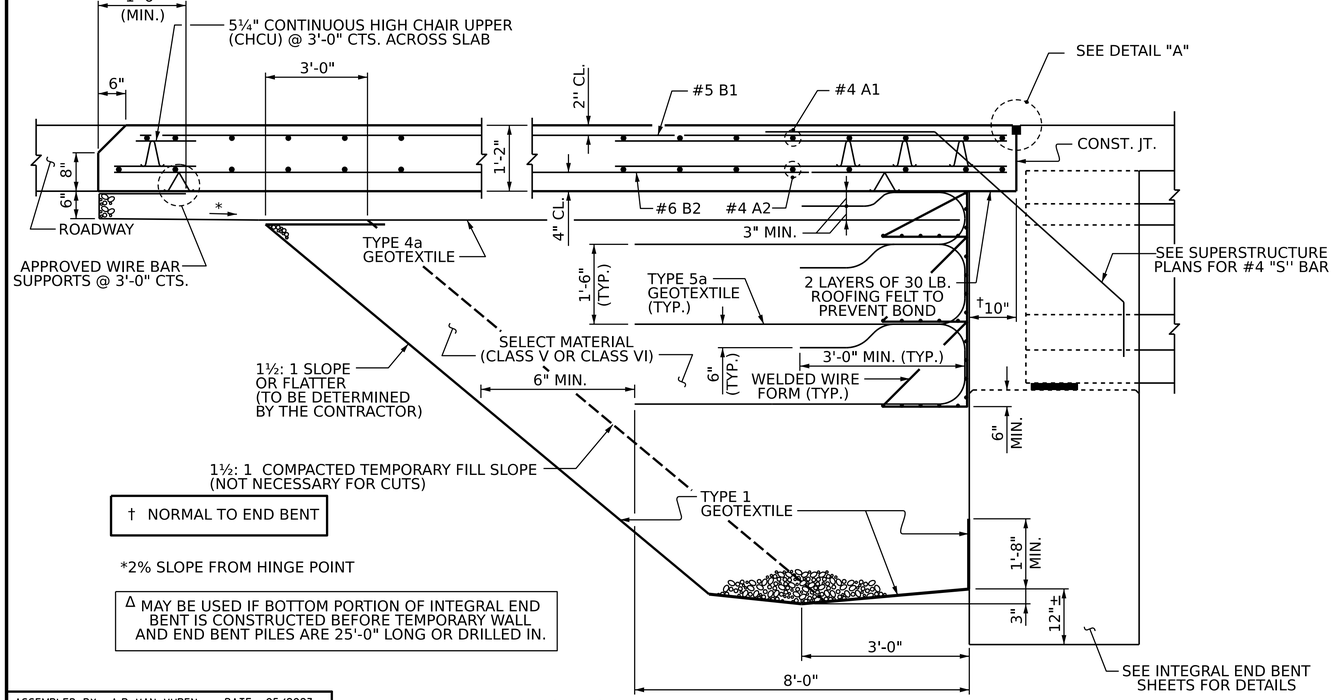
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-29
1			3			TOTAL SHEETS
2			4			31

STD. NO. BAS5



SECTION THRU SLAB

TYPE 1A FILL - SEE ROADWAY PLANS
SHEET 2C-5, 2C-6



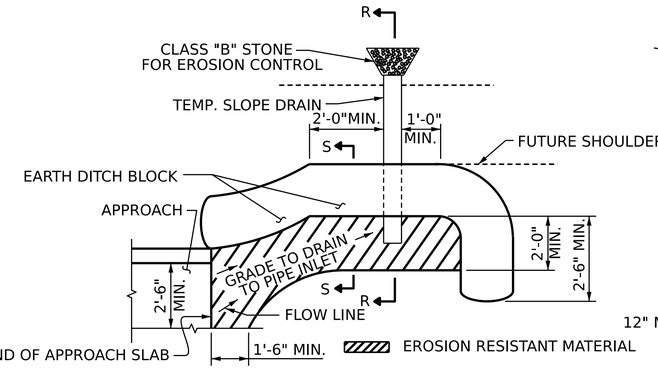
† NORMAL TO END BENT

*2% SLOPE FROM HINGE POINT

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

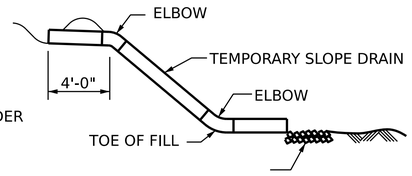
SECTION THRU SLAB

Δ (TYPE 1A FILL - SEE ROADWAY PLANS SHEET 2C-5, 2C-6)

