SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pile(s) #-# (e.g., "Bent 1, Piles 1-5")	Factored Resistance per Pile TONS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Lenth per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles*			Drilled-In Piles		
					Min Pile Tip (Tip No Higher Than) Elev FT	Required Driving Resistance (RDR)** per Pile TONS	Total Pile Redrives Quantity EACH	Predrilling Length per Pile Lin FT	Predrilling Elevation (Elev Not To Predrill Below) FT	Maximum Predrilling Dia INCHES	Pile Excavation (Bottom of Hole) Elev FT	Pile Exc Not In Soil per Pile Lin FT	Pile Exc In Soil per Pile Lin FT
End Bent 1, Piles 1-6	115	22.26	55			155	6						
End Bent 2, Piles 1-6	115	21.55	50			155							

*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 DPT/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

Pile Driving Analyzer (DPT)				Pile Order Lengths	
End Bent/ Bent No	DPT Testing Required? YES or MAYBE	DPT Test Pile Length FT	Total DPT Testing Quantity EACH	End Bent/ Bent No(s)	Pile Order Length Basis* EST or DPT
End Bent 1, Piles 1-6	YES	60	2		
End Bent 2, Piles 1-6	YES	55			

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

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 1-6	115			0.75			
End Bent 2, Piles 1-6	115			0.75			

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

SUMMARY OF DRILLED PIER TESTING

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pier(s) #-# (e.g., "Bent 1, Piers 1-3")	Standard Penetration Test (SPT) Required? YES or MAYBE	Crosshole Sonic Logging (CSL) Required?* YES or MAYBE	Total CSL Tube Length (For All Tubes) per Pier Lin FT	Shaft Inspection Device (SID) Required? YES or MAYBE	Pile Integrity Test (PIT) Required? MAYBE
Bent 1, Piers 1-3		YES	308	MAYBE	
Bent 2, Piers 1-3		YES	300	MAYBE	
TOTAL QTY:		2	1824	2	

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

SUMMARY OF DRILLED PIER INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

End Bent/ Bent No, Pier(s) #-# (e.g., "Bent 1, Piers 1-3")	Factored Resistance per Pier TONS	Minimum Pier Tip (Tip No Higher Than) Elevation FT	Required Tip Resistance per Pier TSF	Scour Critical Elevation FT	Minimum Drilled Pier Penetration Into Rock per Pier Lin FT	Drilled Pier Length per Pier Lin FT	Drilled Pier Length Not In Soil per Pier Lin FT	Drilled Pier Length In Soil per Pier Lin FT	Permanent Steel Casing Required? YES or MAYBE	Permanent Steel Casing Tip Elevation (Elev Not To Extend Casing Below) FT	Permanent Steel Casing Length* per Pier Lin FT
Bent 1, Piers 1-3	430	-60.0	5	2.5		75.5			YES	-8.0	23.5
Bent 2, Piers 1-3	435	-58.0	5	2.5		73.5			YES	-12.0	27.5

*Permanent Steel Casing Length equals the difference between the ground line or top of drilled pier elevation, whichever is higher, and the permanent casing tip elevation.

NOTES:

1. The Pile and Drilled Pier Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Bon-Hsiang Lien, 030132) on 4/28/2022.
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 DPT Testing, Permanent Steel Casing, SPTs, CSL Testing, SID Inspections and PITs when these items may be required.

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 3 OF 4

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030132 PATRICK COLLEGE FALLAIZE 4/27/2024

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE AND DRILLED PIER FOUNDATION TABLES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

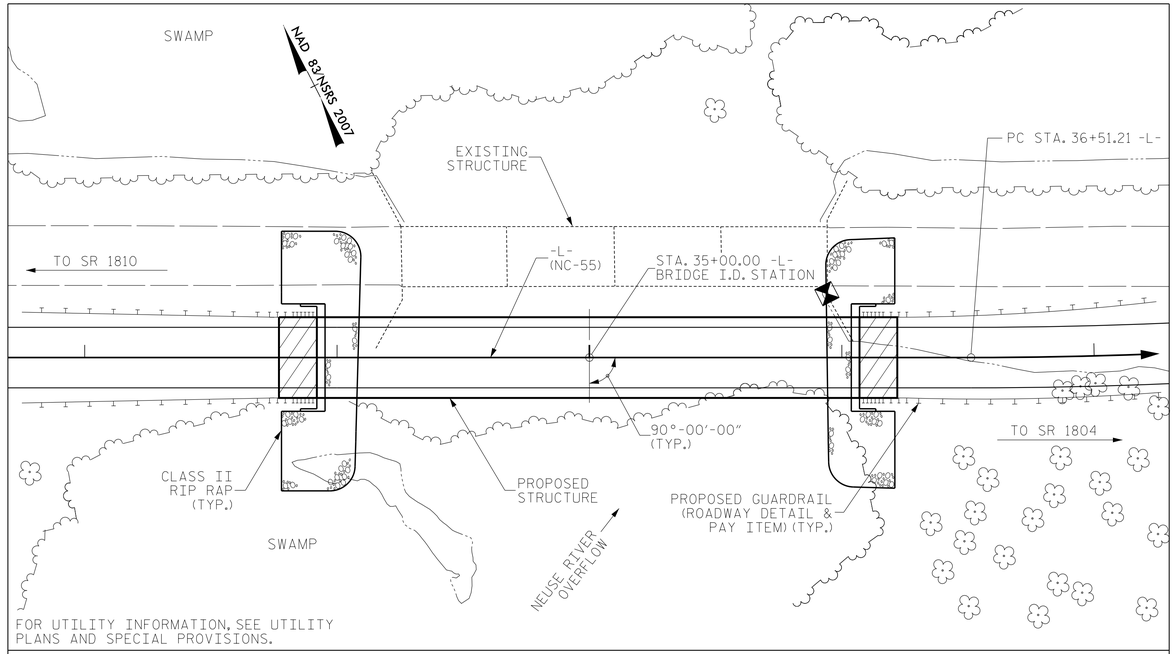
Johnson, Mirmiran, & Thompson Inc.
4700 Falls of Neuse Rd, Suite 100,
Raleigh, NC, 27609
License No: C-3097

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-3
1			3			TOTAL SHEETS
2			4			39

DWN. BY: WDC DATE: 03/2023
CHKD. BY: PRG DATE: 03/2023
DES. EGR. OF RECORD: PRG DATE: 03/2023

wdrutcher
DGN: I:\NCSTructures\03147-01 - B-4926 Lenoir 20 &34\Structures\Lenoir 34\Plans\402_005_B4926_SMU_FT01_S03.dgn
TIME: 6:54 PM on Wednesday, January 31, 2024

BM 2: -L- STA 46+17.63, 45.24' LEFT, BENCH NAIL SET IN 12" OAK, ELEV. 24.53



LOCATION SKETCH

HYDRAULIC DATA		
DESIGN DISCHARGE	=	20,700 CFS
DESIGN FREQUENCY	=	5 YRS
DESIGN HW ELEVATION	=	24.8 FT
BASE DISCHARGE	=	44,300 CFS
BASE FREQUENCY	=	100 YRS
BASE HW ELEVATION	=	30.9 FT
OVERTOPPING FLOOD DATA		
OVERTOPPING DISCHARGE	=	26,000 CFS
OVERTOPPING FREQUENCY	=	10+ YRS
OVERTOPPING ELEVATION	=	26.2 * FT
DRAINAGE AREA	=	2,800 SQ. MI.

* OVERTOPPING OCCURS AT LOW ROADWAY ELEVATION STA. 15+00; BEGIN CONSTRUCTION FOR B-4926; BRIDGE RS 213795; ELEVATION=26.2

GENERAL NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 4 SPANS; 1 @ 41'-9", 1 @ 42'-6", 1 @ 42'-6", 41'-9", ON 4 LINES OF REINFORCED CONCRETE DECK GIRDERS, WITH A CLEAR ROADWAY WIDTH OF 23'-10", ON REINFORCED CONCRETE ABUTMENTS AND INTERIOR BENTS, LOCATED JUST NORTH OF THE SITE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL CONDITION OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, THE LOAD LIMIT MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THE 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.

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

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

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

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

FOR EMBANKMENT EXCAVATION NEAR LEFT SIDE OF BRIDGE, SEE ROADWAY PLANS. ROADWAY DETAIL AND PAY ITEM.

FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISIONS.

ALL PAVEMENT MARKING WILL BE IN ACCORDANCE WITH THE PAVEMENT MARKING PLANS AND SHALL PROVIDE FOR BICYCLES.

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	3'-6" Ø DRILLED PIERS	PERMANENT STEEL CASING FOR 3'-6" Ø DRILLED PIERS	DYNAMIC PILE TESTING	SID INSPECTIONS	CSL TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS
	LUMP SUM	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	EACH	EACH	EACH	SQ. FT.	SQ. FT.	CU. YARDS	LUMP SUM
SUPERSTRUCTURE									7,805	7,481		LUMP SUM
END BENT NO. 1											26.6	
BENT NO. 1				226.5	70.5						25.0	
BENT NO. 2				220.5	82.5						24.8	
END BENT NO. 2											26.6	
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	447.0	153.0	2	2	2	7,805	7,481	103.0	LUMP SUM

	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	45" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	HP 12 X 53 STEEL PILES		PILE REDRIVES	TWO BAR METAL RAIL	1'-2" X 2'-6" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS
	LBS.	LBS.	NO.	LIN. FT.	NO.	NO.	LIN. FT.	EACH	LIN. FT.	LIN. FT.	TONS	SQ. YARDS	LUMP SUM
SUPERSTRUCTURE			15	1062.08					411.67	426.67			LUMP SUM
END BENT NO. 1	4181				6	6	330				270	300	
BENT NO. 1	26,278	4998											
BENT NO. 2	25,736	4853											
END BENT NO. 2	4165				6	6	300				212	236	
TOTAL	60,360	9851	15	1062.08	12	12	630	6	411.67	426.67	482	536	LUMP SUM

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER NEUSE RIVER OVERFLOW ON NC-55 BETWEEN SR 1810 AND SR 1804

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047202 PATRICK R. GALLAGHER 8/12/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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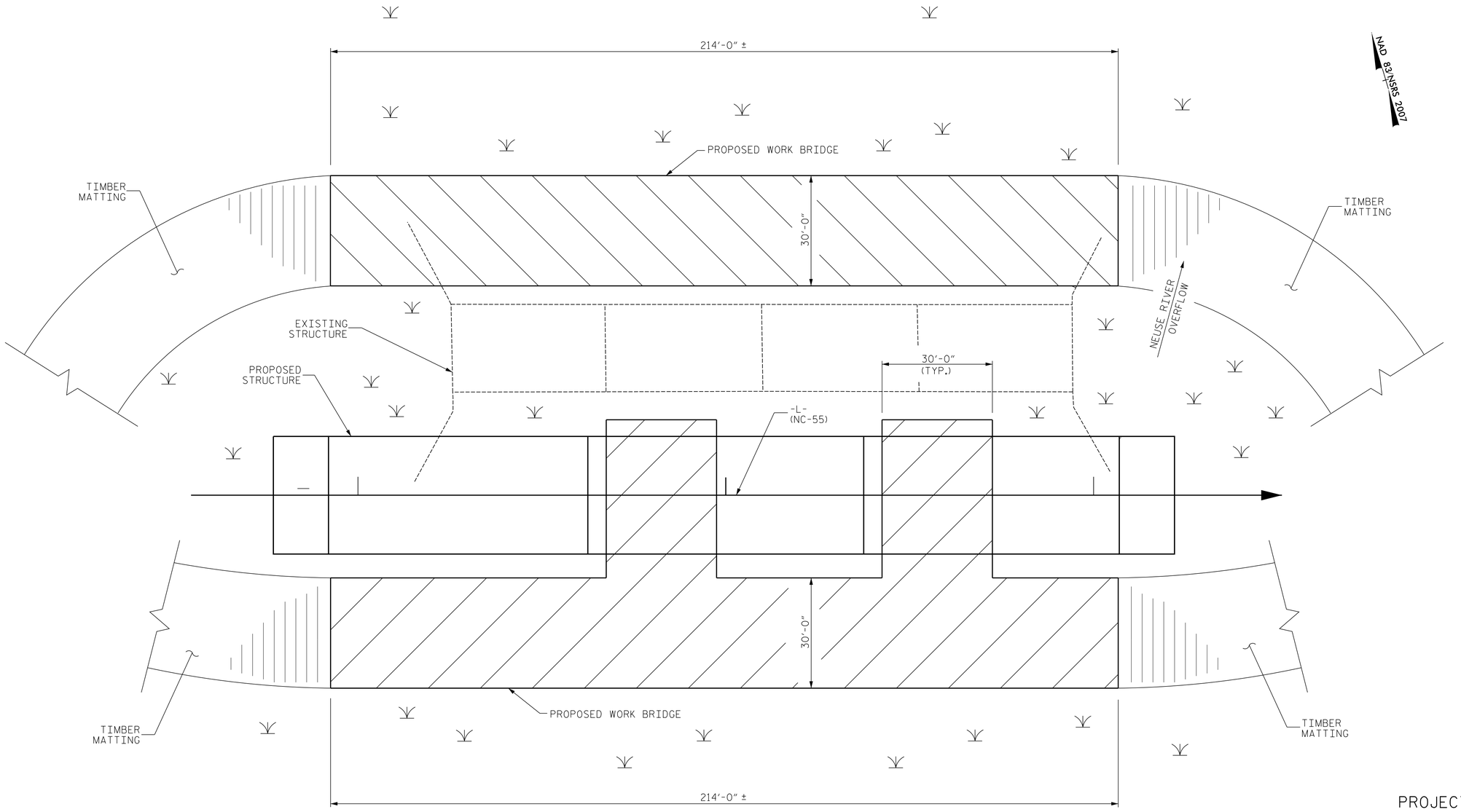
License No: C-3097

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-4
1			3			TOTAL SHEETS
2			4			39

DWN. BY: WDC DATE: 03/2023
CHKD. BY: PRG DATE: 03/2023
DES. EGR. OF RECORD: PRG DATE: 03/2023



PLAN

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TEMPORARY ACCESS

FOR BRIDGE OVER
NEUSE RIVER OVERFLOW
ON NC-55 BETWEEN
SR 1810 AND SR 1804

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-5
1			3			TOTAL SHEETS
2			4			39

PATRICK R. GALLAGHER
NORTH CAROLINA PROFESSIONAL ENGINEER
SEAL 047881
9/1/2023

DocuSigned by: Patrick Gallagher
CA1BED11EE3A4A1...

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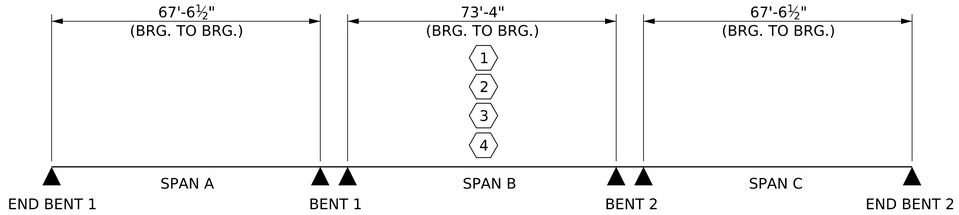
License No: C-3097

DWN. BY: WDC	DATE: 03/2023
CHKD. BY: PRG	DATE: 03/2023
DES. EGR. OF RECORD: PRG	DATE: 03/2023

wdrucker
DGN: V:\NCS\Structure\03TAT-01_-_B-4926 Lenoir 20 &34\Structures\Lenoir 34\Plans\402_009_B4926_SMU_TA01_S05.dgn
TIME: 02:34 PM on Wednesday, September 06, 2023

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

LOAD TYPE		VEHICLE	WEIGHT (W) (TONS)	⟨#⟩ CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR					MOMENT						
							LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD		HL-93 (INVENTORY)	N/A	⟨1⟩	1.06	--	1.75	0.720	1.12	B	EL	36.67	0.789	1.35	A	I	47.28	0.80	0.720	1.06	B	EL	36.67	
		HL-93 (OPERATING)	N/A		1.45	--	1.35	0.720	1.45	B	EL	36.67	0.789	1.90	A	I	54.03	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	⟨2⟩	1.40	50.40	1.75	0.720	1.48	B	EL	36.67	0.789	1.79	A	I	54.03	0.80	0.720	1.40	B	EL	36.67	
		HS-20 (OPERATING)	36.000		1.91	68.76	1.35	0.720	1.91	B	EL	36.67	0.789	2.36	A	I	54.03	N/A	--	--	--	--	--	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		3.18	42.93	1.40	0.720	4.19	B	EL	36.67	0.789	5.48	A	I	54.03	0.80	0.720	3.18	B	EL	36.67	
		SNGARBS2	20.000		2.30	46.00	1.40	0.720	3.03	B	EL	36.67	0.789	2.83	A	I	54.03	0.80	0.720	2.30	B	EL	36.67	
		SNAGRIS2	22.000		2.23	49.06	1.40	0.720	2.94	B	EL	36.67	0.789	2.62	A	I	54.03	0.80	0.720	2.23	B	EL	36.67	
		SNCOTTS3	27.250		1.58	43.06	1.40	0.720	2.09	B	EL	36.67	0.789	2.67	A	I	54.03	0.80	0.720	1.58	B	EL	36.67	
		SNAGGRS4	34.925		1.32	46.10	1.40	0.720	1.74	B	EL	36.67	0.789	2.21	A	I	54.03	0.80	0.720	1.32	B	EL	36.67	
		SNS5A	35.550		1.29	45.86	1.40	0.720	1.70	B	EL	36.67	0.789	2.26	A	I	54.03	0.80	0.720	1.29	B	EL	36.67	
		SNS6A	39.950		1.18	47.14	1.40	0.720	1.56	B	EL	36.67	0.789	2.06	A	I	54.03	0.80	0.720	1.18	B	EL	36.67	
		SNS7B	42.000		1.09	45.78	1.40	0.720	1.43	B	EL	36.67	0.789	1.97	A	I	54.03	0.80	0.720	1.09	B	EL	36.67	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.44	47.52	1.40	0.720	1.90	B	EL	36.67	0.789	2.47	A	I	54.03	0.80	0.720	1.44	B	EL	36.67	
		TNT4A	33.075		1.45	47.96	1.40	0.720	1.91	B	EL	36.67	0.789	2.39	A	I	54.03	0.80	0.720	1.45	B	EL	36.67	
		TNT6A	41.600		1.18	49.09	1.40	0.720	1.56	B	EL	36.67	0.789	2.20	A	I	54.03	0.80	0.720	1.18	B	EL	36.67	
		TNT7A	42.000		1.19	49.98	1.40	0.720	1.57	B	EL	36.67	0.789	2.11	A	I	54.03	0.80	0.720	1.19	B	EL	36.67	
		TNT7B	42.000		1.23	51.66	1.40	0.720	1.62	B	EL	36.67	0.789	1.97	A	I	54.03	0.80	0.720	1.23	B	EL	36.67	
		TNAGRIT4	43.000		1.17	50.31	1.40	0.720	1.54	B	EL	36.67	0.789	1.90	A	I	54.03	0.80	0.720	1.17	B	EL	36.67	
		TNAGT5A	45.000		1.10	49.50	1.40	0.720	1.45	B	EL	36.67	0.789	1.91	A	I	54.03	0.80	0.720	1.10	B	EL	36.67	
		TNAGT5B	45.000	⟨3⟩	1.09	49.05	1.40	0.720	1.44	B	EL	36.67	0.789	1.80	A	I	54.03	0.80	0.720	1.09	B	EL	36.67	
EMERGENCY VEHICLE (EV)		EV2	28.750		1.75	50.31	1.30	0.720	2.47	B	EL	36.67	0.789	2.91	A	I	54.03	0.80	0.720	1.75	B	EL	36.67	
		EV3	43.000	⟨4⟩	1.15	49.45	1.30	0.720	1.62	B	EL	36.67	0.789	1.92	A	I	54.03	0.80	0.720	1.15	B	EL	36.67	



LRFR SUMMARY

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γDC	γDW
	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.

⟨#⟩ 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

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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4700 Falls of Neuse Rd, Suite 100,
Raleigh, NC, 27609
License No: C-3097

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

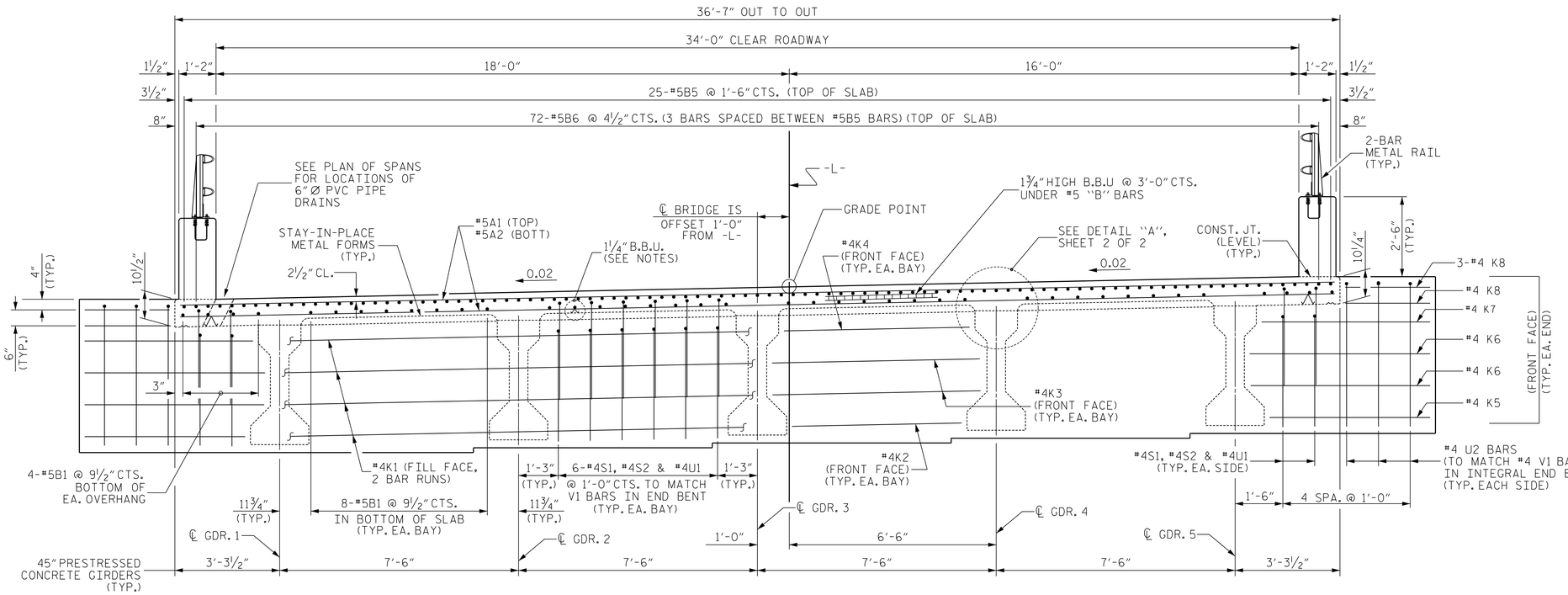
LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-6
1			3			TOTAL SHEETS
2			4			39

STD. NO. LRFR1

DWN. BY: WDC	DATE: 03/2023	DRAWN BY : MAA 1/08	REV. 11/12/08RR	MAA/GM
CHKD. BY: PRG	DATE: 03/2023	CHECKED BY : GM/DI 2/08	REV. 10/1/11	MAA/GM
DES. EGR. OF RECORD: PRG	DATE: 03/2023		REV. 04/23	BNB/AAI



TYPICAL SECTION AT INTEGRAL END BENT DIAPHRAGM

SHOWING ABUTMENT WALL AT FILL FACE OF END BENTS, WINGS NOT SHOWN FOR CLARITY.

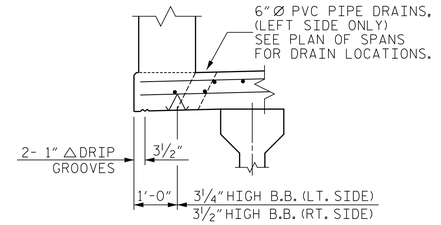
NOTES

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.

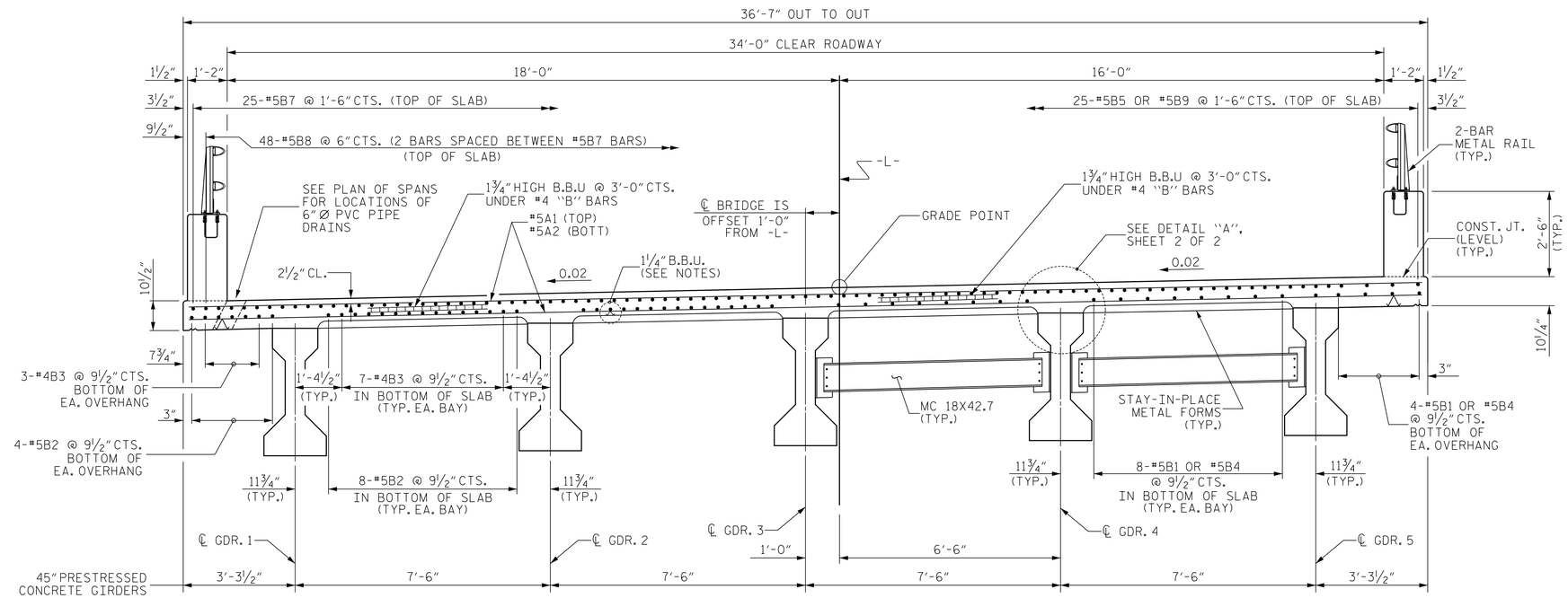
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO THE SUPPORT ANGLES WITHIN THE LINK SLAB AREAS. SEE "PLAN OF SPAN" SHEETS FOR LOCATION.



