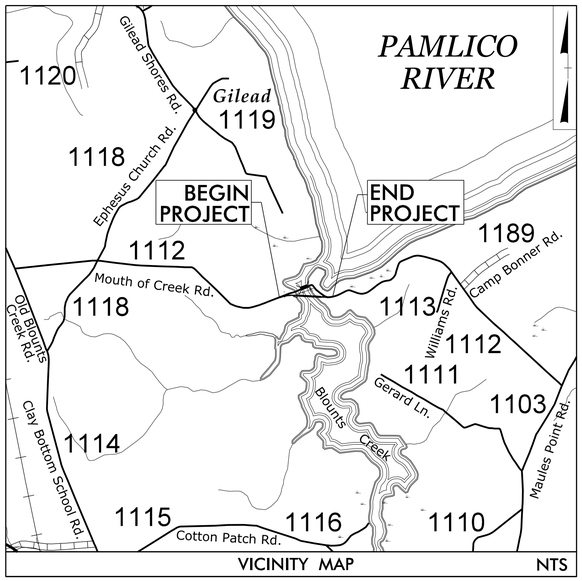
09/08/99

TIP PROJECT: B–5614

CONTRACT: C204711



VICINITY MAP NTS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BEAUFORT COUNTY

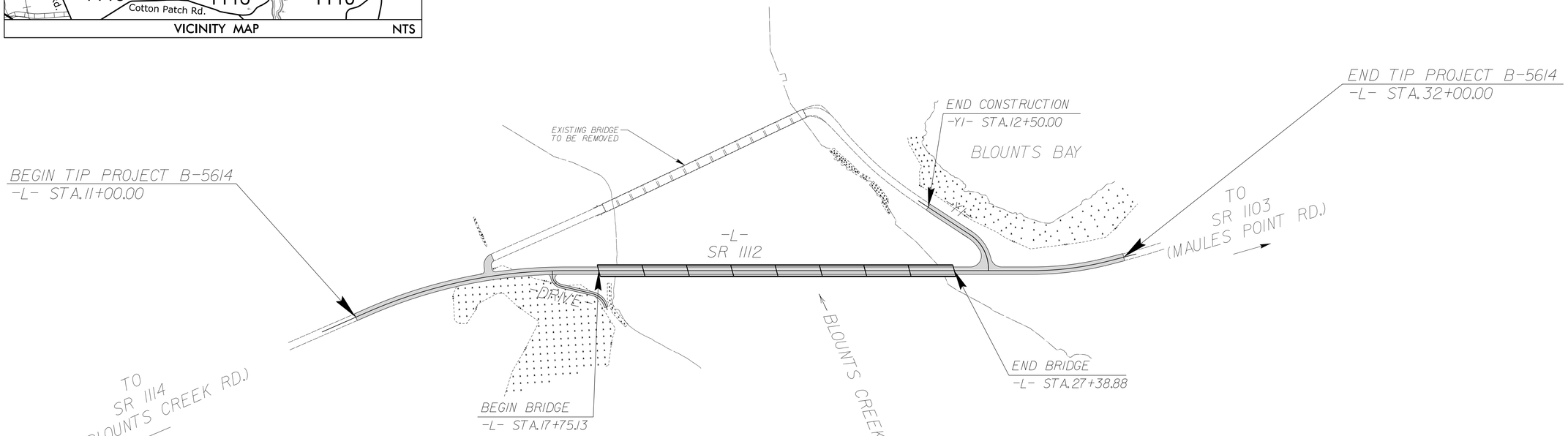
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–5614	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
45569.1.2	N/A	PE
45569.2.1	1112019	RIGHT–OF–WAY
45569.2.2	1112019	UTILITIES
45569.3.1	1112019	CONSTRUCTION

LOCATION: ***BRIDGE #060009 OVER BLOUNTS CREEK ON SR 1112 (MOUTH OF THE CREEK ROAD)***

TYPE OF WORK: ***DRAINAGE, GRADING, PAVING, AND STRUCTURE***

NAD 83/NA 1001



STRUCTURES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DESIGN DATA

2024 ADT = <1000
2044 ADT = <1000
V = 60 MPH

FUNC. CLASS. = LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B–5614	=	0.215 mi.
LENGTH STRUCTURES TIP PROJECT B–5614	=	0.183 mi.
TOTAL LENGTH TIP PROJECT B–5614	=	0.398 mi.

Prepared in the Offices of:

STEWART
223 S. WEST ST, STE 1100
RALEIGH, NC 27603
T 919.380.8750
Firm License #: C-1051
www.stewartinc.com
PROJECT #T19004.00

VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 15, 2021

LETTING DATE:
OCTOBER 21, 2025

DAVID RUGGLES, PE
PROJECT ENGINEER

JEFFREY C. WILSON, PE
PROJECT DESIGN ENGINEER

DAVID STUTTS, PE
NCDOT CONTACT

STRUCTURES ENGINEER

DocuSigned by: David Ruggles
C462768DF412422 P.E.

SIGNATURE:

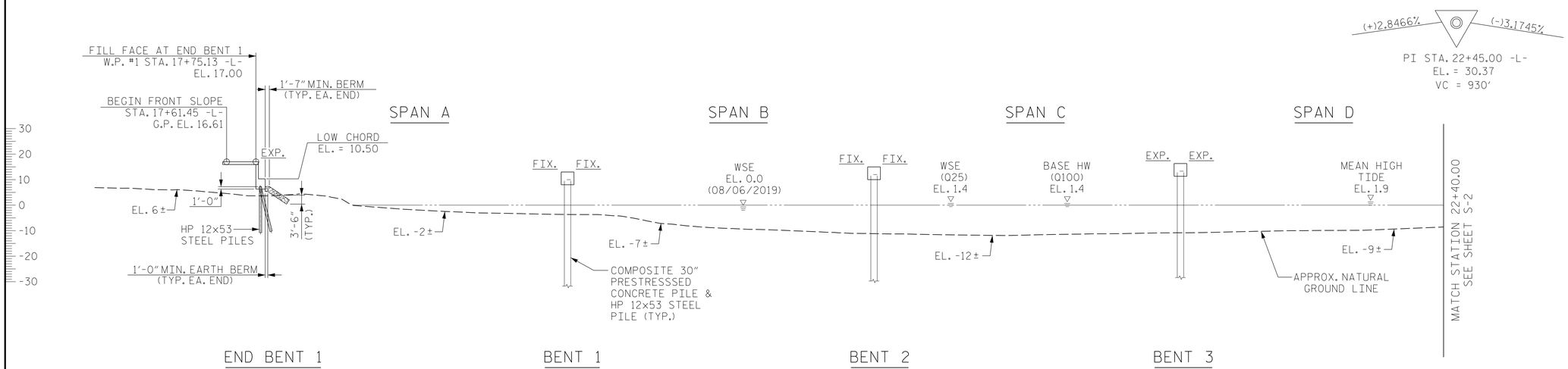
9/22/2025

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

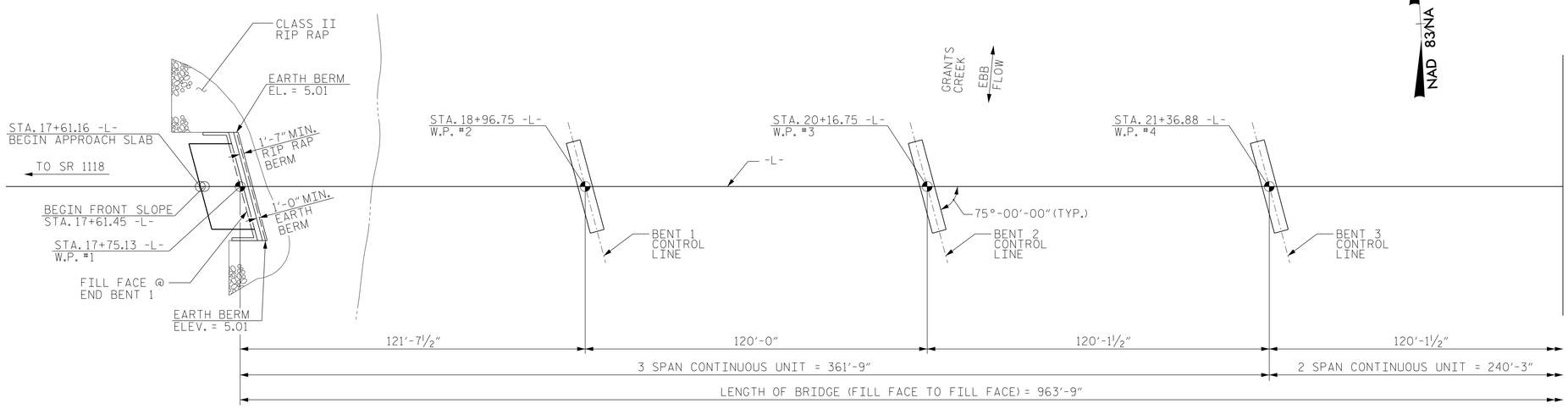
F.A. PROJECT: 1112(019)

17+00 17+50 18+00 18+50 19+00 19+50 20+00 20+50 21+00 21+50 22+00 22+50 23+00



SECTION ALONG -L-

SECTION AT END BENT AND BENTS ARE AT RIGHT ANGLES



PLAN

(PILES NOT SHOWN FOR CLARITY.)

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 1 OF 7 REPLACES BRIDGE NO. 060009

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

DocuSigned by: David Ruggles C462768DF412422...

8/27/2025

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STEWART

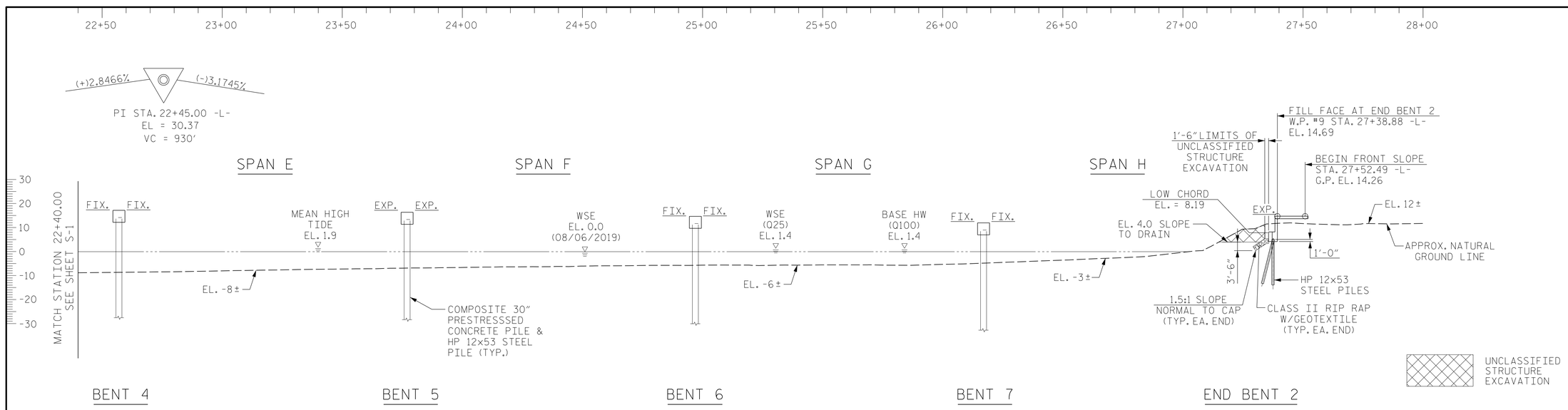
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER BLOUNTS CREEK ON SR 1112 (MOUTH OF THE CREEK RD) BETWEEN SR 1118 AND SR 1113

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

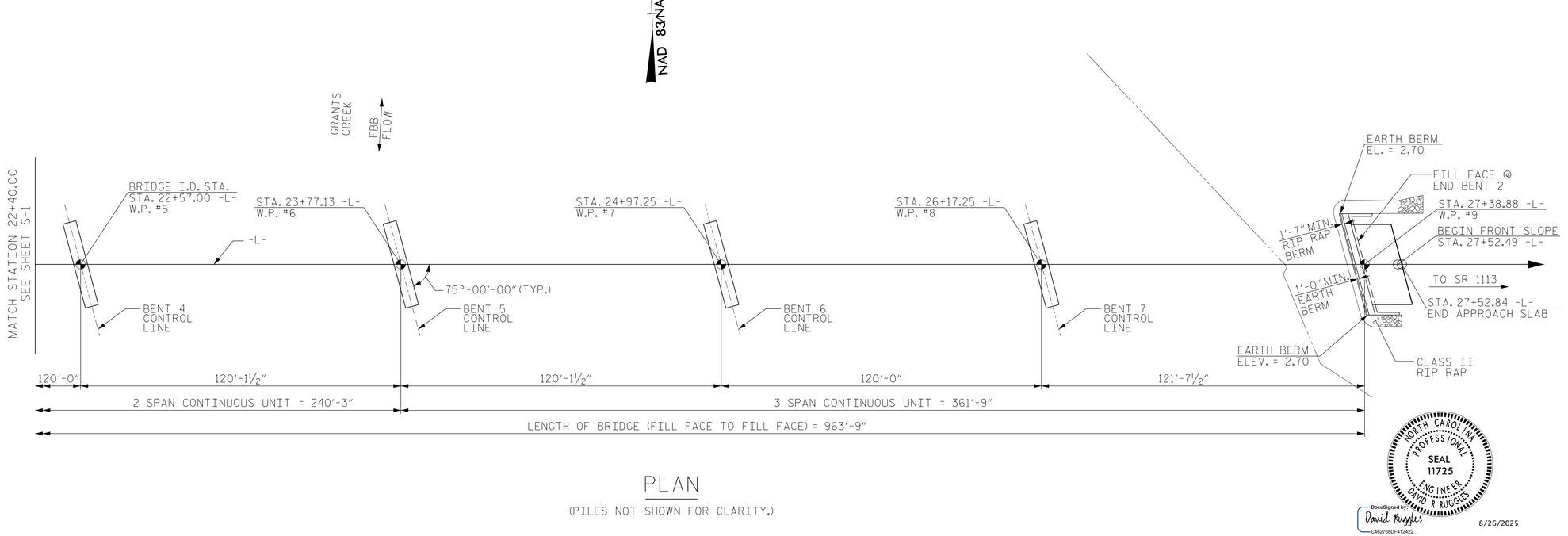
DRAWN BY:	J. WILSON	DATE : 2/25
CHECKED BY:	D. RUGGLES	DATE : 2/25
DESIGN ENGINEER OF RECORD:	D. RUGGLES	DATE : 2/25

8/27/2025
...\B-5614_SMU_GD1_060009.dgn
USER:default



SECTION ALONG -L-

SECTION AT END BENT AND BENTS ARE AT RIGHT ANGLES



PLAN

(PILES NOT SHOWN FOR CLARITY.)

SEAL 11725
NORTH CAROLINA PROFESSIONAL ENGINEER DAVID R. RUGGLES

DocuSigned by: David Ruggles C462768DF412422...
8/26/2025

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PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 2 OF 7

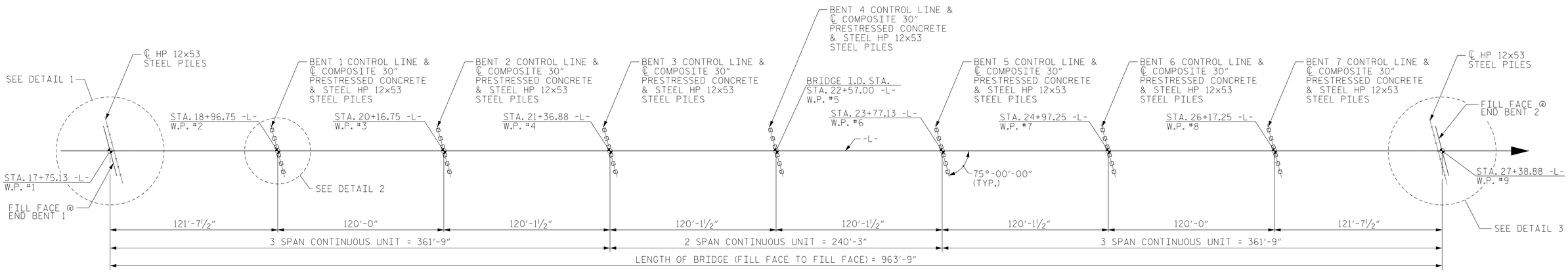
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER BLOUNTS CREEK ON SR 1112 (MOUTH OF THE CREEK RD) BETWEEN SR 1118 AND SR 1113

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

DRAWN BY:	J. WILSON	DATE: 2/25
CHECKED BY:	D. RUGGLES	DATE: 2/25
DESIGN ENGINEER OF RECORD:	D. RUGGLES	DATE: 2/25

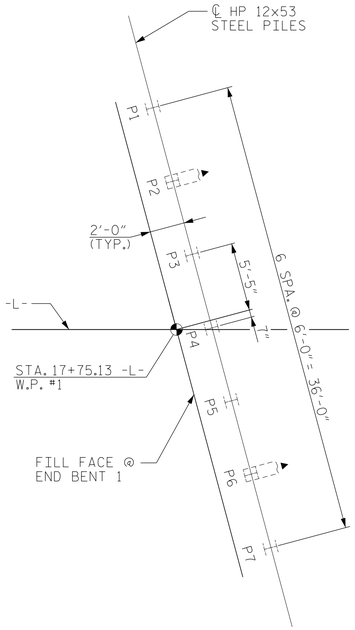
8/26/2025
...\B-5614_SMU_GD2_060009.dgn
USER:default



FOUNDATION LAYOUT

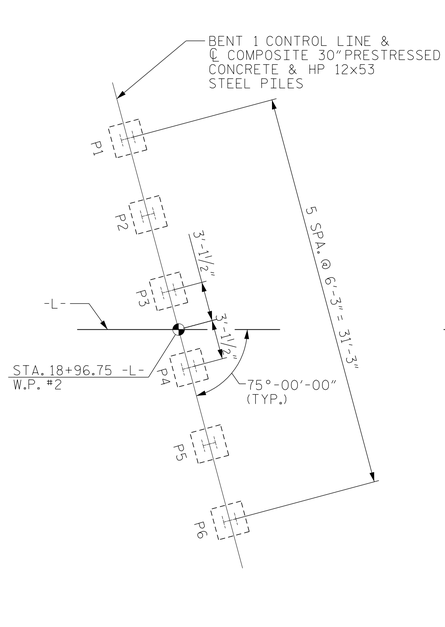
DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES.

NAD 83/NA 2011



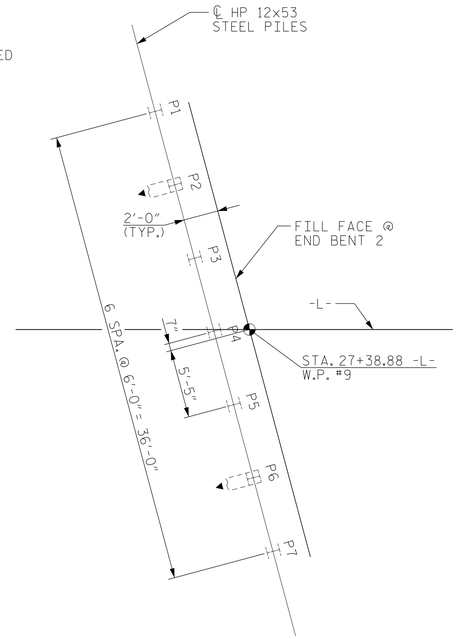
DETAIL 1

▲ DENOTES 3:12 PILE BATTER



DETAIL 2

BENT 1 SHOWN, OTHER BENTS SIMILAR



DETAIL 3

▲ DENOTES 3:12 PILE BATTER

FOUNDATION NOTES

OBSERVE A THREE (3) MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT, END BENT AND REINFORCED BRIDGE APPROACH FILL, IF APPLICABLE, BEFORE BEGINNING APPROACH SLAB CONSTRUCTION AT END BENT 1. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLAN AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 80,000 FT-LBS PER BLOW TO 165,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT 1 THROUGH BENT 7. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 3 OF 7

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

DocuSigned by: David Ruggles C462768DF412422...

8/26/2025

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER BLOUNTS CREEK ON SR 1112 (MOUTH OF THE CREEK RD) BETWEEN SR 1118 AND SR 1113

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

DRAWN BY:	J. WILSON	DATE: 2/25
CHECKED BY:	D. RUGGLES	DATE: 2/25
DESIGN ENGINEER OF RECORD:	D. RUGGLES	DATE: 2/25

8/26/2025
...\B-5614_SMU_FL1_060009.dgn
USER:default

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 Lenth 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 1-7	110	7.29	70			165	7						
End Bent 2, Piles 1-7	110	4.99	65			150							

*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.

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

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 1-7	110	8		0.75	6		1.00
End Bent 2, Piles 1-7	110			0.75			1.00

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

SUMMARY OF DPT/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Dynamic Pile Testing (DPT)				Pile Order Lengths	
End Bent/ Bent No	DPT Testing Required? YES or MAYBE	DPT Test Pile Length FT	Total DPT Testing Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis* EST or DPT
End Bent 1, Piles 1-7	YES	75	2		
End Bent 2, Piles 1-7	YES	70			

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

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 1-7				YES	
End Bent 2, Piles 1-7				YES	
TOTAL QTY:				14	

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Jacob Wessell, P.E., NC PE 030395) on 11-22-2022.
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. Observe a three (3) month waiting period after constructing the embankment, end bent and reinforced bridge approach fill, if applicable, before beginning approach slab construction at End Bent No. 1. For bridge waiting periods, see roadway plans and Section 235 of the Standard Specifications.
4. For piles, see piles provision and Section 450 of the Standard Specifications.

PROJECT NO. B-5614 (45569.1.2)

BEAUFORT COUNTY

STATION: 22+57.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 011725 ENGINEER DAVID R. RUGGLES

DocuSigned by: David Ruggles C462768DF412422... 8/26/2025

SIGNATURE DATE

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE FOUNDATION TABLES (END BENTS)

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

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")	Number of Piles per Line	Factored Resistance per Pile KIPS	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		
						Minimum Pile Tip (Tip No Higher Than) Elevation FT	Required Driving Resistance (RDR)* per pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elevation Not To Predrill Below) FT	Maximum Predrilling Diameter INCHES	Pile Excavation (Bottom of Hole) Elevation FT	Pile Excavation Not In Soil per Pile LIN FT	Pile Excavation In Soil per Pile LIN FT
Bent 1 Piles 1-6	6	485	10.10	55 (PSC) 10 (HP)	-18.20	-40 (PSC) -50 (HP)	700	3						
Bent 2 Piles 1-6	6	485	12.19	60 (PSC) 10 (HP)	-26.90	-42 (PSC) -52 (HP)	700	3						
Bent 3 Piles 1-6	6	485	13.33	55 (PSC) 10 (HP)	-24.30	-39 (PSC) -49 (HP)	700	3						
Bent 4 Piles 1-6	6	485	13.52	55 (PSC) 10 (HP)	-24.40	-39 (PSC) -49 (HP)	700	3						
Bent 5 Piles 1-6	6	485	12.73	55 (PSC) 10 (HP)	-22.00	-40 (PSC) -50 (HP)	700	3						
Bent 6 Piles 1-6	6	485	11.00	55 (PSC) 10 (HP)	-20.80	-40 (PSC) -50 (HP)	700	3						
Bent 7 Piles 1-6	6	485	8.34	55 (PSC) 10 (HP)	-19.30	-40 (PSC) -50 (HP)	700	3						
TOTAL QUANTITY:								21						

$$^{*}RDR = \frac{Factored\ Resistance + Factored\ Drag\ Load + Factored\ Dead\ Load}{Dynamic\ Resistance\ Factor} + Nominal\ Drag\ Load\ Resistance + Nominal\ Resistance\ from\ Scourable\ Material$$

** 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.

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 KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
Bent 1 Piles 1-6	485		11	0.75		24
Bent 2 Piles 1-6	485		20	0.75		24
Bent 3 Piles 1-6	485		21	0.75		24
Bent 4 Piles 1-6	485		19	0.75		24
Bent 5 Piles 1-6	485		18	0.75		24
Bent 6 Piles 1-6	485		14	0.75		24
Bent 7 Piles 1-6	485		11	0.75		24

* 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 EACH	Steel Pile Points		
		Pipe Pile Cutting Shoes EACH	Pipe Pile Conical Points EACH	H-Pile Points EACH
TOTAL QUANTITY:				

SUMMARY OF DPT/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Dynamic Pile Testing (DPT)		
End Bent / Bent No (e.g., "Bent 1 - Bent 3")	DPT Test Pile Length FT	DPT Testing Quantity EACH
Bent 1	60	1
Bent 4	60	1
Bent 6	60	1
Bent 7	60	1
TOTAL QUANTITY:		4

Pile Order Lengths for Concrete Piles	
End Bent / Bent No (e.g., "Bent 1 - Bent 3")	Pile Order Length Basis* EST or DPT
Bent 1	DPT
Bent 2	DPT
Bent 3	DPT
Bent 4	DPT
Bent 5	DPT
Bent 6	DPT
Bent 7	DPT

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

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Thein Tun Zan, #030943) on 012-5-2024.
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 may adjust the quantity for DPT Testing and Pipe Pile Plates when necessary.

PROJECT NO. B-5614 (45569.1.2)

BEAUFORT COUNTY

STATION: 22+57.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 011725 ENGINEER DAVID R. RUGGLES

DocuSigned by: David Ruggles 7/14/2025

SIGNATURE DATE

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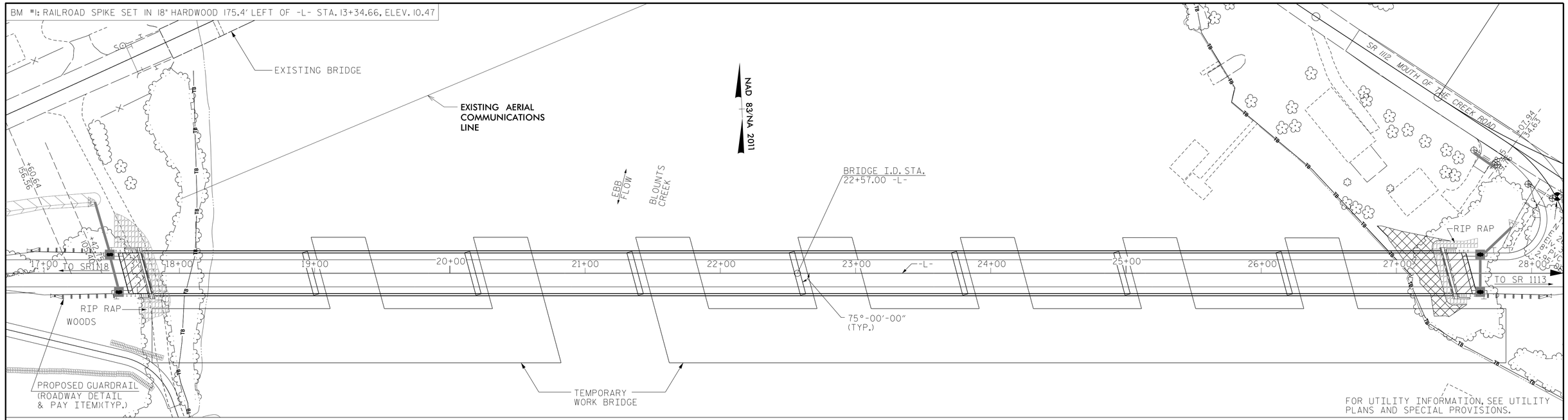
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE FOUNDATION TABLES (BENTS)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			52



LOCATION SKETCH

TOTAL BILL OF MATERIAL

	CONSTRUCTION MAINTENANCE & REMOVAL OF TEMP. ACCESS	REMOVAL OF EXISTING STRUCTURE AT STA. 22+57.00 -L-	ASBESTOS ASSESSMENT	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOOR	CLASS AA CONCRETE	BRIDGE APPROACH SLABS	EPOXY COATED REINFORCING STEEL	63"FIB PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP12x53 STEEL PILES	PILE DRIVING EQUIPMENT SETUP FOR 30" PRESTRESSED CONCRETE PILES	30" PRESTRESSED CONCRETE PILES		HP 12x53 STEEL PILES		STEEL PILE POINTS	PILE REDRIVES	DYNAMIC PILE TESTING	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	FOAM JOINT SEALS	BRIDGE DECK ASPHALT PATCHING
	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	SQ. FT.	SQ. FT.	CY. YDS.	LUMP SUM	LBS	NO.	LIN. FT.	EACH	EACH	No.	LIN. FT.	No.	LIN. FT.	EACH	EACH	EACH	LIN. FT.	TON	SQ. YD.	LUMP SUM	LUMP SUM	TON
SUPERSTRUCTURE	LUMP SUM	LUMP SUM	LUMP SUM		30,985	26,662		LUMP SUM		32	3,829.33										1,921.56				LUMP SUM	LUMP SUM	30
END BENT 1							45.8		6,885			7				7	490	7		1		130	145			
BENT 1							31.2		3,597				6	6	330	6	60		3	1						
BENT 2							31.1		3,597				6	6	360	6	60		3							
BENT 3							31.0		3,597				6	6	330	6	60		3							
BENT 4							30.9		3,597				6	6	330	6	60		3	1						
BENT 5							31.1		3,597				6	6	330	6	60		3							
BENT 6							31.2		3,597				6	6	330	6	60		3	1						
BENT 7							31.4		3,597				6	6	330	6	60		3	1						
END BENT 2				LUMP SUM			45.8		6,883			7				7	455	7		1		55	60			
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	30,985	26,662	309.5	LUMP SUM	38,947	32	3,829.33	14	42	42	2,340	56	1,365	14	✳ 28	6	1,921.56	185	205	LUMP SUM	LUMP SUM	30

NOTES

✳ TOTAL FOR PILE REDRIVES INCLUDES 7 TOTAL FOR BOTH END BENTS, SEE PILE FOUNDATION TABLES.

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 6 OF 7

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R RUGGLES

DocuSigned by: David Ruggles C462768DF412422...

9/5/2025

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE OVER BLOUNTS CREEK ON SR 1112 (MOUTH OF THE CREEK RD) BETWEEN SR 1118 AND SR 1113

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			52

DRAWN BY: J. WILSON DATE : 2/25
CHECKED BY: D. RUGGLES DATE : 2/25
DESIGN ENGINEER OF RECORD: D. RUGGLES DATE : 2/25

9/5/2025
...\B-5614_SMU_GD3_060009.dgn
USER:default

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

FOR FOUNDATION NOTES, SEE SHEETS S-3 THRU S-5.

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.

THIS STRUCTURE CONTAINS THE NECESSARY CORROSION PROTECTION REQUIRED FOR A CORROSIVE SITE.

FOR SECURING OF VESSELS, SEE SPECIAL PROVISIONS.

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

ALL METALIZED SURFACES SHALL RECEIVE A SEAL COATING AS SPECIFIED IN THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALIZATION).

CLASS AA CONCRETE SHALL BE USED IN ALL CAST-IN-PLACE BENT CAPS AND SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR. FOR CALCIUM NITRITE CORROSION INHIBITOR, SEE STANDARD SPECIFICATIONS.

ALL BAR SUPPORTS USED IN THE BARRIER RAIL, DECK, BENT CAPS, AND ALL INCIDENTAL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE CONCRETE IN THE BENT CAPS AND PILES SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB OF CEMENT. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA, ON SHEETS S-2 AND S-6, SHALL BE EXCAVATED FOR THE DISTANCE OF 25 FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF FOURTEEN STEEL I-GIRDER SPANS; 22'-6" CLEAR ROADWAY WIDTH ON A TIMBER DECK ON STEEL CAP AND H-PILE END BENTS AND ON TIMBER PILES AND TIMBER CAP INTERIOR BENTS AND LOCATED APPROXIMATELY 300 FT NORTH OF THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY 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. THERE IS A CHANCE THAT UNDERGROUND BORE USED FOR INSTALLATION OF WATERLINE POSSIBLY DRILLED THROUGH EXISTING BRIDGE PILES. CARE SHALL BE USED WHEN REMOVING EXISTING PILES.

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

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.

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

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

ALL FALSEWORK AND FORMS FOR THE CAST-IN-PLACE DECK SLAB CONTINUOUS UNIT SHALL REMAIN IN PLACE UNTIL THE ENTIRE UNIT IS CAST AND CURED.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 22+57.00 -L-.

THE CONTRACTOR HAS THE OPTION TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 22+57.00 -L- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.

FOR SECURING OF VESSELS, SEE SPECIAL PROVISIONS.

ALL RIP RAP SHALL BE GRANITE RIPRAP.

HYDRAULIC DATA	
DESIGN DISCHARGE	2700 CFS
FREQUENCY OF DESIGN FLOOD	25 YR.
DESIGN HIGHWATER ELEV.	1.4 FT.
DRAINAGE AREA	52.5 SQ. MI.
BASE DISCHARGE (Q100)	4000 C.F.S
BASE HIGHWATER ELEV.	1.4 FT

OVERTOPPING FLOOD DATA	
OVERTOPPING DISCHARGE	118700 CFS
FREQUENCY OF OVERTOPPING FLOOD	500+ YR.
OVERTOPPING FLOOD ELEV.	✳ 8.3 FT.

✳ OVERTOPS AT STA. 12+14.00 -L-

SAMPLE BAR REPLACEMENT

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

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

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

DocuSigned by: David Ruggles C462768DF412422...

8/27/2025

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STEWART

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 7 OF 7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL NOTES
BRIDGE OVER BLOUNTS CREEK ON SR 1112 (MOUTH OF THE CREEK RD) BETWEEN SR 1118 AND SR 1113

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			52

DRAWN BY:	J. WILSON	DATE : 2/25
CHECKED BY:	D. RUGGLES	DATE : 2/25
DESIGN ENGINEER OF RECORD:	D. RUGGLES	DATE : 2/25

8/27/2025
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USER:default

LOAD AND RESISTANCE FACTOR RATING (LRFD) 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						
							LIVELOAD FACTORS	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)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	1	1.51	--	1.75	0.830	1.61	A-H	EL	59.1	0.730	2.18	A-H	I	11.3	0.80	0.830	1.51	A-H	EL	59.1	1
		HL-93 (OPERATING)	N/A	--	2.09	--	1.35	0.830	2.09	A-H	EL	59.1	0.730	2.86	A-H	I	11.3	N/A	--	--	--	--	--	1
		HS-20 (INVENTORY)	36.000	2	2.21	79.56	1.75	0.830	2.35	A-H	EL	59.1	0.730	3.14	A-H	I	11.3	0.80	0.830	2.21	A-H	EL	59.1	1
		HS-20 (OPERATING)	36.000	--	3.05	109.80	1.35	0.830	3.05	A-H	EL	59.1	0.730	4.11	A-H	I	11.3	N/A	--	--	--	--	--	1
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500	--	4.29	57.92	1.4	0.830	6.89	A-H	EL	59.1	0.730	10.18	A-H	I	107.0	0.80	0.830	4.29	A-H	EL	59.1	1
		SNGARBS2	20.000	--	3.07	61.40	1.4	0.830	4.92	A-H	EL	59.1	0.730	7.07	A-H	I	11.3	0.80	0.830	3.07	A-H	EL	59.1	1
		SNAGRIS2	22.000	--	2.85	62.70	1.4	0.830	4.58	A-H	EL	59.1	0.730	6.50	A-H	I	11.3	0.80	0.830	2.85	A-H	EL	59.1	1
		SNCOTTS3	27.250	--	2.13	58.04	1.4	0.830	3.42	A-H	EL	59.1	0.730	4.90	A-H	I	11.3	0.80	0.830	2.13	A-H	EL	59.1	1
		SNAGGRS4	34.925	--	1.73	60.42	1.4	0.830	2.78	A-H	EL	59.1	0.730	3.78	A-H	I	11.3	0.80	0.830	1.73	A-H	EL	59.1	1
		SNS5A	35.550	--	1.70	60.44	1.4	0.830	2.72	A-H	EL	59.1	0.730	3.74	A-H	I	11.3	0.80	0.830	1.70	A-H	EL	59.1	1
		SNS6A	39.950	--	1.53	61.12	1.4	0.830	2.46	A-H	EL	59.1	0.730	3.40	A-H	I	11.3	0.80	0.830	1.53	A-H	EL	59.1	1
		SNS7B	42.000	--	1.46	61.32	1.4	0.830	2.35	A-H	EL	59.1	0.730	3.29	A-H	I	11.3	0.80	0.830	1.46	A-H	EL	59.1	1
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000	--	1.87	61.71	1.4	0.830	3.00	A-H	EL	59.1	0.730	4.06	A-H	I	11.3	0.80	0.830	1.87	A-H	EL	59.1	1
		TNT4A	33.075	--	1.87	61.85	1.4	0.830	3.00	A-H	EL	59.1	0.730	3.95	A-H	I	11.3	0.80	0.830	1.87	A-H	EL	59.1	1
		TNT6A	41.600	--	1.51	62.82	1.4	0.830	2.42	A-H	EL	59.1	0.730	3.39	A-H	I	11.3	0.80	0.830	1.51	A-H	EL	59.1	1
		TNT7A	42.000	--	1.51	63.42	1.4	0.830	2.42	A-H	EL	59.1	0.730	3.30	A-H	I	11.3	0.80	0.830	1.51	A-H	EL	59.1	1
		TNT7B	42.000	--	1.53	64.26	1.4	0.830	2.46	A-H	EL	59.1	0.730	3.17	A-H	I	11.3	0.80	0.830	1.53	A-H	EL	59.1	1
		TNAGRIT4	43.000	--	1.48	63.64	1.4	0.830	2.37	A-H	EL	59.1	0.730	3.08	A-H	I	11.3	0.80	0.830	1.48	A-H	EL	59.1	1
		TNAGT5A	45.000	--	1.40	63.00	1.4	0.830	2.25	A-H	EL	59.1	0.730	3.01	A-H	I	11.3	0.80	0.830	1.40	A-H	EL	59.1	1
		TNAGT5B	45.000	3	1.39	62.55	1.4	0.830	2.24	A-H	EL	59.1	0.730	3.10	A-H	I	11.3	0.80	0.830	1.39	A-H	EL	59.1	1
EMERGENCY VEHICLE (EV)		EV2	28.750	--	1.91	54.91	1.3	0.830	3.97	A-H	EL	59.1	0.730	3.42	A-H	I	11.3	0.80	0.830	1.91	A-H	EL	59.1	1
		EV3	43.000	4	1.26	54.18	1.3	0.830	2.62	A-H	EL	59.1	0.730	2.26	A-H	I	11.3	0.80	0.830	1.26	A-H	EL	59.1	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 TENSILE STRESSES FOR SERVICE III LIMIT STATE SHALL BE 0 PSI IN THE PRECOMPRESSED TENSILE ZONE.

COMMENTS:

1. RATING FACTORS ARE THE SAME FOR ALL SPANS.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

(2) DESIGN LOAD RATING (HS-20)

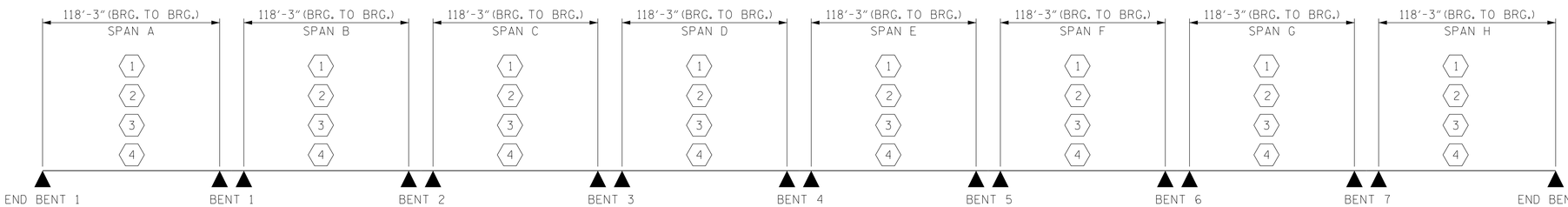
(3) LEGAL LOAD RATING **

(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-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

DocuSigned by: David Ruggles C462768DF412422... 7/14/2025

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STEWART

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:	S-8
1			3			TOTAL SHEETS
2			4			52

ASSEMBLED BY :	JCW	DATE :	2/25
CHECKED BY :	DRR	DATE :	2/25
DRAWN BY : MMA 1/08	REV. 11/12/08RR		MMA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11		MMA/GM
	REV. 04/23		BNB/AAI

7/11/2025
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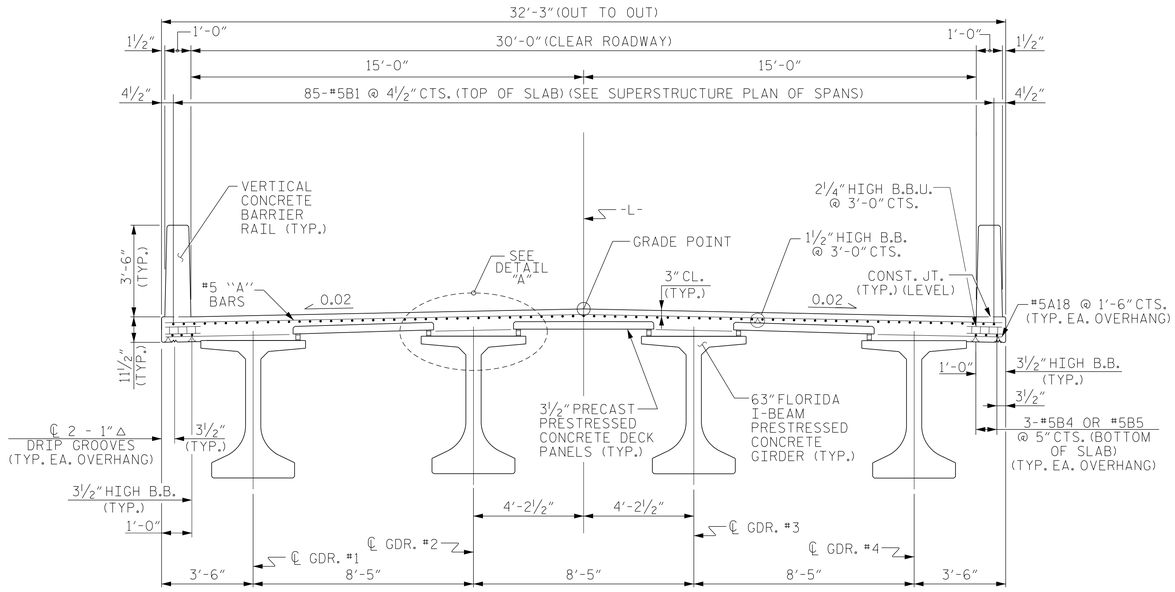
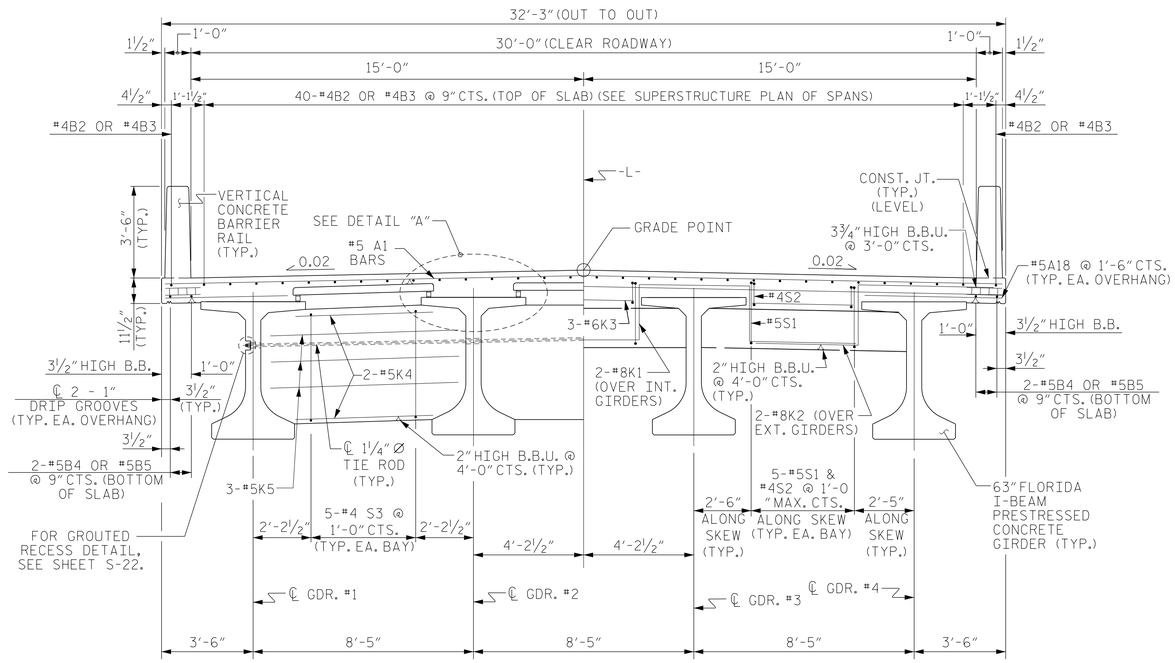
STD. NO. LRFR1



TYPICAL SECTION

SECTION AT BENTS 1, 2, 4, 6, & 7



TYPICAL HALF SECTION

SECTION AT INTERMEDIATE DIAPHRAGMS
FOR SECTION THRU DIAPHRAGMS, SEE SHEET S-21.

