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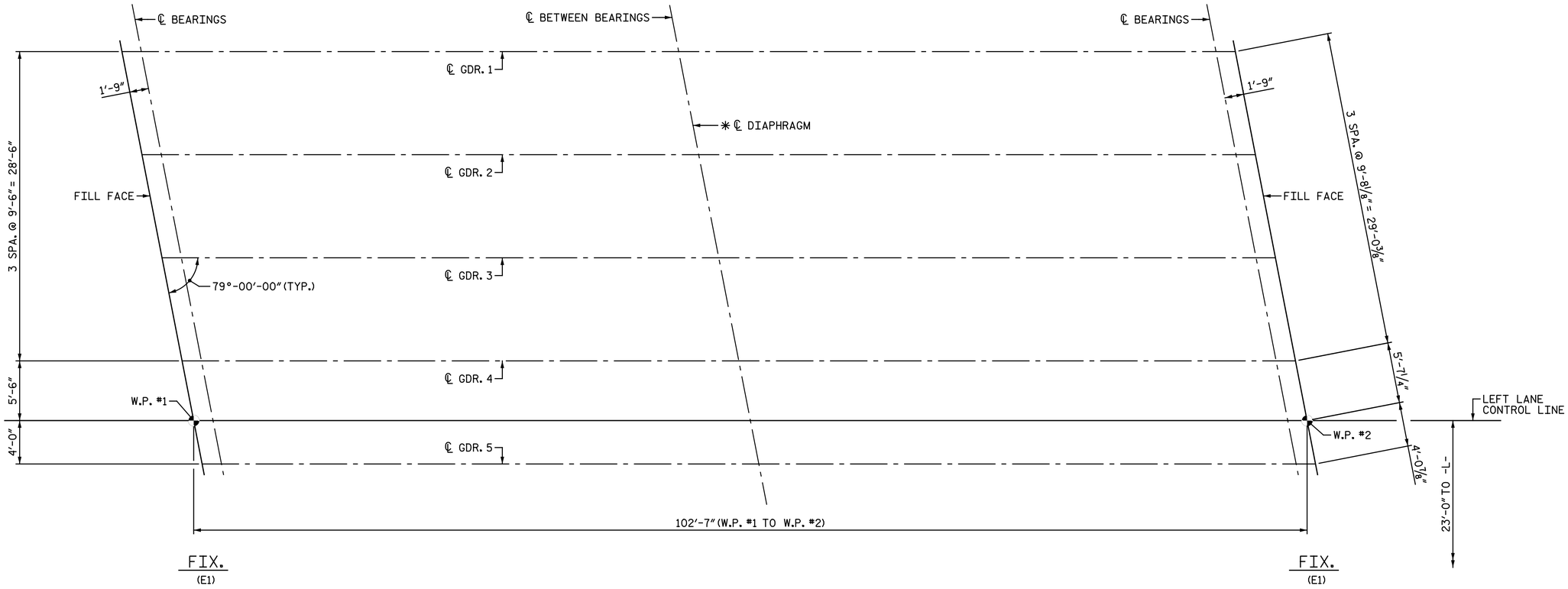

SPAN A

GIRDER LAYOUT

✳ INTERMEDIATE STEEL DIAPHRAGMS NOT SHOWN FOR CLARITY

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell

8/10/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

GIRDER LAYOUT

LEFT LANE

Michael Baker INTERNATIONAL

Michael Baker Engineering
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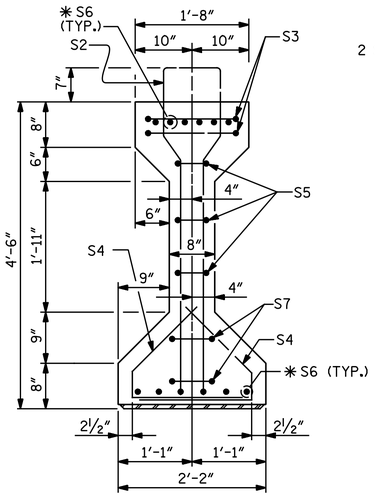
NC License No.: F-1084

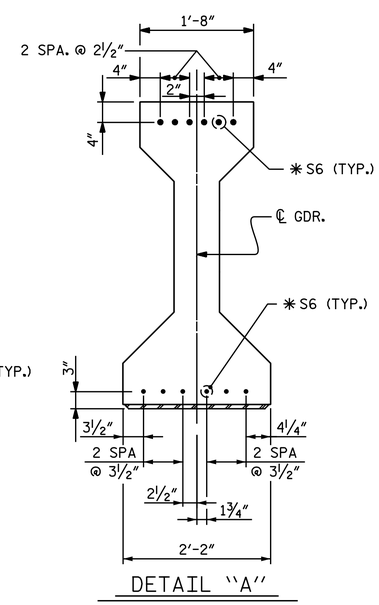
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-8
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : M. D. MAYHEW DATE : 1-3-17
CHECKED BY : B. J. BELL DATE : 3-13-17

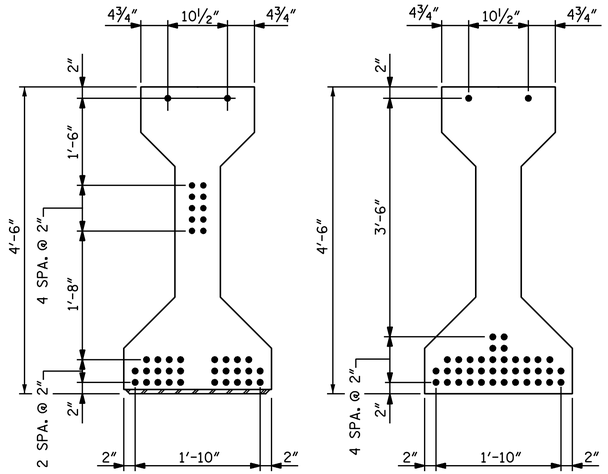


SECTION A-A

✱FOR S6 BARS, SEE DETAIL "A"



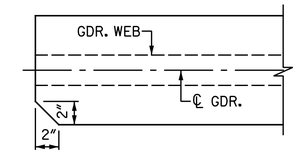
DETAIL "A"



AT END OF GIRDER

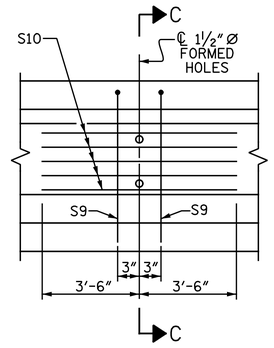
AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT



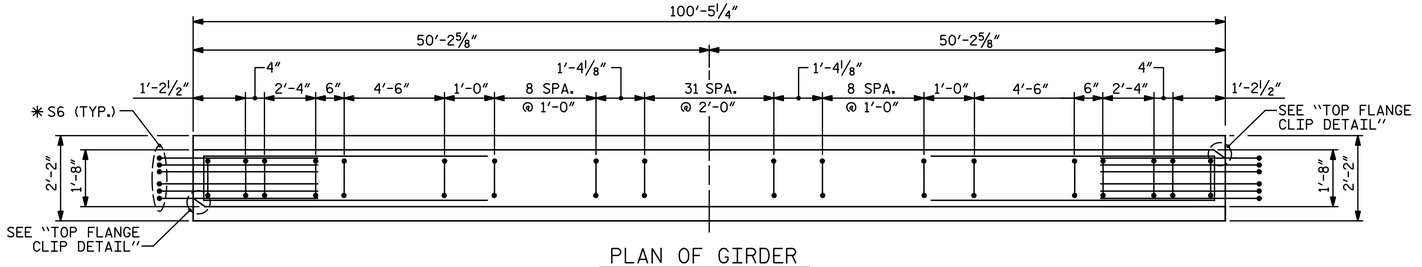
TOP FLANGE CLIP DETAIL

(TYP.)

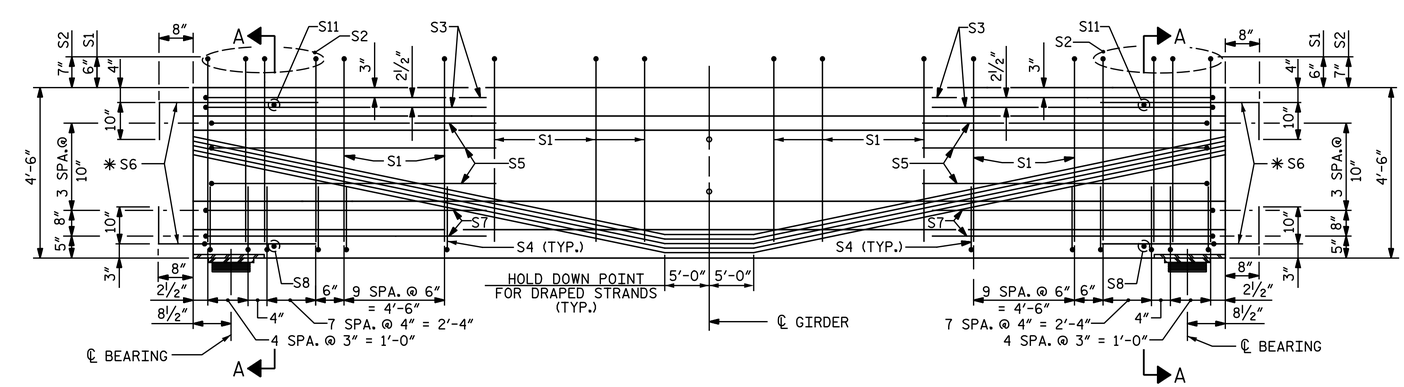


PARTIAL ELEVATION

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



PLAN OF GIRDER

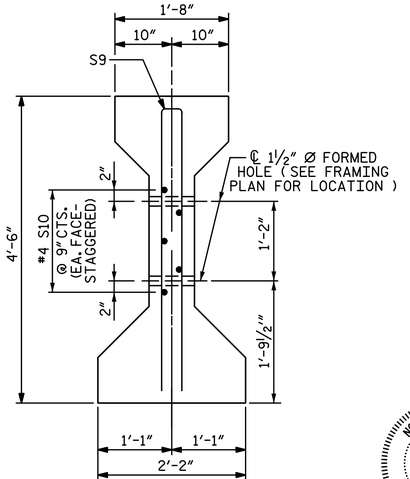


INT. END BENT 1

ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

INT. END BENT 2



SECTION C-C

(S1 BARS NOT SHOWN)

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

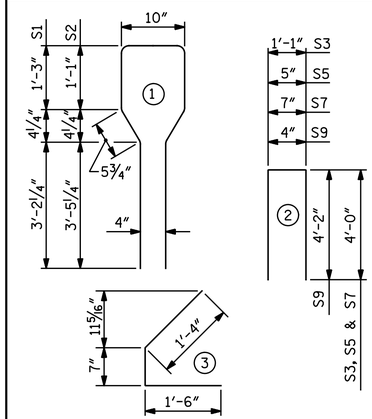
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	70	#4	1	10'-8"	499
S2	26	#6	1	10'-10"	423
S3	4	#4	2	9'-1"	24
S4	92	#4	3	3'-5"	210
S5	6	#4	2	8'-5"	34
✱S6	24	#5	STR.	3'-8"	92
S7	4	#4	2	8'-7"	23
S8	2	#3	STR.	1'-10"	1
S9	2	#5	2	8'-8"	18
S10	5	#4	STR.	7'-0"	23
S11	2	#3	STR.	1'-4"	1

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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	7,500 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
	1,348	20.4	40

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
5	100.44	502.19

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell
8/10/2017

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-9
1			3			TOTAL SHEETS
2			4			25

ASSEMBLED BY : N. B. SPEAKS	DATE : 2-20-17		
CHECKED BY : B. J. BELL	DATE : 4-6-17		
DRAWN BY : JMB 12/87	REV. 5/1/06R	TLA/GM	
CHECKED BY : ARB 12/87	REV. 10/1/11	MAA/GM	
	REV. 1/15	MAA/TMG	

STD. NO. PCG3

DEAD LOAD DEFLECTION TABLE FOR SPAN A

0.6″Ø LOW RELAXATION	GIRDER 1										
TENTH POINTS	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.083	0.156	0.214	0.251	0.263	0.251	0.214	0.156	0.083	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.* ↓	0.000	0.053	0.105	0.145	0.171	0.179	0.171	0.145	0.105	0.053	0.000
FINAL CAMBER ↑	0″	3/8″	5/8″	13/16″	15/16″	1″	15/16″	13/16″	5/8″	3/8″	0″

0.6″Ø LOW RELAXATION	GIRDERS 2 & 4										
TENTH POINTS	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.083	0.156	0.214	0.251	0.263	0.251	0.214	0.156	0.083	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.* ↓	0.000	0.055	0.109	0.151	0.178	0.187	0.178	0.151	0.109	0.055	0.000
FINAL CAMBER ↑	0″	5/16″	9/16″	3/4″	7/8″	15/16″	7/8″	3/4″	9/16″	5/16″	0″

0.6″Ø LOW RELAXATION	GIRDER 3										
TENTH POINTS	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.083	0.156	0.214	0.251	0.263	0.251	0.214	0.156	0.083	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.* ↓	0.000	0.056	0.111	0.154	0.181	0.190	0.181	0.154	0.111	0.056	0.000
FINAL CAMBER ↑	0″	5/16″	9/16″	3/4″	13/16″	7/8″	13/16″	3/4″	9/16″	5/16″	0″

0.6″Ø LOW RELAXATION	GIRDER 5										
TENTH POINTS	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.083	0.156	0.214	0.251	0.263	0.251	0.214	0.156	0.083	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.* ↓	0.000	0.053	0.103	0.143	0.168	0.177	0.168	0.143	0.103	0.053	0.000
FINAL CAMBER ↑	0″	3/8″	5/8″	7/8″	15/16″	1 1/16″	15/16″	7/8″	5/8″	3/8″	0″

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

NOTES:

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,000 PSI.

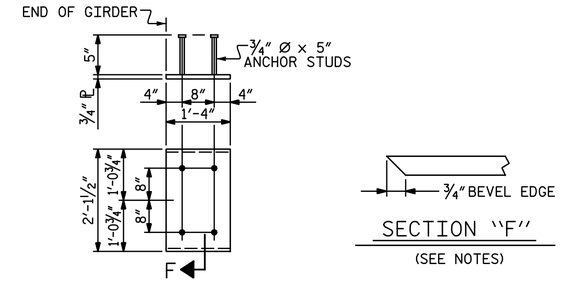
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

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

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

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 EMBEDED CLIPS FOR PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.



EMBEDDED PLATE "B-1" DETAILS
(2 REQUIRED PER GIRDER)

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 200+91.89 -L-

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell
8/10/2017

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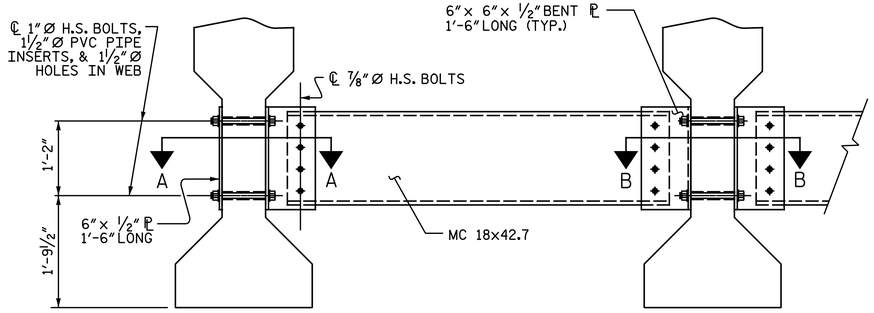
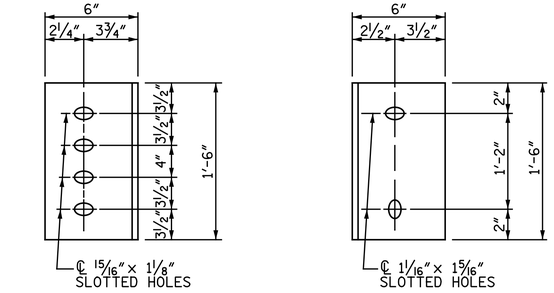
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
PRESTRESSED CONCRETE GIRDER DETAILS
LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-10
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : N. B. SPEAKS DATE : 2-22-17
CHECKED BY : B. J. BELL DATE : 4-6-17



PART SECTION AT INTERMEDIATE DIAPHRAGM



CONNECTOR PLATE DETAILS

STRUCTURAL STEEL NOTES

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

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

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

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

FOR METALLIZATION, APPLY 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 ¼" PROJECTION BEYOND THE NUT.

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

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

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

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

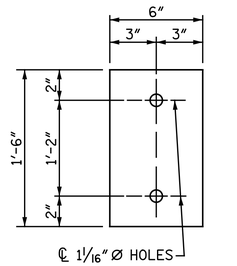
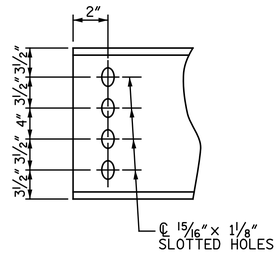
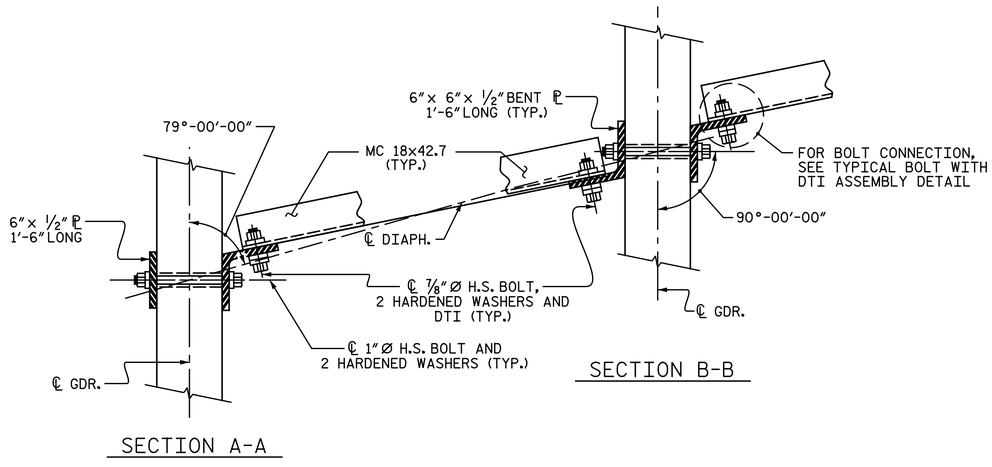


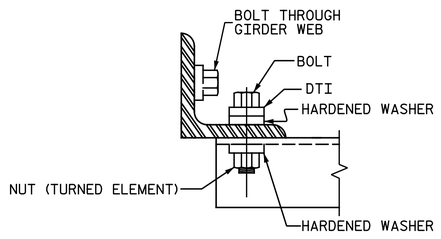
PLATE DETAILS



CHANNEL END



CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

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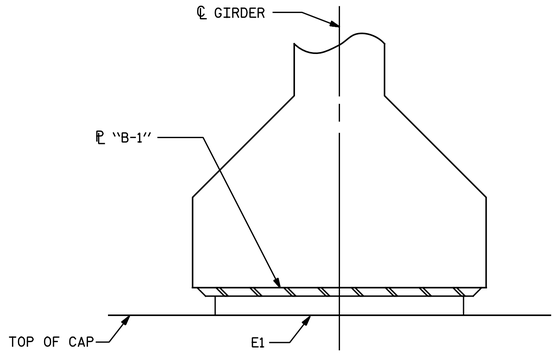
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS LEFT LANE

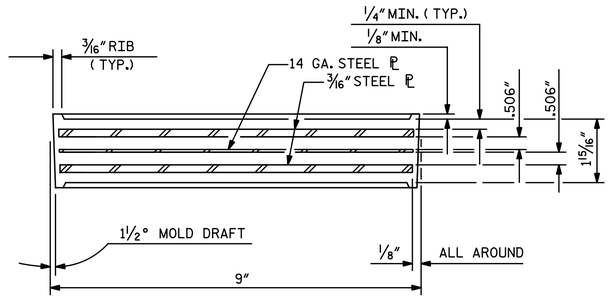
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-11
1			3			TOTAL SHEETS
2			4			25

ASSEMBLED BY :	M. D. MAYHEW	DATE :	3-15-17
CHECKED BY :	B. J. BELL	DATE :	3-20-17
DRAWN BY : TLA	6/05	ADDED	10/21/05
CHECKED BY : VC	6/05	REV. 5/1/06RRR	KMM/GM
		REV. 10/1/11	MAA/GM

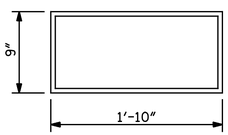
STD. NO. PCG10



SECTION
(AT INTEGRAL END BENTS)



TYPICAL SECTION OF ELASTOMERIC BEARINGS



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: 200+91.89 -L-

ASSEMBLED BY : N. B. SPEAKS	DATE : 2-10-17
CHECKED BY : B. J. BELL	DATE : 4-6-17
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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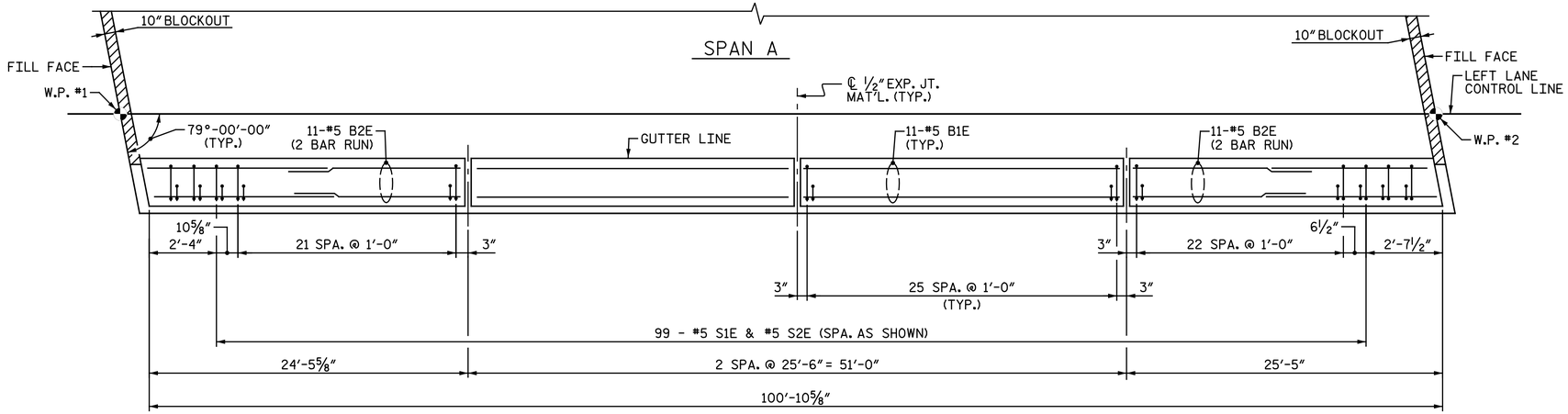
RALEIGH

STANDARD
ELASTOMERIC BEARING DETAILS
PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE
LEFT LANE

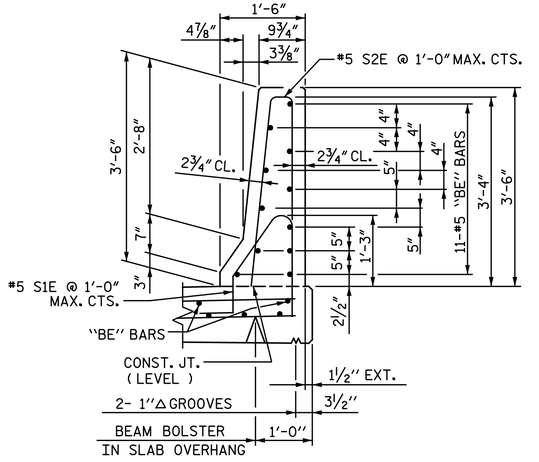
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-12
1			3			TOTAL SHEETS
2			4			25

STD. NO. EB3

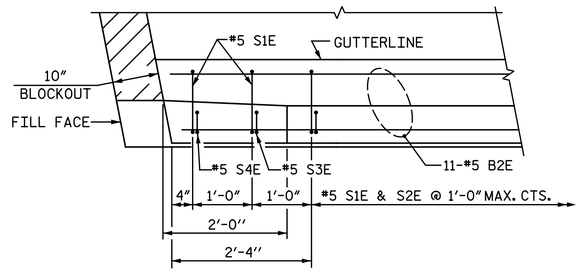


PLAN OF BARRIER RAIL

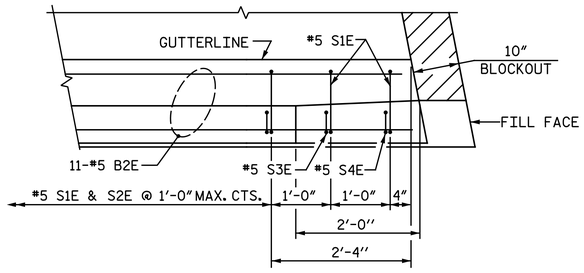
(RIGHT RAIL SHOWN, LEFT RAIL SIMILAR)



SECTION THRU RAIL



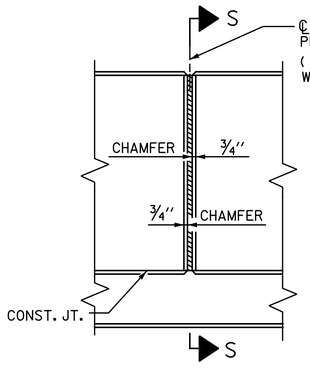
END BENT 1



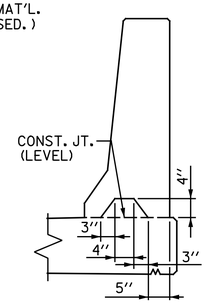
END BENT 2

PLAN

(RIGHT RAIL SHOWN, LEFT RAIL SIMILAR)

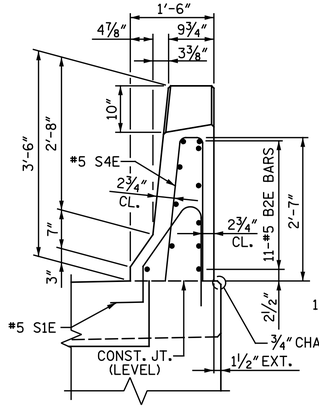


ELEVATION AT EXPANSION JOINTS

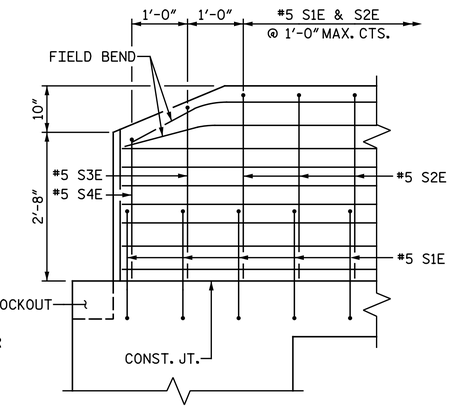


SECTION S-S

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



END VIEW

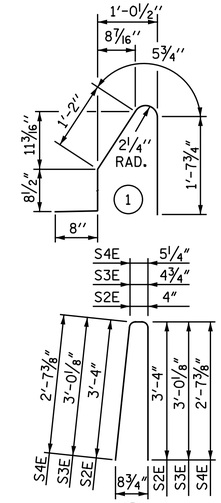


SIDE VIEW

END OF RAIL DETAILS

BARRIER RAIL DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1E	44	#5	STR.	25' - 1"	1,151
B2E	88	#5	STR.	14' - 3"	1,308
S1E	206	#5	1	4' - 8"	1,003
S2E	198	#5	2	7' - 0"	1,446
S3E	4	#5	2	6' - 5"	27
S4E	4	#5	2	5' - 8"	24
EPOXY COATED REINFORCING STEEL				LBS.	4,959
CLASS AA CONCRETE				C.Y.	27.4
CONCRETE BARRIER RAIL				L.F.	201.77

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.

SPLICE LENGTHS	
BAR SIZE	EPOXY COATED
#5	3'-5"

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

Bradley J. Bell

9/12/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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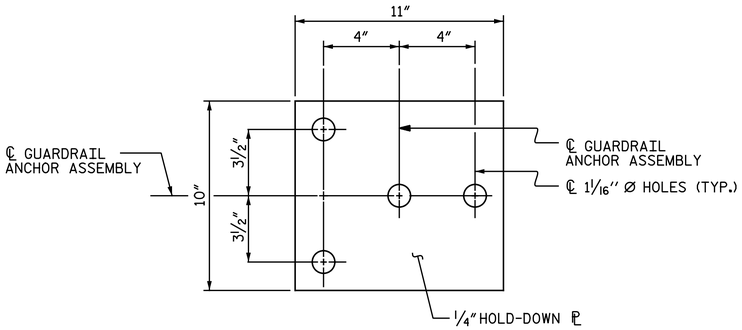
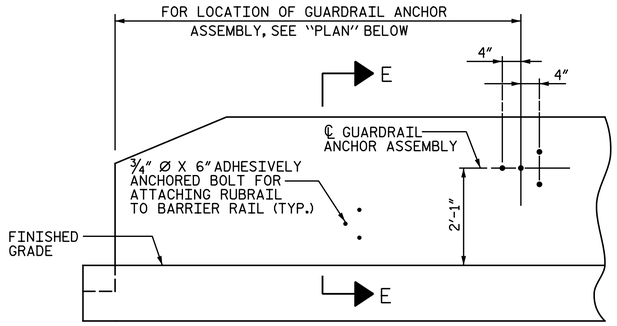
NC License No. : F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-13
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.)

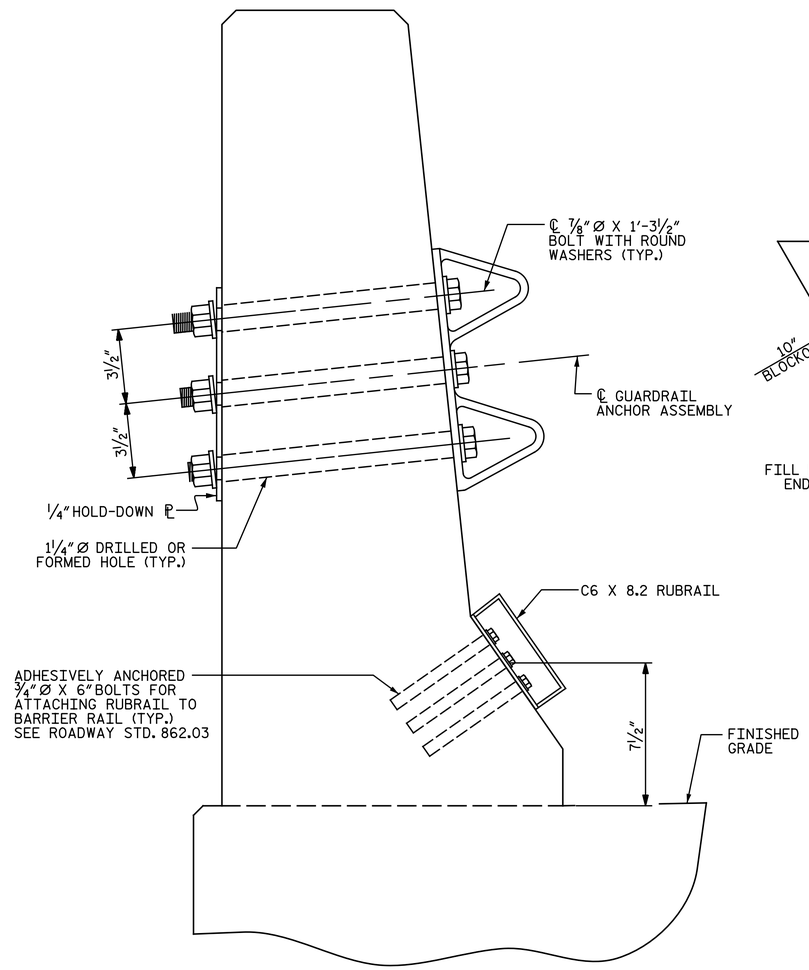
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

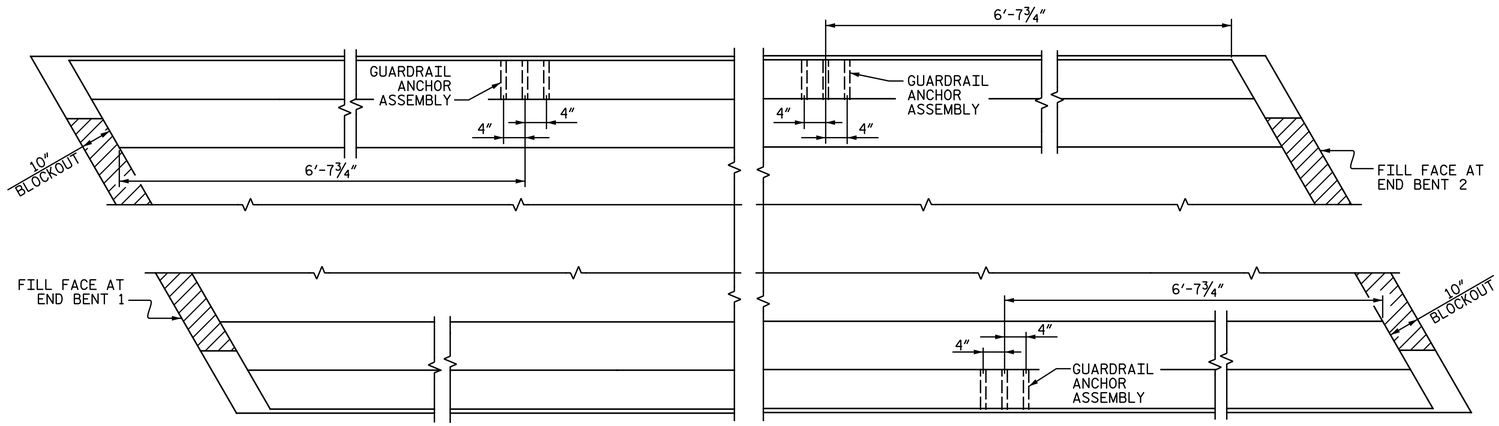
THE 1 1/4″ Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

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.



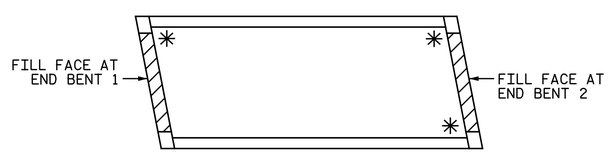
SECTION E-E

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: 200+91.89 -L-

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell

9/12/2017

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NC License No. : F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

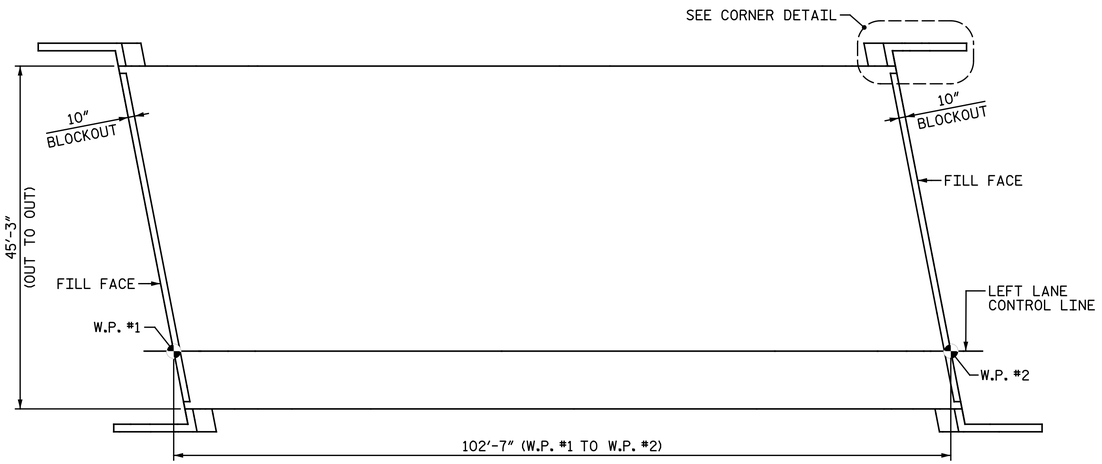
GUARDRAIL ANCHORAGE FOR BARRIER RAIL

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-14
1			3			TOTAL SHEETS
2			4			25

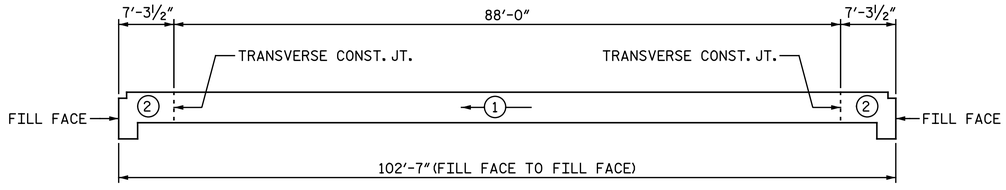
ASSEMBLED BY : N. B. SPEAKS		DATE : 9-11-17
CHECKED BY : B. J. BELL		DATE : 9-12-17
DRAWN BY : TLA 5/06	REV. 10/1/11	MAA/GM
CHECKED BY : GM 5/06	REV. 7/12	MAA/GM
	REV. 6/13	MAA/GM

STD. NO. GRA2



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB

(SQ. FT. = 4,642)



POURING SEQUENCE

(#) DENOTES POUR NUMBER AND DIRECTION

REINFORCING BAR SCHEDULE

SPAN A

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	184	#5	STR.	44′ - 11″	8,620
A2	184	#5	STR.	44′ - 11″	8,620
A3E	6	#5	STR.	45′ - 9″	286
A101E	2	#5	STR.	43′ - 2″	90
A102E	2	#5	STR.	40′ - 7″	85
A103E	2	#5	STR.	38′ - 0″	79
A104E	2	#5	STR.	35′ - 5″	74
A105E	2	#5	STR.	32′ - 10″	68
A106E	2	#5	STR.	30′ - 3″	63
A107E	2	#5	STR.	27′ - 8″	58
A108E	2	#5	STR.	25′ - 1″	52
A109E	2	#5	STR.	22′ - 7″	47
A110E	2	#5	STR.	20′ - 0″	42
A111E	2	#5	STR.	17′ - 5″	36
A112E	2	#5	STR.	14′ - 10″	31
A113E	2	#5	STR.	12′ - 3″	26
A114E	2	#5	STR.	9′ - 8″	20
A115E	2	#5	STR.	7′ - 1″	15
A116E	2	#5	STR.	4′ - 6″	9
A117E	2	#5	STR.	2′ - 0″	4

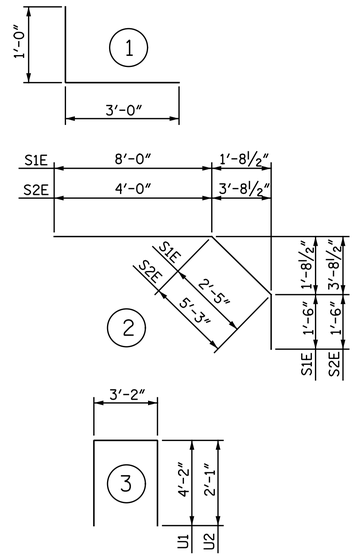
SPAN A (CONT'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A201	2	#5	STR.	43′ - 2″	90
A202	2	#5	STR.	40′ - 7″	85
A203	2	#5	STR.	38′ - 0″	79
A204	2	#5	STR.	35′ - 5″	74
A205	2	#5	STR.	32′ - 10″	68
A206	2	#5	STR.	30′ - 3″	63
A207	2	#5	STR.	27′ - 8″	58
A208	2	#5	STR.	25′ - 1″	52
A209	2	#5	STR.	22′ - 7″	47
A210	2	#5	STR.	20′ - 0″	42
A211	2	#5	STR.	17′ - 5″	36
A212	2	#5	STR.	14′ - 10″	31
A213	2	#5	STR.	12′ - 3″	26
A214	2	#5	STR.	9′ - 8″	20
A215	2	#5	STR.	7′ - 1″	15
A216	2	#5	STR.	4′ - 6″	9
A217	2	#5	STR.	2′ - 0″	4
B1E	124	#4	STR.	26′ - 8″	2,209
B2	112	#5	STR.	51′ - 5″	6,006
B3E	60	#6	STR.	22′ - 6″	2,028
B4E	60	#6	STR.	24′ - 8″	2,223
B5E	8	#4	1	4′ - 0″	21
H1	20	#5	STR.	3′ - 2″	66
K1	20	#4	STR.	24′ - 2″	323
K2	8	#4	STR.	7′ - 1″	38
K3	8	#4	STR.	8′ - 4″	45
K4	16	#4	STR.	8′ - 8″	93
K5	8	#4	STR.	7′ - 7″	41
K6	4	#4	STR.	2′ - 3″	6
K7	4	#4	STR.	2′ - 10″	8
K8	8	#4	STR.	3′ - 0″	16
K9	4	#4	STR.	2′ - 6″	7
S1E	76	#4	2	11′ - 11″	605
S2E	72	#4	2	10′ - 9″	517
U1	76	#4	3	11′ - 6″	584
U2	20	#4	3	7′ - 4″	98
V1	12	#5	STR.	5′ - 7″	70

REINFORCING STEEL	LBS.	16,820
EPOXY COATED REINF. STEEL	LBS.	17,308

"E" SUFFIX DENOTES EPOXY COATED REINFORCING STEEL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

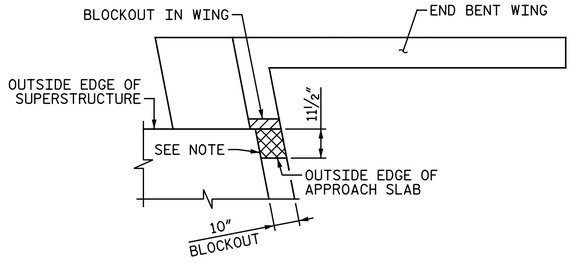
SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
SPAN A		16,820	17,308
POUR 1	129.3		
POUR 2	70.6		
TOTALS*	199.9	16,820	17,308

* QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

GROOVING BRIDGE FLOORS

APPROACH SLABS	1,884	SQ.FT.
BRIDGE DECK	3,921	SQ.FT.
TOTAL	5,805	SQ.FT.



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.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

8/10/2017

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

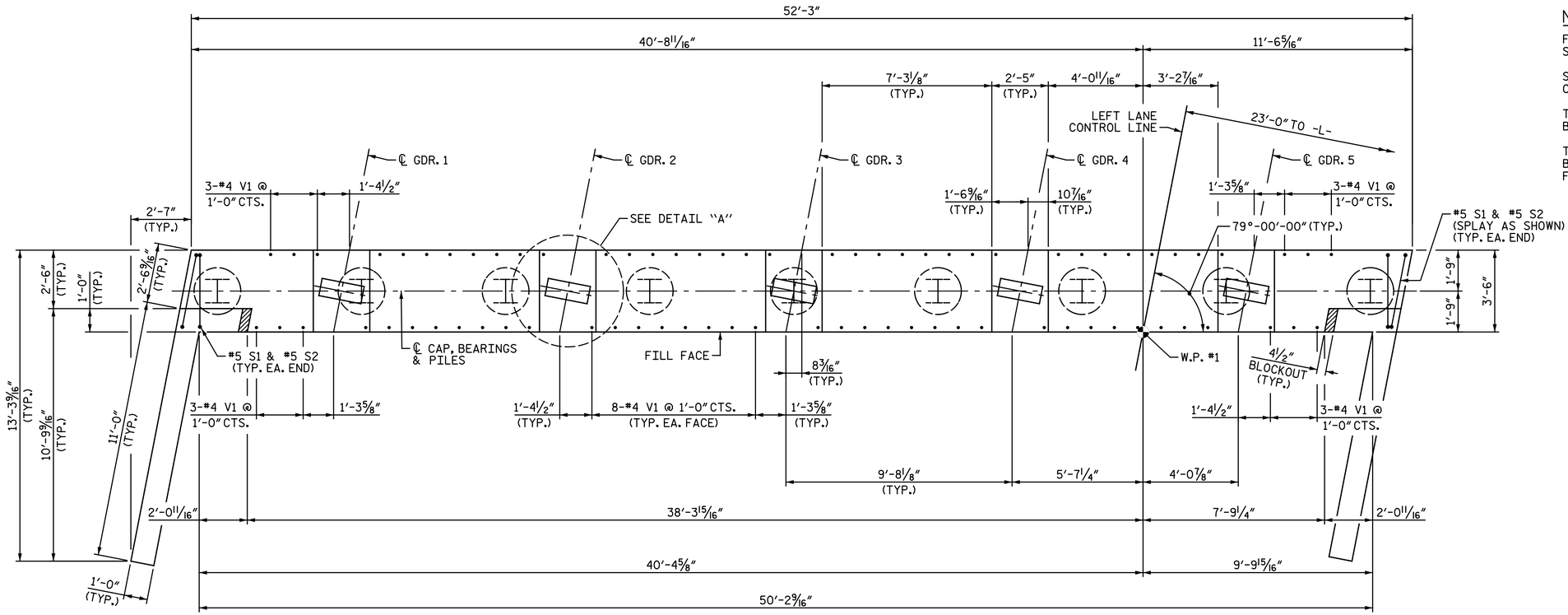
SUPERSTRUCTURE

BILL OF MATERIAL

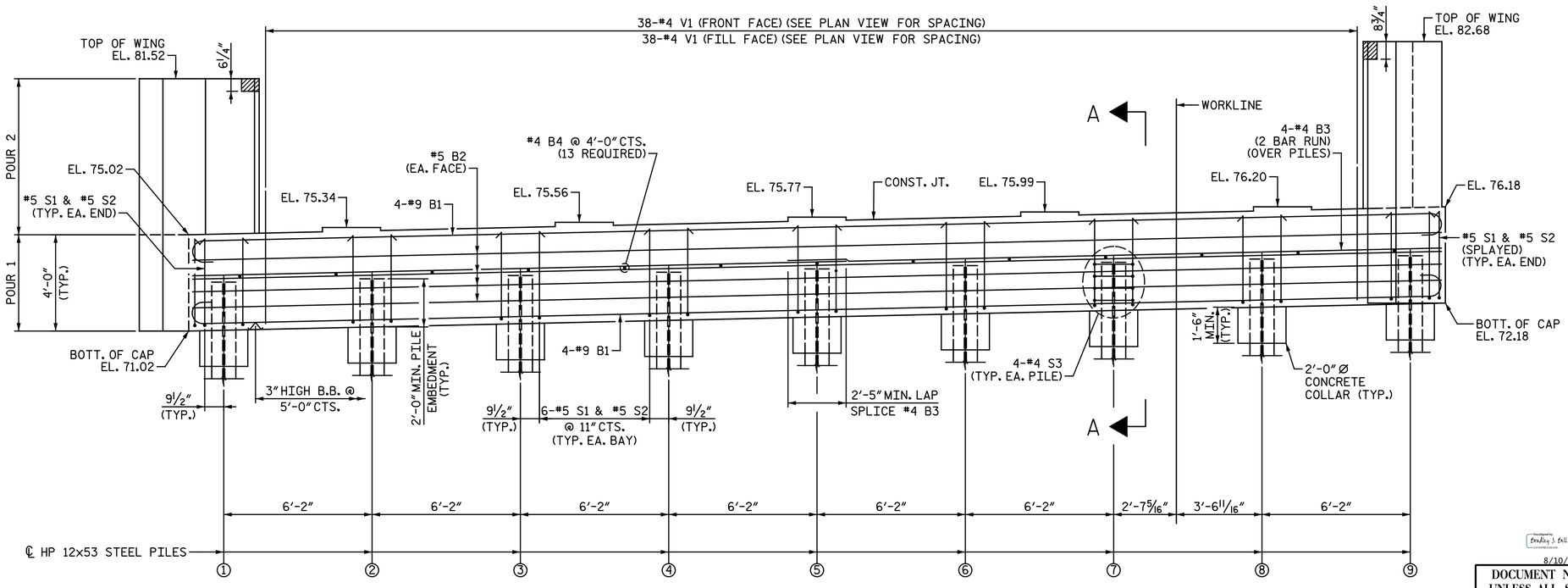
LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-15
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : M. D. MAYHEW DATE : 2-3-17
CHECKED BY : B. J. BELL DATE : 3-22-17



PLAN



ELEVATION

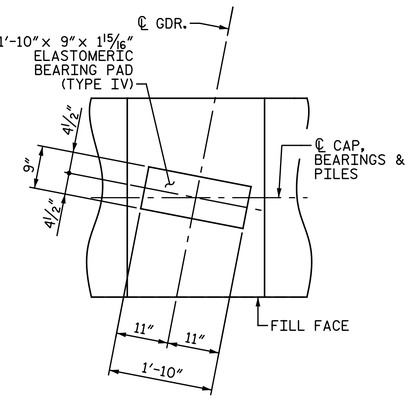
NOTES:

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	73.05
②	73.19
③	73.33
④	73.46
⑤	73.60
⑥	73.74
⑦	73.87
⑧	74.01
⑨	74.15

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

8/10/2017

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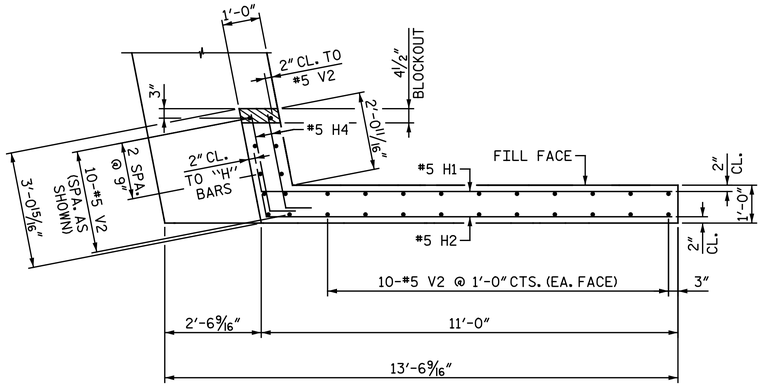
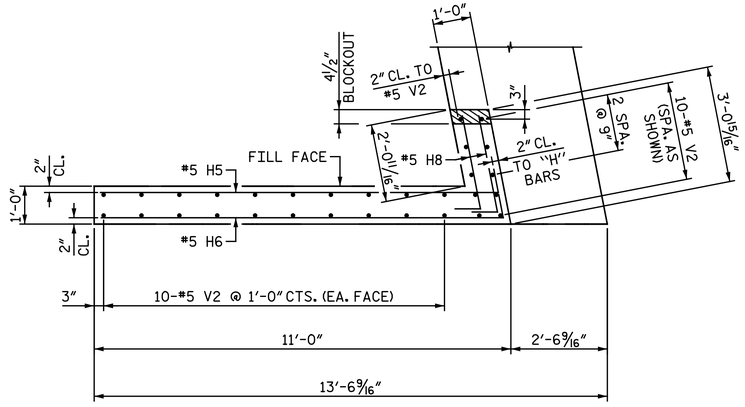
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-16
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : M. D. MAYHEW DATE : 2-10-17
CHECKED BY : B. J. BELL DATE : 4-3-17



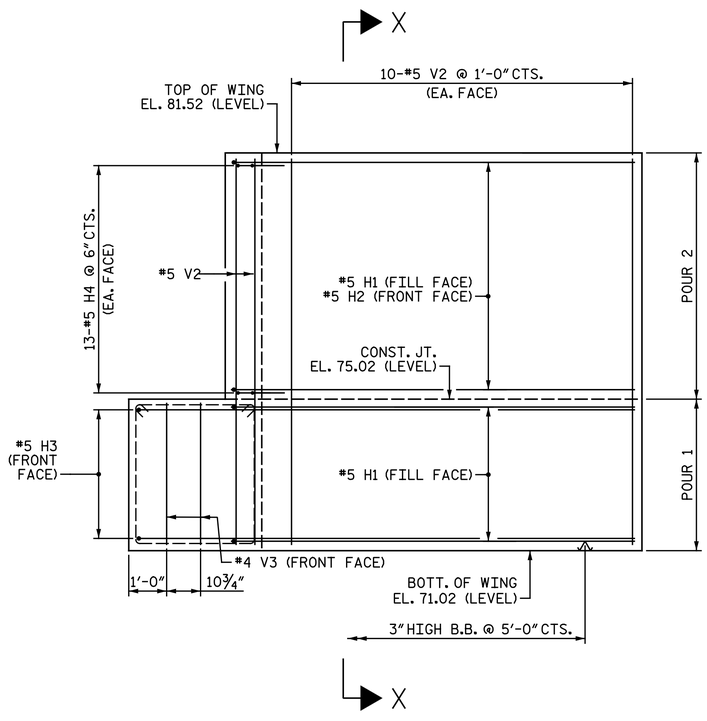
PLAN OF LEFT WING

(H3 BARS NOT SHOWN FOR CLARITY)

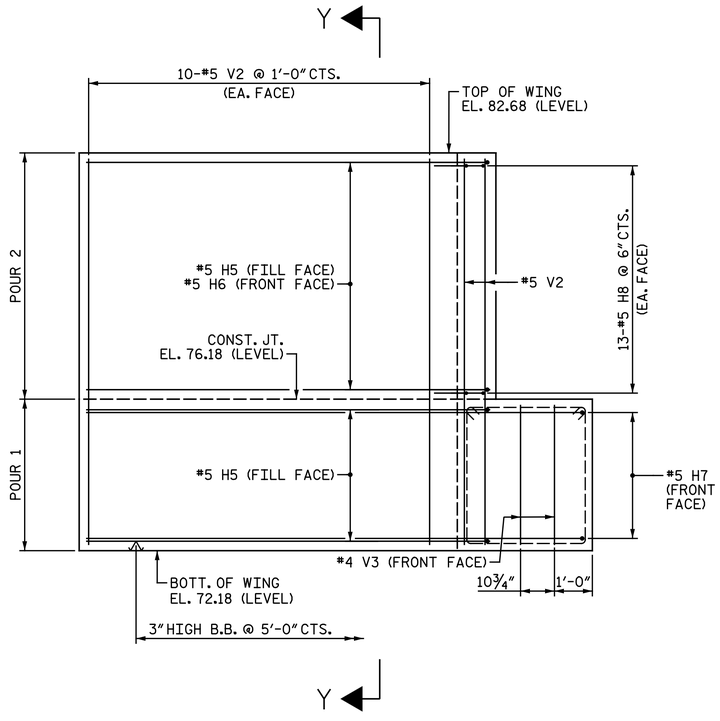


PLAN OF RIGHT WING

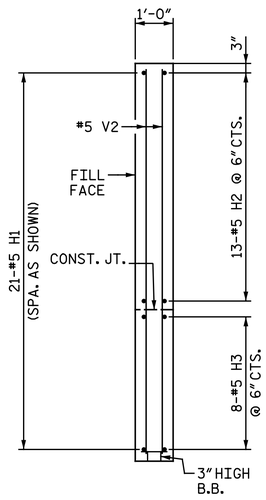
(H7 BARS NOT SHOWN FOR CLARITY)



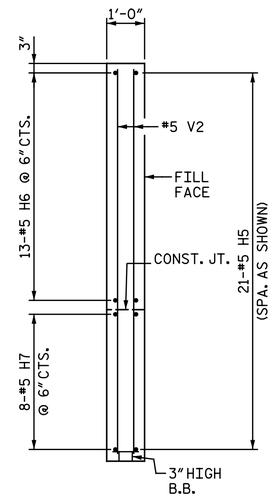
ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING



SECTION X-X



SECTION Y-Y

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

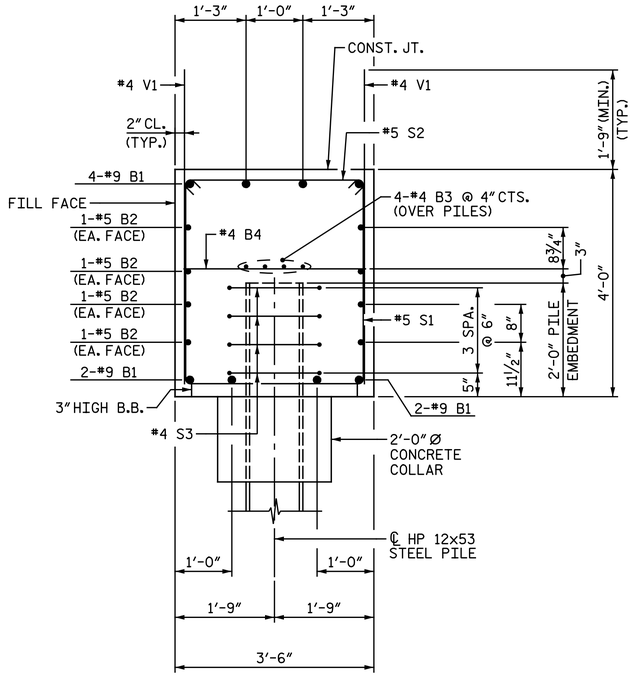
Bradley J. Bell
8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

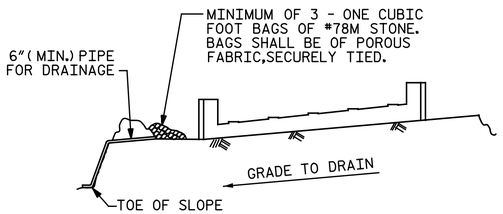
DRAWN BY : M. D. MAYHEW DATE : 2-10-17
CHECKED BY : B. J. BELL DATE : 4-3-17

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:	S5-17
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

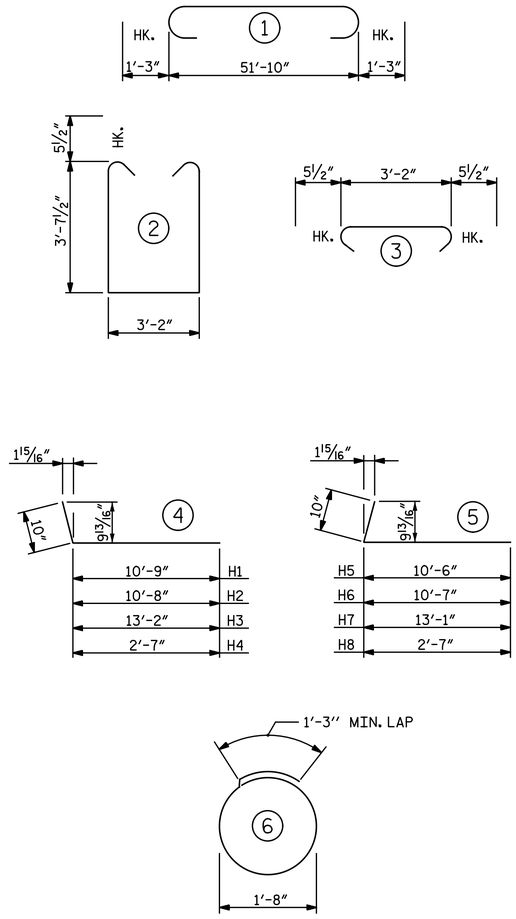
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	54' - 4"	1,478
B2	8	#5	STR.	51' - 10"	432
B3	8	#4	STR.	27' - 2"	145
B4	13	#4	STR.	3' - 2"	27
H1	21	#5	4	11' - 7"	254
H2	13	#5	4	11' - 6"	156
H3	8	#5	4	14' - 0"	117
H4	26	#5	4	3' - 5"	93
H5	21	#5	5	11' - 4"	248
H6	13	#5	5	11' - 5"	155
H7	8	#5	5	13' - 11"	116
H8	26	#5	5	3' - 5"	93
S1	52	#5	2	11' - 4"	615
S2	52	#5	3	4' - 1"	221
S3	36	#4	6	6' - 6"	156
V1	76	#4	STR.	5' - 7"	283
V2	60	#5	STR.	10' - 1"	631
V3	4	#4	STR.	3' - 7"	10

REINFORCING STEEL	LBS.	5,230
CLASS A CONCRETE		
POUR 1 -		
CAP, LOWER PART OF WINGS & COLLARS	C.Y.	31.8
POUR 2 -		
UPPER PART OF WINGS	C.Y.	6.3
TOTAL	C.Y.	38.1
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	EA.	9
HP 12x53 STEEL PILES NO. 9	L.F.	495
PILE REDRIVES	EA.	5

NOTES:

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: 200+91.89 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1 DETAILS

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell

8/10/2017

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Michael Baker INTERNATIONAL

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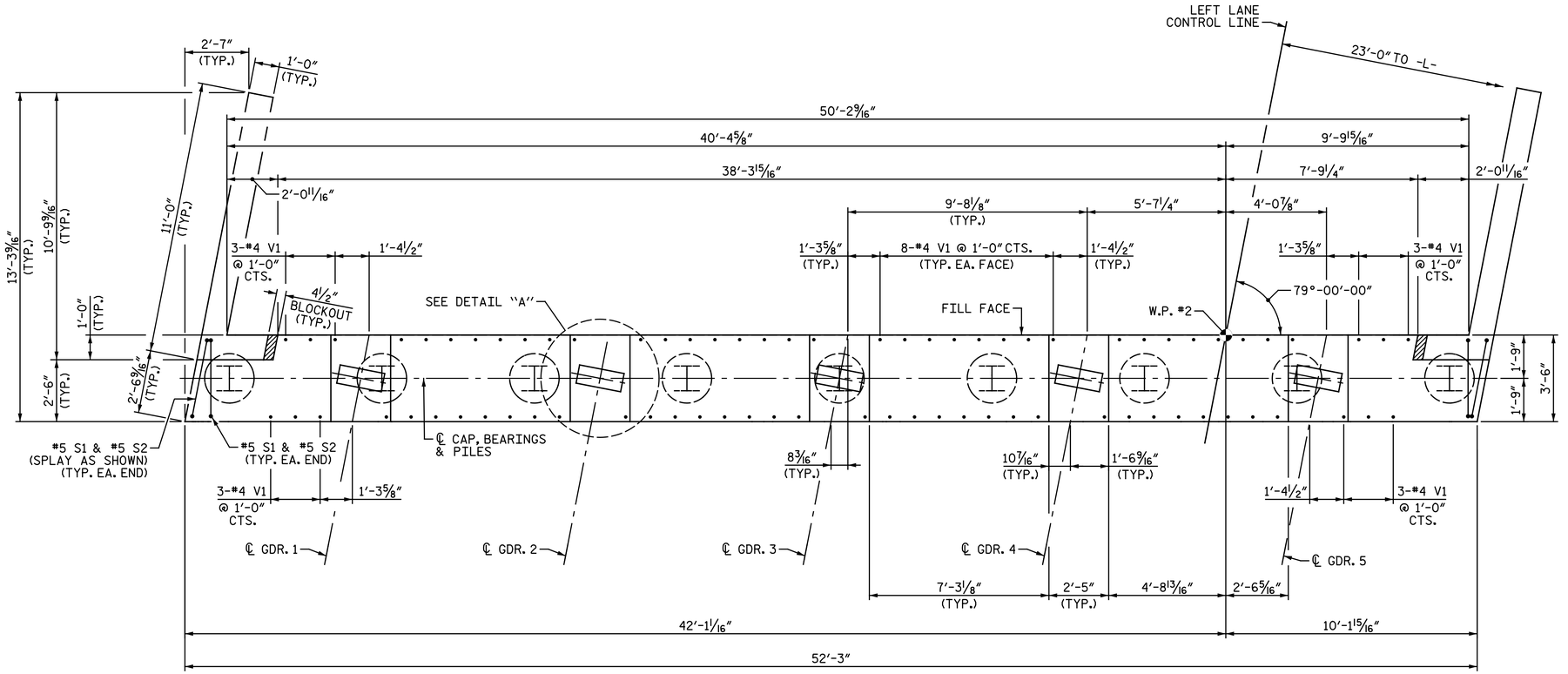
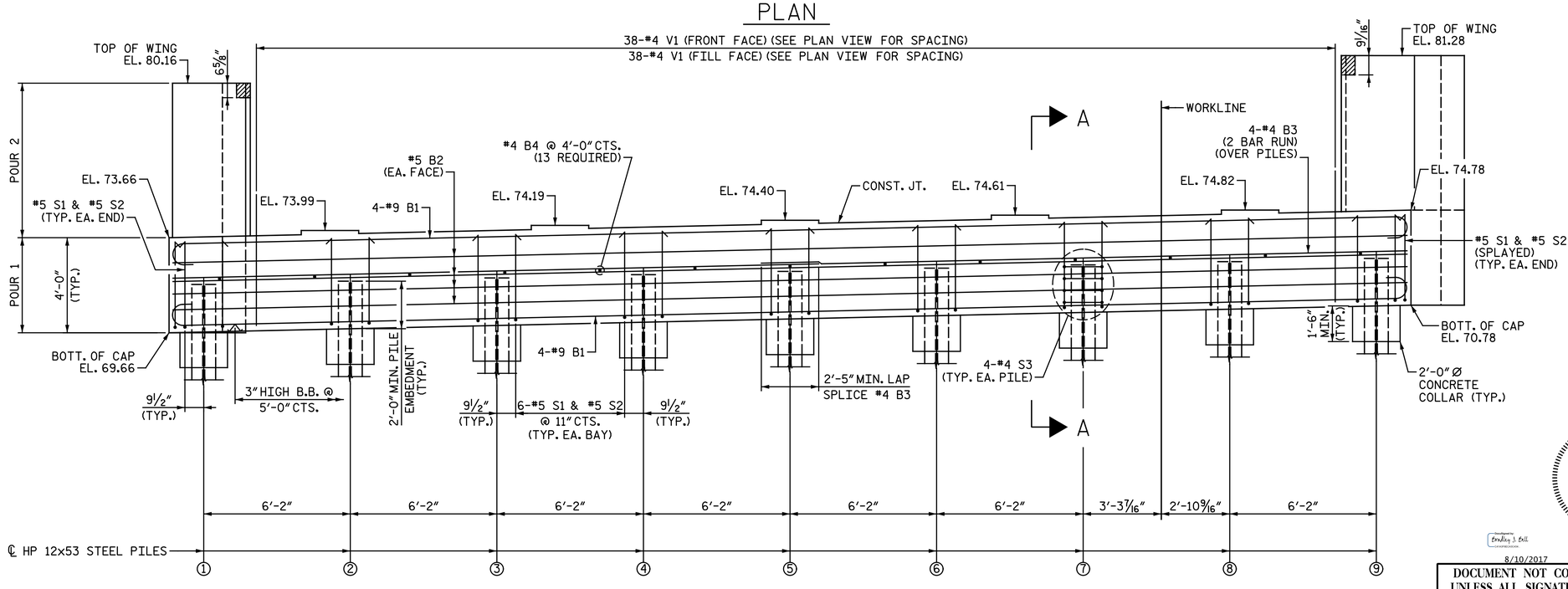
NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-18
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : M. D. MAYHEW DATE : 2-13-17
CHECKED BY : B. J. BELL DATE : 4-3-17



PLAN



ELEVATION

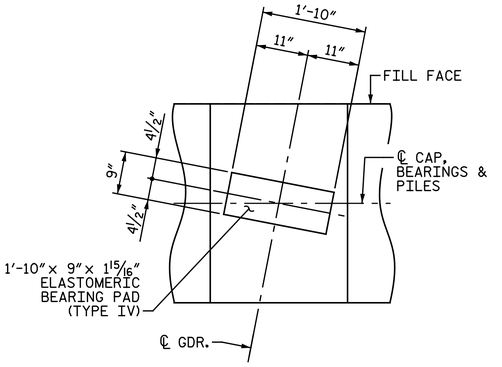
NOTES:

FOR "SECTION A-A", SEE "INTEGRAL END BENT 2 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	71.69
②	71.82
③	71.96
④	72.09
⑤	72.22
⑥	72.35
⑦	72.48
⑧	72.62
⑨	72.75

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

8/10/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

LEFT LANE

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

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REVISIONS						SHEET NO.
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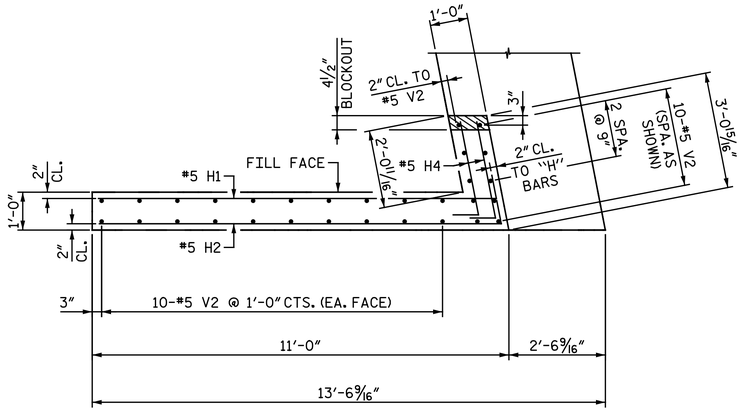
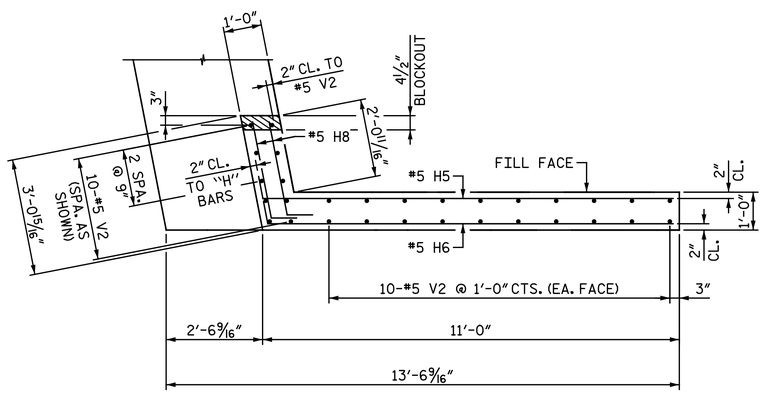
1			3			TOTAL SHEETS
2			4			25



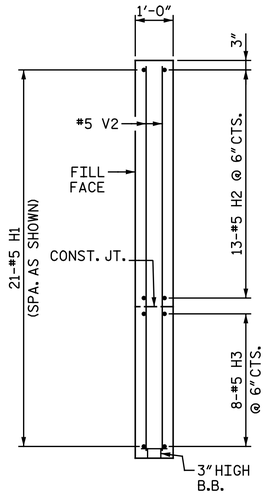
PLAN OF LEFT WING

(H3 BARS NOT SHOWN FOR CLARITY)

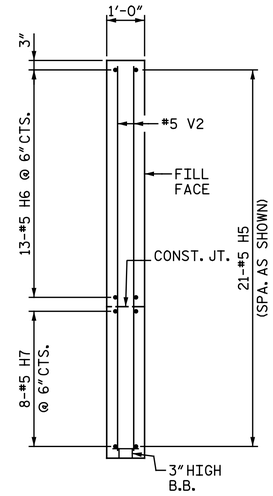


PLAN OF RIGHT WING

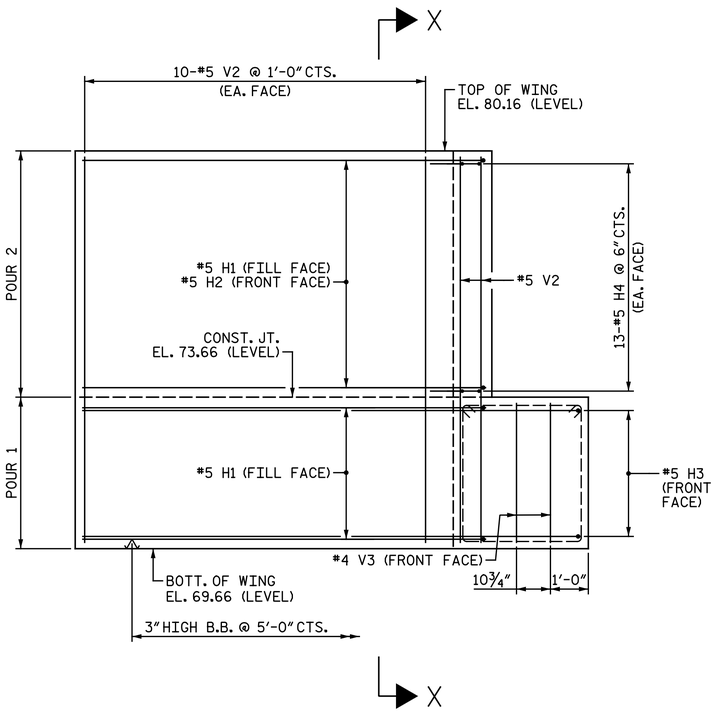
(H7 BARS NOT SHOWN FOR CLARITY)



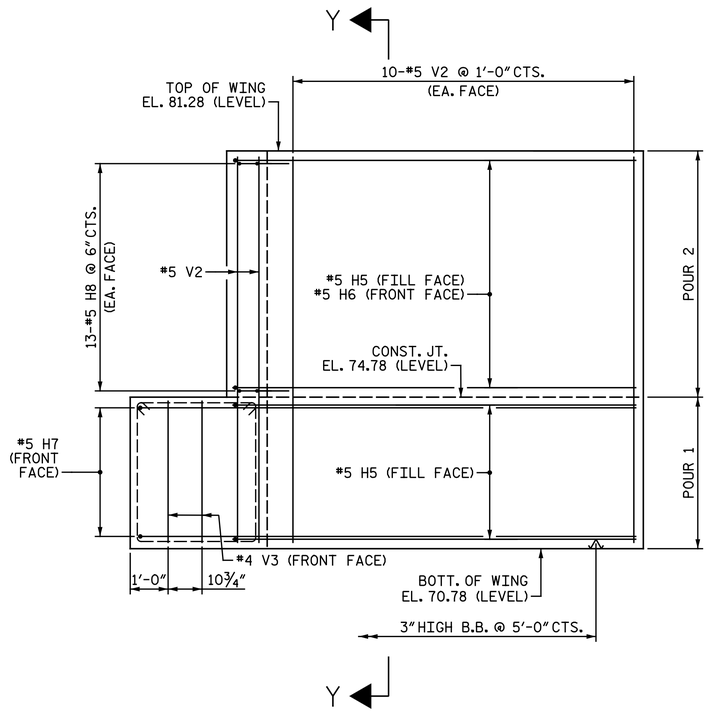
SECTION X-X



SECTION Y-Y



ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell
8/10/2017

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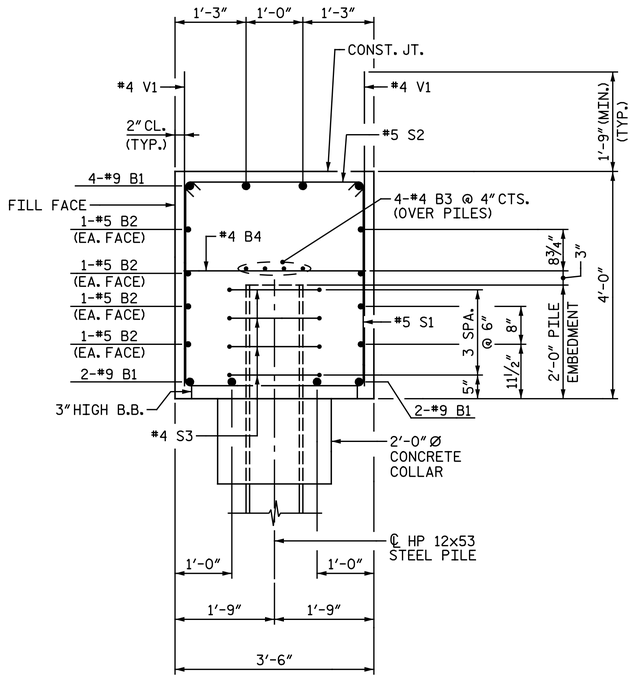
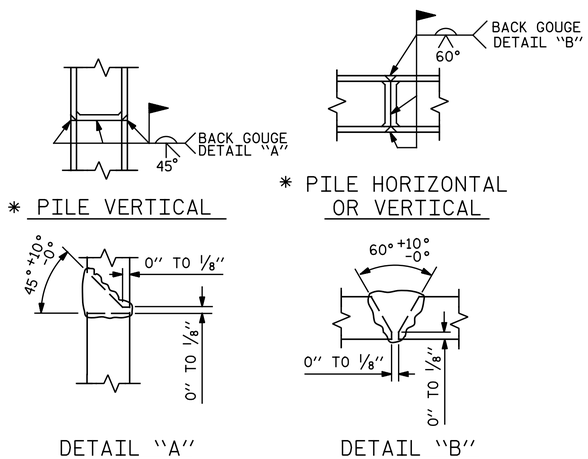
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-20
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : M. D. MAYHEW DATE : 3-16-17
CHECKED BY : B. J. BELL DATE : 4-3-17



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	54′ - 4″	1,478
B2	8	#5	STR.	51′ - 10″	432
B3	8	#4	STR.	27′ - 2″	145
B4	13	#4	STR.	3′ - 2″	27
H1	21	#5	5	11′ - 4″	248
H2	13	#5	5	11′ - 5″	155
H3	8	#5	5	13′ - 11″	116
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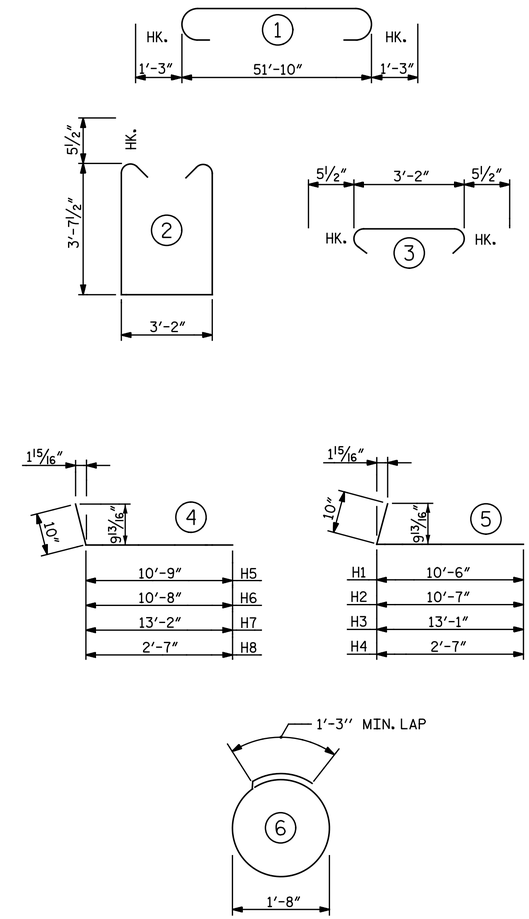
S3	36	#4	6	6′ - 6″	156
V1	76	#4	STR.	5′ - 7″	283
V2	60	#5	STR.	10′ - 1″	631
V3	4	#4	STR.	3′ - 7″	10

REINFORCING STEEL	LBS.	5,230
CLASS A CONCRETE		
POUR 1 -		
CAP, LOWER PART OF WINGS & COLLARS	C.Y.	31.8
POUR 2 -		
UPPER PART OF WINGS	C.Y.	6.3
TOTAL	C.Y.	38.1
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	EA.	9
HP 12x53 STEEL PILES NO. 9	L.F.	540
PILE REDRIVES	EA.	5

NOTES:

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell

8/10/2017

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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:	S5-21
1			3			TOTAL SHEETS
2			4			25

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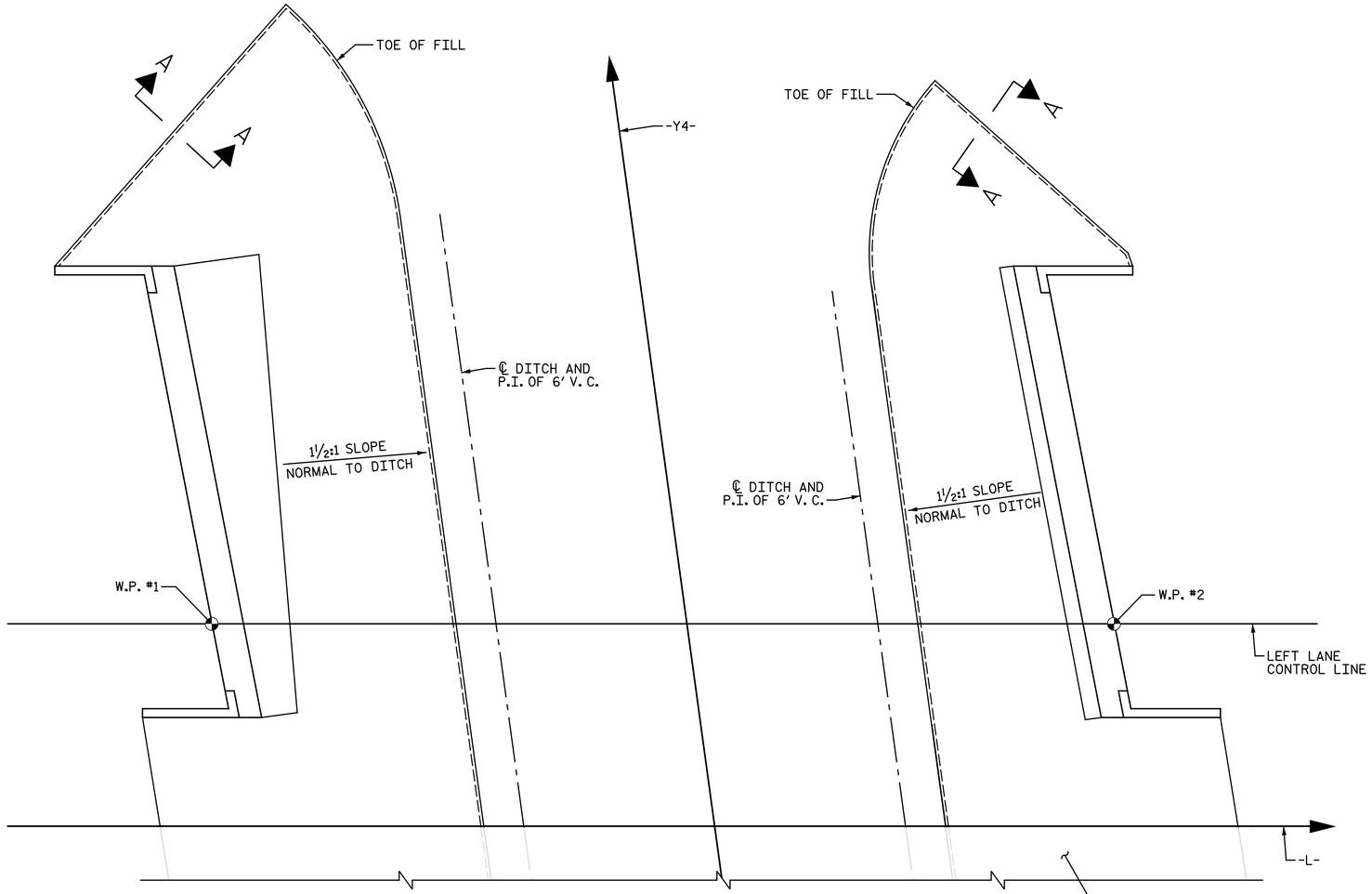
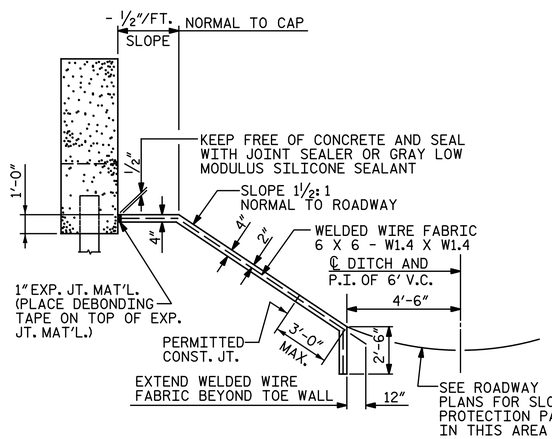
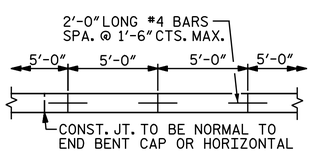
DRAWN BY : M. D. MAYHEW DATE : 3-16-17
CHECKED BY : B. J. BELL DATE : 4-3-17



PLAN

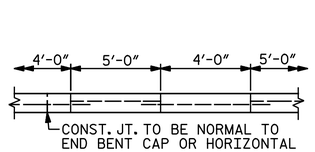


SECTION ALONG CONTROL LINE WHEN FILL CATCHES IN DITCH



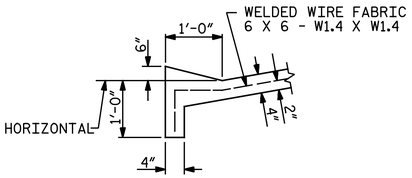
STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL



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

OPTIONAL POURING DETAIL



SECTION A-A

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. 200+91.89 -L- (LEFT LANE)	4 INCH SLOPE PROTECTION	✳ WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	400	720
END BENT 2	270	490

✳ QUANTITY SHOWN IS BASED ON 5′ POURS.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SLOPE PROTECTION DETAILS

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell
8/10/2017

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

REVISIONS

SHEET NO. S5-22

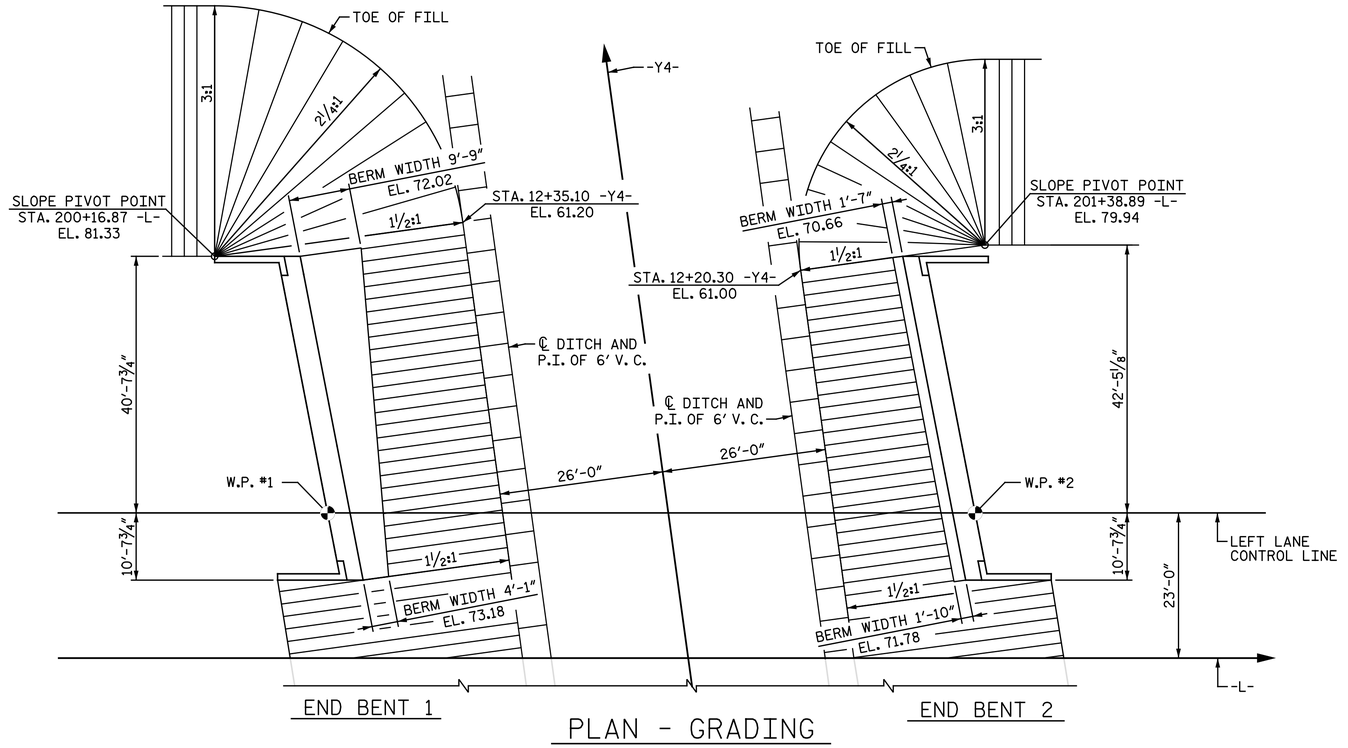
TOTAL SHEETS 25

ASSEMBLED BY : N. B. SPEAKS	DATE : 2-15-17	
CHECKED BY : B. J. BELL	DATE : 4-10-17	
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

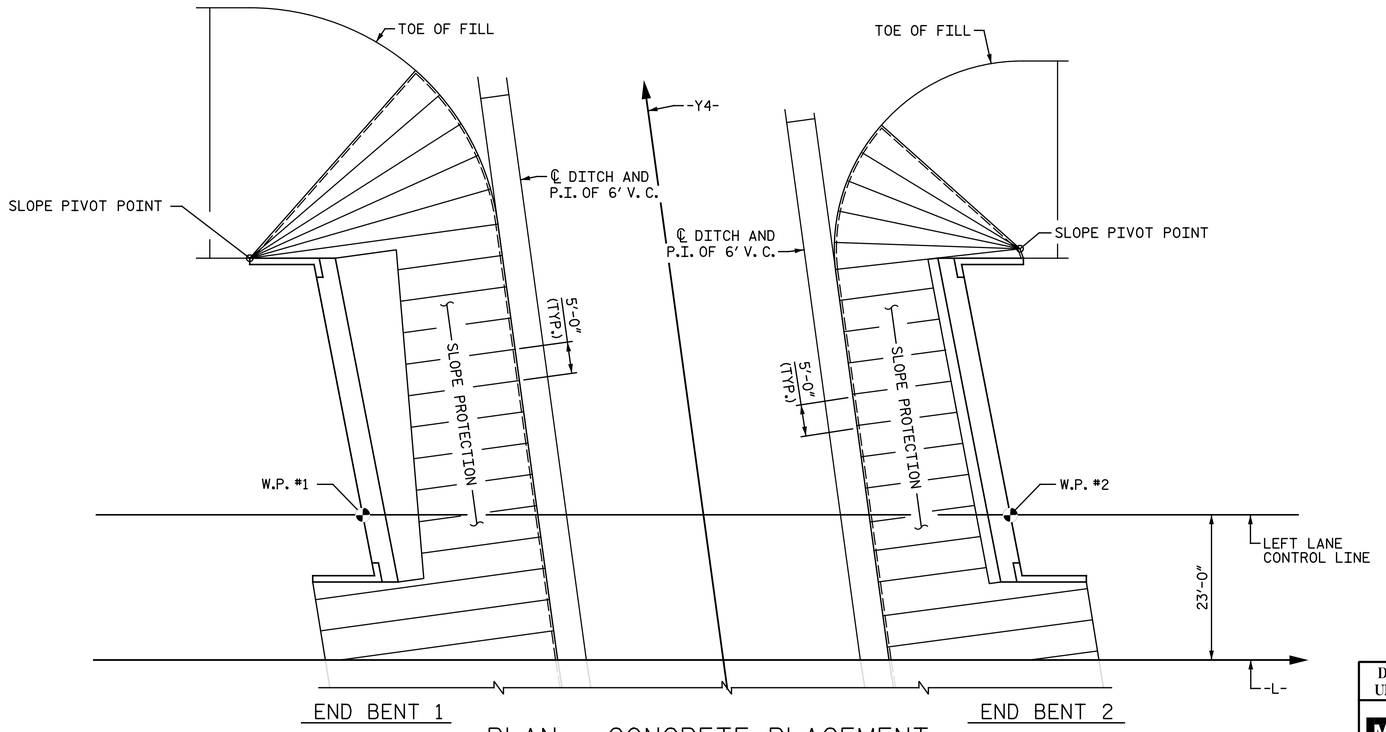
STD. NO. SP1

NOTE:

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



PLAN - GRADING



PLAN - CONCRETE PLACEMENT

(1½:1 SLOPE)

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SLOPE PROTECTION DETAILS

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

8/10/2017

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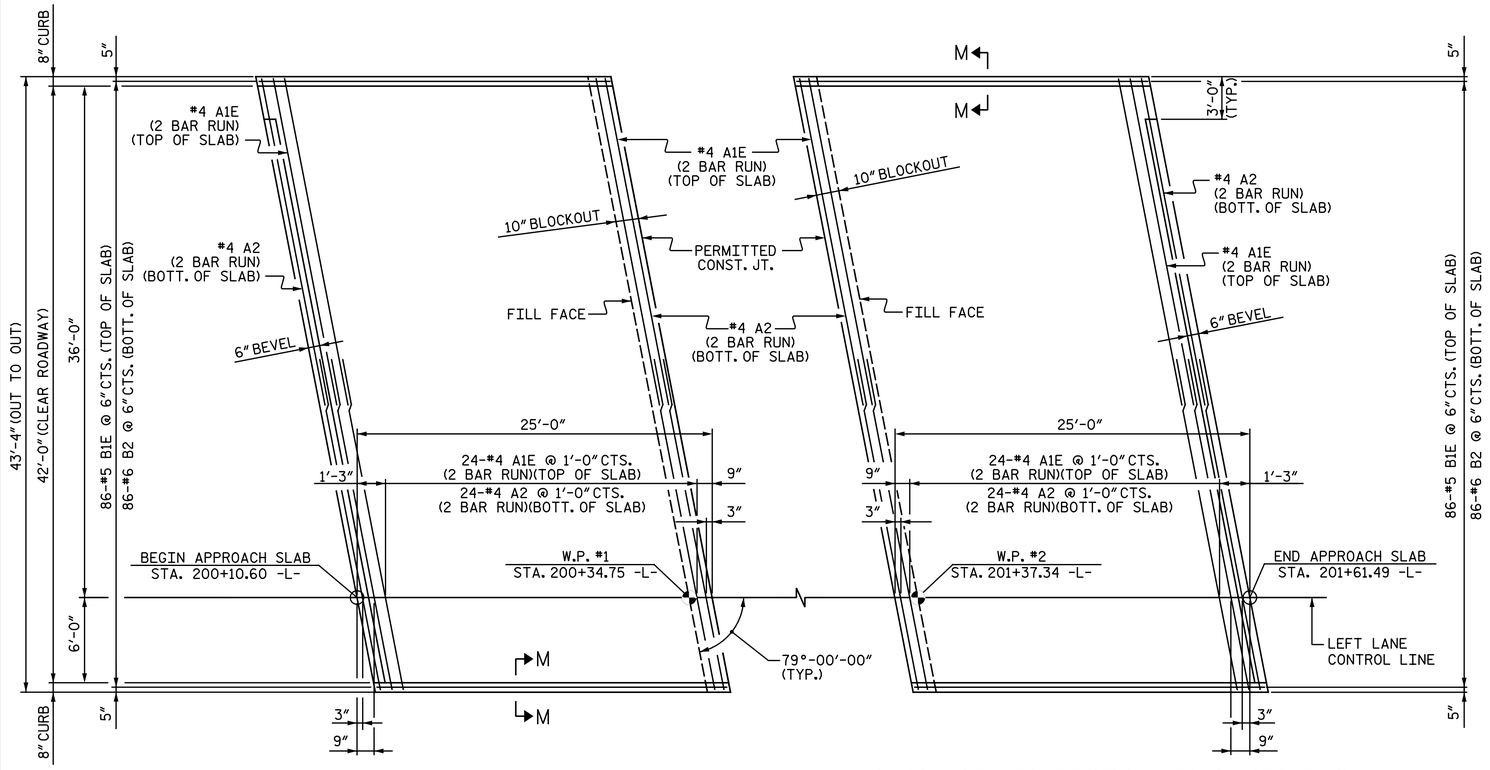
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-23
1			3			TOTAL SHEETS
2			4			25

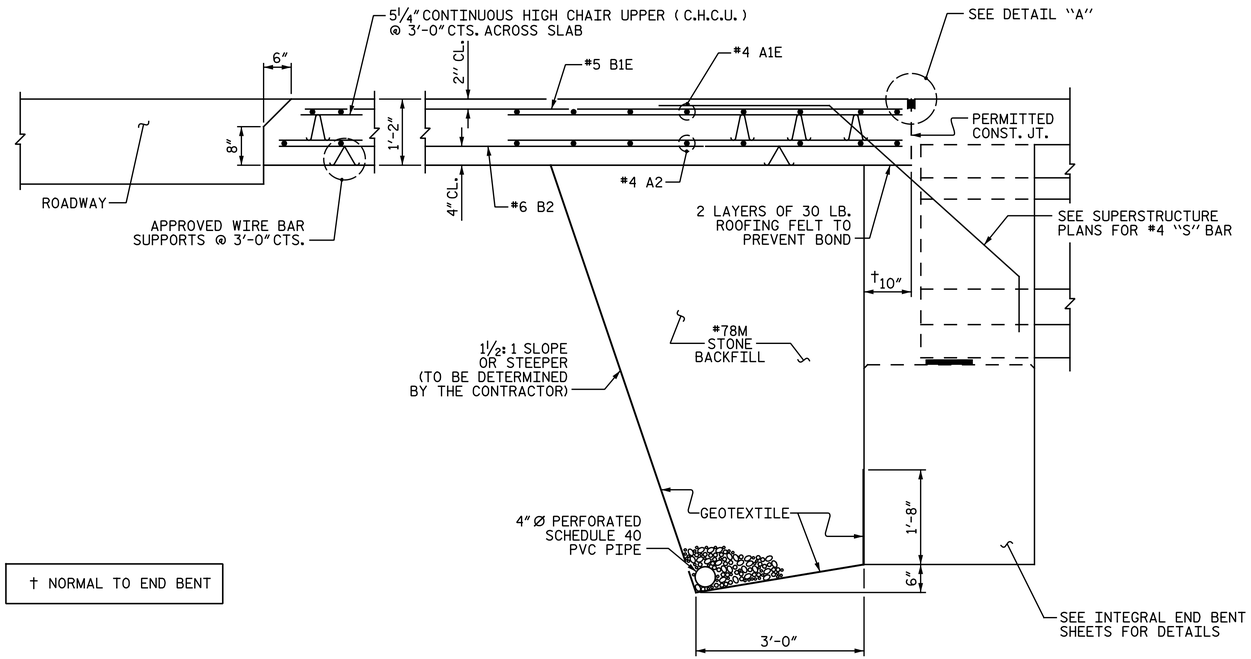
ASSEMBLED BY : N. B. SPEAKS	DATE : 2-23-17	
CHECKED BY : B. J. BELL	DATE : 4-10-17	
DRAWN BY : WJH 10/88	REV. 5/1/06	TLA/GM
CHECKED BY : FCJ 10/88	REV. 10/1/11	MAA/GM
	REV. 1/16	MAA/TMG

STD. NO. SP2



PLAN AT INTEGRAL END BENT 1

PLAN AT INTEGRAL END BENT 2



† NORMAL TO END BENT

SECTION THRU SLAB

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.

