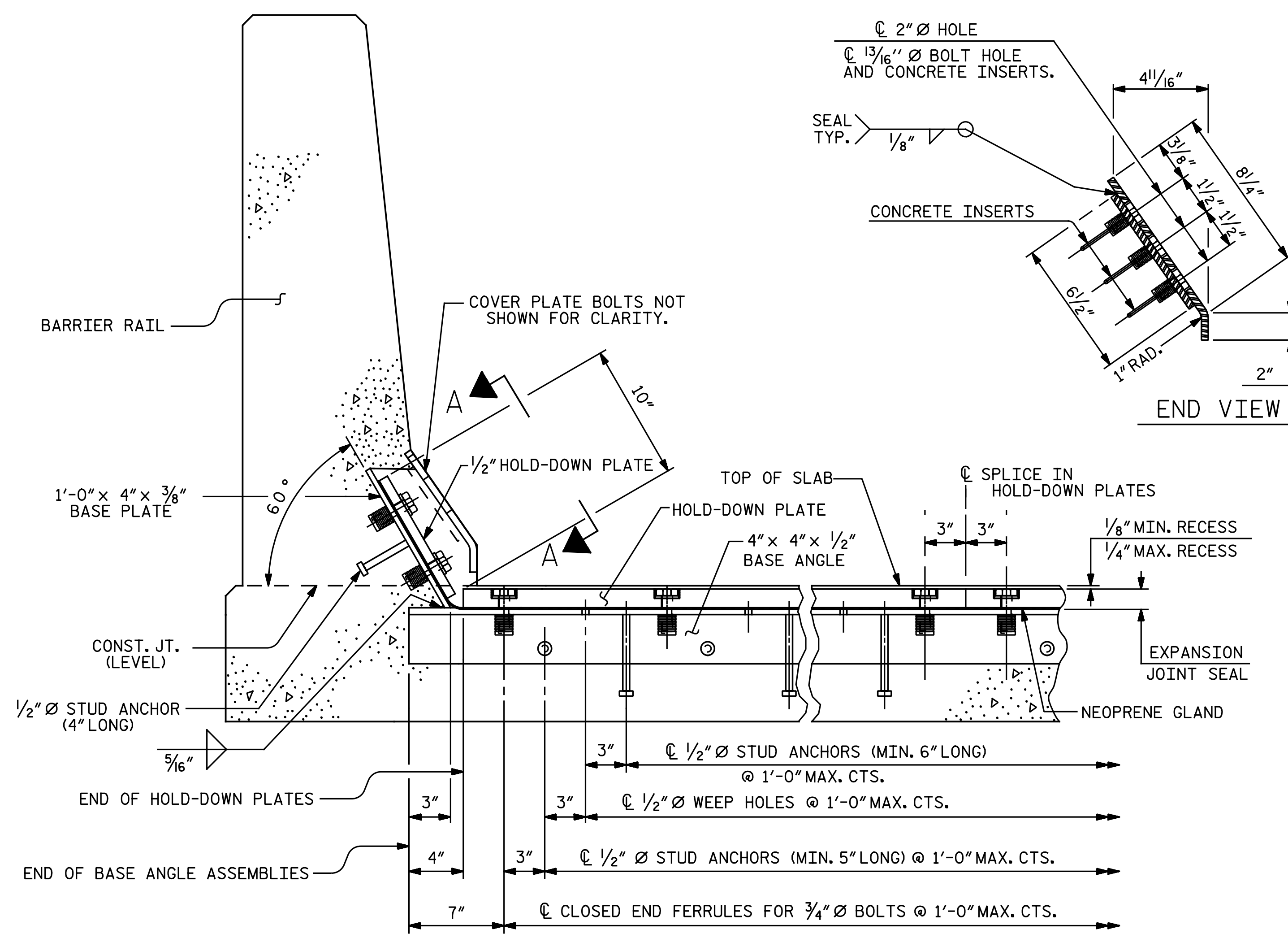


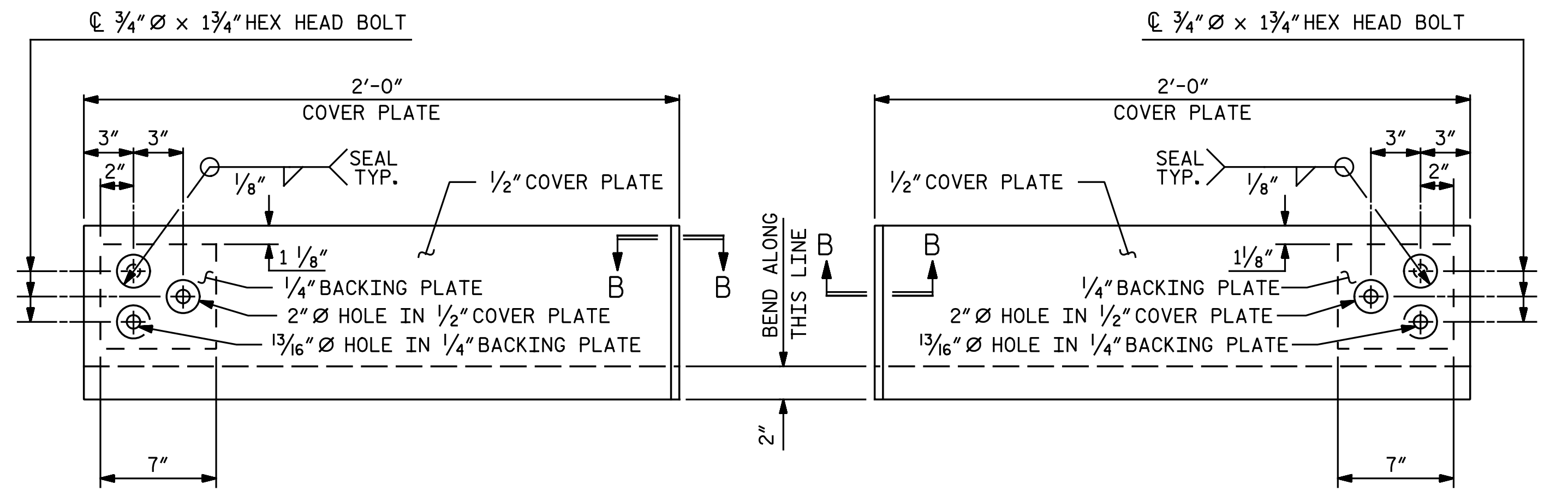
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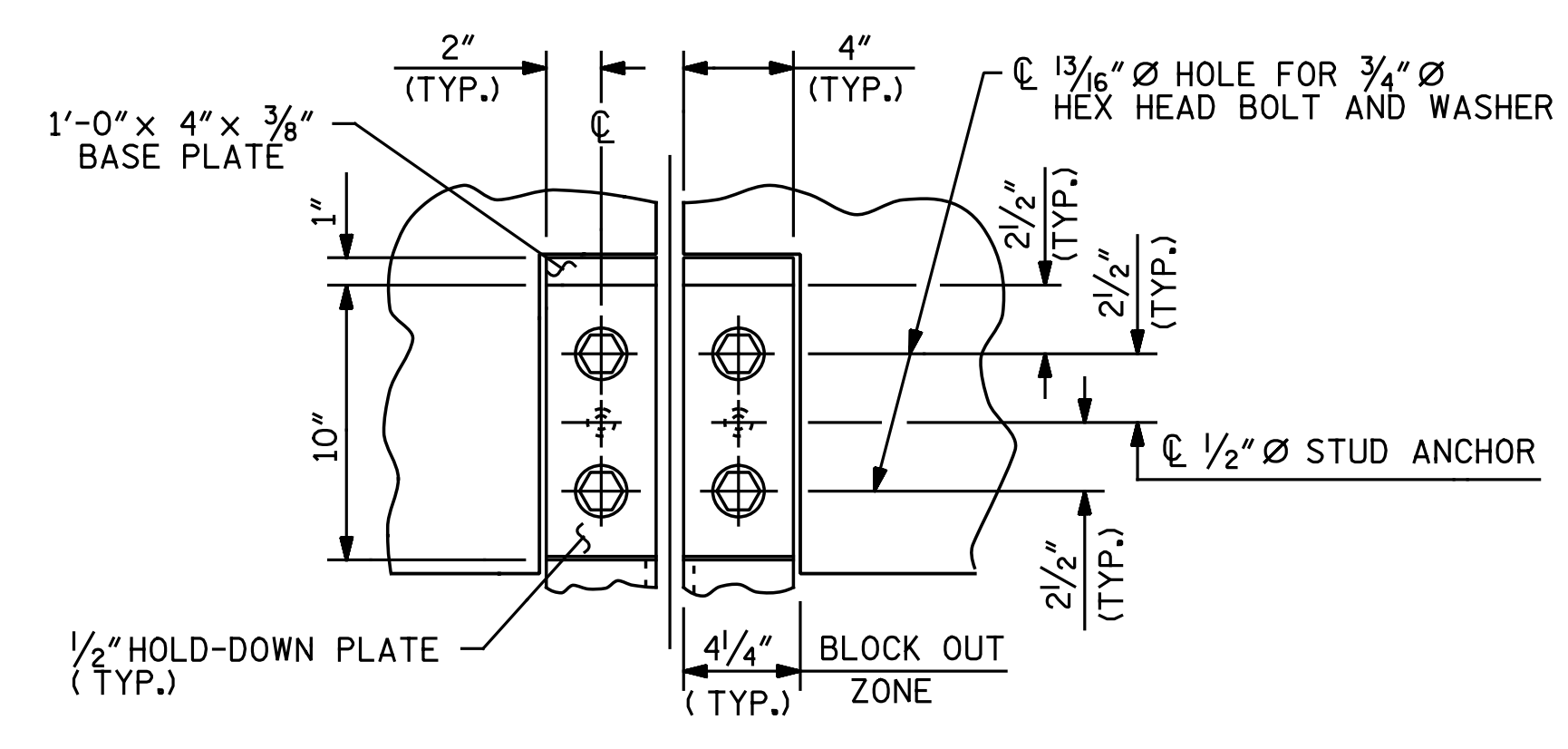


SECTION THRU RAIL NORMAL TO JOINT

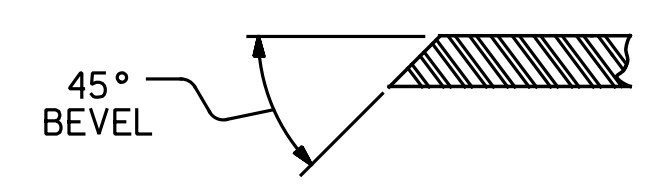


TYPE I - ELEVATION VIEW TYPE II - ELEVATION VIEW

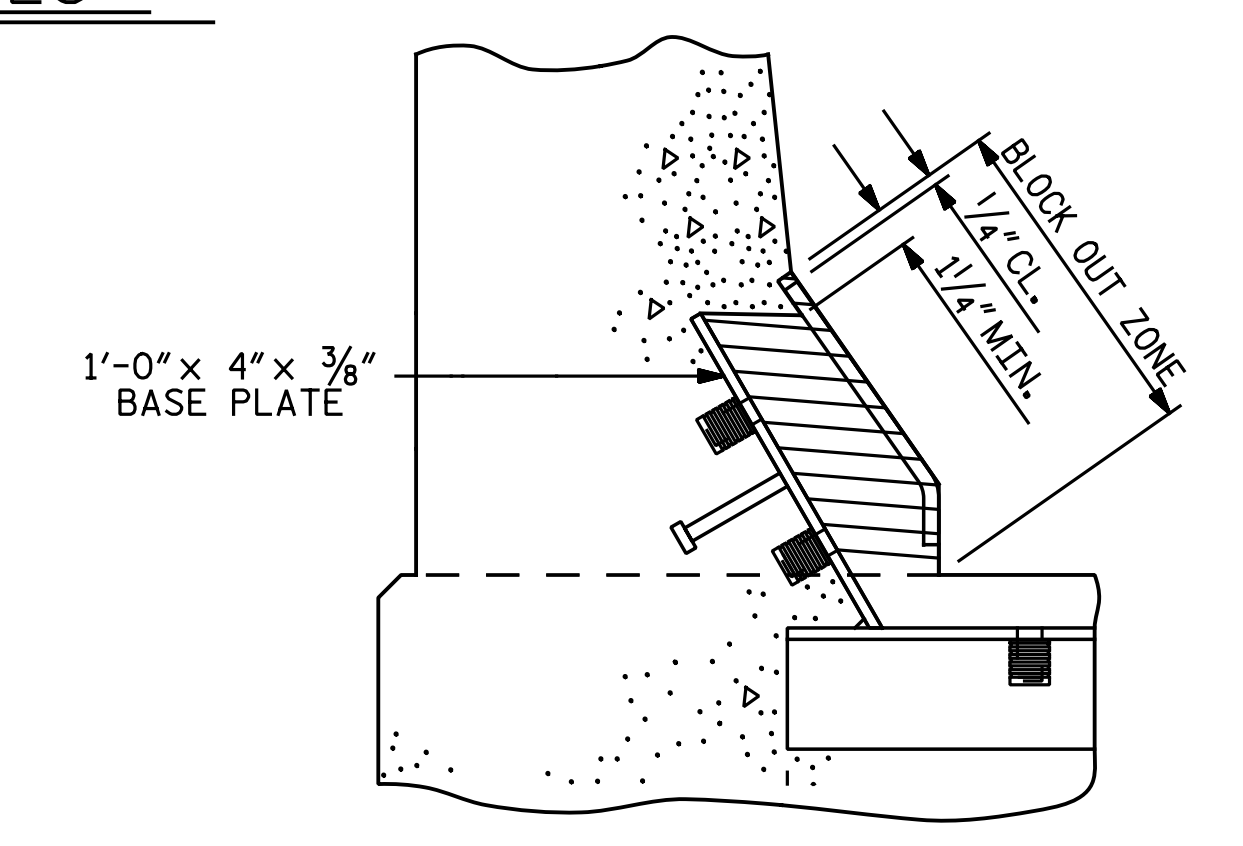
COVER PLATE DETAILS



SECTION A - A

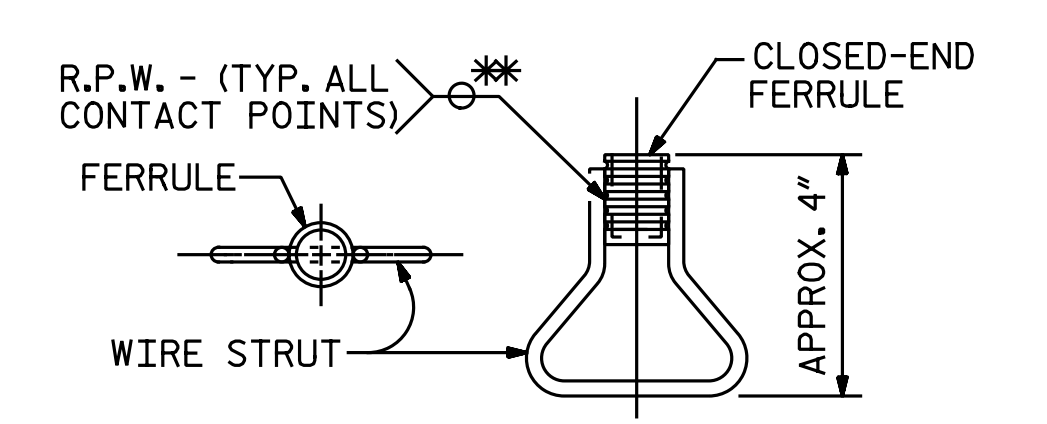


SECTION B - B



BLOCK OUT DETAIL

SEE "SECTION A - A" FOR OTHER DETAILS.

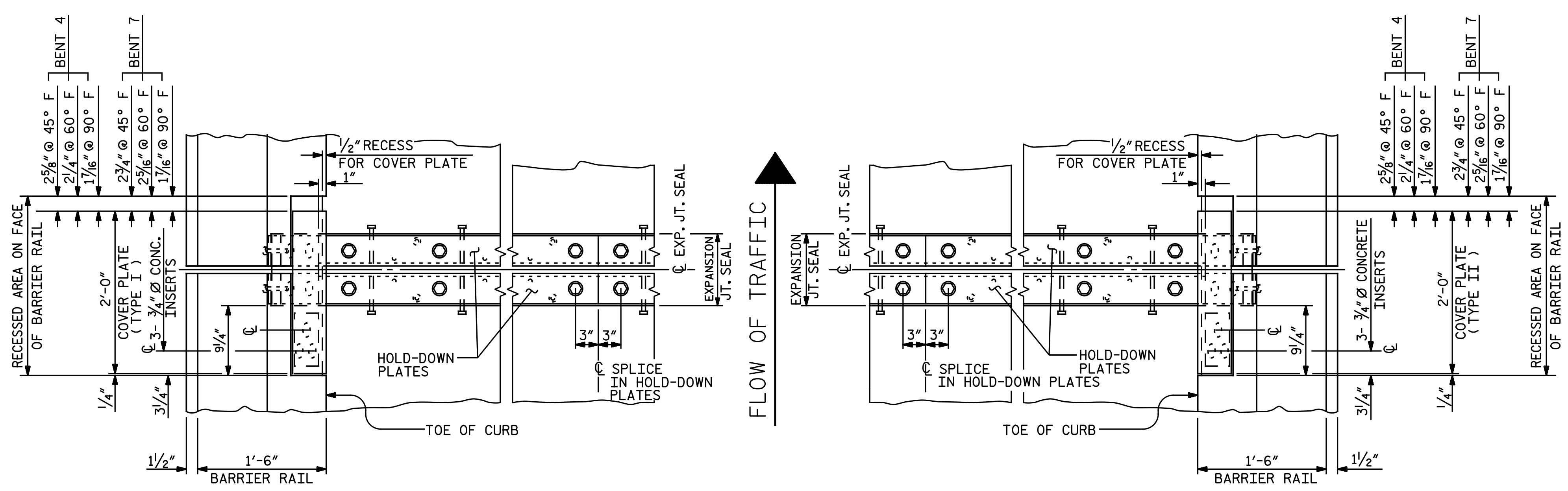


PLAN ELEVATION

CONCRETE INSERT

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

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



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
CHECKED BY : CRK 10/87	REV. 7/12
	REV. 6/13
MAA/GM	MAA/GM
MAA/GM	MAA/GM

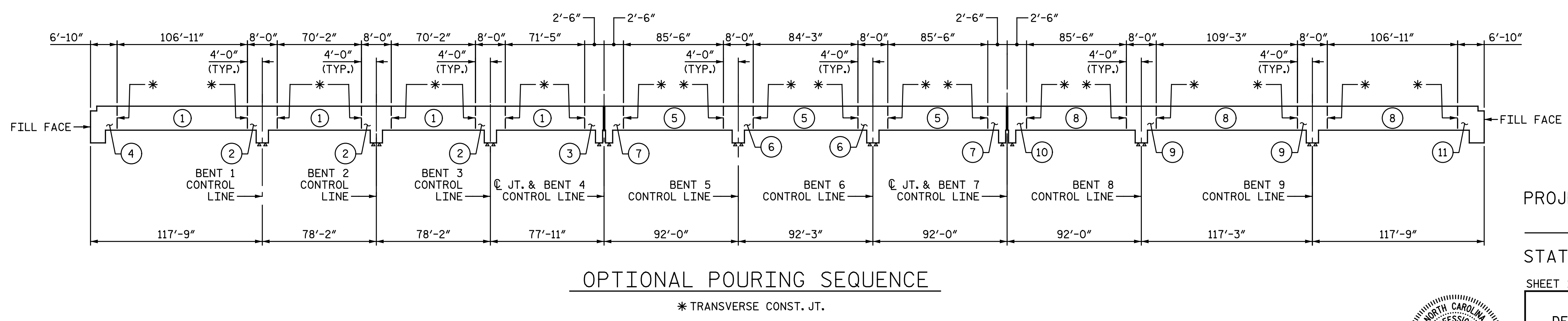
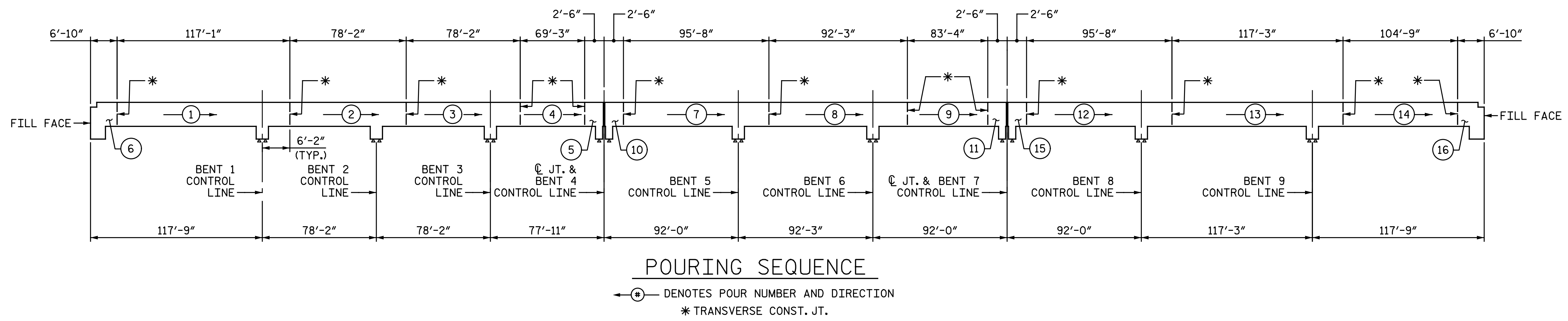
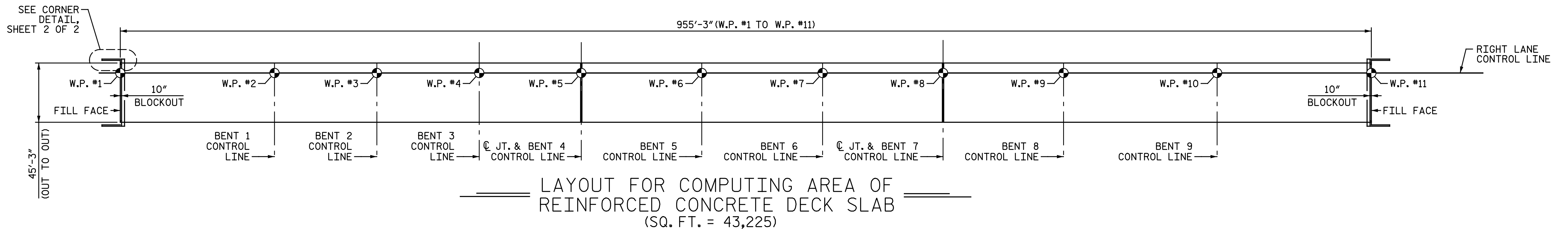
DocuSigned by:
Todd M. Garrison
06/13/2017

DOCUMENT NOT CONSIDERED FINAL
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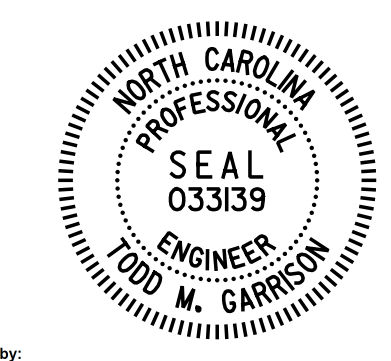
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Michael Baker Engineering
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Cary, North Carolina 27518
NC License No.: F-1084



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD EXPANSION JOINT SEAL DETAILS FOR BARRIER RAIL					
RIGHT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S8-38
					TOTAL SHEETS 52



PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 219+22.38 -L-
 SHEET 1 OF 2

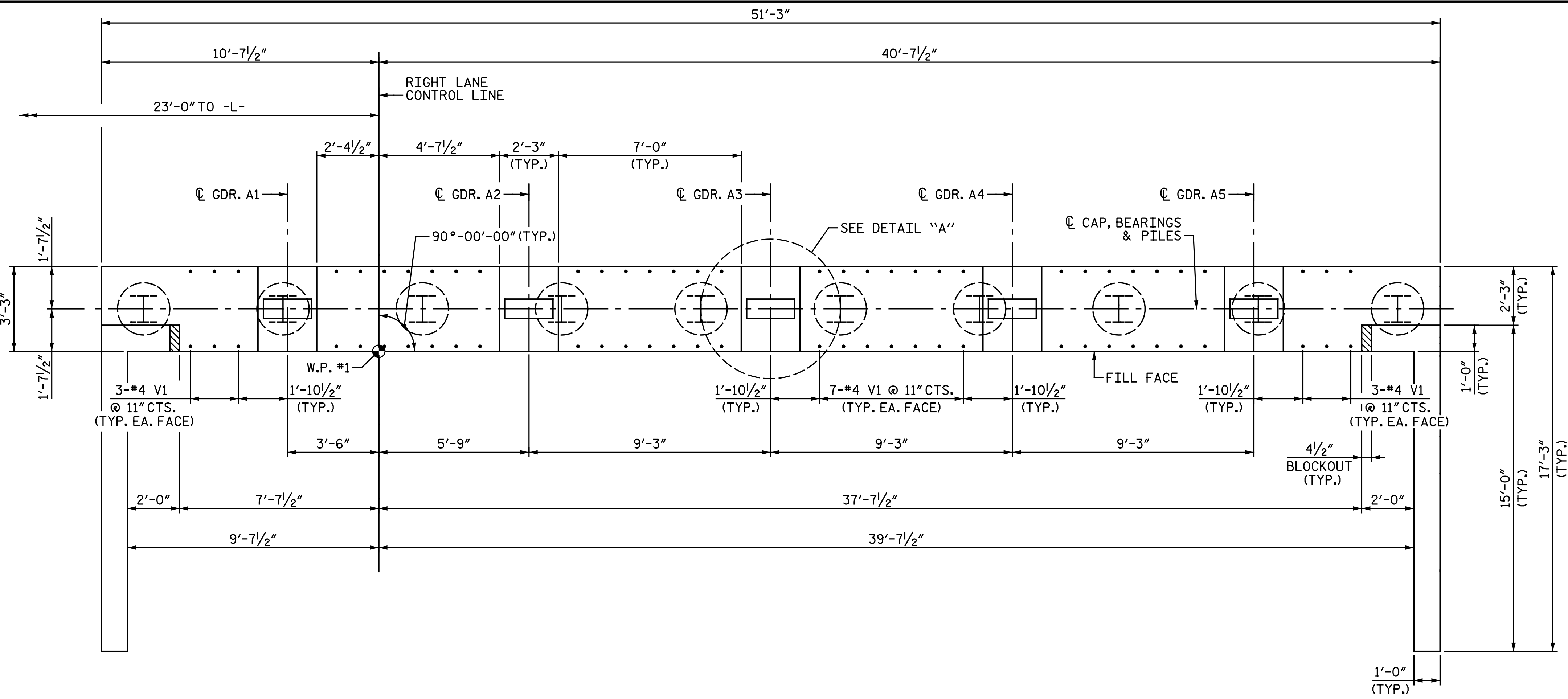


DocuSigned by:
 Todd M. Garrison
 613072017

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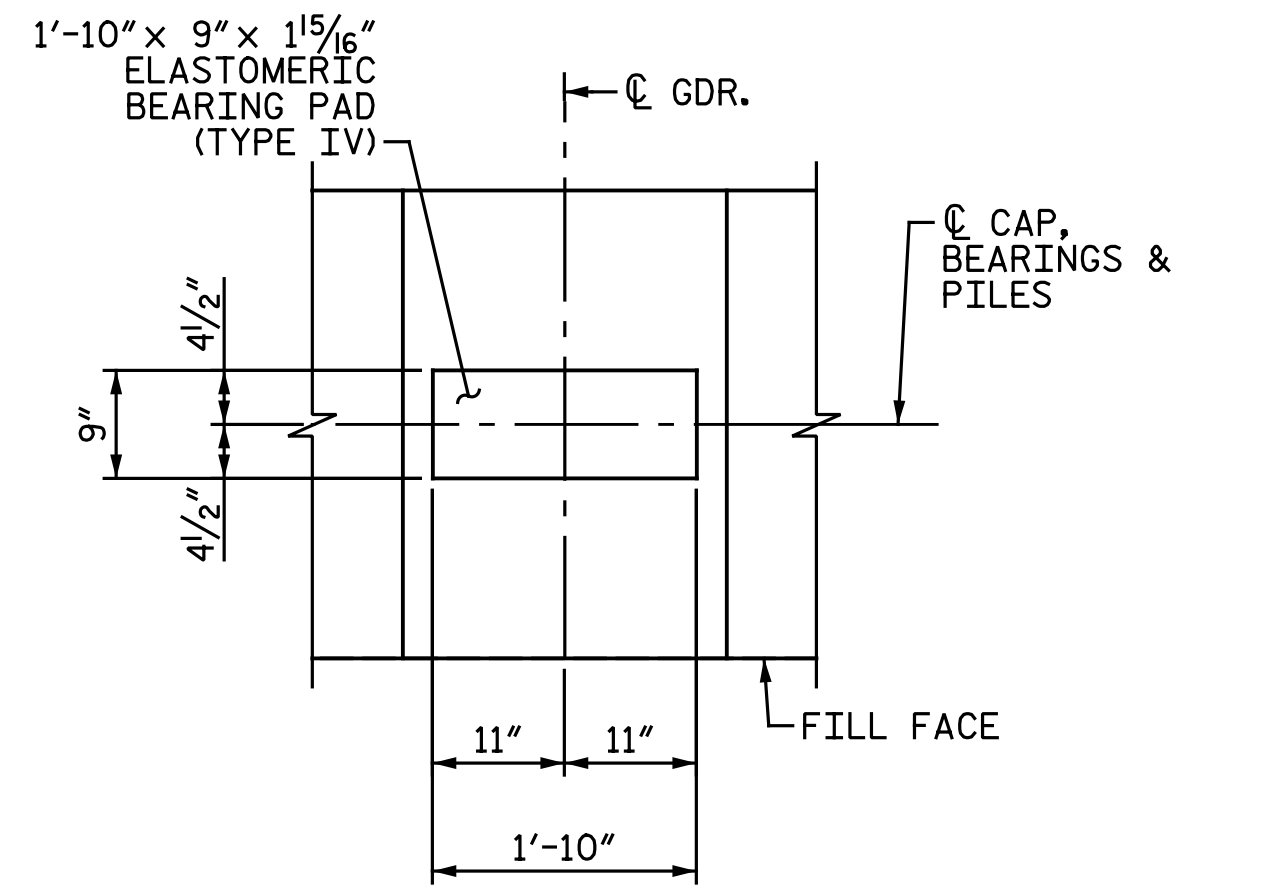
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE					
BILL OF MATERIAL					
RIGHT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S8-39 TOTAL SHEETS 52

