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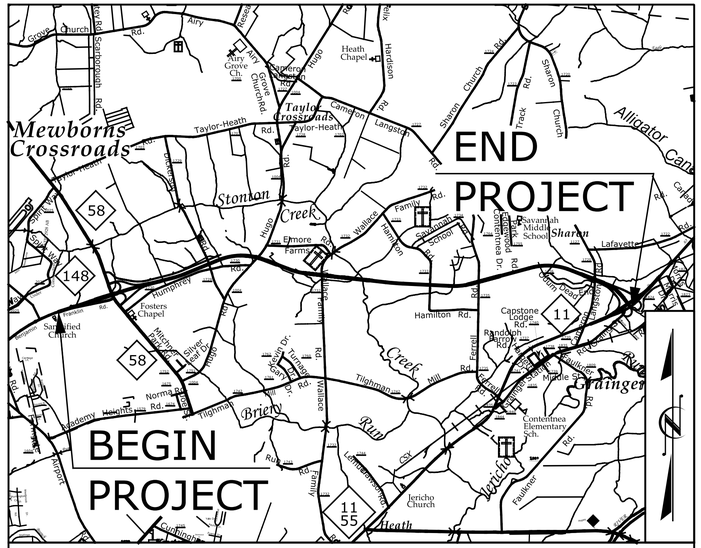
TIP PROJECT: R-5703

CONTRACT: C204014



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

LENOIR COUNTY

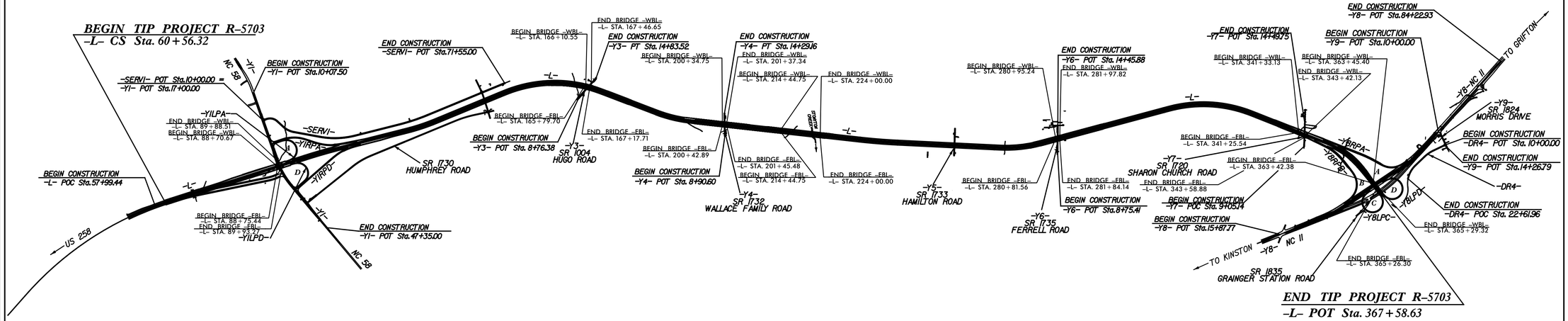
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5703		

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
46375.1.1	N/A	PE
46375.2.1	N/A	R/W
46375.3.1	N/A	CONST.

LOCATION: NC 148 (HARVEY PARKWAY) FROM NC 58 TO NC 11

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

NC GRID
NAD 83 NA 2011



STRUCTURES

STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION *

DESIGN DATA

ADT 2017 = 4,000
ADT 2040 = 18,800
K = 9 %
D = 55 %
T = 8 % *
V = 70 MPH
* (TTST 4% + DUAL 4%)
FUNC CLASS = FREEWAY/INTERSTATE

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-5703 = 5.473 MILES

LENGTH STRUCTURE TIP PROJECT R-5703 = 0.342 MILES

TOTAL LENGTH TIP PROJECT R-5703 = 5.815 MILES

Prepared In the Office of:

Michael Baker

Michael Baker Engineering, Inc.
8000 Regency Parkway, Suite 600
Cary, NC 27518
Professional Corporation License Number: F-1084

2012 STANDARD SPECIFICATIONS

LETTING DATE:
DECEMBER 19, 2017

BRADLEY J. BELL, P.E.
PROJECT ENGINEER

PREPARED FOR:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, NC 27610

PART 1 OF 2

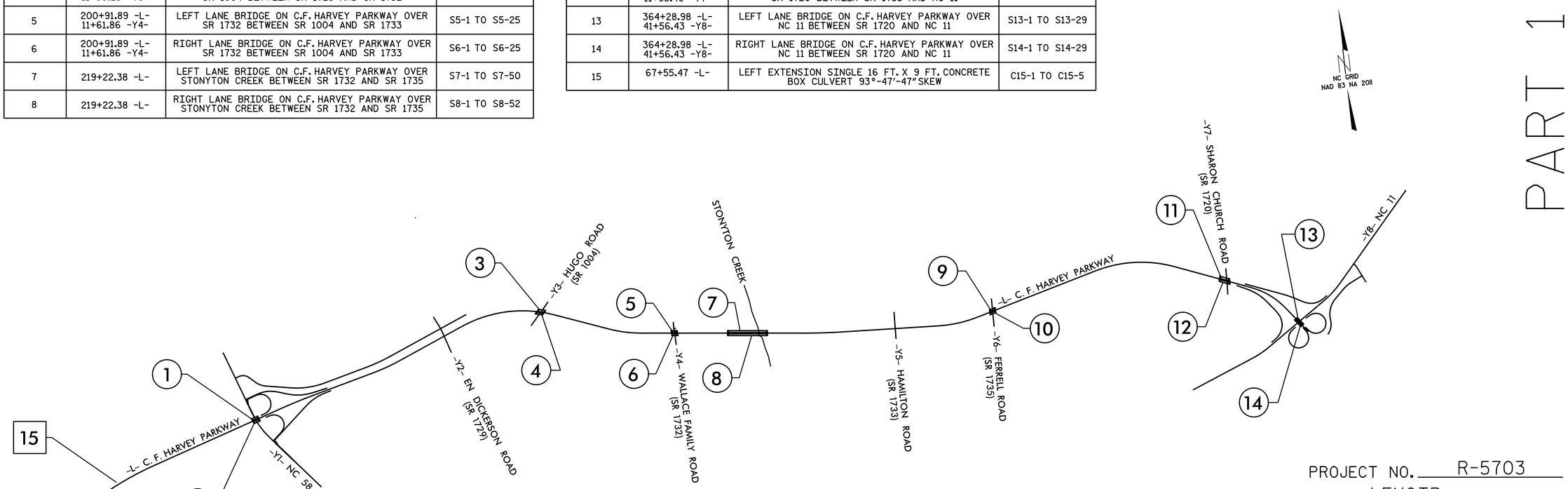
LEGEND

(#) BRIDGES

[#] CULVERT

PART 1			
STR. NO.	STATION	DESCRIPTION	SHEET NO.
1	89+28.52 -L- 28+62.92 -Y1-	LEFT LANE BRIDGE ON C.F. HARVEY PARKWAY OVER NC 58 BETWEEN SR 1581 AND SR 1004	S1-1 TO S1-25
2	89+28.52 -L- 28+62.92 -Y1-	RIGHT LANE BRIDGE ON C.F. HARVEY PARKWAY OVER NC 58 BETWEEN SR 1581 AND SR 1004	S2-1 TO S2-25
3	166+72.51 -L- 11+86.25 -Y3-	LEFT LANE BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1004 BETWEEN SR 1729 AND SR 1732	S3-1 TO S3-34
4	166+72.51 -L- 11+86.25 -Y3-	RIGHT LANE BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1004 BETWEEN SR 1729 AND SR 1732	S4-1 TO S4-31
5	200+91.89 -L- 11+61.86 -Y4-	LEFT LANE BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1732 BETWEEN SR 1004 AND SR 1733	S5-1 TO S5-25
6	200+91.89 -L- 11+61.86 -Y4-	RIGHT LANE BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1732 BETWEEN SR 1004 AND SR 1733	S6-1 TO S6-25
7	219+22.38 -L-	LEFT LANE BRIDGE ON C.F. HARVEY PARKWAY OVER STONYTON CREEK BETWEEN SR 1732 AND SR 1735	S7-1 TO S7-50
8	219+22.38 -L-	RIGHT LANE BRIDGE ON C.F. HARVEY PARKWAY OVER STONYTON CREEK BETWEEN SR 1732 AND SR 1735	S8-1 TO S8-52

PART 2			
STR. NO.	STATION	DESCRIPTION	SHEET NO.
9	281+39.19 -L- 11+64.76 -Y6-	LEFT LANE BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1735 BETWEEN SR 1733 AND SR 1720	S9-1 TO S9-25
10	281+39.19 -L- 11+64.76 -Y6-	RIGHT LANE BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1735 BETWEEN SR 1733 AND SR 1720	S10-1 TO S10-25
11	342+97.24 -L- 11+93.49 -Y7-	LEFT LANE BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1720 BETWEEN SR 1735 AND NC 11	S11-1 TO S11-29
12	342+97.24 -L- 11+93.49 -Y7-	RIGHT LANE BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1720 BETWEEN SR 1735 AND NC 11	S12-1 TO S12-29
13	364+28.98 -L- 41+56.43 -Y8-	LEFT LANE BRIDGE ON C.F. HARVEY PARKWAY OVER NC 11 BETWEEN SR 1720 AND NC 11	S13-1 TO S13-29
14	364+28.98 -L- 41+56.43 -Y8-	RIGHT LANE BRIDGE ON C.F. HARVEY PARKWAY OVER NC 11 BETWEEN SR 1720 AND NC 11	S14-1 TO S14-29
15	67+55.47 -L-	LEFT EXTENSION SINGLE 16 FT. X 9 FT. CONCRETE BOX CULVERT 93°-47'-47" SKEW	C15-1 TO C15-5



PROJECT NO. R-5703

LENOIR COUNTY

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INDEX SHEET

DRAWN BY : C. E. MAYHEW DATE : 5-5-17
CHECKED BY : V. A. PATEL DATE : 7-19-17

Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

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

LEGEND

(#) BRIDGES

[#] CULVERT

PART 1			
STR. NO.	STATION	DESCRIPTION	SHEET NO.
1	89+28.52 -L- 28+62.92 -Y1-	LEFT LANE BRIDGE ON C.F. HARVEY PARKWAY OVER NC 58 BETWEEN SR 1581 AND SR 1004	S1-1 TO S1-25
2	89+28.52 -L- 28+62.92 -Y1-	RIGHT LANE BRIDGE ON C.F. HARVEY PARKWAY OVER NC 58 BETWEEN SR 1581 AND SR 1004	S2-1 TO S2-25
3	166+72.51 -L- 11+86.25 -Y3-	LEFT LANE BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1004 BETWEEN SR 1729 AND SR 1732	S3-1 TO S3-34
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5	200+91.89 -L- 11+61.86 -Y4-	LEFT LANE BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1732 BETWEEN SR 1004 AND SR 1733	S5-1 TO S5-25
6	200+91.89 -L- 11+61.86 -Y4-	RIGHT LANE BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1732 BETWEEN SR 1004 AND SR 1733	S6-1 TO S6-25
7	219+22.38 -L-	LEFT LANE BRIDGE ON C.F. HARVEY PARKWAY OVER STONYTON CREEK BETWEEN SR 1732 AND SR 1735	S7-1 TO S7-50
8	219+22.38 -L-	RIGHT LANE BRIDGE ON C.F. HARVEY PARKWAY OVER STONYTON CREEK BETWEEN SR 1732 AND SR 1735	S8-1 TO S8-52

PART 2			
STR. NO.	STATION	DESCRIPTION	SHEET NO.
9	281+39.19 -L- 11+64.76 -Y6-	LEFT LANE BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1735 BETWEEN SR 1733 AND SR 1720	S9-1 TO S9-25
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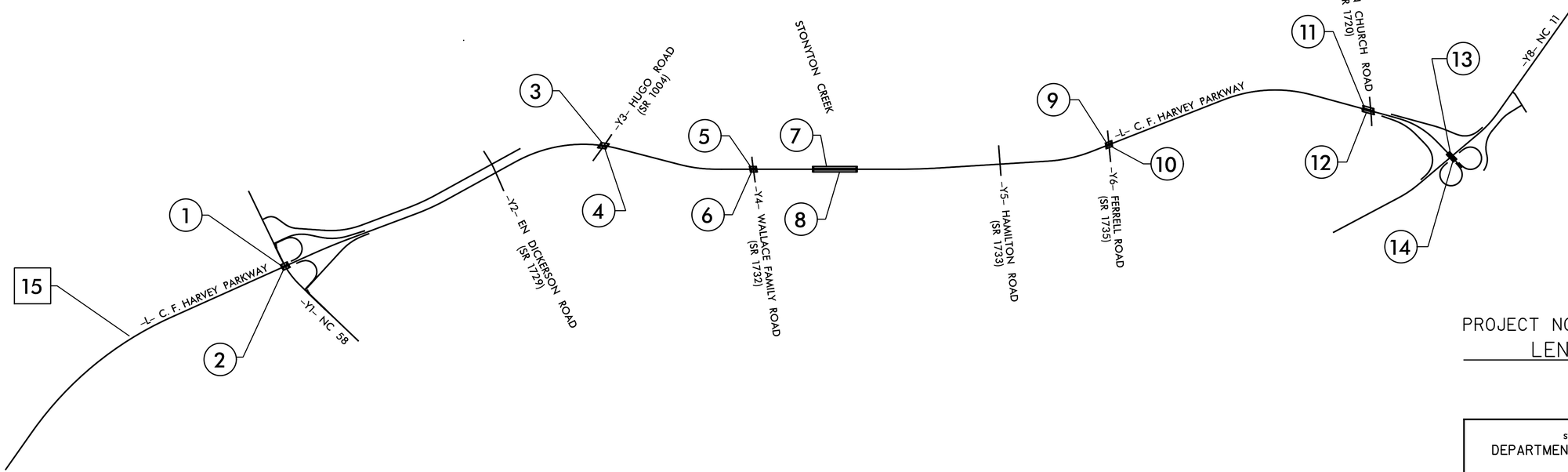
NC GRID
NAD 83 NA 2011



PART 2 OF 2

PROJECT NO. R-5703

LENOIR COUNTY

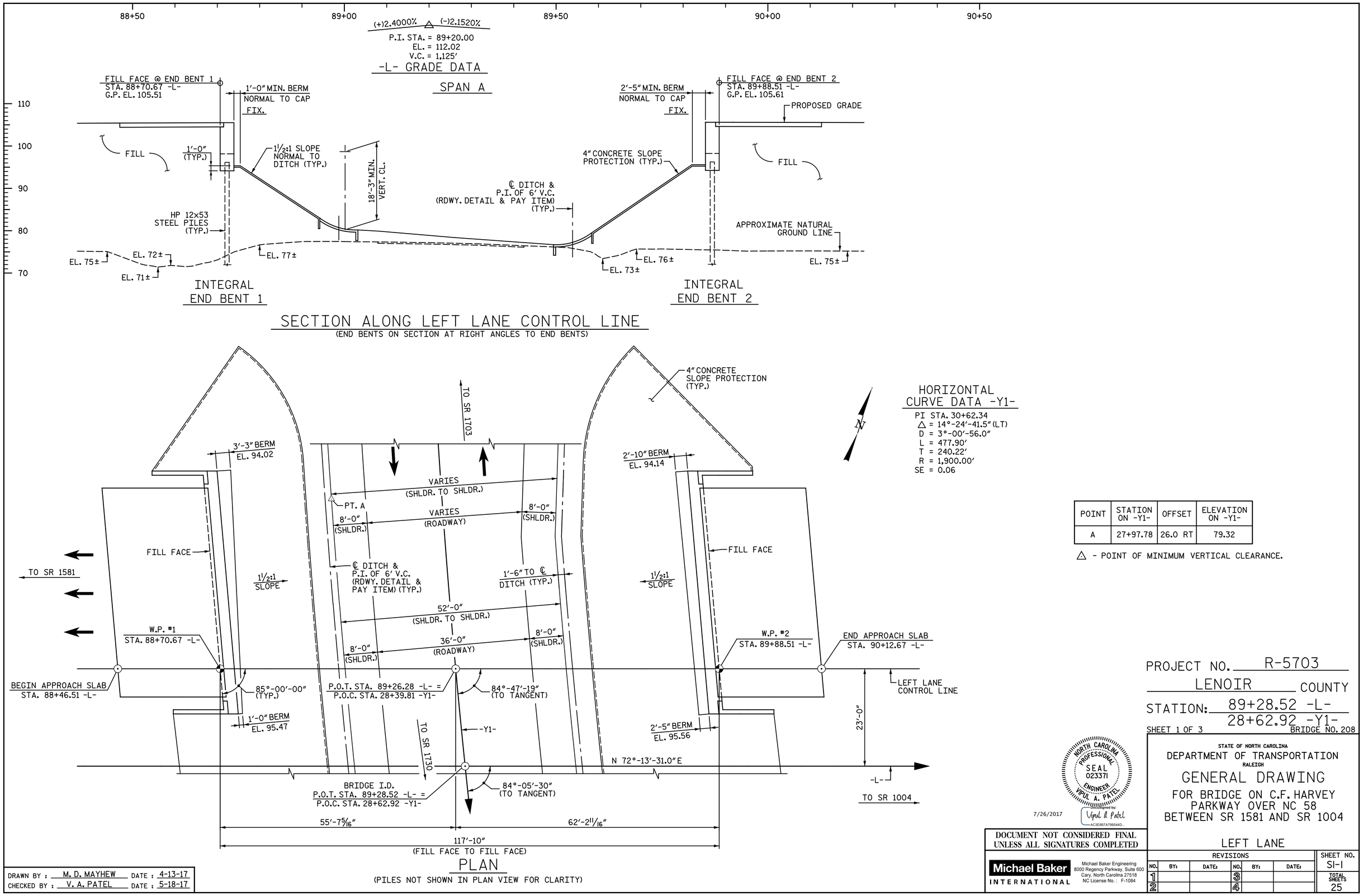
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

INDEX SHEET

DRAWN BY : C. E. MAYHEW DATE : 5-5-17
CHECKED BY : V. A. PATEL DATE : 7-19-17

Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

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



SECTION ALONG LEFT LANE CONTROL LINE

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

PLAN

(PILES NOT SHOWN IN PLAN VIEW FOR CLARITY)

HORIZONTAL CURVE DATA -Y1-

PI STA. 30+62.34
△ = 14°-24'-41.5"(LT)
D = 3°-00'-56.0"
L = 477.90'
T = 240.22'
R = 1,900.00'
SE = 0.06

POINT	STATION ON -Y1-	OFFSET	ELEVATION ON -Y1-
A	27+97.78	26.0 RT	79.32

△ - POINT OF MINIMUM VERTICAL CLEARANCE.

DRAWN BY : M. D. MAYHEW DATE : 4-13-17
CHECKED BY : V. A. PATEL DATE : 5-18-17

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 89+28.52 -L-
28+62.92 -Y1-
SHEET 1 OF 3 BRIDGE NO. 208

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIRUL A. PATEL
7/26/2017
Digitally signed by: Virul A Patel
AC3EB87A79B544D...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

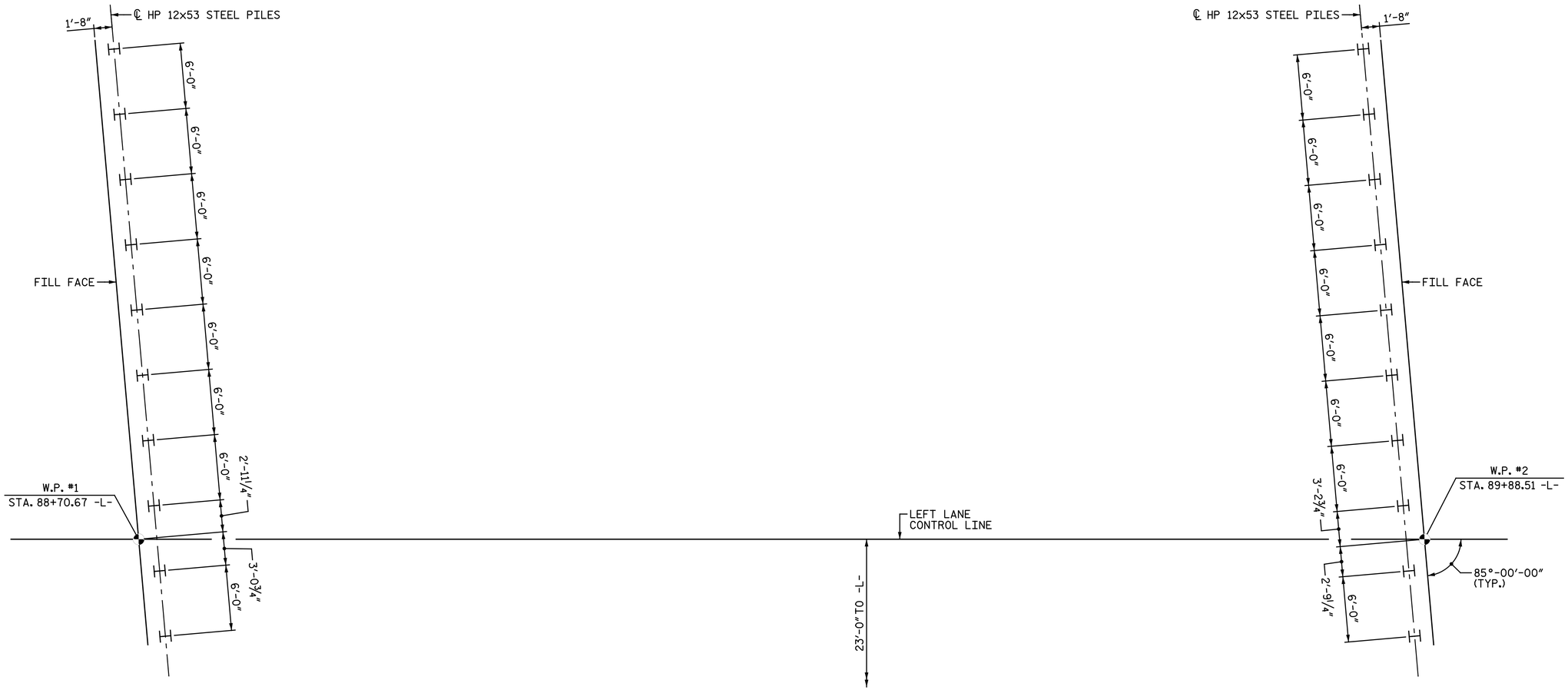
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER NC 58 BETWEEN SR 1581 AND SR 1004

LEFT LANE

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



INTEGRAL
END BENT 1

INTEGRAL
END BENT 2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINES.

ALL PILES ARE VERTICAL.

NOTES:

FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 AND END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 122.5 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 205 TONS PER PILE.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENT NO. 1 OR END BENT NO. 2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS AND FOR PILE DRIVING CRITERIA, SEE PILE DRIVING CRITERIA PROVISION.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 40-50 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

OBSERVE A 2 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO. 1 AND END BENT NO. 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SPECIAL PROVISIONS.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-
28+62.92 -Y1-

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

DocuSigned by: Vipul A Patel

7/26/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER NC 58 BETWEEN SR 1581 AND SR 1004

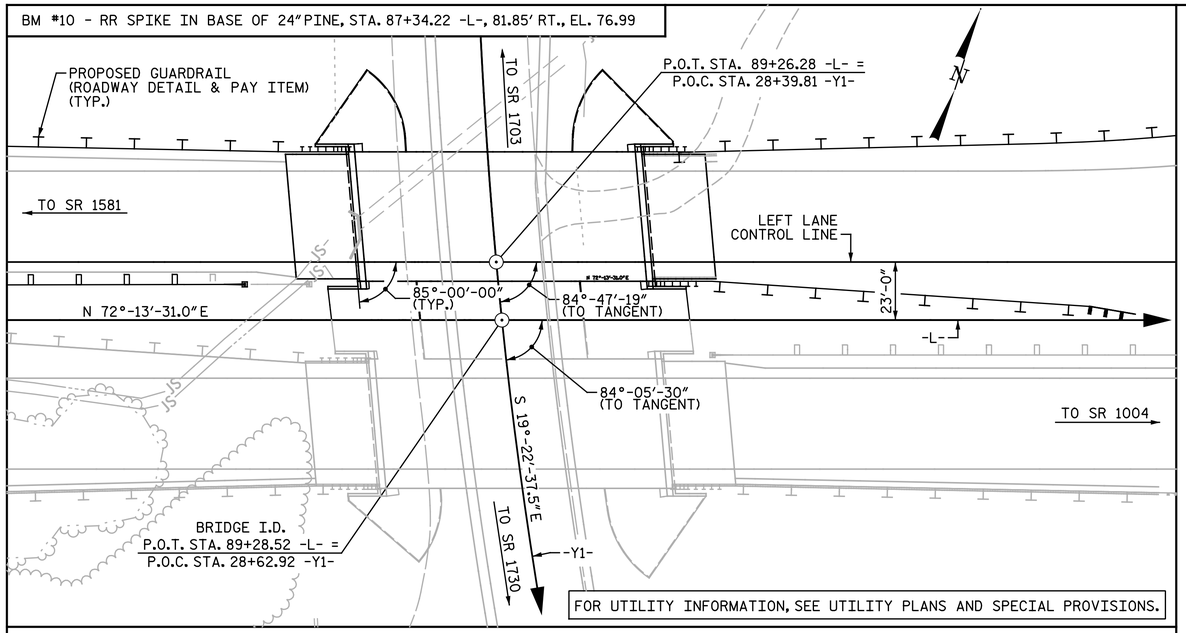
LEFT LANE

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

Michael Baker INTERNATIONAL

Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

DRAWN BY : M. D. MAYHEW DATE : 4-17-17
CHECKED BY : V. A. PATEL DATE : 5-18-17



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 PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

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 MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.

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

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

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

LOCATION	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	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
	EA.	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	EA.	NO.	LIN. FT.	EA.	LIN. FT.	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE		6,039	7,387				5	579.48					232.33		LUMP SUM
END BENT 1				42.8		6,893			10	10	800	5		350	
END BENT 2				42.8		6,893			10	10	800	5		430	
TOTAL	1	6,039	7,387	85.6	LUMP SUM	13,786	5	579.48	20	20	1,600	10	232.33	780	LUMP SUM

DRAWN BY : M. D. MAYHEW DATE : 4-17-17
CHECKED BY : V. A. PATEL DATE : 5-18-17

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 89+28.52 -L-
28+62.92 -Y1-
SHEET 3 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017 DocuSigned by: Vipul A Patel

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Michael Baker INTERNATIONAL
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER NC 58 BETWEEN SR 1581 AND SR 1004

LEFT LANE

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

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

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE											SERVICE III LIMIT STATE						COMMENT NUMBER
								MOMENT					SHEAR						MOMENT						
							LIVE-LOAD FACTORS $\gamma_{(LL)}$	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 $\gamma_{(LL)}$	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	1	1.06	--	1.75	0.971	1.41	A	5	57.24	0.984	1.19	A	5	80.42	1.00	0.971	1.06	A	5	57.24	1, 2
		HL-93 (OPERATING)	N/A		1.74	--	1.35	0.971	1.83	A	5	57.24	1.012	1.74	A	3	92.01	N/A	-	-	-	-	-	2
		HS-20 (INVENTORY)	36.000	2	1.53	55.08	1.75	0.971	2.03	A	5	57.24	1.012	1.80	A	3	92.01	1.00	0.971	1.53	A	5	57.24	1, 2
		HS-20 (OPERATING)	36.000		2.38	85.68	1.35	0.971	2.64	A	5	57.24	1.012	2.38	A	3	92.01	N/A	-	-	-	-	-	2
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.70	49.95	1.40	0.971	6.14	A	5	57.24	1.012	5.90	A	3	92.01	1.00	0.971	3.70	A	5	57.24	1, 2
		SNGARBS2	20.000		2.66	53.20	1.40	0.971	4.40	A	5	57.24	1.012	4.08	A	3	92.01	1.00	0.971	2.66	A	5	57.24	1, 2
		SNAGRIS2	22.000		2.47	54.34	1.40	0.971	4.10	A	5	57.24	1.012	3.75	A	3	92.01	1.00	0.971	2.47	A	5	57.24	1, 2
		SNCOTTS3	27.250		1.84	50.14	1.40	0.971	3.05	A	5	57.24	1.012	2.85	A	3	92.01	1.00	0.971	1.84	A	5	57.24	1, 2
		SNAGGRS4	34.925		1.50	52.39	1.40	0.971	2.48	A	5	57.24	1.012	2.29	A	3	92.01	1.00	0.971	1.50	A	5	57.24	1, 2
		SNS5A	35.550		1.47	52.26	1.40	0.971	2.43	A	5	57.24	1.012	2.30	A	3	92.01	1.00	0.971	1.47	A	5	57.24	1, 2
		SNS6A	39.950		1.33	53.13	1.40	0.971	2.20	A	5	57.24	1.012	2.07	A	3	92.01	1.00	0.971	1.33	A	5	57.24	1, 2
		SNS7B	42.000		1.27	53.34	1.40	0.971	2.10	A	5	57.24	1.012	2.00	A	3	92.01	1.00	0.971	1.27	A	5	57.24	1, 2
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.62	53.46	1.40	0.971	2.68	A	5	57.24	1.012	2.51	A	3	92.01	1.00	0.971	1.62	A	5	57.24	1, 2
		TNT4A	33.075		1.62	53.58	1.40	0.971	2.68	A	5	57.24	1.012	2.46	A	3	92.01	1.00	0.971	1.62	A	5	57.24	1, 2
		TNT6A	41.600		1.31	54.50	1.40	0.971	2.17	A	5	57.24	1.012	2.10	A	3	92.01	1.00	0.971	1.31	A	5	57.24	1, 2
		TNT7A	42.000		1.31	55.02	1.40	0.971	2.16	A	5	57.24	1.012	2.07	A	3	92.01	1.00	0.971	1.31	A	5	57.24	1, 2
		TNT7B	42.000		1.33	55.86	1.40	0.971	2.21	A	5	57.24	1.012	1.97	A	3	92.01	1.00	0.971	1.33	A	5	57.24	1, 2
		TNAGRIT4	43.000		1.28	55.04	1.40	0.971	2.12	A	5	57.24	1.012	1.91	A	3	92.01	1.00	0.971	1.28	A	5	57.24	1, 2
		TNAGT5A	45.000		1.22	54.90	1.40	0.971	2.01	A	5	57.24	1.012	1.87	A	3	92.01	1.00	0.971	1.22	A	5	57.24	1, 2
		TNAGT5B	45.000	3	1.21	54.45	1.40	0.971	2.00	A	5	57.24	1.012	1.81	A	3	92.01	1.00	0.971	1.21	A	5	57.24	1, 2

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:

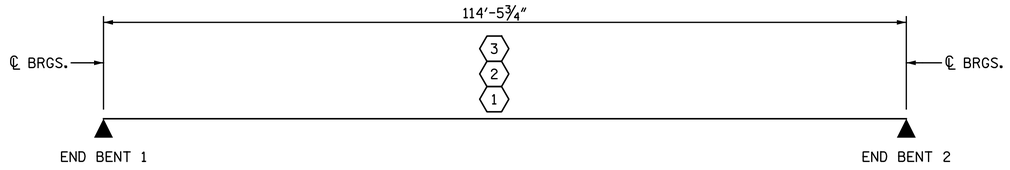
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

COMMENTS:

1. A SERVICE III LIVE LOAD FACTOR OF 1.0 WAS USED TO BE CONSISTENT WITH THE VALUE USED DURING DESIGN.
2. DISTANCE FROM LEFT END OF SPAN IS GIVEN WITH RESPECT TO CENTERLINE OF BEARING AND IS MEASURED ALONG THE CONTROLLING GIRDER.

(#) 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
GIRDER LOCATION IS PROVIDED USING GIRDER NUMBER, WHERE GIRDER 1 IS THE LEFT EXTERIOR GIRDER LOOKING AHEAD STATION. SEE "GIRDER LAYOUT" SHEET FOR ALL GIRDER LOCATIONS.



LRFR SUMMARY

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A Patel

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL

Michael Baker Engineering
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Cary, North Carolina 27518
NC License No.: F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

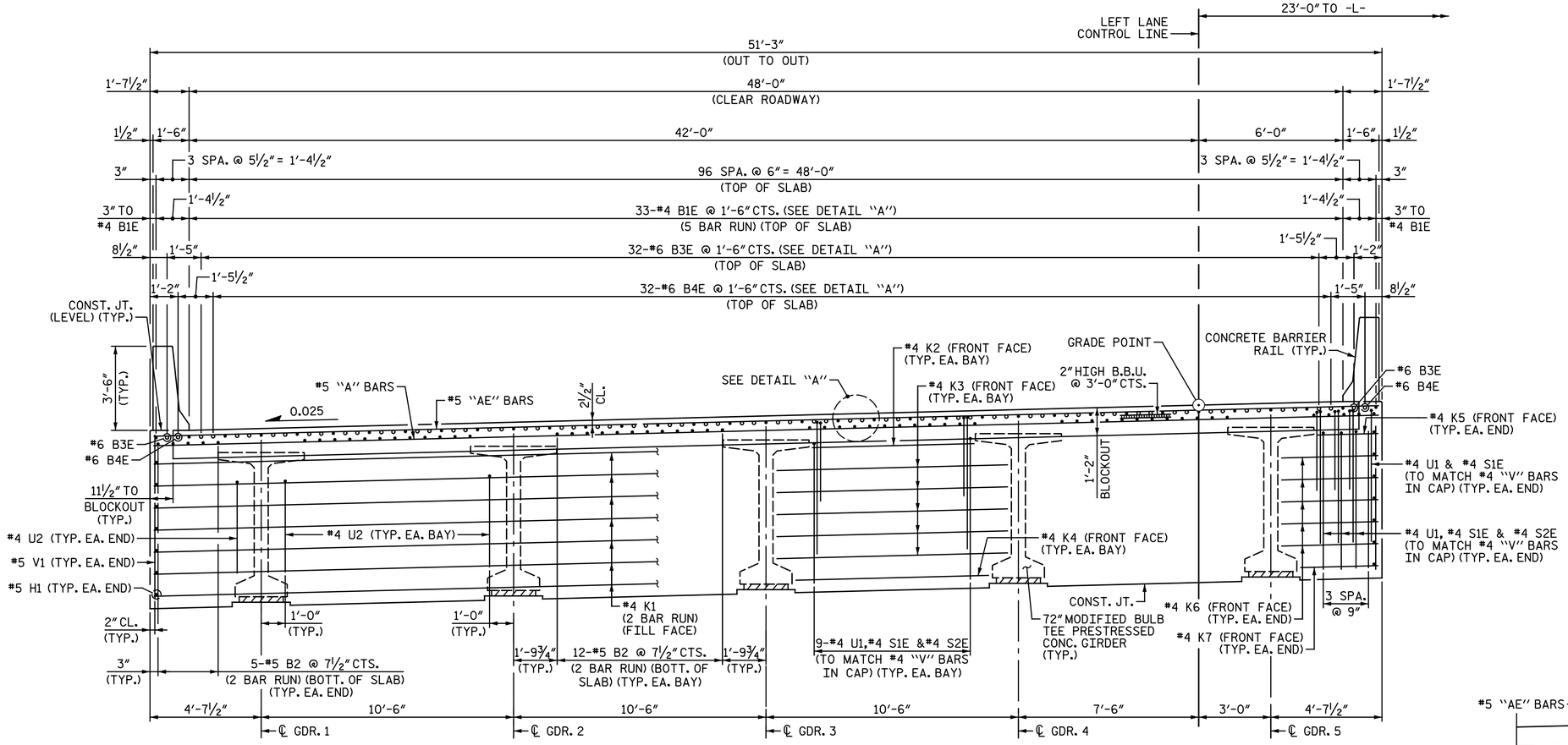
STANDARD

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

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

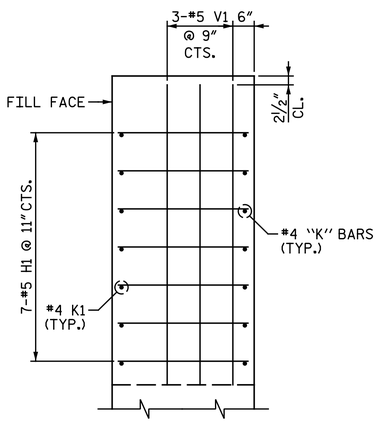
ASSEMBLED BY : M. D. MAYHEW	DATE : 5-11-17	
CHECKED BY : V. A. PATEL	DATE : 5-18-17	
DRAWN BY : MAA 1/08	REV. 11/12/08RR	MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11	MAA/GM

STD. NO. LRFR1



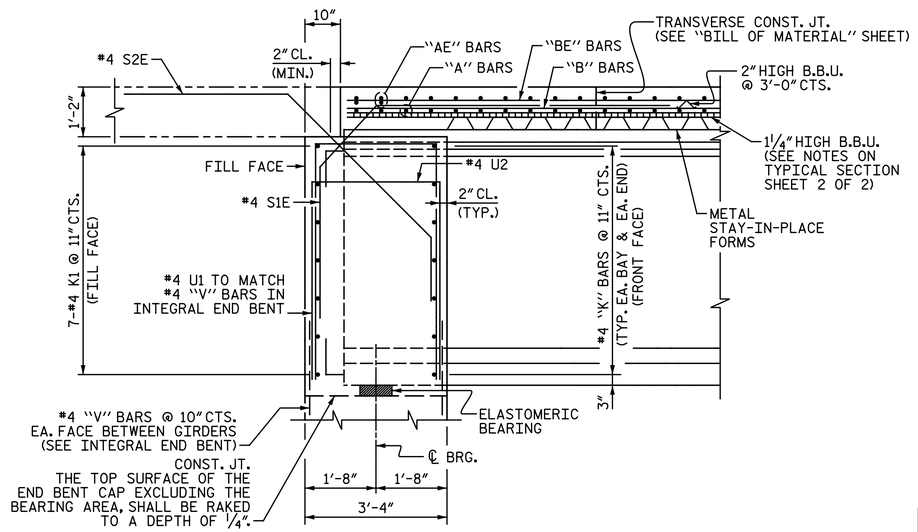
TYPICAL SECTION AT INTEGRAL END BENT

(END BENT 1 SHOWN, END BENT 2 SIMILAR)
(#5 "AE" BARS ALONG SKEW & #4 B5E BARS NOT SHOWN FOR CLARITY)

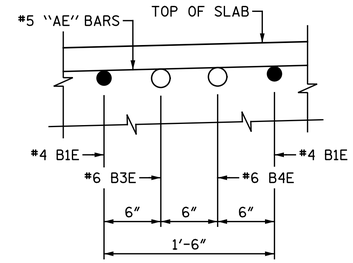


END OF DIAPHRAGM DETAIL

(END BENT 1 SHOWN, END BENT 2 SIMILAR)



END OF GIRDER DETAIL AT INTEGRAL END BENT



DETAIL "A"

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 02337 ENGINEER VIRUL A. PATEL

7/26/2017

DocuSigned by: Virul A Patel

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NC License No.: F-1084

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

DRAWN BY : M. D. MAYHEW DATE : 1-13-17
CHECKED BY : V. A. PATEL DATE : 3-13-17

NOTES:

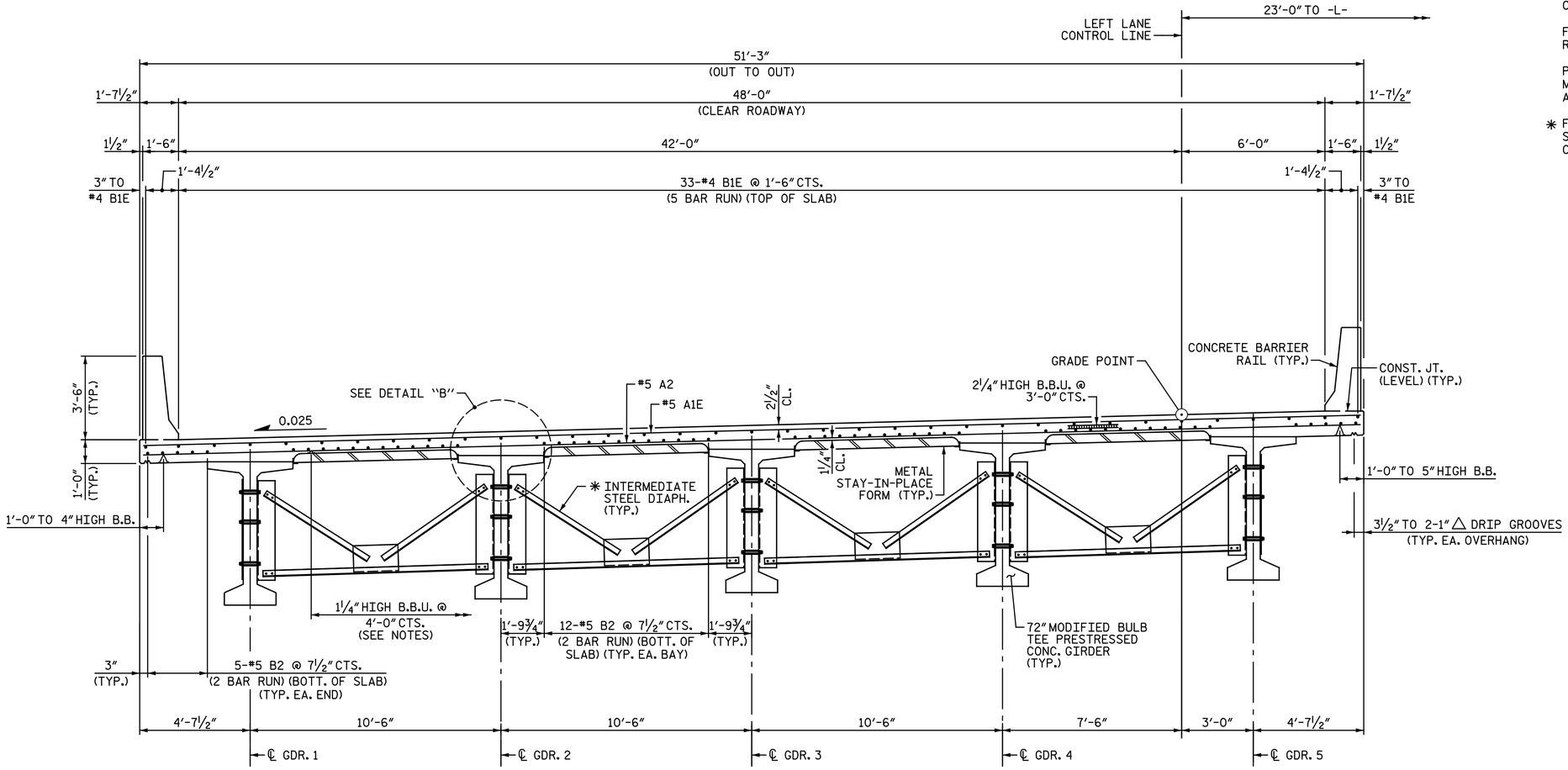
PROVIDE 1¼″ HIGH BEAM BOLSTERS UPPER AT 4′-0″ CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF ″A″ BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4′-0″ CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF ″A″ BARS A CLEAR DISTANCE OF 2½″ ABOVE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

LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS AND TO FACILITATE INSTALLATION OF CONCRETE BARRIER RAIL REINFORCEMENT.

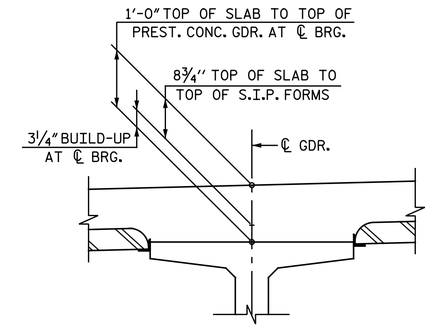
FOR CONCRETE BARRIER RAIL DETAILS, SEE ″CONCRETE BARRIER RAIL″ SHEET.

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

✳ FOR DETAILS OF INTERMEDIATE DIAPHRAGMS, SEE ″INTERMEDIATE STEEL DIAPHRAGMS FOR 72″ MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS″ SHEET.



TYPICAL SECTION @ INTERMEDIATE DIAPHRAGM



DETAIL ″B″

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A Patel

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

LEFT LANE

Michael Baker INTERNATIONAL

Michael Baker Engineering
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NC License No.: F-1084

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

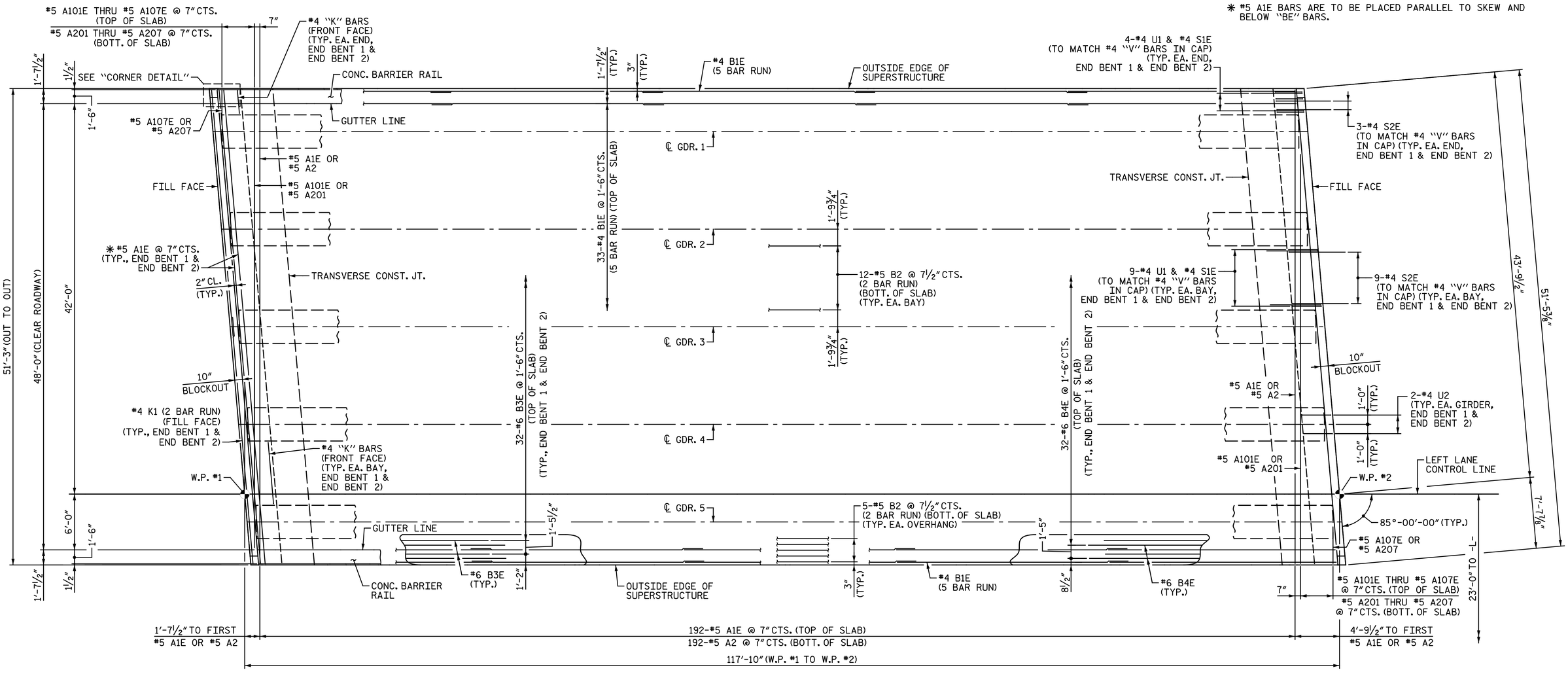
DRAWN BY : M. D. MAYHEW DATE : 1-17-17
CHECKED BY : V. A. PATEL DATE : 3-13-17

NOTES:

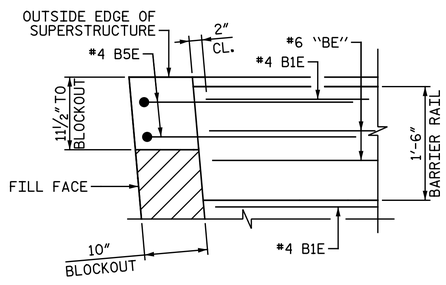
FOR REINFORCING STEEL IN CONCRETE BARRIER RAIL, SEE "CONCRETE BARRIER RAIL" SHEET.

FOR DECK POURING SEQUENCE AND LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE "BILL OF MATERIAL" SHEET.

✳ #5 A1E BARS ARE TO BE PLACED PARALLEL TO SKEW AND BELOW "BE" BARS.

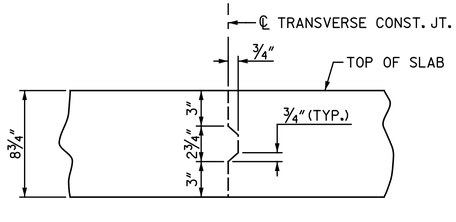


SPAN A
PLAN OF SPAN



CORNER DETAIL

ALL CORNERS SIMILAR.
TRANSVERSE BARS NOT SHOWN FOR CLARITY.



TRANSVERSE CONST. JT. DETAIL

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

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#4 K1	-	2'-5"

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

DocuSigned by: Vipul A Patel

7/26/2017

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN

LEFT LANE

DRAWN BY : M. D. MAYHEW DATE : 1-20-17
CHECKED BY : V. A. PATEL DATE : 3-13-17

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Michael Baker INTERNATIONAL

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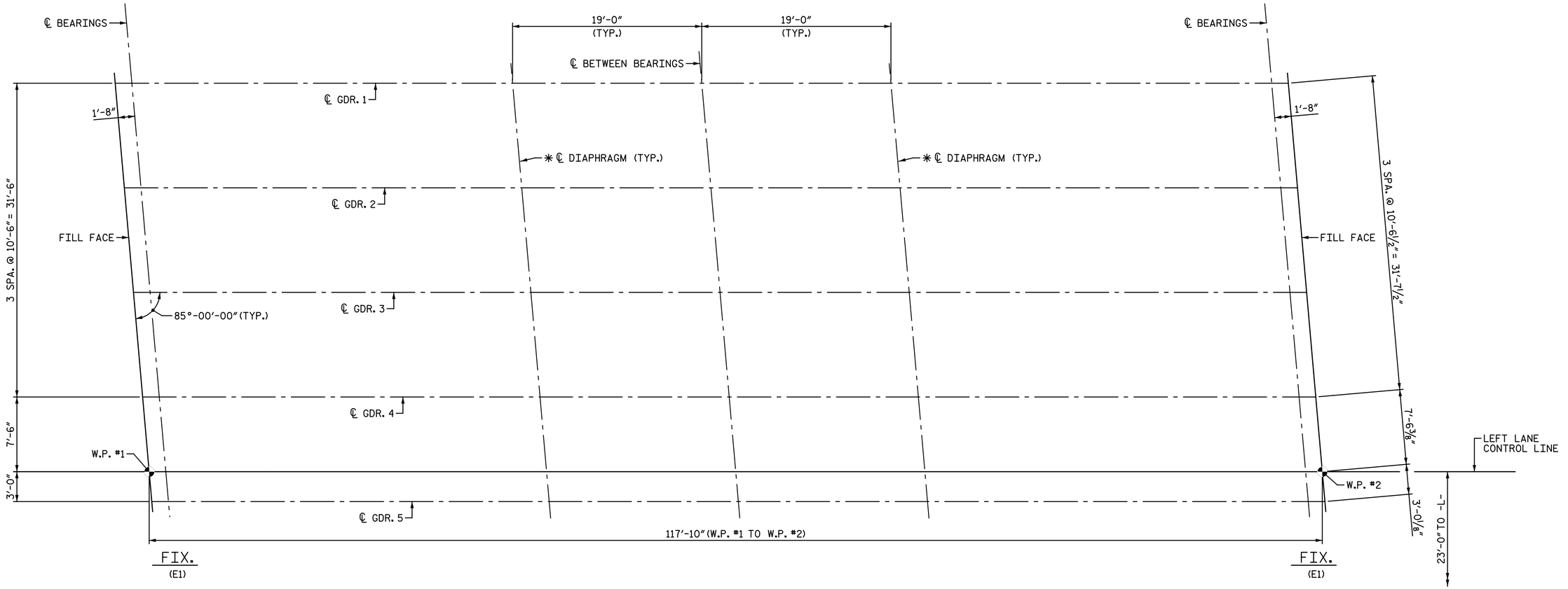
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

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



SPAN A

GIRDER LAYOUT

✳ INTERMEDIATE STEEL DIAPHRAGMS NOT SHOWN FOR CLARITY

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIRUL A. PATEL

7/26/2017

DocuSigned by: Virul A Patel

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

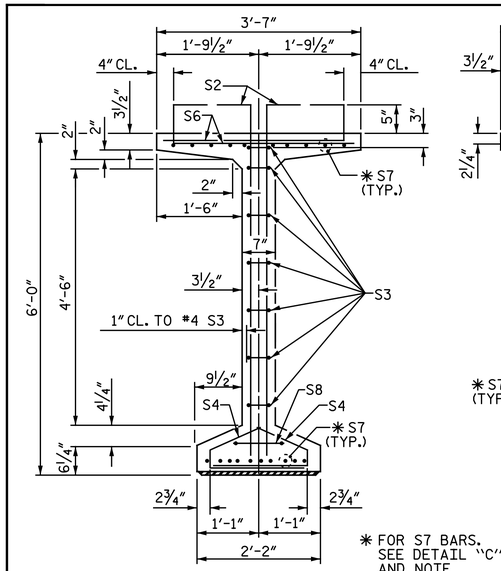
SUPERSTRUCTURE

GIRDER LAYOUT

LEFT LANE

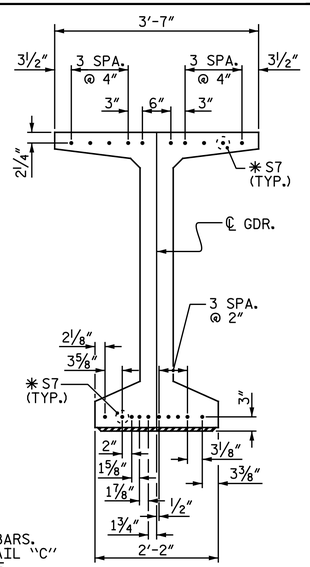
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-8
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : M. D. MAYHEW DATE : 1-20-17
CHECKED BY : V. A. PATEL DATE : 3-13-17

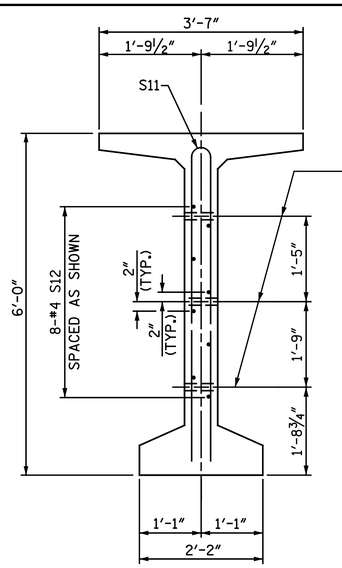


✱ FOR S7 BARS, SEE DETAIL "C" AND NOTE

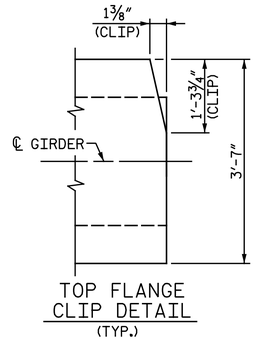
SECTION A-A



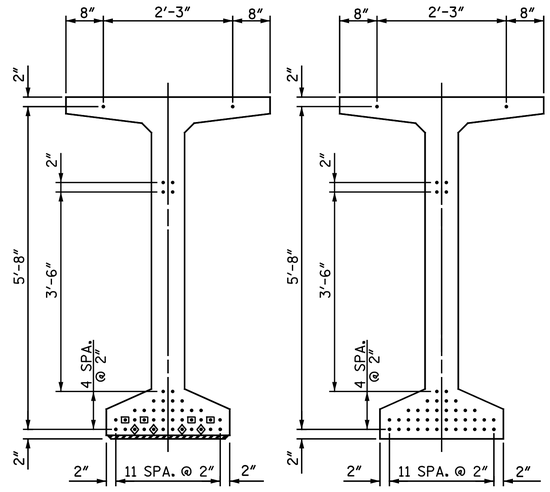
DETAIL "C"



SECTION C-C
(S1, S6 AND S9 BARS NOT SHOWN)



TOP FLANGE CLIP DETAIL (TYP.)

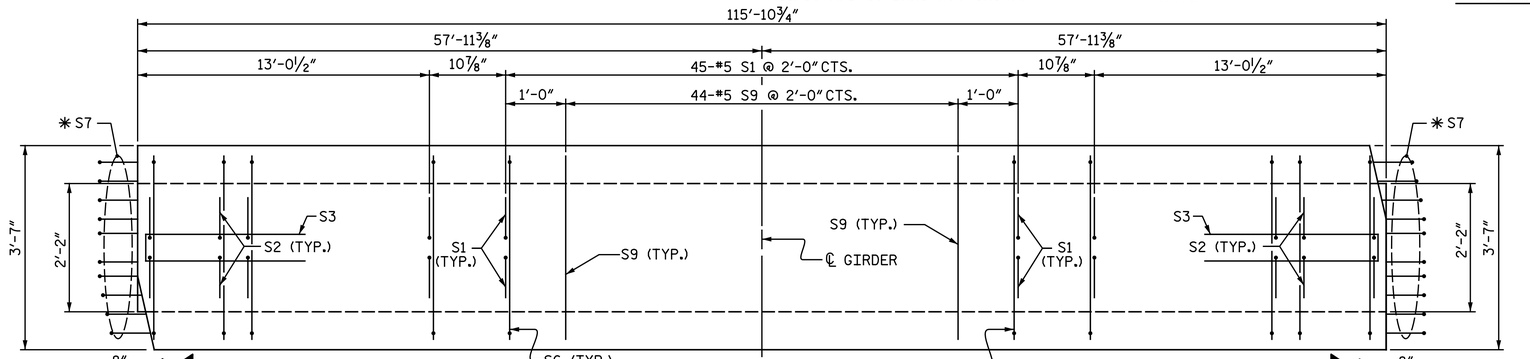


AT END OF GIRDER

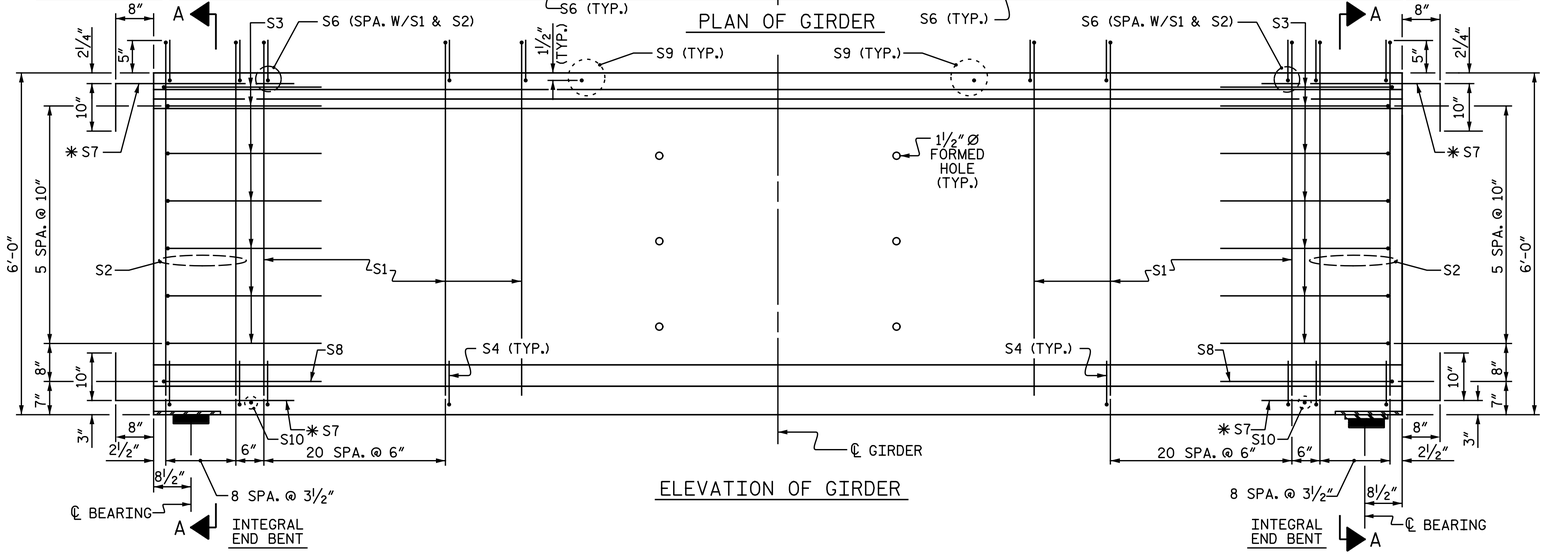
AT ℄ OF GIRDER

0.6"Ø LOW RELAXATION STRAND LAYOUT

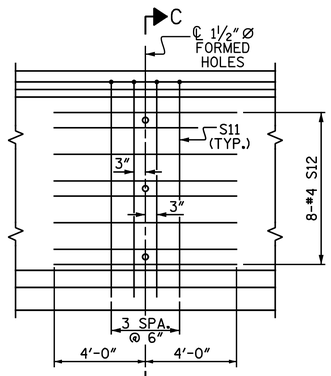
DEBONDING LEGEND
- ● FULLY BONDED STRANDS
- ▣ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◈ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER



PLAN OF GIRDER



ELEVATION OF GIRDER



PARTIAL ELEVATION
SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

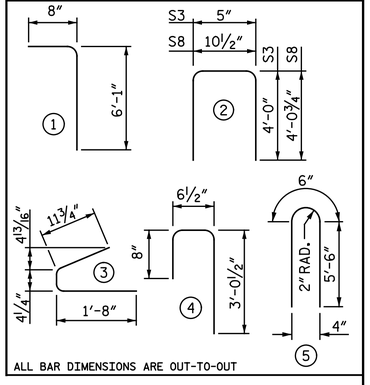
0.6"Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	174	#4	1	6'-9"	785
S2	36	#5	1	6'-9"	253
S3	14	#4	2	8'-5"	79
S4	120	#4	3	3'-0"	240
S6	210	#5	4	4'-3"	931
✱S7	40	#5	STR	3'-8"	153
S8	2	#5	2	9'-0"	19
S9	44	#5	STR	3'-3"	149
S10	2	#3	STR	1'-10"	1
S11	8	#5	5	11'-6"	96
S12	16	#4	STR	8'-0"	86

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	9,500 PSI CONCRETE	0.6"Ø L.R. STRANDS
	LB.	C.Y.	No.
GIRDER	2,792	24.8	44

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
5	115'-10¾"	579.48'

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 89+28.52 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
72" PRESTRESSED CONCRETE MODIFIED BULB TEE

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017
DocuSigned by: Vipul A Patel

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Michael Baker INTERNATIONAL
Michael Baker Engineering
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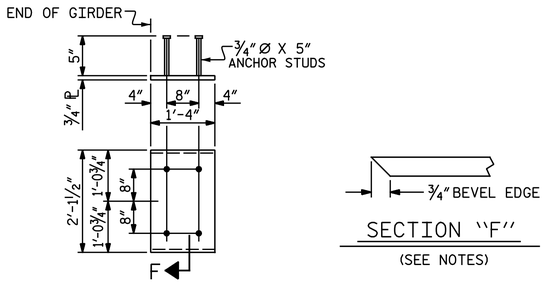
NC License No.: F-1084

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

ASSEMBLED BY : V. A. PATEL		DATE : 3/7/2017
CHECKED BY : D. A. COLETTI		DATE : 4/17/2017
DRAWN BY : EEM 2/6/97	REV. 10/1/11	MAA/GM
CHECKED BY : VAP 2/6/97	REV. 6/13	MAA/GM
	REV. 1/15	MAA/TMG

STD. NO. PCG8



EMBEDDED PLATE "B-1" DETAILS

TWO EMBEDDED PLATES "B-1" ARE REQUIRED FOR EACH GIRDER.

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.

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 7,500 PSI.

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

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

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

THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4,500 LBS.

FOR EMBEDDED CLIPS FOR PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

DEAD LOAD DEFLECTION TABLE FOR SPAN A

0.6 Ø LOW RELAXATION	GIRDERS 1 THRU 5																				
TWENTIETH POINTS	0.00	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	1.00
CAMBER (GIRDER IN PLACE) ↑	0.000	0.043	0.084	0.123	0.159	0.191	0.217	0.239	0.255	0.264	0.267	0.264	0.255	0.239	0.217	0.191	0.159	0.123	0.084	0.043	0.000
DEFLECTION DUE TO D.L. * ↓	0.000	0.026	0.048	0.074	0.094	0.115	0.130	0.144	0.153	0.159	0.161	0.159	0.153	0.144	0.130	0.115	0.094	0.074	0.048	0.026	0.000
FINAL CAMBER ↑	0"	3/16"	3/8"	9/16"	3/4"	7/8"	1"	1 1/8"	1 3/16"	1 1/4"	1 1/4"	1 1/4"	1 3/16"	1 1/8"	1"	7/8"	3/4"	9/16"	3/8"	3/16"	0"

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A Patel

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Michael Baker INTERNATIONAL

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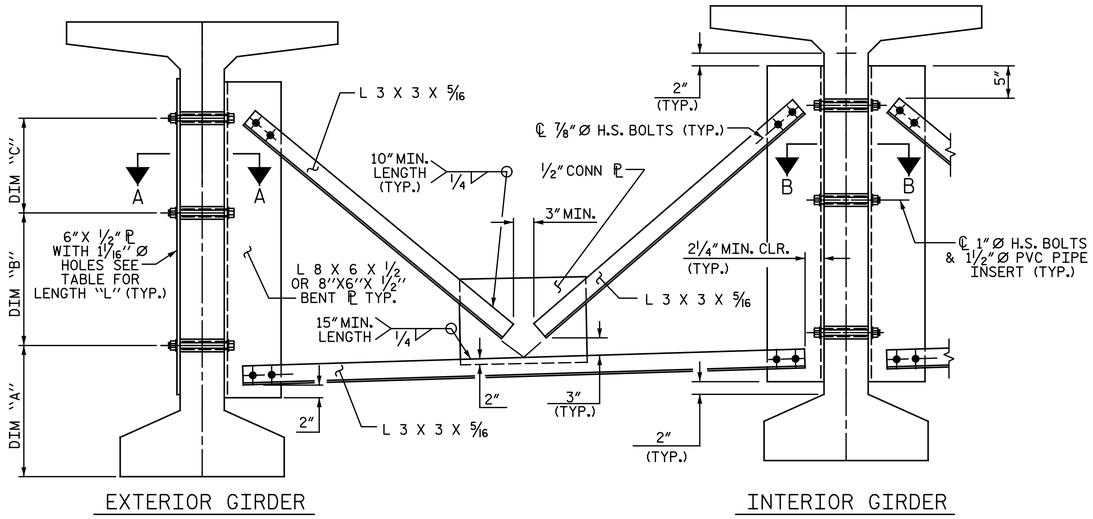
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRESTRESSED CONCRETE GIRDER DETAILS

LEFT LANE

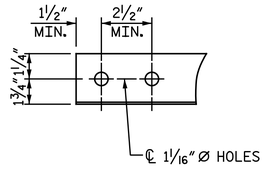
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SI-10
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : C. E. MAYHEW DATE : 5-9-17
CHECKED BY : V. A. PATEL DATE : 5-22-17

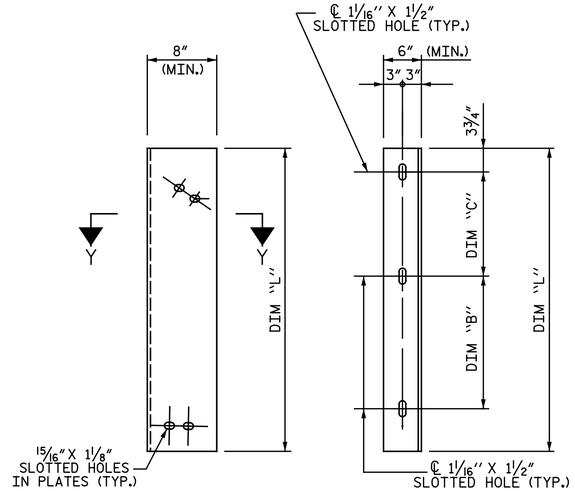


EXTERIOR GIRDER — INTERIOR GIRDER

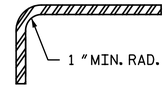
PART SECTION AT INTERMEDIATE DIAPHRAGM



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



DIAPHRAGM FACE — WEB FACE



SECTION Y-Y

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 GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY AN 8 MIL THICK 99.99 PERCENT ZINC (W-Zn-1) THERMAL SPRAYED COATING WITH A 0.5 MIL THICK SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

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

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

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

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

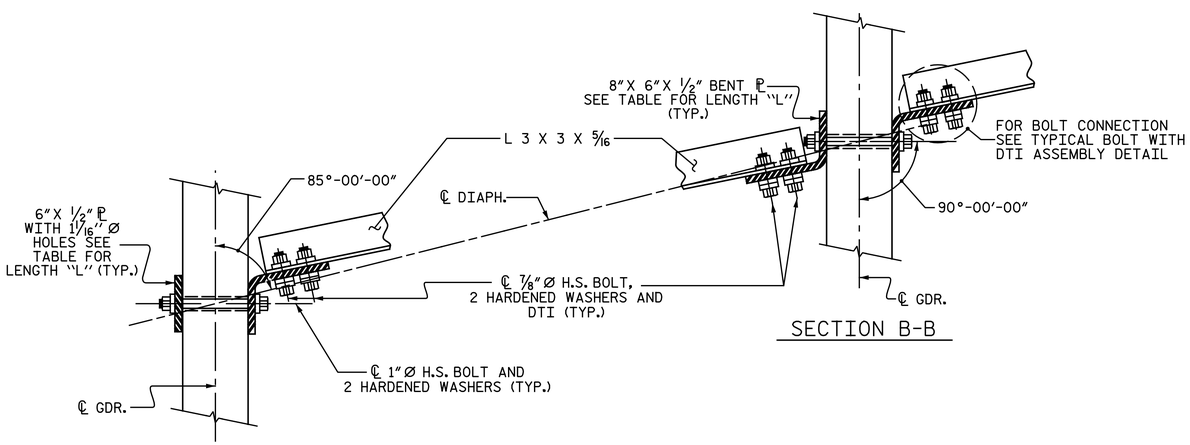
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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

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

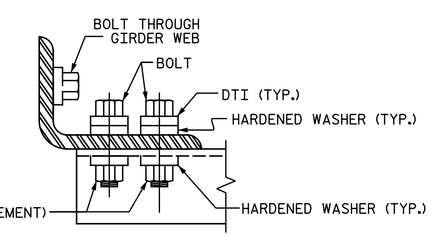
TABLE

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
72" BULB TEE	1'-8 3/4"	1'-9"	1'-5"	4'-2"



SECTION A-A — SECTION B-B

CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A Patel

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

ASSEMBLED BY : M. D. MAYHEW	DATE : 1-17-17
CHECKED BY : V. A. PATEL	DATE : 3-13-17
DRAWN BY : RWW 11/09	ADDED 11/23/09R
CHECKED BY : GM 11/09	REV. 10/1/11 MAA/GM

Michael Baker INTERNATIONAL

Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

REVISIONS						SHEET NO.
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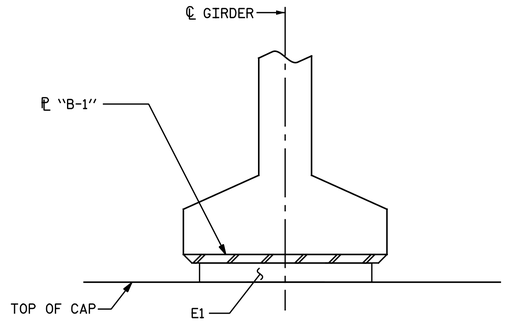
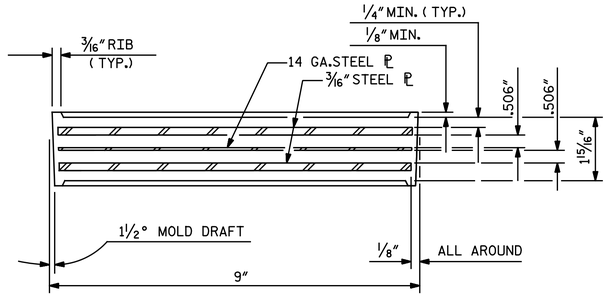
1			3			TOTAL SHEETS
2			4			25

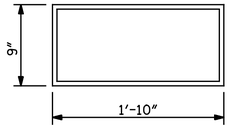
STD. NO. PCG11



SECTION
(AT INTEGRAL END BENTS)



TYPICAL SECTION OF ELASTOMERIC BEARING



E1 (10 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE IV

NOTES

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.

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

ASSEMBLED BY : N.B.SPEAKS		DATE : 1-9-17
CHECKED BY : V. A. PATEL		DATE : 5-23-17
DRAWN BY : WJH 8/89	REV. 10/1/11	MAA/GM
CHECKED BY : CRK 8/89	REV. 6/13	AAC/MAA
	REV. 1/15	MAA/TMG

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIRUL A. PATEL

7/26/2017

DocuSigned by: Virul A Patel

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Cary, North Carolina 27518
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

ELASTOMERIC BEARING DETAILS

PRESTRESSED CONCRETE GIRDER
SUPERSTRUCTURE
LEFT LANE

REVISIONS						SHEET NO.
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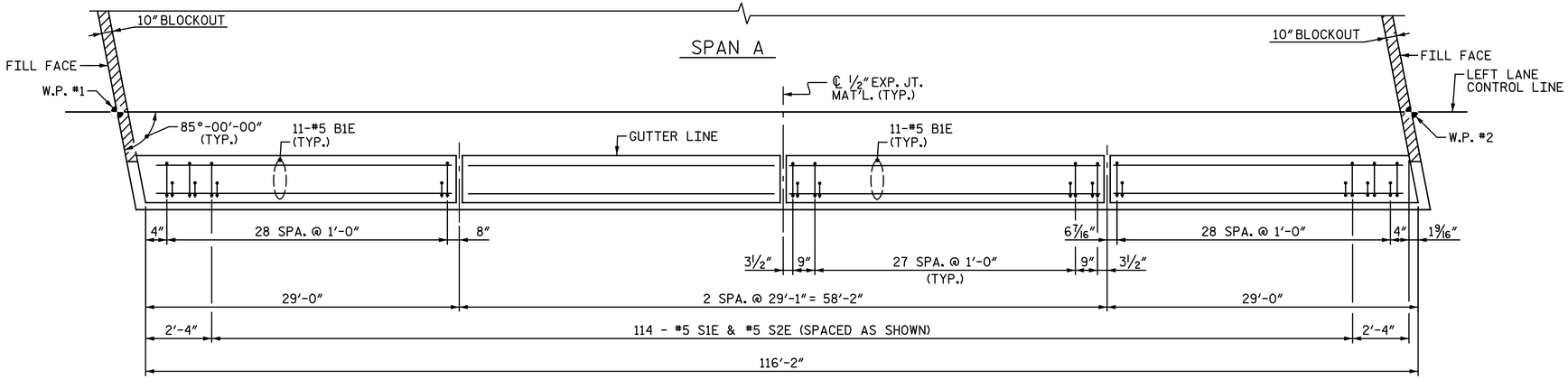
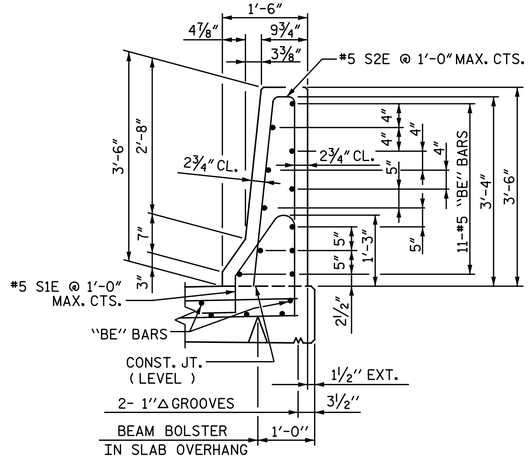
1			3			TOTAL SHEETS
2			4			25

STD. NO. EB3

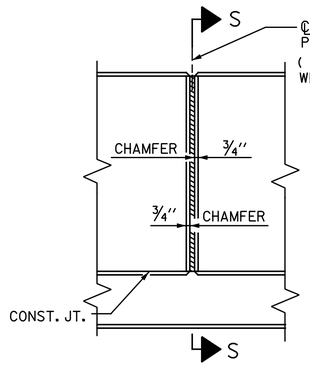


PLAN OF BARRIER RAIL

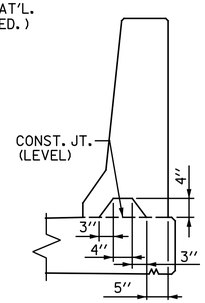
(RIGHT RAIL SHOWN, LEFT RAIL SIMILAR BY ROTATION)



SECTION THRU RAIL



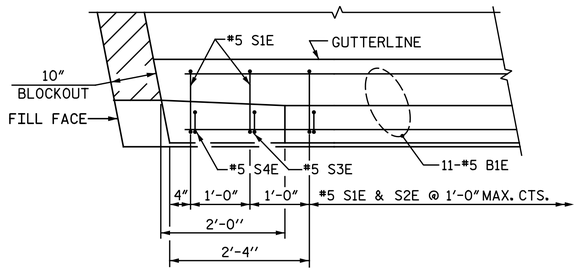
ELEVATION AT EXPANSION JOINTS



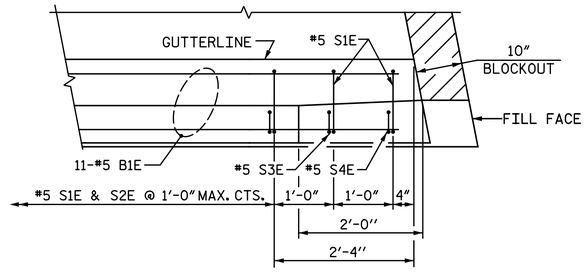
SECTION S-S

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

BARRIER RAIL DETAILS



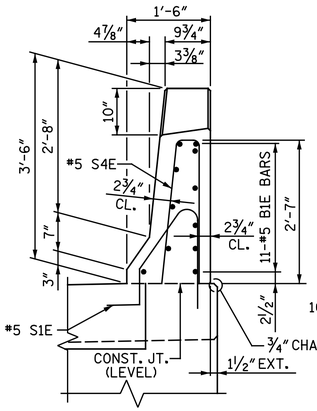
END BENT 1



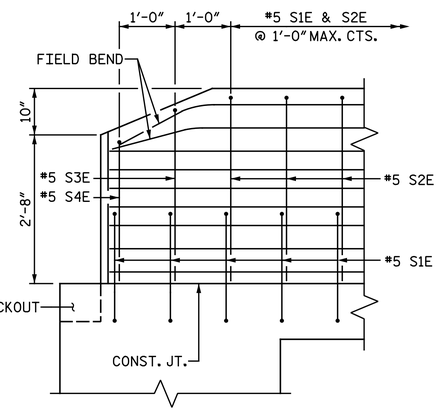
END BENT 2

PLAN

(RIGHT RAIL SHOWN, LEFT RAIL SIMILAR)



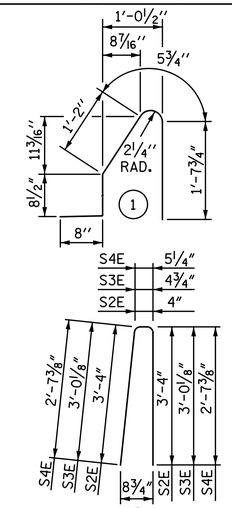
END VIEW



SIDE VIEW

END OF 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	88	#5	STR.	28' - 8"	2,631
S1E	236	#5	1	4' - 8"	1,149
S2E	228	#5	2	7' - 0"	1,665
S3E	4	#5	2	6' - 5"	27
S4E	4	#5	2	5' - 8"	24
EPOXY COATED REINFORCING STEEL				LBS.	5,496
CLASS AA CONCRETE				C.Y.	31.6
CONCRETE BARRIER RAIL				L.F.	232.33

NOTES

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

Vipul A. Patel

9/12/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

CONCRETE BARRIER RAIL

LEFT LANE

ASSEMBLED BY : N. B. SPEAKS	DATE : 9-11-17
CHECKED BY : V. A. PATEL	DATE : 9-12-17

DRAWN BY : ARB 5/87	REV. 10/1/11	MAA/GM
CHECKED BY : SJD 9/87	REV. 7/12	MAA/GM
	REV. 6/13	MAA/GM

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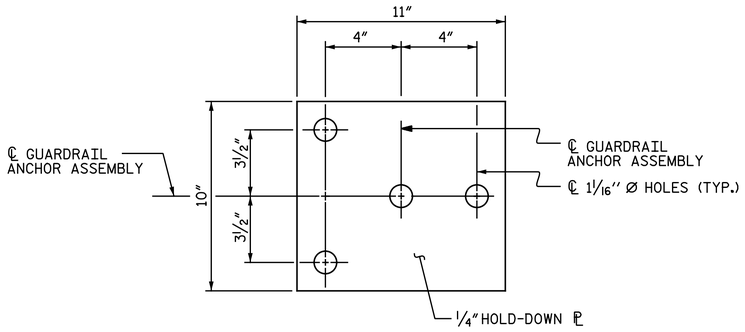
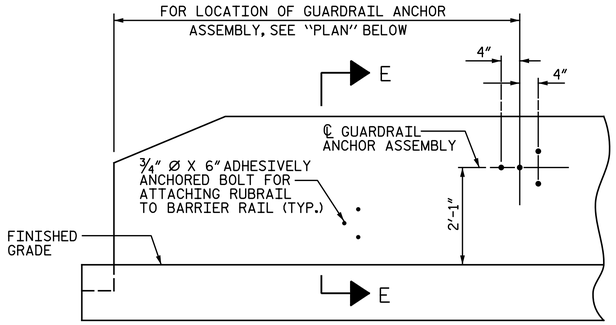
1			3			TOTAL SHEETS
2			4			25

STD. NO. CBR1



PLAN



ELEVATION

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.)

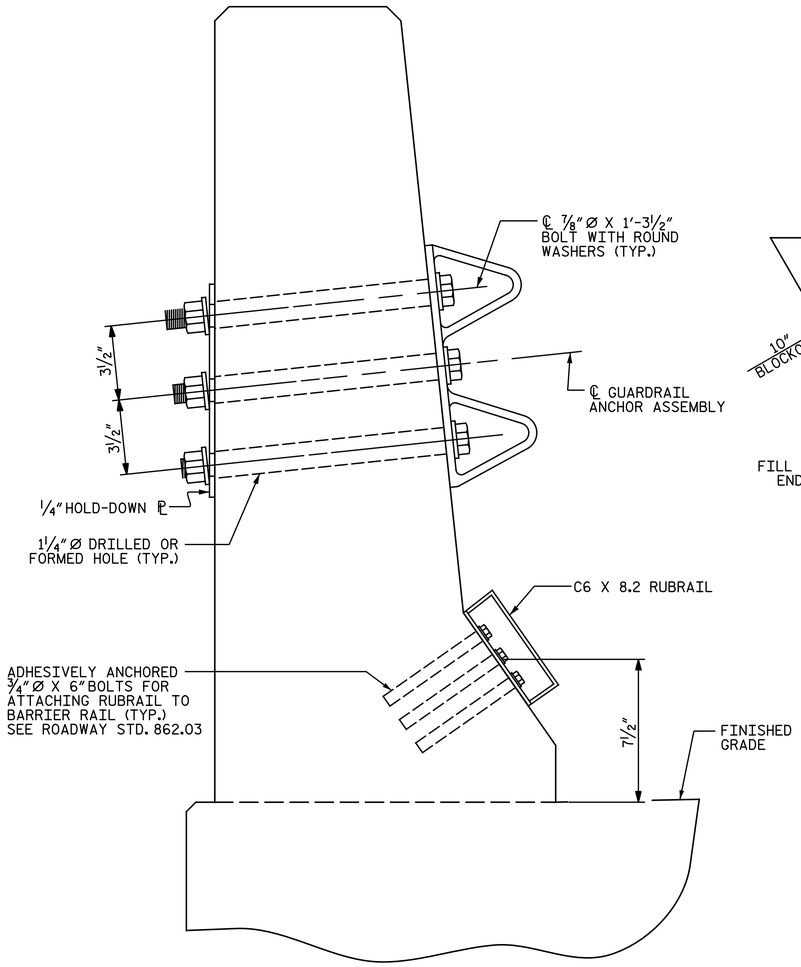
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

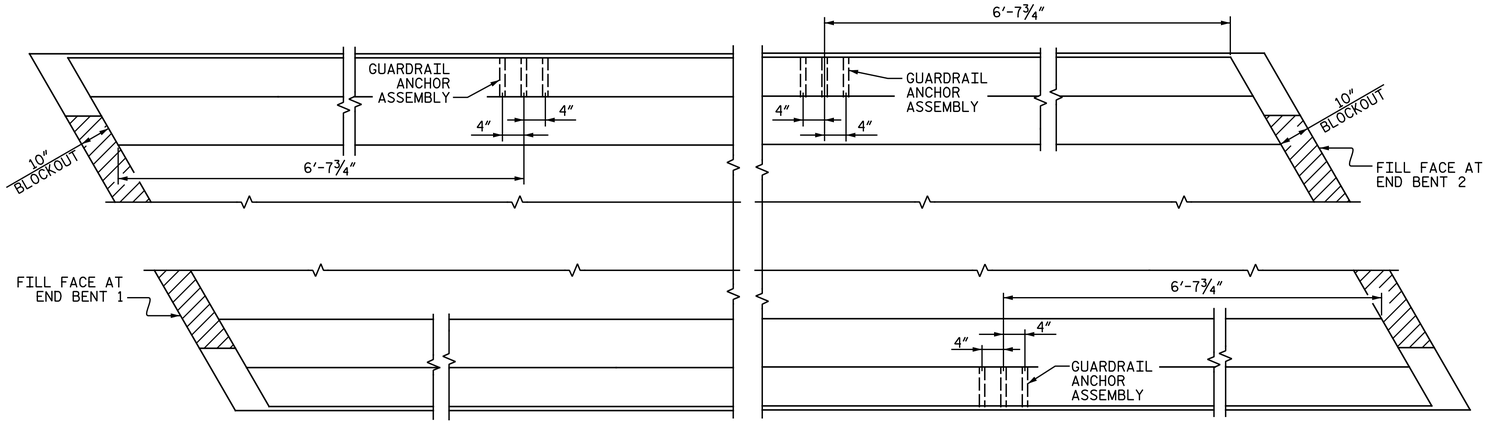
THE 1 1/4″ Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

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.



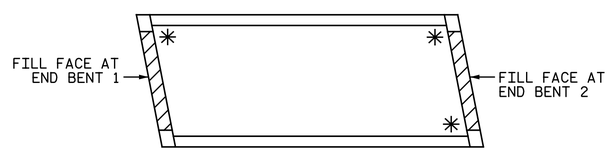
SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

Vipul A Patel

9/12/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

LEFT LANE

ASSEMBLED BY : N. B. SPEAKS	DATE : 9-11-17
CHECKED BY : V. A. PATEL	DATE : 9-12-17
DRAWN BY : TLA 5/06	REV. 10/1/11 MAA/GM
CHECKED BY : GM 5/06	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM

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Cary, North Carolina 27518
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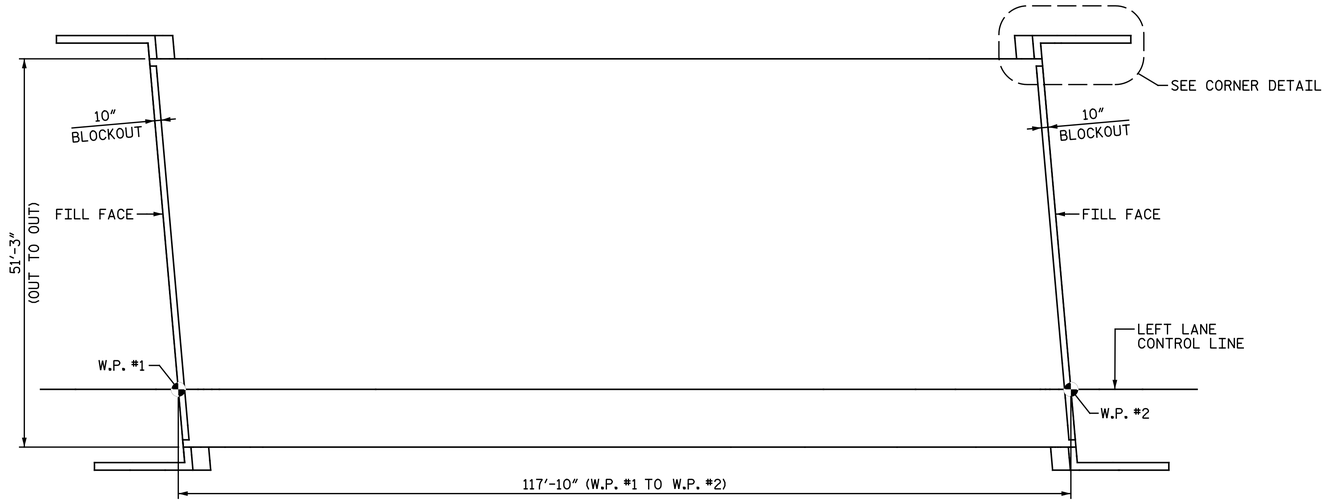
1			3			TOTAL SHEETS
2			4			25

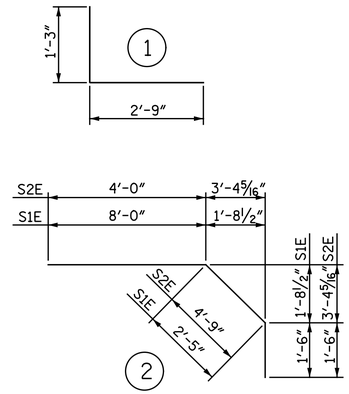
STD. NO. GRA2



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB

(SQ. FT. = 6,039)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
SPAN		19,760	20,371
POUR 1	179.2		
POUR 2	94.2		
TOTALS *	273.4	19,760	20,371

* QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

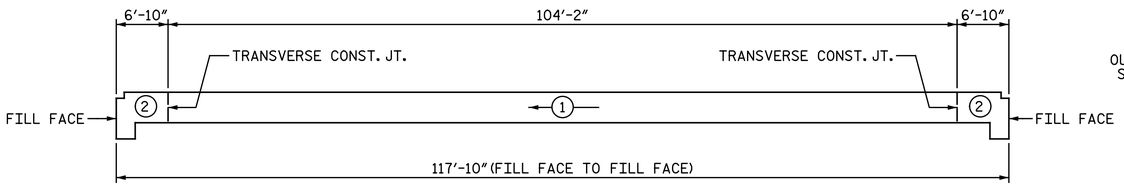
REINFORCING BAR SCHEDULE

SPAN A

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	196	#5	STR.	50′ - 11″	10,409
A2	192	#5	STR.	50′ - 11″	10,196
A101E	2	#5	STR.	43′ - 10″	91
A102E	2	#5	STR.	37′ - 2″	78
A103E	2	#5	STR.	30′ - 6″	64
A104E	2	#5	STR.	23′ - 10″	50
A105E	2	#5	STR.	17′ - 2″	36
A106E	2	#5	STR.	10′ - 6″	22
A107E	2	#5	STR.	3′ - 10″	8
A201	2	#5	STR.	43′ - 10″	91
A202	2	#5	STR.	37′ - 2″	78
A203	2	#5	STR.	30′ - 6″	64
A204	2	#5	STR.	23′ - 10″	50
A205	2	#5	STR.	17′ - 2″	36
A206	2	#5	STR.	10′ - 6″	22
A207	2	#5	STR.	3′ - 10″	8
B1E	175	#4	STR.	24′ - 10″	2,903
B2	116	#5	STR.	59′ - 0″	7,138
B3E	68	#6	STR.	25′ - 5″	2,596
B4E	68	#6	STR.	27′ - 7″	2,817
B5E	8	#4	1	4′ - 0″	21
H1	28	#5	STR.	3′ - 0″	88
K1	28	#4	STR.	26′ - 10″	502
K2	8	#4	STR.	6′ - 7″	35
K3	40	#4	STR.	9′ - 7″	256
K4	8	#4	STR.	8′ - 0″	43
K5	4	#4	STR.	2′ - 6″	7
K6	20	#4	STR.	4′ - 0″	53
K7	4	#4	STR.	3′ - 2″	8
S1E	88	#4	2	11′ - 11″	701
S2E	84	#4	2	10′ - 3″	575
U1	88	#4	3	14′ - 6″	852
U2	20	#4	3	10′ - 10″	145
V1	12	#5	STR.	7′ - 0″	88

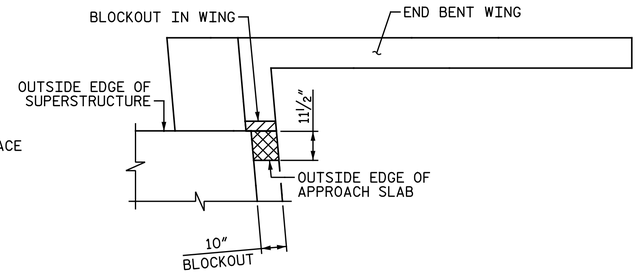
REINFORCING STEEL	LBS.	19,760
EPOXY COATED REINF. STEEL	LBS.	20,371

"E" SUFFIX DENOTES EPOXY COATED REINFORCING STEEL



POURING SEQUENCE

(#) DENOTES POUR NUMBER AND DIRECTION



CORNER DETAIL

CONCRETE SHALL BE POURED IN THE CROSS-HATCHED AREA TO MATCH THE TOP OF END BENT WING ELEVATIONS. UNLESS OTHERWISE DIRECTED BY THE ENGINEER, THE CONCRETE IN THESE AREAS SHALL BE PLACED AT THE SAME TIME THE BLOCKOUTS IN THE END BENT WINGS ARE POURED AS NOTED ON SHEET 1 OF "INTEGRAL END BENT 1" AND SHEET 1 OF "INTEGRAL END BENT 2" SHEETS.