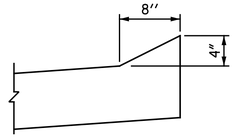
FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND *78M STONE BACKFILL, SEE ROADWAY PLANS.

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

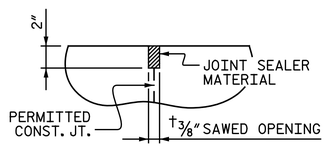
*78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

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

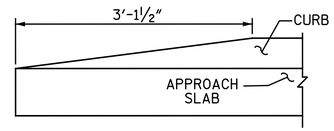
FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.



SECTION M-M



DETAIL "A"



END OF CURB WITHOUT SHOULDER BERM GUTTER

BILL OF MATERIAL
APPROACH SLAB AT END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	52	#4	STR.	22' - 11"	796
A2	52	#4	STR.	22' - 10"	793
B1E	86	#5	STR.	24' - 2"	2,168
B2	86	#6	STR.	24' - 8"	3,186
REINFORCING STEEL				LBS.	3,979
EPOXY COATED REINFORCING STEEL				LBS.	2,964
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.	22' - 11"	796
A2	52	#4	STR.	22' - 10"	793
B1E	86	#5	STR.	24' - 2"	2,168
B2	86	#6	STR.	24' - 8"	3,186
REINFORCING STEEL				LBS.	3,979
EPOXY COATED REINFORCING STEEL				LBS.	2,964
CLASS AA CONCRETE				C.Y.	46.8

SPLICE LENGTHS

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell

8/10/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT

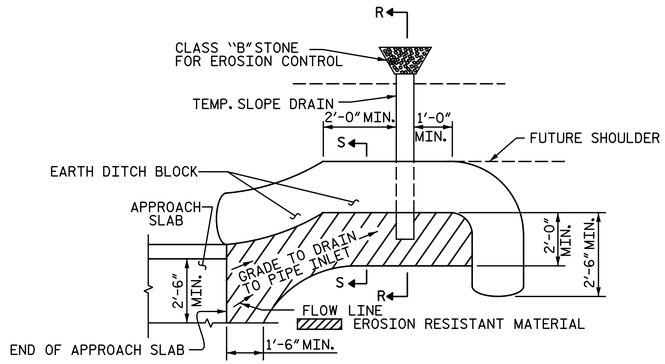
LEFT LANE

DRAWN BY : N. B. SPEAKS DATE : 1-5-17
CHECKED BY : B. J. BELL DATE : 4-6-17

Michael Baker INTERNATIONAL

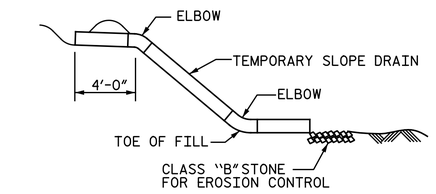
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-24
1			3			TOTAL SHEETS
2			4			25

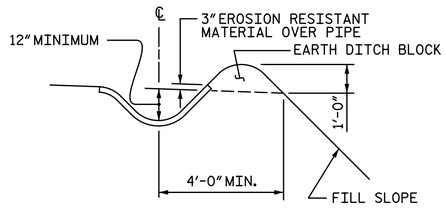


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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



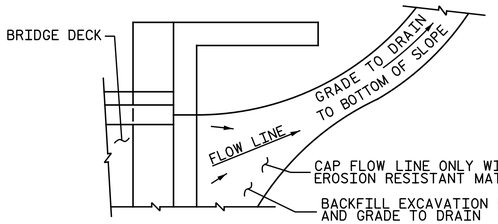
SECTION R-R



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: 200+91.89 -L-

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell

8/10/2017

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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 : 1-10-17	
CHECKED BY : B. J. BELL		DATE : 4-6-17	
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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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-25
1			3			TOTAL SHEETS
2			4			25

STD. NO. BAS4

200+00 200+50 201+00 201+50 202+00

(+)1.6000% (-)2.4000%

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

-L- GRADE DATA

90 80 70 60 50

SPAN A

FILL FACE AT END BENT 1
STA. 200+42.89 -L-
G.P. EL. 81.71

1'-6" MIN. BERM
NORMAL TO CAP

FIX.

1'-0" (TYP.)

FILL

1½:1 SLOPE NORMAL TO DITCH (TYP.)

HP 12x53 STEEL PILES (TYP.)

17'-6" MIN. VERT. CL.

℄ DITCH & P.I. OF 6' V.C. (RDWY. DETAIL & PAY ITEM) (TYP.)

4" CONCRETE SLOPE PROTECTION (TYP.)

2'-2" MIN. BERM
NORMAL TO CAP

FIX.

FILL FACE AT END BENT 2
STA. 201+45.48 -L-
G.P. EL. 80.25

PROPOSED GRADE

FILL

APPROXIMATE NATURAL GROUND LINE

EL. 57± EL. 58± EL. 56± EL. 57± EL. 56± EL. 58±

INTEGRAL END BENT 1 INTEGRAL END BENT 2

SECTION ALONG RIGHT LANE CONTROL LINE

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

102'-7"
(FILL FACE TO FILL FACE)

52'-1¾" 50'-5¼"

BRIDGE I.D.
STA. 200+91.89 -L- =
STA. 11+61.86 -Y4-

-Y4-

TO SR 1727

TO SR 1004

-L-

S 83°-37'-34.5" E

82°-11'-36"

N 1°-25'-58.9" W

3'-1" BERM
EL. 73.13

2'-2" BERM
EL. 71.72

23'-0"

STA. 200+95.04 -L- =
STA. 11+38.64 -Y4-

RIGHT LANE CONTROL LINE

BEGIN APPROACH SLAB
STA. 200+18.74 -L-

W.P. #1
STA. 200+42.89 -L-

79°-00'-00" (TYP.)

1'-6" TO ℄ DITCH (TYP.)

1½:1 SLOPE

8'-0"* (SHLDR.) 24'-0"* (ROADWAY) 8'-0"* (SHLDR.)

40'-0" (SHLDR. TO SHLDR.)

℄ DITCH & P.I. OF 6' V.C. (RDWY. DETAIL & PAY ITEM) (TYP.)

FILL FACE

PT. A

19'-7"± (EXIST. RDWY.)

W.P. #2
STA. 201+45.48 -L-

END APPROACH SLAB
STA. 201+69.63 -L-

TO SR 1733

1'-6" BERM
EL. 71.72

6'-5" BERM
EL. 70.27

4" CONCRETE SLOPE PROTECTION (TYP.)

TO SR 1742

N

POINT	STATION ON -Y4-	OFFSET	ELEVATION ON -Y4-
A	11+03.23	0.00	57.05

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

✱ - FUTURE LANE CONFIGURATION

PLAN

(PILES NOT SHOWN FOR CLARITY)

PROJECT NO. R-5703

LENOIR COUNTY

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

SHEET 1 OF 3 BRIDGE NO. 213

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

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

8/10/2017

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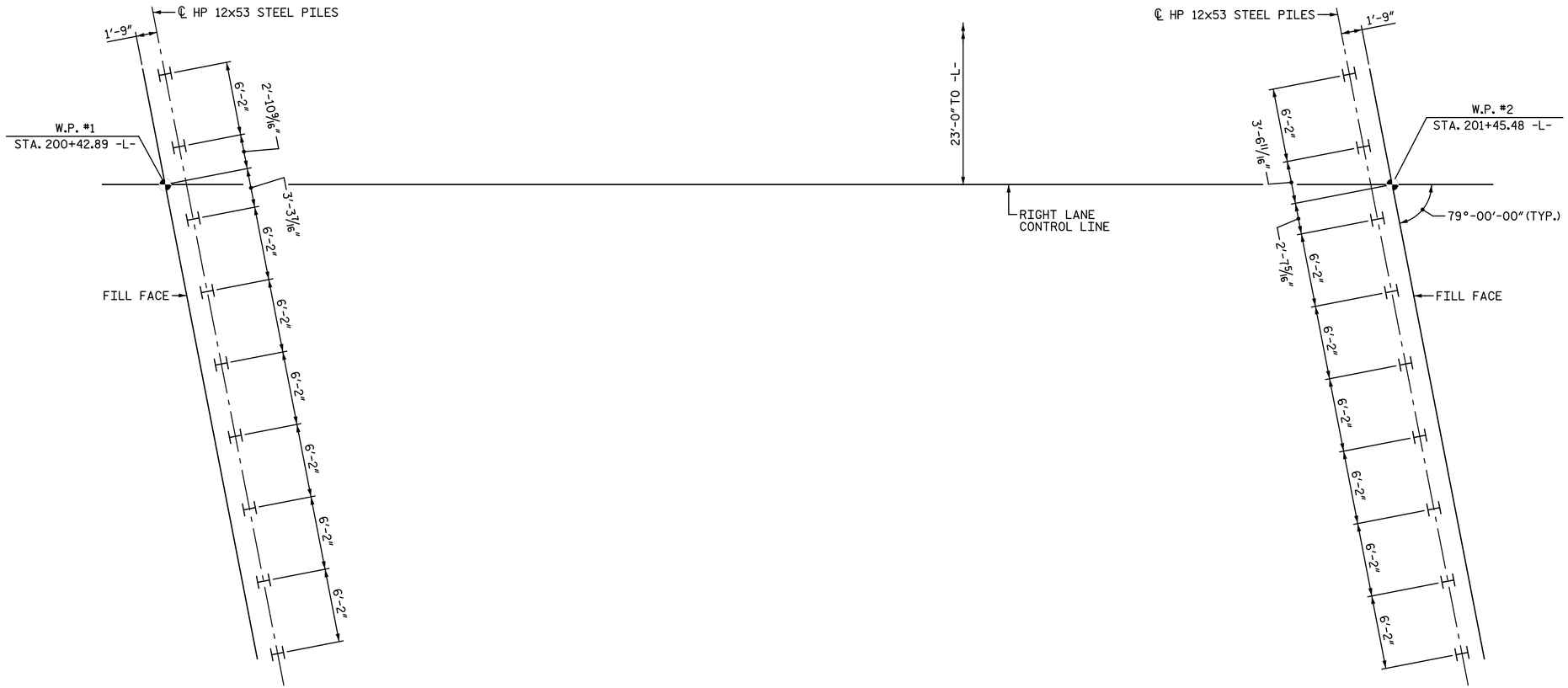
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-1
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : C. E. MAYHEW DATE : 3-21-17
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.

PROJECT NO. R-5703

LENOIR COUNTY

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

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell
8/10/2017

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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

RIGHT LANE

Michael Baker INTERNATIONAL
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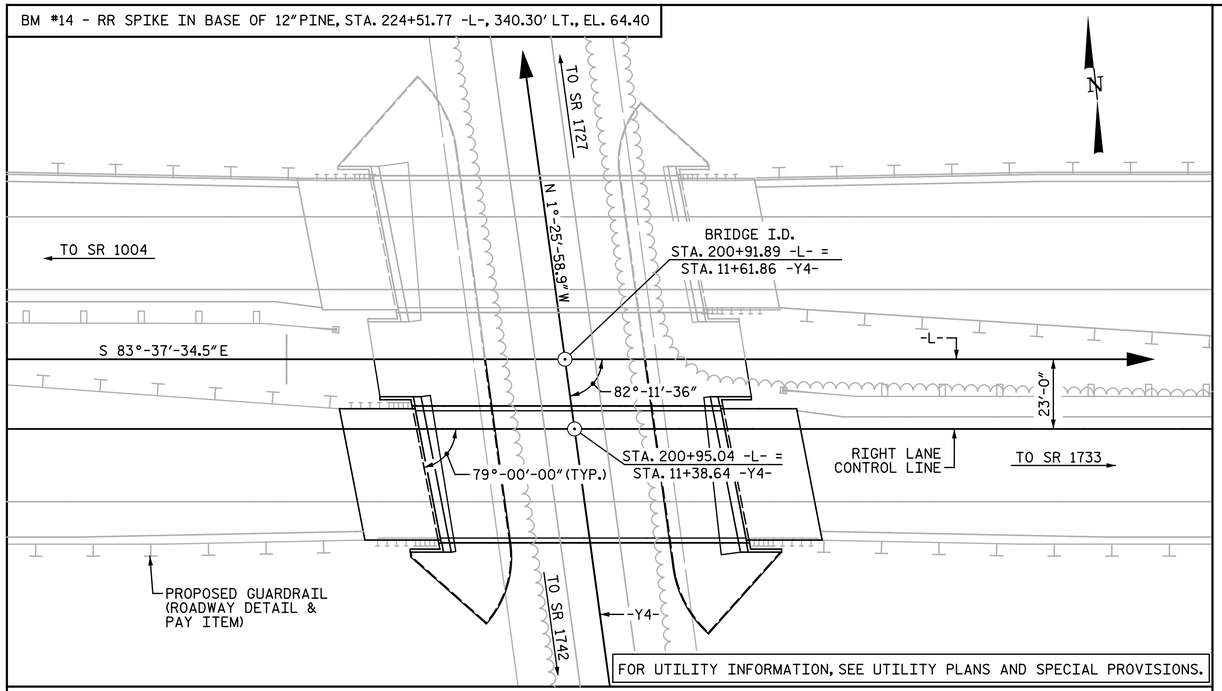
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-2
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : N. B. SPEAKS DATE : 2-28-17
CHECKED BY : B. J. BELL DATE : 4-10-17



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.

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		320	
END BENT 2				38.1		5,230			9	9	540	5		340	
TOTAL	1	4,642	5,805	76.2	LUMP SUM	10,460	5	502.19	18	18	1,035	10	201.77	660	LUMP SUM

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

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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

RIGHT LANE

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-3
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : N.B.S. / M.D.M. DATE : 4-3-17
CHECKED BY : B. J. BELL DATE : 4-10-17

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
							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	1.07	--	1.75	0.821	1.58	A	5	49.50	0.960	1.08	A	3	19.40	1.00	0.821	1.07	A	5	49.50	1,2
		HL-93 (OPERATING)	N/A		1.45	--	1.35	0.821	2.04	A	5	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	5	49.50	0.960	1.45	A	3	19.40	1.00	0.821	1.49	A	5	49.50	1,2
		HS-20 (OPERATING)	36.000		1.93	69.48	1.35	0.821	2.85	A	5	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	5	49.50	0.960	4.75	A	3	19.40	1.00	0.821	3.53	A	5	49.50	1,2
		SNGARBS2	20.000		2.56	51.20	1.40	0.821	4.72	A	5	49.50	0.960	3.30	A	3	19.40	1.00	0.821	2.56	A	5	49.50	1,2
		SNAGRIS2	22.000		2.39	52.58	1.40	0.821	4.41	A	5	49.50	0.960	3.03	A	3	19.40	1.00	0.821	2.39	A	5	49.50	1,2
		SNCOTTS3	27.250		1.75	47.69	1.40	0.821	3.24	A	5	49.50	0.960	2.28	A	3	19.40	1.00	0.821	1.75	A	5	49.50	1,2
		SNAGGRS4	34.925		1.44	50.29	1.40	0.821	2.65	A	5	49.50	0.960	1.84	A	3	19.40	1.00	0.821	1.44	A	5	49.50	1,2
		SNS5A	35.550		1.41	50.13	1.40	0.821	2.60	A	5	49.50	0.960	1.86	A	3	19.40	1.00	0.821	1.41	A	5	49.50	1,2
		SNS6A	39.950		1.28	51.14	1.40	0.821	2.36	A	5	49.50	0.960	1.67	A	3	19.40	1.00	0.821	1.28	A	5	49.50	1,2
		SNS7B	42.000		1.22	51.24	1.40	0.821	2.25	A	5	49.50	0.960	1.62	A	3	19.40	1.00	0.821	1.22	A	5	49.50	1,2
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.56	51.48	1.40	0.821	2.87	A	5	49.50	0.960	2.03	A	3	19.40	1.00	0.821	1.56	A	5	49.50	1,2
		TNT4A	33.075		1.56	51.60	1.40	0.821	2.88	A	5	49.50	0.960	1.98	A	3	19.40	1.00	0.821	1.56	A	5	49.50	1,2
		TNT6A	41.600		1.27	52.83	1.40	0.821	2.33	A	5	49.50	0.960	1.72	A	3	19.40	1.00	0.821	1.27	A	5	49.50	1,2
		TNT7A	42.000		1.27	53.34	1.40	0.821	2.34	A	5	49.50	0.960	1.69	A	3	19.40	1.00	0.821	1.27	A	5	49.50	1,2
		TNT7B	42.000		1.30	54.60	1.40	0.821	2.39	A	5	49.50	0.960	1.60	A	3	19.40	1.00	0.821	1.30	A	5	49.50	1,2
		TNAGRIT4	43.000		1.24	53.32	1.40	0.821	2.29	A	5	49.50	0.960	1.54	A	3	19.40	1.00	0.821	1.24	A	5	49.50	1,2
		TNAGT5A	45.000		1.18	53.10	1.40	0.821	2.17	A	5	49.50	0.960	1.52	A	3	19.40	1.00	0.821	1.18	A	5	49.50	1,2
		TNAGT5B	45.000	3	1.17	52.65	1.40	0.821	2.15	A	5	49.50	0.960	1.46	A	3	19.40	1.00	0.821	1.17	A	5	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)

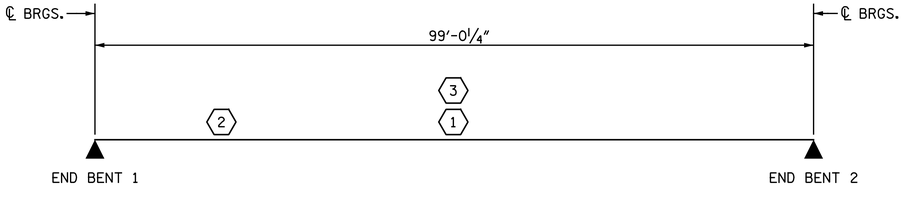
(2) DESIGN LOAD RATING (HS-20)

(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

Bradley J. Bell

8/10/2017

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

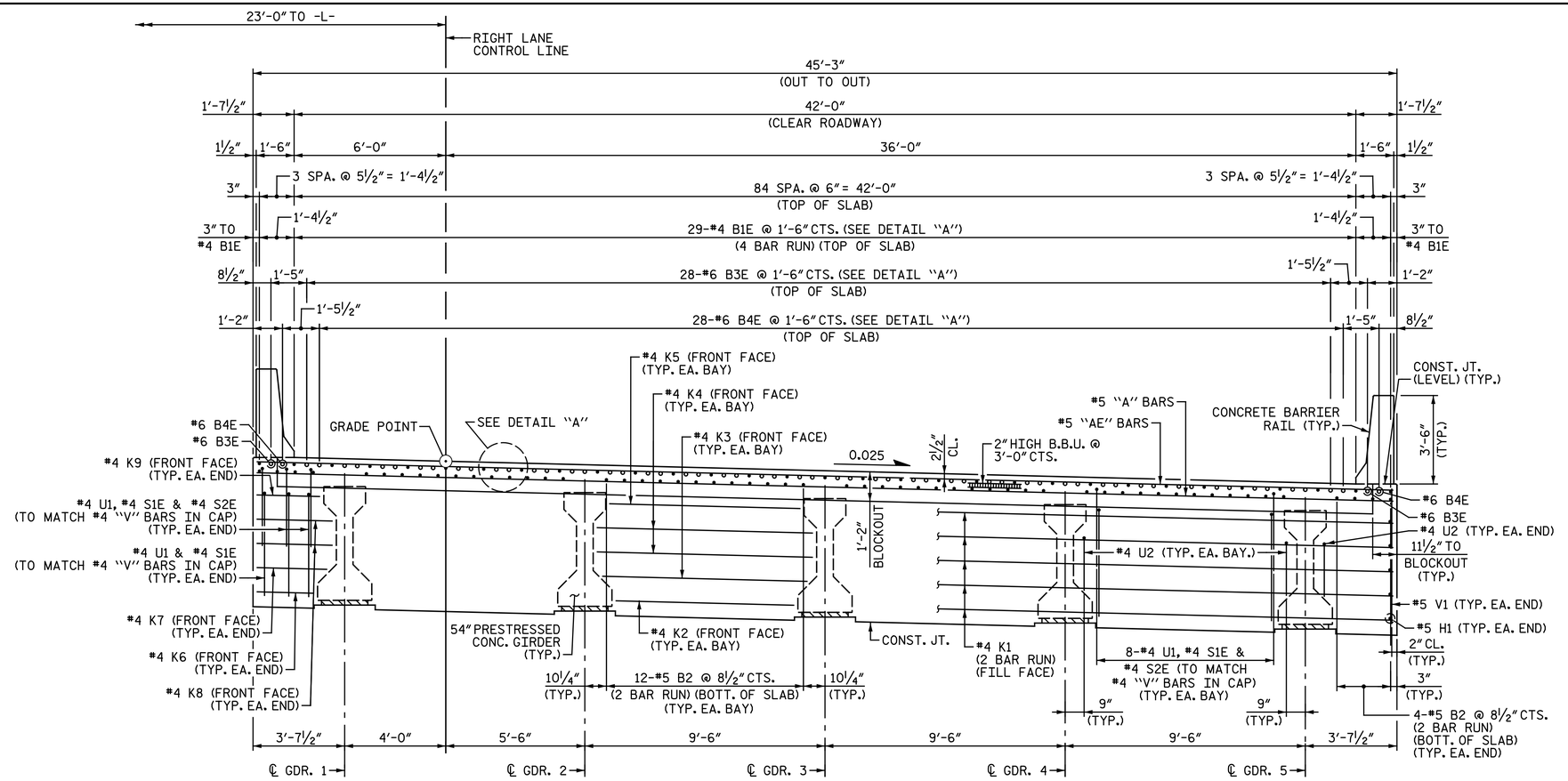
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-4
1			3			TOTAL SHEETS
2			4			25

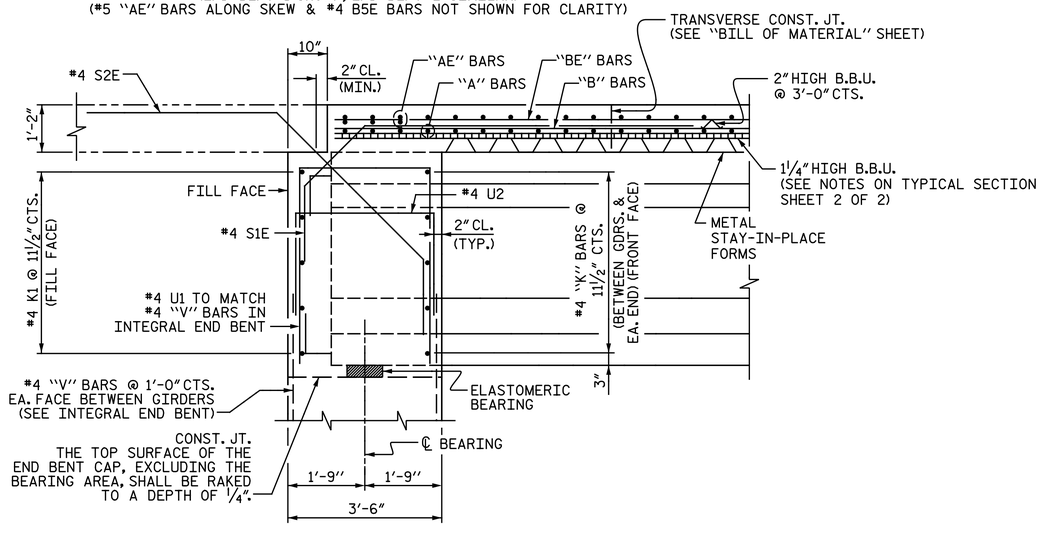
ASSEMBLED BY : N. B. SPEAKS	DATE : 2-27-17
CHECKED BY : B. J. BELL	DATE : 4-10-17
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM

STD. NO. LRFR1

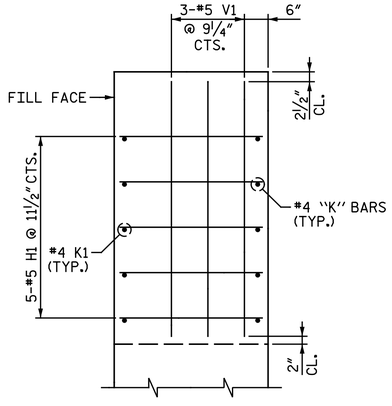


TYPICAL SECTION AT INTEGRAL END BENT

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

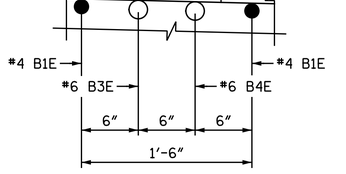


END OF GIRDER DETAIL AT INTEGRAL END BENT



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

RIGHT 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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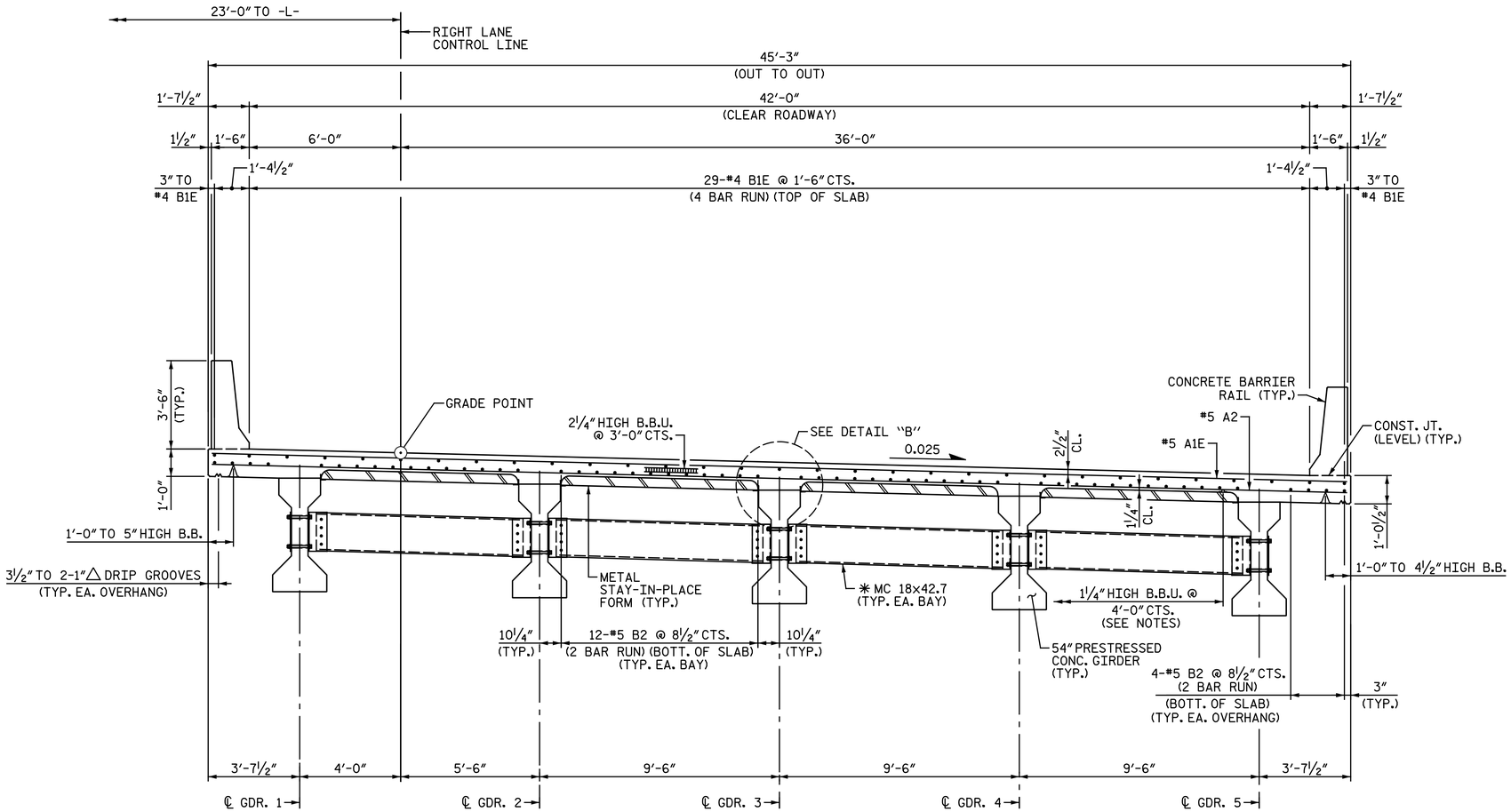
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-5
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : M. D. MAYHEW DATE : 2-17-17
CHECKED BY : B. J. BELL DATE : 3-30-17



TYPICAL SECTION AT INTERMEDIATE DIAPHRAGM

NOTES:

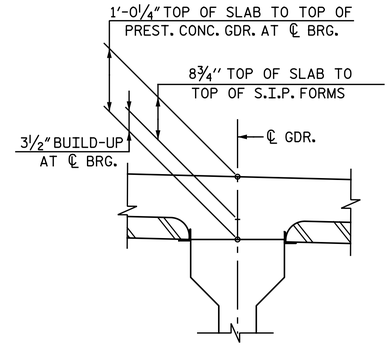
PROVIDE 1¼″ HIGH BEAM BOLSTERS UPPER AT 4′-0″ CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4′-0″ CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2½″ ABOVE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



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

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell
8/10/2017

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-6
1			3			TOTAL SHEETS
2			4			25

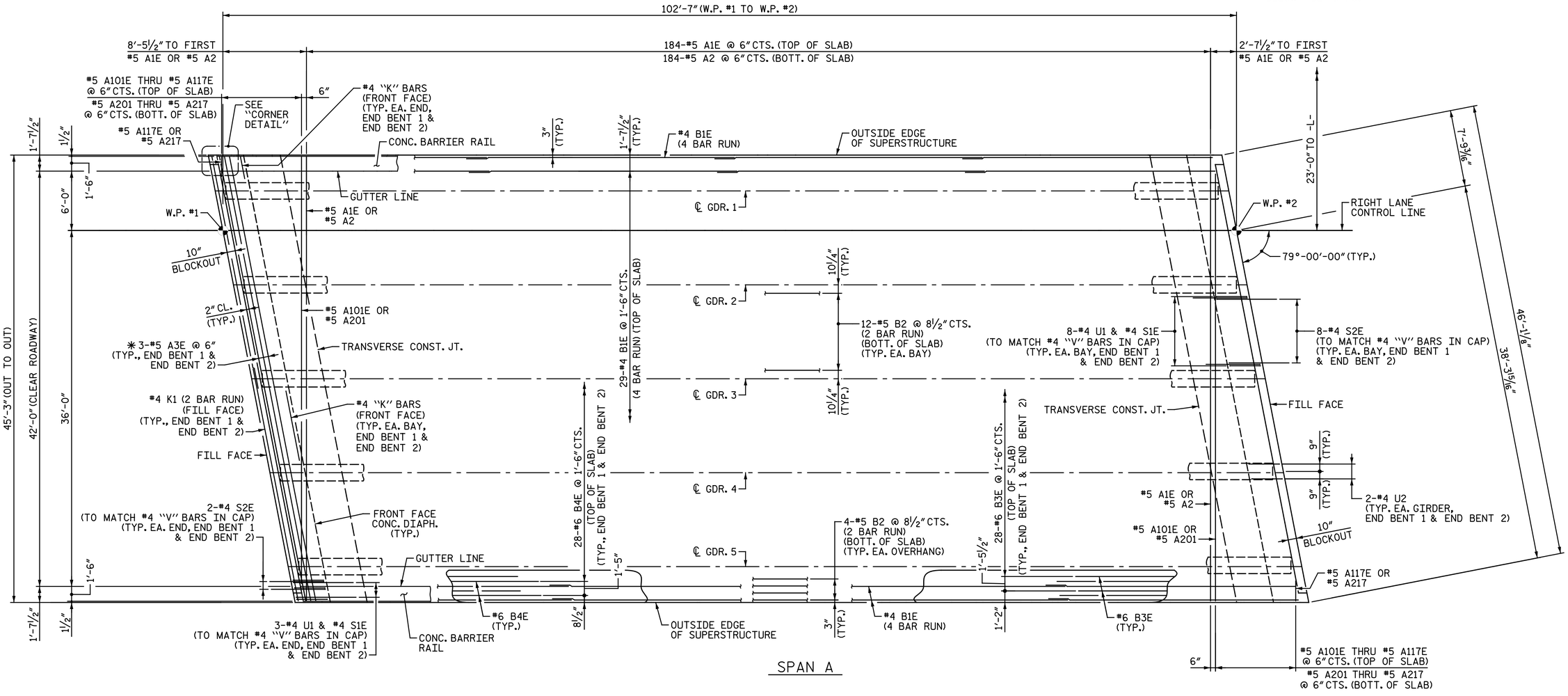
DRAWN BY : M. D. MAYHEW DATE : 12-23-16
CHECKED BY : B. J. BELL DATE : 3-30-17

NOTES:

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

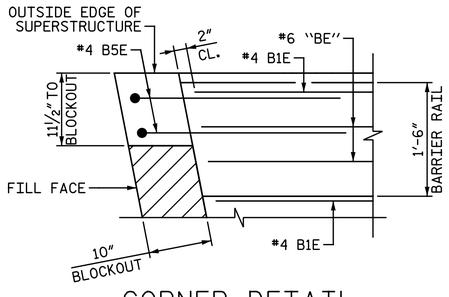
FOR DECK POURING SEQUENCE AND LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE "BILL OF MATERIAL" SHEET.

✳ #5 A3E BARS ARE TO BE PLACED PARALLEL TO SKEW AND BELOW "BE" BARS.



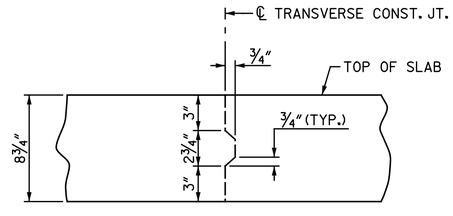
SPAN A

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

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

8/10/2017

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DRAWN BY : M. D. MAYHEW DATE : 3-20-17
CHECKED BY : B. J. BELL DATE : 3-30-17

Michael Baker INTERNATIONAL

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-7
1			3			TOTAL SHEETS
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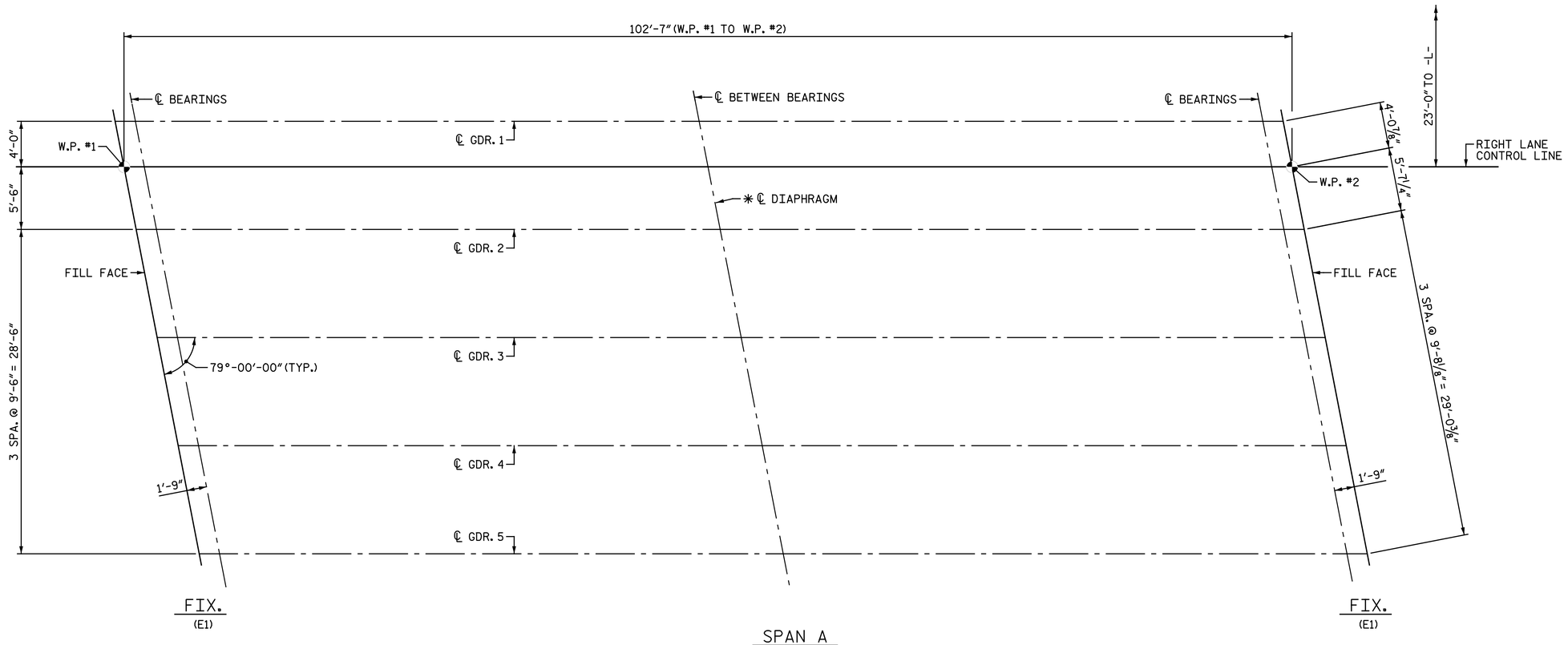

SPAN A

GIRDER LAYOUT

✳ INTERMEDIATE STEEL DIAPHRAGMS NOT SHOWN FOR CLARITY

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

GIRDER LAYOUT

RIGHT LANE

DRAWN BY : M. D. MAYHEW DATE : 2-20-17
CHECKED BY : B. J. BELL DATE : 3-30-17

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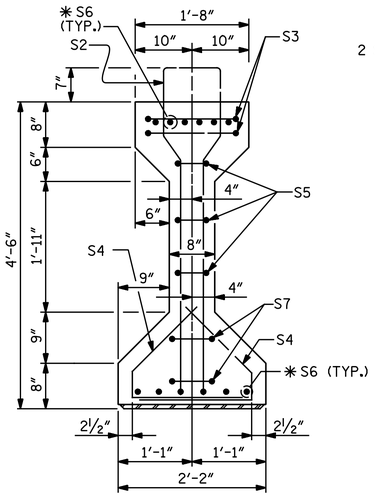
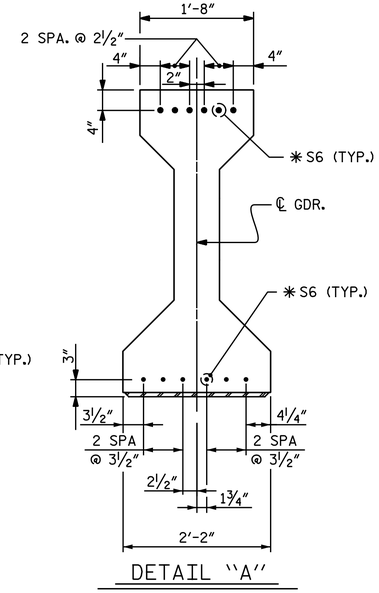
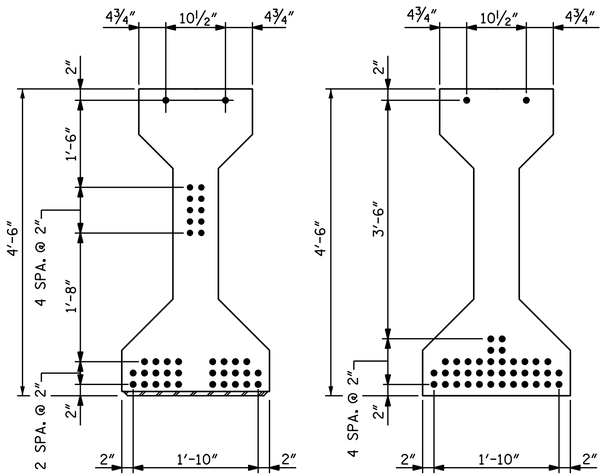


SECTION A-A

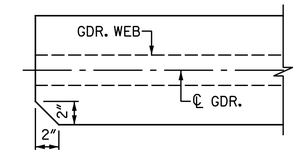
✱FOR S6 BARS, SEE DETAIL "A"



DETAIL "A"

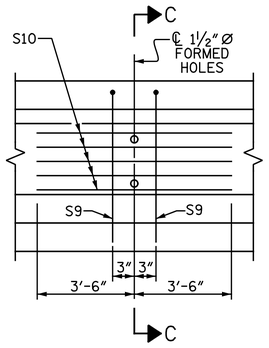


0.6" Ø LOW RELAXATION STRAND LAYOUT



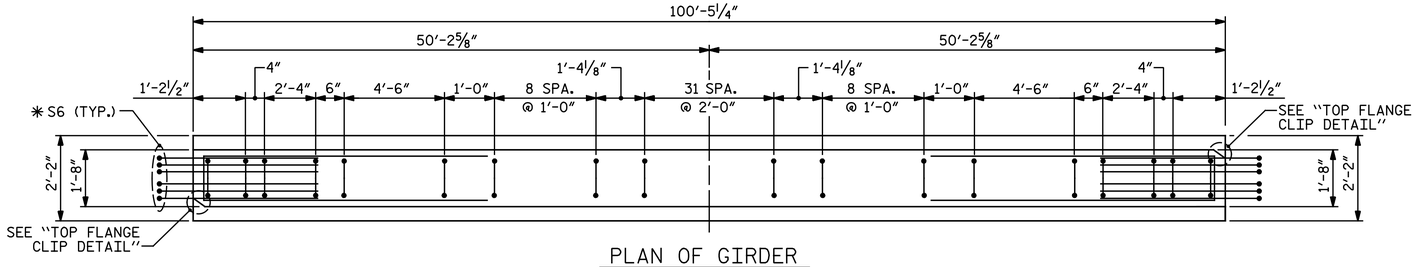
TOP FLANGE CLIP DETAIL

(TYP.)

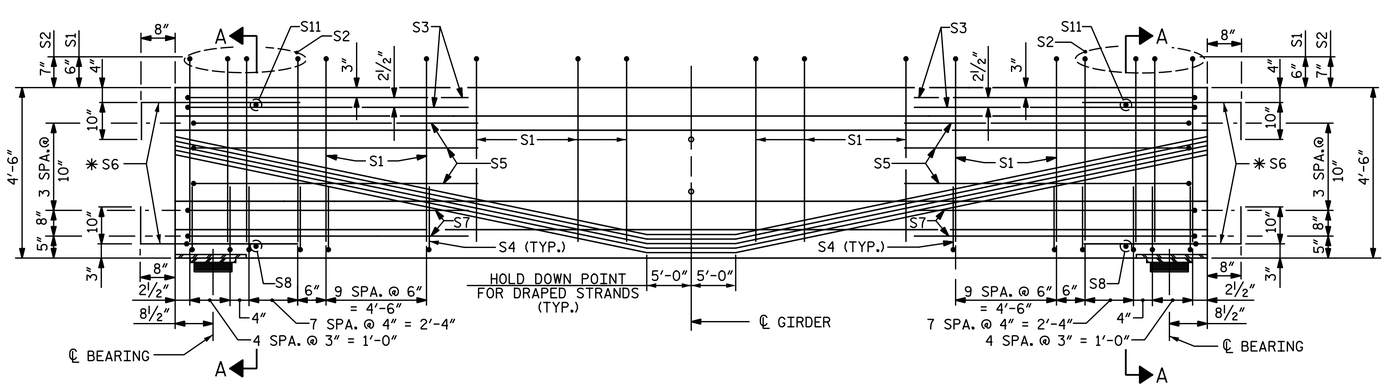


PARTIAL ELEVATION

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



PLAN OF GIRDER

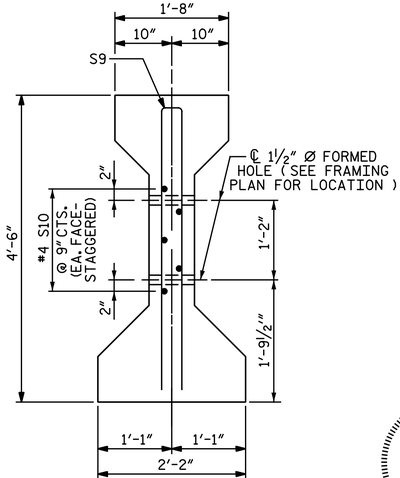


INT. END BENT 1

ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

INT. END BENT 2



SECTION C-C

(S1 BARS NOT SHOWN)

0.6" Ø L. R. GRADE 270 STRANDS

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

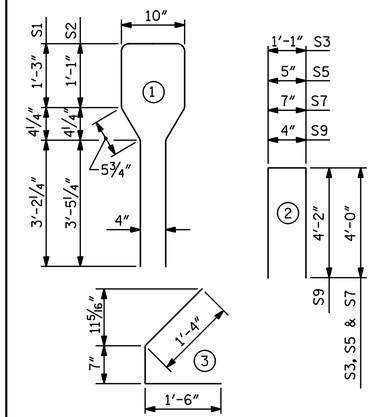
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	70	#4	1	10'-8"	499
S2	26	#6	1	10'-10"	423
S3	4	#4	2	9'-1"	24
S4	92	#4	3	3'-5"	210
S5	6	#4	2	8'-5"	34
✱S6	24	#5	STR.	3'-8"	92
S7	4	#4	2	8'-7"	23
S8	2	#3	STR.	1'-10"	1
S9	2	#5	2	8'-8"	18
S10	5	#4	STR.	7'-0"	23
S11	2	#3	STR.	1'-4"	1

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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	7,500 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
	1,348	20.4	40

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5	100.44	502.19

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

8/10/2017

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-9
1			3			TOTAL SHEETS
2			4			25

ASSEMBLED BY : N. B. SPEAKS	DATE : 2-20-17	
CHECKED BY : B. J. BELL	DATE : 4-6-17	
DRAWN BY : JMB 12/87	REV. 5/1/06R	TLA/GM
CHECKED BY : ARB 12/87	REV. 10/1/11	MAA/GM
	REV. 1/15	MAA/TMG

STD. NO. PCG3

DEAD LOAD DEFLECTION TABLE FOR SPAN A

0.6″Ø LOW RELAXATION	GIRDER 1										
TENTH POINTS	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.083	0.156	0.214	0.251	0.263	0.251	0.214	0.156	0.083	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.* ↓	0.000	0.053	0.103	0.143	0.168	0.177	0.168	0.143	0.103	0.053	0.000
FINAL CAMBER ↑	0″	3/8″	5/8″	7/8″	15/16″	1 1/16″	15/16″	7/8″	5/8″	3/8″	0″

0.6″Ø LOW RELAXATION	GIRDERS 2 & 4										
TENTH POINTS	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.083	0.156	0.214	0.251	0.263	0.251	0.214	0.156	0.083	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.* ↓	0.000	0.055	0.109	0.151	0.178	0.187	0.178	0.151	0.109	0.055	0.000
FINAL CAMBER ↑	0″	5/16″	9/16″	3/4″	7/8″	15/16″	7/8″	3/4″	9/16″	5/16″	0″

0.6″Ø LOW RELAXATION	GIRDER 3										
TENTH POINTS	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.083	0.156	0.214	0.251	0.263	0.251	0.214	0.156	0.083	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.* ↓	0.000	0.056	0.111	0.154	0.181	0.190	0.181	0.154	0.111	0.056	0.000
FINAL CAMBER ↑	0″	5/16″	9/16″	3/4″	13/16″	7/8″	13/16″	3/4″	9/16″	5/16″	0″

0.6″Ø LOW RELAXATION	GIRDER 5										
TENTH POINTS	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.083	0.156	0.214	0.251	0.263	0.251	0.214	0.156	0.083	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L.* ↓	0.000	0.053	0.105	0.145	0.171	0.179	0.171	0.145	0.105	0.053	0.000
FINAL CAMBER ↑	0″	3/8″	5/8″	13/16″	15/16″	1″	15/16″	13/16″	5/8″	3/8″	0″

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

NOTES:

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,000 PSI.

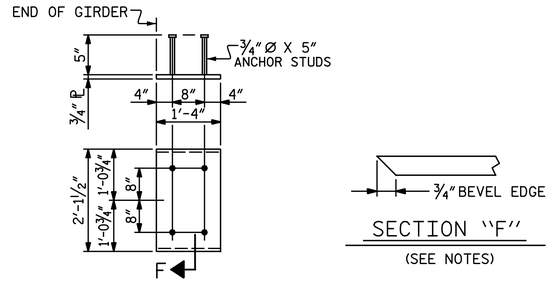
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

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

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

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 EMBEDED CLIPS FOR PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.



EMBEDDED PLATE "B-1" DETAILS
(2 REQUIRED PER GIRDER)

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 200+91.89 -L-

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell
8/10/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

PRESTRESSED CONCRETE GIRDER DETAILS

RIGHT LANE

DRAWN BY : N. B. SPEAKS DATE : 2-22-17
CHECKED BY : B. J. BELL DATE : 4-6-17

Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
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1			3			TOTAL SHEETS
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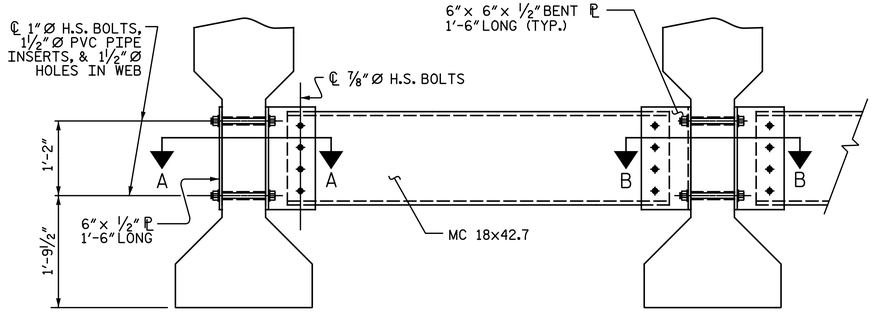
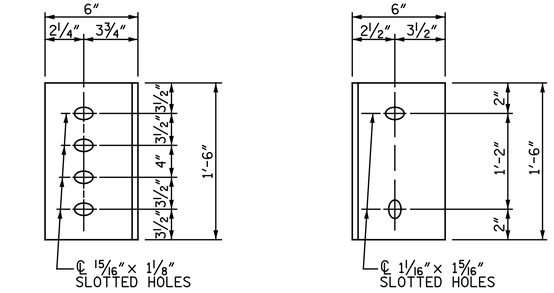


PART SECTION AT INTERMEDIATE DIAPHRAGM



CONNECTOR PLATE DETAILS

STRUCTURAL STEEL NOTES

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

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

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

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

FOR METALLIZATION, APPLY 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 ¼" PROJECTION BEYOND THE NUT.

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

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

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

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

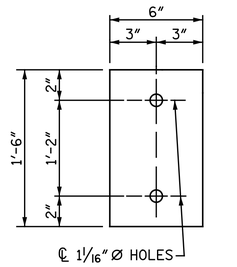
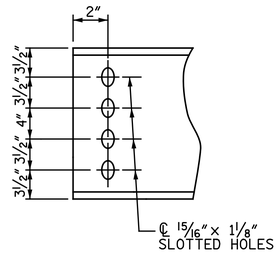
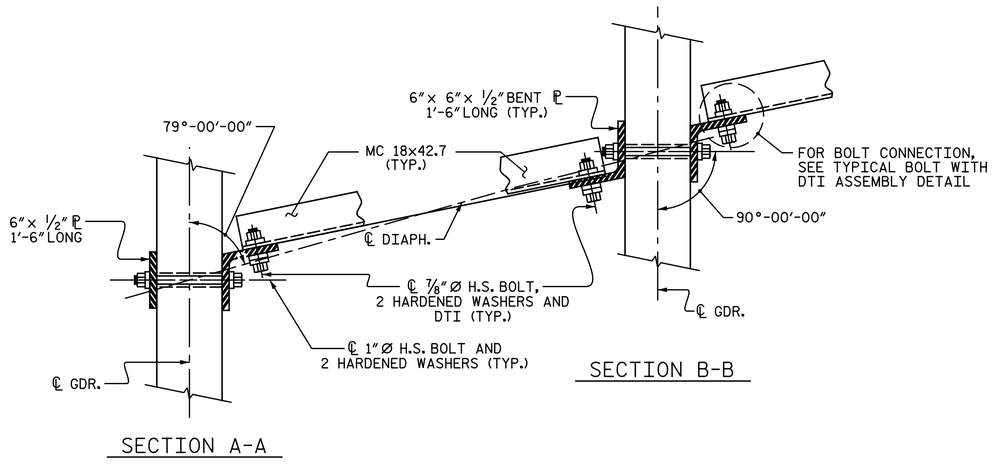


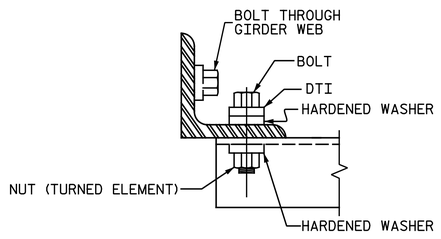
PLATE DETAILS



CHANNEL END



CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell

8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

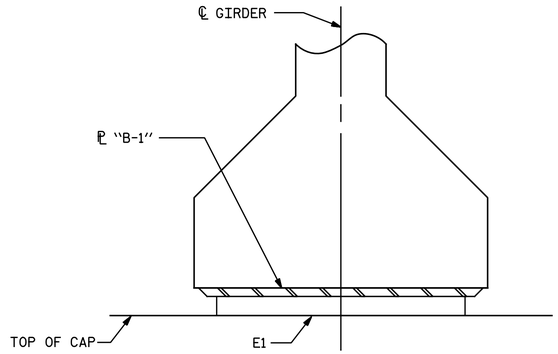
STANDARD INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS RIGHT LANE

ASSEMBLED BY : M. D. MAYHEW	DATE : 3-15-17
CHECKED BY : B. J. BELL	DATE : 3-20-17
DRAWN BY : TLA 6/05	ADDED 10/21/05
CHECKED BY : VC 6/05	REV. 5/1/06RRR KMM/GM
	REV. 10/1/11 MAA/GM

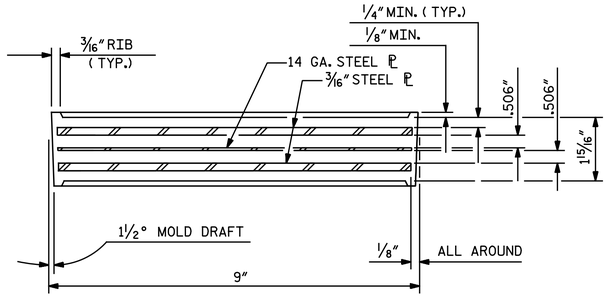
Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-11
1			3			TOTAL SHEETS
2			4			25

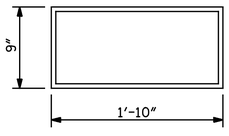
STD. NO. PCG10



SECTION
(AT INTEGRAL END BENTS)



TYPICAL SECTION OF ELASTOMERIC BEARINGS



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: 200+91.89 -L-

ASSEMBLED BY : N. B. SPEAKS	DATE : 2-27-17
CHECKED BY : B. J. BELL	DATE : 4-6-17
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 042399 ENGINEER BRADLEY J. BELL

8/10/2017

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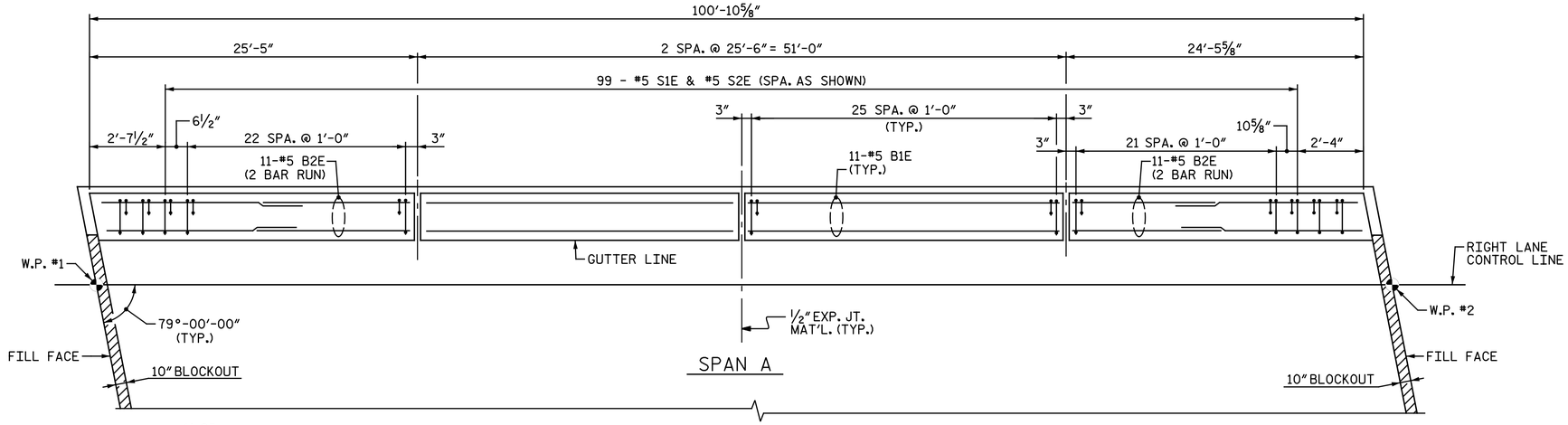
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
ELASTOMERIC BEARING DETAILS
PRESTRESSED CONCRETE GIRDER
SUPERSTRUCTURE
RIGHT LANE

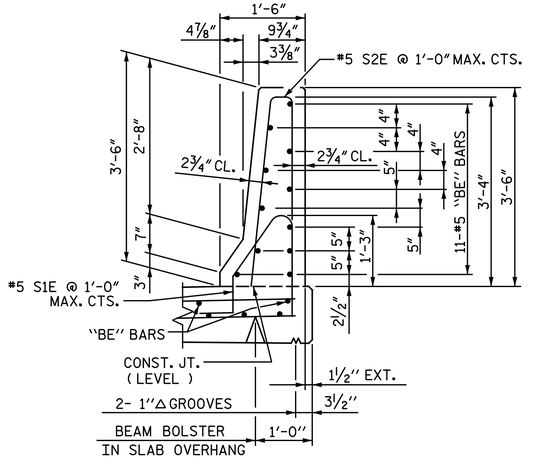
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-12
1			3			TOTAL SHEETS
2			4			25

STD. NO. EB3

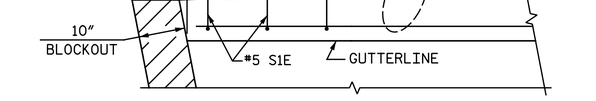


PLAN OF BARRIER RAIL

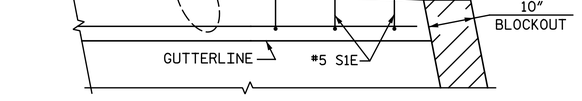
(LEFT RAIL SHOWN, RIGHT RAIL SIMILAR)



SECTION THRU RAIL



END BENT 1

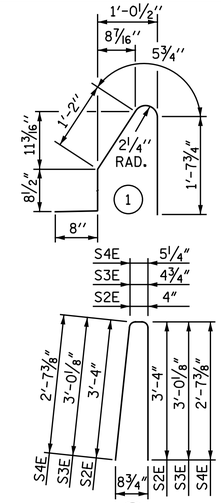


END BENT 2

PLAN

(LEFT RAIL SHOWN, RIGHT RAIL SIMILAR)

BAR TYPES

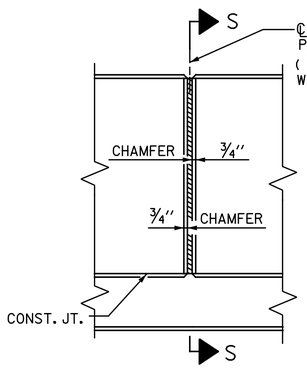


ALL BAR DIMENSIONS ARE OUT TO OUT

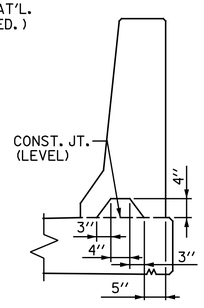
BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1E	44	#5	STR.	25′ - 1″	1151
B2E	88	#5	STR.	14′ - 3″	1308
S1E	206	#5	1	4′ - 8″	1003
S2E	198	#5	2	7′ - 0″	1446
S3E	4	#5	2	6′ - 5″	27
S4E	4	#5	2	5′ - 8″	24
EPOXY COATED REINFORCING STEEL				LBS.	4959
CLASS AA CONCRETE				C.Y.	27.4
CONCRETE BARRIER RAIL				L.F.	201.77

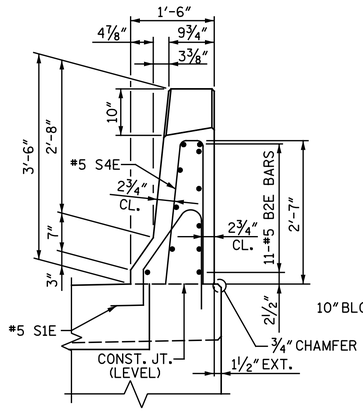


ELEVATION AT EXPANSION JOINTS

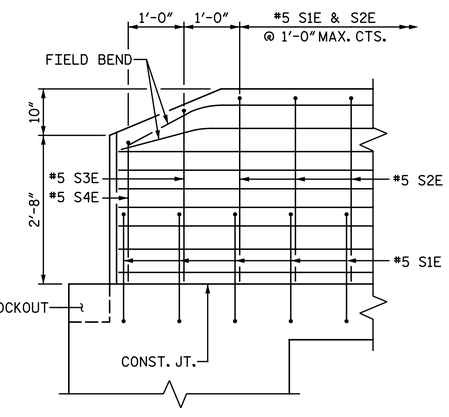


SECTION S-S

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



END VIEW



SIDE VIEW

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.

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

END OF RAIL DETAILS

BARRIER RAIL DETAILS

ASSEMBLED BY : N. B. SPEAKS		DATE : 9-11-17
CHECKED BY : B. J. BELL		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

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell

9/12/2017

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Michael Baker INTERNATIONAL

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

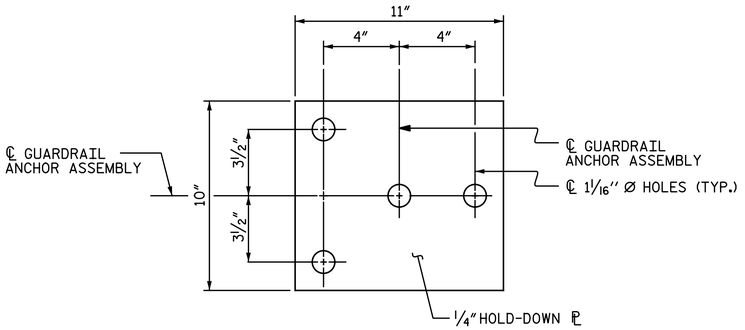
STANDARD

CONCRETE BARRIER RAIL

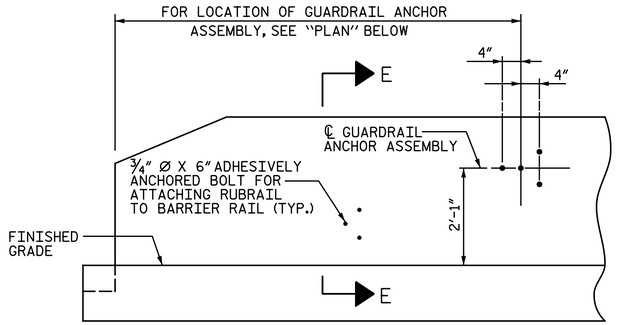
RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-13
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.)

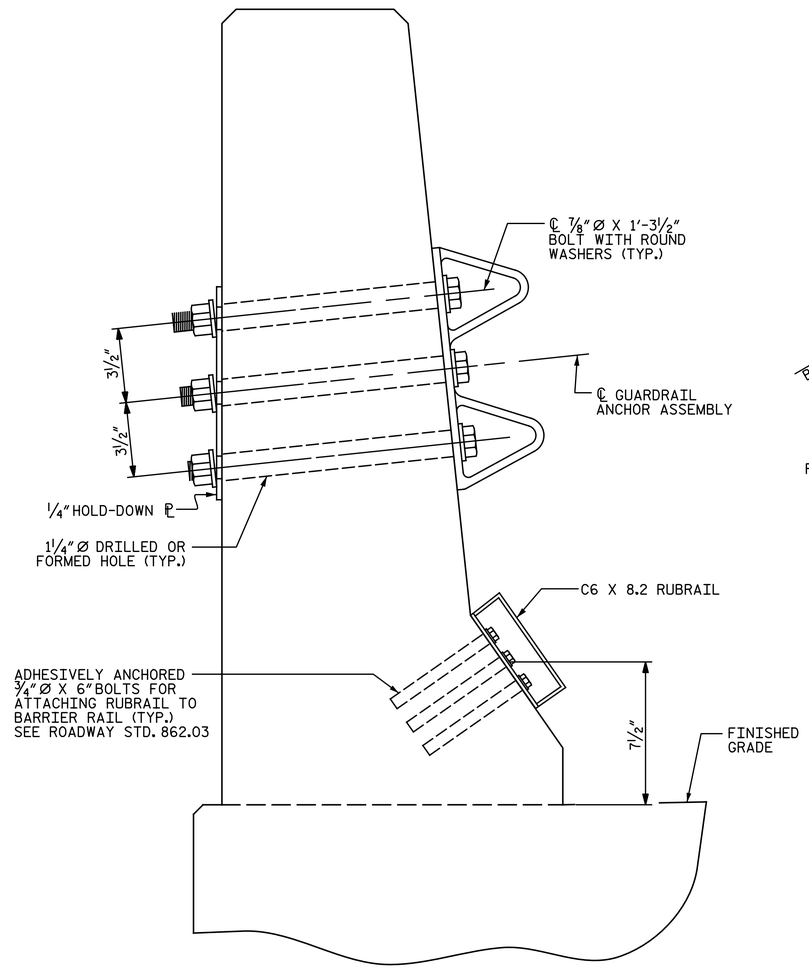
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

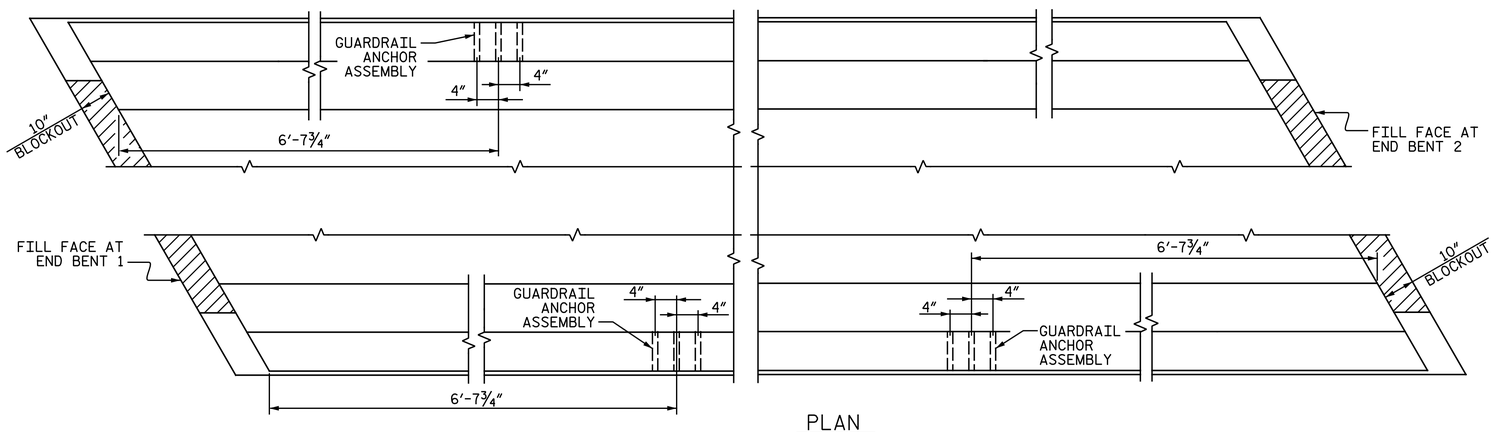
THE 1 1/4″ Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

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.



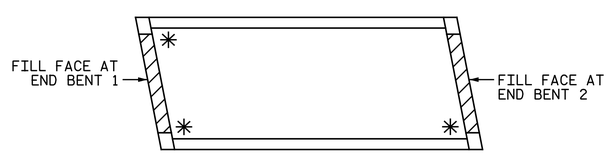
SECTION E-E

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: 200+91.89 -L-

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell

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

RIGHT LANE

ASSEMBLED BY : N. B. SPEAKS	DATE : 9-11-17
CHECKED BY : B. J. BELL	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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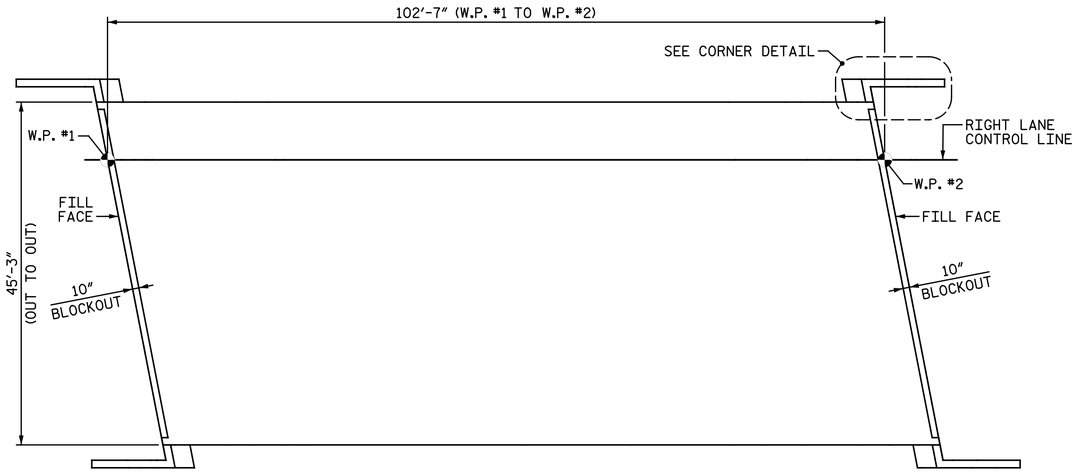
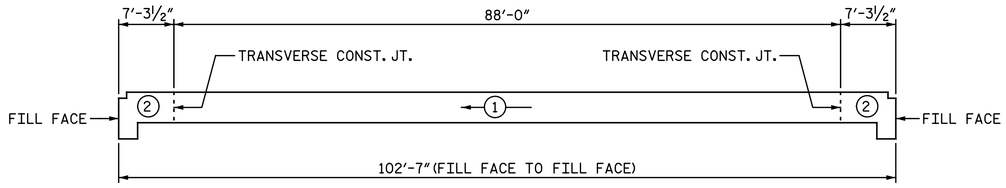
1			3			TOTAL SHEETS
2			4			25

STD. NO. GRA2



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB

(SQ. FT. = 4,642)



POURING SEQUENCE

(#) DENOTES POUR NUMBER AND DIRECTION

REINFORCING BAR SCHEDULE

SPAN A

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	184	#5	STR.	44′ - 11″	8,620
A2	184	#5	STR.	44′ - 11″	8,620
A3E	6	#5	STR.	45′ - 9″	286
A101E	2	#5	STR.	43′ - 2″	90
A102E	2	#5	STR.	40′ - 7″	85
A103E	2	#5	STR.	38′ - 0″	79
A104E	2	#5	STR.	35′ - 5″	74
A105E	2	#5	STR.	32′ - 10″	68
A106E	2	#5	STR.	30′ - 3″	63
A107E	2	#5	STR.	27′ - 8″	58
A108E	2	#5	STR.	25′ - 1″	52
A109E	2	#5	STR.	22′ - 7″	47
A110E	2	#5	STR.	20′ - 0″	42
A111E	2	#5	STR.	17′ - 5″	36
A112E	2	#5	STR.	14′ - 10″	31
A113E	2	#5	STR.	12′ - 3″	26
A114E	2	#5	STR.	9′ - 8″	20
A115E	2	#5	STR.	7′ - 1″	15
A116E	2	#5	STR.	4′ - 6″	9
A117E	2	#5	STR.	2′ - 0″	4

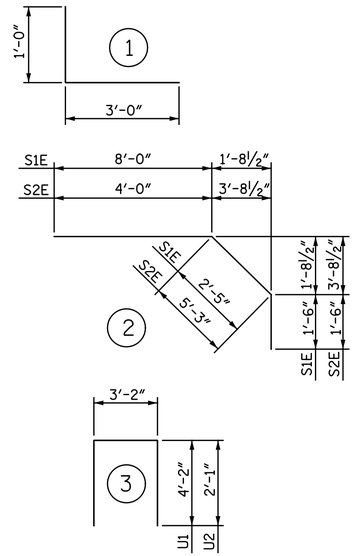
SPAN A (CONT'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A201	2	#5	STR.	43′ - 2″	90
A202	2	#5	STR.	40′ - 7″	85
A203	2	#5	STR.	38′ - 0″	79
A204	2	#5	STR.	35′ - 5″	74
A205	2	#5	STR.	32′ - 10″	68
A206	2	#5	STR.	30′ - 3″	63
A207	2	#5	STR.	27′ - 8″	58
A208	2	#5	STR.	25′ - 1″	52
A209	2	#5	STR.	22′ - 7″	47
A210	2	#5	STR.	20′ - 0″	42
A211	2	#5	STR.	17′ - 5″	36
A212	2	#5	STR.	14′ - 10″	31
A213	2	#5	STR.	12′ - 3″	26
A214	2	#5	STR.	9′ - 8″	20
A215	2	#5	STR.	7′ - 1″	15
A216	2	#5	STR.	4′ - 6″	9
A217	2	#5	STR.	2′ - 0″	4
B1E	124	#4	STR.	26′ - 8″	2,209
B2	112	#5	STR.	51′ - 5″	6,006
B3E	60	#6	STR.	22′ - 6″	2,028
B4E	60	#6	STR.	24′ - 8″	2,223
B5E	8	#4	1	4′ - 0″	21
H1	20	#5	STR.	3′ - 2″	66
K1	20	#4	STR.	24′ - 2″	323
K2	8	#4	STR.	7′ - 1″	38
K3	8	#4	STR.	8′ - 4″	45
K4	16	#4	STR.	8′ - 8″	93
K5	8	#4	STR.	7′ - 7″	41
K6	4	#4	STR.	2′ - 3″	6
K7	4	#4	STR.	2′ - 10″	8
K8	8	#4	STR.	3′ - 0″	16
K9	4	#4	STR.	2′ - 6″	7
S1E	76	#4	2	11′ - 11″	605
S2E	72	#4	2	10′ - 9″	517
U1	76	#4	3	11′ - 6″	584
U2	20	#4	3	7′ - 4″	98
V1	12	#5	STR.	5′ - 7″	70

REINFORCING STEEL	LBS.	16,820
EPOXY COATED REINF. STEEL	LBS.	17,308

"E" SUFFIX DENOTES EPOXY COATED REINFORCING STEEL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

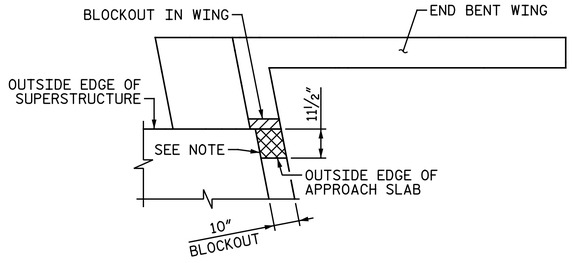
SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
SPAN A		16,820	17,308
POUR 1	129.3		
POUR 2	70.6		
TOTALS*	199.9	16,820	17,308

* QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

GROOVING BRIDGE FLOORS

APPROACH SLABS	1,884	SQ.FT.
BRIDGE DECK	3,921	SQ.FT.
TOTAL	5,805	SQ.FT.



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.