DRAWN BY: N. B. SPEAKS DATE: 6-23-17
 CHECKED BY: J. M. GARRISON DATE: 6-26-17



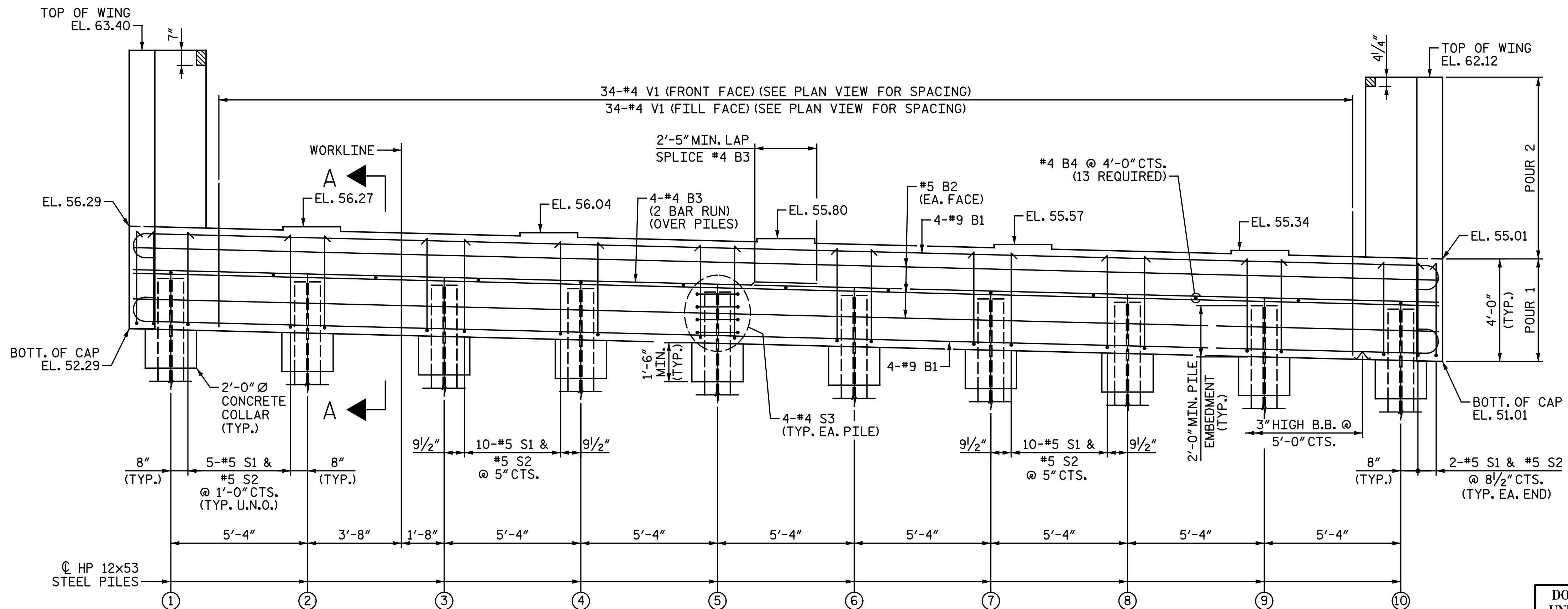
PLAN

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 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	54.26
②	54.13
③	54.00
④	53.86
⑤	53.73
⑥	53.60
⑦	53.46
⑧	53.33
⑨	53.20
⑩	53.06

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
 RIGHT LANE

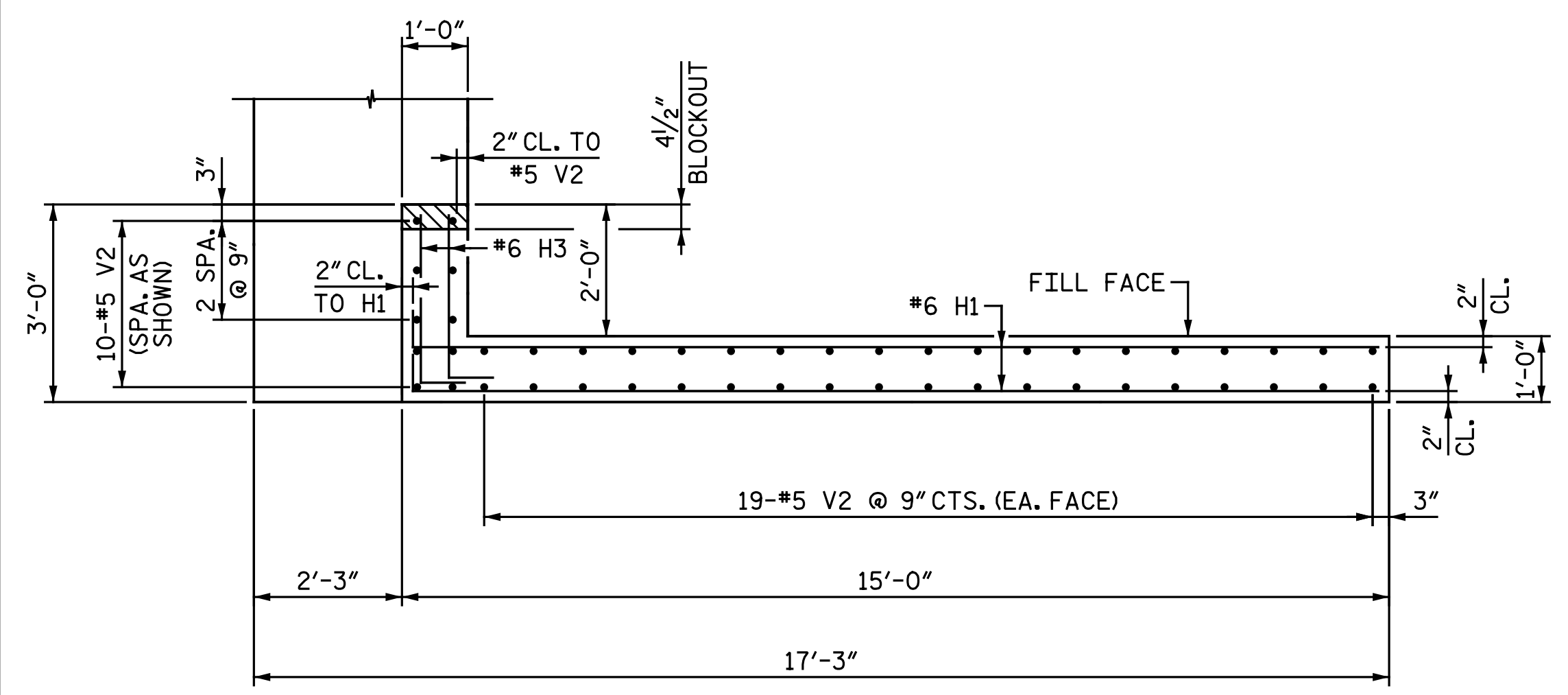
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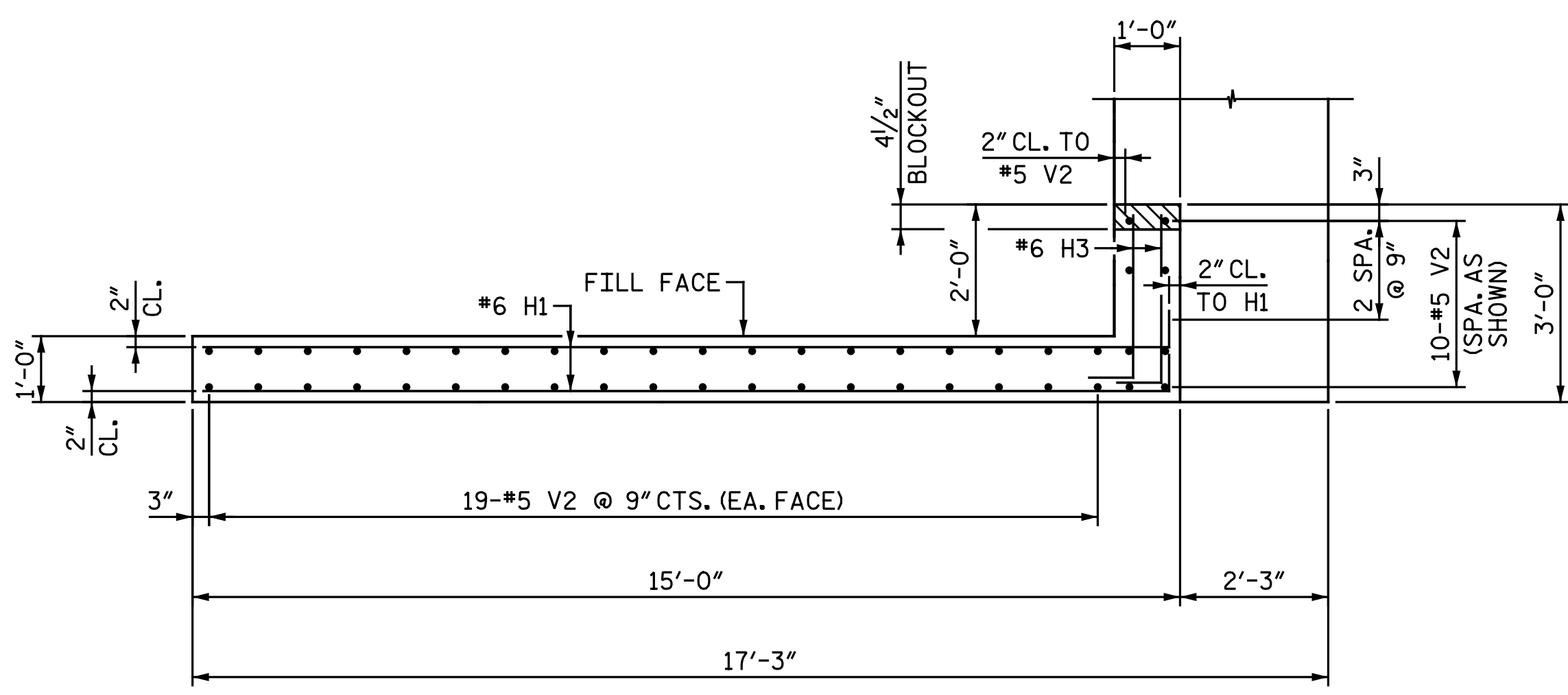
NO.	BY:		DATE:		SHEET NO.
	BY:	DATE:	BY:	DATE:	
1			3		S8-41 TOTAL SHEETS 52
2			4		

DRAWN BY : D. A. LAMAY DATE : 6-22-17
 CHECKED BY : J. M. GARRISON DATE : 6-22-17

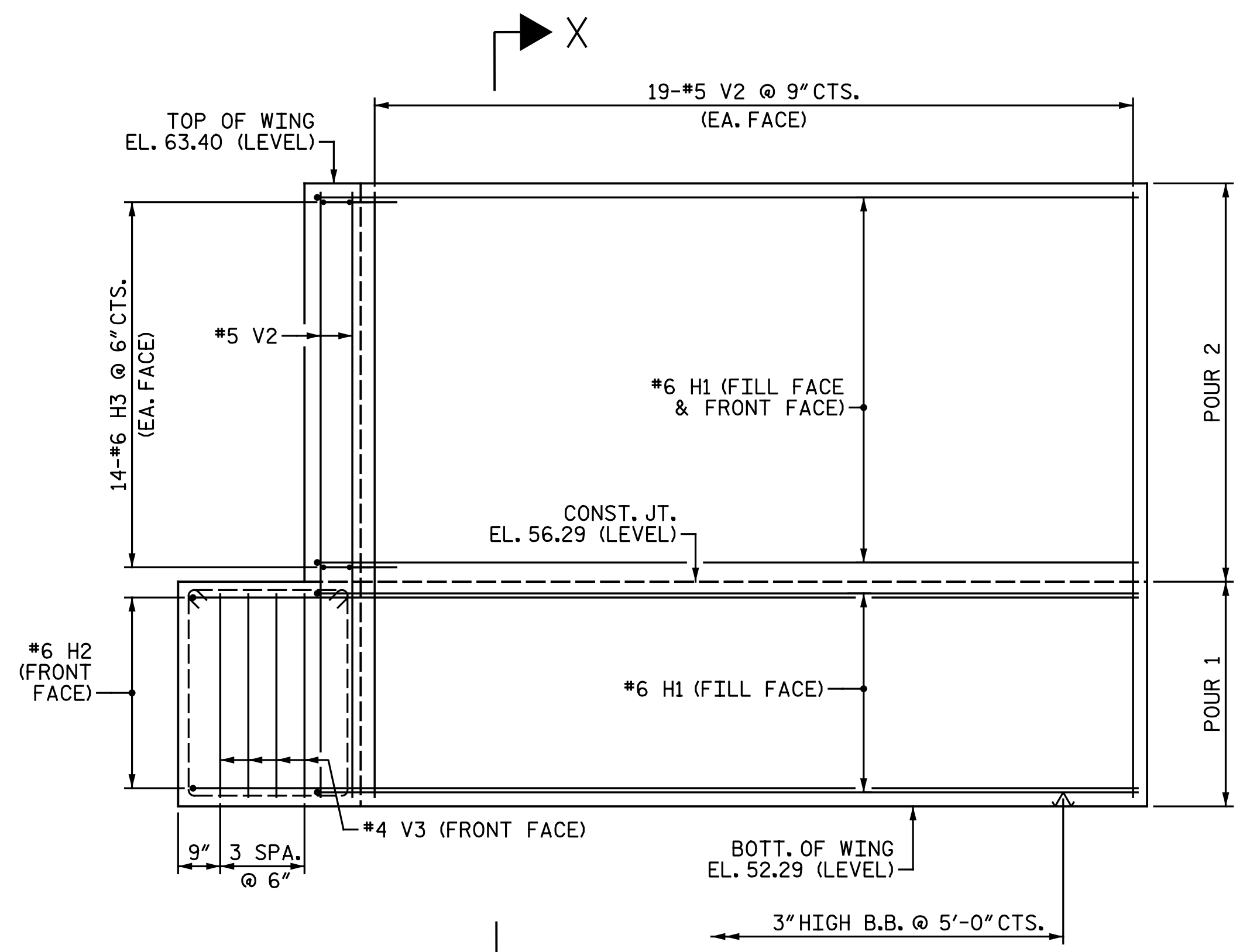
(U.N.O. - DENOTES "UNLESS NOTED OTHERWISE")



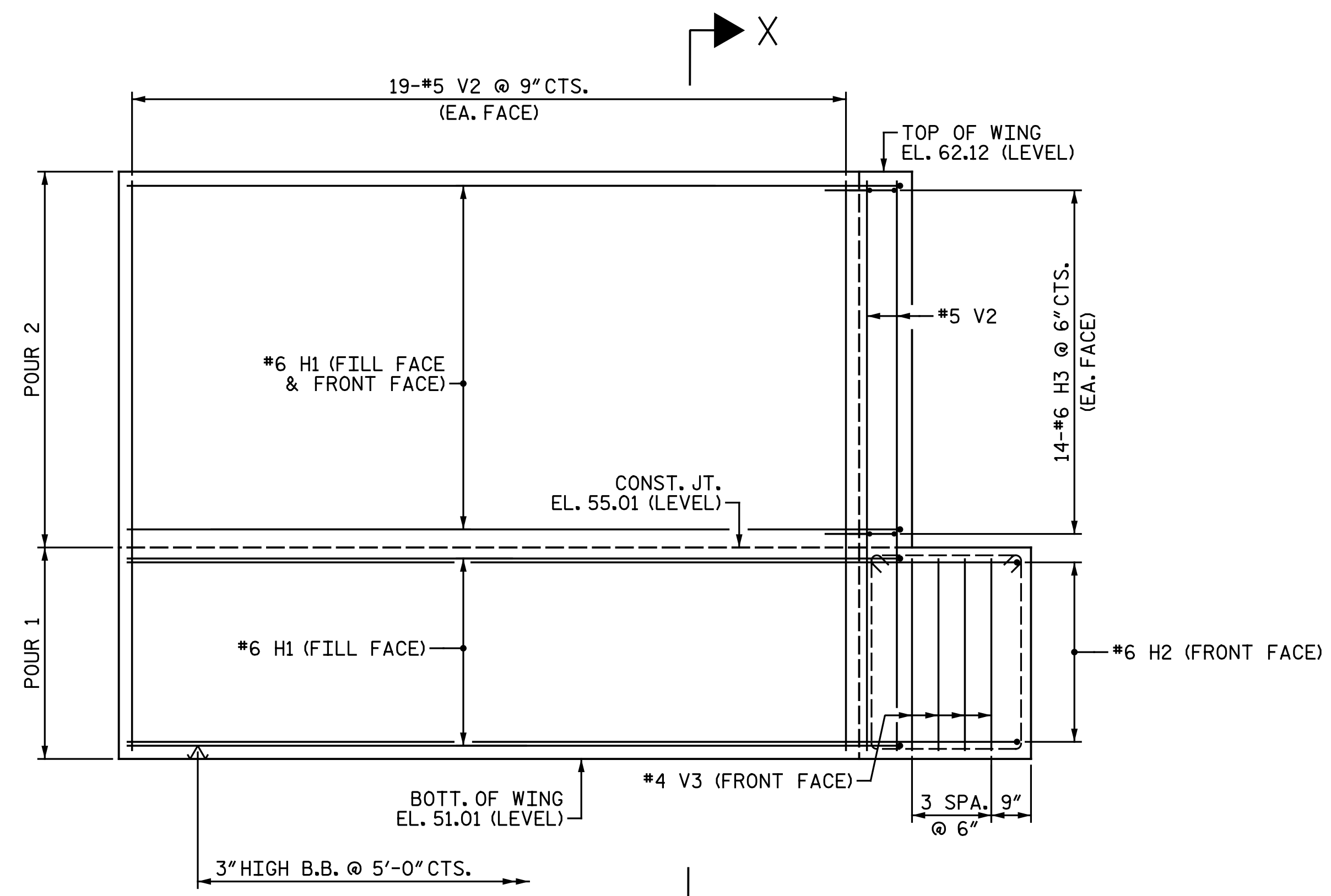
PLAN OF LEFT WING
(H2 BARS NOT SHOWN FOR CLARITY)



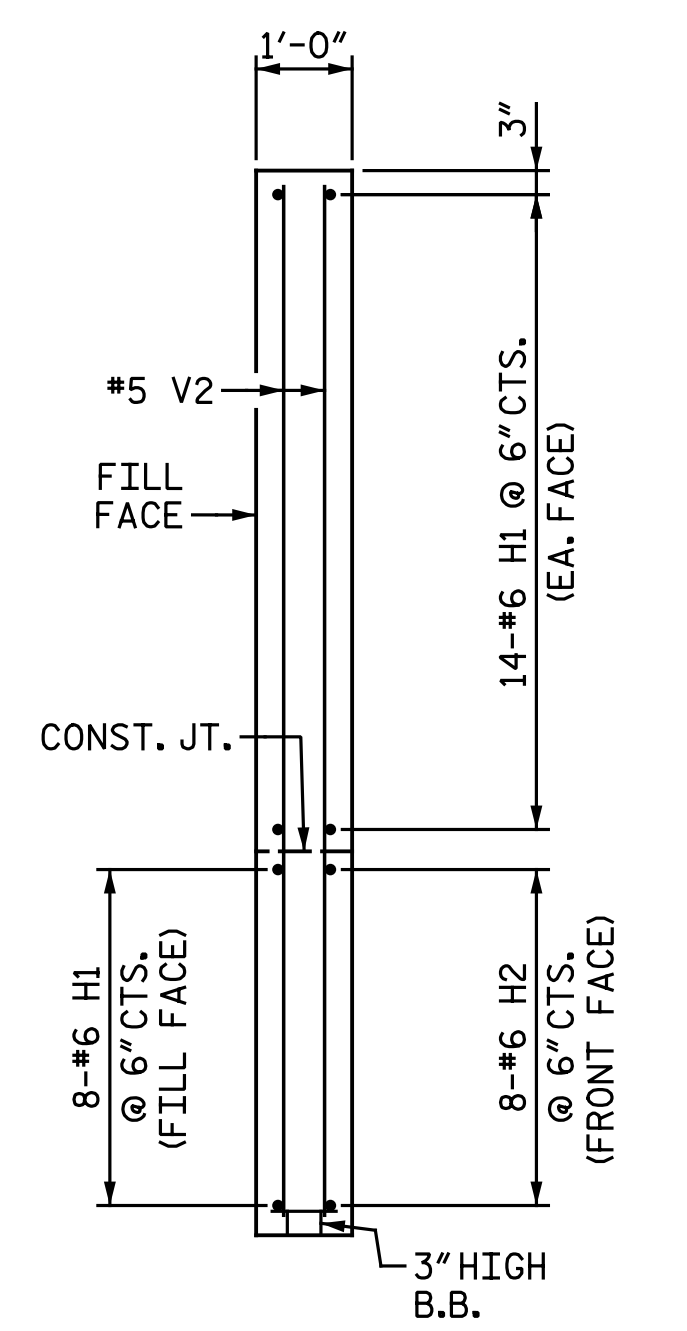
PLAN OF RIGHT WING
(H2 BARS NOT SHOWN FOR CLARITY)



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



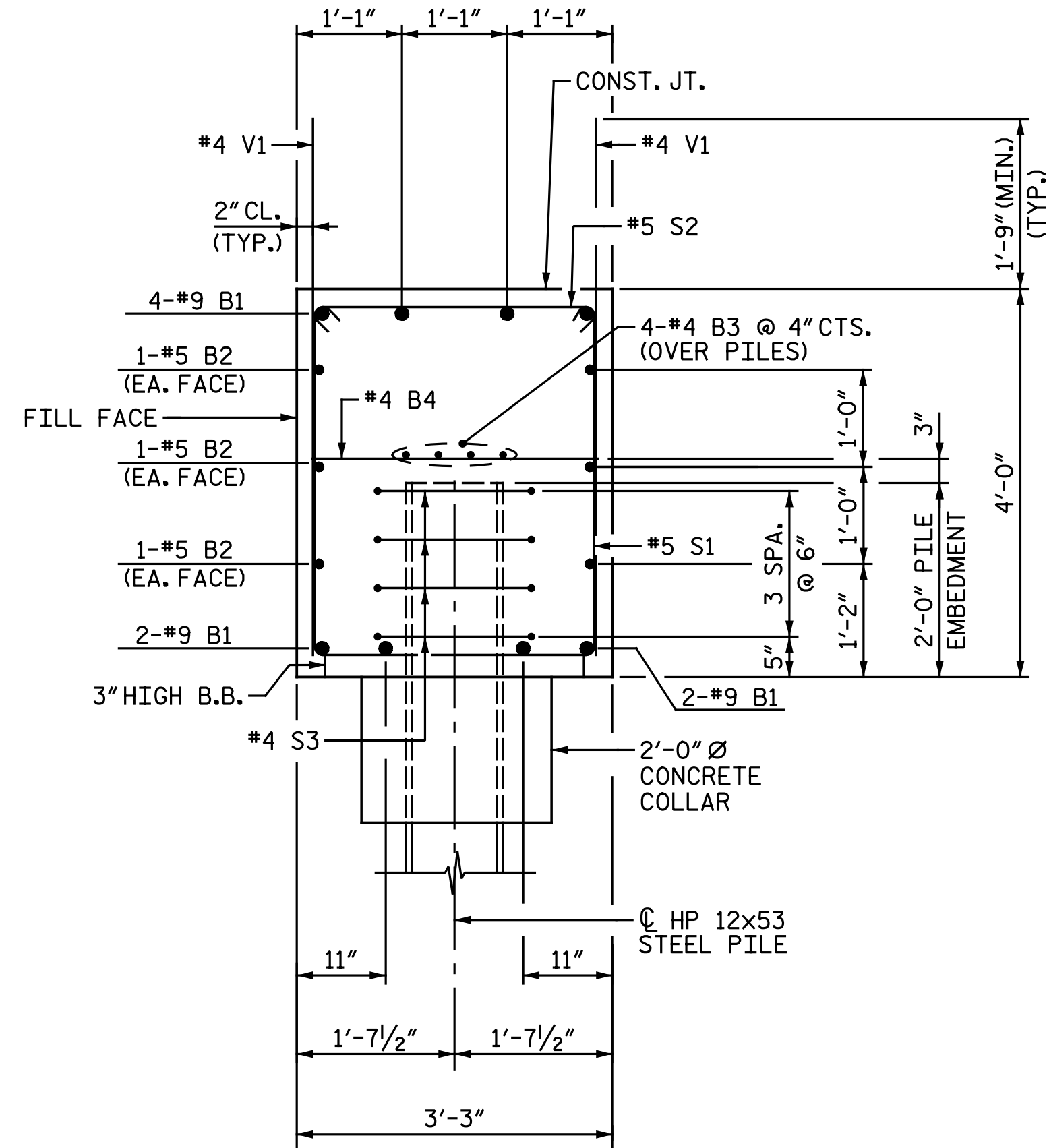
DocuSigned by:
 Todd M. Garrison
 6/13/2017

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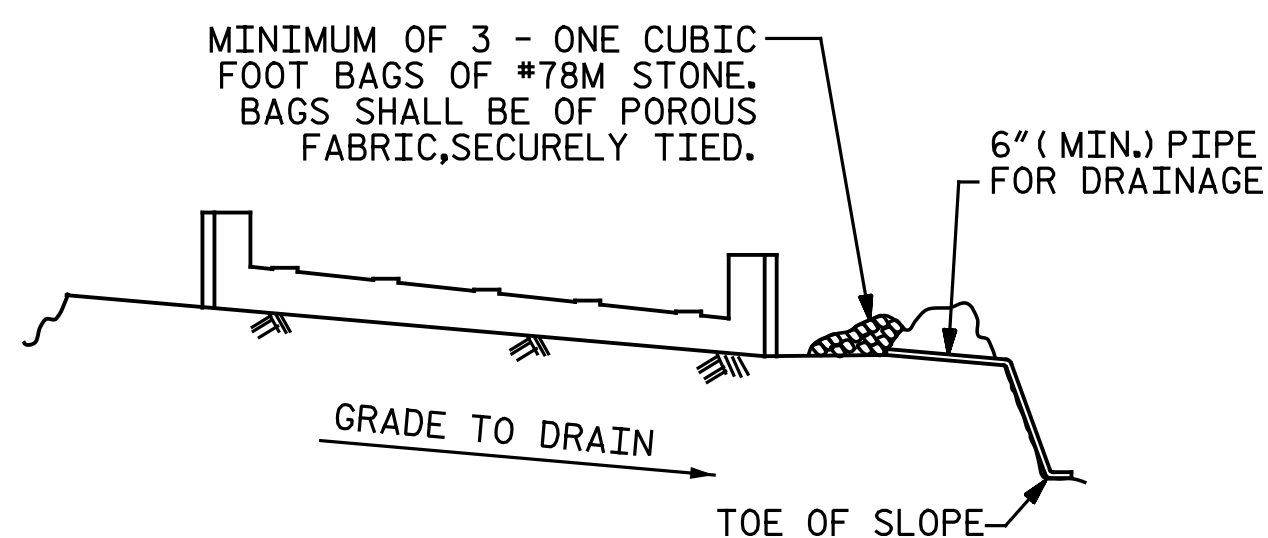
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 Michael Baker Engineering
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 Cary, North Carolina 27518
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
INTEGRAL END BENT 1					
RIGHT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S8-42
					TOTAL SHEETS 52

DRAWN BY : D. A. LAMAY DATE : 6-22-17
 CHECKED BY : J. M. GARRISON DATE : 6-22-17



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

DRAWN BY : D. A. LAMAY DATE : 6-22-17
 CHECKED BY : J. M. GARRISON DATE : 6-22-17

BILL OF MATERIAL

INTEGRAL END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		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		15' - 8"	1,694
H2	16	#6		17' - 11"	431
H3	56	#6		3' - 6"	294
S1	59	#5		11' - 1"	682
S2	59	#5		3' - 10"	236
S3	40	#4		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

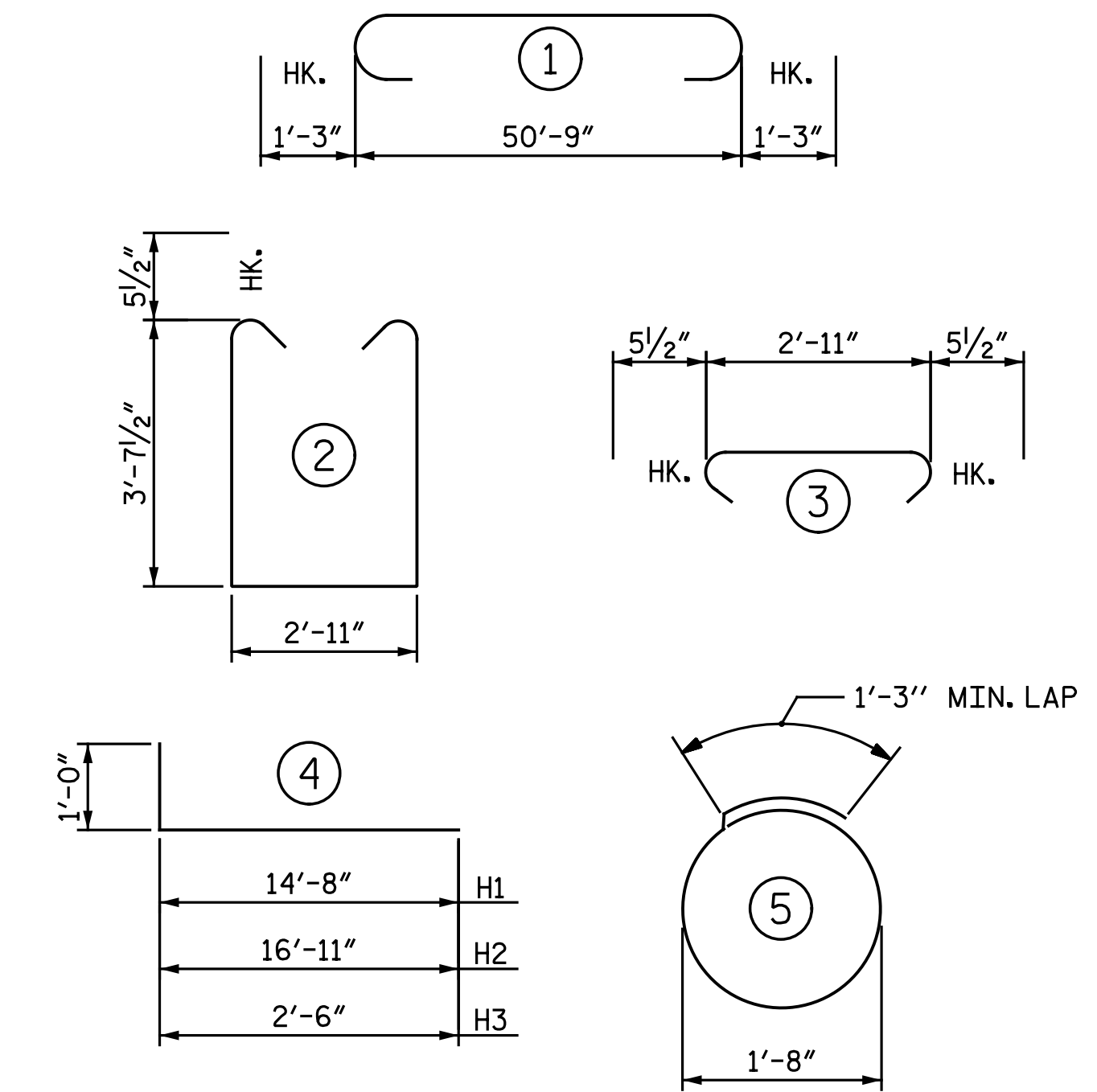
CLASS A CONCRETE
 POUR 1 -
 CAP, LOWER PART OF
 WINGS & COLLARS C.Y. 30.8
 POUR 2 -
 UPPER PART OF WINGS C.Y. 9.0
 TOTAL C.Y. 39.8

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

NOTE:

