09/08/99

TIP PROJECT: B–5156

CONTRACT: C204724

1/11/2024

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–5156	1	

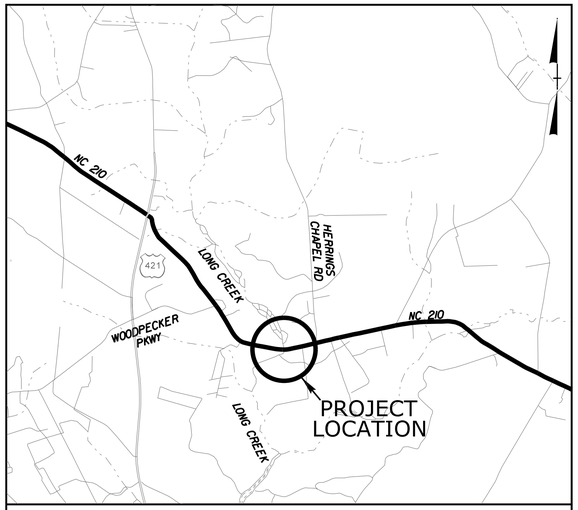
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
42331.1.2		P.E.
42331.2.1		RIGHT OF WAY
42331.2.1		UTILITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

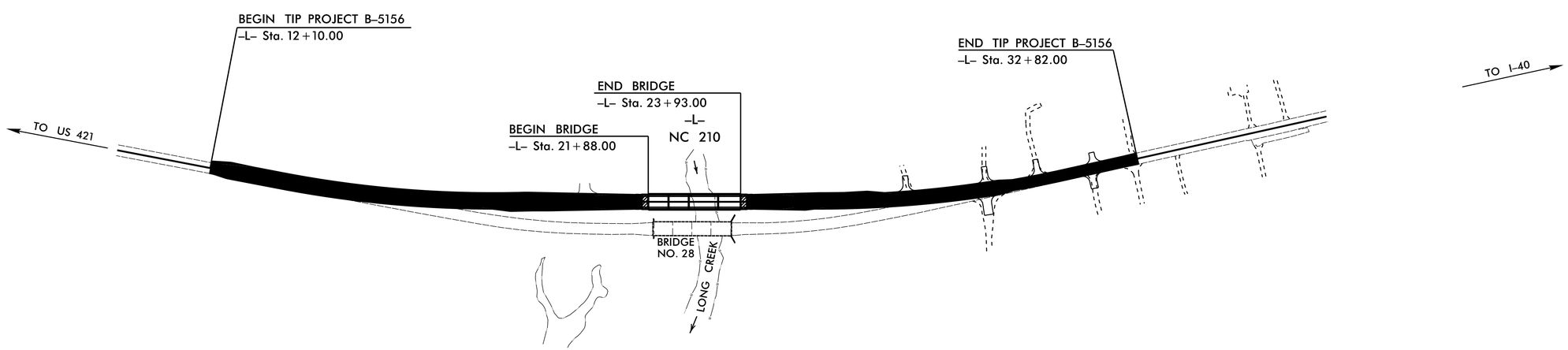
PENDER COUNTY

LOCATION: BRIDGE 28 OVER LONG CREEK ON NC 210

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



VICINITY MAP



STRUCTURES

DESIGN DATA

AADT 2020	=	3,000
AADT 2040	=	3,600
K	=	10%
D	=	55%
T	=	12%*
V	=	60 MPH

* (TTST 4% + DUAL 8%)

FUNCTIONAL CLASSIFICATION: RURAL MAJOR COLLECTOR

REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B–5156	=	0.353 MILES
LENGTH STRUCTURES TIP PROJECT B–5156	=	0.039 MILES
TOTAL LENGTH TIP PROJECT B–5156	=	0.392 MILES

PLANS PREPARED FOR THE NCDOT BY:

Kimley»Horn ©2022

NC LICENSE #P-0102
150 FAYETTEVILLE STREET, SUITE 600
RALEIGH, NORTH CAROLINA 27601
PHONE: (919) 677-2000

2024 STANDARD SPECIFICATIONS

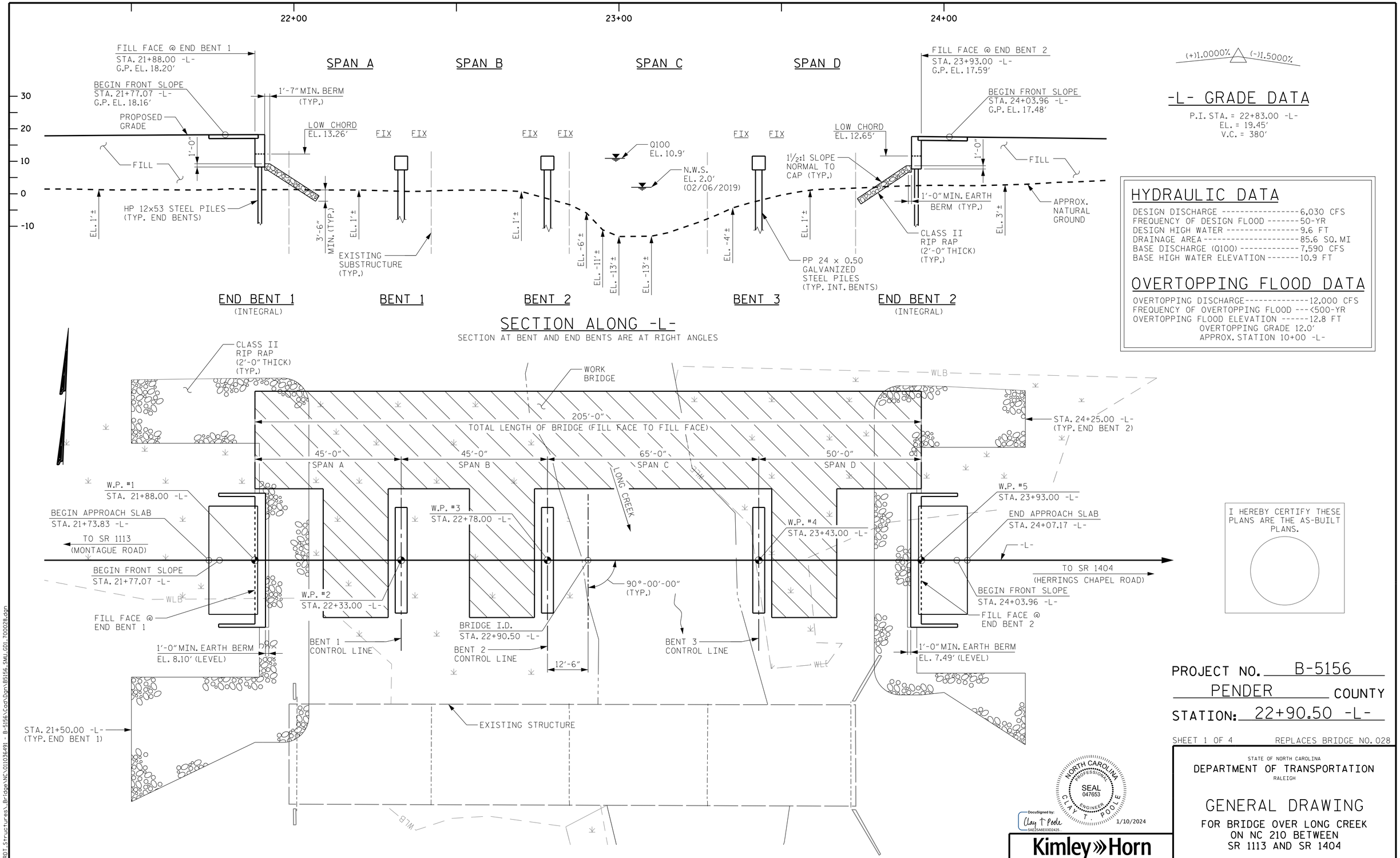
RIGHT OF WAY DATE:
AUGUST 28, 2019

LETTING DATE:
APRIL 16, 2024

SETH A. DENNEY, P.E.
PROJECT ENGINEER

CLAY T. POOLE, P.E.
PROJECT DESIGN ENGINEER

DAVID STUTTS, P.E.
STRUCTURES MANAGEMENT UNIT PROJECT ENGINEER– PEF/PROGRAM MANAGEMENT



SECTION ALONG -L-

SECTION AT BENT AND END BENTS ARE AT RIGHT ANGLES

PLAN

PILES NOT SHOWN IN PLAN VIEW FOR CLARITY.

(+)1.0000% (-)1.5000%

-L- GRADE DATA

P.I. STA. = 22+83.00 -L-
EL. = 19.45'
V.C. = 380'

HYDRAULIC DATA

DESIGN DISCHARGE	6,030 CFS
FREQUENCY OF DESIGN FLOOD	50-YR
DESIGN HIGH WATER	9.6 FT
DRAINAGE AREA	85.6 SQ. MI
BASE DISCHARGE (Q100)	7,590 CFS
BASE HIGH WATER ELEVATION	10.9 FT

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	12,000 CFS
FREQUENCY OF OVERTOPPING FLOOD	<500-YR
OVERTOPPING FLOOD ELEVATION	12.8 FT

OVERTOPPING GRADE 12.0'
APPROX. STATION 10+00 -L-

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS.

PROJECT NO. B-5156
PENDER COUNTY
STATION: 22+90.50 -L-

SHEET 1 OF 4 REPLACES BRIDGE NO. 028

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER LONG CREEK
ON NC 210 BETWEEN
SR 1113 AND SR 1404

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 1/10/2024
5AE25A6E0302425...

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

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

DRAWN BY: D. D. LOWERY DATE: 03/2023
CHECKED BY: A. L. PHILLIPS DATE: 03/2023
DESIGN ENGINEER OF RECORD: C.T. POOLE DATE: 03/2023

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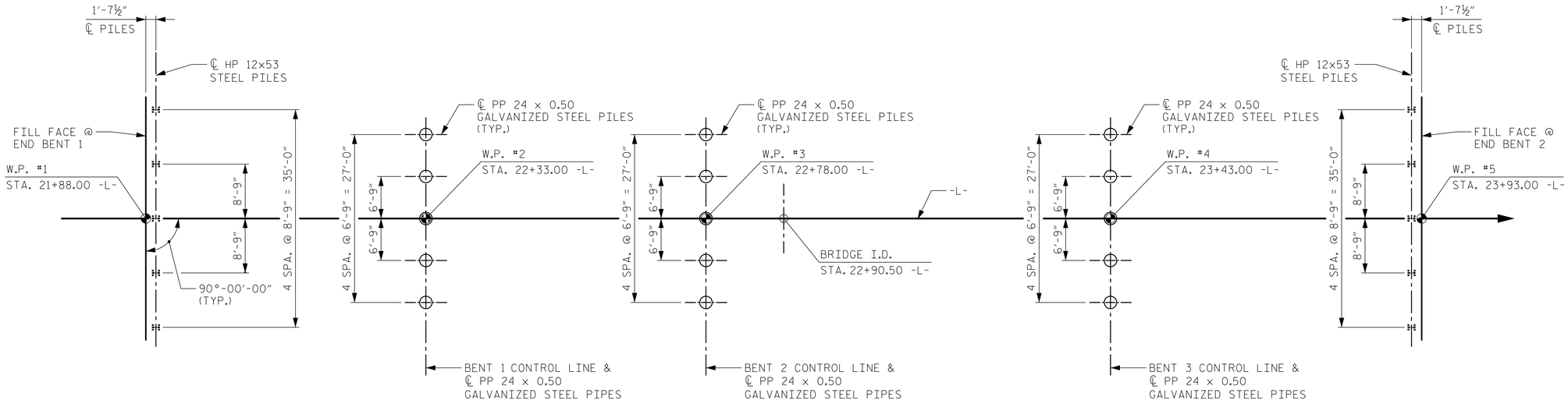
1/10/2024 K:\RDT_Structures_Bridge\NC\01103649I - B-5156\Cad\Dgn\B5156_SMU_G01_T00028.dgn



FOUNDATION LAYOUT

(DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE)

NOTES

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 40,000 TO 83,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT NO.1, BENT NO.2, AND BENT NO.3. THIS ESTIMATED ENERGY RANGES DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 2 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 5AE35A8E0302425... 1/10/2024

Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER LONG CREEK
ON NC 210 BETWEEN
SR 1113 AND SR 1404

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

DRAWN BY: D. D. LOWERY DATE: 03/2023
CHECKED BY: A. L. PHILLIPS DATE: 03/2023
DESIGN ENGINEER OF RECORD: C.T. POOLE DATE: 03/2023

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1/10/2024

SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #-# (e.g., "Bent 1, Piles 1-5")	Factored Resistance per Pile TONS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles*			Drilled-In Piles		
					Min Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)** per Pile TONS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile Lin FT	Pile Exc In Soil per Pile Lin FT
End Bent 1, Piles 1-5	100	11.1	85			170							
Bent 1, Piles 1-5	180	11.1	125	-6.0	-30.0	240							
Bent 2, Piles 1-5	180	11.1	125	-14.0	-39.0	245	13						
Bent 3, Piles 1-5	180	10.8	125	-9.0	-32.0	240							
End Bent 2, Piles 1-5	100	10.5	80			170							

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

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

SUMMARY OF PDA/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Pile Driving Analyzer (PDA)				Pile Order Lengths	
End Bent/ Bent No	PDA Testing Required? YES or MAYBE	PDA Test Pile Length FT	Total PDA Testing Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis* EST or PDA
End Bent 1, Piles 1-5	MAYBE				
Bent 1, Piles 1-5	YES	125			
Bent 2, Piles 1-5	MAYBE	125	3		
Bent 3, Piles 1-5	YES	125			
End Bent 2, Piles 1-5	MAYBE				

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #-# (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile TONS	Factored Downdrag Load per Pile TONS	Factored Dead Load* per Pile TONS	Dynamic Resistance Factor	Nominal Downdrag Resistance per Pile TONS	Nominal Scour Resistance per Pile TONS	Scour Resistance Factor (Default = 1.00)
End Bent 1, Piles 1-5	100			0.6			
Bent 1, Piles 1-5	180			0.75			
Bent 2, Piles 1-5	180			0.75		1.5	1.0
Bent 3, Piles 1-5	180			0.75			
End Bent 2, Piles 1-5	100			0.6			

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

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Cheng Wang, PE# 048123) on 10-26-2022.
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. The Engineer will determine the need for PDA Testing when PDAs may be required.

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 1/10/2024
SAE35AAE03D2425...
SIGNATURE DATE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE FOUNDATION TABLES

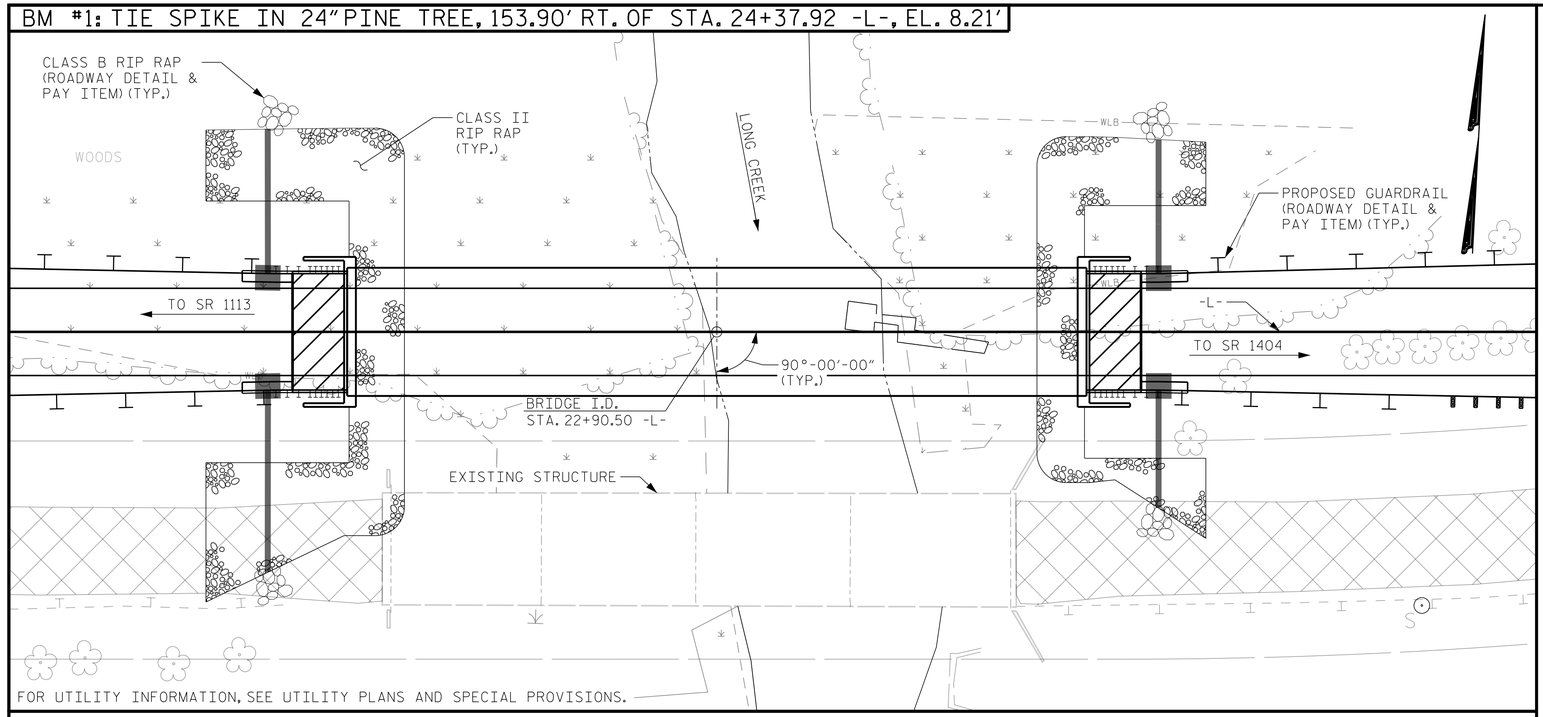
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

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

SHEET NO. S-3

TOTAL SHEETS 42



LOCATION SKETCH

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP ACCESS AT STA. 22+90.50 -L-	REMOVAL OF EXISTING STRUCTURE AT STA. 22+90.50 -L-	ASBESTOS ASSESSMENT	DYNAMIC PILE TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE (BRIDGE)	BRIDGE APPROACH SLABS STA. 22+90.50 -L-	REINFORCING STEEL (BRIDGE)
	LUMP SUM	LUMP SUM	LUMP SUM	EA.	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.
SUPERSTRUCTURE					7,168	6,767		LUMP SUM	
END BENT 1							24.3		4,562
BENT 1							14.9		3,042
BENT 2							14.9		3,042
BENT 3							14.9		3,042
END BENT 2							24.3		4,562
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	3	7,168	6,767	93.3	LUMP SUM	18,250

CONT. TOTAL BILL OF MATERIAL

45" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	PILE DRIVING EQUIPMENT SETUP FOR PP 24x0.50 GALVANIZED STEEL PILES	HP 12x53 STEEL PILES		PP 24x0.50 GALVANIZED STEEL PILES		PILE REDRIVES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS
NO.	LIN. FT.	EA.	EA.	NO.	LIN. FT.	NO.	LIN. FT.	EA.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM
16	808.33								406.67			LUMP SUM
		5		5	425					469	521	
			5			5	625					
			5			5	625					
			5			5	625					
		5		5	400					309	343	
16	808.33	10	15	10	825	15	1,875	13	406.67	778	864	LUMP SUM

DRAWN BY: D. D. LOWERY DATE: 03/2023
CHECKED BY: A. L. PHILLIPS DATE: 03/2023
DESIGN ENGINEER OF RECORD: C.T. POOLE DATE: 03/2023

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1/11/2024

NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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.

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+90.50 -L-".

THE CONTRACTOR SHALL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY ACCESS AT STATION 22+90.50 -L- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISIONS.

AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE CONSISTING OF 4 SPANS (1 @ 42.70', 1 @ 42.42', 1 @ 42.70', 1 @ 41.75') OF REINFORCED CONCRETE DECK GIRDERS WITH A CLEAR ROADWAY WIDTH OF 31'-3" ON REINFORCED CONCRETE CAPS AND REINFORCED CONCRETE COLUMNS AND STEEL PILES AND LOCATED APPROXIMATELY 60 FEET SOUTH OF THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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 INTERIOR BENTS 1, 2, AND 3, ONLY PARTIAL GALVANIZING OF THE PILES IS REQUIRED. SEE INTERIOR BENT SHEETS FOR REQUIRED GALVANIZED LENGTHS. PAYMENT FOR PARTIALLY GALVANIZED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR GALVANIZED STEEL PILES.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

THE LOW CHORD OF THE WORK BRIDGE SHALL MATCH THE LOW CHORD OF THE EXISTING BRIDGE.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS ELEVATION -3.5 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.2 IS ELEVATION -11.5 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.3 IS ELEVATION -6.5 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

PROJECT NO. B-5156
PENDER COUNTY
STATION: 22+90.50 -L-

SHEET 4 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay Poole 5AE35A6E03D2425...

1/11/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER LONG CREEK
ON NC 210 BETWEEN
SR 1113 AND SR 1404

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

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	(#) CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE											SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR						MOMENT						
							LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	1	1.20	--	1.75	0.816	1.40	C	EL	31.700	0.931	1.40	C	I	4.100	0.80	0.775	1.20	C	I	31.700	
		HL-93 (OPERATING)	N/A		1.82	--	1.35	0.816	1.82	C	EL	31.700	0.931	1.83	C	I	4.100	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	2	1.54	55.44	1.75	0.816	1.80	C	EL	31.700	0.931	1.76	C	I	4.100	0.80	0.775	1.54	C	I	31.700	
		HS-20 (OPERATING)	36.000		2.31	83.16	1.35	0.816	2.34	C	EL	31.700	0.931	2.31	C	I	4.100	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.40	45.90	1.40	0.816	4.97	C	EL	31.700	0.931	5.51	C	I	4.100	0.80	0.775	3.40	C	I	31.700	
		SNGARBS2	20.000		2.57	51.40	1.40	0.816	3.75	C	EL	31.700	0.931	3.93	C	I	4.100	0.80	0.775	2.57	C	I	31.700	
		SNAGRIS2	22.000		2.45	53.90	1.40	0.816	3.58	C	EL	31.700	0.931	3.66	C	I	4.100	0.80	0.775	2.45	C	I	31.700	
		SNCOTTS3	27.250		1.69	46.05	1.40	0.816	2.47	C	EL	31.700	0.931	2.60	C	I	4.100	0.80	0.775	1.69	C	I	31.700	
		SNAGGRS4	34.925		1.43	49.94	1.40	0.816	2.09	C	EL	31.700	0.931	2.17	C	I	4.100	0.80	0.775	1.43	C	I	31.700	
		SNS5A	35.550		1.40	49.77	1.40	0.816	2.04	C	EL	31.700	0.931	2.15	C	I	4.100	0.80	0.775	1.40	C	I	31.700	
		SNS6A	39.950		1.29	51.54	1.40	0.816	1.88	C	EL	31.700	0.931	1.97	C	I	4.100	0.80	0.775	1.29	C	I	31.700	
		SNS7B	42.000		1.23	51.66	1.40	0.816	1.79	C	EL	31.700	0.931	1.94	C	I	4.100	0.80	0.775	1.23	C	I	31.700	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.57	51.81	1.40	0.816	2.29	C	EL	31.700	0.931	2.37	C	I	4.100	0.80	0.775	1.57	C	I	31.700	
		TNT4A	33.075		1.58	52.26	1.40	0.816	2.31	C	EL	31.700	0.931	2.33	C	I	4.100	0.80	0.775	1.58	C	I	31.700	
		TNT6A	41.600		1.30	54.08	1.40	0.816	1.89	C	EL	31.700	0.931	2.14	C	I	4.100	0.80	0.775	1.30	C	I	31.700	
		TNT7A	42.000		1.31	55.02	1.40	0.816	1.91	C	EL	31.700	0.931	2.04	C	I	4.100	0.80	0.775	1.31	C	I	31.700	
		TNT7B	42.000		1.36	57.12	1.40	0.816	1.98	C	EL	31.700	0.931	1.89	C	I	4.100	0.80	0.775	1.36	C	I	31.700	
		TNAGRIT4	43.000		1.29	55.47	1.40	0.816	1.88	C	EL	31.700	0.931	1.87	C	I	4.100	0.80	0.775	1.29	C	I	31.700	
		TNAGT5A	45.000		1.21	54.45	1.40	0.816	1.77	C	EL	31.700	0.931	1.91	C	I	4.100	0.80	0.775	1.21	C	I	31.700	
		TNAGT5B	45.000	3	1.19	53.55	1.40	0.816	1.74	C	EL	31.700	0.931	1.77	C	I	4.100	0.80	0.775	1.19	C	I	31.700	
EMERGENCY VEHICLE		EV2	28.750		1.82	52.33	1.30	0.816	2.86	C	EL	31.700	0.931	2.91	C	I	4.100	0.80	0.775	1.82	C	I	31.700	
		EV3	43.000	4	1.19	51.17	1.30	0.816	1.87	C	EL	31.700	0.931	1.83	C	I	4.100	0.80	0.775	1.19	C	I	31.700	

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1.
2.
3.
4.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

(2) DESIGN LOAD RATING (HS-20)

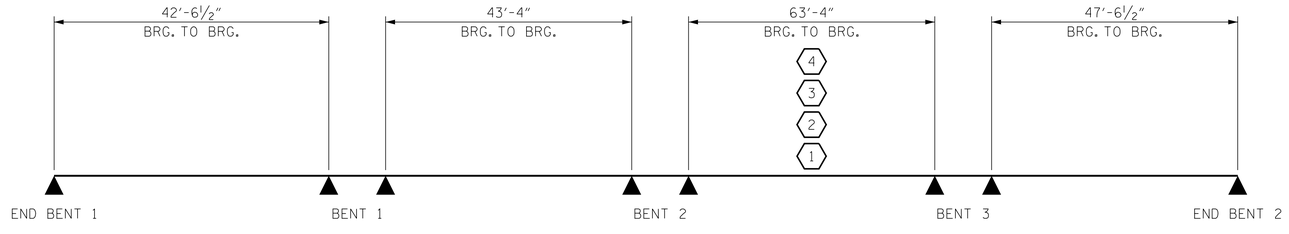
(3) LEGAL LOAD RATING **

(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-5156

PENDER COUNTY

STATION: 22+90.50 -L-

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 5AE5A8E0320425... 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

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-5
1			3			TOTAL SHEETS
2			4			45

STD. NO. LRFR1

ASSEMBLED BY : D. D. LOWERY	DATE :	03/2023
CHECKED BY : C.T. POOLE	DATE :	03/2023
DRAWN BY : MAA 1/08	REV. 11/12/08RR	MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11	MAA/GM
	REV. 12/17	MAA/THC

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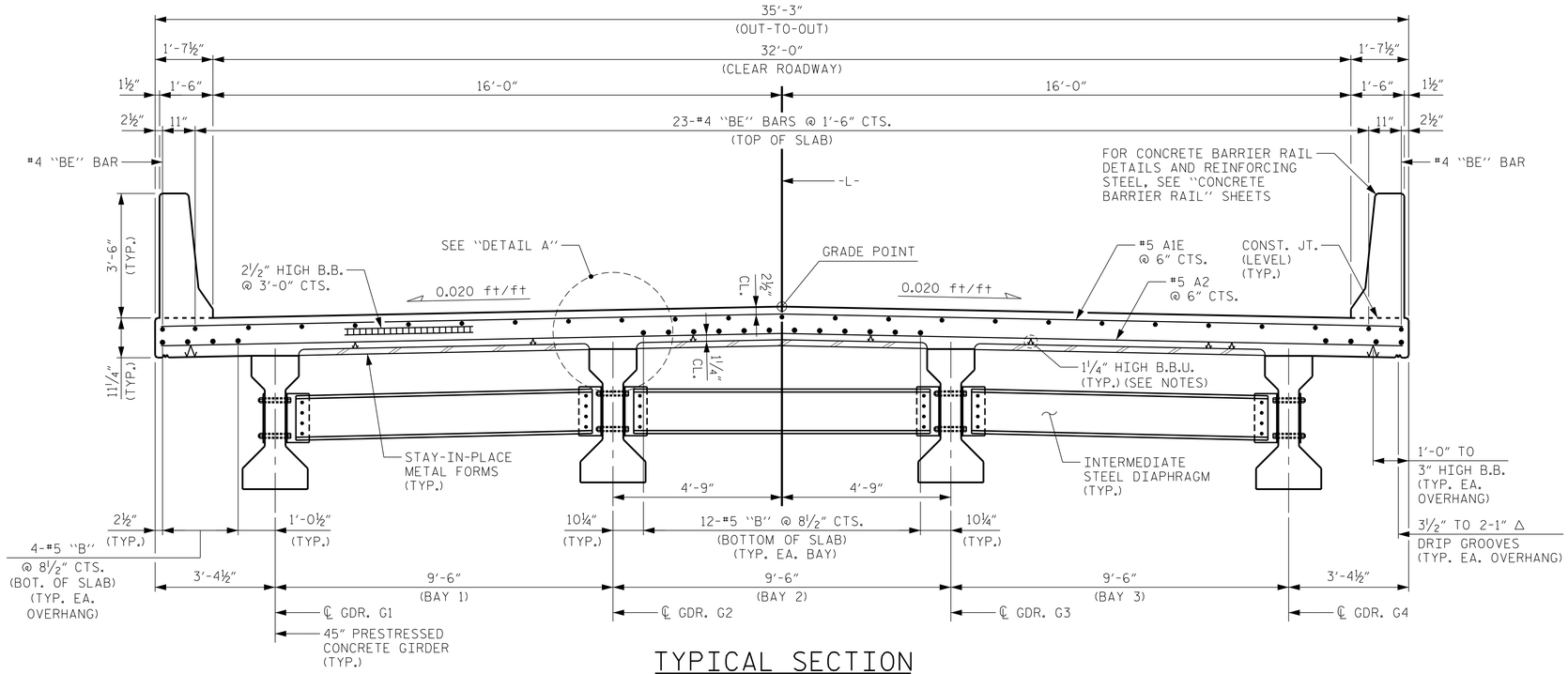
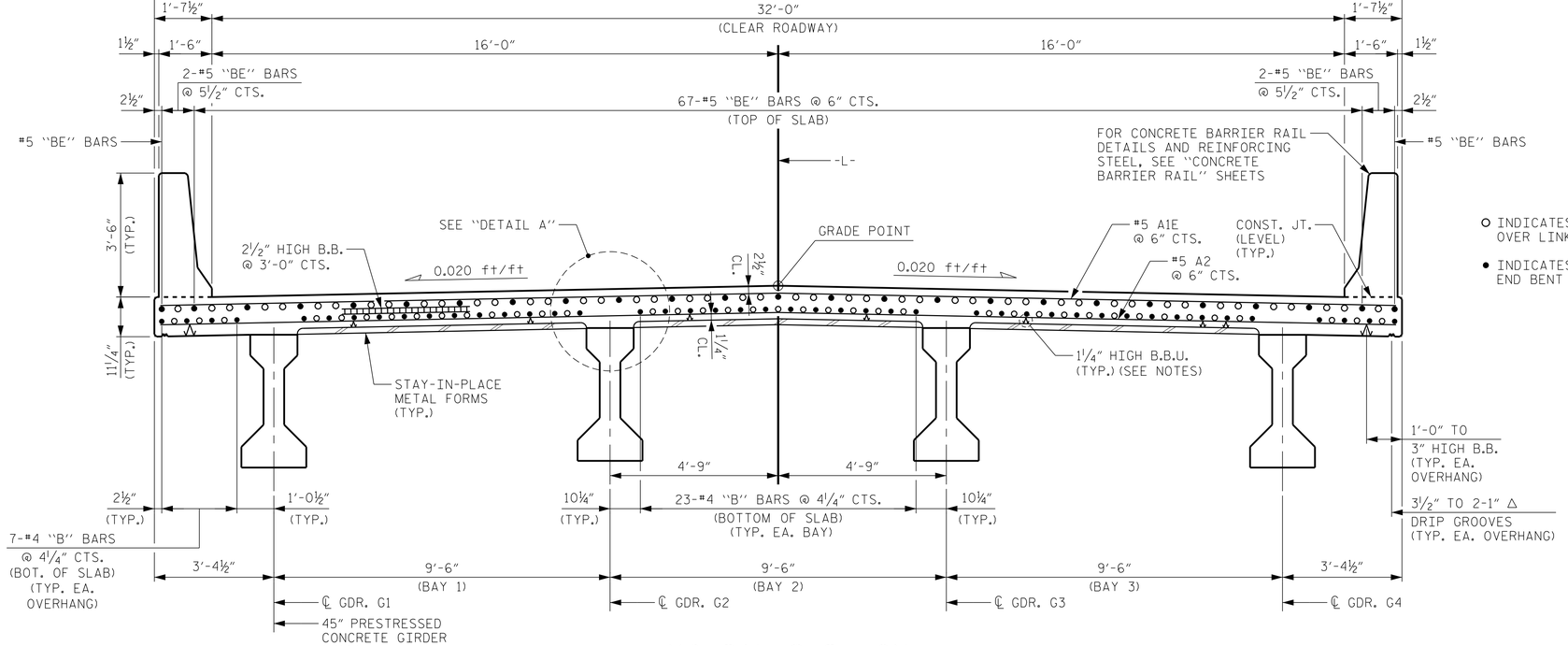


TYPICAL SECTION

(SHOWING INTERMEDIATE DIAPHRAGM)



TYPICAL SECTION

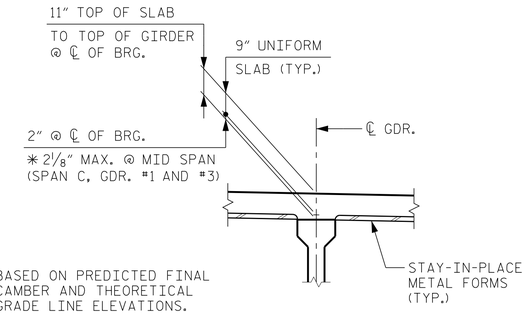
(SHOWING LINK SLAB)

NOTES

PROVIDE 1¼" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2½" ABOVE THE TOP OF THE REMOVABLE FORM.