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

BILL OF MATERIAL

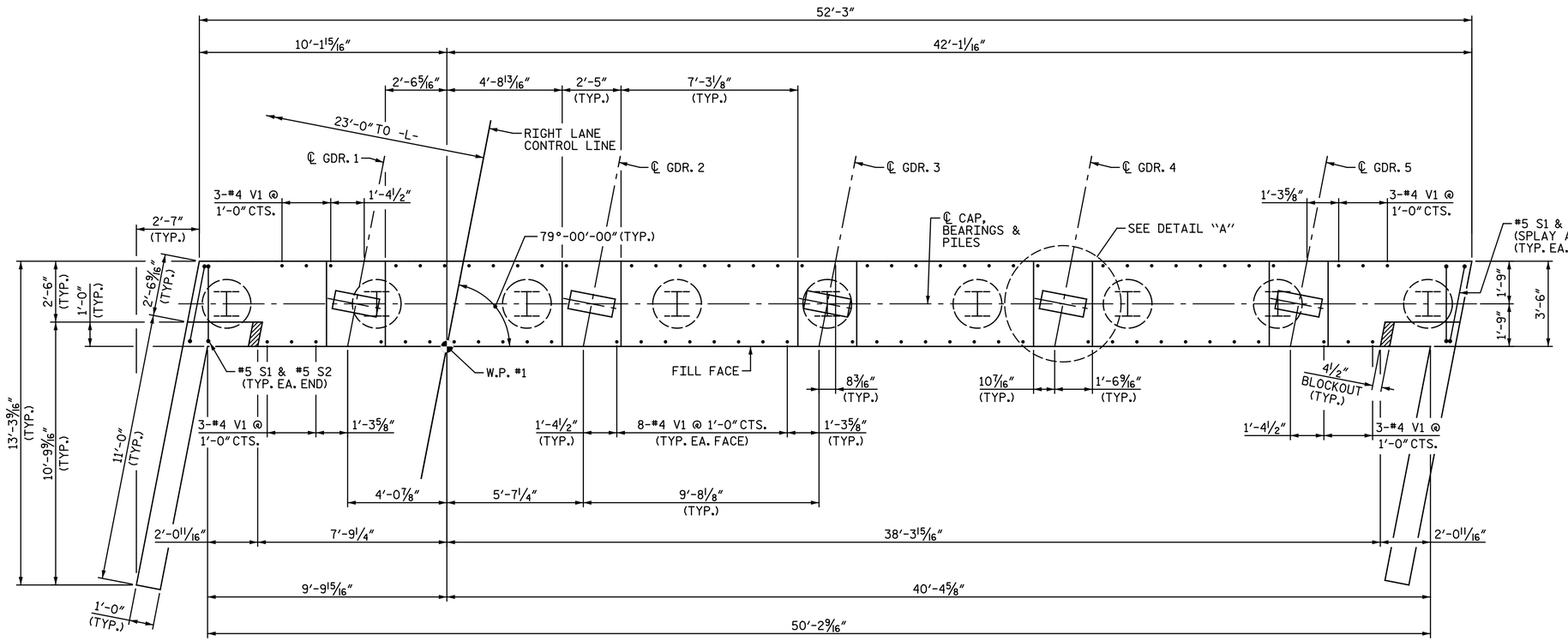
RIGHT LANE

Michael Baker INTERNATIONAL

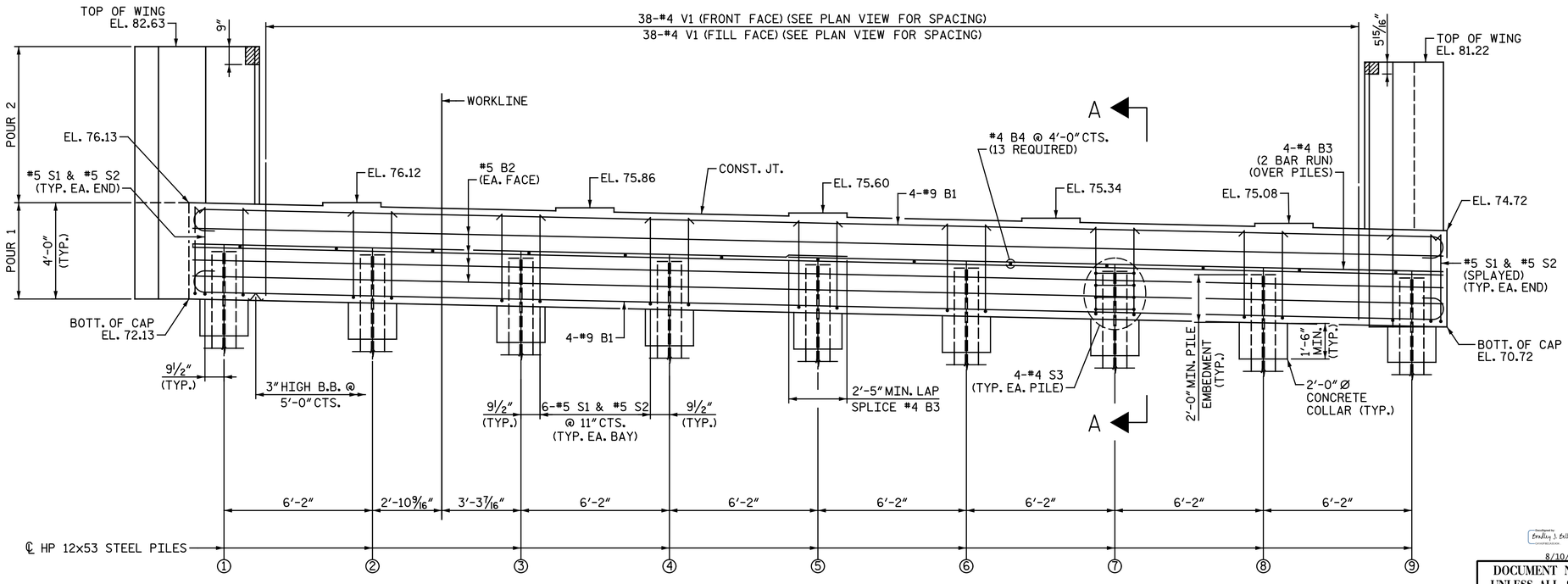
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-15
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : M. D. MAYHEW DATE : 3-24-17
CHECKED BY : B. J. BELL DATE : 3-30-17



PLAN



ELEVATION

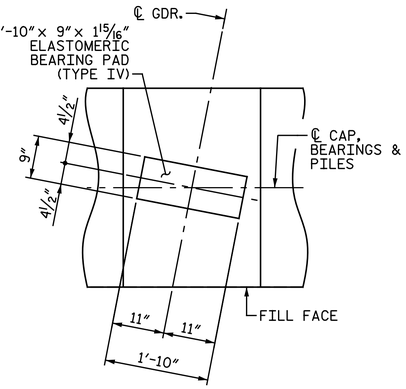
NOTES:

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	74.09
②	73.93
③	73.76
④	73.59
⑤	73.43
⑥	73.26
⑦	73.10
⑧	72.93
⑨	72.76

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

8/10/2017

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Michael Baker INTERNATIONAL

Michael Baker Engineering
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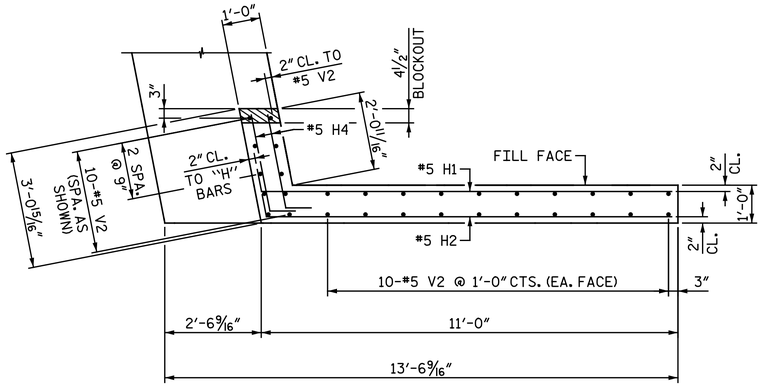
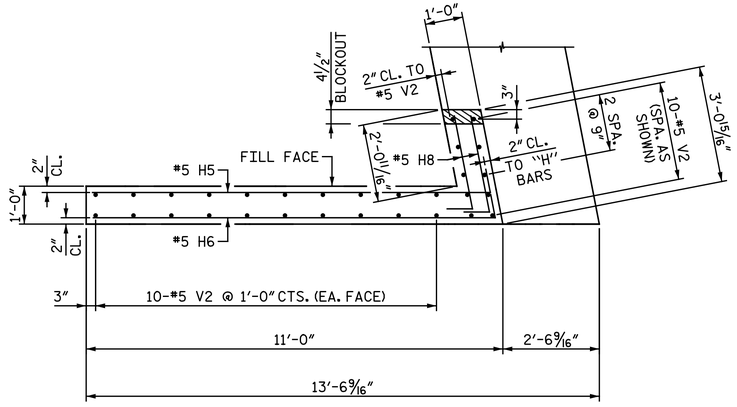
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-16
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : M. D. MAYHEW DATE : 3-24-17
CHECKED BY : B. J. BELL DATE : 4-3-17



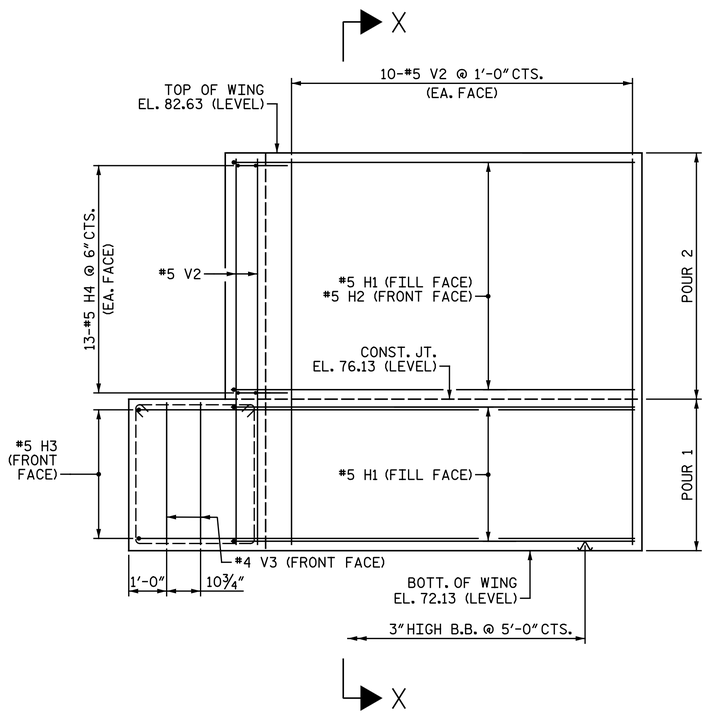
PLAN OF LEFT WING

(H3 BARS NOT SHOWN FOR CLARITY)

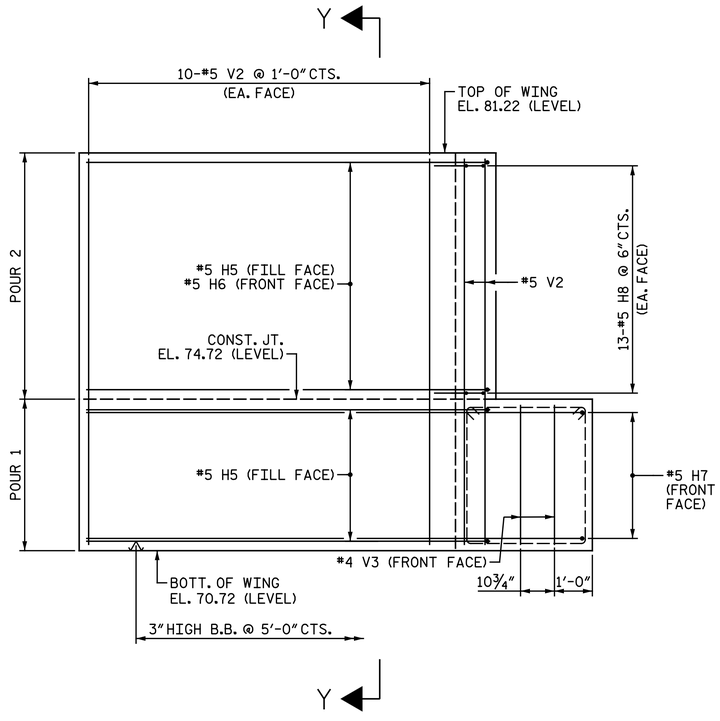


PLAN OF RIGHT WING

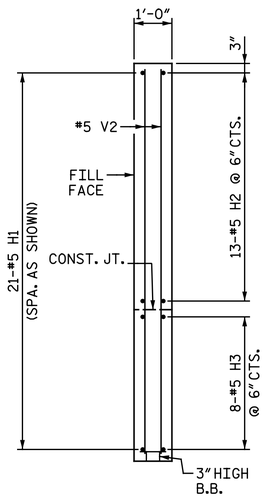
(H7 BARS NOT SHOWN FOR CLARITY)



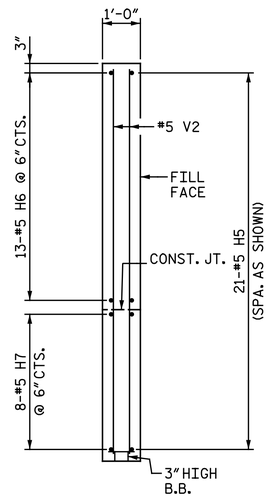
ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING



SECTION X-X



SECTION Y-Y

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell
8/10/2017

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Michael Baker INTERNATIONAL

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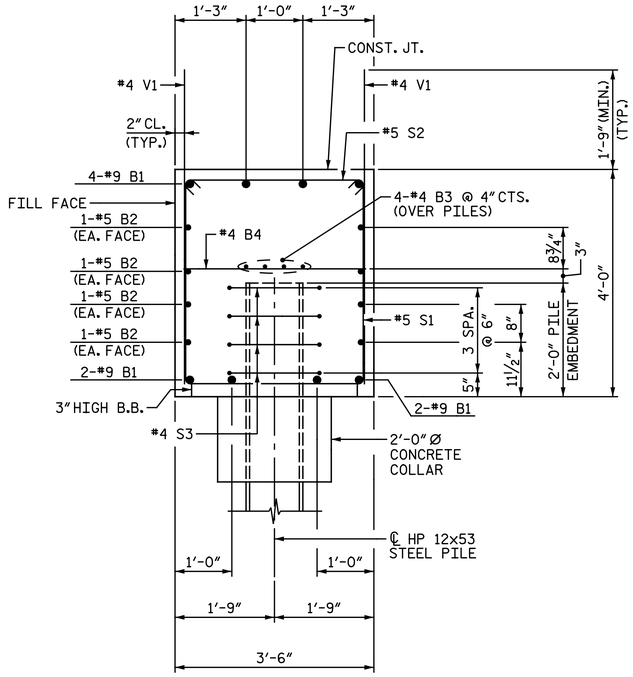
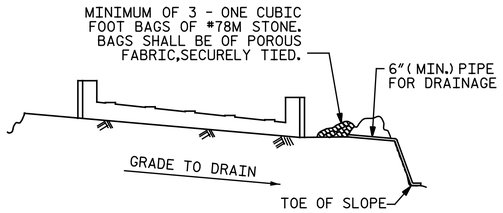
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-17
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : M. D. MAYHEW DATE : 2-10-17
CHECKED BY : B. J. BELL DATE : 4-3-17



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

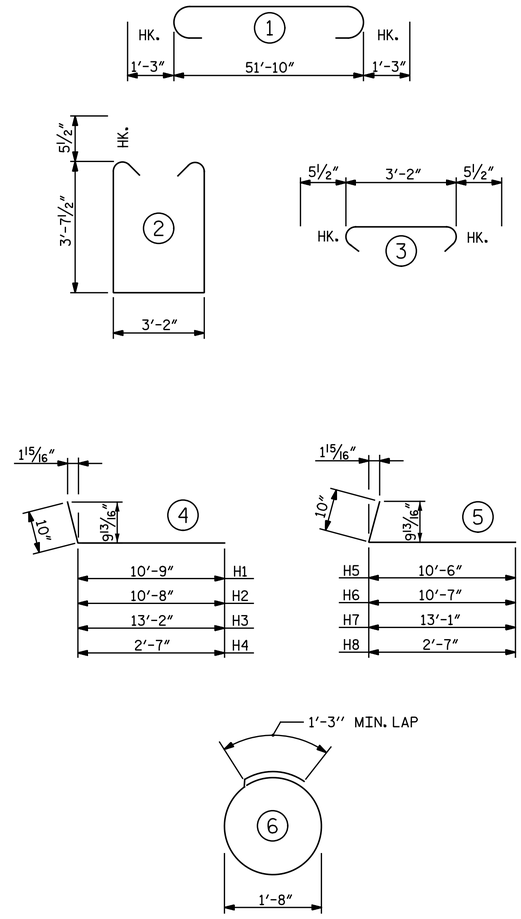
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	54' - 4"	1,478
B2	8	#5	STR.	51' - 10"	432
B3	8	#4	STR.	27' - 2"	145
B4	13	#4	STR.	3' - 2"	27
H1	21	#5	4	11' - 7"	254
H2	13	#5	4	11' - 6"	156
H3	8	#5	4	14' - 0"	117
H4	26	#5	4	3' - 5"	93
H5	21	#5	5	11' - 4"	248
H6	13	#5	5	11' - 5"	155
H7	8	#5	5	13' - 11"	116
H8	26	#5	5	3' - 5"	93
S1	52	#5	2	11' - 4"	615
S2	52	#5	3	4' - 1"	221
S3	36	#4	6	6' - 6"	156
V1	76	#4	STR.	5' - 7"	283
V2	60	#5	STR.	10' - 1"	631
V3	4	#4	STR.	3' - 7"	10

REINFORCING STEEL	LBS.	5,230
CLASS A CONCRETE		
POUR 1 -		
CAP, LOWER PART OF WINGS & COLLARS	C.Y.	31.8
POUR 2 -		
UPPER PART OF WINGS	C.Y.	6.3
TOTAL	C.Y.	38.1
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	EA.	9
HP 12x53 STEEL PILES NO. 9	L.F.	495
PILE REDRIVES	EA.	5

NOTES:

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: 200+91.89 -L-

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell

8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1 DETAILS

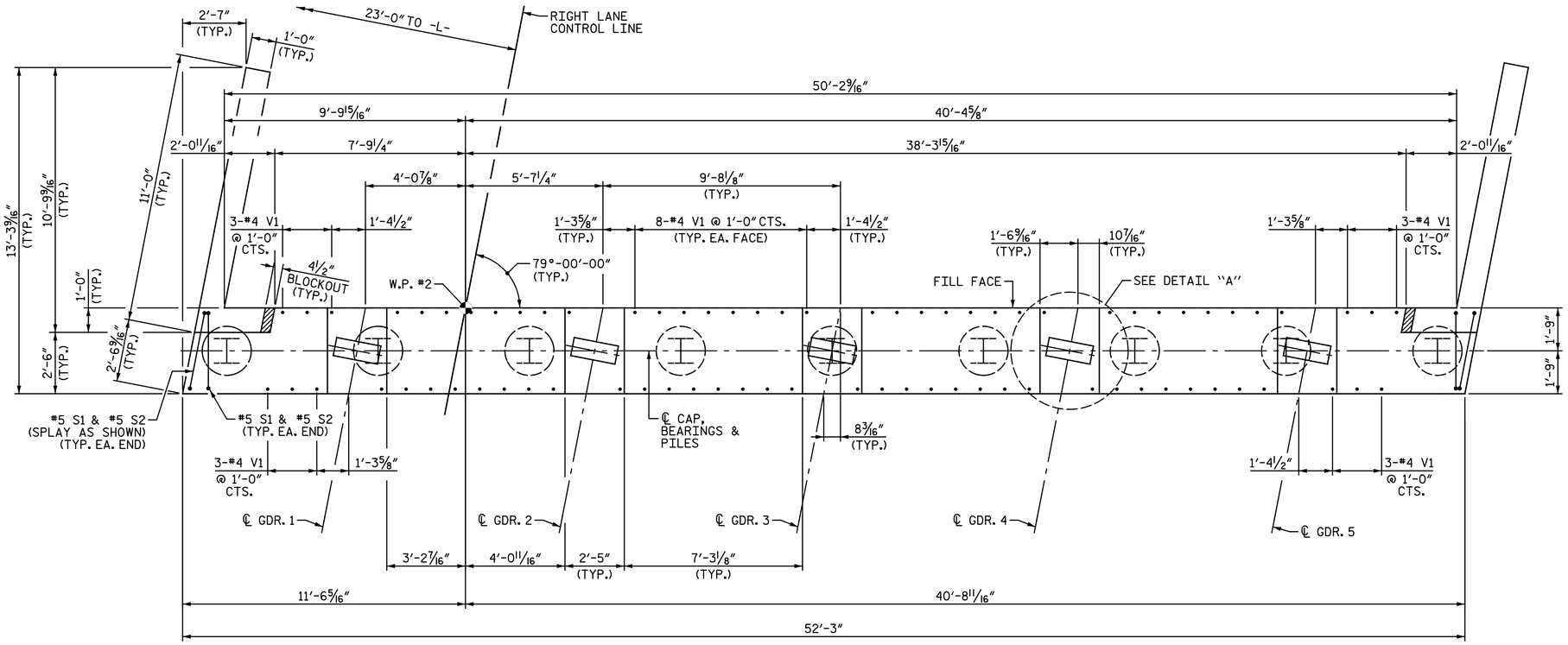
RIGHT LANE

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

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:	S6-18
1			3			TOTAL SHEETS
2			4			25



PLAN

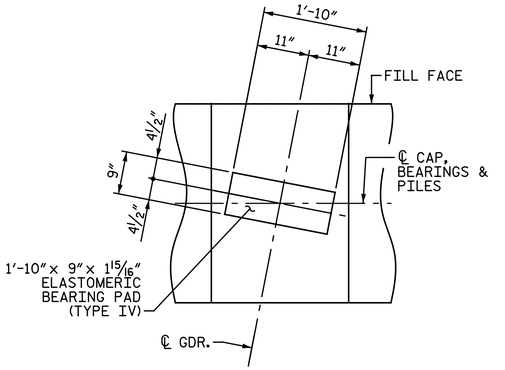
NOTES:

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

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

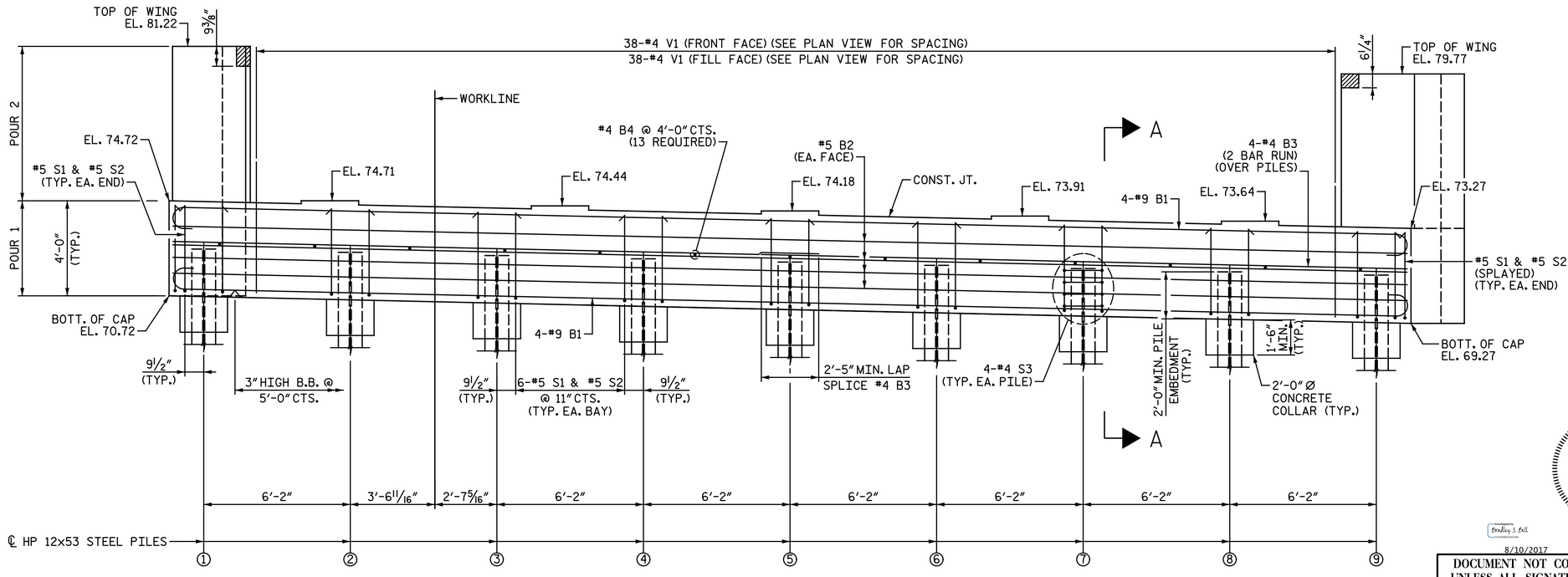
THE TOP SURFACE OF THE END BENT CAP, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

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	72.68
②	72.51
③	72.34
④	72.17
⑤	72.00
⑥	71.82
⑦	71.65
⑧	71.48
⑨	71.31

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell
8/10/2017

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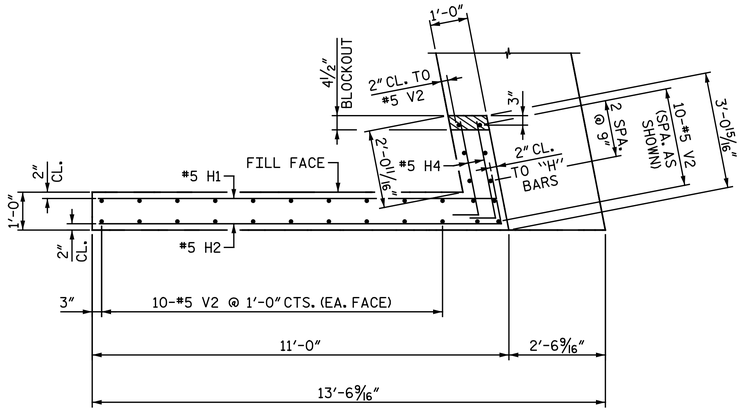
Michael Baker INTERNATIONAL

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

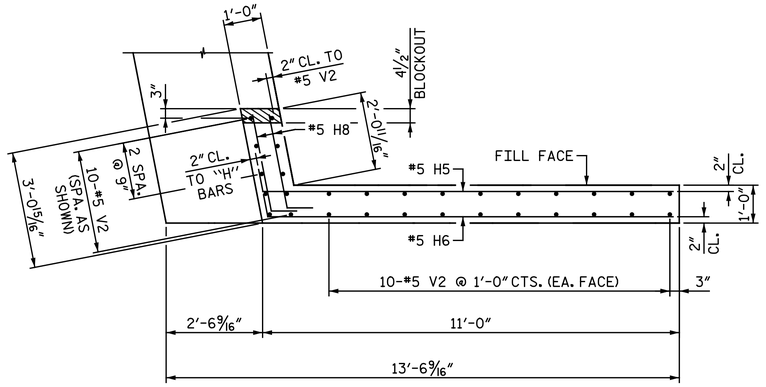
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-19
1			3			TOTAL SHEETS
2			4			25

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



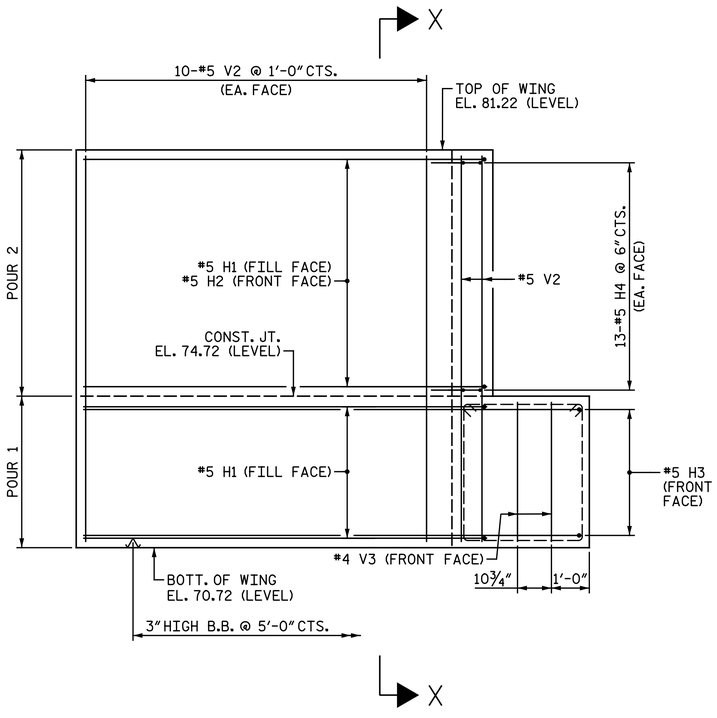
PLAN OF LEFT WING

(H3 BARS NOT SHOWN FOR CLARITY)

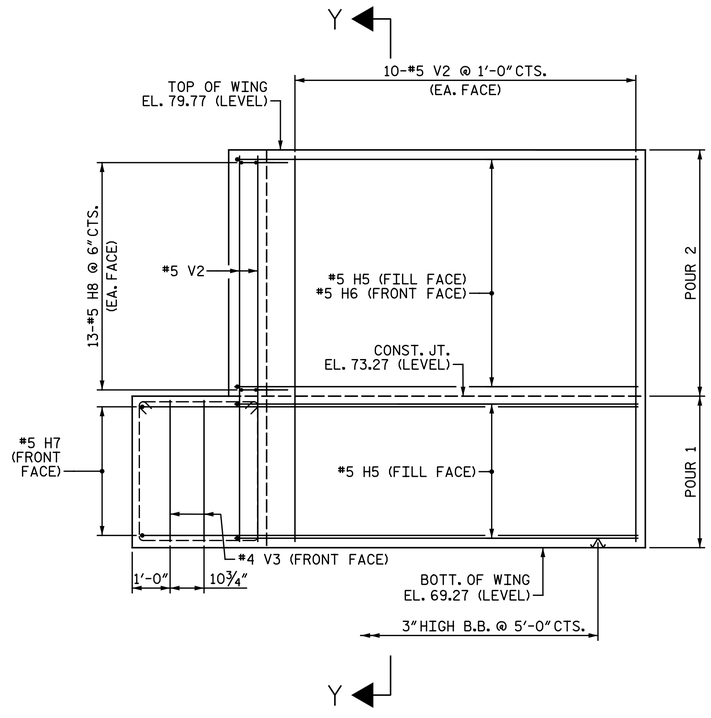


PLAN OF RIGHT WING

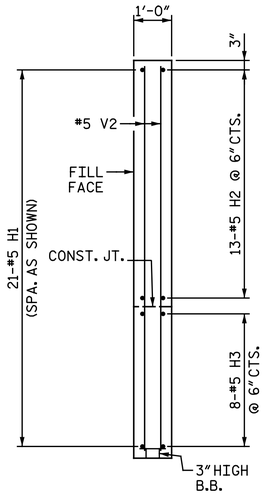
(H7 BARS NOT SHOWN FOR CLARITY)



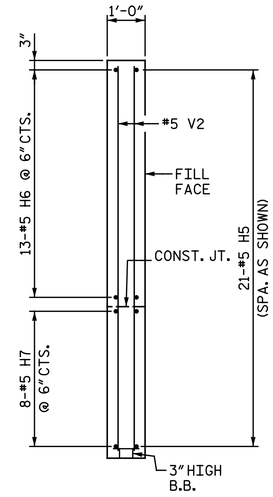
ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING



SECTION X-X



SECTION Y-Y

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

8/10/2017

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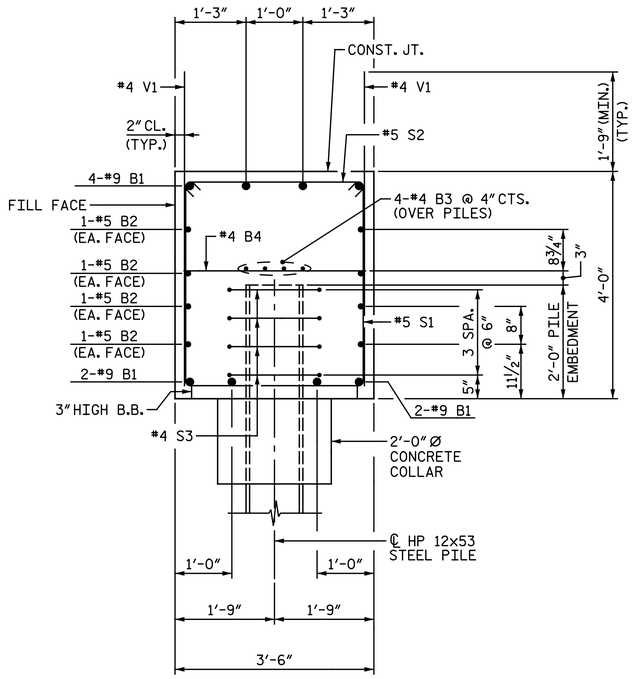
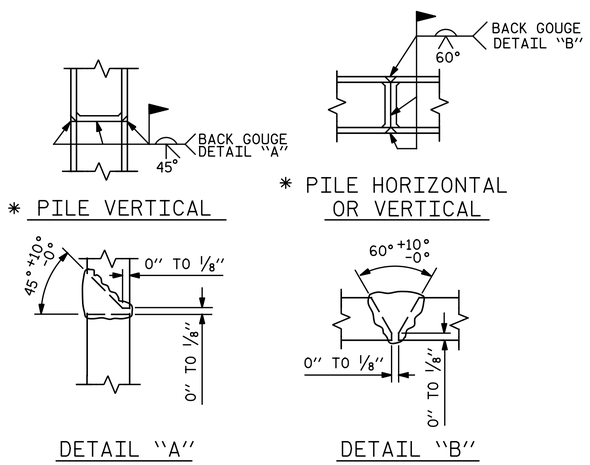
Cary, North Carolina 27518
NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S6-20
1			3			TOTAL SHEETS
2			4			25

DRAWN BY : M. D. MAYHEW DATE : 3-23-17
CHECKED BY : B. J. BELL DATE : 4-3-17



SECTION A-A



PILE SPLICE DETAILS

*POSITION OF PILE DURING WELDING

BILL OF MATERIAL

INTEGRAL END BENT 2

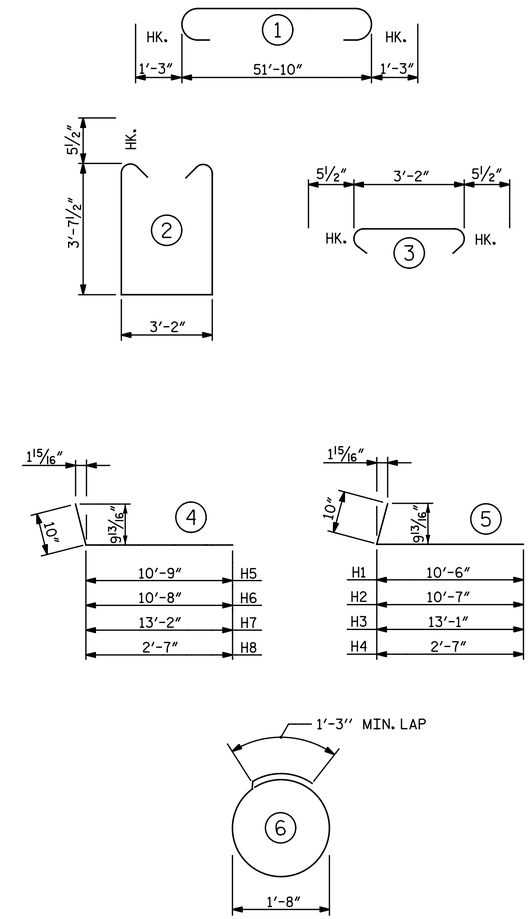
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	54′ - 4″	1,478
B2	8	#5	STR.	51′ - 10″	432
B3	8	#4	STR.	27′ - 2″	145
B4	13	#4	STR.	3′ - 2″	27
H1	21	#5	5	11′ - 4″	248
H2	13	#5	5	11′ - 5″	155
H3	8	#5	5	13′ - 11″	116
H4	26	#5	5	3′ - 5″	93
H5	21	#5	4	11′ - 7″	254
H6	13	#5	4	11′ - 6″	156
H7	8	#5	4	14′ - 0″	117
H8	26	#5	4	3′ - 5″	93
S1	52	#5	2	11′ - 4″	615
S2	52	#5	3	4′ - 1″	221
S3	36	#4	6	6′ - 6″	156
V1	76	#4	STR.	5′ - 7″	283
V2	60	#5	STR.	10′ - 1″	631
V3	4	#4	STR.	3′ - 7″	10

REINFORCING STEEL	LBS.	5,230
CLASS A CONCRETE		
POUR 1 -		
CAP, LOWER PART OF WINGS & COLLARS	C.Y.	31.8
POUR 2 -		
UPPER PART OF WINGS	C.Y.	6.3
TOTAL	C.Y.	38.1
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	EA.	9
HP 12x53 STEEL PILES NO. 9	L.F.	540
PILE REDRIVES	EA.	5

NOTES:

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell

8/10/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2 DETAILS

RIGHT LANE

Michael Baker INTERNATIONAL

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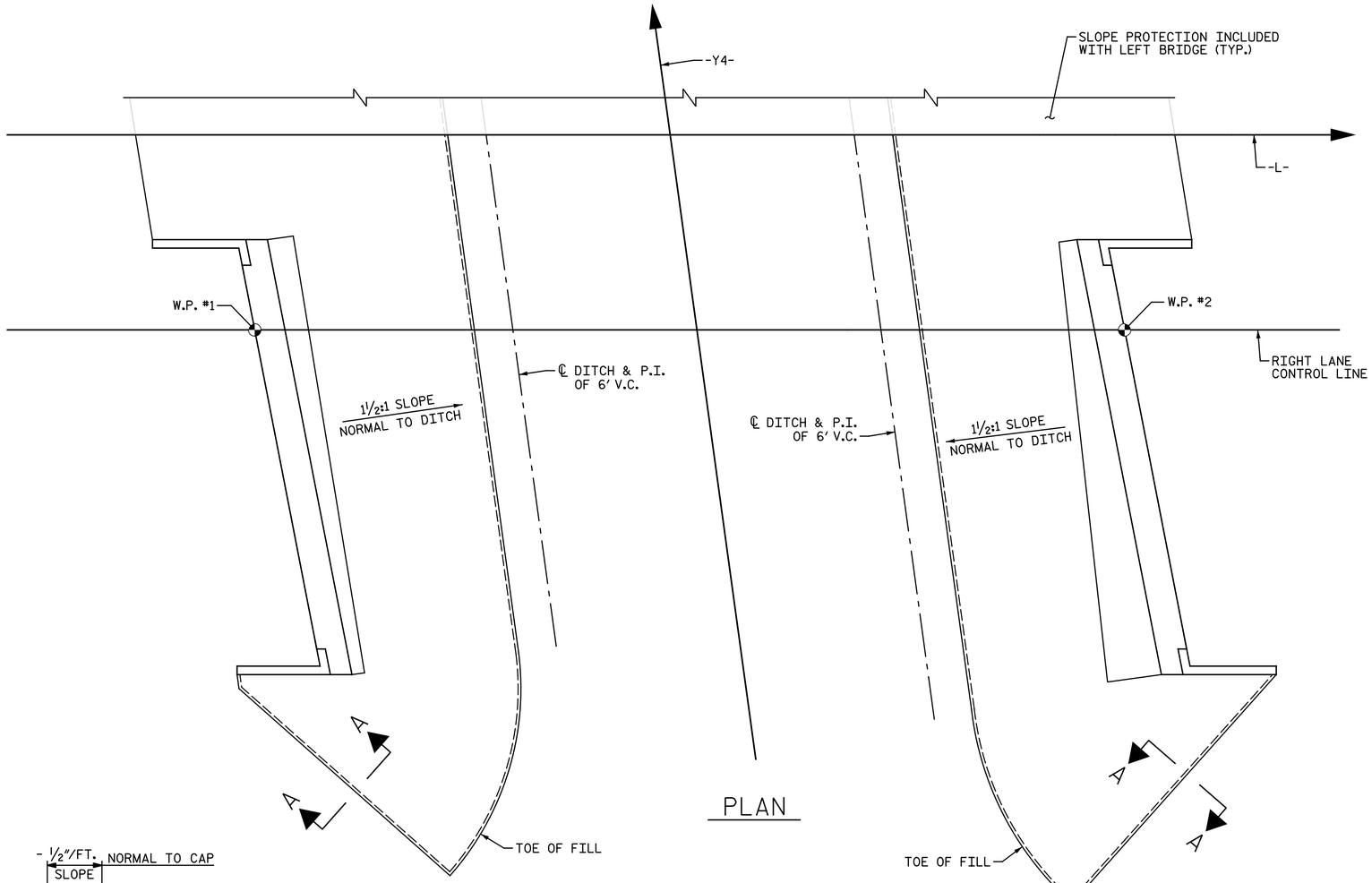
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

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

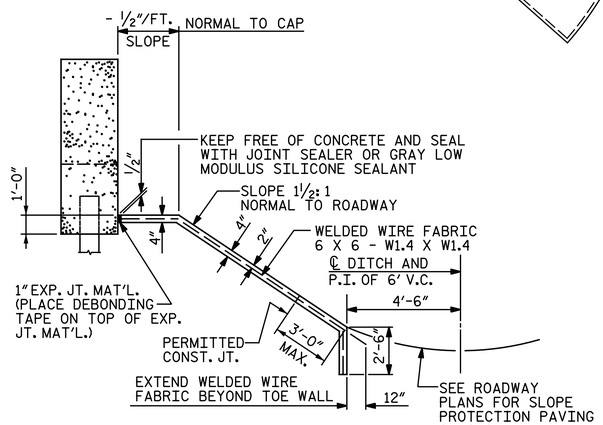
SHEET NO. S6-21

TOTAL SHEETS 25

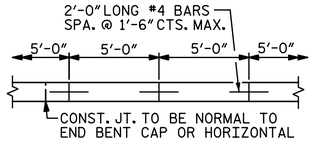
DRAWN BY : M. D. MAYHEW DATE : 3-23-17
CHECKED BY : B. J. BELL DATE : 4-3-17



PLAN

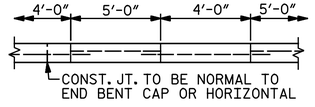


SECTION ALONG CONTROL LINE WHEN FILL CATCHES IN DITCH



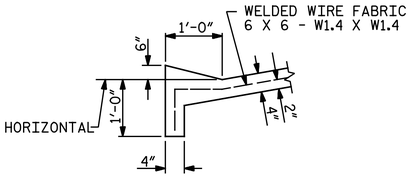
STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL



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

OPTIONAL POURING DETAIL



SECTION A-A

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 AT STA. 200+91.89 -L- (RIGHT LANE)	4 INCH SLOPE PROTECTION	✳ WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	320	580
END BENT 2	340	615

✳ QUANTITY SHOWN IS BASED ON 5' POURS.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SLOPE PROTECTION DETAILS

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : N. B. SPEAKS	DATE : 3-9-17
CHECKED BY : B. J. BELL	DATE : 4-10-17
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

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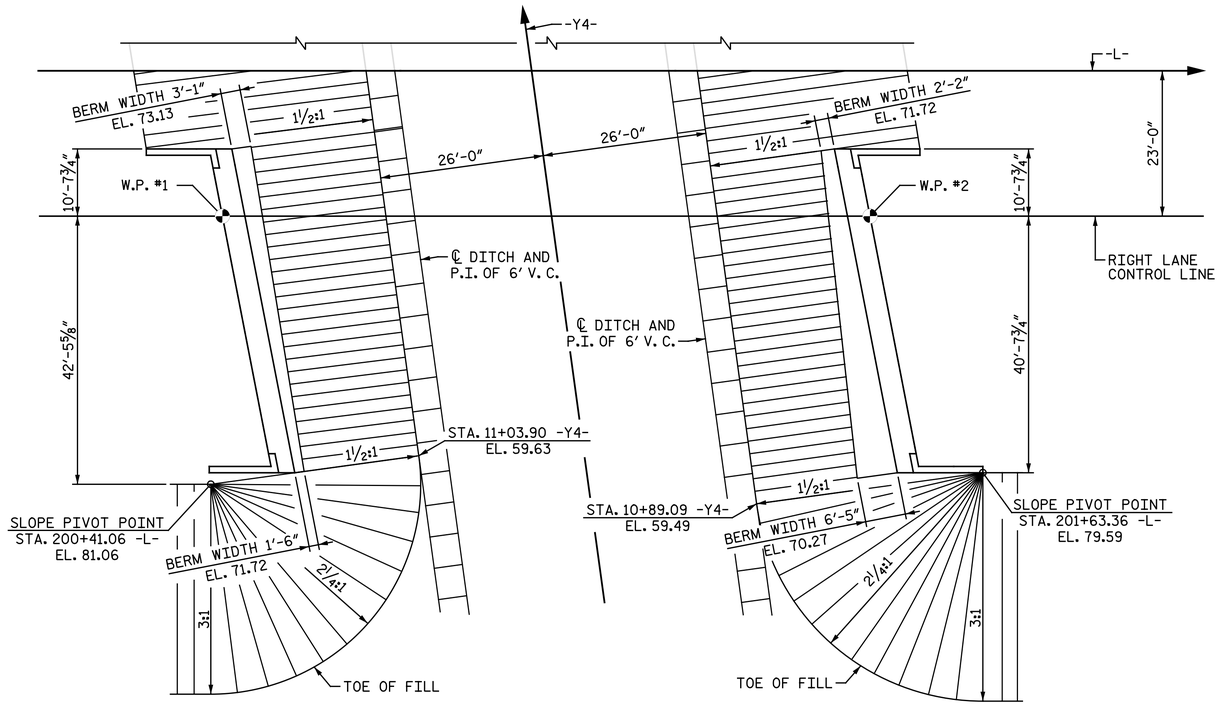
1			3			TOTAL SHEETS
2			4			25

STD. NO. SP1

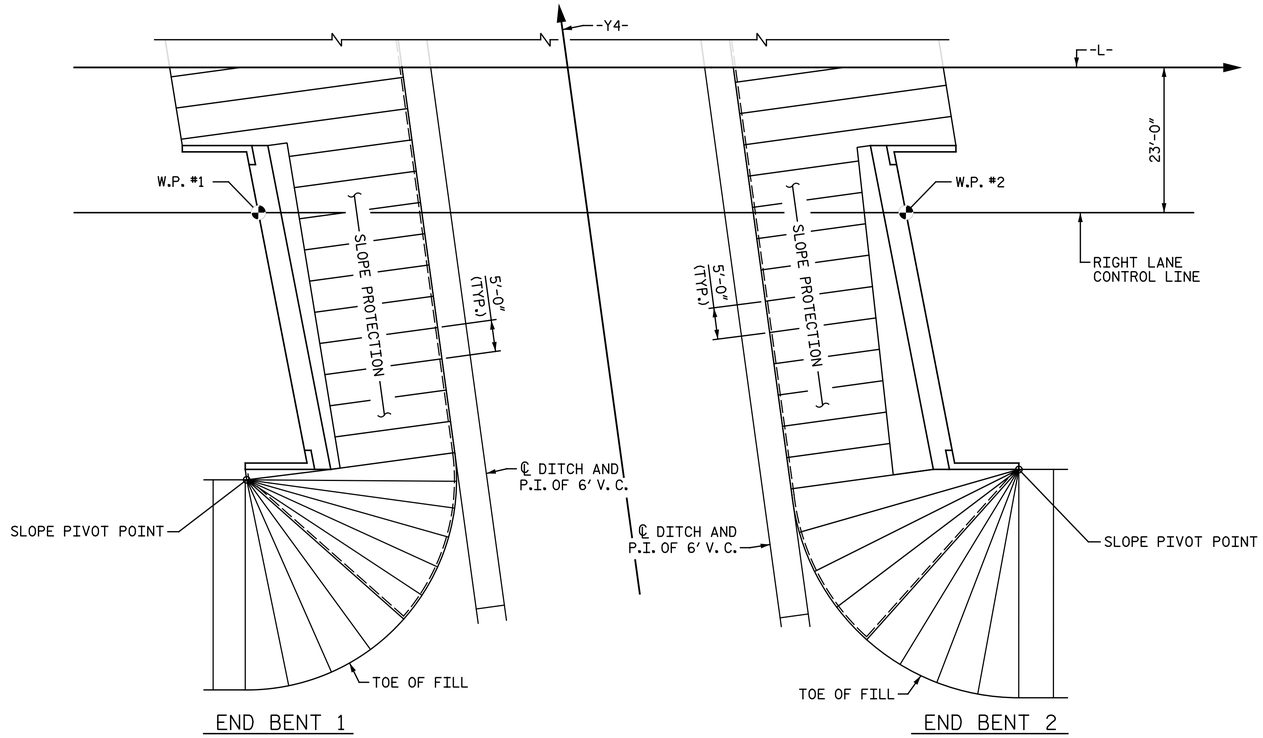
NOTE:

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



END BENT 1 — END BENT 2

PLAN - GRADING



END BENT 1 — END BENT 2

PLAN - CONCRETE PLACEMENT

(1½:1 SLOPE)

ASSEMBLED BY : N. B. SPEAKS	DATE : 2-23-17		
CHECKED BY : B. J. BELL	DATE : 4-10-17		
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: 200+91.89 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

SLOPE PROTECTION DETAILS

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

8/10/2017

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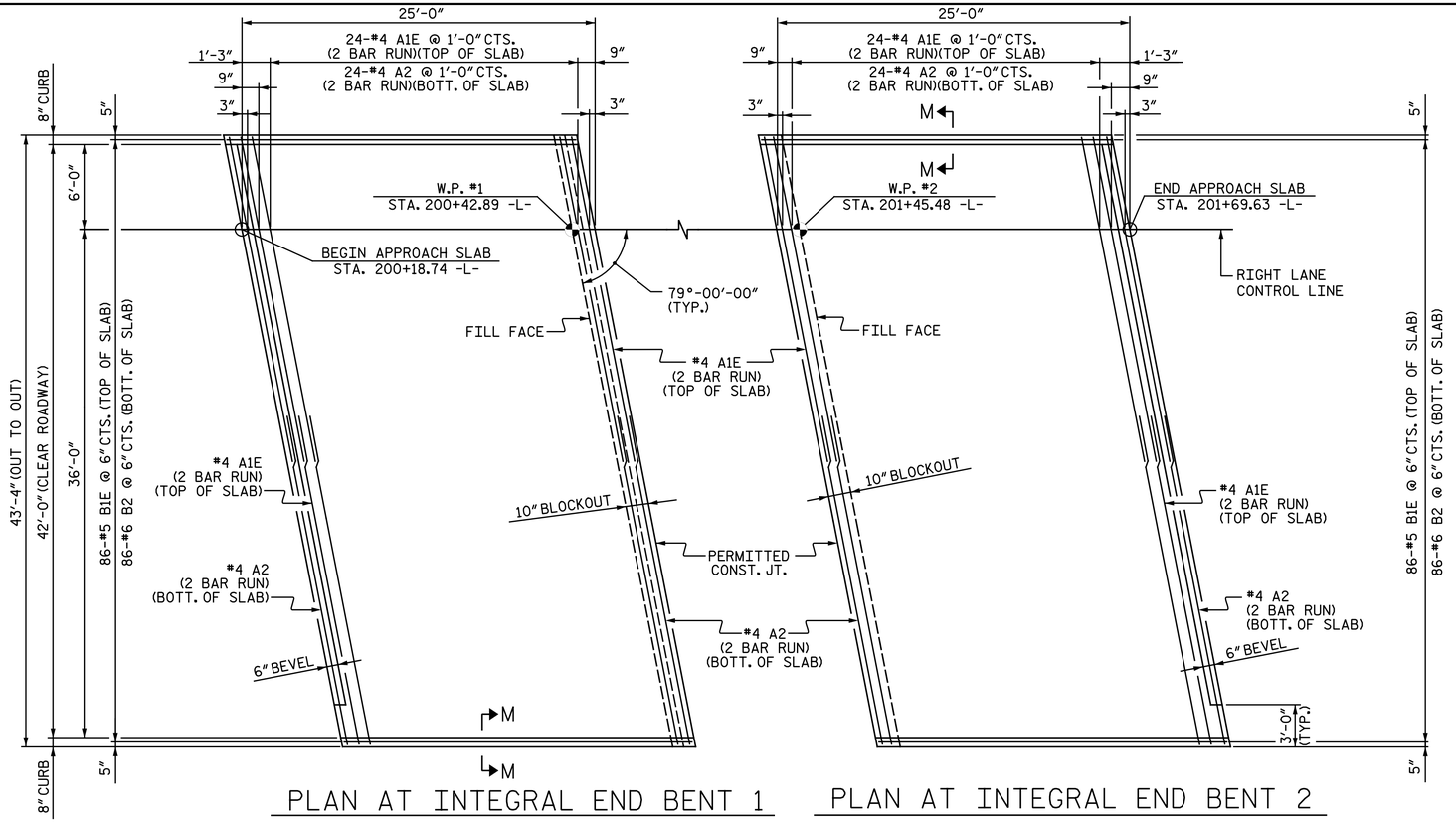
STD. NO. SP2



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.

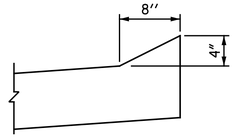
FOR THE 4"Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

BILL OF MATERIAL
APPROACH SLAB AT END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	52	#4	STR.	22' - 11"	796
A2	52	#4	STR.	22' - 10"	793
B1E	86	#5	STR.	24' - 2"	2,168
B2	86	#6	STR.	24' - 8"	3,186
REINFORCING STEEL				LBS.	3,979
EPOXY COATED REINFORCING STEEL				LBS.	2,964
CLASS AA CONCRETE				C.Y.	46.8

BILL OF MATERIAL
APPROACH SLAB AT END BENT 2

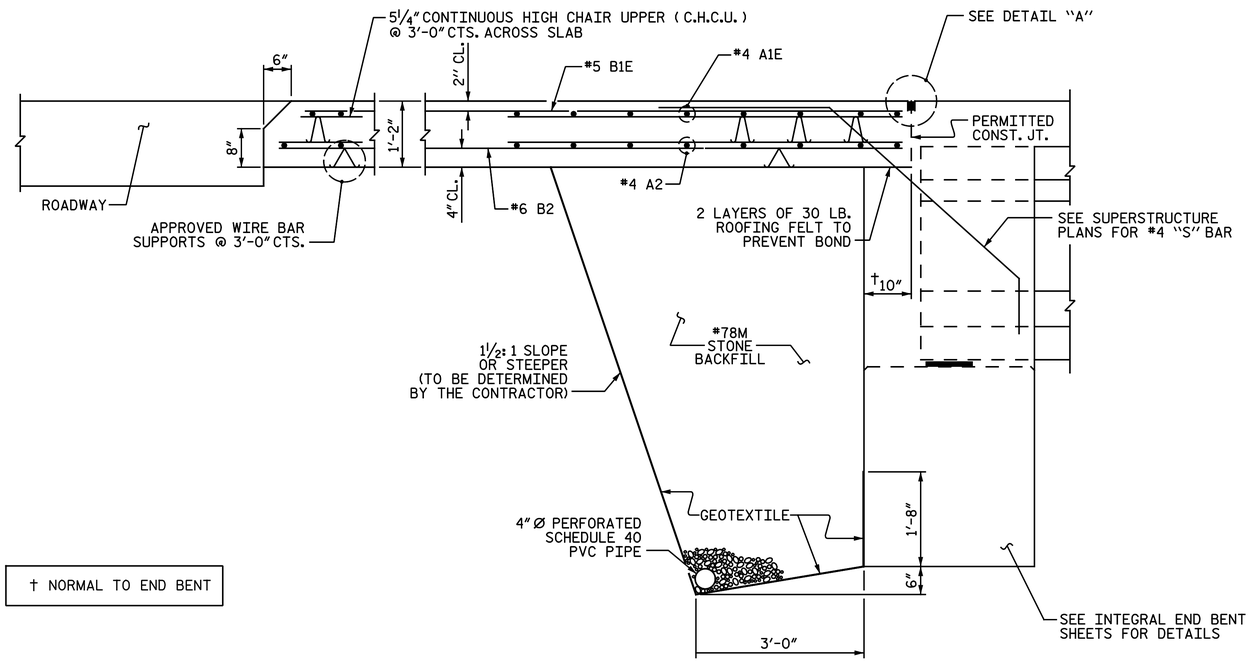
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	52	#4	STR.	22' - 11"	796
A2	52	#4	STR.	22' - 10"	793
B1E	86	#5	STR.	24' - 2"	2,168
B2	86	#6	STR.	24' - 8"	3,186
REINFORCING STEEL				LBS.	3,979
EPOXY COATED REINFORCING STEEL				LBS.	2,964
CLASS AA CONCRETE				C.Y.	46.8



SECTION M-M

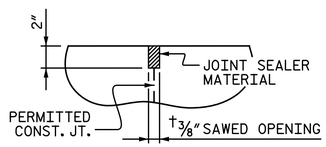
SPLICE LENGTHS

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

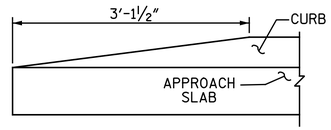


† NORMAL TO END BENT

SECTION THRU SLAB



DETAIL "A"



END OF CURB WITHOUT SHOULDER BERM GUTTER

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 200+91.89 -L-

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell

8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT

RIGHT LANE

DRAWN BY : N. B. SPEAKS DATE : 3-1-17
CHECKED BY : B. J. BELL DATE : 4-6-17

Michael Baker INTERNATIONAL

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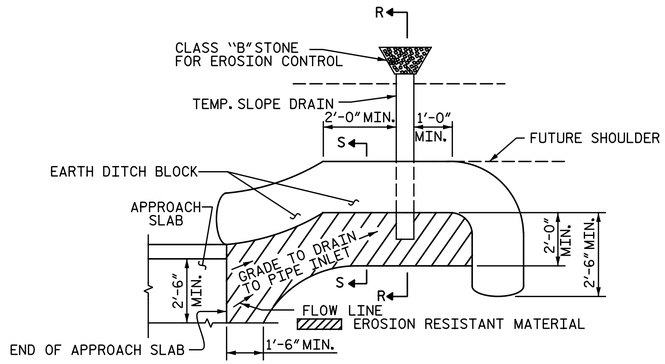
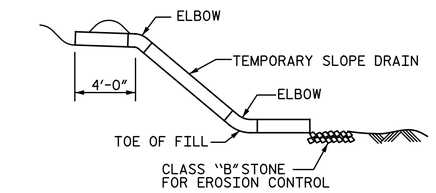
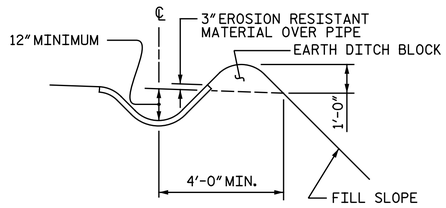


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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



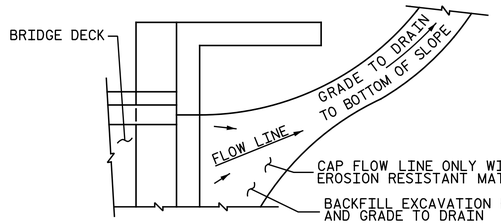
SECTION R-R



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: 200+91.89 -L-

ASSEMBLED BY : N. B. SPEAKS		DATE : 2-27-17	
CHECKED BY : B. J. BELL		DATE : 4-6-17	
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

NORTH CAROLINA PROFESSIONAL SEAL 042399 ENGINEER BRADLEY J. BELL

Bradley J. Bell

8/10/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

RIGHT LANE

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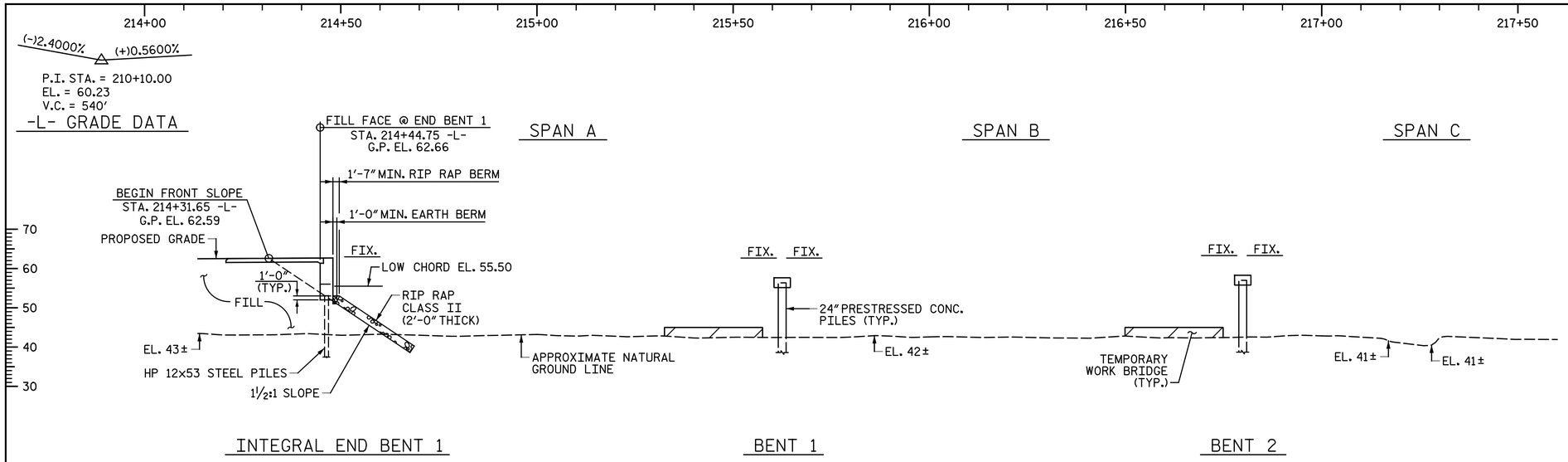
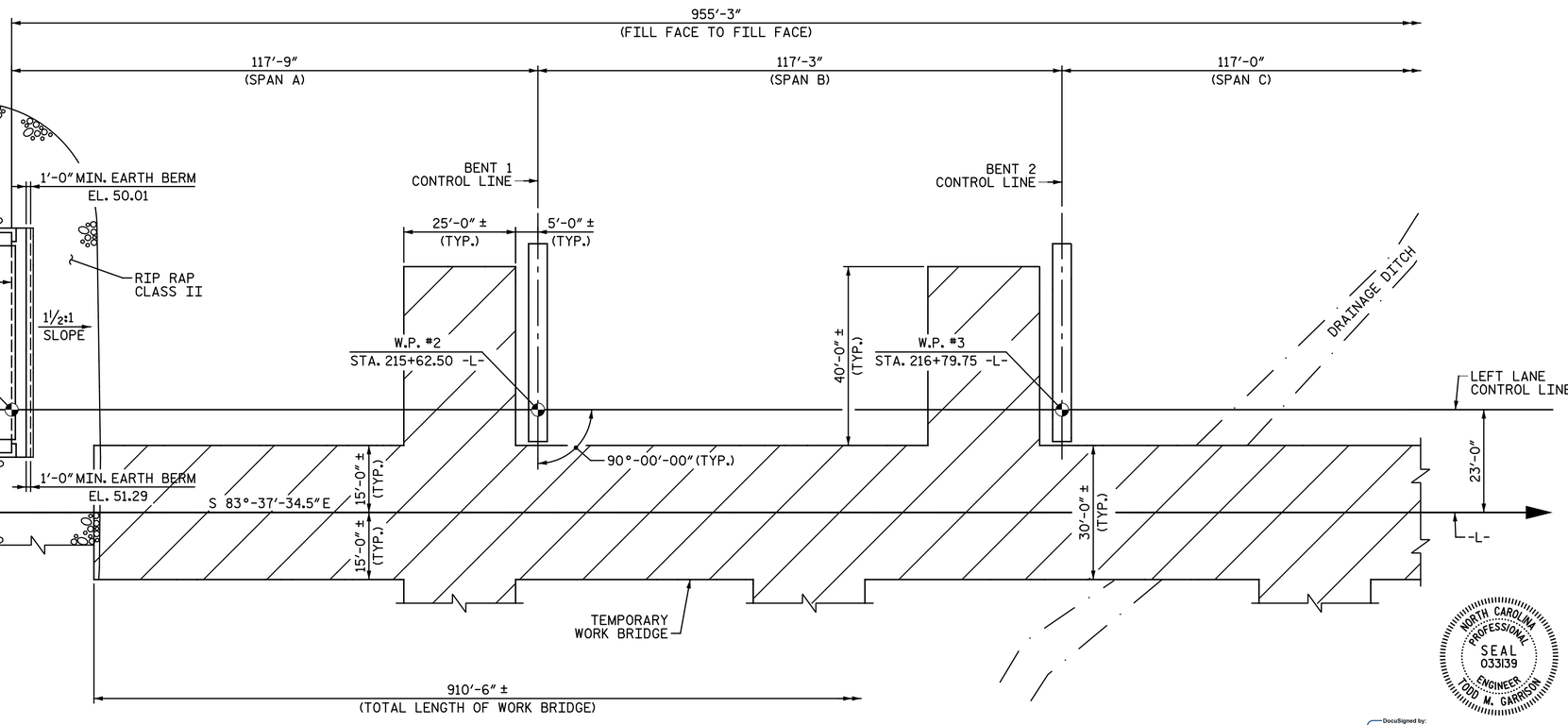


SECTION ALONG LEFT LANE CONTROL LINE



PLAN

(PILES NOT SHOWN IN PLAN VIEW FOR CLARITY)

N

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 1 OF 6 BRIDGE NO. 214

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

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 STONYTON CREEK BETWEEN SR 1732 AND SR 1735

LEFT LANE

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-1
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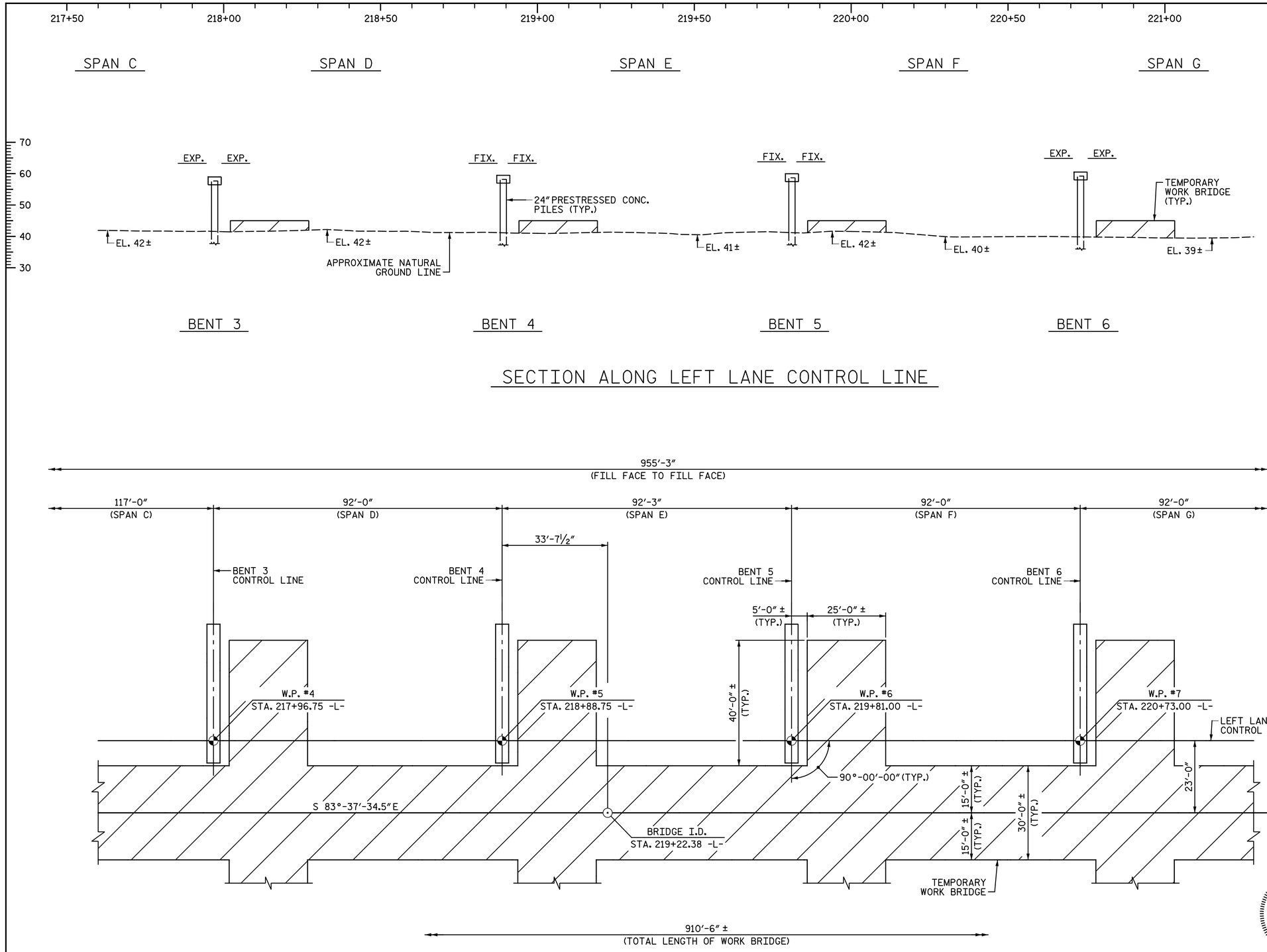
2			4			50

DRAWN BY : M. D. MAYHEW DATE : 5-19-17
CHECKED BY : T. M. GARRISON DATE : 6-21-17



SECTION ALONG LEFT LANE CONTROL LINE

PLAN

(PILES NOT SHOWN IN PLAN FOR CLARITY)

N

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 2 OF 6 BRIDGE NO. 214

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

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Michael Baker INTERNATIONAL

Michael Baker Engineering
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER STONYTON CREEK BETWEEN SR 1732 AND SR 1735

LEFT LANE

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
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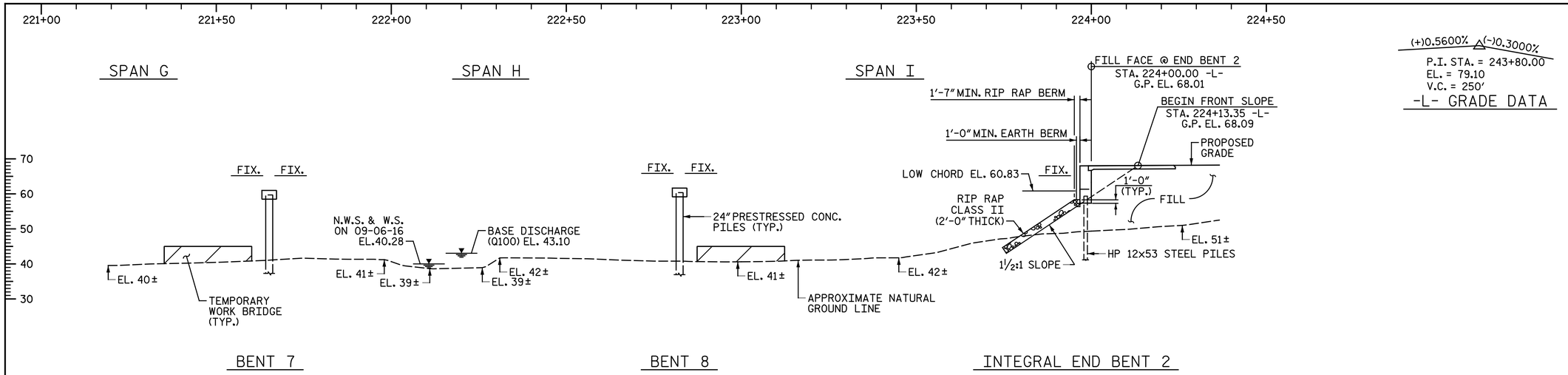
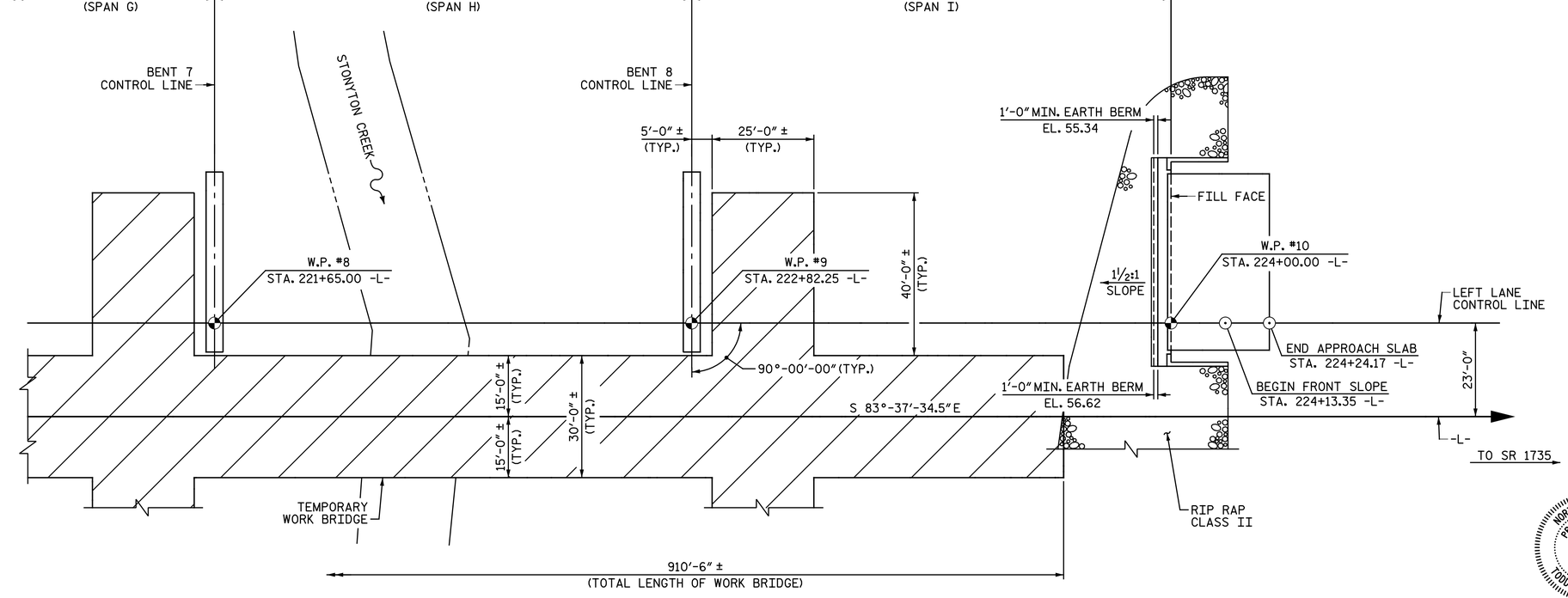
DRAWN BY : M. D. MAYHEW DATE : 5-19-17
CHECKED BY : T. M. GARRISON DATE : 6-21-17



(+)0.5600% (-)0.3000%
P.I. STA. = 243+80.00
EL. = 79.10
V.C. = 250'
-L- GRADE DATA

SECTION ALONG LEFT LANE CONTROL LINE



PLAN
(PILES NOT SHOWN IN PLAN FOR CLARITY)

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

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 219+22.38 -L-

SHEET 3 OF 6 BRIDGE NO. 214

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Tom M. Garrison 8/10/2017

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER STONYTON CREEK BETWEEN SR 1732 AND SR 1735

LEFT LANE

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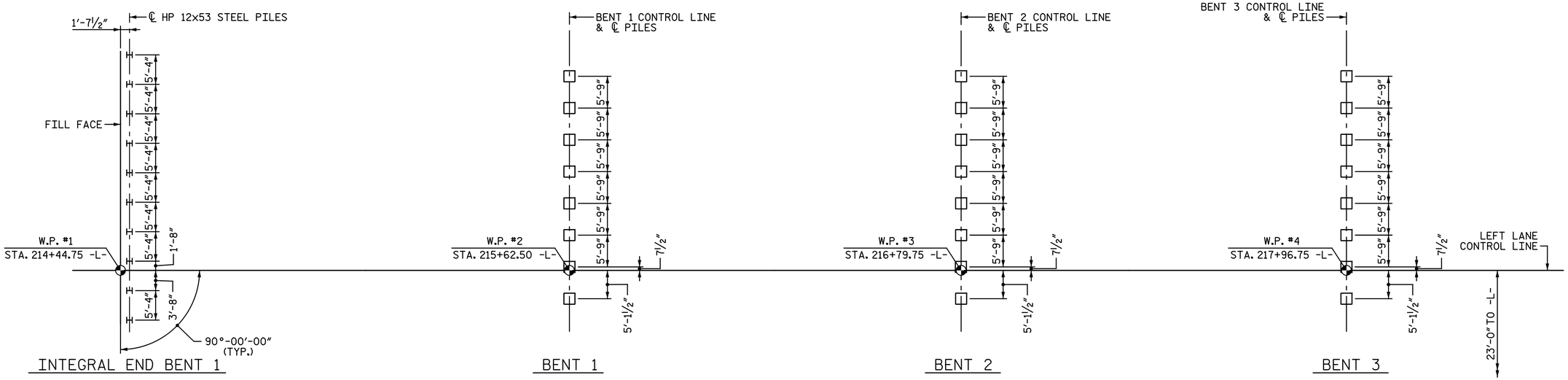
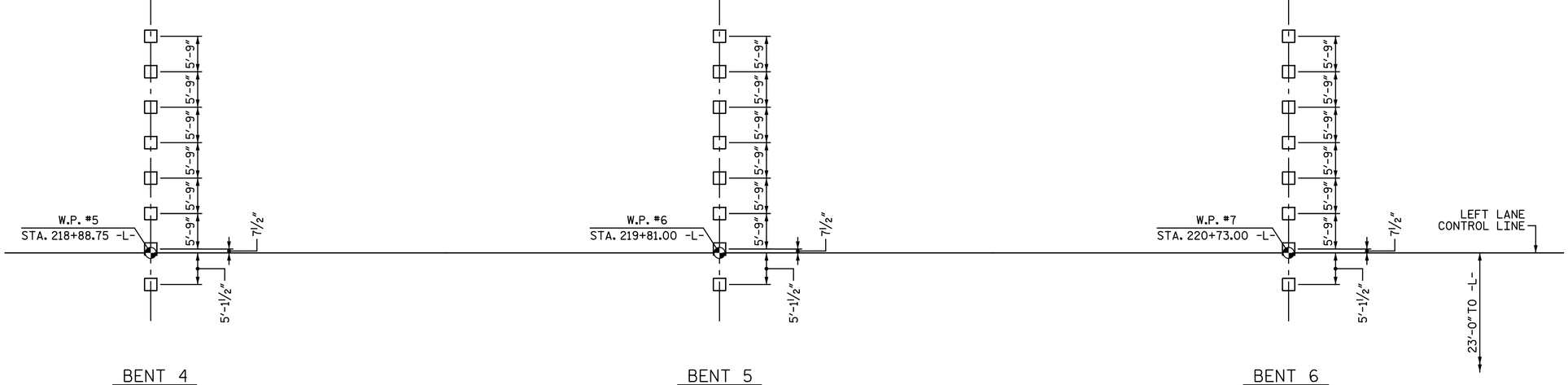
2			4			50

DRAWN BY : M. D. MAYHEW DATE : 5-19-17
CHECKED BY : T. M. GARRISON DATE : 6-21-17





FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINES.

ALL INTERIOR BENT PILES ARE 24"PRESTRESSED CONCRETE PILES.

ALL PILES ARE VERTICAL.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 4 OF 6

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Tom M Garrison 8/10/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER STONYTON CREEK BETWEEN SR 1732 AND SR 1735

LEFT LANE

Michael Baker INTERNATIONAL

Michael Baker Engineering
8000 Regency Parkway, Suite 600
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-4
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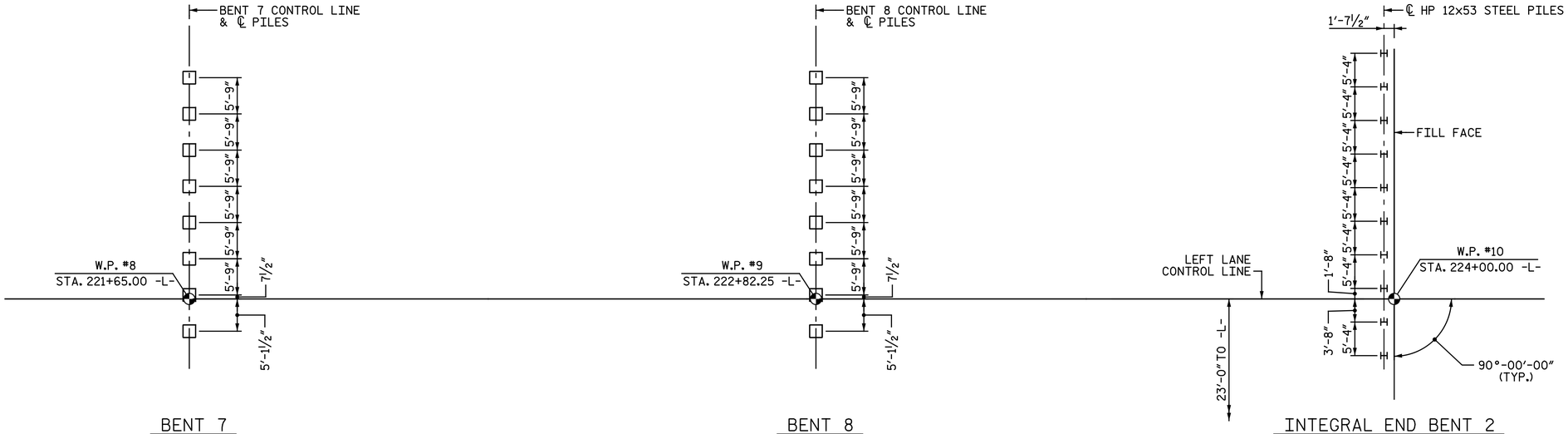
2			4			50

DRAWN BY : M. D. MAYHEW DATE : 5-11-17
CHECKED BY : T. M. GARRISON DATE : 6-21-17



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINES.

ALL INTERIOR BENT PILES ARE 24" PRESTRESSED CONCRETE PILES.

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 110 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.

PILES AT BENT NO. 1, BENT NO. 2 AND BENT NO. 8 ARE DESIGNED FOR A FACTORED RESISTANCE OF 250 TONS PER PILE.

DRIVE PILES AT BENT NO. 1, BENT NO. 2 AND BENT NO. 8 TO A REQUIRED DRIVING RESISTANCE OF 335 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG OR SCOUR.

PILES AT BENT NO. 3, BENT NO. 4, BENT NO. 5 AND BENT NO. 6 ARE DESIGNED FOR A FACTORED RESISTANCE OF 210 TONS PER PILE.

DRIVE PILES AT BENT NO. 3, BENT NO. 4, BENT NO. 5 AND BENT NO. 6 TO A REQUIRED DRIVING RESISTANCE OF 280 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG OR SCOUR.

PILES AT BENT NO. 7 ARE DESIGNED FOR A FACTORED RESISTANCE OF 230 TONS PER PILE.

DRIVE PILES AT BENT NO. 7 TO A REQUIRED DRIVING RESISTANCE OF 310 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG OR SCOUR.

INSTALL 24" PRESTRESSED CONCRETE PILES AT BENT NO. 1 TO A TIP ELEVATION NO HIGHER THAN 12.1 FT.

INSTALL 24" PRESTRESSED CONCRETE PILES AT BENT NO. 2 TO A TIP ELEVATION NO HIGHER THAN 11.8 FT.

INSTALL 24" PRESTRESSED CONCRETE PILES AT BENT NO. 3 TO A TIP ELEVATION NO HIGHER THAN 10.5 FT.

INSTALL 24" PRESTRESSED CONCRETE PILES AT BENT NO. 4 TO A TIP ELEVATION NO HIGHER THAN 17.0 FT.

INSTALL 24" PRESTRESSED CONCRETE PILES AT BENT NO. 5 TO A TIP ELEVATION NO HIGHER THAN 15.5 FT.

INSTALL 24" PRESTRESSED CONCRETE PILES AT BENT NO. 6 TO A TIP ELEVATION NO HIGHER THAN 17.0 FT.

INSTALL 24" PRESTRESSED CONCRETE PILES AT BENT NO. 7 TO A TIP ELEVATION NO HIGHER THAN 15.5 FT.

INSTALL 24" PRESTRESSED CONCRETE PILES AT BENT NO. 8 TO A TIP ELEVATION NO HIGHER THAN 11.2 FT.

STEEL PILE TIPS ARE REQUIRED FOR PRESTRESSED CONCRETE PILES AT BENT NO. 1 THROUGH BENT NO. 8. FOR STEEL PILE TIPS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT NO. 1 TO AN ELEVATION NO LOWER THAN 12.1 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 24". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT NO. 2 TO AN ELEVATION NO LOWER THAN 11.8 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 24". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT NO. 3 TO AN ELEVATION NO LOWER THAN 10.5 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 24". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT NO. 4 TO AN ELEVATION NO LOWER THAN 17.0 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 24". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT NO. 5 TO AN ELEVATION NO LOWER THAN 15.5 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 24". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT NO. 6 TO AN ELEVATION NO LOWER THAN 17.0 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 24". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT NO. 7 TO AN ELEVATION NO LOWER THAN 15.5 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 24". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT NO. 8 TO AN ELEVATION NO LOWER THAN 11.2 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 24". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

TEMPORARY STEEL CASINGS ARE REQUIRED FOR PREDRILLING AT BENT NO. 1 THROUGH BENT NO. 8.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 IS ELEVATION 41 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 2 IS ELEVATION 40 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 3 IS ELEVATION 39 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 4 IS ELEVATION 39 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 5 IS ELEVATION 38 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 6 IS ELEVATION 37 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 7 IS ELEVATION 39 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 8 IS ELEVATION 38 FT.

SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 40,000 TO 50,000 FT-LBS 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.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 125,000 TO 165,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT NO. 1 THROUGH BENT NO. 8. 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.

TESTING THE FIRST PRODUCTION INTERIOR BENT PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED. FOR PDA TESTING, SEE SECTION 450 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. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SPECIAL PROVISIONS.

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: T. M. Garrison 8/10/2017

DRAWN BY : M. D. MAYHEW DATE : 5-11-17
CHECKED BY : T. M. GARRISON DATE : 6-29-17

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL
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8000 Regency Parkway, Suite 600
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PROJECT NO. R-5703
LENOIR COUNTY
STATION: 219+22.38 -L-
SHEET 5 OF 6

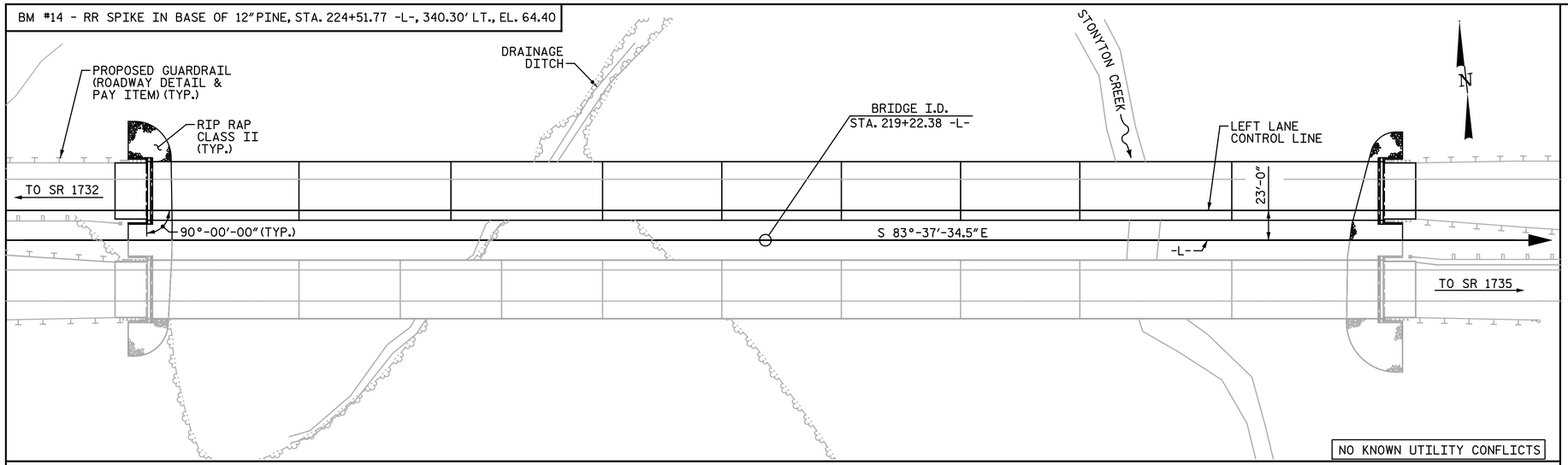
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER STONYTON CREEK BETWEEN SR 1732 AND SR 1735

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-5
1			3			TOTAL SHEETS
2			4			50



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.

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

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

FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STA. 219+22.38 -L-, SEE SPECIAL PROVISIONS.

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

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

TOTAL BILL OF MATERIAL

LOCATION	CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMPORARY ACCESS	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	MODIFIED 63" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR 24" PRESTRESSED CONCRETE PILES	PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	24" PRESTRESSED CONCRETE PILES		HP 12x53 STEEL PILES		STEEL PILE POINTS	PREDRILLING FOR PILES	PILE REDRIVES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS
	LUMP SUM	EA.	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	EA.	EA.	NO.	LIN. FT.	NO.	LIN. FT.	EA.	LIN. FT.	EA.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE			43,225	38,966				45	4,738.75										1,907.17			LUMP SUM	LUMP SUM
END BENT 1					39.8		6,795				10			10	450	10		5		369	410		
BENT 1					25.5		3,413			8		8	360				243	5					
BENT 2					25.5		3,413			8		8	360				244	5					
BENT 3					25.5		3,413			8		8	360				251	5					
BENT 4					25.5		3,413			8		8	360				196	5					
BENT 5					25.5		3,413			8		8	360				209	5					
BENT 6					25.5		3,413			8		8	360				183	5					
BENT 7					25.5		3,413			8		8	360				194	5					
BENT 8					25.5		3,413			8		8	400				238	5					
END BENT 2					39.8		6,795				10			10	400	10		5		248	275		
TOTAL	LUMP SUM	2	43,225	38,966	283.6	LUMP SUM	40,894	45	4,738.75	64	20	64	2,920	20	850	20	1,758	50	1,907.17	617	685	LUMP SUM	LUMP SUM

HYDRAULIC DATA

DESIGN DISCHARGE	= 1,660 CFS
FREQUENCY OF DESIGN FLOOD	= 50 YR
DESIGN HIGH WATER ELEVATION	= 42.8
DRAINAGE AREA	= 12.7 SQ. MI.
BASE DISCHARGE (Q100)	= 2,050 CFS
BASE HIGH WATER ELEVATION	= 43.1

OVERTOPPING DATA

OVERTOPPING DISCHARGE	= 3,160+ CFS
FREQUENCY OF OVERTOPPING FLOOD	= 500+ YR
OVERTOPPING FLOOD ELEVATION	= 61.5

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 6 OF 6

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Tom M. Garrison 8/10/2017

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 STONYTON CREEK BETWEEN SR 1732 AND SR 1735

LEFT LANE

Michael Baker INTERNATIONAL

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8000 Regency Parkway, Suite 600
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-6
1			3			TOTAL SHEETS
2			4			50

DRAWN BY : M. D. MAYHEW DATE : 5-12-17
CHECKED BY : T. M. GARRISON DATE : 6-21-17

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
							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	1.03	--	1.75	0.876	1.42	D	5	45.00	0.876	1.21	D	5	63.28	1.00	0.876	1.03	A	5	57.50	1, 2, 3
		HL-93 (OPERATING)	N/A		1.78	--	1.35	0.876	1.83	D	5	45.00	0.914	1.78	A	3	22.57	N/A	-	-	-	-	-	2, 3
		HS-20 (INVENTORY)	36.000	2	1.42	51.12	1.75	0.876	1.93	D	5	45.00	0.914	1.76	D	3	17.57	1.00	0.876	1.42	D	5	45.00	1, 2, 3
		HS-20 (OPERATING)	36.000		2.32	83.52	1.35	0.876	2.50	D	5	45.00	0.914	2.32	D	3	17.57	N/A	-	-	-	-	-	2, 3
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.32	44.82	1.40	0.876	5.65	D	5	45.00	0.914	5.58	D	3	17.57	1.00	0.876	3.32	D	5	45.00	1, 2, 3
		SNGARBS2	20.000		2.42	48.40	1.40	0.876	4.12	D	5	45.00	0.914	3.90	D	3	17.57	1.00	0.876	2.42	D	5	45.00	1, 2, 3
		SNAGRIS2	22.000		2.27	49.94	1.40	0.876	3.87	D	5	45.00	0.914	3.61	D	3	17.57	1.00	0.876	2.27	D	5	45.00	1, 2, 3
		SNCOTTS3	27.250		1.65	44.96	1.40	0.876	2.81	D	5	45.00	0.914	2.71	D	3	17.57	1.00	0.876	1.65	D	5	45.00	1, 2, 3
		SNAGGRS4	34.925		1.36	47.50	1.40	0.876	2.31	D	5	45.00	0.914	2.21	D	3	17.57	1.00	0.876	1.36	D	5	45.00	1, 2, 3
		SNS5A	35.550		1.33	47.28	1.40	0.876	2.26	D	5	45.00	0.914	2.23	D	3	17.57	1.00	0.876	1.33	D	5	45.00	1, 2, 3
		SNS6A	39.950		1.21	48.34	1.40	0.876	2.06	D	5	45.00	0.914	2.02	D	3	17.57	1.00	0.876	1.21	D	5	45.00	1, 2, 3
		SNS7B	42.000		1.15	48.30	1.40	0.876	1.96	D	5	45.00	0.914	1.98	D	3	17.57	1.00	0.876	1.15	D	5	45.00	1, 2, 3
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.48	48.84	1.40	0.876	2.51	D	5	45.00	0.914	2.44	D	3	17.57	1.00	0.876	1.48	D	5	45.00	1, 2, 3
		TNT4A	33.075		1.48	48.95	1.40	0.876	2.52	D	5	45.00	0.914	2.38	D	3	17.57	1.00	0.876	1.48	D	5	45.00	1, 2, 3
		TNT6A	41.600		1.20	49.92	1.40	0.876	2.05	D	5	45.00	0.914	2.10	D	3	17.57	1.00	0.876	1.20	D	5	45.00	1, 2, 3
		TNT7A	42.000		1.20	50.40	1.40	0.876	2.05	D	5	45.00	0.914	2.06	D	3	17.57	1.00	0.876	1.20	D	5	45.00	1, 2, 3
		TNT7B	42.000		1.24	52.08	1.40	0.876	2.10	D	5	45.00	0.914	1.93	D	3	17.57	1.00	0.876	1.24	D	5	45.00	1, 2, 3
		TNAGRIT4	43.000		1.18	50.74	1.40	0.876	2.01	D	5	45.00	0.914	1.87	D	3	17.57	1.00	0.876	1.18	D	5	45.00	1, 2, 3
		TNAGT5A	45.000		1.12	50.40	1.40	0.876	1.90	D	5	45.00	0.914	1.85	D	3	17.57	1.00	0.876	1.12	D	5	45.00	1, 2, 3
		TNAGT5B	45.000	3	1.11	49.95	1.40	0.876	1.89	D	5	45.00	0.914	1.77	D	3	17.57	1.00	0.876	1.11	D	5	45.00	1, 2, 3

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.
3. RATING FACTORS ARE THE SAME FOR SPANS A, B, C, H & I. RATING FACTORS ARE THE SAME FOR SPANS D, E, F & G.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

(2) DESIGN LOAD RATING (HS-20)

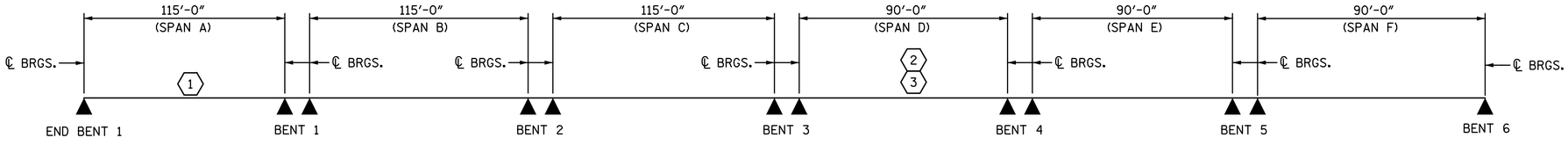
(3) LEGAL LOAD RATING **

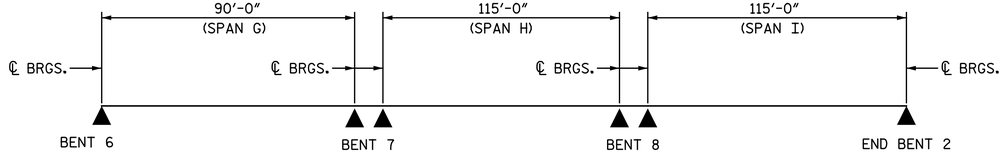
** SEE CHART FOR VEHICLE TYPE

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: 219+22.38 -L-

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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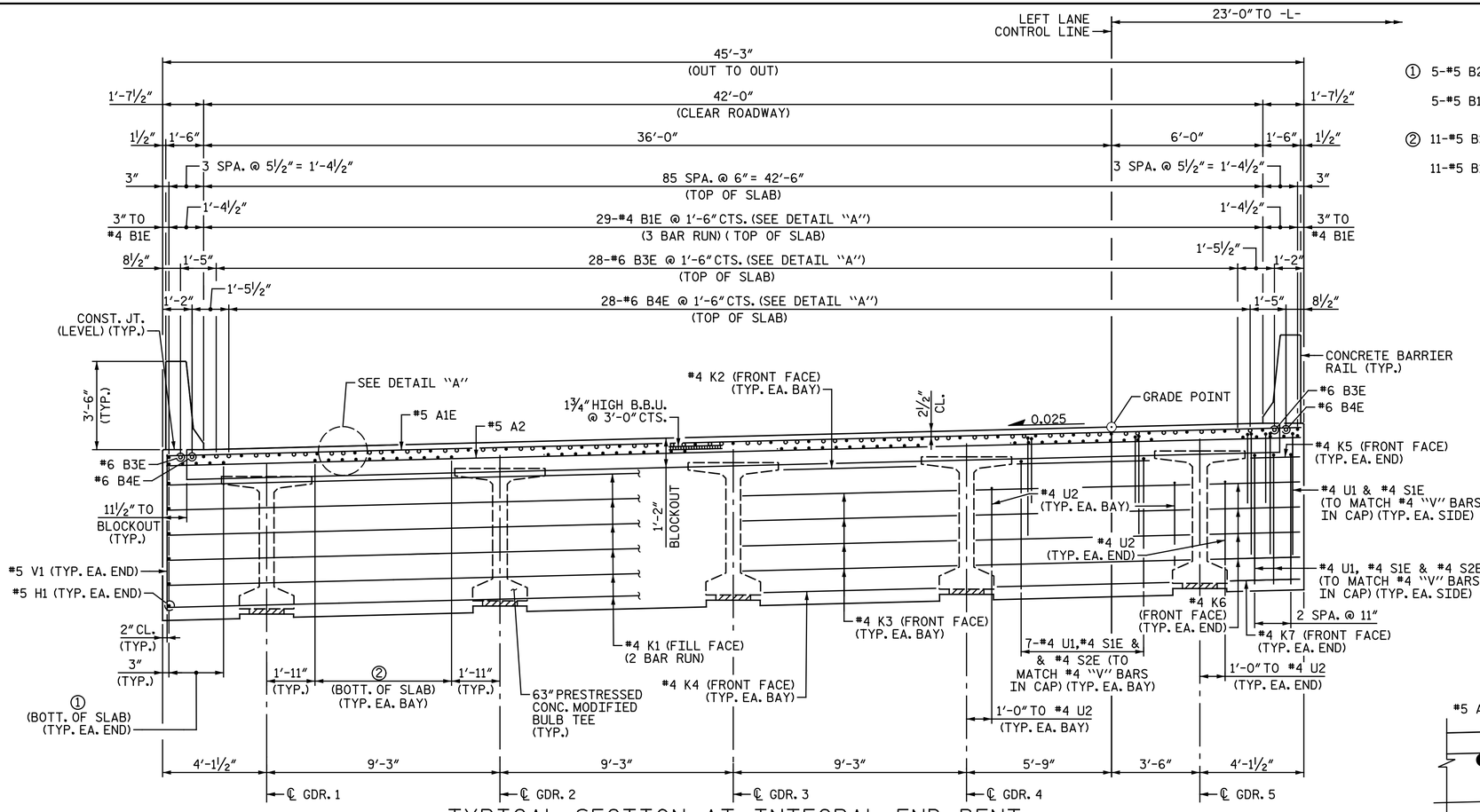
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-7
1			3			TOTAL SHEETS
2			4			50

STD. NO. LRFR1

ASSEMBLED BY : N. B. SPEAKS	DATE : 5-8-17
CHECKED BY : T. M. GARRISON	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

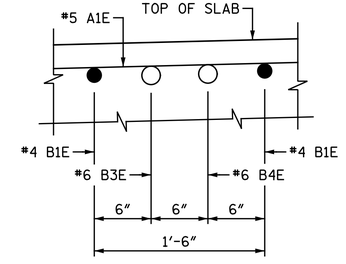


TYPICAL SECTION AT INTEGRAL END BENT

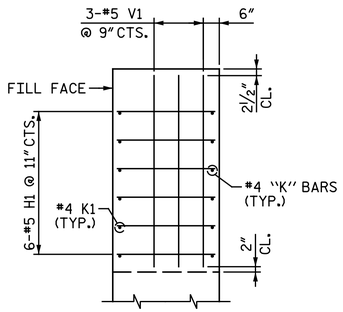
(END BENT 1 SHOWN, END BENT 2 SIMILAR UNLESS OTHERWISE NOTED)
(#4 B5E BARS NOT SHOWN FOR CLARITY)

① 5-#5 B2 @ 6½″ CTS. (SPANS A, B & C) (7 BAR RUN)
5-#5 B13 @ 6½″ CTS. (SPANS G, H & I) (6 BAR RUN)

② 11-#5 B2 @ 6½″ CTS. (SPANS A, B & C) (7 BAR RUN)
11-#5 B13 @ 6½″ CTS. (SPANS G, H & I) (6 BAR RUN)

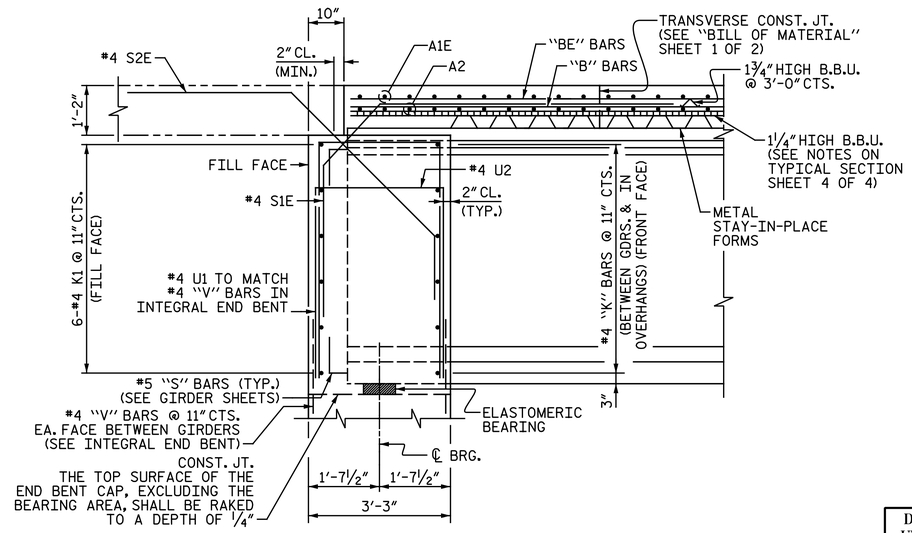


DETAIL ''A''



END OF END BENT 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: 219+22.38 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : D. A. LAMAY DATE : 5-10-17
CHECKED BY : T. M. GARRISON DATE : 5-22-17

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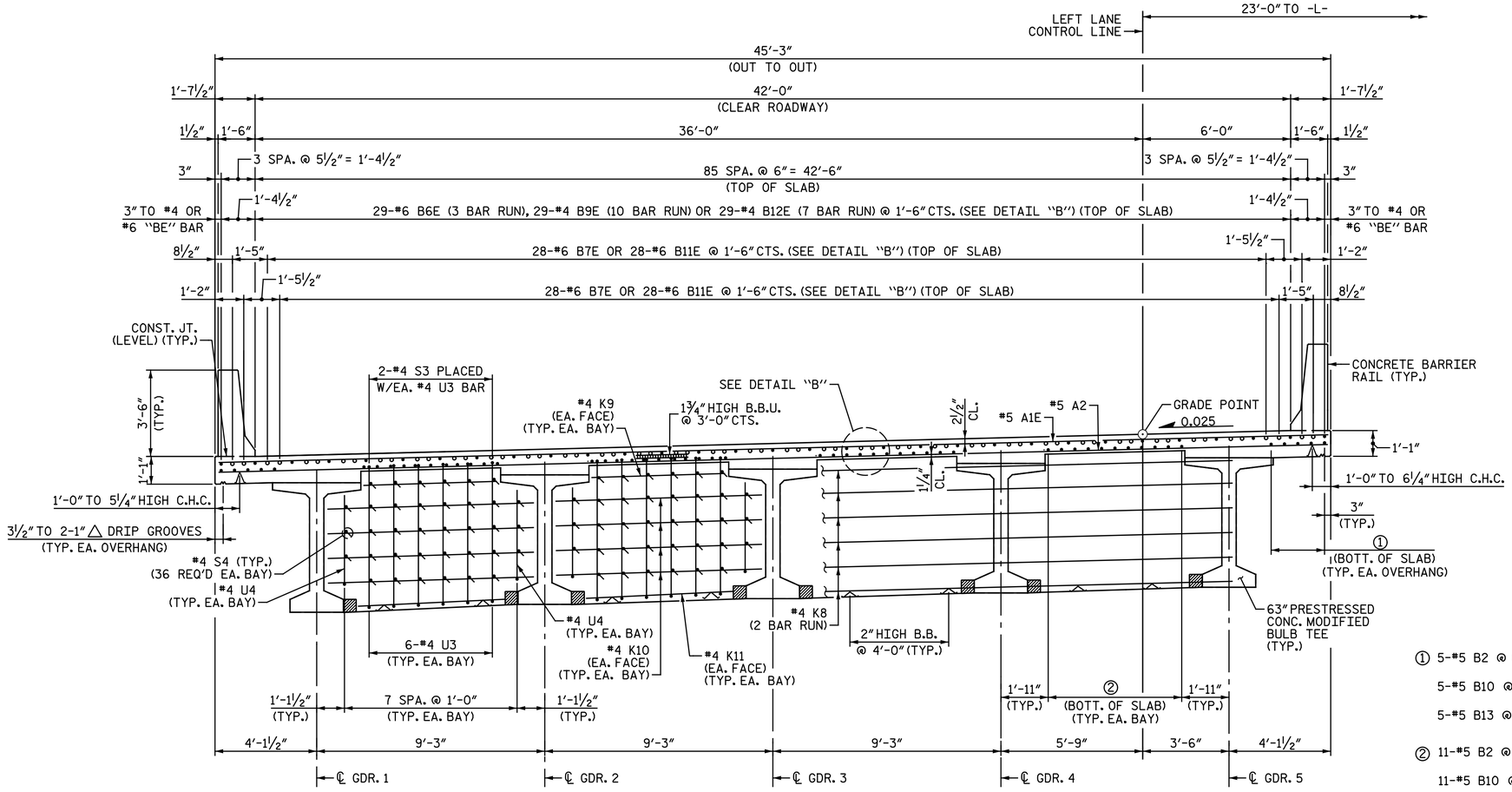
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

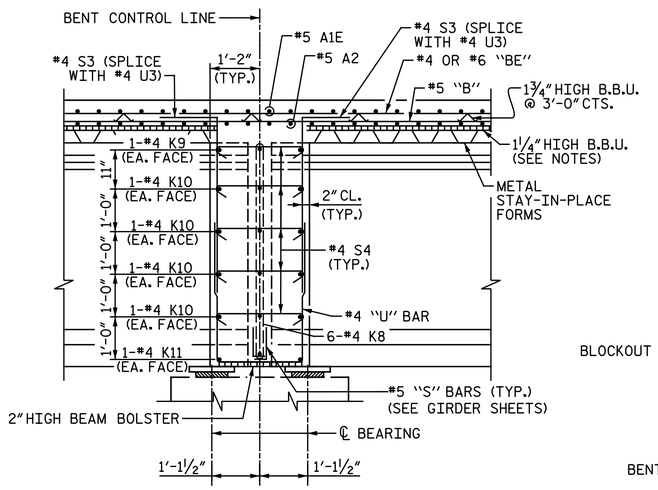
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-8
1			3			TOTAL SHEETS
2			4			50



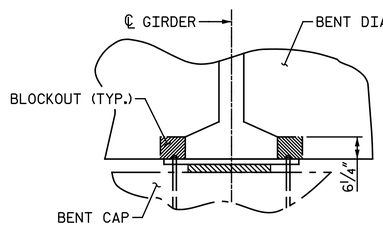
① 5-#5 B2 @ 6½″ CTS. (SPANS A, B & C) (7 BAR RUN)
5-#5 B10 @ 6½″ CTS. (SPANS D, E & F) (5 BAR RUN)
5-#5 B13 @ 6½″ CTS. (SPANS G, H & I) (6 BAR RUN)

② 11-#5 B2 @ 6½″ CTS. (SPANS A, B & C) (7 BAR RUN)
11-#5 B10 @ 6½″ CTS. (SPANS D, E & F) (5 BAR RUN)
11-#5 B13 @ 6½″ CTS. (SPANS G, H & I) (6 BAR RUN)

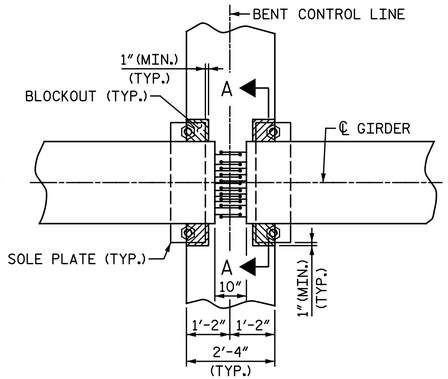
TYPICAL SECTION AT FIXED BENT
(BENT 1, 2, 4, 5, 7 & 8)



SECTION THRU FIXED BENT DIAPHRAGM

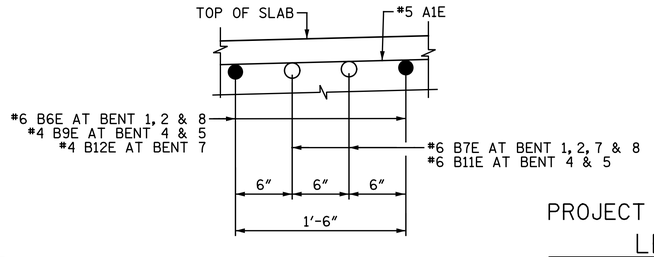


SECTION A-A



PLAN

BENT DIAPHRAGM BLOCKOUT DETAIL



DETAIL "B"

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 219+22.38 -L-

SHEET 2 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

9/20/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

LEFT LANE

DRAWN BY : D. A. LAMAY DATE : 9-20-17
CHECKED BY : T. M. GARRISON DATE : 9-20-17

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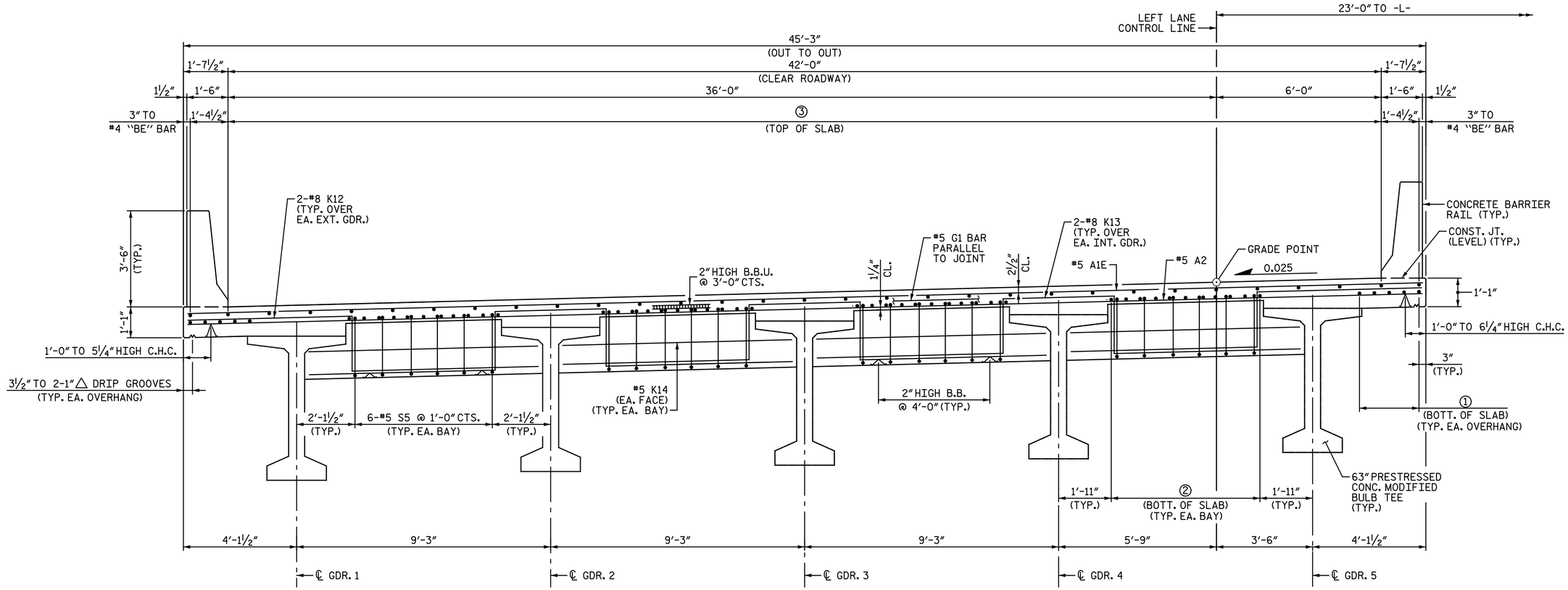
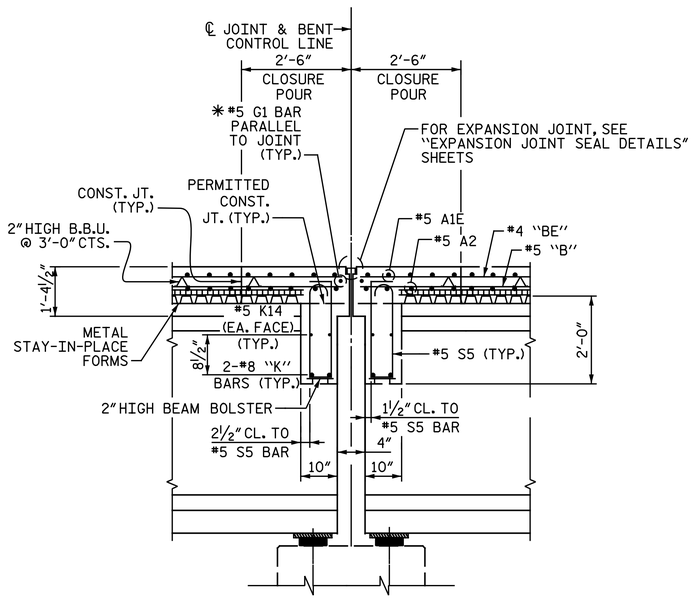


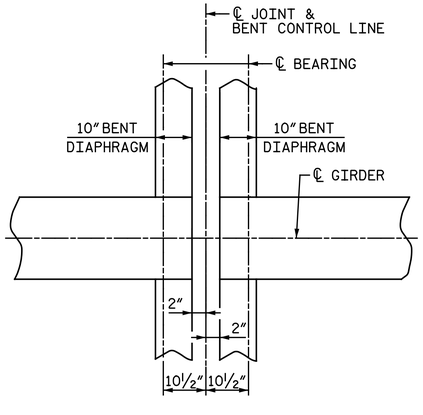


SECTION THRU EXPANSION BENT DIAPHRAGM

*#5 G1 BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.
#4 J1E BARS NOT SHOWN FOR CLARITY, SEE "EXPANSION JOINT SEAL DETAILS".