TYPICAL HALF SECTION

SECTION AT END BENT AND EXPANSION
BENT DIAPHRAGMS

NOTES

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

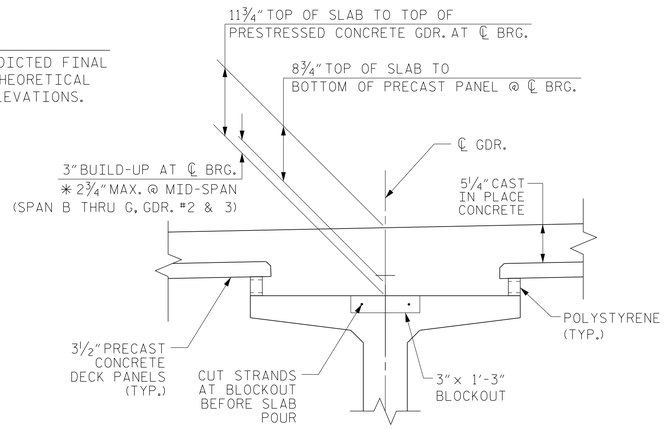
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

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

CONCRETE IN INTERMEDIATE DIAPHRAGMS MAY BE CLASS A IN LIEU OF CLASS AA. PAYMENT SHALL BE MADE UNDER THE UNIT CONTRACT PRICE FOR REINFORCED CONCRETE DECK SLAB.

TEMPORARY STRUTS SHALL BE PLACED BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE DIAPHRAGMS AND THE NUTS ON THE 1¼"Ø TIE RODS SHALL BE FULLY TIGHTENED BEFORE DIAPHRAGMS ARE CAST. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED. THE TIE RODS SHALL BE RE-TIGHTENED AFTER THE STRUTS HAVE BEEN REMOVED.

NOTE:
* BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS.



DETAIL "A"

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R RUGGLES

DocuSigned by: David Ruggles C462768DF412422...

8/26/2025

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			52

DRAWN BY:	J. WILSON	DATE : 2/25
CHECKED BY:	D. RUGGLES	DATE : 2/25
DESIGN ENGINEER OF RECORD:	D. RUGGLES	DATE : 2/25

8/26/2025
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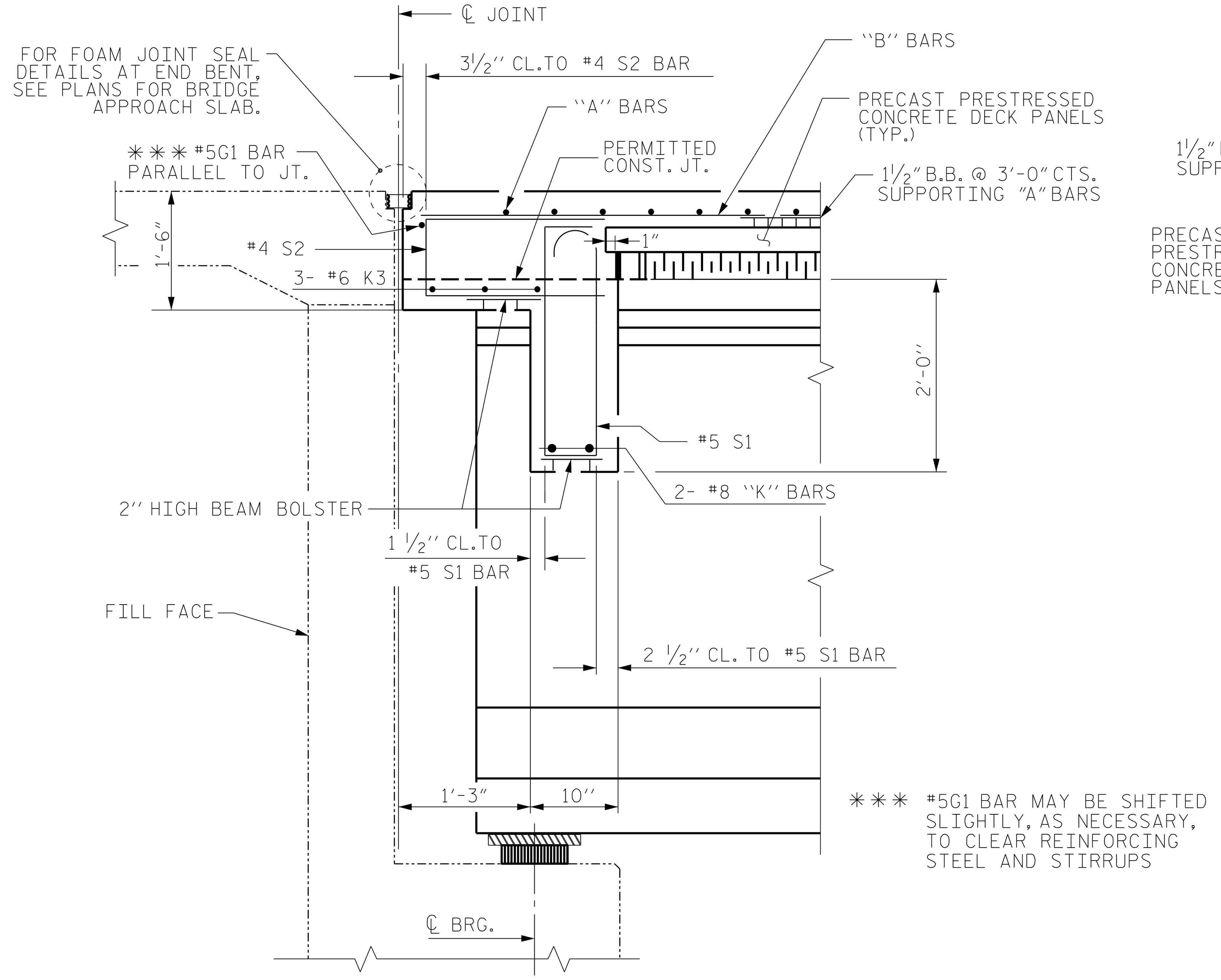
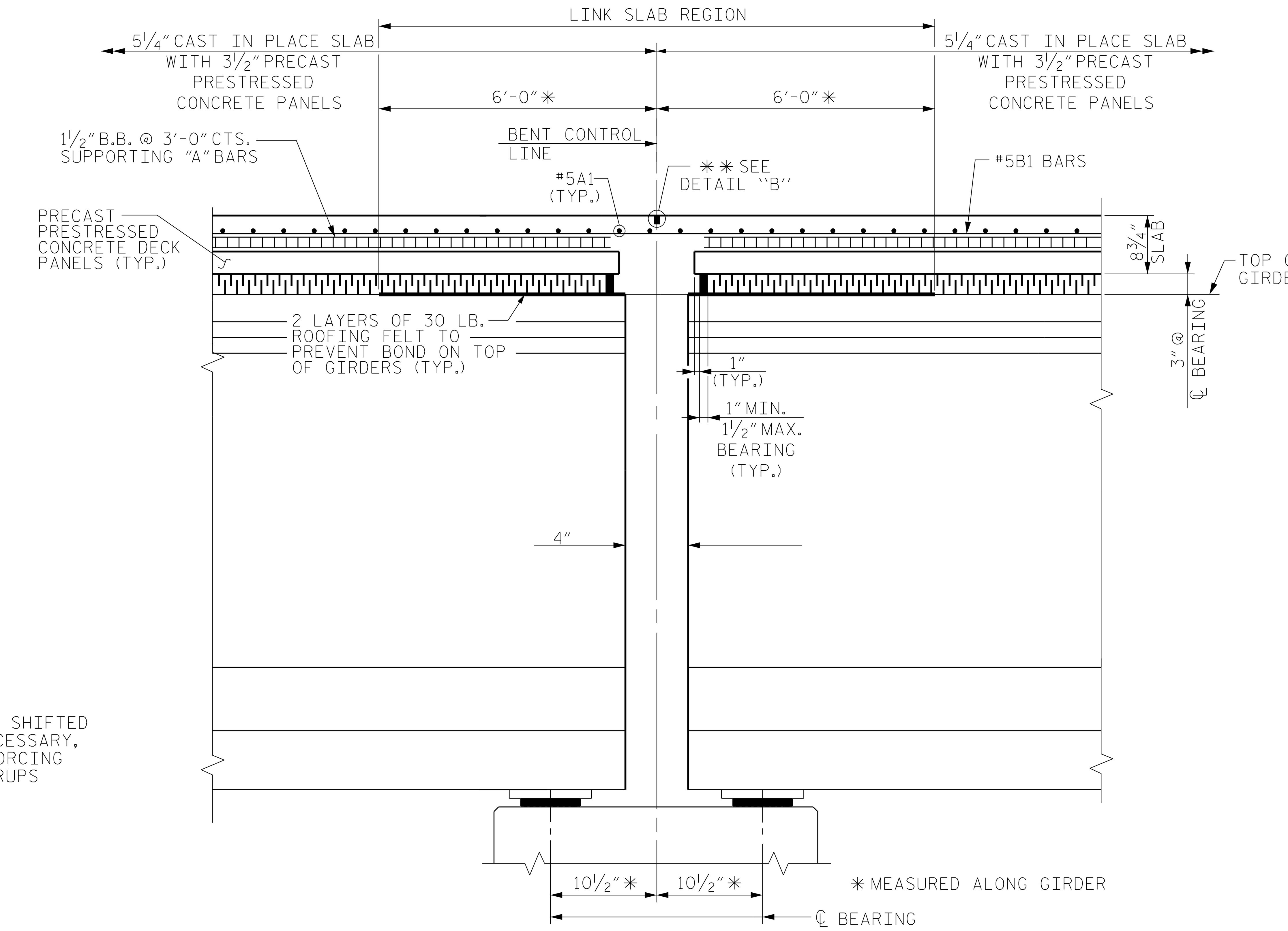
USER:default



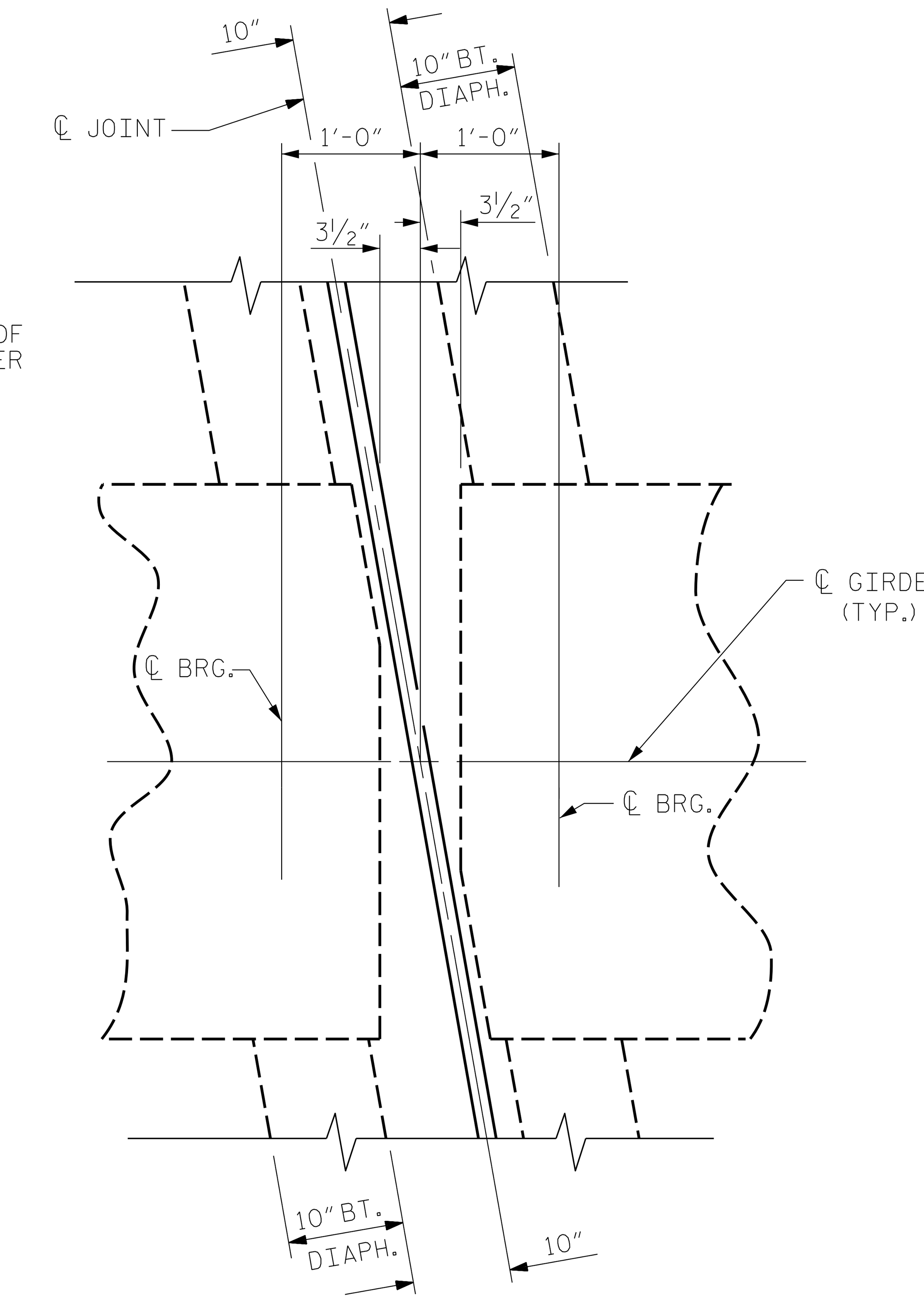
∗∗∗ #5G1 BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS

SECTION @ END BENT DIAPHRAGM



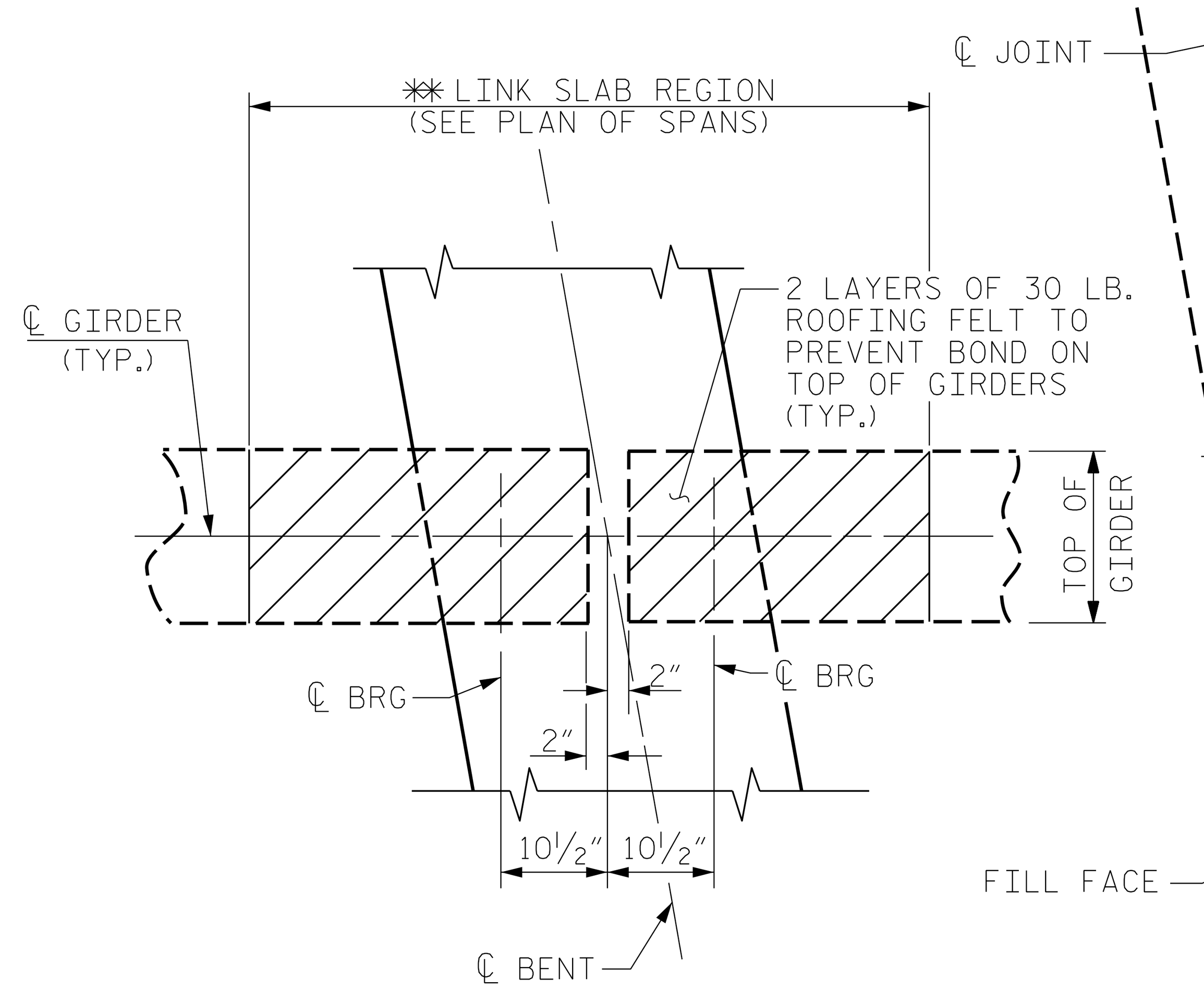
SECTION @ LINK SLAB

(BENTS 1, 2, 4, 6, AND 7)



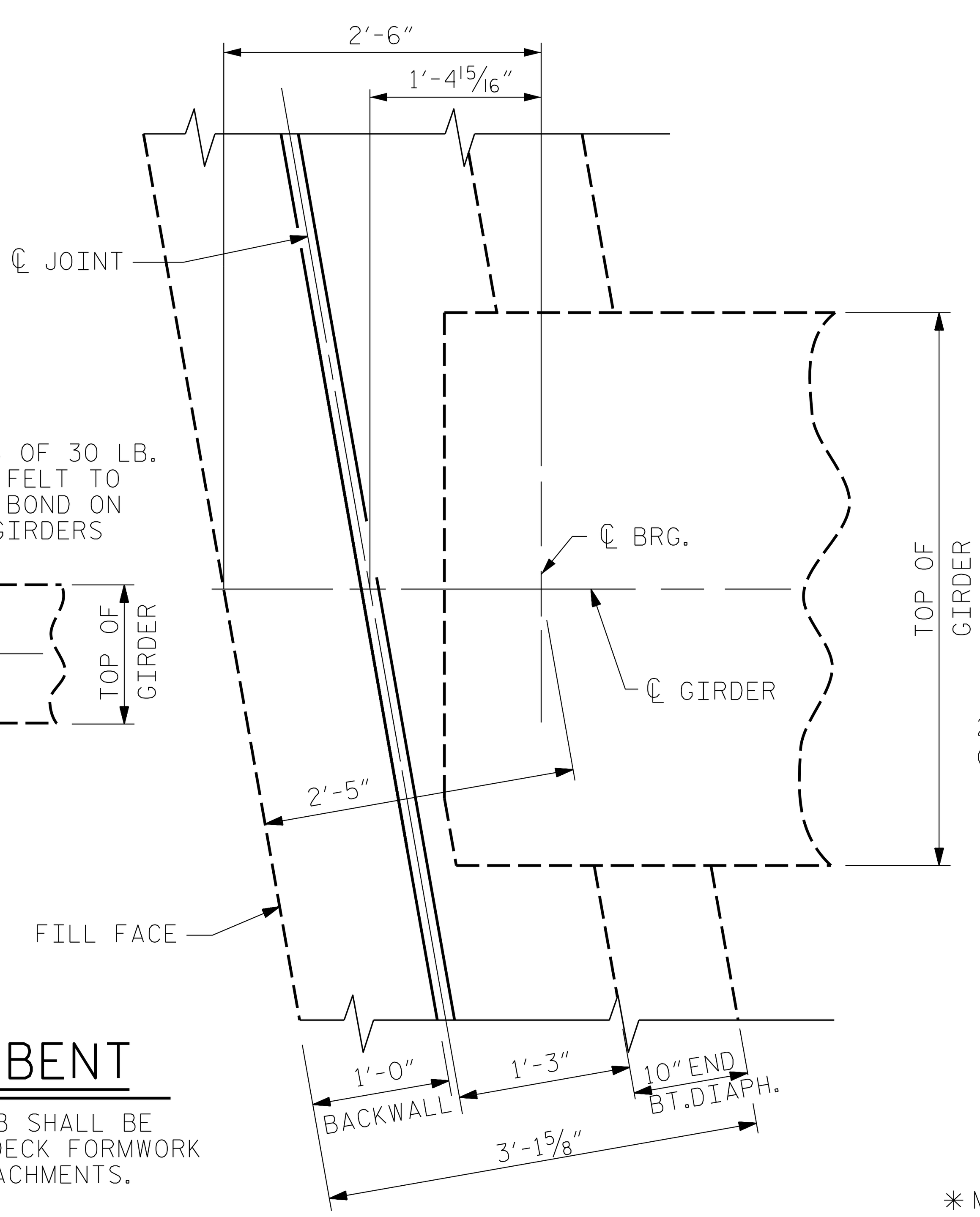
PLAN OF GIRDER AT EXPANSION BENT

(BENTS 3 & 5)



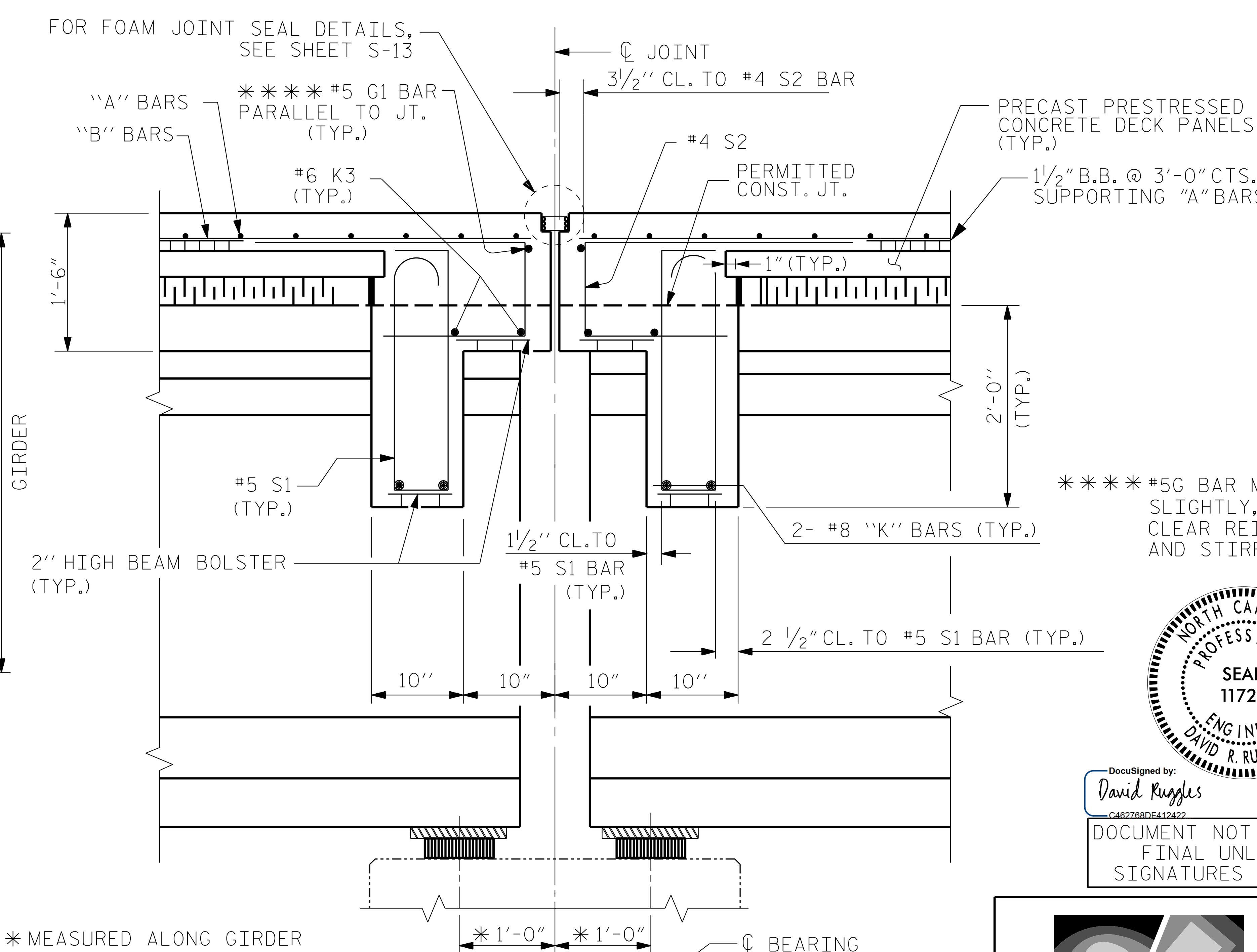
PLAN OF GIRDER AT FIXED BENT

∗∗ 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.
(SHOWING LINK SLAB)
(BENTS 1, 2, 4, 6, & 7)



PLAN OF GIRDER AT END BENT

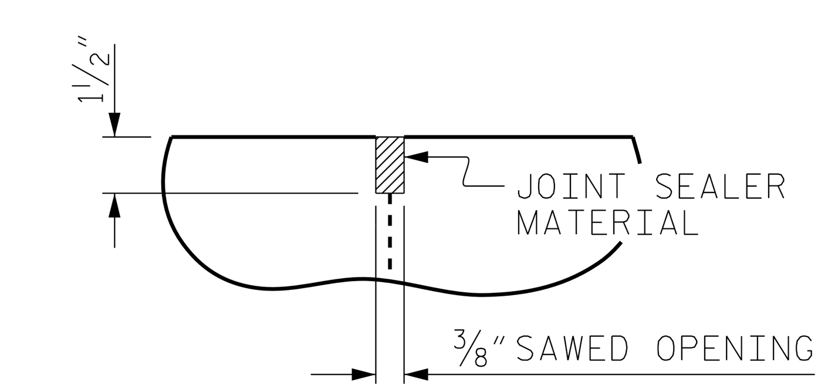
(END BENT 1 SHOWN, END BENT 2 SIMILAR)



∗MEASURED ALONG GIRDER

SECTION @ EXP. BENT DIAPHRAGM

(BENTS 3 AND 5)



DETAIL ''B''

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.

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

PROJECT NO. B-5614
BEAUFORT COUNTY
STATION: 22+57.00 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 11725 DAVID R. RUGGLES

DocuSigned by: David Ruggles 8/26/2025

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION DETAILS

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CHECKED BY:	D. RUGGLES	DATE :	2/25
DESIGN ENGINEER OF RECORD:	D. RUGGLES	DATE :	2/25

REVISIONS

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

SHEET NO. S-10
TOTAL SHEETS 52

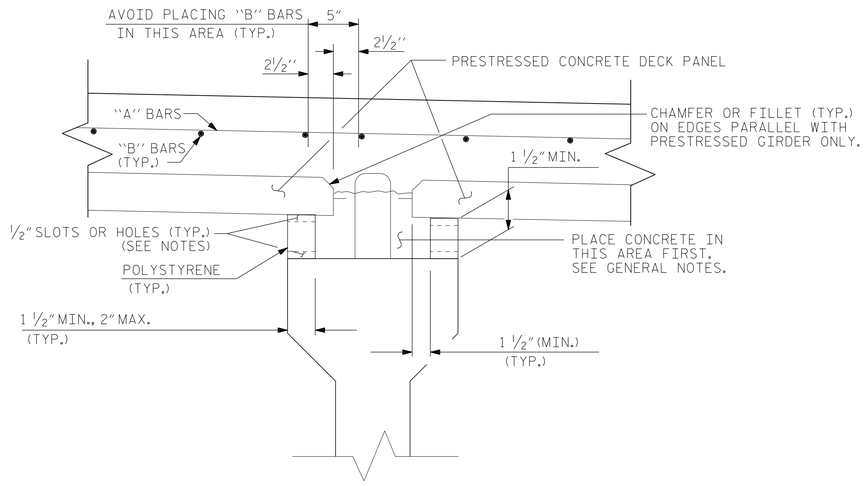
$$$SYSTIME$$$ $$$DGN$$$ $$$USERNAME$$$

DECK PANEL SUPPORTS

THE CONTRACTOR SHALL PROVIDE THE DECK PANEL SUPPORT SYSTEM SHOWN OR HE MAY SUBMIT A DECK PANEL SUPPORT SYSTEM OF HIS OWN DESIGN TO THE ENGINEER FOR APPROVAL.

POLYSTYRENE SUPPORT SYSTEM

1. ALL POLYSTYRENE SHALL BE DOW STYROFOAM 60 HIGH-LOAD, UC INDUSTRIES FOAMULAR 600 OR APPROVED EQUAL.
2. THE POLYSTYRENE SUPPORT SYSTEM SHALL CONSIST OF ONE LAYER WITH A MINIMUM WIDTH OF 1½" AND A MAXIMUM WIDTH OF 2". THE POLYSTYRENE SHALL HAVE ½" X ½" WIDE SLOTS OR ½" DIAMETER HOLES AT 4'-0" CENTERS STAGGERED ALONG THE TOP AND BOTTOM.
3. THE POLYSTYRENE MAY BE CUT AND PLACED ON EDGE AS NECESSARY TO MATCH THE REQUIRED BUILDUP PROFILE ALONG THE GIRDER.
4. ADHESIVE, AS APPROVED BY THE ENGINEER, SHALL BE APPLIED TO THE TOP OF THE GIRDER IN A CONTINUOUS BEAD AND IN SUFFICIENT AMOUNT TO PREVENT THE POLYSTYRENE FROM BLOWING OUT AND TO PREVENT GAPS FROM FORMING BETWEEN THE POLYSTYRENE AND THE GIRDER. PRIOR TO PLACEMENT OF THE DECK PANELS, THE ADHESIVE SHALL ALSO BE APPLIED TO THE TOP OF THE POLYSTYRENE.
5. CONCRETE-FILLED BUCKETS, STACKS OF DECK PANELS, BUNDLED REINFORCING BARS OR OTHER HEAVY CONCENTRATED LOADS WILL NOT BE PERMITTED ON THE DECK PANEL ONCE THE PANEL HAS BEEN PLACED ON THE POLYSTYRENE SUPPORT SYSTEM.



POLYSTYRENE SUPPORT

GENERAL NOTES

1. THE DESIGN COMPRESSIVE STRENGTH (f'c) FOR THE CONCRETE IN PRESTRESSED PANELS SHALL BE 5000 PSI MINIMUM AT 28 DAYS. COMPRESSIVE STRENGTH OF CONCRETE AT TIME OF RELEASE OF STRANDS SHALL BE 4000 PSI MINIMUM.
2. THE PRECAST PRESTRESSED PANEL SHALL HAVE A THICKNESS OF 3½" WITH THE PRESTRESSED STRANDS LOCATED AT HALF THE DEPTH OF THE PANEL.
3. FOR SKEWED SPANS, TRAPEZOIDAL CLOSURE PANELS SHALL HAVE A MINIMUM WIDTH OF 2 FEET ON THE SHORT SIDE.
4. ALL PRESTRESSING STRANDS SHALL EXTEND 2" BEYOND THE PANEL EDGES.
5. SHEAR REINFORCING OF 0.60 SQ. INCHES OF REINFORCING STEEL PER 10 SQ. FEET OF PANEL SURFACE SHALL BE PROVIDED IN THE PANEL TO ENSURE COMPOSITE ACTION BETWEEN PANEL AND THE CAST-IN-PLACE CONCRETE. SHEAR REINFORCEMENT SHALL BE MADE OF WELDED WIRE HAVING A MINIMUM YIELD STRENGTH OF 60 KSI.
6. SHEAR REINFORCEMENT AND LIFTING DEVICES SHALL BE CONSTRUCTED AND PLACED SO AS TO AVOID ANY INTERFERENCE WITH REINFORCING STEEL IN THE CAST-IN-PLACE DECK SLAB AND TO ALLOW FOR PROPER CONCRETE CONSOLIDATION IN THE DECK PANEL.
7. SHIFT LONGITUDINAL "B" BARS AS NECESSARY TO OBTAIN A MINIMUM CLEAR DISTANCE OF 2 ½" TO THE RIGHT OR LEFT OF THE EDGE OF THE DECK PANEL. IF, IN SHIFTING TO OBTAIN THIS CLEARANCE, THE "B" BAR INTERFERES WITH THE STIRRUP IN THE TOP OF THE GIRDER THE "B" BAR MAY BE ELIMINATED.
8. WHEN CASTING THE DECK, PLACE CONCRETE FIRST OVER THE GIRDERS IN CONTINUOUS STRIPS A MINIMUM OF THREE PANEL LENGTHS AHEAD OF THE REST OF THE CONCRETE. CAREFULLY VIBRATE THE CONCRETE OVER THE GIRDERS SO THAT CONCRETE COMPLETELY FILLS THE AREA UNDER THE DECK PANEL OVERHANGS. THEN PLACE AND VIBRATE THE REMAINING DECK CONCRETE.
9. PRECAST PANELS SHALL BE DESIGNED FOR AN ALLOWABLE TENSILE STRESS OF 0 PSI IN THE PRECOMPRESSED TENSILE ZONE UNDER ALL LOADING CONDITIONS.
10. PRESTRESSED CONCRETE GIRDERS AND PRECAST DECK PANELS SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR. SEE STANDARD SPECIFICATIONS FOR CALCIUM NITRITE CORROSION INHIBITOR.

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

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7/14/2025

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STANDARD

PRECAST PRESTRESSED CONCRETE DECK PANELS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			52

ASSEMBLED BY :	JCW	DATE :	2/25
CHECKED BY :	DRR	DATE :	2/25
DRAWN BY : ELR 1/92	REV. 5/1/06R		TLA/GM
CHECKED BY : GRP 4/92	REV. 10/1/11		MMA/GM
	REV. 12/17		MMA/THC

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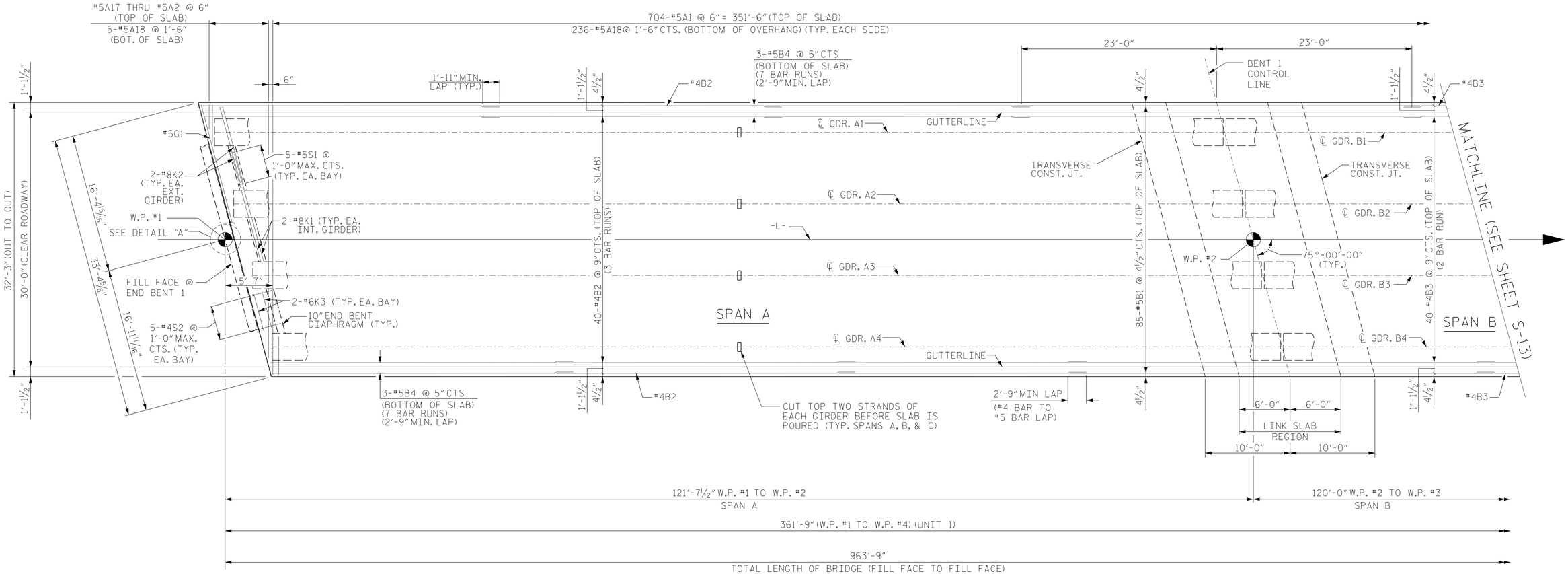
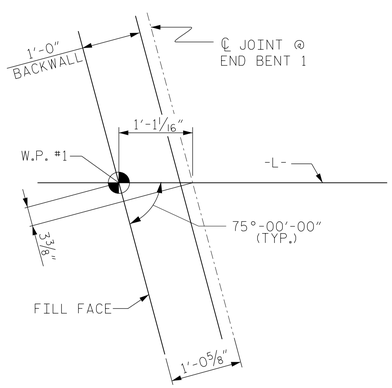
STD. NO. PDP1

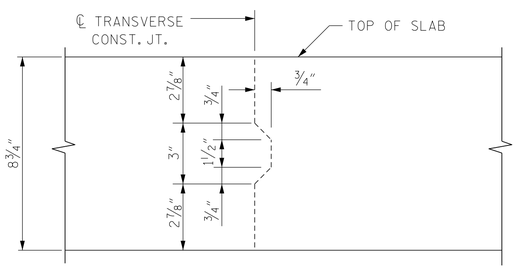


PLAN OF SPANS A, B, & C

AFTER STRANDS ARE CUT, FILL RECESS WITH NON-SHRINK GROUT.



DETAIL A



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

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STATE OF NORTH CAROLINA
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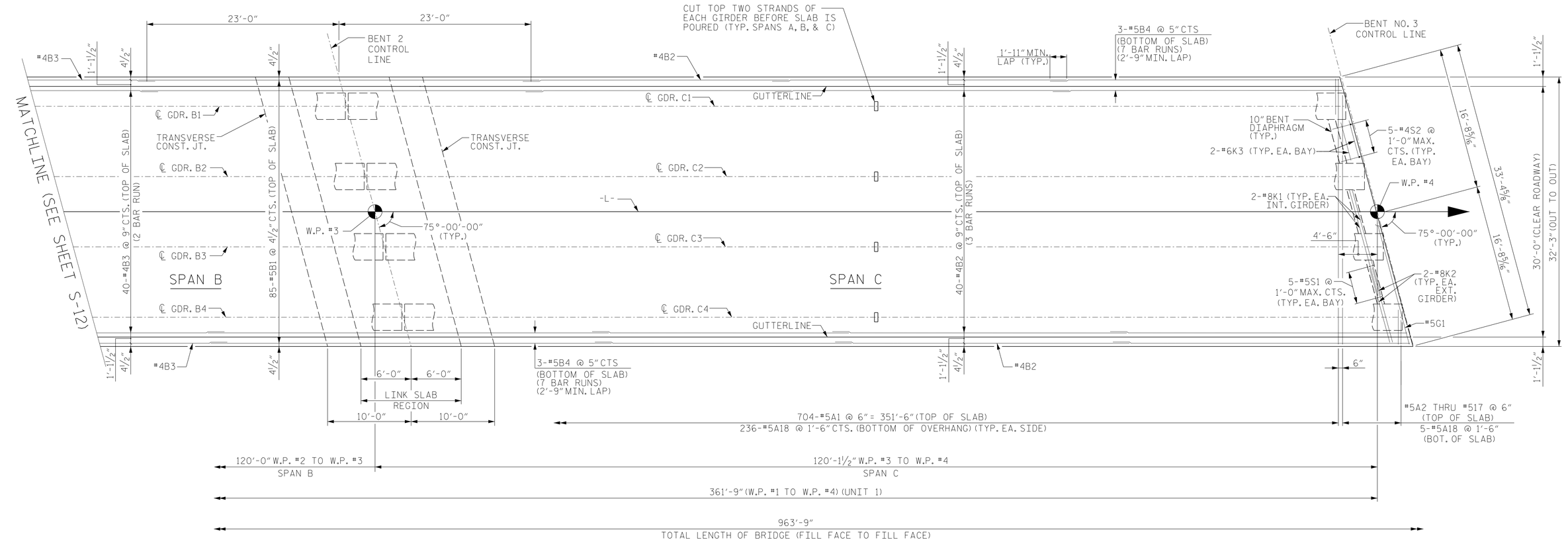
SUPERSTRUCTURE

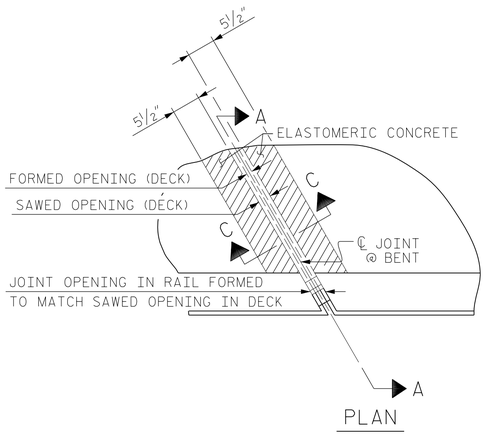
PLAN OF SPANS A, B, AND C

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			52

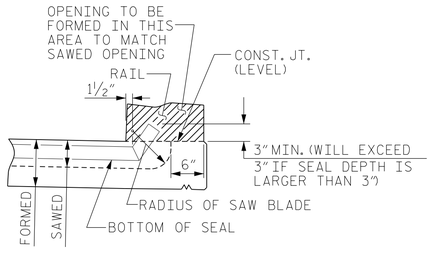


PLAN OF SPANS A, B, & C

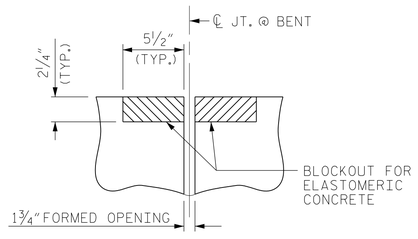
AFTER STRANDS ARE CUT, FILL RECESS WITH NON-SHRINK GROUT.