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

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



✳ BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS.

DETAIL "A"

(TYP. EA. GDR. @ EA. BENT)

○ INDICATES NON-CONTINUOUS REINFORCING STEEL OVER LINK SLAB.

● INDICATES CONTINUOUS REINFORCING STEEL FROM END BENT 1 TO END BENT 2.

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 5AE15A8E0320425... 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			45

DRAWN BY: D. D. LOWERY DATE: 03/2023
CHECKED BY: A. L. PHILLIPS DATE: 03/2023
DESIGN ENGINEER OF RECORD: C. T. POOLE DATE: 03/2023

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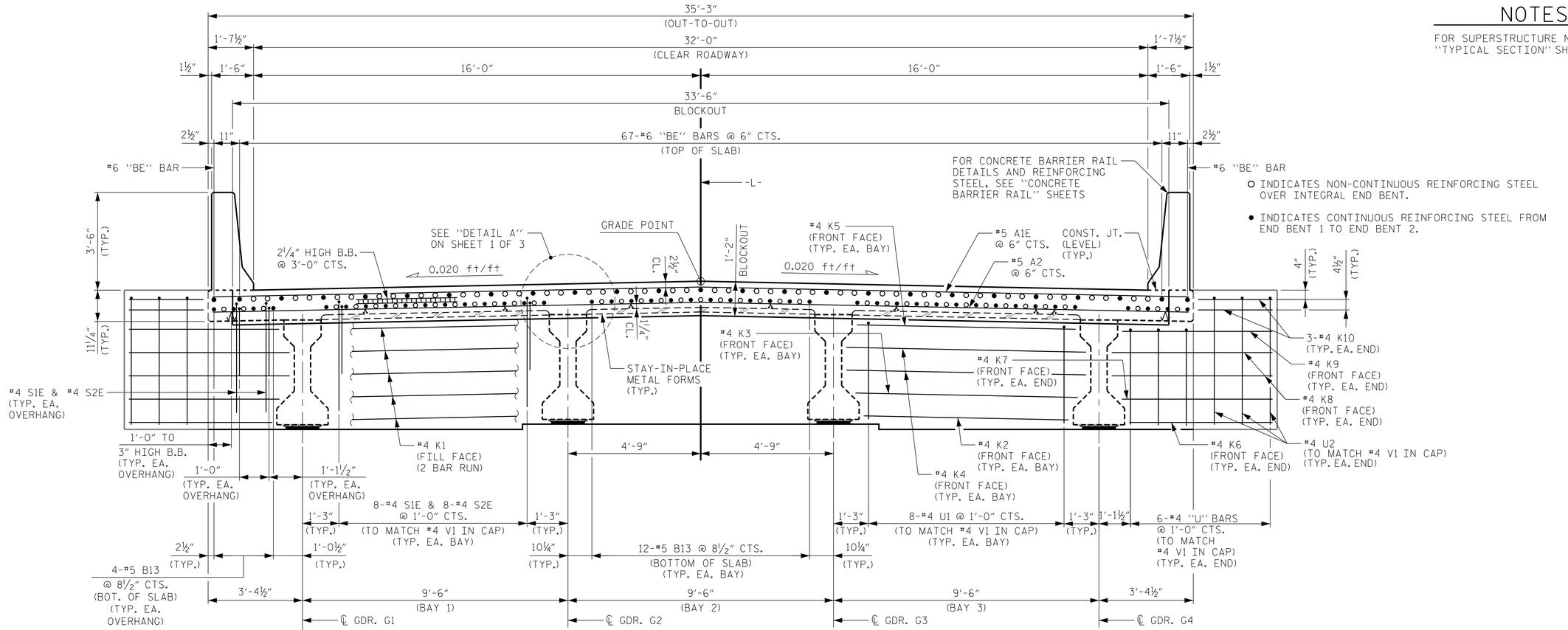
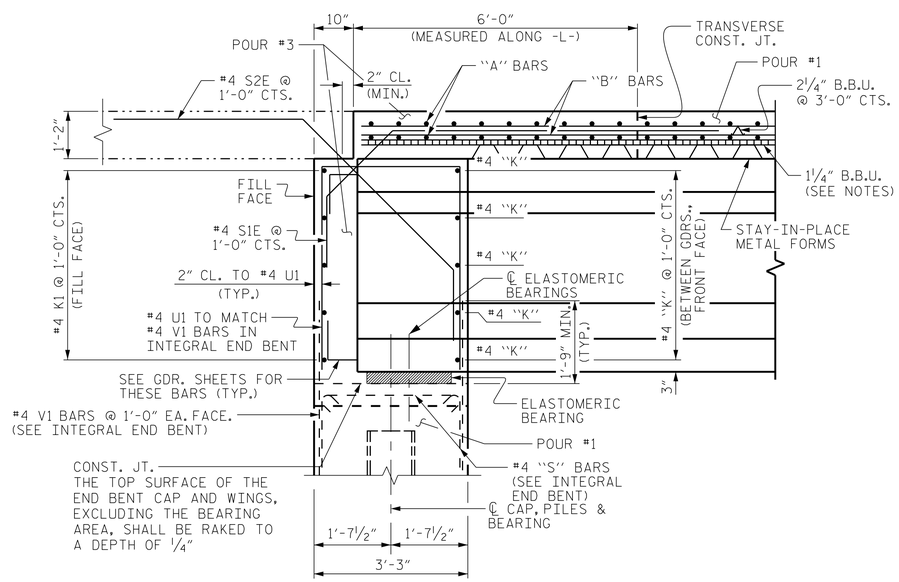
NOTES

FOR SUPERSTRUCTURE NOTES, SEE "TYPICAL SECTION" SHEET 1 OF 3.



TYPICAL SECTION

(SHOWING INTEGRAL END BENT DIAPHRAGM)



SECTION THRU INTEGRAL END BENT

(END BENT 1 SHOWN, END BENT 2 SIMILAR)

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			45

DRAWN BY: D. D. LOWERY DATE: 03/2023
CHECKED BY: A. L. PHILLIPS DATE: 03/2023
DESIGN ENGINEER OF RECORD: C. T. POOLE DATE: 03/2023

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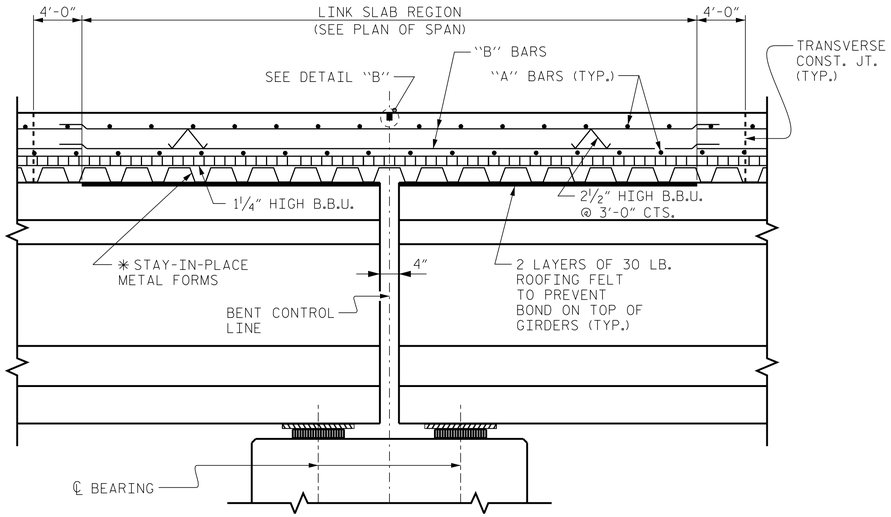
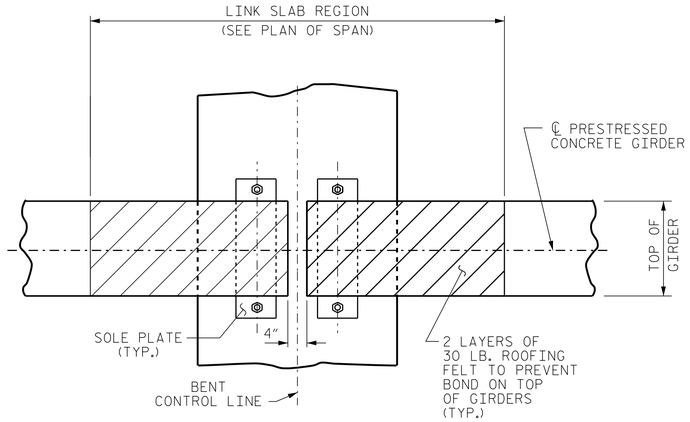
1/10/2024



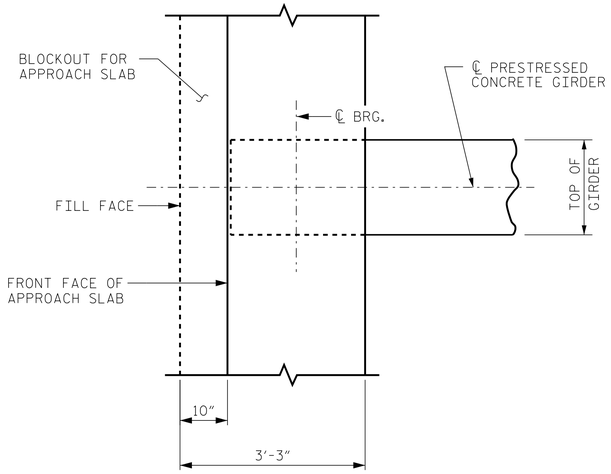
SECTION @ LINK SLAB

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

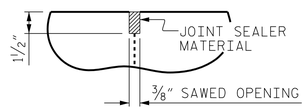


PLAN @ BENT

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



PLAN OF GIRDER @ INTEGRAL END BENT



DETAIL "B"

A 1½" DEEP, ⅜" WIDE CONTRACTION JOINT AT BENT CONTROL LINE SHALL BE SAWN WITHIN 24 HOURS OF POURING THE LINK SLAB 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.

NOTES

FOR SUPERSTRUCTURE NOTES, SEE "TYPICAL SECTION" SHEET 1 OF 3.

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

LINK SLAB DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 5AE35A8E0302425... 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			45

DRAWN BY: D.D. LOWERY DATE: 03/2023
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DESIGN ENGINEER OF RECORD: C.T. POOLE DATE: 03/2023

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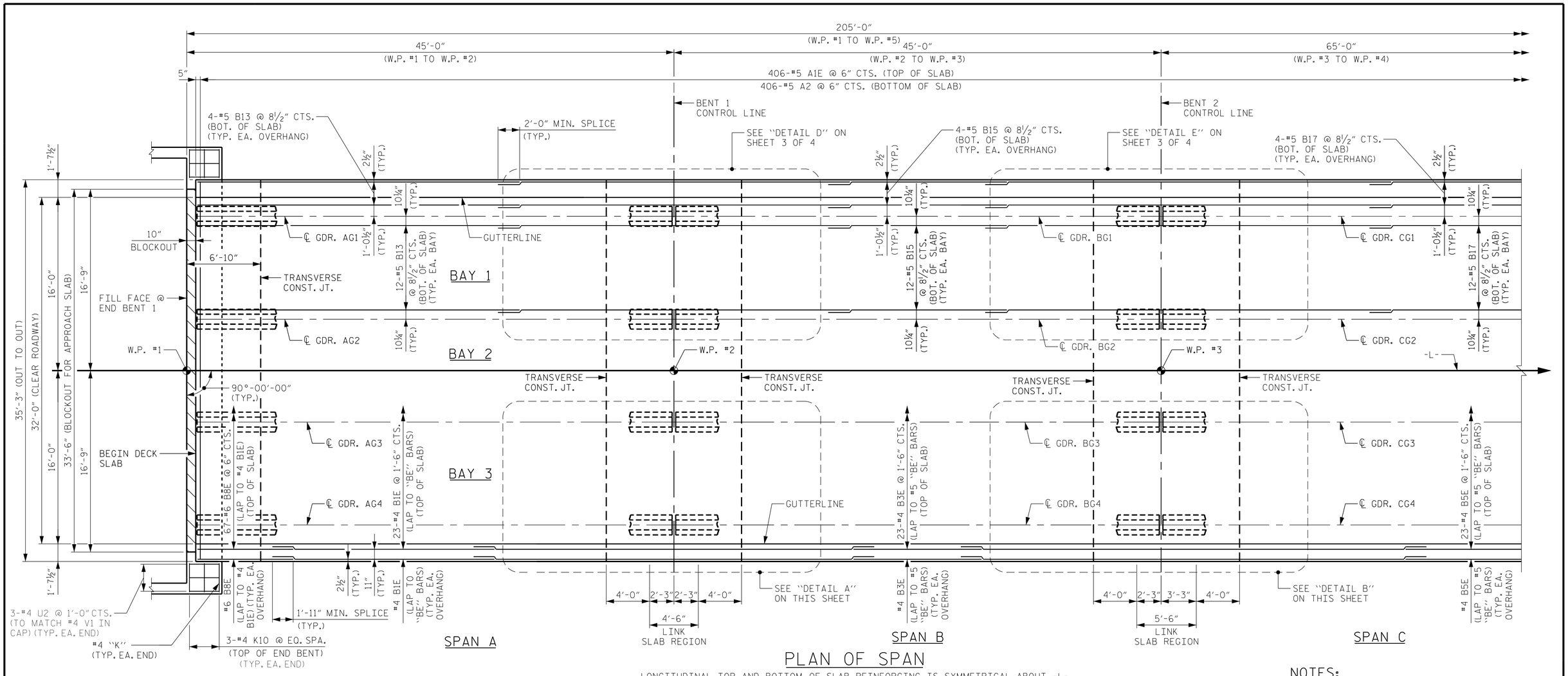
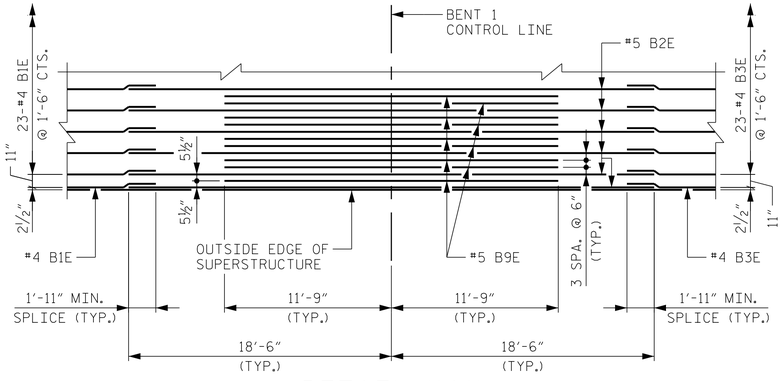


PLAN OF SPAN

LONGITUDINAL TOP AND BOTTOM OF SLAB REINFORCING IS SYMMETRICAL ABOUT -L-

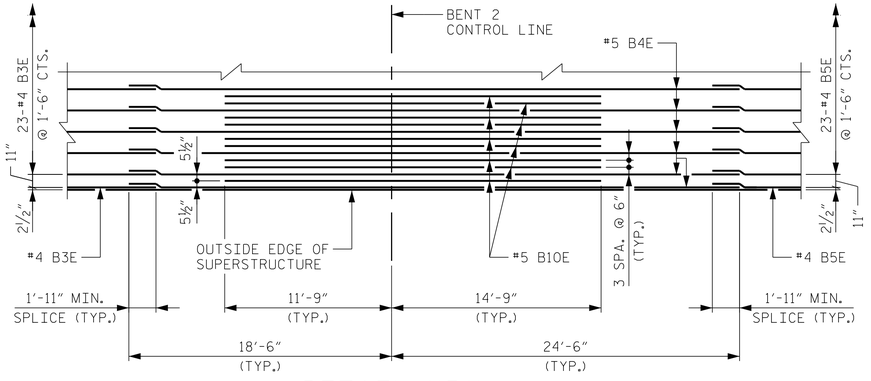
NOTES:

FOR NOTES SEE "PLAN OF SPAN" SHEET 2 OF 4.



DETAIL "A"

LONGITUDINAL TOP OF SLAB REINFORCING IS SYMMETRICAL ABOUT -L-



DETAIL "B"

LONGITUDINAL TOP OF SLAB REINFORCING IS SYMMETRICAL ABOUT -L-

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 1 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 5AE35A8E0320425... 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			45

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DESIGN ENGINEER OF RECORD: C. T. POOLE DATE: 03/2023

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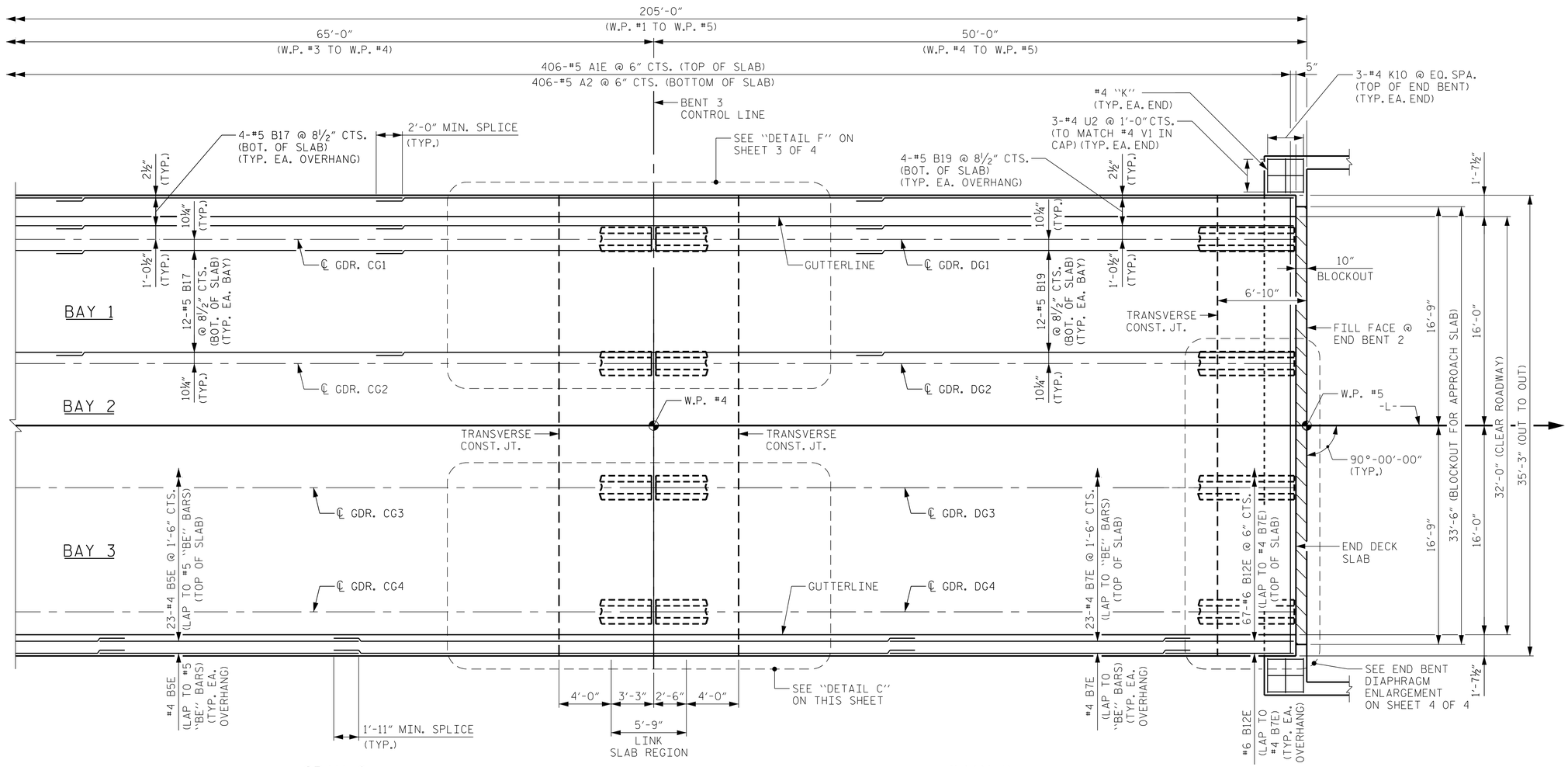


SPAN C — SPAN D

PLAN OF SPAN

LONGITUDINAL TOP AND BOTTOM OF SLAB REINFORCING IS SYMMETRICAL ABOUT -L-

NOTES

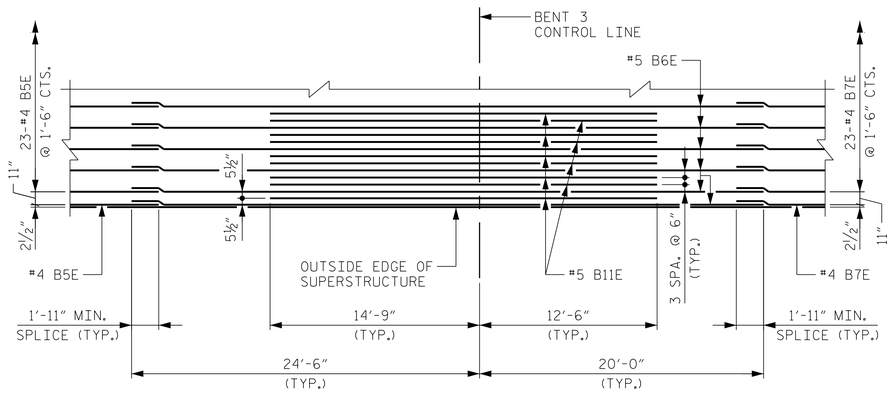
FOR POUR SEQUENCE AND LOCATION OF CONSTRUCTION JOINTS, SEE SUPERSTRUCTURE "BILL OF MATERIAL" SHEET.

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

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

INTERMEDIATE DIAPHRAGMS NOT SHOWN FOR CLARITY, SEE "FRAMING PLAN" SHEET.

FOR LINK SLAB DETAILS, SEE "LINK SLAB DETAILS" SHEET.



DETAIL "C"

LONGITUDINAL TOP OF SLAB REINFORCING IS SYMMETRICAL ABOUT -L-

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 5AE35A8E0302425... 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			45

DRAWN BY: D. D. LOWERY DATE: 03/2023
CHECKED BY: A. L. PHILLIPS DATE: 03/2023
DESIGN ENGINEER OF RECORD: C.T. POOLE DATE: 03/2023

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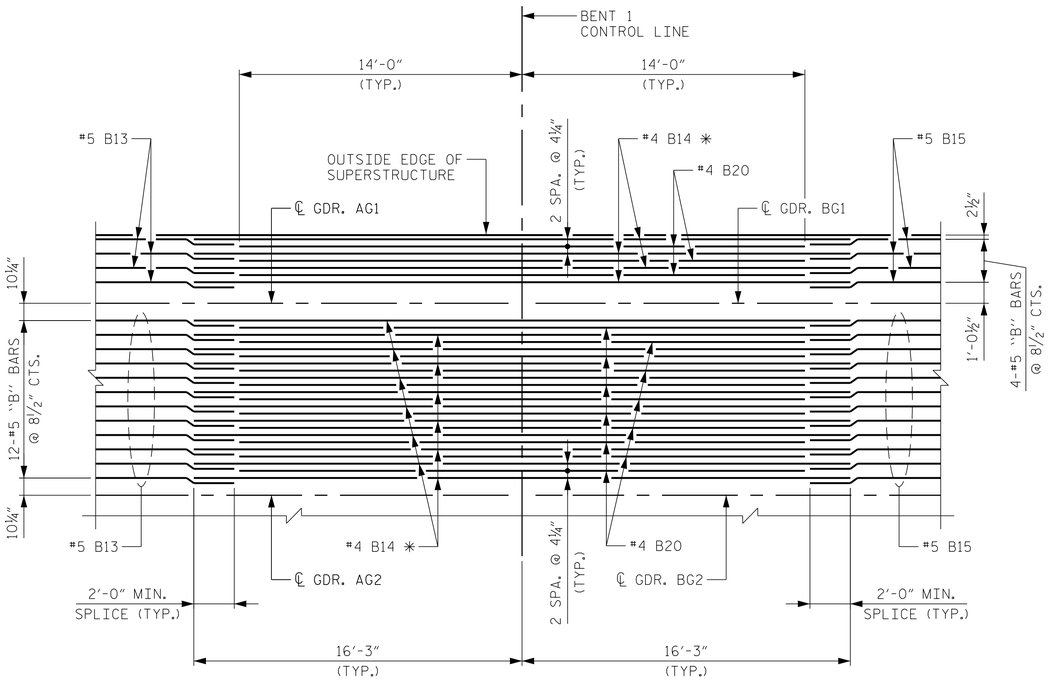
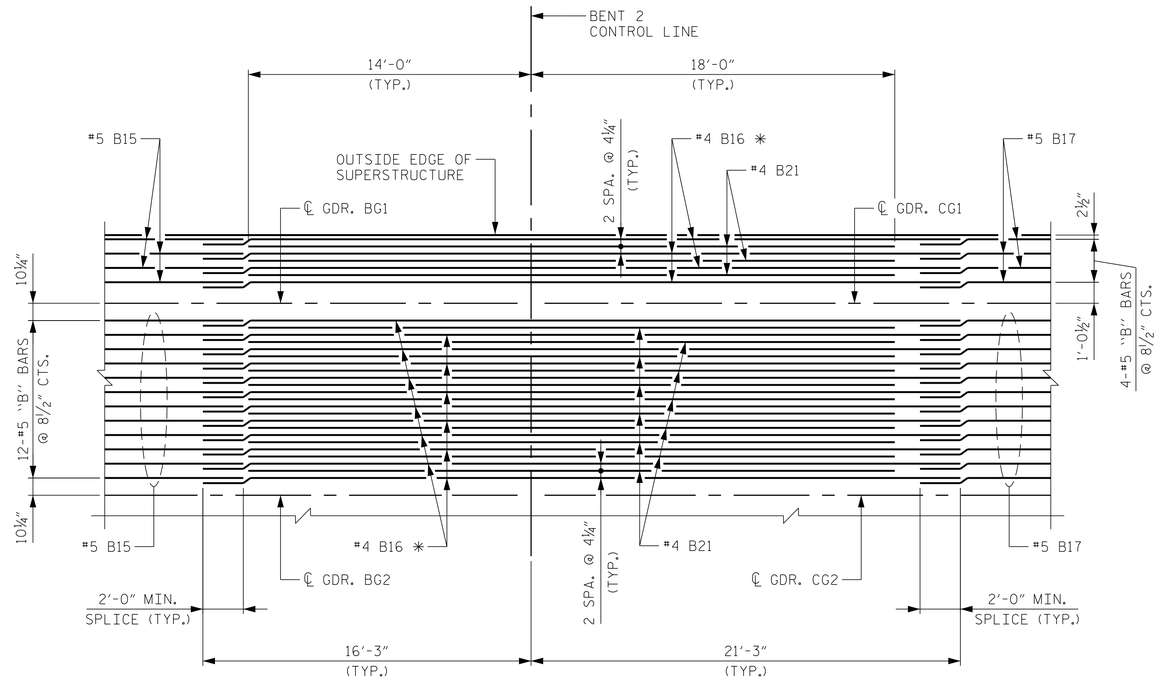


DETAIL ″D″

✳ #4 B14 ARE SPLICED WITH CONTINUOUS #5 ″B″ BARS

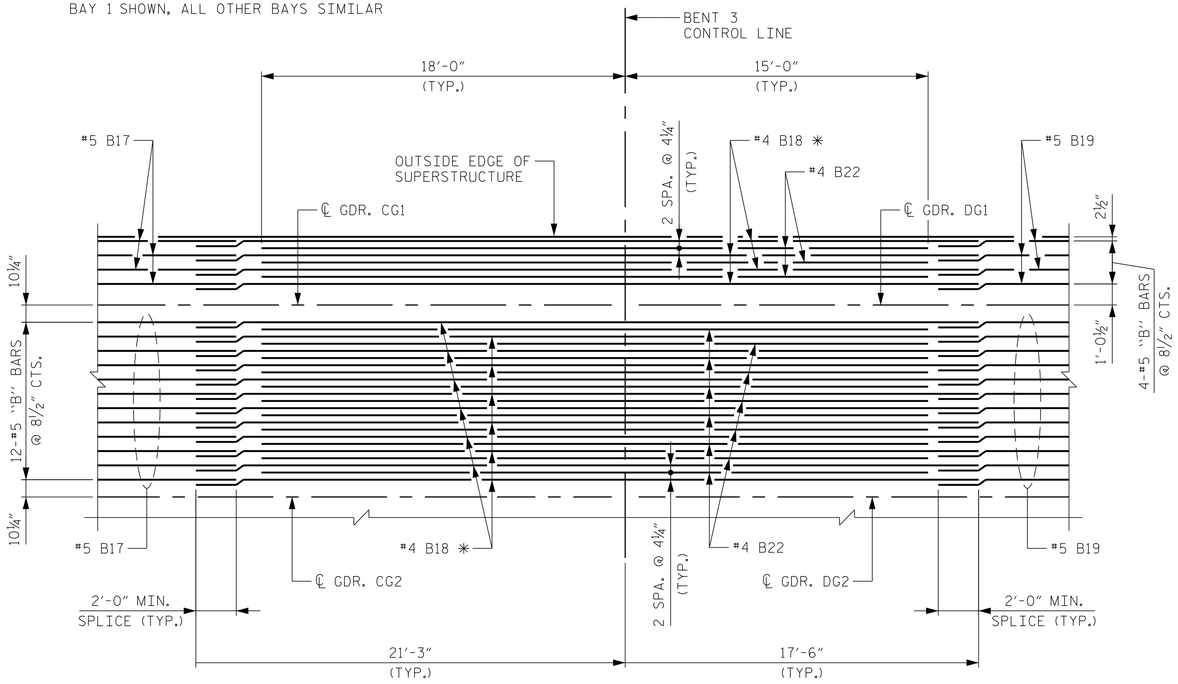
LEFT OVERHANG SHOWN, RIGHT OVERHANG SIMILAR
BAY 1 SHOWN, ALL OTHER BAYS SIMILAR



DETAIL ″E″

✳ #4 B16 ARE SPLICED WITH CONTINUOUS #5 ″B″ BARS

LEFT OVERHANG SHOWN, RIGHT OVERHANG SIMILAR
BAY 1 SHOWN, ALL OTHER BAYS SIMILAR



DETAIL ″F″

✳ #4 B18 ARE SPLICED WITH CONTINUOUS #5 ″B″ BARS

LEFT OVERHANG SHOWN, RIGHT OVERHANG SIMILAR
BAY 1 SHOWN, ALL OTHER BAYS SIMILAR

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DRAWN BY: D. D. LOWERY DATE: 03/2023
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DESIGN ENGINEER OF RECORD: C. T. POOLE DATE: 03/2023

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NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 5AE35AE6D302425... 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