OVERHANG DETAIL

(LEFT SIDE SHOWN, RIGHT SIDE SIMIAR)



TYPICAL HALF-SECTION LINK SLAB AT BENT

TYPICAL HALF-SECTION AT INTERMEDIATE DIAPHRAGM

TYPICAL SECTION

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042590 PATRICK R. GALLAGHER 9/7/2023

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1			3			TOTAL SHEETS
2			4			39

DWN. BY: WDC	DATE: 03/2023
CHKD. BY: PRG	DATE: 03/2023
DES. EGR. OF RECORD: PRG	DATE: 03/2023

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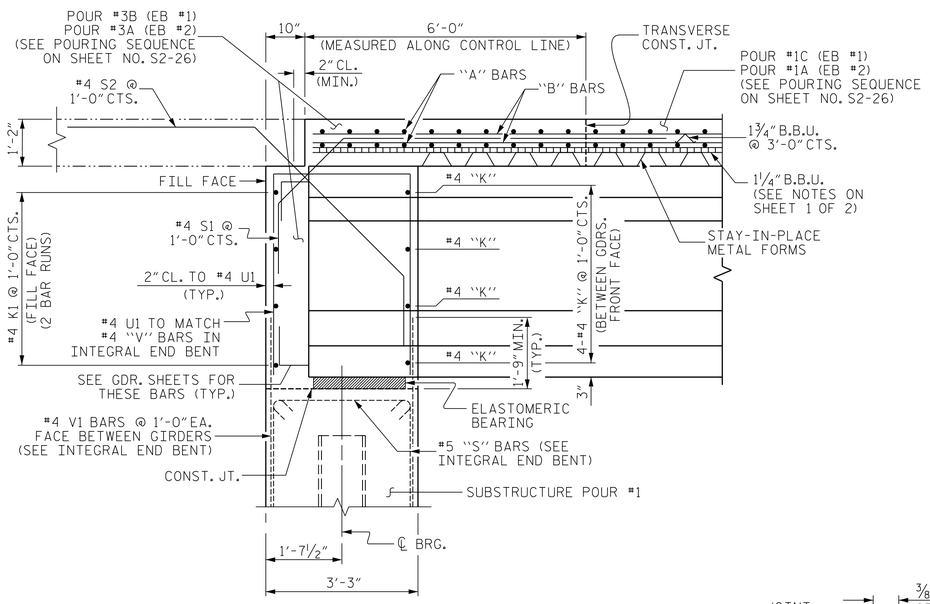
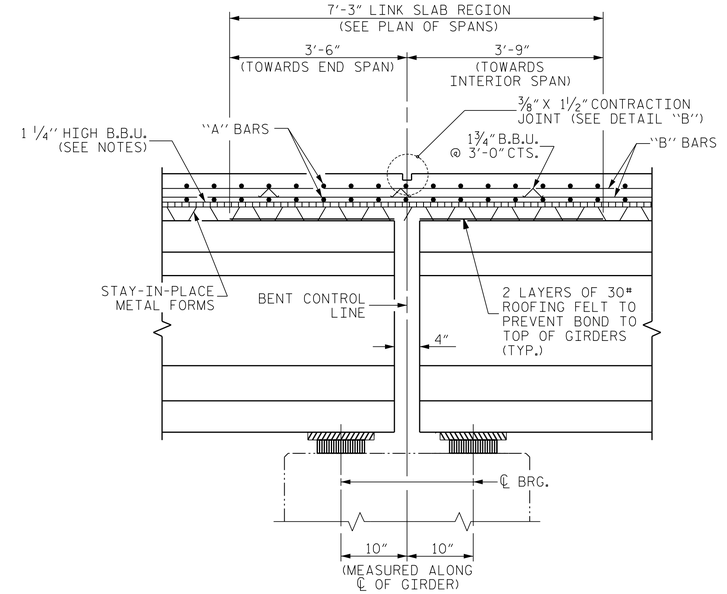


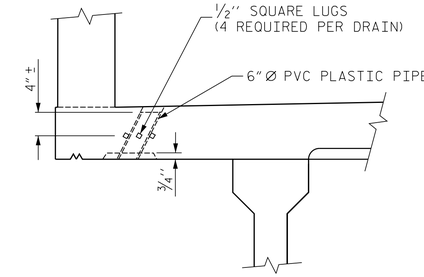
SECTION AT END BENTS



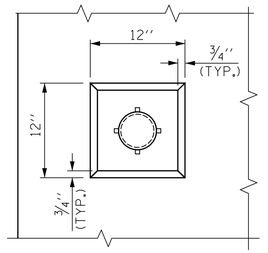
SECTION AT BENT

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

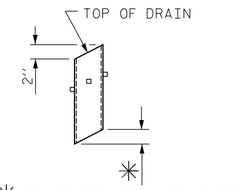
METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO THE GIRDER FLANGES IN THE REGION OF THE LINK SLAB.



ELEVATION



PLAN OF RECESS



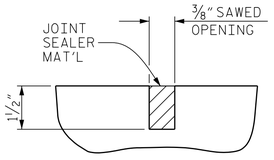
PIPE DETAIL

DRAIN DETAILS

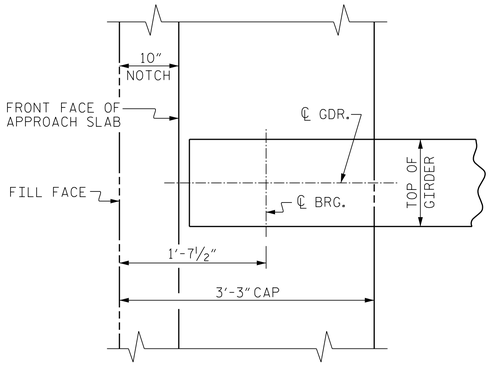
TOP OF FLOOR DRAINS TO BE SET ⅜" BELOW SURFACE OF SLAB.

4 - ½" SQUARE LUGS TO BE GLUED TO THE P.V.C. PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN APPROXIMATELY 4" FROM THE TOP OF THE PIPE.

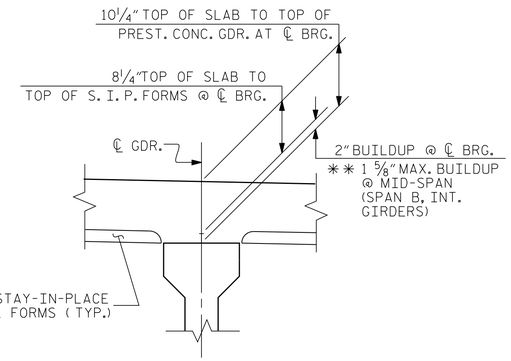
THE 6" Ø PVC PLASTIC PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND CONFORM TO ASTM D1785.



DETAIL "B"

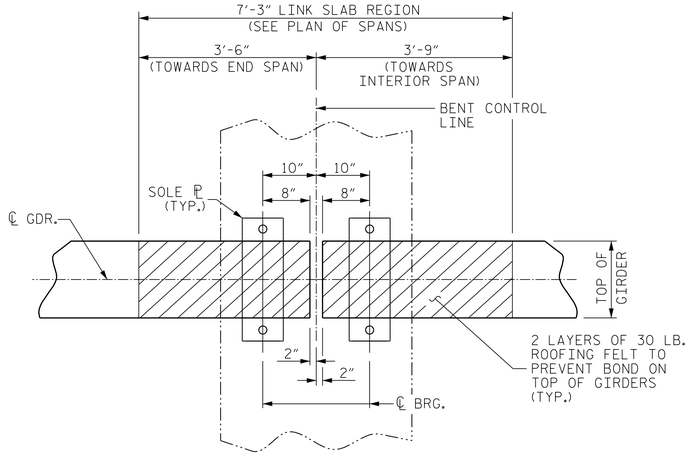


PLAN @ END BENTS



DETAIL "A"

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



PLAN AT BENT - LINK SLAB

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

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042950 PATRICK RALPH GALLAGHER — Signed by: Patrick Gallagher — 6/9/2023

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DES. EGR. OF RECORD: PRG	DATE: 03/2023

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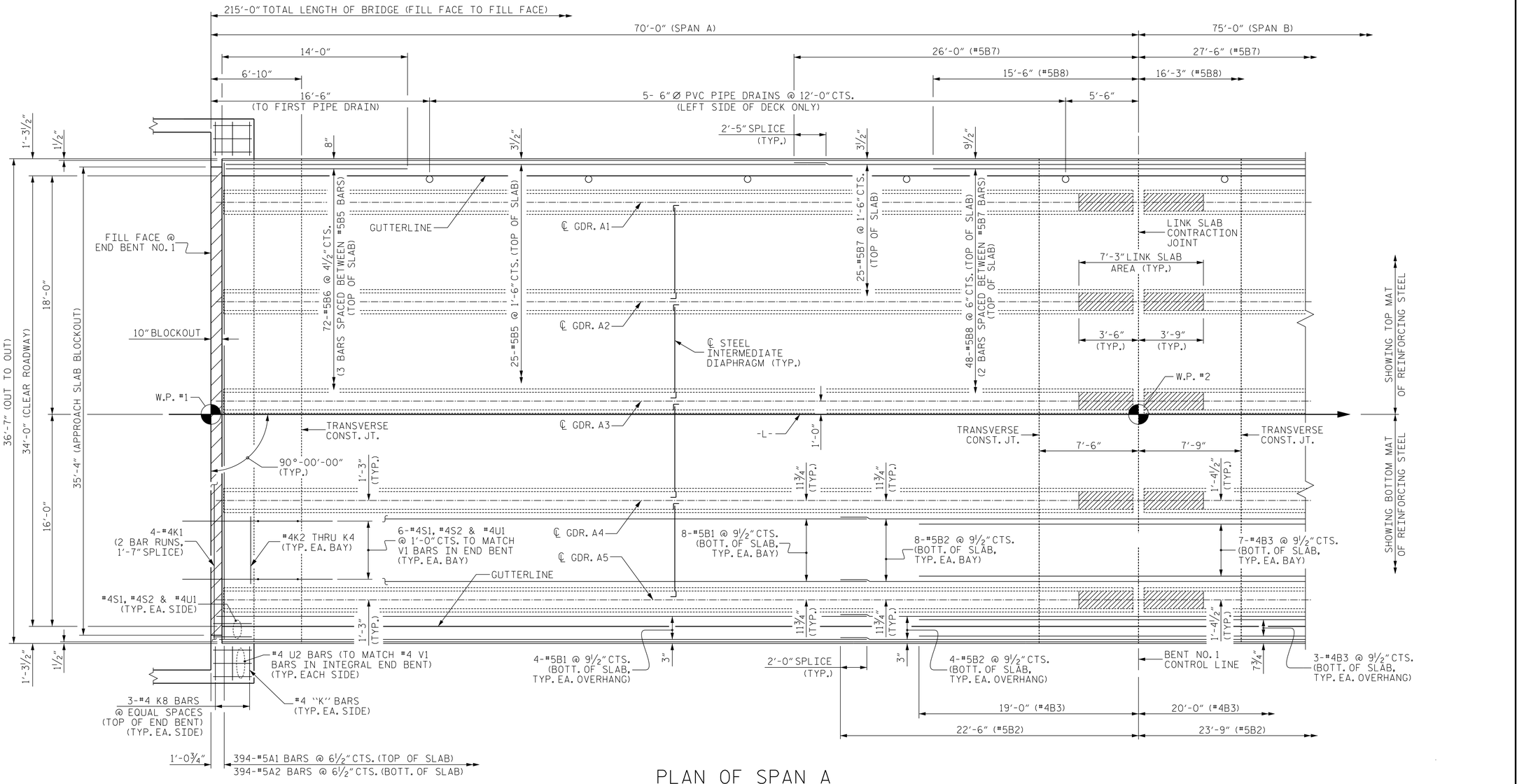

PLAN OF SPAN A

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN A

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER Engineer
5/17/2023

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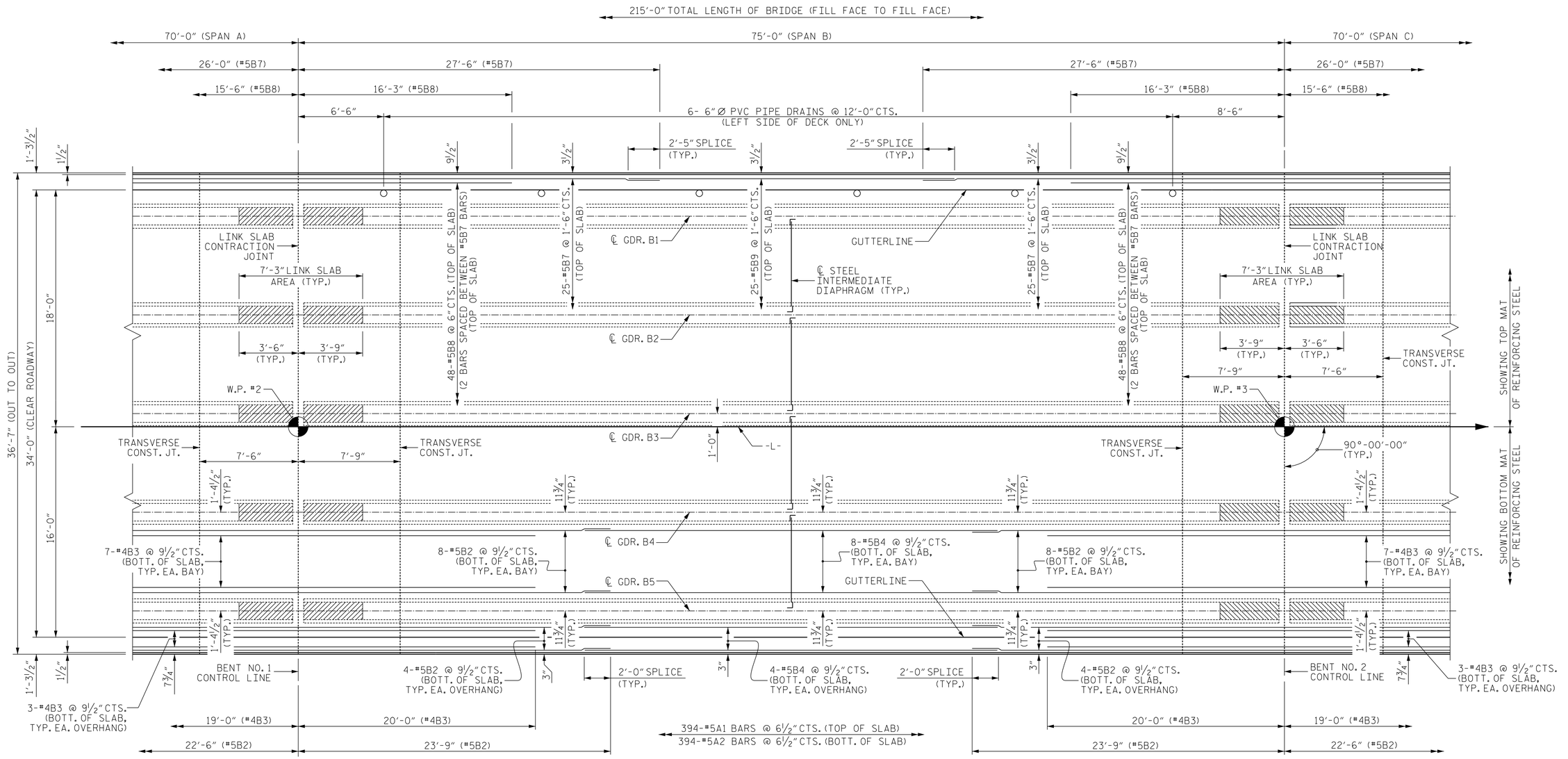

PLAN OF SPAN B

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN B

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 047288 PATRICK R. GALLAGHER
Electronically signed by Patrick R. Gallagher
9/7/2023

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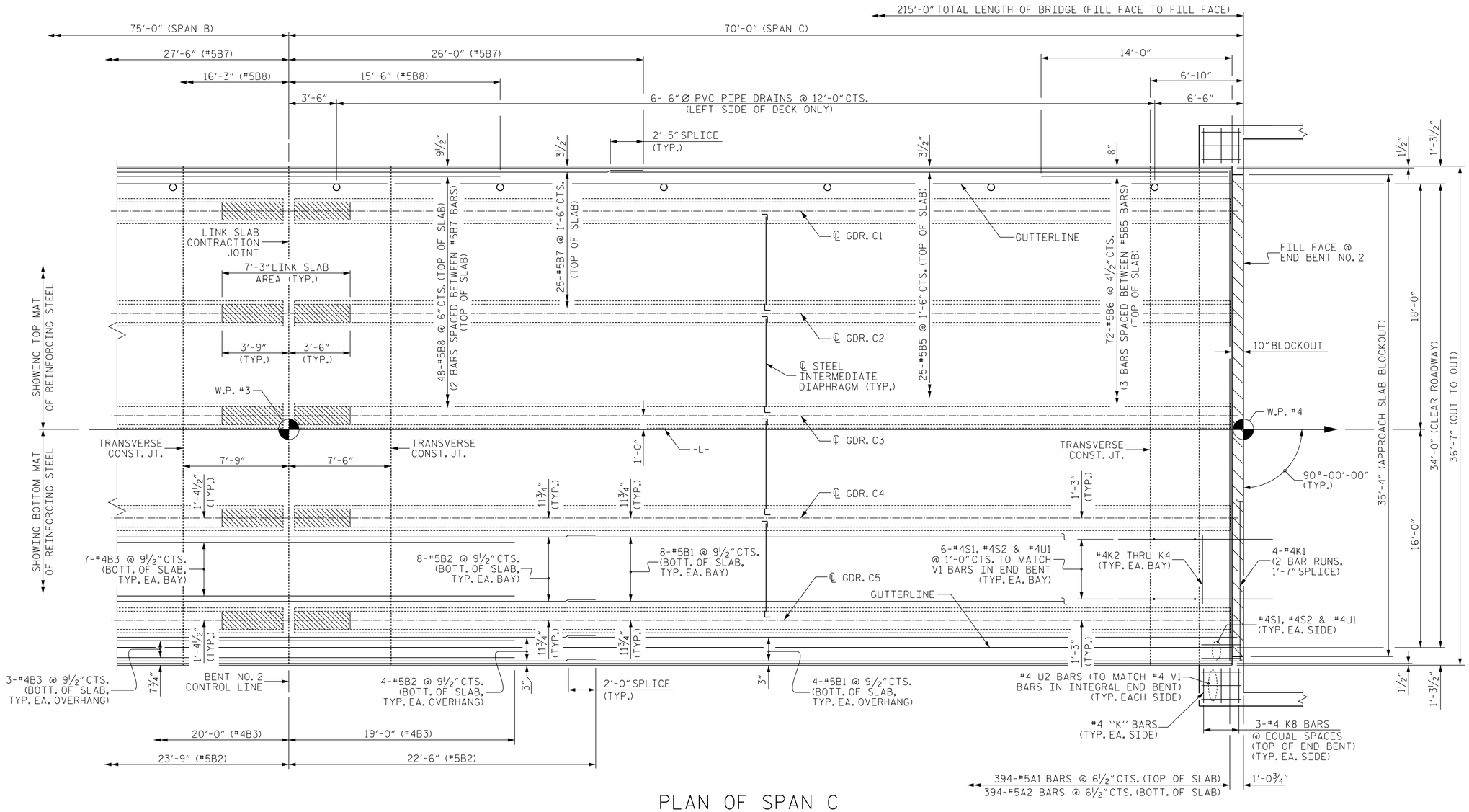

PLAN OF SPAN C

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN C

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL PATRICK R. GALLAGHER 9/7/2023

P.E. Adam Orabzar Structure Engineer

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1			3			TOTAL SHEETS
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DES. EGR. OF RECORD: PRG DATE: 03/2023

wdcrutcher
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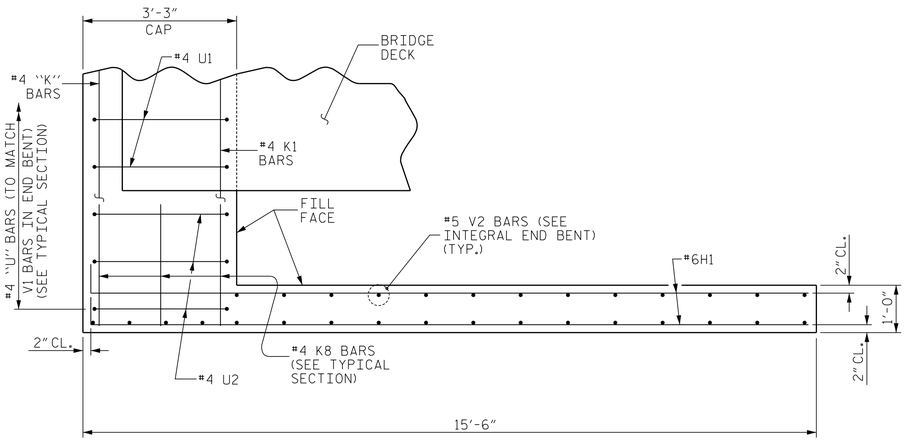
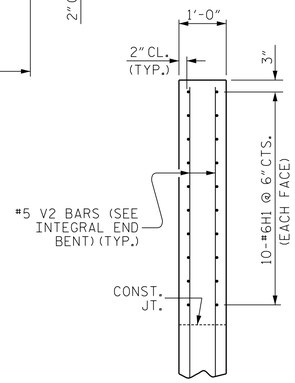
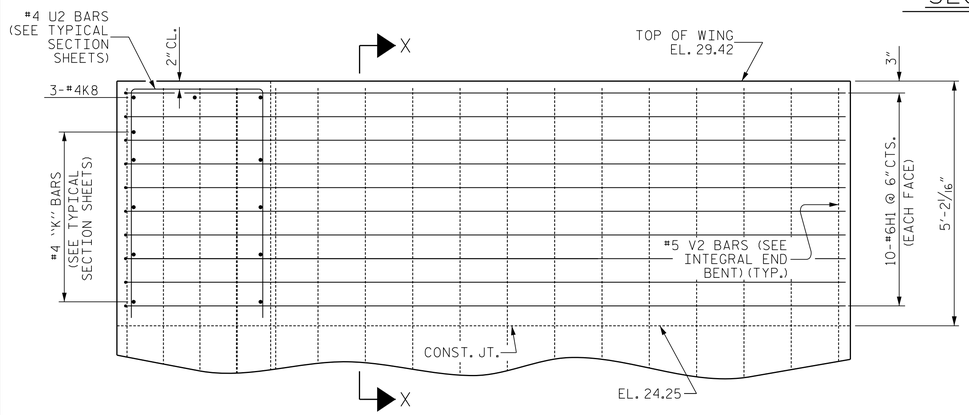


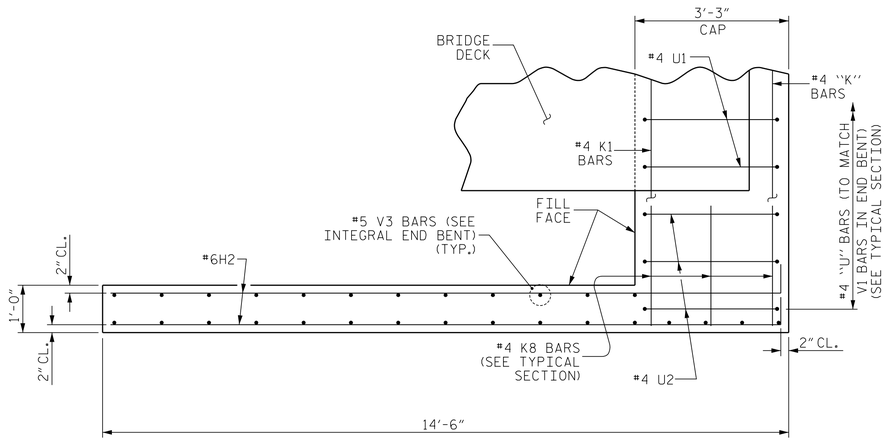
PLAN OF UPPER WING (W1)



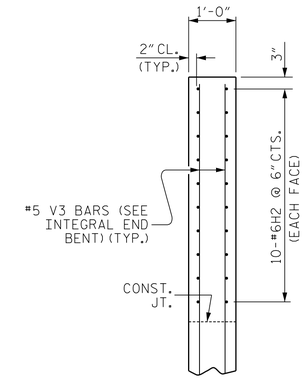
SECTION X-X



ELEVATION OF UPPER WING (W1)



PLAN OF UPPER WING (W2)



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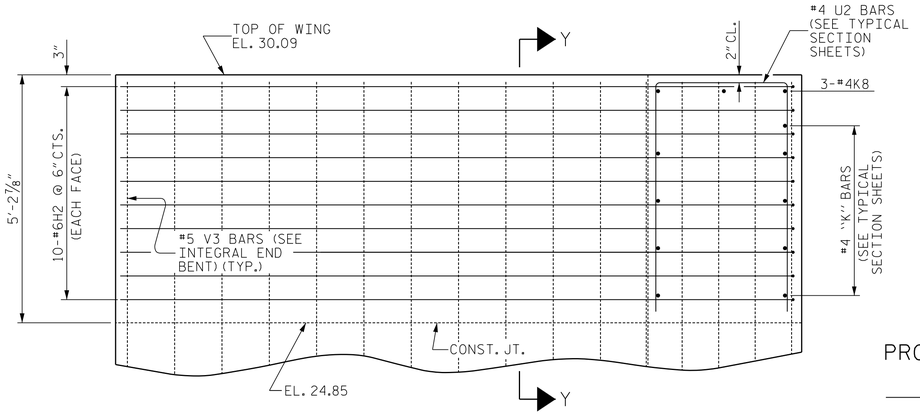

ELEVATION OF UPPER WING (W2)

FOR LOWER WING REINFORCING STEEL AND DETAILS, SEE END BENT WING DETAILS SHEET.

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS DETAILS AT END BENT NO. 1

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043280 PATRICK R. GALLAGHER 9/1/2023

Signature: Patrick R. Gallagher
ENGINEERING
Date: 9/1/2023

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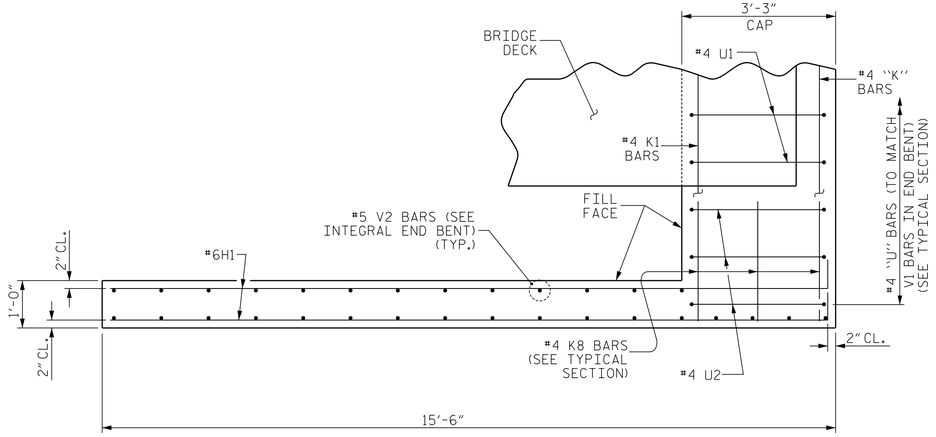

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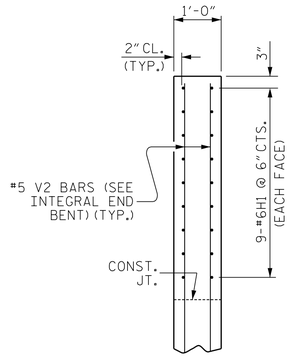

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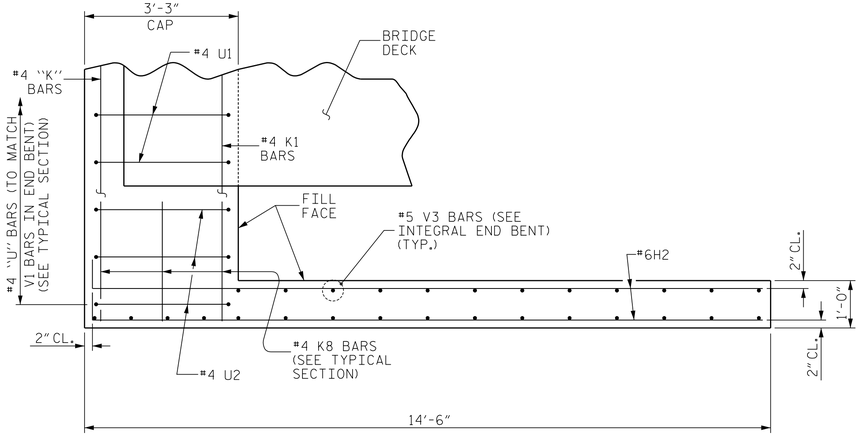

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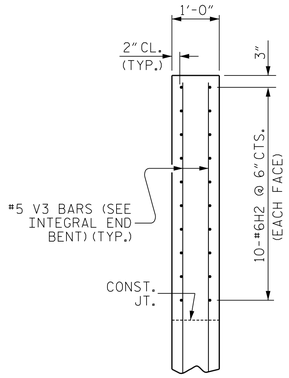

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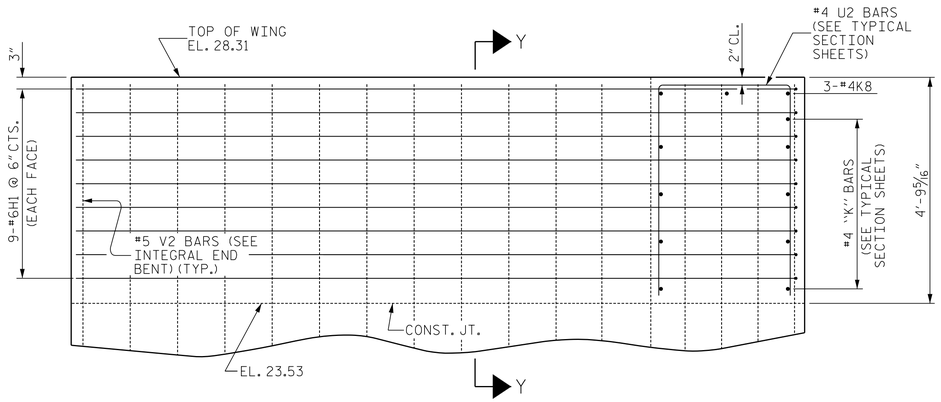
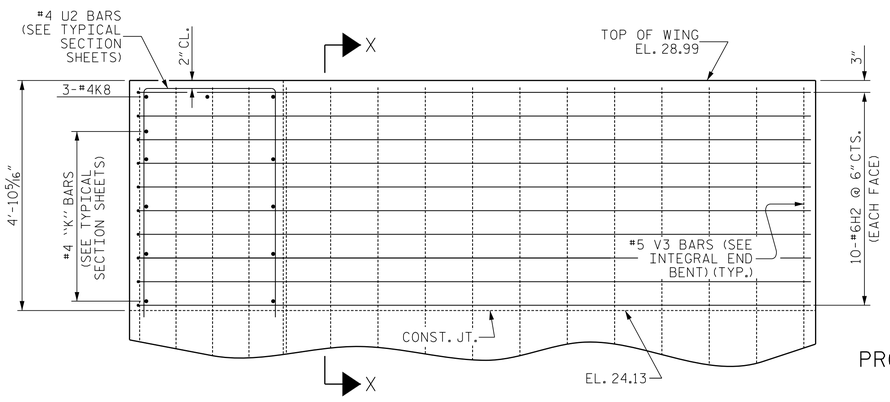


ELEVATION OF UPPER WING (W1)



ELEVATION OF UPPER WING (W2)

FOR LOWER WING REINFORCING STEEL AND DETAILS, SEE END BENT WING DETAILS SHEET.