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

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



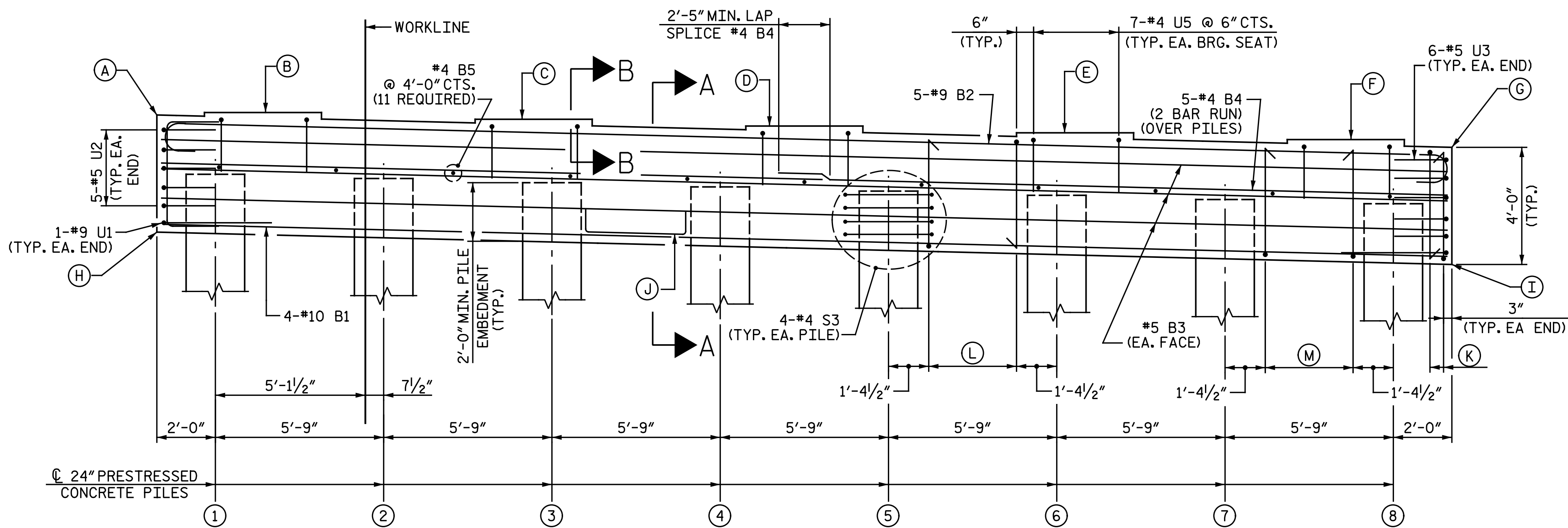
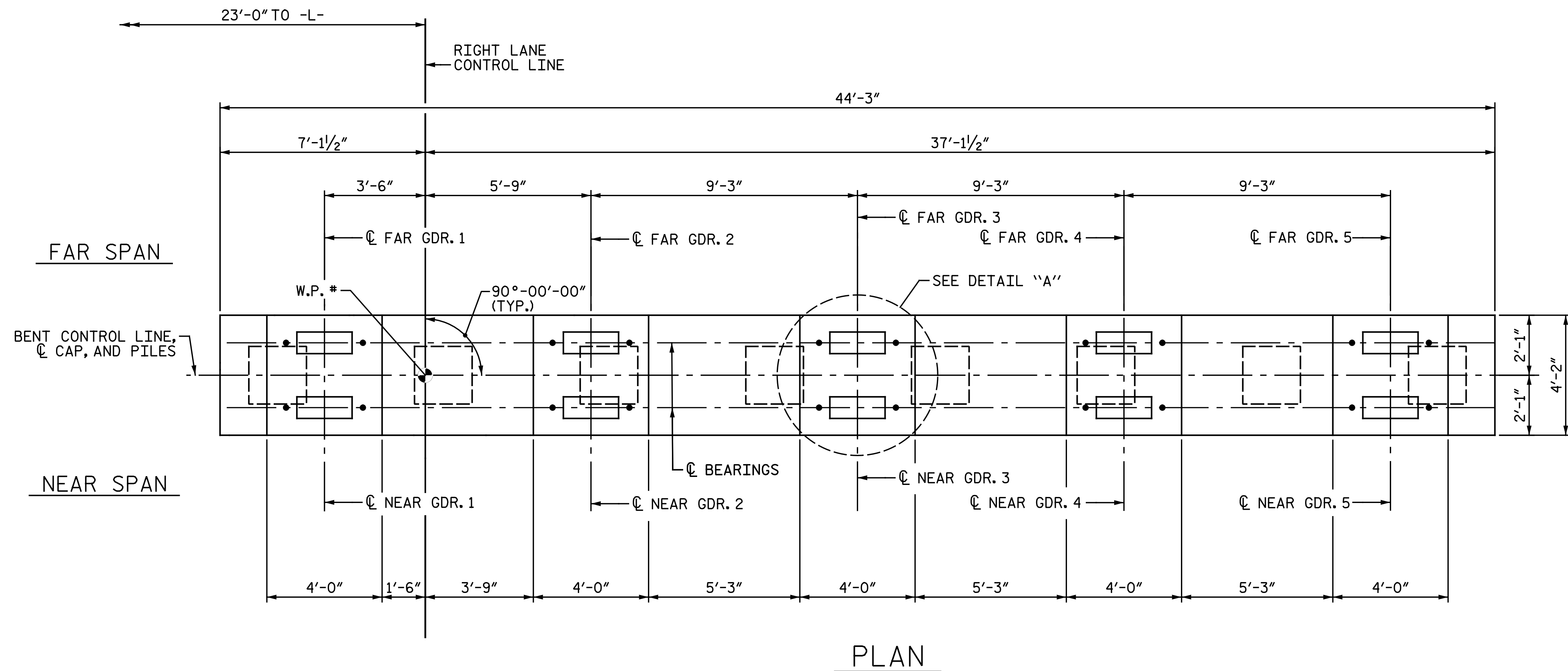
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 INTEGRAL END BENT 1
 DETAILS

RIGHT LANE

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-43
1			3			TOTAL SHEETS
2			4			52



FOR BENT CAP ELEVATIONS (A) THRU (I) AND TOP OF PILE ELEVATIONS, SEE "BENTS 1 THRU 9 DETAILS" SHEET.

STIRRUPS BETWEEN PILES 1 & 2, 2 & 3, 3 & 4, 4 & 5, AND 6 & 7 AND IN LEFT END OF CAP NOT SHOWN FOR CLARITY.

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

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
9	10	I	J

NOTES:

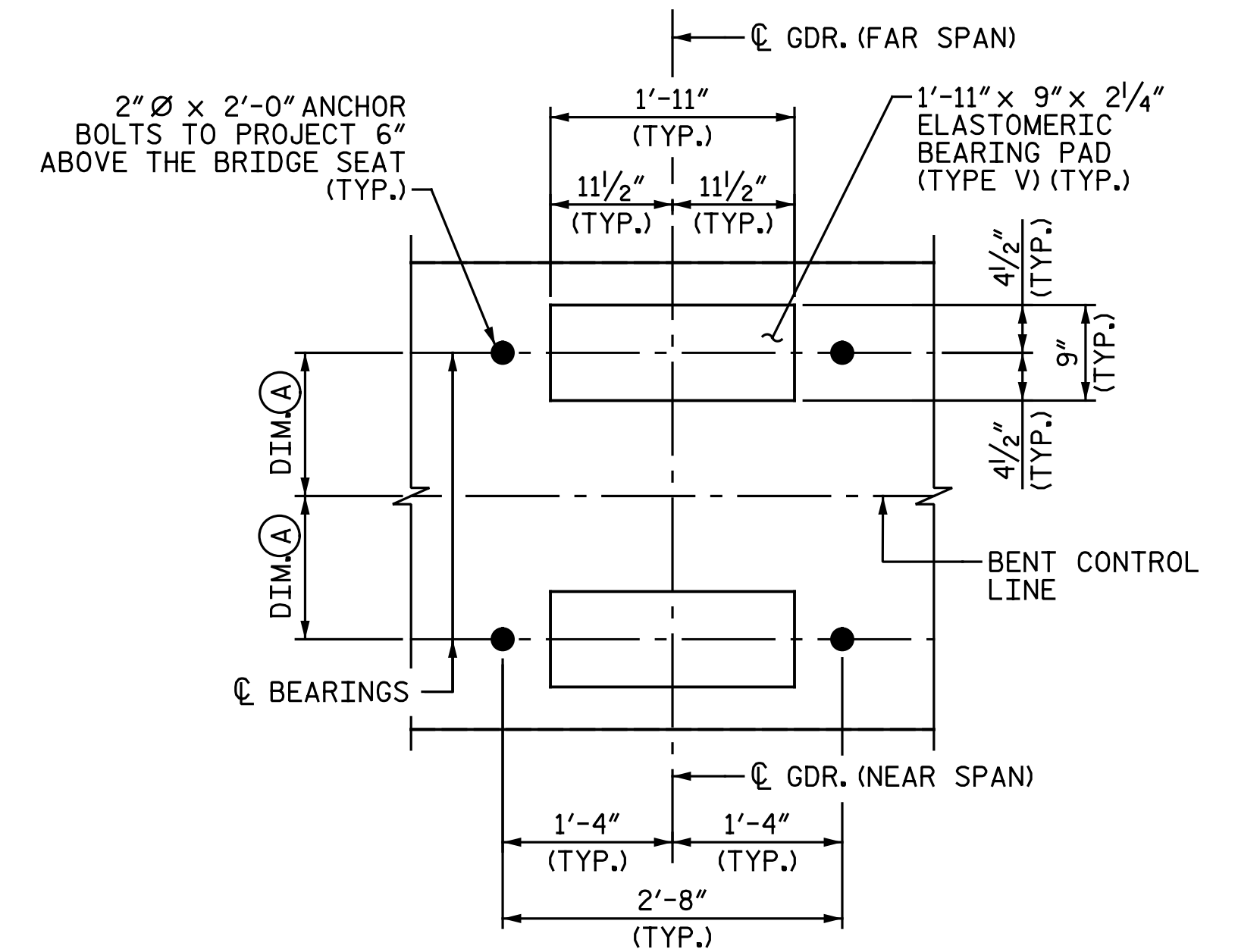
STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

FOR SECTION A-A, SEE "BENTS 1 THRU 9 DETAILS" SHEET.

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

THE TOP SURFACE AREA OF THE BENT CAPS FOR BENT 4 AND BENT 7 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 4 AND BENT 7 SHALL BE EPOXY COATED EXCEPT FOR THE AREAS UNDERNEATH THE ELASTOMERIC BEARING PADS.

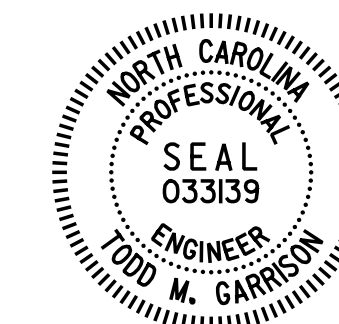


DETAIL "A"

FOR DIMENSION (A), SEE "BENTS 1 THRU 9 DETAILS" SHEET

- (J) 2-#5 U4 PLACED BETWEEN EACH PILE (SEE SECTION A-A ON "BENTS 1 THRU 9 DETAILS" SHEET)
- (K) 2-#5 S1 @ 6" CTS. (TYP. EA. END) (INVERT ALTERNATE S1 STIRRUPS)
- (L) 4-#5 S1 @ 1'-0" CTS. (BETWEEN PILES 2 & 3, 3 & 4, 5 & 6, AND 6 & 7) (INVERT ALTERNATE S1 STIRRUPS)
- (M) 7-#5 S1 & S2 PAIRS @ 6" CTS. (BETWEEN PILES 1 & 2, 4 & 5, AND 7 & 8) (INVERT ALTERNATE S1 STIRRUPS ONLY)

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



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENTS 1 THRU 9

RIGHT LANE

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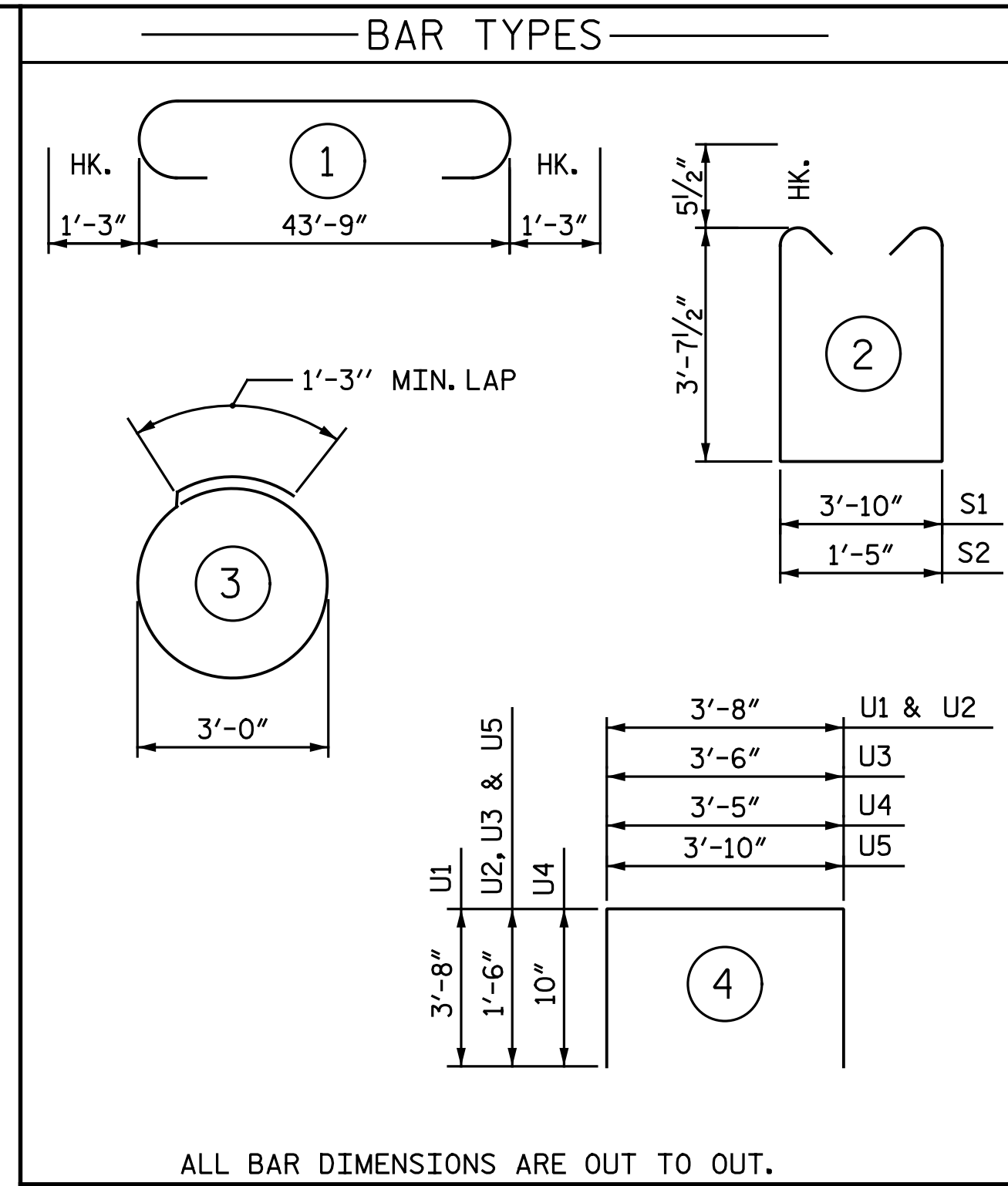
NO.	BY:	DATE:	REVISIONS			SHEET NO.
			NO.	BY:	DATE:	
1			3			S8-44 TOTAL SHEETS 52
2			4			

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BENT CAP ELEVATIONS									
BENT	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)
1	56.70	56.78	56.55	56.32	56.09	55.86	55.59	52.70	51.59
2	57.13	57.22	56.99	56.76	56.52	56.29	56.03	53.13	52.03
3	57.57	57.66	57.42	57.19	56.96	56.73	56.47	53.57	52.47
4	58.01	58.09	57.86	57.63	57.40	57.17	56.90	54.01	52.90
5	58.52	58.61	58.38	58.14	57.91	57.68	57.42	54.52	53.42
6	59.04	59.12	58.89	58.66	58.43	58.20	57.93	55.04	53.93
7	59.56	59.64	59.41	59.18	58.95	58.72	58.45	55.56	54.45
8	60.07	60.15	59.92	59.69	59.46	59.23	58.96	56.07	54.96
9	60.73	60.81	60.58	60.35	60.12	59.89	59.62	56.73	55.62

TOP OF PILE ELEVATIONS										
PILE	BENT 1	BENT 2	BENT 3	BENT 4	BENT 5	BENT 6	BENT 7	BENT 8	BENT 9	
1	54.67	55.11	55.55	55.98	56.50	57.01	57.53	58.04	58.70	
2	54.53	54.96	55.40	55.84	56.35	56.87	57.39	57.90	58.56	
3	54.38	54.82	55.26	55.70	56.21	56.73	57.24	57.76	58.41	
4	54.24	54.68	55.12	55.55	56.07	56.58	57.10	57.61	58.27	
5	54.10	54.53	54.97	55.41	55.92	56.44	56.96	57.47	58.13	
6	53.95	54.39	54.83	55.27	55.78	56.30	56.81	57.33	57.98	
7	53.81	54.25	54.68	55.12	55.64	56.15	56.67	57.18	57.84	
8	53.66	54.10	54.54	54.98	55.49	56.01	56.52	57.04	57.70	

DIMENSION (A)	
BENT	DISTANCE
1	1'-1 1/2"
2	1'-1 1/2"
3	1'-1 1/2"
4	10 1/2"
5	1'-1 1/2"
6	1'-1 1/2"
7	10 1/2"
8	1'-1 1/2"
9	1'-1 1/2"



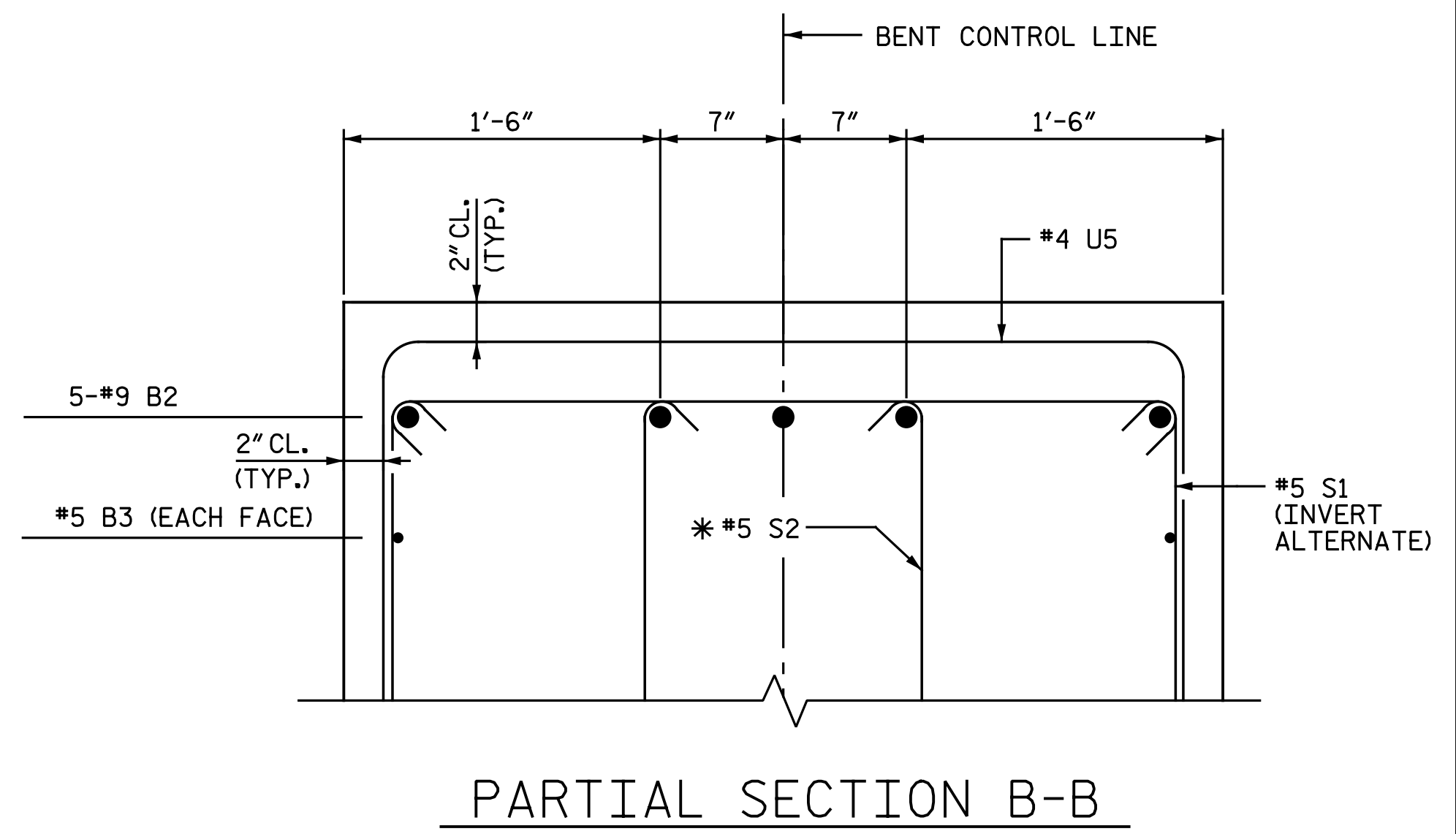
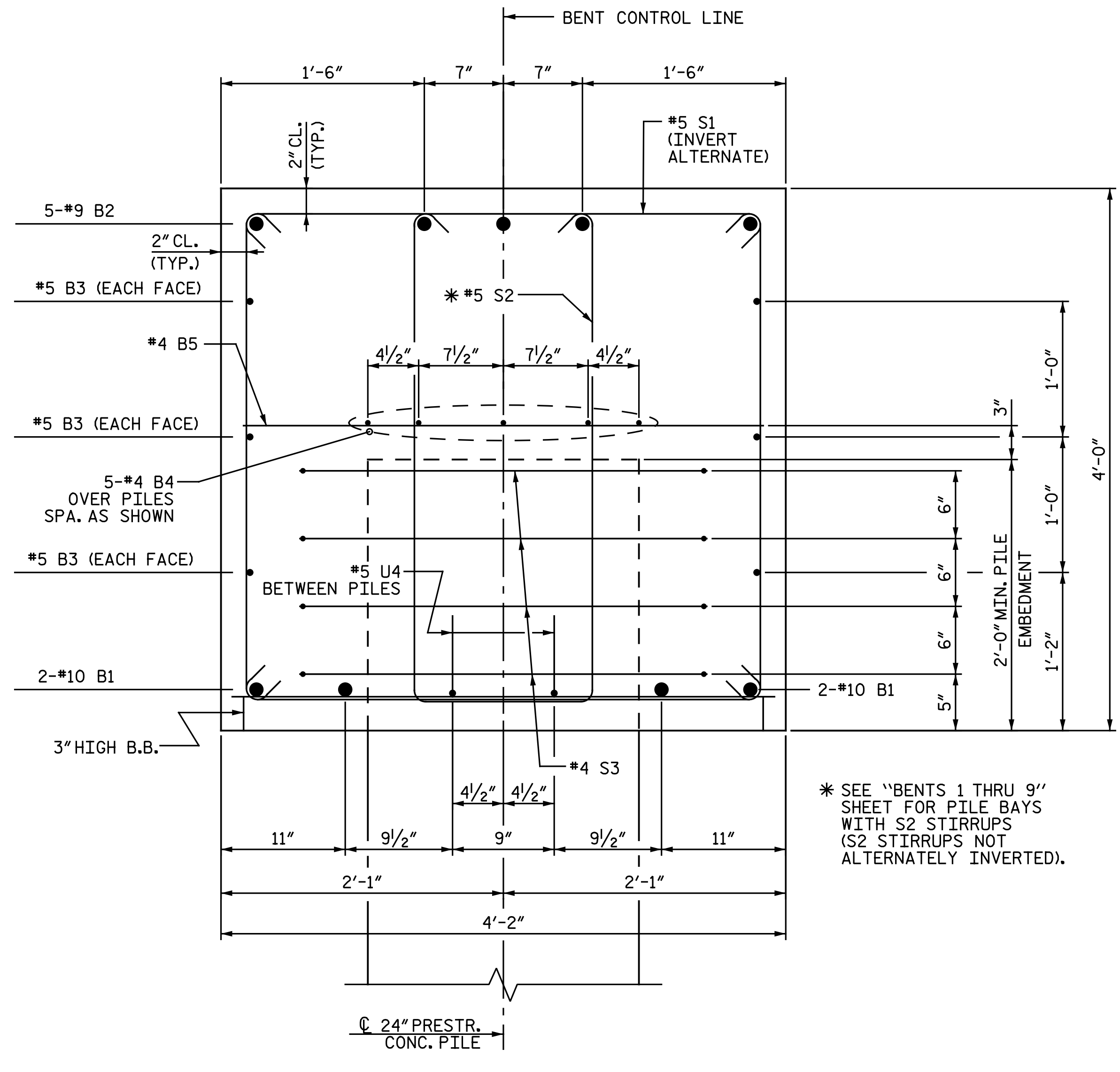
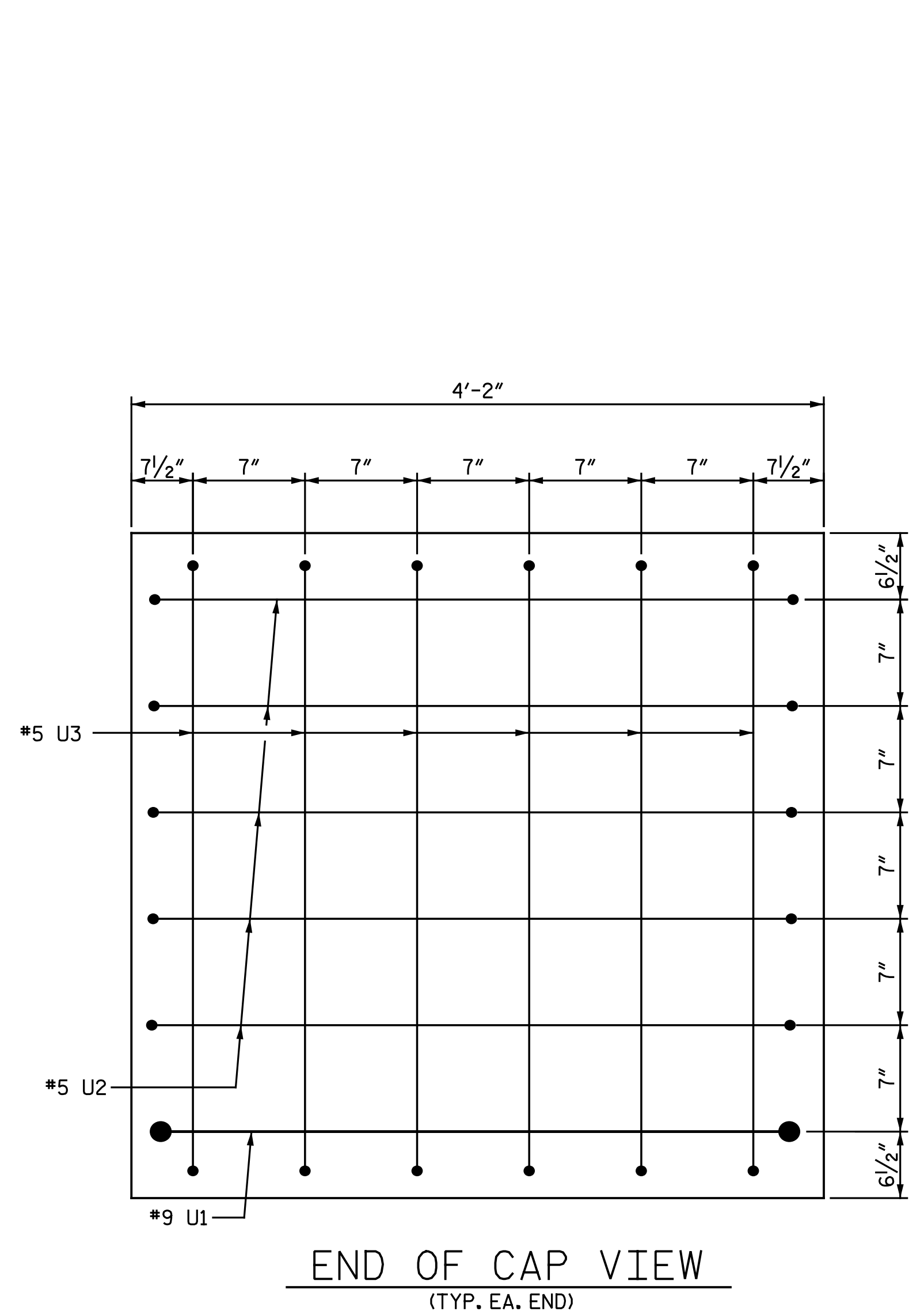
BILL OF MATERIAL FOR ONE BENT					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	STR.	43' - 11"	756
B2	5	#9	1	46' - 3"	786
B3	6	#5	STR.	43' - 11"	275
B4	10	#4	STR.	23' - 2"	155
B5	11	#4	STR.	3' - 10"	28
S1	41	#5	2	12' - 0"	513
S2	21	#5	2	9' - 7"	210
S3	32	#4	3	10' - 9"	230
U1	2	#9	4	11' - 0"	75
U2	10	#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

24" PRESTRESSED CONCRETE PILES									
	BENT 1	BENT 2	BENT 3	BENT 4	BENT 5	BENT 6	BENT 7	BENT 8	BENT 9
NO.	8	8	8	8	8	8	8	8	8
L.F.	360	360	320	360	360	400	360	360	400

PREDRILLING FOR PILES									
	BENT 1	BENT 2	BENT 3	BENT 4	BENT 5	BENT 6	BENT 7	BENT 8	BENT 9
L.F.	267	240	215	250	194	193	180	196	238

ALL BAR DIMENSIONS ARE OUT TO OUT.