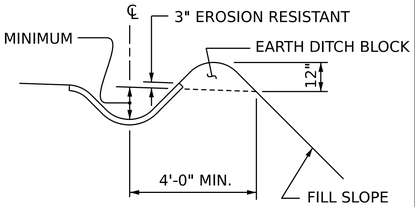


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW



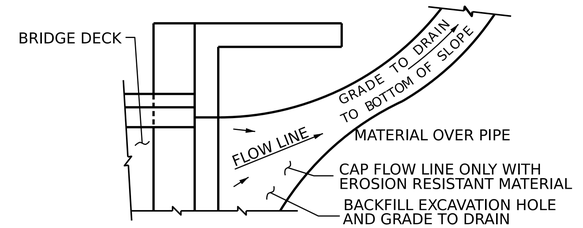
SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

TYPE 5a GEOTEXTILE REINFORCEMENT LENGTH

WALL HEIGHT H (FT)	REINFORCEMENT LENGTH L (FT)
< 8	8
8 TO 12	= H

NOTES

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

FOR TEMPORARY GEOTEXTILE WALL INCLUDING GEOTEXTILE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.

GEOTEXTILE (TYPE 1, TYPE 4a, OR TYPE 5a) SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

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

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

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

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

FOR DETAIL "A", SEE SHEET 1 OF 2.

PROJECT NO. B-3186 / B-5898
HAYWOOD COUNTY
STATION: 24+42.26 -L_RT-

SHEET 2 OF 3

AECOM
AECOM TECHNICAL SERVICES OF NC, INC.
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RALEIGH, NC 27607
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AECOM License No. F-0342

NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANUSHA K VASUDEVAN
Docusigned by: Anusha K Vasudevan
BF206058AD65425...
10/18/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT WITH FLEXIBLE PAVEMENT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-30
1			3			TOTAL SHEETS
2			4			31

STD. NO. BAS5

ASSEMBLED BY : A.R. VAN VUREN	DATE : 05/2023	REV. 6/13	MAA/GM
CHECKED BY : A.K. VASUDEVAN	DATE : 05/2023	REV. 12/17	MAA/THC
DRAWN BY : TLA 10/05		REV. 06/19	BNB/THC
CHECKED BY : GM 5/06			

10/18/2023
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NOTES

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

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

SHIFT, BEND, OR CUT REINFORCING STEEL AS NECESSARY TO CLEAR BLOCKOUT.