PROJECT NO. B-5156
PENDER COUNTY
STATION: 22+90.50 -L-

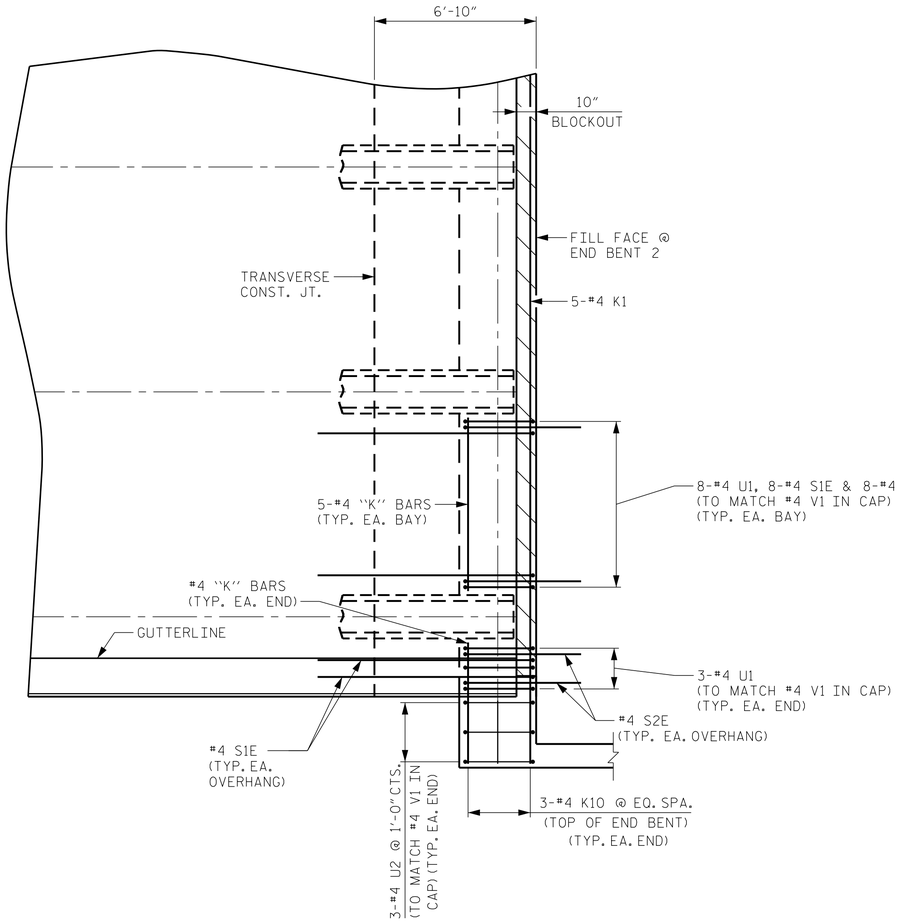
SHEET 3 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			45



END BENT DIAPHRAGM ENLARGEMENT

(END BENT 2 SHOWN, END BENT 1 SIMILAR)

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 4 OF 6

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T POODLE

DocuSigned by: Clay T Poole 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			45

DRAWN BY: D. D. LOWERY DATE: 03/2023
CHECKED BY: A. L. PHILLIPS DATE: 03/2023
DESIGN ENGINEER OF RECORD: C.T. POOLE DATE: 03/2023

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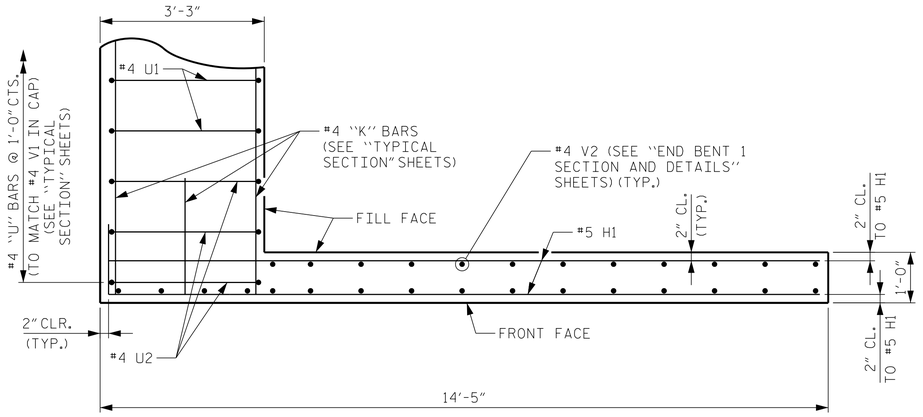
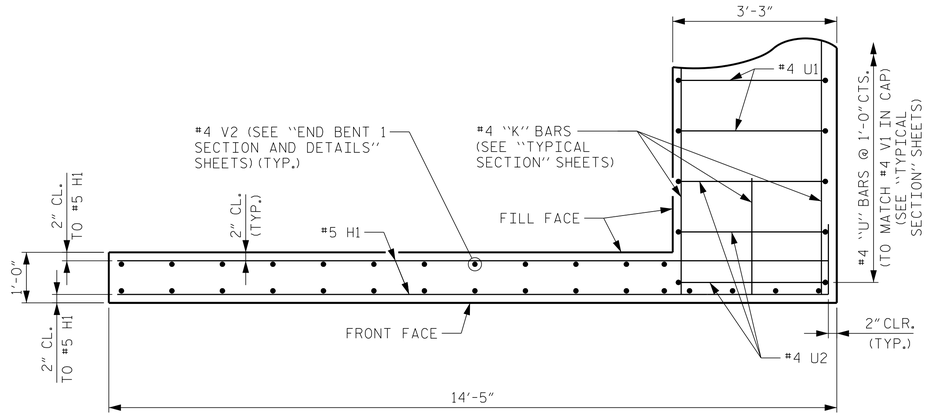
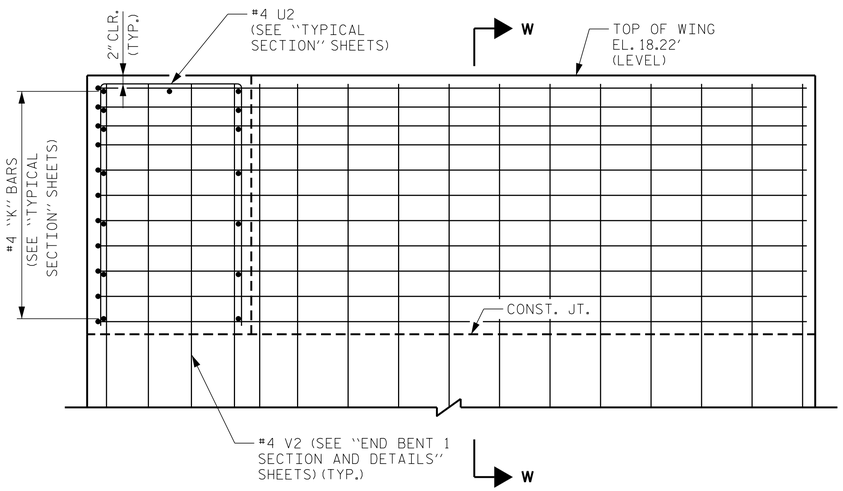


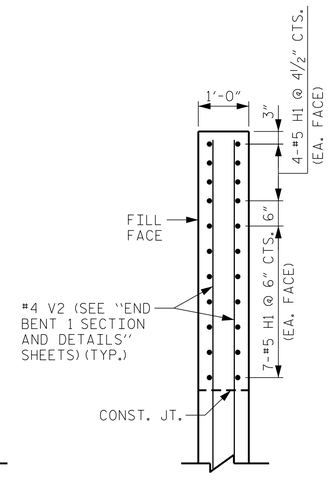
PLAN OF WING W1



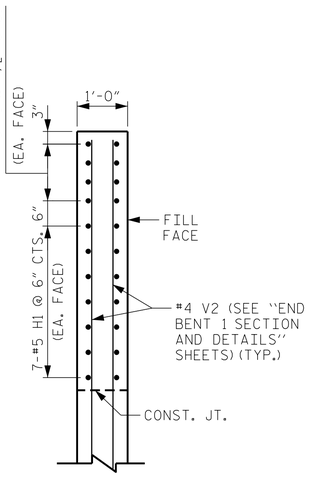
PLAN OF WING W2



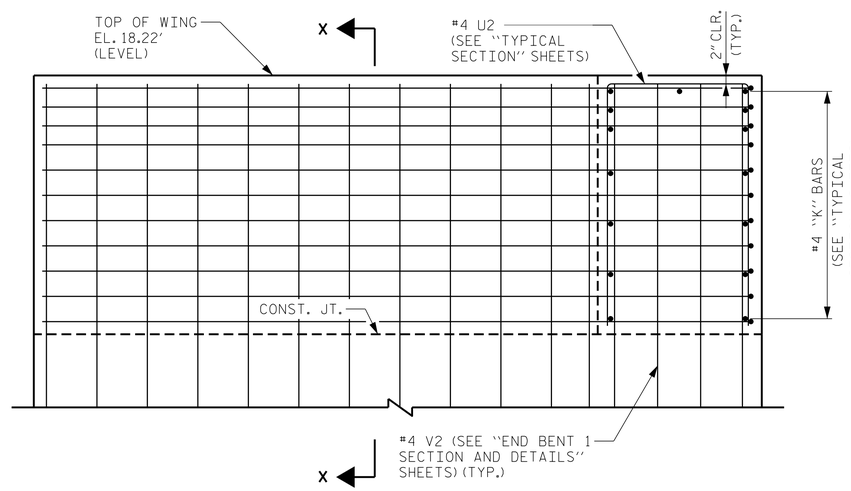
ELEVATION OF WING W1



SECTION W-W



SECTION X-X



ELEVATION OF WING W2

UPPER WINGS AT INTEGRAL END BENT 1

FOR LOWER WING REINFORCING STEEL AND DETAILS, SEE "END BENT 1 SECTION AND DETAILS" SHEETS

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 5 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN
DETAILS @ END BENT 1

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 5AE35A6E03D2426... 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			45

DRAWN BY: D. D. LOWERY DATE: 03/2023
CHECKED BY: A. L. PHILLIPS DATE: 03/2023
DESIGN ENGINEER OF RECORD: C.T. POOLE DATE: 03/2023

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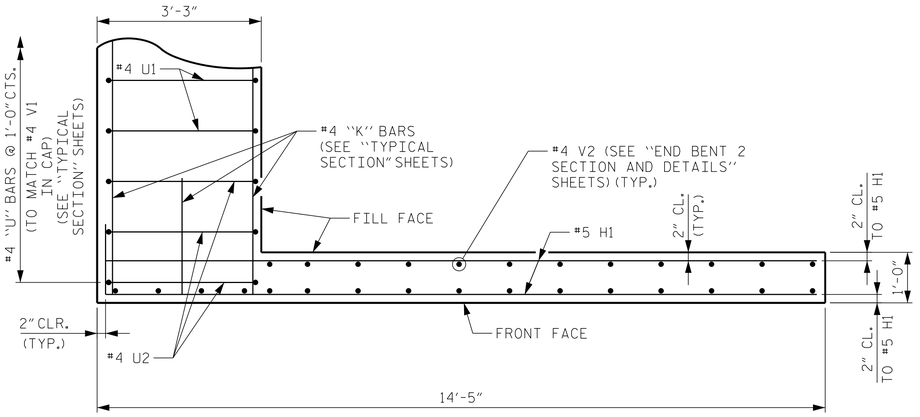
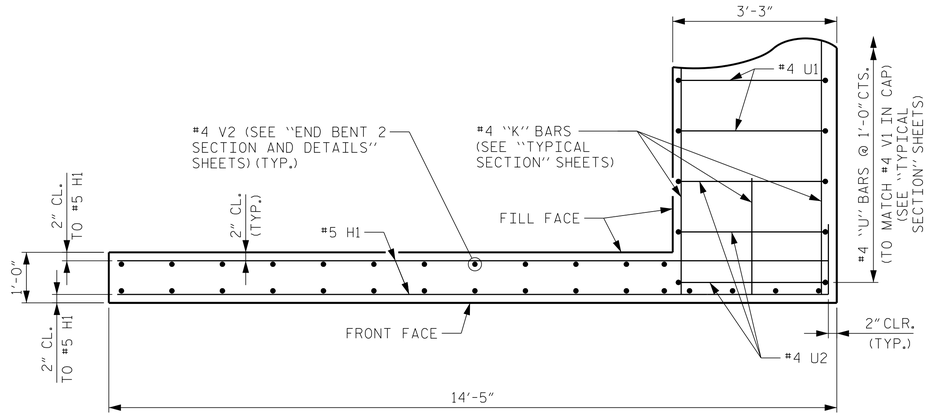
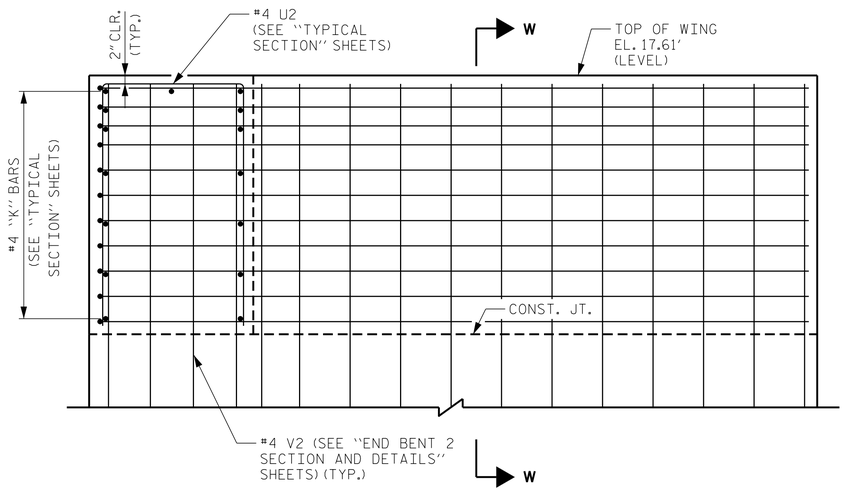


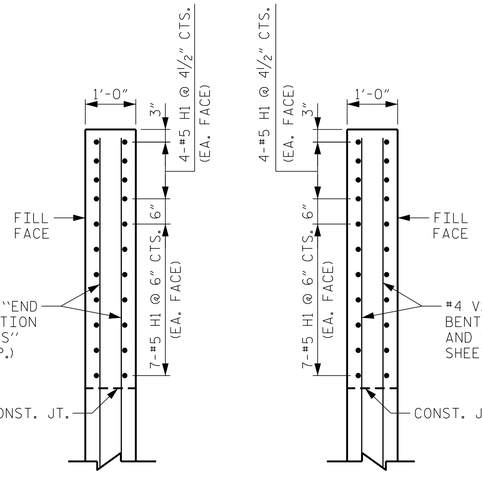
PLAN OF WING W1



PLAN OF WING W2

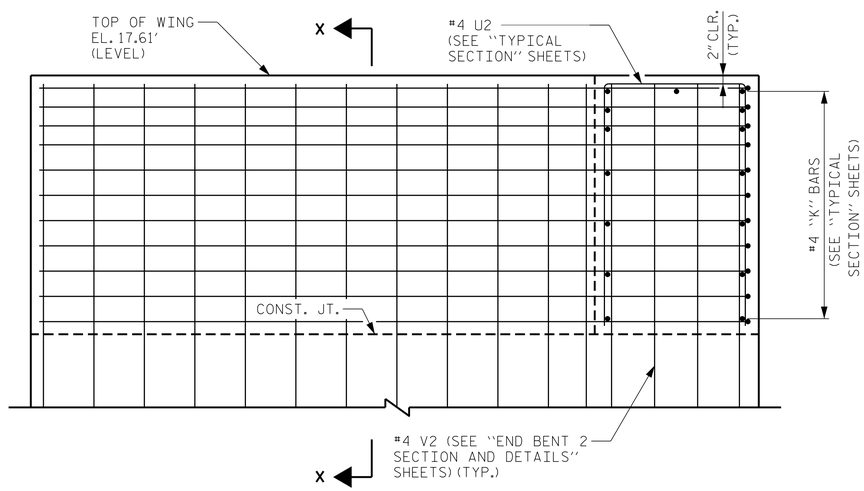


ELEVATION OF WING W1



SECTION W-W

SECTION X-X



ELEVATION OF WING W2

UPPER WINGS AT INTEGRAL END BENT 2

FOR LOWER WING REINFORCING STEEL AND DETAILS, SEE "END BENT 2 SECTION AND DETAILS" SHEETS

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 6 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN
DETAILS @ END BENT 2

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 5AE35A8E03D2426... 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			45

DRAWN BY: D. D. LOWERY DATE: 03/2023
CHECKED BY: A. L. PHILLIPS DATE: 03/2023
DESIGN ENGINEER OF RECORD: C.T. POOLE DATE: 03/2023

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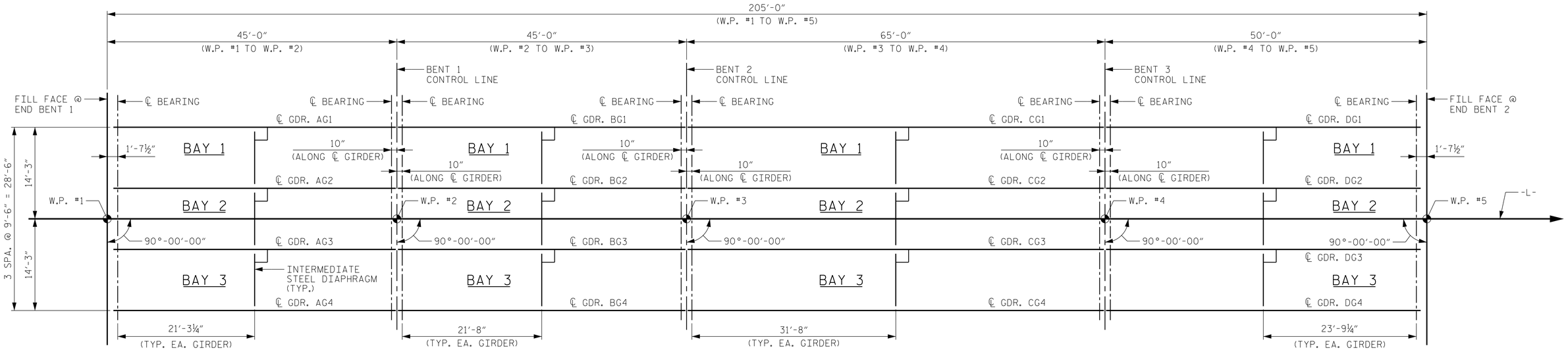
NOTES

FOR STEEL DIAPHRAGM DETAILS, SEE ''INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE III PRESTRESSED CONCRETE GIRDER'' SHEET.



SPAN A	SPAN B		SPAN C		SPAN D
INTEGRAL	FIXED	FIXED	FIXED	FIXED	FIXED	FIXED	INTEGRAL
E3	P1, E3	P1, E3	P1, E3	P1, E3	P1, E3	P1, E3	E3

FRAMING PLAN

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

FRAMING PLAN

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 5AE35AAE0320425... 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			45

DRAWN BY: D. D. LOWERY DATE: 03/2023
CHECKED BY: A. L. PHILLIPS DATE: 03/2023
DESIGN ENGINEER OF RECORD: C. T. POOLE DATE: 03/2023

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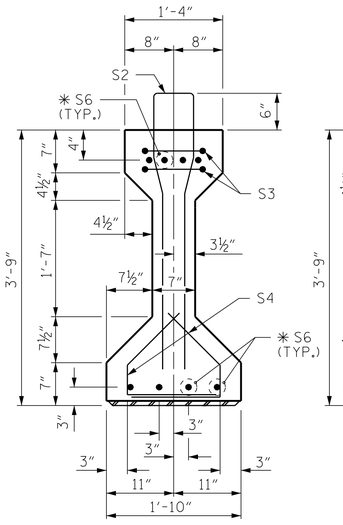
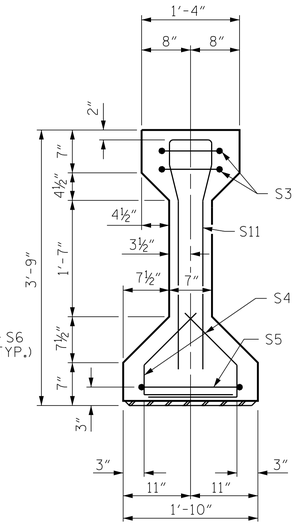
1/10/2024

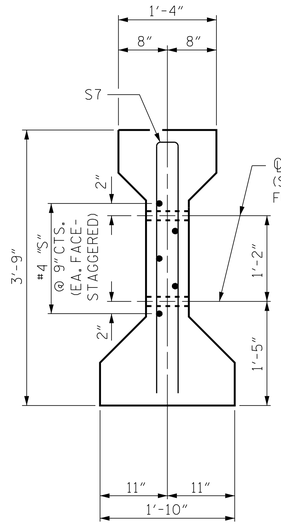


SECTION A-A

✳ FOR S6 BARS, SEE DETAIL "A" ON SHEET 5 OF 6.

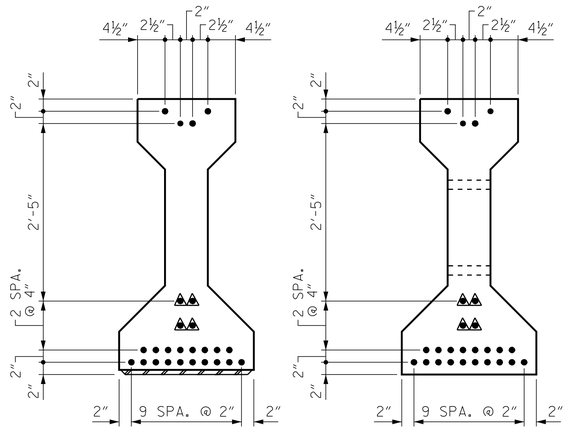


SECTION B-B



SECTION C-C

(S1 BARS NOT SHOWN)



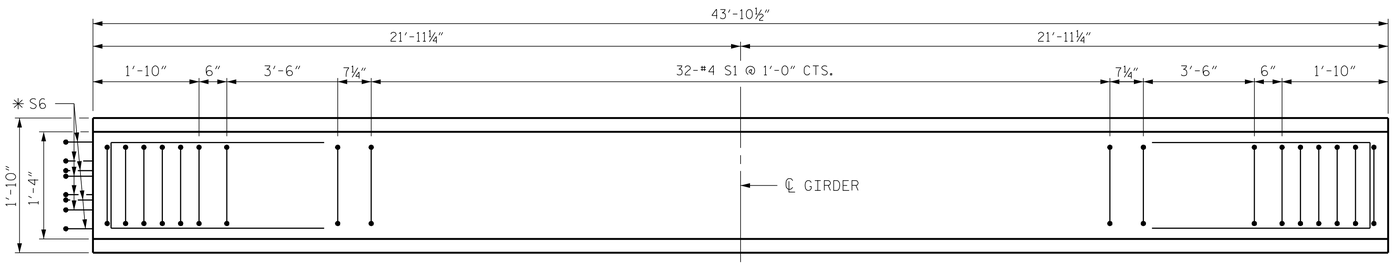
AT END OF GIRDER

AT ℄ OF GIRDER

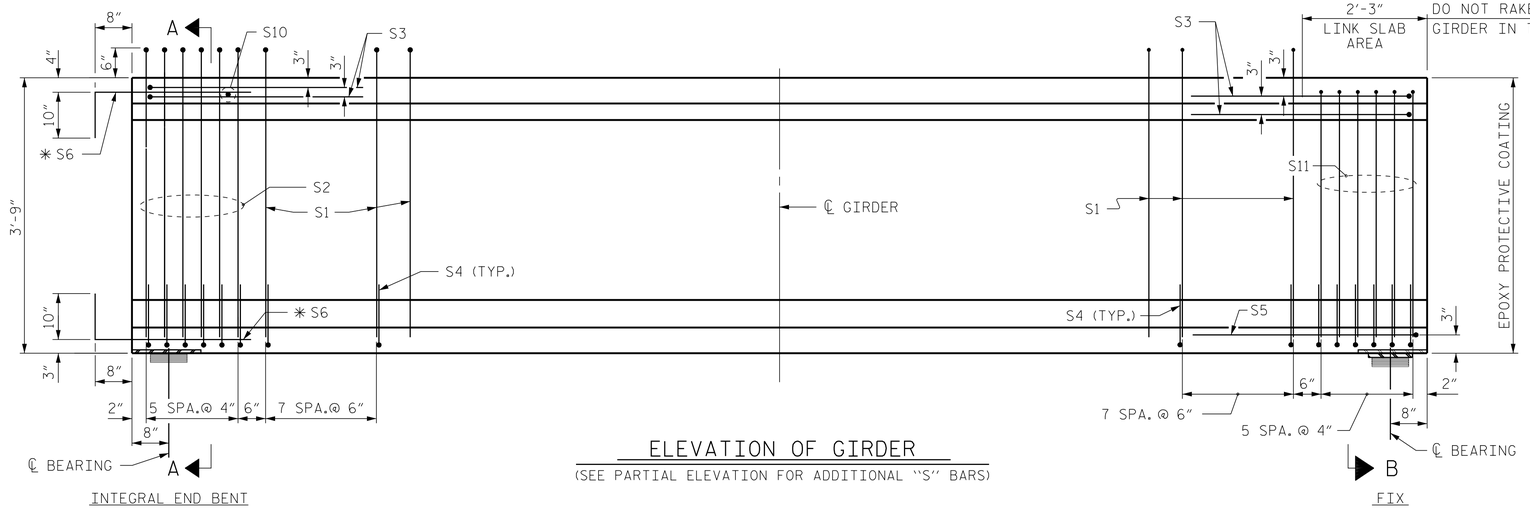
0.6"Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- △ FULLY DEBONDED STRANDS



PLAN OF GIRDER

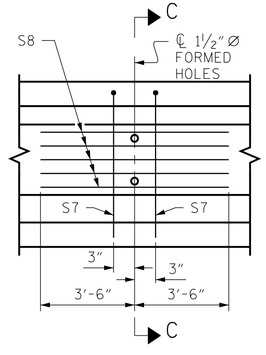


INTEGRAL END BENT

ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

FIX



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

0.6" Ø L.R. GRADE 270 STRANDS

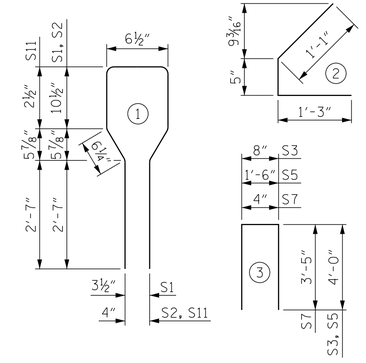
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	48	#4	1	8'-6"	273
S2	6	#6	1	8'-6"	77
S3	4	#4	3	8'-8"	23
S4	48	#4	2	2'-9"	88
S5	1	#4	3	9'-6"	6
✳ S6	8	#5	STR	3'-8"	31
S7	2	#5	3	7'-2"	15
S8	5	#4	STR	7'-0"	23
S10	1	#3	STR	1'-0"	1
S11	6	#6	1	7'-2"	65

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	6,000 PSI CONCRETE	0.6"Ø L.R. STRANDS
	LB.	C.Y.	No.
GDR. AG1-AG4	602	6.3	26

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	43'-10½"	175'-6"

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 1 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

AASHTO TYPE III
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD

SPAN A

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			45

ASSEMBLED BY : D.D. LOWERY	DATE : 03/2023	REV. 1/15	MAA/TMG
CHECKED BY : C.T. POOLE	DATE : 03/2023	REV. 12/17	MAA/THC
DRAWN BY : ELR 8/91		REV. 11/21	BNB/AAI
CHECKED BY : GRP 8/91			

1/10/2024

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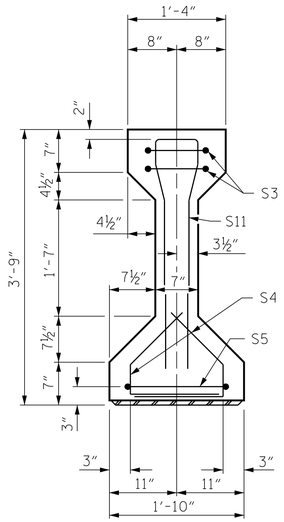
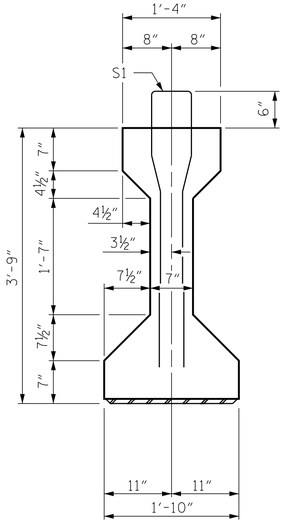
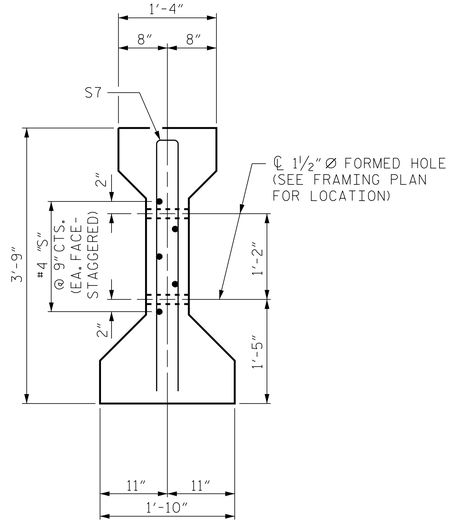
STD. NO. PCG5



SECTION A-A

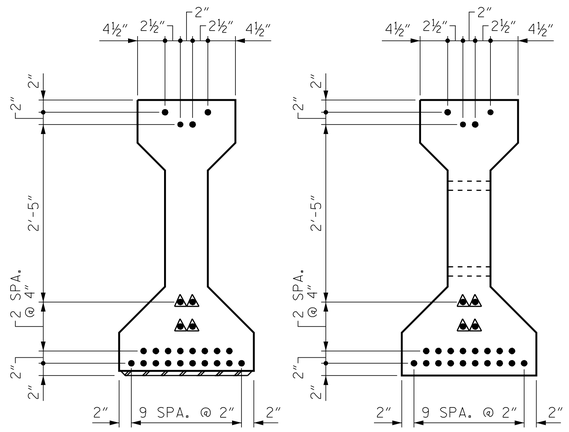


SECTION B-B



SECTION C-C

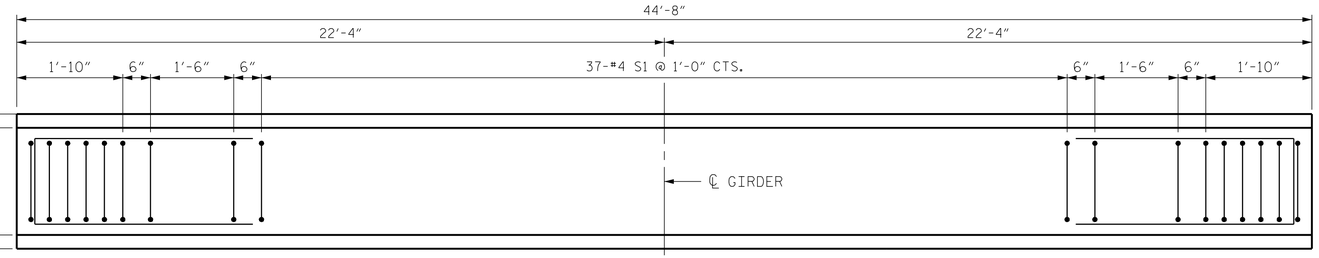
(S1 BARS NOT SHOWN)



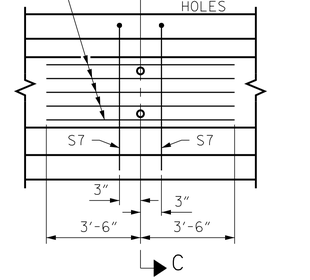
0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ⚠ FULLY DEBONDED STRANDS

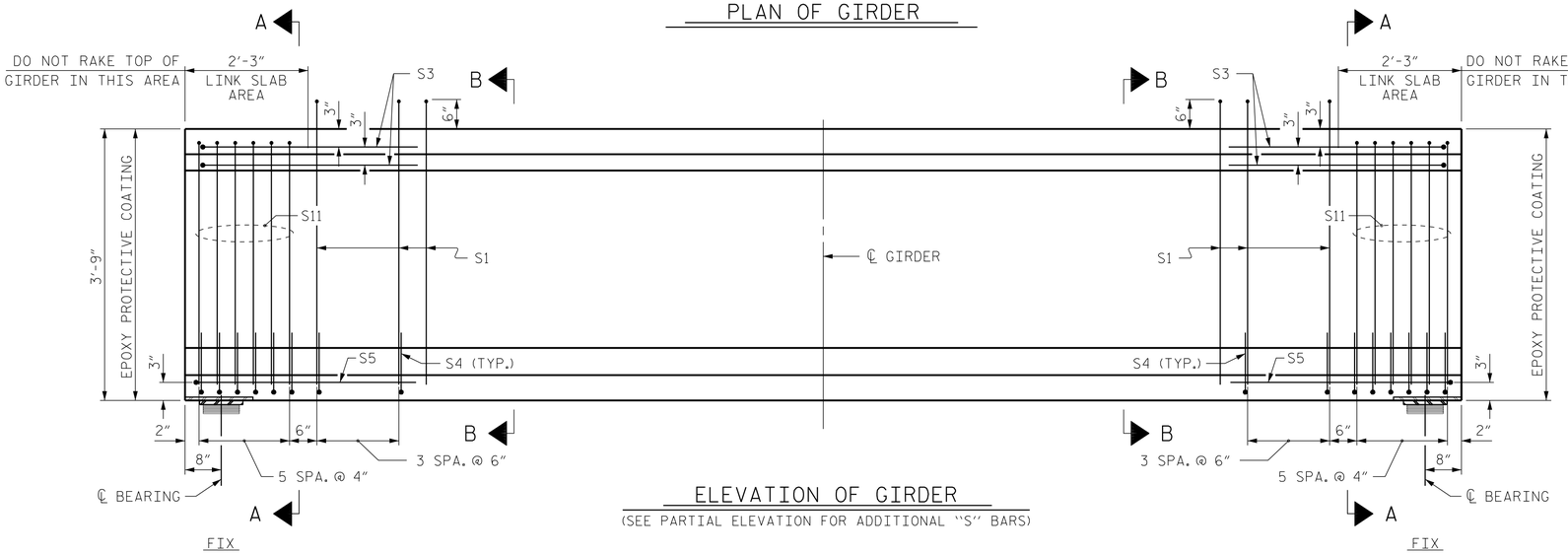


PLAN OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

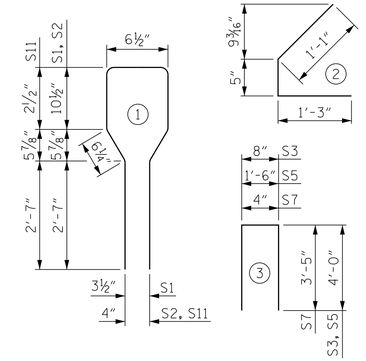
0.6" Ø L.R. GRADE 270 STRANDS

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

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	45	#4	1	8'-6"	256
S3	4	#4	3	8'-8"	23
S4	40	#4	2	2'-9"	73
S5	2	#4	3	9'-6"	13
S7	2	#5	3	7'-2"	15
S8	5	#4	STR	7'-0"	23
S11	12	#6	1	7'-2"	129

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL LB.	6,000 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
GDR. BG1-BG4	532	6.4	26

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	44'-8"	178'-8"

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

AASHTO TYPE III
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD

SPAN B

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			45

STD. NO. PCG5

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 1/10/2024
5AE3A6E0302425...