GROOVING BRIDGE FLOORS

APPROACH SLABS	2,175	SQ.FT.
BRIDGE DECK	5,212	SQ.FT.
TOTAL	7,387	SQ.FT.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A Patel

DRAWN BY : M. D. MAYHEW DATE : 2-3-17

CHECKED BY : V. A. PATEL DATE : 3-13-17

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Michael Baker Engineering
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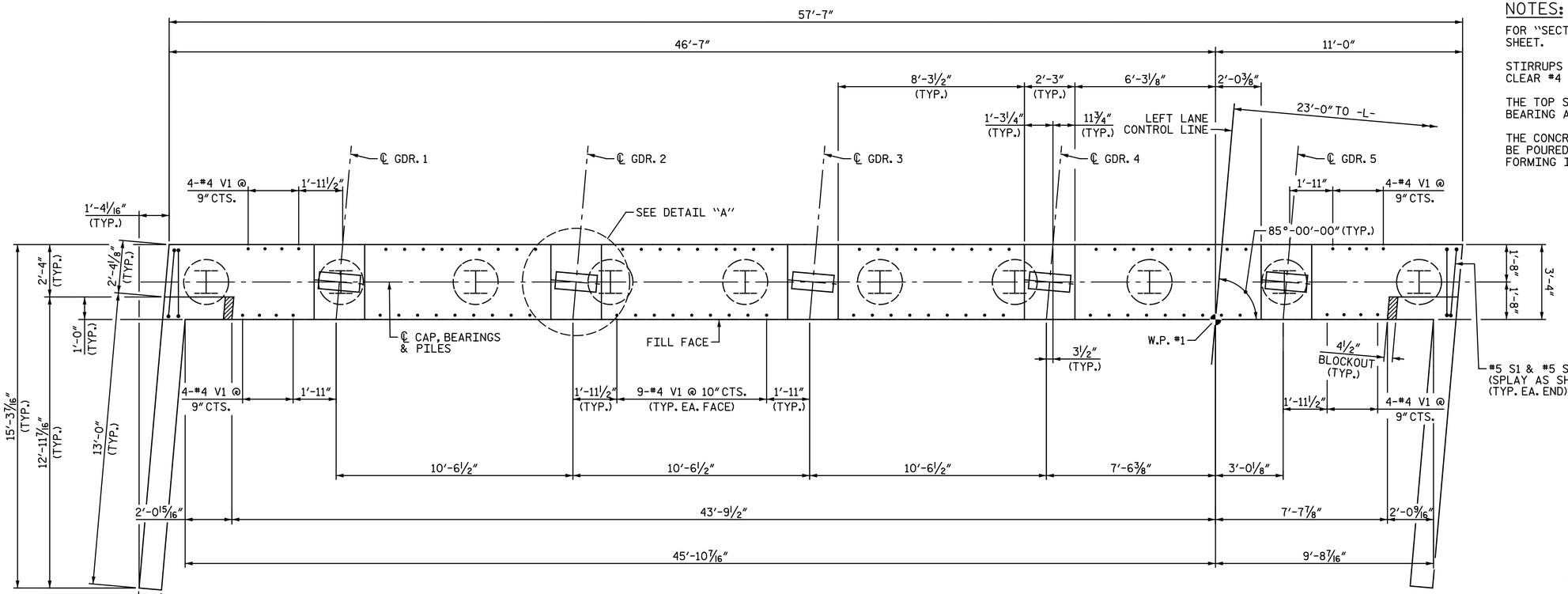
NC License No.: F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

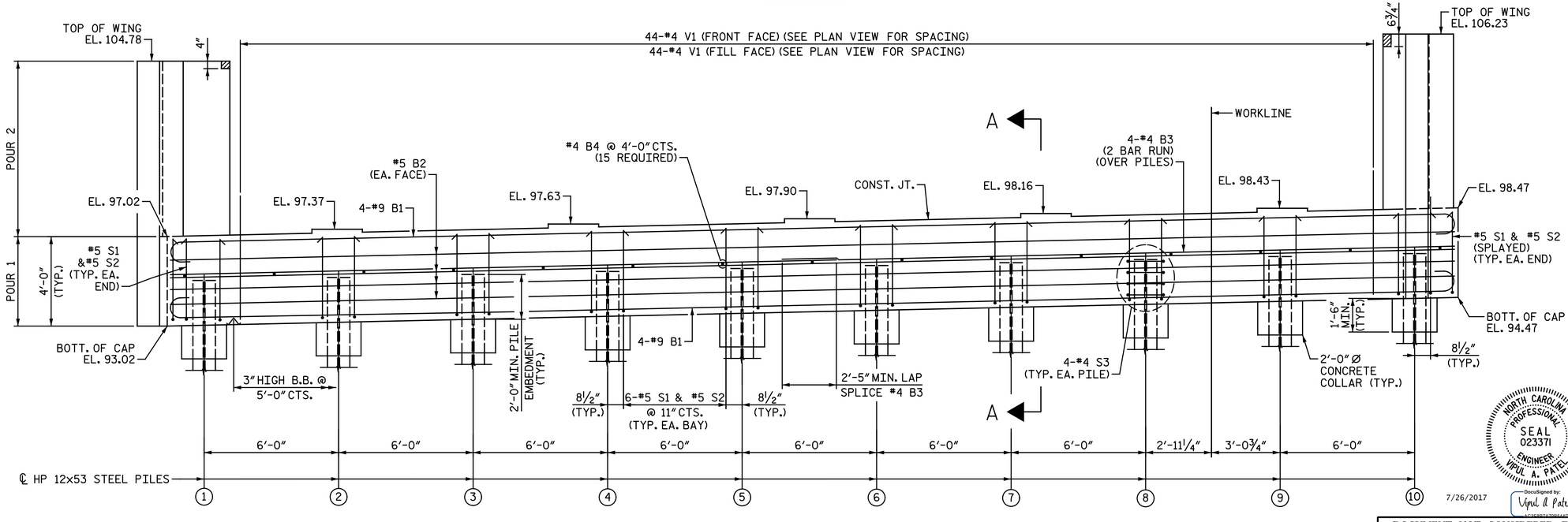
BILL OF MATERIAL

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-15
1			3			TOTAL SHEETS
2			4			25



PLAN



ELEVATION

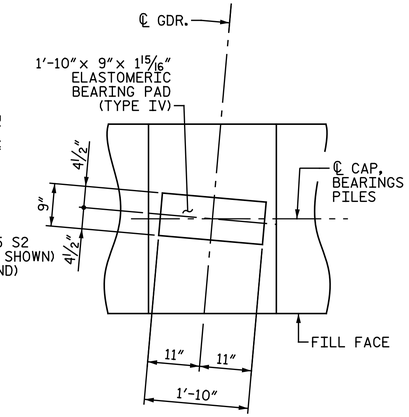
NOTES:

FOR "SECTION A-A", SEE "INTEGRAL END BENT 1 DETAILS" SHEET.

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

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

THE CONCRETE IN THE HATCHED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.



DETAIL "A"

ALL DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS AT EACH BRIDGE SEAT LOCATION.

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
①	95.08
②	95.23
③	95.38
④	95.53
⑤	95.68
⑥	95.83
⑦	95.98
⑧	96.14
⑨	96.29
⑩	96.44

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

DocuSigned by: Vipul A Patel

7/26/2017

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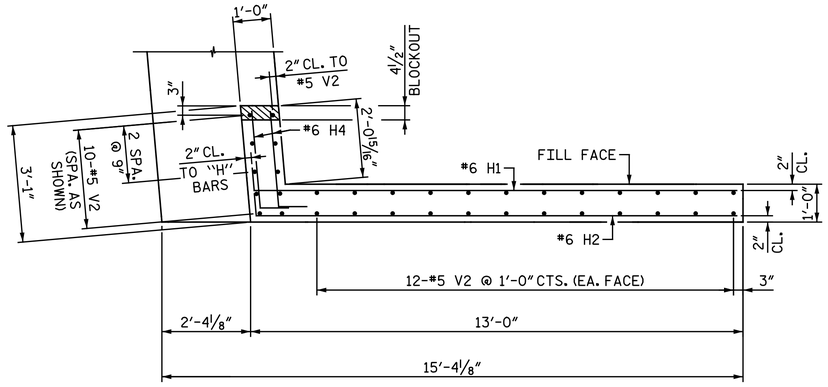
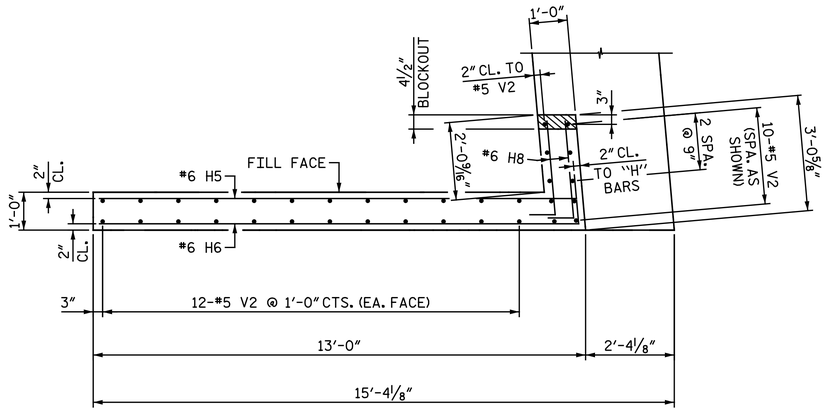
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-16
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : D. A. LAMAY DATE : 4-6-17
CHECKED BY : V. A. PATEL DATE : 4-24-17



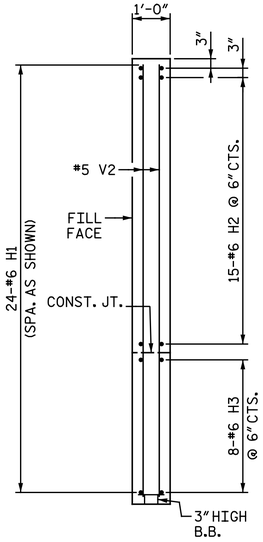
PLAN OF LEFT WING

(H3 BARS NOT SHOWN FOR CLARITY)

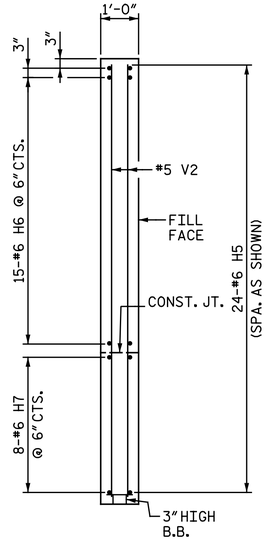


PLAN OF RIGHT WING

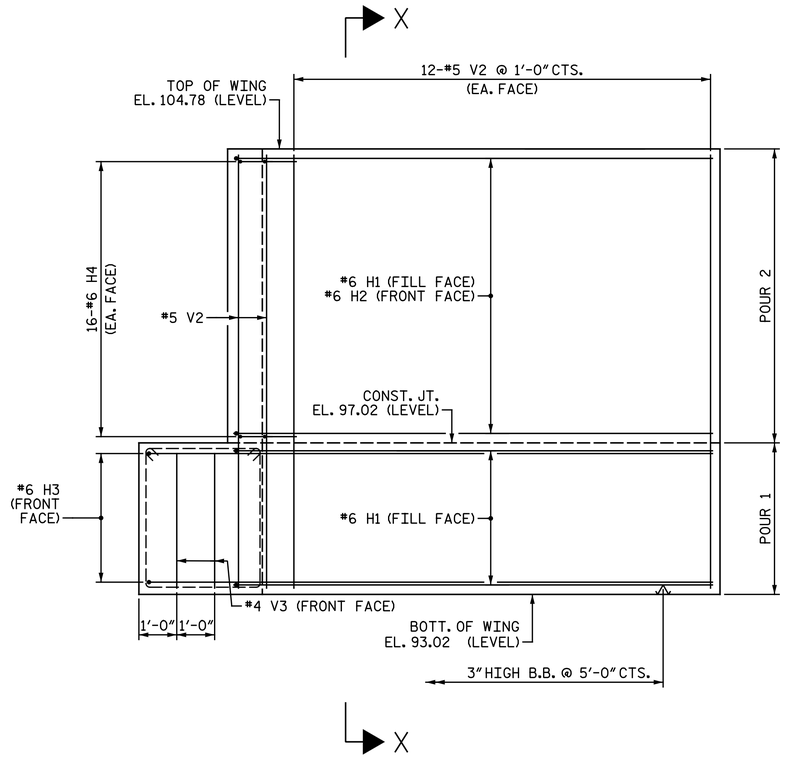
(H7 BARS NOT SHOWN FOR CLARITY)



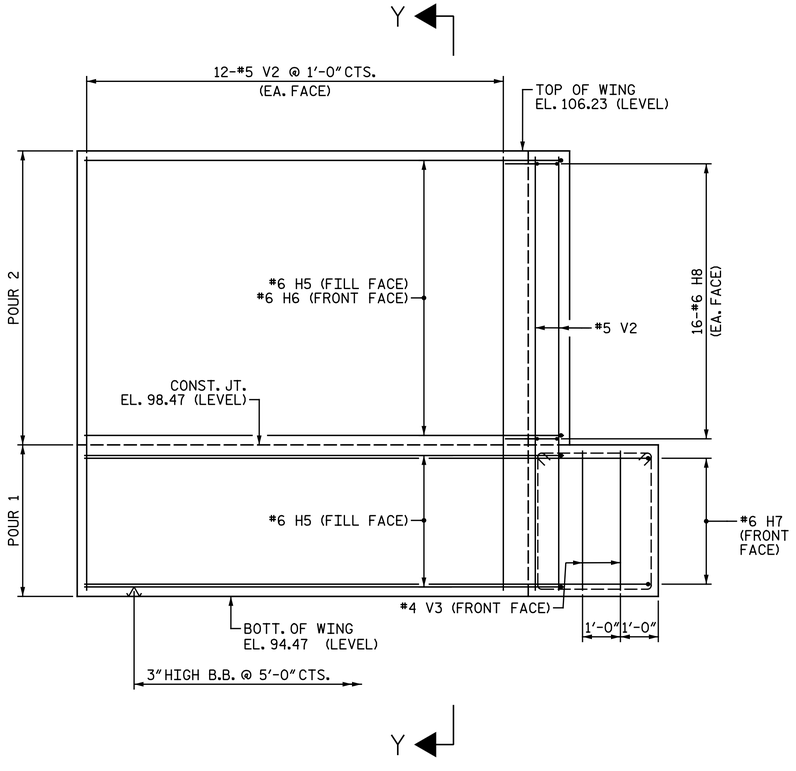
SECTION X-X



SECTION Y-Y



ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A Patel

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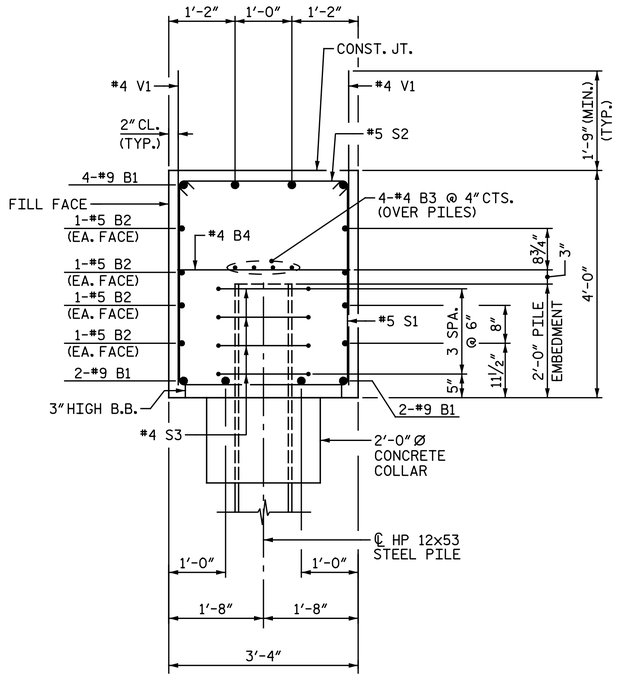
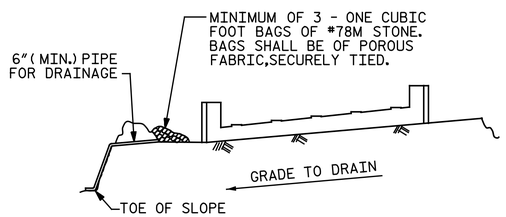
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : D. A. LAMAY DATE : 4-6-17
CHECKED BY : V. A. PATEL DATE : 4-24-17



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 FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

BILL OF MATERIAL

INTEGRAL END BENT 1

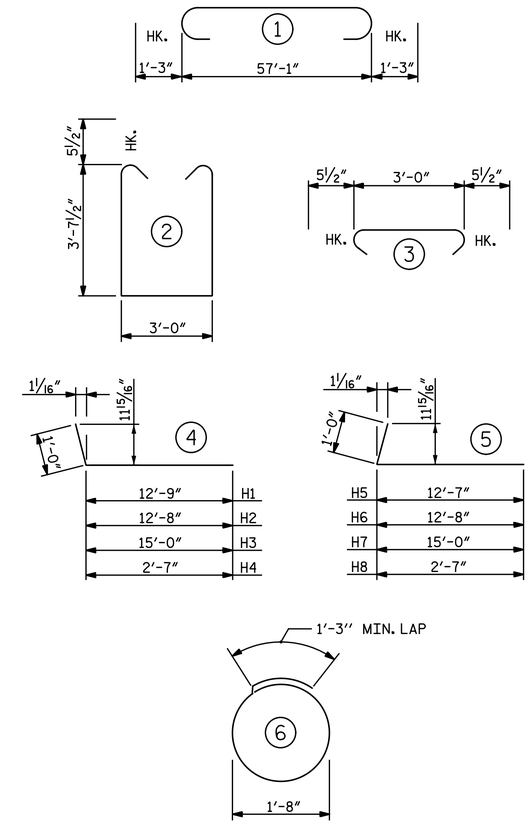
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	59′ - 7″	1,621
B2	8	#5	STR.	57′ - 3″	478
B3	8	#4	STR.	29′ - 10″	159
B4	15	#4	STR.	3′ - 0″	30
H1	24	#6	4	13′ - 9″	496
H2	16	#6	4	13′ - 8″	328
H3	8	#6	4	16′ - 0″	192
H4	32	#6	4	3′ - 7″	172
H5	24	#6	5	13′ - 7″	490
H6	16	#6	5	13′ - 8″	328
H7	8	#6	5	16′ - 0″	192
H8	32	#6	5	3′ - 7″	172
S1	58	#5	2	11′ - 2″	676
S2	58	#5	3	3′ - 11″	237
S3	40	#4	6	6′ - 6″	174
V1	88	#4	STR.	5′ - 7″	328
V2	68	#5	STR.	11′ - 5″	810
V3	4	#4	STR.	3′ - 7″	10

REINFORCING STEEL	LBS.	6,893
CLASS A CONCRETE		
POUR 1 - CAP, LOWER PART OF WINGS & COLLARS	C.Y.	34.2
POUR 2 - UPPER PART OF WINGS	C.Y.	8.6
TOTAL	C.Y.	42.8
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	EA.	10
HP 12x53 STEEL PILES NO. 10	L.F.	800
PILE REDRIVES	EA.	5

NOTE:

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A Patel

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1 DETAILS

LEFT LANE

Michael Baker INTERNATIONAL

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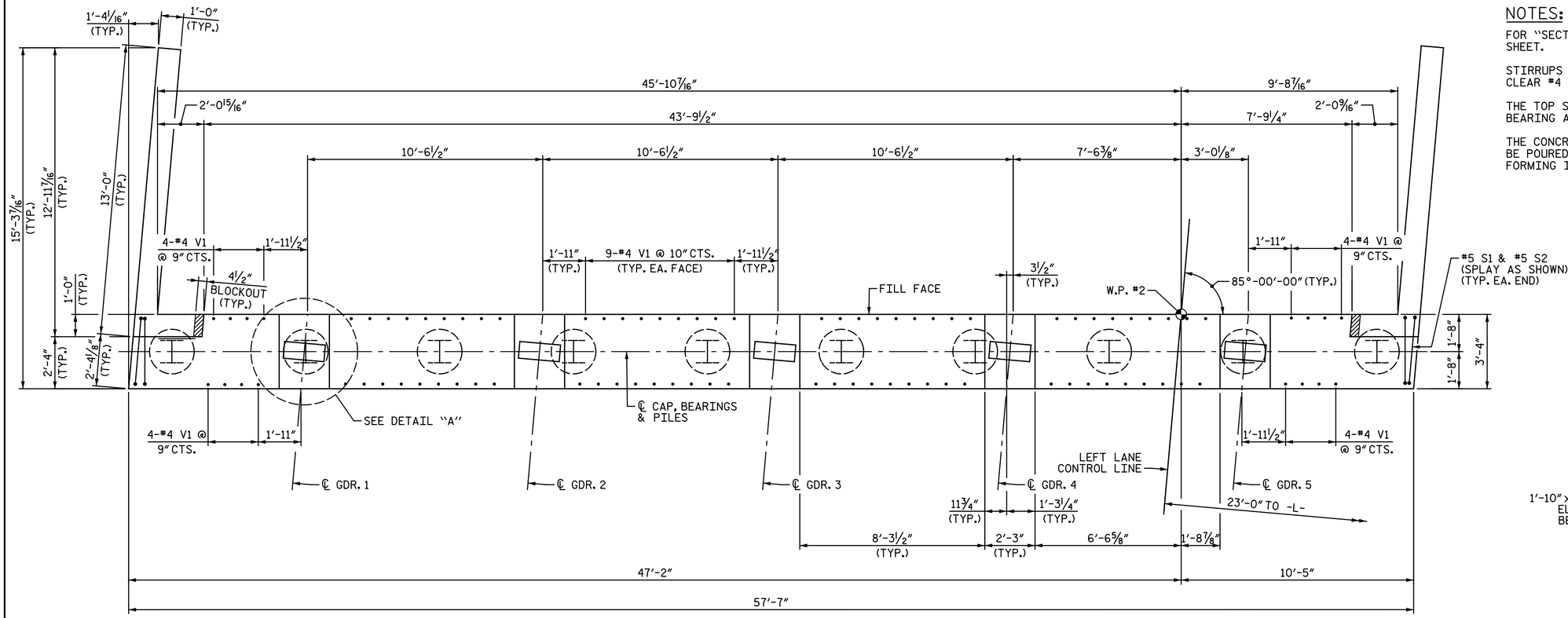
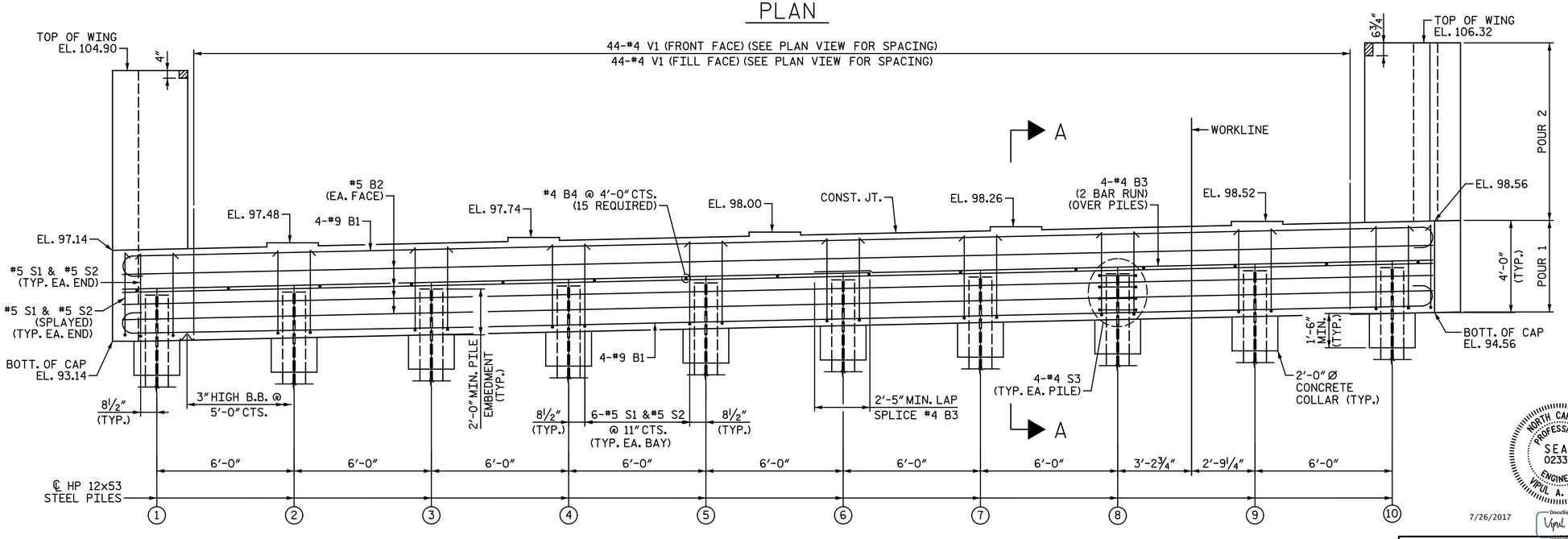
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-18
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : D. A. LAMAY DATE : 4-6-17
CHECKED BY : V. A. PATEL DATE : 4-24-17



PLAN



ELEVATION

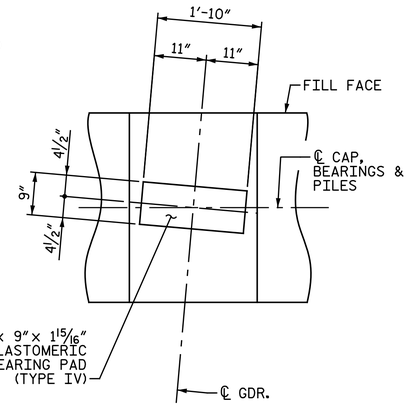
NOTES:

FOR "SECTION A-A", SEE "INTEGRAL END BENT 1 DETAILS" SHEET.

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

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

THE CONCRETE IN THE HATCHED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.



DETAIL "A"

ALL DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS AT EACH BRIDGE SEAT LOCATION.

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
①	95.19
②	95.34
③	95.49
④	95.64
⑤	95.79
⑥	95.94
⑦	96.09
⑧	96.23
⑨	96.38
⑩	96.53

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

DocuSigned by: Vipul A Patel
7/26/2017

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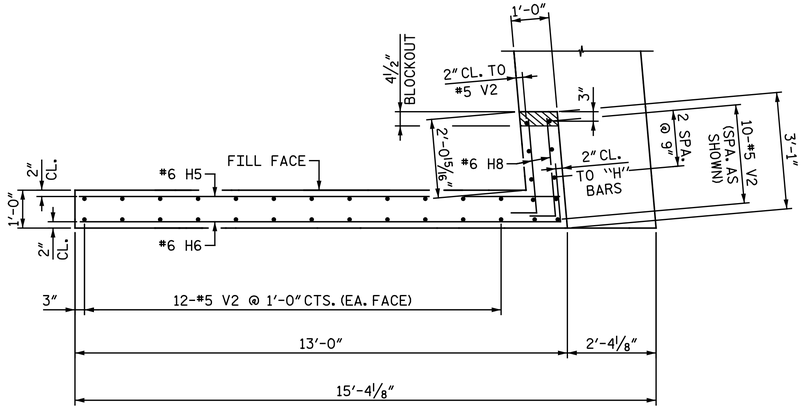
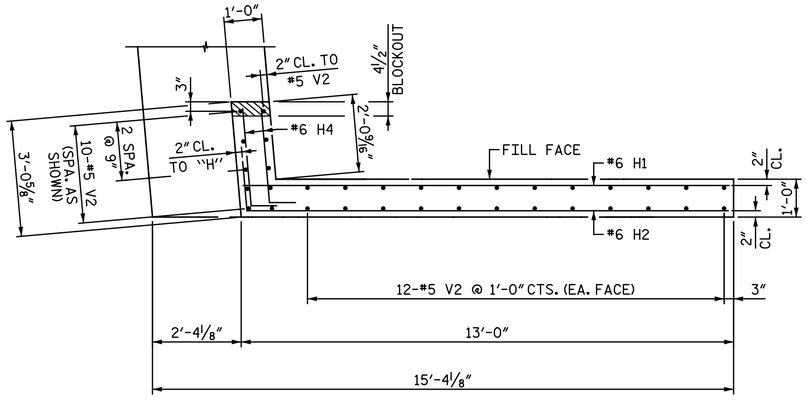
DRAWN BY : D. A. LAMAY DATE : 4-6-17
CHECKED BY : V. A. PATEL DATE : 4-26-17

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



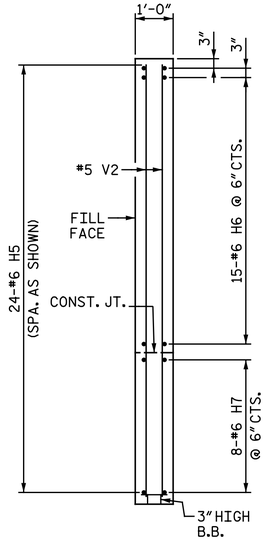
PLAN OF LEFT WING

(H7 BARS NOT SHOWN FOR CLARITY)

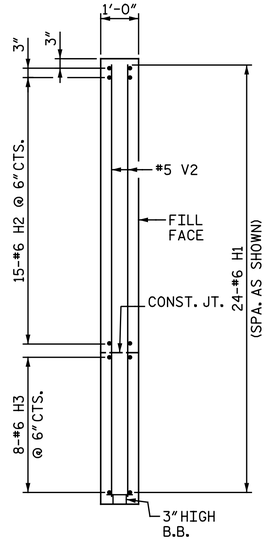


PLAN OF RIGHT WING

(H3 BARS NOT SHOWN FOR CLARITY)



SECTION X-X



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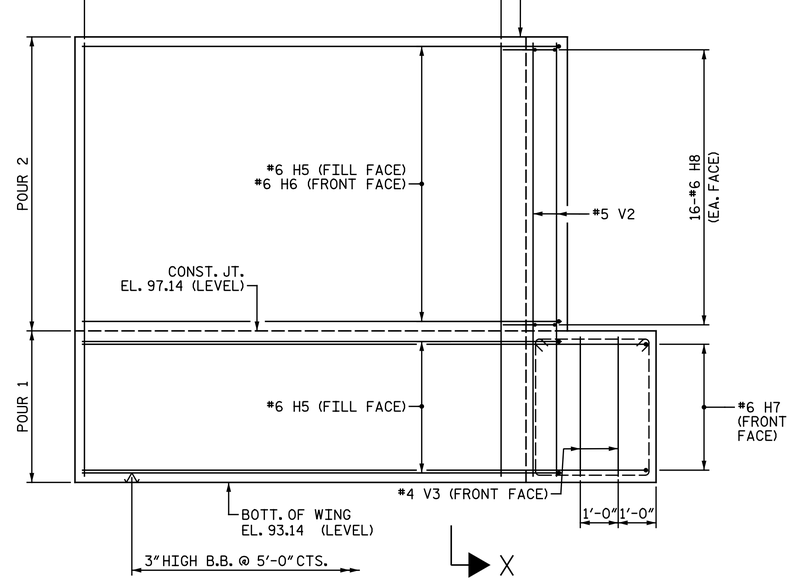
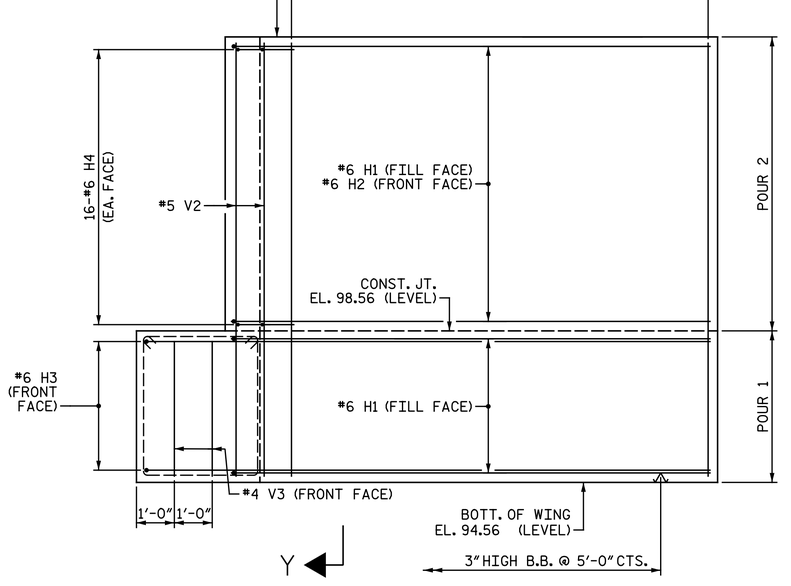


ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A Patel

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

LEFT LANE

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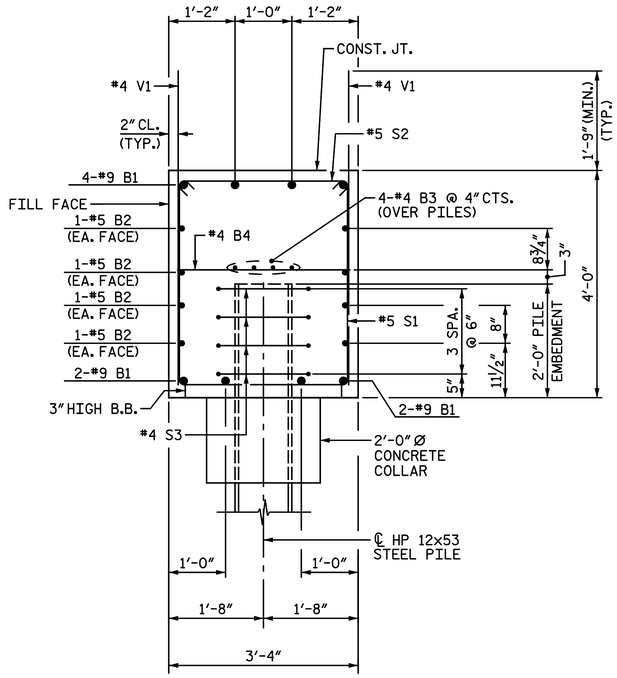
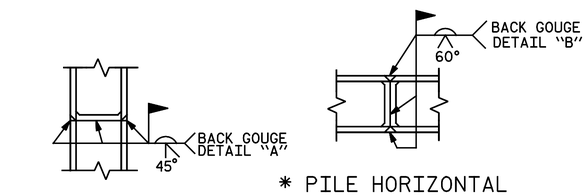
NO.	BY:	DATE:	NO.	BY:	DATE:	SI-20
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : D. A. LAMAY DATE : 4-12-17
CHECKED BY : V. A. PATEL DATE : 4-26-17

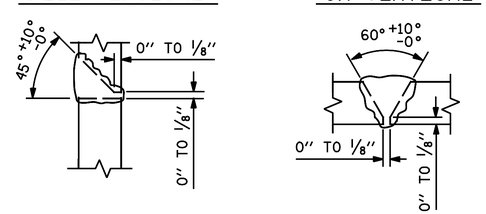


SECTION A-A



* PILE VERTICAL

* PILE HORIZONTAL OR VERTICAL



DETAIL "A"

DETAIL "B"

PILE SPLICE DETAILS

*POSITION OF PILE DURING WELDING

BILL OF MATERIAL

INTEGRAL END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	59′ - 7″	1,621
B2	8	#5	STR.	57′ - 3″	478
B3	8	#4	STR.	29′ - 10″	159
B4	15	#4	STR.	3′ - 0″	30
H1	24	#6	4	13′ - 9″	496
H2	16	#6	4	13′ - 8″	328
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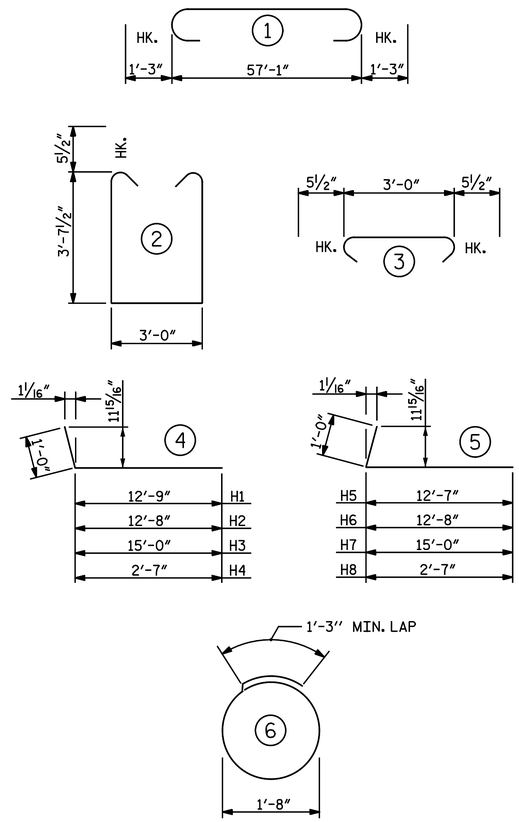
H5	24	#6	5	13′ - 7″	490
H6	16	#6	5	13′ - 8″	328
H7	8	#6	5	16′ - 0″	192
H8	32	#6	5	3′ - 7″	172
S1	58	#5	2	11′ - 2″	676
S2	58	#5	3	3′ - 11″	237
S3	40	#4	6	6′ - 6″	174
V1	88	#4	STR.	5′ - 7″	328
V2	68	#5	STR.	11′ - 5″	810
V3	4	#4	STR.	3′ - 7″	10

REINFORCING STEEL		LBS. 6,893
CLASS A CONCRETE		
POUR 1 - CAP, LOWER PART OF WINGS & COLLARS	C.Y.	34.2
POUR 2 - UPPER PART OF WINGS	C.Y.	8.6
TOTAL	C.Y.	42.8
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	EA.	10
HP 12x53 STEEL PILES NO. 10	L.F.	800
PILE REDRIVES	EA.	5

NOTE:

FOR TEMPORARY DRAINAGE AT END BENT, SEE "INTEGRAL END BENT 1 DETAILS" SHEET.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

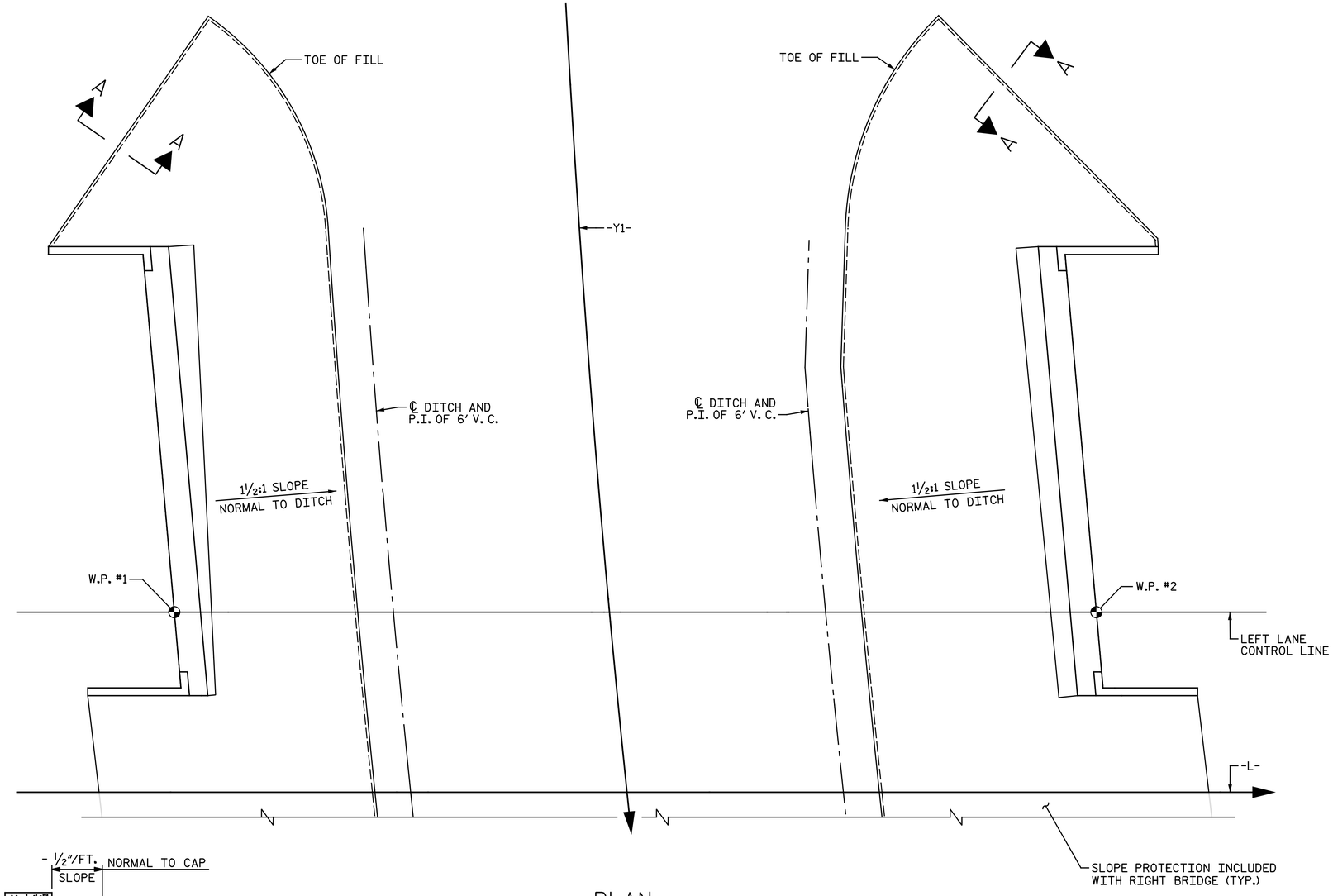
SUBSTRUCTURE

INTEGRAL END BENT 2 DETAILS

LEFT LANE

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

DRAWN BY : D. A. LAMAY DATE : 4-6-17
CHECKED BY : V. A. PATEL DATE : 4-26-17



PLAN

NOTES:

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 WIDTHS AND ELEVATIONS, SEE GENERAL DRAWING AND "SLOPE PROTECTION DETAILS" SHEET 2 OF 2.

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.

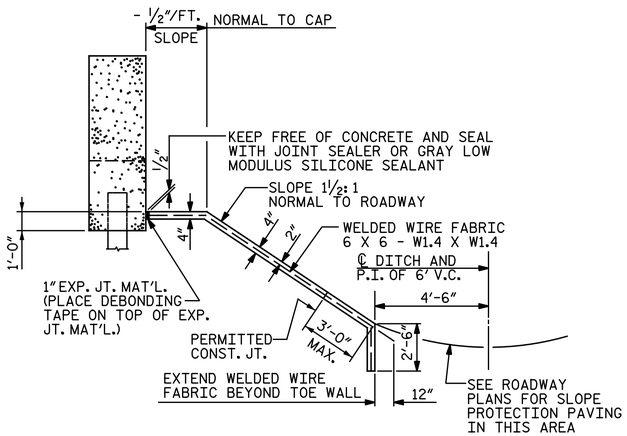
SLOPE PROTECTION SHALL BE POURED IN 5′ STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2′-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1′-6" MAXIMUM SPACING.

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".

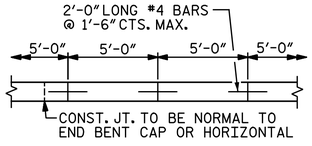
THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

BRIDGE @ STA. 89+28.52 -L- (LEFT LANE)	4 INCH SLOPE PROTECTION	✳ WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	350	630
END BENT 2	430	775

✳ QUANTITY SHOWN IS BASED ON 5′ POURS.

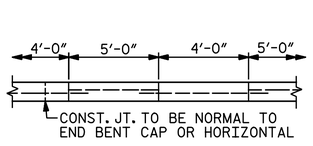


SECTION ALONG CONTROL LINE WHEN FILL CATCHES IN DITCH



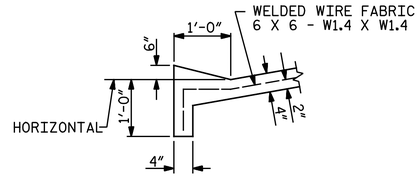
STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL



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

OPTIONAL POURING DETAIL



SECTION A-A

SLOPE PROTECTION DETAILS

ASSEMBLED BY : C. E. MAYHEW	DATE : 4-24-17
CHECKED BY : V. A. PATEL	DATE : 5-23-17
DRAWN BY : ELR 5/92	REV. 10/1/11 MAA/GM
CHECKED BY : GRP 6/92	REV. 12/21/11 MAA/GM
	REV. 1/16 MAA/TMG

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A Patel

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL

Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SLOPE PROTECTION DETAILS

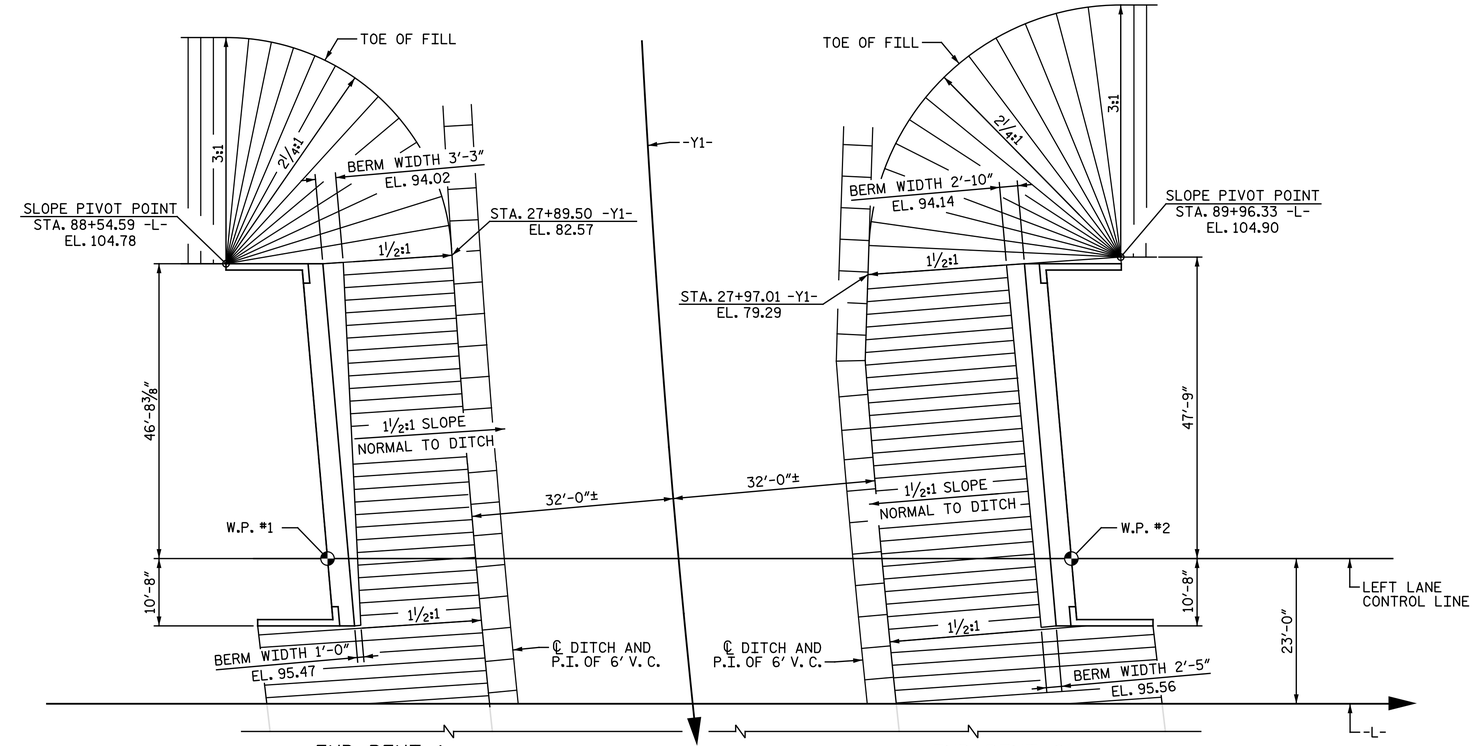
LEFT LANE

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

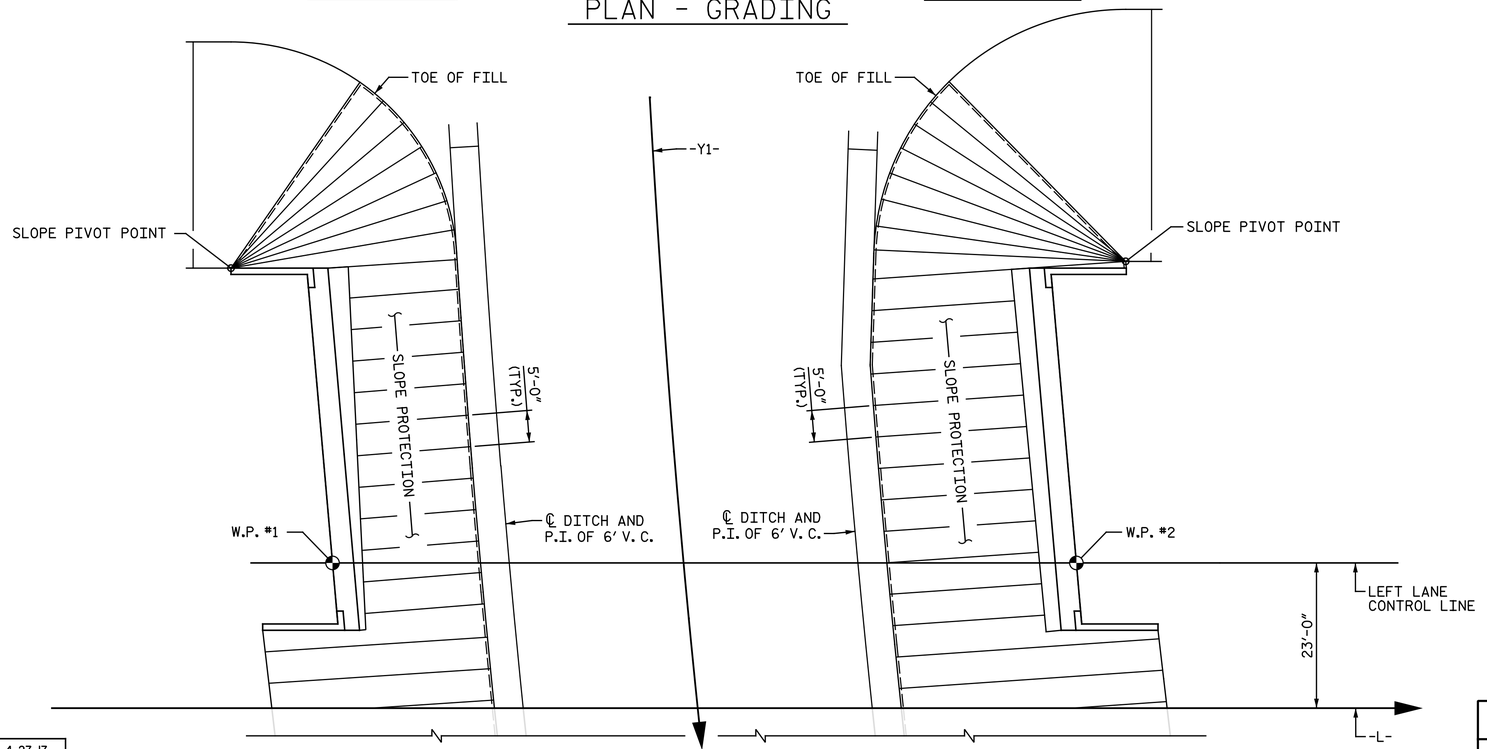
STD. NO. SP1

NOTE:

ALL ELEVATIONS AND BERM WIDTHS ARE GIVEN AT THE TOP OF CONCRETE SLOPE PROTECTION.



PLAN - GRADING



PLAN - CONCRETE PLACEMENT

(1½:1 SLOPE)

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SLOPE PROTECTION DETAILS

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A. Patel

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REVISIONS						SHEET NO.
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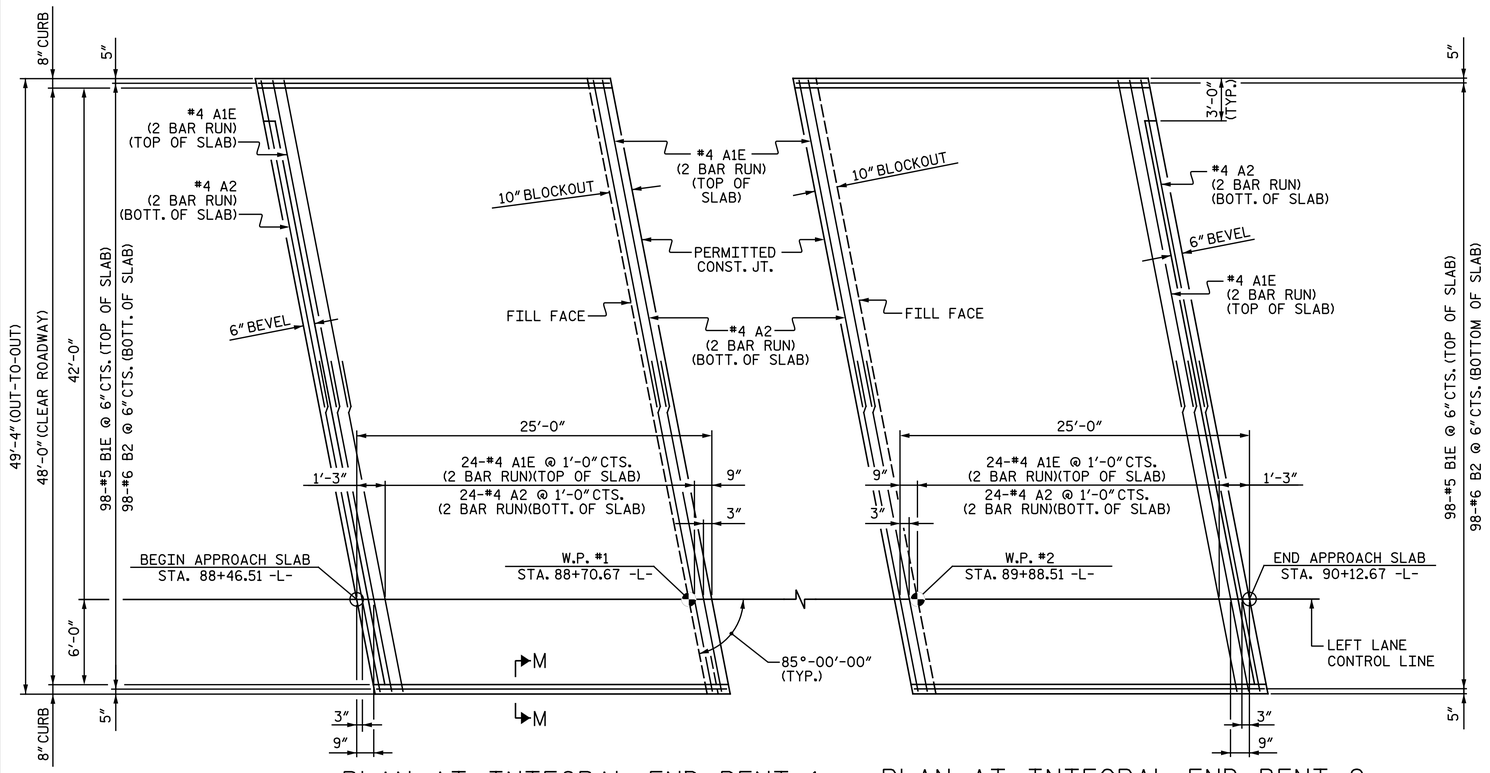
2			4			25

ASSEMBLED BY : C. E. MAYHEW		DATE : 4-27-17
CHECKED BY : V. A. PATEL		DATE : 5-23-17
DRAWN BY : WJH 10/88	REV. 5/1/06	TLA/GM
CHECKED BY : FCJ 10/88	REV. 10/1/11	MAA/GM
	REV. 1/16	MAA/TMG



PLAN AT INTEGRAL END BENT 1 PLAN AT INTEGRAL END BENT 2

NOTES:

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

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

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

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4"Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

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

#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

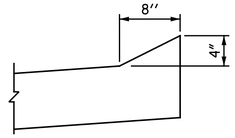
FOR THE 4"Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

BILL OF MATERIAL
APPROACH SLAB AT END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	52	#4	STR.	25' - 8"	892
A2	52	#4	STR.	25' - 6"	886
B1E	98	#5	STR.	24' - 2"	2,470
B2	98	#6	STR.	24' - 8"	3,631
REINFORCING STEEL				LBS.	4,517
EPOXY COATED REINFORCING STEEL				LBS.	3,362
CLASS AA CONCRETE				C.Y.	53.3

BILL OF MATERIAL
APPROACH SLAB AT END BENT 2

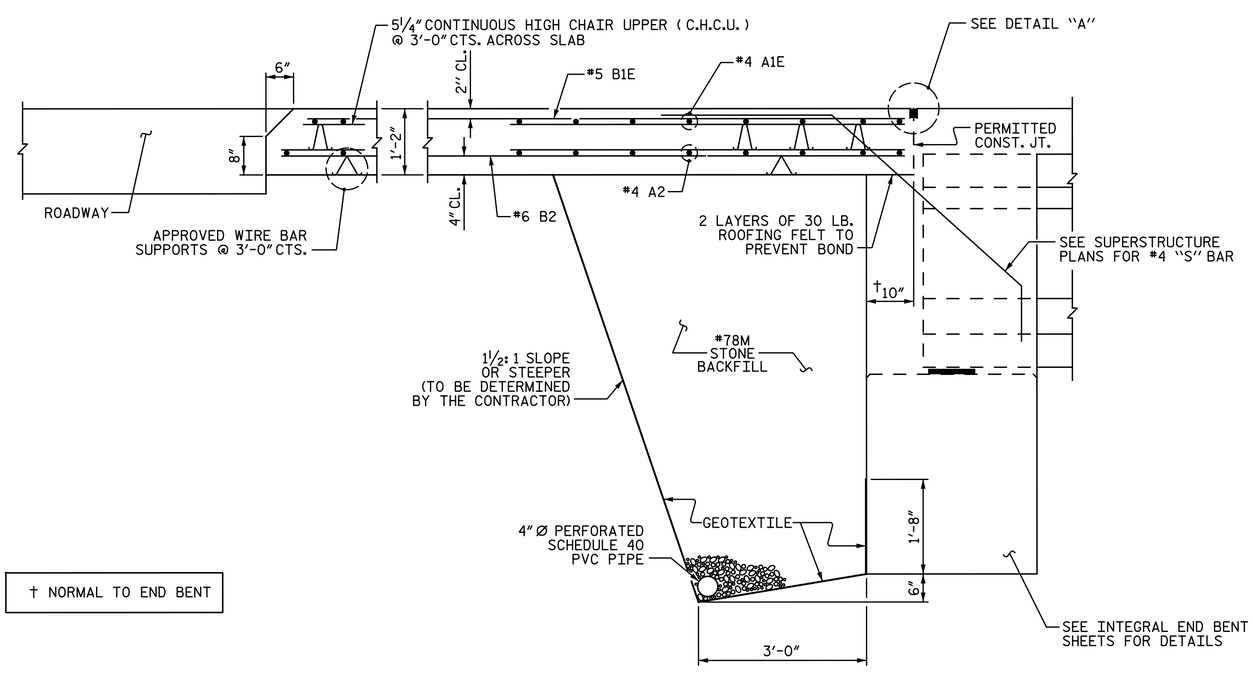
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	52	#4	STR.	25' - 8"	892
A2	52	#4	STR.	25' - 6"	886
B1E	98	#5	STR.	24' - 2"	2,470
B2	98	#6	STR.	24' - 8"	3,631
REINFORCING STEEL				LBS.	4,517
EPOXY COATED REINFORCING STEEL				LBS.	3,362
CLASS AA CONCRETE				C.Y.	53.3



SECTION M-M

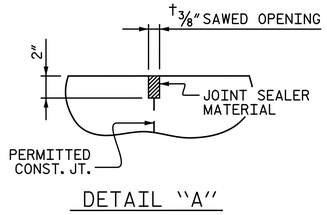
SPLICE LENGTHS

BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"

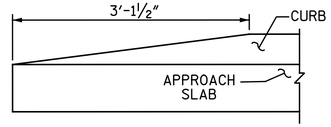


† NORMAL TO END BENT

SECTION THRU SLAB



DETAIL "A"



END OF CURB WITHOUT SHOULDER BERM GUTTER

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A Patel

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT

LEFT LANE

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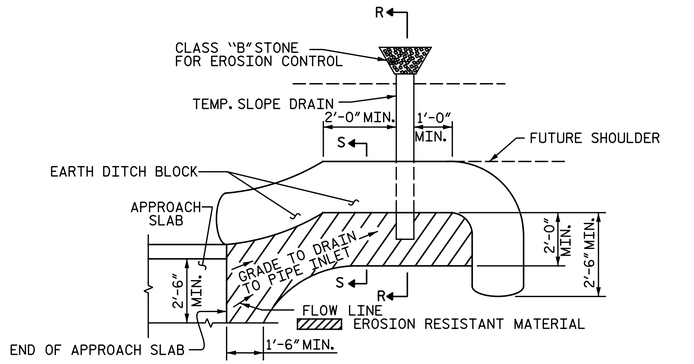
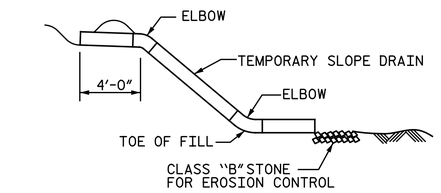
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SI-24
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : N. B. SPEAKS DATE : 3-1-17
CHECKED BY : V. A. PATEL DATE : 5-23-17

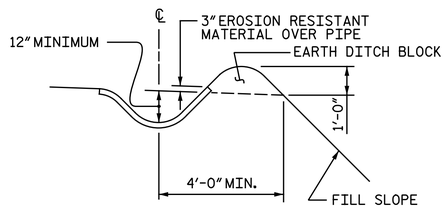


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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



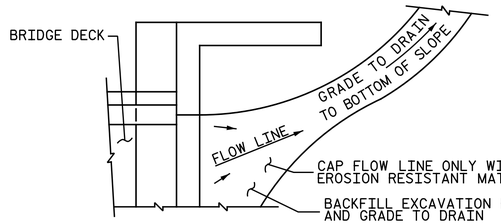
SECTION R-R



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-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

LEFT LANE

ASSEMBLED BY : N. B. SPEAKS	DATE : 3-1-17
CHECKED BY : V. A. PATEL	DATE : 3-20-17

DRAWN BY : FCJ 11/88	REV. 10/1/11 MAA/GM
CHECKED BY : ARB 11/88	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM

Michael Baker INTERNATIONAL

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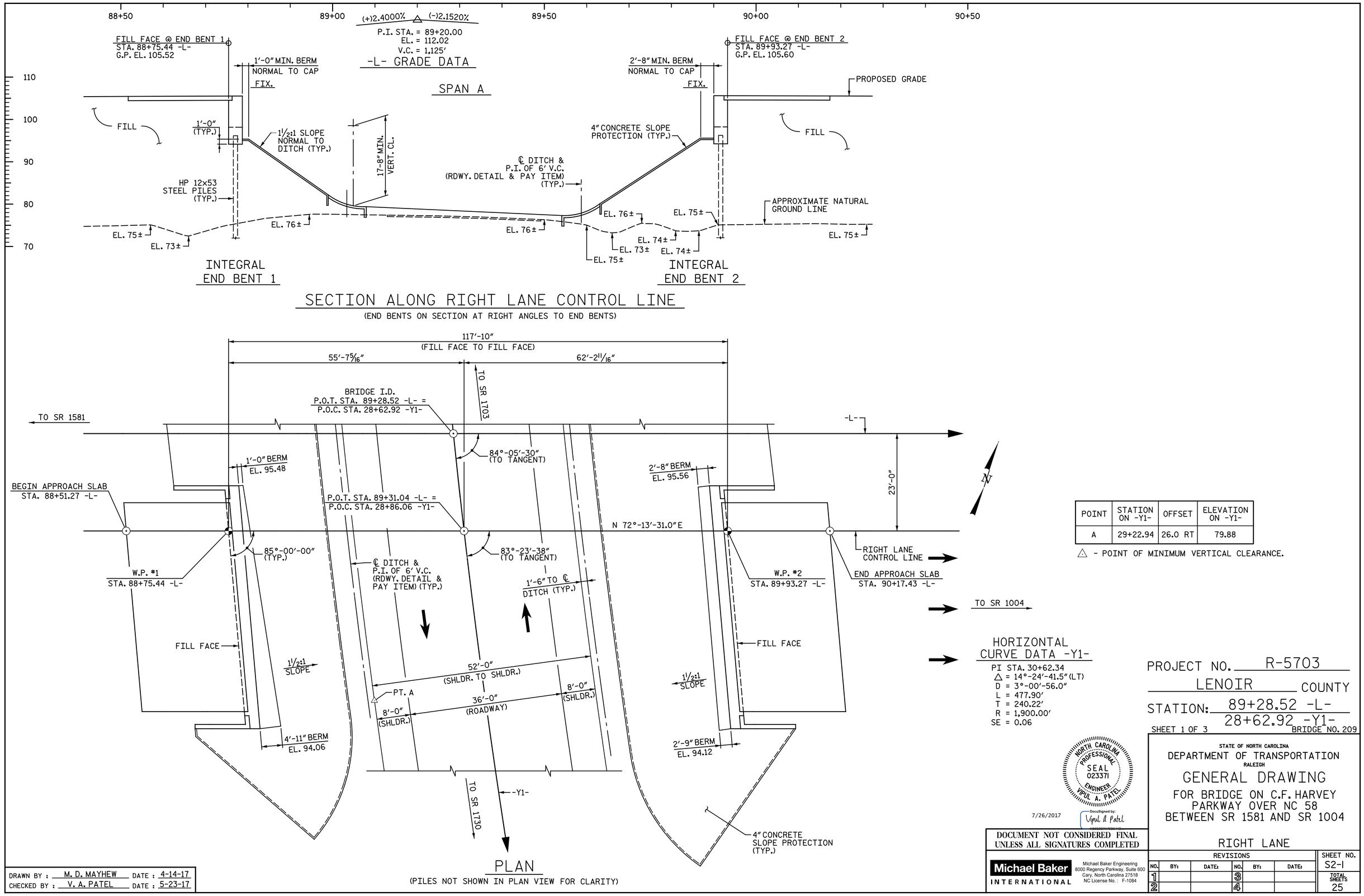
1			3			TOTAL SHEETS
2			4			25

STD. NO. BAS4



SECTION ALONG RIGHT LANE CONTROL LINE

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

PLAN

(PILES NOT SHOWN IN PLAN VIEW FOR CLARITY)

POINT	STATION ON -Y1-	OFFSET	ELEVATION ON -Y1-
A	29+22.94	26.0 RT	79.88

△ - POINT OF MINIMUM VERTICAL CLEARANCE.

HORIZONTAL CURVE DATA -Y1-

PI STA. 30+62.34
△ = 14°-24'-41.5" (LT)
D = 3°-00'-56.0"
L = 477.90'
T = 240.22'
R = 1,900.00'
SE = 0.06

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 89+28.52 -L-
28+62.92 -Y1-
SHEET 1 OF 3 BRIDGE NO. 209

DRAWN BY : M. D. MAYHEW DATE : 4-14-17
CHECKED BY : V. A. PATEL DATE : 5-23-17

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIRUL A. PATEL

7/26/2017 DocuSigned by: Virul A Patel

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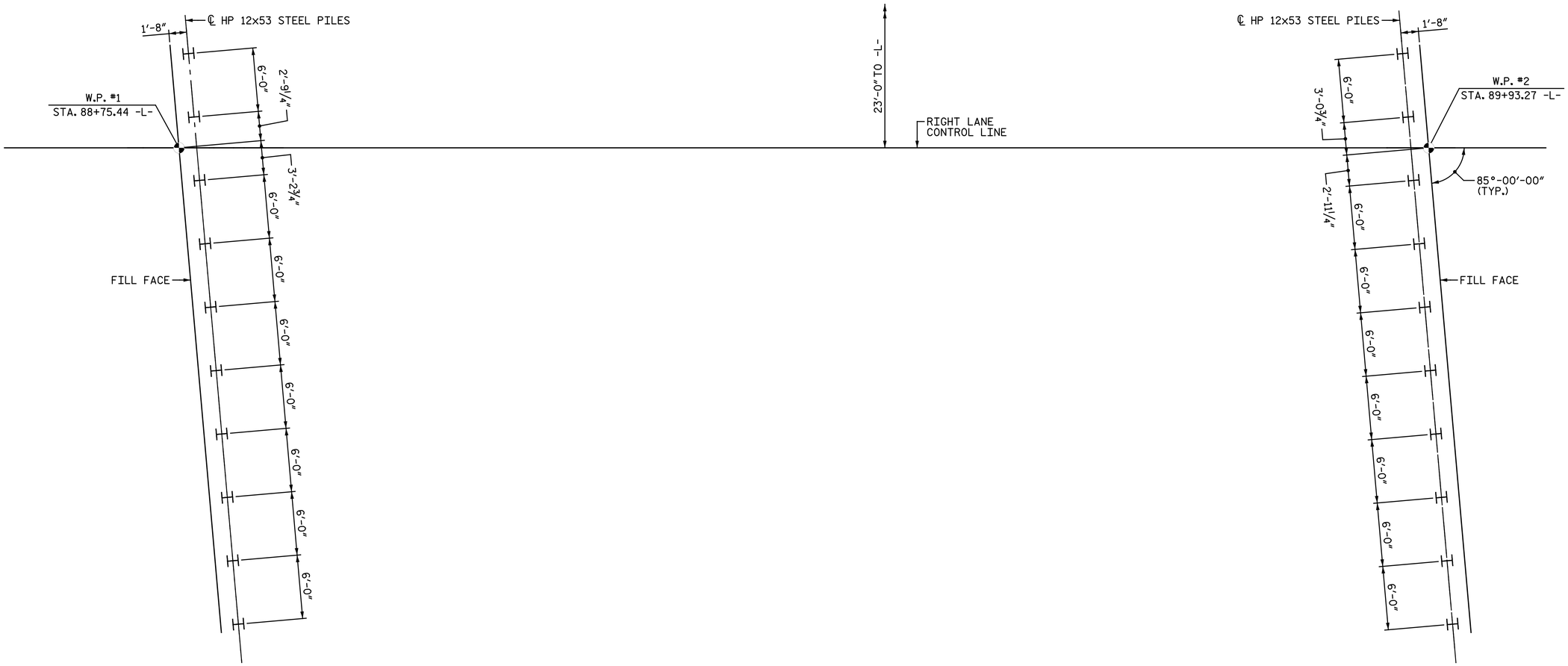
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER NC 58 BETWEEN SR 1581 AND SR 1004

RIGHT LANE

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



INTEGRAL
END BENT 1

INTEGRAL
END BENT 2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINES.

ALL PILES ARE VERTICAL.

NOTES:

FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 AND END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 122.5 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 205 TONS PER PILE.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENT NO. 1 OR END BENT NO. 2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS AND FOR PILE DRIVING CRITERIA, SEE PILE DRIVING CRITERIA PROVISION.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 40-50 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

OBSERVE A 2 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO. 1 AND END BENT NO. 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SPECIAL PROVISIONS,

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-
28+62.92 -Y1-

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIRUL A. PATEL

7/26/2017

DocuSigned by: Virul A Patel

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER NC 58
BETWEEN SR 1581 AND SR 1004

RIGHT LANE

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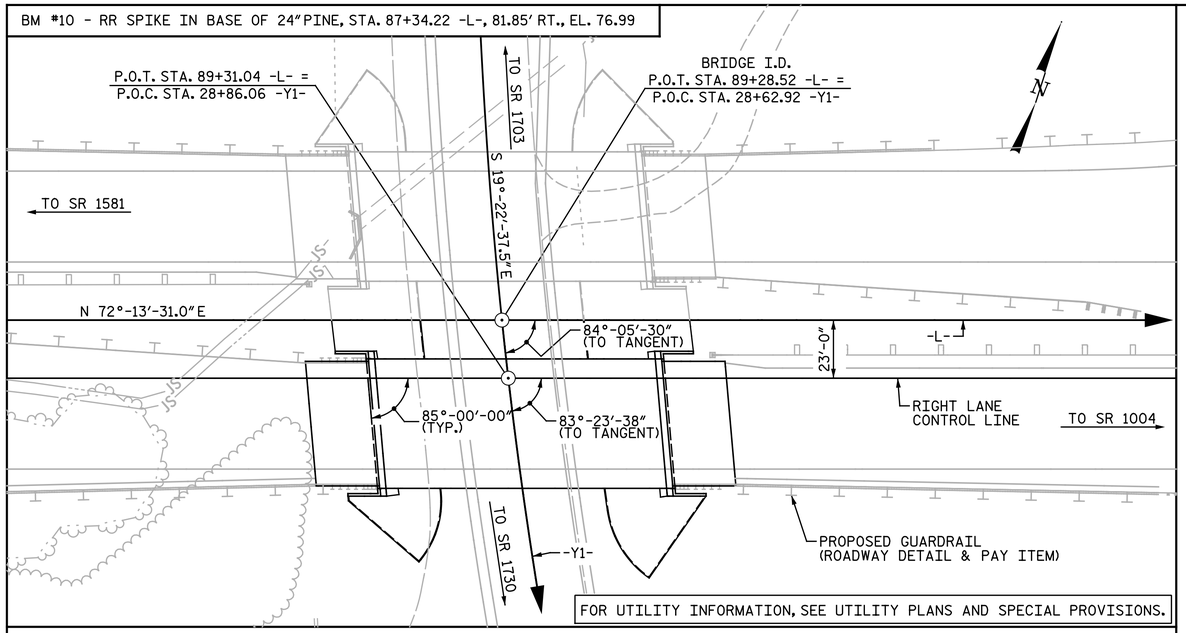
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-2
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : M. D. MAYHEW DATE : 4-17-17
CHECKED BY : V. A. PATEL DATE : 5-23-17



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 PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

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 MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.

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

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

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

LOCATION	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	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
	EA.	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	EA.	NO.	LIN. FT.	EA.	LIN. FT.	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE		6,039	7,387				5	579.48					232.33		LUMP SUM
END BENT 1				42.8		6,893			10	10	800	5		350	
END BENT 2				42.8		6,893			10	10	800	5		430	
TOTAL	1	6,039	7,387	85.6	LUMP SUM	13,786	5	579.48	20	20	1,600	10	232.33	780	LUMP SUM

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-
28+62.92 -Y1-

SHEET 3 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

DocuSigned by:
Bradley J. Bell
8/8/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL

Michael Baker Engineering
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Cary, North Carolina 27518
NC License No.: F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER NC 58
BETWEEN SR 1581 AND SR 1004

RIGHT LANE

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

DRAWN BY : M. D. MAYHEW DATE : 4-17-17
CHECKED BY : V. A. PATEL DATE : 5-23-17

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 $\gamma_{(LL)}$	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 $\gamma_{(LL)}$	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	1	1.06	--	1.75	0.971	1.41	A	1	57.24	0.984	1.19	A	1	80.42	1.00	0.971	1.06	A	1	57.24	1, 2
		HL-93 (OPERATING)	N/A		1.74	--	1.35	0.971	1.83	A	1	57.24	1.012	1.74	A	3	92.01	N/A	-	-	-	-	-	2
		HS-20 (INVENTORY)	36.000	2	1.53	55.08	1.75	0.971	2.03	A	1	57.24	1.012	1.80	A	3	92.01	1.00	0.971	1.53	A	1	57.24	1, 2
		HS-20 (OPERATING)	36.000		2.38	85.68	1.35	0.971	2.64	A	1	57.24	1.012	2.38	A	3	92.01	N/A	-	-	-	-	-	2
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.70	49.95	1.40	0.971	6.14	A	1	57.24	1.012	5.90	A	3	92.01	1.00	0.971	3.70	A	1	57.24	1, 2
		SNGARBS2	20.000		2.66	53.20	1.40	0.971	4.40	A	1	57.24	1.012	4.08	A	3	92.01	1.00	0.971	2.66	A	1	57.24	1, 2
		SNAGRIS2	22.000		2.47	54.34	1.40	0.971	4.10	A	1	57.24	1.012	3.75	A	3	92.01	1.00	0.971	2.47	A	1	57.24	1, 2
		SNCOTTS3	27.250		1.84	50.14	1.40	0.971	3.05	A	1	57.24	1.012	2.85	A	3	92.01	1.00	0.971	1.84	A	1	57.24	1, 2
		SNAGGRS4	34.925		1.50	52.39	1.40	0.971	2.48	A	1	57.24	1.012	2.29	A	3	92.01	1.00	0.971	1.50	A	1	57.24	1, 2
		SNS5A	35.550		1.47	52.26	1.40	0.971	2.43	A	1	57.24	1.012	2.30	A	3	92.01	1.00	0.971	1.47	A	1	57.24	1, 2
		SNS6A	39.950		1.33	53.13	1.40	0.971	2.20	A	1	57.24	1.012	2.07	A	3	92.01	1.00	0.971	1.33	A	1	57.24	1, 2
		SNS7B	42.000		1.27	53.34	1.40	0.971	2.10	A	1	57.24	1.012	2.00	A	3	92.01	1.00	0.971	1.27	A	1	57.24	1, 2
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.62	53.46	1.40	0.971	2.68	A	1	57.24	1.012	2.51	A	3	92.01	1.00	0.971	1.62	A	1	57.24	1, 2
		TNT4A	33.075		1.62	53.58	1.40	0.971	2.68	A	1	57.24	1.012	2.46	A	3	92.01	1.00	0.971	1.62	A	1	57.24	1, 2
		TNT6A	41.600		1.31	54.50	1.40	0.971	2.17	A	1	57.24	1.012	2.10	A	3	92.01	1.00	0.971	1.31	A	1	57.24	1, 2
		TNT7A	42.000		1.31	55.02	1.40	0.971	2.16	A	1	57.24	1.012	2.07	A	3	92.01	1.00	0.971	1.31	A	1	57.24	1, 2
		TNT7B	42.000		1.33	55.86	1.40	0.971	2.21	A	1	57.24	1.012	1.97	A	3	92.01	1.00	0.971	1.33	A	1	57.24	1, 2
		TNAGRIT4	43.000		1.28	55.04	1.40	0.971	2.12	A	1	57.24	1.012	1.91	A	3	92.01	1.00	0.971	1.28	A	1	57.24	1, 2
		TNAGT5A	45.000		1.22	54.90	1.40	0.971	2.01	A	1	57.24	1.012	1.87	A	3	92.01	1.00	0.971	1.22	A	1	57.24	1, 2
		TNAGT5B	45.000	3	1.21	54.45	1.40	0.971	2.00	A	1	57.24	1.012	1.81	A	3	92.01	1.00	0.971	1.21	A	1	57.24	1, 2

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. A SERVICE III LIVE LOAD FACTOR OF 1.0 WAS USED TO BE CONSISTENT WITH THE VALUE USED DURING DESIGN.
2. DISTANCE FROM LEFT END OF SPAN IS GIVEN WITH RESPECT TO CENTERLINE OF BEARING AND IS MEASURED ALONG THE CONTROLLING GIRDER.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

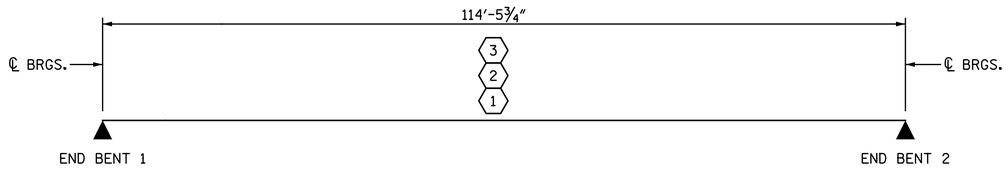
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

GIRDER LOCATION IS PROVIDED USING GIRDER NUMBER, WHERE GIRDER 1 IS THE LEFT EXTERIOR GIRDER LOOKING AHEAD STATION. SEE "GIRDER LAYOUT" SHEET FOR ALL GIRDER LOCATIONS.



LRFR SUMMARY

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A Patel

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL

Michael Baker Engineering
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NC License No.: F-1084

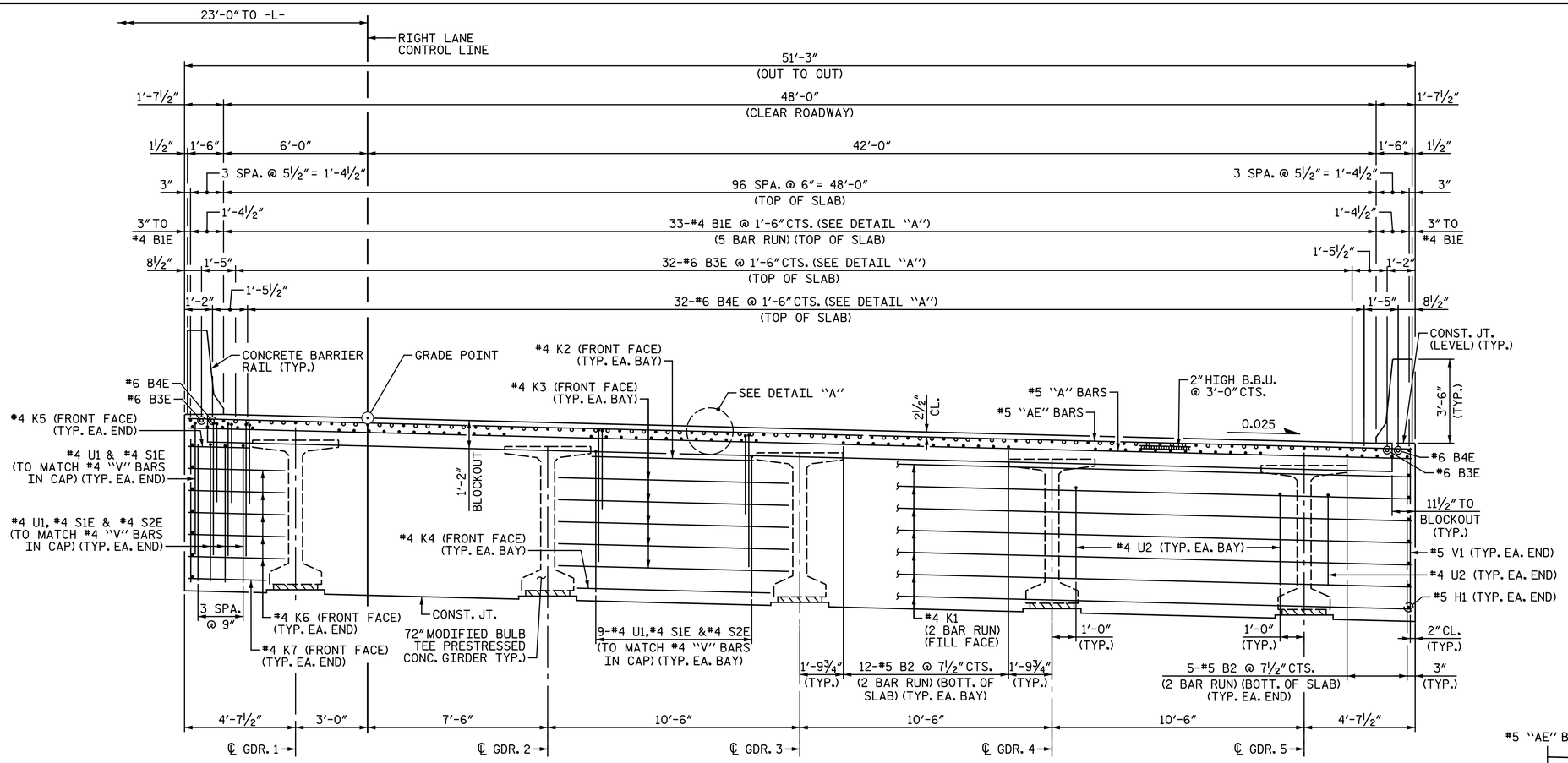
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

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

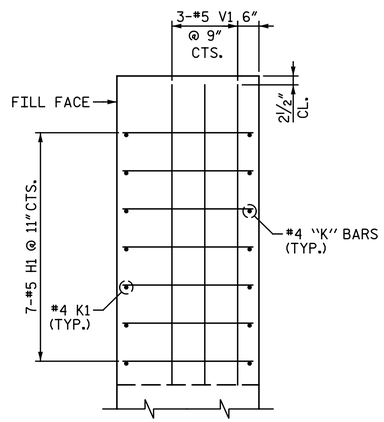
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-4
1			3			TOTAL SHEETS
2			4			25

ASSEMBLED BY : M. D. MAYHEW	DATE : 5-11-17
CHECKED BY : V. A. PATEL	DATE : 5-18-17
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM



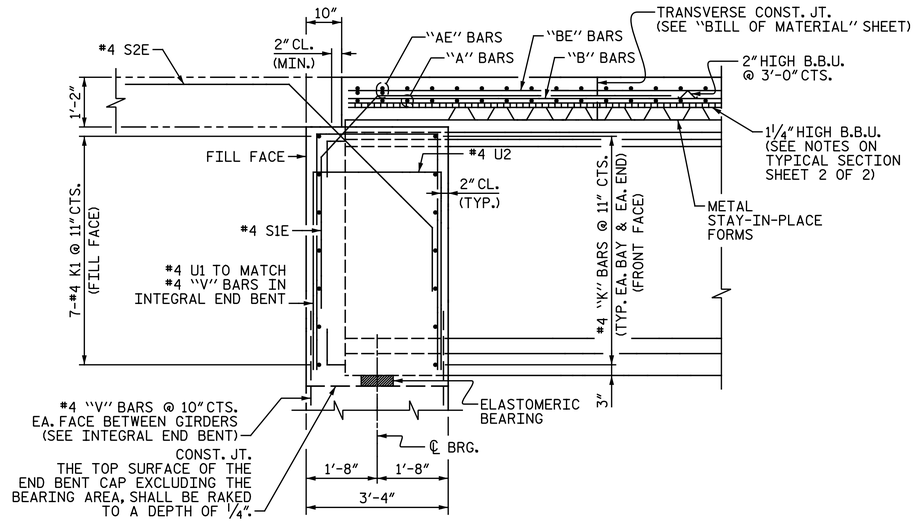
TYPICAL SECTION AT INTEGRAL END BENT

(END BENT 1 SHOWN, END BENT 2 SIMILAR)
(#5 "AE" BARS ALONG SKEW & #4 B5E BARS NOT SHOWN FOR CLARITY)

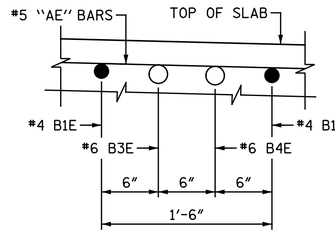


END OF DIAPHRAGM DETAIL

(END BENT 1 SHOWN, END BENT 2 SIMILAR)



END OF GIRDER DETAIL AT INTEGRAL END BENT



DETAIL "A"

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A Patel

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-5
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : M. D. MAYHEW DATE : 2-21-17
CHECKED BY : V. A. PATEL DATE : 3-13-17

NOTES:

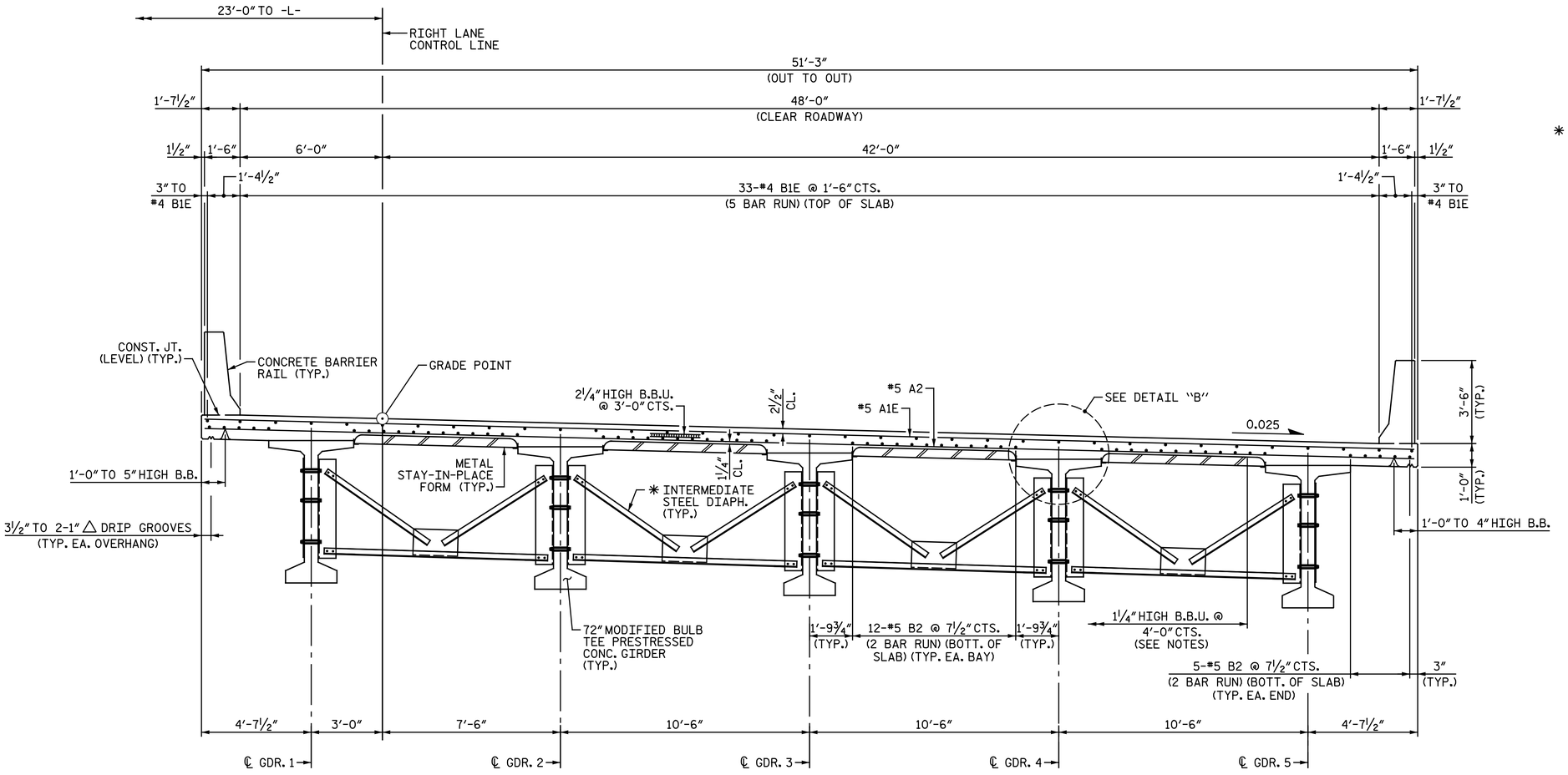
PROVIDE 1¼″ HIGH BEAM BOLSTERS UPPER AT 4′-0″ CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF ″A″ BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4′-0″ CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF ″A″ BARS A CLEAR DISTANCE OF 2½″ ABOVE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

LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS AND TO FACILITATE INSTALLATION OF CONCRETE BARRIER RAIL REINFORCEMENT.