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



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

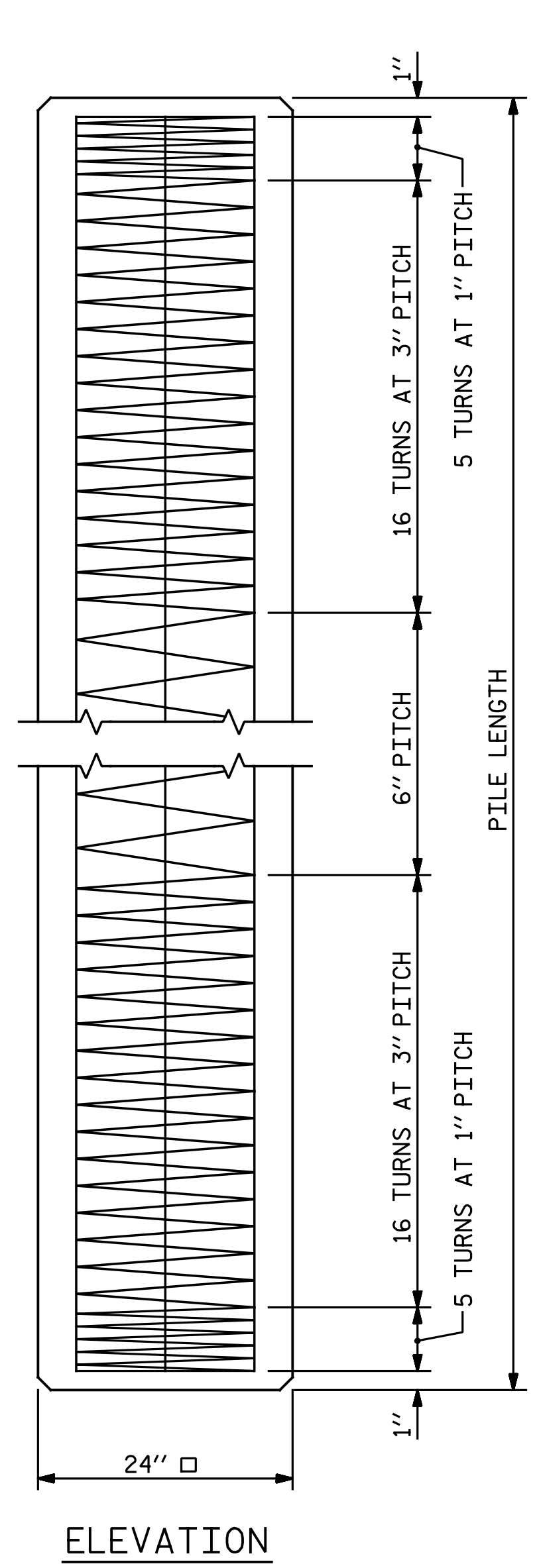
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PROJECT NO. R-5703
 LENOIR COUNTY
 STATION: 219+22.38 -L-

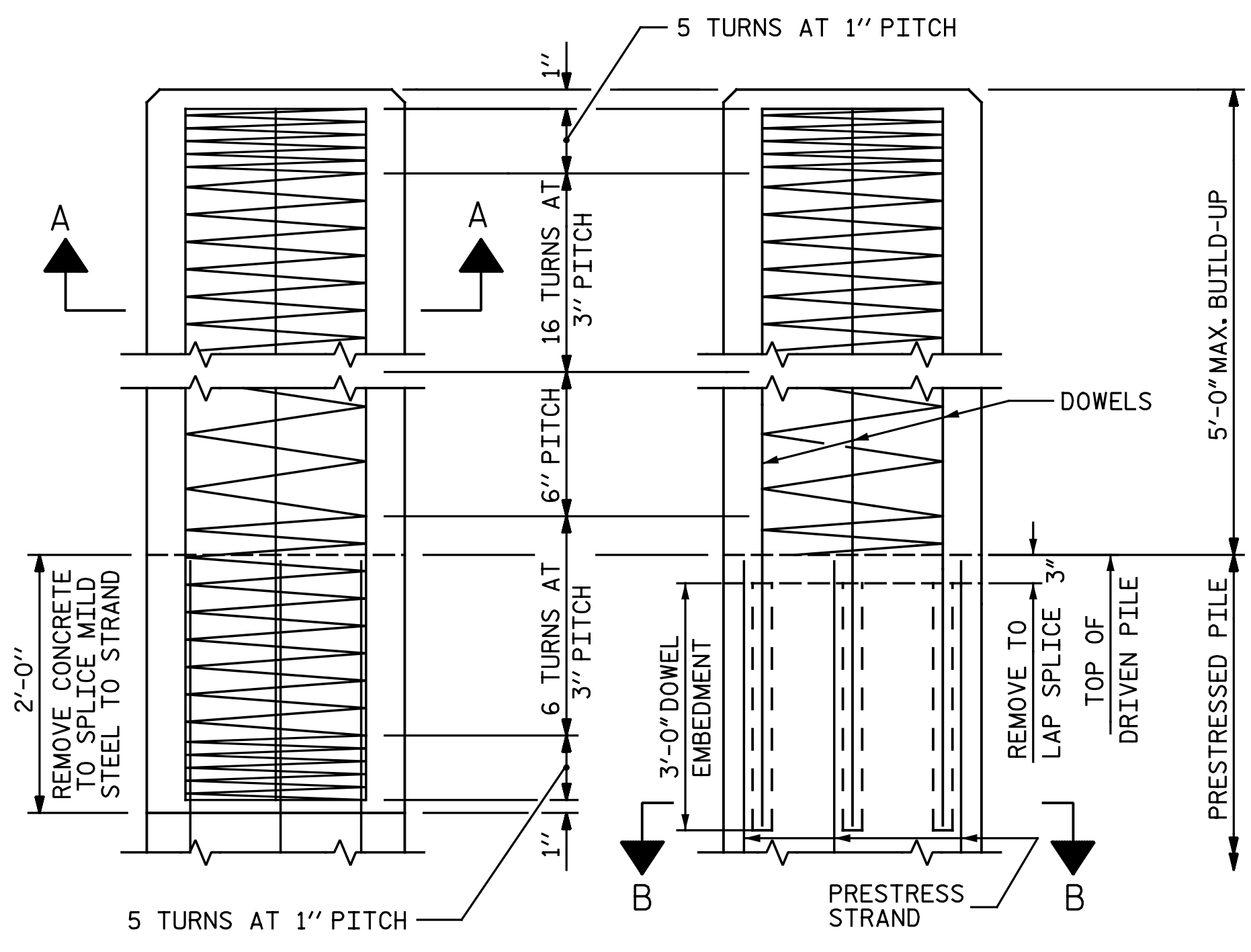


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENTS 1 THRU 9
 DETAILS
 RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-45
1			3			TOTAL SHEETS
2			4			52

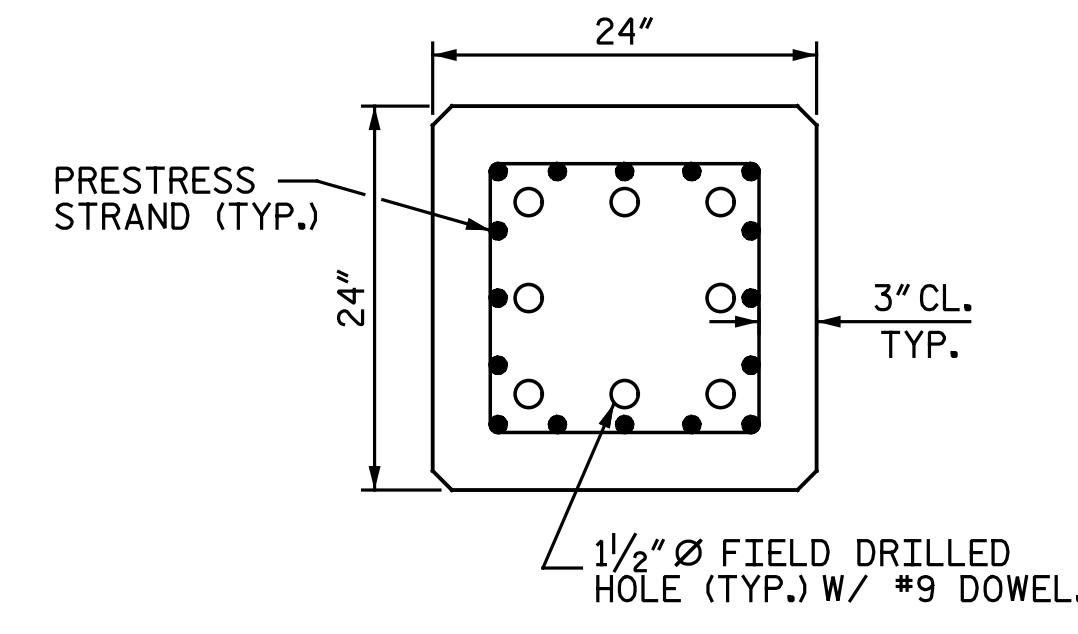


ELEVATION



BUILD-UP AND SPIRAL REINFORCING

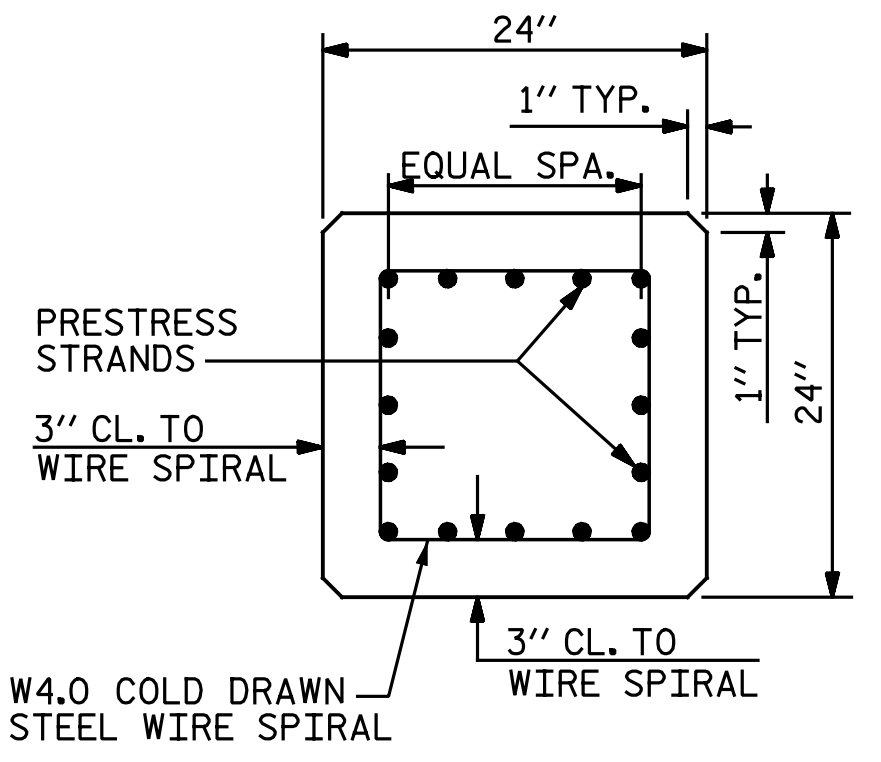
OPTIONAL BUILD-UP WITH DOWELS



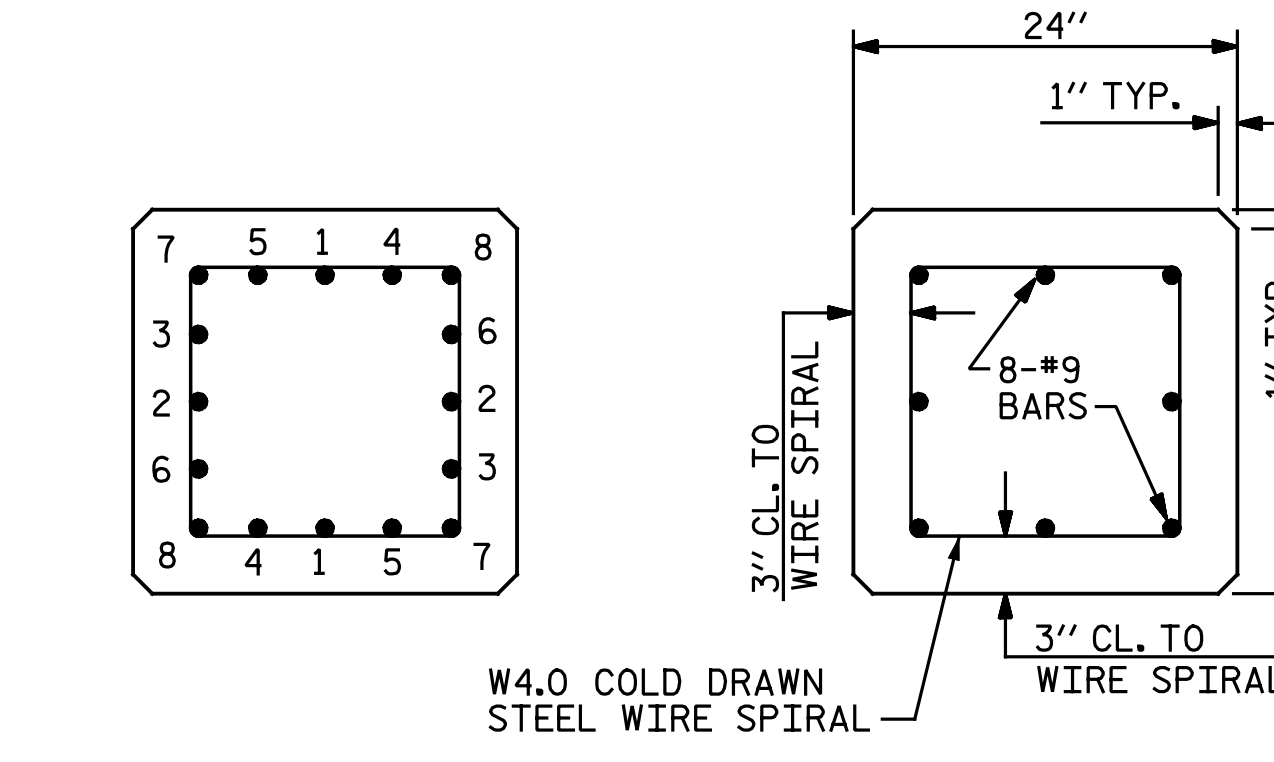
SECTION "B-B"

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

LENGTH	QUANTITIES FOR ONE 24" SQUARE PILE							
	CONCRETE CU. YDS.	PILE WT. TONS	ONE POINT PICK-UP		TWO POINT PICK-UP	THREE POINT PICK-UP		
			0.3L	0.7L	0.207L	0.586L	0.145L	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'-6 1/2"	43'-11"		
80'-0"	11.81	23.92			16'-6 1/2"	46'-11"		
85'-0"	12.55	25.41			17'-7"	49'-10"		
90'-0"	13.29	26.91			18'-7 1/2"	52'-9"		
95'-0"	14.03	28.40			19'-8"	55'-8"		
100'-0"	14.76	29.90			20'-8 1/2"	58'-7"		
105'-0"	15.50	31.39					15'-3"	37'-3"
110'-0"	16.24	32.89					15'-11 1/2"	39'-0 1/2"
115'-0"	16.98	34.38					16'-8"	40'-10"
120'-0"	17.72	35.87					17'-5"	42'-7"



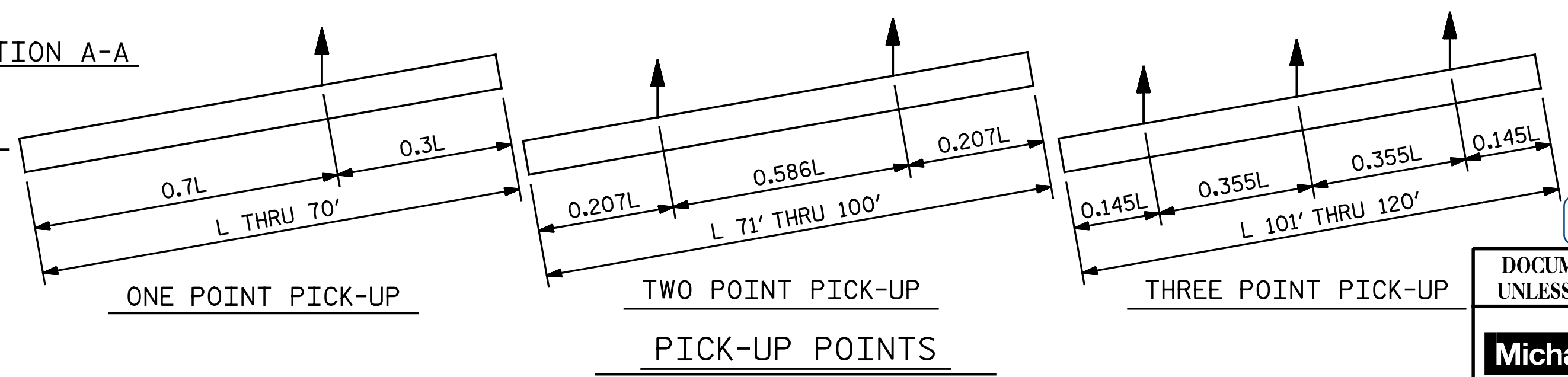
TYPICAL SECTION



SECTION A-A

TYPICAL PATTERN FOR BURNING STRANDS

1/2" OR 0.6" Ø GRADE 270 L.R. PRESTRESS STRANDS

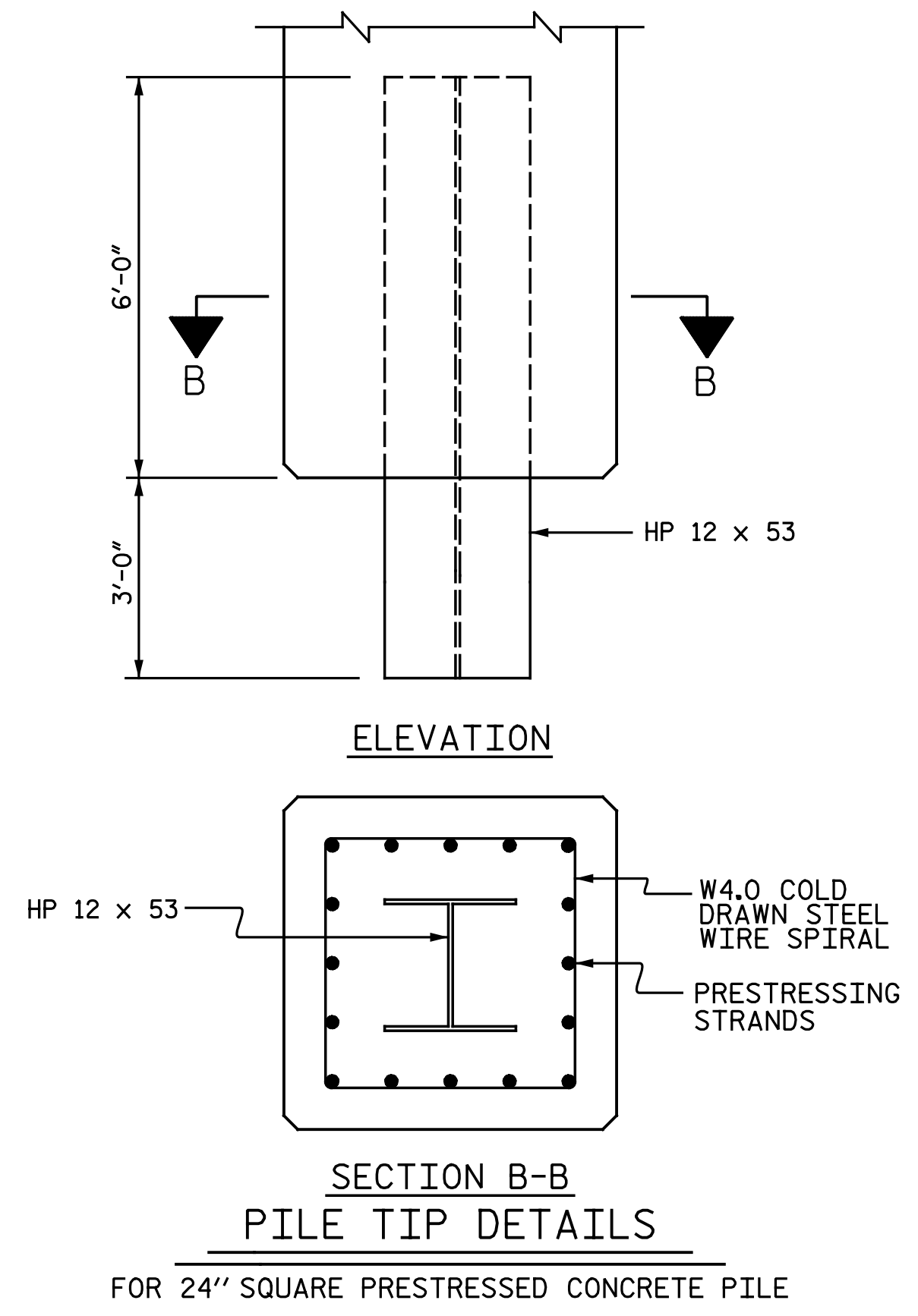


ONE POINT PICK-UP

TWO POINT PICK-UP

THREE POINT PICK-UP

PICK-UP POINTS



ELEVATION

SECTION B-B PILE TIP DETAILS

FOR 24" SQUARE PRESTRESSED CONCRETE PILE

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
1/2"	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, 1/2" 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.

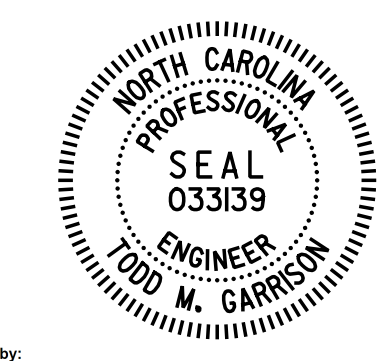
DOWEL HOLES SHALL BE POSITIONED TO MAINTAIN 1/2" CLEAR TO ALL EXISTING PRESTRESSING STRANDS IN THE CONCRETE PILE.

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-



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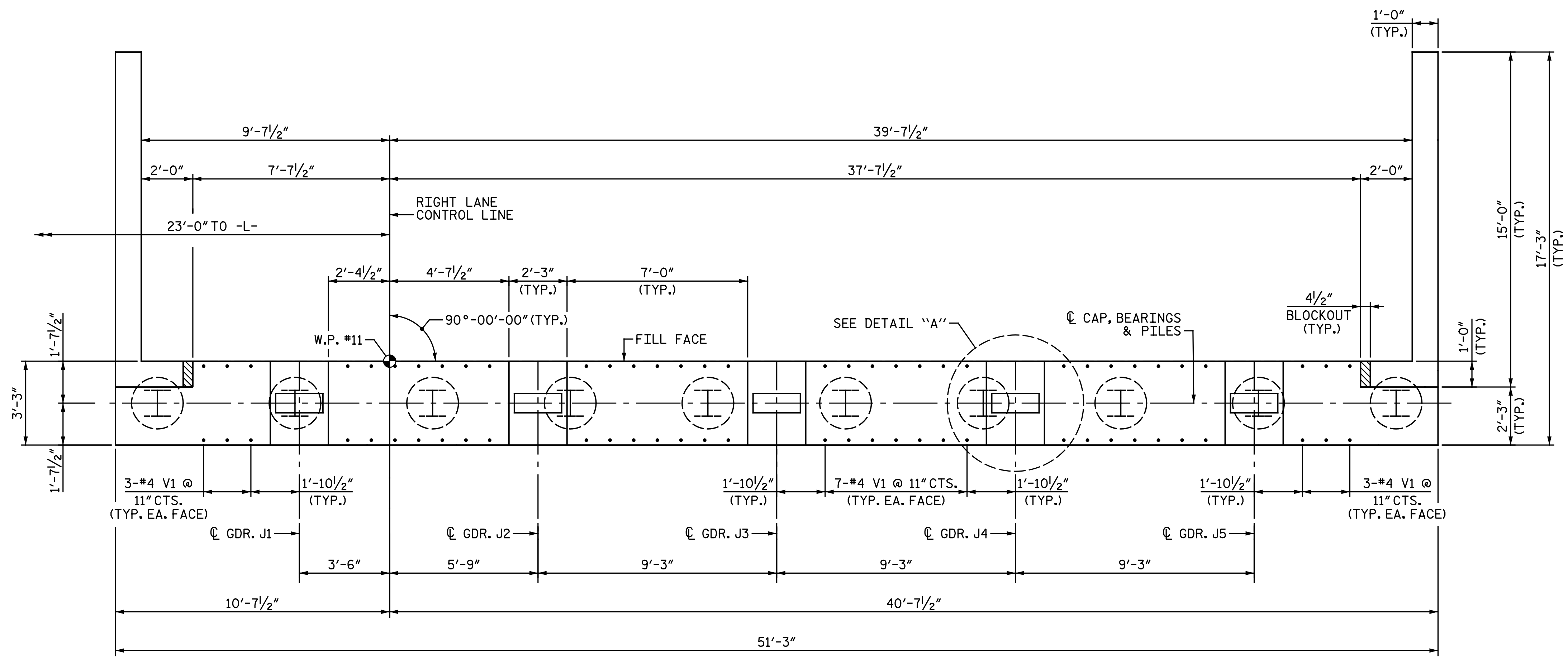
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 24" PRESTRESSED CONCRETE PILE
 RIGHT LANE

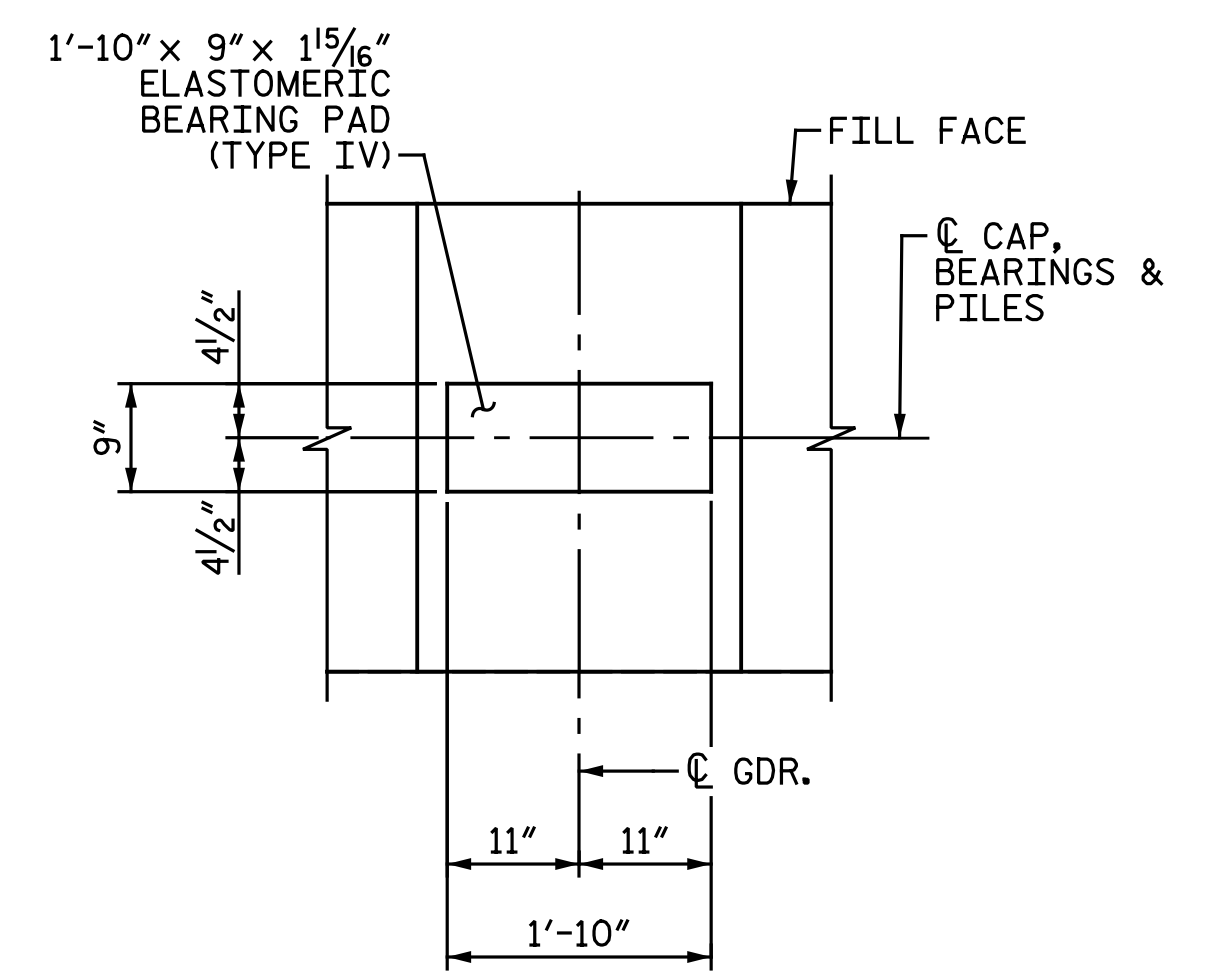
ASSEMBLED BY : N. B. SPEAKS	DATE : 5-30-17
CHECKED BY : T. M. GARRISON	DATE : 6-26-17
DRAWN BY : WJH 1/89	REV. 11/30/10
CHECKED BY : CRK 3/89	REV. 10/11/11
	REV. 12/14
	WMC/GM
	MAA/GM
	MAA/TMG

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SHEET NO. **S8-46**
 TOTAL SHEETS 52

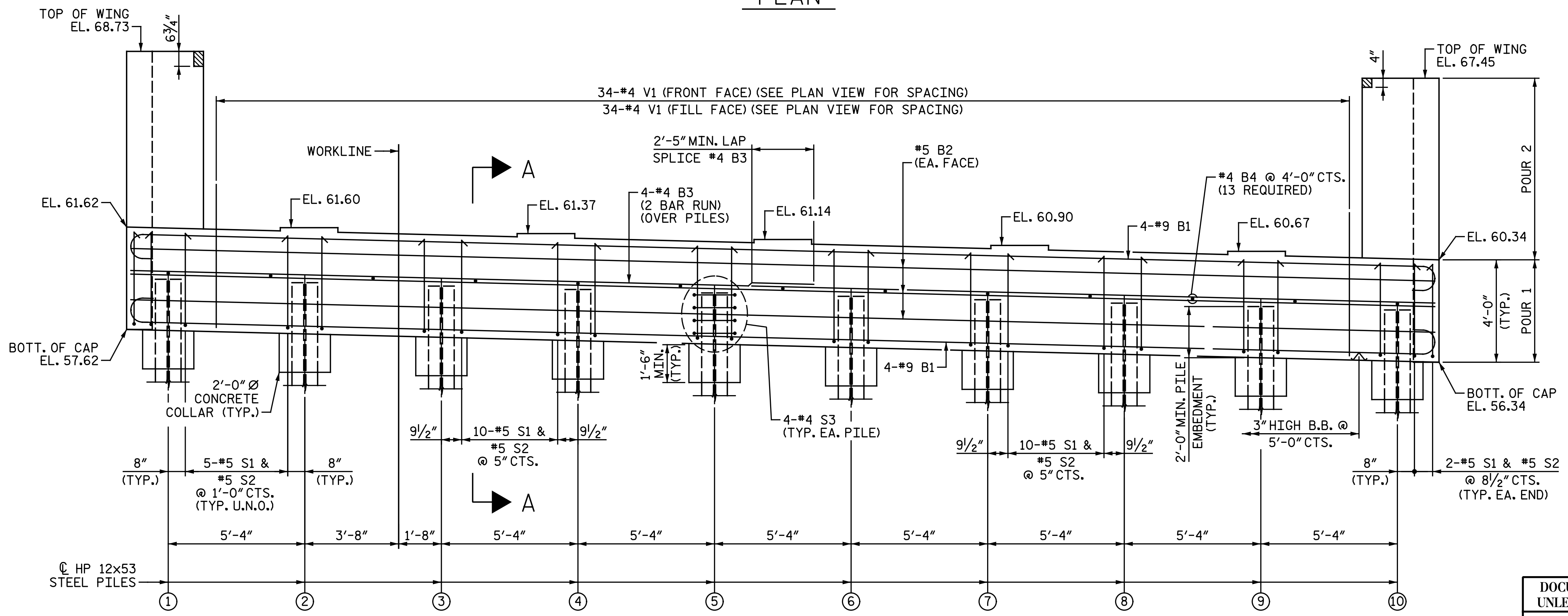


NOTES:
 FOR "SECTION A-A", SEE "INTEGRAL END BENT 2 DETAILS" SHEET.
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.
 THE TOP SURFACE OF THE END BENT CAP, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".
 THE CONCRETE IN THE HATCHED AREA OF THE WING SHALL BE POURED AFTER 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.