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS DETAILS AT END BENT NO. 2

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042939 PATRICK R. GALLAGHER
REGISTERED
Patrick R. Gallagher
9/7/2023

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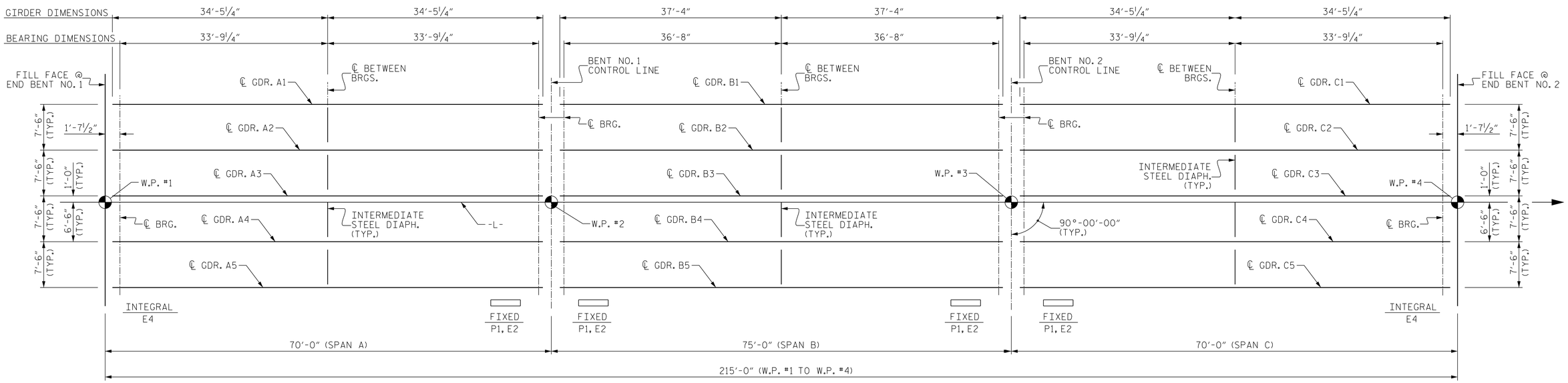

GIRDER LAYOUT

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

GIRDER LAYOUT

SEAL 032890 Patrick Gallagher ENGINEER 9/7/2023

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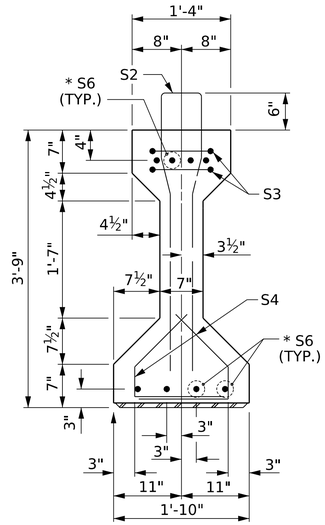
8/26/21



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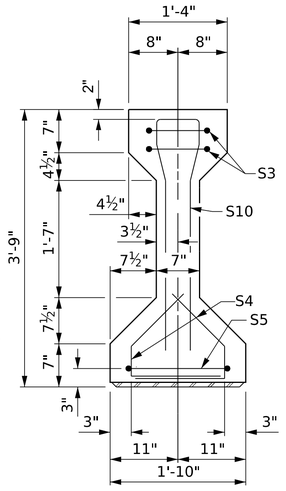
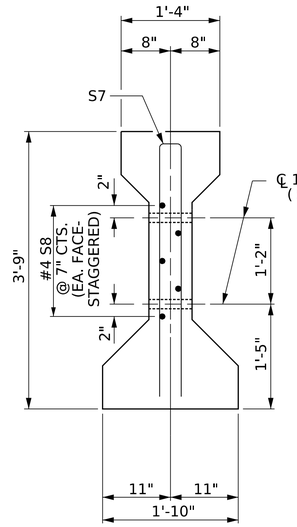


SECTION B-B

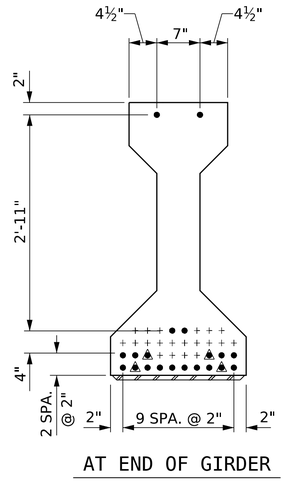


SECTION C-C

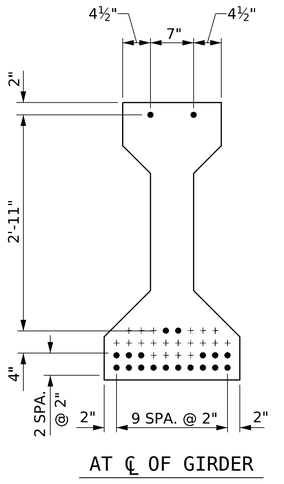
(S1 BARS NOT SHOWN)

DEBONDING LEGEND

- • FULLY BONDED STRANDS
- △ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER

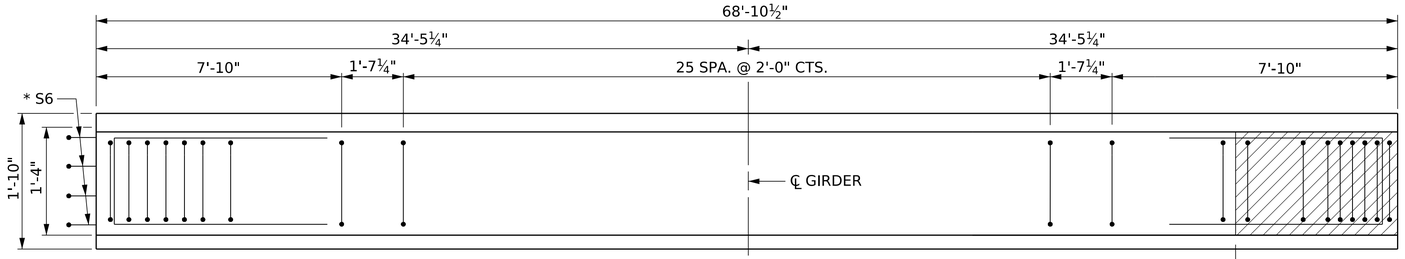


AT END OF GIRDER

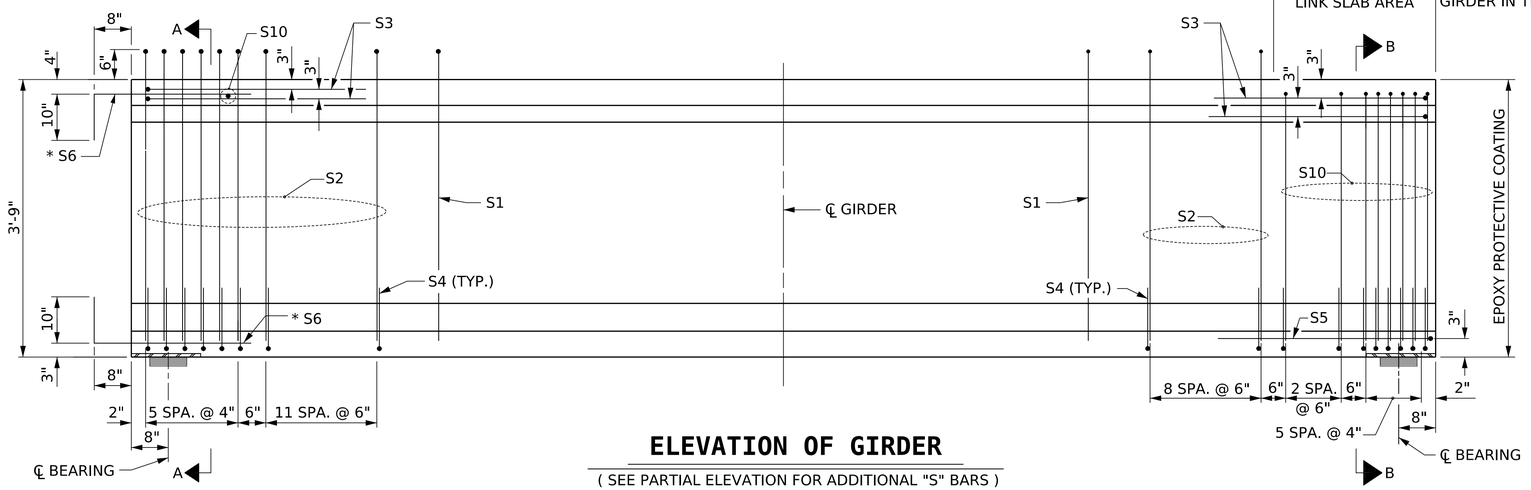


AT ℄ OF GIRDER

0.6" ⌀ LOW RELAXATION STRAND LAYOUT

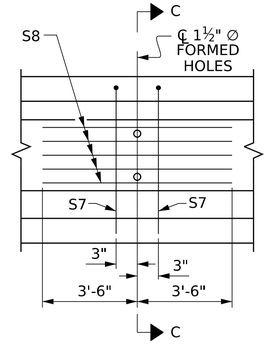


PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1 THRU 5

0.6"⌀ L.R. GRADE 270 STRANDS

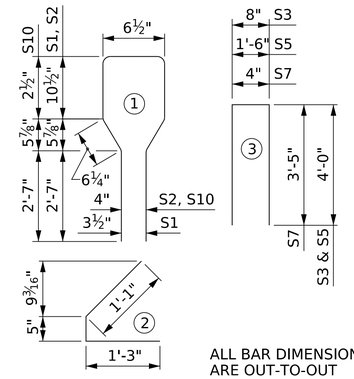
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	26	#4	1	8'-6"	148
S2	27	#6	1	8'-6"	345
S3	4	#4	3	8'-8"	23
S4	72	#4	2	2'-9"	132
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	9	#6	1	7'-2"	97

* 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	7500 PSI CONCRETE	0.6" ∅ L. R. STRANDS
	LB.	C.Y.	No.
	820	9.9	20

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
10	68'-10½"	688'-9"

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

AASHTO TYPE III PRESTRESSED CONCRETE GIRDER - LINK SLAB (SPANS A & C)

REVISIONS

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

SHEET NO. S2-15

TOTAL SHEETS 39

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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4700 Falls of Neuse Rd, Suite 100,
Raleigh, NC, 27609
License No: C-3097

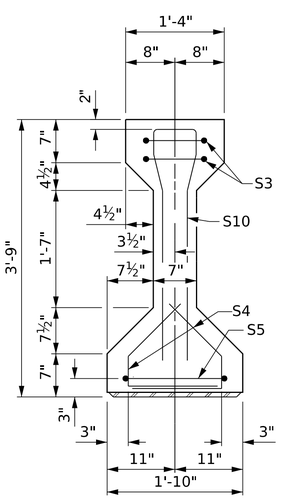
DWN. BY: WDC DATE: 03/2023
CHKD. BY: PRG DATE: 03/2023
DES. EGR. OF RECORD: PRG DATE: 03/2023

DRAWN BY : ELR 8/91
CHECKED BY : GRP 8/91

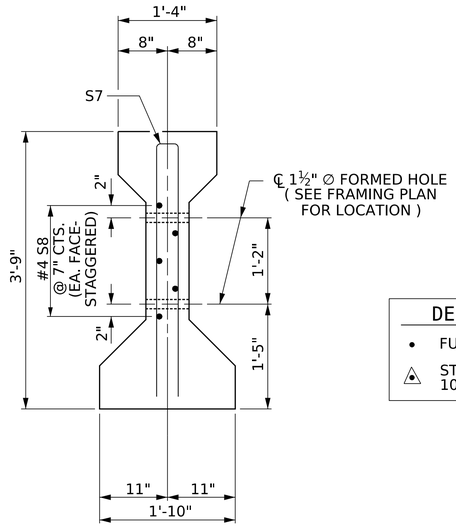
REV. 1/15 MAA/TMG
REV. 12/17 MAA/THC
REV. 11/21 BNB/AAI

STD. NO. PCG5 (SHT. 1)

8/26/21



SECTION B-B

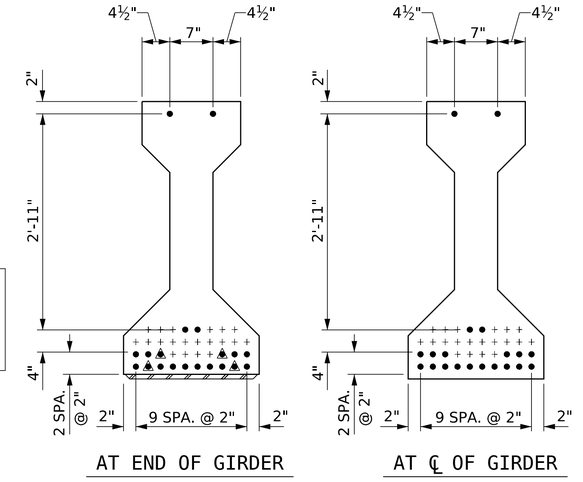


SECTION C-C

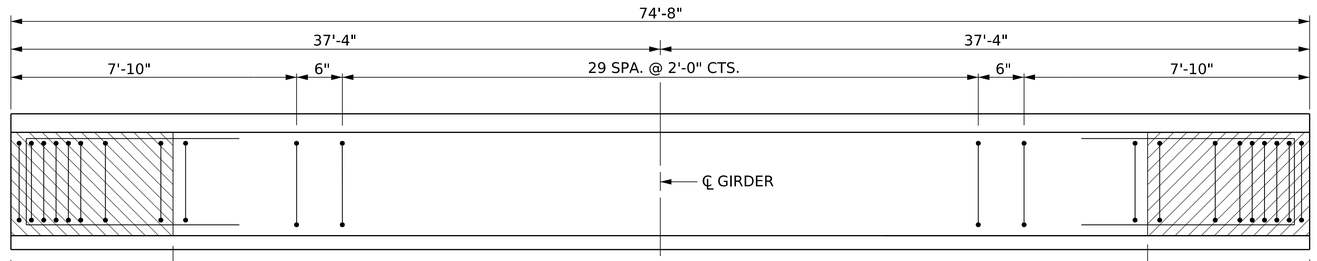
(S1 BARS NOT SHOWN)

DEBONDING LEGEND

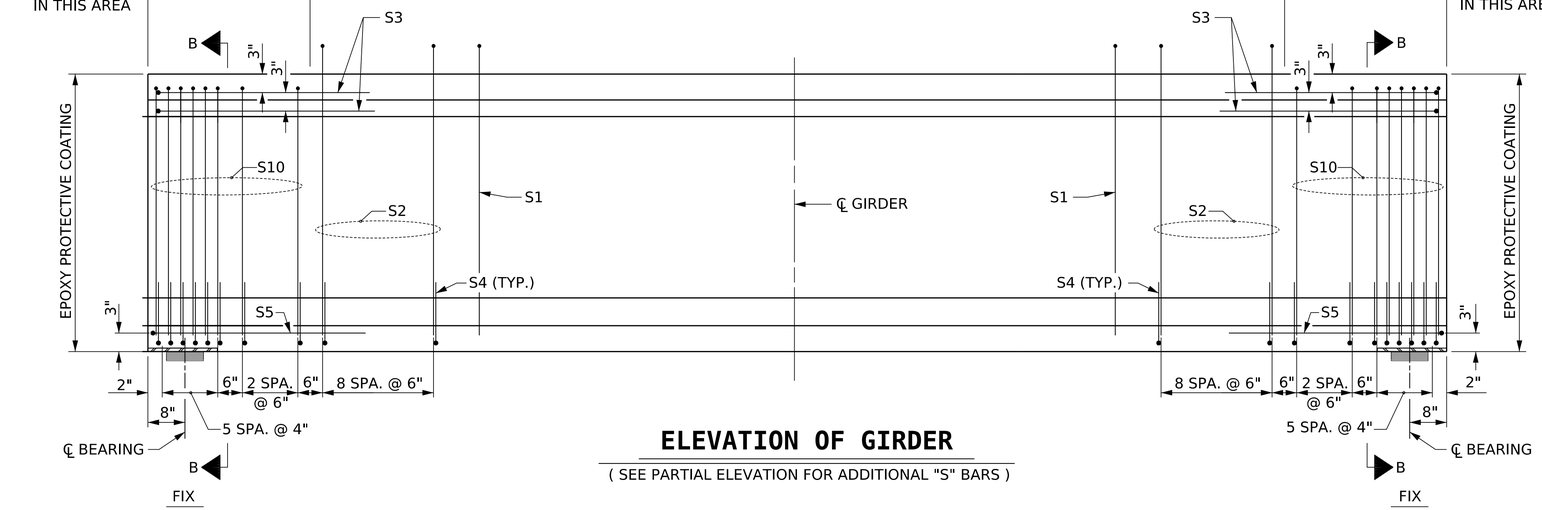
- • FULLY BONDED STRANDS
- △ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER



0.6" ⌀ LOW RELAXATION STRAND LAYOUT

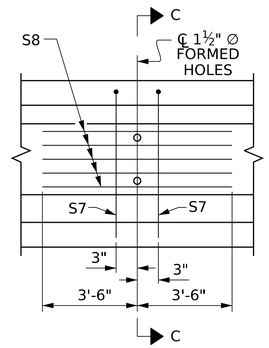


PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1 THRU 5

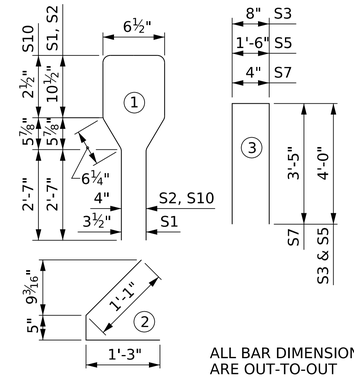
0.6"⌀ L.R. GRADE 270 STRANDS

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

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	30	#4	1	8'-6"	170
S2	18	#6	1	8'-6"	230
S3	4	#4	3	8'-8"	23
S4	72	#4	2	2'-9"	132
S5	2	#4	3	9'-6"	13
S7	2	#5	3	7'-2"	15
S8	5	#4	STR	7'-0"	23
S10	18	#6	1	7'-2"	194

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	7500 PSI CONCRETE	0.6" ∅ L. R. STRANDS
	LB.	C.Y.	No.
	800	10.7	20

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5	74'-8"	373'-4"

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040322 PATRICK R. GALLAGHER 9/1/2023

Patrick Gallagher
DocuSigned by:
EBDE42FC0DE4D6C...
9/1/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

AASHTO TYPE III PRESTRESSED CONCRETE GIRDER - LINK SLAB (SPAN B)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-16
1			3			TOTAL SHEETS
2			4			39

DWN. BY: WDC DATE: 03/2023
CHKD. BY: PRG DATE: 03/2023
DES. EGR. OF RECORD: PRG DATE: 03/2023

DRAWN BY : ELR 8/91
CHECKED BY : GRP 8/91

REV. 1/15 MAA/TMG
REV. 12/17 MAA/THC
REV. 11/21 BNB/AAI

STD. NO. PCG5 (SHT. 1)

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" Ø LOW RELAXATION	SPANS A AND C GIRDERS 1 AND 5																				
TWENTIETH POINTS	0	1/20	2/20	3/20	4/20	5/20	6/20	7/20	8/20	9/20	10/20	11/20	12/20	13/20	14/20	15/20	16/20	17/20	18/20	19/20	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.018	0.035	0.051	0.066	0.079	0.090	0.099	0.106	0.110	0.111	0.110	0.106	0.099	0.090	0.079	0.066	0.051	0.035	0.018	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.009	0.018	0.027	0.036	0.043	0.050	0.054	0.058	0.060	0.061	0.060	0.058	0.054	0.050	0.043	0.036	0.027	0.018	0.009	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"

✳ 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

0.6" Ø LOW RELAXATION	SPANS A AND C GIRDERS 2 THRU 4																				
TWENTIETH POINTS	0	1/20	2/20	3/20	4/20	5/20	6/20	7/20	8/20	9/20	10/20	11/20	12/20	13/20	14/20	15/20	16/20	17/20	18/20	19/20	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.018	0.035	0.051	0.066	0.079	0.090	0.099	0.106	0.110	0.111	0.110	0.106	0.099	0.090	0.079	0.066	0.051	0.035	0.018	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.009	0.019	0.028	0.037	0.044	0.051	0.055	0.060	0.061	0.063	0.061	0.060	0.055	0.051	0.044	0.037	0.028	0.019	0.009	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

0.6" Ø LOW RELAXATION	SPAN B GIRDERS 1 AND 5																				
TWENTIETH POINTS	0	1/20	2/20	3/20	4/20	5/20	6/20	7/20	8/20	9/20	10/20	11/20	12/20	13/20	14/20	15/20	16/20	17/20	18/20	19/20	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.019	0.038	0.055	0.071	0.085	0.097	0.107	0.114	0.118	0.119	0.118	0.114	0.107	0.097	0.085	0.071	0.055	0.038	0.019	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.012	0.025	0.037	0.049	0.059	0.068	0.074	0.080	0.082	0.084	0.082	0.080	0.074	0.068	0.059	0.049	0.037	0.025	0.012	0.000
FINAL CAMBER ↑	0"	1/16"	1/8"	3/16"	1/4"	5/16"	3/8"	3/8"	3/8"	7/16"	7/16"	7/16"	3/8"	3/8"	3/8"	5/16"	1/4"	3/16"	1/8"	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

0.6" Ø LOW RELAXATION	SPAN B GIRDERS 2 THRU 4																				
TWENTIETH POINTS	0	1/20	2/20	3/20	4/20	5/20	6/20	7/20	8/20	9/20	10/20	11/20	12/20	13/20	14/20	15/20	16/20	17/20	18/20	19/20	0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.019	0.038	0.055	0.071	0.085	0.097	0.107	0.114	0.118	0.119	0.0118	0.114	0.107	0.097	0.085	0.071	0.055	0.038	0.019	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.013	0.026	0.038	0.051	0.060	0.070	0.076	0.083	0.085	0.087	0.085	0.080	0.073	0.067	0.058	0.048	0.036	0.024	0.012	0.000
FINAL CAMBER ↑	0"	1/16"	1/8"	3/16"	1/4"	5/16"	5/16"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	5/16"	5/16"	1/4"	3/16"	1/8"	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).

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.

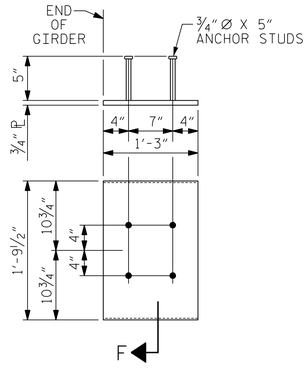
ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

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 6000 PSI.

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

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", AND THE LINK SLAB AREA, SHALL BE RAKED TO A DEPTH OF 1/4".