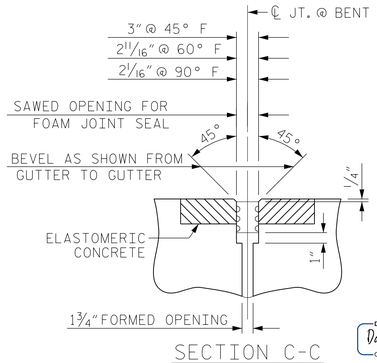
PLAN



SECTION A-A



SECTION C-C
FOAM JOINT SEAL
(PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS)



SECTION C-C
FOAM JOINT SEAL
(EXPANSION)

ELASTOMERIC CONCRETE	
BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
3	5.5
5	5.5
TOTAL	11.0

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

JOINT SEAL DETAILS @ BENT 3 & BENT 5

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

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

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R RUGGLES
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14/2025

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PLAN OF SPANS A, B, AND C

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			52

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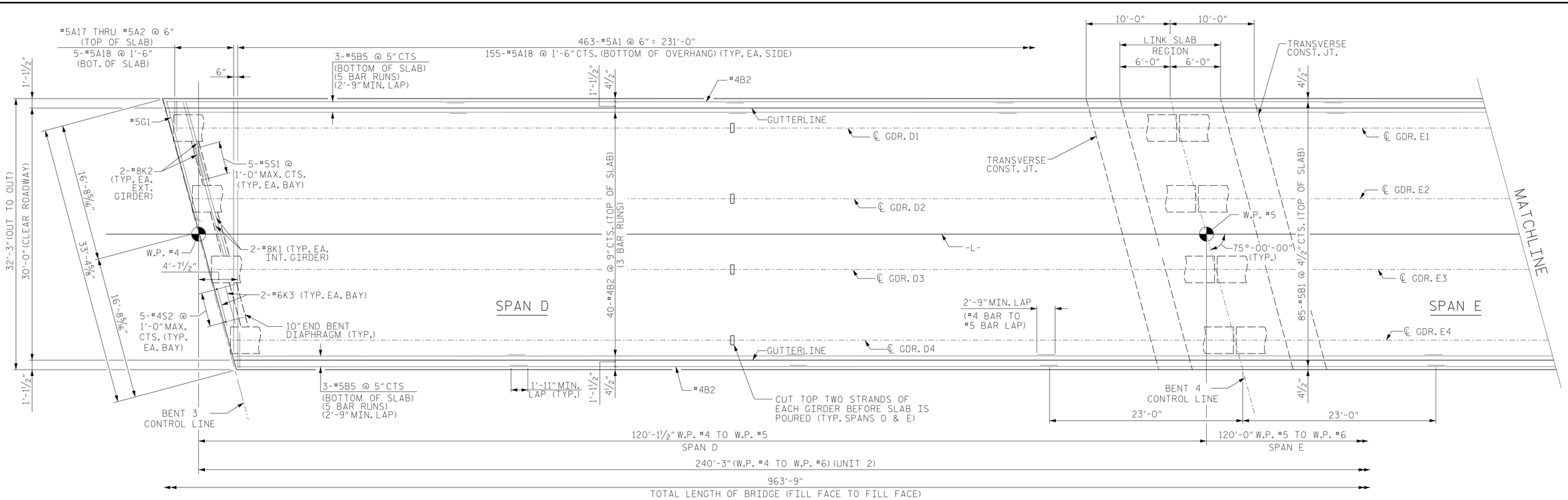
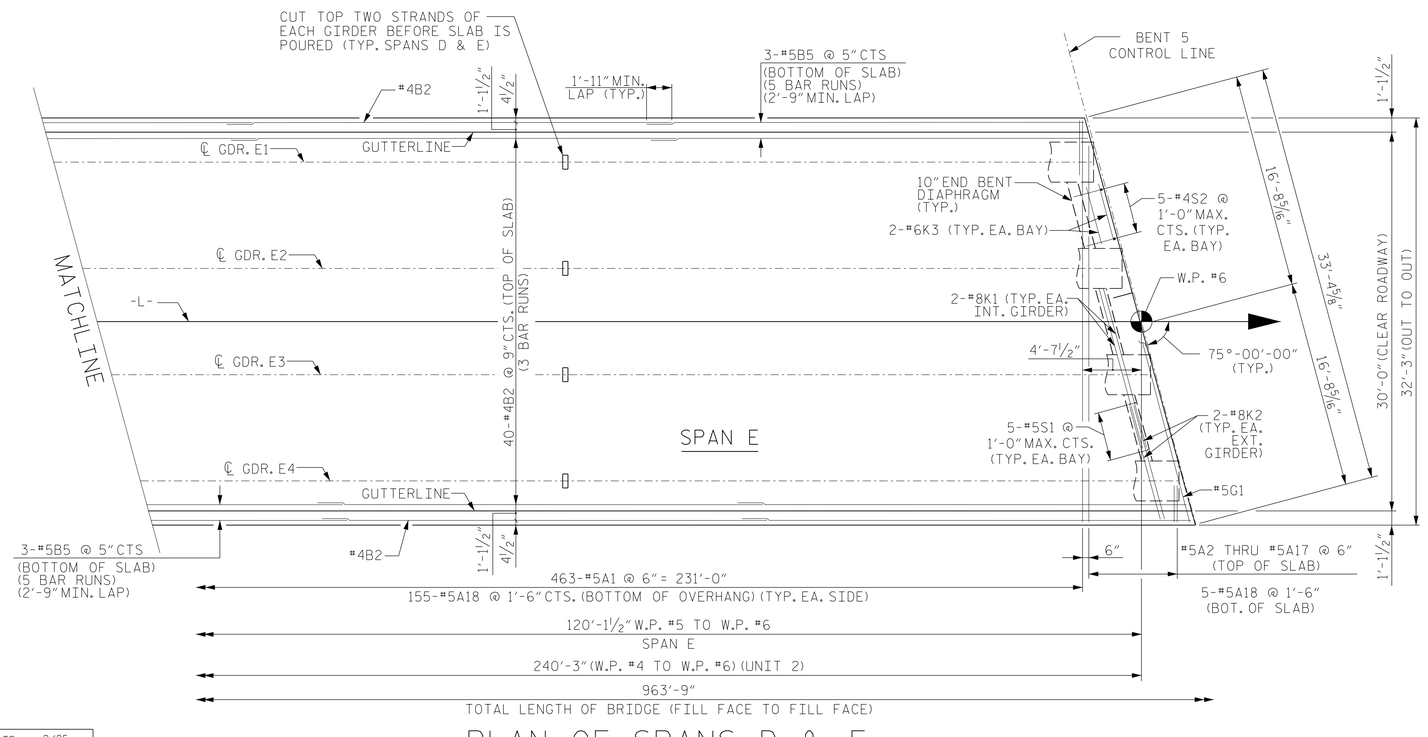


PLAN OF SPANS D & E



PLAN OF SPANS D & E

NOTES

AFTER STRANDS ARE CUT, FILL RECESS WITH NON-SHRINK GROUT.

FOR BENT 3 AND BENT 5 JOINT DETAILS, SEE SHEET S-13.

PROJECT NO. B-5614

BEAUFORT COUNTY

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PLAN OF SPANS D AND E

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1			3			TOTAL SHEETS
2			4			52

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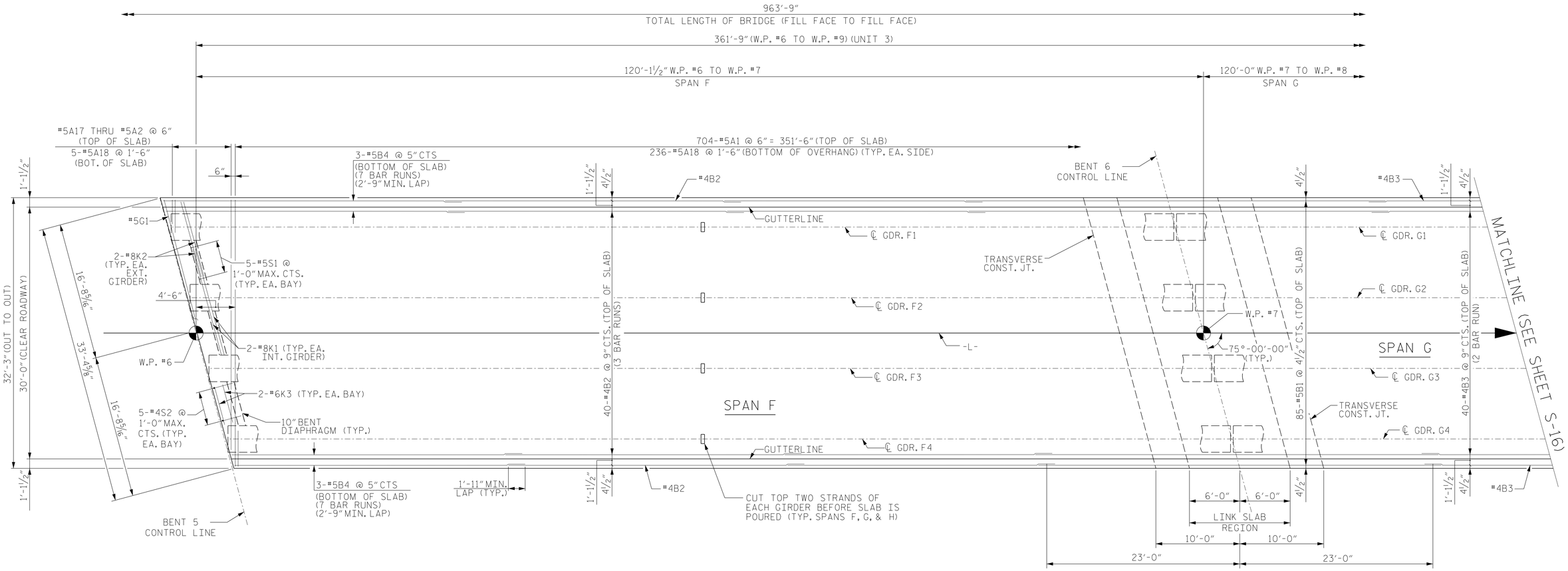

PLAN OF SPANS F, G, & H

AFTER STRANDS ARE CUT, FILL RECESS WITH NON-SHRINK GROUT.

FOR BENT 5 JOINT DETAILS, SEE SHEET S-13.

PROJECT NO. B-5614

BEAUFORT COUNTY

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SHEET 1 OF 2

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PLAN OF SPANS F, G, AND H

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			52

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963'-9"
TOTAL LENGTH OF BRIDGE (FILL FACE TO FILL FACE)

361'-9" (W.P. #6 TO W.P. #9) (UNIT 3)

120'-0" W.P. #7 TO W.P. #8
SPAN G

121'-7½" W.P. #8 TO W.P. #9
SPAN H

10'-0" 10'-0"
LINK SLAB REGION
6'-0" 6'-0"

TRANSVERSE CONST. JT.

2'-9" MIN. LAP
(#4 BAR TO #5 BAR LAP)

3-#5B4 @ 5" CTS
(BOTTOM OF SLAB)
(7 BAR RUNS)
(2'-9" MIN. LAP)

#4B3 — 1'-1½" — 4½" — #4B2

MATCHLINE (SEE SHEET S-15)

℄ GDR. G1 — ℄ GDR. H1

TRANSVERSE CONST. JT.

℄ GDR. G2 — ℄ GDR. H2

W.P. #8

75°-00'-00" (TYP.)

-L-

℄ GDR. G3 — ℄ GDR. H3

40-#4B3 @ 9" CTS. (TOP OF SLAB) (2 BAR RUN)

85-#5B1 @ 4½" CTS. (TOP OF SLAB)

30-#4B2 @ 1'-0" CTS. (TOP OF SLAB) (3 BAR RUNS)

SPAN G

SPAN H

℄ GDR. G4 — ℄ GDR. H4

GUTTERLINE

10" END BENT DIAPHRAGM (TYP.)

2-#6K3 (TYP. EA. BAY)

5-#4S2 @ 1'-0" MAX. CTS. (TYP. EA. BAY)

FILL FACE @ END BENT 2

2-#8K1 (TYP. EA. INT. GIRDER)

SEE DETAIL "B"

W.P. #9

5'-7"

5-#5S1 @ 1'-0" MAX. CTS. (TYP. EA. BAY)

2-#8K2 (TYP. EA. EXT. GIRDER)

#5G1

16'-11¼"

33'-4⅝"

16'-4⅝"

1'-1½"

30'-0" (CLEAR ROADWAY)

32'-3" (OUT TO OUT)

3-#5B4 @ 5" CTS
(BOTTOM OF SLAB)
(7 BAR RUNS)
(2'-9" MIN. LAP)

1'-11" MIN. LAP (TYP.)

CUT TOP TWO STRANDS OF EACH GIRDER BEFORE SLAB IS POURED (TYP. SPANS F, G, & H)

BENT 7 CONTROL LINE

23'-0" 23'-0"

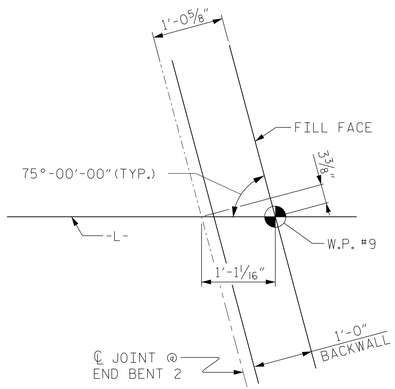
6"

#5A2 THRU #517 @ 6" (TOP OF SLAB)
5-#5A18 @ 1'-6" (BOT. OF SLAB)

704-#5A1 @ 6" = 351'-6" (TOP OF SLAB)
236-#5A18 @ 1'-6" CTS. (BOTTOM OF OVERHANG) (TYP. EA. SIDE)

PLAN OF SPANS F, G, & H

AFTER STRANDS ARE CUT, FILL RECESS WITH NON-SHRINK GROUT.



DETAIL B

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS F, G, AND H

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

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SHEET NO. S-16

TOTAL SHEETS 52

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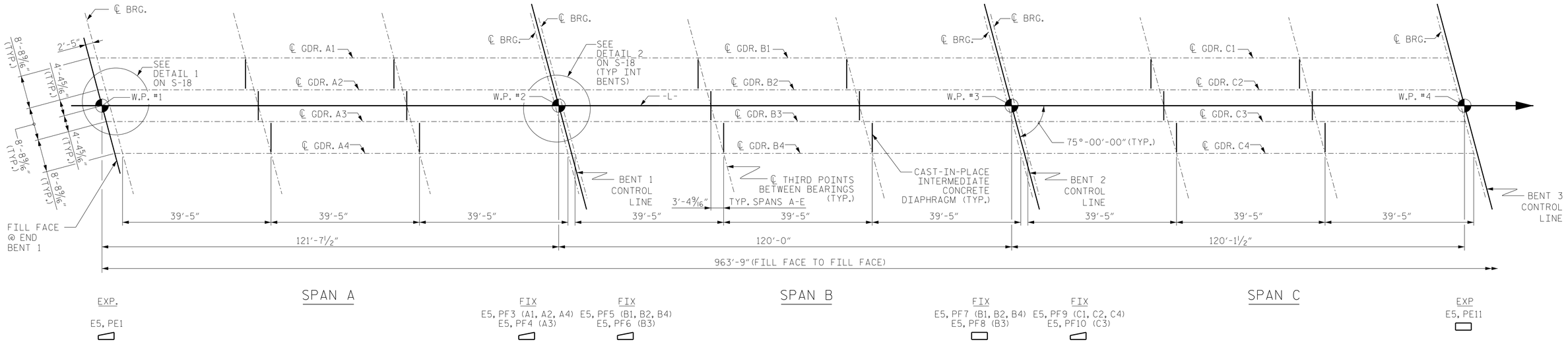

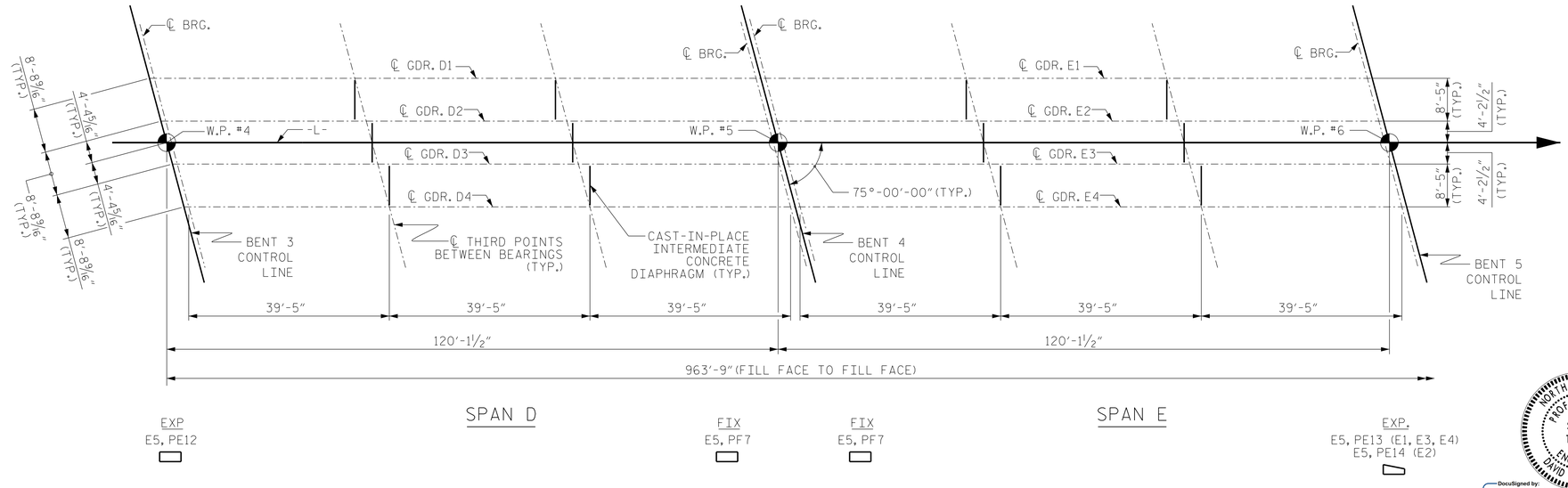

FRAMING PLAN

NOTE: AFTER GIRDERS HAVE BEEN SET IN FINAL POSITION, EXPOSED TOP TWO STRANDS SHALL BE CUT AT CENTER OF SPAN. STRANDS SHALL BE CUT BEFORE SLAB IS POURED.

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

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SHEET 1 OF 2

STATE OF NORTH CAROLINA
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RALEIGH
SUPERSTRUCTURE

FRAMING PLAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			52

DRAWN BY: J. WILSON DATE: 2/25
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FRAMING PLAN

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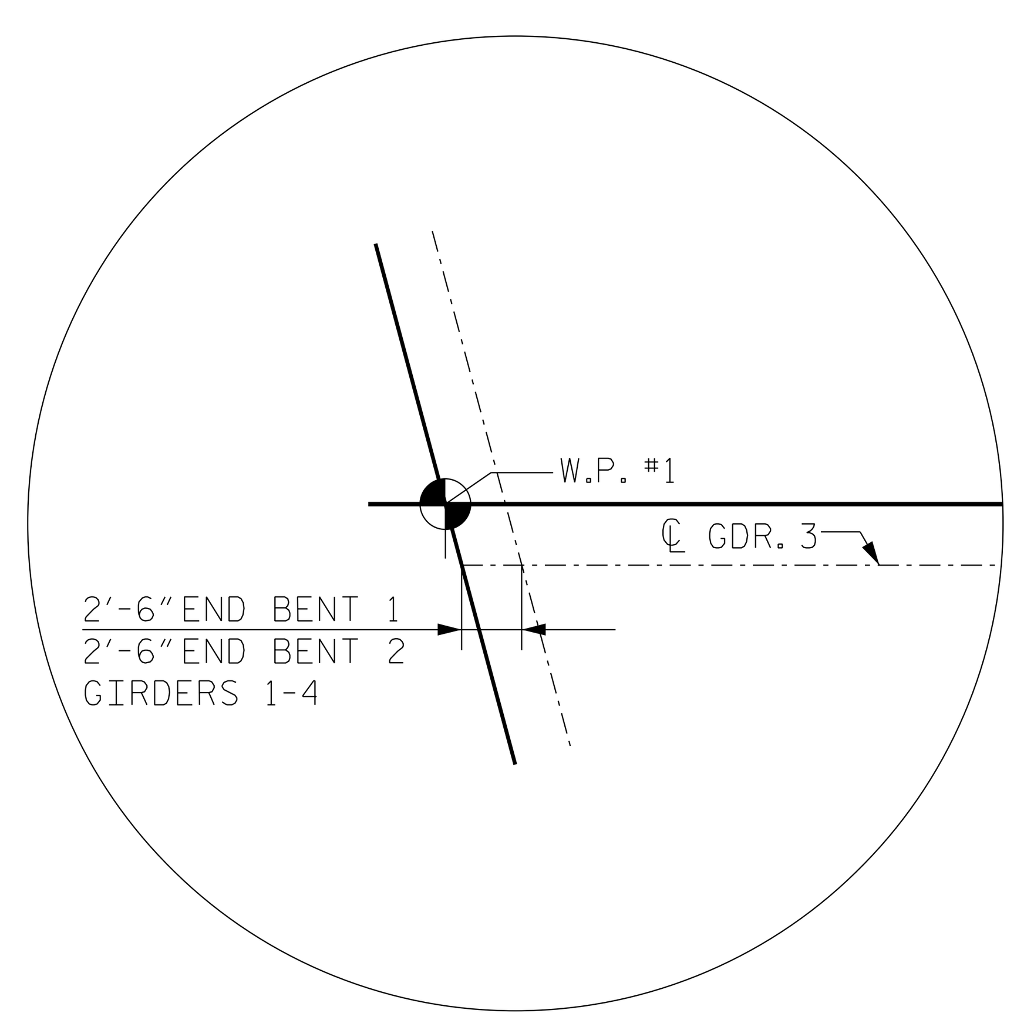
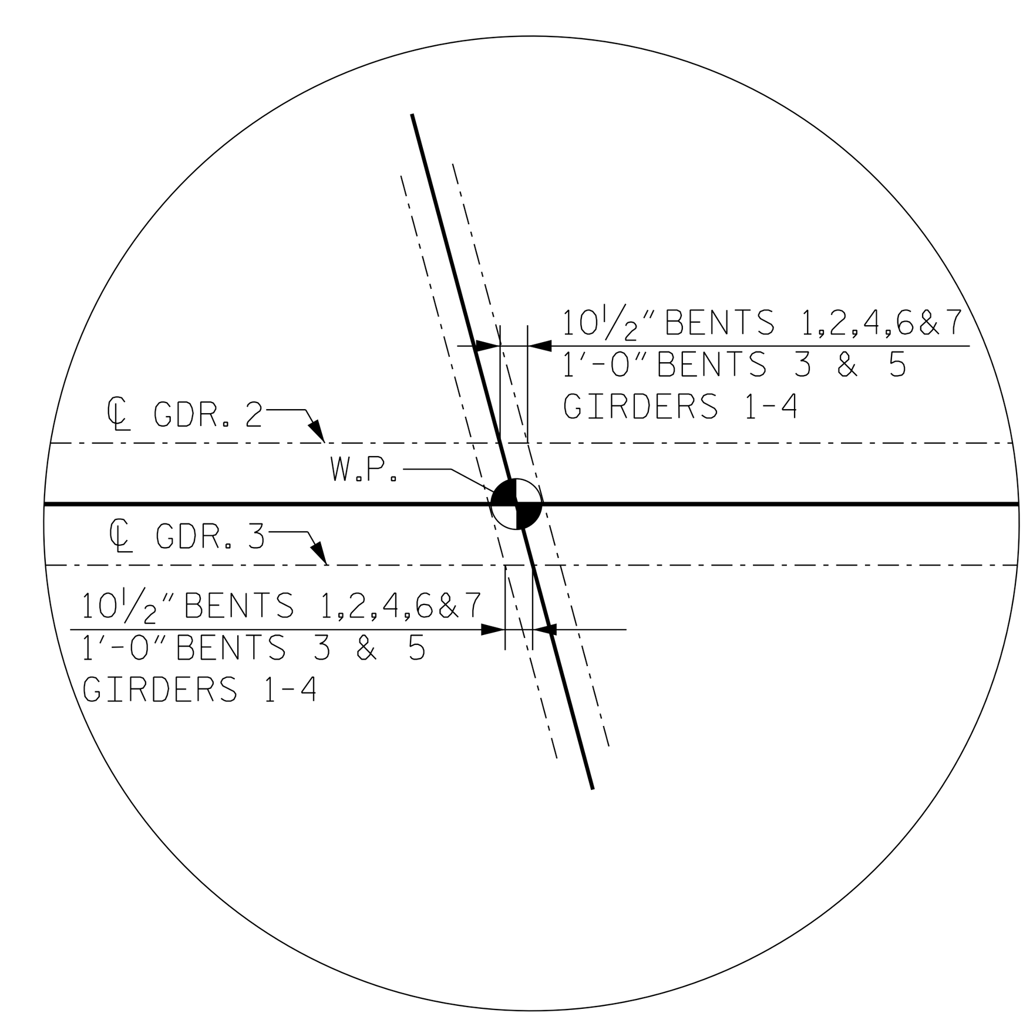


DETAIL 1

FILL FACE TO ℄ BRG
END BENT 1 SHOWN; END BENT 2 SIMILAR



DETAIL 2

℄ BENT TO ℄ BRG
INTERIOR BENTS

PROJECT NO. B-5614
BEAUFORT COUNTY
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SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

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SUPERSTRUCTURE

FRAMING PLAN

REVISIONS							
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.	S-18
1			3			TOTAL SHEETS	52
2			4				

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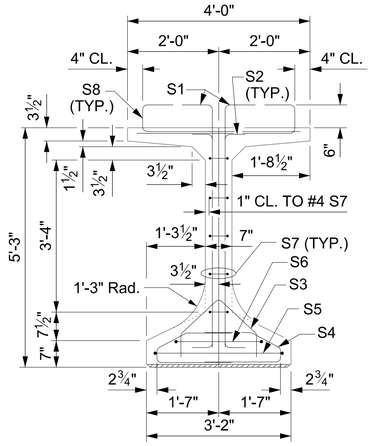
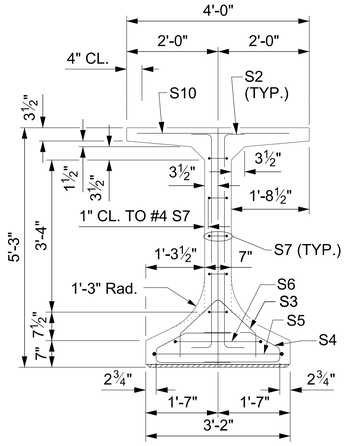
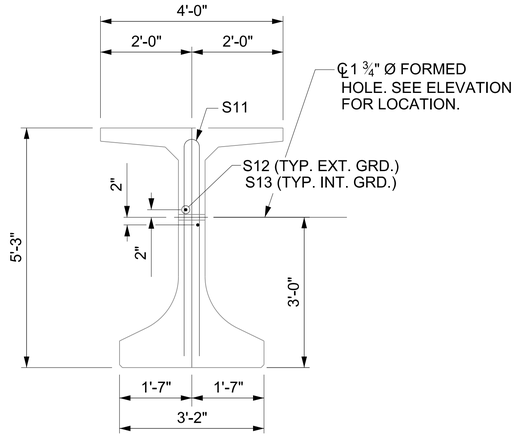


SECTION A-A

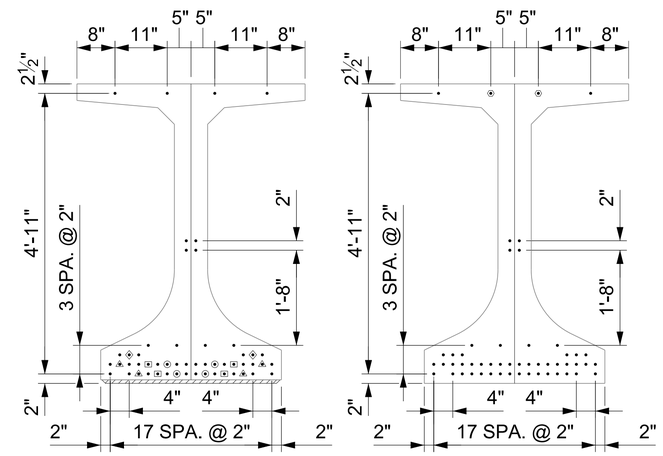


SECTION B-B



SECTION C-C

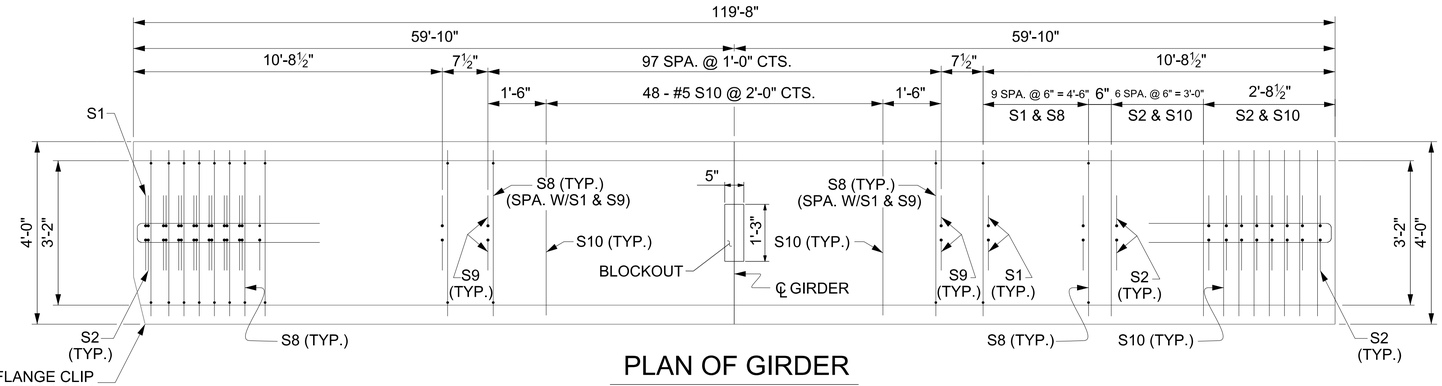
(S8, S9 AND S10 BARS NOT SHOWN)



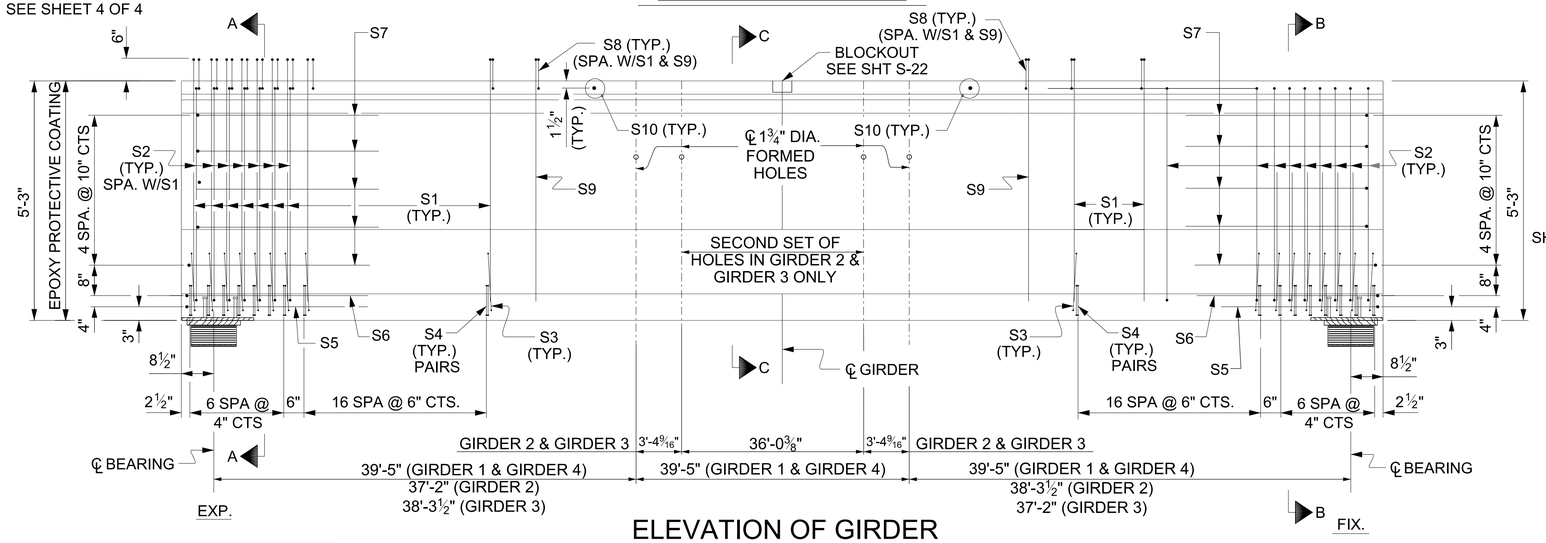
AT END OF GIRDER

AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT



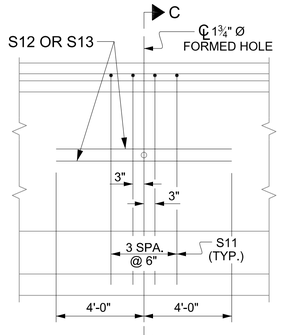
PLAN OF GIRDER



ELEVATION OF GIRDER

DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 40'-0" FROM CENTER OF GIRDER (TOTAL DEBONDED LENGTH IS 80'-0")



PARTIAL ELEVATION

SHOWING INTERMEDIATE CONCRETE DIAPHRAGM REINFORCING STEEL FOR ALL SPANS EXTERIOR GIRDERS SHOWN (INTERIOR GIRDERS SIMILAR)

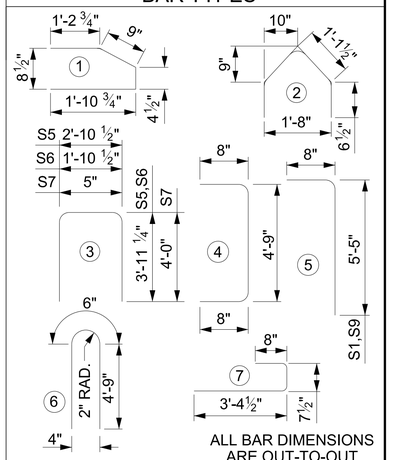
0.6"Ø L. R. GRADE 270 STRANDS

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	68	#5	5	6'-1"	431
	S2	42	#5	4	6'-1"	266
	S3	48	#3	2	3'-4"	60
	S4	96	#3	1	4'-3"	153
	S5	2	#5	3	10'-9"	22
	S6	2	#5	3	9'-9"	20
	S7	10	#4	3	8'-5"	56
	S8	264	#5	7	4'-8"	1,285
	S9	196	#4	5	6'-0"	786
	S10	62	#5	STR	3'-8"	237
EXT. GDR.	S11	8	#5	6	10'-0"	83
INT. GDR.	S11	16	#5	6	10'-0"	167
EXT. GDR.	S12	4	#4	5	8'-0"	21
INT. GDR.	S13	4	#4	5	11'-5"	31

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	8000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
EXTERIOR GDR.	3,420	30.6	52
INTERIOR GDR.	3,514	30.6	52

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	119'-8"	478'-8"

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 1 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGIERI

DocuSigned by: David Ruggieri C4627680F412422...