PLAN



TOP OF PILE ELEVATIONS	
PILE	ELEVATION
①	59.59
②	59.46
③	59.33
④	59.19
⑤	59.06
⑥	58.93
⑦	58.79
⑧	58.66
⑨	58.53
⑩	58.39

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
 RIGHT LANE

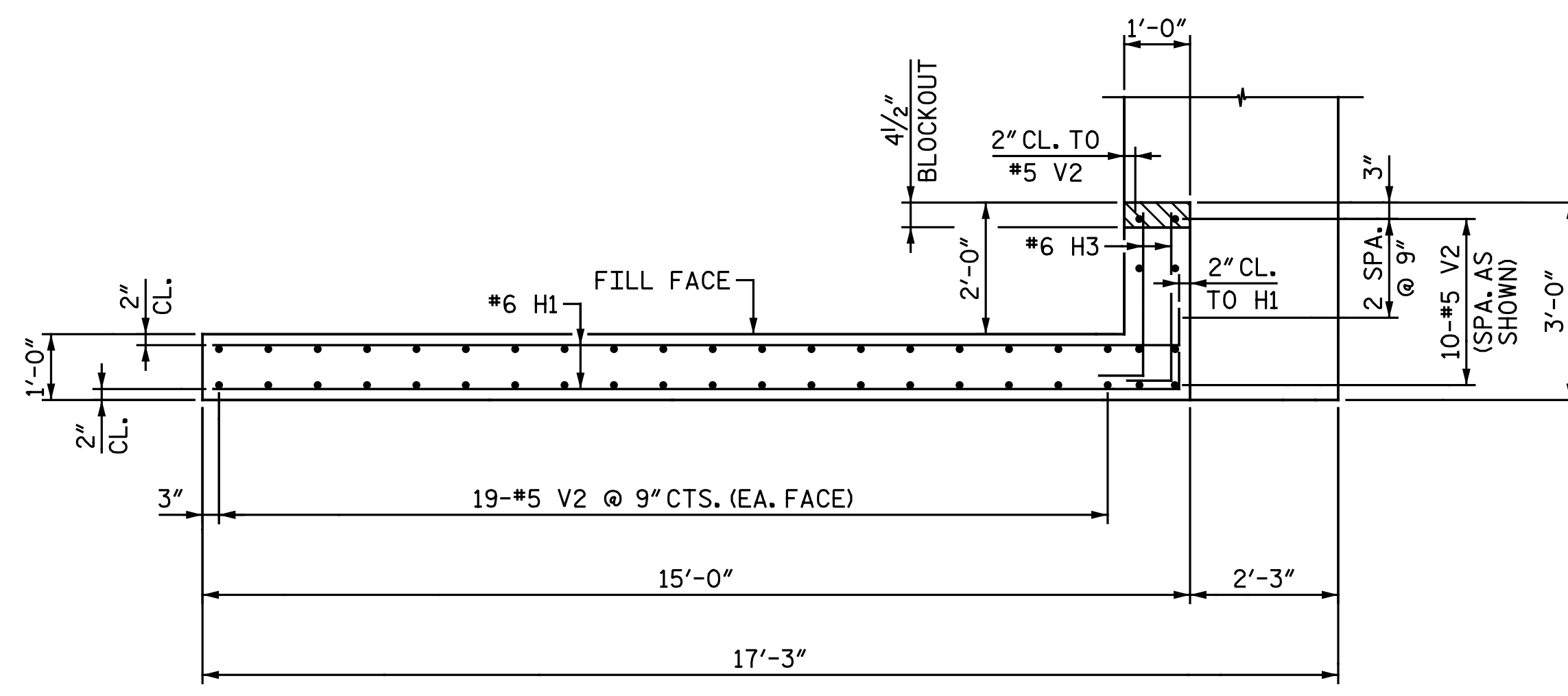
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2			4			

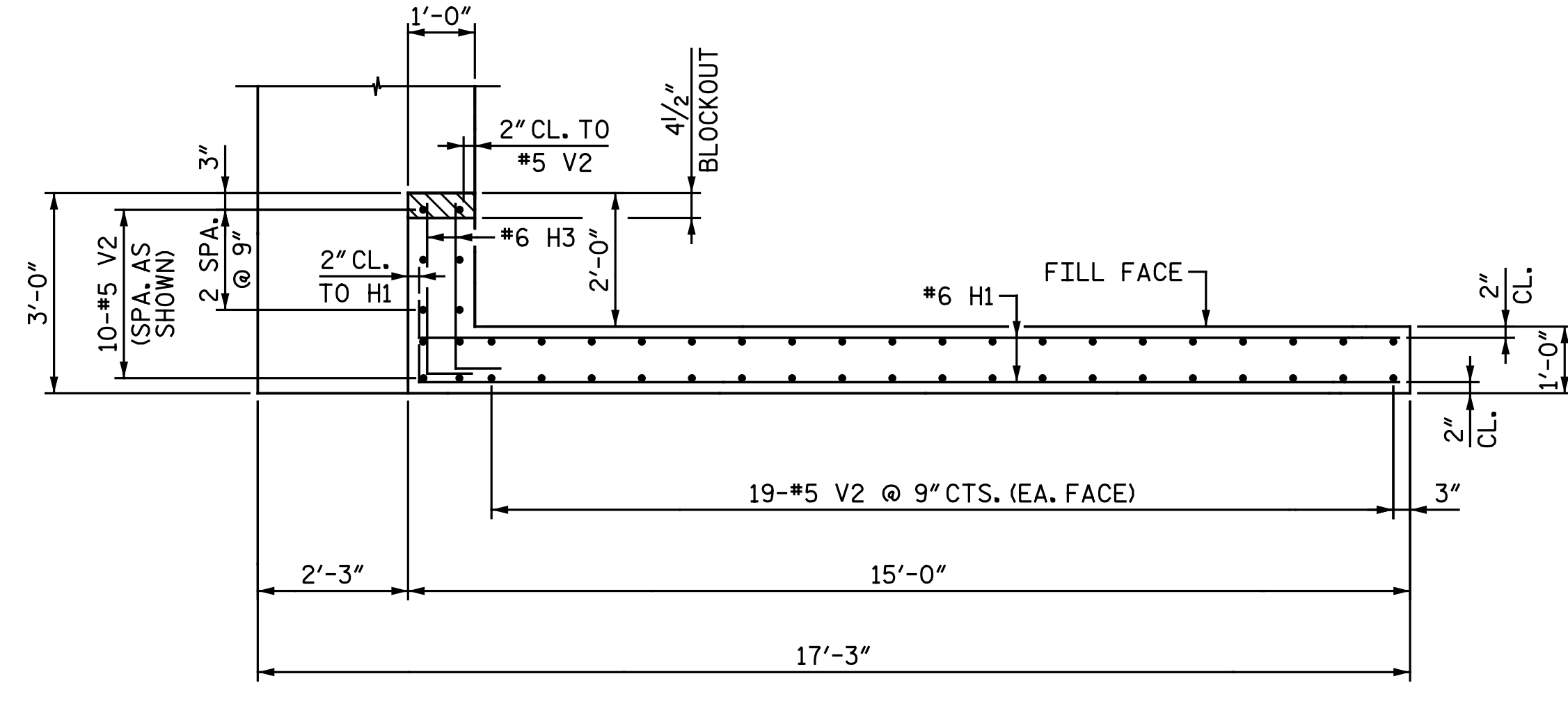
DRAWN BY: D. A. LAMAY DATE: 6-22-17
 CHECKED BY: I. M. GARRISON DATE: 6-22-17

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

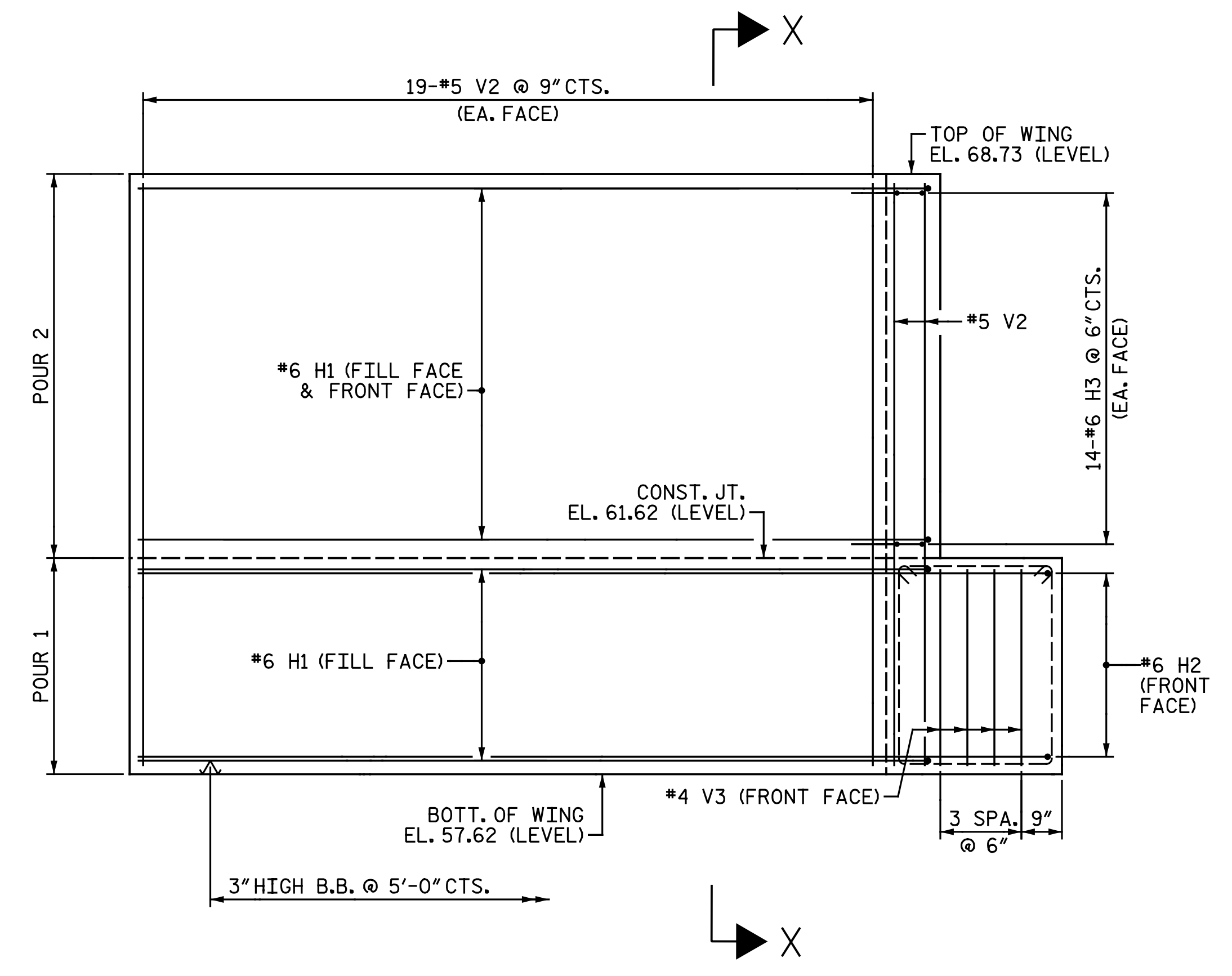
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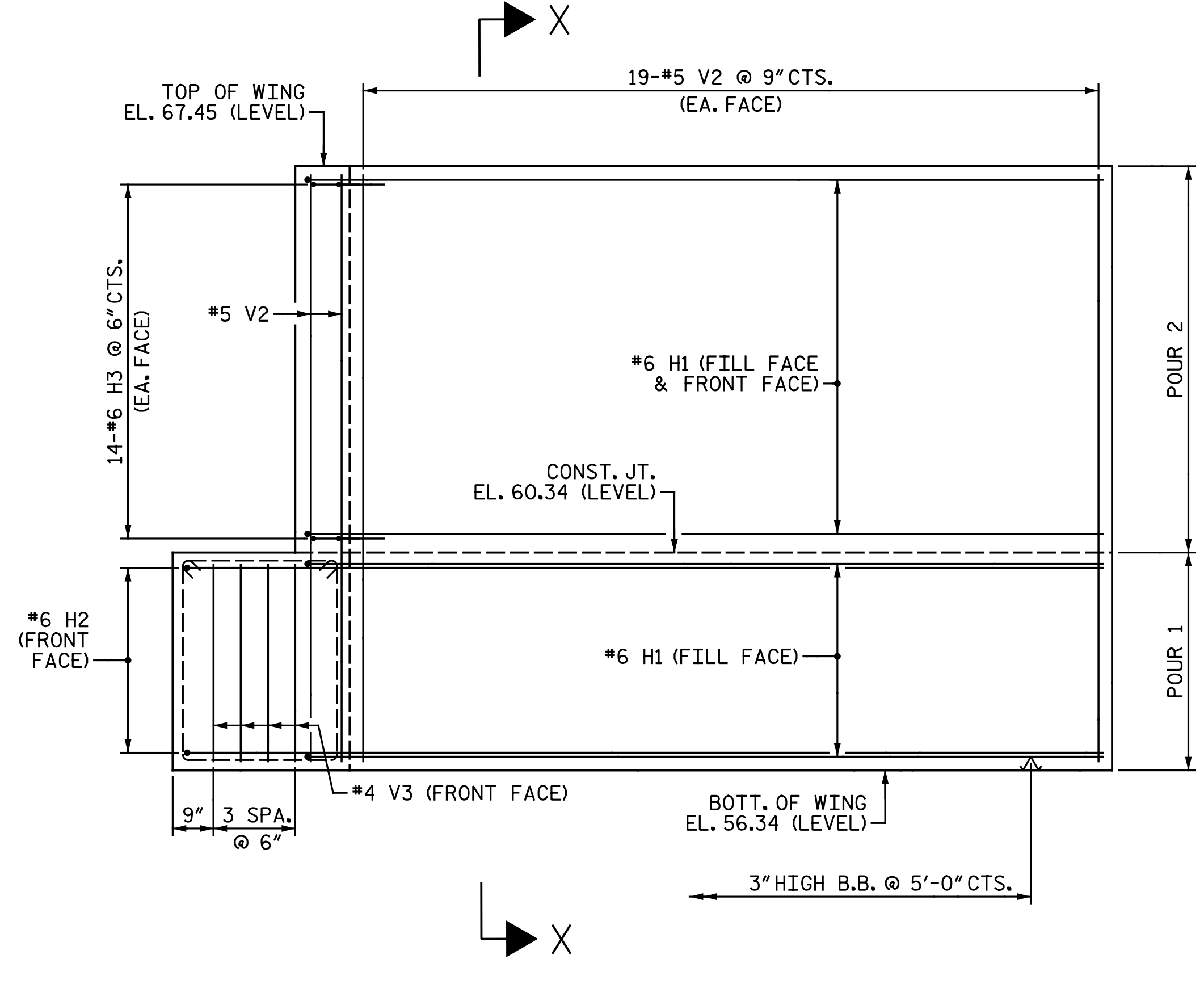
PLAN OF LEFT WING
(H2 BARS NOT SHOWN FOR CLARITY)



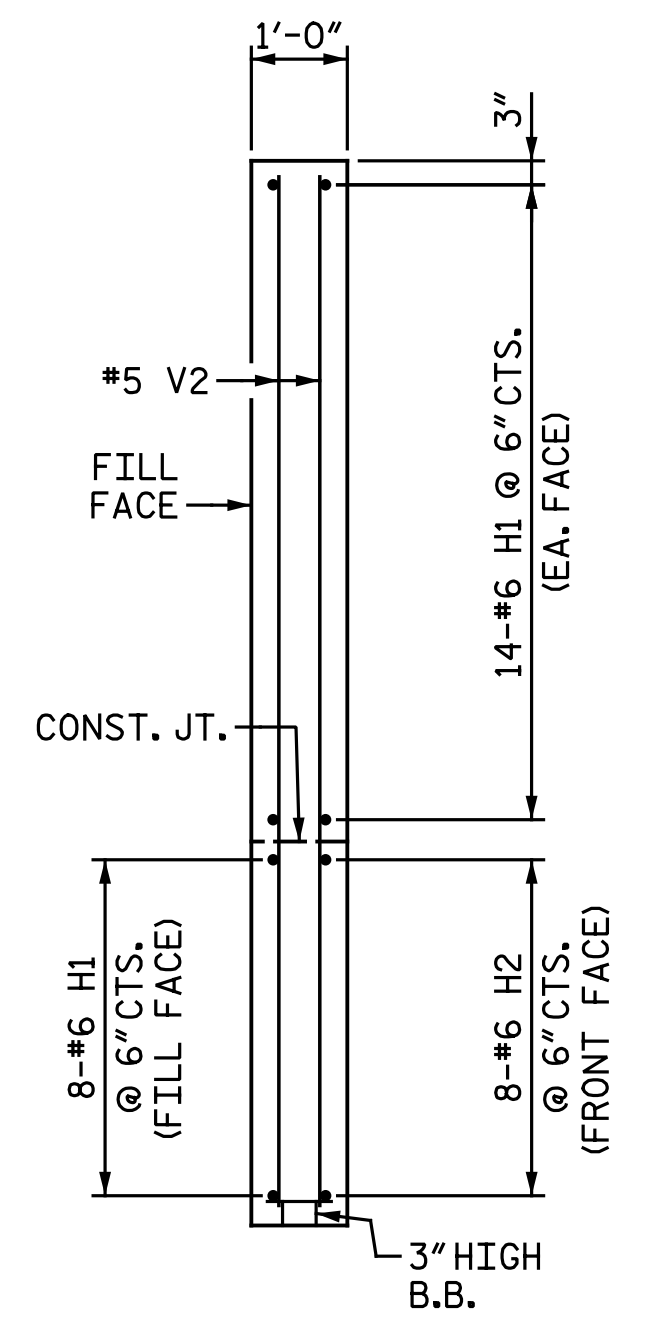
PLAN OF RIGHT WING
(H2 BARS NOT SHOWN FOR CLARITY)



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

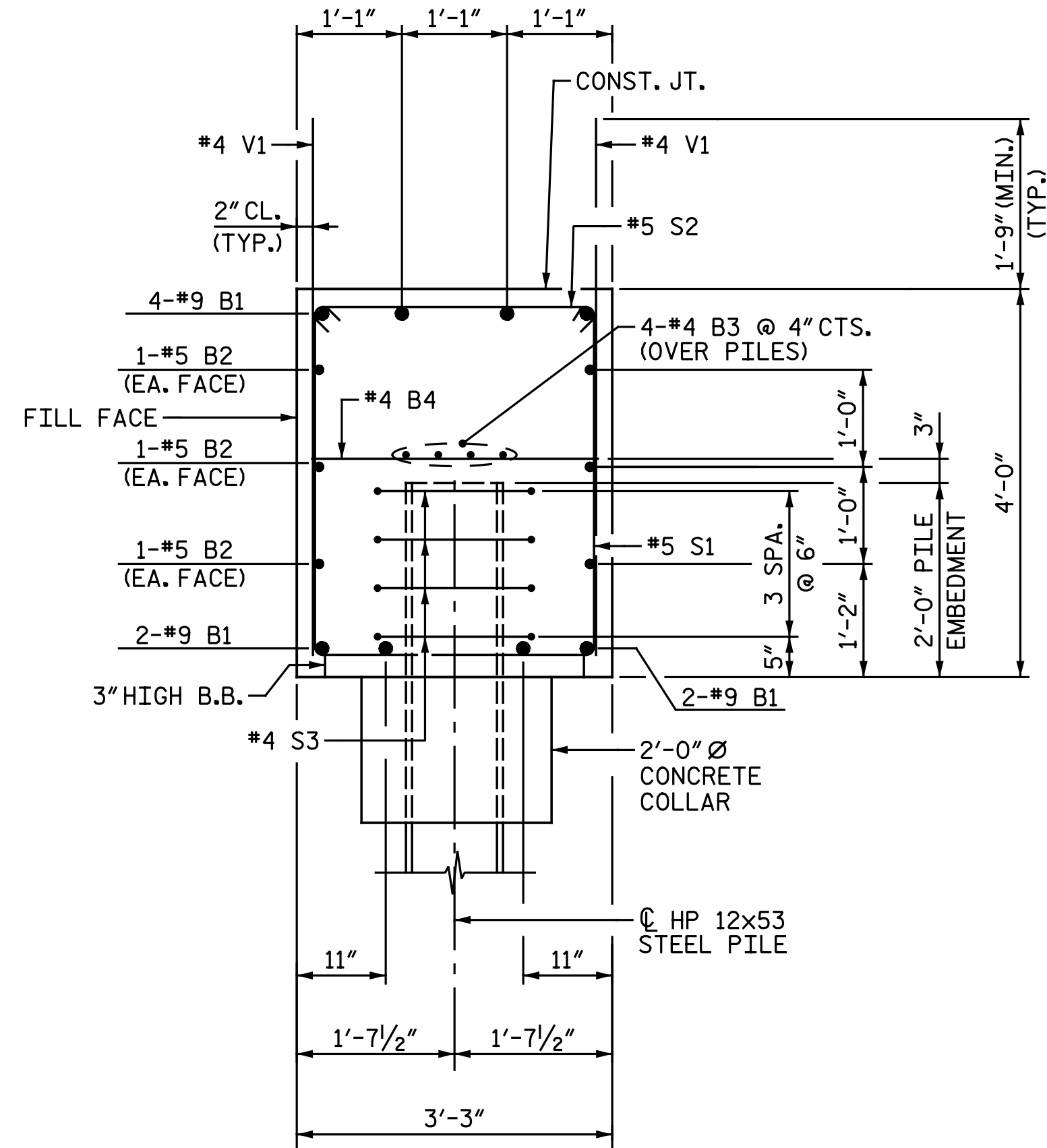


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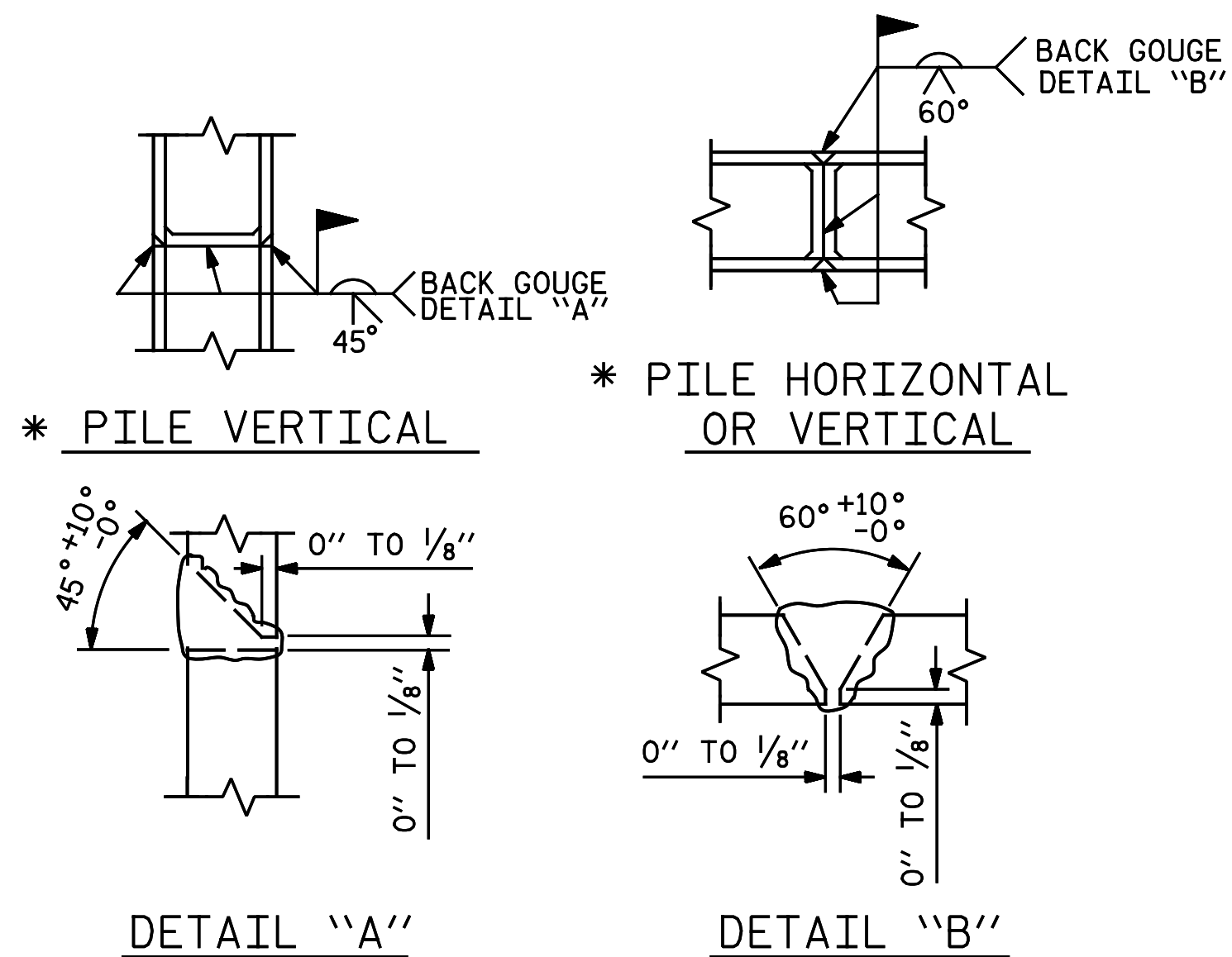
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
INTEGRAL END BENT 2
RIGHT LANE

DRAWN BY: D. A. LAMAY DATE: 6-22-17
CHECKED BY: T. M. GARRISON DATE: 6-22-17

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S8-48
1			3			TOTAL SHEETS
2			4			52



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		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		15' - 8"	1,694
H2	16	#6		17' - 11"	431
H3	56	#6		3' - 6"	294
S1	59	#5		11' - 1"	682
S2	59	#5		3' - 10"	236
S3	40	#4		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

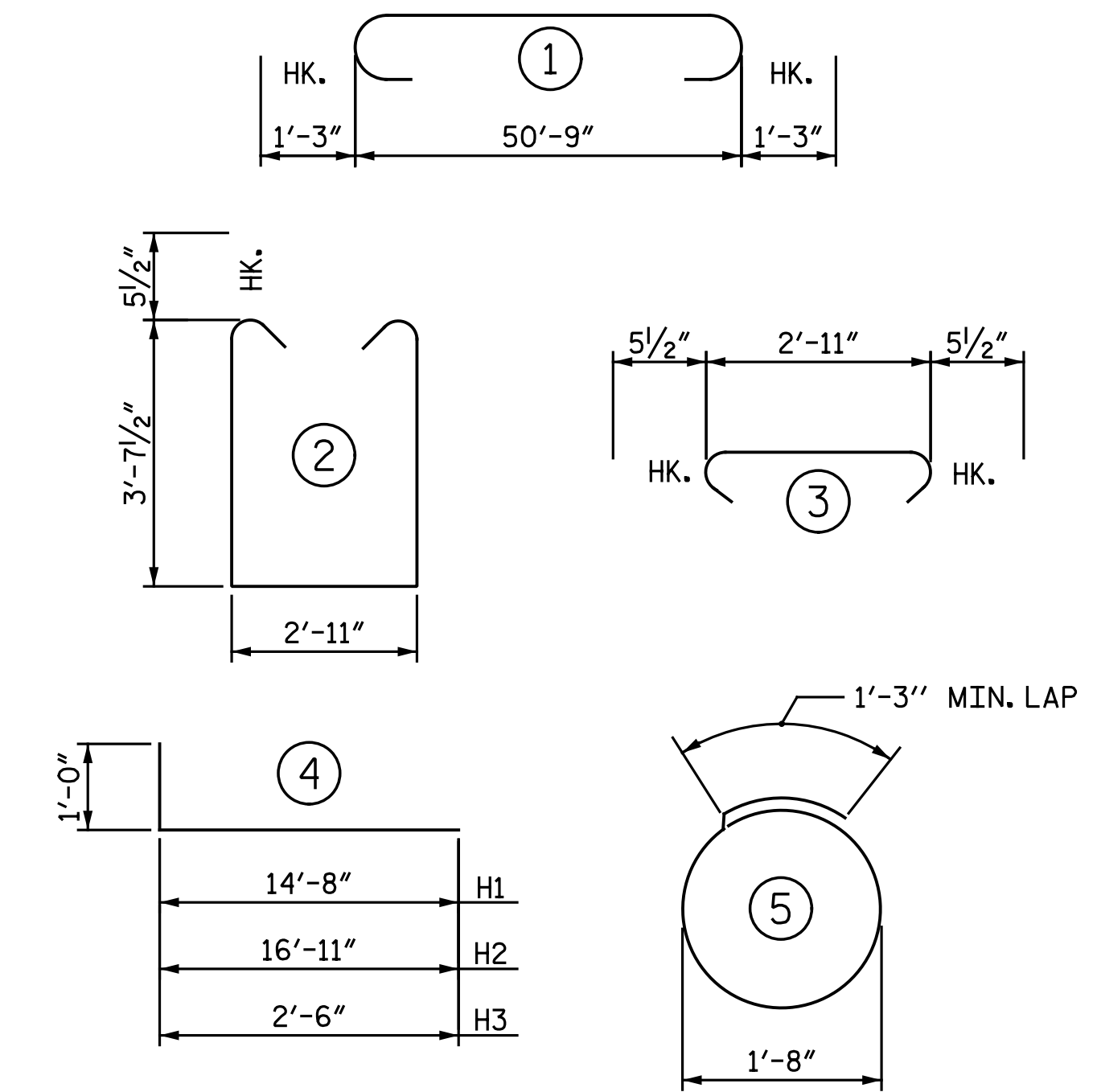
STEEL PILE POINTS EA. 10

PILE REDRIVES EA. 5

NOTE:

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

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



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 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 INTEGRAL END BENT 2
 DETAILS

RIGHT LANE

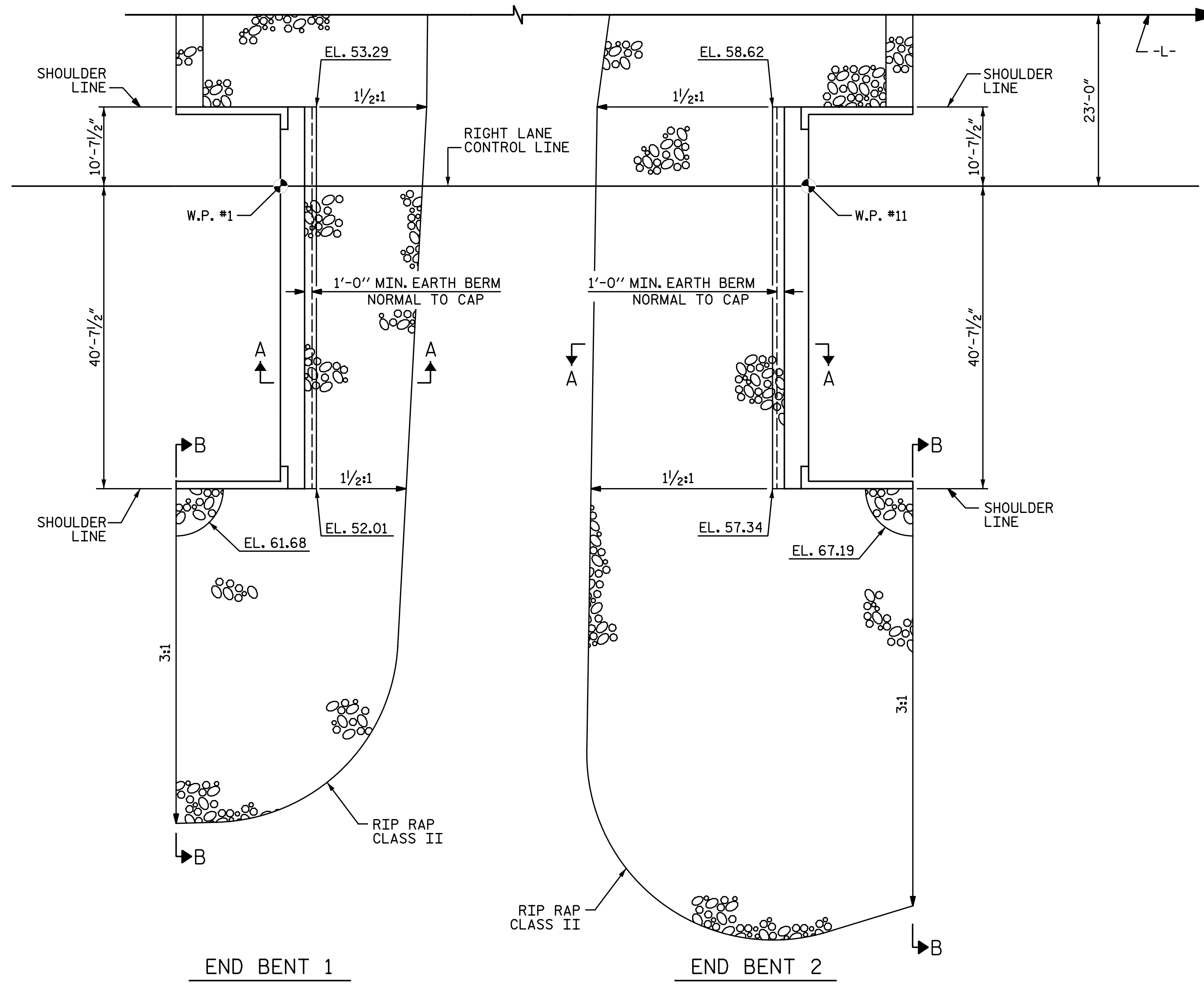
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 CHECKED BY: J. M. GARRISON DATE: 6-22-17

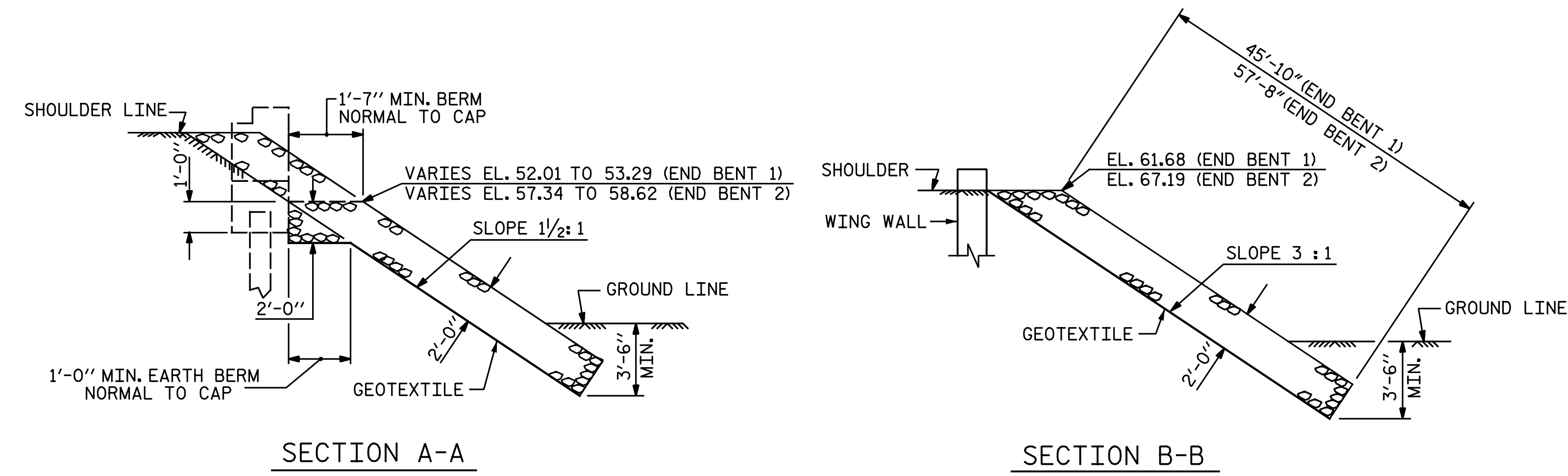
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NOTES:
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWINGS.