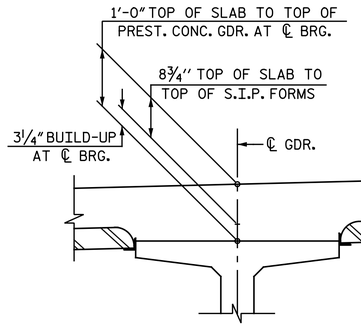
FOR CONCRETE BARRIER RAIL DETAILS, SEE ″CONCRETE BARRIER RAIL″ SHEET.

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

✳ FOR DETAILS OF INTERMEDIATE DIAPHRAGMS, SEE ″INTERMEDIATE STEEL DIAPHRAGMS FOR 72″ MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS″ SHEET.



TYPICAL SECTION @ INTERMEDIATE DIAPHRAGM



DETAIL ″B″

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIRUL A. PATEL

7/26/2017

DocuSigned by: Virul A Patel

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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			25

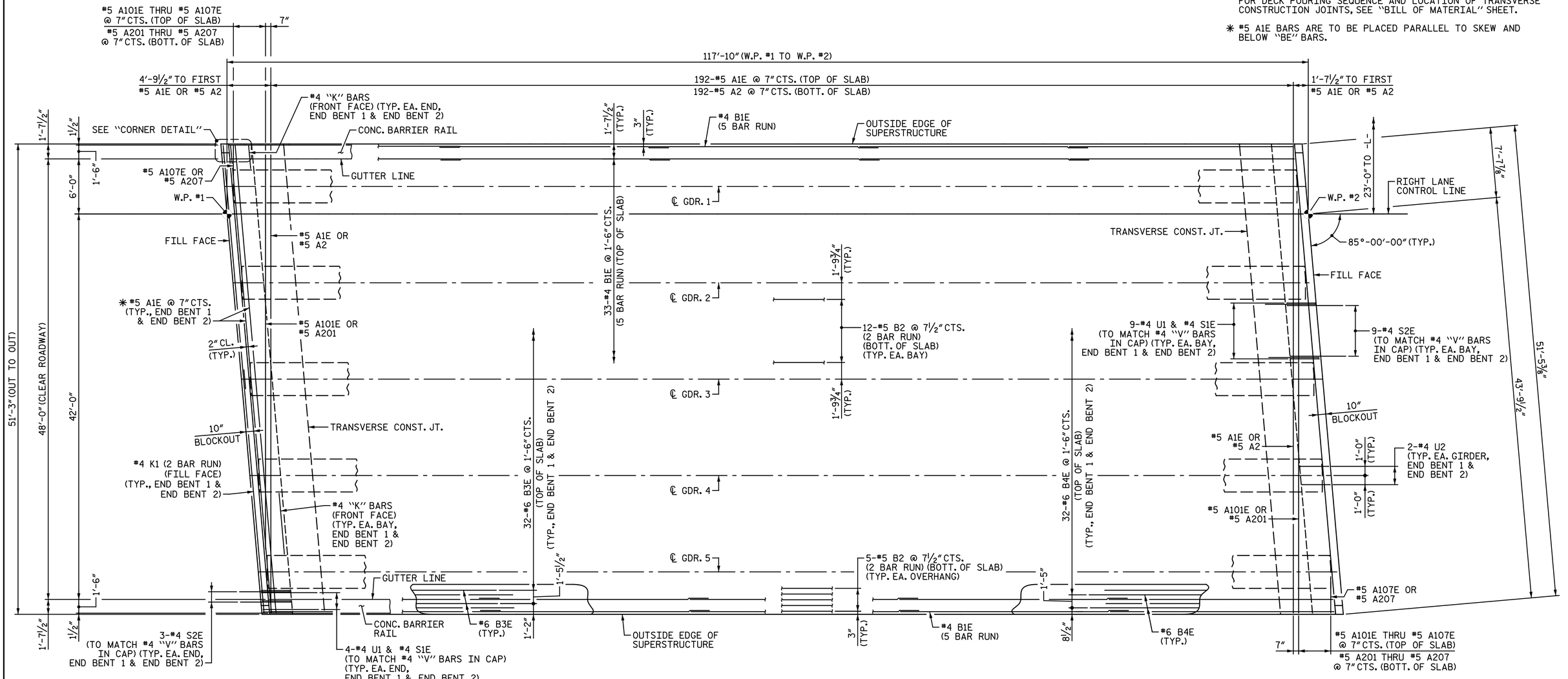
DRAWN BY : M. D. MAYHEW DATE : 2-21-17
CHECKED BY : V. A. PATEL DATE : 3-13-17

NOTES:

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

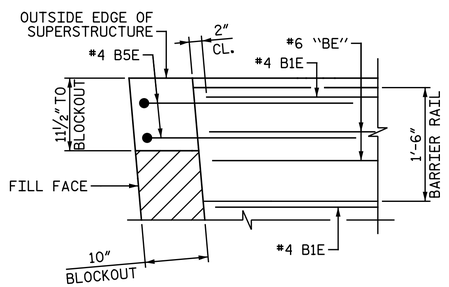
FOR DECK POURING SEQUENCE AND LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE "BILL OF MATERIAL" SHEET.

* #5 A1E BARS ARE TO BE PLACED PARALLEL TO SKEW AND BELOW "BE" BARS.



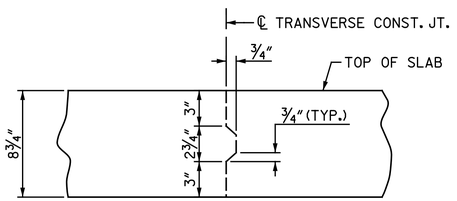
SPAN A

PLAN OF SPAN



CORNER DETAIL

ALL CORNERS SIMILAR.
TRANSVERSE BARS NOT SHOWN FOR CLARITY.



TRANSVERSE CONST. JT. DETAIL

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

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#4 K1	-	2'-5"

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN

RIGHT LANE

DRAWN BY : M. D. MAYHEW DATE : 2-21-17
CHECKED BY : V. A. PATEL DATE : 3-13-17

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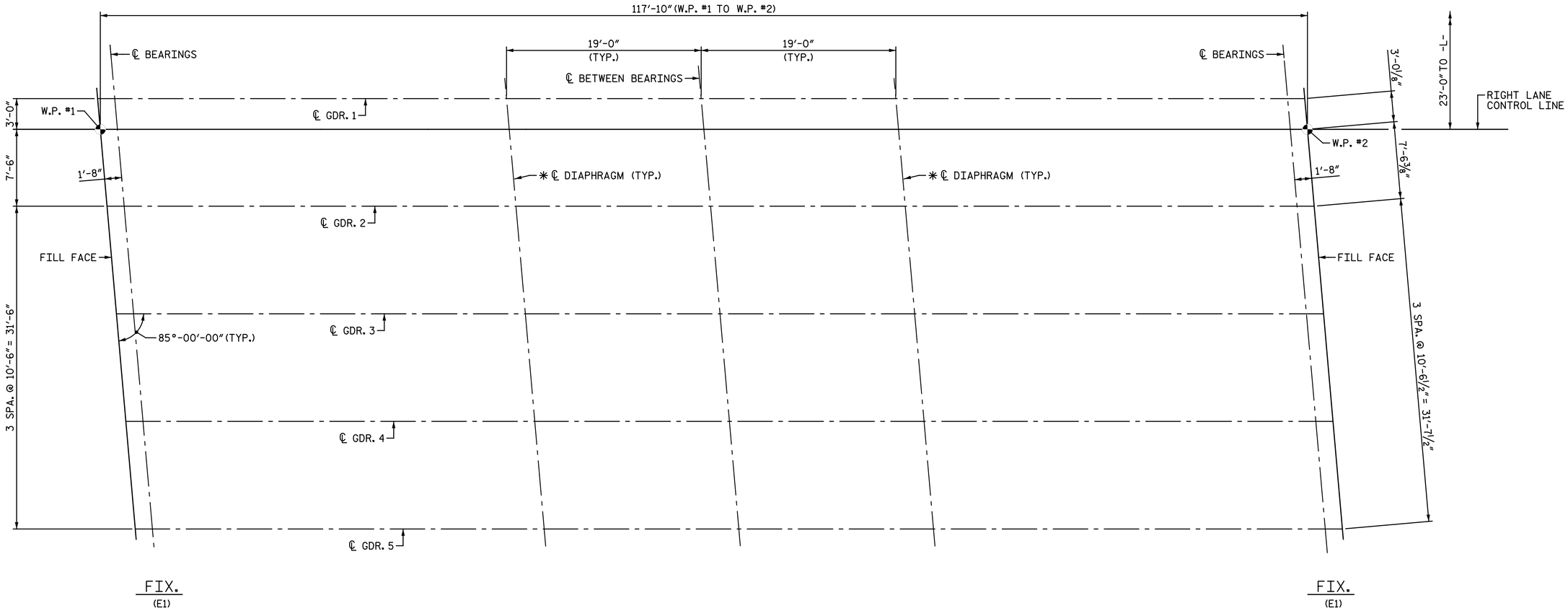
2			4			25



SPAN A

GIRDER LAYOUT

✳ INTERMEDIATE STEEL DIAPHRAGMS NOT SHOWN FOR CLARITY

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIRUL A. PATEL

7/26/2017

DocuSigned by: Virul A Patel

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

GIRDER LAYOUT

RIGHT LANE

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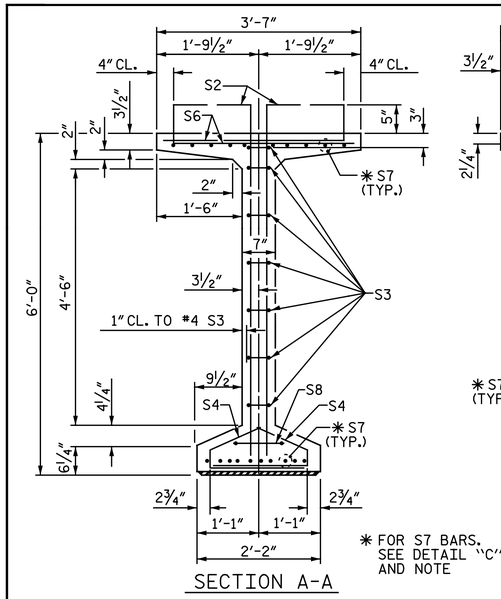
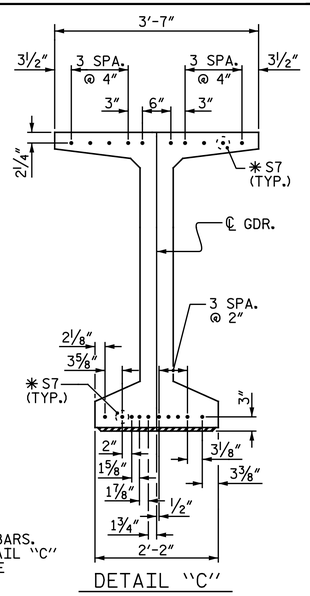
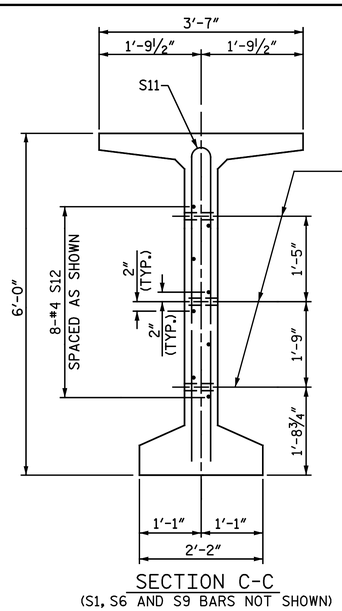


SECTION A-A

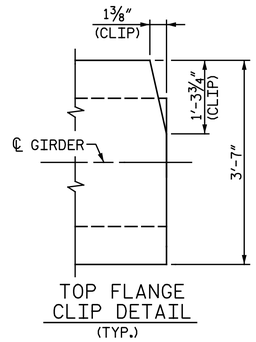
✱ FOR S7 BARS, SEE DETAIL "C" AND NOTE



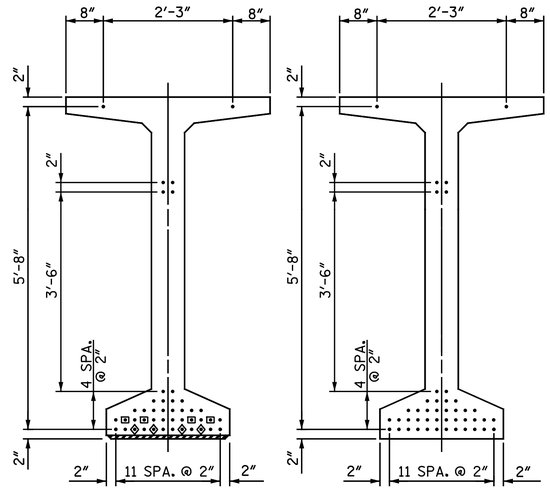
DETAIL "C"



SECTION C-C
(S1, S6 AND S9 BARS NOT SHOWN)



TOP FLANGE CLIP DETAIL
(TYP.)



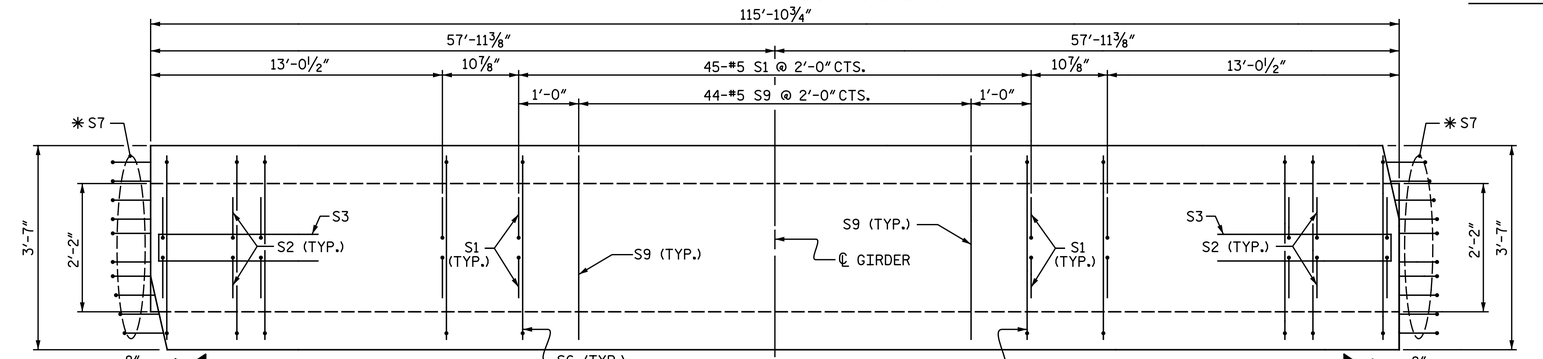
AT END OF GIRDER

AT ℄ OF GIRDER

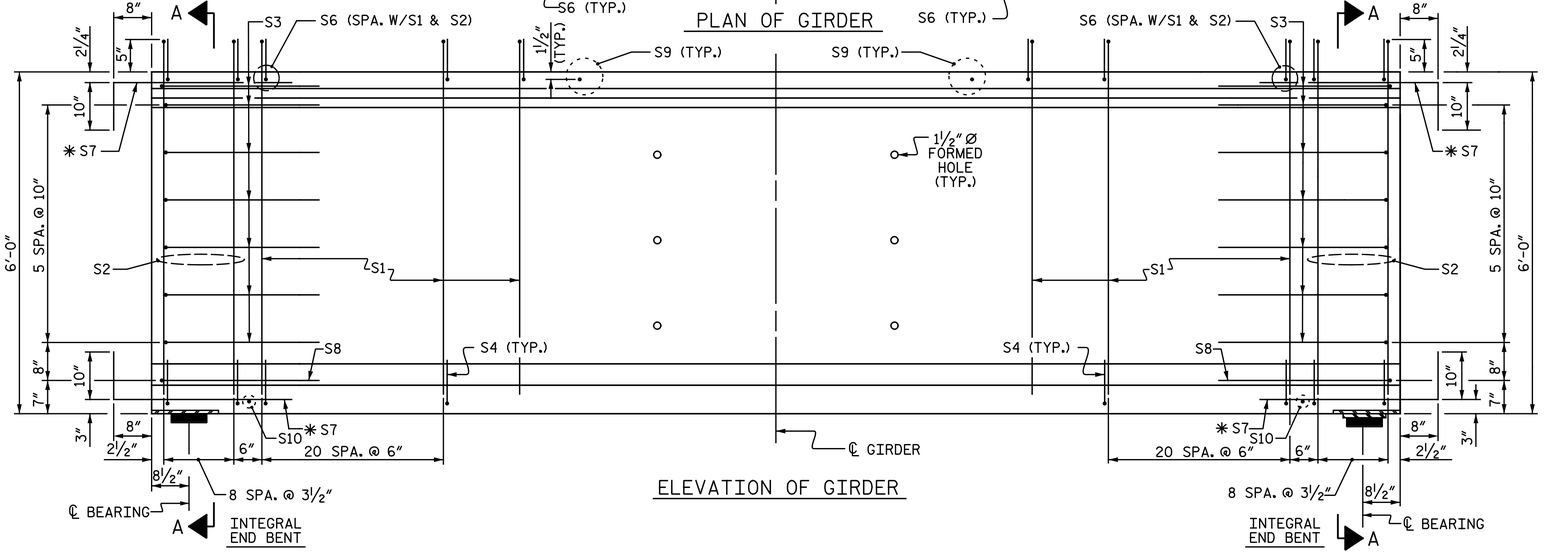
0.6"Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

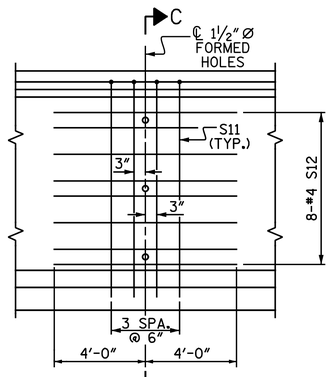
- ● FULLY BONDED STRANDS
- ▣ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◈ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER



PLAN OF GIRDER



ELEVATION OF GIRDER



PARTIAL ELEVATION
SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

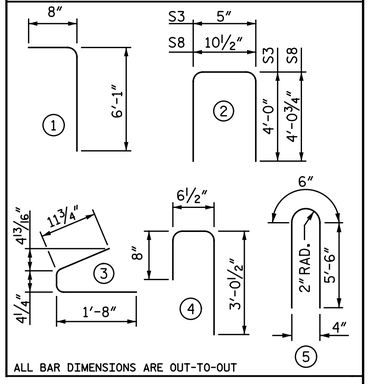
0.6"Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	174	#4	1	6'-9"	785
S2	36	#5	1	6'-9"	253
S3	14	#4	2	8'-5"	79
S4	120	#4	3	3'-0"	240
S6	210	#5	4	4'-3"	931
✱S7	40	#5	STR	3'-8"	153
S8	2	#5	2	9'-0"	19
S9	44	#5	STR	3'-3"	149
S10	2	#3	STR	1'-10"	1
S11	8	#5	5	11'-6"	96
S12	16	#4	STR	8'-0"	86

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	9,500 PSI CONCRETE	0.6"Ø L.R. STRANDS
	LB.	C.Y.	No.
GIRDER	2,792	24.8	44

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5	115'-10¾"	579.48'

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
72" PRESTRESSED CONCRETE MODIFIED BULB TEE

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A Patel

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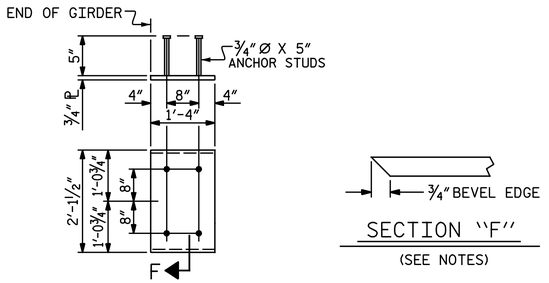
1			3			TOTAL SHEETS
2			4			25

ASSEMBLED BY : V. A. PATEL		DATE : 3/7/2017
CHECKED BY : D. A. COLETTI		DATE : 4/17/2017
DRAWN BY : EEM 2/6/97	REV. 10/1/11	MAA/GM
CHECKED BY : VAP 2/6/97	REV. 6/13	MAA/GM
	REV. 1/15	MAA/TMG

STD. NO. PCG8



EMBEDDED PLATE "B-1" DETAILS

TWO EMBEDDED PLATES "B-1" ARE REQUIRED FOR EACH GIRDER.

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.

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 7,500 PSI.

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

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

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

THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4,500 LBS.

FOR EMBEDDED CLIPS FOR PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

DEAD LOAD DEFLECTION TABLE FOR SPAN A

0.6 Ø LOW RELAXATION	GIRDERS 1 THRU 5																				
TWENTIETH POINTS	0.00	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	1.00
CAMBER (GIRDER IN PLACE) ↑	0.000	0.043	0.084	0.123	0.159	0.191	0.217	0.239	0.255	0.264	0.267	0.264	0.255	0.239	0.217	0.191	0.159	0.123	0.084	0.043	0.000
DEFLECTION DUE TO D.L. * ↓	0.000	0.026	0.048	0.074	0.094	0.115	0.130	0.144	0.153	0.159	0.161	0.159	0.153	0.144	0.130	0.115	0.094	0.074	0.048	0.026	0.000
FINAL CAMBER ↑	0"	3/16"	3/8"	9/16"	3/4"	7/8"	1"	1 1/8"	1 3/16"	1 1/4"	1 1/4"	1 1/4"	1 3/16"	1 1/8"	1"	7/8"	3/4"	9/16"	3/8"	3/16"	0"

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A Patel

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL

Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

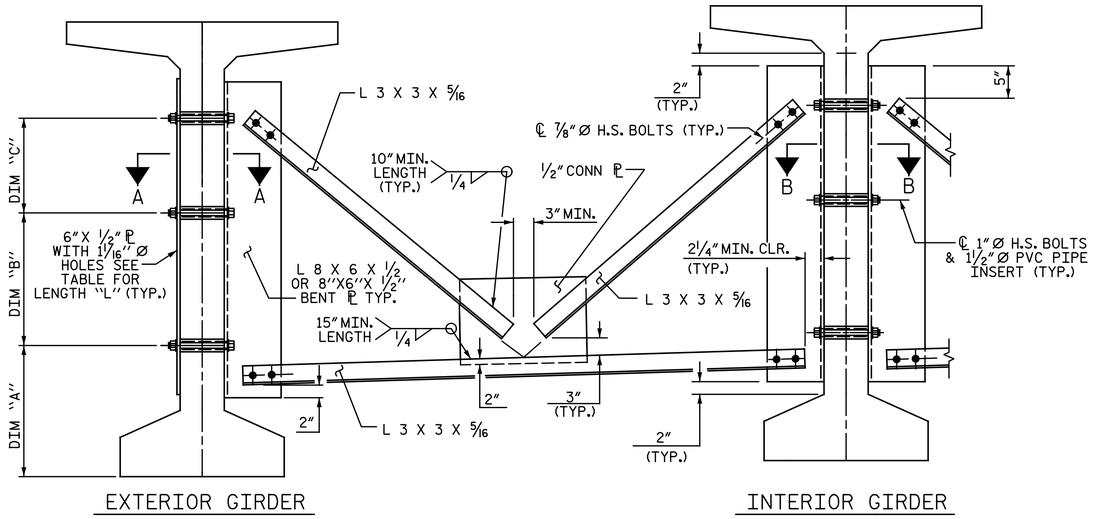
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GIRDER DEFLECTIONS AND CAMBER

RIGHT LANE

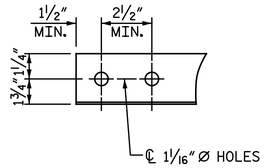
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-10
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : N. B. SPEAKS DATE : 3-13-17
CHECKED BY : V. A. PATEL DATE : 5-22-17

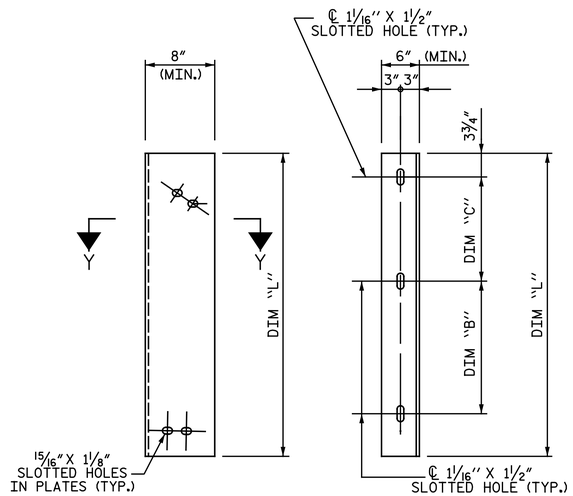


EXTERIOR GIRDER INTERIOR GIRDER

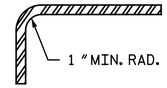
PART SECTION AT INTERMEDIATE DIAPHRAGM



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

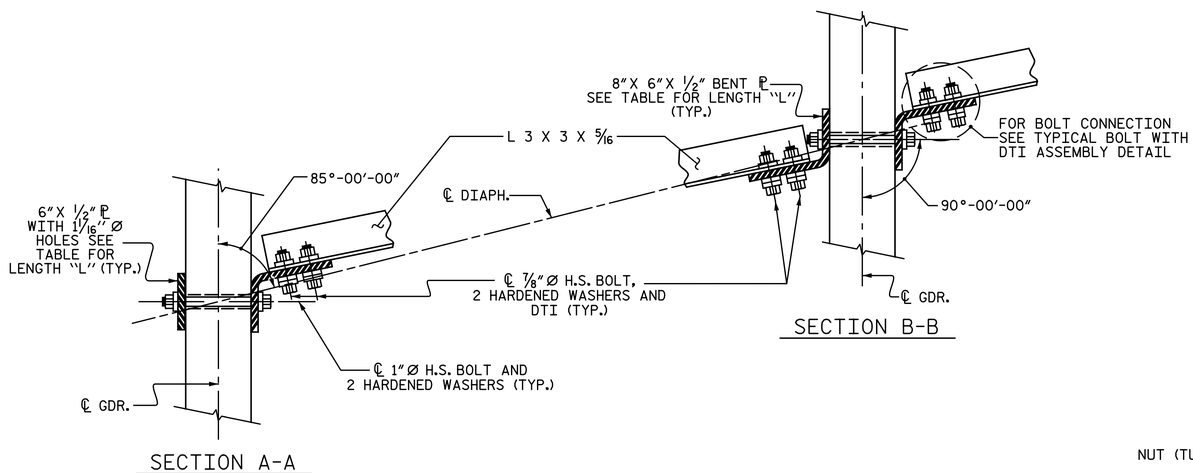


DIAPHRAGM FACE WEB FACE



SECTION Y-Y

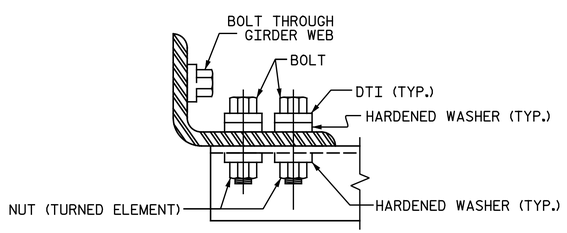
CONNECTOR PLATE DETAIL



SECTION B-B

SECTION A-A

CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

STRUCTURAL STEEL NOTES

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

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

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

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

FOR METALLIZATION, APPLY AN 8 MIL THICK 99.99 PERCENT ZINC (W-Zn-1) THERMAL SPRAYED COATING WITH A 0.5 MIL THICK SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

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

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

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

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

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

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

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

TABLE

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
72" BULB TEE	1'-8 3/4"	1'-9"	1'-5"	4'-2"

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

ASSEMBLED BY : M. D. MAYHEW	DATE : 2-21-17		
CHECKED BY : V. A. PATEL	DATE : 3-13-17		
DRAWN BY : RWW 11/09	ADDED 11/23/09R		
CHECKED BY : GM 11/09	REV. 10/1/11	MAA/GM	

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIRUL A. PATEL

7/26/2017

Documents originated by: Virul A Patel

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Michael Baker INTERNATIONAL

Michael Baker Engineering 8000 Regency Parkway, Suite 600 Cary, North Carolina 27518 NC License No.: F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

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

STD. NO. PCG11

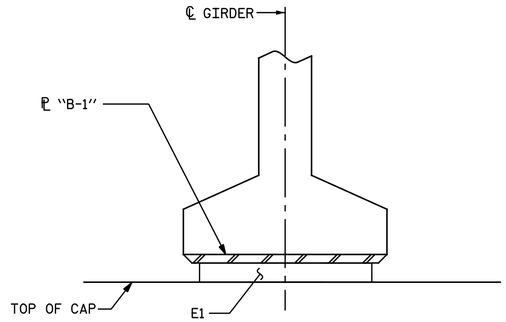
NOTES

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

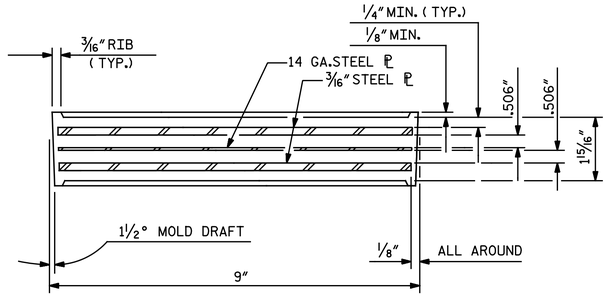
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

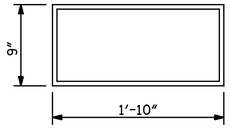
MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE IV	225 k



SECTION
(AT INTEGRAL END BENTS)



TYPICAL SECTION OF ELASTOMERIC BEARING



E1 (10 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE IV

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A Patel

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
ELASTOMERIC BEARING DETAILS
PRESTRESSED CONCRETE GIRDER
SUPERSTRUCTURE
RIGHT LANE

ASSEMBLED BY : N.B.SPEAKS	DATE : 1-9-17
CHECKED BY : V. A. PATEL	DATE : 5-23-17

DRAWN BY : WJH 8/89	REV. 10/1/11	MAA/GM
CHECKED BY : CRK 8/89	REV. 6/13	AAC/MAA
	REV. 1/15	MAA/TMG

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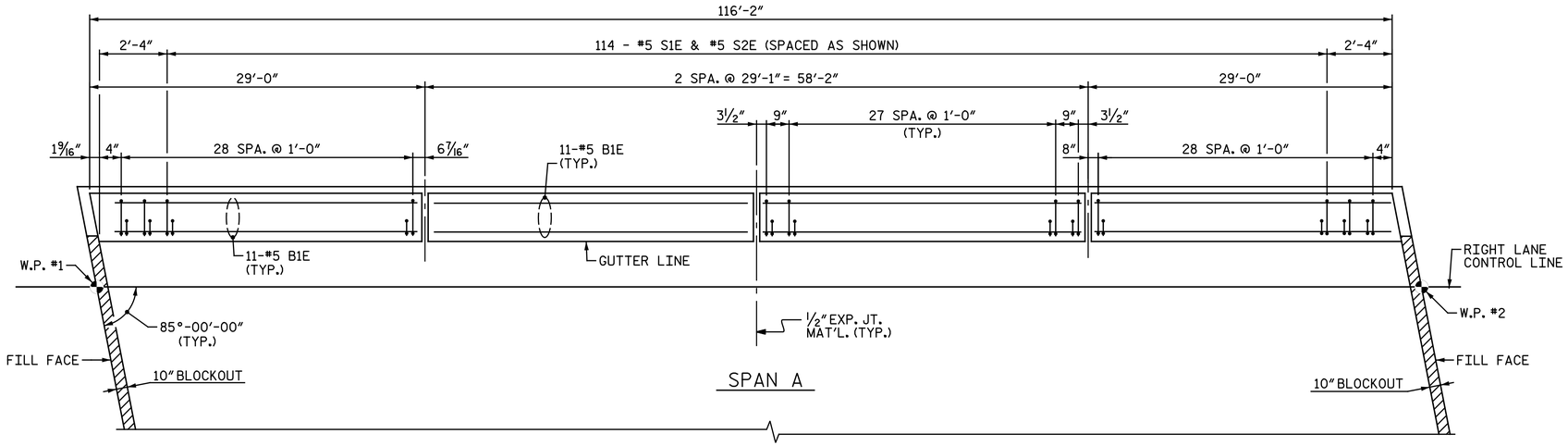
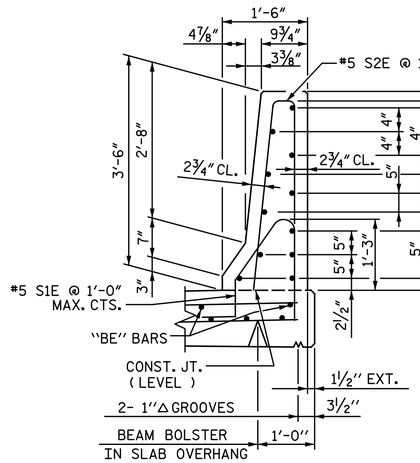
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-12
1			3			TOTAL SHEETS
2			4			25

STD. NO. EB3

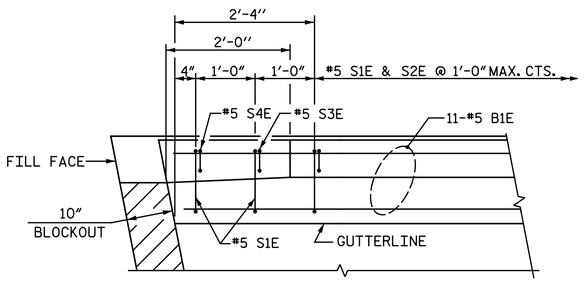


PLAN OF BARRIER RAIL

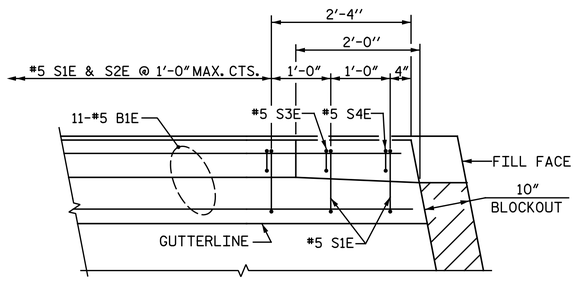
(LEFT RAIL SHOWN, RIGHT RAIL SIMILAR BY ROTATION)



SECTION THRU RAIL



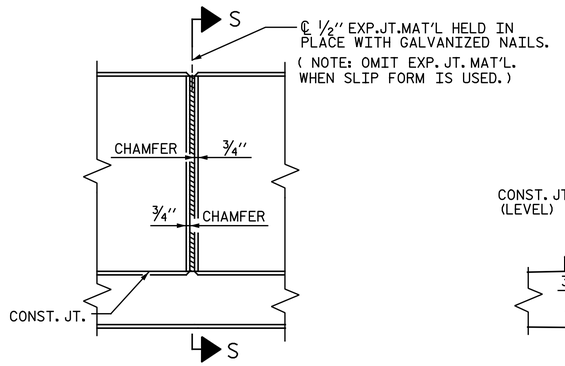
END BENT 1



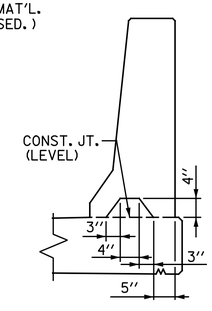
END BENT 2

PLAN

(LEFT RAIL SHOWN, RIGHT RAIL SIMILAR)

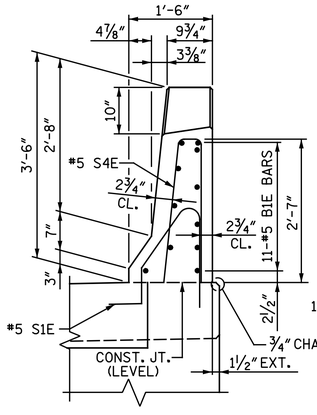


ELEVATION AT EXPANSION JOINTS

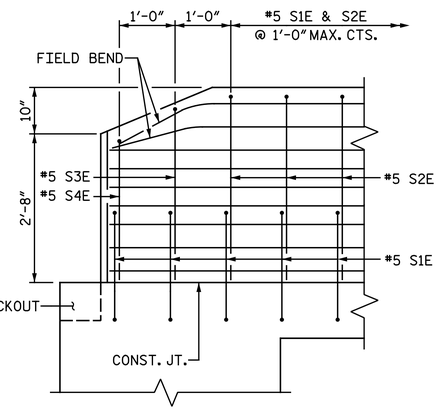


SECTION S-S

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



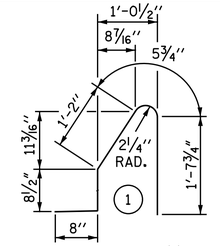
END VIEW

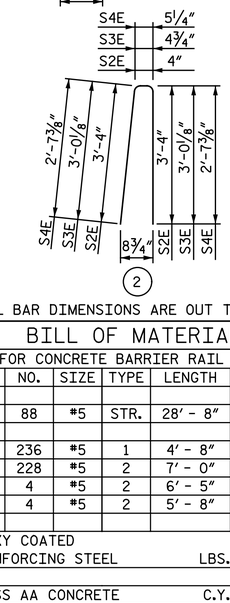


SIDE VIEW

END OF 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	88	#5	STR.	28′ - 8″	2,631
S1E	236	#5	1	4′ - 8″	1,149
S2E	228	#5	2	7′ - 0″	1,665
S3E	4	#5	2	6′ - 5″	27
S4E	4	#5	2	5′ - 8″	24
EPOXY COATED REINFORCING STEEL				LBS.	5,496
CLASS AA CONCRETE				C.Y.	31.6
CONCRETE BARRIER RAIL				L.F.	232.33

NOTES

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

Vipul A Patel

9/12/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

CONCRETE BARRIER RAIL

RIGHT LANE

BARRIER RAIL DETAILS

ASSEMBLED BY : N. B. SPEAKS		DATE : 9-11-17
CHECKED BY : V. A. PATEL		DATE : 9-12-17
DRAWN BY : ARB 5/87	REV. 10/1/11	MAA/GM
CHECKED BY : SJD 9/87	REV. 7/12	MAA/GM
	REV. 6/13	MAA/GM

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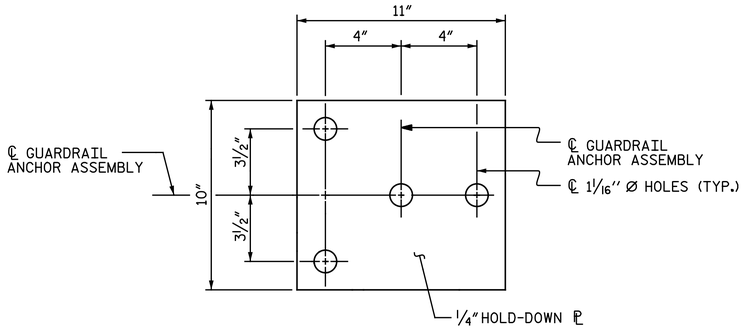
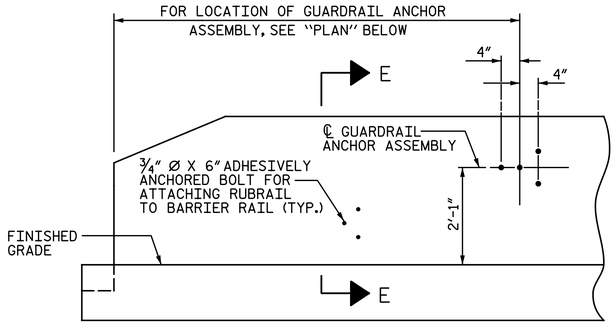
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-13
1			3			TOTAL SHEETS
2			4			25

STD. NO. CBR1



PLAN



ELEVATION

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.)

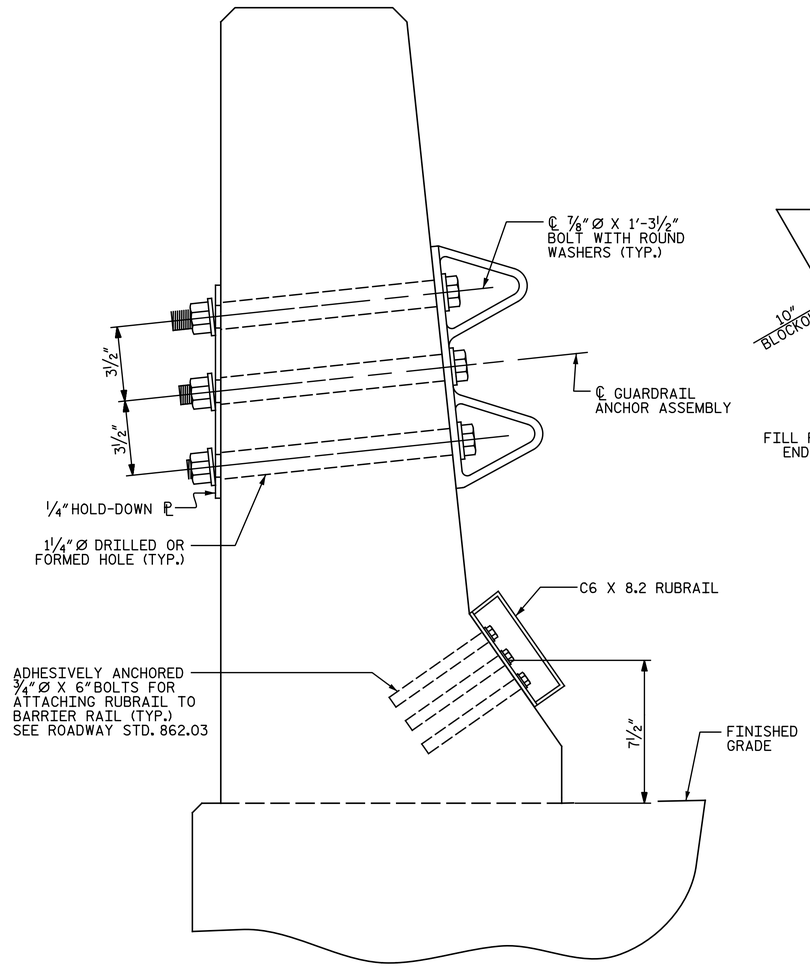
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

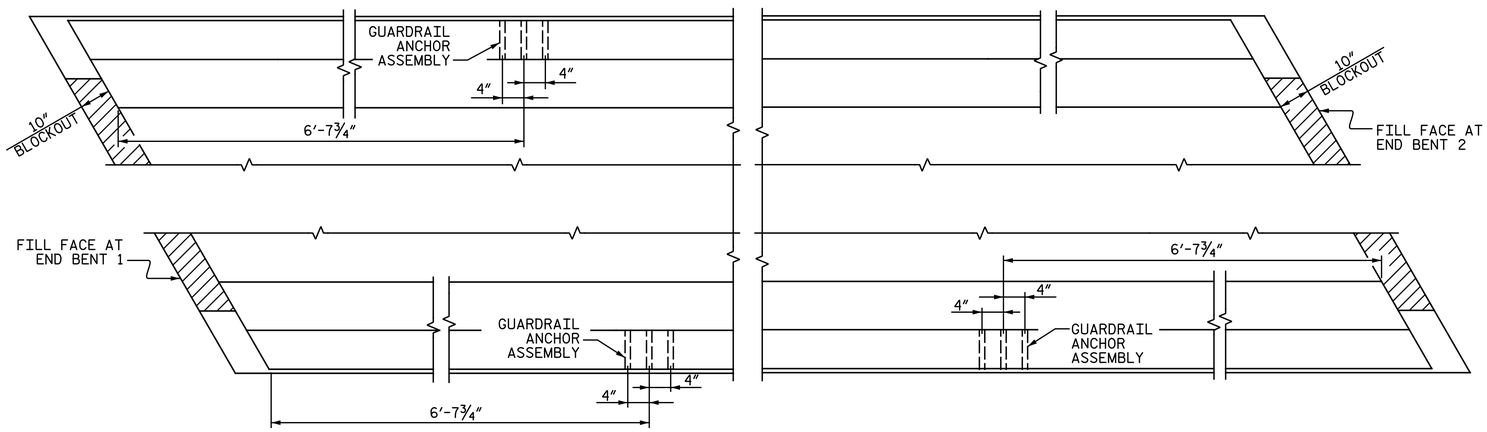
THE 1 1/4″ Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

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.



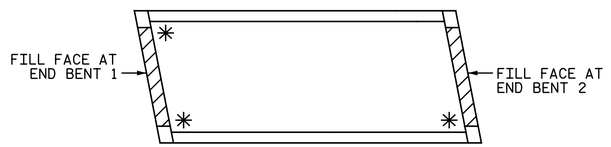
SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

Vipul A Patel 9/12/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

RIGHT LANE

ASSEMBLED BY : N. B. SPEAKS	DATE : 9-11-17
CHECKED BY : V. A. PATEL	DATE : 9-12-17

DRAWN BY : TLA 5/06	REV. 10/1/11	MAA/GM
CHECKED BY : GM 5/06	REV. 7/12	MAA/GM
	REV. 6/13	MAA/GM

Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
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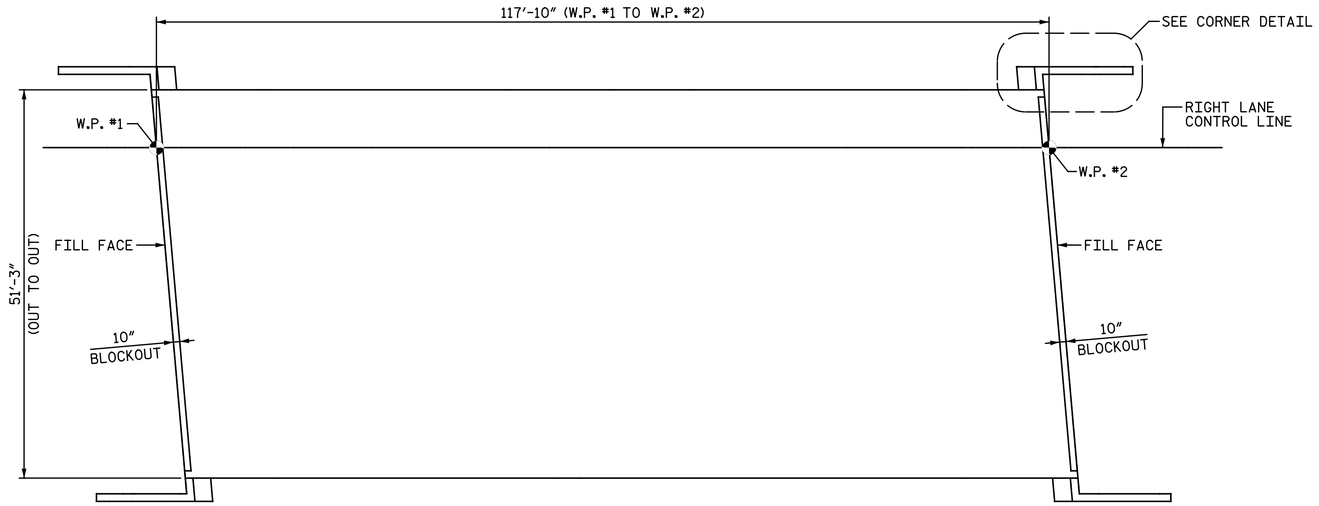
NC License No. : F-1084

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

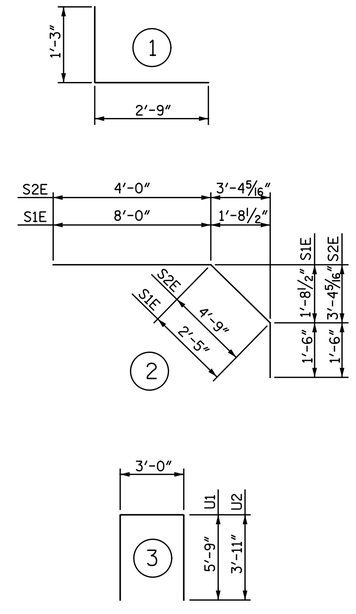
STD. NO. GRA2



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB

(SQ. FT. = 6,039)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
SPAN		19,760	20,371
POUR 1	179.2		
POUR 2	94.2		
TOTALS *	273.4	19,760	20,371

* QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

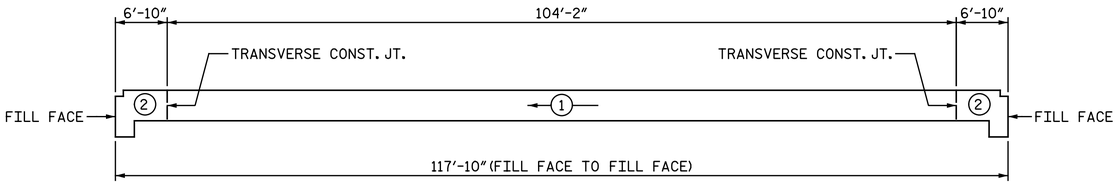
REINFORCING BAR SCHEDULE

SPAN A

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	196	#5	STR.	50′ - 11″	10,409
A2	192	#5	STR.	50′ - 11″	10,196
A101E	2	#5	STR.	43′ - 10″	91
A102E	2	#5	STR.	37′ - 2″	78
A103E	2	#5	STR.	30′ - 6″	64
A104E	2	#5	STR.	23′ - 10″	50
A105E	2	#5	STR.	17′ - 2″	36
A106E	2	#5	STR.	10′ - 6″	22
A107E	2	#5	STR.	3′ - 10″	8
A201	2	#5	STR.	43′ - 10″	91
A202	2	#5	STR.	37′ - 2″	78
A203	2	#5	STR.	30′ - 6″	64
A204	2	#5	STR.	23′ - 10″	50
A205	2	#5	STR.	17′ - 2″	36
A206	2	#5	STR.	10′ - 6″	22
A207	2	#5	STR.	3′ - 10″	8
B1E	175	#4	STR.	24′ - 10″	2,903
B2	116	#5	STR.	59′ - 0″	7,138
B3E	68	#6	STR.	25′ - 5″	2,596
B4E	68	#6	STR.	27′ - 7″	2,817
B5E	8	#4	1	4′ - 0″	21
H1	28	#5	STR.	3′ - 0″	88
K1	28	#4	STR.	26′ - 10″	502
K2	8	#4	STR.	6′ - 7″	35
K3	40	#4	STR.	9′ - 7″	256
K4	8	#4	STR.	8′ - 0″	43
K5	4	#4	STR.	2′ - 6″	7
K6	20	#4	STR.	4′ - 0″	53
K7	4	#4	STR.	3′ - 2″	8
S1E	88	#4	2	11′ - 11″	701
S2E	84	#4	2	10′ - 3″	575
U1	88	#4	3	14′ - 6″	852
U2	20	#4	3	10′ - 10″	145
V1	12	#5	STR.	7′ - 0″	88

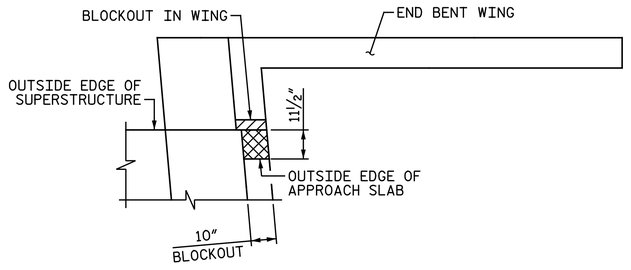
REINFORCING STEEL	LBS.	19,760
EPOXY COATED REINF. STEEL	LBS.	20,371

"E" SUFFIX DENOTES EPOXY COATED REINFORCING STEEL



POURING SEQUENCE

(#) DENOTES POUR NUMBER AND DIRECTION



CORNER DETAIL

CONCRETE SHALL BE POURED IN THE CROSS-HATCHED AREA TO MATCH THE TOP OF END BENT WING ELEVATIONS. UNLESS OTHERWISE DIRECTED BY THE ENGINEER, THE CONCRETE IN THESE AREAS SHALL BE PLACED AT THE SAME TIME THE BLOCKOUTS IN THE END BENT WINGS ARE POURED AS NOTED ON SHEET 1 OF "INTEGRAL END BENT 1" AND "INTEGRAL END BENT 2" SHEETS.

GROOVING BRIDGE FLOORS

APPROACH SLABS	2,175	SQ.FT.
BRIDGE DECK	5,212	SQ.FT.
TOTAL	7,387	SQ.FT.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A Patel

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Cary, North Carolina 27518
NC License No.: F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

BILL OF MATERIAL

RIGHT LANE

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

DRAWN BY : M. D. MAYHEW DATE : 2-21-17
CHECKED BY : V. A. PATEL DATE : 3-13-17

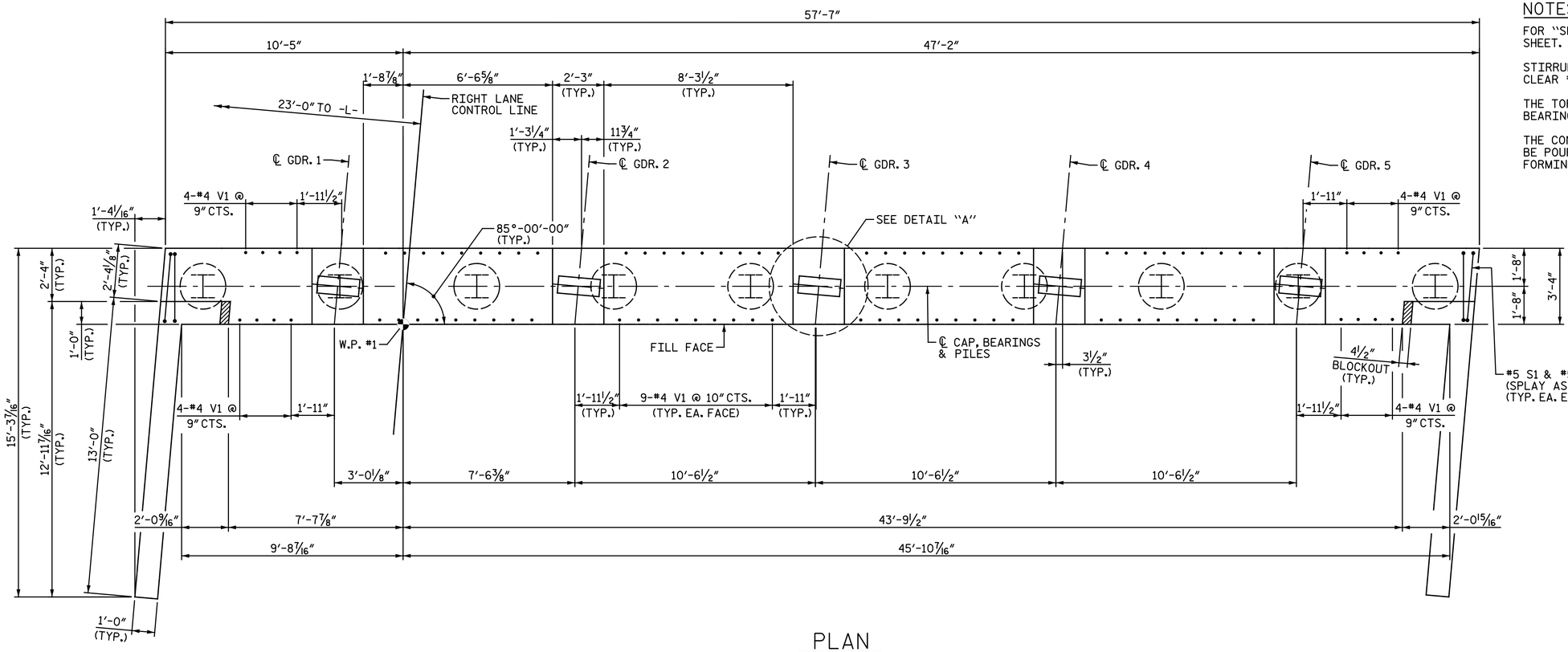
NOTES:

FOR "SECTION A-A", SEE "INTEGRAL END BENT 1 DETAILS" SHEET.

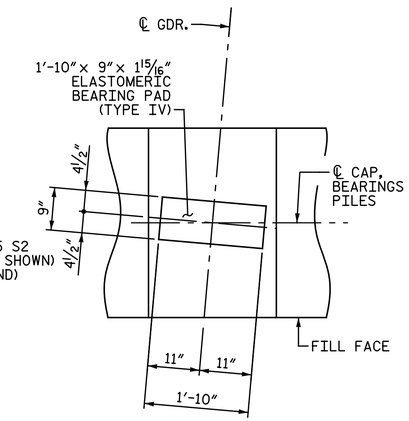
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.

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

THE CONCRETE IN THE HATCHED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

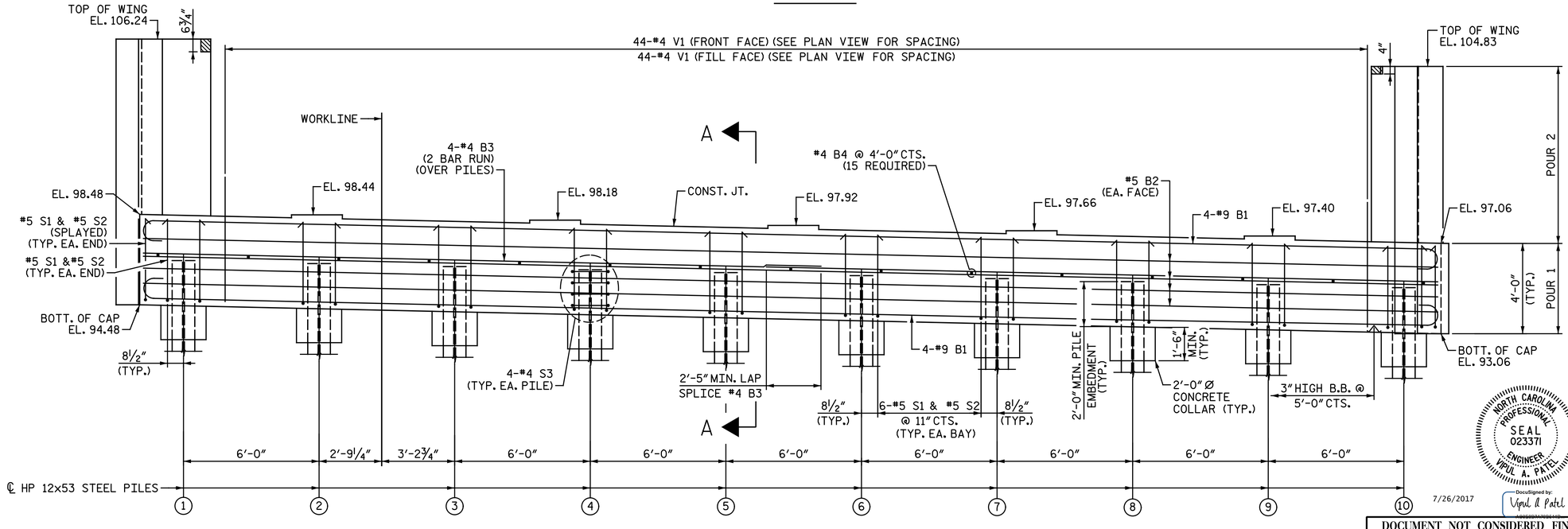


PLAN



DETAIL "A"

ALL DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS AT EACH BRIDGE SEAT LOCATION.



ELEVATION

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
1	96.48
2	96.33
3	96.18
4	96.03
5	95.88
6	95.74
7	95.59
8	95.44
9	95.29
10	95.15

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIRUL A. PATEL

7/26/2017

DocuSigned by: Virul A Patel

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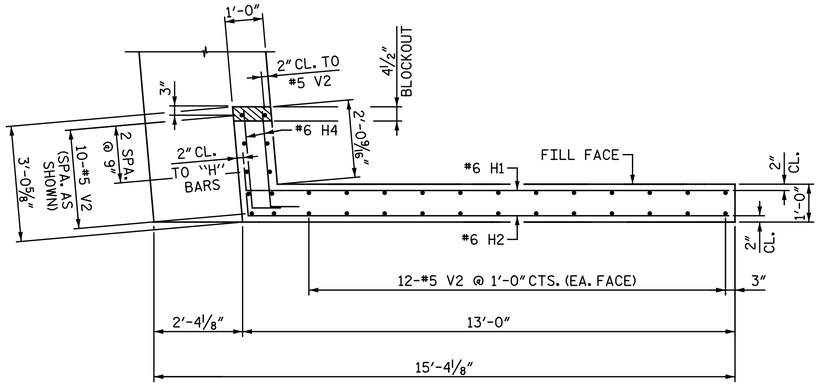
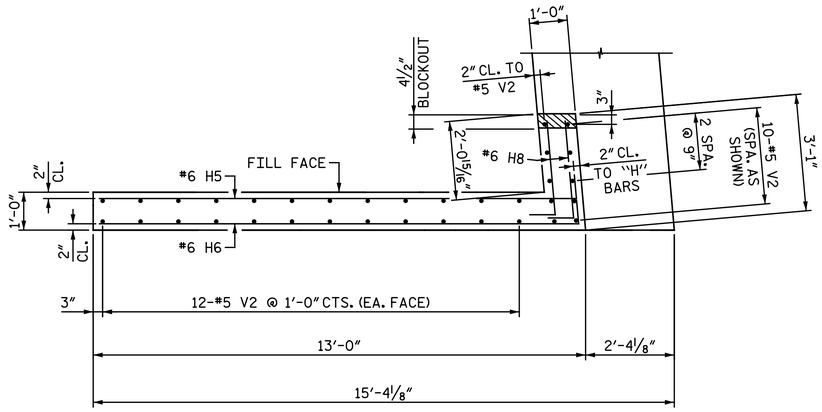
NC License No. : F-1084

DRAWN BY : M. D. MAYHEW DATE : 4-18-17
CHECKED BY : V. A. PATEL DATE : 5-15-17

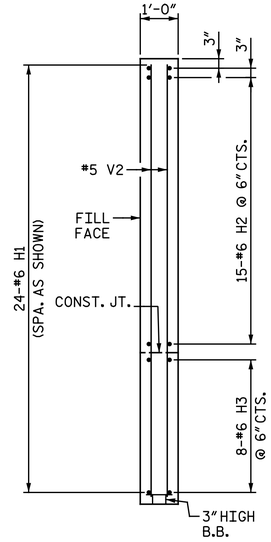
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-16
1			3			TOTAL SHEETS
2			4			25



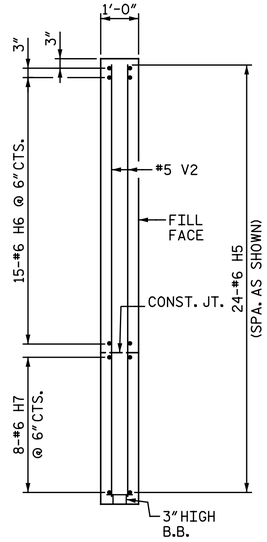
PLAN OF LEFT WING
(H3 BARS NOT SHOWN FOR CLARITY)



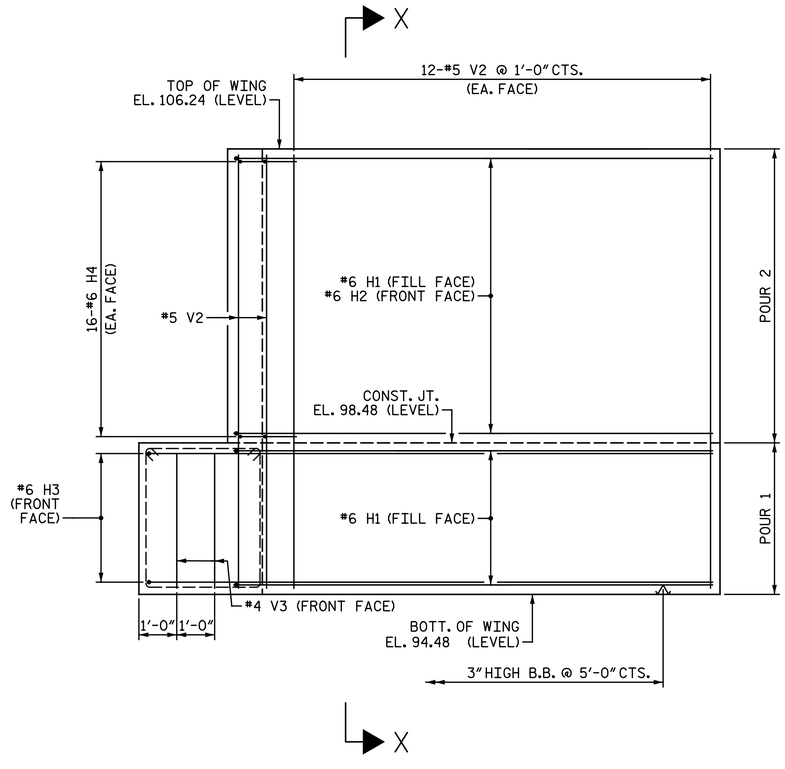
PLAN OF RIGHT WING
(H7 BARS NOT SHOWN FOR CLARITY)



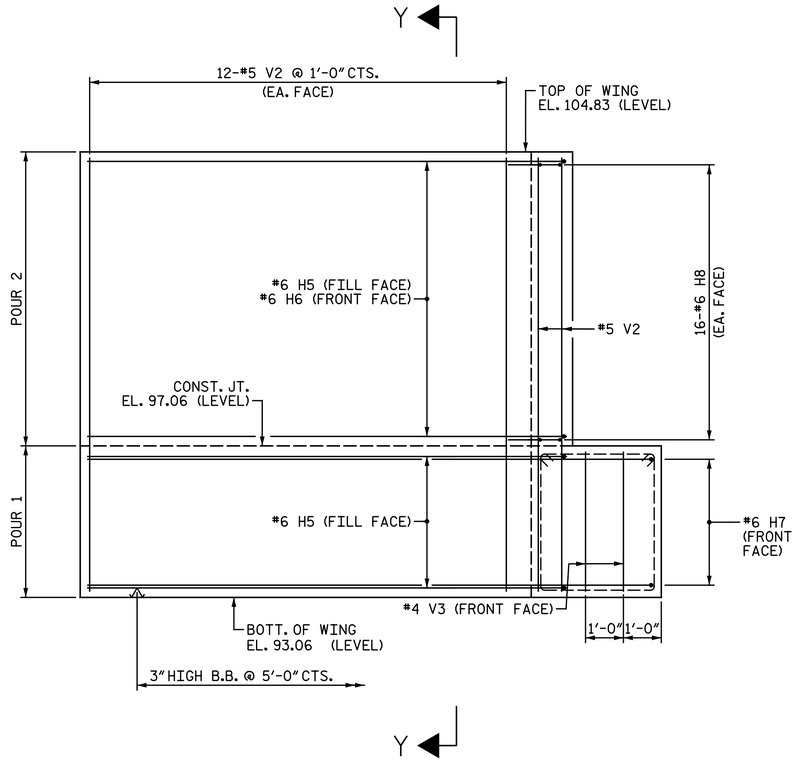
SECTION X-X



SECTION Y-Y



ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING

DRAWN BY : M. D. MAYHEW DATE : 4-19-17
CHECKED BY : V. A. PATEL DATE : 5-15-17

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A Patel

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PROJECT NO. R-5703
LENOIR COUNTY
STATION: 89+28.52 -L-

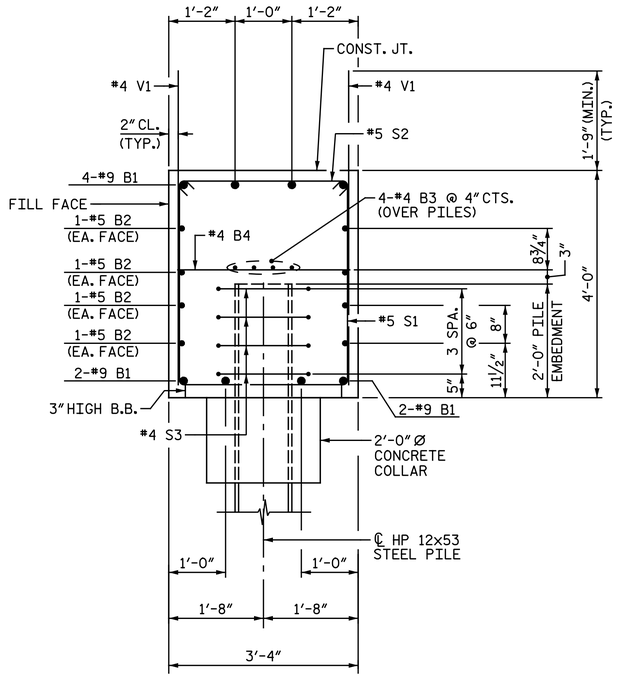
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

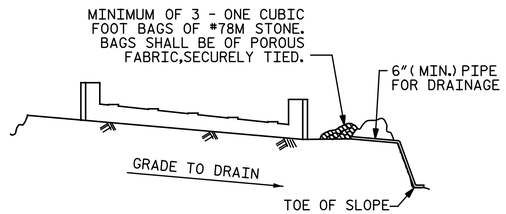
INTEGRAL END BENT 1

RIGHT LANE

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



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 FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

BILL OF MATERIAL
INTEGRAL END BENT 1

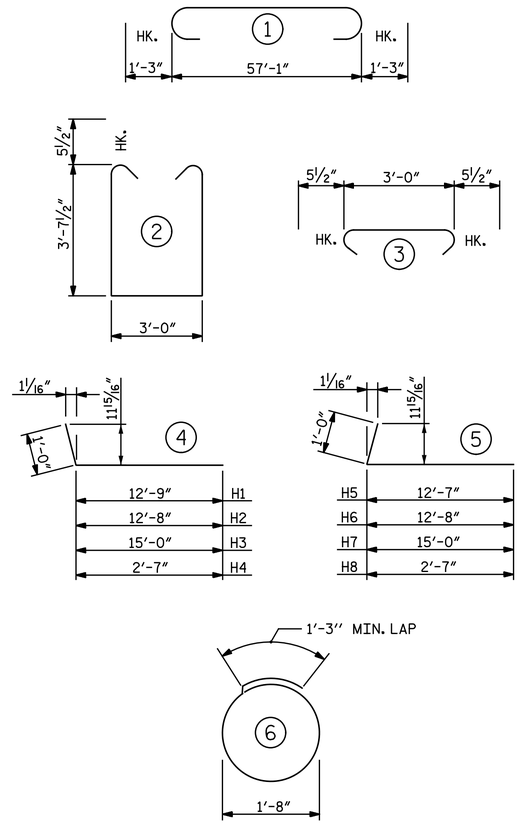
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	59' - 7"	1,621
B2	8	#5	STR.	57' - 3"	478
B3	8	#4	STR.	29' - 10"	159
B4	15	#4	STR.	3' - 0"	30
H1	24	#6	4	13' - 9"	496
H2	16	#6	4	13' - 8"	328
H3	8	#6	4	16' - 0"	192
H4	32	#6	4	3' - 7"	172
H5	24	#6	5	13' - 7"	490
H6	16	#6	5	13' - 8"	328
H7	8	#6	5	16' - 0"	192
H8	32	#6	5	3' - 7"	172
S1	58	#5	2	11' - 2"	676
S2	58	#5	3	3' - 11"	237
S3	40	#4	6	6' - 6"	174
V1	88	#4	STR.	5' - 7"	328
V2	68	#5	STR.	11' - 5"	810
V3	4	#4	STR.	3' - 7"	10

REINFORCING STEEL	LBS.	6,893
CLASS A CONCRETE		
POUR 1 - CAP, LOWER PART OF WINGS & COLLARS	C.Y.	34.2
POUR 2 - UPPER PART OF WINGS	C.Y.	8.6
TOTAL	C.Y.	42.8
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	EA.	10
HP 12x53 STEEL PILES NO. 10	L.F.	800
PILE REDRIVES	EA.	5

NOTE:

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A Patel

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NC License No.: F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

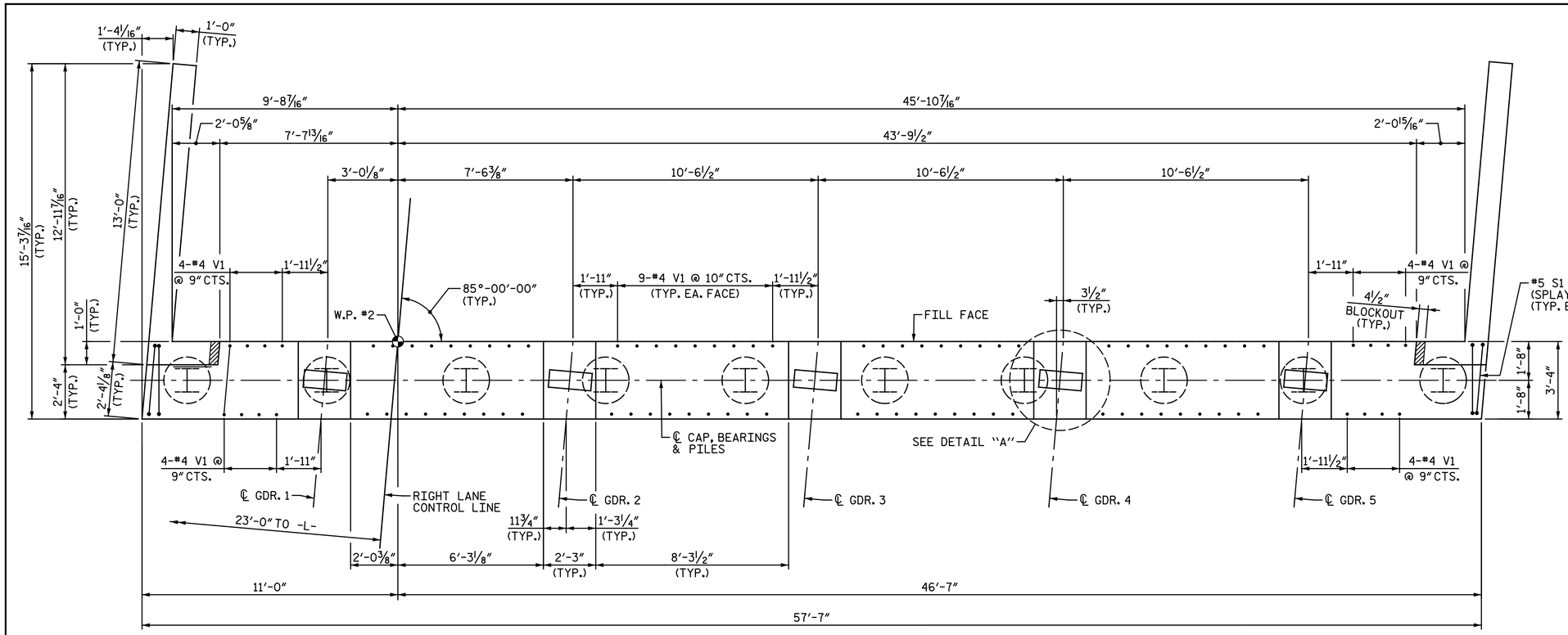
SUBSTRUCTURE

INTEGRAL END BENT 1 DETAILS

RIGHT LANE

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

DRAWN BY : M. D. MAYHEW DATE : 4-19-17
CHECKED BY : V. A. PATEL DATE : 5-15-17



PLAN

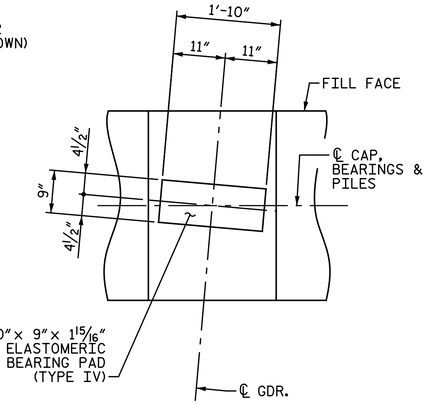
NOTES:

FOR "SECTION A-A", SEE "INTEGRAL END BENT 1 DETAILS" SHEET.

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

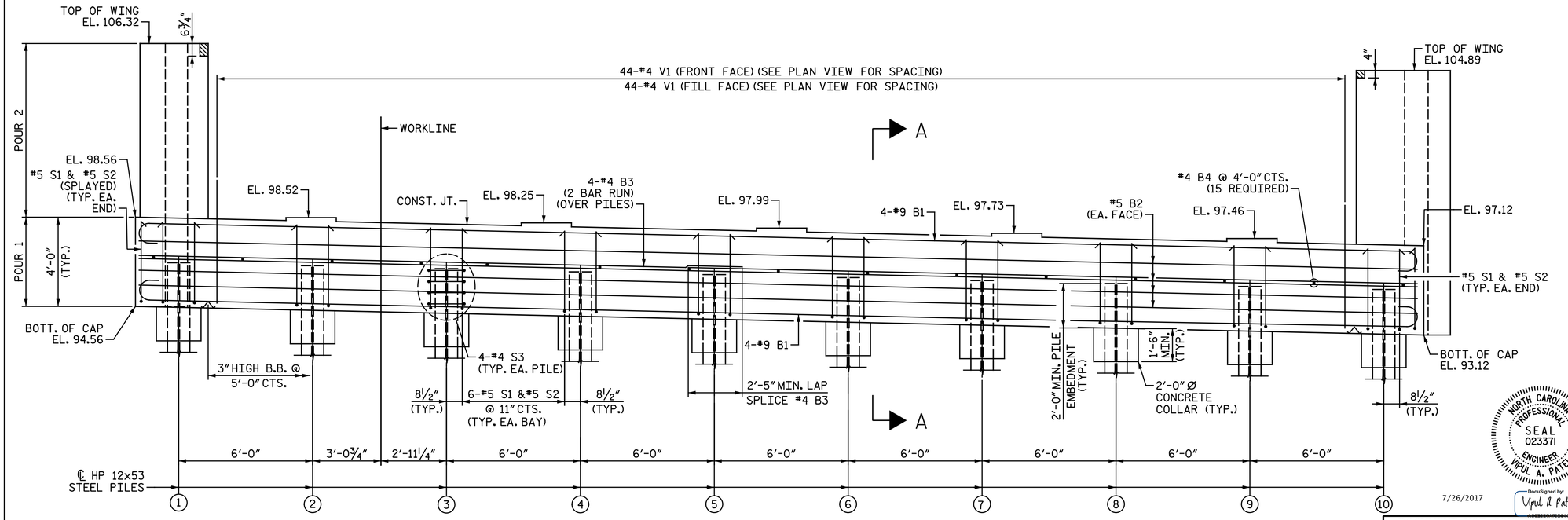
THE TOP SURFACE OF THE END BENT CAP, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

THE CONCRETE IN THE HATCHED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.



DETAIL "A"

ALL DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS AT EACH BRIDGE SEAT LOCATION.



ELEVATION

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
①	96.56
②	96.41
③	96.25
④	96.10
⑤	95.95
⑥	95.80
⑦	95.65
⑧	95.50
⑨	95.35
⑩	95.20

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

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7/26/2017

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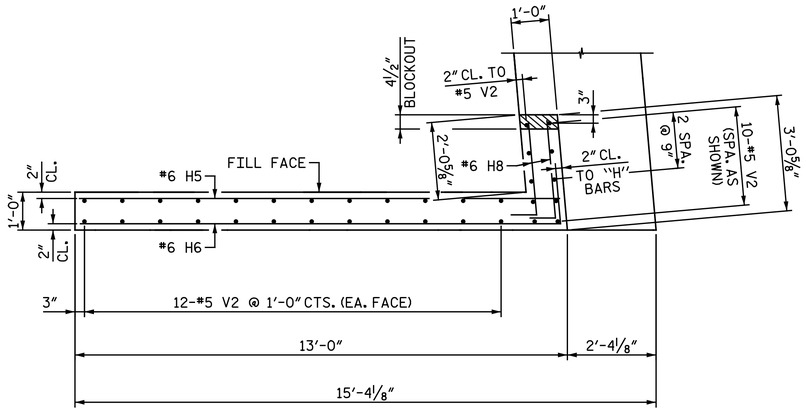
NC License No. : F-1084

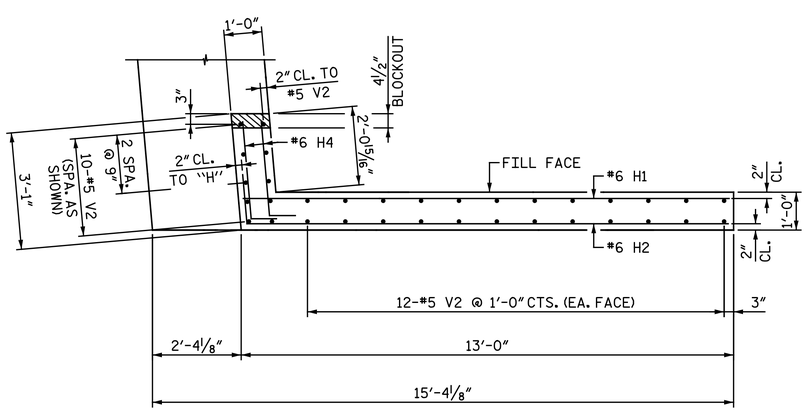
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-19
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : M. D. MAYHEW DATE : 4-18-17
CHECKED BY : V. A. PATEL DATE : 5-16-17



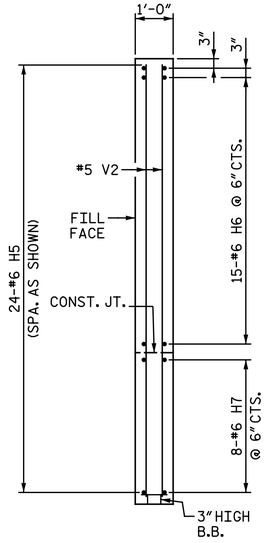
PLAN OF LEFT WING

(H7 BARS NOT SHOWN FOR CLARITY)

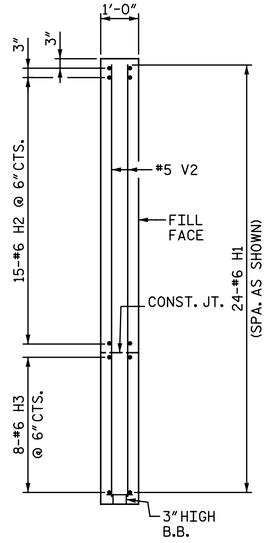


PLAN OF RIGHT WING

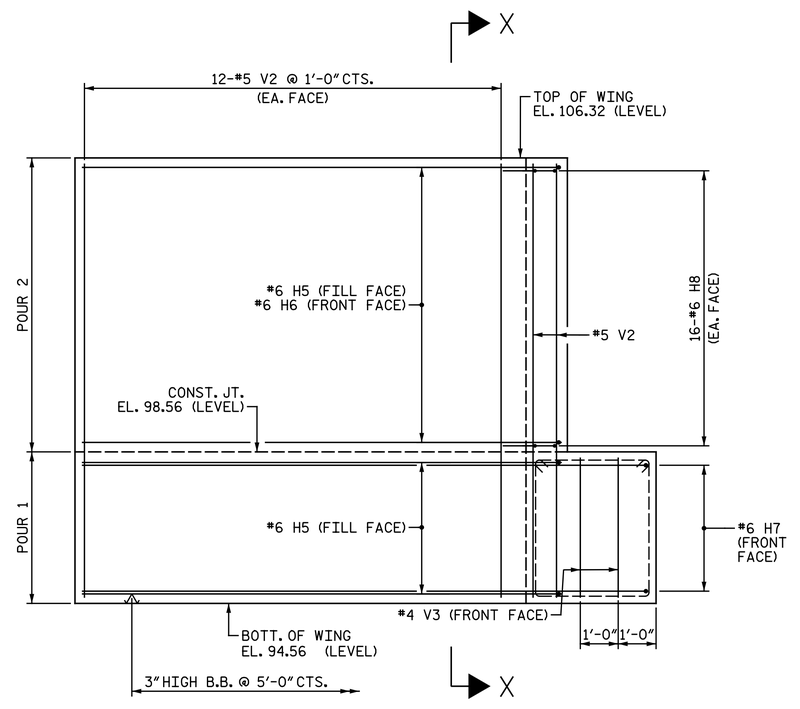
(H3 BARS NOT SHOWN FOR CLARITY)



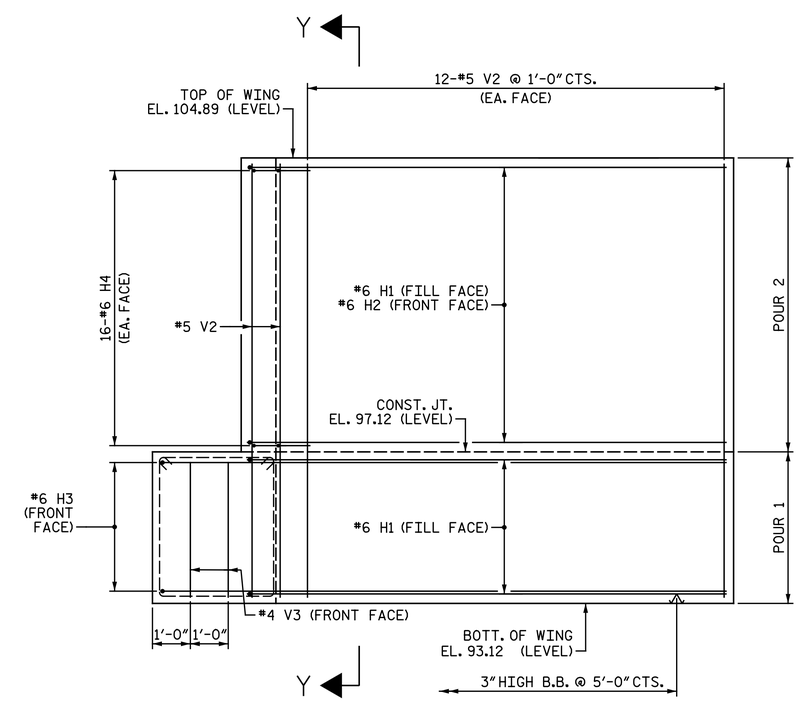
SECTION X-X



SECTION Y-Y



ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A Patel

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

RIGHT LANE

DRAWN BY : M. D. MAYHEW DATE : 4-19-17
CHECKED BY : V. A. PATEL DATE : 5-16-17

Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

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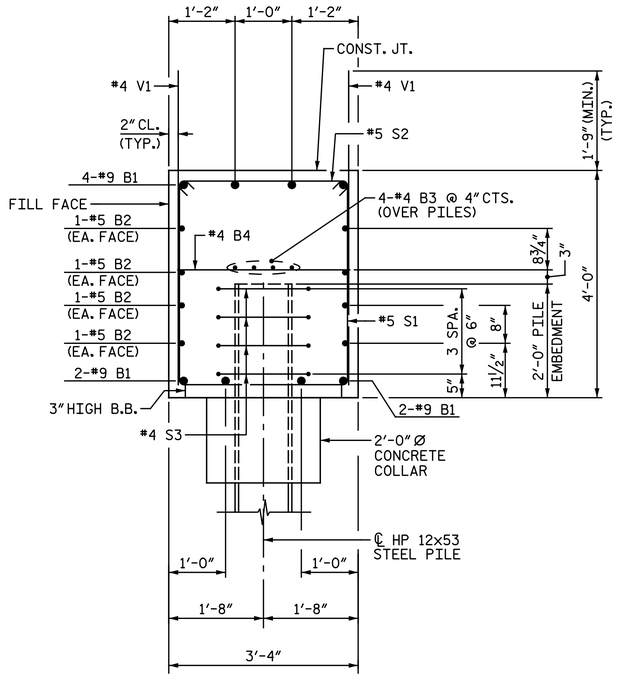
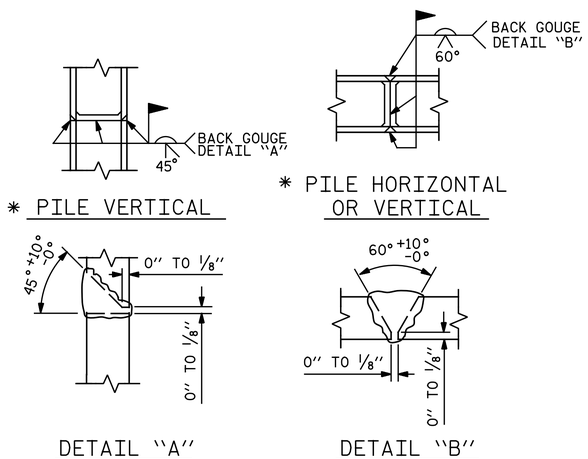
2			4			25



SECTION A-A



PILE SPLICE DETAILS

*POSITION OF PILE DURING WELDING

BILL OF MATERIAL

INTEGRAL END BENT 2

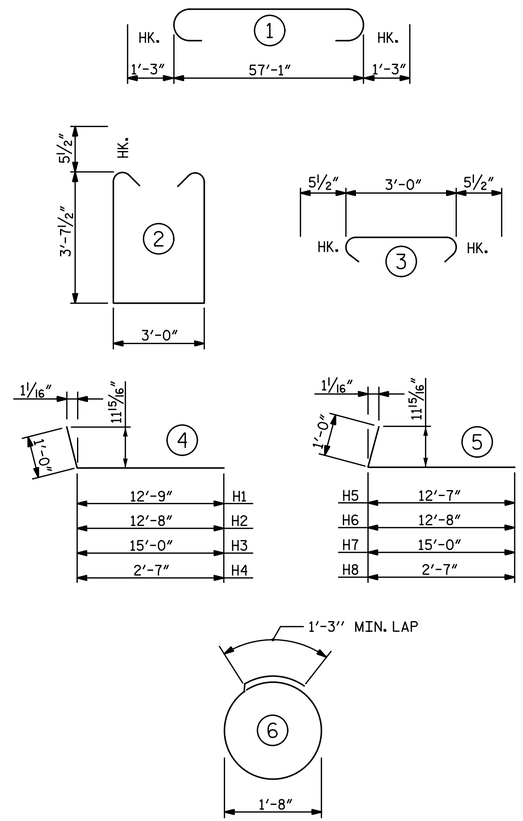
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	59' - 7"	1,621
B2	8	#5	STR.	57' - 3"	478
B3	8	#4	STR.	29' - 10"	159
B4	15	#4	STR.	3' - 0"	30
H1	24	#6	4	13' - 9"	496
H2	16	#6	4	13' - 8"	328
H3	8	#6	4	16' - 0"	192
H4	32	#6	4	3' - 7"	172
H5	24	#6	5	13' - 7"	490
H6	16	#6	5	13' - 8"	328
H7	8	#6	5	16' - 0"	192
H8	32	#6	5	3' - 7"	172
S1	58	#5	2	11' - 2"	676
S2	58	#5	3	3' - 11"	237
S3	40	#4	6	6' - 6"	174
V1	88	#4	STR.	5' - 7"	328
V2	68	#5	STR.	11' - 5"	810
V3	4	#4	STR.	3' - 7"	10

REINFORCING STEEL	LBS.	6,893
CLASS A CONCRETE		
POUR 1 - CAP, LOWER PART OF WINGS & COLLARS	C.Y.	34.2
POUR 2 - UPPER PART OF WINGS	C.Y.	8.6
TOTAL	C.Y.	42.8
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	EA.	10
HP 12x53 STEEL PILES NO. 10	L.F.	800
PILE REDRIVES	EA.	5

NOTE:

FOR TEMPORARY DRAINAGE AT END BENT, SEE "INTEGRAL END BENT 1 DETAILS" SHEET.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

DocuSigned by: Bradley J. Bell 8/8/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

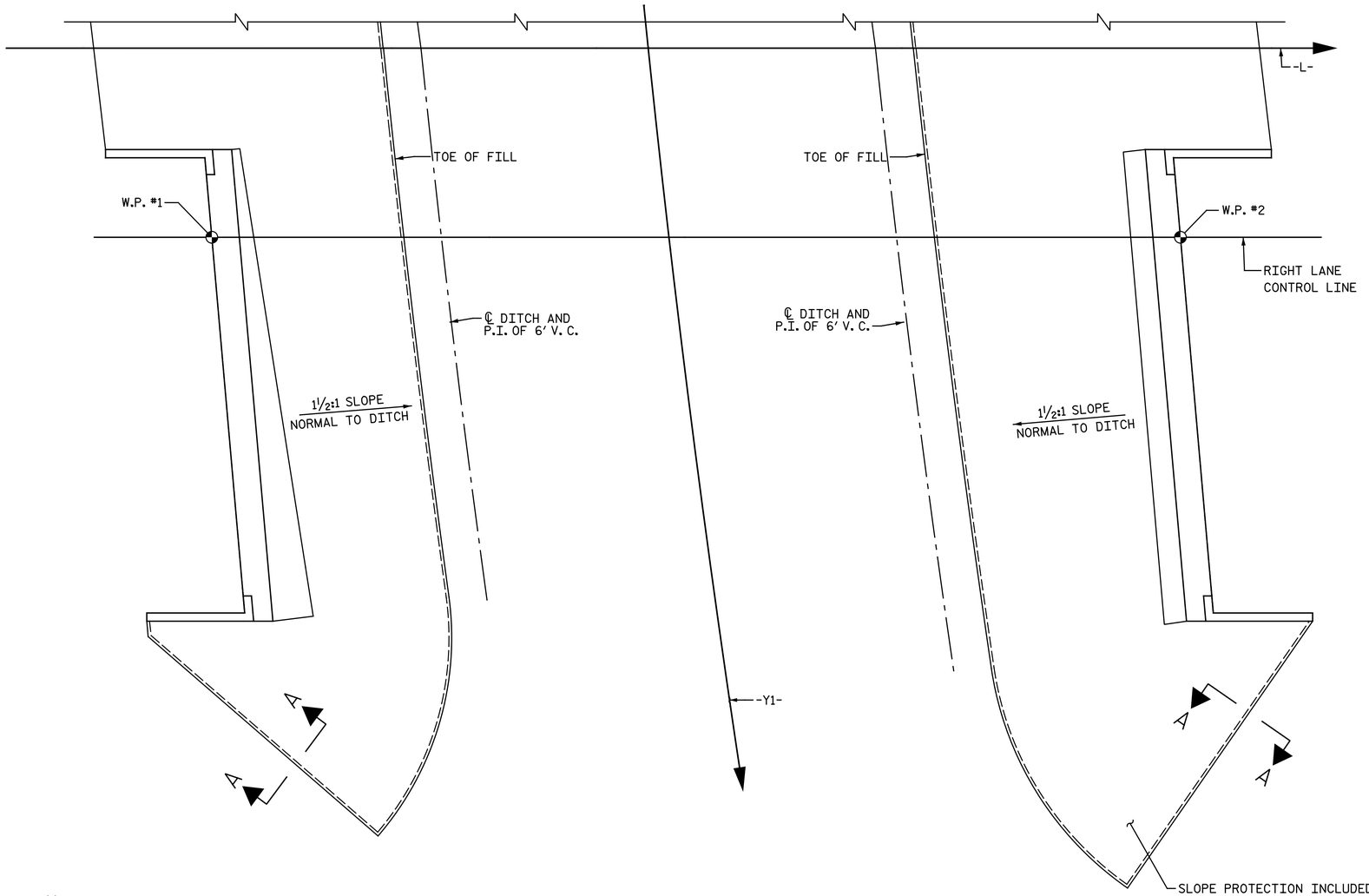
SUBSTRUCTURE

INTEGRAL END BENT 2 DETAILS

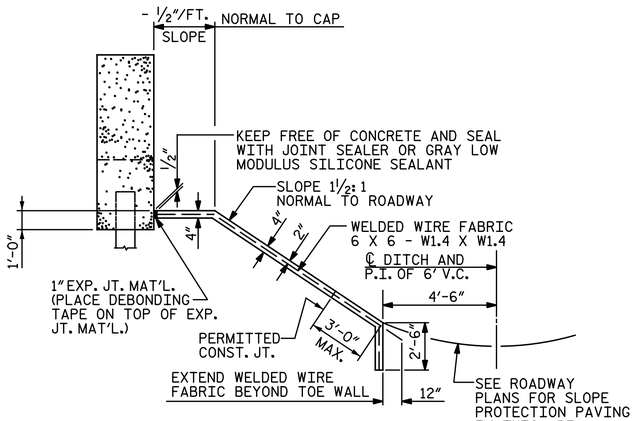
RIGHT LANE

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

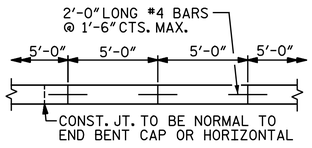
DRAWN BY : M. D. MAYHEW DATE : 4-19-17
CHECKED BY : V. A. PATEL DATE : 5-16-17



PLAN

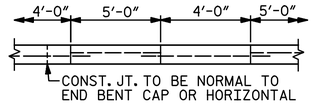


SECTION ALONG CONTROL LINE WHEN FILL CATCHES IN DITCH



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

GENERAL NOTES:

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 WIDTHS AND ELEVATIONS, SEE GENERAL DRAWING AND "SLOPE PROTECTION DETAILS" SHEET 2 OF 2.