TYPICAL SECTION AT EXPANSION BENT

(BENT 3 & 6)



PLAN OF EXPANSION BENT DIAPHRAGM

① 5-#5 B2 @ 6½" CTS. (SPANS A, B & C) (7 BAR RUN)
5-#5 B10 @ 6½" CTS. (SPANS D, E & F) (5 BAR RUN)
5-#5 B13 @ 6½" CTS. (SPANS G, H & I) (6 BAR RUN)

② 11-#5 B2 @ 6½" CTS. (SPANS A,B & C) (7 BAR RUN)
11-#5 B10 @ 6½" CTS. (SPANS D, E & F) (5 BAR RUN)
11-#5 B13 @ 6½" CTS. (SPANS G, H & I) (6 BAR RUN)

③ 29-#4 B1E @ 1'-6" CTS. (SPAN C) (3 BAR RUN)
29-#4 B9E @ 1'-6" CTS. (SPANS D & F) (10 BAR RUN)
29-#4 B12E @ 1'-6" CTS. (SPAN G) (7 BAR RUN)

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 219+22.38 -L-

SHEET 3 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

TYPICAL SECTION

LEFT LANE

DRAWN BY : D. A. LAMAY DATE : 5-10-17
CHECKED BY : T. M. GARRISON DATE : 5-23-17

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① 5-#5 B2 @ 6½″ CTS. (SPANS A, B & C) (7 BAR RUN)

5-#5 B10 @ 6½″ CTS. (SPANS D, E & F) (5 BAR RUN)

5-#5 B13 @ 6½″ CTS. (SPANS G, H & I) (6 BAR RUN)

② 11-#5 B2 @ 6½″ CTS. (SPANS A, B & C) (7 BAR RUN)

11-#5 B10 @ 6½″ CTS. (SPANS D, E & F) (5 BAR RUN)

11-#5 B13 @ 6½″ CTS. (SPANS G, H & I) (6 BAR RUN)

③ 29-#4 B1E @ 1′-6″ CTS. (SPANS A, C & I) (3 BAR RUN)

29-#4 B8E @ 1′-6″ CTS. (SPAN B) (2 BAR RUN)

29-#4 B9E @ 1′-6″ CTS. (SPANS D, E & F) (10 BAR RUN)

29-#4 B12E @ 1′-6″ CTS. (SPANS G & H) (7 BAR RUN)

NOTES:

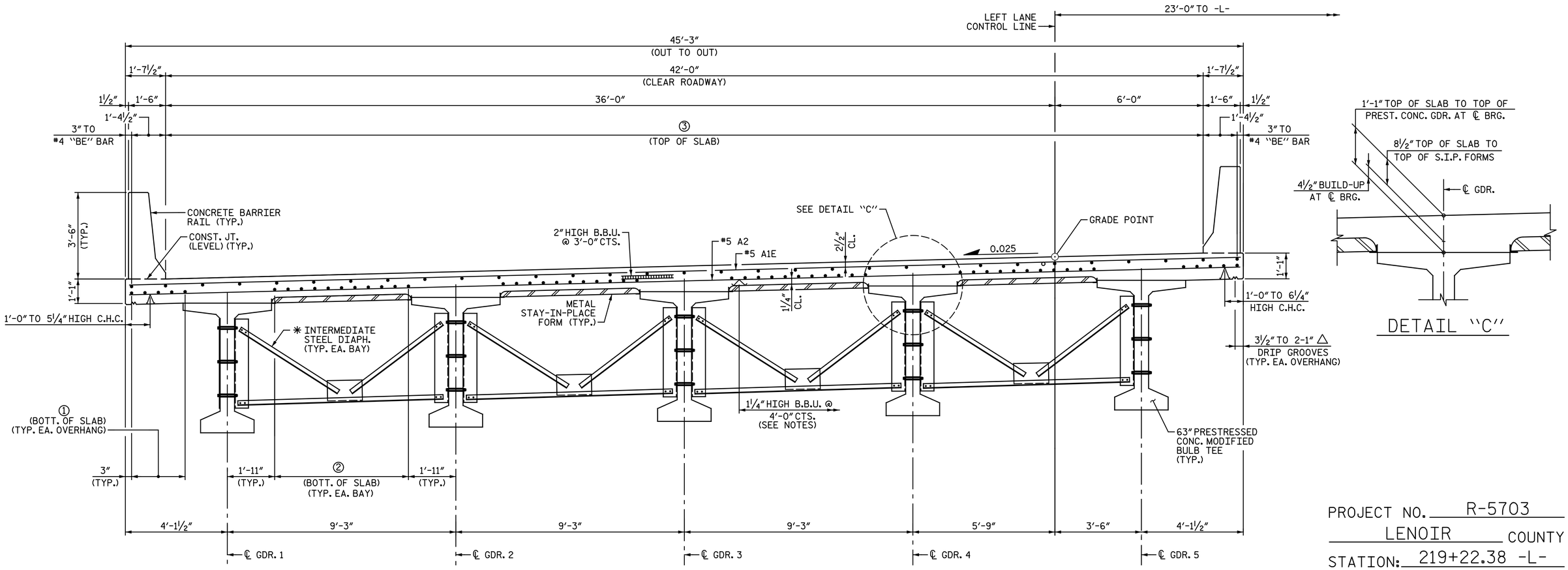
PROVIDE 1¼″ HIGH BEAM BOLSTERS UPPER AT 4′-0″ CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4′-0″ CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2½″ ABOVE 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 CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

✳ FOR DETAILS OF INTERMEDIATE DIAPHRAGMS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 63″ MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET.



TYPICAL SECTION AT INTERMEDIATE DIAPHRAGM

DETAIL "C"

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Tom M Garrison 8/10/2017

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2			4			50

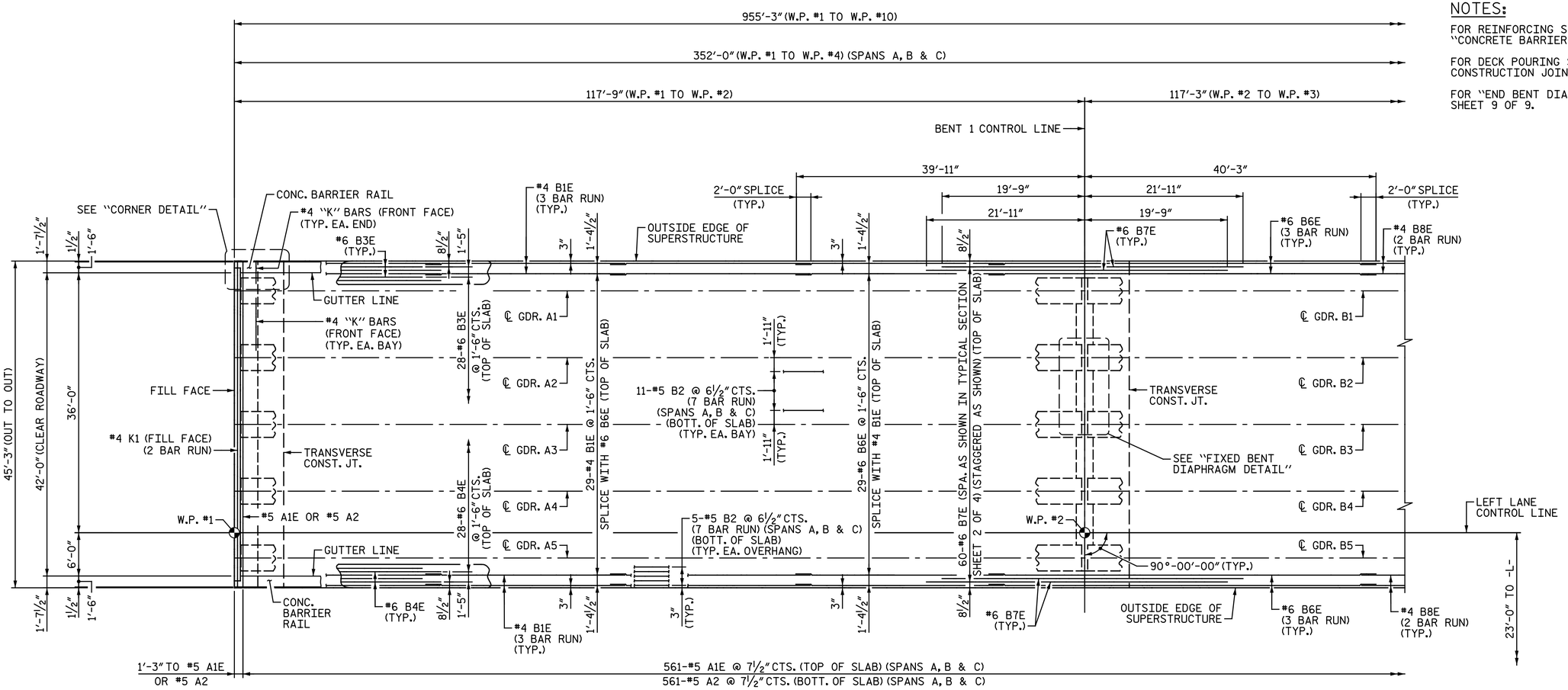
DRAWN BY : D. A. LAMAY DATE : 5-10-17
CHECKED BY : T. M. GARRISON DATE : 5-23-17

NOTES:

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

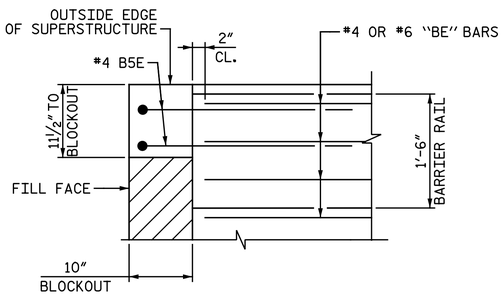
FOR DECK POURING SEQUENCE AND LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE "BILL OF MATERIAL" SHEET 1 OF 2.

FOR "END BENT DIAPHRAGM DETAIL", SEE "PLAN OF SPANS" SHEET 9 OF 9.



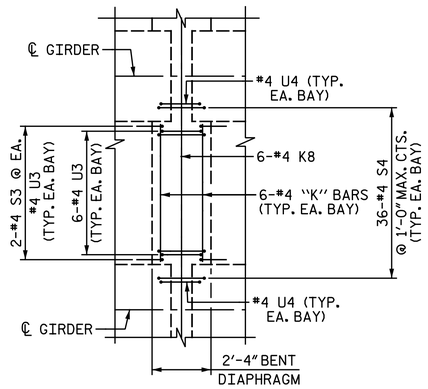
PLAN OF SPAN A

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

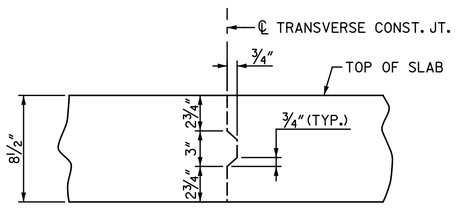


CORNER DETAIL

ALL CORNERS SIMILAR.
TRANSVERSE BARS NOT SHOWN FOR CLARITY.



FIXED BENT DIAPHRAGM DETAIL



TRANSVERSE CONST. JT. DETAIL

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 1 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M Garrison 8/10/2017

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2			4			50

DRAWN BY : D. A. LAMAY DATE : 5-19-17
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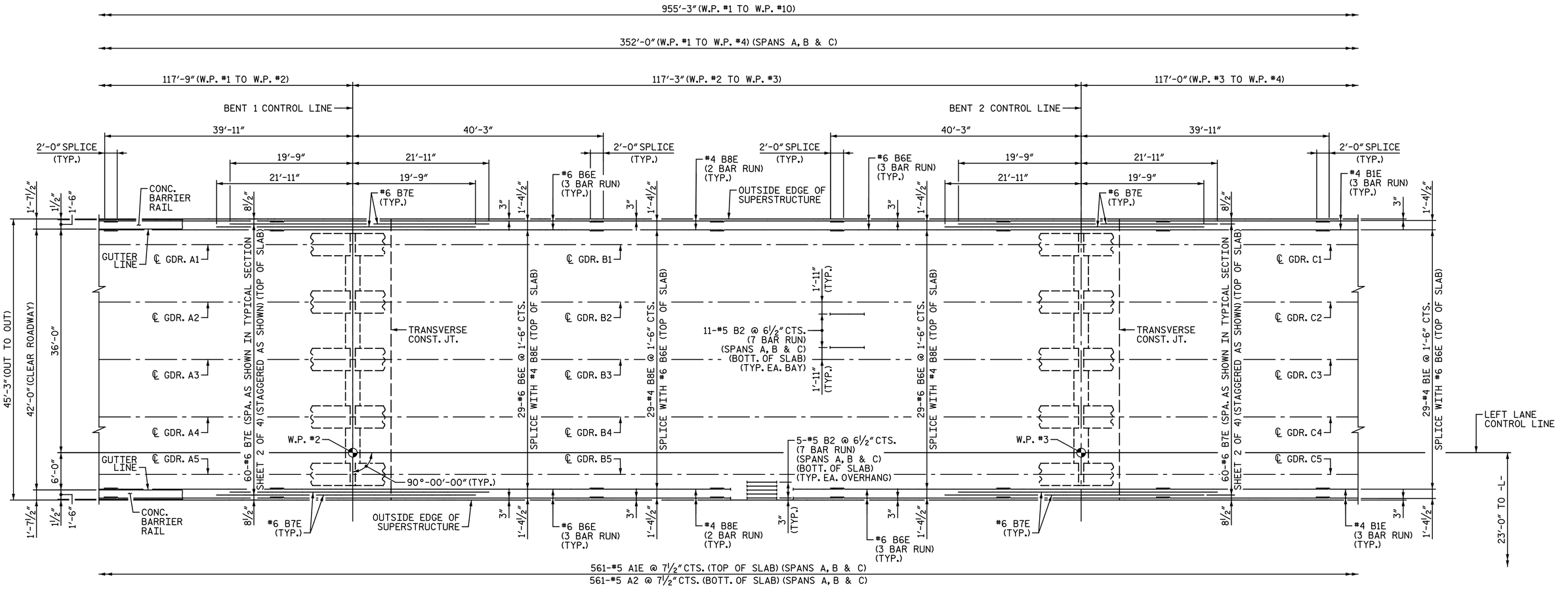
NOTES:

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 1 OF 2.

FOR "FIXED BENT DIAPHRAGM DETAIL" AND "TRANSVERSE CONSTRUCTION JOINT DETAIL", SEE "PLAN OF SPANS" SHEET 1 OF 9.



PLAN OF SPAN B

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 2 OF 9

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

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STATE OF NORTH CAROLINA
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SUPERSTRUCTURE

PLAN OF SPANS

LEFT LANE

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CHECKED BY : T. M. GARRISON DATE : 6-6-17

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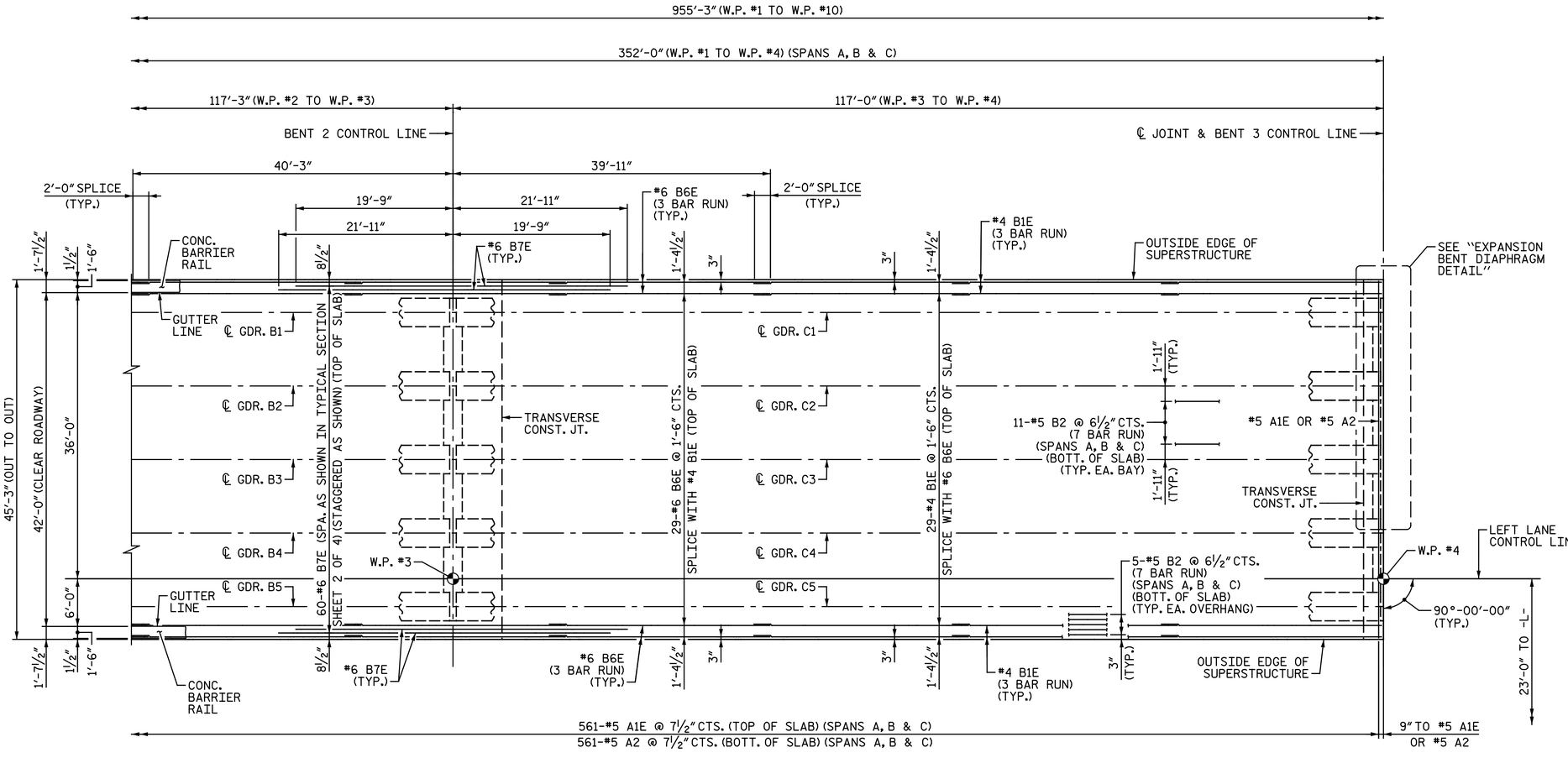
1			3			TOTAL SHEETS
2			4			50



PLAN OF SPAN C

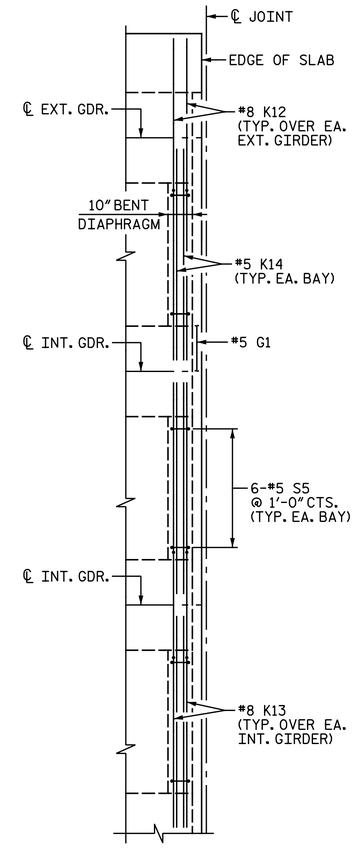
SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-0"	2'-7"

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 1 OF 2.

FOR "FIXED BENT DIAPHRAGM DETAIL" AND "TRANSVERSE CONSTRUCTION JOINT DETAIL", SEE "PLAN OF SPANS" SHEET 1 OF 9.



EXPANSION BENT DIAPHRAGM DETAIL

#4 J1E BARS NOT SHOWN FOR CLARITY. SEE "EXPANSION JOINT SEAL DETAILS".

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 3 OF 9

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

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RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

LEFT LANE

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NOTES:

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

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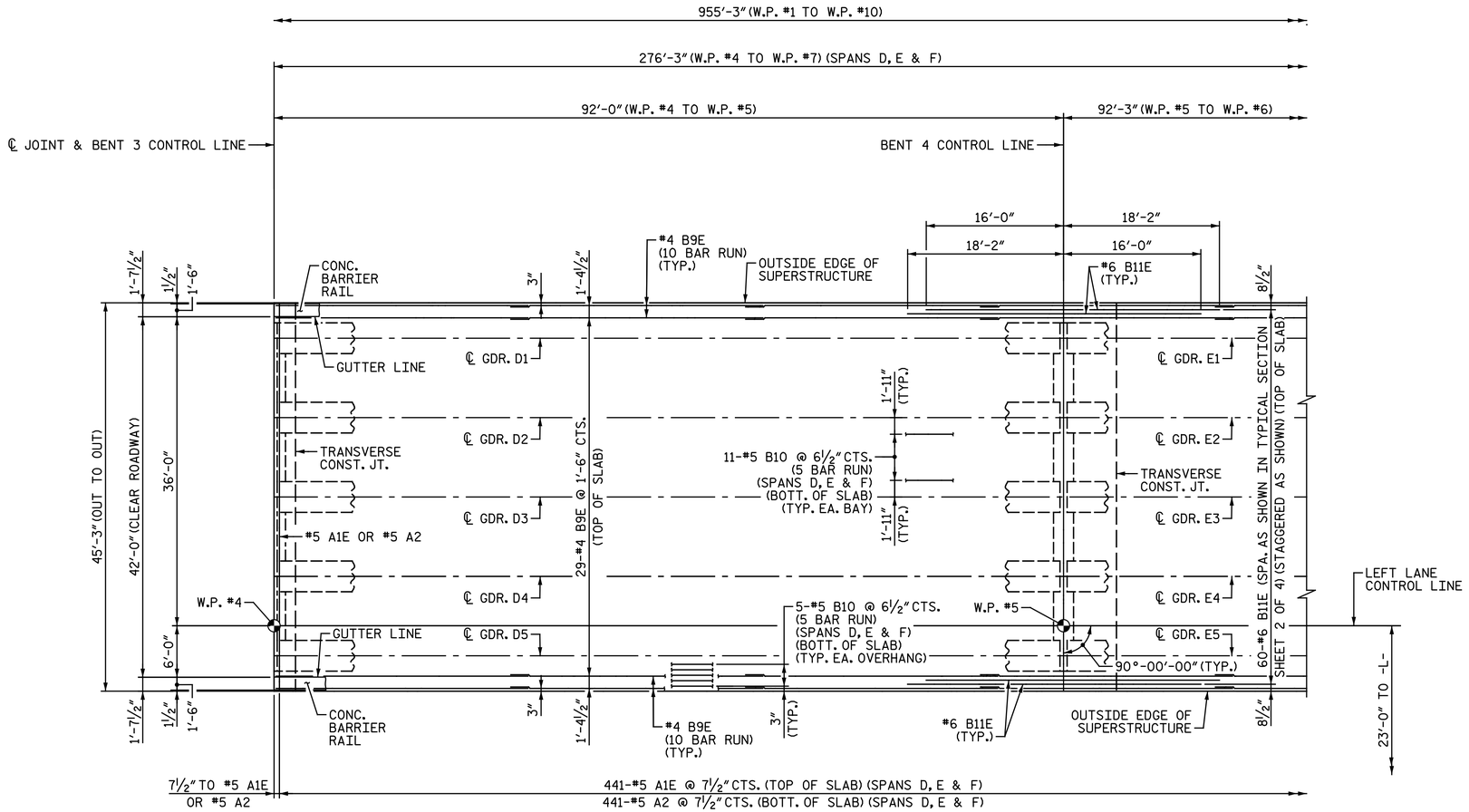
FOR "FIXED BENT DIAPHRAGM DETAIL" AND "TRANSVERSE CONSTRUCTION JOINT DETAIL", SEE "PLAN OF SPANS" SHEET 1 OF 9.

FOR " EXPANSION BENT DIAPHRAGM DETAIL", SEE "PLAN OF SPANS" SHEET 3 OF 9.



PLAN OF SPAN D

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 4 OF 9

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

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STATE OF NORTH CAROLINA
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PLAN OF SPANS

LEFT LANE

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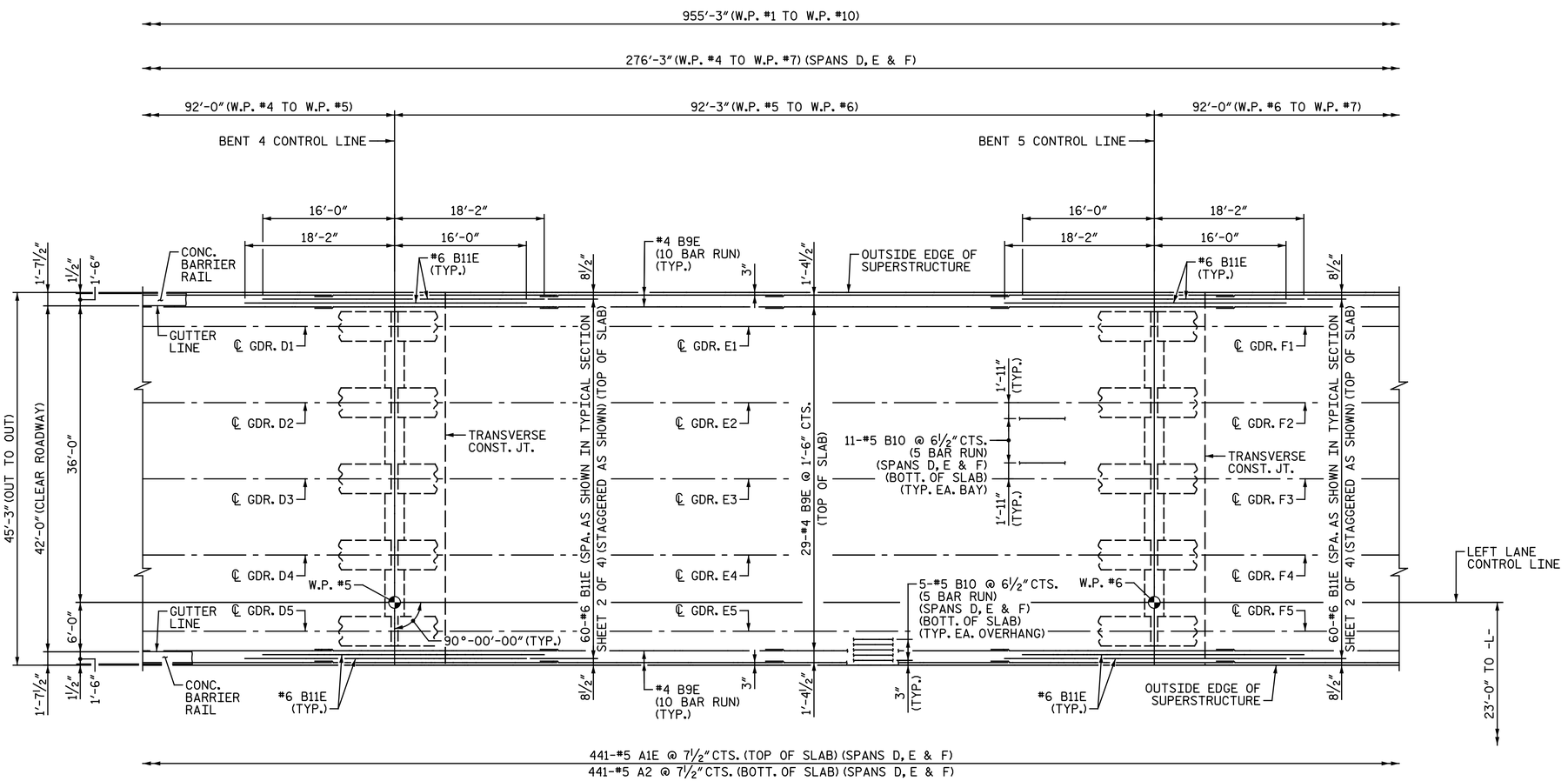
NOTES:

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 1 OF 2.

FOR "FIXED BENT DIAPHRAGM DETAIL" AND "TRANSVERSE CONSTRUCTION JOINT DETAIL", SEE "PLAN OF SPANS" SHEET 1 OF 9.



PLAN OF SPAN E

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 5 OF 9

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

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RALEIGH
SUPERSTRUCTURE

PLAN OF SPANS

LEFT LANE

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2			4			50

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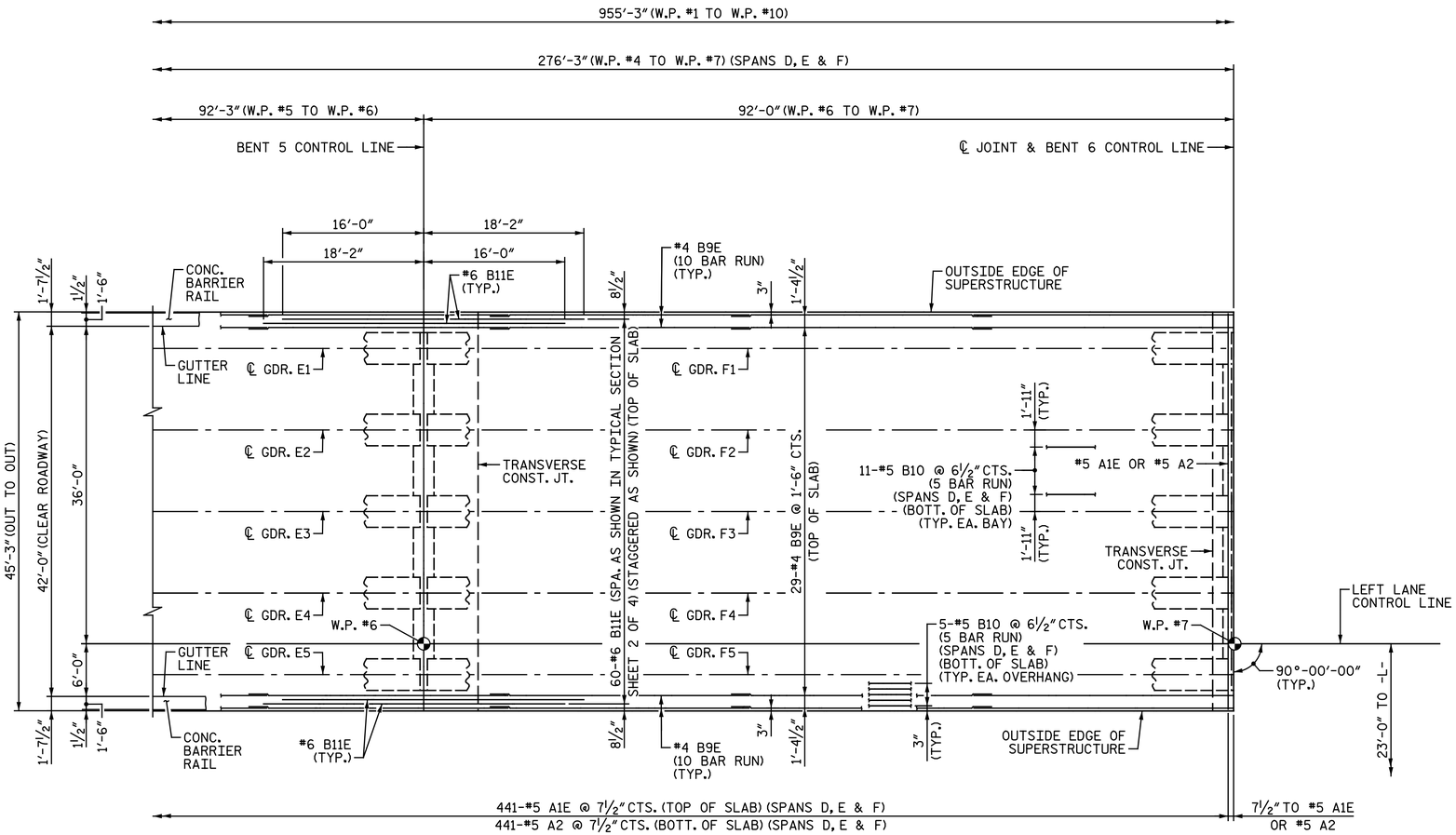
NOTES:

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 1 OF 2.

FOR "FIXED BENT DIAPHRAGM DETAIL" AND "TRANSVERSE CONSTRUCTION JOINT DETAIL", SEE "PLAN OF SPANS" SHEET 1 OF 9.

FOR "EXPANSION BENT DIAPHRAGM DETAIL", SEE "PLAN OF SPANS" SHEET 3 OF 9.



PLAN OF SPAN F

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 6 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

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2			4			50

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CHECKED BY : T. M. GARRISON DATE : 6-15-17

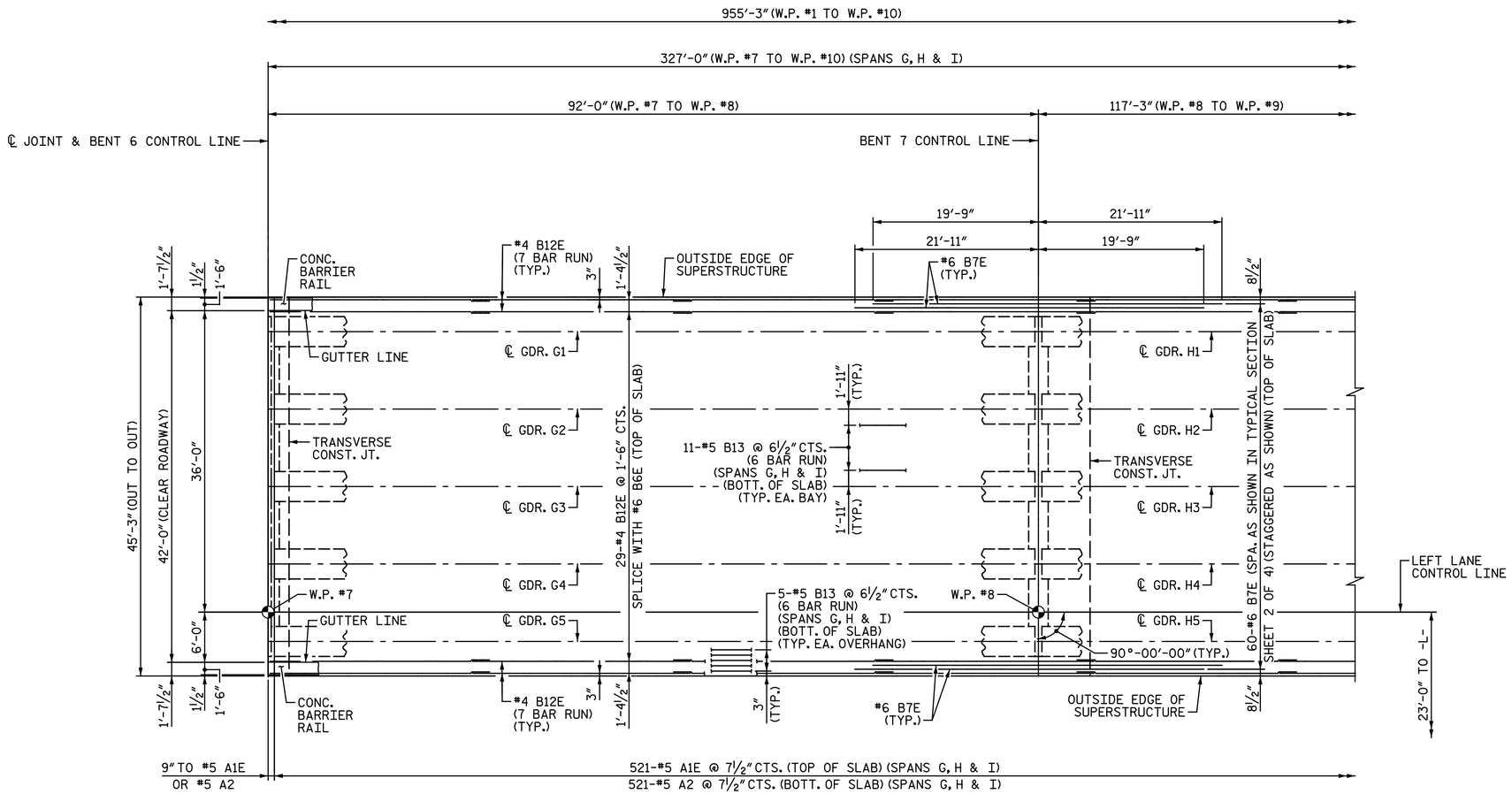
NOTES:

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 1 OF 2.

FOR "FIXED BENT DIAPHRAGM DETAIL" AND "TRANSVERSE CONSTRUCTION JOINT DETAIL", SEE "PLAN OF SPANS" SHEET 1 OF 9.

FOR "EXPANSION BENT DIAPHRAGM DETAIL", SEE "PLAN OF SPANS" SHEET 3 OF 9.



PLAN OF SPAN G

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 7 OF 9

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STATE OF NORTH CAROLINA
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RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

LEFT LANE

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Cary, North Carolina 27518
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1			3			TOTAL SHEETS
2			4			50

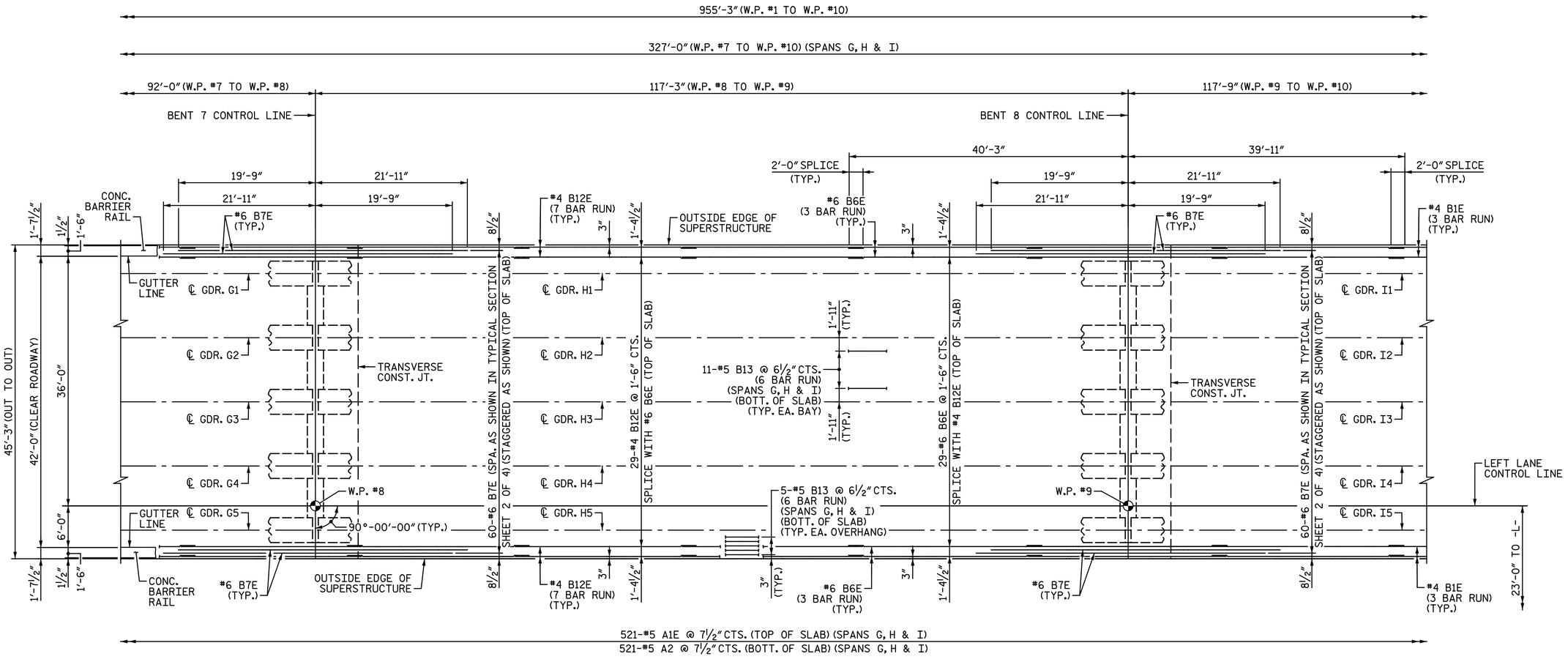
DRAWN BY : D. A. LAMAY DATE : 5-19-17
CHECKED BY : T. M. GARRISON DATE : 6-15-17

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 1 OF 2.

FOR "FIXED BENT DIAPHRAGM DETAIL" AND "TRANSVERSE CONSTRUCTION JOINT DETAIL", SEE "PLAN OF SPANS" SHEET 1 OF 9.



PLAN OF SPAN H

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 8 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Tom M. Garrison 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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-19
1			3			TOTAL SHEETS
2			4			50

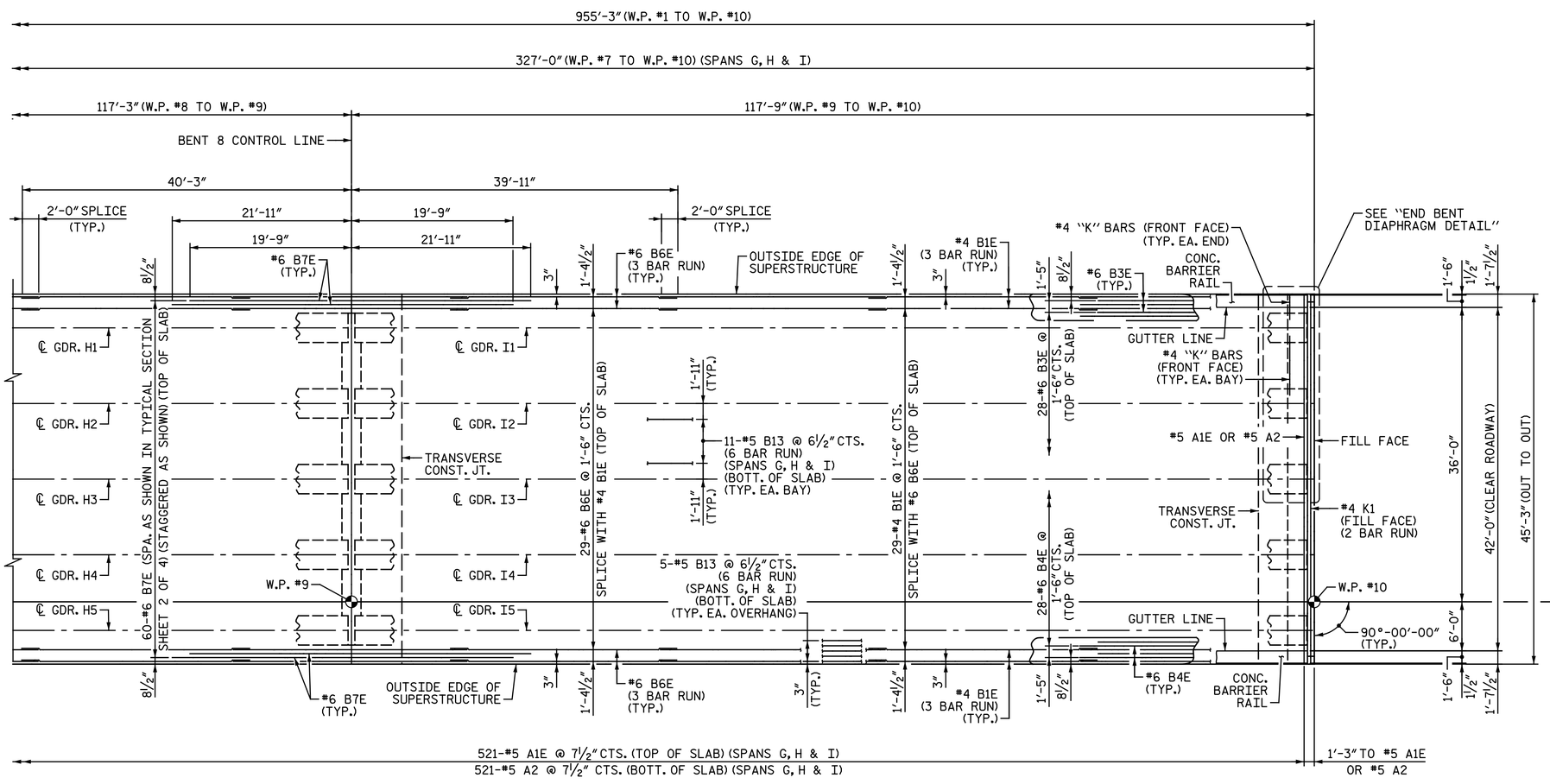
DRAWN BY : D. A. LAMAY DATE : 5-19-17
CHECKED BY : T. M. GARRISON DATE : 6-15-17

NOTES:

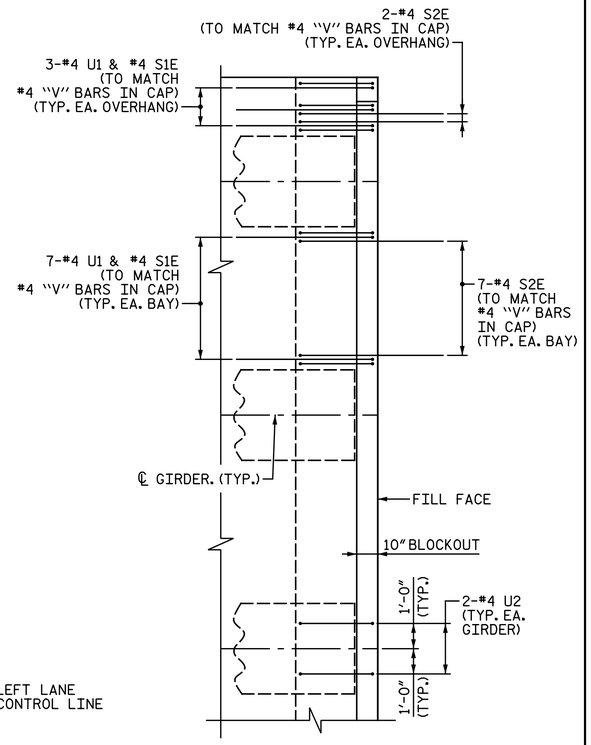
FOR REINFORCING STEEL IN CONCRETE BARRIER RAIL, SEE "CONCRETE BARRIER RAIL" SHEET.

FOR DECK POURING SEQUENCE AND LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE "BILL OF MATERIAL" SHEET 1 OF 2.

FOR "FIXED BENT DIAPHRAGM DETAIL", "TRANSVERSE CONST. JT. DETAIL" AND "CORNER DETAIL", SEE "PLAN OF SPANS" SHEET 1 OF 9.



PLAN OF SPAN I



END BENT DIAPHRAGM DETAIL

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 9 OF 9

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

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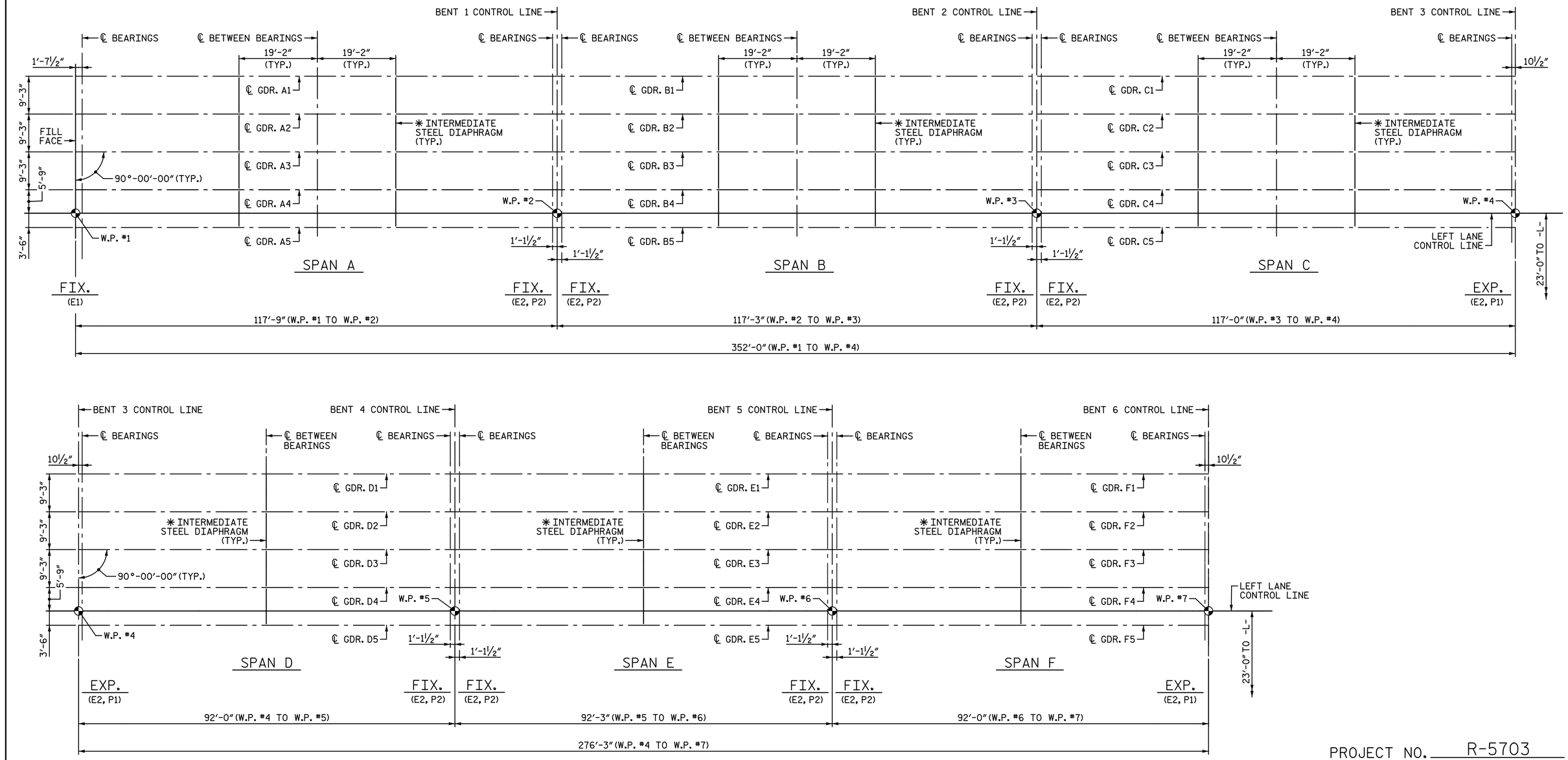
NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-20
1			3			TOTAL SHEETS
2			4			50

DRAWN BY : D. A. LAMAY DATE : 5-19-17
CHECKED BY : T. M. GARRISON DATE : 6-15-17



GIRDER LAYOUT

✳ SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 63" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET FOR DETAILS

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

GIRDER LAYOUT

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

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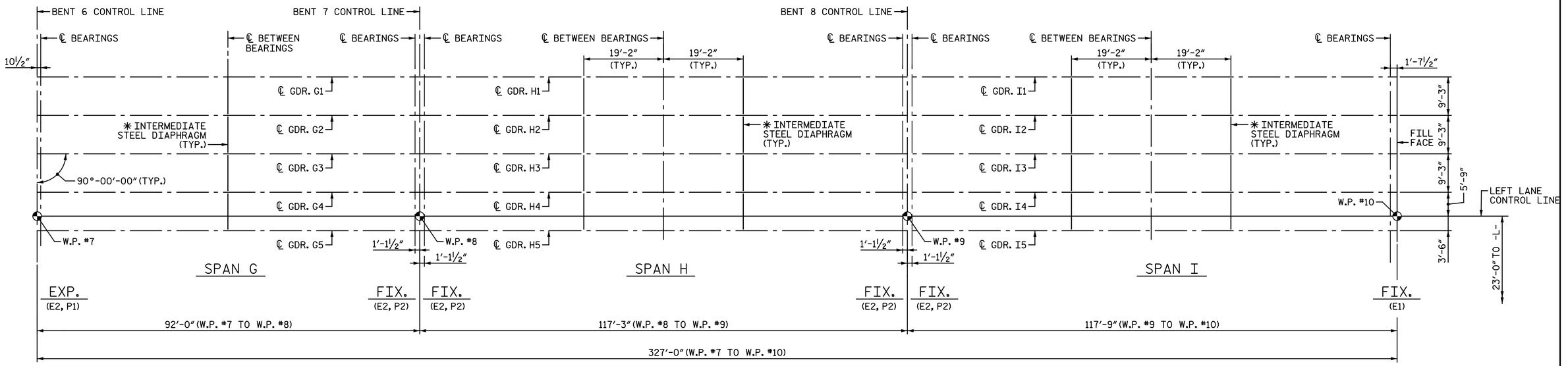
NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-21
1			3			TOTAL SHEETS
2			4			50

DRAWN BY : M. D. MAYHEW DATE : 5-23-17
CHECKED BY : T. M. GARRISON DATE : 6-8-17



GIRDER LAYOUT

✳ SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 63″MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET FOR DETAILS

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Tom M Garrison 8/10/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

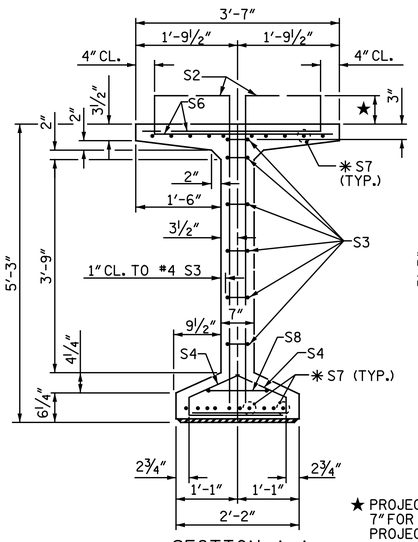
SUPERSTRUCTURE

GIRDER LAYOUT

LEFT LANE

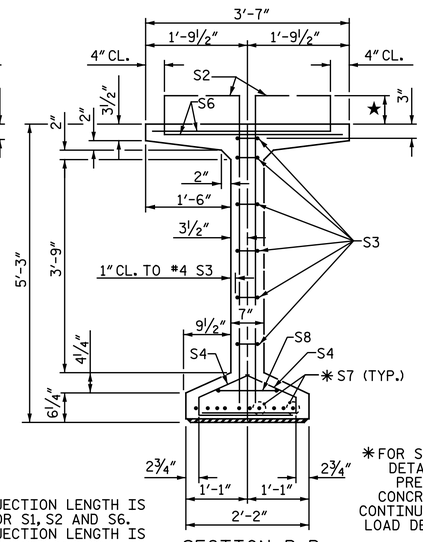
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-22
1			3			TOTAL SHEETS
2			4			50

DRAWN BY : M. D. MAYHEW DATE : 5-23-17
CHECKED BY : T. M. GARRISON DATE : 6-8-17



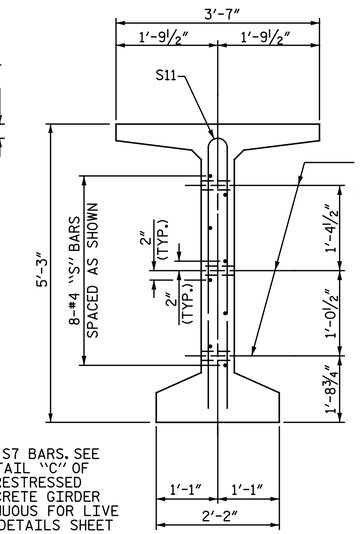
SECTION A-A

★ PROJECTION LENGTH IS 7″ FOR S1, S2 AND S6. PROJECTION LENGTH IS 5″ FOR S13 AND S14.



SECTION B-B

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

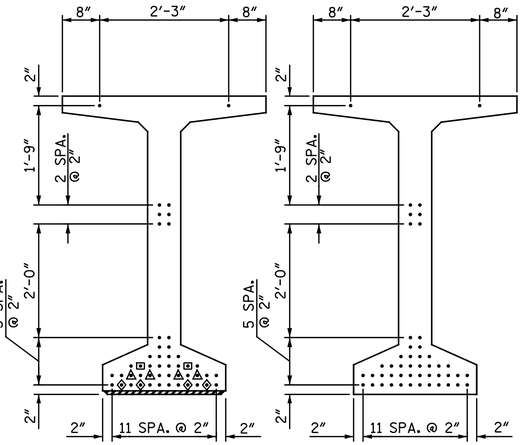


SECTION C-C

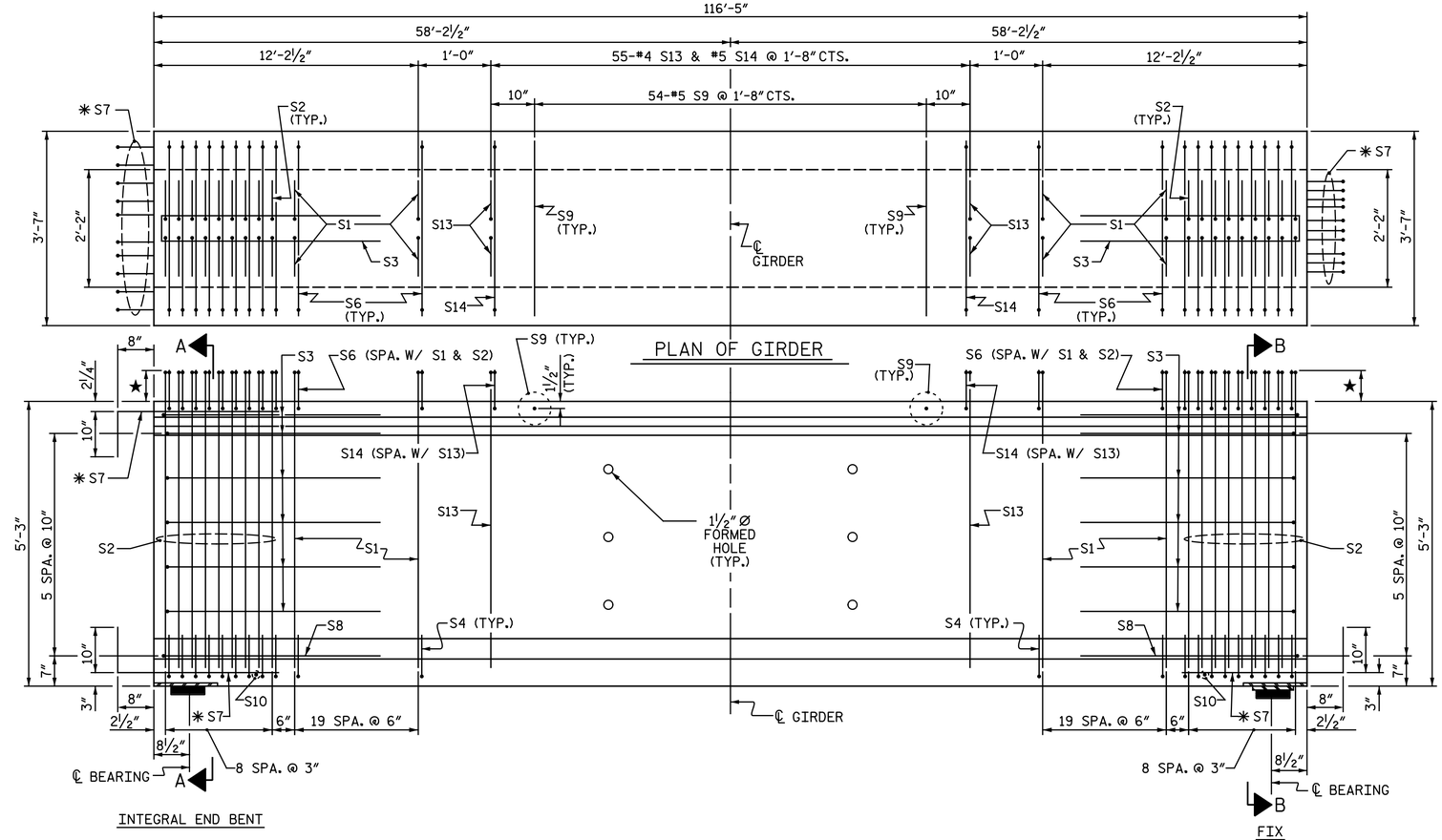
(S1, S6 AND S9 BARS NOT SHOWN)

DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 4′-0″ FROM END OF GIRDER
- STRANDS DEBONDED FOR 6′-0″ FROM END OF GIRDER
- STRANDS DEBONDED FOR 10′-0″ FROM END OF GIRDER



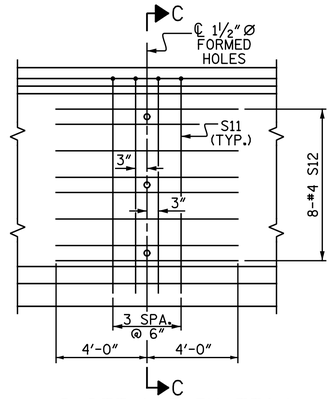
0.6″ Ø LOW RELAXATION STRAND LAYOUT



INTEGRAL END BENT

ELEVATION OF GIRDER

(SPAN A GIRDERS SHOWN, SPAN I GIRDERS SIMILAR BY ROTATION)



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

0.6″ Ø L. R. GRADE 270 STRANDS

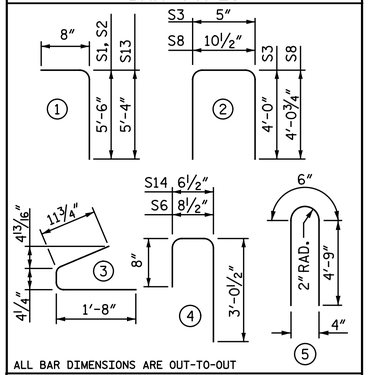
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	80	#4	1	6′-2″	330
S2	36	#5	1	6′-2″	232
S3	12	#4	2	8′-5″	67
S4	116	#4	3	3′-0″	232
S6	116	#5	4	4′-5″	534
✱S7	30	#5	STR	3′-8″	115
S8	2	#5	2	9′-0″	19
S9	54	#5	STR	3′-3″	183
S10	2	#3	STR	1′-10″	1
S11	8	#5	5	10′-0″	83
S12	16	#4	STR	8′-0″	86
S13	110	#4	1	6′-0″	441
S14	110	#5	4	4′-3″	488

✱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	9500 PSI CONCRETE	0.6″ Ø L.R. STRANDS
LB.	C.Y.	No.
2811	23.1	48

GIRDERS REQUIRED

SPAN	NUMBER	LENGTH	TOTAL LENGTH
A	5	116′-5″	582′-1″
I	5	116′-5″	582′-1″
TOTAL	10	116′-5″	1164′-2″

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 1 OF 5

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: 8/10/2017

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Michael Baker INTERNATIONAL

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

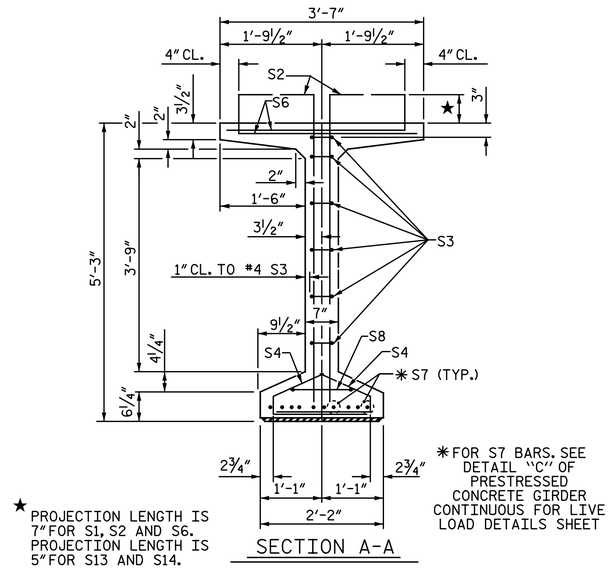
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD 63″ PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD SPANS A & I LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-23
1			3			TOTAL SHEETS
2			4			50

ASSEMBLED BY : T. M. G. / N. B. S.	DATE : 1-11-17	
CHECKED BY : D. A. COLETTI	DATE : 4-13-17	
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

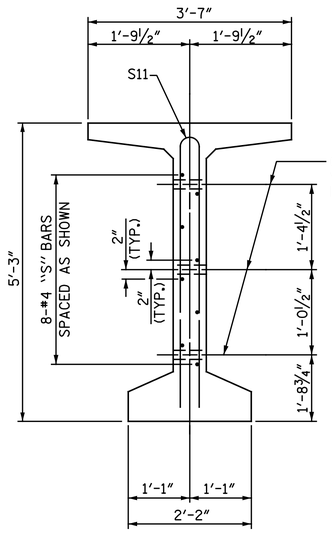
STD. NO. PCG7



★ PROJECTION LENGTH IS 7" FOR S1, S2 AND S6. PROJECTION LENGTH IS 5" FOR S13 AND S14.

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

SECTION A-A

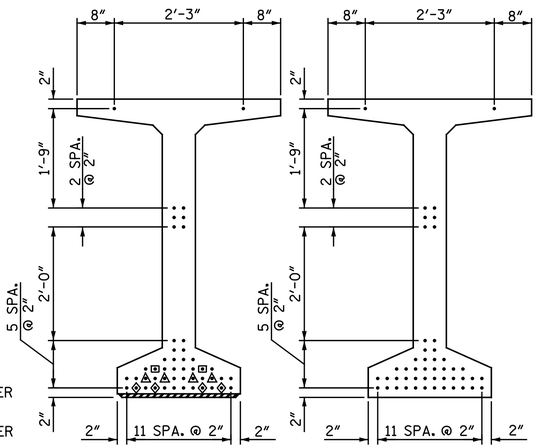


SECTION C-C

(S1, S6 AND S9 BARS NOT SHOWN)

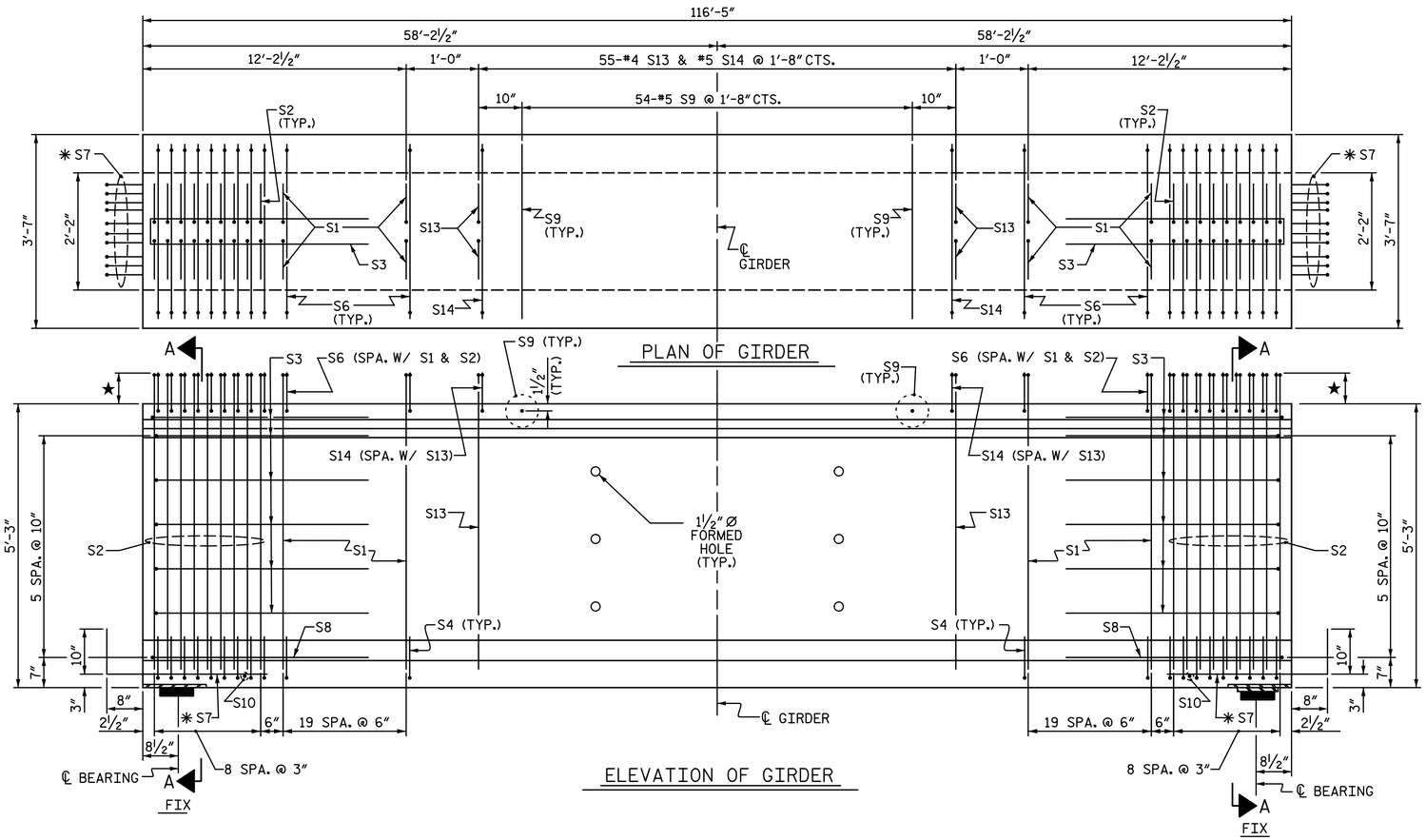
DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ▣ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- △ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
- ◇ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER



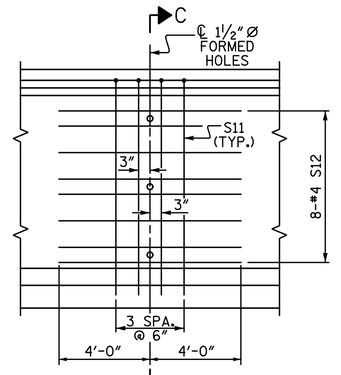
AT END OF GIRDER AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT



PLAN OF GIRDER

ELEVATION OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

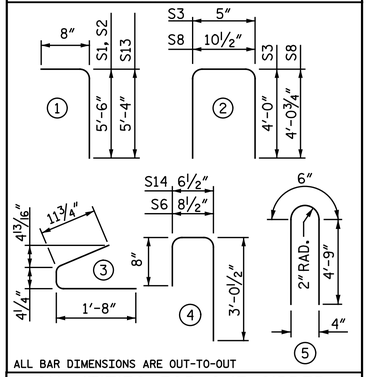
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	80	#4	1	6'-2"	330
S2	36	#5	1	6'-2"	232
S3	12	#4	2	8'-5"	67
S4	116	#4	3	3'-0"	232
S6	116	#5	4	4'-5"	534
✱S7	20	#5	STR	3'-8"	76
S8	2	#5	2	9'-0"	19
S9	54	#5	STR	3'-3"	183
S10	2	#3	STR	1'-10"	1
S11	8	#5	5	10'-0"	83
S12	16	#4	STR	8'-0"	86
S13	110	#4	1	6'-0"	441
S14	110	#5	4	4'-3"	488

✱ 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	9500 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
2772	23.1	48

GIRDERS REQUIRED

SPAN	NUMBER	LENGTH	TOTAL LENGTH
B	5	116'-5"	582'-1"
H	5	116'-5"	582'-1"
TOTAL	10	116'-5"	1164'-2"

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
63" PRESTRESSED CONCRETE
MODIFIED BULB TEE
CONTINUOUS FOR LIVE LOAD
SPANS B & H
LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

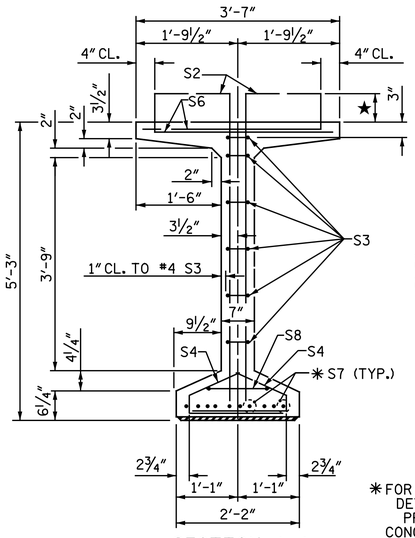
Michael Baker INTERNATIONAL

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-24
1			3			TOTAL SHEETS
2			4			50

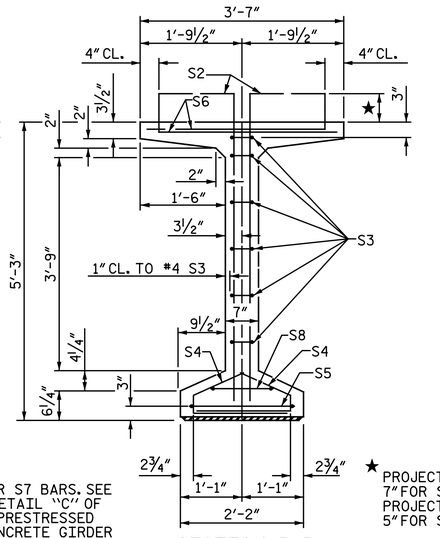
ASSEMBLED BY : T. M. G. / N. B. S.	DATE : 1-11-17		
CHECKED BY : D. A. COLETTI	DATE : 4-13-17		
DRAWN BY : EEM 2/6/97	REV. 10/1/11	MAA/GM	
CHECKED BY : VAP 2/6/97	REV. 6/13	MAA/GM	
	REV. 1/15	MAA/TMG	

STD. NO. PCG7



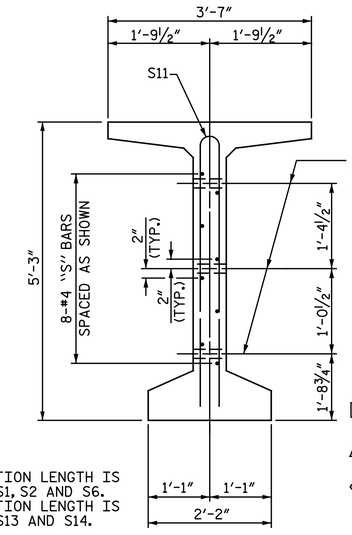
SECTION A-A

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



SECTION B-B

★PROJECTION LENGTH IS 7" FOR S1, S2 AND S6. PROJECTION LENGTH IS 5" FOR S13 AND S14.