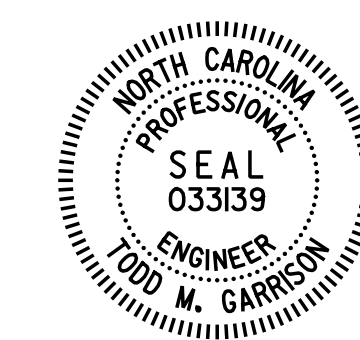


ESTIMATED QUANTITIES		
BRIDGE @ STA. 219+22.38 -L- (RIGHT LANE)	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	324	360
END BENT 2	549	610

SHOULDER RIP RAP IS HIGHER THAN BERM RIP RAP



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STATION: 219+22.38 -L-



STATE OF NORTH CAROLINA
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RALEIGH

RIP RAP DETAILS

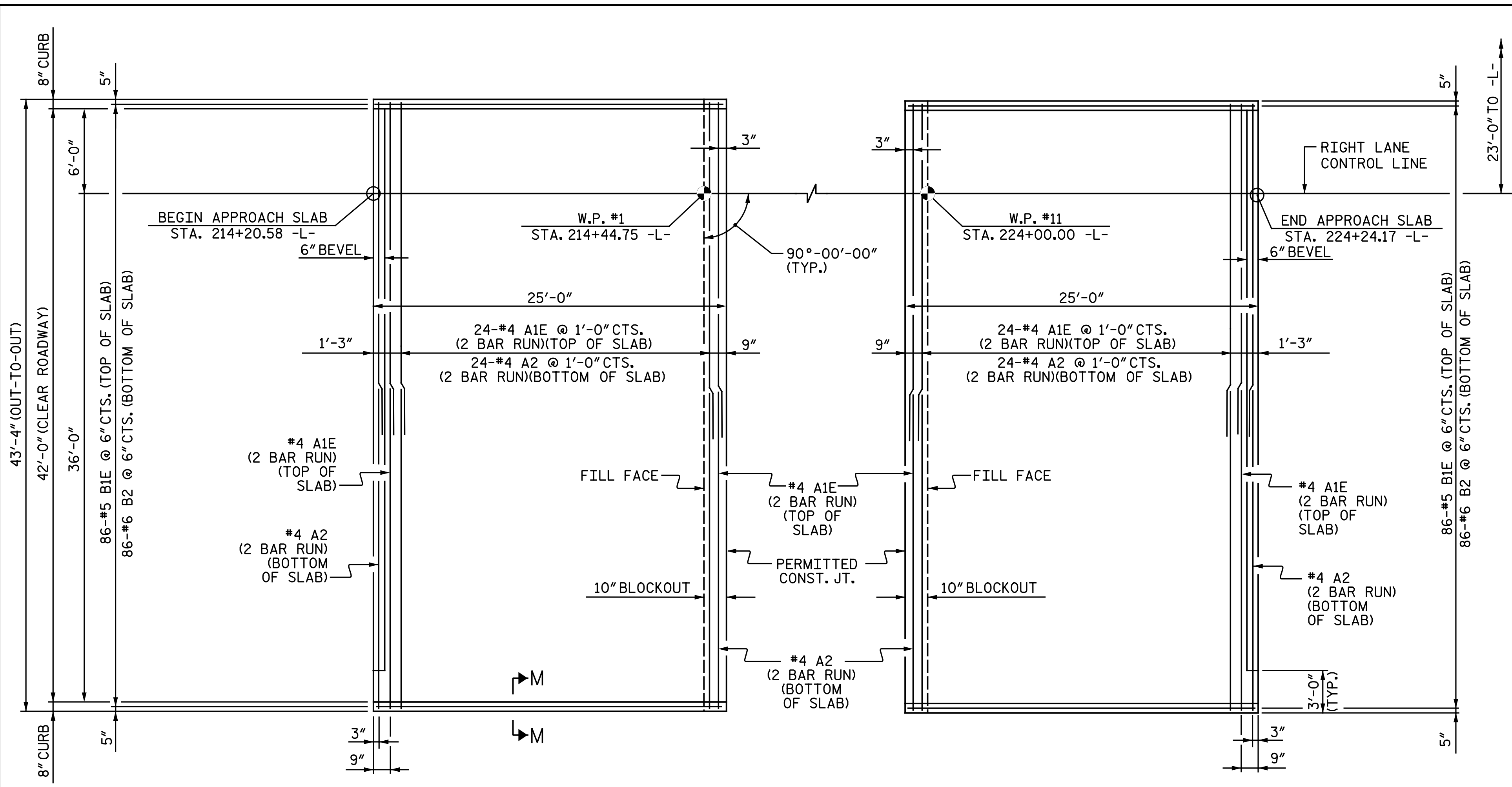
RIGHT LANE

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2			4			52

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PLAN @ INTEGRAL END BENT 1 PLAN @ INTEGRAL END BENT 2

NOTES:

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

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

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

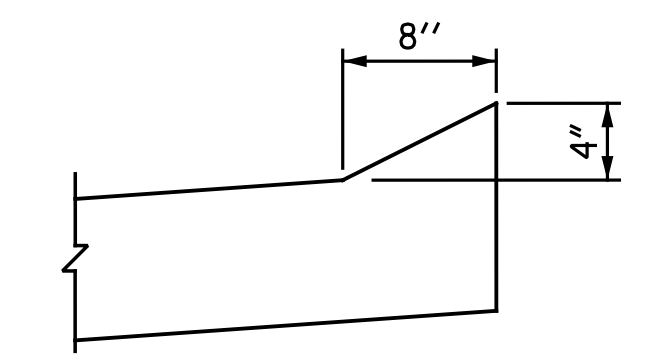
FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

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

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

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

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

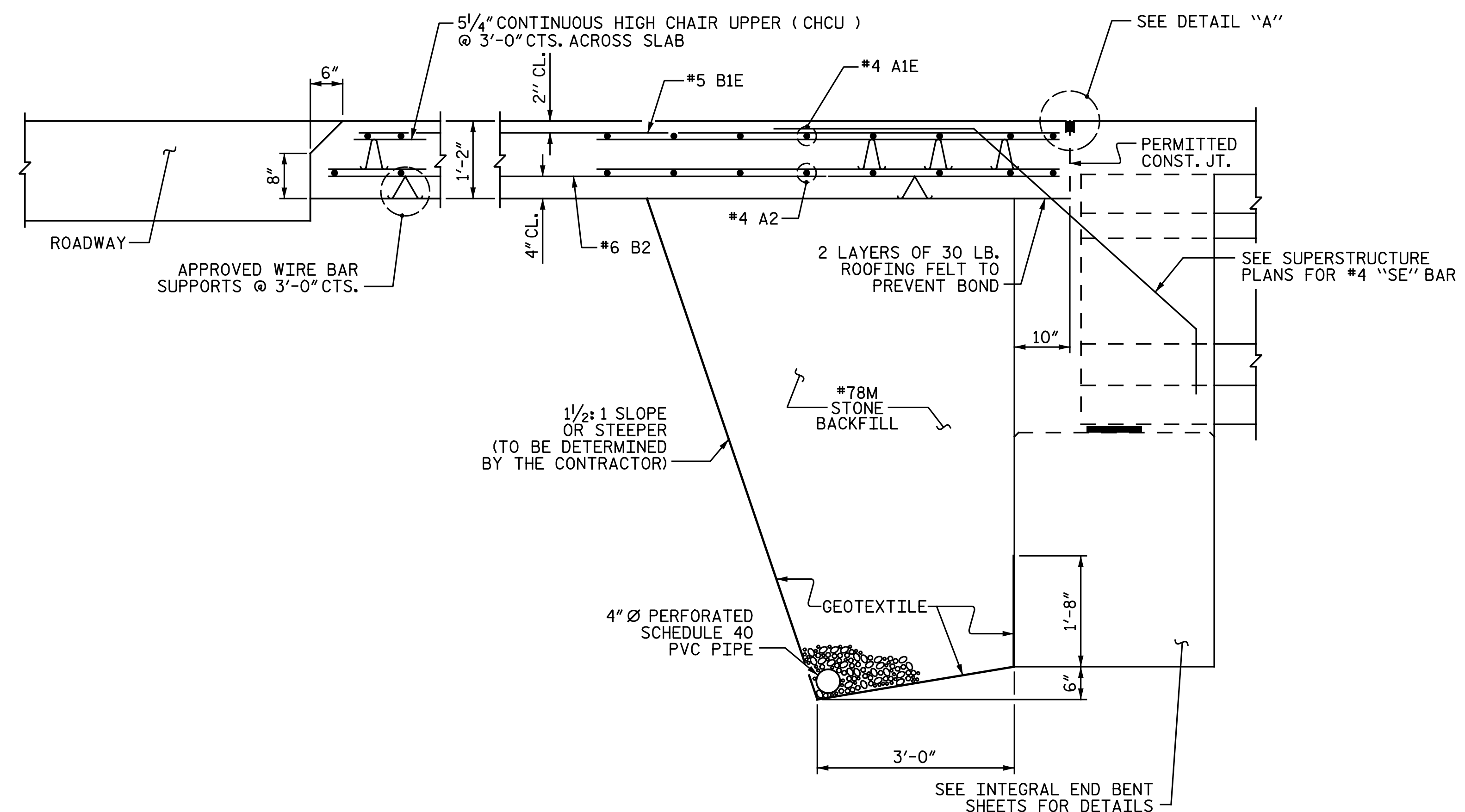


SECTION M-M

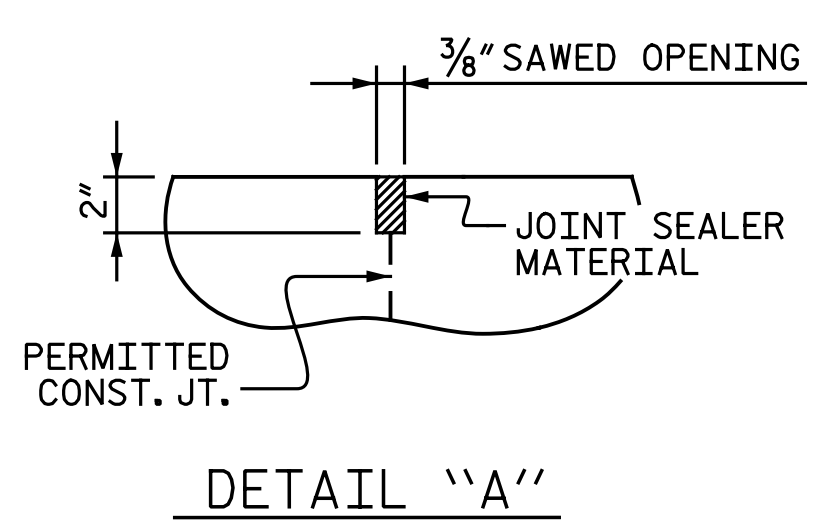
BILL OF MATERIAL					
APPROACH SLAB AT END BENT 1					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
A1E	52	#4	STR.	22' - 6"	782
A2	52	#4	STR.	22' - 5"	779
B1E	86	#5	STR.	24' - 2"	2,168
B2	86	#6	STR.	24' - 8"	3,186
REINFORCING STEEL				LBS.	3,965
EPOXY COATED REINFORCING STEEL				LBS.	2,950
CLASS AA CONCRETE				C.Y.	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

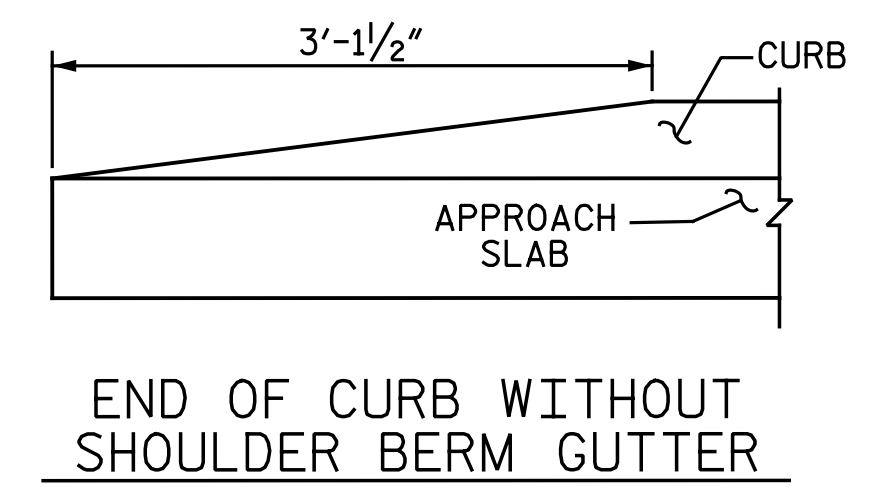
SPlice LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"



SECTION THRU SLAB

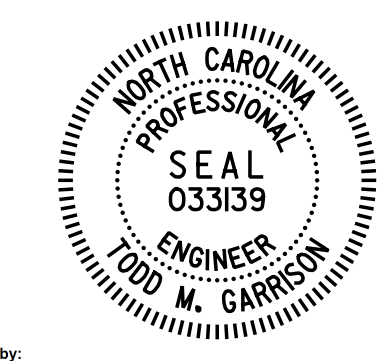


DETAIL "A"



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

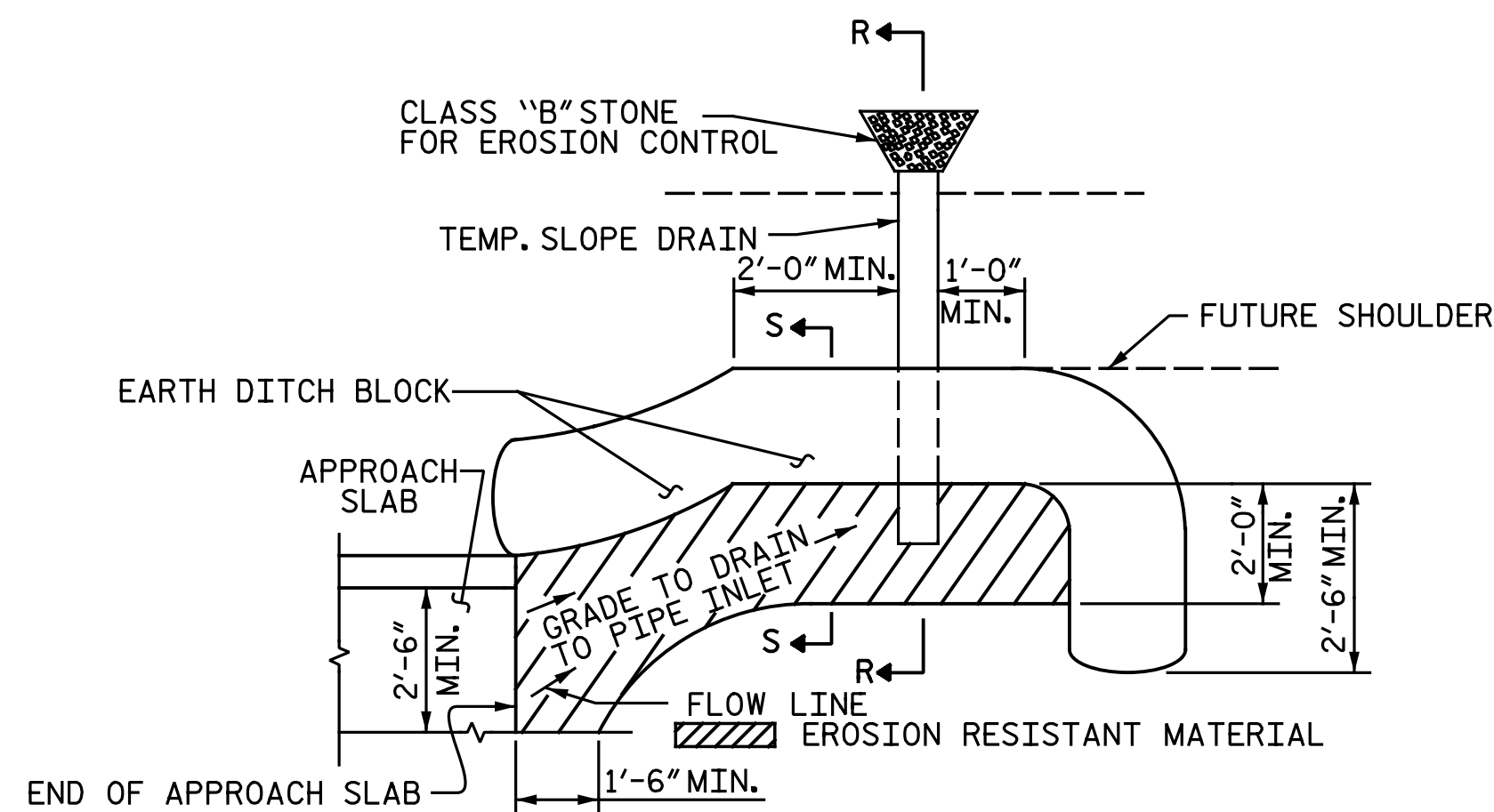
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RIGHT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
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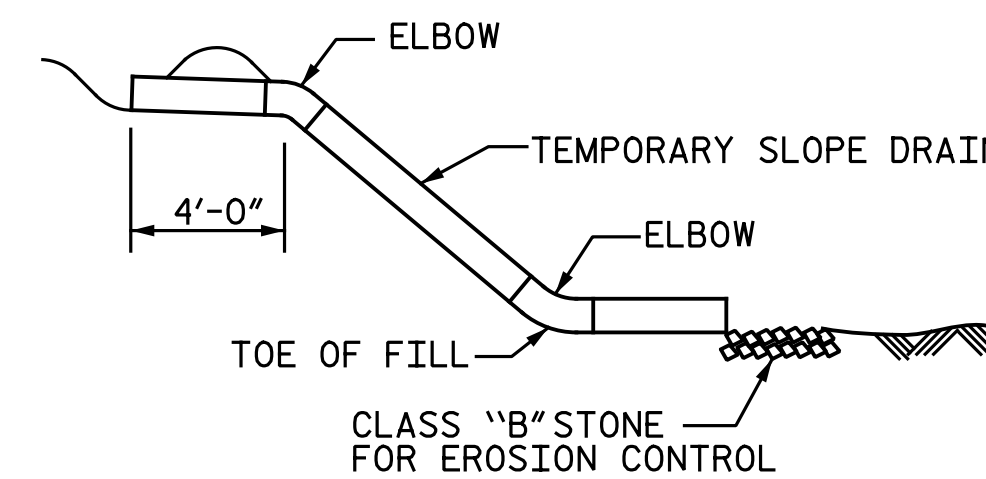
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TOTAL SHEETS 52			

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

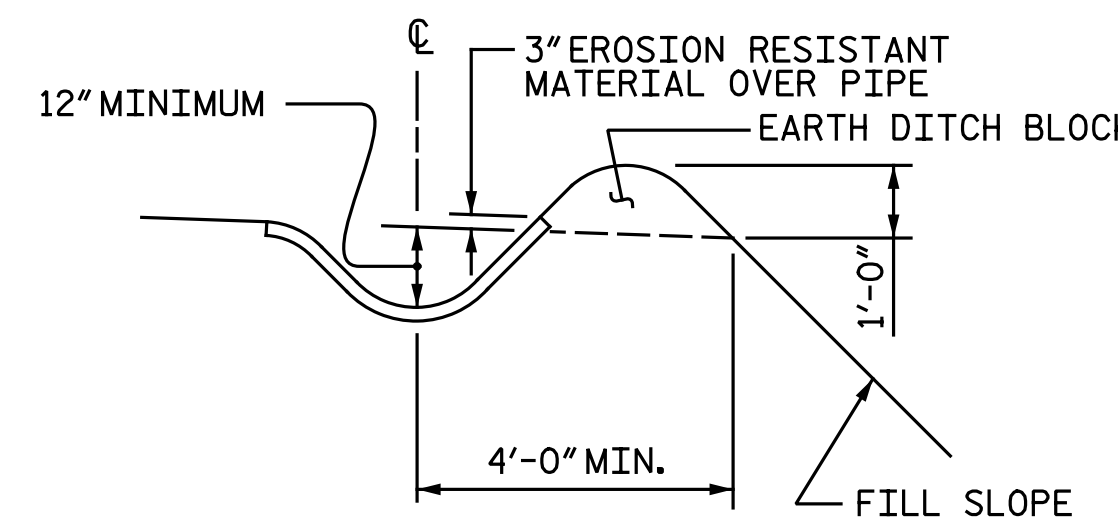


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW



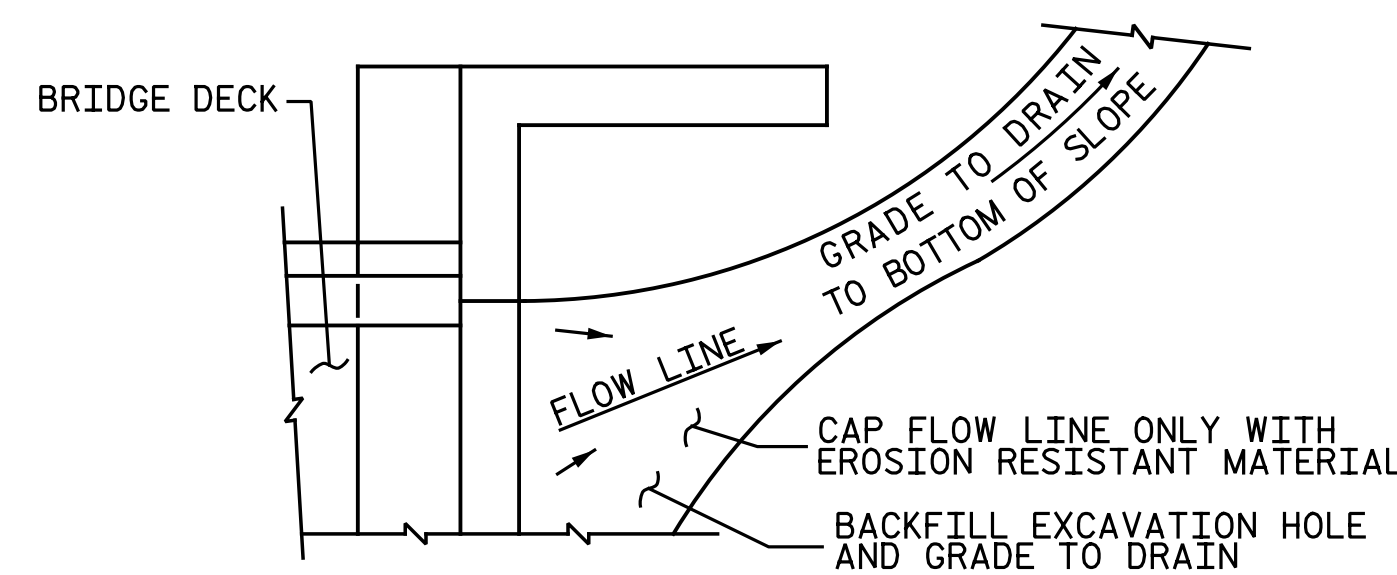
SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

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



DocuSigned by:
 Todd M. Garrison
 6110/2017

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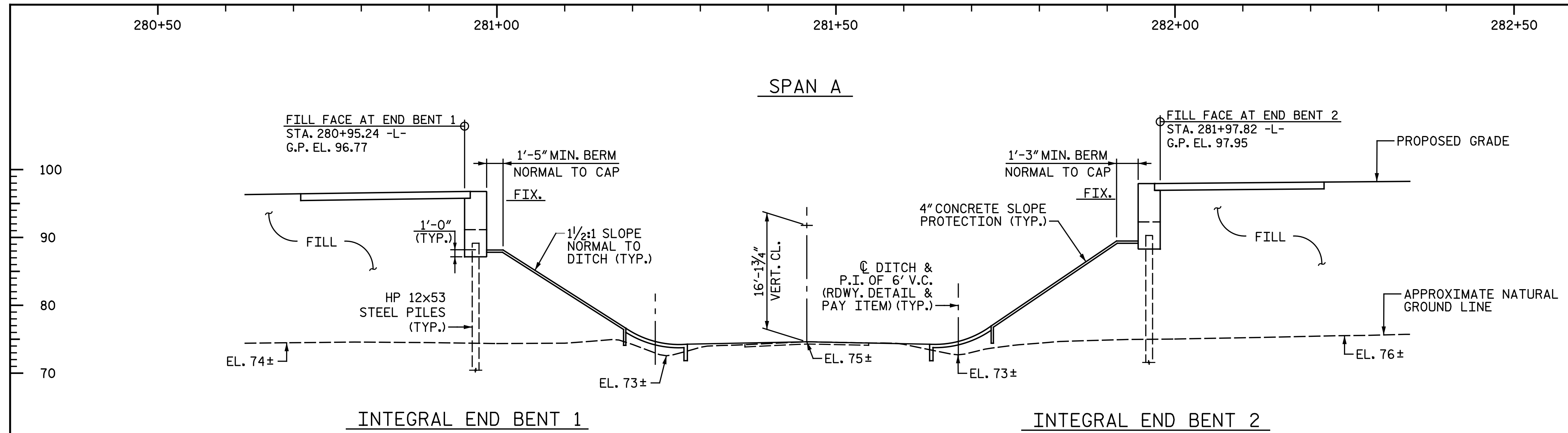
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 DETAILS

RIGHT LANE

ASSEMBLED BY : N. B. SPEAKS	DATE : 3-2-17
CHECKED BY : T. M. GARRISON	DATE : 6-27-17
DRAWN BY : FCJ 11/88	REV. 10/11/11 MAA/GM
CHECKED BY : ARB 11/88	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM

