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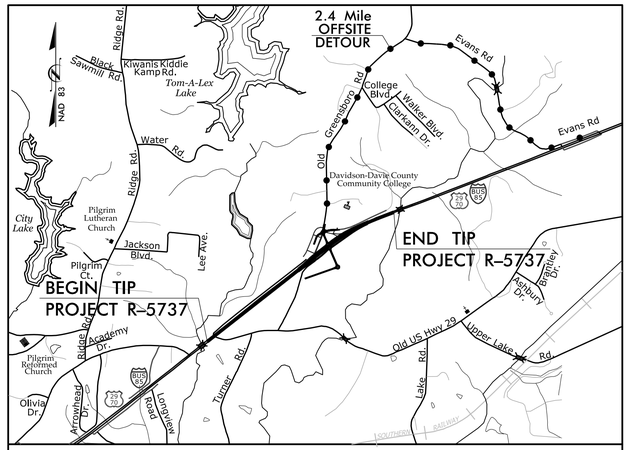
09/08/99

TIP PROJECT: R–5737

CONTRACT: C204399

See Sheet 1A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

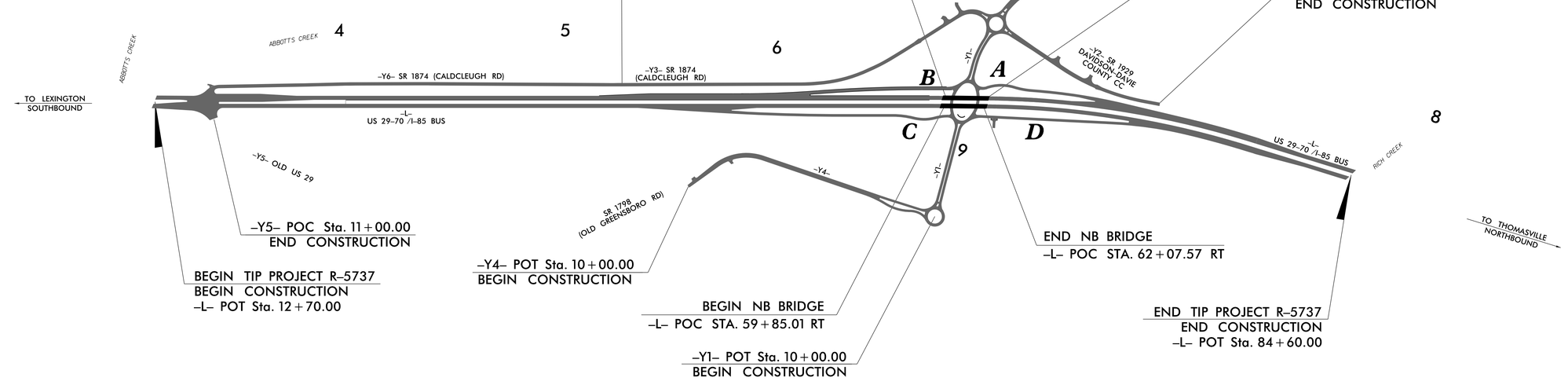
DAVIDSON COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R–5737	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
50195.1.1		PE
50195.2.1		ROW & UTIL.
50195.3.1		CONST.

LOCATION: CONVERT AT–GRADE INTERSECTION OF OLD GREENSBORO RD (SR 1798) AND I–85 BUS/US 29–70 TO INTERCHANGE

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURES



STRUCTURES

NCDOT CONTACT: AL BLANTON, P.E.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DESIGN DATA

ADT 2019 = 19300
ADT 2040 = 21400
K = 9 %
D = 60 %
T = 9 % *
V = 60 MPH
* TTST 5% DUAL 4%
FUNC CLASS = ARTERIAL
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R–5737 = 1.320 MILES
LENGTH STRUCTURE TIP PROJECT R–5737 = 0.042 MILES
TOTAL LENGTH TIP PROJECT R–5737 = 1.362 MILES

STRUCTURE LENGTH BASED ON –L– NB STATIONING.

PLANS PREPARED FOR NCDOT BY:

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F–0929

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 30, 2018

LETTING DATE:
OCTOBER 19, 2021

DENNIS J. MORY, P.E.
PROJECT ENGINEER

MATTHEW PAYNE, P.E.
STRUCTURES DESIGN ENGINEER

STRUCTURAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne E7C3056295FF484...

9/14/2021

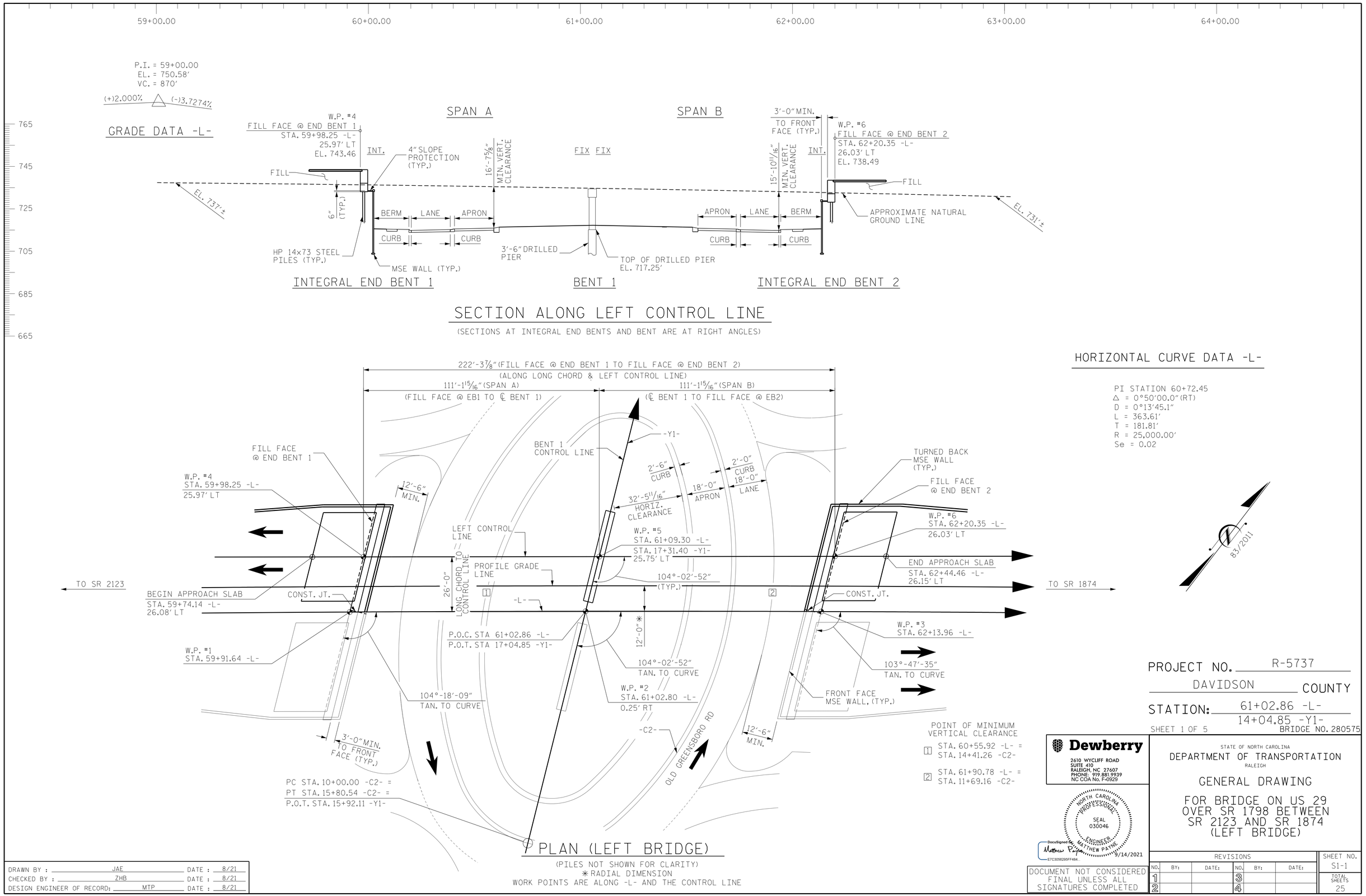
DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

SIGNATURE: *P.E.*

DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

SIGNATURE: *P.E.*

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



SECTION ALONG LEFT CONTROL LINE

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

PLAN (LEFT BRIDGE)

(PILES NOT SHOWN FOR CLARITY)

*RADIAL DIMENSION

WORK POINTS ARE ALONG -L- AND THE CONTROL LINE

POINT OF MINIMUM VERTICAL CLEARANCE

1 STA. 60+55.92 -L- = STA. 14+41.26 -C2-

2 STA. 61+90.78 -L- = STA. 11+69.16 -C2-

HORIZONTAL CURVE DATA -L-

PI STATION 60+72.45
Δ = 0°50'00.0" (RT)
D = 0°13'45.1"
L = 363.61'
T = 181.81'
R = 25,000.00'
Se = 0.02

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-
14+04.85 -Y1-

SHEET 1 OF 5 BRIDGE NO. 280575

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW P. PAYNE
DocuSigned by: Matthew P. Payne E7C3056295FF484...
9/14/2021

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON US 29 OVER SR 1798 BETWEEN SR 2123 AND SR 1874 (LEFT BRIDGE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-1
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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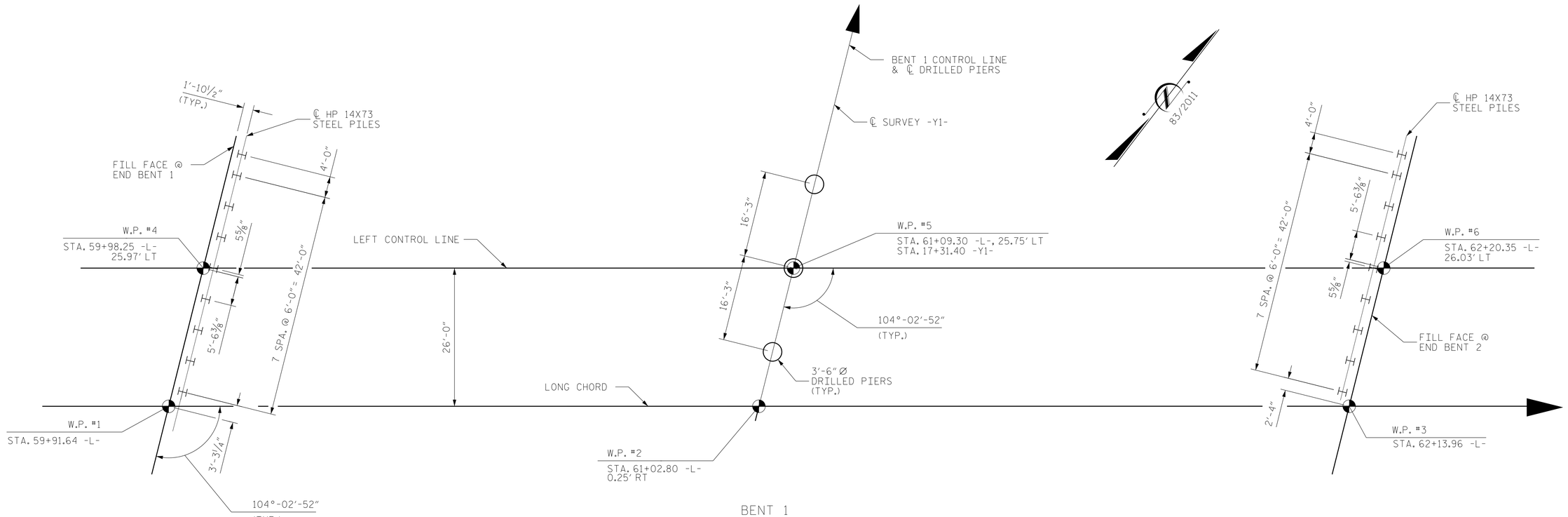
$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE AT BOTTOM OF CAP

NOTES:

1. FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
2. DRILLED PIERS AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 538 TONS PER PIER.
3. INSTALL DRILLED PIERS AT BENT NO. 1 TO A TIP ELEVATION NO HIGHER THAN 706 FT AND PENETRATION OF AT LEAST 8 FT INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.
4. CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
5. FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
6. PILES AT END BENT NO. 1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 109 TONS PER PILE.
7. DRIVE PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 185 TONS PER PILE.
8. DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 284 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDTIONAL RESISTANCE FOR DOWNDRAG.
9. IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 60,000-80,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.
10. TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING. SEE SECTION 450 OF THE STANDARD SPECIFICATIONS (AND FOR PILE DRIVING CRITERIA, SEE PILE DRIVING CRITERIA PROVISION).
11. DRILLED-IN PILES ARE REQUIRED FOR INTEGRAL END BENT NO. 1. EXCAVATE HOLES AT PILE LOCATIONS TO ELEVATION 709 FT. FILL THE BOTTOM 3 FT OF HOLES FOR PILE EXCAVATION WITH CONCRETE AND THE REST OF HOLES WITH CLASS II OR III SELECT MATERIAL THAT MEETS SECTION 1016 OF THE STANDARD SPECIFICATIONS. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

SHEET 2 OF 5

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne E7C3056295FF484...

9/14/2021

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FOUNDATION LAYOUT PLAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-2
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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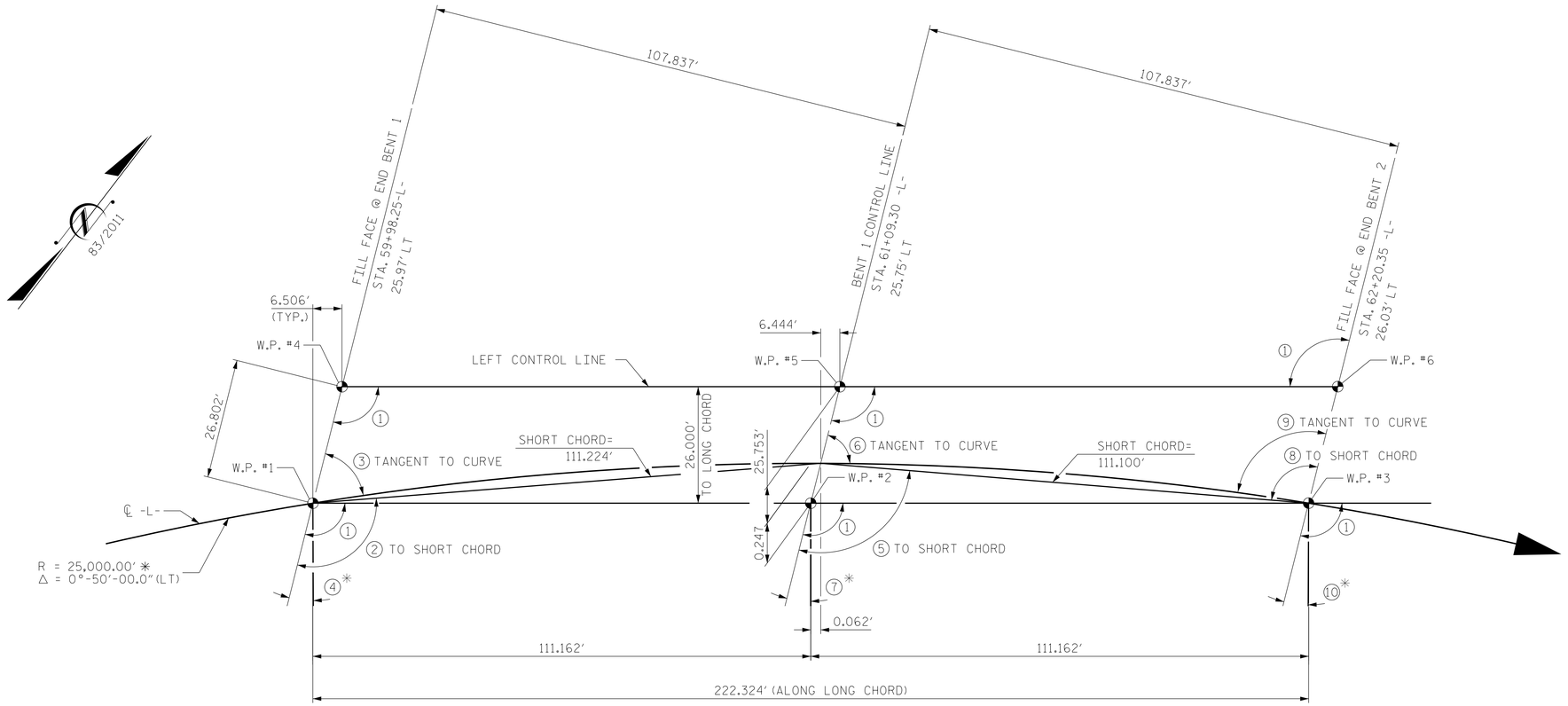
$$$$USERNAME$$$$



INTEGRAL END BENT 1 | BENT 1 | INTEGRAL END BENT 2

ANGLES

① 104°-02′-52″
② 104°-10′-30″ SHORT CHORD
③ 104°-18′-09″ TANGENT TO CURVE
④ 14°-18′-09″ RADIAL
⑤ 103°-55′-13″ SHORT CHORD
⑥ 104°-02′-52″ TANGENT TO CURVE
⑦ 14°-02′-52″ RADIAL
⑧ 103°-55′-13″ SHORT CHORD
⑨ 103°-47′-35″ TANGENT TO CURVE
⑩ 13°-47′-35″ RADIAL

LONG CHORD LAYOUT

(ALL END BENTS AND BENTS ARE PARALLEL)
✳ CURVE EXAGGERATED FOR CLARITY

PROJECT NO. R-5737
DAVIDSON COUNTY
STATION: 61+02.86 -L-

SHEET 3 OF 5

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
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NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE
DocuSigned by: Matthew Payne E7C3056295FF484...
9/14/2021

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

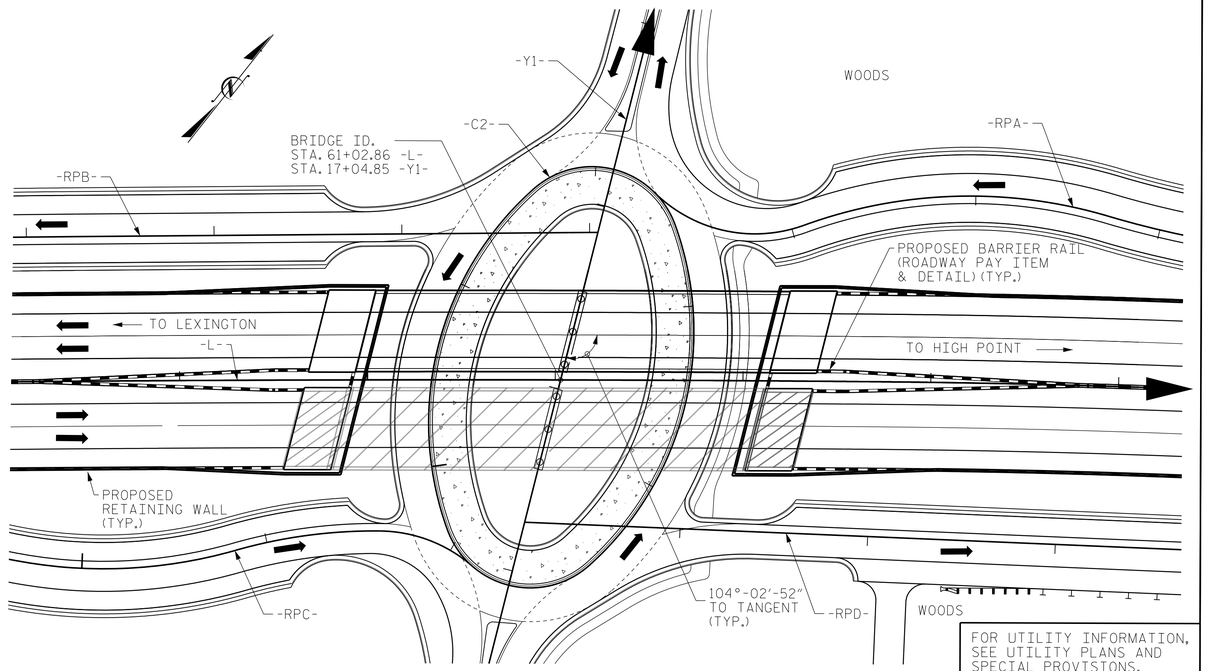
GENERAL DRAWING
FOR BRIDGE ON US29
OVER SR 1798 BETWEEN
SE 2123 AND SR 1874
(LEFT BRIDGE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-3
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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

BENCHMARK BM#3-RAILROAD SPIKE IN 24"GUM, 100.95' RIGHT OF STA. 49+14.96 -L-, EL. 741.680



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

GENERAL DRAWING NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR VERTICAL ARCHITECTURAL CONCRETE SURFACE TREATEMENT OF THE CONCRETE BARRIER RAIL, SEE SPECIAL PROVISIONS.

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

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

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

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

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

WORK SHALL NOT BE STARTED ON THIS BRIDGE (OR SPECIFIC PARTS OF BRIDGE) UNTIL ROADWAY SECTION HAS BEEN EXCAVATED.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

TOTAL BILL OF MATERIAL

	PILE EXCAVATION NOT IN SOIL	3'-6" DIA. DRILLED PIER NOT IN SOIL	PDA TESTING	CSL TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL
	LIN. FT.	LIN. FT.	EA.	EA.	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.
SUPERSTRUCTURE	-	-	-	-	9652	10,070	-	LUMP SUM		
END BENT NO. 1	48	-	-	-	-	-	35.5	-	4,854	
BENT NO. 1	-	33.8	-	-	-	-	40.1	-	11,089	1,676
END BENT NO. 2	-	-	-	-	-	-	35.5	-	4,854	
TOTAL	48	33.8	1	1	9652	10,070	111.1	LUMP SUM	20,797	1,676

TOTAL BILL OF MATERIAL

	MODIFIED 63" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR 14x73 STEEL PILES	HP 14 X 73 STEEL PILES		CONCRETE BARRIER RAIL	ARCHITECTURAL CONCRETE SURFACE TREATMENT	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS
	NO.	LIN. FT.	EA.	NO.	LIN. FT.	LIN. FT.	SQ. FT.	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE	10	1097.71	-	-	-	641.2	623.2	-	LUMP SUM
END BENT NO. 1	-	-	9	9	234	-	-	17	-
BENT NO. 1	-	-	-	-	-	-	-	-	-
END BENT NO. 2	-	-	9	9	270	-	-	17	-
TOTAL	10	1097.71	18	18	504	641.2	623.2	34	LUMP SUM

DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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

PROJECT NO. R-5737
DAVIDSON COUNTY
STATION: 61+02.68 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON US 29
OVER SR 1798 BETWEEN
SR 2123 AND SR 1874
(LEFT BRIDGE)

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030046 MATTHEW PAYNE

DocuSigned by: Matthew Payne 9/14/2021
E7C3056295FF484...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-4
1			3			TOTAL SHEETS
2			4			25

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

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE											SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR						MOMENT						
							LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	1	1.02	--	1.75	0.815	1.24	A	EL	54.18	0.847	1.41	A	EL	21.67	0.80	0.815	1.02	A	EL	54.18	
		HL-93 (OPERATING)	N/A		1.61	--	1.35	0.815	1.61	A	EL	54.18	0.847	2.03	A	EL	21.67	N/A	--	--	--	--	--	·
		HS-20 (INVENTORY)	36.000		1.46	52.26	1.75	0.815	1.77	A	EL	54.18	0.847	2.09	A	EL	21.67	0.80	0.815	1.46	A	EL	54.18	
		HS-20 (OPERATING)	36.000		2.30	82.80	1.35	0.815	2.30	A	EL	54.18	0.847	2.77	A	EL	21.67	N/A	--	--	--	--	--	·
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SH	13.500		3.81	51.44	1.40	0.815	5.79	A	EL	54.18	0.847	7.08	A	I	21.67	0.80	0.815	3.81	A	EL	54.18	·
		S3C	20.000		2.22	44.40	1.40	0.815	3.36	A	EL	54.18	0.847	4.07	A	I	21.67	0.80	0.815	2.22	A	EL	54.18	·
		S3A	22.000		2.10	46.20	1.40	0.815	3.19	A	EL	54.18	0.847	3.58	A	I	21.67	0.80	0.815	2.10	A	EL	54.18	·
		S4A	27.250		1.84	50.14	1.40	0.815	2.79	A	EL	54.18	0.847	3.32	A	I	21.67	0.80	0.815	1.84	A	EL	54.18	·
		S5A	34.925		1.62	56.58	1.40	0.815	2.46	A	EL	54.18	0.847	3.01	A	I	21.67	0.80	0.815	1.62	A	EL	54.18	·
		S6A	35.550		1.46	51.90	1.40	0.815	2.22	A	EL	54.18	0.847	2.69	A	I	21.67	0.80	0.815	1.46	A	EL	54.18	·
		S7B	39.950		1.32	52.73	1.40	0.815	2.01	A	EL	54.18	0.847	2.48	A	I	21.67	0.80	0.815	1.32	A	EL	54.18	·
		S7A	42.000	2	1.30	54.60	1.40	0.815	1.97	A	EL	54.18	0.847	2.52	A	I	21.67	0.80	0.815	1.30	A	EL	54.18	·
	TRUCK TRACTOR SEMI-TRAILER (TTST)	T4A	33.000		1.79	59.70	1.40	0.815	2.72	A	EL	54.18	0.847	3.20	A	I	21.67	0.80	0.815	1.79	A	EL	54.18	·
		T5B	33.075		1.58	52.26	1.40	0.815	2.39	A	EL	54.18	0.847	3.00	A	I	21.67	0.80	0.815	1.58	A	EL	54.18	·
		T6A	41.600		1.43	59.49	1.40	0.815	2.18	A	EL	54.18	0.847	2.73	A	I	21.67	0.80	0.815	1.43	A	EL	54.18	·
		T7A	42.000	3	1.32	55.44	1.40	0.815	2.00	A	EL	54.18	0.847	2.51	A	I	21.67	0.80	0.815	1.32	A	EL	54.18	·
		T7B	42.000		1.38	57.96	1.40	0.815	2.10	A	EL	54.18	0.847	2.38	A	I	21.67	0.80	0.815	1.38	A	EL	54.18	·

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1.
2.
3.
4.

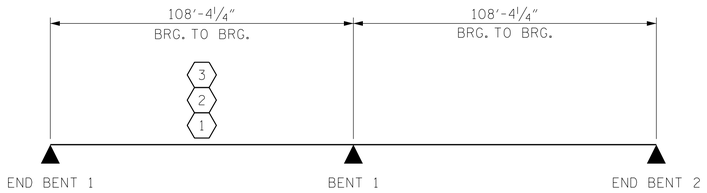
(#) CONTROLLING LOAD RATING

1. DESIGN LOAD RATING (HL-93)
2. DESIGN LOAD RATING (HS-20)
3. LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

SHEET 5 OF 5

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. P-0929

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030046 MATTHEW PAYNE

DocuSigned by: Matthew Payne E7C3056295FF484...

9/14/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

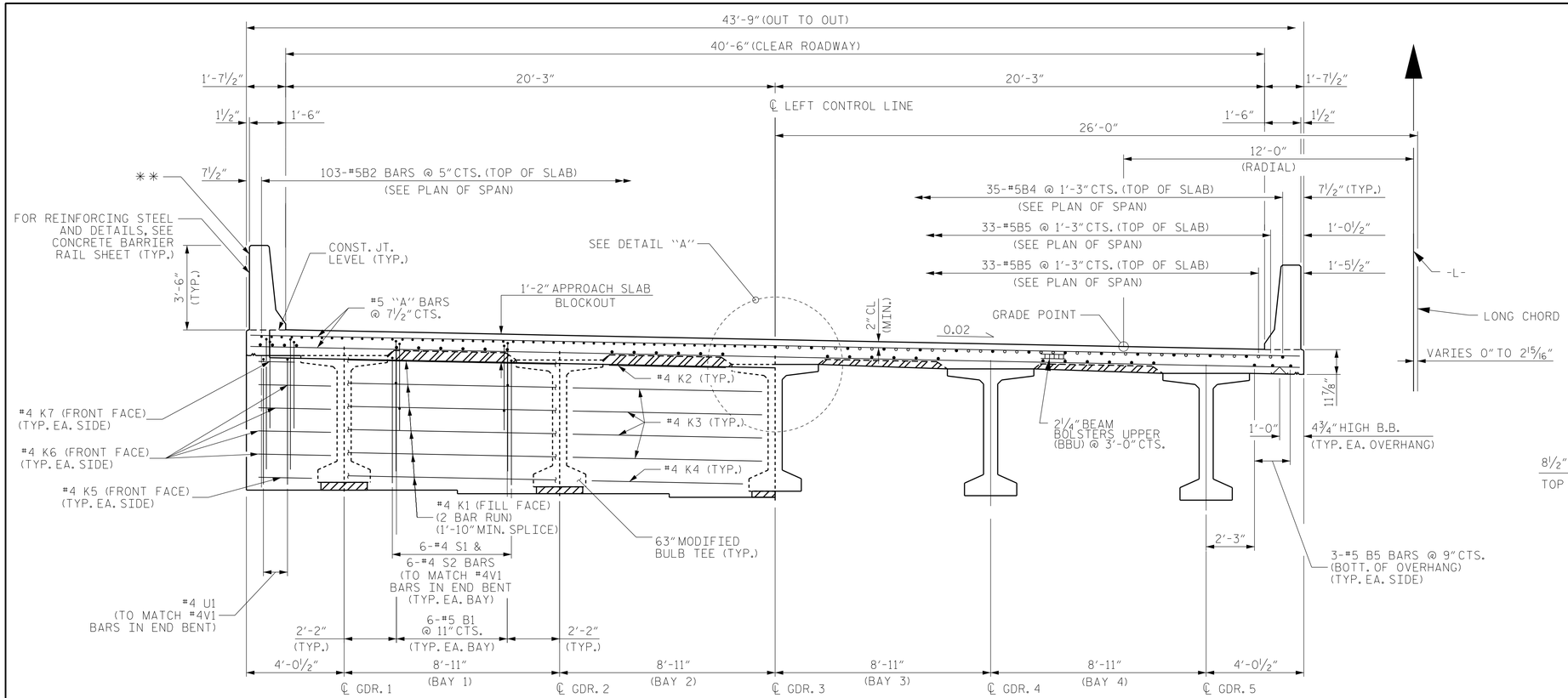
STANDARD

LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS (INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-5
1			3			TOTAL SHEETS
2			4			25

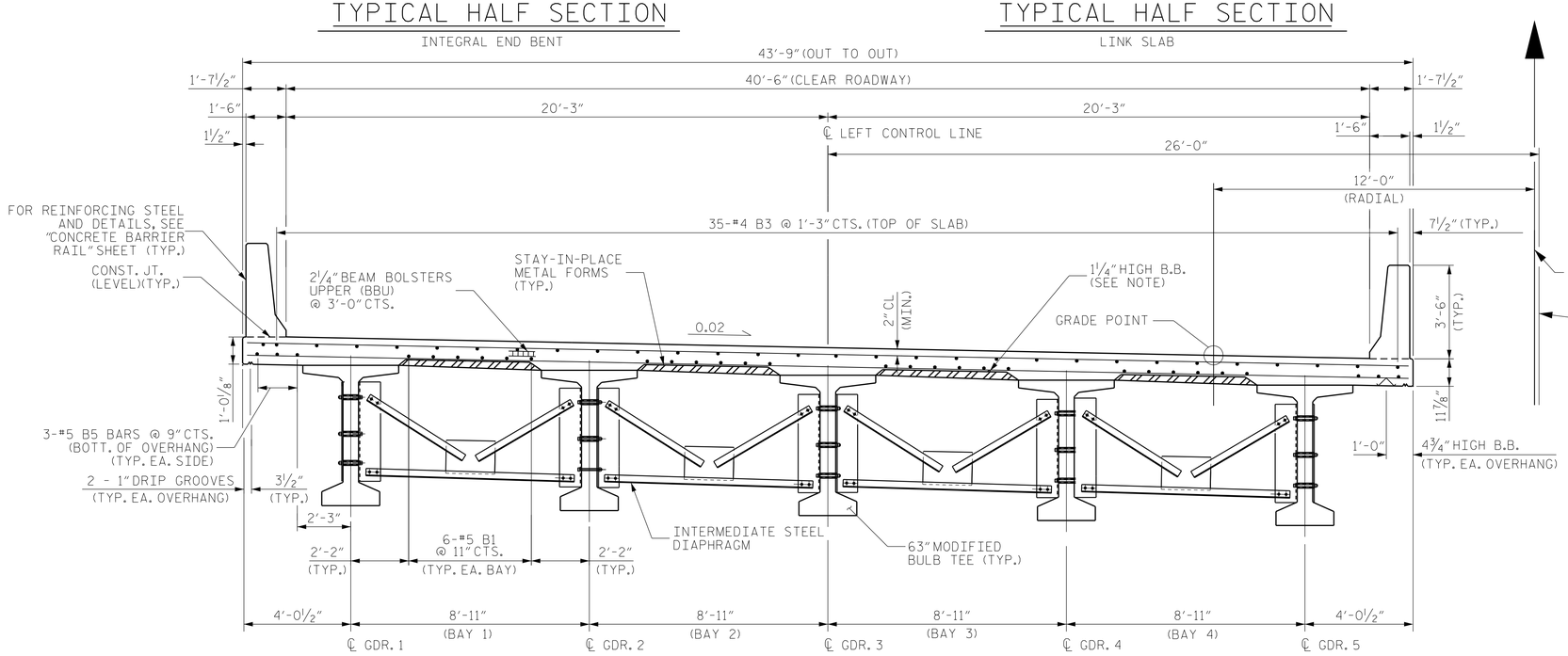
DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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



TYPICAL HALF SECTION
INTEGRAL END BENT

TYPICAL HALF SECTION
LINK SLAB



TYPICAL SECTION
INTERMEDIATE DIAPHRAGMS

NOTES:

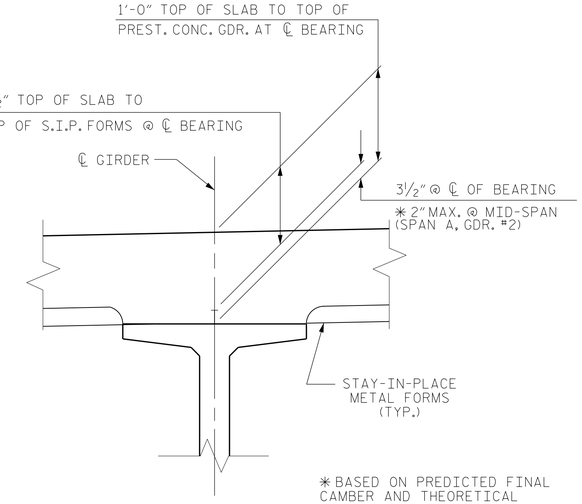
PROVIDE 1 ¼" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY IN PLACE FORS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A CLEAR DISTANCE OF 2½" ABOVE THE TOP OF THE REMOVABLE FORM.

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.

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

EXTERIOR FACE OF EXTERIOR BARRIER TO RECIEVE FORM LINER ARCHITECTURAL FINISH ONLY.



DETAIL A

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

** FOR STONE FACE FORM LINER AND STAINING OF BARRIER, SEE CONCRETE BARRIER RAIL SHEET.

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

SHEET 1 OF 2

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne E7C3056295FF484... 9/14/2021

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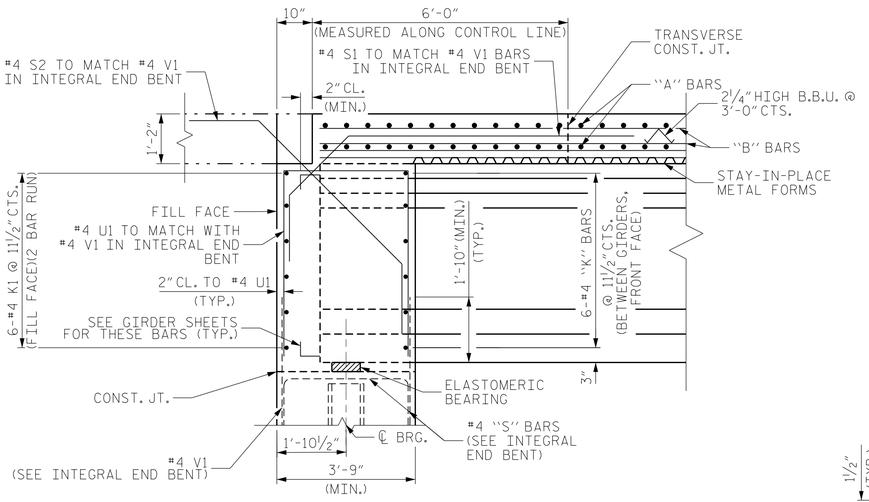
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE TYPICAL SECTION

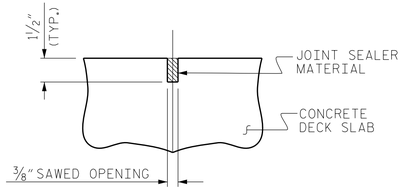
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-6
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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

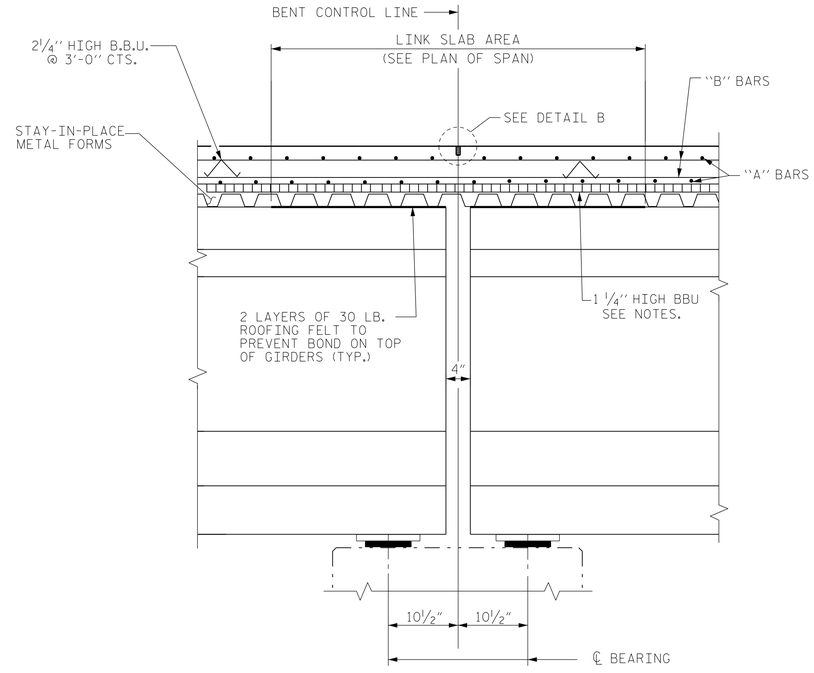


SECTION THRU INTEGRAL END BENTS

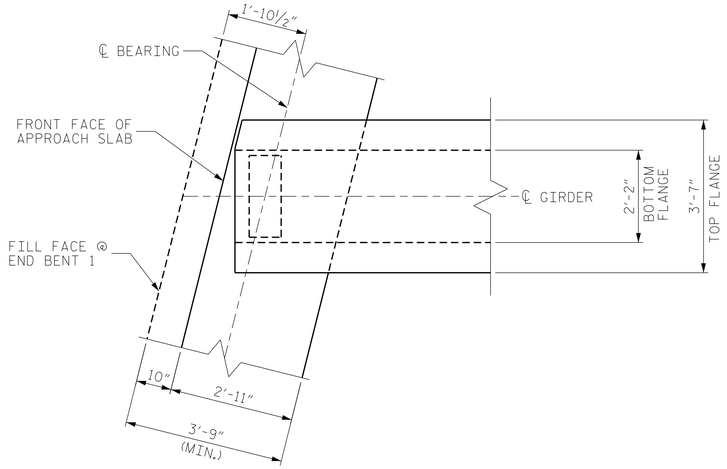


DETAIL B

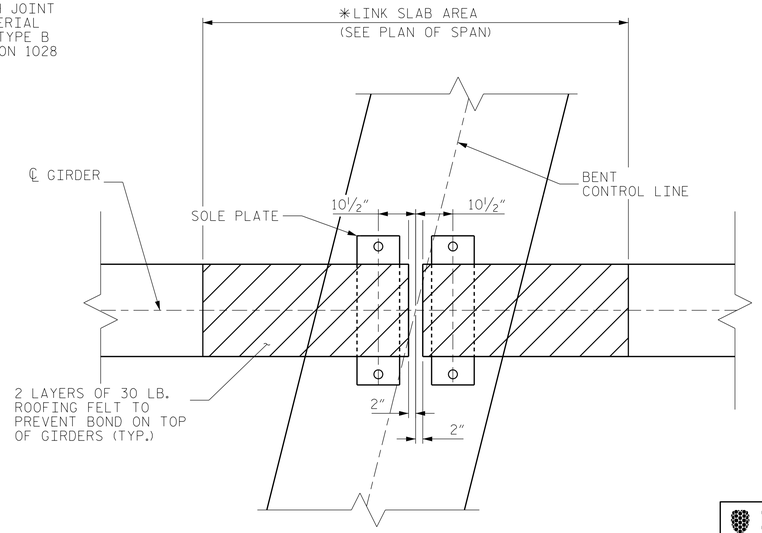
A 1½" DEEP CONTRACTION JOINT AT BENT CONTROL LINE SHALL BE SHAWN WITHIN 24 HOURS OF POURING THE DECK. THE JOINT SHALL BE FILLED WITH JOINT SEALER MATERIAL. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE B LOW MODULUS SILICONE SEALANT. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.



