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TIP PROJECT: R-1015

CONTRACT: C204177

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-1015		

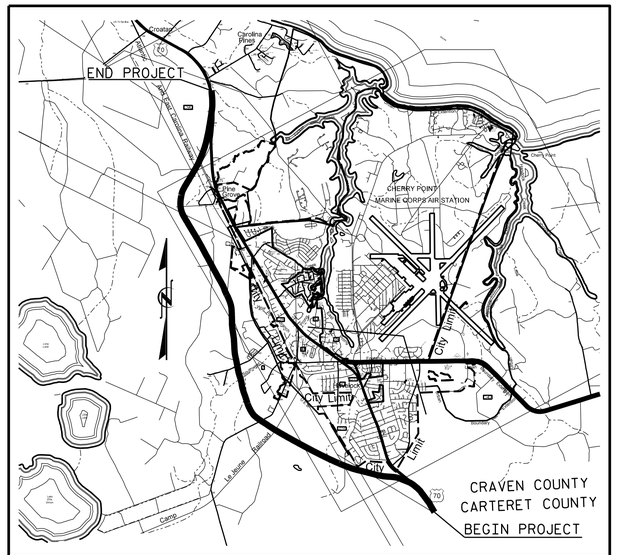
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34360.1.2	NHF-0070(049)	P.E.
34360.2.3	NHF-0070(049)	RW/UTIL.
34360.3.4	NHF-0070(049)	CONST.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

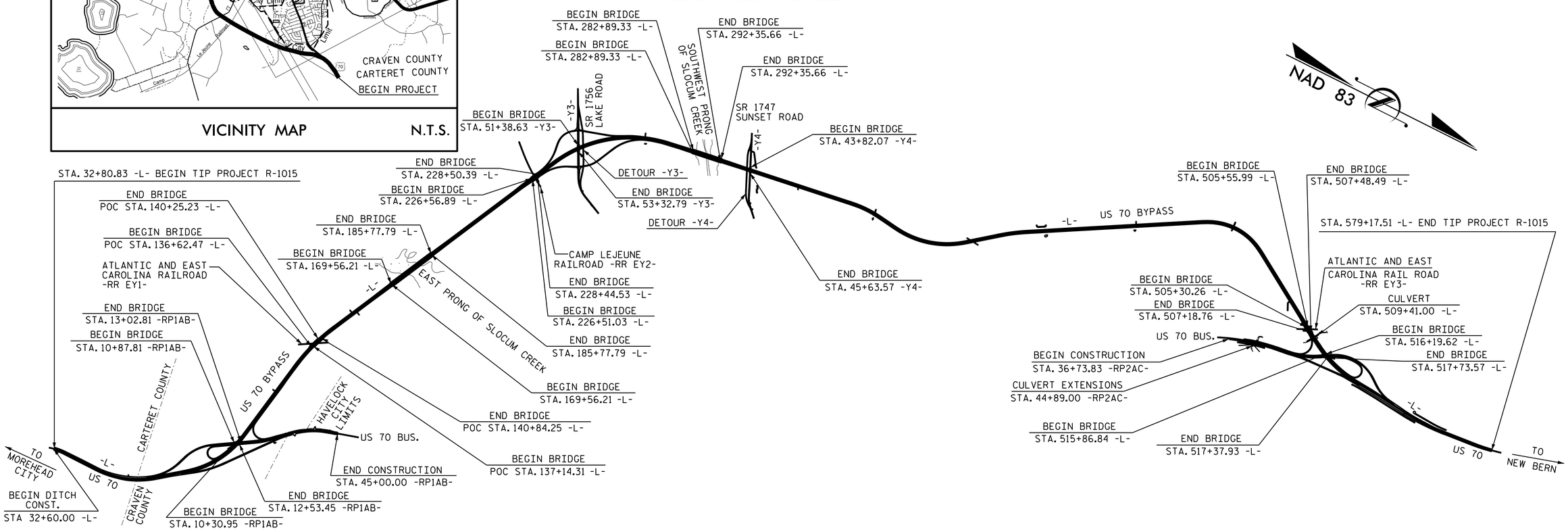
CRAVEN COUNTY

LOCATION: US 70 (HAVELOCK BYPASS) FROM SOUTH OF CARTERET /CRAVEN COUNTY LINE TO SOUTH OF SR 1176, (CAROLINA PINES BLVD.)

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



VICINITY MAP N.T.S.



STRUCTURES

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DESIGN DATA

ADT 2015 = N/A
ADT 2035 = 22,900
K = 9 %
D = 60 %
T = 7 % *
V = 70 MPH
* TTST 3% DUAL 3%
FUNC. CLASS = FREEWAY (FUTURE INTERSTATE)

PROJECT LENGTH

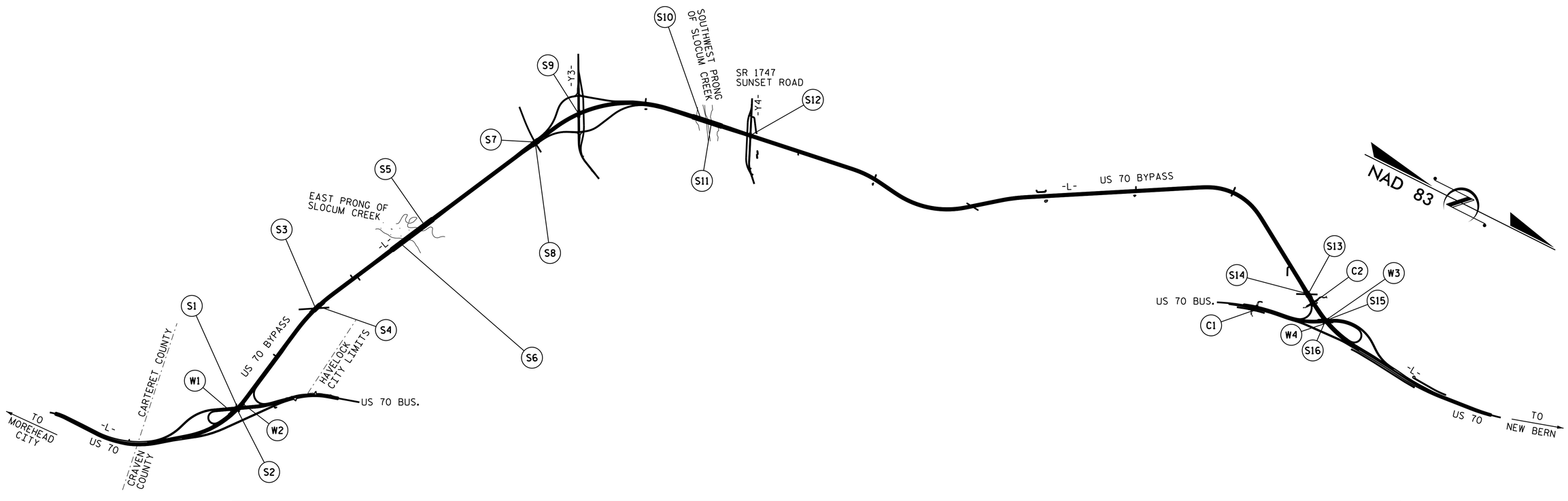
LENGTH OF ROADWAY TIP PROJECT R-1015	=	9.691 MILES
LENGTH OF STRUCTURE TIP PROJECT R-1015	=	0.657 MILES
TOTAL LENGTH OF TIP PROJECT R-1015	=	10.348 MILES

Prepared In the Office of:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

2018 STANDARD SPECIFICATIONS

LETTING DATE :

March 19, 2019



INDEX

STR. NO.	STATION	DESCRIPTION	SHEETS
S1	11+76.30 -RP1AB- 96+97.07 -L-	BRIDGE ON US 70 BUS. OVER US 70 BYPASS BETWEEN US 70 AND SR 1824 (LEFT LANE)	S01-1 THRU S01-41
S2	11+76.30 -RP1AB- 96+97.07 -L-	BRIDGE ON US 70 BUS. OVER US 70 BYPASS BETWEEN US 70 AND SR 1824 (LEFT LANE)	S02-S1 THRU S02-S41
S3	POC STA 138+31.09 -L- POT STA 15+66.39 -RR EY1-	BRIDGE OVER NCRR ON US 70 BUS. BETWEEN US 70 AND SR 1756 (LEFT LANE)	S03-S1 THRU S03-S46
S4	POC STA 138+31.09 -L- POT STA 15+66.39 -RR EY1-	BRIDGE OVER NCRR ON US 70 BUS. BETWEEN US 70 AND SR 1756 (RIGHT LANE)	S04-S1 THRU S04-S46
S5	STA. 177+67.00 -L-	BRIDGE OVER EAST PRONG OF SLOCUM CREEK ON US 70 BYPASS BETWEEN US 70 AND SR 1756 (LEFT LANE)	S05-S1 THRU S05-S46
S6	STA. 177+67.00 -L-	BRIDGE OVER EAST PRONG OF SLOCUM CREEK ON US 70 BYPASS BETWEEN US 70 AND SR 1756 (RIGHT LANE)	S06-S1 THRU S06-S46
S7	227+57.02 -L- POC 22+70.14 -RR EY2-	BRIDGE OVER CAMP LEJUNE RR ON US 70 BYPASS BETWEEN MOREHEAD CITY AND SR 1756 (LEFT LANE)	S07-S1 THRU S07-S35
S8	227+57.02 -L- POC 22+70.14 -RR EY2-	BRIDGE OVER CAMP LEJUNE RR ON US 70 BYPASS BETWEEN MOREHEAD CITY AND SR 1756 (RIGHT LANE)	S08-S1 THRU S08-S36
S9	52+32.96 -Y3- 244+55.76 -L-	BRIDGE OVER US 70 BYPASS ON SR 1756 BETWEEN SR 1125 AND NC 1763	S09-S1 THRU S09-S32
S10	STA. 287+62.5 -L-	BRIDGE ON US 70 BYPASS OVER SW PRONG OF SLOCUM CREEK BETWEEN SR 1756 AND SR 1747 (LEFT LANE)	S10-S1 THRU S10-S44
S11	STA. 287+62.5 -L-	BRIDGE ON US 70 BYPASS OVER SW PRONG OF SLOCUM CREEK BETWEEN SR 1756 AND SR 1747 (RIGHT LANE)	S11-S1 THRU S11-S44

STR. NO.	STATION	DESCRIPTION	SHEETS
S12	44+71.82 -Y4- 302+41.24 -L-	BRIDGE ON SR 1747 OVER US 70 BYPASS BETWEEN PULLEY ROAD AND SR 1746	S12-1 THRU S12-32
S13	506+32.25 -L- 13+07.59 -RR EY3-	BRIDGE OVER NCRR ON US 70 BYPASS BETWEEN SR 1747 AND US 70 (LEFT LANE)	S13-S1 THRU S13-S39
S14	506+32.25 -L- 13+07.59 -RR EY3-	BRIDGE OVER NCRR ON US 70 BYPASS BETWEEN SR 1747 AND US 70 (RIGHT LANE)	S14-S1 THRU S14-S40
S15	STA 516+87.37 -L- STA 69+02.79 -RP2AC-	BRIDGE ON US 70 BYPASS OVER US 70 BUS. BETWEEN SR1747 AND SR 1176 (LEFT LANE)	S15-S1 THRU S15-S44
S16	STA 516+87.37 -L- STA 69+02.79 -RP2AC-	BRIDGE ON US 70 BYPASS OVER US 70 BUS. BETWEEN SR1747 AND SR 1176 (RIGHT LANE)	S16-S1 THRU S16-S44
C1	STA. 44+89.00 -RP2AC-	TRIPLE 9 FT. X 9 FT. CONCRETE BOX CULVERT LEFT AND RIGHT EXTENSIONS 120° SKEW	C01-C1 THRU C01-C10
C2	STA. 509+41.00 -L-	DOUBLE 10 FT. X 8 FT. CONCRETE BOX CULVERT 90° SKEW	C02-C1 THRU C0-C8
W1	96+97.07 -L-	MSE RETAINING WALL 1	W1 THRU W6
W2	96+97.07 -L-	MSE RETAINING WALL 2	
W3	516+87.37 -L-	MSE RETAINING WALL 3	W7 THRU W11
W4	516+87.37 -L-	MSE RETAINING WALL 4	

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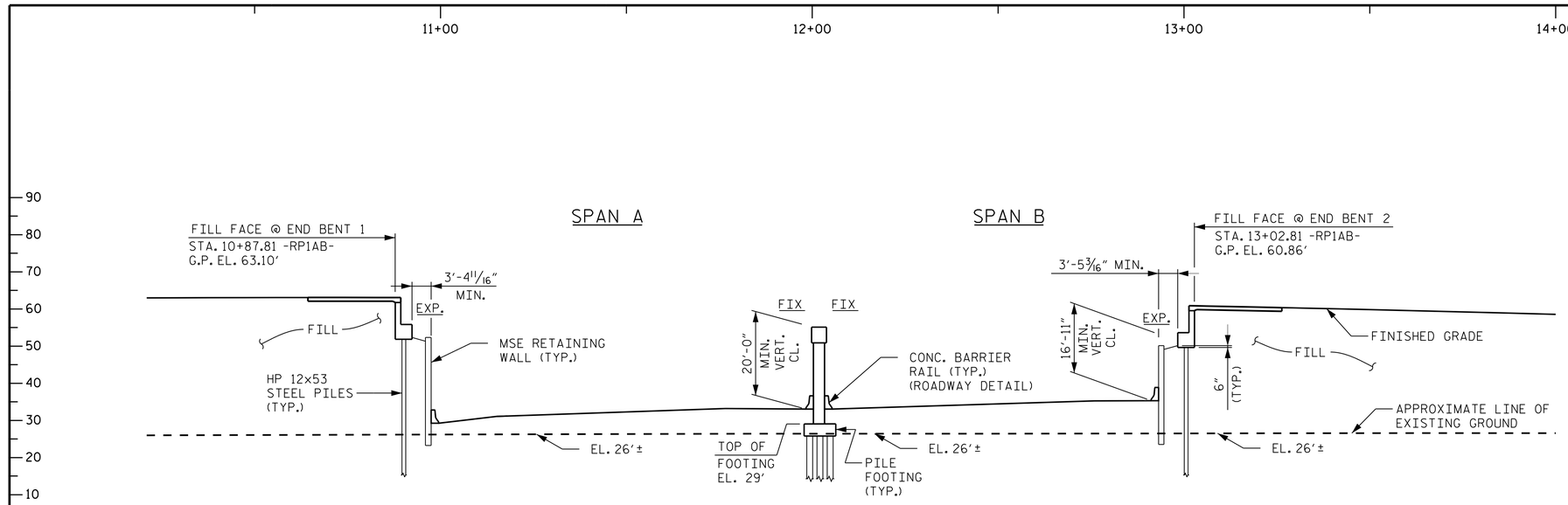
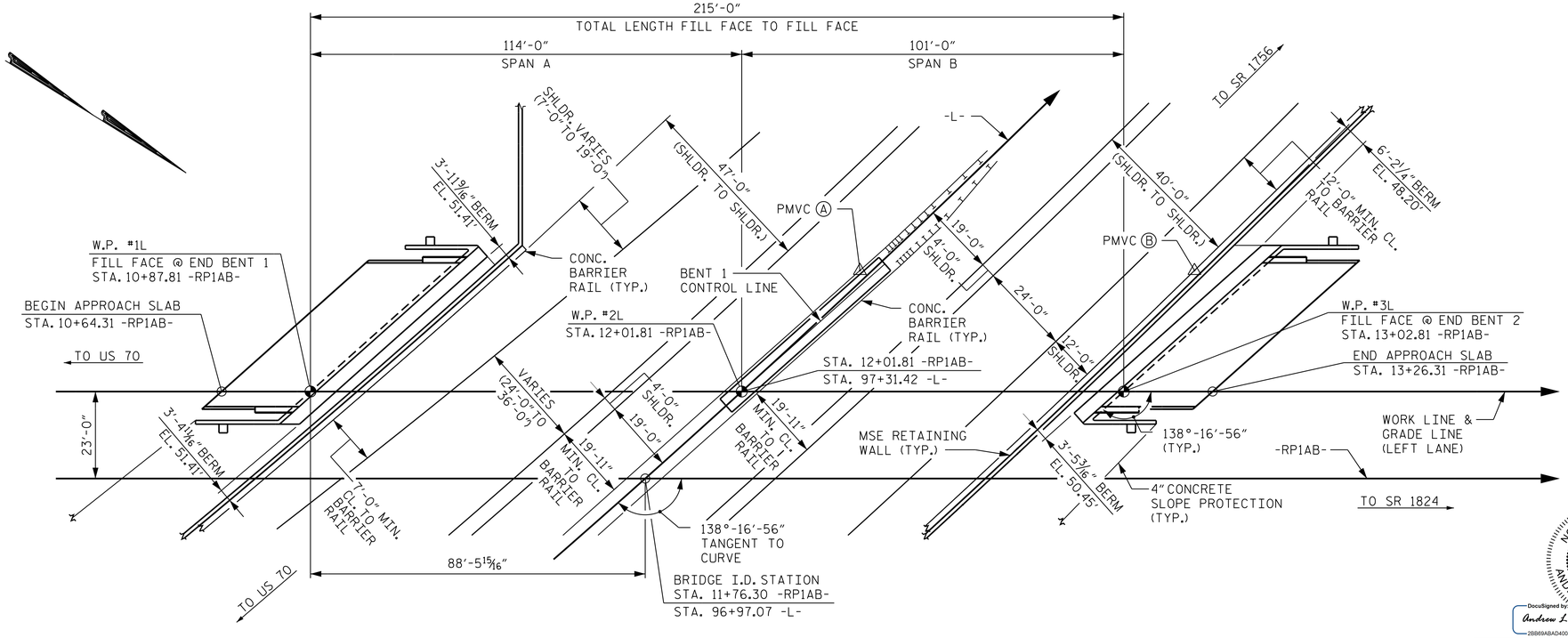


SECTION ALONG GRADE LINE (LEFT LANE)

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



PLAN

PILES, FOOTINGS AND COLUMNS NOT SHOWN IN PLAN VIEW FOR CLARITY

PMVC-DENOTES POINT OF MINIMUM VERTICAL CLEARANCE

(+)3.7043% (-)3.8709%

P.I. STA. = 10+83.00
EL. = 71.53'
V.C. = 890.00'

-RP1AB- GRADE DATA

-L- HORIZONTAL CURVE DATA

P.I. STA. 89+47.37
△ = 34°58'57.1" (LT)
D = 1°53'54.5"
L = 1,842.67'
T = 951.07'
R = 3,018.00'

Ⓐ STA. 12+33.07 -RP1AB-
G.P. EL. 62.02'
OFFSET 55.00' LT.
= STA. 97+76.11 -L-
G.P. EL. 33.78'
OFFSET 2.24' LT.

Ⓑ STA. 13+21.52 -RP1AB-
G.P. EL. 60.48'
OFFSET 55.00' LT.
= STA. 98+39.34 -L-
G.P. EL. 33.97'
OFFSET 59.00' RT.

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-
96+97.07 -L-

SHEET 1 OF 3 BRIDGE NO. 272

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON US 70
BUS. OVER US 70 BYPASS BETWEEN
US 70 AND SR 1824

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew L. Phillips 2BB69A8AD4004D3... 12/7/2018

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

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-1
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 1

DRAWN BY: D. D. LOWERY DATE: 10/18
CHECKED BY: P. D. COOKSEY DATE: 10/18
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS DATE: 10/18

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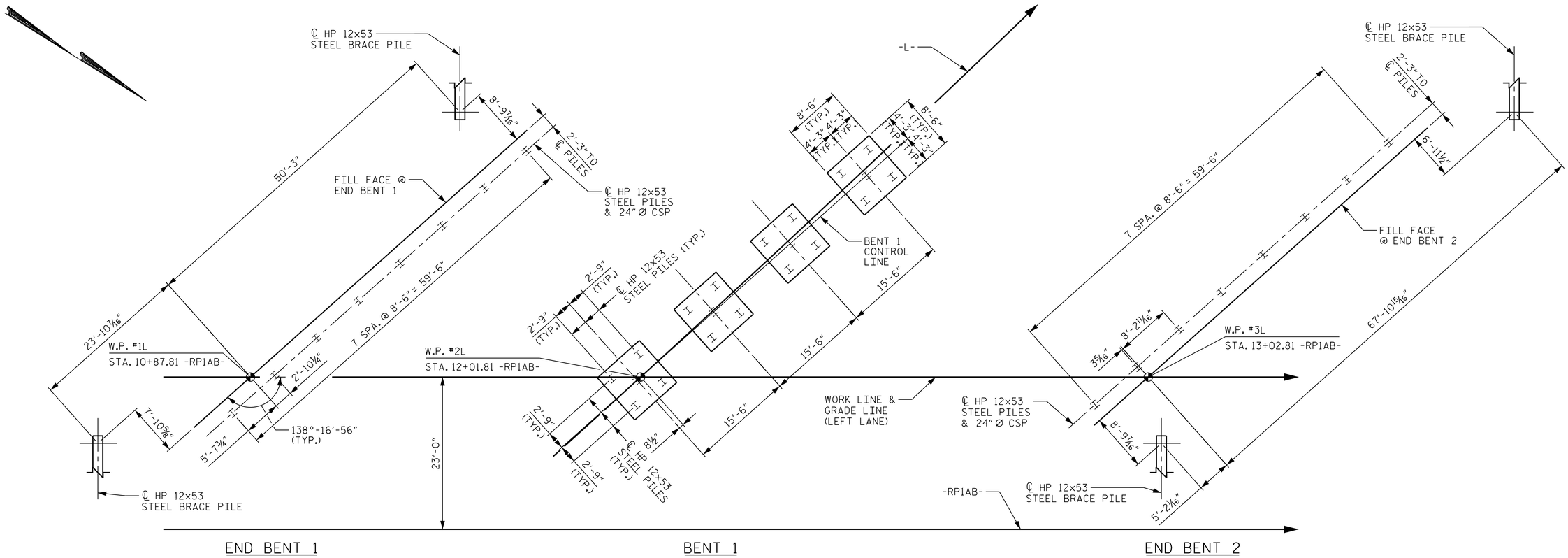


FOUNDATION LAYOUT

(DIMENSIONS LOCATING PILES ARE SHOWN TO
THE CENTERLINE OF PILES AT BOTTOM OF CAP OR FOOTING)

WING BRACE PILE BATTERED 3:12

NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 AND END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 125 TONS PER PILE.

PILES AT BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 125 TONS PER PILE.

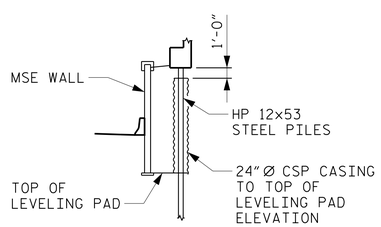
DRIVE PILES AT END BENT 1 AND END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 170 TONS PER PILE.

DRIVE PILES AT BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 170 TONS PER PILE.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENT 1, BENT 1, OR END BENT 2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

24" DIAMETER CSP SLEEVES SHOULD BE INSTALLED DURING MSE WALL CONTRUCTION FOR PILES TO BE INSTALLED AFTER MSE WALL CONSTRUCTION AT END BENT 1 AND END BENT 2. THE SLEEVES SHOULD BE FILLED WITH SAND AFTER THE PILES ARE INSTALLED. SEE MSE WALL PLANS.

NOTE THAT THE BOTTOM OF FOOTINGS AT BENT 1 ARE NEAR OR BELOW THE GROUND WATER TABLE AND DEWATERING MAY BE REQUIRED.



24" Ø CSP CASING DETAIL

(END BENT 2 SHOWN, END BENT 1 SIMILAR)

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12/7/2018

DRAWN BY: D. D. LOWERY DATE: 10/18
CHECKED BY: P. D. COOKSEY DATE: 10/18
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 10/18

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NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew L. Phillips 12/7/2018
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421 Fayetteville Street, Suite 600
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Phone (919) 677-2000 NC LICENSE # F-0102

PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

SHEET 2 OF 3

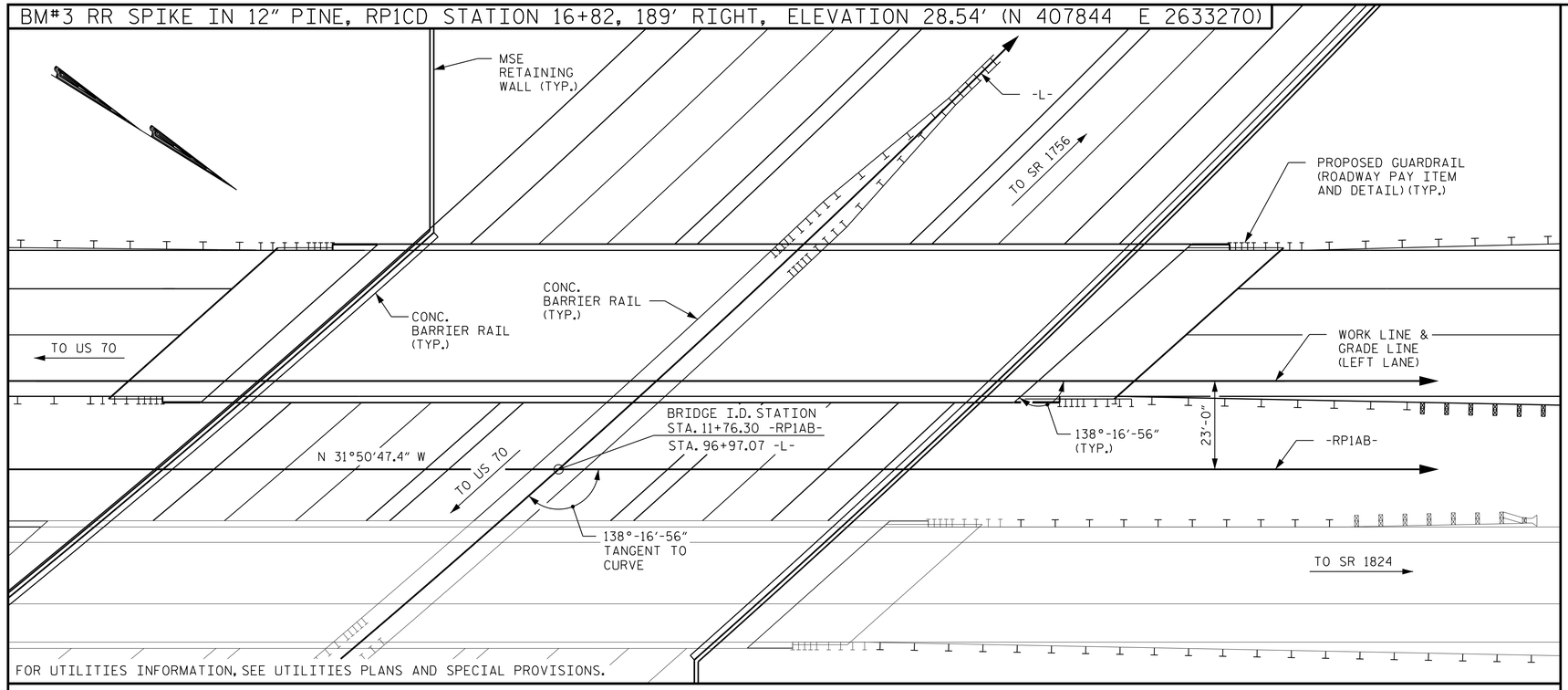
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON US 70
BUS. OVER US 70 BYPASS BETWEEN
US 70 AND SR 1824
LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-2
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 1



LOCATION SKETCH

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.

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.

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

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

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

TOTAL BILL OF MATERIAL

	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE (BRIDGE)	BRIDGE APPROACH SLABS STA. 11+76.30 -RP1AB-	REINFORCING STEEL (BRIDGE)	SPIRAL COLUMN REINFORCING STEEL	MODIFIED 72" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SET UP FOR HP 12x53 STEEL PILES	HP 12x53 STEEL PILES		PILE REDRIVES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS
	EA.	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	EA.	NO.	LIN. FT.	EA.	LIN. FT.	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE		8,732	9,051		LUMP SUM			10	1,034.69					463.7		LUMP SUM	LUMP SUM
END BENT 1				86.5		10,785				10	10	1,000	4		82		
BENT 1				102.2		18,196	1,813			20	20	1,400	10				
END BENT 2				79.2		9,546				10	10	900	4		83		
TOTAL	1	8,732	9,051	267.9	LUMP SUM	38,527	1,813	10	1,034.69	40	40	3,300	18	463.7	165	LUMP SUM	LUMP SUM

SAMPLE BAR REPLACEMENT

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

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

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12/7/2018

DRAWN BY: D. D. LOWERY DATE: 10/18
CHECKED BY: P. D. COOKSEY DATE: 10/18
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS DATE: 10/18

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NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew L. Phillips 12/7/2018
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PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON US 70 BUS. OVER US 70 BYPASS BETWEEN US 70 AND SR 1824
LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-3
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 1

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

LEVEL		VEHICLE	WEIGHT (W) (TONS)	⟨#⟩ CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR					MOMENT						
							LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	⟨1⟩	1.11	--	1.75	0.687	1.49	A	EL	54.280	0.990	1.36	A	I	10.290	0.80	0.633	1.11	A	I	54.280	
		HL-93 (OPERATING)	N/A		1.79	--	1.35	0.687	1.94	A	EL	54.280	0.990	1.79	A	I	10.290	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	⟨2⟩	1.58	56.88	1.75	0.687	2.14	A	EL	54.280	0.990	1.92	A	I	10.290	0.80	0.633	1.58	A	I	54.280	
		HS-20 (OPERATING)	36.000		2.52	90.72	1.35	0.687	2.77	A	EL	54.280	0.990	2.52	A	I	10.290	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.81	51.44	1.40	0.687	6.43	A	EL	54.280	0.990	6.50	A	I	10.290	0.80	0.633	3.81	A	I	54.280	
		SNGARBS2	20.000		2.74	54.80	1.40	0.687	4.62	A	EL	54.280	0.990	4.52	A	I	10.290	0.80	0.633	2.74	A	I	54.280	
		SNAGRIS2	22.000		2.55	56.10	1.40	0.687	4.30	A	EL	54.280	0.990	4.16	A	I	10.290	0.80	0.633	2.55	A	I	54.280	
		SNCOTTS3	27.250		1.89	51.50	1.40	0.687	3.19	A	EL	54.280	0.990	3.14	A	I	10.290	0.80	0.633	1.89	A	I	54.280	
		SNAGGRS4	34.925		1.54	53.78	1.40	0.687	2.60	A	EL	54.280	0.990	2.42	A	I	10.290	0.80	0.633	1.54	A	I	54.280	
		SNS5A	35.550		1.51	53.68	1.40	0.687	2.55	A	EL	54.280	0.990	2.37	A	I	10.290	0.80	0.633	1.51	A	I	54.280	
		SNS6A	39.950		1.37	54.73	1.40	0.687	2.31	A	EL	54.280	0.990	2.18	A	I	10.290	0.80	0.633	1.37	A	I	54.280	
		SNS7B	42.000		1.30	54.60	1.40	0.687	2.20	A	EL	54.280	0.990	2.09	A	I	10.290	0.80	0.633	1.30	A	I	54.280	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.67	55.11	1.40	0.687	2.81	A	EL	54.280	0.990	2.60	A	I	10.290	0.80	0.633	1.67	A	I	54.280	
		TNT4A	33.075		1.67	55.24	1.40	0.687	2.82	A	EL	54.280	0.990	2.71	A	I	10.290	0.80	0.633	1.67	A	I	54.280	
		TNT6A	41.600		1.35	56.16	1.40	0.687	2.28	A	EL	54.280	0.990	2.16	A	I	10.290	0.80	0.633	1.35	A	I	54.280	
		TNT7A	42.000		1.35	56.70	1.40	0.687	2.28	A	EL	54.280	0.990	2.12	A	I	10.290	0.80	0.633	1.35	A	I	54.280	
		TNT7B	42.000		1.38	57.96	1.40	0.687	2.32	A	EL	54.280	0.990	2.03	A	I	10.290	0.80	0.633	1.38	A	I	54.280	
		TNAGRIT4	43.000		1.32	56.76	1.40	0.687	2.23	A	EL	54.280	0.990	2.05	A	I	10.290	0.80	0.633	1.32	A	I	54.280	
		TNAGT5A	45.000		1.25	56.25	1.40	0.687	2.12	A	EL	54.280	0.990	1.95	A	I	10.290	0.80	0.633	1.25	A	I	54.280	
		TNAGT5B	45.000	⟨3⟩	1.25	56.25	1.40	0.687	2.10	A	EL	54.280	0.990	1.97	A	I	10.290	0.80	0.633	1.25	A	I	54.280	

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)

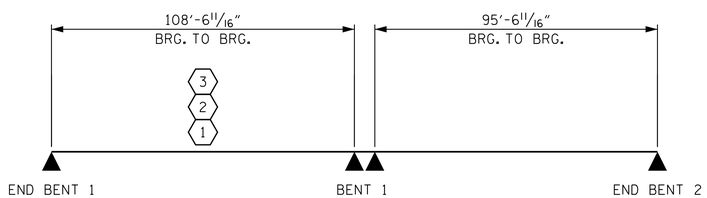
⟨2⟩ DESIGN LOAD RATING (HS-20)

⟨3⟩ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew L. Phillips 12/7/2018
2BB89ABAD4004D3...

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NC LICENSE # F-0102

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-4
1			3			TOTAL SHEETS
2			4			41

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ASSEMBLED BY : D.D.LOWERY	DATE : 10/18		
CHECKED BY : P.D.COOKSEY	DATE : 10/18		
DRAWN BY : MAA 1/08	REV. 11/12/08RR	MAA/GM	
CHECKED BY : GM/DI 2/08	REV. 10/1/11	MAA/GM	
	REV. 12/17	MAA/THC	

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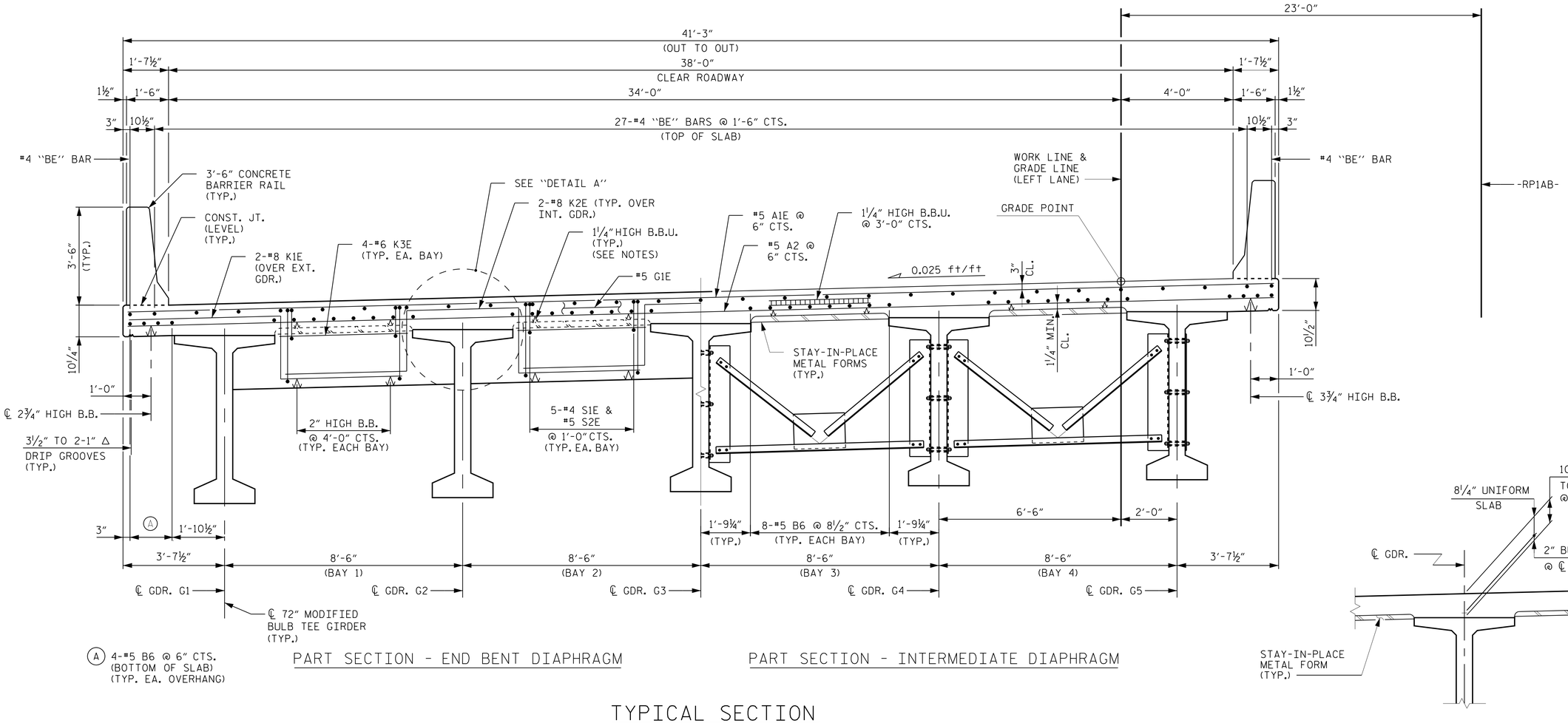
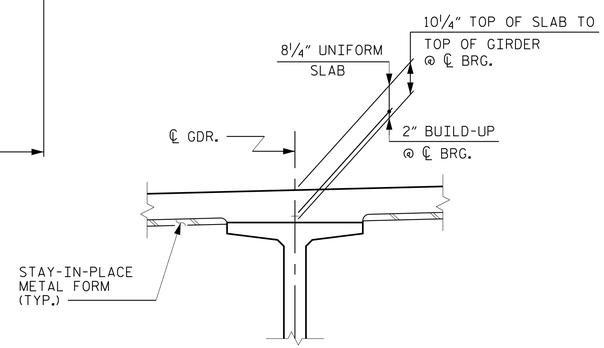
12/7/2018

STRUCTURE 1 STD. NO. LRFR1



PART SECTION - END BENT DIAPHRAGM

PART SECTION - INTERMEDIATE DIAPHRAGM



DETAIL "A"
(TYP. EA. GDR. @ EA. BENT)

TYPICAL SECTION

NOTES:

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

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

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

FOR "SECTION THRU END BENT DIAPHRAGM", SEE "TYPICAL SECTION" SHEET 3 OF 3.

BARRIER RAIL IN CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A COMPRESSIVE STRENGTH OF 3000 PSI.

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

TYPICAL SECTION

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-5
1			3			TOTAL SHEETS
2			4			41

DRAWN BY: D. D. LOWERY DATE: 10/18
CHECKED BY: P. D. COOKSEY DATE: 10/18
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS DATE: 10/18

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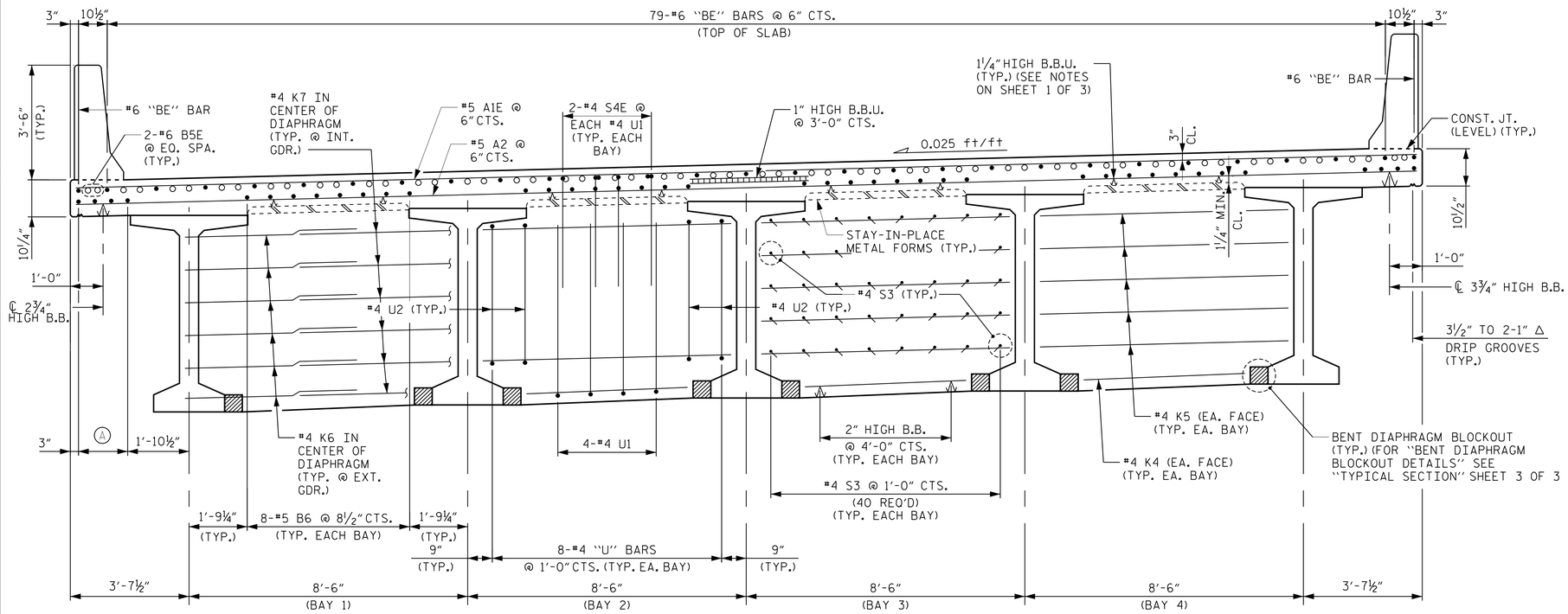
STRUCTURE 1

12/7/2018 K:\R0T_Structures_Bridge\NC\01103603 - R-1015\CAD\Dgn\Structure 40\R1015_SMU_TS1_240272.dgn



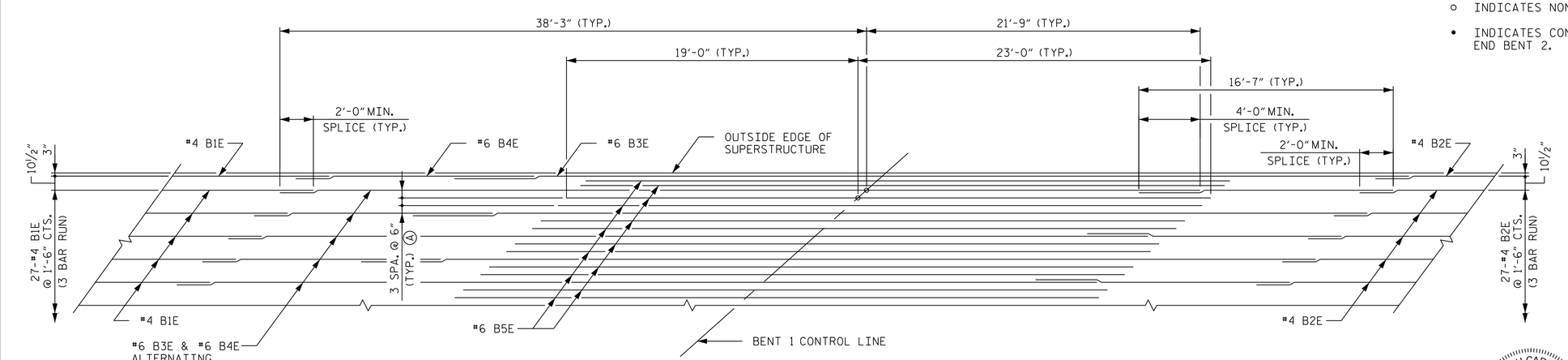
Ⓐ 4-#5 B6 @ 6" CTS. (BOTTOM OF SLAB) (TYP. EA. OVERHANG)

SECTION - BENT DIAPHRAGM

TYPICAL SECTION

NOTE:

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



PART SLAB PLAN OVER BENT

LONGITUDINAL REINFORCING (TOP OF SLAB) REINFORCING IS SYMMETRICAL ABOUT BRIDGE ℄

Ⓐ 2-#6 B5E NON-CONTINUOUS REINFORCING BARS BETWEEN CONTINUOUS REINFORCING OVER INTERIOR BENT.

- ○ INDICATES NON-CONTINUOUS REINFORCING STEEL OVER BENT.
- • INDICATES CONTINUOUS REINFORCING FROM END BENT 1 TO END BENT 2.

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

LEFT LANE

STRUCTURE 1

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L PHILLIPS

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DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 10/18

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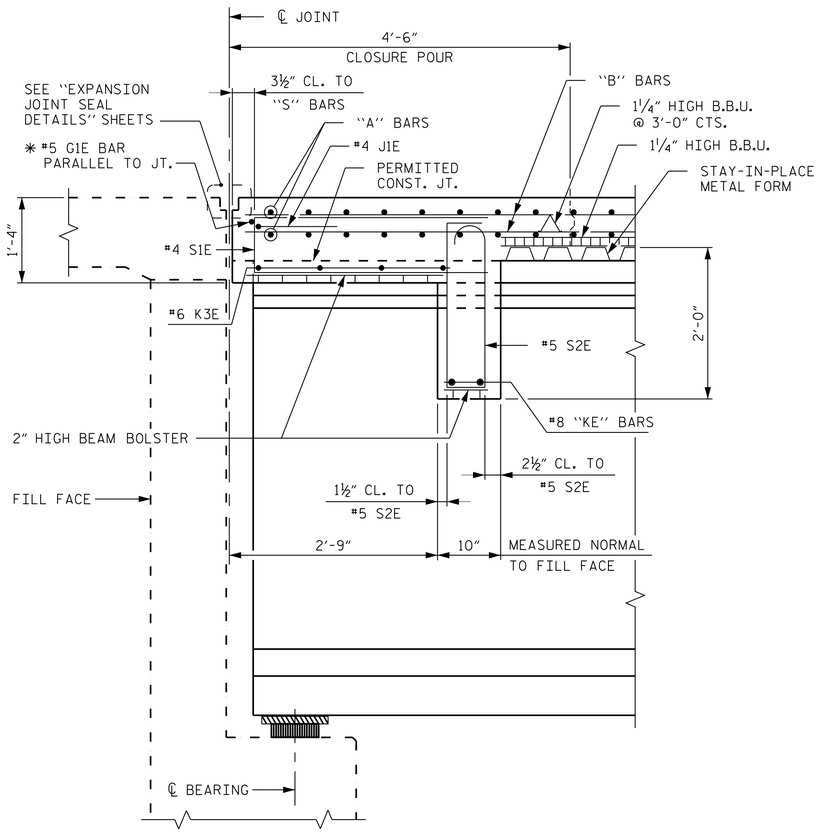
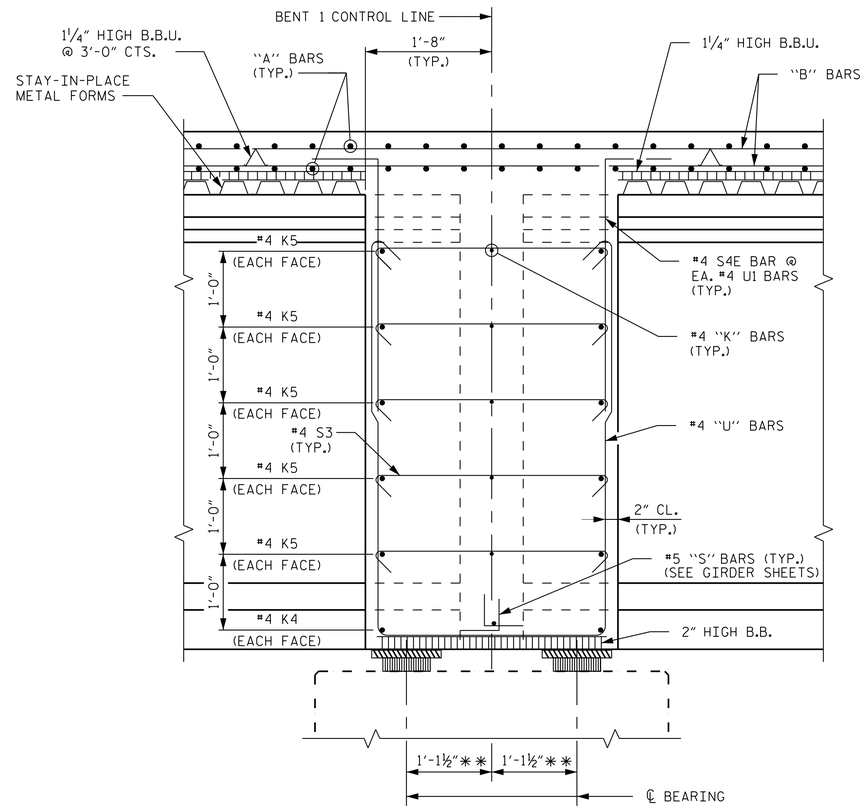


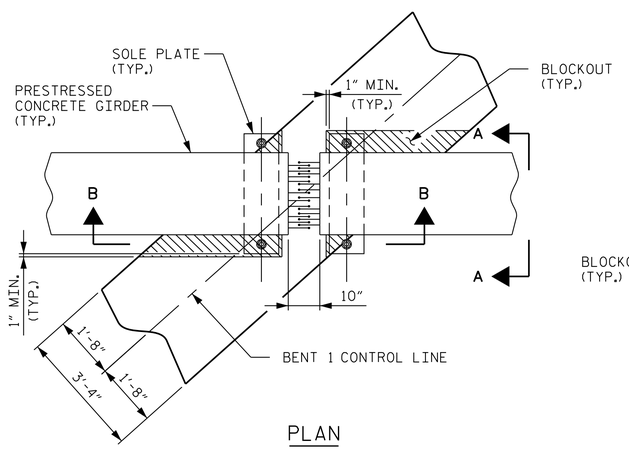
SECTION THRU END BENT DIAPHRAGM

✳ #5 G1E BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY TO CLEAR REINFORCING STEEL AND STIRRUPS

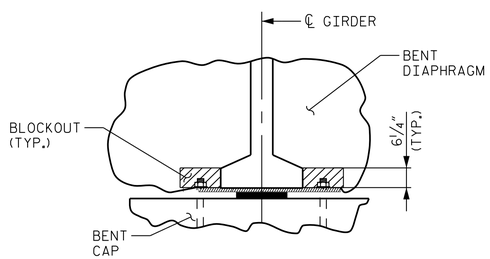


SECTION THRU BENT DIAPHRAGM

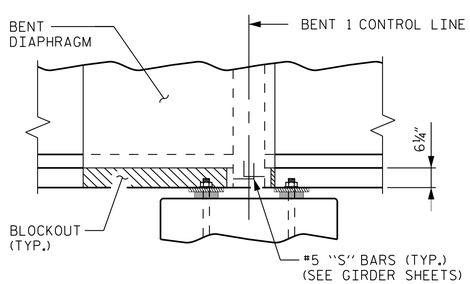
✳✳ DIMENSION ALONG ℄ GIRDER



PLAN



SECTION A-A



SECTION B-B

BENT DIAPHRAGM BLOCKOUT DETAIL

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

TYPICAL SECTION

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-7
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 1

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DESIGN ENGINEER OF RECORD: A. L. PHILLIPS	DATE: 10/18	

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

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NOTES:

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

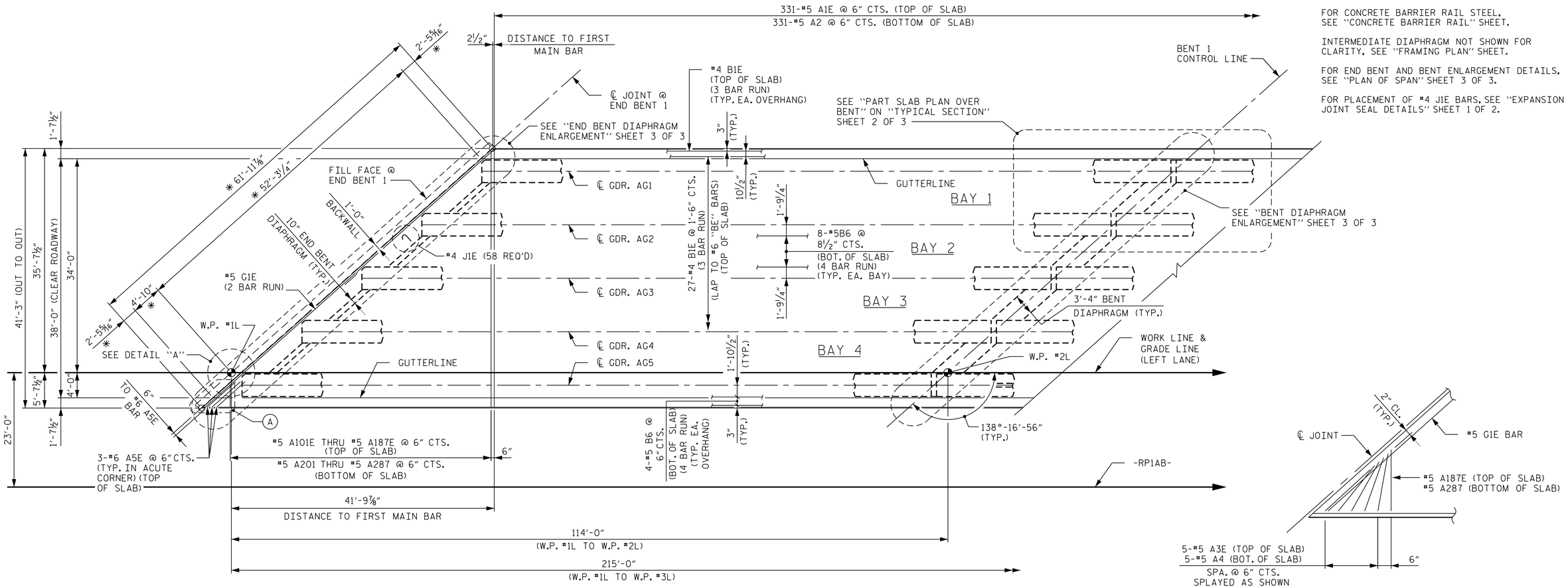
LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

FOR CONCRETE BARRIER RAIL STEEL, SEE "CONCRETE BARRIER RAIL" SHEET.

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

FOR END BENT AND BENT ENLARGEMENT DETAILS, SEE "PLAN OF SPAN" SHEET 3 OF 3.

FOR PLACEMENT OF #4 J1E BARS, SEE "EXPANSION JOINT SEAL DETAILS" SHEET 1 OF 2.

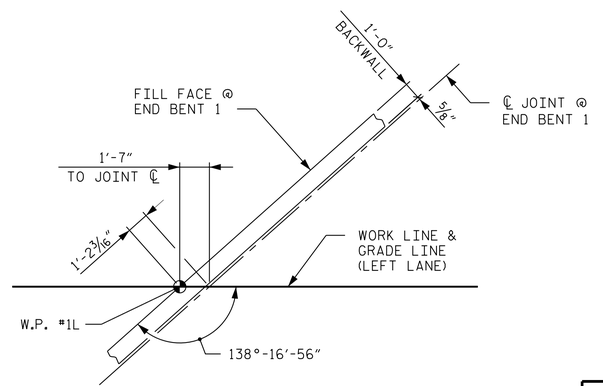


Ⓐ SEE ENLARGED DETAIL, ON THIS SHEET.

SPAN A

PART PLAN OF SPANS

* DENOTES MEASURED ALONG ℄ JOINT



DETAIL "A"

ENLARGED DETAIL

(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

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1			3			TOTAL SHEETS
2			4			41

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DESIGN ENGINEER OF RECORD: A.L. PHILLIPS DATE: 10/18

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STRUCTURE 1

12/7/2018

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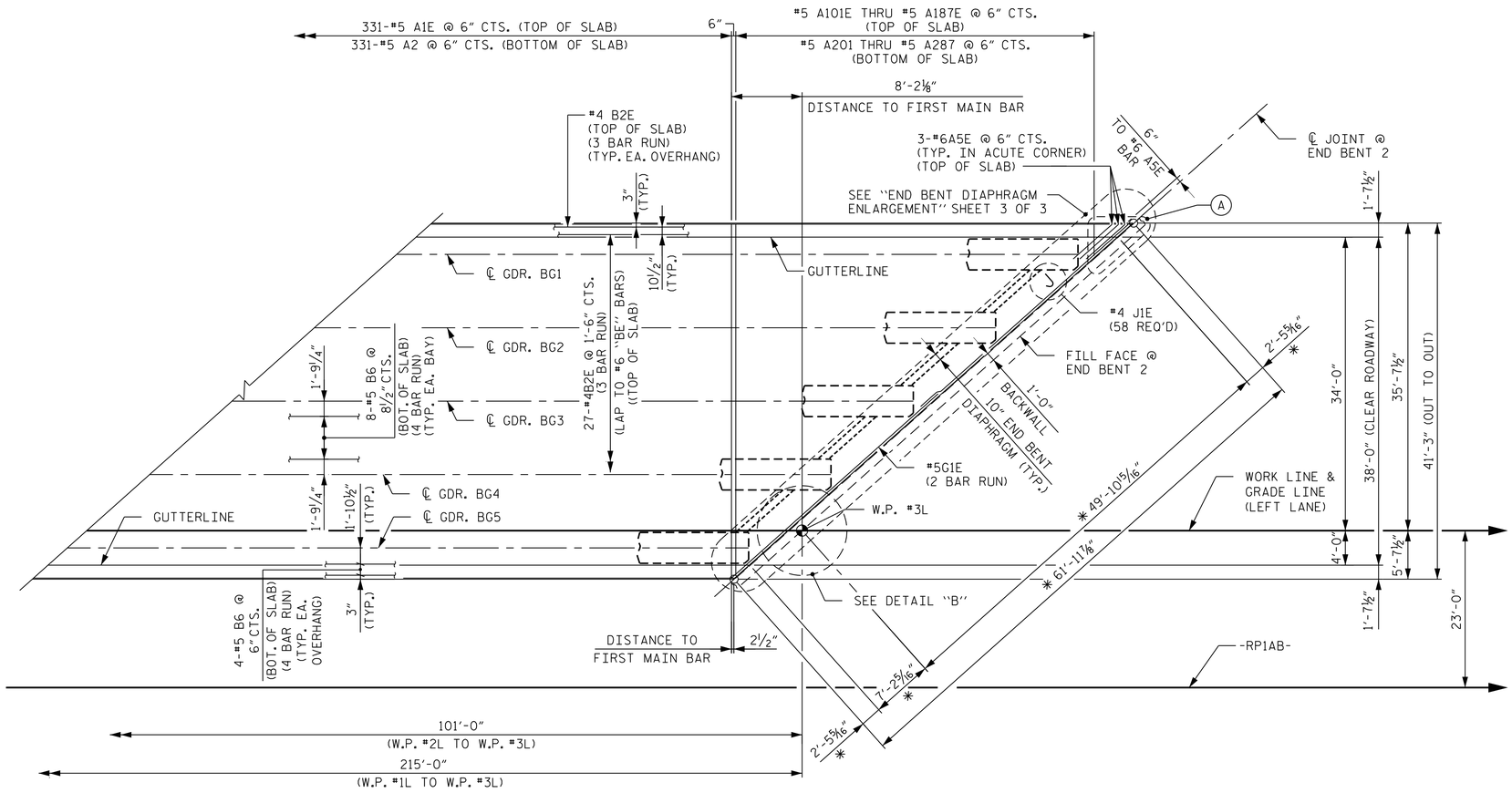
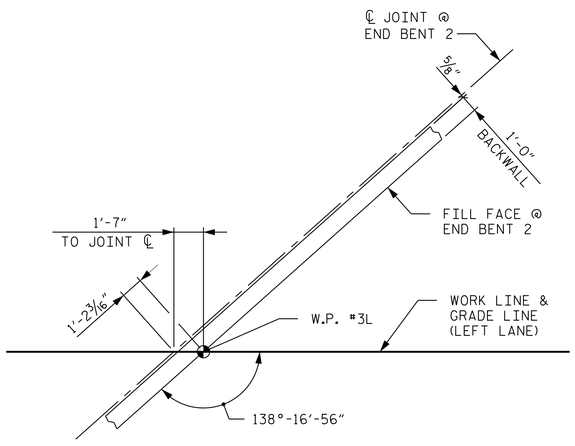


SPAN B

PART PLAN OF SPANS

* DENOTES MEASURED ALONG ℄ JOINT

Ⓐ SEE ENLARGED DETAIL, ON SHEET 1 OF 3.



DETAIL "B"

DRAWN BY: D. D. LOWERY DATE: 10/18
CHECKED BY: P. D. COOKSEY DATE: 10/18
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 10/18

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PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

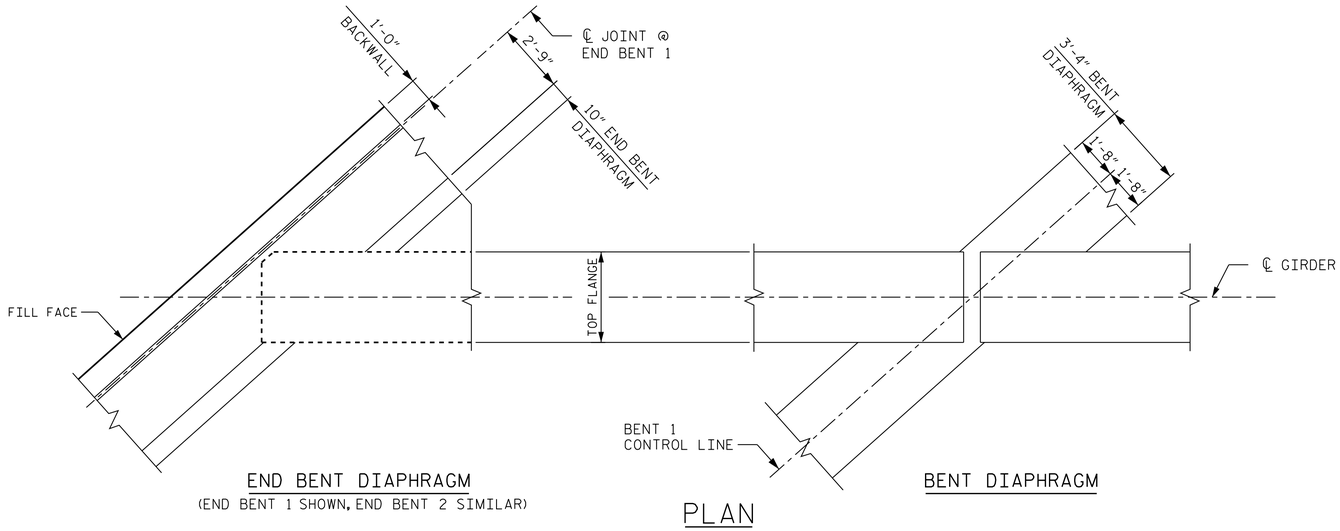
SUPERSTRUCTURE

PLAN OF SPAN

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-9
1			3			TOTAL SHEETS
2			4			41

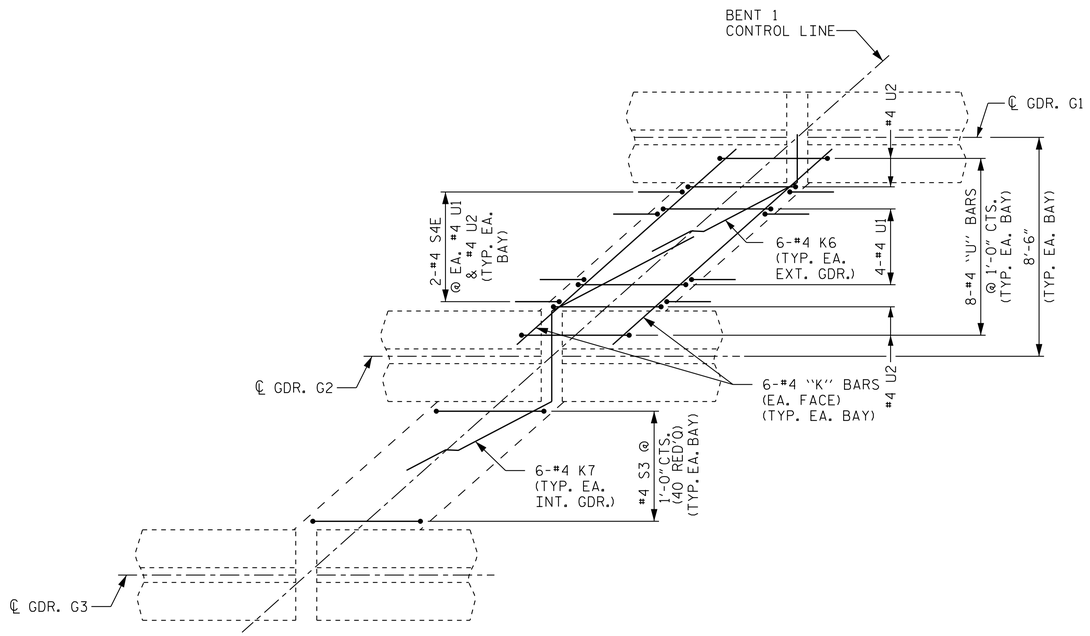
STRUCTURE 1



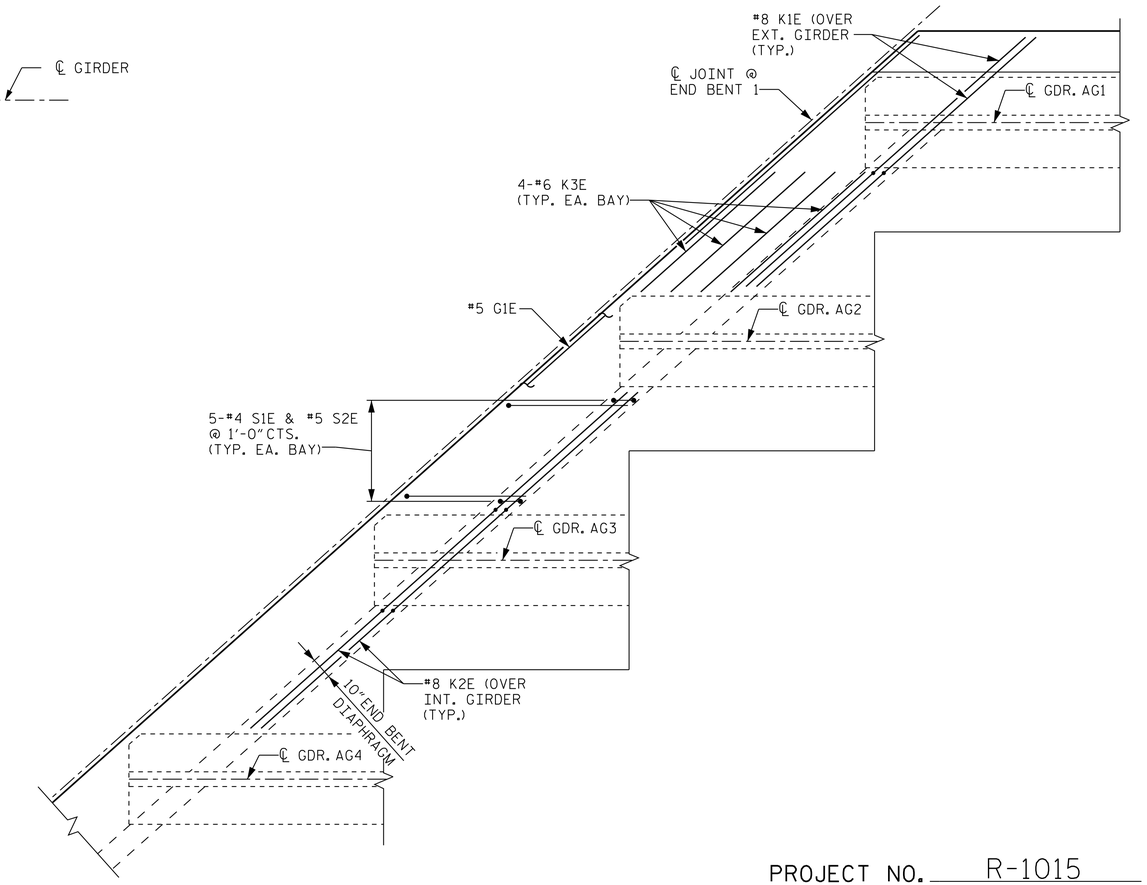
END BENT DIAPHRAGM
(END BENT 1 SHOWN, END BENT 2 SIMILAR)

BENT DIAPHRAGM

PLAN



BENT DIAPHRAGM ENLARGEMENT



END BENT DIAPHRAGM ENLARGEMENT
END BENT 1 SHOWN, END BENT 2 SIMILAR

PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN

LEFT LANE

STRUCTURE 1

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

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NO.	BY:	DATE:	NO.	BY:	DATE:	S01-10
1			3			TOTAL SHEETS
2			4			41

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DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 10/18

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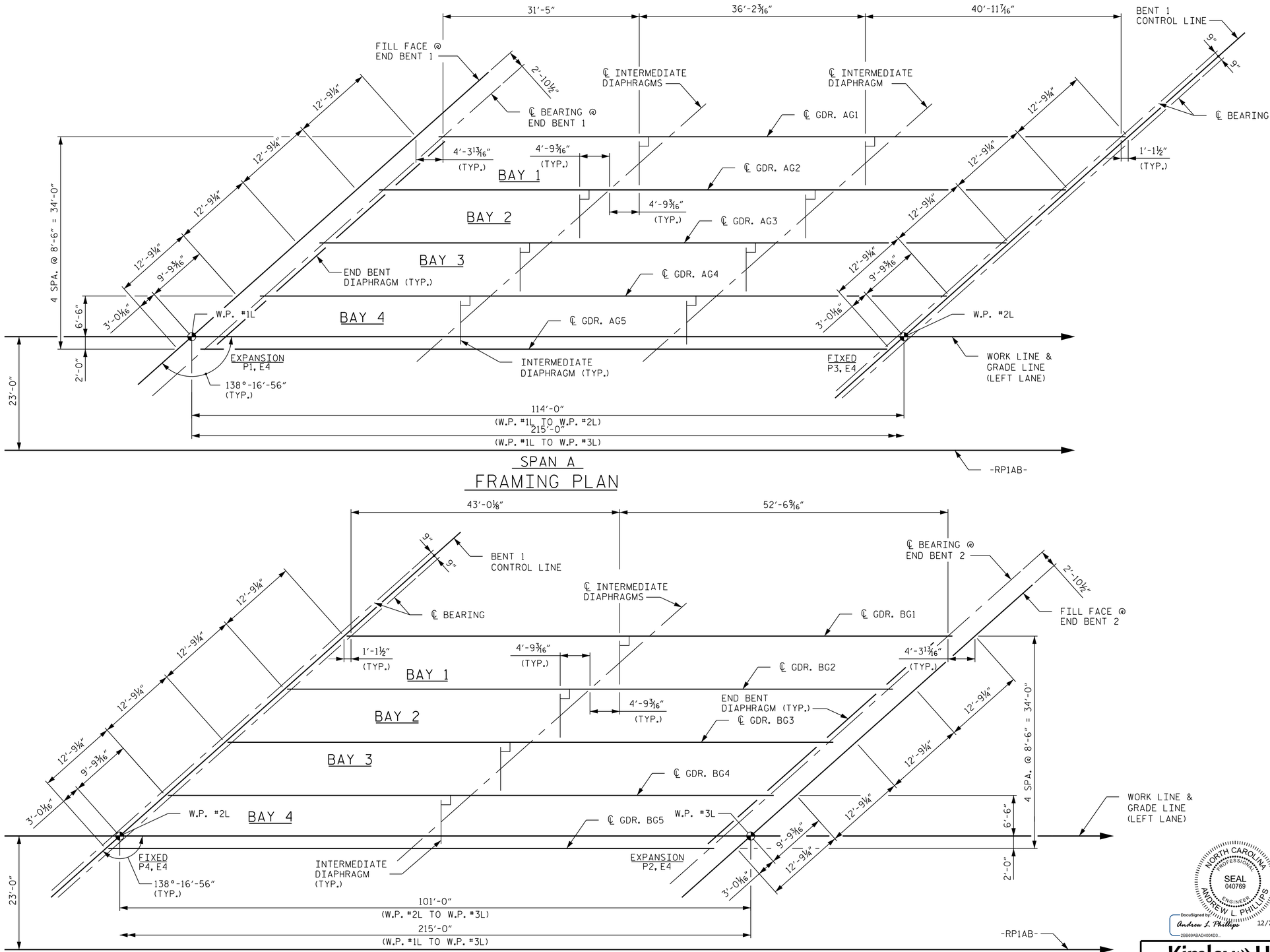

SPAN A

FRAMING PLAN

SPAN B

FRAMING PLAN

NOTES:

FOR STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGM DETAILS FOR 72" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET.

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

FRAMING PLAN

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-11
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 1

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DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 10/18

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DocuSigned by: Andrew L. Phillips 12/7/2018
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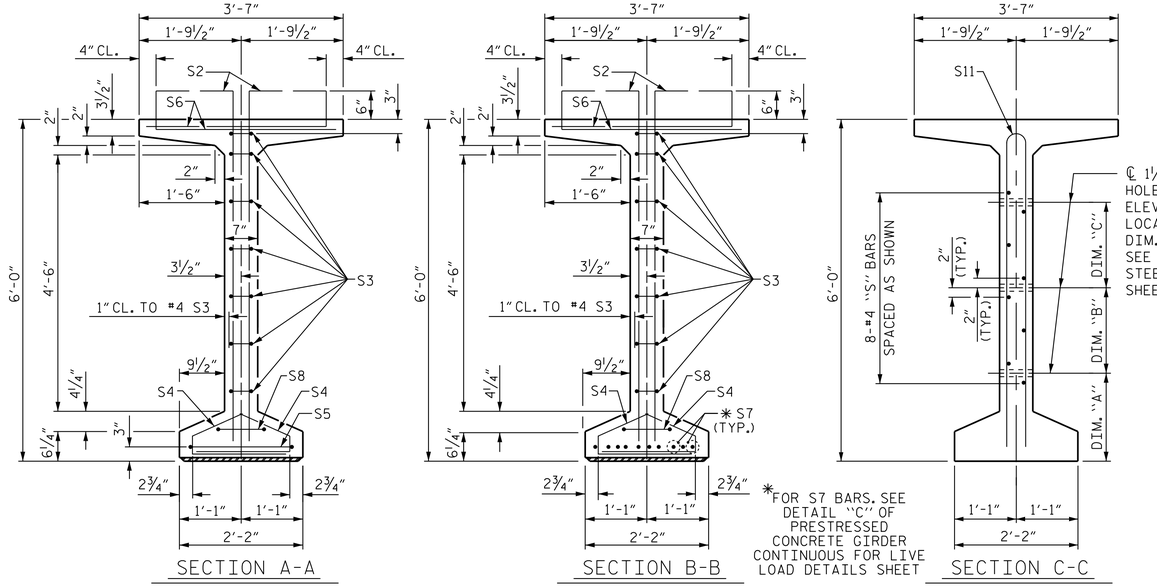
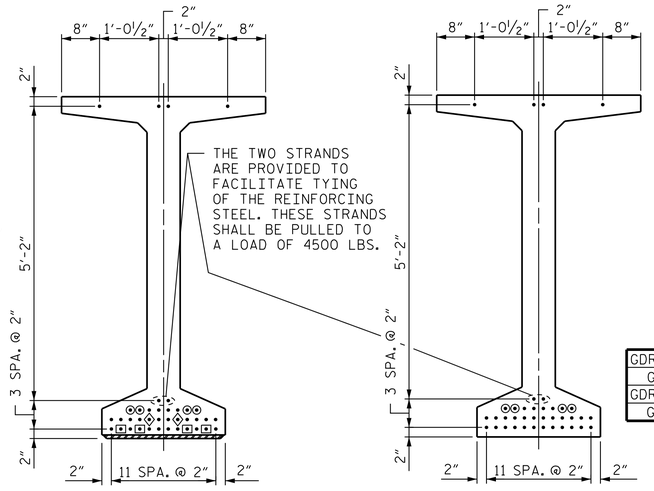


SECTION A-A | SECTION B-B | SECTION C-C

(S1, S6 AND S9 BARS NOT SHOWN)

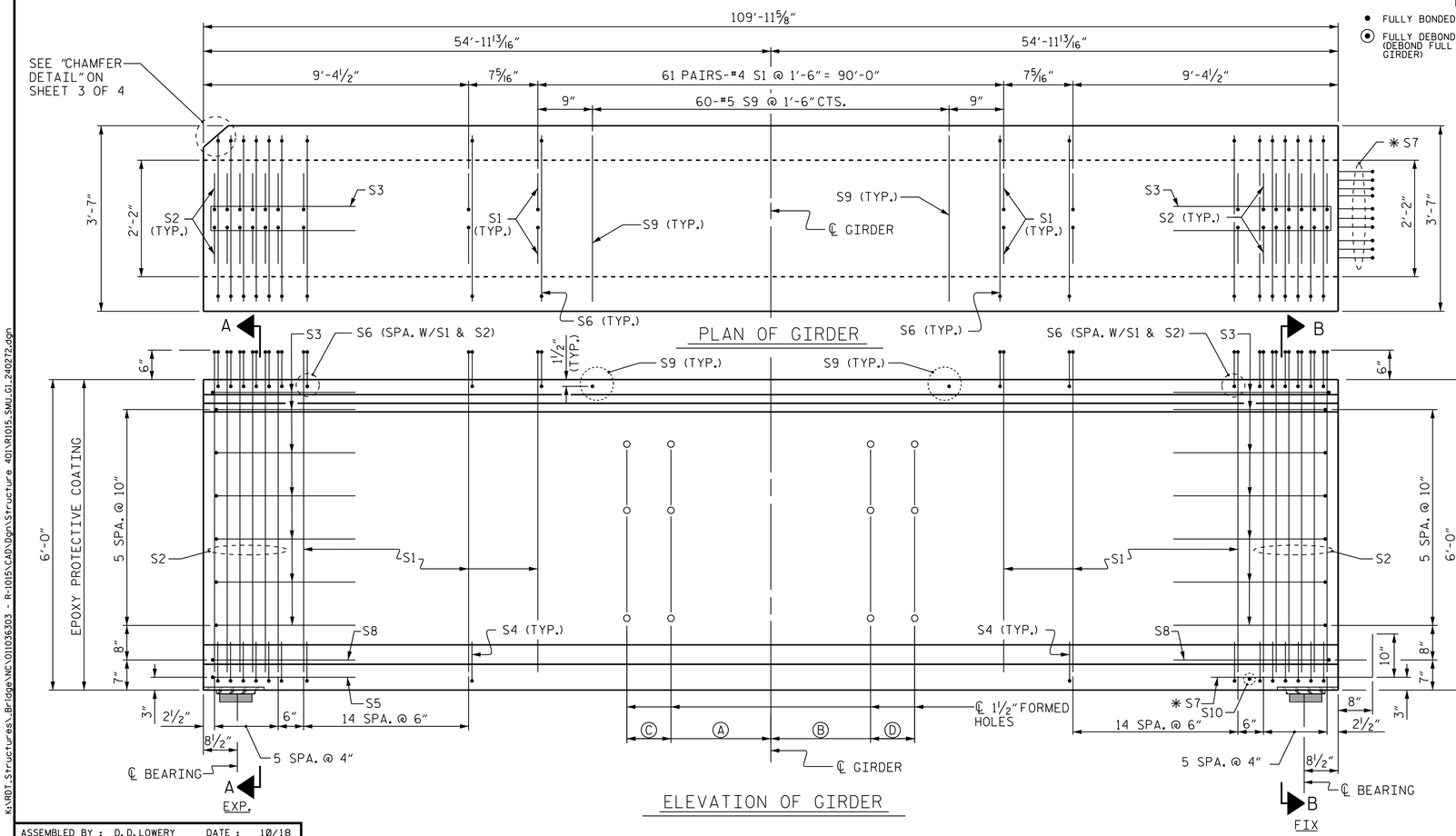


AT END OF GIRDER | AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ◉ FULLY DEBONDED STRANDS (DEBOND FULL LENGTH OF GIRDER)
- ⊡ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◈ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER



PLAN OF GIRDER

ELEVATION OF GIRDER

NOTES

FOR PARTIAL ELEVATIONS REFERENCING SECTION C-C, SEE "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET 3 OF 4.