8/26/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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STEWART

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

63" FIB PRESTRESSED CONCRETE GIRDER (SPAN A, D, & F)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			52

ASSEMBLED BY :	JCW	DATE :	2/25
CHECKED BY :	DRR	DATE :	2/25
DRAWN BY :	BNB 01/21	REV. ---	---/---
CHECKED BY :	AAI 07/21	REV. ---	---/---
		REV. ---	---/---

8/26/2025
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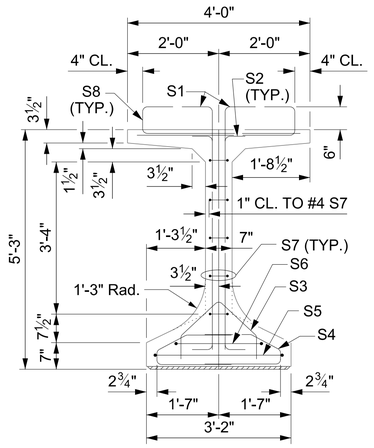
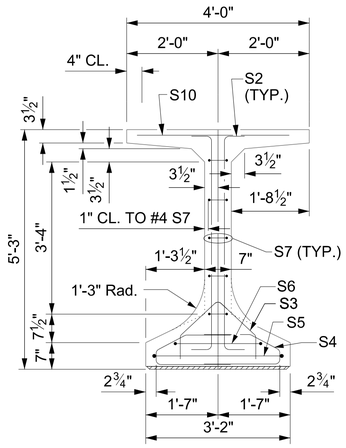
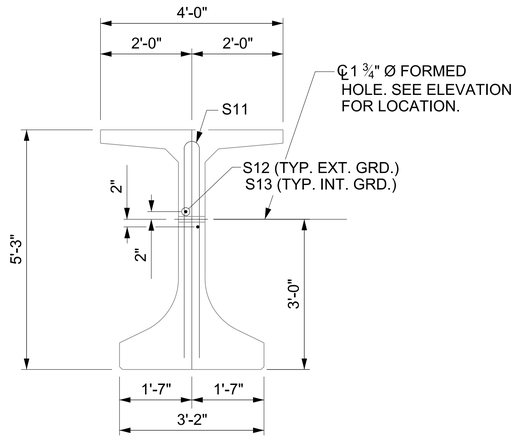
STD. NO. FIB63



SECTION A-A

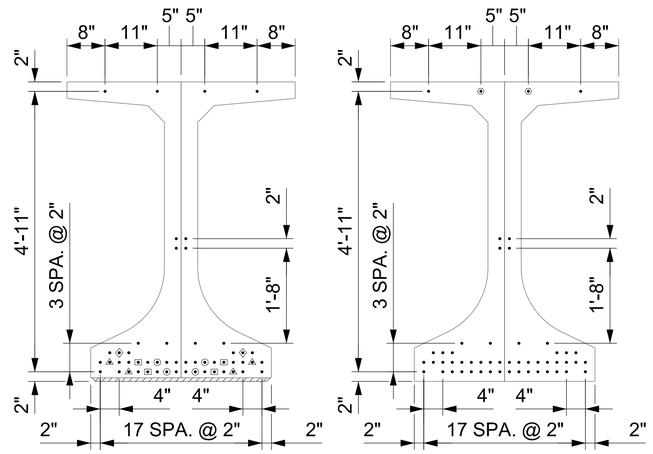


SECTION B-B



SECTION C-C

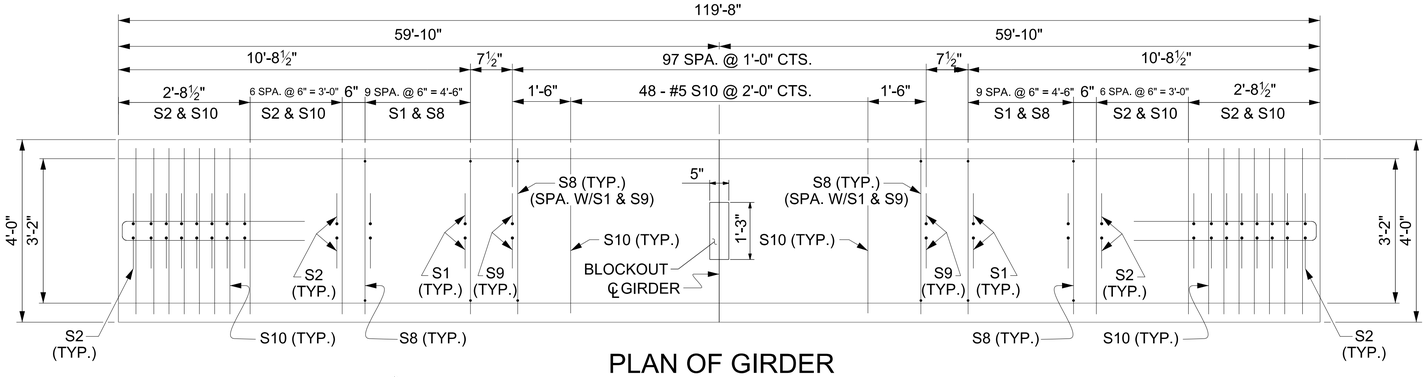
(S8, S9 AND S10 BARS NOT SHOWN)



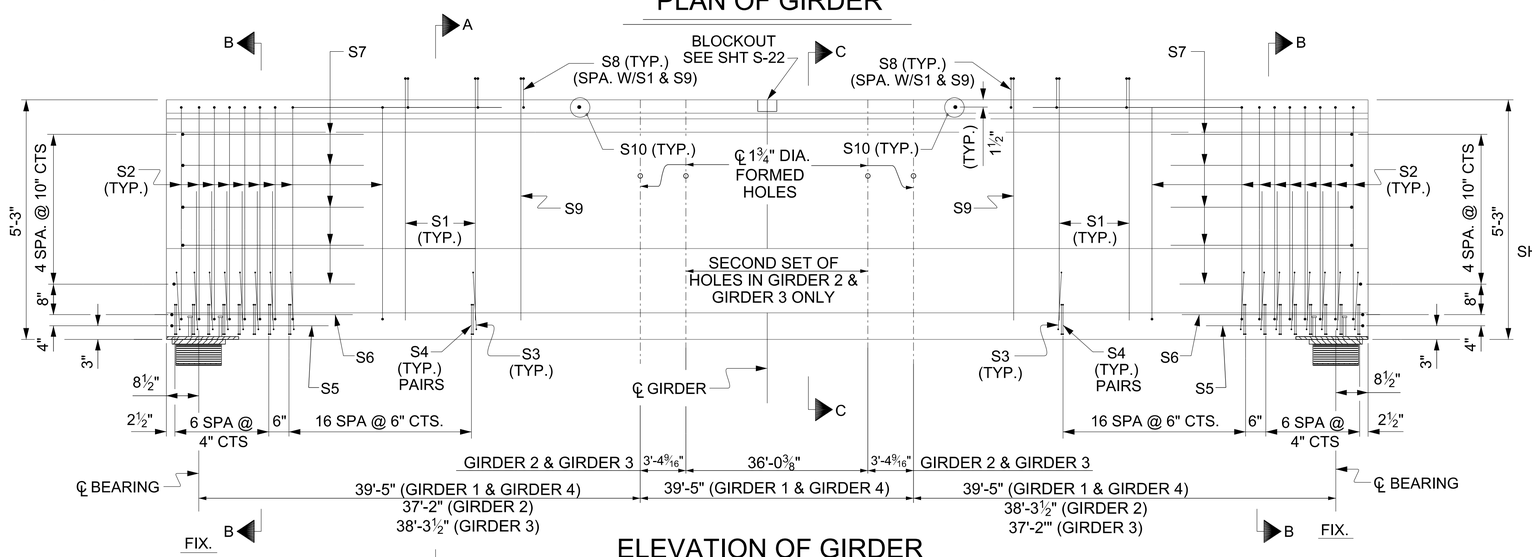
AT END OF GIRDER

AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT



PLAN OF GIRDER



ELEVATION OF GIRDER

DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
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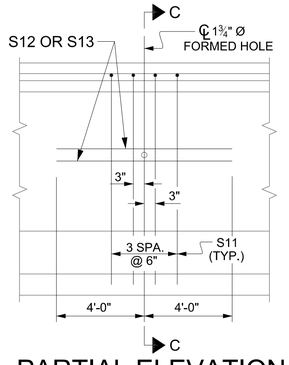


PARTIAL ELEVATION

SHOWING INTERMEDIATE CONCRETE DIAPHRAGM REINFORCING STEEL FOR ALL SPANS EXTERIOR GIRDERS SHOWN (INTERIOR GIRDERS SIMILAR)

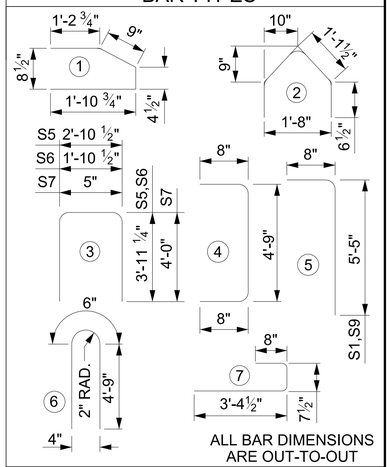
0.6"Ø L. R. GRADE 270 STRANDS

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	6'-1"	254
	S2	56	#5	4	6'-1"	355
	S3	48	#3	2	3'-4"	60
	S4	96	#3	1	4'-3"	153
	S5	2	#5	3	10'-9"	22
	S6	2	#5	3	9'-9"	20
	S7	10	#4	3	8'-5"	56
	S8	236	#5	7	4'-8"	1,149
	S9	196	#4	5	6'-0"	786
	S10	76	#5	STR	3'-8"	291
EXT. GDR.	S11	8	#5	6	10'-0"	83
INT. GDR.	S11	16	#5	6	10'-0"	167
EXT. GDR.	S12	4	#4	5	8'-0"	21
INT. GDR.	S13	4	#4	5	11'-5"	31

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	8000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
EXTERIOR GDR.	3,250	30.6	52
INTERIOR GDR.	3,344	30.6	52

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	119'-8"	478'-8"

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

63" FIB PRESTRESSED CONCRETE GIRDER (SPANS B & G)

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R RUGGIERI

DocuSigned by: David Ruggieri C462768DF412422... 8/26/2025

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STEWART

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			52

ASSEMBLED BY :	JCW	DATE :	2/25
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DRAWN BY :	BNB 01/21	REV. ---	---/---
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		REV. ---	---/---

8/26/2025
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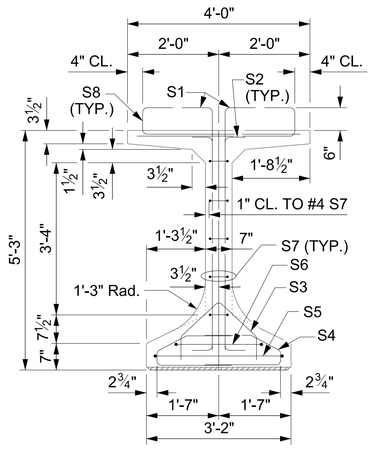
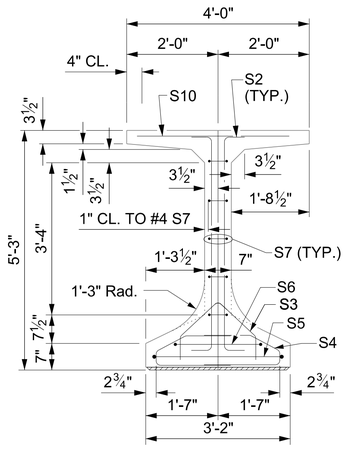
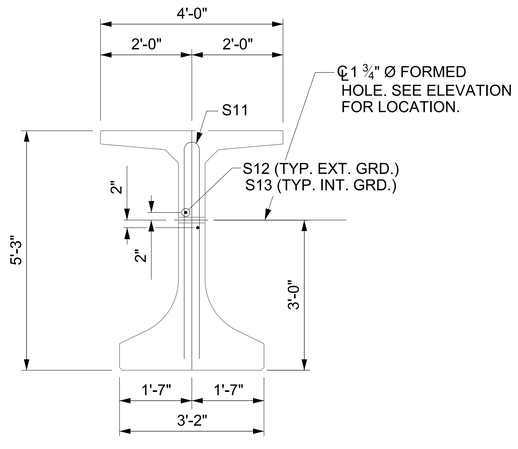
STD. NO. FIB63



SECTION A-A

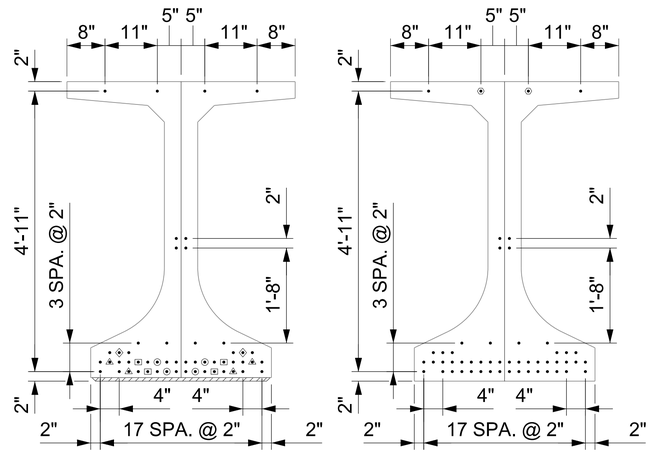


SECTION B-B



SECTION C-C

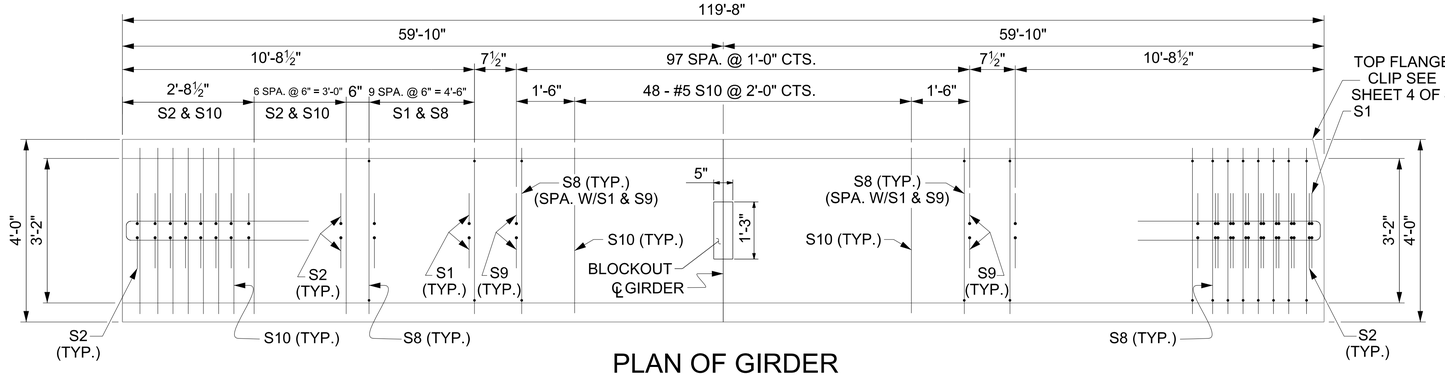
(S8, S9 AND S10 BARS NOT SHOWN)



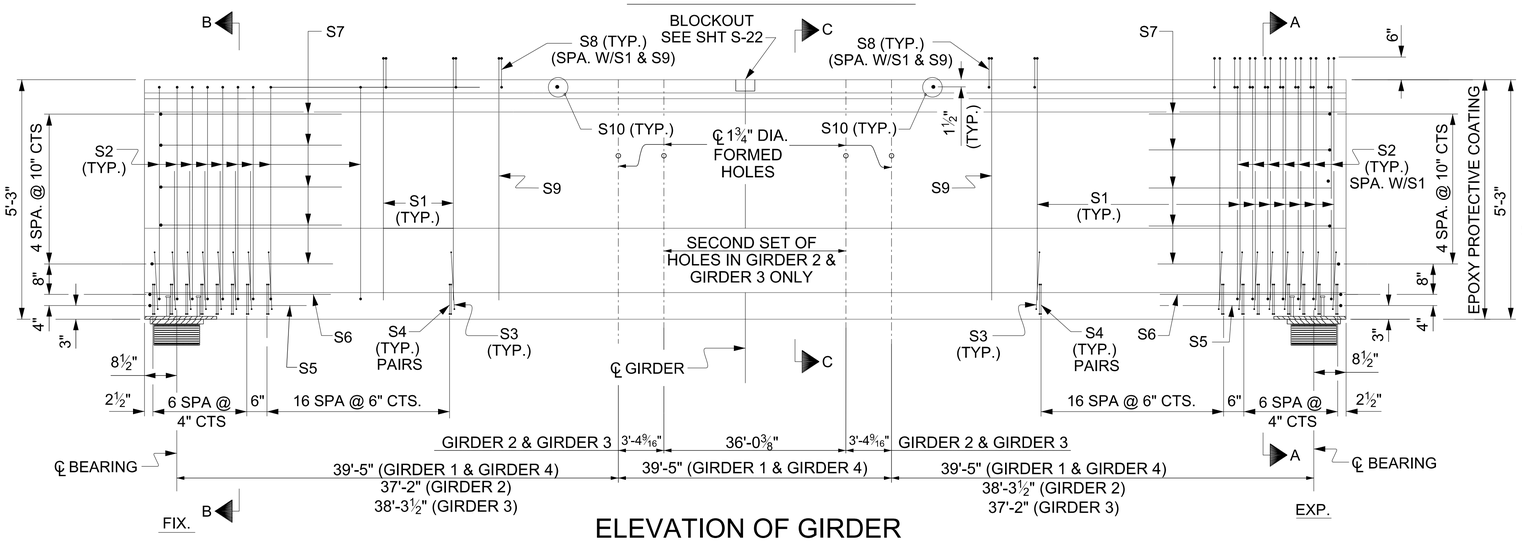
AT END OF GIRDER

AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT



PLAN OF GIRDER



ELEVATION OF GIRDER

DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
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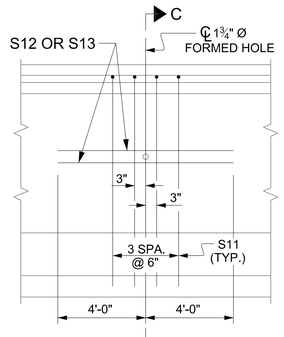

PARTIAL ELEVATION

SHOWING INTERMEDIATE CONCRETE DIAPHRAGM REINFORCING STEEL FOR ALL SPANS EXTERIOR GIRDERS SHOWN (INTERIOR GIRDERS SIMILAR)

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	68	#5	5	6'-1"	431
	S2	42	#5	4	6'-1"	266
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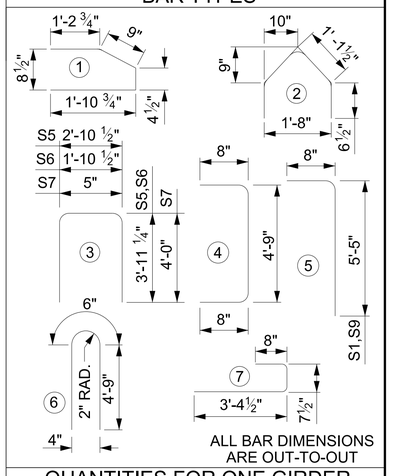
	S4	96	#3	1	4'-3"	153
	S5	2	#5	3	10'-9"	22
	S6	2	#5	3	9'-9"	20
	S7	10	#4	3	8'-5"	56
	S8	264	#5	7	4'-8"	1,285
	S9	196	#4	5	6'-0"	786
	S10	62	#5	STR	3'-8"	237
EXT. GDR.	S11	8	#5	6	10'-0"	83
INT. GDR.	S11	16	#5	6	10'-0"	167
EXT. GDR.	S12	4	#4	5	8'-0"	21
INT. GDR.	S13	4	#4	5	11'-5"	31

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	8000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
EXTERIOR GDR.	3,420	30.6	52
INTERIOR GDR.	3,514	30.6	52

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	119'-8"	478'-8"

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 3 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R RUGGLES

DocuSigned by: David Ruggles C46276BDF412422...

8/26/2025

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

63" FIB PRESTRESSED CONCRETE GIRDER (SPAN C, E, & H)

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STEWART

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			52

ASSEMBLED BY :	JCW	DATE :	2/25
CHECKED BY :	DRR	DATE :	2/25
DRAWN BY :	BNB 01/21	REV. ---	---/---
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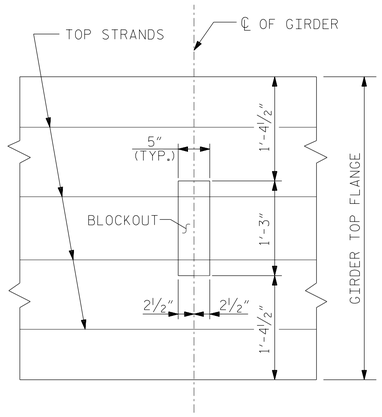
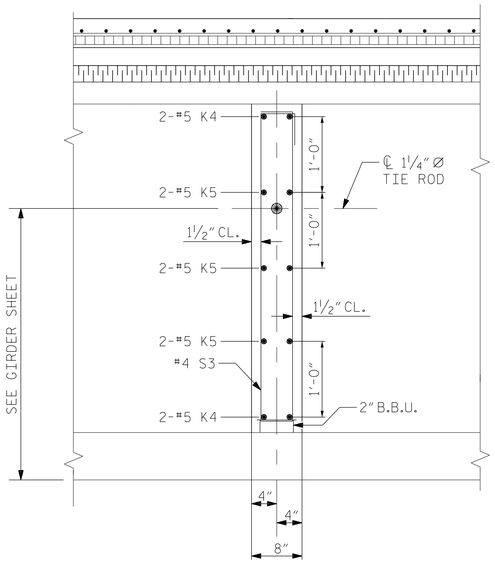
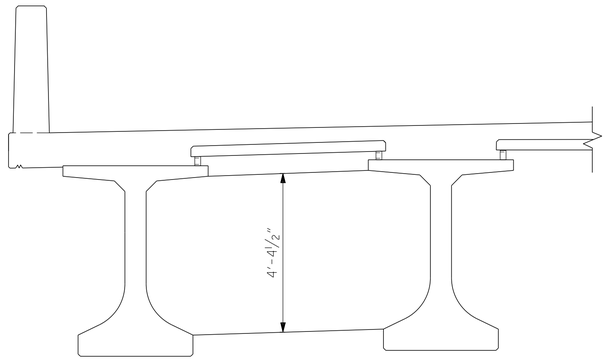


PLAN VIEW OF BLOCKOUT

NOTE: AFTER GIRDER HAS BEEN SET IN FINAL POSITION, TOP STRANDS SHALL BE CUT AT RECESS LOCATION. STRANDS SHALL BE CUT BEFORE SLAB IS POURED.



SECTION AT INTERMEDIATE DIAPHRAGM



DIAPHRAGM ELEVATION

*FOR REINFORCEMENT, SEE SHEET S-9

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

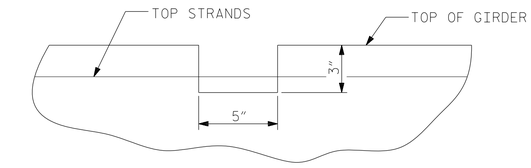
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,500 PSI.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF ¼". (EXCLUDING LINK SLAB AREA)

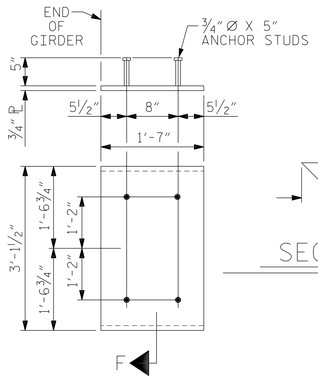
THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.

PRESTRESSED CONCRETE GIRDERS ARE DESIGNED FOR 0 PSI (0 MPa) TENSION IN THE PRECOMPRESSED TENSILE ZONE UNDER ALL LOADING CONDITIONS.

PRESTRESSED CONCRETE GIRDERS AND PRECAST DECK PANELS SHALL CONTAIN CALCIUM NITRATE CORROSION INHIBITOR. SEE STANDARD SPECIFICATIONS FOR CALCIUM NITRATE CORROSION INHIBITOR.

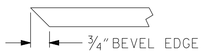


ELEVATION VIEW OF BLOCKOUT



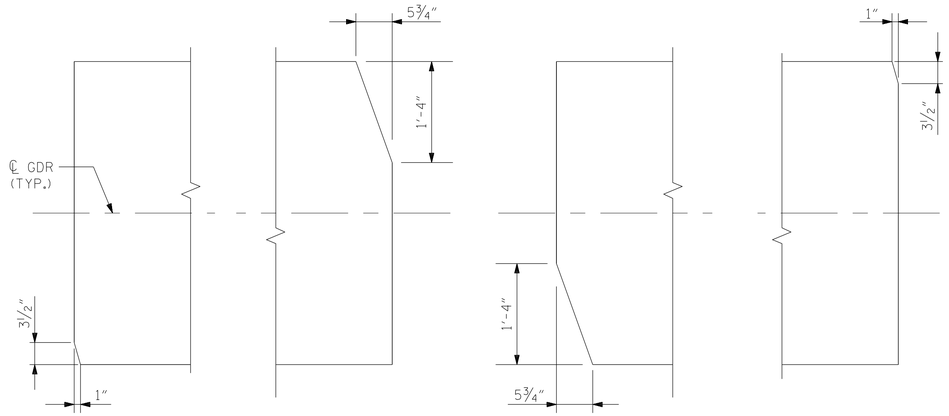
EMBEDDED PLATE "B-1" DETAILS FOR 63" F.I.B. PRESTRESSED GIRDER

(2 REQ'D PER GIRDER)



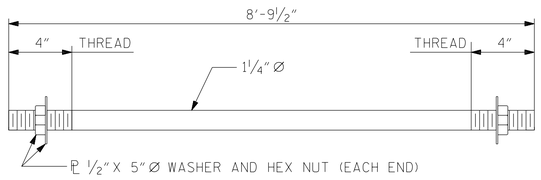
SECTION "F"

(SEE NOTES)



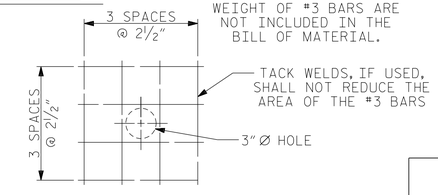
SPAN A SPANS C & E SPANS D & F SPAN H

TOP FLANGE CLIP DETAILS

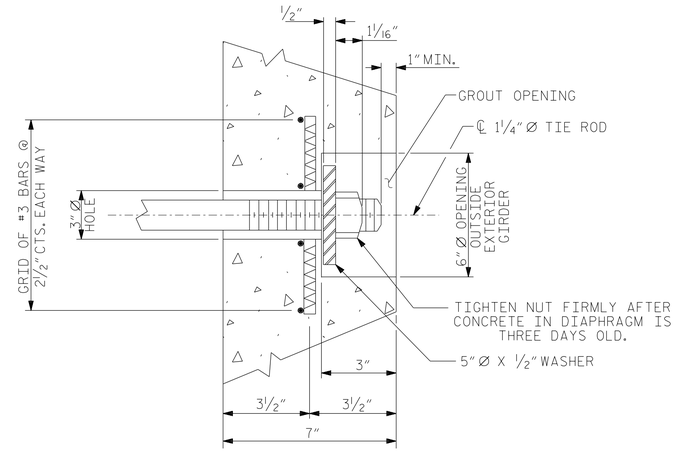


1¼" Ø TIE ROD ASSEMBLY

(48 COMPLETE ASSEMBLIES REQUIRED)



#3 BAR GRID



GROUTED RECESS DETAIL

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 4 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

DocuSigned by: David Ruggles C4827680F412422... 7/14/2025

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

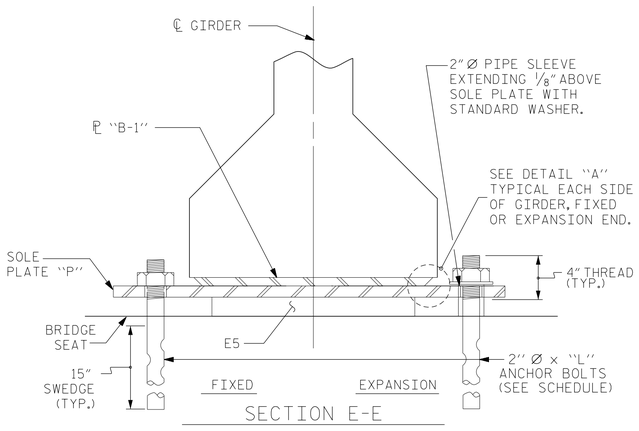
STANDARD

PRESTRESSED CONCRETE GIRDER DETAILS

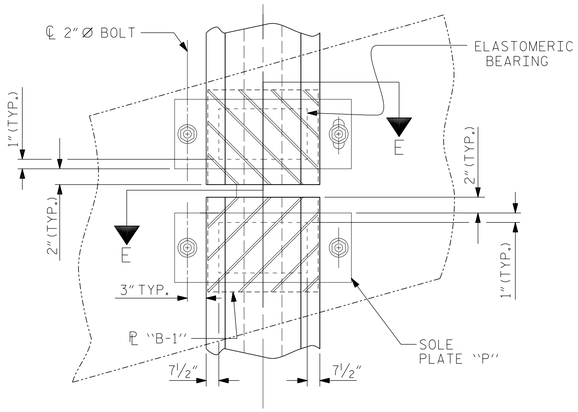
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			52

DRAWN BY: J. WILSON DATE : 2/25
CHECKED BY: D. RUGGLES DATE : 2/25
DESIGN ENGINEER OF RECORD: D. RUGGLES DATE : 2/25

7/11/2025
...\B-5614_SMU_G4_060009.dgn
USER:default



SECTION E-E

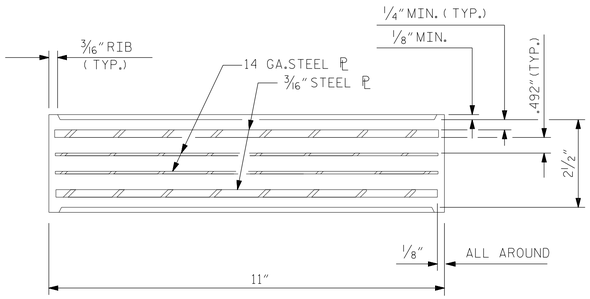


TYPICAL HALF-PLAN

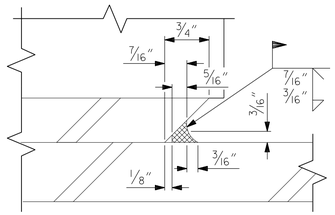
(SHOWING FIXED BEARING @ BENTS 1, 2, 4, 6 & 7)

TYPICAL HALF-PLAN

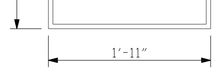
(SHOWING EXPANSION BEARING @ BENTS 3 & 5)
END BENTS 1 & 2 SIMILAR



TYPICAL SECTION OF ELASTOMERIC BEARINGS



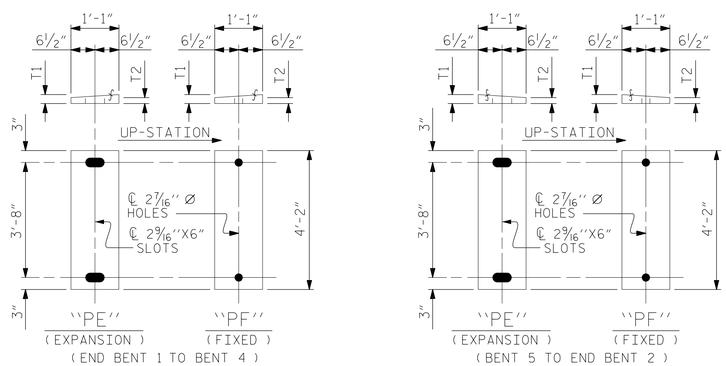
DETAIL "A"



E5 (64 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE VI



SOLE PLATE DETAILS ("P")

SOLE PLATE SCHEDULE (EXPANSION)						
PLATE	BENT	SPAN	GIRDER	T1	T2	# REQ'D
PE1	EB1	A	1,2,3,4	1 1/2"	1 5/16"	4
PE2	EB2	H	1,2,3,4	2"	1 1/2"	4
PE11	3	C	1,2,3,4	1 1/2"	1 1/2"	4
PE11	5	F	1, 3, 4	1 1/2"	1 1/2"	3
PE12	3	D	1,2,3,4	1 1/2"	1 5/8"	4
PE13	5	E	1, 3, 4	1 3/4"	1 1/2"	3
PE14	5	E	2	2"	1 3/4"	1
PE15	5	F	2	1 3/4"	1 3/4"	1
TOTAL SOLE PLATE (EXP.)						24

ANCHOR BOLT SCHEDULE				
BENT	SPAN	GIRDER	L	# REQ'D
EB1	A	1,2,3,4	2'-1"	8
1	A,B	1,2,3,4	2'-2"	16
2	B,C	1,2,3,4	2'-1"	16
3	C,D	1,2,3,4	2'-1"	16
4	D,E	1,2,3,4	2'-1"	16
5	E,F	1,2,3,4	2'-1"	16
6	F,G	1,2,3,4	2'-1 1/2"	16
7	G,H	1,2,3,4	2'-2"	16
EB2	H	1,2,3,4	2'-1"	8
TOTAL ANCHOR BOLTS				128

SOLE PLATE SCHEDULE (FIXED)						
PLATE	BENT	SPAN	GIRDER	T1	T2	# REQ'D
PF3	1	A	1, 2, 4	1 1/2"	1 11/16"	3
PF4	1	A	3	2 1/8"	2 5/16"	1
PF5	1	B	1, 2, 4	2"	2 3/8"	3
PF6	1	B	3	2 5/8"	3"	1
PF7	2	B	1, 2, 4	1 1/2"	1 1/2"	3
PF7	4	D	1,2,3,4	1 1/2"	1 1/2"	4
PF7	4	E	1,2,3,4	1 1/2"	1 1/2"	4
PF8	2	B	3	1 7/8"	1 7/8"	1
PF9	2	C	1, 2, 4	1 1/2"	1 3/4"	3
PF10	2	C	3	1 7/8"	2 1/8"	1
PF16	6	F	1, 3, 4	2 3/16"	1 7/8"	3
PF17	6	F	2	2 11/16"	2 3/8"	1
PF18	6	G	1, 3, 4	1 5/8"	1 1/2"	3
PF19	6	G	2	2 1/8"	2"	1
PF20	7	G	1, 3, 4	2 7/16"	2"	3
PF21	7	G	2	3 3/16"	2 3/4"	1
PF22	7	H	1, 3, 4	1 3/4"	1 1/2"	3
PF23	7	H	2	2 1/2"	2 1/4	1
TOTAL SOLE PLATE (FIX.)						40

NOTES

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

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

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

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

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

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

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

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE STANDARD SPECIFICATIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.

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

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 11725 DAVID R. RUGGLES

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STANDARD

ELASTOMERIC BEARING DETAILS

PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE

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

SHEET NO. S-23

TOTAL SHEETS 52

ASSEMBLED BY :	JCW	DATE :	2/25
CHECKED BY :	DRR	DATE :	2/25
DRAWN BY : WJH 8/89	REV. 12/17		MAA/THC
CHECKED BY : CRK 8/89	REV. 10/21		BNB/AAI
	REV. 10/23		BNB/SNM

7/11/2025
...\B-5614_SMU_BG1_060009.dgn
USER:default

STD. NO. EB4

DEAD LOAD DEFLECTION TABLE - ALL SPANS

	0.6 Ø LOW RELAXATION																					
	FORTIETH POINTS	℄ BRG.	0.025	0.05	0.075	0.10	0.125	0.150	0.175	0.20	0.225	0.250	0.275	0.30	0.325	0.350	0.375	0.40	0.425	0.450	0.475	0.50
GIRDER																						
1	CAMBER (GIRDER ALONE IN PLACE) ▲	0	0.030	0.060	0.090	0.119	0.140	0.161	0.182	0.203	0.217	0.231	0.245	0.259	0.267	0.275	0.283	0.291	0.293	0.296	0.298	0.301
	✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ▼	0	0.013	0.025	0.038	0.050	0.062	0.074	0.086	0.098	0.107	0.116	0.126	0.135	0.141	0.147	0.153	0.159	0.161	0.163	0.165	0.167
	FINAL CAMBER ▲	0	3/16	7/16	5/8	13/16	15/16	1 1/16	1 3/16	1 1/4	1 5/16	1 3/8	1 7/16	1 1/2	1 1/2	1 9/16	1 9/16	1 9/16	1 9/16	1 5/8	1 5/8	1 5/8
2	CAMBER (GIRDER ALONE IN PLACE) ▲	0	0.030	0.060	0.090	0.119	0.140	0.161	0.182	0.203	0.217	0.231	0.245	0.259	0.267	0.275	0.283	0.291	0.293	0.296	0.298	0.301
	✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ▼	0	0.013	0.026	0.039	0.052	0.064	0.076	0.088	0.100	0.110	0.119	0.129	0.138	0.144	0.151	0.157	0.163	0.165	0.167	0.169	0.171
	FINAL CAMBER ▲	0	3/16	3/8	5/8	13/16	15/16	1	1 1/8	1 1/4	1 5/16	1 3/8	1 3/8	1 7/16	1 1/2	1 1/2	1 1/2	1 3/16	1 9/16	1 9/16	1 9/16	1 9/16
3	CAMBER (GIRDER ALONE IN PLACE) ▲	0	0.030	0.060	0.090	0.119	0.140	0.161	0.182	0.203	0.217	0.231	0.245	0.259	0.267	0.275	0.283	0.291	0.293	0.296	0.298	0.301
	✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ▼	0	0.013	0.026	0.039	0.052	0.064	0.076	0.088	0.100	0.110	0.119	0.129	0.138	0.144	0.151	0.157	0.163	0.165	0.167	0.169	0.171
	FINAL CAMBER ▲	0	3/16	3/8	5/8	13/16	15/16	1	1 1/8	1 1/4	1 5/16	1 3/8	1 3/8	1 7/16	1 1/2	1 1/2	1 1/2	1 3/16	1 9/16	1 9/16	1 9/16	1 9/16
4	CAMBER (GIRDER ALONE IN PLACE) ▲	0	0.030	0.060	0.090	0.119	0.140	0.161	0.182	0.203	0.217	0.231	0.245	0.259	0.267	0.275	0.283	0.291	0.293	0.296	0.298	0.301
	✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ▼	0	0.013	0.025	0.038	0.050	0.062	0.074	0.086	0.098	0.107	0.116	0.126	0.135	0.141	0.147	0.153	0.159	0.161	0.163	0.165	0.167
	FINAL CAMBER ▲	0	3/16	7/16	5/8	13/16	15/16	1 1/16	1 3/16	1 1/4	1 5/16	1 3/8	1 7/16	1 1/2	1 1/2	1 9/16	1 9/16	1 9/16	1 9/16	1 5/8	1 5/8	1 5/8

✳ INCLUDES FUTURE WEARING SURFACE

ALL VALUES ARE GIVEN IN FEET (DECIMAL FORMAT), EXCEPT "FINAL CAMBER" WHICH IS GIVEN IN INCHES

DEAD LOAD DEFLECTION TABLE - ALL SPANS (CONT'D)

	0.525	0.550	0.575	0.60	0.625	0.650	0.675	0.70	0.725	0.750	0.775	0.80	0.825	0.850	0.875	0.90	0.925	0.950	0.975	℄ BRG.
GIRDER																				
1	0.298	0.296	0.293	0.291	0.283	0.275	0.267	0.259	0.245	0.231	0.217	0.203	0.182	0.161	0.140	0.119	0.090	0.060	0.030	0
	0.165	0.163	0.161	0.159	0.153	0.147	0.141	0.135	0.126	0.116	0.107	0.098	0.085	0.072	0.059	0.046	0.035	0.023	0.012	0
	1 5/8	1 5/8	1 9/16	1 9/16	1 9/16	1 9/16	1 1/2	1 1/2	1 7/16	1 3/8	1 5/16	1 1/4	1 3/16	1 1/16	1	7/8	11/16	7/16	1/4	0
2	0.298	0.296	0.293	0.291	0.283	0.275	0.267	0.259	0.245	0.231	0.217	0.203	0.182	0.161	0.140	0.119	0.090	0.060	0.030	0
	0.169	0.167	0.165	0.163	0.157	0.151	0.144	0.138	0.129	0.119	0.110	0.100	0.088	0.076	0.064	0.052	0.039	0.026	0.013	0
	1 9/16	1 9/16	1 9/16	1 9/16	1 1/2	1 1/2	1 1/2	1 7/16	1 3/8	1 3/8	1 5/16	1 1/4	1 1/8	1	15/16	13/16	5/8	3/8	3/16	0
3	0.298	0.296	0.293	0.291	0.283	0.275	0.267	0.259	0.245	0.231	0.217	0.203	0.182	0.161	0.140	0.119	0.090	0.060	0.030	0
	0.169	0.167	0.165	0.163	0.157	0.151	0.144	0.138	0.129	0.119	0.110	0.100	0.088	0.076	0.064	0.052	0.039	0.026	0.013	0
	1 9/16	1 9/16	1 9/16	1 9/16	1 1/2	1 1/2	1 1/2	1 7/16	1 3/8	1 3/8	1 5/16	1 1/4	1 1/8	1	15/16	13/16	5/8	3/8	3/16	0
4	0.298	0.296	0.293	0.291	0.283	0.275	0.267	0.259	0.245	0.231	0.217	0.203	0.182	0.161	0.140	0.119	0.090	0.060	0.030	0
	0.165	0.163	0.161	0.159	0.153	0.147	0.141	0.135	0.126	0.116	0.107	0.098	0.086	0.072	0.062	0.046	0.038	0.023	0.013	0
	1 5/8	1 5/8	1 9/16	1 9/16	1 9/16	1 9/16	1 1/2	1 1/2	1 7/16	1 3/8	1 5/16	1 1/4	1 3/16	1 1/16	15/16	7/8	5/8	7/16	3/16	0

✳ INCLUDES FUTURE WEARING SURFACE

ALL VALUES ARE GIVEN IN FEET (DECIMAL FORMAT), EXCEPT "FINAL CAMBER" WHICH IS GIVEN IN INCHES

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

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PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

GIRDER CAMBER AND DEFLECTION TABLES

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

SHEET NO. S-24

TOTAL SHEETS 52

DRAWN BY: J. WILSON DATE : 2/25

CHECKED BY: D. RUGGLES DATE : 2/25

DESIGN ENGINEER OF RECORD: D. RUGGLES DATE : 2/25

7/11/2025
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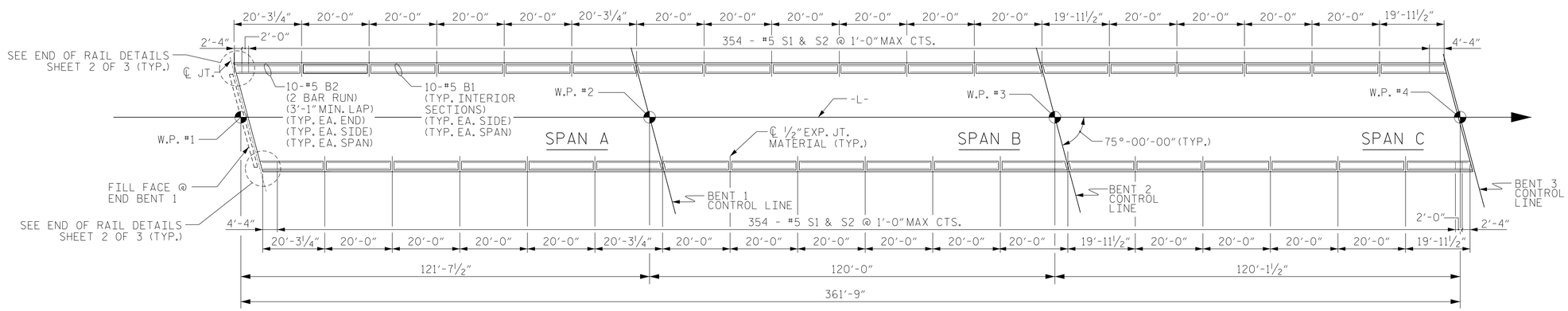
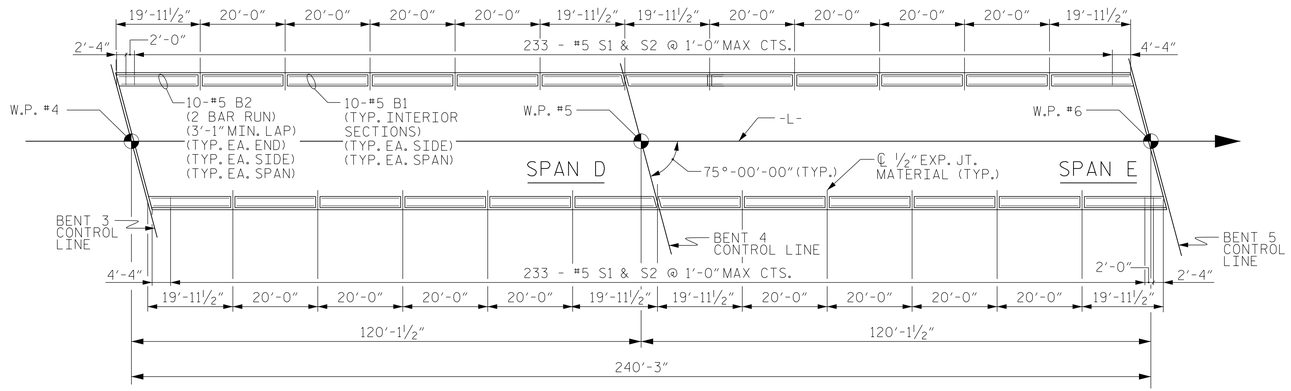
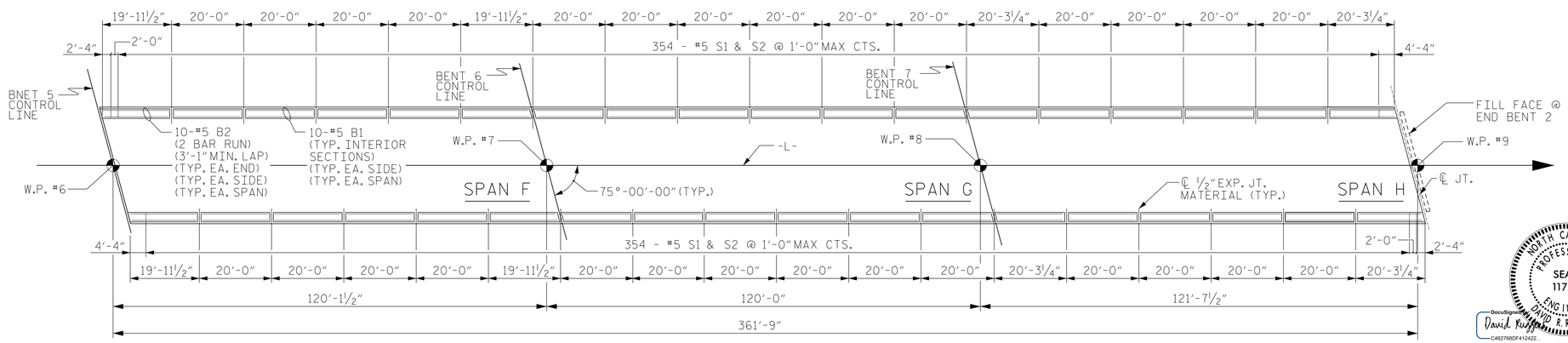
USER:default



PLAN - SPANS A, B, & C



PLAN - SPANS D & E



PLAN - SPANS F, G, & H

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

DocuSigned by: David Ruggles C462768DF412422... 7/14/2025

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PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

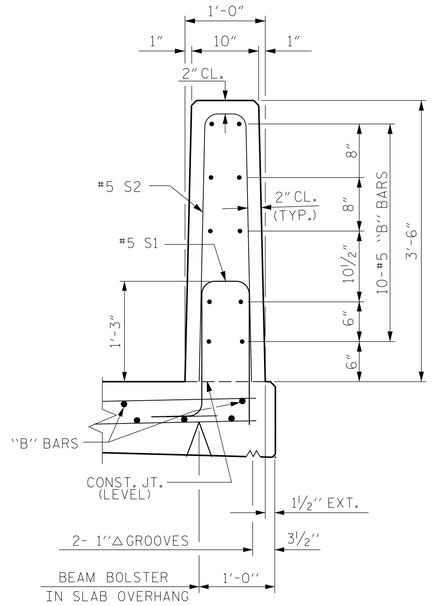
SUPERSTRUCTURE

VERTICAL CONCRETE BARRIER RAIL

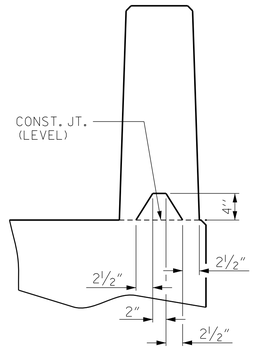
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			52

DRAWN BY: J. WILSON DATE : 2/25
CHECKED BY: D. RUGGLES DATE : 2/25
DESIGN ENGINEER OF RECORD: D. RUGGLES DATE : 2/25

7/14/2025
...\B-5614_SMU_BR1_060009.dgn
USER:default

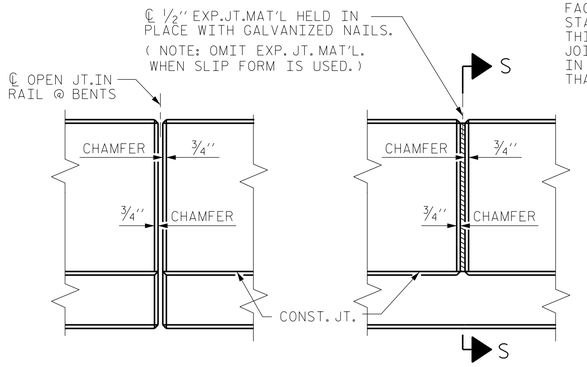


SECTION THRU RAIL



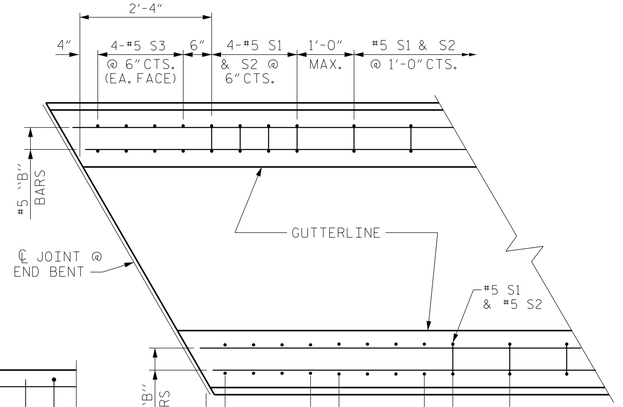
SECTION S-S

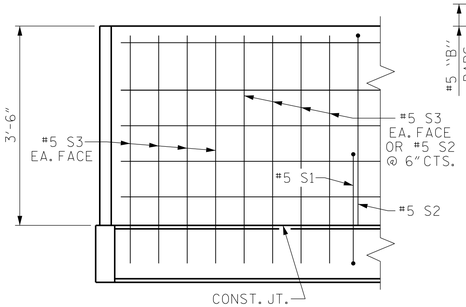
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY
WHEN SLIP FORM IS USED)



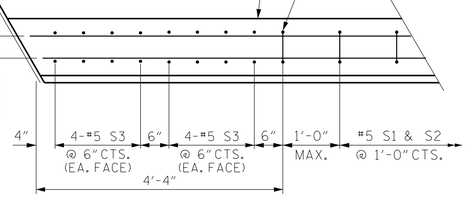
ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS





SIDE VIEW



PLAN

END OF RAIL DETAILS - BENTS 3 & 5

FOR ADHESIVE ANCHORING AT SAWED JOINTS

NOTES

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

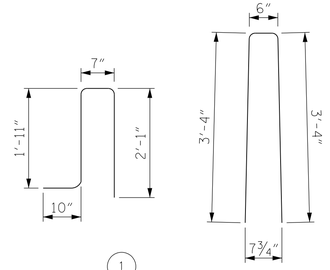
WHEN FOAM JOINT SEAL IS REQUIRED, THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF VERTICAL CONCRETE BARRIER RAIL.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

BAR TYPES



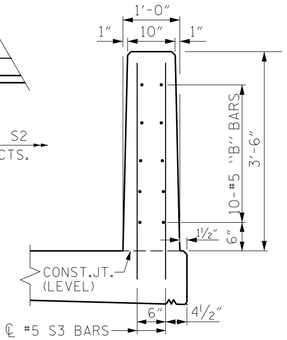
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

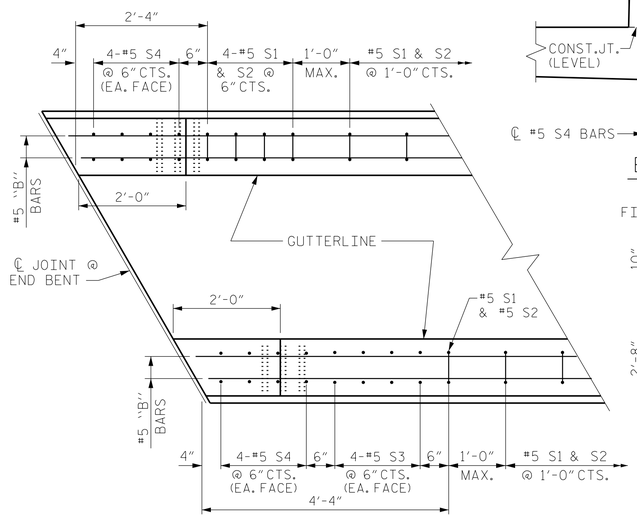
FOR VERTICAL CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	640	#5	STR	19'-7"	13,072
* B2	640	#5	STR	11'-8"	7,788
* S1	1900	#5	1	5'-5"	10,734
* S2	1900	#5	2	7'-2"	14,202
* S3	112	#5	STR	4'-1"	477
* S4	32	#5	STR	3'-3"	108

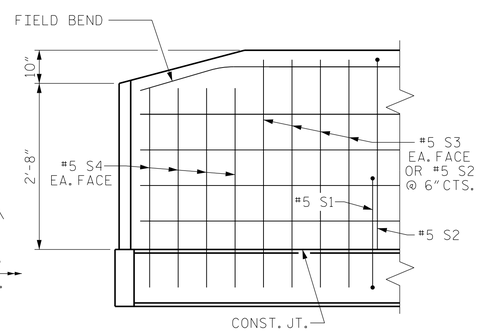
* EPOXY COATED REINFORCING STEEL	46,381 LBS.
CLASS AA CONCRETE	228.8 CU. YDS.
VERTICAL CONCRETE BARRIER RAIL	1922.56 LIN. FT.