SECTION THRU LINK SLAB



PLAN OF END BENT DIAPHRAGM



PLAN AT BENT

* THE TOP OF THE BEAM IN THE REGION OF THE LINK SLAB SHALL BE SMOOTH AND FREE OF STIRRUPS OR ANCHOR STUDS.

PROJECT NO. R-5737

DAVIDSON COUNTY

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SHEET 2 OF 2

Dewberry
2610 WYCLIFF ROAD
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NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

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RALEIGH

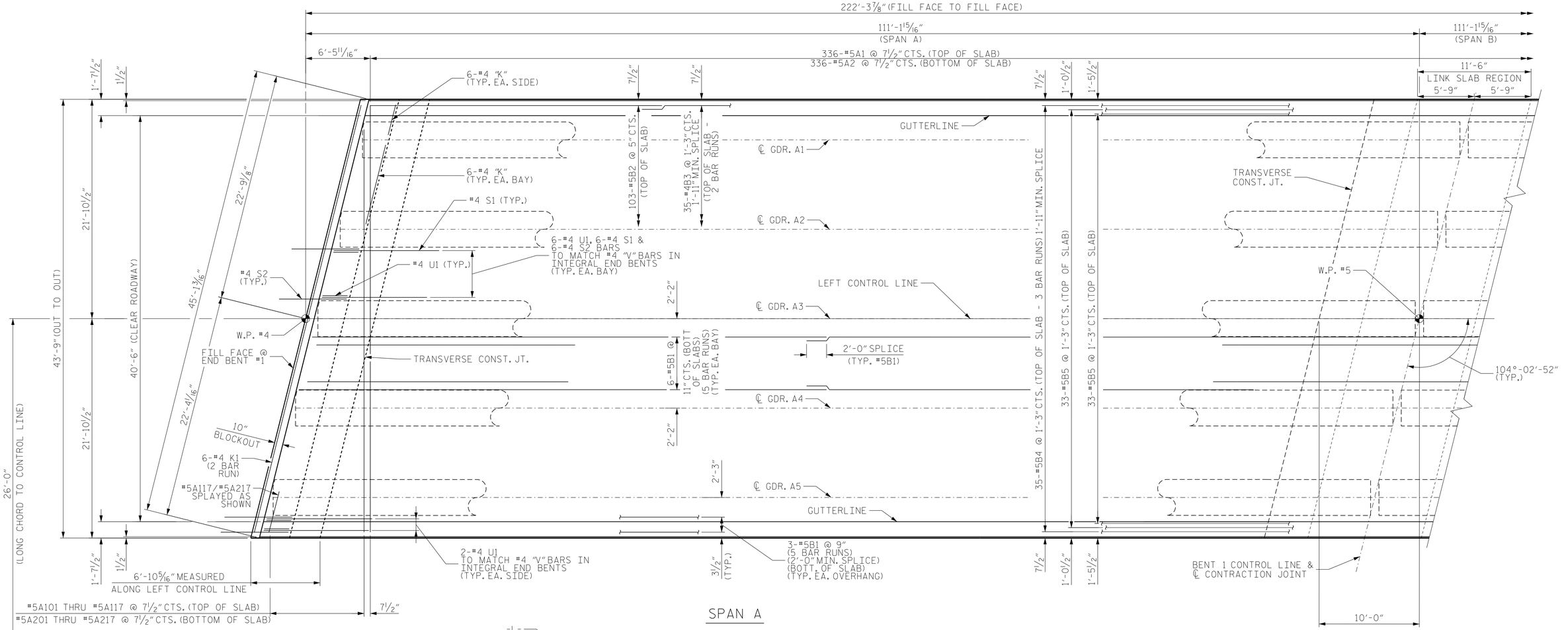
SUPERSTRUCTURE

TYPICAL SECTION DETAILS

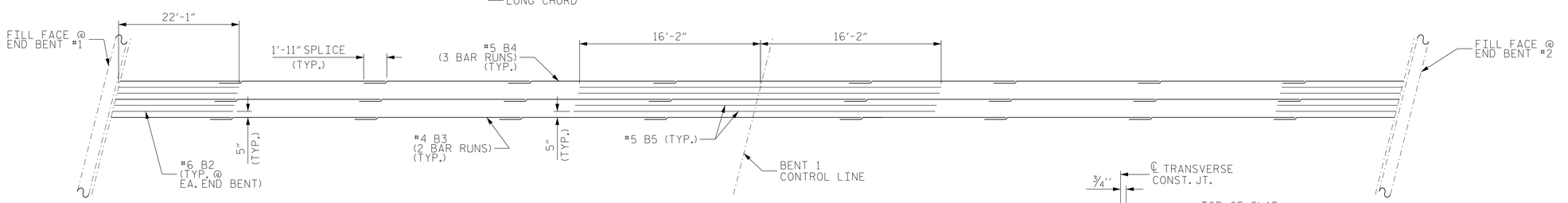
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-7
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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

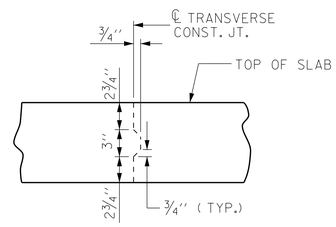


SPAN A



TOP REINFORCING STEEL LAYOUT

SHOWING "B" BARS IN TOP OF SLAB



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

PROJECT NO. R-5737

DAVIDSON COUNTY

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RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN A (LEFT BRIDGE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-8
1			3			TOTAL SHEETS
2			4			25

DRAWN BY :	JAE	DATE : 8/21
CHECKED BY :	ZHB	DATE : 8/21
DESIGN ENGINEER OF RECORD:	MTP	DATE : 8/21

$$$$$$SYSTIME$$$$$
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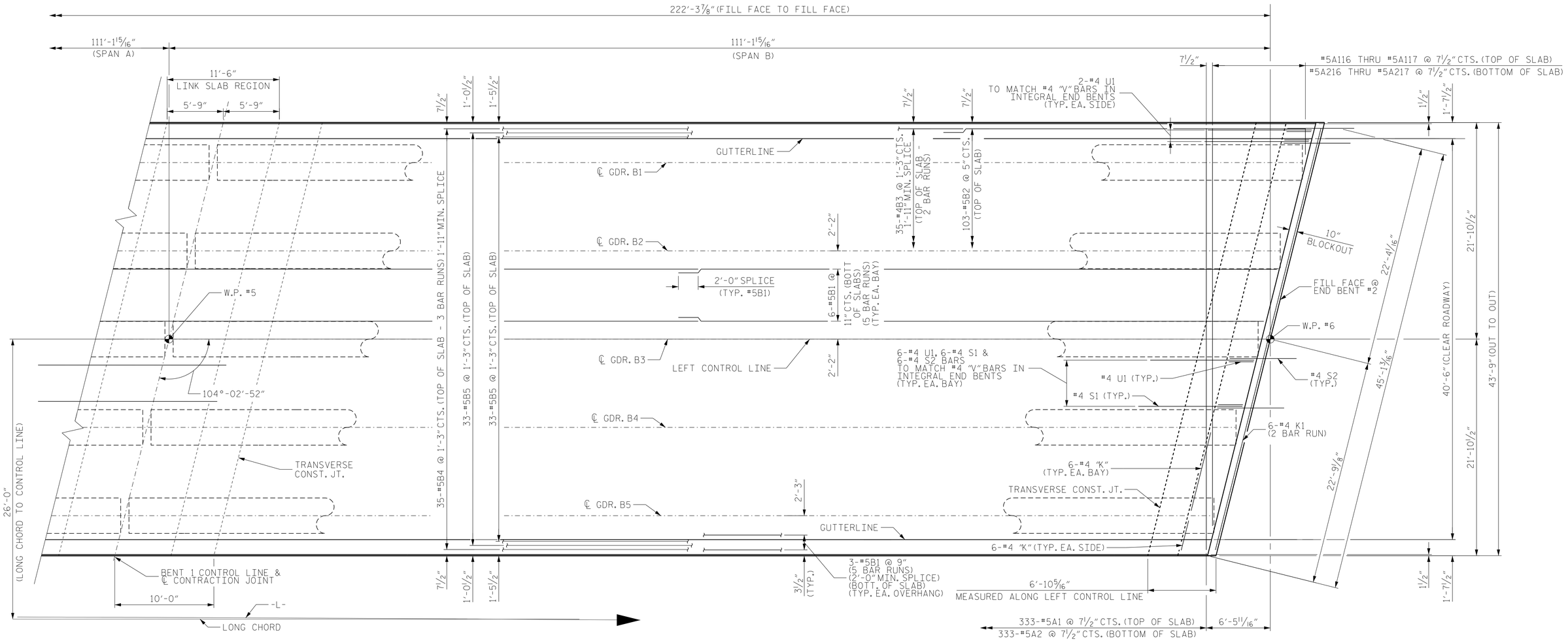

SPAN B

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
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NC COA No. P-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE
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DEPARTMENT OF TRANSPORTATION
RALEIGH

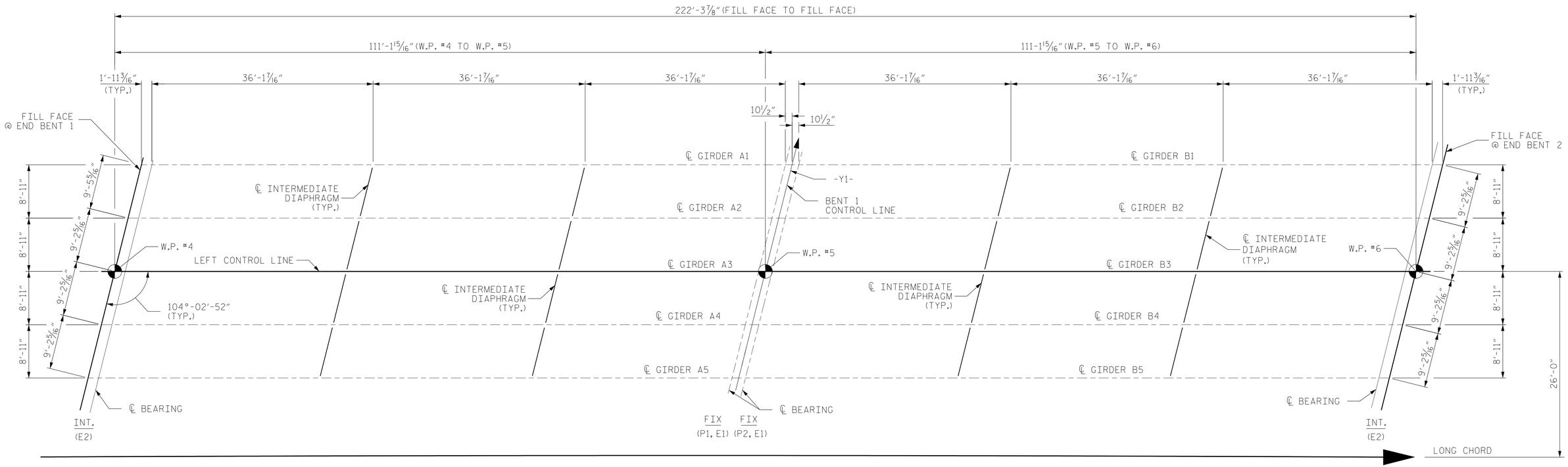
SUPERSTRUCTURE

PLAN OF SPAN B (LEFT BRIDGE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-9
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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



FRAMING PLAN

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

Dewberry
2610 WYCLIFF ROAD
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RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne E7C3056295FF484...

9/14/2021

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

FRAMING PLAN

(LEFT BRIDGE)

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

SHEET NO. S1-10

TOTAL SHEETS 25

DRAWN BY : JAE DATE : 8/21

CHECKED BY : ZHB DATE : 8/21

DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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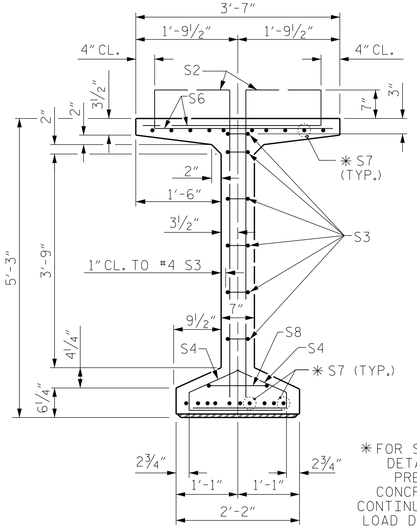
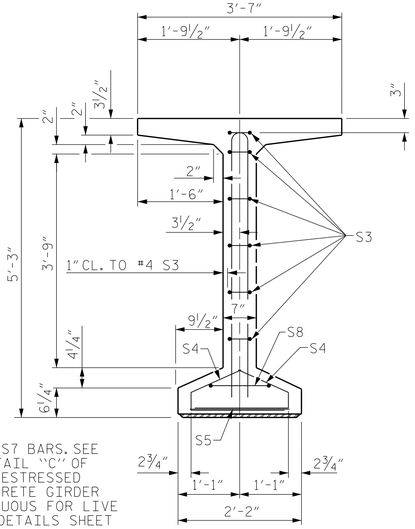
$$$$USERNAME$$$$

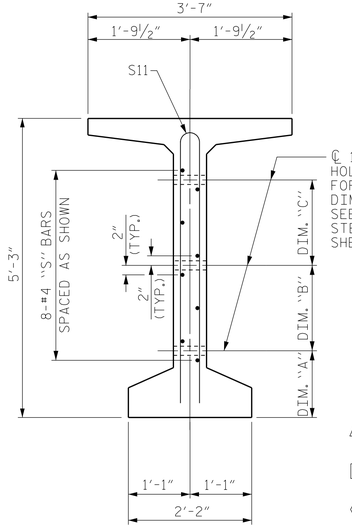


SECTION A-A



SECTION B-B

✱ FOR S7 BARS, SEE DETAIL "C" OF PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS SHEET

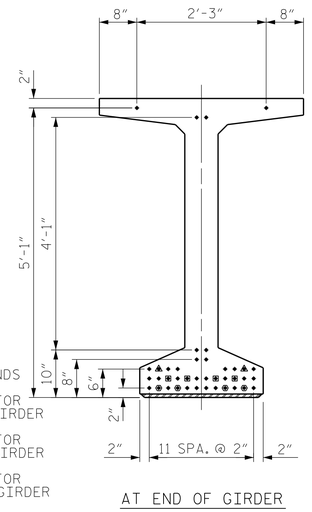


SECTION C-C

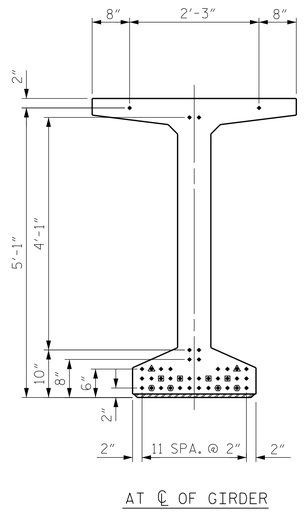
(S1, S6 AND S9 BARS NOT SHOWN)

DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER



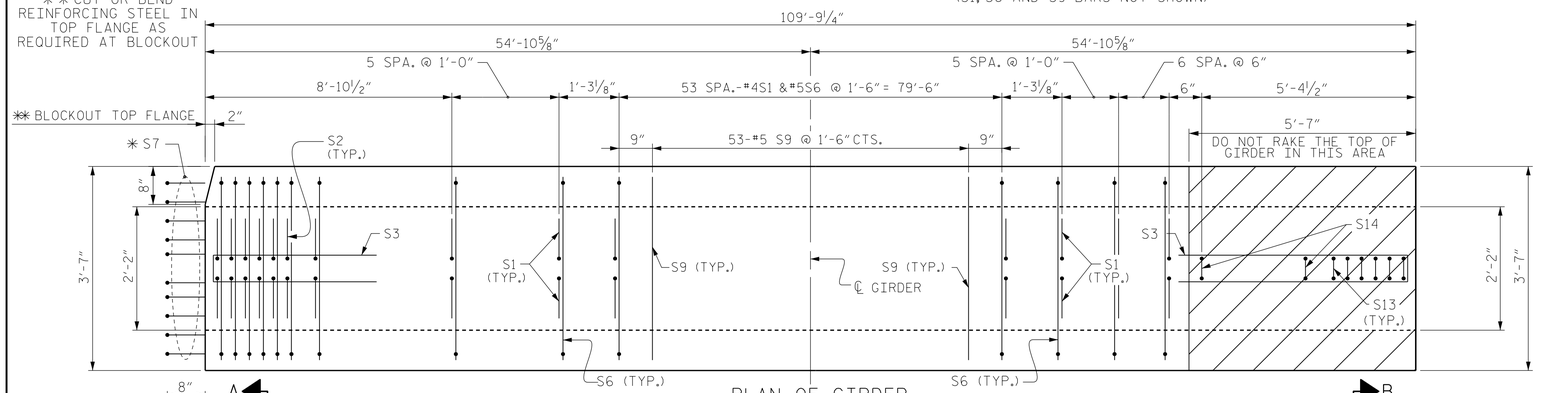
AT END OF GIRDER



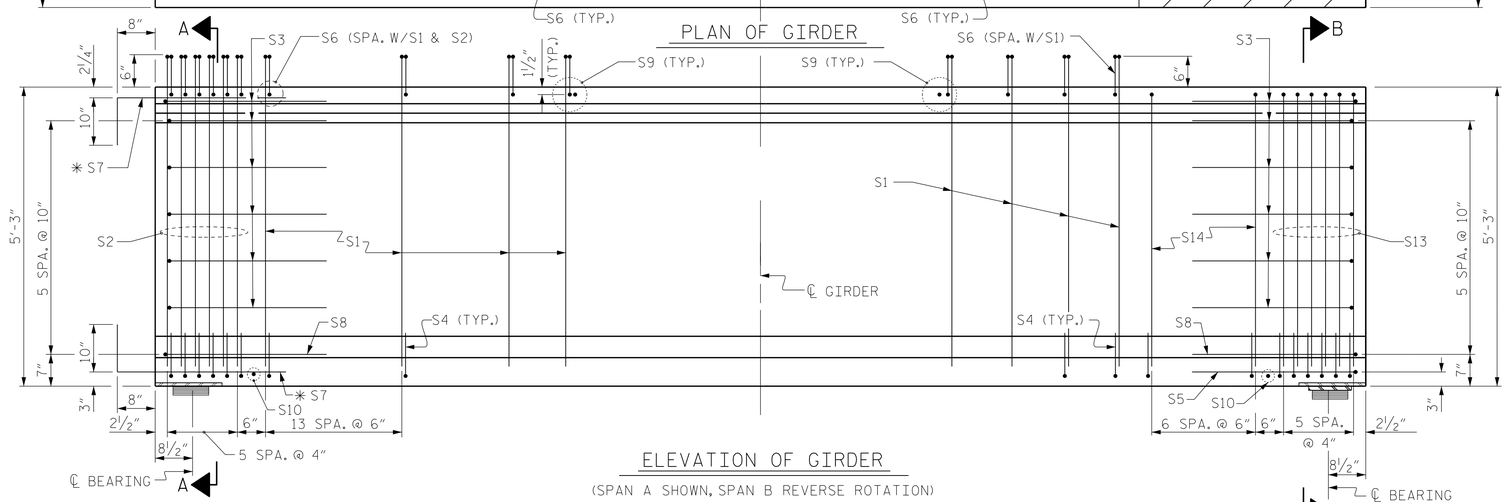
AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

✱✱ CUT OR BEND REINFORCING STEEL IN TOP FLANGE AS REQUIRED AT BLOCKOUT



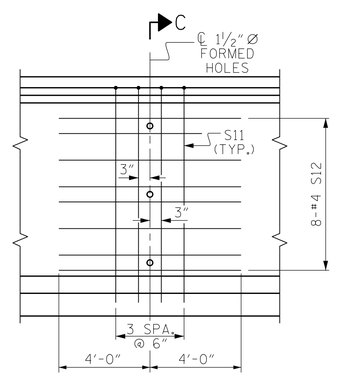
PLAN OF GIRDER



ELEVATION OF GIRDER

(SPAN A SHOWN, SPAN B REVERSE ROTATION)

INTEGRAL END BENT



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

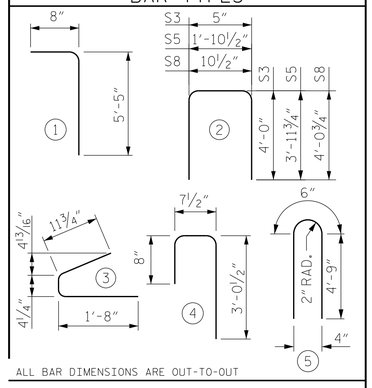
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	172	#4	1	6'-1"	699
S2	12	#5	1	6'-1"	76
S3	12	#4	2	8'-5"	67
S4	72	#4	3	3'-0"	144
S5	1	#5	2	9'-10"	10
S6	184	#5	4	4'-4"	832
✱ S7	20	#5	STR	3'-8"	76
S8	2	#5	2	9'-0"	19
S9	53	#5	STR	3'-3"	180
S10	2	#3	STR	1'-10"	1
S11	8	#5	5	10'-0"	83
S12	16	#4	STR	8'-0"	86
S13	6	#5	5	10'-0"	63
S14	7	#4	5	10'-0"	47

✱ NOTE: S7 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	9,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
63" MBT GIRDER	2383	21.7	40

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
10	109'-9¼"	1097'-8½"

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

SHEET 1 OF 3

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9/14/2021

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DEPARTMENT OF TRANSPORTATION
RALEIGH

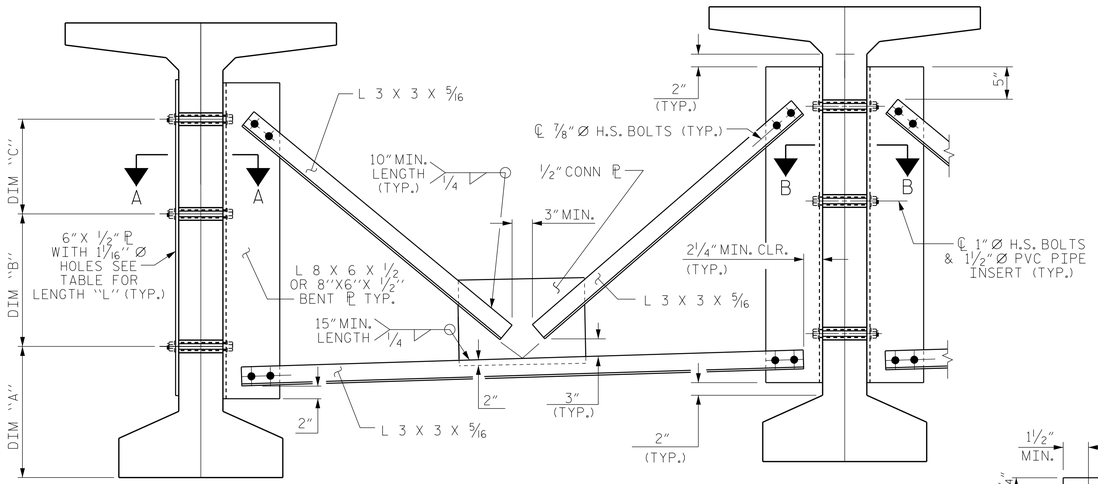
STANDARD

63" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD

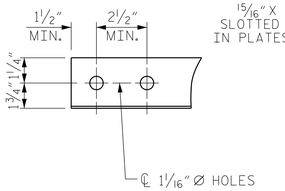
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-11
1			3			TOTAL SHEETS
2			4			25

ASSEMBLED BY :	JAE	DATE : 8/21
CHECKED BY :	ZHB	DATE : 8/21
DRAWN BY : EEM 2/6/97	REV. 6/13	MAA/GM
CHECKED BY : VAP 2/6/97	REV. 1/15	MAA/TMG
	REV. 12/17	MAA/THC

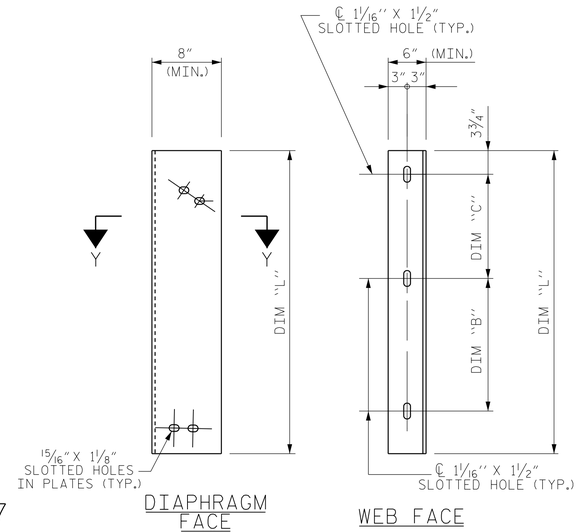
$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

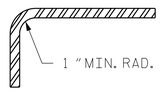


PART SECTION AT INTERMEDIATE DIAPHRAGM



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





SECTION Y-Y

CONNECTION PLATE DETAIL

STRUCTURAL STEEL NOTES

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

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

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

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

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

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

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

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

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

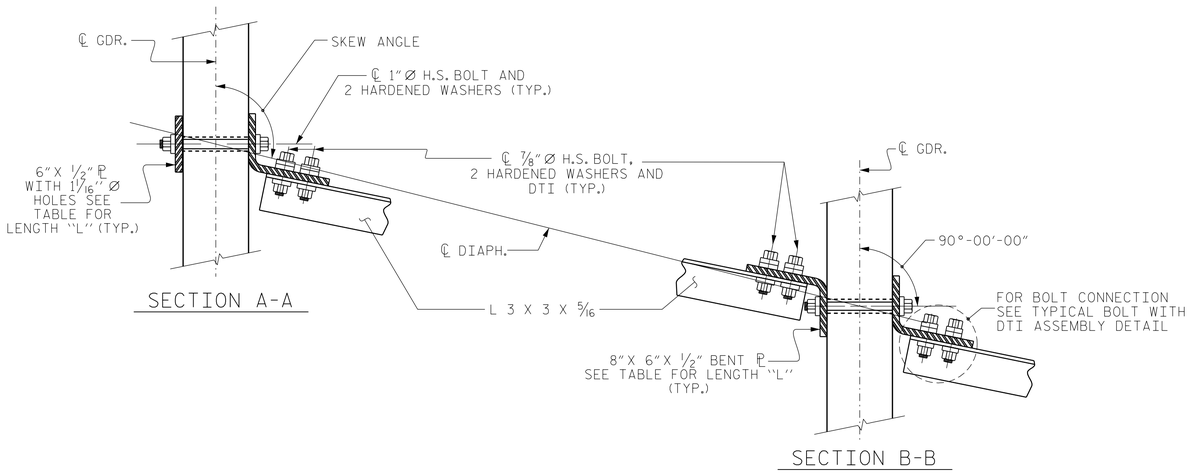
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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

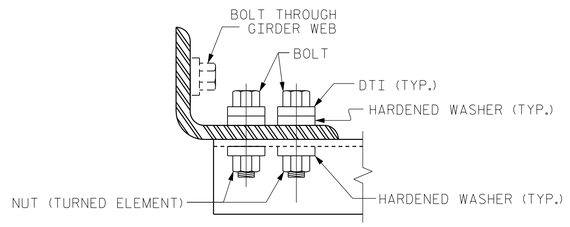
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

TABLE

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
63" BULB TEE	1'-0 7/8"	1'-5 1/2"	1'-5 1/2"	3'-5"



CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. R-5737

DAVIDSON COUNTY

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SHEET 2 OF 3

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD INTERMEDIATE STEEL DIAPHRAGMS FOR 63" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-12
1			3			TOTAL SHEETS
2			4			25

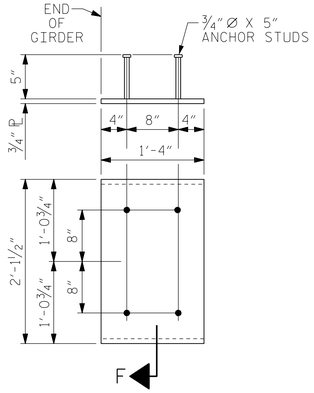
DRAWN BY :	JAE	DATE : 8/21
CHECKED BY :	ZHB	DATE : 8/21
DESIGN ENGINEER OF RECORD:	MTP	DATE : 8/21

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS - SPANS A & B

	GIRDERS 1 AND 5																																									
FORTIETH POINTS	0	.025	.05	.075	.10	.125	.15	.175	.20	.225	.25	.275	.30	.325	.35	.375	.40	.425	.45	.475	.50	.525	.55	.575	.60	.625	.65	.675	.70	.725	.75	.775	.80	.825	.85	.875	.90	.925	.95	.975	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0.00	0.089	0.131	0.169	0.203	0.231	0.254	0.271	0.281	0.284	0.281	0.271	0.254	0.231	0.203	0.169	0.131	0.131	0.089	0.045	0.045	0.089	0.131	0.169	0.203	0.231	0.254	0.271	0.281	0.338	0.281	0.271	0.254	0.231	0.203	0.169	0.131	0.131	0.089	0.045	0.00
✳DEFLECTION DUE TO SUPER IMPOSED D.L. ↓	0.00	.013	0.026	0.039	0.052	0.064	0.076	0.089	0.101	0.111	0.121	0.130	0.140	0.130	0.140	0.159	0.165	0.167	0.174	0.171	0.174	0.171	0.169	0.167	0.165	0.159	0.153	0.147	0.141	0.147	0.131	0.121	0.102	0.112	0.090	0.077	0.052	0.065	0.039	0.026	0.00
FINAL CAMBER ↑	0	1/8"	1/4"	5/16"	7/16"	9/16"	5/8"	3/4"	13/16"	7/8"	15/16"	1"	1 1/16"	1 5/16"	1 9/16"	1 3/8"	1 1/4"	1 5/16"	1 1/4"	1 5/16"	1 5/16"	1 5/16"	1 5/16"	1 5/16"	1 1/4"	1 1/4"	1 3/16"	1 3/16"	1 1/16"	1 1/8"	1"	15/16"	13/16"	7/8"	11/16"	5/8"	7/16"	9/16"	5/16"	1/4"	0

	GIRDERS 2 THRU 4																																									
FORTIETH POINTS	0	.025	.05	.075	.10	.125	.15	.175	.20	.225	.25	.275	.30	.325	.35	.375	.40	.425	.45	.475	.50	.525	.55	.575	.60	.625	.65	.675	.70	.725	.75	.775	.80	.825	.85	.875	.90	.925	.95	.975	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0.00	0.076	0.111	0.143	0.172	0.196	0.215	0.229	0.238	0.241	0.238	0.229	0.215	0.196	0.172	0.143	0.111	0.131	0.076	0.038	0.038	0.076	0.111	0.143	0.172	0.196	0.215	0.229	0.238	0.241	0.238	0.229	0.215	0.196	0.172	0.143	0.111	0.131	0.076	0.038	0.00
✳DEFLECTION DUE TO SUPER IMPOSED D.L. ↓	0.00	0.014	0.027	0.041	0.054	0.067	0.080	0.093	0.106	0.116	0.126	0.137	0.147	0.153	0.160	0.166	0.173	0.175	0.177	0.179	0.182	0.179	0.177	0.175	0.173	0.166	0.160	0.154	0.147	0.137	0.127	0.117	0.106	0.094	0.081	0.068	0.055	0.041	0.027	0.014	0.00
FINAL CAMBER ↑	0	1/8"	3/16"	5/16"	7/16"	1/2"	9/16"	11/16"	3/4"	13/16"	7/8"	15/16"	1"	1 1/16"	1 5/16"	1 1/4"	1 3/16"	1 3/8"	1 1/2"	1 11/16"	1 7/8"	1 11/16"	1 1/2"	1 3/8"	1 3/16"	1 1/8"	1 1/16"	1 1/16"	1"	15/16"	7/8"	13/16"	3/4"	11/16"	9/16"	1/2"	7/16"	5/16"	3/16"	1/8"	0

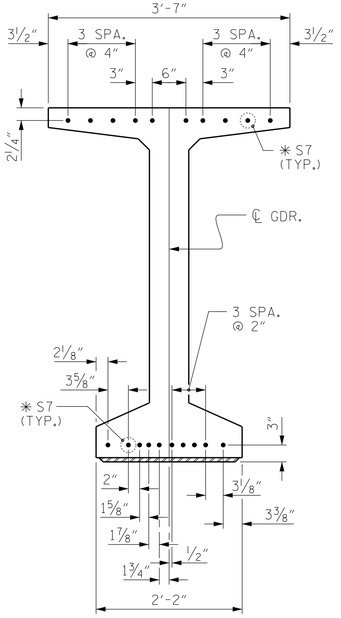


EMBEDDED PLATE "B-1" DETAILS FOR 63" MODIFIED BULB TEES

(2 REQ'D PER GIRDER)

SECTION "F"

(SEE NOTES)



DETAIL "C"

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 7000 PSI.

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

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

WHEN DRAPED STRANDS ARE DETAILED, THE LONGITUDINAL LOCATION OF THE HOLD DOWN DEVICES SHALL BE WITHIN 6" OF THE LOCATION SHOWN AND THE CENTER OF GRAVITY OF THE GROUP OF DRAPED STRANDS SHALL BE LOCATED WITHIN 1/2" OF THE THEORETICAL LOCATION SHOWN.

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

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

SHEET 3 OF 3

DRAWN BY : JAE DATE : 8/21

CHECKED BY : ZHB DATE : 8/21

DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

$$$$$$SYSTIME$$$$$

$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$

$$$$USERNAME$$$$

Dewberry
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RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne E7C3056295FF484... 9/14/2021

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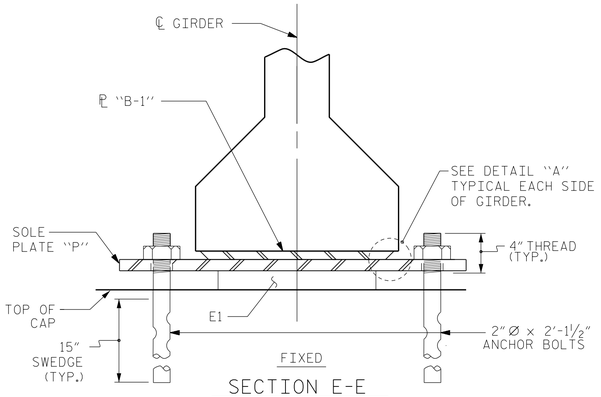
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

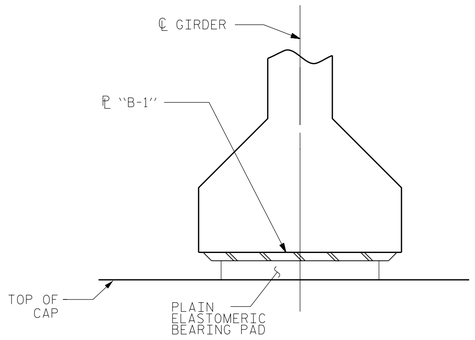
STANDARD

PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS

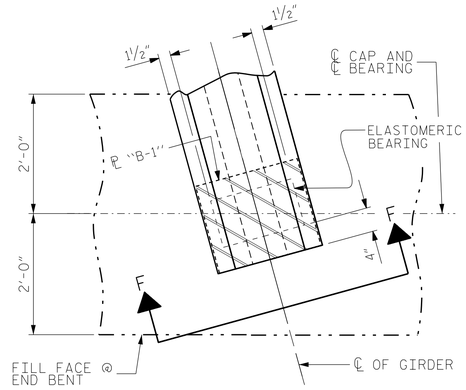
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-13
1			3			TOTAL SHEETS
2			4			25



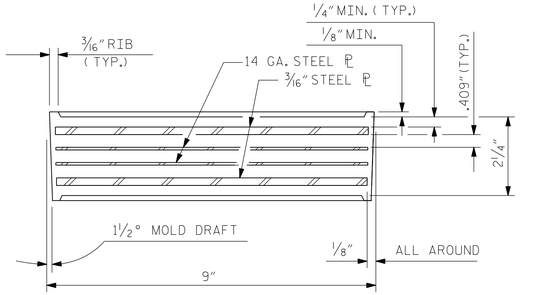
SECTION E-E



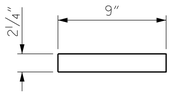
SECTION F-F



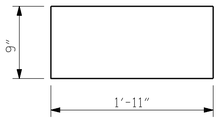
TYPICAL PLAN @ END BENT



TYPICAL SECTION OF ELASTOMERIC BEARINGS

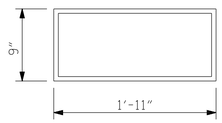


TYPICAL SECTION OF ELASTOMERIC BEARING



(FIXED)
E2 (10 REQ'D)

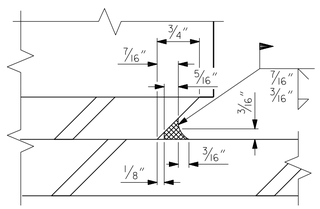
PLAN VIEW OF ELASTOMERIC BEARING



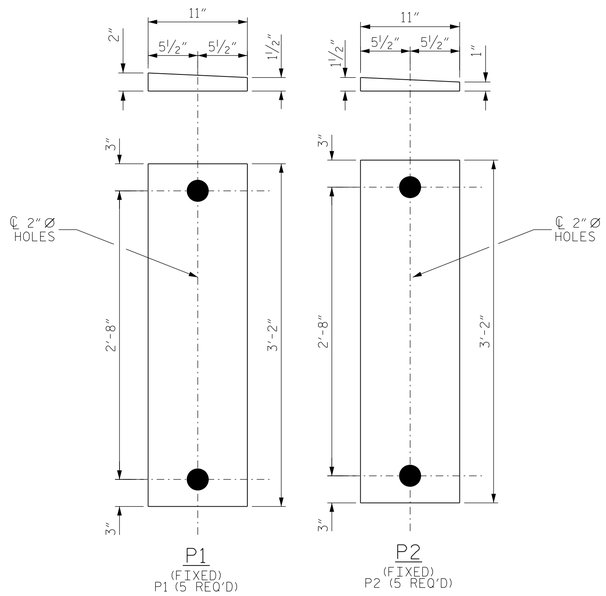
E1 (10 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE V



DETAIL "A"



SOLE PLATE DETAILS ("P")

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.