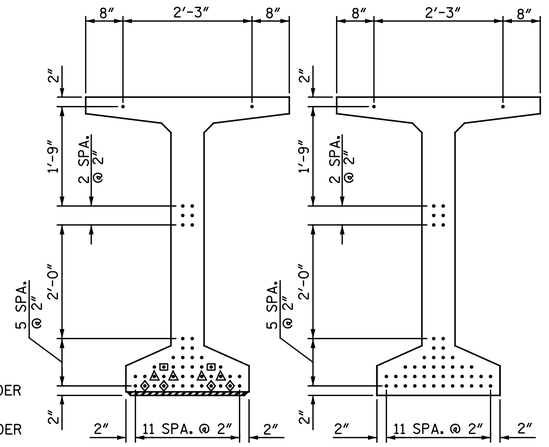


SECTION C-C

(S1, S6 AND S9 BARS NOT SHOWN)

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ▣ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ▲ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
- ◆ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER



AT END OF GIRDER AT ℄ OF GIRDER

0.6"Ø LOW RELAXATION STRAND LAYOUT

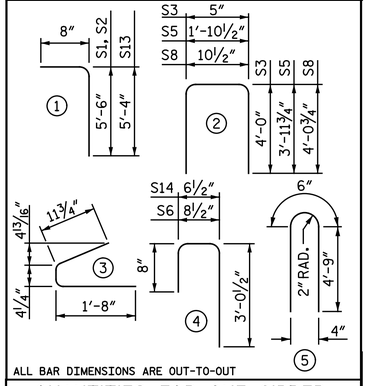
0.6"Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	80	#4	1	6'-2"	330
S2	36	#5	1	6'-2"	232
S3	12	#4	2	8'-5"	67
S4	116	#4	3	3'-0"	232
S5	1	#5	2	9'-10"	10
S6	116	#5	4	4'-5"	534
✱S7	10	#5	STR	3'-8"	38
S8	2	#5	2	9'-0"	19
S9	54	#5	STR	3'-3"	183
S10	1	#3	STR	1'-10"	1
S11	8	#5	5	10'-0"	83
S12	16	#4	STR	8'-0"	86
S13	110	#4	1	6'-0"	441
S14	110	#5	4	4'-3"	488

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

BAR TYPES



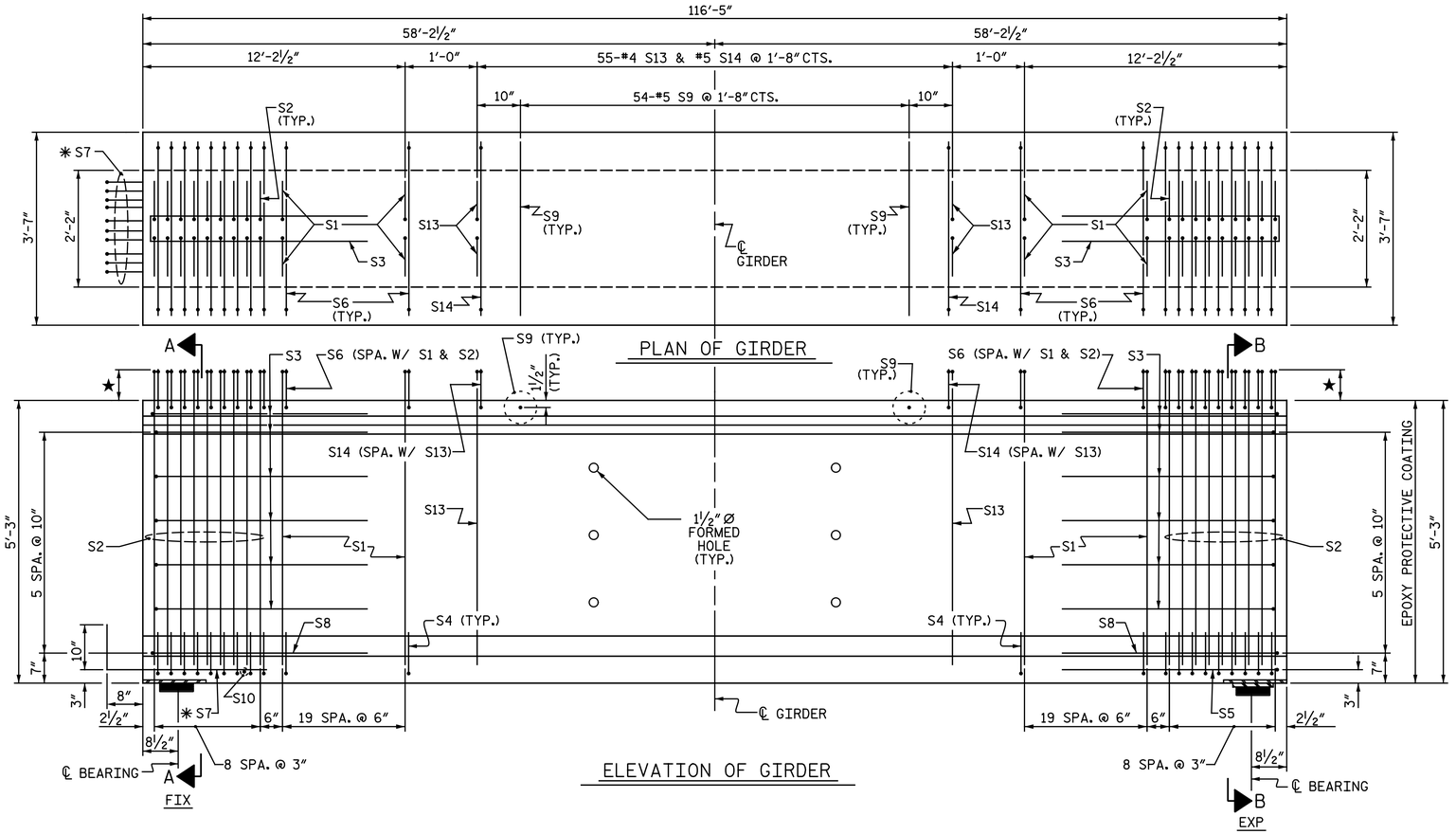
ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

REINFORCING STEEL	9500 PSI CONCRETE	0.6"Ø L.R. STRANDS
LB.	C.Y.	No.
2744	23.1	48

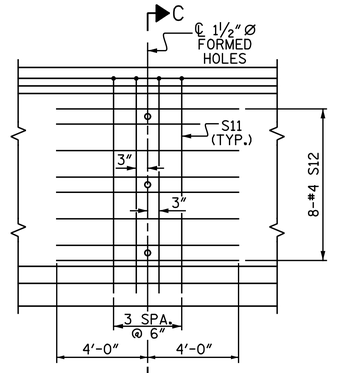
GIRDERS REQUIRED

SPAN	NUMBER	LENGTH	TOTAL LENGTH
C	5	116'-5"	582'-1"



PLAN OF GIRDER

ELEVATION OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
63" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD SPAN C LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER JODY M. GARRISON

DocuSigned by: 8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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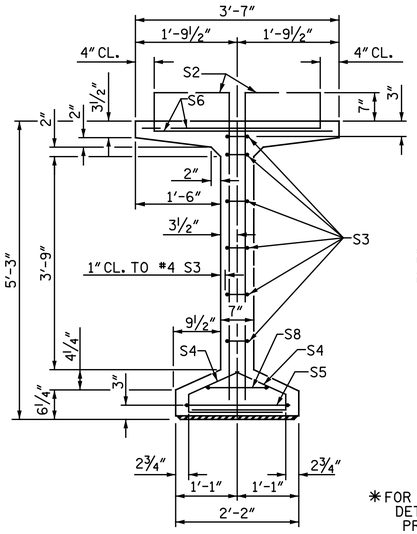
NC License No. : F-1084

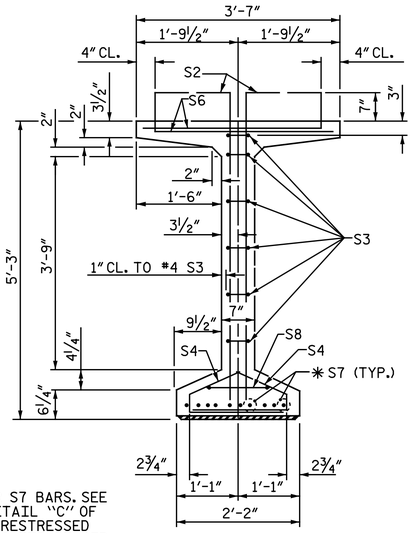
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-25
1			3			TOTAL SHEETS
2			4			50

ASSEMBLED BY : T. M. G. / N. B. S.	DATE : 1-11-17	
CHECKED BY : D. A. COLETTI	DATE : 4-13-17	
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. PCG7

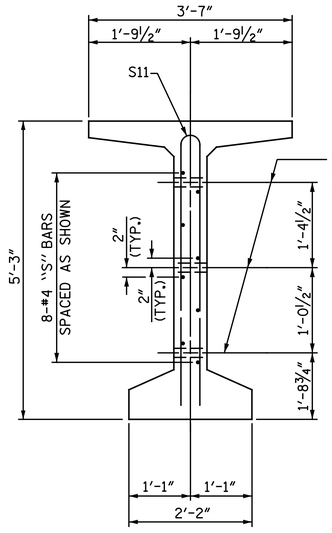


SECTION A-A



SECTION B-B

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

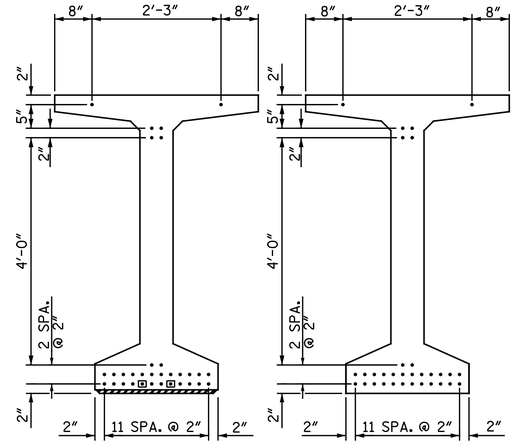


SECTION C-C

(S1, S6 AND S9 BARS NOT SHOWN)

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ⊡ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER



AT END OF GIRDER AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

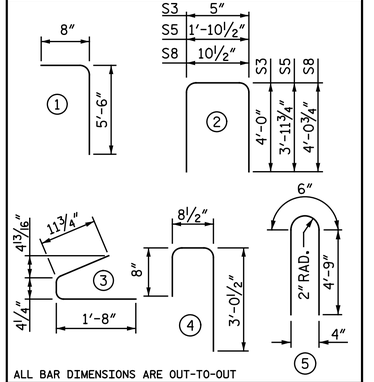
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	136	#4	1	6'-2"	560
S2	24	#5	1	6'-2"	154
S3	12	#4	2	8'-5"	67
S4	88	#4	3	3'-0"	176
S5	1	#5	2	9'-10"	10
S6	160	#5	4	4'-5"	737
✱S7	10	#5	STR	3'-8"	38
S8	2	#5	2	9'-0"	19
S9	35	#5	STR	3'-3"	119
S10	1	#3	STR	1'-10"	1
S11	4	#5	5	10'-0"	42
S12	8	#4	STR	8'-0"	43

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

BAR TYPES



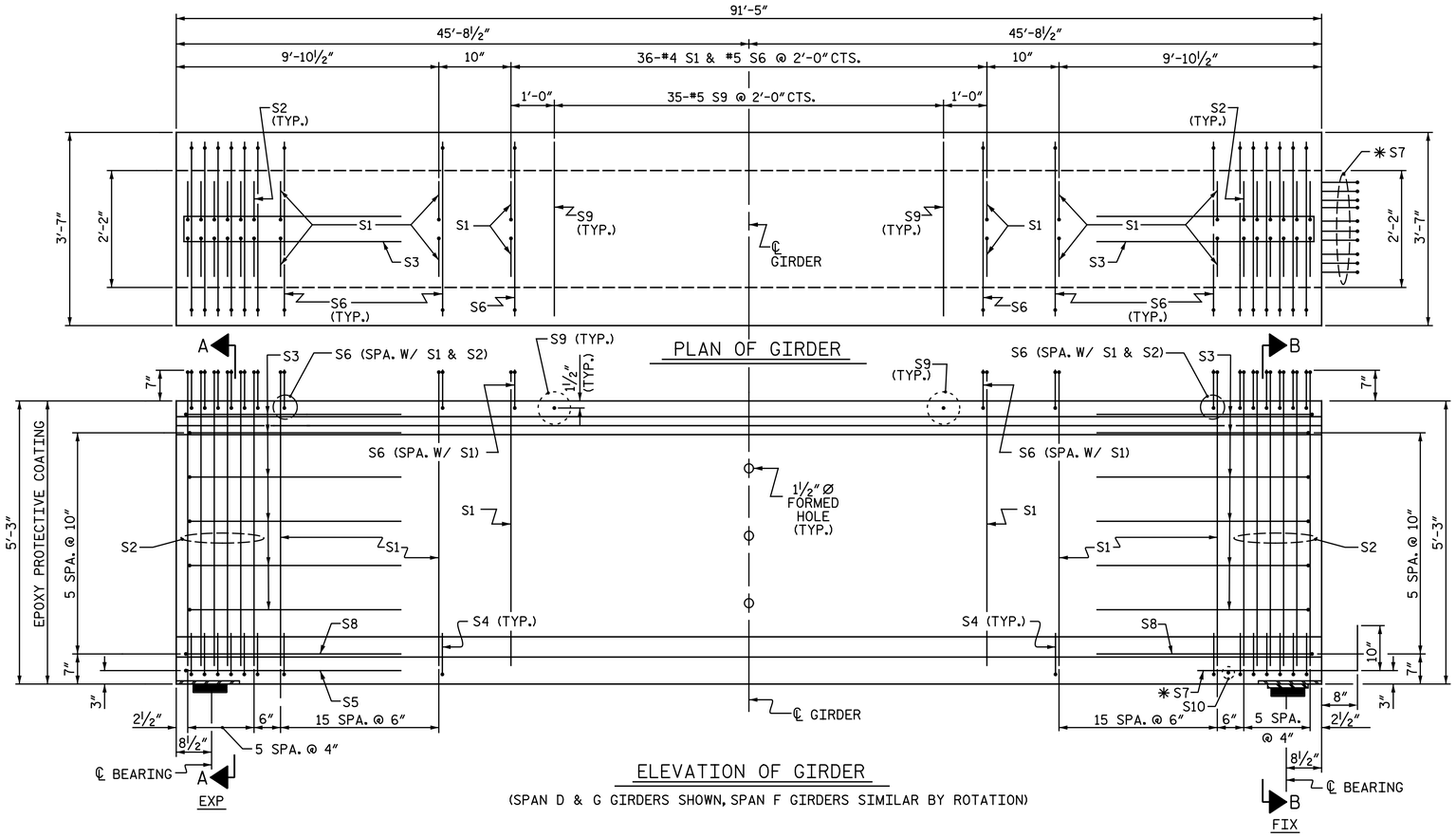
ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

REINFORCING STEEL	7000 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
1966	18.1	32

GIRDERS REQUIRED

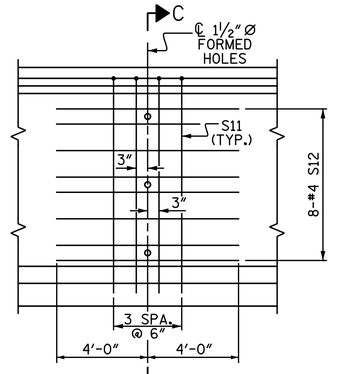
SPAN	NUMBER	LENGTH	TOTAL LENGTH
D	5	91'-5"	457'-1"
F	5	91'-5"	457'-1"
G	5	91'-5"	457'-1"
TOTAL	15	91'-5"	1371'-3"



PLAN OF GIRDER

ELEVATION OF GIRDER

(SPAN D & G GIRDERS SHOWN, SPAN F GIRDERS SIMILAR BY ROTATION)



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
63" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD SPANS D, F & G LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-26
1			3			TOTAL SHEETS
2			4			50

ASSEMBLED BY : T. M. G. / N. B. S.	DATE : 1-11-17	
CHECKED BY : D. A. COLETTI	DATE : 4-13-17	
DRAWN BY : EEM 2/6/97	REV. 10/1/11	MAA/GM
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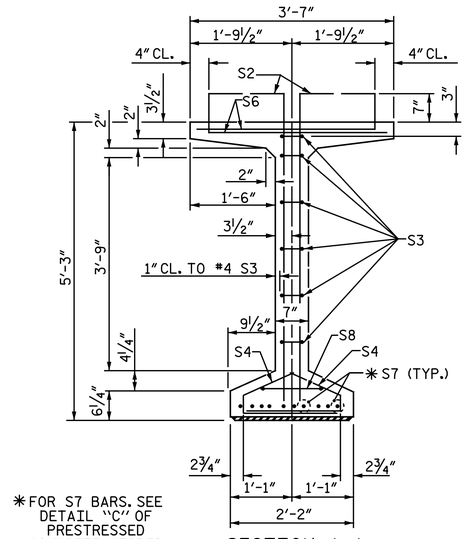
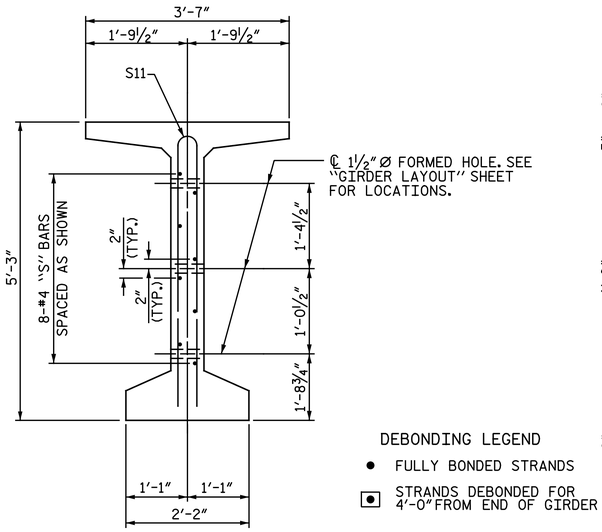
	REV. 1/15	MAA/TMG

STD. NO. PCG7



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

SECTION A-A

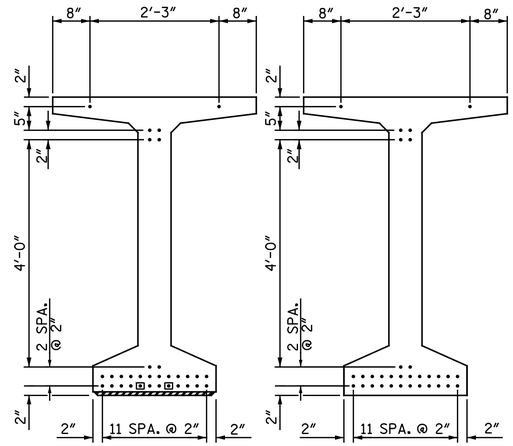


SECTION C-C

(S1, S6 AND S9 BARS NOT SHOWN)

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ⊡ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER



0.6" Ø LOW RELAXATION STRAND LAYOUT

0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
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REINFORCING STEEL FOR ONE GDR

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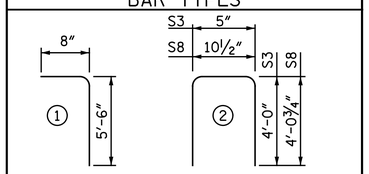
BAR TYPES



QUANTITIES FOR ONE GIRDER

REINFORCING STEEL	7000 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
1994	18.1	32

GIRDERS REQUIRED

SPAN	NUMBER	LENGTH	TOTAL LENGTH
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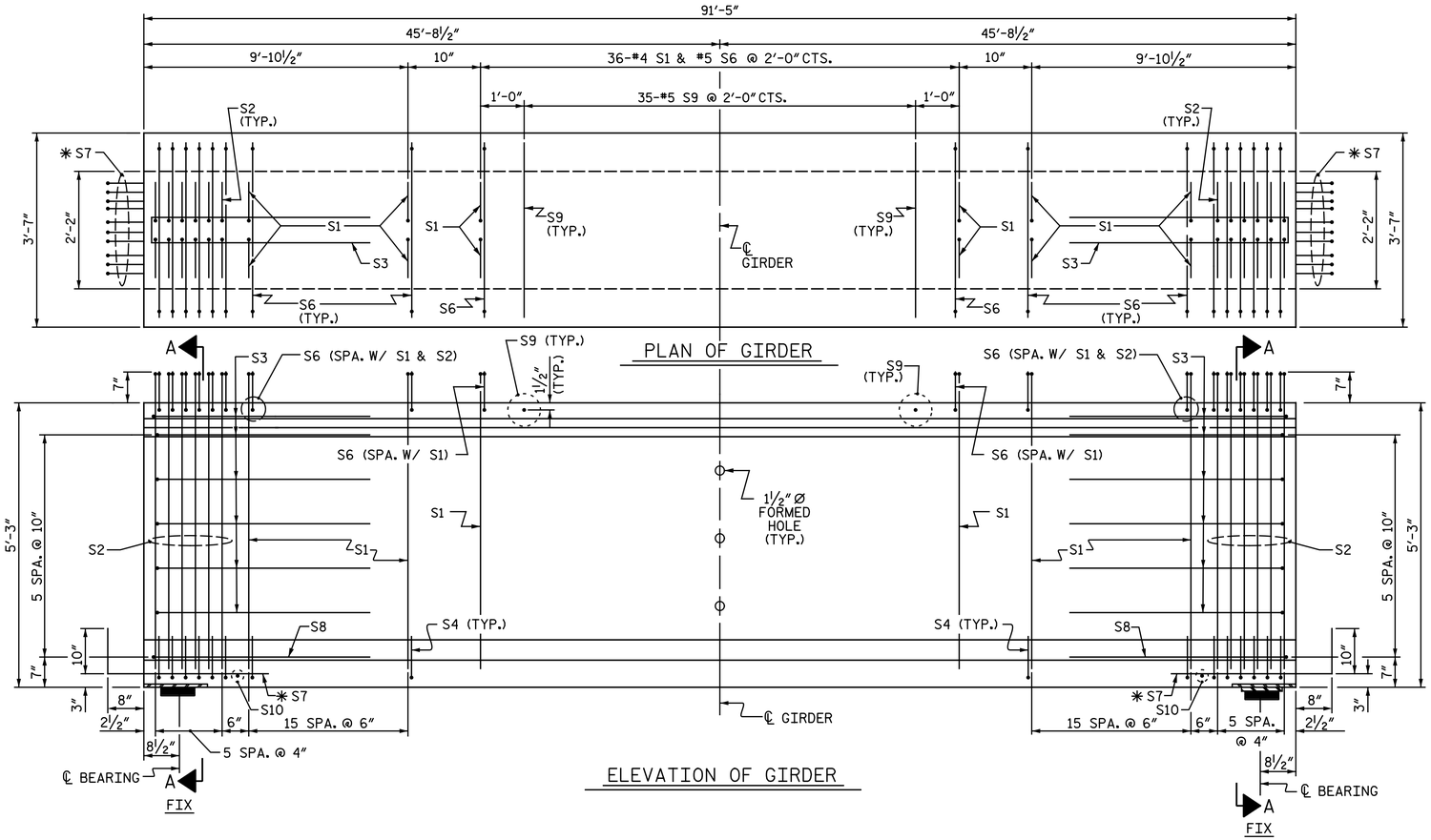
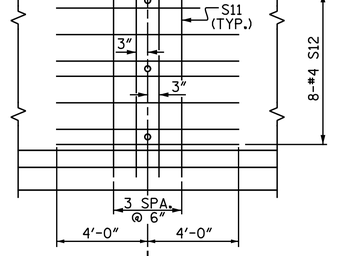


PLAN OF GIRDER

ELEVATION OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
63" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD SPAN E LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER JODY M. GARRISON

DocuSigned by: 8/10/2017

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-27
1			3			TOTAL SHEETS
2			4			50

ASSEMBLED BY : T. M. G. / N. B. S.	DATE : 1-11-17	
CHECKED BY : D. A. COLETTI	DATE : 4-13-17	
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. PCG7

DEAD LOAD DEFLECTION TABLE FOR SPANS A, B, C, H & I

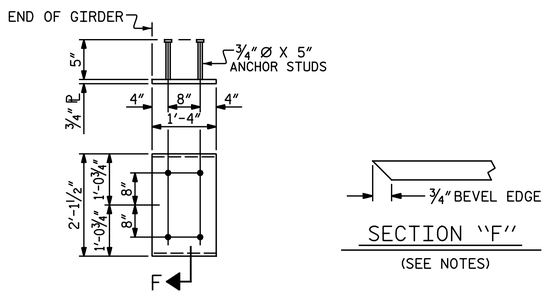
0.6″Ø LOW RELAXATION	GIRDERS 1 THRU 5																				
20TH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.051	0.101	0.148	0.192	0.230	0.262	0.289	0.307	0.319	0.323	0.319	0.307	0.289	0.262	0.230	0.192	0.148	0.101	0.051	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L. * ↓	0.000	0.034	0.064	0.099	0.126	0.154	0.174	0.193	0.205	0.213	0.216	0.213	0.205	0.193	0.174	0.154	0.126	0.099	0.064	0.034	0.000
FINAL CAMBER ↑	0″	3/16″	7/16″	9/16″	13/16″	15/16″	1 1/16″	1 1/8 ″	1 1/4 ″	1 1/4 ″	1 5/16″	1 1/4 ″	1 1/4 ″	1 1/8 ″	1 1/16″	15/16″	13/16″	9/16″	7/16″	3/16″	0″

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

DEAD LOAD DEFLECTION TABLE FOR SPANS D, E, F & G

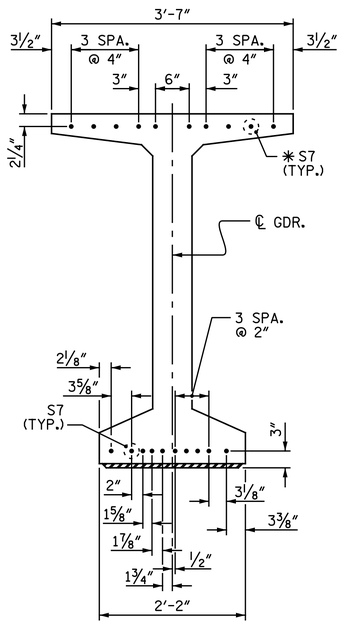
0.6″Ø LOW RELAXATION	GIRDERS 1 THRU 5																				
20TH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.025	0.049	0.072	0.093	0.112	0.128	0.140	0.149	0.155	0.157	0.155	0.149	0.140	0.128	0.112	0.093	0.072	0.049	0.025	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L. * ↓	0.000	0.014	0.026	0.040	0.050	0.062	0.070	0.077	0.082	0.086	0.087	0.086	0.082	0.077	0.070	0.062	0.050	0.040	0.026	0.014	0.000
FINAL CAMBER ↑	0″	1/8 ″	5/16″	3/8 ″	1/2 ″	5/8 ″	11/16″	3/4 ″	13/16″	13/16″	13/16″	13/16″	13/16″	3/4 ″	11/16″	5/8 ″	1/2 ″	3/8 ″	5/16″	1/8 ″	0″

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



SECTION "F"
(SEE NOTES)

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



DETAIL "C"
* S7 BARS IN TOP OF GIRDER ARE ONLY APPLICABLE AT INTEGRAL END BENT LOCATIONS

NOTES:

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 7,900 PSI FOR GIRDERS IN SPANS A, B, C, H & I AND 5,500 PSI FOR GIRDERS IN SPANS D, E, F & G.

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.

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 219+22.38 -L-

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: T. M. Garrison 8/10/2017

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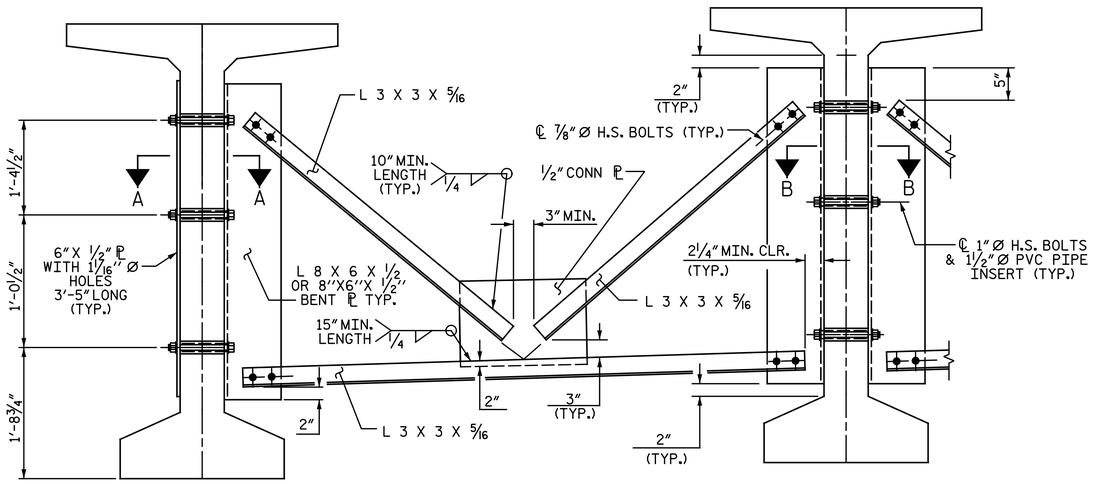
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-28
1			3			TOTAL SHEETS
2			4			50

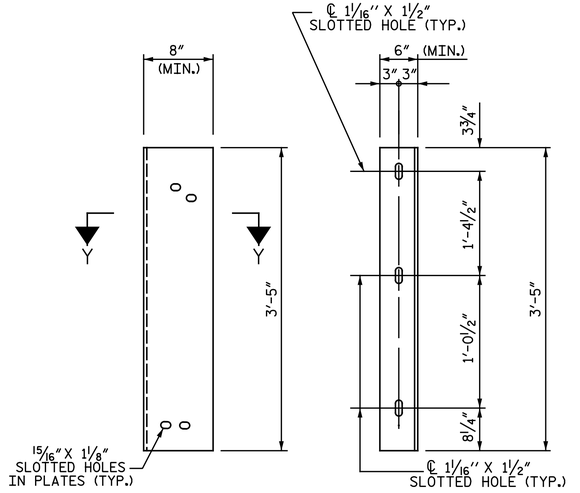
DRAWN BY : N. B. SPEAKS DATE : 5-8-17
CHECKED BY : T. M. GARRISON DATE : 6-26-17



EXTERIOR GIRDER

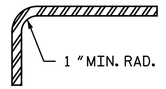
INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM



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.

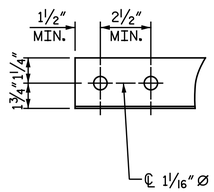
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

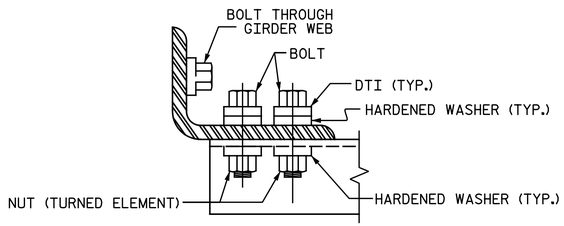
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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.

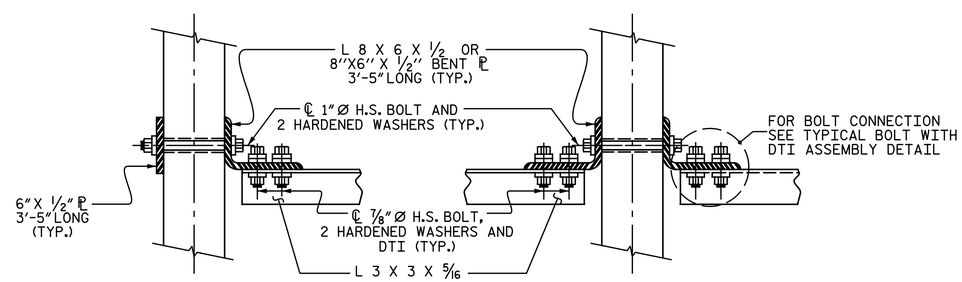
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



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



BOLT WITH DTI ASSEMBLY DETAIL



SECTION A-A

SECTION B-B

CONNECTION DETAILS

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

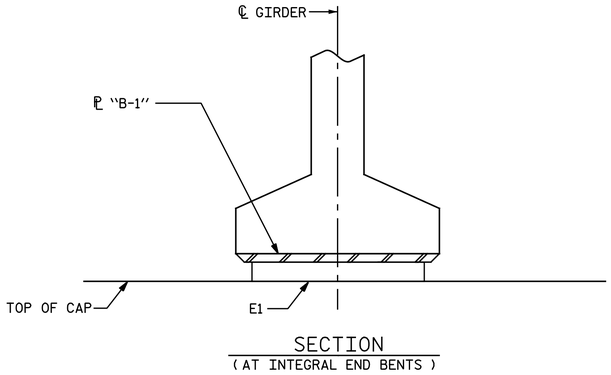
STANDARD INTERMEDIATE STEEL DIAPHRAGMS FOR 63" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-29
1			3			TOTAL SHEETS
2			4			50

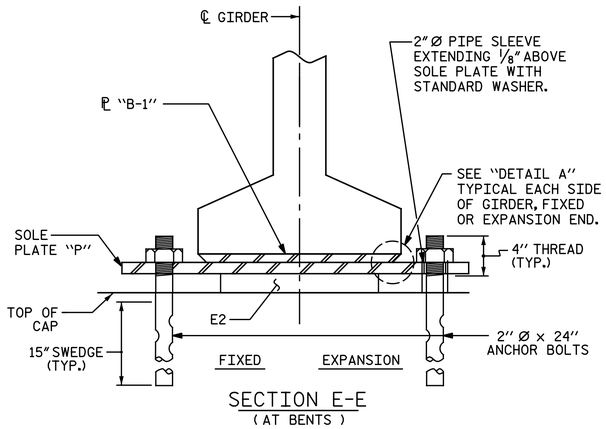
Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

ASSEMBLED BY : T. M. G. / N. B. S. DATE : 3-9-17	
CHECKED BY : D. A. COLETTI DATE : 4-13-17	
DRAWN BY : RWW 11/09	ADDED 11/23/09R
CHECKED BY : GM 11/09	REV. 10/1/11 MAA/GM

STD. NO. PCG11



SECTION
(AT INTEGRAL END BENTS)



SECTION E-E
(AT BENTS)

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE IV	225 k
TYPE V	365 k

NOTES

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

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

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

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

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

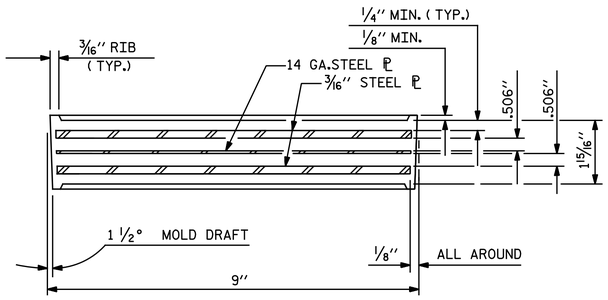
SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

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

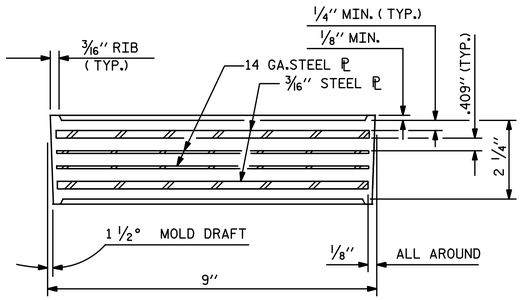
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

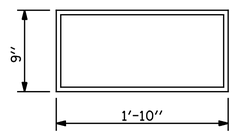
FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.



TYPICAL SECTION OF ELASTOMERIC BEARINGS



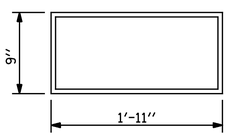
TYPICAL SECTION OF ELASTOMERIC BEARINGS



E1 (10 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

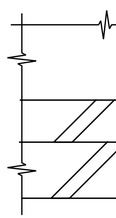
TYPE IV



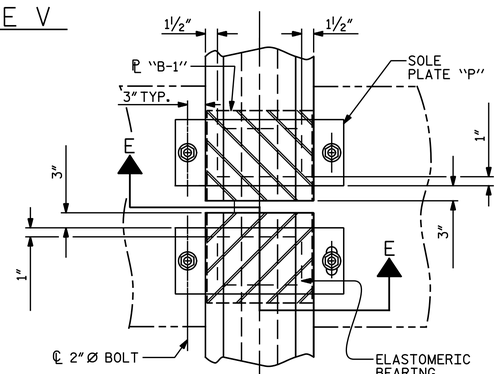
E2 (80 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE V

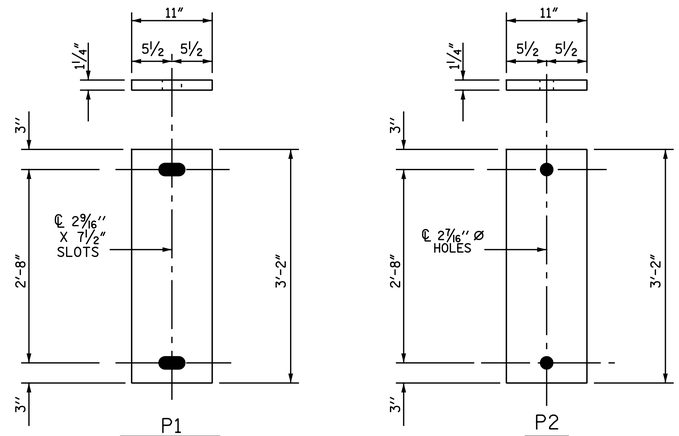


DETAIL A



TYPICAL HALF-PLAN (SHOWING FIXED BENT)

TYPICAL HALF-PLAN (SHOWING EXPANSION BENT)



SOLE PLATE DETAILS ("P")

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/30/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
ELASTOMERIC BEARING DETAILS
PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE
LEFT LANE

ASSEMBLED BY : N. B. SPEAKS	DATE : 5-8-17
CHECKED BY : T. M. GARRISON	DATE : 6-21-17
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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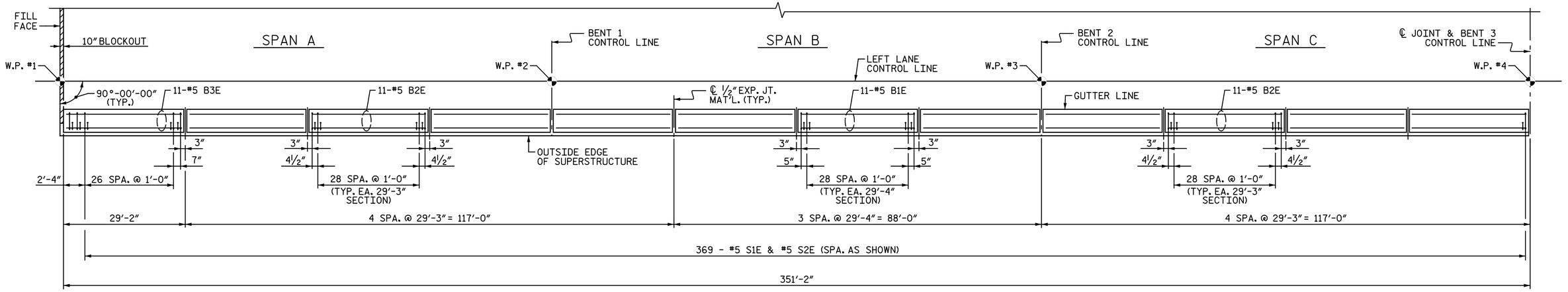
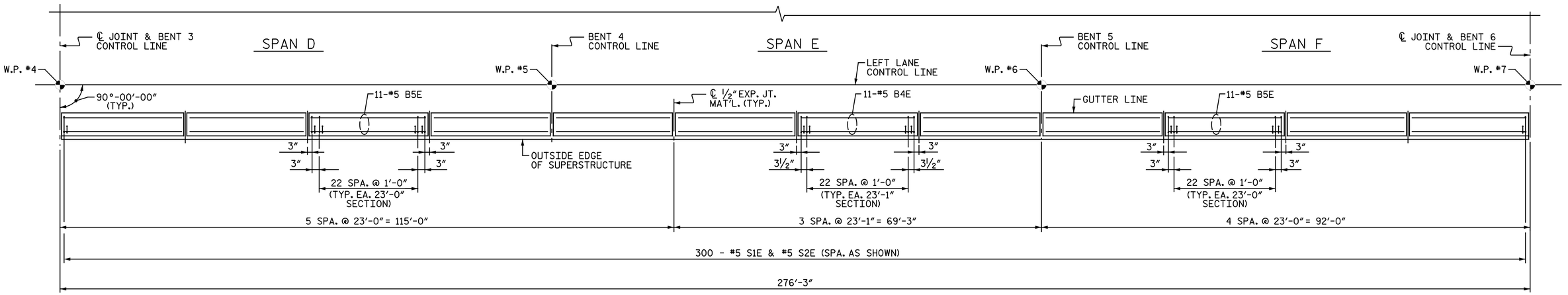
2			4			50





PLAN OF BARRIER RAIL

(RIGHT RAIL SHOWN, LEFT RAIL SIMILAR)

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 1 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE BARRIER RAIL

LEFT LANE

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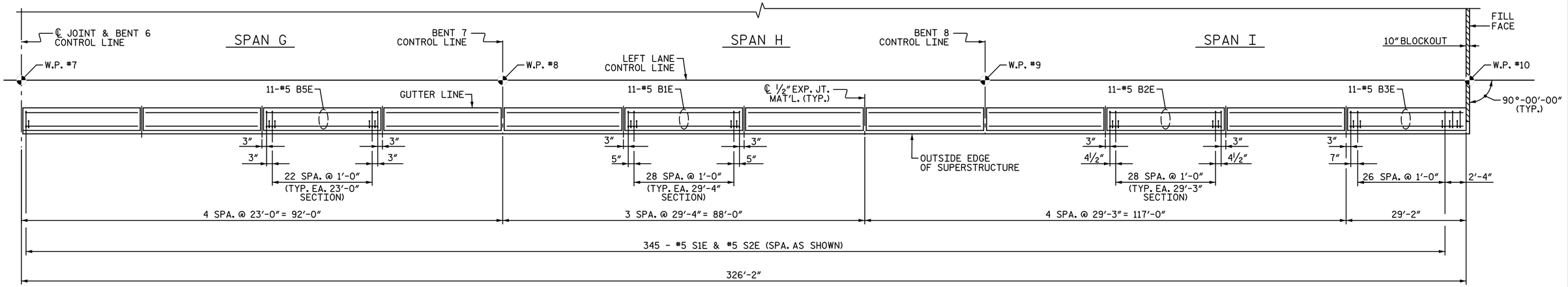
2			4			50

DRAWN BY : N. B. SPEAKS DATE : 5-4-17
CHECKED BY : T. M. GARRISON DATE : 6-25-17



PLAN OF BARRIER RAIL

(RIGHT RAIL SHOWN, LEFT RAIL SIMILAR)

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by:
8/10/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE BARRIER RAIL

LEFT LANE

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DRAWN BY : N. B. SPEAKS DATE : 5-4-17
CHECKED BY : T. M. GARRISON DATE : 6-25-17

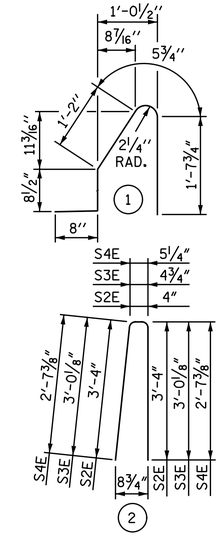
NOTES

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

BAR TYPES

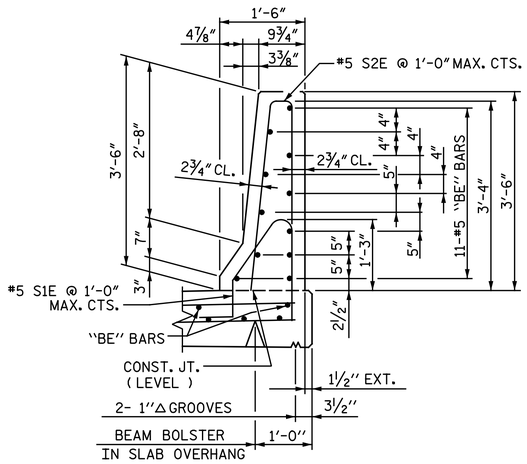


ALL BAR DIMENSIONS ARE OUT TO OUT

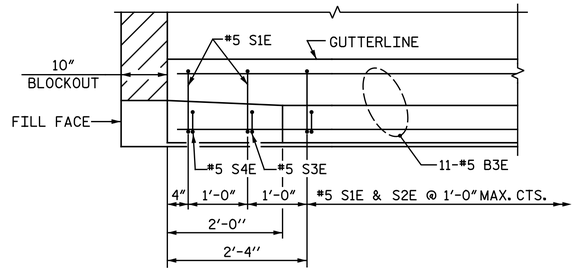
BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

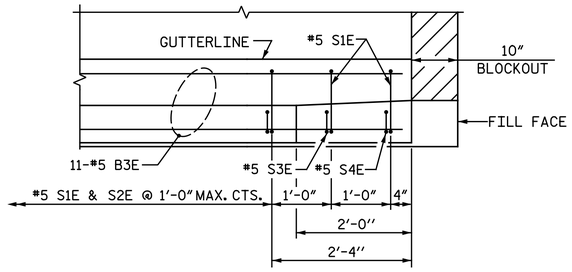
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1E	132	#5	STR.	28' - 11"	3,981
B2E	264	#5	STR.	28' - 10"	7,939
B3E	44	#5	STR.	28' - 9"	1,319
B4E	66	#5	STR.	22' - 8"	1,560
B5E	286	#5	STR.	22' - 7"	6,737
S1E	2036	#5	1	4' - 8"	9,910
S2E	2028	#5	2	7' - 0"	14,806
S3E	4	#5	2	6' - 5"	27
S4E	4	#5	2	5' - 8"	24
EPOXY COATED REINFORCING STEEL				LBS.	46,303
CLASS AA CONCRETE				C.Y.	259.0
CONCRETE BARRIER RAIL				L.F.	1907.17



SECTION THRU RAIL



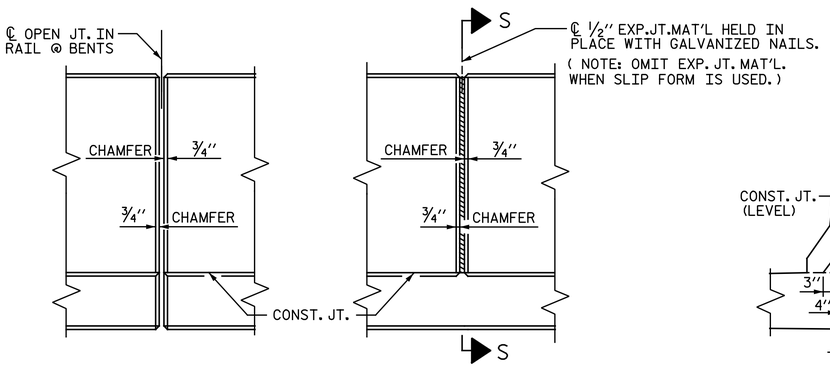
END BENT 1



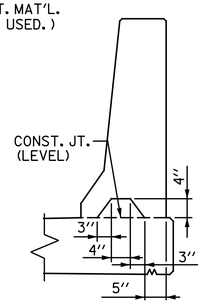
END BENT 2

PLAN

(RIGHT RAIL SHOWN, LEFT RAIL SIMILAR)



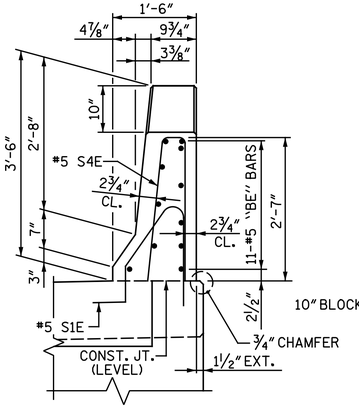
ELEVATION AT EXPANSION JOINTS



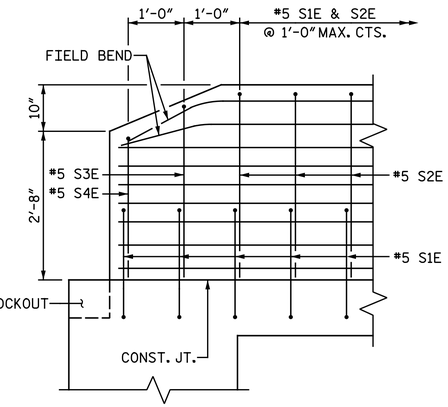
SECTION S-S

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

BARRIER RAIL DETAILS



END VIEW



SIDE VIEW

END OF RAIL DETAILS

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

CONCRETE BARRIER RAIL

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

9/12/2017

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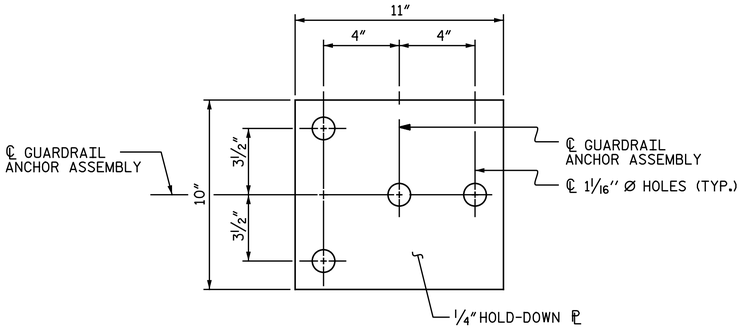
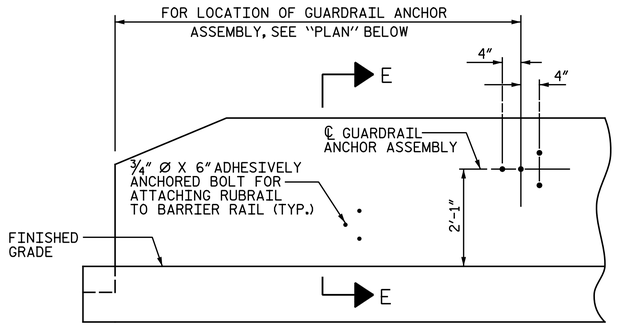
ASSEMBLED BY : N. B. SPEAKS		DATE : 9-11-17	
CHECKED BY : T. M. GARRISON		DATE : 9-12-17	
DRAWN BY : ARB 5/87	REV. 10/1/11		MAA/GM
CHECKED BY : SJD 9/87	REV. 7/12		MAA/GM
	REV. 6/13		MAA/GM

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.)

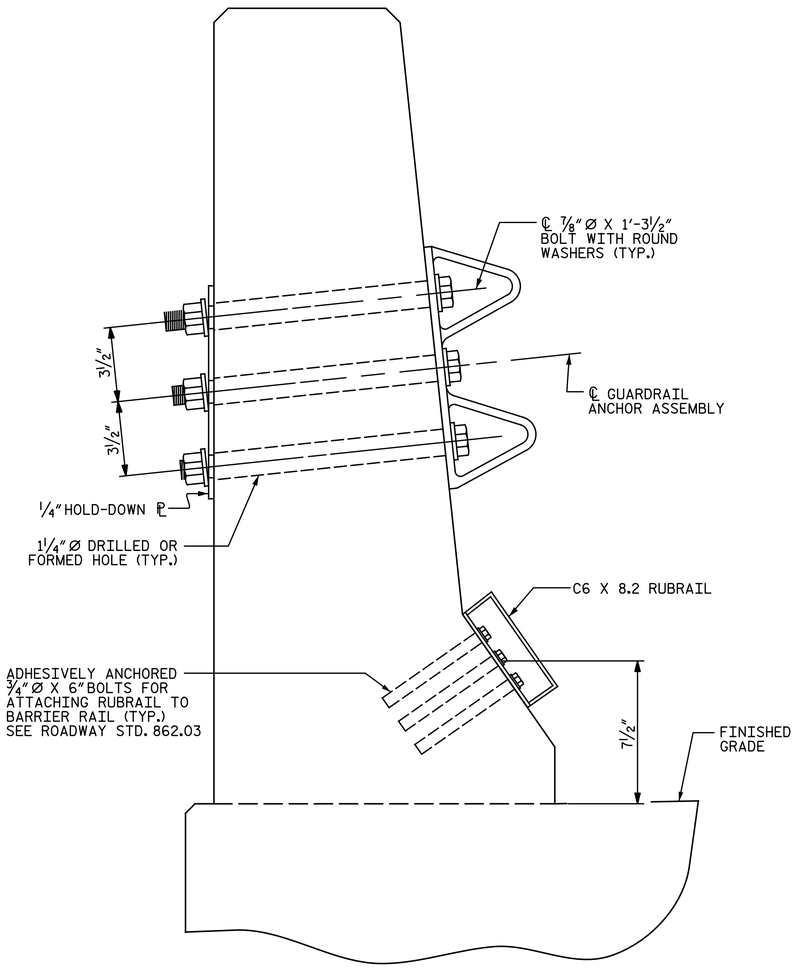
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

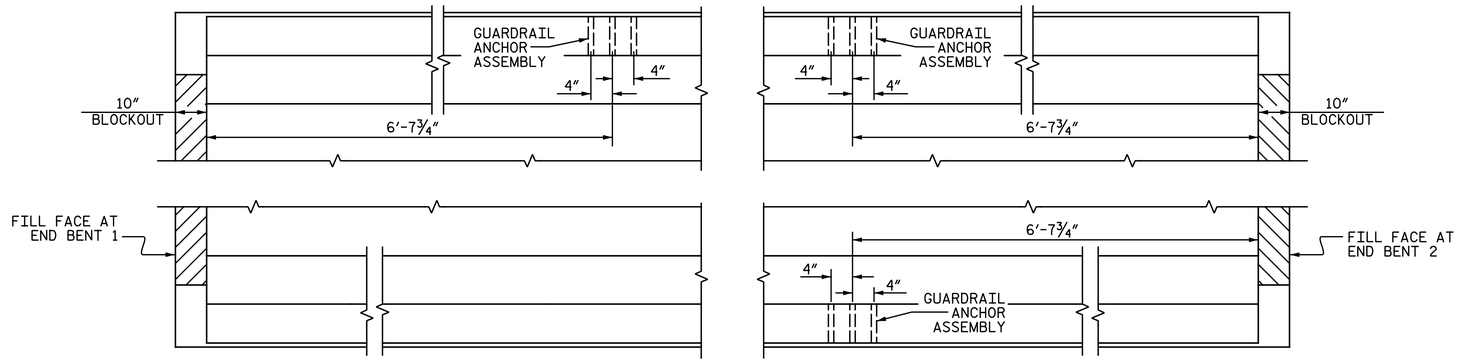
THE 1 1/4″ Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

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.



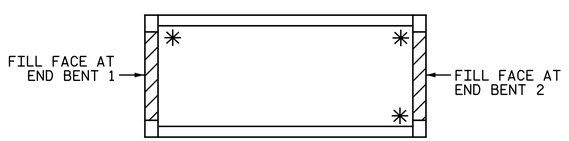
SECTION E-E

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: 219+22.38 -L-

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

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 : T. M. GARRISON	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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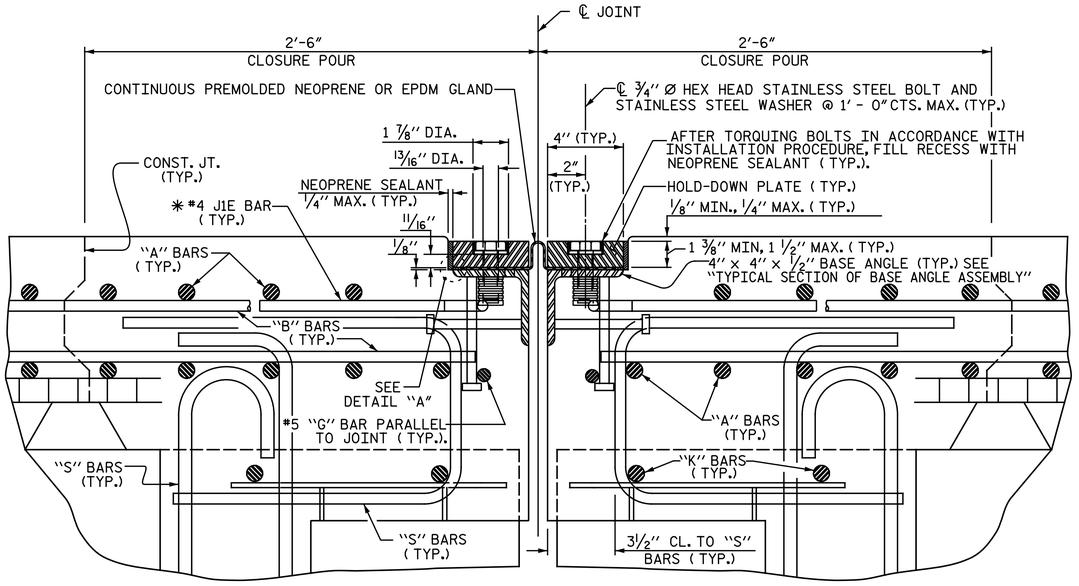
STD. NO. GRA2

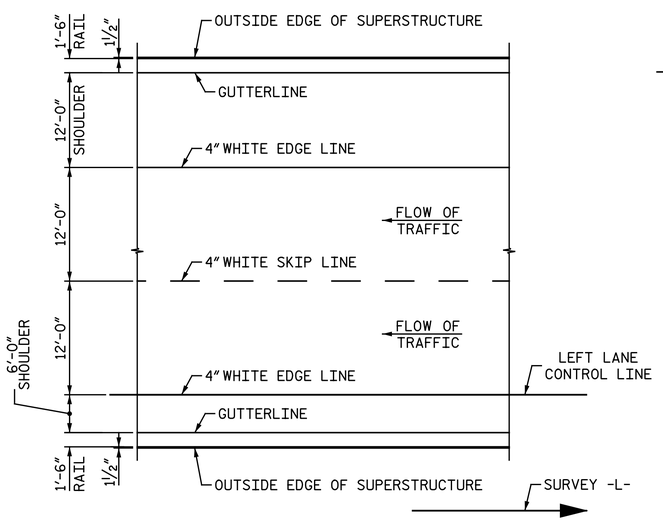


EXPANSION JOINT DETAILS

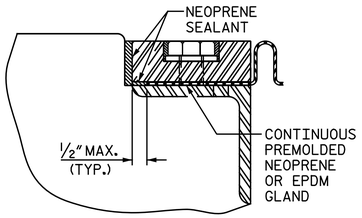
SECTION NORMAL TO JOINT -- PRESTRESSED GIRDER SUPERSTRUCTURE

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

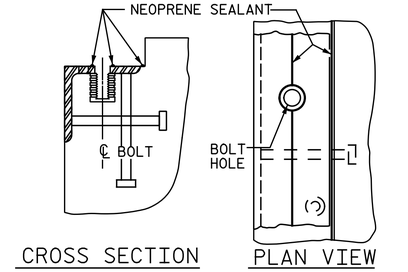
MOVEMENT AND SETTING AT JOINT					
BENT NO.	SKEW ANGLE	TOTAL MOVEMENT (ALONG ℄ RDWY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
3	90°-00'-00"	2 7/16"	2 3/4"	2 5/16"	1 7/16"
6	90°-00'-00"	2 7/16"	2 3/4"	2 5/16"	1 7/16"



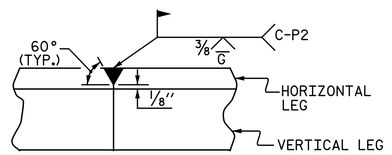
PAVEMENT MARKING ALIGNMENT



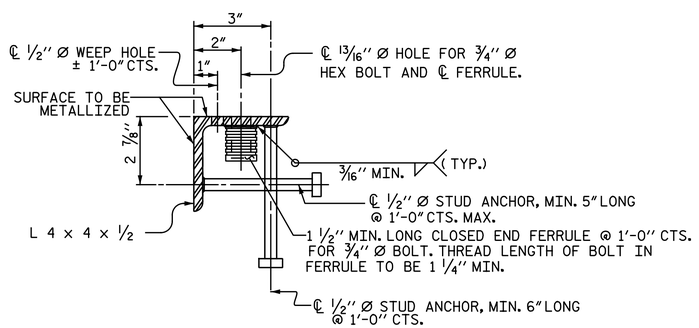
DETAIL "A"



INSTALLATION SKETCH



DETAIL- FIELD WELD SPLICE OF BASE ANGLE



TYPICAL SECTION OF BASE ANGLE ASSEMBLY

INSTALLATION PROCEDURE

1. A TEMPLATE OR OTHER SUITABLE DEVICE SHALL BE USED TO FORM THE TOP OF THE EXPANSION JOINT SEAL BLOCKOUT TO THE PROPER DEPTH AND WIDTH. THE TEMPLATE SHALL BE 4 1/8" TO 4 1/4" WIDE AND OF SUCH THICKNESS AS TO PROVIDE FOR CORRECT FINAL ELEVATION OF TOP OF HOLD-DOWN PLATES. THE TEMPLATE SHALL BE ATTACHED TO THE BASE ANGLE ASSEMBLY WITH THE ¾" Ø HEX HEAD BOLTS PROVIDED FOR THE HOLD-DOWN PLATES. A 1" Ø HOLE SHALL BE PROVIDED IN THE TEMPLATE CENTERED OVER EACH WEEP HOLE IN THE 4" X 4" X ½" BASE ANGLE. OTHER METHODS OF INSURING DRAINAGE THROUGH WEEP HOLES MAY BE EMPLOYED SUBJECT TO ENGINEER'S APPROVAL.
2. AFTER THE CONCRETE HAS BEEN CAST ON BOTH SIDES OF THE JOINT, REMOVE THE TEMPLATE. THOROUGHLY CLEAN THE BOLT HOLES AND THE ANGLE PLATE. REMOVE ANY EXCESS CONCRETE THAT COMES OUT OF THE WEEP HOLES. ANY DAMAGED STEEL SHALL BE COATED WITH A MINIMUM THICKNESS OF 4 DRY MILS OF ZINC-RICH PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
3. LAY THE GLAND ON THE BASE ANGLE AND FIELD MARK THE GLAND FOR THE BOLT HOLES. HOLES IN THE GLAND SHALL BE PUNCHED ⅞" IN DIAMETER WITH A HAND PUNCH.
4. IN ORDER TO CHECK FOR PROPER ALIGNMENT, PLACE THE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. DO NOT APPLY NEOPRENE SEALANT. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE BUT DO NOT TIGHTEN. THE ENGINEER SHALL INSPECT THE JOINT SEAL DEVICE FOR PROPER ALIGNMENT.
5. AFTER INSPECTION, REMOVE THE HOLD-DOWN PLATES AND GLAND. APPLY NEOPRENE SEALANT TO THE BASE ANGLE IN ACCORDANCE WITH THE "INSTALLATION SKETCH". PLACE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE ASSEMBLY AND TORQUE THE BOLTS TO 88 FT-LBS WITH A TORQUE WRENCH. CHECK THE TORQUE AFTER THREE (3) HOURS AND, IF NECESSARY, RETIGHTEN TO 88 FT-LBS. A FINAL CHECK SHALL BE MADE AT SEVEN (7) DAYS. TORQUE SHALL NOT BE LESS THAN 80 FT-LBS AFTER SEVEN (7) DAYS.
6. AFTER PROPER TORQUING, CLEAN THE BOLT HOLE RECESSES AND THE RECESS BETWEEN THE JOINT SEAL DEVICE AND CONCRETE, COMPLETELY FILL THESE RECESSES WITH NEOPRENE SEALANT.

GENERAL NOTES

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

ASSEMBLED BY : N. B. SPEAKS		DATE : 6-21-17	
CHECKED BY : T. M. GARRISON		DATE : 6-21-17	
DRAWN BY : REK 9/87	REV. 5/7/03R		RWW/JTE
CHECKED BY : CRK 10/87	REV. 5/1/06R		TLA/GM
	REV. 10/1/11		MAA/GM

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

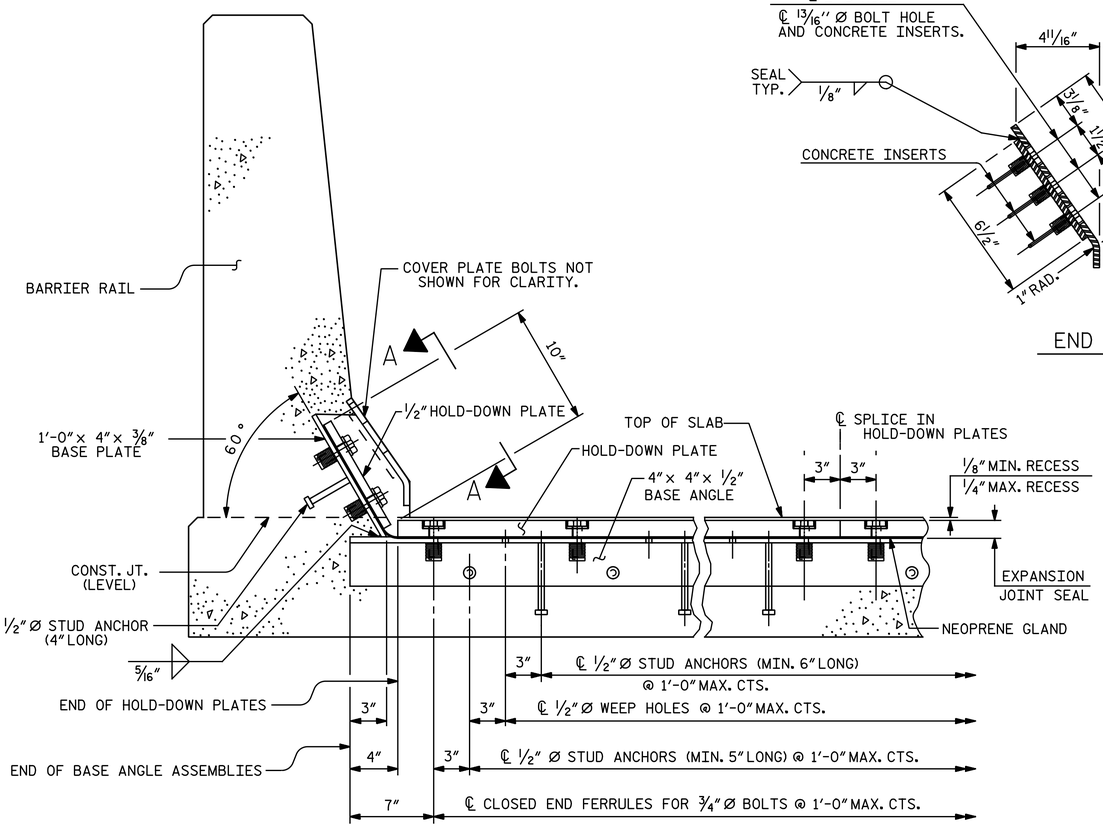
STANDARD

EXPANSION JOINT SEAL DETAILS

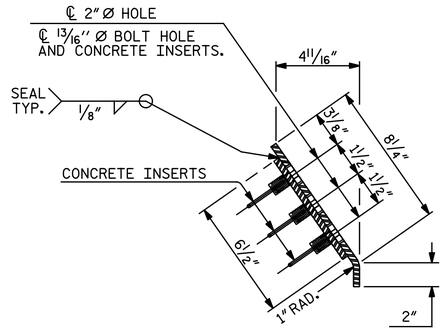
LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-35
1			3			TOTAL SHEETS
2			4			50

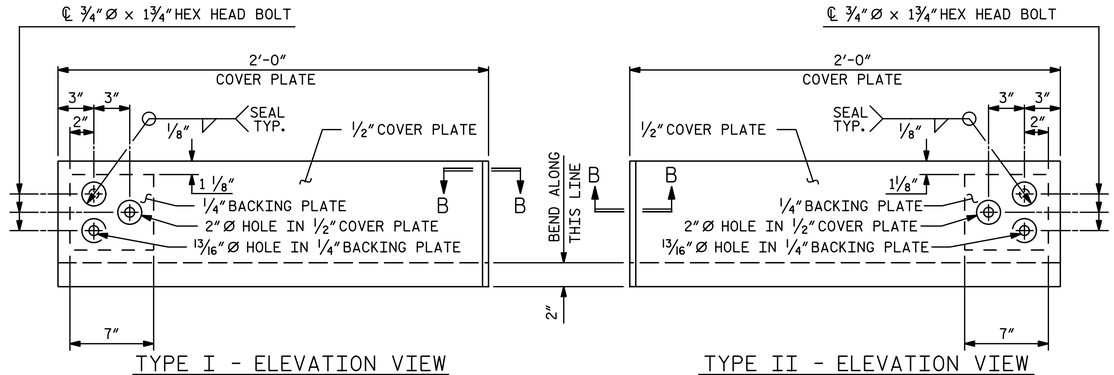
STD. NO. EJS1



SECTION THRU RAIL NORMAL TO JOINT



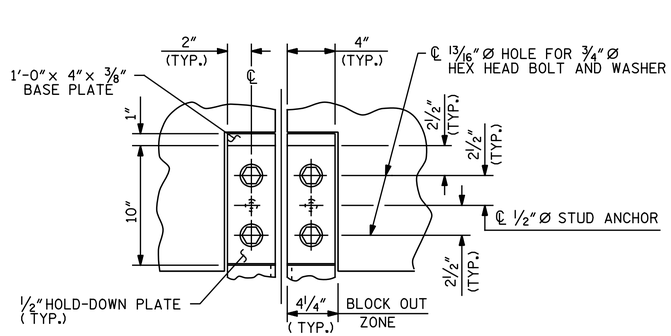
END VIEW



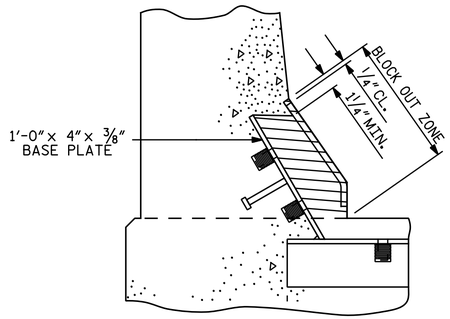
TYPE I - ELEVATION VIEW

TYPE II - ELEVATION VIEW

COVER PLATE DETAILS

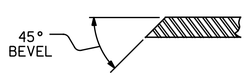


SECTION A - A

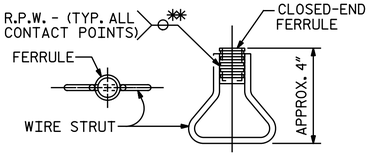


BLOCK OUT DETAIL

SEE "SECTION A - A" FOR OTHER DETAILS.



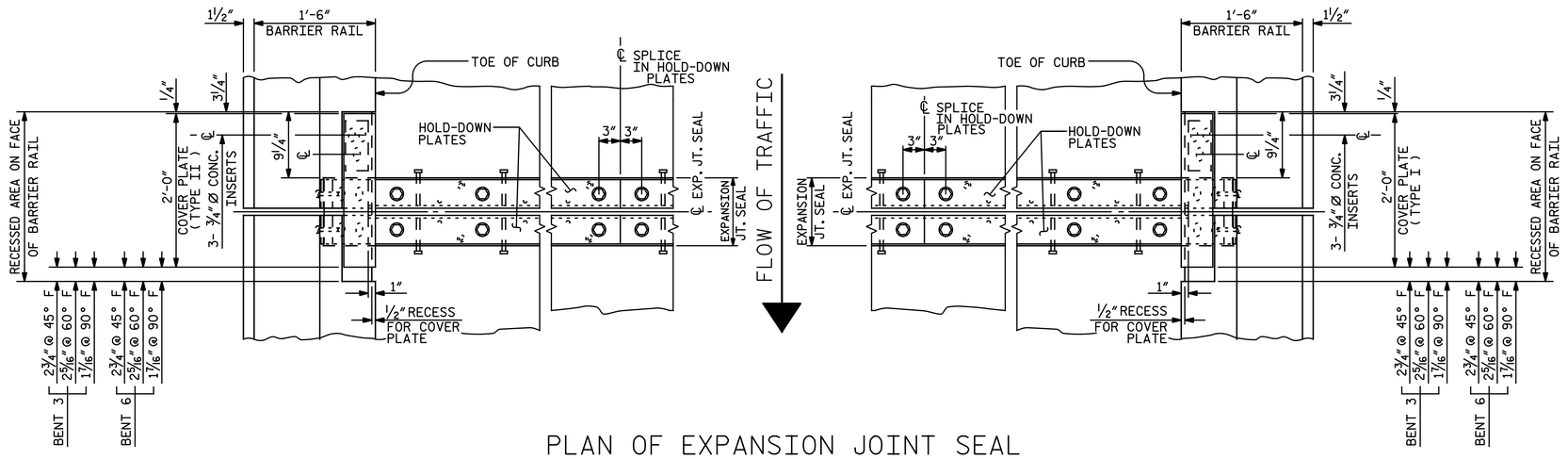
SECTION B - B



PLAN ELEVATION

CONCRETE INSERT

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



PLAN OF EXPANSION JOINT SEAL

ASSEMBLED BY : N. B. SPEAKS	DATE : 6-20-17		
CHECKED BY : T. M. GARRISON	DATE : 6-21-17		
DRAWN BY : REK 9/87	REV. 10/1/11	MAA/GM	
CHECKED BY : CRK 10/87	REV. 7/12	MAA/GM	
	REV. 6/13	MAA/GM	

DocuSigned by: Tom M. Garrison 8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

EXPANSION JOINT SEAL DETAILS FOR BARRIER RAIL

LEFT LANE

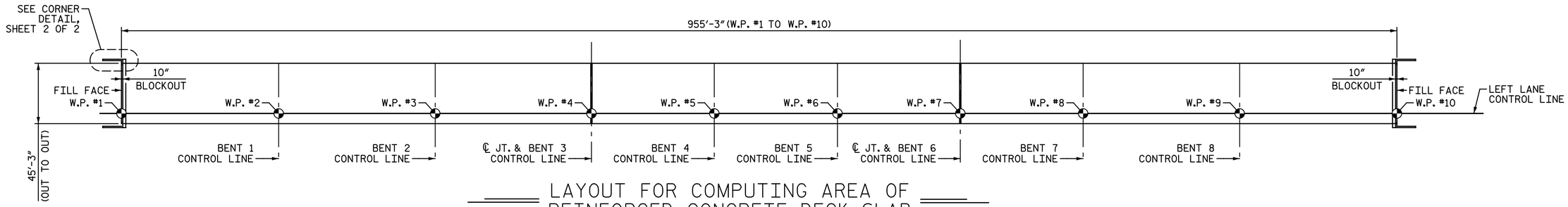
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-36
1			3			TOTAL SHEETS
2			4			50

PROJECT NO. R-5703

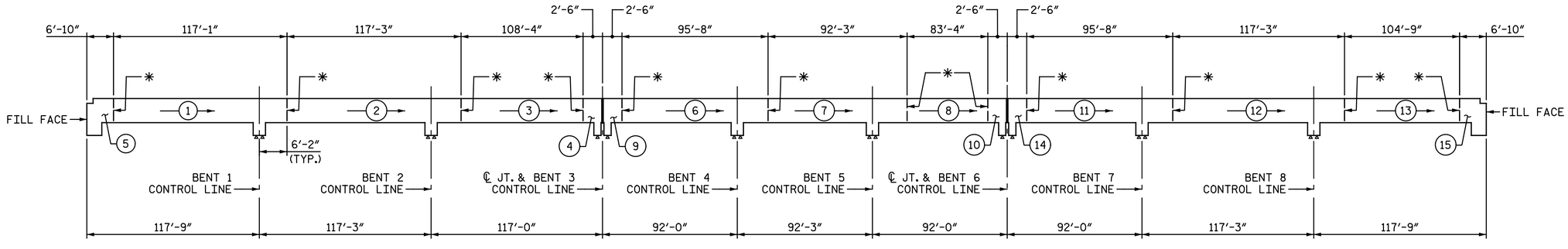
LENOIR COUNTY

STATION: 219+22.38 -L-

STD. NO. EJS2



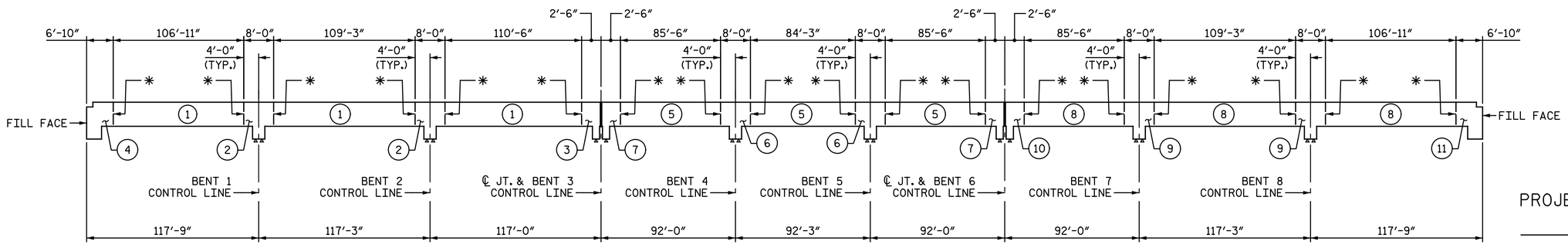
LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 43,225)



POURING SEQUENCE

(#) DENOTES POUR NUMBER AND DIRECTION

✳ TRANSVERSE CONST. JT.



OPTIONAL POURING SEQUENCE

✳ TRANSVERSE CONST. JT.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

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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:	S7-37
1			3			TOTAL SHEETS
2			4			50

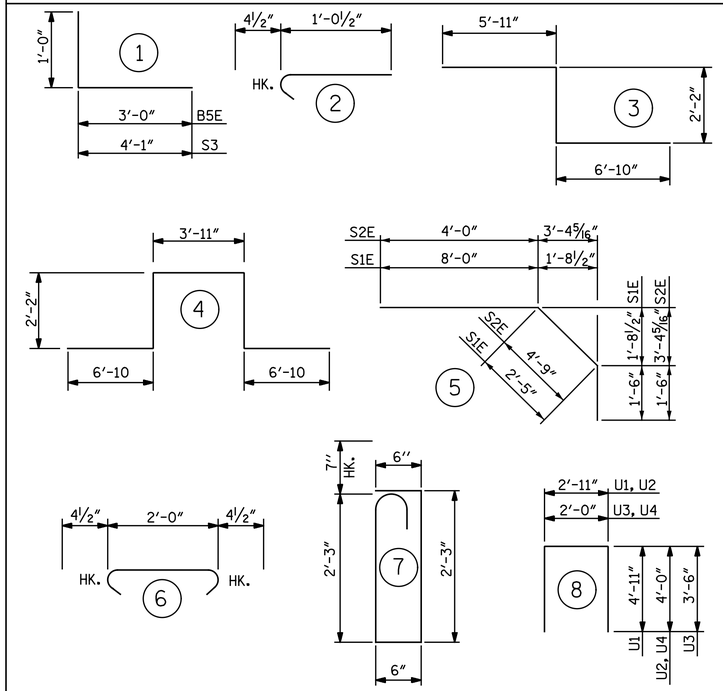
DRAWN BY : N. B. SPEAKS DATE : 6-19-17

CHECKED BY : T. M. GARRISON DATE : 6-26-17

CLASS AA CONCRETE

SPANS	POUR #	CLASS AA CONCRETE (CU. YDS.)
A, B & C	1	199.9
A, B & C	2	200.2
A, B & C	3	170.2
A, B & C	4	5.8
A, B & C	5	37.1
TOTAL (SPANS A, B & C)		613.2 CU. YDS.
D, E & F	6	166.3
D, E & F	7	160.9
D, E & F	8	130.9
D, E & F	9	5.8
D, E & F	10	5.8
TOTAL (SPANS D, E & F)		469.7 CU. YDS.
G, H & I	11	166.3
G, H & I	12	200.2
G, H & I	13	164.5
G, H & I	14	5.8
G, H & I	15	37.1
TOTAL (SPANS G, H & I)		573.9 CU. YDS.
TOTAL (SPANS A THRU I)		1,656.8 CU. YDS.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(LBS.)	(LBS.)
SPANS A, B & C	50,371	49,078
SPANS D, E & F	40,284	32,989
SPANS G, H & I	46,977	44,375
TOTALS *	137,632	126,442

* QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

REINFORCING BAR SCHEDULE

SPANS A, B & C

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	561	#5	STR.	44' - 11"	26,282
A2	561	#5	STR.	44' - 11"	26,282
B1E	186	#4	STR.	27' - 8"	3,438
B2	378	#5	STR.	52' - 0"	20,501
B3E	30	#6	STR.	25' - 5"	1,145
B4E	30	#6	STR.	27' - 7"	1,243
B5E	4	#4	1	4' - 0"	11
B6E	186	#6	STR.	28' - 9"	8,032
B7E	120	#6	STR.	41' - 8"	7,510
B8E	62	#4	STR.	21' - 5"	887
G1	1	#5	STR.	44' - 11"	47
H1	12	#5	STR.	2' - 11"	37
J1E	42	#4	2	1' - 5"	40
K1	12	#4	STR.	23' - 4"	187
K2	4	#4	STR.	5' - 4"	14
K3	16	#4	STR.	8' - 4"	89
K4	4	#4	STR.	6' - 9"	18
K5	2	#4	STR.	2' - 0"	3
K6	8	#4	STR.	3' - 6"	19
K7	2	#4	STR.	2' - 9"	4
K8	24	#4	STR.	19' - 6"	313
K9	16	#4	STR.	5' - 4"	57
K10	64	#4	STR.	8' - 4"	356
K11	16	#4	STR.	5' - 7"	60
K12	4	#8	3	14' - 11"	159
K13	6	#8	4	21' - 11"	351
K14	8	#5	STR.	8' - 4"	70
S1E	34	#4	5	11' - 11"	271
S2E	32	#4	5	10' - 3"	219
S3	96	#4	1	5' - 1"	326
S4	288	#4	6	2' - 9"	529
S5	24	#5	7	6' - 1"	152
U1	34	#4	8	12' - 9"	290
U2	10	#4	8	10' - 11"	73
U3	48	#4	8	9' - 0"	289
U4	16	#4	8	10' - 0"	107
V1	6	#5	STR.	6' - 1"	38
REINFORCING STEEL				LBS.	50,371
EPOXY COATED REINF. STEEL				LBS.	49,078

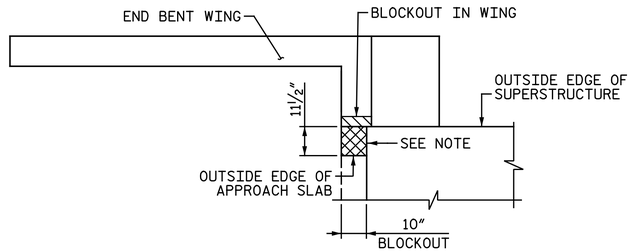
SPANS D, E & F

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	441	#5	STR.	44' - 11"	20,660
A2	441	#5	STR.	44' - 11"	20,660
B9E	310	#4	STR.	29' - 5"	6,092
B10	270	#5	STR.	56' - 11"	16,028
B11E	120	#6	STR.	34' - 2"	6,158
G1	2	#5	STR.	44' - 11"	94
J1E	84	#4	2	1' - 5"	79
K8	24	#4	STR.	19' - 6"	313
K9	16	#4	STR.	5' - 4"	57
K10	64	#4	STR.	8' - 4"	356
K11	16	#4	STR.	5' - 7"	60
K12	8	#8	3	14' - 11"	319
K13	12	#8	4	21' - 11"	702
K14	16	#5	STR.	8' - 4"	139
S3	96	#4	1	5' - 1"	326
S4	288	#4	6	2' - 9"	529
S5	48	#5	7	6' - 1"	305
U3	48	#4	8	9' - 0"	289
U4	16	#4	8	10' - 0"	107
REINFORCING STEEL				LBS.	40,284
EPOXY COATED REINF. STEEL				LBS.	32,989

SPANS G, H & I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	521	#5	STR.	44' - 11"	24,408
A2	521	#5	STR.	44' - 11"	24,408
B1E	93	#4	STR.	27' - 8"	1,719
B3E	30	#6	STR.	25' - 5"	1,145
B4E	30	#6	STR.	27' - 7"	1,243
B5E	4	#4	1	4' - 0"	11
B6E	93	#6	STR.	28' - 9"	4,016
B7E	120	#6	STR.	41' - 8"	7,510
B12E	217	#4	STR.	26' - 2"	3,793
B13	324	#5	STR.	56' - 2"	18,981
G1	1	#5	STR.	44' - 11"	47
H1	12	#5	STR.	2' - 11"	37
J1E	42	#4	2	1' - 5"	40
K1	12	#4	STR.	23' - 4"	187
K2	4	#4	STR.	5' - 4"	14
K3	16	#4	STR.	8' - 4"	89
K4	4	#4	STR.	6' - 9"	18
K5	2	#4	STR.	2' - 0"	3
K6	8	#4	STR.	3' - 6"	19
K7	2	#4	STR.	2' - 9"	4
K8	24	#4	STR.	19' - 6"	313
K9	16	#4	STR.	5' - 4"	57
K10	64	#4	STR.	8' - 4"	356
K11	16	#4	STR.	5' - 7"	60
K12	4	#8	3	14' - 11"	159
K13	6	#8	4	21' - 11"	351
K14	8	#5	STR.	8' - 4"	70
S1E	34	#4	5	11' - 11"	271
S2E	32	#4	5	10' - 3"	219
S3	96	#4	1	5' - 1"	326
S4	288	#4	6	2' - 9"	529
S5	24	#5	7	6' - 1"	152
U1	34	#4	8	12' - 9"	290
U2	10	#4	8	10' - 11"	73
U3	48	#4	8	9' - 0"	289
U4	16	#4	8	10' - 0"	107
V1	6	#5	STR.	6' - 1"	38
REINFORCING STEEL				LBS.	46,977
EPOXY COATED REINF. STEEL				LBS.	44,375

"E" SUFFIX DENOTES EPOXY COATED REINFORCING STEEL.



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	1,885 SQ.FT.
BRIDGE DECK	37,081 SQ.FT.
TOTAL	38,966 SQ.FT.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Tom M Garrison 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
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

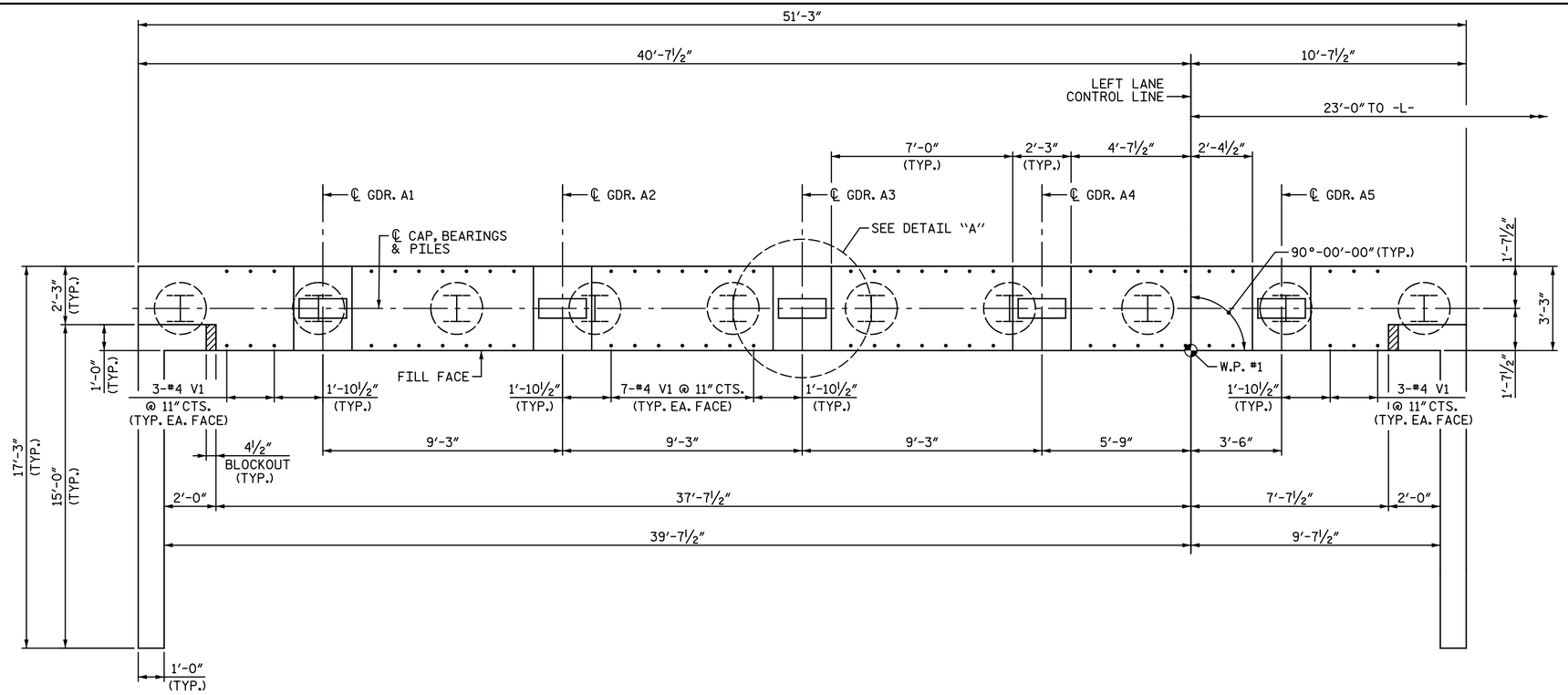
SUPERSTRUCTURE

BILL OF MATERIAL

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-38
1			3			TOTAL SHEETS
2			4			50

DRAWN BY : N. B. SPEAKS DATE : 6-20-17
CHECKED BY : T. M. GARRISON DATE : 6-26-17



PLAN

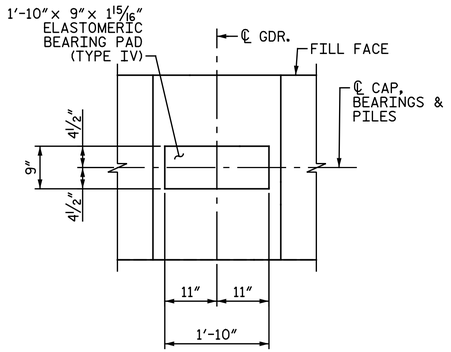
NOTES:

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

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

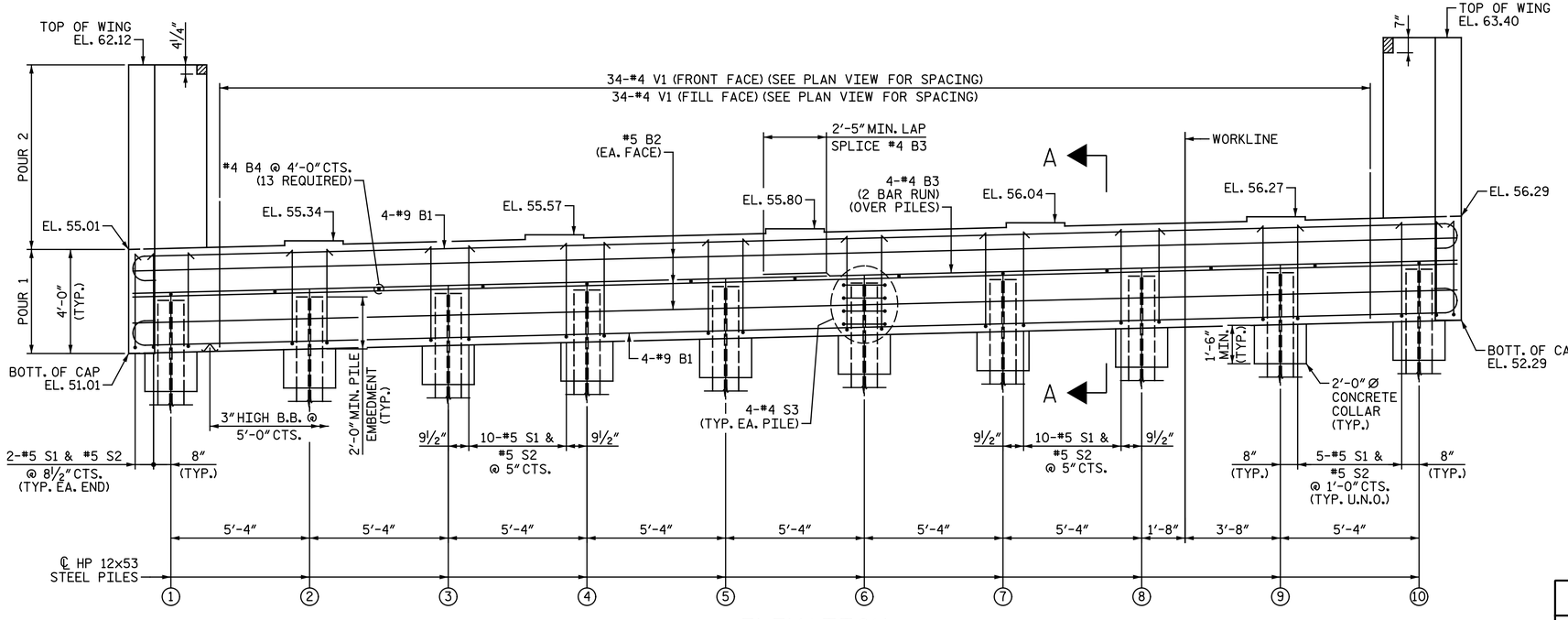
THE TOP SURFACE OF THE END BENT CAP, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF ¼″.

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.



ELEVATION

(U.N.O. - DENOTES ″UNLESS NOTED OTHERWISE″)

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
1	53.06
2	53.20
3	53.33
4	53.46
5	53.60
6	53.73
7	53.86
8	54.00
9	54.13
10	54.26

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

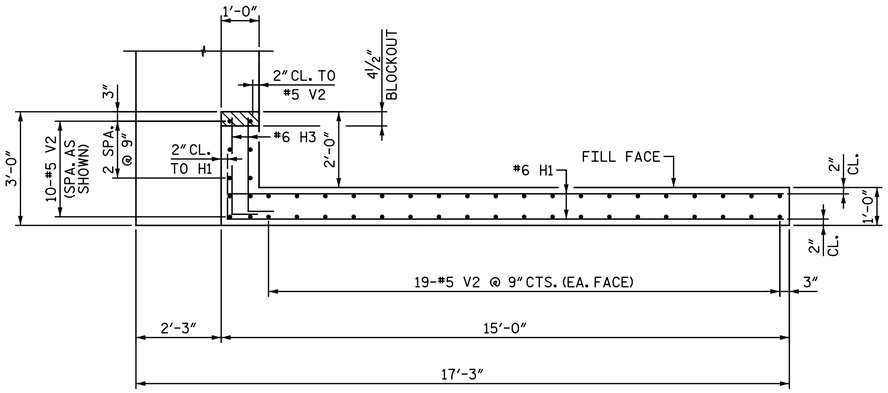
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL

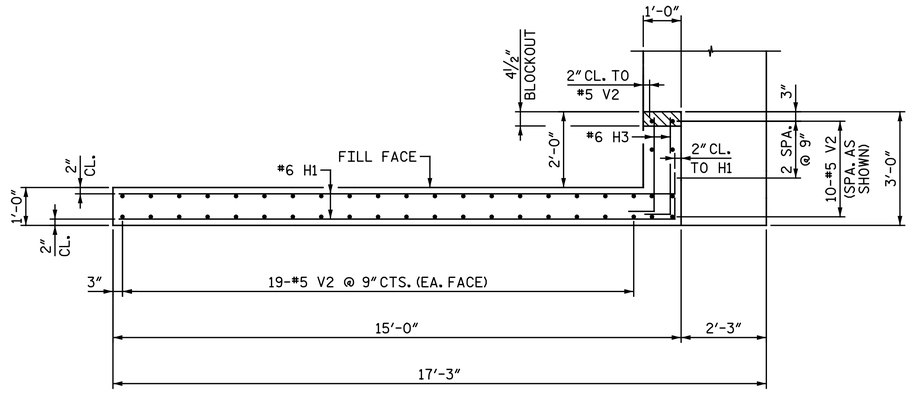
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-39
1			3			TOTAL SHEETS
2			4			50

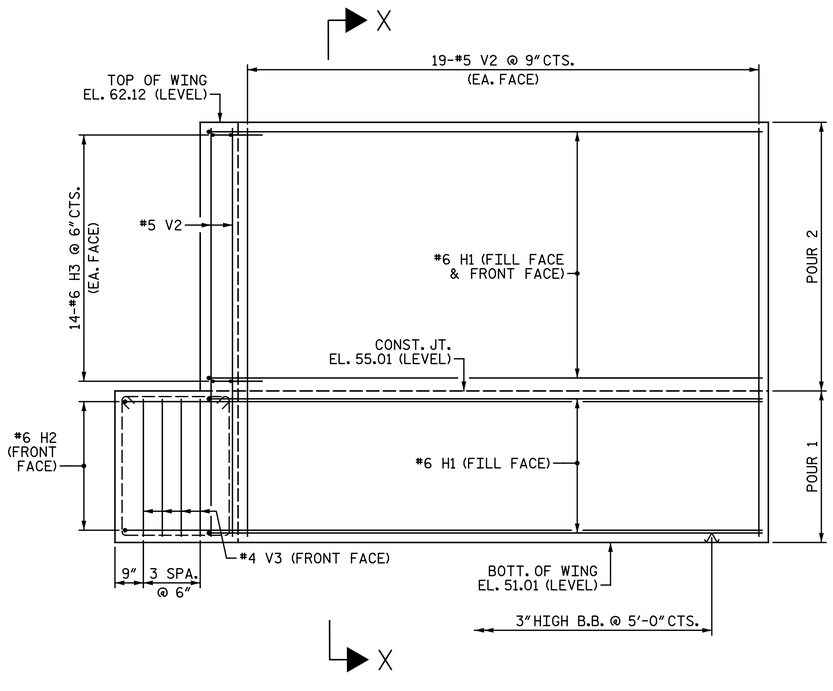
DRAWN BY : M. D. MAYHEW DATE : 5-15-17
CHECKED BY : T. M. GARRISON DATE : 6-21-17



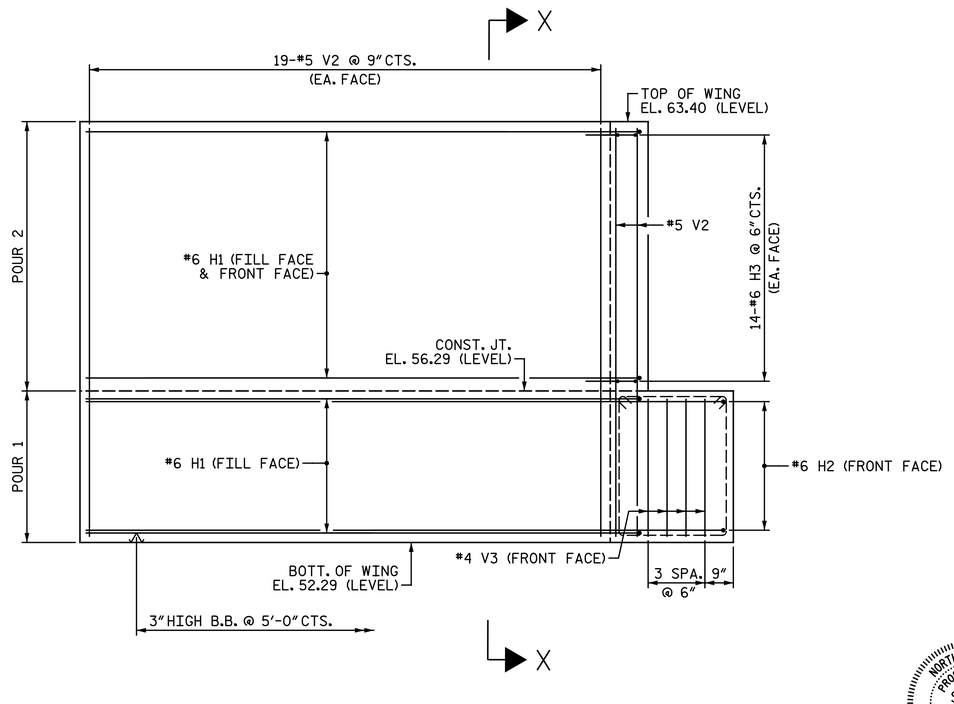
PLAN OF LEFT WING
(H2 BARS NOT SHOWN FOR CLARITY)



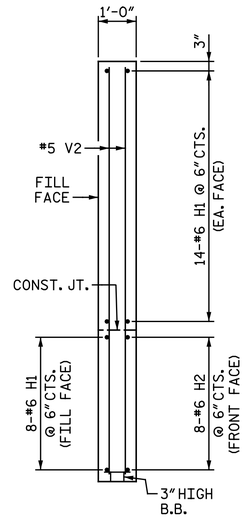
PLAN OF RIGHT WING
(H2 BARS NOT SHOWN FOR CLARITY)



ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING



SECTION X-X

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 1

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

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Michael Baker INTERNATIONAL

Michael Baker Engineering
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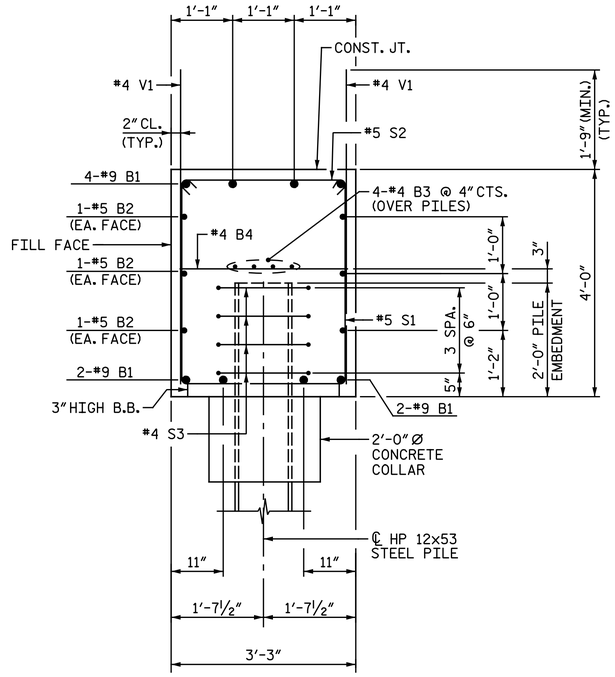
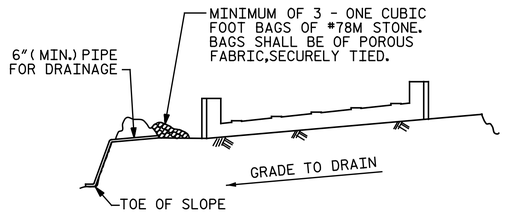
NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-40
1			3			TOTAL SHEETS
2			4			50

DRAWN BY : M. D. MAYHEW DATE : 5-15-17
CHECKED BY : V. A. PATEL DATE : 6-6-17



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

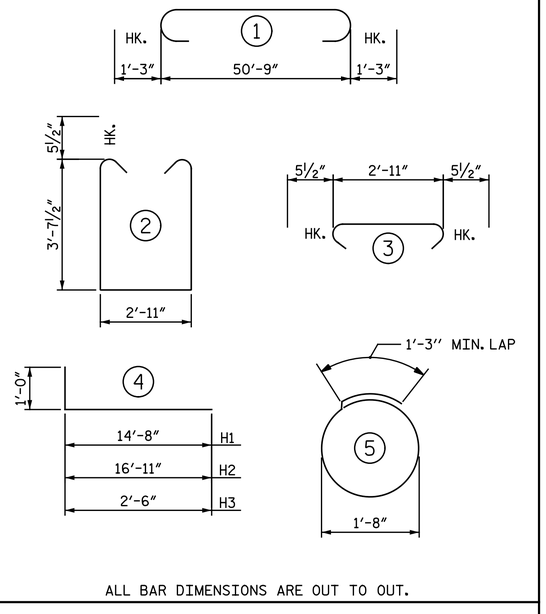
BILL OF MATERIAL

INTEGRAL END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	53' - 3"	1,448
B2	6	#5	STR.	50' - 11"	319
B3	8	#4	STR.	26' - 8"	143
B4	13	#4	STR.	2' - 11"	25
H1	72	#6	4	15' - 8"	1,694
H2	16	#6	4	17' - 11"	431
H3	56	#6	4	3' - 6"	294
S1	59	#5	2	11' - 1"	682
S2	59	#5	3	3' - 10"	236
S3	40	#4	5	6' - 6"	174
V1	68	#4	STR.	5' - 7"	254
V2	96	#5	STR.	10' - 9"	1,076
V3	8	#4	STR.	3' - 7"	19

REINFORCING STEEL	LBS.	6,795
CLASS A CONCRETE		
POUR 1 - CAP, LOWER PART OF WINGS & COLLARS	C.Y.	30.8
POUR 2 - UPPER PART OF WINGS	C.Y.	9.0
TOTAL	C.Y.	39.8
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	EA.	10
HP 12x53 STEEL PILES NO. 10	L.F.	450
STEEL PILE POINTS	EA.	10
PILE REDRIVES	EA.	5

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

NOTE:

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL

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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:	S7-41
1			3			TOTAL SHEETS
2			4			50

DRAWN BY : M. D. MAYHEW DATE : 5-15-17
CHECKED BY : V. A. PATEL DATE : 6-6-17

BENT	W.P. #	NEAR SPAN	FAR SPAN
1	2	A	B
2	3	B	C
3	4	C	D
4	5	D	E
5	6	E	F
6	7	F	G
7	8	G	H
8	9	H	I

NOTES:

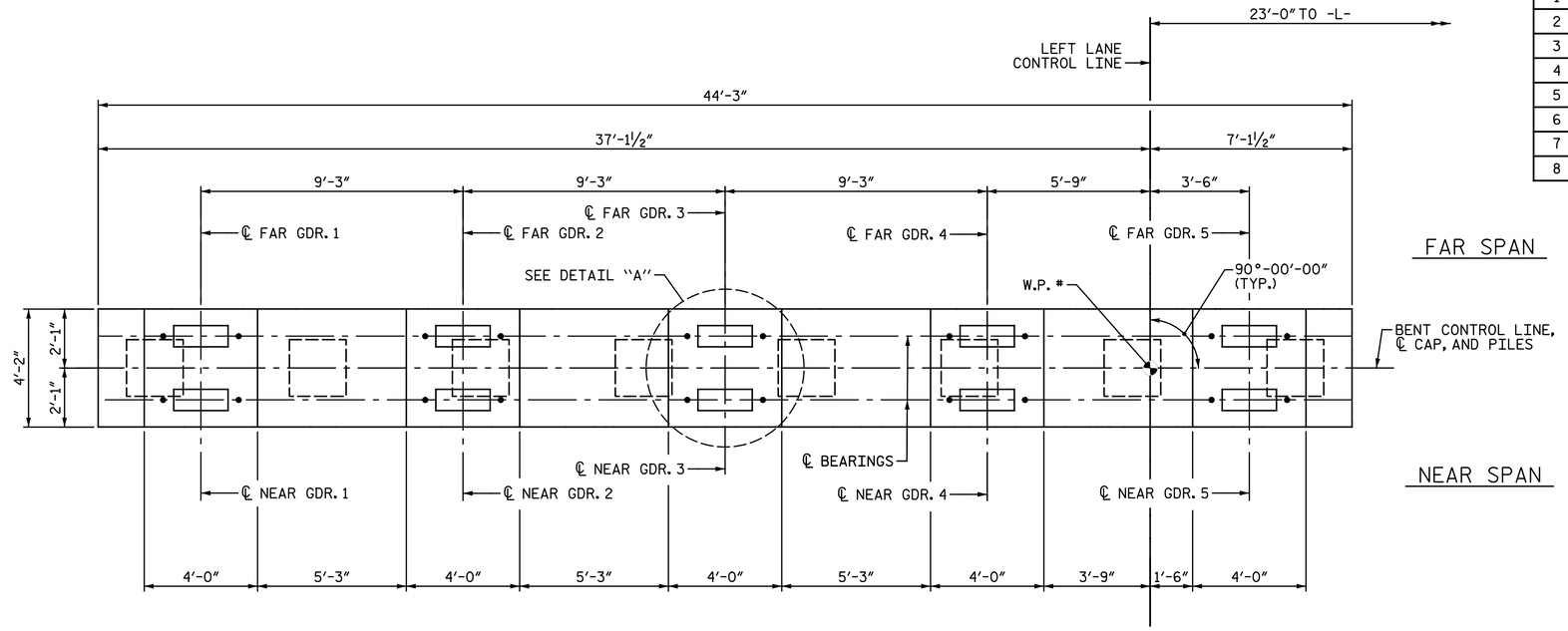
STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

FOR SECTION A-A, SEE "BENTS 1 THRU 8 DETAILS" SHEET.