GDR.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
AG1	22'-10⅝"	13'-3⅞"	-	-
AG2-AG4	13'-3⅞"	13'-3⅞"	9'-6⅞"	9'-6⅞"
AG5	13'-3⅞"	22'-10⅝"	-	-

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

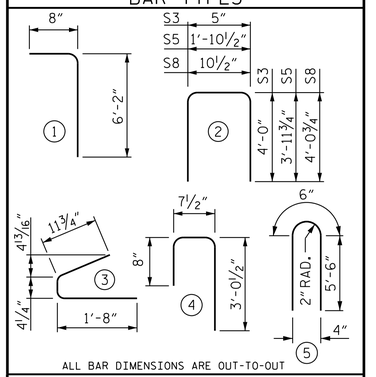
REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	182	#4	1	6'-10"	831
S2	24	#5	1	6'-10"	171
S3	14	#4	2	8'-5"	79
S4	84	#4	3	3'-0"	168
S5	1	#5	2	9'-10"	10
S6	206	#5	4	4'-4"	931
* S7	10	#5	STR	3'-8"	38
S8	2	#5	2	9'-0"	19
S9	60	#5	STR	3'-3"	203
S10	1	#3	STR	1'-10"	1
S11	8	#5	5	11'-6"	96
S11	16	#5	5	11'-6"	192
S12	16	#4	STR	8'-0"	86
S13	16	#4	STR	17'-8"	189

GDR. AG1 & AG5
GDR. AG2-AG4
GDR. AG1 & AG5
GDR. AG2-AG4

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
GDR. AG1 & AG5	2,633	23.6	38
GDR. AG2-AG4	2,832	23.6	38

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5	109'-11⅝"	549'-10⅛"

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

72" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD (SPAN A) LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew L. Phillips 2BB88ABAD4004D3... 12/7/2018

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NC LICENSE # F-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-12
1			3			TOTAL SHEETS
2			4			41

ASSEMBLED BY :	D. D. LOWERY	DATE :	10/18
CHECKED BY :	P. D. COOKSEY	DATE :	10/18
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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STRUCTURE 1 STD. NO. PCG8

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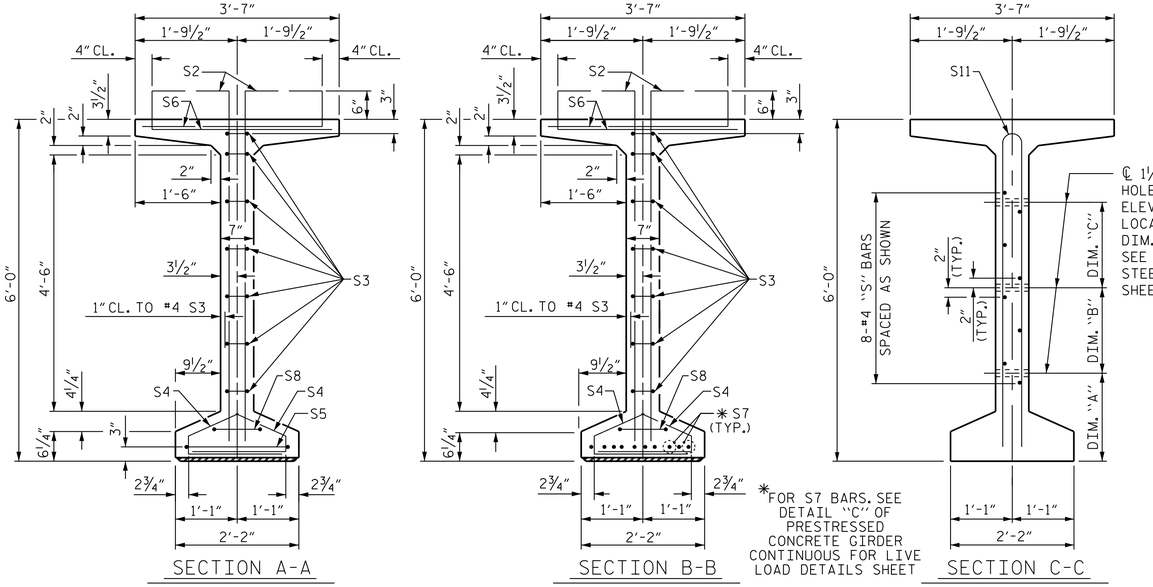
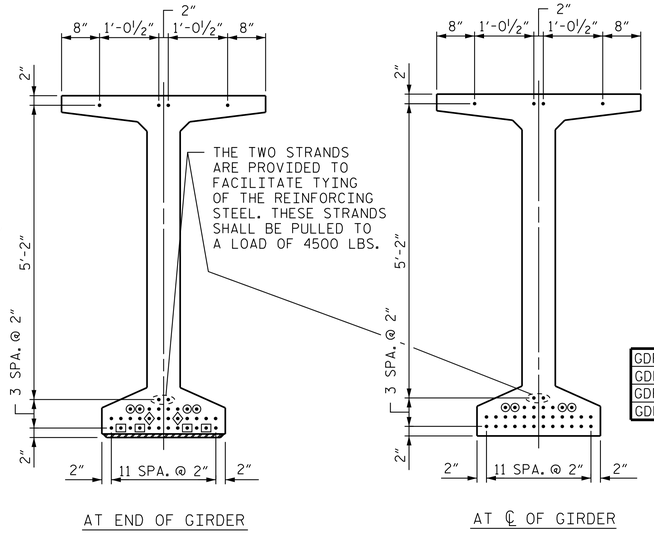
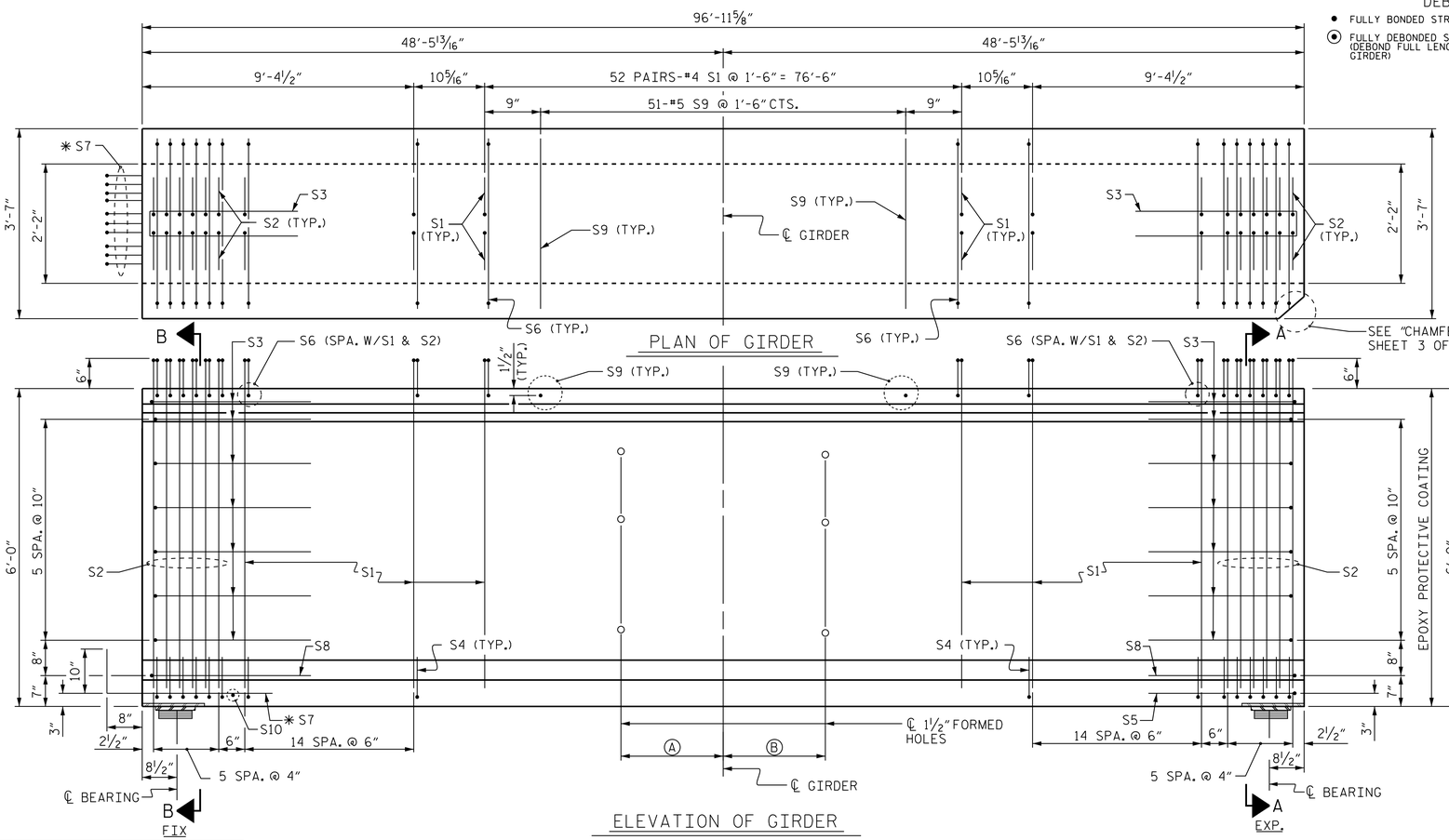




DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ⦿ FULLY DEBONDED STRANDS (DEBOND FULL LENGTH OF GIRDER)
- ⊡ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◈ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER



NOTES

FOR PARTIAL ELEVATIONS REFERENCING SECTION C-C, SEE "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET 3 OF 4.

GDR.	Ⓐ	Ⓑ
BG1	4'-9³⁄₁₆"	-
BG2-BG4	4'-9³⁄₁₆"	4'-9³⁄₁₆"
BG5	-	4'-9³⁄₁₆"

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

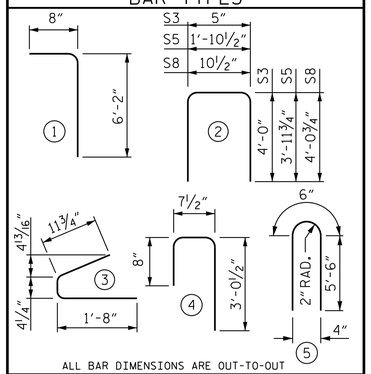
REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	164	#4	1	6'-10"	749
S2	24	#5	1	6'-10"	171
S3	14	#4	2	8'-5"	79
S4	84	#4	3	3'-0"	168
S5	1	#5	2	9'-10"	10
S6	188	#5	4	4'-4"	850
* S7	10	#5	STR	3'-8"	38
S8	2	#5	2	9'-0"	19
S9	51	#5	STR	3'-3"	173
S10	1	#3	STR	1'-10"	1
S11	4	#5	5	11'-6"	48
S11	8	#5	5	11'-6"	96
S12	8	#4	STR	8'-0"	43
S13	8	#4	STR	17'-8"	94

GDR. BG1 & BG5	
GDR. BG2 - BG4	
GDR. BG1 & BG5	
GDR. BG2 - BG4	

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	8000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
GDR. BG1 & BG5	2,349	20.8	38
GDR. BG2 - BG4	2,448	20.8	38

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5	96'-11⅝"	484'-10⅛"

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

72" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD (SPAN B) LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew L. Phillips 2BB88ABAD4004D3... 12/7/2018

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NC LICENSE # F-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-13
1			3			TOTAL SHEETS
2			4			41

ASSEMBLED BY :	D. D. LOWERY	DATE : 10/18
CHECKED BY :	P. D. COOKSEY	DATE : 10/18
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

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STRUCTURE 1 STD. NO. PCG8

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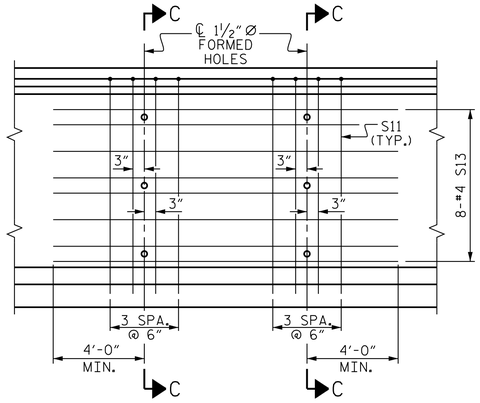
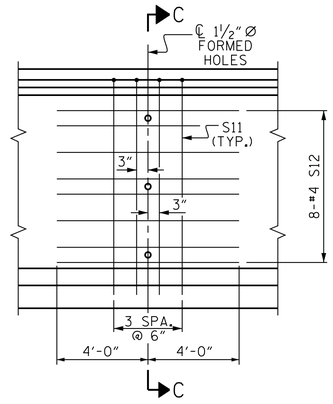


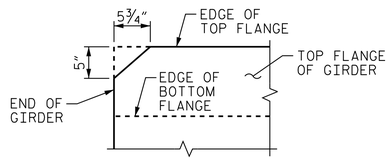
PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM
REINFORCING STEEL FOR GIRDER Nos. AG2, AG3, AG4, BG2, BG3 & BG4



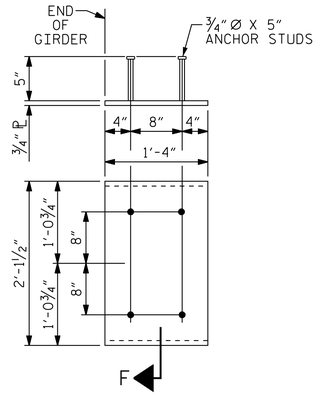
PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM
REINFORCING STEEL FOR GIRDER Nos. AG1, AG5, BG1 & BG5



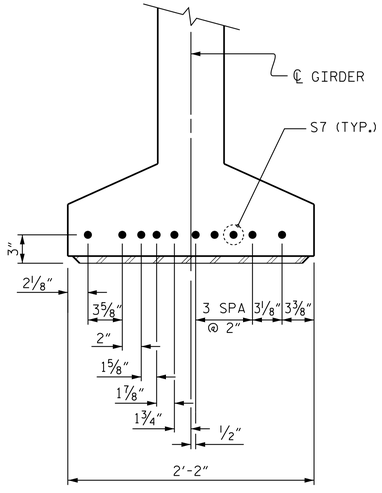
CHAMFER DETAIL

SPAN A GIRDER SHOWN, SPAN B SIMILAR.
APPLY CHAMFER TO EXPANSION END OF ALL BEAMS.

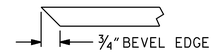


EMBEDDED PLATE "B-1" DETAILS
FOR 72" MODIFIED BULB TEES

(2 REQ'D PER GIRDER)



DETAIL "C"



SECTION "F"

(SEE NOTES)

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,400 PSI.

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

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF ¼".

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

FOR SECTION C-C, SEE "72" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD" SHEETS 1 OF 4 & 2 OF 4.

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L PHILLIPS

DocuSigned by: Andrew L. Phillips 12/7/2018
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-14
1			3			TOTAL SHEETS
2			4			41

ASSEMBLED BY : D.D.LOWERY	DATE : 10/18		
CHECKED BY : P.D.COOKSEY	DATE : 10/18		
DRAWN BY : ELR 11/91	REV. 1/15	MAA/TMG	
CHECKED BY : GRP 11/91	REV. 2/15	MAA/TMG	
	REV. 12/17	MAA/THC	

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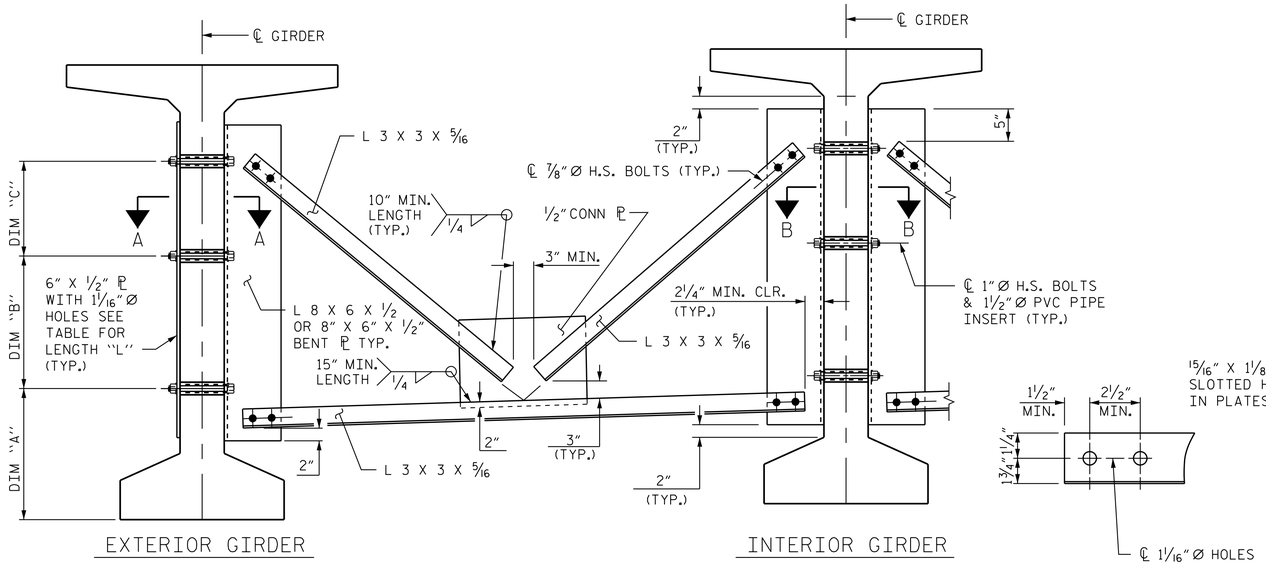
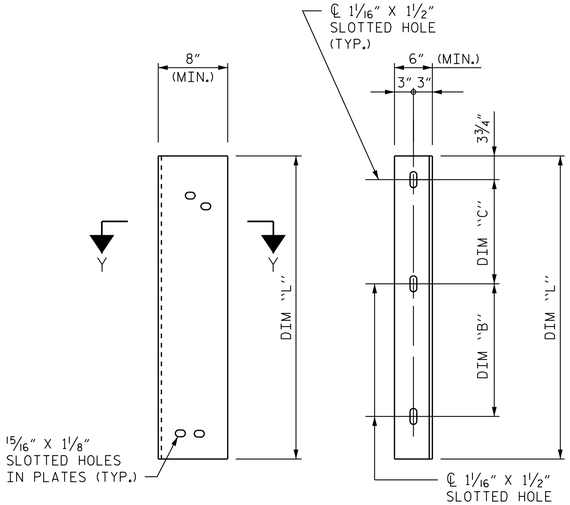
STRUCTURE 1 STD. NO. PCG9



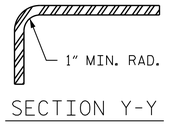
PART SECTION AT INTERMEDIATE DIAPHRAGM

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



DIAPHRAGM FACE

WEB FACE



SECTION Y-Y

CONNECTOR 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 METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALIZATION) SEE SPECIAL PROVISION.

FOR METALLIZATION, APPLY A THERMAL SPRAYED COATING WITH A SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE DEPARTMENT'S THERMAL SPRAYED COATINGS (METALIZATION) PROGRAM, THERMAL SPRAYED COATING 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.

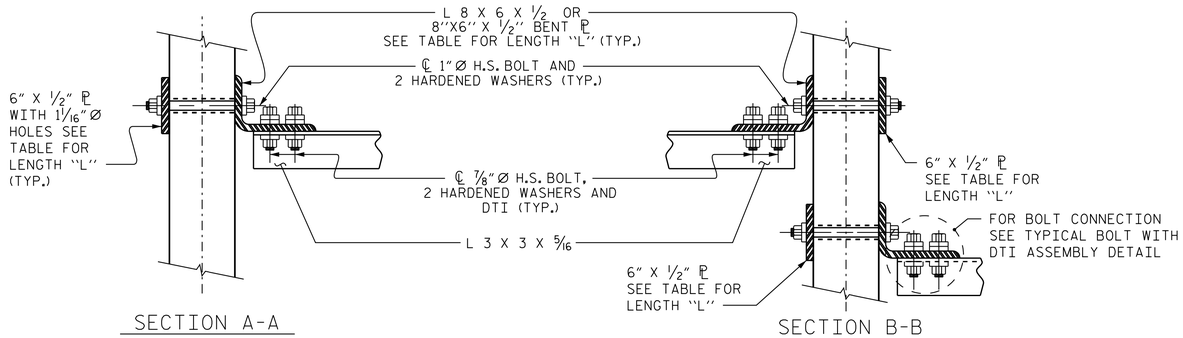
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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

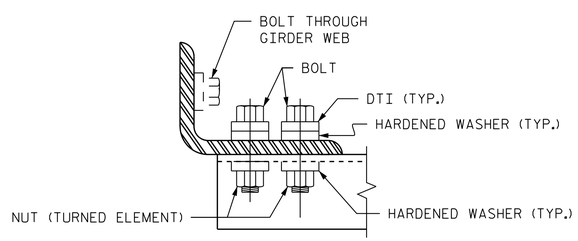
GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
72" BULB TEE	1'-2¾"	1'-10"	1'-10"	4'-2"



SECTION A-A

SECTION B-B

CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

INTERMEDIATE STEEL DIAPHRAGMS FOR 72" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-15
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 1 STD. NO. PCG11

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L PHILLIPS

DocuSigned by: Andrew L. Phillips 12/7/2018
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ASSEMBLED BY : D. D. LOWERY	DATE : 10/18		
CHECKED BY : P. D. COOKSEY	DATE : 10/18		
DRAWN BY : RWW 11/09	REV. 10/1/11	MAA/GM	
CHECKED BY : GM 11/09	REV. 12/17	MAA/THC	

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DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" Ø LOW RELAXATION STRANDS	SPAN A GIRDERS AG1 AND AG5																				
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.028′	0.056′	0.082′	0.106′	0.127′	0.145′	0.160′	0.170′	0.177′	0.179′	0.177′	0.170′	0.160′	0.145′	0.127′	0.106′	0.082′	0.056′	0.028′	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.016′	0.031′	0.046′	0.061′	0.072′	0.084′	0.091′	0.098′	0.101′	0.103′	0.101′	0.098′	0.091′	0.084′	0.072′	0.061′	0.046′	0.031′	0.016′	0.000
FINAL CAMBER ↑	0	1/8″	1/4″	3/8″	1/2″	5/8″	11/16″	13/16″	13/16″	7/8″	7/8″	7/8″	13/16″	13/16″	11/16″	5/8″	1/2″	3/8″	1/4″	1/8″	0

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" Ø LOW RELAXATION STRANDS	SPAN A GIRDERS AG2, AG3, AND AG4																				
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.028′	0.056′	0.082′	0.106′	0.127′	0.145′	0.160′	0.170′	0.177′	0.179′	0.177	0.170′	0.160″	0.145′	0.127′	0.106′	0.082′	0.056′	0.028′	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.017′	0.034′	0.050′	0.066′	0.078′	0.090′	0.098′	0.106′	0.109′	0.112′	0.109′	0.106′	0.098′	0.090′	0.078′	0.066′	0.050′	0.034′	0.017′	0.000
FINAL CAMBER ↑	0	1/8″	1/4″	3/8″	7/16″	9/16″	5/8″	11/16″	3/4″	3/4″	3/4″	3/4″	3/4″	11/16″	5/8″	9/16″	7/16″	3/8″	1/4″	1/8″	0

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" Ø LOW RELAXATION STRANDS	SPAN B GIRDERS BG1 AND BG5										
TENTH POINTS	BRG.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	BRG.
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.050′	0.095′	0.130′	0.153′	0.160′	0.153′	0.130′	0.095′	0.050′	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.019′	0.036′	0.050′	0.059′	0.062′	0.059′	0.050′	0.036′	0.019′	0.000
FINAL CAMBER ↑	0	3/8″	11/16″	15/16″	1 1/8″	1 1/8″	1 1/8″	15/16″	11/16″	3/8″	0

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" Ø LOW RELAXATION STRANDS	SPAN B GIRDERS BG2, BG3, AND BG4										
TENTH POINTS	BRG.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	BRG.
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.050′	0.095′	0.130′	0.153′	0.160′	0.153′	0.130′	0.095′	0.050′	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.020′	0.039′	0.054′	0.064′	0.067′	0.064′	0.054′	0.039′	0.020′	0.000
FINAL CAMBER ↑	0	5/16″	5/8″	7/8″	1 1/16″	1 1/16″	1 1/16″	7/8″	5/8″	5/16″	0

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

K:\RDT_Structures_Bridge\NC\01036303 - R-1015\CAD\Dgn\Structure 401\R1015_SMU_DL1_240272.dgn
12/7/2018

DRAWN BY: D. D. LOWERY DATE: 10/18
CHECKED BY: P. D. COOKSEY DATE: 10/18
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS DATE: 10/18

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NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS
DocuSigned by: Andrew L. Phillips 12/7/2018
28B89ABAD4004D3...

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421 Fayetteville Street, Suite 600
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NC LICENSE # F-0102

PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

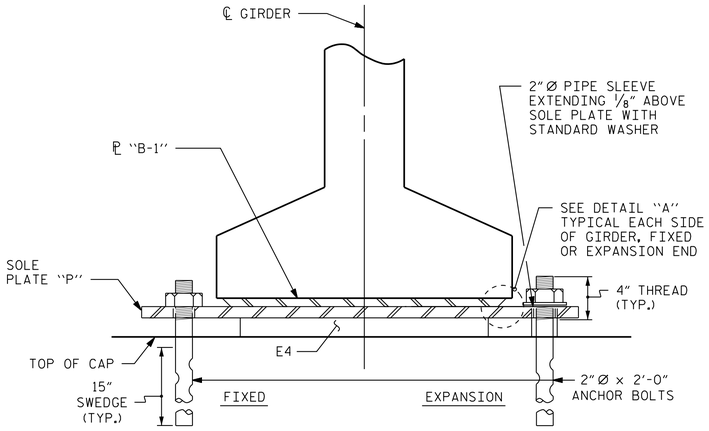
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

GIRDER DEFLECTION AND CAMBER SCHEDULES

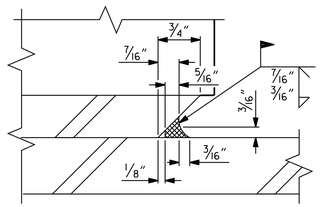
LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-16
1			3			TOTAL SHEETS
2			4			41

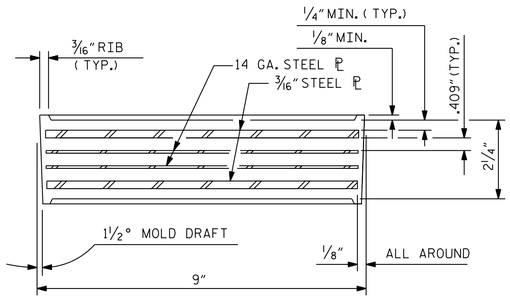
STRUCTURE 1



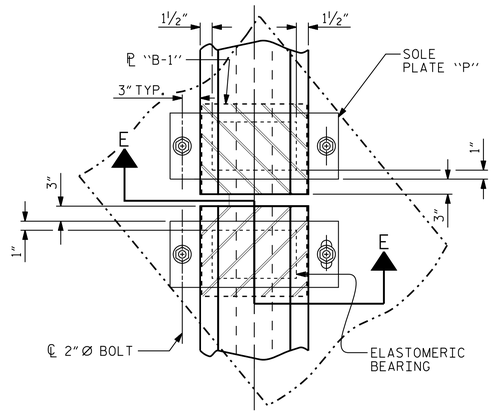
SECTION E-E



DETAIL "A"

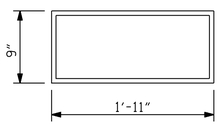


TYPICAL SECTION OF ELASTOMERIC BEARINGS



TYPICAL HALF-PLAN (FIXED)

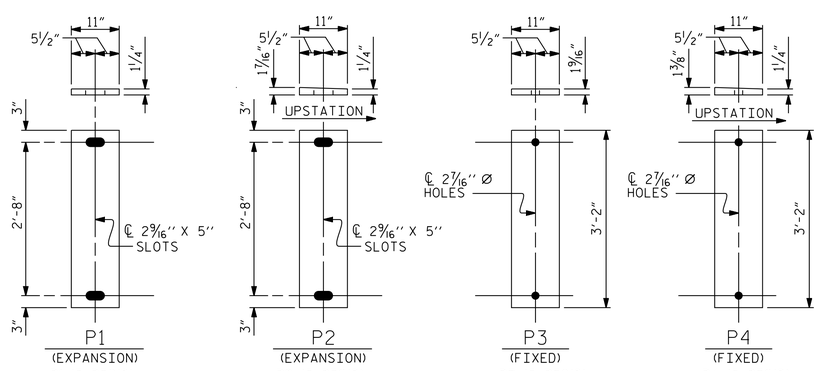
TYPICAL HALF-PLAN (EXPANSION)



E4 (20 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE V



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 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

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

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

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

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

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

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

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.

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

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

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12/7/2018

ASSEMBLED BY : D.D.LOWERY	DATE : 10/18		
CHECKED BY : P.D.COOKSEY	DATE : 10/18		
DRAWN BY : EEM 2/97	REV. 6/13	AAC/MAA	
CHECKED BY : VAP 2/97	REV. 1/15	MAA/TMG	
	REV. 12/17	MAA/THC	

DocuSigned by: Andrew L. Phillips 2BB89ABAD4004D3... 12/7/2018

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

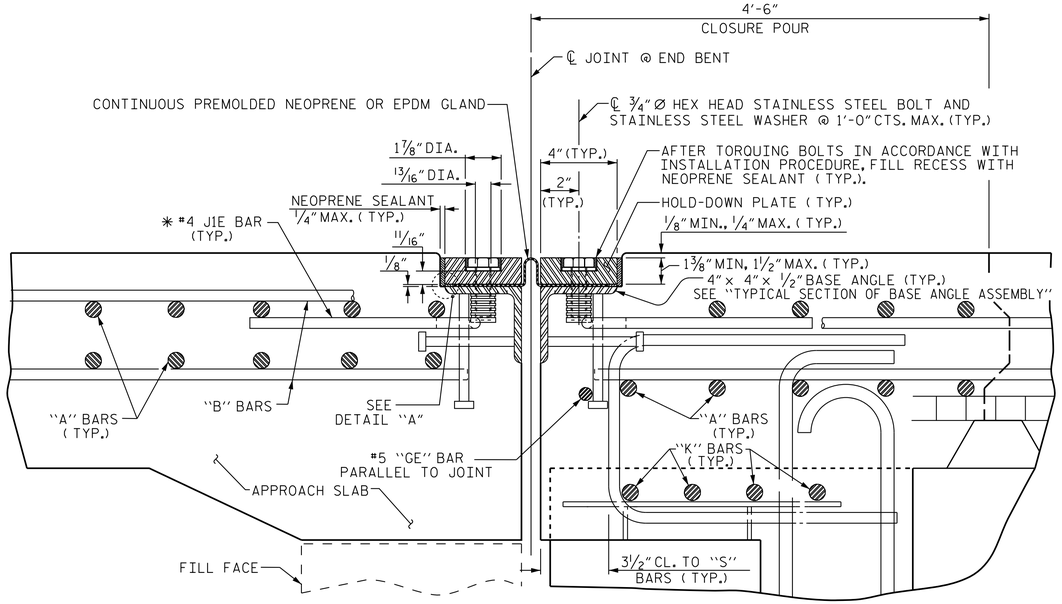
STANDARD

ELASTOMERIC BEARING DETAILS

PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-17
1			3			TOTAL SHEETS
2			4			41

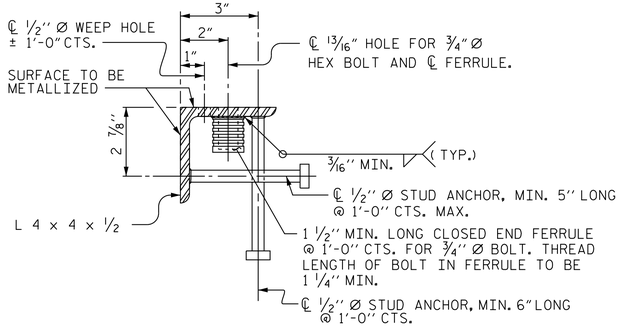
STRUCTURE 1 STD. NO. EB4



EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT -- PRESTRESSED GIRDER SUPERSTRUCTURE

* THE QUANTITY OF #4 J1E BARS ON THE BILL OF MATERIAL IS BASED ON 1'-0" CENTERS. J1E BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF J1E BARS SPECIFIED, ADDITIONAL J1E BARS WILL NOT BE REQUIRED.



TYPICAL SECTION OF BASE ANGLE ASSEMBLY

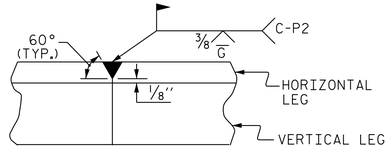
INSTALLATION PROCEDURE

1. A TEMPLATE OR OTHER SUITABLE DEVICE SHALL BE USED TO FORM THE TOP OF THE EXPANSION JOINT SEAL BLOCKOUT TO THE PROPER DEPTH AND WIDTH. THE TEMPLATE SHALL BE 4⅛" TO 4¼" WIDE AND OF SUCH THICKNESS AS TO PROVIDE FOR CORRECT FINAL ELEVATION OF TOP OF HOLD-DOWN PLATES. THE TEMPLATE SHALL BE ATTACHED TO THE BASE ANGLE ASSEMBLY WITH THE ¾" Ø HEX HEAD BOLTS PROVIDED FOR THE HOLD-DOWN PLATES. A 1" Ø HOLE SHALL BE PROVIDED IN THE TEMPLATE CENTERED OVER EACH WEEP HOLE IN THE 4" X 4" X ½" BASE ANGLE. OTHER METHODS OF INSURING DRAINAGE THROUGH WEEP HOLES MAY BE EMPLOYED SUBJECT TO ENGINEER'S APPROVAL.
2. AFTER THE CONCRETE HAS BEEN CAST ON BOTH SIDES OF THE JOINT, REMOVE THE TEMPLATE. THOROUGHLY CLEAN THE BOLT HOLES AND THE ANGLE PLATE. REMOVE ANY EXCESS CONCRETE THAT COMES OUT OF THE WEEP HOLES. ANY DAMAGED STEEL SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).
3. LAY THE GLAND ON THE BASE ANGLE AND FIELD MARK THE GLAND FOR THE BOLT HOLES. HOLES IN THE GLAND SHALL BE PUNCHED ⅞" IN DIAMETER WITH A HAND PUNCH.
4. IN ORDER TO CHECK FOR PROPER ALIGNMENT, PLACE THE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. DO NOT APPLY NEOPRENE SEALANT. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE BUT DO NOT TIGHTEN. THE ENGINEER SHALL INSPECT THE JOINT SEAL DEVICE FOR PROPER ALIGNMENT.
5. AFTER INSPECTION, REMOVE THE HOLD-DOWN PLATES AND GLAND. APPLY NEOPRENE SEALANT TO THE BASE ANGLE IN ACCORDANCE WITH THE "INSTALLATION SKETCH". PLACE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE ASSEMBLY AND TORQUE THE BOLTS TO 88 FT-LBS WITH A TORQUE WRENCH. CHECK THE TORQUE AFTER THREE (3) HOURS AND, IF NECESSARY, RETIGHTEN TO 88 FT-LBS. A FINAL CHECK SHALL BE MADE AT SEVEN (7) DAYS. TORQUE SHALL NOT BE LESS THAN 80 FT-LBS AFTER SEVEN (7) DAYS.
6. AFTER PROPER TORQUING, CLEAN THE BOLT HOLE RECESSES, THE RECESS BETWEEN THE JOINT SEAL DEVICE AND CONCRETE, AND THE LIFTING HOLES IN THE HOLD-DOWN PLATE, AND COMPLETELY FILL THE RECESSES AND LIFTING HOLES WITH NEOPRENE SEALANT.

DETAIL "A"

INSTALLATION SKETCH

MOVEMENT AND SETTING AT JOINT					
BENT NO.	SKEW ANGLE	TOTAL MOVEMENT	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
EB1	138°-16'-56"	11/16"	15/16"	1¼"	1⅛"
EB2	138°-16'-56"	⅝"	1¼"	1⅜"	1 1/16"



DETAIL- FIELD WELD SPLICE OF BASE ANGLE

GENERAL NOTES

1. FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.
2. ALL PLATES AND ANGLES SHALL CONFORM TO AASHTO M270 GRADE 36 STEEL OR APPROVED EQUAL. ALL HOLD-DOWN BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL CONFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. ALL STUD ANCHORS SHALL CONFORM TO AASHTO M169, GRADES 1010 THRU 1020 OR APPROVED EQUAL. ALL CONCRETE INSERTS SHALL BE CLOSED END AND SHALL CONFORM TO AASHTO M169, GRADE 12L14. TENSILE CAPACITY SHALL BE 3000 LBS. MINIMUM.
3. A PREMOLDED CORRUGATED OR NON-CORRUGATED GLAND SHALL BE USED FOR JOINTS SKEWED BETWEEN 50° THRU 130°. FOR JOINTS SKEWED LESS THAN 50° OR MORE THAN 130°, ONLY A CORRUGATED GLAND SHALL BE USED.
4. CLOSED END FERRULES AND STUD ANCHORS SHALL BE SHOP WELDED AND ALL HOLES SHALL BE SHOP DRILLED AS SHOWN ON PLANS. STUD ANCHORS SHALL BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION.
5. SURFACES COMING IN CONTACT WITH NEOPRENE SHALL BE GROUND SMOOTH PRIOR TO METALLIZING.
6. UPON COMPLETION OF SHOP FABRICATION, THE HOLD-DOWN PLATE AND BASE ANGLE ASSEMBLY, AS SHOWN IN THE "TYPICAL SECTION OF BASE ANGLE ASSEMBLY", SHALL BE METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
7. THE COVER PLATES SHALL BE METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
8. BASE ANGLE ASSEMBLY SHALL BE CONTINUOUS FOR THE LENGTH OF THE JOINT. AT CROWN BREAKS, THE ENDS OF THE BASE ANGLE ASSEMBLY SHALL BE CUT PARALLEL TO THE BRIDGE CENTERLINE FOR SKEWS LESS THAN 80° AND GREATER THAN 100°. FINISHED WELD SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).
9. FIELD SPLICES OF HOLD-DOWN PLATES SHALL BE KEPT TO A MINIMUM. CONTRACTOR SHALL FURNISH DETAILED PLANS SHOWING PROPOSED SPLICE LOCATIONS FOR APPROVAL. HOLD-DOWN PLATES SHALL NOT EXCEED 20' LENGTHS UNLESS APPROVED BY THE ENGINEER.
10. NO ALTERNATE JOINT DETAILS SHALL BE PERMITTED IN LIEU OF THOSE SHOWN ON THESE PLANS.
11. THE CONTRACTOR MAY, AT HIS OPTION, USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF CONCRETE INSERTS FOR COVER PLATES. THE YIELD LOAD OF THE ¾" Ø BOLT IS 10 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.
12. THE FABRICATOR SHALL PROVIDE ½" Ø THREADED HOLES IN THE HOLD-DOWN PLATES TO ASSIST IN LIFTING AND PLACING. THE HOLES SHALL BE ¾" DEEP AT 6'-0" MAXIMUM SPACING AND A MINIMUM OF TWO HOLES PER PLATE.

PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
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STANDARD
EXPANSION JOINT SEAL DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS
DocuSigned by: Andrew L. Phillips 2BB89ABAD4004D3... 12/7/2018

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ASSEMBLED BY : D. D. LOWERY		DATE :	10/18
CHECKED BY : P. D. COOKSEY		DATE :	10/18
DRAWN BY : REK	9/87	REV. 10/1/11	MAA/GM
CHECKED BY : CRK	10/87	REV. 10/17	MAA/THC
		REV. 6/18	MAA/THC

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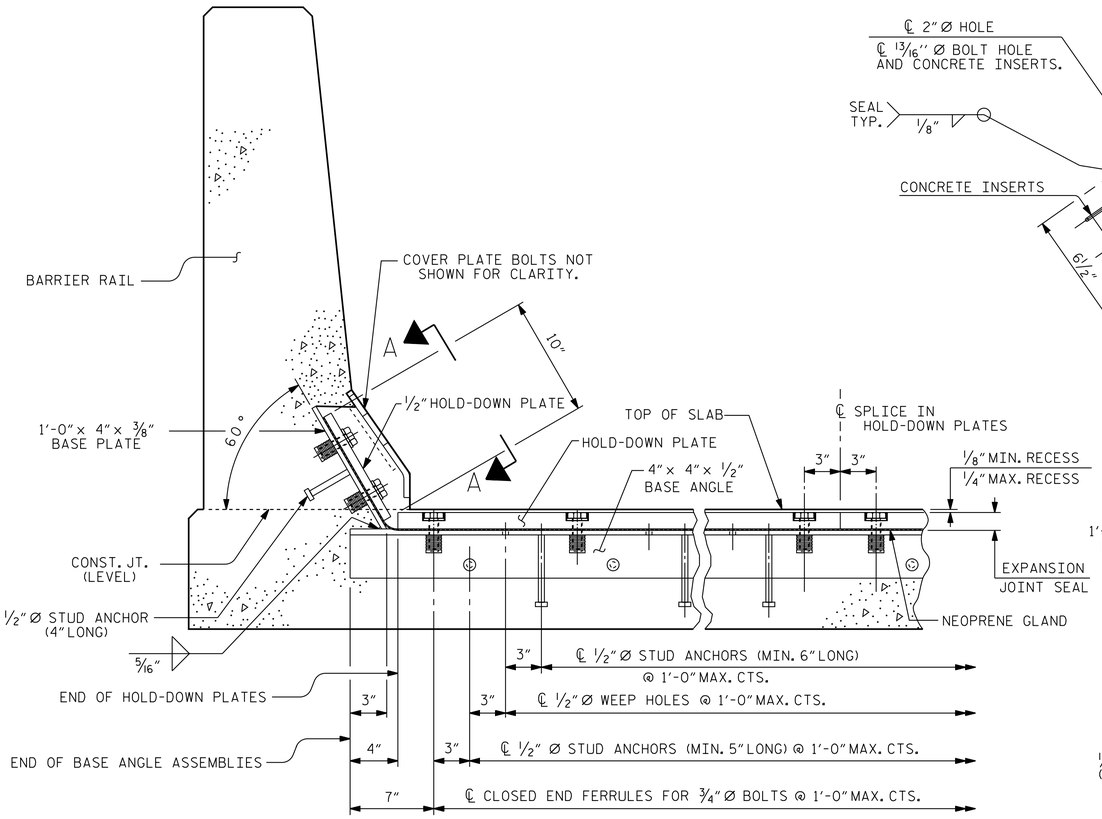
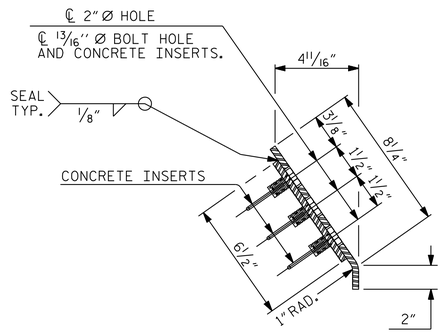
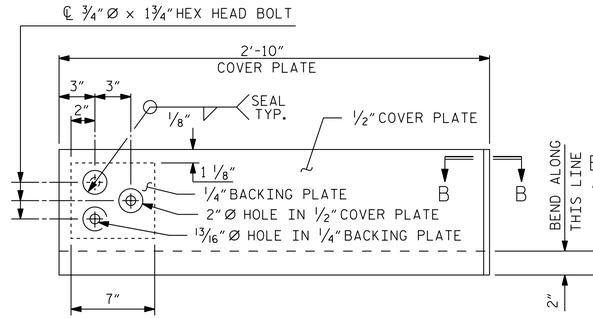
STRUCTURE 1 STD. NO. EJS1



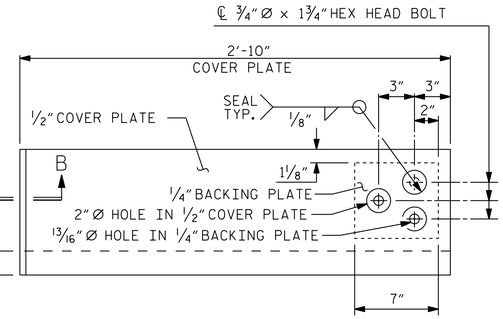
SECTION THRU RAIL NORMAL TO JOINT



END VIEW

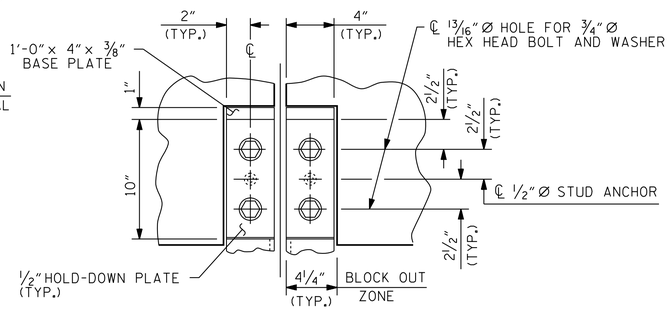


TYPE I - ELEVATION VIEW

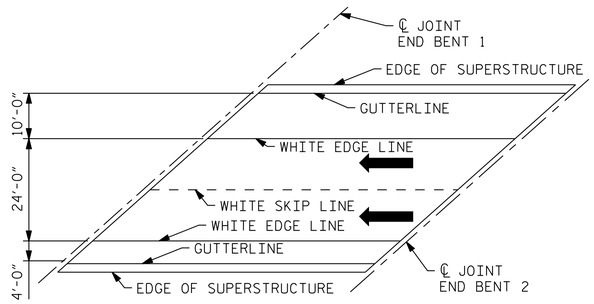


TYPE II - ELEVATION VIEW

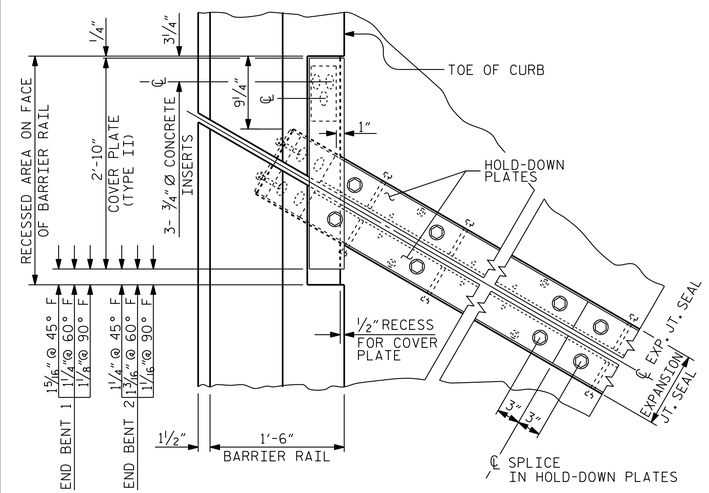
COVER PLATE DETAILS



SECTION A - A

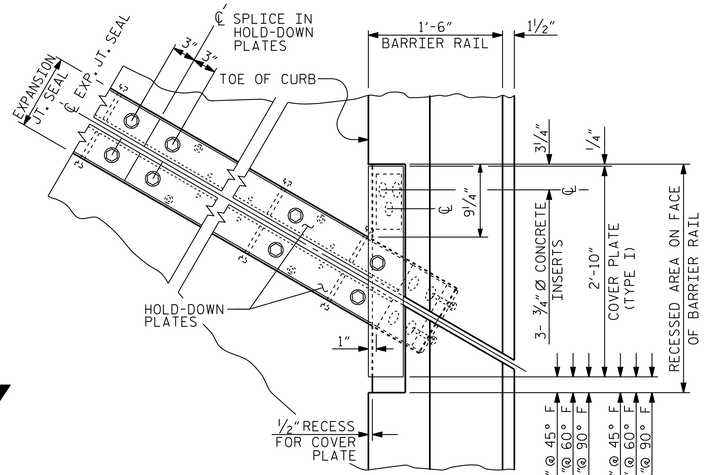


PAVEMENT MARKING ALIGNMENT

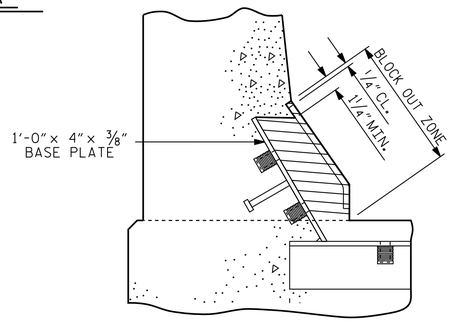


PLAN OF EXPANSION JOINT SEAL

FLOW OF TRAFFIC

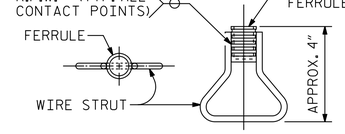


SECTION B - B



BLOCK OUT DETAIL

SEE " SECTION A - A " FOR OTHER DETAILS.



PLAN ELEVATION

CONCRETE INSERT

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

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

EXPANSION JOINT SEAL DETAILS FOR BARRIER RAIL

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-19
1			3			TOTAL SHEETS
2			4			41

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew L. Phillips 26B86ABAD4004D3... 12/7/2018

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ASSEMBLED BY : D. D. LOWERY	DATE : 10/18		
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DRAWN BY : REK 9/87	REV. 7/12	MAA/GM	
CHECKED BY : CRK 10/87	REV. 6/13	MAA/GM	
	REV. 12/17	MAA/THC	

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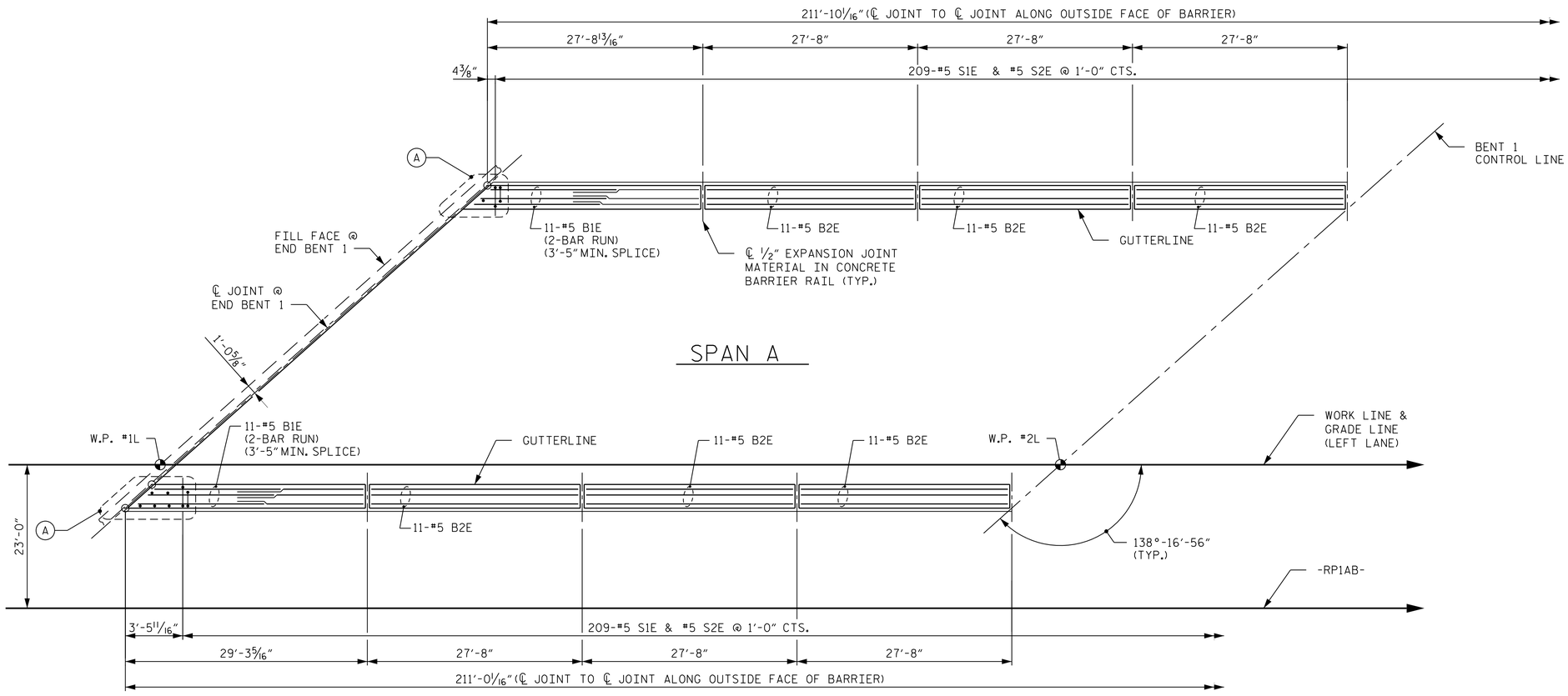
12/7/2018

STRUCTURE 1 STD. NO. EJS2

NOTES

ALL DIMENSIONS ARE MEASURED ALONG OUTSIDE FACE OF CONCRETE BARRIER RAIL.



(A) SEE "PLAN AT END OF RAIL" DETAIL ON SHEET 3 OF 3 FOR LOCATIONS & BAR TYPES .

PLAN OF BARRIER RAIL

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

CONCRETE BARRIER RAIL LAYOUT

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew L. Phillips 2BB88ABAD4004D3... 12/7/2018

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1			3			TOTAL SHEETS
2			4			41

STRUCTURE 1

DRAWN BY: D. D. LOWERY DATE: 10/18
CHECKED BY: P. D. COOKSEY DATE: 10/18
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS DATE: 10/18

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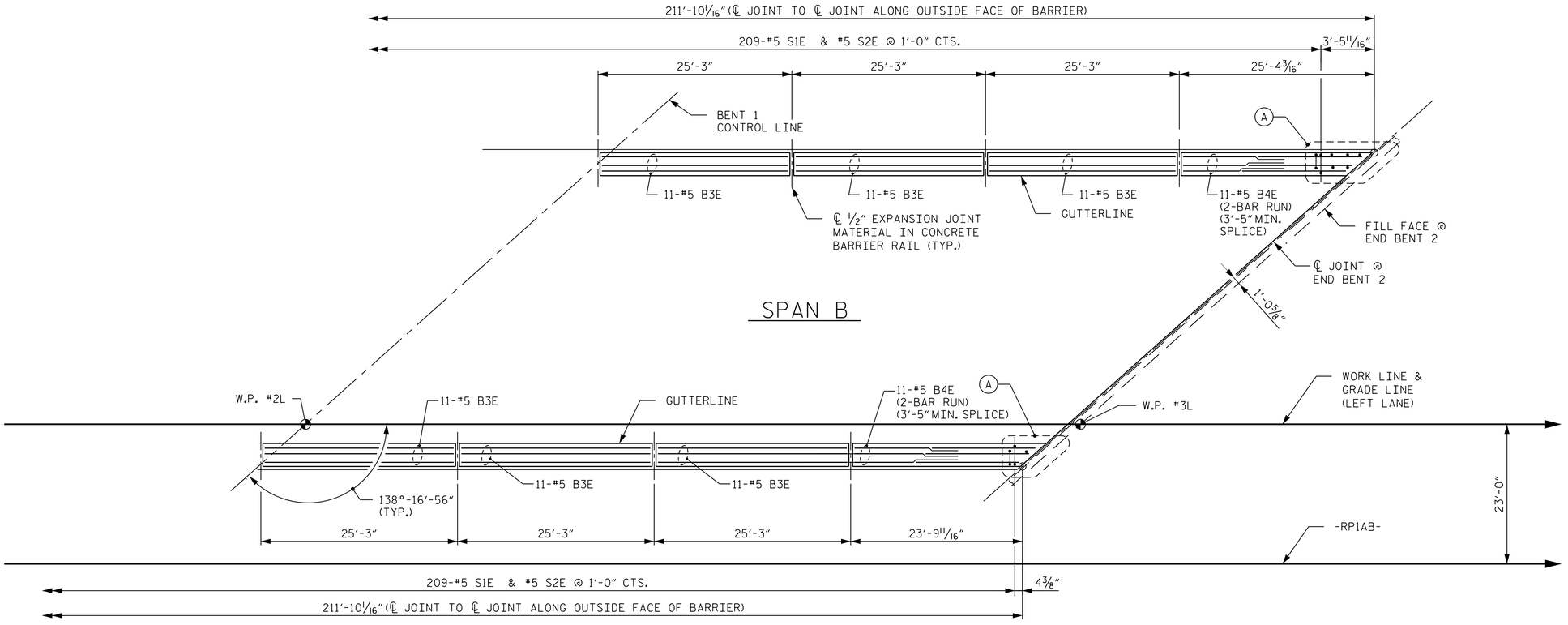
NOTES

ALL DIMENSIONS ARE MEASURED ALONG OUTSIDE FACE OF CONCRETE BARRIER RAIL.



PLAN OF BARRIER RAIL

(A) SEE "PLAN AT END OF RAIL" DETAIL ON SHEET 3 OF 3 FOR LOCATIONS & BAR TYPES .

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew L. Phillips 2BB89ABAD4004D3... 12/7/2018

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NC LICENSE # F-0102

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

CONCRETE BARRIER RAIL LAYOUT

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-21
1			3			TOTAL SHEETS
2			4			41

DRAWN BY: D. D. LOWERY DATE: 10/18
CHECKED BY: P. D. COOKSEY DATE: 10/18
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS DATE: 10/18

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STRUCTURE 1

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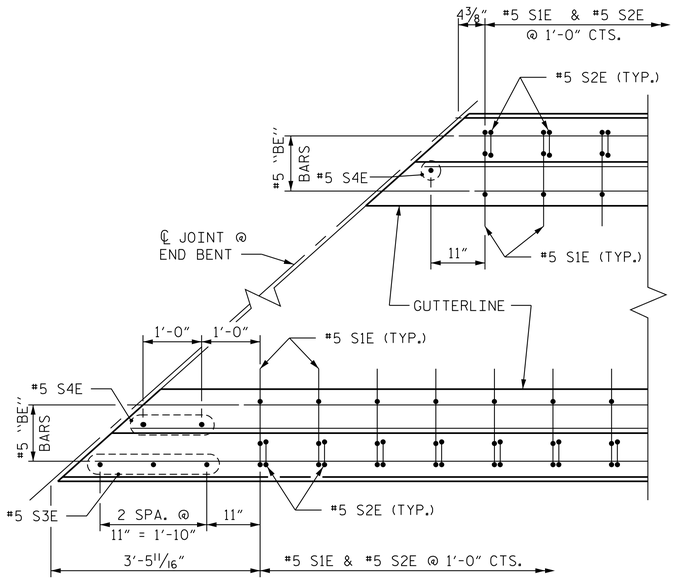
12/7/2018



PLAN AT END OF RAIL

(END BENT 1 SHOWN, END BENT 2 SIMILAR)

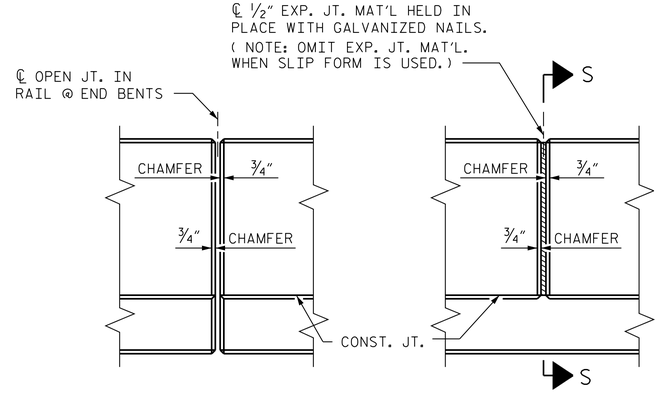
NOTES

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.

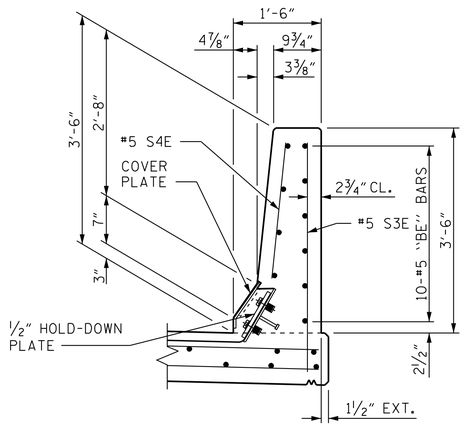
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS 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.

QUANTITIES FOR BARRIER RAIL ON APPROACH SLAB ARE INCLUDED ON BRIDGE APPROACH SLAB SHEETS.

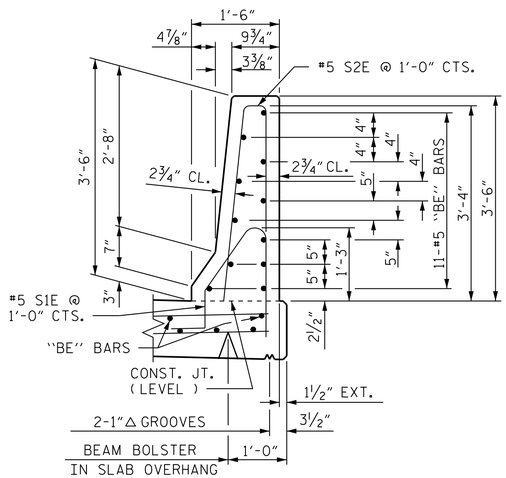


ELEVATION AT EXPANSION JOINTS

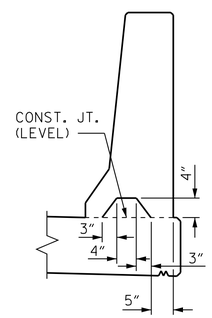
BARRIER RAIL DETAILS



SECTION THRU RAIL
@ END VIEW

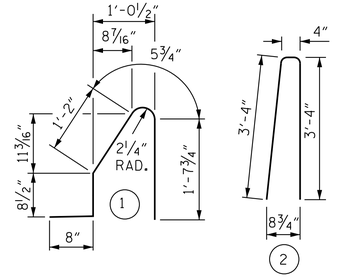


SECTION THRU RAIL



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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1E	44	#5	STR	16'-1"	738
B2E	66	#5	STR	27'-3"	1,876
B3E	66	#5	STR	24'-10"	1,709
B4E	44	#5	STR	14'-1"	646
S1E	418	#5	1	4'-8"	2,035
S2E	418	#5	2	7'-0"	3,052
S3E	6	#5	STR	3'-11"	25
S4E	6	#5	STR	2'-4"	15

EPOXY COATED REINFORCING STEEL	10,096 LBS.
CLASS AA CONCRETE	57.6 CU. YDS.
CONCRETE BARRIER RAIL **	423.7 LIN. FT.

"E" INDICATES EPOXY COATED REINFORCING.

** DOES NOT INCLUDE BARRIER RAIL ON APPROACH SLAB

PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
CONCRETE BARRIER RAIL

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS
DocuSigned by: Andrew L. Phillips 2BB89ABAD4004D3... 12/7/2018

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NC LICENSE # F-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-22
1			3			TOTAL SHEETS
2			4			41

ASSEMBLED BY : D.D.LOWERY		DATE :	10/18
CHECKED BY : P.D.COOKSEY		DATE :	10/18
DRAWN BY : ARB 5/87	REV. 7/12		MAA/GM
CHECKED BY : SJD 9/87	REV. 6/13		MAA/GM
	REV. 12/17		MAA/THC

12/7/2018

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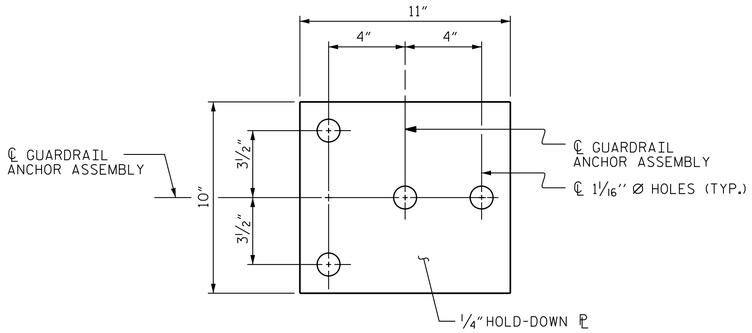
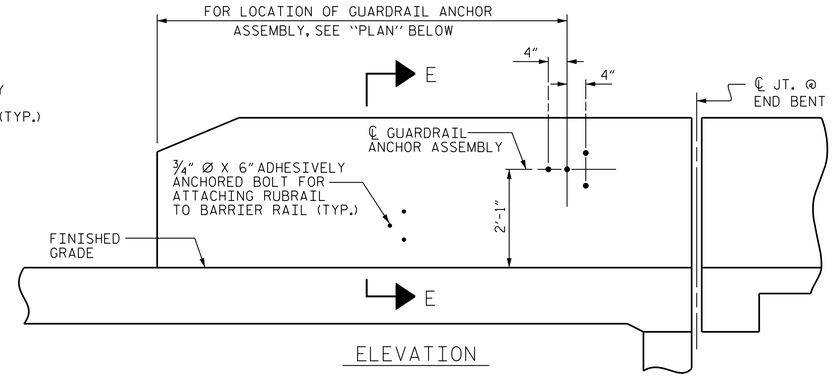
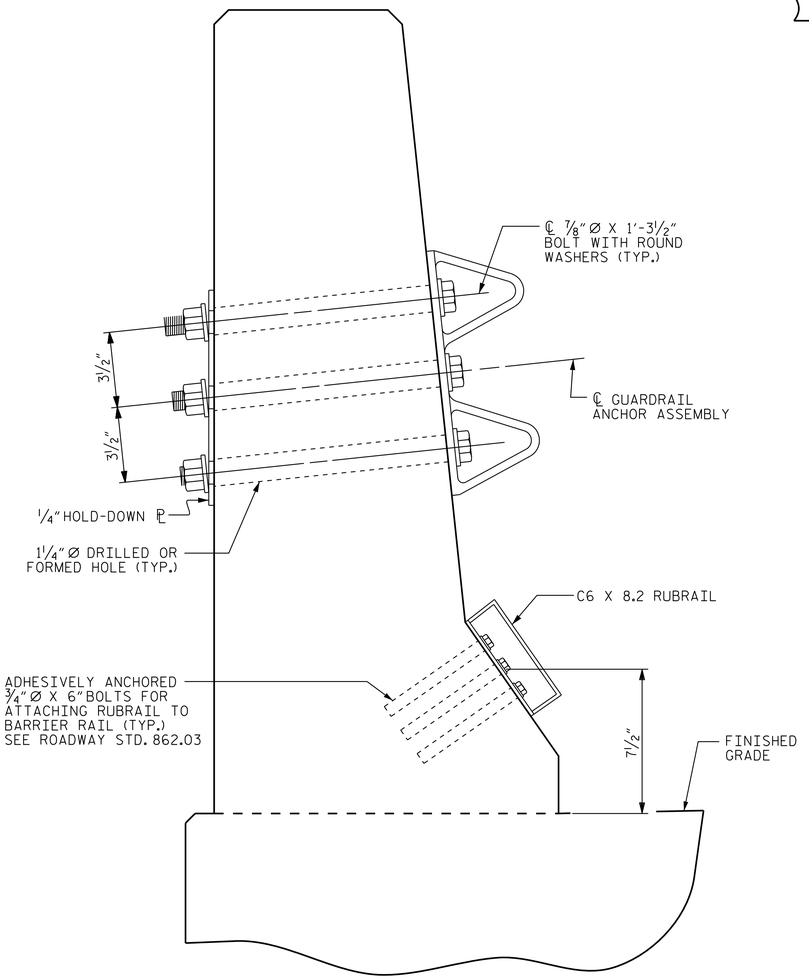
STRUCTURE 1 STD. NO. CBR1



PLAN



ELEVATION



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS

PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR

SEE "SKETCH SHOWING POINTS OF ATTACHMENTS" FOR ACTUAL LOCATIONS OF GUARDRAIL ATTACHMENT

NOTES

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

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

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

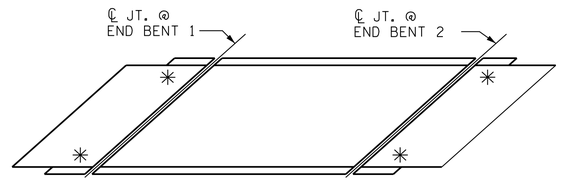
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

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



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew L. Phillips 2BB69ABAD4004D3... 12/7/2018

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-23
1			3			TOTAL SHEETS
2			4			41

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ASSEMBLED BY : D. D. LOWERY		DATE :	10/18
CHECKED BY : P. D. COOKSEY		DATE :	10/18
DRAWN BY : TLA 5/06	REV. 7/12		MAA/GM
CHECKED BY : GM 5/06	REV. 6/13		MAA/GM
	REV. 12/17		MAA/THC

12/7/2018

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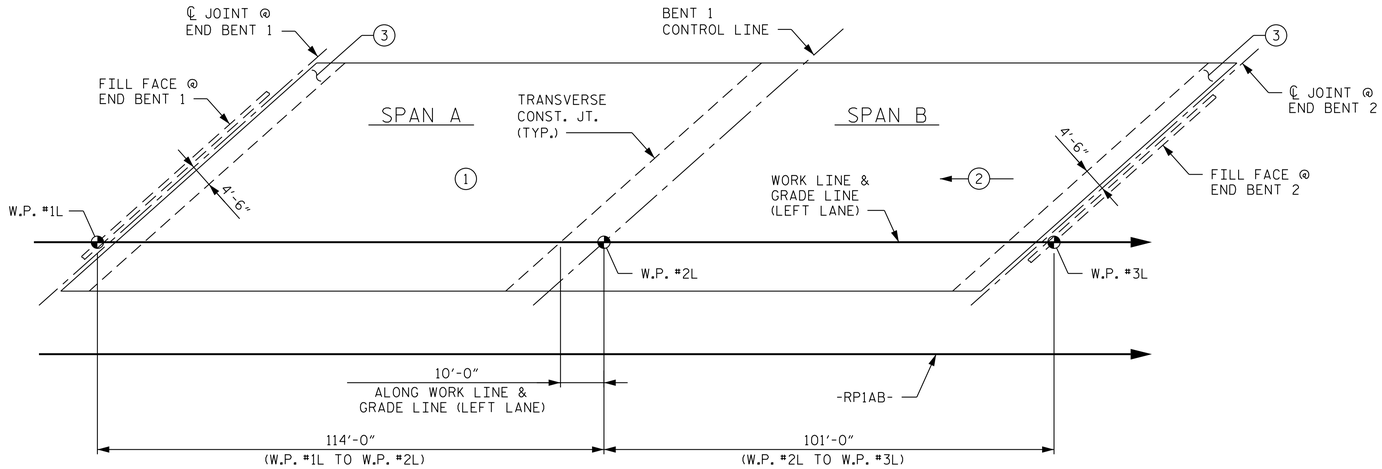
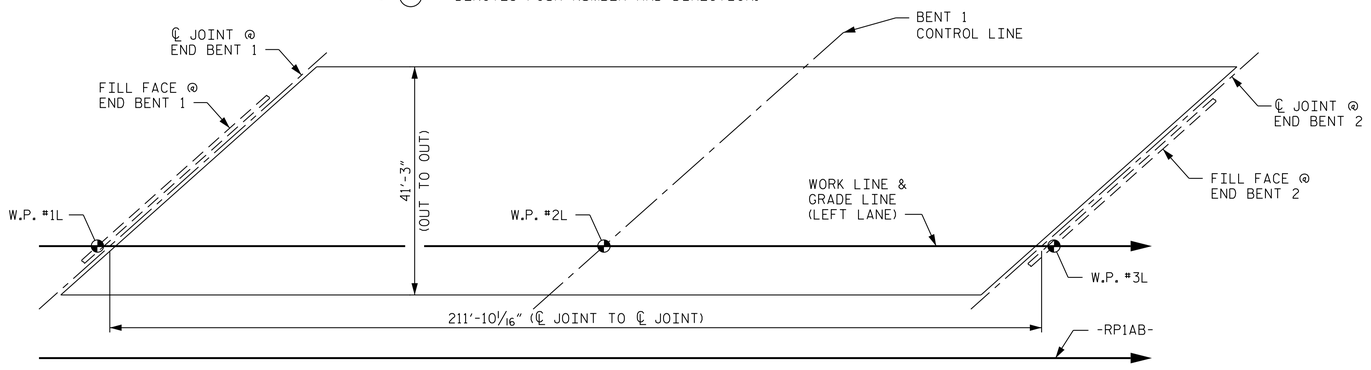
STRUCTURE 1 STD. NO. GRA2



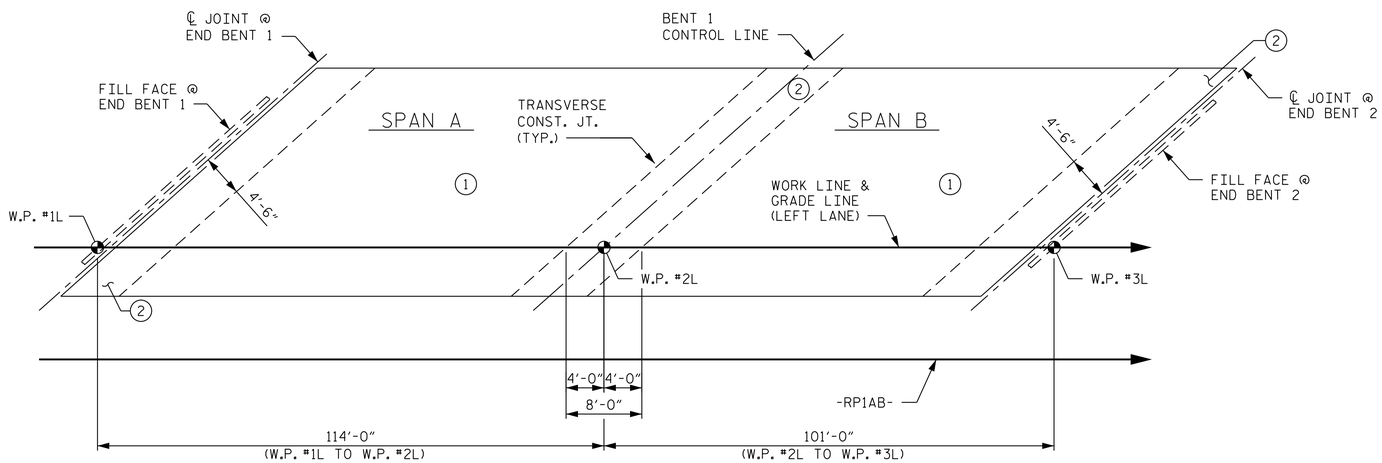
POUR SEQUENCE

(#) DENOTES POUR NUMBER AND DIRECTION.



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE SLAB

(SQ. FT. = 8,732)



OPTIONAL POUR SEQUENCE

POUR #2 MAY NOT BE STARTED UNTIL BOTH ADJACENT POUR #1 REACH A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR 1	113.6		
POUR 2	155.8		
POUR 3	20.8		
TOTALS **	290.2	28,592	30,206

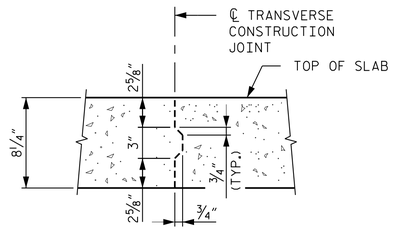
** QUANTITIES FOR BARRIER RAILS ARE NOT INCLUDED.

GROOVING BRIDGE FLOORS

APPROACH SLABS	1,696 SQ.FT.
BRIDGE DECK	7,355 SQ.FT.
TOTAL	9,051 SQ.FT.