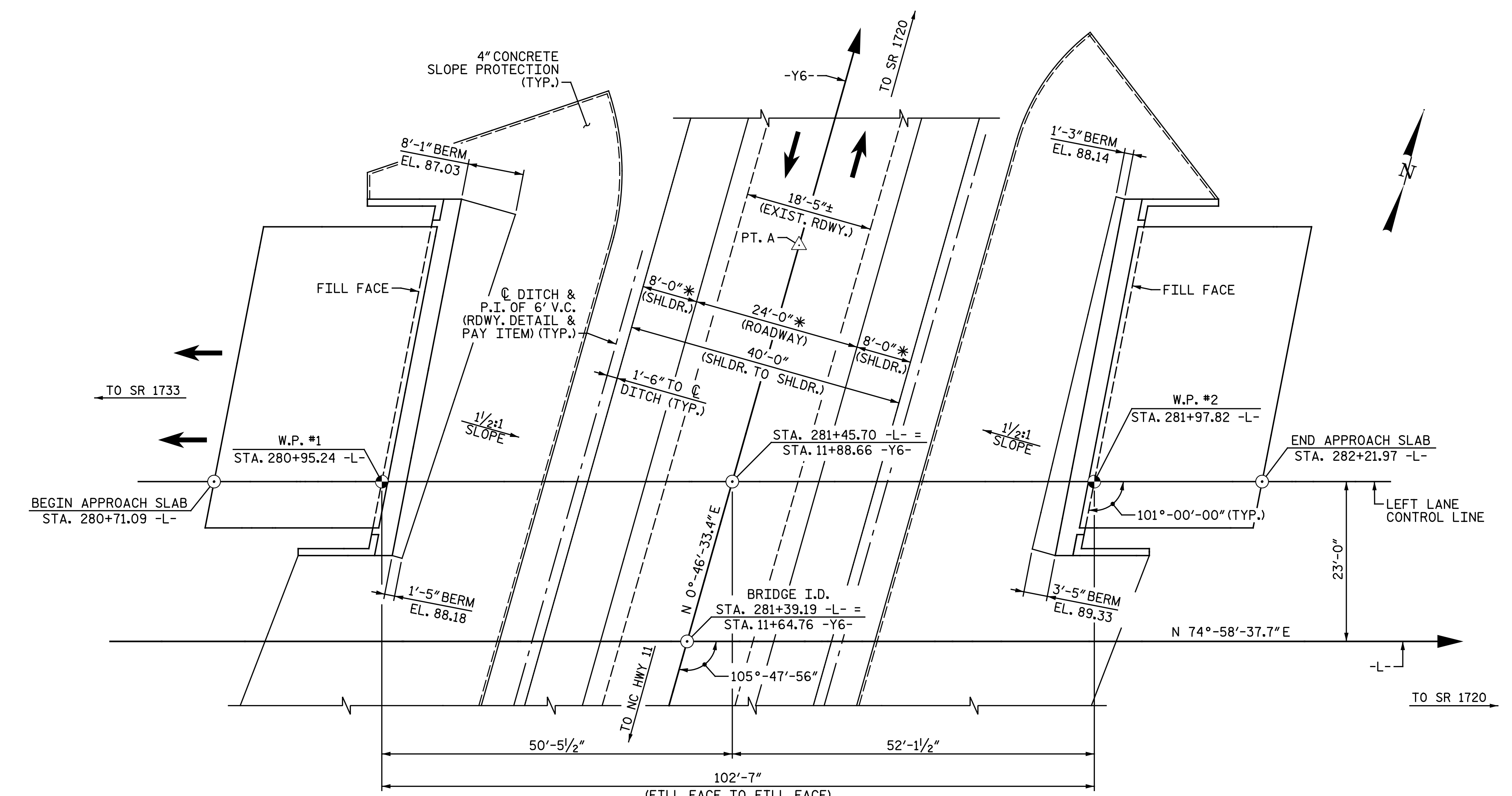
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			52
2			4			52

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 NC License No. : F-1084



(+3.0000% Δ (-)2.2800%
 P.I. STA. = 283+40.00
 EL. = 107.48
 V.C. = 1,305'
 -L- GRADE DATA

SECTION ALONG LEFT LANE CONTROL LINE
 (END BENTS ON SECTION AT RIGHT ANGLES TO END BENTS)



POINT	STATION ON -Y6-	OFFSET	ELEVATION ON -Y6-
A	12+25.12	0.00	74.96

Δ - POINT OF MINIMUM VERTICAL CLEARANCE OVER EXISTING ROADWAY WITH 1/2" OVERLAY
 * - FUTURE LANE CONFIGURATION

PROJECT NO. R-5703
 LENOIR COUNTY
 STATION: 281+39.19 -L-
 11+64.76 -Y6-
 SHEET 1 OF 3 BRIDGE NO. 216



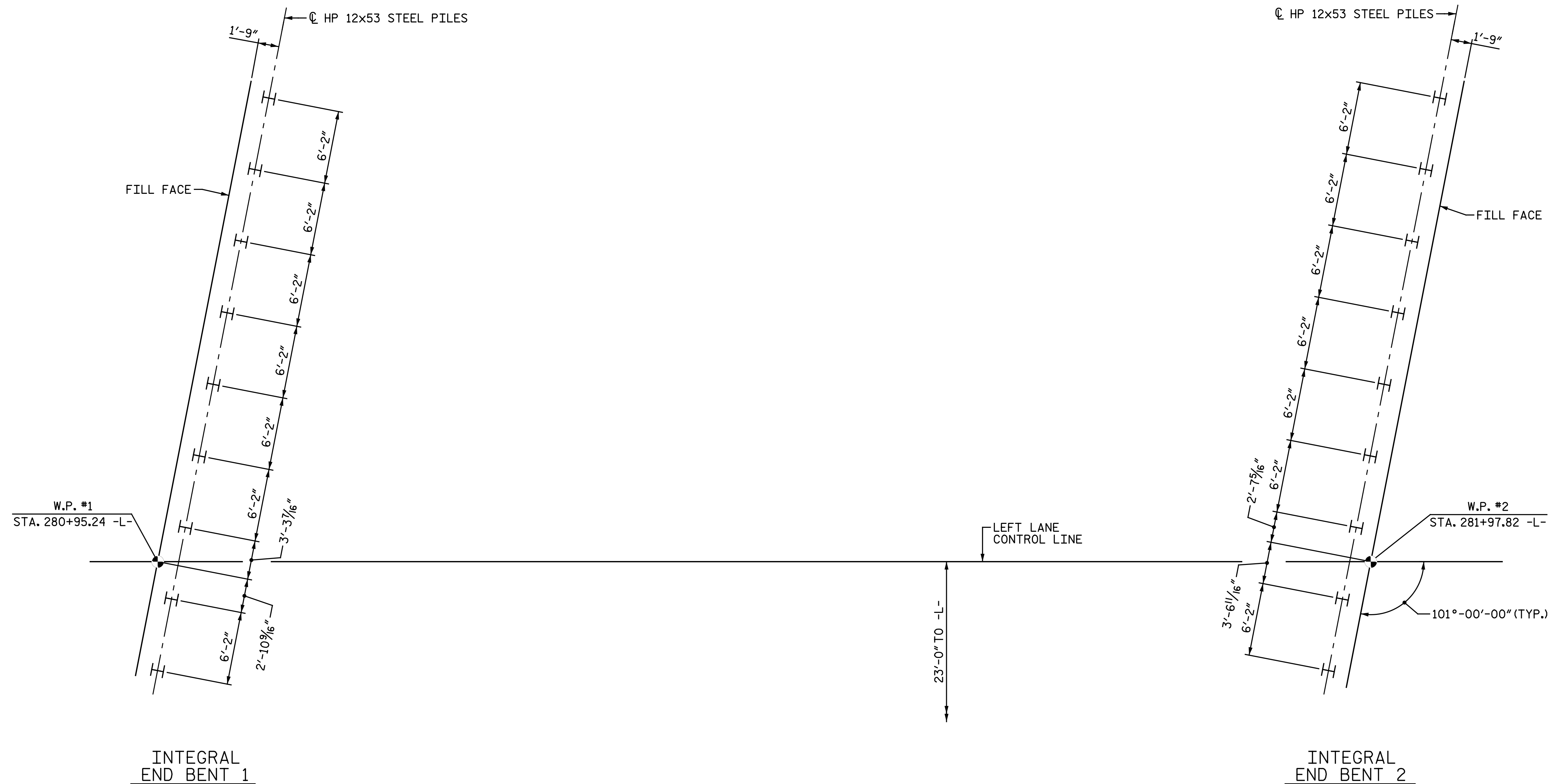
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON C.F. HARVEY
 PARKWAY OVER SR 1735
 BETWEEN SR 1733 AND SR 1720

8/10/2017
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 UNLESS ALL SIGNATURES COMPLETED

NO.		BY:		DATE:		NO.		BY:		DATE:		SHEET NO.
1						3						S9-1
2						4						TOTAL SHEETS
												25

DRAWN BY: C. E. MAYHEW DATE: 3-21-17
 CHECKED BY: B. J. BELL DATE: 4-10-17

PLAN
 (PILES NOT SHOWN FOR CLARITY)



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: 281+39.19 -L-
11+64.76 -Y6-
 SHEET 2 OF 3



8/10/2017

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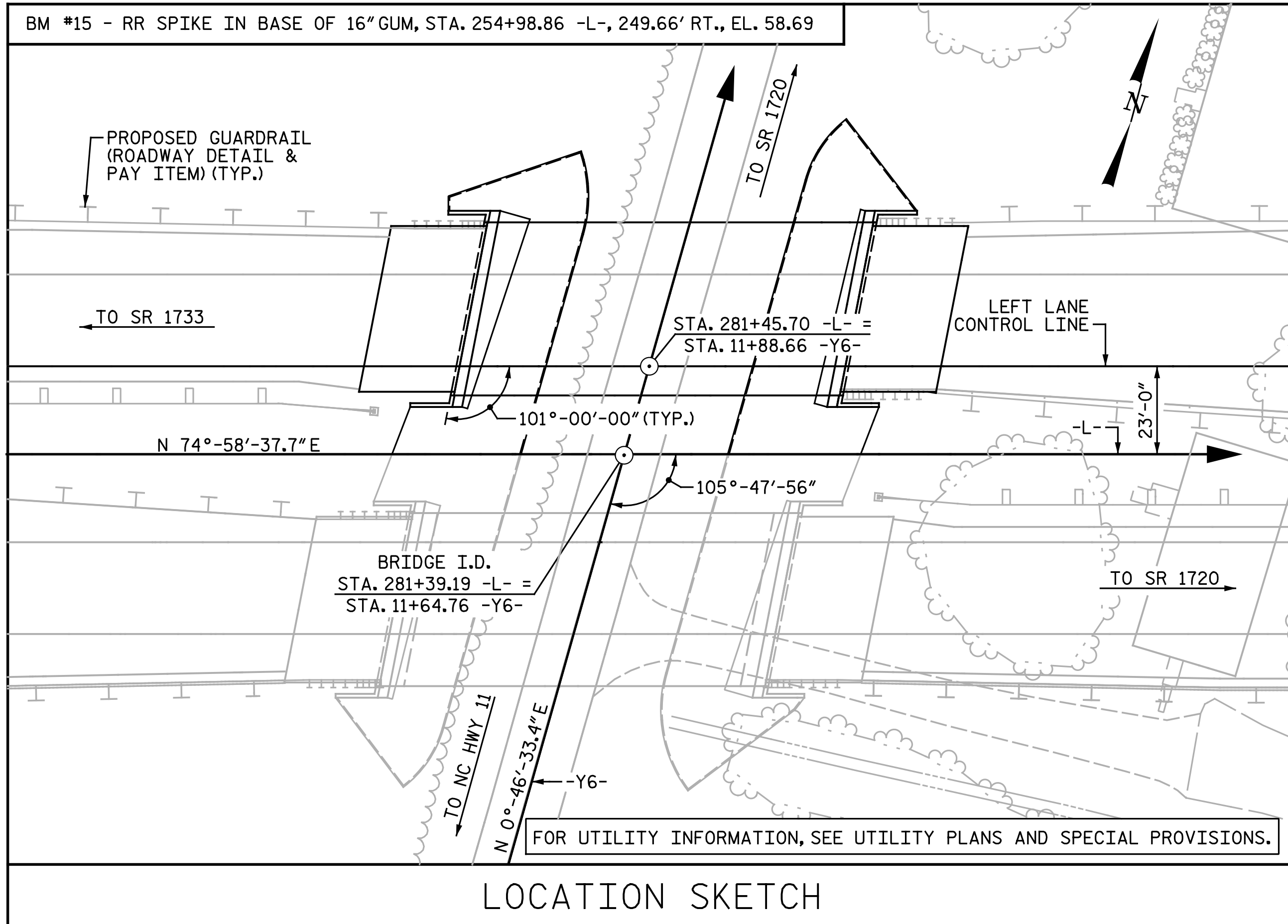
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 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27518
 NC License No.: F-1084

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON C.F. HARVEY
 PARKWAY OVER SR 1735
 BETWEEN SR 1733 AND SR 1720

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S9-2
1			3			TOTAL SHEETS
2			4			25

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



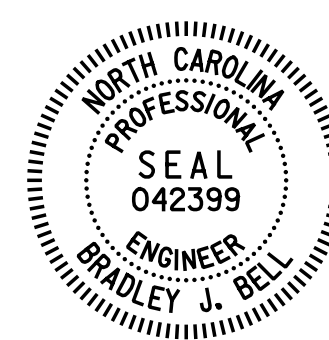
NOTES:

- 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	630	5		320	
END BENT 2				38.1		5,230			9	9	630	5		320	
TOTAL	1	4,642	5,805	76.2	LUMP SUM	10,460	5	502.19	18	18	1,260	10	201.77	640	LUMP SUM

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 281+39.19 -L-
11+64.76 -Y6-
 SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON C.F. HARVEY
 PARKWAY OVER SR 1735
 BETWEEN SR 1733 AND SR 1720

8/10/2017
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S9-3
1			3			TOTAL SHEETS
2			4			25

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

LOAD FACTORS:

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

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																								
LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER		
						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	1	49.50	0.960	1.08	A	3	19.40	1.00	0.821	1.07	A	1	49.50	1,2	
	HL-93 (OPERATING)	N/A		1.45	--	1.35	0.821	2.04	A	1	49.50	0.960	1.45	A	3	19.40	N/A	-	-	-	-	-	2	
	HS-20 (INVENTORY)	36.000	2	1.45	52.20	1.75	0.821	2.20	A	1	49.50	0.960	1.45	A	3	19.40	1.00	0.821	1.49	A	1	49.50	1,2	
	HS-20 (OPERATING)	36.000		1.93	69.48	1.35	0.821	2.85	A	1	49.50	0.960	1.93	A	3	19.40	N/A	-	-	-	-	-	2	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.53	47.66	1.40	0.821	6.51	A	1	49.50	0.960	4.75	A	3	19.40	1.00	0.821	3.53	A	1	49.50	1,2
		SNGARBS2	20.000		2.56	51.20	1.40	0.821	4.72	A	1	49.50	0.960	3.30	A	3	19.40	1.00	0.821	2.56	A	1	49.50	1,2
		SNAGRIS2	22.000		2.39	52.58	1.40	0.821	4.41	A	1	49.50	0.960	3.03	A	3	19.40	1.00	0.821	2.39	A	1	49.50	1,2
		SNCOTTS3	27.250		1.75	47.69	1.40	0.821	3.24	A	1	49.50	0.960	2.28	A	3	19.40	1.00	0.821	1.75	A	1	49.50	1,2
		SNAGGRS4	34.925		1.44	50.29	1.40	0.821	2.65	A	1	49.50	0.960	1.84	A	3	19.40	1.00	0.821	1.44	A	1	49.50	1,2
		SNS5A	35.550		1.41	50.13	1.40	0.821	2.60	A	1	49.50	0.960	1.86	A	3	19.40	1.00	0.821	1.41	A	1	49.50	1,2
		SNS6A	39.950		1.28	51.14	1.40	0.821	2.36	A	1	49.50	0.960	1.67	A	3	19.40	1.00	0.821	1.28	A	1	49.50	1,2
		SNS7B	42.000		1.22	51.24	1.40	0.821	2.25	A	1	49.50	0.960	1.62	A	3	19.40	1.00	0.821	1.22	A	1	49.50	1,2
	TRUCK TRACTOR SEMI-TRAILER (T/S)	TNAGRIT3	33.000		1.56	51.48	1.40	0.821	2.87	A	1	49.50	0.960	2.03	A	3	19.40	1.00	0.821	1.56	A	1	49.50	1,2
		TNT4A	33.075		1.56	51.60	1.40	0.821	2.88	A	1	49.50	0.960	1.98	A	3	19.40	1.00	0.821	1.56	A	1	49.50	1,2
		TNT6A	41.600		1.27	52.83	1.40	0.821	2.33	A	1	49.50	0.960	1.72	A	3	19.40	1.00	0.821	1.27	A	1	49.50	1,2
		TNT7A	42.000		1.27	53.34	1.40	0.821	2.34	A	1	49.50	0.960	1.69	A	3	19.40	1.00	0.821	1.27	A	1	49.50	1,2
		TNT7B	42.000		1.30	54.60	1.40	0.821	2.39	A	1	49.50	0.960	1.60	A	3	19.40	1.00	0.821	1.30	A	1	49.50	1,2
		TNAGRIT4	43.000		1.24	53.32	1.40	0.821	2.29	A	1	49.50	0.960	1.54	A	3	19.40	1.00	0.821	1.24	A	1	49.50	1,2
		TNAGT5A	45.000		1.18	53.10	1.40	0.821	2.17	A	1	49.50	0.960	1.52	A	3	19.40	1.00	0.821	1.18	A	1	49.50	1,2
		TNAGT5B	45.000	3	1.17	52.65	1.40	0.821	2.15	A	1	49.50	0.960	1.46	A	3	19.40	1.00	0.821	1.17	A	1	49.50	1,2

NOTES:

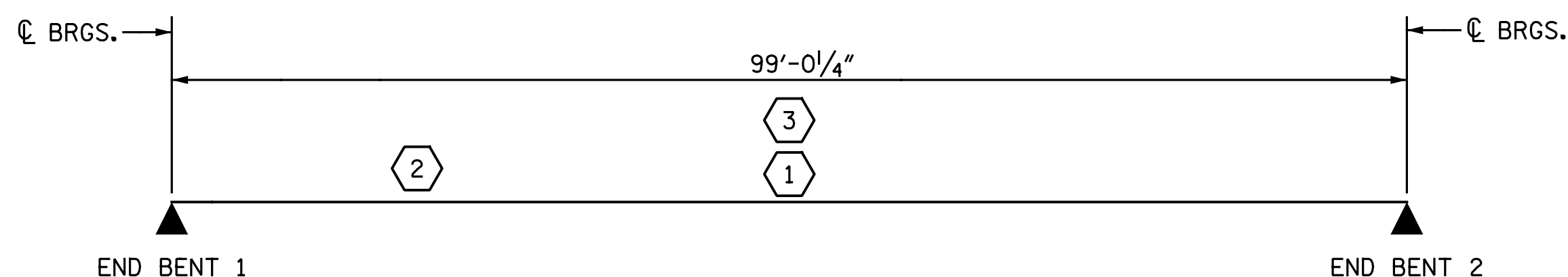
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

COMMENTS:

- A SERVICE III LIVE LOAD FACTOR OF 1.0 WAS USED TO BE CONSISTENT WITH THE VALUE USED DURING DESIGN.
- 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: 281+39.19 -L-



8/10/2017

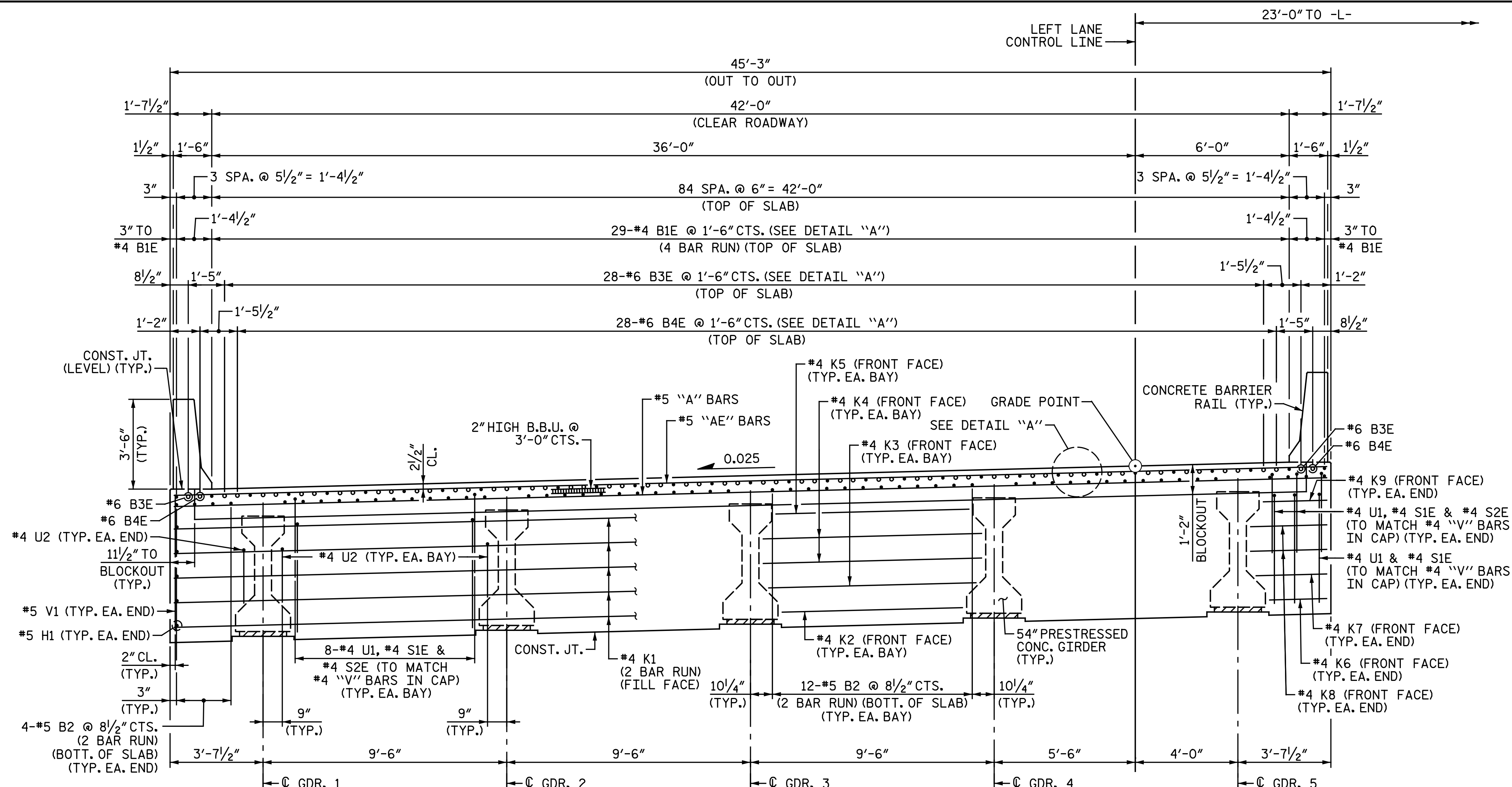
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 Cary, North Carolina 27518
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE GIRDERS
 (NON-INTERSTATE TRAFFIC)
 LEFT LANE

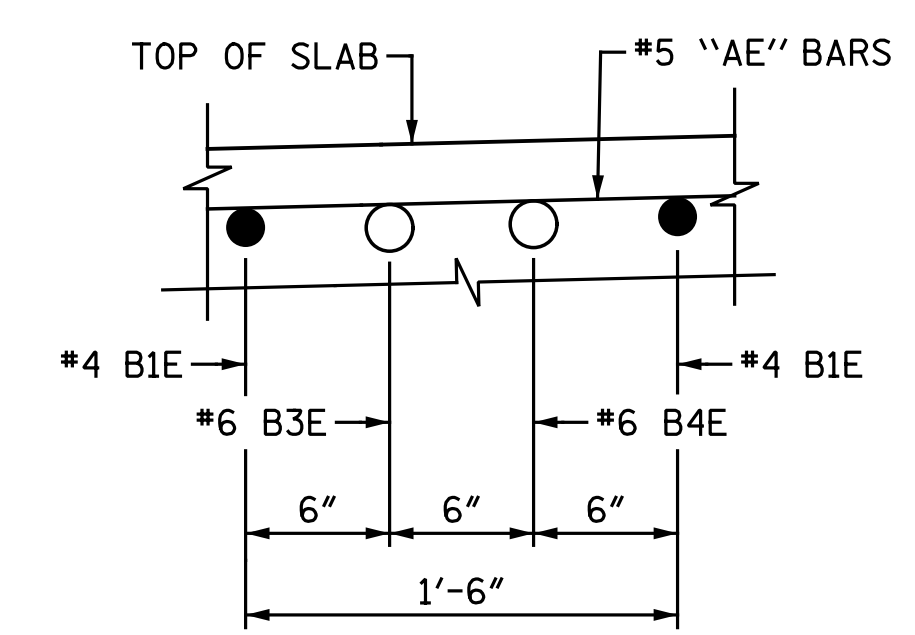
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S9-4
1			3			TOTAL SHEETS
2			4			25

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

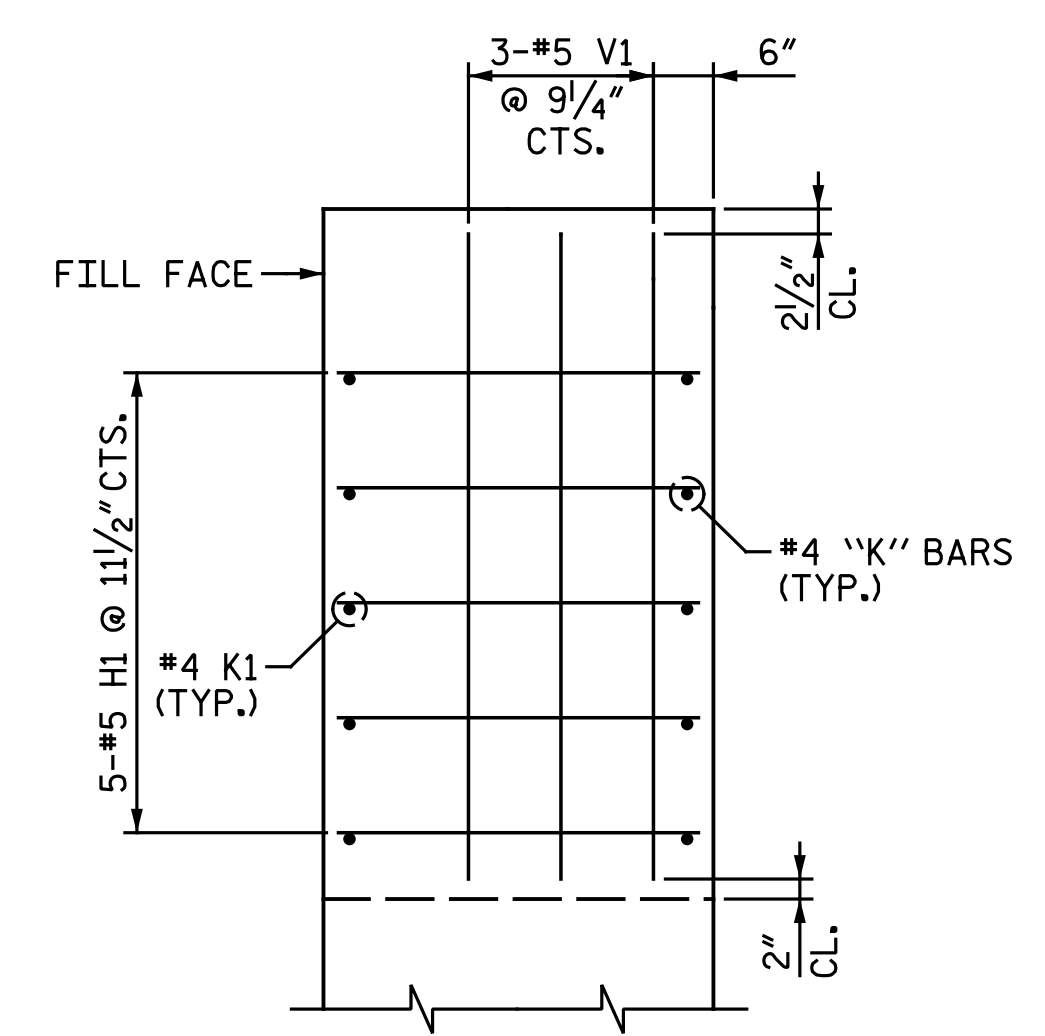


TYPICAL SECTION AT INTEGRAL END BENT

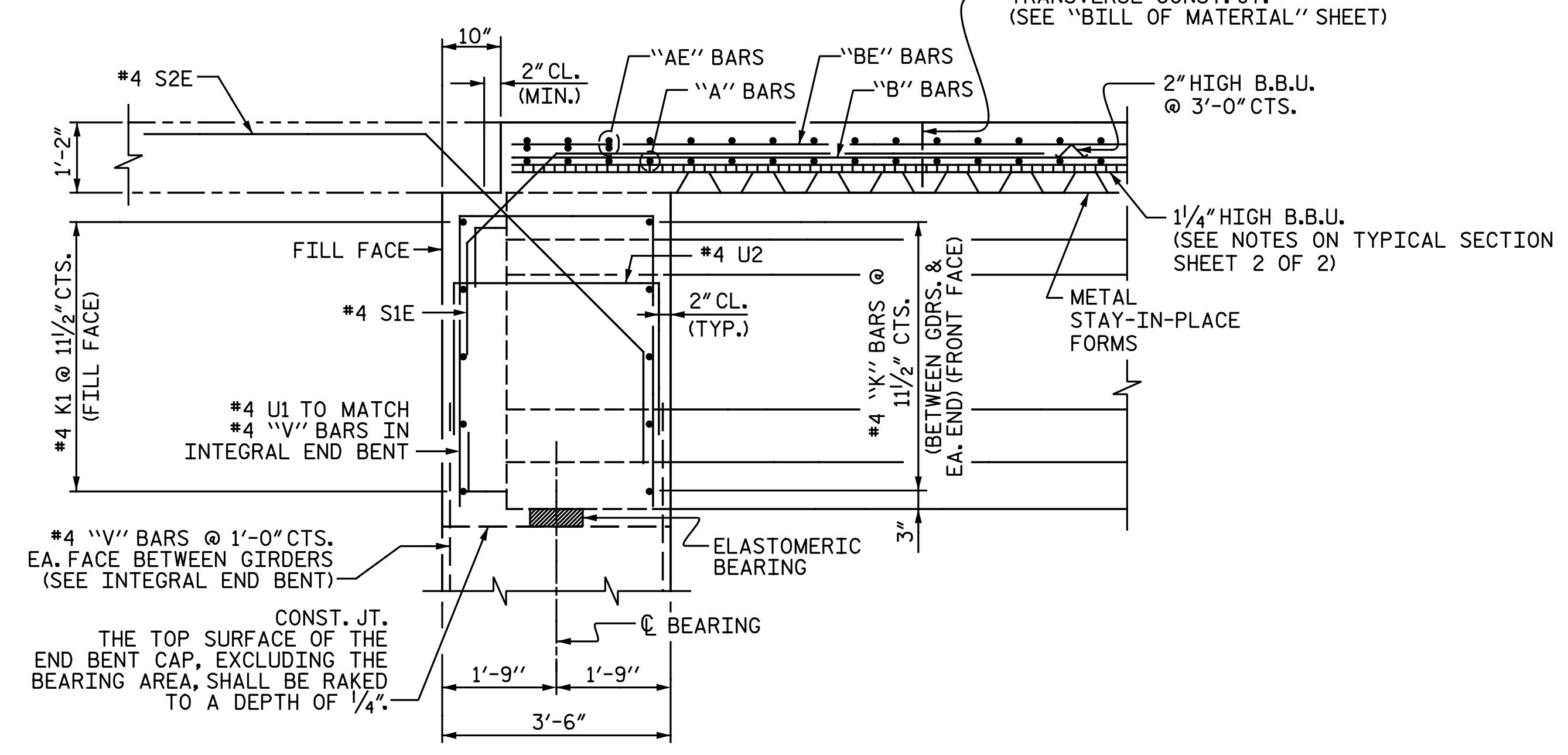
(END BENT 1 SHOWN, END BENT 2 SIMILAR)
 (#5 "AE" BARS ALONG SKEW & #4 B5E BARS NOT SHOWN FOR CLARITY)



DETAIL "A"