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.

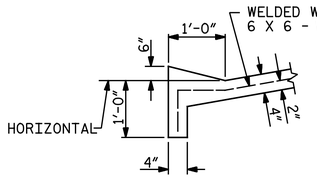
SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING.

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. 89+28.52 -L- (LEFT LANE)	4 INCH SLOPE PROTECTION	✳ WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	350	630
END BENT 2	430	775

✳ QUANTITY SHOWN IS BASED ON 5' POURS.



SECTION A-A

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

SHEET 1 OF 2

ASSEMBLED BY : C. E. MAYHEW	DATE : 4-24-17	
CHECKED BY : V. A. PATEL	DATE : 5-23-17	
DRAWN BY : ELR 5/92	REV. 10/1/11	MAA/GM
CHECKED BY : GRP 6/92	REV. 12/21/11	MAA/GM
	REV. 1/16	MAA/TMG

SLOPE PROTECTION DETAILS

7/26/2017

DocuSigned by: Vipul A. Patel

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NC License No. : F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SLOPE PROTECTION DETAILS

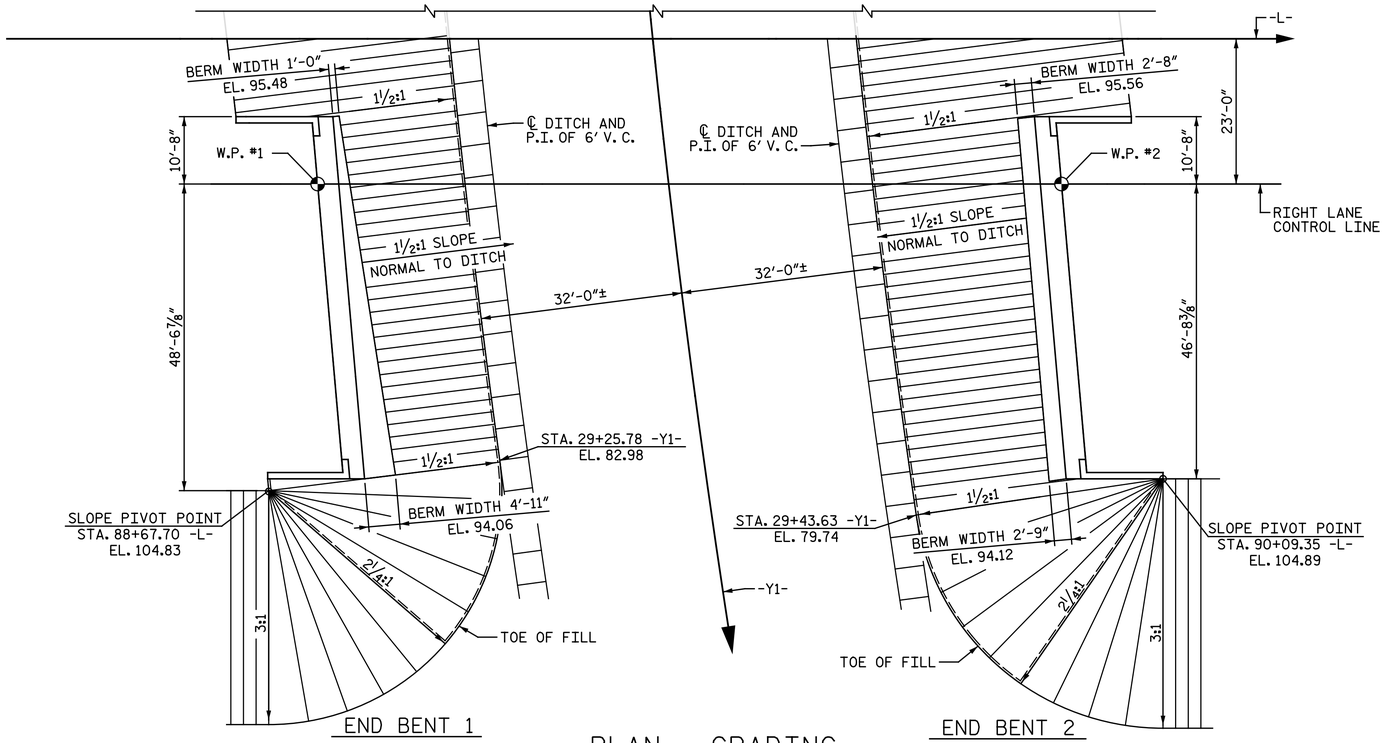
RIGHT LANE

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

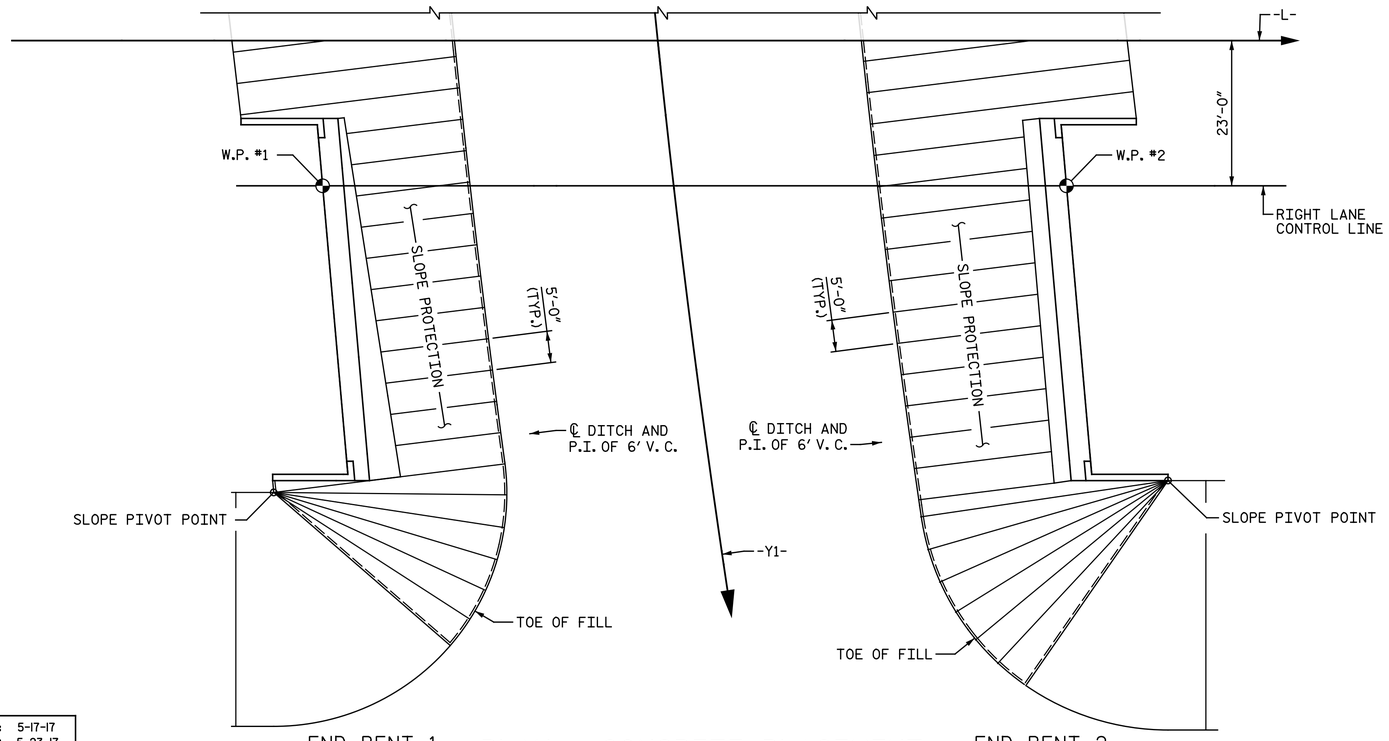
STD. NO. SP1

NOTE:

ALL ELEVATIONS AND BERM WIDTHS ARE GIVEN AT THE TOP OF CONCRETE SLOPE PROTECTION.



PLAN - GRADING



PLAN - CONCRETE PLACEMENT

(1½:1 SLOPE)

ASSEMBLED BY : C. E. MAYHEW	DATE : 5-17-17		
CHECKED BY : V. A. PATEL	DATE : 5-23-17		
DRAWN BY : WJH 10/88	REV. 5/1/06	TLA/GM	
CHECKED BY : FCJ 10/88	REV. 10/1/11	MAA/GM	
	REV. 1/16	MAA/TMG	

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SLOPE PROTECTION DETAILS

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A Patel

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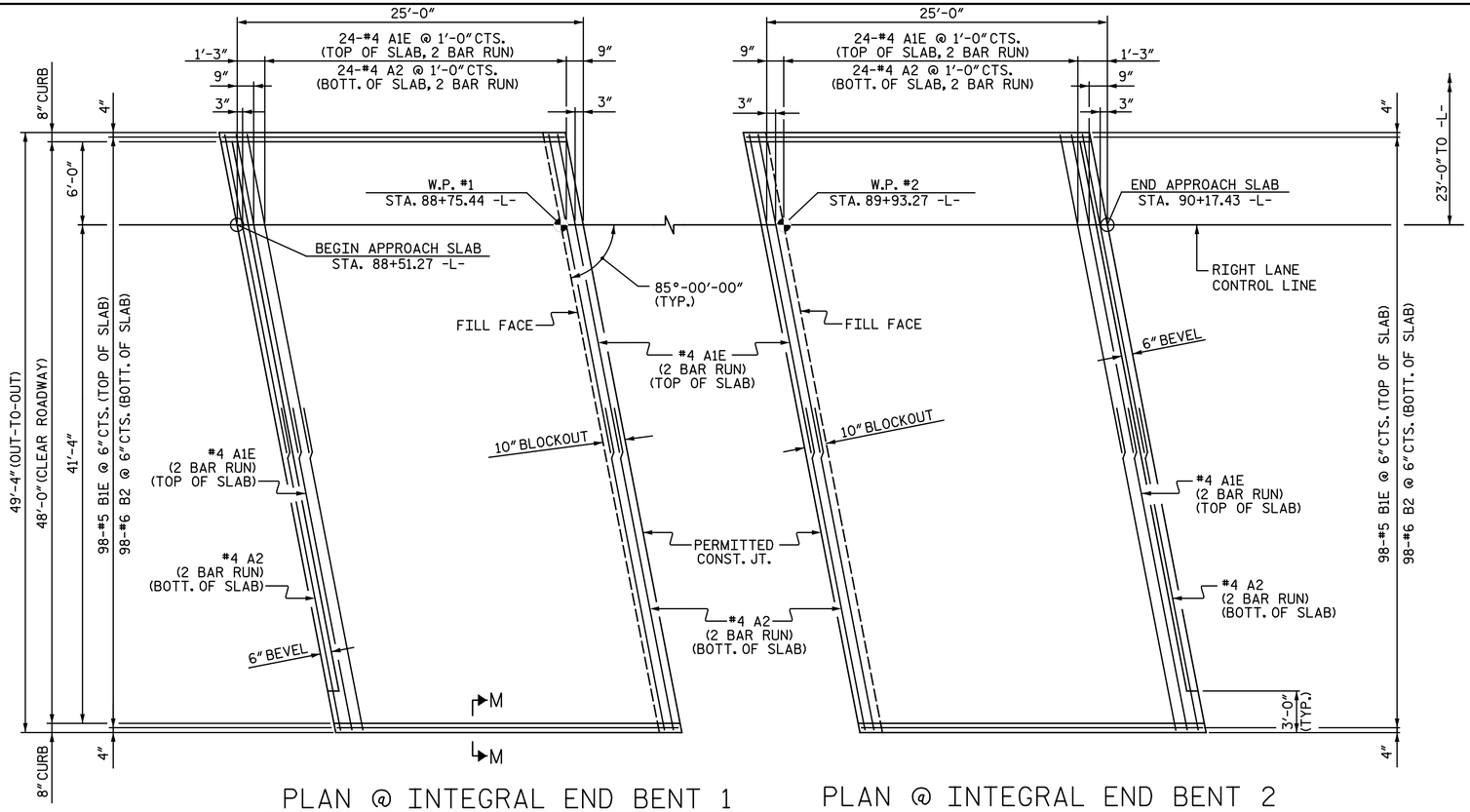


PLAN @ INTEGRAL END BENT 1

PLAN @ INTEGRAL END BENT 2

NOTES:

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

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

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

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4"Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

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

#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4"Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

BILL OF MATERIAL
APPROACH SLAB AT END BENT 1

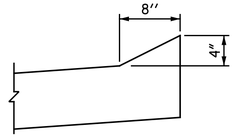
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	52	#4	STR.	25' - 8"	892
A2	52	#4	STR.	25' - 6"	886
B1E	98	#5	STR.	24' - 2"	2,470
B2	98	#6	STR.	24' - 8"	3,631
REINFORCING STEEL				LBS.	4,517
EPOXY COATED REINFORCING STEEL				LBS.	3,362
CLASS AA CONCRETE				C.Y.	53.3

BILL OF MATERIAL
APPROACH SLAB AT END BENT 2

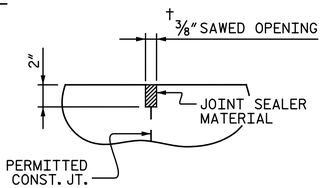
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	52	#4	STR.	25' - 8"	892
A2	52	#4	STR.	25' - 6"	886
B1E	98	#5	STR.	24' - 2"	2,470
B2	98	#6	STR.	24' - 8"	3,631
REINFORCING STEEL				LBS.	4,517
EPOXY COATED REINFORCING STEEL				LBS.	3,362
CLASS AA CONCRETE				C.Y.	53.3

ALL BAR DIMENSIONS ARE OUT TO OUT.

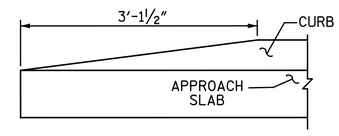
SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"



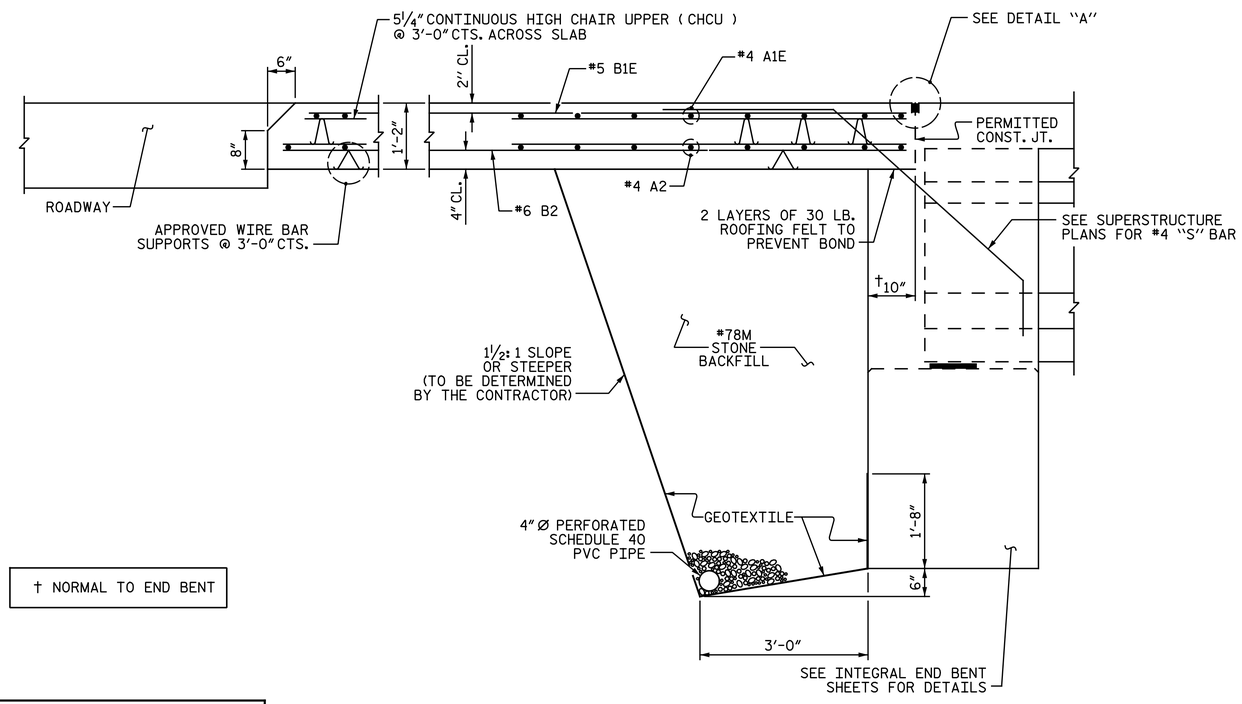
SECTION M-M



DETAIL "A"



END OF CURB WITHOUT SHOULDER BERM GUTTER



† NORMAL TO END BENT

SECTION THRU SLAB

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A Patel

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT

RIGHT LANE

DRAWN BY :	N. B. SPEAKS	DATE :	3-6-17
CHECKED BY :	V. A. PATEL	DATE :	5-23-17

Michael Baker INTERNATIONAL

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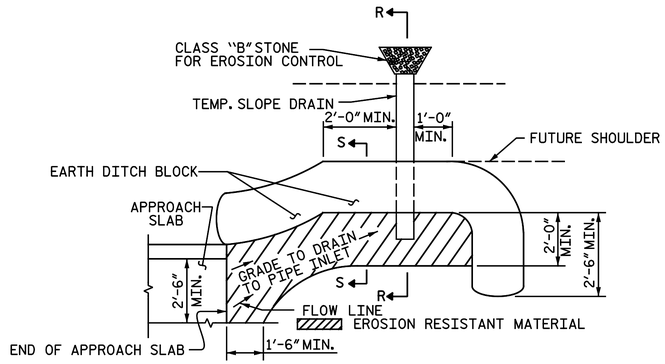
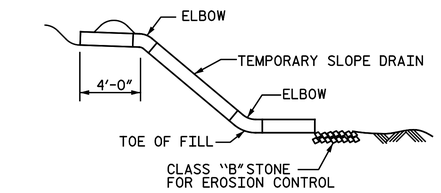
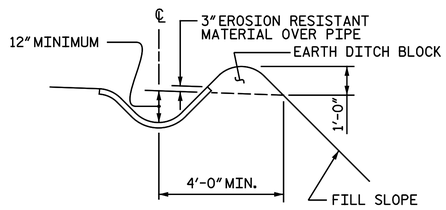


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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



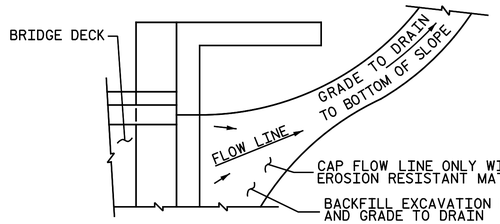
SECTION R-R



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-5703

LENOIR COUNTY

STATION: 89+28.52 -L-

NORTH CAROLINA PROFESSIONAL SEAL 023371 ENGINEER VIPUL A. PATEL

7/26/2017

DocuSigned by: Vipul A Patel

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

RIGHT LANE

ASSEMBLED BY : N. B. SPEAKS	DATE : 3-1-17
CHECKED BY : V. A. PATEL	DATE : 3-20-17
DRAWN BY : FCJ 11/88	REV. 10/1/11 MAA/GM
CHECKED BY : ARB 11/88	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM

Michael Baker INTERNATIONAL

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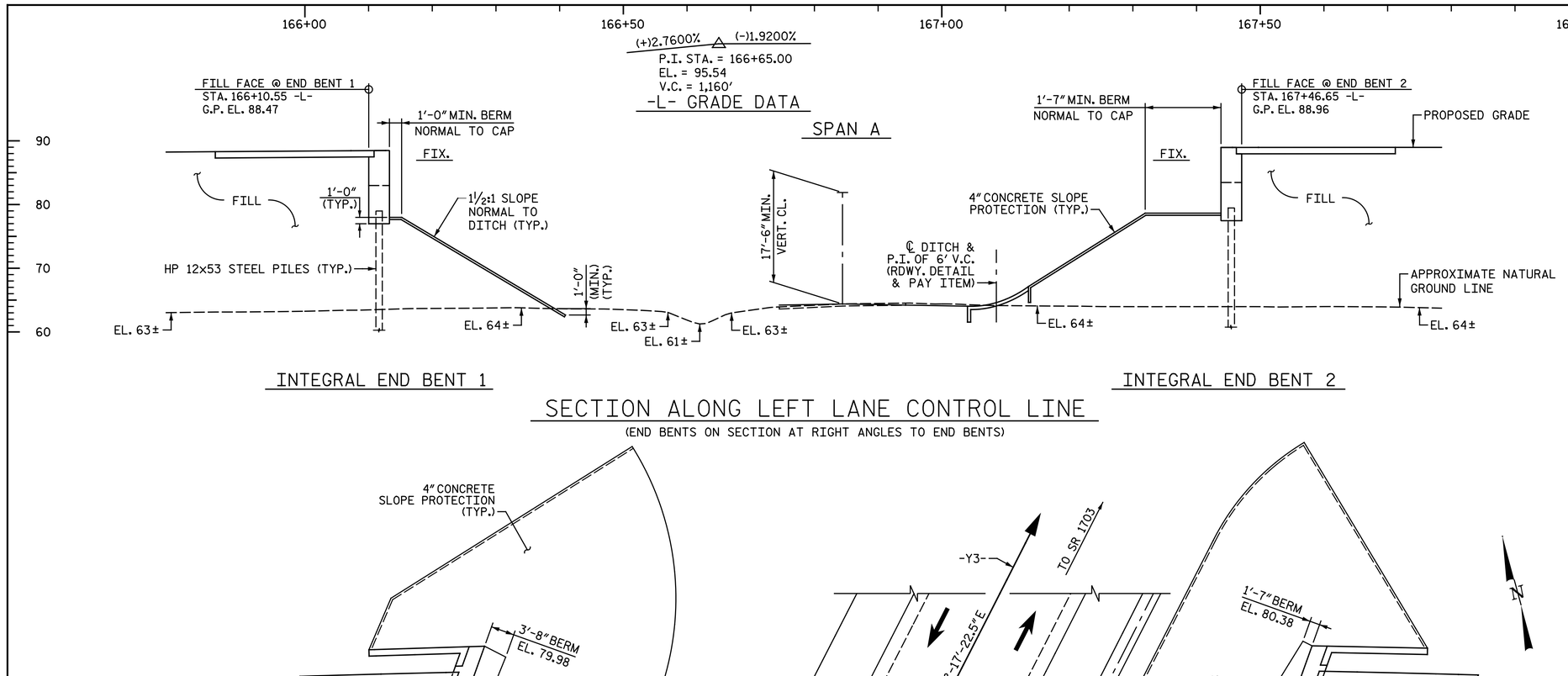

SECTION ALONG LEFT LANE CONTROL LINE

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

PLAN

(PILES NOT SHOWN IN PLAN VIEW FOR CLARITY)

-L- HORIZONTAL CURVE DATA

P. I. STA. 158+61.41
△ = 38°-24'-10.2" (RT)
D = 1°-49'-08.1"
L = 2,111.31'
T = 1,097.03'
R = 3,150.00'

POINT	STATION ON -Y3-	OFFSET	ELEVATION ON -Y3-
A	11+95.83	0.00	64.36

△ - DENOTES POINT OF MINIMUM VERTICAL CLEARANCE OVER EXISTING ROADWAY WITH 1½" OVERLAY.

✳ - FUTURE LANE CONFIGURATION

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-
11+86.25 -Y3-

SHEET 1 OF 4 BRIDGE NO. 210

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1004 BETWEEN SR 1729 AND SR 1732
LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti

8/14/2017

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REVISIONS						SHEET NO.
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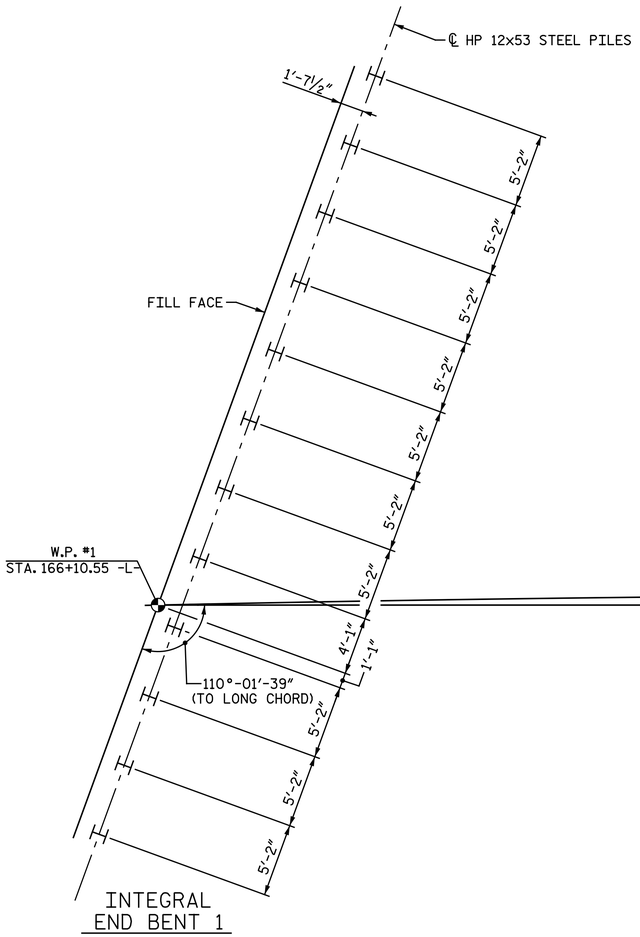
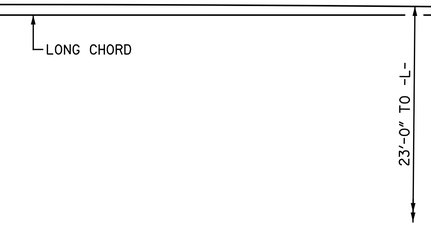
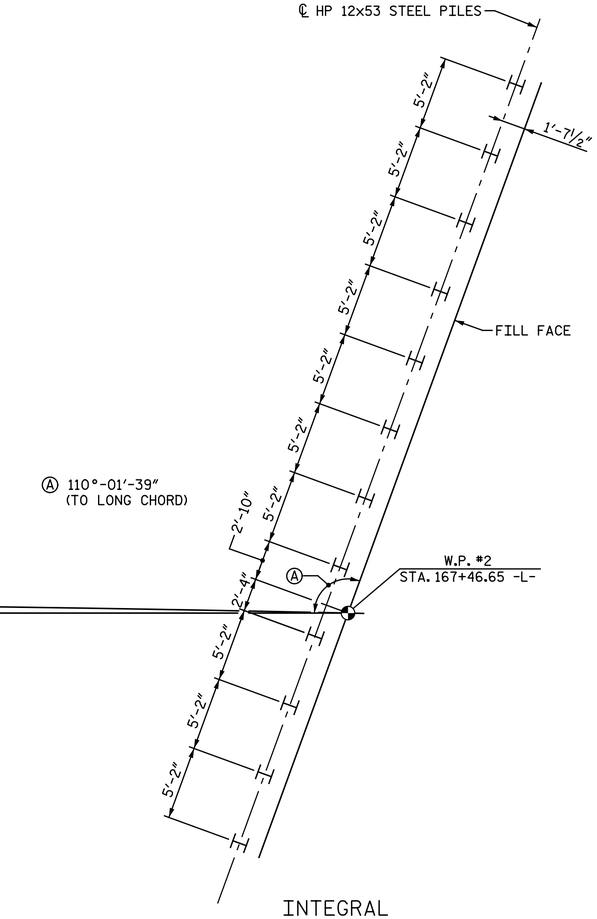
1			3			TOTAL SHEETS
2			4			34

DRAWN BY : C. E. MAYHEW DATE : 7-14-17
CHECKED BY : D. A. COLETTI DATE : 7-14-17







FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINES.

ALL HP 12x53 STEEL PILES ARE VERTICAL.

NOTES:

FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 AND END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 125 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 210 TONS PER PILE.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENT NO. 1 OR END BENT NO. 2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS AND FOR PILE DRIVING CRITERIA, SEE PILE DRIVING CRITERIA PROVISION.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 60-65 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO.1 AND 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

OBSERVE A 2 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO.1 AND END BENT NO. 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SPECIAL PROVISIONS.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-
11+86.25 -Y3-

SHEET 2 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti

8/14/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL

Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

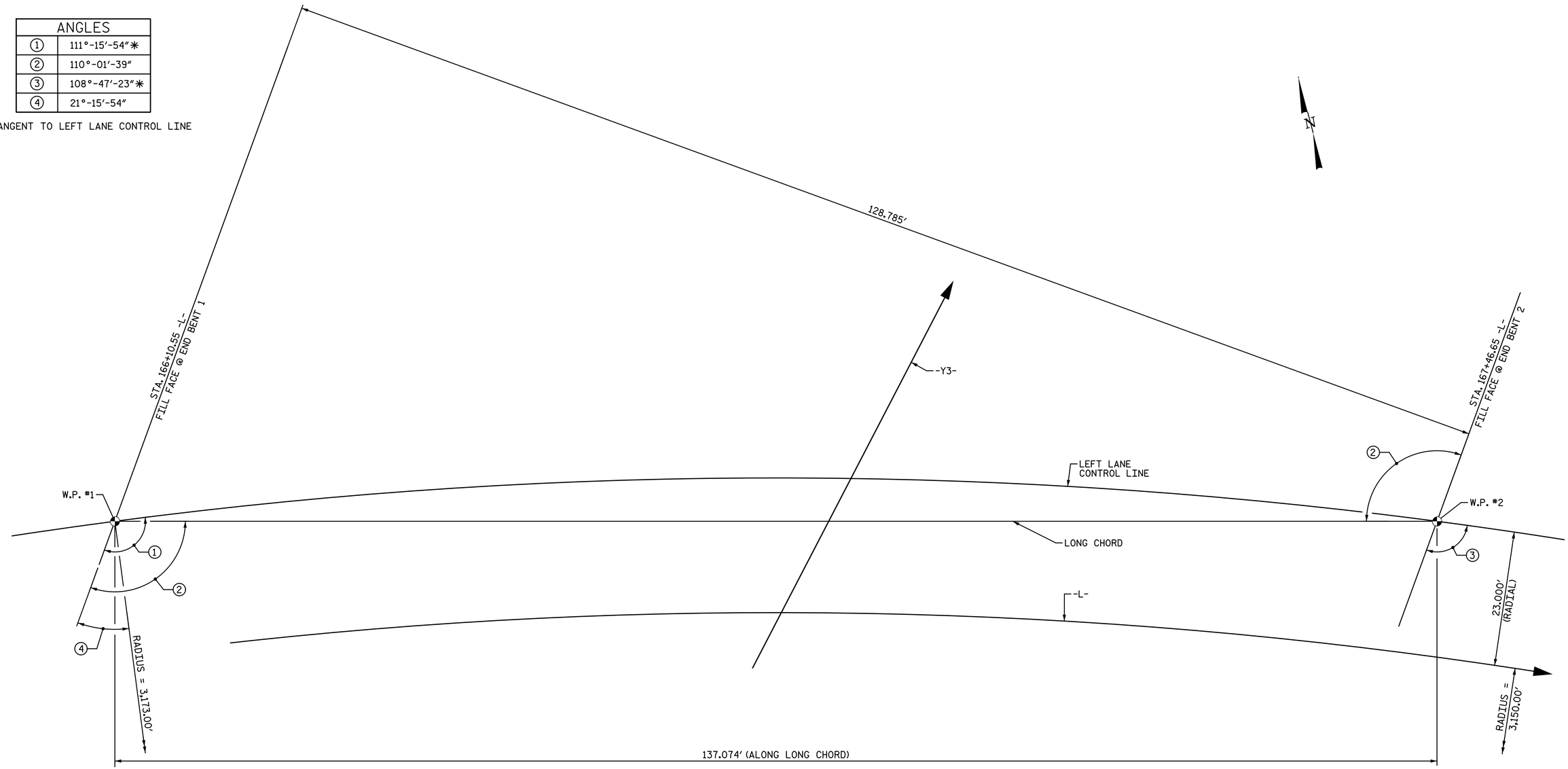
FOR BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1004 BETWEEN SR 1729 AND SR 1732
LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-2
1			3			TOTAL SHEETS
2			4			34

DRAWN BY : C. E. MAYHEW DATE : 7-14-17
CHECKED BY : D. A. COLETTI DATE : 7-14-17

ANGLES	
①	111°-15′-54″✳
②	110°-01′-39″
③	108°-47′-23″✳
④	21°-15′-54″

✳TANGENT TO LEFT LANE CONTROL LINE



LONG CHORD LAYOUT

(END BENTS ARE PARALLEL)

-L- HORIZONTAL CURVE DATA

P. I. STA. 158+61.41
△ = 38°-24′-10.2″ (RT)
D = 1°-49′-08.1″
L = 2,111.31′
T = 1,097.03′
R = 3,150.00′

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-
11+86.25 -Y3-

SHEET 3 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti

8/14/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1004 BETWEEN SR 1729 AND SR 1732

LEFT LANE

Michael Baker INTERNATIONAL

Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
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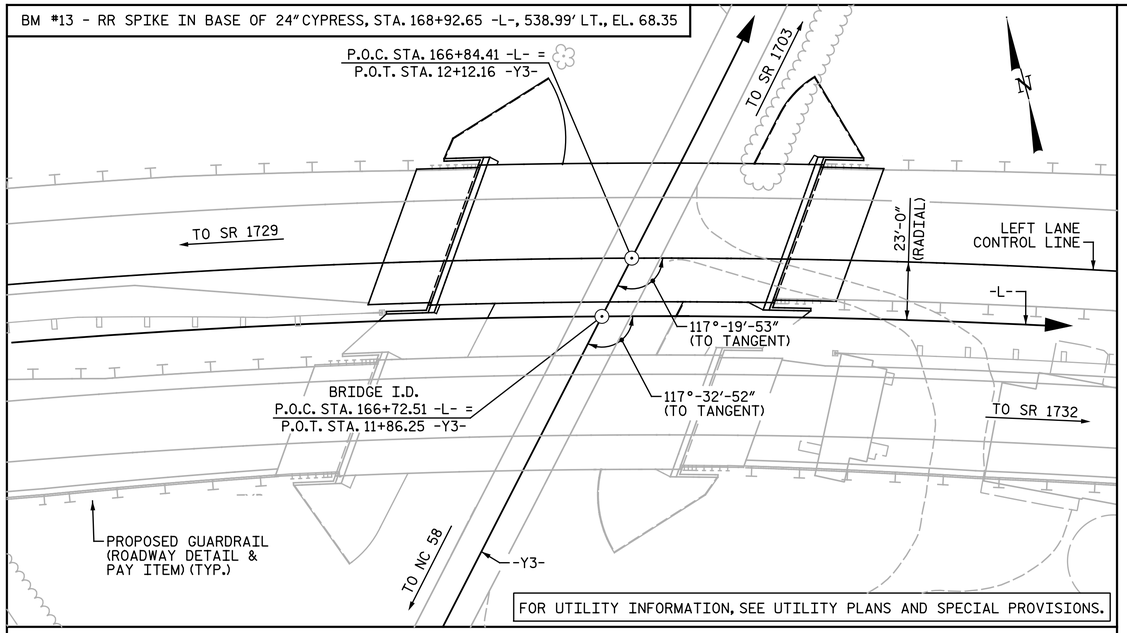
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-3
1			3			TOTAL SHEETS
2			4			34

DRAWN BY : C. E. MAYHEW DATE : 1-17-17
CHECKED BY : D. A. COLETTI DATE : 6-8-17



LOCATION SKETCH

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.

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.

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 4 OF ARTICLE 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

TOTAL BILL OF MATERIAL

LOCATION	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	APPROX. 289,500 LBS. STRUCTURAL STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	HP 12x53 STEEL PILES		PILE REDRIVES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS
	EA.	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LUMP SUM	EA.	NO.	LIN. FT.	EA.	LIN. FT.	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE		7,525	8,929				LUMP SUM					270.51		LUMP SUM
END BENT 1				60.4		10,597		12	12	1,020	6		390	
END BENT 2				59.7		10,549		12	12	1,020	6		430	
TOTAL	1	7,525	8,929	120.1	LUMP SUM	21,146	LUMP SUM	24	24	2,040	12	270.51	820	LUMP SUM

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-
11+86.25 -Y3-

SHEET 4 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1004 BETWEEN SR 1729 AND SR 1732 LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-4
1			3			TOTAL SHEETS
2			4			34

DRAWN BY : CEM / NBS DATE : 7-14-17
CHECKED BY : D. A. COLETTI DATE : 7-14-17

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR STEEL GIRDERS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE											SERVICE II LIMIT STATE						COMMENT NUMBER
							LIVE-LOAD FACTORS (γ_{LL})	MOMENT					SHEAR					LIVE-LOAD FACTORS (γ_{LL})	MOMENT					
								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)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	1	1.16	--	1.75	0.83	1.27	A	1	66.81	1.00	1.16	A	3	26.72	1.30	0.83	1.36	A	1	66.81	1, 2
		HL-93 (OPERATING)	N/A		1.50	--	1.35	0.83	1.64	A	1	66.81	1.00	1.50	A	3	26.72	1.00	0.83	1.76	A	1	66.81	1, 2
		HS-20 (INVENTORY)	36.00	2	1.61	57.89	1.75	0.83	1.90	A	1	66.81	1.00	1.61	A	3	26.72	1.30	0.83	2.04	A	1	66.81	1, 2
		HS-20 (OPERATING)	36.00		2.08	75.04	1.35	0.83	2.47	A	1	66.81	1.00	2.08	A	3	26.72	1.00	0.83	2.65	A	1	66.81	1, 2
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		5.01	67.64	1.40	0.83	5.84	A	1	66.81	1.00	5.02	A	3	26.72	1.30	0.83	5.01	A	1	66.81	1, 2
		SNGARBS2	20.000		3.49	69.80	1.40	0.83	4.15	A	1	66.81	1.00	3.49	A	3	26.72	1.30	0.83	3.56	A	1	66.81	1, 2
		SNAGRIS2	22.000		3.22	70.84	1.40	0.83	3.85	A	1	66.81	1.00	3.22	A	3	26.72	1.30	0.83	3.30	A	1	66.81	1, 2
		SNCOTTS3	27.250		2.49	67.85	1.40	0.83	2.89	A	1	66.81	1.00	2.50	A	3	26.72	1.30	0.83	2.49	A	1	66.81	1, 2
		SNAGGRS4	34.925		2.01	70.20	1.40	0.83	2.35	A	1	66.81	1.00	2.02	A	3	26.72	1.30	0.83	2.01	A	1	66.81	1, 2
		SNS5A	35.550		1.97	70.03	1.40	0.83	2.30	A	1	66.81	1.00	2.02	A	3	26.72	1.30	0.83	1.97	A	1	66.81	1, 2
		SNS6A	39.950		1.78	71.11	1.40	0.83	2.08	A	1	66.81	1.00	1.82	A	3	26.72	1.30	0.83	1.78	A	1	66.81	1, 2
		SNS7B	42.000		1.69	70.98	1.40	0.83	1.98	A	1	66.81	1.00	1.77	A	3	26.72	1.30	0.83	1.69	A	1	66.81	1, 2
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.16	71.28	1.40	0.83	2.52	A	1	66.81	1.00	2.19	A	3	26.72	1.30	0.83	2.16	A	1	66.81	1, 2
		TNT4A	33.075		2.15	71.11	1.40	0.83	2.53	A	1	66.81	1.00	2.15	A	3	26.72	1.30	0.83	2.17	A	1	66.81	1, 2
		TNT6A	41.600		1.75	72.80	1.40	0.83	2.04	A	1	66.81	1.00	1.84	A	3	26.72	1.30	0.83	1.75	A	1	66.81	1, 2
		TNT7A	42.000		1.74	73.08	1.40	0.83	2.03	A	1	66.81	1.00	1.81	A	3	26.72	1.30	0.83	1.74	A	1	66.81	1, 2
		TNT7B	42.000		1.74	73.08	1.40	0.83	2.07	A	1	66.81	1.00	1.74	A	3	26.72	1.30	0.83	1.77	A	1	66.81	1, 2
		TNAGRIT4	43.000		1.69	72.67	1.40	0.83	1.99	A	1	66.81	1.00	1.69	A	3	26.72	1.30	0.83	1.71	A	1	66.81	1, 2
		TNAGT5A	45.000		1.62	72.90	1.40	0.83	1.89	A	1	66.81	1.00	1.66	A	3	26.72	1.30	0.83	1.62	A	1	66.81	1, 2
		TNAGT5B	45.000	3	1.61	72.45	1.40	0.83	1.88	A	1	66.81	1.00	1.62	A	3	26.72	1.30	0.83	1.61	A	1	66.81	1, 2
FATIGUE		HL-93 (INVENTORY)	γ_{LL} = 0.75																					

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 II LIMIT STATES.

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

COMMENTS:

1. DISTANCE FROM LEFT END OF SPAN IS GIVEN WITH RESPECT TO CENTERLINE OF BEARING AND IS MEASURED ALONG THE CONTROLLING GIRDER.
2. FATIGUE RATING IS NOT REQUIRED OR REPORTED SINCE GIRDER DOES NOT INCLUDE FATIGUE-PRONE DETAILS.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

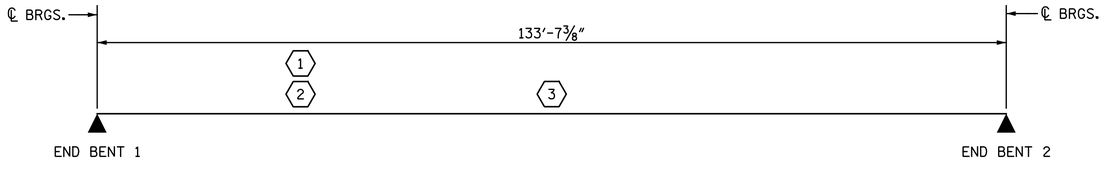
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

GIRDER LOCATION IS PROVIDED USING GIRDER NUMBER, WHERE GIRDER 1 IS THE LEFT EXTERIOR GIRDER LOOKING AHEAD STATION. SEE "GIRDER LAYOUT" SHEET FOR ALL GIRDER LOCATIONS.



LRFR SUMMARY

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Digitally signed by Domenic A. Coletti

8/14/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

LRFR SUMMARY FOR STEEL GIRDERS
(NON-INTERSTATE TRAFFIC)
LEFT LANE

Michael Baker INTERNATIONAL

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8000 Regency Parkway, Suite 600
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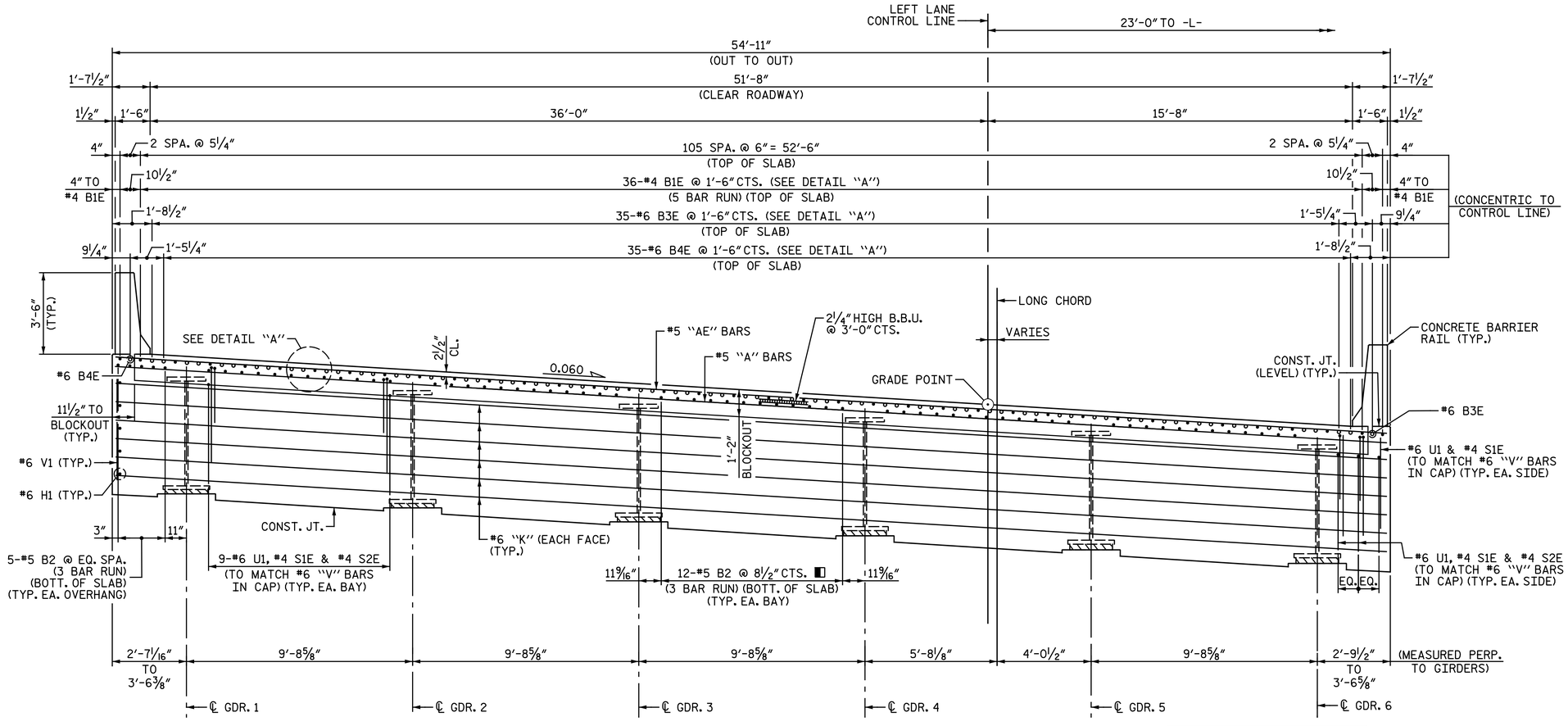
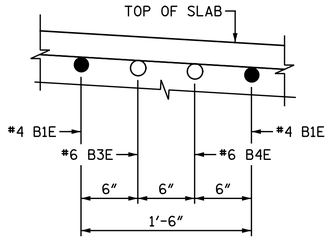
NC License No. : F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-5
1			3			TOTAL SHEETS
2			4			34

ASSEMBLED BY : C. E. MAYHEW	DATE : 3-10-17
CHECKED BY : D. A. COLETTI	DATE : 6-8-17
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM

STD. NO. LRFR3



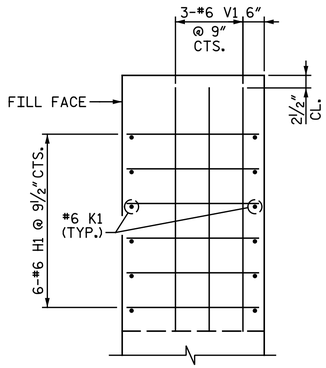


DETAIL "A"

TYPICAL SECTION AT INTEGRAL END BENT

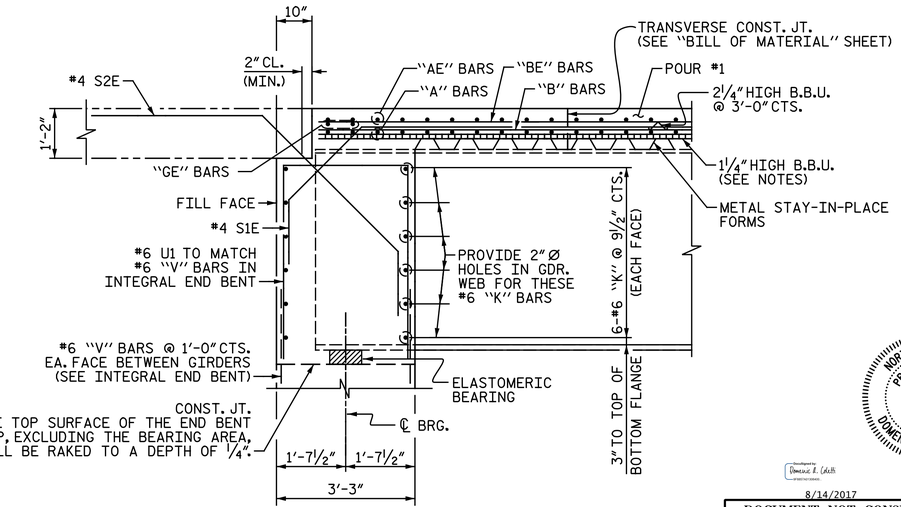
(ALL HORIZONTAL DIMENSIONS ARE RADIAL U.N.O.)
(END BENT 1 SHOWN, END BENT 2 SIMILAR)
(#5 "GE" BARS ALONG SKEW NOT SHOWN FOR CLARITY)
(GIRDERS ARE PARALLEL TO LONG CHORD)

◧ = PARALLEL TO GIRDERS



END OF DIAPHRAGM DETAIL

(END BENT 1 SHOWN, END BENT 2 SIMILAR)



END OF GIRDER DETAIL AT INTEGRAL END BENT

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 166+72.51 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

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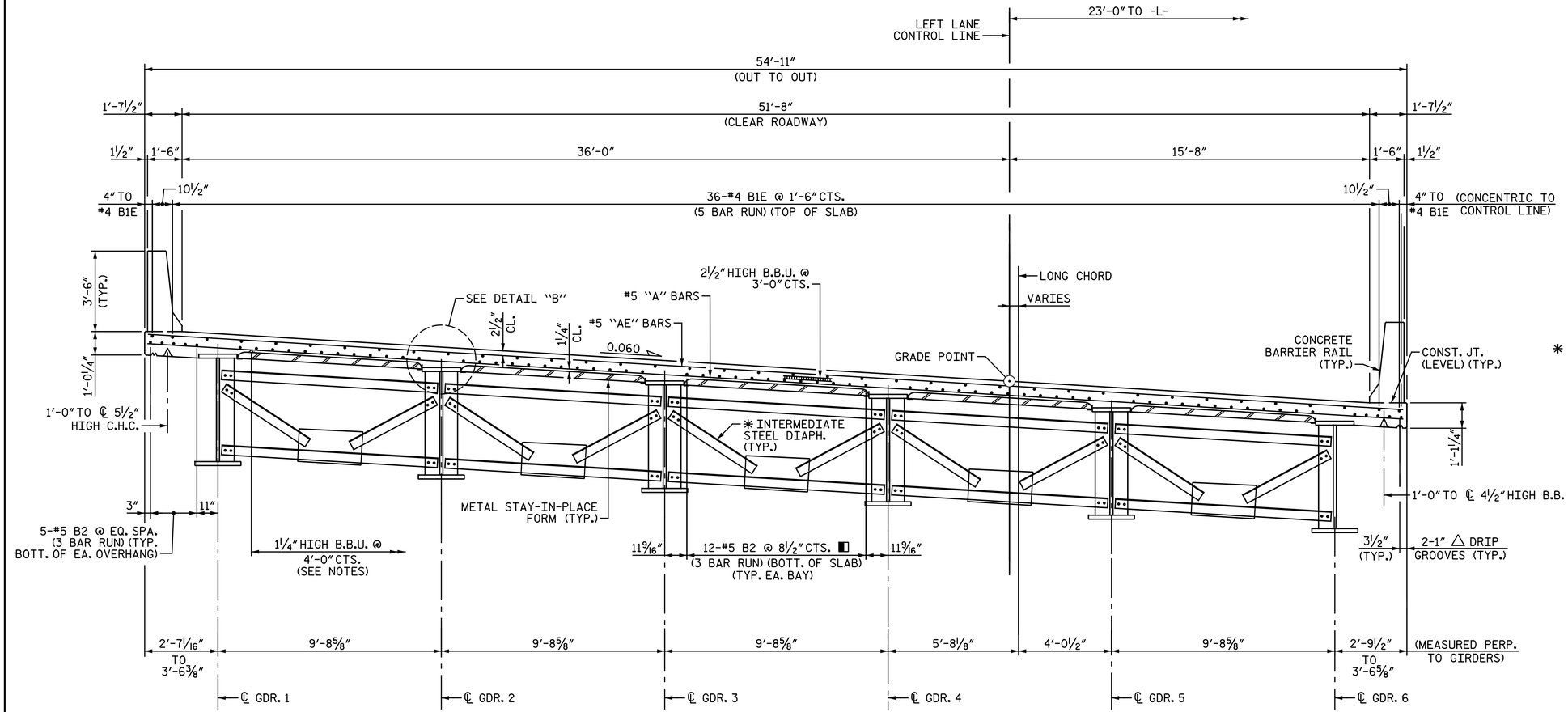
1			3			TOTAL SHEETS
2			4			34

DRAWN BY : CEM / MDM DATE : 7-13/17
CHECKED BY : D. A. COLETTI DATE : 7-14-17



TYPICAL SECTION AT INTERMEDIATE DIAPHRAGMS

(ALL HORIZONTAL DIMENSIONS ARE RADIAL U.N.O.)
(GIRDERS ARE PARALLEL TO LONG CHORD)

◧ = PARALLEL TO GIRDERS

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 2 " ABOVE THE TOP OF THE REMOVABLE FORM.

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

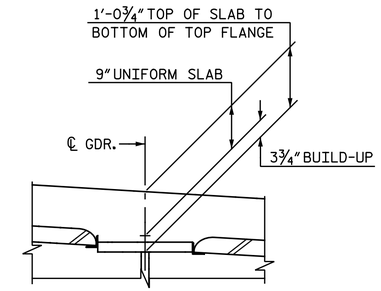
METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO BEAM OR GIRDER FLANGES IN THE ZONES REQUIRING CHARPY V-NOTCH TEST. SEE STRUCTURAL STEEL DETAIL SHEETS.

PREVIOUSLY CAST CONCRETE IN A SPAN SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE SPAN.

THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND BEAM/GIRDER STIFFENERS OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE METAL STAY-IN-PLACE FORM WORKING DRAWINGS.

FOR ADDITIONAL INFORMATION ON DECK SLAB REINFORCING, SEE "PLAN OF SPAN" SHEETS.

✳ FOR DETAILS OF INTERMEDIATE DIAPHRAGMS, SEE "STRUCTURAL STEEL DETAILS" SHEET 2 OF 2.



DETAIL "B"

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 166+72.51 -L-
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

TYPICAL SECTION

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Dominic A. Coletti
8/14/2017

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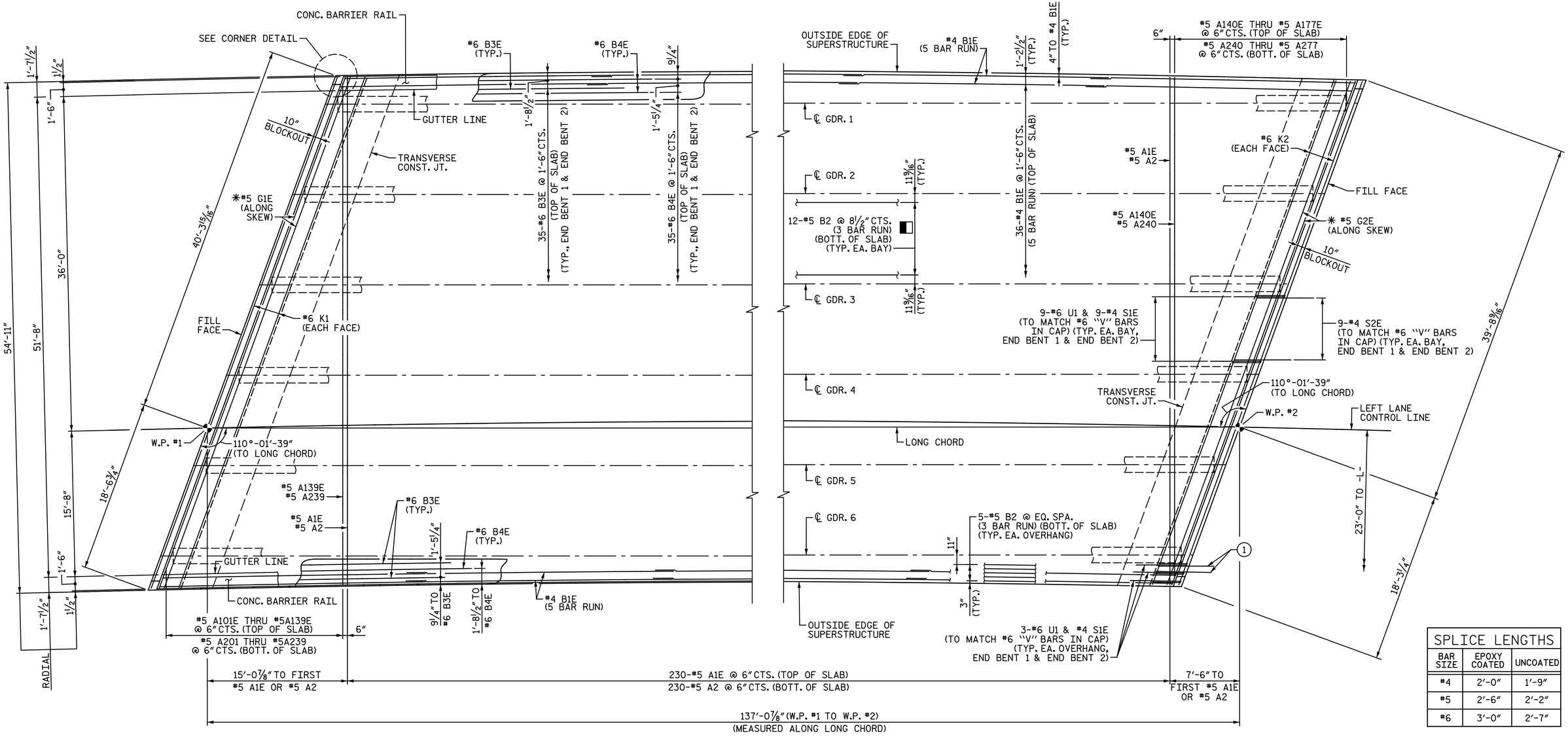
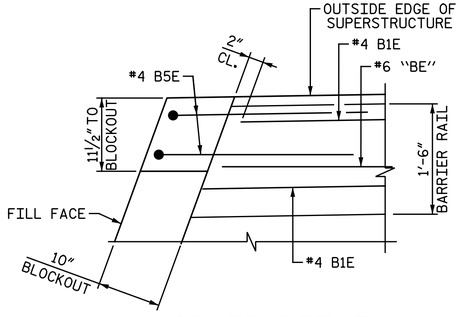
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-7
1			3			TOTAL SHEETS
2			4			34

DRAWN BY : CEM / MDM DATE : 7-13-17
CHECKED BY : D. A. COLETTI DATE : 7-14-17

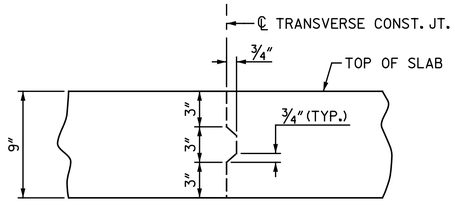


SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-0"	2'-7"



CORNER DETAIL

ALL CORNERS SIMILAR.
TRANSVERSE BARS NOT SHOWN FOR CLARITY.



TRANSVERSE CONST. JT. DETAIL

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

SPAN A
PLAN OF SPAN

NOTES:

* #5 "GE" BARS ARE TO BE PLACED PARALLEL TO SKEW AND BELOW "BE" BARS.

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

FOR DECK POURING SEQUENCE AND LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE "BILL OF MATERIAL" SHEET.

FOR ARC OFFSETS, SEE SHEET 2 OF 2.

"A" AND "AE" BARS ARE TO BE PLACED PERPENDICULAR TO THE LONG CHORD.

① 2-#4 S2E (TO MATCH #6 "V" BARS IN CAP) (TYP. EA. OVERHANG, END BENT 1 & END BENT 2)

▮ PARALLEL TO GIRDERS

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 166+72.51 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL
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NC License No. : F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN

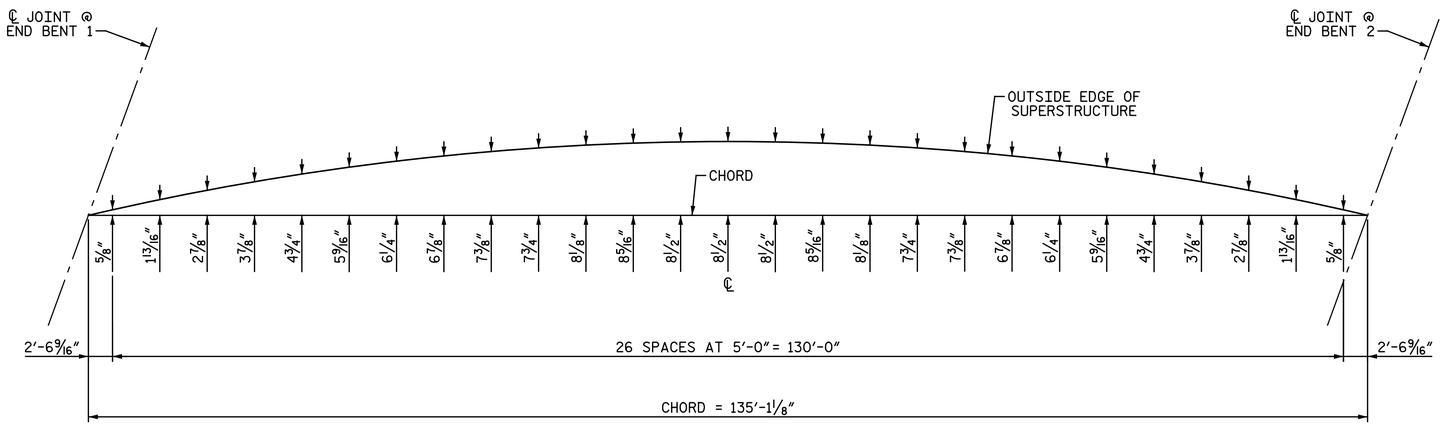
LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-8
1			3			TOTAL SHEETS
2			4			34

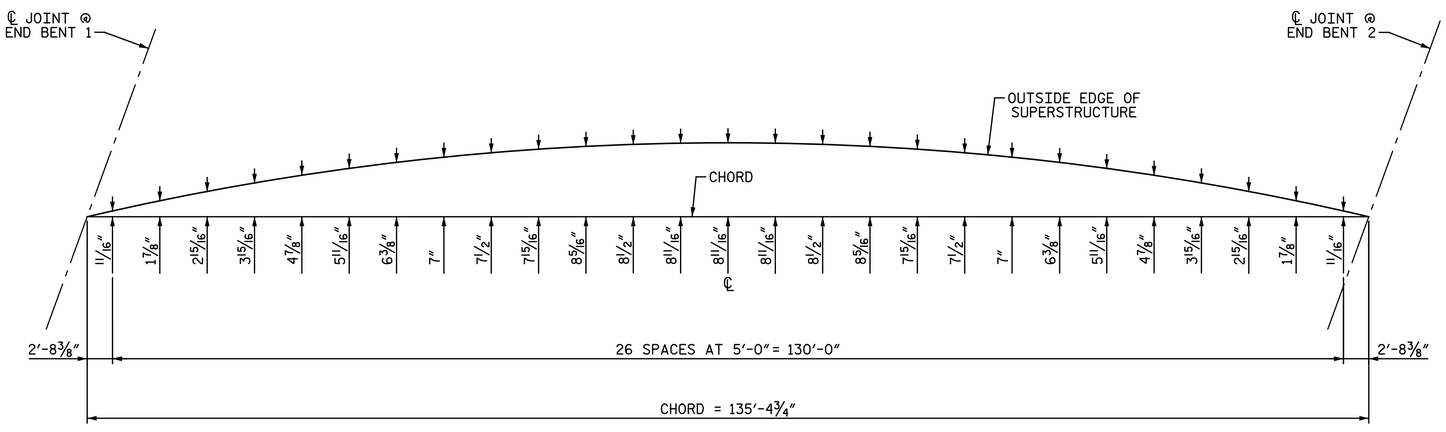
DRAWN BY : C. E. MAYHEW DATE : 7-14-17
CHECKED BY : D. A. COLETTI DATE : 7-18-17

NOTES:

℄ JOINT INDICATES THE PERMITTED CONSTRUCTION JOINT BETWEEN APPROACH SLAB AND DECK.



LEFT SIDE



RIGHT SIDE

ARC OFFSETS - SPAN A

DRAWN BY : C. E. MAYHEW DATE : 7-14-17
CHECKED BY : D. A. COLETTI DATE : 7-14-17

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 166+72.51 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

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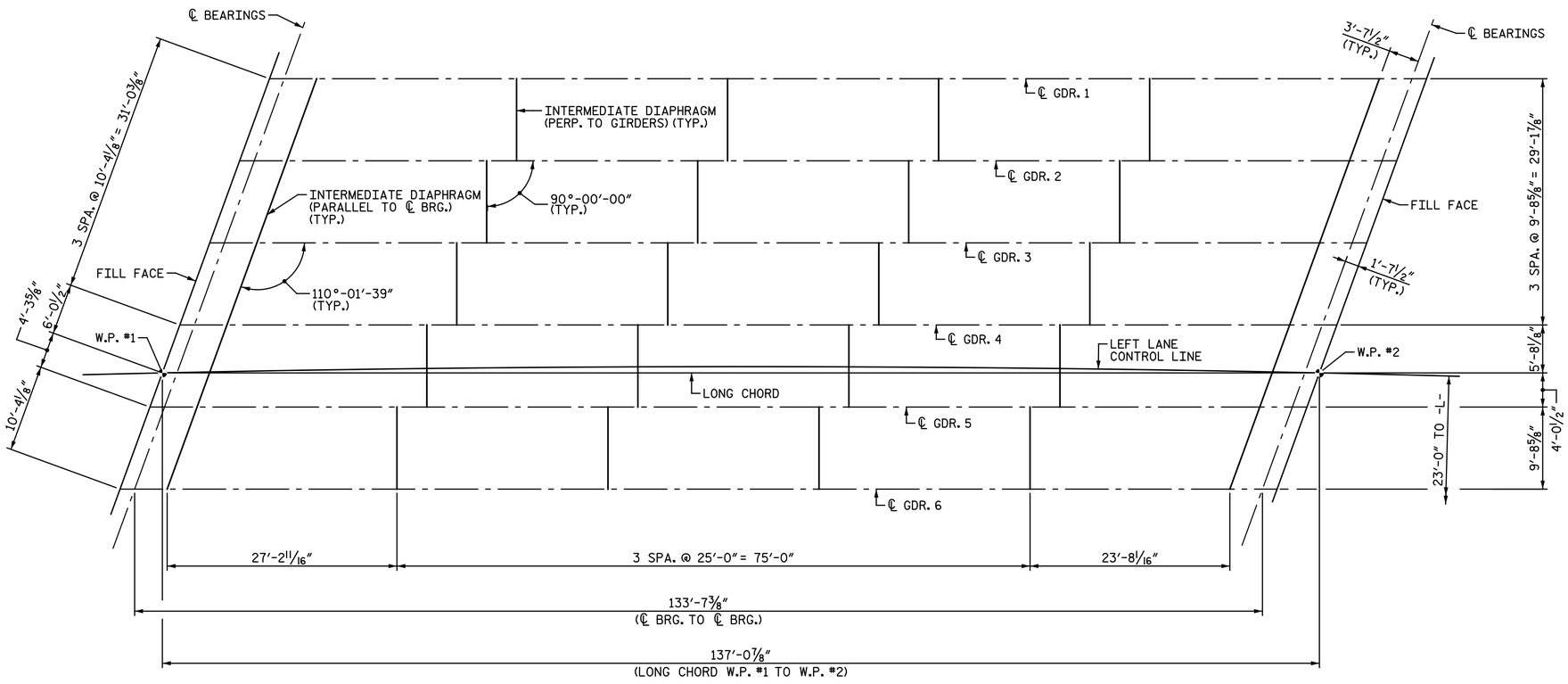
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-9
1			3			TOTAL SHEETS
2			4			34



INTEGRAL (E1)

INTEGRAL (E1)

SPAN A

GIRDER LAYOUT

(GIRDERS ARE PARALLEL TO LONG CHORD)

STRUCTURAL STEEL NOTES:

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 4 OF ARTICLE 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.

ALL FIELD CONNECTIONS TO BE 7/8" DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED. BOLTS SHALL BE DETAILED WITH THREADS EXCLUDED FROM SHEAR PLANES.

BEARING STIFFENERS ARE TO BE PLACED NORMAL TO THE WEB OF THE GIRDER AND SHALL BE PLUMB IN THE FINAL CONDITION.

PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 15 FEET OF MAXIMUM DEAD LOAD DEFLECTION KEEP 2 FEET MINIMUM BETWEEN WEB AND FLANGE SHOP SPLICES. KEEP 6" MINIMUM BETWEEN CONNECTOR PLATE OR TRANSVERSE STIFFENER WELDS AND WEB OR FLANGE SHOP SPLICES.

STUDS ON GIRDERS MAY BE SHIFTED UP TO 1" IF NECESSARY TO CLEAR FLANGE SPLICE WELDS.

TENSION ON THE ASTM A325 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

ENDS OF GIRDERS SHALL BE PLUMB IN THE FINAL CONDITION.

FABRICATORS SHALL DETAIL DIAPHRAGM MEMBERS AND CONNECTIONS FOR FULL DEAD LOAD FIT UP. GIRDERS SHALL BE PLUMB AFTER THE FULL AMOUNT OF DEAD LOAD IS APPLIED.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti

8/14/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

FRAMING PLAN

LEFT LANE

Michael Baker INTERNATIONAL

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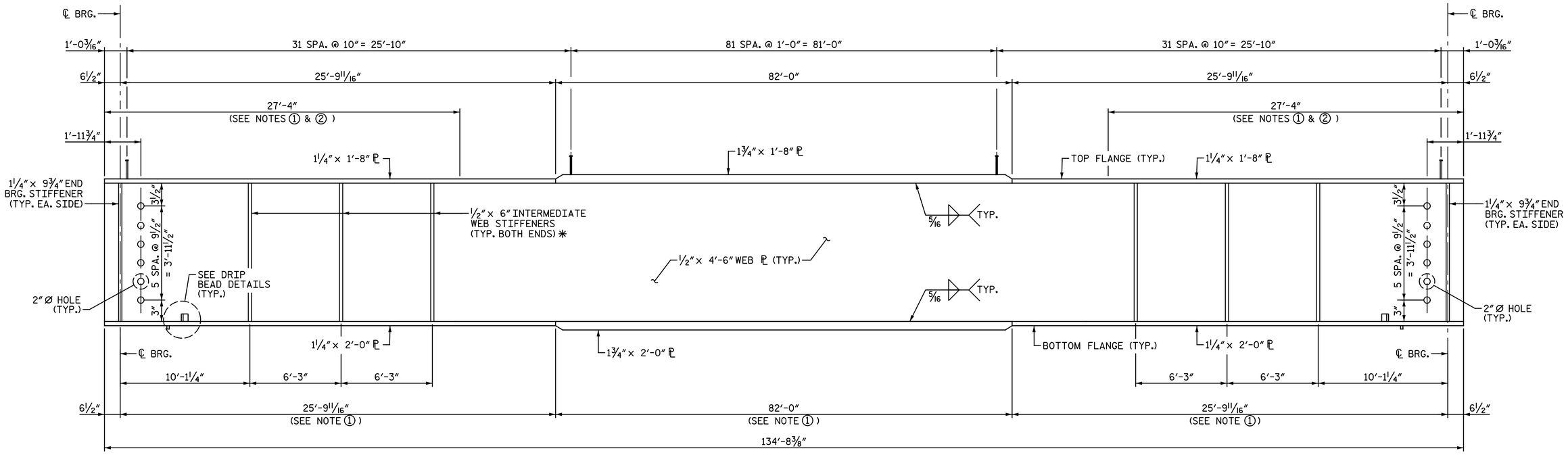
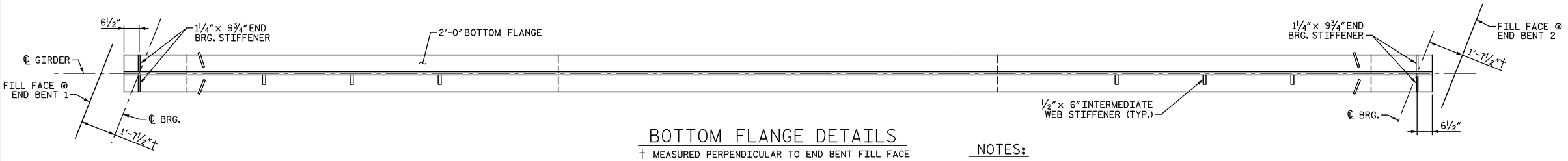
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-10
1			3			TOTAL SHEETS
2			4			34

DRAWN BY : C. E. MAYHEW DATE : 7-14-17
CHECKED BY : D. A. COLETTI DATE : 7-14-17



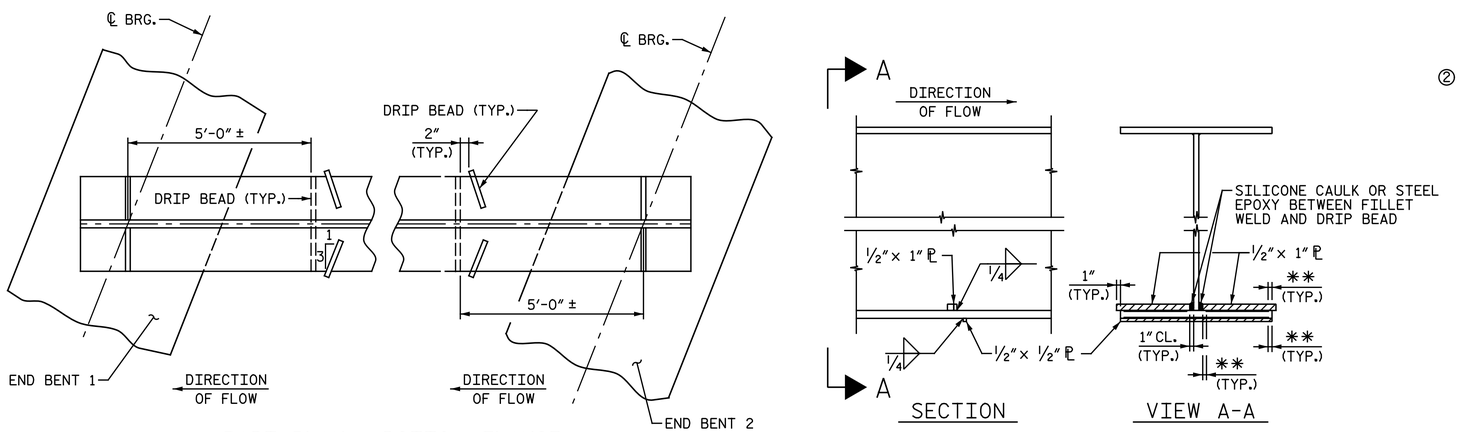
✳ PLACE INTERMEDIATE WEB STIFFENERS ON ONLY ONE FACE OF THE WEB (INTERIOR FACE FOR EXTERIOR GIRDERS).

GIRDER ELEVATION



BOTTOM FLANGE DETAILS

† MEASURED PERPENDICULAR TO END BENT FILL FACE



PART PLAN - BOTTOM FLANGE

SECTION

VIEW A-A

DRIP BEAD DETAILS

✳✳ SEE "WELD TERMINATION DETAILS" ON "STRUCTURAL STEEL DETAILS", SHEET 2 OF 3.

NOTES:

① CHARPY V-NOTCH TESTS ARE REQUIRED FOR ALL TOP OR BOTTOM FLANGE PLATES WHICH FALL WITHIN THESE LIMITS, ALL WEB PLATES, AND ALL SPLICE PLATES. IF A PERMITTED SHOP FLANGE SPLICE IS NOT USED, CHARPY V-NOTCH TESTS WILL BE REQUIRED FOR THE ENTIRE FLANGE PLATE. FOR CHARPY V-NOTCH TESTS, SEE ARTICLE 1072-7 OF THE STANDARD SPECIFICATIONS.

② NO WELDING OF FORMS OR FALSEWORK TO THE TOP FLANGE WILL BE PERMITTED IN THIS REGION.

FOR SHEAR CONNECTOR TRANSVERSE SPACING, SEE "STRUCTURAL STEEL DETAILS", SHEET 2 OF 2.

FOR STRUCTURAL STEEL NOTES, SEE "FRAMING PLAN" SHEET.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

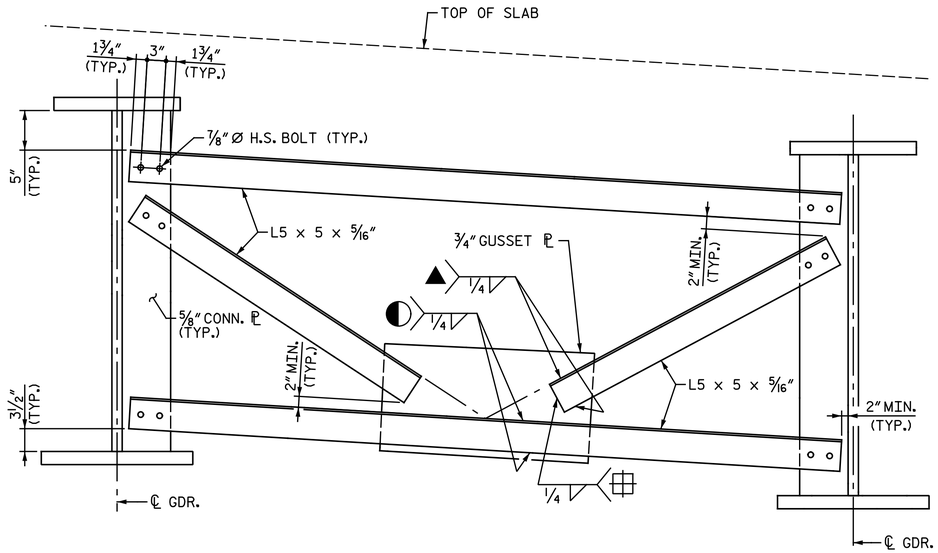
STRUCTURAL STEEL DETAILS

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-11
1			3			TOTAL SHEETS
2			4			34

DRAWN BY : C. E. MAYHEW DATE : 3-10-17

CHECKED BY : D. A. COLETTI DATE : 6-8-17

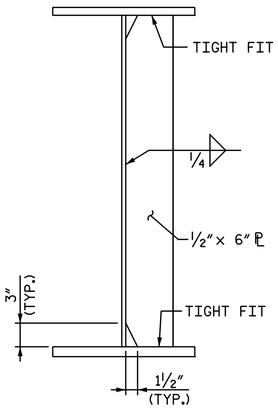


INTERMEDIATE DIAPHRAGM

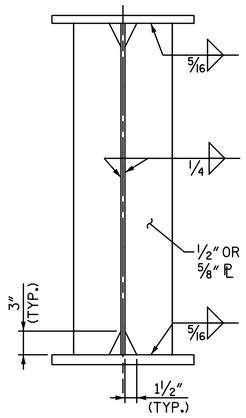
▲ 4" MIN. LENGTH EACH SIDE OF ANGLE, AT EACH END WELDED END OF ANGLE

⊞ FULL WIDTH ACROSS END OF ANGLE, AT EACH WELDED END OF ANGLE

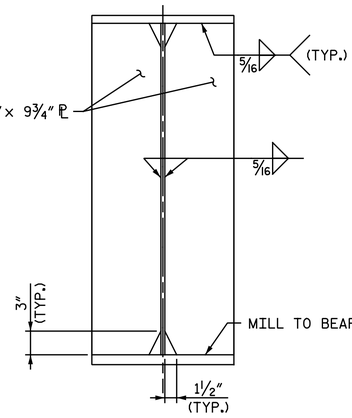
◐ 28" MIN. LENGTH EACH SIDE OF ANGLE, AT BOTTOM CHORD MID-LENGTH GUSSET ℄ CONN. SEE "ANGLE TO GUSSET PLATE CONNECTION WELD TERMINATION DETAILS"



INTERMEDIATE STIFFENER

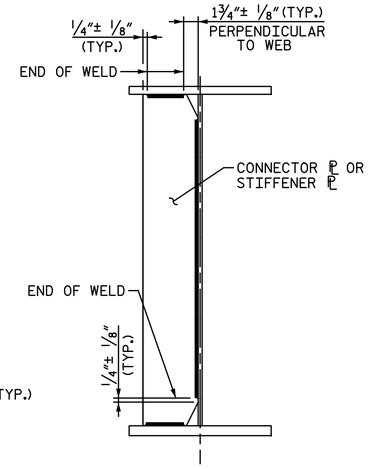


INTERMEDIATE DIAPHRAGM CONNECTOR ℄

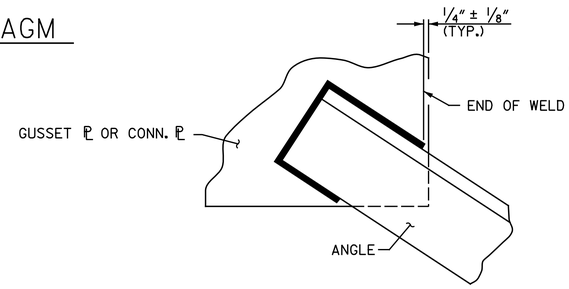


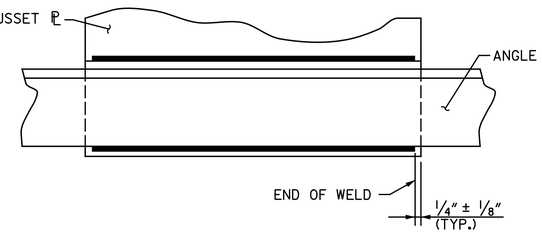
BEARING STIFFENER

BEARING STIFFENER MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE.

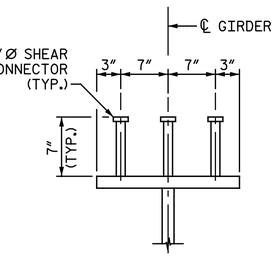


STIFFENER OR CONNECTOR PLATE CONNECTIONS WELD TERMINATION DETAILS

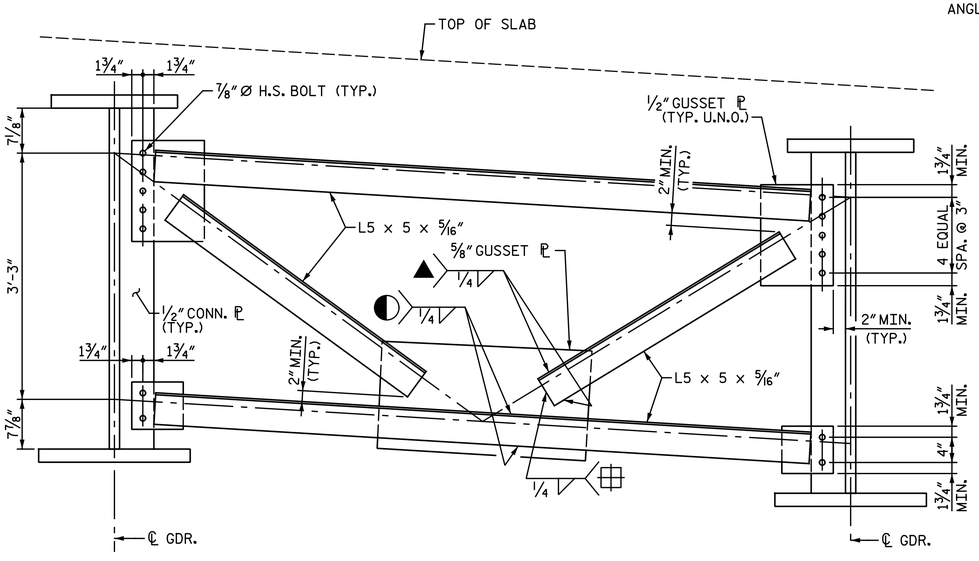




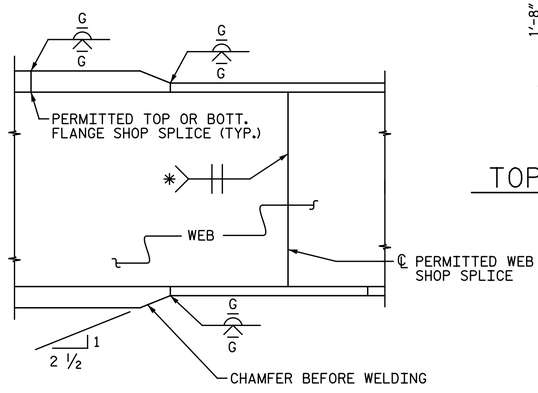
ANGLE TO GUSSET PLATE CONNECTION WELD TERMINATION DETAILS



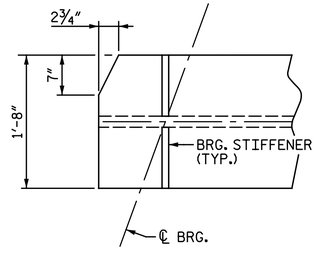
SHEAR CONNECTOR DETAIL



OPTIONAL INTERMEDIATE DIAPHRAGM



ELEVATION



TOP FLANGE CLIP DETAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION

TYPICAL FLANGE AND WEB BUTT JOINT DETAILS

* GRIND SMOOTH AND FLUSH ON OUTER FACE OF EXTERIOR GIRDERS

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

STRUCTURAL STEEL DETAILS

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

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DRAWN BY : C. E. M. / N. B. S. DATE : 3-10-17
CHECKED BY : D. A. COLETTI DATE : 6-8-17

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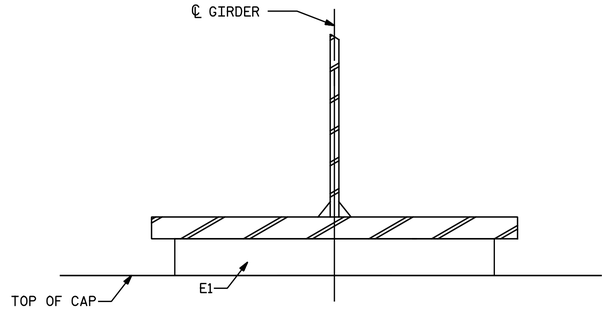
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-12
1			3			TOTAL SHEETS
2			4			34

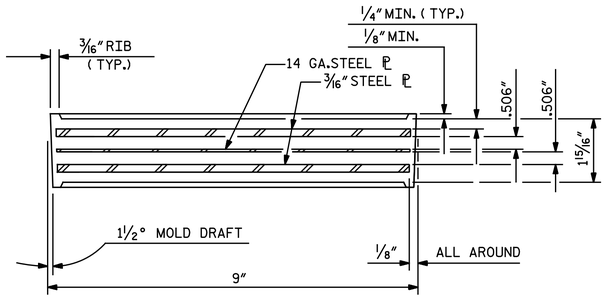
NOTES:

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.

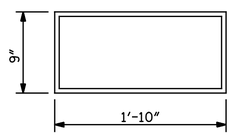


SECTION
AT INTEGRAL END BENTS



TYPICAL SECTION OF ELASTOMERIC BEARINGS

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



E1 (12 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE IV

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

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RALEIGH
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ELASTOMERIC BEARING DETAILS

LEFT LANE

DRAWN BY : N. B. SPEAKS DATE : 7-19-17
CHECKED BY : D. A. COLETTI DATE : 7-19-17

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1			3			TOTAL SHEETS
2			4			34

NOTES:

VALUES GIVEN ARE AT TWENTIETH POINTS BETWEEN CENTERLINE OF BEARINGS.

UPWARD DEFLECTIONS ARE INDICATED WITH A "- " SIGN.