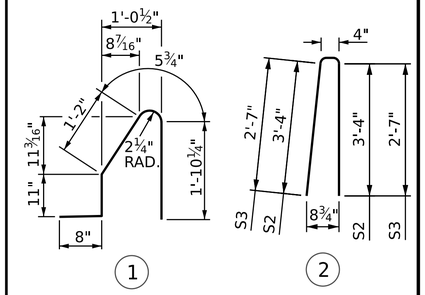
BILL OF MATERIAL

CONCRETE BARRIER RAIL

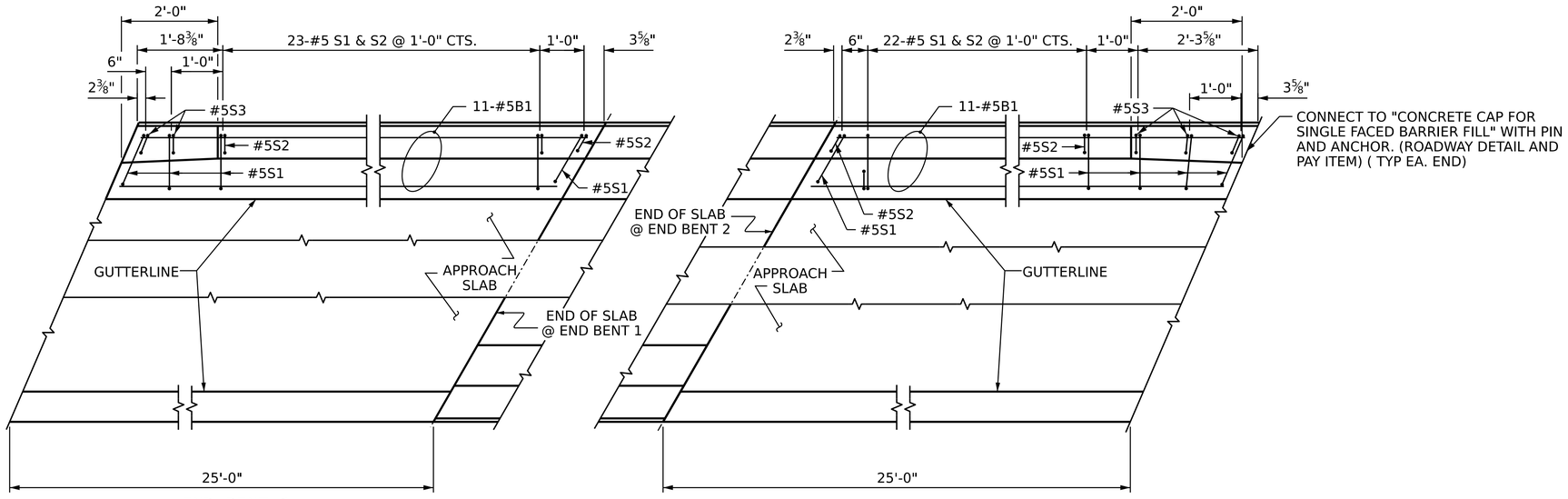
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B1	22	5	STR	24'-7"	564
✳ S1	52	5	1	5'-1"	276
✳ S2	47	5	2	7'-0"	343
✳ S3	5	5	2	5'-6"	29

✳ EPOXY COATED REINFORCING STEEL	1,212 LBS.
CLASS AA CONCRETE	6.8 C.Y.
CONCRETE BARRIER RAIL	50.0 L.F.

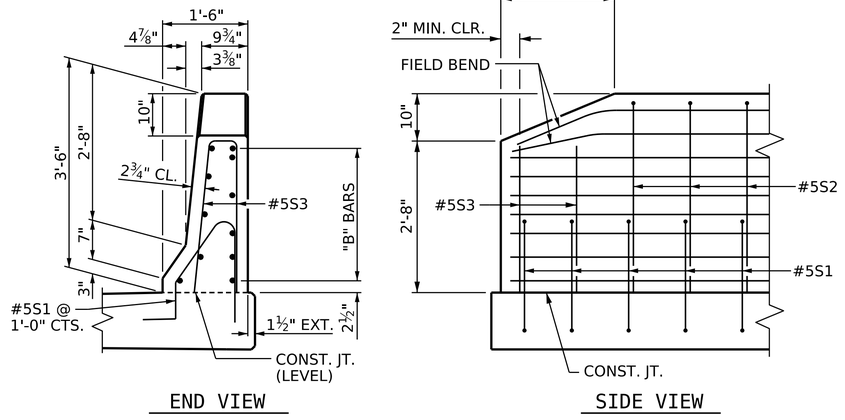
BAR TYPES

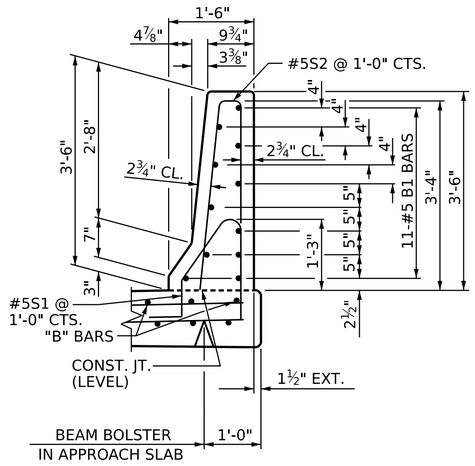


ALL BAR DIMENSIONS ARE OUT TO OUT.



PLAN OF BARRIER RAIL





END OF RAIL DETAILS

DRAWN BY :	A.R. VAN VUREN	DATE :	07/2023
CHECKED BY :	A.K. VASUDEVAN	DATE :	07/2023
DESIGN ENGINEER OF RECORD:	A.K. VASUDEVAN	DATE :	07/2023

10/18/2023
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NORTH CAROLINA PROFESSIONAL SEAL 054212 ENGINEER ANUPAMA K VASUDEVAN
Document ID: BF206058AD65425...
10/18/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SLAB DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-31
1			3			TOTAL SHEETS
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SHEET 3 OF 3