SECTION "F"
(SEE NOTES)

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

(2 REQ'D PER GIRDER)

PROJECT NO. B-4926
LENOIR COUNTY
STATION: 35+00.00 -L-

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042824 PATRICK R. GRASSER DALLAS

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PRESTRESSED CONCRETE GIRDER DETAILS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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License No: C-3097

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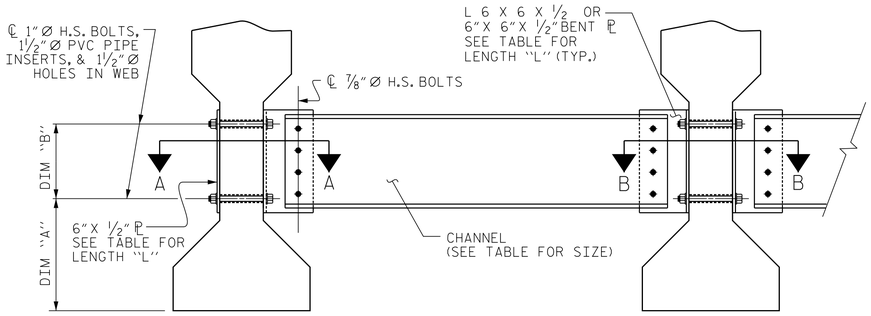
1			3		
2			4		

SHEET NO. S2-17
TOTAL SHEETS 39

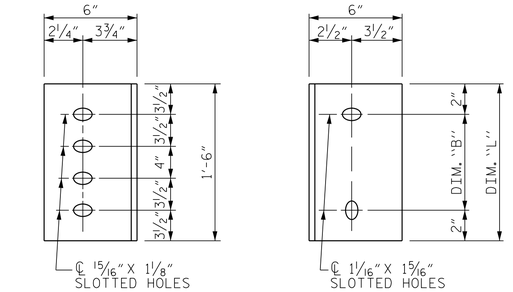
DWN. BY: WDC DATE: 03/2023
CHKD. BY: PRG DATE: 03/2023
DES. EGR. OF RECORD: PRG DATE: 03/2023



EXTERIOR GIRDER

INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM



DIAPHRAGM FACE

WEB FACE

CONNECTION PLATE DETAILS

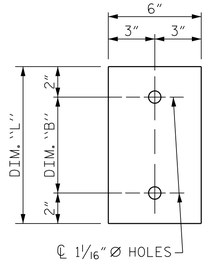
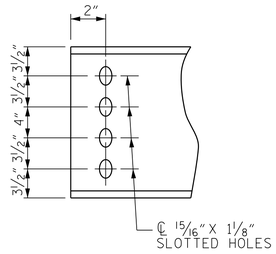
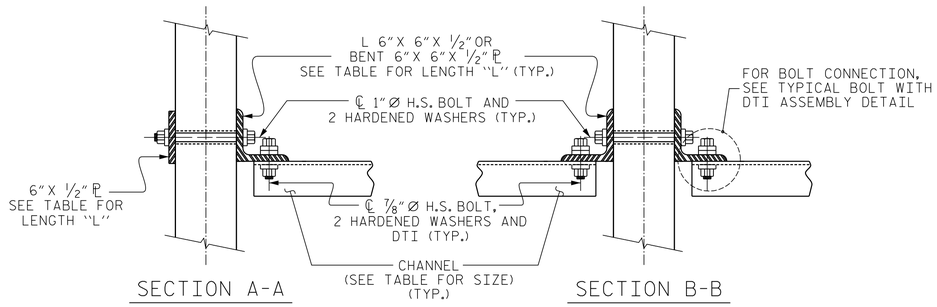


PLATE DETAILS



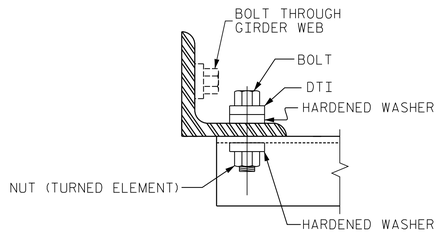
CHANNEL END



SECTION A-A

SECTION B-B

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-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE III PRESTRESSED CONCRETE GIRDERS

SEAL 042290 ENGINEER PATRICK R. GALLAGHER 9/8/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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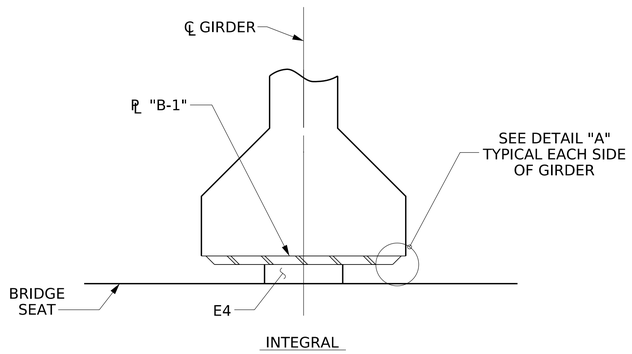
4700 Falls of Neuse Rd, Suite 100,
Raleigh, NC, 27609
License No: C-3097

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-18
1			3			TOTAL SHEETS
2			4			39

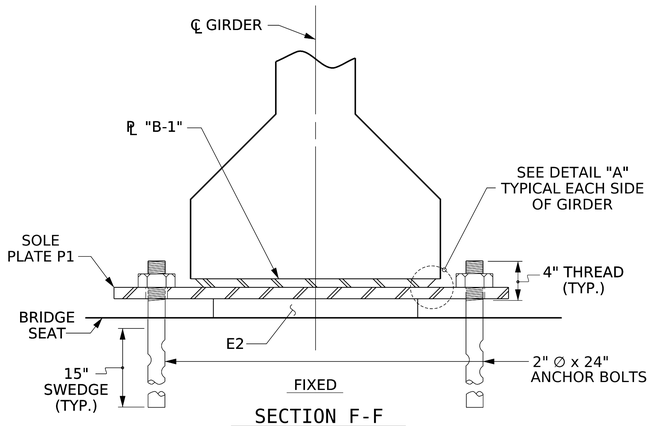
STD. NO. PCG10

DWN. BY: WDC	DATE: 03/2023	DRAWN BY : TLA	6/05	REV. 5/1/06RRR	KMM/GM
CHKD. BY: PRG	DATE: 03/2023	CHECKED BY : VC	6/05	REV. 10/1/11	MAA/GM
DES. EGR. OF RECORD: PRG	DATE: 03/2023			REV. 12/17	MAA/THC

8/26/21



SECTION E-E



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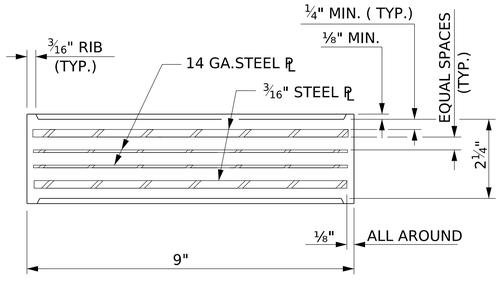
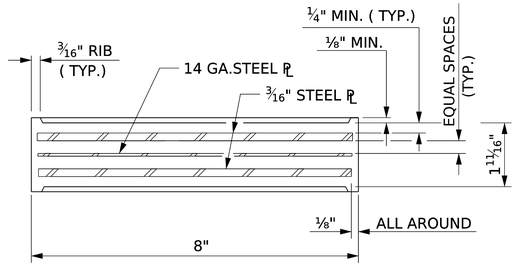
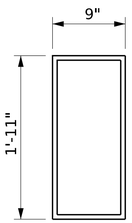


TYPICAL SECTION OF ELASTOMERIC BEARINGS



TYPICAL SECTION OF ELASTOMERIC BEARINGS

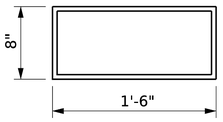


E4 (10 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE V

(AT END BENTS)

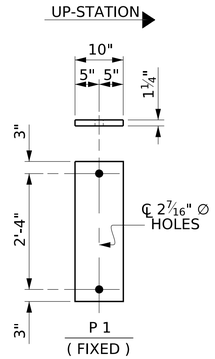


E2 (20 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE III

(AT BENTS)



(20 REQ'D)

SOLE PLATE DETAILS (P1)

(AT BENTS)

NOTES

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

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

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

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

SOLE PLATE P1, BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

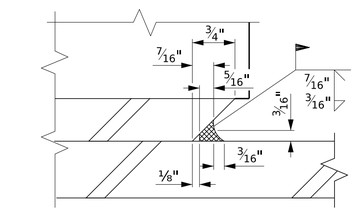
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

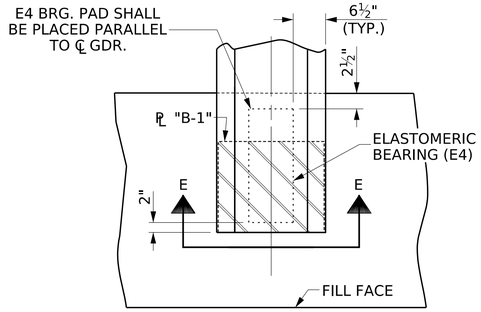
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.

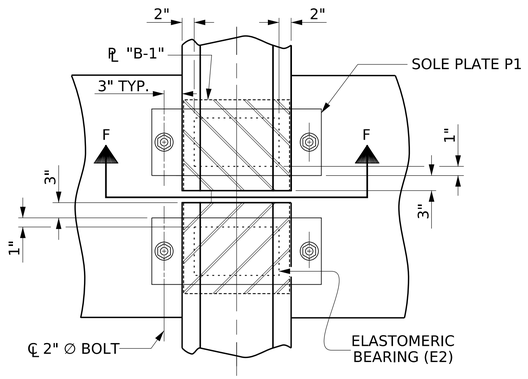
MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE III	205 k
TYPE V	365 k



DETAIL "A"



PLAN VIEW AT END BENTS



PLAN VIEW AT BENTS

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

ELASTOMERIC BEARING DETAILS

PRESTRESSED CONCRETE GIRDER
SUPERSTRUCTURE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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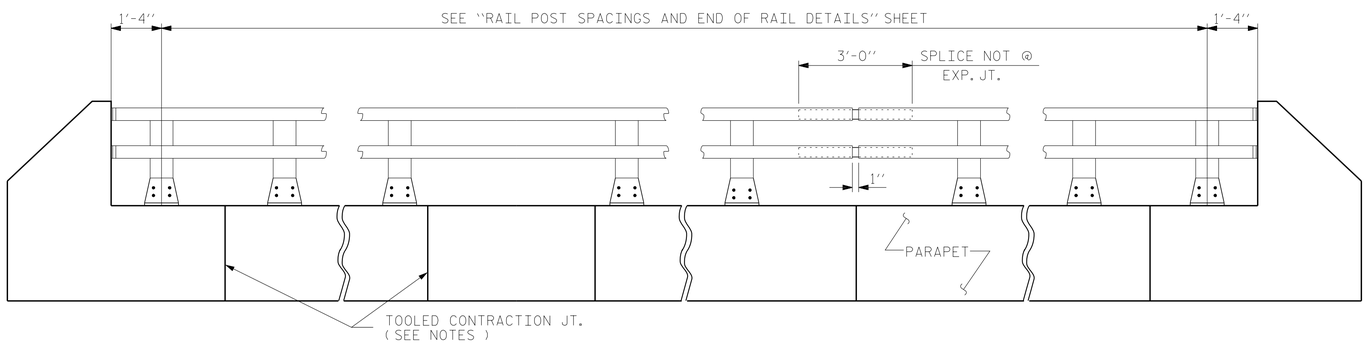
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-19
1			3			TOTAL SHEETS
2			4			39

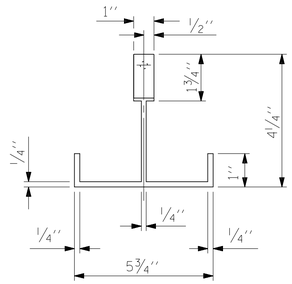
STD. NO. EB3/EB4

DWN. BY: WDC	DATE: 03/2023	DRAWN BY : WJH 8/89	REV. 12/17	MAA/THC
CHKD. BY: PRG	DATE: 03/2023	CHECKED BY : CRK 8/89	REV. 10/21	BNB/AAI
DES. EGR. OF RECORD: PRG	DATE: 03/2023		REV. 10/23	BNB/SNM

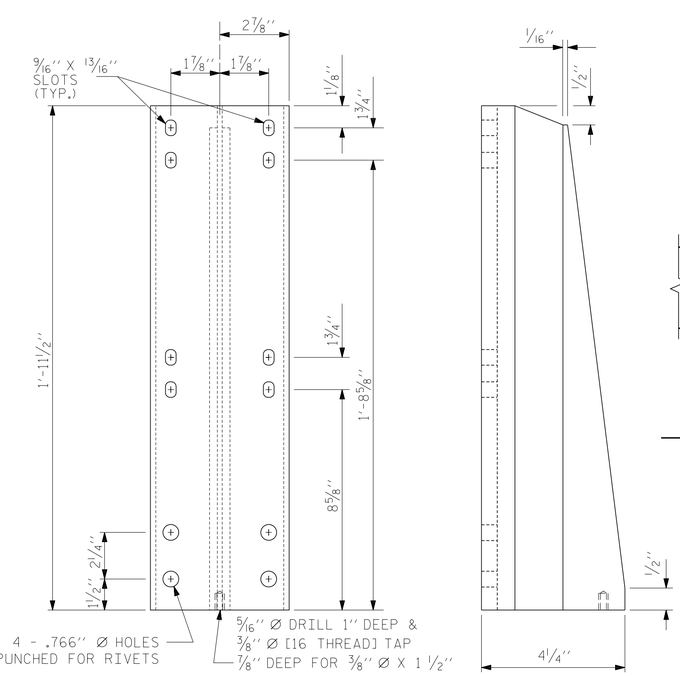


ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.

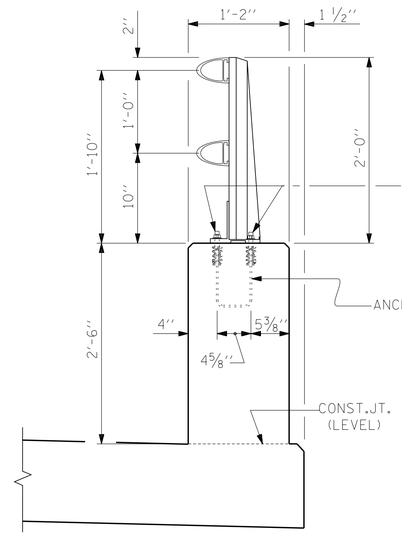


PLAN

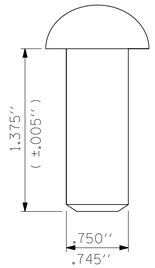


FRONT ELEVATION SIDE ELEVATION

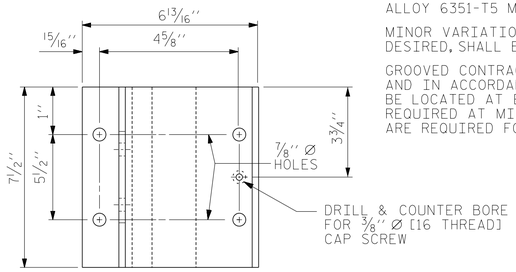
DETAILS OF POST



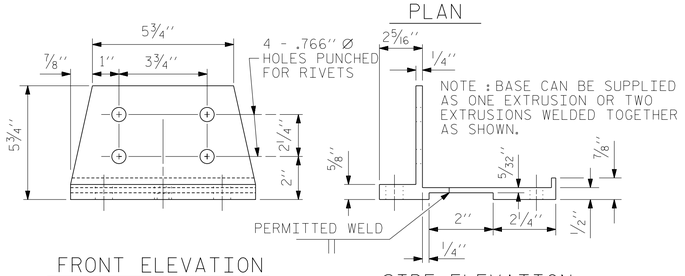
SECTION THRU PARAPET AND RAIL



RIVET DETAIL



PLAN



FRONT ELEVATION SIDE ELEVATION

POST BASE DETAILS

NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

UNLESS OTHERWISE REQUIRED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR HAS THE OPTION TO USE AN ALTERNATE TO THE 2 BAR METAL RAIL. THE ALTERNATE RAIL SHALL MEET THE REQUIREMENTS OF THE AASHTO LRFDBRIDGE DESIGN SPECIFICATIONS AND MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) UNDER ''2 BAR METAL RAIL ALTERNATE''. ADJUSTMENTS TO THE CONCRETE PARAPET WILL NOT BE ALLOWED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6.

MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO ASTM A123.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF AASHTO A1011 FOR GRADE 36, 40, 45 OR ASTM A1008 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A1011 FOR GRADE 36, 40, 45 OR ASTM A1008 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

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

PAY LENGTH = 411.67 LIN. FT.

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043891 PATRICK R. GALLAGHER 2/4/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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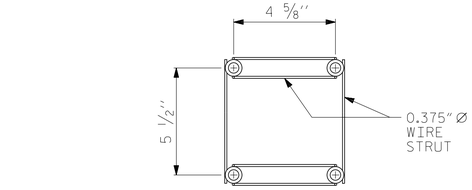
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-20
1			3			TOTAL SHEETS
2			4			39

DWN. BY: WDC	DATE: 03/2023	DRAWN BY : EEM 6/94	REV. 6/13	MAA/GM
CHKD. BY: PRG	DATE: 03/2023	CHECKED BY : RGW 6/94	REV. 12/17	MAA/THC
DES. EGR. OF RECORD: PRG	DATE: 03/2023		REV. 10/23	BNB/SNM

STD. NO. BMR3



4-BOLT METAL RAIL ANCHOR ASSEMBLY

(70 ASSEMBLIES REQUIRED)

NOTES

STRUCTURAL CONCRETE ANCHOR ASSEMBLY

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2'' FOR 3/4'' FERRULES.

B. 4 - 3/4'' Ø X 2 1/2'' BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4'' Ø X 2 1/2'' GALVANIZED BOLTS 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.

C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16'' Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

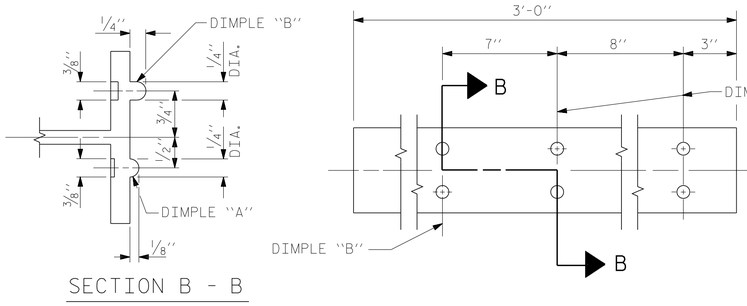
D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO ASTM A123.

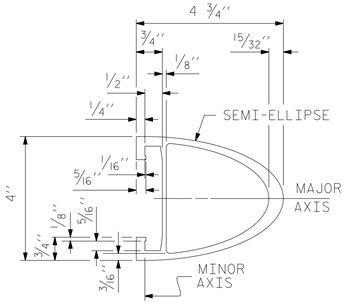
E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.

F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4"Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.





CLAMP ASSEMBLY

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

2 BAR METAL RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-21
1			3			TOTAL SHEETS
2			4			39

STD. NO. BMR4

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CHKD. BY: PRG	DATE: 03/2023	CHECKED BY : RGW 6/94	REV. 12/17 MAA/THC
DES. EGR. OF RECORD: PRG	DATE: 03/2023		REV. 10/23 BNB/SNM

wdcrutcher
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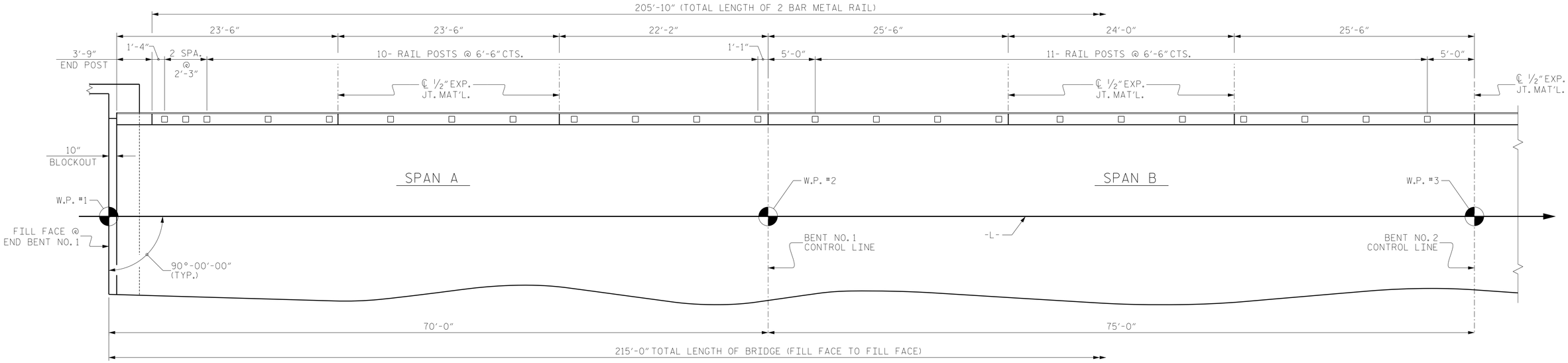
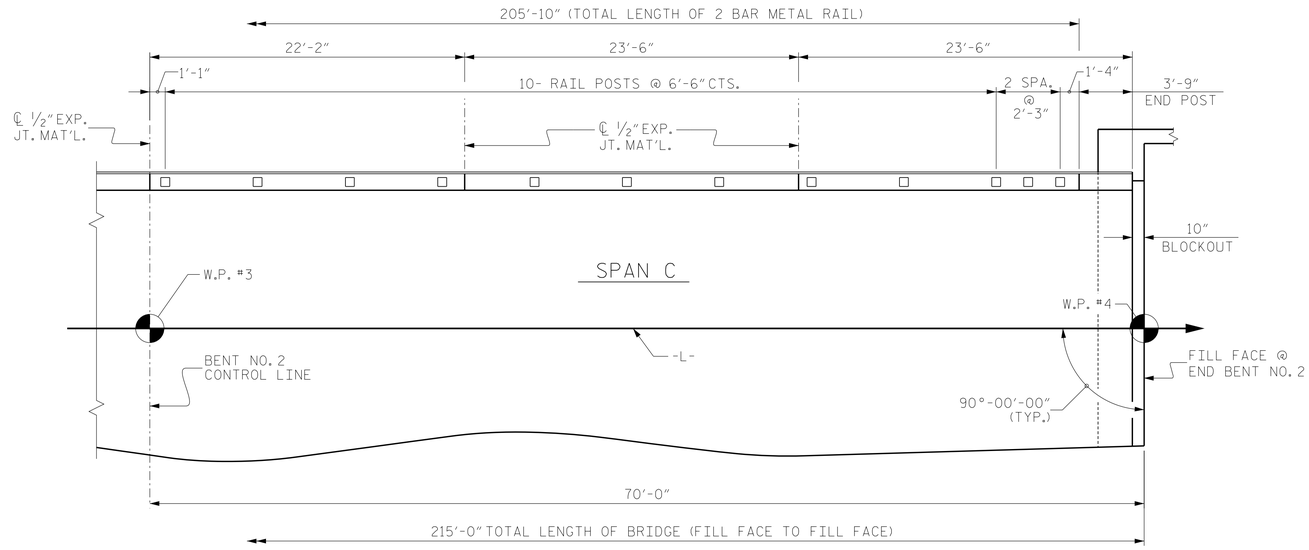
TIME: 0902 AM on Wednesday, January 31, 2024





RAIL POST SPACING

(LEFT SIDE SHOWN, RIGHT SIDE SIMILAR)

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

RAIL POSTS SPACING

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL PATRICK R. GALLAGHER
Electronically signed by Patrick Gallagher
PRELIMINARY PLANS
2/2/2024

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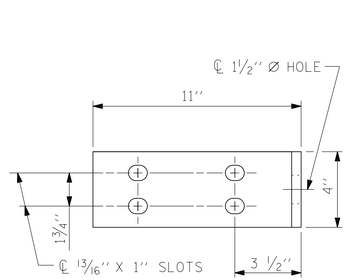
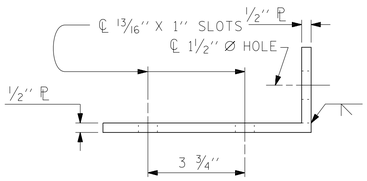
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-22
1			3			TOTAL SHEETS
2			4			39

DWN. BY: WDC DATE: 03/2023
CHKD. BY: PRG DATE: 03/2023
DES. EGR. OF RECORD: PRG DATE: 03/2023

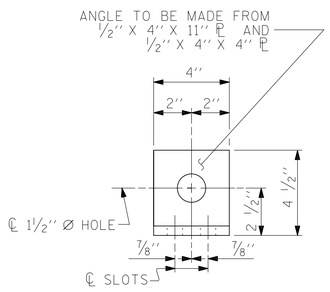
SEE SHEET 1 OF 2 FOR RAIL POST SPACING



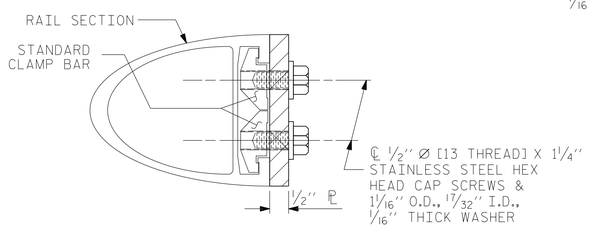
ELEVATION



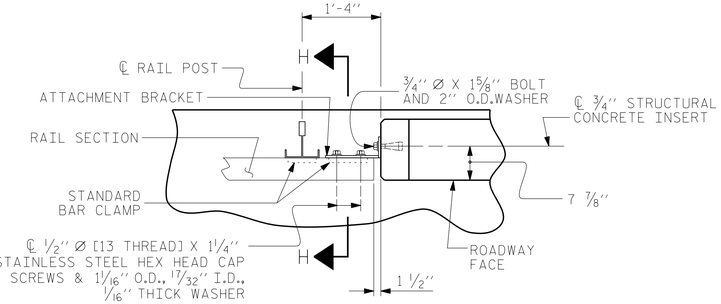
TOP VIEW



END VIEW (FIX AND EXP.)



SECTION H-H (FIX)



PLAN - RAIL AND END POST

NOTES

STRUCTURAL CONCRETE INSERT

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1½''.

B. 1 - ¾'' Ø X 1⅝'' BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE ¾'' Ø X 1⅝'' GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16'' Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

A. ½'' PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.

B. ¾'' STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A ¾''Ø X 1⅝'' BOLT WITH 2'' O.D. WASHER IN PLACE. THE ¾''Ø X 1⅝'' BOLT SHALL HAVE N. C. THREADS.

C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.

D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).

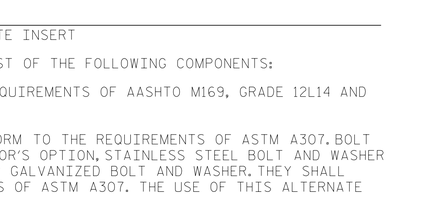
E. ½'' Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

THE ¾'' STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE ¾'' STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE ½'' PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE ¾'' Ø X 1⅝'' BOLT WITH WASHER SHALL BE REPLACED WITH A ¾''Ø X 6½'' BOLT AND 2'' O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE ¾'' Ø X 1⅝'' BOLT SHALL APPLY TO THE ¾''Ø X 6 ½'' BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



PLAN ELEVATION

STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

RAIL POST SPACINGS
AND
END OF RAIL DETAILS
FOR ONE OR TWO BAR METAL RAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER
DocuSigned by: Patrick Gallagher
2/2/2024

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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NO.	BY:	DATE:	NO.	BY:	DATE:	S1-22a
1			3			TOTAL SHEETS
2			4			39

DWN. BY: WDC	DATE: 03/2023	DRAWN BY : FCJ 1/88	REV. 10/1/11	MAA/GM
CHKD. BY: PRG	DATE: 03/2023	CHECKED BY : CRK 3/89	REV. 12/17	MAA/THC
DES. EGR. OF RECORD: PRG	DATE: 03/2023		REV. 10/23	BNB/SNM

STD. NO. BMR2

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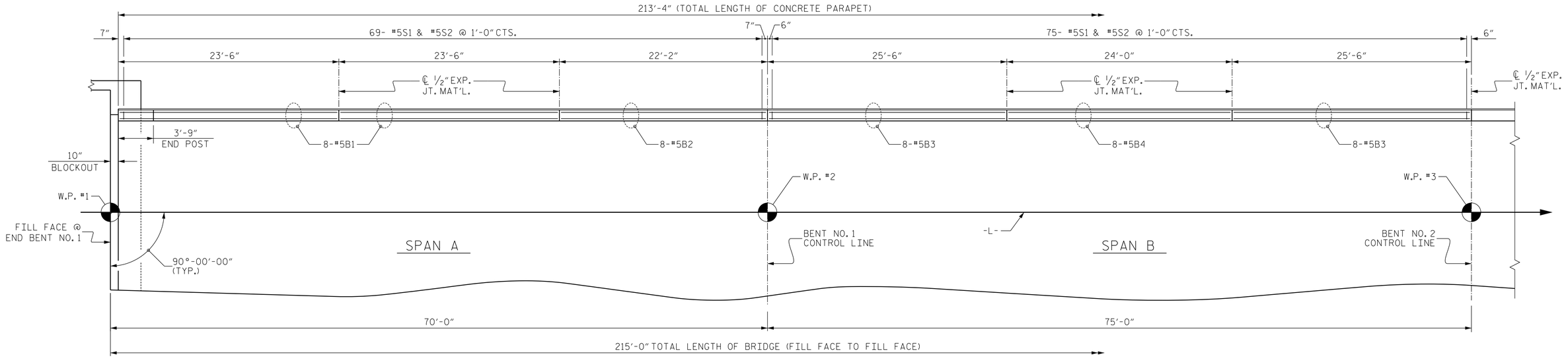