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

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

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

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

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

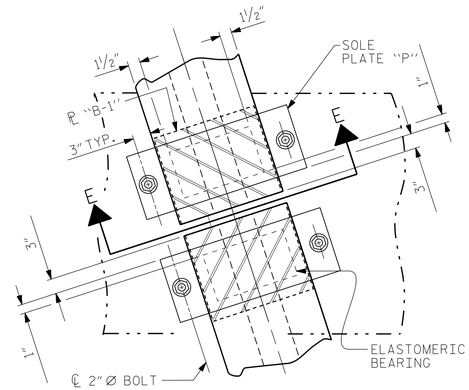
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



TYPICAL PLAN @ BENT

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

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

DRAWN BY : JAE DATE : 8/21

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DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne 9/14/2021

E7C3056295FF484...

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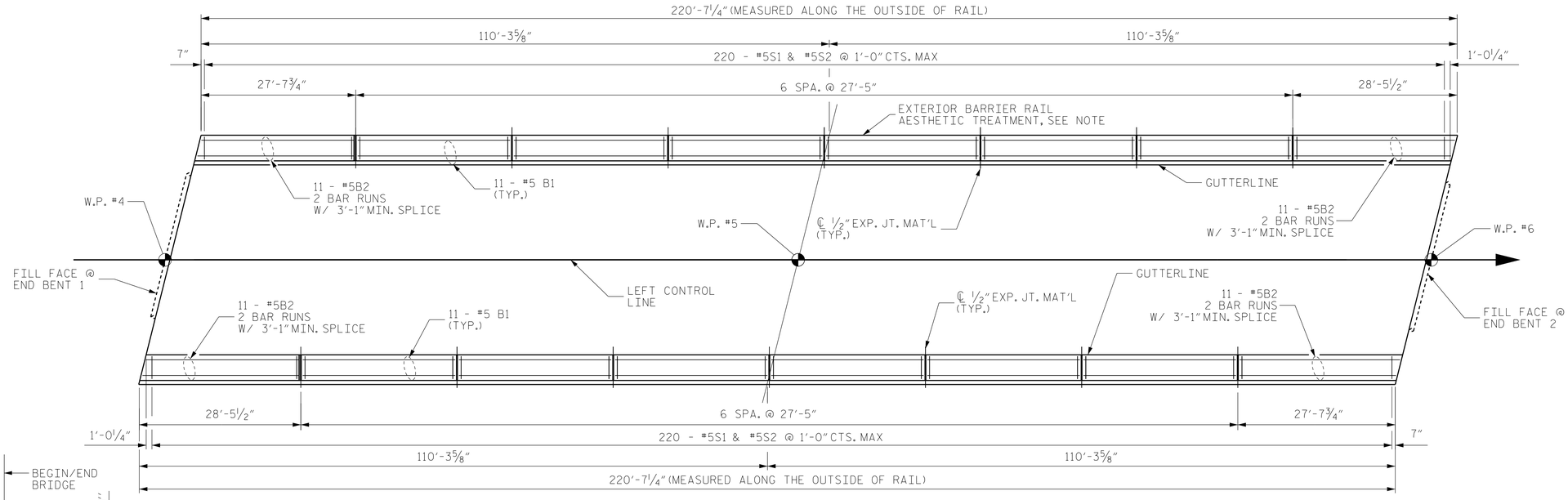
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

ELASTOMERIC BEARING DETAILS

PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-14
1			3			TOTAL SHEETS
2			4			25

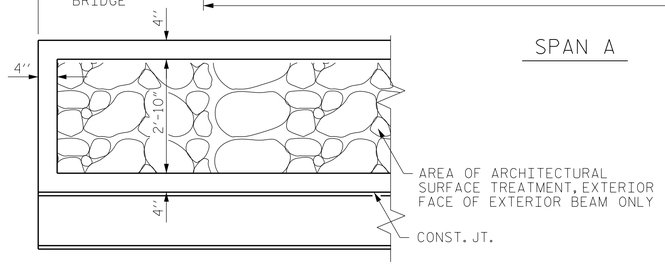


SPAN A

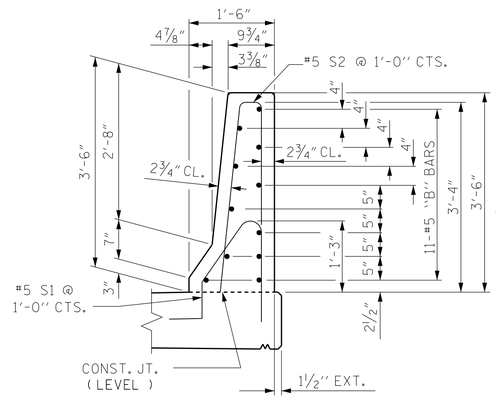
SPAN B

PLAN OF RAIL

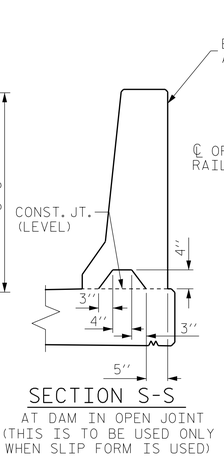
ALL DIMENSIONS ARE MEASURED ALONG OUTSIDE FACE OF RAIL



FORM LINED ARCHITECTURAL TREATMENT

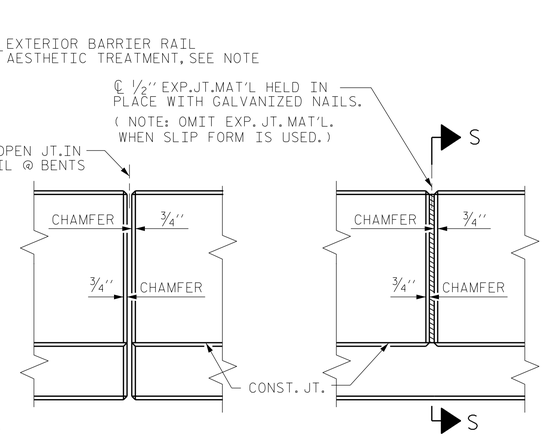


SECTION THRU RAIL



SECTION S-S

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



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

NOTES

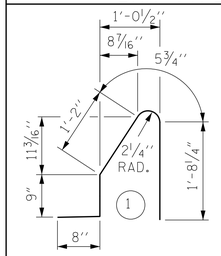
THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

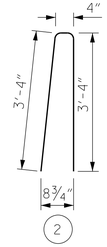
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

EXTERIOR FACE OF CONCRETE BARRIER RAIL SHALL BE FORMED USING AN AHSLAR STONE PATTERN FORM LINER. CONTRACTOR SHALL PROVIDE SAMPLE OF PROPOSED ASHLAR STONE PATTERN FOR APPROVAL BY THE ENGINEER. PATTERN FORM LINER SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND THE NCDOT AESTHETICS GUIDANCE PATTERN BOOK, SEE SPECIAL PROVISIONS.

BAR TYPES





ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	132	#5	STR.	27'-1"	3729
* B2	88	#5	STR.	15'-7"	1430
* S1	440	#5	1	4'-9"	2180
* S2	440	#5	2	7'-7"	3212

* EPOXY COATED REINFORCING STEEL	10551 LBS.
CLASS AA CONCRETE	60 CU. YDS.
CONCRETE BARRIER RAIL	441.2 LIN. FT.
ARCHITECTURAL CONCRETE SURFACE TREATMENT	623.2 SQ. FT.

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DAVIDSON COUNTY

STATION: 61+02.86 -L-

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RALEIGH

CONCRETE BARRIER RAIL

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

SHEET NO. S1-15

TOTAL SHEETS 25

REINFORCING BAR SCHEDULE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	336	#5	STR	43′-5″	15215	A2	336	#5	STR	43′-5″	15215	✳ S1	24	#4	1	11′-11″	191
												✳ S2	24	#4	1	11′-0″	176
✳ A101	2	#5	STR	40′-11″	85	A201	2	#5	STR	40′-11″	85						
✳ A102	2	#5	STR	38′-5″	80	A202	2	#5	STR	38′-5″	80	U1	28	#4	2	12′-11″	242
✳ A103	2	#5	STR	35′-11″	75	A203	2	#5	STR	35′-11″	75	U2	24	#4	2	11′-7″	186
✳ A104	2	#5	STR	33′-5″	70	A204	2	#5	STR	33′-5″	70						
✳ A105	2	#5	STR	30′-11″	64	A205	2	#5	STR	30′-11″	64	REINFORCING STEEL					27,331 LBS.
✳ A106	2	#5	STR	28′-5″	59	A206	2	#5	STR	28′-5″	59	✳ EPOXY COATED REINFORCING STEEL					30,426 LBS.
✳ A107	2	#5	STR	25′-11″	54	A207	2	#5	STR	25′-11″	54						
✳ A108	2	#5	STR	23′-5″	49	A208	2	#5	STR	23′-5″	49						
✳ A109	2	#5	STR	20′-11″	44	A209	2	#5	STR	20′-11″	44						
✳ A110	2	#5	STR	18′-5″	38	A210	2	#5	STR	18′-5″	38						
✳ A111	2	#5	STR	15′-11″	33	A211	2	#5	STR	15′-11″	33						
✳ A112	2	#5	STR	13′-5″	28	A212	2	#5	STR	13′-5″	28						
✳ A113	2	#5	STR	10′-11″	23	A213	2	#5	STR	10′-11″	23						
✳ A114	2	#5	STR	8′-5″	18	A214	2	#5	STR	8′-5″	18						
✳ A115	2	#5	STR	5′-11″	12	A215	2	#5	STR	5′-11″	12						
✳ A116	2	#5	STR	3′-6″	7	A216	2	#5	STR	3′-6″	7						
✳ A117	2	#5	STR	1′-10″	4	A217	2	#5	STR	1′-10″	4						
B1	150	#6	STR	45′-8″	10289	K1	24	#4	STR	22′-11″	367						
✳ B2	206	#5	STR	22′-2″	4763	K2	8	#4	STR	5′-3″	28						
✳ B3	140	#5	STR	28′-10″	4210	K3	32	#4	STR	8′-3″	176						
✳ B4	105	#5	STR	26′-6″	2902	K4	8	#4	STR	6′-8″	36						
✳ B5	66	#5	STR	32′-4″	2226	K5	4	#4	STR	2′-8″	7						
						K6	16	#4	STR	3′-6″	37						
						K7	4	#4	STR	2′-0″	5						

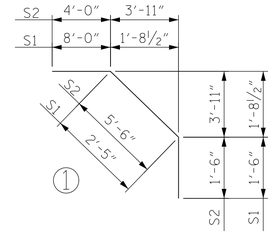
SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

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″	-	-	-

GROOVING BRIDGE FLOOR

APPROACH SLABS	1,810	SQ. FT
BRIDGE DECK	8,260	SQ. FT
TOTAL	10,070	SQ. FT

BAR TYPES

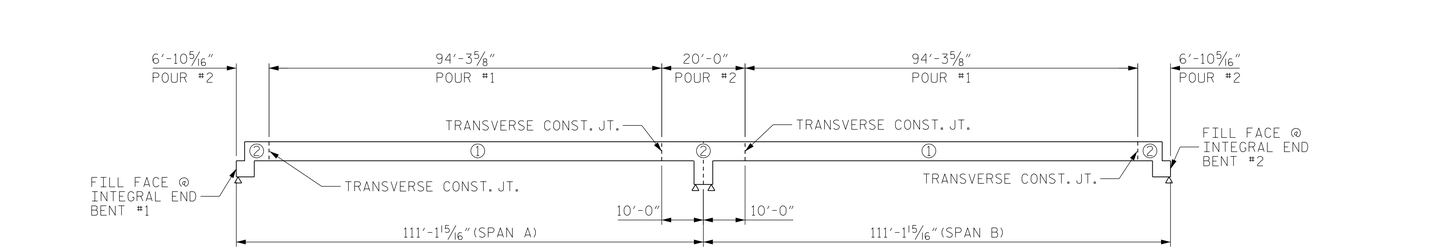


ALL BAR DIMENSIONS ARE OUT TO OUT.

SUPERSTRUCTURE BILL OF MATERIALS

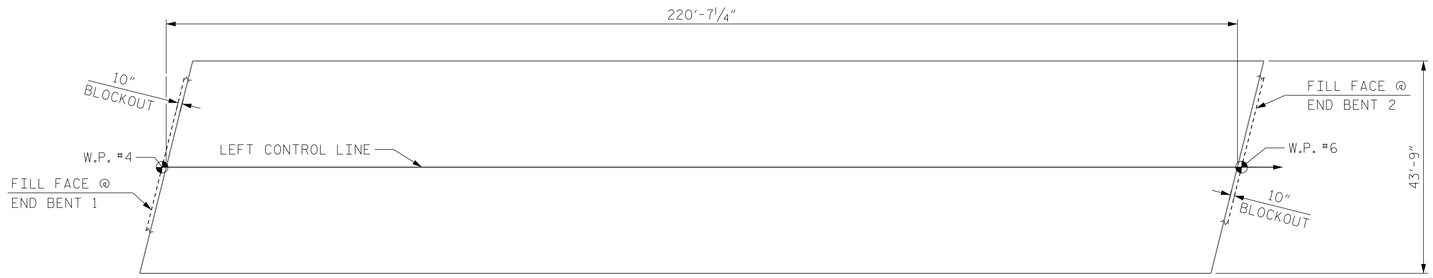
	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR #1	275.1		
POUR #2	111.6		
TOTAL	386.7	27,331	30,426

✳✳QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED



POURING SEQUENCE

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



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 9,652)

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

Dewberry
2610 WYCLIFF ROAD
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RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. P-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne 9/14/2021
E7C3056295FF484...

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

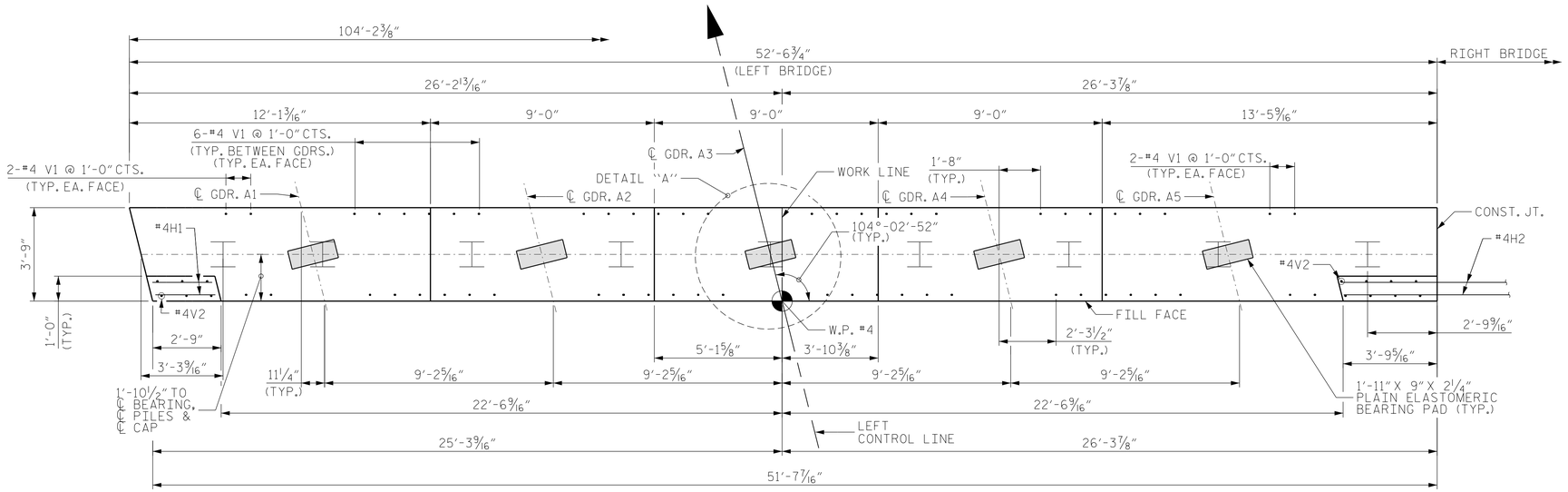
STANDARD

SUPERSTRUCTURE BILL OF MATERIAL (LEFT BRIDGE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-16
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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

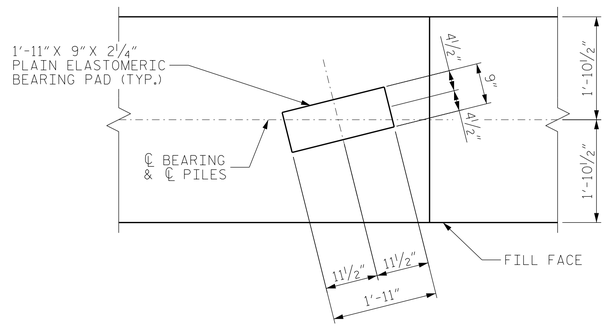


PLAN

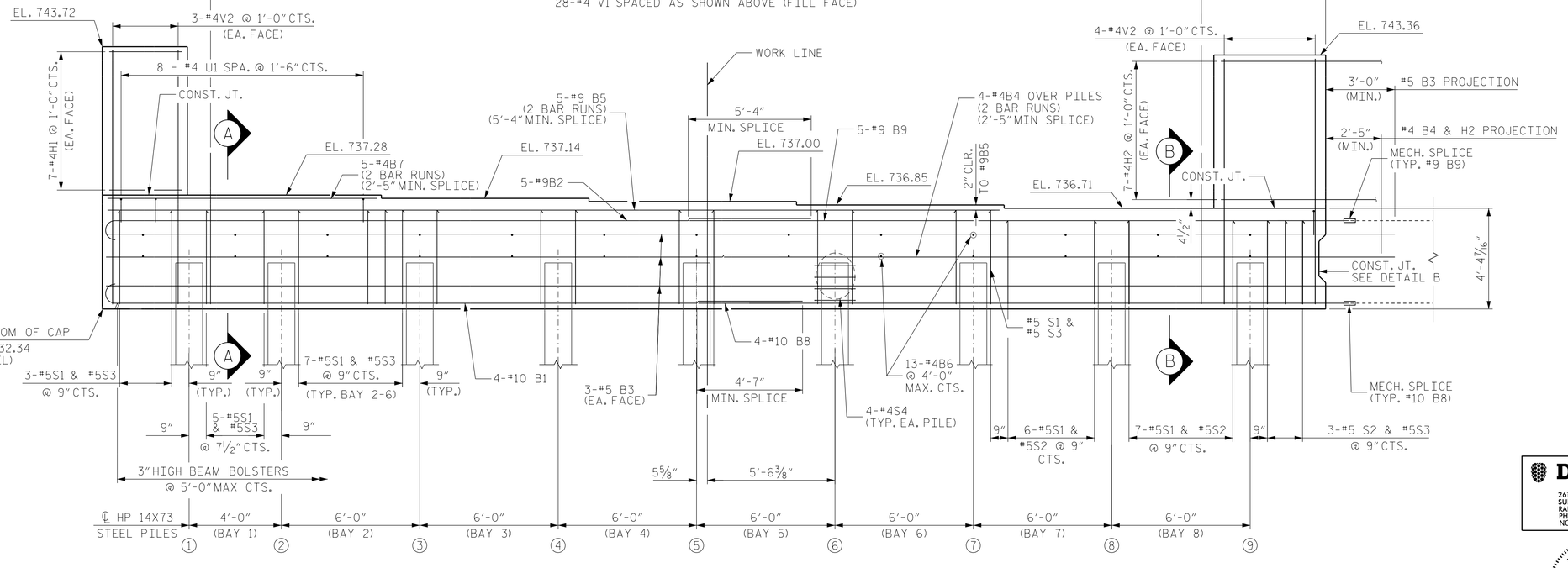
NOTES:

FOR PILE SPLICE DETAILS, SEE END BENT 1 SHEET 2 OF 2.

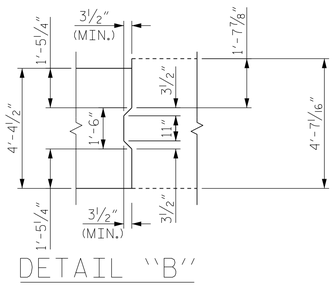
THE TOP SURFACE OF THE END BENT CAP AND WINGS (POUR 1), EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".



DETAIL "A"



ELEVATION



DETAIL "B"

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne E7C3056295FF484...

9/14/2021

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

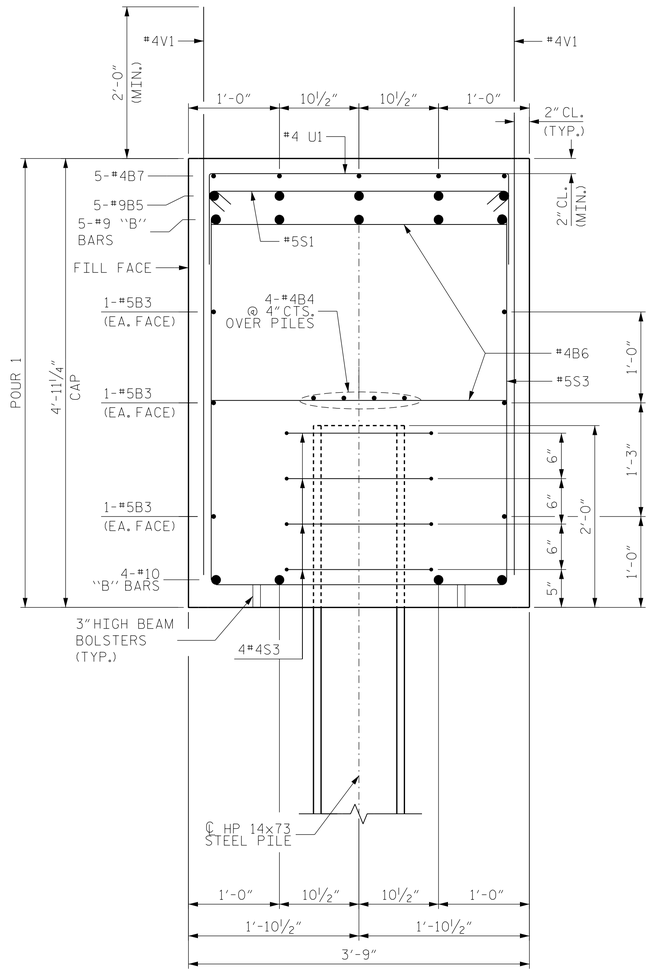
INTEGRAL END BENT 1

(LEFT BRIDGE)

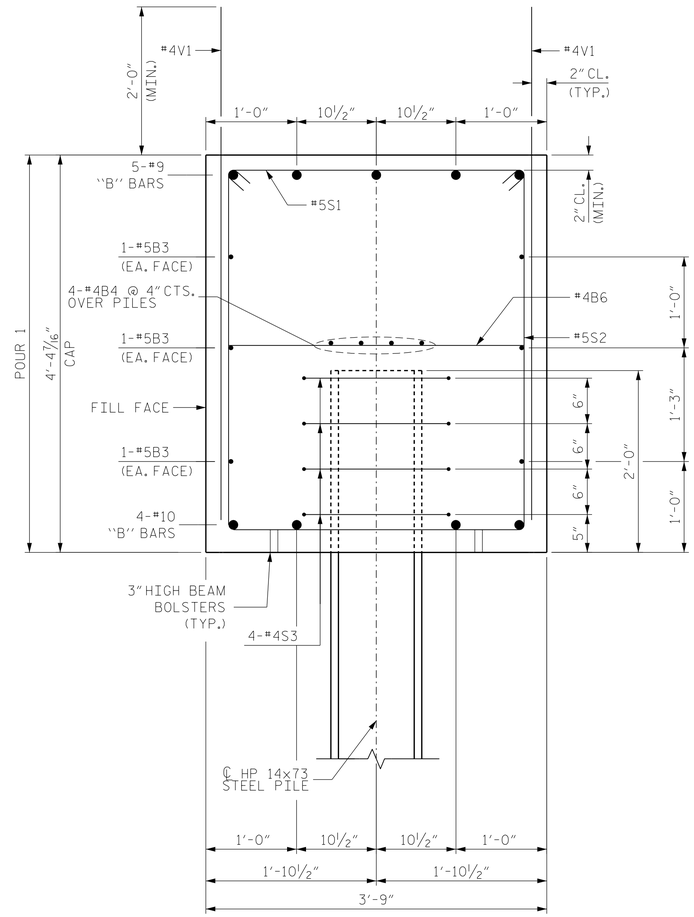
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-17
1			3			TOTAL SHEETS
2			4			25

DRAWN BY :	JAE	DATE : 8/21
CHECKED BY :	ZHB	DATE : 8/21
DESIGN ENGINEER OF RECORD:	MTP	DATE : 8/21

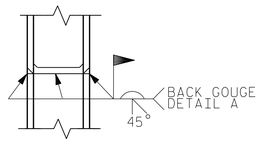
$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$$



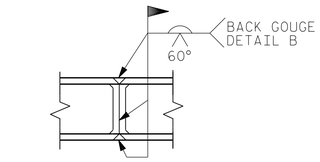
SECTION A-A



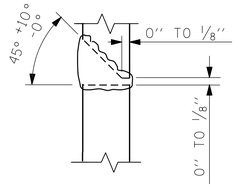
SECTION B-B



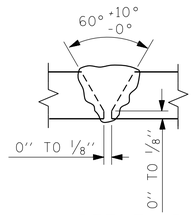
PILE VERTICAL



PILE HORIZONTAL OR VERTICAL

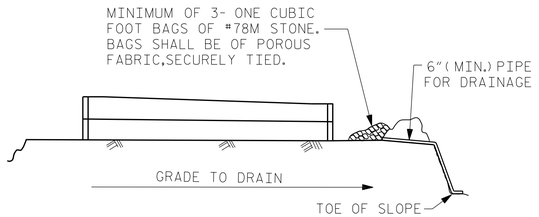


DETAIL A



DETAIL B

PILE SPLICE DETAILS



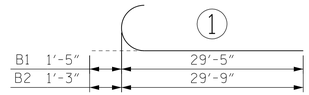
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION, PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

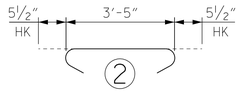
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

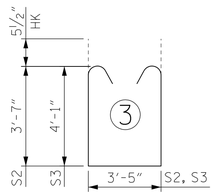
NO SEPARATE PAYMENT WILL BEW MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR THE SEVERAL PAY ITEMS.

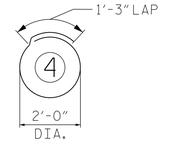
TEMPORARY DRAINAGE END BENT

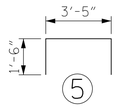
BAR TYPES











ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	30'-10"	531
B2	5	#9	1	31'-0"	527
B3	6	#5	STR	55'-4"	346
B4	8	#4	STR	29'-1"	155
B5	10	#9	STR	21'-9"	649
B6	26	#4	STR	3'-5"	59
B7	10	#4	STR	7'-1"	47
B8	4	#10	STR	29'-5"	506
B9	5	#9	STR	29'-9"	506
H1	14	#4	STR	2'-5"	23
H2	14	#4	STR	8'-2"	76
S1	60	#5	2	4'-4"	271
S2	17	#5	3	11'-6"	204
S3	43	#5	3	12'-6"	561
U1	8	#4	5	6'-5"	34
V1	56	#4	STR	6'-11"	259
V2	14	#4	STR	10'-8"	100

TOTAL REINFORCING STEEL 4854 LBS.

CLASS "A" CONCRETE - CU. YARDS

POUR 1 (CAP & LOWER WINGS)	33.7 CU. YDS.
POUR 2 (UPPER WINGS)	1.8 CU. YDS.
TOTAL	35.5 CU. YDS.

PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 STEEL PILES - EACH	9
HP 14 X 73 STEEL PILES 9 PILES REQUIRED - LIN. FEET	234

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE
DocuSigned by: Matthew Payne E7C3056295FF484...
9/14/2021

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1

(LEFT BRIDGE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-18
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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

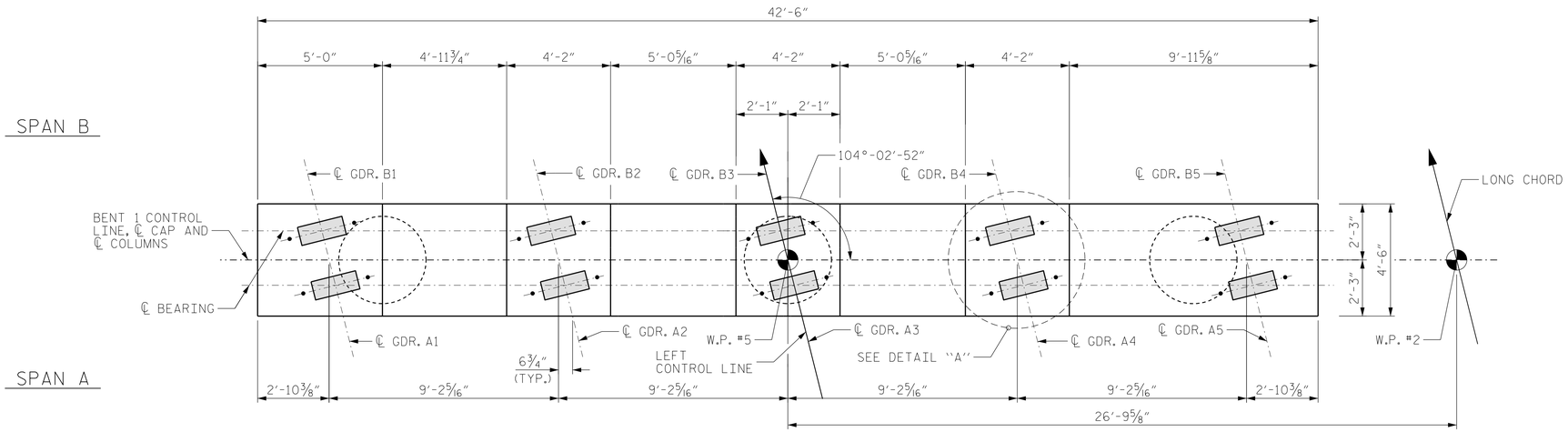
NOTES:

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

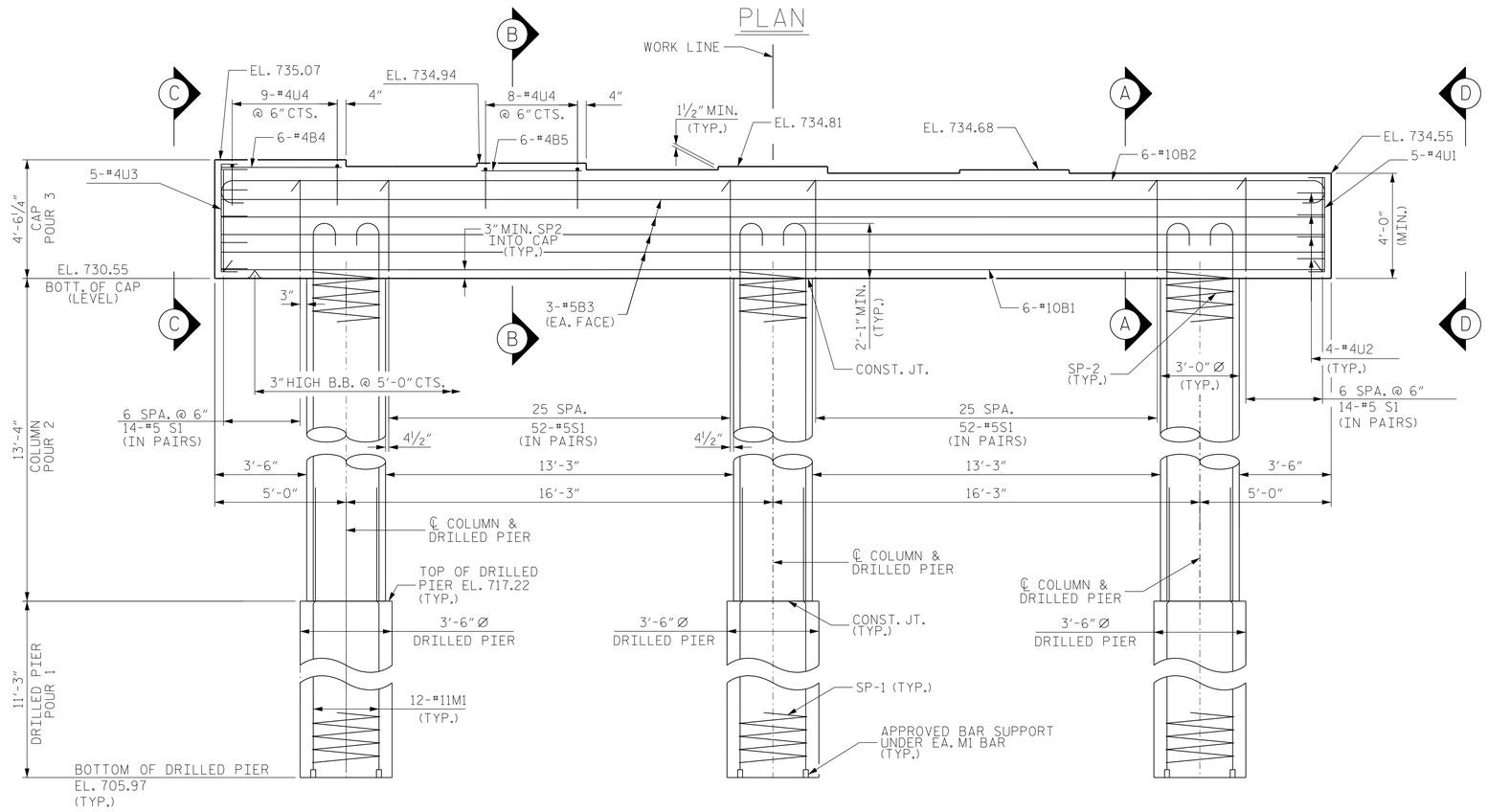
HOOKS ON "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

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

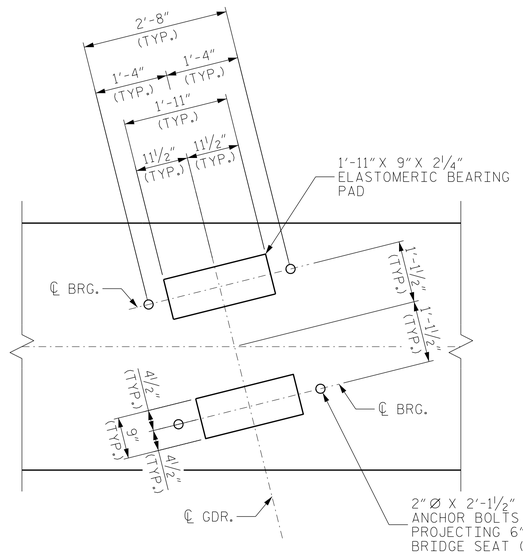
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS ARE DETAILED WITH 3 FEET OF EXTRA LENGTH.



PLAN



ELEVATION



DETAIL "A"

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

Dewberry
2610 WYCLIFF ROAD
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DocuSigned by: Matthew Payne E7C3056295FF484...