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	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			



TRANSVERSE CONSTRUCTION JOINT IN DECK SLAB

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

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew L. Phillips 2BB69ABAD4004D3... 12/7/2018

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SUPERSTRUCTURE

BILL OF MATERIAL

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-24
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 1

DRAWN BY: D. D. LOWERY DATE: 10/18
CHECKED BY: P. D. COOKSEY DATE: 10/18
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS DATE: 10/18

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12/7/2018

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BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	331	5	STR	40′-11″	14,126	A169E	2	5	STR	10′-3″	21	A255	2	5	STR	16′-6″	34
A2	331	5	STR	40′-11″	14,126	A170E	2	5	STR	9′-10″	21	A256	2	5	STR	16′-1″	34
A3E	10	5	STR	2′-4″	24	A171E	2	5	STR	9′-4″	19	A257	2	5	STR	15′-7″	33
A4	10	5	STR	2′-4″	24	A172E	2	5	STR	8′-11″	19	A258	2	5	STR	15′-2″	32
A5E	6	6	STR	6′-0″	54	A173E	2	5	STR	8′-6″	18	A259	2	5	STR	14′-9″	31
						A174E	2	5	STR	8′-0″	17	A260	2	5	STR	14′-3″	30
A101E	2	5	STR	40′-7″	85	A175E	2	5	STR	7′-7″	16	A261	2	5	STR	13′-10″	29
A102E	2	5	STR	40′-1″	84	A176E	2	5	STR	7′-2″	15	A262	2	5	STR	13′-4″	28
A103E	2	5	STR	39′-8″	83	A177E	2	5	STR	6′-8″	14	A263	2	5	STR	12′-11″	27
A104E	2	5	STR	39′-3″	82	A178E	2	5	STR	6′-3″	13	A264	2	5	STR	12′-6″	26
A105E	2	5	STR	38′-9″	81	A179E	2	5	STR	5′-10″	12	A265	2	5	STR	12′-0″	25
A106E	2	5	STR	38′-4″	80	A180E	2	5	STR	5′-4″	11	A266	2	5	STR	11′-7″	24
A107E	2	5	STR	37′-11″	79	A181E	2	5	STR	4′-11″	10	A267	2	5	STR	11′-2″	23
A108E	2	5	STR	37′-5″	78	A182E	2	5	STR	4′-5″	9	A268	2	5	STR	10′-8″	22
A109E	2	5	STR	37′-0″	77	A183E	2	5	STR	4′-0″	8	A269	2	5	STR	10′-3″	21
A110E	2	5	STR	36′-7″	76	A184E	2	5	STR	3′-7″	7	A270	2	5	STR	9′-10″	21
A111E	2	5	STR	36′-1″	75	A185E	2	5	STR	3′-1″	6	A271	2	5	STR	9′-4″	19
A112E	2	5	STR	35′-8″	74	A186E	2	5	STR	2′-8″	6	A272	2	5	STR	8′-11″	19
A113E	2	5	STR	35′-3″	74	A187E	2	5	STR	2′-3″	5	A273	2	5	STR	8′-6″	18
A114E	2	5	STR	34′-9″	72							A274	2	5	STR	8′-0″	17
A115E	2	5	STR	34′-4″	72	A201	2	5	STR	40′-7″	85	A275	2	5	STR	7′-7″	16
A116E	2	5	STR	33′-11″	71	A202	2	5	STR	40′-1″	84	A276	2	5	STR	7′-2″	15
A117E	2	5	STR	33′-5″	70	A203	2	5	STR	39′-8″	83	A277	2	5	STR	6′-8″	14
A118E	2	5	STR	33′-0″	69	A204	2	5	STR	39′-3″	82	A278	2	5	STR	6′-3″	13
A119E	2	5	STR	32′-6″	68	A205	2	5	STR	38′-9″	81	A279	2	5	STR	5′-10″	12
A120E	2	5	STR	32′-1″	67	A206	2	5	STR	38′-4″	80	A280	2	5	STR	5′-4″	11
A121E	2	5	STR	31′-8″	66	A207	2	5	STR	37′-11″	79	A281	2	5	STR	4′-11″	10
A122E	2	5	STR	31′-2″	65	A208	2	5	STR	37′-5″	78	A282	2	5	STR	4′-5″	9
A123E	2	5	STR	30′-9″	64	A209	2	5	STR	37′-0″	77	A283	2	5	STR	4′-0″	8
A124E	2	5	STR	30′-4″	63	A210	2	5	STR	36′-7″	76	A284	2	5	STR	3′-7″	7
A125E	2	5	STR	29′-10″	62	A211	2	5	STR	36′-1″	75	A285	2	5	STR	3′-1″	6
A126E	2	5	STR	29′-5″	61	A212	2	5	STR	35′-8″	74	A286	2	5	STR	2′-8″	6
A127E	2	5	STR	29′-0″	60	A213	2	5	STR	35′-3″	74	A287	2	5	STR	2′-3″	5
A128E	2	5	STR	28′-6″	59	A214	2	5	STR	34′-9″	72						
A129E	2	5	STR	28′-1″	59	A215	2	5	STR	34′-4″	72	B1E	87	4	STR	26′-8″	1,550
A130E	2	5	STR	27′-8″	58	A216	2	5	STR	33′-11″	71	B2E	87	4	STR	23′-8″	1,375
A131E	2	5	STR	27′-2″	57	A217	2	5	STR	33′-5″	70	B3E	29	6	STR	60′-0″	2,613
A132E	2	5	STR	26′-9″	56	A218	2	5	STR	33′-0″	69	B4E	29	6	STR	16′-7″	722
A133E	2	5	STR	26′-4″	55	A219	2	5	STR	32′-6″	68	B5E	56	6	STR	42′-0″	3,533
A134E	2	5	STR	25′-10″	54	A220	2	5	STR	32′-1″	67	B6	160	5	STR	54′-6″	9,095
A135E	2	5	STR	25′-5″	53	A221	2	5	STR	31′-8″	66						
A136E	2	5	STR	25′-0″	52	A222	2	5	STR	31′-2″	65	G1E	4	5	STR	32′-0″	134
A137E	2	5	STR	24′-6″	51	A223	2	5	STR	30′-9″	64						
A138E	2	5	STR	24′-1″	50	A224	2	5	STR	30′-4″	63	J1E	116	4	10	1′-5″	110
A139E	2	5	STR	23′-8″	49	A225	2	5	STR	29′-10″	62						
A140E	2	5	STR	23′-2″	48	A226	2	5	STR	29′-5″	61	K1E	8	8	1	17′-1″	365
A141E	2	5	STR	22′-9″	47	A227	2	5	STR	29′-0″	60	K2E	12	8	2	24′-1″	772
A142E	2	5	STR	22′-3″	46	A228	2	5	STR	28′-6″	59	K3E	32	6	STR	6′-10″	328
A143E	2	5	STR	21′-10″	46	A229	2	5	STR	28′-1″	59	K4	8	4	STR	5′-7″	30
A144E	2	5	STR	21′-5″	45	A230	2	5	STR	27′-8″	58	K5	40	4	STR	11′-4″	303
A145E	2	5	STR	20′-11″	44	A231	2	5	STR	27′-2″	57	K6	12	4	8	8′-4″	67
A146E	2	5	STR	20′-6″	43	A232	2	5	STR	26′-9″	56	K7	18	4	9	16′-5″	197
A147E	2	5	STR	20′-1″	42	A233	2	5	STR	26′-4″	55						
A148E	2	5	STR	19′-7″	41	A234	2	5	STR	25′-10″	54	S1E	40	4	5	9′-10″	263
A149E	2	5	STR	19′-2″	40	A235	2	5	STR	25′-5″	53	S2E	40	5	3	5′-9″	240
A150E	2	5	STR	18′-9″	39	A236	2	5	STR	25′-0″	52	S3	160	4	4	5′-3″	561
A151E	2	5	STR	18′-3″	38	A237	2	5	STR	24′-6″	51	S4E	32	4	6	5′-4″	114
A152E	2	5	STR	17′-10″	37	A238	2	5	STR	24′-1″	50						
A153E	2	5	STR	17′-5″	36	A239	2	5	STR	23′-8″	49	U1	16	4	5	14′-10″	159
A154E	2	5	STR	16′-11″	35	A240	2	5	STR	23′-2″	48	U2	16	4	7	13′-9″	147
A155E	2	5	STR	16′-6″	34	A241	2	5	STR	22′-9″	47						
A156E	2	5	STR	16′-1″	34	A242	2	5	STR	22′-3″	46	EPOXY COATED					
A157E	2	5	STR	15′-7″	33	A243	2	5	STR	21′-10″	46	REINFORCING STEEL					30,206 LBS.
A158E	2	5	STR	15′-2″	32	A244	2	5	STR	21′-5″	45	REINFORCING STEEL					28,592 LBS.
A159E	2	5	STR	14′-9″	31	A245	2	5	STR	20′-11″	44						
A160E	2	5	STR	14′-3″	30	A246	2	5	STR	20′-6″	43						
A161E	2	5	STR	13′-10″	29	A247	2	5	STR	20′-1″	42						
A162E	2	5	STR	13′-4″	28	A248	2	5	STR	19′-7″	41						
A163E	2	5	STR	12′-11″	27	A249	2	5	STR	19′-2″	40						
A164E	2	5	STR	12′-6″	26	A250	2	5	STR	18′-9″	39						
A165E	2	5	STR	12′-0″	25	A251	2	5	STR	18′-3″	38						
A166E	2	5	STR	11′-7″	24	A252	2	5	STR	17′-10″	37						
A167E	2	5	STR	11′-2″	23	A253	2	5	STR	17′-5″	36						
A168E	2	5	STR	10′-8″	22	A254	2	5	STR	16′-11″	35						

"E" SUFFIX DENOTES EPOXY COATED REINFORCING STEEL.

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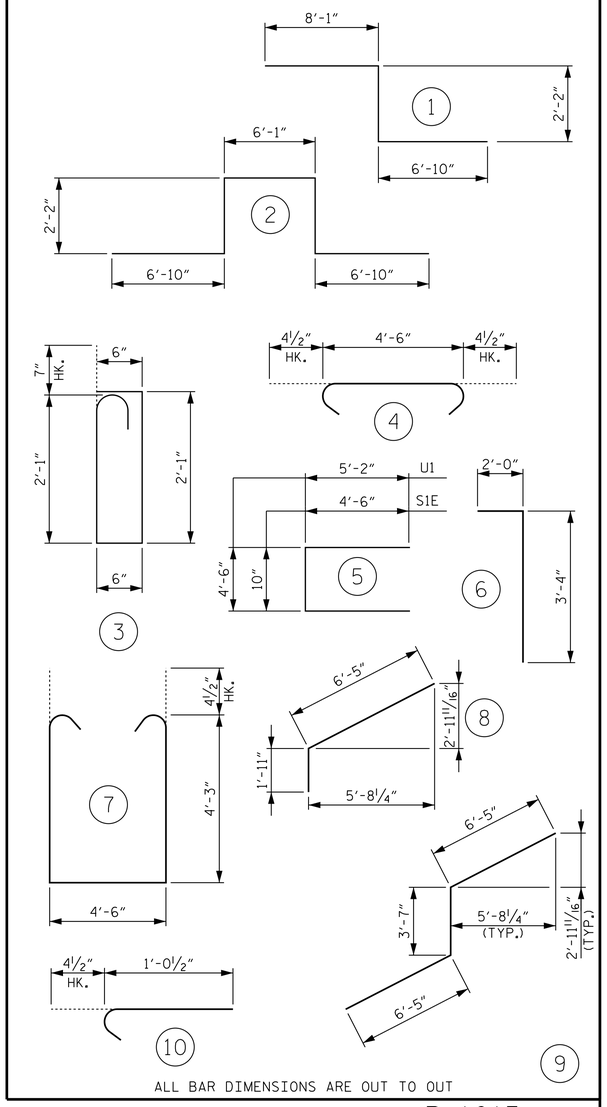
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L PHILLIPS

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

BILL OF MATERIAL

LEFT LANE

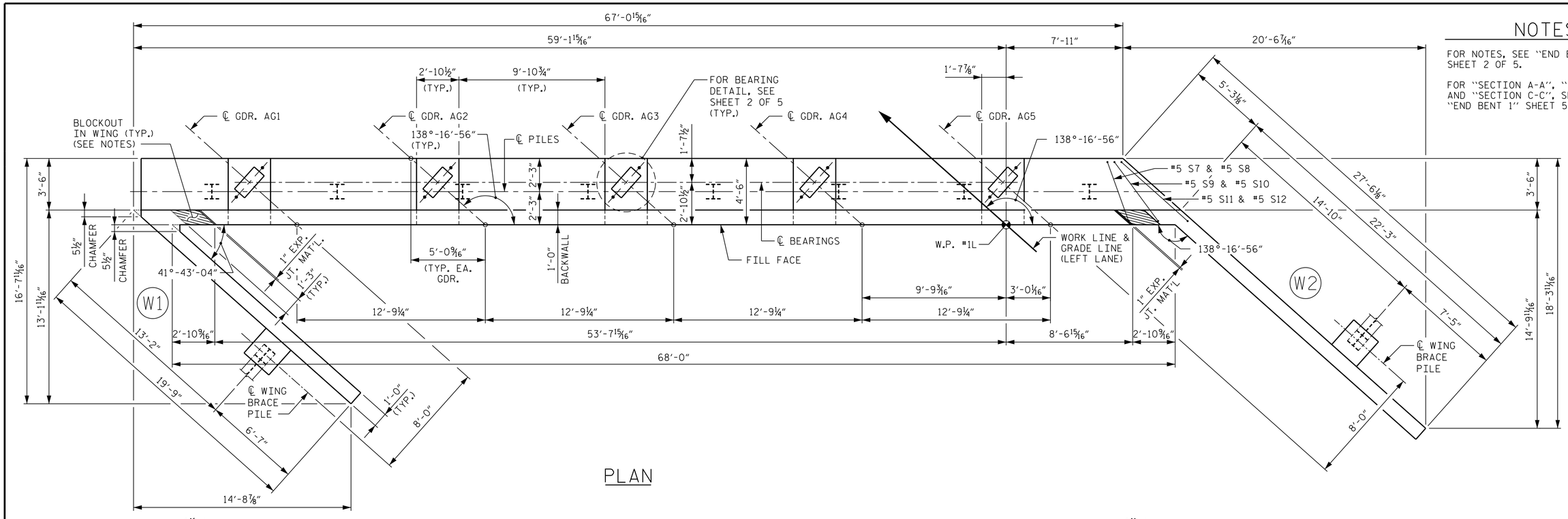
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-25
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 1

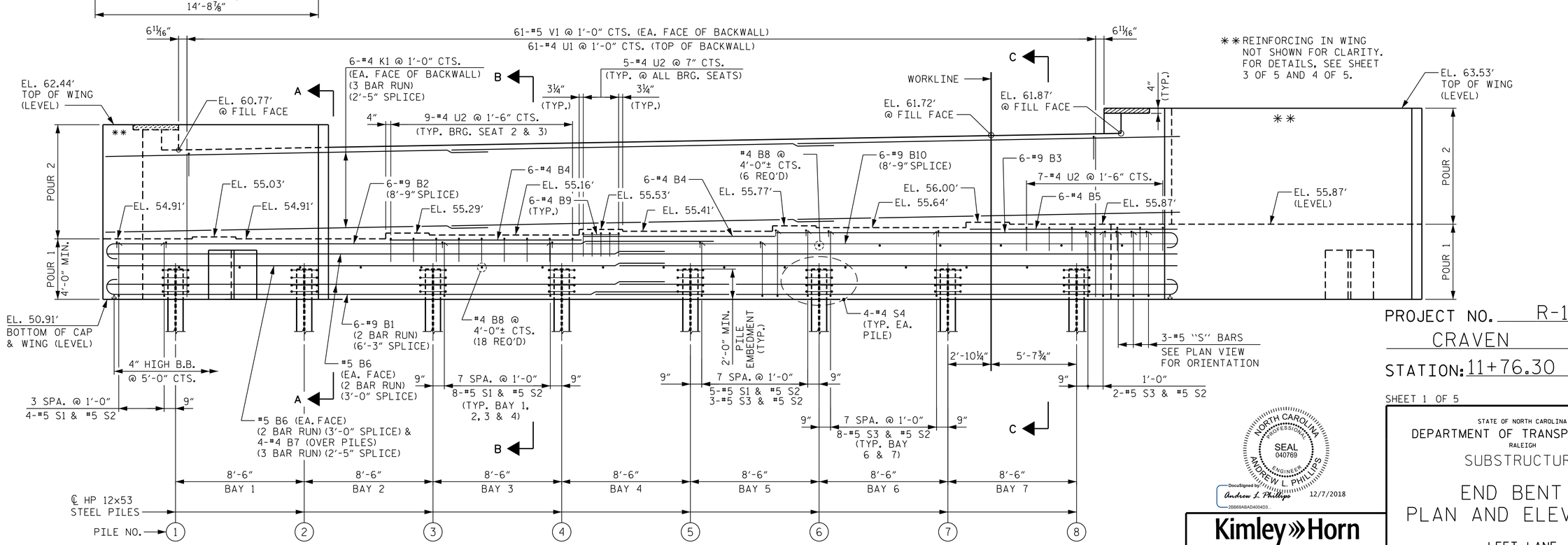
NOTES

FOR NOTES, SEE "END BENT 1" SHEET 2 OF 5.

FOR "SECTION A-A", "SECTION B-B" AND "SECTION C-C", SEE "END BENT 1" SHEET 5 OF 5.



PLAN



ELEVATION

WING PILES NOT SHOWN FOR CLARITY.

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 PLAN AND ELEVATION

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

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STRUCTURE 1

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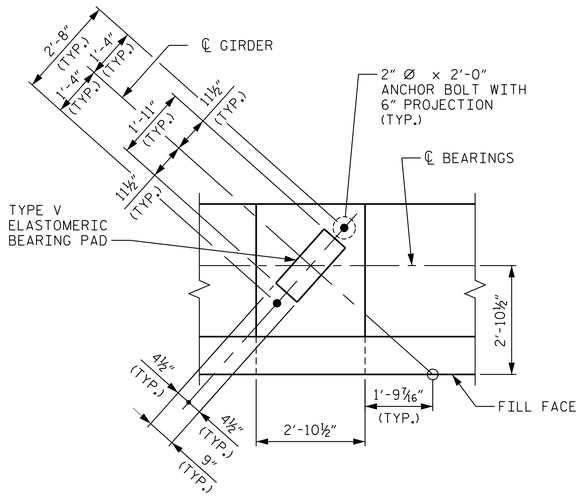
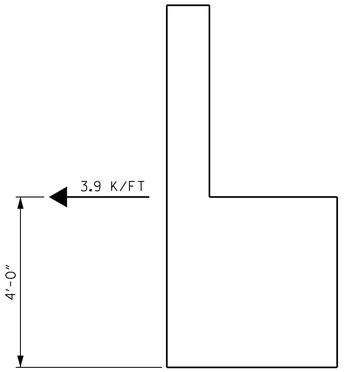


BEARING DETAIL



MSE REINFORCING STRAP LOAD DETAIL

MSE REINFORCING STRAP NOTES

MSE REINFORCING STRAPS SHALL BE ATTACHED TO THE END BENT CAP AND/OR BACKWALL. FOR DESIGN CRITERIA AND DETAILS, SEE MSE WALL SHEETS AND SPECIAL PROVISIONS.

PLANS, WORKING DRAWINGS, AND DESIGN CALCULATIONS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR REVIEW AND APPROVAL, SEE SPECIAL PROVISIONS.

PLANS SUBMITTED FOR REVIEW SHALL INCLUDE THE FOLLOWING: PLAN VIEW, ELEVATION VIEW, TYPICAL SECTIONS, AND STRAP DETAILS.

THE MSE REINFORCING STRAPS SHALL BE DESIGNED TO CARRY THE LOADS FROM THE BRIDGE SUPERSTRUCTURE AS INDICATED IN THE "MSE REINFORCING STRAP LOAD DETAIL". IN ADDITION, THE MSE REINFORCING STRAPS SHALL ALSO BE DESIGNED TO CARRY LOADS FROM SOIL PRESSURE AS OUTLINED IN THE SPECIAL PROVISION.

THE LOADS IN THE DETAIL ABOVE ARE FACTORED LOADS.

NOTES

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

FOR PILE SPLICE DETAILS, SEE SHEET 5 OF 5.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE PROTECTIVE COATING.

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

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

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAILS ARE CAST IF SLIP FORMING IS USED.

FOR "24" Ø CSP CASING DETAIL" SEE "GENERAL DRAWING" SHEET 2 OF 3.

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PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

SHEET 2 OF 5

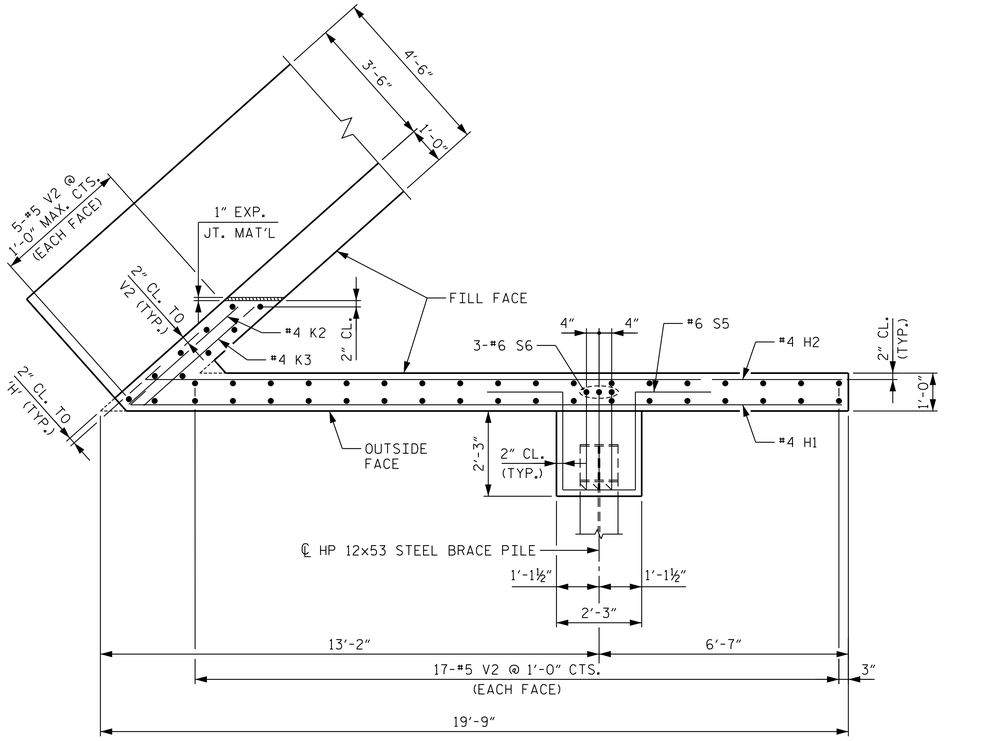
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

END BENT 1 DETAILS

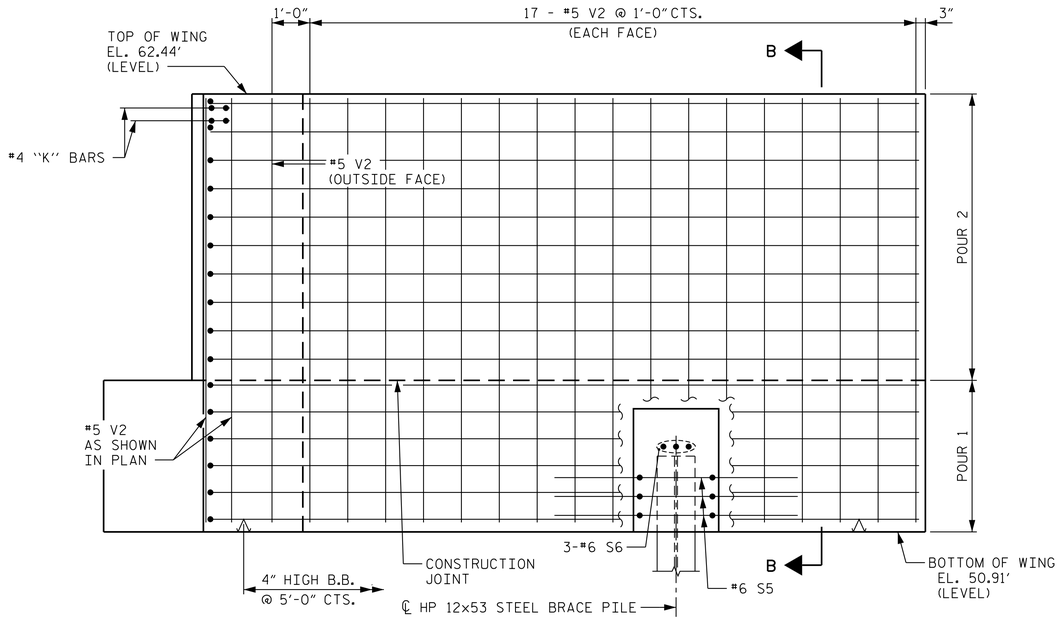
LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-27
1			3			TOTAL SHEETS
2			4			41

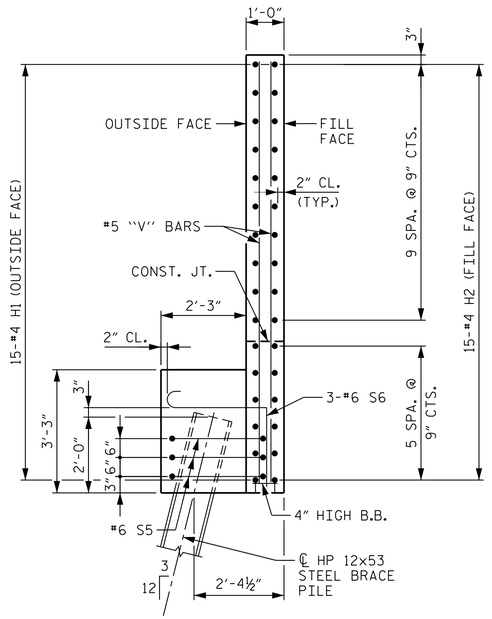
STRUCTURE 1



PLAN W1



ELEVATION W1



SECTION B-B

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CRAVEN COUNTY
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SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

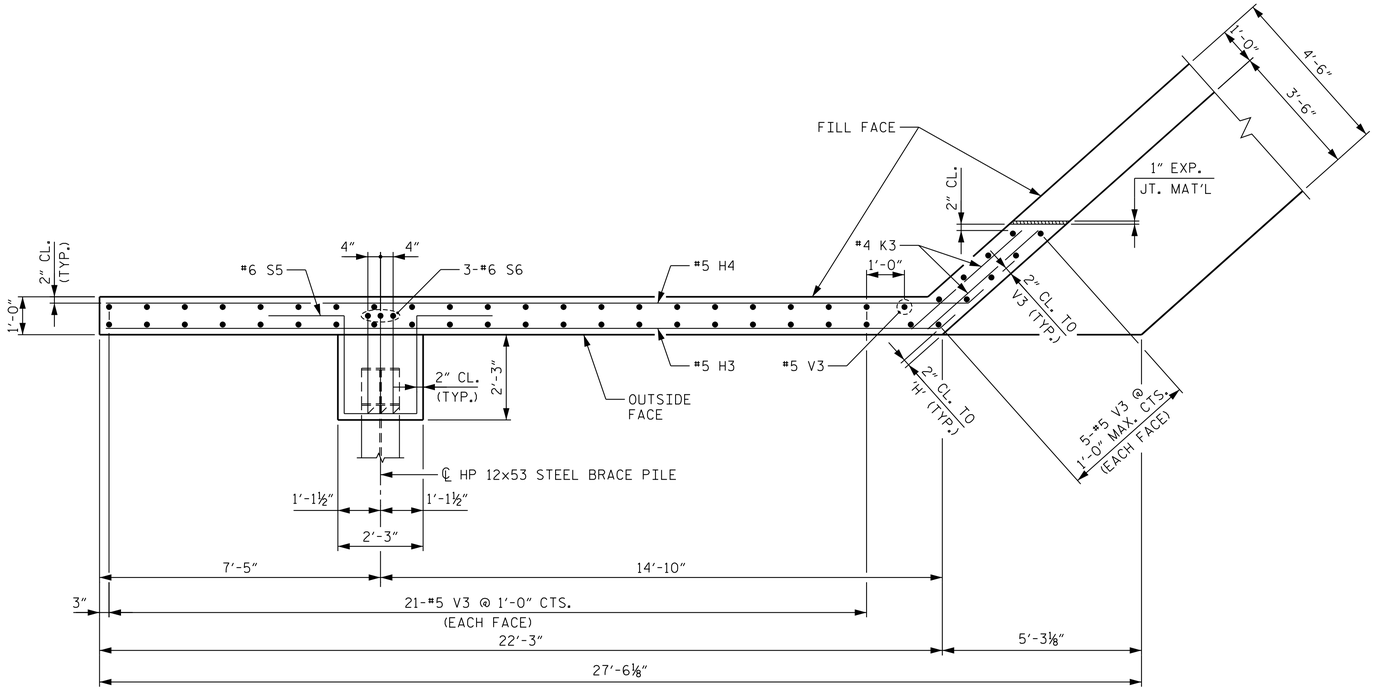
SUBSTRUCTURE

END BENT 1 SECTIONS AND DETAILS

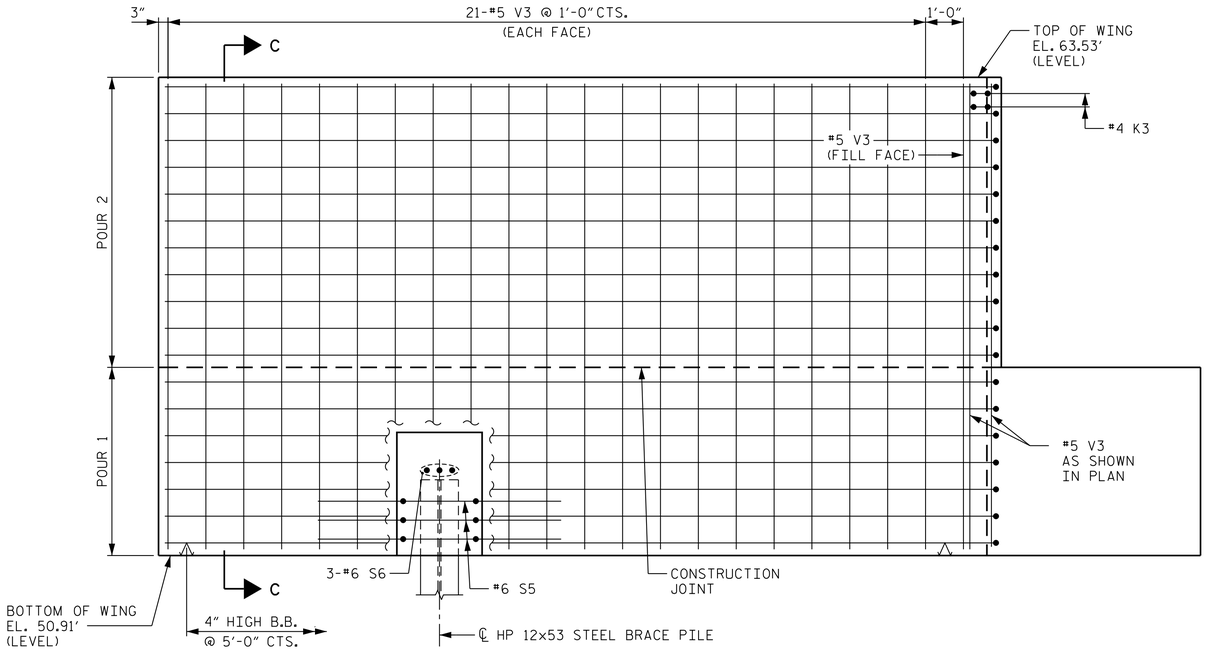
LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-28
1			3			TOTAL SHEETS
2			4			41

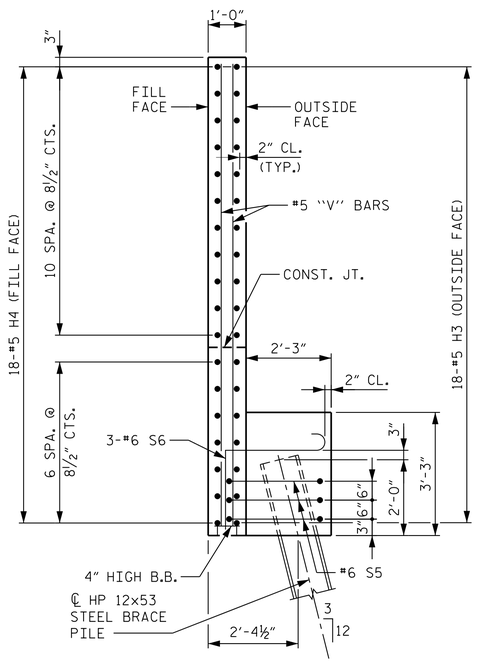
STRUCTURE 1



PLAN W2



ELEVATION W2



SECTION C-C

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CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 SECTIONS AND DETAILS

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-29
1			3			TOTAL SHEETS
2			4			41

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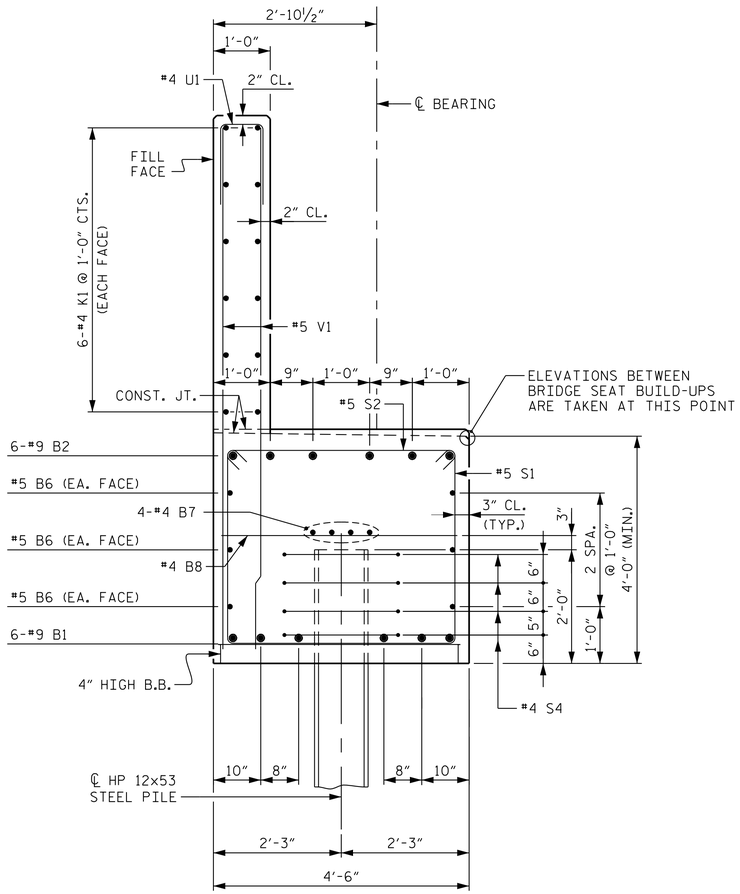
STRUCTURE 1



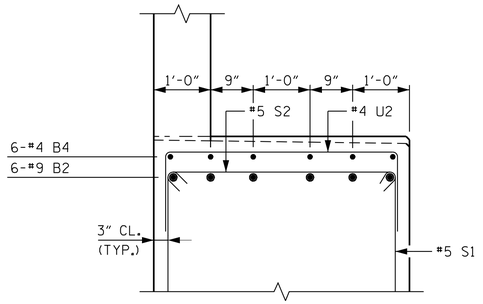
SECTION A-A

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

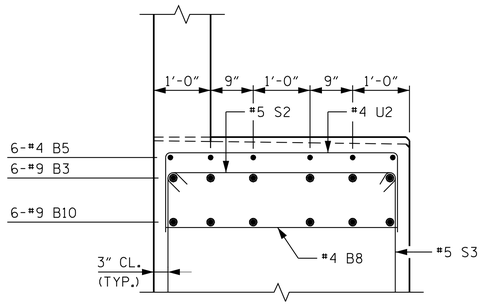
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

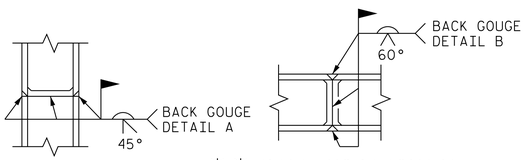
TEMPORARY DRAINAGE AT END BENT



PARTIAL SECTION B-B

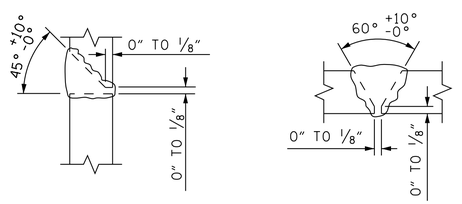


PARTIAL SECTION C-C



** PILE VERTICAL

** PILE HORIZONTAL OR VERTICAL

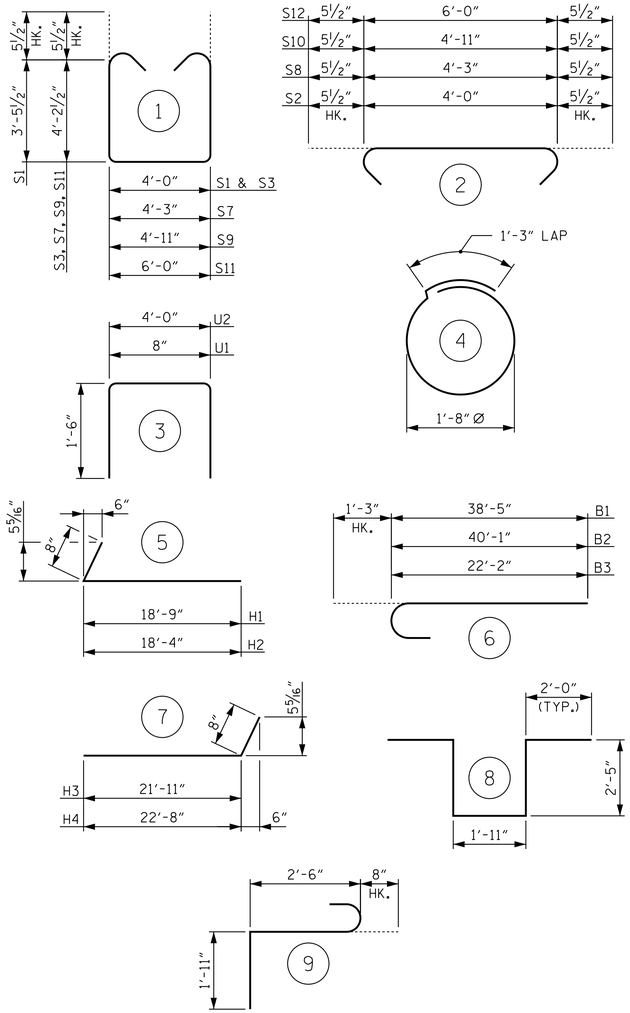


DETAIL A DETAIL B

PILE SPLICE DETAILS

** POSITION OF PILE DURING WELDING.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	9	6	39'-8"	1,618
B2	6	9	6	41'-4"	843
B3	6	9	6	23'-5	478
B4	12	4	STR	12'-9"	102
B5	6	4	STR	14'-1"	56
B6	12	5	STR	36'-10"	461
B7	12	4	STR	25'-2"	202
B8	24	4	STR	4'-0"	64
B9	30	4	STR	2'-5"	48
B10	6	9	STR	40'-1"	818
H1	15	4	5	19'-5"	195
H2	15	4	5	19'-0"	190
H3	18	5	7	22'-7"	424
H4	18	5	7	23'-4"	438
K1	36	4	STR	25'-2"	605
K2	2	4	STR	3'-8"	5
K3	6	4	STR	3'-10"	15
S1	41	5	1	11'-10"	506
S2	62	5	2	4'-11"	318
S3	21	5	1	13'-3"	290
S4	32	4	4	6'-6"	139
S5	6	6	8	10'-9"	97
S6	6	6	9	5'-1"	46
S7	1	5	1	13'-7"	14
S8	1	5	2	5'-2"	5
S9	1	5	1	14'-3"	15
S10	1	5	2	5'-10"	6
S11	1	5	1	15'-4"	16
S12	1	5	2	6'-11"	7
U1	61	4	3	3'-8"	149
U2	50	4	3	7'-0"	234
V1	122	5	STR	9'-4"	1,188
V2	45	5	STR	11'-1"	520
V3	53	5	STR	12'-2"	673

REINFORCING STEEL	10,785 LBS.
CLASS A CONCRETE BREAKDOWN	
POUR 1 (CAP & LOWER WING)	59.3 C.Y.
POUR 2 (BACKWALL & UPPER PORTION OF WING)	27.2 C.Y.
TOTAL CLASS A CONCRETE	86.5 C.Y.
HP 12x53 STEEL PILES	
NO. 10	1,000 LIN. FT.
PILE REDRIVES	4 EA.
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	10 EA.

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1
SECTIONS AND DETAILS

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-30
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 1

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L PHILLIPS

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DESIGN ENGINEER OF RECORD:	A.L. PHILLIPS	DATE:	10/18

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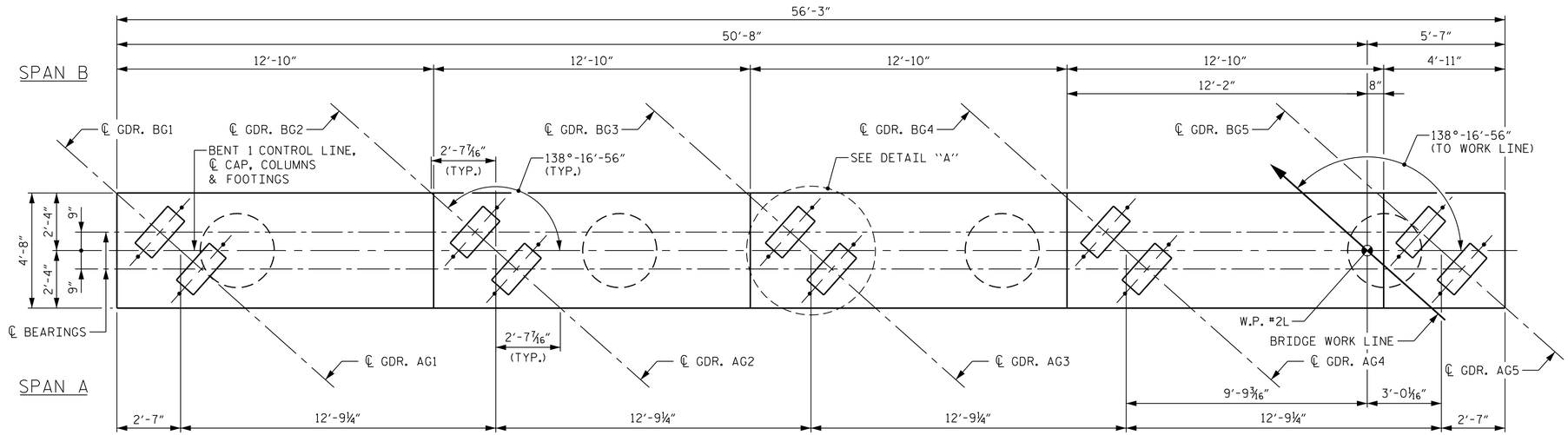
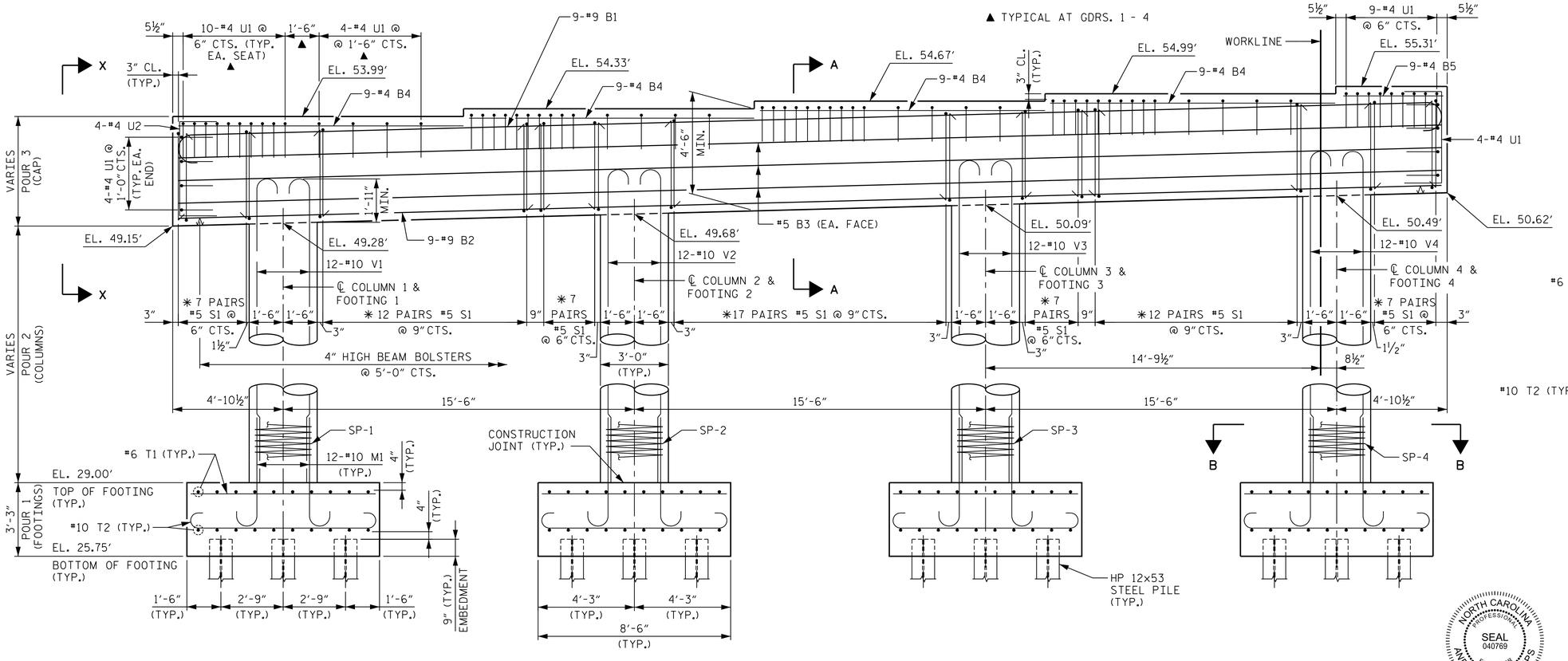


PLAN



ELEVATION

✳ INVERT ALTERNATE STIRRUP PAIRS

NOTES

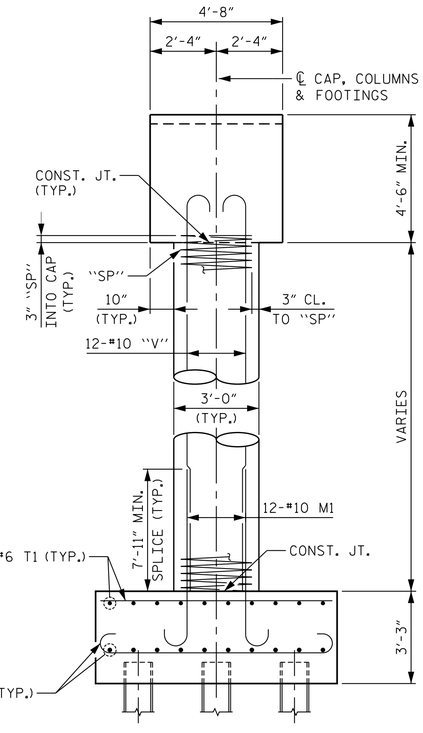
FOR "END VIEW X-X", SEE "BENT 1" SHEET 2 OF 2.

FOR "SECTION A-A" AND "SECTION B-B", SEE "BENT 1" SHEET 2 OF 2.

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

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

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



PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

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RALEIGH

SUBSTRUCTURE

BENT 1 PLAN AND ELEVATION

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-31
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 1

DRAWN BY: D. D. LOWERY	DATE: 10/18	
CHECKED BY: P. D. COOKSEY	DATE: 10/18	
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS	DATE: 10/18	

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12/7/2018

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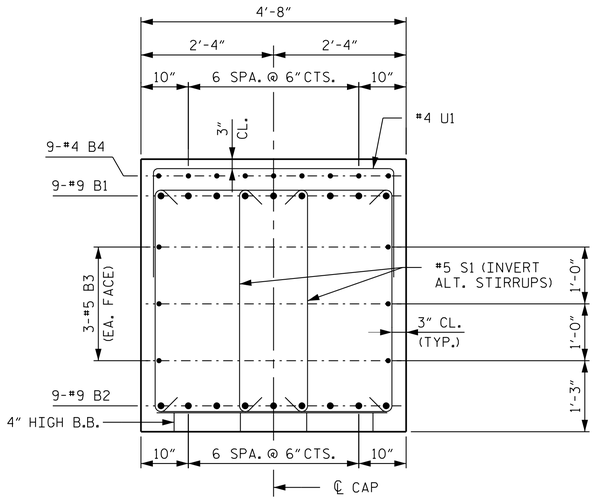
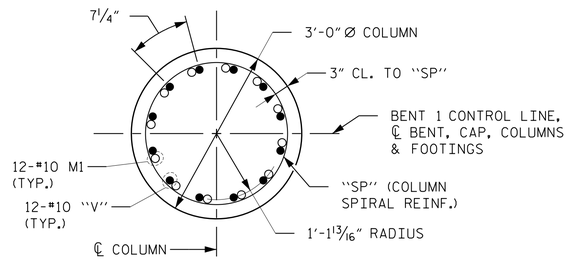
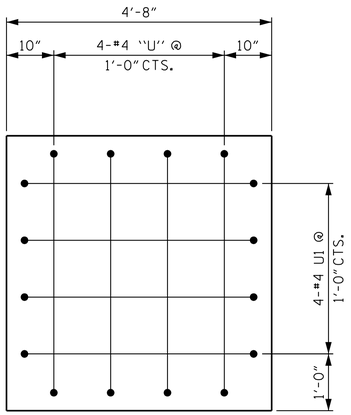


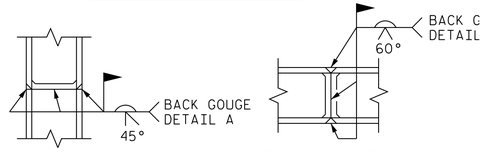
SECTION A-A



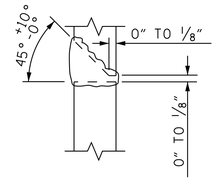
SECTION B-B



END VIEW X-X

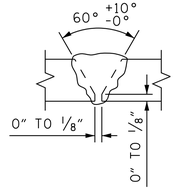


** PILE VERTICAL



DETAIL A

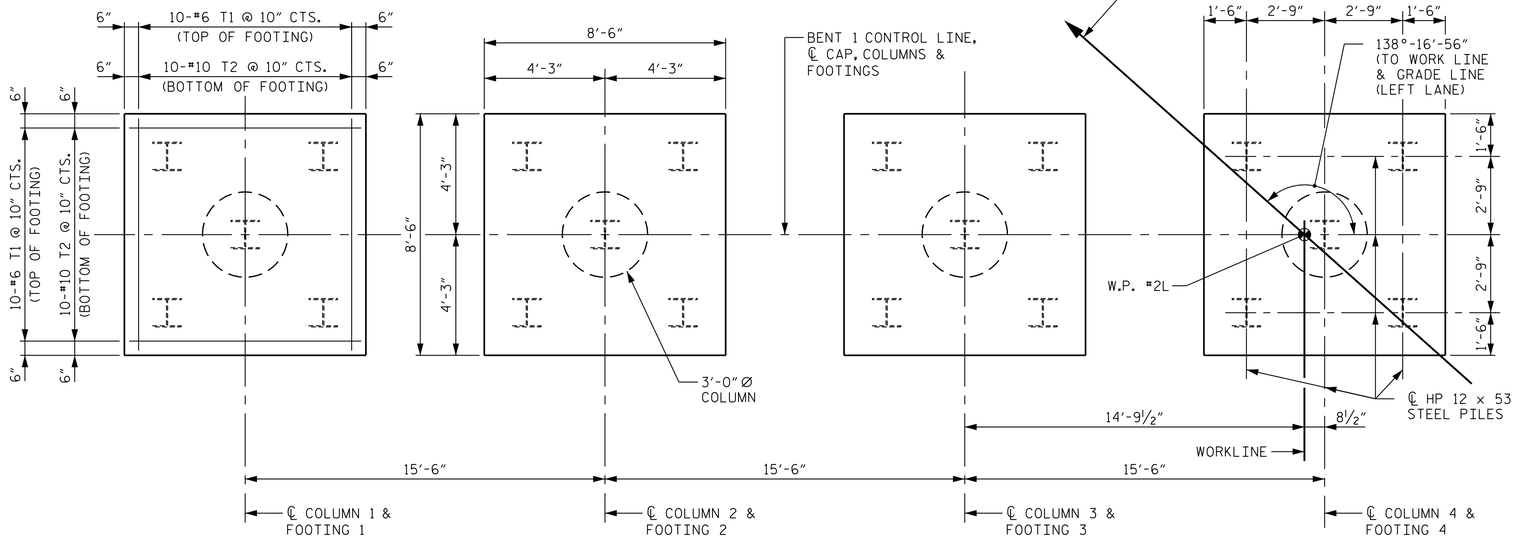
** PILE HORIZONTAL OR VERTICAL



DETAIL B

PILE SPLICE DETAILS

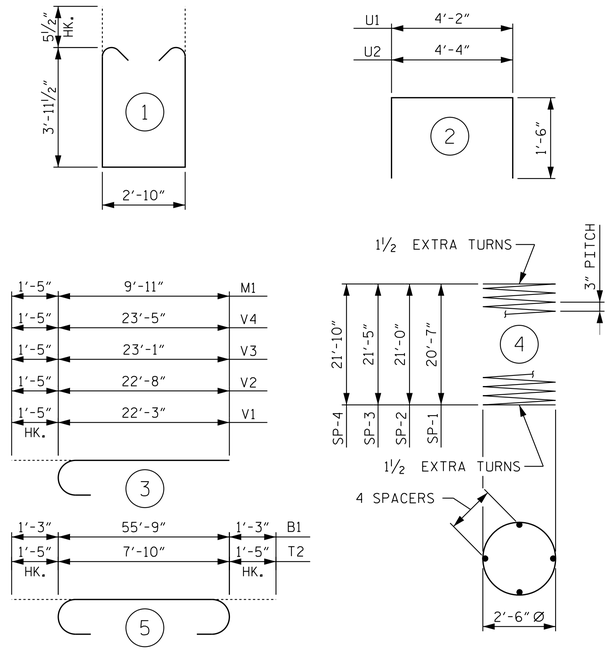
** POSITION OF PILE DURING WELDING.



PLAN OF FOOTINGS

ALL FOOTING DIMENSIONS AND REINFORCING STEEL ARE TYPICAL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	9	9	5	58′-3″	1,782
B2	9	9	STR	55′-9″	1,706
B3	6	5	STR	55′-9″	349
B4	36	4	STR	12′-4″	297
B5	9	4	STR	4′-5″	27
M1	48	10	3	11′-4″	2,341
S1	138	5	1	11′-8″	1,679
T1	80	6	STR	7′-10″	941
T2	80	10	5	10′-8″	3,672
U1	77	4	2	7′-2″	369
U2	4	4	2	7′-4″	20
V1	12	10	3	23′-8″	1,222
V2	12	10	3	24′-1″	1,244
V3	12	10	3	24′-6″	1,265
V4	12	10	3	24′-10″	1,282

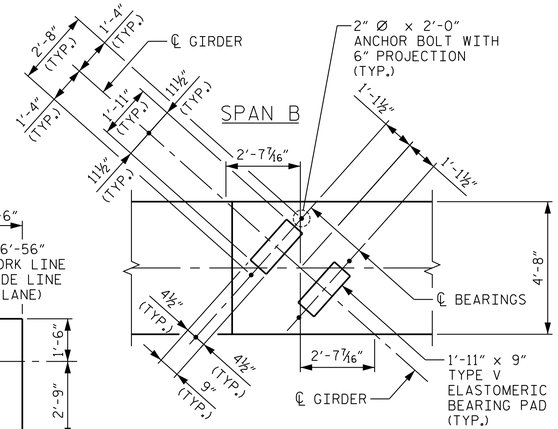
REINFORCING STEEL					18,196 LBS.
SP-1	1	**	4	659′-5″	440
SP-2	1	**	4	672′-4″	449
SP-3	1	**	4	685′-2″	458
SP-4	1	**	4	698′-1″	466

SPIRAL COLUMN REINFORCING STEEL 1,813 LBS.

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

BENT 1 TOTAL QUANTITIES

CLASS A CONCRETE	
POUR 1 (FOOTINGS)	34.8 C.Y.
POUR 2 (COLUMNS)	21.9 C.Y.
POUR 3 (CAP)	45.5 C.Y.
TOTAL CLASS A CONCRETE	102.2 C.Y.
HP 12x53 STEEL PILES	
NO. 20	1,400 LIN. FT.
PILE REDRIVES	10 EA.
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	20 EA.



DETAIL ″A″

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew L. Phillips 2BB86ABAD4004D3... 12/7/2018

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NC LICENSE # F-0102

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-32
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 1

DRAWN BY: D. D. LOWERY	DATE:	10/18
CHECKED BY: P. D. COOKSEY	DATE:	10/18
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS	DATE:	10/18

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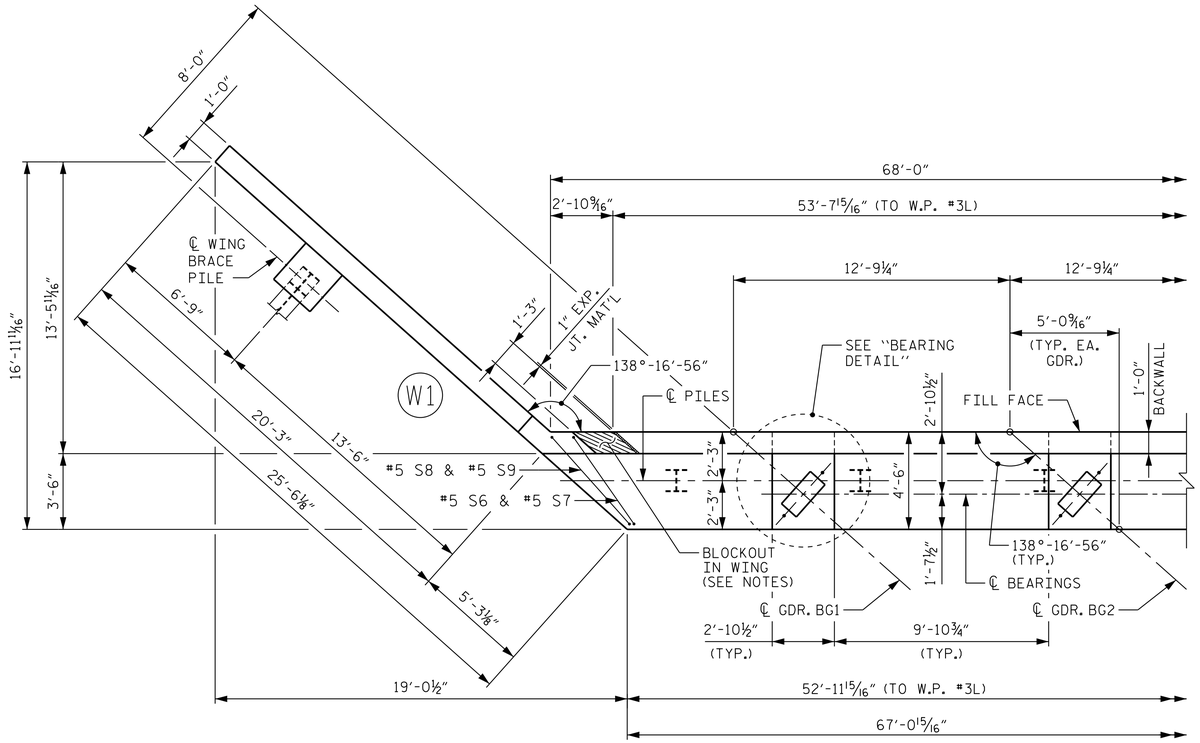
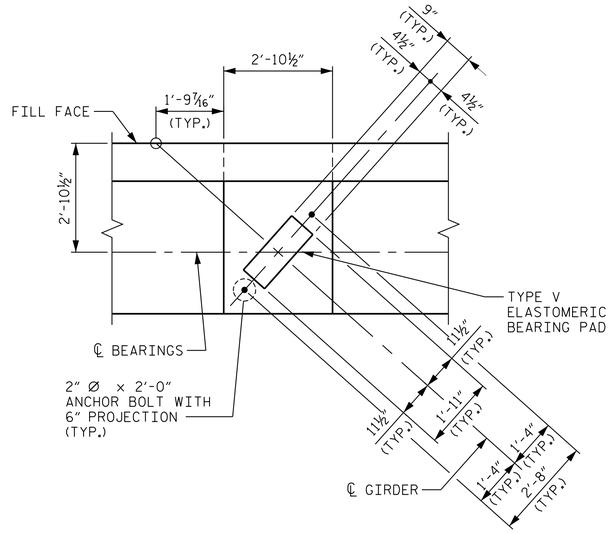


PLAN



BEARING DETAIL

NOTES

FOR "SECTION A-A", SEE "END BENT 2" SHEET 5 OF 5.

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

FOR PILE SPLICE DETAILS, SEE "END BENT 2" SHEET 5 OF 5.

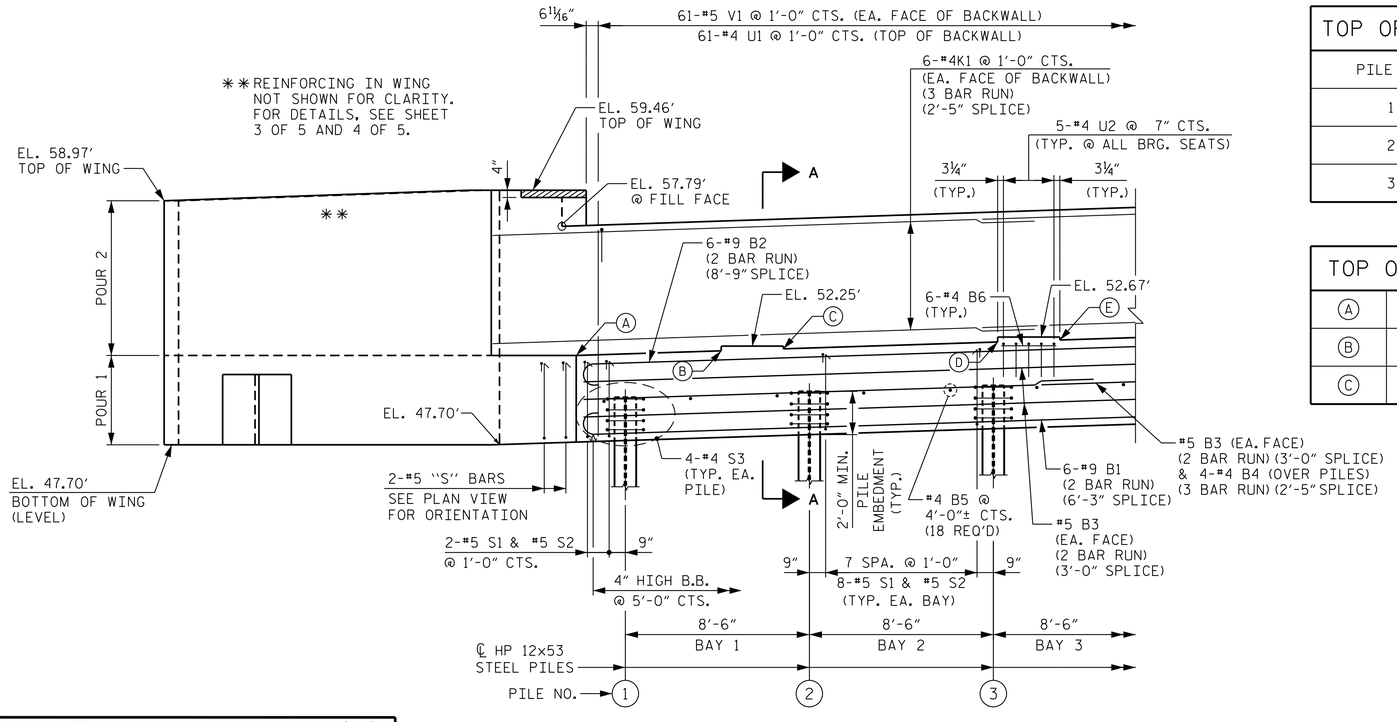
BACKWALL SHALL BE PLACED BEFORE APPLYING THE PROTECTIVE COATING.

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

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

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAILS ARE CAST IF SLIP FORMING IS USED.

FOR "24" Ø CSP CASING DETAIL" SEE "GENERAL DRAWING" SHEET 2 OF 3.



ELEVATION

WING PILE NOT SHOWN FOR CLARITY.

TOP OF PILE ELEVATIONS	
PILE NO.	ELEVATION
1	49.89'
2	50.16'
3	50.44'

TOP OF CAP ELEVATIONS			
(A)	51.82'	(D)	52.44'
(B)	52.04'	(E)	52.54'
(C)	52.13'		

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 PLAN AND ELEVATION

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-33
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 1

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew L. Phillips 12/7/2018
2BB69ABAD4004D3...

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CHECKED BY: P. D. COOKSEY	DATE: 10/18	
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS	DATE: 10/18	

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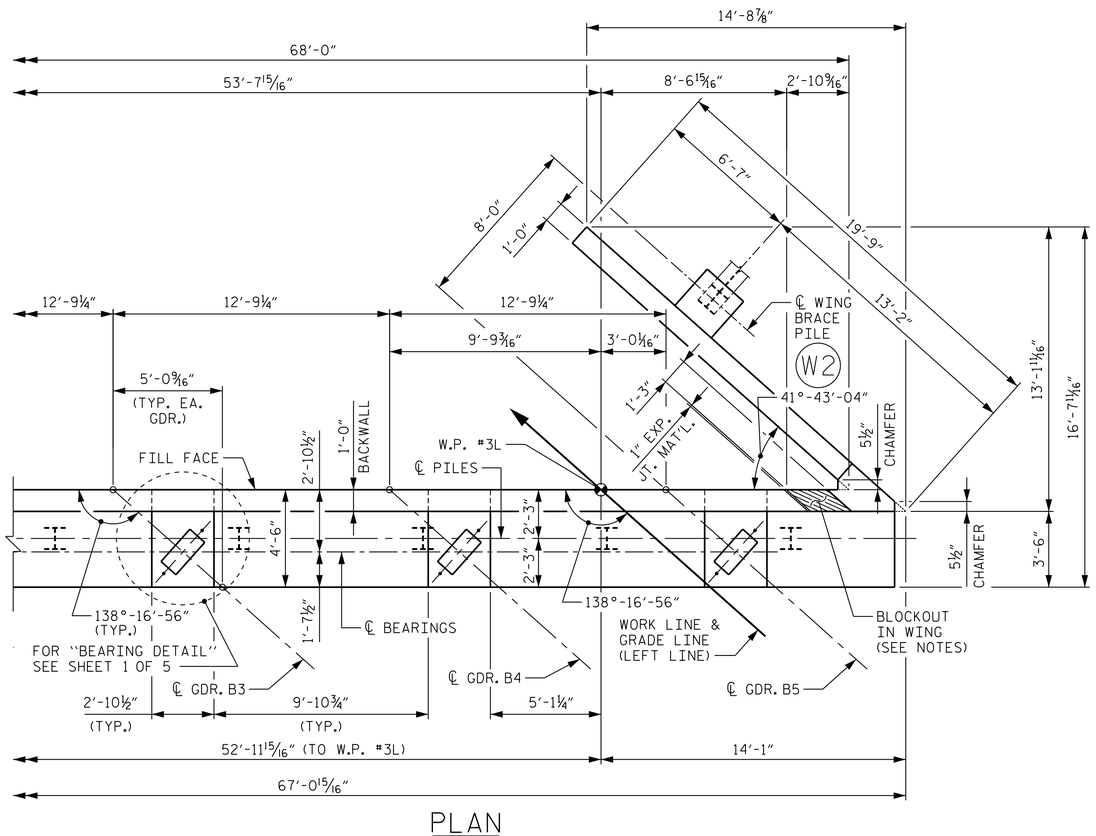
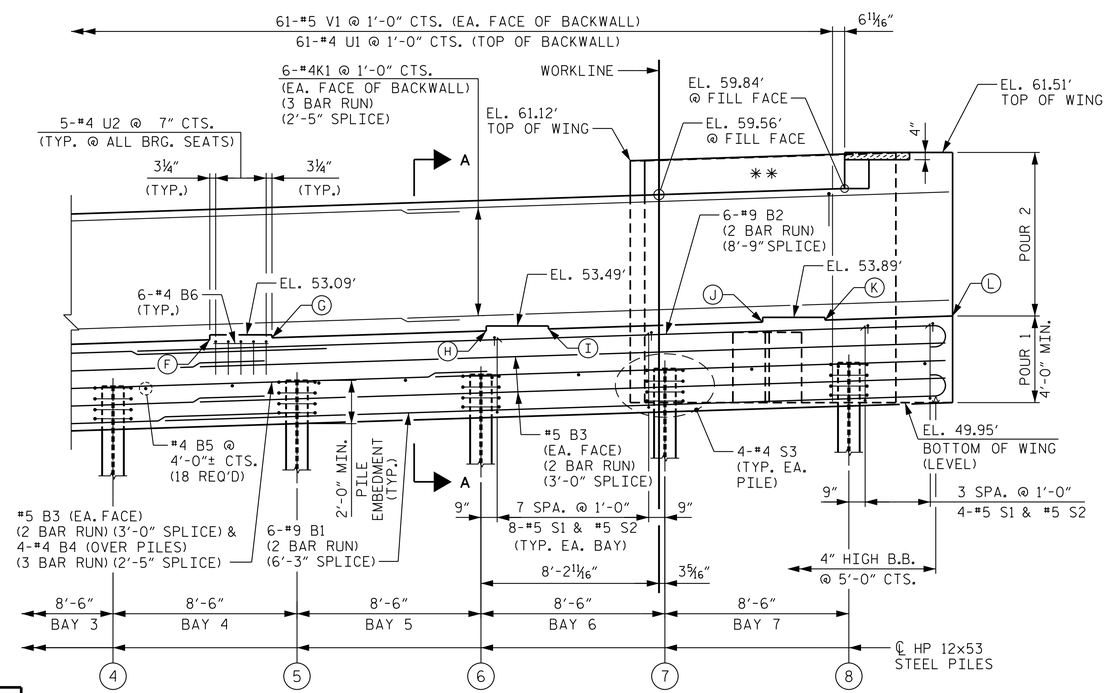


PLAN



ELEVATION

WING PILE NOT SHOWN FOR CLARITY.

NOTES

FOR "SECTION A-A", SEE "END BENT 2" SHEET 5 OF 5.

FOR NOTES SEE "END BENT 2" SHEET 1 OF 5.

TOP OF CAP ELEVATIONS			
Ⓕ	52.85′	Ⓙ	53.67′
Ⓖ	52.95′	Ⓚ	53.76′
Ⓗ	53.26′	Ⓛ	53.95′
Ⓘ	53.36′		

TOP OF PILE ELEVATIONS	
PILE NO.	ELEVATION
4	50.71′
5	50.98′
6	51.25′
7	51.52′
8	51.80′

**REINFORCING IN WING NOT SHOWN FOR CLARITY. FOR DETAILS, SEE SHEET 3 OF 5 AND 4 OF 5.

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 PLAN AND ELEVATION

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew L. Phillips 2BB89ABAD4004D3... 12/7/2018

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-34
1			3			TOTAL SHEETS
2			4			41

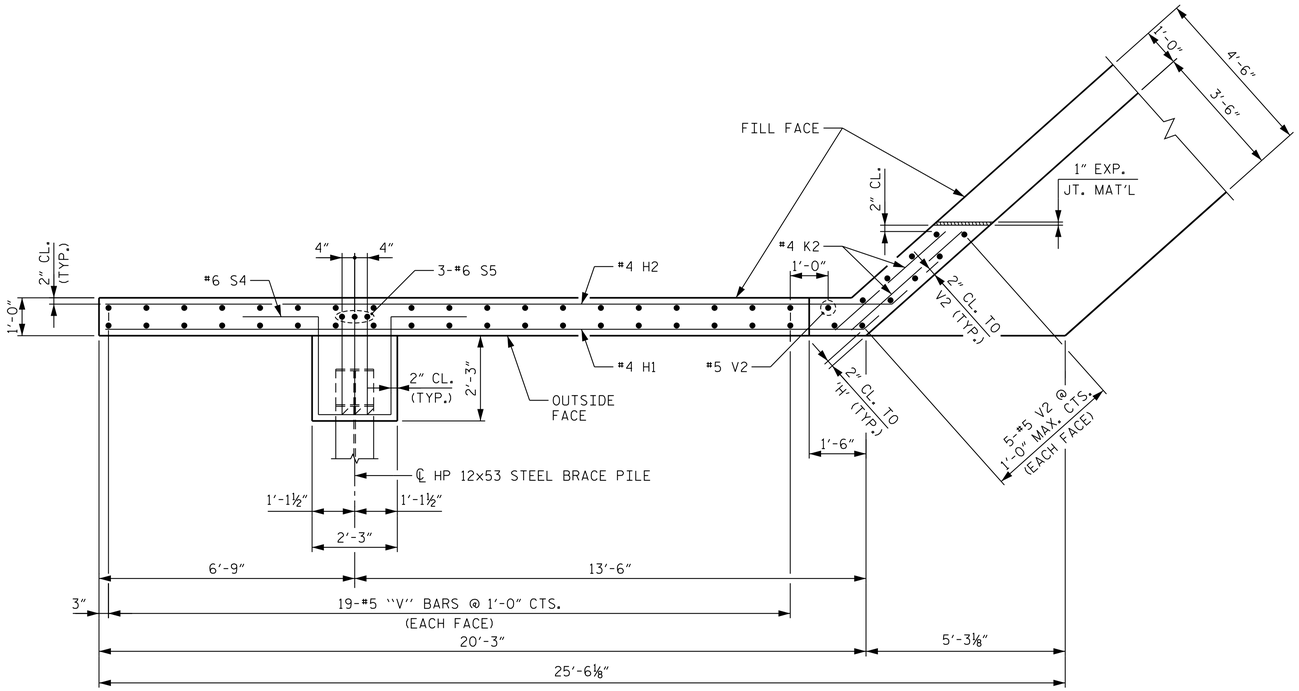
STRUCTURE 1

DRAWN BY: D. D. LOWERY DATE: 10/18

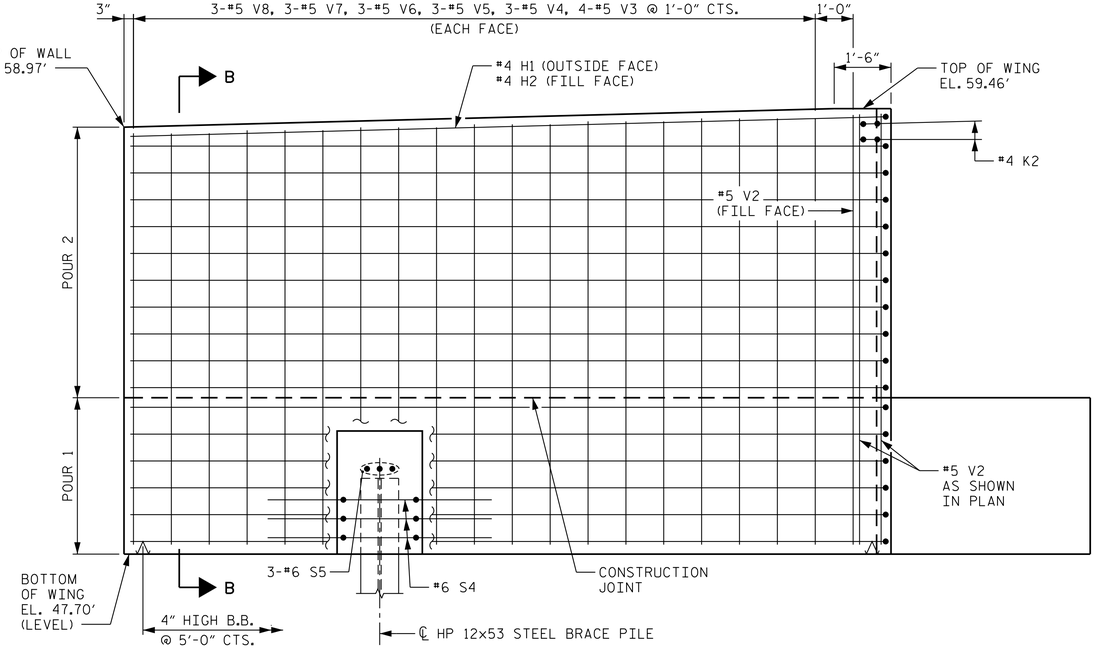
CHECKED BY: P. D. COOKSEY DATE: 10/18

DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 10/18

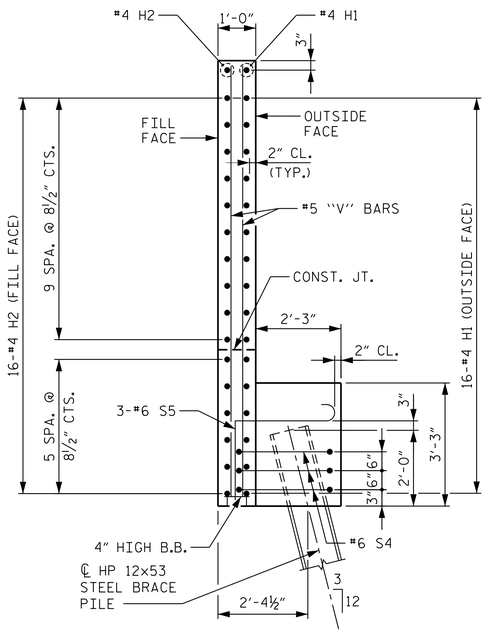
12/7/2018 K:\RDT_Structures_Bridge\NC\01036303 - R-1015\CAD\Dgn\Structure 401\R1015_SMLE7_240272.dgn



PLAN W1



ELEVATION W1



SECTION B-B

DRAWN BY: D. D. LOWERY	DATE: 10/18
CHECKED BY: P. D. COOKSEY	DATE: 10/18
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS	DATE: 10/18

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PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2
SECTIONS AND DETAILS

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-35
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 1

12/7/2018
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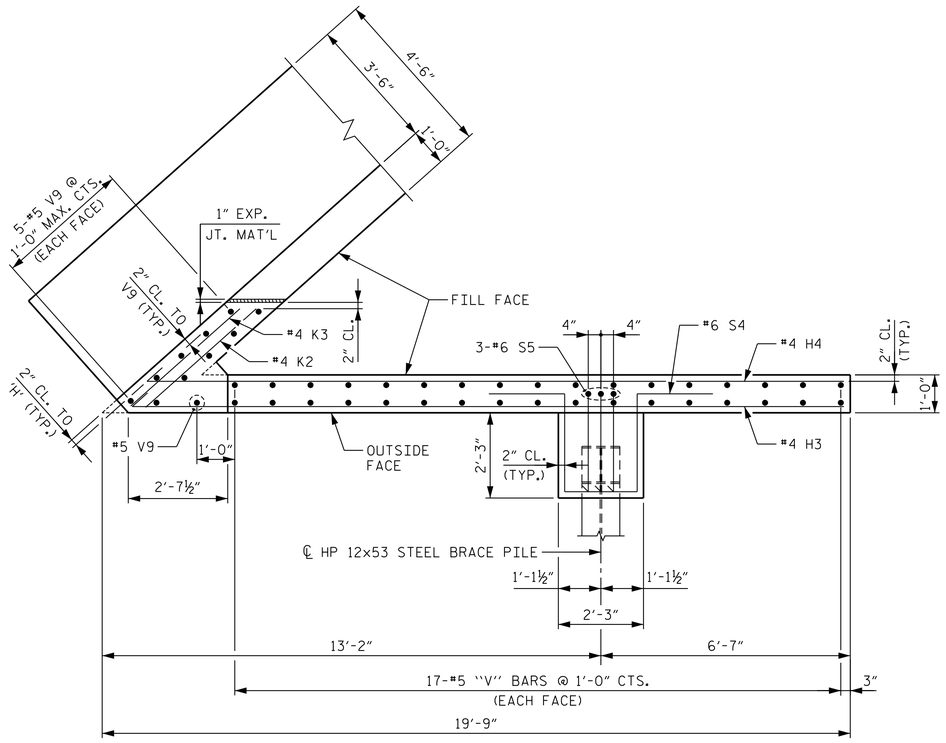
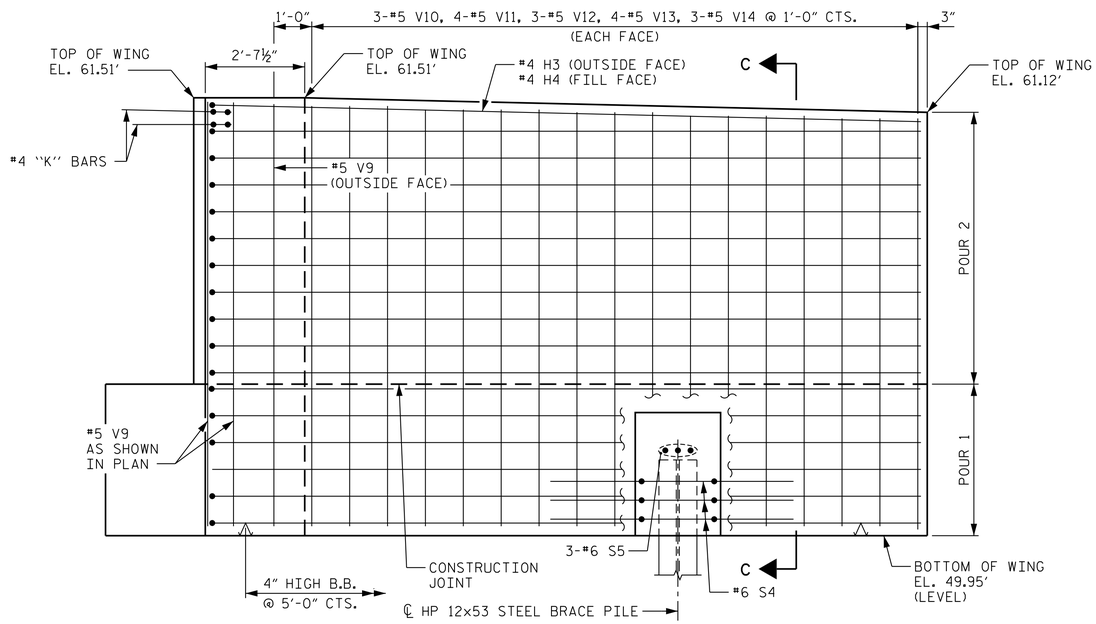
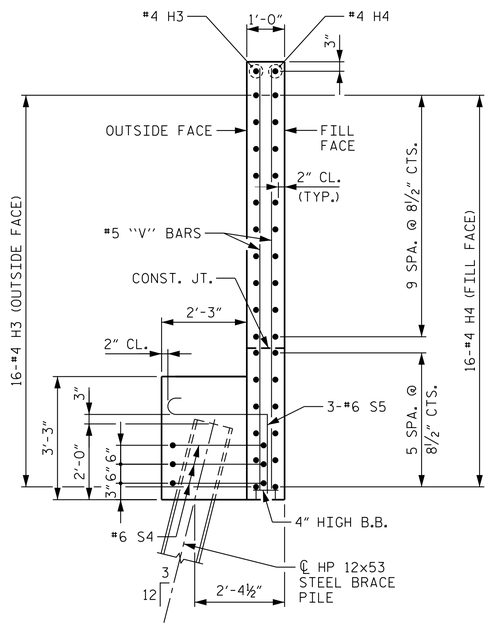


PLAN W2



ELEVATION W2



SECTION C-C

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NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L PHILLIPS

DocuSigned by: Andrew L. Phillips 2BB69ABAD4004D3... 12/7/2018

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PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 SECTIONS AND DETAILS

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-36
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 1

DRAWN BY: D. D. LOWERY DATE: 10/18
CHECKED BY: P. D. COOKSEY DATE: 10/18
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 10/18

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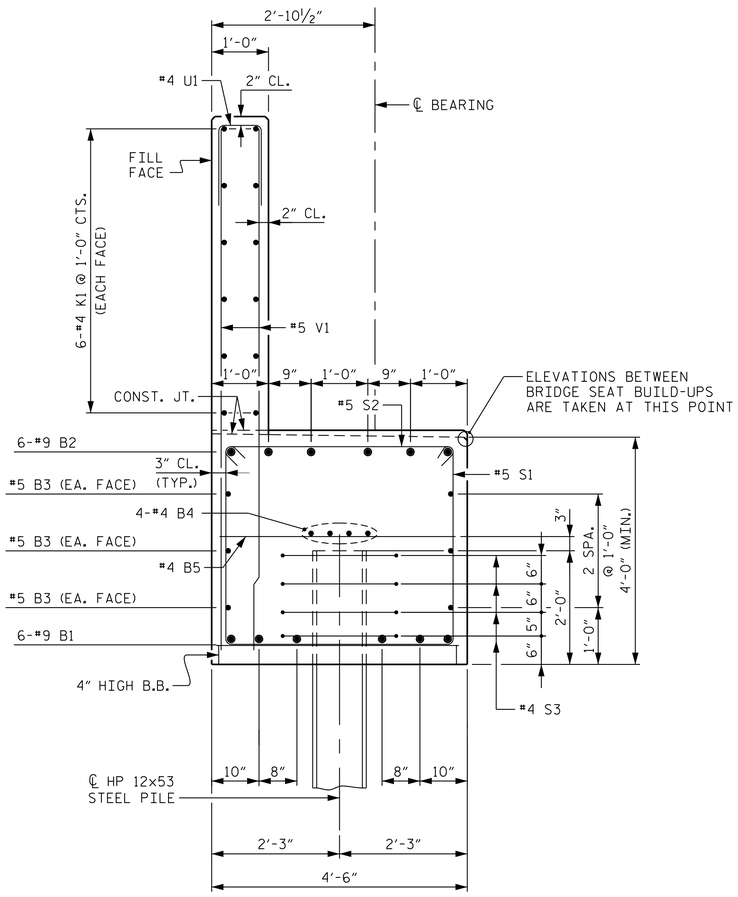
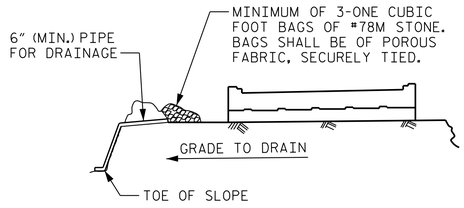


SECTION A-A

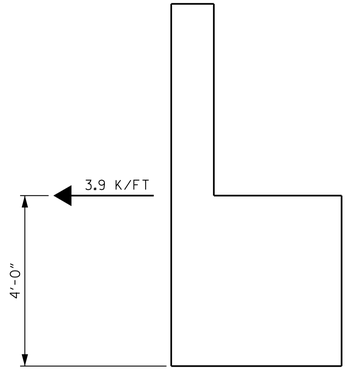


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT



MSE REINFORCING STRAP LOAD DETAIL

MSE REINFORCING STRAP NOTES

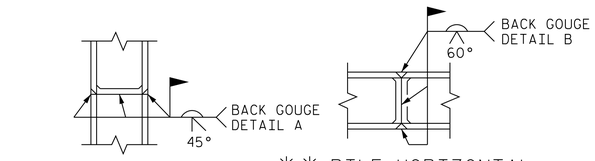
MSE REINFORCING STRAPS SHALL BE ATTACHED TO THE END BENT CAP AND/OR BACKWALL. FOR DESIGN CRITERIA AND DETAILS, SEE MSE WALL SHEETS AND SPECIAL PROVISIONS.