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

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ASSEMBLED BY : D.D. LOWERY	DATE : 03/2023		
CHECKED BY : C.T.POOLE	DATE : 03/2023		
DRAWN BY : ELR 8/91	REV. 1/15	MAA/TMG	
CHECKED BY : GRP 8/91	REV. 12/17	MAA/THC	
	REV. 11/21	BNB/AAI	

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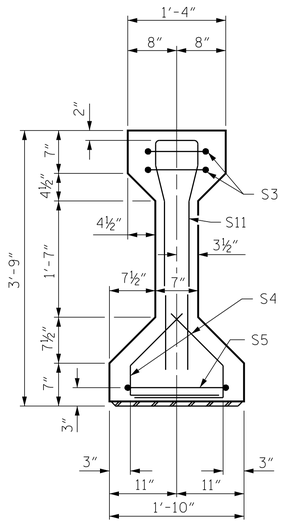
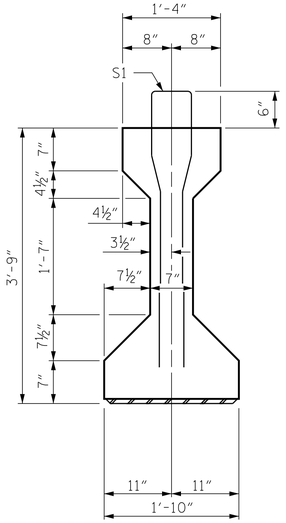
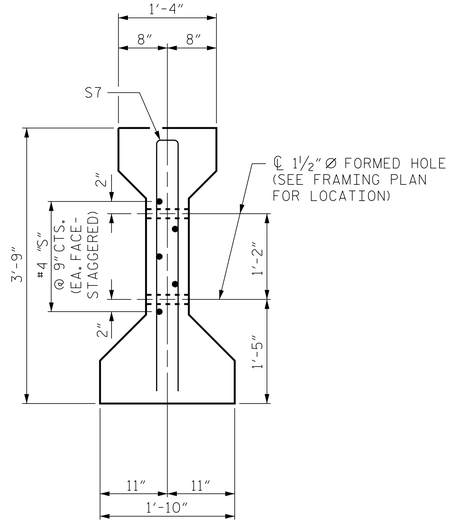


SECTION A-A

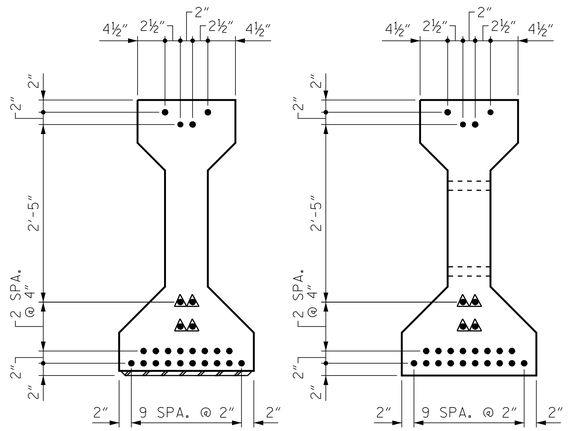


SECTION B-B



SECTION C-C

(S1 BARS NOT SHOWN)



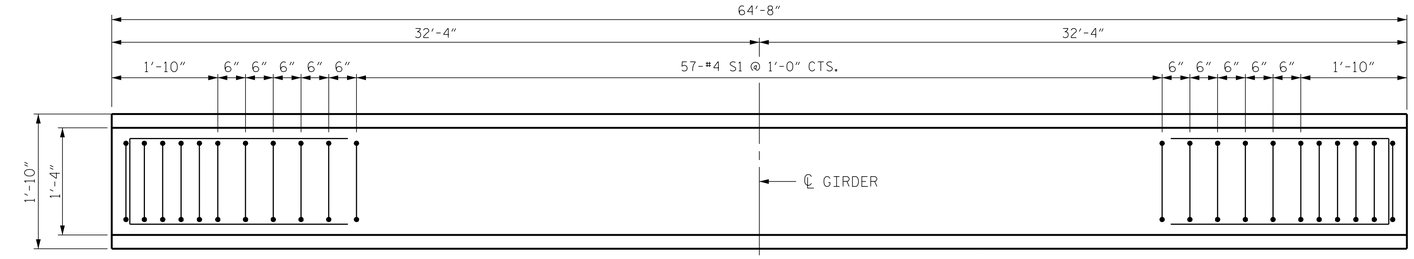
AT END OF GIRDER

AT ℄ OF GIRDER

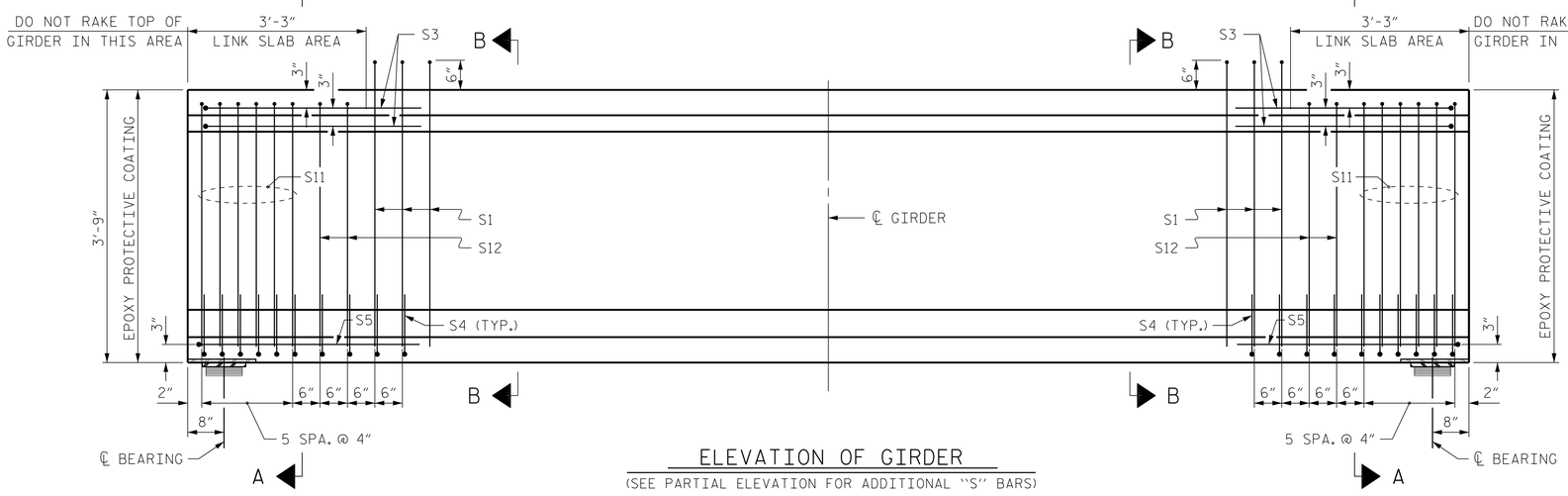
0.6"Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ⚠ FULLY DEBONDED STRANDS

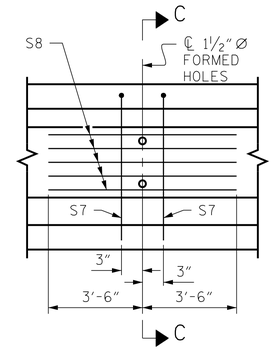


PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

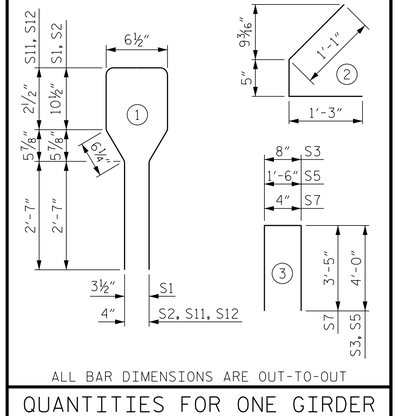
0.6" Ø L.R. GRADE 270 STRANDS

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

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	61	#4	1	8'-6"	346
S3	4	#4	3	8'-8"	23
S4	40	#4	2	2'-9"	73
S5	2	#4	3	9'-6"	13
S7	2	#5	3	7'-2"	15
S8	5	#4	STR	7'-0"	23
S11	12	#6	1	7'-2"	129
S12	4	#4	1	7'-2"	19

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	6,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
GDR. CG1-CG4	641	9.3	26

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	64'-8"	258'-8"

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 3 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

AASHTO TYPE III
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD

SPAN C

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			45

ASSEMBLED BY : D. D. LOWERY	DATE : 03/2023	REV. 1/15	MAA/TMG
CHECKED BY : C.T. POOLE	DATE : 03/2023	REV. 12/17	MAA/THC
DRAWN BY : ELR 8/91		REV. 11/21	BNB/AAI
CHECKED BY : GRP 8/91			

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STD. NO. PCG5

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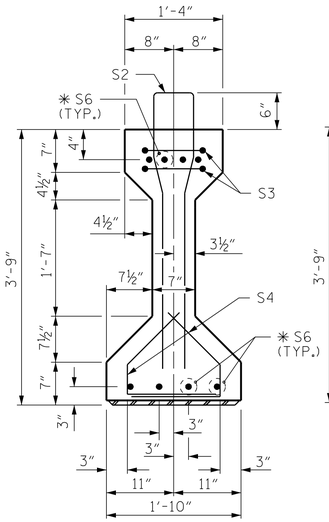
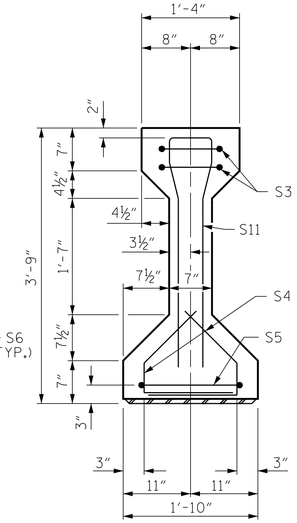
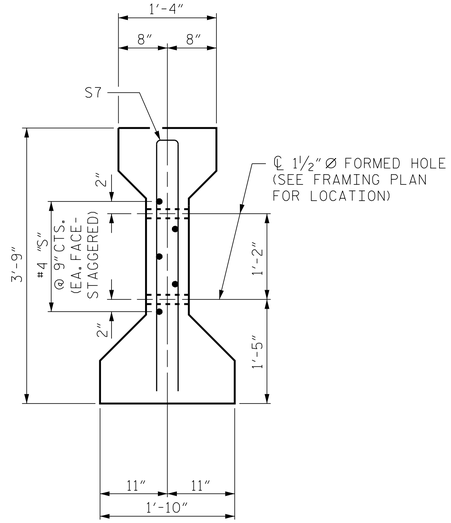


SECTION A-A

✱ FOR S6 BARS, SEE DETAIL "A" ON SHEET 5 OF 6.

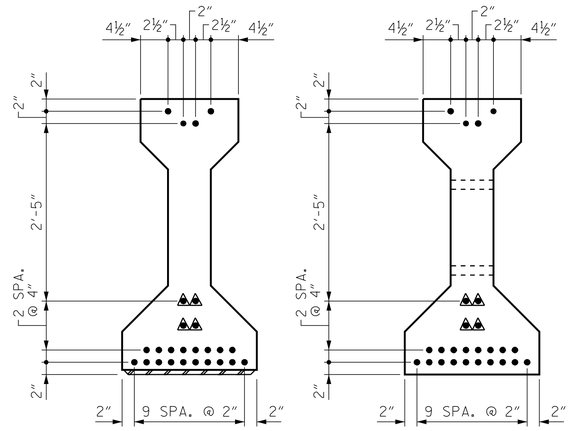


SECTION B-B



SECTION C-C

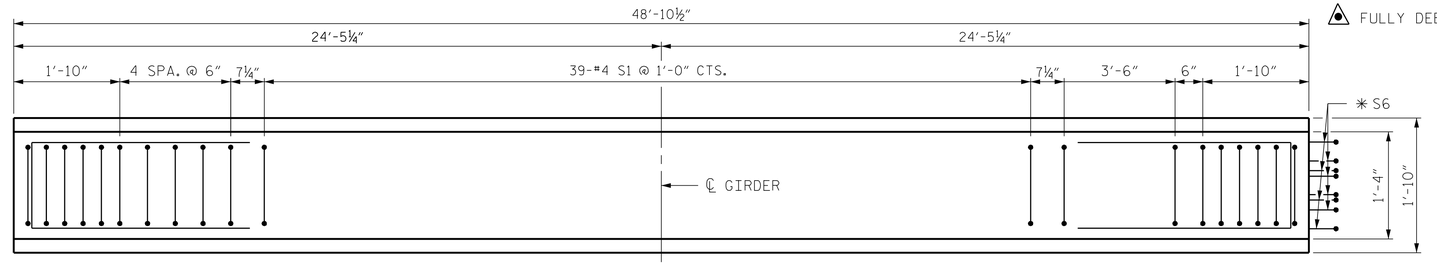
(S1 BARS NOT SHOWN)



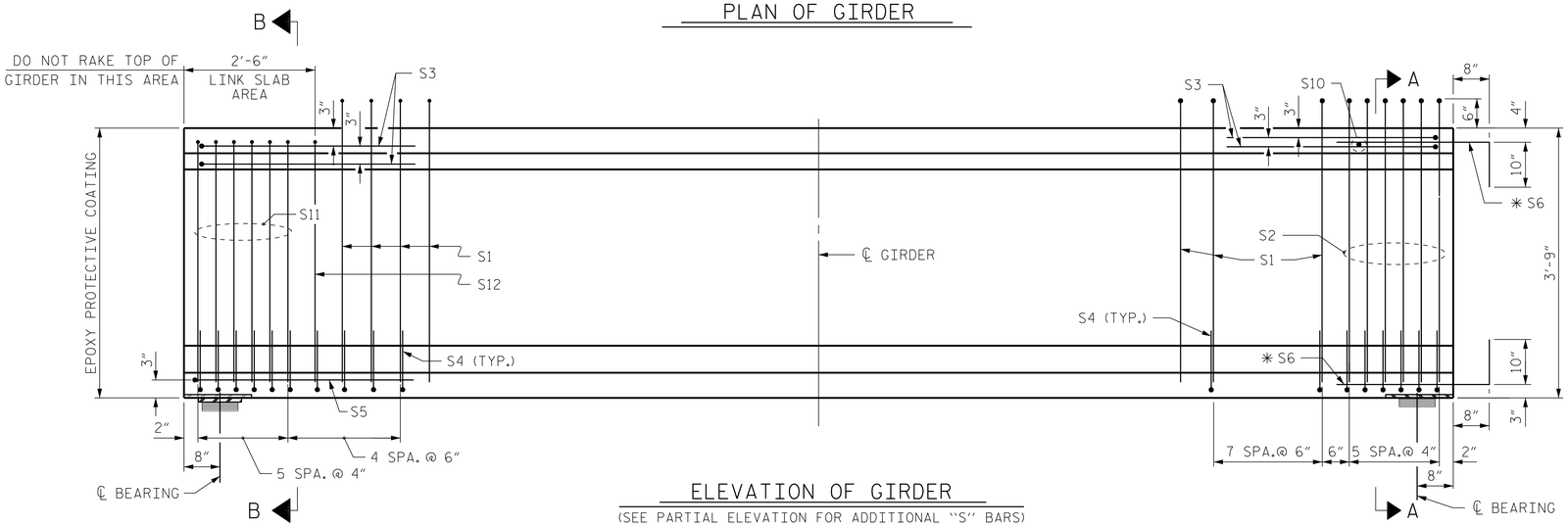
0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- △ FULLY DEBONDED STRANDS

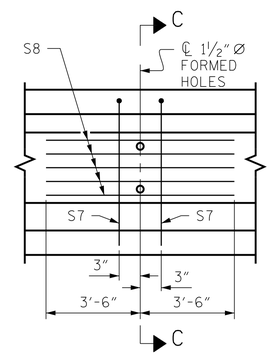


PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

0.6" Ø L.R. GRADE 270 STRANDS

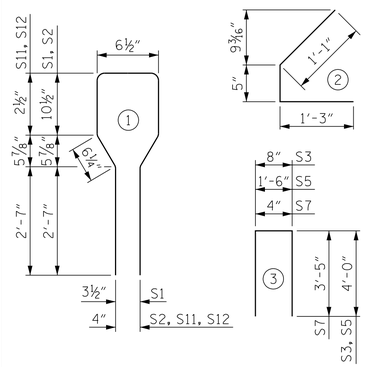
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	50	#4	1	8'-6"	284
S2	6	#6	1	8'-6"	77
S3	4	#4	3	8'-8"	23
S4	48	#4	2	2'-9"	88
S5	1	#4	3	9'-6"	6
✱S6	8	#5	STR	3'-8"	31
S7	2	#5	3	7'-2"	15
S8	5	#4	STR	7'-0"	23
S10	1	#3	STR	1'-0"	1
S11	6	#6	1	7'-2"	65
S12	1	#4	1	7'-2"	5

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	6,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
GDR. DG1-DG4	618	7.0	26

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	48'-10½"	195'-6"

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 4 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

AASHTO TYPE III
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD

SPAN D

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 1/10/2024
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Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			45

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ASSEMBLED BY : D.D. LOWERY	DATE : 03/2023		
CHECKED BY : C.T. POOLE	DATE : 03/2023		
DRAWN BY : ELR 8/91	REV. 1/15	MAA/TMG	
CHECKED BY : GRP 8/91	REV. 12/17	MAA/THC	
	REV. 11/21	BNB/AAI	

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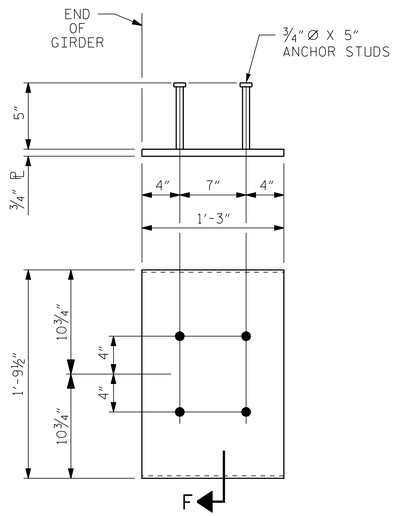
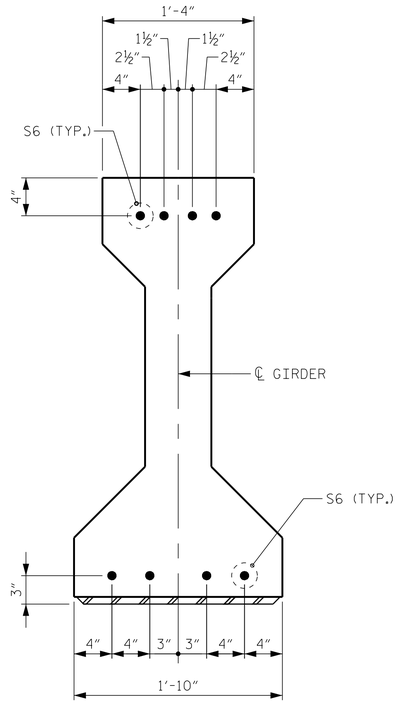
STD. NO. PCG5



EMBEDDED PLATE "B-1" DETAILS
FOR AASHTO TYPE III GIRDER

(2 REQ'D PER GIRDER)



DETAIL A

SECTION "F"

(SEE NOTES)

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5,000 PSI.

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

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF ¼" EXCEPT IN THE LINK SLAB AREA SHOWN IN PLANS.

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 5 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			45

STD. NO. PCG9

ASSEMBLED BY : D.D. LOWERY		DATE :	03/2023
CHECKED BY : C.T. POOLE		DATE :	03/2023
DRAWN BY : ELR 11/91	REV. 1/15		MAA/TMG
CHECKED BY : GRP 11/91	REV. 2/15		MAA/TMG
	REV. 12/17		MAA/THC

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NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T POOLE

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Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
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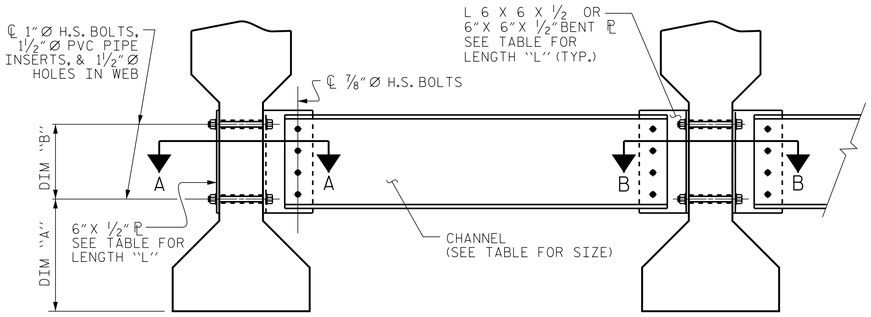
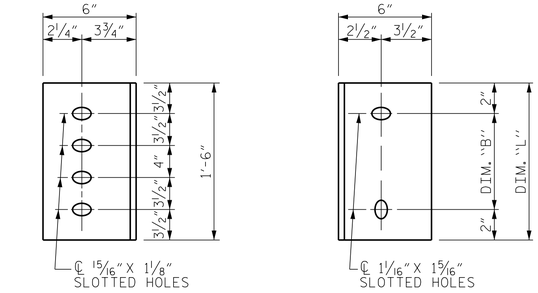
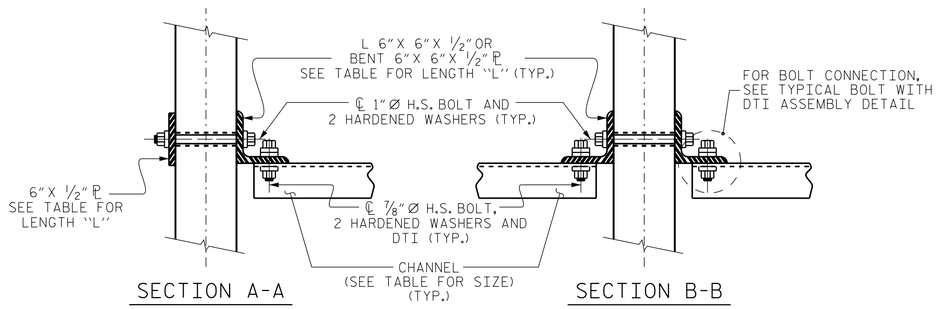


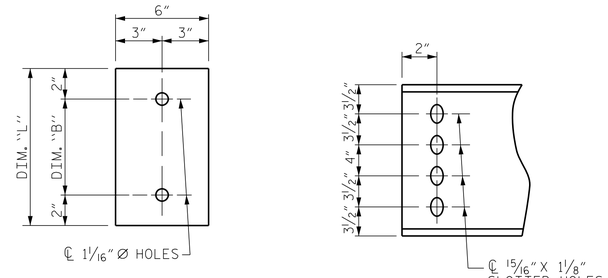
PART SECTION AT INTERMEDIATE DIAPHRAGM

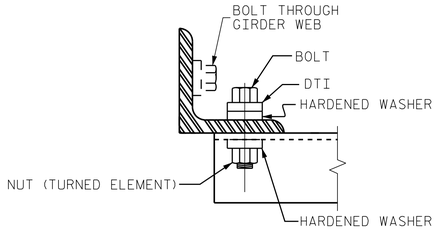


CONNECTOR PLATE DETAILS



CONNECTION DETAILS





BOLT WITH DTI ASSEMBLY DETAIL

STRUCTURAL STEEL NOTES

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

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

TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL ¼ TURN.

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

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

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

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

FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST ¼" PROJECTION BEYOND THE NUT.

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

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

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

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

TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
III	MC 18 x 42.7	1'-5"	1'-2"	1'-6"

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 6 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE III PRESTRESSED CONCRETE GIRDERS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
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STD. NO. PCG10

ASSEMBLED BY : D. D. LOWERY	DATE : 03/2023		
CHECKED BY : C.T. POOLE	DATE : 03/2023		
DRAWN BY : TLA 6/05	REV. 5/1/06RRR	KMM/GM	
CHECKED BY : VC 6/05	REV. 10/1/11	MAA/GM	
	REV. 12/17	MAA/THC	

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SEAL 047653 NORTH CAROLINA PROFESSIONAL ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

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DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN A																				
	GIRDER AG1 AND AG4																				
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.010	0.020	0.029	0.037	0.044	0.051	0.056	0.059	0.062	0.062	0.062	0.059	0.056	0.051	0.044	0.037	0.029	0.020	0.010	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.002	0.004	0.005	0.007	0.009	0.010	0.011	0.012	0.012	0.013	0.012	0.012	0.011	0.010	0.009	0.007	0.005	0.004	0.002	0.000
FINAL CAMBER ↑	0	1/8"	3/16"	5/16"	3/8"	7/16"	1/2"	9/16"	9/16"	5/8"	9/16"	5/8"	9/16"	9/16"	1/2"	7/16"	3/8"	5/16"	3/16"	1/8"	0
	GIRDERS AG2 AND AG3																				
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.010	0.020	0.029	0.037	0.044	0.051	0.056	0.059	0.062	0.062	0.062	0.059	0.056	0.051	0.044	0.037	0.029	0.020	0.010	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.002	0.004	0.006	0.008	0.010	0.011	0.012	0.014	0.014	0.014	0.014	0.014	0.013	0.012	0.010	0.008	0.006	0.004	0.002	0.000
FINAL CAMBER ↑	0	1/8"	3/16"	1/4"	3/8"	7/16"	1/2"	1/2"	9/16"	9/16"	9/16"	9/16"	9/16"	1/2"	1/2"	7/16"	3/8"	1/4"	3/16"	1/8"	0

✳ INCLUDES FUTURE WEARING SURFACE.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT ''FINAL CAMBER'', WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN B																				
	GIRDER BG1 AND BG4																				
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.010	0.020	0.030	0.038	0.046	0.052	0.057	0.061	0.063	0.064	0.063	0.061	0.057	0.052	0.046	0.038	0.030	0.020	0.010	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.002	0.004	0.006	0.008	0.010	0.011	0.012	0.013	0.013	0.014	0.013	0.013	0.012	0.011	0.010	0.008	0.006	0.004	0.002	0.000
FINAL CAMBER ↑	0	1/8"	3/16"	5/16"	3/8"	7/16"	1/2"	9/16"	9/16"	5/8"	5/8"	5/8"	9/16"	9/16"	1/2"	7/16"	3/8"	5/16"	3/16"	1/8"	0
	GIRDERS BG2 AND BG3																				
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.010	0.020	0.030	0.038	0.046	0.052	0.057	0.061	0.063	0.064	0.063	0.061	0.057	0.052	0.046	0.038	0.030	0.020	0.010	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.002	0.004	0.007	0.009	0.011	0.012	0.014	0.015	0.015	0.015	0.015	0.015	0.014	0.012	0.011	0.009	0.007	0.004	0.002	0.000
FINAL CAMBER ↑	0	1/8"	3/16"	5/16"	3/8"	7/16"	1/2"	1/2"	9/16"	9/16"	9/16"	9/16"	9/16"	1/2"	1/2"	7/16"	3/8"	5/16"	3/16"	1/8"	0

✳ INCLUDES FUTURE WEARING SURFACE.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT ''FINAL CAMBER'', WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. B-5156
PENDER COUNTY
STATION: 22+90.50 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T POOLE

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Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

GIRDER DEFLECTION AND CAMBER SCHEDULES

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			45

DRAWN BY: D. D. LOWERY DATE: 03/2023
CHECKED BY: A. L. PHILLIPS DATE: 03/2023
DESIGN ENGINEER OF RECORD: C.T. POOLE DATE: 03/2023

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DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN C																				
	GIRDER CG1 AND CG4																				
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.017	0.034	0.049	0.063	0.076	0.087	0.095	0.102	0.105	0.107	0.105	0.102	0.095	0.087	0.076	0.063	0.049	0.034	0.017	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.009	0.018	0.027	0.036	0.043	0.050	0.055	0.059	0.061	0.062	0.061	0.059	0.055	0.050	0.043	0.036	0.027	0.018	0.009	0.000
FINAL CAMBER ↑	0	1/8"	3/16"	1/4"	5/16"	3/8"	7/16"	1/2"	1/2"	1/2"	9/16"	1/2"	1/2"	1/2"	7/16"	3/8"	5/16"	1/4"	3/16"	1/8"	0
	GIRDERS CG2 AND CG3																				
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.017	0.034	0.049	0.063	0.076	0.087	0.095	0.102	0.105	0.107	0.105	0.102	0.095	0.087	0.076	0.063	0.049	0.034	0.017	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.010	0.020	0.030	0.040	0.048	0.056	0.061	0.066	0.068	0.070	0.068	0.066	0.061	0.056	0.048	0.040	0.030	0.020	0.010	0.000
FINAL CAMBER ↑	0	1/16"	3/16"	1/4"	1/4"	5/16"	3/8"	3/8"	7/16"	7/16"	7/16"	7/16"	7/16"	3/8"	3/8"	5/16"	1/4"	1/4"	3/16"	1/16"	0

✳ INCLUDES FUTURE WEARING SURFACE.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT ''FINAL CAMBER'', WHICH IS GIVEN IN INCHES (FRACTION FORM).

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

	SPAN D																				
	GIRDER DG1 AND DG4																				
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.012	0.023	0.034	0.044	0.053	0.060	0.066	0.071	0.073	0.074	0.073	0.071	0.066	0.060	0.053	0.044	0.034	0.023	0.012	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.003	0.006	0.009	0.011	0.014	0.016	0.017	0.019	0.019	0.020	0.019	0.019	0.017	0.016	0.014	0.011	0.008	0.005	0.003	0.000
FINAL CAMBER ↑	0	1/8"	3/16"	5/16"	3/8"	1/2"	1/2"	9/16"	5/8"	5/8"	5/8"	5/8"	5/8"	9/16"	1/2"	1/2"	3/8"	5/16"	3/16"	1/8"	0
	GIRDERS DG2 AND DG3																				
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.012	0.023	0.034	0.044	0.053	0.060	0.066	0.071	0.073	0.074	0.073	0.071	0.066	0.060	0.053	0.044	0.034	0.023	0.012	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.003	0.006	0.010	0.013	0.015	0.018	0.019	0.021	0.022	0.022	0.022	0.021	0.019	0.018	0.015	0.013	0.009	0.006	0.003	0.000
FINAL CAMBER ↑	0	1/8"	3/16"	5/16"	3/8"	7/16"	1/2"	9/16"	5/8"	5/8"	5/8"	5/8"	5/8"	9/16"	1/2"	7/16"	3/8"	5/16"	3/16"	1/8"	0

✳ INCLUDES FUTURE WEARING SURFACE.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT ''FINAL CAMBER'', WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. B-5156
PENDER COUNTY
STATION: 22+90.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

GIRDER DEFLECTION AND CAMBER SCHEDULES

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T POOLE

DocuSigned by: Clay T Poole 1/10/2024
5AE35A6E0302425...