9/14/2021

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DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

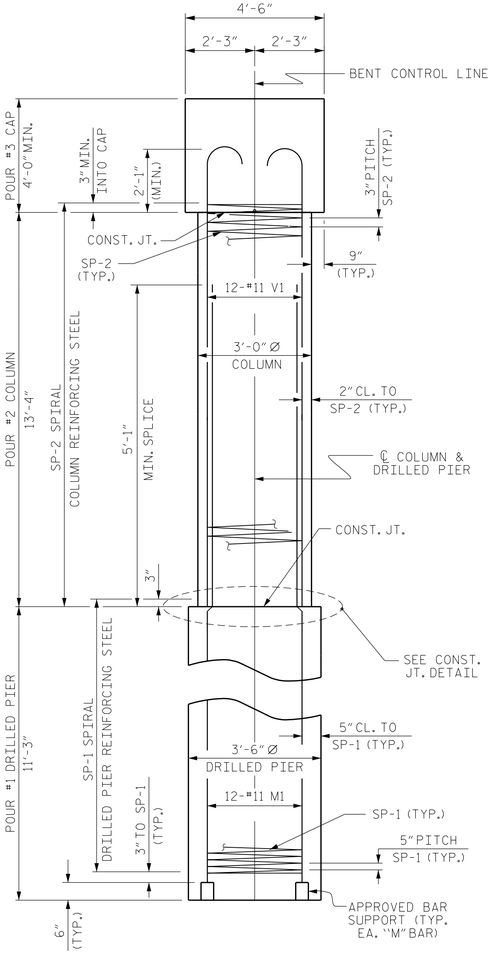
BENT 1

(LEFT BRIDGE)

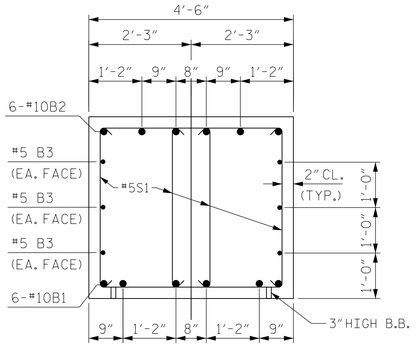
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-19
1			3			TOTAL SHEETS
2			4			25

DRAWN BY :	JAE	DATE : 8/21
CHECKED BY :	ZHB	DATE : 8/21
DESIGN ENGINEER OF RECORD:	MTP	DATE : 8/21

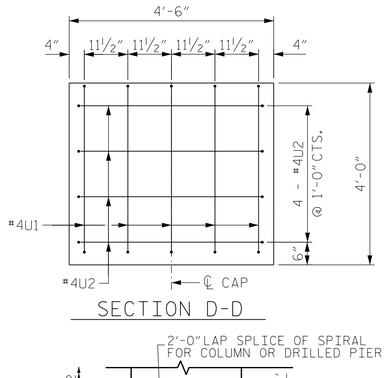
$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



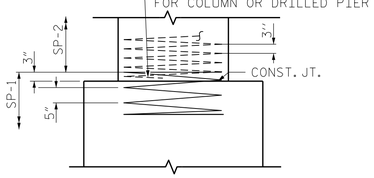
END ELEVATION



SECTION A-A

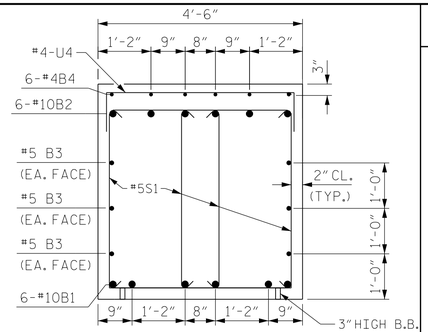


SECTION D-D

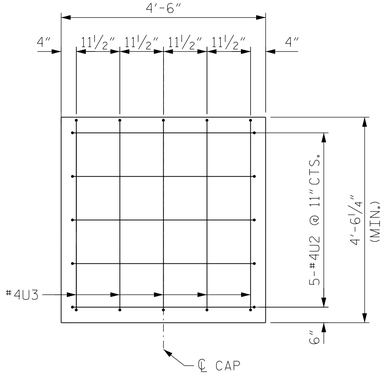


CONSTRUCTION JOINT DETAIL

"V" AND "M" BARS NOT SHOWN FOR CLARITY



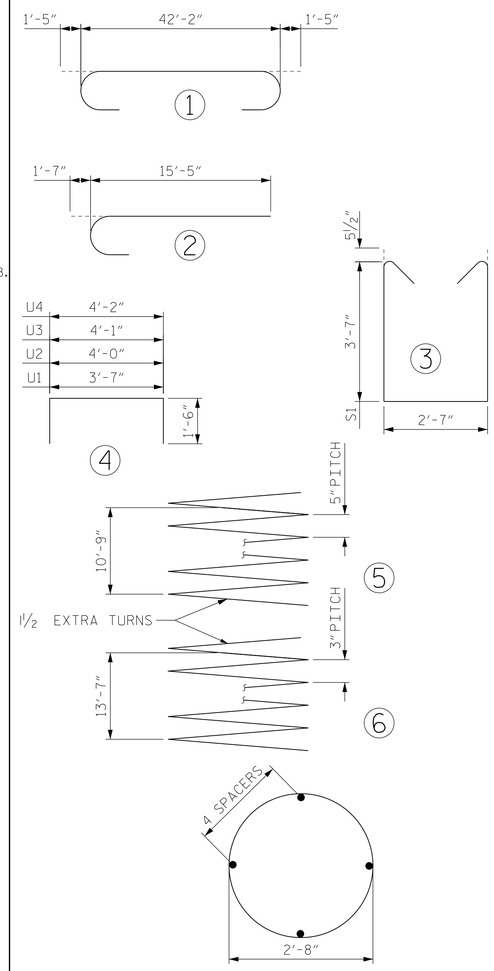
SECTION B-B



SECTION C-C

PLAN OF DRILLED PIERS & COLUMNS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

✳ 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.

▲ NO SEPARATE PAYMENT WILL BE MADE FOR CSL TUBES. CSL TUBES WILL BE INCLUDED IN THE UNIT BID PRICE FOR DRILLED PIERS.

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	1	42'-2"	1089
B2	6	#10	STR	45'-0"	1162
B3	6	#5	STR	42'-2"	264
B4	6	#4	STR	4'-8"	19
B5	6	#4	STR	3'-10"	15
M1	36	#11	STR	19'-1"	3650
S1	132	#5	3	10'-8"	1469
U1	5	#4	4	6'-8"	22
U2	9	#4	4	7'-0"	42
U3	5	#4	4	7'-1"	24
U4	17	#4	4	7'-2"	81
V1	36	#11	2	17'-0"	3252
REINFORCING STEEL		LBS			11,089
SP-1	3	✳	5	233'-10"	732
SP-2	3	✳✳	6	471'-0"	944
SPIRAL COLUMN REINFORCING STEEL					1676

BENT 1 TOTAL QUANTITIES

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)	
POUR #2 (COLUMNS)	10.5 C.Y.
POUR #3 (CAP)	29.6 C.Y.
TOTAL CLASS A CONCRETE	40.1 C.Y.

DRILLED PIERS: (FOR ONE BENT)	
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	12.1 C.Y.
3'-6" Ø DRILLED PIER NOT IN SOIL	33.8 LIN. FT.
CSL TUBES	153 LIN. FT.

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

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DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

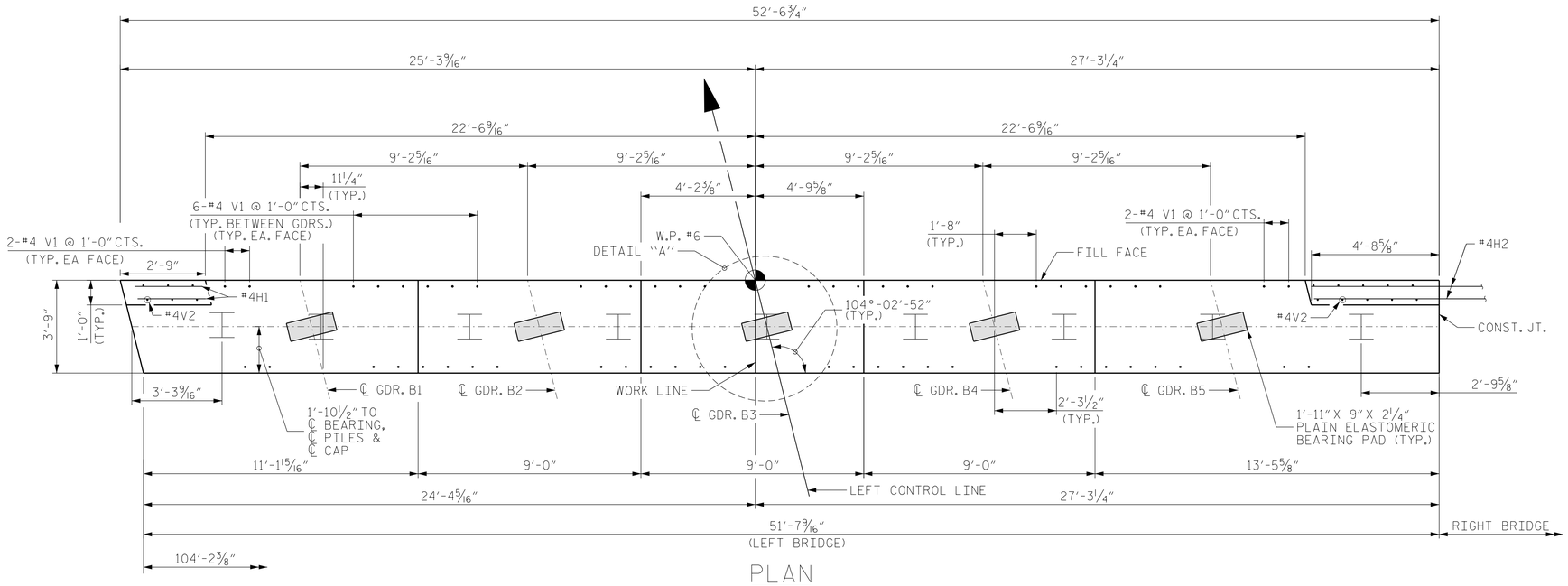
BENT 1

(LEFT BRIDGE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-20
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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

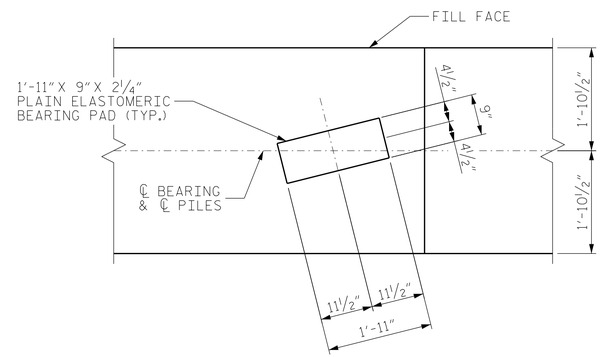


PLAN

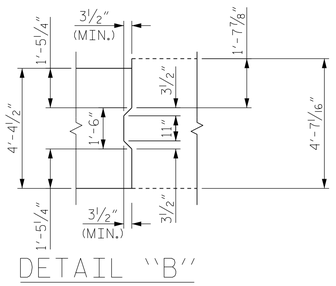
NOTES:

FOR PILE SPLICE DETAILS, SEE END BENT 2 SHEET 2 OF 2.

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



DETAIL "A"



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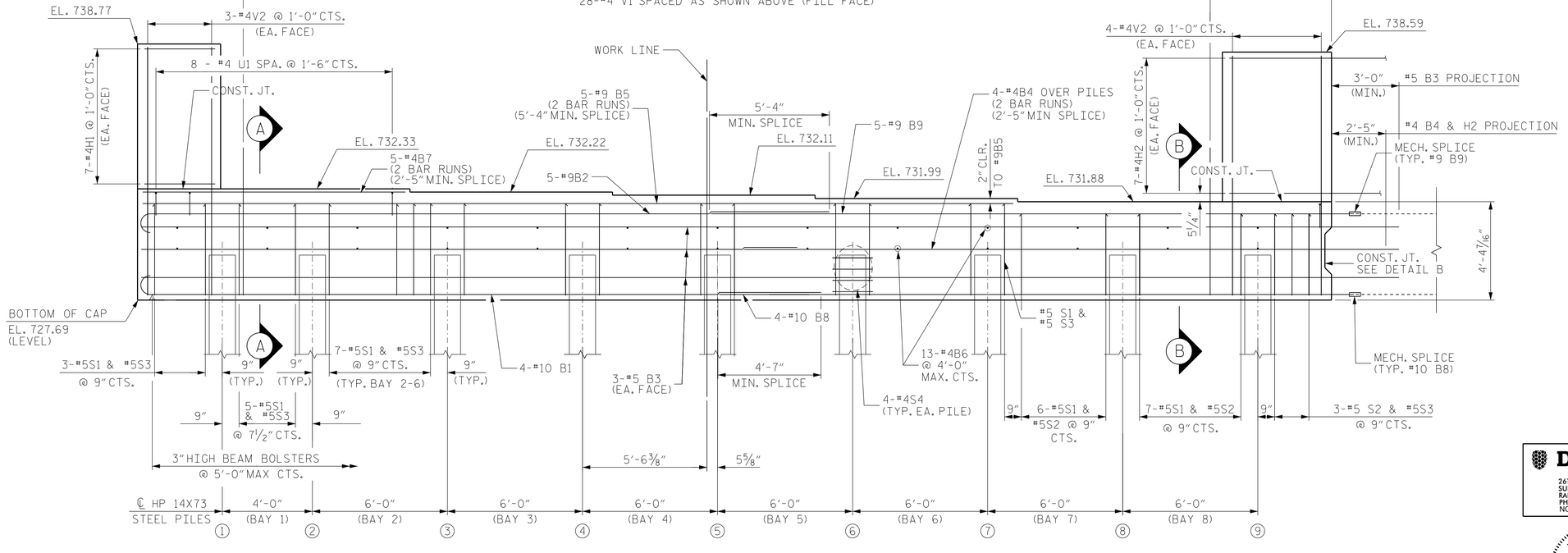


ELEVATION

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne E7C3056299FF484...

9/14/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

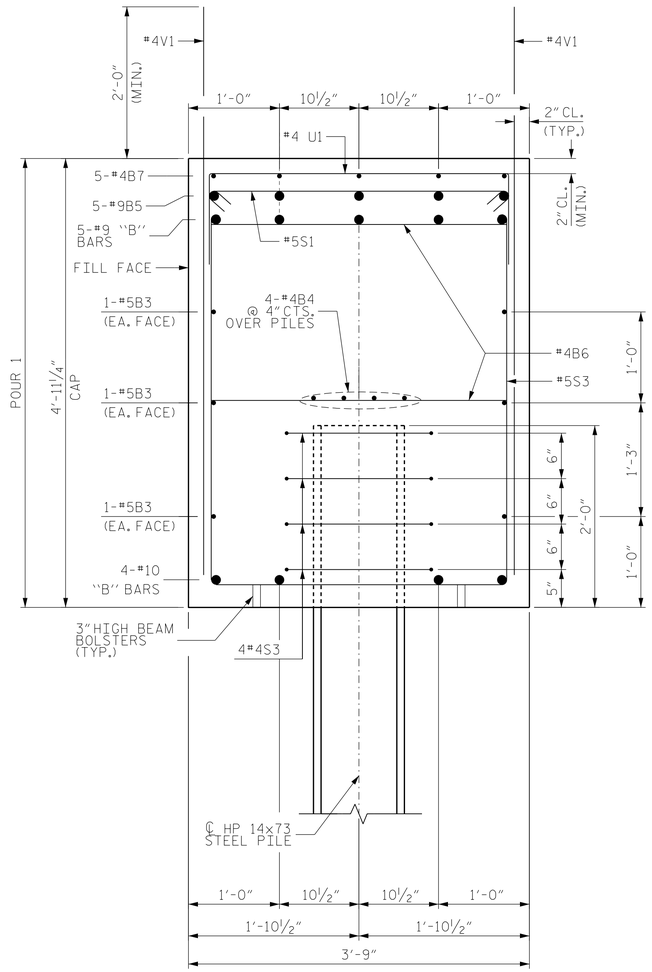
INTEGRAL END BENT 2

(LEFT BRIDGE)

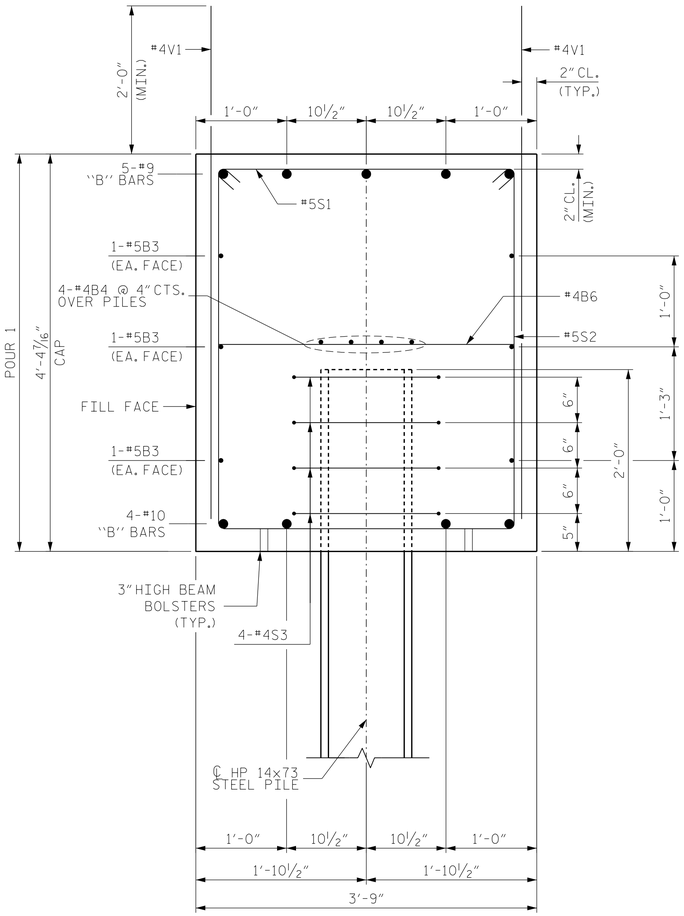
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-21
1			3			TOTAL SHEETS
2			4			25

DRAWN BY :	JAE	DATE :	8/21
CHECKED BY :	ZHB	DATE :	8/21
DESIGN ENGINEER OF RECORD:	MTP	DATE :	8/21

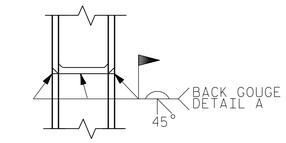
$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



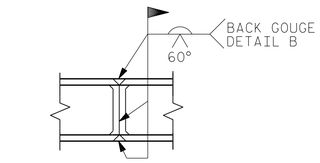
SECTION A-A



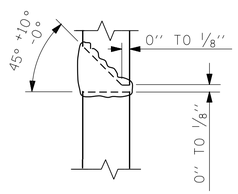
SECTION B-B



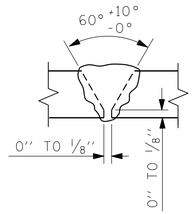
PILE VERTICAL



PILE HORIZONTAL OR VERTICAL

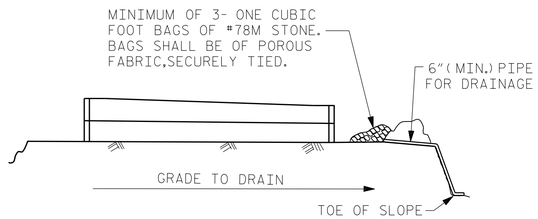


DETAIL A



DETAIL B

PILE SPLICE DETAILS



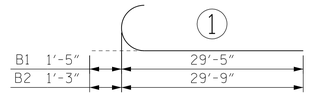
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION, PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

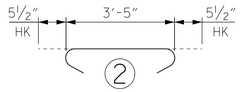
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

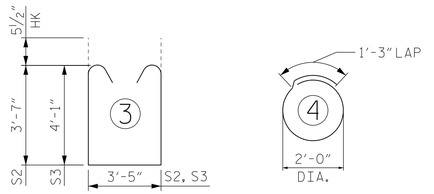
NO SEPARATE PAYMENT WILL BEW MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR THE SEVERAL PAY ITEMS.

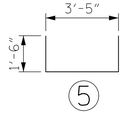
TEMPORARY DRAINAGE END BENT

BAR TYPES









ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	30'-10"	531
B2	5	#9	1	31'-0"	527
B3	6	#5	STR	55'-4"	346
B4	8	#4	STR	29'-1"	155
B5	10	#9	STR	21'-9"	649
B6	26	#4	STR	3'-5"	59
B7	10	#4	STR	7'-1"	47
B8	4	#10	STR	29'-5"	506
B9	5	#9	STR	29'-9"	506
H1	14	#4	STR	2'-5"	23
H2	14	#4	STR	8'-2"	76
S1	60	#5	2	4'-4"	271
S2	17	#5	3	11'-6"	204
S3	43	#5	3	12'-6"	561
U1	8	#4	5	6'-5"	34
V1	56	#4	STR	6'-11"	259
V2	14	#4	STR	10'-8"	100

TOTAL REINFORCING STEEL 4854 LBS.

CLASS "A" CONCRETE - CU. YARDS

POUR 1
(CAP & LOWER WINGS) 33.7 CU. YDS.

POUR 2
(UPPER WINGS) 1.8 CU. YDS.

TOTAL 35.5 CU. YDS.

PILE DRIVING EQUIPMENT SETUP FOR
HP 14 X 73 STEEL PILES - EACH 9

HP 14 X 73 STEEL PILES
9 PILES REQUIRED - LIN. FEET 270

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE
DocuSigned by: Matthew Payne E7C3056295FF484...
9/14/2021

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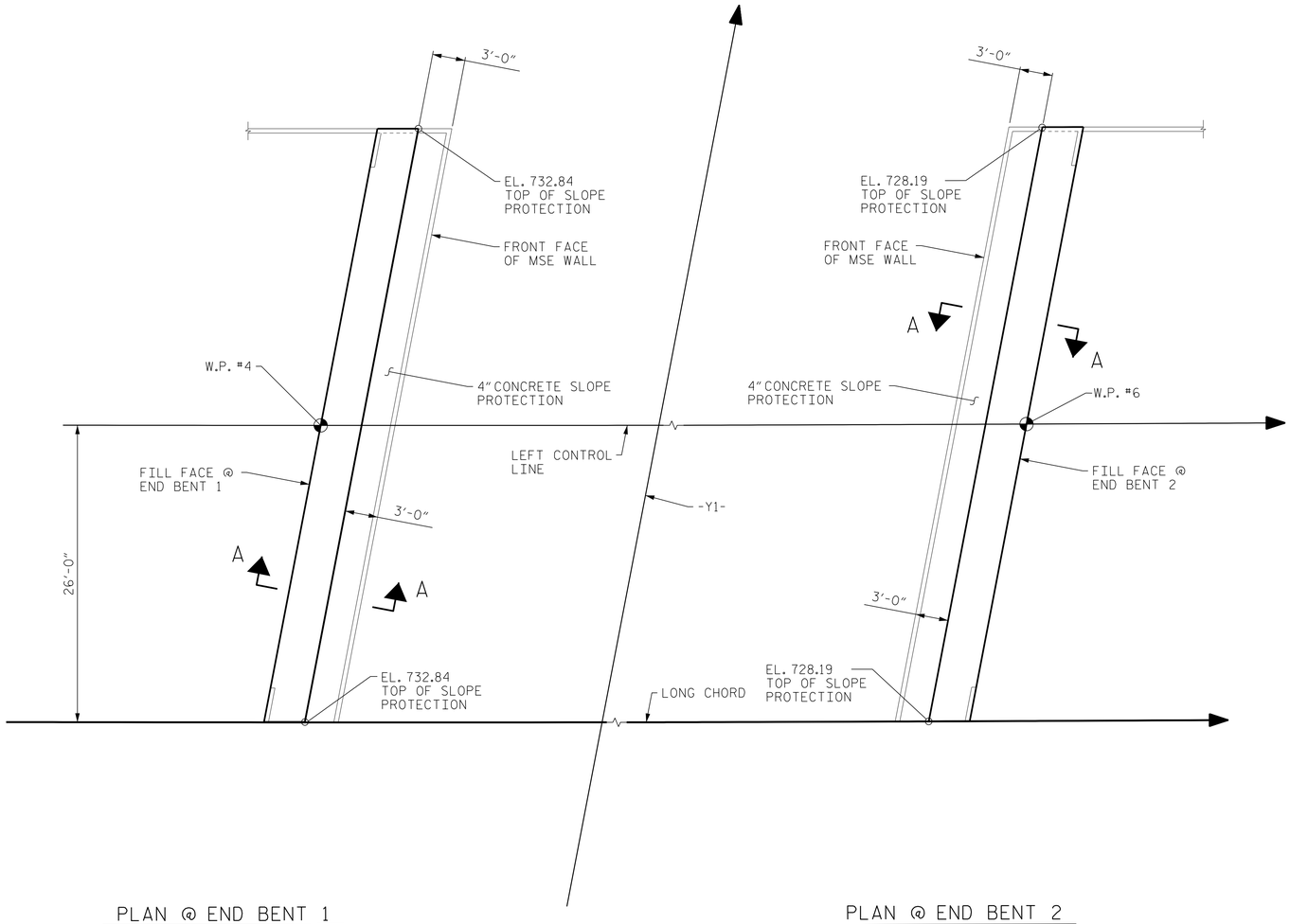
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
INTEGRAL
END BENT 2
(LEFT BRIDGE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-22
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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



PLAN @ END BENT 1

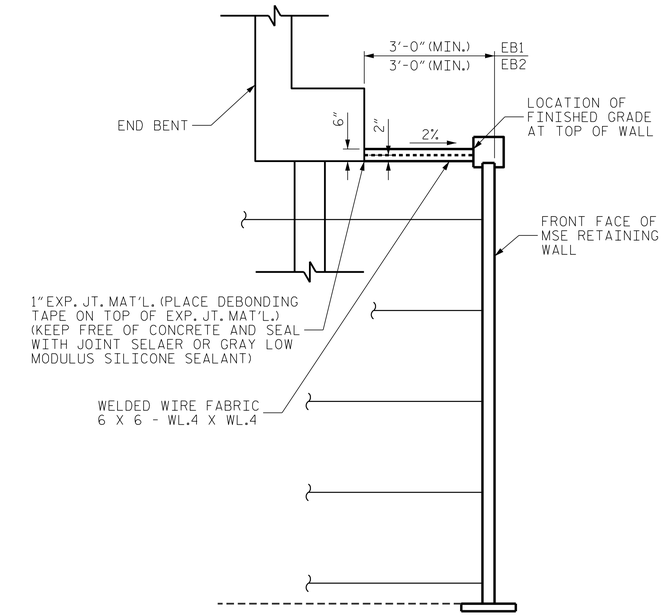
PLAN @ END BENT 2

SLOPE PROTECTION LAYOUT

NOTES:

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING.

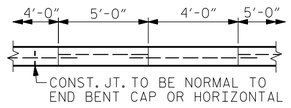
SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - WL4.60" WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.



SECTION A-A

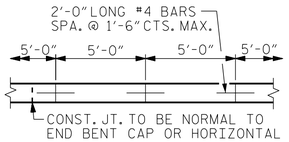
BRIDGE @ STA. 61+02.86 -L- (LEFT LANE)	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	17.4	31.3
END BENT 2	17.4	31.3

* QUANTITY SHOWN IS BASED ON 5' POURS.



POUR A 4'-0" STRIP FIRST. STRIP WIDTHS MAY VARY IN CURVED PORTION.

OPTIONAL POURING DETAIL



STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne E7C3056295FF484...

9/14/2021

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

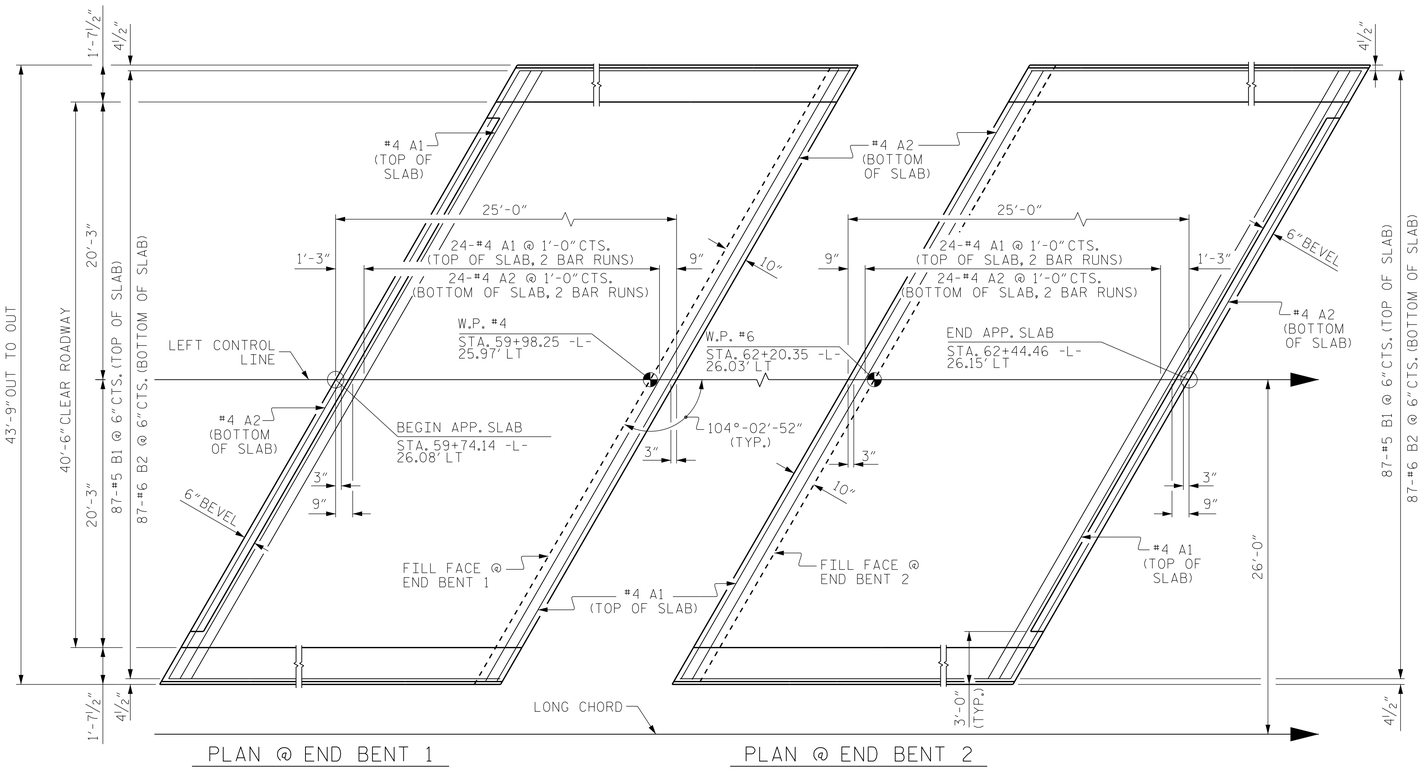
SLOPE PROTECTION DETAIL

(LEFT BRIDGE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-23
1			3			TOTAL SHEETS
2			4			25

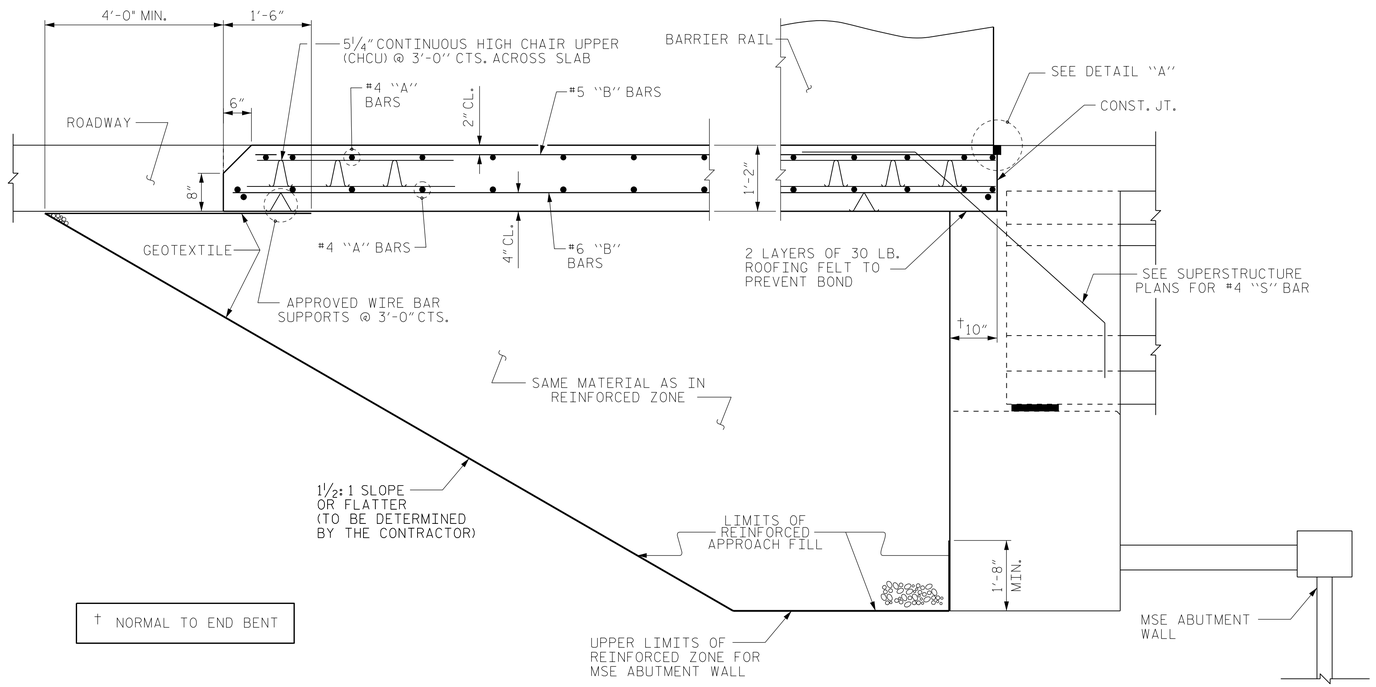
DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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



PLAN @ END BENT 1 PLAN @ END BENT 2

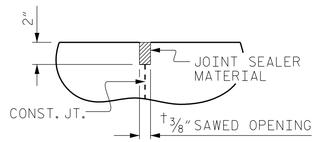
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



† NORMAL TO END BENT

SECTION THRU SLAB

(TYPE III - REINFORCED APPROACH FILL)



DETAIL "A"

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6"Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

BACKFILL MATERIAL SHALL BE THE SAME MATERIAL USED IN THE THE MSE REINFORCED ZONE.

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

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

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.

BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	52	#4	STR	23'-4"	811
A2	54	#4	STR	23'-2"	836
✳B1	87	#5	STR	24'-2"	2193
B2	87	#6	STR	24'-8"	3223
REINFORCING STEEL ✳✳				LBS.	4059
✳EPOXY COATED REINFORCING STEEL				✳✳ LBS.	3004
CLASS AA CONCRETE ✳✳				C.Y.	47.1

ALL BAR DIMENSIONS ARE OUT TO OUT

✳✳ QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED. SEE SHEET 2 OF 2.

SPLICE LENGTHS

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

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

SHEET 1 OF 2

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne E7C3056295FF484...

9/14/2021

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

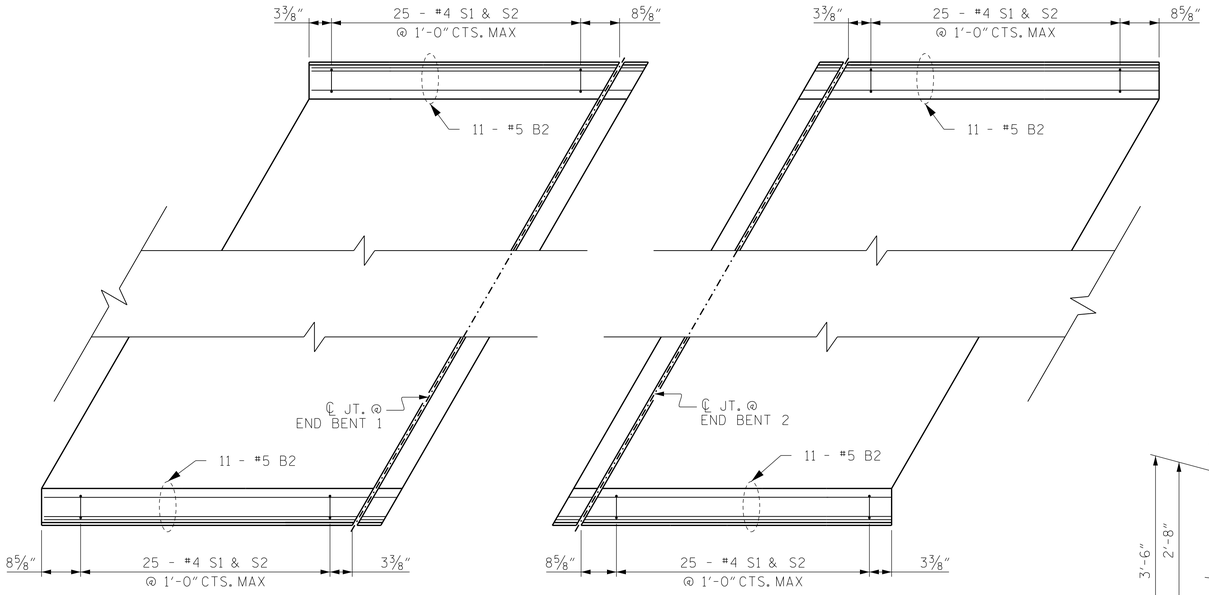
STANDARD

BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-24
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

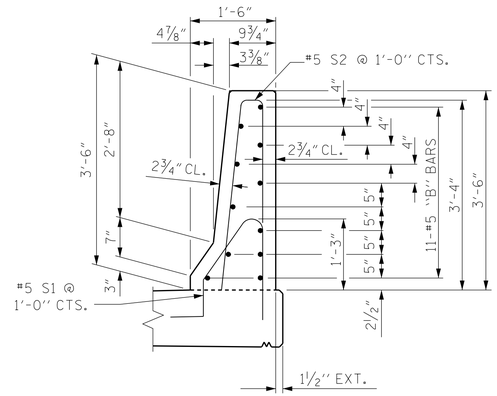
$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



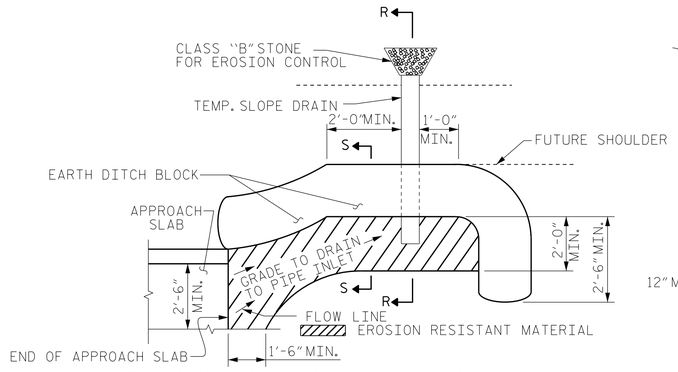
PLAN @ END BENT 1

PLAN @ END BENT 2

PLAN OF BARRIER RAIL

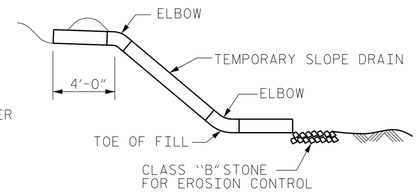


SECTION THRU RAIL

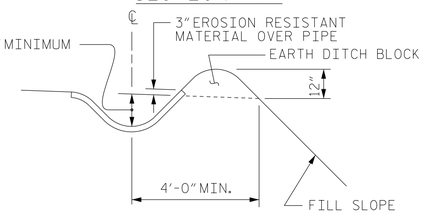


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

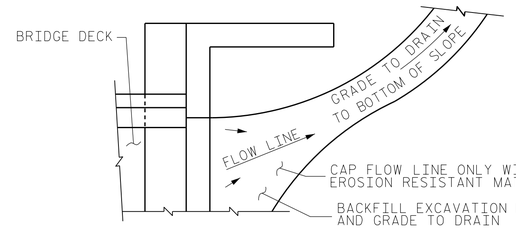
PLAN VIEW



SECTION R-R



SECTION S-S



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

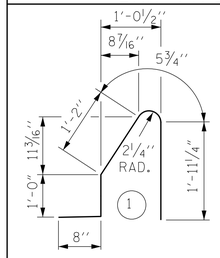
TEMPORARY BERM AND SLOPE DRAIN DETAILS

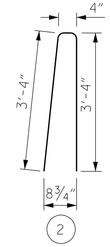
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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

BAR TYPES





ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	44	#5	STR.	24'-6"	1124
* S1	100	#5	1	5'-3"	548
* S2	100	#5	2	7'-0"	730

* EPOXY COATED REINFORCING STEEL	2402 LBS.
CLASS AA CONCRETE	13.6 CU. YDS.
CONCRETE BARRIER RAIL	100 LIN. FT.