DEAD LOAD DEFLECTION AND CAMBER ORDINATES FOR SPAN A

GIRDER 1

20TH POINTS	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.019	0.037	0.054	0.069	0.083	0.094	0.103	0.109	0.113	0.115	0.113	0.109	0.103	0.094	0.083	0.069	0.054	0.037	0.019	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.063	0.125	0.182	0.233	0.277	0.315	0.345	0.367	0.381	0.385	0.381	0.367	0.345	0.315	0.277	0.233	0.182	0.125	0.063	0.000
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	0.009	0.017	0.025	0.032	0.038	0.043	0.048	0.051	0.052	0.053	0.052	0.051	0.048	0.043	0.038	0.032	0.025	0.017	0.009	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.091	0.179	0.261	0.334	0.398	0.452	0.496	0.527	0.547	0.553	0.547	0.527	0.496	0.452	0.398	0.334	0.261	0.179	0.091	0.000
VERTICAL CURVE ORDINATE	0.000	0.016	0.031	0.044	0.056	0.065	0.073	0.079	0.083	0.086	0.087	0.086	0.083	0.079	0.073	0.065	0.056	0.044	0.031	0.016	0.000
SUPERLEVATION ORDINATE	0.000	-0.008	-0.015	-0.021	-0.027	-0.031	-0.035	-0.038	-0.040	-0.041	-0.042	-0.041	-0.040	-0.038	-0.035	-0.031	-0.027	-0.021	-0.015	-0.008	0.000
REQUIRED CAMBER	0"	1 3/16"	2 5/16"	3 7/16"	4 3/8 "	5 3/16"	5 7/8 "	6 7/16"	6 7/8 "	7 1/8 "	7 3/16"	7 1/8 "	6 7/8 "	6 7/16"	5 7/8 "	5 3/16"	4 3/8 "	3 7/16"	2 5/16"	1 3/16"	0"

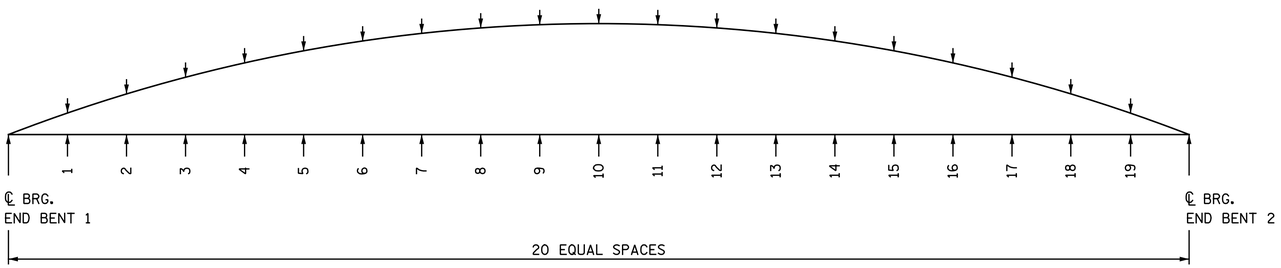
GIRDER 2

20TH POINTS	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.019	0.037	0.054	0.069	0.083	0.094	0.103	0.109	0.113	0.115	0.113	0.109	0.103	0.094	0.083	0.069	0.054	0.037	0.019	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.063	0.124	0.181	0.232	0.277	0.314	0.344	0.366	0.380	0.384	0.380	0.366	0.344	0.314	0.277	0.232	0.181	0.124	0.063	0.000
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	0.009	0.017	0.025	0.032	0.039	0.044	0.048	0.051	0.053	0.054	0.053	0.051	0.048	0.044	0.039	0.032	0.025	0.017	0.009	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.091	0.179	0.261	0.334	0.398	0.452	0.495	0.527	0.546	0.553	0.546	0.527	0.495	0.452	0.398	0.334	0.261	0.179	0.091	0.000
VERTICAL CURVE ORDINATE	0.000	0.017	0.031	0.044	0.056	0.065	0.073	0.079	0.084	0.086	0.087	0.086	0.084	0.079	0.073	0.065	0.056	0.045	0.031	0.017	0.000
SUPERLEVATION ORDINATE	0.000	-0.008	-0.015	-0.021	-0.027	-0.031	-0.035	-0.038	-0.040	-0.041	-0.042	-0.041	-0.040	-0.038	-0.035	-0.031	-0.027	-0.021	-0.015	-0.008	0.000
REQUIRED CAMBER	0"	1 3/16"	2 3/8 "	3 7/16"	4 3/8 "	5 3/16"	5 7/8 "	6 7/16"	6 7/8 "	7 1/8 "	7 3/16"	7 1/8 "	6 7/8 "	6 7/16"	5 7/8 "	5 3/16"	4 3/8 "	3 7/16"	2 5/16"	1 3/16"	0"

GIRDER 3

20TH POINTS	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.019	0.037	0.054	0.069	0.083	0.094	0.103	0.109	0.113	0.115	0.113	0.109	0.103	0.094	0.083	0.069	0.054	0.037	0.019	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.063	0.124	0.181	0.231	0.276	0.313	0.343	0.365	0.379	0.383	0.379	0.365	0.343	0.313	0.276	0.231	0.181	0.124	0.063	0.000
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	0.009	0.017	0.025	0.032	0.039	0.044	0.048	0.051	0.053	0.054	0.053	0.051	0.048	0.044	0.039	0.032	0.025	0.017	0.009	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.090	0.179	0.260	0.333	0.397	0.451	0.494	0.526	0.545	0.552	0.545	0.526	0.494	0.451	0.397	0.333	0.260	0.179	0.090	0.000
VERTICAL CURVE ORDINATE	0.000	0.017	0.032	0.045	0.056	0.066	0.074	0.080	0.084	0.087	0.088	0.087	0.084	0.080	0.074	0.066	0.056	0.045	0.032	0.017	0.000
SUPERLEVATION ORDINATE	0.000	-0.008	-0.015	-0.021	-0.027	-0.032	-0.035	-0.038	-0.040	-0.042	-0.042	-0.042	-0.040	-0.038	-0.035	-0.031	-0.027	-0.021	-0.015	-0.008	0.000
REQUIRED CAMBER	0"	1 3/16"	2 5/16"	3 3/8 "	4 3/8 "	5 3/16"	5 7/8 "	6 7/16"	6 13/16"	7 1/16"	7 3/16"	7 1/16"	6 13/16"	6 7/16"	5 7/8 "	5 3/16"	4 3/8 "	3 3/8 "	2 5/16"	1 3/16"	0"

* INCLUDES SLAB, BUILDUPS, AND STAY-IN-PLACE FORMS. DEFLECTIONS BASED ON SLAB POUR SEQUENCE SHOWN ON "BILL OF MATERIAL" SHEET.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER" WHICH IS SHOWN IN INCHES (FRACTION FORM).



SPAN A

SCHEMATIC CAMBER ORDINATES

DRAWN BY : C. E. MAYHEW DATE : 7-18-17
CHECKED BY : D. A. COLETTI DATE : 7-19-17

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 166+72.51 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

DEAD LOAD DEFLECTION AND CAMBER ORDINATES

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-14
1			3			TOTAL SHEETS
2			4			34

NOTES:

VALUES GIVEN ARE AT TWENTIETH POINTS BETWEEN CENTERLINE OF BEARINGS.

UPWARD DEFLECTIONS ARE INDICATED WITH A "- " SIGN.

DEAD LOAD DEFLECTION AND CAMBER ORDINATES FOR SPAN A

GIRDER 4

20TH POINTS	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.019	0.037	0.054	0.069	0.083	0.094	0.103	0.109	0.113	0.115	0.113	0.109	0.103	0.094	0.083	0.069	0.054	0.037	0.019	0.000
DEFLECTION DUE TO WEIGHT OF SLAB ✳	0.000	0.063	0.124	0.181	0.231	0.276	0.313	0.343	0.365	0.379	0.383	0.379	0.365	0.343	0.313	0.276	0.231	0.181	0.124	0.063	0.000
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	0.009	0.017	0.025	0.032	0.039	0.044	0.048	0.051	0.053	0.054	0.053	0.051	0.048	0.044	0.039	0.032	0.025	0.017	0.009	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.090	0.179	0.260	0.333	0.397	0.451	0.494	0.526	0.545	0.552	0.545	0.526	0.494	0.451	0.397	0.333	0.260	0.179	0.090	0.000
VERTICAL CURVE ORDINATE	0.000	0.017	0.032	0.045	0.057	0.066	0.074	0.081	0.085	0.088	0.088	0.088	0.085	0.080	0.074	0.066	0.057	0.045	0.032	0.017	0.000
SUPERLEVATION ORDINATE	0.000	-0.008	-0.015	-0.021	-0.027	-0.032	-0.035	-0.038	-0.040	-0.042	-0.042	-0.042	-0.040	-0.038	-0.035	-0.032	-0.027	-0.022	-0.015	-0.008	0.000
REQUIRED CAMBER	0"	1 3/16"	2 5/16"	3 7/16"	4 3/8 "	5 3/16"	5 7/8 "	6 7/16"	6 7/8 "	7 1/16"	7 3/16"	7 1/16"	6 7/8 "	6 7/16"	5 7/8 "	5 3/16"	4 3/8 "	3 7/16"	2 5/16"	1 3/16"	0"

GIRDER 5

20TH POINTS	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.019	0.037	0.054	0.069	0.083	0.094	0.103	0.109	0.113	0.115	0.113	0.109	0.103	0.094	0.083	0.069	0.054	0.037	0.019	0.000
DEFLECTION DUE TO WEIGHT OF SLAB ✳	0.000	0.063	0.124	0.181	0.232	0.277	0.314	0.344	0.366	0.380	0.384	0.380	0.366	0.344	0.314	0.277	0.232	0.181	0.124	0.063	0.000
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	0.009	0.017	0.025	0.032	0.039	0.044	0.048	0.051	0.053	0.054	0.053	0.051	0.048	0.044	0.039	0.032	0.025	0.017	0.009	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.091	0.179	0.261	0.334	0.398	0.452	0.495	0.527	0.546	0.553	0.546	0.527	0.495	0.452	0.398	0.334	0.261	0.179	0.091	0.000
VERTICAL CURVE ORDINATE	0.000	0.017	0.032	0.045	0.057	0.067	0.075	0.081	0.085	0.088	0.089	0.088	0.085	0.081	0.075	0.067	0.057	0.045	0.032	0.017	0.000
SUPERLEVATION ORDINATE	0.000	-0.008	-0.015	-0.022	-0.027	-0.032	-0.035	-0.038	-0.041	-0.042	-0.042	-0.042	-0.041	-0.038	-0.036	-0.032	-0.027	-0.022	-0.015	-0.008	0.000
REQUIRED CAMBER	0"	1 3/16"	2 3/8 "	3 7/16"	4 3/8 "	5 3/16"	5 7/8 "	6 7/16"	6 7/8 "	7 1/8 "	7 3/16"	7 1/8 "	6 7/8 "	6 7/16"	5 7/8 "	5 3/16"	4 3/8 "	3 7/16"	2 3/8 "	1 3/16"	0"

GIRDER 6

20TH POINTS	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.019	0.037	0.054	0.069	0.083	0.094	0.103	0.109	0.113	0.115	0.113	0.109	0.103	0.094	0.083	0.069	0.054	0.037	0.019	0.000
DEFLECTION DUE TO WEIGHT OF SLAB ✳	0.000	0.063	0.125	0.182	0.233	0.277	0.315	0.345	0.367	0.381	0.385	0.381	0.367	0.345	0.315	0.277	0.233	0.182	0.125	0.063	0.000
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	0.009	0.017	0.025	0.032	0.038	0.043	0.048	0.051	0.052	0.053	0.052	0.051	0.048	0.043	0.038	0.032	0.025	0.017	0.009	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.091	0.179	0.261	0.334	0.398	0.452	0.496	0.527	0.547	0.553	0.547	0.527	0.496	0.452	0.398	0.334	0.261	0.179	0.091	0.000
VERTICAL CURVE ORDINATE	0.000	0.017	0.032	0.046	0.057	0.067	0.075	0.081	0.086	0.089	0.089	0.089	0.086	0.081	0.075	0.067	0.057	0.046	0.032	0.017	0.000
SUPERLEVATION ORDINATE	0.000	-0.008	-0.015	-0.022	-0.027	-0.032	-0.036	-0.039	-0.041	-0.042	-0.042	-0.042	-0.041	-0.039	-0.036	-0.032	-0.027	-0.022	-0.015	-0.008	0.000
REQUIRED CAMBER	0"	1 3/16"	2 3/8 "	3 7/16"	4 3/8 "	5 3/16"	5 7/8 "	6 7/16"	6 7/8 "	7 1/8 "	7 3/16"	7 1/8 "	6 7/8 "	6 7/16"	5 7/8 "	5 3/16"	4 3/8 "	3 7/16"	2 3/8 "	1 3/16"	0"

✳ INCLUDES SLAB, BUILDUPS, AND STAY-IN-PLACE FORMS. DEFLECTIONS BASED ON SLAB POUR SEQUENCE SHOWN ON "BILL OF MATERIAL" SHEET.

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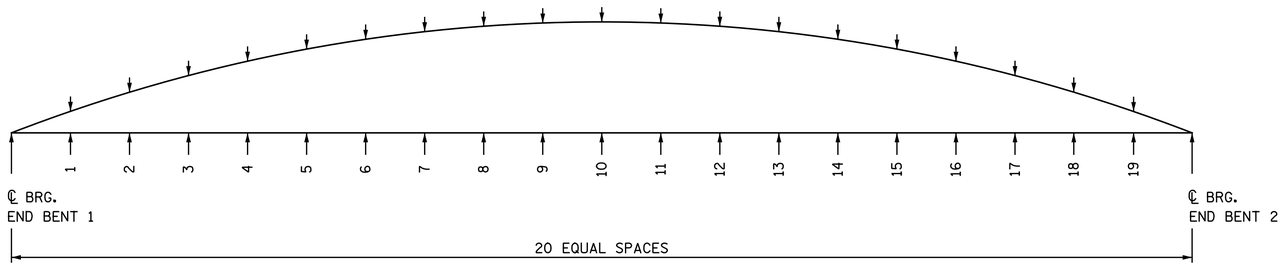


SPAN A

SCHEMATIC CAMBER ORDINATES

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Dominic A. Coletti

8/14/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL

Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

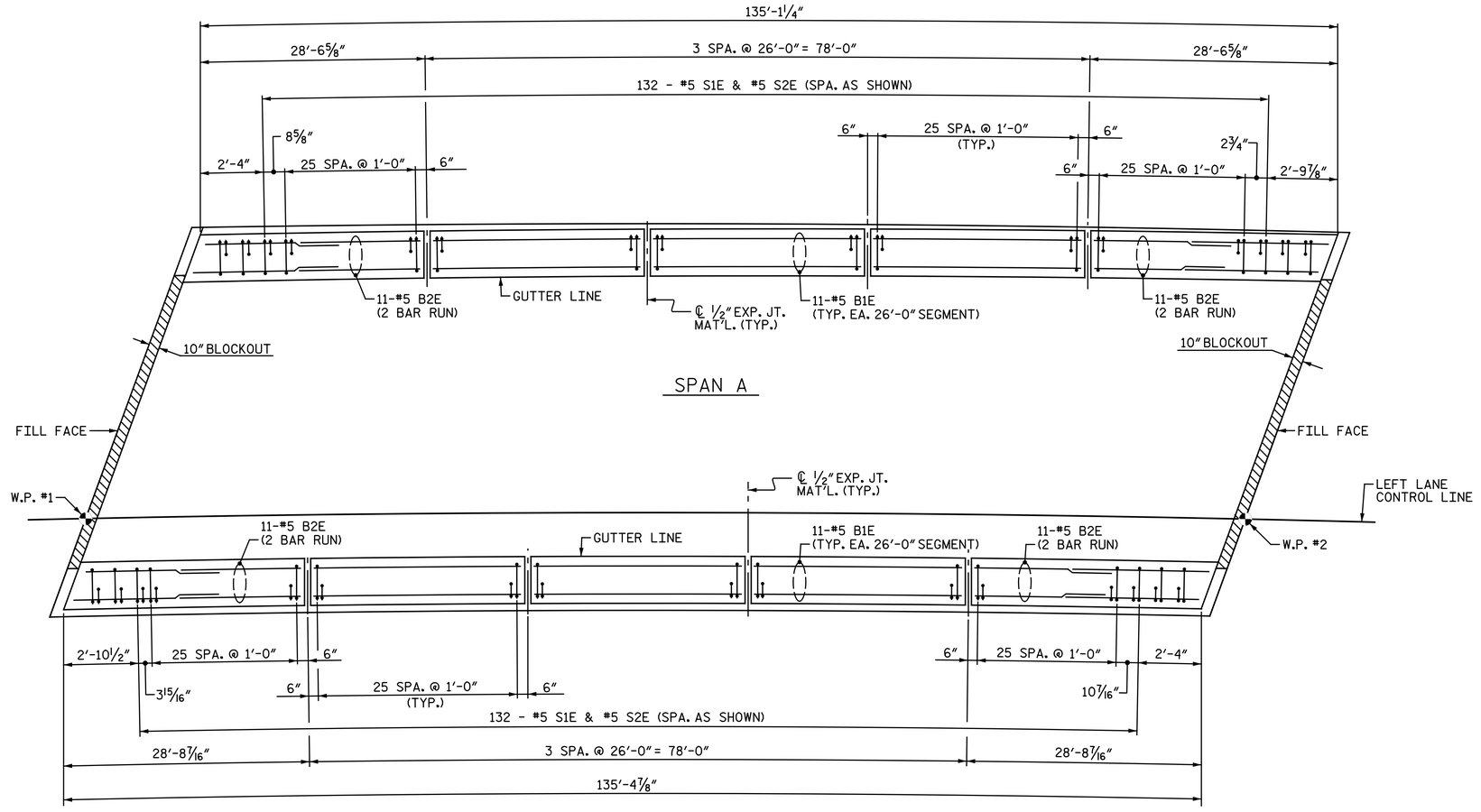
DEAD LOAD DEFLECTION AND CAMBER ORDINATES

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-15
1			3			TOTAL SHEETS
2			4			34

DRAWN BY : C. E. MAYHEW DATE : 7-18-17

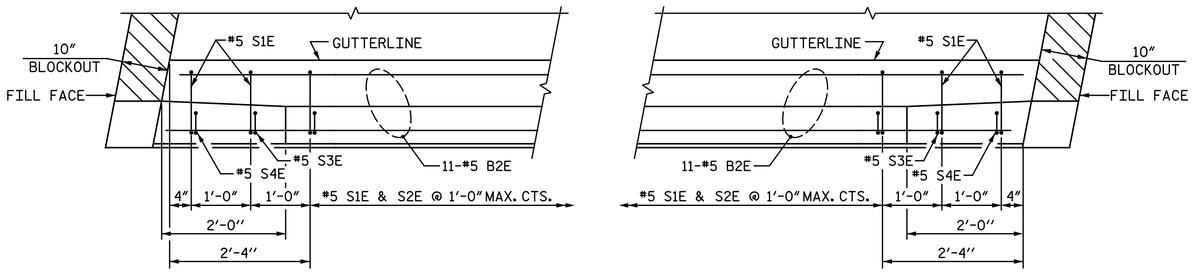
CHECKED BY : D. A. COLETTI DATE : 7-19-17



PLAN OF BARRIER RAIL

NOTE: ALL BARRIER RAIL DIMENSIONS ARE MEASURED ALONG THE ARC AT THE BACK FACE OF THE BARRIER RAIL.

SPLICE LENGTHS	
BAR SIZE	EPOXY COATED
#5	3′-5″



END BENT 1 — END BENT 2

PLAN

(RIGHT RAIL SHOWN, LEFT RAIL SIMILAR)

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE BARRIER RAIL

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Dominic A. Coletti
8/14/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL

Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-16
1			3			TOTAL SHEETS
2			4			34

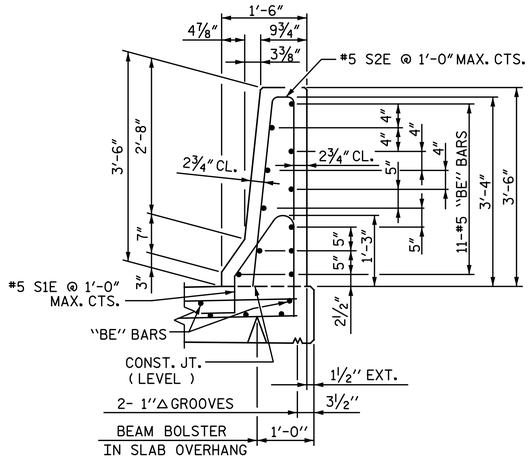
ASSEMBLED BY : N. B. SPEAKS		DATE : 3-29-17
CHECKED BY : D. A. COLETTI		DATE : 6-8-17
DRAWN BY : ARB 5/87	REV. 10/1/11	MAA/GM
CHECKED BY : SJD 9/87	REV. 7/12	MAA/GM
	REV. 6/13	MAA/GM

NOTES:

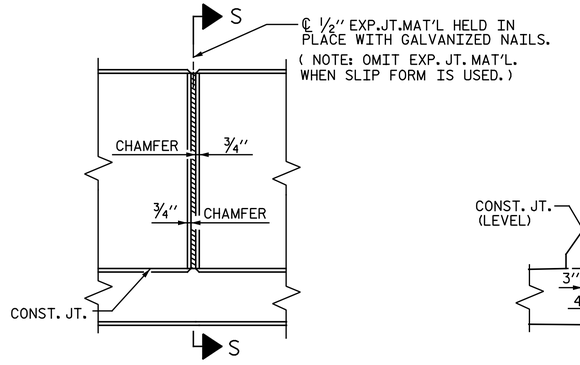
THE BARRIER RAIL IN THE SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

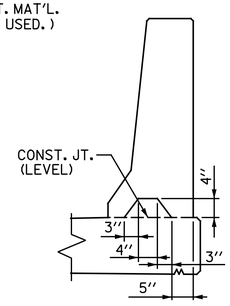
GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED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



SECTION THRU RAIL

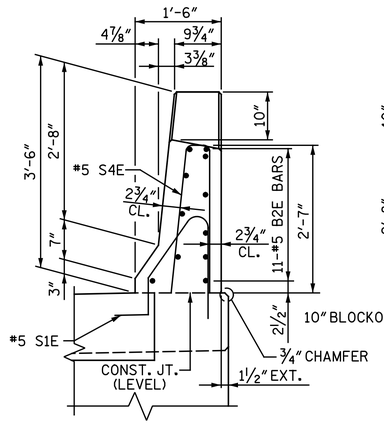


ELEVATION AT EXPANSION JOINTS

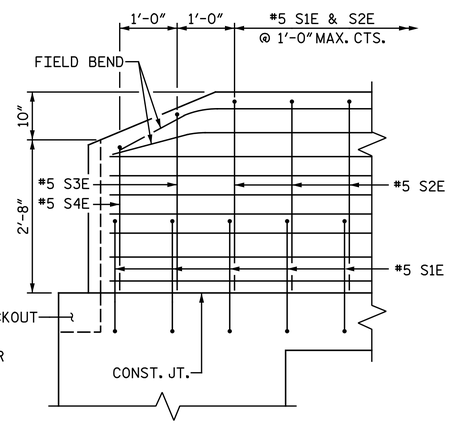


SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

BARRIER RAIL DETAILS



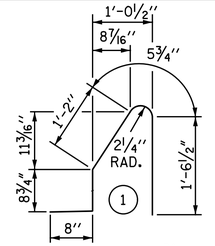
END VIEW

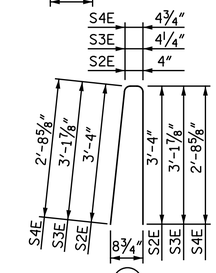


SIDE VIEW

END OF 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	66	#5	STR.	25' - 8"	1,767
B2E	88	#5	STR.	15' - 11"	1,461
S1E	272	#5	1	4' - 7"	1,300
S2E	264	#5	2	7' - 0"	1,927
S3E	4	#5	2	6' - 8"	28
S4E	4	#5	2	5' - 10"	24
EPOXY COATED REINFORCING STEEL				LBS.	6,507
CLASS AA CONCRETE				C.Y.	36.8
CONCRETE BARRIER RAIL				L.F.	270.51

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

9/12/2017

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NC License No.: F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

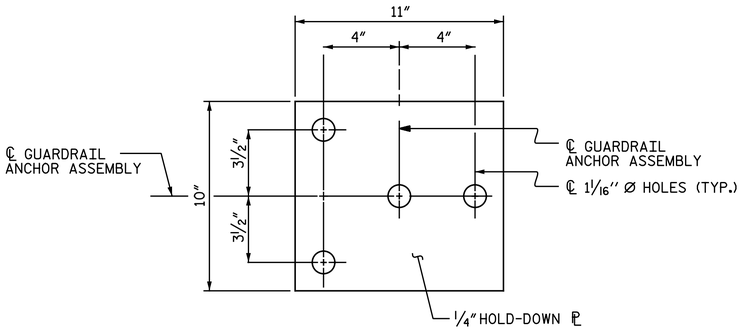
CONCRETE BARRIER RAIL

LEFT LANE

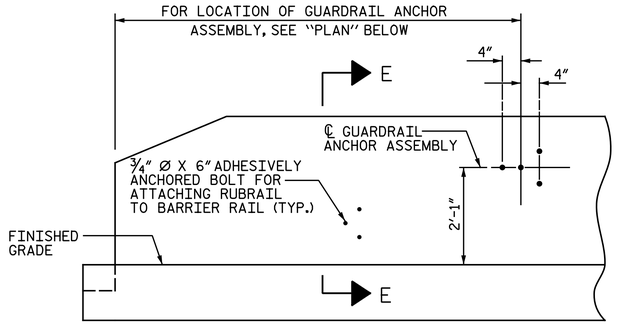
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-17
1			3			TOTAL SHEETS
2			4			34

ASSEMBLED BY : N. B. SPEAKS	DATE : 9-11-17	
CHECKED BY : D. A. COLETTI	DATE : 9-12-17	
DRAWN BY : ARB 5/87	REV. 10/1/11	MAA/GM
CHECKED BY : SJD 9/87	REV. 7/12	MAA/GM
	REV. 6/13	MAA/GM

STD. NO. CBR1



PLAN



ELEVATION

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.)

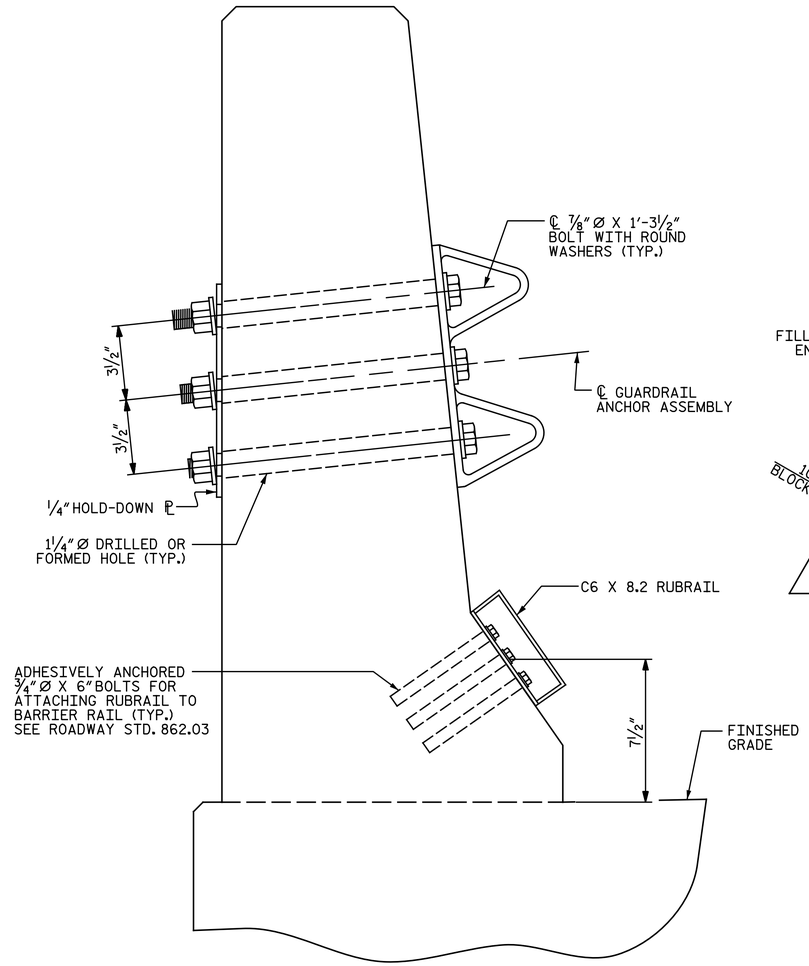
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

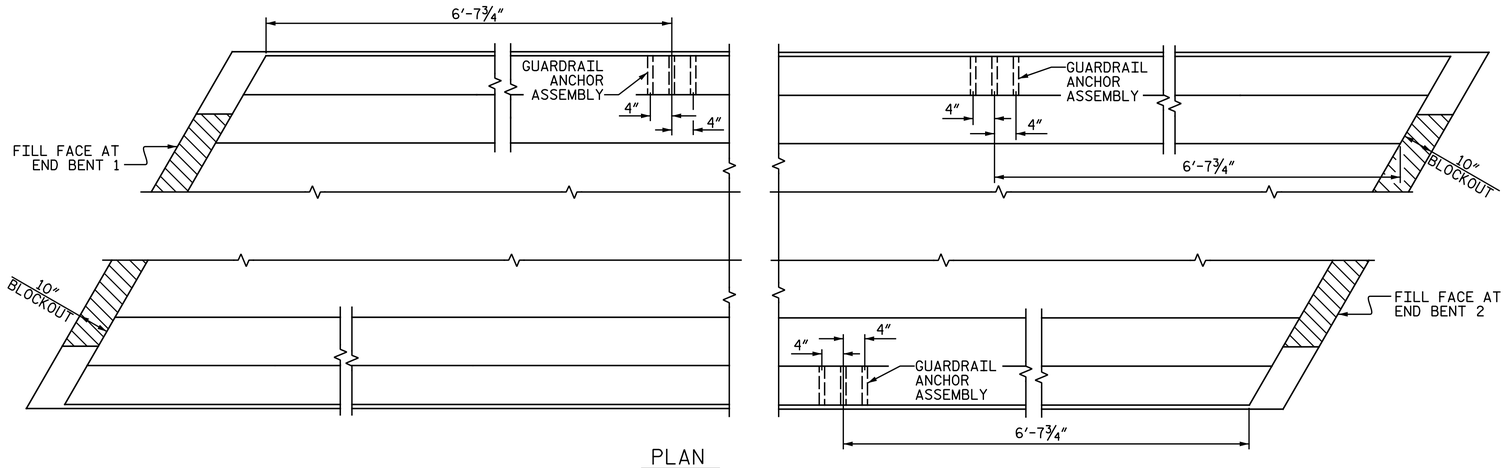
THE 1 1/4″ Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

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.



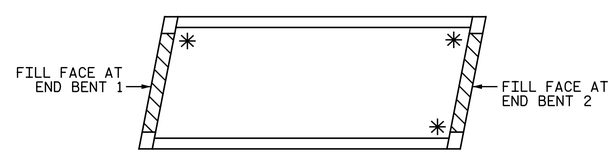
SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

9/12/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

LEFT LANE

ASSEMBLED BY : N. B. SPEAKS	DATE : 9-11-17
CHECKED BY : D.A. COLETTI	DATE : 9-12-17

DRAWN BY : TLA 5/06	REV. 10/1/11	MAA/GM
CHECKED BY : GM 5/06	REV. 7/12	MAA/GM
	REV. 6/13	MAA/GM

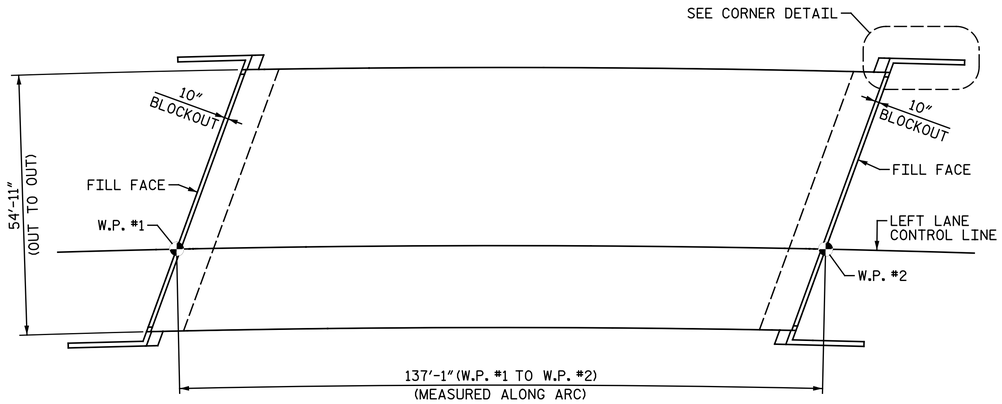
Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-18
1			3			TOTAL SHEETS
2			4			34

STD. NO. GRA2

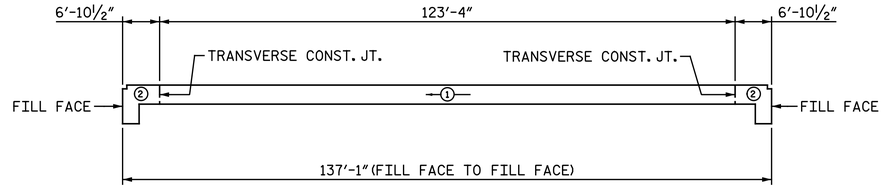
NOTES:

FOR BAR TYPES AND BAR SCHEDULE, SEE SHEET 2 OF 2.



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB

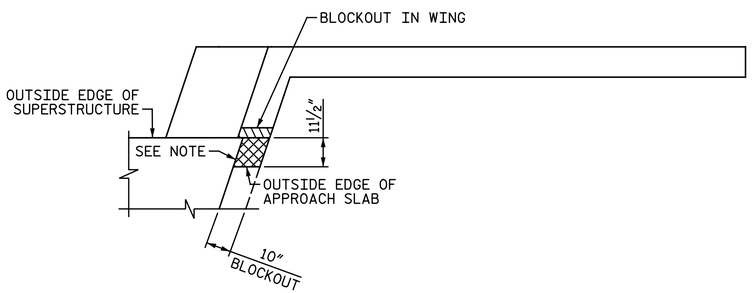
(SQ. FT. = 7,525)



POURING SEQUENCE

—④— DENOTES POUR NUMBER AND DIRECTION

(ALL DIMENSIONS ARE ALONG CONTROL LINE)



CORNER DETAIL

CONCRETE SHALL BE POURED IN THE CROSS-HATCHED AREA TO MATCH THE TOP OF END BENT WING ELEVATIONS. UNLESS OTHERWISE DIRECTED BY THE ENGINEER, THE CONCRETE IN THESE AREAS SHALL BE PLACED AT THE SAME TIME THE BLOCKOUTS IN THE END BENT WINGS ARE POURED AS NOTED ON SHEET 1 OF "INTEGRAL END BENT 1" AND "INTEGRAL END BENT 2" SHEETS.

DRAWN BY : C. E. MAYHEW DATE : 7-14-17

CHECKED BY : D. A. COLETTI DATE : 7-19-17

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti

8/14/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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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:	S3-19
1			3			TOTAL SHEETS
2			4			34

REINFORCING BAR SCHEDULE

SPAN A

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	230	#5	STR.	54′ - 7″	13,094
A2	230	#5	STR.	54′ - 7″	13,094
A101E	1	#5	STR.	2′ - 2″	2
A102E	1	#5	STR.	3′ - 6″	4
A103E	1	#5	STR.	4′ - 10″	5
A104E	1	#5	STR.	6′ - 3″	7
A105E	1	#5	STR.	7′ - 7″	8
A106E	1	#5	STR.	8′ - 11″	9
A107E	1	#5	STR.	10′ - 3″	11
A108E	1	#5	STR.	11′ - 8″	12
A109E	1	#5	STR.	13′ - 0″	14
A110E	1	#5	STR.	14′ - 4″	15
A111E	1	#5	STR.	15′ - 9″	16
A112E	1	#5	STR.	17′ - 1″	18
A113E	1	#5	STR.	18′ - 5″	19
A114E	1	#5	STR.	19′ - 10″	21
A115E	1	#5	STR.	21′ - 2″	22
A116E	1	#5	STR.	22′ - 6″	23
A117E	1	#5	STR.	23′ - 11″	25
A118E	1	#5	STR.	25′ - 3″	26
A119E	1	#5	STR.	26′ - 7″	28
A120E	1	#5	STR.	28′ - 0″	29
A121E	1	#5	STR.	29′ - 4″	31
A122E	1	#5	STR.	30′ - 9″	32
A123E	1	#5	STR.	32′ - 1″	33
A124E	1	#5	STR.	33′ - 5″	35
A125E	1	#5	STR.	34′ - 10″	36
A126E	1	#5	STR.	36′ - 2″	38
A127E	1	#5	STR.	37′ - 6″	39
A128E	1	#5	STR.	38′ - 11″	41
A129E	1	#5	STR.	40′ - 3″	42
A130E	1	#5	STR.	41′ - 7″	43
A131E	1	#5	STR.	43′ - 0″	45
A132E	1	#5	STR.	44′ - 4″	46
A133E	1	#5	STR.	45′ - 8″	48
A134E	1	#5	STR.	47′ - 1″	49
A135E	1	#5	STR.	48′ - 5″	50
A136E	1	#5	STR.	49′ - 9″	52
A137E	1	#5	STR.	51′ - 2″	53
A138E	1	#5	STR.	52′ - 6″	55
A139E	1	#5	STR.	53′ - 10″	56
A140E	1	#5	STR.	53′ - 10″	56
A141E	1	#5	STR.	52′ - 6″	55
A142E	1	#5	STR.	51′ - 1″	53
A143E	1	#5	STR.	49′ - 8″	52
A144E	1	#5	STR.	48′ - 4″	50
A145E	1	#5	STR.	46′ - 11″	49
A146E	1	#5	STR.	45′ - 7″	48
A147E	1	#5	STR.	44′ - 2″	46
A148E	1	#5	STR.	42′ - 10″	45
A149E	1	#5	STR.	41′ - 5″	43
A150E	1	#5	STR.	40′ - 0″	42
A151E	1	#5	STR.	38′ - 8″	40
A152E	1	#5	STR.	37′ - 3″	39
A153E	1	#5	STR.	35′ - 11″	37
A154E	1	#5	STR.	34′ - 6″	36
A155E	1	#5	STR.	33′ - 1″	35
A156E	1	#5	STR.	31′ - 9″	33
A157E	1	#5	STR.	30′ - 4″	32
A158E	1	#5	STR.	29′ - 0″	30
A159E	1	#5	STR.	27′ - 7″	29
A160E	1	#5	STR.	26′ - 3″	27
A161E	1	#5	STR.	24′ - 10″	26
A162E	1	#5	STR.	23′ - 5″	24
A163E	1	#5	STR.	22′ - 1″	23
A164E	1	#5	STR.	20′ - 8″	22
A165E	1	#5	STR.	19′ - 4″	20
A166E	1	#5	STR.	17′ - 11″	19
A167E	1	#5	STR.	16′ - 6″	17
A168E	1	#5	STR.	15′ - 2″	16
A169E	1	#5	STR.	13′ - 9″	14
A170E	1	#5	STR.	12′ - 5″	13
A171E	1	#5	STR.	11′ - 0″	11
A172E	1	#5	STR.	9′ - 7″	10
A173E	1	#5	STR.	8′ - 3″	9
A174E	1	#5	STR.	6′ - 10″	7
A175E	1	#5	STR.	5′ - 6″	6
A176E	1	#5	STR.	4′ - 1″	4
A177E	1	#5	STR.	2′ - 8″	3

SPAN A (CONT'D)

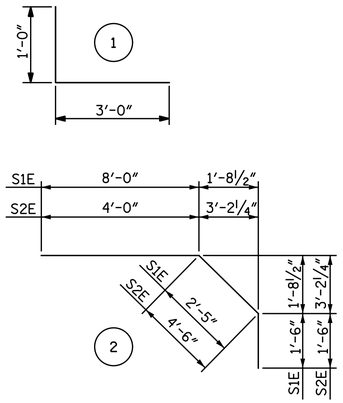
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A201	1	#5	STR.	2′ - 2″	2
A202	1	#5	STR.	3′ - 6″	4
A203	1	#5	STR.	4′ - 10″	5
A204	1	#5	STR.	6′ - 3″	7
A205	1	#5	STR.	7′ - 7″	8
A206	1	#5	STR.	8′ - 11″	9
A207	1	#5	STR.	10′ - 3″	11
A208	1	#5	STR.	11′ - 8″	12
A209	1	#5	STR.	13′ - 0″	14
A210	1	#5	STR.	14′ - 4″	15
A211	1	#5	STR.	15′ - 9″	16
A212	1	#5	STR.	17′ - 1″	18
A213	1	#5	STR.	18′ - 5″	19
A214	1	#5	STR.	19′ - 10″	21
A215	1	#5	STR.	21′ - 2″	22
A216	1	#5	STR.	22′ - 6″	23
A217	1	#5	STR.	23′ - 11″	25
A218	1	#5	STR.	25′ - 3″	26
A219	1	#5	STR.	26′ - 7″	28
A220	1	#5	STR.	28′ - 0″	29
A221	1	#5	STR.	29′ - 4″	31
A222	1	#5	STR.	30′ - 9″	32
A223	1	#5	STR.	32′ - 1″	33
A224	1	#5	STR.	33′ - 5″	35
A225	1	#5	STR.	34′ - 10″	36
A226	1	#5	STR.	36′ - 2″	38
A227	1	#5	STR.	37′ - 6″	39
A228	1	#5	STR.	38′ - 11″	41
A229	1	#5	STR.	40′ - 3″	42
A230	1	#5	STR.	41′ - 7″	43
A231	1	#5	STR.	43′ - 0″	45
A232	1	#5	STR.	44′ - 4″	46
A233	1	#5	STR.	45′ - 8″	48
A234	1	#5	STR.	47′ - 1″	49
A235	1	#5	STR.	48′ - 5″	50
A236	1	#5	STR.	49′ - 9″	52
A237	1	#5	STR.	51′ - 2″	53
A238	1	#5	STR.	52′ - 6″	55
A239	1	#5	STR.	53′ - 10″	56
A240	1	#5	STR.	53′ - 10″	56
A241	1	#5	STR.	52′ - 6″	55
A242	1	#5	STR.	51′ - 1″	53
A243	1	#5	STR.	49′ - 8″	52
A244	1	#5	STR.	48′ - 4″	50
A245	1	#5	STR.	46′ - 11″	49
A246	1	#5	STR.	45′ - 7″	48
A247	1	#5	STR.	44′ - 2″	46
A248	1	#5	STR.	42′ - 10″	45
A249	1	#5	STR.	41′ - 5″	43
A250	1	#5	STR.	40′ - 0″	42
A251	1	#5	STR.	38′ - 8″	40
A252	1	#5	STR.	37′ - 3″	39
A253	1	#5	STR.	35′ - 11″	37
A254	1	#5	STR.	34′ - 6″	36
A255	1	#5	STR.	33′ - 1″	35
A256	1	#5	STR.	31′ - 9″	33
A257	1	#5	STR.	30′ - 4″	32
A258	1	#5	STR.	29′ - 0″	30
A259	1	#5	STR.	27′ - 7″	29
A260	1	#5	STR.	26′ - 3″	27
A261	1	#5	STR.	24′ - 10″	26
A262	1	#5	STR.	23′ - 5″	24
A263	1	#5	STR.	22′ - 1″	23
A264	1	#5	STR.	20′ - 8″	22
A265	1	#5	STR.	19′ - 4″	20
A266	1	#5	STR.	17′ - 11″	19
A267	1	#5	STR.	16′ - 6″	17
A268	1	#5	STR.	15′ - 2″	16
A269	1	#5	STR.	13′ - 9″	14
A270	1	#5	STR.	12′ - 5″	13
A271	1	#5	STR.	11′ - 0″	11
A272	1	#5	STR.	9′ - 7″	10
A273	1	#5	STR.	8′ - 3″	9
A274	1	#5	STR.	6′ - 10″	7
A275	1	#5	STR.	5′ - 6″	6
A276	1	#5	STR.	4′ - 1″	4
A277	1	#5	STR.	2′ - 8″	3

SPAN A (CONT'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1E	190	#4	STR.	28′ - 8″	3,638
B2	210	#5	STR.	46′ - 6″	10,185
B3E	72	#6	STR.	29′ - 2″	3,154
B4E	72	#6	STR.	31′ - 4″	3,389
B5E	8	#4	1	4′ - 0″	21
G1E	2	#5	STR.	58′ - 5″	122
G2E	2	#5	STR.	57′ - 7″	120
H1	24	#6	STR.	2′ - 11″	105
K1	12	#6	STR.	58′ - 5″	1,053
K2	12	#6	STR.	57′ - 7″	1,038
S1E	102	#4	2	11′ - 11″	812
S2E	98	#4	2	10′ - 0″	655
U1	102	#6	3	11′ - 11″	1,826
V1	12	#4	STR.	5′ - 8″	45
REINFORCING STEEL				LBS.	29,605
EPOXY COATED REINF. STEEL				LBS.	27,264

"E" SUFFIX DENOTES EPOXY COATED REINFORCING STEEL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
SPAN A		29,605	27,264
POUR 1	218.3		
POUR 2	93.1		
TOTALS *	311.4	29,605	27,264

QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

GROOVING BRIDGE FLOORS

APPROACH SLABS	2,364	SQ.FT.
BRIDGE DECK	6,565	SQ.FT.
TOTAL	8,929	SQ.FT.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

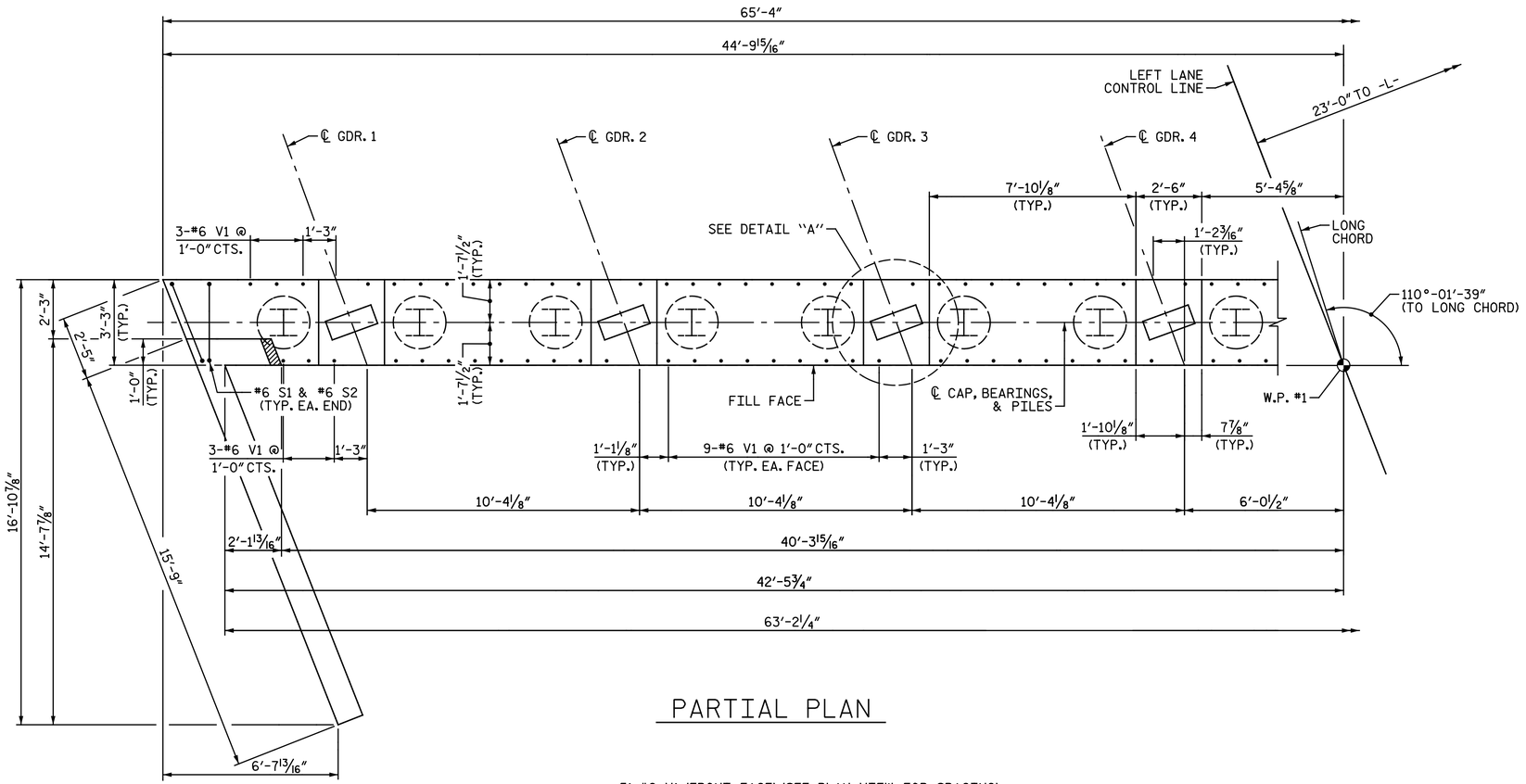
BILL OF MATERIAL

LEFT LANE

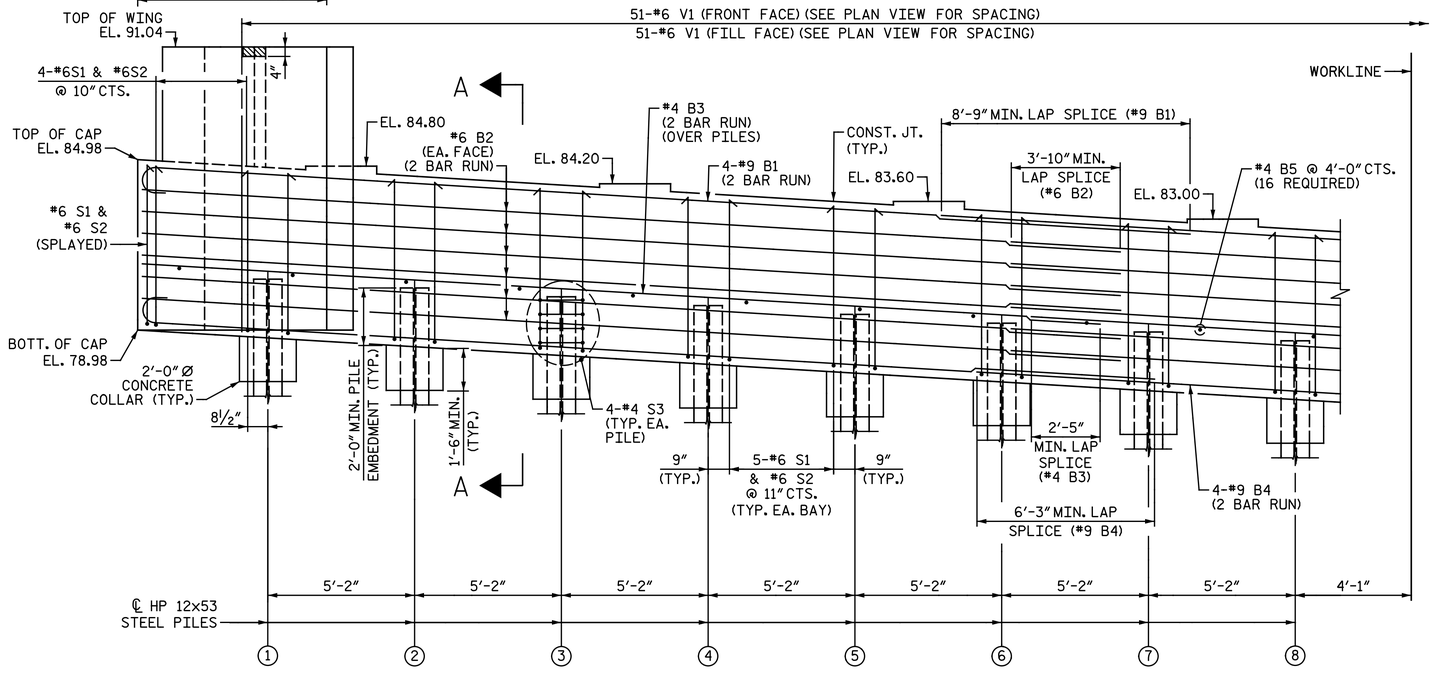
DRAWN BY : C. E. MAYHEW DATE : 7-14-17
CHECKED BY : D. A. COLETTI DATE : 7-19-17

Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-20
1			3			TOTAL SHEETS
2			4			34



PARTIAL PLAN



PARTIAL ELEVATION

NOTES:

FOR NOTES, SEE SHEET 2 OF 4.

FOR "DETAIL A", SEE SHEET 2 OF 4.

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
1	80.75
2	80.45
3	80.15
4	79.85
5	79.55
6	79.25
7	78.95
8	78.65
9	78.35
10	78.05
11	77.75
12	77.45

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 1 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1

LEFT LANE

DRAWN BY : CEM / MDM DATE : 7-13-17
CHECKED BY : D. A. COLETTI DATE : 7-14-17

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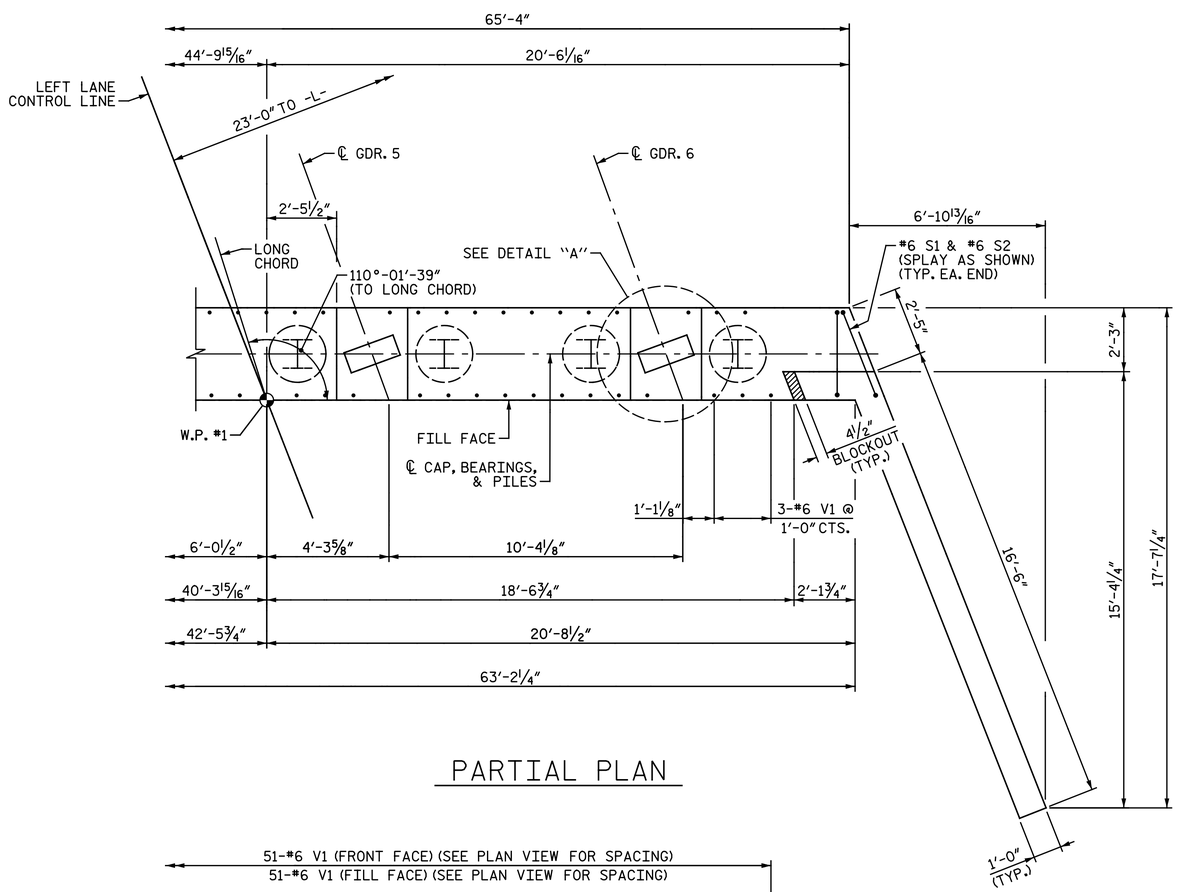
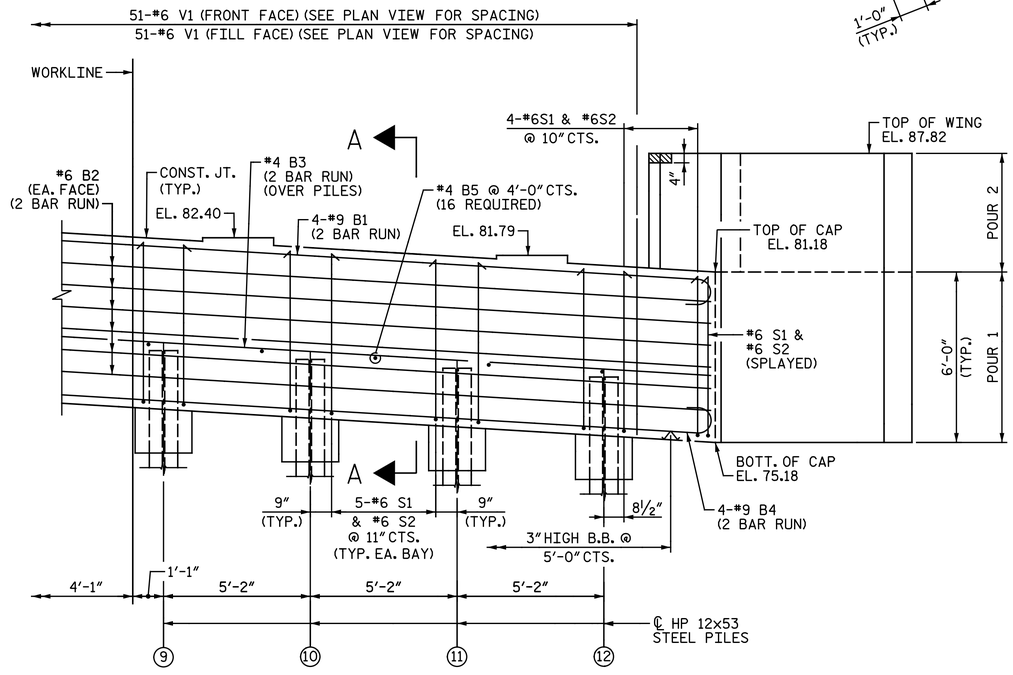
1			3			TOTAL SHEETS
2			4			34



PARTIAL PLAN



PARTIAL ELEVATION

NOTES:

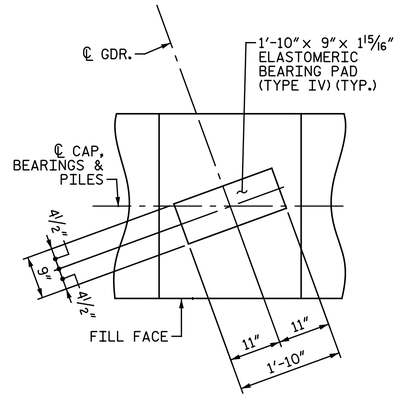
FOR "SECTION A-A", SEE "INTEGRAL END BENT 1 DETAILS" SHEET.

FOR "TOP OF PILE ELEVATIONS", SEE SHEET 1 OF 4.

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

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

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



DETAIL "A"

ALL DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS AT EACH BRIDGE SEAT LOCATION.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

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1			3			TOTAL SHEETS
2			4			34

DRAWN BY : CEM / MDM DATE : 7-13-17
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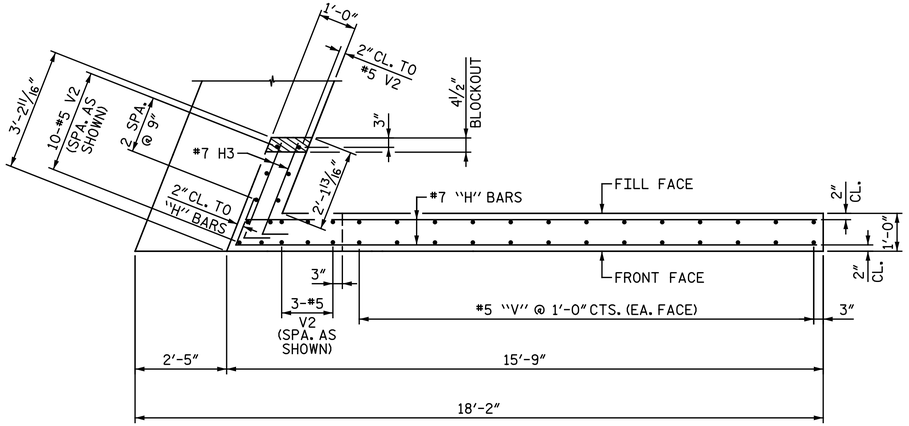
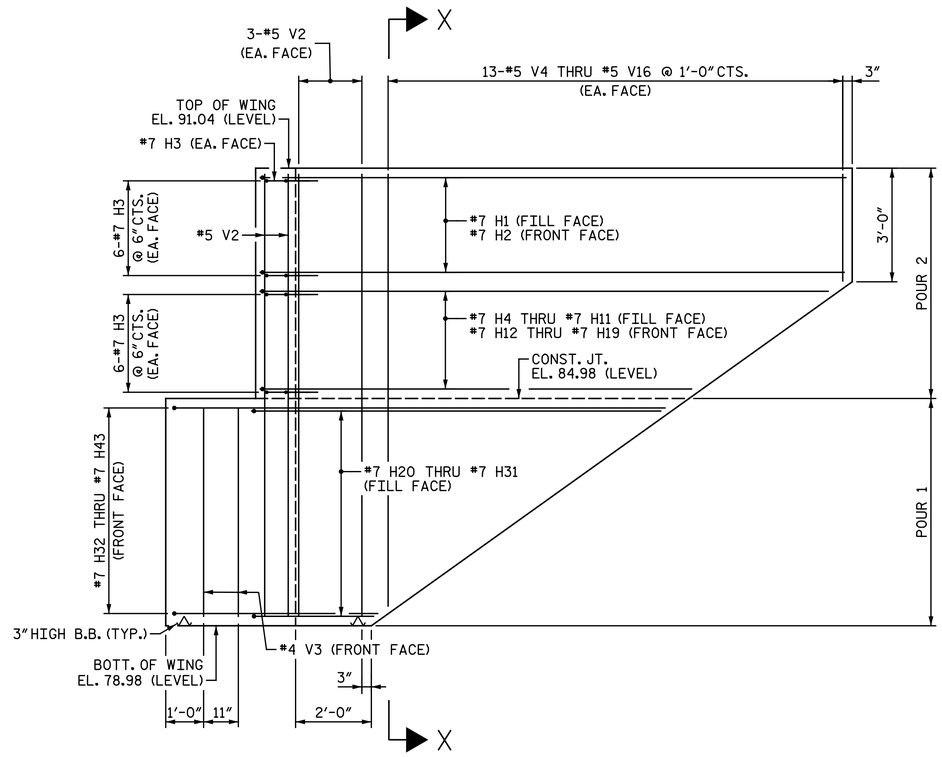
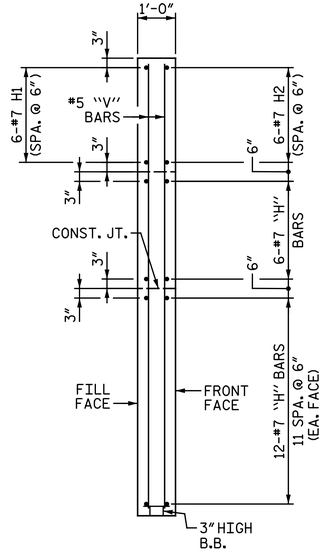


PLAN OF LEFT WING



ELEVATION OF LEFT WING



SECTION X-X

DRAWN BY : C. E. MAYHEW DATE : 7-14-17
CHECKED BY : D. A. COLETTI DATE : 7-14-17

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 166+72.51 -L-

SHEET 3 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

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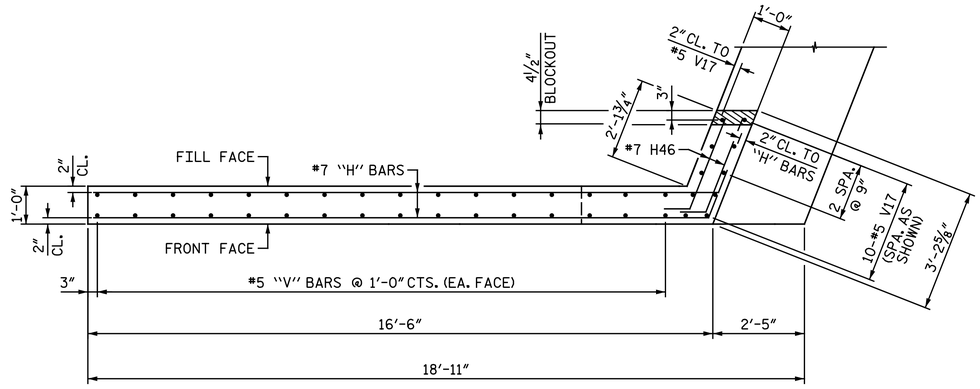
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

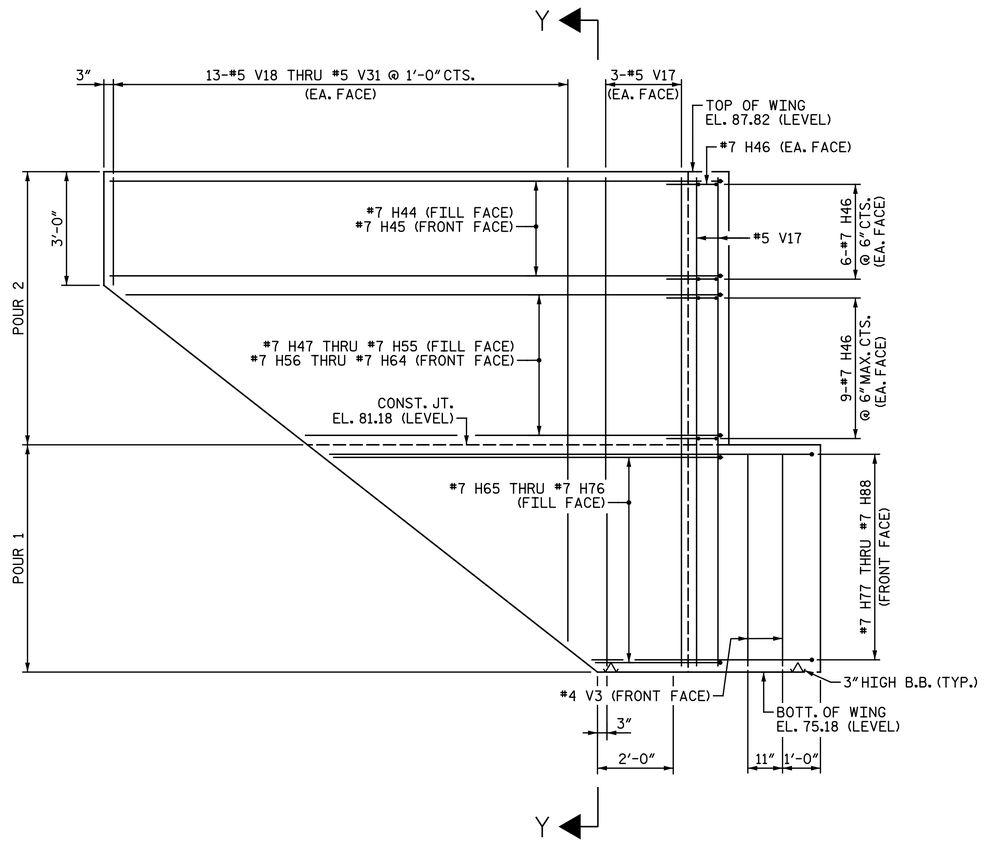
INTEGRAL END BENT 1

LEFT LANE

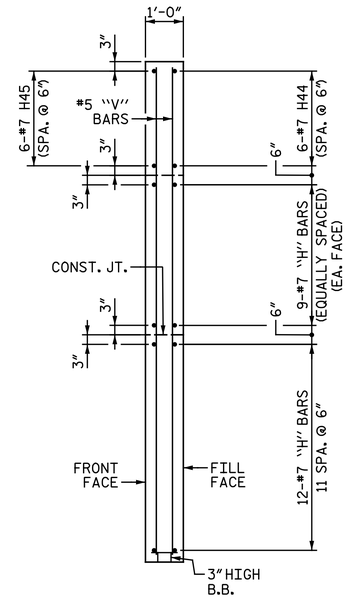
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-23
1			3			TOTAL SHEETS
2			4			34



PLAN OF RIGHT WING



ELEVATION OF RIGHT WING



SECTION Y-Y

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

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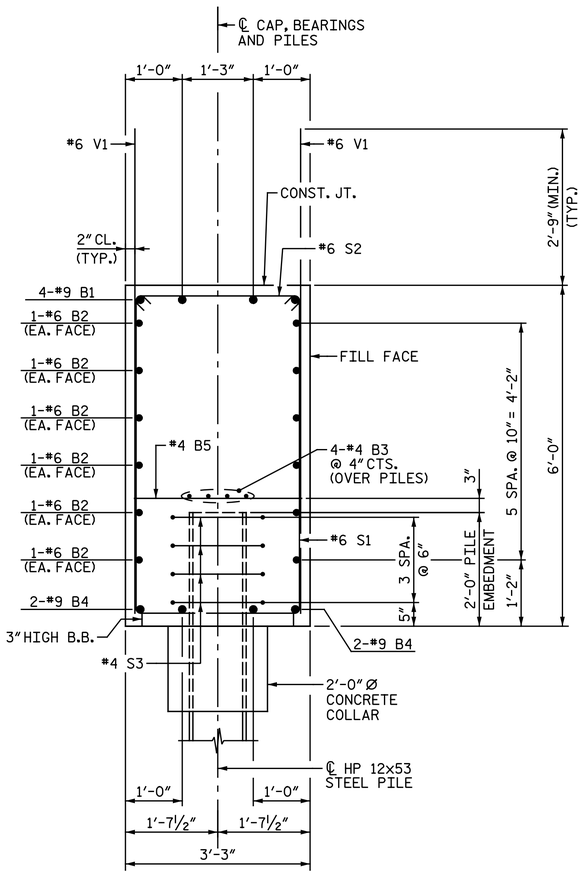
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-24
1			3			TOTAL SHEETS
2			4			34

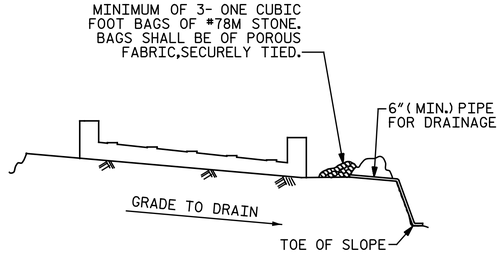
DRAWN BY : C. E. MAYHEW DATE : 7-14-17
CHECKED BY : D. A. COLETTI DATE : 7-14-17



SECTION A-A

BAR	A	BAR	A
H1	15' - 8"	H41	16' - 1"
H2	15' - 5"	H42	2' - 6"
H3	2' - 6"	H43	15' - 4"
H4	15' - 2"	H44	14' - 7"
H5	14' - 5"	H45	13' - 10"
H6	13' - 8"	H46	13' - 1"
H7	12' - 12"	H47	12' - 4"
H8	12' - 3"	H48	11' - 7"
H9	11' - 7"	H49	10' - 11"
H10	14' - 11"	H50	15' - 6"
H11	14' - 2"	H51	14' - 10"
H12	13' - 5"	H52	14' - 1"
H13	12' - 9"	H53	13' - 4"
H14	11' - 12"	H54	12' - 7"
H15	11' - 4"	H55	11' - 10"
H16	10' - 9"	H56	11' - 2"
H17	10' - 1"	H57	10' - 3"
H18	9' - 5"	H58	9' - 6"
H19	8' - 8"	H59	8' - 10"
H20	7' - 12"	H60	8' - 1"
H21	7' - 4"	H61	7' - 5"
H22	6' - 7"	H62	6' - 9"
H23	5' - 11"	H63	5' - 12"
H24	5' - 3"	H64	5' - 4"
H25	4' - 6"	H65	4' - 8"
H26	3' - 10"	H66	3' - 11"
H27	3' - 2"	H67	3' - 3"
H28	12' - 11"	H68	2' - 7"
H29	12' - 2"	H69	12' - 9"
H30	11' - 6"	H70	12' - 1"
H31	10' - 9"	H71	11' - 5"
H32	10' - 1"	H72	10' - 8"
H33	9' - 5"	H73	9' - 12"
H34	8' - 8"	H74	9' - 4"
H35	7' - 12"	H75	8' - 7"
H36	7' - 4"	H76	7' - 11"
H37	6' - 7"	H77	7' - 3"
H38	5' - 11"	H78	6' - 6"
H39	5' - 3"	H79	5' - 10"
H40	15' - 10"	H80	5' - 2"

NOTE:
FOR PILE SPLICE DETAILS, SEE "INTEGRAL END BENT 2 DETAILS" SHEET.



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 FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

BILL OF MATERIAL
INTEGRAL END BENT 1

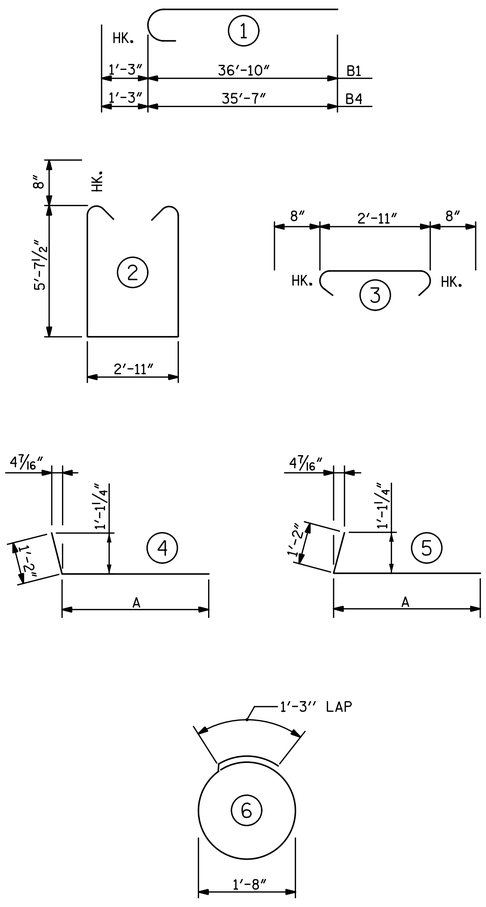
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	38' - 1"	1,036
B2	24	#6	STR.	34' - 5"	1,241
B3	8	#4	STR.	33' - 9"	180
B4	8	#9	1	36' - 10"	1,002
B5	16	#4	STR.	2' - 11"	31
H1	6	#7	5	16' - 9"	206
H2	6	#7	5	16' - 7"	203
H3	24	#7	5	3' - 8"	180
H4	1	#7	5	16' - 4"	33
H5	1	#7	5	15' - 7"	32
H6	1	#7	5	14' - 10"	30
H7	1	#7	5	14' - 2"	29
H8	1	#7	5	13' - 5"	27
H9	1	#7	5	12' - 9"	26
H10	1	#7	5	16' - 1"	33
H11	1	#7	5	15' - 4"	31
H12	1	#7	5	14' - 7"	30
H13	1	#7	5	13' - 11"	28
H14	1	#7	5	13' - 2"	27
H15	1	#7	5	12' - 6"	26
H16	1	#7	5	11' - 11"	24
H17	1	#7	5	11' - 3"	23
H18	1	#7	5	10' - 7"	22
H19	1	#7	5	9' - 10"	20
H20	1	#7	5	9' - 2"	19
H21	1	#7	5	8' - 6"	17
H22	1	#7	5	7' - 9"	16
H23	1	#7	5	7' - 1"	14
H24	1	#7	5	6' - 5"	13
H25	1	#7	5	5' - 8"	12
H26	1	#7	5	5' - 0"	10
H27	1	#7	5	4' - 4"	9
H28	1	#7	5	14' - 1"	29
H29	1	#7	5	13' - 4"	27
H30	1	#7	5	12' - 8"	26
H31	1	#7	5	11' - 11"	24
H32	1	#7	5	11' - 3"	23
H33	1	#7	5	10' - 7"	22
H34	1	#7	5	9' - 10"	20
H35	1	#7	5	9' - 2"	19
H36	1	#7	5	8' - 6"	17
H37	1	#7	5	7' - 9"	16
H38	1	#7	5	7' - 1"	14
H39	1	#7	5	6' - 5"	13
H40	6	#7	5	17' - 0"	208
H41	6	#7	5	17' - 3"	212
H42	26	#7	5	3' - 8"	195
H43	1	#7	5	16' - 6"	34
H44	1	#7	4	15' - 9"	32
H45	1	#7	4	15' - 0"	31
H46	1	#7	4	14' - 3"	29
H47	1	#7	4	13' - 6"	28
H48	1	#7	4	12' - 9"	26
H49	1	#7	4	12' - 1"	25
H50	1	#7	4	16' - 8"	34
H51	1	#7	4	16' - 0"	33
H52	1	#7	4	15' - 3"	31
H53	1	#7	4	14' - 6"	30
H54	1	#7	4	13' - 9"	28
H55	1	#7	4	13' - 0"	27
H56	1	#7	4	12' - 4"	25
H57	1	#7	4	11' - 5"	23
H58	1	#7	4	10' - 8"	22
H59	1	#7	4	10' - 0"	20
H60	1	#7	4	9' - 3"	19
H61	1	#7	4	8' - 7"	18
H62	1	#7	4	7' - 11"	16
H63	1	#7	4	7' - 2"	15

BILL OF MATERIAL
INTEGRAL END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H64	1	#7	4	6' - 6"	13
H65	1	#7	4	5' - 10"	12
H66	1	#7	4	5' - 1"	10
H67	1	#7	4	4' - 5"	9
H68	1	#7	4	3' - 9"	8
H69	1	#7	4	13' - 11"	28
H70	1	#7	4	13' - 3"	27
H71	1	#7	4	12' - 7"	26
H72	1	#7	4	11' - 10"	24
H73	1	#7	4	11' - 2"	23
H74	1	#7	4	10' - 6"	21
H75	1	#7	4	9' - 9"	20
H76	1	#7	4	9' - 1"	19
H77	1	#7	4	8' - 5"	17
H78	1	#7	4	7' - 8"	16
H79	1	#7	4	7' - 0"	14
H80	1	#7	4	6' - 4"	13
S1	65	#6	2	15' - 6"	1,513
S2	65	#6	3	4' - 3"	415
S3	48	#4	6	6' - 6"	208
V1	102	#6	STR.	8' - 6"	1,302
V2	16	#5	STR.	11' - 7"	193
V3	4	#4	STR.	5' - 7"	15
V4	2	#5	STR.	11' - 3"	23
V5	2	#5	STR.	10' - 7"	22
V6	2	#5	STR.	9' - 10"	21
V7	2	#5	STR.	9' - 2"	19
V8	2	#5	STR.	8' - 5"	18
V9	2	#5	STR.	7' - 9"	16
V10	2	#5	STR.	7' - 0"	15
V11	2	#5	STR.	6' - 3"	13
V12	2	#5	STR.	5' - 7"	12
V13	2	#5	STR.	4' - 10"	10
V14	2	#5	STR.	4' - 2"	9
V15	2	#5	STR.	3' - 5"	7
V16	2	#5	STR.	2' - 8"	6
V17	16	#5	STR.	12' - 3"	204
V18	2	#5	STR.	12' - 1"	25
V19	2	#5	STR.	11' - 4"	24
V20	2	#5	STR.	10' - 7"	22
V21	2	#5	STR.	9' - 11"	21
V22	2	#5	STR.	9' - 2"	19
V23	2	#5	STR.	8' - 5"	18
V24	2	#5	STR.	7' - 9"	16
V25	2	#5	STR.	7' - 0"	15
V26	2	#5	STR.	6' - 4"	13
V27	2	#5	STR.	5' - 7"	12
V28	2	#5	STR.	4' - 10"	10
V29	2	#5	STR.	4' - 2"	9
V30	2	#5	STR.	3' - 5"	7
V31	2	#4	STR.	2' - 8"	4

REINFORCING STEEL	LBS.	10,597
CLASS A CONCRETE		
POUR 1 -		
CAP, LOWER PART OF WINGS & COLLARS	C.Y.	52.3
POUR 2 -		
UPPER PART OF WINGS	C.Y.	8.1
TOTAL	C.Y.	60.4
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	EA.	12
HP 12x53 STEEL PILES NO. 12	L.F.	1,020
PILE REDRIVES	EA.	6

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti

8/14/2017

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Michael Baker INTERNATIONAL

Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1 DETAILS

LEFT LANE

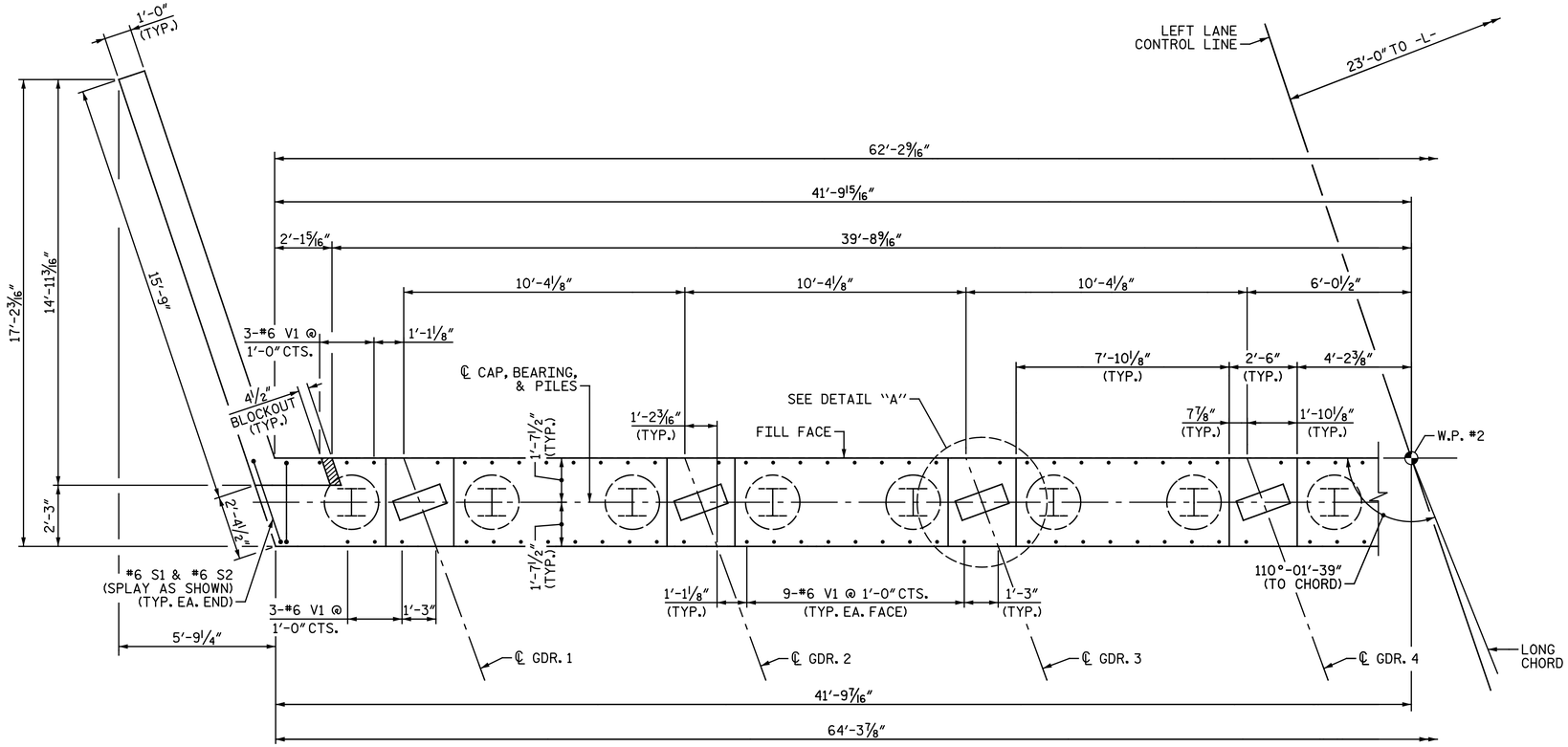
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-25
1			3			TOTAL SHEETS
2			4			34

DRAWN BY : CEM / MDM DATE : 7-13-17
CHECKED BY : D. A. COLETTI DATE : 7-14-17

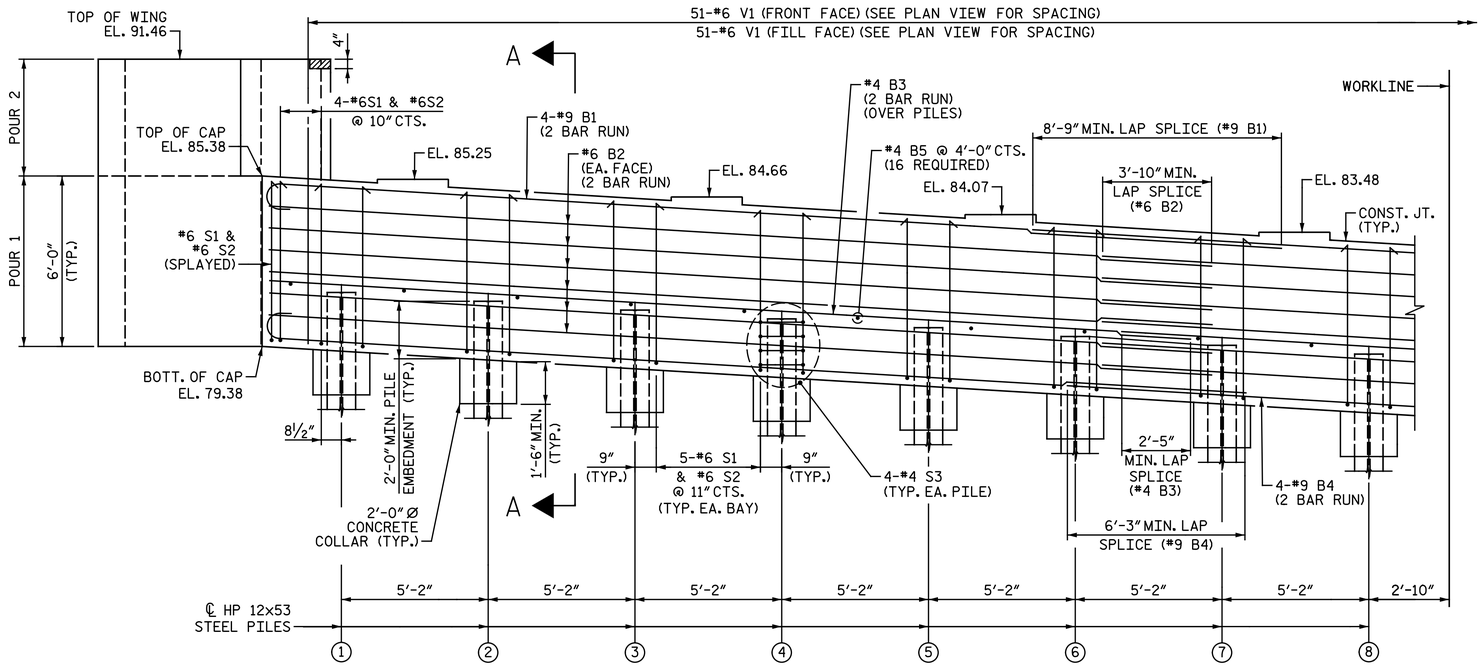
NOTES:

FOR NOTES, SEE, SHEET 2 OF 4.

FOR "DETAIL A", SEE SHEET 2 OF 4.



PARTIAL PLAN



PARTIAL ELEVATION

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
①	81.19
②	80.90
③	80.60
④	80.31
⑤	80.01
⑥	79.72
⑦	79.42
⑧	79.13
⑨	78.83
⑩	78.54
⑪	78.24
⑫	77.95

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Digitally signed by Domenic A. Coletti

8/14/2017

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-26
1			3			TOTAL SHEETS
2			4			34

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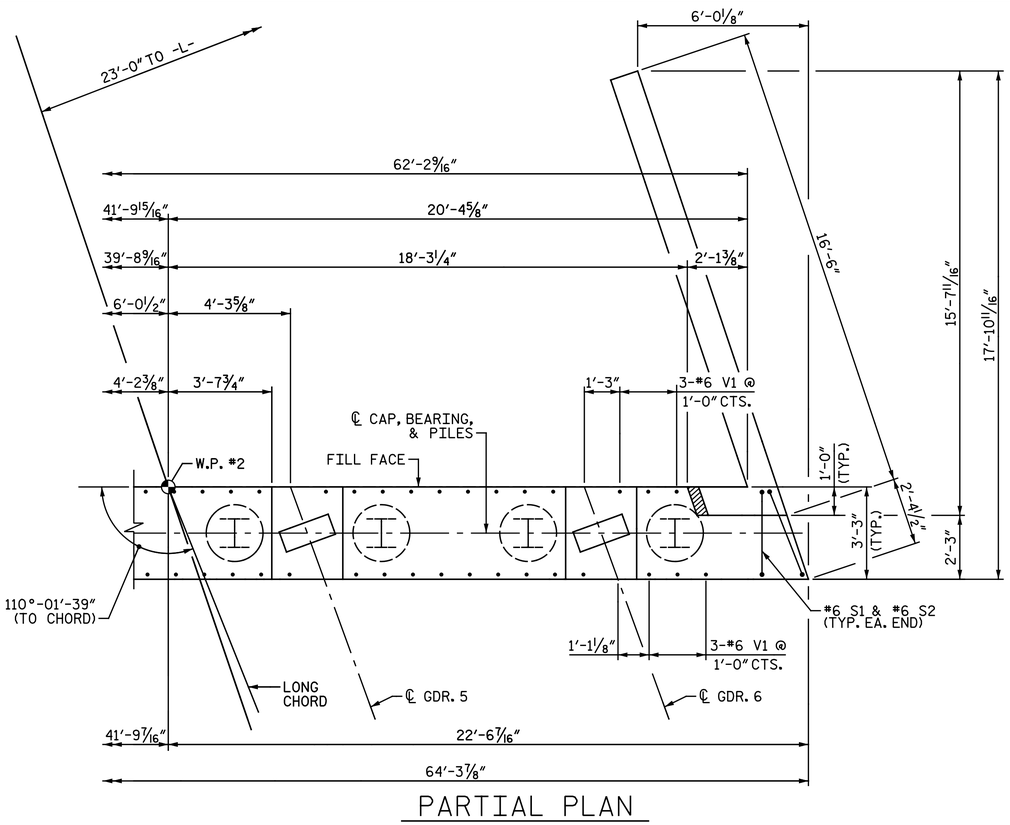
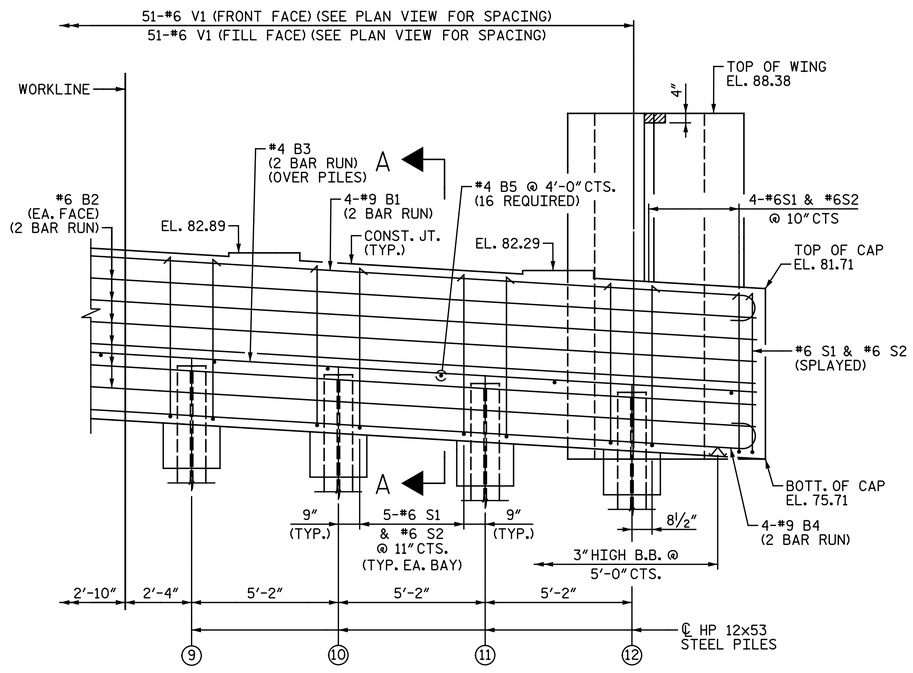
CHECKED BY : D. A. COLETTI DATE : 7-14-17



PARTIAL PLAN



PARTIAL ELEVATION

NOTES:

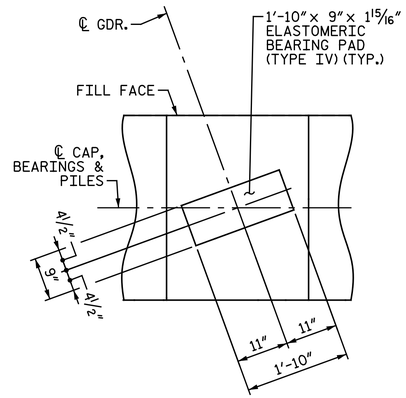
FOR "SECTION A-A", SEE "INTEGRAL END BENT 2 DETAILS" SHEET.