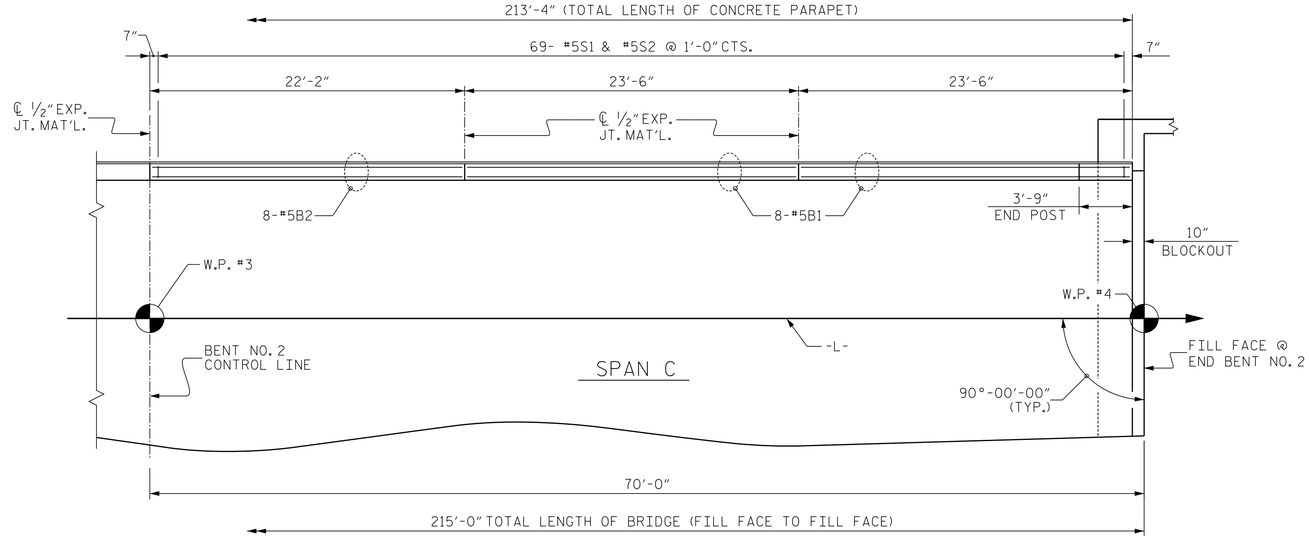

PLAN OF PARAPET

(LEFT SIDE SHOWN, RIGHT SIDE SIMILAR)

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

CONCRETE PARAPET AND END POST DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER
Digitally signed by Patrick Gallagher
9/7/2023

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1			3			TOTAL SHEETS
2			4			39

DWN. BY: WDC DATE: 03/2023
CHKD. BY: PRG DATE: 03/2023
DES. EGR. OF RECORD: PRG DATE: 03/2023

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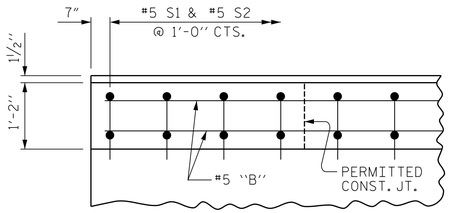
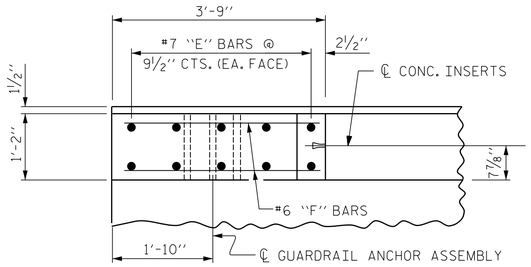
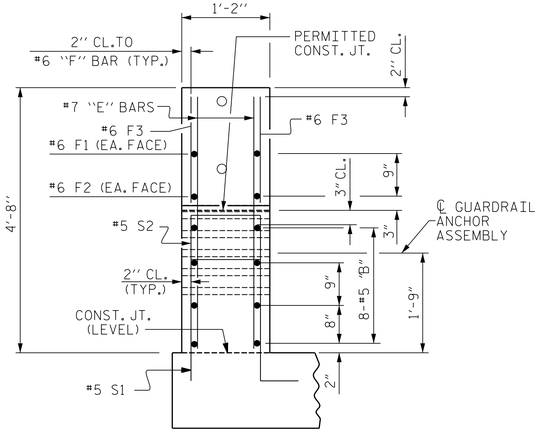


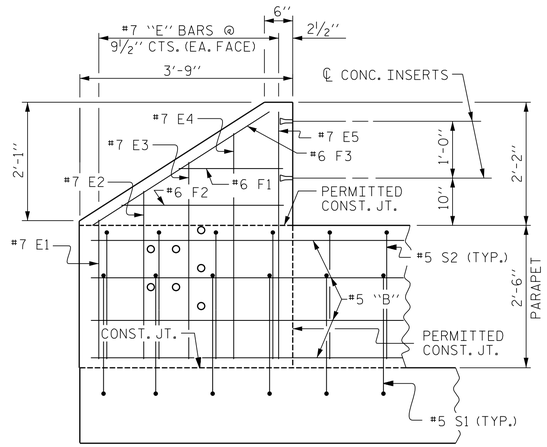
PLAN OF PARAPET



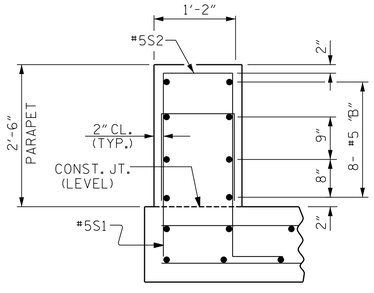
PLAN OF END POST



END VIEW

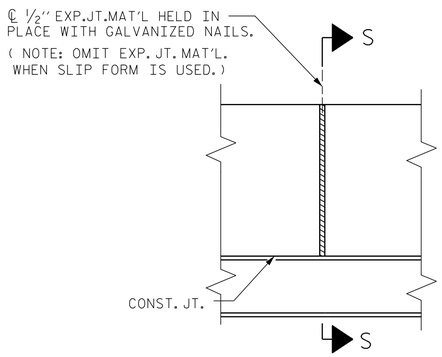


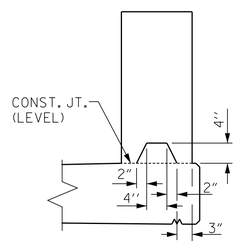
ELEVATION



SECTION THRU PARAPET

PARAPET AND END POST FOR TWO BAR RAIL



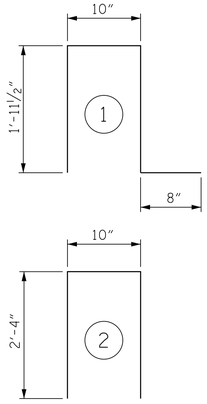


SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY
WHEN SLIP FORM IS USED)

ELEVATION AT EXPANSION JOINTS

CONCRETE PARAPET DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

FOR 2 PARAPETS AND 4 END POSTS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B1	64	#5	STR	23'-2"	1546
✳ B2	32	#5	STR	21'-10"	729
✳ B3	32	#5	STR	25'-2"	840
✳ B4	16	#5	STR	23'-8"	395
✳ E1	8	#7	STR	2'-6"	41
✳ E2	8	#7	STR	3'-0"	49
✳ E3	8	#7	STR	3'-6"	57
✳ E4	8	#7	STR	4'-0"	65
✳ E5	8	#7	STR	4'-4"	71
✳ F1	8	#6	STR	1'-10"	22
✳ F2	8	#6	STR	3'-0"	36
✳ F3	8	#6	STR	3'-8"	44
✳ S1	213	#5	1	5'-5"	1203
✳ S2	213	#5	2	5'-6"	1222

✳ EPOXY COATED REINFORCING STEEL	6,320 LBS.
CLASS AA CONCRETE	46.9 CU. YDS.
1'-2" x 2'-6" CONCRETE PARAPET	426.67 LIN. FT.

NOTES

ALL REINFORCING STEEL IN PARAPETS AND END POSTS SHALL BE EPOXY COATED.

FOR DETAIL OF CONCRETE INSERT AND GUARDRAIL ANCHOR ASSEMBLY, SEE "RAIL POST SPACINGS AND END OF RAIL DETAIL" SHEET.

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

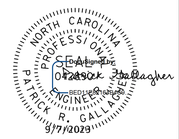
PARAPET IN THE SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
CONCRETE PARAPET AND END POST DETAILS

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1			3			TOTAL SHEETS
2			4			39

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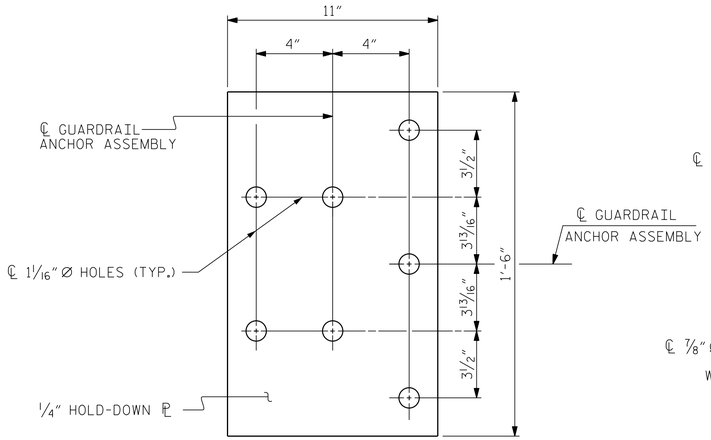
CHKD. BY: PRG DATE: 03/2023
DES. EGR. OF RECORD: PRG DATE: 03/2023



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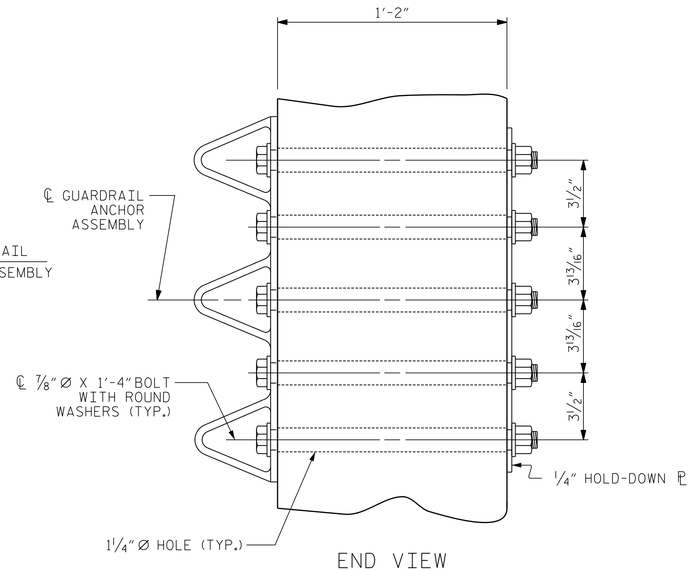


END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

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

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

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

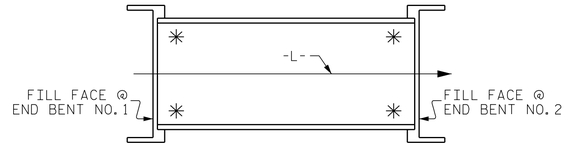
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

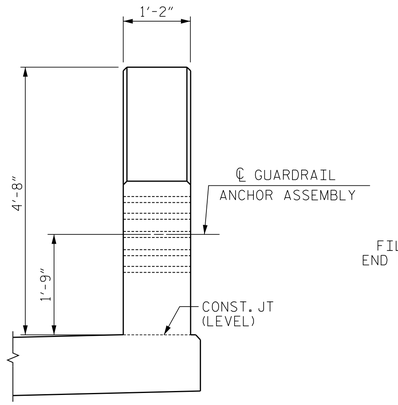
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

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

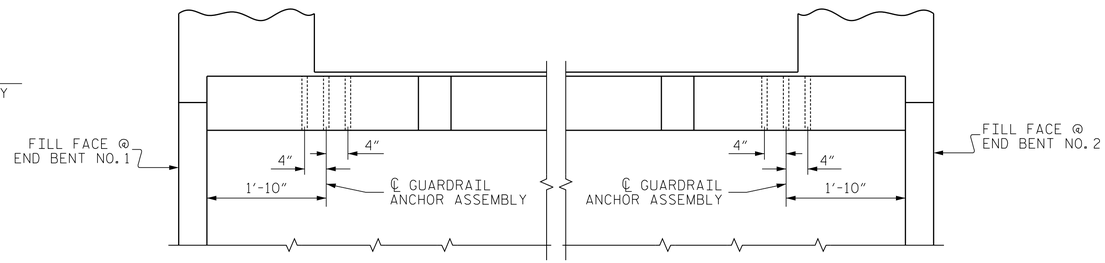


SKETCH SHOWING POINTS OF ATTACHMENT

✳ LOCATION OF GUARDRAIL ATTACHMENT



END VIEW
(TWO BAR METAL RAIL)



PLAN
LEFT SIDE SHOWN, RIGHT SIDE SIMILAR

LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER
PATRICK R. GALLAGHER
037203
ENGINEER
9/7/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-25
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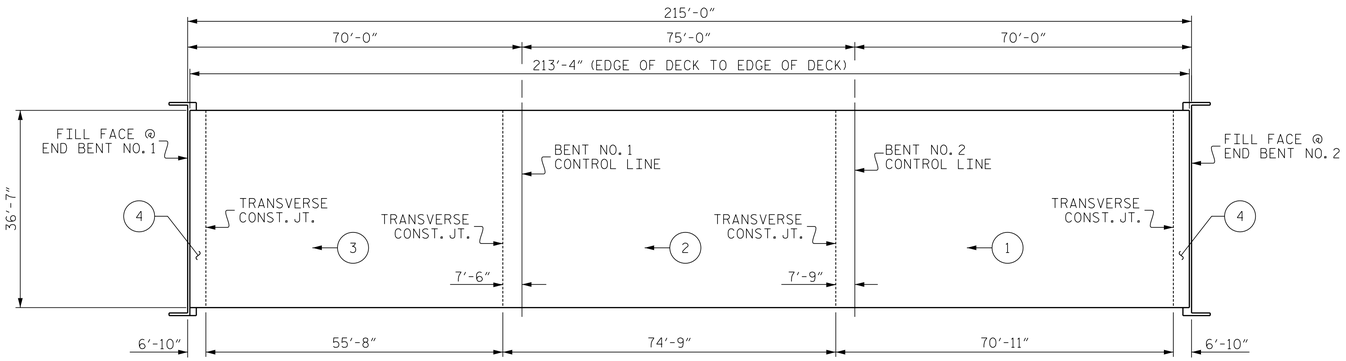
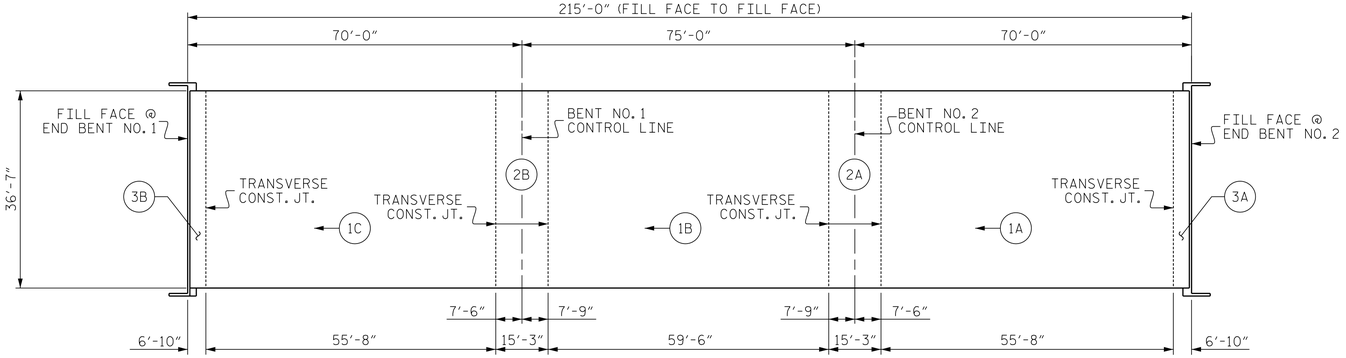
CHKD. BY: PRG	DATE: 03/2023	CHECKED BY : GM	5/10	REV. 12/17	MAA/THC
DES. EGR. OF RECORD: PRG	DATE: 03/2023			REV. 5/18	MAA/THC

STD. NO. GRA3



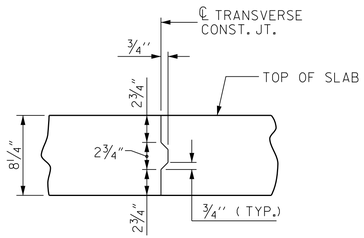
POURING SEQUENCE AND LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB

(TOTAL = 7,805 SQ. FT.)



OPTIONAL POURING SEQUENCE

NOTE: POUR 2 SHALL NOT BE STARTED UNTIL BOTH ADJACENT 1 POURS REACH A MINIMUM STRENGTH OF 3000 PSI.



TRANSVERSE CONSTRUCTION JOINT DETAIL

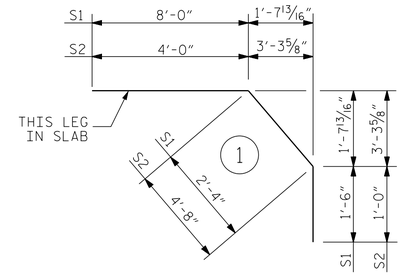
NOTE: REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT

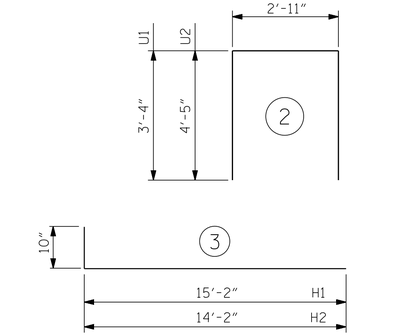
BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	394	#5	STR	36'-3"	14,897
A2	394	#5	STR	36'-3"	14,897
B1	80	#5	STR	48'-6"	4,047
B2	80	#5	STR	46'-3"	3,859
B3	68	#4	STR	39'-0"	1,772
B4	40	#5	STR	31'-6"	1,314
✳ B5	50	#5	STR	45'-5"	2,368
✳ B6	144	#5	STR	13'-10"	2,078
✳ B7	50	#5	STR	53'-6"	2,790
✳ B8	96	#5	STR	31'-9"	3,179
✳ B9	25	#5	STR	24'-10"	648
H1	38	#6	3	16'-0"	913
H2	40	#6	3	15'-0"	901
K1	16	#4	STR	21'-11"	234
K2	8	#4	STR	5'-4"	29
K3	16	#4	STR	6'-6"	69
K4	8	#4	STR	5'-10"	31
K5	4	#4	STR	5'-0"	13
K6	8	#4	STR	5'-7"	30
K7	4	#4	STR	5'-3"	14
K8	16	#4	STR	2'-8"	29
✳ S1	56	#4	1	11'-10"	443
✳ S2	56	#4	1	9'-8"	362
U1	56	#4	2	9'-7"	358
U2	12	#4	2	11'-9"	94

REINFORCING STEEL	28,604 LBS.
✳ EPOXY COATED REINFORCING STEEL	26,765 LBS.

BAR TYPES





ALL BAR DIMENSIONS ARE OUT TO OUT

GROOVING BRIDGE FLOORS

APPROACH SLABS	878	SQ.FT.
BRIDGE DECK	6,603	SQ.FT.
TOTAL	7,481	SQ.FT.

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR 1	76.8	——	——
POUR 2	81.0	——	——
POUR 3	60.3	——	——
POUR 4	62.0	——	——
TOTALS**	280.1	28,526	26,988

** QUANTITIES FOR PARAPETS AND END POSTS ARE NOT INCLUDED.

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

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

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Johnson, Mirmiran, & Thompson Inc.
4700 Falls of Neuse Rd, Suite 100,
Raleigh, NC, 27609
License No: C-3097

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

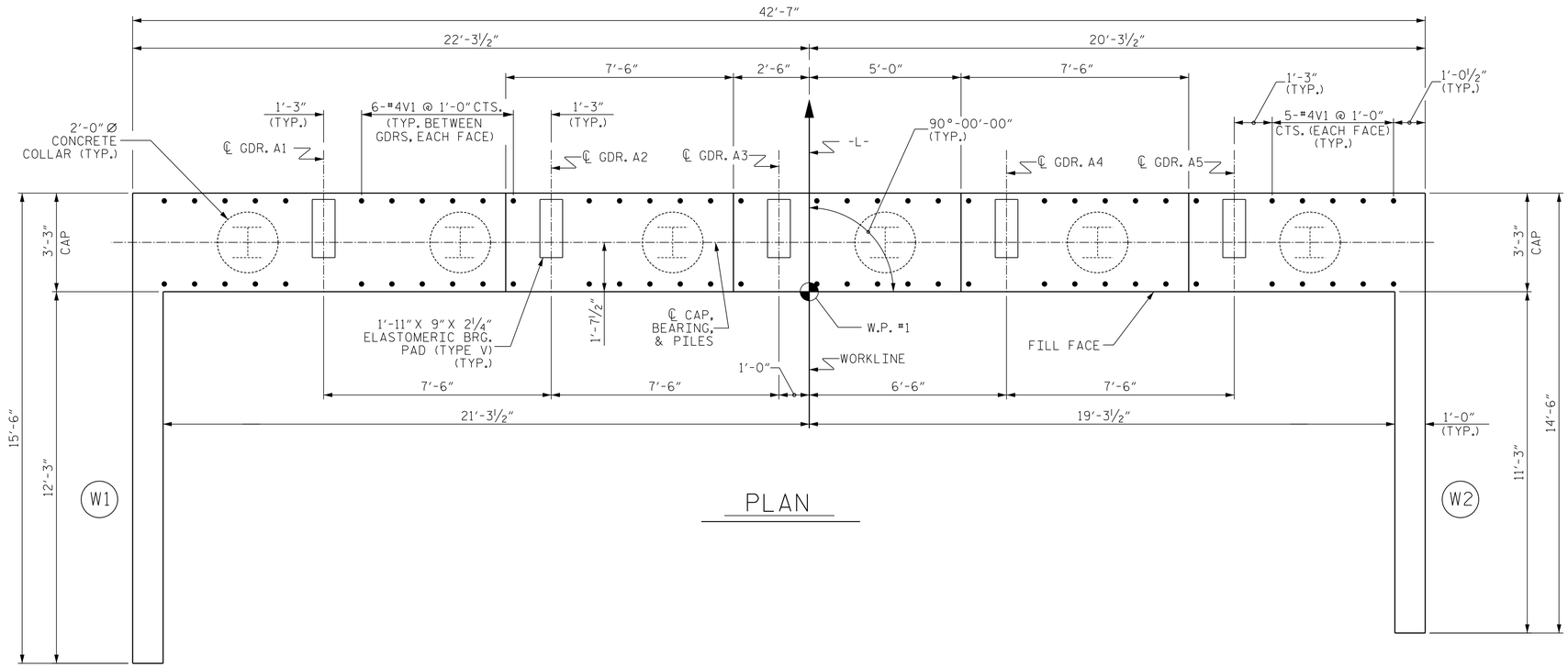
SUPERSTRUCTURE

BILL OF MATERIAL

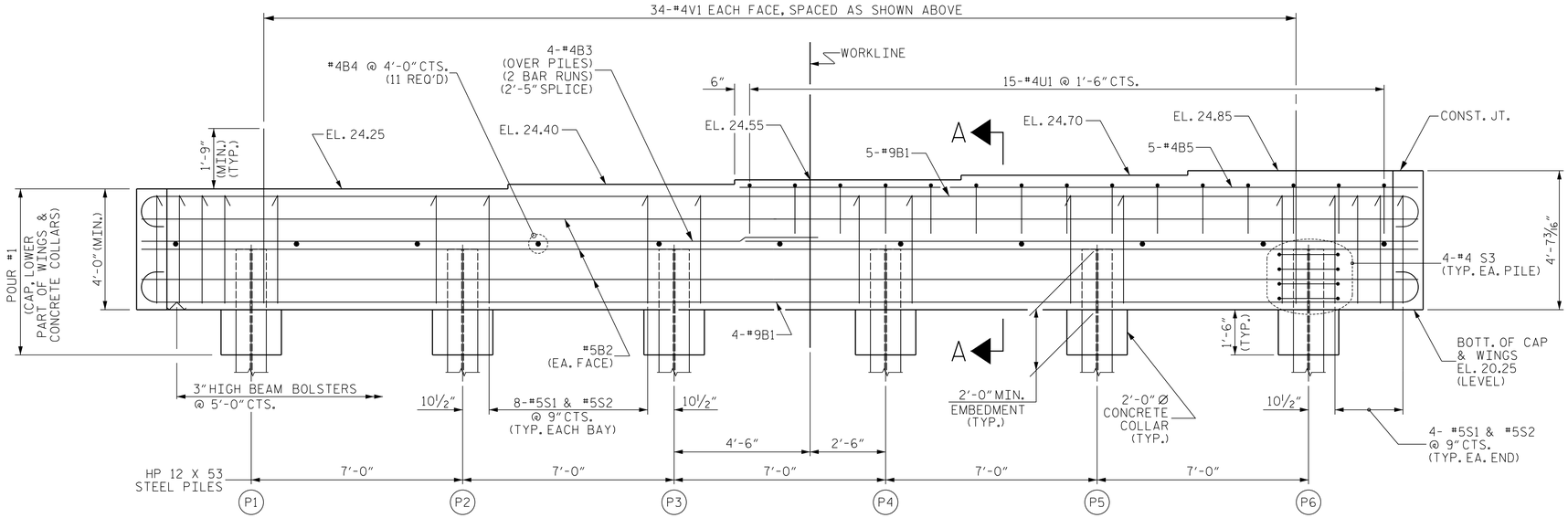
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-26
1			3			TOTAL SHEETS
2			4			39

DWN. BY: WDC DATE: 03/2023
CHKD. BY: PRG DATE: 03/2023
DES. EGR. OF RECORD: PRG DATE: 03/2023

wgcrutcher
DGN: V:\NCS\Structure\037147-01 - B-4926 Lenoir 20 &34\Structures\Lenoir 34\Plans\402_051_B4926_SMU_BOM_S26.dgn
TIME: 02:54 PM on Wednesday, September 06, 2023



PLAN



ELEVATION

NOTES

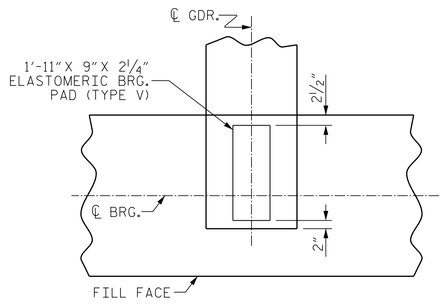
STIRRUPS IN THE CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.

SEE THE SUPERSTRUCTURE SHEETS FOR FOR UPPER PART OF INTEGRAL END BENT DETAIL.

THE UPPER PART OF INTEGRAL PORTION AND WINGS SHALL BE POURED WITH THE SUPERSTRUCTURE. SEE SUPERSTRUCTURE PLAN OF SPANS.

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".