PLANS, WORKING DRAWINGS, AND DESIGN CALCULATIONS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR REVIEW AND APPROVAL, SEE SPECIAL PROVISIONS.

PLANS SUBMITTED FOR REVIEW SHALL INCLUDE THE FOLLOWING: PLAN VIEW, ELEVATION VIEW, TYPICAL SECTIONS, AND STRAP DETAILS.

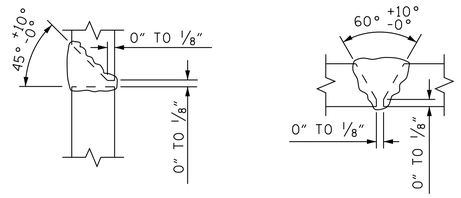
THE MSE REINFORCING STRAPS SHALL BE DESIGNED TO CARRY THE LOADS FROM THE BRIDGE SUPERSTRUCTURE AS INDICATED IN THE "MSE REINFORCING STRAP LOAD DETAIL". IN ADDITION, THE MSE REINFORCING STRAPS SHALL ALSO BE DESIGNED TO CARRY LOADS FROM SOIL PRESSURE AS OUTLINED IN THE SPECIAL PROVISION.

THE LOADS IN THE DETAIL ABOVE ARE FACTORED LOADS.



** PILE VERTICAL

** PILE HORIZONTAL OR VERTICAL



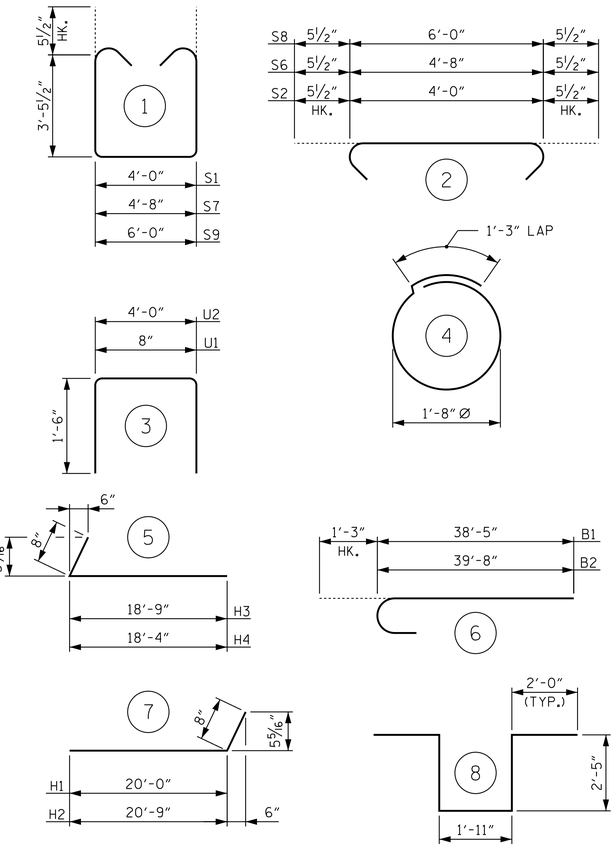
DETAIL A

DETAIL B

PILE SPLICE DETAILS

** POSITION OF PILE DURING WELDING.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	9	6	39'-8"	1,618
B2	12	9	6	40'-11"	1,669
B3	12	5	STR	36'-10"	461
B4	12	4	STR	25'-2"	202
B5	18	4	STR	4'-0"	48
B6	30	4	STR	2'-5"	48
H1	17	4	7	20'-8"	235
H2	17	4	7	21'-5"	243
H3	17	4	5	19'-5"	220
H4	17	4	5	19'-0"	216
K1	36	4	STR	25'-2"	605
K2	6	4	STR	3'-10"	15
K3	2	4	STR	3'-8"	5
S1	62	5	1	11'-10"	765
S2	62	5	2	4'-11"	318
S3	32	4	4	6'-6"	139
S4	6	6	8	10'-9"	97
S5	6	6	9	5'-1"	46
S6	1	5	2	5'-7"	6
S7	1	5	1	12'-6"	13
S8	1	5	2	6'-11"	7
S9	1	5	1	13'-10"	14
U1	61	4	3	3'-8"	149
U2	25	4	3	7'-0"	117
V1	122	5	STR	9'-6"	1,209
V2	11	5	STR	11'-4"	130
V3	8	5	STR	11'-3"	94
V4	6	5	STR	11'-2"	70
V5	6	5	STR	11'-1"	69
V6	6	5	STR	11'-0"	69
V7	6	5	STR	10'-11"	68
V8	6	5	STR	10'-10"	68
V9	11	5	STR	11'-1"	127
V10	6	5	STR	11'-1"	69
V11	8	5	STR	11'-0"	92
V12	6	5	STR	10'-11"	68
V13	8	5	STR	10'-10"	90
V14	6	5	STR	10'-9"	67

REINFORCING STEEL	9,546 LBS.
CLASS A CONCRETE BREAKDOWN	
POUR 1 (CAP & LOWER WING)	52.7 C.Y.
POUR 2 (BACKWALL & UPPER PORTION OF WING)	26.5 C.Y.
TOTAL CLASS A CONCRETE	79.2 C.Y.
HP 12x53 STEEL PILES	
NO. 10	900 LIN. FT.
PILE REDRIVES	4 EA.
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	10 EA.

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 SECTIONS AND DETAILS

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew L. Phillips 12/7/2018

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-37
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 1

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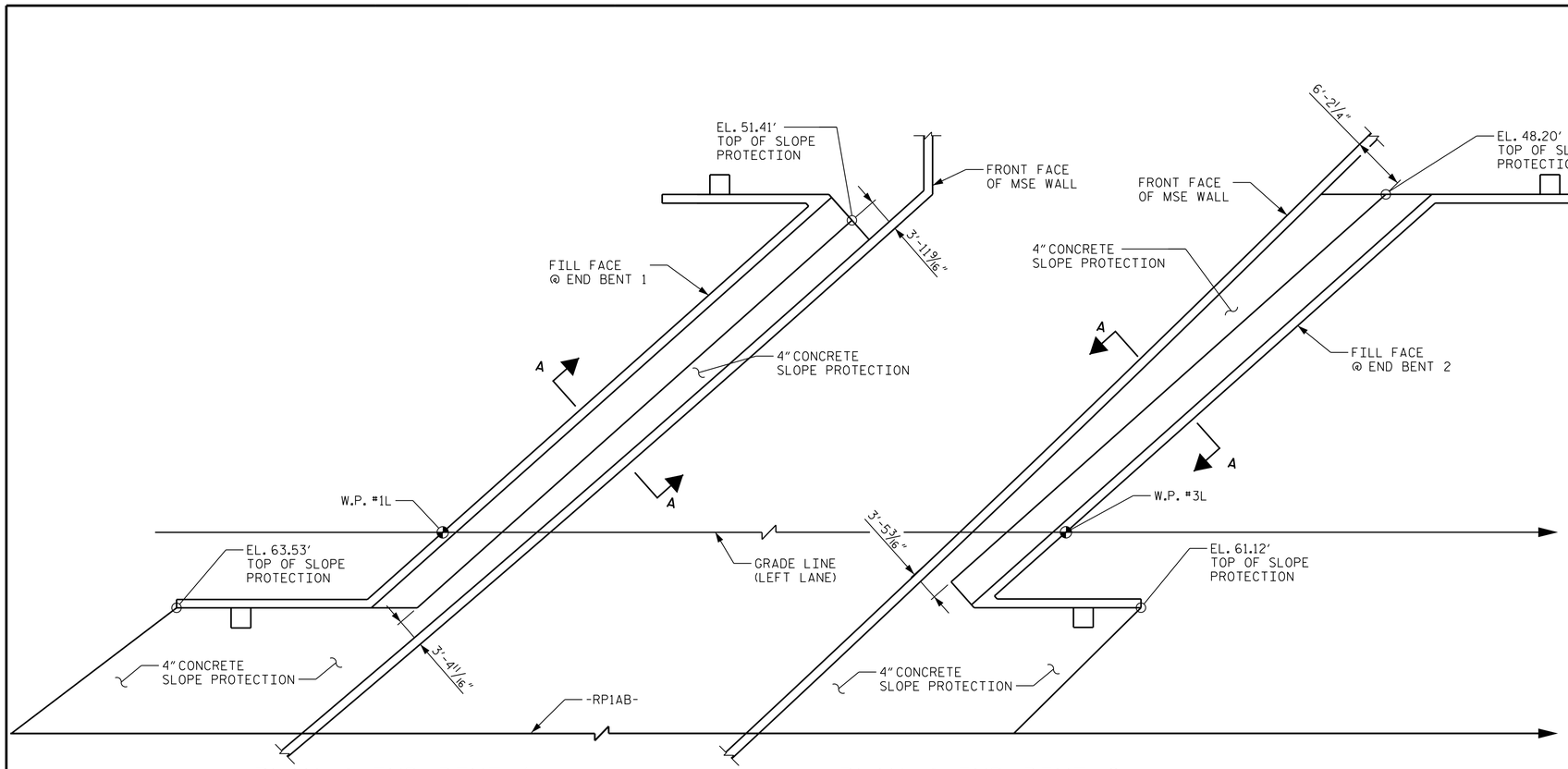
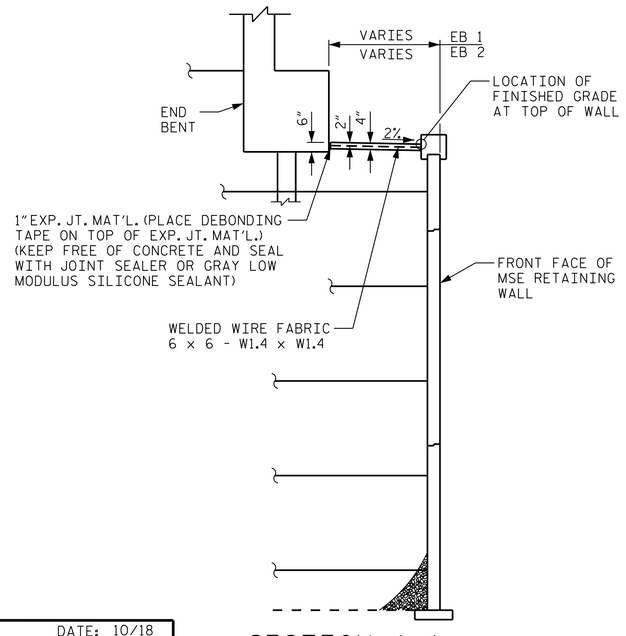
DRAWN BY: D. D. LOWERY	DATE: 10/18	
CHECKED BY: P. D. COOKSEY	DATE: 10/18	
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS	DATE: 10/18	

12/7/2018 K:\R0T_Structures_Bridge\NC\0110036303 - R-1015\CAD\Dgn\Structure 401\R1015_SMU_E10_240272.dgn

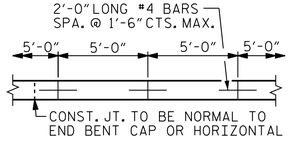


PLAN @ END BENT 1

PLAN @ END BENT 2

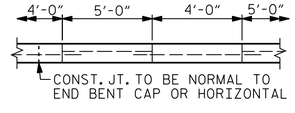


SECTION A-A



STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL



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

OPTIONAL POURING DETAIL

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 AS 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 - W1.4 X W1.4, 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.

BRIDGE @ STA. 11+76.30 -RP1AB- (LEFT LANE)	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	82	200
END BENT 2	83	215

* QUANTITY SHOWN IS BASED ON 5' POURS.

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SLOPE PROTECTION DETAILS

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew L. Phillips 26B69ABAD4004D3... 12/7/2018

REVISIONS						SHEET NO.
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2			4			41

STRUCTURE 1

DRAWN BY: D. D. LOWERY	DATE: 10/18	
CHECKED BY: P. D. COOKSEY	DATE: 10/18	
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS	DATE: 10/18	

12/7/2018

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NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, MSE WALL REINFORCEMENT AND BACKFILL MATERIAL SEE ROADWAY PLANS.

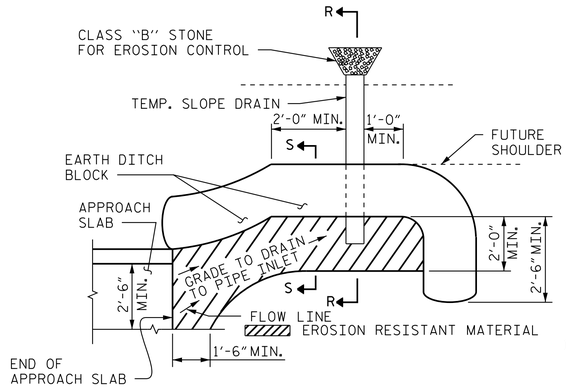
GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

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

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

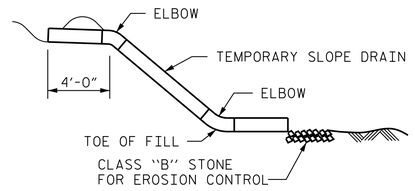
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

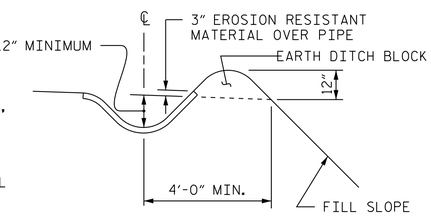


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 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



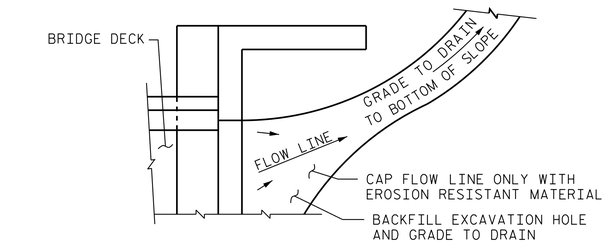
SECTION R-R



SECTION S-S

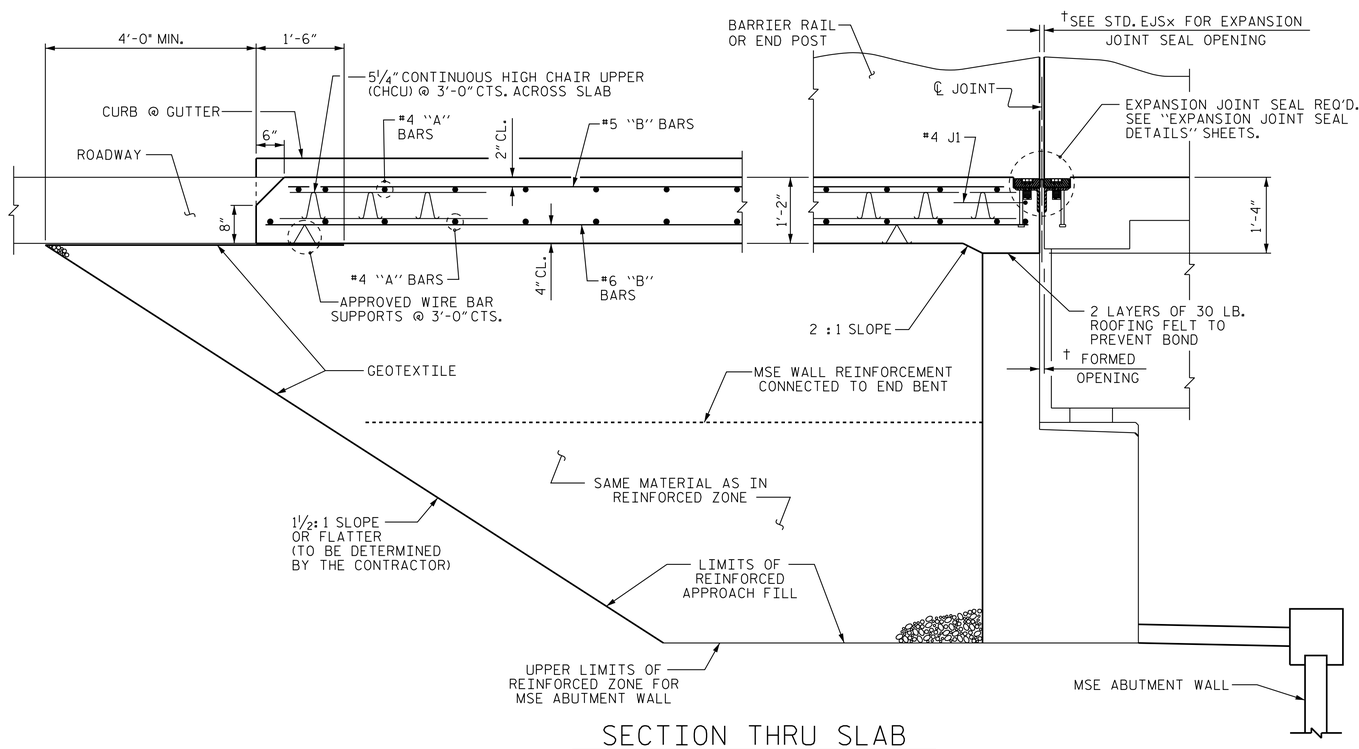
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(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



SECTION THRU SLAB

(TYPE III - REINFORCED APPROACH FILL)

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew L. Phillips 2BB89ABAD4004D3... 12/7/2018

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-39
1			3			TOTAL SHEETS
2			4			41

ASSEMBLED BY : D. D. LOWERY		DATE :	10/18
CHECKED BY : P. D. COOKSEY		DATE :	10/18
DRAWN BY : EEM 3/95	REV. 12/21/11		MAA/GM
CHECKED BY : VAP 3/95	REV. 6/13		MAA/GM
	REV. 12/17		MAA/THC

12/7/2018

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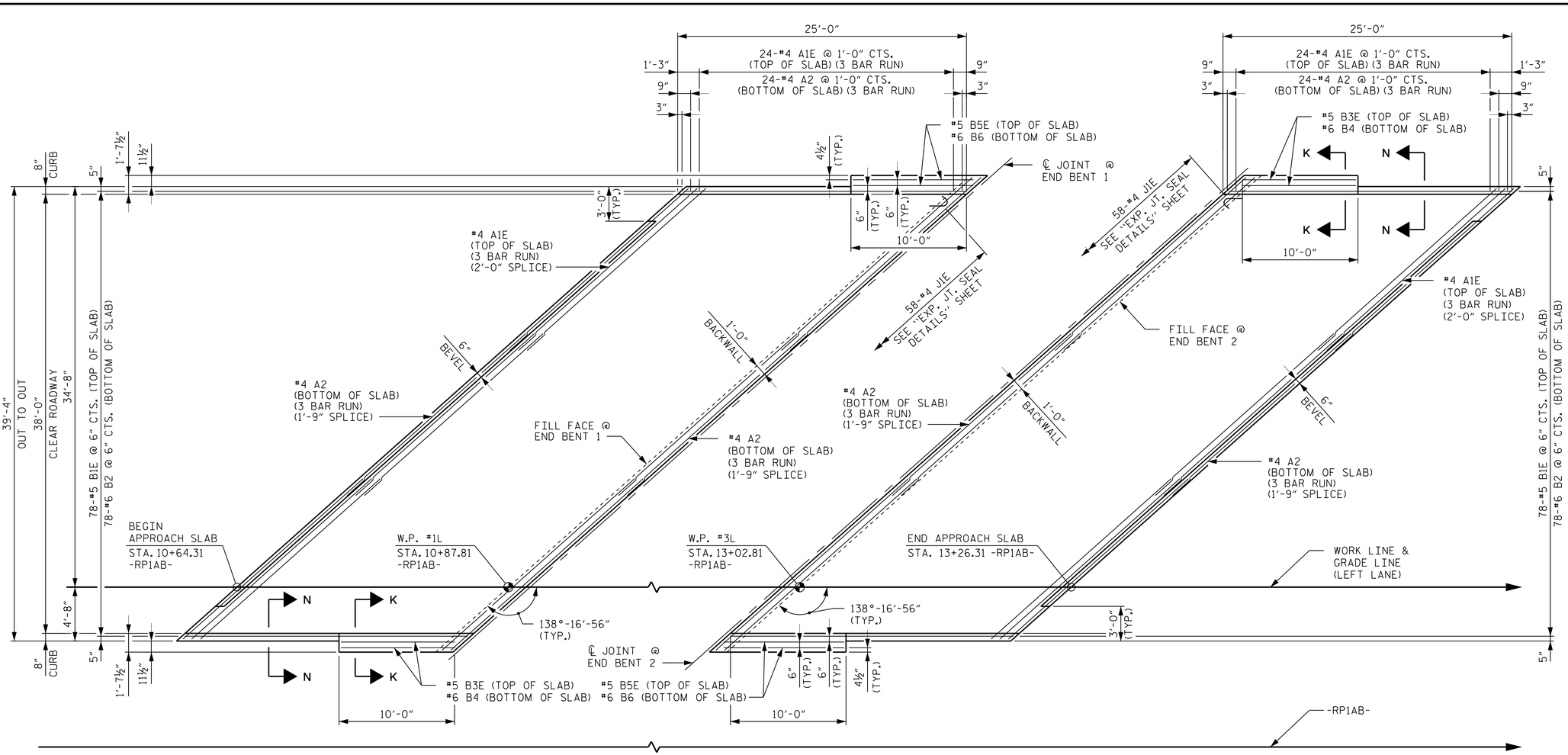
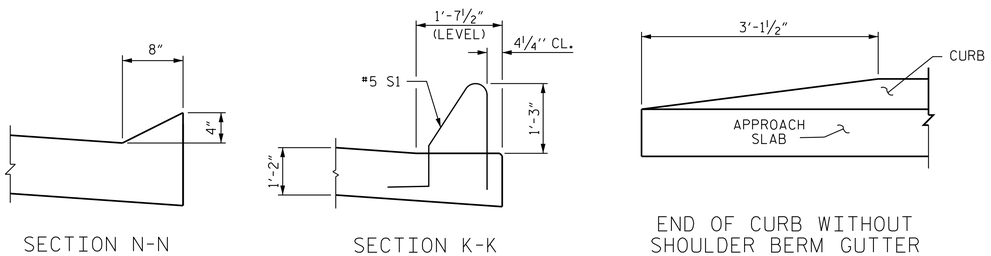
STRUCTURE 1 STD. NO. BAS2



PLAN @ END BENT 1

PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION N-N

SECTION K-K

END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

NOTES

FOR APPROACH SLAB NOTES SEE BRIDGE APPROACH SLAB DETAILS FOR FLEXIBLE PAVEMENT, SHEET 1 OF 3.

THE CONCRETE BARRIER RAIL ON THE APPROACH SLAB SHALL BE INCLUDED IN THE CONCRETE BARRIER RAIL QUANTITY FOR THE SUPERSTRUCTURE. FOR QUANTITIES SEE SHEET 3 OF 3.

BILL OF MATERIAL

APPROACH SLAB AT EB 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	75	#4	STR	21'-10"	1,094
A2	78	#4	STR	21'-8"	1,129
B1E	78	#5	STR	23'-5"	1,905
B2	78	#6	STR	24'-6"	2,870
B3E	2	#5	STR	9'-10"	21
B4	2	#6	STR	9'-10"	30
B5E	2	#5	STR	10'-5"	22
B6	2	#6	STR	10'-5"	31
J1E	58	#4	1	1'-5"	55

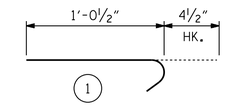
REINFORCING STEEL **	LBS.	4,060
EPOXY COATED REINFORCING STEEL **	LBS.	3,097
CLASS AA CONCRETE **	C. Y.	43.4

APPROACH SLAB AT EB 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	75	#4	STR	21'-10"	1,094
A2	78	#4	STR	21'-8"	1,129
B1E	78	#5	STR	23'-5"	1,905
B2	78	#6	STR	24'-6"	2,870
B3E	2	#5	STR	9'-10"	21
B4	2	#6	STR	9'-10"	30
B5E	2	#5	STR	10'-5"	22
B6	2	#6	STR	10'-5"	31
J1E	58	#4	1	1'-5"	55

REINFORCING STEEL **	LBS.	4,060
EPOXY COATED REINFORCING STEEL **	LBS.	3,097
CLASS AA CONCRETE **	C. Y.	43.4

BAR TYPE



ALL BAR DIMENSIONS ARE OUT TO OUT

"E" INDICATES EPOXY COATED REINFORCING.

** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED. SEE SHEET 3 OF 3.

SPLICE LENGTHS

BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew L. Phillips 12/7/2018

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-40
1			3			TOTAL SHEETS
2			4			41

DRAWN BY: D. D. LOWERY DATE: 10/18
CHECKED BY: P. D. COOKSEY DATE: 10/18
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 10/18

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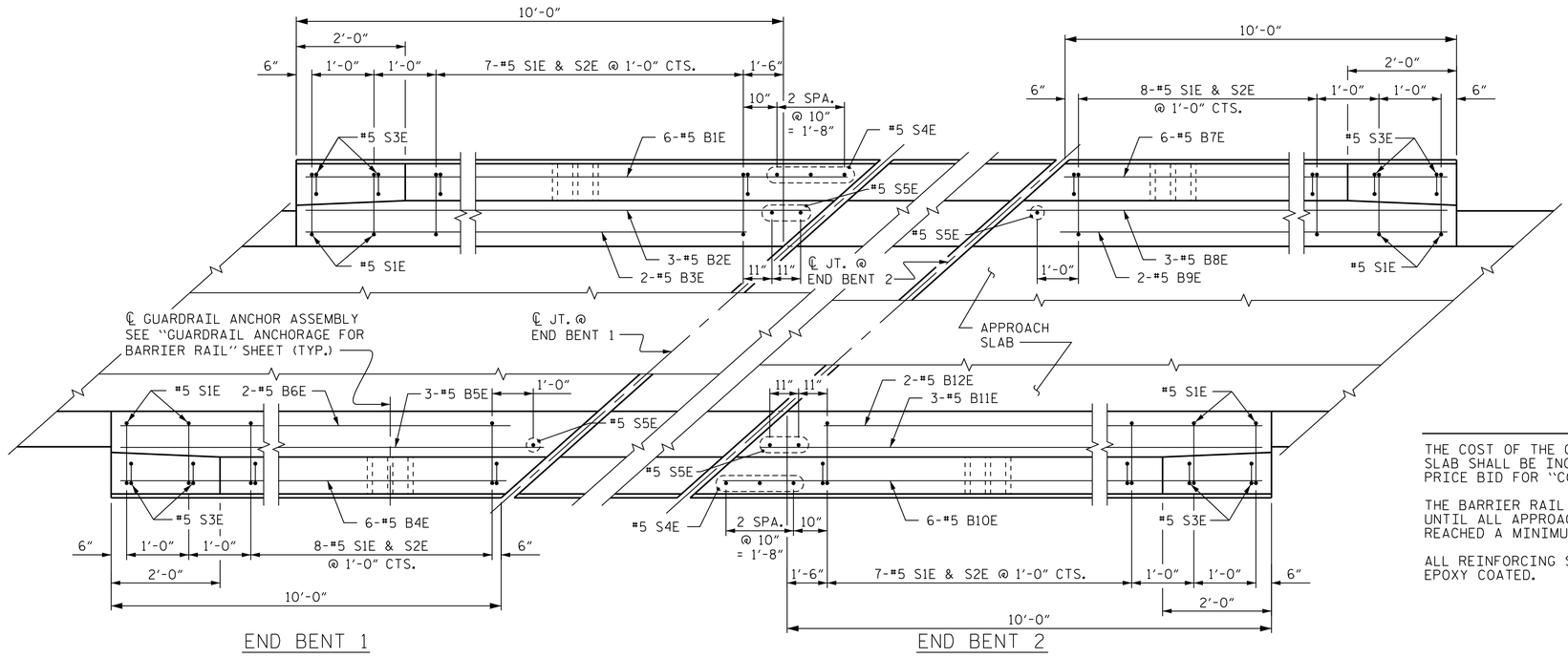
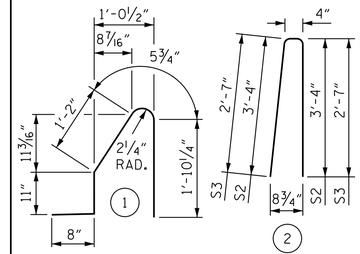
STRUCTURE 1

12/7/2018 K:\RDT_Structures_Bridge\NC\01036303 - R-1015\CAD\Dgn\Structure 401\R1015_SMU_AS2_240272.dgn



PLAN OF BARRIER RAIL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL AT EB 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1E	6	#5	STR	10′-11″	68
B2E	3	#5	STR	10′-4″	32
B3E	2	#5	STR	8′-3″	17
B4E	6	#5	STR	9′-10″	62
B5E	3	#5	STR	10′-6″	33
B6E	2	#5	STR	9′-6″	20
S1E	19	#5	1	5′-1″	101
S2E	15	#5	2	7′-0″	110
S3E	4	#5	2	5′-6″	23
S4E	3	#5	STR	3′-11″	12
S5E	3	#5	STR	2′-4″	7

EPOXY COATED REINFORCING STEEL	485 LBS.
CLASS AA CONCRETE	2.9 CU. YDS.
CONCRETE BARRIER RAIL	20.0 LIN. FT.

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL AT EB 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B7E	6	#5	STR	9′-10″	62
B8E	3	#5	STR	10′-6″	33
B9E	2	#5	STR	10′-0″	21
B10E	6	#5	STR	10′-11″	68
B11E	3	#5	STR	10′-4″	32
B12E	2	#5	STR	8′-9″	18
S1E	19	#5	1	5′-1″	101
S2E	15	#5	2	7′-0″	110
S3E	4	#5	2	5′-6″	23
S4E	3	#5	STR	3′-11″	12
S5E	3	#5	STR	2′-4″	7

EPOXY COATED REINFORCING STEEL	487 LBS.
CLASS AA CONCRETE	2.9 CU. YDS.
CONCRETE BARRIER RAIL	20.0 LIN. FT.

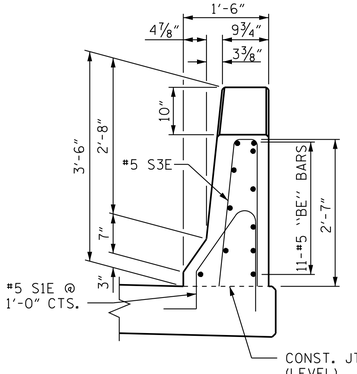
''E'' INDICATES EPOXY COATED REINFORCING.

NOTES

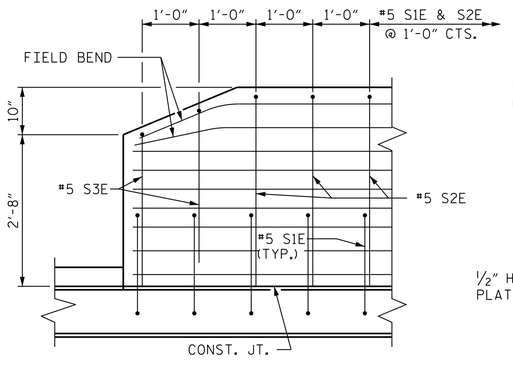
THE COST OF THE CONCRETE BARRIER RAIL ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LINEAR FOOT CONTRACT PRICE BID FOR ''CONCRETE BARRIER RAIL''.

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

ALL REINFORCING STEEL IN CONCRETE BARRIER RAIL SHALL BE EPOXY COATED.

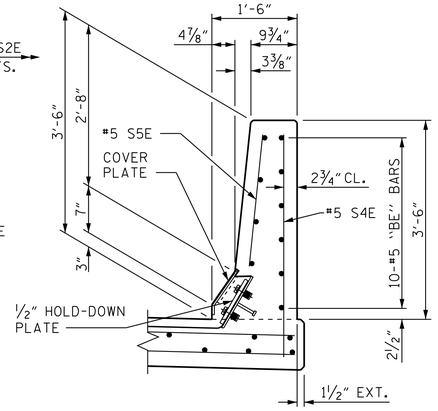


END VIEW



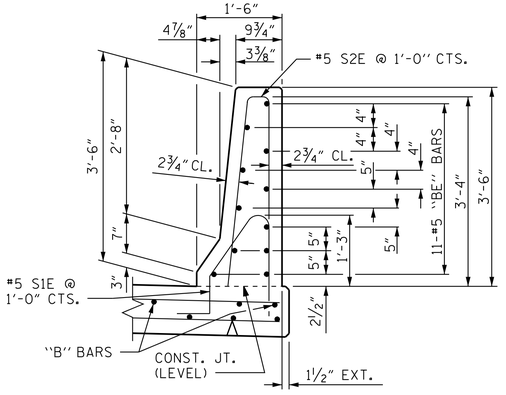
SIDE VIEW

END OF RAIL DETAILS



END VIEW

(AT EXP. JT.)



SECTION THRU RAIL

NORTH CAROLINA PROFESSIONAL SEAL 040769 ENGINEER ANDREW L. PHILLIPS

DocuSigned by: Andrew L. Phillips 2BB89ABAD4004D3... 12/7/2018

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PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-41
1			3			TOTAL SHEETS
2			4			41

ASSEMBLED BY :	D. D. LOWERY	DATE :	10/18
CHECKED BY :	P. D. COOKSEY	DATE :	10/18
DRAWN BY :	FCJ 11/88	REV. 7/12	MAA/GM
CHECKED BY :	ARB 11/88	REV. 6/13	MAA/GM
		REV. 12/17	MAA/THC

STRUCTURE 1 STD. NO. BAS4

12/7/2018 K:\RDT_Structures_Bridge\NC\011036303 - R-1015\CAD\Dgn\Structure 401\R1015_SMU_AS3_240272.dgn

10+00 11+00 12+00 13+00

80 70 60 50 40 30 20 10

SPAN A SPAN B

FILL FACE @ END BENT 1
STA. 10+30.95 -RP1AB-
G.P. EL. 63.03'

FILL FACE @ END BENT 2
STA. 12+53.45 -RP1AB-
G.P. EL. 61.72

3'-2 5/16" MIN.
3'-5 1/8" MIN.
EXP.
FIX FIX
21'-9" MIN. VERT. CL.
19'-5" MIN. VERT. CL.
FILL
6" (TYP.)
MSE RETAINING WALL (TYP.)
CONC. BARRIER RAIL (TYP.) (ROADWAY DETAIL)
FINISHED GRADE
HP 12x53 STEEL PILES (TYP.)
APPROXIMATE LINE OF EXISTING GROUND
EL. 26'±
TOP OF FOOTING EL. 29'
PILE FOOTING (TYP.)

END BENT 1 BENT 1 END BENT 2

SECTION ALONG GRADE LINE (RIGHT LANE)

(SECTION AT BENT AND END BENTS ARE AT RIGHT ANGLES)

(+)3.7043% (-)3.8709%

P.I. STA. = 10+83.00
EL. = 71.53'
V.C. = 890.00'

-RP1AB- GRADE DATA

-L- HORIZONTAL CURVE DATA

P.I. STA. 89+47.37
△ = 34°58'57.1" (LT)
D = 1°53'54.5"
L = 1,842.67'
T = 951.07'
R = 3,018.00'

222'-6"
TOTAL LENGTH FILL FACE TO FILL FACE
119'-3" SPAN A
103'-3" SPAN B
145'-4 3/16"

TO US 70
4" CONCRETE SLOPE PROTECTION (TYP.)
W.P. #1R
FILL FACE @ END BENT 1
STA. 10+30.95 -RP1AB-
23'-0"
BEGIN APPROACH SLAB
STA. 10+07.46 -RP1AB-
5'-7 9/16" BERM EL. 51.68'
3'-2 5/16" BERM EL. 51.68'
7'-0" MIN. CL. TO BARRIER RAIL
47'-0" (SHLDR. TO SHLDR.)
19'-11" MIN. TO BARRIER RAIL
138°-16'-56" (TYP.)
CONC. BARRIER RAIL (TYP.)
SHLDR. VARIES (17'-0" TO 19'-0")
24'-0" TO 36'-0" VARIES
TO US 70
-L-
BRIDGE I.D. STATION
STA. 11+76.30 -RP1AB-
STA. 96+97.07 -L-
STA. 11+50.20 -RP1AB-
STA. 96+62.29 -L-
138°-16'-56" TANGENT TO CURVE
W.P. #2R
STA. 11+50.20 -RP1AB-
PMVC (A)
BENT 1 CONTROL LINE
4'-0" SHLDR.
19'-0"
19'-11" MIN. TO BARRIER RAIL
MSE RETAINING WALL (TYP.)
24'-0"
12'-0" SHLDR.
40'-0" (SHLDR. TO SHLDR.)
TO SR 1756
12'-0" MIN. CL. TO BARRIER RAIL
-RP1AB-
3'-11/4" BERM EL. 50.83'
WORK LINE & GRADE LINE (RIGHT LANE)
PMVC (B)
END APPROACH SLAB
STA. 12+76.95 -RP1AB-
TO SR 1824
W.P. #3R
FILL FACE @ END BENT 2
STA. 12+53.45 -RP1AB-
3'-5 1/8" BERM EL. 50.83'

PLAN

PILES, FOOTINGS, AND COLUMNS NOT SHOWN IN PLAN VIEW FOR CLARITY
PMVC-DENOTES POINT OF MINIMUM VERTICAL CLEARANCE

(A) STA. 11+23.14 -RP1AB-
G.P. EL. 63.00'
OFFSET 43.00' RT.
= STA. 96+28.71 -L-
G.P. EL. 33.34'
OFFSET 2.51' LT.

(B) STA. 12+16.73 -RP1AB-
G.P. EL. 62.23'
OFFSET 43.00' RT.
= STA. 96+98.61 -L-
G.P. EL. 33.55'
OFFSET 59.00' RT.

PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-
96+97.07 -L-
SHEET 1 OF 3 BRIDGE NO. 273

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON US 70
BUS. OVER US 70 BYPASS BETWEEN
US 70 AND SR 1824

RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-1
1			3			TOTAL SHEETS
2			4			41

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON
DocuSigned by: Jeffrey C. Wilson CDA045FAFCC9418...
12/7/2018

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DRAWN BY: D. D. LOWERY DATE: 10/18
CHECKED BY: C. T. POOLE DATE: 10/18
DESIGN ENGINEER OF RECORD: J. C. WILSON DATE: 10/18

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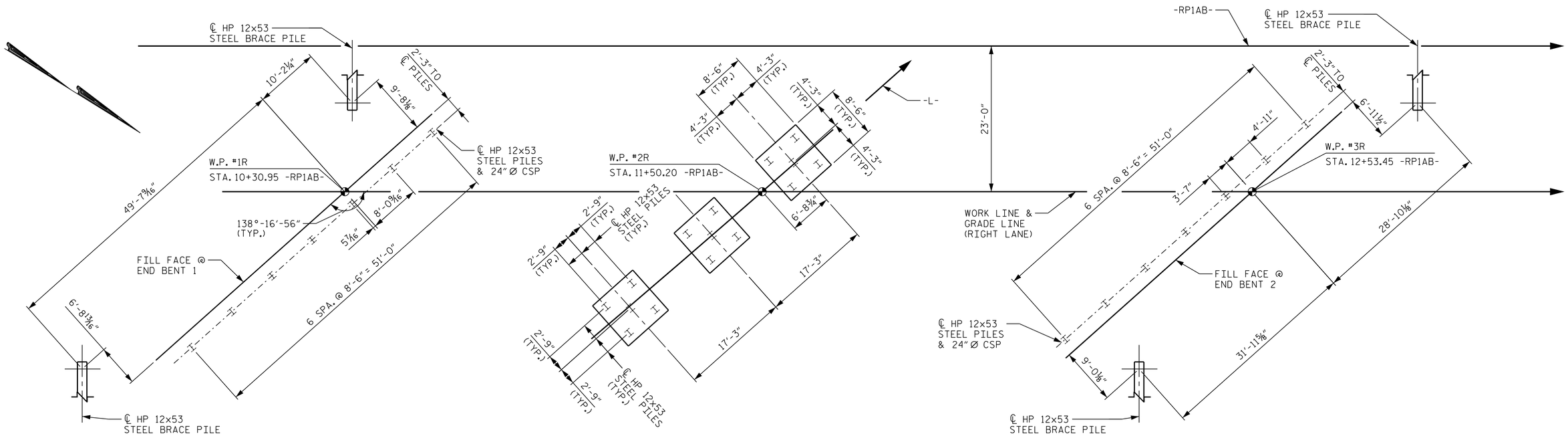
STRUCTURE 2

12/7/2018 K:\RDT_Structures_Bridge\NC\01036303 - R-1015\CAD\Dgn\Structure 402\R1015_SMU_G01_240273.dgn



FOUNDATION LAYOUT

(DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES AT BOTTOM OF CAP OR FOOTING)

WING BRACE PILE BATTERED 3:12

NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 AND END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 125 TONS PER PILE.

PILES AT BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 125 TONS PER PILE.

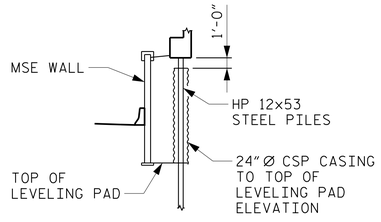
DRIVE PILES AT END BENT 1 AND END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 170 TONS PER PILE.

DRIVE PILES AT BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 170 TONS PER PILE.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENT 1, BENT 1, OR END BENT 2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

24" DIAMETER CSP SLEEVES SHOULD BE INSTALLED DURING MSE WALL CONSTRUCTION FOR PILES TO BE INSTALLED AFTER MSE WALL CONSTRUCTION AT END BENT 1 AND END BENT 2. THE SLEEVES SHOULD BE FILLED WITH SAND AFTER THE PILES ARE INSTALLED. SEE MSE WALL PLANS.

NOTE THAT THE BOTTOM OF FOOTINGS AT BENT 1 ARE NEAR OR BELOW THE GROUNDWATER TABLE AND DEWATERING MAY BE REQUIRED.



24" Ø CSP CASING DETAIL

(END BENT 2 SHOWN, END BENT 1 SIMILAR)

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON US 70
BUS. OVER US 70 BYPASS BETWEEN
US 70 AND SR 1824

RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-2
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 2

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

DocuSigned by: Jeffrey C. Wilson CDA045FAFCC9416... 12/7/2018

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DRAWN BY: D. D. LOWERY	DATE:	10/18
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DESIGN ENGINEER OF RECORD: J. C. WILSON	DATE:	10/18

12/7/2018

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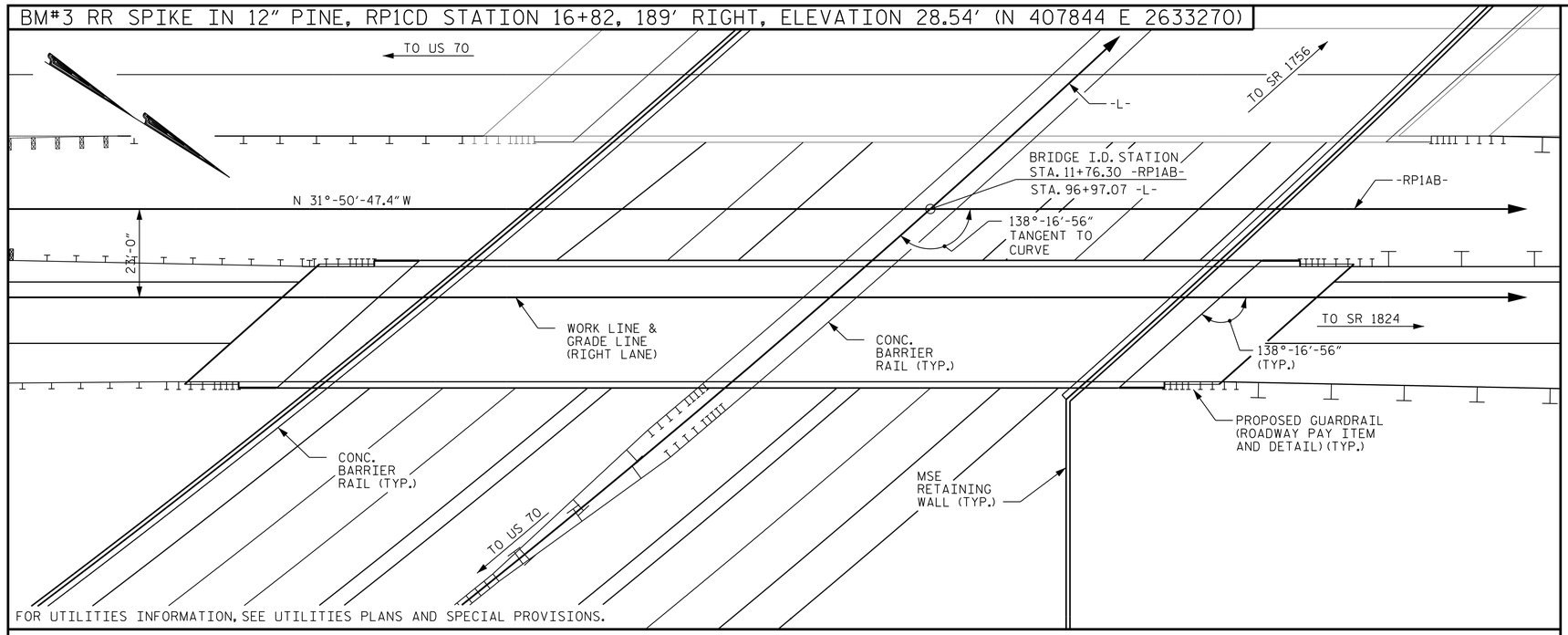

LOCATION SKETCH

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.

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

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

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

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

TOTAL BILL OF MATERIAL

	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE (BRIDGE)	BRIDGE APPROACH SLABS STA. 11+76.30 -RP1AB-	REINFORCING STEEL (BRIDGE)	SPIRAL COLUMN REINFORCING STEEL	MODIFIED 72" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	HP 12x53 STEEL PILES		PILE REDRIVES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS
	EA.	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	EA.	NO.	LIN. FT.	EA.	LIN. FT.	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE		7,288	7,144		LUMP SUM			8	857.75					478.4		LUMP SUM	LUMP SUM
END BENT 1				73.1		8,918				9	9	900	3		71		
BENT 1				81.1		16,063	1,413			15	15	1,050	7				
END BENT 2				69.6		8,380				9	9	810	3		56		
TOTAL	1	7,288	7,144	223.8	LUMP SUM	33,361	1,413	8	857.75	33	33	2,760	13	478.4	127	LUMP SUM	LUMP SUM

SAMPLE BAR REPLACEMENT

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

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

DRAWN BY: D. D. LOWERY DATE: 10/18
CHECKED BY: C. T. POOLE DATE: 10/18
DESIGN ENGINEER OF RECORD: J. C. WILSON DATE: 10/18

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NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON
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PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON US 70
BUS. OVER US 70 BYPASS BETWEEN
US 70 AND SR 1824
RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-3
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 2

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

LEVEL		VEHICLE	WEIGHT (W) (TONS)	⟨#⟩ CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE											SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR						MOMENT						
							LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	⟨1⟩	1.13	--	1.75	0.696	1.56	A	ER	56.900	1.005	1.27	A	I	10.800	0.80	0.636	1.13	A	I	56.900	
		HL-93 (OPERATING)	N/A		1.69	--	1.35	0.696	2.02	A	ER	56.900	1.005	1.69	A	I	10.800	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	⟨2⟩	1.64	59.04	1.75	0.696	2.25	A	ER	56.900	1.005	1.83	A	I	10.800	0.80	0.636	1.64	A	I	56.900	
		HS-20 (OPERATING)	36.000		2.40	86.40	1.35	0.696	2.92	A	ER	56.900	1.005	2.40	A	I	10.800	N/A	--	--	--	--	--	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.96	53.46	1.40	0.696	6.81	A	ER	56.900	1.005	6.26	A	I	10.800	0.80	0.636	3.96	A	I	56.900	
		SNGARBS2	20.000		2.84	56.80	1.40	0.696	4.87	A	ER	56.900	1.005	4.34	A	I	10.800	0.80	0.636	2.84	A	I	56.900	
		SNAGRIS2	22.000		2.64	58.08	1.40	0.696	4.53	A	ER	56.900	1.005	3.99	A	I	10.800	0.80	0.636	2.64	A	I	56.900	
		SNCOTTS3	27.250		1.97	53.68	1.40	0.696	3.38	A	ER	56.900	1.005	3.00	A	I	10.800	0.80	0.636	1.97	A	I	56.900	
		SNAGGRS4	34.925		1.60	55.88	1.40	0.696	2.75	A	ER	56.900	1.005	2.31	A	I	10.800	0.80	0.636	1.60	A	I	56.900	
		SNS5A	35.550		1.57	55.81	1.40	0.696	2.69	A	ER	56.900	1.005	2.27	A	I	10.800	0.80	0.636	1.57	A	I	56.900	
		SNS6A	39.950		1.42	56.73	1.40	0.696	2.44	A	ER	56.900	1.005	2.08	A	I	10.800	0.80	0.636	1.42	A	I	56.900	
		SNS7B	42.000		1.35	56.70	1.40	0.696	2.32	A	ER	56.900	1.005	2.00	A	I	10.800	0.80	0.636	1.35	A	I	56.900	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.73	57.09	1.40	0.696	2.97	A	ER	56.900	1.005	2.48	A	I	10.800	0.80	0.636	1.73	A	I	56.900	
		TNT4A	33.075		1.73	57.22	1.40	0.696	2.97	A	ER	56.900	1.005	2.40	A	I	10.800	0.80	0.636	1.73	A	I	56.900	
		TNT6A	41.600		1.40	58.24	1.40	0.696	2.40	A	ER	56.900	1.005	2.06	A	I	10.800	0.80	0.636	1.40	A	I	56.900	
		TNT7A	42.000		1.40	58.80	1.40	0.696	2.40	A	ER	56.900	1.005	2.00	A	I	10.800	0.80	0.636	1.40	A	I	56.900	
		TNT7B	42.000		1.42	59.64	1.40	0.696	2.44	A	ER	56.900	1.005	1.92	A	I	10.800	0.80	0.636	1.42	A	I	56.900	
		TNAGRIT4	43.000		1.37	58.91	1.40	0.696	2.35	A	ER	56.900	1.005	1.87	A	I	10.800	0.80	0.636	1.37	A	I	56.900	
		TNAGT5A	45.000		1.30	58.50	1.40	0.696	2.23	A	ER	56.900	1.005	1.82	A	I	10.800	0.80	0.636	1.30	A	I	56.900	
		TNAGT5B	45.000	⟨3⟩	1.29	58.05	1.40	0.696	2.21	A	ER	56.900	1.005	1.88	A	I	10.800	0.80	0.636	1.29	A	I	56.900	

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)

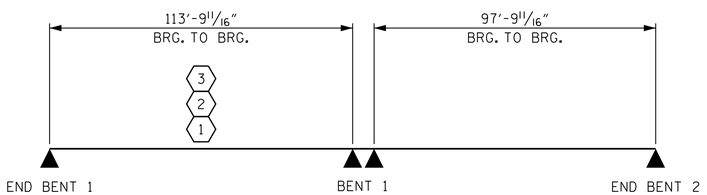
⟨2⟩ DESIGN LOAD RATING (HS-20)

⟨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-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON
DocuSigned by: Jeffrey C. Wilson CDA045AFCC9416...
12/7/2018

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-4
1			3			TOTAL SHEETS
2			4			41

ASSEMBLED BY : D. D. LOWERY	DATE : 10/18	
CHECKED BY : C. T. POOLE	DATE : 10/18	
DRAWN BY : MAA 1/08	REV. 11/12/08RR	MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11	MAA/GM
	REV. 12/17	MAA/THC

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STRUCTURE 2 STD. NO. LRFR1

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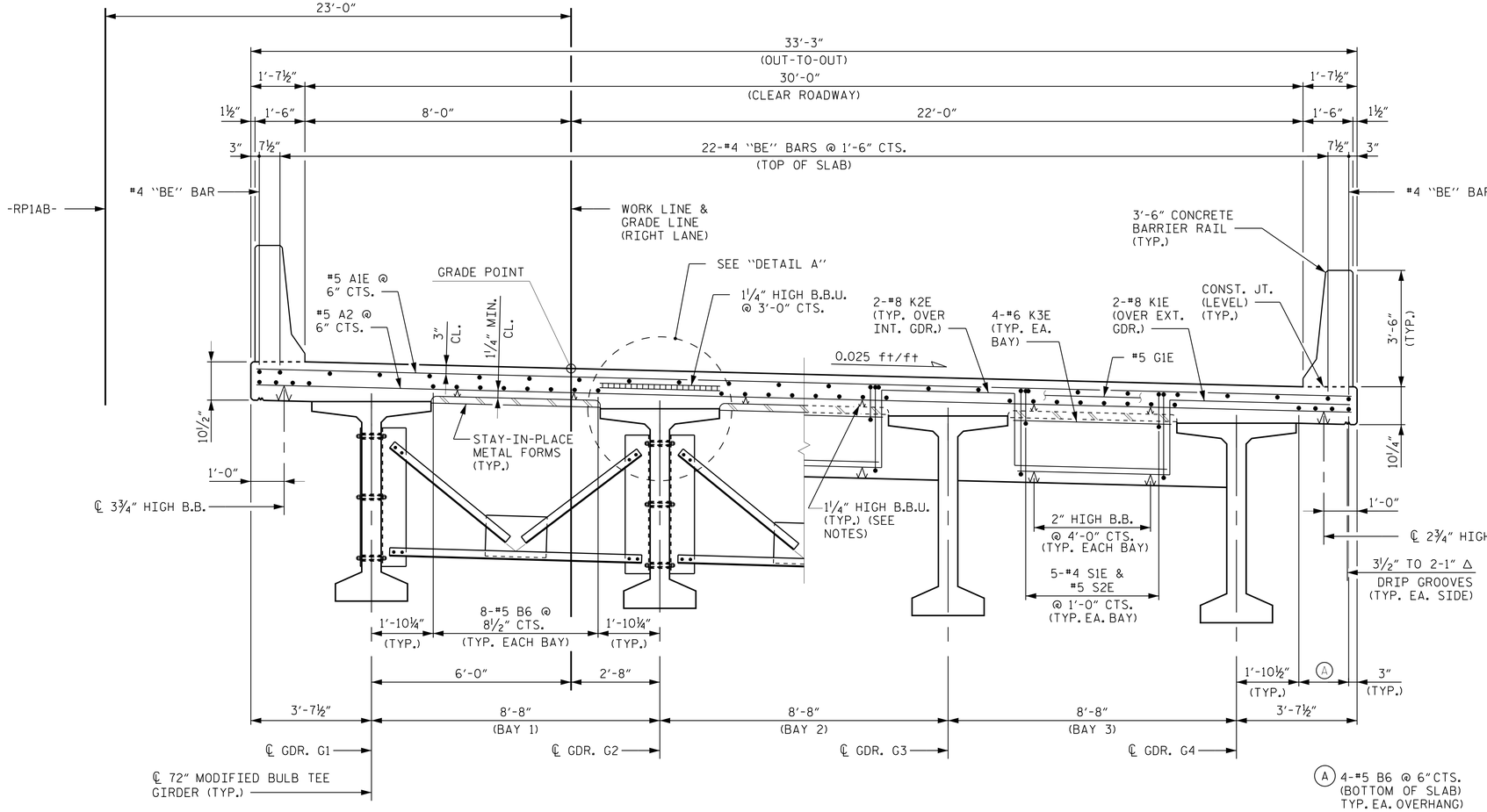


PART SECTION - INTERMEDIATE DIAPHRAGM

PART SECTION - END BENT DIAPHRAGM

TYPICAL SECTION

NOTES:

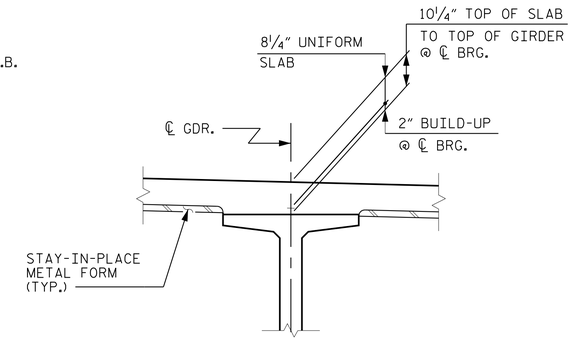
PROVIDE 1¼" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2½" ABOVE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

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

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

FOR "SECTION THRU END BENT DIAPHRAGM", SEE "TYPICAL SECTION" SHEET 3 OF 3.

BARRIER RAIL IN CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A COMPRESSIVE STRENGTH OF 3000 PSI.



DETAIL "A"
(TYP. EA. GDR. @ EA. BENT)

PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION
RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON
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12/7/2018

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-5
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 2

DRAWN BY: D. D. LOWERY DATE: 10/18
CHECKED BY: C. T. POOLE DATE: 10/18
DESIGN ENGINEER OF RECORD: J. C. WILSON DATE: 10/18

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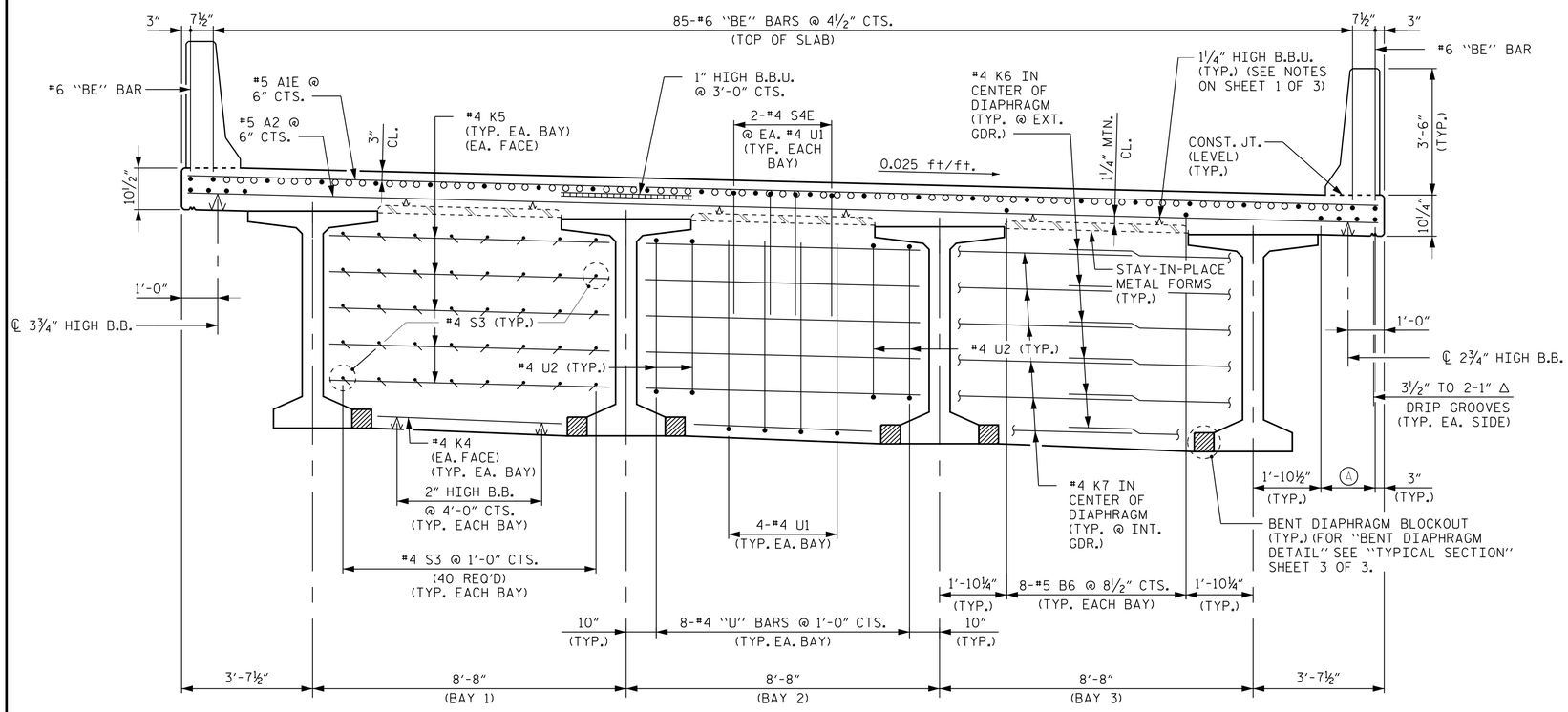


SECTION - BENT DIAPHRAGM

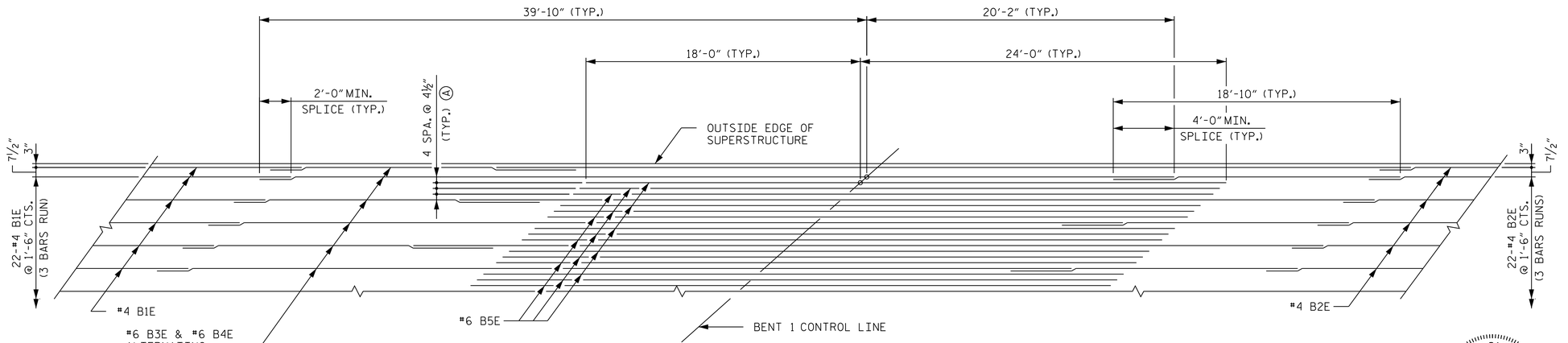
Ⓐ 4-#5 B6 @ 6"CTS. (BOTTOM OF SLAB) TYP. EA. OVERHANG)

NOTE:

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

- ○ INDICATES NON-CONTINUOUS REINFORCING STEEL OVER BENT.
- • INDICATES CONTINUOUS REINFORCING FROM END BENT 1 TO END BENT 2.

TYPICAL SECTION



PART SLAB PLAN OVER BENT

LONGITUDINAL REINFORCING (TOP OF SLAB)
REINFORCING IS SYMMETRICAL ABOUT BRIDGE ℄

Ⓐ 3-#6 B5E NON-CONTINUOUS REINFORCING BAR BETWEEN CONTINUOUS REINFORCING OVER INTERIOR BENT.

PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION
RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON
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NC LICENSE # F-0102

REVISIONS						SHEET NO.
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2			4			41

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CHECKED BY: C. T. POOLE DATE: 10/18
DESIGN ENGINEER OF RECORD: J. C. WILSON DATE: 10/18

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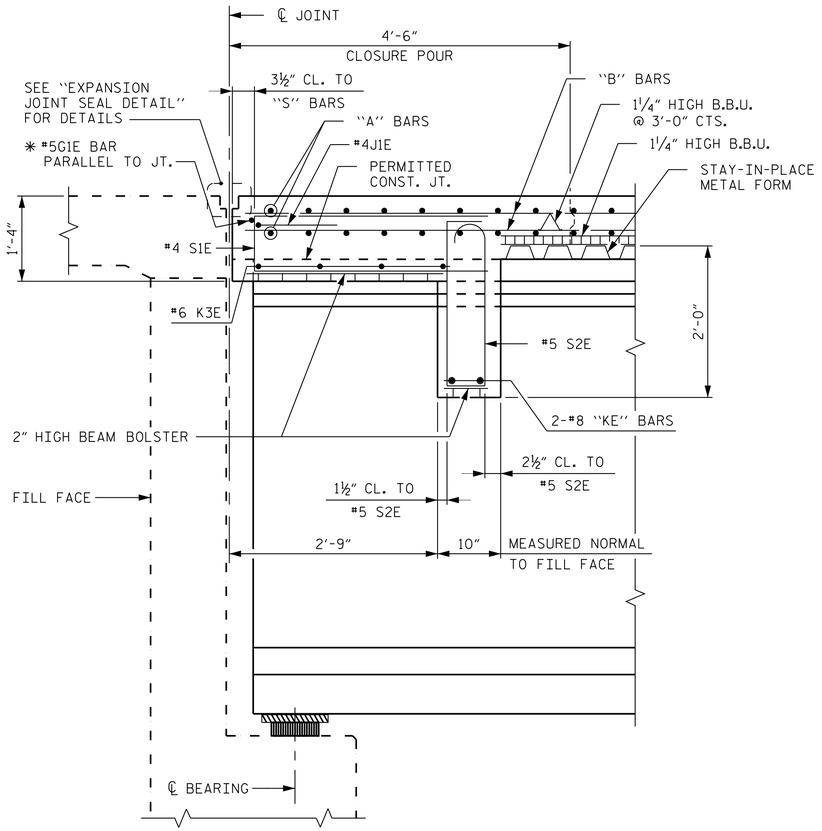
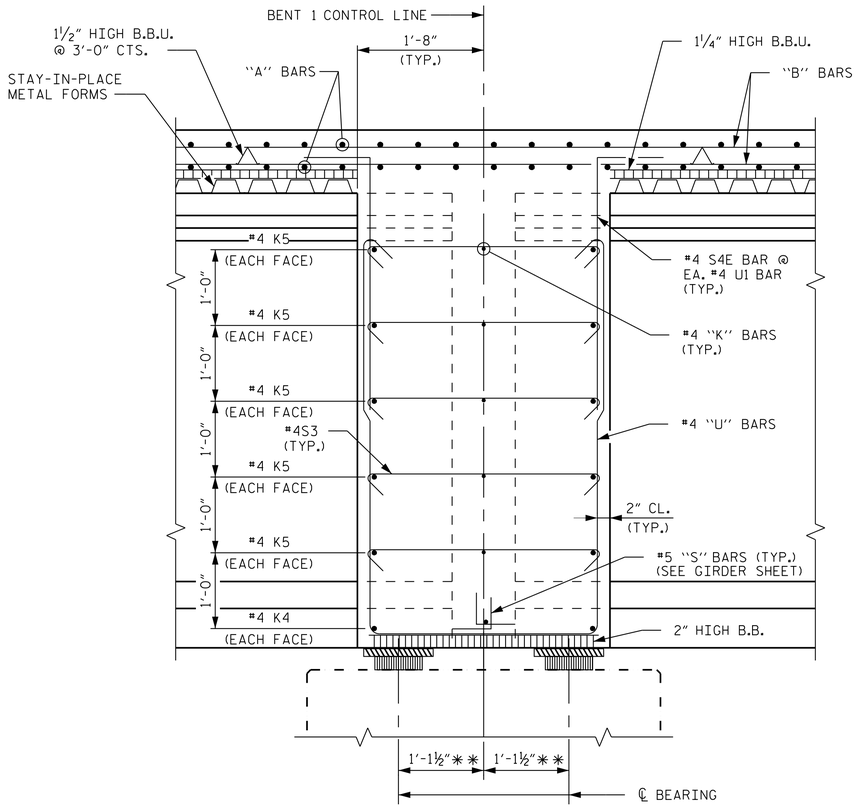
STRUCTURE 2

12/7/2018 K:\RDT_Structures_Bridge\NC\V01036303 - R-1015\CAD\Dgn\Structure 402\R1015_SMU_TS2_240213.dgn



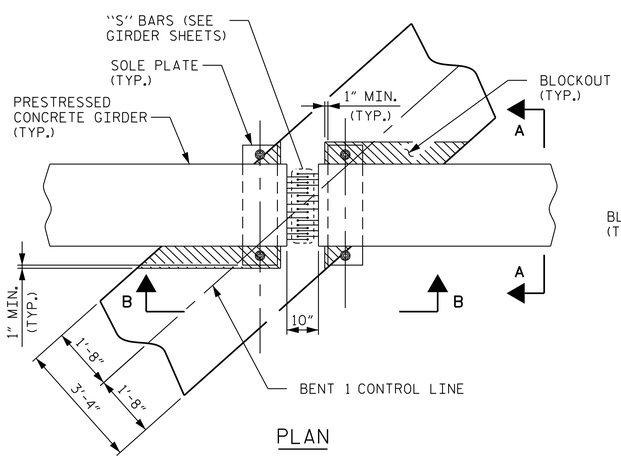
SECTION THRU END BENT DIAPHRAGM

✳ #5G1E BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY TO CLEAR REINFORCING STEEL AND STIRRUPS

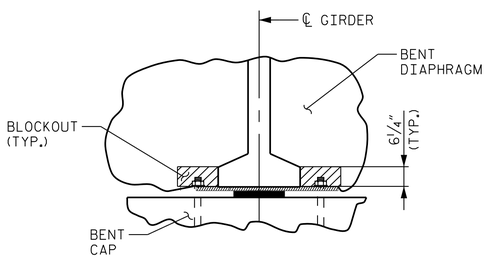


SECTION THRU BENT DIAPHRAGM

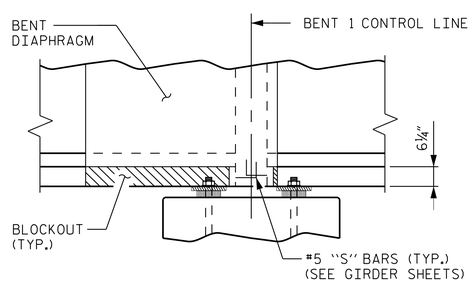
✳✳ DIMENSION ALONG ℄ GIRDER



PLAN



SECTION A-A



SECTION B-B

BENT DIAPHRAGM BLOCKOUT DETAIL

PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

RIGHT LANE

STRUCTURE 2

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
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DESIGN ENGINEER OF RECORD: J. C. WILSON DATE: 10/18

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON
DocuSigned by: Jeffrey C. Wilson CDA045FAFCC9416...
12/7/2018

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NOTES:

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

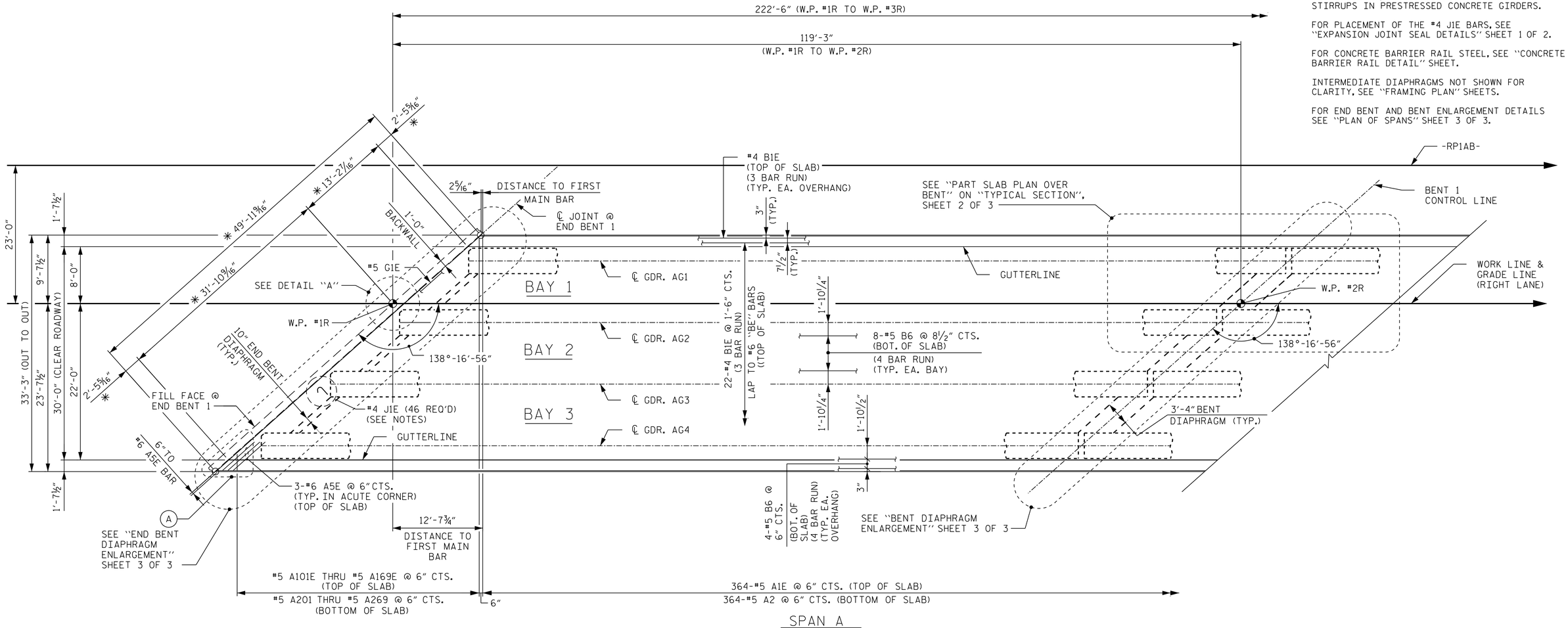
LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

FOR PLACEMENT OF THE #4 J1E BARS, SEE "EXPANSION JOINT SEAL DETAILS" SHEET 1 OF 2.