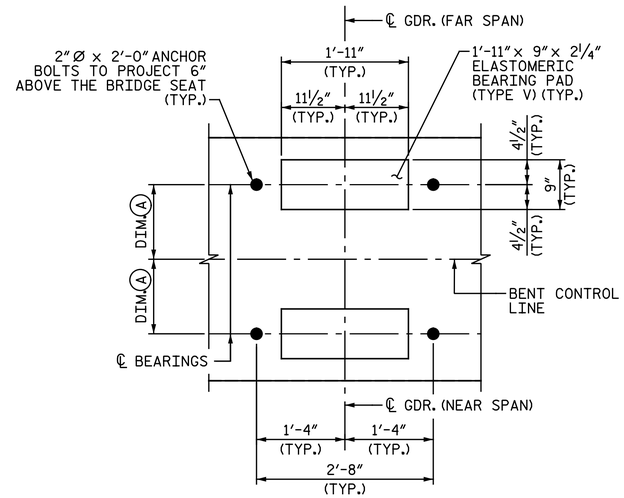
FOR 24" PRESTRESSED CONCRETE PILE DETAILS, SEE 24" PRESTRESSED CONCRETE PILE SHEET.

THE TOP SURFACE AREA OF THE BENT CAPS FOR BENT 3 AND BENT 6 SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE TOP SURFACE AREA OF THE BENT CAPS FOR BENT 3 AND BENT 6 SHALL BE EPOXY COATED EXCEPT FOR THE AREAS UNDERNEATH THE ELASTOMERIC BEARING PADS.

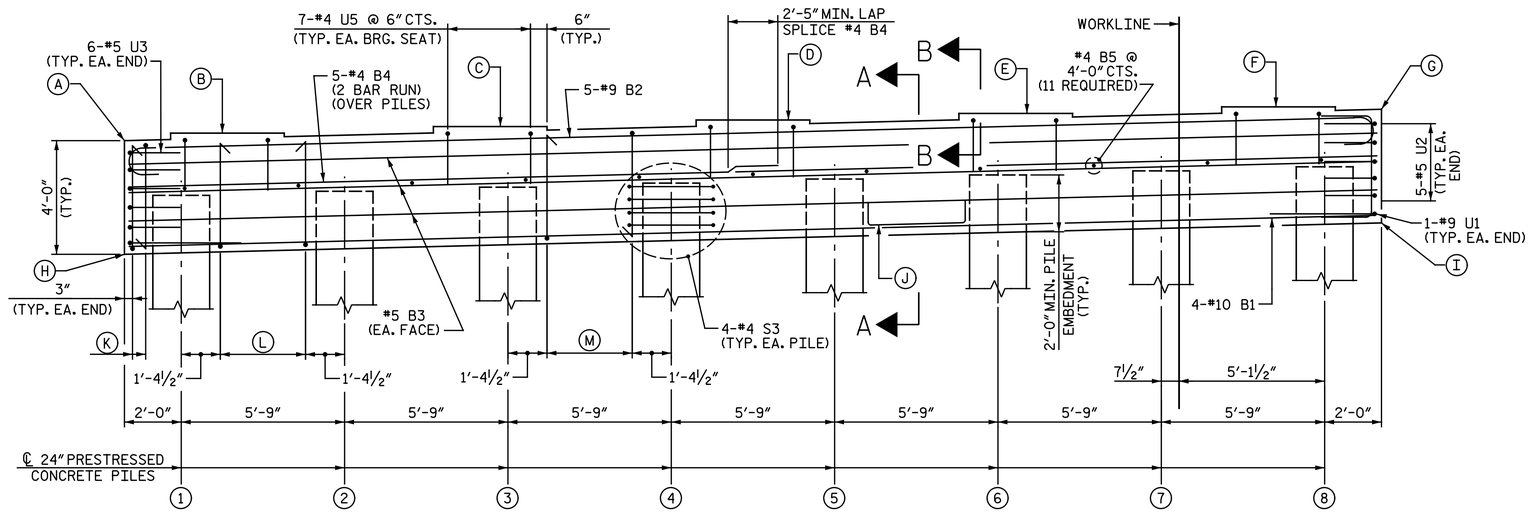


PLAN



DETAIL "A"

FOR DIMENSION (A), SEE "BENTS 1 THRU 8 DETAILS" SHEET



ELEVATION

FOR BENT CAP ELEVATIONS (A) THRU (I) AND TOP OF PILE ELEVATIONS, SEE "BENTS 1 THRU 8 DETAILS" SHEET.

STIRRUPS BETWEEN PILES 2 & 3, 4 & 5, 5 & 6, 6 & 7, AND 7 & 8 AND IN RIGHT END OF CAP NOT SHOWN FOR CLARITY.

(J) 2-#5 U4 PLACED BETWEEN EACH PILE (SEE SECTION A-A ON "BENTS 1 THRU 8 DETAILS" SHEET)

(K) 2-#5 S1 @ 6" CTS. (TYP. EA. END) (INVERT ALTERNATE S1 STIRRUPS)

(L) 7-#5 S1 & S2 PAIRS @ 6" CTS. (BETWEEN PILES 1 & 2, 4 & 5, AND 7 & 8) (INVERT ALTERNATE S1 STIRRUPS ONLY)

(M) 4-#5 S1 @ 1'-0" CTS. (BETWEEN PILES 2 & 3, 3 & 4, 5 & 6, AND 6 & 7) (INVERT ALTERNATE S1 STIRRUPS)

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

DRAWN BY : N. B. SPEAKS DATE : 6-20-17

CHECKED BY : T. M. GARRISON DATE : 6-22-17

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: T. M. Garrison 8/10/2017

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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

BENTS 1 THRU 8

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-42
1			3			TOTAL SHEETS
2			4			50

BENT CAP ELEVATIONS

BENT	Ⓐ	Ⓑ	Ⓒ	Ⓓ	Ⓔ	Ⓕ	Ⓖ	Ⓗ	Ⓘ
1	55.59	55.86	56.09	56.32	56.55	56.78	56.70	51.59	52.70
2	56.25	56.51	56.74	56.97	57.21	57.44	57.35	52.25	53.35
3	56.90	57.17	57.40	57.63	57.86	58.09	58.01	52.90	54.01
4	57.42	57.68	57.91	58.14	58.38	58.61	58.52	53.42	54.52
5	57.93	58.20	58.43	58.66	58.89	59.12	59.04	53.93	55.04
6	58.45	58.72	58.95	59.18	59.41	59.64	59.56	54.45	55.56
7	58.96	59.23	59.46	59.69	59.92	60.15	60.07	54.96	56.07
8	59.62	59.89	60.12	60.35	60.58	60.81	60.73	55.62	56.73

TOP OF PILE ELEVATIONS

PILE	BENT 1	BENT 2	BENT 3	BENT 4	BENT 5	BENT 6	BENT 7	BENT 8
1	53.66	54.32	54.98	55.49	56.01	56.52	57.04	57.70
2	53.81	54.46	55.12	55.64	56.15	56.67	57.18	57.84
3	53.95	54.61	55.27	55.78	56.30	56.81	57.33	57.98
4	54.10	54.75	55.41	55.92	56.44	56.96	57.47	58.13
5	54.24	54.90	55.55	56.07	56.58	57.10	57.61	58.27
6	54.38	55.04	55.70	56.21	56.73	57.24	57.76	58.41
7	54.53	55.18	55.84	56.35	56.87	57.39	57.90	58.56
8	54.67	55.33	55.98	56.50	57.01	57.53	58.04	58.70

DIMENSION Ⓐ

BENT	DISTANCE
1	1′-1½″
2	1′-1½″
3	10½″
4	1′-1½″
5	1′-1½″
6	10½″
7	1′-1½″
8	1′-1½″

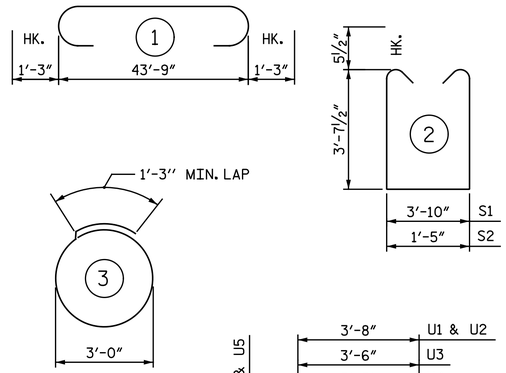
24″ PRESTRESSED CONCRETE PILES

	BENT 1	BENT 2	BENT 3	BENT 4	BENT 5	BENT 6	BENT 7	BENT 8
NO.	8	8	8	8	8	8	8	8
L.F.	360	360	360	360	360	360	360	400

PREDRILLING FOR PILES

	BENT 1	BENT 2	BENT 3	BENT 4	BENT 5	BENT 6	BENT 7	BENT 8
L.F.	243	244	251	196	209	183	194	238

BAR TYPES



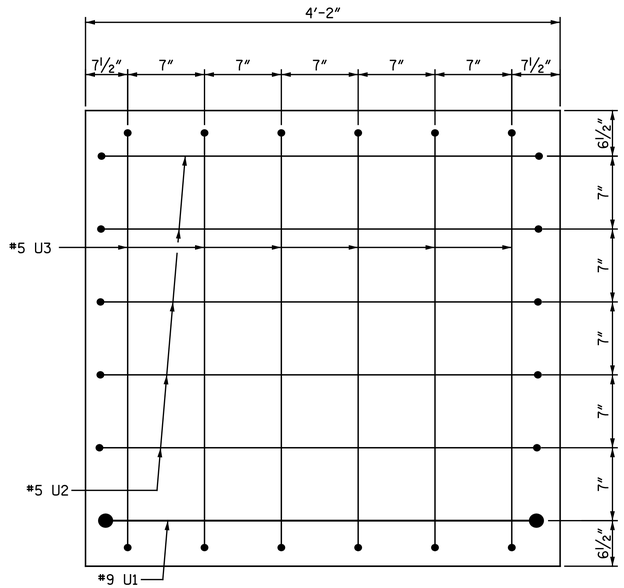
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR ONE BENT

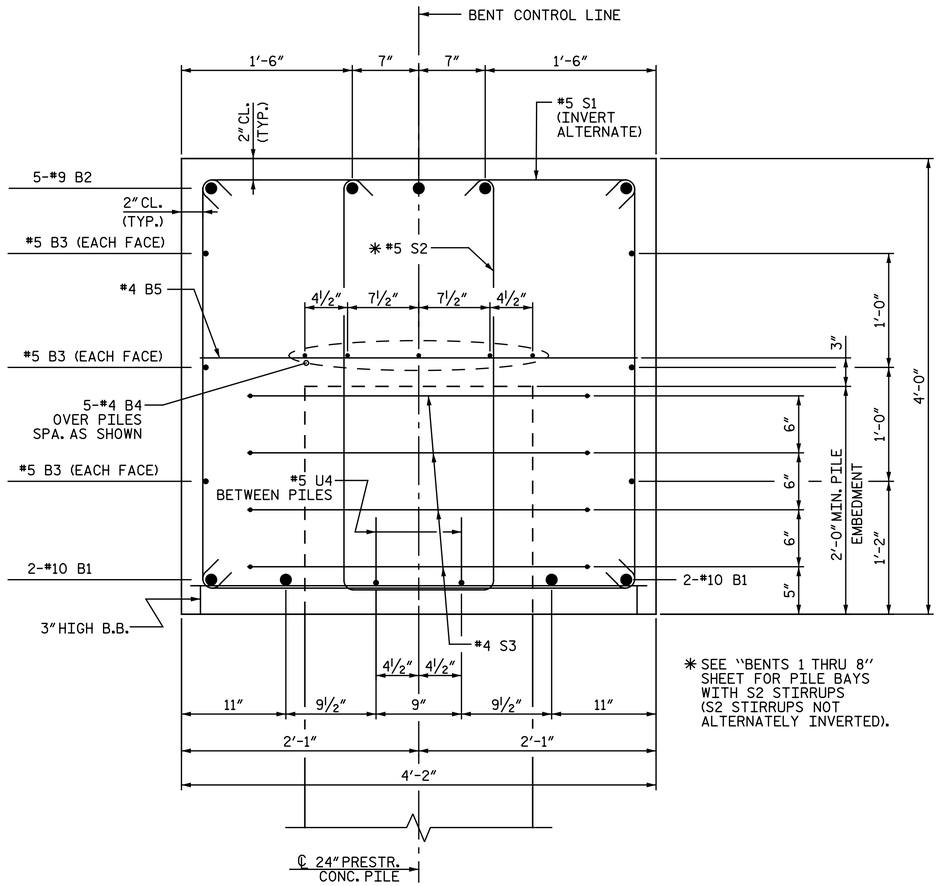
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	STR.	43′ - 11″	756
B2	5	#9	1	46′ - 3″	786
B3	6	#5	STR.	43′ - 11″	275
B4	10	#4	STR.	23′ - 2″	155
B5	11	#4	STR.	3′ - 10″	28
S1	41	#5	2	12′ - 0″	513
S2	21	#5	2	9′ - 7″	210
S3	32	#4	3	10′ - 9″	230
U1	2	#9	4	11′ - 0″	75
U2	10	#5	4	6′ - 8″	70
U3	12	#5	4	6′ - 6″	81
U4	14	#5	4	5′ - 1″	74
U5	35	#4	4	6′ - 10″	160

REINFORCING STEEL	LBS.	3,413
CLASS A CONCRETE ▲	C.Y.	25.5
PILE DRIVING EQUIPMENT SETUP FOR 24″PRESTRESSED CONCRETE PILES	EA.	8
24″PRESTRESSED CONCRETE PILES SEE ″24″PRESTRESSED CONCRETE PILES″ TABLE		
PREDRILLING FOR PILES SEE ″PREDRILLING FOR PILES″ TABLE		
PILE REDRIVES	EA.	5

▲ CONCRETE DISPLACED BY 24″PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM CLASS A CONCRETE QUANTITY.

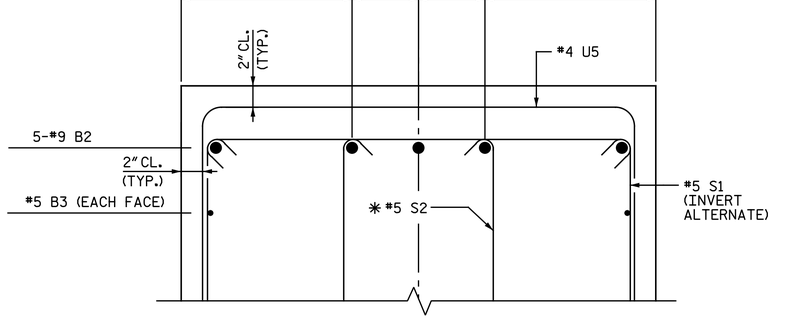


END OF CAP VIEW
(TYP. EA. END)



✱ SEE ″BENTS 1 THRU 8″ SHEET FOR PILE BAYS WITH S2 STIRRUPS (S2 STIRRUPS NOT ALTERNATELY INVERTED).

SECTION A-A



PARTIAL SECTION B-B

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 219+22.38 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

BENTS 1 THRU 8 DETAILS

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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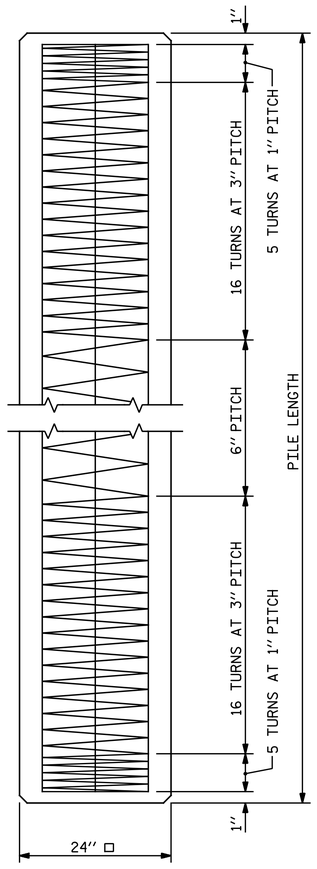
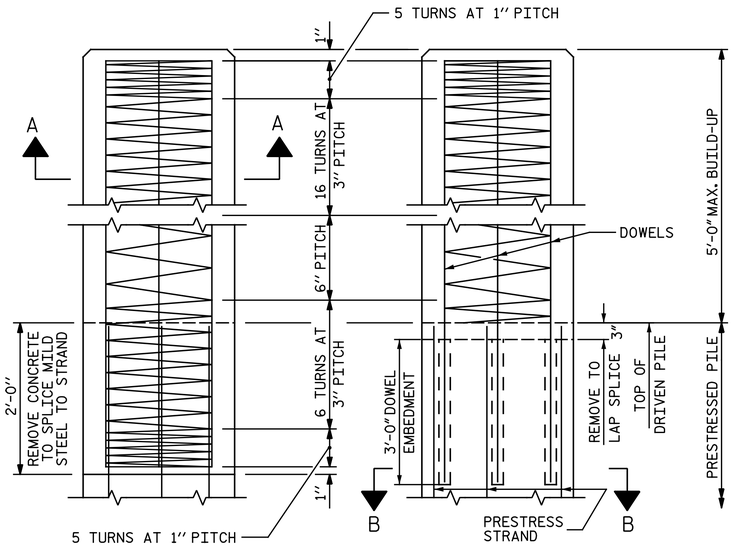
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-43
1			3			TOTAL SHEETS
2			4			50

DRAWN BY : N. B. SPEAKS DATE : 6-20-17
CHECKED BY : T. M. GARRISON DATE : 6-22-17

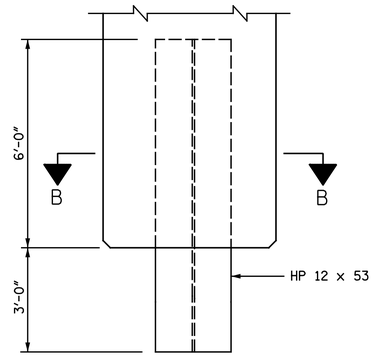


ELEVATION

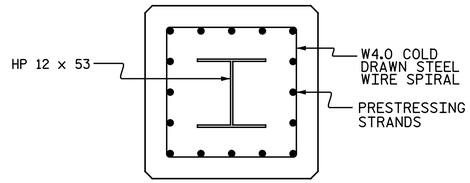


BUILD-UP AND SPIRAL REINFORCING

OPTIONAL BUILD-UP WITH DOWELS



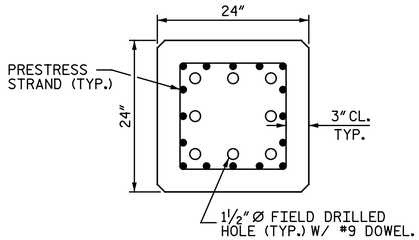
ELEVATION



SECTION B-B

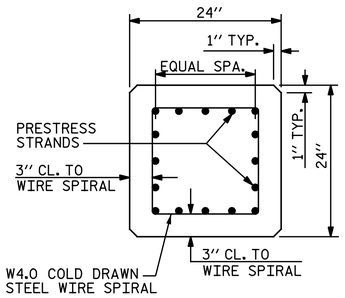
PILE TIP DETAILS

FOR 24″ SQUARE PRESTRESSED CONCRETE PILE

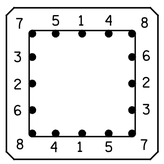


SECTION ″B-B″

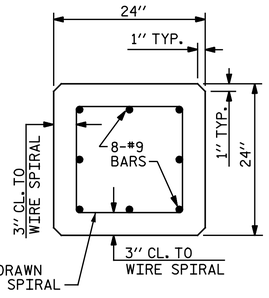
(AT THE CONTRACTOR'S OPTION, PILE BUILD-UP MAY BE CONSTRUCTED WITH DOWELS.)



TYPICAL SECTION



TYPICAL PATTERN FOR BURNING STRANDS

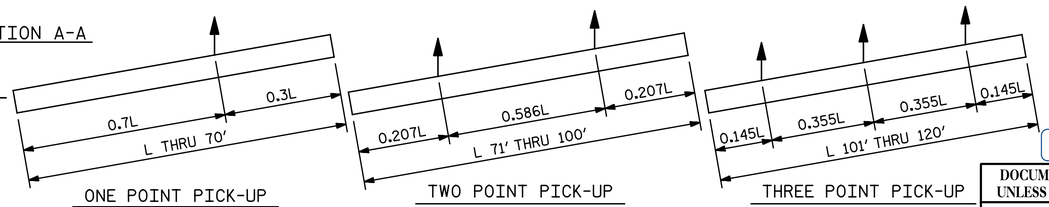


SECTION A-A

½″ OR 0.6″Ø GRADE 270 L.R. PRESTRESS STRANDS

QUANTITIES FOR ONE 24″ SQUARE PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE POINT PICK-UP 0.3L	ONE POINT PICK-UP 0.7L	TWO POINT PICK-UP 0.207L	TWO POINT PICK-UP 0.586L	THREE POINT PICK-UP 0.145L	THREE POINT PICK-UP 0.355L
25′-0″	3.69	7.47	7′-6″	17′-6″				
30′-0″	4.43	8.97	9′-0″	21′-0″				
35′-0″	5.17	10.46	10′-6″	24′-6″				
40′-0″	5.91	11.96	12′-0″	28′-0″				
45′-0″	6.64	13.45	13′-6″	31′-6″				
50′-0″	7.38	14.95	15′-0″	35′-0″				
55′-0″	8.12	16.44	16′-6″	38′-6″				
60′-0″	8.86	17.94	18′-0″	42′-0″				
65′-0″	9.60	19.43	19′-6″	45′-6″				
70′-0″	10.33	20.93	21′-0″	49′-0″				
75′-0″	11.07	22.42			15′-6½″	43′-11″		
80′-0″	11.81	23.92			16′-6½″	46′-11″		
85′-0″	12.55	25.41			17′-7″	49′-10″		
90′-0″	13.29	26.91			18′-7½″	52′-9″		
95′-0″	14.03	28.40			19′-8″	55′-8″		
100′-0″	14.76	29.90			20′-8½″	58′-7″		
105′-0″	15.50	31.39					15′-3″	37′-3″
110′-0″	16.24	32.89					15′-11½″	39′-0½″
115′-0″	16.98	34.38					16′-8″	40′-10″
120′-0″	17.72	35.87					17′-5″	42′-7″



PICK-UP POINTS

NOTES

PRESTRESSED CONCRETE STRENGTH : f′c= 7,500 PSI

BUILD-UP CONCRETE STRENGTH : f′c= 7,500 PSI

STRAND DATA:

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
½″	270 L.R.	0.153	41,300# PER STRAND	30,980# PER STRAND
0.6″	270 L.R.	0.217	58,600# PER STRAND	43,940# PER STRAND

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS CONFORMING TO AASHTO M203. STRAND SAMPLING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

AT THE CONTRACTOR'S OPTION, ½″ OR 0.6″ STRANDS MAY BE USED IN THE STRAND CONFIGURATION SHOWN IN THE TYPICAL SECTION DETAIL. MIXING OF STRAND SIZE IS NOT ALLOWED.

THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

TRANSFER THE LOAD FROM THE ANCHORAGES TO THE PILE AFTER THE CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI.

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN OPPOSITE PAIRS AS INDICATED IN THE TYPICAL PATTERN SHOWN. FOR ANY NUMBER OF STRANDS, BURN IN OPPOSITE PAIRS AND SYMMETRICALLY ABOUT BOTH THE VERTICAL AND HORIZONTAL AXES, STRANDS 1-1 SHALL BE BURNED BEFORE 2-2, ETC. NOT MORE THAN 4 STRANDS, SAY 5-5 AND 6-6, MAY BE BURNED AT ANY ONE SECTION BEFORE THESE SAME PAIRS OF STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS ARE TO BE INDICATED WITH A 2″ WIDE BLACK MARK.

DRIVE PILES USING A METHOD APPROVED BY THE ENGINEER, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

DRIVING OF THE BUILT-UP PILE WILL NOT BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 5,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

DOWEL INSTALLATION FOR OPTIONAL BUILD-UP

GROUT COMPRESSIVE STRENGTH: f′c= 5,000 PSI

BEFORE DRILLING DOWEL HOLES, REMOVE THE UPPER 3″ OF CONCRETE FROM THE TOP OF THE PILE WITHOUT DAMAGE TO THE REINFORCING STEEL. THE REMOVAL PLANE SHOULD BE NORMAL TO THE EDGE OF THE PILE.

DOWEL HOLES SHALL BE POSITIONED TO MAINTAIN ½″ CLEAR TO ALL EXISTING PRESTRESSING STRANDS IN THE CONCRETE PILE.

FIELD DRILLED HOLES SHALL BE CLEAN AND FREE OF ANY OBSTRUCTIONS BEFORE GROUTING OF DOWELS. DOWEL BARS SHALL BE INSTALLED AND GROUTED WITH AN APPROVED NON-SHRINK GROUT.

THE SPIRAL REINFORCING IN ALL BUILD-UPS SHALL BE W4.0 COLD DRAWN WIRE WHICH SHALL BE SECURED TO THE LONGITUDINAL REINFORCEMENT TO MAINTAIN PITCH.

THE SPIRAL REINFORCING IN THE BUILD-UP AND THE PRESTRESSED CONCRETE PILE SHALL BE SPLICED BY OVERLAPPING A MIN. OF ONE TURN.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M Garrison 8/10/2017

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NC License No. : F-1084

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

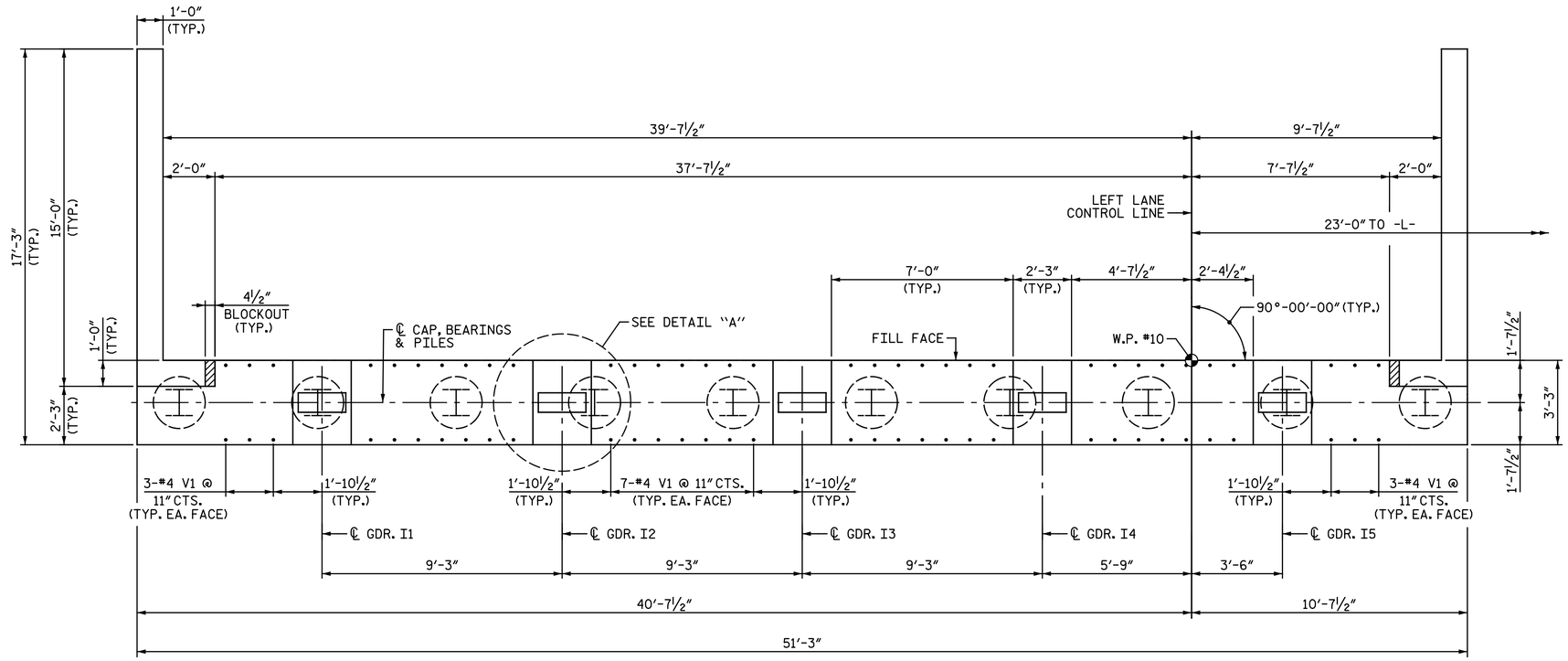
24″ PRESTRESSED CONCRETE PILE

LEFT LANE

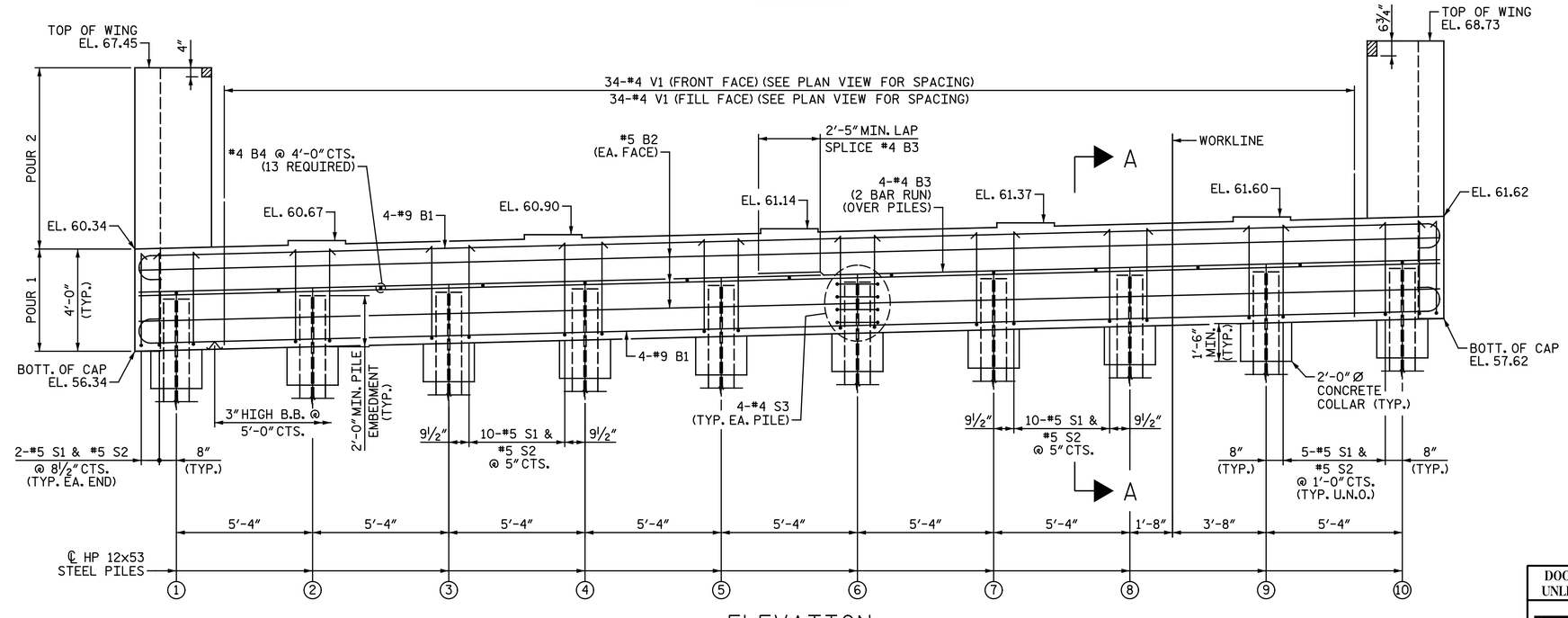
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-44
1			3			TOTAL SHEETS
2			4			50

ASSEMBLED BY : N. B. SPEAKS	DATE : 5-30-17	
CHECKED BY : T. M. GARRISON	DATE : 6-26-17	
DRAWN BY : WJH 1/89	REV. 11/30/10	WMC/GM
CHECKED BY : CRK 3/89	REV. 10/1/11	MAA/GM
	REV. 12/14	MAA/TMG

STD. NO. PCP4



PLAN



ELEVATION

(U.N.O. - DENOTES "UNLESS NOTED OTHERWISE")

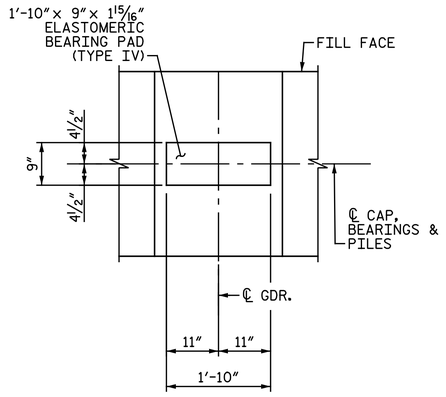
NOTES:

FOR "SECTION A-A", SEE "INTEGRAL END BENT 2 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	58.39
②	58.53
③	58.66
④	58.79
⑤	58.93
⑥	59.06
⑦	59.19
⑧	59.33
⑨	59.46
⑩	59.59

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

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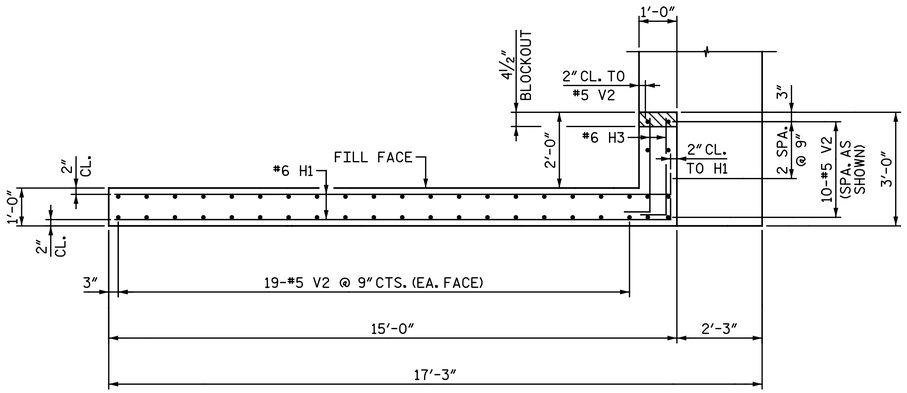
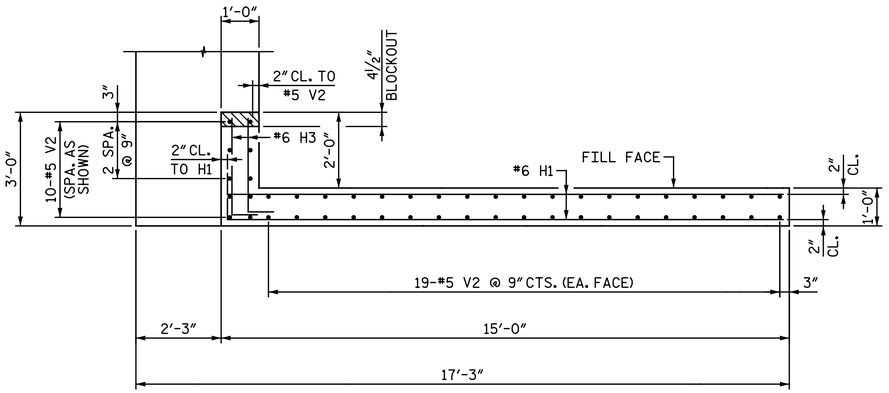
1			3			TOTAL SHEETS
2			4			50

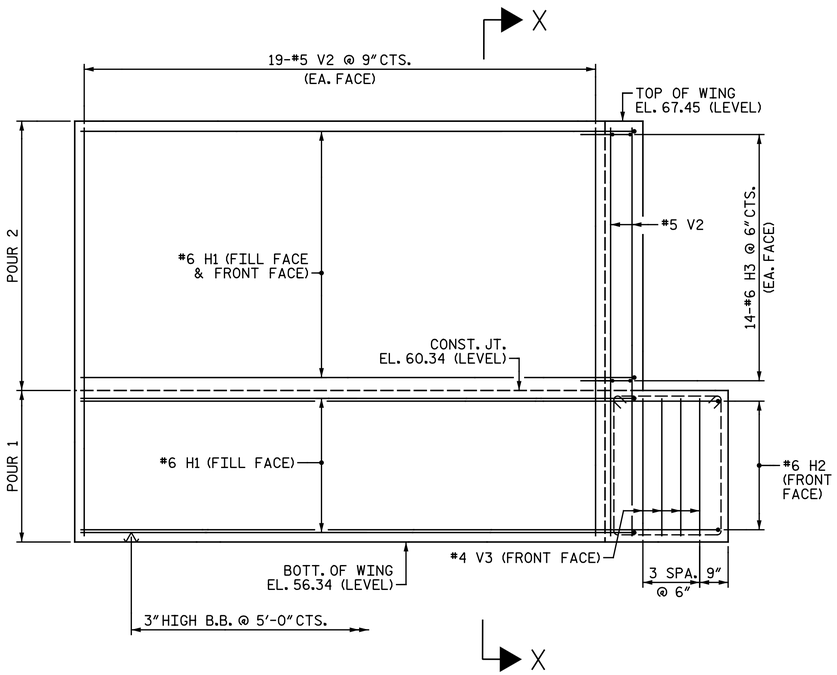
DRAWN BY : M. D. MAYHEW DATE : 5-22-17
CHECKED BY : T. M. GARRISON DATE : 6-21-17



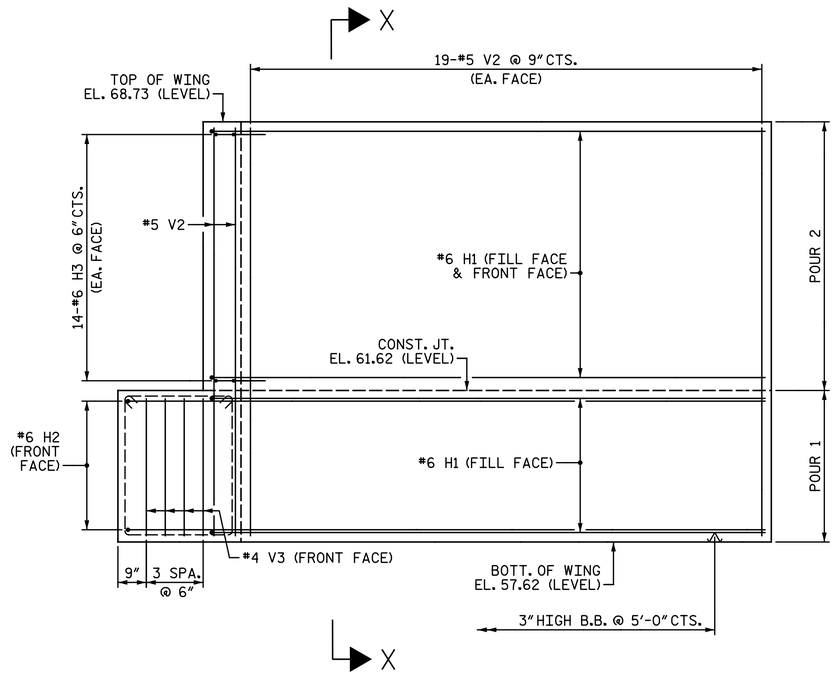
PLAN OF LEFT WING
(H2 BARS NOT SHOWN FOR CLARITY)



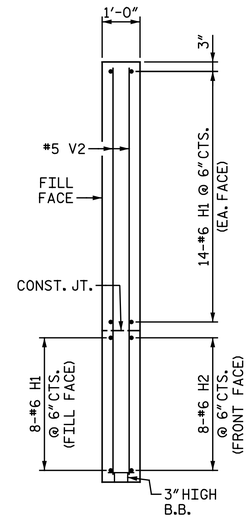
PLAN OF RIGHT WING
(H2 BARS NOT SHOWN FOR CLARITY)



ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING



SECTION X-X

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

INTEGRAL END BENT 2

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

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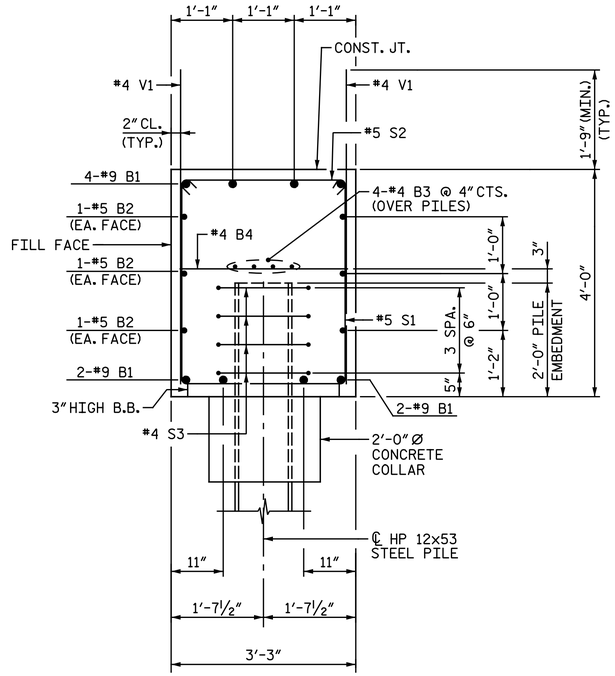
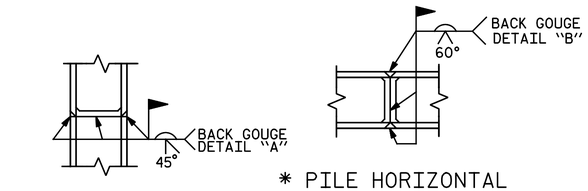
2			4			50

DRAWN BY : M. D. MAYHEW DATE : 5-15-17
CHECKED BY : V. A. PATEL DATE : 6-6-17

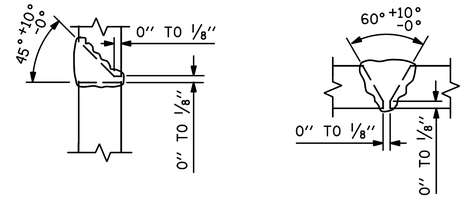


SECTION A-A



* PILE VERTICAL

* PILE HORIZONTAL OR VERTICAL



DETAIL "A"

DETAIL "B"

PILE SPLICE DETAILS

*POSITION OF PILE DURING WELDING

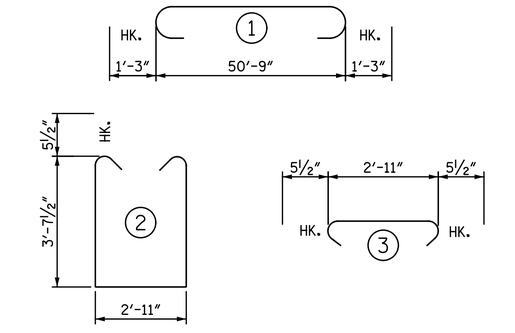
BILL OF MATERIAL

INTEGRAL END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	53' - 3"	1,448
B2	6	#5	STR.	50' - 11"	319
B3	8	#4	STR.	26' - 8"	143
B4	13	#4	STR.	2' - 11"	25
H1	72	#6	4	15' - 8"	1,694
H2	16	#6	4	17' - 11"	431
H3	56	#6	4	3' - 6"	294
S1	59	#5	2	11' - 1"	682
S2	59	#5	3	3' - 10"	236
S3	40	#4	5	6' - 6"	174
V1	68	#4	STR.	5' - 7"	254
V2	96	#5	STR.	10' - 9"	1,076
V3	8	#4	STR.	3' - 7"	19

REINFORCING STEEL	LBS.	6,795
CLASS A CONCRETE		
POUR 1 - CAP, LOWER PART OF WINGS & COLLARS	C.Y.	30.8
POUR 2 - UPPER PART OF WINGS	C.Y.	9.0
TOTAL	C.Y.	39.8
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	EA.	10
HP 12x53 STEEL PILES NO. 10	L.F.	400
STEEL PILE POINTS	EA.	10
PILE REDRIVES	EA.	5

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

NOTE:

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

INTEGRAL END BENT 2 DETAILS

LEFT LANE

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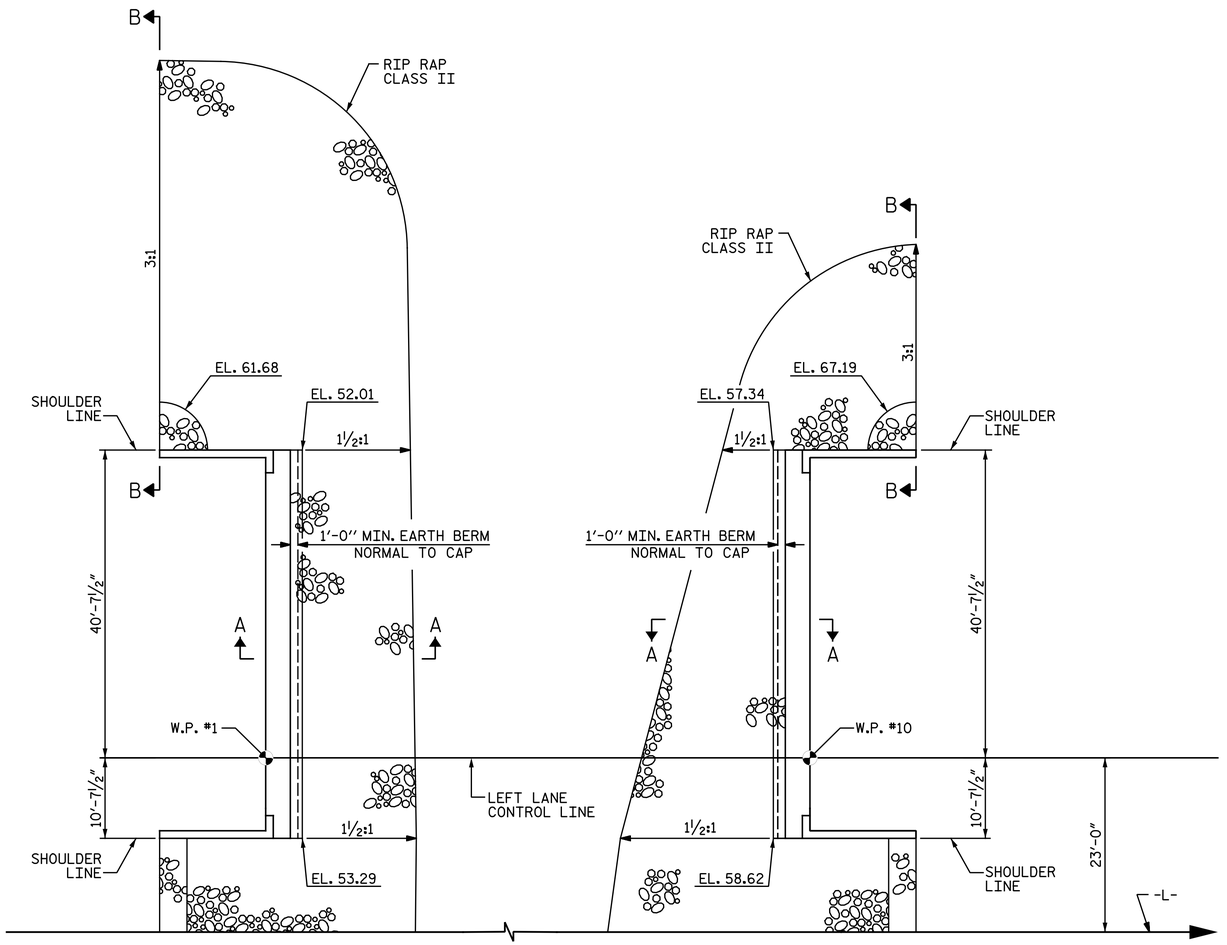
2			4			50

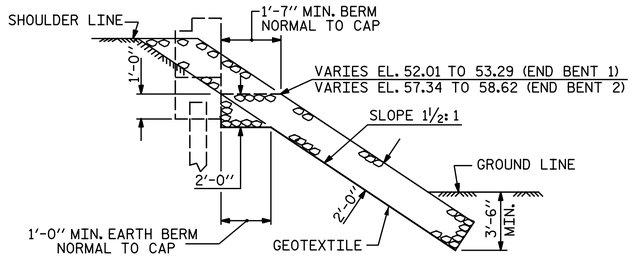
DRAWN BY : M. D. MAYHEW DATE : 5-15-17
CHECKED BY : V. A. PATEL DATE : 6-6-17

NOTES:
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWINGS.

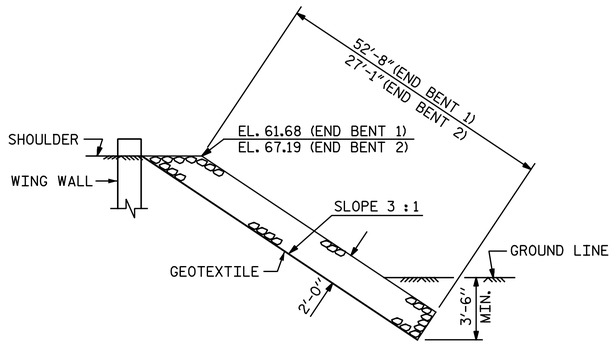


END BENT 1 END BENT 2

SHOULDER RIP RAP IS HIGHER THAN BERM RIP RAP



SECTION A-A



SECTION B-B

ESTIMATED QUANTITIES		
BRIDGE @ STA. 219+22.38 -L- (LEFT LANE)	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	369	410
END BENT 2	248	275

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 219+22.38 -L-

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

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DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

LEFT LANE

DRAWN BY : N. B. SPEAKS DATE : 5-25-17
CHECKED BY : B. J. BELL DATE : 6-27-17

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Cary, North Carolina 27518
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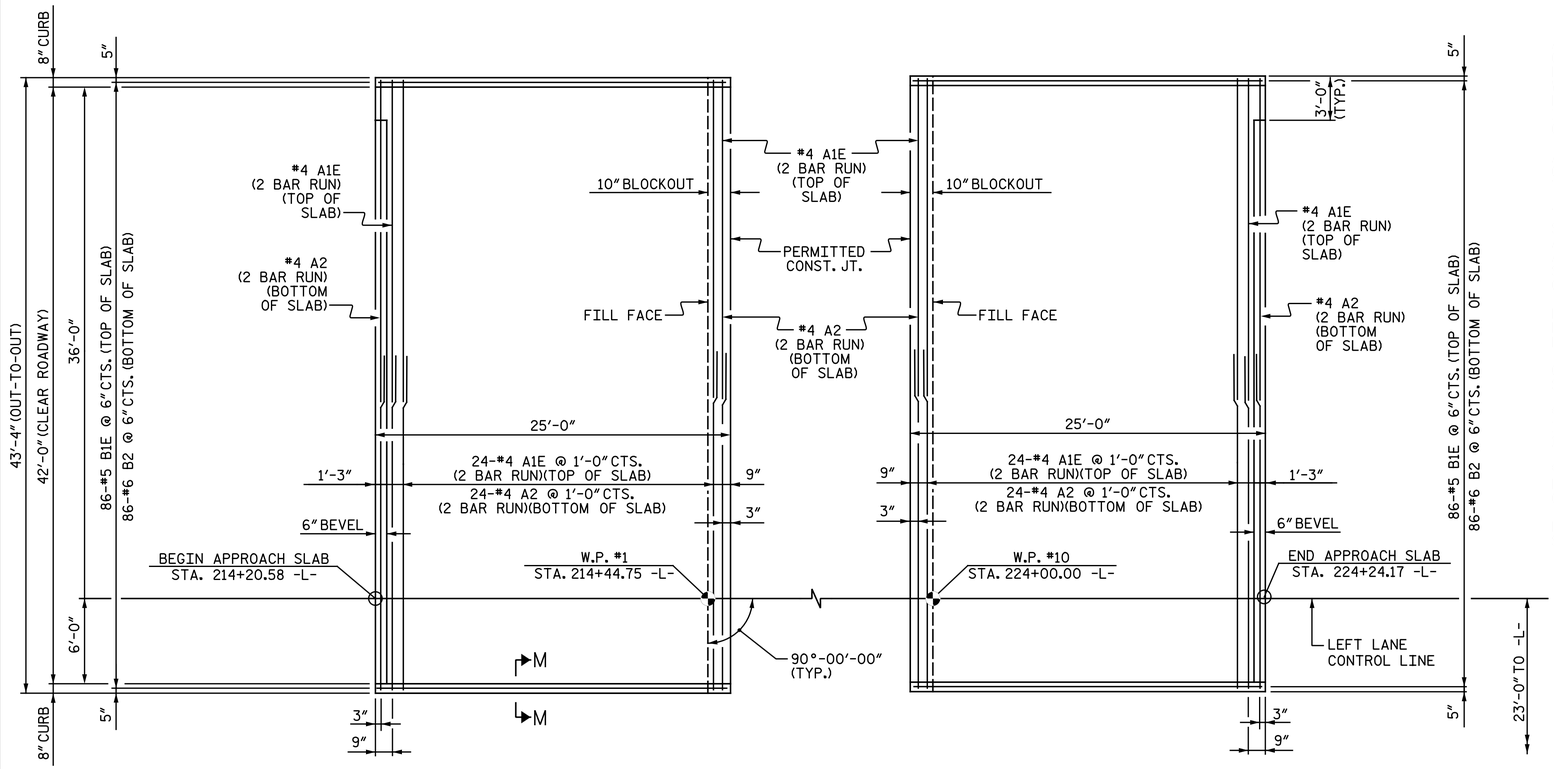
1			3			TOTAL SHEETS
2			4			50



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.

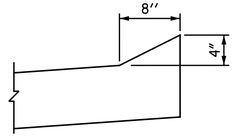
BILL OF MATERIAL
APPROACH SLAB AT END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	52	#4	STR.	22' - 6"	782
A2	52	#4	STR.	22' - 5"	779
B1E	86	#5	STR.	24' - 2"	2,168
B2	86	#6	STR.	24' - 8"	3,186
REINFORCING STEEL				LBS.	3,965
EPOXY COATED REINFORCING STEEL				LBS.	2,950
CLASS AA CONCRETE				C.Y.	46.6

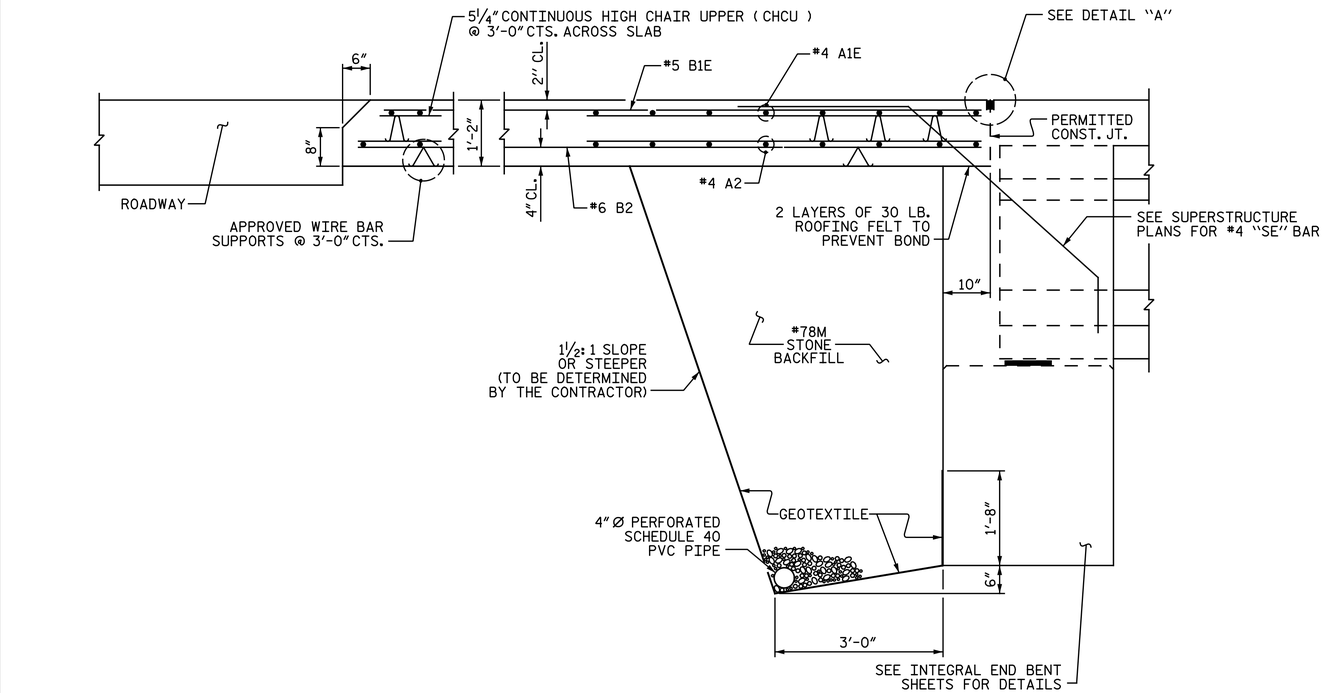
BILL OF MATERIAL
APPROACH SLAB AT END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	52	#4	STR.	22' - 6"	782
A2	52	#4	STR.	22' - 5"	779
B1E	86	#5	STR.	24' - 2"	2,168
B2	86	#6	STR.	24' - 8"	3,186
REINFORCING STEEL				LBS.	3,965
EPOXY COATED REINFORCING STEEL				LBS.	2,950
CLASS AA CONCRETE				C.Y.	46.6

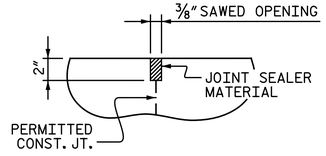
SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"



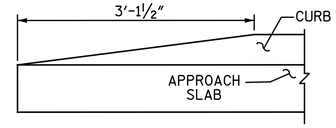
SECTION M-M



SECTION THRU SLAB



DETAIL "A"



END OF CURB WITHOUT SHOULDER BERM GUTTER

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT

LEFT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

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DRAWN BY : N. B. SPEAKS DATE : 5-11-17
CHECKED BY : T. M. GARRISON DATE : 6-27-17

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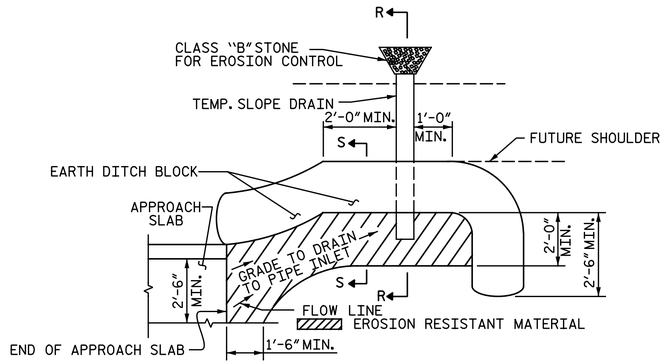
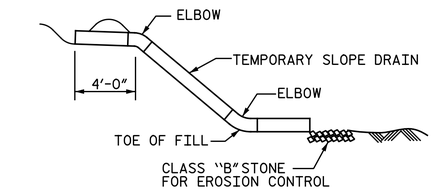
2			4			50

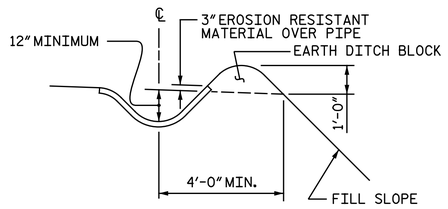


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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



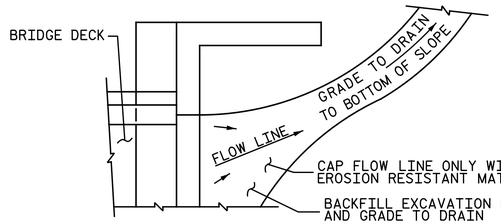
SECTION R-R



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: 219+22.38 -L-

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH SLAB DETAILS

LEFT LANE

ASSEMBLED BY : N. B. SPEAKS	DATE : 5-9-17
CHECKED BY : T. M. GARRISON	DATE : 6-27-17

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

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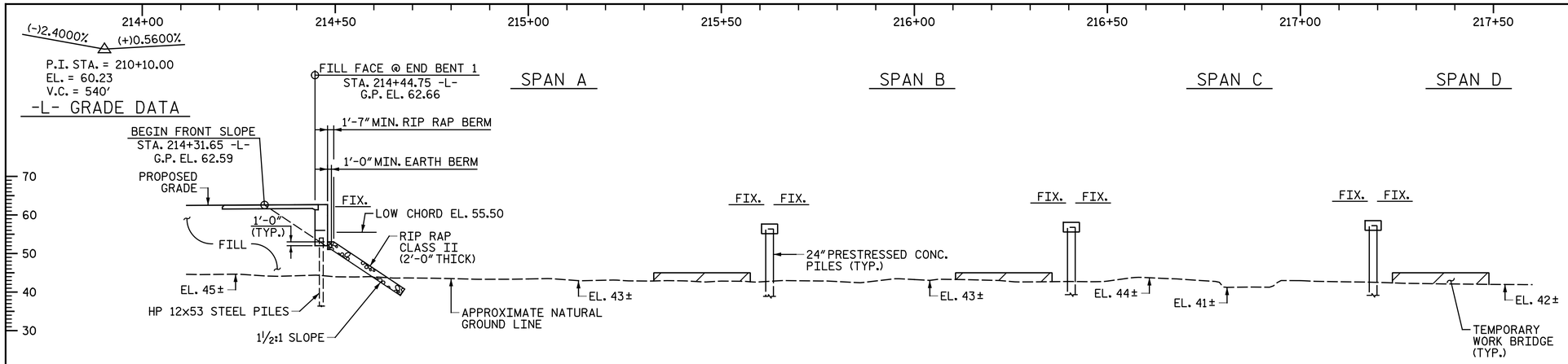
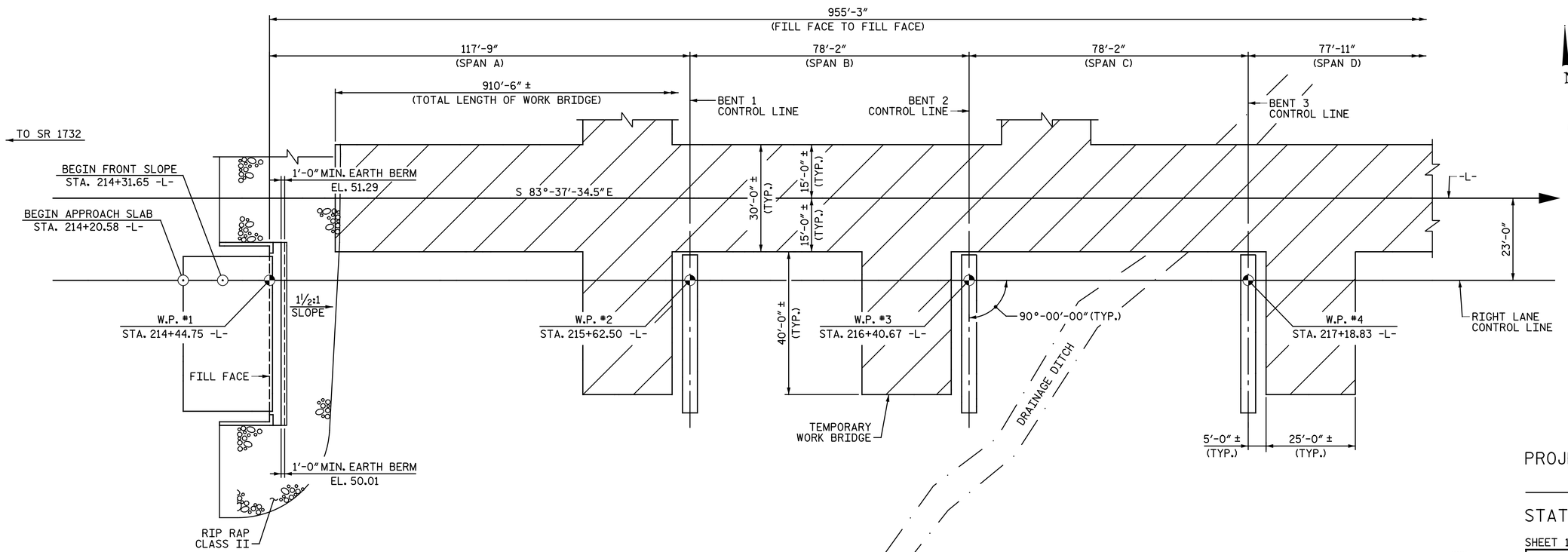
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-50
1			3			TOTAL SHEETS
2			4			50

STD. NO. BAS4



SECTION ALONG RIGHT LANE CONTROL LINE



PLAN

(PILES NOT SHOWN IN PLAN VIEW FOR CLARITY)

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 1 OF 6 BRIDGE NO. 215

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Tom M. Garrison 8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

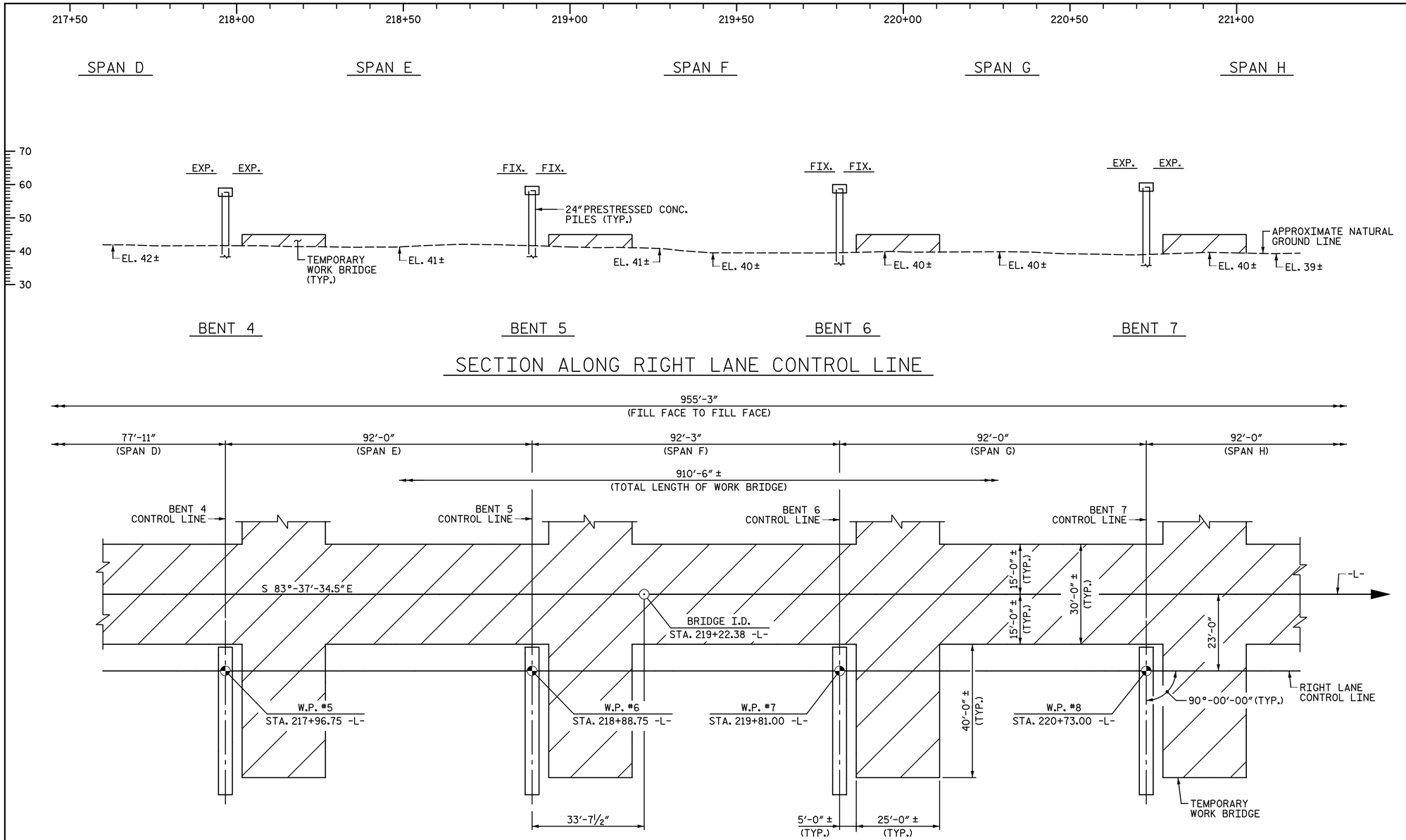
FOR BRIDGE ON C.F. HARVEY PARKWAY OVER STONYTON CREEK BETWEEN SR 1732 AND SR 1735

RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-1
1			3			TOTAL SHEETS
2			4			52

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 : 6-20-17
CHECKED BY : T. M. GARRISON DATE : 6-21-17



SECTION ALONG RIGHT LANE CONTROL LINE

PLAN

(PILES NOT SHOWN IN PLAN FOR CLARITY)

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 2 OF 6 BRIDGE NO. 215

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Tom M. Garrison 8/10/2017

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 STONYTON CREEK BETWEEN SR 1732 AND SR 1735

RIGHT LANE

Michael Baker INTERNATIONAL

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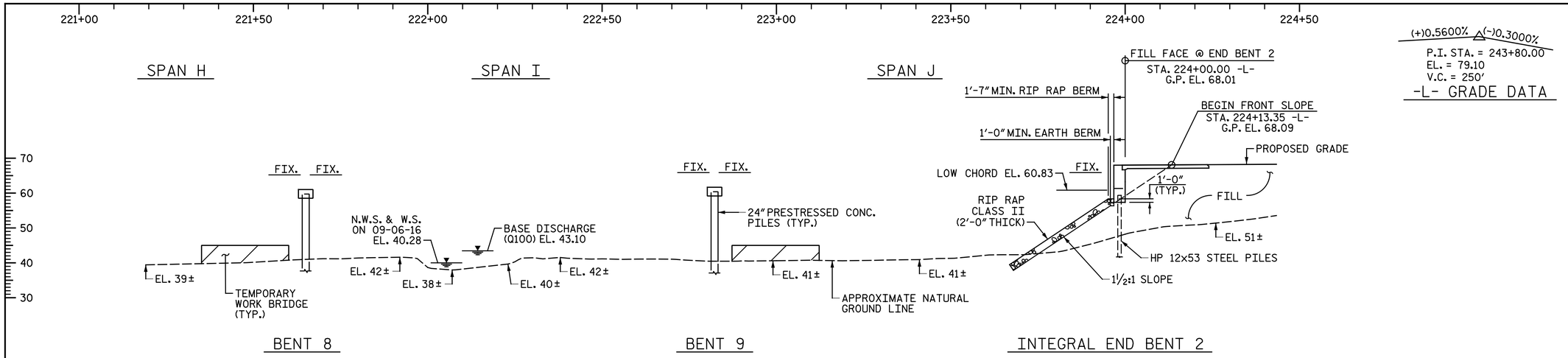
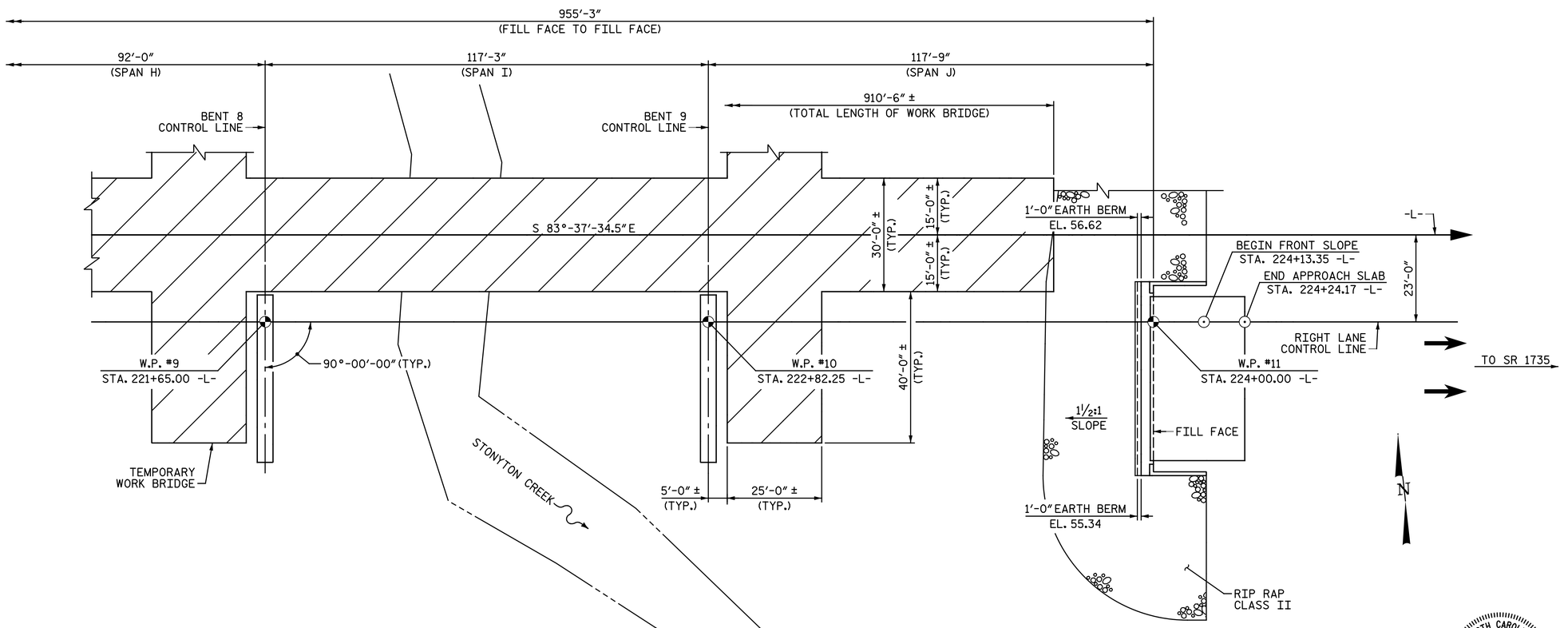
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-2
1			3			TOTAL SHEETS
2			4			52

DRAWN BY : M. D. MAYHEW DATE : 6-20-17
CHECKED BY : T. M. GARRISON DATE : 6-21-17



(+)0.5600% (-)0.3000%
P.I. STA. = 243+80.00
EL. = 79.10
V.C. = 250'
-L- GRADE DATA

SECTION ALONG RIGHT LANE CONTROL LINE



PLAN
(PILES NOT SHOWN IN PLAN FOR CLARITY)

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

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 219+22.38 -L-

SHEET 3 OF 6 BRIDGE NO. 215

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER STONYTON CREEK BETWEEN SR 1732 AND SR 1735

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Tom M. Garrison 8/10/2017

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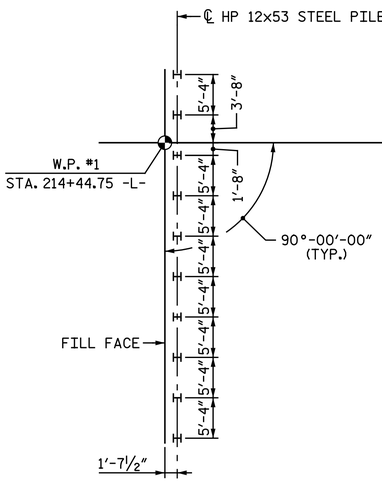
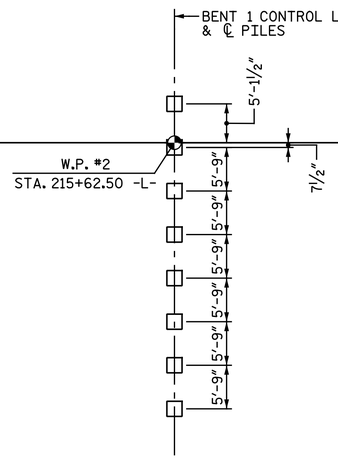
DRAWN BY : M. D. MAYHEW DATE : 6-20-17
CHECKED BY : T. M. GARRISON DATE : 6-21-17



INTEGRAL END BENT 1



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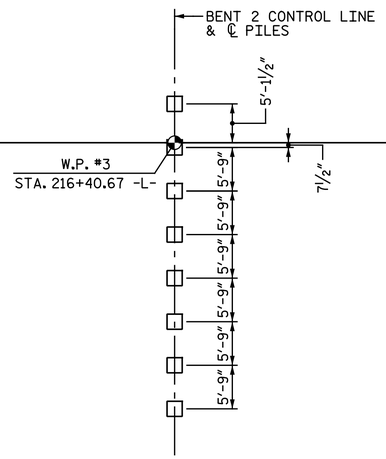

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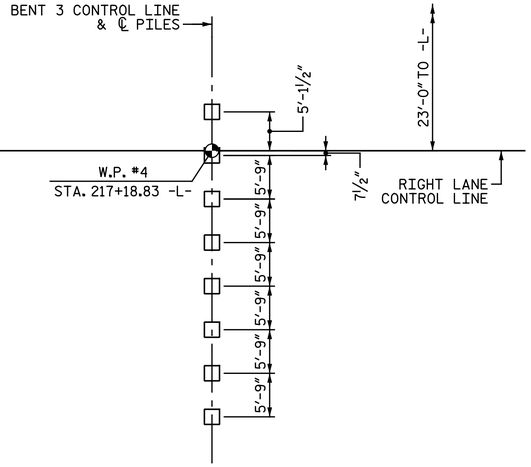
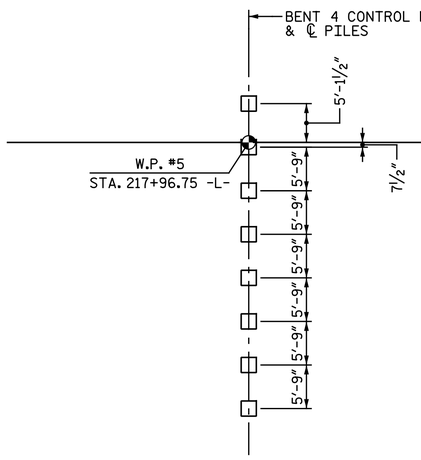


BENT 3



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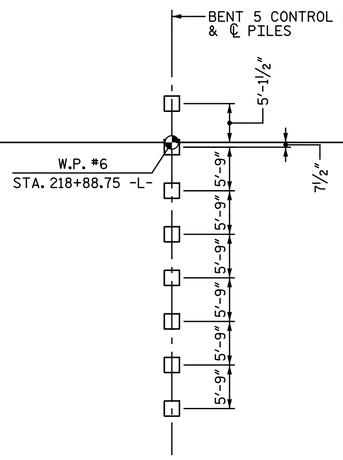
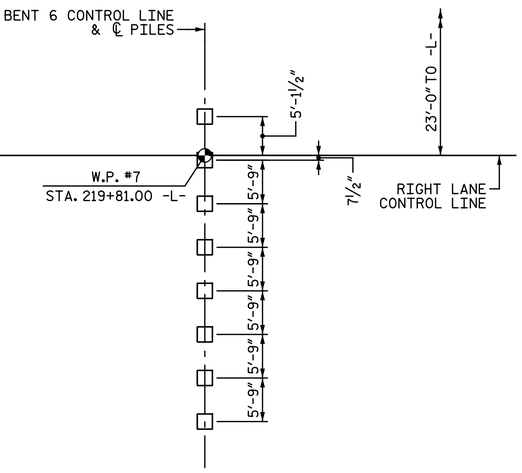


BENT 5



BENT 6

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINES.

ALL INTERIOR BENT PILES ARE 24"PRESTRESSED CONCRETE PILES.

ALL PILES ARE VERTICAL.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 4 OF 6

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER STONYTON CREEK BETWEEN SR 1732 AND SR 1735

RIGHT LANE

DRAWN BY : N. B. SPEAKS DATE : 6-20-17
CHECKED BY : T. M. GARRISON DATE : 6-23-17

Michael Baker INTERNATIONAL
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NC License No. : F-1084

REVISIONS						SHEET NO.
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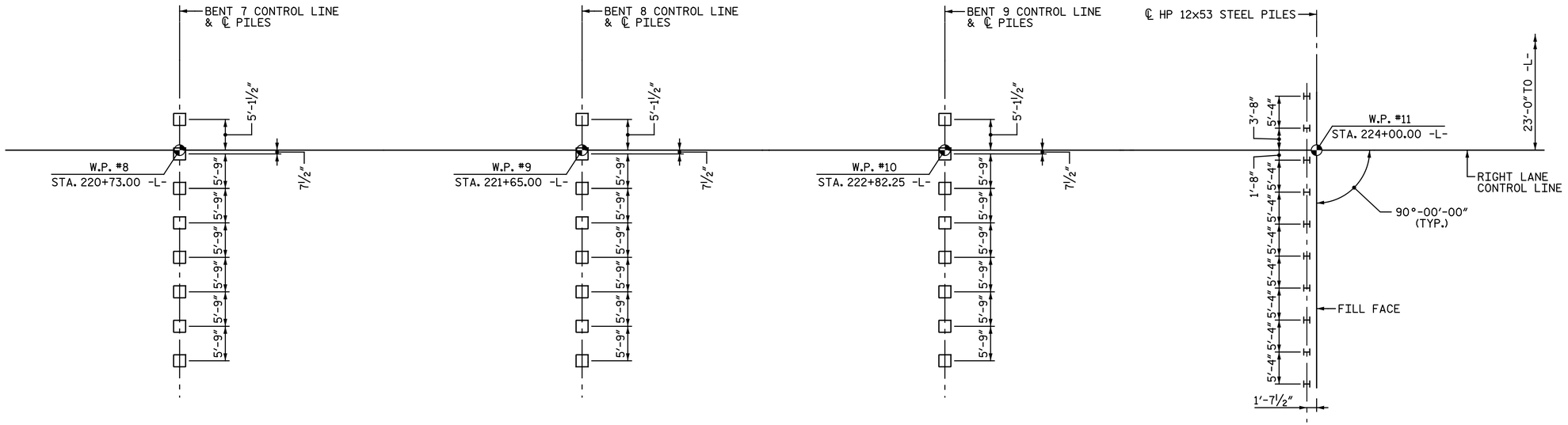
2			4			52



BENT 7 | BENT 8 | BENT 9 | INTEGRAL END BENT 2

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINES.

ALL INTERIOR BENT PILES ARE 24"PRESTRESSED CONCRETE PILES.

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 110 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.

PILES AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 220 TONS PER PILE.

DRIVE PILES AT BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 295 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG OR SCOUR.

PILES AT BENT NO. 2 AND BENT NO. 3 ARE DESIGNED FOR A FACTORED RESISTANCE OF 185 TONS PER PILE.

DRIVE PILES AT BENT NO. 2 AND BENT NO. 3 TO A REQUIRED DRIVING RESISTANCE OF 250 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG OR SCOUR.

PILES AT BENT NO. 4, BENT NO. 5, BENT NO. 6 AND BENT NO. 7 ARE DESIGNED FOR A FACTORED RESISTANCE OF 210 TONS PER PILE.

DRIVE PILES AT BENT NO. 4, BENT NO. 5, BENT NO. 6 AND BENT NO. 7 TO A REQUIRED DRIVING RESISTANCE OF 280 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG OR SCOUR.

PILES AT BENT NO. 8 ARE DESIGNED FOR A FACTORED RESISTANCE OF 230 TONS PER PILE.

DRIVE PILES AT BENT NO. 8 TO A REQUIRED DRIVING RESISTANCE OF 310 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG OR SCOUR.

PILES AT BENT NO. 9 ARE DESIGNED FOR A FACTORED RESISTANCE OF 250 TONS PER PILE.

DRIVE PILES AT BENT NO. 9 TO A REQUIRED DRIVING RESISTANCE OF 335 TONS PER PILE.

INSTALL 24"PRESTRESSED CONCRETE PILES AT BENT NO. 1 TO A TIP ELEVATION NO HIGHER THAN 9.1 FT.

INSTALL 24"PRESTRESSED CONCRETE PILES AT BENT NO. 2 TO A TIP ELEVATION NO HIGHER THAN 12.6 FT.

INSTALL 24"PRESTRESSED CONCRETE PILES AT BENT NO. 3 TO A TIP ELEVATION NO HIGHER THAN 16.0 FT.

INSTALL 24"PRESTRESSED CONCRETE PILES AT BENT NO. 4 TO A TIP ELEVATION NO HIGHER THAN 10.5 FT.

INSTALL 24"PRESTRESSED CONCRETE PILES AT BENT NO. 5 TO A TIP ELEVATION NO HIGHER THAN 17.0 FT.

INSTALL 24"PRESTRESSED CONCRETE PILES AT BENT NO. 6 TO A TIP ELEVATION NO HIGHER THAN 15.5 FT.

INSTALL 24"PRESTRESSED CONCRETE PILES AT BENT NO. 7 TO A TIP ELEVATION NO HIGHER THAN 17.0 FT.

INSTALL 24"PRESTRESSED CONCRETE PILES AT BENT NO. 8 TO A TIP ELEVATION NO HIGHER THAN 15.5 FT.

INSTALL 24"PRESTRESSED CONCRETE PILES AT BENT NO. 9 TO A TIP ELEVATION NO HIGHER THAN 11.2 FT.

STEEL PILE TIPS ARE REQUIRED FOR PRESTRESSED CONCRETE PILES AT BENT NO. 1 THROUGH BENT NO. 9. FOR STEEL PILE TIPS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT NO. 1 TO AN ELEVATION NO LOWER THAN 9.1 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 24". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT NO. 2 TO AN ELEVATION NO LOWER THAN 12.6 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 24". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT NO. 3 TO AN ELEVATION NO LOWER THAN 16.0 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 24". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT NO. 4 TO AN ELEVATION NO LOWER THAN 10.5 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 24". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT NO. 5 TO AN ELEVATION NO LOWER THAN 17.0 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 24". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT NO. 6 TO AN ELEVATION NO LOWER THAN 15.5 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 24". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT NO. 7 TO AN ELEVATION NO LOWER THAN 17.0 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 24". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT NO. 8 TO AN ELEVATION NO LOWER THAN 15.5 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 24". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT NO. 9 TO AN ELEVATION NO LOWER THAN 11.2 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 24". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

TEMPORARY STEEL CASINGS ARE REQUIRED FOR PREDRILLING AT BENT NO. 1 THROUGH BENT NO. 9.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 1 IS ELEVATION 38 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 2 IS ELEVATION 41 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 3 IS ELEVATION 41 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 4 IS ELEVATION 39 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 5 IS ELEVATION 39 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 6 IS ELEVATION 38 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 7 IS ELEVATION 37 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 8 IS ELEVATION 39 FT.