PROJECT NO. R-5737
DAVIDSON COUNTY
STATION: 61+02.86 -L-

SHEET 2 OF 2

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE
DocuSigned by: Matthew Payne ET630562995F484...
9/14/2021

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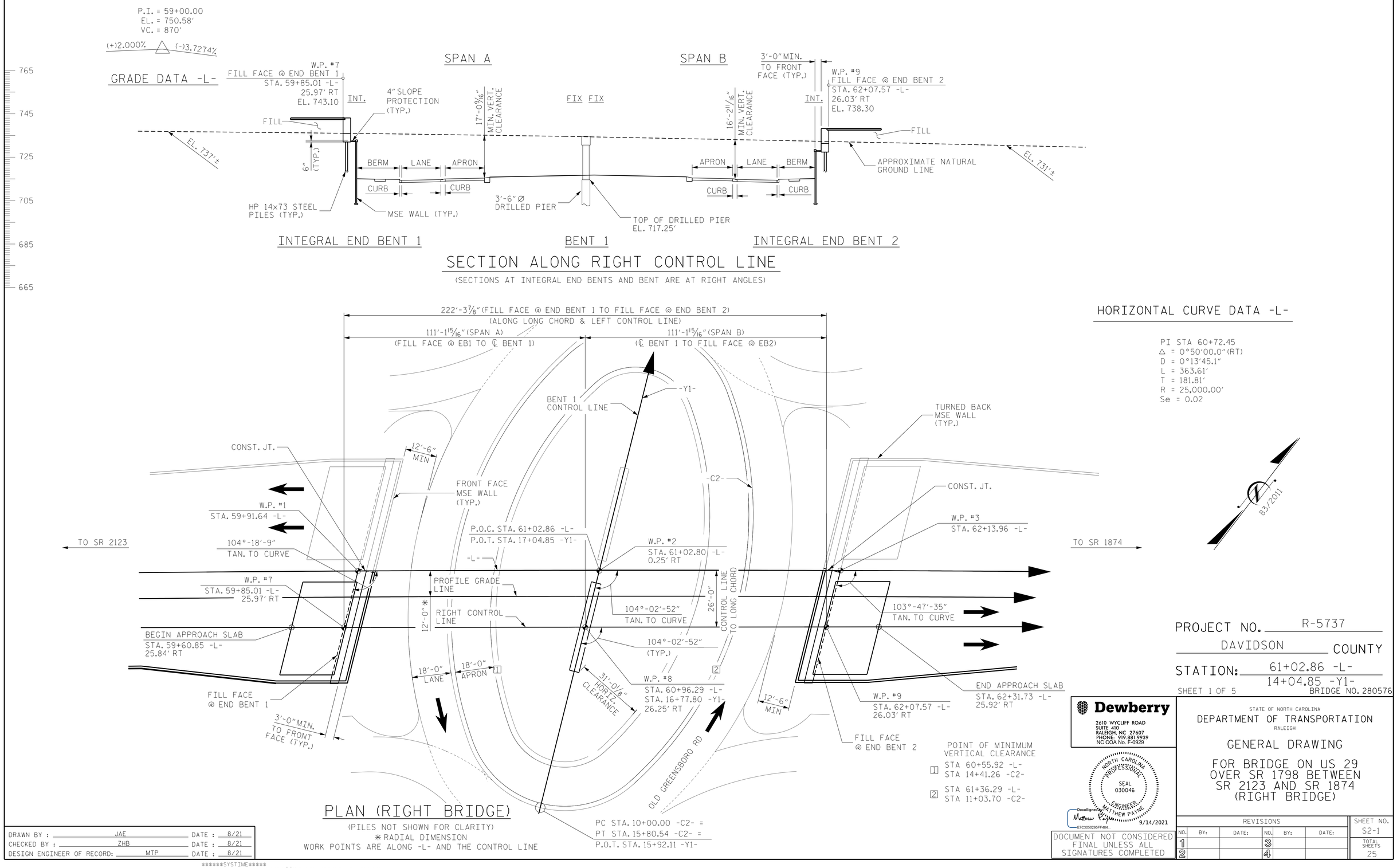
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS (LEFT BRIDGE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-25
1			3			TOTAL SHEETS
2			4			25

(SHT 1b)



HORIZONTAL CURVE DATA -L-

PI STA 60+72.45
Δ = 0°50'00.0"(RT)
D = 0°13'45.1"
L = 363.61'
T = 181.81'
R = 25,000.00'
Se = 0.02

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-
14+04.85 -Y1-

SHEET 1 OF 5

BRIDGE NO. 280576

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW P RYNE

DocuSigned by: Matthew Ryne 9/14/2021
E7C3056295FF484...

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON US 29
OVER SR 1798 BETWEEN
SR 2123 AND SR 1874
(RIGHT BRIDGE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-1
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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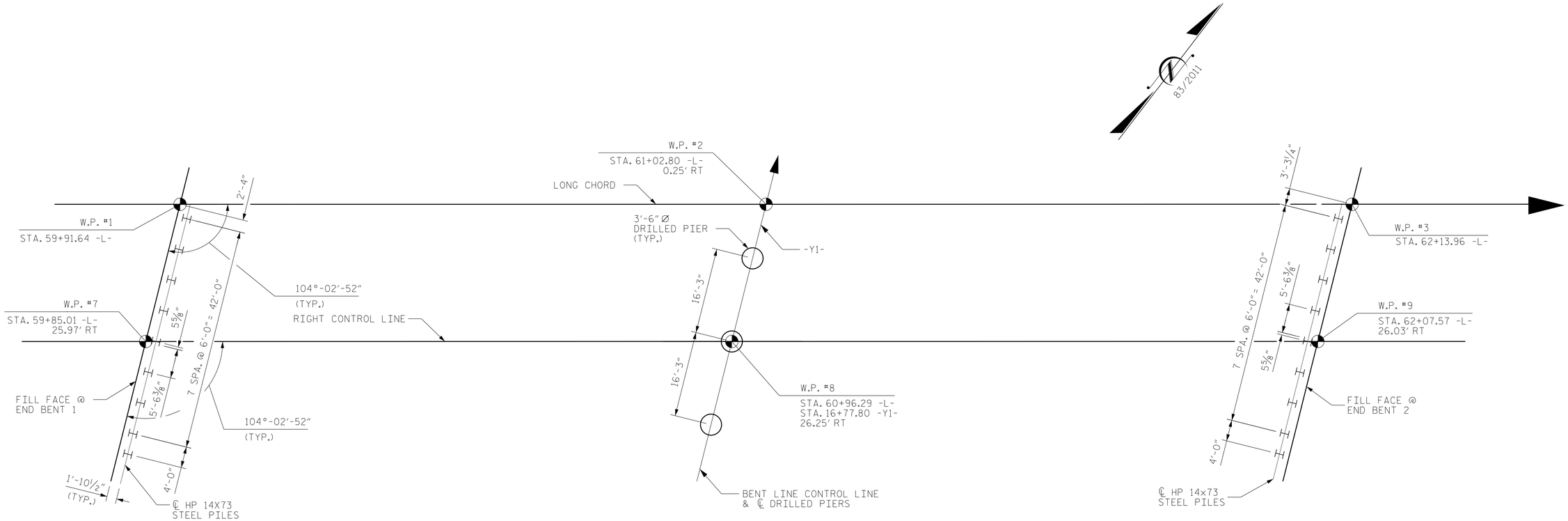
$$$$USERNAME$$$$



END BENT 1 | BENT 1 | END BENT 2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE AT BOTTOM OF CAP

NOTES:

1. FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
2. DRILLED PIERS AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 538 TONS PER PIER.
3. INSTALL DRILLED PIERS AT BENT NO. 1 TO A TIP ELEVATION NO HIGHER THAN 706 FT AND PENETRATION OF AT LEAST 8 FT INTO ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.
4. CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
5. FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
6. PILES AT END BENT NO. 1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 109 TONS PER PILE.
7. DRIVE PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 185 TONS PER PILE.
8. DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 284 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDTIONAL RESISTANCE FOR DOWNDRAG.
9. IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 60,000-80,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.
10. TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING. SEE SECTION 450 OF THE STANDARD SPECIFICATIONS (AND FOR PILE DRIVING CRITERIA, SEE PILE DRIVING CRITERIA PROVISION).
11. DRILLED-IN PILES ARE REQUIRED FOR INTEGRAL END BENT NO. 1. EXCAVATE HOLES AT PILE LOCATIONS TO ELEVATION 709 FT. FILL THE BOTTOM 3 FT OF HOLES FOR PILE EXCAVATION WITH CONCRETE AND THE REST OF HOLES WITH CLASS II OR III SELECT MATERIAL THAT MEETS SECTION 1016 OF THE STANDARD SPECIFICATIONS. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

SHEET 2 OF 5

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$$$$USERNAME$$$$

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne E7C3056295FF484... 9/14/2021

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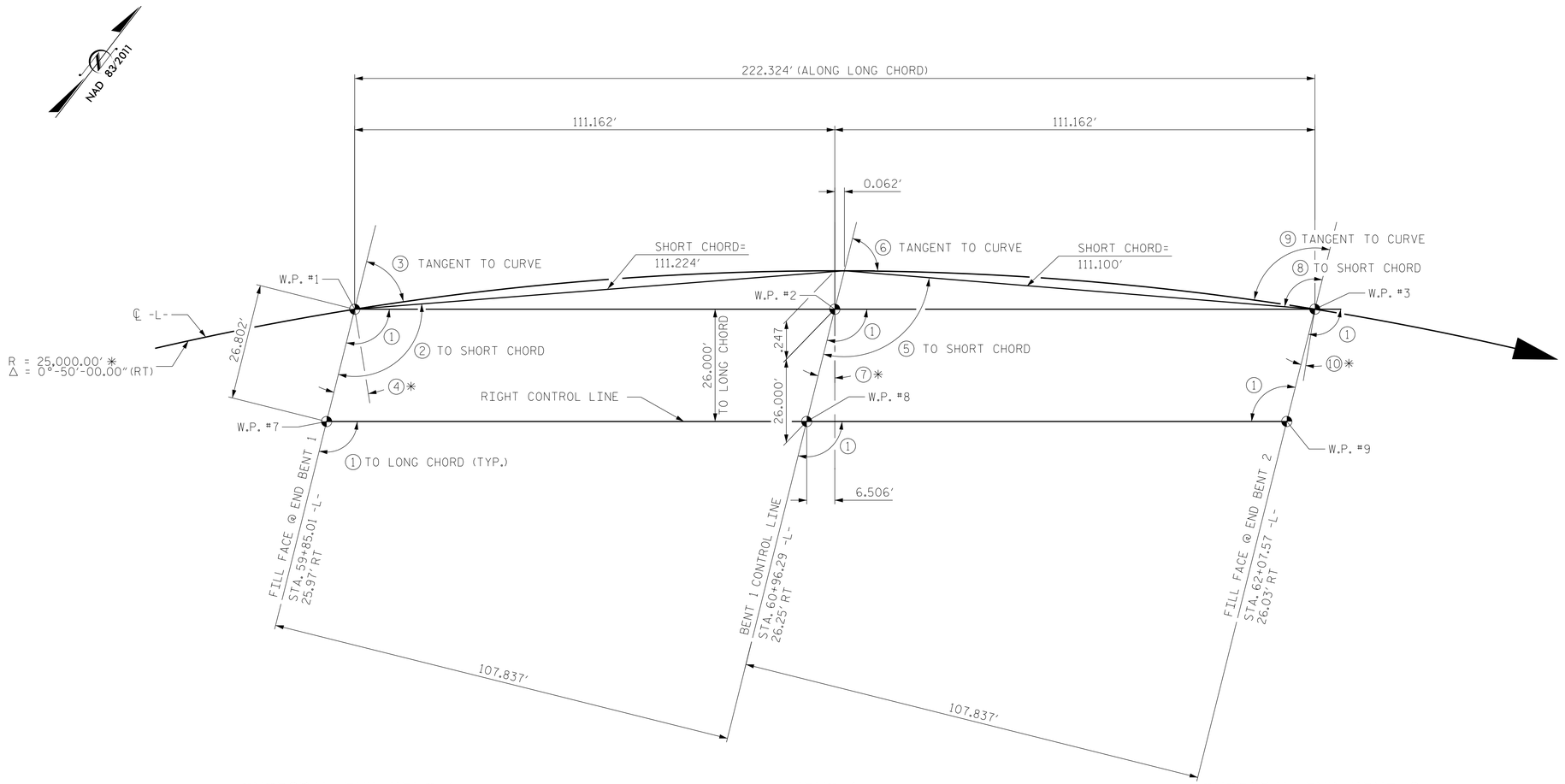
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

FOUNDATION LAYOUT PLAN

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-2
1			3			TOTAL SHEETS
2			4			25



ANGLES

① 104°-02′-52″
② 104°-10′-30″ SHORT CHORD
③ 104°-18′-09″ TANGENT TO CURVE
④ 14°-18′-09″ RADIAL
⑤ 103°-55′-13″ SHORT CHORD
⑥ 104°-02′-52″ TANGENT TO CURVE
⑦ 14°-02′-52″ RADIAL
⑧ 103°-55′-13″ SHORT CHORD
⑨ 103°-47′-35″ TANGENT TO CURVE
⑩ 13°-47′-35″ RADIAL

LONG CHORD LAYOUT

(ALL END BENTS AND BENTS ARE PARALLEL)
✳ CURVE EXAGGERATED FOR CLARITY

PROJECT NO. R-5737
DAVIDSON COUNTY
STATION: 61+02.86 -L-
SHEET 3 OF 5

Dewberry
2610 WYCLIFF ROAD
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DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON US 29 OVER SR 1798 BETWEEN SR 2123 AND SR 1874 (RIGHT BRIDGE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-3
1			3			TOTAL SHEETS
2			4			25

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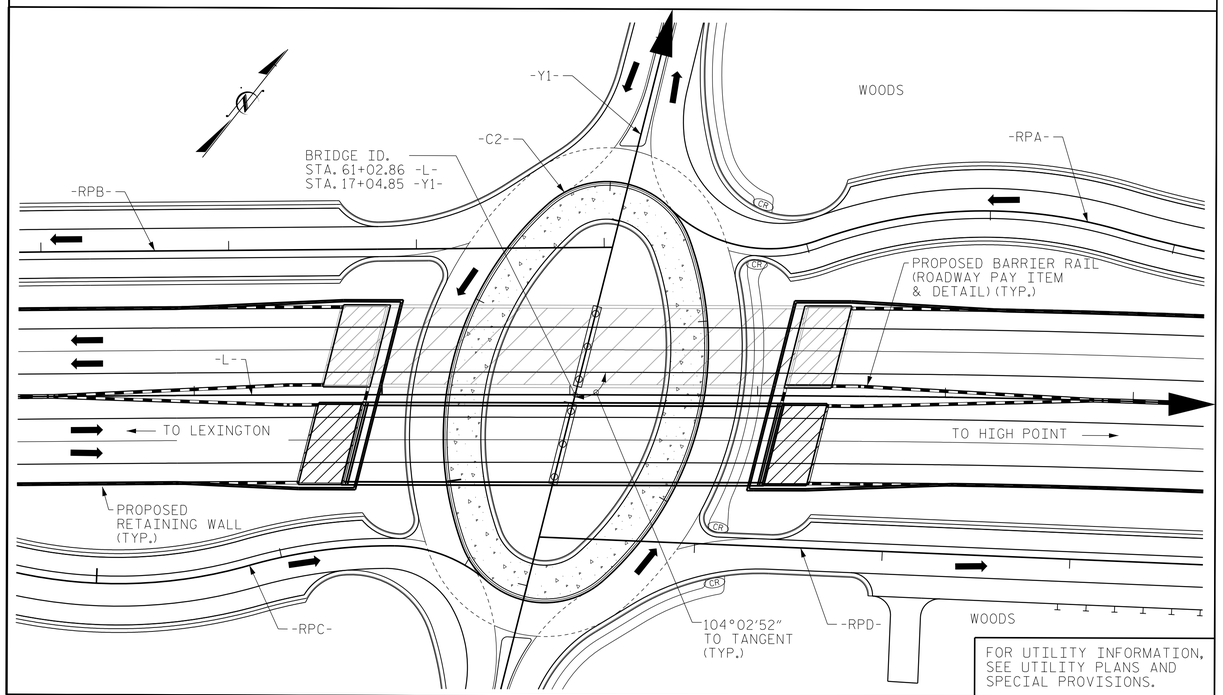
$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

BENCHMARK: BM#3-RAILROAD SPIKE IN 24"GUM, 100.95' RIGHT OF STA. 49+14.96 -L-, EL. 741.680



LOCATION SKETCH

GENERAL DRAWING NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

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

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

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

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

WORK SHALL NOT BE STARTED ON THIS BRIDGE (OR SPECIFIC PARTS OF BRIDGE) UNTIL ROADWAY SECTION HAS BEEN EXCAVATED.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

TOTAL BILL OF MATERIAL

	PILE EXCAVATION NOT IN SOIL	3'-6" DIA. DRILLED PIER NOT IN SOIL	PDA TESTING	CSL TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL
	LIN. FT.	LIN. FT.	EA.	EA.	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.
SUPERSTRUCTURE	-	-	-	-	9652	10,070	-	LUMP SUM		
END BENT NO. 1	48	-	-	-	-	-	32.9	-	4,353	
BENT NO. 1	-	33.8	-	-	-	-	39.8	-	11,025	1,643
END BENT NO. 2	-	-	-	-	-	-	32.9	-	4,353	
TOTAL	48	33.8	1	1	9652	10,070	105.6	LUMP SUM	19,731	1,643

TOTAL BILL OF MATERIAL

	MODIFIED 63" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR 14x73 STEEL PILES	HP 14 X 73 STEEL PILES		CONCRETE BARRIER RAIL	ARCHITECTURAL CONCRETE SURFACE TREATMENT	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS
	NO.	LIN. FT.	EA.	NO.	LIN. FT.	LIN. FT.	SQ. FT.	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE	10	1097.71	-	-	-	641.2	623.2	-	LUMP SUM
END BENT NO. 1	-	-	9	9	234	-	-	17	-
BENT NO. 1	-	-	-	-	-	-	-	-	-
END BENT NO. 2	-	-	9	9	315	-	-	17	-
TOTAL	10	1097.71	18	18	549	641.2	623.2	34	LUMP SUM

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$$$$USERNAME$$$$

PROJECT NO. R-5737
DAVIDSON COUNTY
STATION: 61+02.86 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON US 29
OVER SR 1798 BETWEEN
SR 2123 AND SR 1874
(RIGHT BRIDGE)

Dewberry
2610 WYCLIFF ROAD
SUITE 410
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NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

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NO.	BY:	DATE:	NO.	BY:	DATE:	S2-4
1			3			TOTAL SHEETS
2			4			25

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

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE											SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR						MOMENT						
							LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	1	1.02	--	1.75	0.815	1.24	A	EL	54.18	0.847	1.41	A	EL	21.67	0.80	0.815	1.02	A	EL	54.18	
		HL-93 (OPERATING)	N/A		1.61	--	1.35	0.815	1.61	A	EL	54.18	0.847	2.03	A	EL	21.67	N/A	--	--	--	--	--	·
		HS-20 (INVENTORY)	36.000		1.46	52.26	1.75	0.815	1.77	A	EL	54.18	0.847	2.09	A	EL	21.67	0.80	0.815	1.46	A	EL	54.18	
		HS-20 (OPERATING)	36.000		2.30	82.80	1.35	0.815	2.30	A	EL	54.18	0.847	2.77	A	EL	21.67	N/A	--	--	--	--	--	·
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SH	13.500		3.81	51.44	1.40	0.815	5.79	A	EL	54.18	0.847	7.08	A	I	21.67	0.80	0.815	3.81	A	EL	54.18	·
		S3C	20.000		2.22	44.40	1.40	0.815	3.36	A	EL	54.18	0.847	4.07	A	I	21.67	0.80	0.815	2.22	A	EL	54.18	·
		S3A	22.000		2.10	46.20	1.40	0.815	3.19	A	EL	54.18	0.847	3.58	A	I	21.67	0.80	0.815	2.10	A	EL	54.18	·
		S4A	27.250		1.84	50.14	1.40	0.815	2.79	A	EL	54.18	0.847	3.32	A	I	21.67	0.80	0.815	1.84	A	EL	54.18	·
		S5A	34.925		1.62	56.58	1.40	0.815	2.46	A	EL	54.18	0.847	3.01	A	I	21.67	0.80	0.815	1.62	A	EL	54.18	·
		S6A	35.550		1.46	51.90	1.40	0.815	2.22	A	EL	54.18	0.847	2.69	A	I	21.67	0.80	0.815	1.46	A	EL	54.18	·
		S7B	39.950		1.32	52.73	1.40	0.815	2.01	A	EL	54.18	0.847	2.48	A	I	21.67	0.80	0.815	1.32	A	EL	54.18	·
		S7A	42.000	2	1.30	54.60	1.40	0.815	1.97	A	EL	54.18	0.847	2.52	A	I	21.67	0.80	0.815	1.30	A	EL	54.18	·
	TRUCK TRACTOR SEMI-TRAILER (TTST)	T4A	33.000		1.79	59.70	1.40	0.815	2.72	A	EL	54.18	0.847	3.20	A	I	21.67	0.80	0.815	1.79	A	EL	54.18	·
		T5B	33.075		1.58	52.26	1.40	0.815	2.39	A	EL	54.18	0.847	3.00	A	I	21.67	0.80	0.815	1.58	A	EL	54.18	·
		T6A	41.600		1.43	59.49	1.40	0.815	2.18	A	EL	54.18	0.847	2.73	A	I	21.67	0.80	0.815	1.43	A	EL	54.18	·
		T7A	42.000	3	1.32	55.44	1.40	0.815	2.00	A	EL	54.18	0.847	2.51	A	I	21.67	0.80	0.815	1.32	A	EL	54.18	·
		T7B	42.000		1.38	57.96	1.40	0.815	2.10	A	EL	54.18	0.847	2.38	A	I	21.67	0.80	0.815	1.38	A	EL	54.18	·

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1.
2.
3.
4.

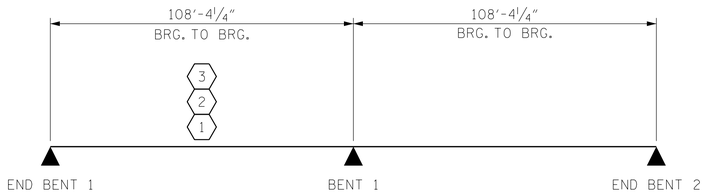
(#) CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)
2 DESIGN LOAD RATING (HS-20)
3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

SHEET 5 OF 5

Dewberry
2610 WYCLIFF ROAD
SUITE 410
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DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS (INTERSTATE TRAFFIC)

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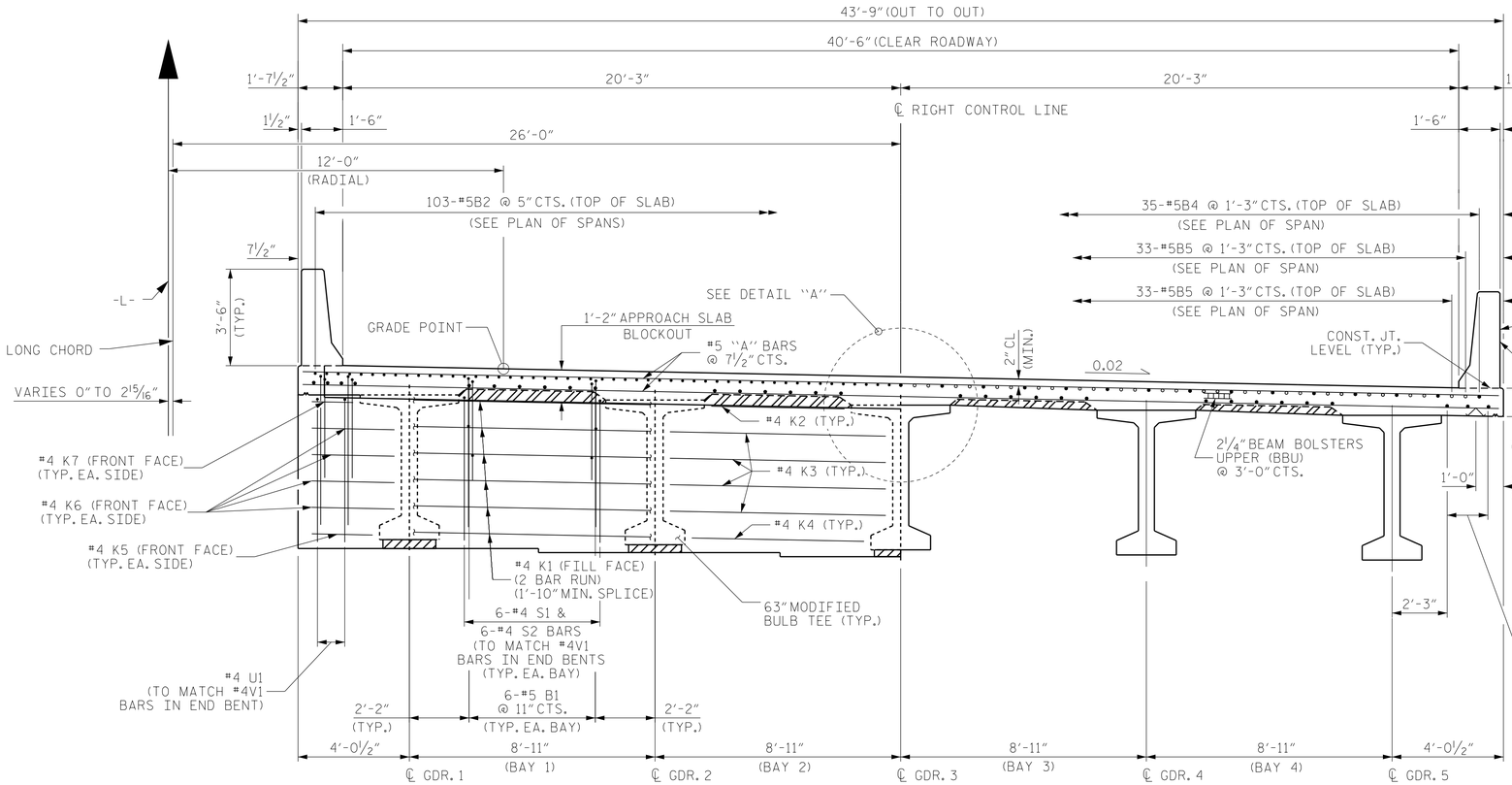
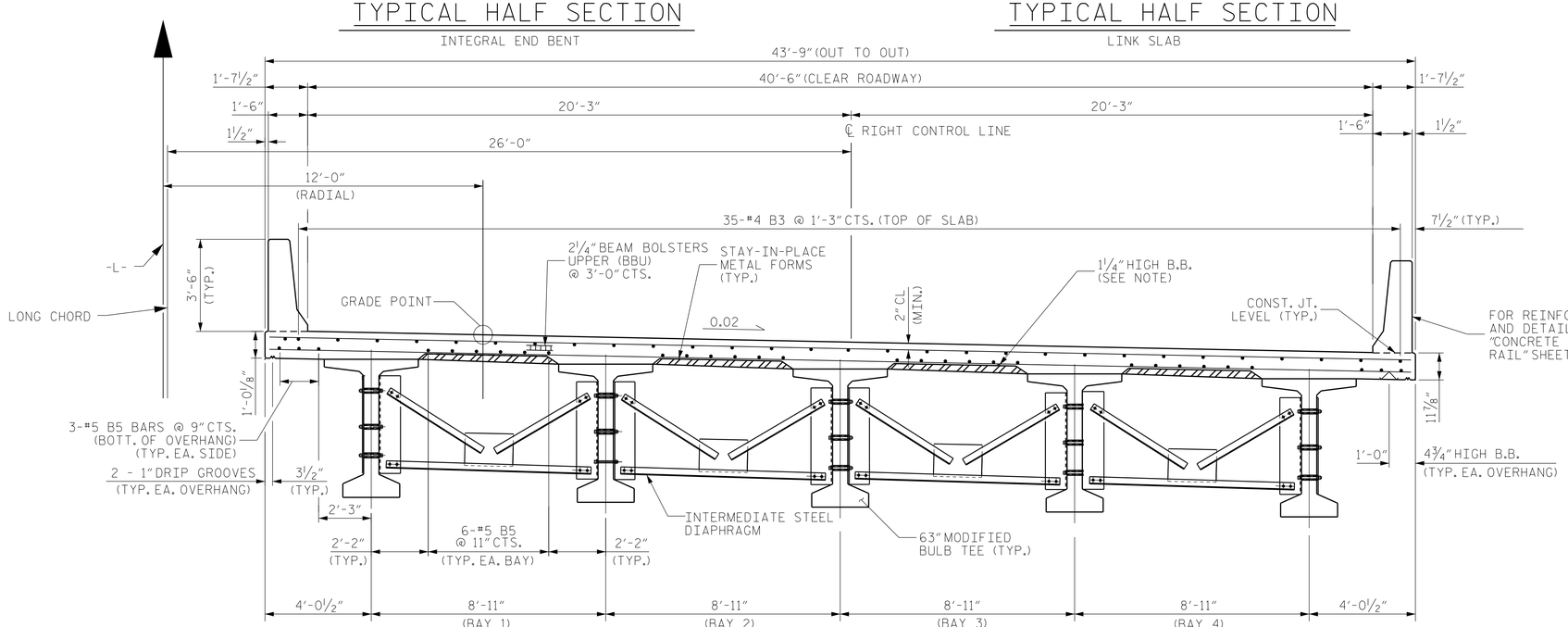


TYPICAL HALF SECTION
INTEGRAL END BENT

TYPICAL HALF SECTION
LINK SLAB



TYPICAL SECTION
INTERMEDIATE DIAPHRAGMS

NOTES:

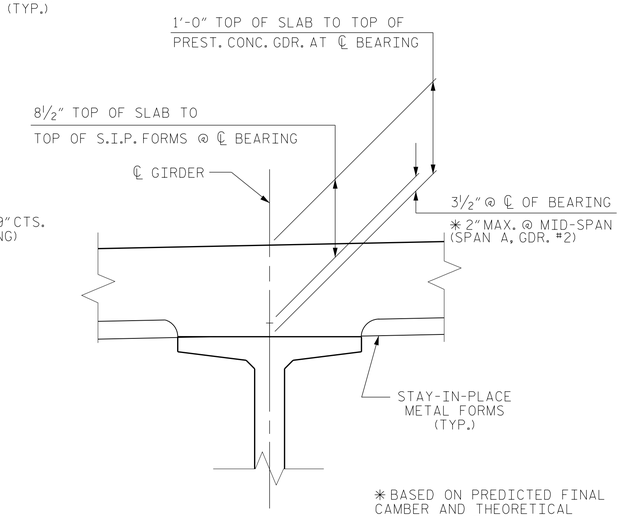
PROVIDE 1 ¼" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY IN PLACE FORS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A CLEAR DISTANCE OF 2½" ABOVE THE TOP OF THE REMOVABLE FORM.

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.

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

EXTERIOR FACE OF EXTERIOR BARRIER TO RECIEVE FORM LINER ARCHITECTURAL FINISH ONLY.



DETAIL A

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

** FOR STONE FACE FORM LINER AND STAINING OF BARRIER, SEE CONCRETE BARRIER RAIL SHEET.

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

SHEET 1 OF 2

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SUPERSTRUCTURE TYPICAL SECTION

REVISIONS						SHEET NO.
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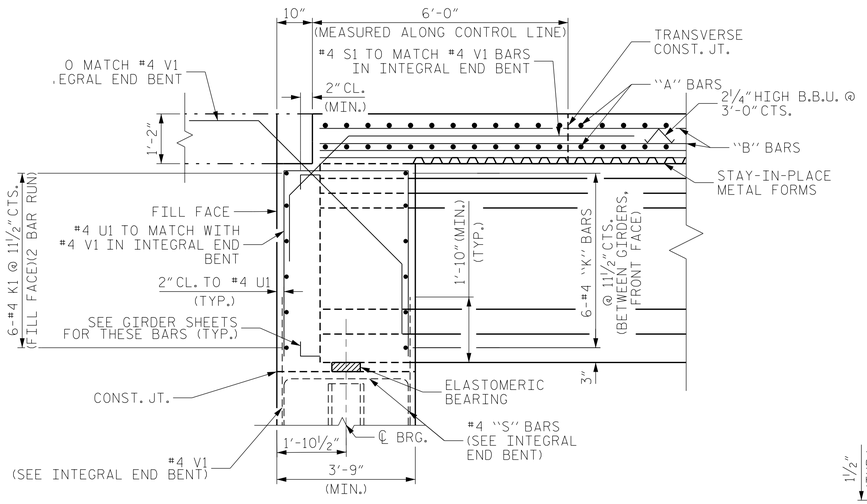
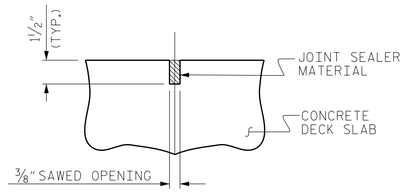
$$$$USERNAME$$$$

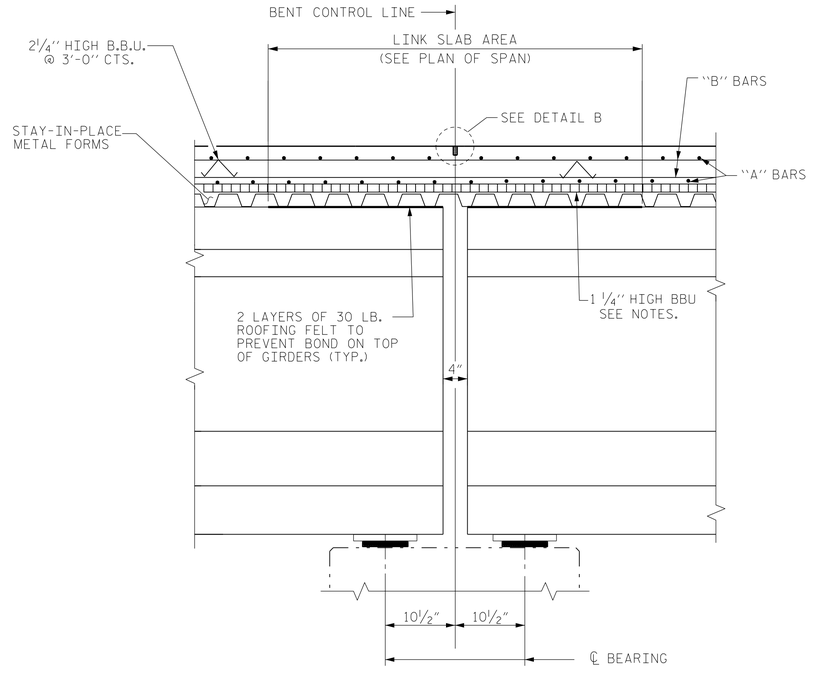


SECTION THRU INTEGRAL END BENTS

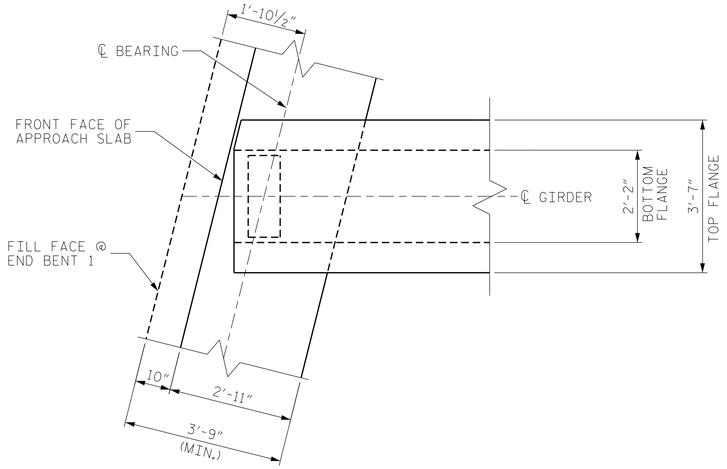


DETAIL B

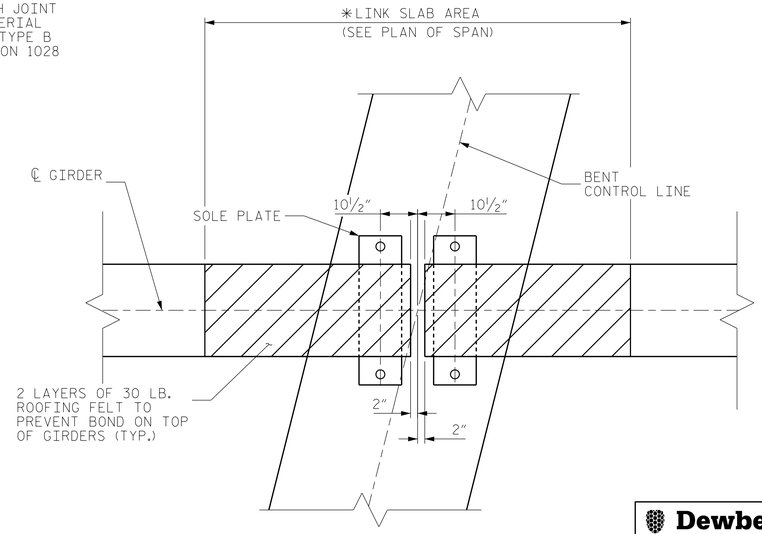
A 1½"DEEP CONTRACTION JOINT AT BENT CONTROL LINE SHALL BE SHAWN WITHIN 24 HOURS OF POURING THE DECK. THE JOINT SHALL BE FILLED WITH JOINT SEALER MATERIAL. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE B LOW MODULUS SILICONE SEALANT. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.



SECTION THRU LINK SLAB



PLAN OF END BENT DIAPHRAGM



PLAN AT BENT

* THE TOP OF THE BEAM IN THE REGION OF THE LINK SLAB SHALL BE SMOOTH AND FREE OF STIRRUPS OR ANCHOR STUDS.

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

SHEET 2 OF 2

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne E7C3056295FF484...