FOR "TOP OF PILE ELEVATIONS", SEE SHEET 1 OF 4.

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6 V1 BARS.

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

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



DETAIL "A"

ALL DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS AT EACH BRIDGE SEAT LOCATION.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 2 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

LEFT LANE

DRAWN BY : CEM / MDM DATE : 7-14-17
CHECKED BY : D. A. COLETTI DATE : 7-14-17

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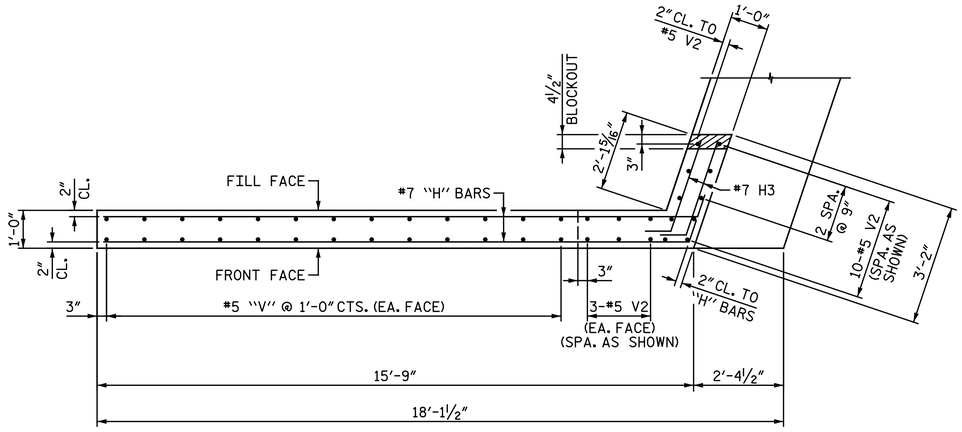
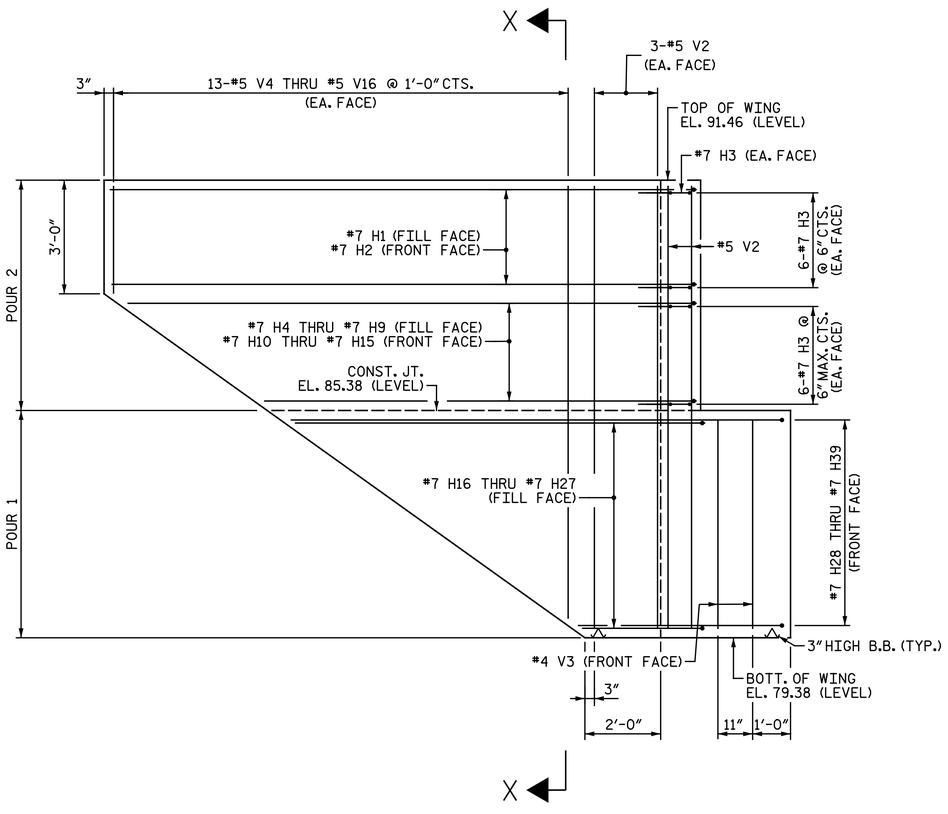
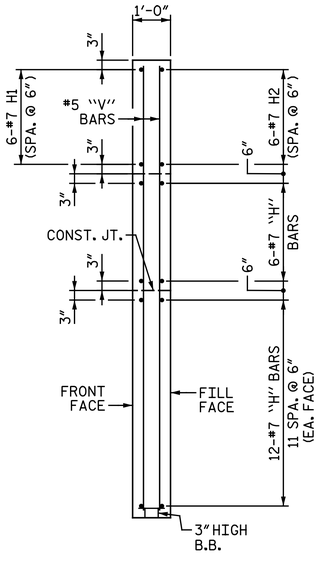
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-27
1			3			TOTAL SHEETS
2			4			34



PLAN OF LEFT WING



ELEVATION OF LEFT WING



SECTION X-X

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

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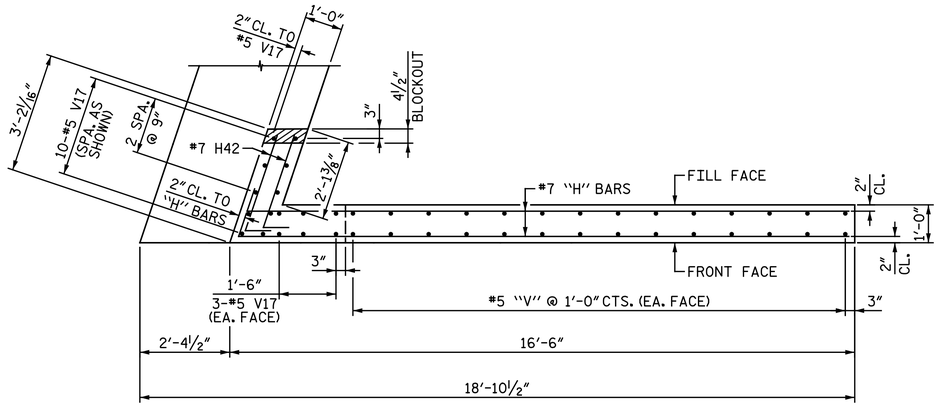
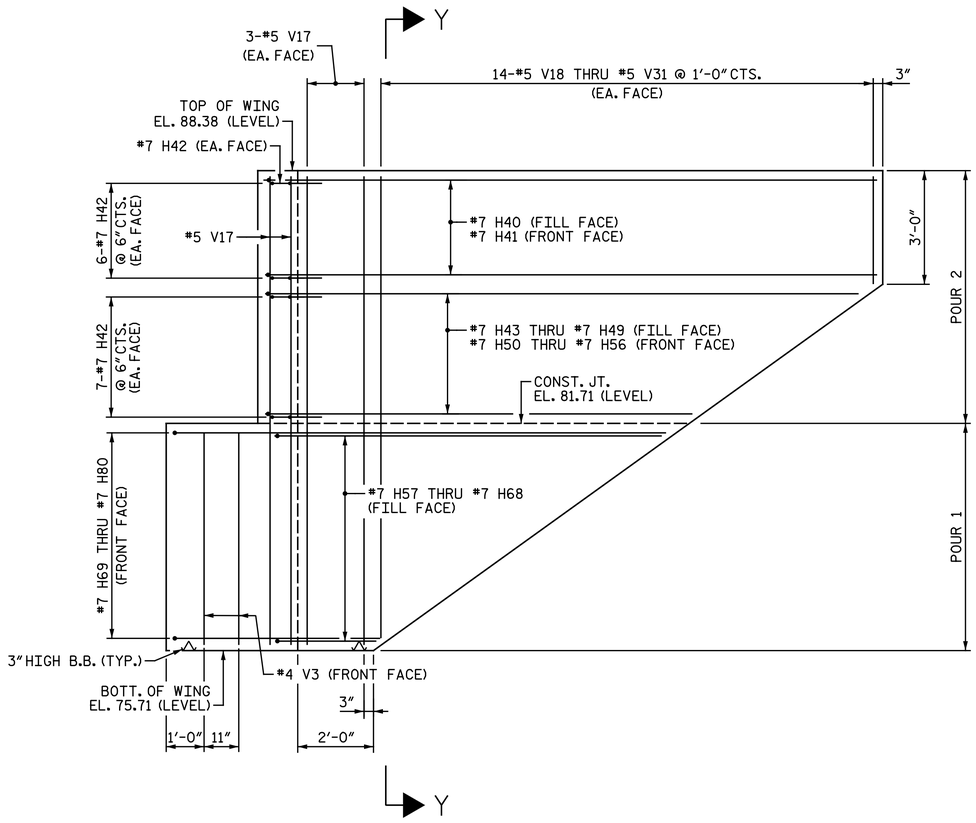
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-28
1			3			TOTAL SHEETS
2			4			34

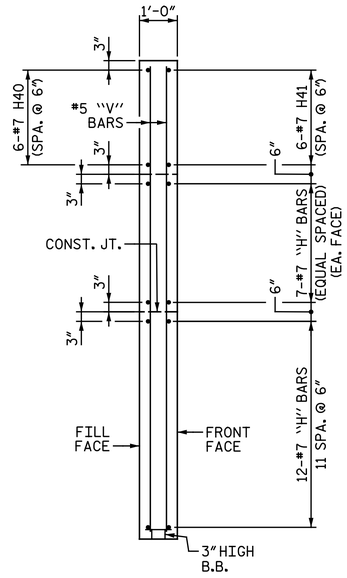
DRAWN BY : C. E. MAYHEW DATE : 4-14-17
CHECKED BY : D. A. COLETTI DATE : 6-9-17



PLAN OF RIGHT WING



ELEVATION OF RIGHT WING



SECTION Y-Y

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

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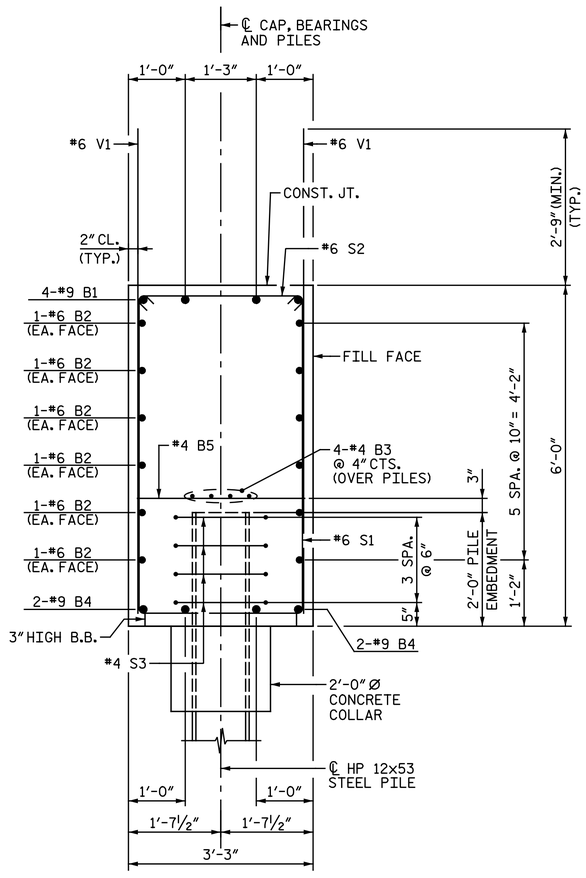
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-29
1			3			TOTAL SHEETS
2			4			34

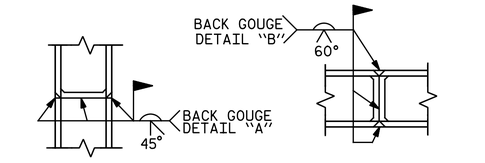
DRAWN BY : C. E. MAYHEW DATE : 7-14-17
CHECKED BY : D. A. COLETTI DATE : 7-14-17



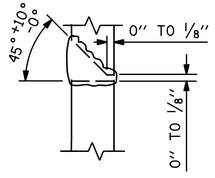
SECTION A-A

BAR	A	BAR	A
H1	15′ - 8″	H41	16′ - 1″
H2	15′ - 5″	H42	2′ - 6″
H3	2′ - 6″	H43	15′ - 4″
H4	15′ - 2″	H44	14′ - 7″
H5	14′ - 5″	H45	13′ - 10″
H6	13′ - 8″	H46	13′ - 1″
H7	12′ - 12″	H47	12′ - 4″
H8	12′ - 3″	H48	11′ - 7″
H9	11′ - 7″	H49	10′ - 11″
H10	14′ - 11″	H50	15′ - 6″
H11	14′ - 2″	H51	14′ - 10″
H12	13′ - 5″	H52	14′ - 1″
H13	12′ - 9″	H53	13′ - 4″
H14	11′ - 12″	H54	12′ - 7″
H15	11′ - 4″	H55	11′ - 10″
H16	10′ - 9″	H56	11′ - 2″
H17	10′ - 1″	H57	10′ - 3″
H18	9′ - 5″	H58	9′ - 6″
H19	8′ - 8″	H59	8′ - 10″
H20	7′ - 12″	H60	8′ - 1″
H21	7′ - 4″	H61	7′ - 5″
H22	6′ - 7″	H62	6′ - 9″
H23	5′ - 11″	H63	5′ - 12″
H24	5′ - 3″	H64	5′ - 4″
H25	4′ - 6″	H65	4′ - 8″
H26	3′ - 10″	H66	3′ - 11″
H27	3′ - 2″	H67	3′ - 3″
H28	12′ - 11″	H68	2′ - 7″
H29	12′ - 2″	H69	12′ - 9″
H30	11′ - 6″	H70	12′ - 1″
H31	10′ - 9″	H71	11′ - 5″
H32	10′ - 1″	H72	10′ - 8″
H33	9′ - 5″	H73	9′ - 12″
H34	8′ - 8″	H74	9′ - 4″
H35	7′ - 12″	H75	8′ - 7″
H36	7′ - 4″	H76	7′ - 11″
H37	6′ - 7″	H77	7′ - 3″
H38	5′ - 11″	H78	6′ - 6″
H39	5′ - 3″	H79	5′ - 10″
H40	15′ - 10″	H80	5′ - 2″

NOTE:
FOR TEMPORARY DRAINAGE AT END BENT DETAILS, SEE "INTEGRAL END BENT 1 DETAILS" SHEET.

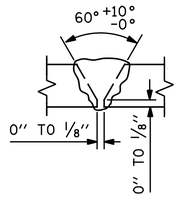


* PILE VERTICAL



DETAIL "A"

* PILE HORIZONTAL OR VERTICAL



DETAIL "B"

PILE SPLICE DETAILS

* POSITION OF PILE DURING WELDING

BILL OF MATERIAL
INTEGRAL END BENT 2

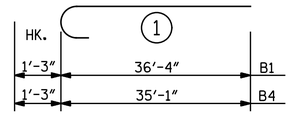
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	37′ - 7″	1,022
B2	24	#6	STR.	33′ - 11″	1,223
B3	8	#4	STR.	33′ - 3″	178
B4	8	#9	1	36′ - 4″	988
B5	16	#4	STR.	2′ - 11″	31
H1	6	#7	5	16′ - 9″	206
H2	6	#7	5	16′ - 7″	203
H3	24	#7	5	3′ - 8″	180
H4	1	#7	5	16′ - 4″	33
H5	1	#7	5	15′ - 7″	32
H6	1	#7	5	14′ - 10″	30
H7	1	#7	5	14′ - 2″	29
H8	1	#7	5	13′ - 5″	27
H9	1	#7	5	12′ - 9″	26
H10	1	#7	5	16′ - 1″	33
H11	1	#7	5	15′ - 4″	31
H12	1	#7	5	14′ - 7″	30
H13	1	#7	5	13′ - 11″	28
H14	1	#7	5	13′ - 2″	27
H15	1	#7	5	12′ - 6″	26
H16	1	#7	5	11′ - 11″	24
H17	1	#7	5	11′ - 3″	23
H18	1	#7	5	10′ - 7″	22
H19	1	#7	5	9′ - 10″	20
H20	1	#7	5	9′ - 2″	19
H21	1	#7	5	8′ - 6″	17
H22	1	#7	5	7′ - 9″	16
H23	1	#7	5	7′ - 1″	14
H24	1	#7	5	6′ - 5″	13
H25	1	#7	5	5′ - 8″	12
H26	1	#7	5	5′ - 0″	10
H27	1	#7	5	4′ - 4″	9
H28	1	#7	5	14′ - 1″	29
H29	1	#7	5	13′ - 4″	27
H30	1	#7	5	12′ - 8″	26
H31	1	#7	5	11′ - 11″	24
H32	1	#7	5	11′ - 3″	23
H33	1	#7	5	10′ - 7″	22
H34	1	#7	5	9′ - 10″	20
H35	1	#7	5	9′ - 2″	19
H36	1	#7	5	8′ - 6″	17
H37	1	#7	5	7′ - 9″	16
H38	1	#7	5	7′ - 1″	14
H39	1	#7	5	6′ - 5″	13
H40	6	#7	5	17′ - 0″	208
H41	6	#7	5	17′ - 3″	212
H42	26	#7	5	3′ - 8″	195
H43	1	#7	5	16′ - 6″	34
H44	1	#7	4	15′ - 9″	32
H45	1	#7	4	15′ - 0″	31
H46	1	#7	4	14′ - 3″	29
H47	1	#7	4	13′ - 6″	28
H48	1	#7	4	12′ - 9″	26
H49	1	#7	4	12′ - 1″	25
H50	1	#7	4	16′ - 8″	34
H51	1	#7	4	16′ - 0″	33
H52	1	#7	4	15′ - 3″	31
H53	1	#7	4	14′ - 6″	30
H54	1	#7	4	13′ - 9″	28
H55	1	#7	4	13′ - 0″	27
H56	1	#7	4	12′ - 4″	25
H57	1	#7	4	11′ - 5″	23
H58	1	#7	4	10′ - 8″	22
H59	1	#7	4	10′ - 0″	20
H60	1	#7	4	9′ - 3″	19
H61	1	#7	4	8′ - 7″	18
H62	1	#7	4	7′ - 11″	16
H63	1	#7	4	7′ - 2″	15

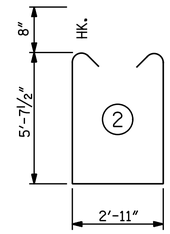
BILL OF MATERIAL
INTEGRAL END BENT 2

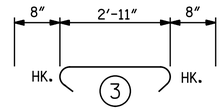
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H64	1	#7	4	6′ - 6″	13
H65	1	#7	4	5′ - 10″	12
H66	1	#7	4	5′ - 1″	10
H67	1	#7	4	4′ - 5″	9
H68	1	#7	4	3′ - 9″	8
H69	1	#7	4	13′ - 11″	28
H70	1	#7	4	13′ - 3″	27
H71	1	#7	4	12′ - 7″	26
H72	1	#7	4	11′ - 10″	24
H73	1	#7	4	11′ - 2″	23
H74	1	#7	4	10′ - 6″	21
H75	1	#7	4	9′ - 9″	20
H76	1	#7	4	9′ - 1″	19
H77	1	#7	4	8′ - 5″	17
H78	1	#7	4	7′ - 8″	16
H79	1	#7	4	7′ - 0″	14
H80	1	#7	4	6′ - 4″	13
S1	65	#6	2	15′ - 6″	1,513
S2	65	#6	3	4′ - 3″	415
S3	48	#4	6	6′ - 6″	208
V1	102	#6	STR.	8′ - 6″	1,302
V2	16	#5	STR.	11′ - 7″	193
V3	4	#4	STR.	5′ - 7″	15
V4	2	#5	STR.	11′ - 3″	23
V5	2	#5	STR.	10′ - 7″	22
V6	2	#5	STR.	9′ - 10″	21
V7	2	#5	STR.	9′ - 2″	19
V8	2	#5	STR.	8′ - 5″	18
V9	2	#5	STR.	7′ - 9″	16
V10	2	#5	STR.	7′ - 0″	15
V11	2	#5	STR.	6′ - 3″	13
V12	2	#5	STR.	5′ - 7″	12
V13	2	#5	STR.	4′ - 10″	10
V14	2	#5	STR.	4′ - 2″	9
V15	2	#5	STR.	3′ - 5″	7
V16	2	#5	STR.	2′ - 8″	6
V17	16	#5	STR.	12′ - 3″	204
V18	2	#5	STR.	12′ - 1″	25
V19	2	#5	STR.	11′ - 4″	24
V20	2	#5	STR.	10′ - 7″	22
V21	2	#5	STR.	9′ - 11″	21
V22	2	#5	STR.	9′ - 2″	19
V23	2	#5	STR.	8′ - 5″	18
V24	2	#5	STR.	7′ - 9″	16
V25	2	#5	STR.	7′ - 0″	15
V26	2	#5	STR.	6′ - 4″	13
V27	2	#5	STR.	5′ - 7″	12
V28	2	#5	STR.	4′ - 10″	10
V29	2	#5	STR.	4′ - 2″	9
V30	2	#5	STR.	3′ - 5″	7
V31	2	#4	STR.	2′ - 8″	4

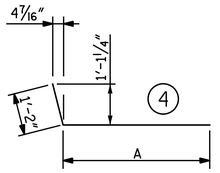
REINFORCING STEEL	LBS.	10,549
CLASS A CONCRETE		
POUR 1 -		
CAP, LOWER PART OF WINGS & COLLARS	C.Y.	51.6
POUR 2 -		
UPPER PART OF WINGS	C.Y.	8.1
TOTAL	C.Y.	59.7
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	EA.	12
HP 12x53 STEEL PILES NO. 12	L.F.	1020
PILE REDRIVES	EA.	6

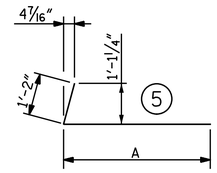
BAR TYPES

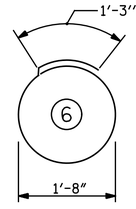












ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

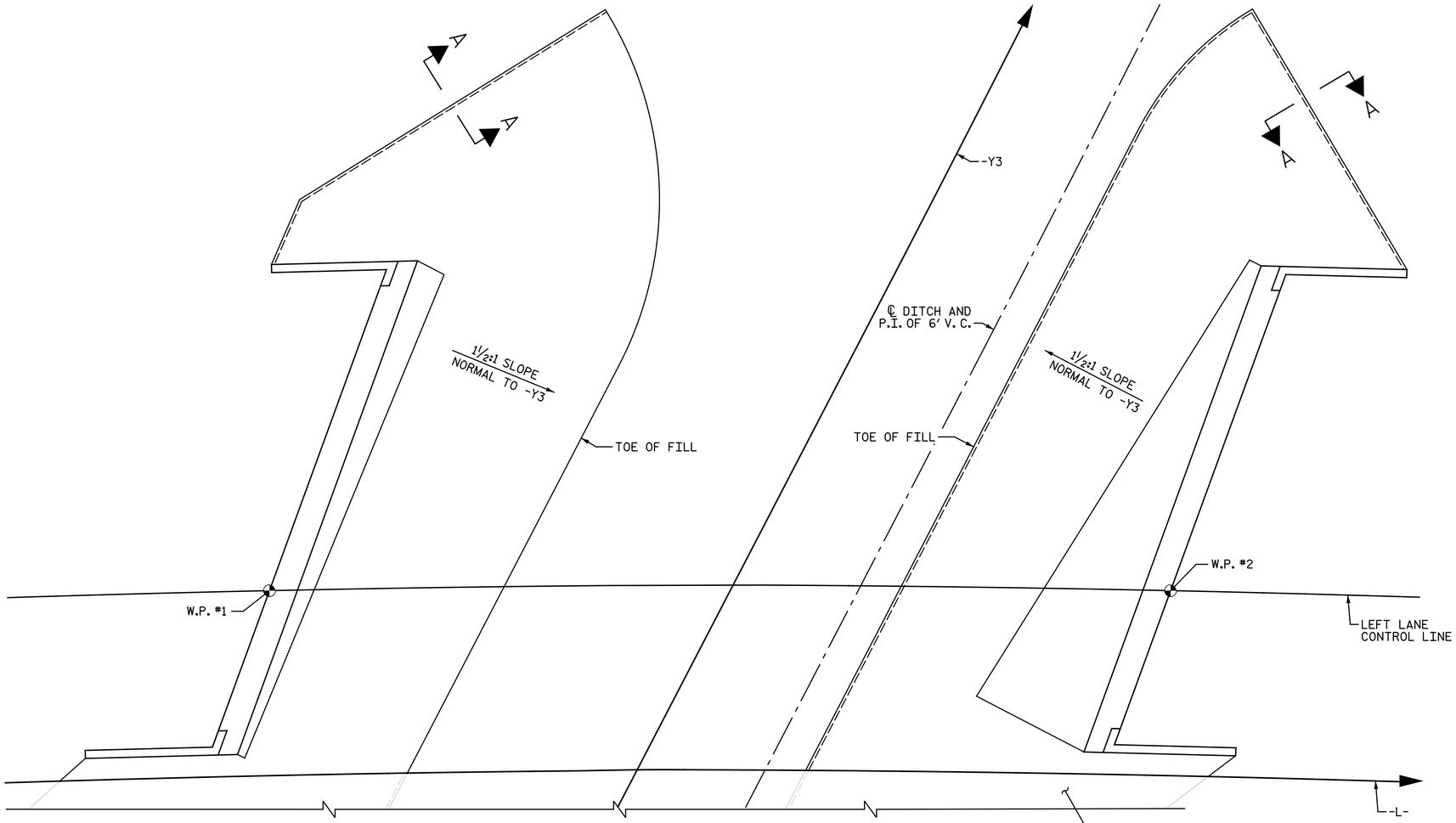
INTEGRAL END BENT 2 DETAILS

LEFT LANE

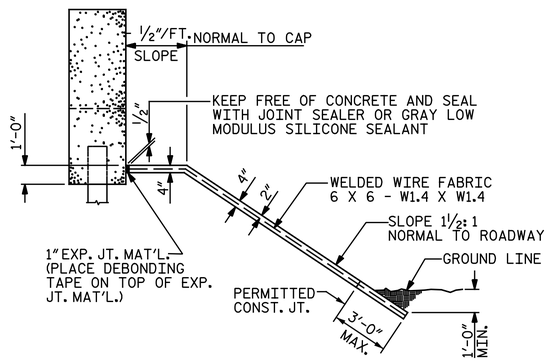
DRAWN BY : CEM / MDM DATE : 7-14-17
CHECKED BY : D. A. COLETTI DATE : 7-14-17

Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

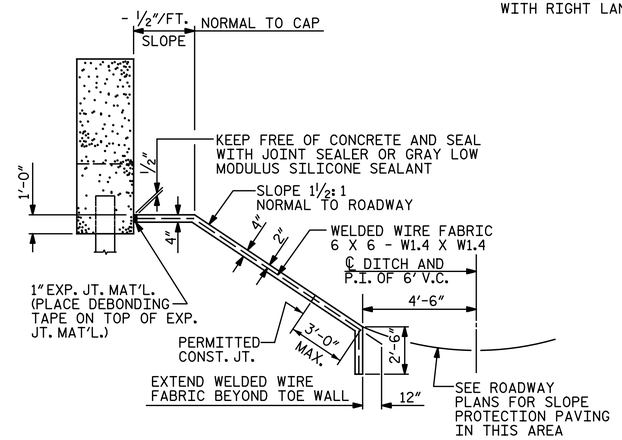
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-30
1			3			TOTAL SHEETS
2			4			34



PLAN



SECTION ALONG ℄ SURVEY WHEN DITCH IS NOT PROVIDED



SECTION ALONG ℄ SURVEY WHEN FILL CATCHES IN DITCH

GENERAL NOTES:

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 WIDTHS AND ELEVATIONS, SEE GENERAL DRAWING AND "SLOPE PROTECTION DETAILS" SHEET 2 OF 2.

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.

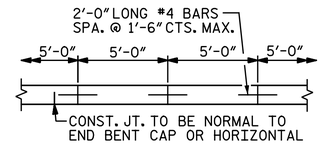
SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING.

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.

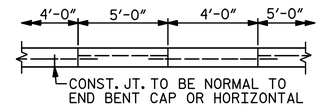
BRIDGE @ STA. 166+72.51 -L- (LEFT LANE)	4 INCH SLOPE PROTECTION	✳ WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	390	705
END BENT 2	430	775

✳ QUANTITY SHOWN IS BASED ON 5' POURS.



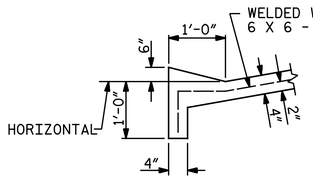
STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL



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

OPTIONAL POURING DETAIL



SECTION A-A

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SLOPE PROTECTION DETAILS

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL

Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

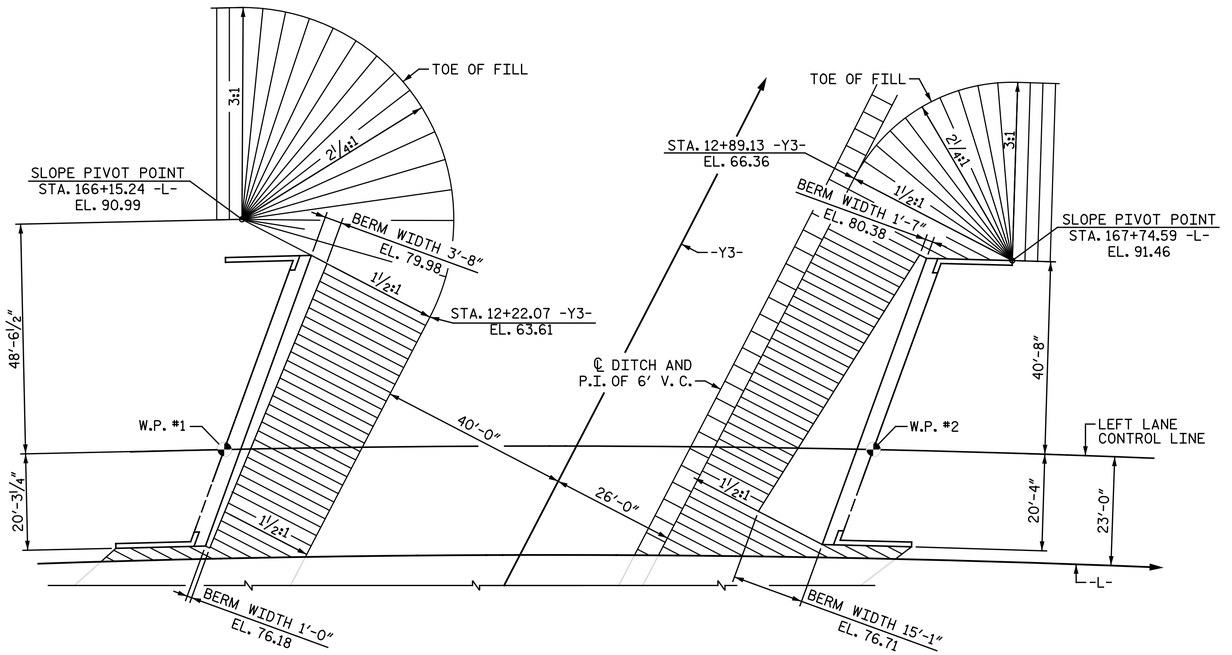
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-31
1			3			TOTAL SHEETS
2			4			34

ASSEMBLED BY : M. D. MAYHEW		DATE :	7-14-17
CHECKED BY : D. A. COLETTI		DATE :	7-18-17
DRAWN BY : ELR 5/92	REV. 10/1/11		MAA/GM
CHECKED BY : GRP 6/92	REV. 12/21/11		MAA/GM
	REV. 1/16		MAA/TMG

STD. NO. SP1

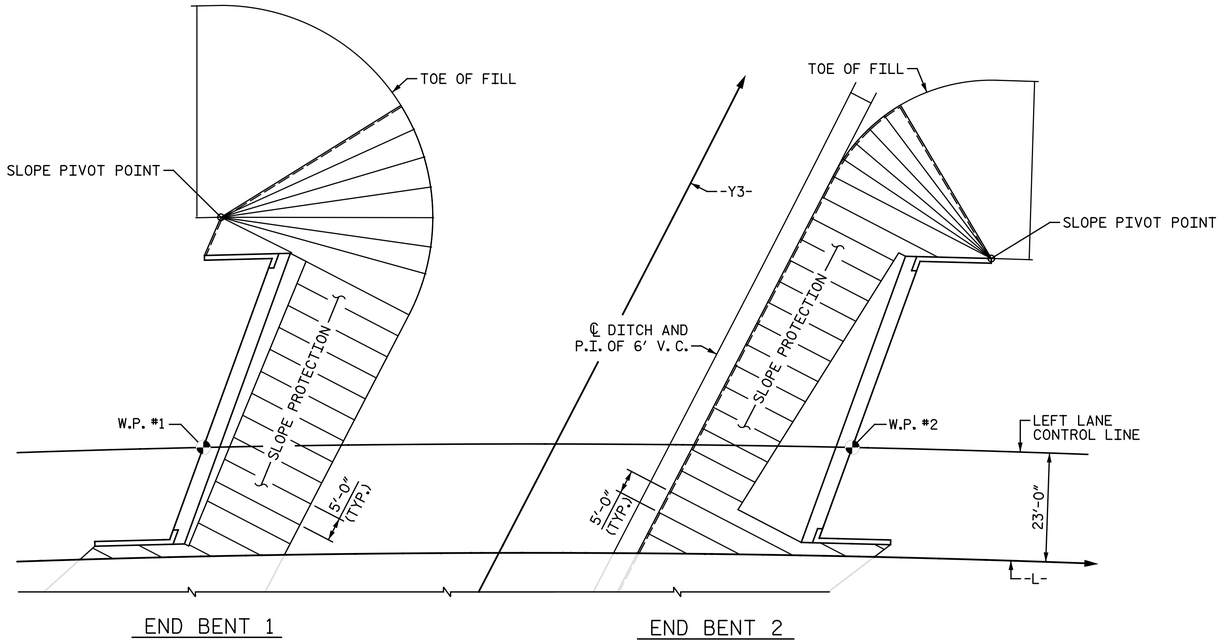
NOTE:

ALL ELEVATIONS AND BERM WIDTHS ARE GIVEN AT THE TOP OF CONCRETE SLOPE PROTECTION.



END BENT 1 END BENT 2

PLAN - GRADING



END BENT 1 END BENT 2

PLAN - CONCRETE PLACEMENT

(1½:1 SLOPE)

ASSEMBLED BY : M. D.MAYHEW	DATE : 7-14-17		
CHECKED BY : D. A. COLETTI	DATE : 7-18-17		
DRAWN BY : WJH 10/88	REV. 5/1/06	TLA/GM	
CHECKED BY : FCJ 10/88	REV. 10/1/11	MAA/GM	
	REV. 1/16	MAA/TMG	

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SLOPE PROTECTION DETAILS

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti
8/14/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL

Michael Baker Engineering
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Cary, North Carolina 27518
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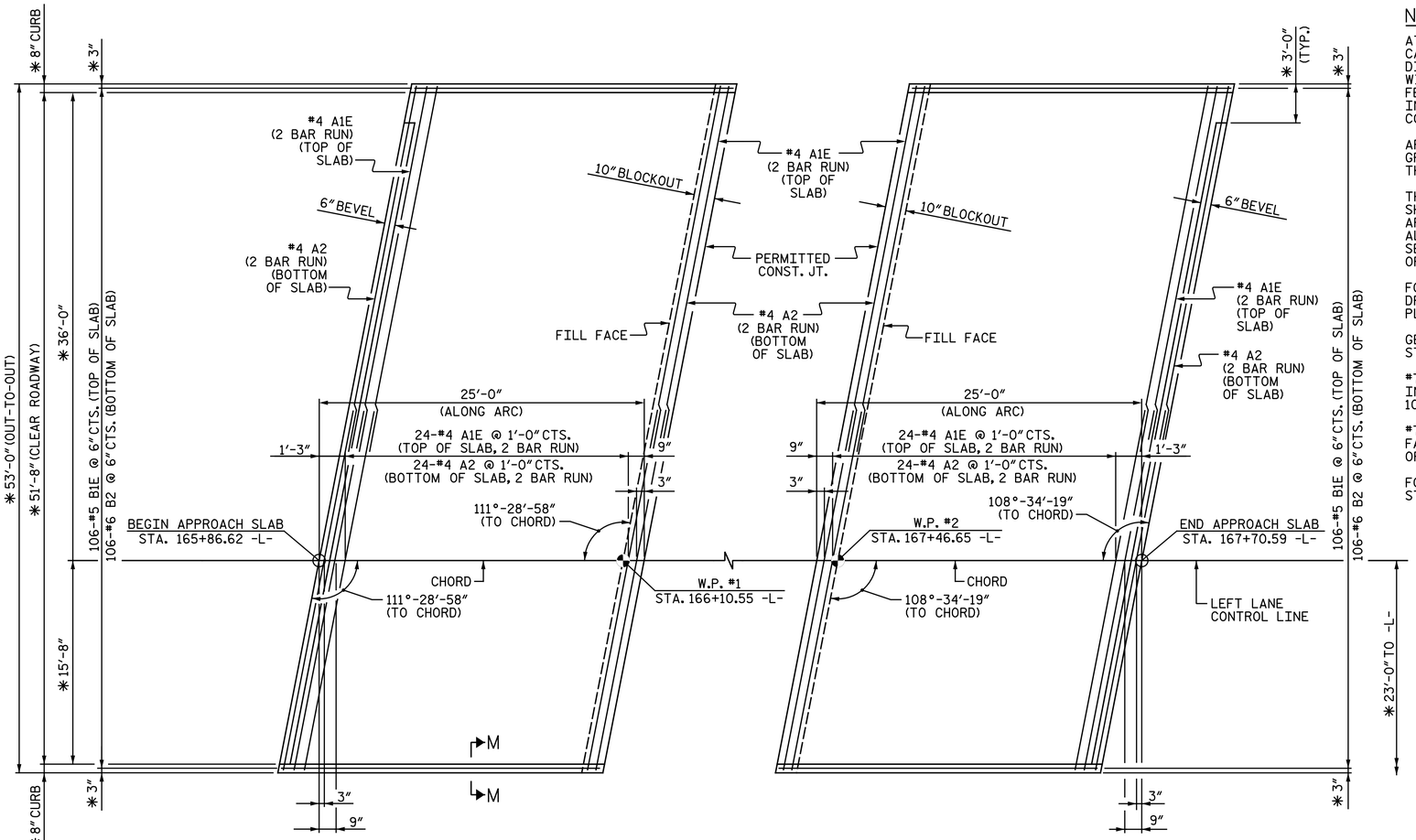
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-32
1			3			TOTAL SHEETS
2			4			34

STD. NO. SP2



PLAN @ INTEGRAL END BENT 1

PLAN @ INTEGRAL END BENT 2

NOTES:

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

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

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

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4″Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

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

#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4″Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

BILL OF MATERIAL
APPROACH SLAB AT END BENT 1

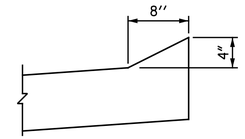
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	52	#4	STR.	29′ - 4″	1,019
A2	52	#4	STR.	29′ - 3″	1,016
B1E	106	#5	STR.	24′ - 2″	2,672
B2	106	#6	STR.	24′ - 8″	3,927
REINFORCING STEEL				LBS.	4,943
EPOXY COATED REINFORCING STEEL				LBS.	3,691
CLASS AA CONCRETE				C.Y.	57.2

BILL OF MATERIAL
APPROACH SLAB AT END BENT 2

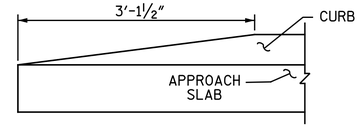
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	52	#4	STR.	29′ - 4″	1,019
A2	52	#4	STR.	29′ - 3″	1,016
B1E	106	#5	STR.	24′ - 2″	2,672
B2	106	#6	STR.	24′ - 8″	3,927
REINFORCING STEEL				LBS.	4,943
EPOXY COATED REINFORCING STEEL				LBS.	3,691
CLASS AA CONCRETE				C.Y.	57.2

ALL BAR DIMENSIONS ARE OUT TO OUT.

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2′-0″	1′-9″

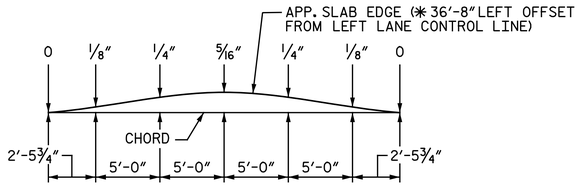


SECTION M-M

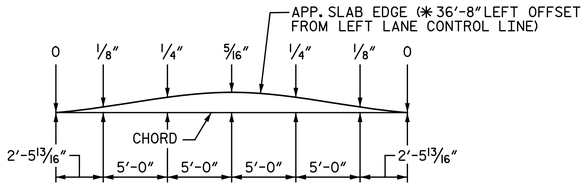


END OF CURB WITHOUT SHOULDER BERM GUTTER

✱ RADIAL DIMENSIONS
† NORMAL TO END BENT



LEFT EDGE



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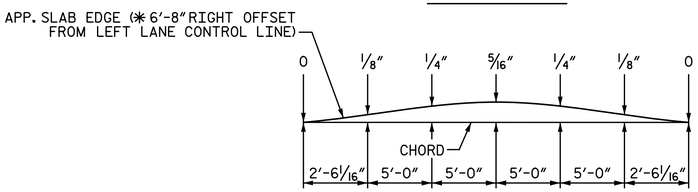
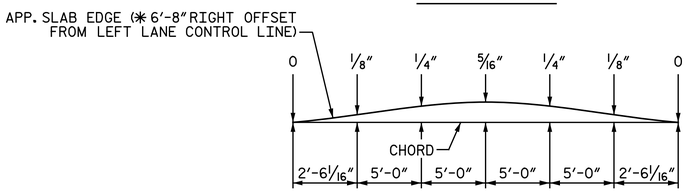


RIGHT EDGE

APPROACH SLAB @ END BENT 1



RIGHT EDGE

APPROACH SLAB @ END BENT 2

ARC OFFSETS

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 166+72.51 -L-

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

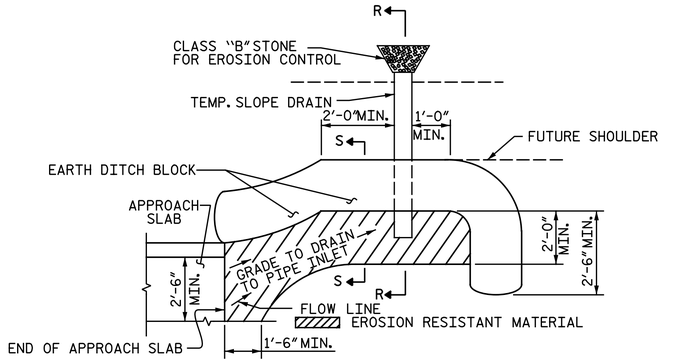
BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT

LEFT LANE

DRAWN BY : N. B. SPEAKS DATE : 7-14-17
CHECKED BY : D. A. COLETTI DATE : 7-14-17

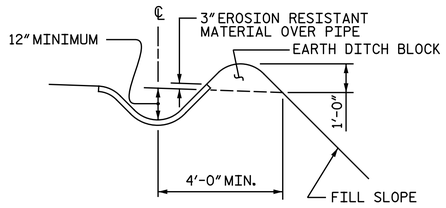
Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-33
1			3			TOTAL SHEETS
2			4			34

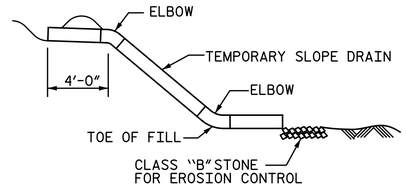


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

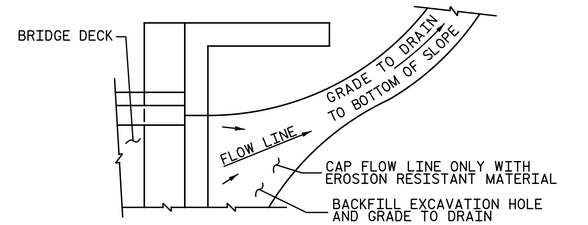
PLAN VIEW



SECTION S-S



SECTION R-R

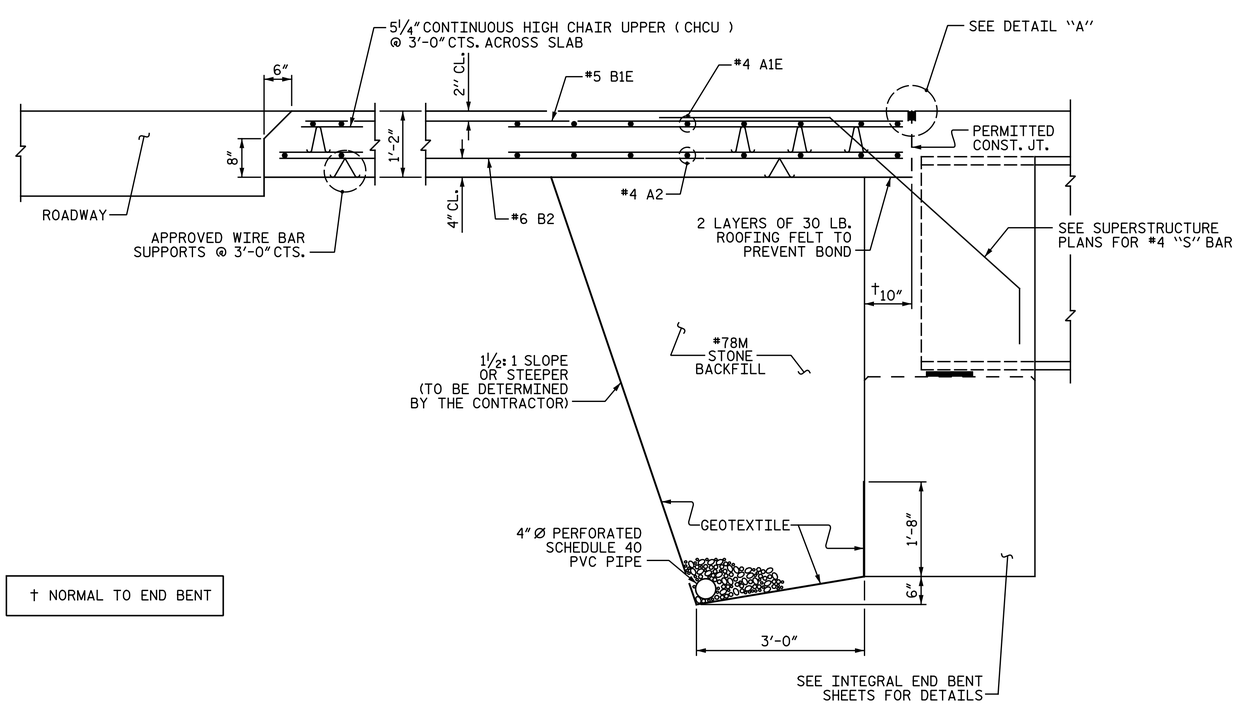


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

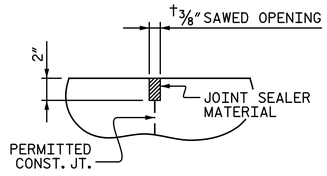
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



† NORMAL TO END BENT

SECTION THRU SLAB



DETAIL "A"

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Dominic A. Coletti

8/14/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

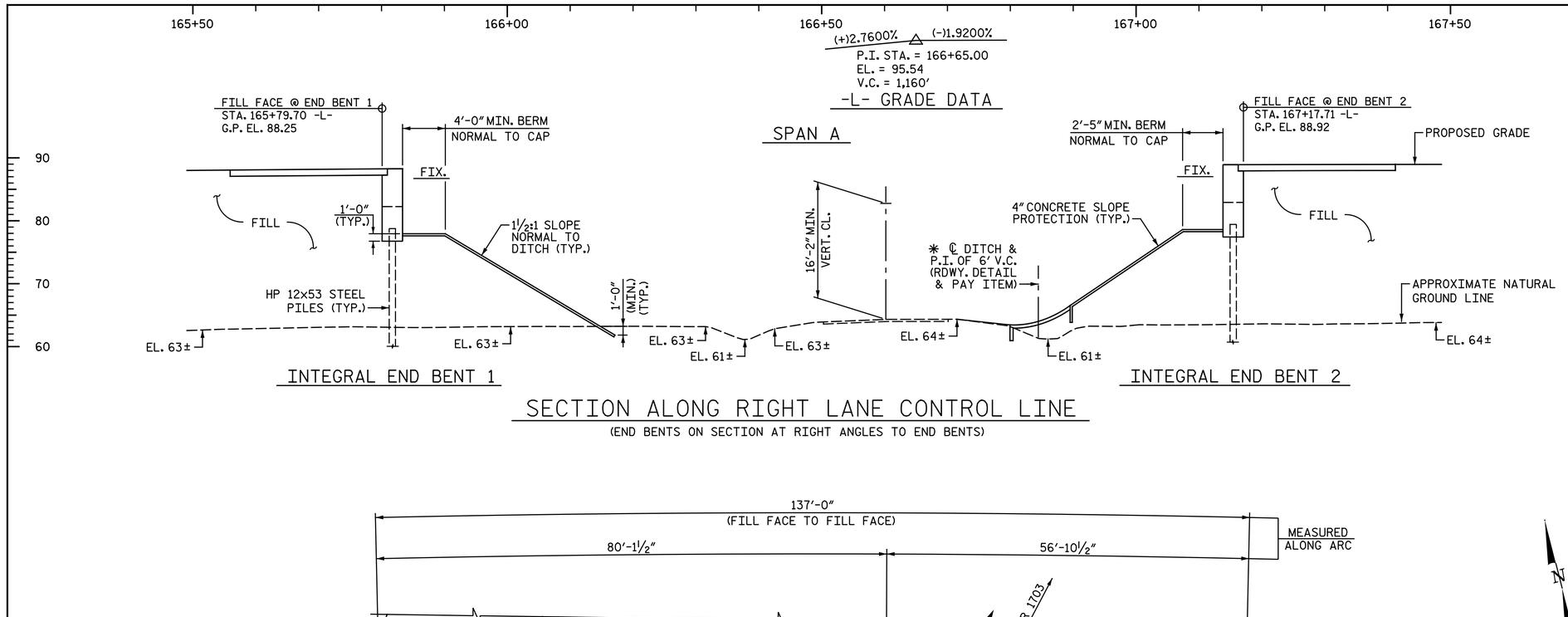
BRIDGE APPROACH SLAB DETAILS

LEFT LANE

DRAWN BY : N. B. SPEAKS DATE : 3-6-17
CHECKED BY : D. A. COLETTI DATE : 6-8-17

Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-34
1			3			TOTAL SHEETS
2			4			34



SECTION ALONG RIGHT LANE CONTROL LINE

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

PLAN

(PILES NOT SHOWN IN PLAN VIEW FOR CLARITY)

-L- HORIZONTAL CURVE DATA

P. I. STA. 158+61.41
△ = 38°-24'-10.2" (RT)
D = 1°-49'-08.1"
L = 2,111.31'
T = 1,097.03'
R = 3,150.00'

POINT	STATION ON -Y3-	OFFSET	ELEVATION ON -Y3-
A	11+20.71	0.00	64.24

△ - DENOTES POINT OF MINIMUM VERTICAL CLEARANCE OVER EXISTING ROADWAY WITH 1½" OVERLAY.

* - FUTURE CONSTRUCTION

DRAWN BY : C. E. MAYHEW DATE : 4-24-17
CHECKED BY : D. A. COLETTI DATE : 6-8-17

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 166+72.51 -L-
11+86.25 -Y3-
SHEET 1 OF 4 BRIDGE NO. 211

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL
Michael Baker Engineering
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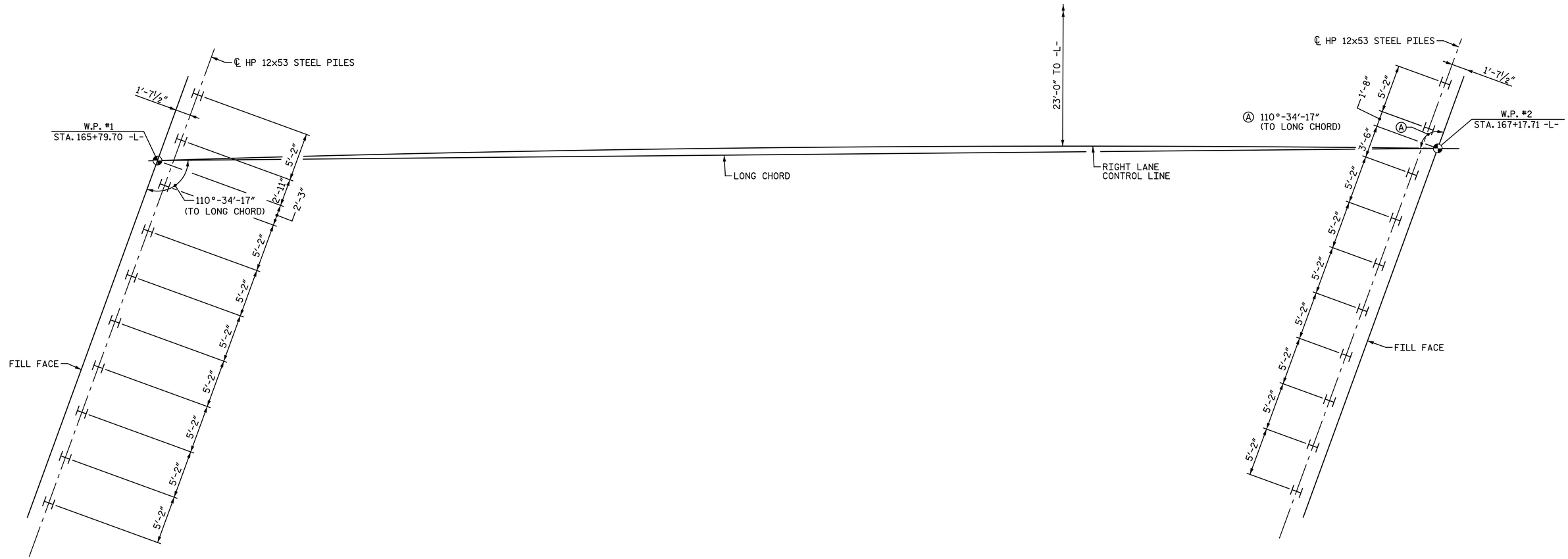
Cary, North Carolina 27518
NC License No. : F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1004 BETWEEN SR 1729 AND SR 1732 RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-1
1			3			TOTAL SHEETS
2			4			31



INTEGRAL
END BENT 1

INTEGRAL
END BENT 2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINES.

ALL HP 12x53 STEEL PILES ARE VERTICAL.

NOTES:

FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 AND END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 125 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 210 TONS PER PILE.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENT NO. 1 OR END BENT NO. 2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS AND FOR PILE DRIVING CRITERIA, SEE PILE DRIVING CRITERIA PROVISION.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 60-65 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO.1 AND 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

OBSERVE A 2 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO.1 AND END BENT NO. 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SPECIAL PROVISIONS.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-
11+86.25 -Y3-

SHEET 2 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti

8/14/2017

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NC License No.: F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

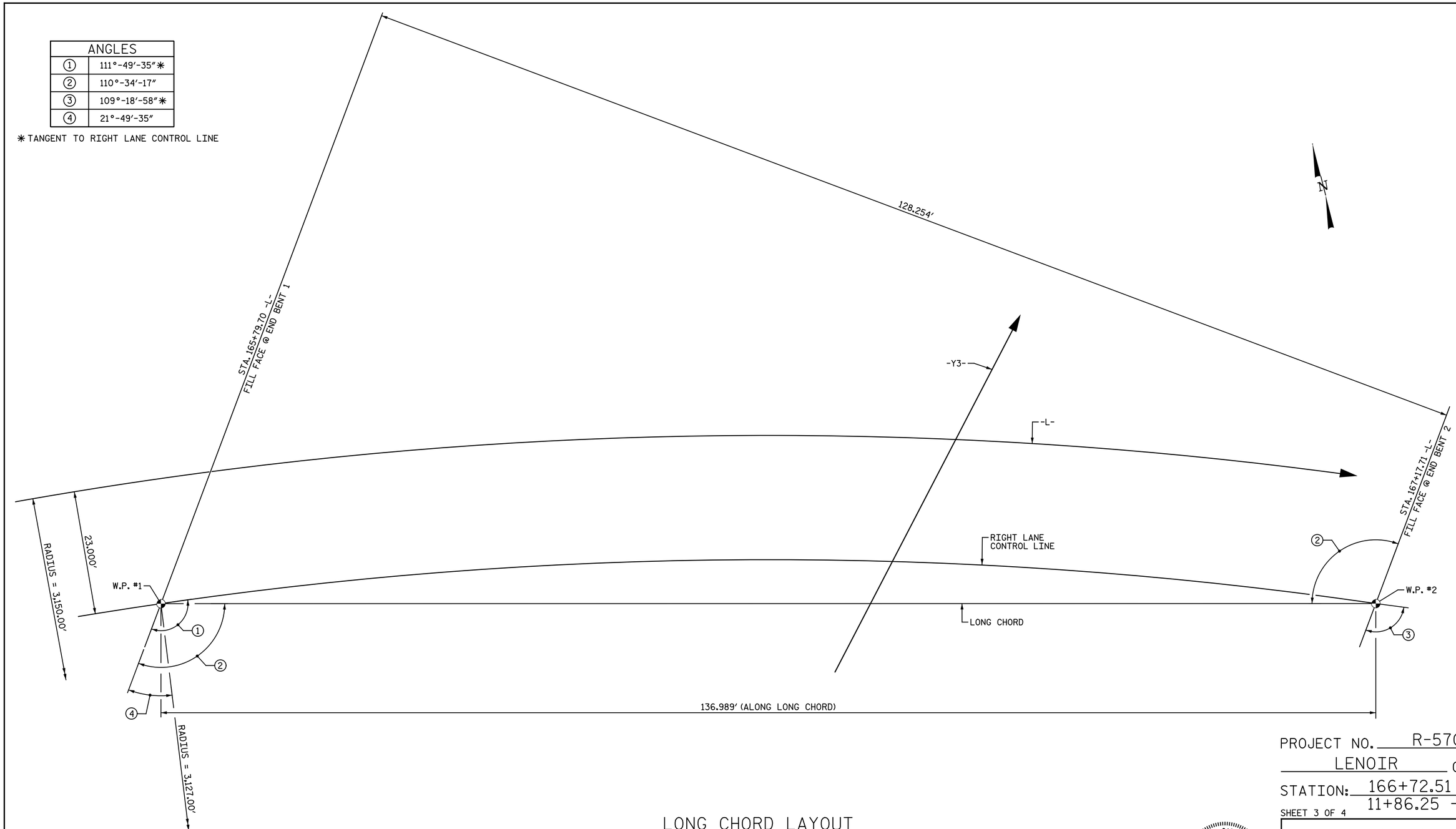
FOR BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1004 BETWEEN SR 1729 AND SR 1732 RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-2
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : M. D. MAYHEW DATE : 5-16-17
CHECKED BY : D. A. COLETTI DATE : 6-8-17

ANGLES	
①	111°-49′-35″✳
②	110°-34′-17″
③	109°-18′-58″✳
④	21°-49′-35″

✳TANGENT TO RIGHT LANE CONTROL LINE



LONG CHORD LAYOUT

(END BENTS ARE PARALLEL)

-L- HORIZONTAL CURVE DATA

P. I. STA. 158+61.41
△ = 38°-24′-10.2″(RT)
D = 1°-49′-08.1″
L = 2,111.31′
T = 1,097.03′
R = 3,150.00′

DRAWN BY : C. E. MAYHEW DATE : 4-24-17
CHECKED BY : D. A. COLETTI DATE : 6-8-17

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-
11+86.25 -Y3-

SHEET 3 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Digitally signed by Domenic A. Coletti

8/14/2017

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Michael Baker INTERNATIONAL

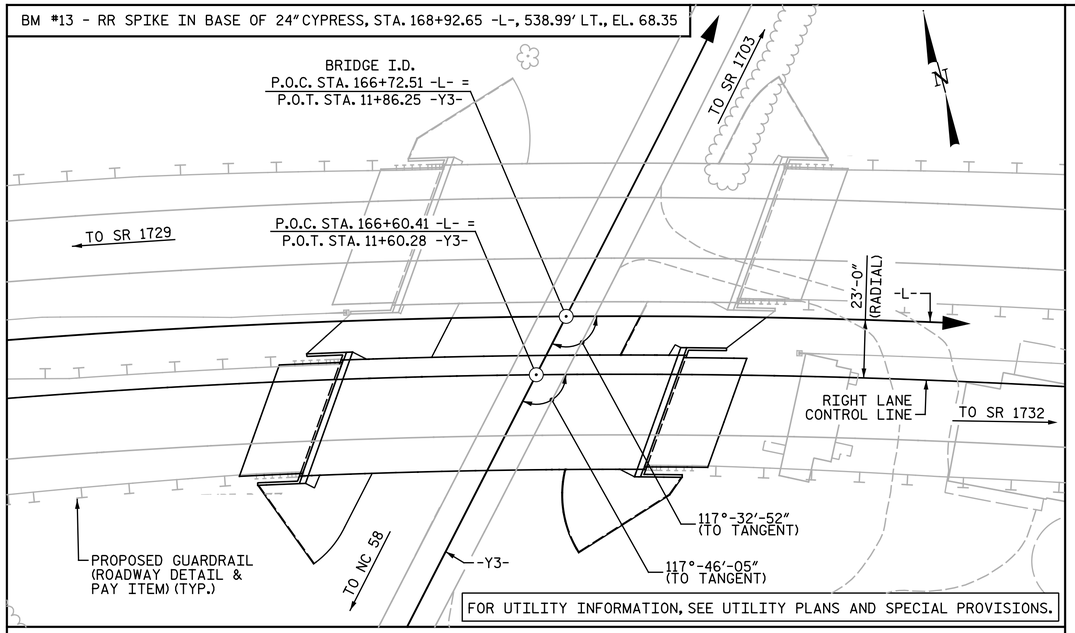
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1004 BETWEEN SR 1729 AND SR 1732
RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-3
1			3			TOTAL SHEETS
2			4			31



LOCATION SKETCH

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.

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.

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 4 OF ARTICLE 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

TOTAL BILL OF MATERIAL

LOCATION	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	APPROX. 240,600 LBS. STRUCTURAL STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	HP 12x53 STEEL PILES		PILE REDRIVES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS
	EA.	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LUMP SUM	EA.	NO.	LIN. FT.	EA.	LIN. FT.	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE		6,204	7,159				LUMP SUM					270.63		LUMP SUM
END BENT 1				52.70		9,269		10	10	850	5		470	
END BENT 2				52.10		9,226		10	10	850	5		400	
TOTAL	1	6,204	7,159	104.80	LUMP SUM	18,495	LUMP SUM	20	20	1,700	10	270.63	870	LUMP SUM

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-
11+86.25 -Y3-

SHEET 4 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti

8/14/2017

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Michael Baker INTERNATIONAL

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NC License No.: F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1004 BETWEEN SR 1729 AND SR 1732 RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-4
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : C.E.M. / M.D.M. DATE : 4-24-17
CHECKED BY : D. A. COLETTI DATE : 6-8-17

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR STEEL GIRDERS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W × RF	STRENGTH I LIMIT STATE											SERVICE II LIMIT STATE						COMMENT NUMBER
							LIVE-LOAD FACTORS $\gamma_{(LL)}$	MOMENT					SHEAR					LIVE-LOAD FACTORS $\gamma_{(LL)}$	MOMENT					
								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)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	1	1.16	--	1.75	0.83	1.27	A	1	66.81	1.00	1.16	A	3	26.72	1.30	0.83	1.36	A	1	66.81	1, 2
		HL-93 (OPERATING)	N/A		1.50	--	1.35	0.83	1.64	A	1	66.81	1.00	1.50	A	3	26.72	1.00	0.83	1.76	A	1	66.81	1, 2
		HS-20 (INVENTORY)	36.00	2	1.61	57.89	1.75	0.83	1.90	A	1	66.81	1.00	1.61	A	3	26.72	1.30	0.83	2.04	A	1	66.81	1, 2
		HS-20 (OPERATING)	36.00		2.08	75.04	1.35	0.83	2.47	A	1	66.81	1.00	2.08	A	3	26.72	1.00	0.83	2.65	A	1	66.81	1, 2
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		5.01	67.64	1.40	0.83	5.84	A	1	66.81	1.00	5.02	A	3	26.72	1.30	0.83	5.01	A	1	66.81	1, 2
		SNGARBS2	20.000		3.49	69.80	1.40	0.83	4.15	A	1	66.81	1.00	3.49	A	3	26.72	1.30	0.83	3.56	A	1	66.81	1, 2
		SNAGRIS2	22.000		3.22	70.84	1.40	0.83	3.85	A	1	66.81	1.00	3.22	A	3	26.72	1.30	0.83	3.30	A	1	66.81	1, 2
		SNCOTTS3	27.250		2.49	67.85	1.40	0.83	2.89	A	1	66.81	1.00	2.50	A	3	26.72	1.30	0.83	2.49	A	1	66.81	1, 2
		SNAGGRS4	34.925		2.01	70.20	1.40	0.83	2.35	A	1	66.81	1.00	2.02	A	3	26.72	1.30	0.83	2.01	A	1	66.81	1, 2
		SNS5A	35.550		1.97	70.03	1.40	0.83	2.30	A	1	66.81	1.00	2.02	A	3	26.72	1.30	0.83	1.97	A	1	66.81	1, 2
		SNS6A	39.950		1.78	71.11	1.40	0.83	2.08	A	1	66.81	1.00	1.82	A	3	26.72	1.30	0.83	1.78	A	1	66.81	1, 2
		SNS7B	42.000		1.69	70.98	1.40	0.83	1.98	A	1	66.81	1.00	1.77	A	3	26.72	1.30	0.83	1.69	A	1	66.81	1, 2
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.16	71.28	1.40	0.83	2.52	A	1	66.81	1.00	2.19	A	3	26.72	1.30	0.83	2.16	A	1	66.81	1, 2
		TNT4A	33.075		2.15	71.11	1.40	0.83	2.53	A	1	66.81	1.00	2.15	A	3	26.72	1.30	0.83	2.17	A	1	66.81	1, 2
		TNT6A	41.600		1.75	72.80	1.40	0.83	2.04	A	1	66.81	1.00	1.84	A	3	26.72	1.30	0.83	1.75	A	1	66.81	1, 2
		TNT7A	42.000		1.74	73.08	1.40	0.83	2.03	A	1	66.81	1.00	1.81	A	3	26.72	1.30	0.83	1.74	A	1	66.81	1, 2
		TNT7B	42.000		1.74	73.08	1.40	0.83	2.07	A	1	66.81	1.00	1.74	A	3	26.72	1.30	0.83	1.77	A	1	66.81	1, 2
		TNAGRIT4	43.000		1.69	72.67	1.40	0.83	1.99	A	1	66.81	1.00	1.69	A	3	26.72	1.30	0.83	1.71	A	1	66.81	1, 2
		TNAGT5A	45.000		1.62	72.90	1.40	0.83	1.89	A	1	66.81	1.00	1.66	A	3	26.72	1.30	0.83	1.62	A	1	66.81	1, 2
		TNAGT5B	45.000	3	1.61	72.45	1.40	0.83	1.88	A	1	66.81	1.00	1.62	A	3	26.72	1.30	0.83	1.61	A	1	66.81	1, 2
FATIGUE		HL-93 (INVENTORY)	$\gamma_{LL} = 0.75$																					

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 II LIMIT STATES.

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

COMMENTS:

1. DISTANCE FROM LEFT END OF SPAN IS GIVEN WITH RESPECT TO CENTERLINE OF BEARING AND IS MEASURED ALONG THE CONTROLLING GIRDER.
2. FATIGUE RATING IS NOT REQUIRED OR REPORTED SINCE GIRDER DOES NOT INCLUDE FATIGUE-PRONE DETAILS.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

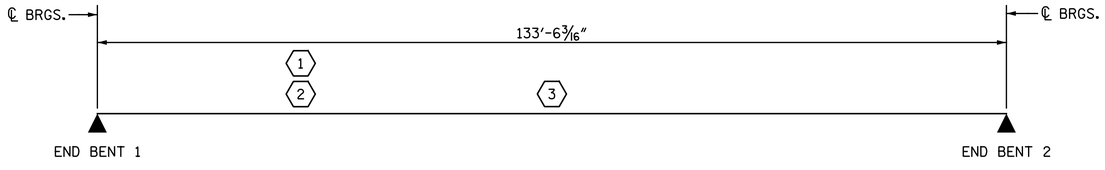
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

GIRDER LOCATION IS PROVIDED USING GIRDER NUMBER, WHERE GIRDER 1 IS THE LEFT EXTERIOR GIRDER LOOKING AHEAD STATION. SEE "GIRDER LAYOUT" SHEET FOR ALL GIRDER LOCATIONS.



LRFR SUMMARY

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Digitally signed by Domenic A. Coletti

8/14/2017

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Michael Baker INTERNATIONAL

Michael Baker Engineering
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NC License No. : F-1084

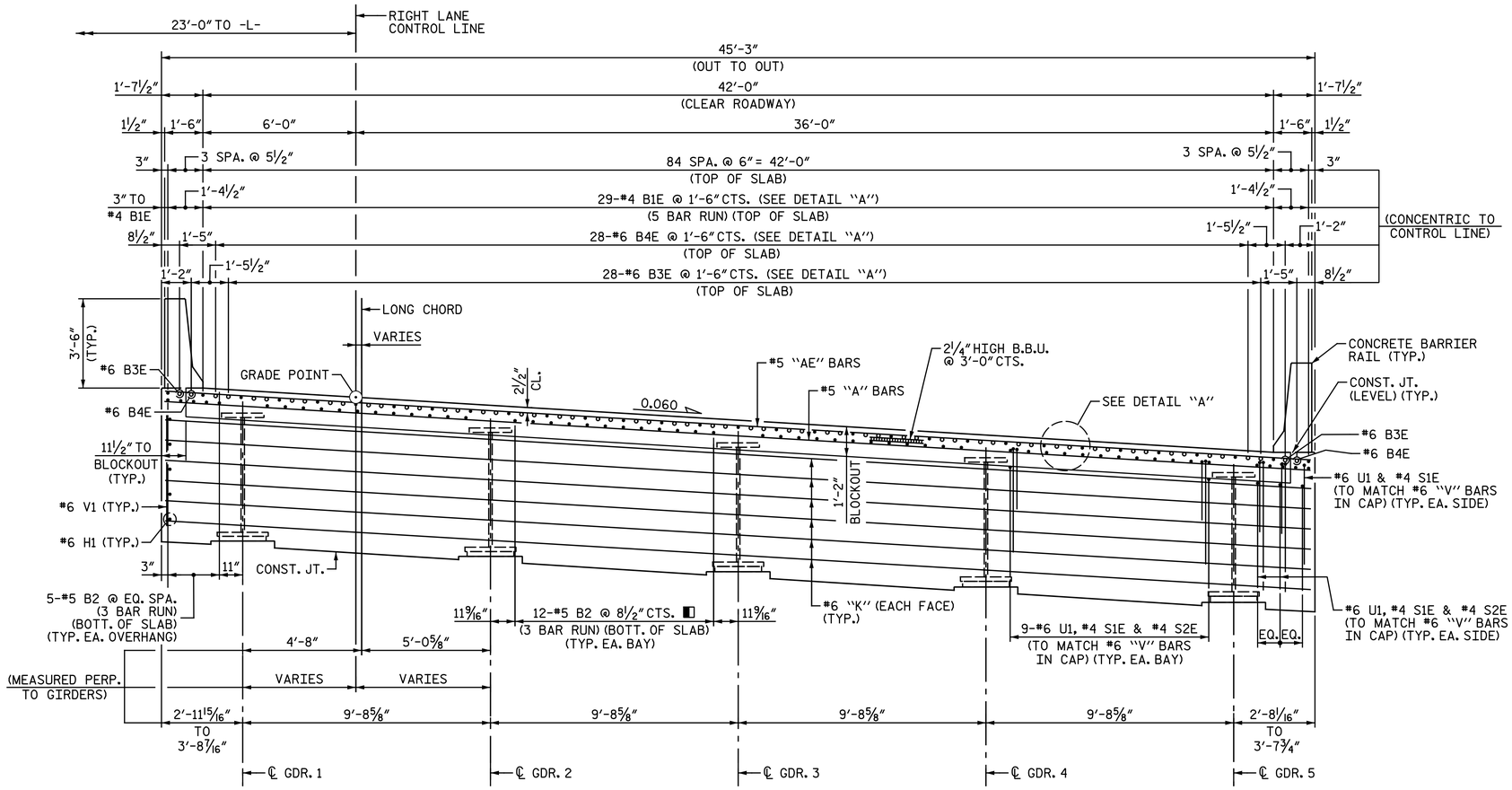
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

LRFR SUMMARY FOR STEEL GIRDERS
(NON-INTERSTATE TRAFFIC)
RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-5
1			3			TOTAL SHEETS
2			4			31

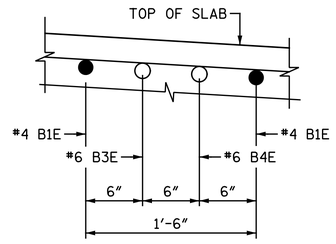
ASSEMBLED BY : C. E. MAYHEW	DATE : 3-10-17
CHECKED BY : D. A. COLETTI	DATE : 6-8-17
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM

STD. NO. LRFR3



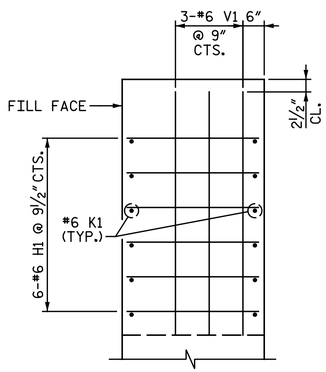
TYPICAL SECTION AT INTEGRAL END BENT

(ALL HORIZONTAL DIMENSIONS ARE RADIAL U.N.O.)
(END BENT 1 SHOWN, END BENT 2 SIMILAR)
(#5 ″GE″ BARS ALONG SKEW NOT SHOWN FOR CLARITY)
(GIRDERS ARE PARALLEL TO LONG CHORD)



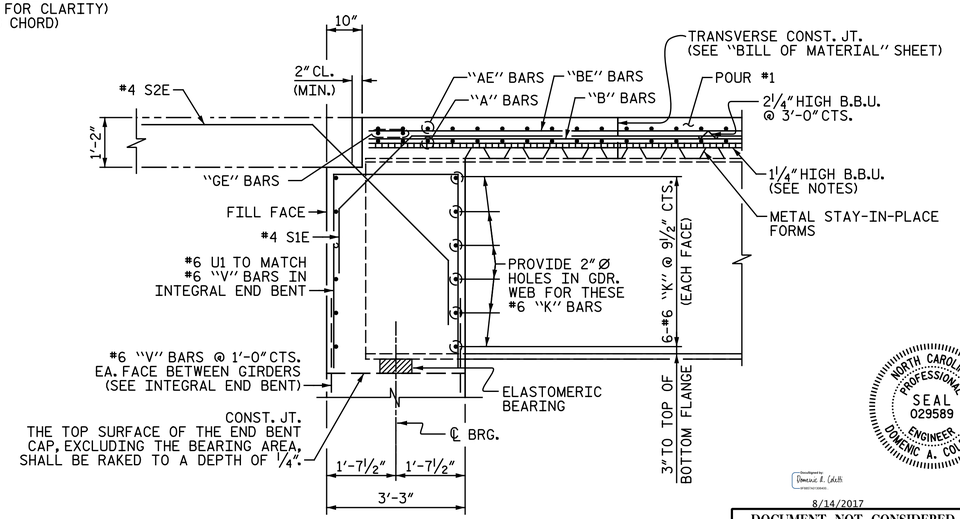
DETAIL ″A″

◧ = PARALLEL TO GIRDERS



END OF DIAPHRAGM DETAIL

(END BENT 1 SHOWN, END BENT 2 SIMILAR)



END OF GIRDER DETAIL AT INTEGRAL END BENT

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 166+72.51 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

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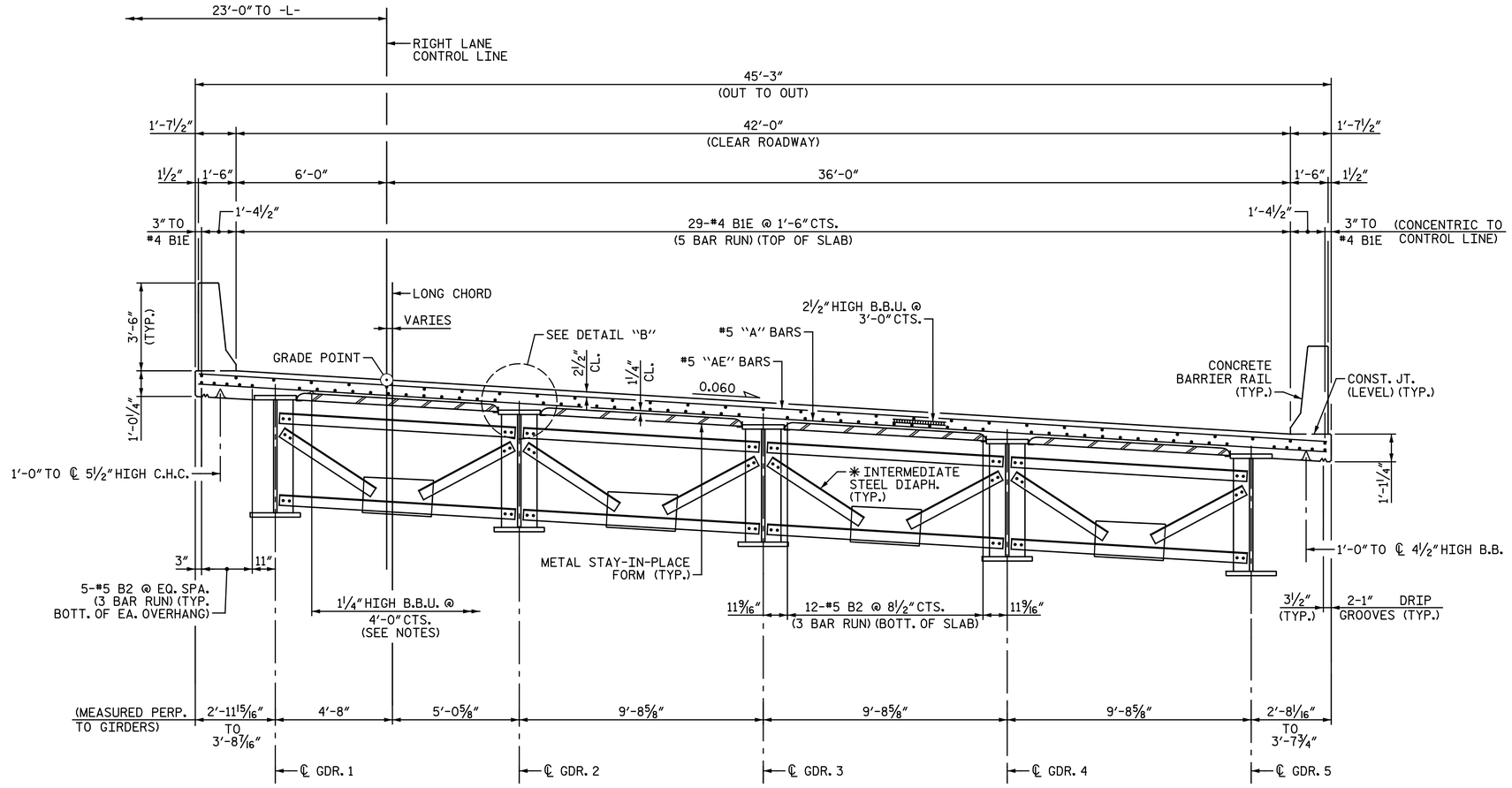
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : M. D. MAYHEW DATE : 5-16-17
CHECKED BY : D. A. COLETTI DATE : 6-8-17



TYPICAL SECTION AT INTERMEDIATE DIAPHRAGMS

(ALL HORIZONTAL DIMENSIONS ARE RADIAL U.N.O.)
(GIRDERS ARE PARALLEL TO LONG CHORD)

◧ = PARALLEL TO GIRDERS

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 2 " ABOVE THE TOP OF THE REMOVABLE FORM.

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

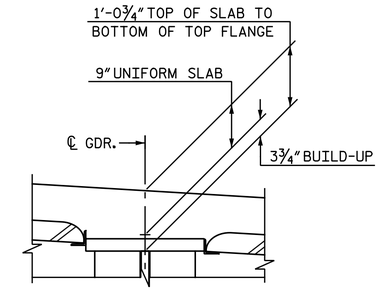
METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO BEAM OR GIRDER FLANGES IN THE ZONES REQUIRING CHARPY V-NOTCH TEST. SEE STRUCTURAL STEEL DETAIL SHEETS.

PREVIOUSLY CAST CONCRETE IN A SPAN SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE SPAN.

THE CONTRACTOR MAY, WHEN NECESSARY, PROPOSE A SCHEME FOR AVOIDING INTERFERENCE BETWEEN METAL STAY-IN-PLACE FORM SUPPORTS OR FORMS AND BEAM/GIRDER STIFFENERS OR CONNECTOR PLATES. THE PROPOSAL SHALL BE INDICATED, AS APPROPRIATE, ON EITHER THE STEEL WORKING DRAWINGS OR THE METAL STAY-IN-PLACE FORM WORKING DRAWINGS.

FOR ADDITIONAL INFORMATION ON DECK SLAB REINFORCING, SEE "PLAN OF SPAN" SHEETS.

✳ FOR DETAILS OF INTERMEDIATE DIAPHRAGMS, SEE "STRUCTURAL STEEL DETAILS" SHEET 2 OF 2.



DETAIL "B"

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 166+72.51 -L-
SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti
8/14/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

TYPICAL SECTION

RIGHT LANE

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-7
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : M. D. MAYHEW DATE : 5-16-17
CHECKED BY : D. A. COLETTI DATE : 6-8-17

NOTES:

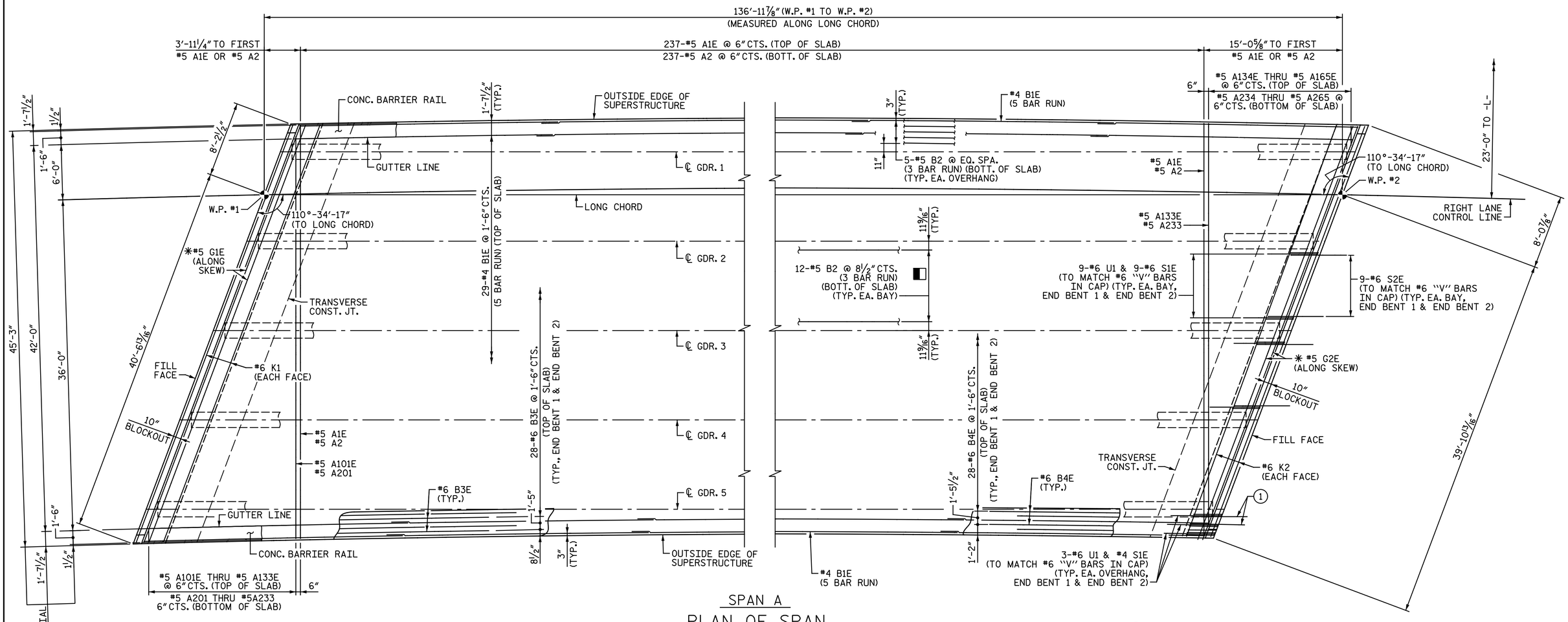
✳ #5 "GE" BARS ARE TO BE PLACED PARALLEL TO SKEW AND BELOW "BE" BARS.

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

FOR DECK POURING SEQUENCE AND LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE "BILL OF MATERIAL" SHEET.

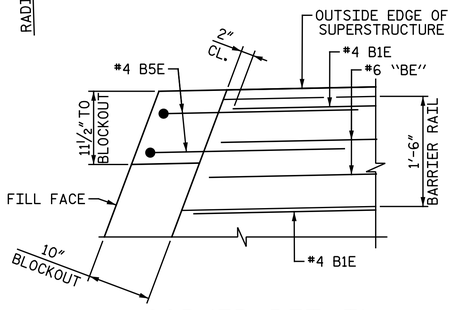
FOR ARC OFFSETS, SEE SHEET 2 OF 2.

"A" AND "AE" BARS ARE TO BE PLACED PERPENDICULAR TO THE LONG CHORD.



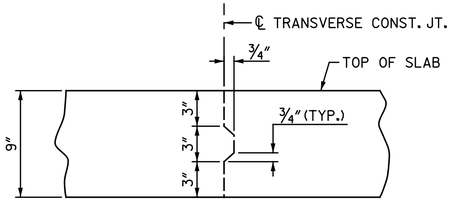
SPAN A

PLAN OF SPAN



CORNER DETAIL

ALL CORNERS SIMILAR.
TRANSVERSE BARS NOT SHOWN FOR CLARITY.



TRANSVERSE CONST. JT. DETAIL

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

① 2-#4 S2E (TO MATCH #6 "V" BARS IN CAP) (TYP. EA. OVERHANG, END BENT 1 & END BENT 2)

PARALLEL TO GIRDERS

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

Dominic A. Coletti
8/14/2017

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DRAWN BY : C. E. MAYHEW DATE : 6-9-17
CHECKED BY : D. A. COLETTI DATE : 6-8-17

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PROJECT NO. R-5703
LENOIR COUNTY
STATION: 166+72.51 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

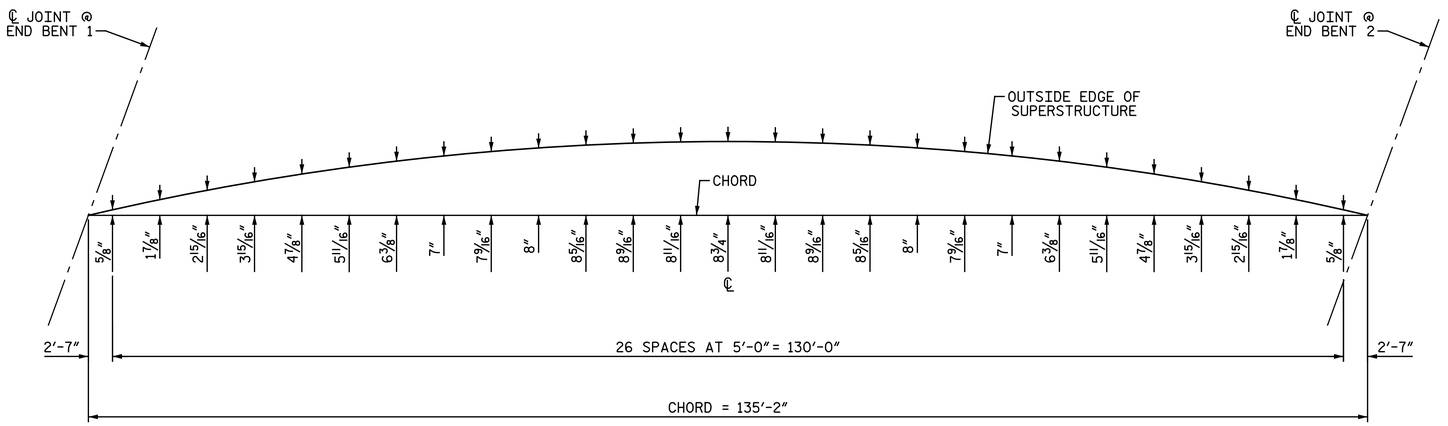
PLAN OF SPAN

RIGHT LANE

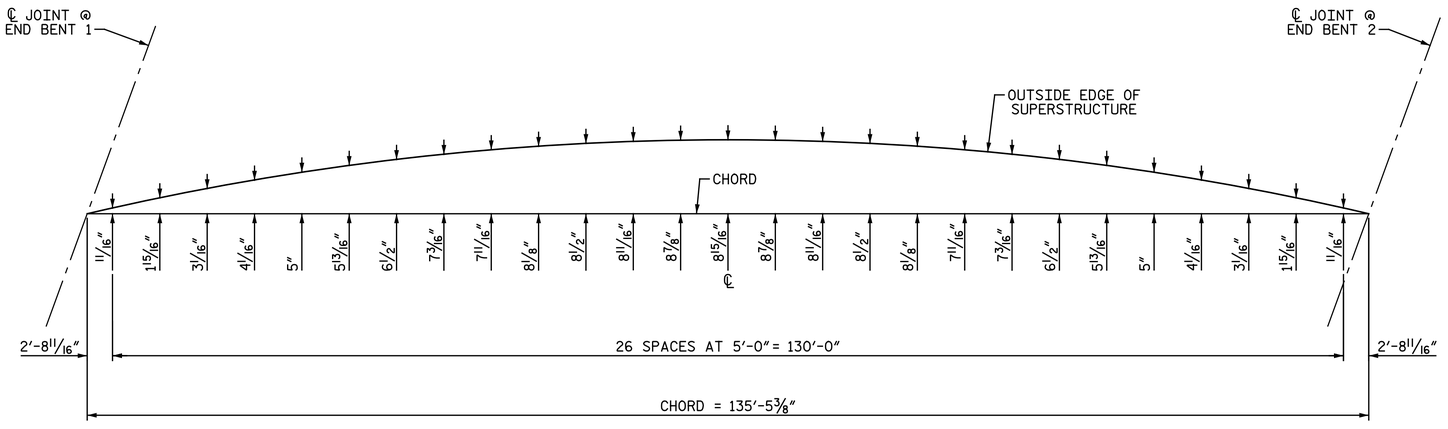
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-8
1			3			TOTAL SHEETS
2			4			31

NOTES:

℄ JOINT INDICATES THE PERMITTED CONSTRUCTION JOINT BETWEEN APPROACH SLAB AND DECK.