END VIEW



PLAN



SIDE VIEW

END OF RAIL DETAILS - END BENTS

FOR ADHESIVE ANCHORING AT SAWED JOINTS
END BENT 1 SHOWN; END BENT 2 SIMILAR

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

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www.wearestewart.com
STEWART

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

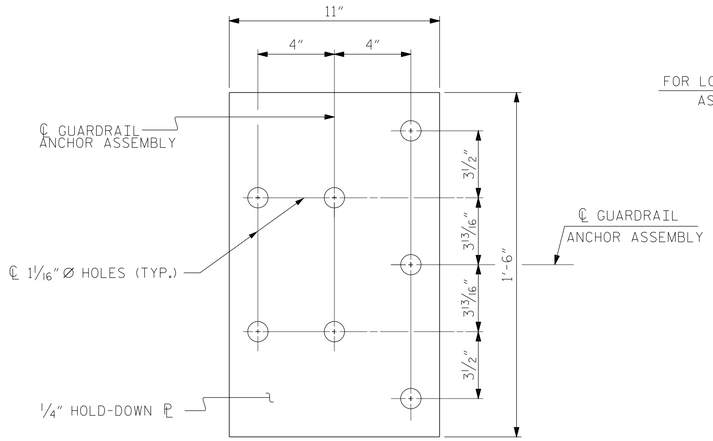
STANDARD
VERTICAL
CONCRETE
BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			52

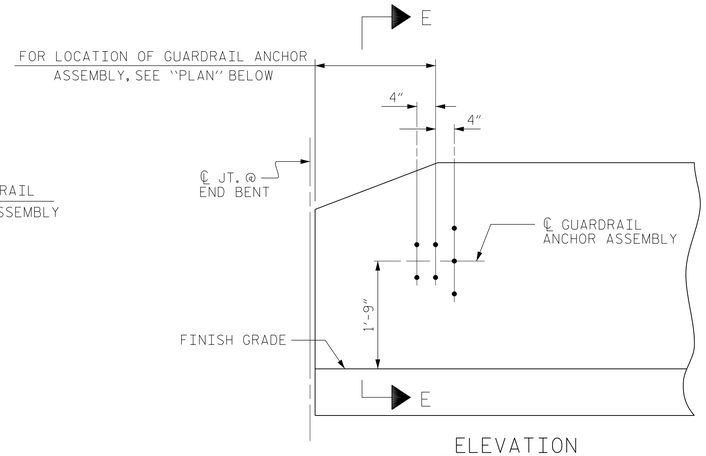
ASSEMBLED BY :	JCW	DATE :	2/25
CHECKED BY :	DRR	DATE :	2/25
DRAWN BY : MAA	5/10	REV. 6/13	MAA/GM
CHECKED BY : GM	5/10	REV. 12/17	MAA/THC
		REV. 5/18	MAA/THC

$$$SYSTIME$$$
$$$DGN$$$
$$$USERNAME$$$

STD. NO. CBR2



PLAN



ELEVATION

NOTES

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

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

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

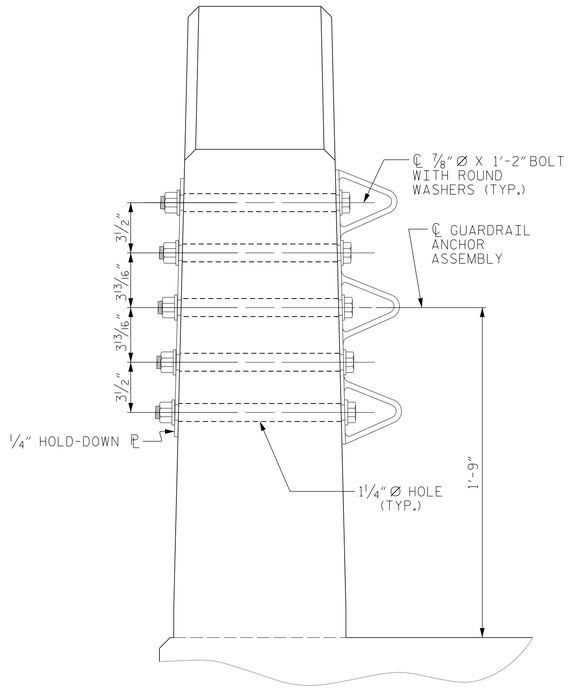
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

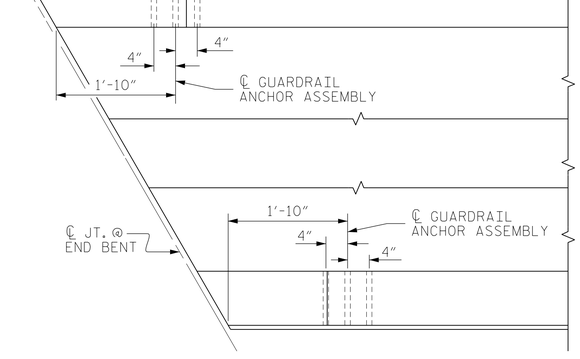
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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

SKETCH SHOWING POINTS OF ATTACHMENT

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

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BEAUFORT COUNTY

STATION: 22+57.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

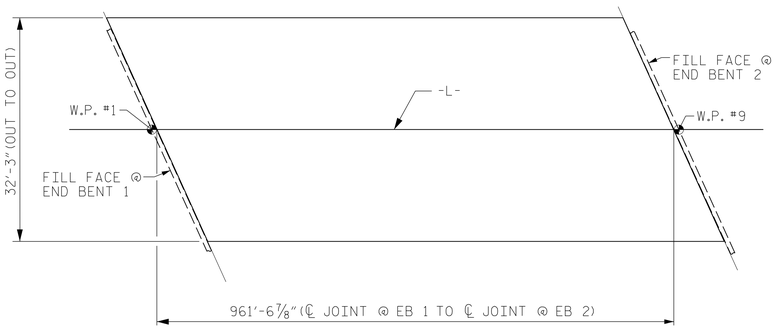
STANDARD GUARDRAIL ANCHORAGE DETAILS FOR VERTICAL CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			52

ASSEMBLED BY :	JCW	DATE :	2/25
CHECKED BY :	DRR	DATE :	2/25
DRAWN BY : MAA	5/10	REV. 1/15	MAA/TMG
CHECKED BY : GM	5/10	REV. 12/17	MAA/THC
		REV. 5/18	MAA/THC

7/11/2025
...\B-5614_SMU_GR1_060009.dgn
USER:default

STD. NO. GRA3



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 31,011)

CLASS AA CONCRETE

SPANS	POUR #	CLASS AA CONCRETE (CU. YDS.)
A, B, & C	1	223.7
A, B, & C	2	36.0
TOTAL (A, B, & C)		259.7
D & E	1	144.0
D & E	2	28.8
TOTAL (D & E)		172.8
F, G, & H	1	223.7
F, G, & H	2	36.0
TOTAL (F, G, & H)		259.7
TOTAL (SPANS A - H)		692.2

GROOVING BRIDGE FLOORS

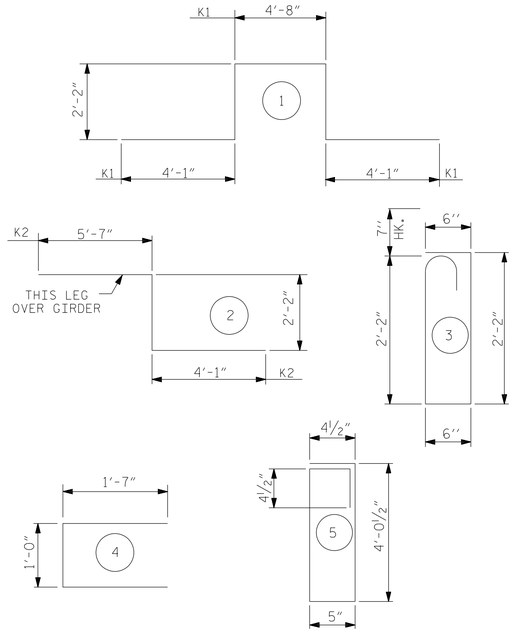
APPROACH SLABS	765	SQ.FT.
BRIDGE DECK	25,923	SQ.FT.
TOTAL	26,688	SQ.FT.

SUPERSTRUCTURE BILL OF MATERIAL

	✳ EPOXY COATED REINFORCING STEEL (LBS.)
SPANS A, B, & C	47,685
SPANS D & E	31,566
SPANS F, G, & H	47,685
✳✳ TOTALS	126,936

✳✳ QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

SPANS A, B, & C

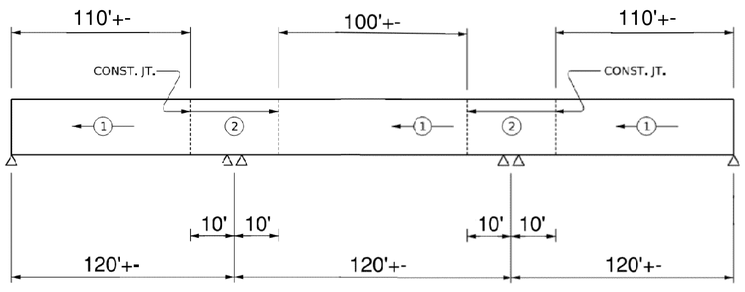
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	704	#5	STR	31'-11"	23436
✳ A2	2	#5	STR	30'-4"	63
✳ A3	2	#5	STR	28'-5"	59
✳ A4	2	#5	STR	26'-7"	55
✳ A5	2	#5	STR	24'-8"	51
✳ A6	2	#5	STR	22'-10"	48
✳ A7	2	#5	STR	20'-11"	44
✳ A8	2	#5	STR	19'-1"	40
✳ A9	2	#5	STR	17'-2"	36
✳ A10	2	#5	STR	15'-4"	32
✳ A11	2	#5	STR	13'-6"	28
✳ A12	2	#5	STR	11'-7"	24
✳ A13	2	#5	STR	9'-9"	20
✳ A14	2	#5	STR	7'-10"	16
✳ A15	2	#5	STR	6'-0"	13
✳ A16	2	#5	STR	4'-2"	9
✳ A17	2	#5	STR	2'-3"	5
✳ A18	482	#5	STR	4'-7"	2304
✳ B1	170	#5	STR	46'-0"	8156
✳ B2	252	#4	STR	34'-8"	5836
✳ B3	84	#4	STR	38'-10"	2179
✳ B4	42	#5	STR	53'-10"	2358
✳ G1	2	#5	STR	32'-10"	68
✳ K1	8	#8	1	17'-2"	367
✳ K2	8	#8	2	11'-10"	253
✳ K3	18	#6	STR	4'-3"	115
✳ K4	72	#5	STR	5'-3"	394
✳ K5	108	#5	STR	7'-4"	826
✳ S1	30	#5	3	5'-11"	185
✳ S2	30	#4	4	4'-2"	84
✳ S3	90	#4	5	9'-8"	581

SPANS D & E

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	463	#5	STR	31'-11	15413
✳ A2	2	#5	STR	30'-7"	64
✳ A3	2	#5	STR	28'-9"	60
✳ A4	2	#5	STR	26'-11"	56
✳ A5	2	#5	STR	25'-0"	52
✳ A6	2	#5	STR	23'-1"	48
✳ A7	2	#5	STR	21'-3"	44
✳ A8	2	#5	STR	19'-5"	41
✳ A9	2	#5	STR	17'-6"	37
✳ A10	2	#5	STR	15'-8"	33
✳ A11	2	#5	STR	13'-9"	29
✳ A12	2	#5	STR	11'-11"	25
✳ A13	2	#5	STR	10'-1"	21
✳ A14	2	#5	STR	8'-2"	17
✳ A15	2	#5	STR	6'-4"	13
✳ A16	2	#5	STR	4'-5"	9
✳ A17	2	#5	STR	2'-7"	5
✳ A18	320	#5	STR	4'-7"	1530
✳ B1	85	#5	STR	46'-0"	4078
✳ B2	240	#4	STR	34'-8"	5558
✳ B5	42	#5	STR	50'-2"	2198
✳ G1	2	#5	STR	32'-10"	68
✳ K1	8	#8	1	17'-2"	367
✳ K2	8	#8	2	11'-10"	253
✳ K3	12	#6	STR	4'-3"	77
✳ K4	48	#5	STR	5'-3"	263
✳ K5	72	#5	STR	7'-4"	551
✳ S1	30	#5	3	5'-11"	185
✳ S2	30	#4	4	4'-2"	84
✳ S3	60	#4	5	9'-8"	387

SPANS F, G, & H

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	704	#5	STR	31'-11	23436
✳ A2	2	#5	STR	30'-4"	63
✳ A3	2	#5	STR	28'-5"	59
✳ A4	2	#5	STR	26'-7"	55
✳ A5	2	#5	STR	24'-8"	51
✳ A6	2	#5	STR	22'-10"	48
✳ A7	2	#5	STR	20'-11"	44
✳ A8	2	#5	STR	19'-1"	40
✳ A9	2	#5	STR	17'-2"	36
✳ A10	2	#5	STR	15'-4"	32
✳ A11	2	#5	STR	13'-6"	28
✳ A12	2	#5	STR	11'-7"	24
✳ A13	2	#5	STR	9'-9"	20
✳ A14	2	#5	STR	7'-10"	16
✳ A15	2	#5	STR	6'-0"	13
✳ A16	2	#5	STR	4'-2"	9
✳ A17	2	#5	STR	2'-3"	5
✳ A18	482	#5	STR	4'-7"	2304
✳ B1	170	#5	STR	46'-0"	8156
✳ B2	252	#4	STR	34'-8"	5836
✳ B3	84	#4	STR	38'-10"	2179
✳ B4	42	#5	STR	53'-10"	2358
✳ G1	2	#5	STR	32'-10"	68
✳ K1	8	#8	1	17'-2"	367
✳ K2	8	#8	2	11'-10"	253
✳ K3	18	#6	STR	4'-3"	115
✳ K4	72	#5	STR	5'-3"	394
✳ K5	108	#5	STR	7'-4"	826
✳ S1	30	#5	3	5'-11"	185
✳ S2	30	#4	4	4'-2"	84
✳ S3	90	#4	5	9'-8"	581



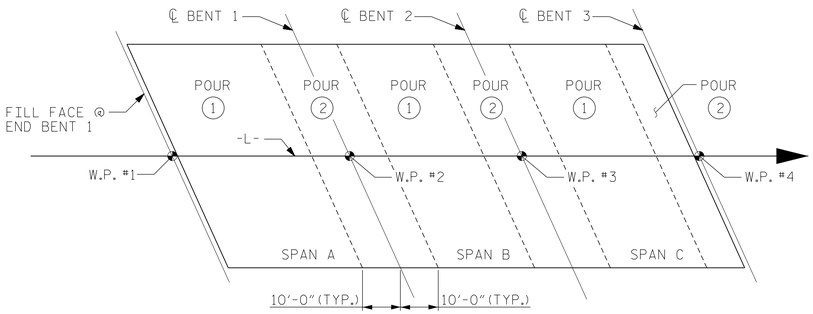
KEY

* POUR (2) CAN NOT BE STARTED UNTIL BOTH ADJACENT (1) POURS REACH A MINIMUM OF 3000 PSI.

(#) = INDICATES POUR NUMBER AND DIRECTION OF POUR

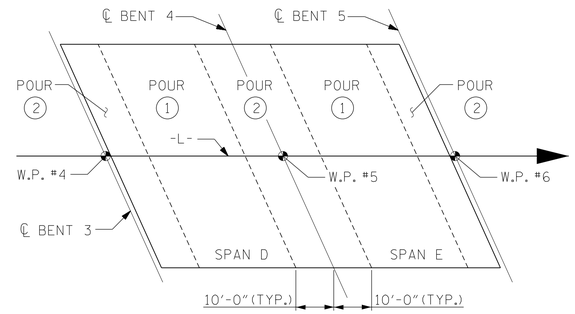
OPTIONAL POURING SEQUENCE - SPANS A, B, & C

SPANS F, G, & H SIMILAR. SPANS D&E SIMILAR.



POURING SEQUENCE - SPANS A, B, & C

SPANS F, G, & H SIMILAR EXCEPT OPPOSITE HAND



POURING SEQUENCE - SPANS D & E

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

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

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

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STEWART

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

BILL OF MATERIAL

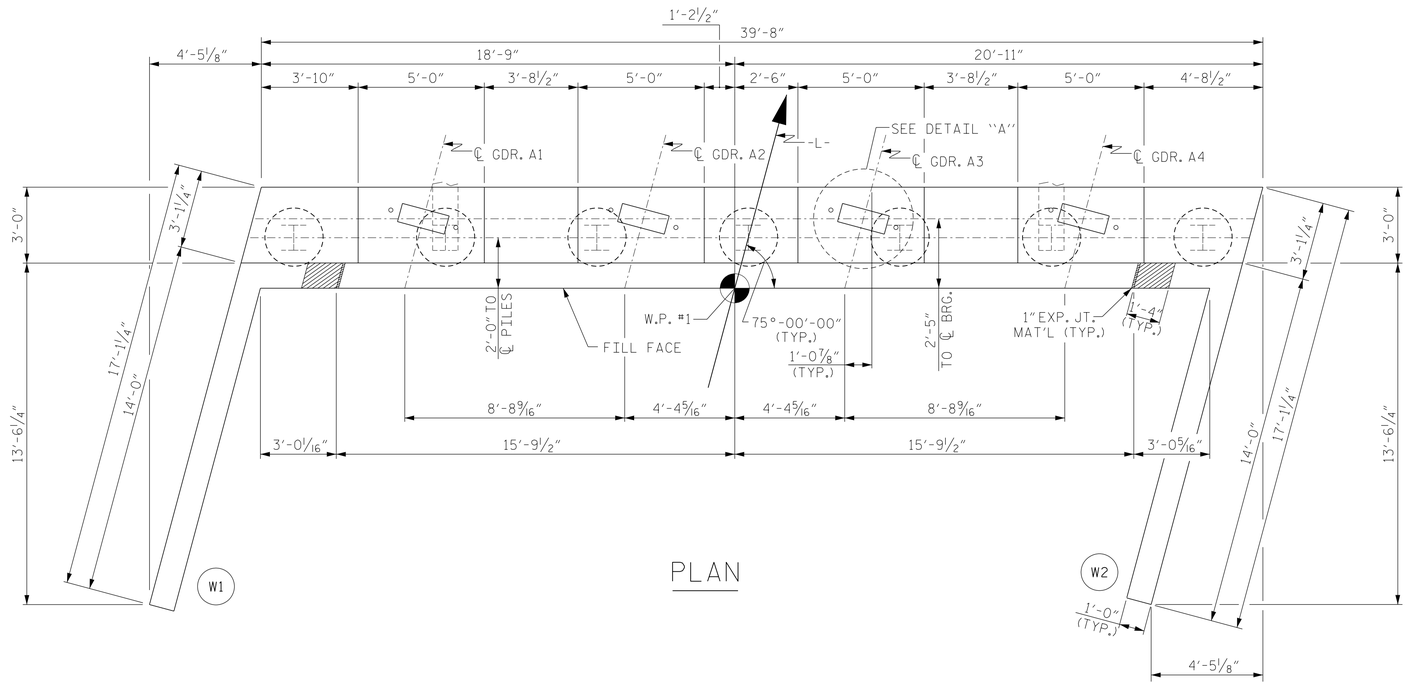
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-28

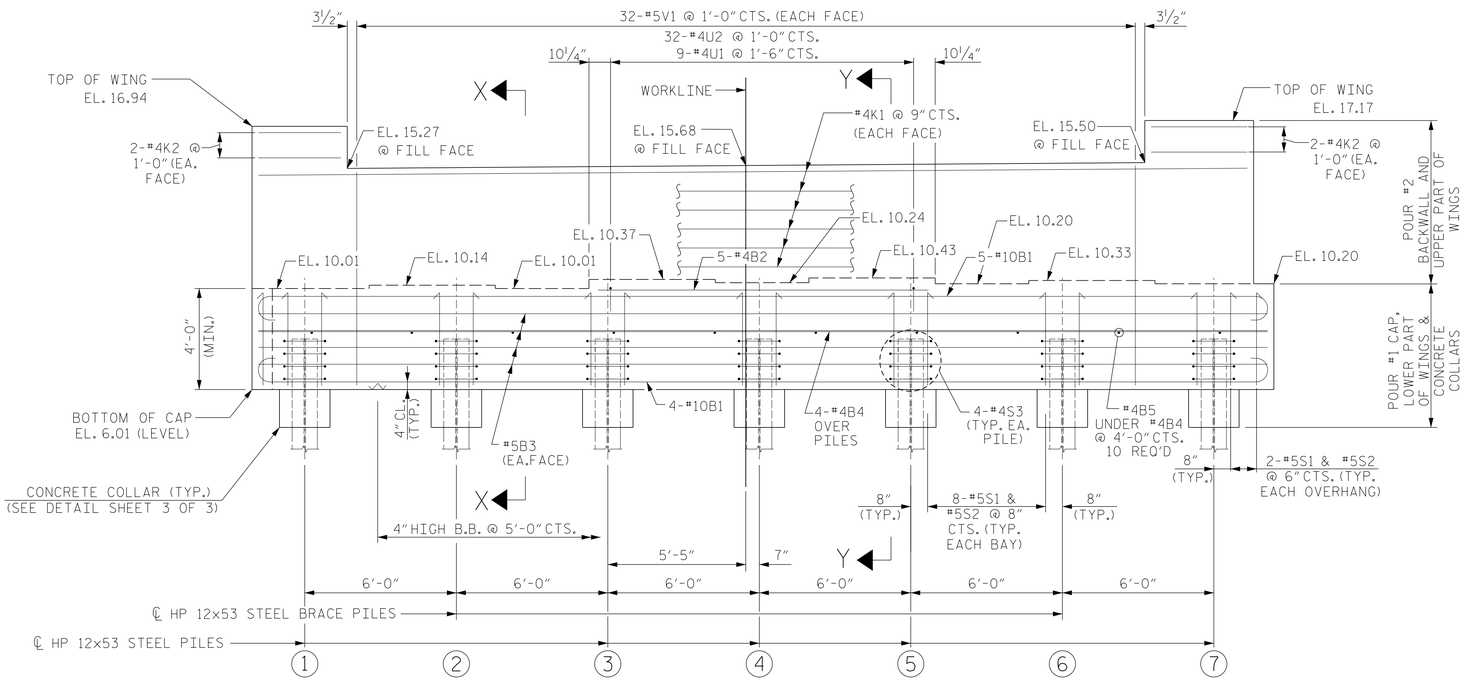
TOTAL SHEETS 52

DRAWN BY: J. WILSON DATE : 2/25
CHECKED BY: D. RUGGLES DATE : 2/25
DESIGN ENGINEER OF RECORD: D. RUGGLES DATE : 2/25

8/26/2025
...\B-5614_SMU_BM1_060009.dgn
USER:default



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTIONS X-X & Y-Y, SEE SHEET S-31.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN VIEW FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", END BENT 1 SHEET 3 OF 3.

NOTES

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

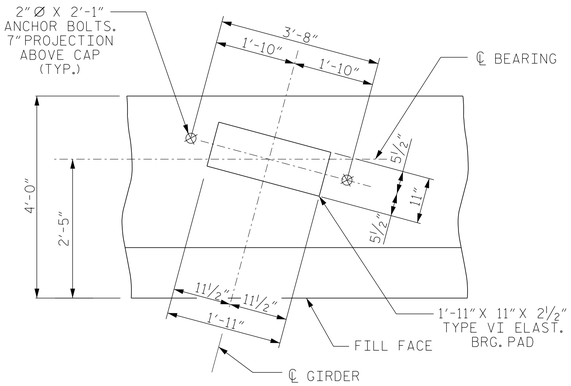
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR BEARING DETAILS, SEE ELASTOMERIC BEARING DETAILS.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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



DETAIL "A"

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 1 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1
PLAN AND ELEVATION

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			52

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DESIGN ENGINEER OF RECORD:	D. RUGGLES	DATE : 2/25

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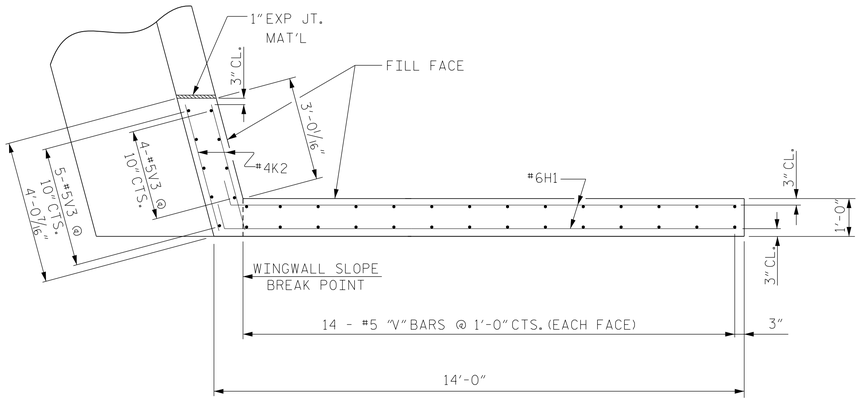
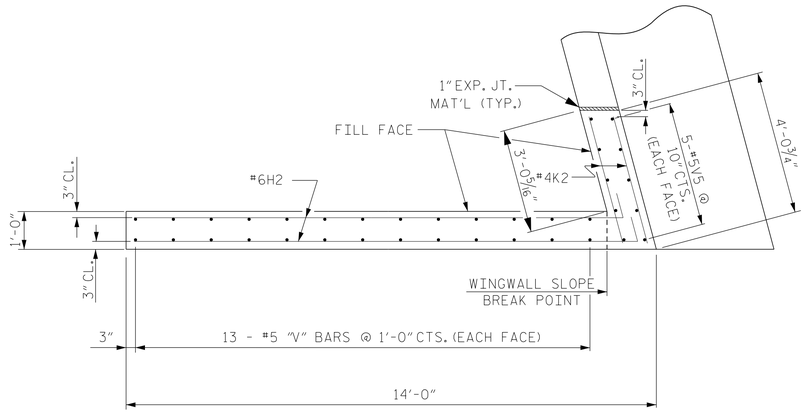
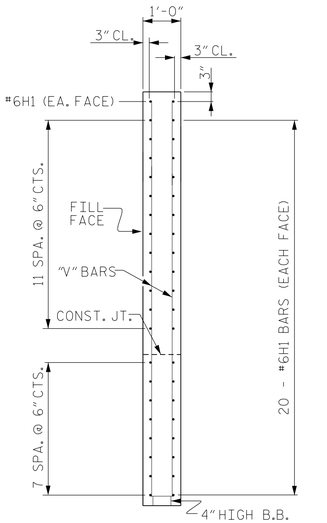
...\B-5614_SMU_E1_060009.dgn
USER:default



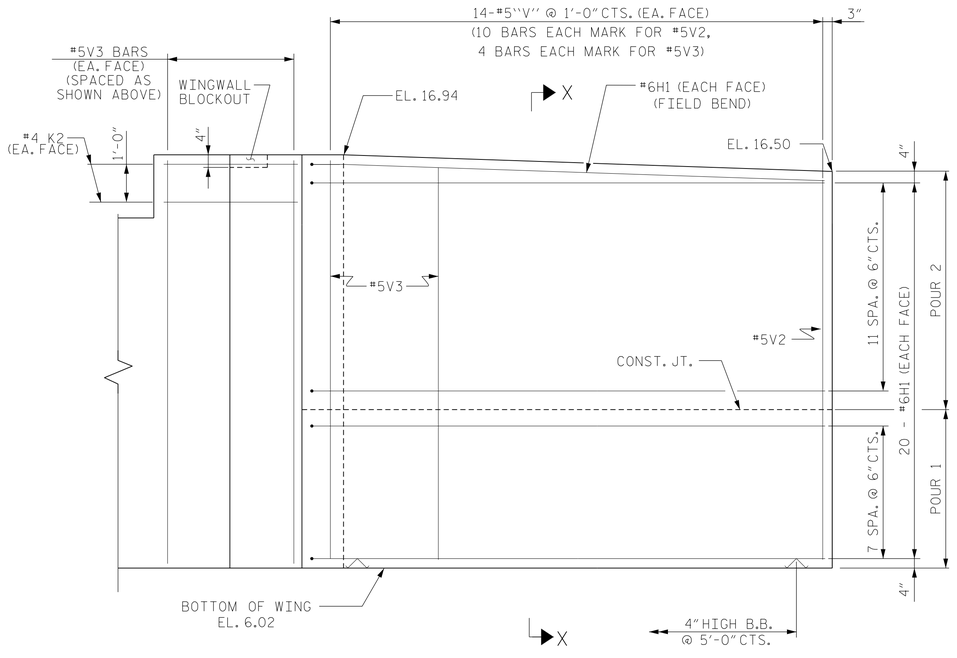
PLAN OF WING (W1)



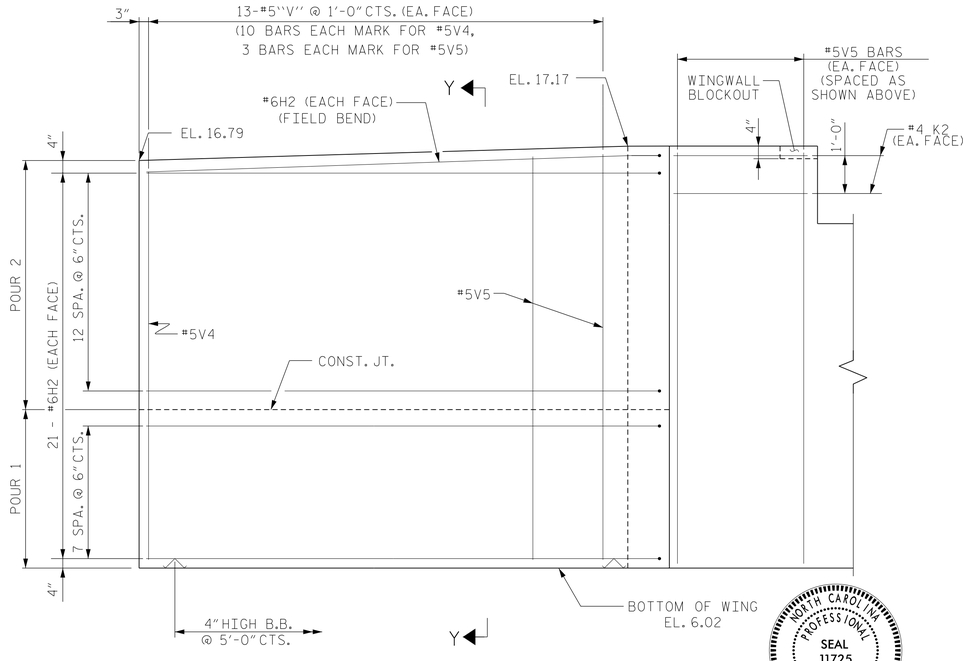
PLAN OF WING (W2)



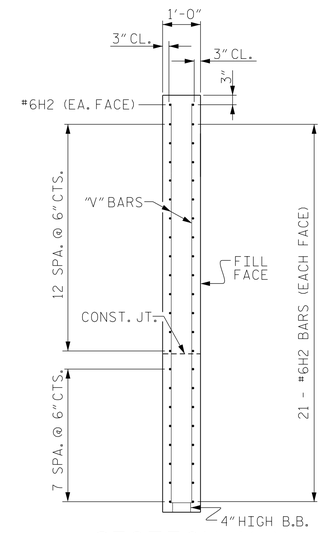
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION Y-Y

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1
WING DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES
DocuSigned by: David Ruggles C462768DF412422...
7/14/2025

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1			3			TOTAL SHEETS
2			4			52

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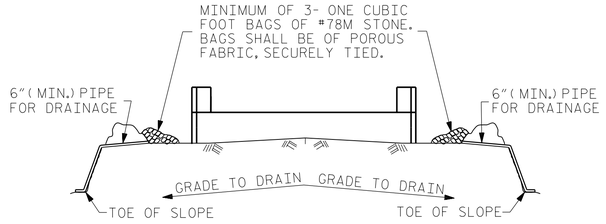
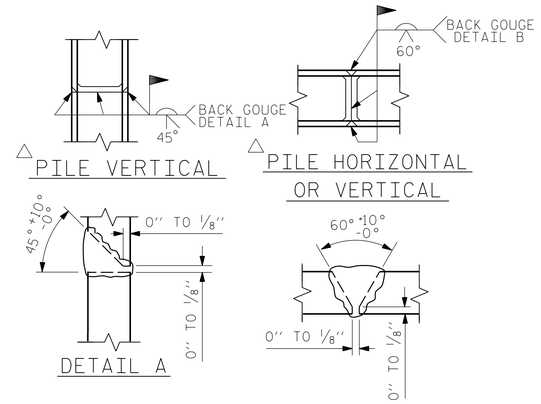


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

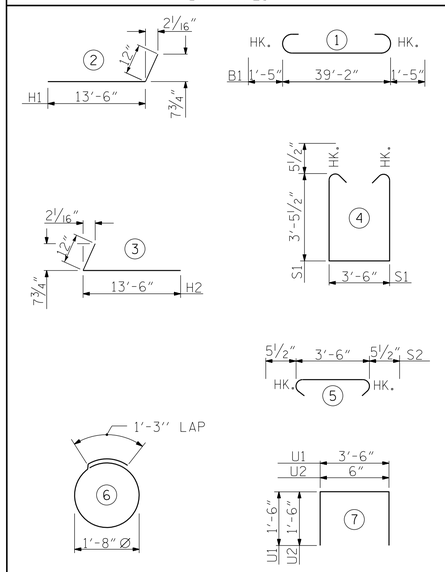
TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

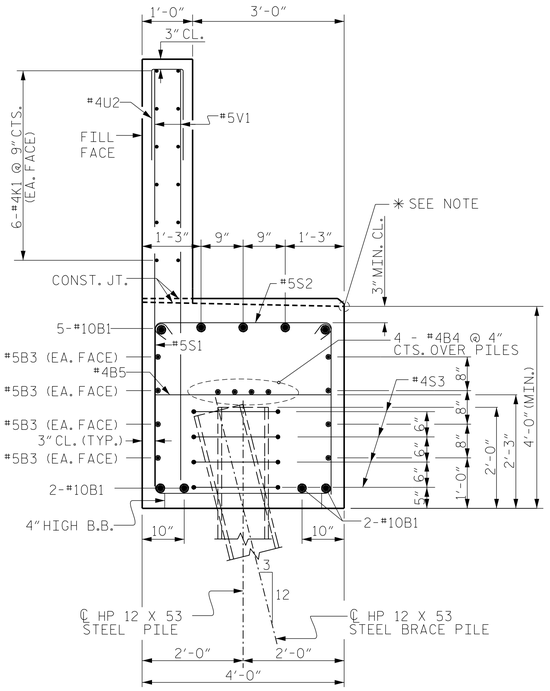
BILL OF MATERIAL
FOR END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B1	9	#10	1	42'-0"	1627
✳B2	5	#4	STR	13'-2"	44
✳B3	8	#5	STR	39'-2"	327
✳B4	8	#4	STR	39'-2"	209
✳B5	10	#4	STR	3'-6"	23
✳H1	42	#6	2	14'-6"	915
✳H2	44	#6	3	14'-6"	958
✳K1	12	#4	STR	39'-2"	314
✳K2	8	#4	STR	3'-6"	19
✳S1	52	#5	4	11'-4"	615
✳S2	52	#5	5	4'-5"	240
✳S3	28	#4	6	6'-6"	122
✳U1	9	#4	7	6'-6"	39
✳U2	32	#4	7	3'-6"	75
✳V1	64	#5	STR	8'-8"	579
✳V2	20	#5	STR	9'-11"	207
✳V3	17	#5	STR	10'-4"	183
✳V4	20	#5	STR	10'-2"	212
✳V5	16	#5	STR	10'-7"	177

✳EPOXY COATED REINFORCING STEEL (FOR END BENT 1) 6,885 LBS.

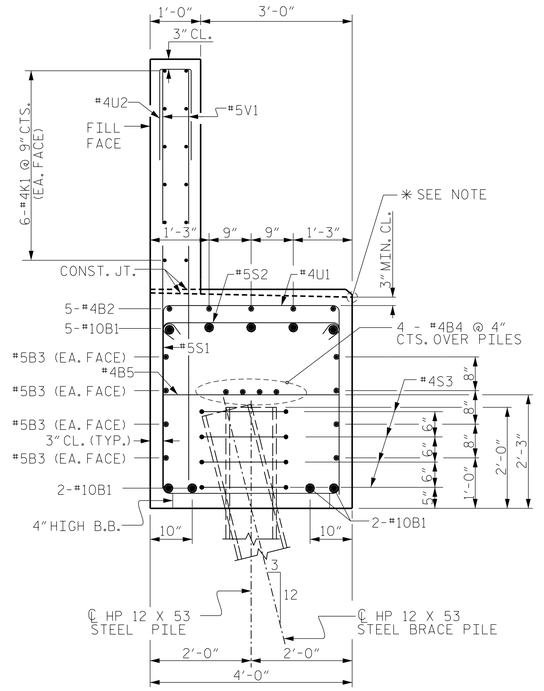
CLASS AA CONCRETE BREAKDOWN

POUR #1	CAP & LOWER PART OF WINGS	30.3 C.Y.
POUR #2	BACKWALL & UPPER PART OF WINGS	15.5 C.Y.
TOTAL CLASS AA CONCRETE		45.8 C.Y.