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

REVISIONS					
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2			4		

SHEET NO. S-23
TOTAL SHEETS 45

DRAWN BY: D. D. LOWERY DATE: 03/2023
CHECKED BY: A. L. PHILLIPS DATE: 03/2023
DESIGN ENGINEER OF RECORD: C.T. POOLE DATE: 03/2023

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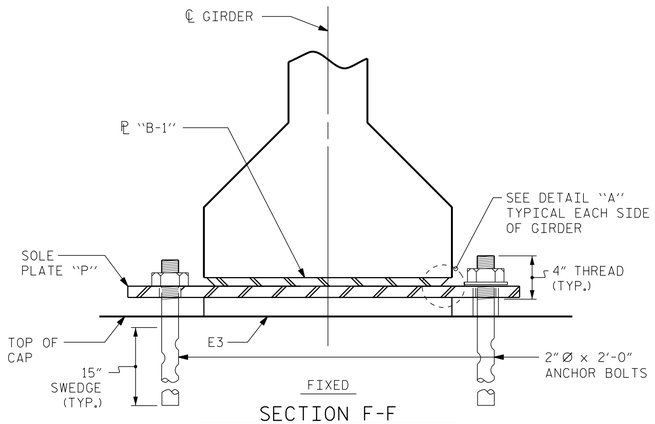
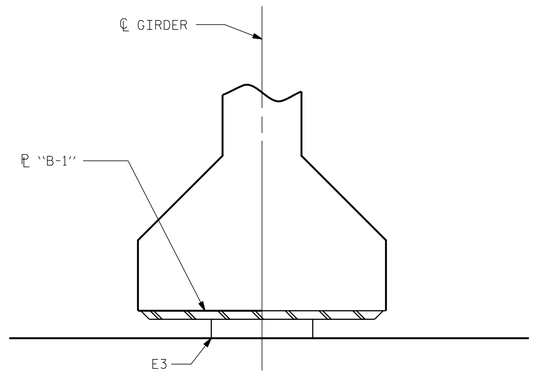


SECTION F-F



SECTION E-E

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

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" DIA. 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.

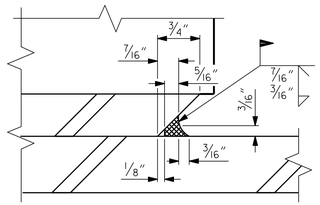
SOLE PLATE "P", BOLTS, NUTS, AND WASHERS SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

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

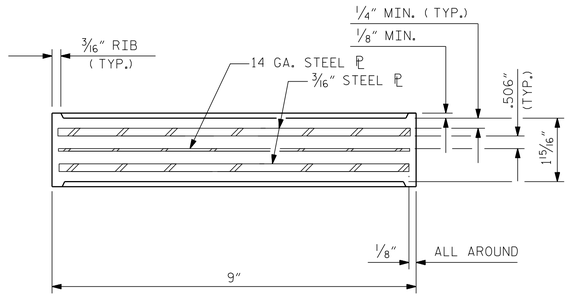
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

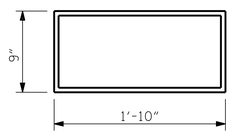
ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



DETAIL "A"



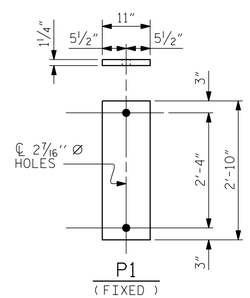
TYPICAL SECTION OF ELASTOMERIC BEARINGS



E3 (32 REQ'D)

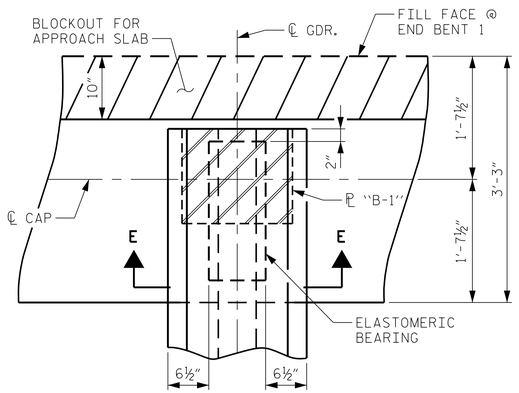
PLAN VIEW OF ELASTOMERIC BEARING

TYPE IV



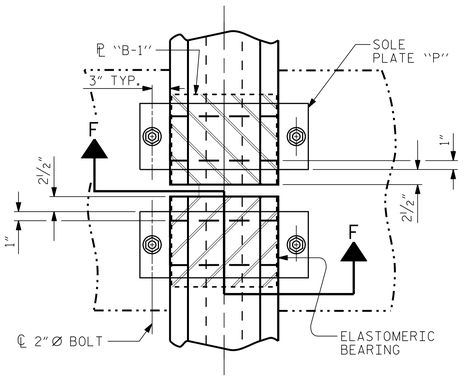
P1 (24 REQ'D)

SOLE PLATE DETAILS ("P")



TYPICAL PLAN

(SHOWING INTEGRAL END BENT)
(END BENT 1 SHOWN, END BENT 2 SIMILAR)



TYPICAL PLAN

(SHOWING INTERIOR BENT)

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

ELASTOMERIC BEARING DETAILS

PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			45

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 5AE35A6E0302426... 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

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CHECKED BY : C.T. POOLE	DATE : 03/2023		
DRAWN BY : WJH 8/89	REV. 1/15	MAA/TMG	
CHECKED BY : CRK 8/89	REV. 12/17	MAA/THC	
	REV. 10/21	BNB/AAI	

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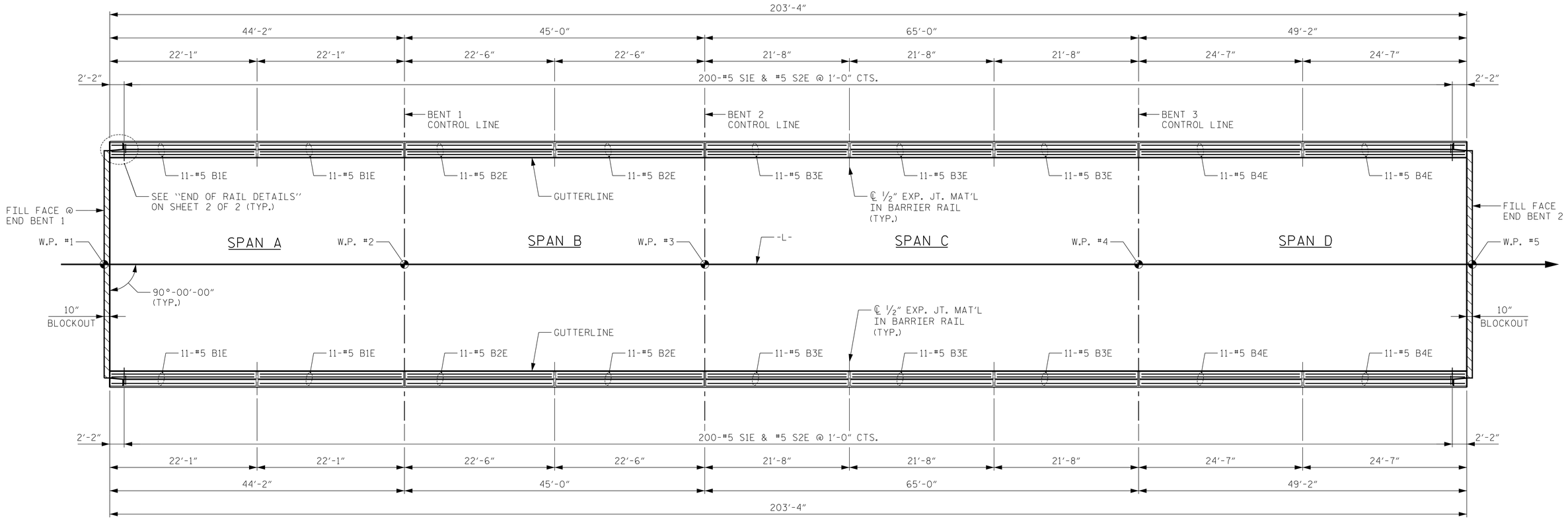
STD. NO. EB3



PLAN

ALL DIMENSIONS ARE MEASURED ALONG THE OUTSIDE EDGE OF THE BARRIER RAIL

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

CONCRETE BARRIER RAIL

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

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DRAWN BY: D. D. LOWERY DATE: 03/2023
CHECKED BY: A.L. PHILLIPS DATE: 03/2023
DESIGN ENGINEER OF RECORD: C.T. POOLE DATE: 03/2023

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1/10/2024

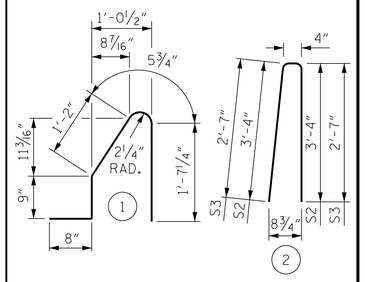
NOTES

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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



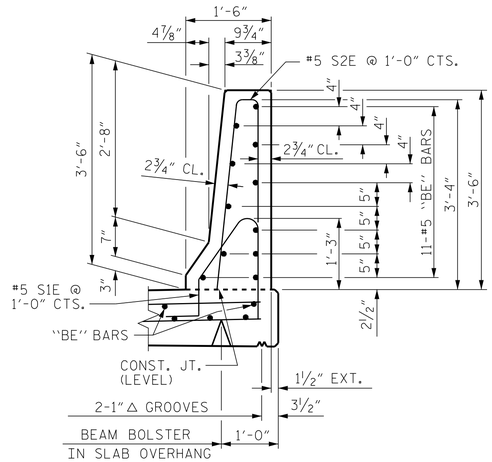
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

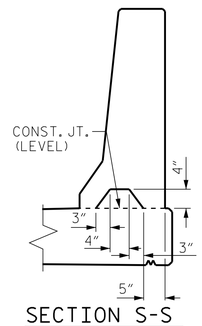
FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1E	44	#5	STR	21'-8"	994
B2E	44	#5	STR	22'-1"	1,013
B3E	66	#5	STR	21'-3"	1,463
B4E	44	#5	STR	24'-2"	1,109
S1E	408	#5	1	4'-8"	1,986
S2E	400	#5	2	7'-0"	2,920
S3E	8	#5	2	5'-6"	46

EPOXY COATED REINFORCING STEEL	9,531 LBS.
CLASS AA CONCRETE	55.3 CU. YDS.
CONCRETE BARRIER RAIL	406.67 LIN. FT.

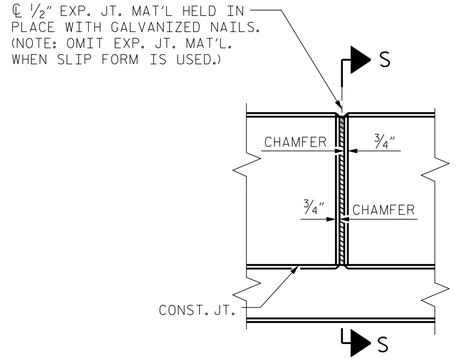


SECTION THRU RAIL

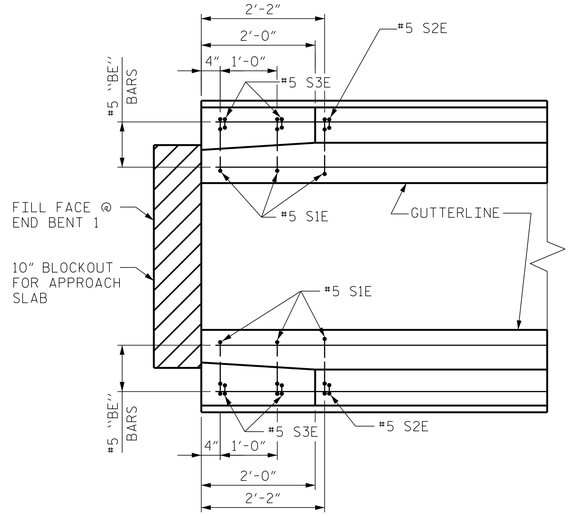


SECTION S-S

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

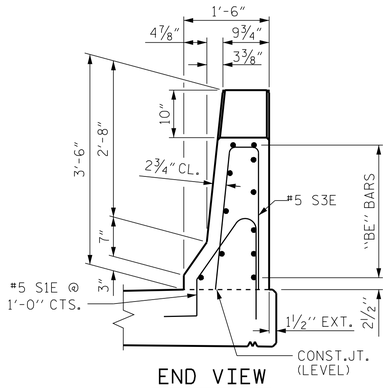


ELEVATION AT EXPANSION JOINTS

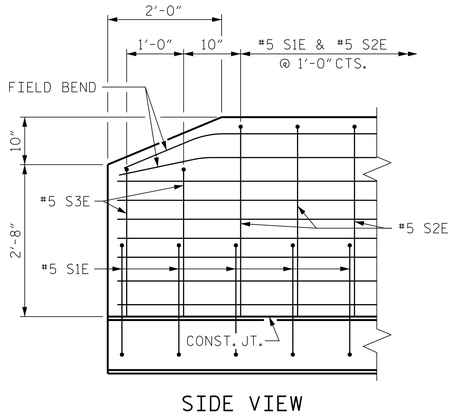


PLAN

END BENT 1 SHOWN, END BENT 2 SIMILAR



END VIEW



SIDE VIEW

END OF RAIL DETAILS

BARRIER RAIL DETAILS

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
CONCRETE
BARRIER RAIL

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 5AE35A6E03D2425... 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
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2			4			45

ASSEMBLED BY : D.D. LOWERY	DATE : 03/2023		
CHECKED BY : C.T. POOLE	DATE : 03/2023		
DRAWN BY : ARB 5/87	REV. 7/12	MAA/GM	
CHECKED BY : SJD 9/87	REV. 6/13	MAA/GM	
	REV. 12/17	MAA/THC	

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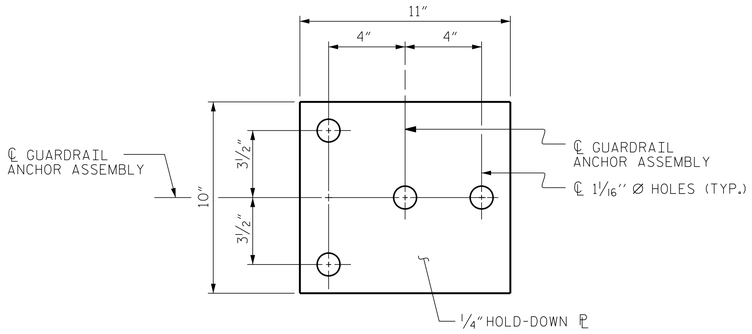
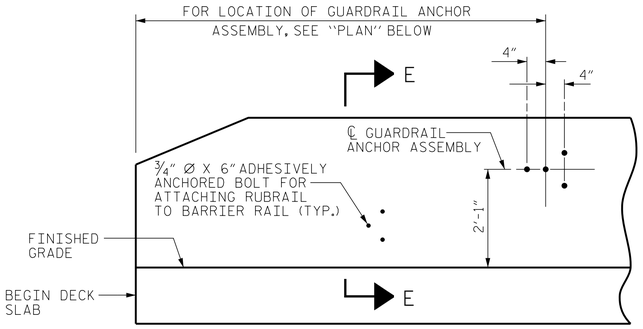
STD. NO. CBR1

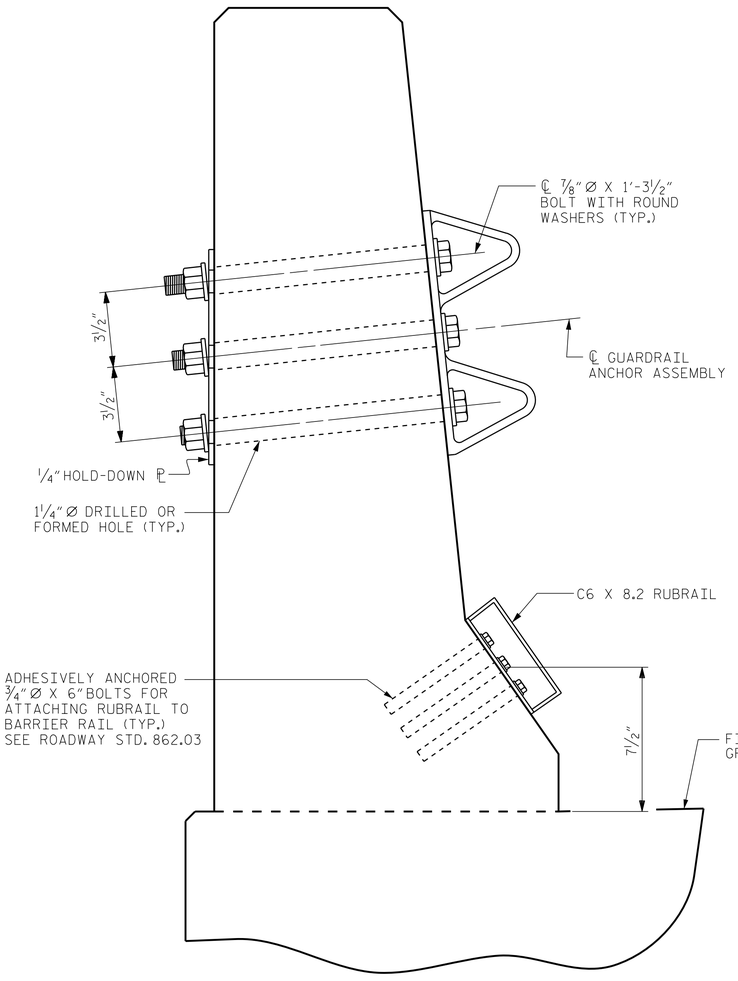


PLAN



ELEVATION

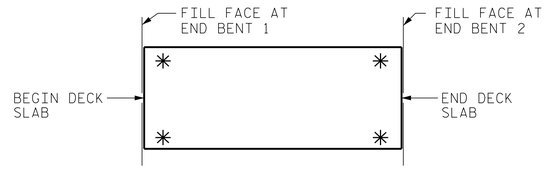
END BENT 1 SHOWN, END BENT 2 SIMILAR



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS

PLAN



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR

NOTES

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

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

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

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

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

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

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

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

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

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1/10/2024

ASSEMBLED BY : D. D. LOWERY	DATE : 03/2023		
CHECKED BY : C. T. POOLE	DATE : 03/2023		
DRAWN BY : TLA 5/06	REV. 7/12	MAA/GM	
CHECKED BY : GM 5/06	REV. 6/13	MAA/GM	
	REV. 12/17	MAA/THC	

DocuSigned by: Clay T Poole 1/10/2024

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			45

STD. NO. GRA2

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"			

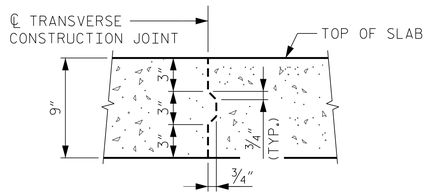
SUPERSTRUCTURE BILL OF MATERIAL

		CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
		(CU. YDS.)	(LBS.)	(LBS.)
SPAN A	POUR 1	33.3		
	POUR 3	29.1		
BENT 1	POUR 2	13.1		
SPAN B	POUR 1	33.9		
BENT 2	POUR 2	14.1		
SPAN C	POUR 1	52.7		
BENT 3	POUR 2	14.4		
SPAN D	POUR 1	38.3		
	POUR 3	29.1		
TOTALS **		258.0	26,097	25,762

** QUANTITIES FOR CONCRETE BARRIER RAIL NOT INCLUDED.

GROOVING BRIDGE FLOORS

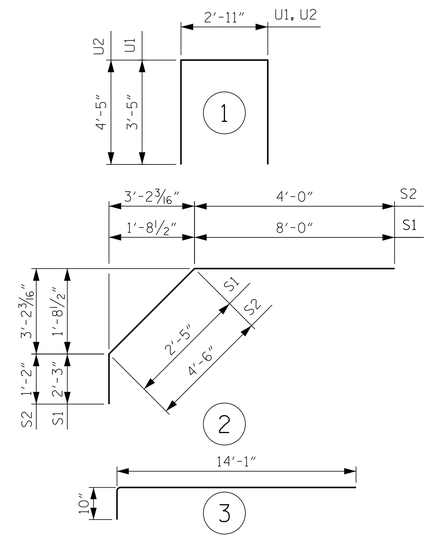
APPROACH SLABS	870 SQ.FT.
BRIDGE DECK	5,897 SQ.FT.
TOTAL	6,767 SQ.FT.



TRANSVERSE CONSTRUCTION JOINT IN DECK SLAB

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

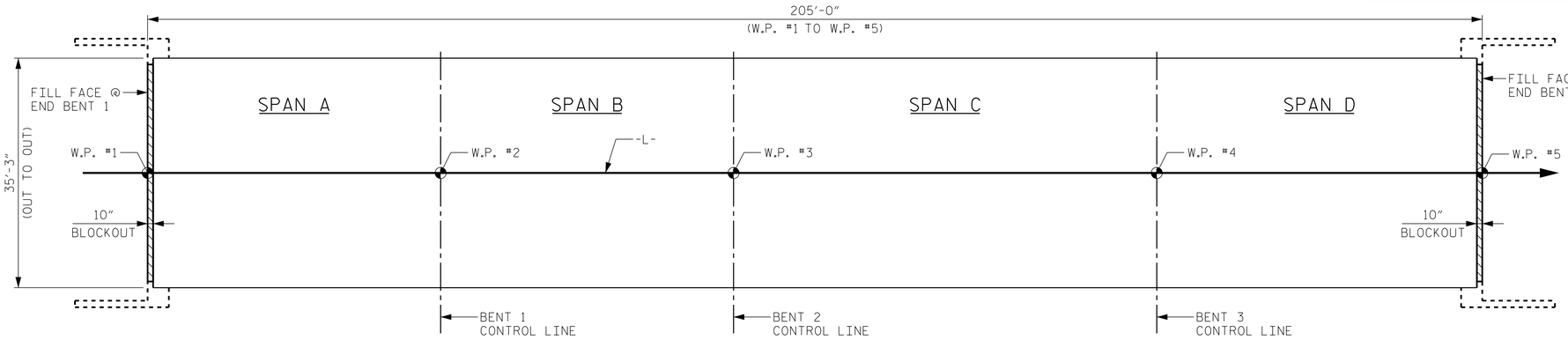
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

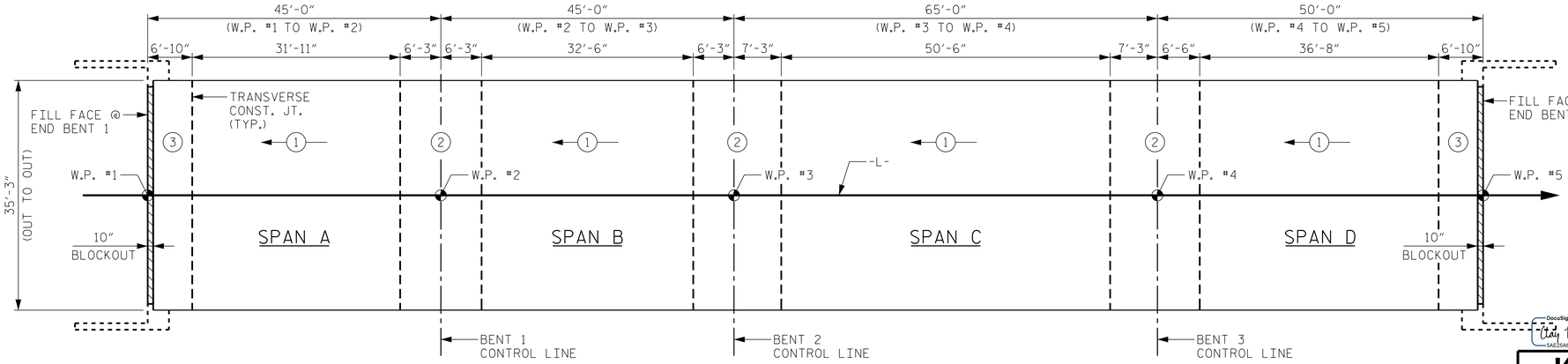
REINFORCING STEEL SCHEDULE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	406	5	STR	34'-11"	14,786
A2	406	5	STR	34'-11"	14,786
B1E	25	4	STR	20'-6"	342
B2E	25	5	STR	37'-0"	965
B3E	25	4	STR	11'-10"	198
B4E	25	5	STR	43'-0"	1,121
B5E	25	4	STR	19'-10"	331
B6E	25	5	STR	44'-6"	1,160
B7E	25	4	STR	23'-0"	384
B8E	69	6	STR	8'-10"	915
B9E	46	5	STR	23'-6"	1,127
B10E	46	5	STR	26'-6"	1,271
B11E	46	5	STR	27'-3"	1,307
B12E	69	6	STR	9'-10"	1,019
B13	44	5	STR	29'-9"	1,365
B14	44	4	STR	32'-6"	955
B15	44	5	STR	16'-6"	757
B16	44	4	STR	37'-6"	1,102
B17	44	5	STR	26'-6"	1,216
B18	44	4	STR	38'-9"	1,139
B19	44	5	STR	33'-6"	1,537
B20	39	4	STR	28'-0"	729
B21	39	4	STR	32'-0"	834
B22	39	4	STR	33'-0"	860
H1	44	5	3	14'-11"	342
K1	20	4	STR	21'-3"	284
K2	6	4	STR	7'-4"	29
K3	6	4	STR	7'-10"	31
K4	12	4	STR	8'-7"	69
K5	6	4	STR	7'-10"	31
K6	4	4	STR	5'-1"	14
K7	4	4	STR	5'-4"	14
K8	8	4	STR	5'-9"	31
K9	4	4	STR	5'-4"	14
K10	24	4	STR	2'-8"	43
S1E	56	4	2	12'-8"	474
S2E	56	4	2	9'-8"	362
U1	60	4	1	9'-9"	391
U2	12	4	1	11'-9"	94
REINFORCING STEEL					26,667 LBS.
EPOXY COATED REINFORCING STEEL					25,762 LBS.



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE SLAB

(SQ. FT. = 7,168)



POUR SEQUENCE

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

—(#)→ DENOTES POUR NUMBER AND DIRECTION.

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
BILL OF MATERIAL

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 5AE25A6E0302425... 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			45

DRAWN BY: D. D. LOWERY DATE: 03/2023
CHECKED BY: A.L. PHILLIPS DATE: 03/2023
DESIGN ENGINEER OF RECORD: C.T. POOLE DATE: 03/2023

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1/10/2024 K:\RDT_Structures_Bridge\NC\011036491 - B-5156\Cad\Dgn\B5156_SMU_BM1_700028.dgn

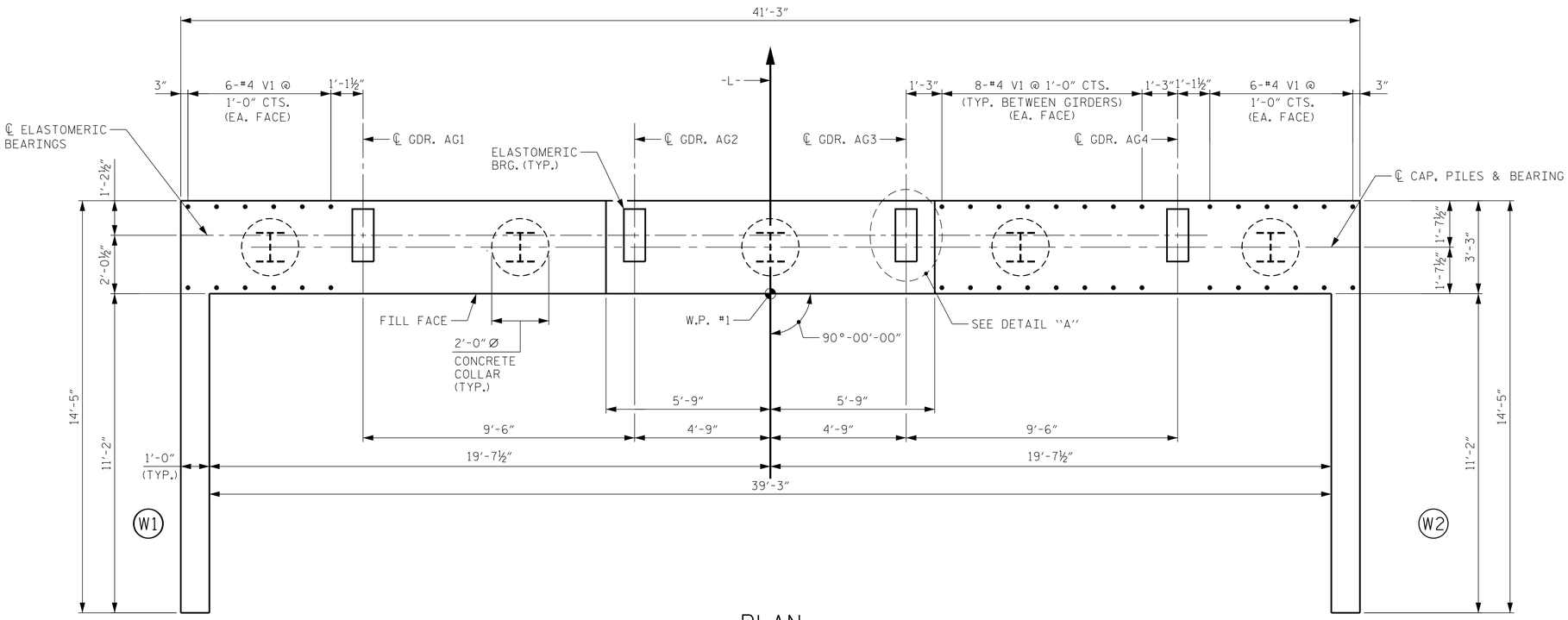
NOTES

FOR PILE SPLICE DETAILS, AND TEMPORARY DRAINAGE DETAILS, SEE SHEET 3 OF 3.

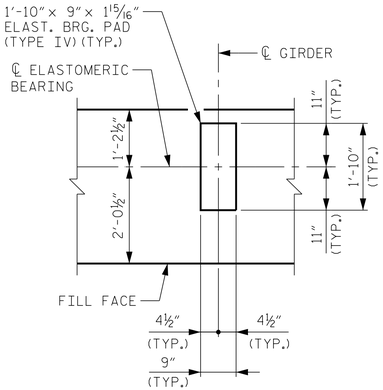
FOR SECTION A-A, SEE SHEET 3 OF 3.

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.

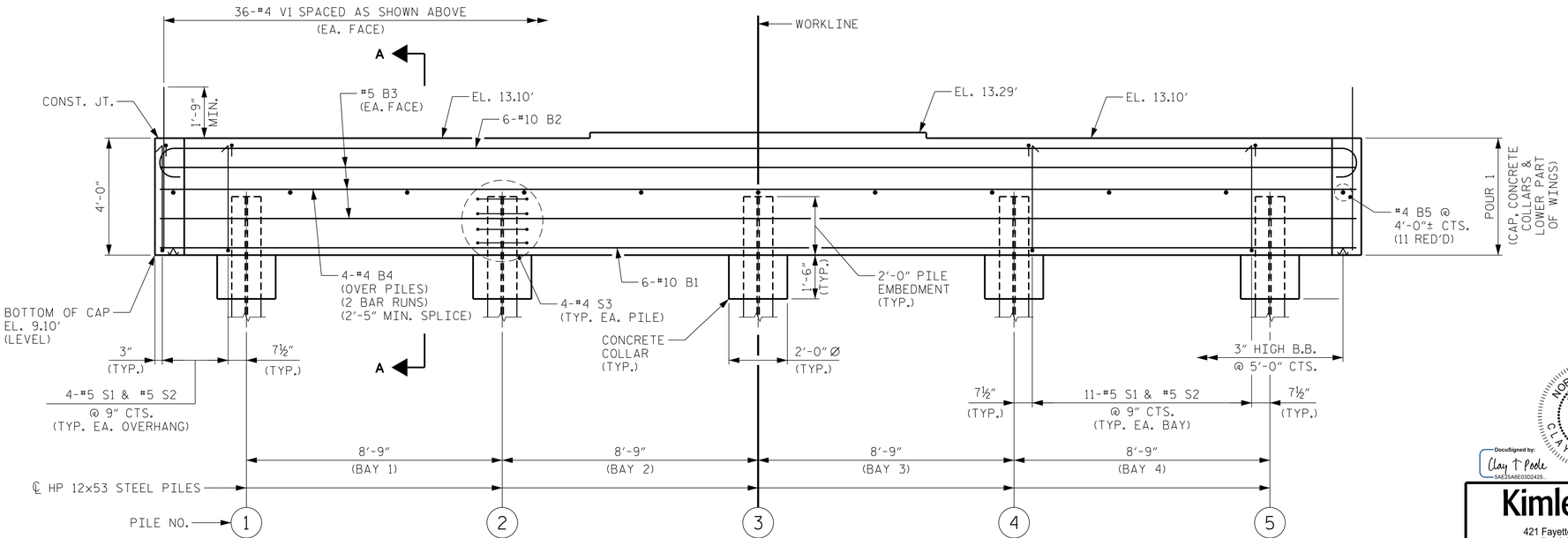
THE TOP SURFACE OF POUR #1 OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".