THE SCOUR CRITICAL ELEVATION FOR BENT NO. 9 IS ELEVATION 38 FT.

SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 40,000 TO 50,000 FT-LBS 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.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 125,000 TO 165,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT NO. 1 THROUGH BENT NO. 9. 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.

TESTING THE FIRST PRODUCTION INTERIOR BENT PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED. FOR PDA TESTING, SEE SECTION 450 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. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SPECIAL PROVISIONS.

DRAWN BY : N. B. SPEAKS DATE : 6-20-17
CHECKED BY : T. M. GARRISON DATE : 6-29-17

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 219+22.38 -L-

SHEET 5 OF 6

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER JODY M. GARRISON

DocuSigned by: Jody M. Garrison 6/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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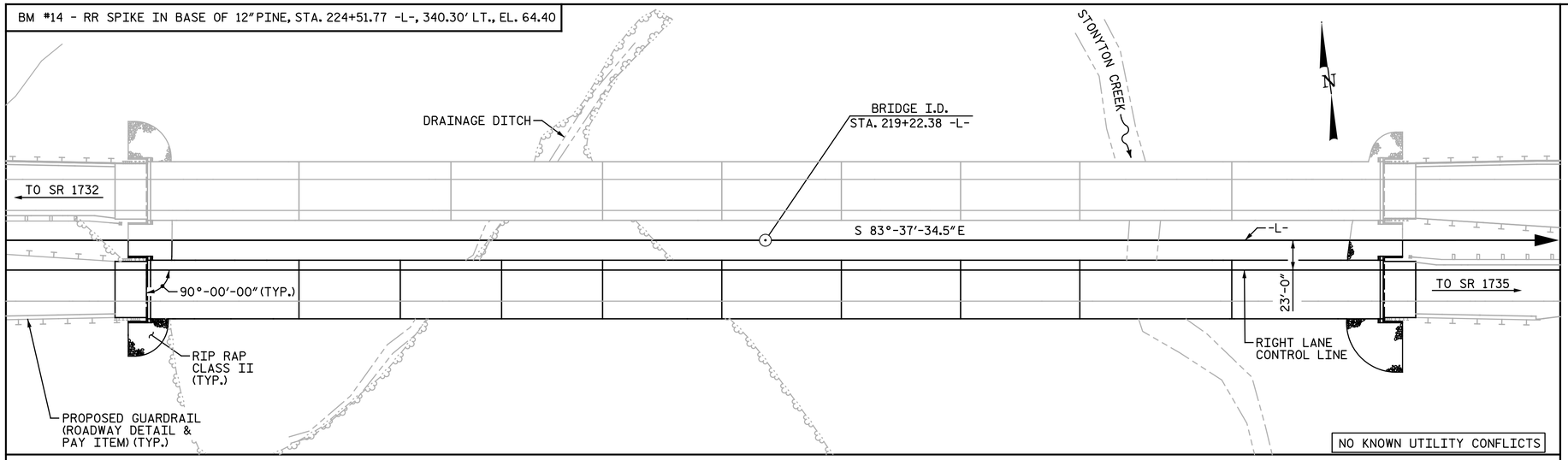
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY PARKWAY OVER STONYTON CREEK BETWEEN SR 1732 AND SR 1735

RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-5
1			3			TOTAL SHEETS
2			4			52



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.

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

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

FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STA. 219+22.38 -L-, SEE SPECIAL PROVISIONS.

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

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

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 63" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR 24" PRESTRESSED CONCRETE PILES	PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	24" PRESTRESSED CONCRETE PILES		HP 12x53 STEEL PILES		STEEL PILE POINTS	PREDRILLING FOR PILES	PILE REDRIVES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS
	EA.	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	EA.	EA.	NO.	LIN. FT.	NO.	LIN. FT.	EA.	LIN. FT.	EA.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE		43,225	38,966				50	4,734.58										1,907.17			LUMP SUM	LUMP SUM
END BENT 1				39.8		6,795				10			10	450	10		5		324	360		
BENT 1				25.5		3,413			8		8	360				267	5					
BENT 2				25.5		3,413			8		8	360				240	5					
BENT 3				25.5		3,413			8		8	320				215	5					
BENT 4				25.5		3,413			8		8	360				250	5					
BENT 5				25.5		3,413			8		8	360				194	5					
BENT 6				25.5		3,413			8		8	400				193	5					
BENT 7				25.5		3,413			8		8	360				180	5					
BENT 8				25.5		3,413			8		8	360				196	5					
BENT 9				25.5		3,413			8		8	400				238	5					
END BENT 2				39.8		6,795				10			10	400	10		5		549	610		
TOTAL	2	43,225	38,966	309.1	LUMP SUM	44,307	50	4,734.58	72	20	72	3,280	20	850	20	1,973	55	1,907.17	873	970	LUMP SUM	LUMP SUM

HYDRAULIC DATA

DESIGN DISCHARGE	= 1,660 CFS
FREQUENCY OF DESIGN FLOOD	= 50 YR
DESIGN HIGH WATER ELEVATION	= 42.8
DRAINAGE AREA	= 12.7 SQ. MI.
BASE DISCHARGE (Q100)	= 2,050 CFS
BASE HIGH WATER ELEVATION	= 43.1

OVERTOPPING DATA

OVERTOPPING DISCHARGE	= 3,160+ CFS
FREQUENCY OF OVERTOPPING FLOOD	= 500+ YR
OVERTOPPING FLOOD ELEVATION	= 61.5

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 6 OF 6

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

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 STONYTON CREEK BETWEEN SR 1732 AND SR 1735

RIGHT 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:	S8-6
1			3			TOTAL SHEETS
2			4			52

DRAWN BY : M. D. MAYHEW DATE : 5-12-17

CHECKED BY : T. M. GARRISON DATE : 6-27-17

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	1.03	--	1.75	0.876	1.32	B	1	37.96	0.876	1.04	B	1	22.49	1.00	0.876	1.03	A	1	57.50	1, 2, 3
		HL-93 (OPERATING)	N/A		1.71	--	1.35	0.876	1.71	B	1	37.96	0.914	1.78	A	3	22.57	N/A	-	-	-	-	-	2, 3
		HS-20 (INVENTORY)	36.000	2	1.36	48.96	1.75	0.876	1.74	B	1	37.96	0.876	1.68	B	1	22.49	1.00	0.876	1.36	B	1	37.96	1, 2, 3
		HS-20 (OPERATING)	36.000		2.26	81.36	1.35	0.876	2.26	B	1	37.96	0.914	2.32	E	3	17.57	N/A	-	-	-	-	-	2, 3
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.10	41.85	1.40	0.876	4.95	B	1	37.96	0.914	5.50	B	3	14.76	1.00	0.876	3.10	B	1	37.96	1, 2, 3
		SNGARBS2	20.000		2.30	46.00	1.40	0.876	3.67	B	1	37.96	0.914	3.89	B	3	14.76	1.00	0.876	2.30	B	1	37.96	1, 2, 3
		SNAGRIS2	22.000		2.18	47.96	1.40	0.876	3.47	B	1	37.96	0.914	3.61	E	3	17.57	1.00	0.876	2.18	B	1	37.96	1, 2, 3
		SNCOTTS3	27.250		1.54	41.97	1.40	0.876	2.46	B	1	37.96	0.914	2.69	B	3	14.76	1.00	0.876	1.54	B	1	37.96	1, 2, 3
		SNAGGRS4	34.925		1.29	45.05	1.40	0.876	2.05	B	1	37.96	0.914	2.21	E	3	17.57	1.00	0.876	1.29	B	1	37.96	1, 2, 3
		SNS5A	35.550		1.26	44.79	1.40	0.876	2.01	B	1	37.96	0.914	2.23	E	3	17.57	1.00	0.876	1.26	B	1	37.96	1, 2, 3
		SNS6A	39.950		1.15	45.94	1.40	0.876	1.84	B	1	37.96	0.914	2.02	E	3	17.57	1.00	0.876	1.15	B	1	37.96	1, 2, 3
		SNS7B	42.000		1.10	46.20	1.40	0.876	1.75	B	1	37.96	0.914	1.98	E	3	17.57	1.00	0.876	1.10	B	1	37.96	1, 2, 3
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.41	46.53	1.40	0.876	2.24	B	1	37.96	0.914	2.44	E	3	17.57	1.00	0.876	1.41	B	1	37.96	1, 2, 3
		TNT4A	33.075		1.41	46.64	1.40	0.876	2.25	B	1	37.96	0.914	2.38	E	3	17.57	1.00	0.876	1.41	B	1	37.96	1, 2, 3
		TNT6A	41.600		1.15	47.84	1.40	0.876	1.84	B	1	37.96	0.914	2.10	E	3	17.57	1.00	0.876	1.15	B	1	37.96	1, 2, 3
		TNT7A	42.000		1.16	48.72	1.40	0.876	1.84	B	1	37.96	0.914	2.06	E	3	17.57	1.00	0.876	1.16	B	1	37.96	1, 2, 3
		TNT7B	42.000		1.19	49.98	1.40	0.876	1.91	B	1	37.96	0.914	1.93	E	3	17.57	1.00	0.876	1.19	B	1	37.96	1, 2, 3
		TNAGRIT4	43.000		1.14	49.02	1.40	0.876	1.81	B	1	37.96	0.914	1.87	E	3	17.57	1.00	0.876	1.14	B	1	37.96	1, 2, 3
		TNAGT5A	45.000		1.07	48.15	1.40	0.876	1.71	B	1	37.96	0.914	1.85	E	3	17.57	1.00	0.876	1.07	B	1	37.96	1, 2, 3
		TNAGT5B	45.000	3	1.06	47.70	1.40	0.876	1.69	B	1	37.96	0.876	1.71	B	1	22.49	1.00	0.876	1.06	B	1	37.96	1, 2, 3

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.
3. RATING FACTORS ARE THE SAME FOR SPANS A, I, & J.
   RATING FACTORS ARE THE SAME FOR SPANS B, C & D.
   RATING FACTORS ARE THE SAME FOR SPANS E, F, G & H.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

(2) DESIGN LOAD RATING (HS-20)

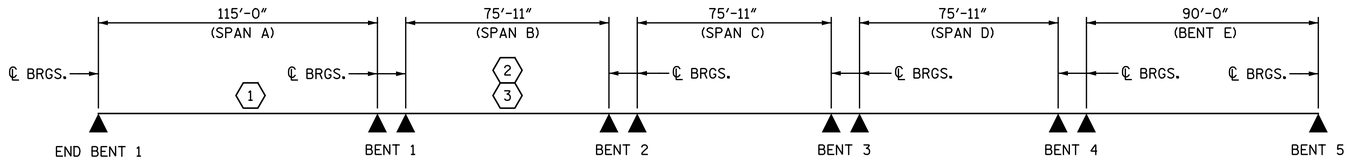
(3) LEGAL LOAD RATING **

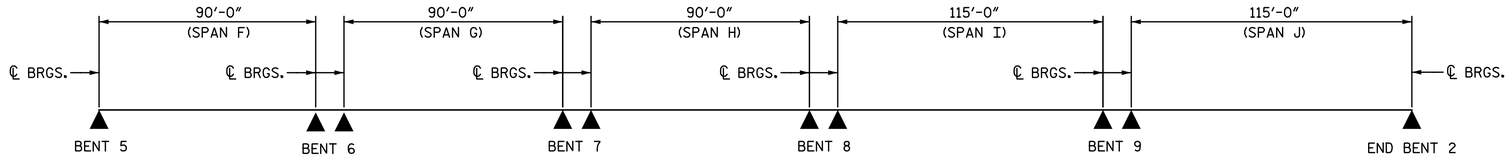
** SEE CHART FOR VEHICLE TYPE

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: 219+22.38 -L-

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

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Michael Baker INTERNATIONAL

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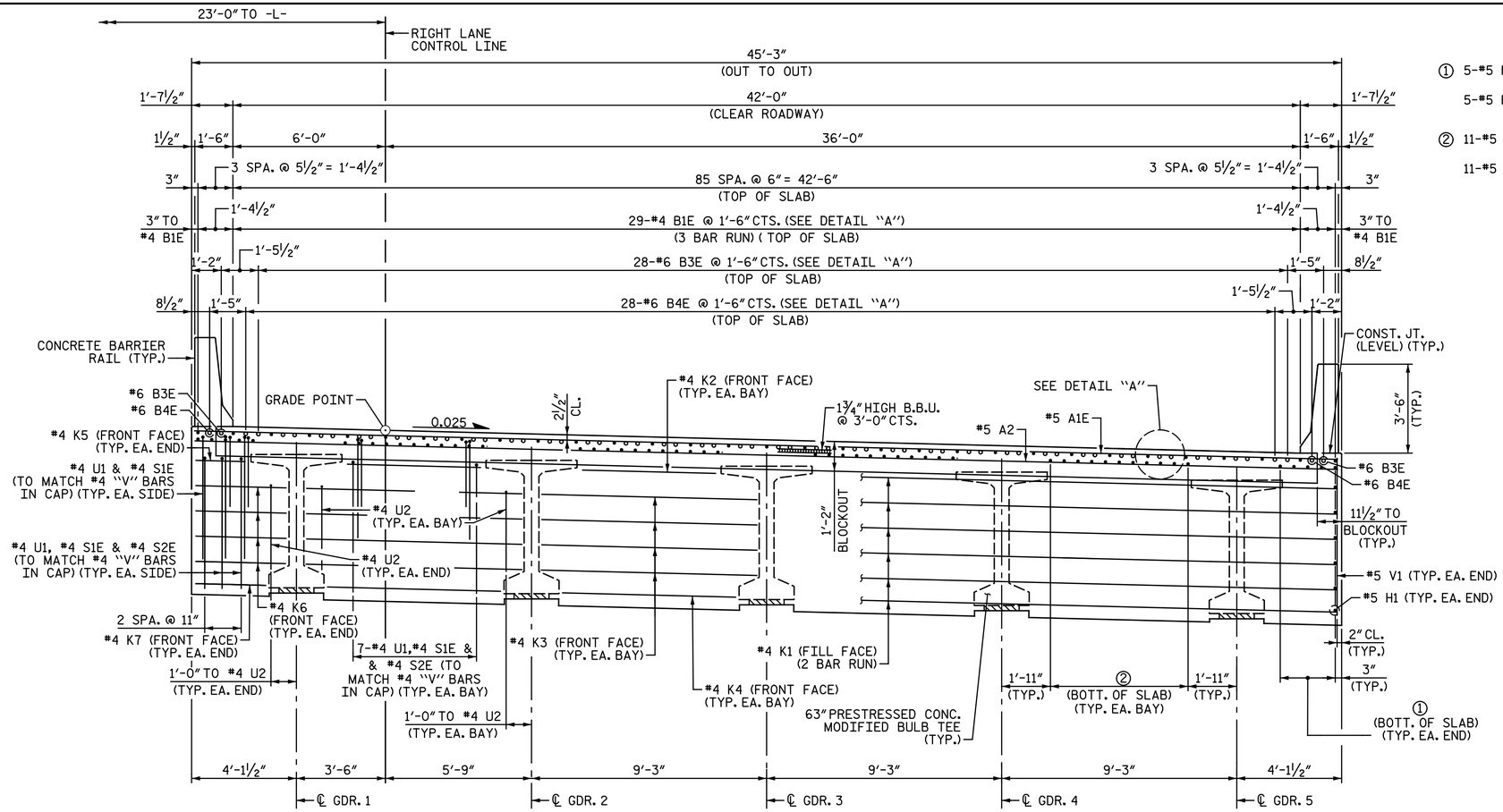
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-7
1			3			TOTAL SHEETS
2			4			52

ASSEMBLED BY : N. B. SPEAKS	DATE : 6-20-17
CHECKED BY : T. M. GARRISON	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. LRFR1

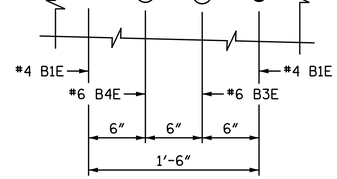


TYPICAL SECTION AT INTEGRAL END BENT

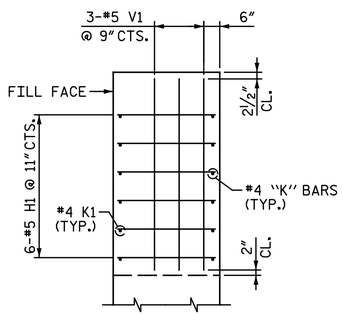
(END BENT 1 SHOWN, END BENT 2 SIMILAR UNLESS OTHERWISE NOTED)
(#4 B5E BARS NOT SHOWN FOR CLARITY)

① 5-#5 B2 @ 6½″ CTS. (SPANS A, B, C & D) (7 BAR RUN)
5-#5 B13 @ 6½″ CTS. (SPANS H, I & J) (6 BAR RUN)

② 11-#5 B2 @ 6½″ CTS. (SPANS A, B, C & D) (7 BAR RUN)
11-#5 B13 @ 6½″ CTS. (SPANS H, I & J) (6 BAR RUN)

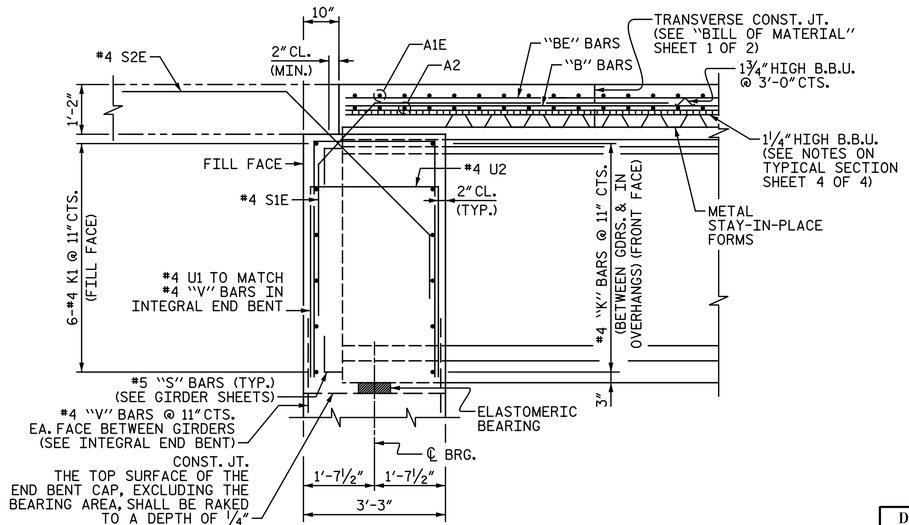


DETAIL ''A''



END OF END BENT 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: 219+22.38 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

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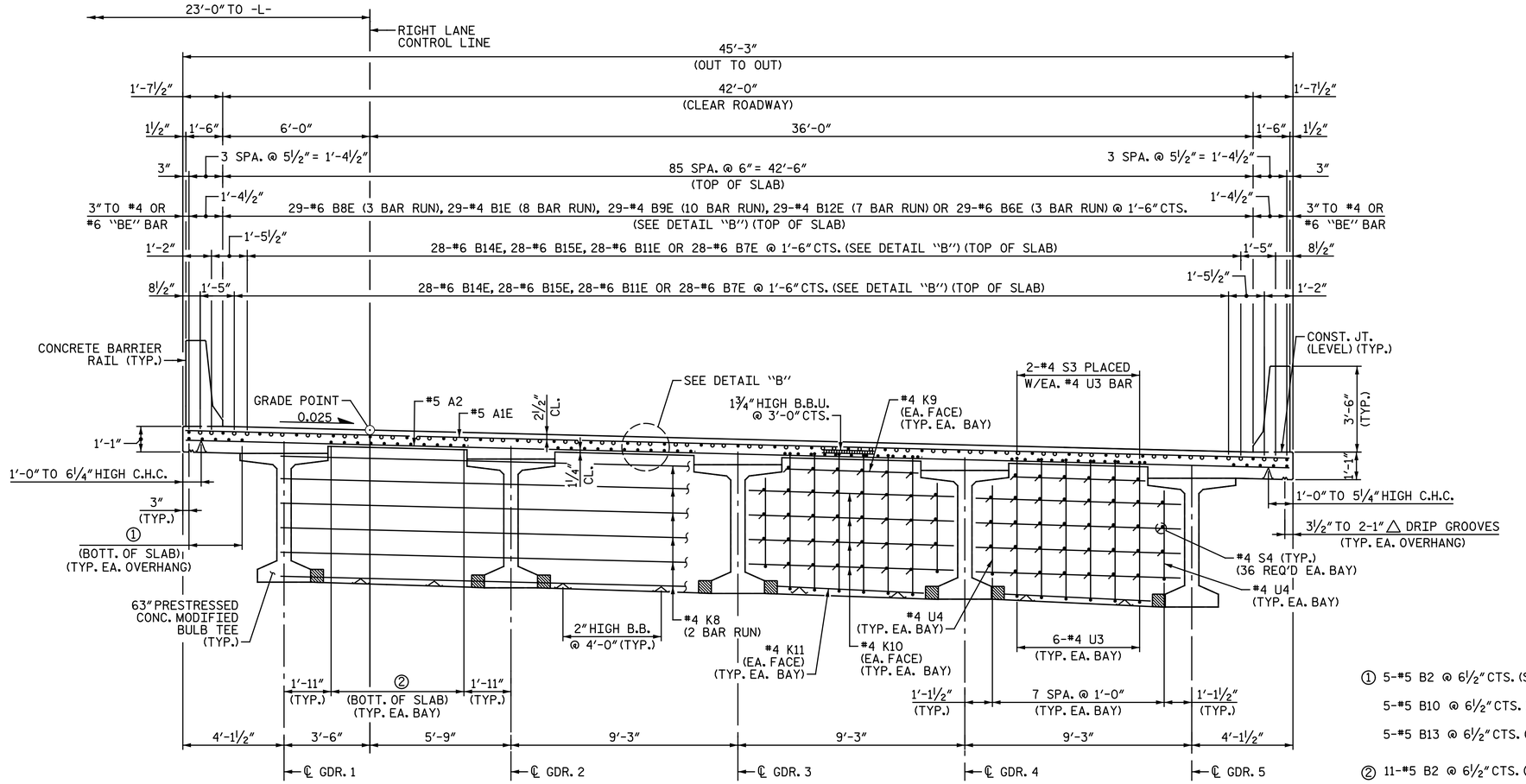
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-8
1			3			TOTAL SHEETS
2			4			52

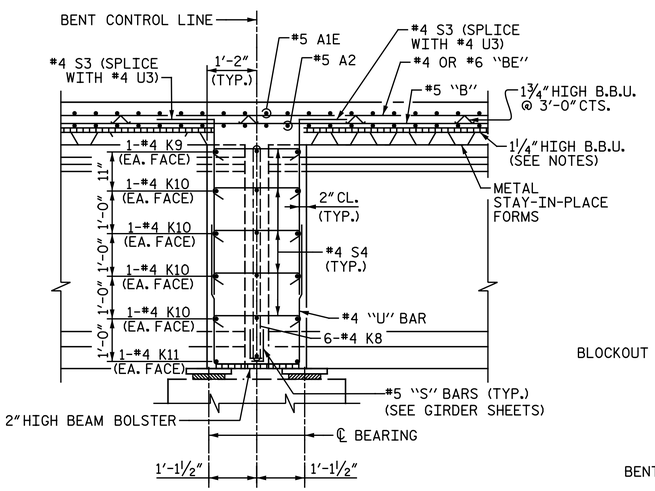
DRAWN BY : D. A. LAMAY DATE : 6-19-17
CHECKED BY : T. M. GARRISON DATE : 6-19-17



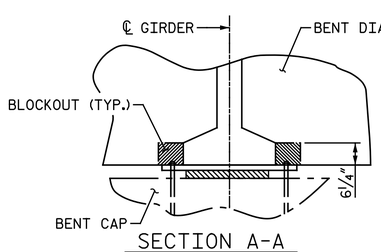
TYPICAL SECTION AT FIXED BENT
(BENT 1, 2, 3, 5, 6, 8 & 9)

① 5-#5 B2 @ 6½″ CTS. (SPANS A, B, C & D) (7 BAR RUN)
5-#5 B10 @ 6½″ CTS. (SPANS E, F & G) (5 BAR RUN)
5-#5 B13 @ 6½″ CTS. (SPANS H, I & J) (6 BAR RUN)

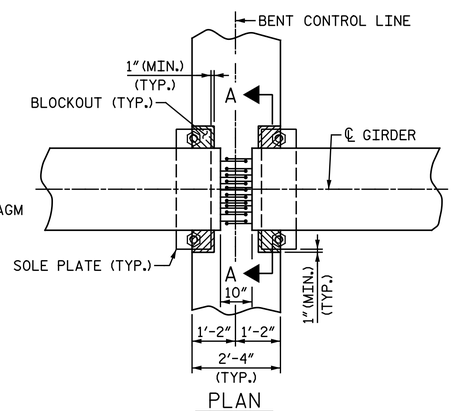
② 11-#5 B2 @ 6½″ CTS. (SPANS A, B, C & D) (7 BAR RUN)
11-#5 B10 @ 6½″ CTS. (SPANS E, F & G) (5 BAR RUN)
11-#5 B13 @ 6½″ CTS. (SPANS H, I & J) (6 BAR RUN)



SECTION THRU FIXED BENT DIAPHRAGM

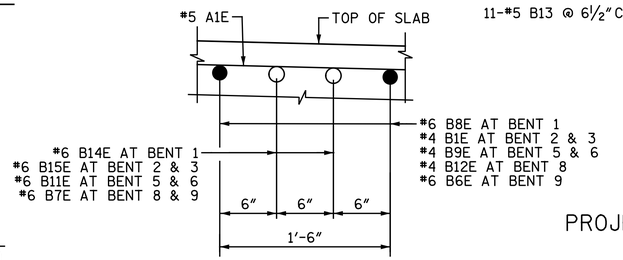


SECTION A-A



PLAN

BENT DIAPHRAGM BLOCKOUT DETAIL



DETAIL ″B″

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 219+22.38 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

9/20/2017

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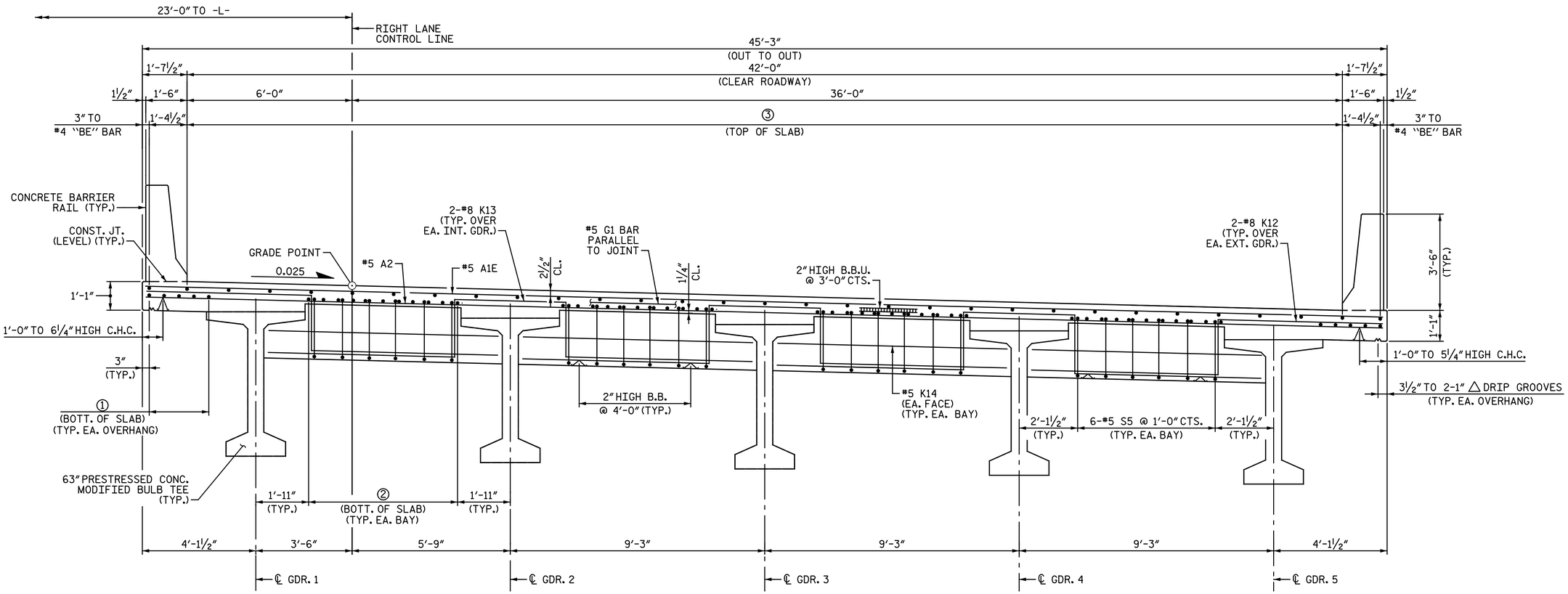
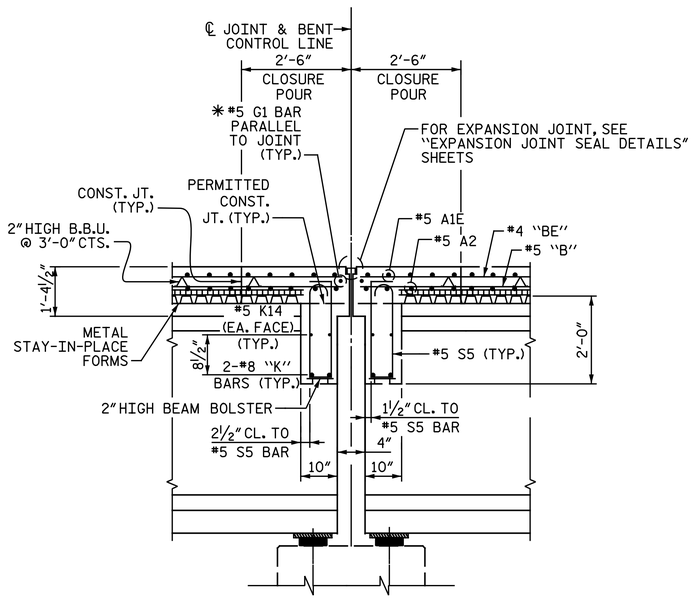
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-9
1			3			TOTAL SHEETS
2			4			52

DRAWN BY : D. A. LAMAY DATE : 9-20-17
CHECKED BY : T. M. GARRISON DATE : 9-20-17



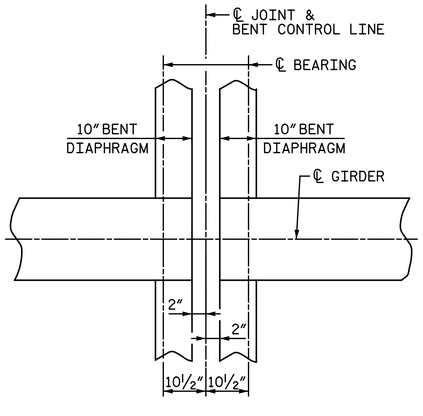


SECTION THRU EXPANSION BENT DIAPHRAGM

✱#5 G1 BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.
#4 J1E BARS NOT SHOWN FOR CLARITY, SEE "EXPANSION JOINT SEAL DETAILS".

TYPICAL SECTION AT EXPANSION BENT

(BENT 4 & 7)



PLAN OF EXPANSION BENT DIAPHRAGM

① 5-#5 B2 @ 6½″CTS. (SPANS A, B, C & D) (7 BAR RUN)
5-#5 B10 @ 6½″CTS. (SPANS E, F & G) (5 BAR RUN)
5-#5 B13 @ 6½″CTS. (SPANS H, I & J) (6 BAR RUN)

② 11-#5 B2 @ 6½″CTS. (SPANS A, B, C & D) (7 BAR RUN)
11-#5 B10 @ 6½″CTS. (SPANS E, F & G) (5 BAR RUN)
11-#5 B13 @ 6½″CTS. (SPANS H, I & J) (6 BAR RUN)

③ 29-#4 B1E @ 1′-6″CTS. (SPAN D) (8 BAR RUN)
29-#4 B9E @ 1′-6″CTS. (SPANS E & G) (10 BAR RUN)
29-#4 B12E @ 1′-6″CTS. (SPAN H) (7 BAR RUN)

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 219+22.38 -L-

SHEET 3 OF 4

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

TYPICAL SECTION

RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-10
1			3			TOTAL SHEETS
2			4			52

DRAWN BY : D. A. LAMAY DATE : 6-19-17
CHECKED BY : T. M. GARRISON DATE : 6-19-17

① 5-#5 B2 @ 6½″ CTS. (SPANS A, B, C & D) (7 BAR RUN)

5-#5 B10 @ 6½″ CTS. (SPANS E, F & G) (5 BAR RUN)

5-#5 B13 @ 6½″ CTS. (SPANS H, I & J) (6 BAR RUN)

② 11-#5 B2 @ 6½″ CTS. (SPANS A, B, C & D) (7 BAR RUN)

11-#5 B10 @ 6½″ CTS. (SPANS E, F & G) (5 BAR RUN)

11-#5 B13 @ 6½″ CTS. (SPANS H, I & J) (6 BAR RUN)

③ 29-#4 B1E @ 1′-6″ CTS. (SPANS A & J) (3 BAR RUN)

29-#4 B1E @ 1′-6″ CTS. (SPANS B, C & D) (8 BAR RUN)

29-#4 B9E @ 1′-6″ CTS. (SPANS E, F & G) (10 BAR RUN)

29-#4 B12E @ 1′-6″ CTS. (SPANS H & I) (7 BAR RUN)

NOTES:

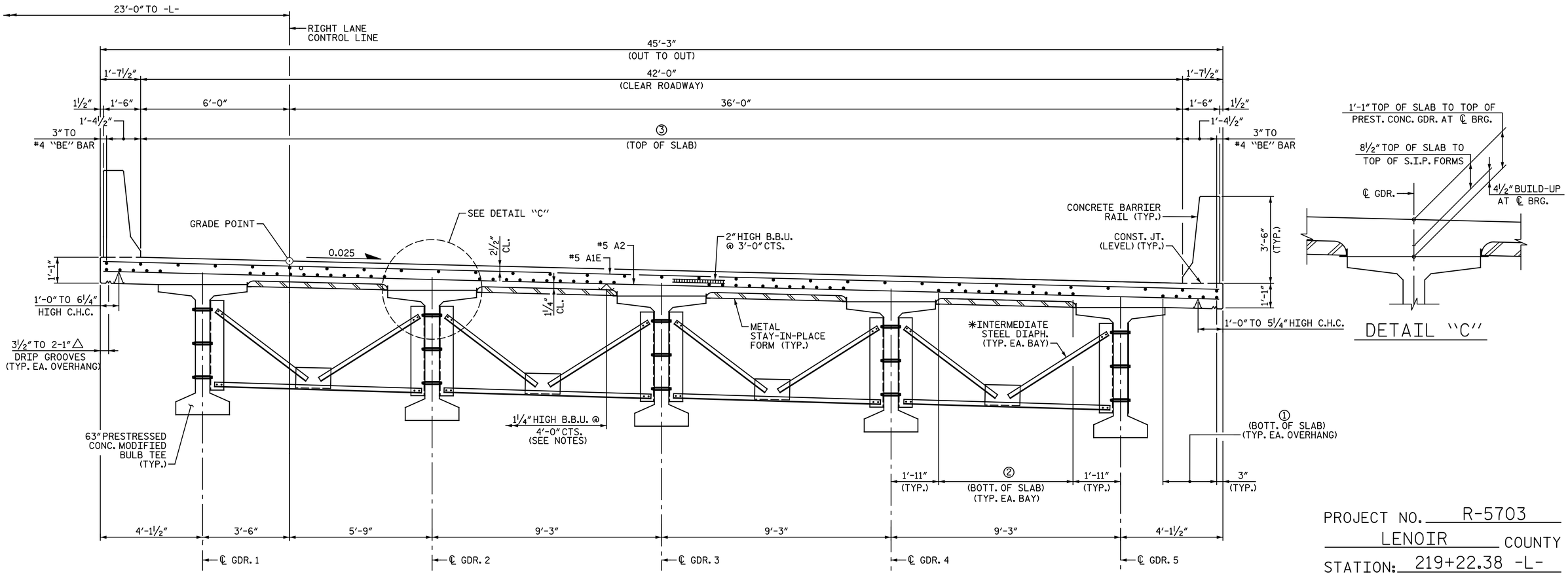
PROVIDE 1¼″ HIGH BEAM BOLSTERS UPPER AT 4′-0″ CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4′-0″ CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2½″ ABOVE 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 CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

✳ FOR DETAILS OF INTERMEDIATE DIAPHRAGMS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 63″ MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET.



TYPICAL SECTION AT INTERMEDIATE DIAPHRAGM

DETAIL "C"

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Tom M Garrison 8/10/2017

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-11
1			3			TOTAL SHEETS
2			4			52

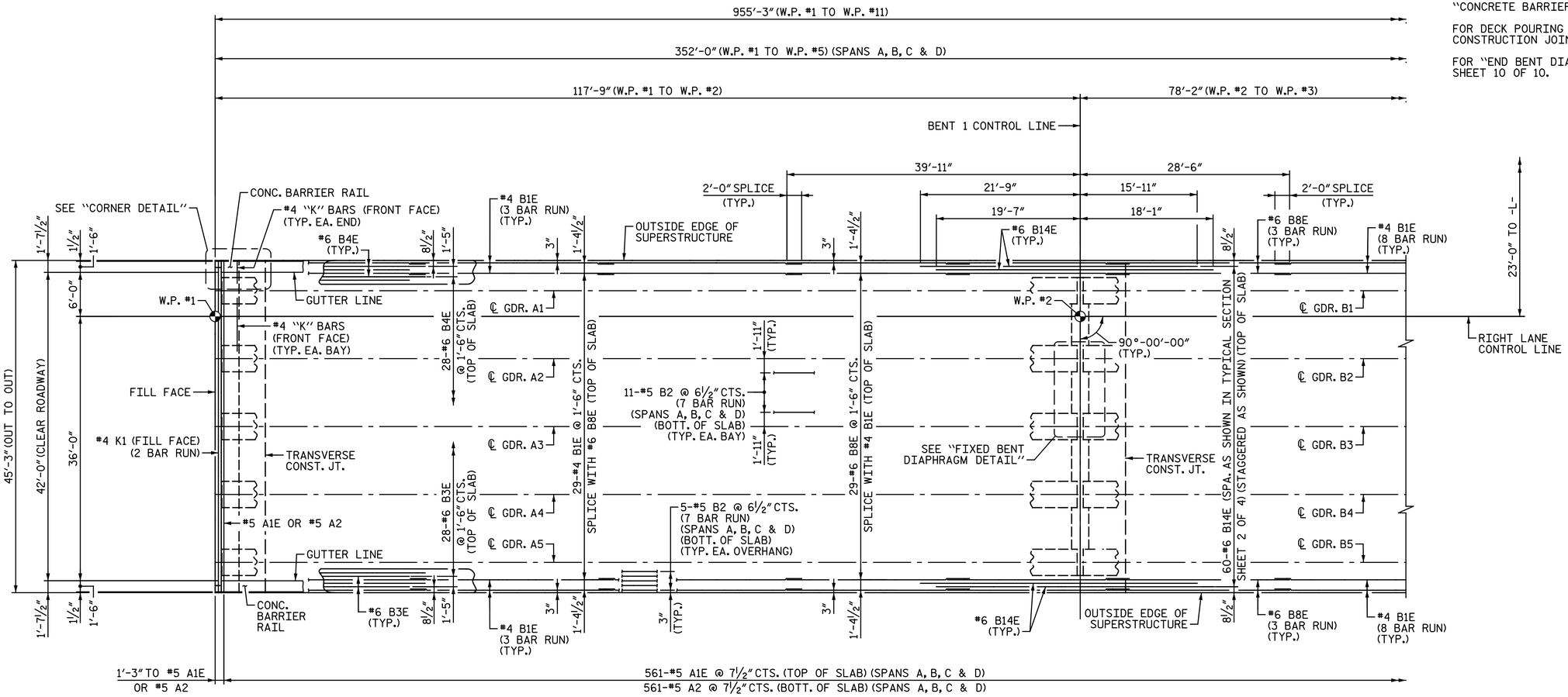
DRAWN BY : D. A. LAMAY DATE : 6-19-17
CHECKED BY : T. M. GARRISON DATE : 6-19-17

NOTES:

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

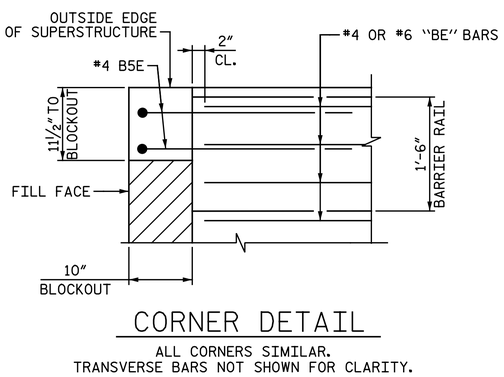
FOR DECK POURING SEQUENCE AND LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE "BILL OF MATERIAL" SHEET 1 OF 2.

FOR "END BENT DIAPHRAGM DETAIL", SEE "PLAN OF SPANS" SHEET 10 OF 10.



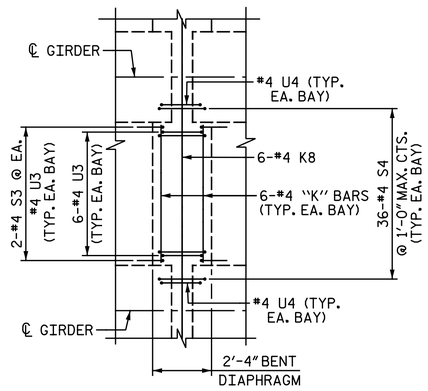
PLAN OF SPAN A

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

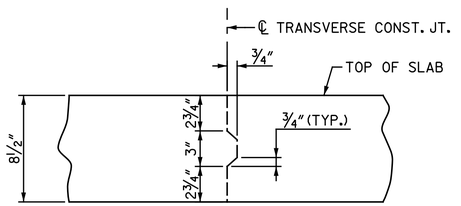


CORNER DETAIL

ALL CORNERS SIMILAR.
TRANSVERSE BARS NOT SHOWN FOR CLARITY.



FIXED BENT DIAPHRAGM DETAIL



TRANSVERSE CONST. JT. DETAIL

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 1 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-12
1			3			TOTAL SHEETS
2			4			52

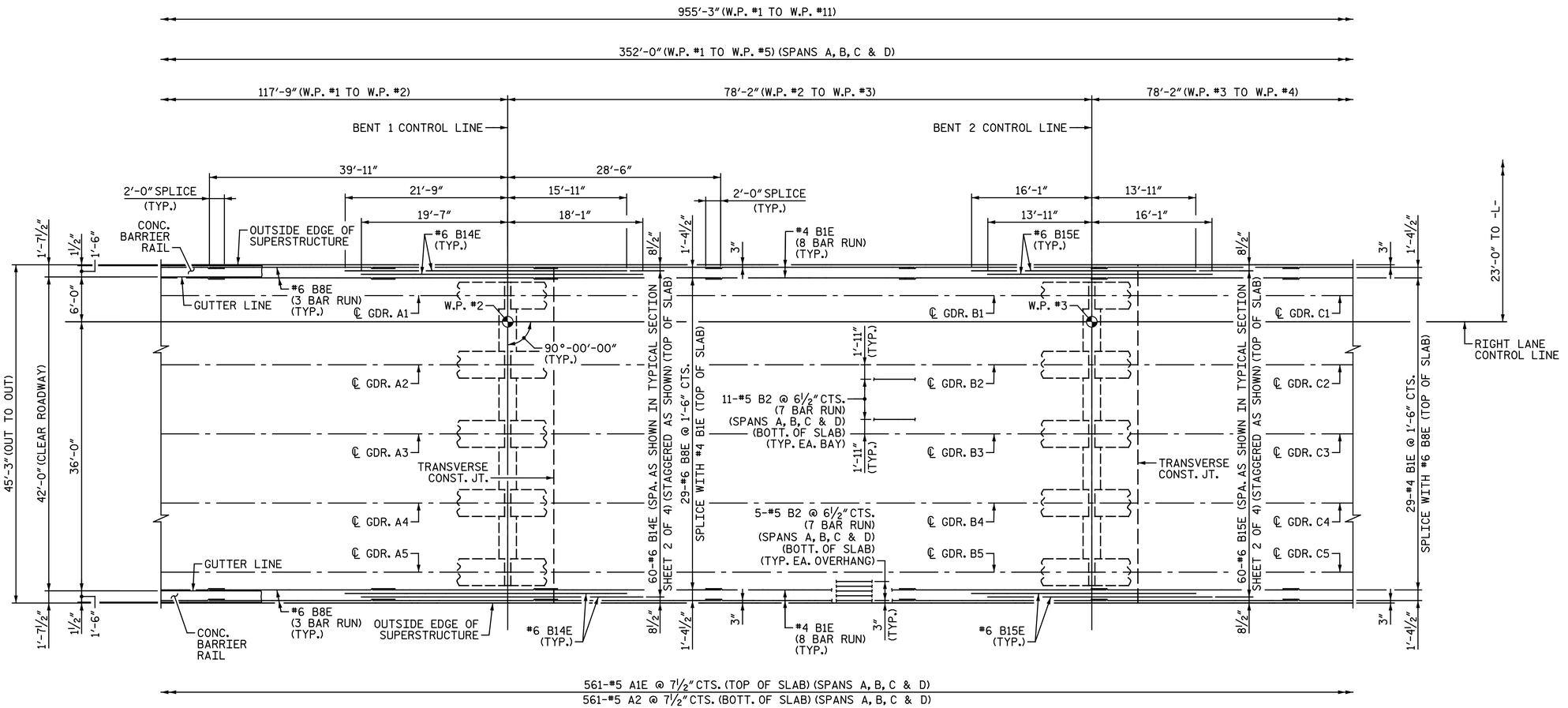
DRAWN BY : M. D. MAYHEW DATE : 6-21-17
CHECKED BY : T. M. GARRISON DATE : 6-26-17

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 1 OF 2.

FOR "FIXED BENT DIAPHRAGM DETAIL" AND "TRANSVERSE CONSTRUCTION JOINT DETAIL", SEE "PLAN OF SPANS" SHEET 1 OF 10.



PLAN OF SPAN B

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 2 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

PLAN OF SPANS

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

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1			3			TOTAL SHEETS
2			4			52

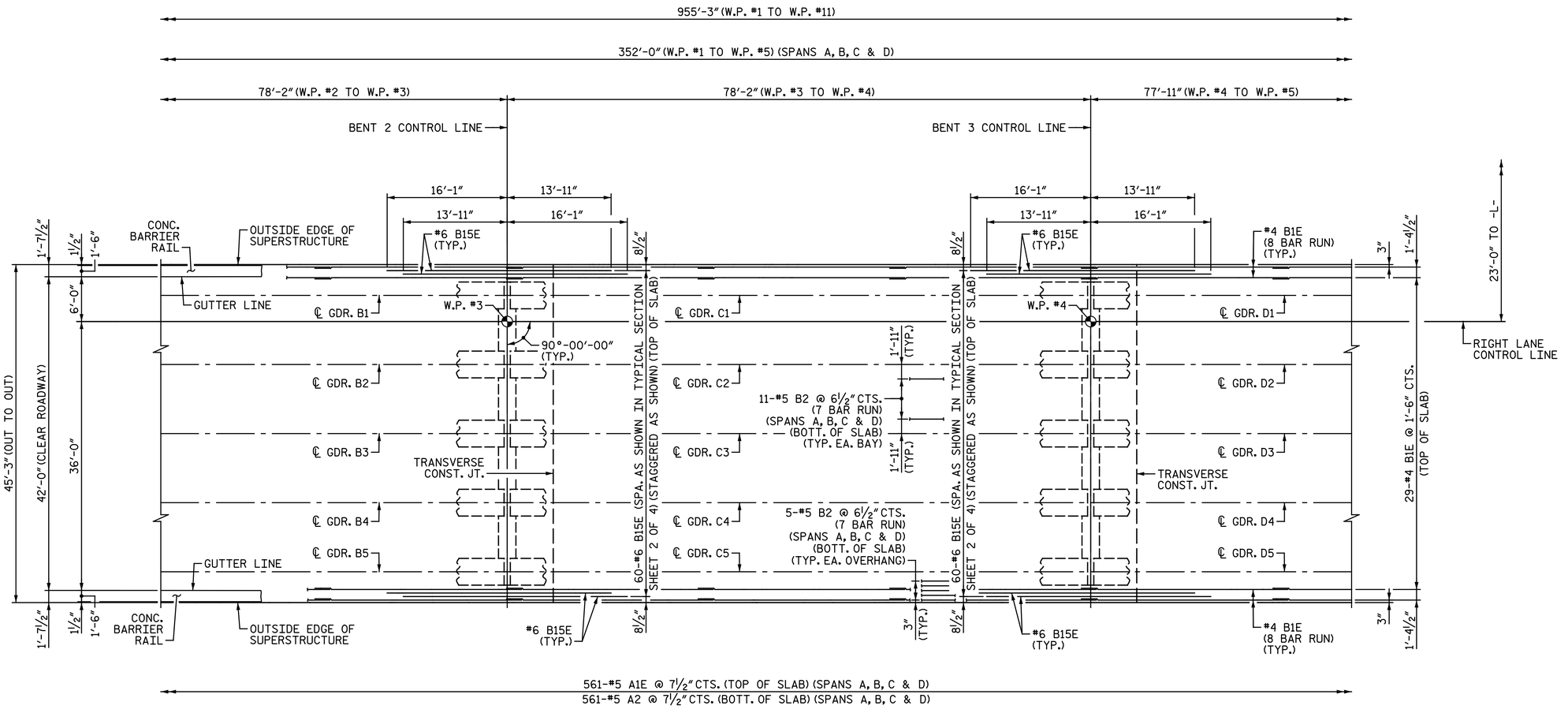
DRAWN BY : M. D. MAYHEW DATE : 6-22-17
CHECKED BY : T. M. GARRISON DATE : 6-26-17

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 1 OF 2.

FOR "FIXED BENT DIAPHRAGM DETAIL" AND "TRANSVERSE CONSTRUCTION JOINT DETAIL", SEE "PLAN OF SPANS" SHEET 1 OF 10.



PLAN OF SPAN C

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 3 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

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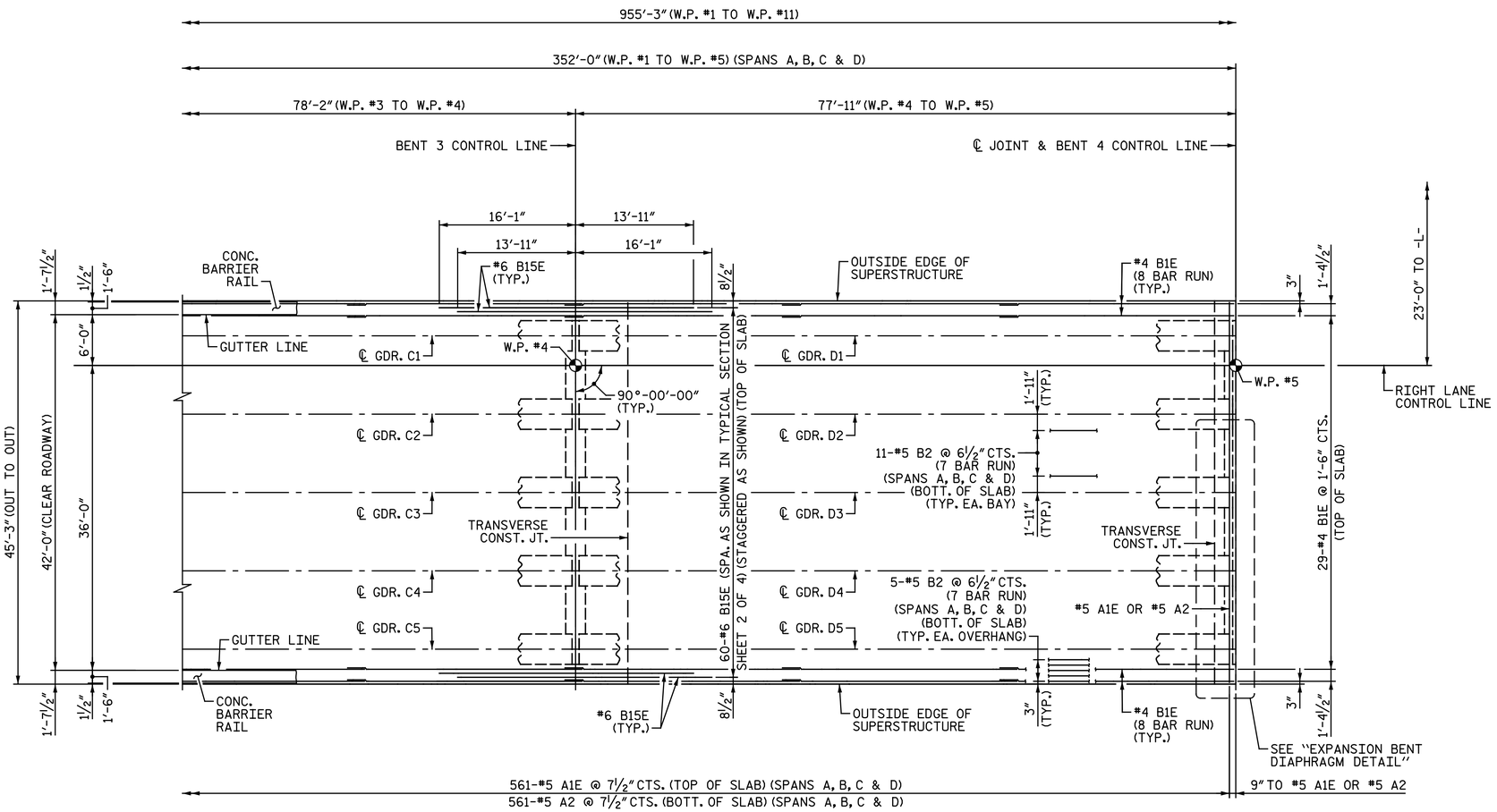
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-14
1			3			TOTAL SHEETS
2			4			52

DRAWN BY : M. D. MAYHEW DATE : 6-23-17
CHECKED BY : T. M. GARRISON DATE : 6-26-17



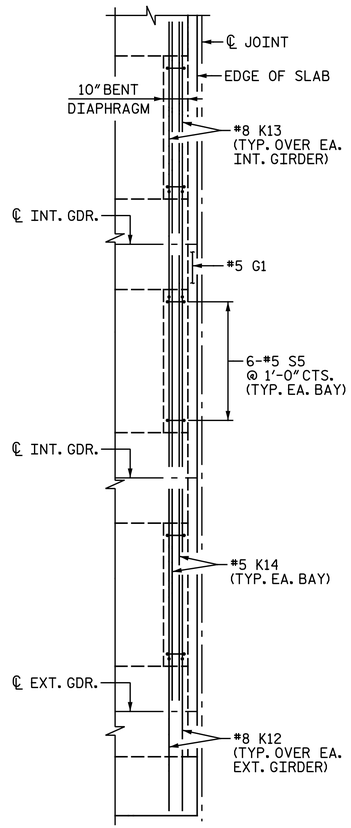
PLAN OF SPAN D

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 1 OF 2.

FOR "FIXED BENT DIAPHRAGM DETAIL" AND "TRANSVERSE CONSTRUCTION JOINT DETAIL", SEE "PLAN OF SPANS" SHEET 1 OF 10.



EXPANSION BENT DIAPHRAGM DETAIL

#4 J1E BARS NOT SHOWN FOR CLARITY. SEE "EXPANSION JOINT SEAL DETAILS".

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 4 OF 10

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

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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:	S8-15
1			3			TOTAL SHEETS
2			4			52

DRAWN BY : M. D. MAYHEW DATE : 6-23-17
CHECKED BY : T. M. GARRISON DATE : 6-26-17

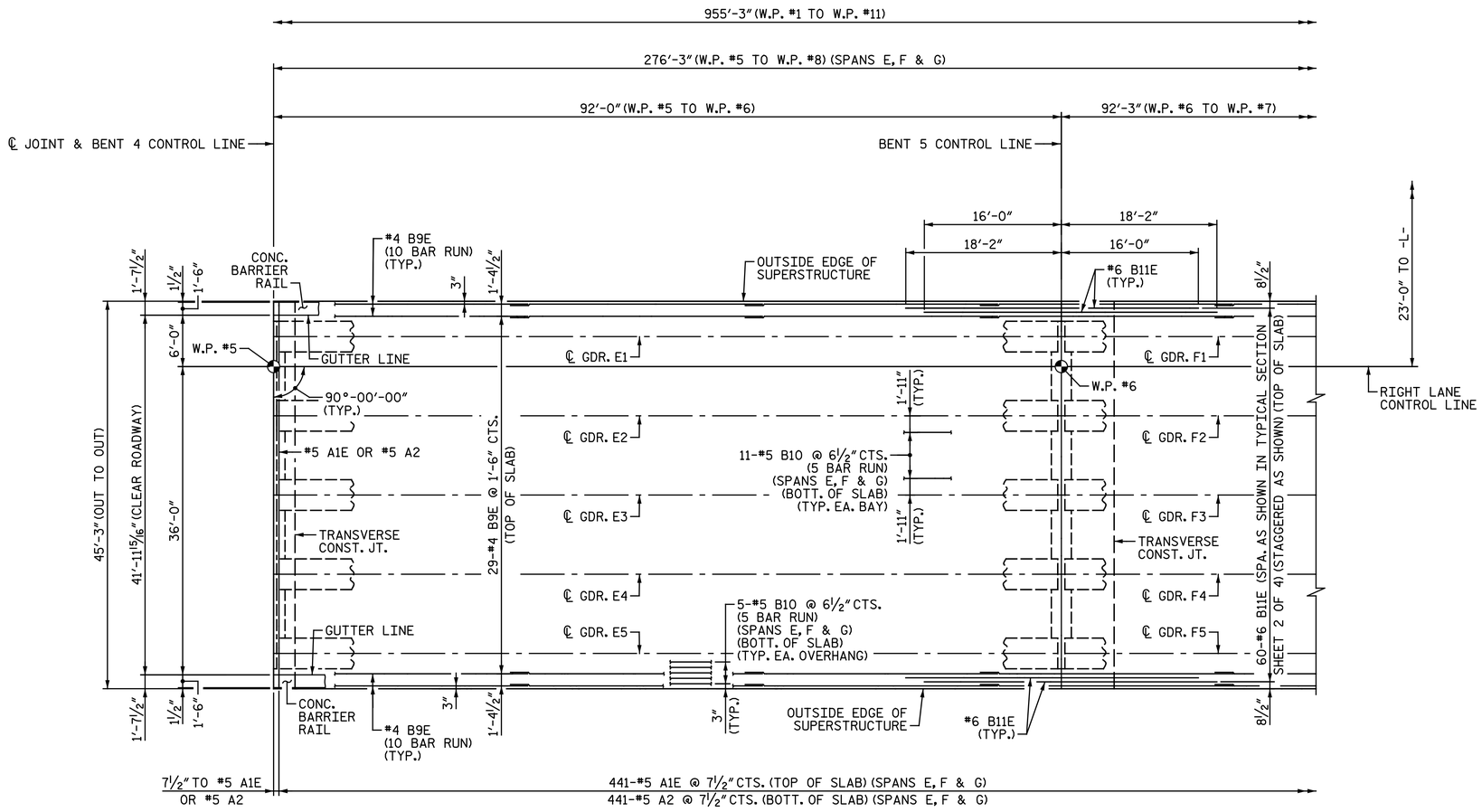
NOTES:

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 1 OF 2.

FOR "FIXED BENT DIAPHRAGM DETAIL" AND "TRANSVERSE CONSTRUCTION JOINT DETAIL", SEE "PLAN OF SPANS" SHEET 1 OF 10.

FOR "EXPANSION BENT DIAPHRAGM DETAIL", SEE "PLAN OF SPANS" SHEET 4 OF 10.



PLAN OF SPAN E

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 5 OF 10

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-16
1			3			TOTAL SHEETS
2			4			52

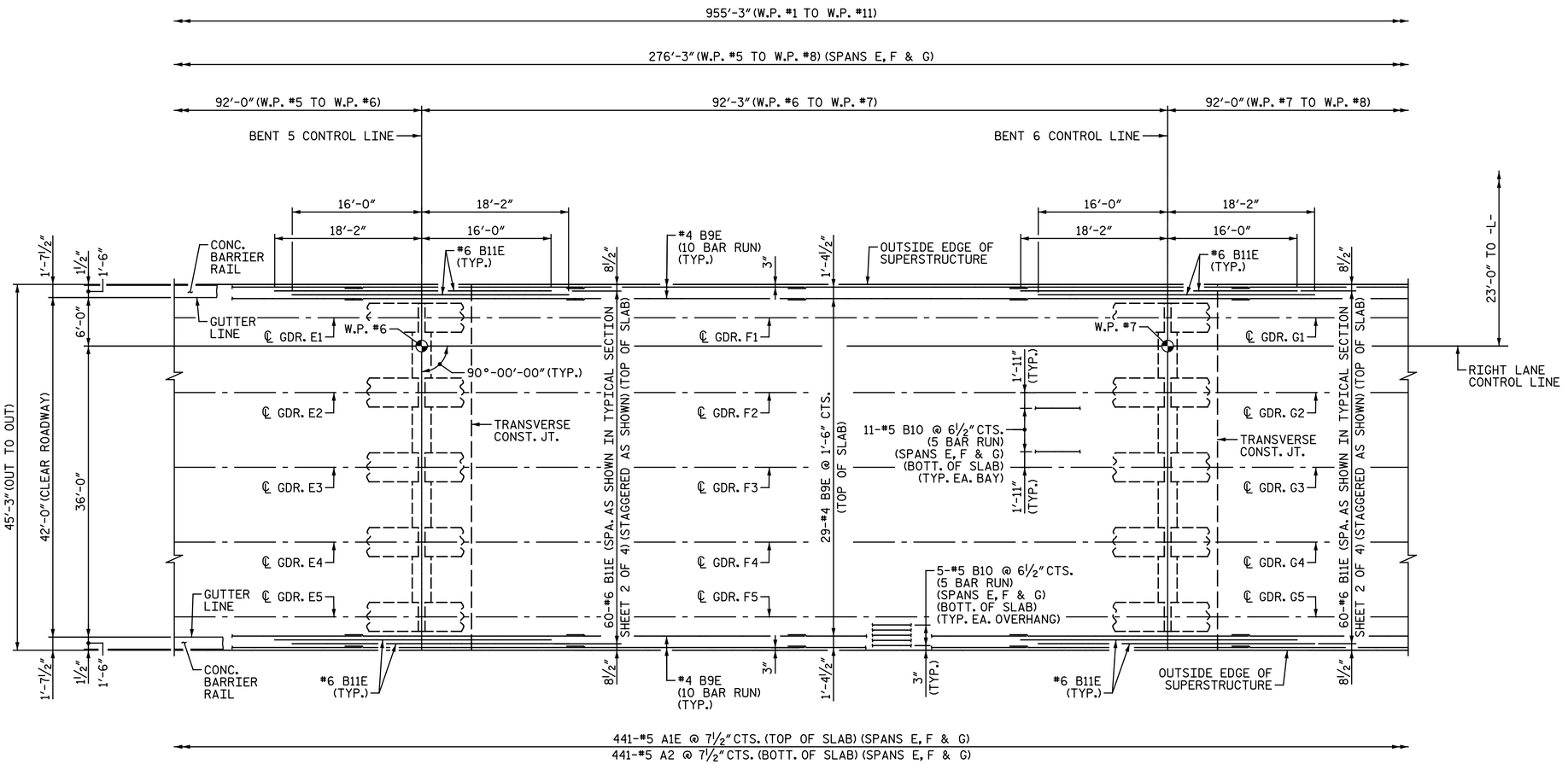
DRAWN BY : M. D. MAYHEW DATE : 6-26-17
CHECKED BY : T. M. GARRISON DATE : 6-27-17

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 1 OF 2.

FOR "FIXED BENT DIAPHRAGM DETAIL" AND "TRANSVERSE CONSTRUCTION JOINT DETAIL", SEE "PLAN OF SPANS" SHEET 1 OF 10.



PLAN OF SPAN F

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 6 OF 10

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

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STATE OF NORTH CAROLINA
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-17
1			3			TOTAL SHEETS
2			4			52

DRAWN BY : M. D. MAYHEW DATE : 6-27-17
CHECKED BY : T. M. GARRISON DATE : 6-27-17

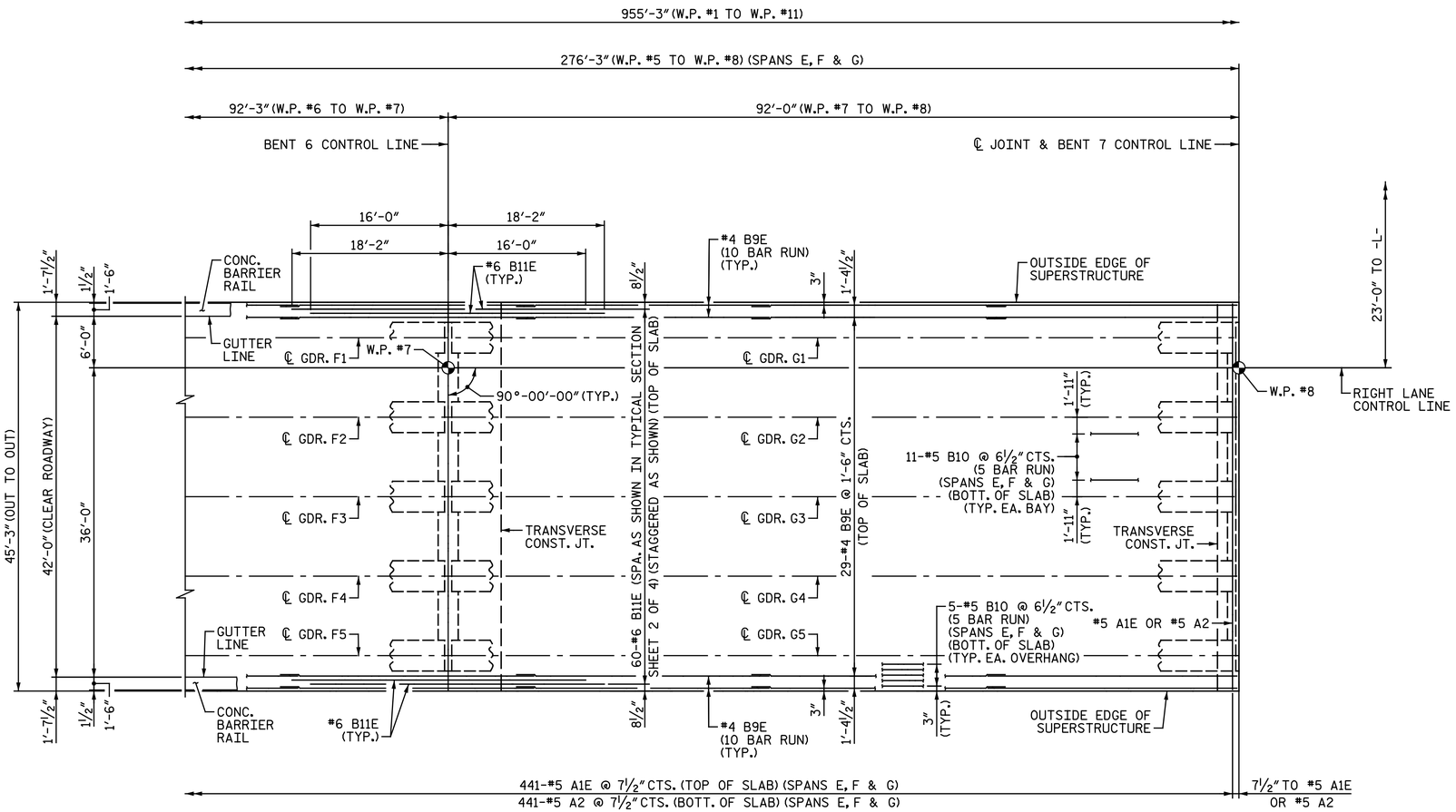
NOTES:

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 1 OF 2.

FOR "FIXED BENT DIAPHRAGM DETAIL" AND "TRANSVERSE CONSTRUCTION JOINT DETAIL", SEE "PLAN OF SPANS" SHEET 1 OF 10.

FOR "EXPANSION BENT DIAPHRAGM DETAIL", SEE "PLAN OF SPANS" SHEET 4 OF 10.



PLAN OF SPAN G

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 7 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

PLAN OF SPANS

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

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

SHEET NO. S8-18

TOTAL SHEETS 52

DRAWN BY : M. D. MAYHEW DATE : 6-27-17
CHECKED BY : T. M. GARRISON DATE : 6-27-17

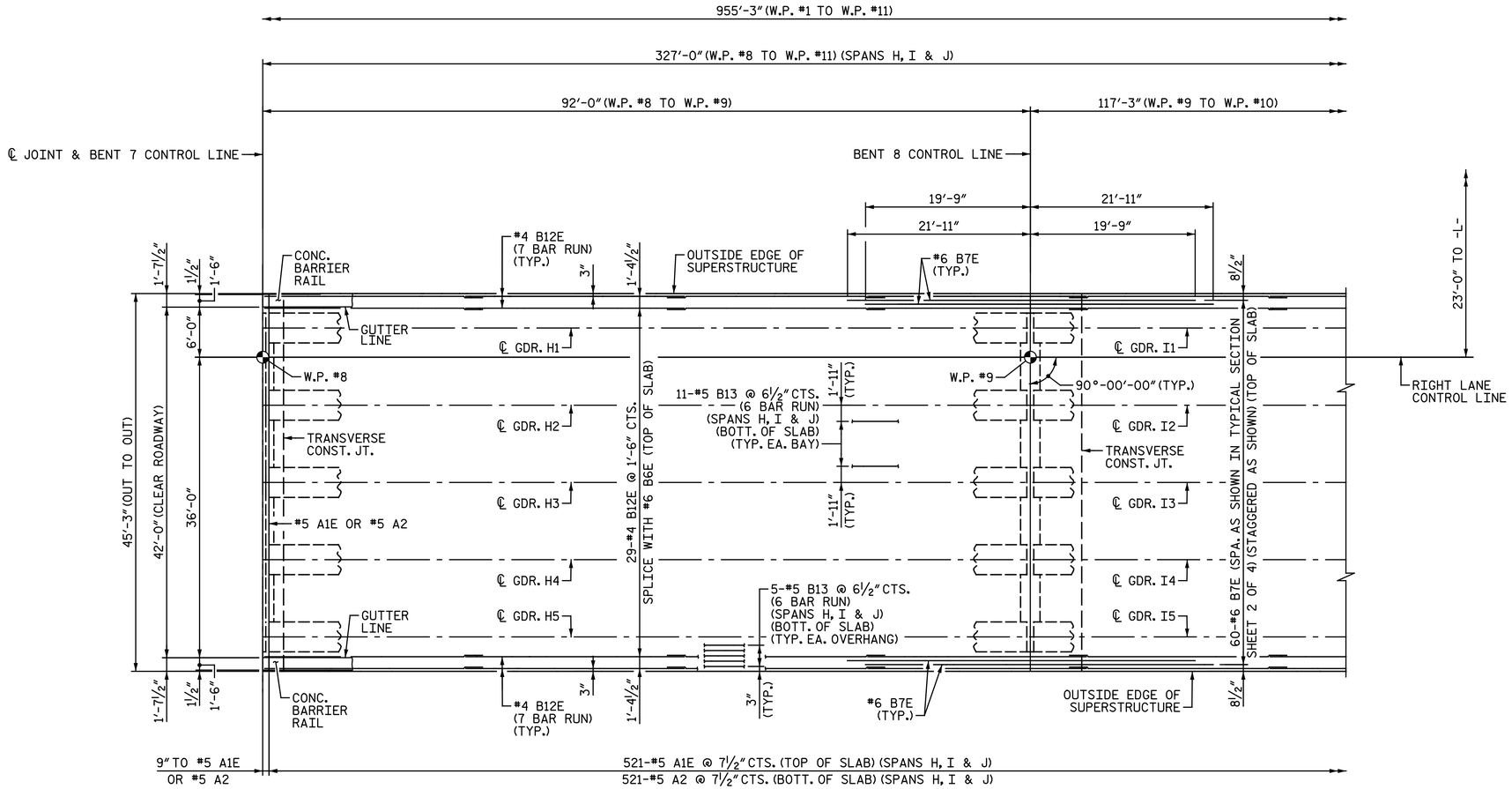
NOTES:

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 1 OF 2.

FOR "FIXED BENT DIAPHRAGM DETAIL" AND "TRANSVERSE CONSTRUCTION JOINT DETAIL", SEE "PLAN OF SPANS" SHEET 1 OF 10.

FOR "EXPANSION BENT DIAPHRAGM DETAIL", SEE "PLAN OF SPANS" SHEET 4 OF 10.



PLAN OF SPAN H

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 8 OF 10

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-19
1			3			TOTAL SHEETS
2			4			52

DRAWN BY : C. E. MAYHEW DATE : 6-26-17

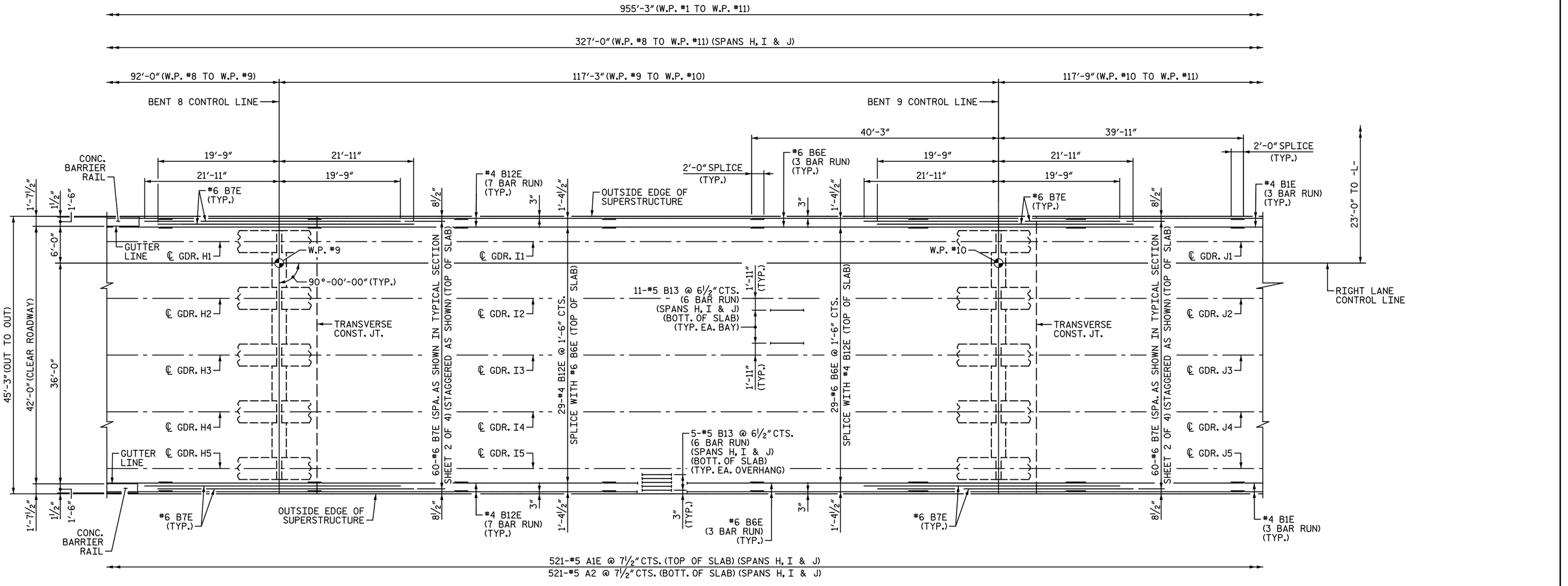
CHECKED BY : T. M. GARRISON DATE : 6-28-17

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 1 OF 2.

FOR "FIXED BENT DIAPHRAGM DETAIL" AND "TRANSVERSE CONSTRUCTION JOINT DETAIL", SEE "PLAN OF SPANS" SHEET 1 OF 10.



PLAN OF SPAN I

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 9 OF 10

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS

RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-20
1			3			TOTAL SHEETS
2			4			52

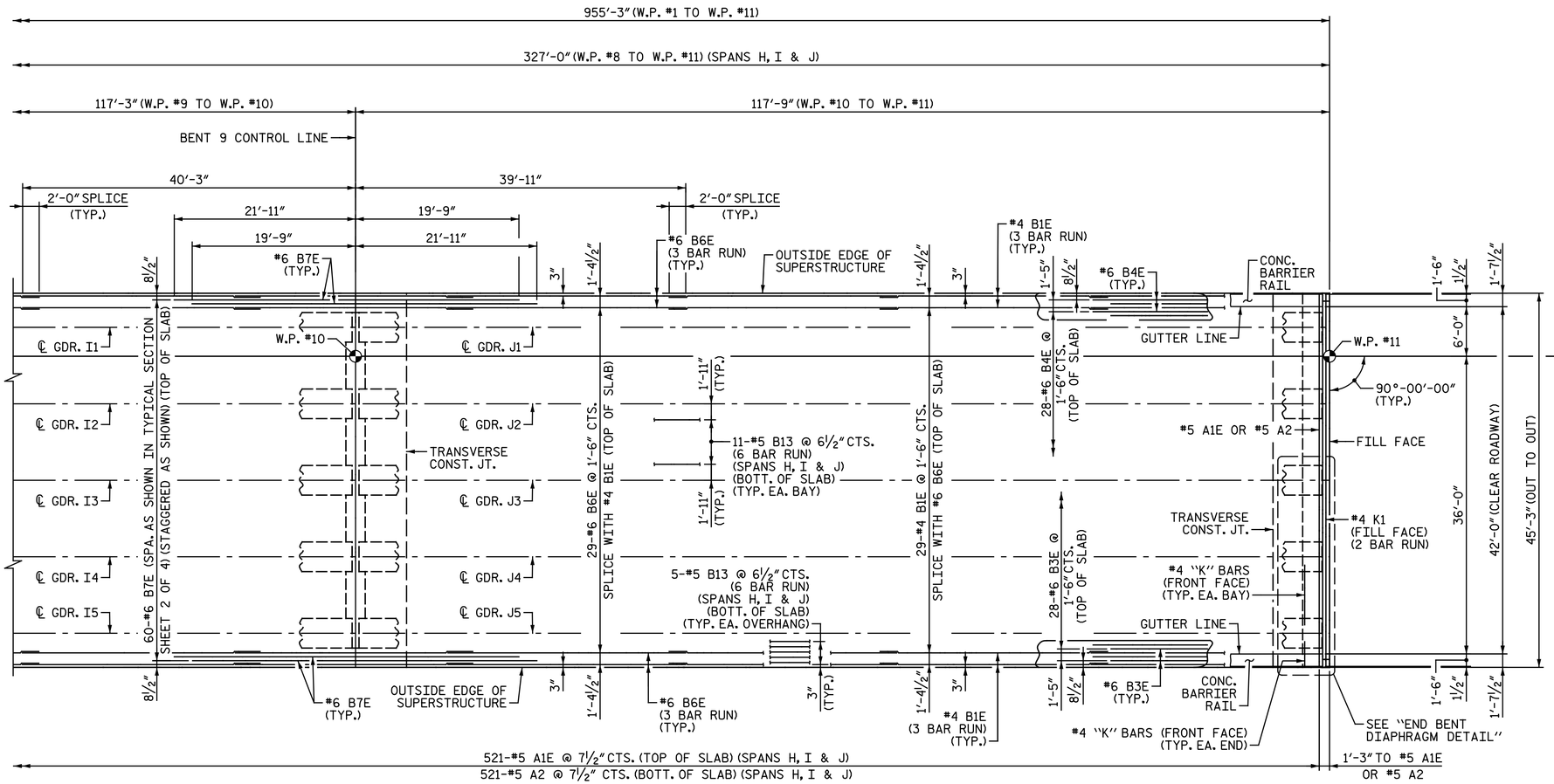
DRAWN BY : C. E. MAYHEW DATE : 6-26-17
CHECKED BY : T. M. GARRISON DATE : 6-28-17

NOTES:

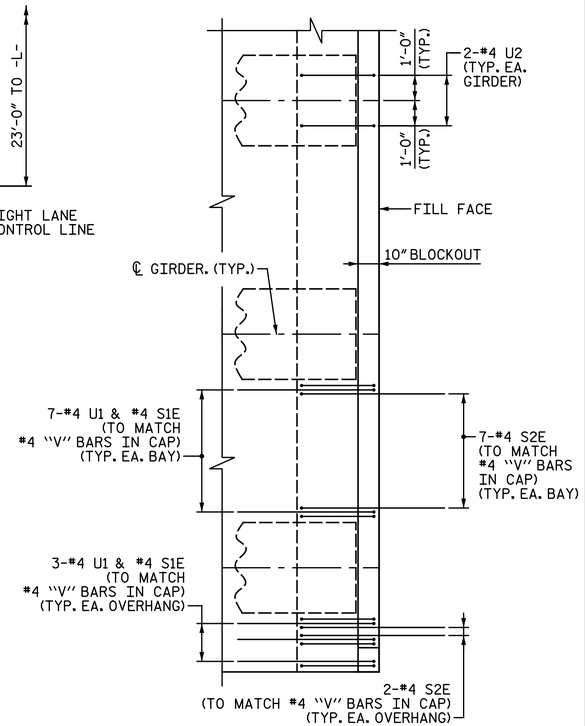
FOR REINFORCING STEEL IN CONCRETE BARRIER RAIL, SEE "CONCRETE BARRIER RAIL" SHEET.

FOR DECK POURING SEQUENCE AND LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE "BILL OF MATERIAL" SHEET 1 OF 2.

FOR "FIXED BENT DIAPHRAGM DETAIL", "TRANSVERSE CONSTRUCTION JOINT DETAIL" AND "CORNER DETAIL", SEE "PLAN OF SPANS" SHEET 1 OF 10.



PLAN OF SPAN J



END BENT DIAPHRAGM DETAIL

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

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 10 OF 10

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

PLAN OF SPANS

RIGHT LANE

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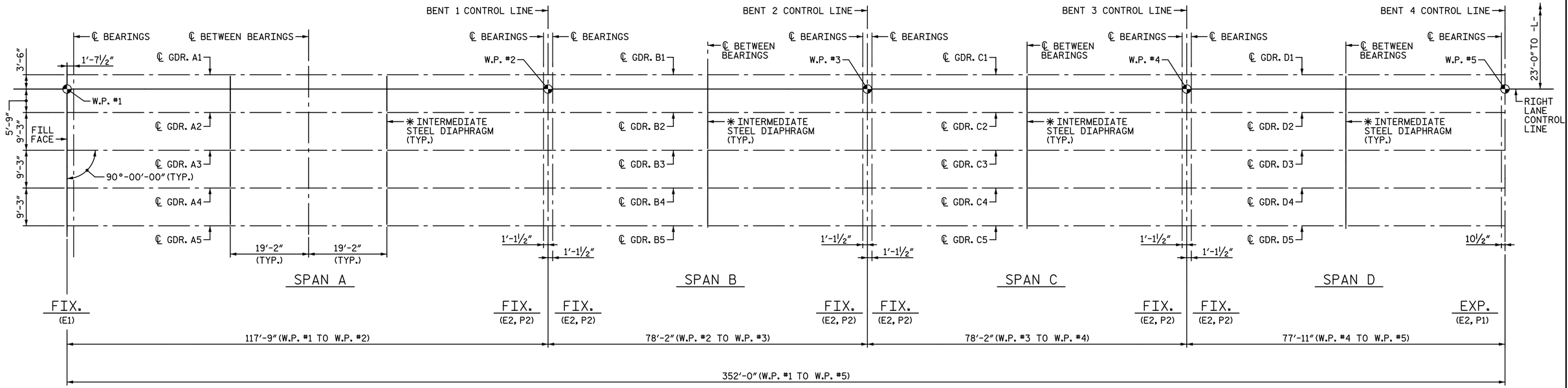
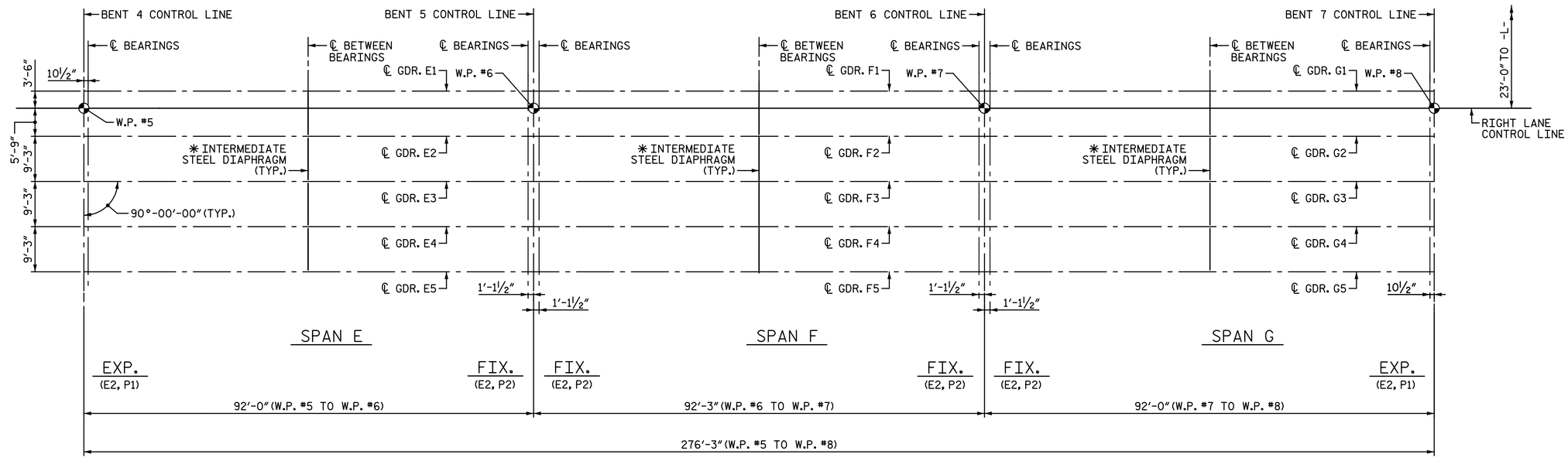
NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-21
1			3			TOTAL SHEETS
2			4			52

DRAWN BY : C. E. MAYHEW DATE : 6-26-17
CHECKED BY : T. M. GARRISON DATE : 6-28-17





GIRDER LAYOUT

✳ SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 63" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET FOR DETAILS

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/30/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

GIRDER LAYOUT

RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-22
1			3			TOTAL SHEETS
2			4			52

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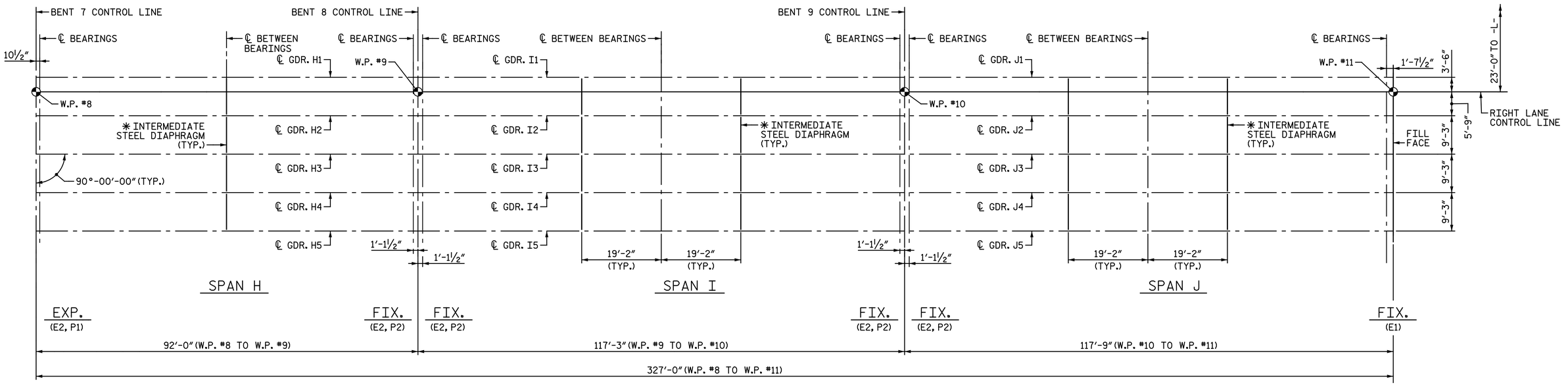
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

DRAWN BY : M. D. MAYHEW DATE : 6-20-17
CHECKED BY : T. M. GARRISON DATE : 6-29-17



GIRDER LAYOUT

✳ SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 63″MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET FOR DETAILS

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 2 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Tom M Garrison 8/10/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

GIRDER LAYOUT

RIGHT LANE

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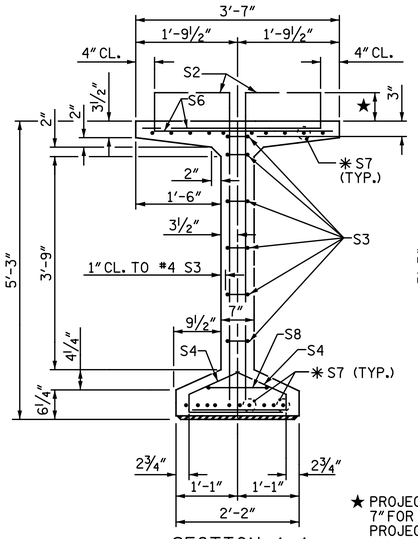
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No. : F-1084

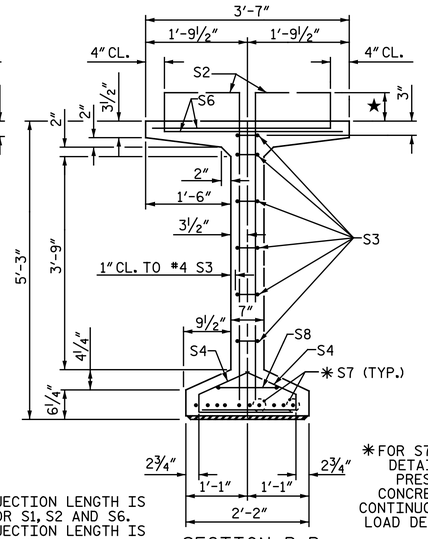
REVISIONS						SHEET NO.
NO.	BY₁	DATE₁	NO.	BY₁	DATE₁	S8-23
1			3			TOTAL SHEETS
2			4			52

DRAWN BY : M. D. MAYHEW DATE : 5-23-17
CHECKED BY : T. M. GARRISON DATE : 6-29-17



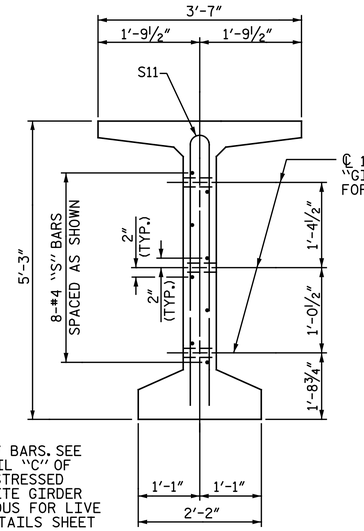
SECTION A-A

★ PROJECTION LENGTH IS 7″ FOR S1, S2 AND S6. PROJECTION LENGTH IS 5″ FOR S13 AND S14.