SECTION X-X

(CONCRETE COLLAR NOT SHOWN FOR CLARITY)
(SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL")



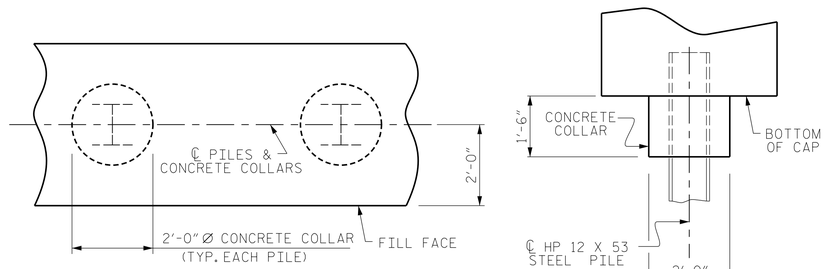
SECTION Y-Y

(CONCRETE COLLAR NOT SHOWN FOR CLARITY)
(SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL")

NOTES:

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

✳ ELEVATIONS BETWEEN BRIDGE SEAT BUILDUPS ARE SHOWN AT THIS POINT.



PLAN ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 SECTION AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R RUGGLES

DocuSigned by: David Ruggles C4627680DF412422... 8/26/2025

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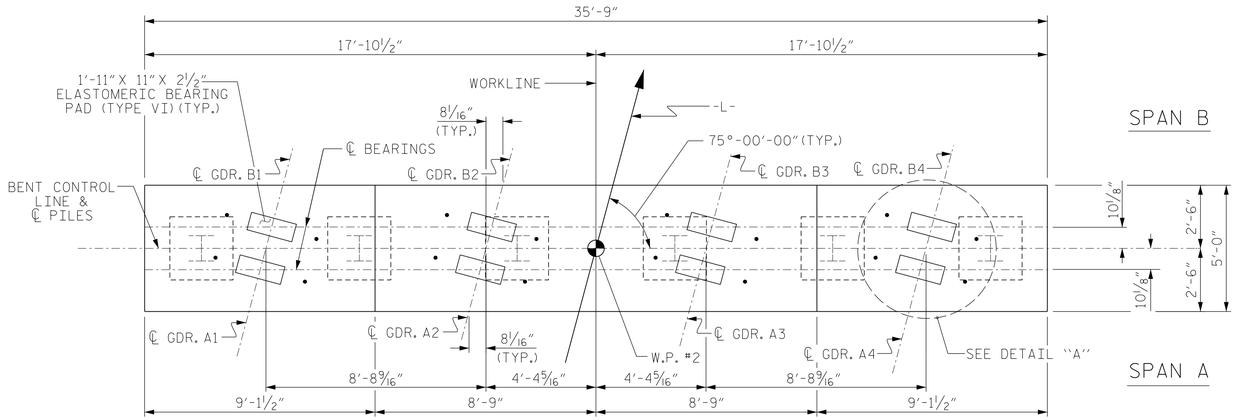
$$$USERNAME$$$

NOTES

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

★ INVERT ALTERNATE STIRRUPS.

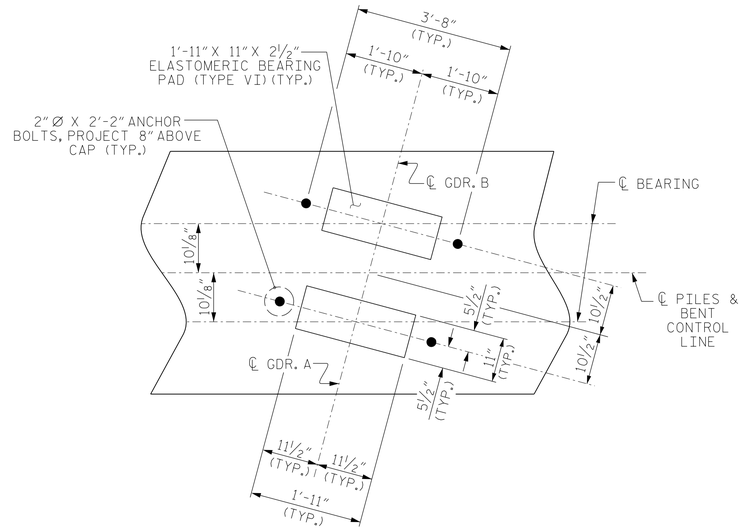
SEE SHEET 2 OF 2 FOR SECTION X-X AND Y-Y.



PLAN

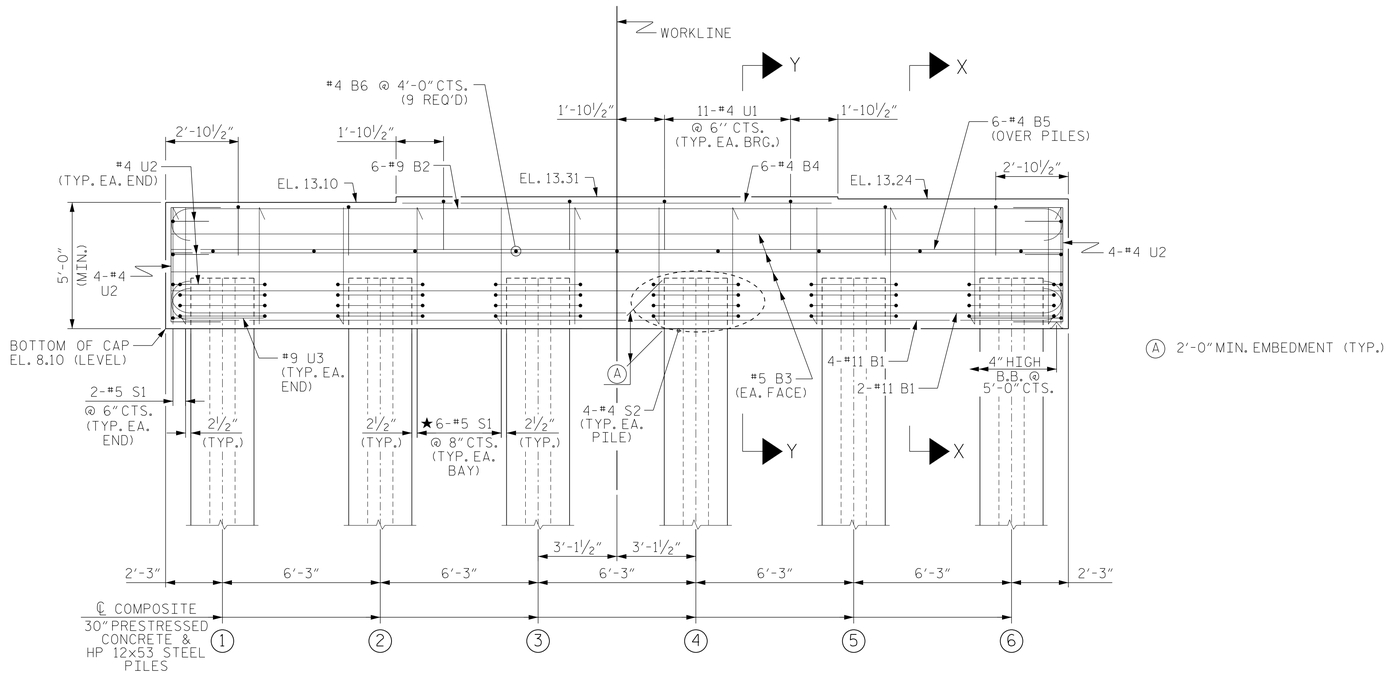
B1	B2	B3	B4
PF5	PF5	PF6	PF5
A1	A2	A3	A4
PF3	PF3	PF4	PF3

SOLE PLATE CHART



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)



ELEVATION

Ⓐ 2'-0" MIN. EMBEDMENT (TYP.)

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

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SUBSTRUCTURE

BENT 1 PLAN AND ELEVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			52

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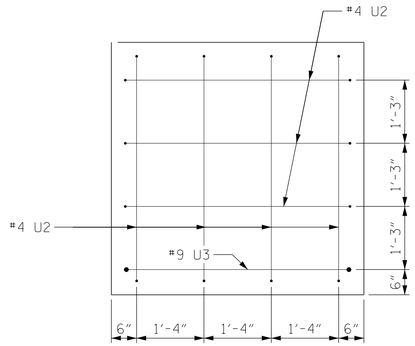
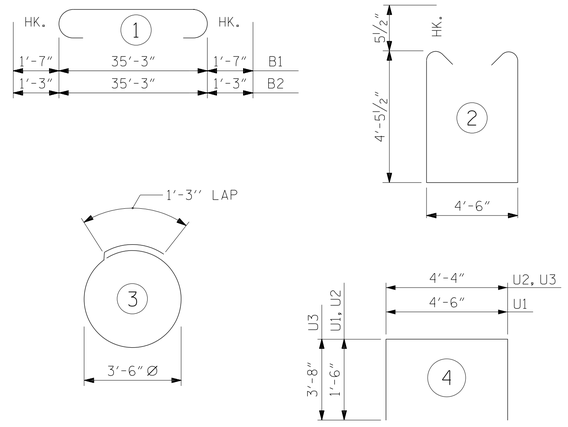


END OF CAP VIEW

(TYPICAL BOTH ENDS)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

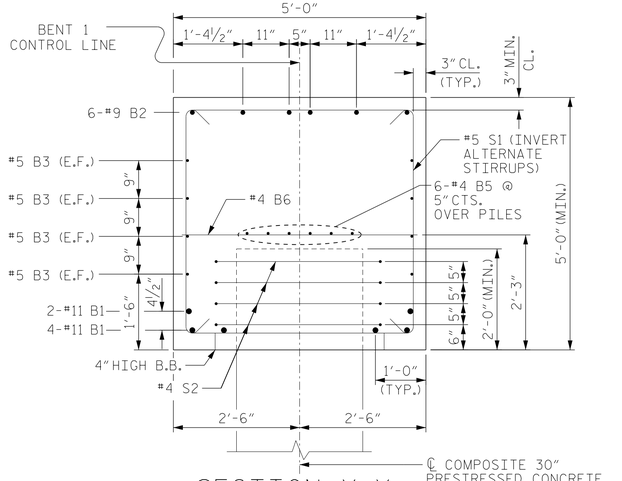
FOR BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B1	6	#11	1	38'-5"	1,225
✳ B2	6	#9	1	37'-9"	770
✳ B3	8	#5	STR	35'-3"	294
✳ B4	6	#4	STR	17'-0"	68
✳ B5	6	#4	STR	35'-3"	141
✳ B6	9	#4	STR	4'-6"	27
✳ S1	34	#5	2	14'-4"	508
✳ S2	24	#4	3	12'-3"	196
✳ U1	44	#4	4	7'-6"	220
✳ U2	14	#4	4	7'-4"	69
✳ U3	2	#9	4	11'-8"	79

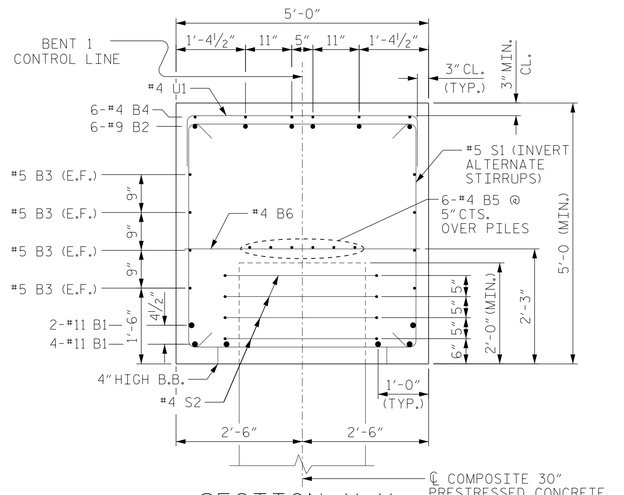
✳ EPOXY COATED REINFORCING STEEL 3,597 LBS.

TOTAL CLASS AA CONCRETE ▲ 31.2 C.Y.

▲ CONCRETE DISPLACED BY THE 30" PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.



SECTION X-X



SECTION Y-Y

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PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1 SECTION AND DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33
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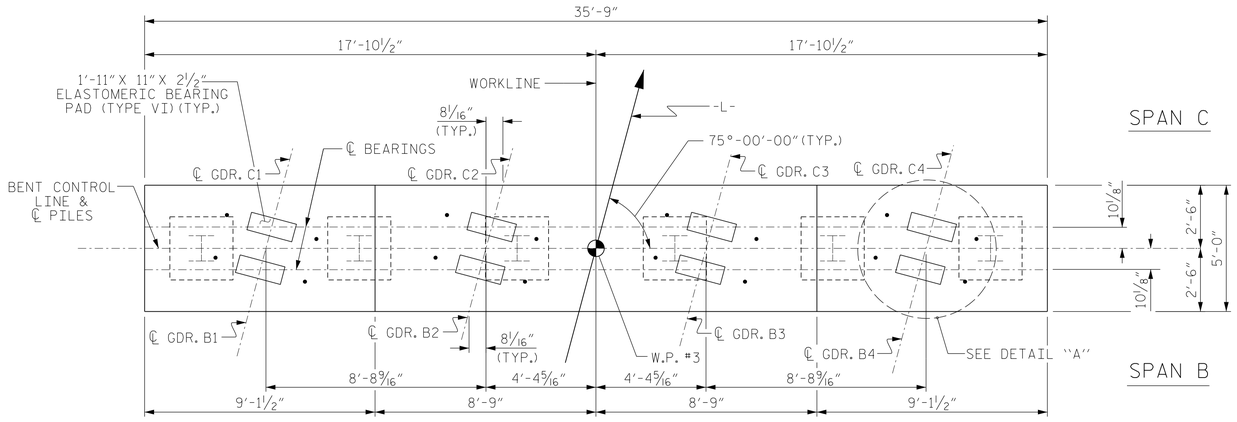
NOTES

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

★ INVERT ALTERNATE STIRRUPS.

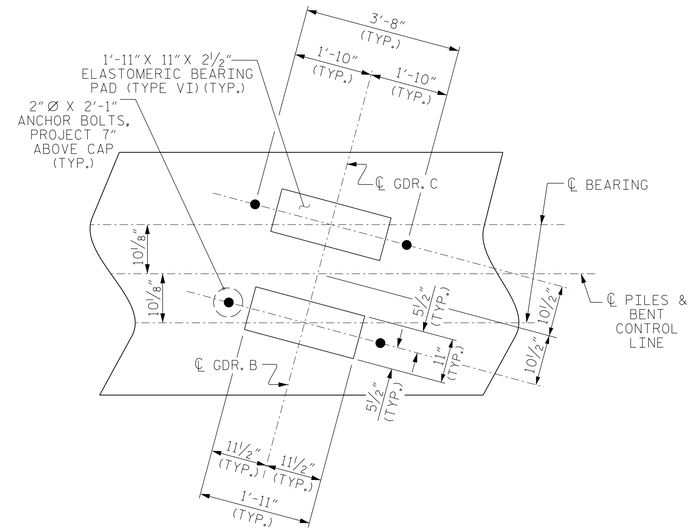
SEE SHEET 2 OF 2 FOR SECTION X-X AND Y-Y.



PLAN

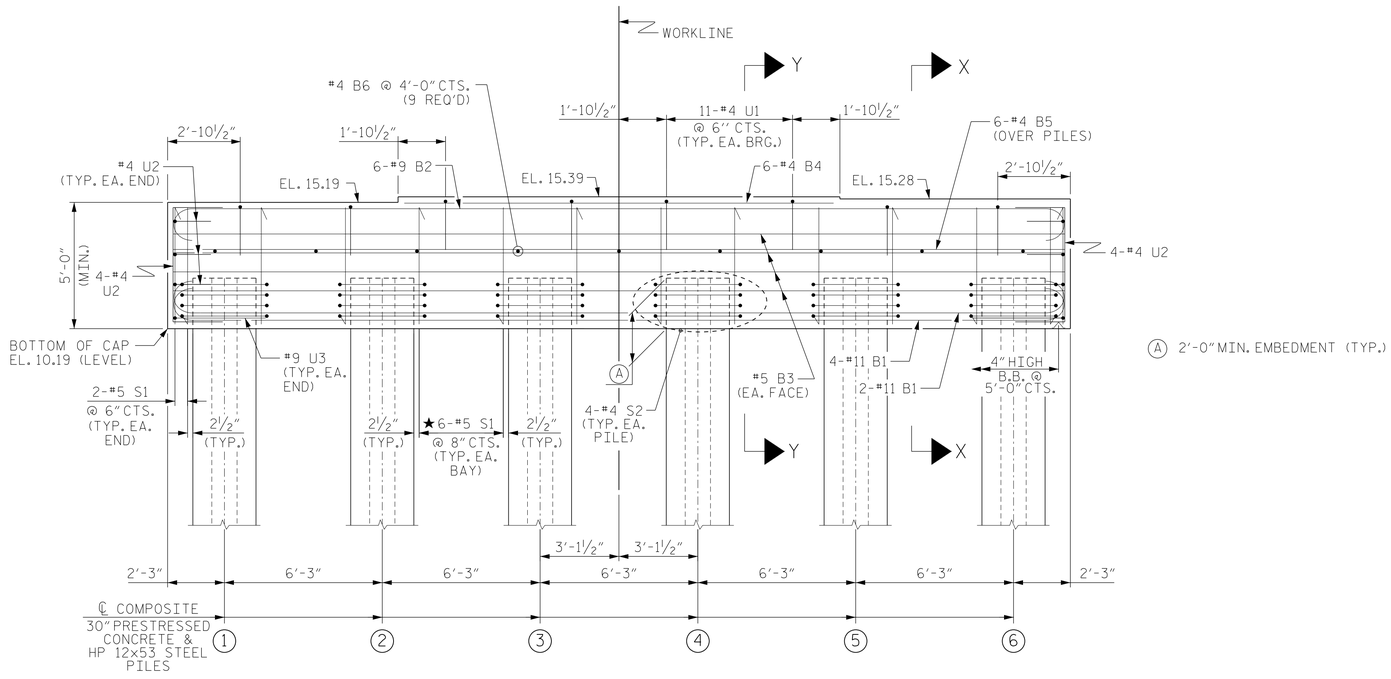
C1	C2	C3	C4
PF9	PF9	PF10	PF9
B1	B2	B3	B4
PF7	PF7	PF8	PF7

SOLE PLATE CHART



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)



ELEVATION

Ⓐ 2'-0" MIN. EMBEDMENT (TYP.)

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

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SUBSTRUCTURE

BENT 2 PLAN AND ELEVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34
1			3			TOTAL SHEETS
2			4			52

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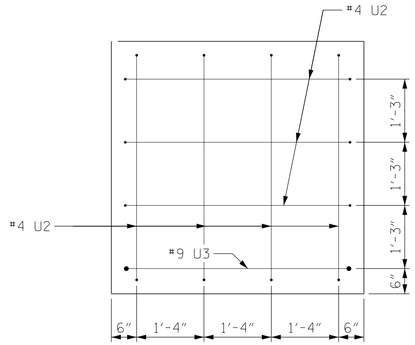
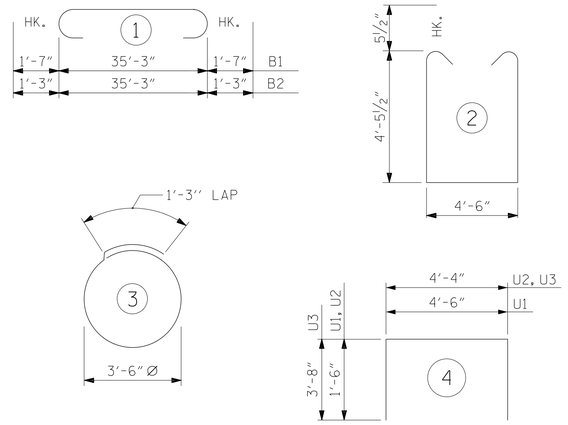


END OF CAP VIEW

(TYPICAL BOTH ENDS)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

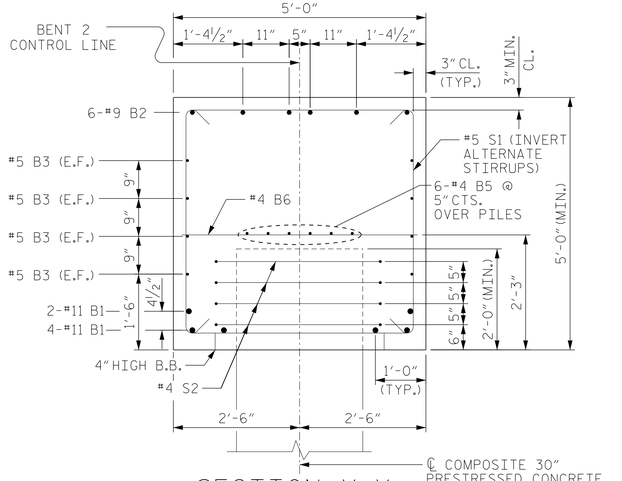
FOR BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B1	6	#11	1	38'-5"	1,225
✳ B2	6	#9	1	37'-9"	770
✳ B3	8	#5	STR	35'-3"	294
✳ B4	6	#4	STR	17'-0"	68
✳ B5	6	#4	STR	35'-3"	141
✳ B6	9	#4	STR	4'-6"	27
✳ S1	34	#5	2	14'-4"	508
✳ S2	24	#4	3	12'-3"	196
✳ U1	44	#4	4	7'-6"	220
✳ U2	14	#4	4	7'-4"	69
✳ U3	2	#9	4	11'-8"	79

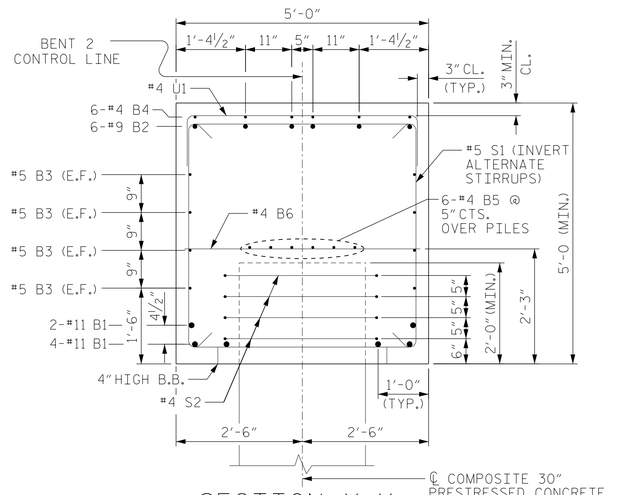
✳ EPOXY COATED REINFORCING STEEL 3,597 LBS.

TOTAL CLASS AA CONCRETE ▲ 31.1 C.Y.

▲ CONCRETE DISPLACED BY THE 30" PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.



SECTION X-X



SECTION Y-Y

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 2
SECTION AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R RUGGLES

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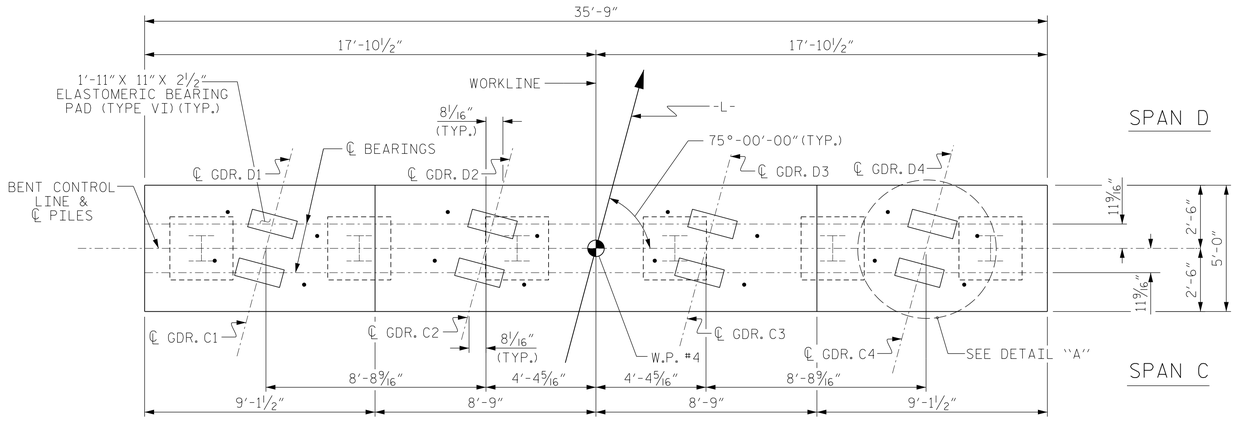
NOTES

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

★ INVERT ALTERNATE STIRRUPS.

THE TOP SURFACE AREAS OF THE BENT 3 CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

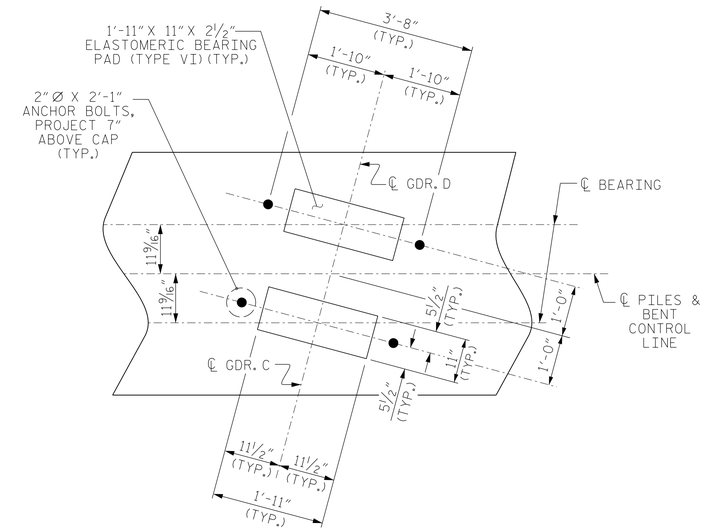
SEE SHEET 2 OF 2 FOR SECTION X-X AND Y-Y.



PLAN

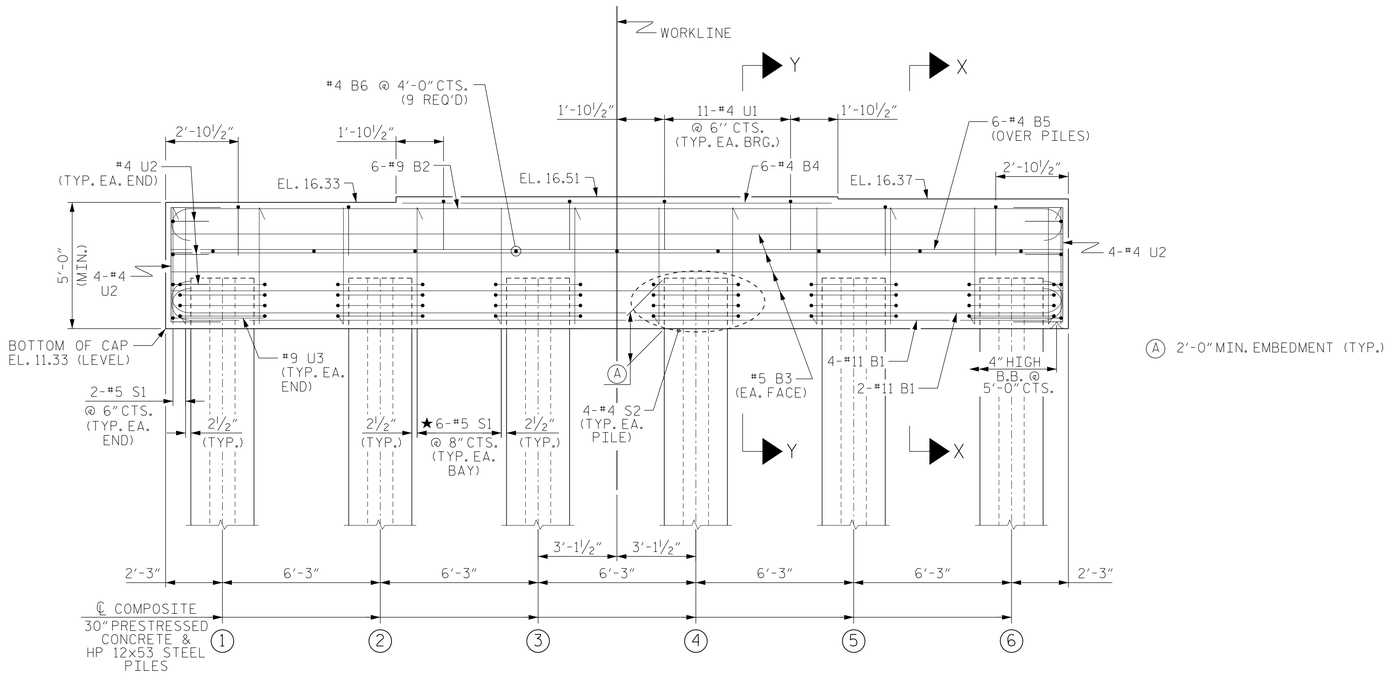
D1	D2	D3	D4
PE12	PE12	PE12	PE12
C1	C2	C3	C4
PE11	PE11	PE11	PE11

SOLE PLATE CHART



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)



ELEVATION

(A) 2'-0" MIN. EMBEDMENT (TYP.)

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

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RALEIGH

SUBSTRUCTURE

BENT 3 PLAN AND ELEVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36
1			3			TOTAL SHEETS
2			4			52

DRAWN BY: J. WILSON DATE: 2/25
CHECKED BY: D. RUGGLES DATE: 2/25
DESIGN ENGINEER OF RECORD: D. RUGGLES DATE: 2/25

7/11/2025
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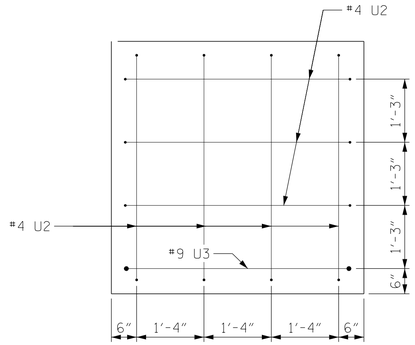
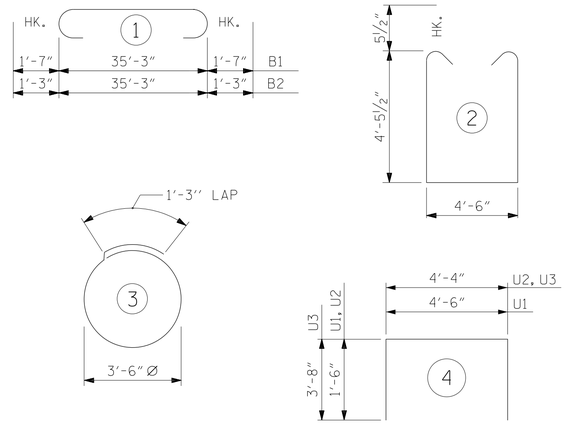
USER:default



END OF CAP VIEW

(TYPICAL BOTH ENDS)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

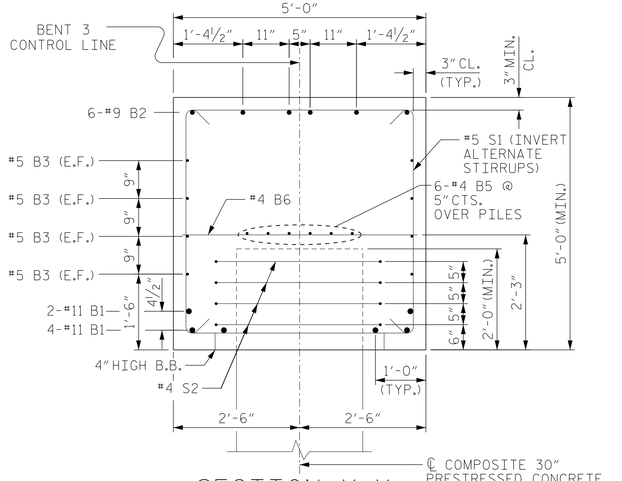
FOR BENT 3

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B1	6	#11	1	38'-5"	1,225
✳ B2	6	#9	1	37'-9"	770
✳ B3	8	#5	STR	35'-3"	294
✳ B4	6	#4	STR	17'-0"	68
✳ B5	6	#4	STR	35'-3"	141
✳ B6	9	#4	STR	4'-6"	27
✳ S1	34	#5	2	14'-4"	508
✳ S2	24	#4	3	12'-3"	196
✳ U1	44	#4	4	7'-6"	220
✳ U2	14	#4	4	7'-4"	69
✳ U3	2	#9	4	11'-8"	79

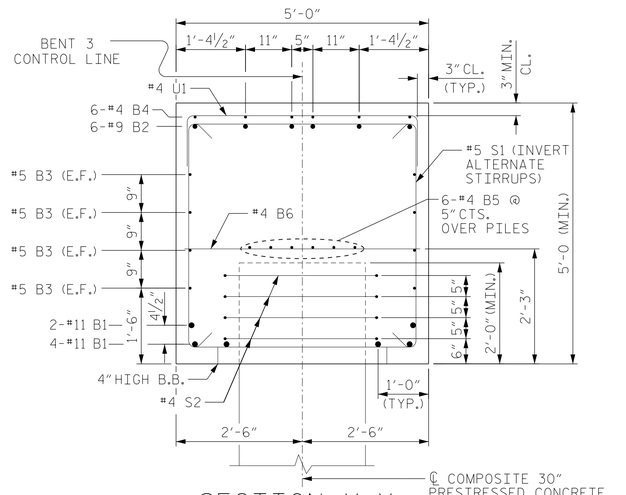
✳ EPOXY COATED REINFORCING STEEL 3,597 LBS.

TOTAL CLASS AA CONCRETE ▲ 31.0 C.Y.

▲ CONCRETE DISPLACED BY THE 30" PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.



SECTION X-X



SECTION Y-Y

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 3 SECTION AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R RUGGLES

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NO.	BY:	DATE:	NO.	BY:	DATE:	S-37
1			3			TOTAL SHEETS
2			4			52

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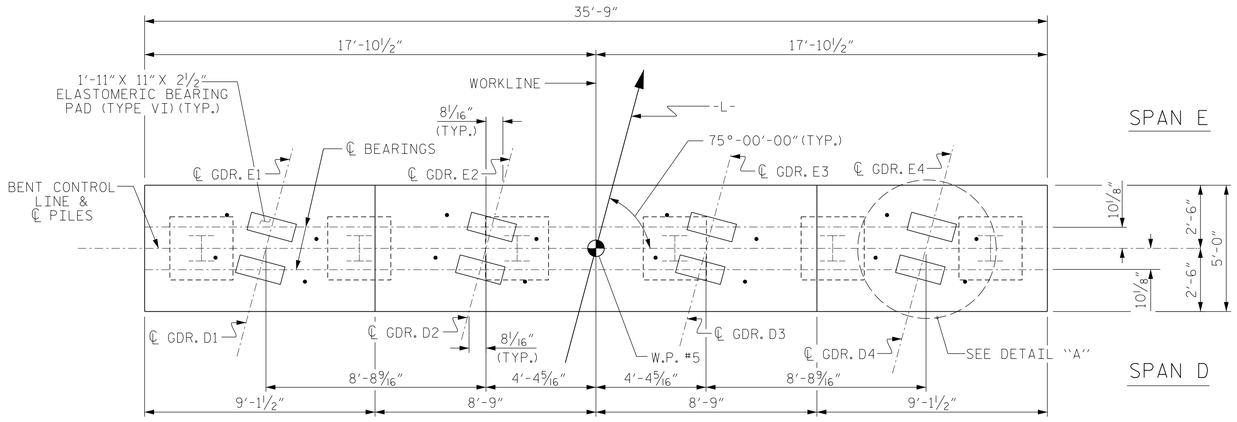
NOTES

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

★ INVERT ALTERNATE STIRRUPS.

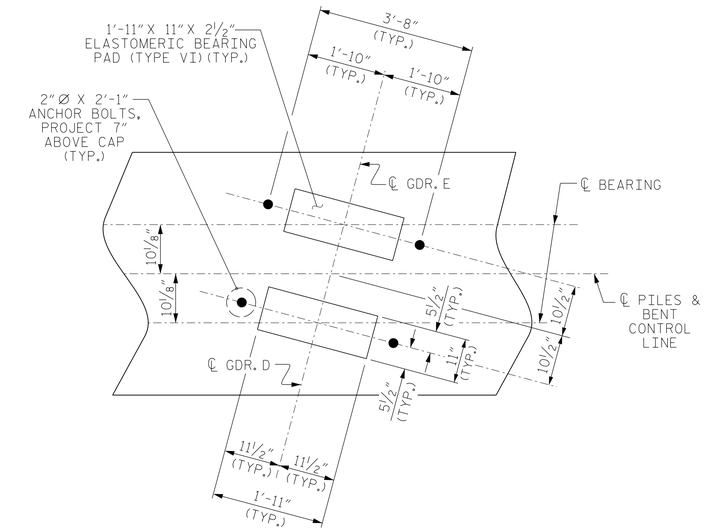
SEE SHEET 2 OF 2 FOR SECTION X-X AND Y-Y.



PLAN

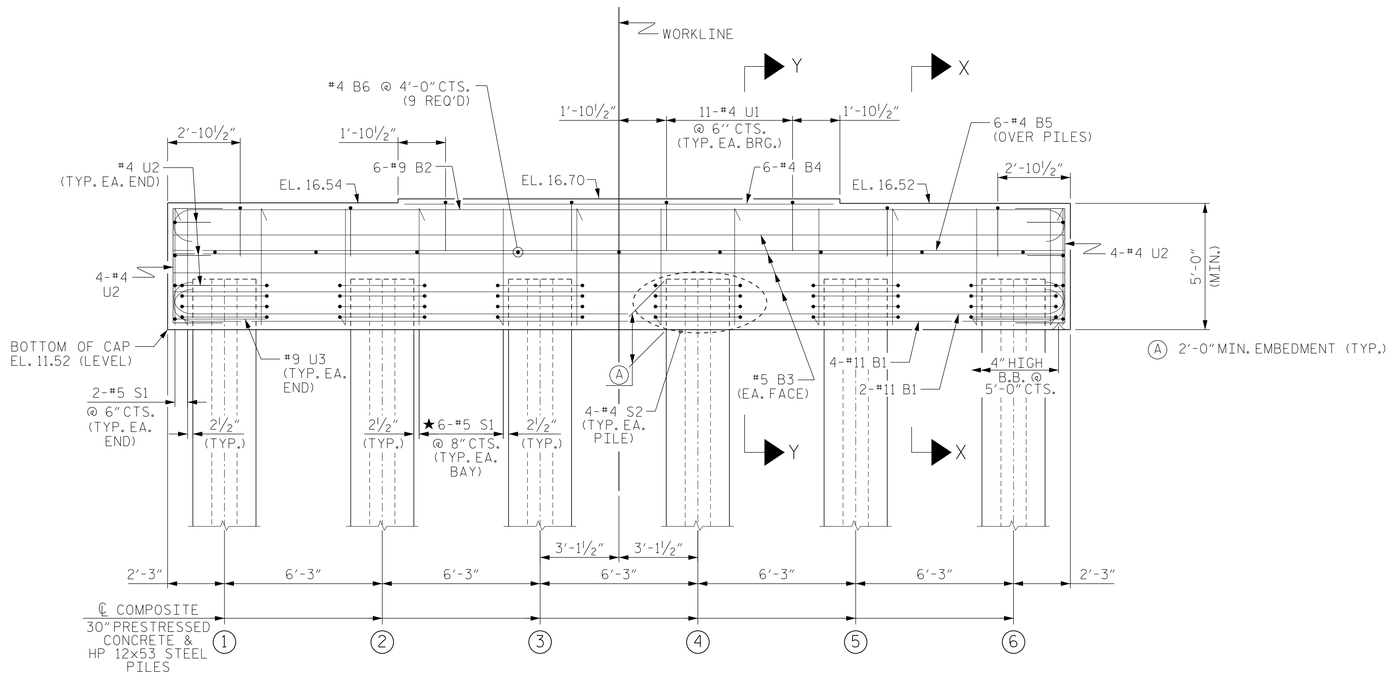
E1	E2	E3	E4
PF7	PF7	PF7	PF7
D1	D2	D3	D4
PF7	PF7	PF7	PF7

SOLE PLATE CHART



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)



ELEVATION

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

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SUBSTRUCTURE

BENT 4 PLAN AND ELEVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-38
1			3			TOTAL SHEETS
2			4			52

DRAWN BY: J. WILSON DATE : 2/25
CHECKED BY: D. RUGGLES DATE : 2/25
DESIGN ENGINEER OF RECORD: D. RUGGLES DATE : 2/25

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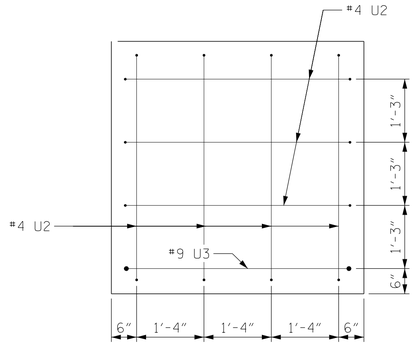
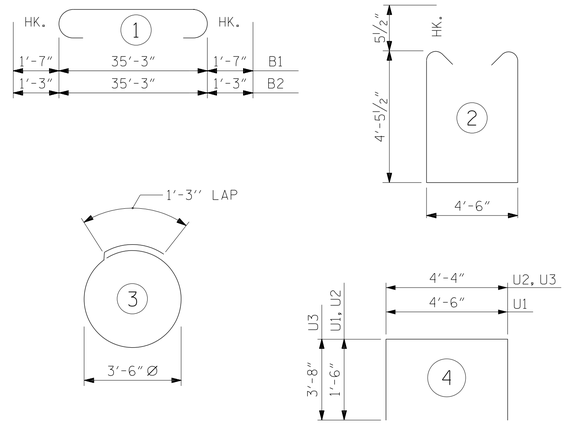


END OF CAP VIEW

(TYPICAL BOTH ENDS)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

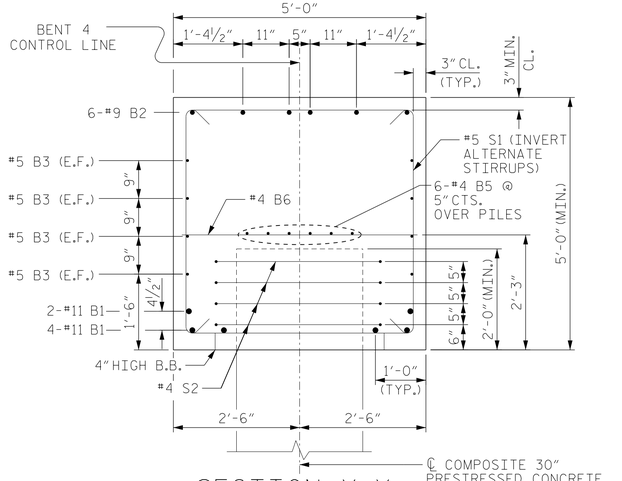
FOR BENT 4

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B1	6	#11	1	38'-5"	1,225
✳ B2	6	#9	1	37'-9"	770
✳ B3	8	#5	STR	35'-3"	294
✳ B4	6	#4	STR	17'-0"	68
✳ B5	6	#4	STR	35'-3"	141
✳ B6	9	#4	STR	4'-6"	27
✳ S1	34	#5	2	14'-4"	508
✳ S2	24	#4	3	12'-3"	196
✳ U1	44	#4	4	7'-6"	220
✳ U2	14	#4	4	7'-4"	69
✳ U3	2	#9	4	11'-8"	79

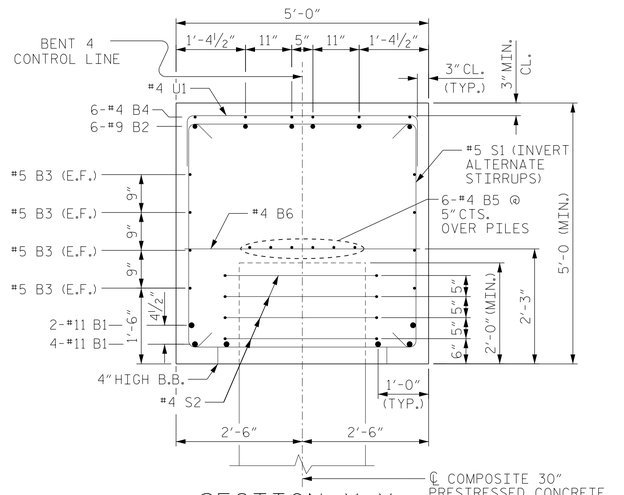
✳ EPOXY COATED REINFORCING STEEL 3,597 LBS.