PLAN



DETAIL "A"



ELEVATION

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1
PLAN AND ELEVATION

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

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Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

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DESIGN ENGINEER OF RECORD: C. T. POOLE DATE: 03/2023

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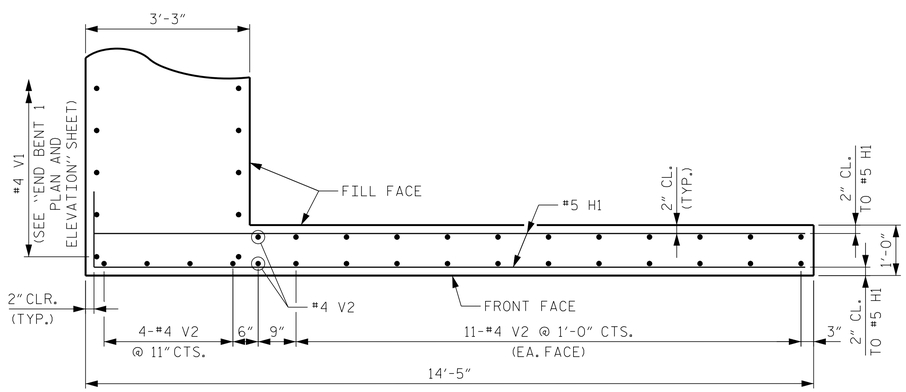
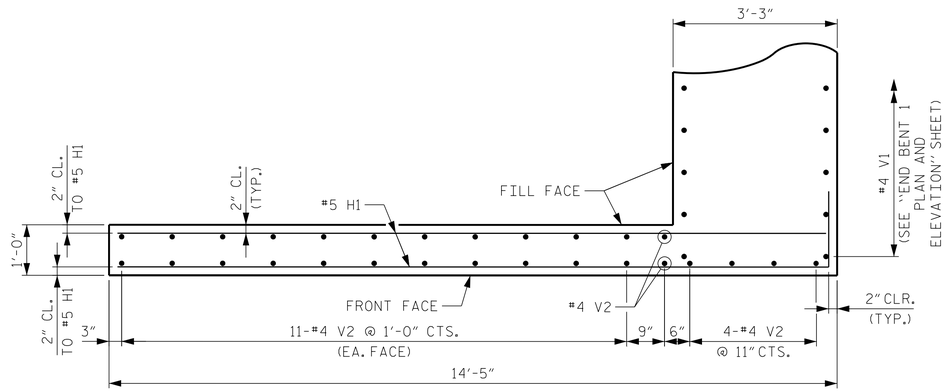
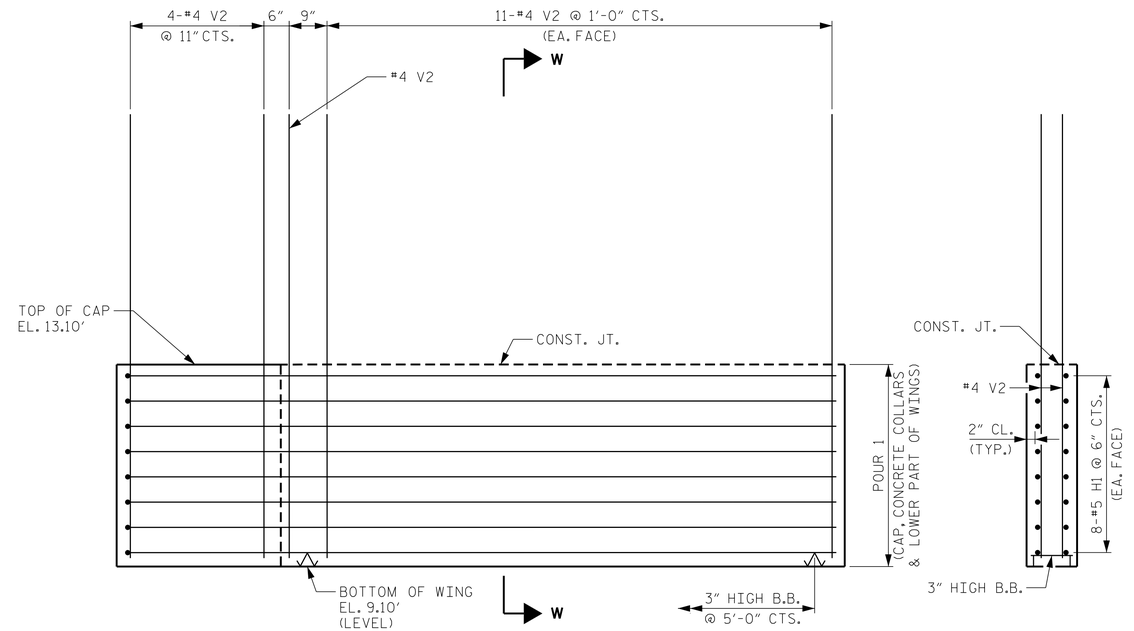


PLAN OF WING W1

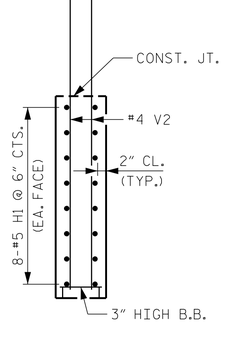


PLAN OF WING W2

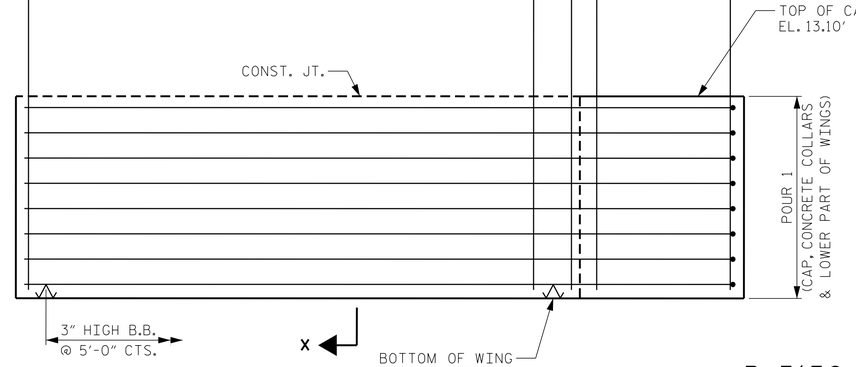


ELEVATION OF WING W1

SECTION W-W



SECTION X-X



ELEVATION OF WING W2

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 SECTION AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 5AE25A6E0302425... 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

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2			4			45

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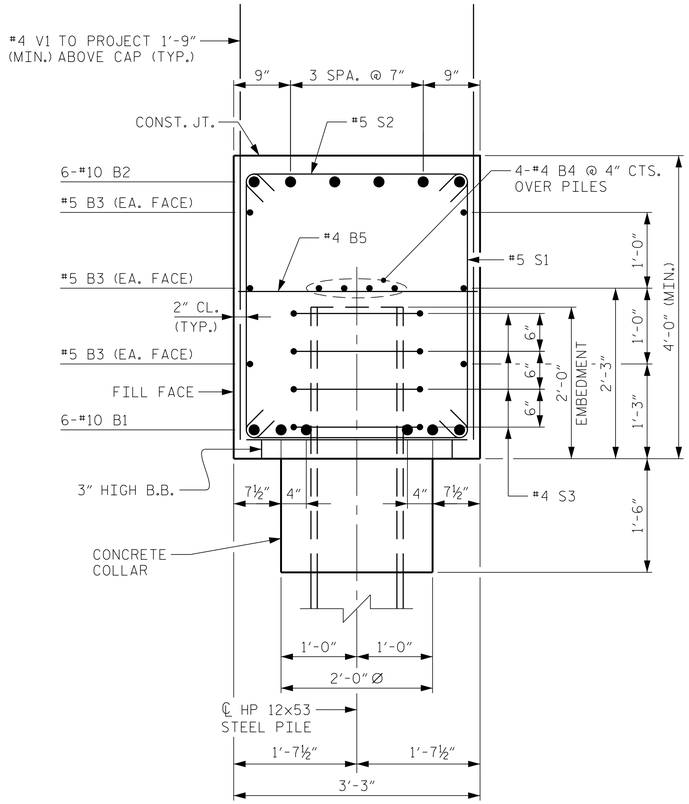
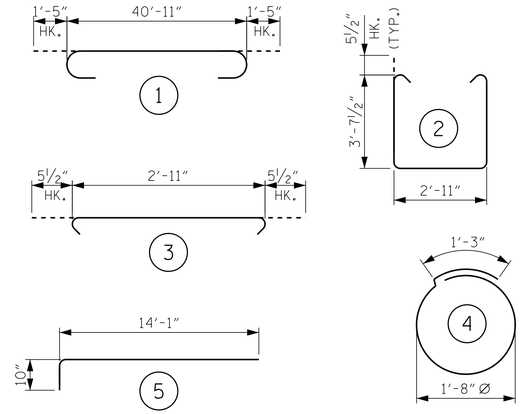
DESIGN ENGINEER OF RECORD:	C.T. POOLE	DATE: 03/2023

1/10/2024 K:\NDT_Structures_Bridge\NC\01103649] - B-5156\Cad\Dgn\B5156_SMU_E2_700028.dgn



SECTION A-A

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

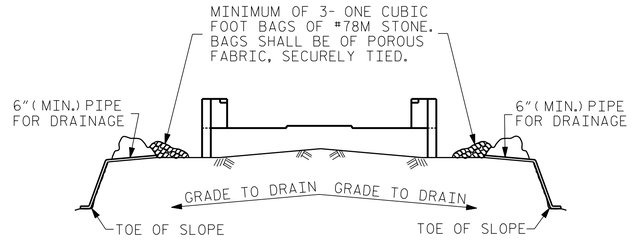
BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	10	STR	40'-11"	1,056
B2	6	10	1	43'-9"	1,130
B3	6	5	STR	40'-11"	256
B4	8	4	STR	21'-8"	116
B5	11	4	STR	2'-11"	21
H1	32	5	5	14'-11"	498
S1	52	5	2	11'-1"	601
S2	52	5	3	3'-10"	208
S3	20	4	4	6'-6"	87
V1	72	4	STR	5'-6"	265
V2	56	4	STR	8'-8"	324

REINFORCING STEEL 4,562 LBS.

CLASS A CONCRETE BREAKDOWN
POUR 1 (CAP, LOWER WING WALLS, & COLLARS) 24.3 C.Y.

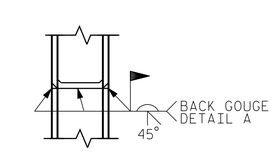


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

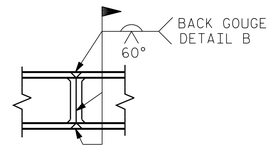
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT

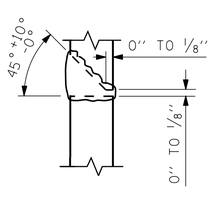


✳PILE VERTICAL

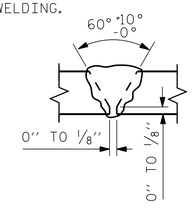


✳PILE HORIZONTAL OR VERTICAL

✳POSITION OF PILE DURING WELDING.



DETAIL "A"



DETAIL "B"

HP PILE SPLICE DETAILS

PROJECT NO. B-5156
PENDER COUNTY
STATION: 22+90.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT 1 SECTION AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole SAE35A8E0302425... 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
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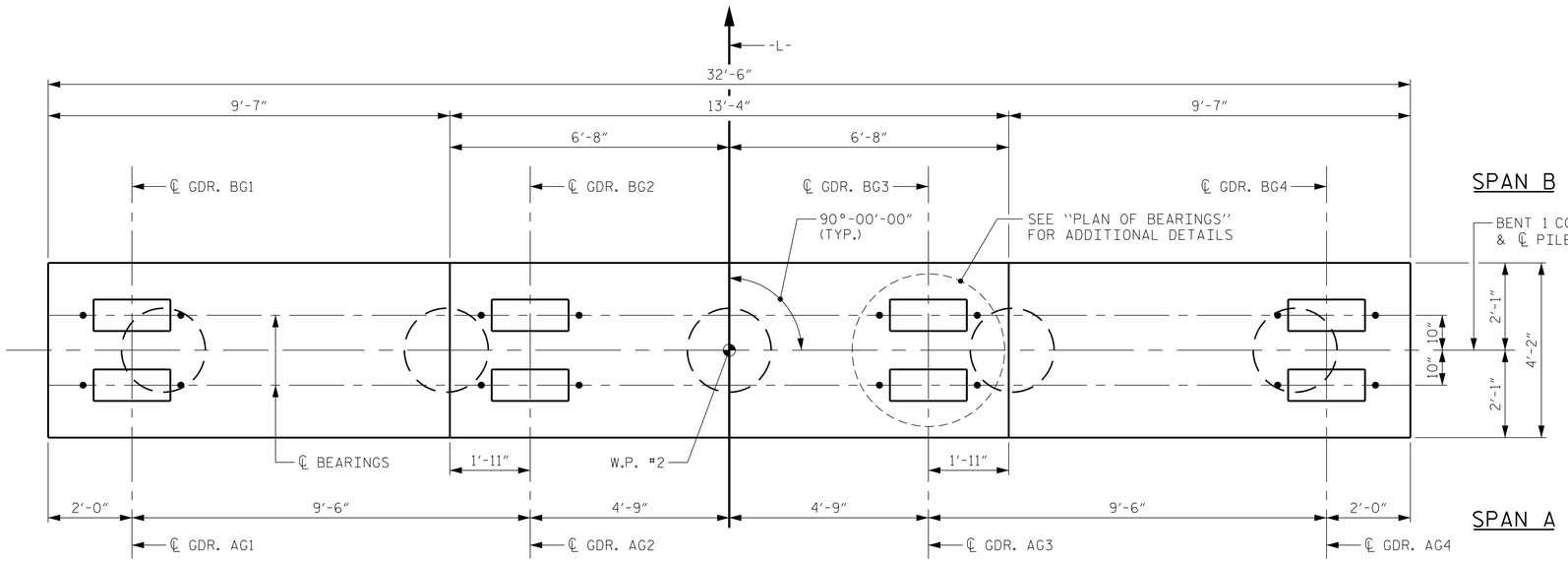
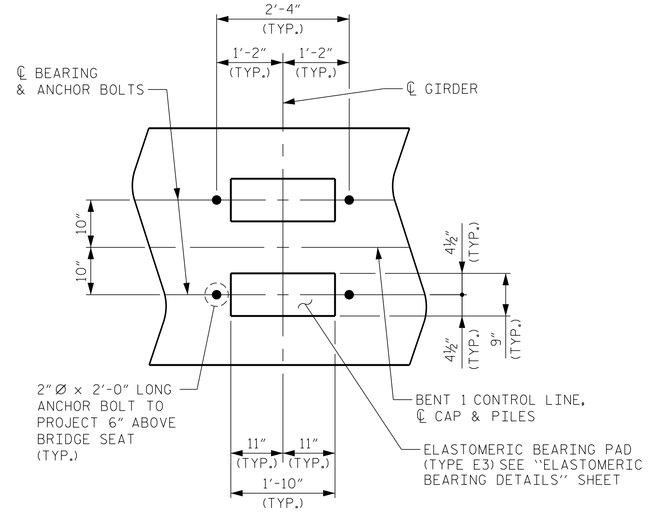
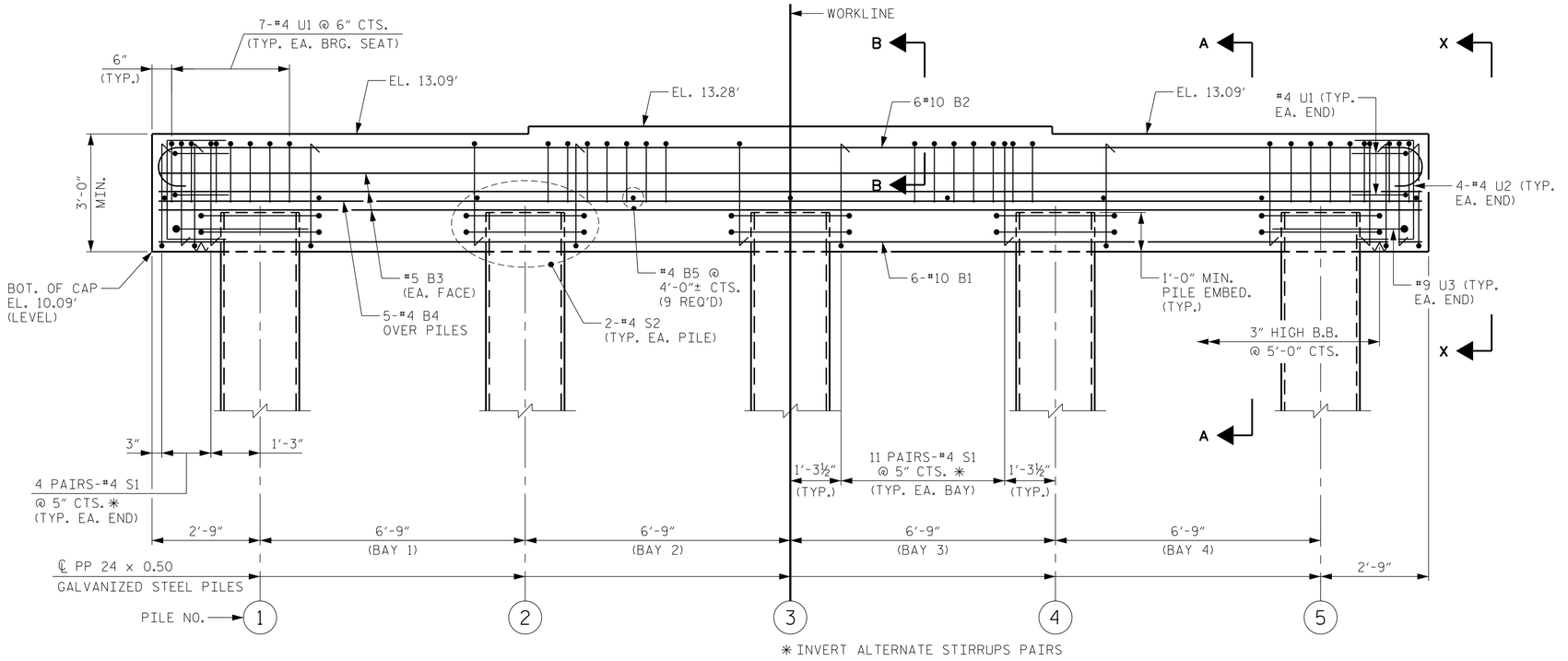


PLAN



PLAN OF BEARINGS
(DIMENSIONS ARE TYPICAL EACH BEARING)



ELEVATION

NOTES

FOR SECTION A-A, PARTIAL SECTION B-B, AND VIEW X-X, SEE SHEET 2 OF 2.

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

FOR REINFORCING STEEL IN PILE, SEE "24" STEEL PIPE PILE" SHEET.

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 35 FEET, GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATION.

FOR ADDITIONAL INFORMATION AND NOTES, SEE "GENERAL DRAWING" SHEETS 2 OF 4 AND 3 OF 4.

CONCRETE DISPLAYED BY PP 24 x 0.50 GALVANIZED STEEL PILE HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.

PROJECT NO. B-5156
PENDER COUNTY
STATION: 22+90.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

BENT 1
PLAN AND ELEVATION

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole SAE3A8E0302425...
1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
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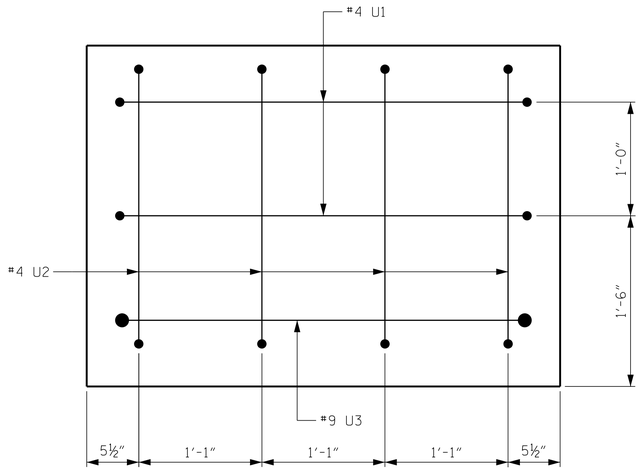
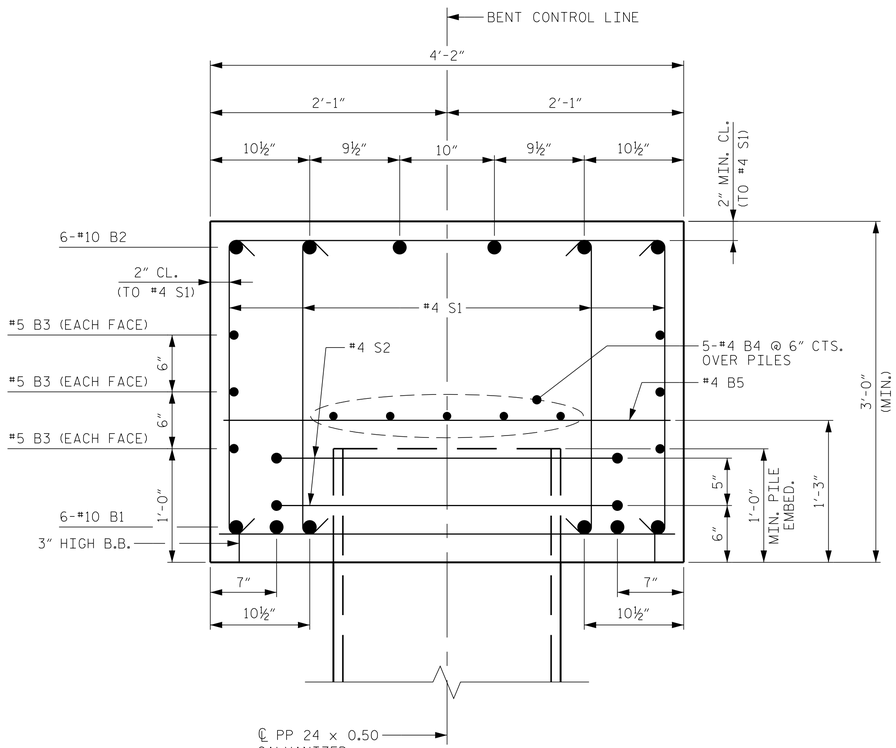
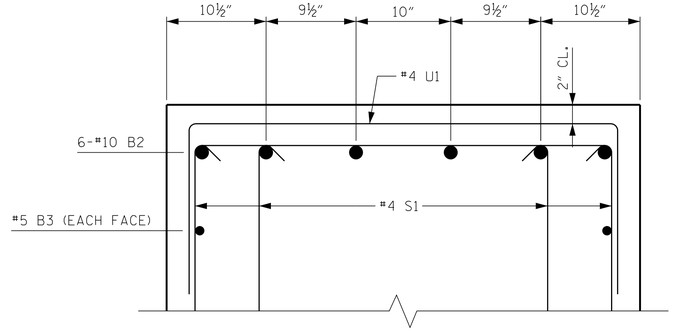


VIEW X-X
(TYPICAL BOTH ENDS)

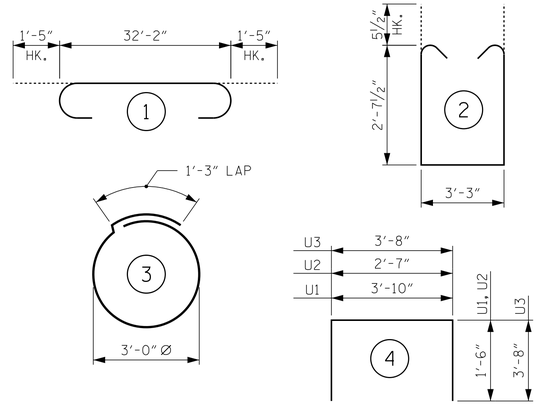


SECTION A-A



PARTIAL SECTION B-B
(FOR LOCATION OF SECTION, SEE SHEET 1 OF 2)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	10	STR	32'-2"	830
B2	6	10	1	35'-0"	904
B3	6	5	STR	32'-2"	201
B4	5	4	STR	32'-2"	107
B5	9	4	STR	3'-10"	23
S1	104	4	2	9'-5"	654
S2	10	4	3	10'-9"	72
U1	32	4	4	6'-10"	146
U2	8	4	4	5'-7"	30
U3	2	9	4	11'-0"	75

REINFORCING STEEL 3,042 LBS.

CLASS A CONCRETE BREAKDOWN
POUR 1 (CAP) 14.9 C.Y.

NOTE: THE VOLUME OF THE CONCRETE DISPLACED BY THE PIPE PILES HAS BEEN DEDUCTED FROM THE TOTAL VOLUME.

PROJECT NO. B-5156
PENDER COUNTY
STATION: 22+90.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

BENT 1
SECTION AND DETAILS

DRAWN BY: D. D. LOWERY DATE: 03/2023
CHECKED BY: A.L. PHILLIPS DATE: 03/2023
DESIGN ENGINEER OF RECORD: C.T. POOLE DATE: 03/2023

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE
DocuSigned by: Clay T Poole 5AE25A6E0302425... 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

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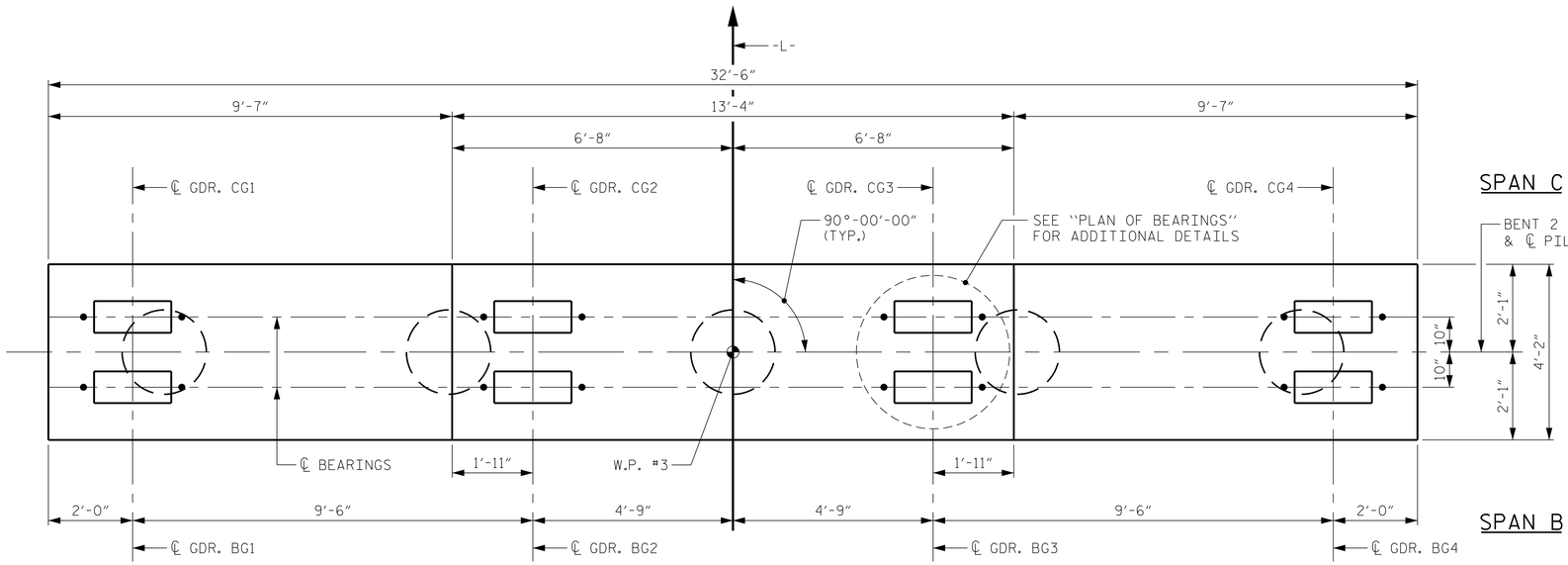
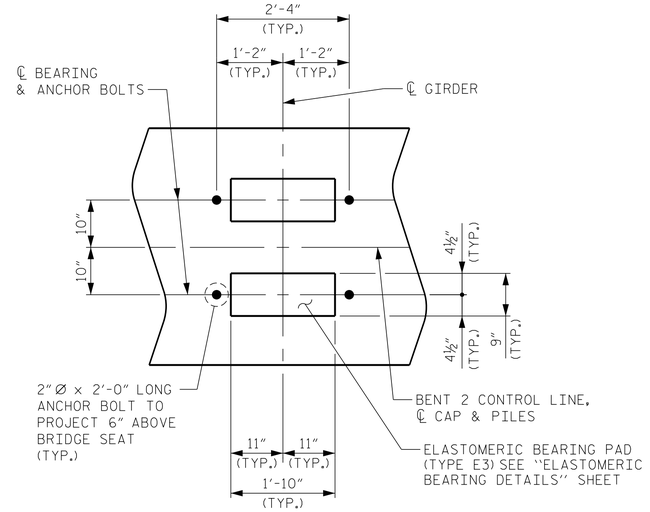
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33
1			3			TOTAL SHEETS
2			4			45

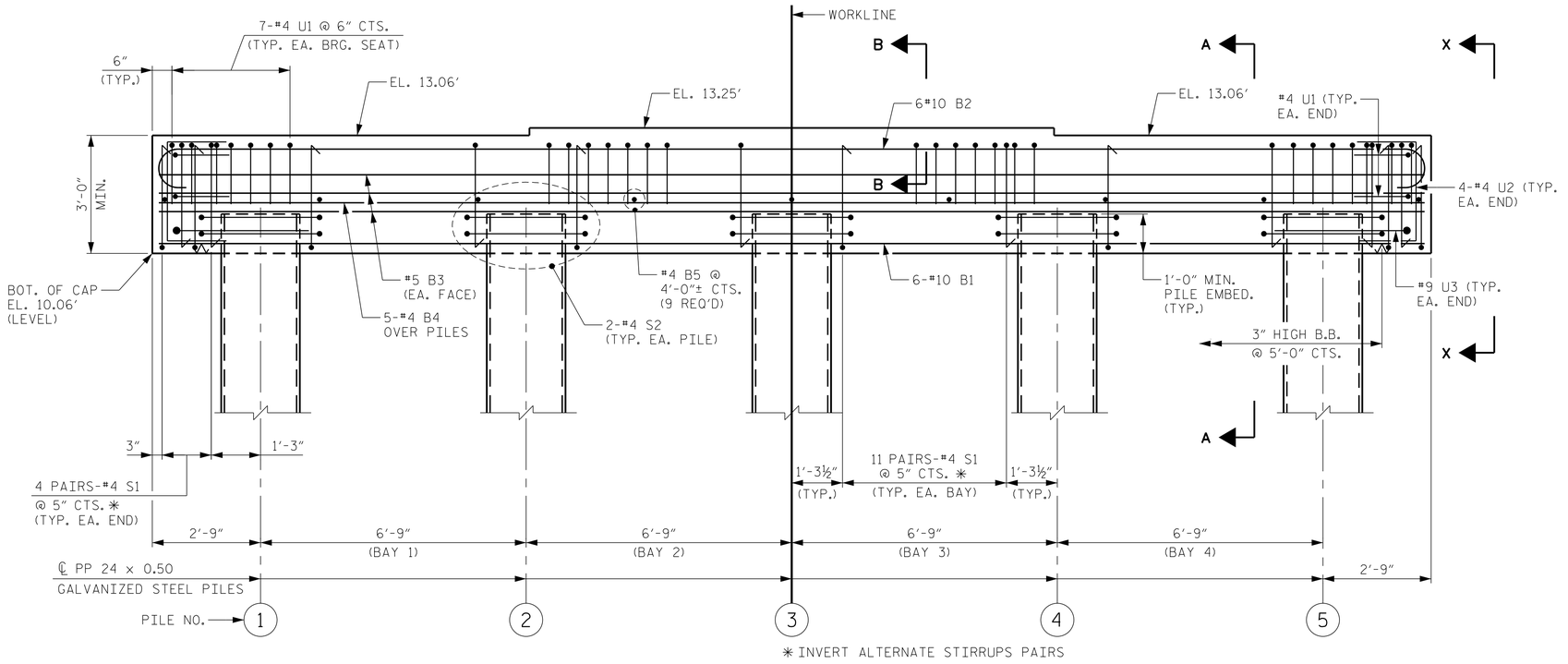
1/10/2024 K:\RDT_Structures_Bridge\NC\011036491 - B-5156\Cad\Dgn\B5156_SMU_B2_700028.dgn



PLAN



PLAN OF BEARINGS
(DIMENSIONS ARE TYPICAL EACH BEARING)



✳ INVERT ALTERNATE STIRRUPS PAIRS

ELEVATION

NOTES

FOR SECTION A-A, PARTIAL SECTION B-B, AND VIEW X-X, SEE SHEET 2 OF 2.