LEFT SIDE



RIGHT SIDE

ARC OFFSETS - SPAN A

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

RIGHT LANE

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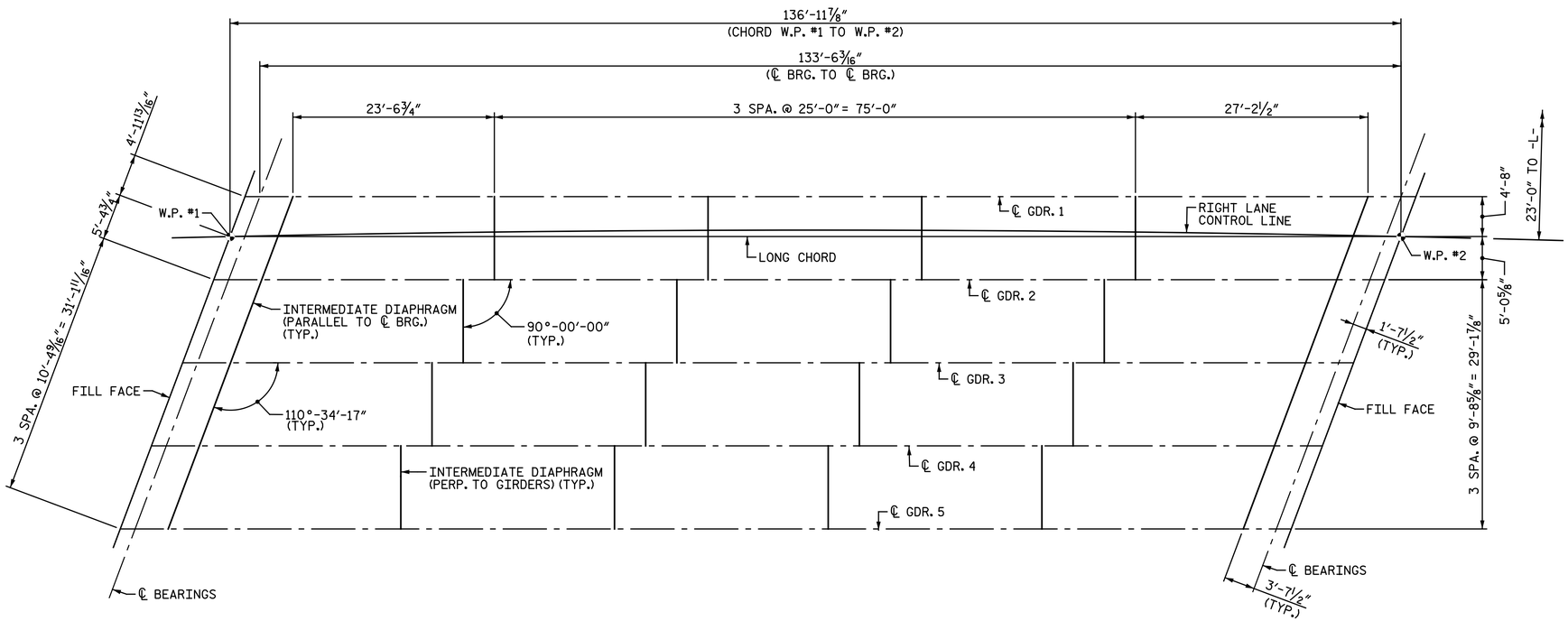
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-9
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : D. A. LAMAY DATE : 6-6-17
CHECKED BY : D. A. COLETTI DATE : 6-8-17



INTEGRAL
(E1)

INTEGRAL
(E1)

SPAN A

GIRDER LAYOUT

(GIRDERS ARE PARALLEL TO LONG CHORD)

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 4 OF ARTICLE 442-8 OF THE STANDARD SPECIFICATIONS UNLESS OTHERWISE NOTED ON THE PLANS.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.

ALL FIELD CONNECTIONS TO BE ⅞″ DIA. HIGH STRENGTH BOLTS UNLESS OTHERWISE NOTED. BOLTS SHALL BE DETAILED WITH THREADS EXCLUDED FROM SHEAR PLANES.

BEARING STIFFENERS ARE TO BE PLACED NORMAL TO THE WEB OF THE GIRDER AND SHALL BE PLUMB IN THE FINAL CONDITION.

PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 15 FEET OF MAXIMUM DEAD LOAD DEFLECTION KEEP 2 FEET MINIMUM BETWEEN WEB AND FLANGE SHOP SPLICES. KEEP 6″ MINIMUM BETWEEN CONNECTOR PLATE OR TRANSVERSE STIFFENER WELDS AND WEB OR FLANGE SHOP SPLICES.

STUDS ON GIRDERS MAY BE SHIFTED UP TO 1″ IF NECESSARY TO CLEAR FLANGE SPLICE WELDS.

TENSION ON THE ASTM A325 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

ENDS OF GIRDERS SHALL BE PLUMB IN THE FINAL CONDITION.

FABRICATORS SHALL DETAIL DIAPHRAGM MEMBERS AND CONNECTIONS FOR FULL DEAD LOAD FIT UP. GIRDERS SHALL BE PLUMB AFTER THE FULL AMOUNT OF DEAD LOAD IS APPLIED.

PROJECT NO. R-5703

LENOIR COUNTY

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NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti

8/14/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

FRAMING PLAN

RIGHT LANE

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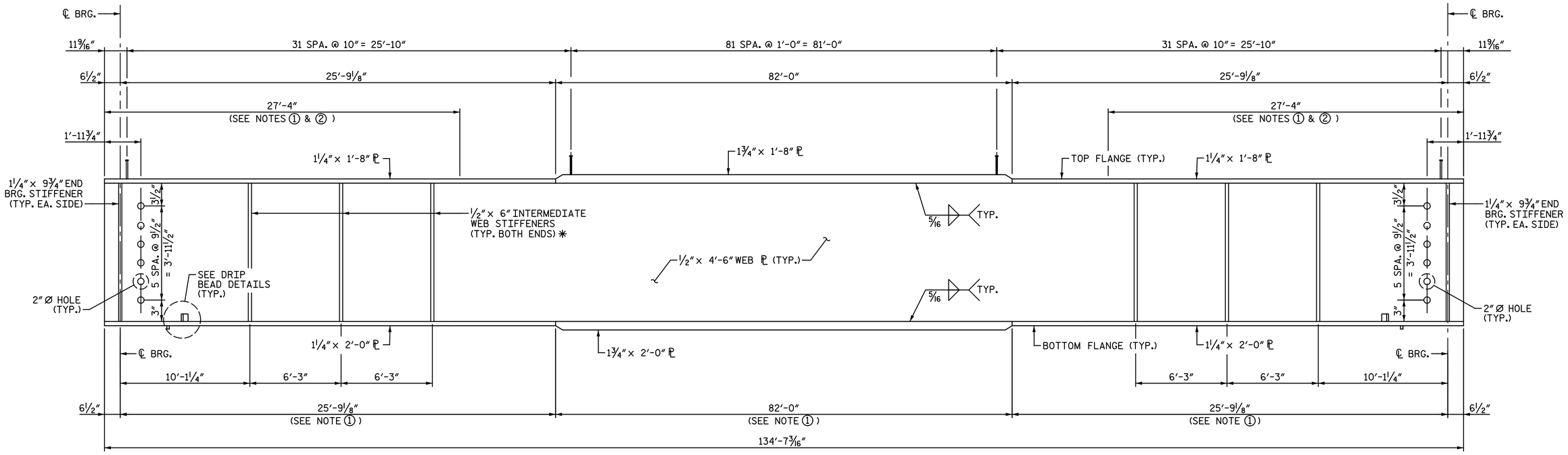
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-10
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : M. D. MAYHEW DATE : 5-17-17
CHECKED BY : D. A. COLETTI DATE : 6-8-17

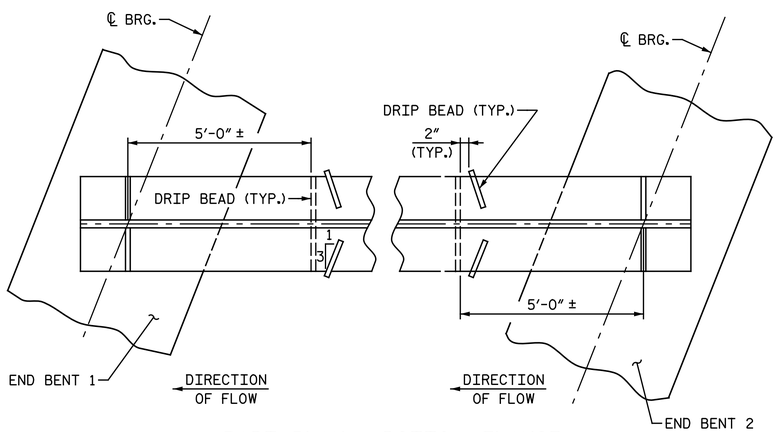


* PLACE INTERMEDIATE WEB STIFFENERS ON ONLY ONE FACE OF THE WEB (INTERIOR FACE FOR EXTERIOR GIRDERS).

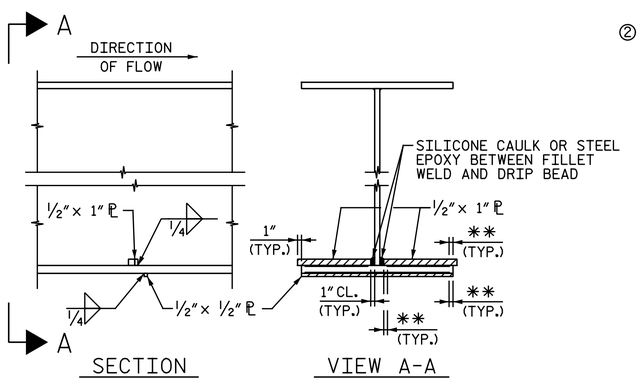
GIRDER ELEVATION

BOTTOM FLANGE DETAILS

† MEASURED PERPENDICULAR TO END BENT FILL FACE



PART PLAN - BOTTOM FLANGE



SECTION VIEW A-A

DRIP BEAD DETAILS

** SEE "WELD TERMINATION DETAILS" ON "STRUCTURAL STEEL DETAILS", SHEET 2 OF 3.

NOTES:

① CHARPY V-NOTCH TESTS ARE REQUIRED FOR ALL TOP OR BOTTOM FLANGE PLATES WHICH FALL WITHIN THESE LIMITS, ALL WEB PLATES, AND ALL SPLICE PLATES. IF A PERMITTED SHOP FLANGE SPLICE IS NOT USED, CHARPY V-NOTCH TESTS WILL BE REQUIRED FOR THE ENTIRE FLANGE PLATE. FOR CHARPY V-NOTCH TESTS, SEE ARTICLE 1072-7 OF THE STANDARD SPECIFICATIONS.

② NO WELDING OF FORMS OR FALSEWORK TO THE TOP FLANGE WILL BE PERMITTED IN THIS REGION.

FOR SHEAR CONNECTOR TRANSVERSE SPACING, SEE "STRUCTURAL STEEL DETAILS", SHEET 2 OF 2.

FOR STRUCTURAL STEEL NOTES, SEE "FRAMING PLAN" SHEET.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

STRUCTURAL STEEL DETAILS

RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-11
1			3			TOTAL SHEETS
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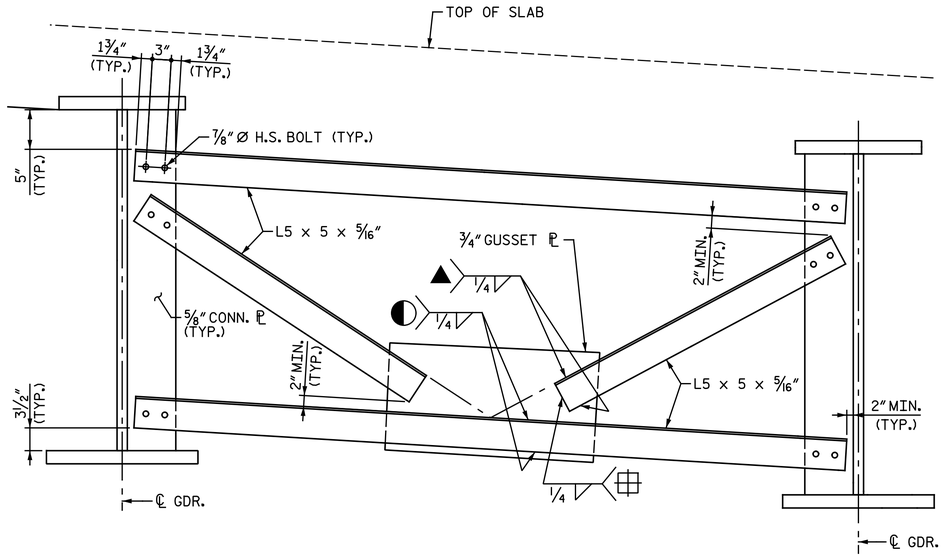
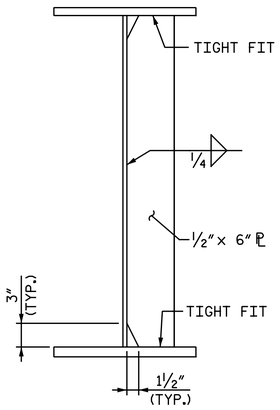


INTERMEDIATE DIAPHRAGM

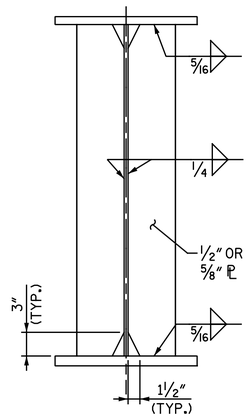
▲ 4" MIN. LENGTH EACH SIDE OF ANGLE, AT EACH END WELDED END OF ANGLE

FULL WIDTH ACROSS END OF ANGLE, AT EACH WELDED END OF ANGLE

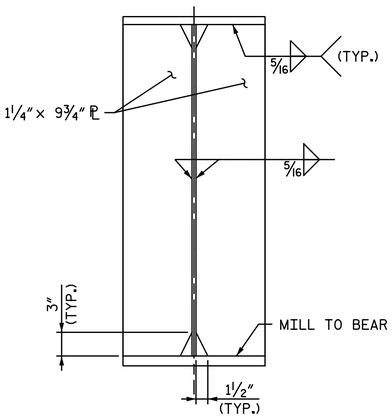
◐ 28" MIN. LENGTH EACH SIDE OF ANGLE, AT BOTTOM CHORD MID-LENGTH GUSSET ℙ CONN. SEE "ANGLE TO GUSSET PLATE CONNECTION WELD TERMINATION DETAILS"



INTERMEDIATE STIFFENER

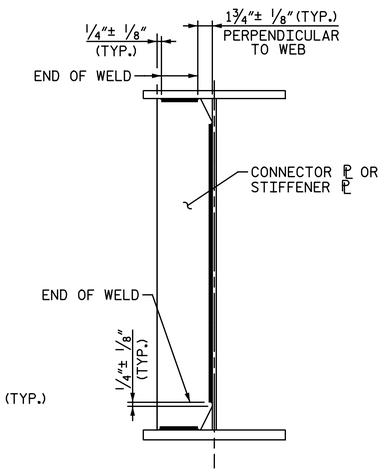


INTERMEDIATE DIAPHRAGM CONNECTOR ℙ

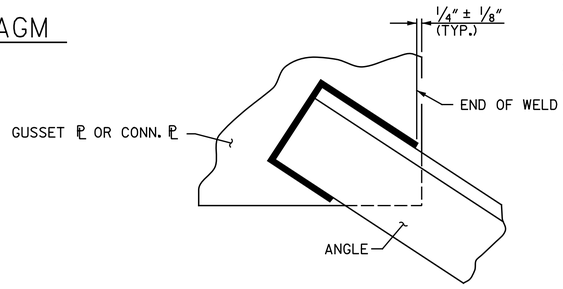


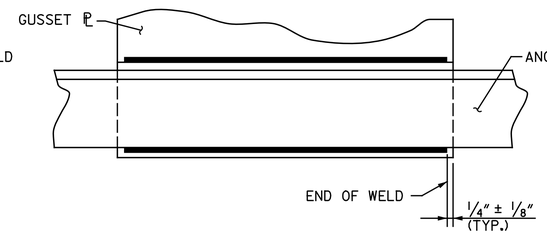
BEARING STIFFENER

BEARING STIFFENER MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE.

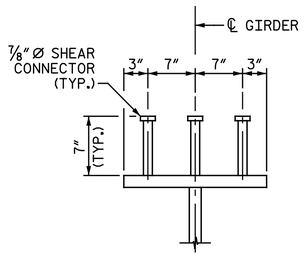


STIFFENER OR CONNECTOR PLATE CONNECTIONS WELD TERMINATION DETAILS

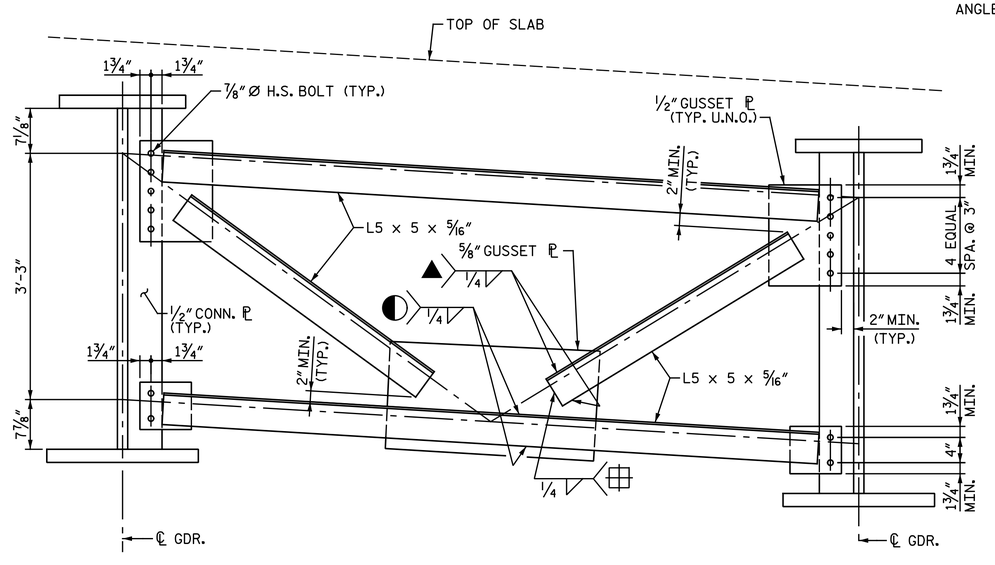




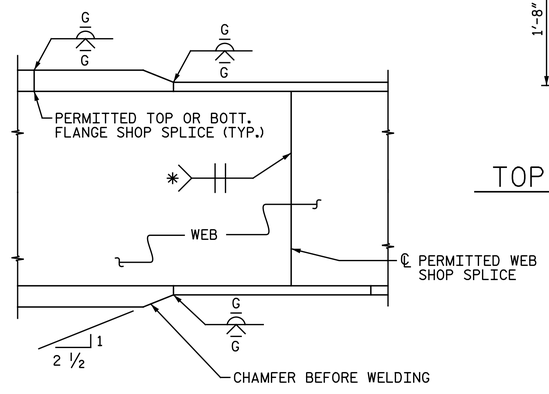
ANGLE TO GUSSET PLATE CONNECTION WELD TERMINATION DETAILS



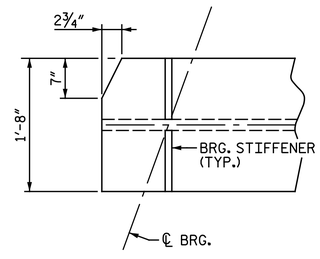
SHEAR CONNECTOR DETAIL



OPTIONAL INTERMEDIATE DIAPHRAGM



ELEVATION



TOP FLANGE CLIP DETAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION

TYPICAL FLANGE AND WEB BUTT JOINT DETAILS

* GRIND SMOOTH AND FLUSH ON OUTER FACE OF EXTERIOR GIRDERS

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

STRUCTURAL STEEL DETAILS

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Digitally signed by Domenic A. Coletti
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NC License No.: F-1084

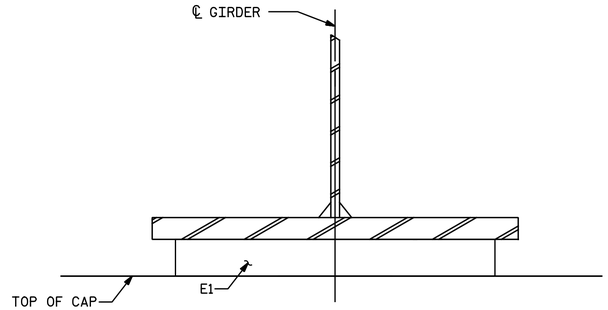
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-12
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : C. E. M. / N. B. S. DATE : 3-10-17
CHECKED BY : D. A. COLETTI DATE : 6-8-17

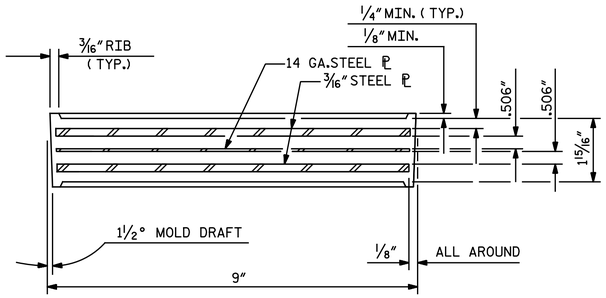
NOTES:

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

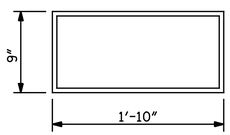
FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.



SECTION
AT INTEGRAL END BENTS



TYPICAL SECTION OF ELASTOMERIC BEARINGS



E1 (10 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE IV

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Signed by: Domenic A. Coletti

8/14/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL

Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

ELASTOMERIC BEARING DETAILS

RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-13
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : N. B. SPEAKS DATE : 4-5-17
CHECKED BY : D. A. COLETTI DATE : 6-8-17

NOTES:

VALUES GIVEN ARE AT TWENTIETH POINTS BETWEEN CENTERLINE OF BEARINGS.

UPWARD DEFLECTIONS ARE INDICATED WITH A "-" SIGN.

DEAD LOAD DEFLECTION AND CAMBER ORDINATES FOR SPAN A

GIRDER 1

20TH POINTS	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.019	0.037	0.054	0.069	0.083	0.094	0.103	0.109	0.113	0.115	0.113	0.109	0.103	0.094	0.083	0.069	0.054	0.037	0.019	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.063	0.125	0.182	0.233	0.277	0.315	0.345	0.367	0.381	0.385	0.381	0.367	0.345	0.315	0.277	0.233	0.182	0.125	0.063	0.000
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	0.009	0.017	0.025	0.032	0.038	0.043	0.048	0.051	0.052	0.053	0.052	0.051	0.048	0.043	0.038	0.032	0.025	0.017	0.009	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.091	0.179	0.261	0.334	0.398	0.452	0.496	0.527	0.547	0.553	0.547	0.527	0.496	0.452	0.398	0.334	0.261	0.179	0.091	0.000
VERTICAL CURVE ORDINATE	0.000	0.017	0.033	0.046	0.058	0.068	0.076	0.083	0.087	0.090	0.091	0.090	0.087	0.083	0.076	0.068	0.058	0.046	0.033	0.017	0.000
SUPERLEVATION ORDINATE	0.000	-0.008	-0.015	-0.022	-0.027	-0.032	-0.036	-0.039	-0.041	-0.042	-0.043	-0.042	-0.041	-0.039	-0.036	-0.032	-0.027	-0.022	-0.015	-0.008	0.000
REQUIRED CAMBER	0"	1 3/16"	2 3/8 "	3 7/16"	4 3/8 "	5 3/16"	5 15/16"	6 1/2 "	6 7/8 "	7 1/8 "	7 3/16"	7 1/8 "	6 7/8 "	6 1/2 "	5 15/16"	5 3/16"	4 3/8 "	3 7/16"	2 3/8 "	1 3/16"	0"

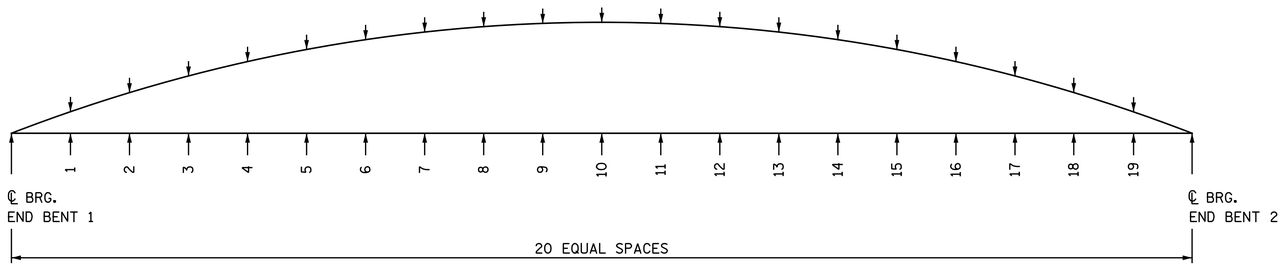
GIRDER 2

20TH POINTS	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.019	0.037	0.054	0.069	0.083	0.094	0.103	0.109	0.113	0.115	0.113	0.109	0.103	0.094	0.083	0.069	0.054	0.037	0.019	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.063	0.124	0.181	0.232	0.277	0.314	0.344	0.366	0.380	0.384	0.380	0.366	0.344	0.314	0.277	0.232	0.181	0.124	0.063	0.000
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	0.009	0.017	0.025	0.032	0.039	0.044	0.048	0.051	0.053	0.054	0.053	0.051	0.048	0.044	0.039	0.032	0.025	0.017	0.009	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.091	0.179	0.261	0.334	0.398	0.452	0.495	0.527	0.546	0.553	0.546	0.527	0.495	0.452	0.398	0.334	0.261	0.179	0.091	0.000
VERTICAL CURVE ORDINATE	0.000	0.017	0.033	0.047	0.059	0.069	0.077	0.083	0.088	0.091	0.091	0.091	0.088	0.083	0.077	0.069	0.059	0.047	0.033	0.017	0.000
SUPERLEVATION ORDINATE	0.000	-0.008	-0.015	-0.022	-0.027	-0.032	-0.036	-0.039	-0.041	-0.042	-0.043	-0.042	-0.041	-0.039	-0.036	-0.032	-0.027	-0.022	-0.015	-0.008	0.000
REQUIRED CAMBER	0"	1 3/16"	2 3/8 "	3 7/16"	4 3/8 "	5 3/16"	5 15/16"	6 1/2 "	6 7/8 "	7 1/8 "	7 3/16"	7 1/8 "	6 7/8 "	6 1/2 "	5 15/16"	5 3/16"	4 3/8 "	3 7/16"	2 3/8 "	1 3/16"	0"

GIRDER 3

20TH POINTS	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.019	0.037	0.054	0.069	0.083	0.094	0.103	0.109	0.113	0.115	0.113	0.109	0.103	0.094	0.083	0.069	0.054	0.037	0.019	0.000
DEFLECTION DUE TO WEIGHT OF SLAB *	0.000	0.063	0.124	0.181	0.231	0.276	0.313	0.343	0.365	0.379	0.383	0.379	0.365	0.343	0.313	0.276	0.231	0.181	0.124	0.063	0.000
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	0.009	0.017	0.025	0.032	0.039	0.044	0.048	0.051	0.053	0.054	0.053	0.051	0.048	0.044	0.039	0.032	0.025	0.017	0.009	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.090	0.179	0.260	0.333	0.397	0.451	0.494	0.526	0.545	0.552	0.545	0.526	0.494	0.451	0.397	0.333	0.260	0.179	0.090	0.000
VERTICAL CURVE ORDINATE	0.000	0.017	0.033	0.047	0.059	0.069	0.077	0.084	0.088	0.091	0.092	0.091	0.088	0.084	0.077	0.069	0.059	0.047	0.033	0.018	0.000
SUPERLEVATION ORDINATE	0.000	-0.008	-0.015	-0.022	-0.027	-0.032	-0.036	-0.039	-0.041	-0.043	-0.043	-0.043	-0.041	-0.039	-0.036	-0.032	-0.028	-0.022	-0.016	-0.008	0.000
REQUIRED CAMBER	0"	1 3/16"	2 3/8 "	3 7/16"	4 3/8 "	5 3/16"	5 15/16"	6 1/2 "	6 7/8 "	7 1/8 "	7 3/16"	7 1/8 "	6 7/8 "	6 1/2 "	5 15/16"	5 3/16"	4 3/8 "	3 7/16"	2 3/8 "	1 3/16"	0"

* INCLUDES SLAB, BUILDUPS, AND STAY-IN-PLACE FORMS. DEFLECTIONS BASED ON SLAB POUR SEQUENCE SHOWN ON "BILL OF MATERIAL" SHEET.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "REQUIRED CAMBER" WHICH IS SHOWN IN INCHES (FRACTION FORM).



SPAN A

SCHEMATIC CAMBER ORDINATES

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Digitally signed by Domenic A. Coletti

8/14/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

DEAD LOAD DEFLECTION AND CAMBER ORDINATES

RIGHT LANE

Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-14
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : C. E. MAYHEW DATE : 6-1-17
CHECKED BY : D. A. COLETTI DATE : 6-8-17

NOTES:

VALUES GIVEN ARE AT TWENTIETH POINTS BETWEEN CENTERLINE OF BEARINGS.

UPWARD DEFLECTIONS ARE INDICATED WITH A "-" SIGN.

DEAD LOAD DEFLECTION AND CAMBER ORDINATES FOR SPAN A

GIRDER 4

20TH POINTS	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.019	0.037	0.054	0.069	0.083	0.094	0.103	0.109	0.113	0.115	0.113	0.109	0.103	0.094	0.083	0.069	0.054	0.037	0.019	0.000
DEFLECTION DUE TO WEIGHT OF SLAB ✳	0.000	0.063	0.124	0.181	0.232	0.277	0.314	0.344	0.366	0.380	0.384	0.380	0.366	0.344	0.314	0.277	0.232	0.181	0.124	0.063	0.000
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	0.009	0.017	0.025	0.032	0.039	0.044	0.048	0.051	0.053	0.054	0.053	0.051	0.048	0.044	0.039	0.032	0.025	0.017	0.009	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.091	0.179	0.261	0.334	0.398	0.452	0.495	0.527	0.546	0.553	0.546	0.527	0.495	0.452	0.398	0.334	0.261	0.179	0.091	0.000
VERTICAL CURVE ORDINATE	0.000	0.018	0.033	0.047	0.059	0.069	0.078	0.084	0.089	0.092	0.093	0.092	0.089	0.084	0.078	0.070	0.059	0.047	0.033	0.018	0.000
SUPERLEVATION ORDINATE	0.000	-0.008	-0.016	-0.022	-0.028	-0.032	-0.036	-0.039	-0.041	-0.043	-0.043	-0.043	-0.041	-0.039	-0.036	-0.032	-0.028	-0.022	-0.016	-0.008	0.000
REQUIRED CAMBER	0"	1 3/16"	2 3/8 "	3 7/16"	4 3/8 "	5 1/4 "	5 15/16"	6 1/2 "	6 7/8 "	7 1/8 "	7 1/4 "	7 1/8 "	6 7/8 "	6 1/2 "	5 15/16"	5 1/4 "	4 3/8 "	3 7/16"	2 3/8 "	1 3/16"	0"

GIRDER 5

20TH POINTS	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
DEFLECTION DUE TO WEIGHT OF STEEL	0.000	0.019	0.037	0.054	0.069	0.083	0.094	0.103	0.109	0.113	0.115	0.113	0.109	0.103	0.094	0.083	0.069	0.054	0.037	0.019	0.000
DEFLECTION DUE TO WEIGHT OF SLAB ✳	0.000	0.063	0.125	0.182	0.233	0.277	0.315	0.345	0.367	0.381	0.385	0.381	0.367	0.345	0.315	0.277	0.233	0.182	0.125	0.063	0.000
DEFLECTION DUE TO WEIGHT OF RAIL	0.000	0.009	0.017	0.025	0.032	0.038	0.043	0.048	0.051	0.052	0.053	0.052	0.051	0.048	0.043	0.038	0.032	0.025	0.017	0.009	0.000
TOTAL DEAD LOAD DEFLECTION	0.000	0.091	0.179	0.261	0.334	0.398	0.452	0.496	0.527	0.547	0.553	0.547	0.527	0.496	0.452	0.398	0.334	0.261	0.179	0.091	0.000
VERTICAL CURVE ORDINATE	0.000	0.018	0.034	0.047	0.060	0.070	0.078	0.085	0.089	0.092	0.093	0.092	0.090	0.085	0.078	0.070	0.060	0.048	0.034	0.018	0.000
SUPERLEVATION ORDINATE	0.000	-0.008	-0.015	-0.022	-0.028	-0.032	-0.036	-0.039	-0.042	-0.043	-0.043	-0.043	-0.041	-0.039	-0.036	-0.032	-0.028	-0.022	-0.016	-0.008	0.000
REQUIRED CAMBER	0"	1 3/16"	2 3/8 "	3 7/16"	4 3/8 "	5 1/4 "	5 15/16"	6 1/2 "	6 7/8 "	7 1/8 "	7 1/4 "	7 1/8 "	6 7/8 "	6 1/2 "	5 15/16"	5 1/4 "	4 3/8 "	3 7/16"	2 3/8 "	1 3/16"	0"

✳ INCLUDES SLAB, BUILDUPS, AND STAY-IN-PLACE FORMS. DEFLECTIONS BASED ON SLAB POUR SEQUENCE SHOWN ON "BILL OF MATERIAL" SHEET.
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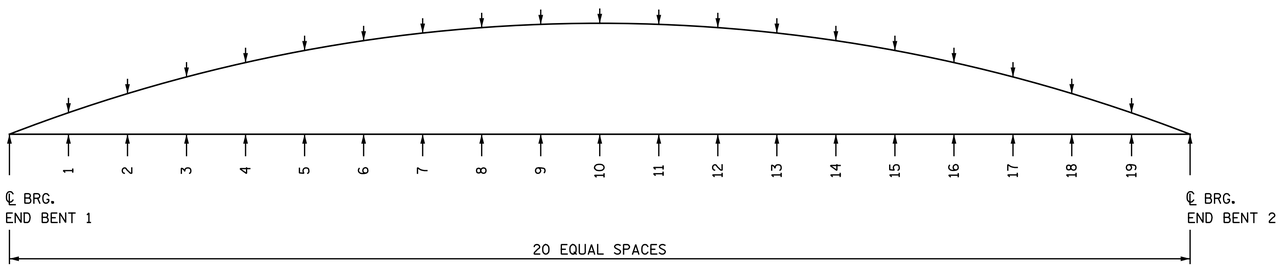


SPAN A

SCHEMATIC CAMBER ORDINATES

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

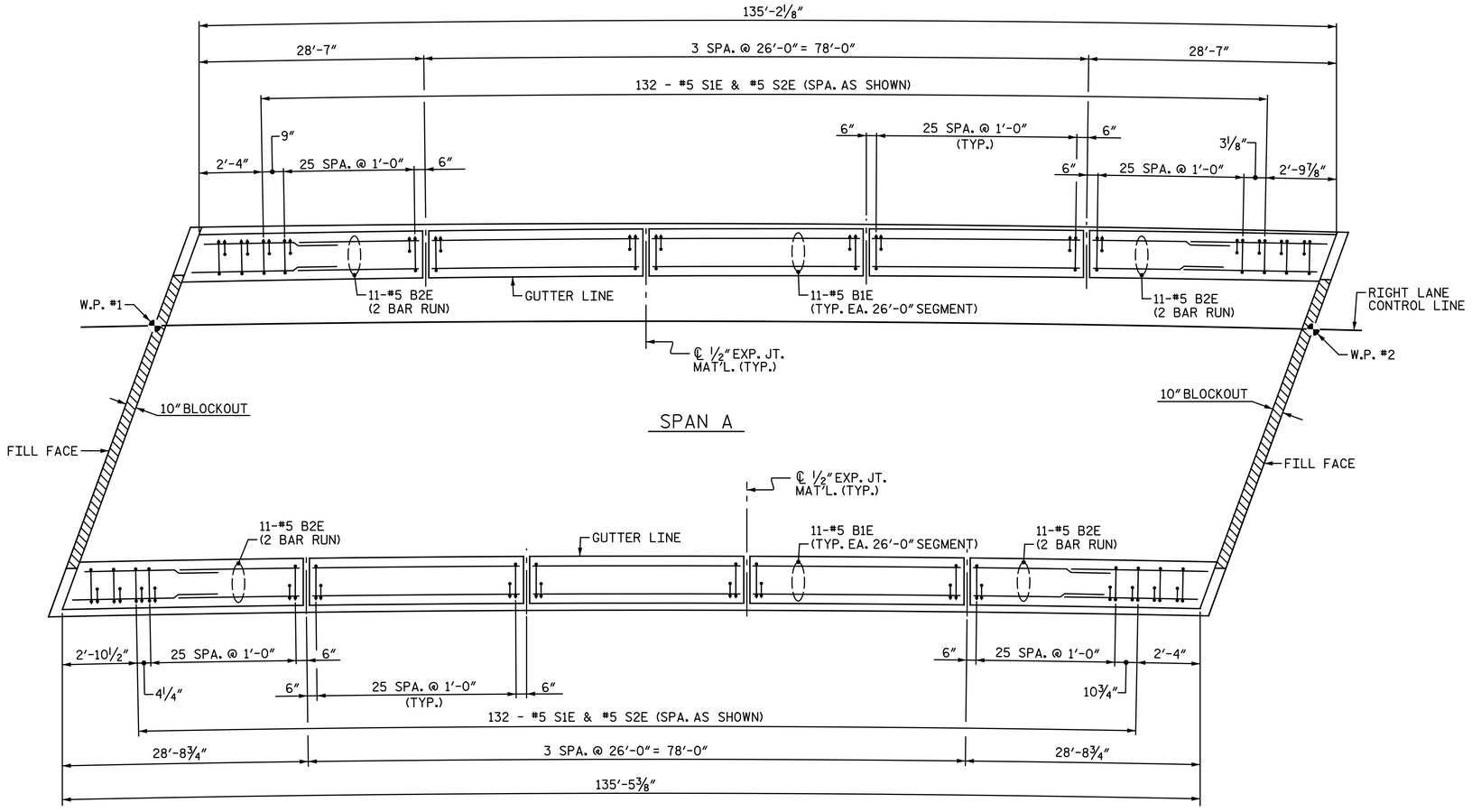
DEAD LOAD DEFLECTION AND CAMBER ORDINATES

RIGHT LANE

Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-15
1			3			TOTAL SHEETS
2			4			31

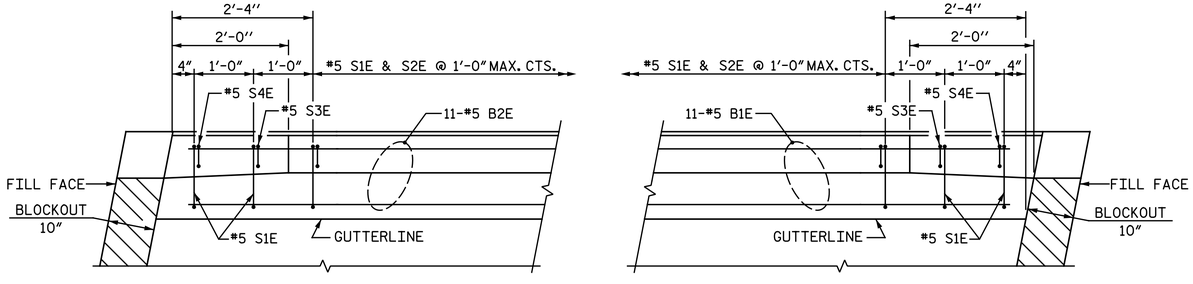
DRAWN BY : C. E. MAYHEW DATE : 6-1-17
CHECKED BY : D. A. COLETTI DATE : 6-8-17



PLAN OF BARRIER RAIL

NOTE: ALL BARRIER RAIL DIMENSIONS ARE MEASURED ALONG THE ARC AT THE BACK FACE OF THE BARRIER RAIL.

SPLICE LENGTHS	
BAR SIZE	EPOXY COATED
#5	3′-5″



END BENT 1 — END BENT 2

PLAN

(RIGHT RAIL SHOWN, LEFT RAIL SIMILAR)

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE BARRIER RAIL

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Dominic A. Coletti

8/14/2017

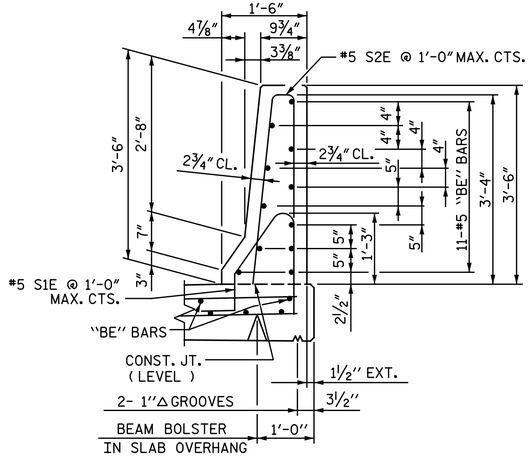
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL

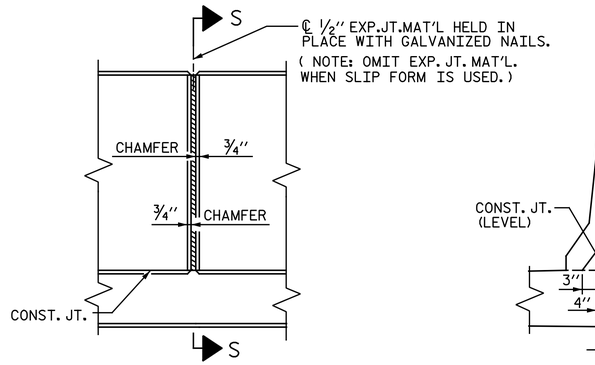
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-16
1			3			TOTAL SHEETS
2			4			31

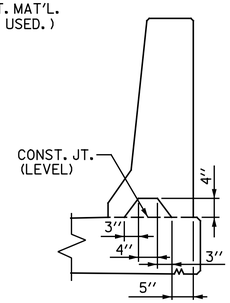
ASSEMBLED BY : N. B. SPEAKS		DATE : 3-29-17
CHECKED BY : D. A. COLETTI		DATE : 6-8-17
DRAWN BY : ARB 5/87	REV. 10/1/11	MAA/GM
CHECKED BY : SJD 9/87	REV. 7/12	MAA/GM
	REV. 6/13	MAA/GM



SECTION THRU RAIL



ELEVATION AT EXPANSION JOINTS



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

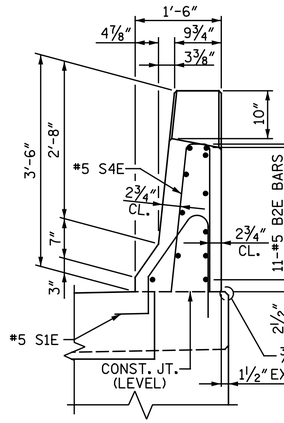
BARRIER RAIL DETAILS

NOTES:

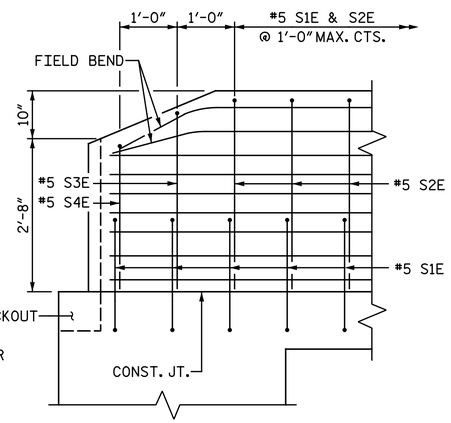
THE BARRIER RAIL IN THE SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

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.



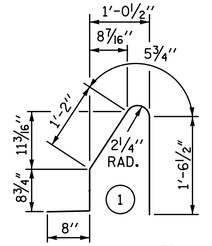
END VIEW

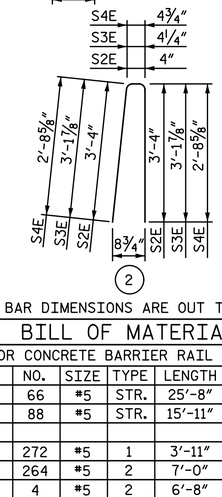


SIDE VIEW

END OF 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	66	#5	STR.	25'-8"	1,767
B2E	88	#5	STR.	15'-11"	1,461
S1E	272	#5	1	3'-11"	1,111
S2E	264	#5	2	7'-0"	1,927
S3E	4	#5	2	6'-8"	28
S4E	4	#5	2	5'-10"	24
EPOXY COATED REINFORCING STEEL			LBS.		6,318
CLASS AA CONCRETE			C.Y.		36.8
CONCRETE BARRIER RAIL			L.F.		270.60

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

CONCRETE BARRIER RAIL

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

9/12/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL

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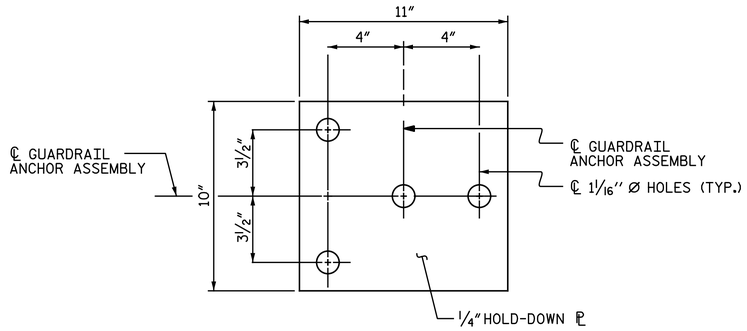
NC License No.: F-1084

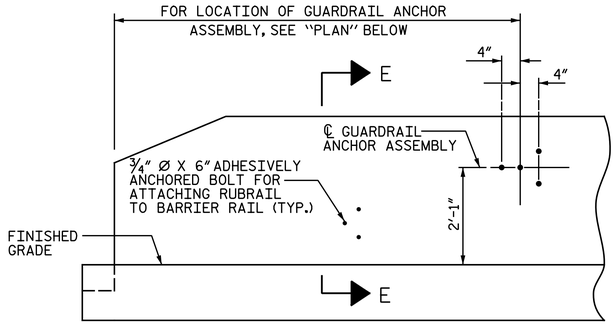
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-17
1			3			TOTAL SHEETS
2			4			31

ASSEMBLED BY : N. B. SPEAKS		DATE : 9-11-17
CHECKED BY : D. A. COLETTI		DATE : 9-12-17
DRAWN BY : ARB 5/87	REV. 10/1/11	MAA/GM
CHECKED BY : SJD 9/87	REV. 7/12	MAA/GM
	REV. 6/13	MAA/GM

STD. NO. CBR1



PLAN



ELEVATION

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.)

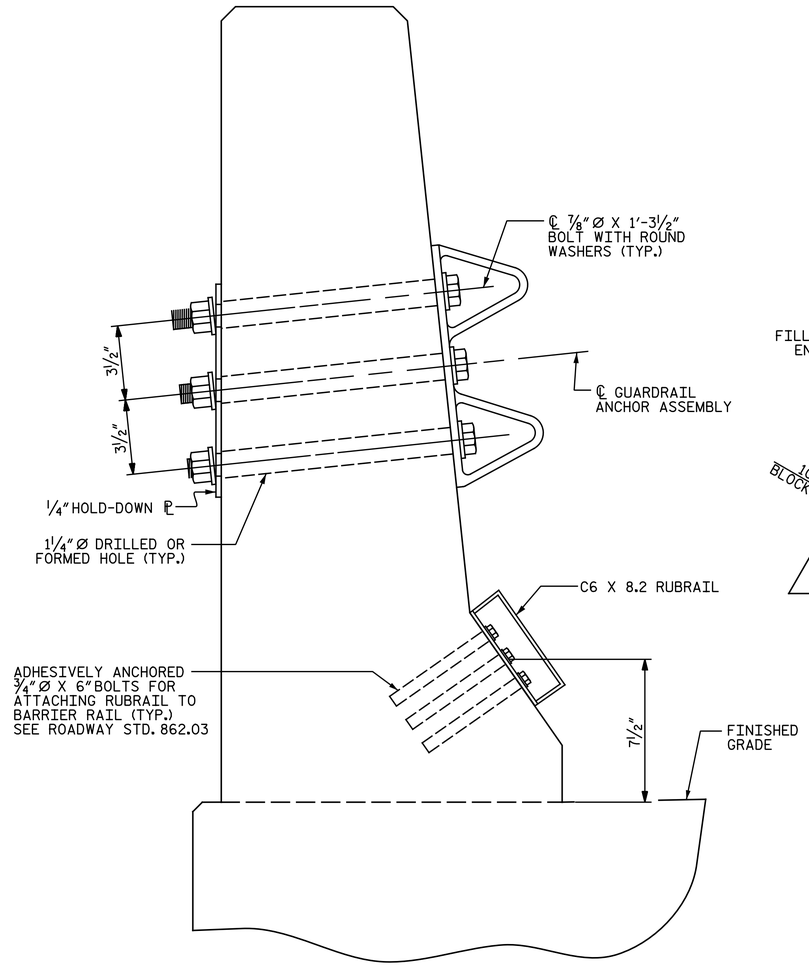
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

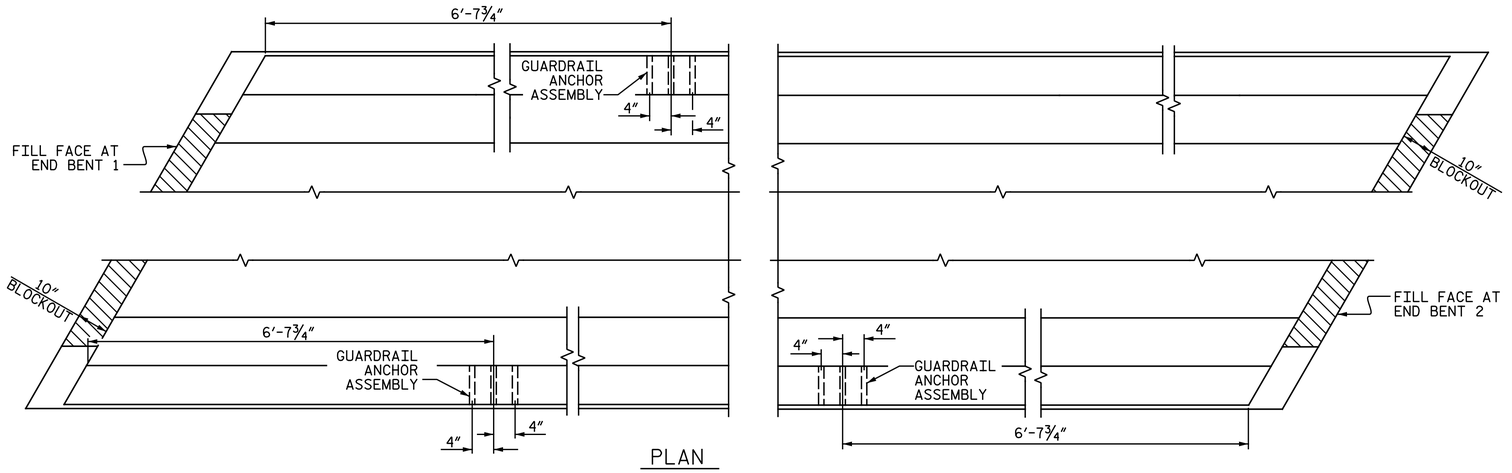
THE 1 1/4″ Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

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.



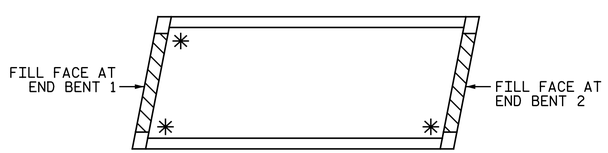
SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

LOCATION OF ANCHORS FOR GUARDRAIL



SKETCH SHOWING POINTS OF ATTACHMENTS

✳ DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

9/12/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

GUARDRAIL ANCHORAGE FOR BARRIER RAIL

RIGHT LANE

ASSEMBLED BY : N. B. SPEAKS	DATE : 9-11-17
CHECKED BY : D.A. COLETTI	DATE : 9-12-17
DRAWN BY : TLA 5/06	REV. 10/1/11 MAA/GM
CHECKED BY : GM 5/06	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM

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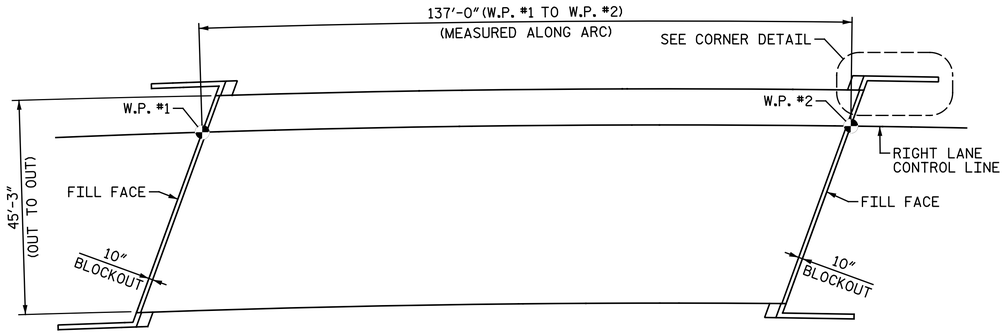
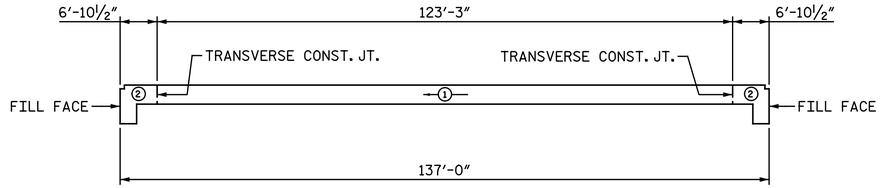
STD. NO. GRA2



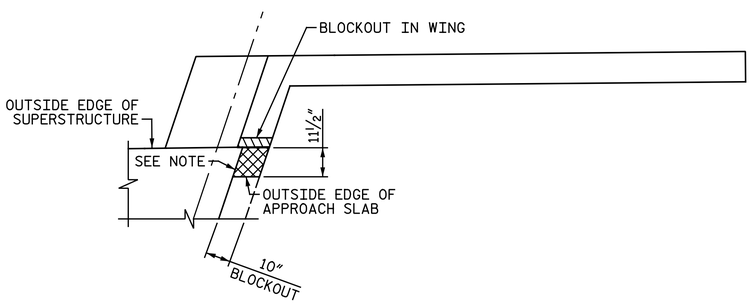
LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB

(SQ. FT. = 6,204)



POURING SEQUENCE

④ DENOTES POUR NUMBER AND DIRECTION
(ALL DIMENSIONS ARE ALONG CONTROL LINE)



CORNER DETAIL

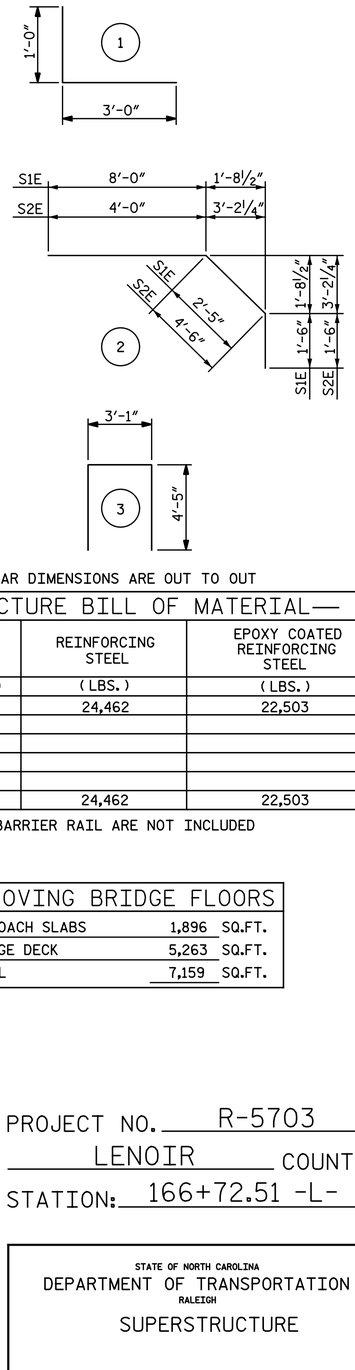
CONCRETE SHALL BE POURED IN THE CROSS-HATCHED AREA TO MATCH THE TOP OF END BENT WING ELEVATIONS. UNLESS OTHERWISE DIRECTED BY THE ENGINEER, THE CONCRETE IN THESE AREAS SHALL BE PLACED AT THE SAME TIME THE BLOCKOUTS IN THE END BENT WINGS ARE POURED AS NOTED ON SHEET 1 OF "INTEGRAL END BENT 1" AND "INTEGRAL END BENT 2" SHEETS.

DRAWN BY : C. E. MAYHEW DATE : 6-9-17
CHECKED BY : D. A. COLETTI DATE : 6-19-17

REINFORCING BAR SCHEDULE

SPAN A						SPAN A (CONT'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	237	#5	STR.	44′ - 11″	11,103	A215	1	#5	STR.	25′ - 2″	26
A2	237	#5	STR.	44′ - 11″	11,103	A216	1	#5	STR.	23′ - 10″	25
						A217	1	#5	STR.	22′ - 6″	23
A101E	1	#5	STR.	43′ - 8″	46	A218	1	#5	STR.	21′ - 2″	22
A102E	1	#5	STR.	42′ - 4″	44	A219	1	#5	STR.	19′ - 11″	21
A103E	1	#5	STR.	41′ - 0″	43	A220	1	#5	STR.	18′ - 7″	19
A104E	1	#5	STR.	39′ - 8″	41	A221	1	#5	STR.	17′ - 3″	18
A105E	1	#5	STR.	38′ - 5″	40	A222	1	#5	STR.	15′ - 11″	17
A106E	1	#5	STR.	37′ - 1″	39	A223	1	#5	STR.	14′ - 7″	15
A107E	1	#5	STR.	35′ - 9″	37	A224	1	#5	STR.	13′ - 3″	14
A108E	1	#5	STR.	34′ - 5″	36	A225	1	#5	STR.	12′ - 0″	13
A109E	1	#5	STR.	33′ - 4″	35	A226	1	#5	STR.	10′ - 8″	11
A110E	1	#5	STR.	31′ - 9″	33	A227	1	#5	STR.	9′ - 4″	10
A111E	1	#5	STR.	30′ - 5″	32	A228	1	#5	STR.	8′ - 0″	8
A112E	1	#5	STR.	29′ - 2″	30	A229	1	#5	STR.	6′ - 8″	7
A113E	1	#5	STR.	27′ - 10″	29	A230	1	#5	STR.	5′ - 4″	6
A114E	1	#5	STR.	26′ - 6″	28	A231	1	#5	STR.	4′ - 1″	4
A115E	1	#5	STR.	25′ - 2″	26	A232	1	#5	STR.	2′ - 9″	3
A116E	1	#5	STR.	23′ - 10″	25	A233	1	#5	STR.	1′ - 5″	1
A117E	1	#5	STR.	22′ - 6″	23	A234	1	#5	STR.	43′ - 8″	46
A118E	1	#5	STR.	21′ - 2″	22	A235	1	#5	STR.	42′ - 4″	44
A119E	1	#5	STR.	19′ - 11″	21	A236	1	#5	STR.	40′ - 11″	43
A120E	1	#5	STR.	18′ - 7″	19	A237	1	#5	STR.	39′ - 7″	41
A121E	1	#5	STR.	17′ - 3″	18	A238	1	#5	STR.	38′ - 3″	40
A122E	1	#5	STR.	15′ - 11″	17	A239	1	#5	STR.	36′ - 11″	39
A123E	1	#5	STR.	14′ - 7″	15	A240	1	#5	STR.	35′ - 7″	37
A124E	1	#5	STR.	13′ - 3″	14	A241	1	#5	STR.	34′ - 3″	36
A125E	1	#5	STR.	12′ - 0″	13	A242	1	#5	STR.	32′ - 11″	34
A126E	1	#5	STR.	10′ - 8″	11	A243	1	#5	STR.	31′ - 7″	33
A127E	1	#5	STR.	9′ - 4″	10	A244	1	#5	STR.	30′ - 3″	32
A128E	1	#5	STR.	8′ - 0″	8	A245	1	#5	STR.	28′ - 11″	30
A129E	1	#5	STR.	6′ - 8″	7	A246	1	#5	STR.	27′ - 6″	29
A130E	1	#5	STR.	5′ - 4″	6	A247	1	#5	STR.	26′ - 2″	27
A131E	1	#5	STR.	4′ - 1″	4	A248	1	#5	STR.	24′ - 10″	26
A132E	1	#5	STR.	2′ - 9″	3	A249	1	#5	STR.	23′ - 6″	25
A133E	1	#5	STR.	1′ - 5″	1	A250	1	#5	STR.	22′ - 2″	23
A134E	1	#5	STR.	43′ - 8″	46	A251	1	#5	STR.	20′ - 10″	22
A135E	1	#5	STR.	42′ - 4″	44	A252	1	#5	STR.	19′ - 6″	20
A136E	1	#5	STR.	40′ - 11″	43	A253	1	#5	STR.	18′ - 2″	19
A137E	1	#5	STR.	39′ - 7″	41	A254	1	#5	STR.	16′ - 10″	18
A138E	1	#5	STR.	38′ - 3″	40	A255	1	#5	STR.	15′ - 6″	16
A139E	1	#5	STR.	36′ - 11″	39	A256	1	#5	STR.	14′ - 1″	15
A140E	1	#5	STR.	35′ - 7″	37	A257	1	#5	STR.	12′ - 9″	13
A141E	1	#5	STR.	34′ - 3″	36	A258	1	#5	STR.	11′ - 5″	12
A142E	1	#5	STR.	32′ - 11″	34	A259	1	#5	STR.	10′ - 1″	11
A143E	1	#5	STR.	31′ - 7″	33	A260	1	#5	STR.	8′ - 9″	9
A144E	1	#5	STR.	30′ - 3″	32	A261	1	#5	STR.	7′ - 5″	8
A145E	1	#5	STR.	28′ - 11″	30	A262	1	#5	STR.	6′ - 1″	6
A146E	1	#5	STR.	27′ - 6″	29	A263	1	#5	STR.	4′ - 9″	5
A147E	1	#5	STR.	26′ - 2″	27	A264	1	#5	STR.	3′ - 5″	4
A148E	1	#5	STR.	24′ - 10″	26	A265	1	#5	STR.	2′ - 0″	2
A149E	1	#5	STR.	23′ - 6″	25						
A150E	1	#5	STR.	22′ - 2″	23	B1E	155	#4	STR.	28′ - 8″	2,968
A151E	1	#5	STR.	20′ - 10″	22	B2	174	#5	STR.	46′ - 6″	8,439
A152E	1	#5	STR.	19′ - 6″	20	B3E	60	#6	STR.	29′ - 3″	2,636
A153E	1	#5	STR.	18′ - 2″	19	B4E	60	#6	STR.	31′ - 5″	2,831
A154E	1	#5	STR.	16′ - 10″	18	B5E	8	#4	1	4′ - 0″	21
A155E	1	#5	STR.	15′ - 6″	16						
A156E	1	#5	STR.	14′ - 1″	15	G1E	2	#5	STR.	48′ - 3″	101
A157E	1	#5	STR.	12′ - 9″	13	G2E	2	#5	STR.	47′ - 5″	99
A158E	1	#5	STR.	11′ - 5″	12						
A159E	1	#5	STR.	10′ - 1″	11	H1	24	#6	STR.	2′ - 11″	105
A160E	1	#5	STR.	8′ - 9″	9						
A161E	1	#5	STR.	7′ - 5″	8	K1	12	#6	STR.	48′ - 3″	870
A162E	1	#5	STR.	6′ - 1″	6	K2	12	#6	STR.	47′ - 5″	855
A163E	1	#5	STR.	4′ - 9″	5						
A164E	1	#5	STR.	3′ - 5″	4	S1E	84	#4	2	11′ - 11″	669
A165E	1	#5	STR.	2′ - 0″	2	S2E	80	#4	2	10′ - 0″	534
A201	1	#5	STR.	43′ - 8″	46	U1	84	#6	3	11′ - 11″	1,504
A202	1	#5	STR.	42′ - 4″	44						
A203	1	#5	STR.	41′ - 0″	43	V1	12	#4	STR.	5′ - 8″	45
A204	1	#5	STR.	39′ - 8″	41						
A205	1	#5	STR.	38′ - 5″	40	REINFORCING STEEL LBS. 24,462					
A206	1	#5	STR.	37′ - 1″	39	EPOXY COATED REINF. STEEL LBS. 22,503					
A207	1	#5	STR.	35′ - 9″	37						
A208	1	#5	STR.	34′ - 5″	36						
A209	1	#5	STR.	33′ - 4″	35						
A210	1	#5	STR.	31′ - 9″	33						
A211	1	#5	STR.	30′ - 5″	32						
A212	1	#5	STR.	29′ - 2″	30						
A213	1	#5	STR.	27′ - 10″	29						
A214	1	#5	STR.	26′ - 6″	28						

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
SPAN A		24,462	22,503
POUR 1	180.9		
POUR 2	77.0		
TOTALS*	257.9	24,462	22,503

QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

GROOVING BRIDGE FLOORS

APPROACH SLABS	1,896 SQ.FT.
BRIDGE DECK	5,263 SQ.FT.
TOTAL	7,159 SQ.FT.

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 166+72.51 -L-

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti
8/14/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

BILL OF MATERIAL

RIGHT LANE

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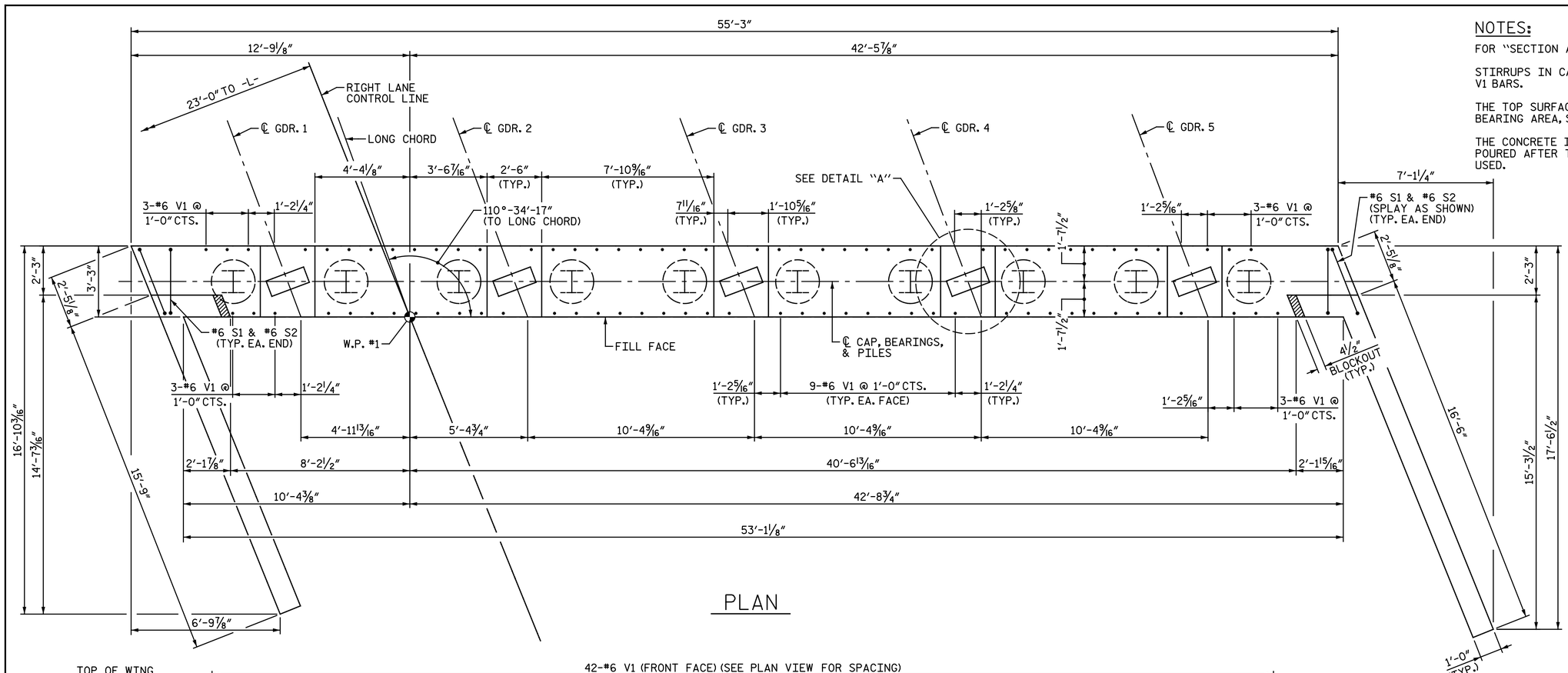
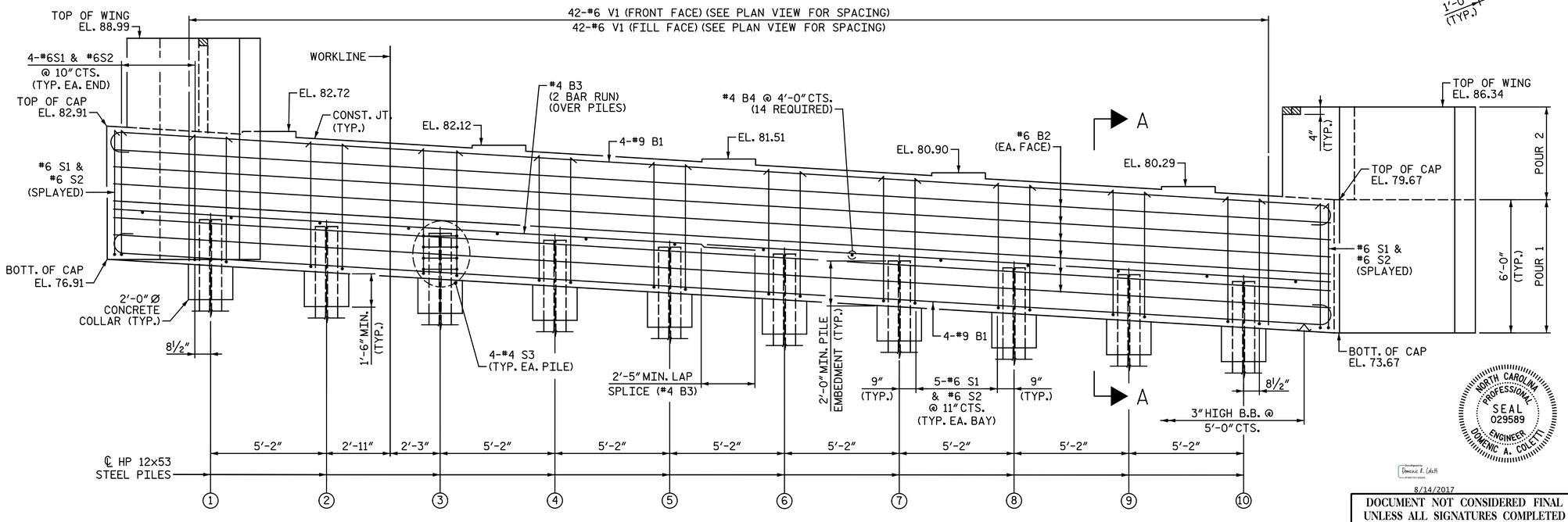


PLAN



ELEVATION

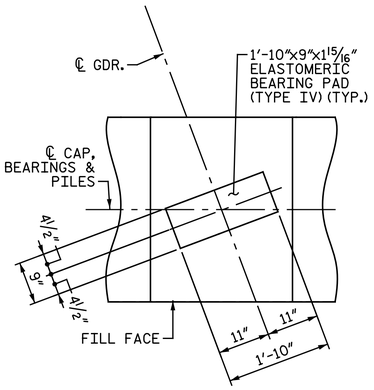
NOTES:

FOR "SECTION A-A", SEE "INTEGRAL END BENT 1 DETAILS" SHEET.

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6 V1 BARS.

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

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



DETAIL "A"

ALL DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS AT EACH BRIDGE SEAT LOCATION.

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
1	78.67
2	78.37
3	78.07
4	77.76
5	77.46
6	77.16
7	76.85
8	76.55
9	76.25
10	75.95

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

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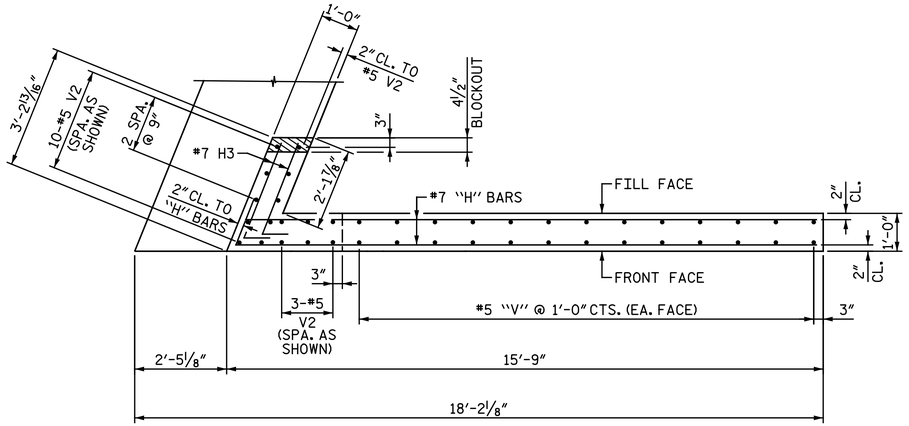
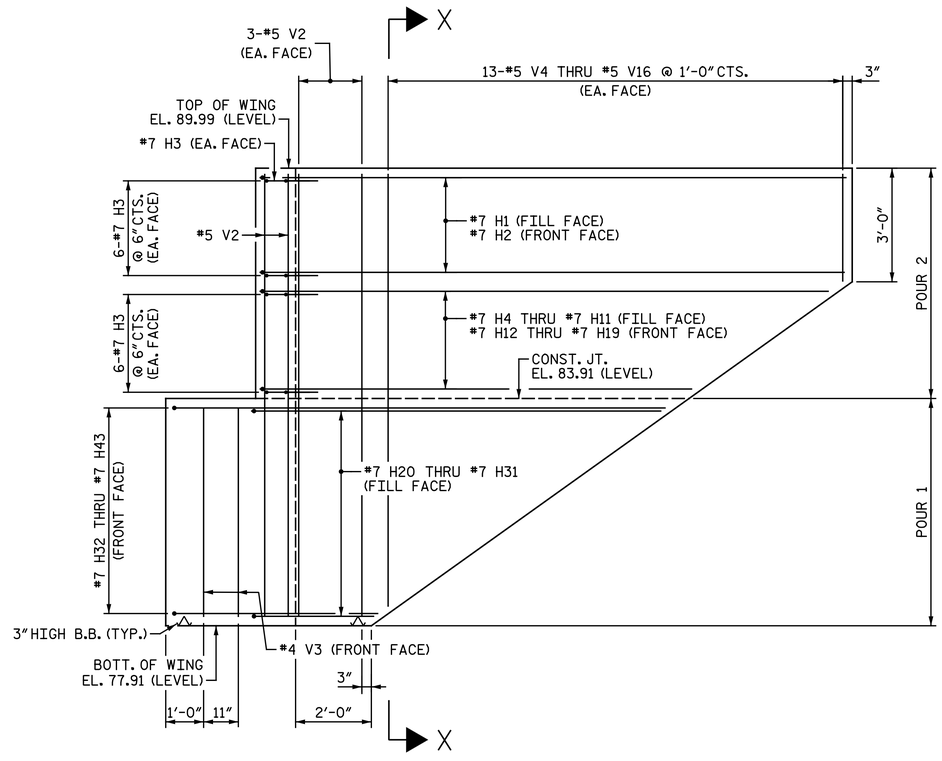
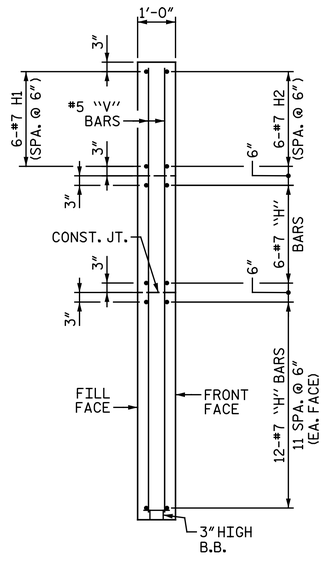
DRAWN BY : C. E. MAYHEW DATE : 5-25-17
CHECKED BY : D. A. COLETTI DATE : 6-8-17



PLAN OF LEFT WING



ELEVATION OF LEFT WING



SECTION X-X

DRAWN BY : C. E. MAYHEW DATE : 4-14-17
CHECKED BY : D. A. COLETTI DATE : 6-9-17

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

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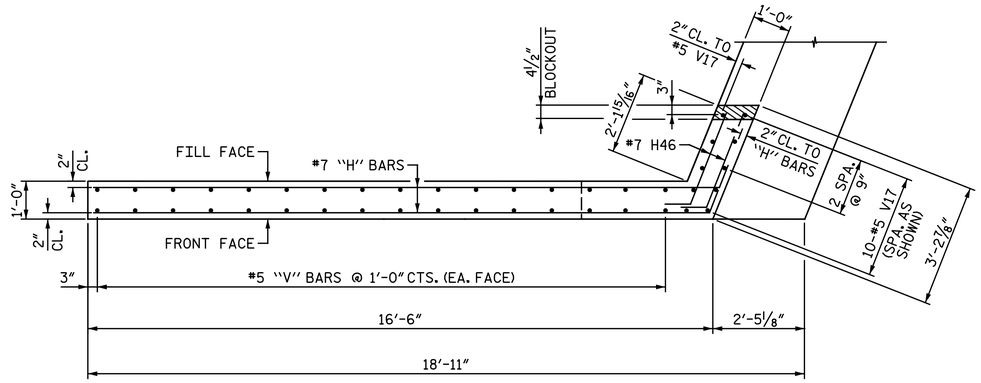
PROJECT NO. R-5703
LENOIR COUNTY
STATION: 166+72.51 -L-
SHEET 2 OF 3

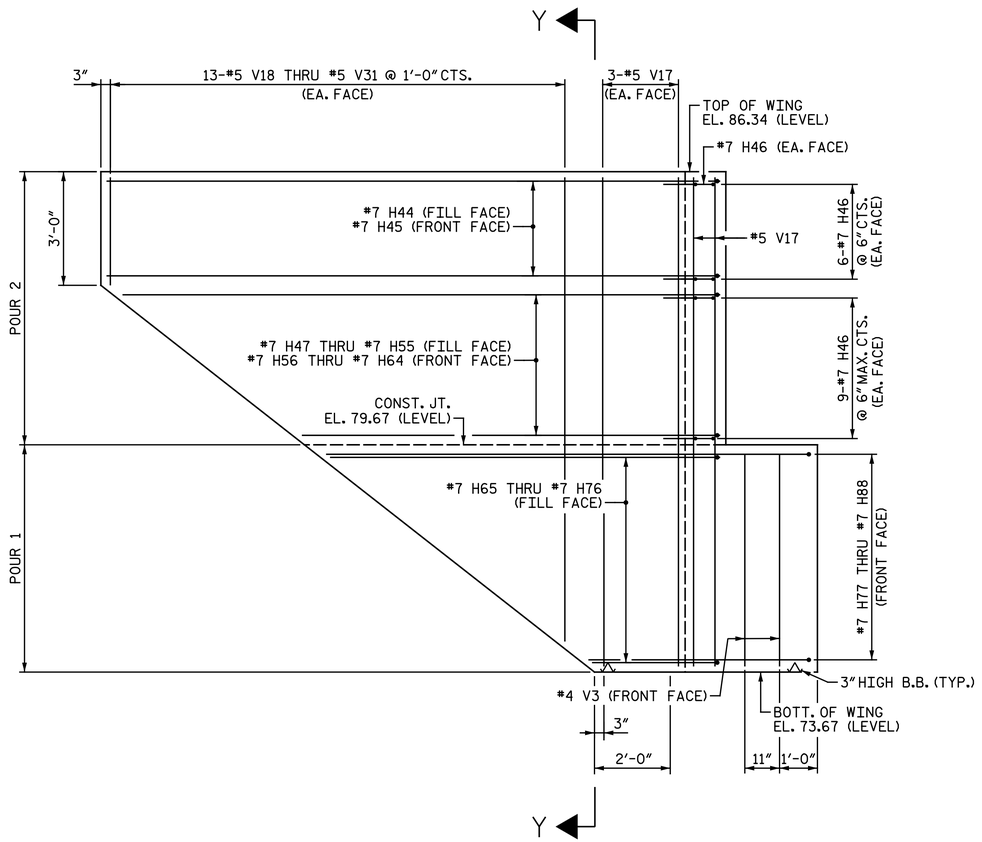
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

INTEGRAL END BENT 1

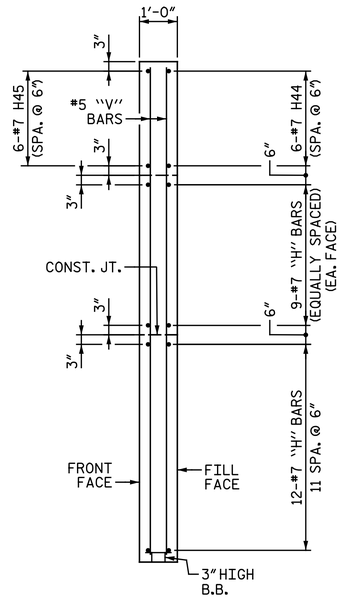
RIGHT LANE



PLAN OF RIGHT WING



ELEVATION OF RIGHT WING



SECTION Y-Y

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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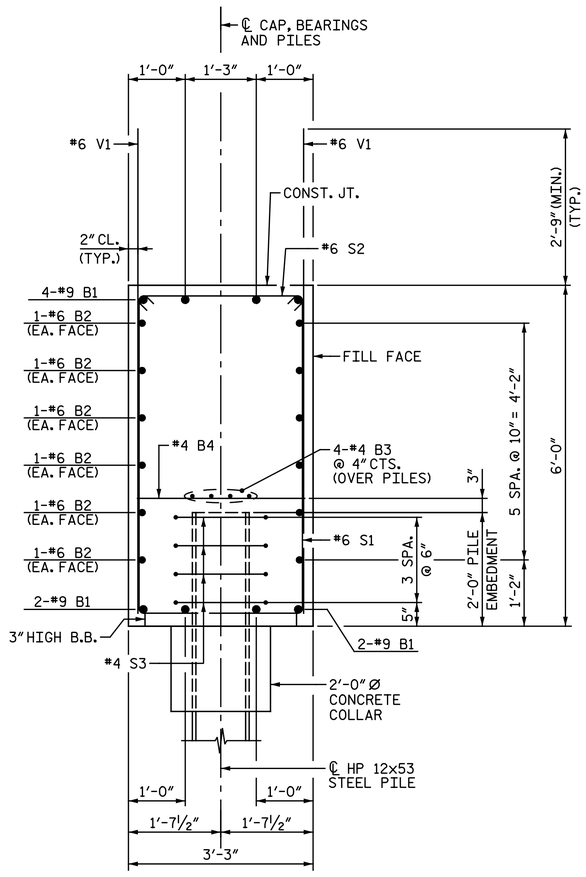
NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-22
1			3			TOTAL SHEETS
2			4			31

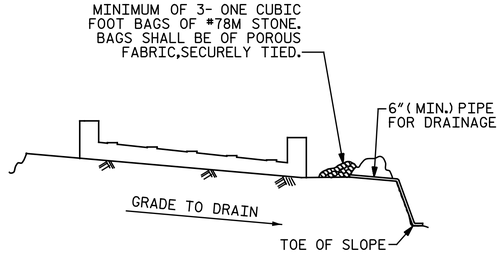
DRAWN BY : C. E. MAYHEW DATE : 4-17-17
CHECKED BY : D. A. COLETTI DATE : 6-9-17



SECTION A-A

BAR	A	BAR	A
H1	15' - 8"	H41	16' - 1"
H2	15' - 5"	H42	2' - 6"
H3	2' - 6"	H43	15' - 4"
H4	15' - 2"	H44	14' - 7"
H5	14' - 5"	H45	13' - 10"
H6	13' - 8"	H46	13' - 1"
H7	12' - 12"	H47	12' - 4"
H8	12' - 3"	H48	11' - 7"
H9	11' - 7"	H49	10' - 11"
H10	14' - 11"	H50	15' - 6"
H11	14' - 2"	H51	14' - 10"
H12	13' - 5"	H52	14' - 1"
H13	12' - 9"	H53	13' - 4"
H14	11' - 12"	H54	12' - 7"
H15	11' - 4"	H55	11' - 10"
H16	10' - 9"	H56	11' - 2"
H17	10' - 1"	H57	10' - 3"
H18	9' - 5"	H58	9' - 6"
H19	8' - 8"	H59	8' - 10"
H20	7' - 12"	H60	8' - 1"
H21	7' - 4"	H61	7' - 5"
H22	6' - 7"	H62	6' - 9"
H23	5' - 11"	H63	5' - 12"
H24	5' - 3"	H64	5' - 4"
H25	4' - 6"	H65	4' - 8"
H26	3' - 10"	H66	3' - 11"
H27	3' - 2"	H67	3' - 3"
H28	12' - 11"	H68	2' - 7"
H29	12' - 2"	H69	12' - 9"
H30	11' - 6"	H70	12' - 1"
H31	10' - 9"	H71	11' - 5"
H32	10' - 1"	H72	10' - 8"
H33	9' - 5"	H73	9' - 12"
H34	8' - 8"	H74	9' - 4"
H35	7' - 12"	H75	8' - 7"
H36	7' - 4"	H76	7' - 11"
H37	6' - 7"	H77	7' - 3"
H38	5' - 11"	H78	6' - 6"
H39	5' - 3"	H79	5' - 10"
H40	15' - 10"	H80	5' - 2"

NOTE:
FOR PILE SPLICE DETAILS, SEE "INTEGRAL END BENT 2 DETAILS" SHEET.



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 FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

BILL OF MATERIAL
INTEGRAL END BENT 1

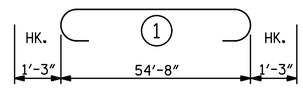
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	57' - 2"	1,555
B2	12	#6	STR.	54' - 10"	988
B3	8	#4	STR.	28' - 8"	153
B4	14	#4	STR.	2' - 11"	27
H1	6	#7	5	16' - 9"	206
H2	6	#7	5	16' - 7"	203
H3	24	#7	5	3' - 8"	180
H4	1	#7	5	16' - 4"	33
H5	1	#7	5	15' - 7"	32
H6	1	#7	5	14' - 10"	30
H7	1	#7	5	14' - 2"	29
H8	1	#7	5	13' - 5"	27
H9	1	#7	5	12' - 9"	26
H10	1	#7	5	16' - 1"	33
H11	1	#7	5	15' - 4"	31
H12	1	#7	5	14' - 7"	30
H13	1	#7	5	13' - 11"	28
H14	1	#7	5	13' - 2"	27
H15	1	#7	5	12' - 6"	26
H16	1	#7	5	11' - 11"	24
H17	1	#7	5	11' - 3"	23
H18	1	#7	5	10' - 7"	22
H19	1	#7	5	9' - 10"	20
H20	1	#7	5	9' - 2"	19
H21	1	#7	5	8' - 6"	17
H22	1	#7	5	7' - 9"	16
H23	1	#7	5	7' - 1"	14
H24	1	#7	5	6' - 5"	13
H25	1	#7	5	5' - 8"	12
H26	1	#7	5	5' - 0"	10
H27	1	#7	5	4' - 4"	9
H28	1	#7	5	14' - 1"	29
H29	1	#7	5	13' - 4"	27
H30	1	#7	5	12' - 8"	26
H31	1	#7	5	11' - 11"	24
H32	1	#7	5	11' - 3"	23
H33	1	#7	5	10' - 7"	22
H34	1	#7	5	9' - 10"	20
H35	1	#7	5	9' - 2"	19
H36	1	#7	5	8' - 6"	17
H37	1	#7	5	7' - 9"	16
H38	1	#7	5	7' - 1"	14
H39	1	#7	5	6' - 5"	13
H40	6	#7	5	17' - 0"	208
H41	6	#7	5	17' - 3"	212
H42	26	#7	5	3' - 8"	195
H43	1	#7	5	16' - 6"	34
H44	1	#7	4	15' - 9"	32
H45	1	#7	4	15' - 0"	31
H46	1	#7	4	14' - 3"	29
H47	1	#7	4	13' - 6"	28
H48	1	#7	4	12' - 9"	26
H49	1	#7	4	12' - 1"	25
H50	1	#7	4	16' - 8"	34
H51	1	#7	4	16' - 0"	33
H52	1	#7	4	15' - 3"	31
H53	1	#7	4	14' - 6"	30
H54	1	#7	4	13' - 9"	28
H55	1	#7	4	13' - 0"	27
H56	1	#7	4	12' - 4"	25
H57	1	#7	4	11' - 5"	23
H58	1	#7	4	10' - 8"	22
H59	1	#7	4	10' - 0"	20
H60	1	#7	4	9' - 3"	19
H61	1	#7	4	8' - 7"	18
H62	1	#7	4	7' - 11"	16
H63	1	#7	4	7' - 2"	15

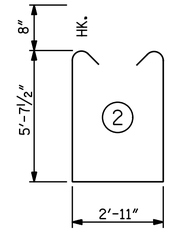
BILL OF MATERIAL
INTEGRAL END BENT 1

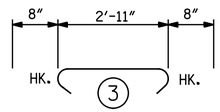
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H64	1	#7	4	6' - 6"	13
H65	1	#7	4	5' - 10"	12
H66	1	#7	4	5' - 1"	10
H67	1	#7	4	4' - 5"	9
H68	1	#7	4	3' - 9"	8
H69	1	#7	4	13' - 11"	28
H70	1	#7	4	13' - 3"	27
H71	1	#7	4	12' - 7"	26
H72	1	#7	4	11' - 10"	24
H73	1	#7	4	11' - 2"	23
H74	1	#7	4	10' - 6"	21
H75	1	#7	4	9' - 9"	20
H76	1	#7	4	9' - 1"	19
H77	1	#7	4	8' - 5"	17
H78	1	#7	4	7' - 8"	16
H79	1	#7	4	7' - 0"	14
H80	1	#7	4	6' - 4"	13
S1	55	#6	2	15' - 6"	1,280
S2	55	#6	3	4' - 3"	351
S3	40	#4	6	6' - 6"	174
V1	84	#6	STR.	8' - 6"	1,072
V2	16	#5	STR.	11' - 7"	193
V3	4	#4	STR.	5' - 7"	15
V4	2	#5	STR.	11' - 3"	23
V5	2	#5	STR.	10' - 7"	22
V6	2	#5	STR.	9' - 10"	21
V7	2	#5	STR.	9' - 2"	19
V8	2	#5	STR.	8' - 5"	18
V9	2	#5	STR.	7' - 9"	16
V10	2	#5	STR.	7' - 0"	15
V11	2	#5	STR.	6' - 3"	13
V12	2	#5	STR.	5' - 7"	12
V13	2	#5	STR.	4' - 10"	10
V14	2	#5	STR.	4' - 2"	9
V15	2	#5	STR.	3' - 5"	7
V16	2	#5	STR.	2' - 8"	6
V17	16	#5	STR.	12' - 3"	204
V18	2	#5	STR.	12' - 1"	25
V19	2	#5	STR.	11' - 4"	24
V20	2	#5	STR.	10' - 7"	22
V21	2	#5	STR.	9' - 11"	21
V22	2	#5	STR.	9' - 2"	19
V23	2	#5	STR.	8' - 5"	18
V24	2	#5	STR.	7' - 9"	16
V25	2	#5	STR.	7' - 0"	15
V26	2	#5	STR.	6' - 4"	13
V27	2	#5	STR.	5' - 7"	12
V28	2	#5	STR.	4' - 10"	10
V29	2	#5	STR.	4' - 2"	9
V30	2	#5	STR.	3' - 5"	7
V31	2	#4	STR.	2' - 8"	4

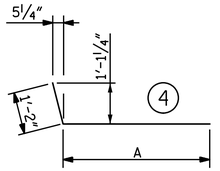
REINFORCING STEEL	LBS.	9,269
CLASS A CONCRETE		
POUR 1 -		
CAP, LOWER PART OF WINGS & COLLARS	C.Y.	44.6
POUR 2 -		
UPPER PART OF WINGS	C.Y.	8.1
TOTAL	C.Y.	52.7
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	EA.	10
HP 12x53 STEEL PILES NO. 10	L.F.	850
PILE REDRIVES	EA.	5

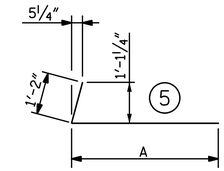
BAR TYPES

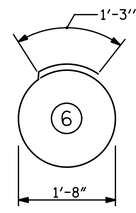












ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 166+72.51 -L-

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

INTEGRAL END BENT 1 DETAILS

RIGHT LANE

DRAWN BY : C. E. MAYHEW DATE : 6-6-17
CHECKED BY : D. A. COLETTI DATE : 6-9-17

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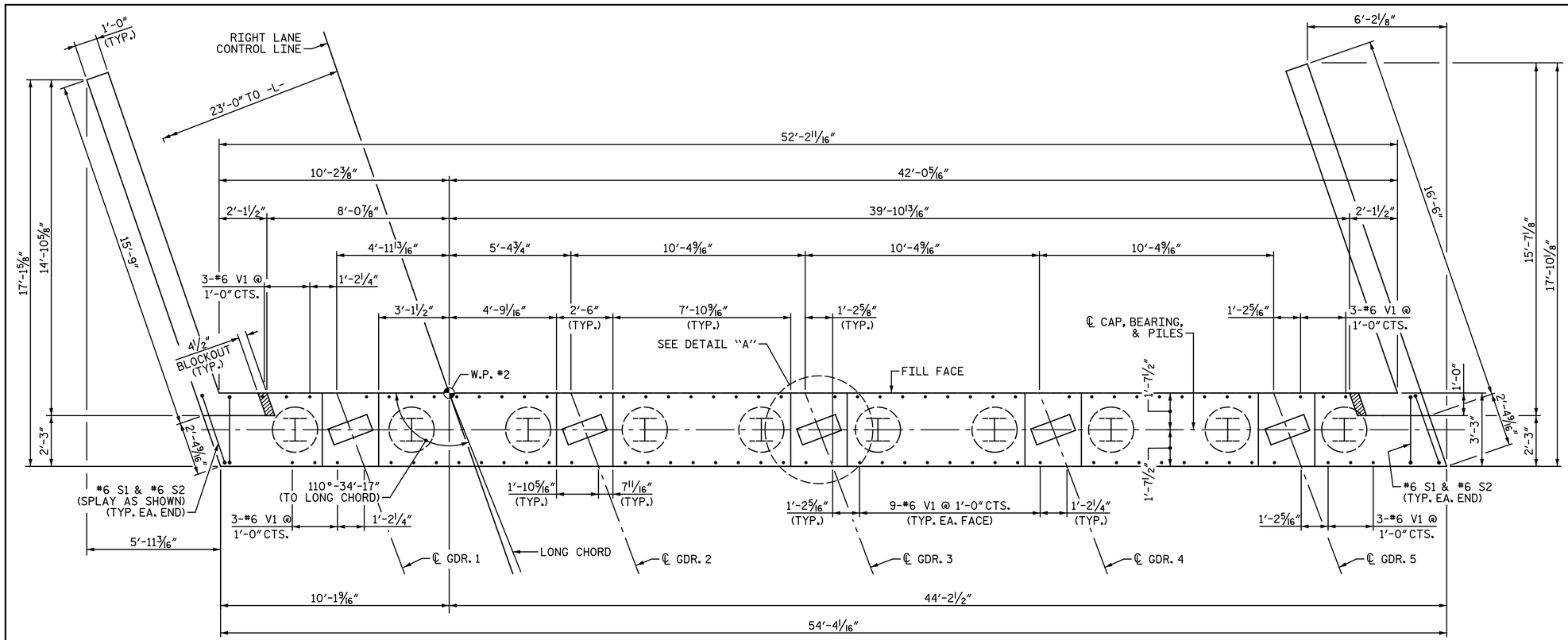


PLAN

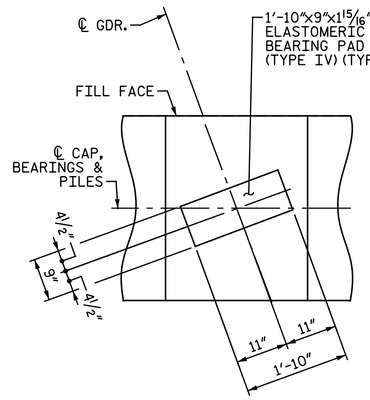
NOTES:

FOR "SECTION A-A", SEE "INTEGRAL END BENT 1 DETAILS" SHEET.