FOR CONCRETE BARRIER RAIL STEEL, SEE "CONCRETE BARRIER RAIL DETAIL" SHEET.

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

FOR END BENT AND BENT ENLARGEMENT DETAILS SEE "PLAN OF SPANS" SHEET 3 OF 3.

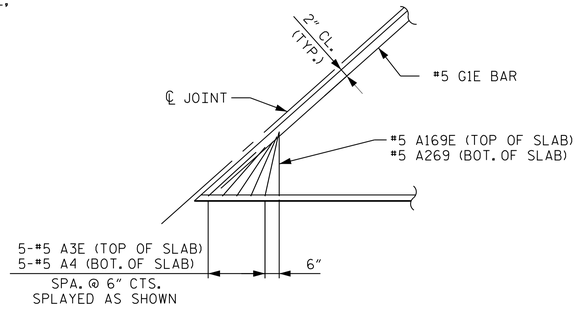


SPAN A

PART PLAN OF SPANS

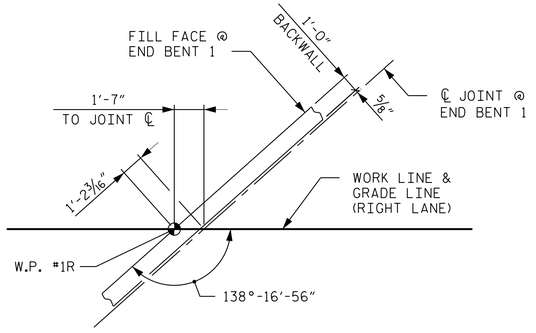
✱ DENOTES MEASURED ALONG ℄ JOINT

Ⓐ SEE ENLARGED DETAIL, ON THIS SHEET.



ENLARGED DETAIL

(RIGHT SIDE SHOWN, LEFT SIDE SIMILAR)



DETAIL "A"

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN

RIGHT LANE

STRUCTURE 2

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

DocuSigned by: Jeffrey C. Wilson 12/7/2018

DRAWN BY: D. D. LOWERY	DATE: 10/18
CHECKED BY: C. T. POOLE	DATE: 10/18
DESIGN ENGINEER OF RECORD: J. C. WILSON	DATE: 10/18

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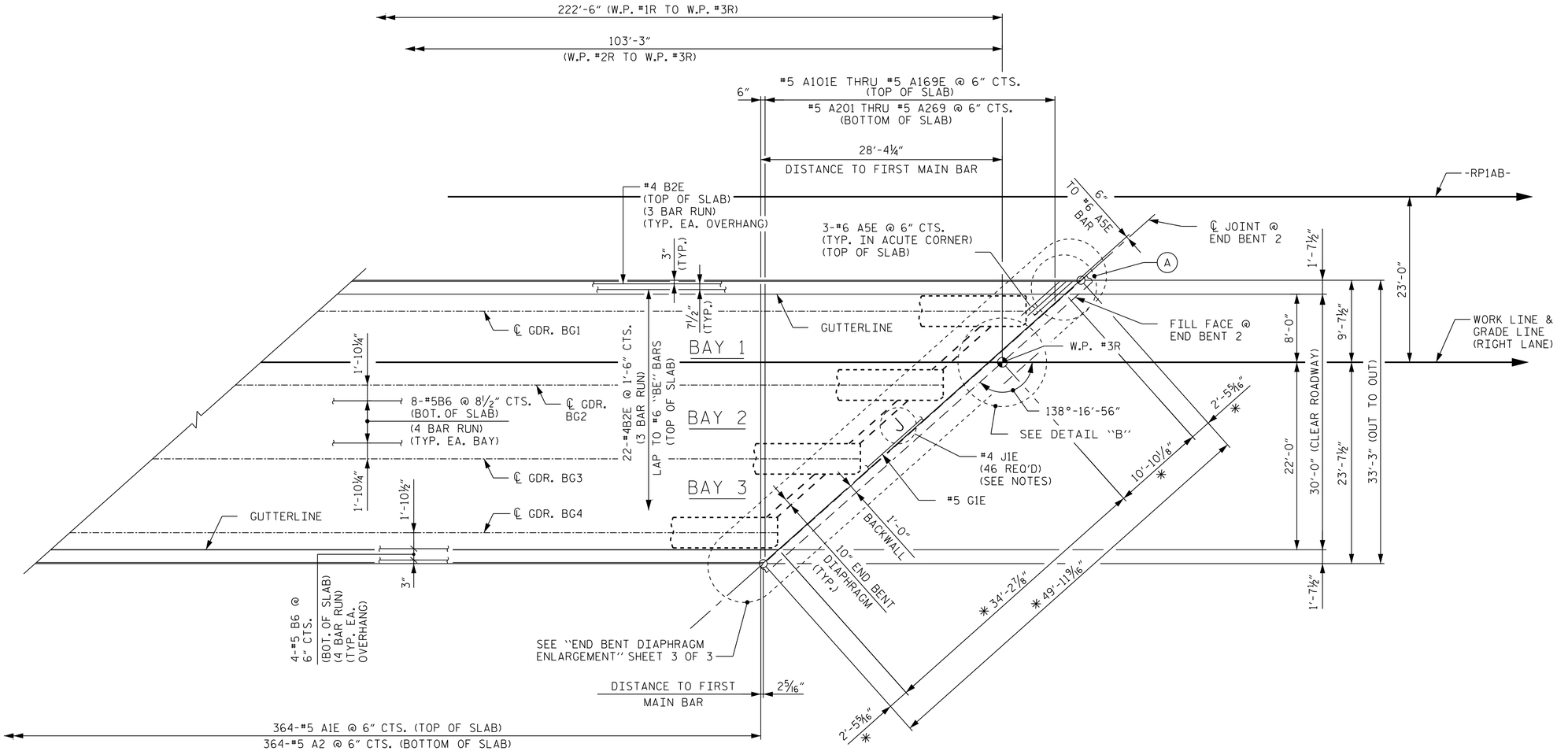
1			3			TOTAL SHEETS
2			4			41

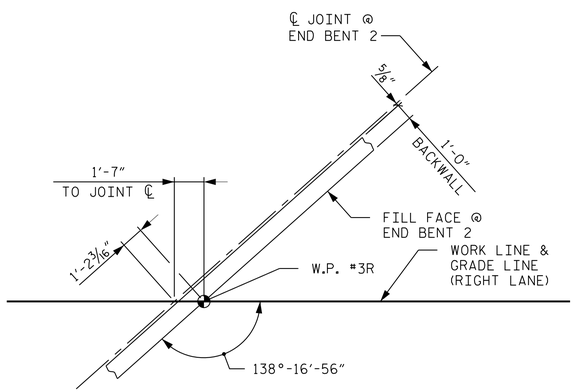


SPAN B

PART PLAN OF SPANS

* DENOTES MEASURED ALONG ℄ JOINT

Ⓐ SEE ENLARGED DETAIL, ON SHEET 1 OF 3.



DETAIL "B"

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN

RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-9
1			3			TOTAL SHEETS
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STRUCTURE 2

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

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12/7/2018

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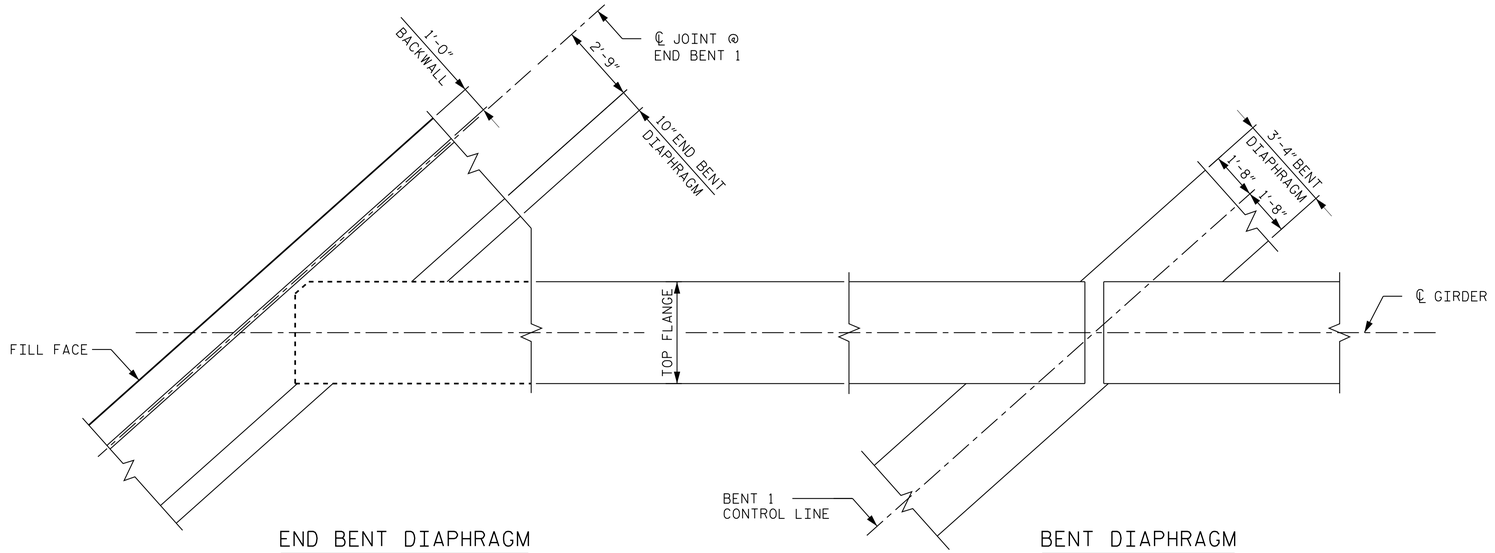
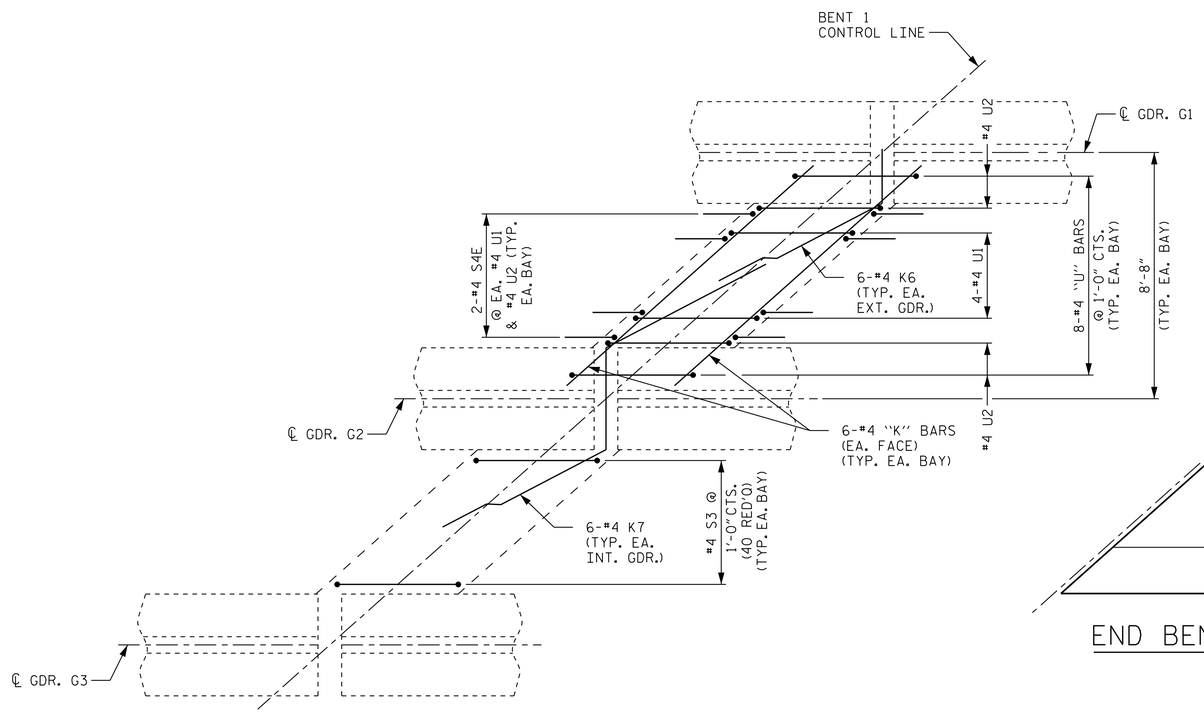


END BENT DIAPHRAGM

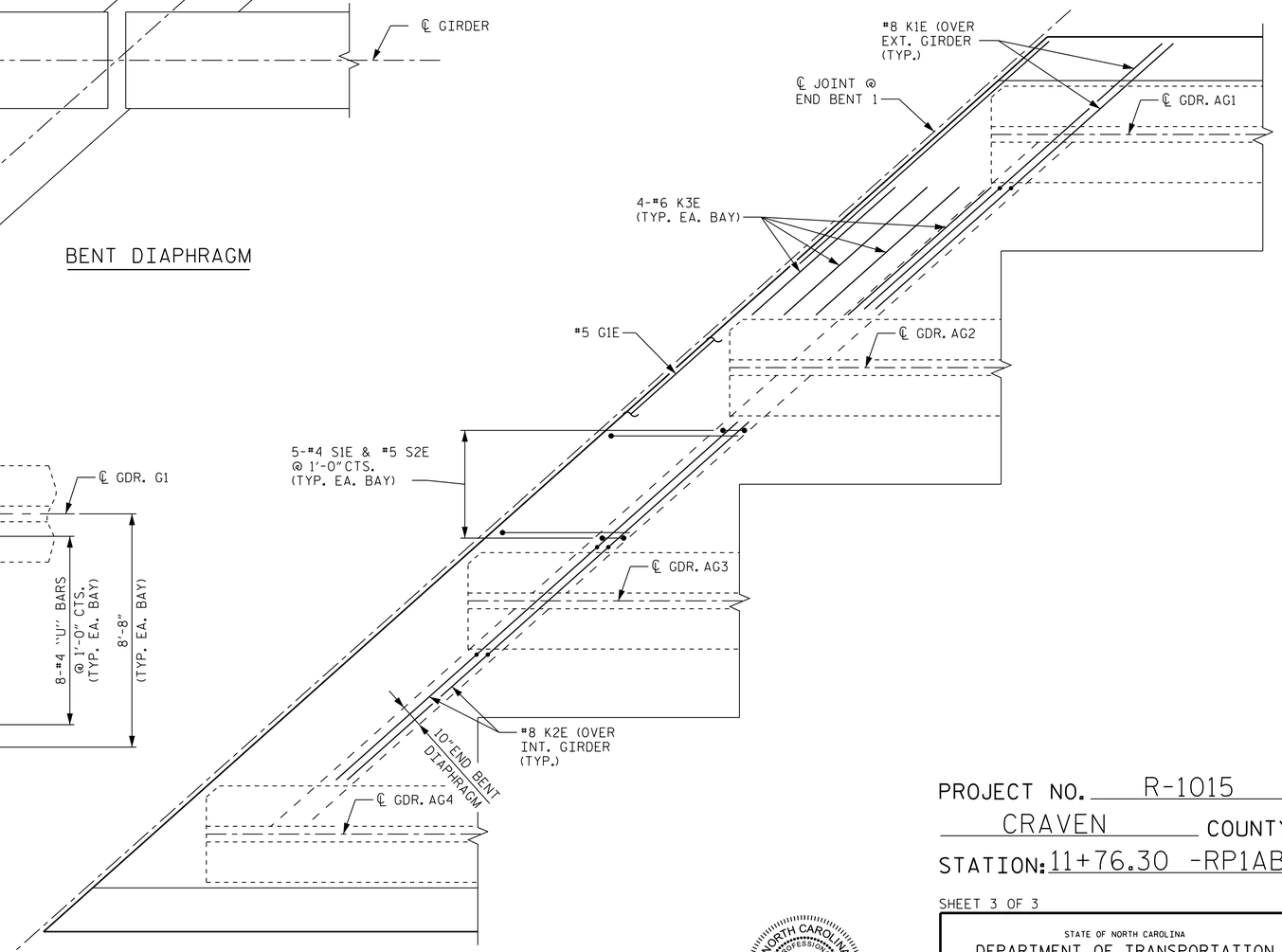
(END BENT 1 SHOWN, END BENT 2 SIMILAR)

BENT DIAPHRAGM

PLAN



BENT DIAPHRAGM ENLARGEMENT



END BENT DIAPHRAGM ENLARGEMENT

END BENT 1 SHOWN, END BENT 2 SIMILAR

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 3 OF 3

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

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STRUCTURE 2

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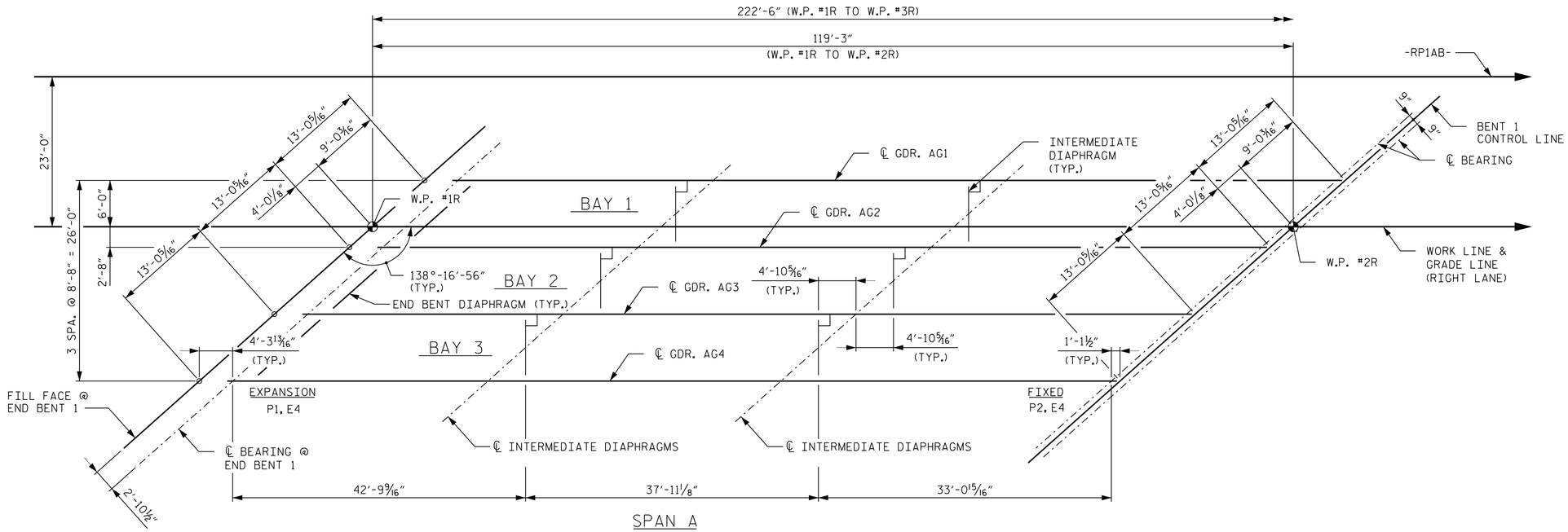
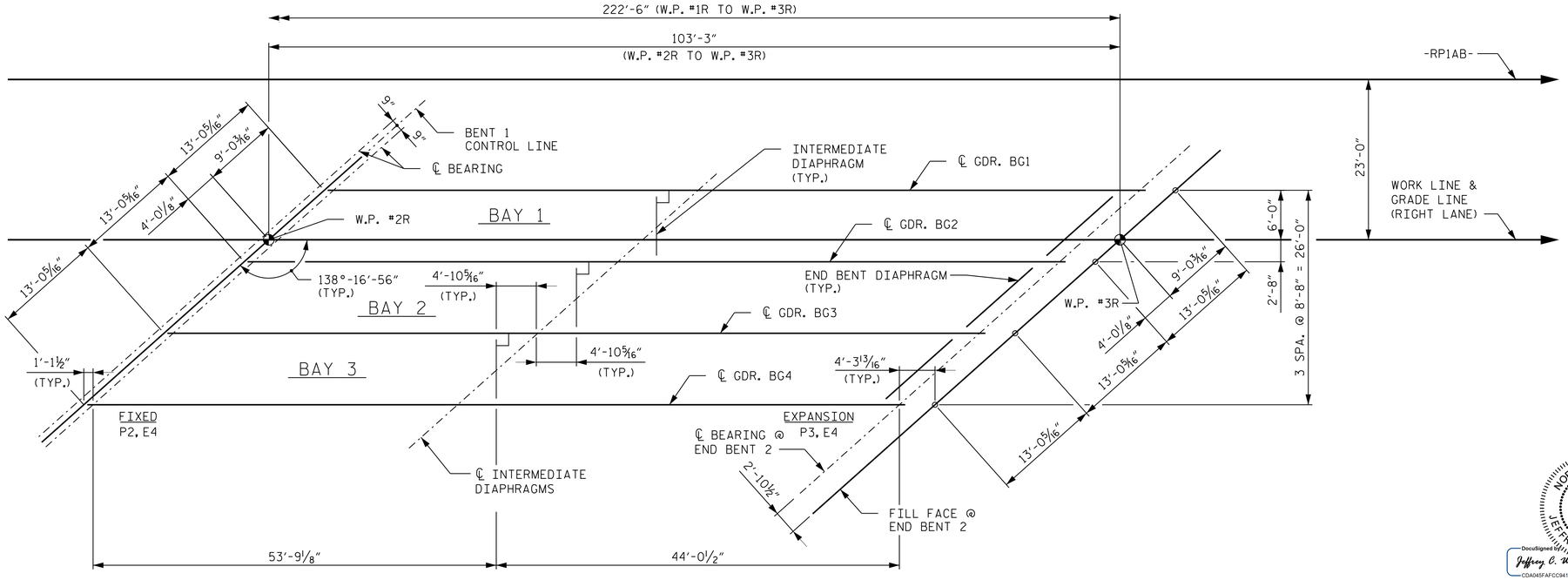
NOTES:

FOR STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGM DETAILS FOR 72" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET.



SPAN A

FRAMING PLAN



SPAN B

FRAMING PLAN

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

FRAMING PLAN

RIGHT LANE

STRUCTURE 2

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

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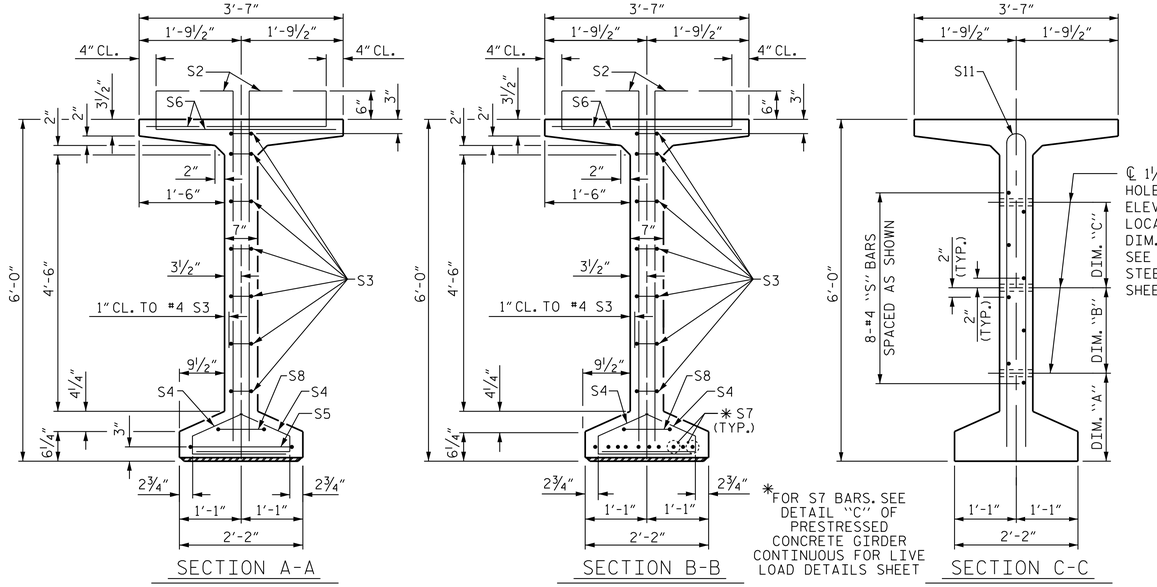
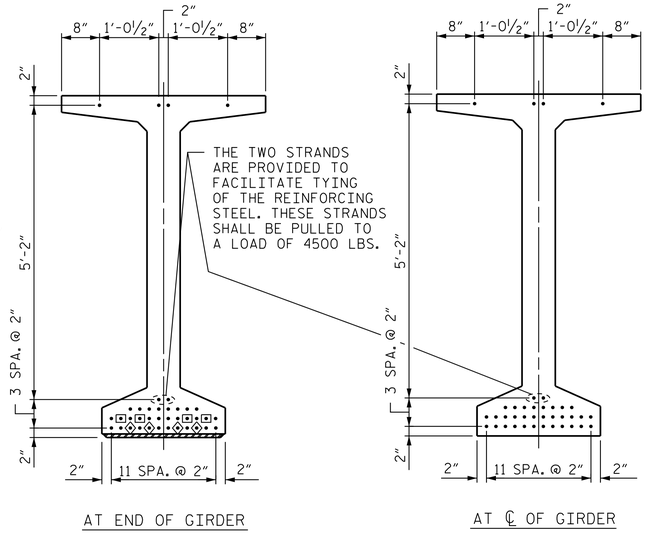


SECTION A-A SECTION B-B SECTION C-C

(S1, S6 AND S9 BARS NOT SHOWN)

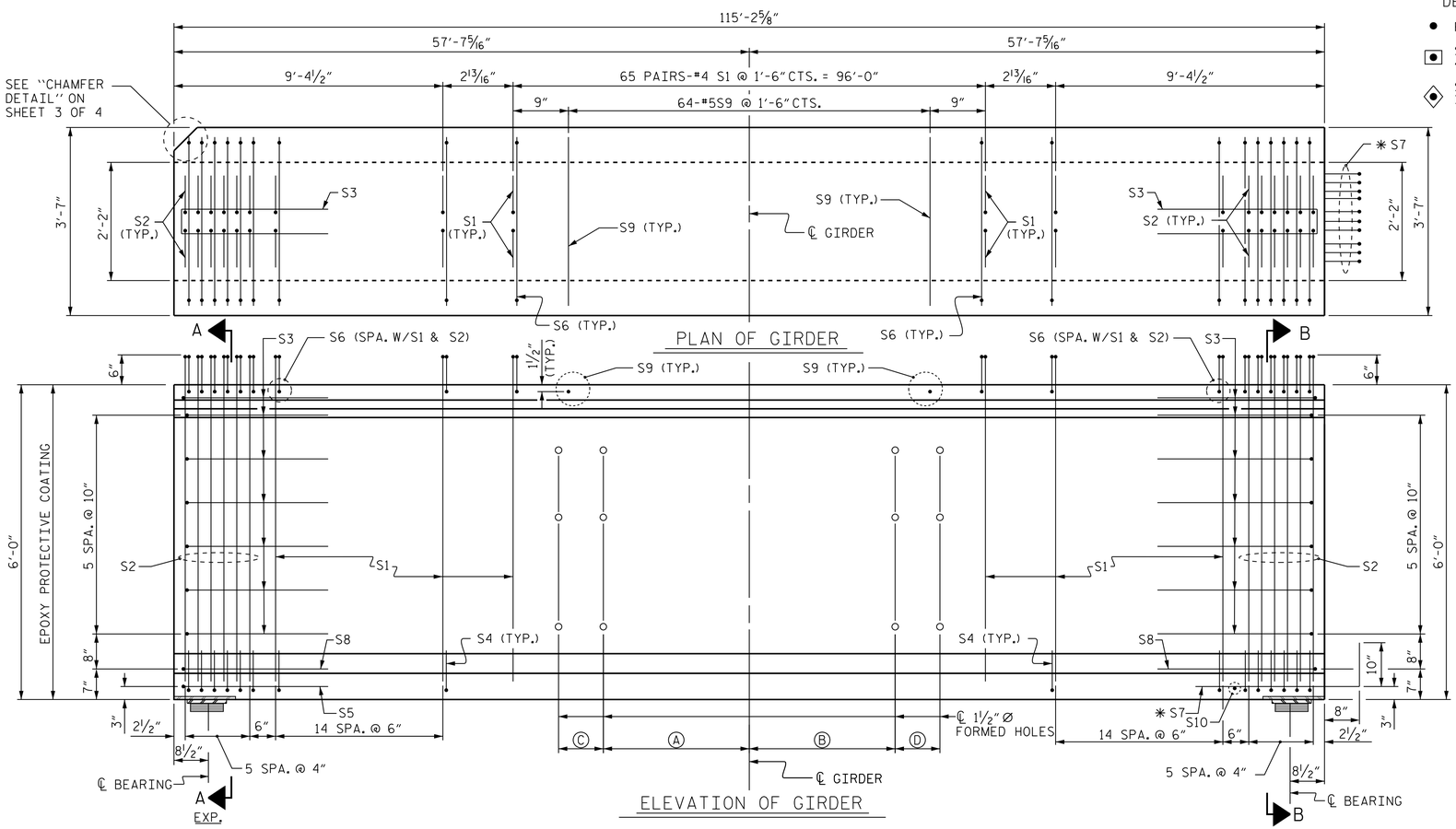


AT END OF GIRDER AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ▣ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◈ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER



PLAN OF GIRDER

ELEVATION OF GIRDER

NOTES

FOR PARTIAL ELEVATIONS REFERENCING SECTION C-C, SEE "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET 3 OF 4.

GDR.	Ⓐ	Ⓑ	Ⓒ	Ⓓ
AG1	23'-9⅞"	14'-1¼"	-	-
AG2 & AG3	14'-1¼"	14'-1¼"	9'-8⅝"	9'-8⅝"
AG4	14'-1¼"	23'-9⅞"	-	-

0.6" Ø L. R. GRADE 270 STRANDS

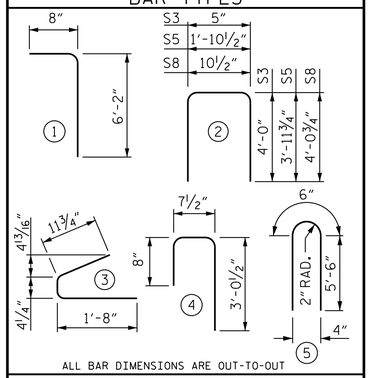
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	190	#4	1	6'-10"	867
S2	24	#5	1	6'-10"	171
S3	14	#4	2	8'-5"	79
S4	84	#4	3	3'-0"	168
S5	1	#5	2	9'-10"	10
S6	214	#5	4	4'-4"	967
* S7	10	#5	STR	3'-8"	38
S8	2	#5	2	9'-0"	19
S9	64	#5	STR	3'-3"	217
S10	1	#3	STR	1'-10"	1
S11 (GDR. AG1 & AG4)	8	#5	5	11'-6"	96
S11 (GDR. AG2 & AG3)	16	#5	5	11'-6"	192
S12 (GDR. AG1 & AG4)	16	#4	STR	8'-0"	86
S13 (GDR. AG2 & AG3)	16	#4	STR	19'-9"	211

* 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	8,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
GDR. AG1 & AG4	2,719	24.7	38
GDR. AG2 & AG3	2,940	24.7	38

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	115'-2⅝"	460'-10½"

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

72" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD
(SPAN A)
RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

DocuSigned by: Jeffrey C. Wilson CDA045FAFCC9416...

12/7/2018

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1			3			TOTAL SHEETS
2			4			41

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CHECKED BY :	C. T. POOLE	DATE :	10/18
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

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STRUCTURE 2 STD. NO. PCG8

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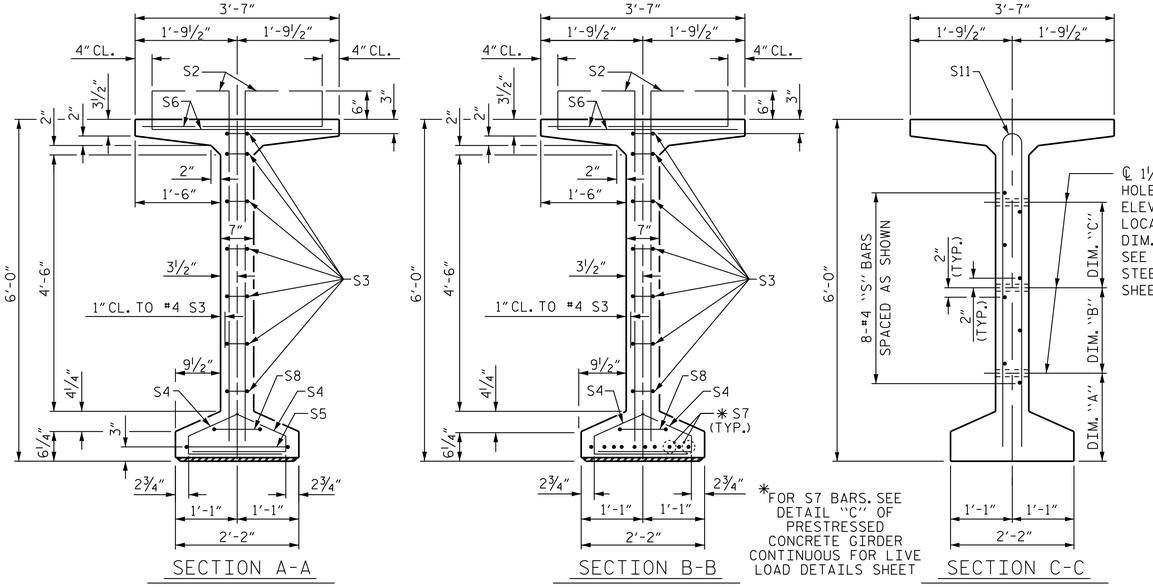
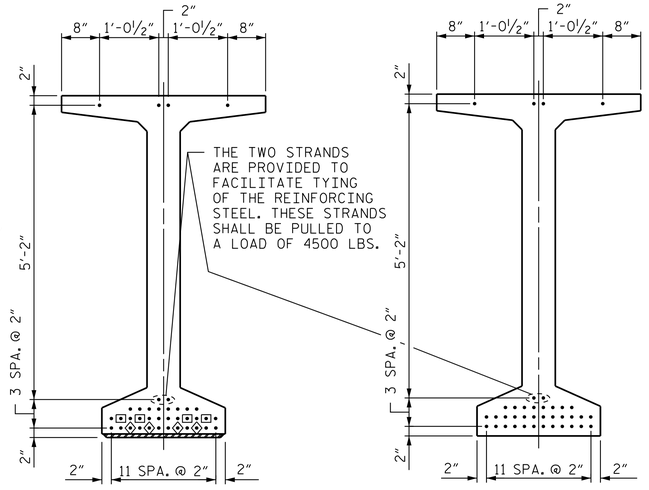


SECTION A-A | SECTION B-B | SECTION C-C

(S1, S6 AND S9 BARS NOT SHOWN)

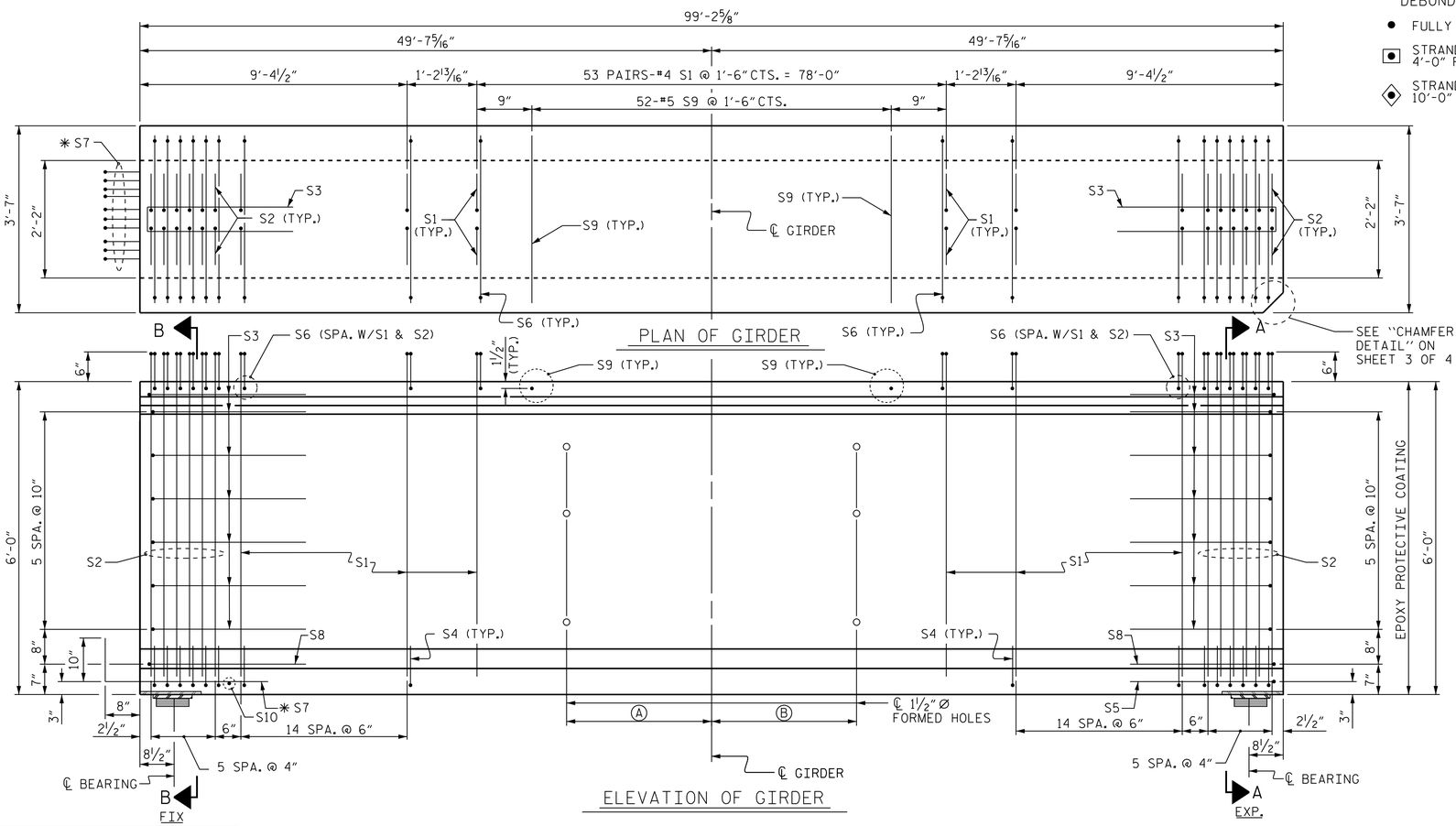


AT END OF GIRDER | AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ▣ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◈ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER



PLAN OF GIRDER

ELEVATION OF GIRDER

NOTES

FOR PARTIAL ELEVATIONS REFERENCING SECTION C-C, SEE "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET 3 OF 4.

GDR.	Ⓐ	Ⓑ
BG1	4'-10⅝"	-
BG2 & BG3	4'-10⅝"	4'-10⅝"
BG4	-	4'-10⅝"

0.6" Ø L. R. GRADE 270 STRANDS

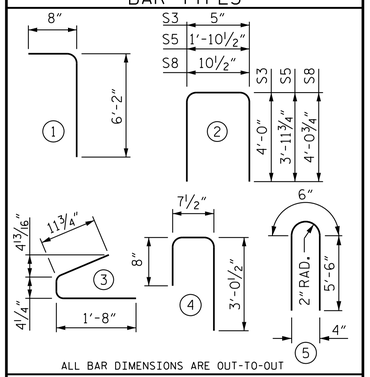
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR

	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
	S1	166	#4	1	6'-10"	758
	S2	24	#5	1	6'-10"	171
	S3	14	#4	2	8'-5"	79
	S4	84	#4	3	3'-0"	168
	S5	1	#5	2	9'-10"	10
	S6	190	#5	4	4'-4"	859
	* S7	10	#5	STR	3'-8"	38
	S8	2	#5	2	9'-0"	19
	S9	52	#5	STR	3'-3"	176
	S10	1	#3	STR	1'-10"	1
GDR. BG1 & BG4	S11	4	#5	5	11'-6"	48
GDR. BG2 & BG3	S11	8	#5	5	11'-6"	96
GDR. BG1 & BG4	S12	8	#4	STR	8'-0"	43
GDR. BG2 & BG3	S13	8	#4	STR	17'-9"	95

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
GDR. BG1 & BG4	2,370	21.3	38
GDR. BG2 & BG3	2,470	21.3	38

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	99'-2⅝"	396'-10½"

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

72" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD (SPAN B) RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-13
1			3			TOTAL SHEETS
2			4			41

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

DocuSigned by: Jeffrey C. Wilson CDA045FAFCC9416...

12/7/2018

Kimley»Horn
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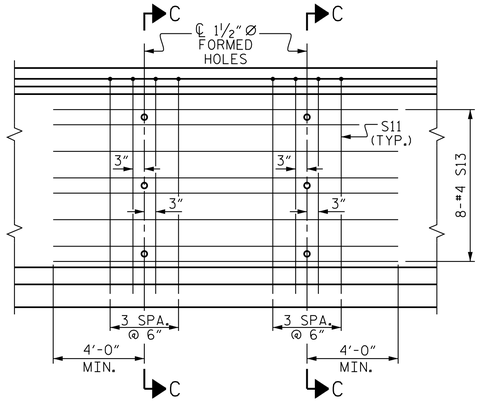
ASSEMBLED BY : D. D. LOWERY	DATE : 10/18		
CHECKED BY : C. T. POOLE	DATE : 10/18		
DRAWN BY : EEM 2/6/97	REV. 6/13	MAA/GM	
CHECKED BY : VAP 2/6/97	REV. 1/15	MAA/TMG	
	REV. 12/17	MAA/THC	

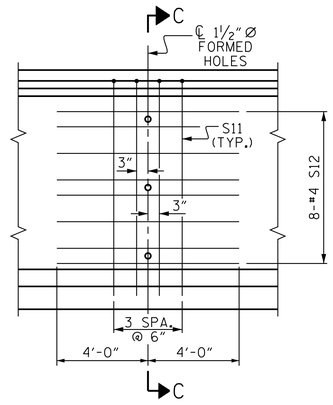
12/7/2018 K:\RDT_Structures_Bridge\NC\011036303 - R-1015\CAD\Dgn\Structure 402\R1015_SMU_G2_240273.dgn

STRUCTURE 2 STD. NO. PCG8



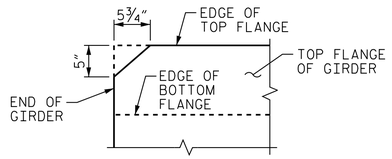
PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM
REINFORCING STEEL FOR GIRDER Nos. AG2, AG3, BG2, BG3



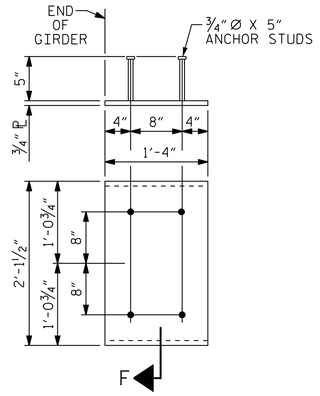
PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM
REINFORCING STEEL FOR GIRDER Nos. AG1, AG4, BG1, BG4



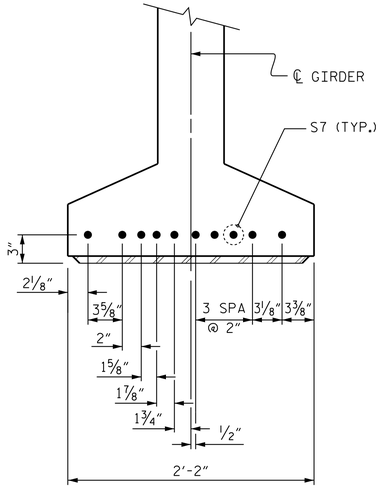
CHAMFER DETAIL

SPAN A GIRDER SHOWN, SPAN B SIMILAR.
APPLY CHAMFER TO EXPANSION END OF ALL BEAMS.

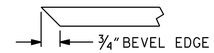


EMBEDDED PLATE "B-1" DETAILS
FOR 72" MODIFIED BULB TEES

(2 REQ'D PER GIRDER)



DETAIL "C"



SECTION "F"

(SEE NOTES)

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,400 PSI.

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

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF ¼".

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

FOR SECTION C-C, SEE "72" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD" SHEETS 1 OF 4 & 2 OF 4.

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

DocuSigned by: Jeffrey C. Wilson CDA045FAFCC9416... 12/7/2018

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-14
1			3			TOTAL SHEETS
2			4			41

ASSEMBLED BY : D. D. LOWERY	DATE : 10/18	
CHECKED BY : C. T. POOLE	DATE : 10/18	
DRAWN BY : ELR 11/91	REV. 1/15	MAA/TMG
CHECKED BY : GRP 11/91	REV. 2/15	MAA/TMG
	REV. 12/17	MAA/THC

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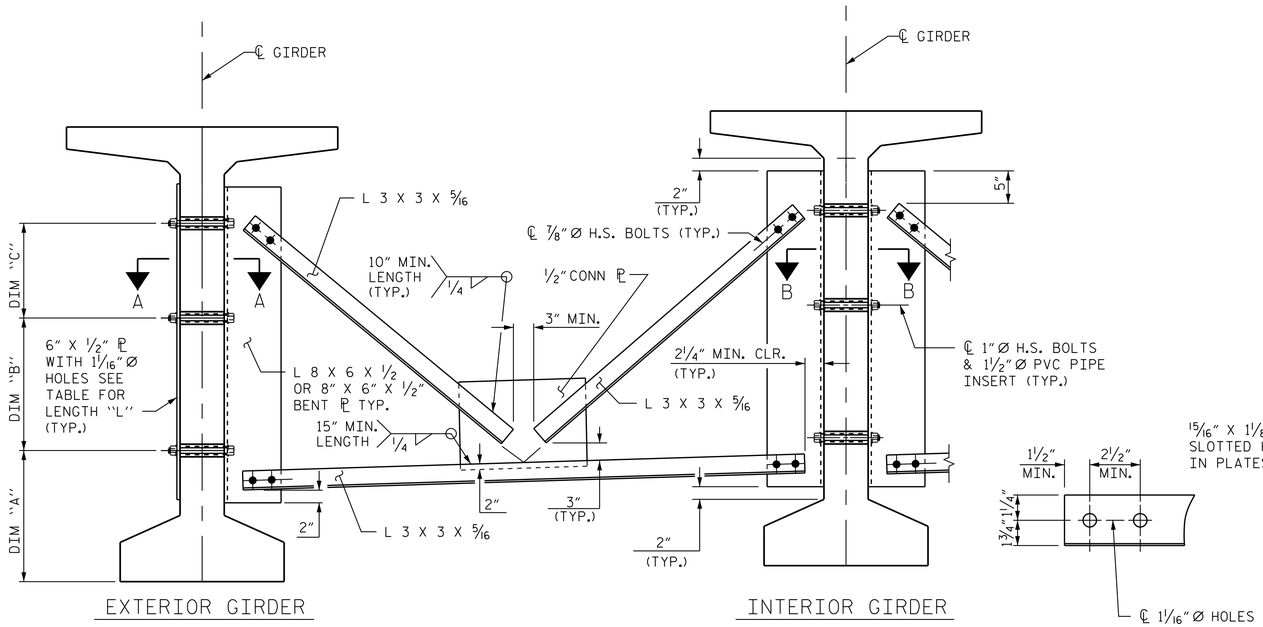
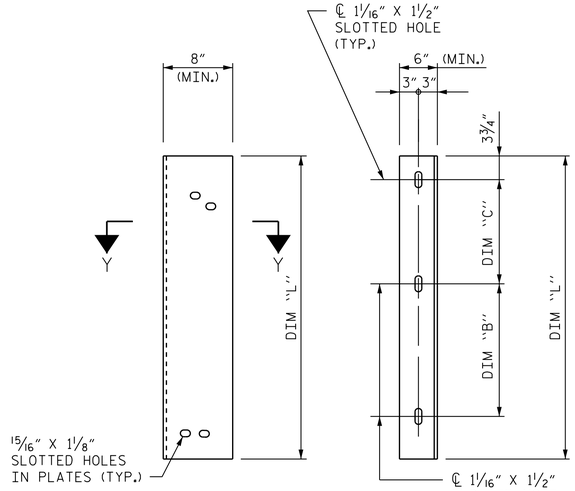
STRUCTURE 2 STD. NO. PCG9



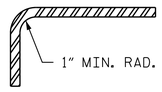
PART SECTION AT INTERMEDIATE DIAPHRAGM

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



DIAPHRAGM FACE

WEB FACE



SECTION Y-Y

CONNECTOR 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 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 DEPARTMENT'S THERMAL SPRAYED COATINGS (METALIZATION) SEE SPECIAL PROVISION.

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.

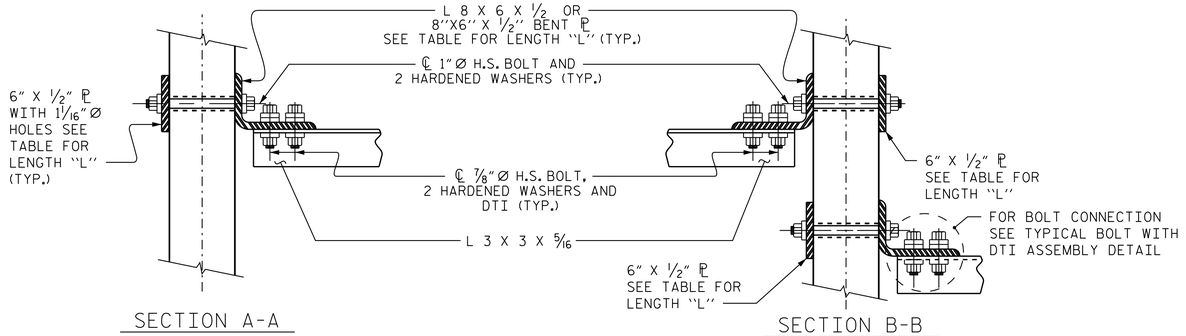
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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

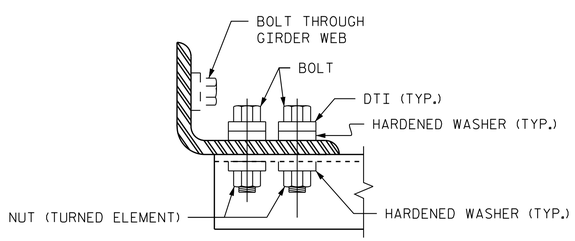
GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
72" BULB TEE	1'-2 3/4"	1'-10"	1'-10"	4'-2"



SECTION A-A

SECTION B-B

CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

INTERMEDIATE STEEL DIAPHRAGMS FOR 72" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-15
1			3			TOTAL SHEETS
2			4			41

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

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ASSEMBLED BY : D. D. LOWERY	DATE : 10/18	ADDED 11/23/09 R	
CHECKED BY : C. T. POOLE	DATE : 10/18	REV. 10/1/11	MAA/GM
DRAWN BY : RWW 11/09		REV. 12/17	MAA/THC
CHECKED BY : GM 11/09			

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STRUCTURE 2 STD. NO. PCG11

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" Ø LOW RELAXATION STRANDS	SPAN A GIRDERS AG1 & AG4																					
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.036	0.071	0.103	0.133	0.160	0.183	0.201	0.214	0.222	0.225	0.222	0.214	0.201	0.183	0.160	0.133	0.103	0.071	0.036	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.020	0.039	0.057	0.075	0.090	0.104	0.113	0.122	0.125	0.128	0.125	0.122	0.113	0.104	0.090	0.076	0.057	0.039	0.020	0.000
FINAL CAMBER ↑	0	3/16"	3/8"	1/2"	11/16"	13/16"	15/16"	1"	1 1/16"	1 1/8"	1 1/8"	1 1/8"	1 1/16"	1"	15/16"	13/16"	11/16"	1/2"	3/8"	3/16"	0

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" Ø LOW RELAXATION STRANDS	SPAN A GIRDERS AG2 & AG3																					
TWENTIETH POINTS	BRG.	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	BRG.
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.036	0.071	0.103	0.133	0.160	0.183	0.201	0.214	0.222	0.225	0.222	0.214	0.201	0.183	0.160	0.133	0.103	0.071	0.036	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.021	0.042	0.062	0.082	0.097	0.113	0.123	0.133	0.136	0.139	0.136	0.133	0.123	0.113	0.097	0.082	0.062	0.042	0.021	0.000
FINAL CAMBER ↑	0	1/8"	5/16"	7/16"	9/16"	3/4"	13/16"	15/16"	15/16"	1"	1"	1"	15/16"	15/16"	13/16"	3/4"	9/16"	7/16"	5/16"	1/8"	0

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" Ø LOW RELAXATION STRANDS	SPAN B GIRDERS BG1 & BG4										
TENTH POINTS	BRG.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	BRG.
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.061	0.116	0.158	0.185	0.195	0.185	0.158	0.116	0.061	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.021	0.041	0.057	0.067	0.070	0.067	0.057	0.041	0.021	0.000
FINAL CAMBER ↑	0	7/16"	7/8"	1 3/16"	1 3/8"	1 1/2"	1 3/8"	1 3/16"	7/8"	7/16"	0

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" Ø LOW RELAXATION STRANDS	SPAN B GIRDERS BG2 & BG3										
TENTH POINTS	BRG.	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	BRG.
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.061	0.116	0.158	0.185	0.195	0.185	0.158	0.116	0.061	0.000
✳ DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.023	0.045	0.062	0.072	0.076	0.072	0.062	0.045	0.023	0.000
FINAL CAMBER ↑	0	7/16"	13/16"	1 1/8"	1 5/16"	1 3/8"	1 5/16"	1 1/8"	13/16"	7/16"	0

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

PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

GIRDER DEFLECTION AND CAMBER SCHEDULES

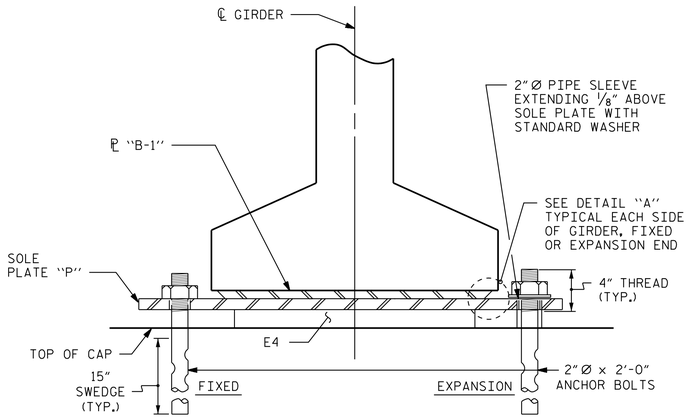
RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-16
1			3			TOTAL SHEETS
2			4			41

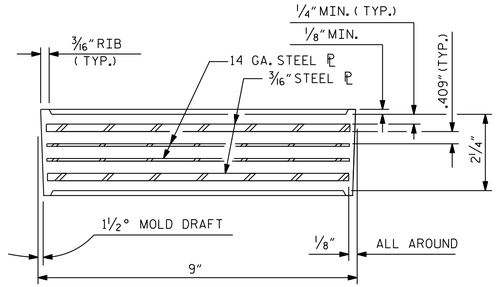
STRUCTURE 2

DRAWN BY: D. D. LOWERY DATE: 10/18
CHECKED BY: C. T. POOLE DATE: 10/18
DESIGN ENGINEER OF RECORD: J. C. WILSON DATE: 10/18

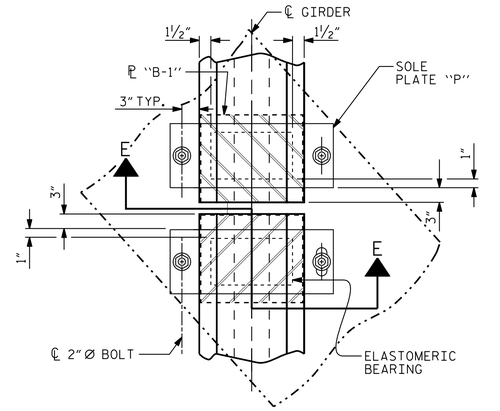
12/7/2018 K:\RDT_Structures_Bridge\NC\01036303 - R-1015\CAD\Dgn\Structure 402\R1015_SMU_DL1_240213.dgn



SECTION E-E

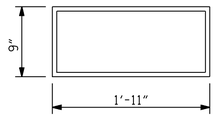


TYPICAL SECTION OF ELASTOMERIC BEARINGS



TYPICAL HALF-PLAN (FIXED)

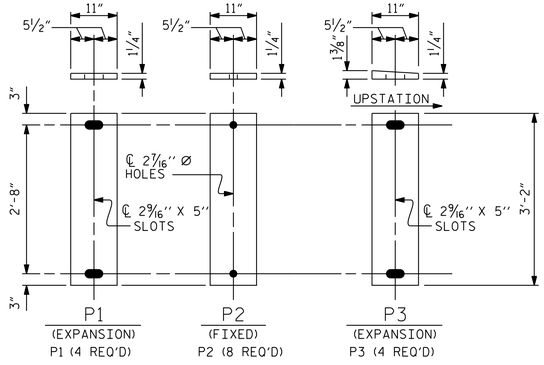
TYPICAL HALF-PLAN (EXPANSION)



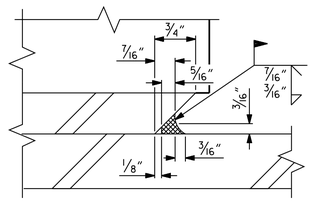
E4 (16 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE V



SOLE PLATE DETAILS ("P")



DETAIL "A"

NOTES

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

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

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

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

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

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

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

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.

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

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

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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:	S02-17
1			3			TOTAL SHEETS
2			4			41

ASSEMBLED BY : O. D. LOWERY		DATE :	10/18
CHECKED BY : C. T. POOLE		DATE :	10/18
DRAWN BY : EEM 2/97	REV. 6/13		AAC/MAA
CHECKED BY : VAP 2/97	REV. 1/15		MAA/TMG
	REV. 12/17		MAA/THC

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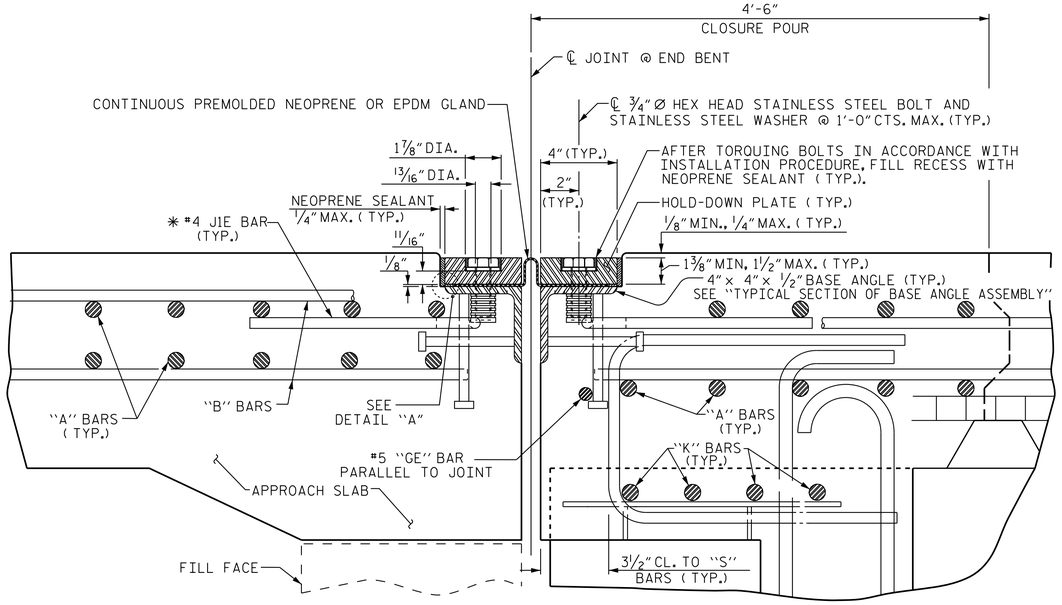
STRUCTURE 2 STD. NO. EB4

12/7/2018 K:\RDT_Structures_Bridge\NC\01103603 - R-1015\CAD\Dgn\Structure # 402\R1015_SMU_B01_240213.dgn



EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT -- PRESTRESSED GIRDER SUPERSTRUCTURE

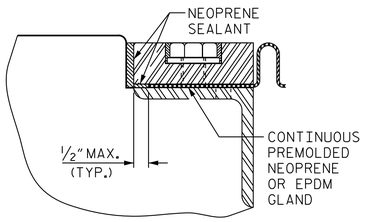
* THE QUANTITY OF #4 J1E BARS ON THE BILL OF MATERIAL IS BASED ON 1'-0" CENTERS. J1E BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF J1E BARS SPECIFIED, ADDITIONAL J1E BARS WILL NOT BE REQUIRED.

INSTALLATION PROCEDURE

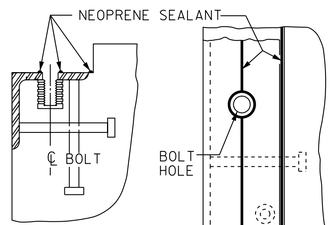
1. A TEMPLATE OR OTHER SUITABLE DEVICE SHALL BE USED TO FORM THE TOP OF THE EXPANSION JOINT SEAL BLOCKOUT TO THE PROPER DEPTH AND WIDTH. THE TEMPLATE SHALL BE 4⅛" TO 4¼" WIDE AND OF SUCH THICKNESS AS TO PROVIDE FOR CORRECT FINAL ELEVATION OF TOP OF HOLD-DOWN PLATES. THE TEMPLATE SHALL BE ATTACHED TO THE BASE ANGLE ASSEMBLY WITH THE ¾"Ø HEX HEAD BOLTS PROVIDED FOR THE HOLD-DOWN PLATES. A 1"Ø HOLE SHALL BE PROVIDED IN THE TEMPLATE CENTERED OVER EACH WEEP HOLE IN THE 4" X 4" X ½" BASE ANGLE. OTHER METHODS OF INSURING DRAINAGE THROUGH WEEP HOLES MAY BE EMPLOYED SUBJECT TO ENGINEER'S APPROVAL.
2. AFTER THE CONCRETE HAS BEEN CAST ON BOTH SIDES OF THE JOINT, REMOVE THE TEMPLATE. THOROUGHLY CLEAN THE BOLT HOLES AND THE ANGLE PLATE. REMOVE ANY EXCESS CONCRETE THAT COMES OUT OF THE WEEP HOLES. ANY DAMAGED STEEL SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).
3. LAY THE GLAND ON THE BASE ANGLE AND FIELD MARK THE GLAND FOR THE BOLT HOLES. HOLES IN THE GLAND SHALL BE PUNCHED ⅞" IN DIAMETER WITH A HAND PUNCH.
4. IN ORDER TO CHECK FOR PROPER ALIGNMENT, PLACE THE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. DO NOT APPLY NEOPRENE SEALANT. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE BUT DO NOT TIGHTEN. THE ENGINEER SHALL INSPECT THE JOINT SEAL DEVICE FOR PROPER ALIGNMENT.
5. AFTER INSPECTION, REMOVE THE HOLD-DOWN PLATES AND GLAND. APPLY NEOPRENE SEALANT TO THE BASE ANGLE IN ACCORDANCE WITH THE "INSTALLATION SKETCH". PLACE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE ASSEMBLY AND TORQUE THE BOLTS TO 88 FT-LBS WITH A TORQUE WRENCH. CHECK THE TORQUE AFTER THREE (3) HOURS AND, IF NECESSARY, RETIGHTEN TO 88 FT-LBS. A FINAL CHECK SHALL BE MADE AT SEVEN (7) DAYS. TORQUE SHALL NOT BE LESS THAN 80 FT-LBS AFTER SEVEN (7) DAYS.
6. AFTER PROPER TORQUING, CLEAN THE BOLT HOLE RECESSES, THE RECESS BETWEEN THE JOINT SEAL DEVICE AND CONCRETE, AND THE LIFTING HOLES IN THE HOLD-DOWN PLATE, AND COMPLETELY FILL THE RECESSES AND LIFTING HOLES WITH NEOPRENE SEALANT.

GENERAL NOTES

1. FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.
2. ALL PLATES AND ANGLES SHALL CONFORM TO AASHTO M270 GRADE 36 STEEL OR APPROVED EQUAL. ALL HOLD-DOWN BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL CONFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. ALL STUD ANCHORS SHALL CONFORM TO AASHTO M169, GRADES 1010 THRU 1020 OR APPROVED EQUAL. ALL CONCRETE INSERTS SHALL BE CLOSED END AND SHALL CONFORM TO AASHTO M169, GRADE 12L14. TENSILE CAPACITY SHALL BE 3000 LBS. MINIMUM.
3. A PREMOLDED CORRUGATED OR NON-CORRUGATED GLAND SHALL BE USED FOR JOINTS SKEWED BETWEEN 50° THRU 130°. FOR JOINTS SKEWED LESS THAN 50° OR MORE THAN 130°, ONLY A CORRUGATED GLAND SHALL BE USED.
4. CLOSED END FERRULES AND STUD ANCHORS SHALL BE SHOP WELDED AND ALL HOLES SHALL BE SHOP DRILLED AS SHOWN ON PLANS. STUD ANCHORS SHALL BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION.
5. SURFACES COMING IN CONTACT WITH NEOPRENE SHALL BE GROUND SMOOTH PRIOR TO METALLIZING.
6. UPON COMPLETION OF SHOP FABRICATION, THE HOLD-DOWN PLATE AND BASE ANGLE ASSEMBLY, AS SHOWN IN THE "TYPICAL SECTION OF BASE ANGLE ASSEMBLY", SHALL BE METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
7. THE COVER PLATES SHALL BE METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
8. BASE ANGLE ASSEMBLY SHALL BE CONTINUOUS FOR THE LENGTH OF THE JOINT. AT CROWN BREAKS, THE ENDS OF THE BASE ANGLE ASSEMBLY SHALL BE CUT PARALLEL TO THE BRIDGE CENTERLINE FOR SKEWS LESS THAN 80° AND GREATER THAN 100°. FINISHED WELD SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).
9. FIELD SPLICES OF HOLD-DOWN PLATES SHALL BE KEPT TO A MINIMUM. CONTRACTOR SHALL FURNISH DETAILED PLANS SHOWING PROPOSED SPLICE LOCATIONS FOR APPROVAL. HOLD-DOWN PLATES SHALL NOT EXCEED 20' LENGTHS UNLESS APPROVED BY THE ENGINEER.
10. NO ALTERNATE JOINT DETAILS SHALL BE PERMITTED IN LIEU OF THOSE SHOWN ON THESE PLANS.
11. THE CONTRACTOR MAY, AT HIS OPTION, USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF CONCRETE INSERTS FOR COVER PLATES. THE YIELD LOAD OF THE ¾"Ø BOLT IS 10 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.
12. THE FABRICATOR SHALL PROVIDE ½"Ø THREADED HOLES IN THE HOLD-DOWN PLATES TO ASSIST IN LIFTING AND PLACING. THE HOLES SHALL BE ¾" DEEP AT 6'-0" MAXIMUM SPACING AND A MINIMUM OF TWO HOLES PER PLATE.



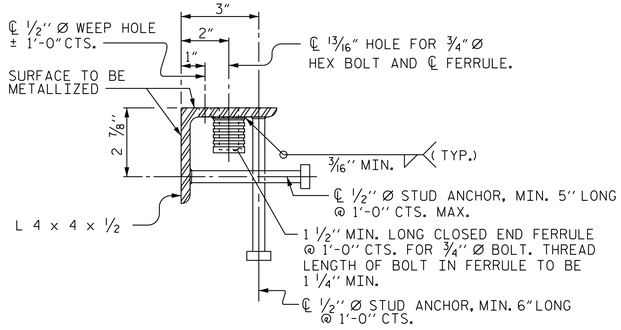
DETAIL "A"



CROSS SECTION

PLAN VIEW

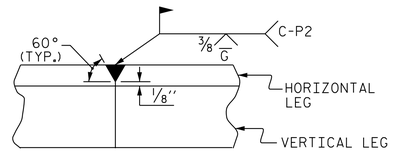
INSTALLATION SKETCH



TYPICAL SECTION OF BASE ANGLE ASSEMBLY

MOVEMENT AND SETTING AT JOINT					
BENT NO.	SKEW ANGLE	TOTAL MOVEMENT	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
EB1	138°-16'-56"	11/16"	5/16"	1¼"	1/16"
EB2	138°-16'-56"	⅝"	1¼"	1⅜"	1/16"

TOTAL MOVEMENT IS CALCULATED ALONG THE CENTERLINE OF THE GIRDER. JOINT OPENINGS ARE MEASURED PERPENDICULAR TO THE JOINT.



DETAIL- FIELD WELD SPLICE OF BASE ANGLE

PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

EXPANSION JOINT SEAL DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

DocuSigned by: Jeffrey C. Wilson 12/7/2018
CDA045AFCC9416...

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-18
1			3			TOTAL SHEETS
2			4			41

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : D. D. LOWERY		DATE :	10/18
CHECKED BY : C. T. POOLE		DATE :	10/18
DRAWN BY : REK 9/87	REV. 10/1/11		MAA/GM
CHECKED BY : CRK 10/87	REV. 10/17		MAA/THC
	REV. 6/18		MAA/THC

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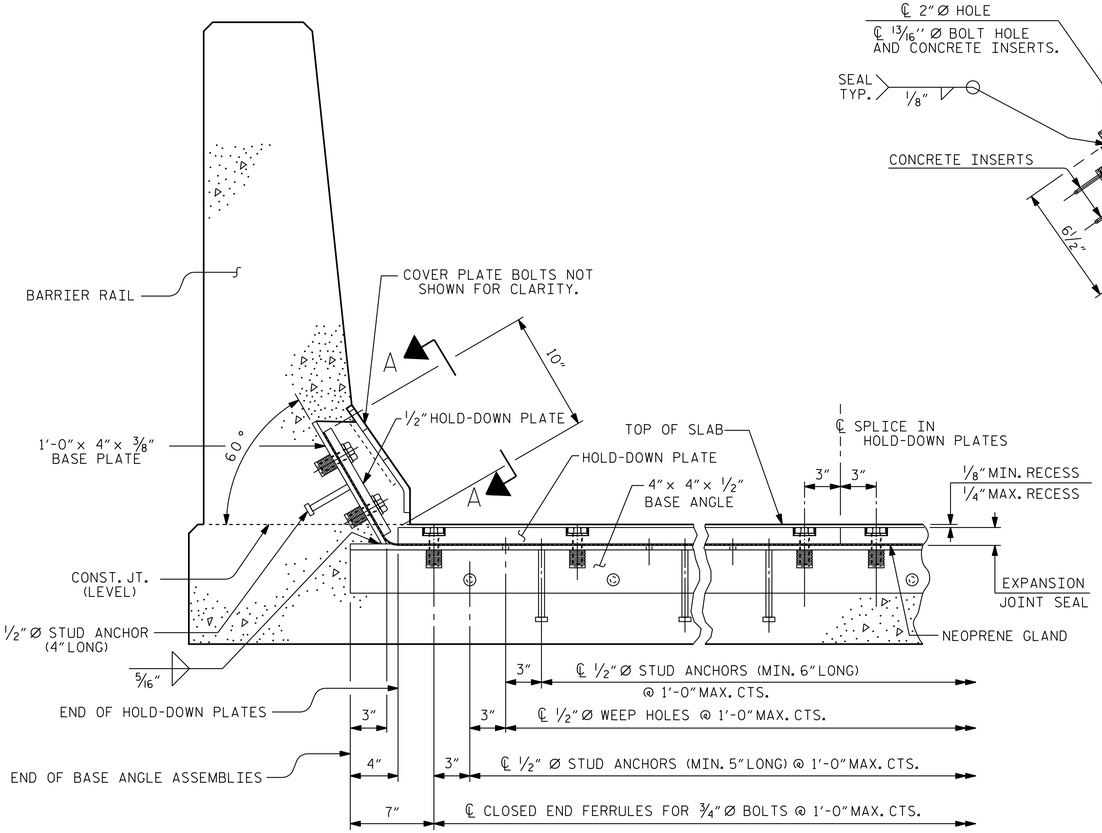
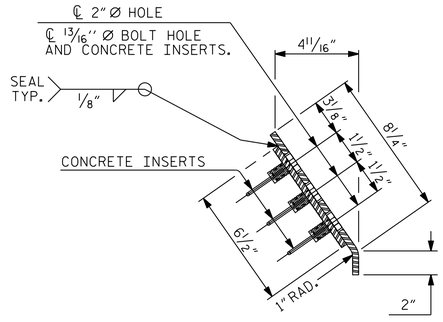
12/7/2018

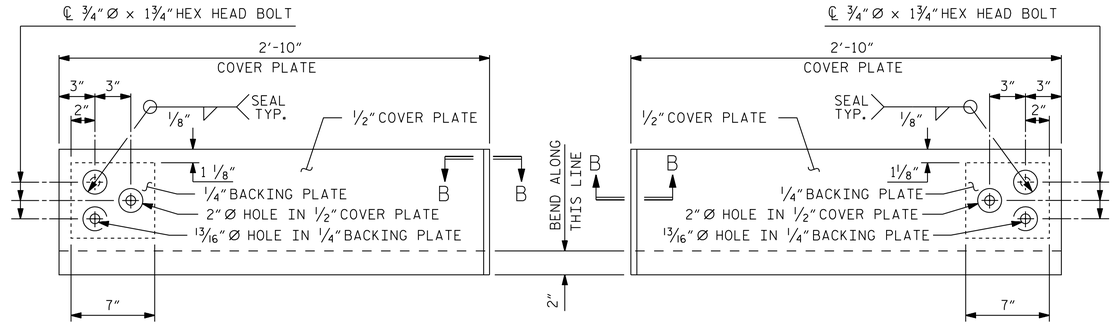
STRUCTURE 2 STD. NO. EJS1



SECTION THRU RAIL NORMAL TO JOINT



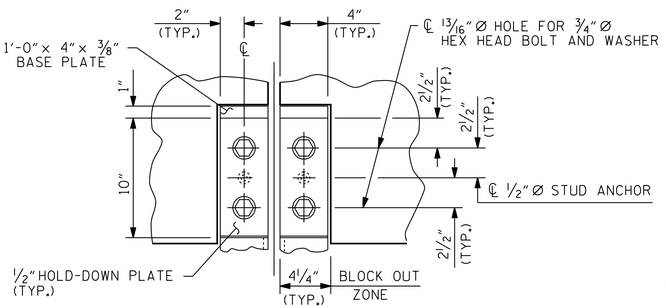
END VIEW



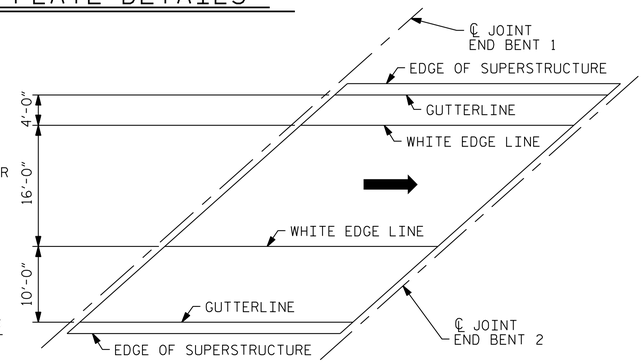
TYPE I - ELEVATION VIEW

TYPE II - ELEVATION VIEW

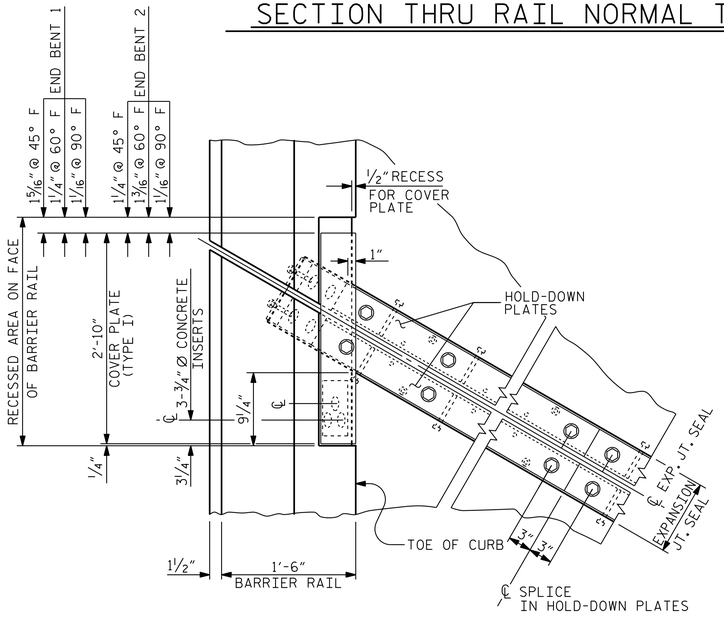
COVER PLATE DETAILS



SECTION A - A

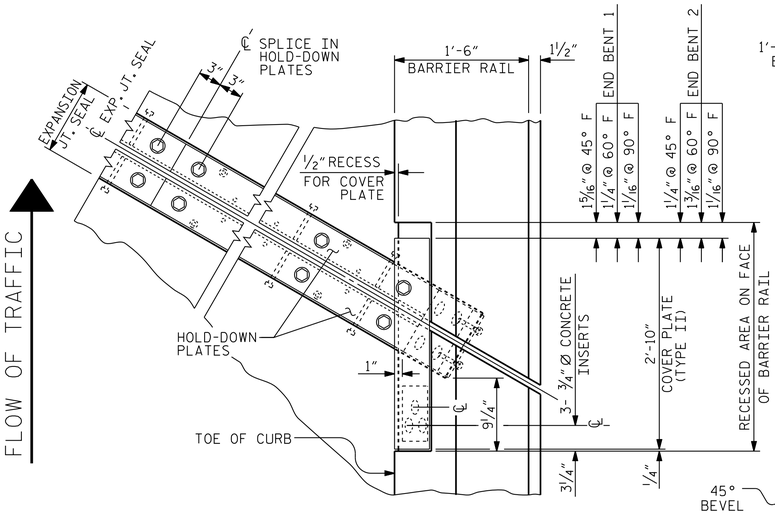


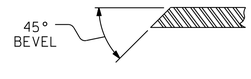
PAVEMENT MARKING ALIGNMENT



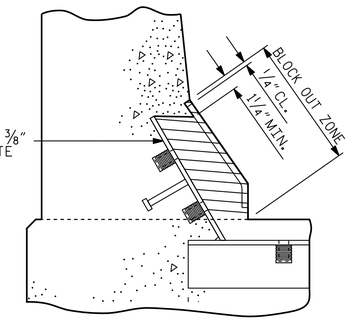
PLAN OF EXPANSION JOINT SEAL

FLOW OF TRAFFIC



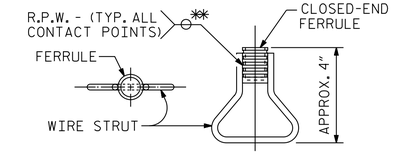


SECTION B - B



BLOCK OUT DETAIL

SEE "SECTION A - A" FOR OTHER DETAILS.



PLAN ELEVATION

CONCRETE INSERT

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

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

DocuSigned by: Jeffrey C. Wilson CDA045FAFCC9416...