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

FOR REINFORCING STEEL IN PILE, SEE "24" STEEL PIPE PILE" SHEET.

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 43 FEET, GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATION.

FOR ADDITIONAL INFORMATION AND NOTES, SEE "GENERAL DRAWING" SHEETS 2 OF 4 AND 3 OF 4.

CONCRETE DISPLAYED BY PP 24 x 0.50 GALVANIZED STEEL PILE HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.

PROJECT NO. B-5156
PENDER COUNTY
STATION: 22+90.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

BENT 2 PLAN AND ELEVATION

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 5AE3ABE0302425... 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34
1			3			TOTAL SHEETS
2			4			45

DRAWN BY: D. D. LOWERY DATE: 03/2023
CHECKED BY: A. L. PHILLIPS DATE: 03/2023
DESIGN ENGINEER OF RECORD: C. T. POOLE DATE: 03/2023

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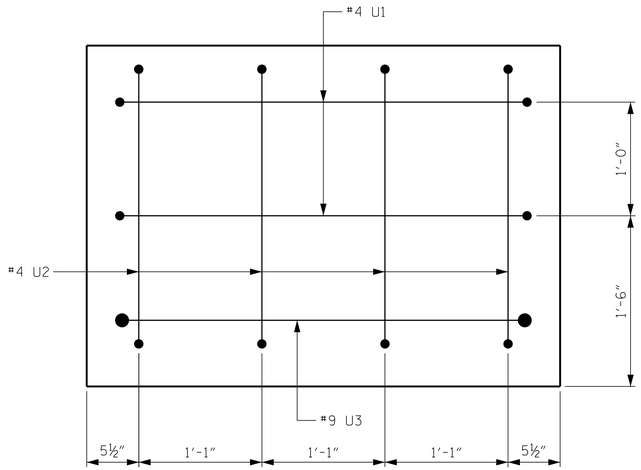
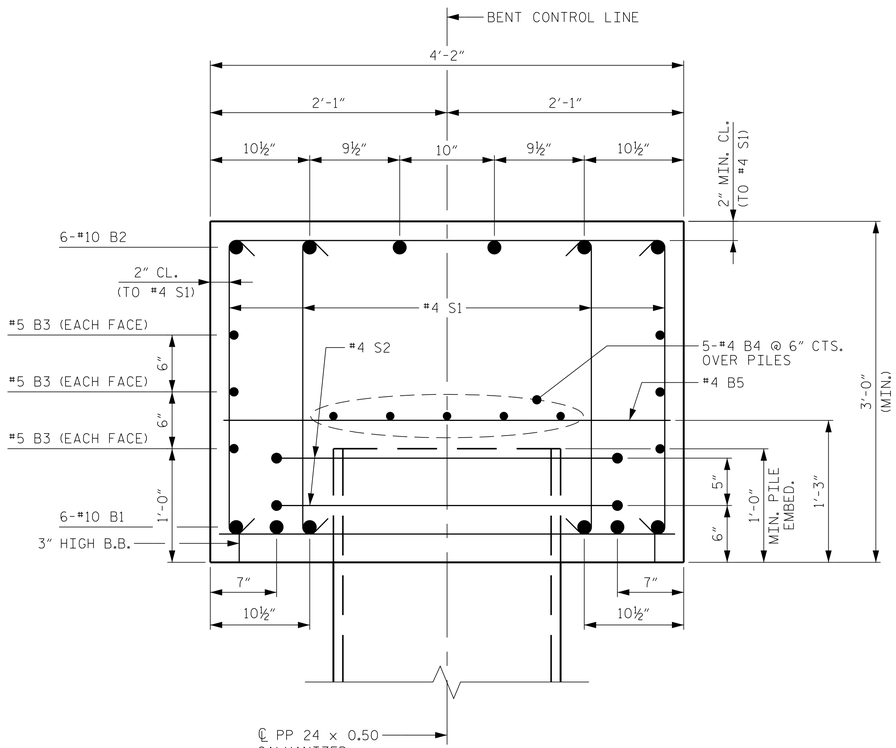
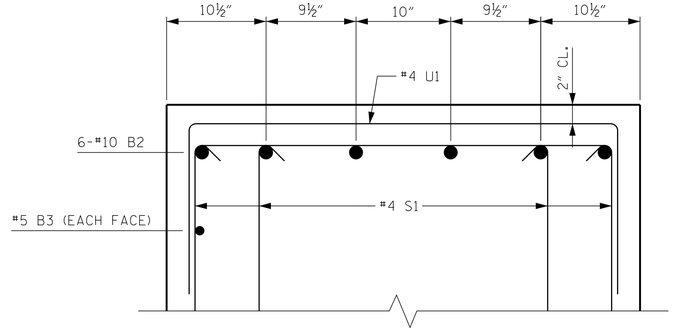


VIEW X-X
(TYPICAL BOTH ENDS)

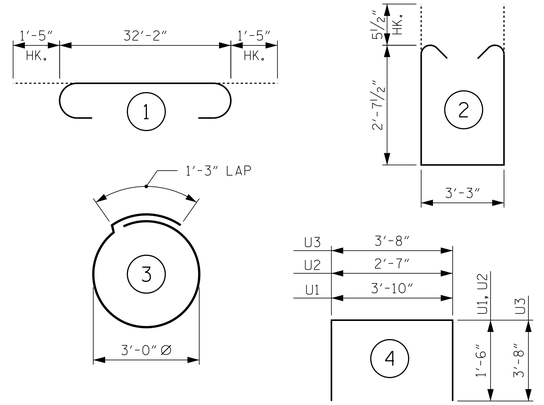


SECTION A-A



PARTIAL SECTION B-B
(FOR LOCATION OF SECTION, SEE SHEET 1 OF 2)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	10	STR	32'-2"	830
B2	6	10	1	35'-0"	904
B3	6	5	STR	32'-2"	201
B4	5	4	STR	32'-2"	107
B5	9	4	STR	3'-10"	23
S1	104	4	2	9'-5"	654
S2	10	4	3	10'-9"	72
U1	32	4	4	6'-10"	146
U2	8	4	4	5'-7"	30
U3	2	9	4	11'-0"	75

REINFORCING STEEL 3,042 LBS.

CLASS A CONCRETE BREAKDOWN
POUR 1 (CAP) 14.9 C.Y.

NOTE: THE VOLUME OF THE CONCRETE DISPLACED BY THE PIPE PILES HAS BEEN DEDUCTED FROM THE TOTAL VOLUME.

PROJECT NO. B-5156
PENDER COUNTY
STATION: 22+90.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

BENT 2
SECTION AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 1/10/2024
5AE25A6E0302425...

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-35
1			3			TOTAL SHEETS
2			4			45

DRAWN BY: D. D. LOWERY DATE: 03/2023
CHECKED BY: A.L. PHILLIPS DATE: 03/2023
DESIGN ENGINEER OF RECORD: C.T. POOLE DATE: 03/2023

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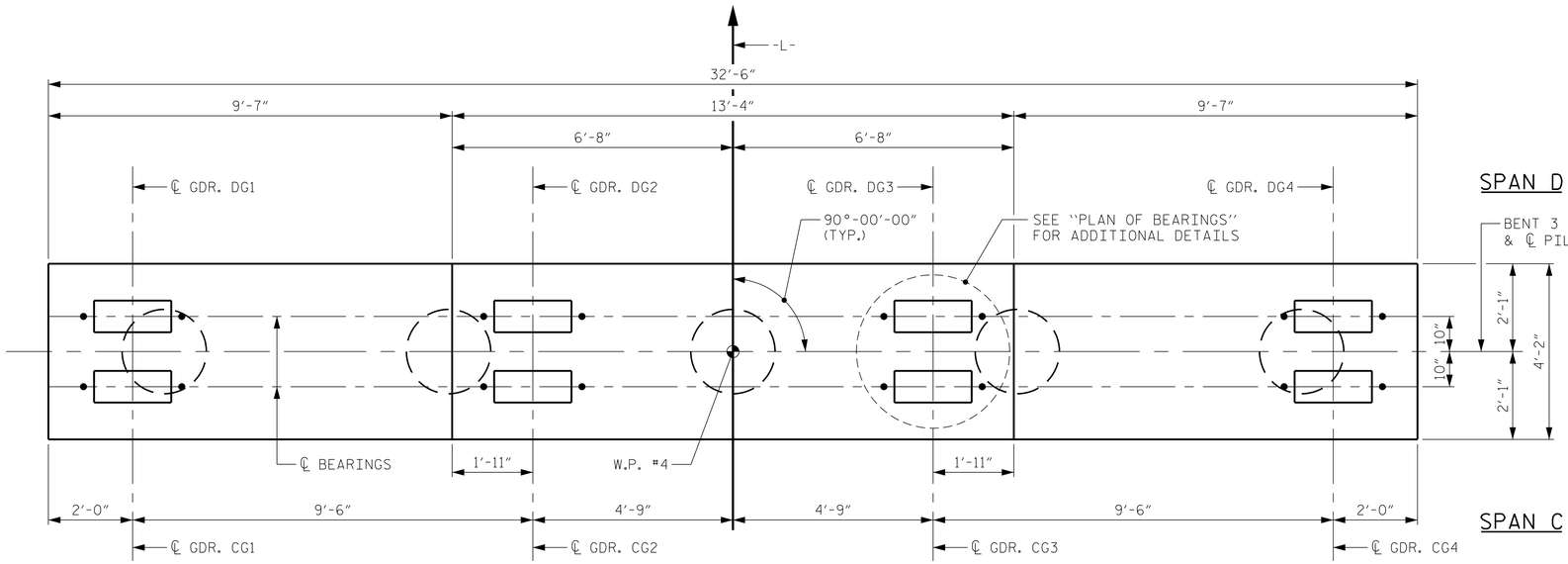
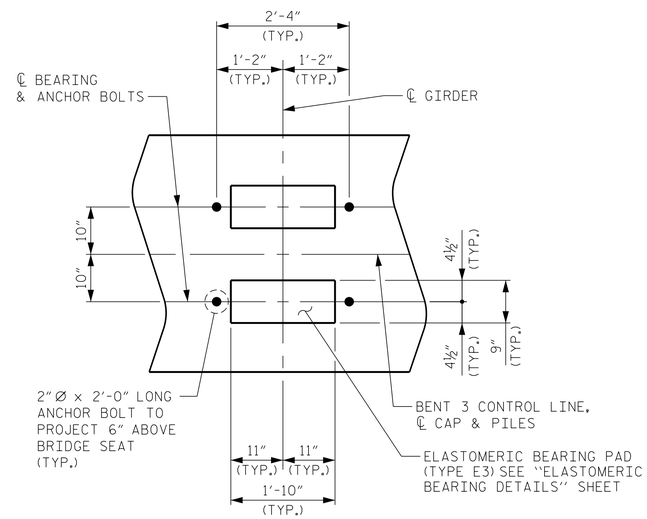
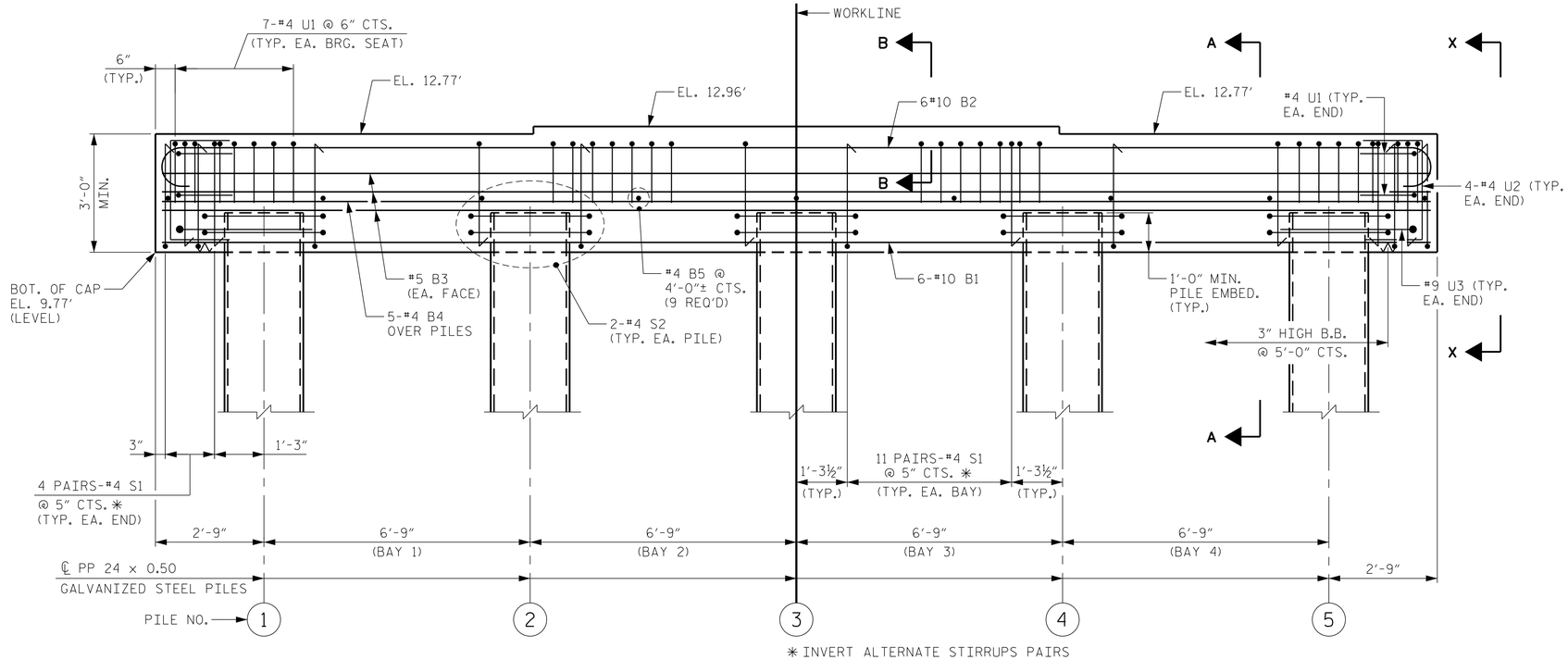


PLAN



PLAN OF BEARINGS
(DIMENSIONS ARE TYPICAL EACH BEARING)



* INVERT ALTERNATE STIRRUPS PAIRS

ELEVATION

NOTES

FOR SECTION A-A, PARTIAL SECTION B-B, AND VIEW X-X, SEE SHEET 2 OF 2.

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

FOR REINFORCING STEEL IN PILE, SEE "24" STEEL PIPE PILE" SHEET.

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 38 FEET, GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATION.

FOR ADDITIONAL INFORMATION AND NOTES, SEE "GENERAL DRAWING" SHEETS 2 OF 4 AND 3 OF 4.

CONCRETE DISPLAYED BY PP 24 x 0.50 GALVANIZED STEEL PILE HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 3
PLAN AND ELEVATION

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 5AE35A8E03D2425... 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36
1			3			TOTAL SHEETS
2			4			45

DRAWN BY: D. D. LOWERY DATE: 03/2023
CHECKED BY: A. L. PHILLIPS DATE: 03/2023
DESIGN ENGINEER OF RECORD: C. T. POOLE DATE: 03/2023

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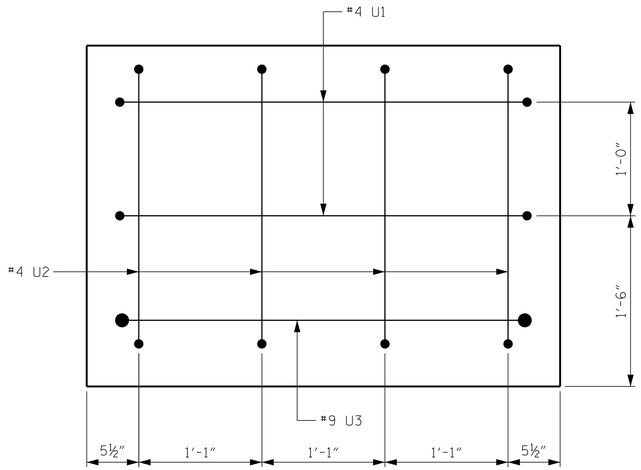
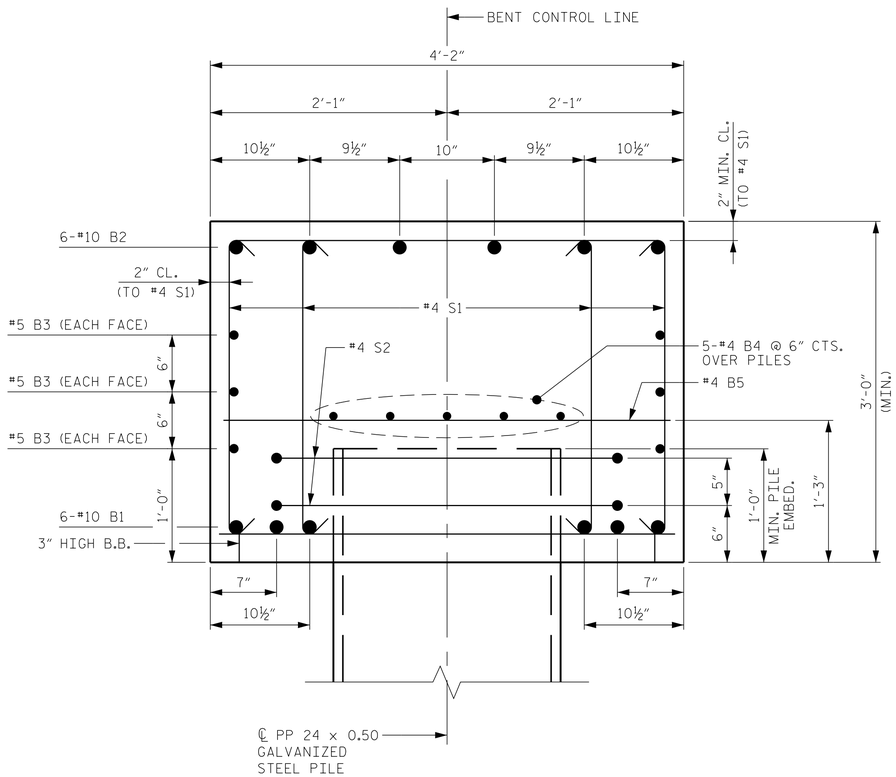
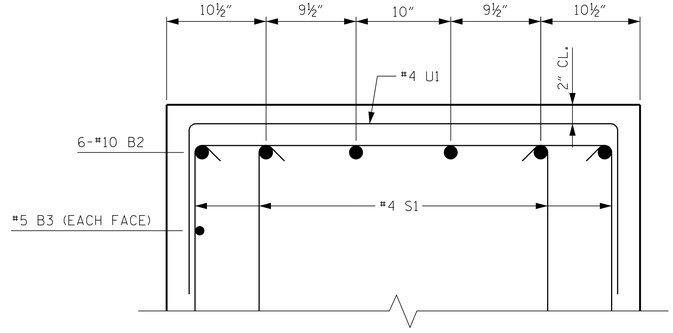


VIEW X-X
(TYPICAL BOTH ENDS)

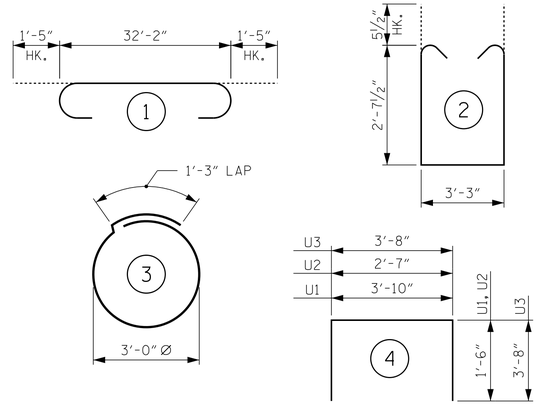


SECTION A-A



PARTIAL SECTION B-B
(FOR LOCATION OF SECTION, SEE SHEET 1 OF 2)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 3

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	10	STR	32'-2"	830
B2	6	10	1	35'-0"	904
B3	6	5	STR	32'-2"	201
B4	5	4	STR	32'-2"	107
B5	9	4	STR	3'-10"	23
S1	104	4	2	9'-5"	654
S2	10	4	3	10'-9"	72
U1	32	4	4	6'-10"	146
U2	8	4	4	5'-7"	30
U3	2	9	4	11'-0"	75

REINFORCING STEEL 3,042 LBS.

CLASS A CONCRETE BREAKDOWN
POUR 1 (CAP) 14.9 C.Y.

NOTE: THE VOLUME OF THE CONCRETE DISPLACED BY THE PIPE PILES HAS BEEN DEDUCTED FROM THE TOTAL VOLUME.

PROJECT NO. B-5156
PENDER COUNTY
STATION: 22+90.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

BENT 3
SECTION AND DETAILS

DRAWN BY: D. D. LOWERY DATE: 03/2023
CHECKED BY: A.L. PHILLIPS DATE: 03/2023
DESIGN ENGINEER OF RECORD: C.T. POOLE DATE: 03/2023

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE
DocuSigned by: Clay T Poole SAE25A6E0302425... 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-37
1			3			TOTAL SHEETS
2			4			45

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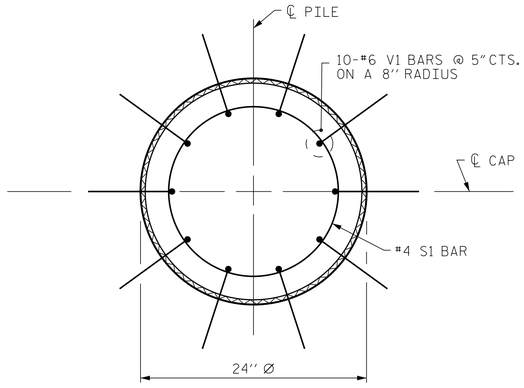
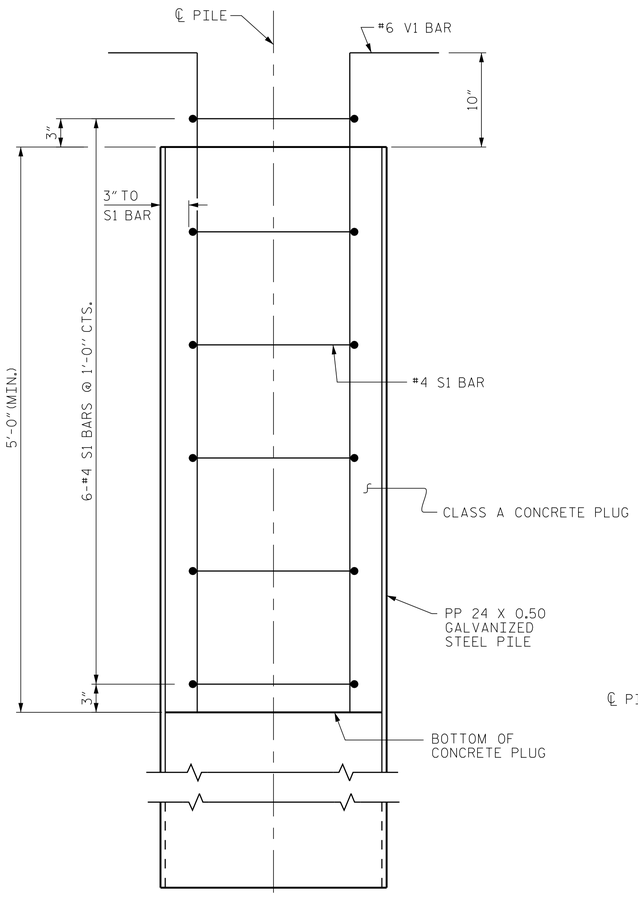
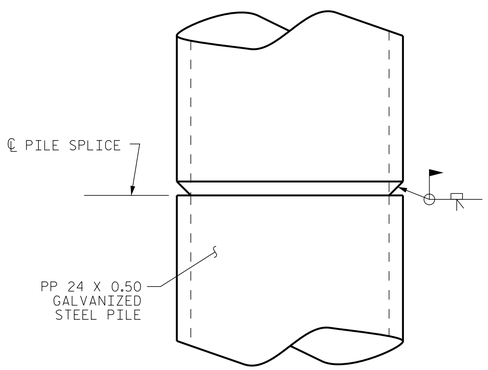


PLAN



ELEVATION

PP 24 X 0.50 GALVANIZED STEEL PILE



PIPE PILE SPLICE DETAIL

NOTES

PIPE PILES SHALL BE IN ACCORDANCE WITH SECTION 1084 OF THE STANDARD SPECIFICATIONS.

GALVANIZE STEEL PIPE PILES IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS UNLESS METALLIZING IS REQUIRED. GALVANIZING OR METALLIZING PIPE PILE PLATES IS NOT REQUIRED.

REMOVE AND REPLACE OR REPAIR TO THE SATISFACTION OF THE ENGINEER PILES THAT ARE DAMAGED, DEFORMED OR COLLAPSED DURING INSTALLATION OR DRIVING.

PILE SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND AWS D1.1.

FOR OPEN END PIPE PILES, REMOVE ENOUGH SOIL AND WATER FROM INSIDE THE PILES TO CONSTRUCT THE CONCRETE PLUG WITHOUT FOULING THE CONCRETE.

FORM THE CONCRETE PLUG SUCH THAT THE REINFORCING STEEL OR CONCRETE DOES NOT MOVE AND THE CLEARANCE FROM THE REINFORCING STEEL TO THE INSIDE OF THE PILE IS MAINTAINED AFTER CONCRETE PLACEMENT. DO NOT PLACE CONCRETE IN THE BENT CAP UNTIL THE CONCRETE PLUG HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

THE REINFORCING STEEL, CLASS A CONCRETE, AND GALVANIZING ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR PP 24 X 0.50 GALVANIZED STEEL PILES.

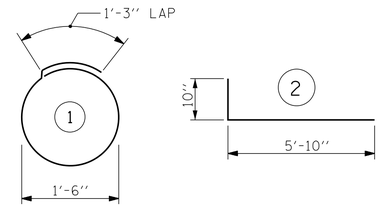
BILL OF MATERIAL FOR ONE PP 24 X 0.50 GALVANIZED STEEL PILE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	6	#4	1	6'-0"	24
V1	10	#6	2	6'-8"	100
REINFORCING STEEL =				124	lbs

CLASS A CONCRETE

5'-0" MINIMUM PLUG 0.5 CY

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

24" STEEL PIPE PILE

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 5AE35A8E03D2425... 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-38
1			3			TOTAL SHEETS
2			4			45

ASSEMBLED BY : D.D. LOWERY	DATE : 03/2023		
CHECKED BY : C.T. POOLE	DATE : 03/2023		
DRAWN BY : TLA 8/05	REV. 5/1/06R	MAA/KMM	
CHECKED BY : GM 9/05	REV. 10/1/11	MAA/GM	
	REV. 12/17	MAA/THC	

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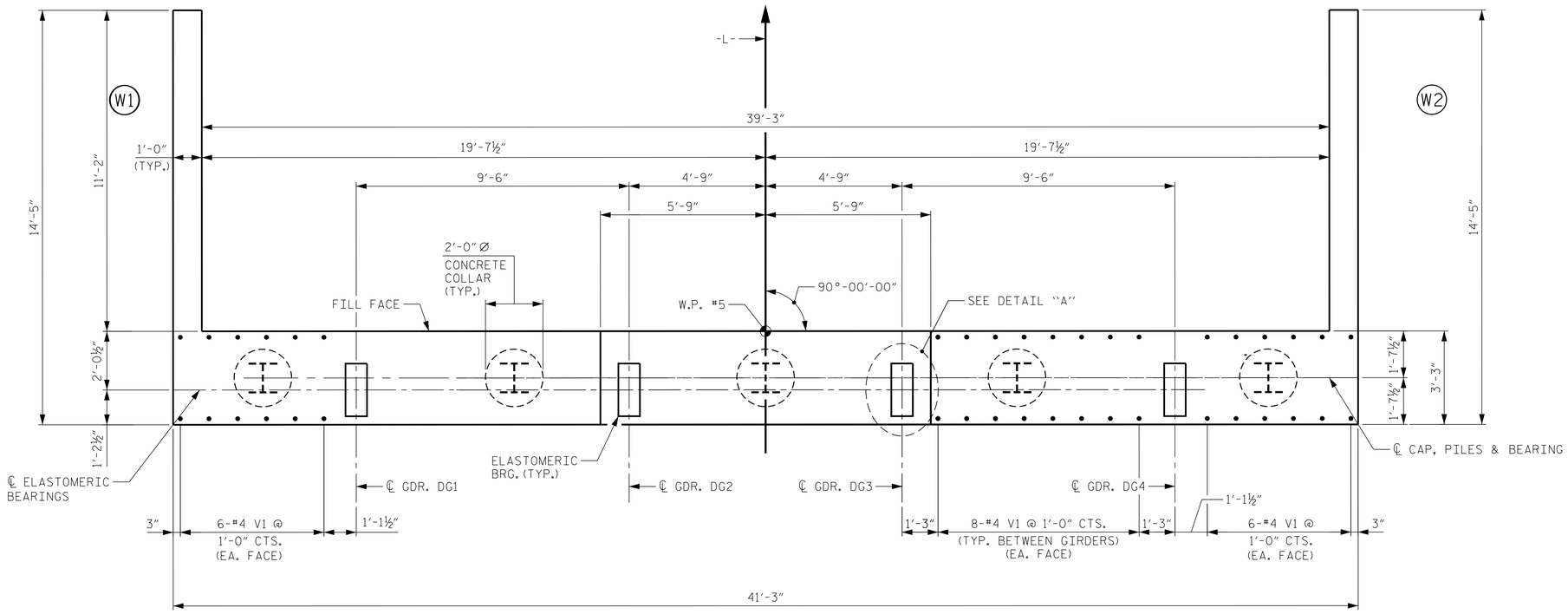
STD. NO. SPP4



PLAN

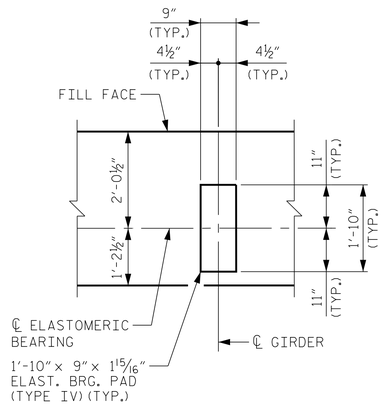
NOTES

FOR PILE SPLICE DETAILS, AND TEMPORARY DRAINAGE DETAILS, SEE SHEET 3 OF 3.