TOTAL CLASS AA CONCRETE ▲ 30.9 C.Y.

▲ CONCRETE DISPLACED BY THE 30" PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.



SECTION X-X



SECTION Y-Y

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BEAUFORT COUNTY

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SHEET 2 OF 2

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SUBSTRUCTURE

BENT 4 SECTION AND DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-39
1			3			TOTAL SHEETS
2			4			52

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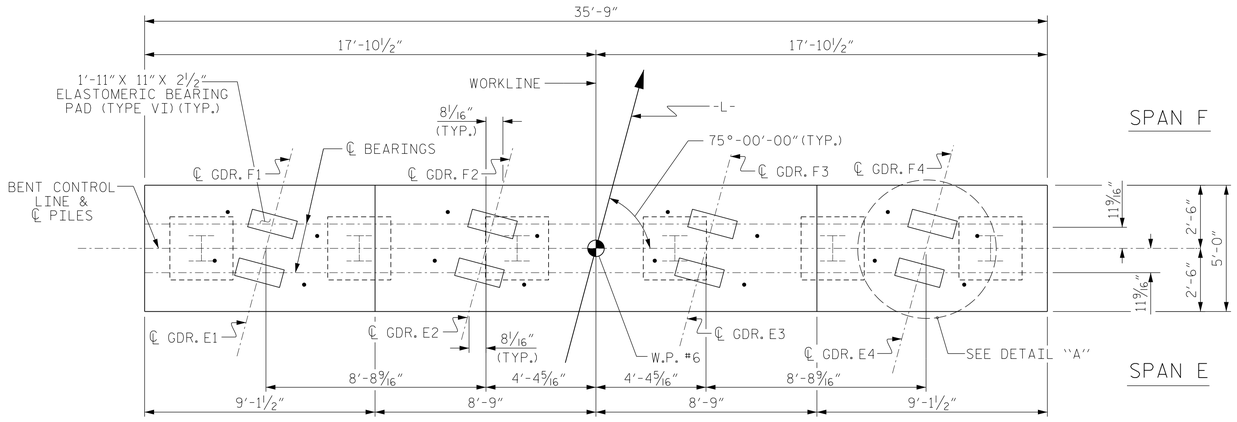
NOTES

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

★ INVERT ALTERNATE STIRRUPS.

THE TOP SURFACE AREAS OF THE BENT 5 CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

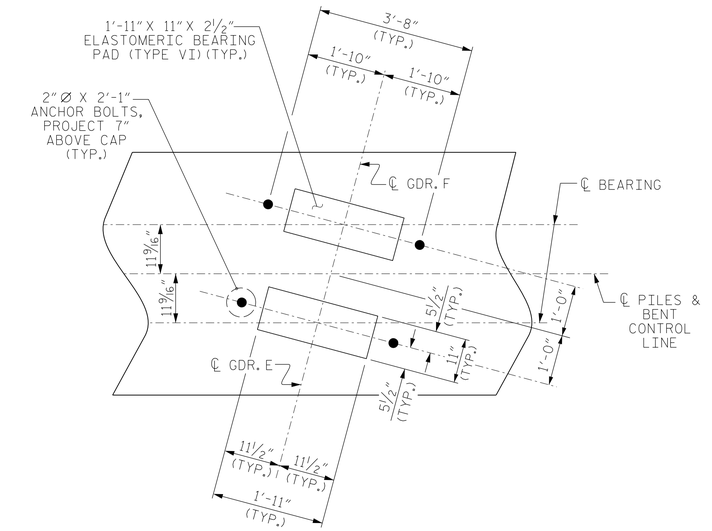
SEE SHEET 2 OF 2 FOR SECTION X-X AND Y-Y.



PLAN

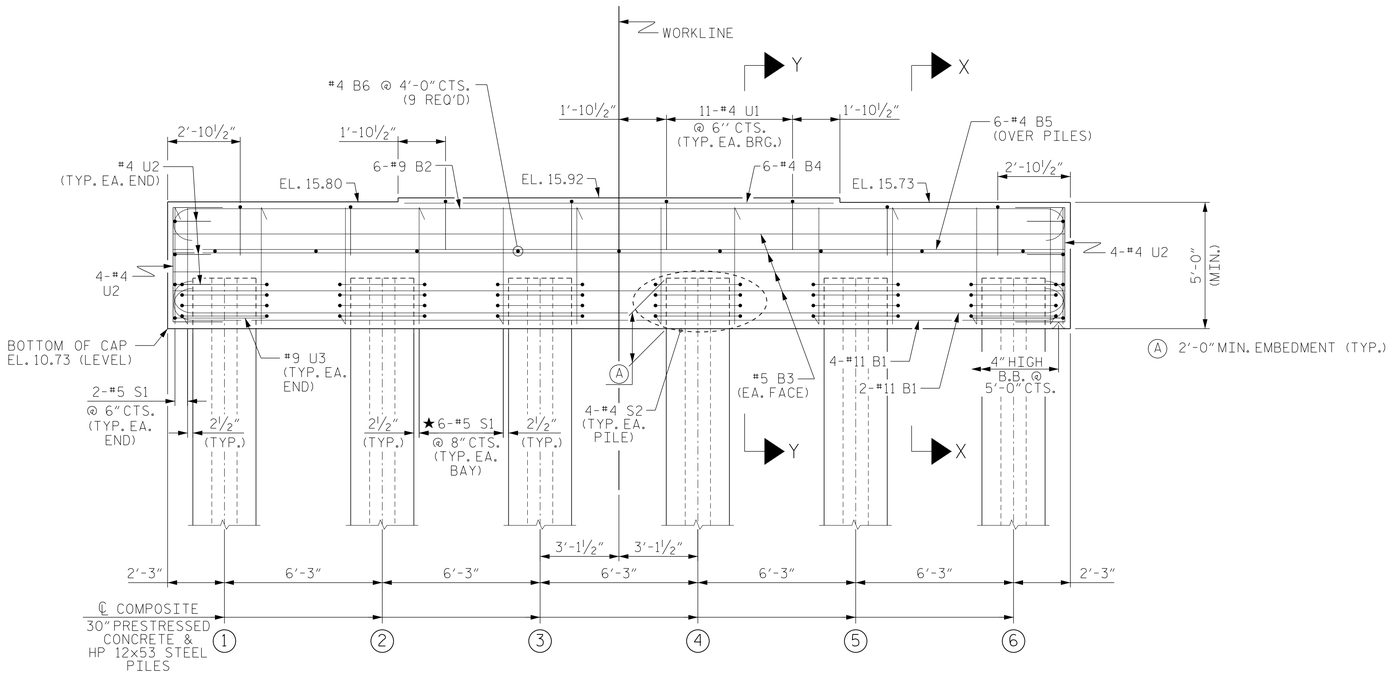
F1	F2	F3	F4
PE11	PE15	PE11	PE11
E1	E2	E3	E4
PE13	PE14	PE13	PE13

SOLE PLATE CHART



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)



ELEVATION

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

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SUBSTRUCTURE

BENT 5 PLAN AND ELEVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-40
1			3			TOTAL SHEETS
2			4			52

DRAWN BY: J. WILSON DATE: 2/25
CHECKED BY: D. RUGGLES DATE: 2/25
DESIGN ENGINEER OF RECORD: D. RUGGLES DATE: 2/25

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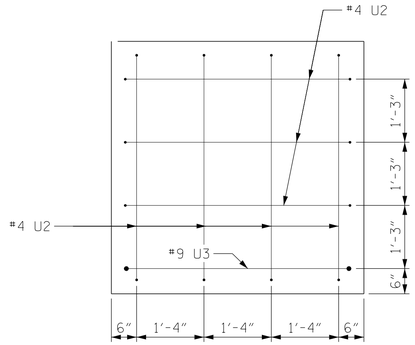
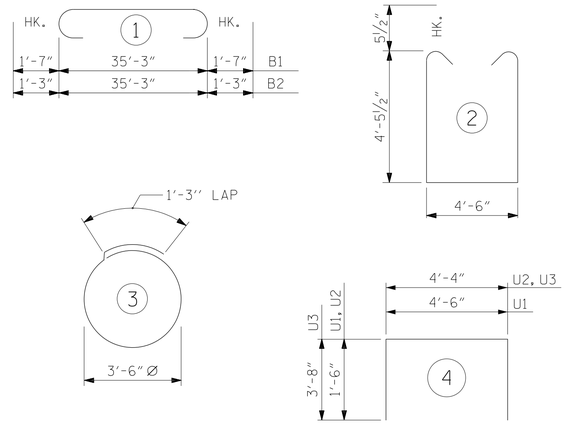


END OF CAP VIEW

(TYPICAL BOTH ENDS)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

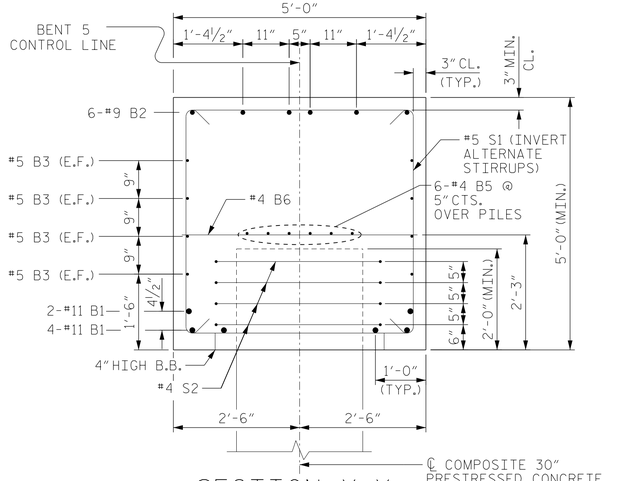
FOR BENT 5

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B1	6	#11	1	38'-5"	1,225
✳ B2	6	#9	1	37'-9"	770
✳ B3	8	#5	STR	35'-3"	294
✳ B4	6	#4	STR	17'-0"	68
✳ B5	6	#4	STR	35'-3"	141
✳ B6	9	#4	STR	4'-6"	27
✳ S1	34	#5	2	14'-4"	508
✳ S2	24	#4	3	12'-3"	196
✳ U1	44	#4	4	7'-6"	220
✳ U2	14	#4	4	7'-4"	69
✳ U3	2	#9	4	11'-8"	79

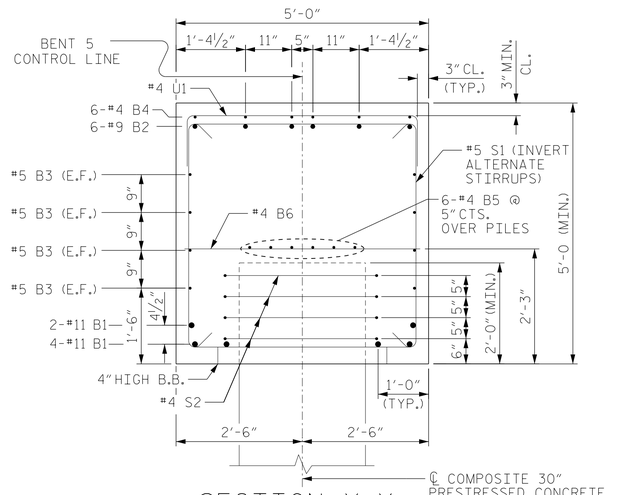
✳ EPOXY COATED REINFORCING STEEL 3,597 LBS.

TOTAL CLASS AA CONCRETE ▲ 31.1 C.Y.

▲ CONCRETE DISPLACED BY THE 30" PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.



SECTION X-X



SECTION Y-Y

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R RUGGLES

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SUBSTRUCTURE

BENT 5 SECTION AND DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-41
1			3			TOTAL SHEETS
2			4			52

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DESIGN ENGINEER OF RECORD: D. RUGGLES DATE : 2/25

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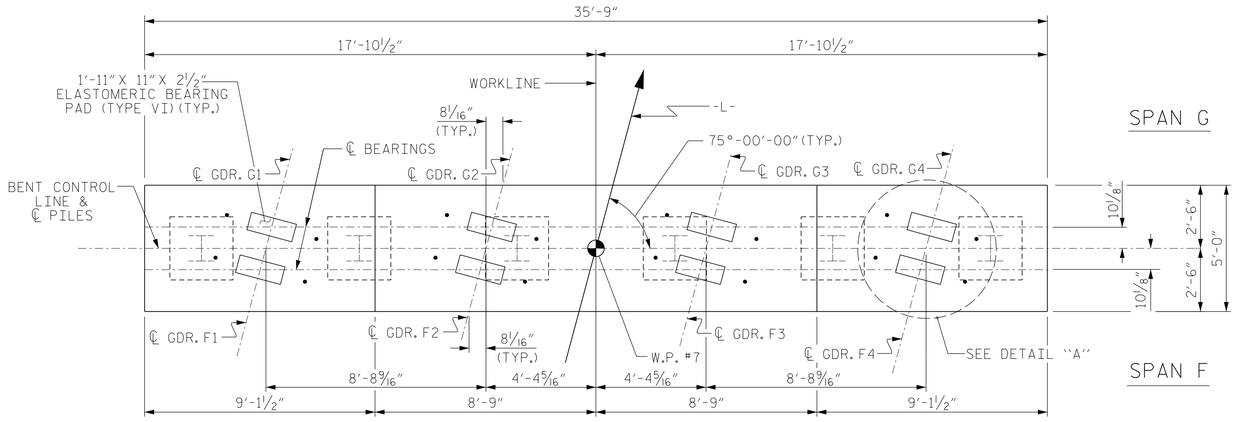
USER:default

NOTES

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

★ INVERT ALTERNATE STIRRUPS.

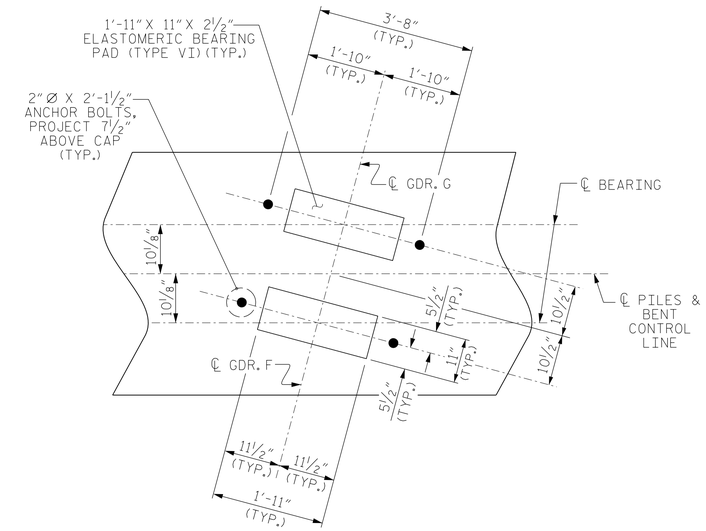
SEE SHEET 2 OF 2 FOR SECTION X-X AND Y-Y.



PLAN

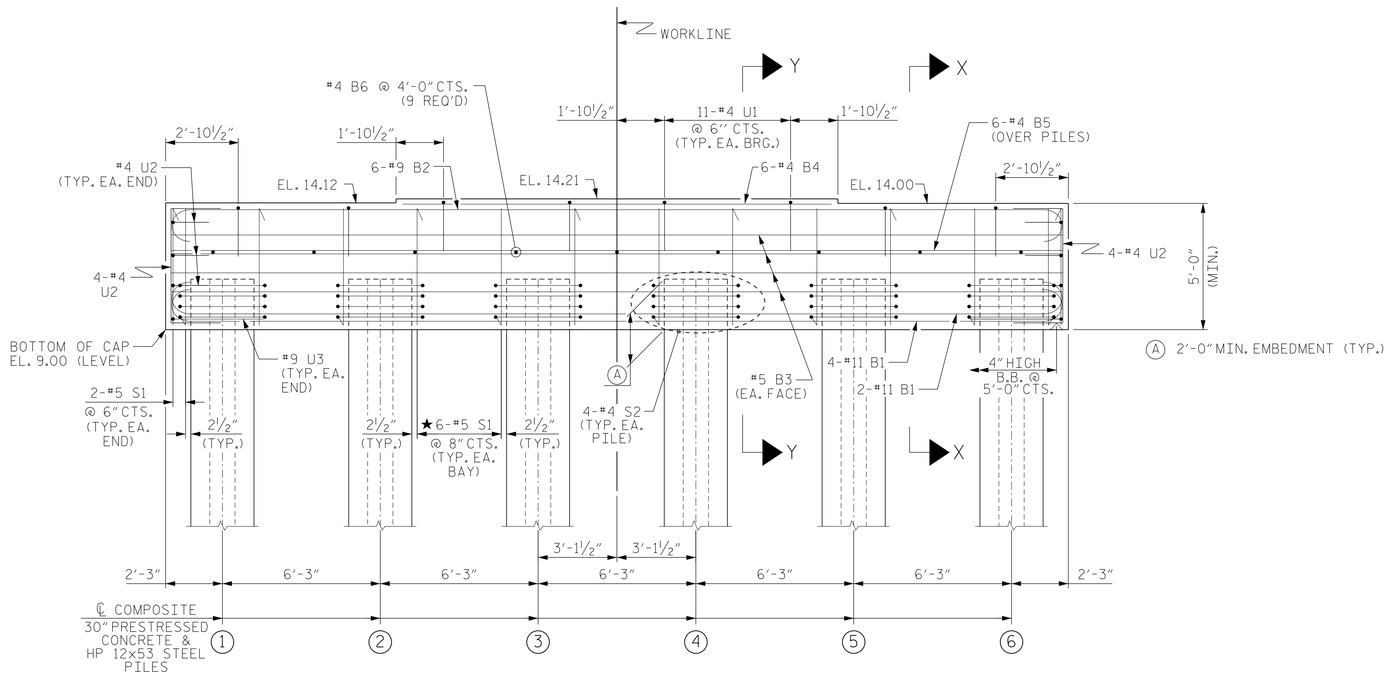
G1	G2	G3	G4
PF18	PF19	PF18	PF18
F1	F2	F3	F4
PF16	PF17	PF16	PF16

SOLE PLATE CHART



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)



ELEVATION

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

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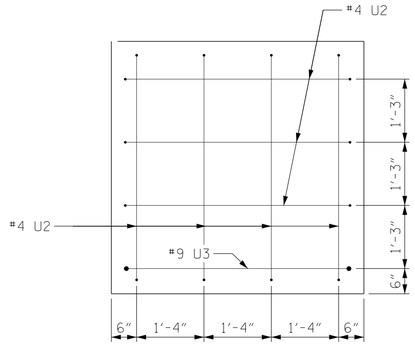
SUBSTRUCTURE

BENT 6
PLAN AND ELEVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-42
1			3			TOTAL SHEETS
2			4			52

DRAWN BY: J. WILSON DATE : 2/25
CHECKED BY: D. RUGGLES DATE : 2/25
DESIGN ENGINEER OF RECORD: D. RUGGLES DATE : 2/25

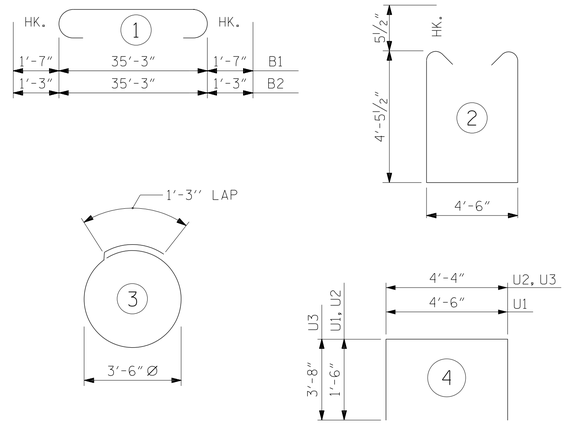
7/14/2025
...\B-5614_SMU_B11_060009.dgn
USER:default



END OF CAP VIEW

(TYPICAL BOTH ENDS)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

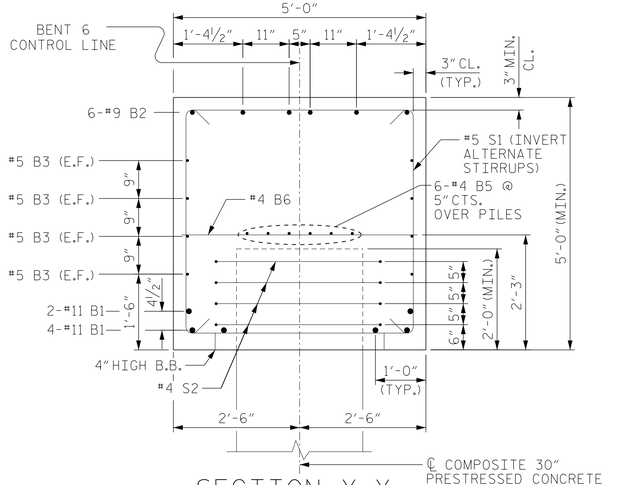
FOR BENT 6

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B1	6	#11	1	38'-5"	1,225
✳ B2	6	#9	1	37'-9"	770
✳ B3	8	#5	STR	35'-3"	294
✳ B4	6	#4	STR	17'-0"	68
✳ B5	6	#4	STR	35'-3"	141
✳ B6	9	#4	STR	4'-6"	27
✳ S1	34	#5	2	14'-4"	508
✳ S2	24	#4	3	12'-3"	196
✳ U1	44	#4	4	7'-6"	220
✳ U2	14	#4	4	7'-4"	69
✳ U3	2	#9	4	11'-8"	79

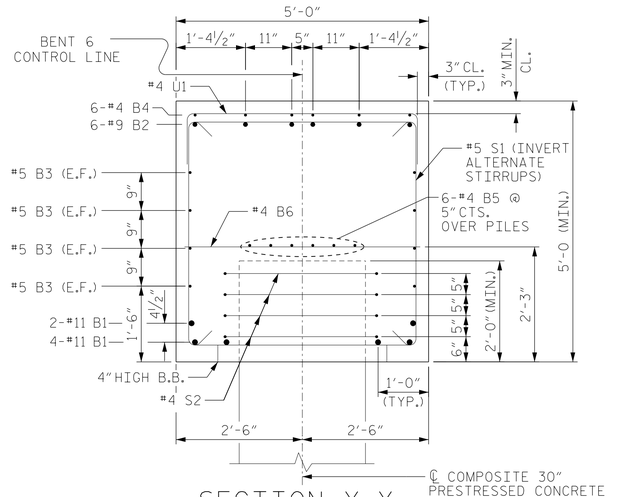
✳ EPOXY COATED REINFORCING STEEL 3,597 LBS.

TOTAL CLASS AA CONCRETE ▲ 31.2 C.Y.

▲ CONCRETE DISPLACED BY THE 30" PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.



SECTION X-X



SECTION Y-Y

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 6
SECTION AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R RUGGLES

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NO.	BY:	DATE:	NO.	BY:	DATE:	S-43
1			3			TOTAL SHEETS
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CHECKED BY: D. RUGGLES DATE : 2/25
DESIGN ENGINEER OF RECORD: D. RUGGLES DATE : 2/25

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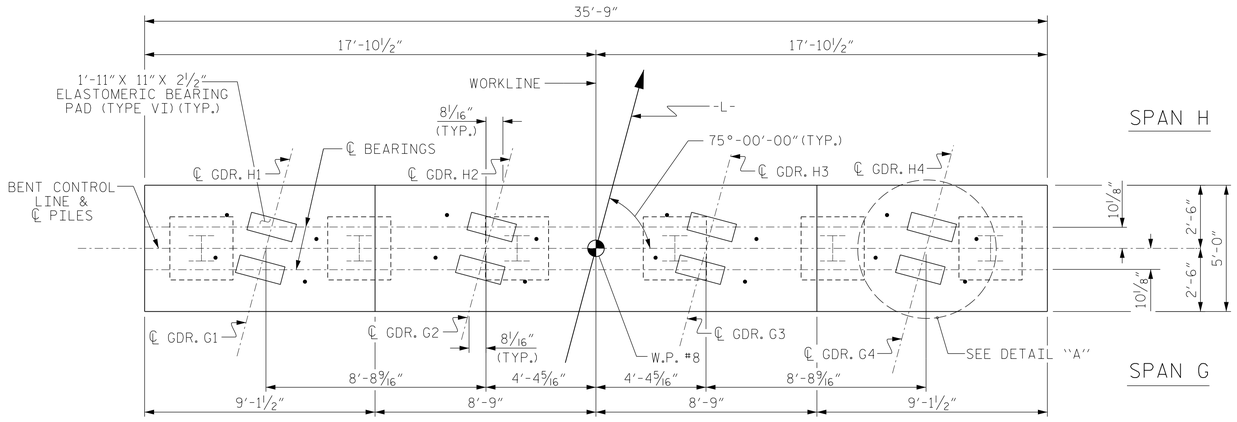
NOTES

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

★ INVERT ALTERNATE STIRRUPS.

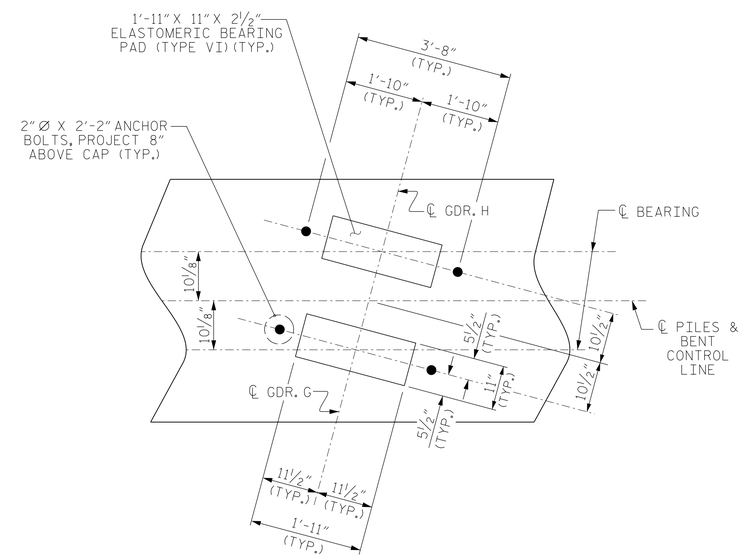
SEE SHEET 2 OF 2 FOR SECTION X-X AND Y-Y.



PLAN

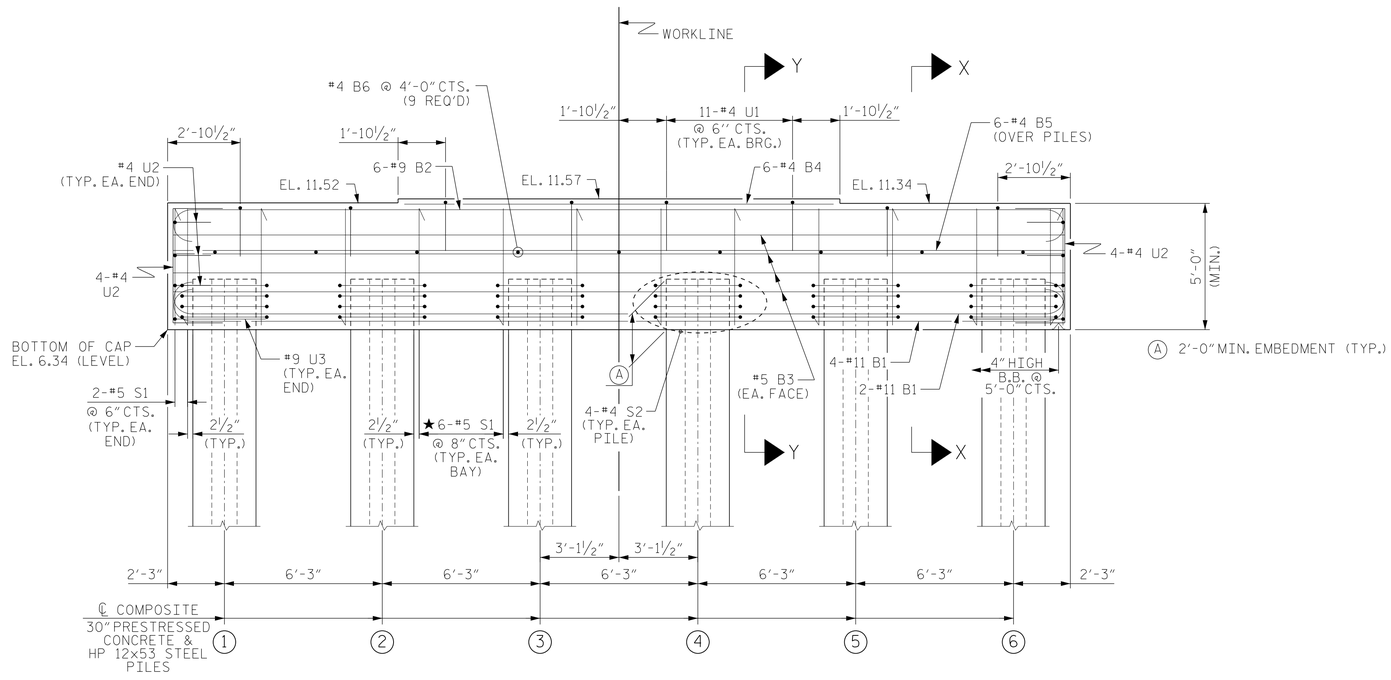
H1	H2	H3	H4
PF22	PF23	PF22	PF22
G1	G2	G3	G4
PF20	PF21	PF20	PF20

SOLE PLATE CHART



DETAIL "A"

(DIMENSIONS ARE TYPICAL EACH BEARING)



ELEVATION

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

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SUBSTRUCTURE

BENT 7
PLAN AND ELEVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-44
1			3			TOTAL SHEETS
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DESIGN ENGINEER OF RECORD: D. RUGGLES DATE : 2/25

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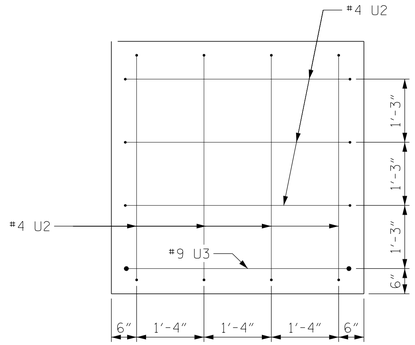
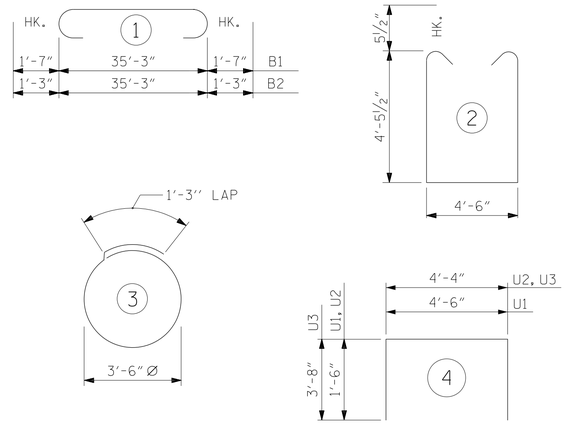


END OF CAP VIEW

(TYPICAL BOTH ENDS)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

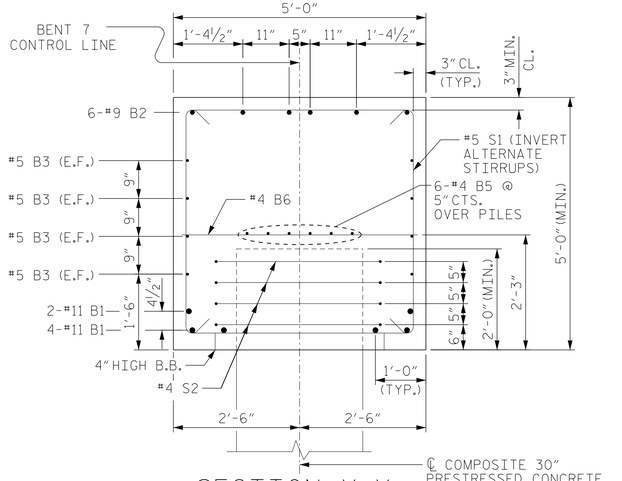
FOR BENT 7

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B1	6	#11	1	38'-5"	1,225
✳ B2	6	#9	1	37'-9"	770
✳ B3	8	#5	STR	35'-3"	294
✳ B4	6	#4	STR	17'-0"	68
✳ B5	6	#4	STR	35'-3"	141
✳ B6	9	#4	STR	4'-6"	27
✳ S1	34	#5	2	14'-4"	508
✳ S2	24	#4	3	12'-3"	196
✳ U1	44	#4	4	7'-6"	220
✳ U2	14	#4	4	7'-4"	69
✳ U3	2	#9	4	11'-8"	79

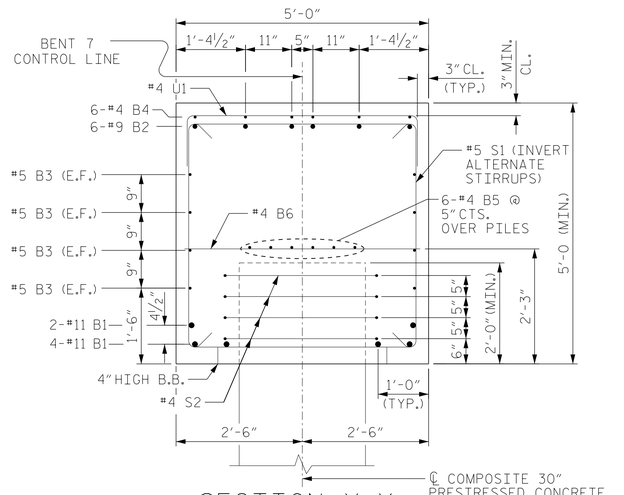
✳ EPOXY COATED REINFORCING STEEL 3,597 LBS.

TOTAL CLASS AA CONCRETE ▲ 31.4 C.Y.

▲ CONCRETE DISPLACED BY THE 30" PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.



SECTION X-X



SECTION Y-Y

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PROJECT NO. B-5614

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SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 7 SECTION AND DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-45
1			3			TOTAL SHEETS
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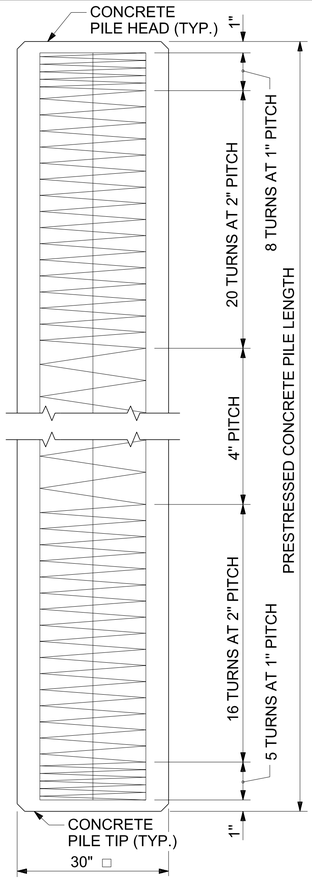
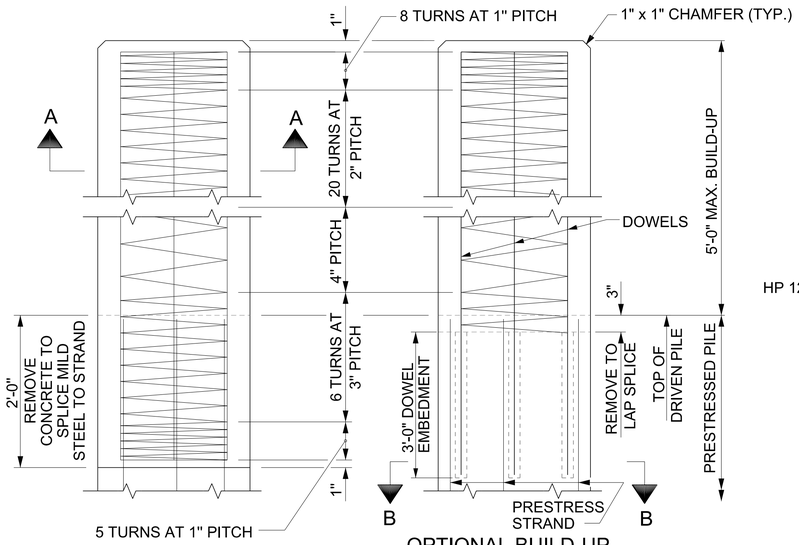
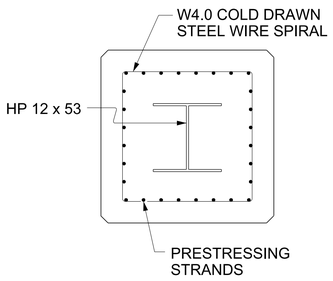


ELEVATION

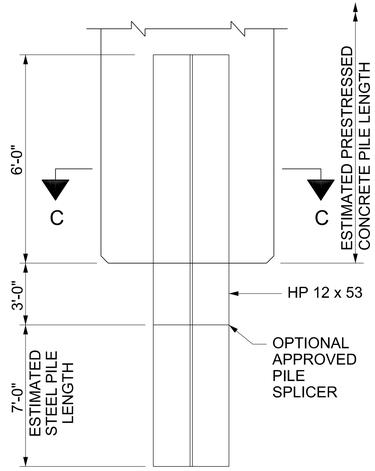


BUILD-UP AND SPIRAL REINFORCING

OPTIONAL BUILD-UP WITH DOWELS



SECTION C-C



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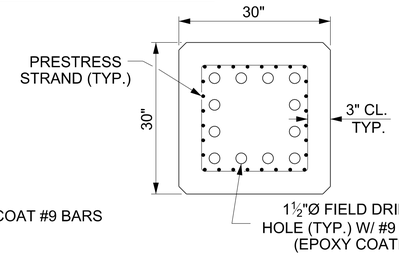


SECTION "B-B"

(AT THE CONTRACTOR'S OPTION, PILE BUILD-UP MAY BE CONSTRUCTED WITH DOWELS.)

PILE TIP DETAILS

FOR 30" SQUARE PRESTRESSED CONCRETE PILE

QUANTITIES FOR ONE 30" SQUARE PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE POINT PICK-UP 0.3L	ONE POINT PICK-UP 0.7L	TWO POINT PICK-UP 0.207L	TWO POINT PICK-UP 0.586L	THREE POINT PICK-UP 0.145L	THREE POINT PICK-UP 0.355L
25'-0"	5.77	11.69	7'-6"	17'-6"				
30'-0"	6.93	14.03	9'-0"	21'-0"				
35'-0"	8.08	16.37	10'-6"	24'-6"				
40'-0"	9.24	18.71	12'-0"	28'-0"				
45'-0"	10.39	21.05	13'-6"	31'-6"				
50'-0"	11.55	23.39	15'-0"	35'-0"				
55'-0"	12.70	25.72	16'-6"	38'-6"				
60'-0"	13.86	28.06	18'-0"	42'-0"				
65'-0"	15.01	30.40	19'-6"	45'-6"				
70'-0"	16.17	32.74	21'-0"	49'-0"				
75'-0"	17.32	35.08			15'-6½"	43'-11"		
80'-0"	18.48	37.42			16'-6½"	46'-11"		
85'-0"	19.63	39.76			17'-7"	49'-10"		
90'-0"	20.79	42.09			18'-7½"	52'-9"		
95'-0"	21.94	44.43			19'-8"	55'-8"		
100'-0"	23.10	46.77			20'-8½"	58'-7"		
105'-0"	24.25	49.11					15'-3"	37'-3"
110'-0"	25.41	51.45					15'-11½"	39'-0½"
115'-0"	26.56	53.79					16'-8"	40'-10"
120'-0"	27.72	56.12					17'-5"	42'-7"

NOTES

PRESTRESSED CONCRETE STRENGTH f'c = 10,000 PSI

BUILD-UP CONCRETE STRENGTH : f'c = 5,000 PSI

STRAND DATA:

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
0.6"	270 L.R.	0.217	58,600# PER STRAND	43,940# PER STRAND

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS CONFORMING TO AASHTO M203. STRAND SAMPLING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

TRANSFER THE LOAD FROM THE ANCHORAGES TO THE PILE AFTER THE CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 8,000 PSI.

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN OPPOSITE PAIRS AS INDICATED IN THE TYPICAL PATTERN SHOWN. FOR ANY NUMBER OF STRANDS, BURN IN OPPOSITE PAIRS AND SYMMETRICALLY ABOUT BOTH THE VERTICAL AND HORIZONTAL AXES, STRANDS 1-1 SHALL BE BURNED BEFORE 2-2, ETC. NOT MORE THAN 4 STRANDS, SAY 5-5 AND 6-6, MAY BE BURNED AT ANY ONE SECTION BEFORE THESE SAME PAIRS OF STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS ARE TO BE INDICATED WITH A 2" WIDE BLACK MARK.

DRIVE PILES USING A METHOD APPROVED BY THE ENGINEER, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

DRIVING OF THE BUILT-UP PILE WILL NOT BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 6,700 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

DOWEL INSTALLATION FOR OPTIONAL BUILD-UP

GROUT COMPRESSIVE STRENGTH: f'c = 6,700 PSI

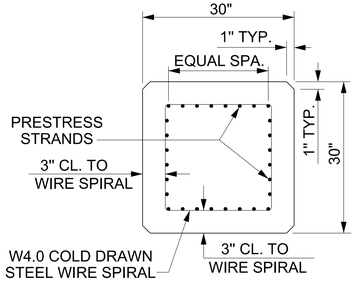
BEFORE DRILLING DOWEL HOLES, REMOVE THE UPPER 3" OF CONCRETE FROM THE TOP OF THE PILE WITHOUT DAMAGE TO THE REINFORCING STEEL. THE REMOVAL PLANE SHOULD BE NORMAL TO THE EDGE OF THE PILE.

DOWEL HOLES SHALL BE POSITIONED TO MAINTAIN ½" CLEAR TO ALL EXISTING PRESTRESSING STRANDS IN THE CONCRETE PILE.