SECTION B-B

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

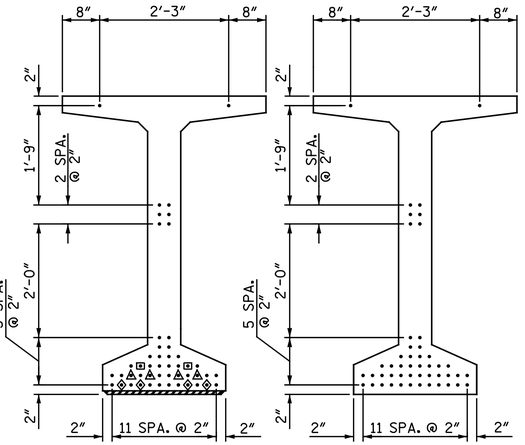


SECTION C-C

(S1, S6 AND S9 BARS NOT SHOWN)

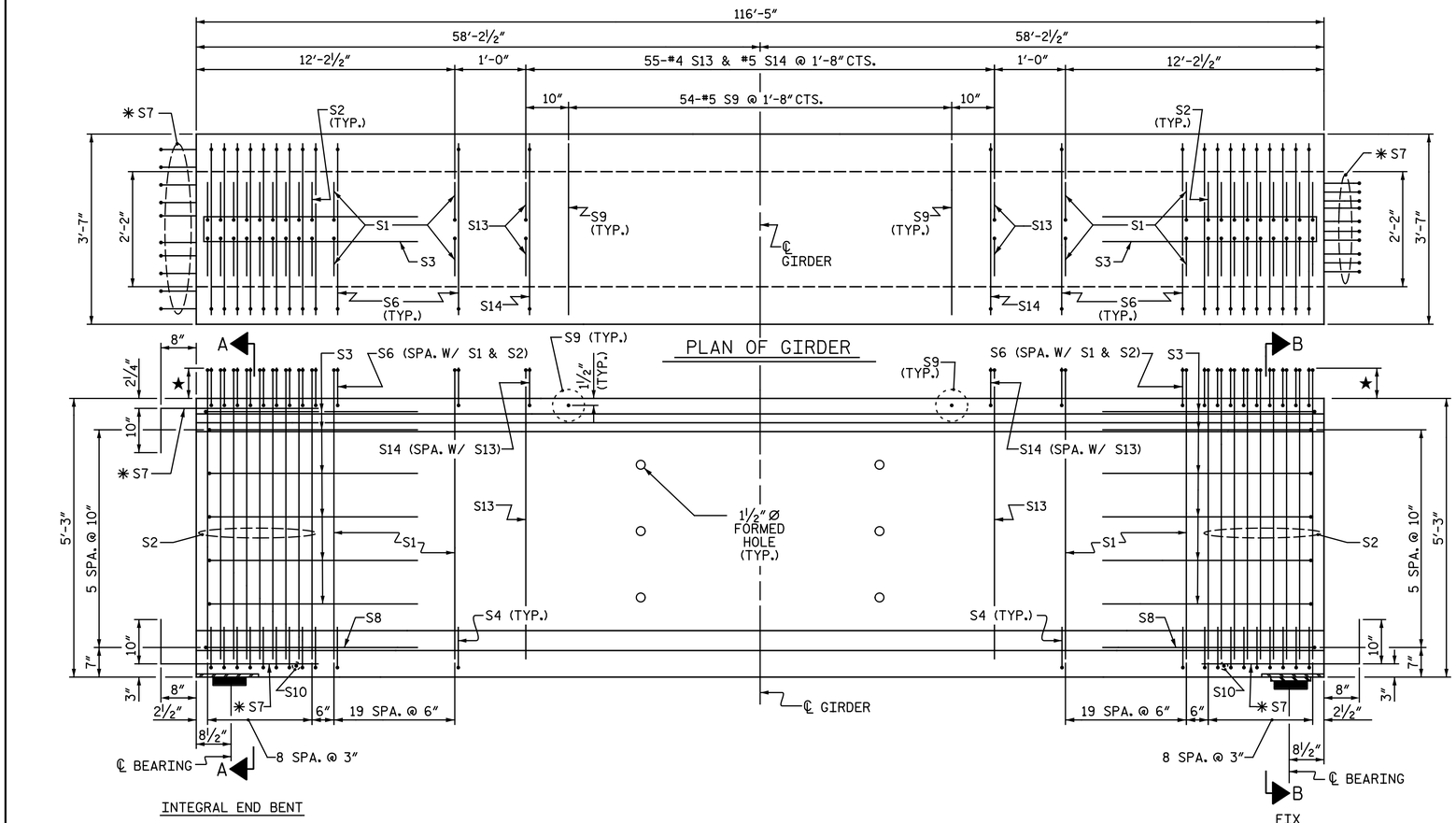
DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ▣ STRANDS DEBONDED FOR 4′-0″ FROM END OF GIRDER
- ◬ STRANDS DEBONDED FOR 6′-0″ FROM END OF GIRDER
- ◈ STRANDS DEBONDED FOR 10′-0″ FROM END OF GIRDER



AT END OF GIRDER AT ℄ OF GIRDER

0.6″ Ø LOW RELAXATION STRAND LAYOUT

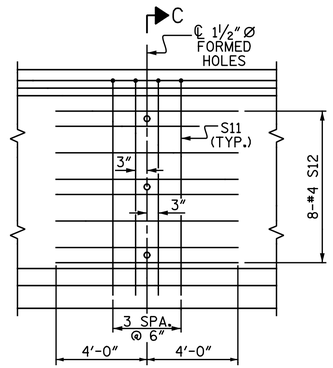


PLAN OF GIRDER

INTEGRAL END BENT

ELEVATION OF GIRDER

(SPAN A GIRDERS SHOWN, SPAN J GIRDERS SIMILAR BY ROTATION)



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

0.6″ Ø L. R. GRADE 270 STRANDS

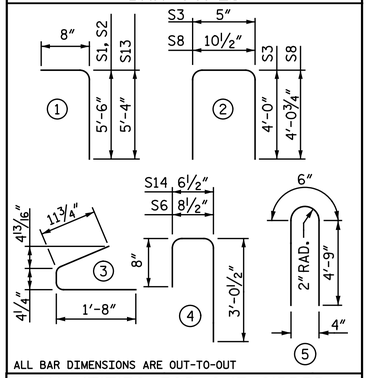
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	80	#4	1	6′-2″	330
S2	36	#5	1	6′-2″	232
S3	12	#4	2	8′-5″	67
S4	116	#4	3	3′-0″	232
S6	116	#5	4	4′-5″	534
✱S7	30	#5	STR	3′-8″	115
S8	2	#5	2	9′-0″	19
S9	54	#5	STR	3′-3″	183
S10	2	#3	STR	1′-10″	1
S11	8	#5	5	10′-0″	83
S12	16	#4	STR	8′-0″	86
S13	110	#4	1	6′-0″	441
S14	110	#5	4	4′-3″	488

✱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	9500 PSI CONCRETE	0.6″ Ø L.R. STRANDS
LB.	C.Y.	No.
2811	23.1	48

GIRDERS REQUIRED

SPAN	NUMBER	LENGTH	TOTAL LENGTH
A	5	116′-5″	582′-1″
J	5	116′-5″	582′-1″
TOTAL	10	116′-5″	1164′-2″

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 1 OF 6

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: 8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
63″ PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD SPANS A & J RIGHT LANE

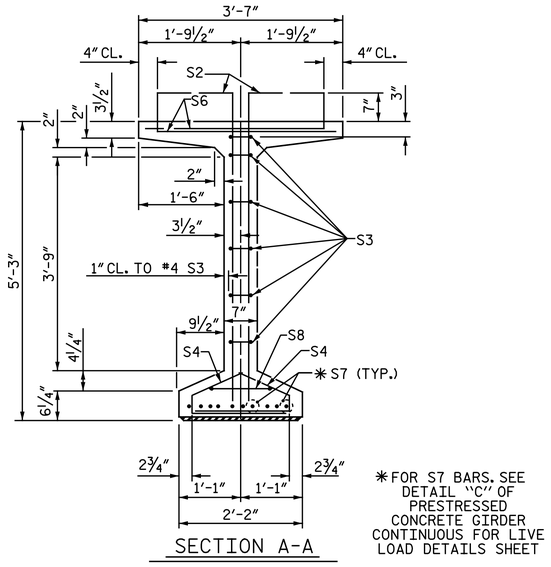
ASSEMBLED BY : T. M. G. / N. B. S.	DATE : 5-11-17
CHECKED BY : D. A. COLETTI	DATE : 4-13-17
DRAWN BY : EEM 2/6/97	REV. 10/1/11 MAA/GM
CHECKED BY : VAP 2/6/97	REV. 6/13 MAA/GM
	REV. 1/15 MAA/TMG

Michael Baker INTERNATIONAL

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

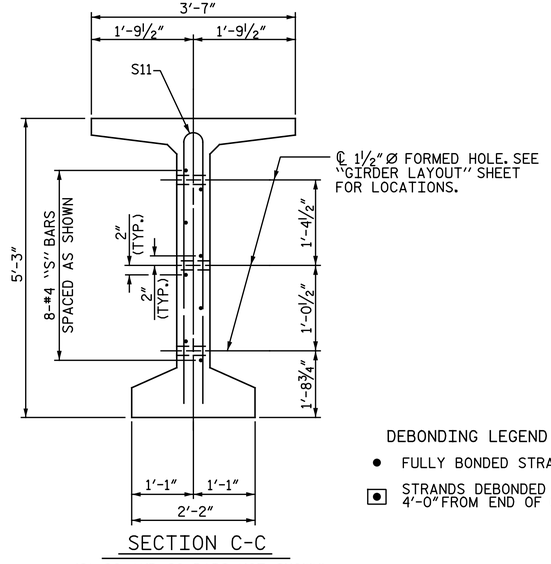
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-24
1			3			TOTAL SHEETS
2			4			52

STD. NO. PCG7



SECTION A-A

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

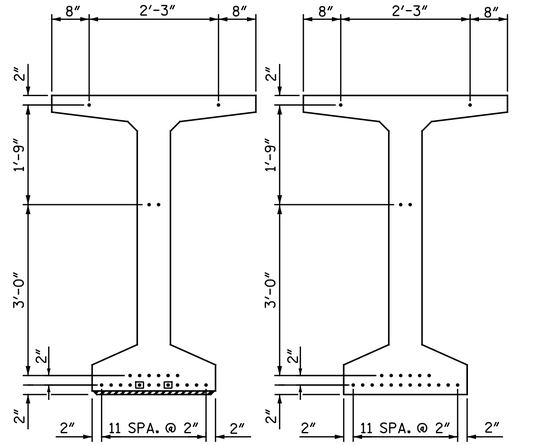


SECTION C-C

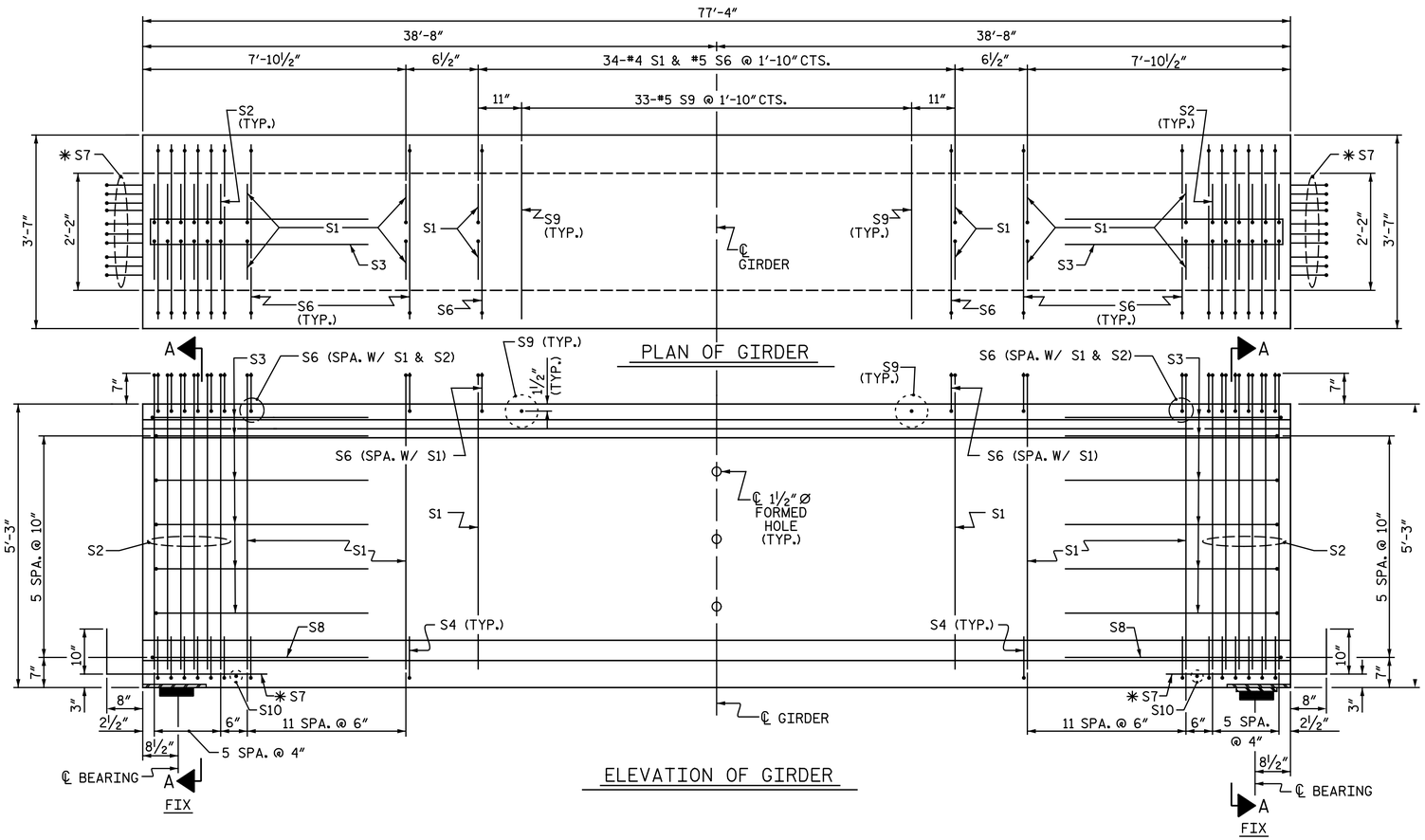
(S1, S6 AND S9 BARS NOT SHOWN)

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ⊡ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER

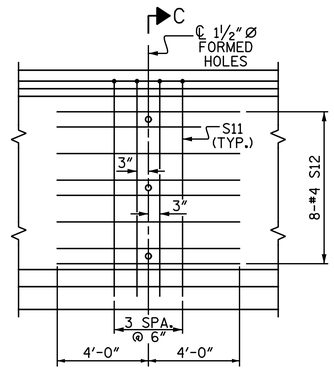


0.6" Ø LOW RELAXATION STRAND LAYOUT



PLAN OF GIRDER

ELEVATION OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

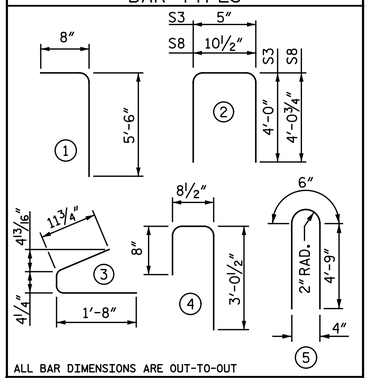
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	116	#4	1	6'-2"	478
S2	24	#5	1	6'-2"	154
S3	12	#4	2	8'-5"	67
S4	72	#4	3	3'-0"	144
S6	140	#5	4	4'-5"	645
✳S7	20	#5	STR	3'-8"	76
S8	2	#5	2	9'-0"	19
S9	33	#5	STR	3'-3"	112
S10	2	#3	STR	1'-10"	1
S11	4	#5	5	10'-0"	42
S12	8	#4	STR	8'-0"	43

✳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	5000 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
1781	15.3	22

GIRDERS REQUIRED

SPAN	NUMBER	LENGTH	TOTAL LENGTH
B	5	77'-4"	386'-8"
C	5	77'-4"	386'-8"
TOTAL	10	77'-4"	773'-4"

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
63" PRESTRESSED CONCRETE
MODIFIED BULB TEE
CONTINUOUS FOR LIVE LOAD
SPANS B & C
RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

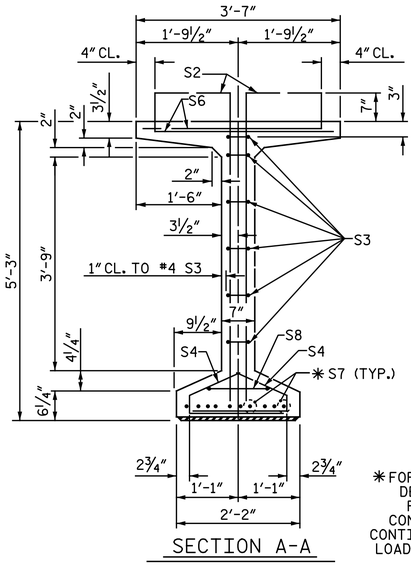
Michael Baker INTERNATIONAL

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-25
1			3			TOTAL SHEETS
2			4			52

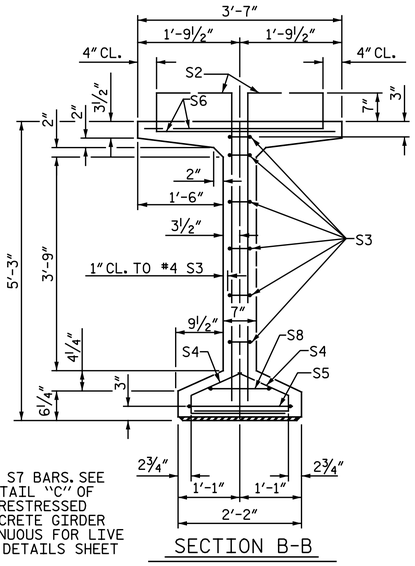
ASSEMBLED BY : T. M. GARRISON	DATE : 1-11-17	REV. 10/1/11	MAA/GM
CHECKED BY : D. A. COLETTI	DATE : 4-13-17	REV. 6/13	MAA/GM
DRAWN BY : EEM 2/6/97		REV. 1/15	MAA/TMG
CHECKED BY : VAP 2/6/97			

STD. NO. PCG7

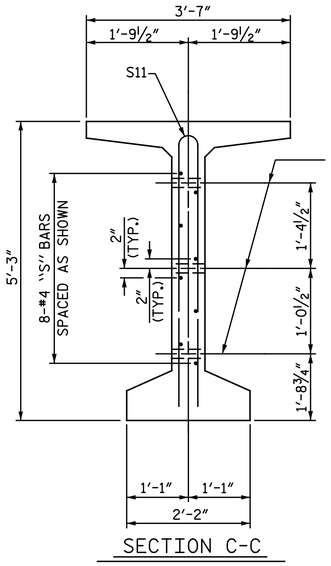


SECTION A-A

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



SECTION B-B

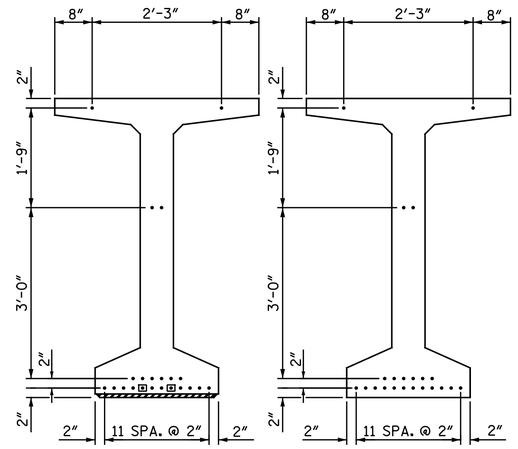


SECTION C-C

(S1, S6 AND S9 BARS NOT SHOWN)

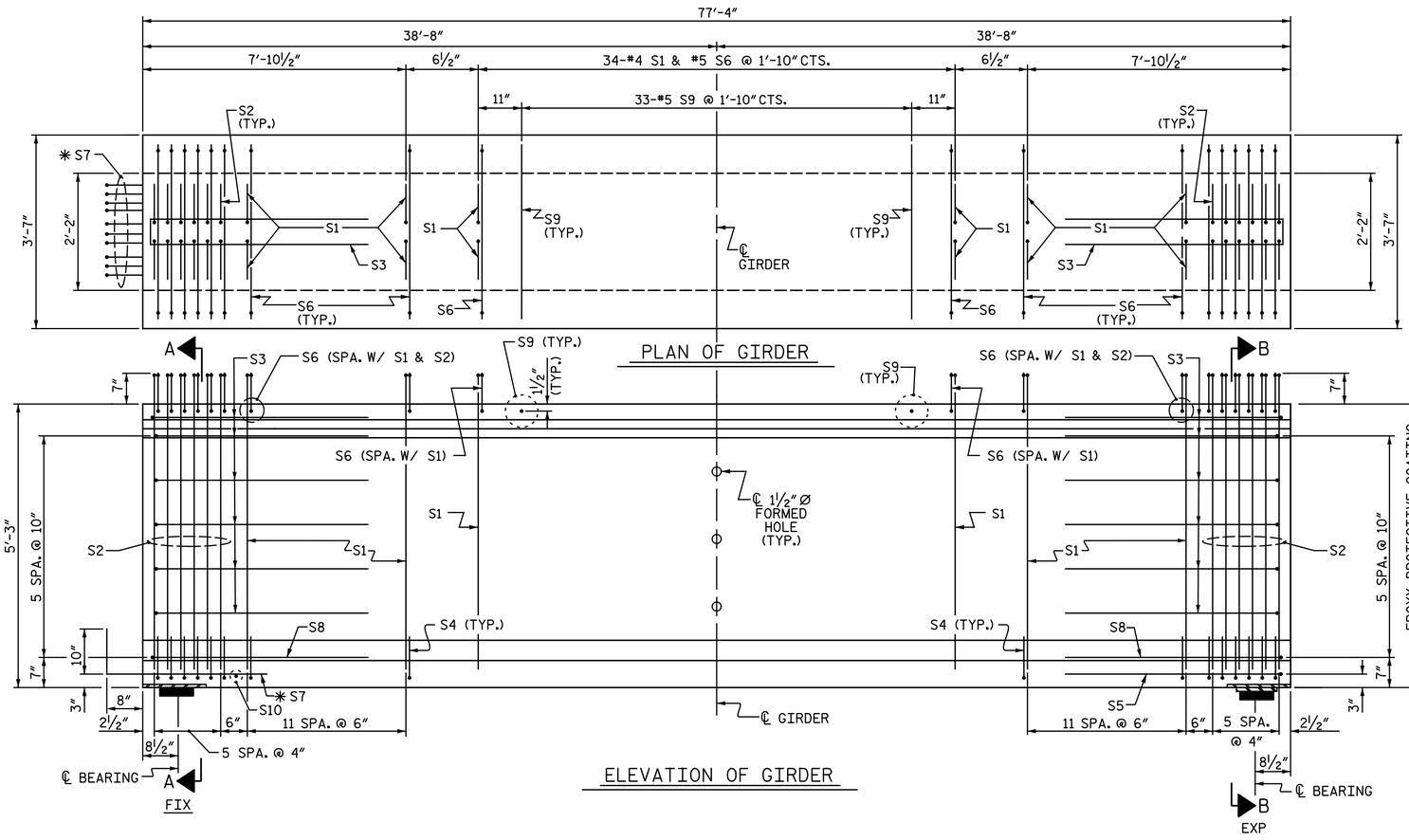
DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ⊡ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER



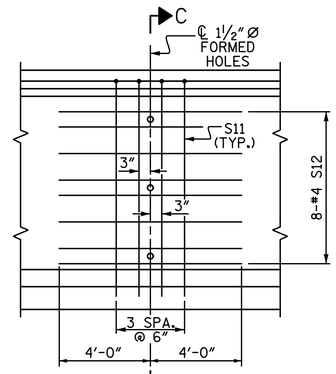
AT END OF GIRDER AT ℄ OF GIRDER

0.6"Ø LOW RELAXATION STRAND LAYOUT



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

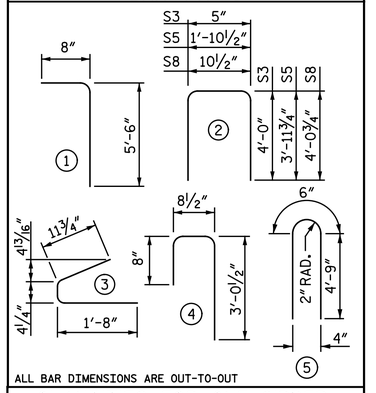
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	116	#4	1	6'-2"	478
S2	24	#5	1	6'-2"	154
S3	12	#4	2	8'-5"	67
S4	72	#4	3	3'-0"	144
S5	1	#5	2	9'-10"	10
S6	140	#5	4	4'-5"	645
✱S7	10	#5	STR	3'-8"	38
S8	2	#5	2	9'-0"	19
S9	33	#5	STR	3'-3"	112
S10	1	#3	STR	1'-10"	1
S11	4	#5	5	10'-0"	42
S12	8	#4	STR	8'-0"	43

✱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	5000 PSI CONCRETE	0.6"Ø L.R. STRANDS
LB.	C.Y.	No.
1753	15.3	22

GIRDERS REQUIRED

SPAN	NUMBER	LENGTH	TOTAL LENGTH
D	5	77'-4"	386'-8"

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 3 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
63" PRESTRESSED CONCRETE
MODIFIED BULB TEE
CONTINUOUS FOR LIVE LOAD
SPAN D
RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

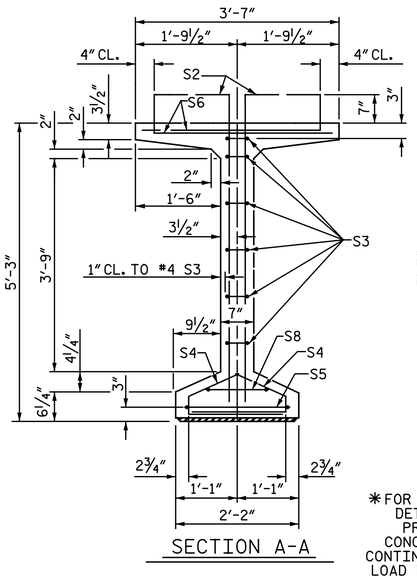
Michael Baker INTERNATIONAL

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

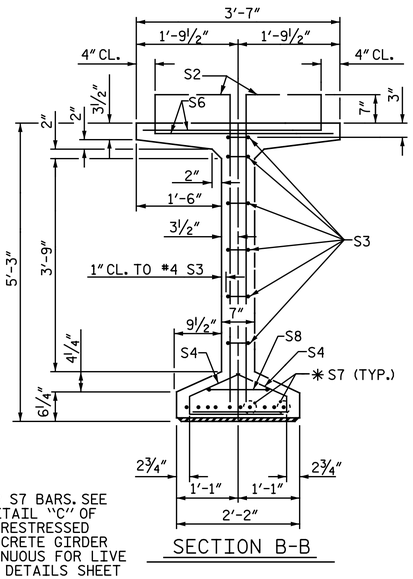
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-26
1			3			TOTAL SHEETS
2			4			52

ASSEMBLED BY : T. M. GARRISON	DATE : 1-11-17	REV. 10/1/11	MAA/GM
CHECKED BY : D. A. COLETTI	DATE : 4-13-17	REV. 6/13	MAA/GM
DRAWN BY : EEM 2/6/97		REV. 1/15	MAA/TMG
CHECKED BY : VAP 2/6/97			

STD. NO. PCG7

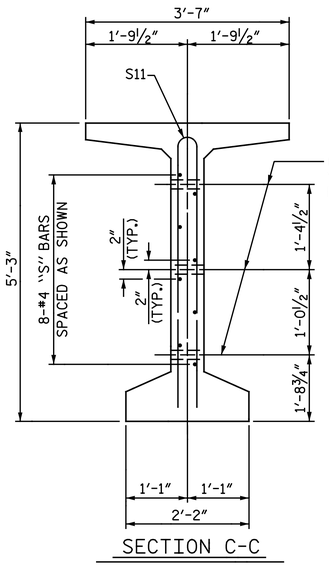


SECTION A-A



SECTION B-B

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

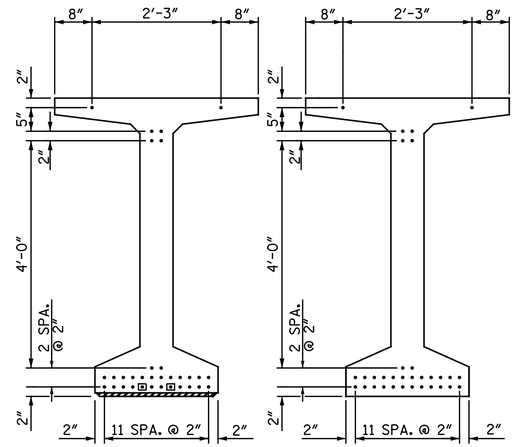


SECTION C-C

(S1, S6 AND S9 BARS NOT SHOWN)

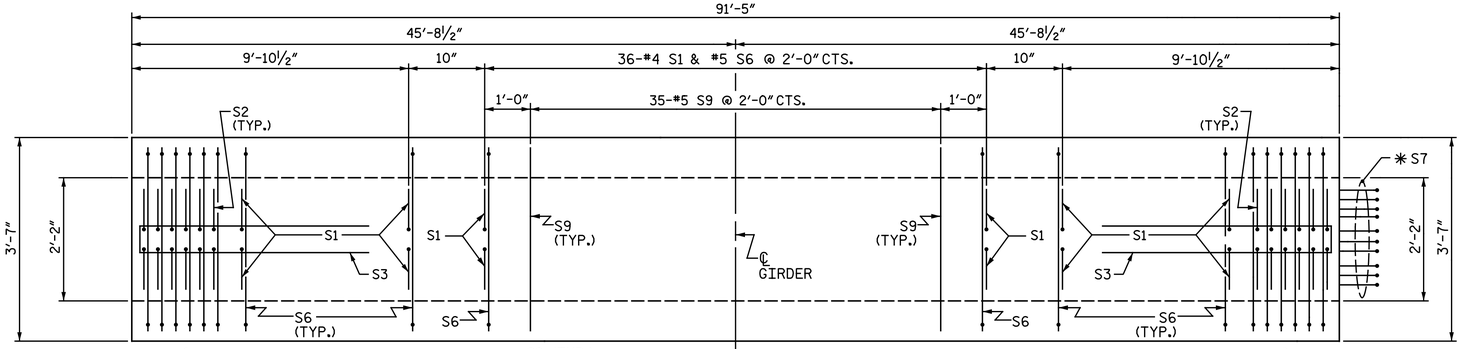
DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ⊡ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER

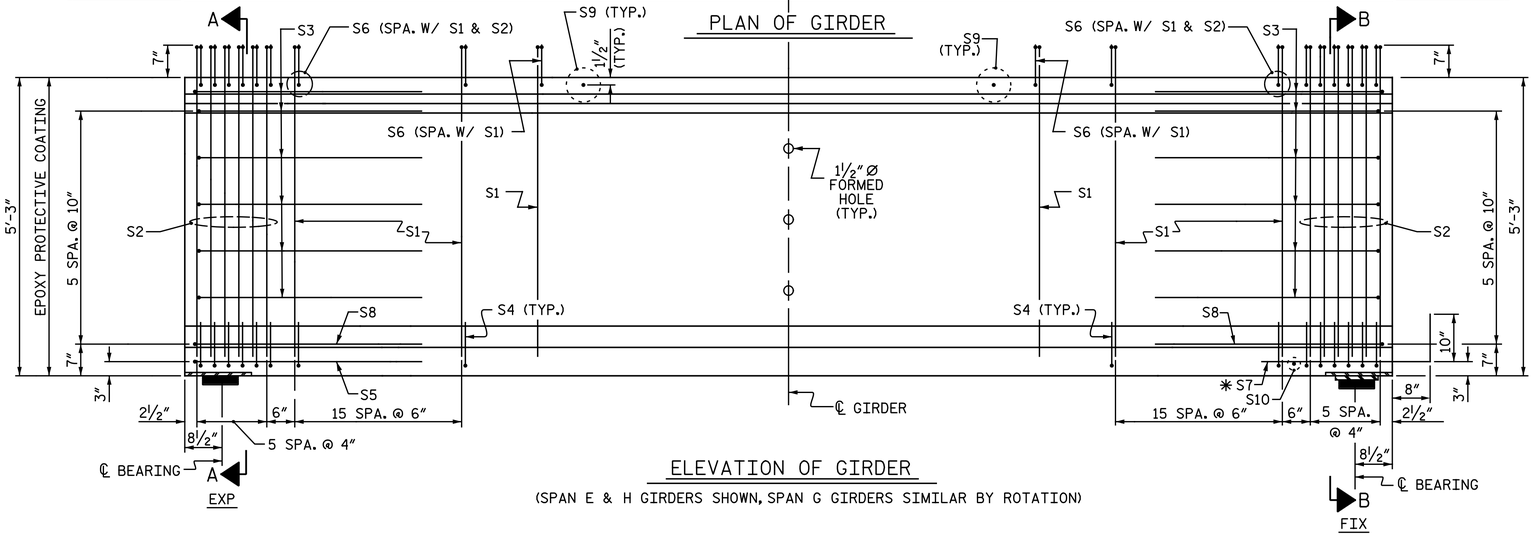


AT END OF GIRDER AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

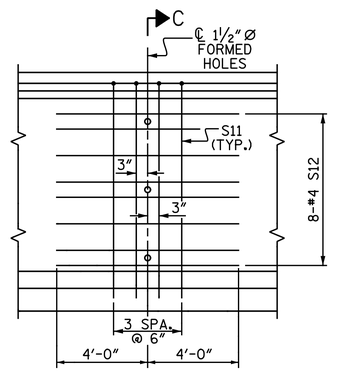


PLAN OF GIRDER



ELEVATION OF GIRDER

(SPAN E & H GIRDERS SHOWN, SPAN G GIRDERS SIMILAR BY ROTATION)



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

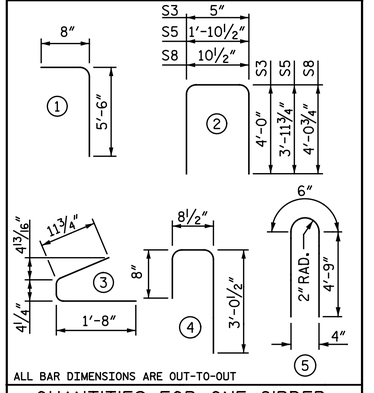
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	136	#4	1	6'-2"	560
S2	24	#5	1	6'-2"	154
S3	12	#4	2	8'-5"	67
S4	88	#4	3	3'-0"	176
S5	1	#5	2	9'-10"	10
S6	160	#5	4	4'-5"	737
✱S7	10	#5	STR	3'-8"	38
S8	2	#5	2	9'-0"	19
S9	35	#5	STR	3'-3"	119
S10	1	#3	STR	1'-10"	1
S11	4	#5	5	10'-0"	42
S12	8	#4	STR	8'-0"	43

✱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	7000 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
1966	18.1	32

GIRDERS REQUIRED

SPAN	NUMBER	LENGTH	TOTAL LENGTH
E	5	91'-5"	457'-1"
G	5	91'-5"	457'-1"
H	5	91'-5"	457'-1"
TOTAL	15	91'-5"	1371'-3"

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 4 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
63" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD SPANS E, G & H RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

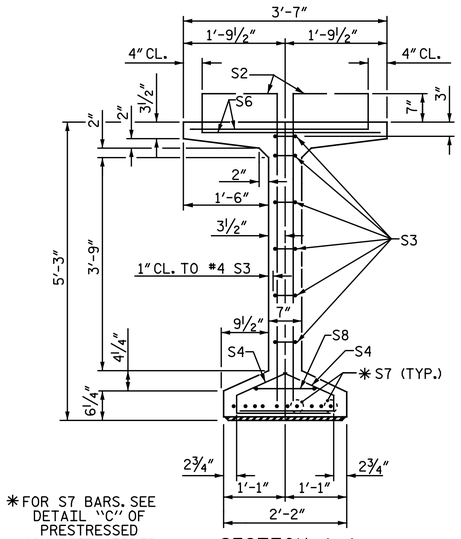
Michael Baker INTERNATIONAL

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-27
1			3			TOTAL SHEETS
2			4			52

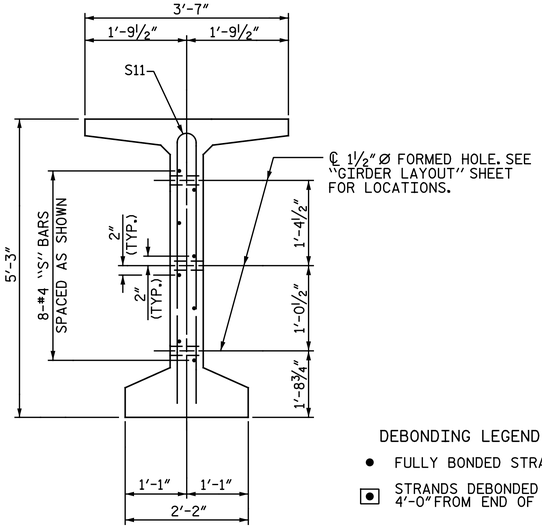
ASSEMBLED BY : T. M. G. / N. B. S.	DATE : 5-11-17	
CHECKED BY : D. A. COLETTI	DATE : 4-13-17	
DRAWN BY : EEM 2/6/97	REV. 10/1/11	MAA/GM
CHECKED BY : VAP 2/6/97	REV. 6/13	MAA/GM
	REV. 1/15	MAA/TMG

STD. NO. PCG7



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

SECTION A-A

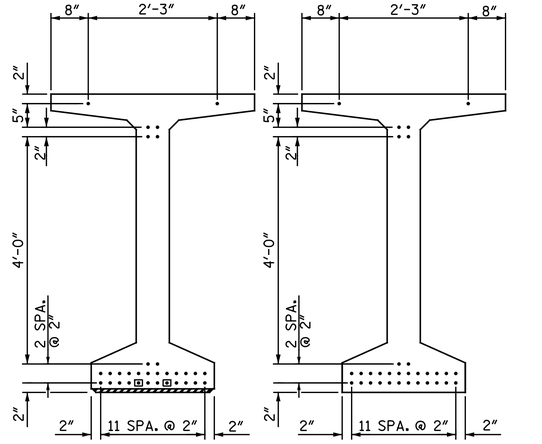


SECTION C-C

(S1, S6 AND S9 BARS NOT SHOWN)

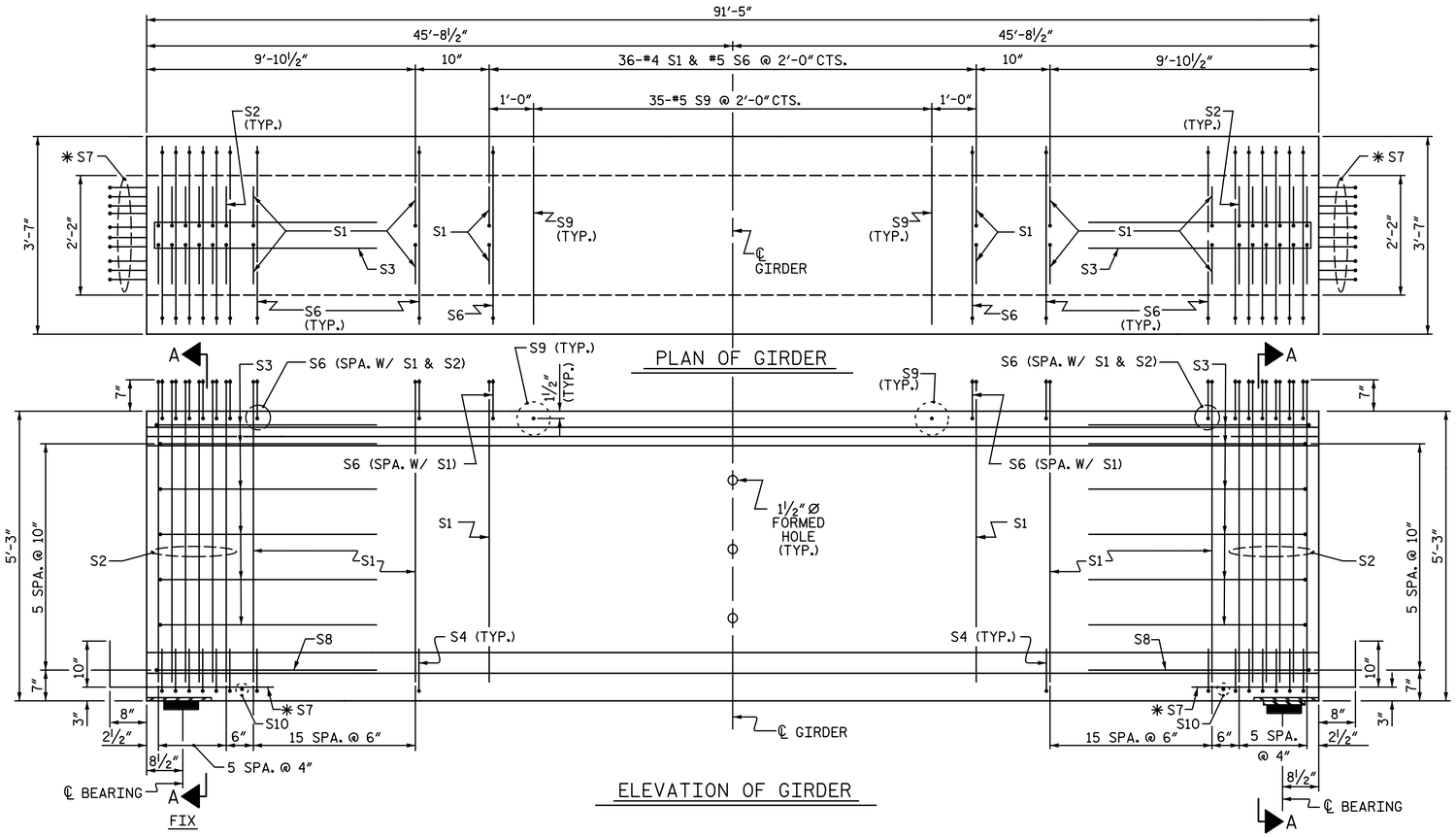
DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ⊡ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER



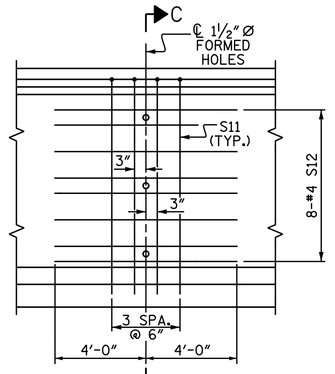
AT END OF GIRDER AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT



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

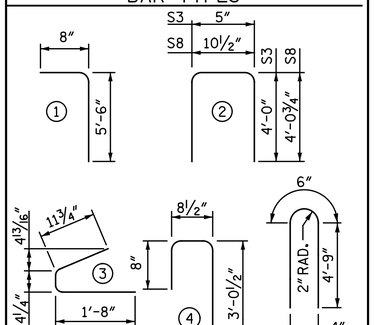
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	136	#4	1	6'-2"	560
S2	24	#5	1	6'-2"	154
S3	12	#4	2	8'-5"	67
S4	88	#4	3	3'-0"	176
S6	160	#5	4	4'-5"	737
✱S7	20	#5	STR	3'-8"	76
S8	2	#5	2	9'-0"	19
S9	35	#5	STR	3'-3"	119
S10	2	#3	STR	1'-10"	1
S11	4	#5	5	10'-0"	42
S12	8	#4	STR	8'-0"	43

✱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	7000 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
1994	18.1	32

GIRDERS REQUIRED

SPAN	NUMBER	LENGTH	TOTAL LENGTH
F	5	91'-5"	457'-1"

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 5 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD 63" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD SPAN F RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: 8/10/2017

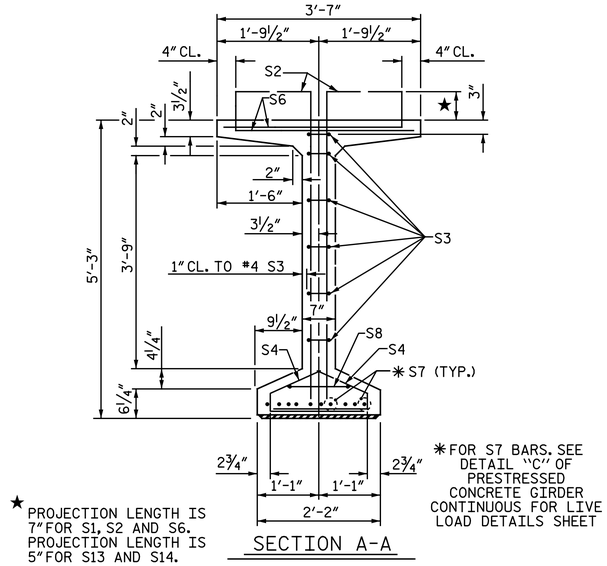
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-28
1			3			TOTAL SHEETS
2			4			52

ASSEMBLED BY : T. M. G. / N. B. S.	DATE : 5-11-17	
CHECKED BY : D. A. COLETTI	DATE : 4-13-17	
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

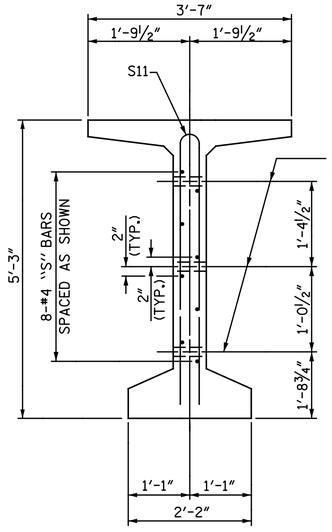
STD. NO. PCG7



★ PROJECTION LENGTH IS 7" FOR S1, S2 AND S6. PROJECTION LENGTH IS 5" FOR S13 AND S14.

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

SECTION A-A

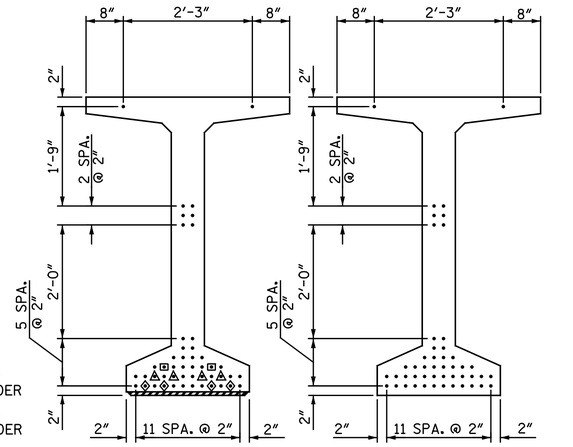


SECTION C-C

(S1, S6 AND S9 BARS NOT SHOWN)

DEBONDING LEGEND

- ● FULLY BONDED STRANDS
- ▣ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ▲ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
- ◆ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER



AT END OF GIRDER AT ℄ OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

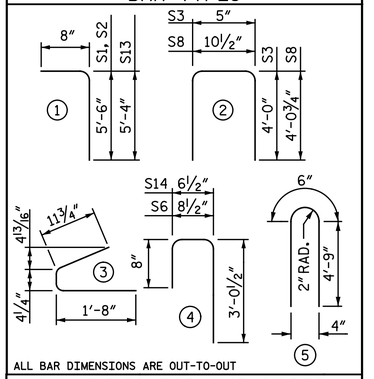
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	80	#4	1	6'-2"	330
S2	36	#5	1	6'-2"	232
S3	12	#4	2	8'-5"	67
S4	116	#4	3	3'-0"	232
S6	116	#5	4	4'-5"	534
✱S7	20	#5	STR	3'-8"	76
S8	2	#5	2	9'-0"	19
S9	54	#5	STR	3'-3"	183
S10	2	#3	STR	1'-10"	1
S11	8	#5	5	10'-0"	83
S12	16	#4	STR	8'-0"	86
S13	110	#4	1	6'-0"	441
S14	110	#5	4	4'-3"	488

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

BAR TYPES



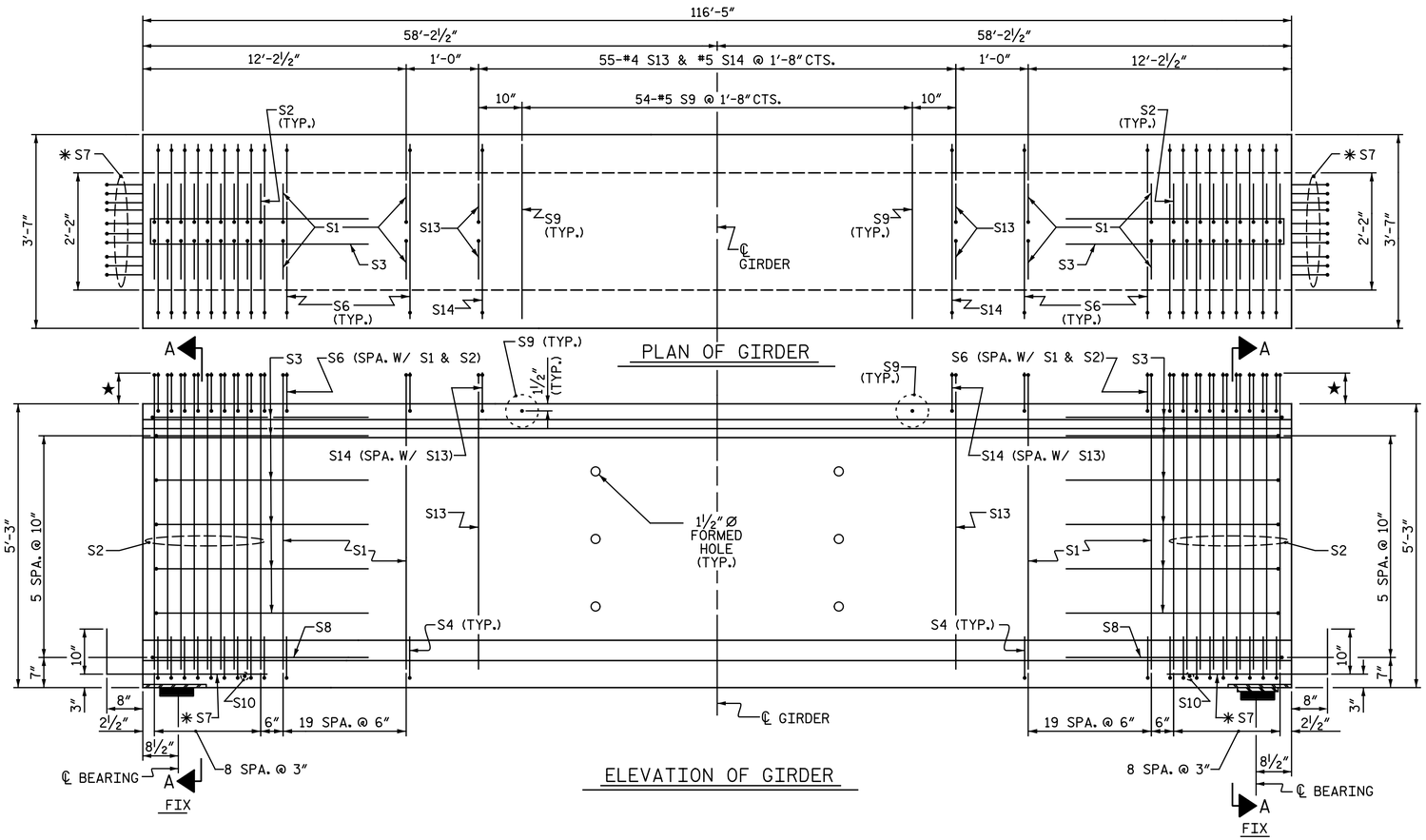
ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER

REINFORCING STEEL	9500 PSI CONCRETE	0.6" Ø L.R. STRANDS
LB.	C.Y.	No.
2772	23.1	48

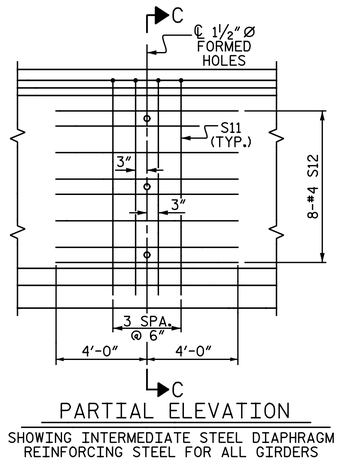
GIRDERS REQUIRED

SPAN	NUMBER	LENGTH	TOTAL LENGTH
I	5	116'-5"	582'-1"



PLAN OF GIRDER

ELEVATION OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 6 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
63" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD SPAN I RIGHT LANE

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: 8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-29
1			3			TOTAL SHEETS
2			4			52

ASSEMBLED BY : T. M. G. / N. B. S.	DATE : 5-11-17	
CHECKED BY : D. A. COLETTI	DATE : 4-13-17	
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. PCG7

DEAD LOAD DEFLECTION TABLE FOR SPANS A, I & J

0.6″Ø LOW RELAXATION	GIRDERS 1 THRU 5																				
20TH 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 ALONE IN PLACE) ↑	0.000	0.051	0.101	0.148	0.192	0.230	0.262	0.289	0.307	0.319	0.323	0.319	0.307	0.289	0.262	0.230	0.192	0.148	0.101	0.051	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L. ✱ ↓	0.000	0.034	0.064	0.099	0.126	0.154	0.174	0.193	0.205	0.213	0.216	0.213	0.205	0.193	0.174	0.154	0.126	0.099	0.064	0.034	0.000
FINAL CAMBER ↑	0″	3/16″	7/16″	9/16″	13/16″	15/16″	1 1/16″	1 1/8 ″	1 1/4 ″	1 1/4 ″	1 5/16″	1 1/4 ″	1 1/4 ″	1 1/8 ″	1 1/16″	15/16″	13/16″	9/16″	7/16″	3/16″	0″

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

DEAD LOAD DEFLECTION TABLE FOR SPANS B, C & D

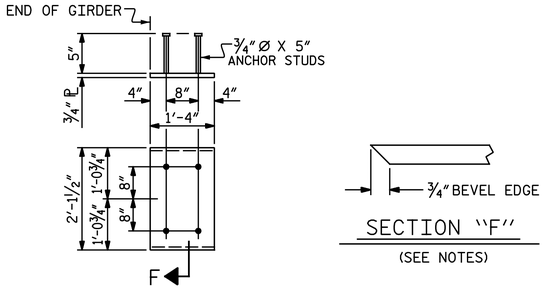
0.6″Ø LOW RELAXATION	GIRDERS 1 THRU 5																				
20TH POINTS	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.018	0.035	0.051	0.066	0.080	0.091	0.100	0.107	0.111	0.112	0.111	0.107	0.100	0.091	0.080	0.066	0.051	0.035	0.018	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L. ✱ ↓	0.000	0.008	0.014	0.022	0.028	0.034	0.038	0.043	0.045	0.047	0.048	0.047	0.045	0.043	0.038	0.034	0.028	0.022	0.014	0.008	0.000
FINAL CAMBER ↑	0″	1/8 ″	1/4 ″	3/8 ″	7/16″	9/16″	5/8 ″	11/16″	3/4 ″	3/4 ″	3/4 ″	3/4 ″	3/4 ″	11/16″	5/8 ″	9/16″	7/16″	3/8 ″	1/4 ″	1/8 ″	0″

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

DEAD LOAD DEFLECTION TABLE FOR SPANS E, F, G & H

0.6″Ø LOW RELAXATION	GIRDERS 1 THRU 5																				
20TH 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 ALONE IN PLACE) ↑	0.000	0.025	0.049	0.072	0.093	0.112	0.128	0.140	0.149	0.155	0.157	0.155	0.149	0.140	0.128	0.112	0.093	0.072	0.049	0.025	0.000
DEFLECTION DUE TO SUPERIMPOSED D.L. ✱ ↓	0.000	0.014	0.026	0.040	0.050	0.062	0.070	0.077	0.082	0.086	0.087	0.086	0.082	0.077	0.070	0.062	0.050	0.040	0.026	0.014	0.000
FINAL CAMBER ↑	0″	1/8 ″	5/16″	3/8 ″	1/2 ″	5/8 ″	11/16″	3/4 ″	13/16″	13/16″	13/16″	13/16″	13/16″	3/4 ″	11/16″	5/8 ″	1/2 ″	3/8 ″	5/16″	1/8 ″	0″

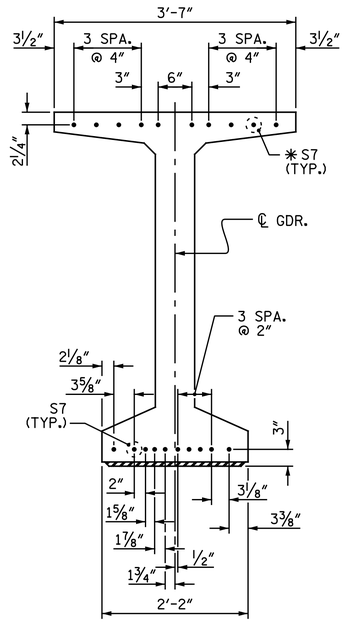
✱ INCLUDES FUTURE WEARING SURFACE.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).



SECTION "F"
(SEE NOTES)

EMBEDDED PLATE "B-1" DETAILS

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



DETAIL "C"

✱ S7 BARS IN TOP OF GIRDER ARE ONLY APPLICABLE AT INTEGRAL END BENT LOCATIONS

NOTES:

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 7,900 PSI FOR GIRDERS IN SPANS A, I & J, 4,000 PSI FOR GIRDERS IN SPANS B, C & D, AND 5,500 PSI FOR GIRDERS IN SPANS E, F, G & H.

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"× 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.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: T. M. Garrison 8/10/2017

DRAWN BY : N. B. SPEAKS DATE : 5-8-17
CHECKED BY : T. M. GARRISON DATE : 6-26-17

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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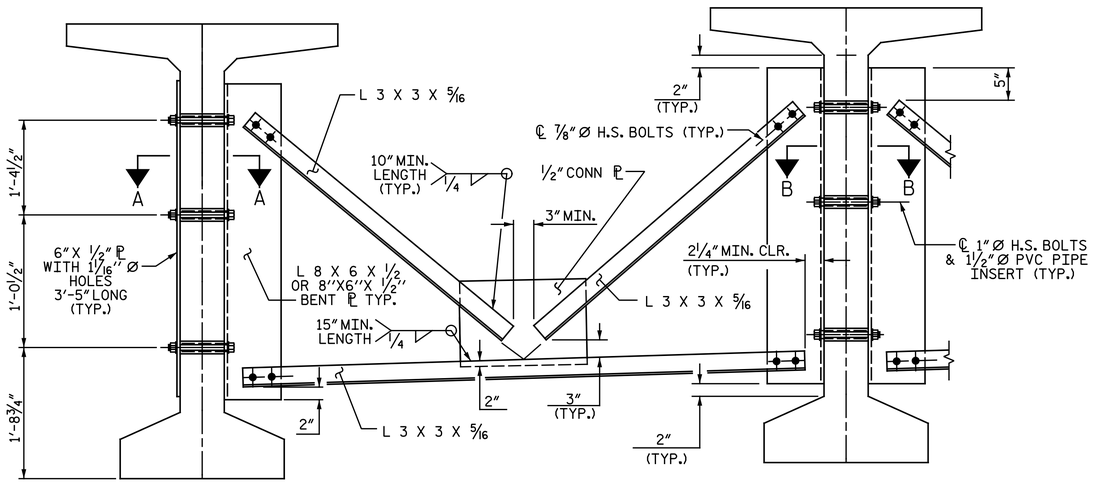
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE

PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS

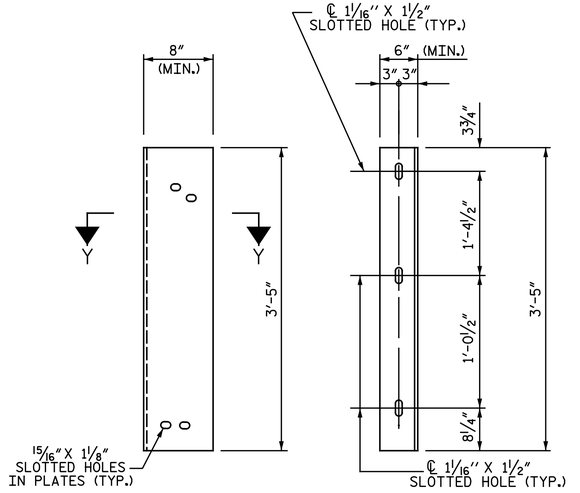
RIGHT LANE

REVISIONS							SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:		S8-30
1			3				TOTAL SHEETS
2			4				52

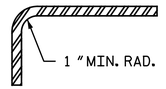


EXTERIOR GIRDER INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM



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.

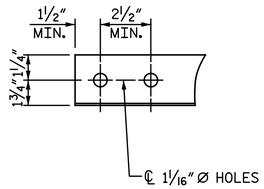
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

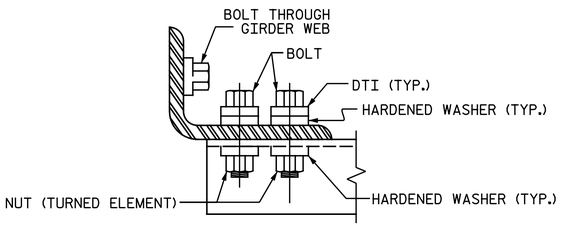
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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.

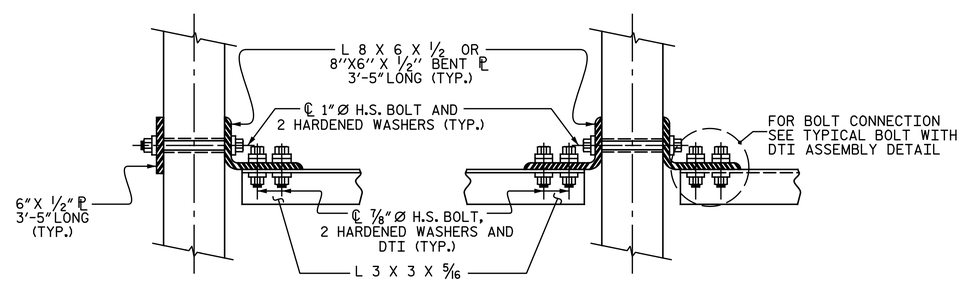
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



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



BOLT WITH DTI ASSEMBLY DETAIL



SECTION A-A SECTION B-B

CONNECTION DETAILS

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 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

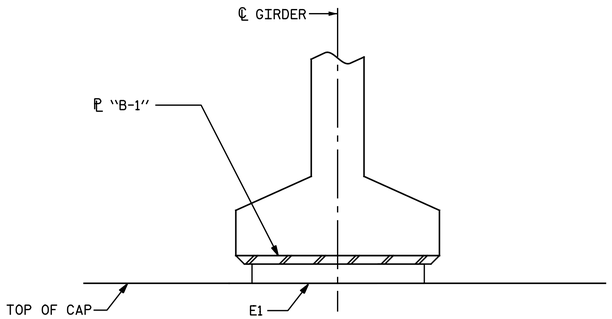
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

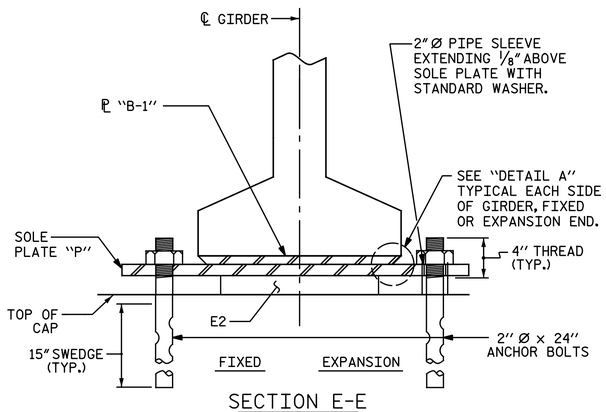
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-31
1			3			TOTAL SHEETS
2			4			52

ASSEMBLED BY : T. M. G. / N. B. S. DATE : 3-9-17	
CHECKED BY : D. A. COLETTI DATE : 4-13-17	
DRAWN BY : RWW 11/09	ADDED 11/23/09R REV. 10/1/11 MAA/GM
CHECKED BY : GM 11/09	

STD. NO. PCG11



SECTION
(AT INTEGRAL END BENTS)



SECTION E-E
(AT BENTS)

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE IV	225 k
TYPE V	365 k

NOTES

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

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

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

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

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

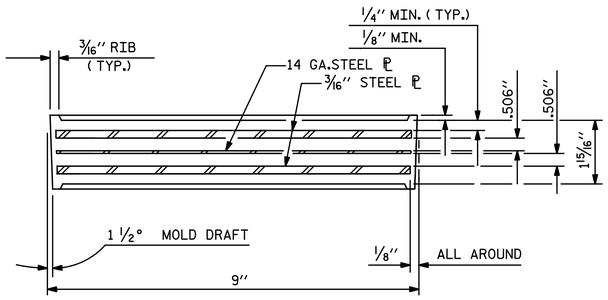
SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

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

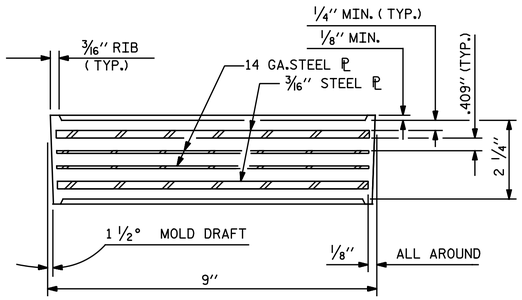
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

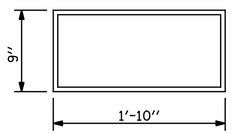
FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.



TYPICAL SECTION OF ELASTOMERIC BEARINGS

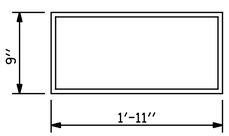


TYPICAL SECTION OF ELASTOMERIC BEARINGS



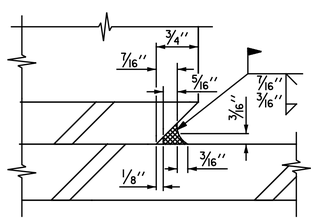
E1 (10 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING

TYPE IV

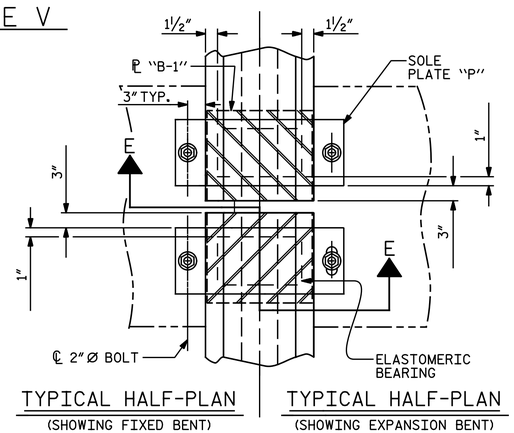


E2 (90 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING

TYPE V

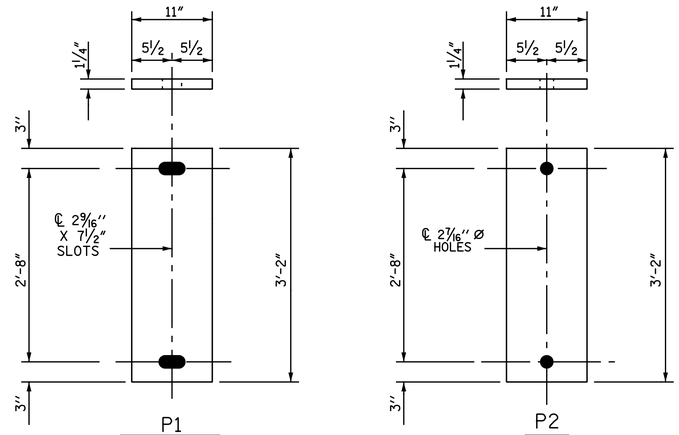


DETAIL A



TYPICAL HALF-PLAN (SHOWING FIXED BENT)

TYPICAL HALF-PLAN (SHOWING EXPANSION BENT)



SOLE PLATE DETAILS ("P")

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 219+22.38 -L-

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/30/2017

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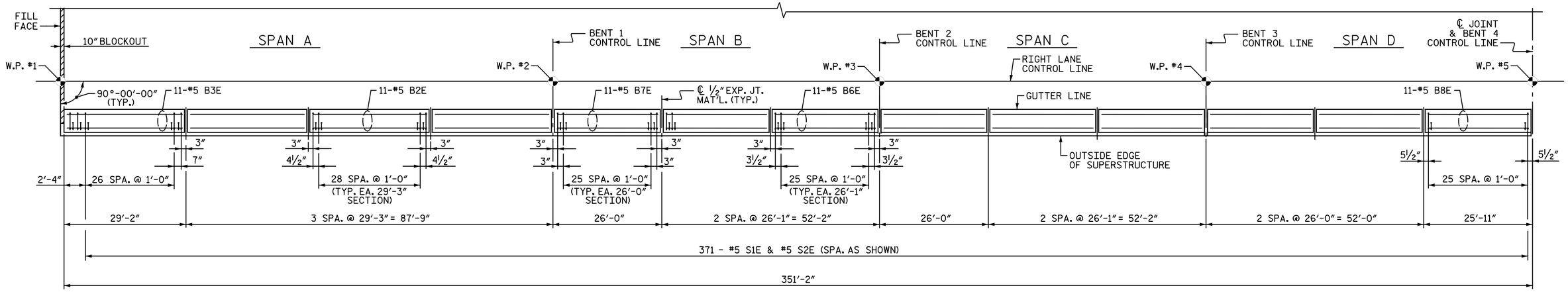
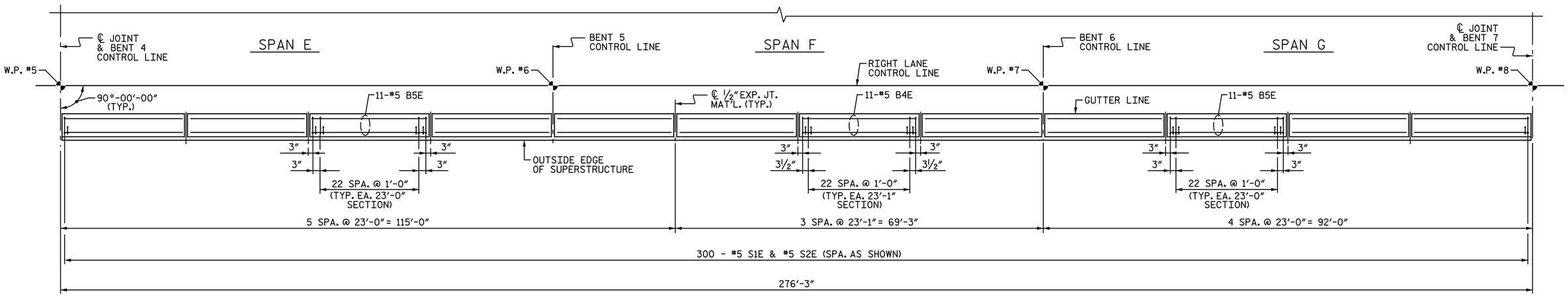
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
ELASTOMERIC BEARING DETAILS
PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE
RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-32
1			3			TOTAL SHEETS
2			4			52

ASSEMBLED BY : N. B. SPEAKS		DATE : 5-11-17
CHECKED BY : T. M. GARRISON		DATE : 6-21-17
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





PLAN OF BARRIER RAIL

(RIGHT RAIL SHOWN, LEFT RAIL SIMILAR)

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 1 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

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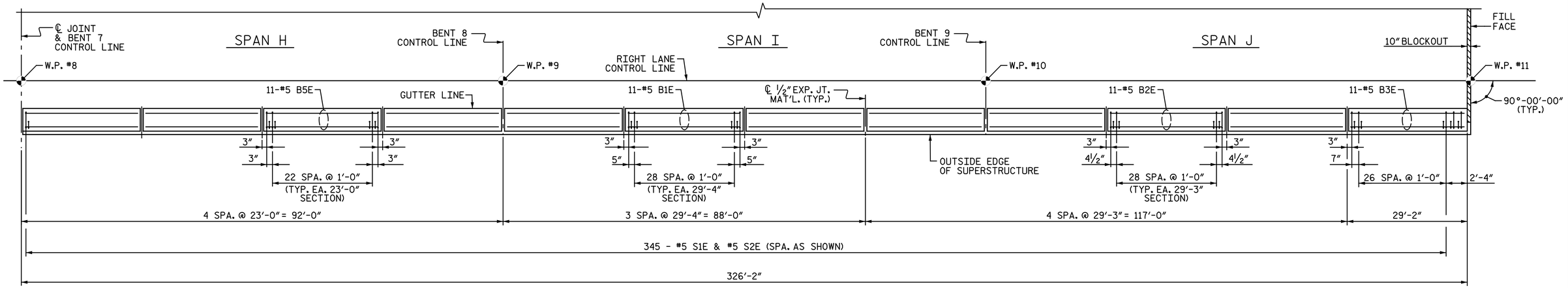
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE BARRIER RAIL

RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-33
1			3			TOTAL SHEETS
2			4			52

DRAWN BY : N. B. SPEAKS DATE : 5-11-17
CHECKED BY : T. M. GARRISON DATE : 6-25-17



PLAN OF BARRIER RAIL

(RIGHT RAIL SHOWN, LEFT RAIL SIMILAR)

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 2 OF 3

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by:
8/10/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONCRETE BARRIER RAIL

RIGHT LANE

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-34
1			3			TOTAL SHEETS
2			4			52

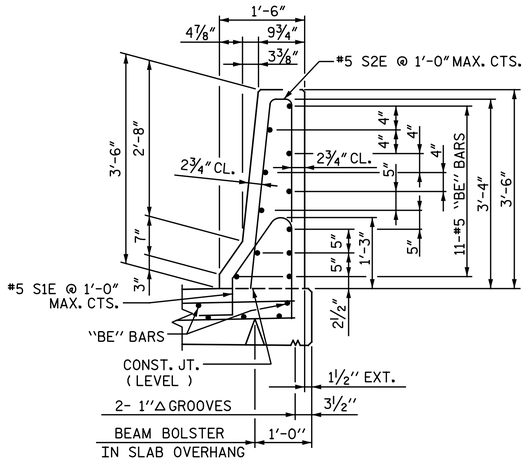
DRAWN BY : N. B. SPEAKS DATE : 5-11-17
CHECKED BY : T. M. GARRISON DATE : 6-25-17

NOTES

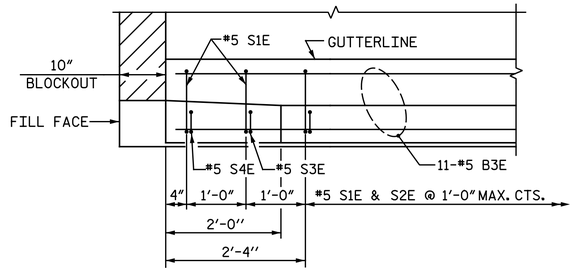
THE BARRIER RAIL IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

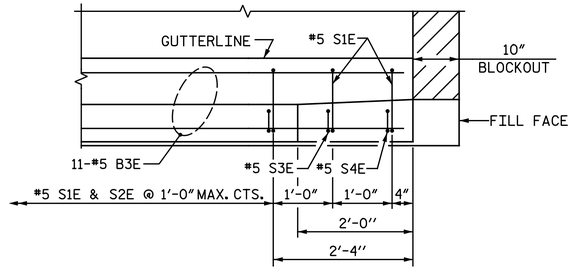
GROOVED CONTRACTION JOINTS, ½″ IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED 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



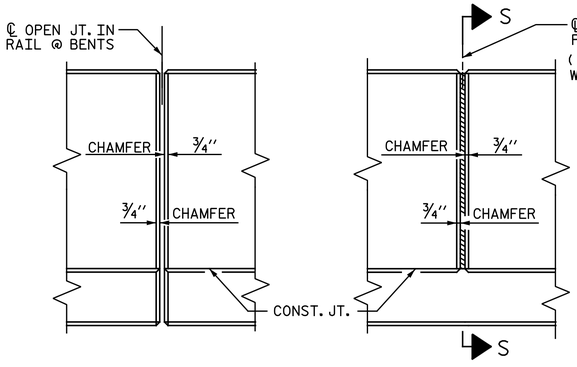
END BENT 1



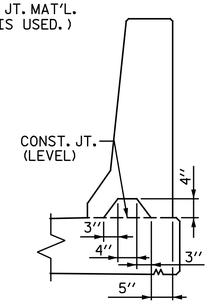
END BENT 2

PLAN

(RIGHT RAIL SHOWN, LEFT RAIL SIMILAR)

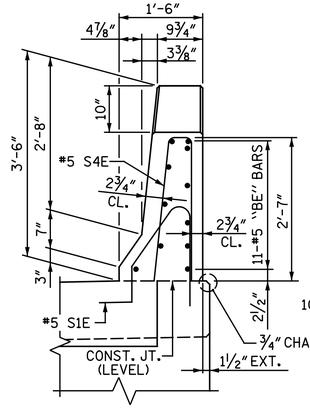


ELEVATION AT EXPANSION JOINTS

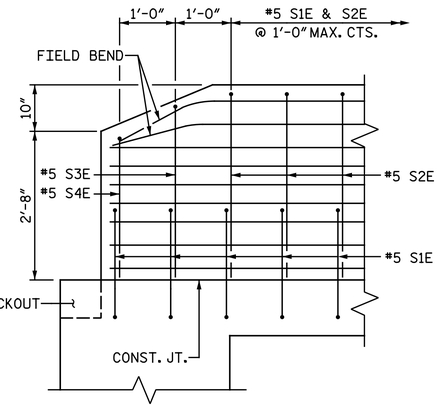


SECTION S-S

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



END VIEW

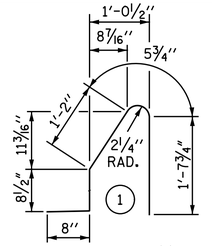


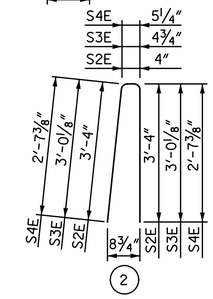
SIDE VIEW

BARRIER RAIL DETAILS

END OF RAIL DETAILS

BAR TYPES





BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1E	66	#5	STR.	28′ - 11″	1,991
B2E	154	#5	STR.	28′ - 10″	4,631
B3E	44	#5	STR.	28′ - 9″	1,319
B4E	66	#5	STR.	22′ - 8″	1,560
B5E	286	#5	STR.	22′ - 7″	6,737
B6E	88	#5	STR.	25′ - 8″	2,356
B7E	88	#5	STR.	25′ - 7″	2,348
B8E	22	#5	STR.	25′ - 6″	585
S1E	2040	#5	1	4′ - 8″	9,929
S2E	2032	#5	2	7′ - 0″	14,836
S3E	4	#5	2	6′ - 5″	27
S4E	4	#5	2	5′ - 8″	24
EPOXY COATED REINFORCING STEEL				LBS.	46,343
CLASS AA CONCRETE				C.Y.	259.0
CONCRETE BARRIER RAIL				L.F.	1907.17

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

SHEET 3 OF 3

ASSEMBLED BY : N. B. SPEAKS	DATE : 9-11-17	
CHECKED BY : T. M. GARRISON	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

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

9/12/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

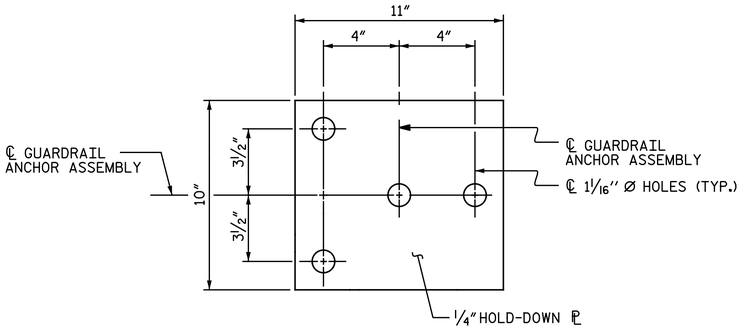
STANDARD

CONCRETE BARRIER RAIL

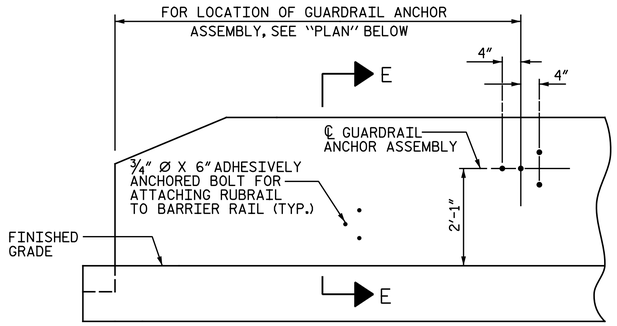
RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-35
1			3			TOTAL SHEETS
2			4			52

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.)

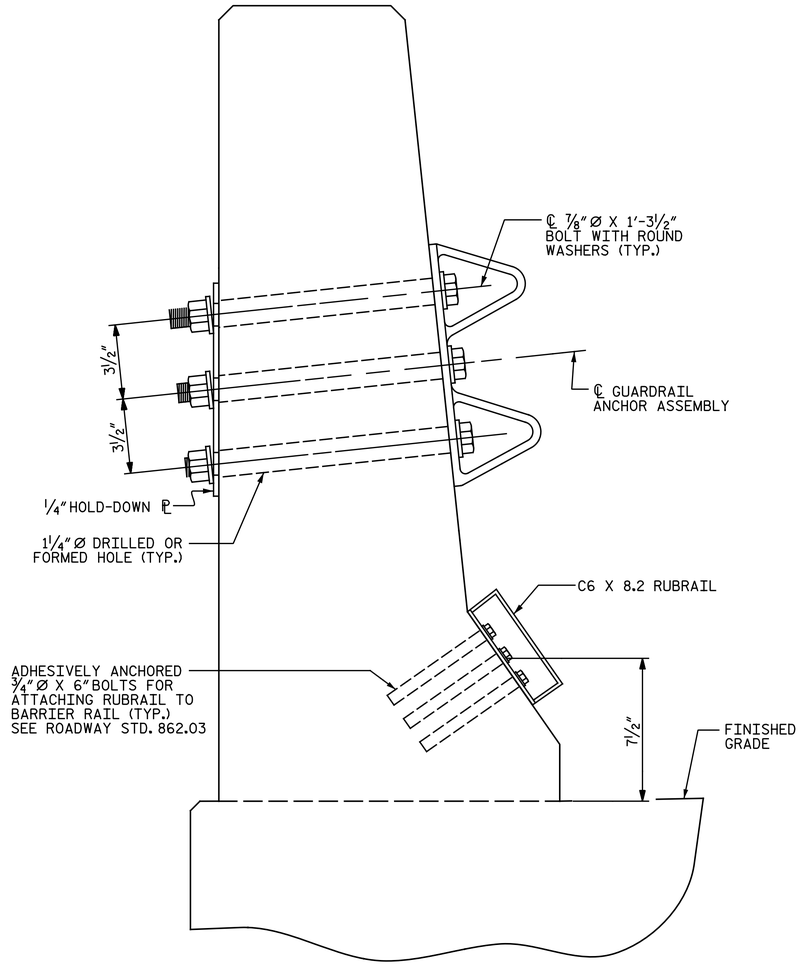
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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.

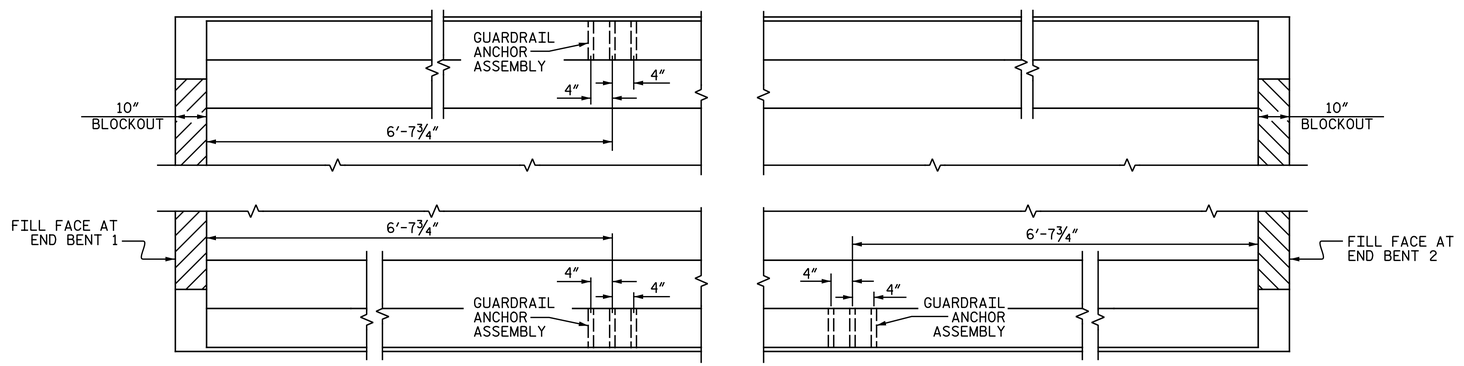
THE 1 1/4″ Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

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.



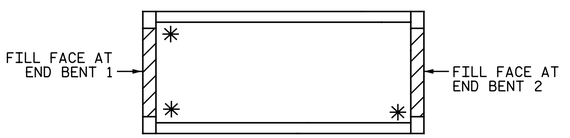
SECTION E-E

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: 219+22.38 -L-

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

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 : T. M. GARRISON	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
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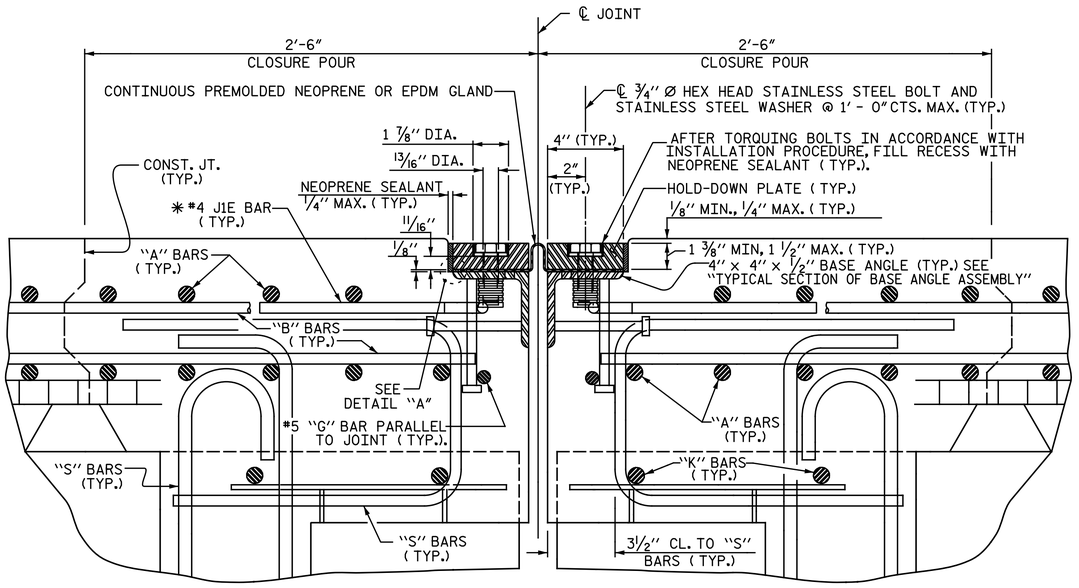
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-36
1			3			TOTAL SHEETS
2			4			52

STD. NO. GRA2

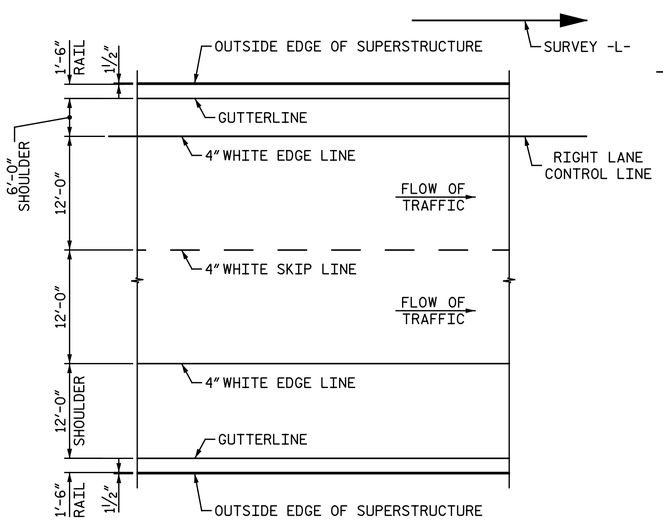


EXPANSION JOINT DETAILS

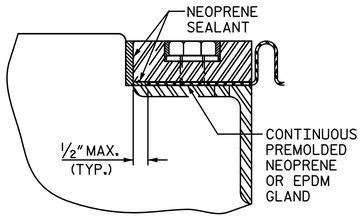
SECTION NORMAL TO JOINT -- PRESTRESSED GIRDER SUPERSTRUCTURE

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

MOVEMENT AND SETTING AT JOINT					
BENT NO.	SKEW ANGLE	TOTAL MOVEMENT (ALONG ℄ RDWY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
4	90°-00'-00"	2 5/16"	2 5/8"	2 1/4"	1 7/16"
7	90°-00'-00"	2 7/16"	2 3/4"	2 5/16"	1 7/16"



PAVEMENT MARKING ALIGNMENT



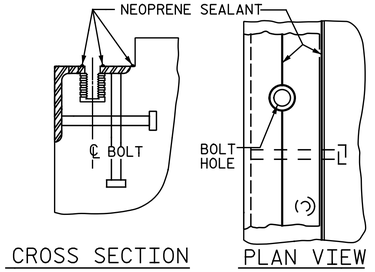
DETAIL "A"

INSTALLATION PROCEDURE

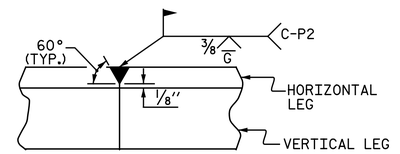
1. A TEMPLATE OR OTHER SUITABLE DEVICE SHALL BE USED TO FORM THE TOP OF THE EXPANSION JOINT SEAL BLOCKOUT TO THE PROPER DEPTH AND WIDTH. THE TEMPLATE SHALL BE 4 1/8" TO 4 1/4" WIDE AND OF SUCH THICKNESS AS TO PROVIDE FOR CORRECT FINAL ELEVATION OF TOP OF HOLD-DOWN PLATES. THE TEMPLATE SHALL BE ATTACHED TO THE BASE ANGLE ASSEMBLY WITH THE ¾" Ø HEX HEAD BOLTS PROVIDED FOR THE HOLD-DOWN PLATES. A 1" Ø HOLE SHALL BE PROVIDED IN THE TEMPLATE CENTERED OVER EACH WEEP HOLE IN THE 4" X 4" X ½" BASE ANGLE. OTHER METHODS OF INSURING DRAINAGE THROUGH WEEP HOLES MAY BE EMPLOYED SUBJECT TO ENGINEER'S APPROVAL.
2. AFTER THE CONCRETE HAS BEEN CAST ON BOTH SIDES OF THE JOINT, REMOVE THE TEMPLATE. THOROUGHLY CLEAN THE BOLT HOLES AND THE ANGLE PLATE. REMOVE ANY EXCESS CONCRETE THAT COMES OUT OF THE WEEP HOLES. ANY DAMAGED STEEL SHALL BE COATED WITH A MINIMUM THICKNESS OF 4 DRY MILS OF ZINC-RICH PAINT IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
3. LAY THE GLAND ON THE BASE ANGLE AND FIELD MARK THE GLAND FOR THE BOLT HOLES. HOLES IN THE GLAND SHALL BE PUNCHED ⅞" IN DIAMETER WITH A HAND PUNCH.
4. IN ORDER TO CHECK FOR PROPER ALIGNMENT, PLACE THE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. DO NOT APPLY NEOPRENE SEALANT. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE BUT DO NOT TIGHTEN. THE ENGINEER SHALL INSPECT THE JOINT SEAL DEVICE FOR PROPER ALIGNMENT.
5. AFTER INSPECTION, REMOVE THE HOLD-DOWN PLATES AND GLAND. APPLY NEOPRENE SEALANT TO THE BASE ANGLE IN ACCORDANCE WITH THE "INSTALLATION SKETCH". PLACE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE ASSEMBLY AND TORQUE THE BOLTS TO 88 FT-LBS WITH A TORQUE WRENCH. CHECK THE TORQUE AFTER THREE (3) HOURS AND, IF NECESSARY, RETIGHTEN TO 88 FT-LBS. A FINAL CHECK SHALL BE MADE AT SEVEN (7) DAYS. TORQUE SHALL NOT BE LESS THAN 80 FT-LBS AFTER SEVEN (7) DAYS.
6. AFTER PROPER TORQUING, CLEAN THE BOLT HOLE RECESSES AND THE RECESS BETWEEN THE JOINT SEAL DEVICE AND CONCRETE, COMPLETELY FILL THESE RECESSES WITH NEOPRENE SEALANT.

GENERAL NOTES

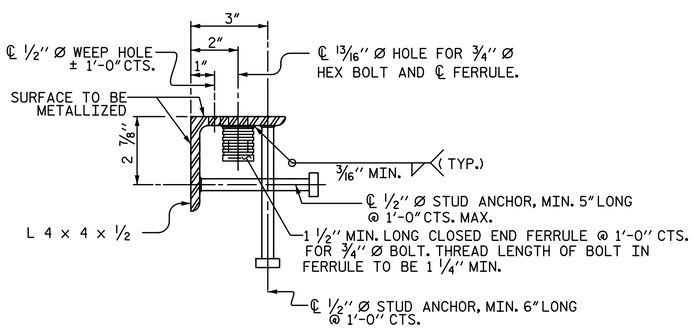
1. FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.
2. ALL PLATES AND ANGLES SHALL CONFORM TO AASHTO M270 GRADE 36 STEEL OR APPROVED EQUAL. ALL HOLD-DOWN BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL CONFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS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



INSTALLATION SKETCH



DETAIL- FIELD WELD SPLICE OF BASE ANGLE



TYPICAL SECTION OF BASE ANGLE ASSEMBLY

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 219+22.38 -L-

NORTH CAROLINA PROFESSIONAL SEAL 033139 ENGINEER TODD M. GARRISON

DocuSigned by: Todd M. Garrison 8/10/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

EXPANSION JOINT SEAL DETAILS

RIGHT LANE

ASSEMBLED BY : N. B. SPEAKS	DATE : 6-21-17
CHECKED BY : T. M. GARRISON	DATE : 6-21-17
DRAWN BY : REK 9/87	REV. 5/7/03R RWW/JTE
CHECKED BY : CRK 10/87	REV. 5/1/06R TLA/GM
	REV. 10/1/11 MAA/GM

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-37
1			3			TOTAL SHEETS
2			4			52

STD. NO. EJS1