12/7/2018

Kimley»Horn

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Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

EXPANSION JOINT SEAL DETAILS FOR BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-19
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 2 STD. NO. EJS2

ASSEMBLED BY : D.D.LOWERY	DATE : 10/18		
CHECKED BY : C.T.POOLE	DATE : 10/18		
DRAWN BY : REK 9/87	REV. 7/12	MAA/GM	
CHECKED BY : CRK 10/87	REV. 6/13	MAA/GM	
	REV. 12/17	MAA/THC	

12/7/2018

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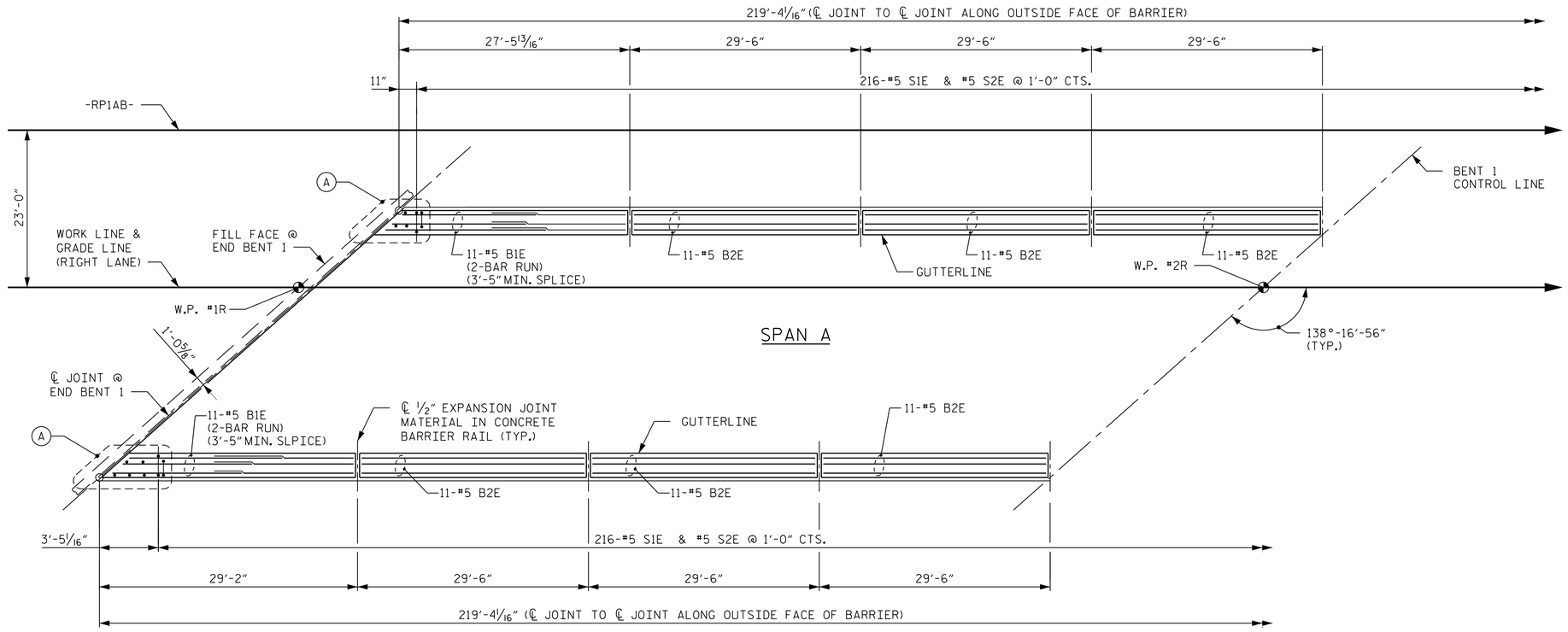
NOTES

ALL DIMENSIONS ARE MEASURED ALONG OUTSIDE FACE OF CONCRETE BARRIER RAIL.



PLAN OF BARRIER RAIL

(A) SEE "PLAN AT END OF RAIL" DETAIL ON SHEET 3 OF 3 FOR LOCATIONS & BAR TYPES .

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

CONCRETE BARRIER RAIL LAYOUT

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

DocuSigned by: Jeffrey C. Wilson CDA045FAFCC9416... 12/7/2018

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-20
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 2

DRAWN BY: D. D. LOWERY DATE: 10/18
CHECKED BY: C. T. POOLE DATE: 10/18
DESIGN ENGINEER OF RECORD: J. C. WILSON DATE: 10/18

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12/7/2018

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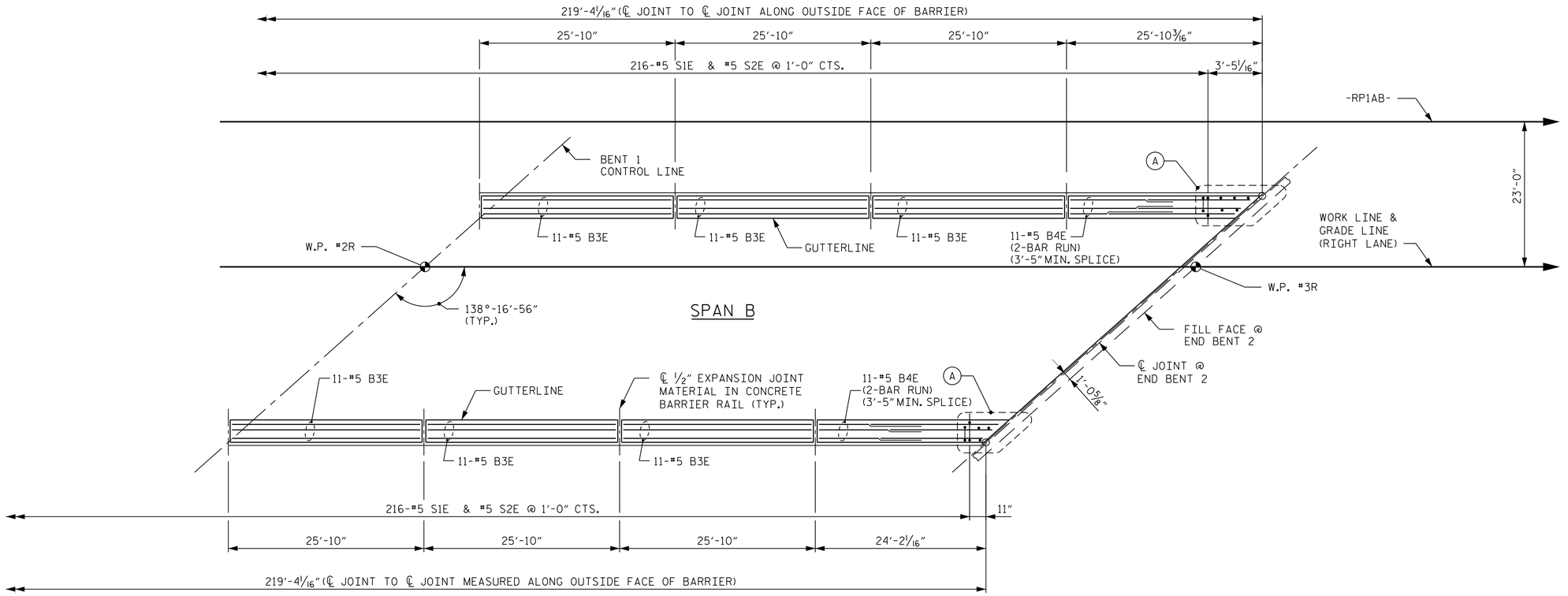
NOTES

ALL DIMENSIONS ARE MEASURED ALONG OUTSIDE FACE OF CONCRETE BARRIER RAIL.



PLAN OF BARRIER RAIL

(A) SEE "PLAN AT END OF RAIL" DETAIL ON SHEET 3 OF 3 FOR LOCATIONS & BAR TYPES .

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

CONCRETE BARRIER RAIL LAYOUT

RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-21
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 2

DRAWN BY: D. D. LOWERY DATE: 10/18
CHECKED BY: C. T. POOLE DATE: 10/18
DESIGN ENGINEER OF RECORD: J. C. WILSON DATE: 10/18

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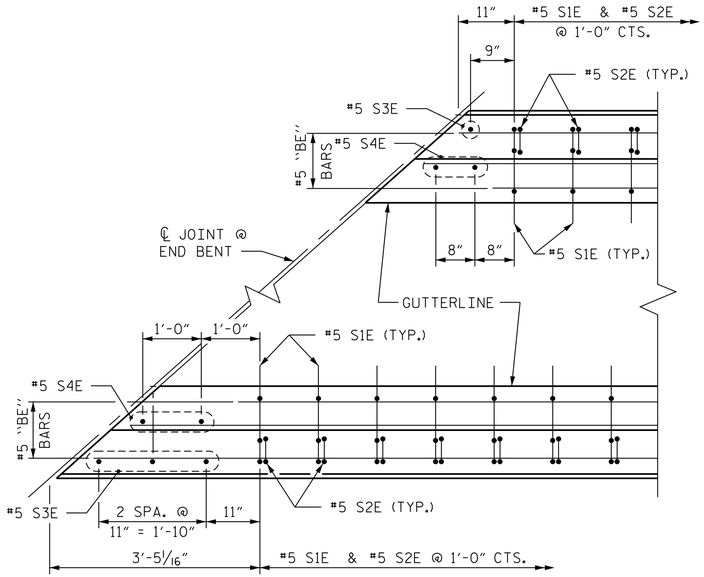


PLAN AT END OF RAIL

(END BENT 1 SHOWN, END BENT 2 SIMILAR)

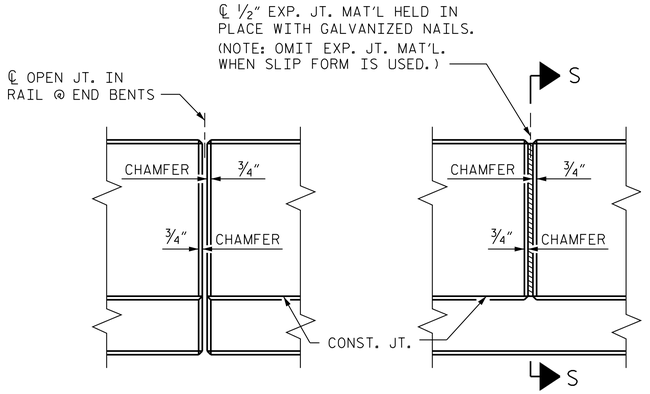
NOTES

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, 1/2″ 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.

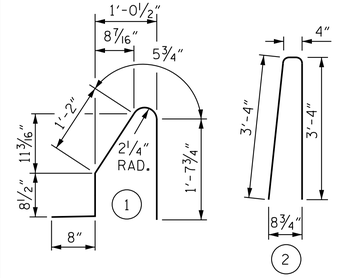
QUANTITIES FOR BARRIER RAIL ON APPROACH SLAB ARE INCLUDED ON BRIDGE APPROACH SLAB SHEETS.



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

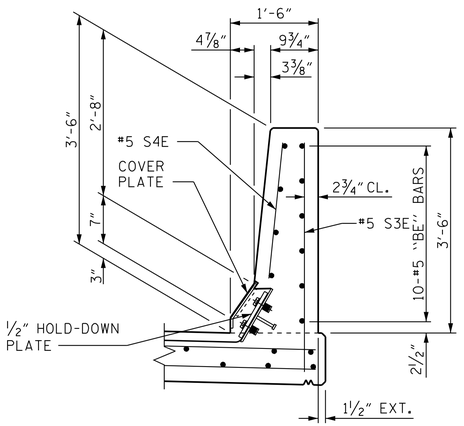
BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

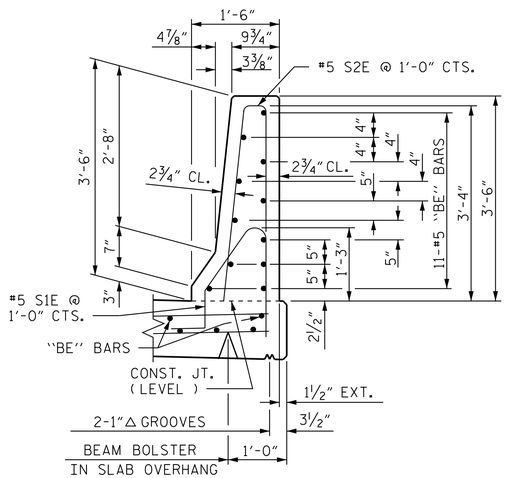
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1E	44	#5	STR	15′-11″	730
B2E	66	#5	STR	29′-1″	2,002
B3E	66	#5	STR	25′-5″	1,750
B4E	44	#5	STR	14′-3″	654
S1E	432	#5	1	4′-8″	2,103
S2E	432	#5	2	7′-0″	3,154
S3E	8	#5	STR	3′-11″	33
S4E	8	#5	STR	2′-4″	19

EPOXY COATED REINFORCING STEEL	10,455 LBS.
CLASS AA CONCRETE	59.6 CU. YDS.
CONCRETE BARRIER RAIL **	438.4 LIN. FT.

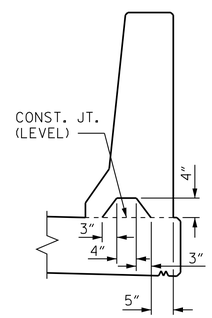
** DOES NOT INCLUDE BARRIER RAIL ON APPROACH SLAB.



SECTION THRU RAIL
@ END VIEW



SECTION THRU RAIL



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

PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
CONCRETE
BARRIER RAIL

RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-22
1			3			TOTAL SHEETS
2			4			41

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON
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ASSEMBLED BY : D.D.LOWERY		DATE :	10/18
CHECKED BY : C.T.POOLE		DATE :	10/18
DRAWN BY : ARB 5/87	REV. 7/12		MAA/GM
CHECKED BY : SJD 9/87	REV. 6/13		MAA/GM
	REV. 12/17		MAA/THC

12/7/2018

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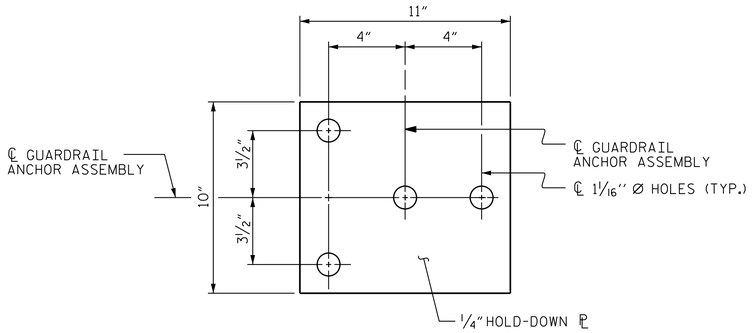
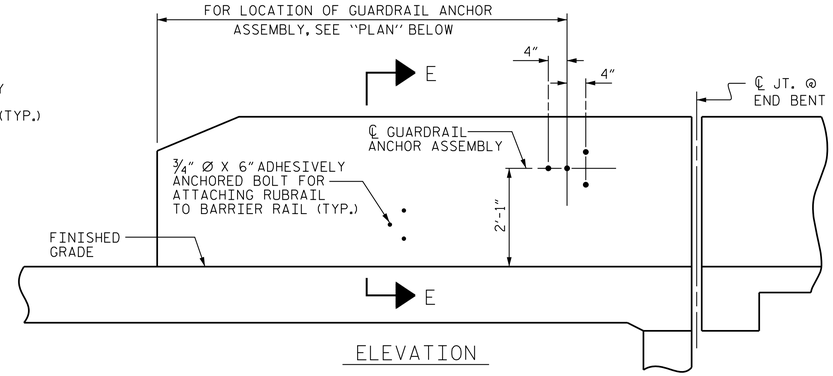
STRUCTURE 2 STD. NO. CBR1



PLAN



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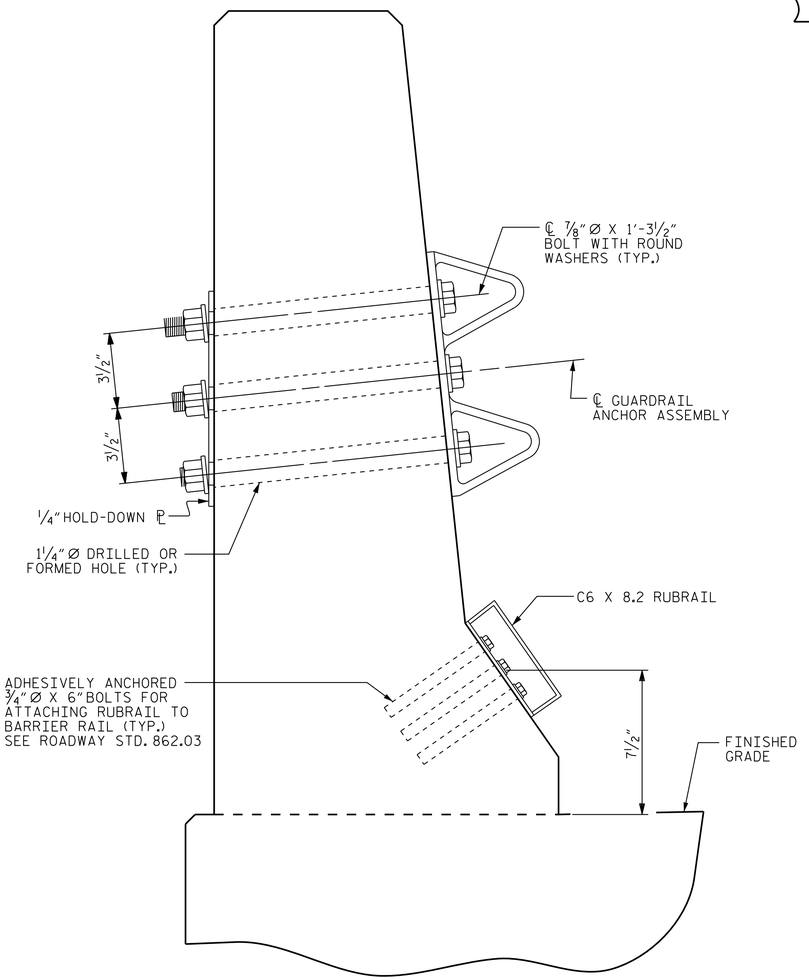


SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS

PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR

SEE "SKETCH SHOWING POINTS OF ATTACHMENTS" FOR ACTUAL LOCATIONS OF GUARDRAIL ATTACHMENT

NOTES

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

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

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

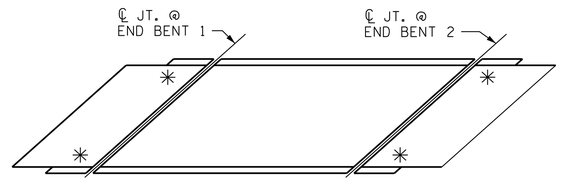
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

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



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

DocuSigned by: Jeffrey C. Wilson CDA045FAFCC9416... 12/7/2018

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-23
1			3			TOTAL SHEETS
2			4			41

ASSEMBLED BY : D. D. LOWERY		DATE :	10/18
CHECKED BY : C. T. POOLE		DATE :	10/18
DRAWN BY : TLA 5/06	REV. 7/12		MAA/GM
CHECKED BY : GM 5/06	REV. 6/13		MAA/GM
	REV. 12/17		MAA/THC

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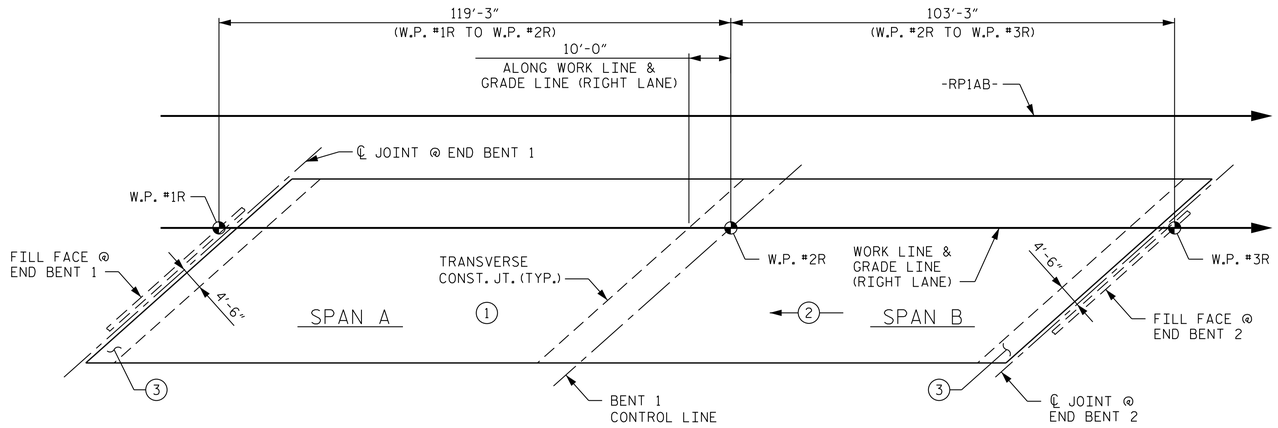
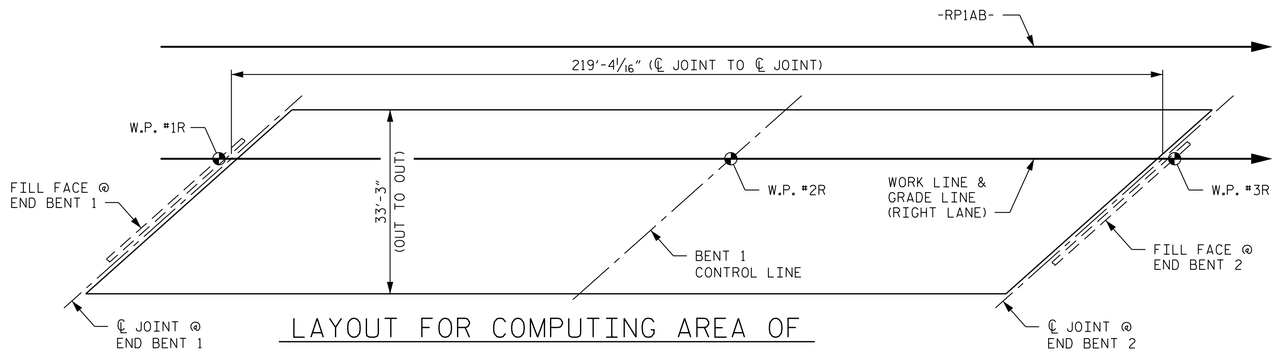
STRUCTURE 2 STD. NO. GRA2

12/7/2018 K:\RDT_Structures_Bridge\NC\011036303 - R-1015\CAD\Dgn\Structure 402\VRI015_SMU_GRL_240273.dgn



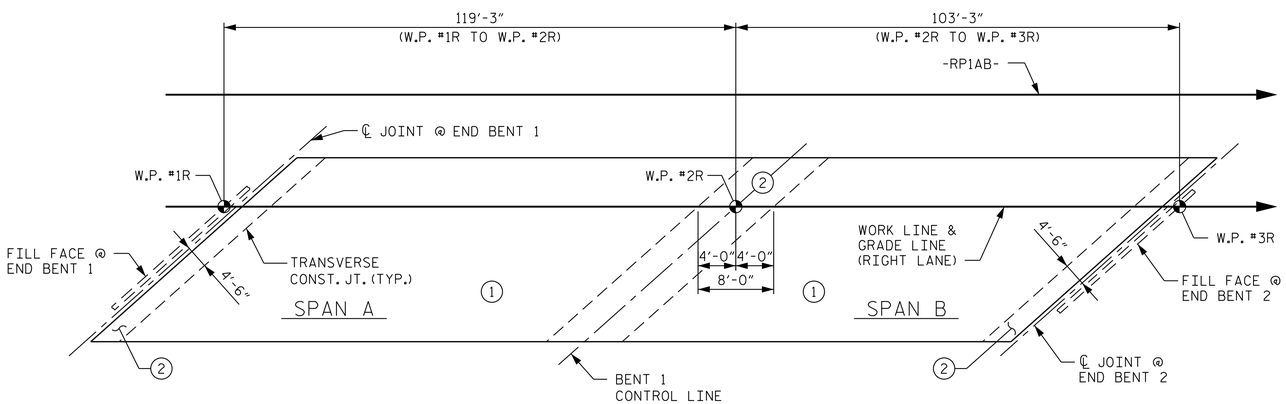
POUR SEQUENCE

←(#)— DENOTES POUR NUMBER AND DIRECTION



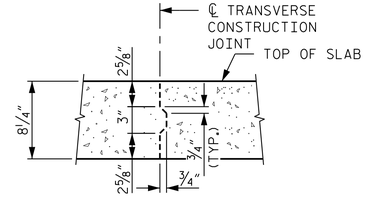
LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE SLAB

(SQ. FT. = 7,288)



OPTIONAL POURING SEQUENCE

POUR #2 CAN NOT BE STARTED UNTIL BOTH ADJACENT
POUR #1 REACH A MINIMUM OF 3,000 PSI



TRANSVERSE CONSTRUCTION JOINT IN DECK SLAB

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

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR 1	100.2		
POUR 2	130.2		
POUR 3	24.1		
TOTALS **	254.5	23,666	26,219

** QUANTITIES FOR BARRIER RAILS NOT INCLUDED.

GROOVING BRIDGE FLOORS

APPROACH SLABS	1,268	SQ.FT.
BRIDGE DECK	5,876	SQ.FT.
TOTAL	7,144	SQ.FT.

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	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			

PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
BILL OF MATERIAL

RIGHT LANE

STRUCTURE 2

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON
DocuSigned by: Jeffrey C. Wilson CDA045AFCC9416...
12/7/2018

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NC LICENSE # F-0102

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-24
1			3			TOTAL SHEETS
2			4			41

DRAWN BY: D. D. LOWERY DATE: 10/18
CHECKED BY: C. T. POOLE DATE: 10/18
DESIGN ENGINEER OF RECORD: J. C. WILSON DATE: 10/18

12/7/2018
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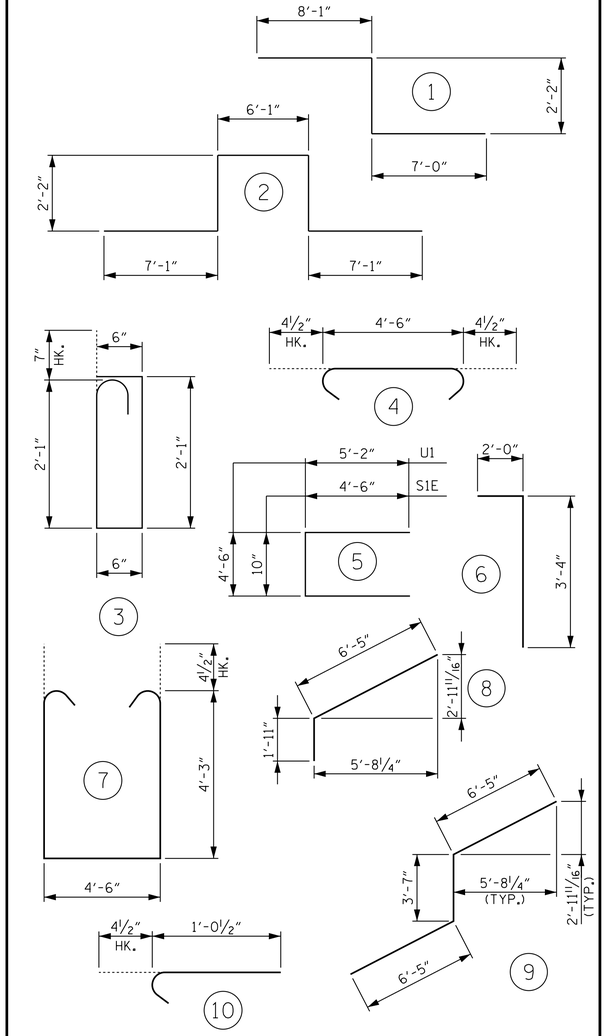
BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	364	5	STR	32'-11"	12,497
A2	364	5	STR	32'-11"	12,497
A3E	10	5	STR	2'-3"	23
A4	10	6	STR	2'-3"	34
A5E	6	6	STR	8'-3"	74
A101E	2	5	STR	32'-7"	68
A102E	2	5	STR	32'-1"	67
A103E	2	5	STR	31'-8"	66
A104E	2	5	STR	31'-3"	65
A105E	2	5	STR	30'-9"	64
A106E	2	5	STR	30'-4"	63
A107E	2	5	STR	29'-10"	62
A108E	2	5	STR	29'-5"	61
A109E	2	5	STR	29'-0"	60
A110E	2	5	STR	28'-6"	59
A111E	2	5	STR	28'-1"	59
A112E	2	5	STR	27'-8"	58
A113E	2	5	STR	27'-2"	57
A114E	2	5	STR	26'-9"	56
A115E	2	5	STR	26'-4"	55
A116E	2	5	STR	25'-10"	54
A117E	2	5	STR	25'-5"	53
A118E	2	5	STR	25'-0"	52
A119E	2	5	STR	24'-6"	51
A120E	2	5	STR	24'-1"	50
A121E	2	5	STR	23'-8"	49
A122E	2	5	STR	23'-2"	48
A123E	2	5	STR	22'-9"	47
A124E	2	5	STR	22'-4"	47
A125E	2	5	STR	21'-10"	46
A126E	2	5	STR	21'-5"	45
A127E	2	5	STR	20'-11"	44
A128E	2	5	STR	20'-6"	43
A129E	2	5	STR	20'-1"	42
A130E	2	5	STR	19'-7"	41
A131E	2	5	STR	19'-2"	40
A132E	2	5	STR	18'-9"	39
A133E	2	5	STR	18'-3"	38
A134E	2	5	STR	17'-10"	37
A135E	2	5	STR	17'-5"	36
A136E	2	5	STR	16'-11"	35
A137E	2	5	STR	16'-6"	34
A138E	2	5	STR	16'-1"	34
A139E	2	5	STR	15'-7"	33
A140E	2	5	STR	15'-2"	32
A141E	2	5	STR	14'-9"	31
A142E	2	5	STR	14'-3"	30
A143E	2	5	STR	13'-10"	29
A144E	2	5	STR	13'-5"	28
A145E	2	5	STR	12'-11"	27
A146E	2	5	STR	12'-6"	26
A147E	2	5	STR	12'-0"	25
A148E	2	5	STR	11'-7"	24
A149E	2	5	STR	11'-2"	23
A150E	2	5	STR	10'-8"	22
A151E	2	5	STR	10'-3"	21
A152E	2	5	STR	9'-10"	21
A153E	2	5	STR	9'-4"	19
A154E	2	5	STR	8'-11"	19
A155E	2	5	STR	8'-6"	18
A156E	2	5	STR	8'-0"	17
A157E	2	5	STR	7'-7"	16
A158E	2	5	STR	7'-2"	15
A159E	2	5	STR	6'-8"	14
A160E	2	5	STR	6'-3"	13
A161E	2	5	STR	5'-10"	12
A162E	2	5	STR	5'-4"	11
A163E	2	5	STR	4'-11"	10
A164E	2	5	STR	4'-6"	9
A165E	2	5	STR	4'-0"	8
A166E	2	5	STR	3'-7"	7
A167E	2	5	STR	3'-2"	7
A168E	2	5	STR	2'-8"	6
A169E	2	5	STR	2'-3"	5
A201	2	5	STR	32'-7"	68
A202	2	5	STR	32'-1"	67
A203	2	5	STR	31'-8"	66
A204	2	5	STR	31'-3"	65
A205	2	5	STR	30'-9"	64
A206	2	5	STR	30'-4"	63
A207	2	5	STR	29'-10"	62
A208	2	5	STR	29'-5"	61
A209	2	5	STR	29'-0"	60
A210	2	5	STR	28'-6"	59
A211	2	5	STR	28'-1"	59
A212	2	5	STR	27'-8"	58
A213	2	5	STR	27'-2"	57
A214	2	5	STR	26'-9"	56
A215	2	5	STR	26'-4"	55
A216	2	5	STR	25'-10"	54
A217	2	5	STR	25'-5"	53
A218	2	5	STR	25'-0"	52
A219	2	5	STR	24'-6"	51
A220	2	5	STR	24'-1"	50
A221	2	5	STR	23'-8"	49
A222	2	5	STR	23'-2"	48
A223	2	5	STR	22'-9"	47
A224	2	5	STR	22'-4"	47
A225	2	5	STR	21'-10"	46
A226	2	5	STR	21'-5"	45
A227	2	5	STR	20'-11"	44
A228	2	5	STR	20'-6"	43
A229	2	5	STR	20'-1"	42
A230	2	5	STR	19'-7"	41
A231	2	5	STR	19'-2"	40
A232	2	5	STR	18'-9"	39
A233	2	5	STR	18'-3"	38
A234	2	5	STR	17'-10"	37
A235	2	5	STR	17'-5"	36
A236	2	5	STR	16'-11"	35
A237	2	5	STR	16'-6"	34
A238	2	5	STR	16'-1"	34
A239	2	5	STR	15'-7"	33
A240	2	5	STR	15'-2"	32
A241	2	5	STR	14'-9"	31
A242	2	5	STR	14'-3"	30
A243	2	5	STR	13'-10"	29
A244	2	5	STR	13'-5"	28
A245	2	5	STR	12'-11"	27
A246	2	5	STR	12'-6"	26
A247	2	5	STR	12'-0"	25
A248	2	5	STR	11'-7"	24
A249	2	5	STR	11'-2"	23
A250	2	5	STR	10'-8"	22
A251	2	5	STR	10'-3"	21
A252	2	5	STR	9'-10"	21
A253	2	5	STR	9'-4"	19
A254	2	5	STR	8'-11"	19
A255	2	5	STR	8'-6"	18
A256	2	5	STR	8'-0"	17
A257	2	5	STR	7'-7"	16
A258	2	5	STR	7'-2"	15
A259	2	5	STR	6'-8"	14
A260	2	5	STR	6'-3"	13
A261	2	5	STR	5'-10"	12
A262	2	5	STR	5'-4"	11
A263	2	5	STR	4'-11"	10
A264	2	5	STR	4'-6"	9
A265	2	5	STR	4'-0"	8
A266	2	5	STR	3'-7"	7
A267	2	5	STR	3'-2"	7
A268	2	5	STR	2'-8"	6
A269	2	5	STR	2'-3"	5
B1E	72	4	STR	27'-11"	1,343
B2E	72	4	STR	24'-2"	1,162
B3E	24	6	STR	60'-0"	2,163
B4E	24	6	STR	18'-10"	679
B5E	63	6	STR	42'-0"	3,974
B6	128	5	STR	56'-4"	7,521
G1E	2	5	STR	49'-5"	103
J1E	92	4	10	1'-5"	87
K1E	8	8	1	17'-3"	368
K2E	8	8	2	24'-7"	525
K3E	24	6	STR	7'-1"	255
K4	6	4	STR	7'-6"	30
K5	30	4	STR	11'-7"	232
K6	12	4	8	8'-4"	67
K7	12	4	9	16'-5"	132
S1E	30	4	5	9'-10"	197
S2E	30	5	3	5'-9"	180
S3	120	4	4	5'-3"	421
S4E	24	4	6	5'-4"	86
U1	12	4	5	14'-10"	119
U2	12	4	7	13'-9"	110

EPOXY COATED REINFORCING STEEL	26,219 LBS.
REINFORCING STEEL	23,666 LBS.

"E" SUFFIX DENOTES EPOXY COATED REINFORCING STEEL.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

DocuSigned by: Jeffrey C. Wilson CDA045FAFCC9416... 12/7/2018

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

BILL OF MATERIAL

RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-25
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 2

DRAWN BY: D. D. LOWERY DATE: 10/18
CHECKED BY: C. T. POOLE DATE: 10/18
DESIGN ENGINEER OF RECORD: J. C. WILSON DATE: 10/18

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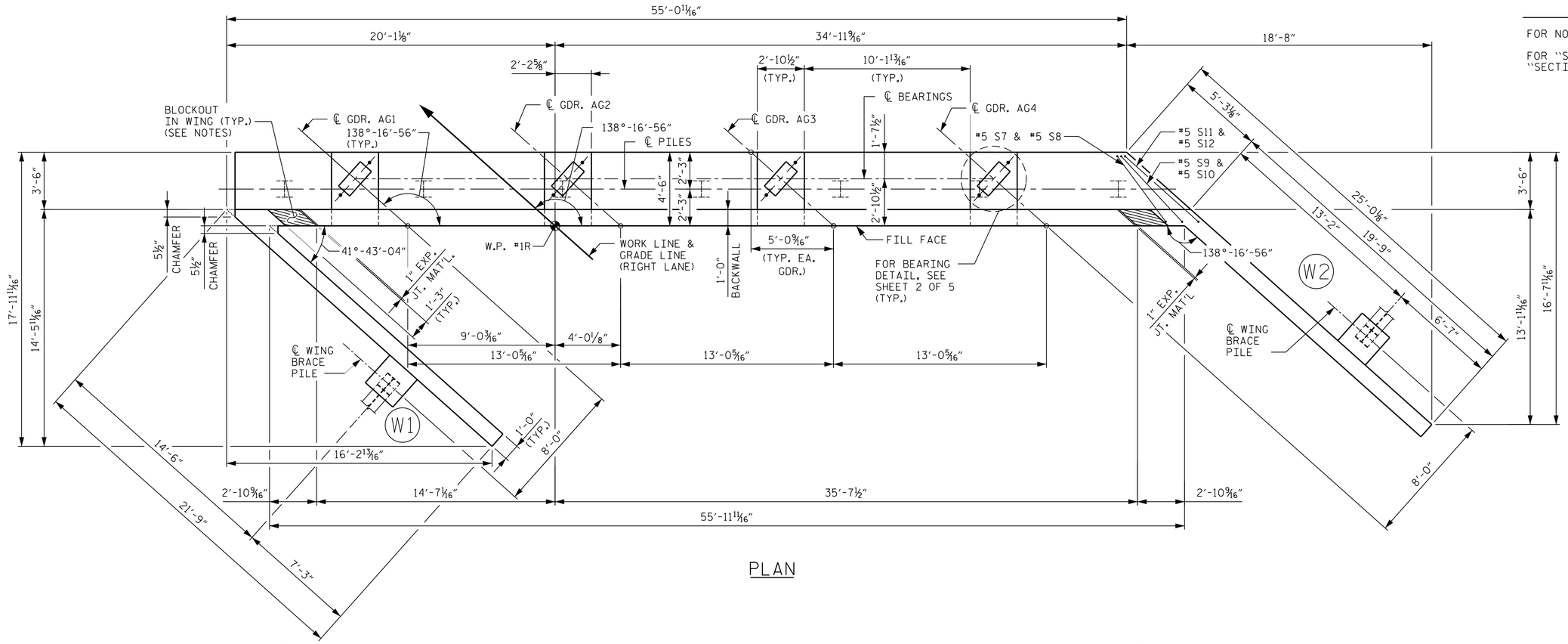
12/7/2018

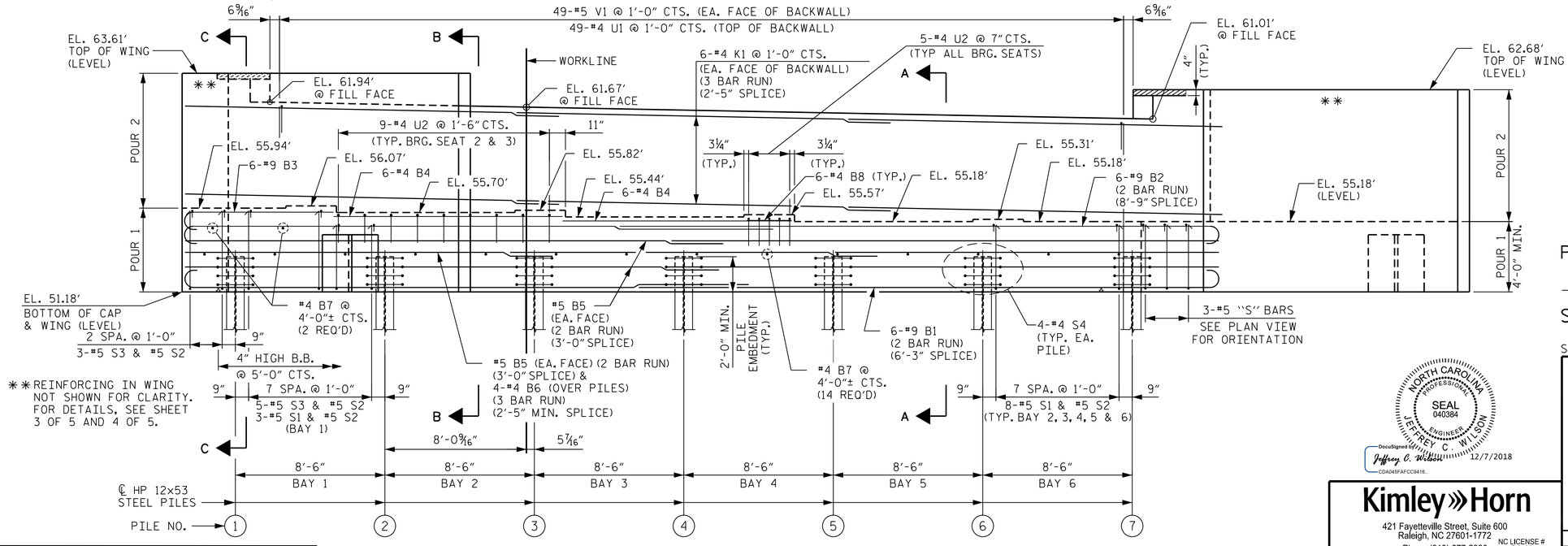
NOTES

FOR NOTES, SEE "END BENT 1" SHEET 2 OF 5.

FOR "SECTION A-A", "SECTION B-B", AND "SECTION C-C", SEE SHEET 5 OF 5.



PLAN



ELEVATION

WING PILES NOT SHOWN FOR CLARITY.

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 PLAN AND ELEVATION

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

DocuSigned by: Jeffrey C. Wilson CDA045FAFCC9416...

12/7/2018

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NO.	BY:	DATE:	NO.	BY:	DATE:	S02-26
1			3			TOTAL SHEETS
2			4			41

DRAWN BY: D. D. LOWERY DATE: 10/18

CHECKED BY: C. T. POOLE DATE: 10/18

DESIGN ENGINEER OF RECORD: J. C. WILSON DATE: 10/18

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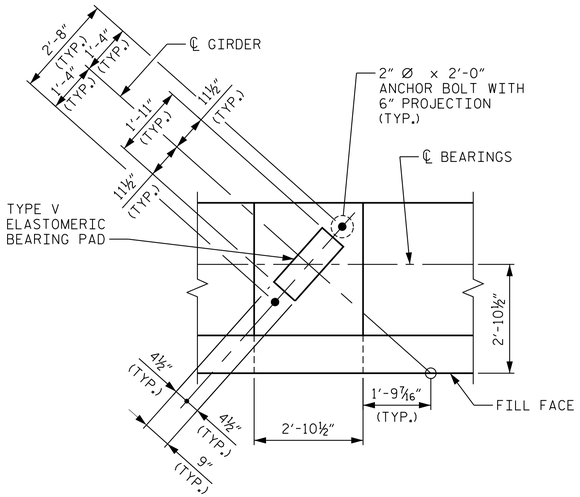
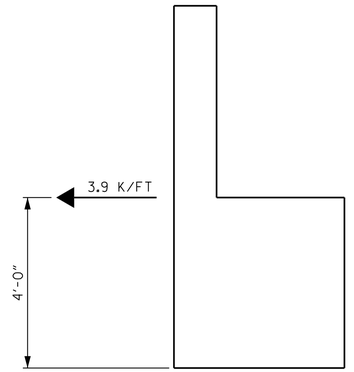
12/7/2018

STRUCTURE 2



BEARING DETAIL



MSE REINFORCING STRAP LOAD DETAIL

MSE REINFORCING STRAP NOTES

MSE REINFORCING STRAPS SHALL BE ATTACHED TO THE END BENT CAP AND/OR BACKWALL. FOR DESIGN CRITERIA AND DETAILS, SEE MSE WALL SHEETS AND SPECIAL PROVISIONS.

PLANS, WORKING DRAWINGS, AND DESIGN CALCULATIONS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR REVIEW AND APPROVAL, SEE SPECIAL PROVISIONS.

PLANS SUBMITTED FOR REVIEW SHALL INCLUDE THE FOLLOWING: PLAN VIEW, ELEVATION VIEW, TYPICAL SECTIONS, AND STRAP DETAILS.

THE MSE REINFORCING STRAPS SHALL BE DESIGNED TO CARRY THE LOADS FROM THE BRIDGE SUPERSTRUCTURE AS INDICATED IN THE ''MSE REINFORCING STRAP LOAD DETAIL''. IN ADDITION, THE MSE REINFORCING STRAPS SHALL ALSO BE DESIGNED TO CARRY LOADS FROM SOIL PRESSURE AS OUTLINED IN THE SPECIAL PROVISION.

THE LOADS IN THE DETAIL ABOVE ARE FACTORED LOADS.

NOTES

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

FOR PILE SPLICE DETAILS, SEE SHEET 5 OF 5.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE PROTECTIVE COATING.

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

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

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAILS ARE CAST IF SLIP FORMING IS USED.

FOR ''24"Ø CSP CASING DETAIL'' SEE ''GENERAL DRAWING'' SHEET 2 OF 3.

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

END BENT 1 DETAILS

RIGHT LANE

STRUCTURE 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-27
1			3			TOTAL SHEETS
2			4			41

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

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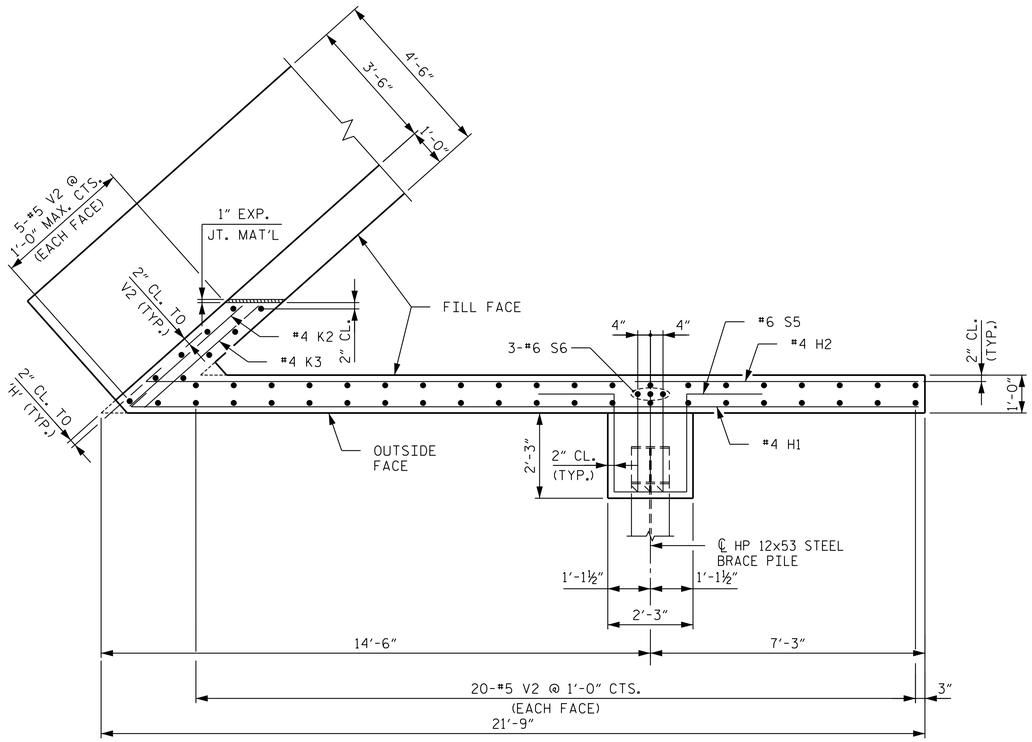
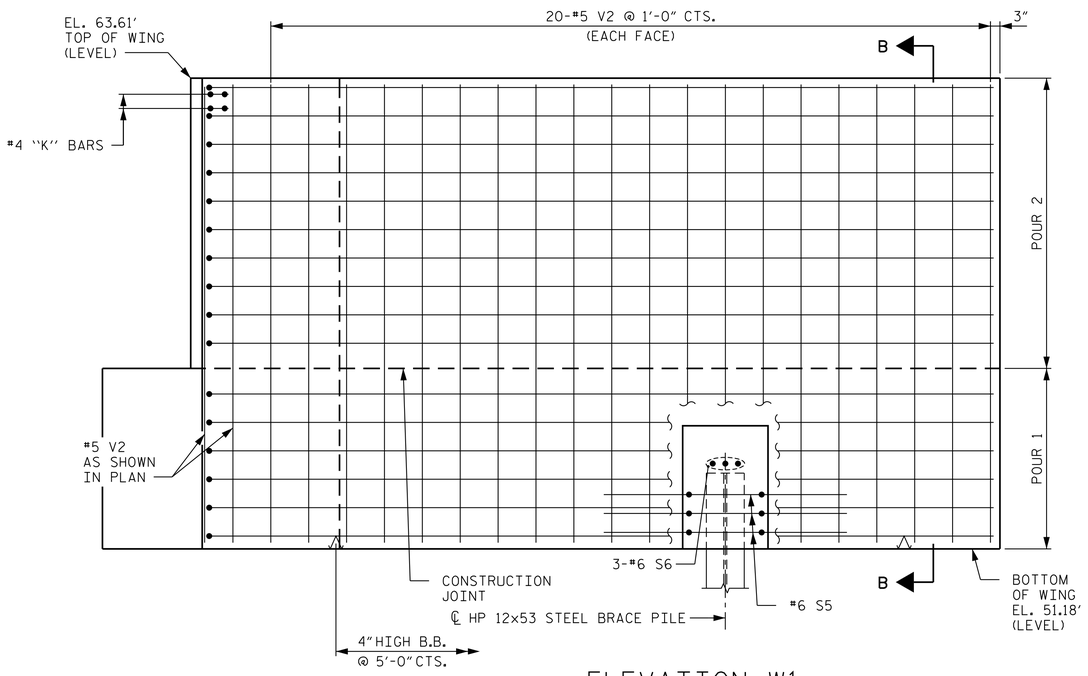
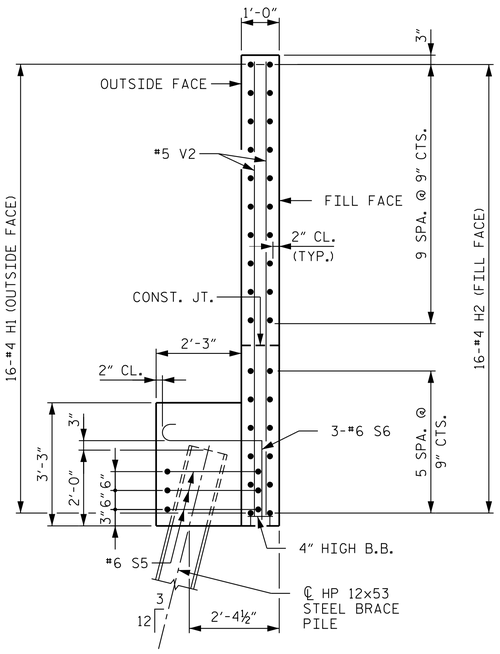


PLAN W1



ELEVATION W1



SECTION B-B

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PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 SECTIONS AND DETAILS

RIGHT LANE

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STRUCTURE 2

12/7/2018
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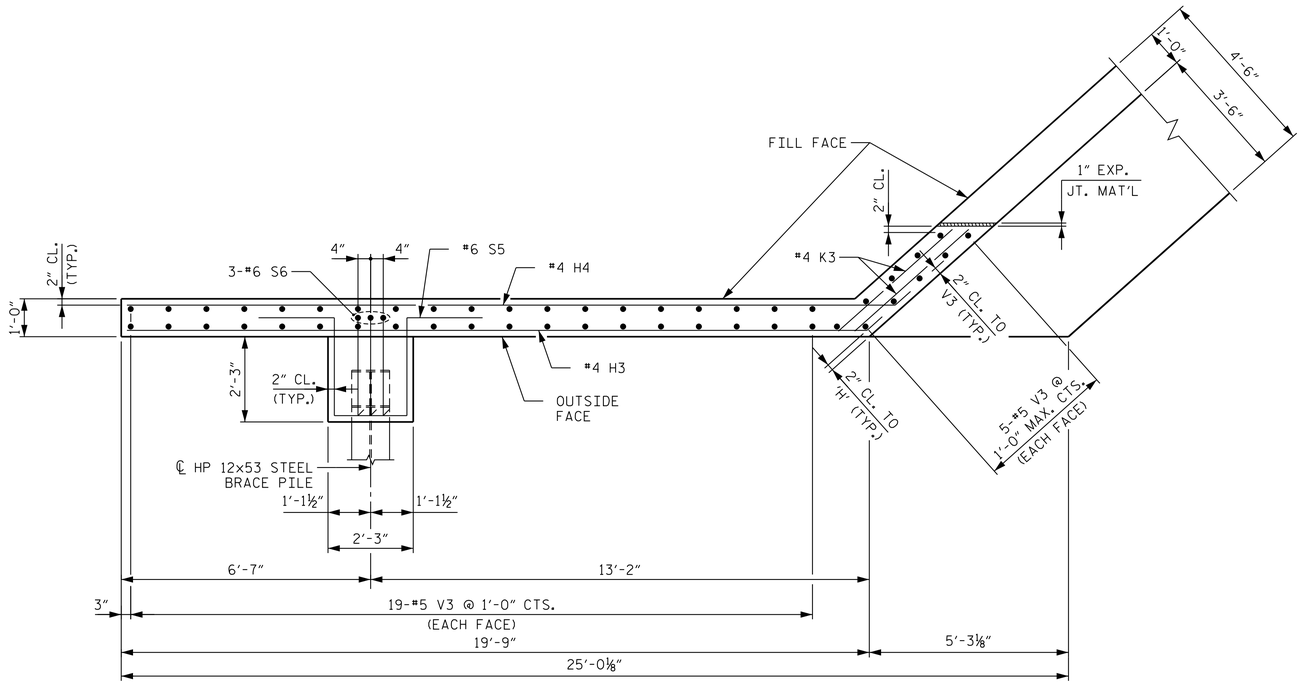
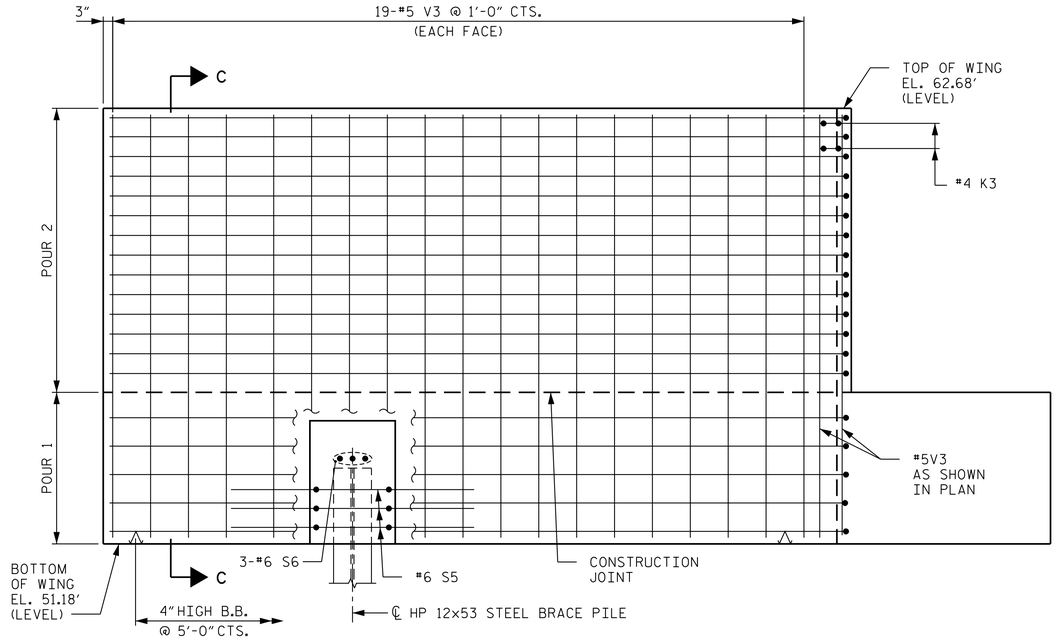
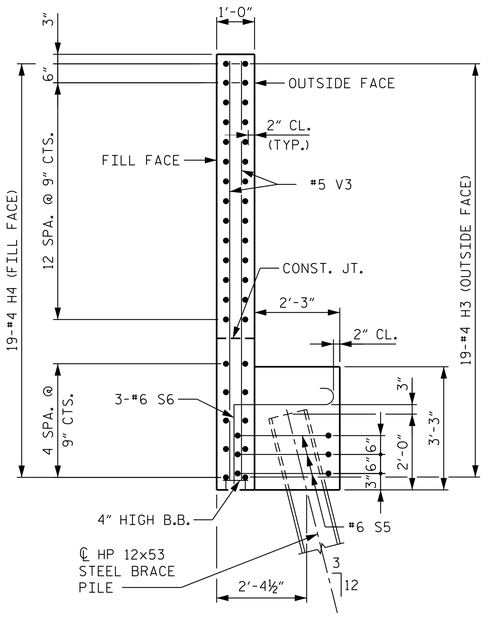


PLAN W2



ELEVATION W2



SECTION C-C

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SHEET 4 OF 5

STATE OF NORTH CAROLINA
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SUBSTRUCTURE

END BENT 1 SECTIONS AND DETAILS

RIGHT LANE

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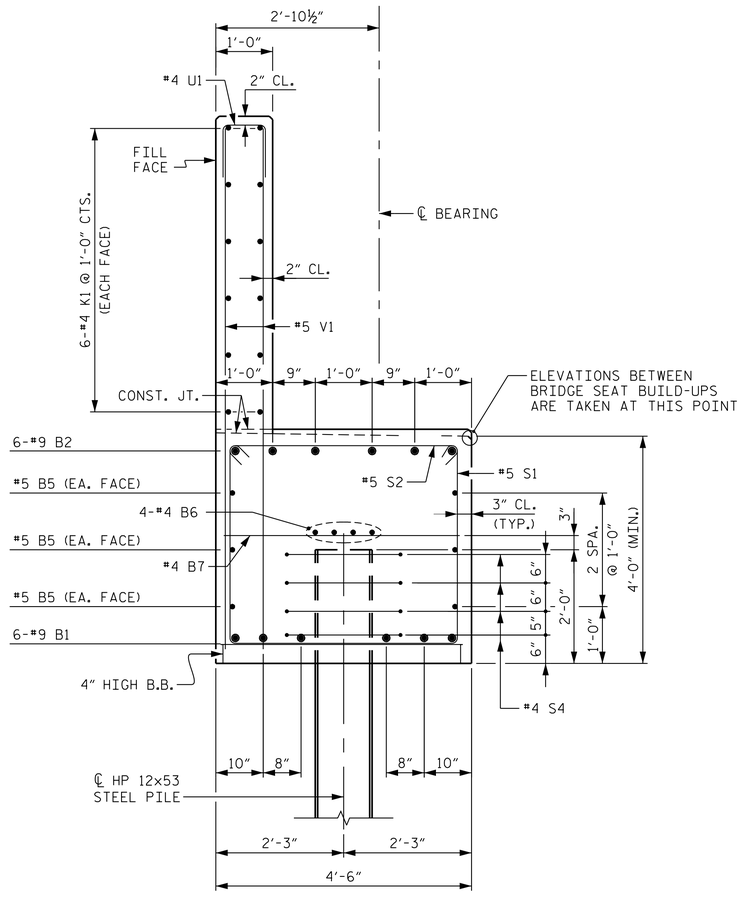
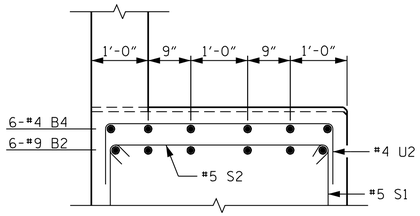
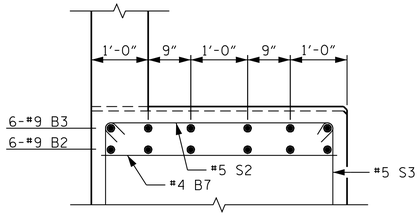
STRUCTURE 2



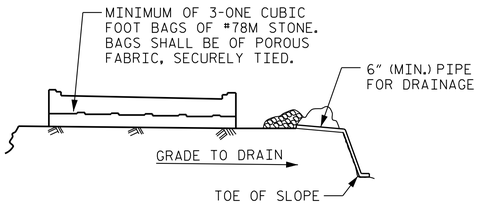
SECTION A-A



PARTIAL SECTION B-B



PARTIAL SECTION C-C

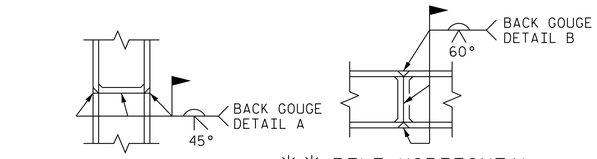


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

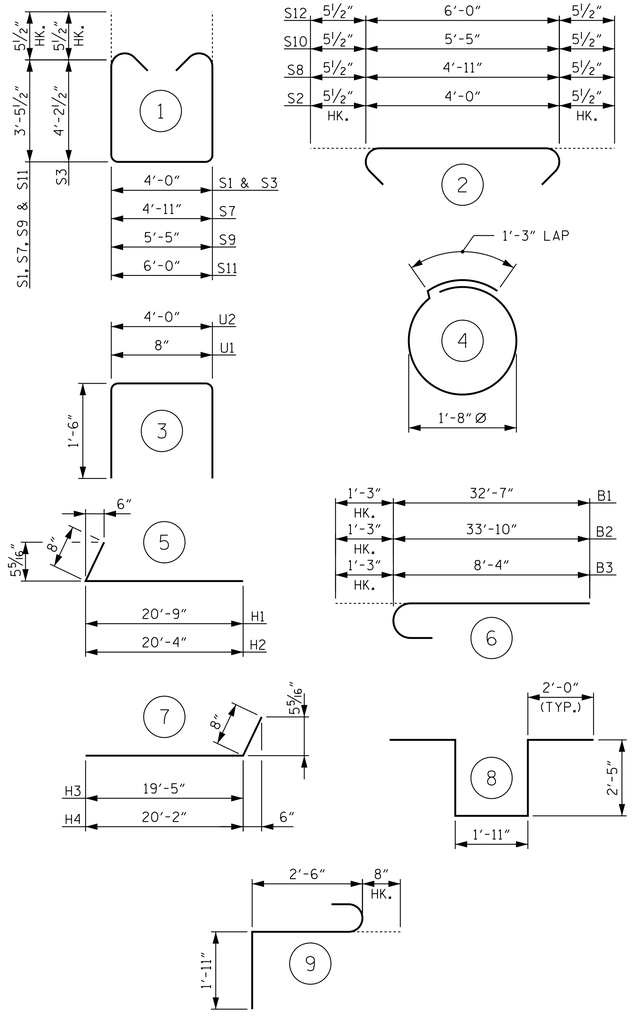
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

** POSITION OF PILE DURING WELDING.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	9	6	33'-10"	1,380
B2	12	9	6	35'-1"	1,431
B3	6	9	6	9'-7"	196
B4	12	4	STR	13'-1"	105
B5	12	5	STR	30'-11"	387
B6	12	4	STR	21'-3"	170
B7	16	4	STR	4'-0"	43
B8	24	4	STR	2'-5"	39
H1	16	4	5	21'-5"	229
H2	16	4	5	21'-0"	224
H3	19	4	7	20'-1"	255
H4	19	4	7	20'-10"	264
K1	36	4	STR	21'-1"	507
K2	2	4	STR	3'-8"	5
K3	6	4	STR	3'-10"	15
S1	43	5	1	11'-10"	531
S2	51	5	2	4'-11"	262
S3	8	5	1	13'-4"	111
S4	28	4	4	6'-6"	122
S5	6	6	8	10'-9"	97
S6	6	6	9	5'-1"	46
S7	1	5	1	12'-9"	13
S8	1	5	2	5'-10"	6
S9	1	5	1	13'-3"	14
S10	1	5	2	6'-4"	7
S11	1	5	1	13'-10"	14
S12	1	5	2	6'-11"	7
U1	49	4	3	3'-8"	120
U2	38	4	3	7'-0"	178
V1	98	5	STR	9'-5"	963
V2	50	5	STR	12'-0"	626
V3	48	5	STR	11'-0"	551

REINFORCING STEEL	8,918 LBS.
CLASS A CONCRETE BREAKDOWN	
POUR 1 (CAP & LOWER WING)	48.5 C.Y.
POUR 2 (BACKWALL & UPPER PORTION OF WING)	24.6 C.Y.
TOTAL CLASS A CONCRETE	73.1 C.Y.
HP 12x53 STEEL PILES	
NO. 9	900 LIN. FT.
PILE REDRIVES	3 EA.
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	9 EA.

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PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

SHEET 5 OF 5

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STATE OF NORTH CAROLINA
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RALEIGH
SUBSTRUCTURE

END BENT 1 SECTIONS AND DETAILS

RIGHT LANE

REVISIONS						SHEET NO.
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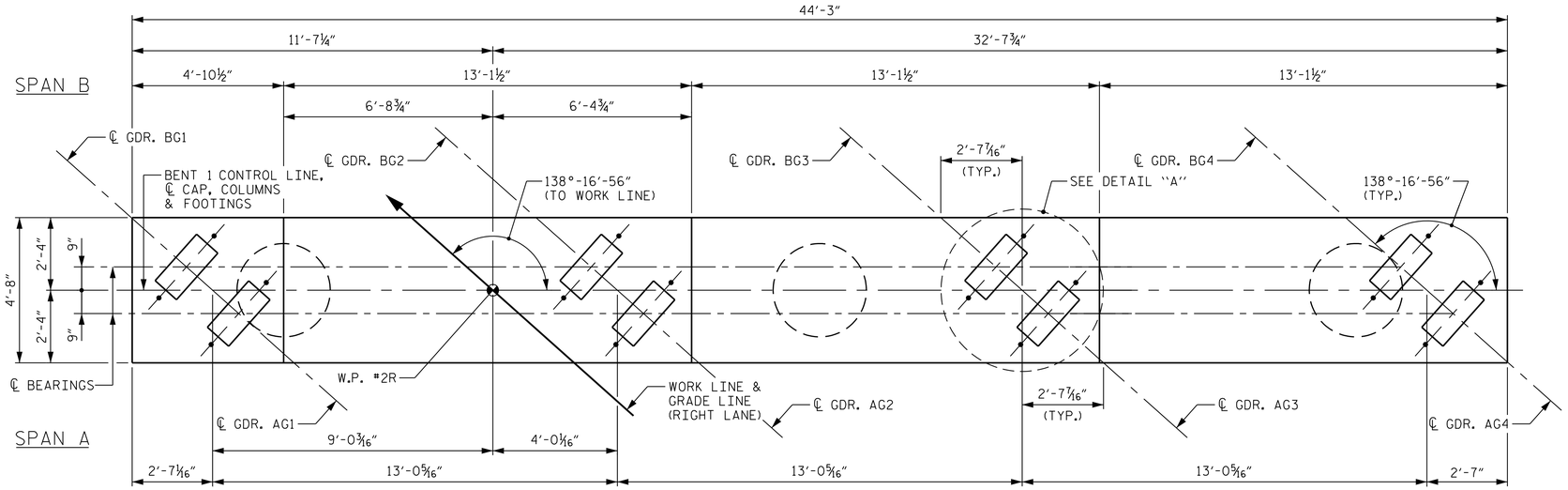
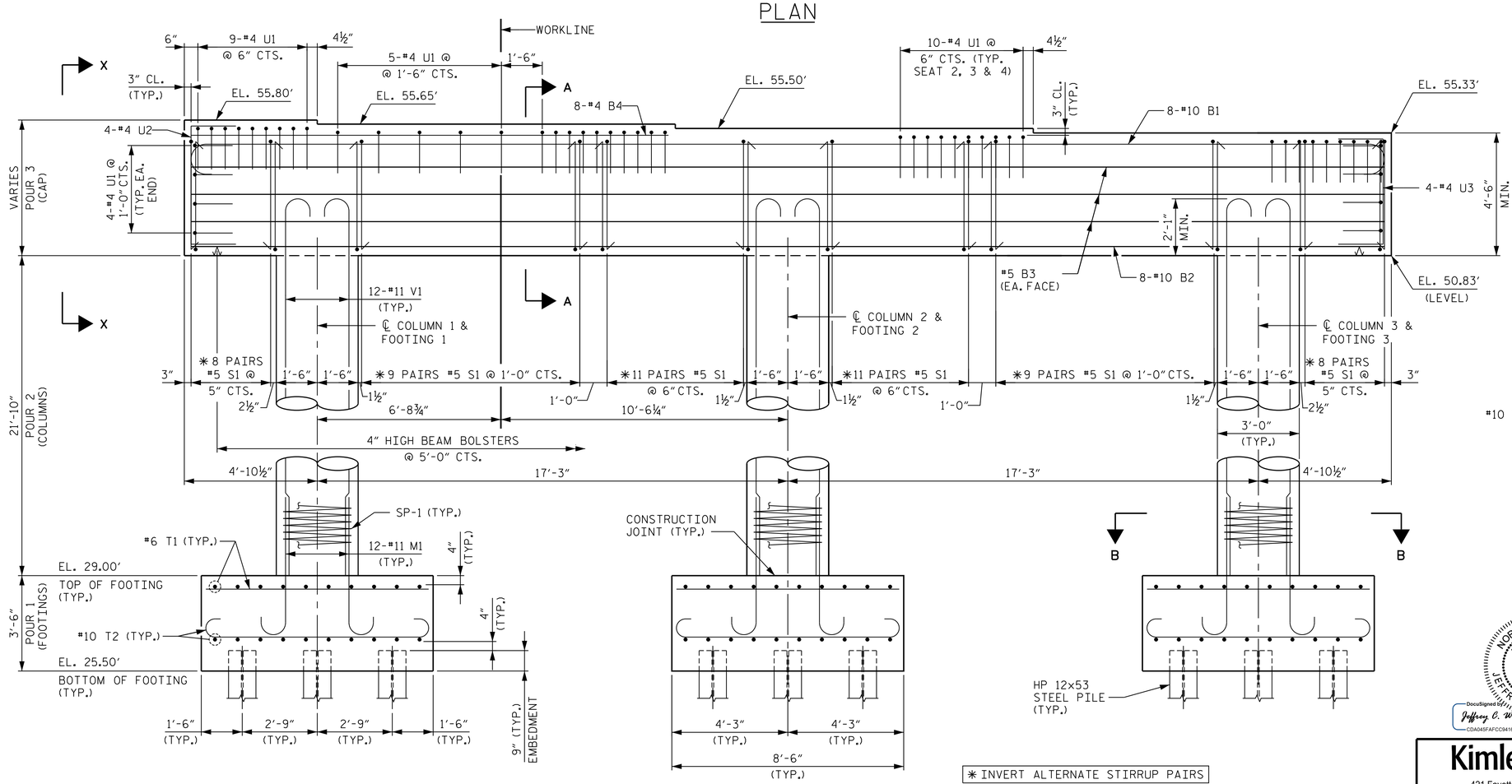
2			4			41

STRUCTURE 2



PLAN



ELEVATION

✳INVERT ALTERNATE STIRRUP PAIRS

NOTES

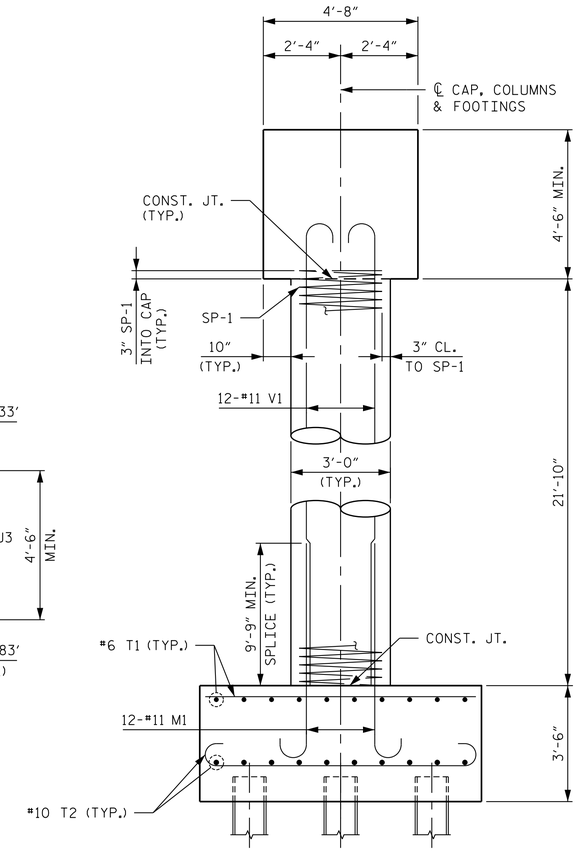
FOR "END VIEW X-X", SEE "BENT 1" SHEET 2 OF 2.

FOR "SECTION A-A" AND "SECTION B-B", SEE "BENT 1" SHEET 2 OF 2.

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

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

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



END VIEW

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1 PLAN AND ELEVATION

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

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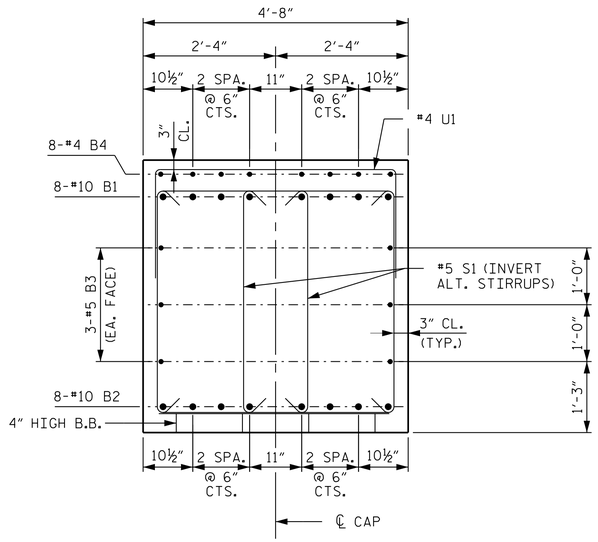
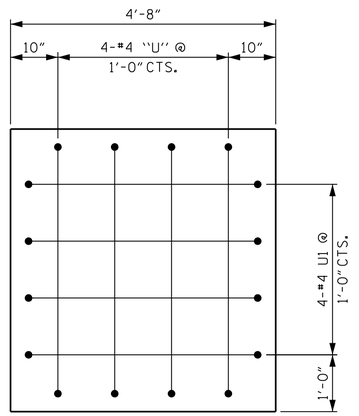
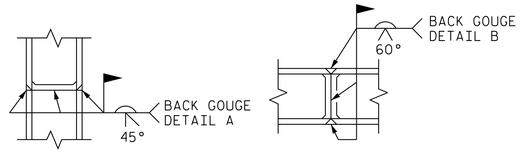
STRUCTURE 2



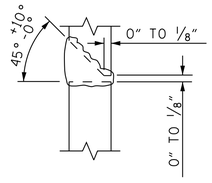
SECTION A-A



END VIEW X-X

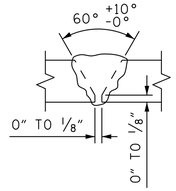


** PILE VERTICAL



DETAIL A

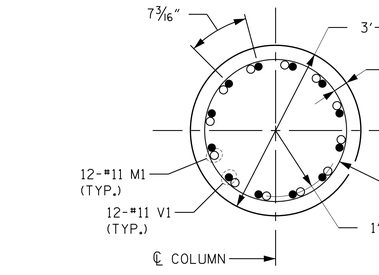
** PILE HORIZONTAL OR VERTICAL



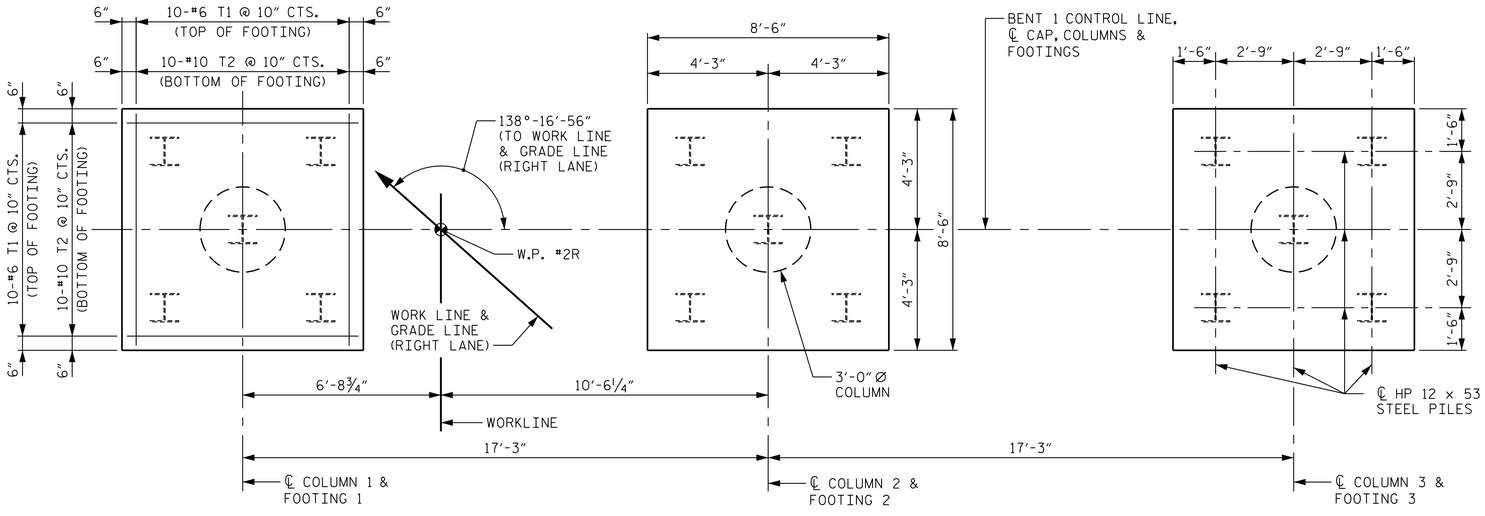
DETAIL B

PILE SPLICE DETAILS

** POSITION OF PILE DURING WELDING.



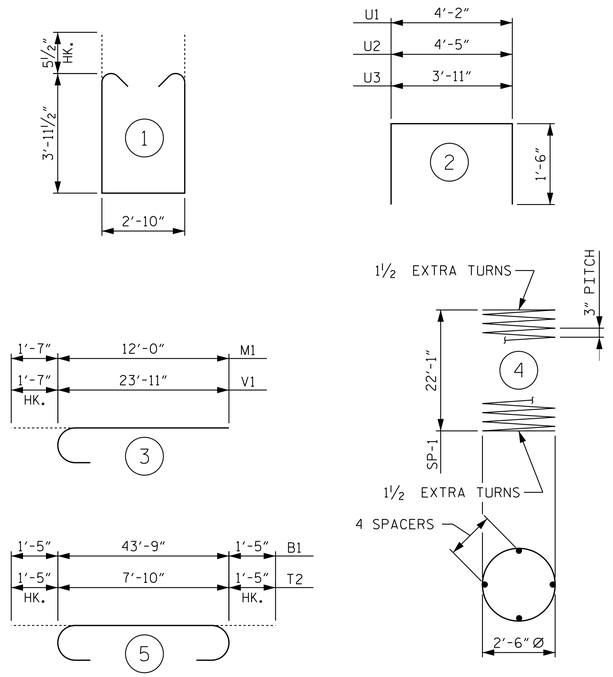
SECTION B-B



PLAN OF FOOTINGS

ALL FOOTING DIMENSIONS AND REINFORCING STEEL ARE TYPICAL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 1

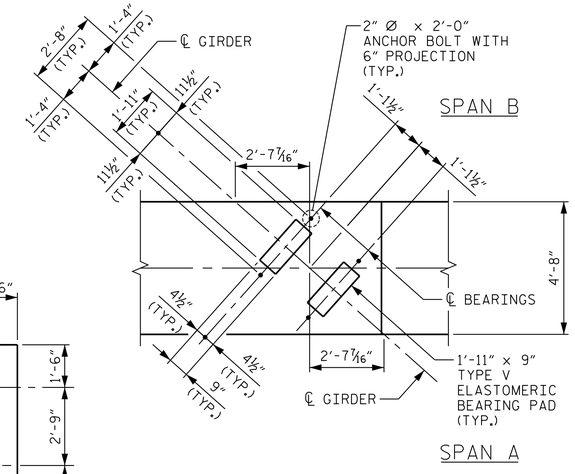
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	10	5	46'-7"	1,604
B2	8	10	STR	43'-9"	1,506
B3	6	5	STR	43'-9"	274
B4	8	4	STR	17'-6"	94
M1	36	11	3	13'-7"	2,598
S1	112	5	1	11'-8"	1,363
T1	60	6	STR	7'-10"	706
T2	60	10	5	10'-8"	2,754
U1	52	4	2	7'-2"	249
U2	4	4	2	7'-5"	20
U3	4	4	2	6'-11"	18
V1	36	11	3	25'-6"	4,877

REINFORCING STEEL					16,063 LBS.
SP-1	3	**	4	705'-9"	471
SPIRAL COLUMN REINFORCING STEEL					1,413 LBS.