9/14/2021

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

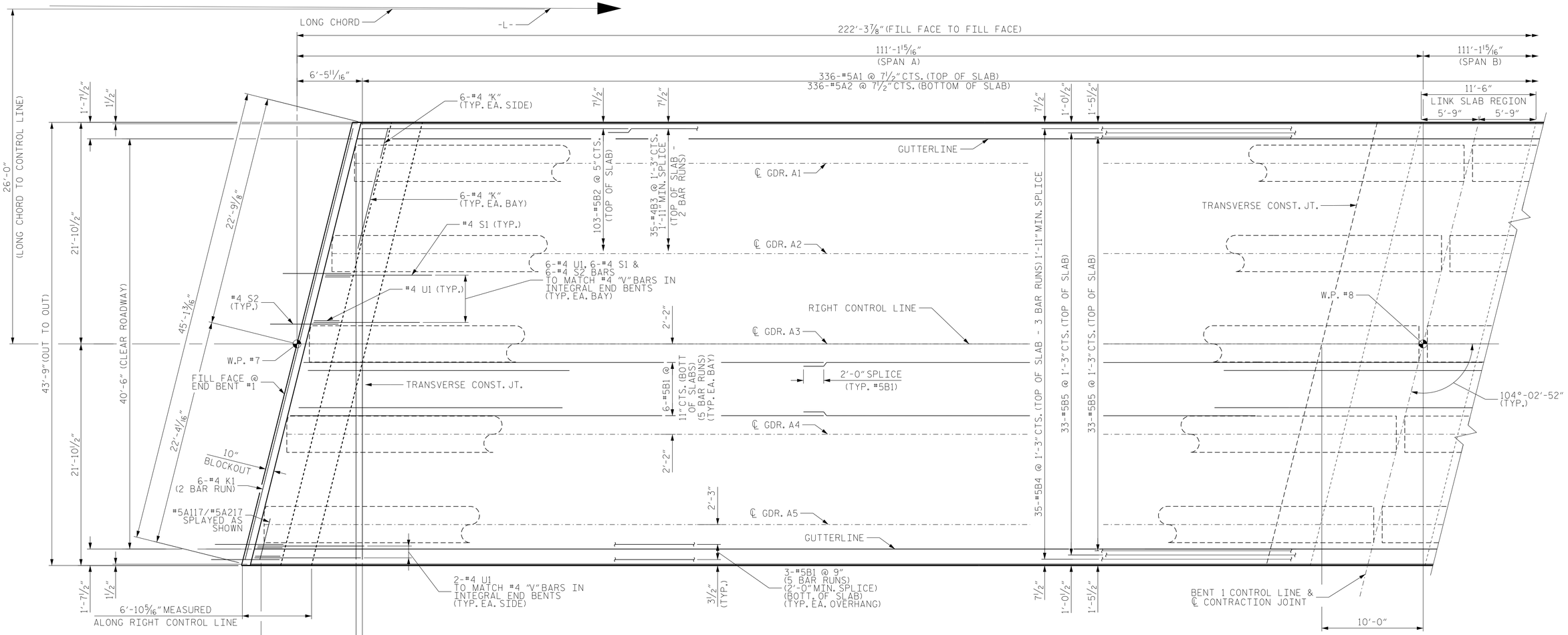
SUPERSTRUCTURE

TYPICAL SECTION DETAILS

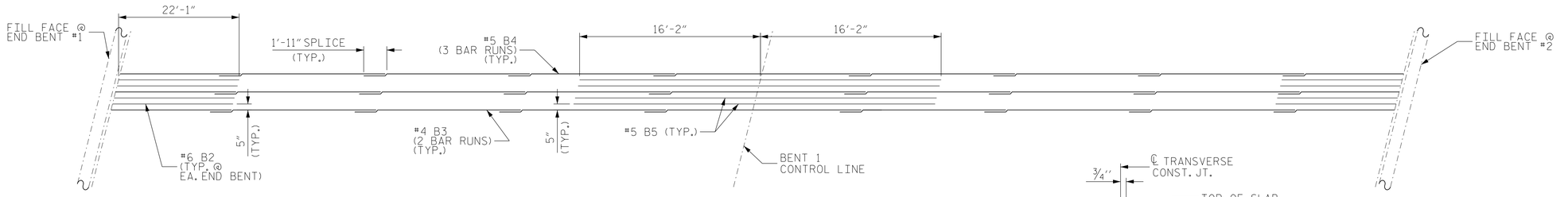
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-7
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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

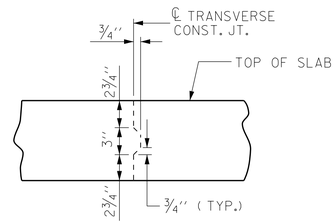


SPAN A



TOP REINFORCING STEEL LAYOUT

SHOWING "B" BARS IN TOP OF SLAB



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

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RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN A (RIGHT BRIDGE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-8
1			3			TOTAL SHEETS
2			4			25

DRAWN BY :	JAE	DATE : 8/21
CHECKED BY :	ZHB	DATE : 8/21
DESIGN ENGINEER OF RECORD:	MTP	DATE : 8/21

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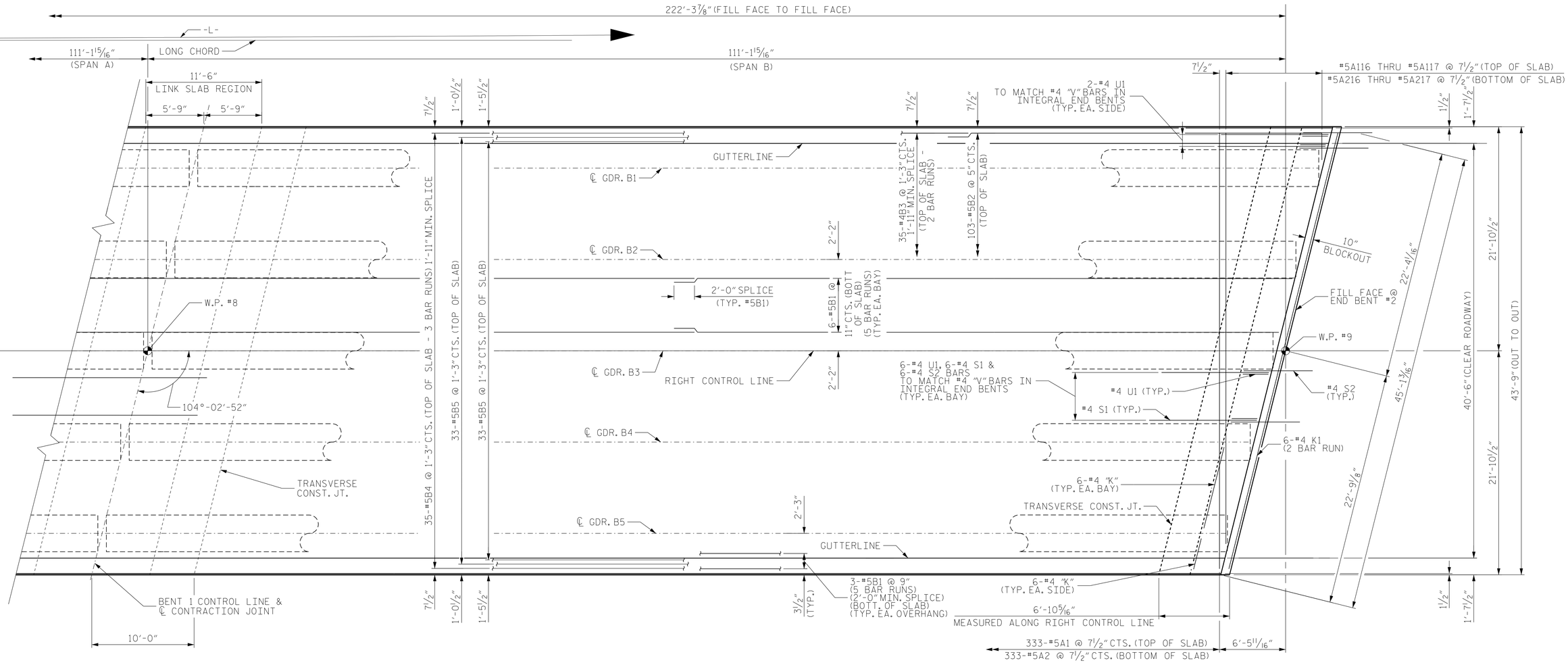

SPAN B

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
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NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne E7C3056295FF484...

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RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN B
(RIGHT BRIDGE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-9
1			3			TOTAL SHEETS
2			4			25

DRAWN BY :	JAE	DATE : 8/21
CHECKED BY :	ZHB	DATE : 8/21
DESIGN ENGINEER OF RECORD:	MTP	DATE : 8/21

$$$$$$SYSTIME$$$$$
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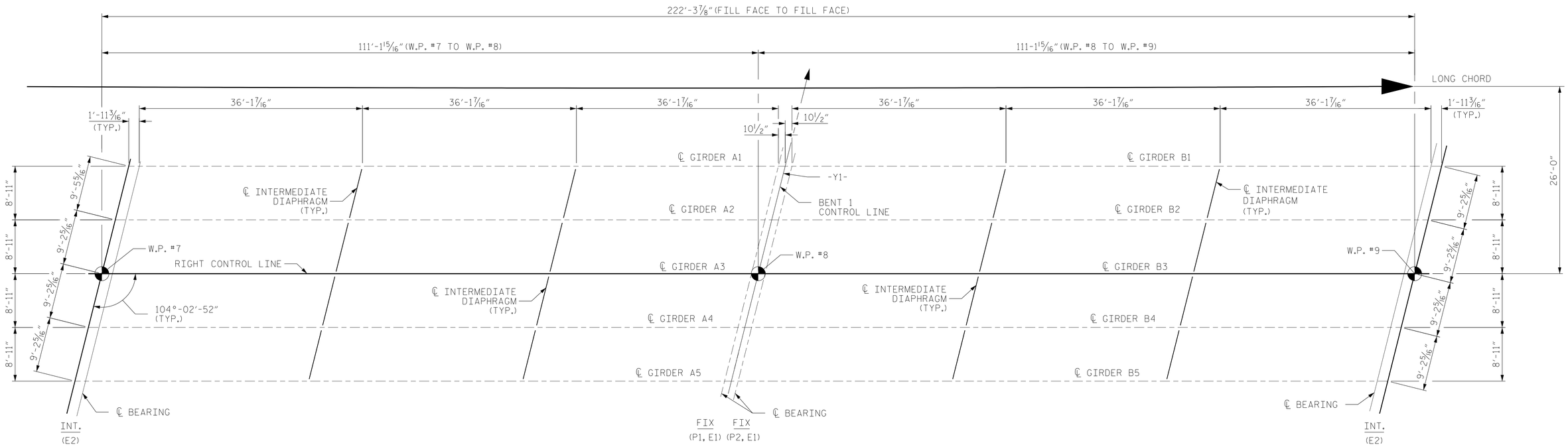
$$$$USERNAME$$$$



SPAN A

SPAN B

FRAMING PLAN

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

SHEET 1 OF 1

Dewberry
2610 WYCLIFF ROAD
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RALEIGH

SUPERSTRUCTURE

FRAMING PLAN

(RIGHT BRIDGE)

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

SHEET NO. S2-10

TOTAL SHEETS 25

DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
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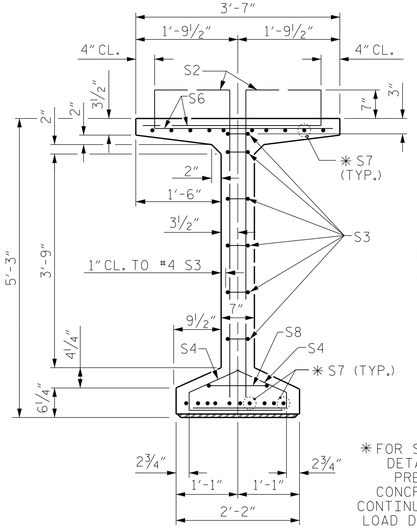
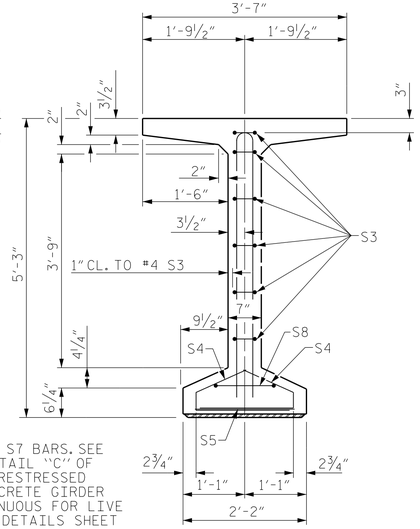
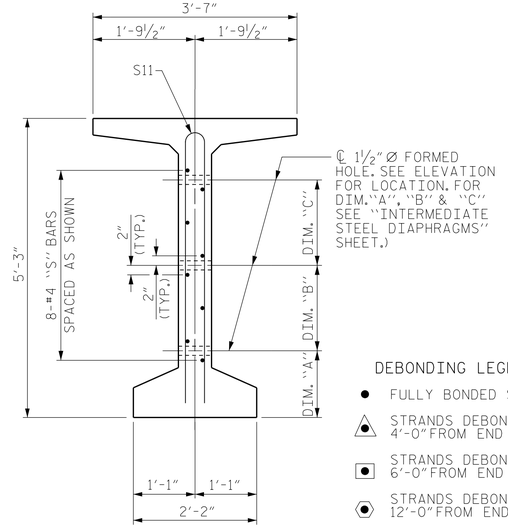


SECTION A-A

✱ FOR S7 BARS, SEE DETAIL "C" OF PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS SHEET



SECTION B-B

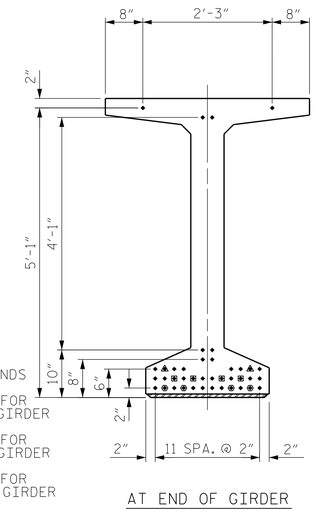


SECTION C-C

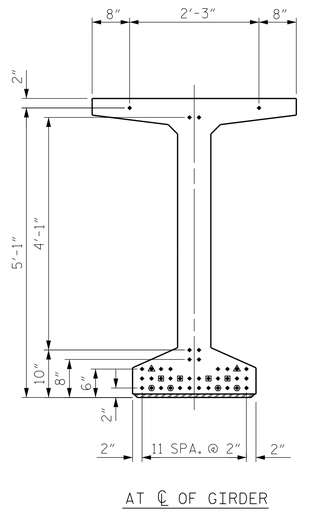
(S1, S6 AND S9 BARS NOT SHOWN)

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- △ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ▣ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
- ⬡ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER



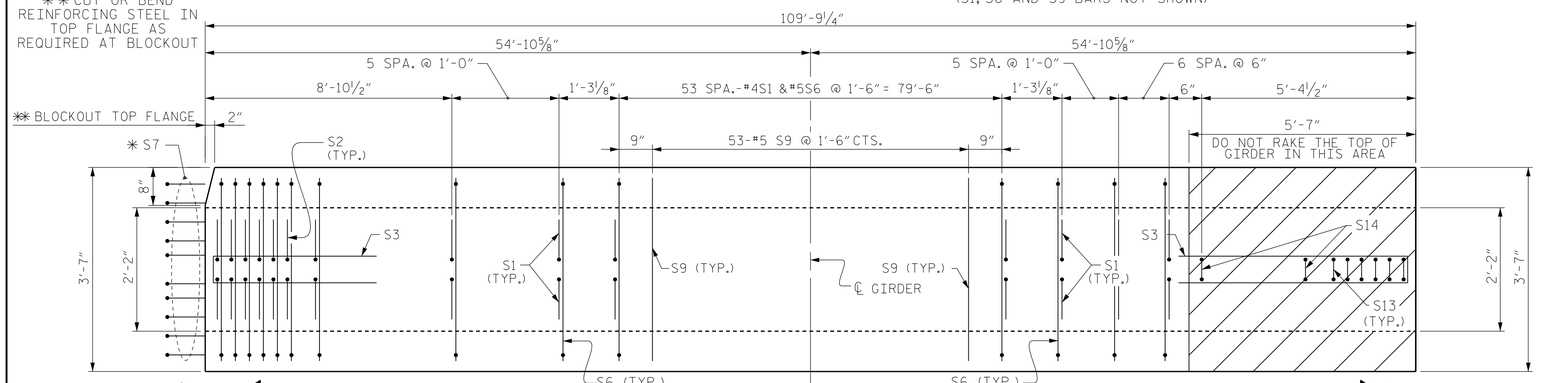
AT END OF GIRDER



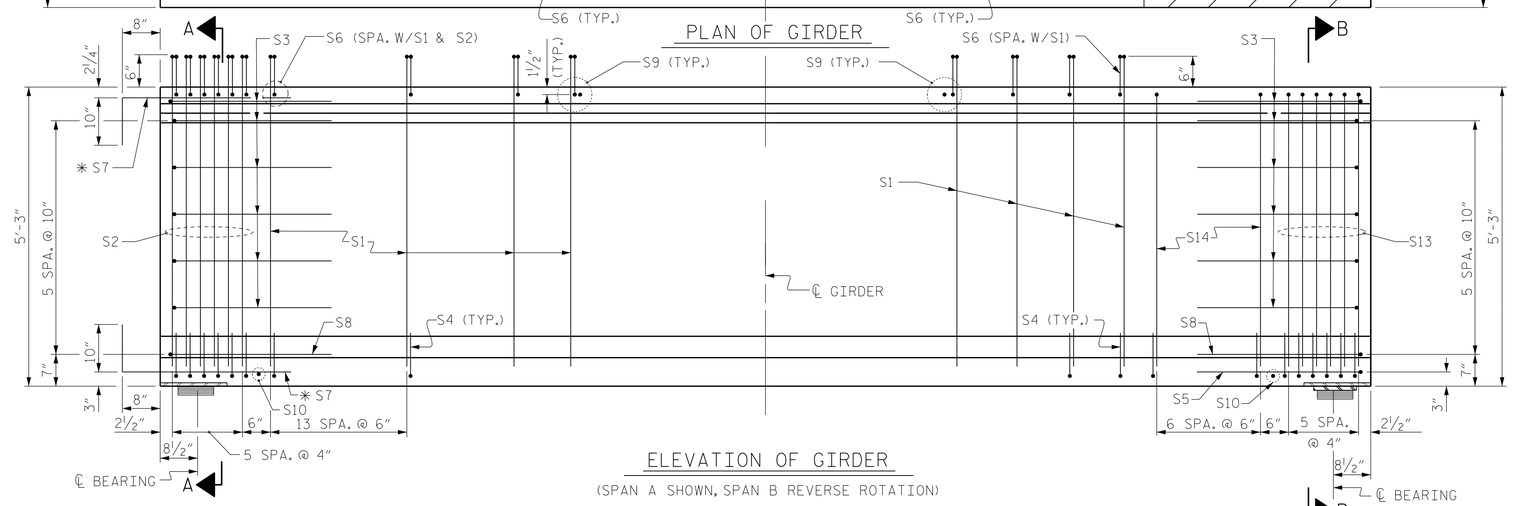
AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

✱✱ CUT OR BEND REINFORCING STEEL IN TOP FLANGE AS REQUIRED AT BLOCKOUT



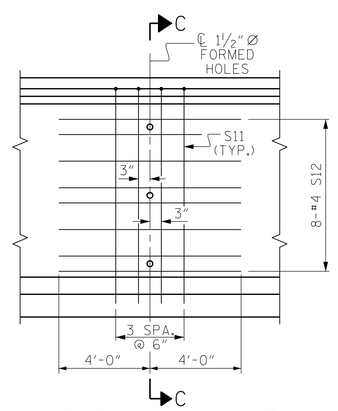
PLAN OF GIRDER



ELEVATION OF GIRDER

(SPAN A SHOWN, SPAN B REVERSE ROTATION)

INTEGRAL END BENT



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

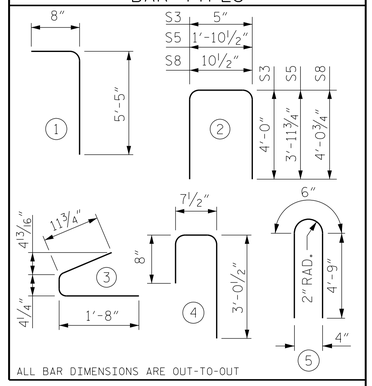
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	172	#4	1	6'-1"	699
S2	12	#5	1	6'-1"	76
S3	12	#4	2	8'-5"	67
S4	72	#4	3	3'-0"	144
S5	1	#5	2	9'-10"	10
S6	184	#5	4	4'-4"	832
✱ S7	20	#5	STR	3'-8"	76
S8	2	#5	2	9'-0"	19
S9	53	#5	STR	3'-3"	180
S10	2	#3	STR	1'-10"	1
S11	8	#5	5	10'-0"	83
S12	16	#4	STR	8'-0"	86
S13	6	#5	5	10'-0"	63
S14	7	#4	5	10'-0"	47

✱ NOTE: S7 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	9,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
63" MBT GIRDER	2383	21.7	40

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
10	109'-9¼"	1097'-8½"

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

SHEET 1 OF 3

Dewberry
2610 WYCLIFF ROAD
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PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne 9/14/2021
E7C3056295FF484...

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

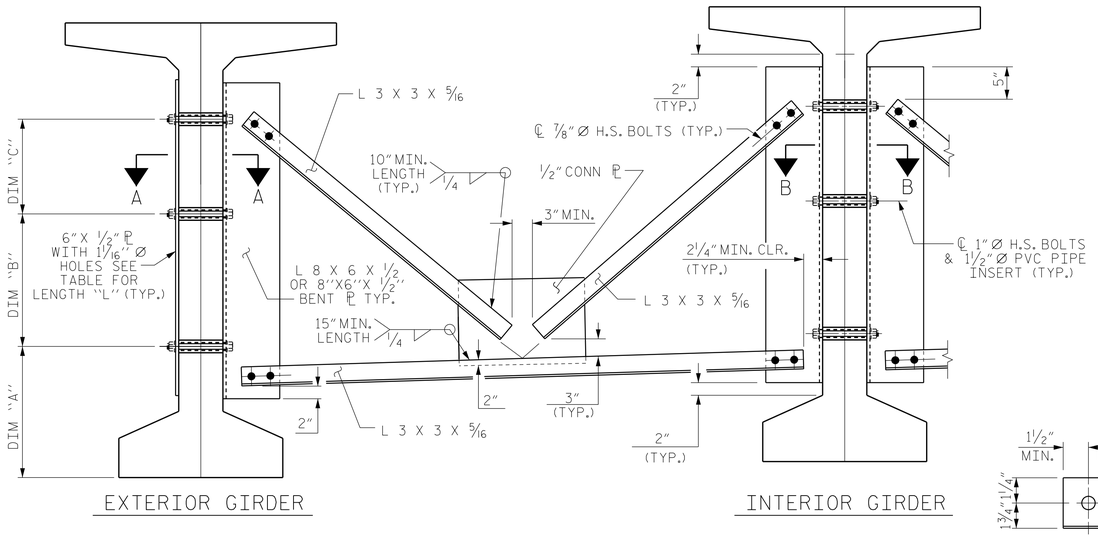
STANDARD

63" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-11
1			3			TOTAL SHEETS
2			4			25

ASSEMBLED BY : JAE	DATE : 8/21	
CHECKED BY : ZHB	DATE : 8/21	
DRAWN BY : EEM 2/6/97	REV. 6/13	MAA/GM
CHECKED BY : VAP 2/6/97	REV. 1/15	MAA/TMG
	REV. 12/17	MAA/THC

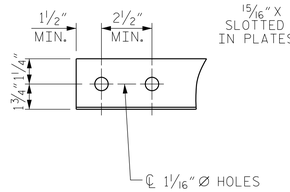
$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



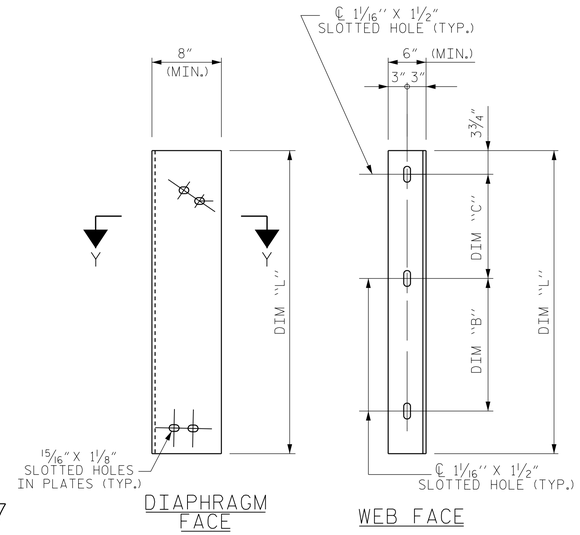
EXTERIOR GIRDER

INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM

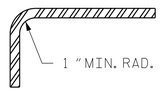


ANGLE END
(L 3 X 3 X 5/16)



DIAPHRAGM FACE

WEB FACE



SECTION Y-Y

CONNECTION PLATE DETAIL

STRUCTURAL STEEL NOTES

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

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

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

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

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

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

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

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

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

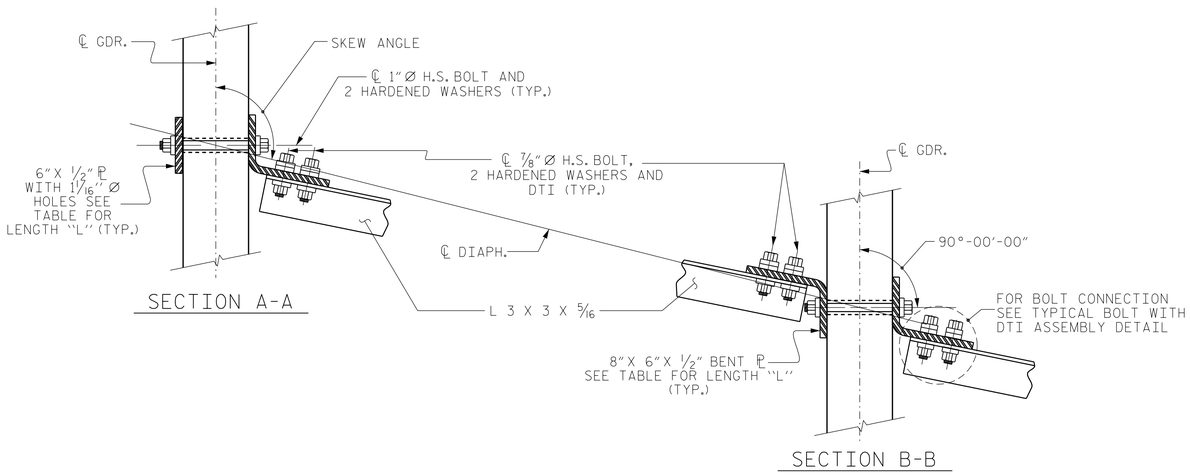
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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

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

TABLE

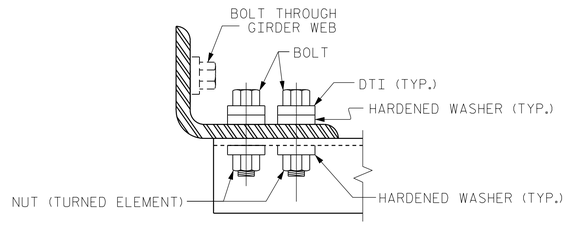
GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
63" BULB TEE	1'-0 7/8"	1'-5 1/2"	1'-5 1/2"	3'-5"



SECTION A-A

SECTION B-B

CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

SHEET 2 OF 3

Dewberry
2610 WYCLIFF ROAD
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RALEIGH

STANDARD INTERMEDIATE STEEL DIAPHRAGMS FOR 63" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-12
1			3			TOTAL SHEETS
2			4			25

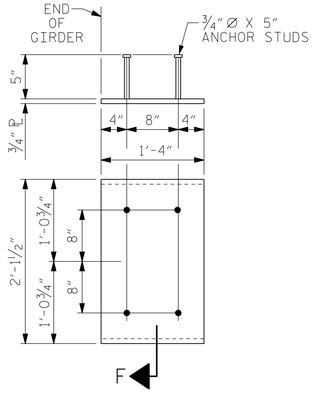
DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS - SPANS A & B

	GIRDERS 1 AND 5																																								
FORTIETH POINTS	0	.025	.05	.075	.10	.125	.15	.175	.20	.225	.25	.275	.30	.325	.35	.375	.40	.425	.45	.475	.50	.525	.55	.575	.60	.625	.65	.675	.70	.725	.75	.775	.80	.825	.85	.875	.90	.925	.95	.975	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0.00	0.089	0.131	0.169	0.203	0.231	0.254	0.271	0.281	0.284	0.281	0.271	0.254	0.231	0.203	0.169	0.131	0.131	0.089	0.045	0.045	0.089	0.131	0.169	0.203	0.231	0.254	0.271	0.281	0.338	0.281	0.271	0.254	0.231	0.203	0.169	0.131	0.131	0.089	0.045	0.00
✳DEFLECTION DUE TO SUPER IMPOSED D.L. ↓	0.00	.013	0.026	0.039	0.052	0.064	0.076	0.089	0.101	0.111	0.121	0.130	0.140	0.130	0.140	0.159	0.165	0.167	0.174	0.171	0.174	0.171	0.169	0.167	0.165	0.159	0.153	0.147	0.141	0.147	0.131	0.121	0.102	0.112	0.090	0.077	0.052	0.065	0.039	0.026	0.00
FINAL CAMBER ↑	0	1/8"	1/4"	5/16"	7/16"	9/16"	5/8"	3/4"	13/16"	7/8"	15/16"	1"	1 1/16"	1 5/16"	1 9/16"	1 3/8"	1 1/4"	1 5/16"	1 1/4"	1 5/16"	1 5/16"	1 5/16"	1 5/16"	1 5/16"	1 1/4"	1 1/4"	1 3/16"	1 3/16"	1 1/16"	1 1/8"	1"	15/16"	13/16"	7/8"	11/16"	5/8"	7/16"	9/16"	5/16"	1/4"	0

	GIRDERS 2 THRU 4																																								
FORTIETH POINTS	0	.025	.05	.075	.10	.125	.15	.175	.20	.225	.25	.275	.30	.325	.35	.375	.40	.425	.45	.475	.50	.525	.55	.575	.60	.625	.65	.675	.70	.725	.75	.775	.80	.825	.85	.875	.90	.925	.95	.975	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0.00	0.076	0.111	0.143	0.172	0.196	0.215	0.229	0.238	0.241	0.238	0.229	0.215	0.196	0.172	0.143	0.111	0.131	0.076	0.038	0.038	0.076	0.111	0.143	0.172	0.196	0.215	0.229	0.238	0.241	0.238	0.229	0.215	0.196	0.172	0.143	0.111	0.131	0.076	0.038	0.00
✳DEFLECTION DUE TO SUPER IMPOSED D.L. ↓	0.00	0.014	0.027	0.041	0.054	0.067	0.080	0.093	0.106	0.116	0.126	0.137	0.147	0.153	0.160	0.166	0.173	0.175	0.177	0.179	0.182	0.179	0.177	0.175	0.173	0.166	0.160	0.154	0.147	0.137	0.127	0.117	0.106	0.094	0.081	0.068	0.055	0.041	0.027	0.014	0.00
FINAL CAMBER ↑	0	1/8"	3/16"	5/16"	7/16"	1/2"	9/16"	11/16"	3/4"	13/16"	7/8"	15/16"	1"	1 1/16"	1 5/16"	1 1/4"	1 3/16"	1 3/8"	1 1/2"	1 11/16"	1 7/8"	1 11/16"	1 1/2"	1 3/8"	1 3/16"	1 1/8"	1 1/16"	1 1/16"	1"	15/16"	7/8"	13/16"	3/4"	11/16"	9/16"	1/2"	7/16"	5/16"	3/16"	1/8"	0

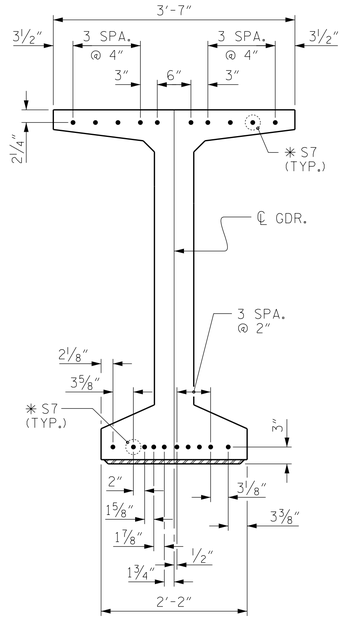


EMBEDDED PLATE "B-1" DETAILS FOR 63" MODIFIED BULB TEES

(2 REQ'D PER GIRDER)

SECTION "F"

(SEE NOTES)



DETAIL "C"

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 7000 PSI.

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

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

WHEN DRAPED STRANDS ARE DETAILED, THE LONGITUDINAL LOCATION OF THE HOLD DOWN DEVICES SHALL BE WITHIN 6" OF THE LOCATION SHOWN AND THE CENTER OF GRAVITY OF THE GROUP OF DRAPED STRANDS SHALL BE LOCATED WITHIN 1/2" OF THE THEORETICAL LOCATION SHOWN.

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

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

SHEET 3 OF 3

Dewberry
2610 WYCLIFF ROAD
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NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW T PLYING

DocuSigned by: Matthew Plying 9/14/2021

E7C3056295FF484...

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

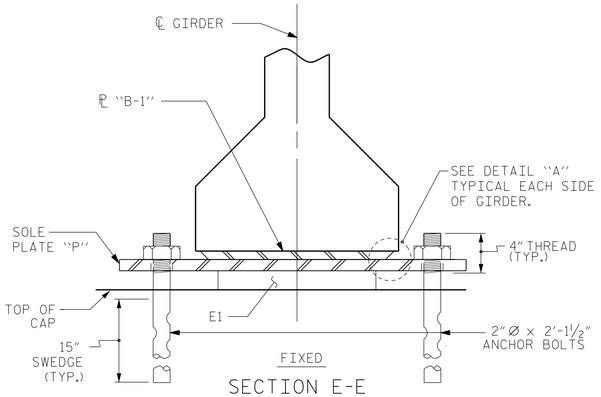
STANDARD

PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS

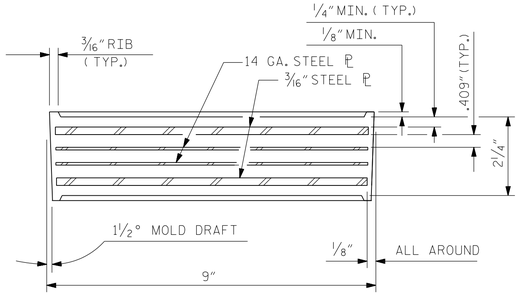
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-13
1			3			TOTAL SHEETS
2			4			25

DRAWN BY :	JAE	DATE : 8/21
CHECKED BY :	ZHB	DATE : 8/21
DESIGN ENGINEER OF RECORD:	MTP	DATE : 8/21

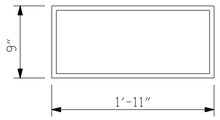
$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



SECTION E-E



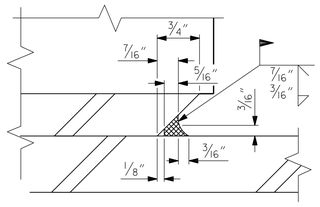
TYPICAL SECTION OF ELASTOMERIC BEARINGS



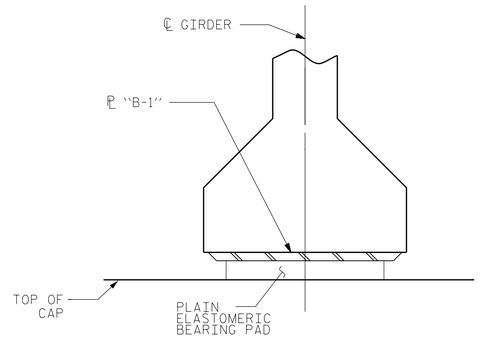
E1 (10 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

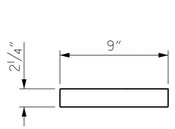
TYPE V



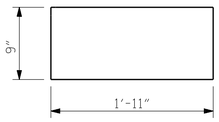
DETAIL "A"



SECTION F-F

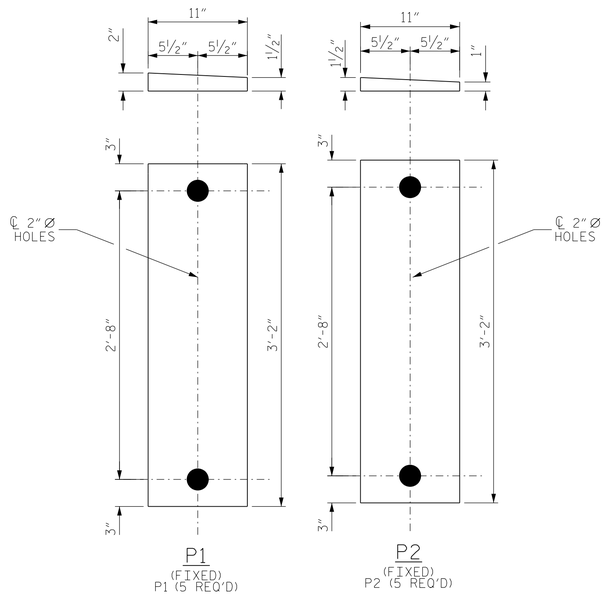


TYPICAL SECTION OF ELASTOMERIC BEARING

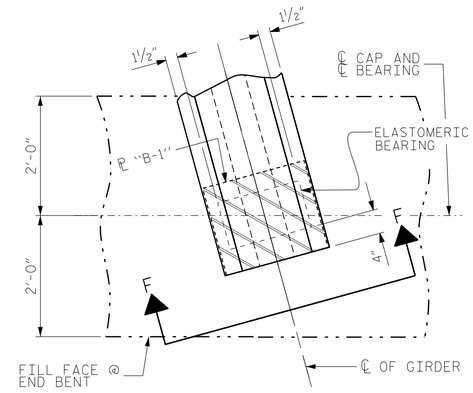


(FIXED)
E2 (10 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING



SOLE PLATE DETAILS ("P")



TYPICAL PLAN @ END BENT

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.

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

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

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

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

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

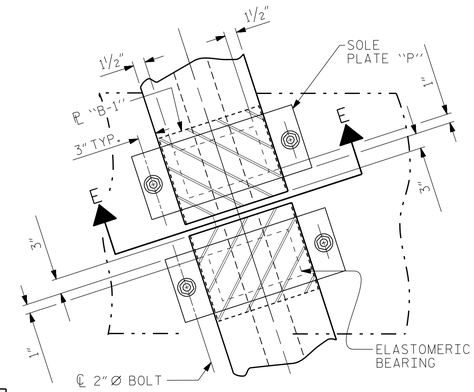
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



TYPICAL PLAN @ BENT

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

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

SHEET 1 OF 1

Dewberry
2610 WYCLIFF ROAD
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PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne E7C3056296FF484...