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



BRG. PAD DETAIL

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT NO. 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-27
1			3			TOTAL SHEETS
2			4			39

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER 9/7/2023

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License No: C-3097

DWN. BY: WDC	DATE: 03/2023	
CHKD. BY: PRG	DATE: 03/2023	
DES. EGR. OF RECORD: PRG	DATE: 03/2023	

wdcrutcher
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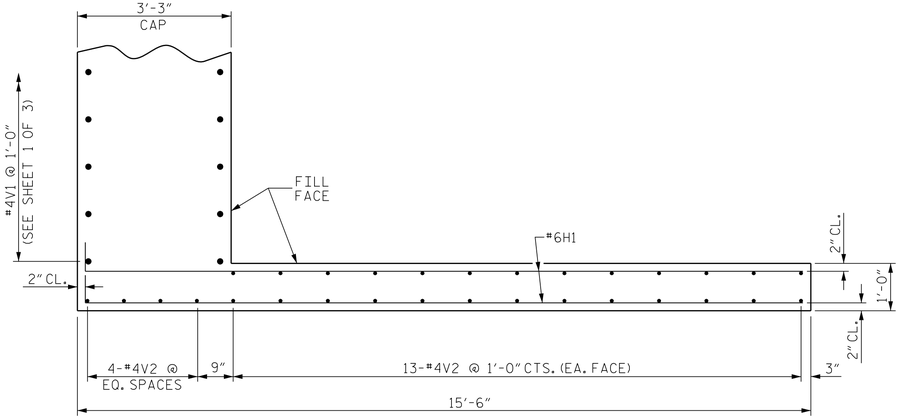
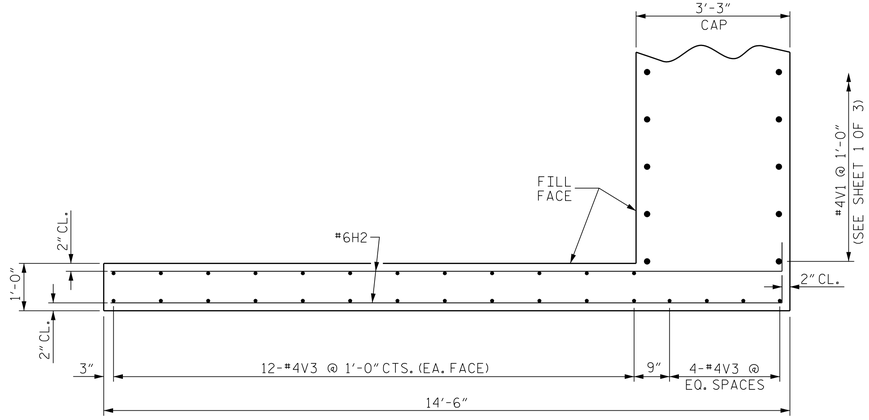
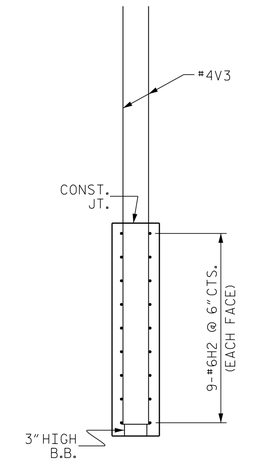


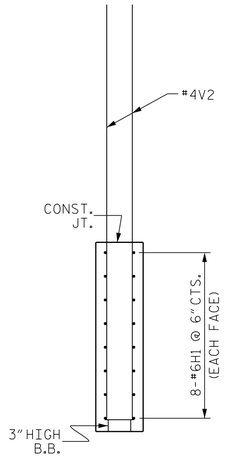
PLAN OF WING (W1)



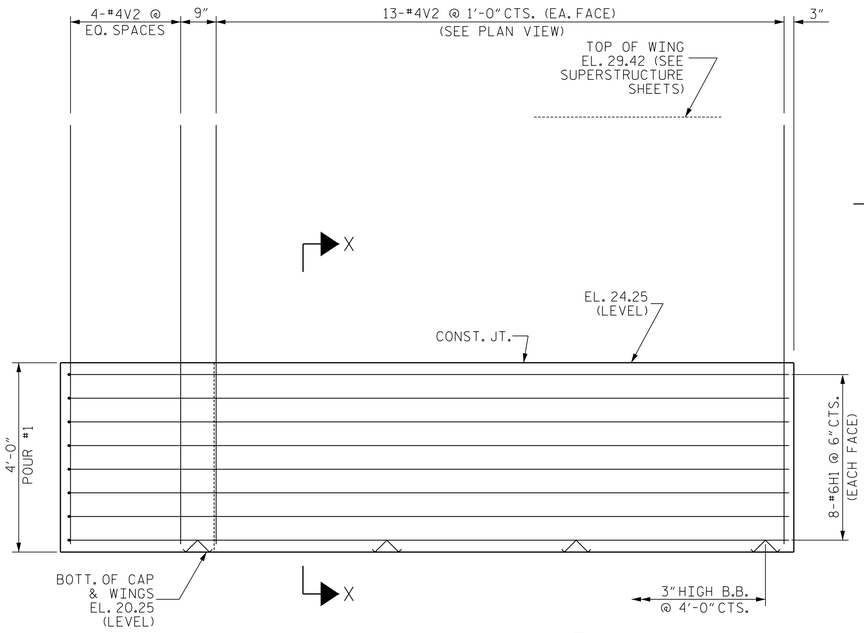
PLAN OF WING (W2)



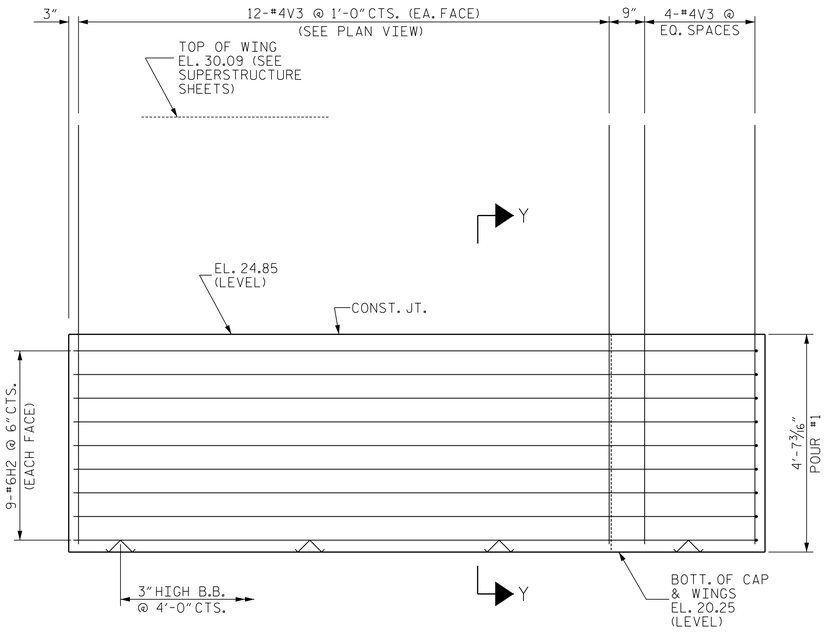
SECTION Y-Y



SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

DWN. BY: WDC	DATE: 03/2023	
CHKD. BY: PRG	DATE: 03/2023	
DES. EGR. OF RECORD: PRG	DATE: 03/2023	

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 47282 PATRICK R. GALLAGHER
9/7/2023

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

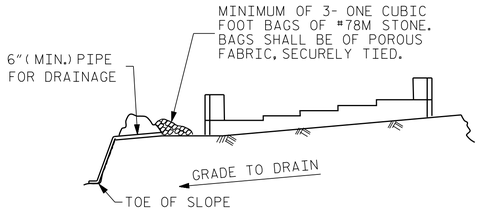
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT NO. 1 WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-28
1			3			TOTAL SHEETS
2			4			39

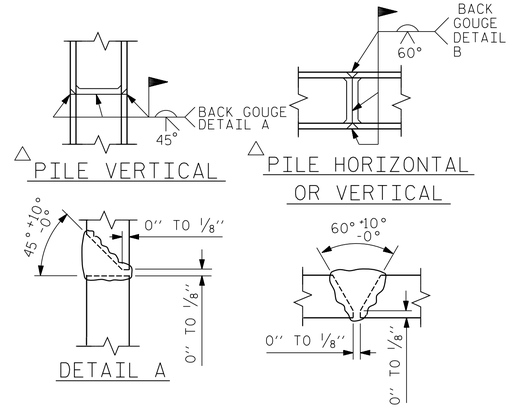


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

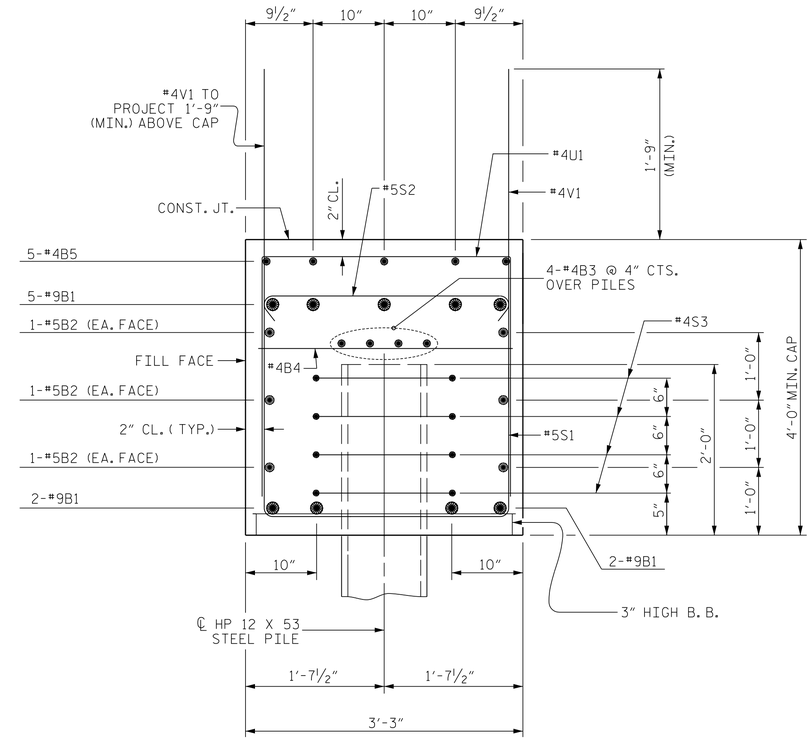
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

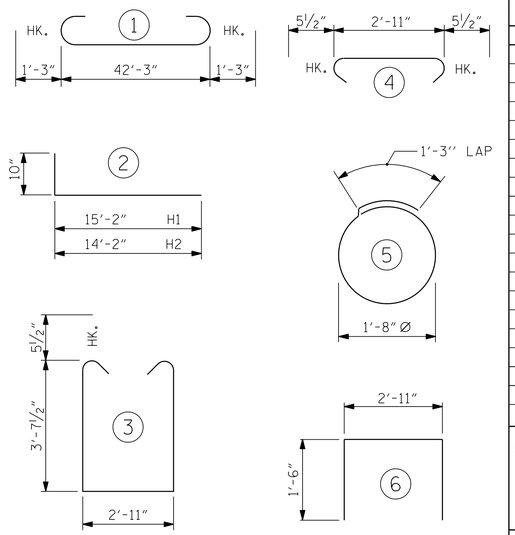
PILE SPLICE DETAILS



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY, SEE SHEET 1 OF 3 FOR DETAILS)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT NO. 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	9	#9	1	44'-9"	1369
B2	6	#5	STR	42'-3"	264
B3	8	#4	STR	22'-4"	120
B4	11	#4	STR	2'-11"	21
B5	5	#4	STR	22'-5"	75
H1	16	#6	2	16'-0"	385
H2	18	#6	2	15'-0"	406
S1	48	#5	3	11'-1"	555
S2	48	#5	4	3'-10"	192
S3	24	#4	5	6'-6"	104
U1	15	#4	6	5'-11"	59
V1	68	#4	STR	6'-2"	280
V2	30	#4	STR	8'-9"	175
V3	28	#4	STR	9'-5"	176

REINFORCING STEEL 4,181 LBS.

CLASS A CONCRETE

POUR #1 CAP, LOWER PART OF WINGS & CONC. PILE COLLARS 26.6 C.Y.

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT NO. 1 DETAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042850 PATRICK R. GALLAGHER 9/19/2023

Docusigned by: Patrick Gallagher BED11E82D6D4E0...

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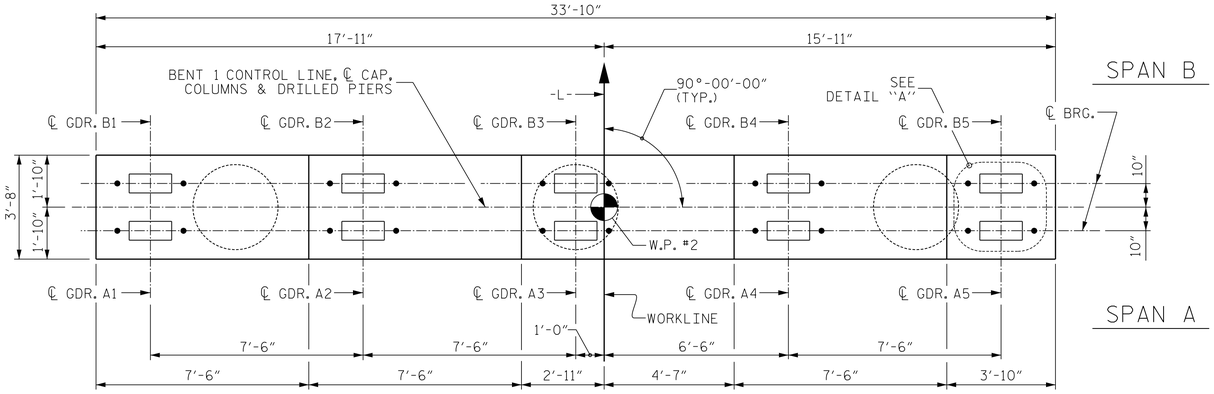
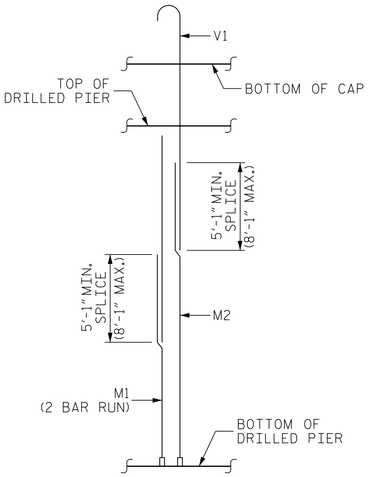
2			4			39

DWN. BY: WDC	DATE: 03/2023
CHKD. BY: PRG	DATE: 03/2023
DES. EGR. OF RECORD: PRG	DATE: 03/2023

w3crutcher
DGN: V:\NCDOT\Structures\031747~01 - B-4926, Lenoir 210 &3A\Structures\Lenoir 3A\Plans\402_057_B4926_SMU_EB13_S29.dgn
TIME: 02:54 PM on Wednesday, September 06, 2023



PLAN OF CAP



LONGITUDINAL REINFORCEMENT DETAIL

NOTES

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

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

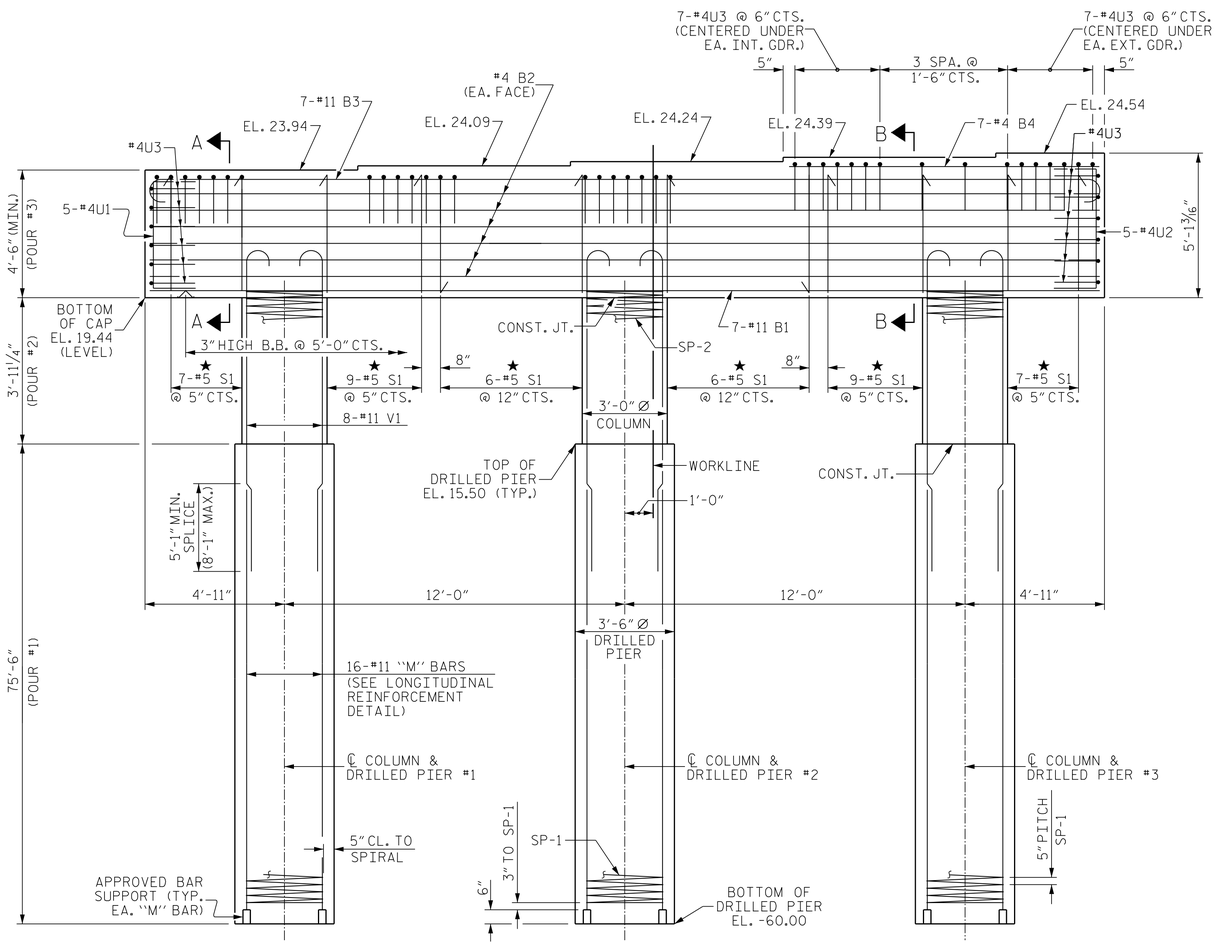
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

★ INVERT ALTERNATE STIRRUPS.

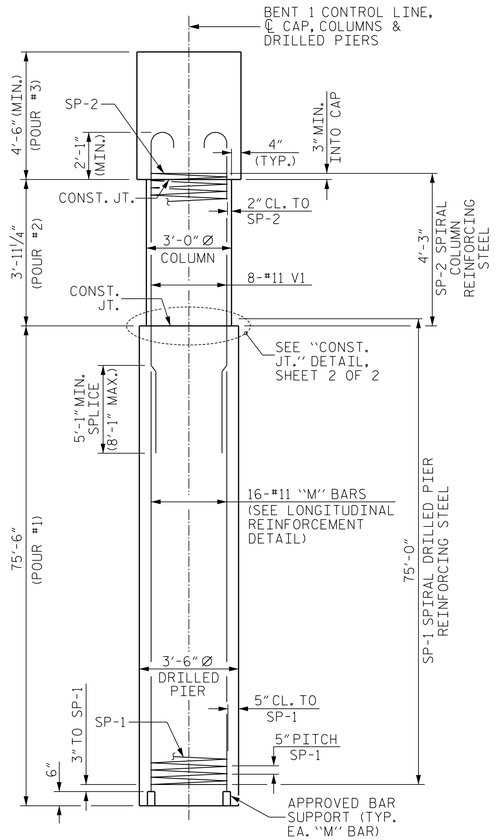
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

SEE SHEET 2 OF 2 FOR SECTIONS A-A AND B-B.



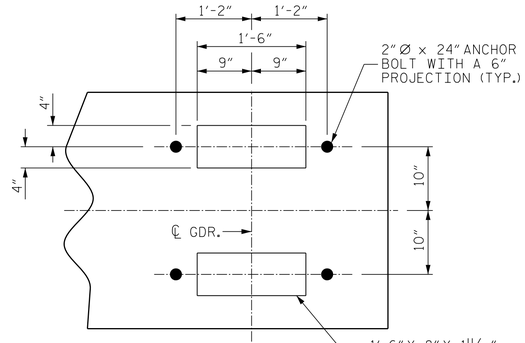
ELEVATION

REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER



END ELEVATION

REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER



DETAIL "A"

INFORMATION SHOWN IS TYPICAL FOR EACH BEARING

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT NO. 1

NORTH CAROLINA PROFESSIONAL SEAL 049899 ENGINEER Patrick Gallagher — Documents not considered final for bidding or construction

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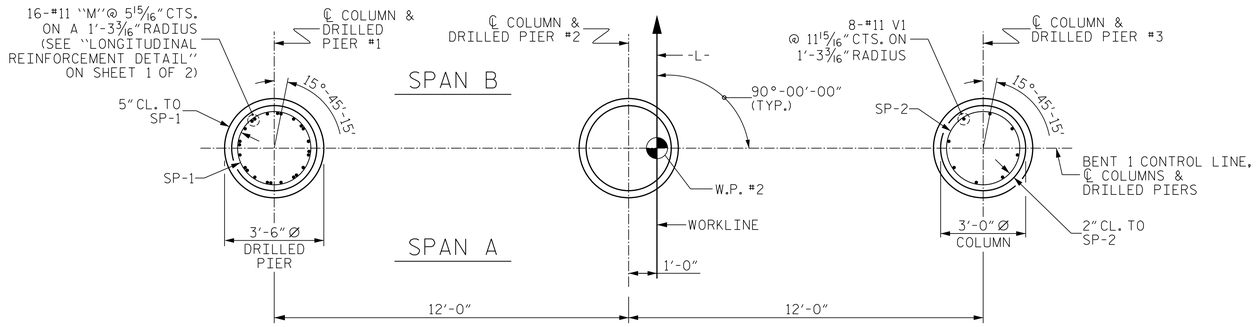
1			3			TOTAL SHEETS
2			4			39

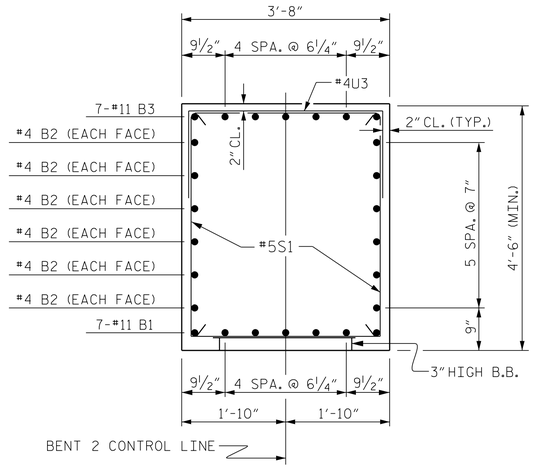
DWN. BY: WDC	DATE: 03/2023
CHKD. BY: PRG	DATE: 03/2023
DES. EGR. OF RECORD: PRG	DATE: 03/2023

wdrucker
DGN: V:\NCSTructures\03747-01 - B-4926 Lenoir 20 &3A\Structures\Lenoir 3A\Plans\402_059_B4926_SMU_BT11_S30.dgn
TIME: 08:54 PM on Wednesday, September 06, 2023

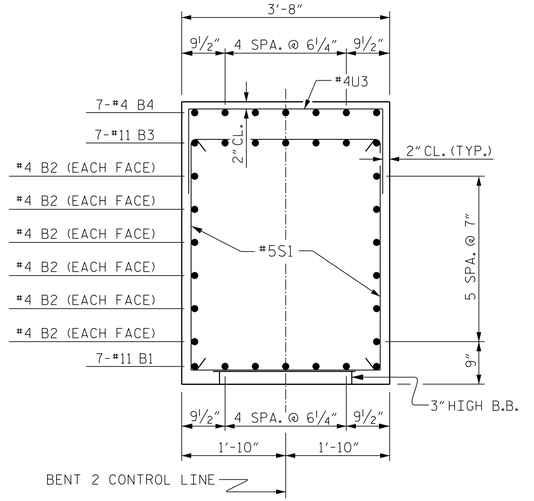


PLAN OF DRILLED PIERS & COLUMNS

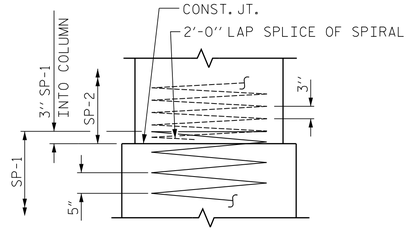
REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER



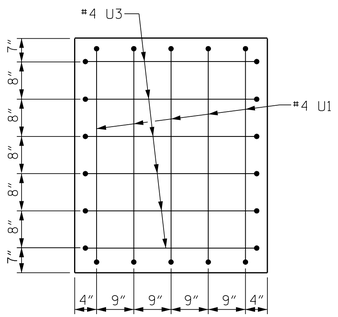
SECTION A-A



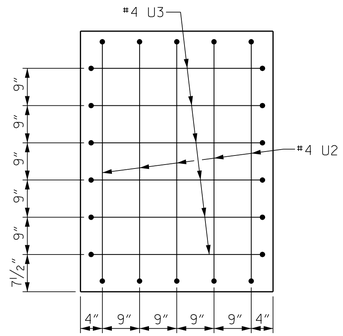
SECTION B-B



CONSTRUCTION JOIN DETAIL

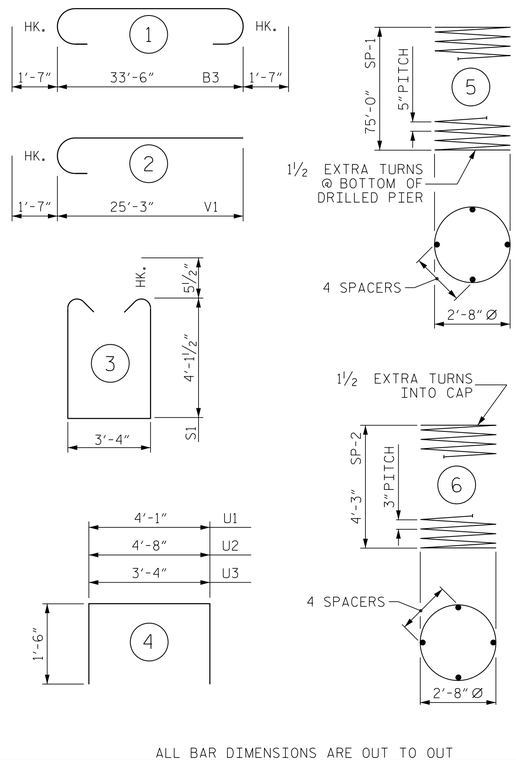


LEFT END OF CAP



RIGHT END OF CAP

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT NO. 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	#11	STR	33'-6"	1246
B2	12	#4	STR	33'-6"	269
B3	7	#11	1	36'-8"	1364
B4	7	#4	STR	11'-0"	51
M1	48	#11	STR	42'-11"	10,945
M2	24	#11	STR	60'-0"	7651
S1	44	#5	3	12'-6"	574
U1	5	#4	4	7'-1"	24
U2	5	#4	4	7'-8"	26
U3	49	#4	4	6'-4"	207
V1	24	#11	2	30'-9"	3921

REINFORCING STEEL 26,278 LBS.

SP-1	3	**	5	1496'-11"	4684
SP-2	3	*	6	156'-10"	314

SPIRAL COLUMN REINFORCING STEEL 4,998 LBS.

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

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

CLASS A CONCRETE BREAKDOWN

POUR #2 (COLUMNS)	3.1 C.Y.
POUR #3 (CAP)	21.9 C.Y.
TOTAL CLASS A CONCRETE	25.0 C.Y.

DRILLED PIERS:

DRILLED PIER CONCRETE	
POUR #1 (DRILLED PIERS)	80.7 C.Y.