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

BENT 1 TOTAL QUANTITIES

CLASS A CONCRETE	
POUR 1 (FOOTINGS)	28.1 C.Y.
POUR 2 (COLUMNS)	17.1 C.Y.
POUR 3 (CAP)	35.9 C.Y.
TOTAL CLASS A CONCRETE	81.1 C.Y.
HP 12x53 STEEL PILES	
NO. 15	1,050 LIN. FT.
PILE REDRIVES	7 EA.
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	15 EA.



DETAIL "A"

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

BENT 1

RIGHT LANE

STRUCTURE 2

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

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DESIGN ENGINEER OF RECORD: J. C. WILSON	DATE:	10/18

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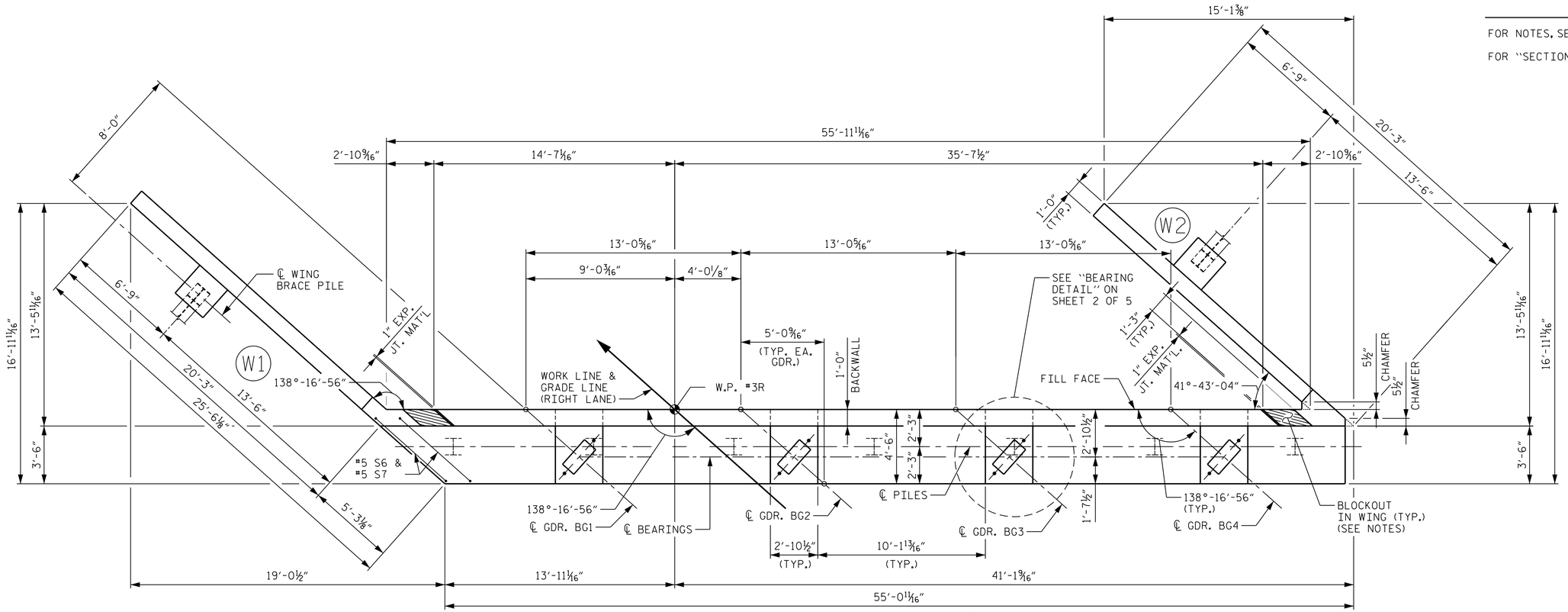
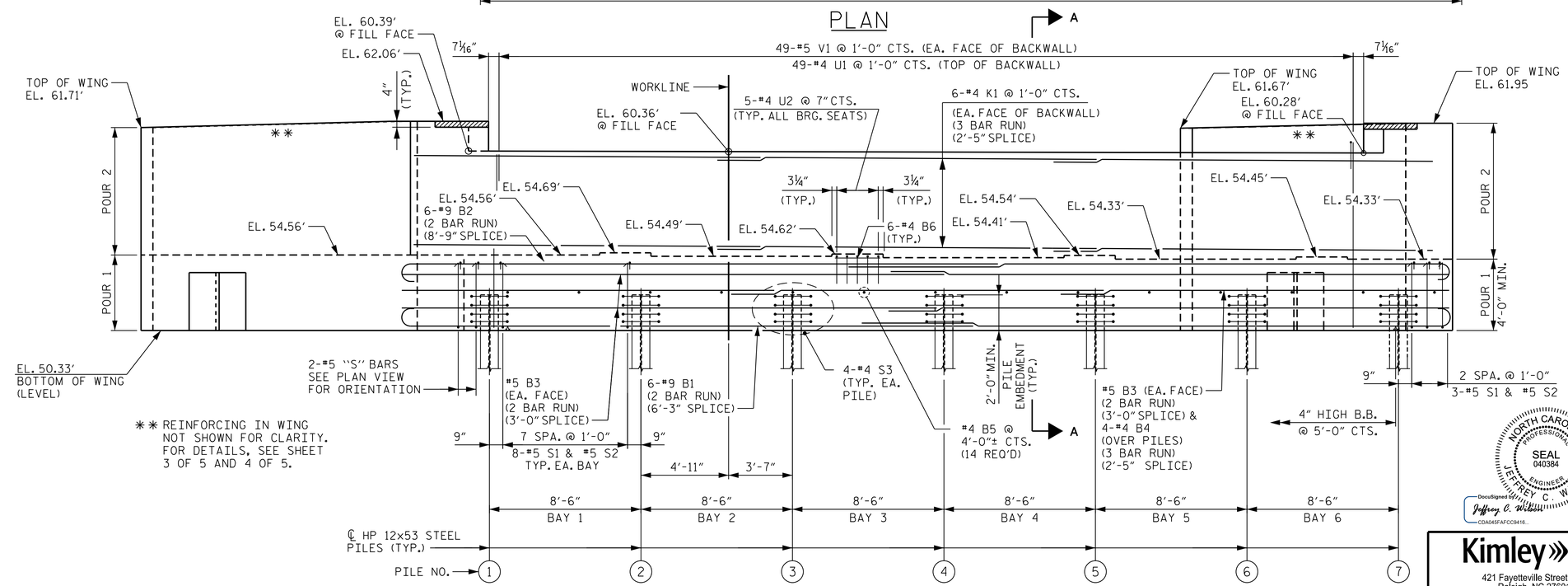
NOTES

FOR NOTES, SEE "END BENT 2" SHEET 2 OF 5.

FOR "SECTION A-A", SEE "END BENT 2" SHEET 5 OF 5.



PLAN



** REINFORCING IN WING NOT SHOWN FOR CLARITY. FOR DETAILS, SEE SHEET 3 OF 5 AND 4 OF 5.

ELEVATION

WING PILES NOT SHOWN FOR CLARITY.

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 PLAN AND ELEVATION

RIGHT LANE

REVISIONS						SHEET NO.
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2			4			41

STRUCTURE 2

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

DocuSigned by: Jeffrey C. Wilson CDA045FAFCC9416...

12/7/2018

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CHECKED BY: C. T. POOLE	DATE:	10/18
DESIGN ENGINEER OF RECORD: J. C. WILSON	DATE:	10/18

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NOTES

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

FOR PILE SPLICE DETAILS, SEE SHEET 5 OF 5.

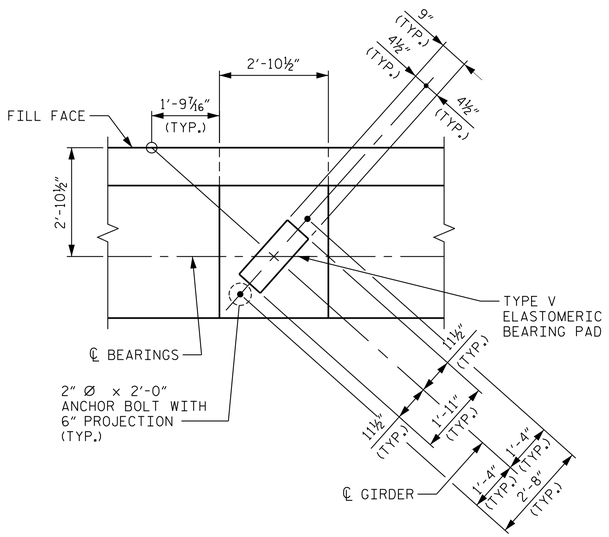
BACKWALL SHALL BE PLACED BEFORE APPLYING THE PROTECTIVE COATING.

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

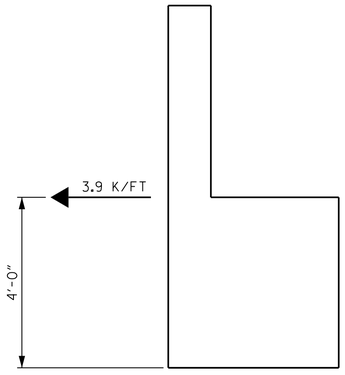
THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAILS ARE CAST IF SLIP FORMING IS USED.

FOR "24"Ø CSP CASING DETAIL" SEE "GENERAL DRAWING" SHEET 2 OF 3.



BEARING DETAIL



MSE REINFORCING STRAP LOAD DETAIL

MSE REINFORCING STRAP NOTES

MSE REINFORCING STRAPS SHALL BE ATTACHED TO THE END BENT CAP AND/OR BACKWALL. FOR DESIGN CRITERIA AND DETAILS, SEE MSE WALL SHEETS AND SPECIAL PROVISIONS.

PLANS, WORKING DRAWINGS, AND DESIGN CALCULATIONS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR REVIEW AND APPROVAL, SEE SPECIAL PROVISIONS.

PLANS SUBMITTED FOR REVIEW SHALL INCLUDE THE FOLLOWING: PLAN VIEW, ELEVATION VIEW, TYPICAL SECTIONS, AND STRAP DETAILS.

THE MSE REINFORCING STRAPS SHALL BE DESIGNED TO CARRY THE LOADS FROM THE BRIDGE SUPERSTRUCTURE AS INDICATED IN THE "MSE REINFORCING STRAP LOAD DETAIL". IN addition, THE MSE REINFORCING STRAPS SHALL ALSO BE DESIGNED TO CARRY LOADS FROM SOIL PRESSURE AS OUTLINED IN THE SPECIAL PROVISION.

THE LOADS IN THE DETAIL ABOVE ARE FACTORED LOADS.

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NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

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PROJECT NO. R-1015
CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

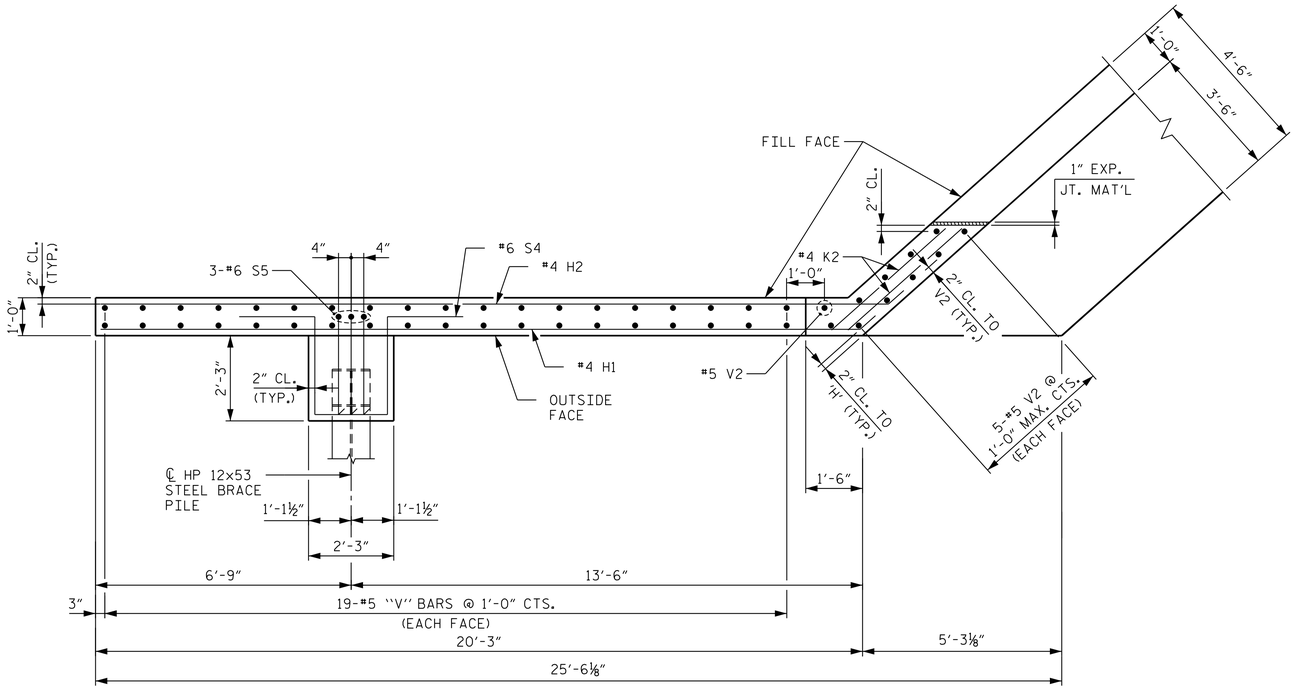
SUBSTRUCTURE

END BENT 2 DETAILS

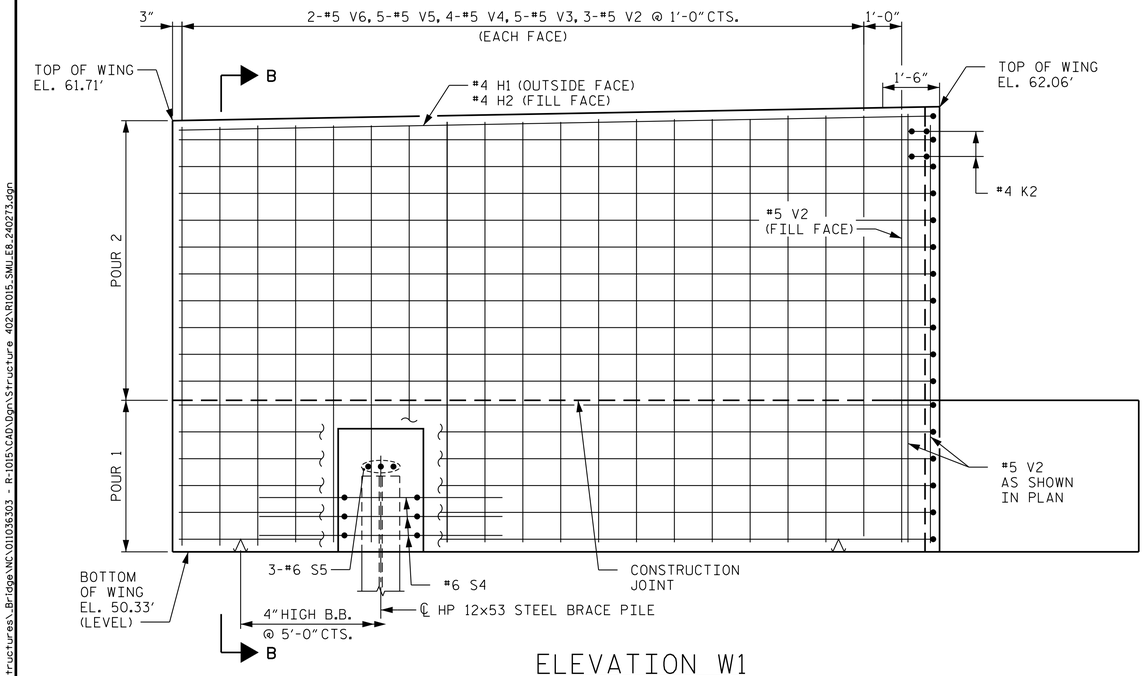
RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-34
1			3			TOTAL SHEETS
2			4			41

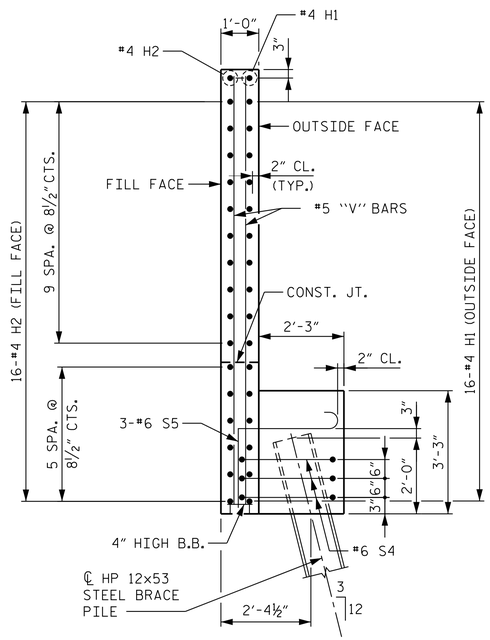
STRUCTURE 2



PLAN W1



ELEVATION W1



SECTION B-B

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CRAVEN COUNTY
STATION: 11+76.30 -RP1AB-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 SECTIONS AND DETAILS

RIGHT LANE

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STRUCTURE 2

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12/7/2018

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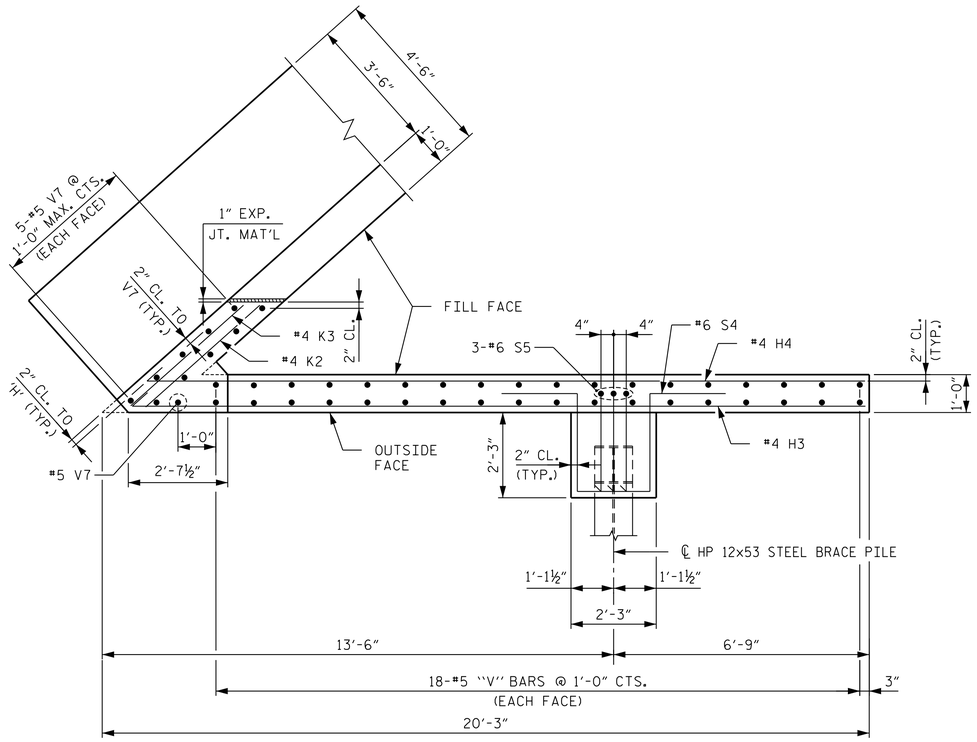
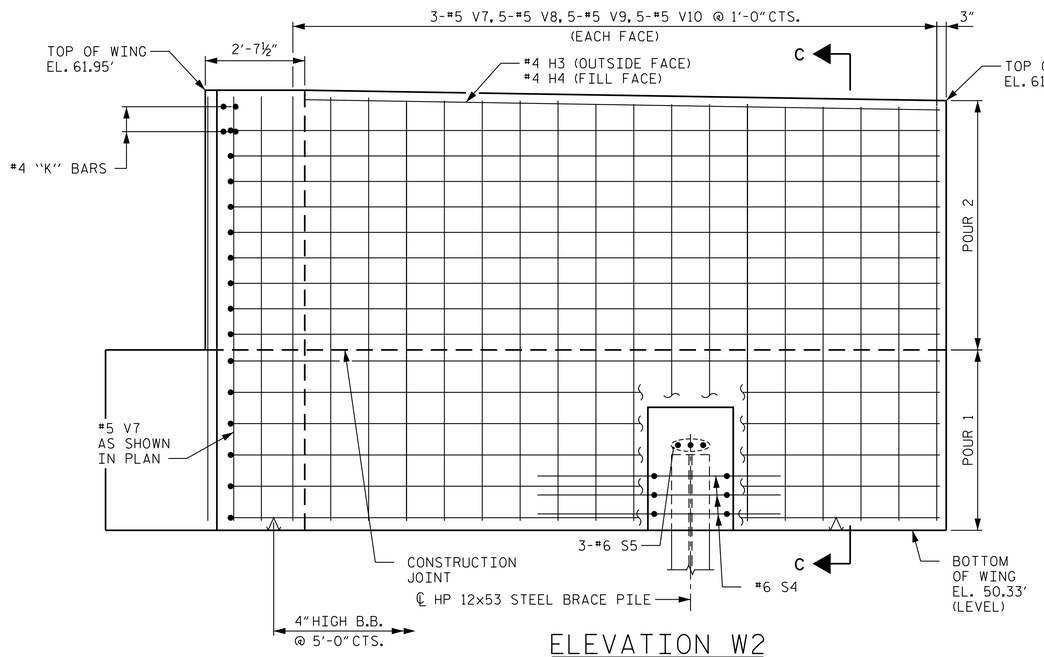
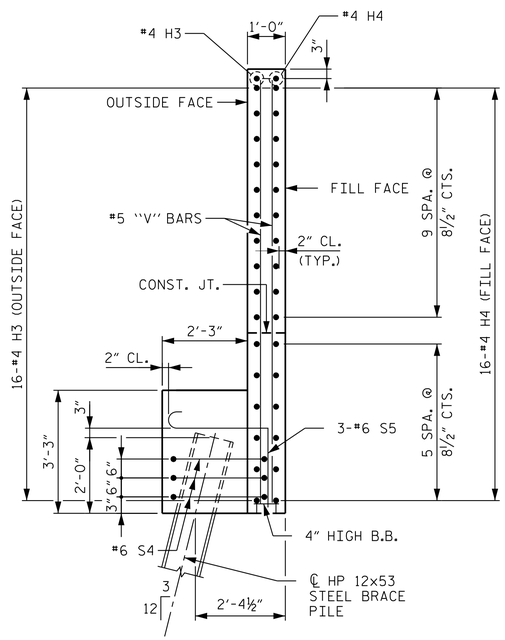


PLAN W2



ELEVATION W2



SECTION C-C

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NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON
DocuSigned by: Jeffrey C. Wilson CDA045AFCC9416...
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PROJECT NO. R-1015
CRAVEN COUNTY
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SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 SECTIONS AND DETAILS

RIGHT LANE

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STRUCTURE 2

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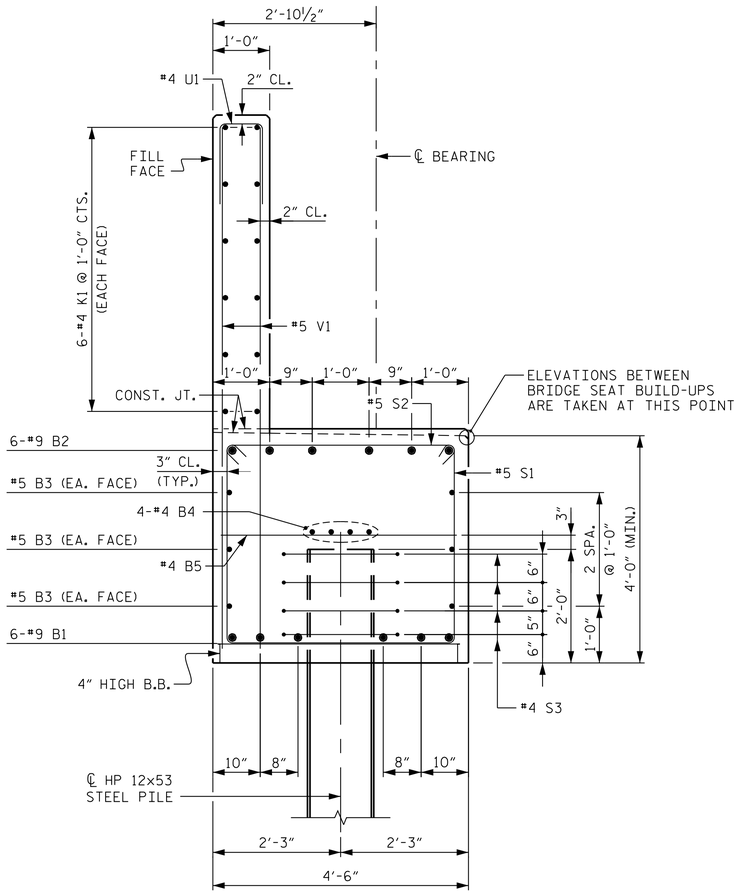
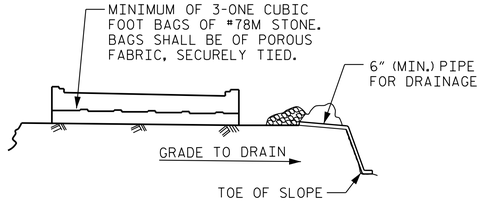


SECTION A-A

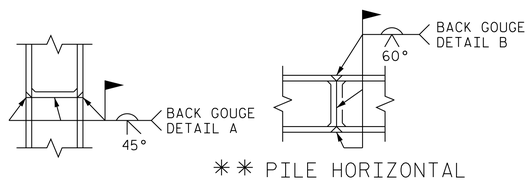


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

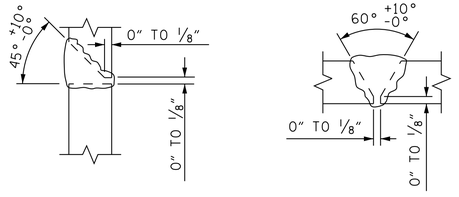
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



** PILE VERTICAL

** PILE HORIZONTAL OR VERTICAL

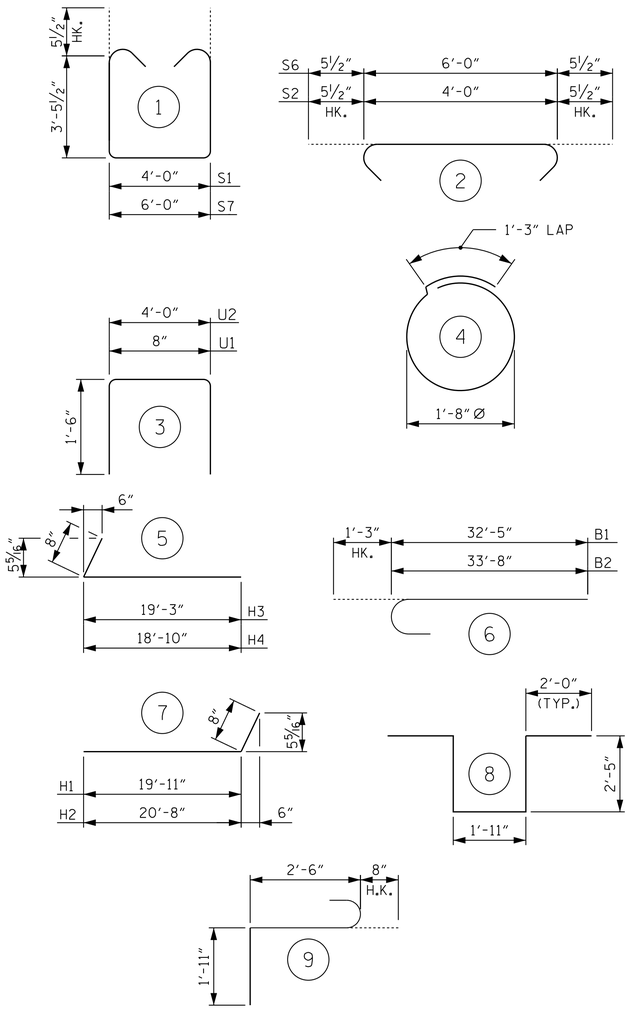


DETAIL A DETAIL B

PILE SPLICE DETAILS

** POSITION OF PILE DURING WELDING.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	12	9	6	33'-8"	1,374
B2	12	9	6	34'-11"	1,425
B3	12	5	STR	30'-9"	385
B4	12	4	STR	21'-2"	170
B5	15	4	STR	4'-0"	40
B6	24	4	STR	2'-5"	39
H1	17	4	7	20'-7"	234
H2	17	4	7	21'-4"	242
H3	17	4	5	19'-11"	226
H4	17	4	5	19'-6"	221
K1	36	4	STR	21'-2"	509
K2	6	4	STR	3'-10"	15
K3	2	4	STR	3'-8"	5
S1	51	5	1	11'-10"	629
S2	51	5	2	4'-11"	262
S3	28	4	4	6'-6"	122
S4	6	6	8	10'-9"	97
S5	6	6	9	5'-1"	46
S6	2	5	2	6'-11"	14
S7	2	5	1	13'-10"	29
U1	49	4	3	3'-8"	120
U2	20	4	3	7'-0"	94
V1	98	5	STR	9'-6"	971
V2	17	5	STR	11'-3"	199
V3	10	5	STR	11'-2"	116
V4	8	5	STR	11'-1"	92
V5	10	5	STR	11'-0"	115
V6	4	5	STR	10'-11"	46
V7	17	5	STR	11'-2"	198
V8	10	5	STR	11'-1"	116
V9	10	5	STR	11'-0"	115
V10	10	5	STR	10'-11"	114

REINFORCING STEEL	8,380 LBS.
CLASS A CONCRETE BREAKDOWN	
POUR 1 (CAP & LOWER WING)	45.6 C.Y.
POUR 2 (BACKWALL & UPPER PORTION OF WING)	24.0 C.Y.
TOTAL CLASS A CONCRETE	69.6 C.Y.
HP 12x53 STEEL PILES	
NO. 9	810 LIN. FT.
PILE REDRIVES	3 EA.
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	9 EA.

PROJECT NO. R-1015

CRAVEN COUNTY

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SHEET 5 OF 5

STATE OF NORTH CAROLINA
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RALEIGH

SUBSTRUCTURE

END BENT 2 SECTIONS AND DETAILS

RIGHT LANE

STRUCTURE 2

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NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

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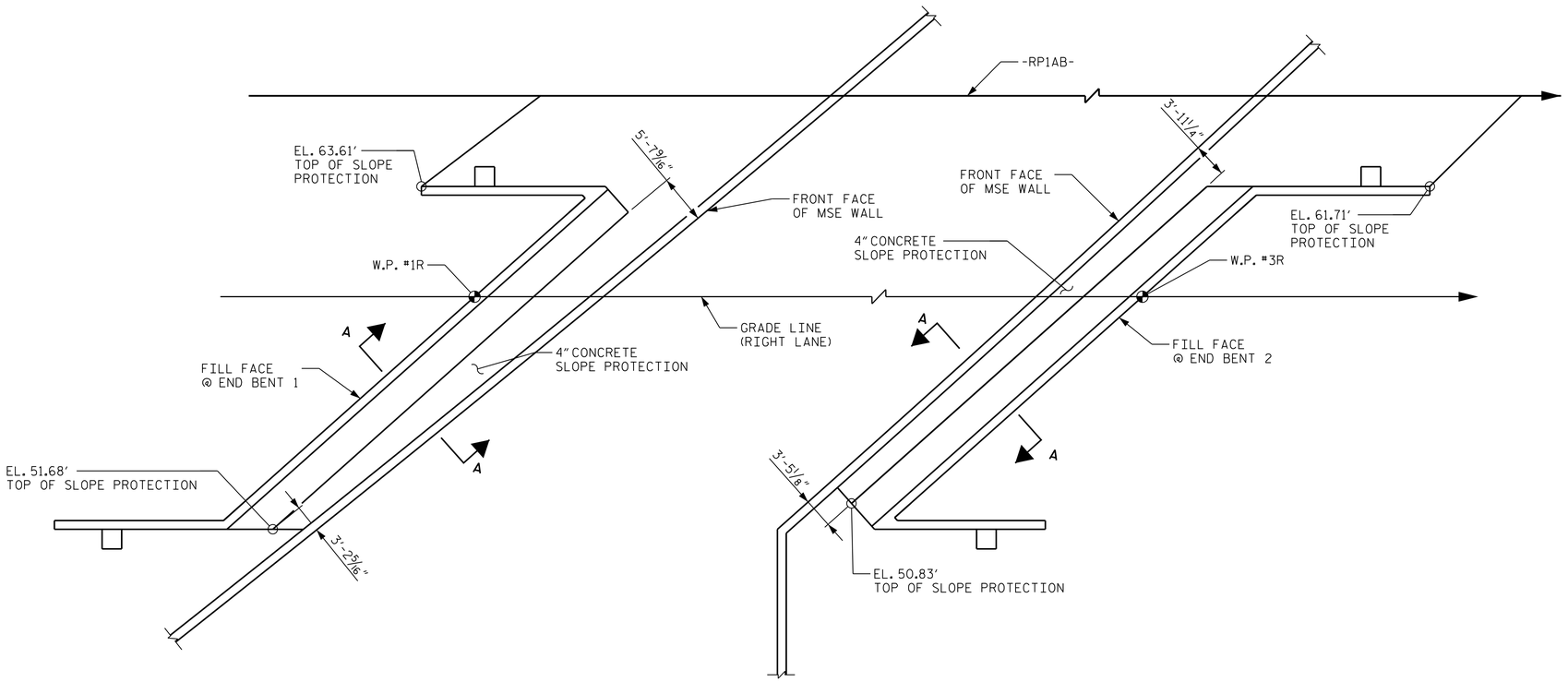
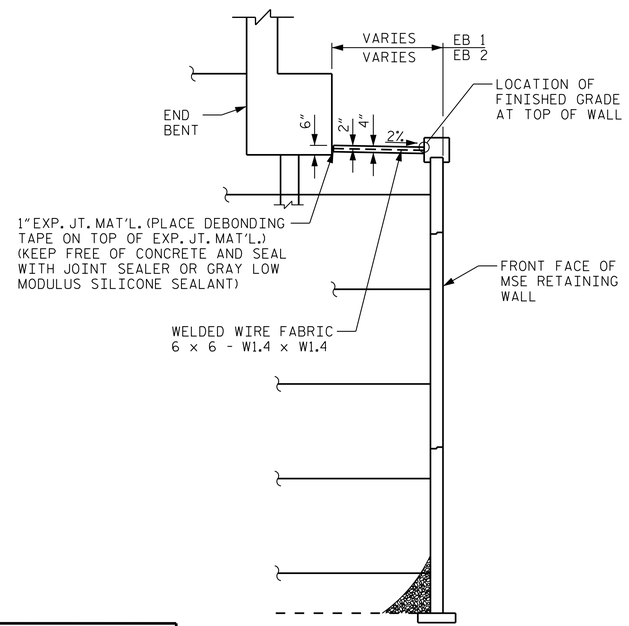
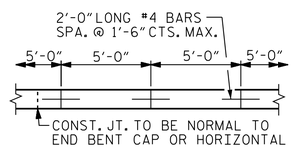


PLAN @ END BENT 1

PLAN @ END BENT 2

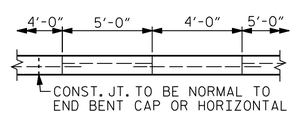


SECTION A-A



STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL



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

OPTIONAL POURING DETAIL

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 AS 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 - W1.4 X W1.4, 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.

BRIDGE @ STA. 11+76.30 -RP1AB- (RIGHT LANE)	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	71	200
END BENT 2	56	160

* QUANTITY SHOWN IS BASED ON 5' POURS.

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

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DEPARTMENT OF TRANSPORTATION
RALEIGH

SLOPE PROTECTION DETAILS

RIGHT LANE

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STRUCTURE 2

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NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, MSE WALL REINFORCEMENT AND BACKFILL MATERIAL SEE ROADWAY PLANS.

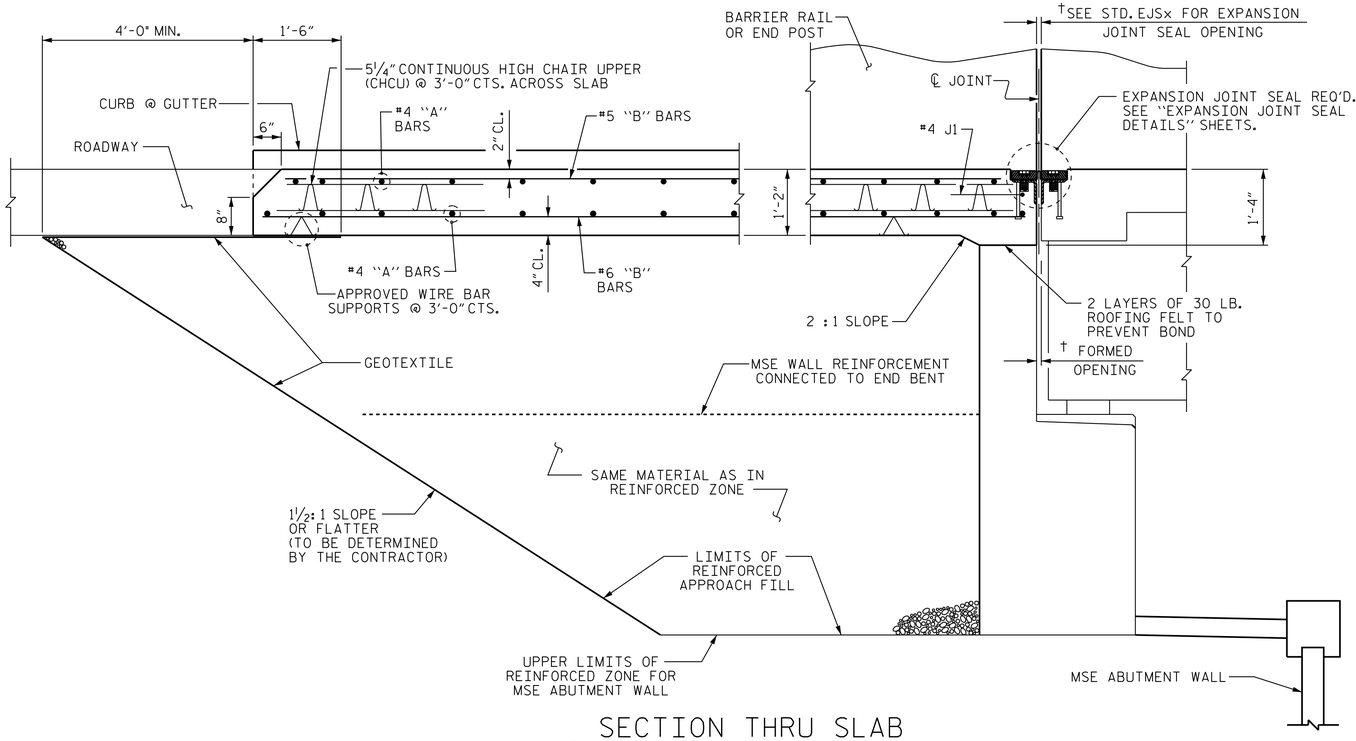
GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

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

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

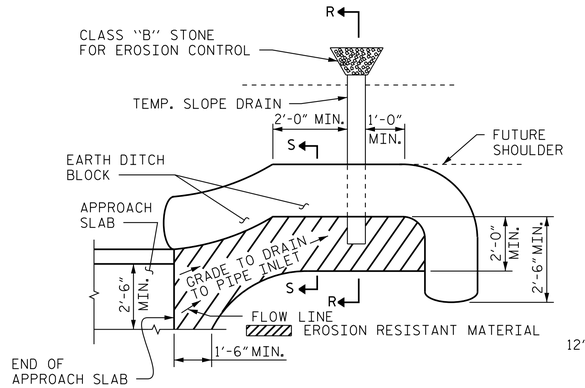
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.



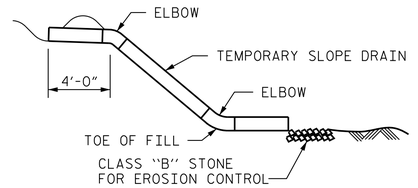
SECTION THRU SLAB

(TYPE III - REINFORCED APPROACH FILL)

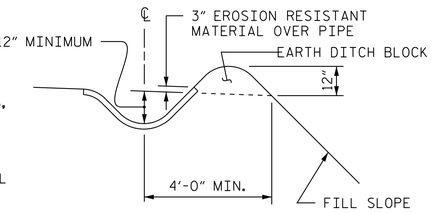


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW



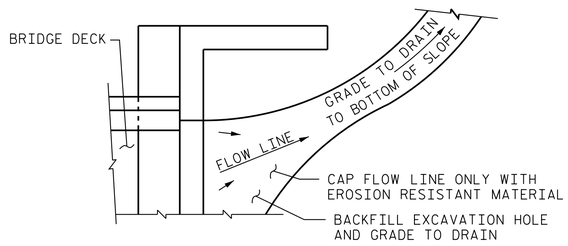
SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

DocuSigned by: Jeffrey C. Wilson 12/7/2018
CDA045FAFCC9416...

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CHECKED BY : C. T. POOLE	DATE : 10/18		
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CHECKED BY : VAP 3/95	REV. 6/13	MAA/GM	
	REV. 12/17	MAA/THC	

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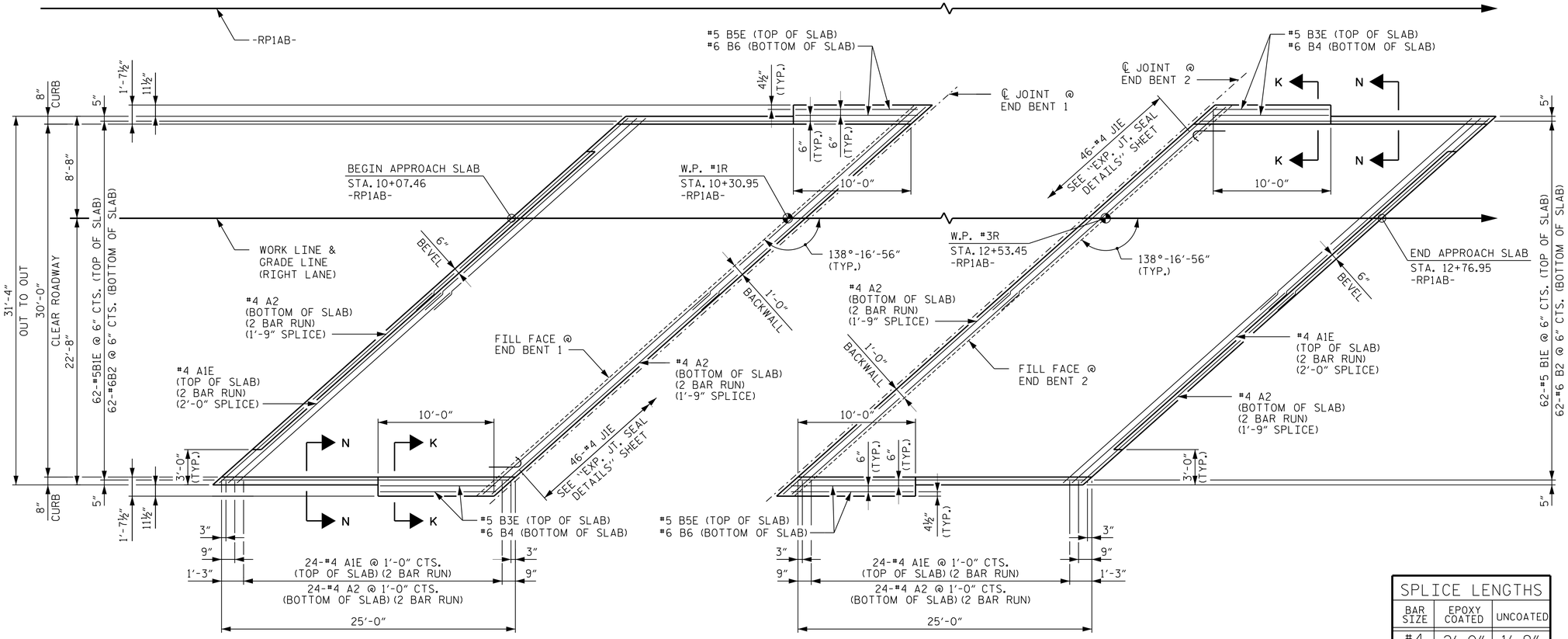
STRUCTURE 2 STD. NO. BAS2

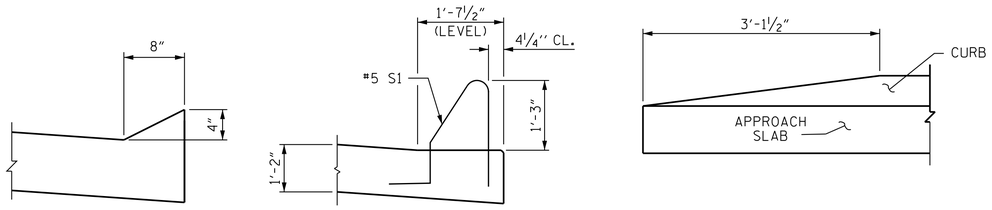
12/7/2018 K:\RDT_Structures_Bridge\NC\101036303 - R-1015\CAD\Dgn\Structure 402\RR1015_SMU_ASI_240273.dgn



PLAN @ END BENT 1

PLAN @ END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION N-N

SECTION K-K

END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"

BILL OF MATERIAL

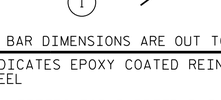
APPROACH SLAB AT EB 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	50	#4	STR	25'-9"	860
A2	52	#4	STR	25'-8"	892
B1E	62	#5	STR	23'-6"	1,520
B2	62	#6	STR	24'-6"	2,282
B3E	2	#5	STR	9'-10"	21
B4	2	#6	STR	9'-10"	30
B5E	2	#5	STR	10'-5"	22
B6	2	#6	STR	10'-5"	31
J1E	46	#4	1	1'-5"	44
REINFORCING STEEL **			LBS.		3,235
EPOXY COATED REINFORCING STEEL **			LBS.		2,467
CLASS AA CONCRETE **			C.Y.		35.0

APPROACH SLAB AT EB 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	50	#4	STR	25'-9"	860
A2	52	#4	STR	25'-8"	892
B1E	62	#5	STR	23'-6"	1,520
B2	62	#6	STR	24'-6"	2,282
B3E	2	#5	STR	9'-10"	21
B4	2	#6	STR	9'-10"	30
B5E	2	#5	STR	10'-5"	22
B6	2	#6	STR	10'-5"	31
J1E	46	#4	1	1'-5"	44
REINFORCING STEEL **			LBS.		3,235
EPOXY COATED REINFORCING STEEL **			LBS.		2,467
CLASS AA CONCRETE **			C.Y.		35.0

BAR TYPE



ALL BAR DIMENSIONS ARE OUT TO OUT

"E" INDICATES EPOXY COATED REINFORCING STEEL

** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED. SEE SHEET 3 OF 3.

NOTES

FOR APPROACH SLAB NOTES SEE BRIDGE APPROACH SLAB DETAILS FOR FLEXIBLE PAVEMENT, SHEET 1 OF 3.

THE CONCRETE BARRIER RAIL ON THE APPROACH SLAB SHALL BE INCLUDED IN THE CONCRETE BARRIER RAIL QUANTITY FOR THE SUPERSTRUCTURE, FOR QUANTITIES, SEE SHEET 3 OF 3.

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 040384 ENGINEER JEFFREY C. WILSON

DocuSigned by: Jeffrey C. Wilson CDA045FAFCC9416...

12/7/2018

Kimley»Horn

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-40
1			3			TOTAL SHEETS
2			4			41

STRUCTURE 2

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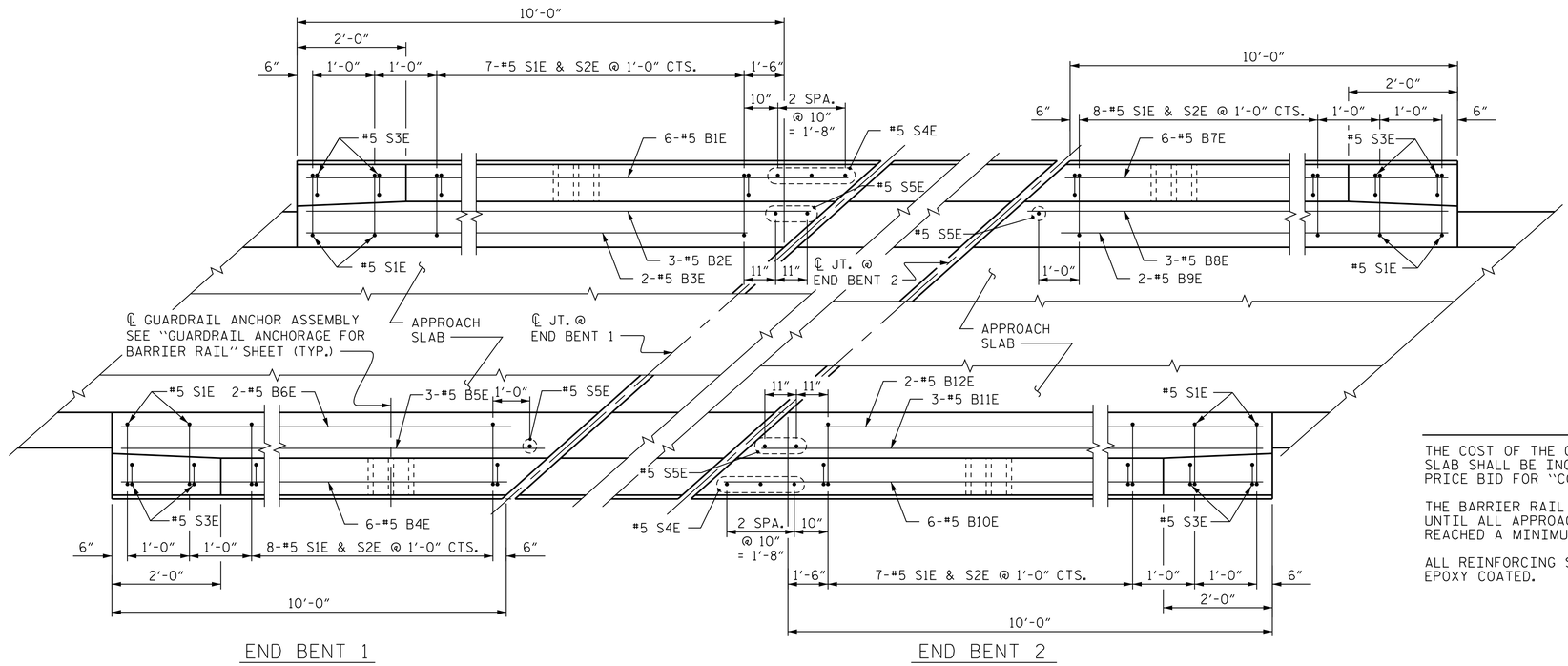
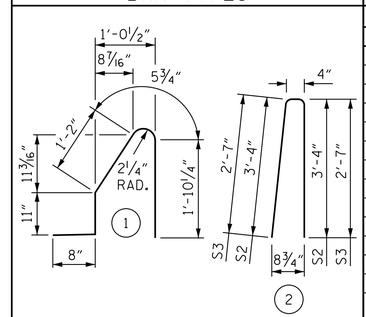
DRAWN BY: D. D. LOWERY	DATE:	10/18
CHECKED BY: C. T. POOLE	DATE:	10/18
DESIGN ENGINEER OF RECORD: J. C. WILSON	DATE:	10/18

12/7/2018 K:\ROT_Structures_Bridge\NC\011036303 - R-1015\CAD\Dgn\Structure 402\R1015_SMU_AS2_240213.dgn



PLAN OF BARRIER RAIL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL AT EB 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1E	6	#5	STR	10'-11"	68
B2E	3	#5	STR	10'-4"	32
B3E	2	#5	STR	8'-3"	17
B4E	6	#5	STR	9'-10"	62
B5E	3	#5	STR	10'-6"	33
B6E	2	#5	STR	9'-6"	20
S1E	19	#5	1	5'-1"	101
S2E	15	#5	2	7'-0"	110
S3E	4	#5	2	5'-6"	23
S4E	3	#5	STR	3'-11"	12
S5E	3	#5	STR	2'-4"	7

EPOXY COATED REINFORCING STEEL	485 LBS.
CLASS AA CONCRETE	2.9 CU. YDS.
CONCRETE BARRIER RAIL	20.0 LIN. FT.

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL AT EB 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B7E	6	#5	STR	9'-10"	62
B8E	3	#5	STR	10'-6"	33
B9E	2	#5	STR	10'-0"	21
B10E	6	#5	STR	10'-11"	68
B11E	3	#5	STR	10'-4"	32
B12E	2	#5	STR	8'-9"	18
S1E	19	#5	1	5'-1"	101
S2E	15	#5	2	7'-0"	110
S3E	4	#5	2	5'-6"	23
S4E	3	#5	STR	3'-11"	12
S5E	3	#5	STR	2'-4"	7

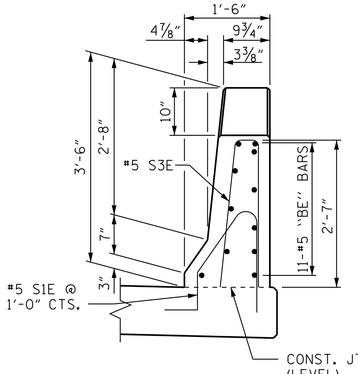
EPOXY COATED REINFORCING STEEL	487 LBS.
CLASS AA CONCRETE	2.9 CU. YDS.
CONCRETE BARRIER RAIL	20.0 LIN. FT.

NOTES

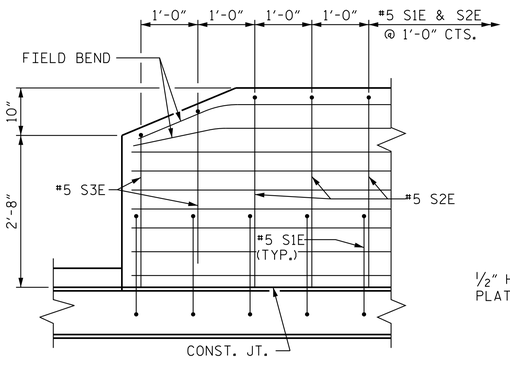
THE COST OF THE CONCRETE BARRIER RAIL ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LINEAR FOOT CONTRACT PRICE BID FOR "CONCRETE BARRIER RAIL".

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

ALL REINFORCING STEEL IN CONCRETE BARRIER RAIL SHALL BE EPOXY COATED.

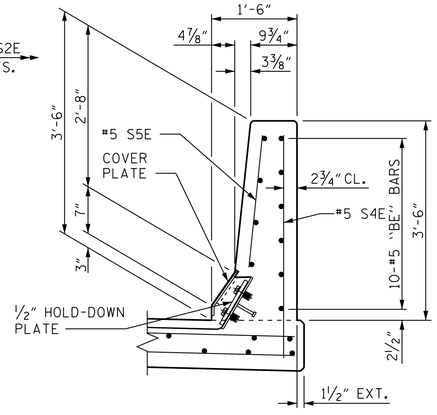


END VIEW

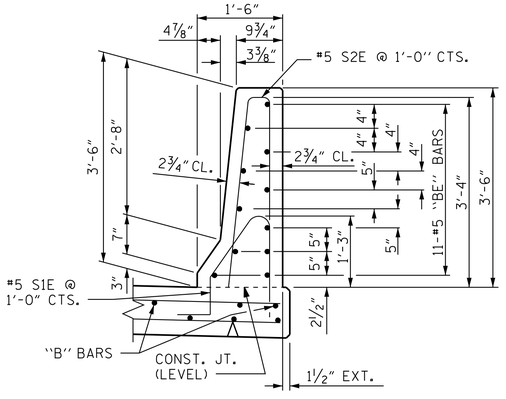


SIDE VIEW

END OF RAIL DETAILS



END VIEW
(AT EXP. JT.)



SECTION THRU RAIL

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: 11+76.30 -RP1AB-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-41
1			3			TOTAL SHEETS
2			4			41

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ASSEMBLED BY :	D. D. LOWERY	DATE :	10/18
CHECKED BY :	C. T. POOLE	DATE :	10/18
DRAWN BY :	FCJ 11/88	REV. 7/12	MAA/GM
CHECKED BY :	ARB 11/88	REV. 6/13	MAA/GM
		REV. 12/17	MAA/THC

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STRUCTURE 2 STD. NO. BAS4

F.A. PROJECT NO. NHF-70(49)

+50 137+00 +50 138+00 +50 139+00 +50 140+00 +50 141+00

SPAN A SPAN B SPAN C SPAN D

FILL FACE END BENT 1
POC STA. 136+62.47 -L-
23.00' LT.
GP EL. 61.25

FILL FACE END BENT 2
POC STA. 140+25.23 -L-
23.00' LT.
GP EL. 57.72

1'-6" MIN. BERM NORMAL TO CAP

4" CONCRETE SLOPE PROTECTION (TYP.)

4'-10" MIN. BERM NORMAL TO CAP

EXP. EXP. FIX. FIX. EXP. EXP.

FILL 1'-0" (TYP.)

1½:1 SLOPE NORMAL TO END BENT

HP 12x53 STEEL PILES (TYP. @ END BENTS)

℄ -RR EY1-

TOP OF FOOTING EL. 18.5±

27'-5" MVC (24'-11" MIN.)

℄ PROPOSED DITCH

TOP OF FOOTING EL. 15.2±

TOP OF FOOTING EL. 16.7±

TOP OF FOOTING EL. 15.2±

1½:1 SLOPE NORMAL TO END BENT

FILL

APPROXIMATE EXISTING GROUND LINE

EL. 22.0± EL. 21.0± EL. 21.0± EL. 18.0± EL. 19.0± EL. 22.0± EL. 23.0± EL. 25.0± EL. 25.0± EL. 23.0± EL. 21.0± EL. 16.0± EL. 21.0± EL. 22.0± EL. 23.0± EL. 23.0± EL. 22.0± EL. 21.0±

END BENT 1 BENT 1 BENT 2 BENT 3 END BENT 2

FOOTING W/HP 12x53 STEEL PILES (TYP.)

SECTION ALONG CONTROL LINE LEFT

(END BENTS AND BENTS ON SECTION AT RIGHT ANGLES TO END BENTS AND BENTS)

NOTES:

FOR GENERAL NOTES, SEE SHEET 4 OF 4.

MVC = MIN. VERTICAL CLEARANCE

MHC = MIN. HORIZONTAL CLEARANCE

PI STA. = 134+19.00 -L-
ELEV = 74.39
V.C. = 2,060'

(+)2.4628% (-)2.4001%

GRADE DATA -L-

CURVE DATA -L-

PI STA. = 137+14.92
△ = 13°30'48"(RT)
D = 0°59'53"
L = 1,354.03'
T = 680.17'
R = 5,741.00'
SE = 0.04

4" CONC. SLOPE PROTECTION

2¼:1 1½:1 1'-6" BERM

℄ SURVEY -RR EY1- N 30°-22'-18" W TO BEAUFORT

EXISTING RR DITCH

40'-3" MHC TO CAP

PROPOSED DITCH

FLOW

WORK POINT 2L
℄ BENT 1
POC STA. 137+39.19 -L-
23.00' LT.

NCRR TO NEW BERN

2:1 2:1 23'-4" 17'-2" 12'-0" (PROPOSED DITCH)

4" CONC. SLOPE PROTECTION

2¼:1 4'-10" BERM 1½:1

WORK POINT 5L
FILL FACE END BENT 2
POC STA. 140+25.23 -L-
23.00' LT.

END APPROACH SLAB
POC STA. 140+48.52 -L-
23.00' LT.

TOP OF RAIL PROFILE

PI STA. = 12+54.00 -RR EY1-
ELEV = 24.80
V.C. = 140'

(-)0.290% (+)0.160%

GRADE DATA -RR EY1-

NOTE: TOP OF RAIL PROFILE WAS APPROXIMATED FROM AVAILABLE SURVEY INFORMATION

BEGIN APPROACH SLAB
POC STA. 136+39.07 -L-
23.00' LT.

23'-0" RADIAL

5'-0" BERM

41°-50'-48" TAN. TO CURVE

41°-04'-52" TAN. TO CURVE

40°-26'-02" TAN. TO CURVE

39°-46'-41" TAN. TO CURVE

38°-57'-19" TAN. TO CURVE

38°-13'-34" TAN. TO CURVE

9'-3" BERM

CONTROL LINE LT. & GRADE POINT LINE

TO SR 1756 (LAKE RD.) -L-

TO US 70

WORK POINT 1L
FILL FACE END BENT 1
POC STA. 136+62.47 -L-
23.00' LT.

POC STA. 138+04.03 -L-, 23.00' LT.=
POT STA. 15+30.83 -RR EY1-

POINT OF MVC
POC STA. 138+22.29 -L-, 19.24' LT.
= STA. 15+47.23 -RR EY1-, 9.00' LT.
MVC = 27'-5"

1990' TO MTLE POST EC-78

38'-9⁹⁄₁₆"

WORK POINT 3L
℄ BENT 2
POC STA. 138+69.74 -L-
23.00' LT.

WORK POINT 4L
℄ BENT 3
POC STA. 139+52.18 -L-
23.00' LT.

77'-0¼" SPAN A 131'-0⅞" SPAN B 82'-9¼" SPAN C 73'-4⅜" SPAN D

364'-2⁹⁄₁₆" TOTAL LENGTH OF BRIDGE
(FILL FACE TO FILL FACE OF END BENTS)

ALONG CONTROL LINE LT.

IDENTIFICATION STATION
POC STA. 138+31.09 -L- =
POT STA. 15+66.39 -RR EY1-

PLAN

NOTES: PILES NOT SHOWN FOR CLARITY.
ALL END BENTS AND BENTS ARE PARALLEL.

DocuSigned by: James P. Gregg 0B0FE024AB9C404...

NORTH CAROLINA PROFESSIONAL SEAL 046632 ENGINEER JAMES P. GREGG

11/20/2018

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DRAWN BY M. WRIGHT DATE 3/18
CHECKED BY B. NEUPANE DATE 9/18
DESIGN ENGINEER OF RECORD J. GREGG DATE 10/18

DWG. NO. 1

PROJECT NO. R-1015

CRAVEN **COUNTY**

STATION: POC STA. 138+31.09 -L- = POT STA 15+66.39 -RR EY1-

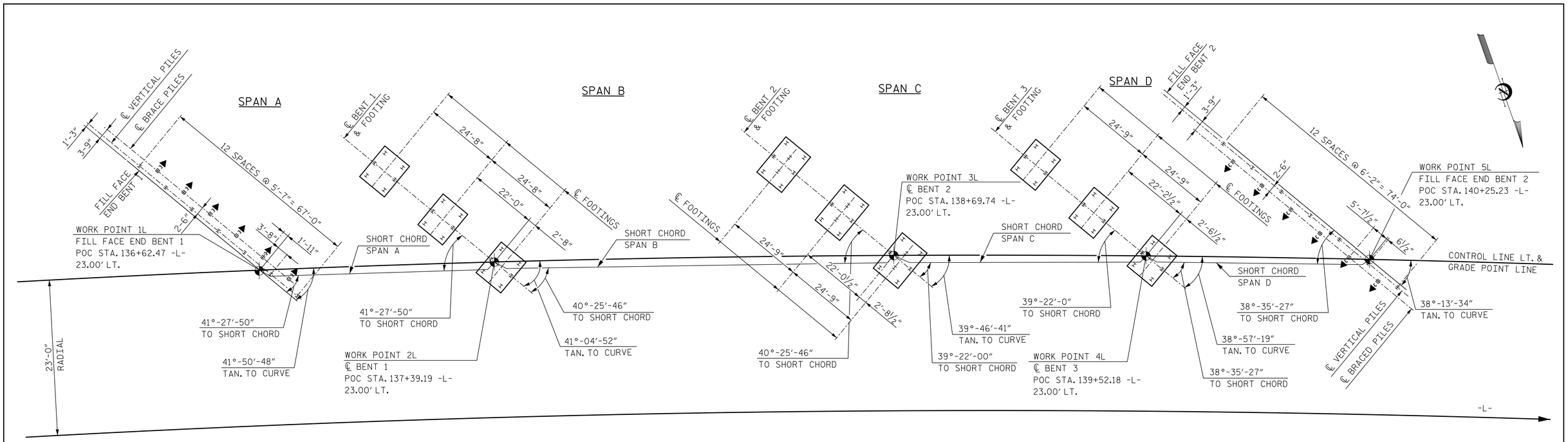
BRIDGE NO. 274

SHEET 1 OF 4 NCRR MILE POST EC-78.38

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE OVER NCRR
ON US 70 (HAVELOCK BYPASS)
BETWEEN US 70 AND SR 1756
LEFT LANE

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S03-1
1			3			TOTAL SHEETS
2			4			46



FOUNDATION NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE. DRIVE PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE.

PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 105 TONS PER PILE. DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 140 TONS PER PILE.

PILES AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 125 TONS PER PILE. DRIVE PILES AT BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 170 TONS PER PILE.

PILES AT BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILE. DRIVE PILES AT BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 155 TONS PER PILE.

PILES AT BENT NO. 3 ARE DESIGNED FOR A FACTORED RESISTANCE OF 105 TONS PER PILE. DRIVE PILES AT BENT NO. 3 TO A REQUIRED DRIVING RESISTANCE OF 140 TONS PER PILE.

TESTING THE FIRST PRODUCTION PILE PER STRUCTURE WITH THE PDA DURING DRIVING, RESTRIKING, OR REDRIVING IS REQUIRED AT THE FIRST END BENT AND THE FIRST INTERIOR BENT LOCATIONS. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

NOTE THAT AT BENTS 1 - 3 THE BOTTOM OF FOOTINGS ARE BELOW THE GROUNDWATER TABLE AND DEWATERING IS ANTICIPATED.

NOTES:

ALL DIMENSIONS ARE PARALLEL OR NORMAL TO BENT CONTROL LINES AND FILL FACES.

◄⊏ INDICATES PILE BATTER IN DIRECTION SHOWN.

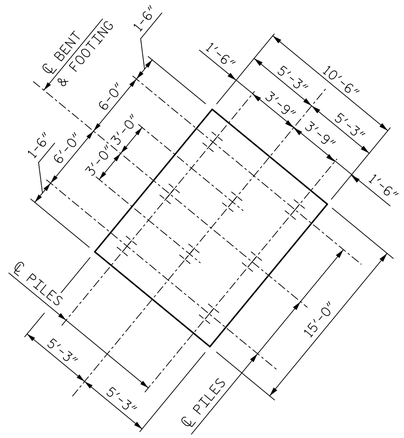
BRACE PILES AT END BENTS ARE TO BE BATTERED AT 3:12.

ALL PILES AT END BENT 1 AND END BENT 2 ARE HP 12x53 STEEL PILES.

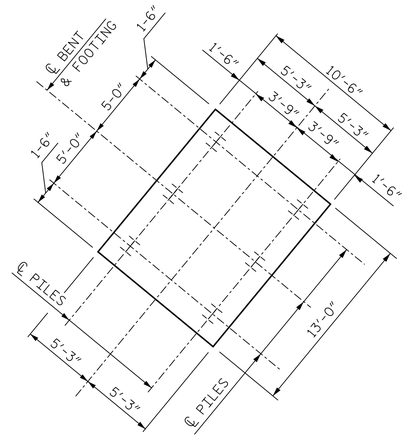
ALL PILES AT BENT 1, 2, AND 3 ARE HP 12X53 STEEL PILES.

FOR FOUNDATION ELEVATIONS AND DETAILS, SEE BENT AND END BENT SHEETS.

ALL PILE DIMENSIONS ARE TO CENTERS OF PILES AT BOTTOM OF END BENTS.



TYPICAL FOOTING LAYOUT
BENT 2



TYPICAL FOOTING LAYOUT
BENT 1 AND 3

DocuSigned by: James P. Gregg
B0FE024AB9C404...

NORTH CAROLINA PROFESSIONAL SEAL 046632 ENGINEER JAMES P. GREGG

11/20/2018

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DRAWN BY A. SMITH DATE 7/18
CHECKED BY B. NEUPANE DATE 9/18
DESIGN ENGINEER OF RECORD J. GREGG DATE 10/18

DWG. NO. 2

PROJECT NO. R-1015
CRAVEN COUNTY
STATION: POC STA. 138+31.09 -L-

SHEET 2 OF 4

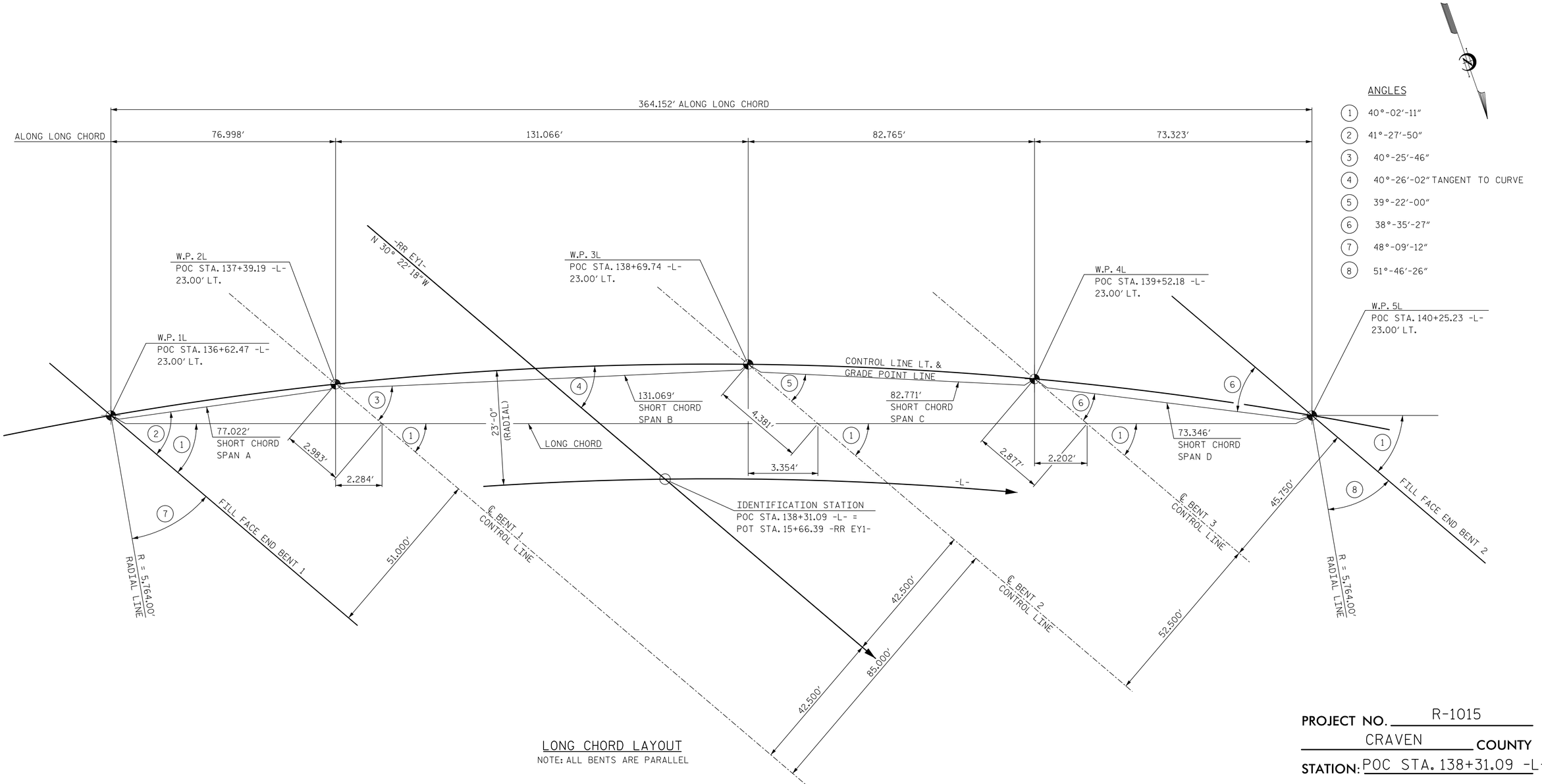
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOUNDATION LAYOUT

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S03-2
1			3			TOTAL SHEETS
2			4			46



ANGLES

1. 40°-02′-11″
2. 41°-27′-50″
3. 40°-25′-46″
4. 40°-26′-02″ TANGENT TO CURVE
5. 39°-22′-00″
6. 38°-35′-27″
7. 48°-09′-12″
8. 51°-46′-26″

LONG CHORD LAYOUT

NOTE: ALL BENTS ARE PARALLEL

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: POC STA. 138+31.09 -L-

SHEET 3 OF 4

DocuSigned by: James P. Gregg

NORTH CAROLINA PROFESSIONAL SEAL 046632 ENGINEER JAMES P. GREGG

11/20/2018

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DRAWN BY A. SMITH DATE 7/18
CHECKED BY B. NEUPANE DATE 9/18
DESIGN ENGINEER OF RECORD J. GREGG DATE 10/18

DWG. NO. 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

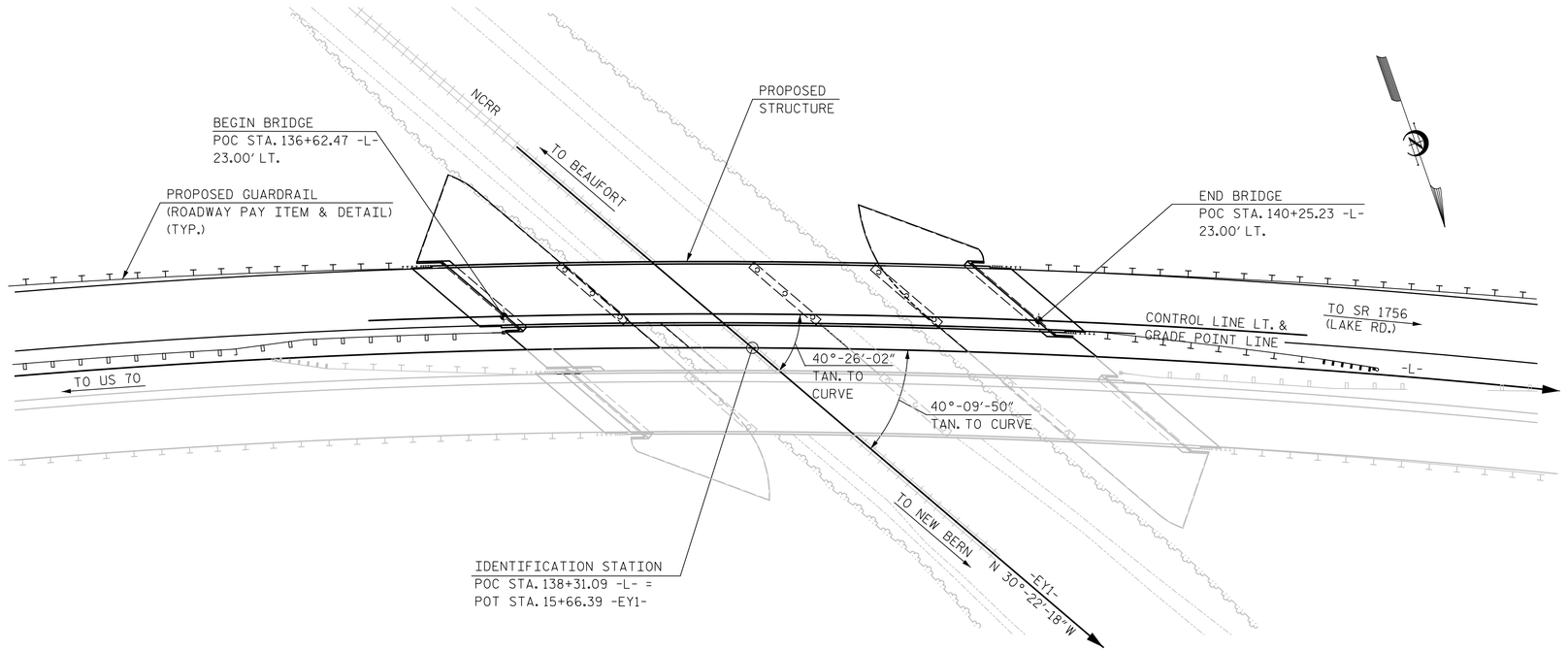
GENERAL DRAWING

LONG CHORD LAYOUT

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S03-3
1			3			TOTAL SHEETS
2			4			46

BM - "BM7" -L- STA 140+63.43, 191.75' LT., RR SPIKE IN TREE. EL 22.75



LOCATION SKETCH

NOTE: FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

GENERAL NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD 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 MODIFIED 74" PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

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

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE RAILROAD TRACK TOP OF RAIL ELEVATIONS SHOWN ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE TOP OF RAIL ELEVATIONS AND REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

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

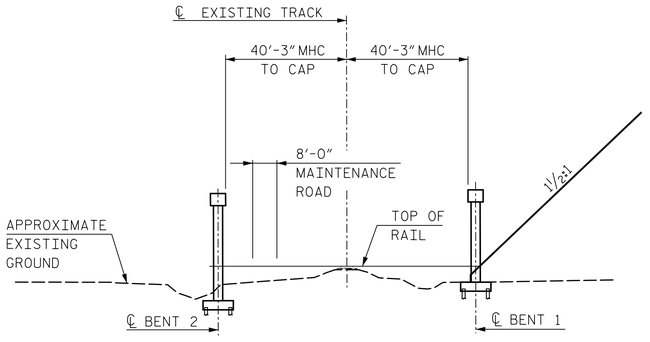
NOTE:
SAMPLE BAR REPLACEMENT LENGTHS BASED ON 30" (SAMPLE LENGTH) PLUS TWO SPLICE LENGTHS AND FY = 60KSI.