9/14/2021

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

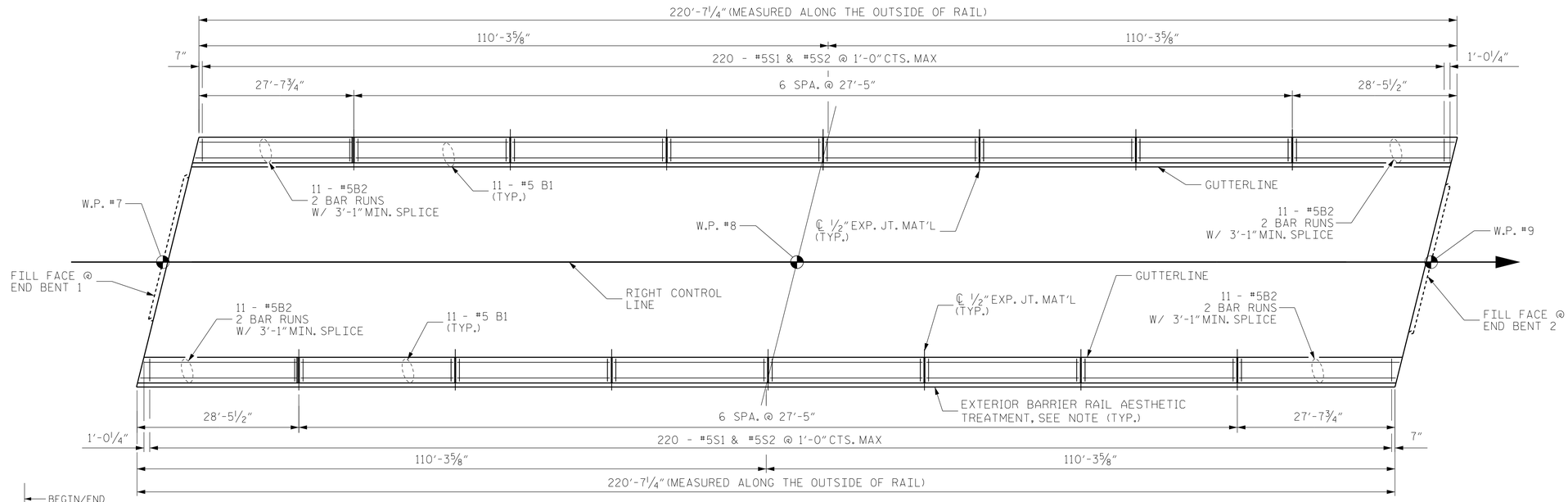
ELASTOMERIC BEARING DETAILS

PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-14
1			3			TOTAL SHEETS
2			4			25

DRAWN BY :	JAE	DATE : 8/21
CHECKED BY :	ZHB	DATE : 8/21
DESIGN ENGINEER OF RECORD:	MTP	DATE : 8/21

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

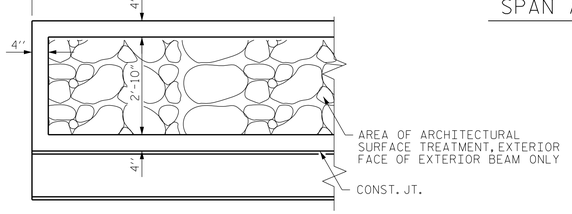


SPAN A

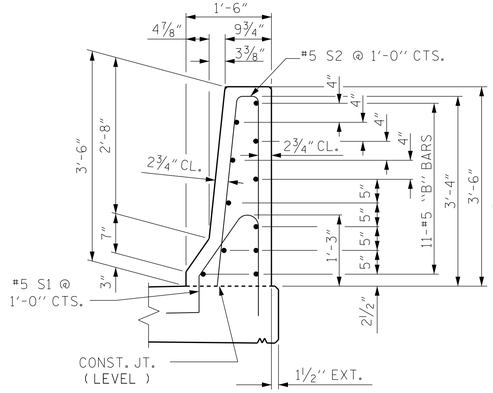
SPAN B

PLAN OF RAIL

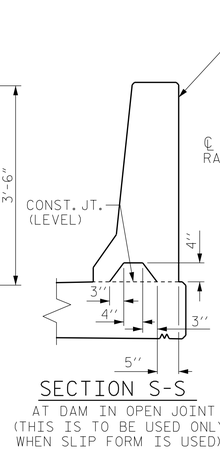
ALL DIMENSIONS ARE MEASURED ALONG OUTSIDE FACE OF RAIL



FORM LINED ARCHITECTURAL TREATMENT

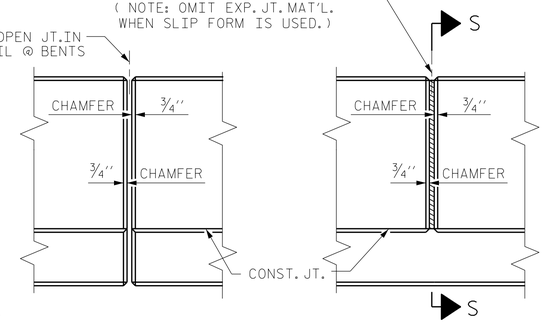


SECTION THRU RAIL



SECTION S-S

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



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

NOTES

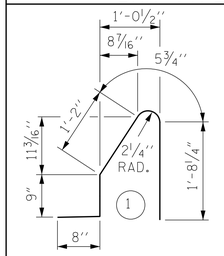
THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

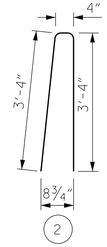
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

EXTERIOR FACE OF CONCRETE BARRIER RAIL SHALL BE FORMED USING AN AHSLAR STONE PATTERN FORM LINER. CONTRACTOR SHALL PROVIDE SAMPLE OF PROPOSED ASHLAR STONE PATTERN FOR APPROVAL BY THE ENGINEER. PATTERN FORM LINER SHALL BE IN ACCORDANCE WITH SPECIFICATIONS AND THE NCDOT AESTHETICS GUIDANCE PATTERN BOOK.

BAR TYPES





ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ B1	132	#5	STR.	27'-1"	3729
✳ B2	88	#5	STR.	15'-7"	1430
✳ S1	440	#5	1	4'-9"	2180
✳ S2	440	#5	2	7'-7"	3212

✳ EPOXY COATED REINFORCING STEEL	10551 LBS.
CLASS AA CONCRETE	60 CU. YDS.
CONCRETE BARRIER RAIL	441.2 LIN. FT.
ARCHITECTURAL CONCRETE SURFACE TREATMENT	623.2 SQ. FT.

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

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NC COA No. P-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne E7C30562955FF484... 9/14/2021

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DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-15
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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

REINFORCING BAR SCHEDULE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳ A1	336	#5	STR	43′-5″	15215	A2	336	#5	STR	43′-5″	15215	✳ S1	28	#4	1	11′-11″	223
												✳ S2	28	#4	1	11′-0″	206
✳ A101	2	#5	STR	40′-11″	85	A201	2	#5	STR	40′-11″	85						
✳ A102	2	#5	STR	38′-5″	80	A202	2	#5	STR	38′-5″	80	U1	28	#4	2	12′-11″	242
✳ A103	2	#5	STR	35′-11″	75	A203	2	#5	STR	35′-11″	75						
✳ A104	2	#5	STR	33′-5″	70	A204	2	#5	STR	33′-5″	70						
✳ A105	2	#5	STR	30′-11″	64	A205	2	#5	STR	30′-11″	64	REINFORCING STEEL					27,331 LBS.
✳ A106	2	#5	STR	28′-5″	59	A206	2	#5	STR	28′-5″	59	✳ EPOXY COATED REINFORCING STEEL					30,426 LBS.
✳ A107	2	#5	STR	25′-11″	54	A207	2	#5	STR	25′-11″	54						
✳ A108	2	#5	STR	23′-5″	49	A208	2	#5	STR	23′-5″	49						
✳ A109	2	#5	STR	20′-11″	44	A209	2	#5	STR	20′-11″	44						
✳ A110	2	#5	STR	18′-5″	38	A210	2	#5	STR	18′-5″	38						
✳ A111	2	#5	STR	15′-11″	33	A211	2	#5	STR	15′-11″	33						
✳ A112	2	#5	STR	13′-5″	28	A212	2	#5	STR	13′-5″	28						
✳ A113	2	#5	STR	10′-11″	23	A213	2	#5	STR	10′-11″	23						
✳ A114	2	#5	STR	8′-5″	18	A214	2	#5	STR	8′-5″	18						
✳ A115	2	#5	STR	5′-11″	12	A215	2	#5	STR	5′-11″	12						
✳ A116	2	#5	STR	3′-6″	7	A216	2	#5	STR	3′-6″	7						
✳ A117	2	#5	STR	1′-10″	4	A217	2	#5	STR	1′-10″	4						
B1	150	#6	STR	45′-8″	10289	K1	24	#4	STR	22′-11″	367						
✳ B2	206	#5	STR	22′-2″	4763	K2	8	#4	STR	5′-3″	28						
✳ B3	140	#5	STR	28′-10″	4210	K3	32	#4	STR	8′-3″	176						
✳ B4	105	#5	STR	26′-6″	2902	K4	8	#4	STR	6′-8″	36						
✳ B5	660	#5	STR	32′-4″	2226	K5	4	#4	STR	2′-8″	7						
						K6	16	#4	STR	3′-6″	37						
						K7	4	#4	STR	2′-0″	5						

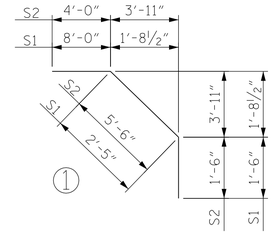
SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

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″	-	-	-

GROOVING BRIDGE FLOOR

APPROACH SLABS	1,810	SQ. FT
BRIDGE DECK	8,260	SQ. FT
TOTAL	10,070	SQ. FT

BAR TYPES

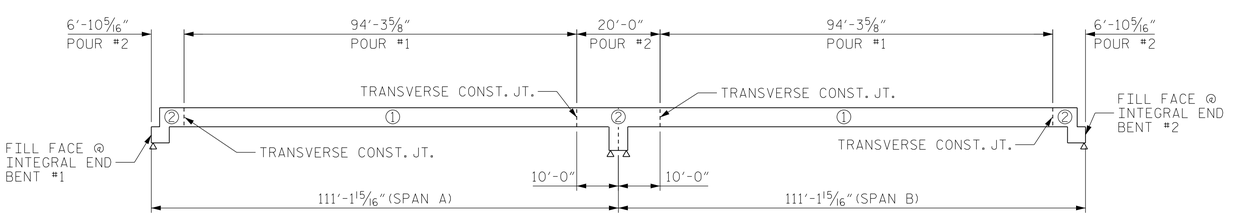


ALL BAR DIMENSIONS ARE OUT TO OUT.

SUPERSTRUCTURE BILL OF MATERIALS

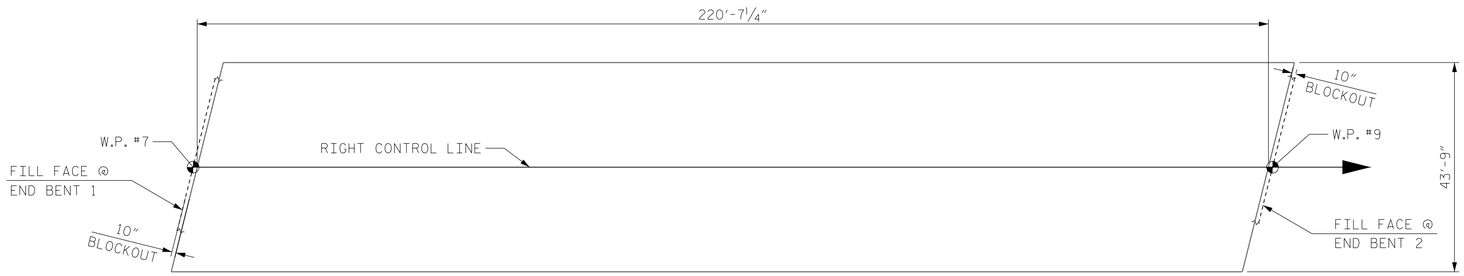
	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR #1	275.1		
POUR #2	111.6		
TOTAL	386.7	27,331	30,426

✳✳ QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED



POURING SEQUENCE

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



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 9,652)

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. P-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne E7C3056295FF484... 9/14/2021

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

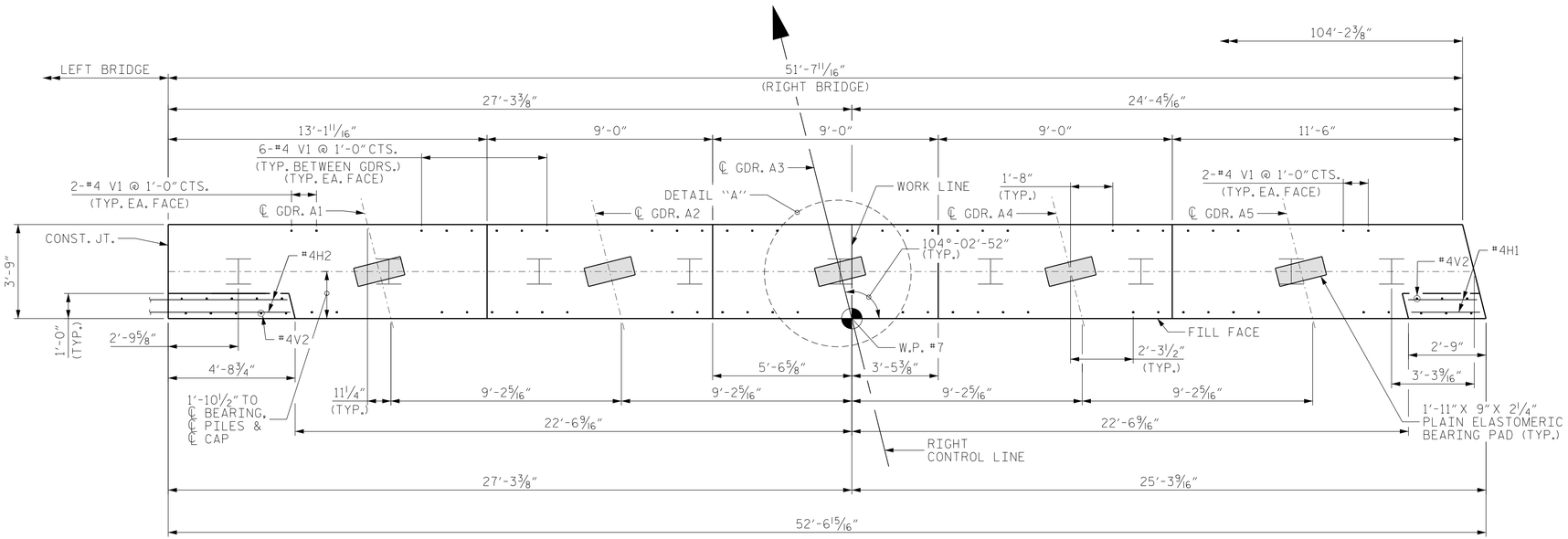
STANDARD

SUPERSTRUCTURE BILL OF MATERIAL (RIGHT BRIDGE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-16
1			3			TOTAL SHEETS
2			4			25

DRAWN BY :	JAE	DATE :	8/21
CHECKED BY :	ZHB	DATE :	8/21
DESIGN ENGINEER OF RECORD:	MTP	DATE :	8/21

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

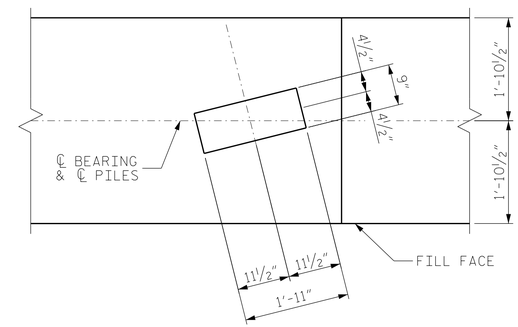


PLAN

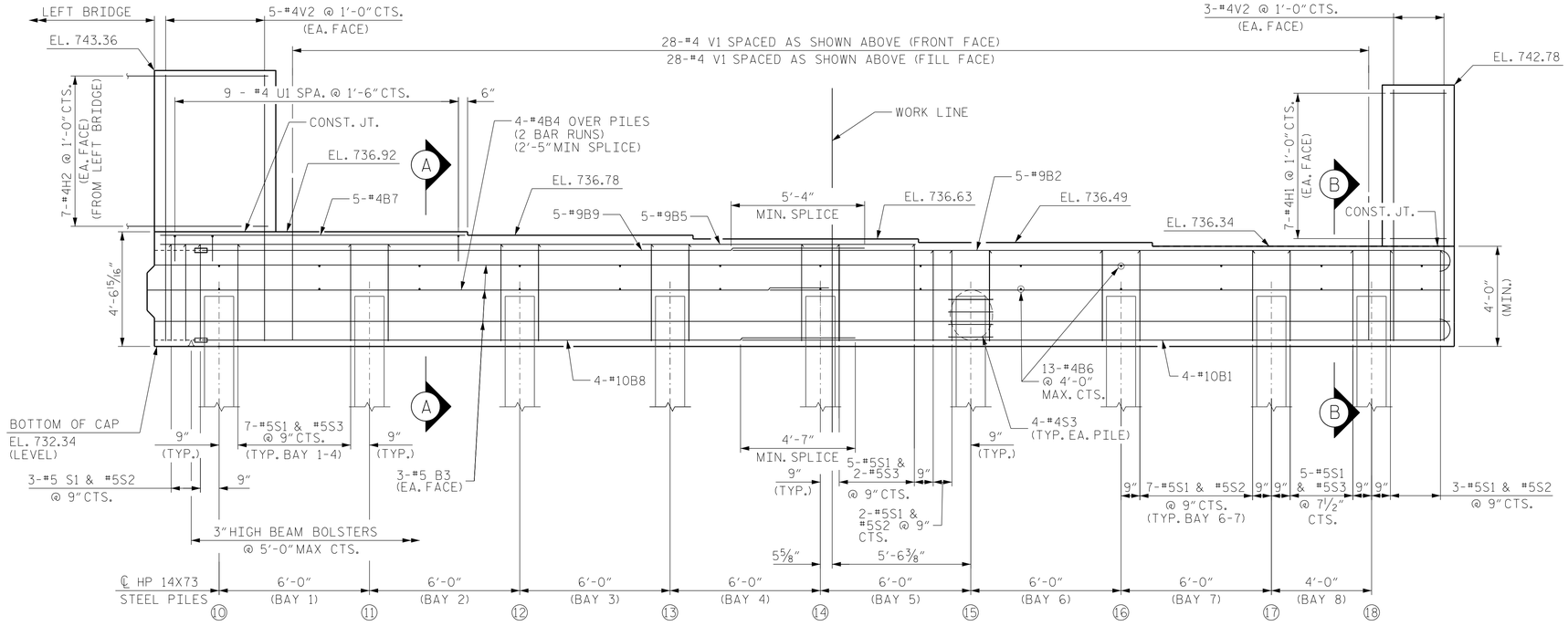
NOTES:

FOR PILE SPLICE DETAILS, SEE END BENT 1 SHEET 2 OF 2.

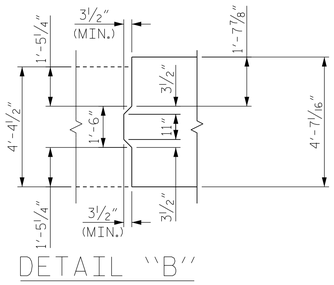
THE TOP SURFACE OF THE END BENT CAP AND WINGS (POUR 1), EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".



DETAIL "A"



ELEVATION



DETAIL "B"

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. P-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne E7C3056295FF484...

9/14/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

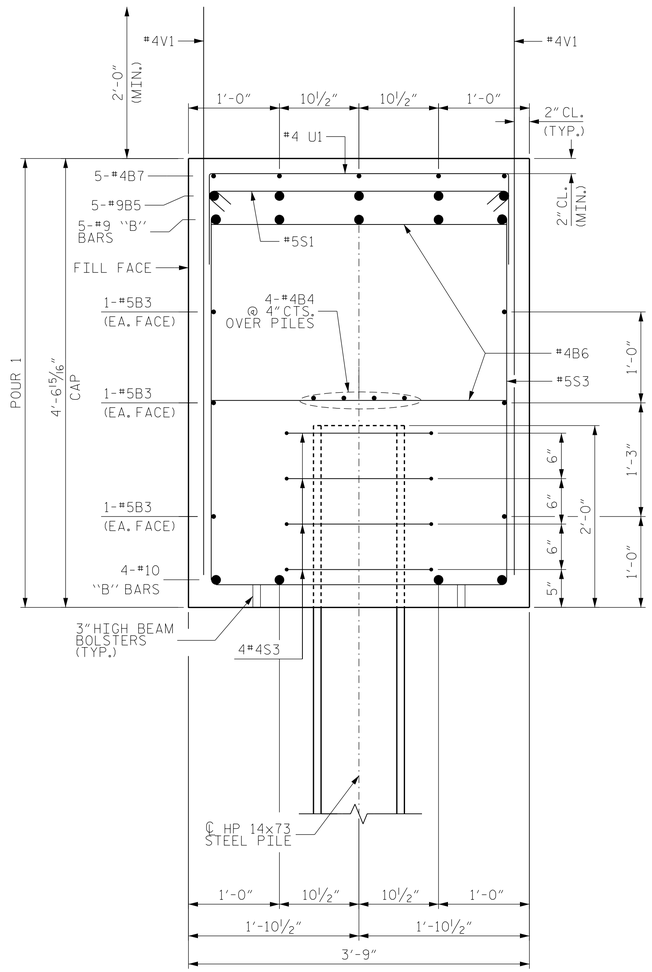
INTEGRAL END BENT 1

(RIGHT BRIDGE)

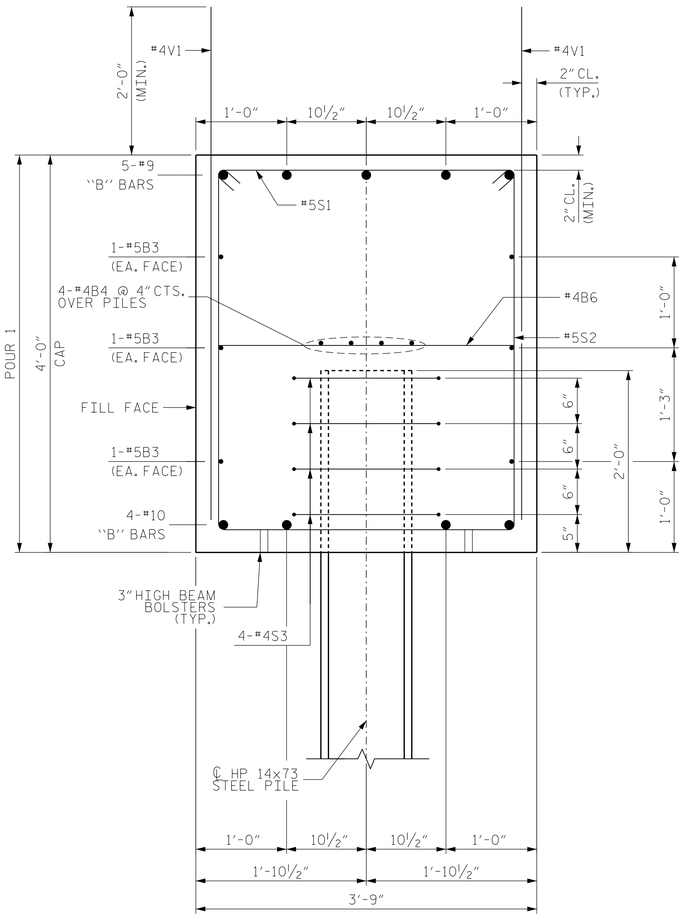
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-17
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

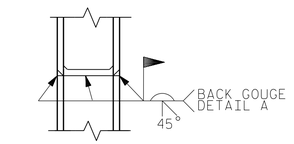
$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



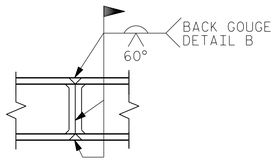
SECTION A-A



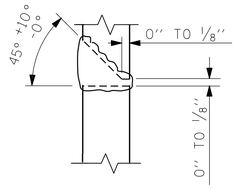
SECTION B-B



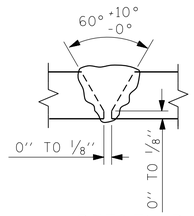
PILE VERTICAL



PILE HORIZONTAL OR VERTICAL

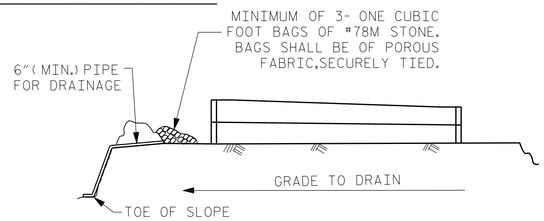


DETAIL A



DETAIL B

PILE SPLICE DETAILS



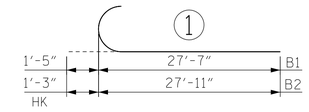
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION, PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

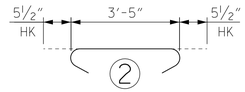
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

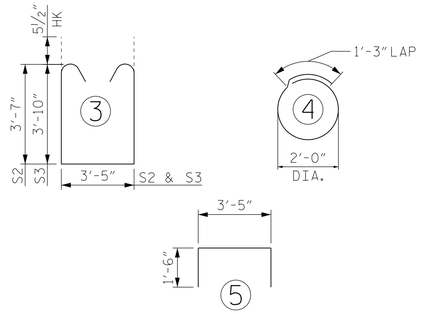
NO SEPARATE PAYMENT WILL BEW MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE END BENT

BAR TYPES







ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	29'-0"	499
B2	5	#9	1	29'-2"	496
B3	6	#5	STR	51'-11"	325
B4	8	#4	STR	27'-2"	145
B5	5	#9	STR	30'-7"	520
B6	12	#4	STR	3'-5"	27
B7	5	#4	STR	12'-7"	42
B8	4	#10	STR	27'-7"	475
B9	5	#9	STR	27'-11"	475
H1	14	#4	STR	2'-5"	23
S1	60	#5	2	4'-4"	271
S2	24	#5	3	7'-11"	198
S3	36	#5	3	11'-0"	413
U1	9	#4	5	6'-5"	39
V1	56	#4	STR	6'-11"	259
V2	16	#4	STR	10'-8"	114

TOTAL REINFORCING STEEL 4353 LBS.

CLASS "A" CONCRETE - CU. YARDS

POUR 1 (CAP & LOWER WINGS)	31.1 CU. YDS.
POUR 2 (UPPER WINGS)	1.8 CU. YDS.
TOTAL	32.9 CU. YDS.

PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 STEEL PILES - EACH	9
HP 14 X 73 STEEL PILES 9 PILES REQUIRED - LIN. FEET	234

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

Dewberry
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RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE
DocuSigned by: Matthew Payne E7C3056926FF484...
9/14/2021

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1

(RIGHT BRIDGE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-18
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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

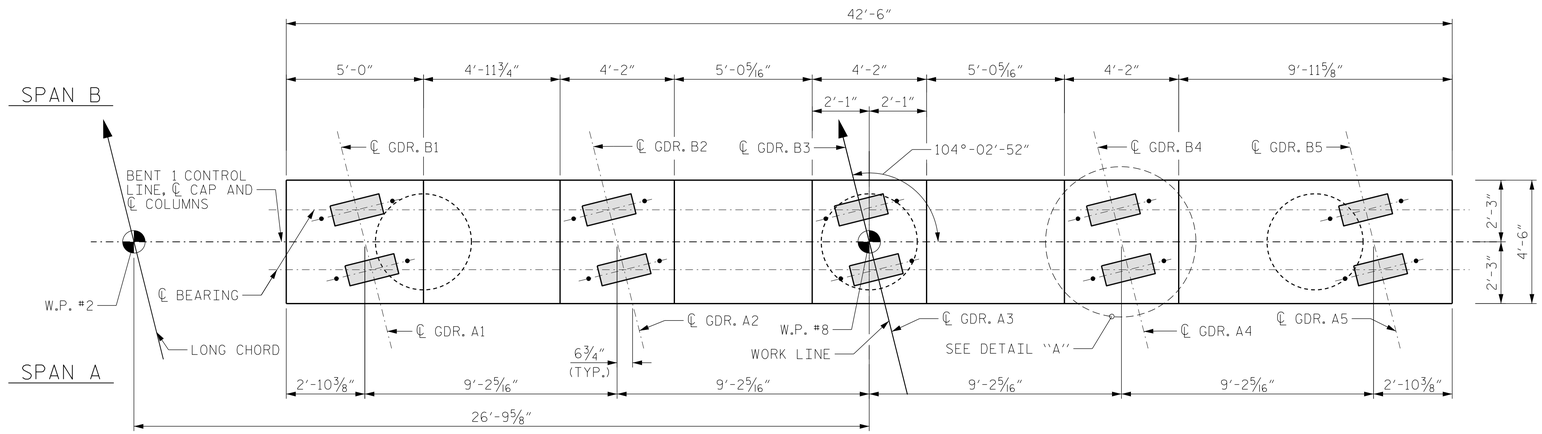
NOTES:

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

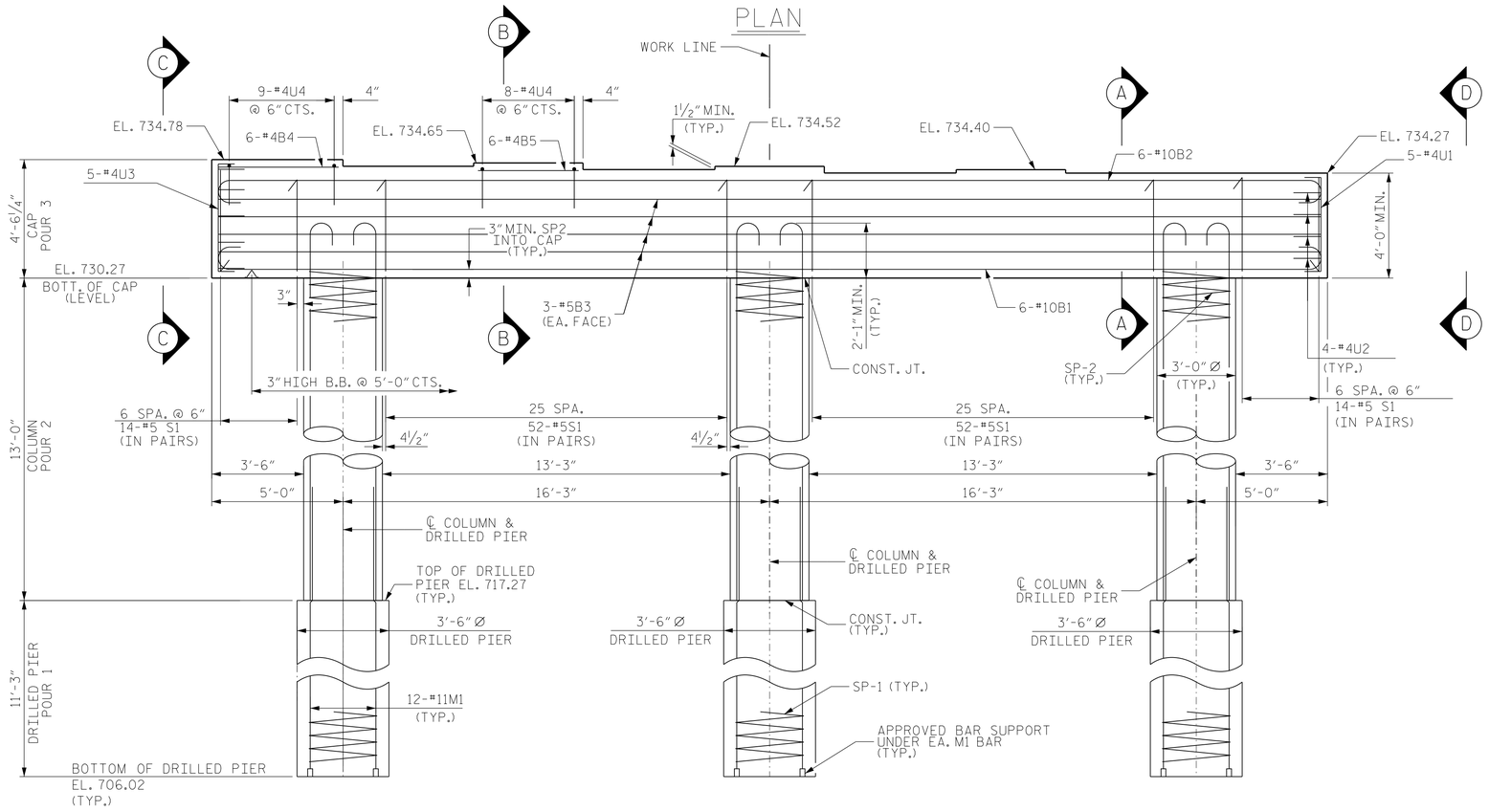
HOOKS ON "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

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

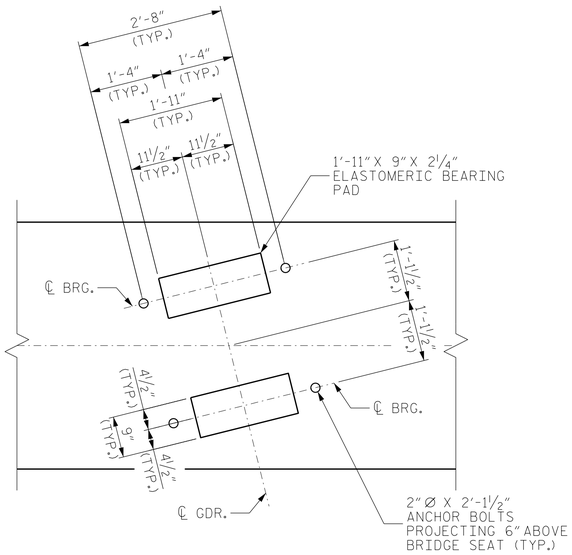
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS ARE DETAILED WITH 3 FEET OF EXTRA LENGTH.



PLAN



ELEVATION



DETAIL "A"

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne 9/14/2021
E7C30562095FF484...

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

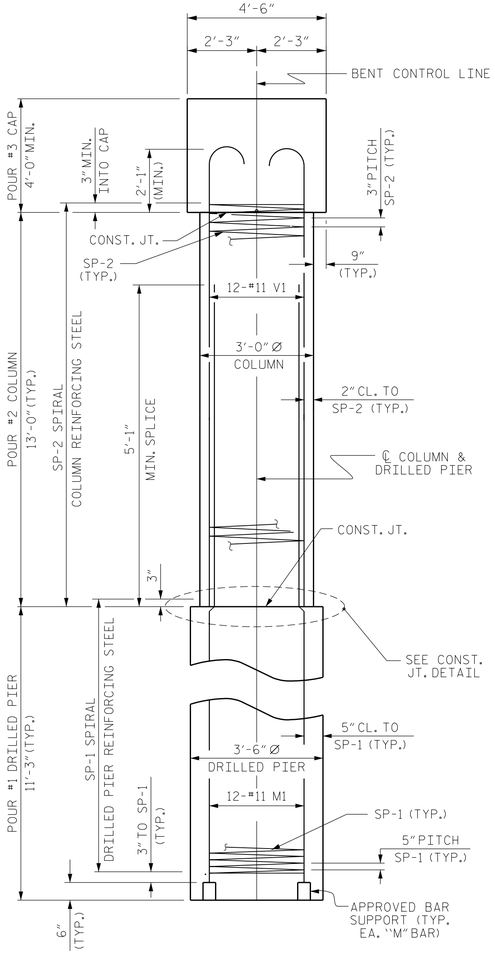
BENT 1

(RIGHT BRIDGE)

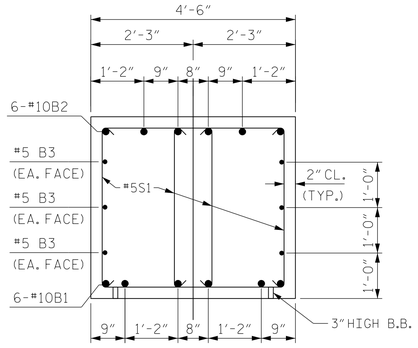
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-19
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

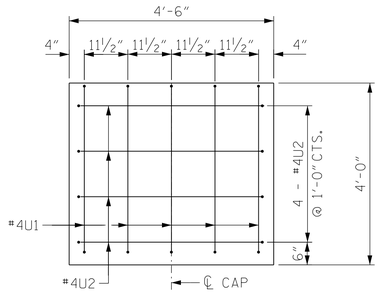
$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



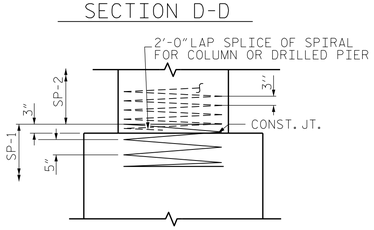
END ELEVATION



SECTION A-A

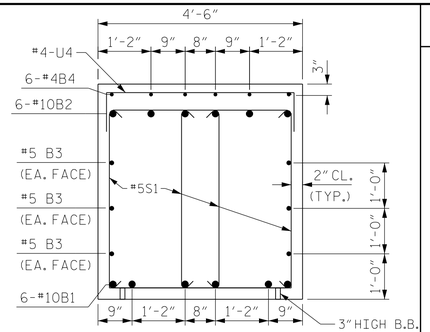


SECTION D-D

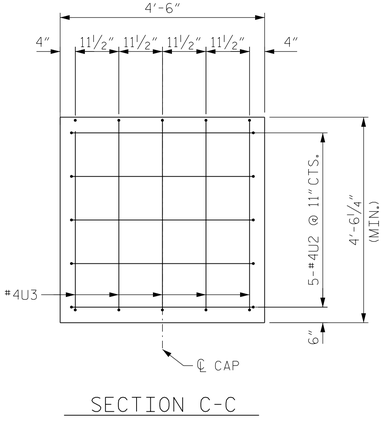


CONSTRUCTION JOINT DETAIL

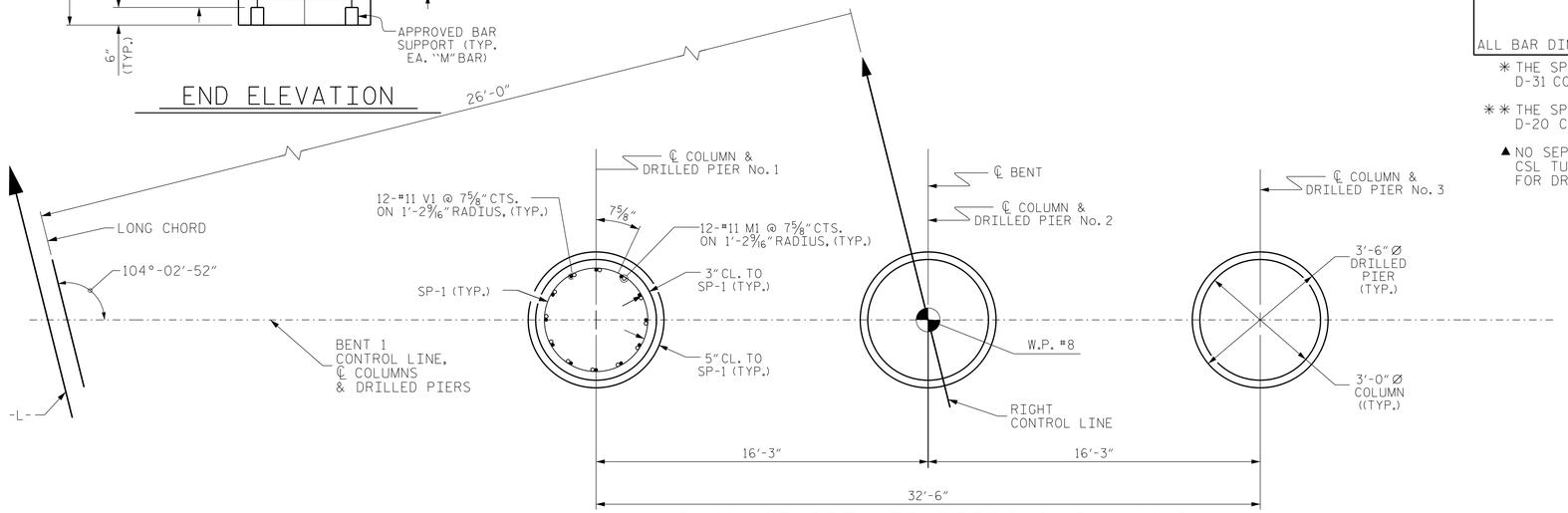
"V" AND "M" BARS NOT SHOWN FOR CLARITY



SECTION B-B

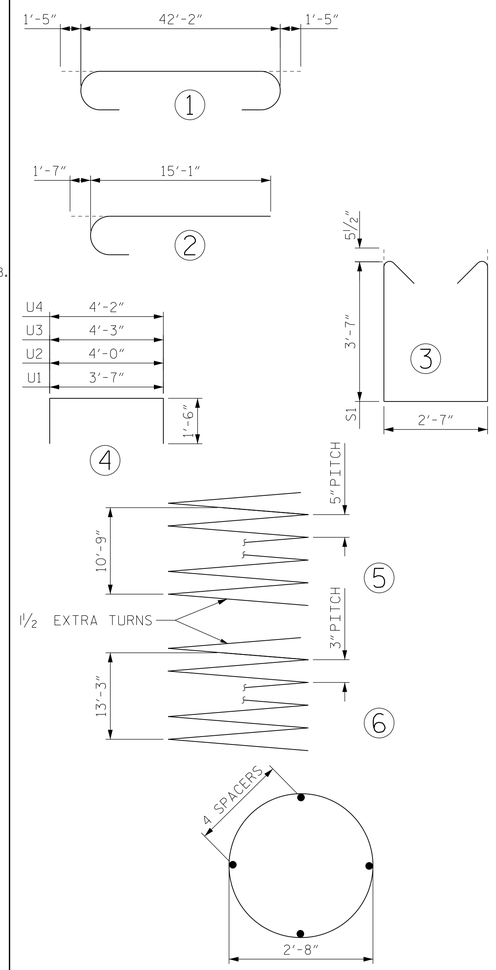


SECTION C-C



PLAN OF DRILLED PIERS & COLUMNS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	1	42'-2"	1089
B2	6	#10	STR	45'-0"	1162
B3	6	#5	STR	42'-2"	264
B4	6	#4	STR	4'-8"	19
B5	6	#4	STR	3'-10"	15
M1	36	#11	STR	19'-1"	3650
S1	132	#5	3	10'-8"	1469
U1	5	#4	4	6'-8"	22
U2	9	#4	4	7'-0"	42
U3	5	#4	4	7'-1"	24
U4	17	#4	4	7'-2"	81
V1	36	#11	2	16'-8"	3188
REINFORCING STEEL			LBS		11,025
SP-1	3	*	5	233'-10"	732
SP-2	3	**	6	454'-9"	911
SPIRAL COLUMN REINFORCING STEEL					1643

BENT 1 TOTAL QUANTITIES

CLASS A CONCRETE BREAKDOWN (FOR ONE BENT)

POUR #2 (COLUMNS)	10.2 C.Y.
POUR #3 (CAP)	29.6 C.Y.
TOTAL CLASS A CONCRETE	39.8 C.Y.