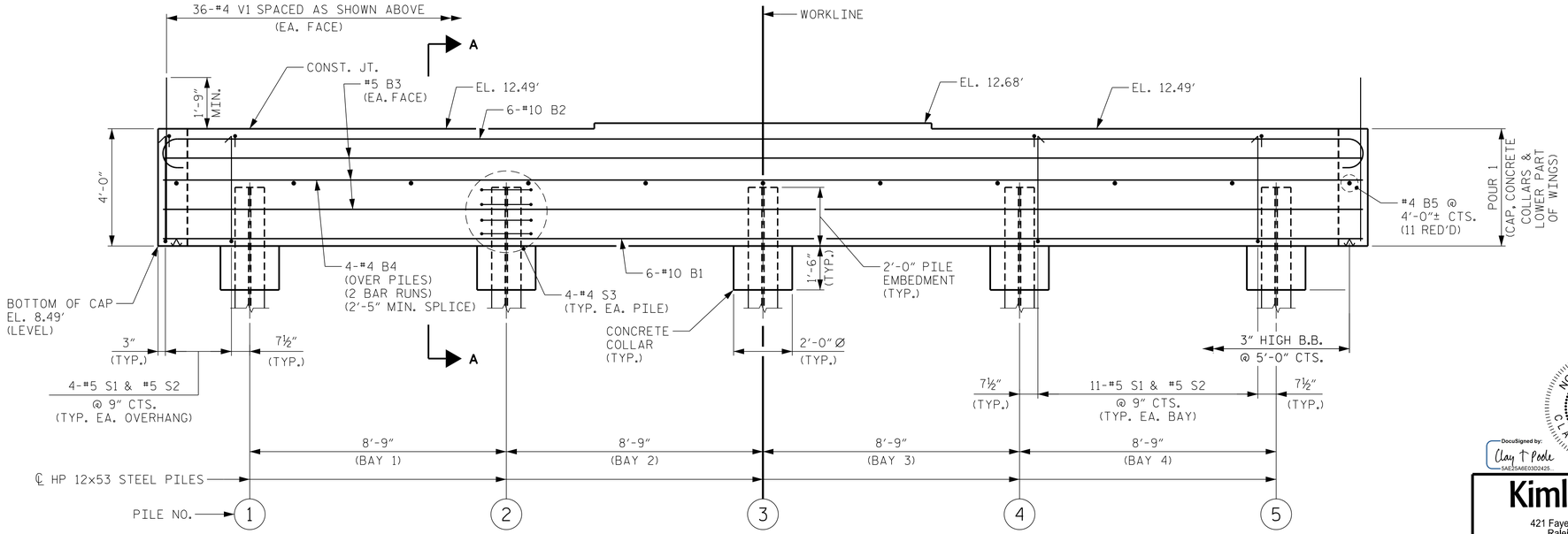
FOR SECTION A-A, SEE SHEET 3 OF 3.

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.

THE TOP SURFACE OF POUR #1 OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF ¼".



DETAIL "A"



ELEVATION

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 PLAN AND ELEVATION

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole SAE35AAE0302425... 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-39
1			3			TOTAL SHEETS
2			4			45

DRAWN BY: D. D. LOWERY DATE: 03/2023
CHECKED BY: A.L. PHILLIPS DATE: 03/2023
DESIGN ENGINEER OF RECORD: C.T. POOLE DATE: 03/2023

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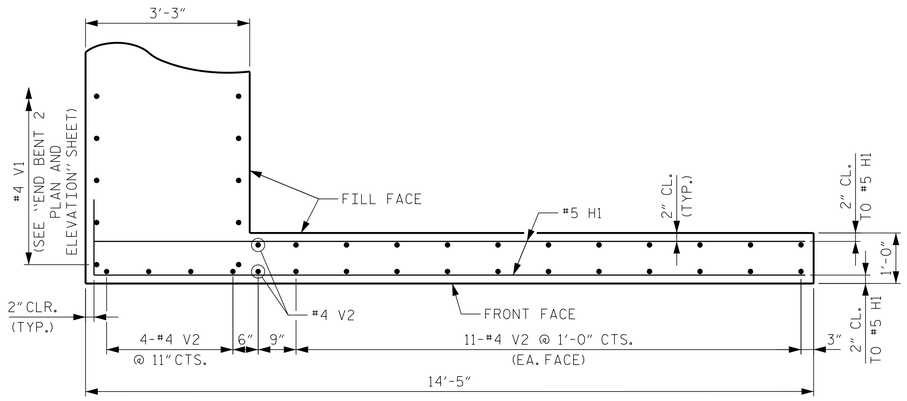
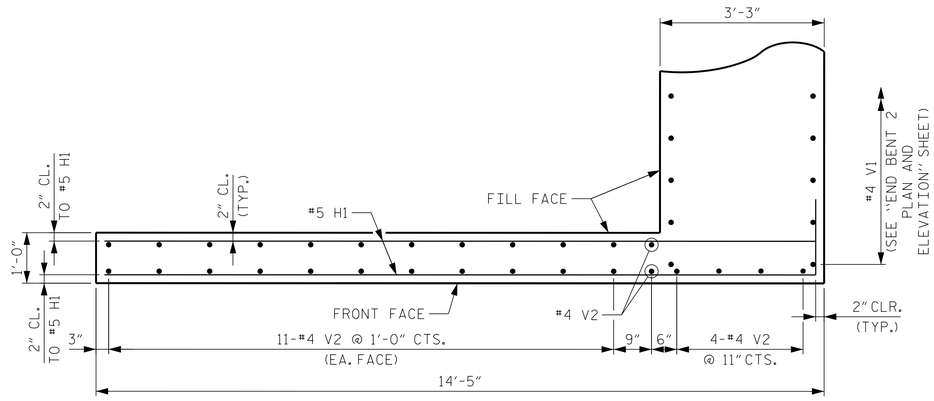
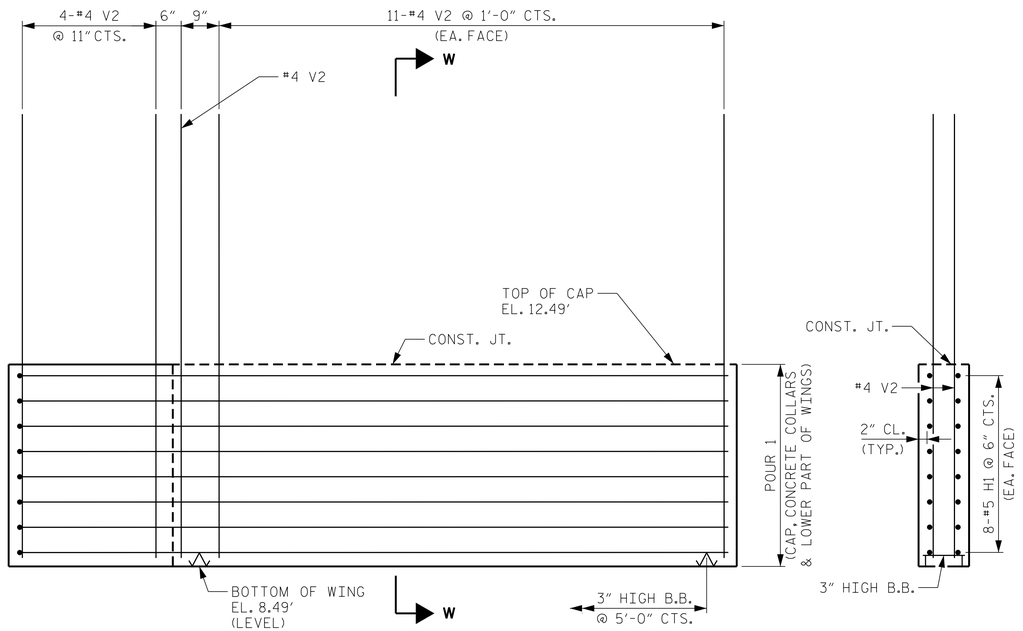


PLAN OF WING W1

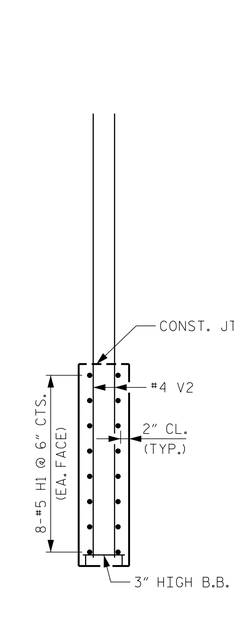


PLAN OF WING W2

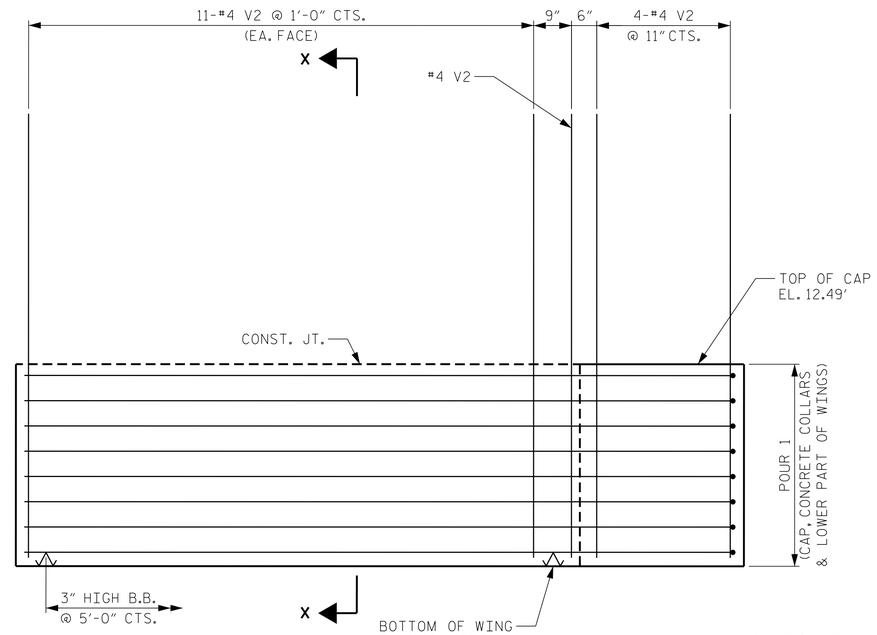


ELEVATION OF WING W1

SECTION W-W



SECTION X-X



ELEVATION OF WING W2

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 SECTION AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 5AE35A8E03D2425... 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

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DRAWN BY:	D. D. LOWERY	DATE: 03/2023
CHECKED BY:	A. L. PHILLIPS	DATE: 03/2023
DESIGN ENGINEER OF RECORD:	C.T. POOLE	DATE: 03/2023

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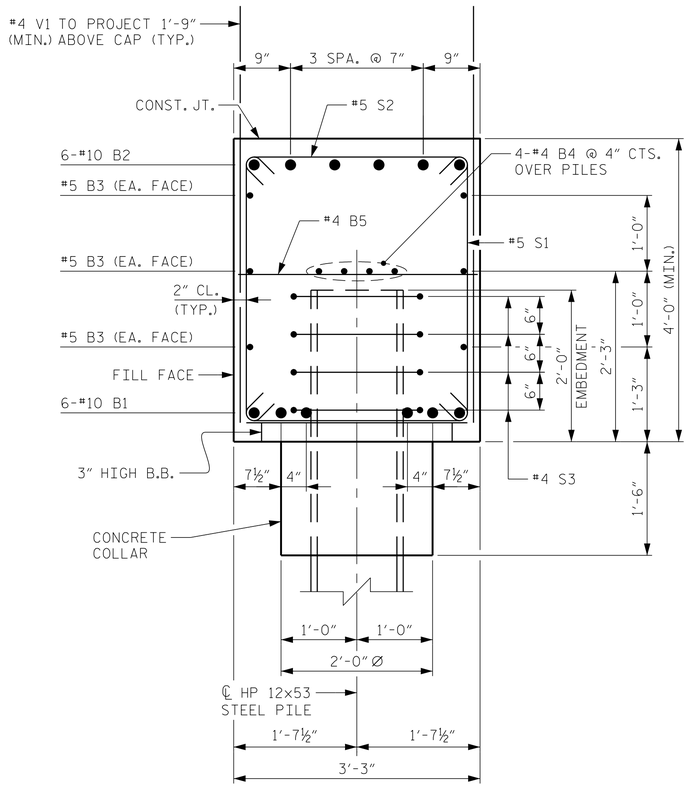
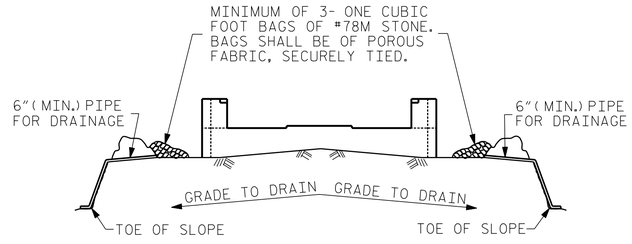


SECTION A-A



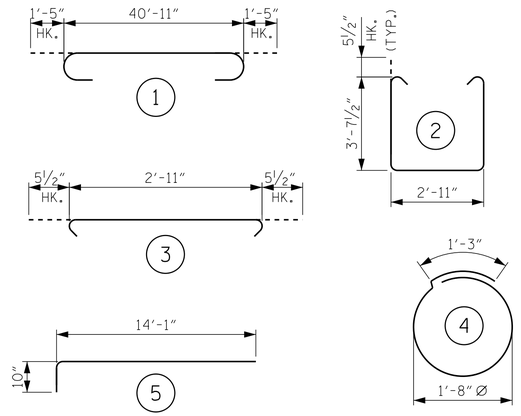
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

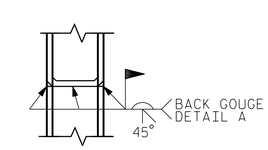
BILL OF MATERIAL

END BENT 2

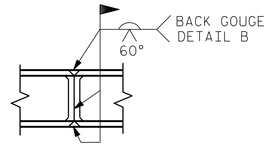
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	10	STR	40'-11"	1,056
B2	6	10	1	43'-9"	1,130
B3	6	5	STR	40'-11"	256
B4	8	4	STR	21'-8"	116
B5	11	4	STR	2'-11"	21
H1	32	5	5	14'-11"	498
S1	52	5	2	11'-1"	601
S2	52	5	3	3'-10"	208
S3	20	4	4	6'-6"	87
V1	72	4	STR	5'-6"	265
V2	56	4	STR	8'-8"	324

REINFORCING STEEL 4,562 LBS.

CLASS A CONCRETE BREAKDOWN
POUR 1 (CAP, LOWER WING WALLS, & COLLARS) 24.3 C.Y.

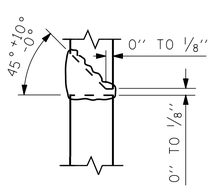


✳PILE VERTICAL



✳PILE HORIZONTAL OR VERTICAL

✳POSITION OF PILE DURING WELDING.



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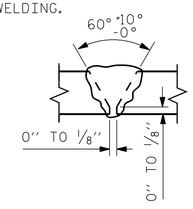

DETAIL "B"

HP PILE SPLICE DETAILS

PROJECT NO. B-5156
PENDER COUNTY
STATION: 22+90.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

END BENT 2 SECTION AND DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole SAE35A8E0302425... 1/10/2024

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

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DRAWN BY:	D. D. LOWERY	DATE: 03/2023
CHECKED BY:	A. L. PHILLIPS	DATE: 03/2023
DESIGN ENGINEER OF RECORD:	C. T. POOLE	DATE: 03/2023

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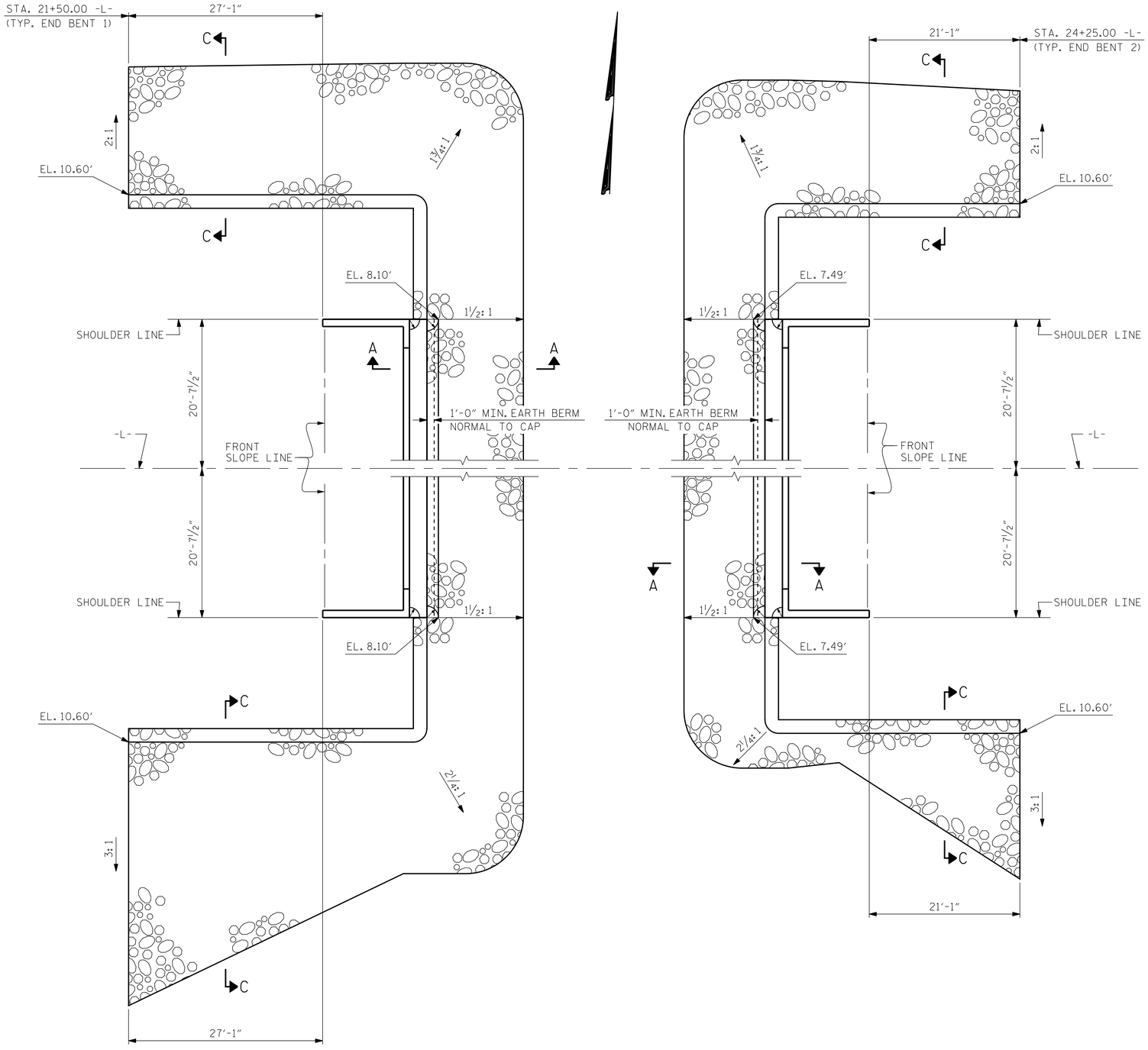


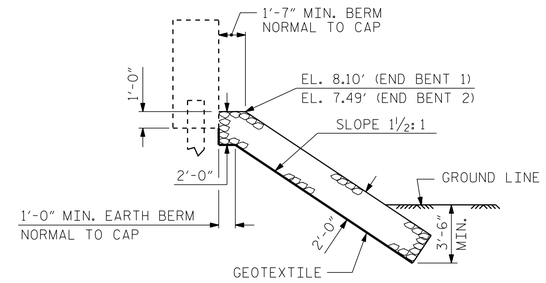
END BENT 1

PLAN

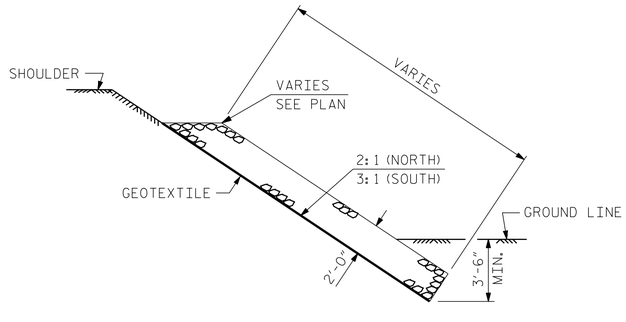
END BENT 2

NOTES

FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



SECTION A-A



SECTION C-C

ESTIMATED QUANTITIES		
BRIDGE @ STA. 22+90.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	469	521
END BENT 2	309	343

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

DocuSigned by:
Clay T Poole
5AE35A6E0302425...
1/10/2024

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

RIP RAP DETAILS

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ASSEMBLED BY : D. D. LOWERY	DATE : 03/2023		
CHECKED BY : C. T. POOLE	DATE : 03/2023		
DRAWN BY : REK 1/84	REV. 10/1/11	MAA/GM	
CHECKED BY : RDU 1/84	REV. 12/21/11	MAA/GM	
	REV. 12/17	MAA/THC	

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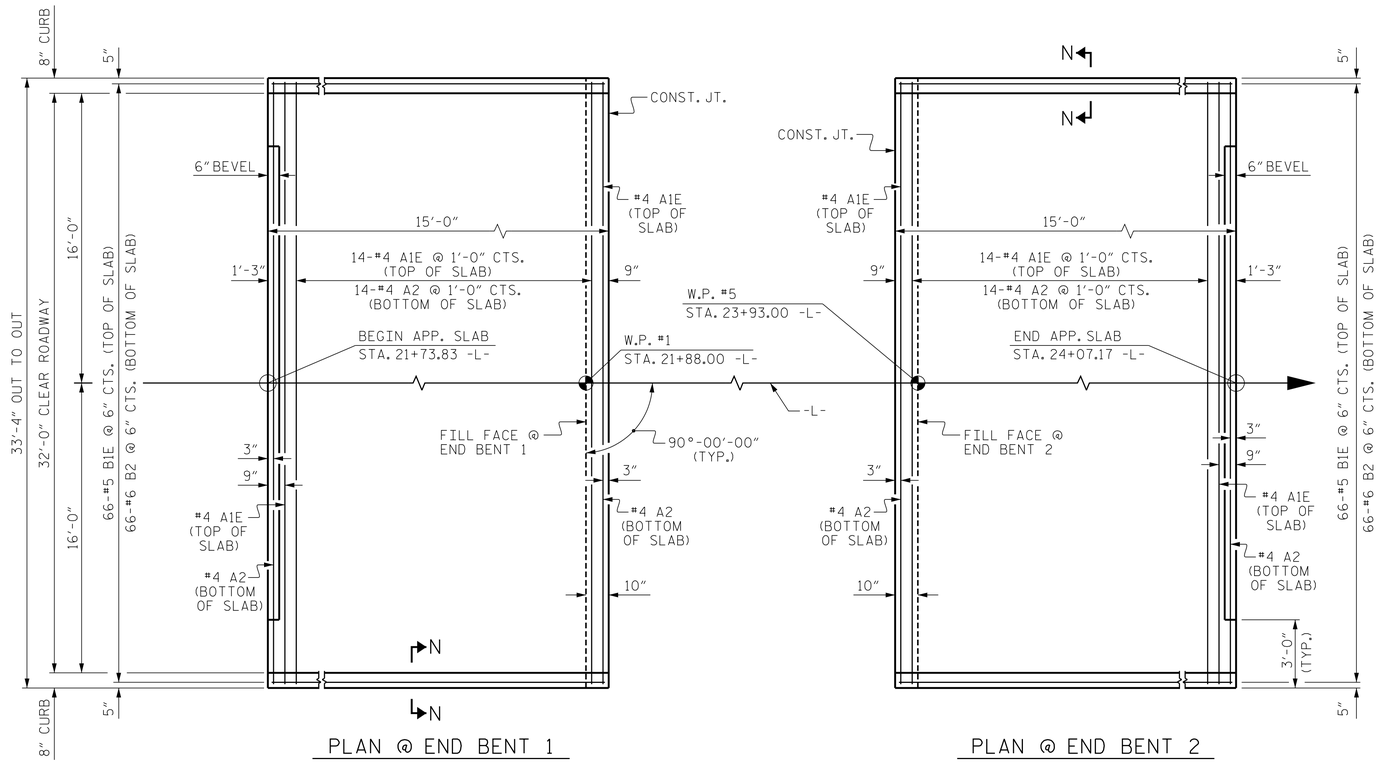
STD. NO. RR1



DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

NOTES

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.

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

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

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

AT THE CONTRACTORS OPTION "TYPE 1A - ALTERNATE APPROACH FILL" (ROADWAY STD. 423.02) MAY BE CONSTRUCTED AT NO ADDITIONAL COST TO THE DEPARTMENT IN LIEU OF "TYPE 1 - APPROACH FILL".

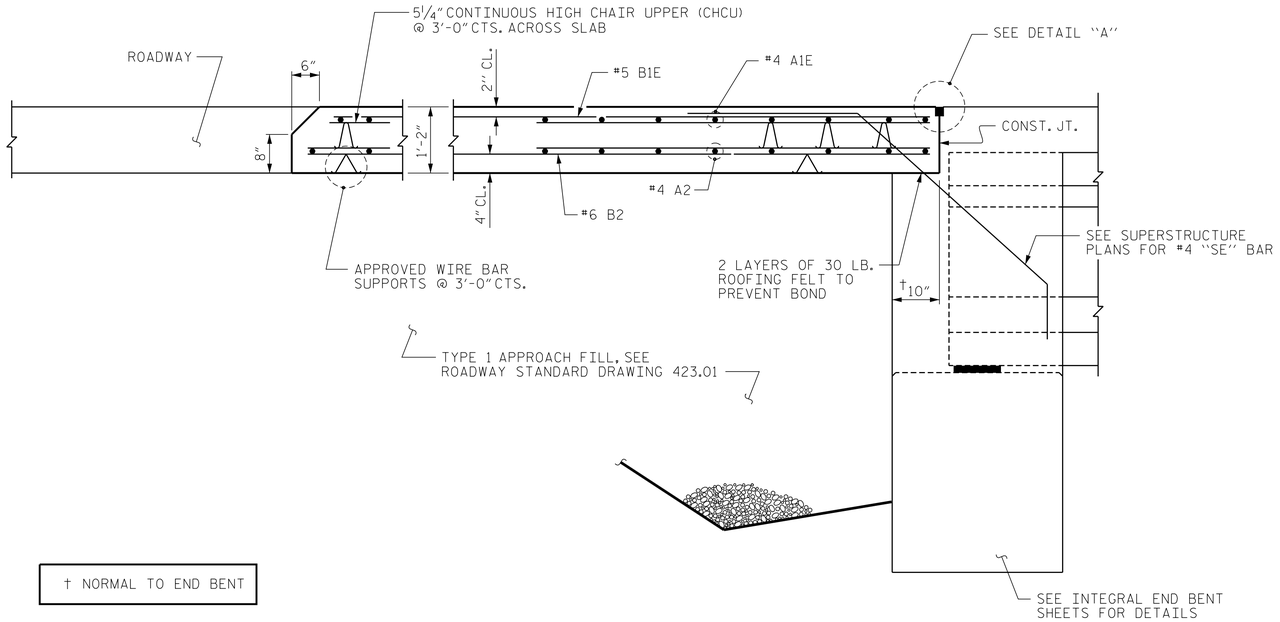
BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	16	#4	STR	33'-0"	353
A2	16	#4	STR	33'-0"	353
B1E	66	#5	STR	14'-2"	975
B2	66	#6	STR	14'-8"	1,454
REINFORCING STEEL					1,807 LBS.
EPOXY COATED REINFORCING STEEL					1,328 LBS.
CLASS AA CONCRETE					21.5 C.Y.

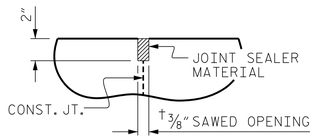
SPLICE LENGTHS

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



† NORMAL TO END BENT

SECTION THRU SLAB



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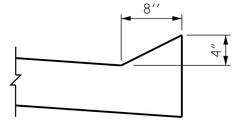

SECTION N-N

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT WITH FLEXIBLE PAVEMENT

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 1/10/2024

ASSEMBLED BY : D.D. LOWERY	DATE : 03/2023
CHECKED BY : C.T. POOLE	DATE : 03/2023

DRAWN BY : TLA 10/05	REV. 6/13	MAA/GM
CHECKED BY : GM 5/06	REV. 12/17	MAA/THC
	REV. 06/19	BNB/THC

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Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

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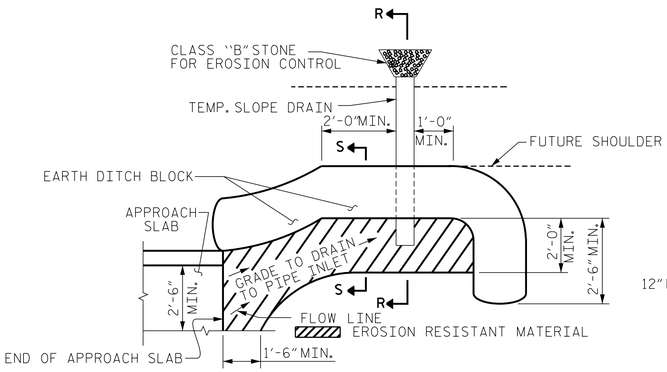
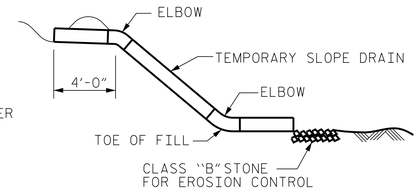
STD. NO. BAS5

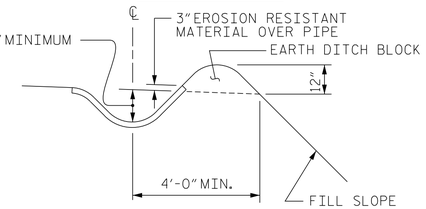


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW



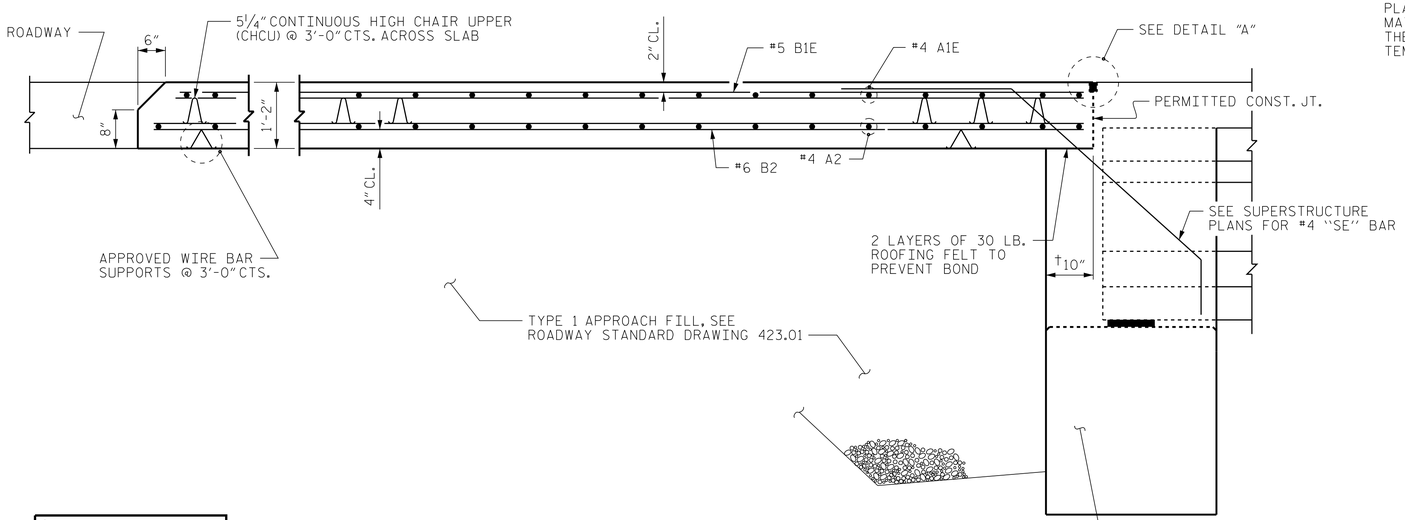
SECTION R-R



SECTION S-S

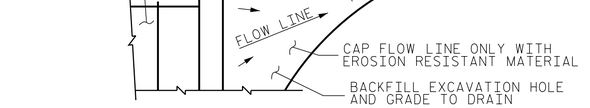
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



† NORMAL TO END BENT

SECTION THRU SLAB



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

TEMPORARY DRAINAGE DETAIL

NOTES

AT THE CONTRACTOR'S OPTION, THE APPROACH SLAB MAY BE CAST MONOLITHICALLY WITH THE INTEGRAL END BENT DIAPHRAGM AND THE END SECTION OF BRIDGE DECK. IF CAST WITH THE INTEGRAL DIAPHRAGM, THE LAYERS OF ROOFING FELT SHALL BE OMITTED. IF CAST SEPARATE FROM THE INTEGRAL DIAPHRAGM, APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

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

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

PROJECT NO. B-5156

PENDER COUNTY

STATION: 22+90.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 047653 ENGINEER CLAY T. POOLE

DocuSigned by: Clay T Poole 1/10/2024
5AE35ABE03D2425...

Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

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	REV. 12/17		MAA/THC

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STD. NO. BAS5

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 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 ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" 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 ¼" 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 ⅞" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾" Ø STUDS BASED ON THE RATIO OF 3 - ⅞" Ø STUDS FOR 4 - ¾" 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 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 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

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

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. 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.

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