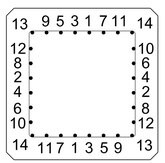
FIELD DRILLED HOLES SHALL BE CLEAN AND FREE OF ANY OBSTRUCTIONS BEFORE GROUTING OF DOWELS. DOWEL BARS SHALL BE INSTALLED AND GROUTED WITH AN APPROVED NON-SHRINK GROUT.

THE SPIRAL REINFORCING IN ALL BUILD-UPS SHALL BE W4.0 COLD DRAWN WIRE WHICH SHALL BE SECURED TO THE LONGITUDINAL REINFORCEMENT TO MAINTAIN PITCH.

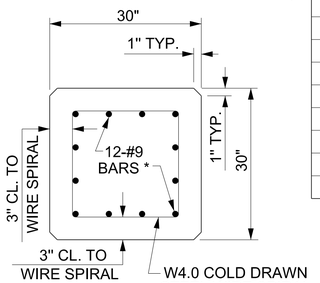
THE SPIRAL REINFORCING IN THE BUILD-UP AND THE PRESTRESSED CONCRETE PILE SHALL BE SPLICED BY OVERLAPPING A MIN. OF ONE TURN.



TYPICAL SECTION



TYPICAL PATTERN FOR BURNING STRANDS



SECTION A-A

0.6"Ø GRADE 270 L.R. PRESTRESS STRANDS

NOTES CONT'D

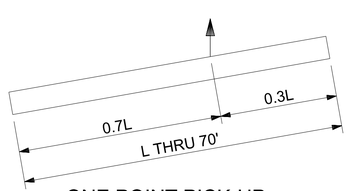
THE WATER/CEMENT RATIO FOR CONCRETE PILES SHALL NOT EXCEED 0.40.

THIS DESIGN FOLLOWS THE MINIMUM GUIDELINE PROVIDED BY THE PCI PRESTRESSED CONCRETE PILING COMMITTEE AS OUTLINED IN "RECOMMENDED PRACTICE FOR DESIGN, MANUFACTURE, AND INSTALLATION OF PRESTRESSED CONCRETE PILING", PCI JOURNAL, JULY-AUGUST 2019.

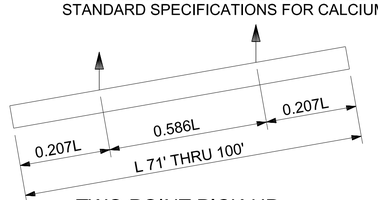
NOTES CONT'D

THE CONCRETE IN THE PILES OF BENTS 1-7 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB OF CEMENT. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

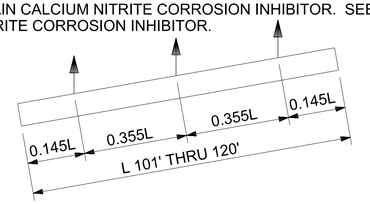
PRESTRESSED CONCRETE PILES SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR. SEE STANDARD SPECIFICATIONS FOR CALCIUM NITRITE CORROSION INHIBITOR.



ONE POINT PICK-UP



TWO POINT PICK-UP



THREE POINT PICK-UP

PICK-UP POINTS

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

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SUBSTRUCTURE
30" SQUARE PRESTRESSED CONCRETE PILE (COMPOSITE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-46
1			3			TOTAL SHEETS
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DRAWN BY: J. WILSON DATE : 2/25
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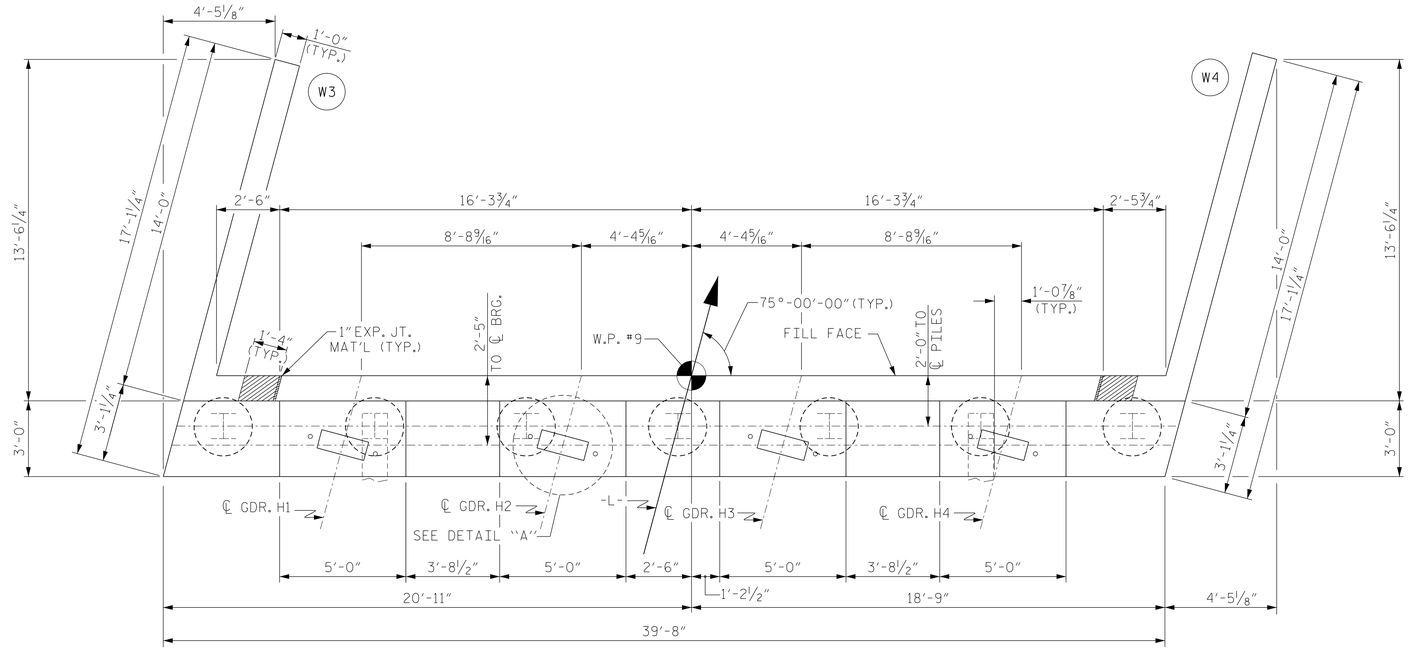
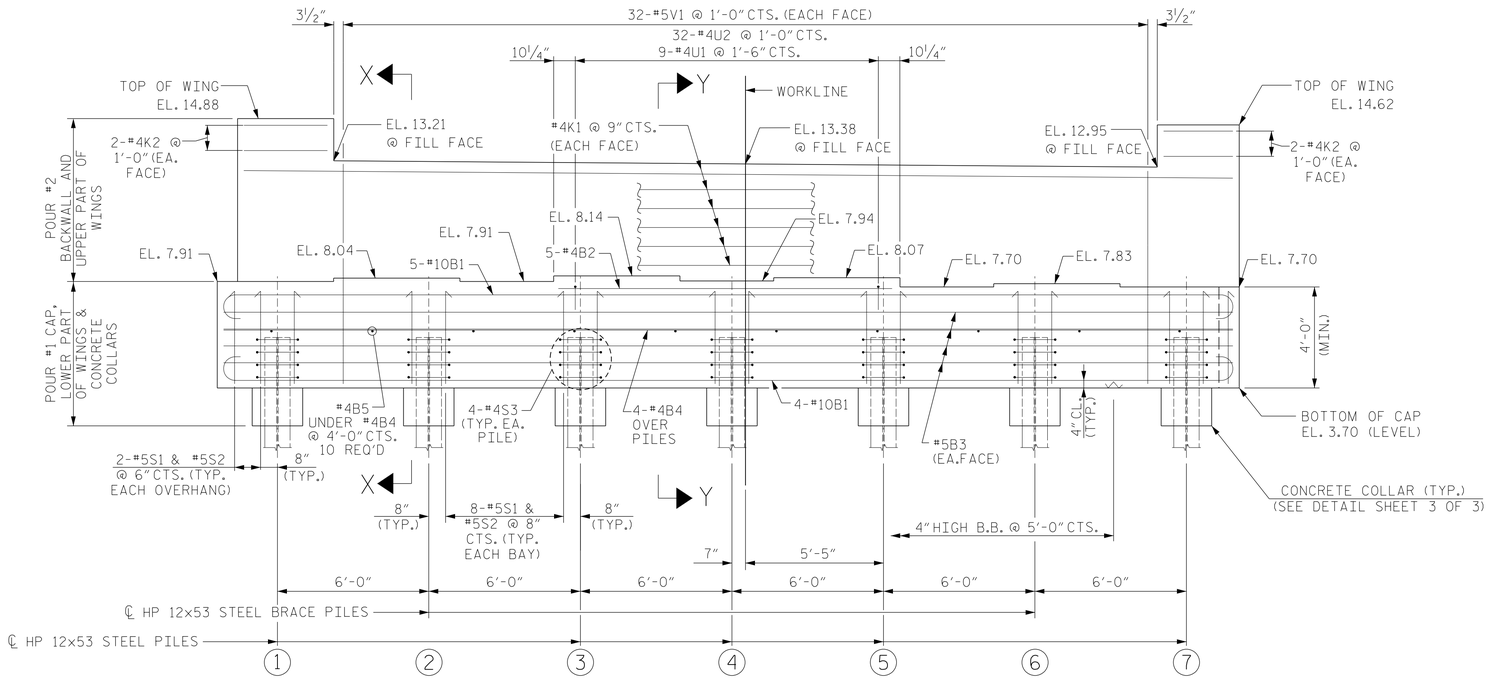
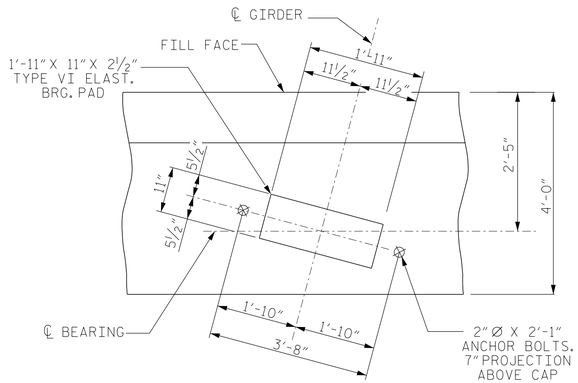


PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTIONS X-X & Y-Y, SEE SHEET S-49.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN VIEW FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", END BENT 1 SHEET 3 OF 3.



DETAIL "A"

NOTES

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

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR BEARING DETAILS, SEE ELASTOMERIC BEARING DETAILS.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 1 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

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SUBSTRUCTURE

END BENT 2 PLAN AND ELEVATION

REVISIONS						SHEET NO.
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DRAWN BY: J. WILSON DATE: 2/25
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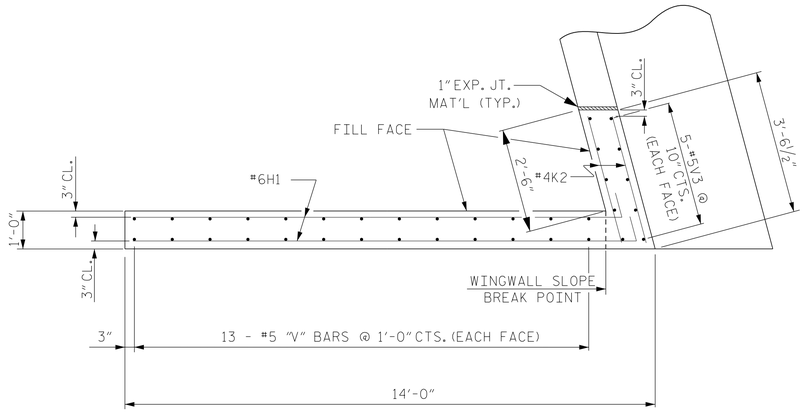
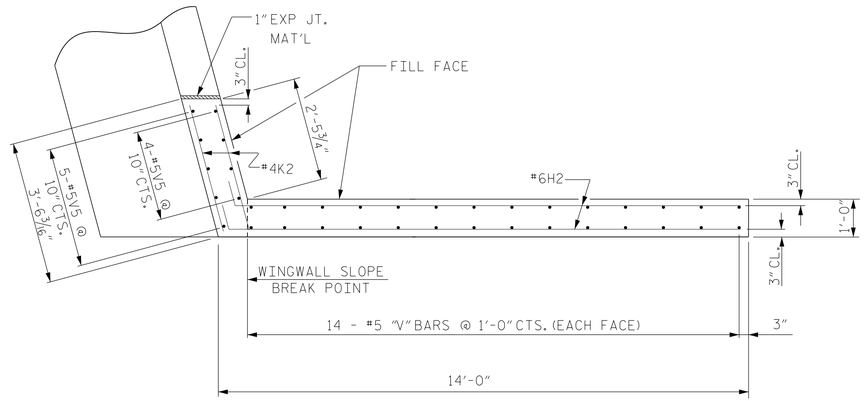
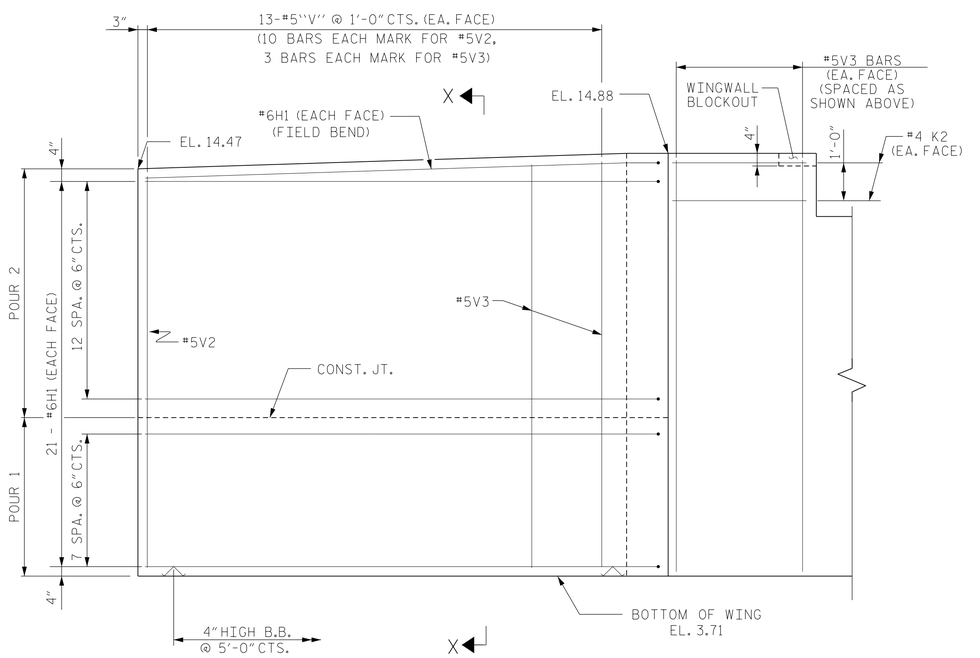


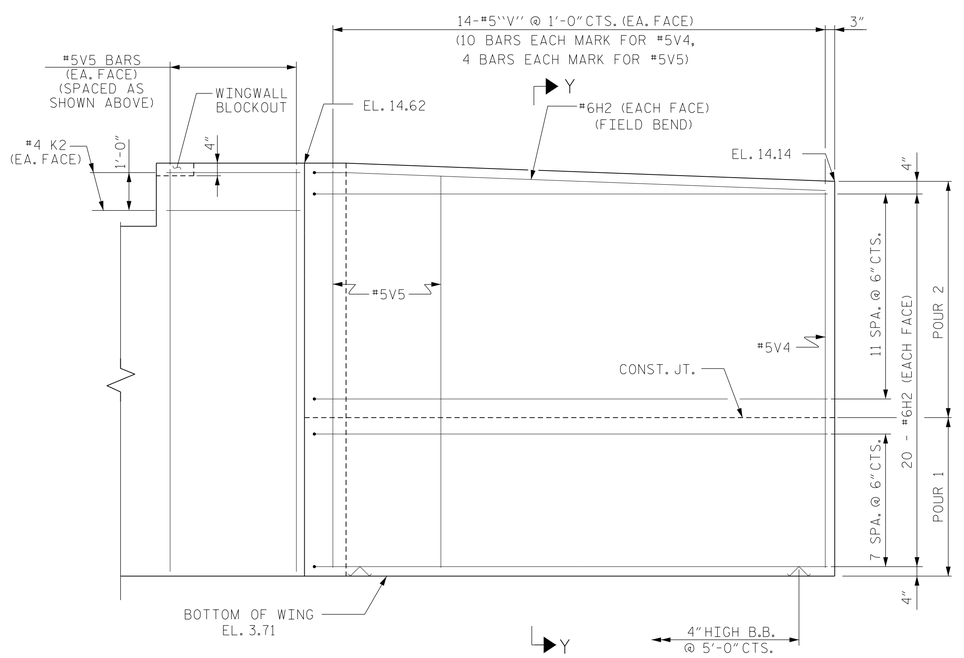
PLAN OF WING (W3)



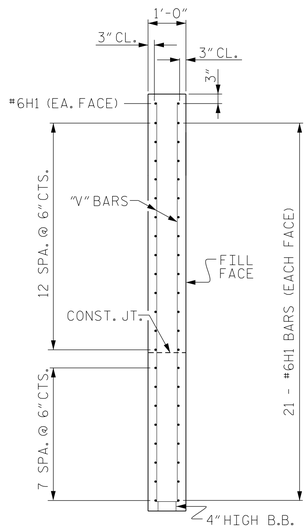
PLAN OF WING (W4)



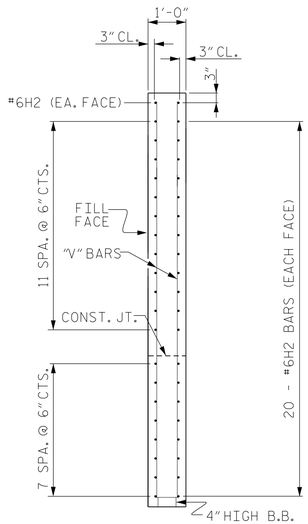
ELEVATION OF WING (W3)



ELEVATION OF WING (W4)



SECTION X-X



SECTION Y-Y

PROJECT NO. B-5614

BEAUFORT COUNTY

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SHEET 2 OF 3

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-48
1			3			TOTAL SHEETS
2			4			52

DRAWN BY: J. WILSON DATE : 2/25
CHECKED BY: D. RUGGLES DATE : 2/25
DESIGN ENGINEER OF RECORD: D. RUGGLES DATE : 2/25

7/11/2025
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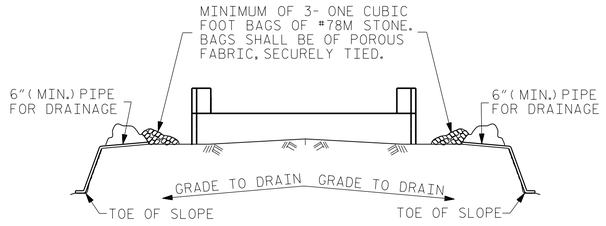
USER:default

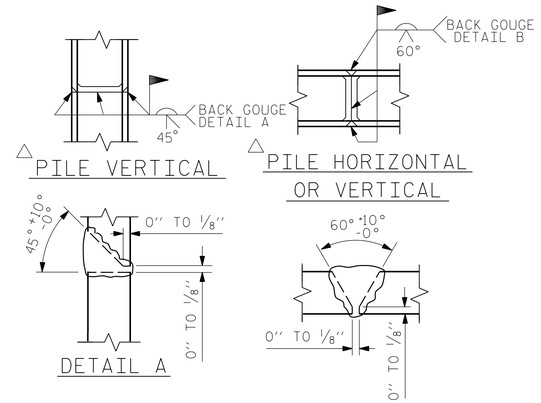


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

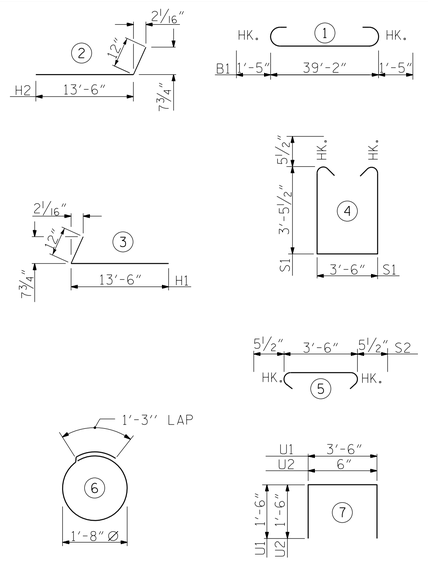
TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL
FOR END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳B1	9	#10	1	42'-0"	1627
✳B2	5	#4	STR	13'-2"	44
✳B3	8	#5	STR	39'-2"	327
✳B4	8	#4	STR	39'-2"	209
✳B5	10	#4	STR	3'-6"	23
✳H1	44	#6	3	14'-6"	958
✳H2	42	#6	2	14'-6"	915
✳K1	12	#4	STR	39'-2"	314
✳K2	8	#4	STR	3'-6"	19
✳S1	52	#5	4	11'-4"	615
✳S2	52	#5	5	4'-5"	240
✳S3	28	#4	6	6'-6"	122
✳U1	9	#4	7	6'-6"	39
✳U2	32	#4	7	3'-6"	75
✳V1	64	#5	STR	8'-8"	579
✳V2	20	#5	STR	10'-2"	212
✳V3	16	#5	STR	10'-7"	177
✳V4	20	#5	STR	9'-10"	205
✳V5	17	#5	STR	10'-4"	183

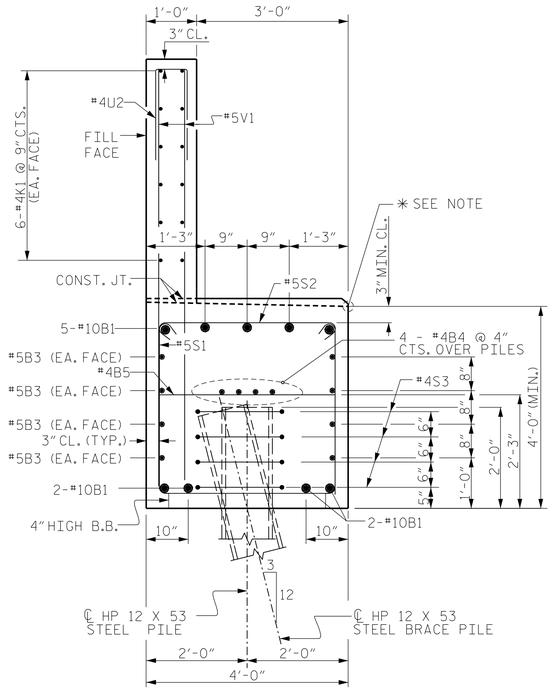
✳EPOXY COATED REINFORCING STEEL (FOR END BENT 2) 6,883 LBS.

CLASS AA CONCRETE BREAKDOWN

POUR #1 CAP & LOWER PART OF WINGS 30.4 C.Y.

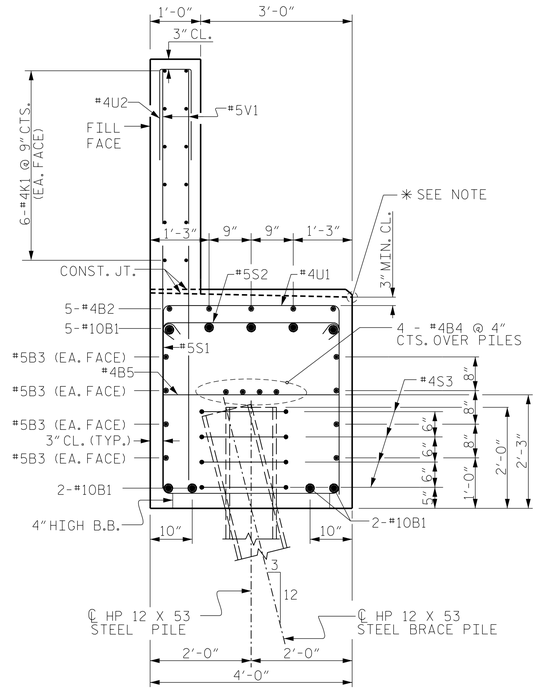
POUR #2 BACKWALL & UPPER PART OF WINGS 15.4 C.Y.

TOTAL CLASS AA CONCRETE 45.8 C.Y.



SECTION X-X

(CONCRETE COLLAR NOT SHOWN FOR CLARITY)
(SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL")



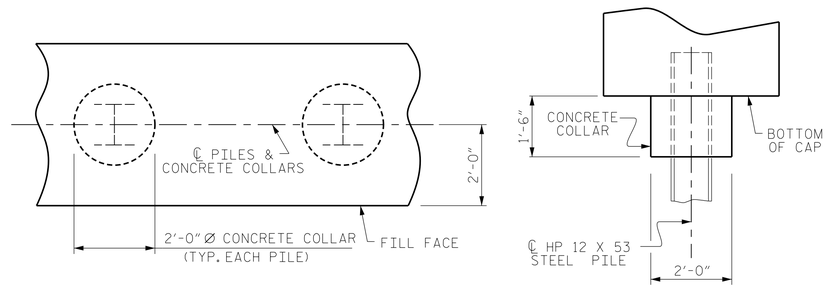
SECTION Y-Y

(CONCRETE COLLAR NOT SHOWN FOR CLARITY)
(SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL")

NOTES:

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

✳ ELEVATIONS BETWEEN BRIDGE SEAT BUILDUPS ARE SHOWN AT THIS POINT.



PLAN ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 SECTION AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

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CHECKED BY:	D. RUGGLES	DATE : 2/25
DESIGN ENGINEER OF RECORD:	D. RUGGLES	DATE : 2/25

$$$SYSTIME$$$
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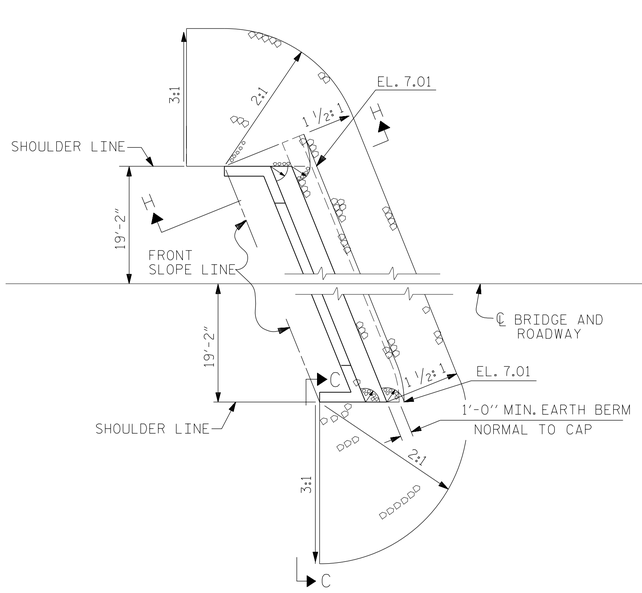
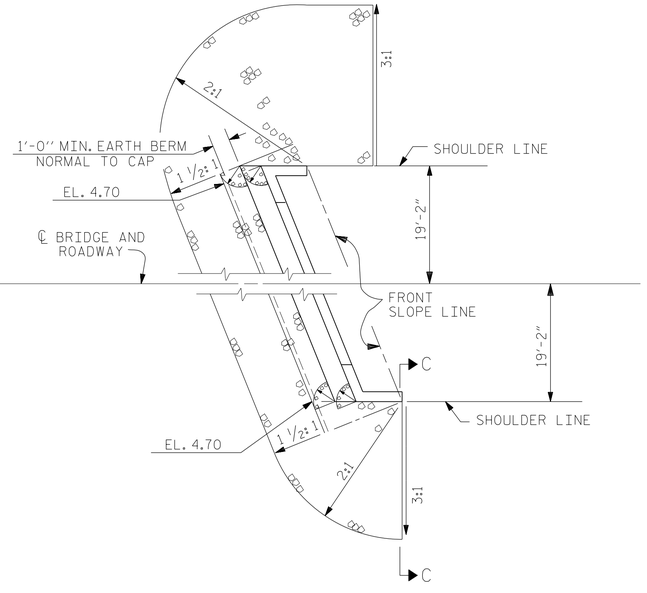


END BENT 1



END BENT 2

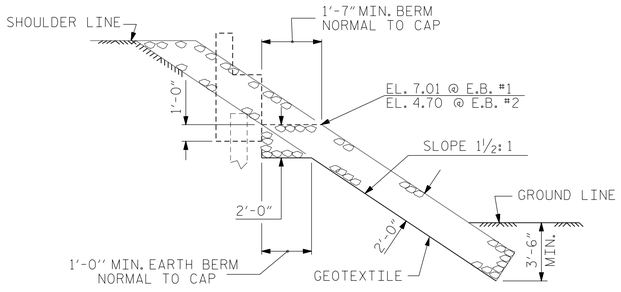
NOTES :

FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

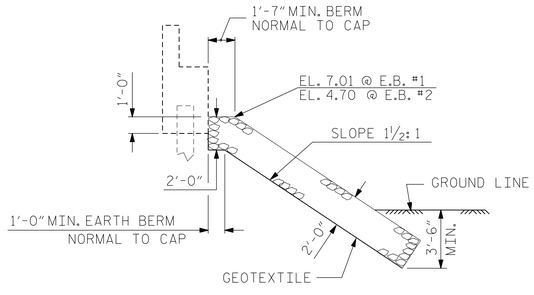
FOR GRANITE RIP RAP CLASS II (2'-0" THICK), SEE SPECIAL PROVISIONS.

ESTIMATED QUANTITIES		
BRIDGE @ STA. 22+57.00 -L-	GRANITE RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	130	145
END BENT 2	55	60

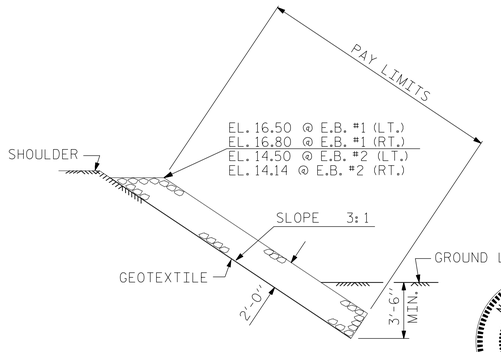
PLAN OF RIP RAP



SECTION H-H



℄ SECTION
BERM RIP RAPPED



SECTION C-C

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

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7/14/2025

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PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

STATE OF NORTH CAROLINA
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RALEIGH
STANDARD

RIP RAP DETAILS

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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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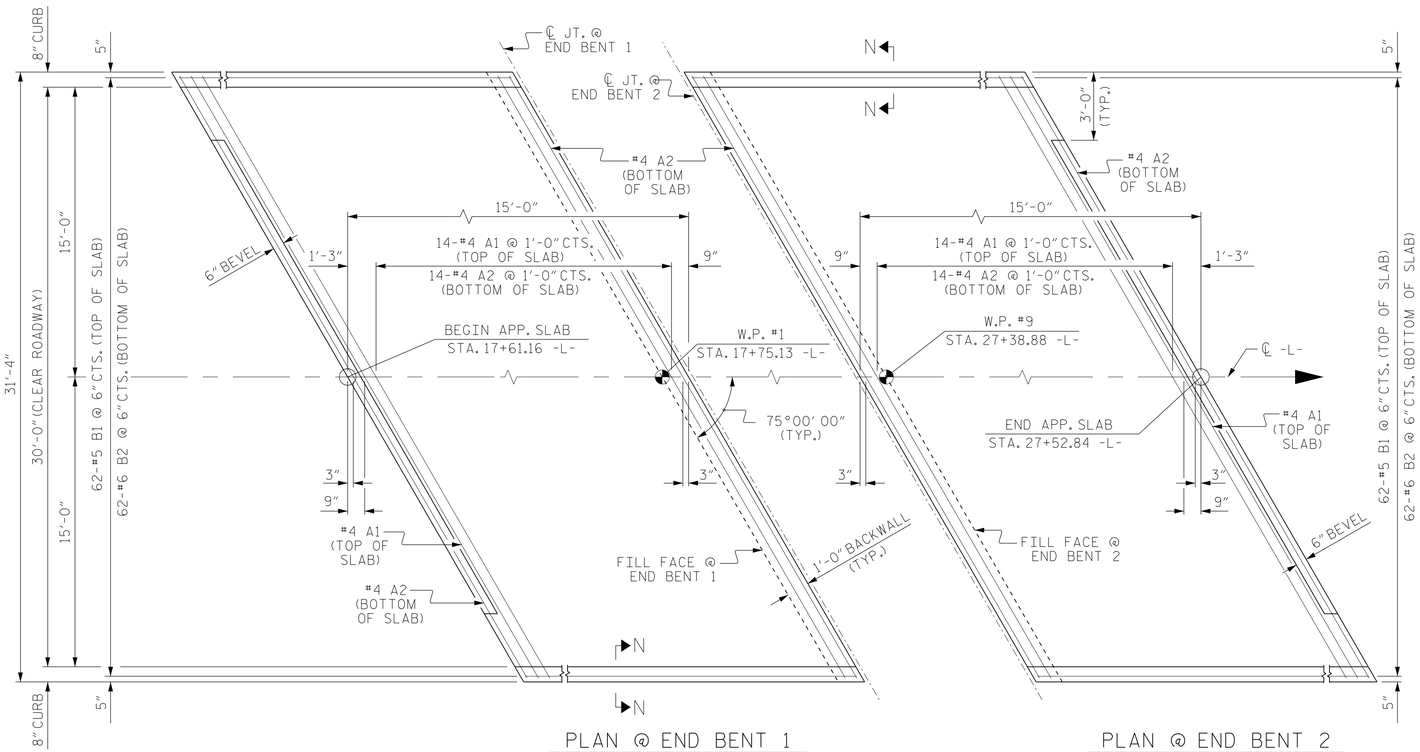
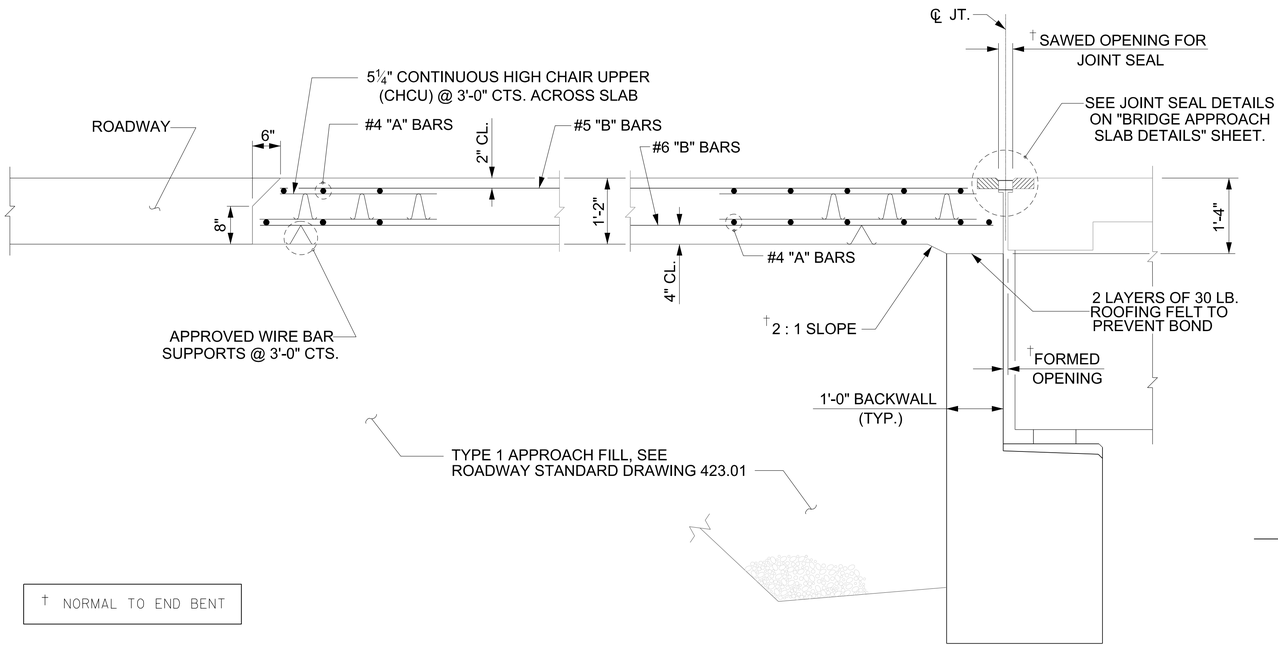
STD. NO. RR1 (Sht 1)

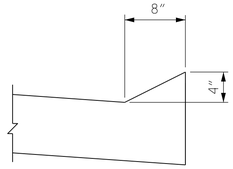


DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

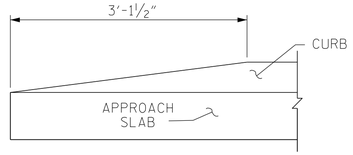


† NORMAL TO END BENT

SECTION THRU SLAB



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

NOTES

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.

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

THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE BARRIER RAIL OR PARAPET AND END POST.

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

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2½″.

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL
FOR ONE APPROACH SLAB
(2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	15	#4	STR	32′-1″	321
✳A2	16	#4	STR	32′-1″	343
✳B1	62	#5	STR	14′-2″	916
✳B2	62	#6	STR	14′-8″	1366
✳EPOXY COATED REINFORCING STEEL					2946 LBS.
CLASS AA CONCRETE					20.8 C.Y.

SPLICE LENGTHS

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

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

NORTH CAROLINA PROFESSIONAL SEAL 11725 ENGINEER DAVID R. RUGGLES

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DRAWN BY : EEM 3/95	REV. 12/17		MAA/THC
CHECKED BY : VAP 3/95	REV. 06/19		BNB/THC
	REV. 07/23		BNB/SNM

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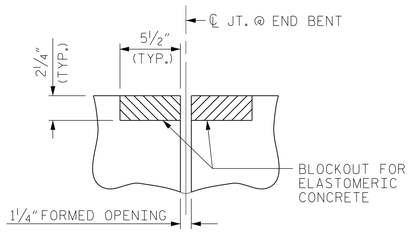
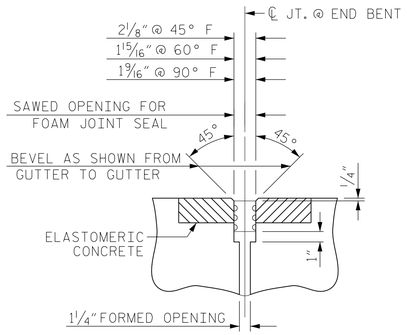
STD. NO. BAS2



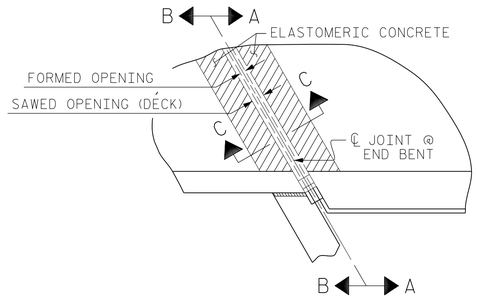
SECTION C-C

FOAM JOINT SEAL
(PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS)

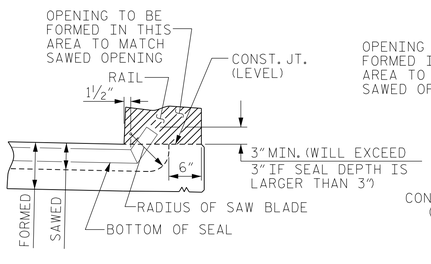


SECTION C-C

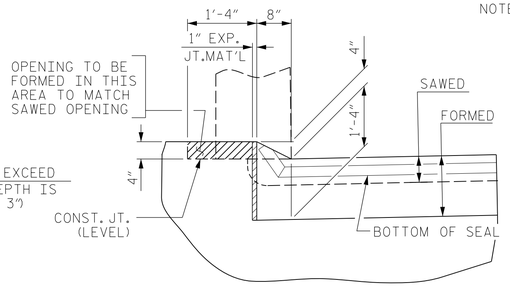
FOAM JOINT SEAL
(EXPANSION)



PLAN



SECTION A-A



SECTION B-B

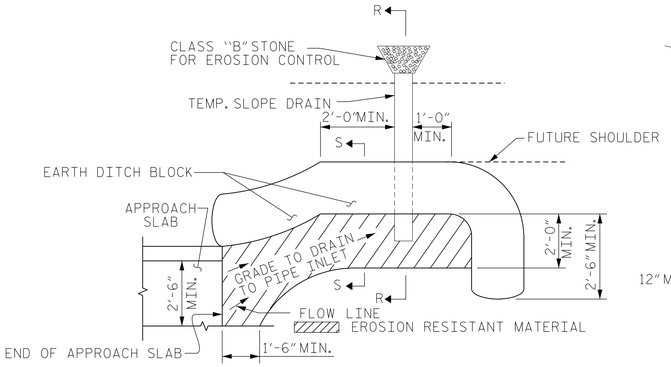
JOINT SEAL DETAILS @ END BENT

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

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

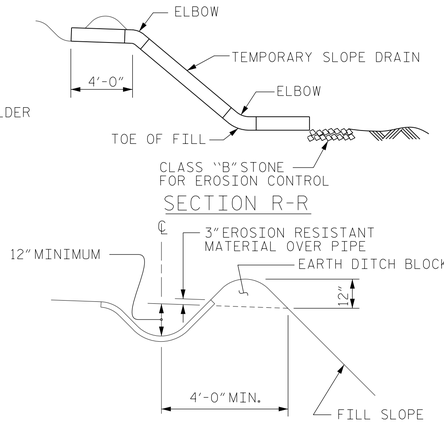
ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	5.8
2	5.8
TOTAL	11.6

* BASED ON THE MINIMUM BLOCKOUT SHOWN.



PLAN VIEW

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.

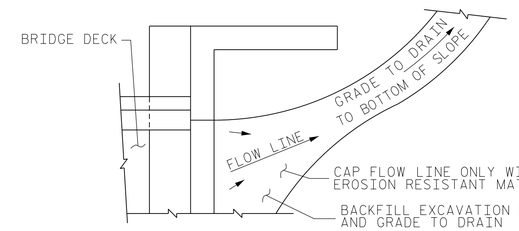


SECTION R-R

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

PROJECT NO. B-5614

BEAUFORT COUNTY

STATION: 22+57.00 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 11725 DAVID R. RUGGLES

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BRIDGE APPROACH SLAB DETAILS

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CHECKED BY : ARB 11/88	REV. 12/17		MMA/THC
	REV. 5/18		MMA/THC

7/11/2025
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STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	AASHTO (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE AASHTO
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE AASHTO
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2024 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE $\frac{7}{8}$" Ø SHEAR STUDS FOR THE $\frac{3}{4}$" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - $\frac{7}{8}$" Ø STUDS FOR 4 - $\frac{3}{4}$" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF $\frac{7}{8}$" Ø STUDS ALONG THE BEAM AS SHOWN FOR $\frac{3}{4}$" Ø STUDS BASED ON THE RATIO OF 3 - $\frac{7}{8}$"Ø STUDS FOR 4 - $\frac{3}{4}$" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST $\frac{5}{16}$" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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