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT NO. 1

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042850 PATRICK R. GALLAGHER 9/19/2023

DocuSigned by: Patrick Gallagher

DWN. BY: WDC DATE: 03/2023
CHKD. BY: PRG DATE: 03/2023
DES. EGR. OF RECORD: PRG DATE: 03/2023

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1			3			TOTAL SHEETS
2			4			39

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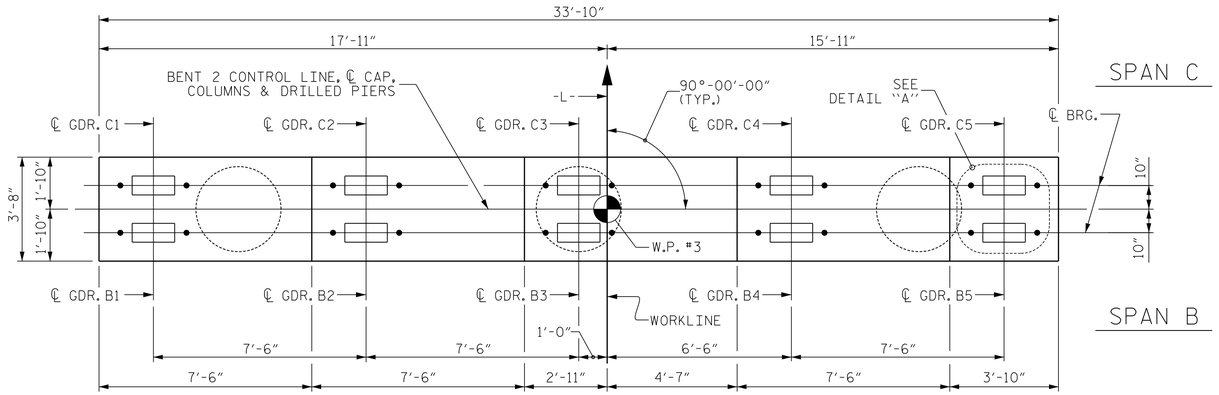
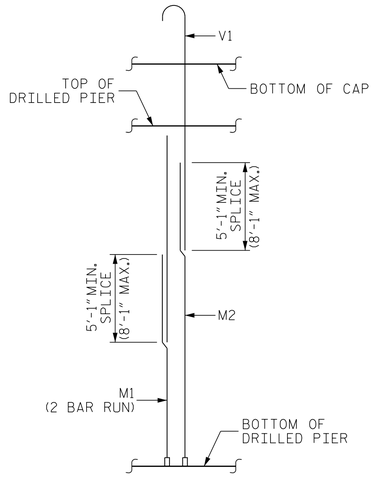


PLAN OF CAP



LONGITUDINAL REINFORCEMENT DETAIL

NOTES

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

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

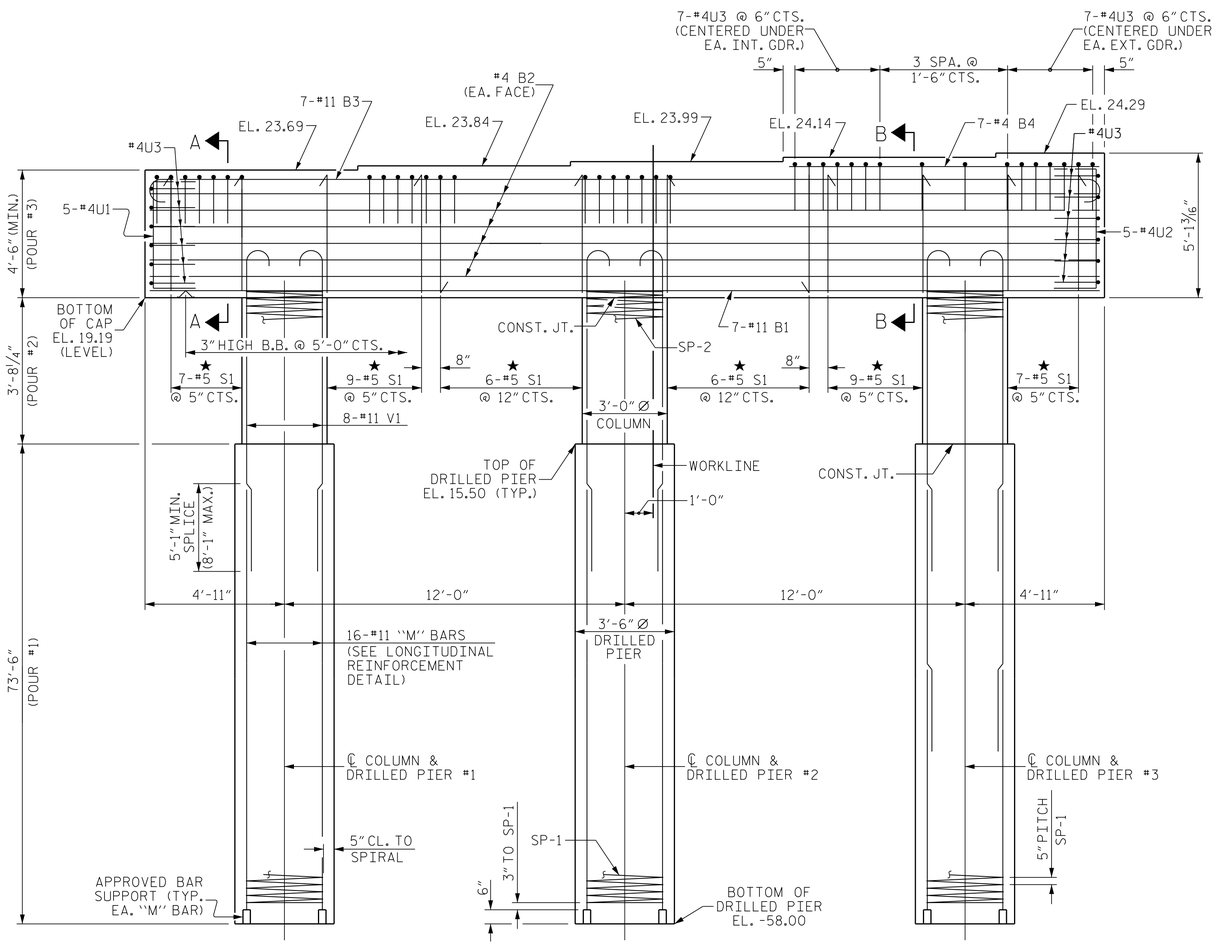
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

★ INVERT ALTERNATE STIRRUPS.

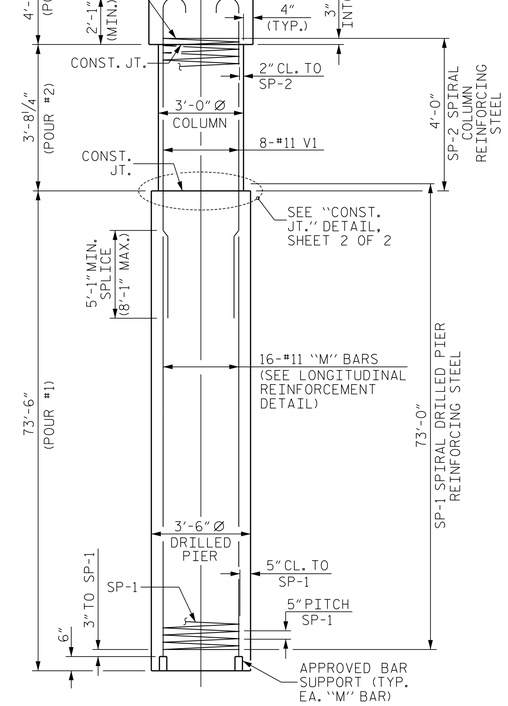
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

SEE SHEET 2 OF 2 FOR SECTIONS A-A AND B-B.



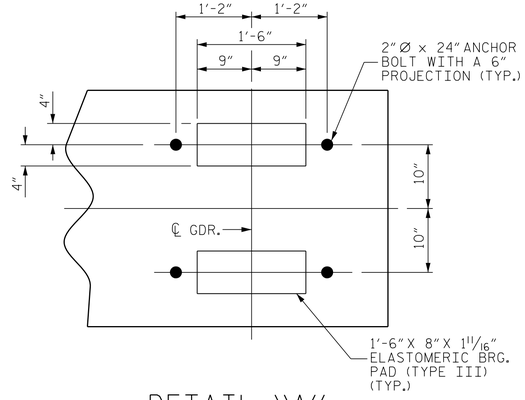
ELEVATION

REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER



END ELEVATION

REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER



DETAIL "A"

INFORMATION SHOWN IS TYPICAL FOR EACH BEARING

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT NO. 2

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042660 PATRICK R GALLAGHER
Executed by Jesse Batcher
3/9/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Johnson, Mirmiran, & Thompson Inc.
4700 Falls of Neuse Rd, Suite 100,
Raleigh, NC, 27609
License No: C-3097

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-32
1			3			TOTAL SHEETS
2			4			39

DWN. BY: WDC	DATE: 03/2023
CHKD. BY: PRG	DATE: 03/2023
DES. EGR. OF RECORD: PRG	DATE: 03/2023

wdcrutcher
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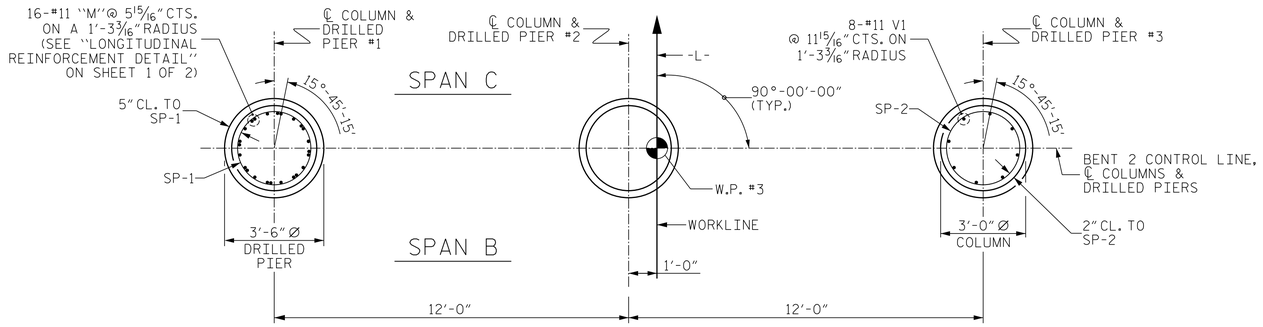
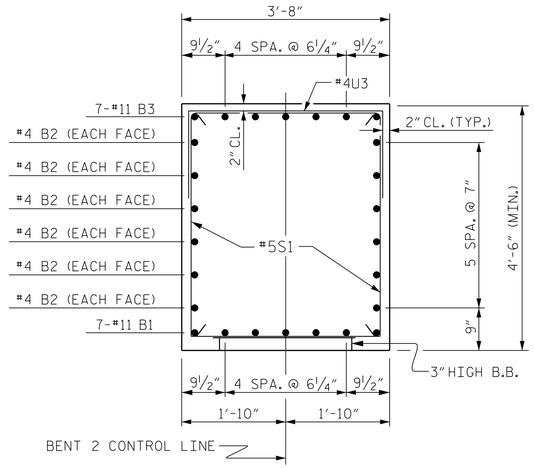
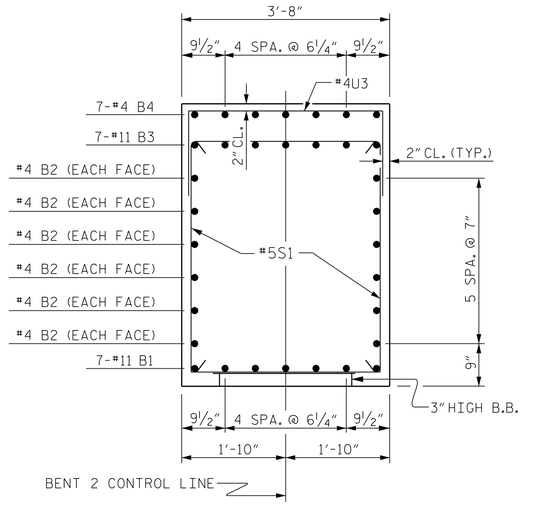


PLAN OF DRILLED PIERS & COLUMNS

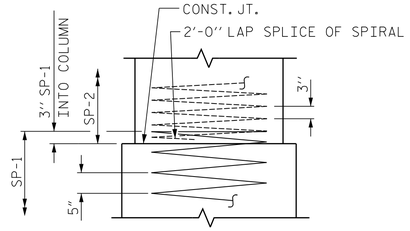
REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER



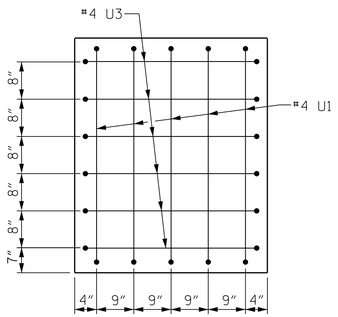
SECTION A-A



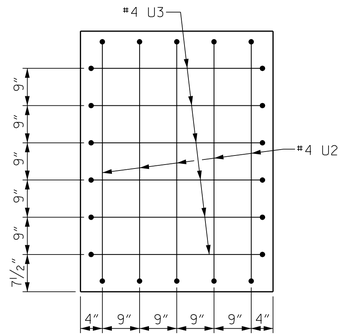
SECTION B-B



CONSTRUCTION JOIN DETAIL

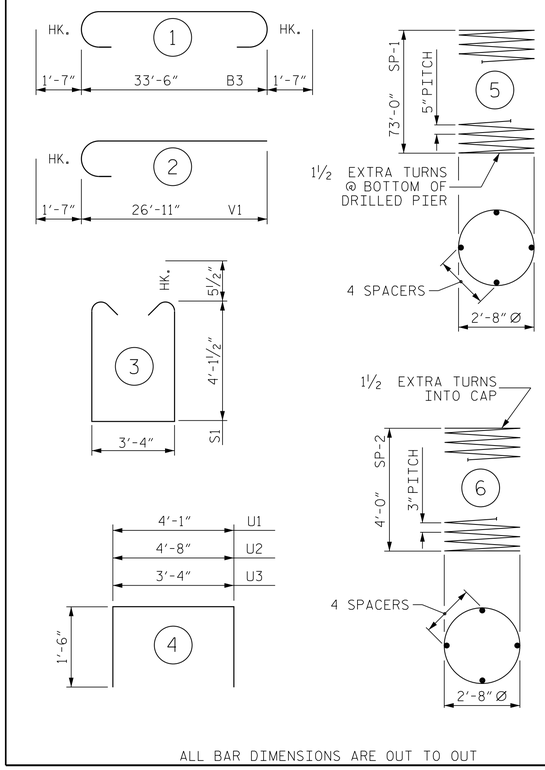


LEFT END OF CAP



RIGHT END OF CAP

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT NO. 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	#11	STR	33'-6"	1246
B2	12	#4	STR	33'-6"	269
B3	7	#11	1	36'-8"	1364
B4	7	#4	STR	11'-0"	51
M1	48	#11	STR	41'-11"	10,690
M2	24	#11	STR	60'-0"	7651
S1	44	#5	3	12'-6"	574
U1	5	#4	4	7'-1"	24
U2	5	#4	4	7'-8"	26
U3	49	#4	4	6'-4"	207
V1	24	#11	2	28'-6"	3634

REINFORCING STEEL 25,736 LBS.

SP-1	3	**	5	1455'-9"	4555
SP-2	3	*	6	148'-7"	298

SPIRAL COLUMN REINFORCING STEEL 4,853 LBS.

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

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

CLASS A CONCRETE BREAKDOWN

POUR #2 (COLUMNS)	2.9 C.Y.
POUR #3 (CAP)	21.9 C.Y.
TOTAL CLASS A CONCRETE	24.8 C.Y.

DRILLED PIERS:

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	78.6 C.Y.

PROJECT NO. B-4926

LENOIR COUNTY

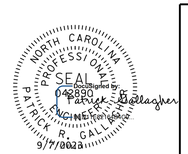
STATION: 35+00.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT NO. 2



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1			3			TOTAL SHEETS
2			4			39

DWN. BY: WDC DATE: 03/2023
CHKD. BY: PRG DATE: 03/2023
DES. EGR. OF RECORD: PRG DATE: 03/2023

wdcrutcher
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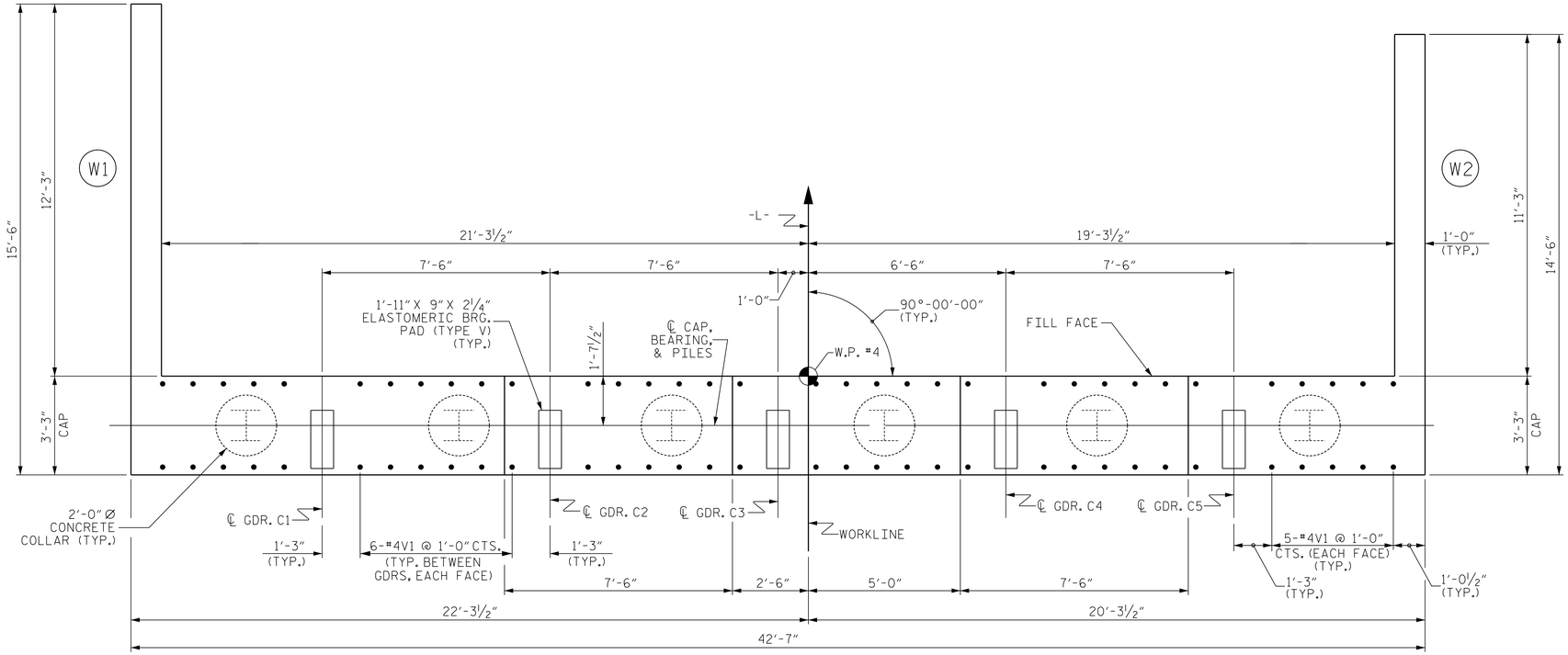
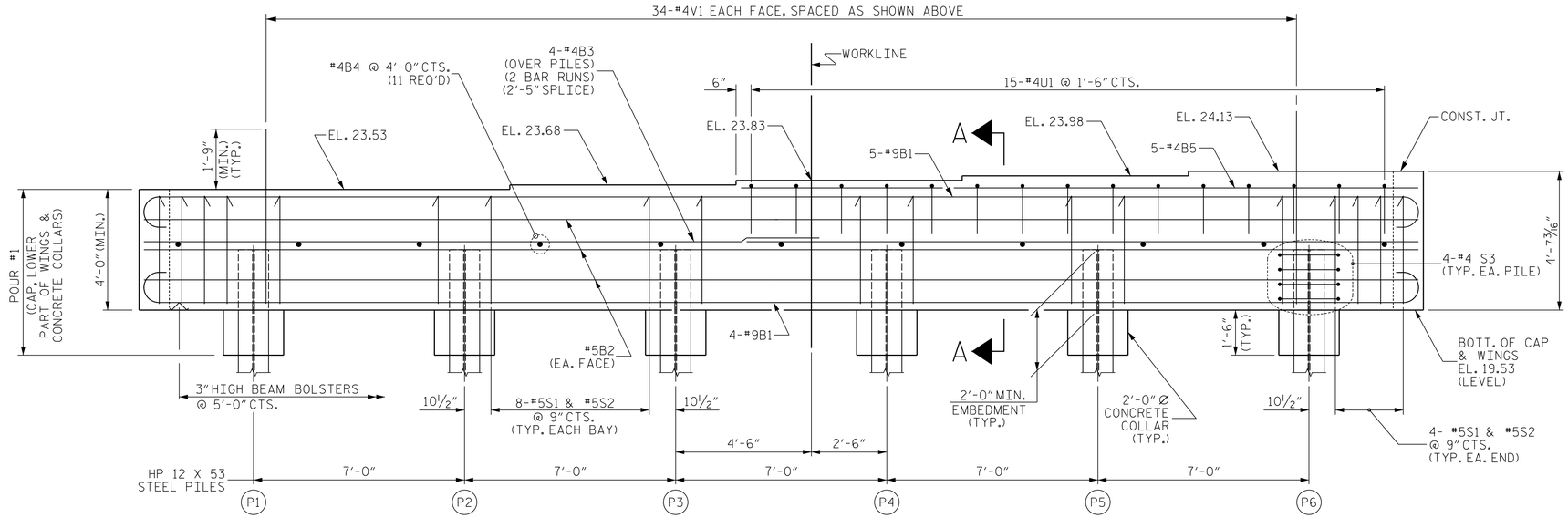


PLAN



ELEVATION

NOTES

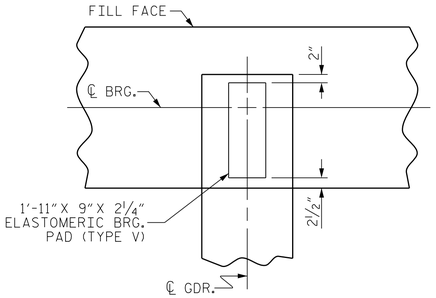
STIRRUPS IN THE CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.

SEE THE SUPERSTRUCTURE SHEETS FOR FOR UPPER PART OF INTEGRAL END BENT DETAIL.

THE UPPER PART OF INTEGRAL PORTION AND WINGS SHALL BE POURED WITH THE SUPERSTRUCTURE. SEE SUPERSTRUCTURE PLAN OF SPANS.

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".

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



BRG. PAD DETAIL

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT NO. 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-34
1			3			TOTAL SHEETS
2			4			39

NORTH CAROLINA PROFESSIONAL SEAL 042939 ENGINEER PATRICK R CALLAHAN 8/1/2023 — Patrick Callahan

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DWN. BY: WDC	DATE: 03/2023
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DES. EGR. OF RECORD: PRG	DATE: 03/2023

w5crutcher
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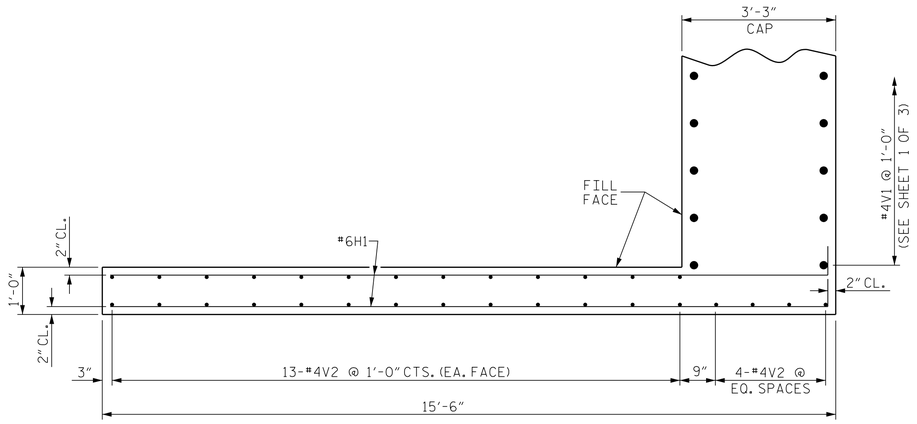
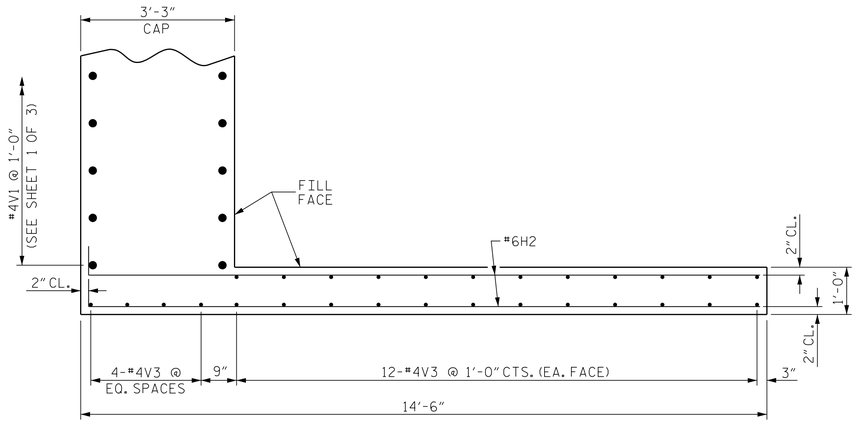
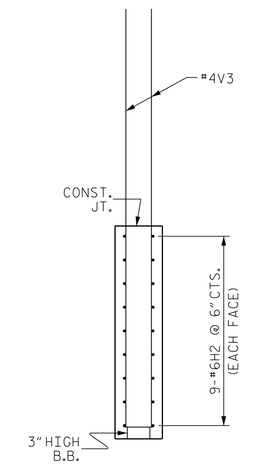


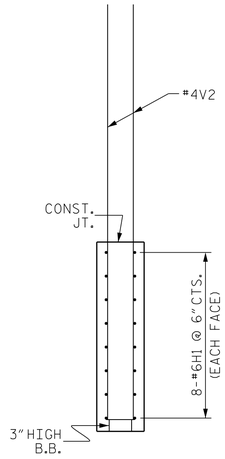
PLAN OF WING (W1)



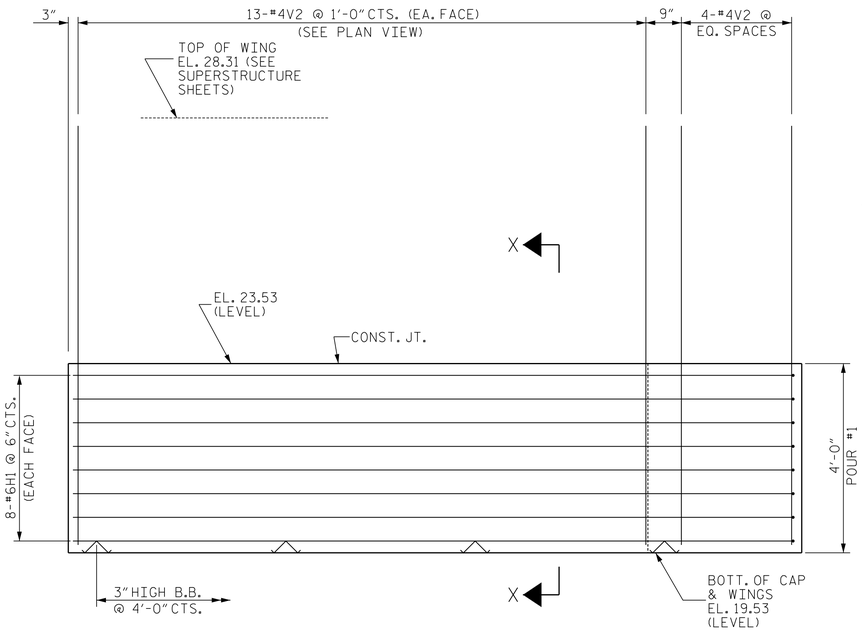
PLAN OF WING (W2)



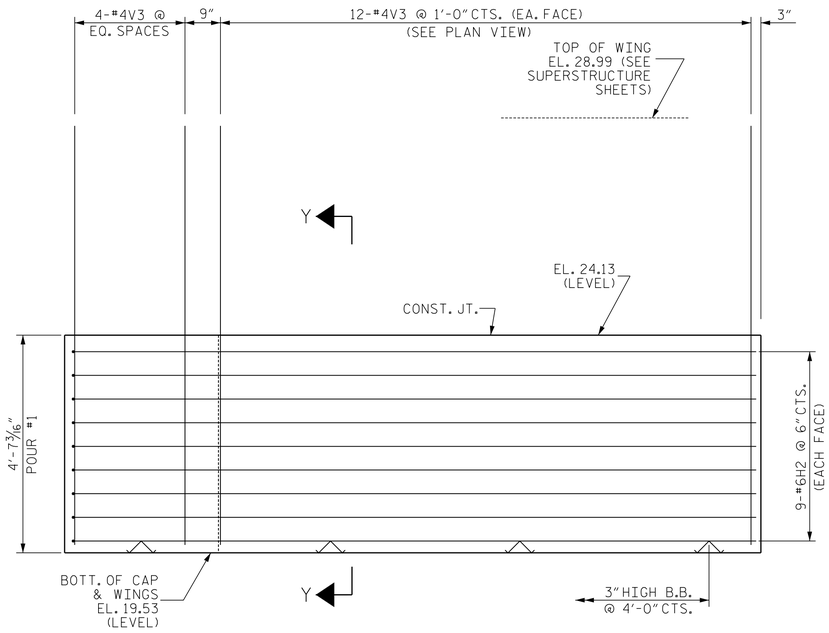
SECTION Y-Y



SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT NO. 2 WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-35
1			3			TOTAL SHEETS
2			4			39