TOTAL BILL OF MATERIAL

	FOUNDATION EXCAVATION FOR BENT AT STATION 138+31.09 -L- (LEFT LANE)	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLAB AT STATION 138+31.09 -L- (LEFT LANE)	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL
	LUMP SUM	EA.	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.
SUPERSTRUCTURE	———	———	15,549	15,031	———	LUMP SUM	———	———
END BENT 1	———	———	———	———	86.3	———	11,392	———
BENT 1	LUMP SUM	———	———	———	150.7	———	29,787	2,953
BENT 2	LUMP SUM	———	———	———	164.0	———	29,749	3,153
BENT 3	LUMP SUM	———	———	———	153.4	———	29,088	3,069
END BENT 2	———	———	———	———	88.9	———	11,968	———
TOTAL	LUMP SUM	2	15,549	15,031	643.3	LUMP SUM	111,984	9,175

TOTAL BILL OF MATERIAL

	MODIFIED 74" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	HP 12X53 STEEL PILES		PILE REDRIVES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS
	NO.	L.F.	EA.	NO.	L.F.	EA.	L.F.	SQ. YD.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE	16	1413.54	———	—	———	———	763.3	———	LUMP SUM	LUMP SUM
END BENT 1	—	———	14	14	1,470	6	———	1,616.3	———	———
BENT 1	—	———	18	18	1,350	9	———	———	———	———
BENT 2	—	———	24	24	1,680	12	———	———	———	———
BENT 3	—	———	18	18	1,170	9	———	———	———	———
END BENT 2	—	———	13	13	1,300	6	———	1,196.1	———	———
TOTAL	16	1413.54	87	87	6,970	42	763.3	2,812.4	LUMP SUM	LUMP SUM



SECTION THRU RAILROAD

(LOOKING IN DIRECTION OF INCREASING STATIONS ON RAILROAD)
(SPAN LENGTHS BASED ON THIS SECTION)

MHC = MINIMUM HORIZONTAL CLEARANCE

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: POC STA. 138+31.09 -L-

SHEET 4 OF 4

DocuSigned by: P. 6-1-18

NORTH CAROLINA PROFESSIONAL SEAL 046632 ENGINEER JAMES P. GREGG 12/25/2019

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NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY A. SMITH DATE 7/18
CHECKED BY B. NEUPANE DATE 9/18
DESIGN ENGINEER OF RECORD J. GREGG DATE 10/18

DWG. NO. 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWINGS
LOCATION SKETCH, GENERAL NOTES, AND TOTAL BILL OF MATERIALS
LEFT LANE

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S03-4
1			3			TOTAL SHEETS
2			4			46

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

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE											SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR						MOMENT						
							LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	1	1.19	--	1.75	0.83	1.48	C	ER	40.2	1.27	1.19	B	I	25.3	0.80	0.76	1.22	B	I	64.4	1
		HL-93 (OPERATING)	N/A		1.59	--	1.35	0.83	1.91	C	ER	40.2	1.27	1.59	B	I	25.3	N/A	--	--	--	--	--	1
		HS-20 (INVENTORY)	36.000	2	1.66	59.8	1.75	0.83	1.98	C	ER	40.2	1.27	1.74	B	I	25.3	0.80	0.79	1.66	C	I	40.2	1
		HS-20 (OPERATING)	36.000		2.30	82.8	1.35	0.83	2.56	C	ER	40.2	1.27	2.30	B	I	25.3	N/A	--	--	--	--	--	1
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.82	51.6	1.40	0.83	5.71	C	ER	40.2	1.27	5.46	A	I	13.8	0.80	0.79	3.82	C	I	40.2	1
		SNGARBS2	20.000		2.81	56.2	1.40	0.83	4.20	C	ER	40.2	1.27	3.88	A	I	13.8	0.80	0.79	2.81	C	I	40.2	1
		SNAGRIS2	22.000		2.65	58.3	1.40	0.83	3.95	C	ER	40.2	1.27	3.61	A	I	13.8	0.80	0.79	2.65	C	I	40.2	1
		SNCOTTS3	27.250		1.90	51.8	1.40	0.83	2.84	C	ER	40.2	1.27	2.82	A	I	13.8	0.80	0.79	1.90	C	I	40.2	1
		SNAGGRS4	34.925		1.57	54.8	1.40	0.83	2.35	C	ER	40.2	1.27	2.18	B	I	25.3	0.80	0.79	1.57	C	I	40.2	1
		SNS5A	35.550		1.54	54.7	1.40	0.83	2.30	C	ER	40.2	1.27	2.08	B	I	25.3	0.80	0.79	1.54	C	I	40.2	1
		SNS6A	39.950		1.41	56.3	1.40	0.83	2.10	C	ER	40.2	1.27	1.87	B	I	25.3	0.80	0.79	1.41	C	I	40.2	1
		SNS7B	42.000		1.34	56.3	1.40	0.83	2.00	C	ER	40.2	1.27	1.80	B	I	25.3	0.80	0.79	1.34	C	I	40.2	1
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.72	56.8	1.40	0.83	2.56	C	ER	40.2	1.27	2.34	B	I	25.3	0.80	0.79	1.72	C	I	40.2	1
		TNT4A	33.075		1.72	56.9	1.40	0.83	2.57	C	ER	40.2	1.27	2.31	B	I	25.3	0.80	0.79	1.72	C	I	40.2	1
		TNT6A	41.600		1.40	58.2	1.40	0.83	2.09	C	ER	40.2	1.27	1.98	B	I	25.3	0.80	0.79	1.40	C	I	40.2	1
		TNT7A	42.000		1.41	59.2	1.40	0.83	2.10	C	ER	40.2	1.27	1.86	B	I	25.3	0.80	0.79	1.41	C	I	40.2	1
		TNT7B	42.000		1.45	60.9	1.40	0.83	2.16	C	ER	40.2	1.27	1.78	B	I	25.3	0.80	0.79	1.45	C	I	40.2	1
		TNAGRIT4	43.000		1.38	59.3	1.40	0.83	2.06	C	ER	40.2	1.27	1.79	B	I	25.3	0.80	0.79	1.38	C	I	40.2	1
		TNAGT5A	45.000		1.31	59.0	1.40	0.83	1.95	C	ER	40.2	1.27	1.74	B	I	25.3	0.80	0.79	1.31	C	I	40.2	1
		TNAGT5B	45.000	3	1.29	58.1	1.40	0.83	1.93	C	ER	40.2	1.27	1.80	B	I	25.3	0.80	0.79	1.29	C	I	40.2	1

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

1. CONTROLLING SHEAR OCCURS AT PROVIDED DISTANCE FROM EITHER END.
2.
3.
4.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

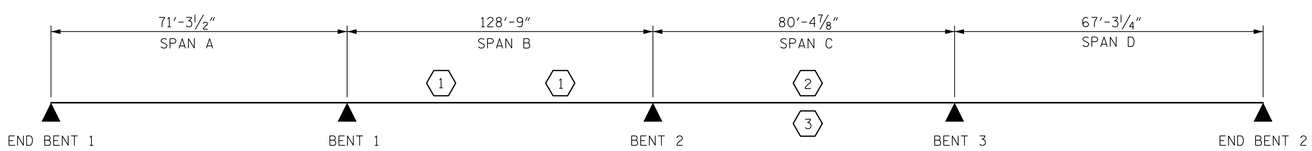
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

NOTE: SPAN LENGTHS SHOWN ARE BEARING TO BEARING LENGTHS.

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: POC STA. 138+31.09 -L-

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NORTH CAROLINA PROFESSIONAL SEAL 046632 ENGINEER JAMES P. GREGG

11/20/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S03-5
1			3			TOTAL SHEETS
2			4			46

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DRAWN BY A. SMITH DATE 7/18
CHECKED BY E. JOWZA DATE 9/18
DESIGN ENGINEER OF RECORD J. GREGG DATE 10/18

DWG. NO. 5

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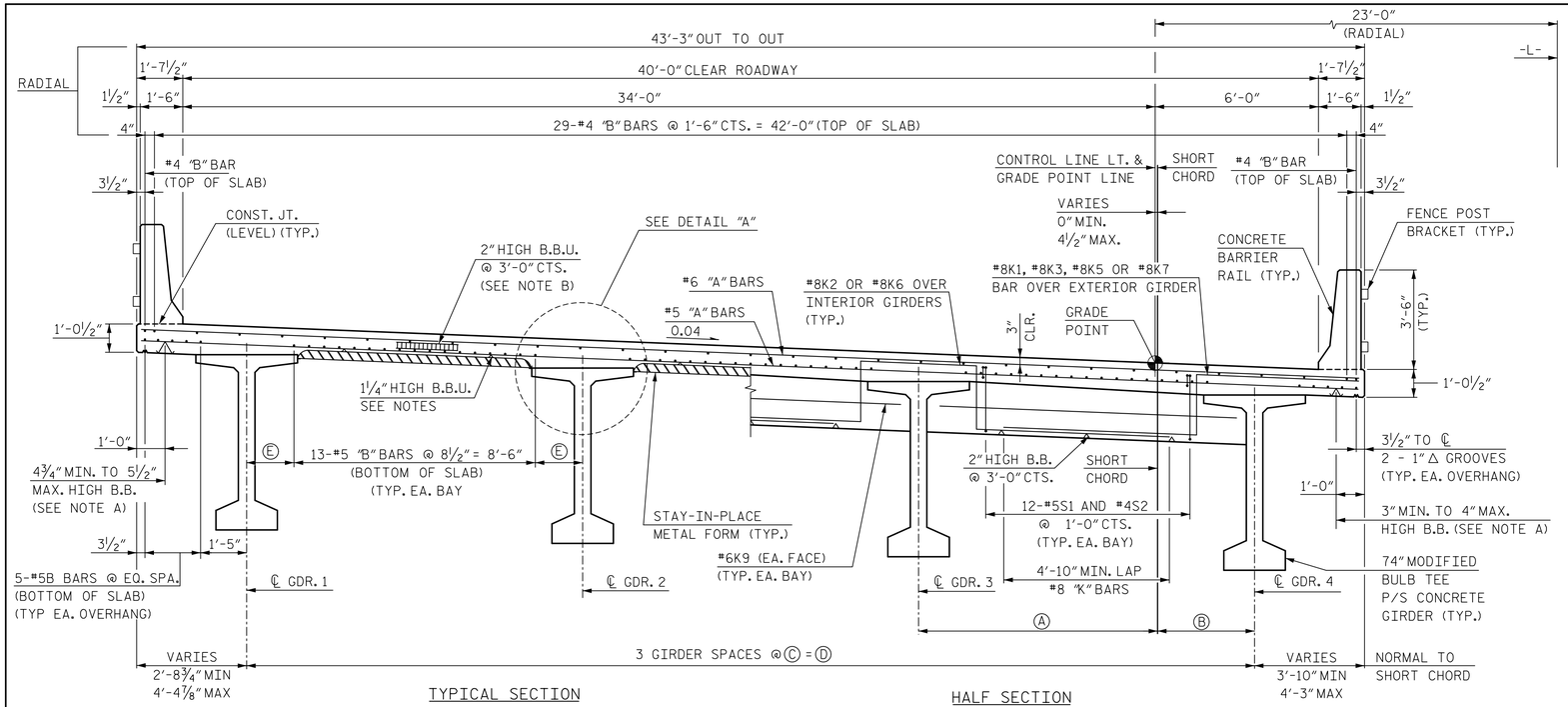
ASSEMBLED BY : A. SMITH	DATE : 7/18		
CHECKED BY : E. JOWZA	DATE : 9/18		
DRAWN BY : MAA 1/08	REV. 11/12/08RR	MAA/GM	
CHECKED BY : GM/DI 2/08	REV. 10/1/11	MAA/GM	
	REV. 12/17	MAA/THC	

STD. NO. LRFR2



TYPICAL SECTION

HALF SECTION AT END DIAPHRAGM

TYPICAL SECTION LEFT LANE BRIDGE

FOR SECTION THRU END BENT DIAPHRAGM, SEE SECTION A-A, SHEET 2 OF 2.

DIMENSION TABLE					
	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ
SPAN A	8′-7″	3′-5″	12′-0″	36′-0″	1′-9″
SPAN B	8′-5″	3′-5″	11′-10″	35′-6″	1′-8″
SPAN C	8′-3″	3′-5″	11′-8″	35′-0″	1′-7″
SPAN D	8′-2″	3′-5″	11′-7″	34′-9″	1′-6½″

NOTES:

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

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.

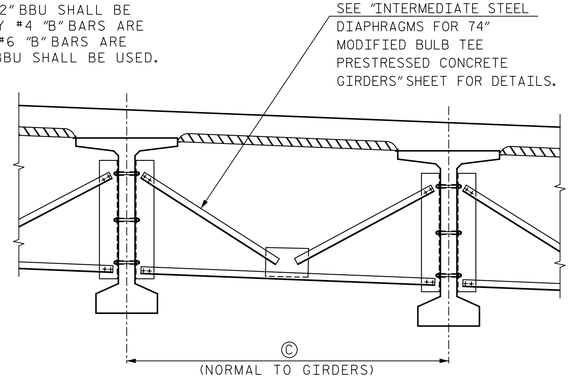
LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

NO CHAMFER IS REQUIRED ON CORNERS OF GIRDER BUILDUPS.

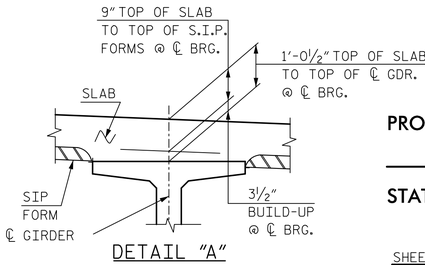
#5G1 AND #5G2 BARS MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING AND STIRRUPS.

NOTE A: THE HEIGHT OF THE BEAM BOLSTER VARIES ALONG THE LENGTH OF THE SPAN DUE TO CAMBER AND THE VARYING HEIGHT REQUIRED FOR THE BUILDUP. THE CONTRACTOR SHALL HAVE SUFFICIENT SIZES TO PROPERLY SUPPORT THE REINFORCING STEEL.

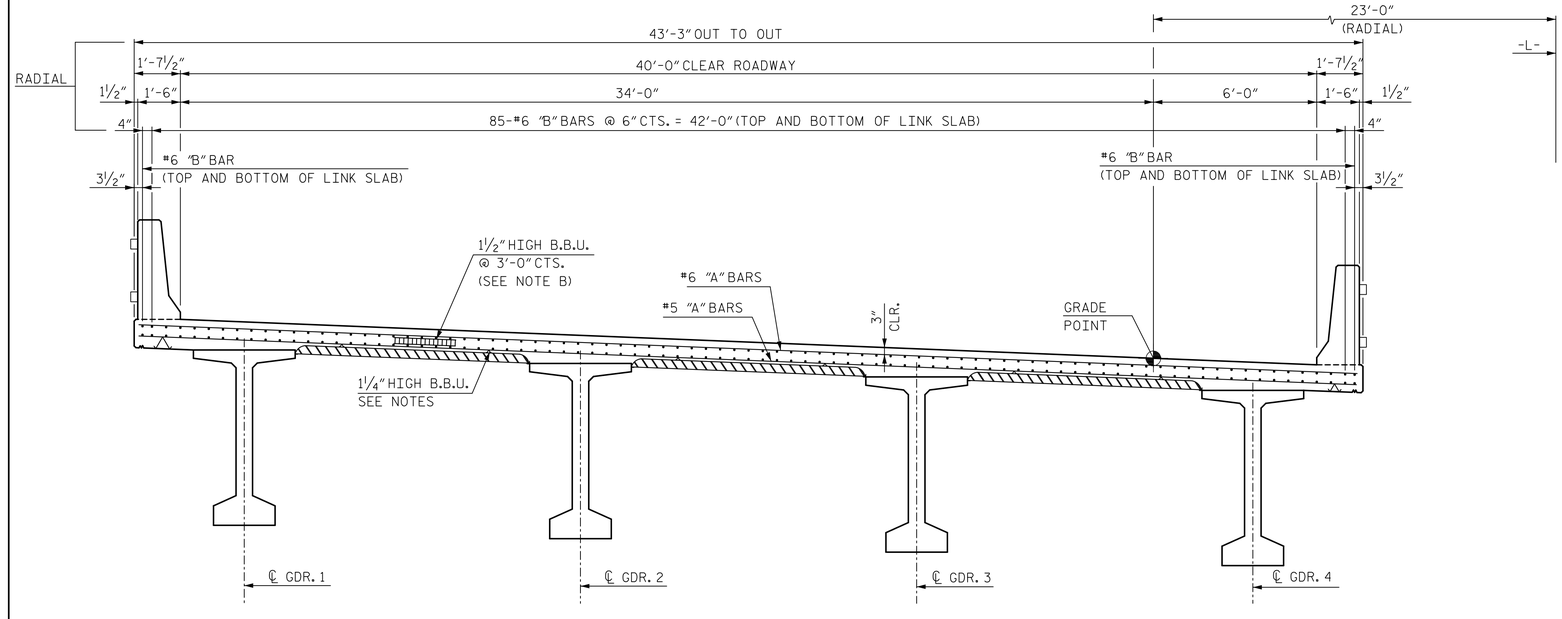
NOTE B: TO MAINTAIN PROPER LOCATION OF "A" BARS IN TOP OF SLAB, BBU DEPTH MUST VARY IN UNIT AS THE MAXIMUM SIZE OF THE "B" BARS IN THE TOP OF SLAB VARIES. A 2″ BBU SHALL BE USED WHERE ONLY #4 "B" BARS ARE PRESENT. WHERE #6 "B" BARS ARE PRESENT, A 1½″ BBU SHALL BE USED.



PARTIAL TYPICAL SECTION
(SHOWING INTERMEDIATE DIAPHRAGMS)



DETAIL "A"



TYPICAL SECTION THROUGH LINK SLAB

FOR DETAILS NOT SHOWN, SEE "TYPICAL SECTION LEFT LANE BRIDGE"

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NORTH CAROLINA PROFESSIONAL SEAL 046632 ENGINEER JAMES P. GREGG

11/20/2018

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DRAWN BY J. PHILLIPS DATE 9/18
CHECKED BY D. LAWRENCE DATE 10/18
DESIGN ENGINEER OF RECORD J. GREGG DATE 10/18

DWG. NO. 6

PROJECT NO. R-1015
CRAVEN COUNTY
STATION: POC STA. 138+31.09 -L-

SHEET 1 OF 2

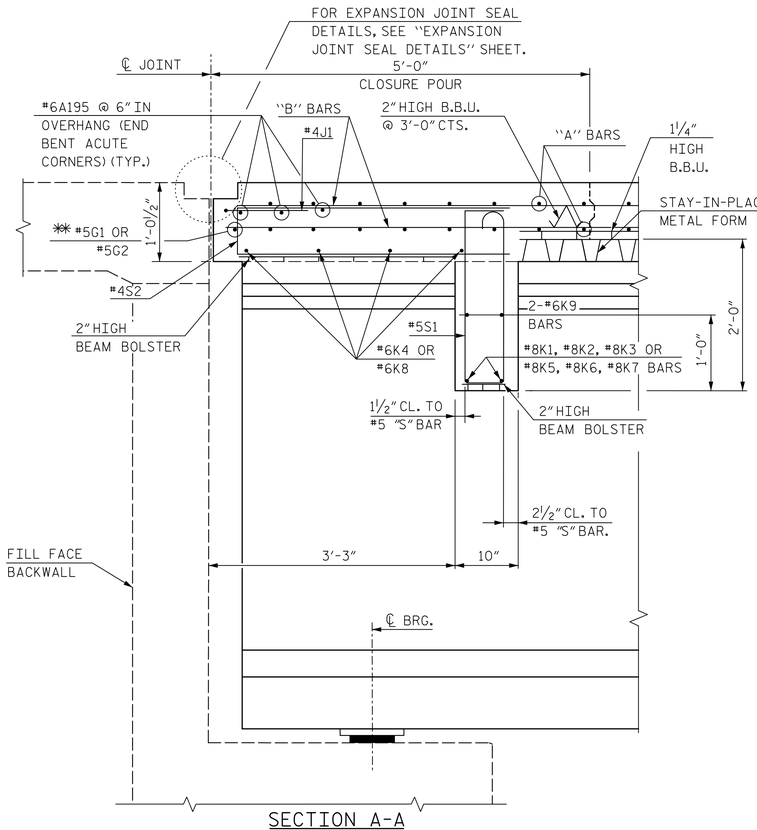
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTIONS

LEFT LANE

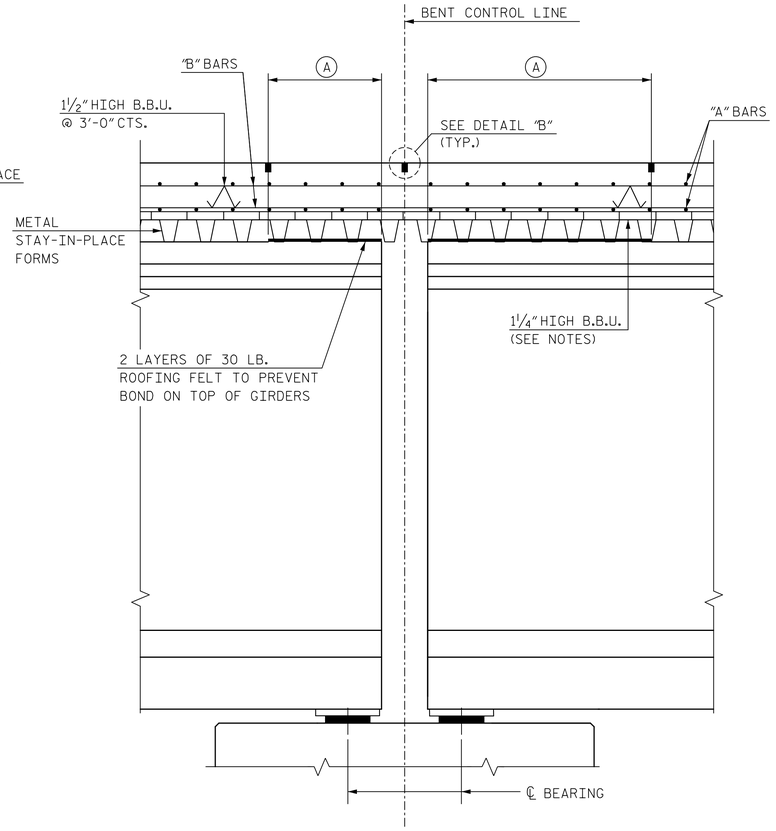
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S03-6
1			3			TOTAL SHEETS
2			4			46



SECTION A-A

SECTION NORMAL THROUGH END BENT DIAPHRAGM
SECTION AT END BENT 1 SHOWN, END BENT 2 SIMILAR

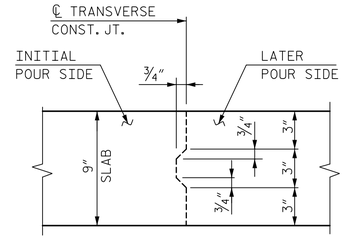
✻✻ #5 "G" BAR MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR REINFORCING STEEL AND STIRRUPS.



SECTION THROUGH BENT

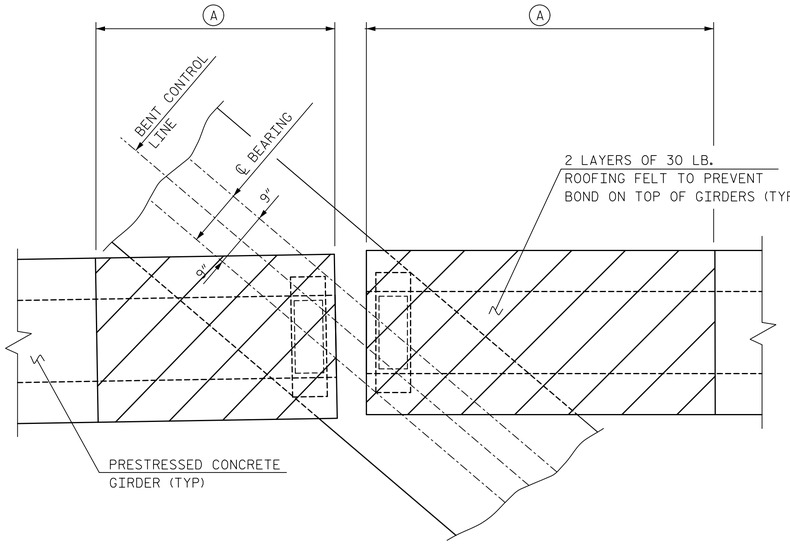
SECTION PARALLEL TO BEAM AT BENT 1 SHOWN, BENT 2 AND 3 SIMILAR

	Ⓐ
SPAN A	3'-8"
SPAN B	6'-7"
SPAN C	4'-2"
SPAN D	3'-6"

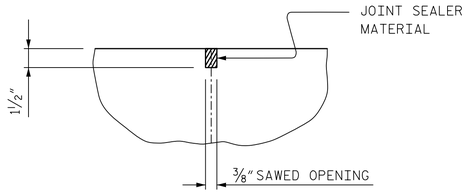


DECK SLAB TRANSVERSE CONSTRUCTION JOINT DETAIL

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



PLAN @ BENT



DETAIL "B"

PROJECT NO. R-1015
CRAVEN COUNTY
STATION: POC STA. 138+31.09 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION DETAILS

LEFT LANE

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NORTH CAROLINA PROFESSIONAL SEAL 046632 ENGINEER JAMES 'P. GREGG
12/6/2018

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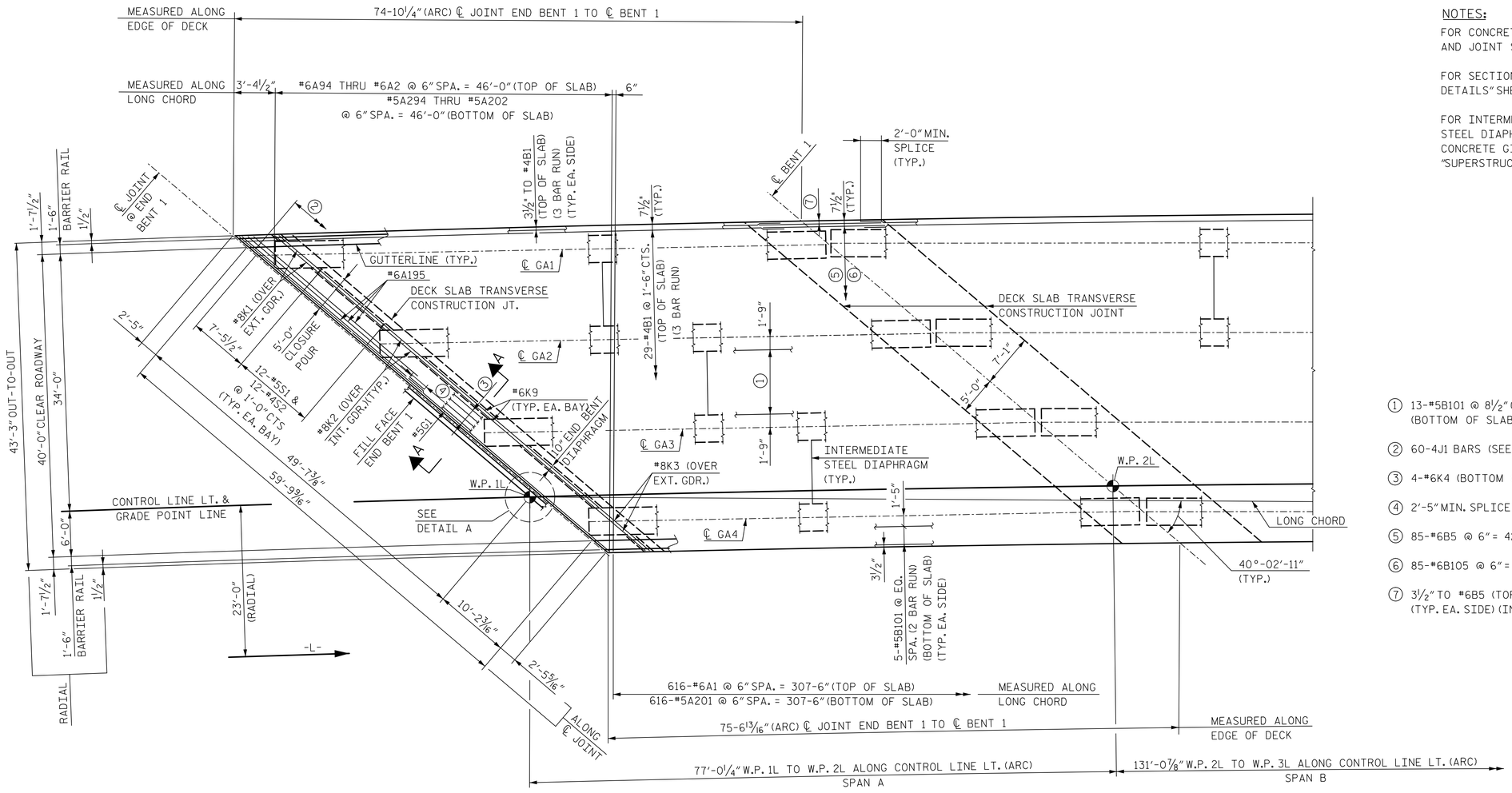
DRAWN BY J. PHILLIPS DATE 9/18
CHECKED BY D. LAWRENCE DATE 10/18
DESIGN ENGINEER OF RECORD J. GREGG DATE 10/18
DWG. NO. 7

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S03-7
1			3			TOTAL SHEETS
2			4			46



PLAN OF SPAN A

NOTES:

FOR CONCRETE BARRIER RAIL DIMENSIONS, REINFORCING STEEL, AND JOINT SPACING, SEE "CONCRETE BARRIER RAIL" SHEET.

FOR SECTION VIEWS, SEE "SUPERSTRUCTURE TYPICAL SECTION DETAILS" SHEET 2 OF 2.

FOR INTERMEDIATE STEEL DIAPHRAGMS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 74" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET FOR DETAILS. FOR LOCATION, SEE "SUPERSTRUCTURE FRAMING PLANS" SHEET.

① 13-#5B101 @ 8½" CTS. = 8'-6" (2 BAR RUN WITH 2'-0" MIN. SPLICE) (BOTTOM OF SLAB) (TYP. EA. BAY)

② 60-4J1 BARS (SEE "EXP. JT. DETAILS SHEET)

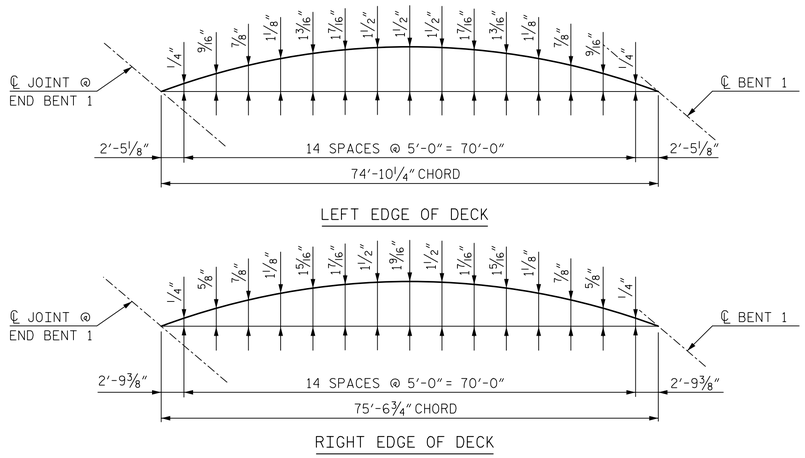
③ 4-#6K4 (BOTTOM OF SLAB) (2 BAR RUN WITH 2'-5" MIN. SPLICE)

④ 2'-5" MIN. SPLICE

⑤ 85-#6B5 @ 6" = 42'-0" (TOP OF SLAB IN LINK SLAB AREA)

⑥ 85-#6B105 @ 6" = 42'-0" (BOTTOM OF SLAB IN LINK SLAB AREA)

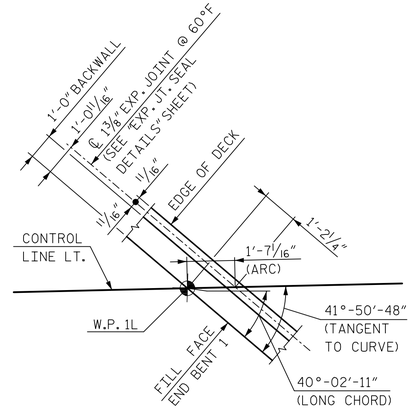
⑦ 3½" TO #6B5 (TOP OF SLAB) AND #6B105 (BOTTOM OF SLAB) (TYP. EA. SIDE) (IN LINK SLAB AREA)



LEFT EDGE OF DECK

RIGHT EDGE OF DECK

ARC OFFSETS SPAN A



DETAIL A

DocuSigned by:
James P. Gregg
B80FE024A89C404...

NORTH CAROLINA PROFESSIONAL SEAL 046632 ENGINEER JAMES P. GREGG

11/20/2018

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DRAWN BY	J. PHILLIPS	DATE 9/18
CHECKED BY	D. LAWRENCE	DATE 10/18
DESIGN ENGINEER OF RECORD	J. GREGG	DATE 10/18

DWG. NO. 8

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: POC STA. 138+31.09 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

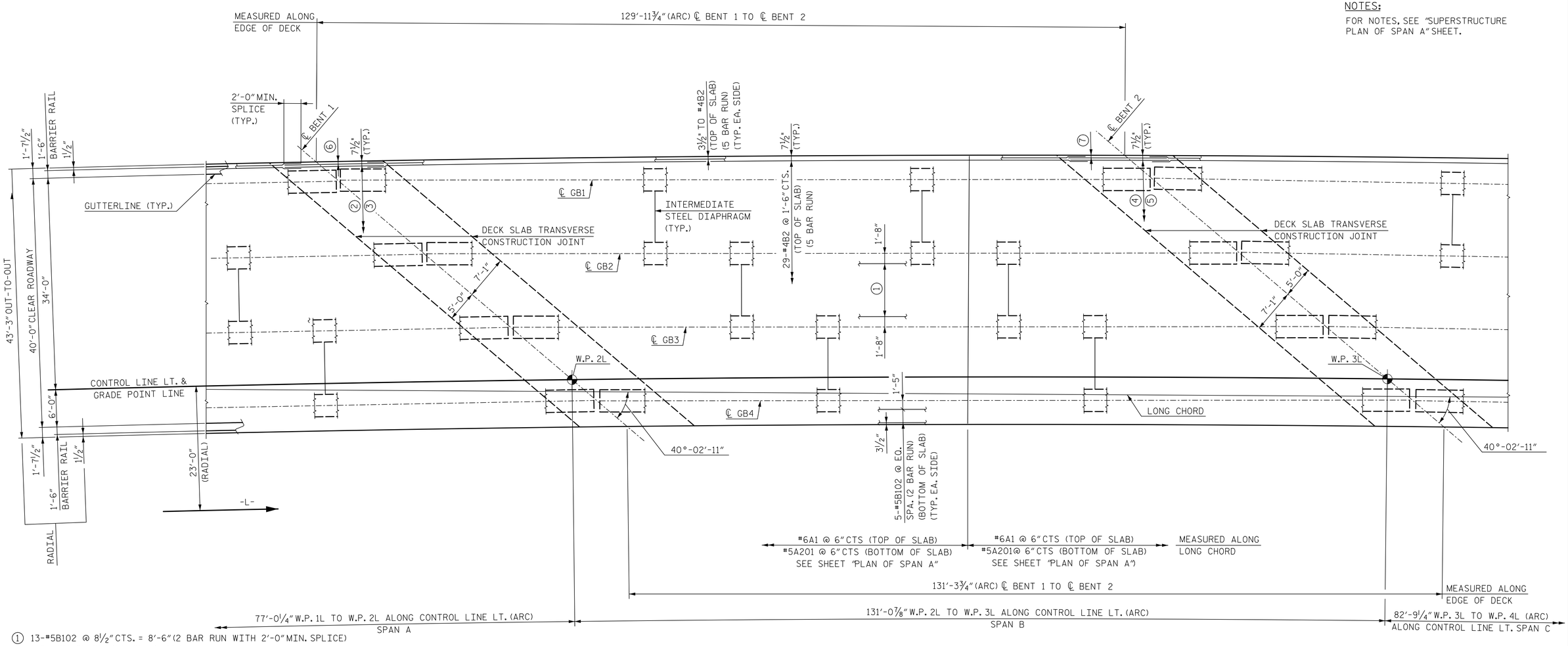
PLAN OF SPAN A

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S03-8
1			3			TOTAL SHEETS
2			4			46

NOTES:

FOR NOTES, SEE "SUPERSTRUCTURE PLAN OF SPAN A" SHEET.



PLAN OF SPAN B

① 13-#5B102 @ 8½" CTS. = 8'-6" (2 BAR RUN WITH 2'-0" MIN. SPLICE) (BOTTOM OF SLAB) (TYP. EA. BAY)

② 85-#6B5 @ 6" = 42'-0" (TOP OF SLAB IN LINK SLAB AREA)

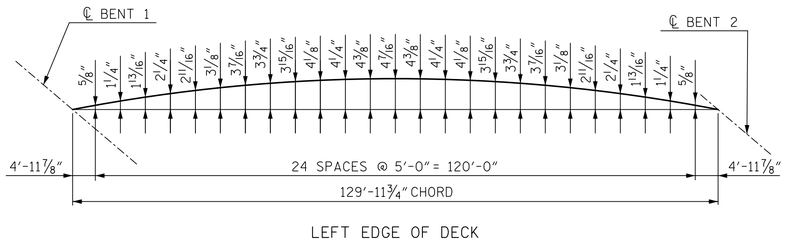
③ 85-#6B105 @ 6" = 42'-0" (BOTTOM OF SLAB IN LINK SLAB AREA)

④ 85-#6B6 @ 6" = 42'-0" (TOP OF SLAB IN LINK SLAB AREA)

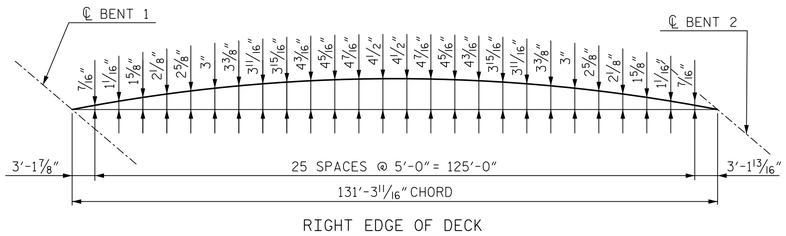
⑤ 85-#6B106 @ 6" = 42'-0" (BOTTOM OF SLAB IN LINK SLAB AREA)

⑥ 3½" TO #6B5 (TOP OF SLAB) AND #6B105 (BOTTOM OF SLAB) (TYP. EA. SIDE) (IN LINK SLAB AREA)

⑦ 3½" TO #6B6 (TOP OF SLAB) AND #6B106 (BOTTOM OF SLAB) (TYP. EA. SIDE) (IN LINK SLAB AREA)



LEFT EDGE OF DECK



RIGHT EDGE OF DECK

ARC OFFSETS SPAN B

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: POC STA. 138+31.09 -L-

DocuSigned by: James P. Gregg
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NORTH CAROLINA PROFESSIONAL SEAL 046632 ENGINEER JAMES P. GREGG

11/20/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN B

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S03-9
1			3			TOTAL SHEETS
2			4			46

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DWG. NO. 9

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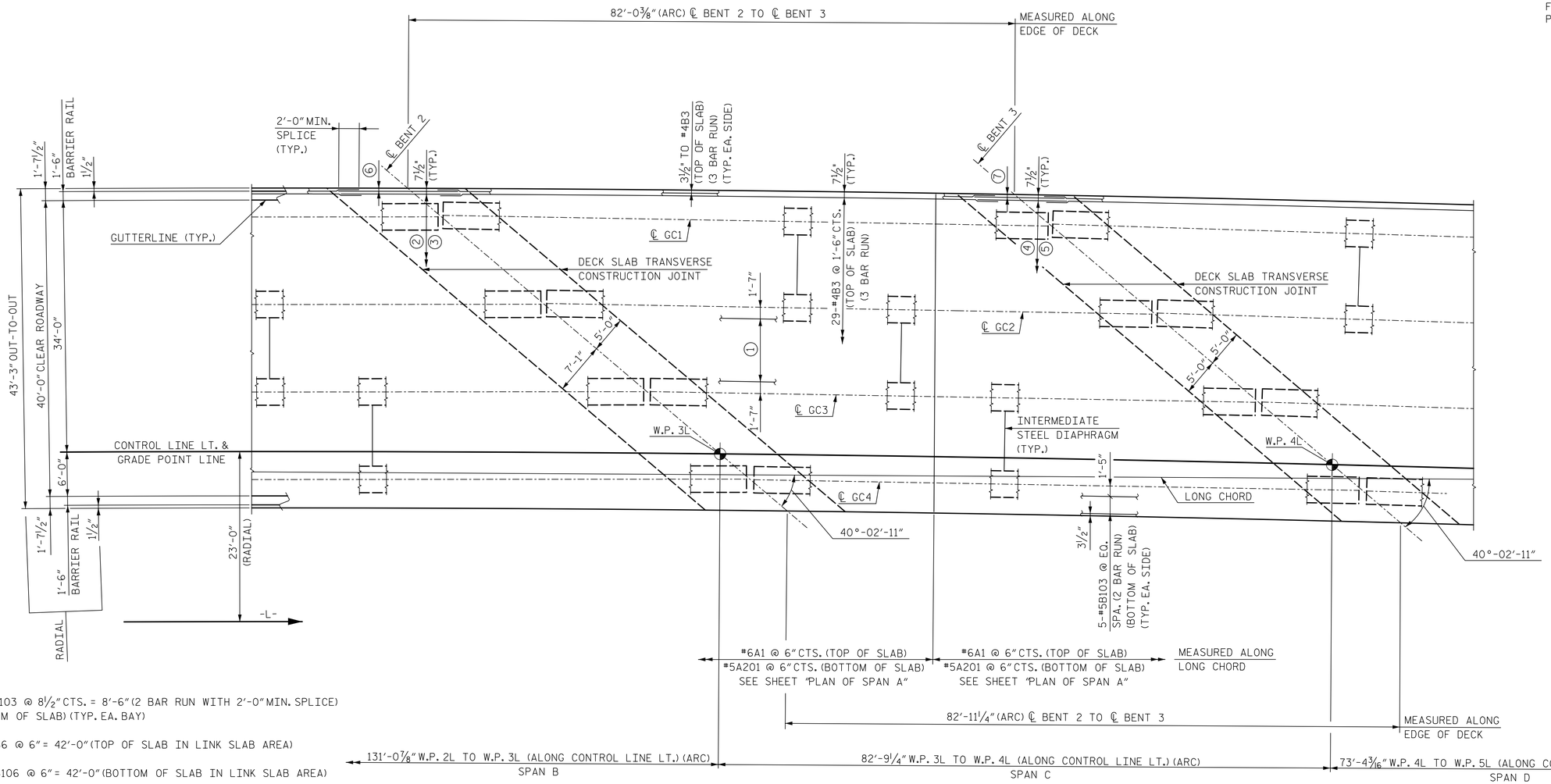
NOTES:

FOR NOTES, SEE "SUPERSTRUCTURE PLAN OF SPAN A" SHEET.



PLAN OF SPAN C

① 13-#5B103 @ 8½" CTS. = 8'-6" (2 BAR RUN WITH 2'-0" MIN. SPLICE) (BOTTOM OF SLAB) (TYP. EA. BAY)

② 85-#6B6 @ 6" = 42'-0" (TOP OF SLAB IN LINK SLAB AREA)

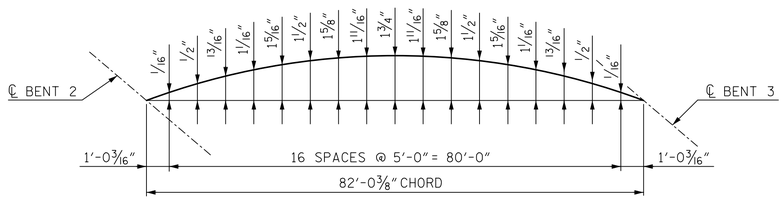
③ 85-#6B106 @ 6" = 42'-0" (BOTTOM OF SLAB IN LINK SLAB AREA)

④ 85-#6B7 @ 6" = 42'-0" (TOP OF SLAB IN LINK SLAB AREA)

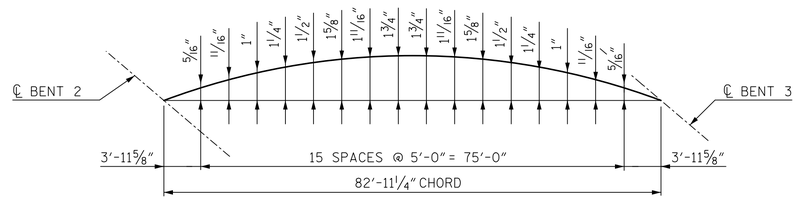
⑤ 85-#6B107 @ 6" = 42'-0" (BOTTOM OF SLAB IN LINK SLAB AREA)

⑥ 3½" TO #6B6 (TOP OF SLAB) AND #6B106 (BOTTOM OF SLAB) (TYP. EA. SIDE) (IN LINK SLAB AREA)

⑦ 3½" TO #6B7 (TOP OF SLAB) AND #6B107 (BOTTOM OF SLAB) (TYP. EA. SIDE) (IN LINK SLAB AREA)



LEFT EDGE OF DECK



RIGHT EDGE OF DECK

ARC OFFSETS SPAN C

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NORTH CAROLINA PROFESSIONAL SEAL 046632 ENGINEER JAMES P. GREGG
11/20/2018

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: POC STA. 138+31.09 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN C
LEFT LANE

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S03-10
1			3			TOTAL SHEETS
2			4			46

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DWG. NO. 10

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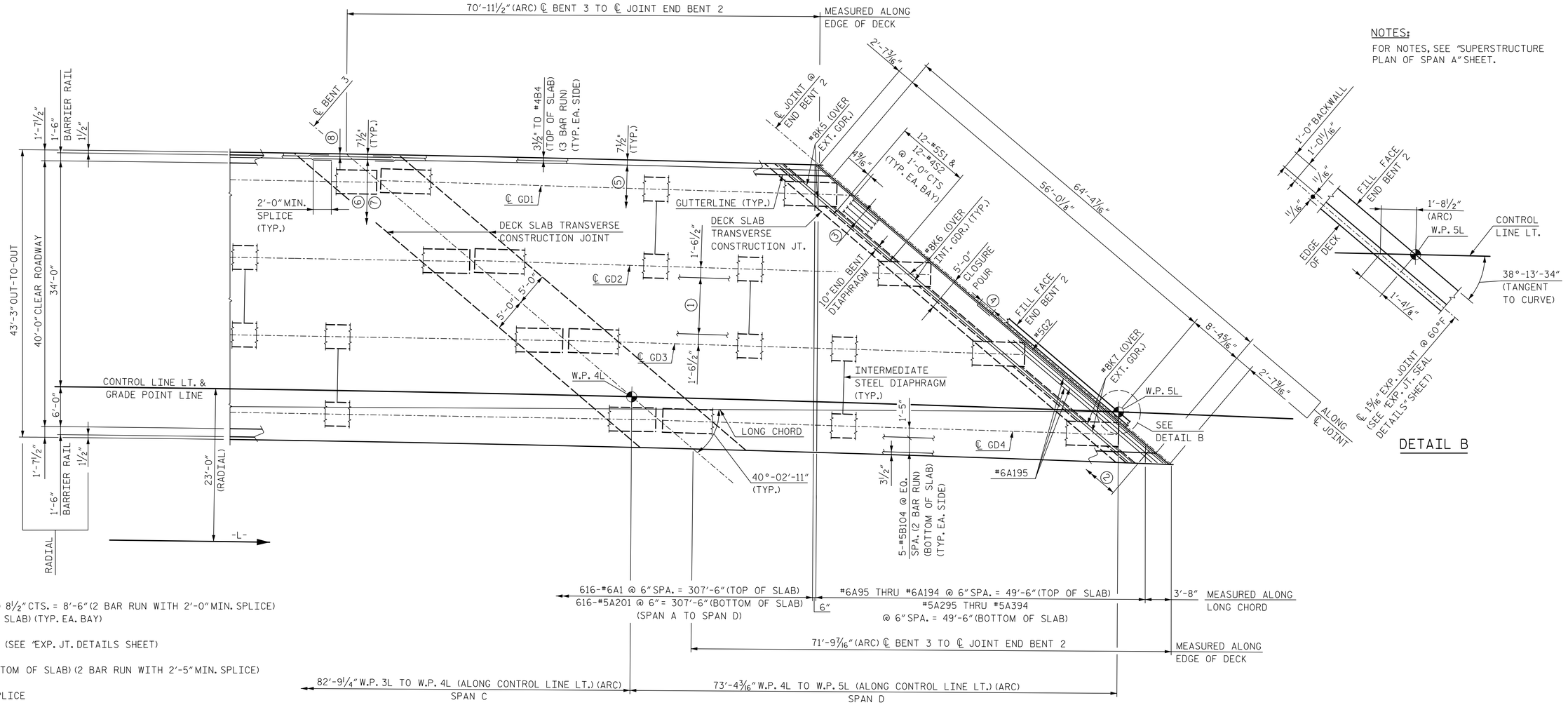


DETAIL B

NOTES:

FOR NOTES, SEE "SUPERSTRUCTURE PLAN OF SPAN A" SHEET.

① 13-#5B104 @ 8½" CTS. = 8'-6" (2 BAR RUN WITH 2'-0" MIN. SPLICE) (BOTTOM OF SLAB) (TYP. EA. BAY)

② 63-4J1 BARS (SEE "EXP. JT. DETAILS" SHEET)

③ 4-#6K4 (BOTTOM OF SLAB) (2 BAR RUN WITH 2'-5" MIN. SPLICE)

④ 2'-5" MIN. SPLICE

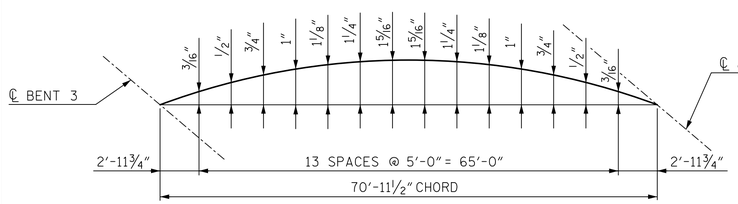
⑤ 29-#4B4 @ 1'-6" CTS. = 42'-0" (TOP OF SLAB) (3 BAR RUN)

⑥ 85-#6B7 @ 6" CTS. = 42'-0" (TOP OF SLAB IN LINK SLAB AREA)

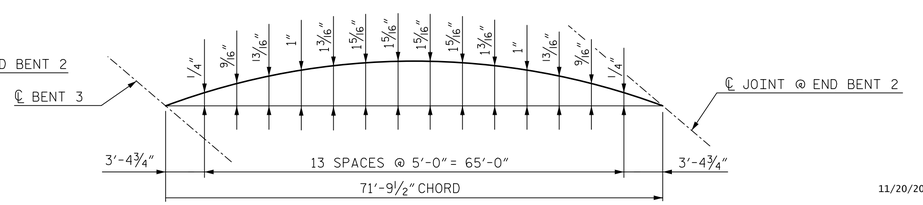
⑦ 85-#6B107 @ 6" CTS. = 42'-0" (BOTTOM OF SLAB IN LINK SLAB AREA)

⑧ 3½" TO #6B7 (TOP OF SLAB) AND #6B107 (BOTTOM OF SLAB) (TYP. EA. SIDE) (IN LINK SLAB AREA)

PLAN OF SPAN D



LEFT EDGE OF DECK



RIGHT EDGE OF DECK

ARC OFFSETS SPAN D

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11/20/2018

NORTH CAROLINA PROFESSIONAL SEAL 046632 ENGINEER JAMES P. GREGG

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DESIGN ENGINEER OF RECORD J. GREGG DATE 10/18

DWG. NO. 11

PROJECT NO. R-1015

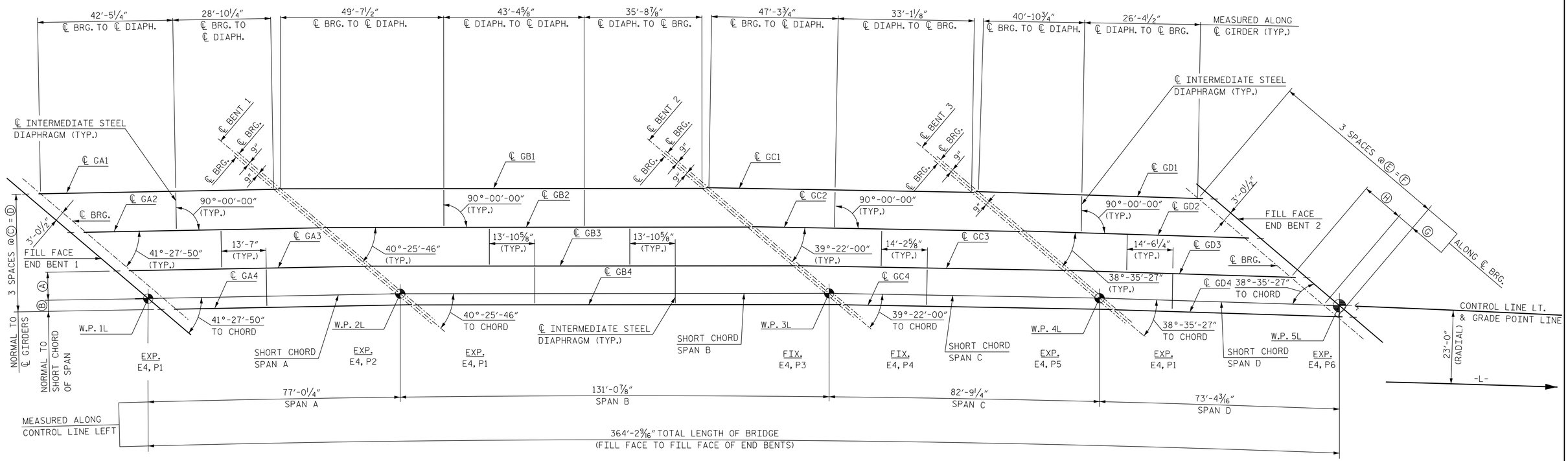
CRAVEN COUNTY

STATION: POC STA. 138+31.09 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPAN D
LEFT LANE

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S03-11
1			3			TOTAL SHEETS
2			4			46



SPAN A SPAN B SPAN C SPAN D

FRAMING PLAN

GIRDER LAYOUT DIMENSION TABLE								
DIM. / LOCATION	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ
SPAN A	8′-7″	3′-5″	12′-0″	36′-0″	18′-1½″ (-)	54′-4 1/16″	5′-1 5/16″	12′-11 3/16″
SPAN B	8′-5″	3′-5″	11′-10″	35′-6″	18′-2 5/16″ (+)	54′-8⅞″	5′-3¼″	12′-11¾″
SPAN C	8′-3″	3′-5″	11′-8″	35′-0″	18′-4¾″ (-)	55′-2 3/16″	5′-4⅝″	13′-0 1/16″
SPAN D	8′-2″	3′-5″	11′-7″	34′-9″	18′-6⅞″ (-)	55′-8 3/16″	5′-5¾″	13′-1⅛″

NOTES:

ALL DIMENSIONS MEASURED ALONG ℄ GIRDER UNLESS NOTED OTHERWISE.

FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 74" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET.

FOR GIRDER ELEVATIONS AND DETAILS, SEE "74" PRESTRESSED CONCRETE GIRDER MODIFIED BULB TEE" SHEETS.

NOTES:

"EXP." DENOTES EXPANSION BEARING ASSEMBLY.

"FIX." DENOTES FIXED BEARING ASSEMBLY.

"E" DENOTES ELASTOMERIC BEARING PAD MARK.

"P" DENOTES STEEL SOLE PLATE MARK.

GIRDERS IN EACH SPAN ARE SET PARALLEL TO SHORT CHORD.

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: POC STA. 138+31.09 -L-

DocuSigned by: James P. Gregg 8B0FE024AB9C404...

NORTH CAROLINA PROFESSIONAL SEAL 046632 ENGINEER JAMES P. GREGG

11/20/2018

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DRAWN BY A. SMITH DATE 7/18
CHECKED BY E. JOWZA DATE 9/18
DESIGN ENGINEER OF RECORD J. GREGG DATE 10/18

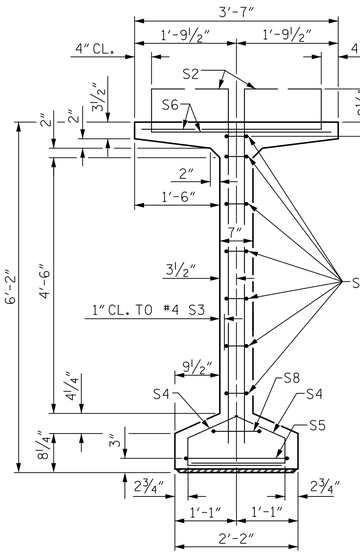
DWG. NO. 12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

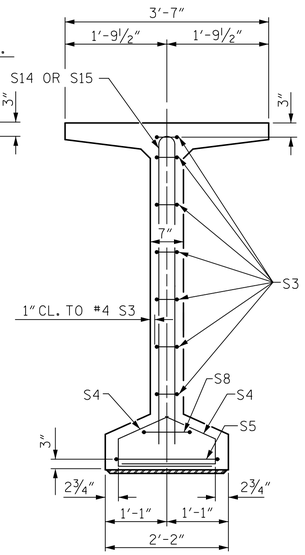
SUPERSTRUCTURE

FRAMING PLAN
LEFT LANE

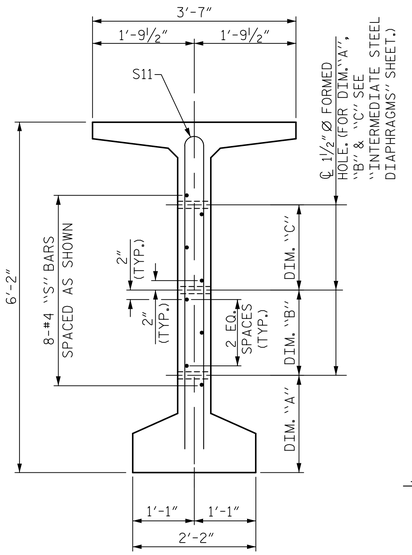
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S03-12
1			3			TOTAL SHEETS
2			4			46



SECTION A-A

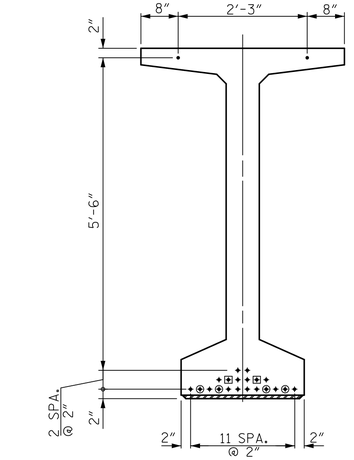


SECTION B-B



SECTION C-C

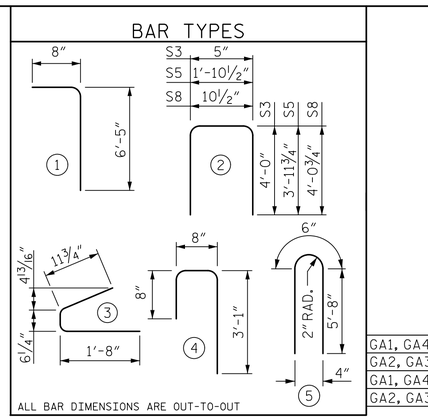
(S1, S6 AND S9 BARS NOT SHOWN)



0.6"Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ▣ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◉ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER



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

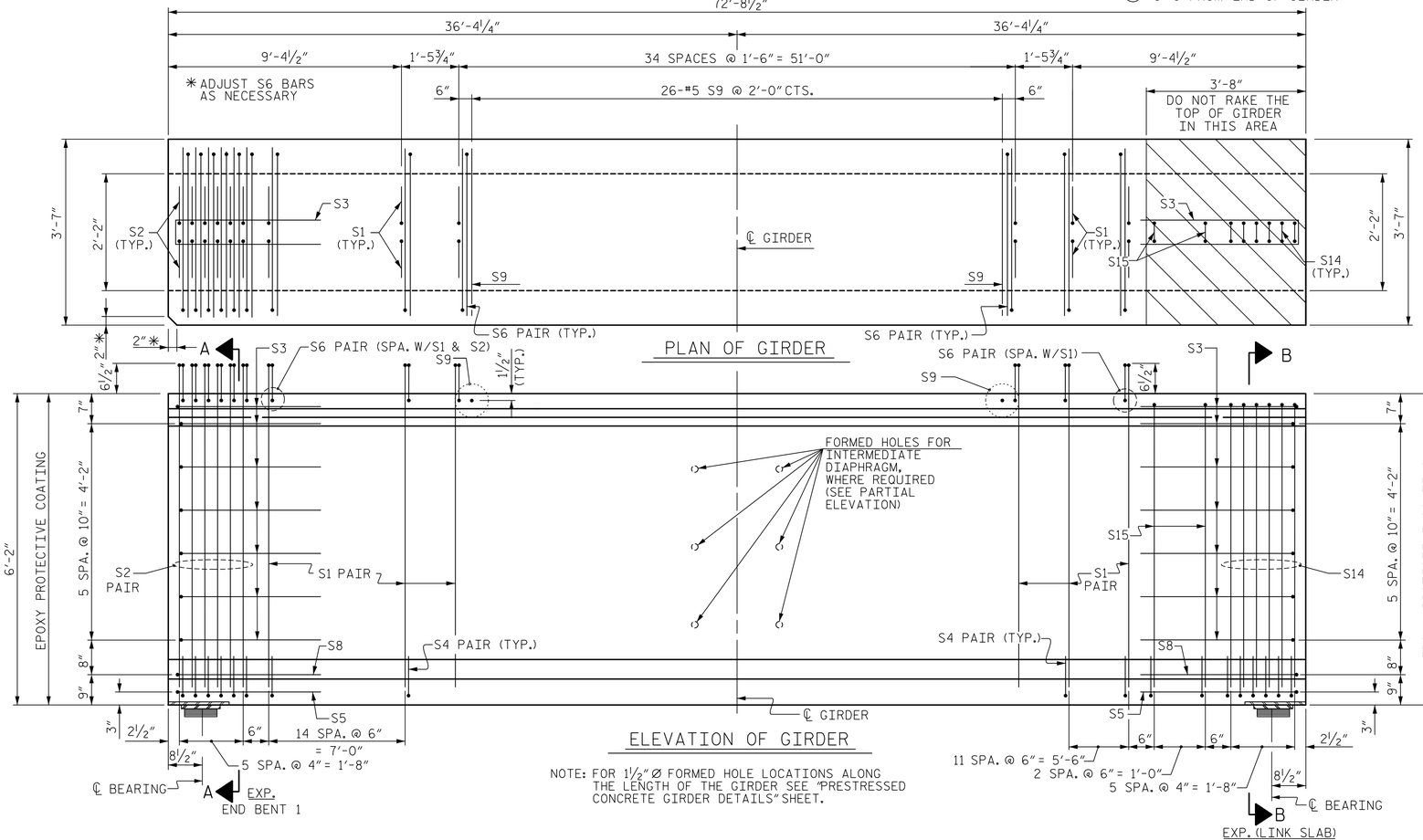
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
S1	124	#4	1	7'-1"	587	
S2	12	#5	1	7'-1"	89	
S3	14	#4	2	8'-5"	79	
S4	84	#4	3	3'-2"	178	
S5	2	#5	2	9'-10"	21	
S6	136	#5	4	4'-5"	626	
S8	2	#5	2	9'-0"	19	
S9	26	#5	STR	3'-3"	88	
S11	4	#5	5	11'-10"	49	GA1, GA4
S11	8	#5	5	11'-10"	99	GA2, GA3
S12	8	#4	STR	8'-0"	43	GA1, GA4
S13	8	#4	STR	21'-7"	115	GA2, GA3
S14	6	#5	5	11'-10"	74	
S15	3	#4	5	11'-10"	24	

QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL (LB.)	5,000 PSI CONCRETE (C.Y.)	0.6"Ø L.R. STRANDS (No.)
GA1	1,877	16.6	22
GA2	1,999	16.6	22
GA3	1,999	16.6	22
GA4	1,877	16.6	22

GIRDERS REQUIRED

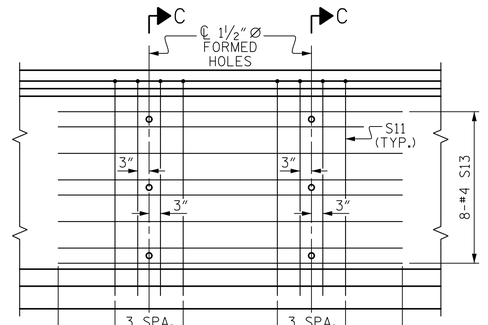
NUMBER	LENGTH	TOTAL LENGTH
4	72'-8½"	290.83'



PLAN OF GIRDER

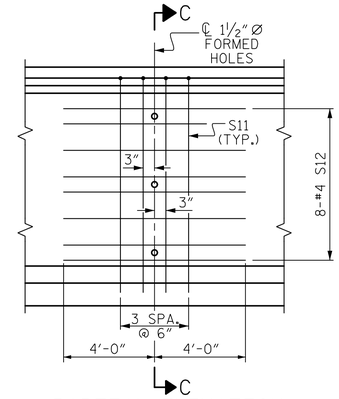
ELEVATION OF GIRDER

NOTE: FOR 1½" Ø FORMED HOLE LOCATIONS ALONG THE LENGTH OF THE GIRDER SEE "PRESTRESSED CONCRETE GIRDER DETAILS" SHEET.



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. GA2 & GA3



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. GA1 & GA4

NOTES:

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4,000 PSI FOR SPAN A GIRDERS.

GIRDER CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI AT THE AGE OF 28 DAYS.

DocuSigned by: p. 61-88 — 12/6/2018

NORTH CAROLINA PROFESSIONAL SEAL 046632 ENGINEER JAMES P. GREGG

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: POC STA. 138+31.09 -L-

SHEET 1 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

74" PRESTRESSED CONCRETE MODIFIED BULB TEE SPAN A

LEFT LANE

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY A. SMITH DATE 7/18
CHECKED BY E. JOWZA DATE 9/18
DESIGN ENGINEER OF RECORD J. GREGG DATE 10/18

DWG. NO. 13

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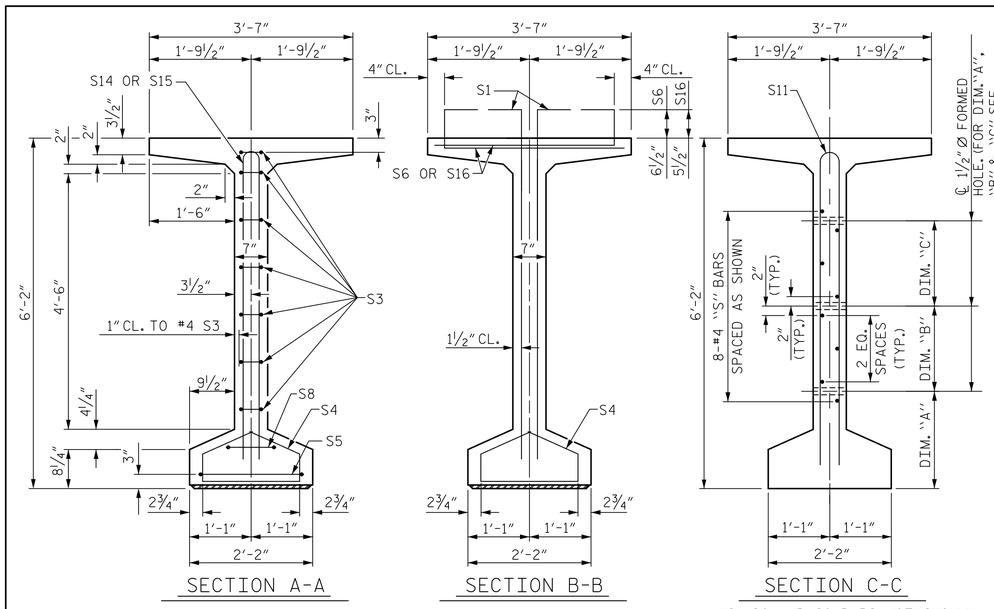
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S03-13
1			3			TOTAL SHEETS
2			4			46

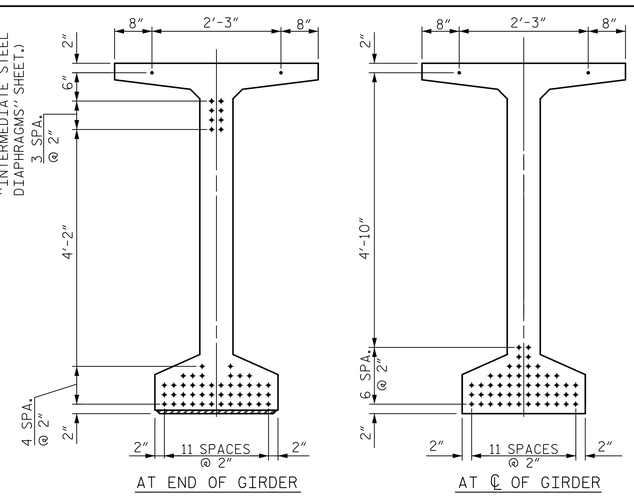


SECTION A-A

SECTION B-B

SECTION C-C

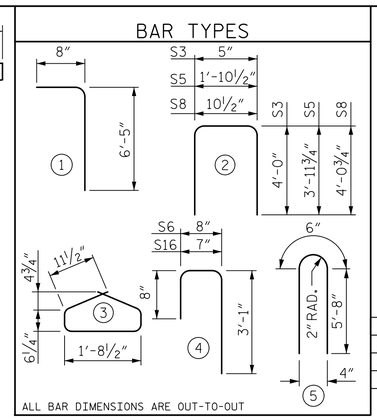
(S1, S6 AND S9 BARS NOT SHOWN)



AT END OF GIRDER

AT ℄ OF GIRDER

BAR TYPES



	BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
	S1	186	#4	1	7'-1"	880
	S3	14	#4	2	8'-5"	79
	S4	48	#4	3	4'-8"	150
	S5	2	#5	2	9'-10"	21
	S6	80	#5	4	4'-5"	369
	S8	2	#5	2	9'-0"	19
	S9	55	#5	STR	3'-3"	186
GB1, GB4	S11	8	#5	5	11'-10"	99
GB2, GB3	S11	16	#5	5	11'-10"	197
GB1, GB4	S12	16	#4	STR	8'-0"	86
GB2, GB3	S13	16	#4	STR	21'-11"	234
	S14	18	#6	5	11'-10"	320
	S15	18	#4	5	11'-10"	142
	S16	106	#5	4	4'-4"	479

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

QUANTITIES FOR ONE GIRDER

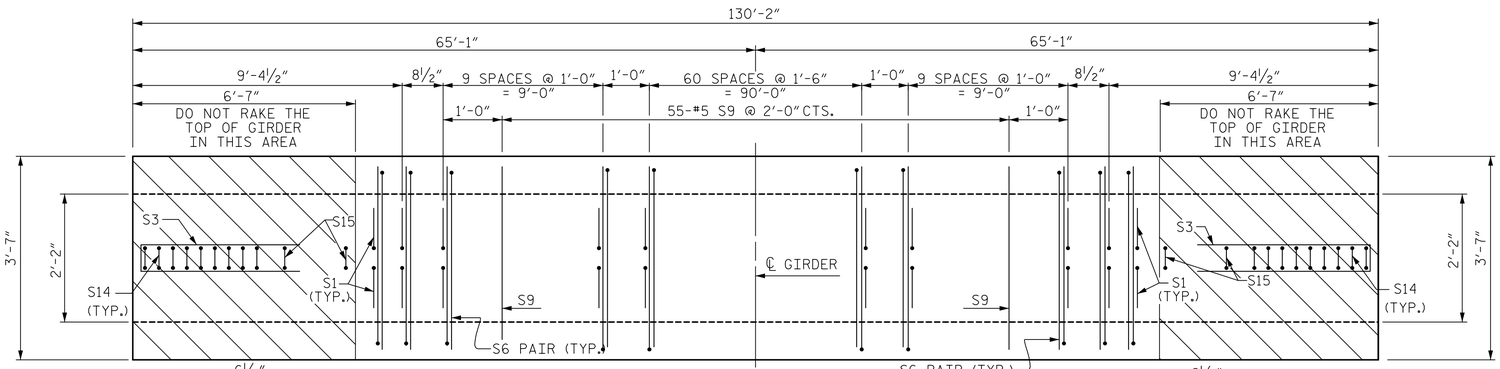
	REINFORCING STEEL LB.	10,000 PSI CONCRETE C.Y.	0.6"Ø L.R. STRANDS No.
GB1	2,830	29.6	54
GB2	3,076	29.6	54
GB3	3,076	29.6	54
GB4	2,830	29.6	54

GIRDERS REQUIRED

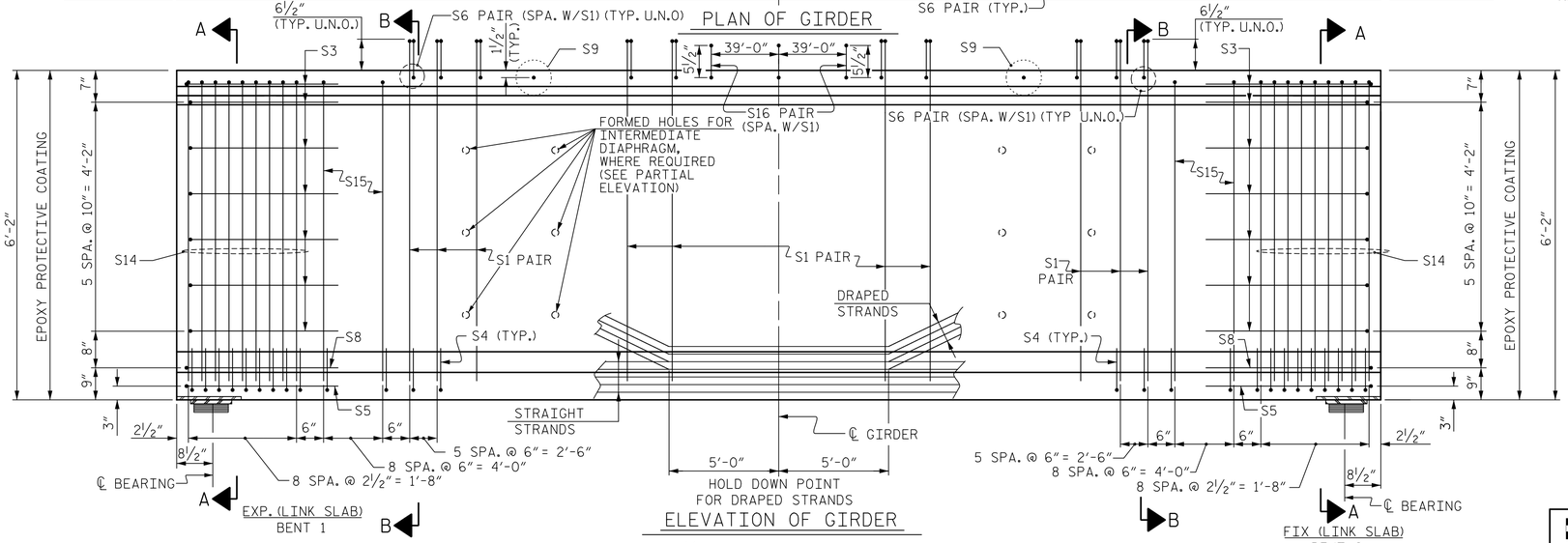
NUMBER	LENGTH	TOTAL LENGTH
4	130'-2"	520.67'

0.6" Ø LOW RELAXATION STRAND LAYOUT

NOTE: ALL STRANDS ARE BONDED FULL LENGTH.

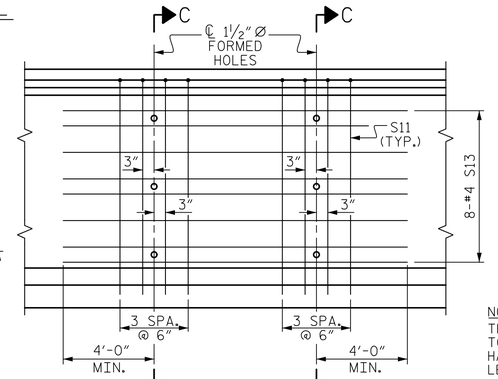


PLAN OF GIRDER



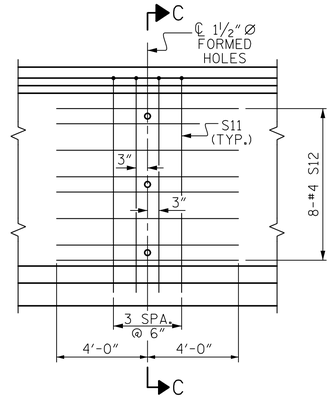
ELEVATION OF GIRDER

NOTE: FOR 1½"Ø FORMED HOLE LOCATIONS ALONG THE LENGTH OF THE GIRDER SEE "PRESTRESSED CONCRETE GIRDER DETAILS" SHEET.



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. GB2 & GB3



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. GB1 & GB4

NOTES:

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 8,100 PSI FOR SPAN B GIRDERS.

GIRDER CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 10,000 PSI AT THE AGE OF 28 DAYS.

THE UPLIFT FORCE DUE TO DRAPED STRANDS IS 25 KIPS.

DocuSigned by: James P. Gregg 0F2D4AB9C404...

NORTH CAROLINA PROFESSIONAL SEAL 046632 ENGINEER JAMES P. GREGG

12/6/2018

PROJECT NO. R-1015

CRAVEN COUNTY

STATION: POC STA. 138+31.09 -L-

SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

74" PRESTRESSED CONCRETE MODIFIED BULB TEE SPAN B

LEFT LANE

HNTB NORTH CAROLINA, P.C.
NC License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY A. SMITH DATE 7/18
CHECKED BY E. JOWZA DATE 9/18
DESIGN ENGINEER OF RECORD J. GREGG DATE 10/18

DWG. NO. 14

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S03-14
1			3			TOTAL SHEETS
2			4			46