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6 V1 BARS.

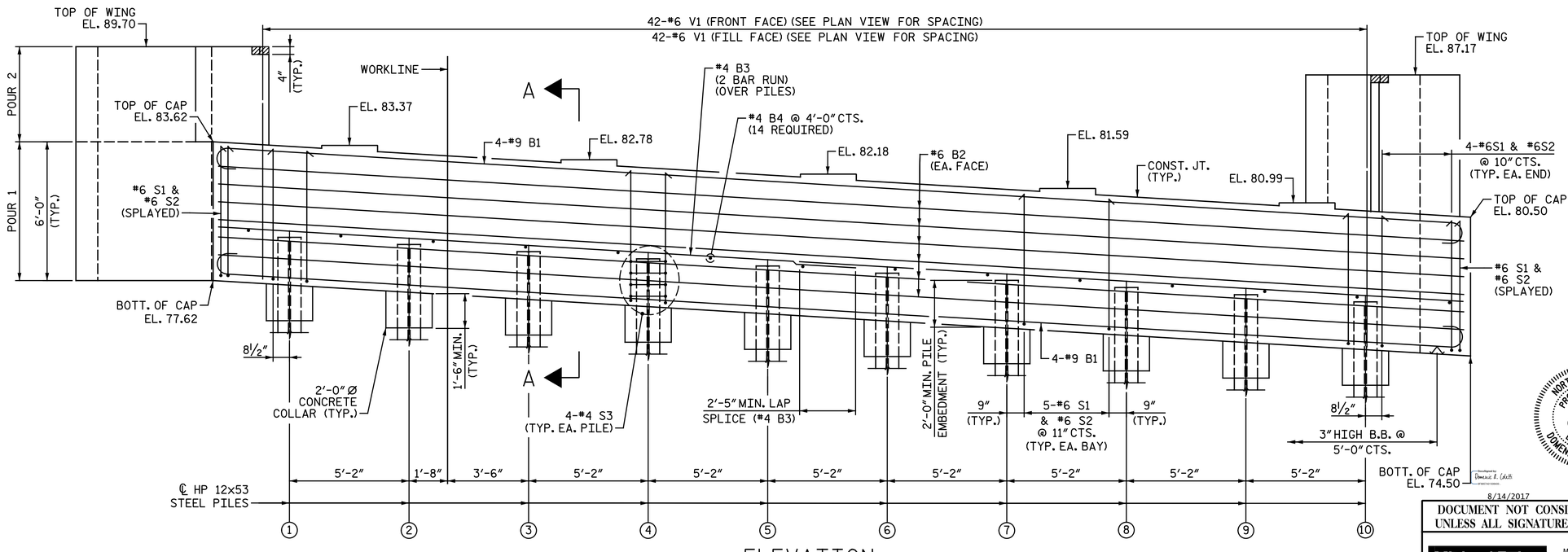
THE TOP SURFACE OF THE END BENT CAP, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

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



DETAIL "A"

ALL DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS AT EACH BRIDGE SEAT LOCATION.



ELEVATION

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
1	79.40
2	79.10
3	78.81
4	78.51
5	78.21
6	77.92
7	77.62
8	77.32
9	77.03
10	76.73

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

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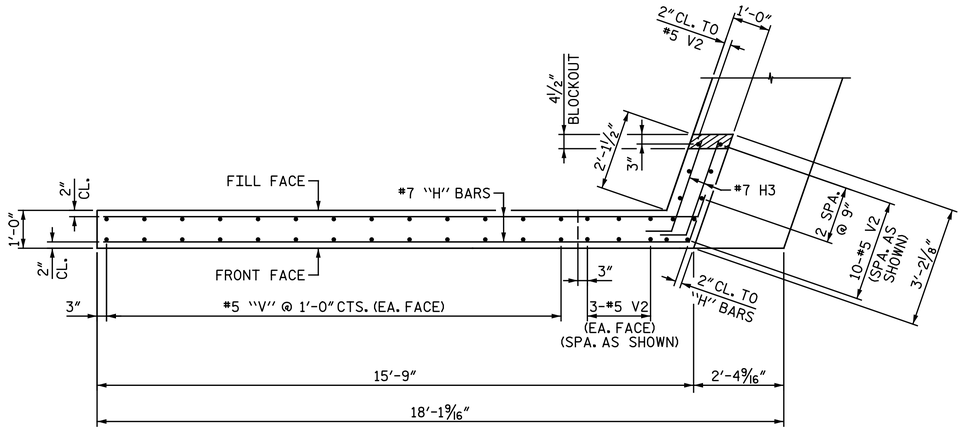
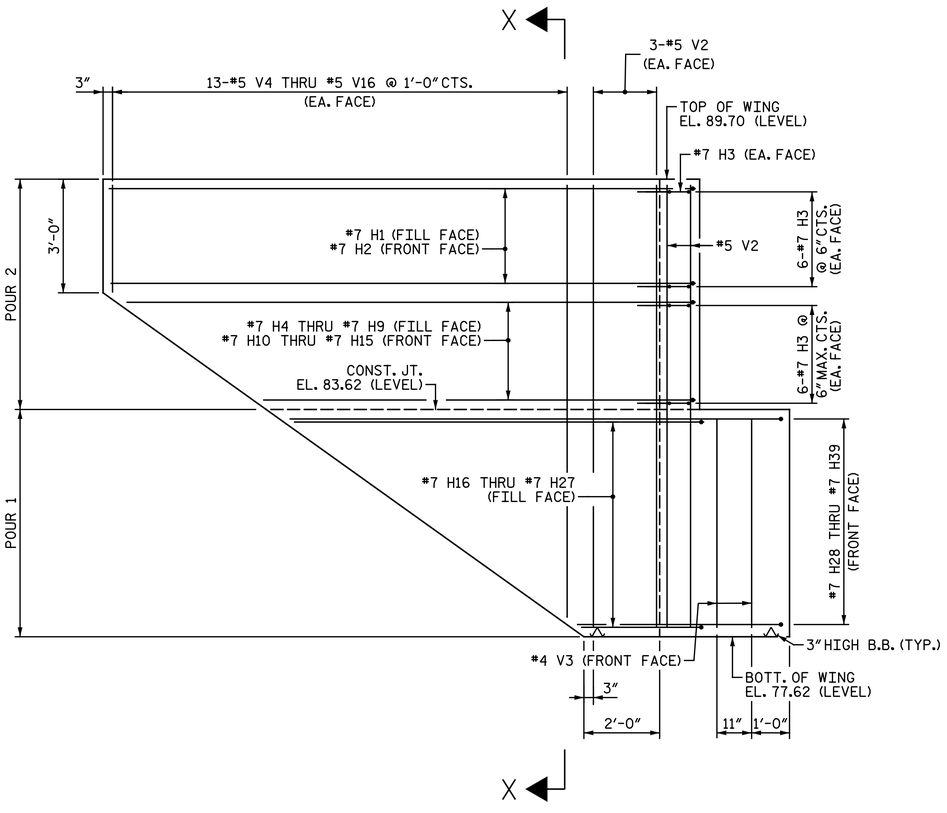
1			3			TOTAL SHEETS
2			4			31

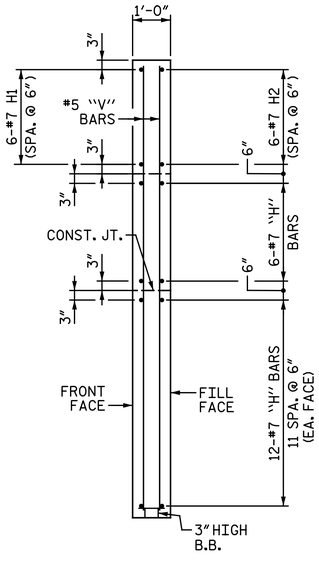
DRAWN BY : C. E. MAYHEW DATE : 6-5-17
CHECKED BY : D. A. COLETTI DATE : 6-9-17



PLAN OF LEFT WING



ELEVATION OF LEFT WING



SECTION X-X

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

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REVISIONS						SHEET NO.
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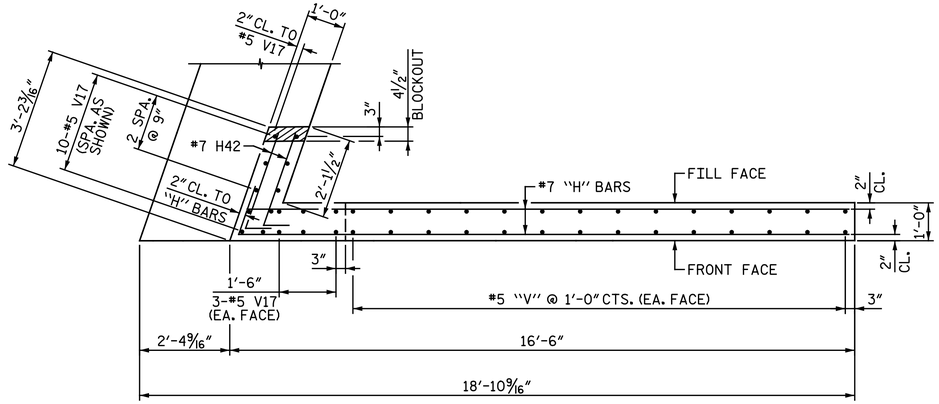
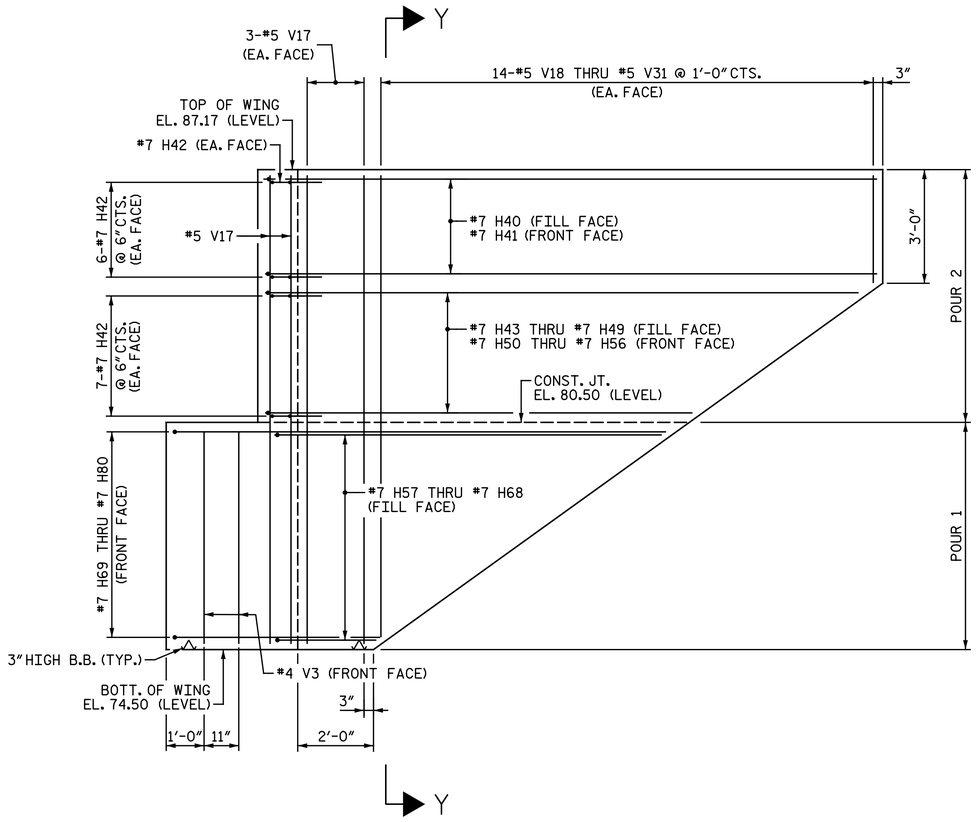
1			3			TOTAL SHEETS
2			4			31

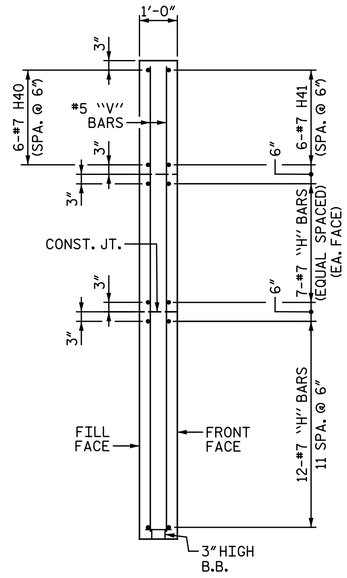
DRAWN BY : C. E. MAYHEW DATE : 4-14-17
CHECKED BY : D. A. COLETTI DATE : 6-9-17



PLAN OF RIGHT WING



ELEVATION OF RIGHT WING



SECTION Y-Y

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

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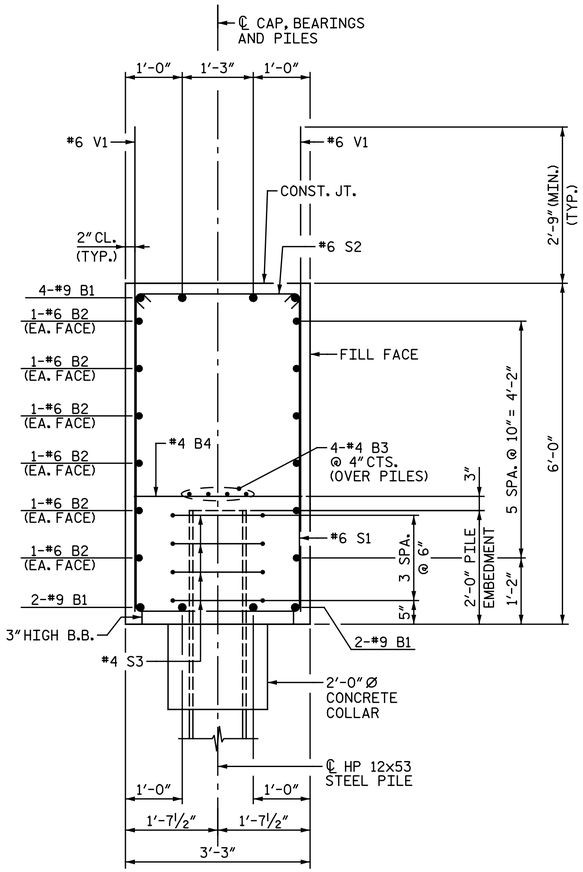
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-26
1			3			TOTAL SHEETS
2			4			31

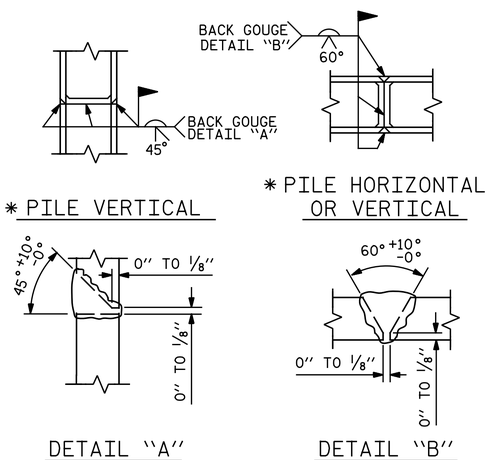
DRAWN BY : C. E. MAYHEW DATE : 6-7-17
CHECKED BY : D. A. COLETTI DATE : 6-9-17



SECTION A-A

BAR	A	BAR	A
H1	15' - 8"	H41	16' - 1"
H2	15' - 5"	H42	2' - 6"
H3	2' - 6"	H43	15' - 4"
H4	15' - 2"	H44	14' - 7"
H5	14' - 5"	H45	13' - 10"
H6	13' - 8"	H46	13' - 1"
H7	12' - 12"	H47	12' - 4"
H8	12' - 3"	H48	11' - 7"
H9	11' - 7"	H49	10' - 11"
H10	14' - 11"	H50	15' - 6"
H11	14' - 2"	H51	14' - 10"
H12	13' - 5"	H52	14' - 1"
H13	12' - 9"	H53	13' - 4"
H14	11' - 12"	H54	12' - 7"
H15	11' - 4"	H55	11' - 10"
H16	10' - 9"	H56	11' - 2"
H17	10' - 1"	H57	10' - 3"
H18	9' - 5"	H58	9' - 6"
H19	8' - 8"	H59	8' - 10"
H20	7' - 12"	H60	8' - 1"
H21	7' - 4"	H61	7' - 5"
H22	6' - 7"	H62	6' - 9"
H23	5' - 11"	H63	5' - 12"
H24	5' - 3"	H64	5' - 4"
H25	4' - 6"	H65	4' - 8"
H26	3' - 10"	H66	3' - 11"
H27	3' - 2"	H67	3' - 3"
H28	12' - 11"	H68	2' - 7"
H29	12' - 2"	H69	12' - 9"
H30	11' - 6"	H70	12' - 1"
H31	10' - 9"	H71	11' - 5"
H32	10' - 1"	H72	10' - 8"
H33	9' - 5"	H73	9' - 12"
H34	8' - 8"	H74	9' - 4"
H35	7' - 12"	H75	8' - 7"
H36	7' - 4"	H76	7' - 11"
H37	6' - 7"	H77	7' - 3"
H38	5' - 11"	H78	6' - 6"
H39	5' - 3"	H79	5' - 10"
H40	15' - 10"	H80	5' - 2"

NOTE:
FOR TEMPORARY DRAINAGE AT END BENT DETAILS, SEE "INTEGRAL END BENT 1 DETAILS" SHEET.



PILE SPLICE DETAILS

*POSITION OF PILE DURING WELDING

BILL OF MATERIAL
INTEGRAL END BENT 2

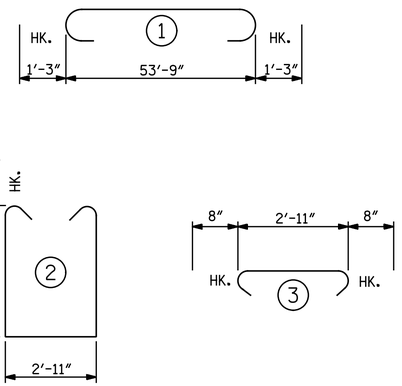
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	56' - 3"	1,530
B2	12	#6	STR.	53' - 11"	972
B3	8	#4	STR.	28' - 3"	151
B4	14	#4	STR.	2' - 11"	27
H1	6	#7	5	16' - 9"	206
H2	6	#7	5	16' - 7"	203
H3	24	#7	5	3' - 8"	180
H4	1	#7	5	16' - 4"	33
H5	1	#7	5	15' - 7"	32
H6	1	#7	5	14' - 10"	30
H7	1	#7	5	14' - 2"	29
H8	1	#7	5	13' - 5"	27
H9	1	#7	5	12' - 9"	26
H10	1	#7	5	16' - 1"	33
H11	1	#7	5	15' - 4"	31
H12	1	#7	5	14' - 7"	30
H13	1	#7	5	13' - 11"	28
H14	1	#7	5	13' - 2"	27
H15	1	#7	5	12' - 6"	26
H16	1	#7	5	11' - 11"	24
H17	1	#7	5	11' - 3"	23
H18	1	#7	5	10' - 7"	22
H19	1	#7	5	9' - 10"	20
H20	1	#7	5	9' - 2"	19
H21	1	#7	5	8' - 6"	17
H22	1	#7	5	7' - 9"	16
H23	1	#7	5	7' - 1"	14
H24	1	#7	5	6' - 5"	13
H25	1	#7	5	5' - 8"	12
H26	1	#7	5	5' - 0"	10
H27	1	#7	5	4' - 4"	9
H28	1	#7	5	14' - 1"	29
H29	1	#7	5	13' - 4"	27
H30	1	#7	5	12' - 8"	26
H31	1	#7	5	11' - 11"	24
H32	1	#7	5	11' - 3"	23
H33	1	#7	5	10' - 7"	22
H34	1	#7	5	9' - 10"	20
H35	1	#7	5	9' - 2"	19
H36	1	#7	5	8' - 6"	17
H37	1	#7	5	7' - 9"	16
H38	1	#7	5	7' - 1"	14
H39	1	#7	5	6' - 5"	13
H40	6	#7	5	17' - 0"	208
H41	6	#7	5	17' - 3"	212
H42	26	#7	5	3' - 8"	195
H43	1	#7	5	16' - 6"	34
H44	1	#7	4	15' - 9"	32
H45	1	#7	4	15' - 0"	31
H46	1	#7	4	14' - 3"	29
H47	1	#7	4	13' - 6"	28
H48	1	#7	4	12' - 9"	26
H49	1	#7	4	12' - 1"	25
H50	1	#7	4	16' - 8"	34
H51	1	#7	4	16' - 0"	33
H52	1	#7	4	15' - 3"	31
H53	1	#7	4	14' - 6"	30
H54	1	#7	4	13' - 9"	28
H55	1	#7	4	13' - 0"	27
H56	1	#7	4	12' - 4"	25
H57	1	#7	4	11' - 5"	23
H58	1	#7	4	10' - 8"	22
H59	1	#7	4	10' - 0"	20
H60	1	#7	4	9' - 3"	19
H61	1	#7	4	8' - 7"	18
H62	1	#7	4	7' - 11"	16
H63	1	#7	4	7' - 2"	15

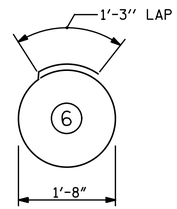
BILL OF MATERIAL
INTEGRAL END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H64	1	#7	4	6' - 6"	13
H65	1	#7	4	5' - 10"	12
H66	1	#7	4	5' - 1"	10
H67	1	#7	4	4' - 5"	9
H68	1	#7	4	3' - 9"	8
H69	1	#7	4	13' - 11"	28
H70	1	#7	4	13' - 3"	27
H71	1	#7	4	12' - 7"	26
H72	1	#7	4	11' - 10"	24
H73	1	#7	4	11' - 2"	23
H74	1	#7	4	10' - 6"	21
H75	1	#7	4	9' - 9"	20
H76	1	#7	4	9' - 1"	19
H77	1	#7	4	8' - 5"	17
H78	1	#7	4	7' - 8"	16
H79	1	#7	4	7' - 0"	14
H80	1	#7	4	6' - 4"	13
S1	55	#6	2	15' - 6"	1,280
S2	55	#6	3	4' - 3"	351
S3	40	#4	6	6' - 6"	174
V1	84	#6	STR.	8' - 6"	1,072
V2	16	#5	STR.	11' - 7"	193
V3	4	#4	STR.	5' - 7"	15
V4	2	#5	STR.	11' - 3"	23
V5	2	#5	STR.	10' - 7"	22
V6	2	#5	STR.	9' - 10"	21
V7	2	#5	STR.	9' - 2"	19
V8	2	#5	STR.	8' - 5"	18
V9	2	#5	STR.	7' - 9"	16
V10	2	#5	STR.	7' - 0"	15
V11	2	#5	STR.	6' - 3"	13
V12	2	#5	STR.	5' - 7"	12
V13	2	#5	STR.	4' - 10"	10
V14	2	#5	STR.	4' - 2"	9
V15	2	#5	STR.	3' - 5"	7
V16	2	#5	STR.	2' - 8"	6
V17	16	#5	STR.	12' - 3"	204
V18	2	#5	STR.	12' - 1"	25
V19	2	#5	STR.	11' - 4"	24
V20	2	#5	STR.	10' - 7"	22
V21	2	#5	STR.	9' - 11"	21
V22	2	#5	STR.	9' - 2"	19
V23	2	#5	STR.	8' - 5"	18
V24	2	#5	STR.	7' - 9"	16
V25	2	#5	STR.	7' - 0"	15
V26	2	#5	STR.	6' - 4"	13
V27	2	#5	STR.	5' - 7"	12
V28	2	#5	STR.	4' - 10"	10
V29	2	#5	STR.	4' - 2"	9
V30	2	#5	STR.	3' - 5"	7
V31	2	#4	STR.	2' - 8"	4

REINFORCING STEEL	LBS.	9,226
CLASS A CONCRETE		
POUR 1 -		
CAP, LOWER PART OF WINGS & COLLARS	C.Y.	44.0
POUR 2 -		
UPPER PART OF WINGS	C.Y.	8.1
TOTAL	C.Y.	52.1
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	EA.	10
HP 12x53 STEEL PILES NO. 10	L.F.	850
PILE REDRIVES	EA.	5

BAR TYPES





ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Domenic A. Coletti

8/14/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2 DETAILS

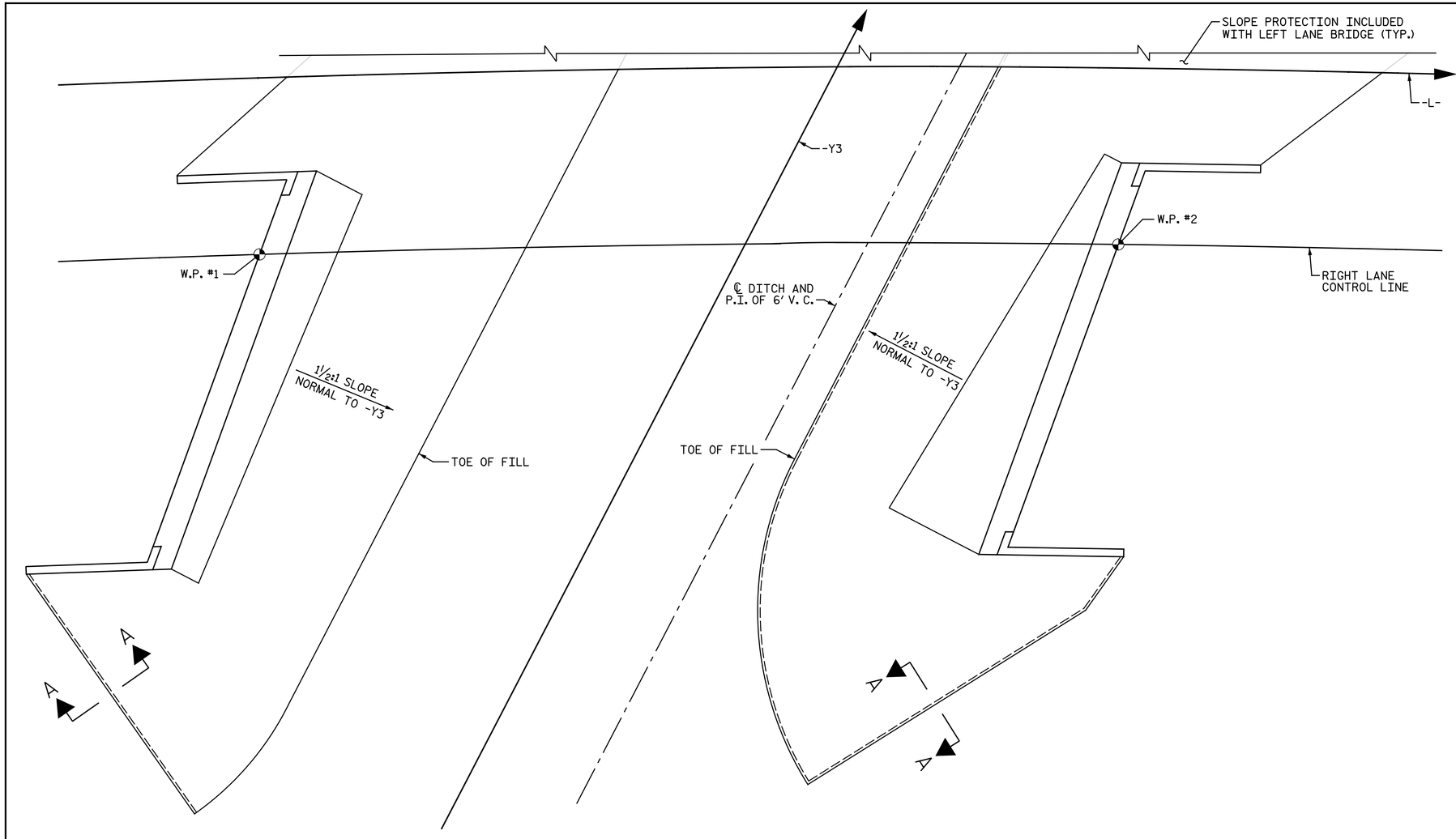
RIGHT LANE

DRAWN BY : C. E. MAYHEW DATE : 4-14-17
CHECKED BY : D. A. COLETTI DATE : 6-9-17

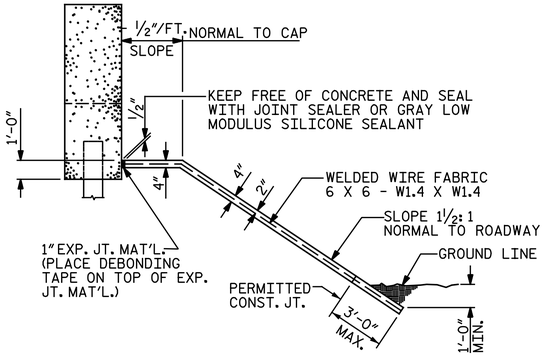
Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

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

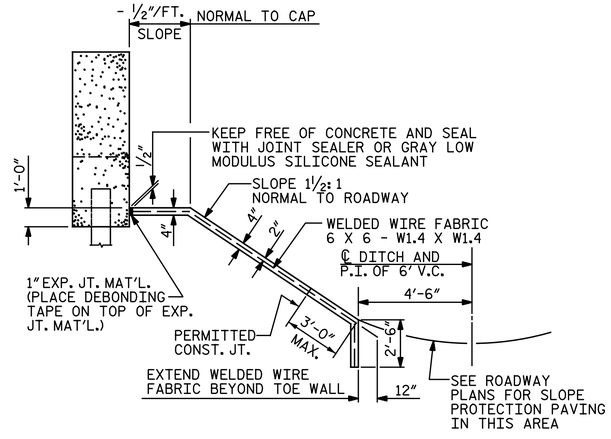
SHEET NO. S4-27
TOTAL SHEETS 31



PLAN



SECTION ALONG ℄ SURVEY WHEN DITCH IS NOT PROVIDED



SECTION ALONG ℄ SURVEY WHEN FILL CATCHES IN DITCH

GENERAL NOTES:

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 WIDTHS AND ELEVATIONS, SEE GENERAL DRAWING AND "SLOPE PROTECTION DETAILS" SHEET 2 OF 2.

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.

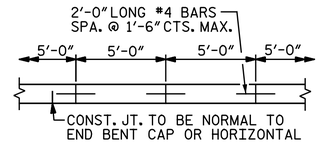
SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING.

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.

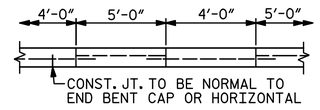
BRIDGE @ STA. 166+72.51 -L- (RIGHT LANE)	4 INCH SLOPE PROTECTION	✳ WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	470	850
END BENT 2	400	720

✳ QUANTITY SHOWN IS BASED ON 5' POURS.



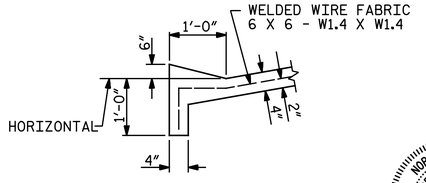
STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL



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

OPTIONAL POURING DETAIL



SECTION A-A

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SLOPE PROTECTION DETAILS

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

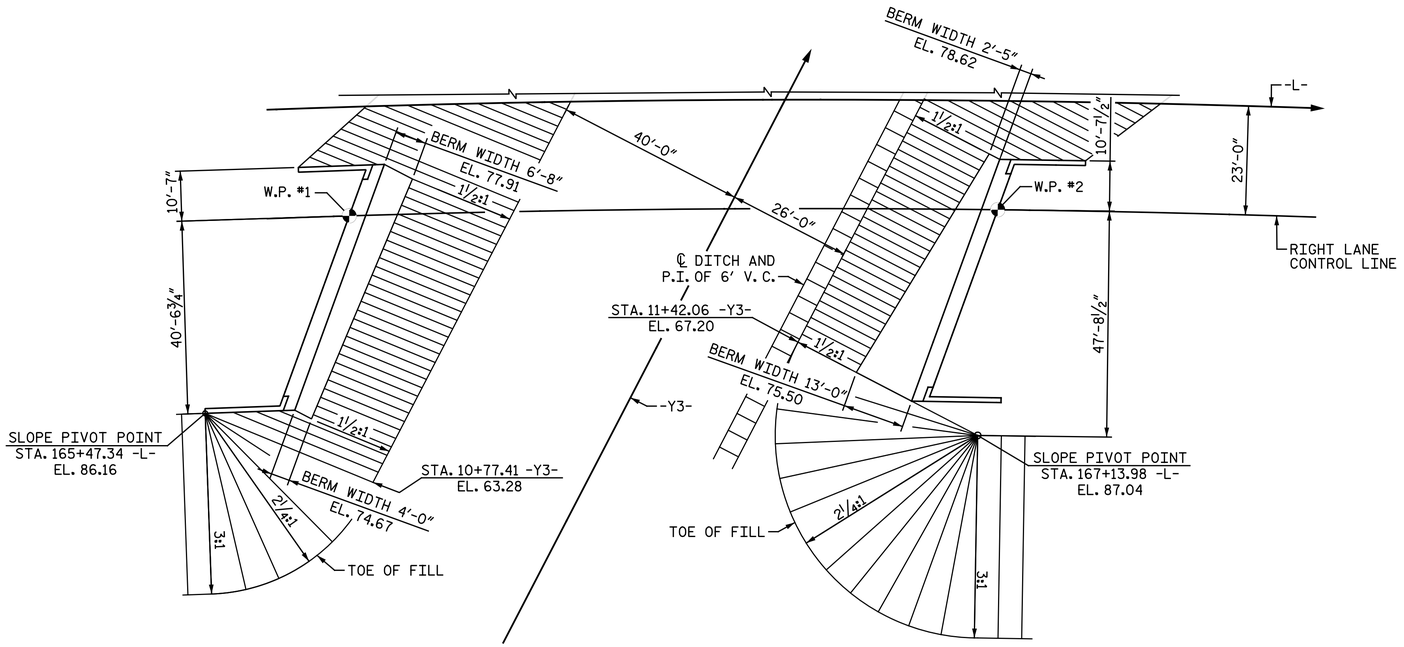
ASSEMBLED BY : M. D. MAYHEW	DATE : 6-15-17
CHECKED BY : D. A. COLETTI	DATE : 6-16-17
DRAWN BY : ELR 5/92	REV. 10/1/11 MAA/GM
CHECKED BY : GRP 6/92	REV. 12/21/11 MAA/GM
	REV. 1/16 MAA/TMG

Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-28
1			3			TOTAL SHEETS
2			4			31

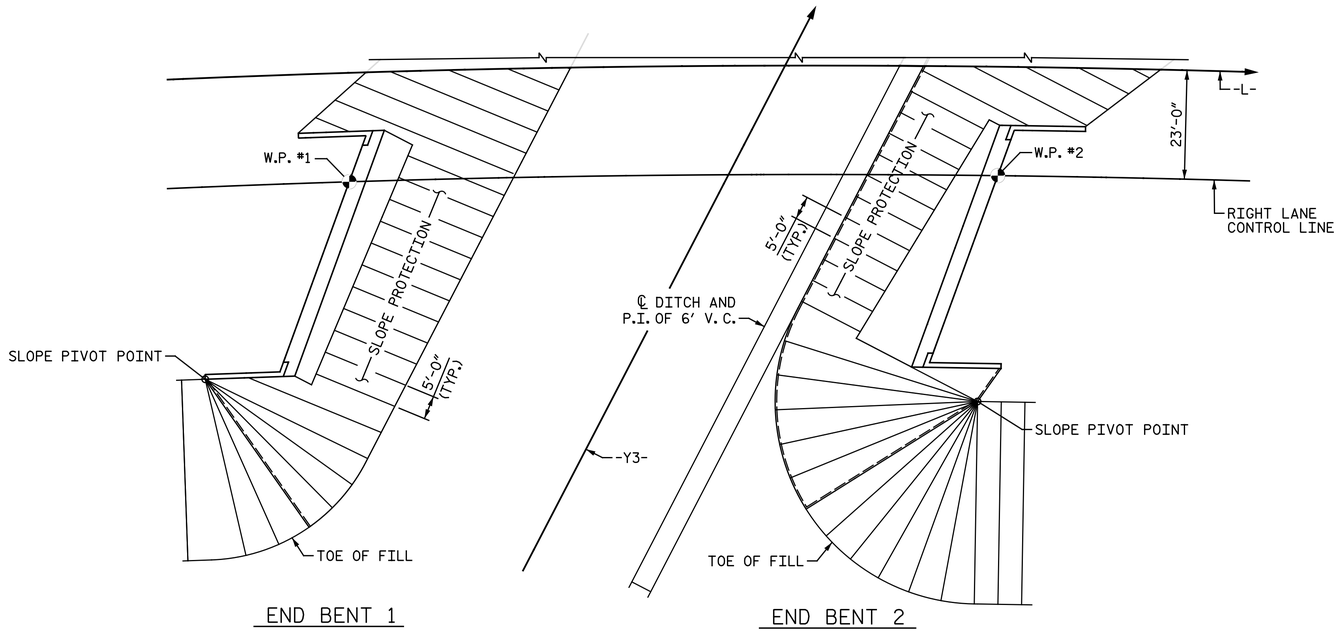
NOTE:

ALL ELEVATIONS AND BERM WIDTHS ARE GIVEN AT THE TOP OF CONCRETE SLOPE PROTECTION.



END BENT 1 END BENT 2

PLAN - GRADING



END BENT 1 END BENT 2

PLAN - CONCRETE PLACEMENT

(1½:1 SLOPE)

ASSEMBLED BY : M. D. MAYHEW	DATE : 6-15-17		
CHECKED BY : D. A. COLETTI	DATE : 6-16-17		
DRAWN BY : WJH 10/88	REV. 5/1/06	TLA/GM	
CHECKED BY : FCJ 10/88	REV. 10/1/11	MAA/GM	
	REV. 1/16	MAA/TMG	

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

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Michael Baker INTERNATIONAL

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

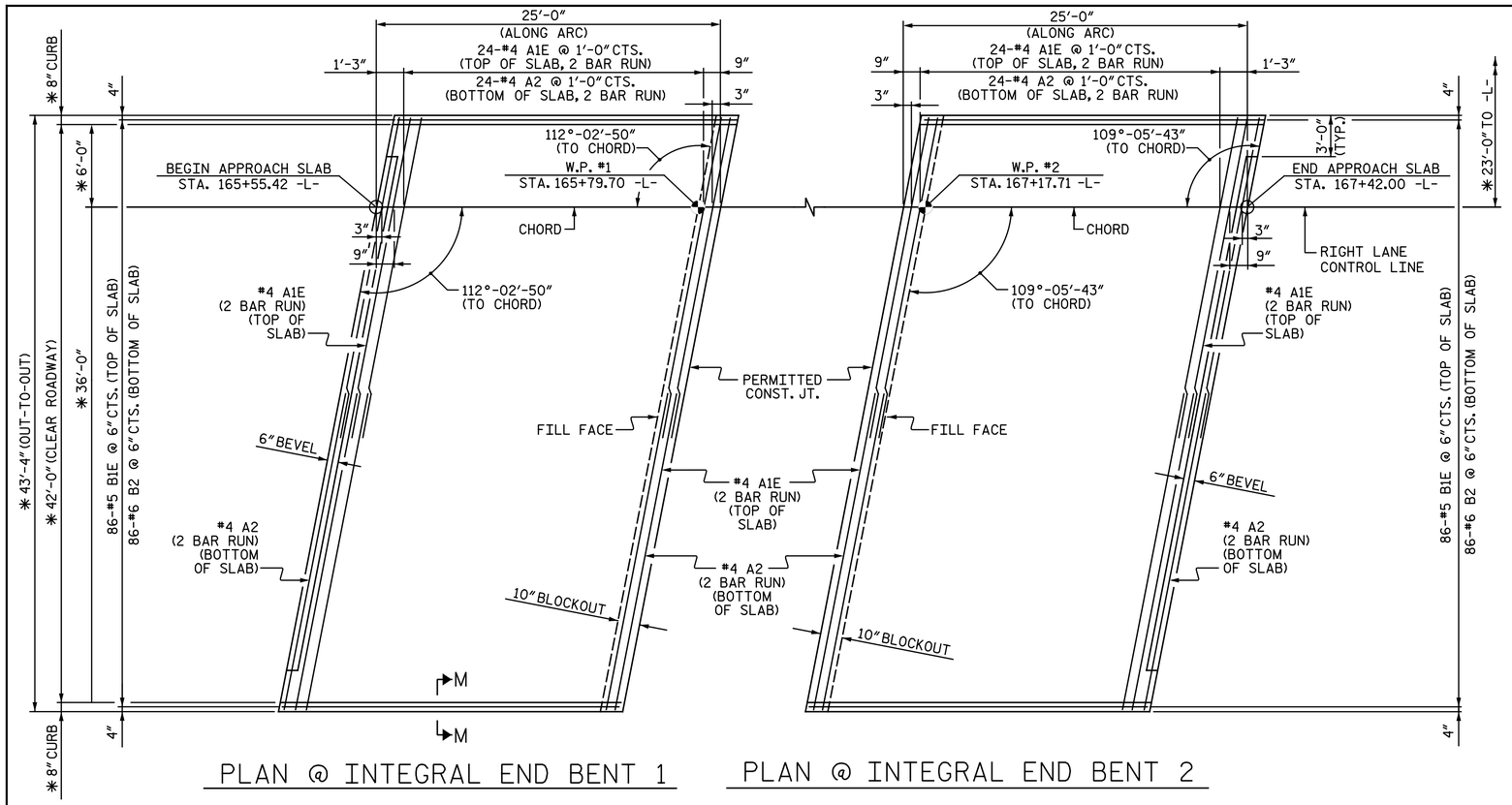
STANDARD

SLOPE PROTECTION DETAILS

RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-29
1			3			TOTAL SHEETS
2			4			31

STD. NO. SP2



PLAN @ INTEGRAL END BENT 1

PLAN @ INTEGRAL END BENT 2

NOTES:

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

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

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

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4"Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

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

#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4"Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

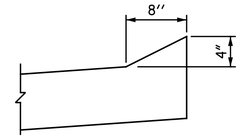
BILL OF MATERIAL
APPROACH SLAB AT END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	52	#4	STR.	24' - 2"	839
A2	52	#4	STR.	24' - 0"	834
B1E	86	#5	STR.	24' - 2"	2,168
B2	86	#6	STR.	24' - 8"	3,186
REINFORCING STEEL				LBS.	4,020
EPOXY COATED REINFORCING STEEL				LBS.	3,007
CLASS AA CONCRETE				C.Y.	46.8

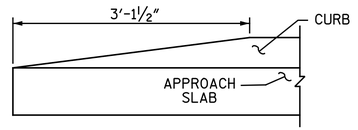
BILL OF MATERIAL
APPROACH SLAB AT END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	52	#4	STR.	24' - 2"	839
A2	52	#4	STR.	24' - 0"	834
B1E	86	#5	STR.	24' - 2"	2,168
B2	86	#6	STR.	24' - 8"	3,186
REINFORCING STEEL				LBS.	4,020
EPOXY COATED REINFORCING STEEL				LBS.	3,007
CLASS AA CONCRETE				C.Y.	46.8

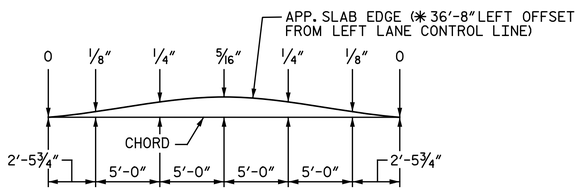
SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"



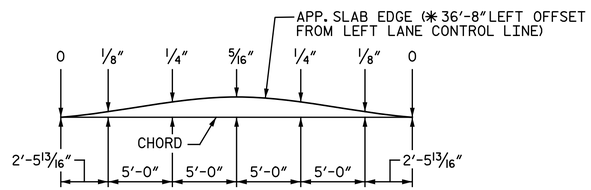
SECTION M-M



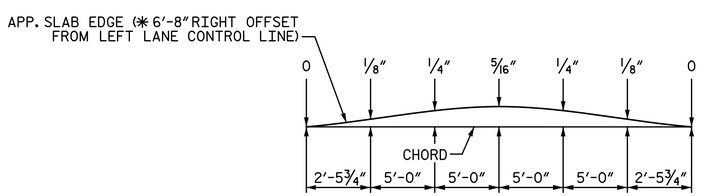
END OF CURB WITHOUT SHOULDER BERM GUTTER



LEFT EDGE

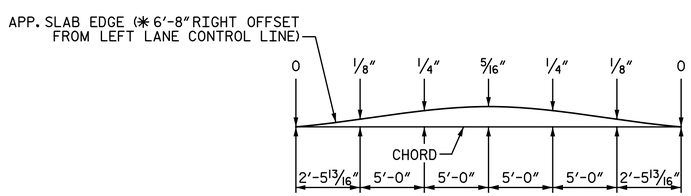


LEFT EDGE



RIGHT EDGE

APPROACH SLAB @ END BENT 1



RIGHT EDGE

APPROACH SLAB @ END BENT 2

✳ RADIAL DIMENSIONS

ARC OFFSETS

DRAWN BY : N. B. SPEAKS DATE : 3-6-17
CHECKED BY : D. A. COLETTI DATE : 6-8-17

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 166+72.51 -L-

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

Digitally signed by Domenic A. Coletti
8/14/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

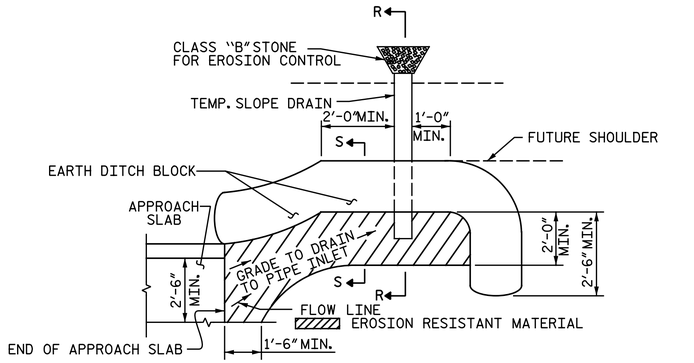
Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT

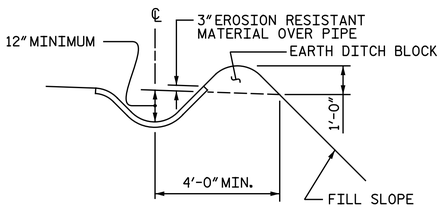
RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-30
1			3			TOTAL SHEETS
2			4			31

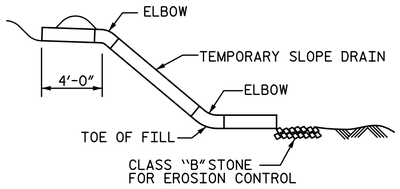


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

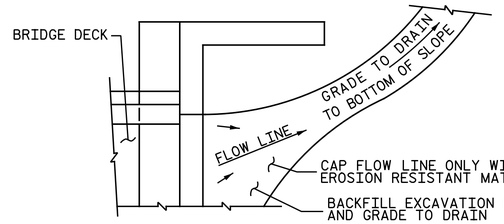
PLAN VIEW



SECTION S-S



SECTION R-R

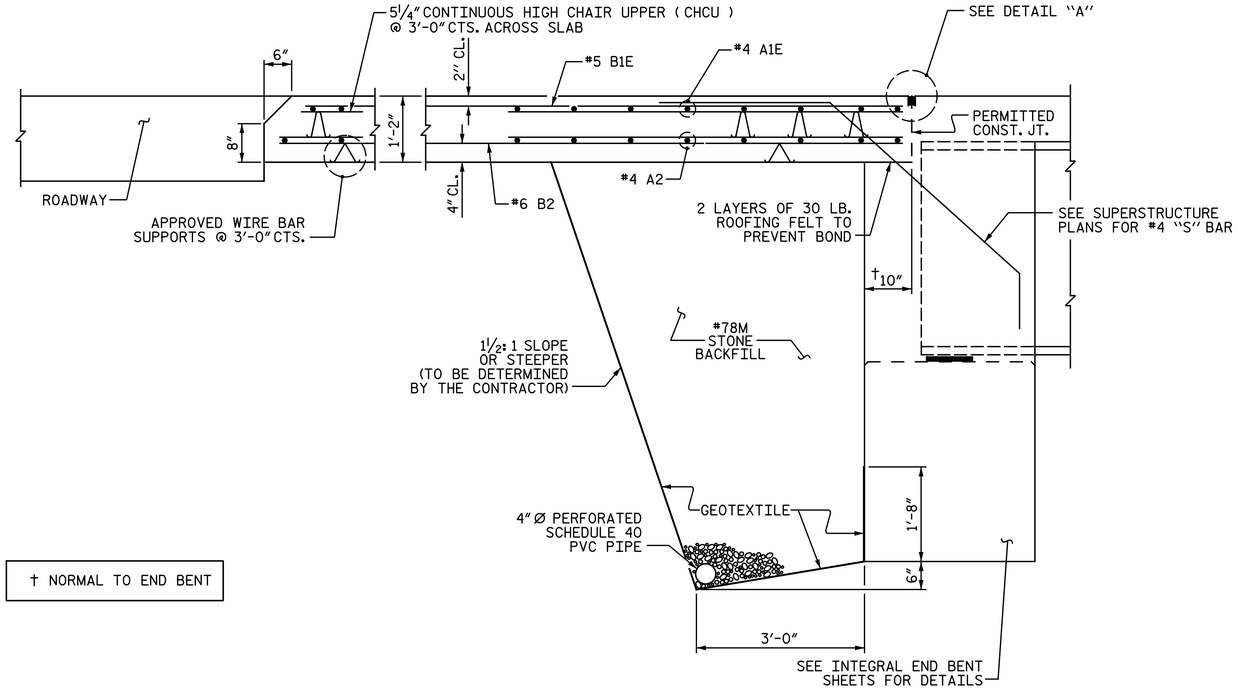


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

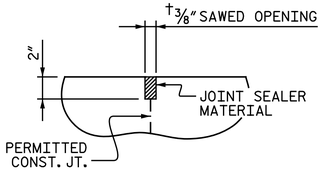
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION THRU SLAB

† NORMAL TO END BENT



DETAIL "A"

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 166+72.51 -L-

NORTH CAROLINA PROFESSIONAL SEAL 029589 ENGINEER DOMENIC A. COLETTI

8/14/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB DETAILS

RIGHT LANE

Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

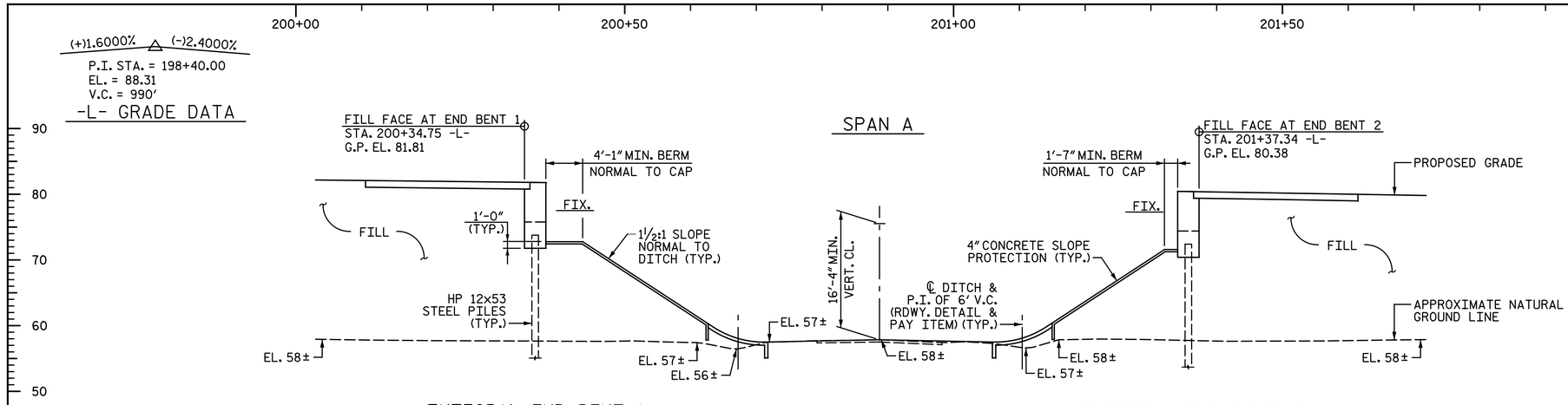
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-31
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : N. B. SPEAKS DATE : 5-10-17
CHECKED BY : D. A. COLETTI DATE : 6-8-17

(+)1.6000% (-)2.4000%

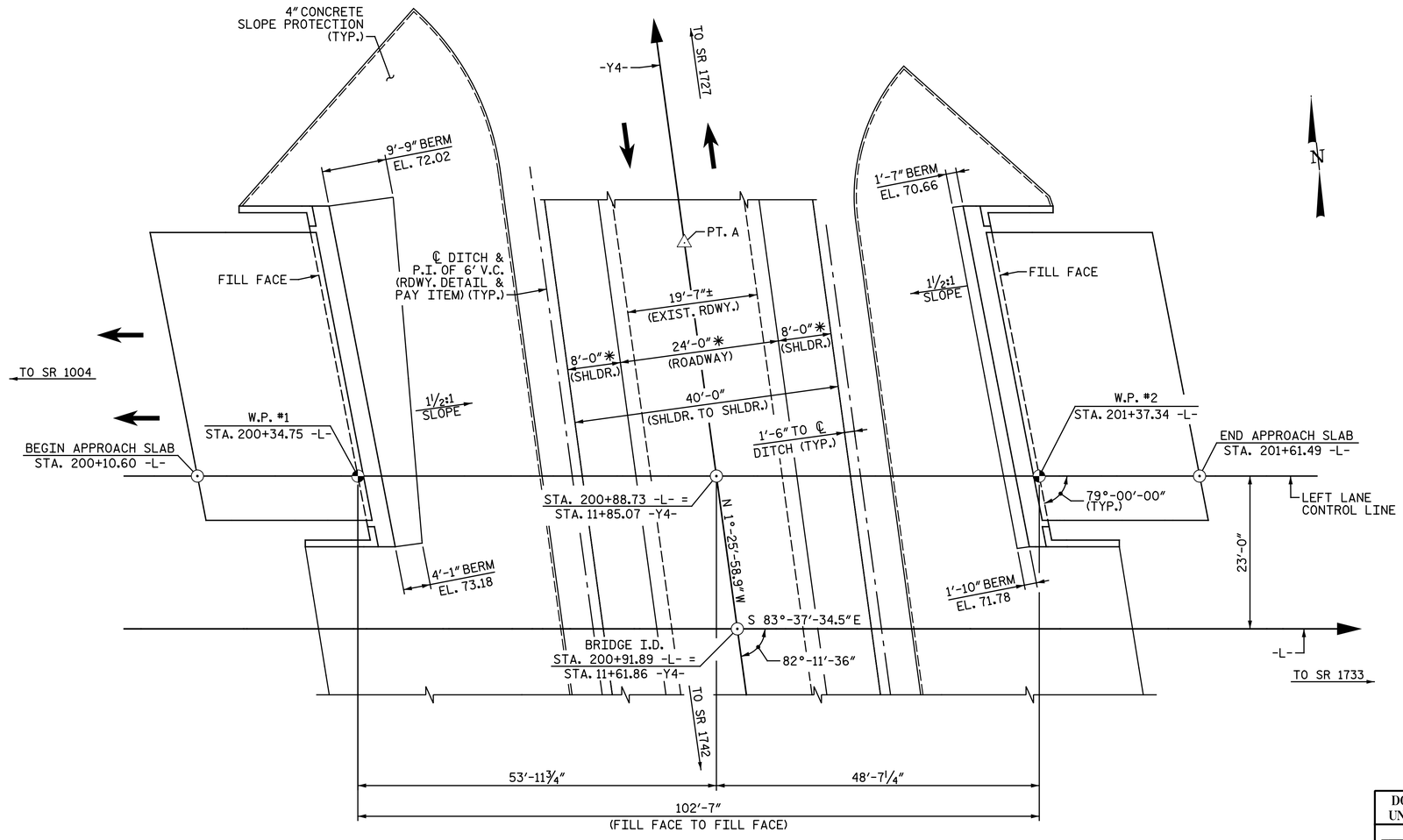
P.I. STA. = 198+40.00
EL. = 88.31
V.C. = 990'

-L- GRADE DATA



SECTION ALONG LEFT LANE CONTROL LINE

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



PLAN

(PILES NOT SHOWN FOR CLARITY)

POINT	STATION ON -Y4-	OFFSET	ELEVATION ON -Y4-
A	12+20.48	0.00	58.44

△ - POINT OF MINIMUM VERTICAL CLEARANCE OVER EXISTING ROADWAY WITH 1½" OVERLAY

* - FUTURE LANE CONFIGURATION

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-
11+61.86 -Y4-

SHEET 1 OF 3 BRIDGE NO. 212

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

8/10/2017

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1732 BETWEEN SR 1004 AND SR 1733

LEFT LANE

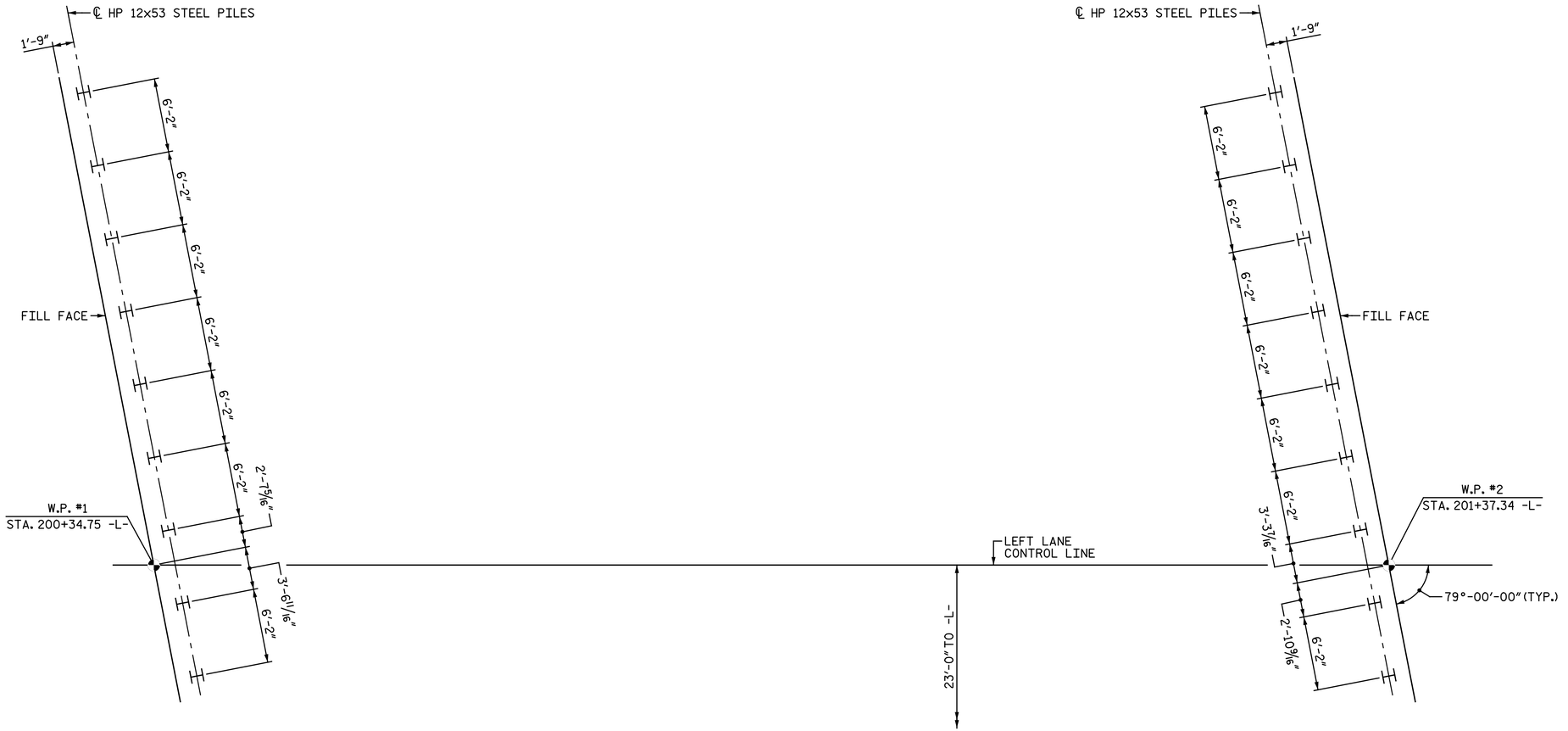
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL

Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-1
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : C. E. MAYHEW DATE : 3-23-17
CHECKED BY : B. J. BELL DATE : 4-10-17



INTEGRAL
END BENT 1

INTEGRAL
END BENT 2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINES.

ALL PILES ARE VERTICAL.

NOTES:

FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 AND END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 109 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 185 TONS PER PILE.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENT NO. 1 OR END BENT NO. 2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS AND FOR PILE DRIVING CRITERIA, SEE PILE DRIVING CRITERIA PROVISION.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 40-50 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

OBSERVE A 1 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT, END BENT AND REINFORCED BRIDGE APPROACH FILL, IF APPLICABLE, BEFORE BEGINNING APPROACH SLAB CONSTRUCTION AT END BENT NO. 1 AND END BENT NO. 2.

DRAWN BY : M. D. MAYHEW DATE : 3-13-17
CHECKED BY : B. J. BELL DATE : 4-10-17

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL

Michael Baker Engineering
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NC License No. : F-1084

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-
11+61.86 -Y4-

SHEET 2 OF 3

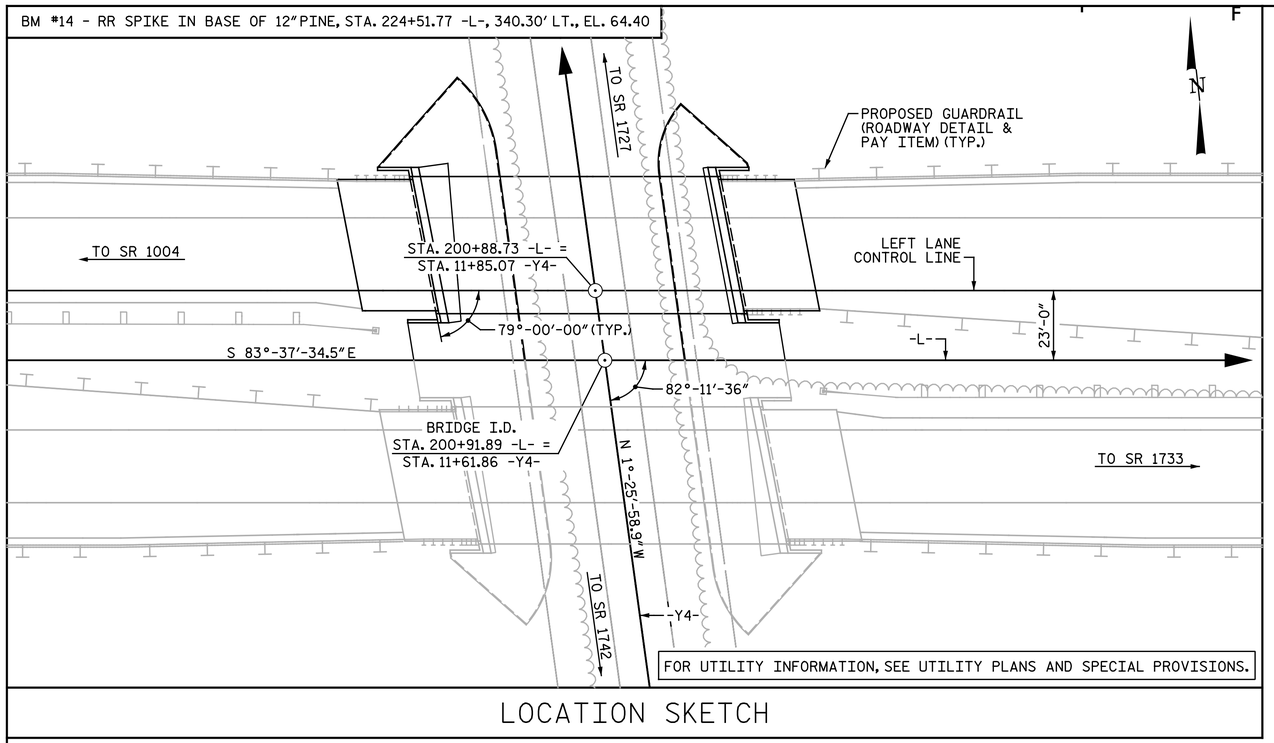
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1732 BETWEEN SR 1004 AND SR 1733

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-2
1			3			TOTAL SHEETS
2			4			25



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 PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.

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

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

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

LOCATION	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	54" 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
	EA.	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	EA.	NO.	LIN. FT.	EA.	LIN. FT.	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE		4,642	5,805				5	502.19					201.77		LUMP SUM
END BENT 1				38.1		5,230			9	9	495	5		400	
END BENT 2				38.1		5,230			9	9	540	5		270	
TOTAL	1	4,642	5,805	76.2	LUMP SUM	10,460	5	502.19	18	18	1,035	10	201.77	670	LUMP SUM

DRAWN BY : C. E. MAYHEW DATE : 3-17-17
CHECKED BY : B. J. BELL DATE : 4-10-17

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 200+91.89 -L-
11+61.86 -Y4-
SHEET 3 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER SR 1732 BETWEEN SR 1004 AND SR 1733

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-3
1			3			TOTAL SHEETS
2			4			25

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

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W × 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	1.07	--	1.75	0.821	1.58	A	1	49.50	0.960	1.08	A	3	19.40	1.00	0.821	1.07	A	1	49.50	1,2
		HL-93 (OPERATING)	N/A		1.45	--	1.35	0.821	2.04	A	1	49.50	0.960	1.45	A	3	19.40	N/A	-	-	-	-	-	2
		HS-20 (INVENTORY)	36.000	2	1.45	52.20	1.75	0.821	2.20	A	1	49.50	0.960	1.45	A	3	19.40	1.00	0.821	1.49	A	1	49.50	1,2
		HS-20 (OPERATING)	36.000		1.93	69.48	1.35	0.821	2.85	A	1	49.50	0.960	1.93	A	3	19.40	N/A	-	-	-	-	-	2
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.53	47.66	1.40	0.821	6.51	A	1	49.50	0.960	4.75	A	3	19.40	1.00	0.821	3.53	A	1	49.50	1,2
		SNGARBS2	20.000		2.56	51.20	1.40	0.821	4.72	A	1	49.50	0.960	3.30	A	3	19.40	1.00	0.821	2.56	A	1	49.50	1,2
		SNAGRIS2	22.000		2.39	52.58	1.40	0.821	4.41	A	1	49.50	0.960	3.03	A	3	19.40	1.00	0.821	2.39	A	1	49.50	1,2
		SNCOTTS3	27.250		1.75	47.69	1.40	0.821	3.24	A	1	49.50	0.960	2.28	A	3	19.40	1.00	0.821	1.75	A	1	49.50	1,2
		SNAGGRS4	34.925		1.44	50.29	1.40	0.821	2.65	A	1	49.50	0.960	1.84	A	3	19.40	1.00	0.821	1.44	A	1	49.50	1,2
		SNS5A	35.550		1.41	50.13	1.40	0.821	2.60	A	1	49.50	0.960	1.86	A	3	19.40	1.00	0.821	1.41	A	1	49.50	1,2
		SNS6A	39.950		1.28	51.14	1.40	0.821	2.36	A	1	49.50	0.960	1.67	A	3	19.40	1.00	0.821	1.28	A	1	49.50	1,2
		SNS7B	42.000		1.22	51.24	1.40	0.821	2.25	A	1	49.50	0.960	1.62	A	3	19.40	1.00	0.821	1.22	A	1	49.50	1,2
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.56	51.48	1.40	0.821	2.87	A	1	49.50	0.960	2.03	A	3	19.40	1.00	0.821	1.56	A	1	49.50	1,2
		TNT4A	33.075		1.56	51.60	1.40	0.821	2.88	A	1	49.50	0.960	1.98	A	3	19.40	1.00	0.821	1.56	A	1	49.50	1,2
		TNT6A	41.600		1.27	52.83	1.40	0.821	2.33	A	1	49.50	0.960	1.72	A	3	19.40	1.00	0.821	1.27	A	1	49.50	1,2
		TNT7A	42.000		1.27	53.34	1.40	0.821	2.34	A	1	49.50	0.960	1.69	A	3	19.40	1.00	0.821	1.27	A	1	49.50	1,2
		TNT7B	42.000		1.30	54.60	1.40	0.821	2.39	A	1	49.50	0.960	1.60	A	3	19.40	1.00	0.821	1.30	A	1	49.50	1,2
		TNAGRIT4	43.000		1.24	53.32	1.40	0.821	2.29	A	1	49.50	0.960	1.54	A	3	19.40	1.00	0.821	1.24	A	1	49.50	1,2
		TNAGT5A	45.000		1.18	53.10	1.40	0.821	2.17	A	1	49.50	0.960	1.52	A	3	19.40	1.00	0.821	1.18	A	1	49.50	1,2
		TNAGT5B	45.000	3	1.17	52.65	1.40	0.821	2.15	A	1	49.50	0.960	1.46	A	3	19.40	1.00	0.821	1.17	A	1	49.50	1,2

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. A SERVICE III LIVE LOAD FACTOR OF 1.0 WAS USED TO BE CONSISTENT WITH THE VALUE USED DURING DESIGN.
2. DISTANCE FROM LEFT END OF SPAN IS GIVEN WITH RESPECT TO CENTERLINE OF BEARING AND IS MEASURED ALONG THE CONTROLLING GIRDER.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

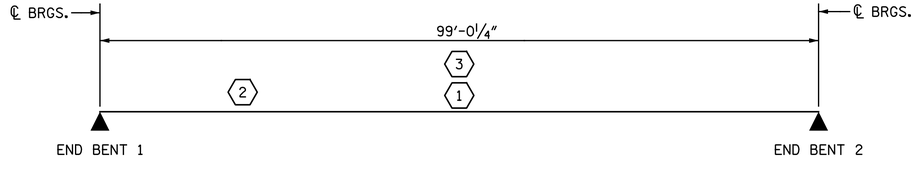
(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

GIRDER LOCATION IS PROVIDED USING GIRDER NUMBER, WHERE GIRDER 1 IS THE LEFT EXTERIOR GIRDER LOOKING AHEAD STATION. SEE "GIRDER LAYOUT" SHEET FOR ALL GIRDER LOCATIONS.



LRFR SUMMARY

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL

Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

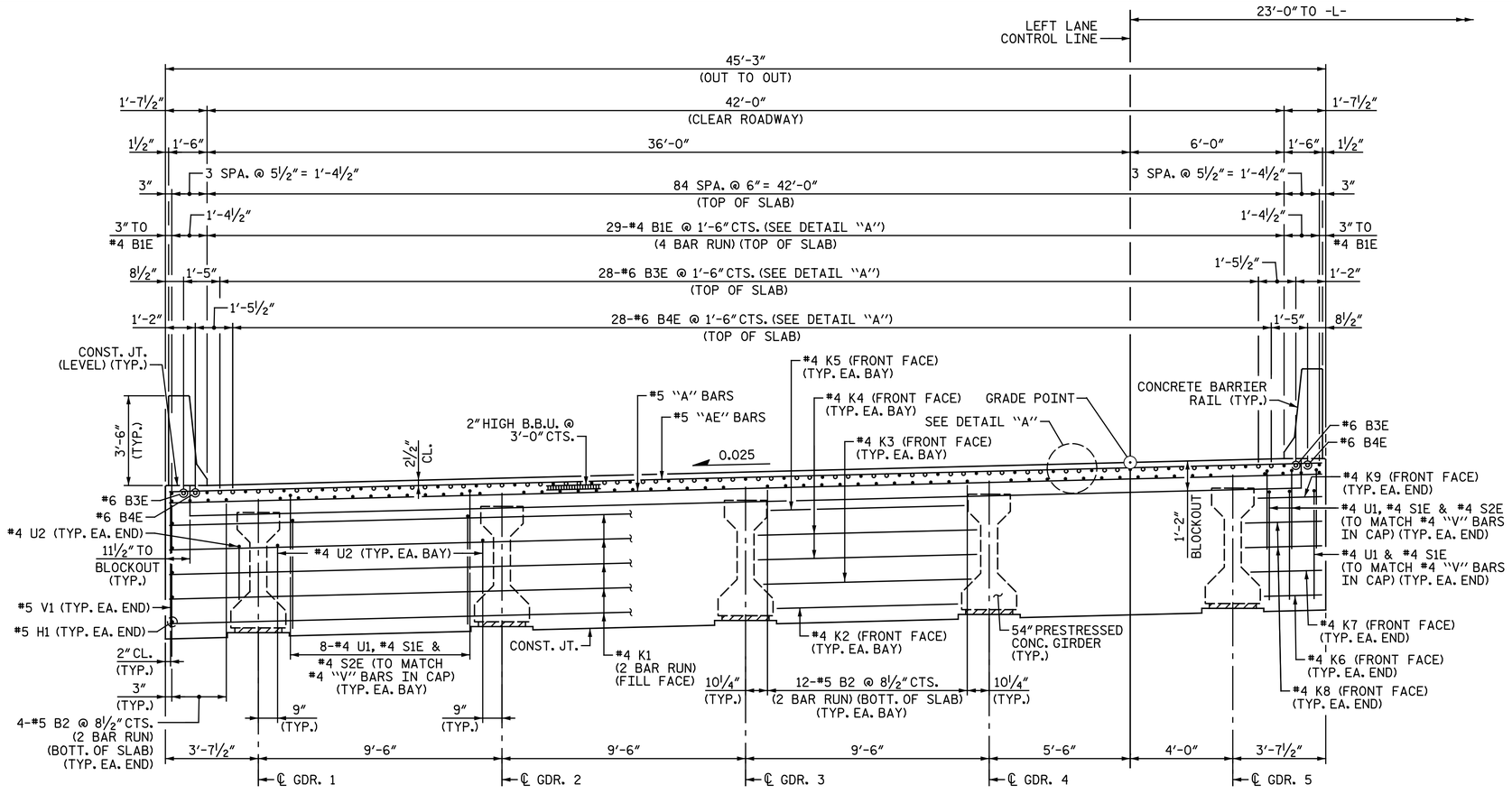
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-4
1			3			TOTAL SHEETS
2			4			25

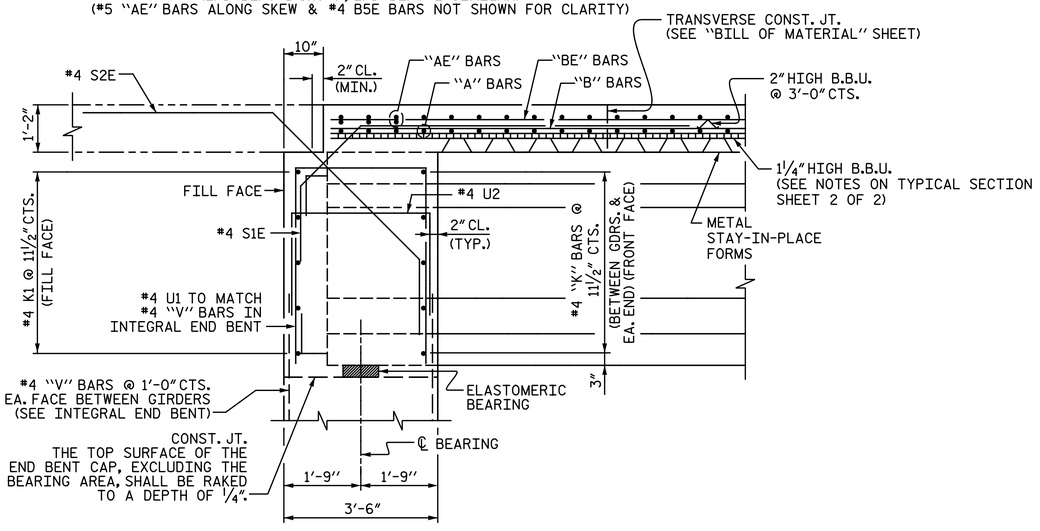
ASSEMBLED BY : N. B. SPEAKS	DATE : 2-27-17
CHECKED BY : B. J. BELL	DATE : 4-6-17
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM

STD. NO. LRFR1

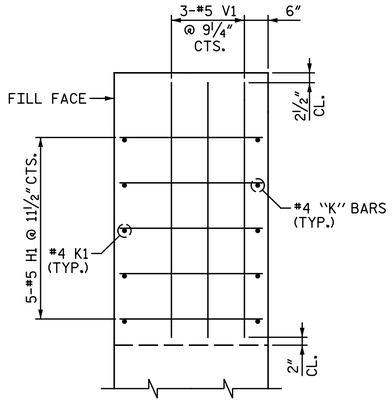


TYPICAL SECTION AT INTEGRAL END BENT

(END BENT 1 SHOWN, END BENT 2 SIMILAR)
(#5 "AE" BARS ALONG SKEW & #4 BSE BARS NOT SHOWN FOR CLARITY)

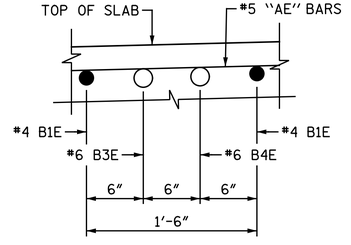


END OF GIRDER DETAIL AT INTEGRAL END BENT



END OF DIAPHRAGM DETAIL

(END BENT 1 SHOWN, END BENT 2 SIMILAR)



DETAIL "A"

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL

Michael Baker Engineering
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NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-5
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : M. D. MAYHEW DATE : 3-15-17
CHECKED BY : B. J. BELL DATE : 3-24-17

NOTES:

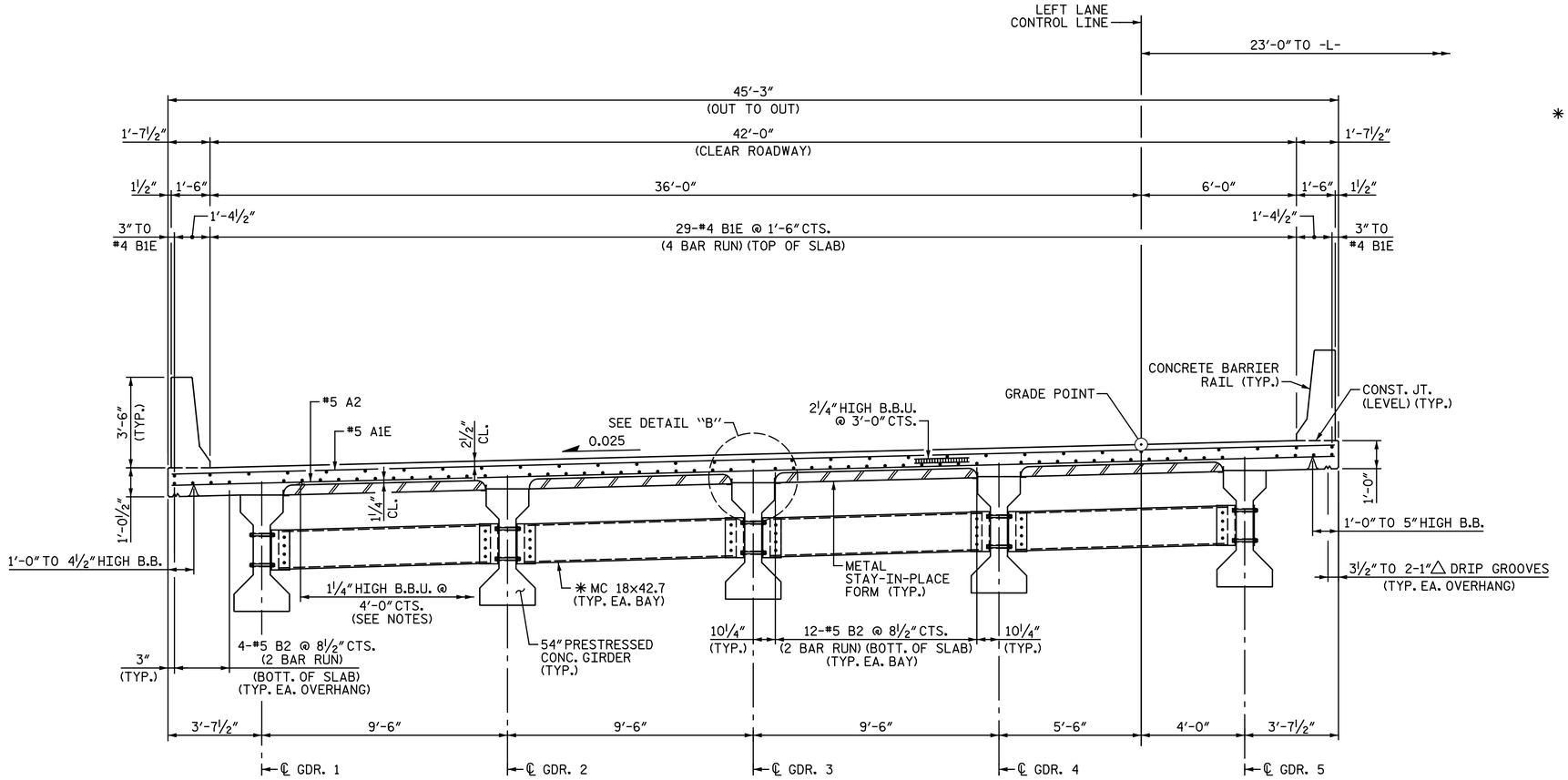
PROVIDE 1¼″ HIGH BEAM BOLSTERS UPPER AT 4′-0″ CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF ″A″ BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4′-0″ CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF ″A″ BARS A CLEAR DISTANCE OF 2½″ ABOVE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

LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS AND TO FACILITATE INSTALLATION OF CONCRETE BARRIER RAIL REINFORCEMENT.

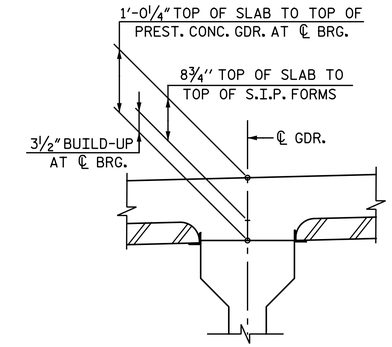
PREVIOUSLY CAST CONCRETE IN A SPAN SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE SPAN.

FOR CONCRETE BARRIER RAIL DETAILS, SEE ″CONCRETE BARRIER RAIL″ SHEET.

✳ FOR DETAILS OF INTERMEDIATE DIAPHRAGMS, SEE ″INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS″ SHEET.



TYPICAL SECTION AT INTERMEDIATE DIAPHRAGM



DETAIL ″B″

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell
8/10/2017

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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			25

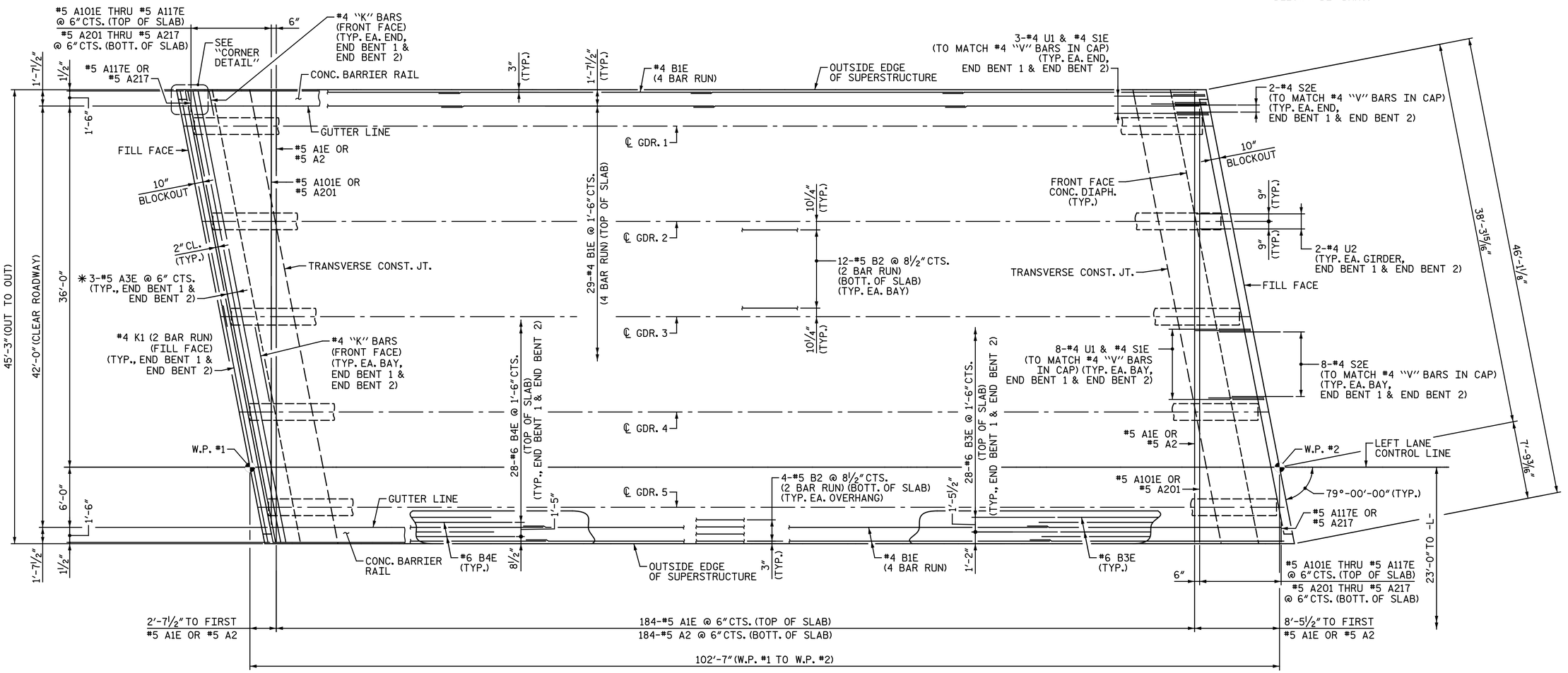
DRAWN BY : M. D. MAYHEW DATE : 3-15-17
CHECKED BY : B. J. BELL DATE : 3-20-17

NOTES:

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

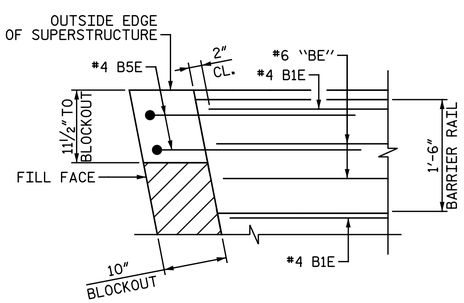
FOR DECK POURING SEQUENCE AND LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE "BILL OF MATERIAL" SHEET.

✳ #5 A3E BARS ARE TO BE PLACED PARALLEL TO SKEW AND BELOW "BE" BARS.



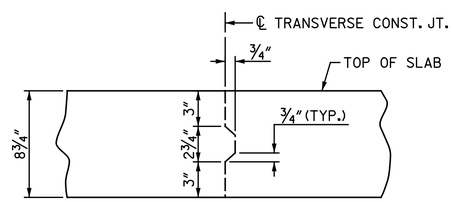
SPAN A

PLAN OF SPAN



CORNER DETAIL

ALL CORNERS SIMILAR.
TRANSVERSE BARS NOT SHOWN FOR CLARITY.



TRANSVERSE CONST. JT. DETAIL

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

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#4 K1	-	2'-5"

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell
8/10/2017

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REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			25

DRAWN BY : M. D. MAYHEW DATE : 3-15-17
CHECKED BY : B. J. BELL DATE : 3-24-17