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DWN. BY: WDC	DATE: 03/2023
CHKD. BY: PRG	DATE: 03/2023
DES. EGR. OF RECORD: PRG	DATE: 03/2023

w:\cruncher
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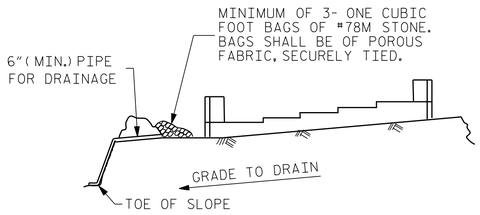
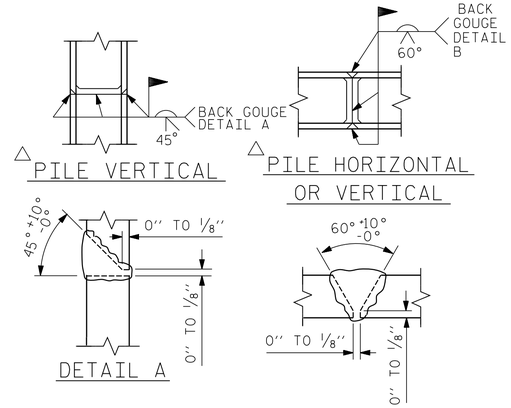


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

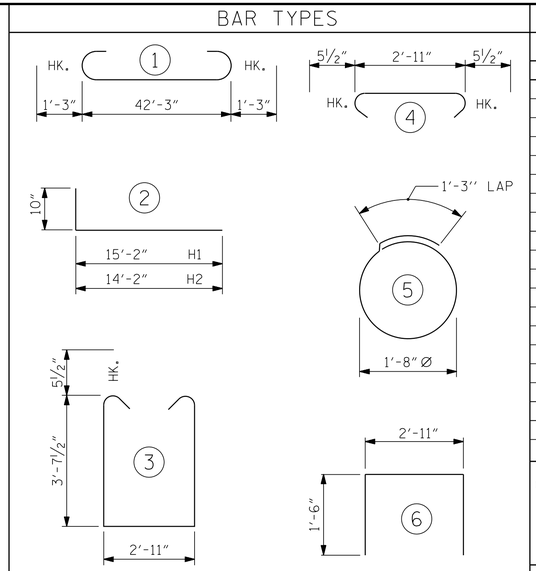
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



BILL OF MATERIAL

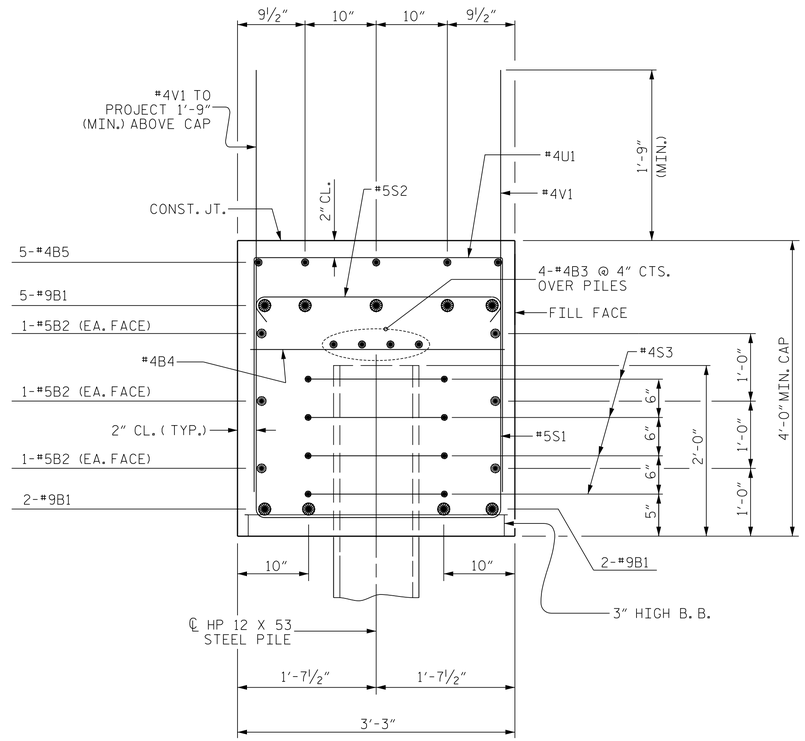
END BENT NO. 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	9	#9	1	44'-9"	1369
B2	6	#5	STR	42'-3"	264
B3	8	#4	STR	22'-4"	120
B4	11	#4	STR	2'-11"	21
B5	5	#4	STR	22'-5"	75
H1	16	#6	2	16'-0"	385
H2	18	#6	2	15'-0"	406
S1	48	#5	3	11'-1"	555
S2	48	#5	4	3'-10"	192
S3	24	#4	5	6'-6"	104
U1	15	#4	6	5'-11"	59
V1	68	#4	STR	6'-2"	280
V2	30	#4	STR	8'-4"	167
V3	28	#4	STR	9'-0"	168

REINFORCING STEEL 4,165 LBS.

CLASS A CONCRETE

POUR #1 CAP, LOWER PART OF WINGS & CONC. PILE COLLARS 26.6 C.Y.



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY, SEE SHEET 1 OF 3 FOR DETAILS)

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT NO. 2 DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 042892 ENGINEER PATRICK R. GALLAGHER
Digitally signed by PATRICK R. GALLAGHER
9/7/2023

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NO.	BY:	DATE:	NO.	BY:	DATE:	S2-36
1			3			TOTAL SHEETS
2			4			39

DWN. BY: WDC	DATE: 03/2023
CHKD. BY: PRG	DATE: 03/2023
DES. EGR. OF RECORD: PRG	DATE: 03/2023

w3crutcher
DGN: V:\MO\Structures\03147-0\ - B-4926, Lenoir 20 &34\Structures\Lenoir 34\Plans\402_071_B4926_SNU_EBE3_S36.dgn
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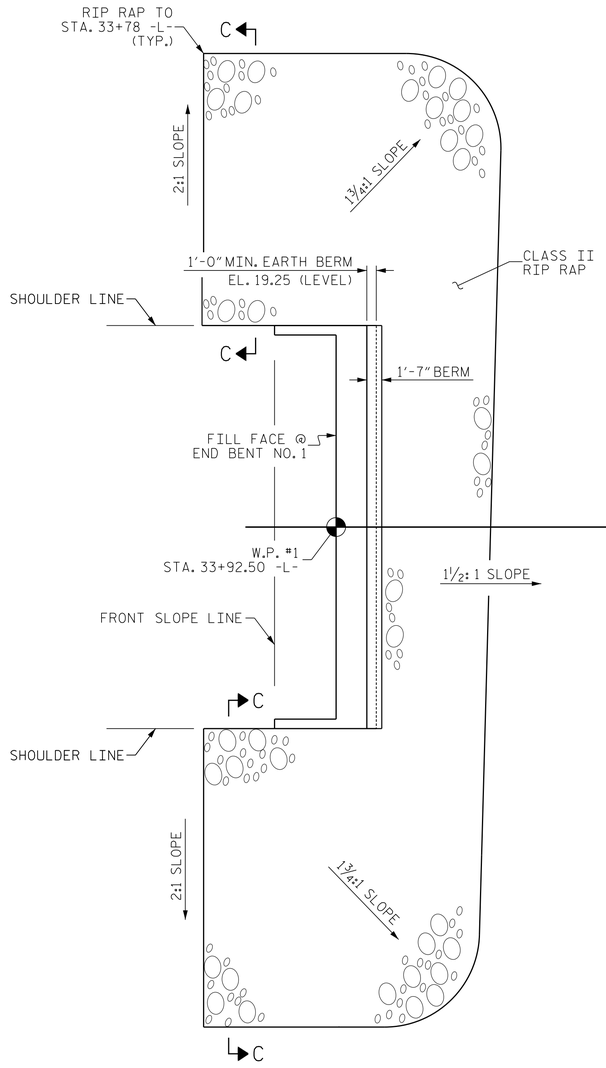
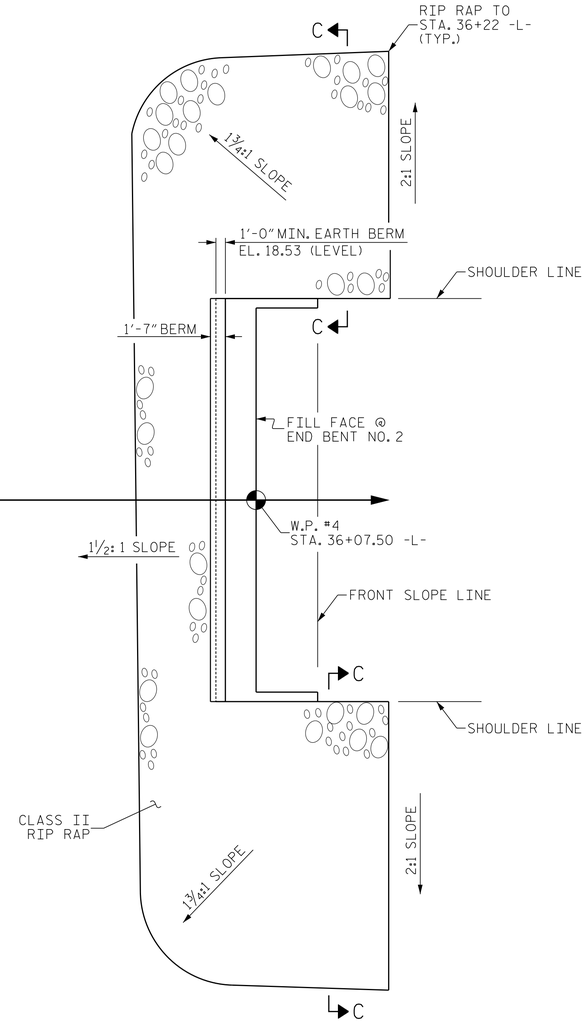
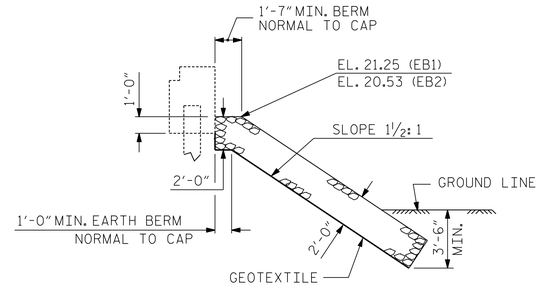


PLAN @ END BENT NO. 1

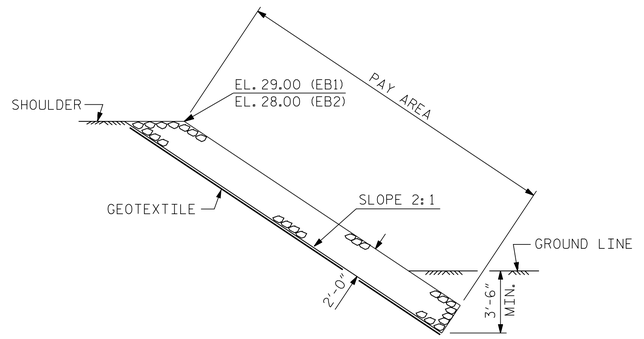


PLAN @ END BENT NO. 2

ESTIMATED QUANTITIES		
BRIDGE @ STA. 35+00.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT NO. 1	270	300
END BENT NO. 2	212	236
TOTAL	482	536



℄ SECTION
BERM RIP RAPPED
(END BENT 1 SHOWN, END BENT 2 SIMILAR)



SECTION C-C

PROJECT NO. B-4926
LENOIR COUNTY
STATION: 35+00.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
RIP RAP DETAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042839 PATRICK R. GALLAGHER 9/7/2023
Released for Construction
Electronically Signed and Sealed
PRG 9/7/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-37
1			3			TOTAL SHEETS
2			4			39

DWN. BY: WDC	DATE: 03/2023	DRAWN BY : REK 1/84	REV. 10/1/11	MAA/GM
CHKD. BY: PRG	DATE: 03/2023	CHECKED BY : RDU 1/84	REV. 12/21/11	MAA/GM
DES. EGR. OF RECORD: PRG	DATE: 03/2023		REV. 12/17	MAA/THC

STD. NO. RR1

wdcrutcher
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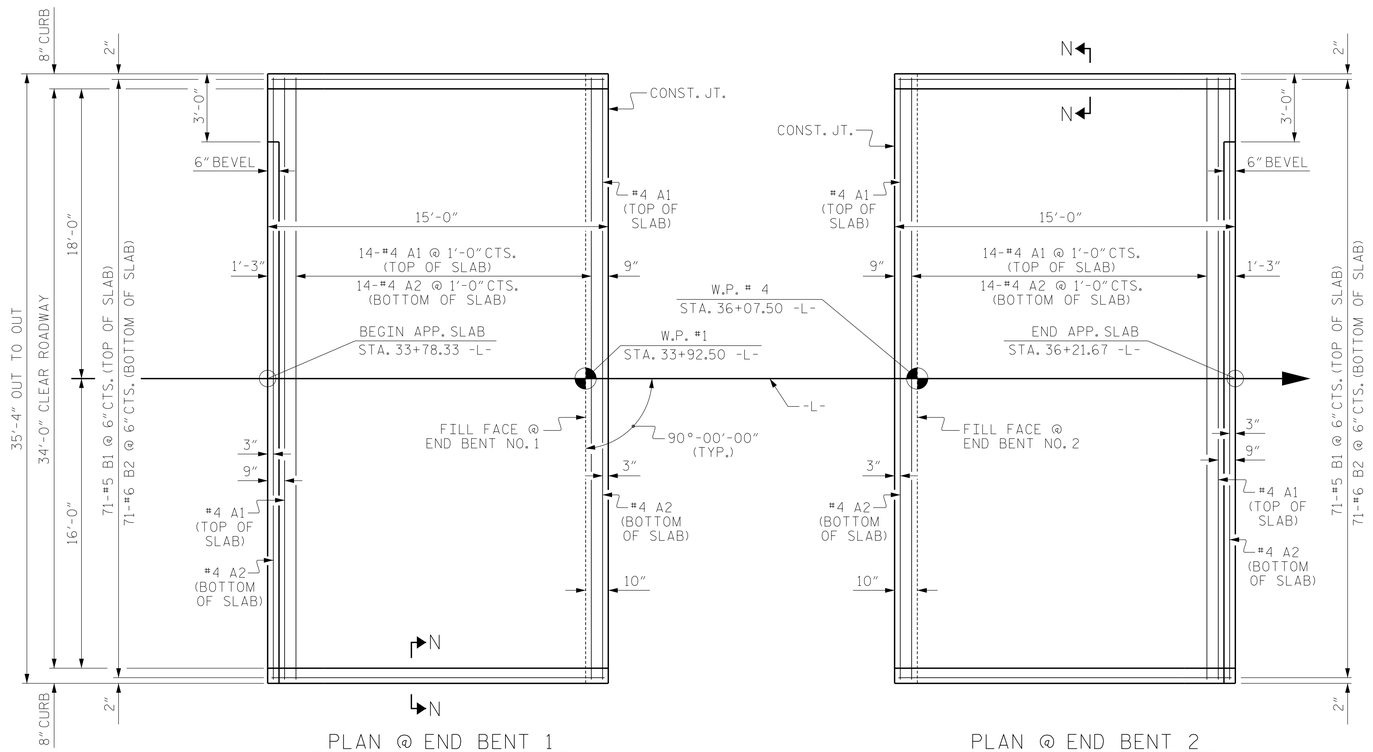
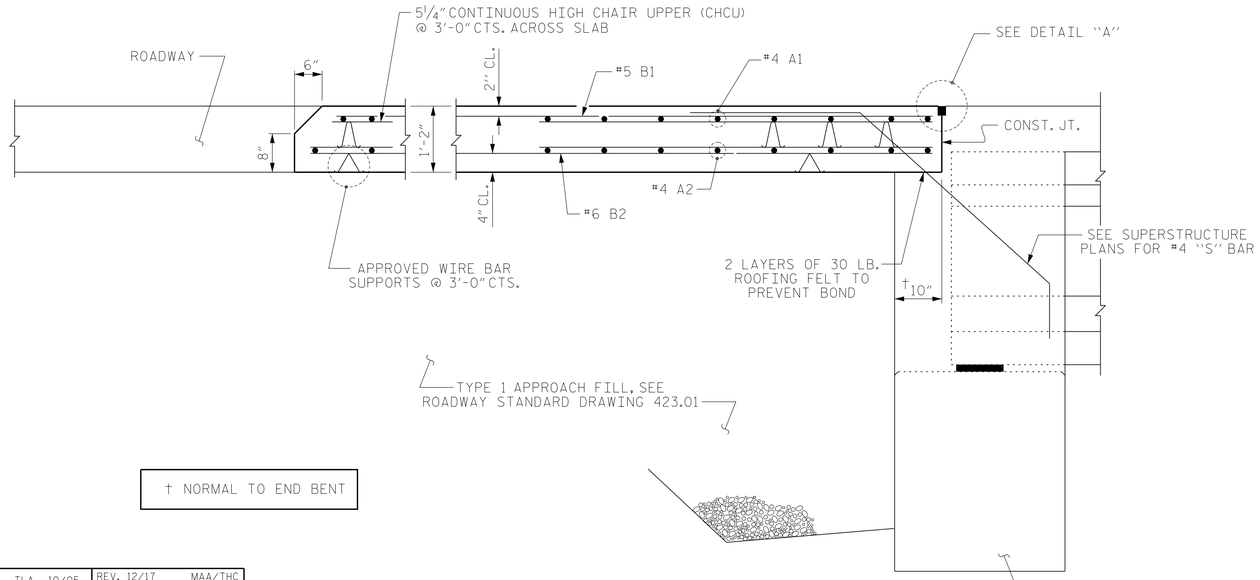


PLAN @ END BENT 1 PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



† NORMAL TO END BENT

SECTION THRU SLAB

(TYPE I - STANDARD APPROACH FILL)

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".

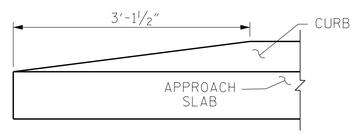
BILL OF MATERIAL

FOR ONE APPROACH SLAB
(2 REQ'D)

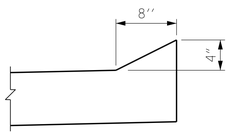
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	16	#4	STR	35'-0"	374
A2	16	#4	STR	35'-0"	374
* B1	71	#5	STR	14'-2"	1049
B2	71	#6	STR	14'-8"	1564
REINFORCING STEEL					1938 LBS.
* EPOXY COATED REINFORCING STEEL					1423 LBS.
CLASS AA CONCRETE					22.7 C.Y.

SPLICE LENGTHS

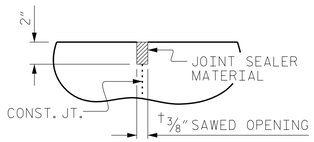
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"



END OF CURB WITHOUT SHOULDER BERM GUTTER



SECTION N-N



DETAIL "A"

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -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 ENGINEER SEAL PATRICK R GALLAGHER 10/31/2023

SEAL
Patrick Ryan Gallagher
ENGINEERING

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Johnson, Mirmiran, & Thompson Inc.
4700 Falls of Neuse Rd, Suite 100,
Raleigh, NC, 27609
License No: C-3097

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

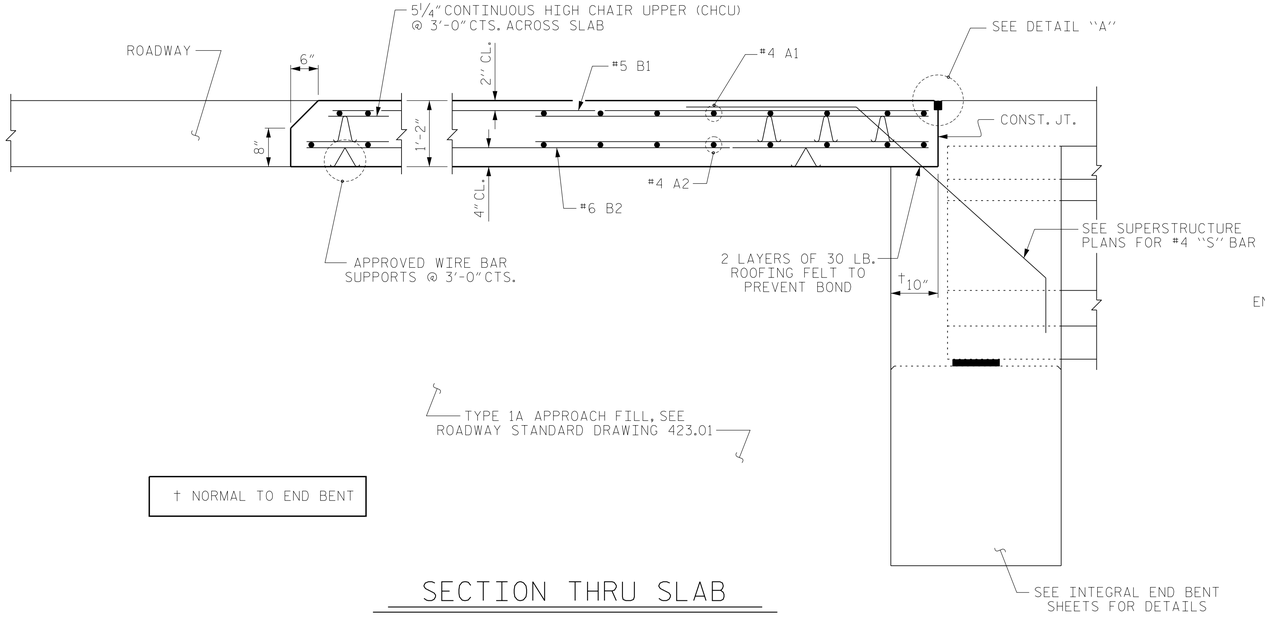
SHEET NO. S2-38

TOTAL SHEETS 39

DRAWN BY : TLA 10/05	REV. 12/17	MAA/THC	
CHECKED BY : GM 5/06	REV. 06/19	BNB/THC	
	REV. 07/23	BNB/SNM	
DWN. BY: WDC	DATE: 03/2023		
CHKD. BY: PRG	DATE: 03/2023		
DES. EGR. OF RECORD: PRG	DATE: 03/2023		

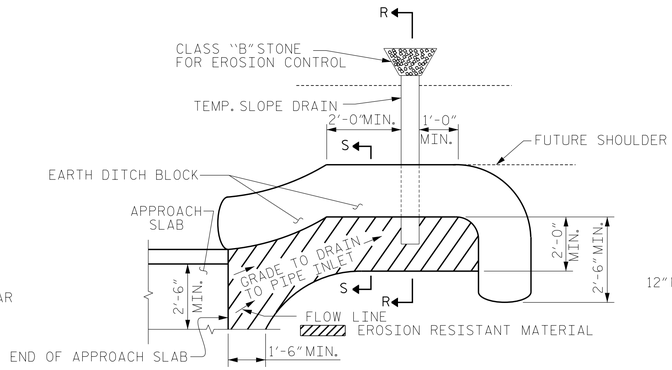
STD. NO. BAS5

wdcrutcher
DGN: 1
TIME: 6:52 PM on Monday, October 02, 2023
C:\NCSTructures\03747-01 - B-4926 Lenoir 20 &34\Structures\Lenoir 34\Plans\402_075_B4926_SWI_AS01_S38.dgn



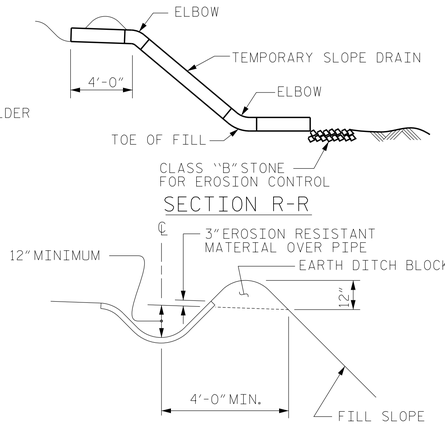
SECTION THRU SLAB

(TYPE 1A - ALTERNATE APPROACH FILL)



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

PLAN VIEW

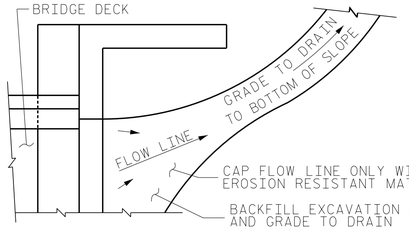


SECTION R-R

SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

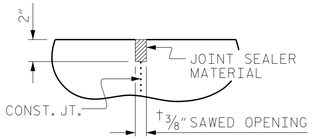
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



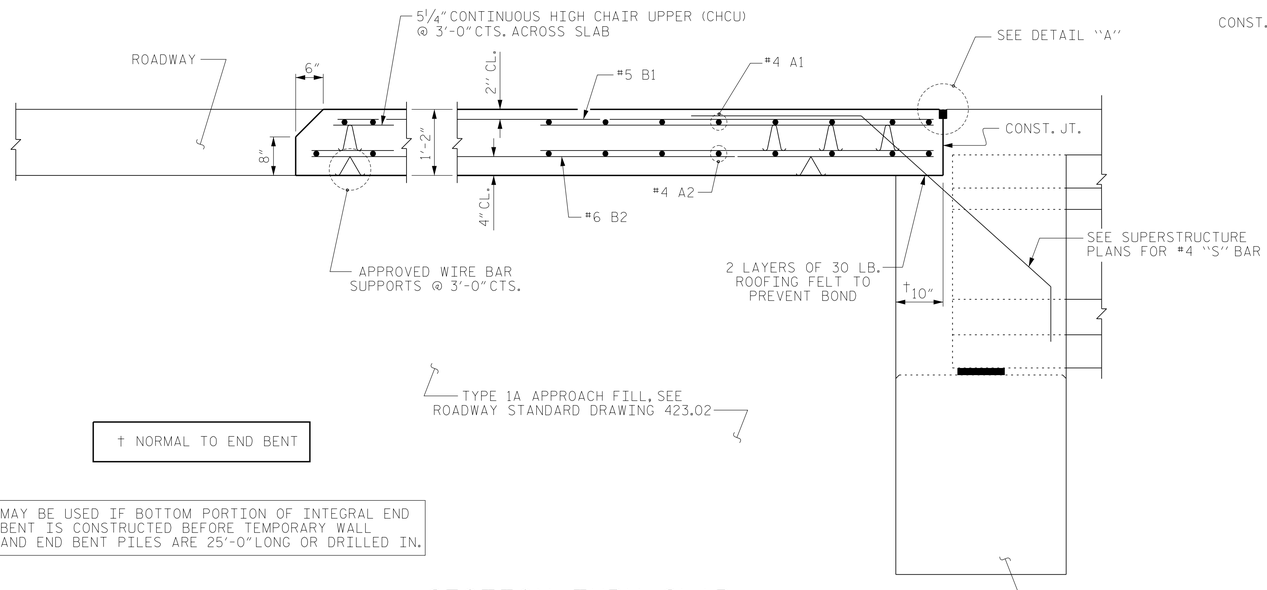
NOTE:

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

TEMPORARY DRAINAGE DETAIL



DETAIL "A"



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

SECTION THRU SLAB

☆ (TYPE 1A - ALTERNATE APPROACH FILL)

PROJECT NO. B-4926

LENOIR COUNTY

STATION: 35+00.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

DRAWN BY : TLA 10/05	REV. 12/17 MAA/THC
CHECKED BY : GM 5/06	REV. 06/19 BNB/THC
	REV. 07/23 BNB/SNM
DWN. BY: WDC	DATE: 03/2023
CHKD. BY: PRG	DATE: 03/2023
DES. EGR. OF RECORD: PRG	DATE: 03/2023

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER
DocuSigned by: Patrick Gallagher 8ED1180166E4CF...
10/3/2023

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-39
1			3			TOTAL SHEETS
2			4			39

STD. NO. BAS5

wdcrutcher
DGN: V:\NCStructures\03147-01- B-4926 Lenoir 20 &34\Structures\Lenoir 34\Plans\402_077_B4926_SNU_AS02_S39.dgn
TIME: 08:04 AM on 1\date\,October 03,2023

8/26/21

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

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

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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