DRILLED PIERS: (FOR ONE BENT)

DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)	12.1 C.Y.
3'-6" Ø DRILLED PIER NOT IN SOIL	33.8 LIN. FT.
CSL TUBES	153 LIN. FT.

* 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.

▲ NO SEPARATE PAYMENT WILL BE MADE FOR CSL TUBES. CSL TUBES WILL BE INCLUDED IN THE UNIT BID PRICE FOR DRILLED PIERS.

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

Dewberry
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NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne E7C3056295FF484...

9/14/2021

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

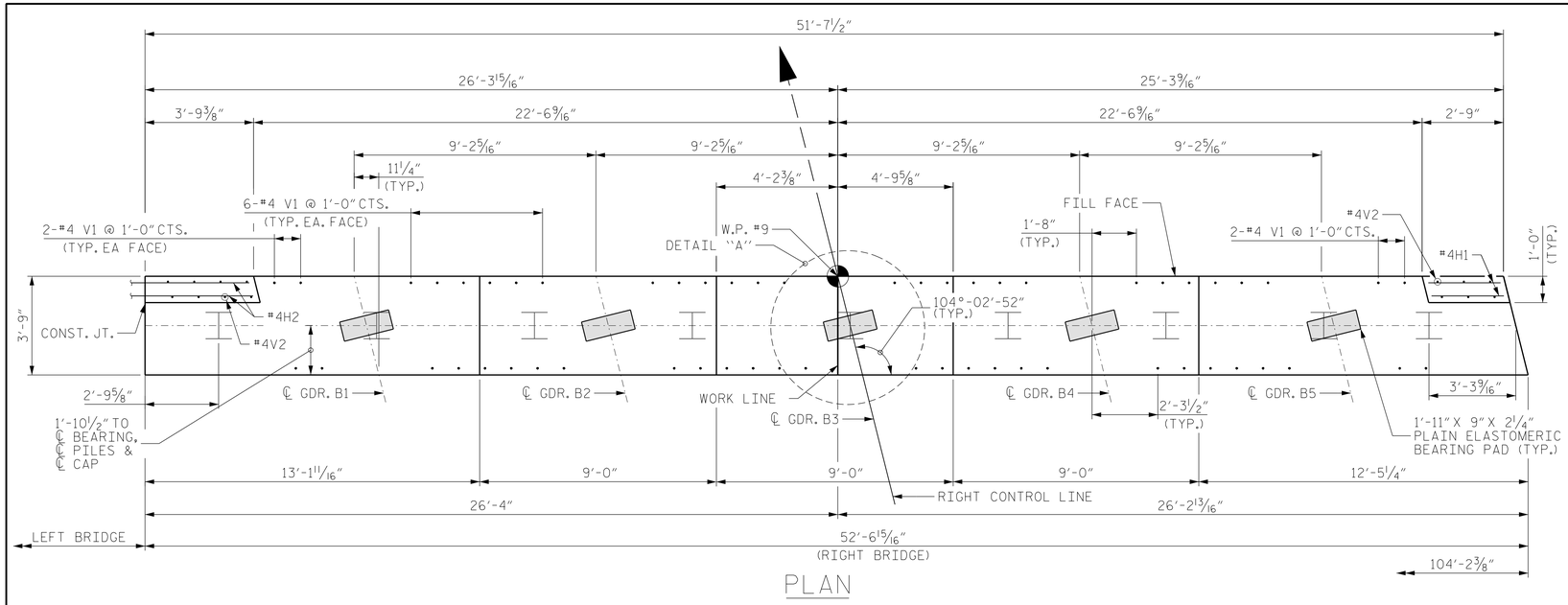
BENT 1

(RIGHT BRIDGE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-20
1			3			TOTAL SHEETS
2			4			25

DRAWN BY :	JAE	DATE :	8/21
CHECKED BY :	ZHB	DATE :	8/21
DESIGN ENGINEER OF RECORD:	MTP	DATE :	8/21

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

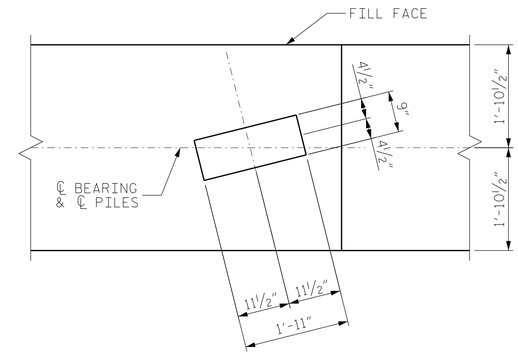


PLAN

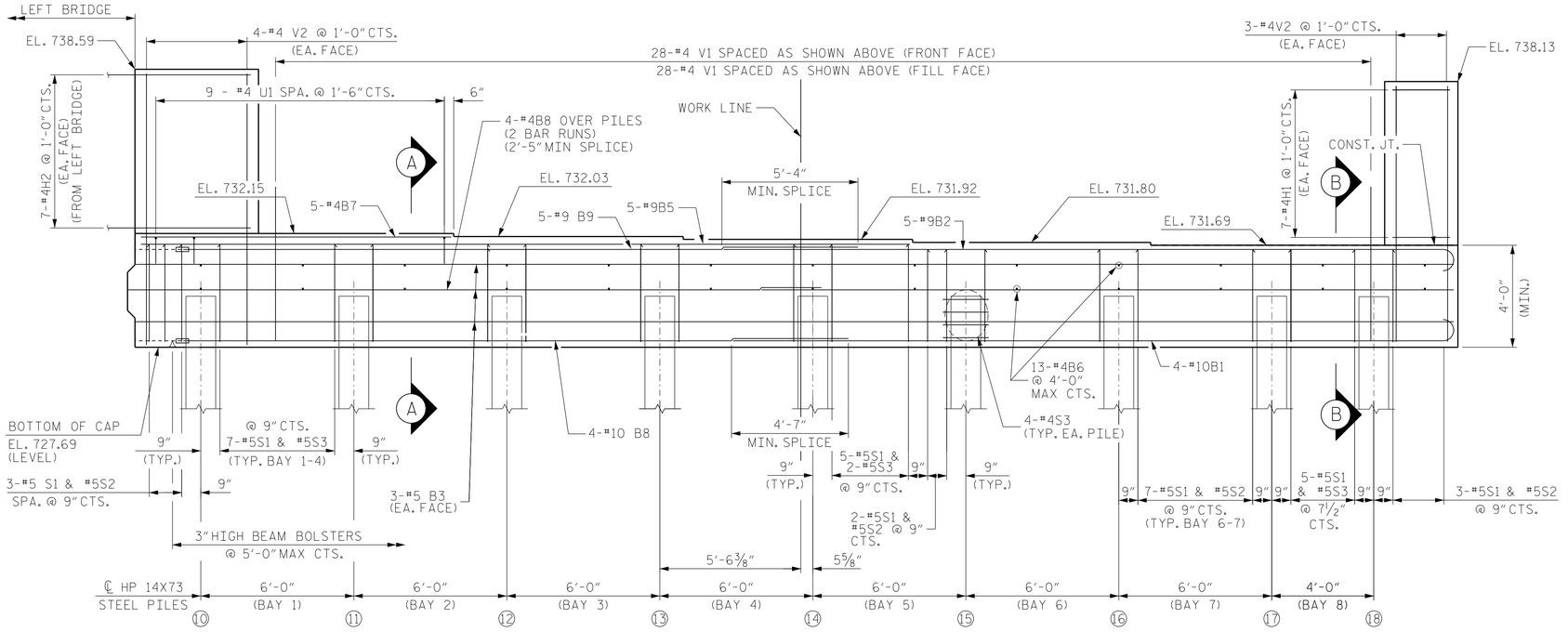
NOTES:

FOR PILE SPLICE DETAILS, SEE END BENT 2 SHEET 2 OF 2.

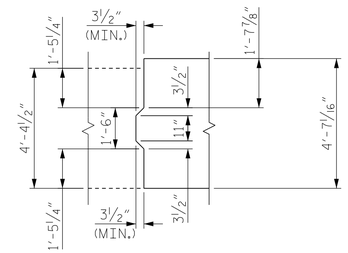
THE TOP SURFACE OF THE END BENT CAP AND WINGS (POUR 1), EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".



DETAIL "A"



ELEVATION



DETAIL "B"

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. P-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne E7C3056295FF484...

9/14/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

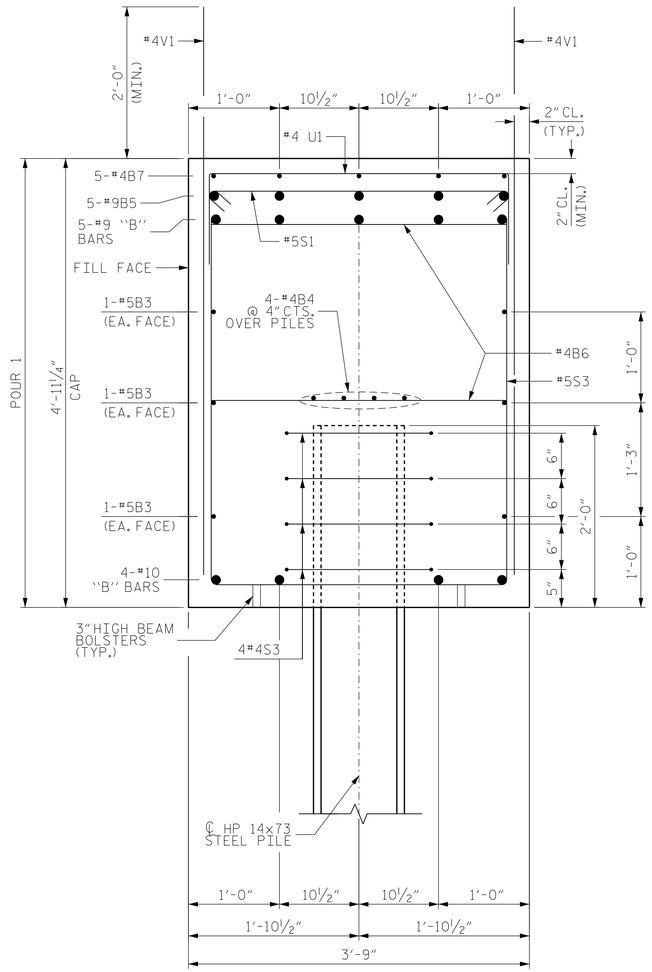
INTEGRAL END BENT 2

(RIGHT BRIDGE)

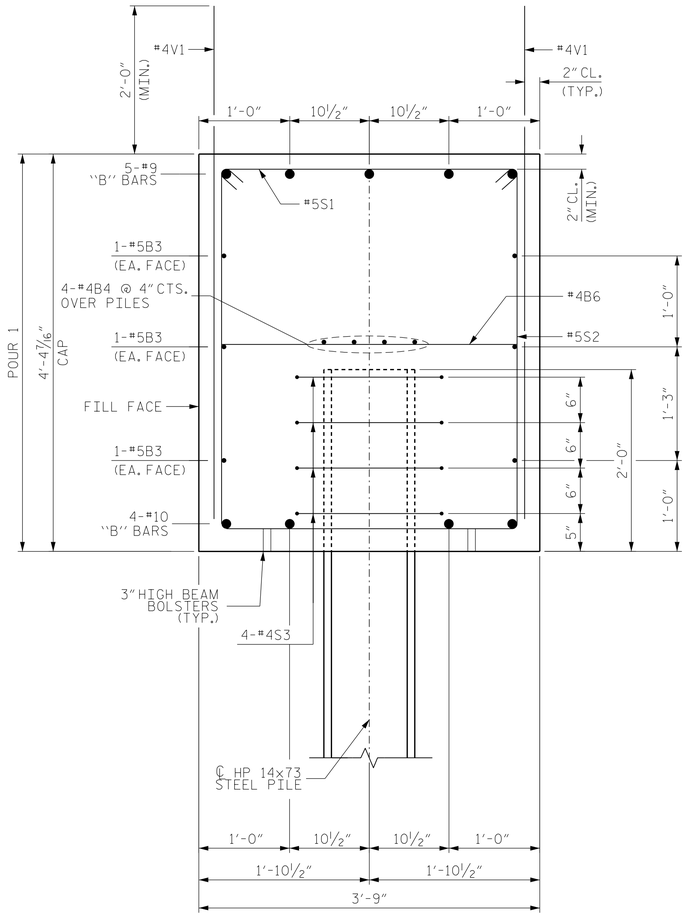
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-21
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

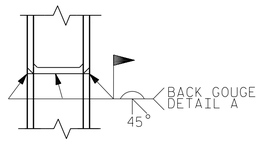
$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



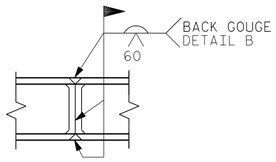
SECTION A-A



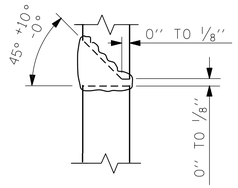
SECTION B-B



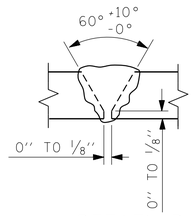
PILE VERTICAL



PILE HORIZONTAL OR VERTICAL

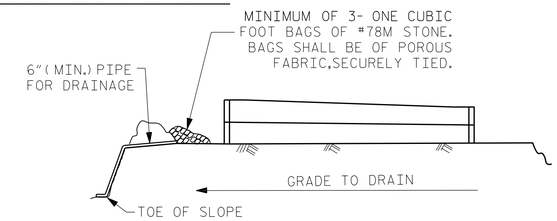


DETAIL A



DETAIL B

PILE SPLICE DETAILS



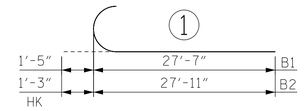
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION, PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

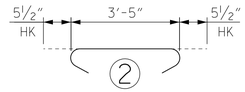
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

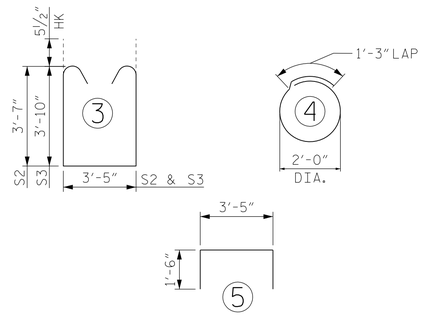
NO SEPARATE PAYMENT WILL BEW MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE END BENT

BAR TYPES







ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	29'-0"	499
B2	5	#9	1	29'-2"	496
B3	6	#5	STR	51'-11"	325
B4	8	#4	STR	27'-2"	145
B5	5	#9	STR	30'-7"	520
B6	12	#4	STR	3'-5"	27
B7	5	#4	STR	12'-7"	42
B8	4	#10	STR	27'-7"	475
B9	5	#9	STR	27'-11"	475
H1	14	#4	STR	2'-5"	23
S1	60	#5	2	4'-4"	271
S2	24	#5	3	7'-11"	198
S3	36	#5	3	11'-0"	413
U1	9	#4	5	6'-5"	39
V1	56	#4	STR	6'-11"	259
V2	16	#4	STR	10'-8"	114

TOTAL REINFORCING STEEL 4353 LBS.

CLASS "A" CONCRETE - CU. YARDS

POUR 1 (CAP & LOWER WINGS)	31.1 CU. YDS.
POUR 2 (UPPER WINGS)	1.8 CU. YDS.
TOTAL	32.9 CU. YDS.

PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 STEEL PILES - EACH	9
HP 14 X 73 STEEL PILES 9 PILES REQUIRED - LIN. FEET	315

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

Dewberry
2610 WYCLIFF ROAD
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PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE
DocuSigned by: Matthew Payne E7C3056295FF484...
9/14/2021

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

(RIGHT BRIDGE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-22
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : JAE DATE : 8/21
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DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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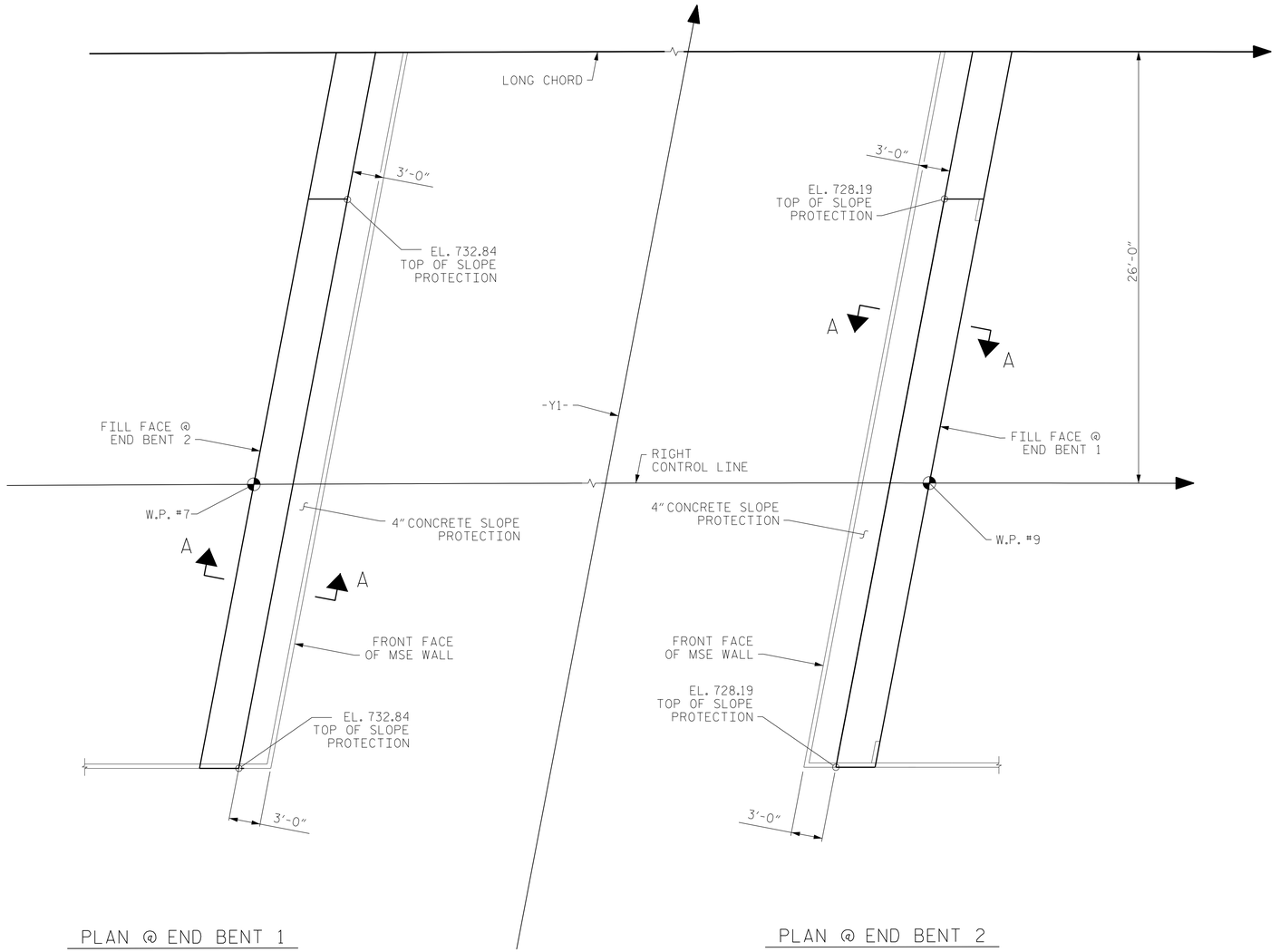
$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



PLAN @ END BENT 1

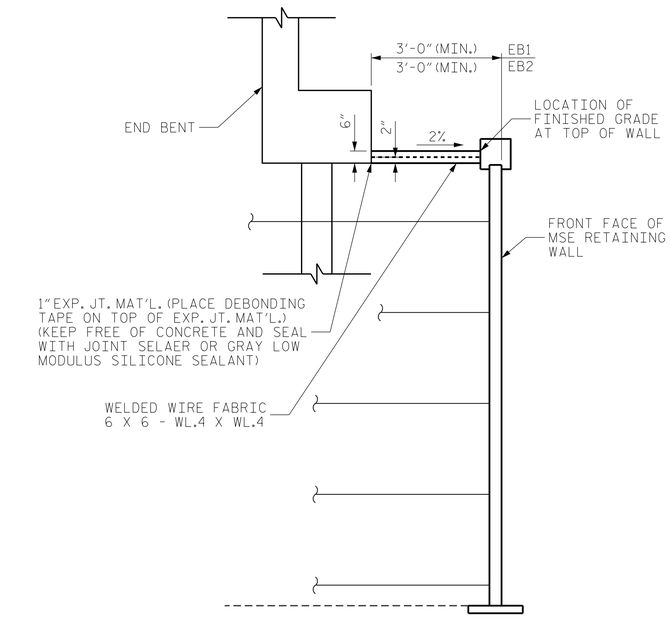
PLAN @ END BENT 2

SLOPE PROTECTION LAYOUT

NOTES:

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING.

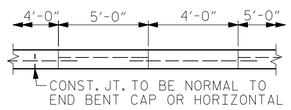
SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - WL4. 60" WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.



SECTION A-A

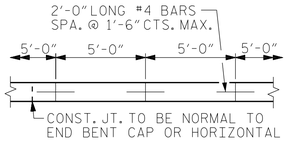
BRIDGE @ STA. 61+02.86 -L- (RIGHT LANE)	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	17	31
END BENT 2	17	31

* QUANTITY SHOWN IS BASED ON 5' POURS.



POUR A 4'-0" STRIP FIRST. STRIP WIDTHS MAY VARY IN CURVED PORTION.

OPTIONAL POURING DETAIL



STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-

DRAWN BY : JAE DATE : 8/21

CHECKED BY : ZHB DATE : 8/21

DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

$$$$$$SYSTIME$$$$$

$$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$

$$$$USERNAME$$$$

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne E7C3056295FF484...

9/14/2021

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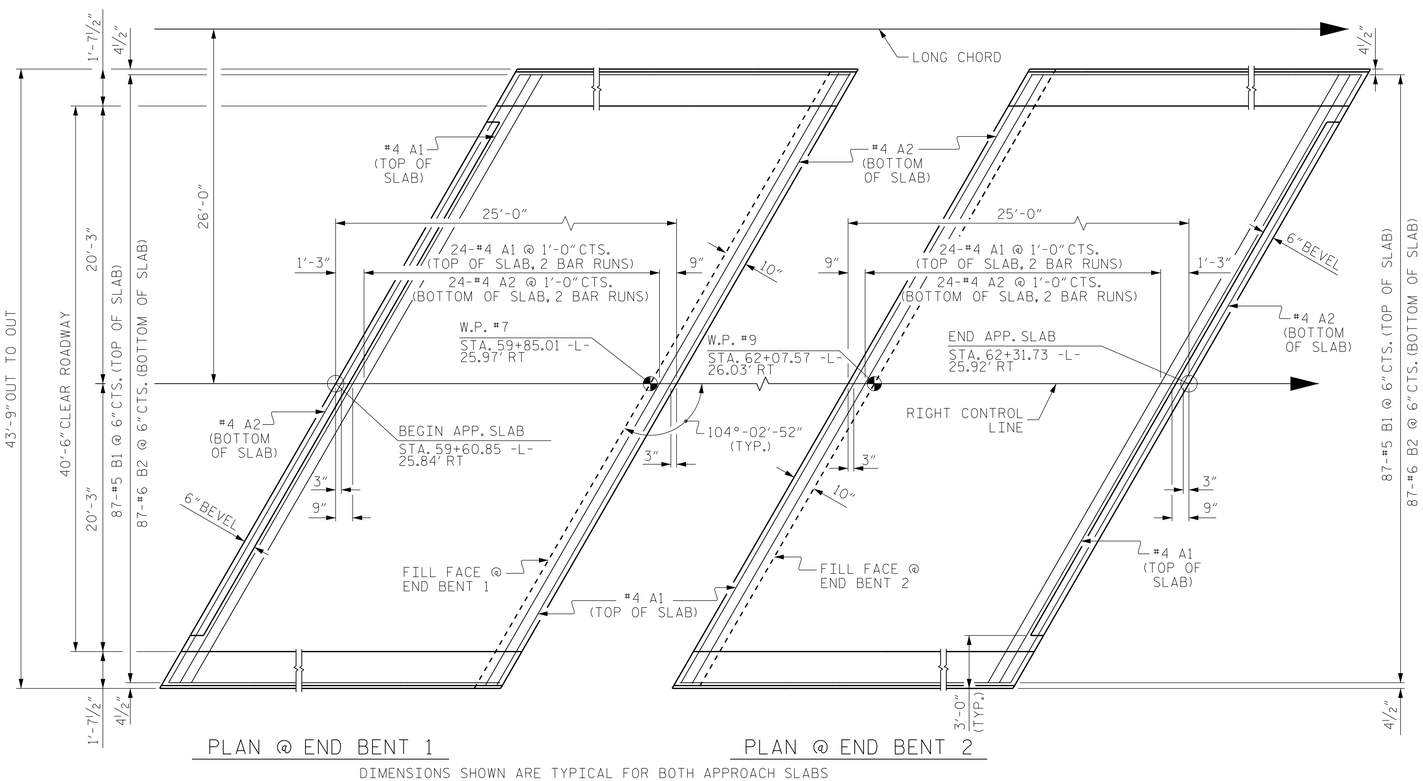
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SLOPE PROTECTION DETAIL

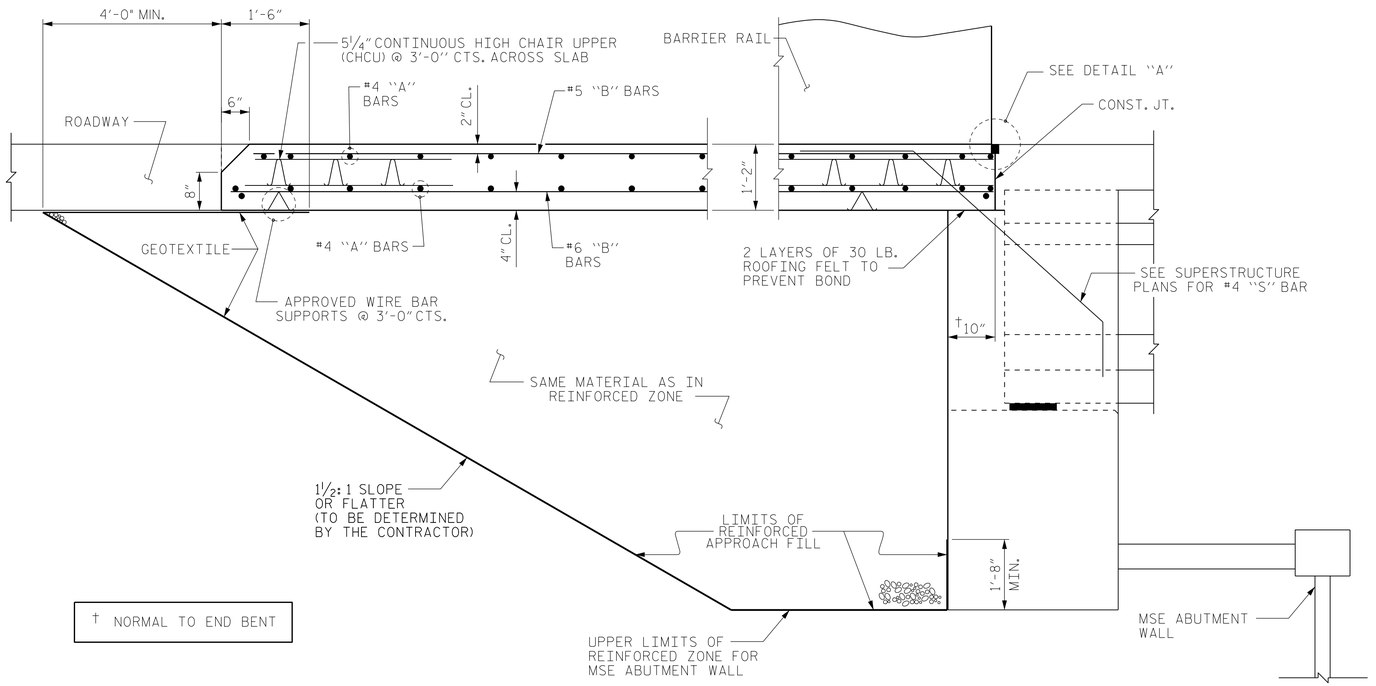
(RIGHT BRIDGE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-23
1			3			TOTAL SHEETS
2			4			25



PLAN @ END BENT 1 — PLAN @ END BENT 2

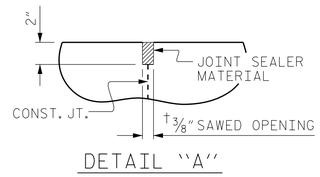
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



† NORMAL TO END BENT

SECTION THRU SLAB

(TYPE III - REINFORCED APPROACH FILL)



DETAIL "A"

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6"Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

BACKFILL MATERIAL SHALL BE THE SAME MATERIAL USED IN THE THE MSE REINFORCED ZONE.

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

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

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.

BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
✳A1	52	#4	STR	23'-4"	811
A2	54	#4	STR	23'-2"	836
✳B1	87	#5	STR	24'-2"	2193
B2	87	#6	STR	24'-8"	3223
REINFORCING STEEL ✳✳ LBS.					4059
✳EPOXY COATED REINFORCING STEEL ✳✳ LBS.					3004
CLASS AA CONCRETE ✳✳ C.Y.					47.1

ALL BAR DIMENSIONS ARE OUT TO OUT

✳✳ QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED. SEE SHEET 2 OF 2.

SPLICE LENGTHS

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

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-
17+04.85 -Y1-

SHEET 1 OF 2

Dewberry
2610 WYCLIFF ROAD
SUITE 410
RALEIGH, NC 27607
PHONE: 919.881.9939
NC COA No. F-0929

NORTH CAROLINA PROFESSIONAL SEAL 030046 ENGINEER MATTHEW PAYNE

DocuSigned by: Matthew Payne E7C3056295FF484...

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-24
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : JAE DATE : 8/21
CHECKED BY : ZHB DATE : 8/21
DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

$$$$$$SYSTIME$$$$$
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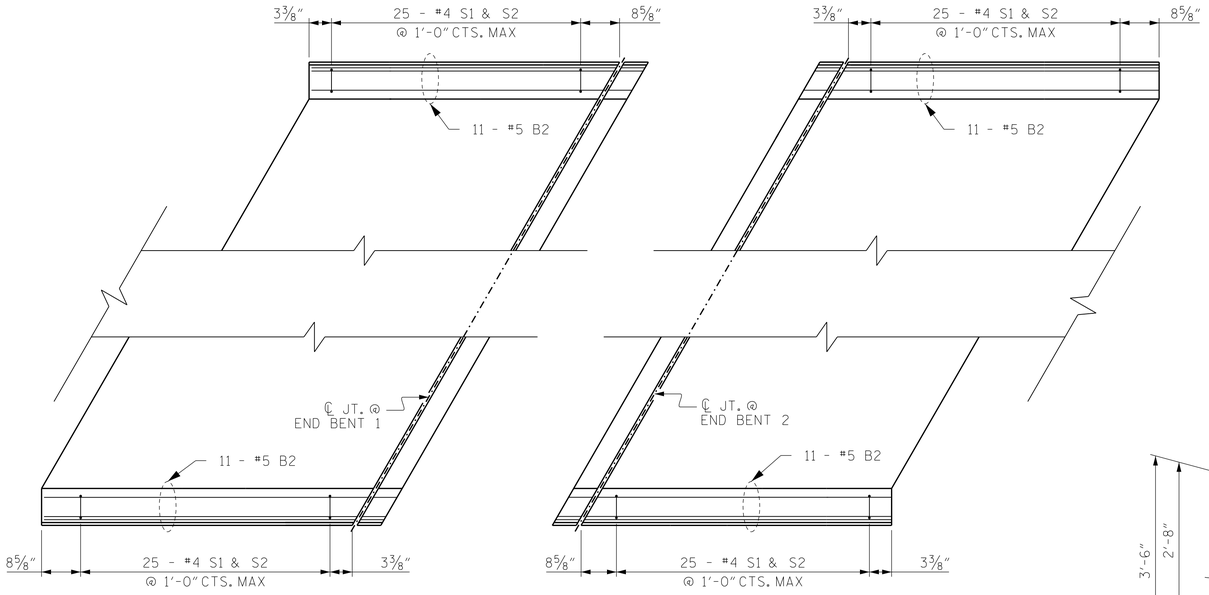
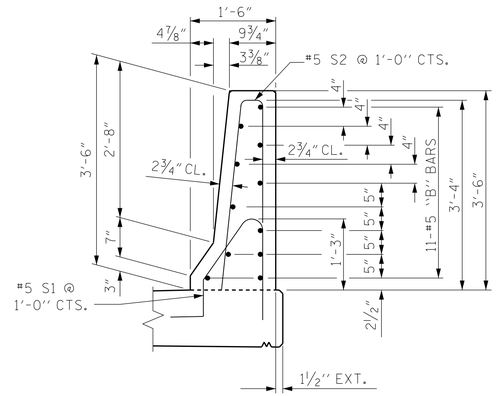


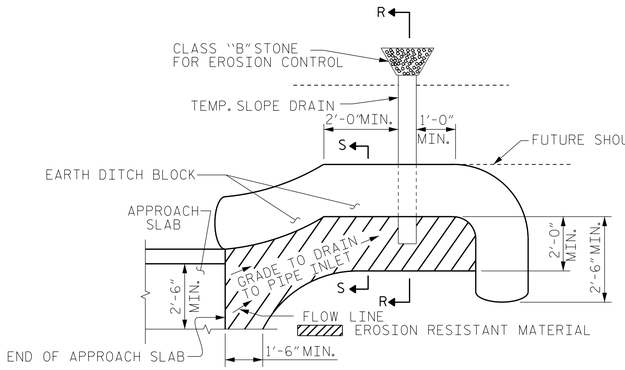
PLAN @ END BENT 1

PLAN @ END BENT 2

PLAN OF BARRIER RAIL

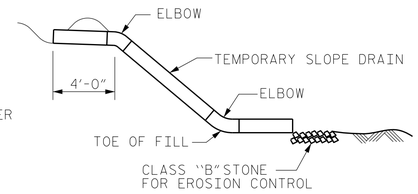


SECTION THRU RAIL

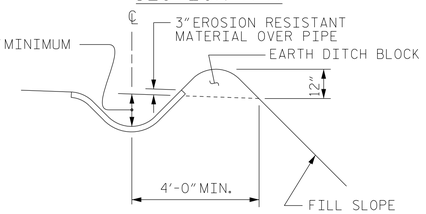


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW



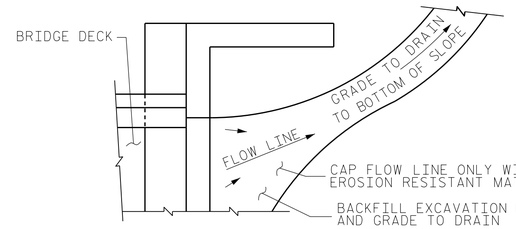
SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

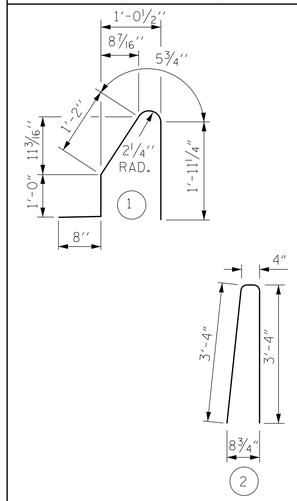
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	44	#5	STR.	24'-6"	1124
* S1	100	#5	1	5'-3"	548
* S2	100	#5	2	7'-0"	730

* EPOXY COATED REINFORCING STEEL	2402 LBS.
CLASS AA CONCRETE	13.6 CU. YDS.
CONCRETE BARRIER RAIL	100 LIN. FT.

PROJECT NO. R-5737

DAVIDSON COUNTY

STATION: 61+02.86 -L-
17+04.85 -Y1-

SHEET 2 OF 2

DRAWN BY : JAE DATE : 8/21
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DESIGN ENGINEER OF RECORD: MTP DATE : 8/21

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

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DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS (RIGHT BRIDGE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-25
1			3			TOTAL SHEETS
2			4			25

(SHT 1b)

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A ¼" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

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

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE ⅞"Ø SHEAR STUDS FOR THE ¾"Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞"Ø STUDS FOR 4 - ¾"Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞"Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾"Ø STUDS BASED ON THE RATIO OF 3 - ⅞"Ø STUDS FOR 4 - ¾"Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

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

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

HANDRAILS AND POSTS:

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

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

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990

REV. 6-16-95 EEM (/) RGW REV. 5-7-03 RWW (/) JTE REV. 10-1-11 MAA (/) GM
REV. 8-16-99 RWW (/) LES REV. 5-1-06 TLA (/) GM REV. 12-17 MAA (/) THC

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