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



END OF GIRDER DETAIL
 AT INTEGRAL END BENT

PROJECT NO. R-5703
 LENOIR COUNTY
 STATION: 281+39.19 -L-

SHEET 1 OF 2



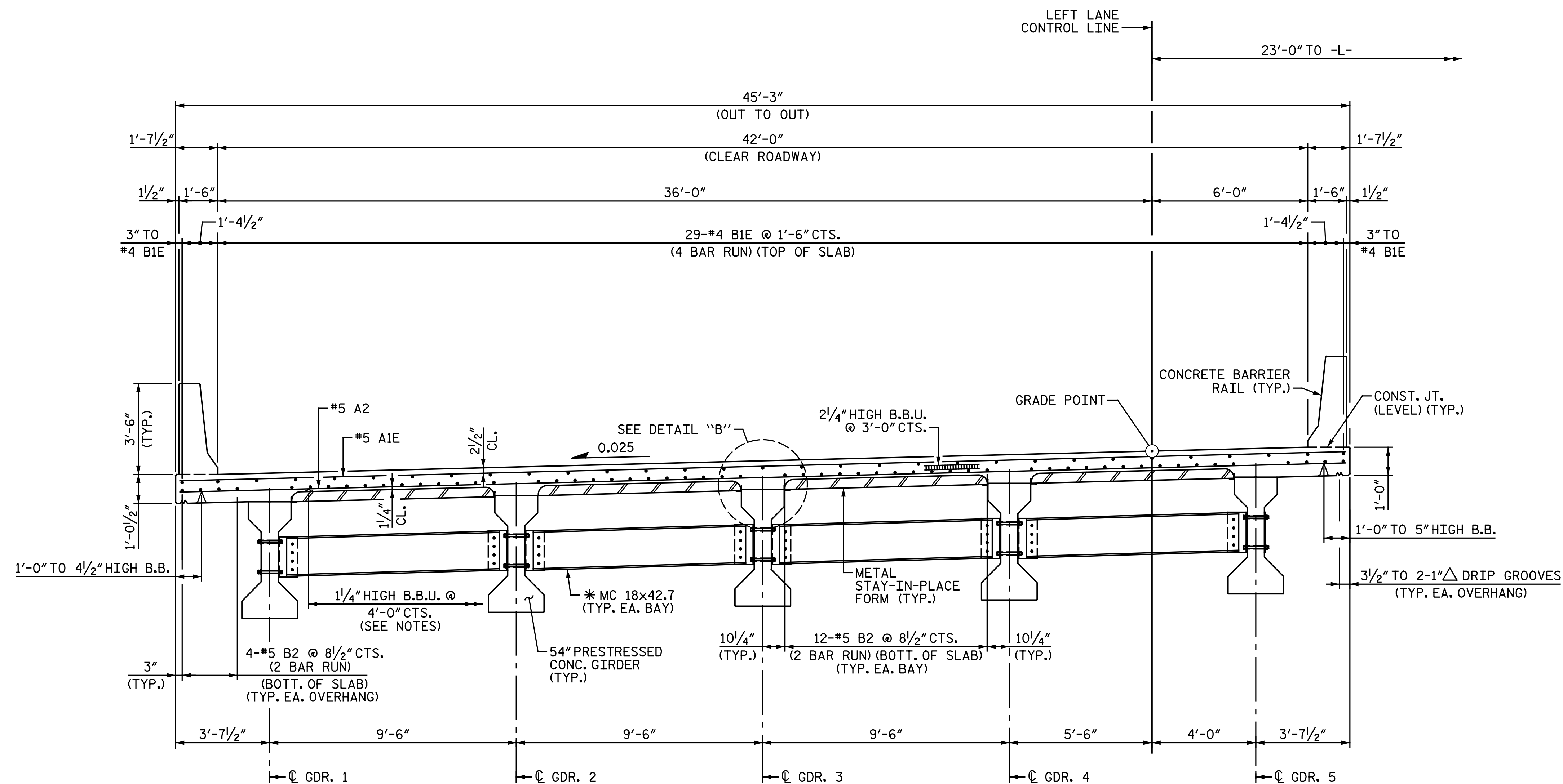
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION

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REVISIONS						SHEET NO. S9-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

DRAWN BY: M. D. MAYHEW DATE: 3-15-17
 CHECKED BY: B. J. BELL DATE: 4-3-17



TYPICAL SECTION AT INTERMEDIATE DIAPHRAGM

NOTES:

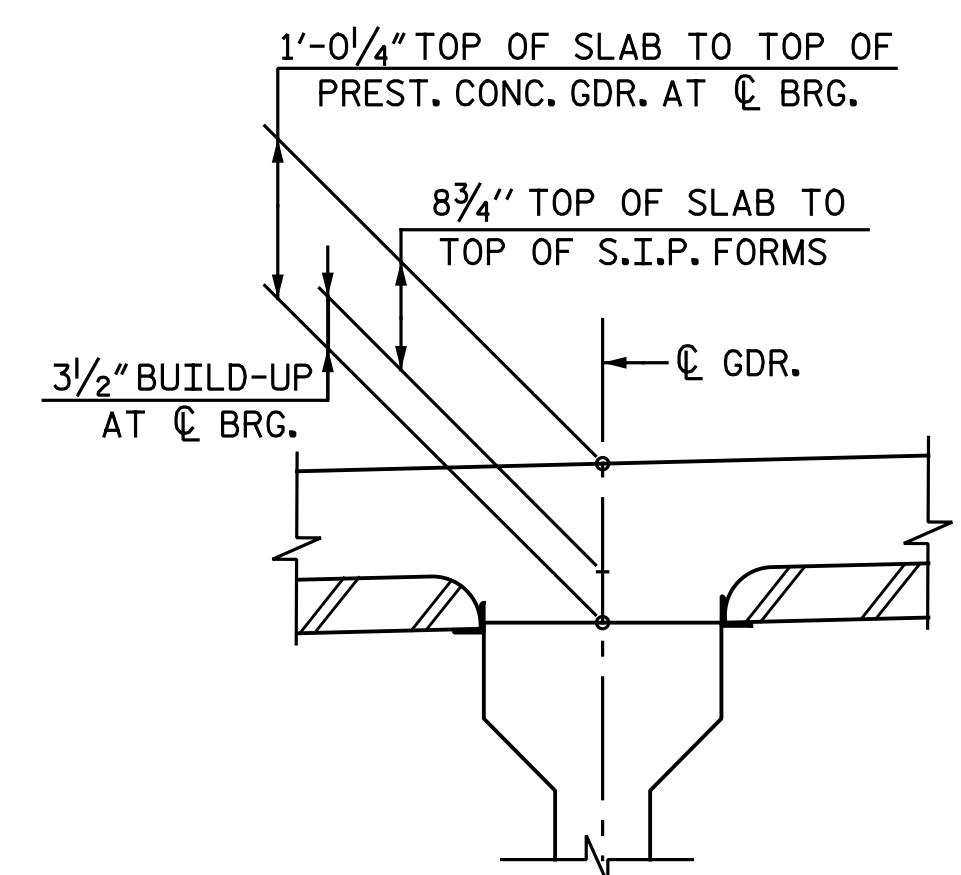
PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2" 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: 281+39.19 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION

LEFT LANE

8/10/2017
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 Michael Baker Engineering
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 Cary, North Carolina 27518
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S9-6
1			3			TOTAL SHEETS
2			4			25

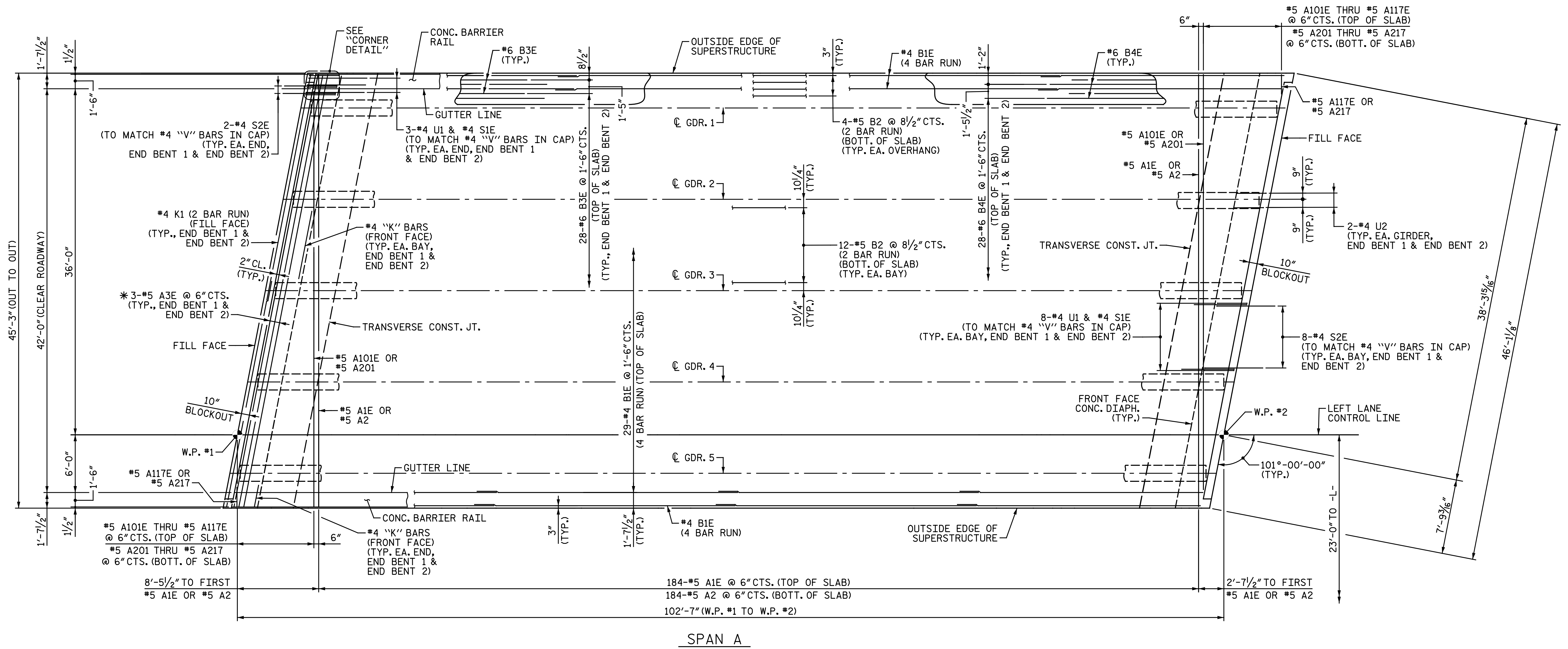
DRAWN BY: M. D. MAYHEW DATE: 3-15-17
 CHECKED BY: B. J. BELL DATE: 4-3-17

NOTES:

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

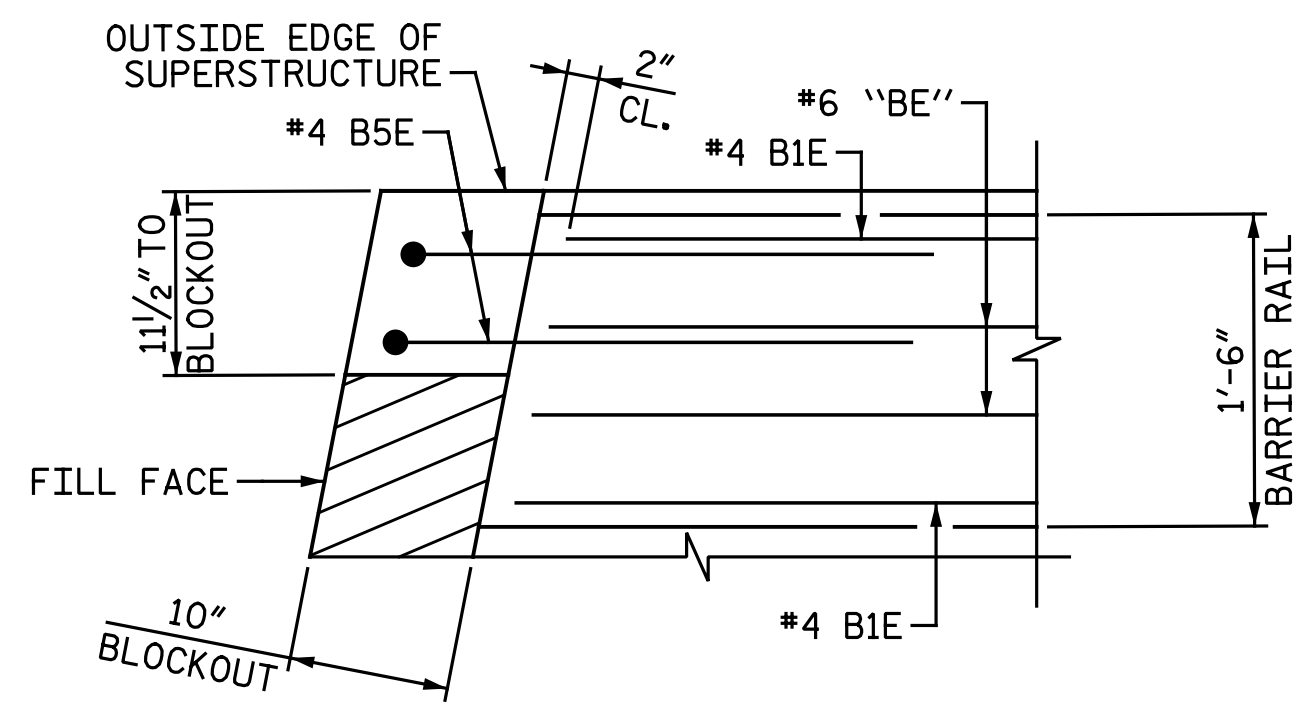
FOR DECK POURING SEQUENCE AND LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE "BILL OF MATERIAL" SHEET.

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



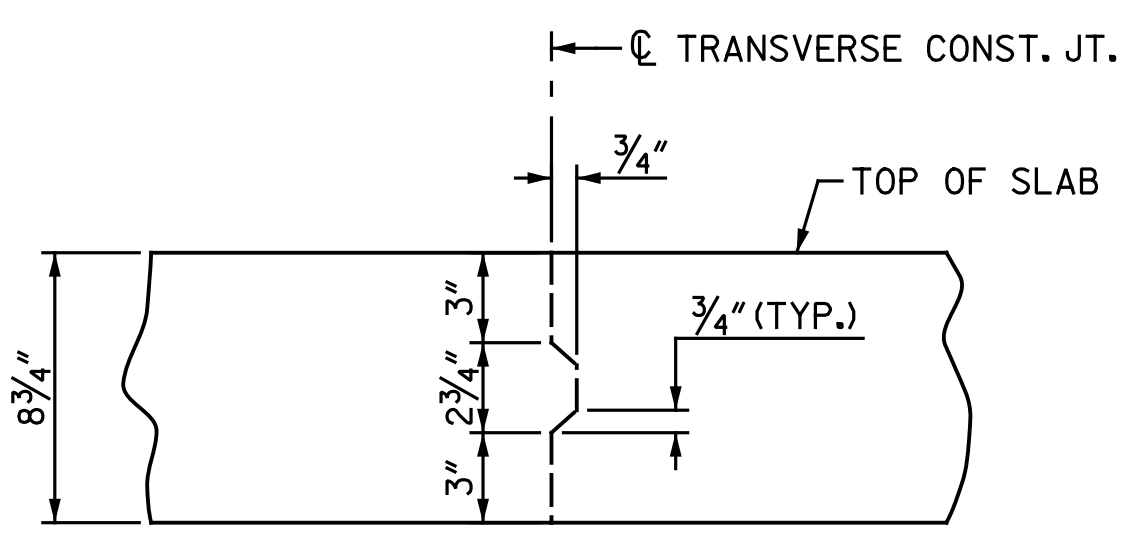
SPAN A
PLAN OF SPAN

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 281+39.19 -L-



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"



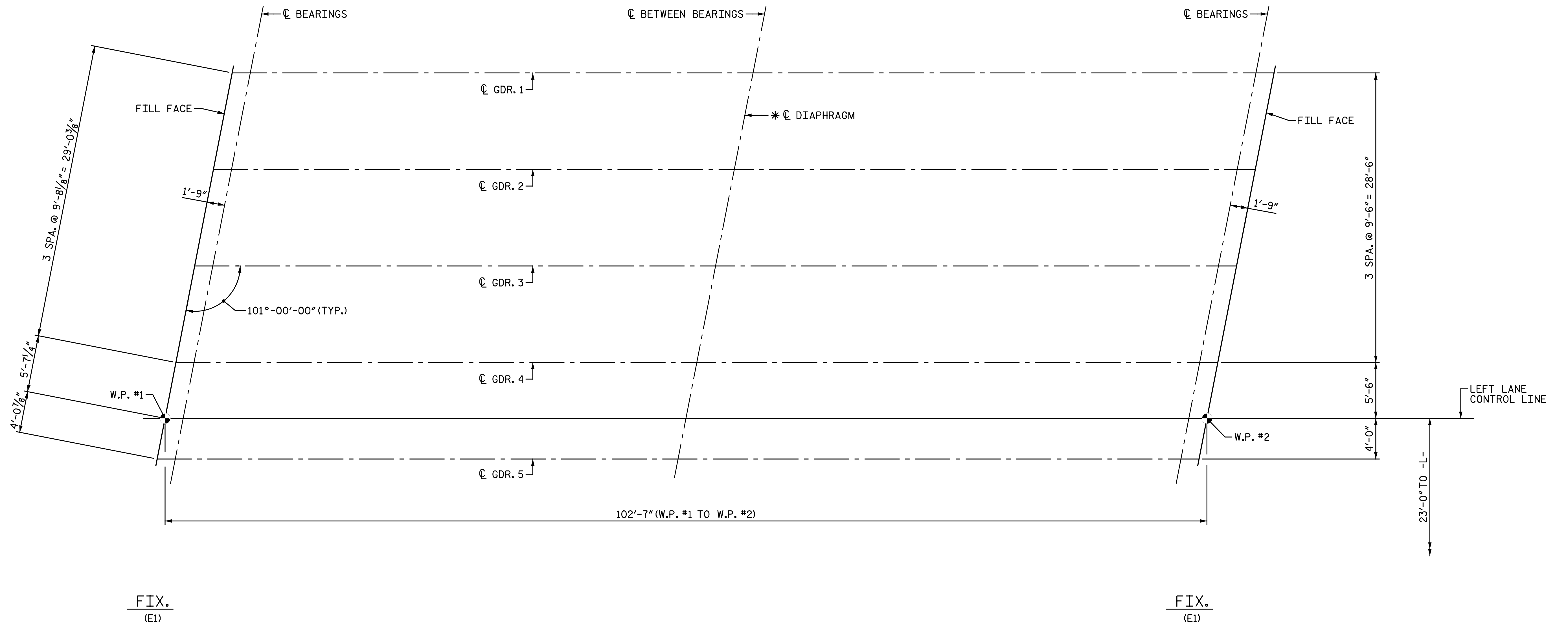
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
PLAN OF SPAN

REVISIONS						SHEET NO. S9-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

DRAWN BY: D. A. LAMAY DATE: 3-15-17
CHECKED BY: B. J. BELL DATE: 4-3-17



GIRDER LAYOUT

* INTERMEDIATE STEEL DIAPHRAGMS NOT SHOWN FOR CLARITY

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 281+39.19 -L-



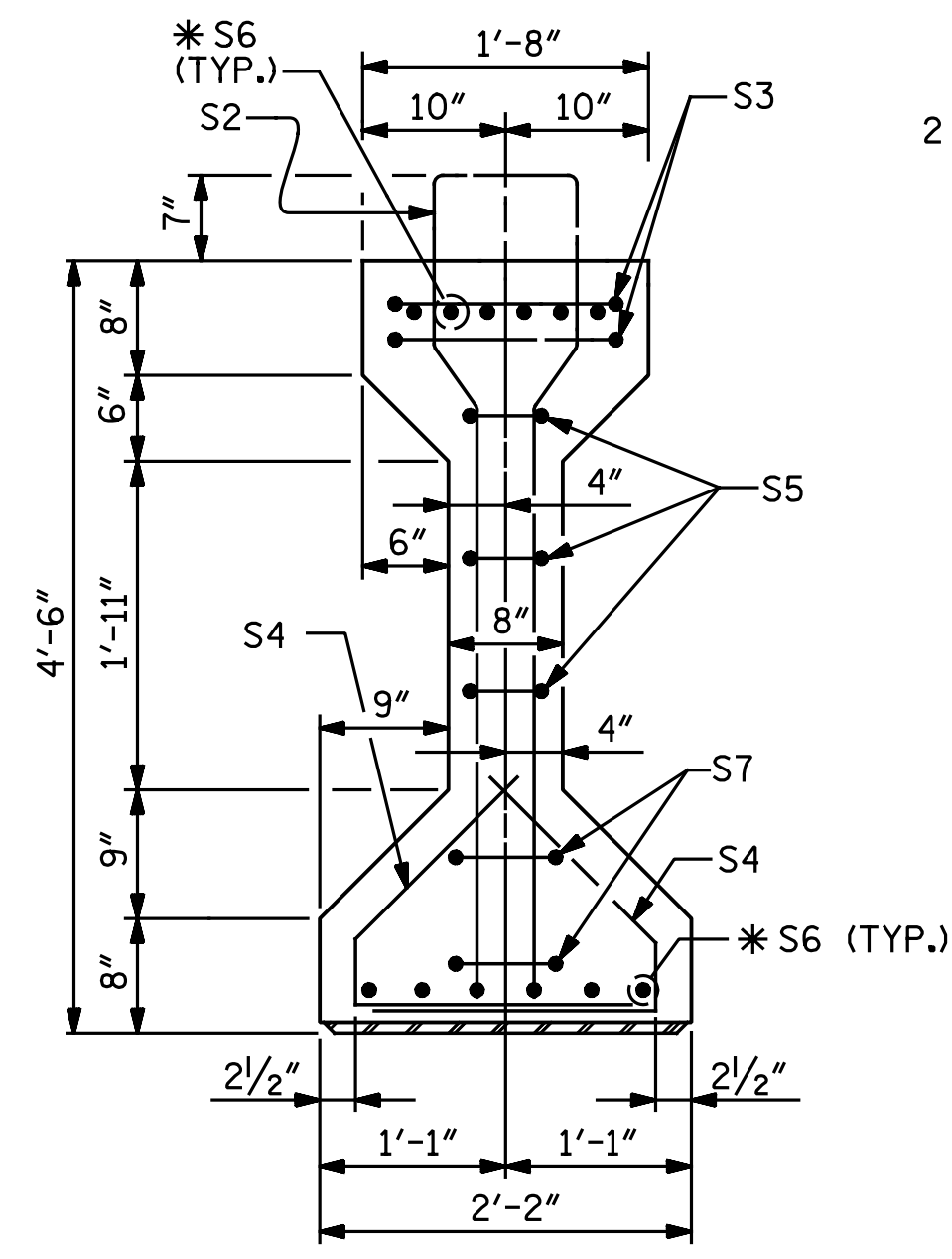
8/10/2017

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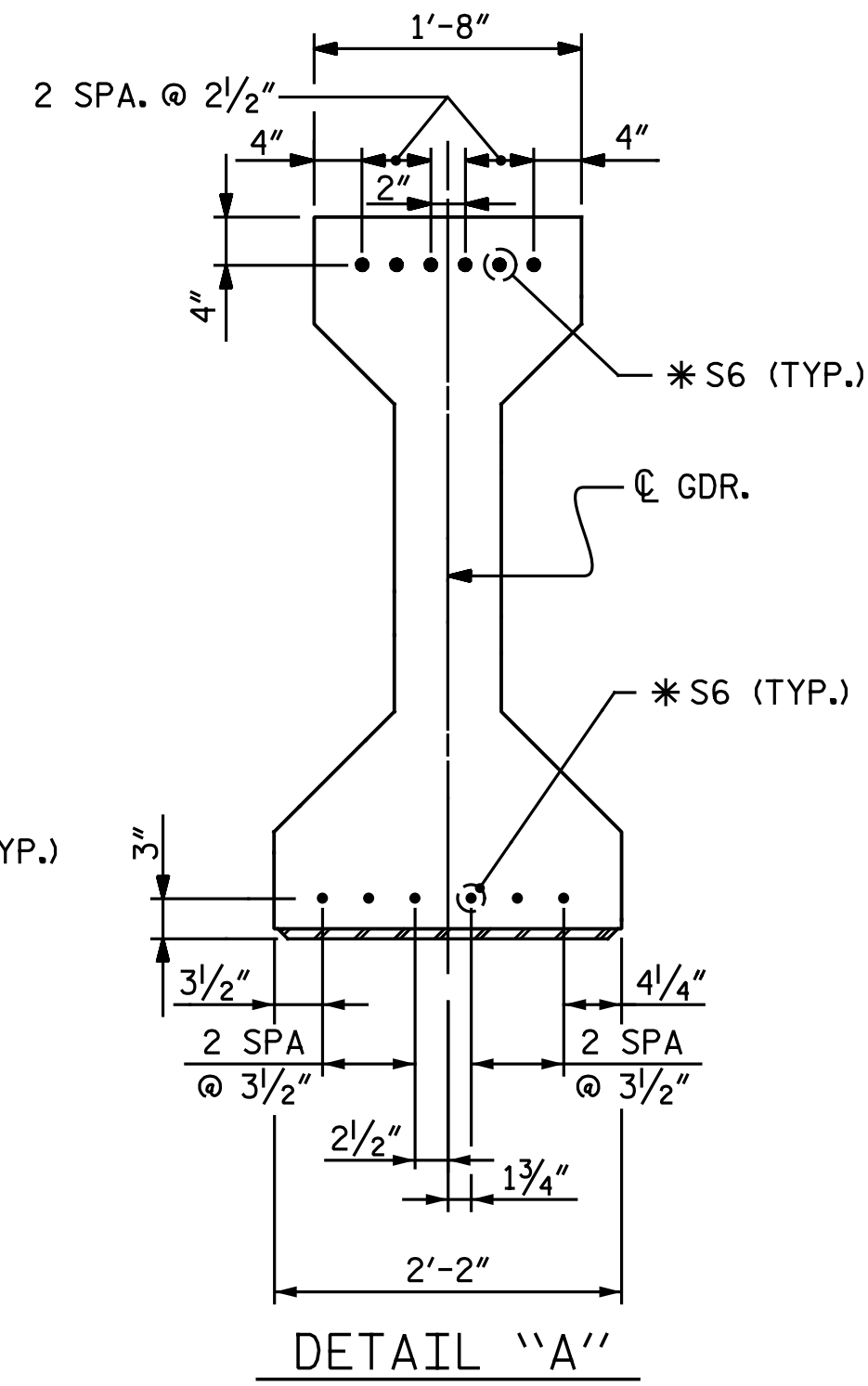
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
GIRDER LAYOUT					
LEFT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S9-8
TOTAL SHEETS					25

DRAWN BY : C. E. MAYHEW DATE : 3-13-17
 CHECKED BY : B. J. BELL DATE : 4-3-17

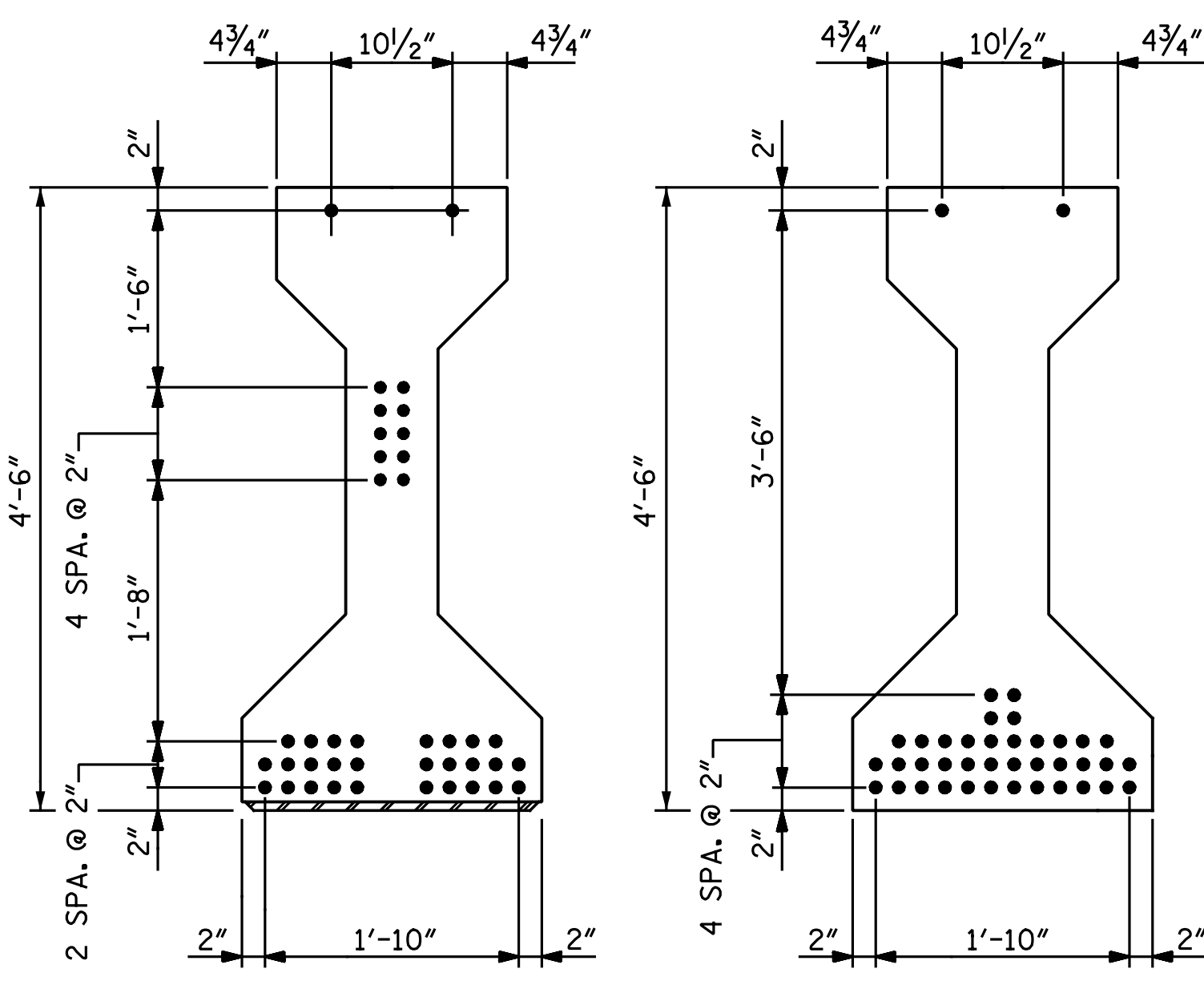


SECTION A-A

* FOR S6 BARS, SEE DETAIL "A"



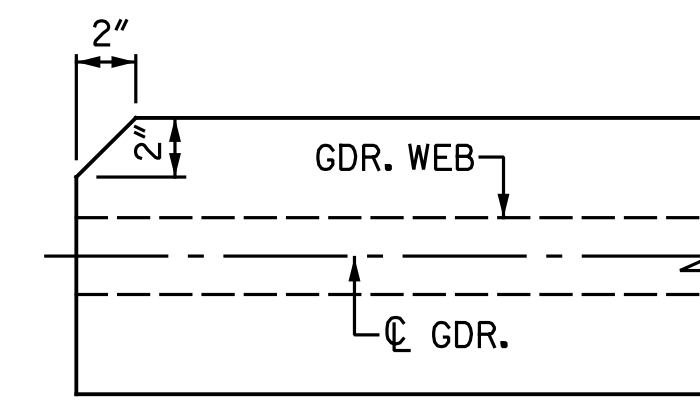
DETAIL "A"



AT END OF GIRDER

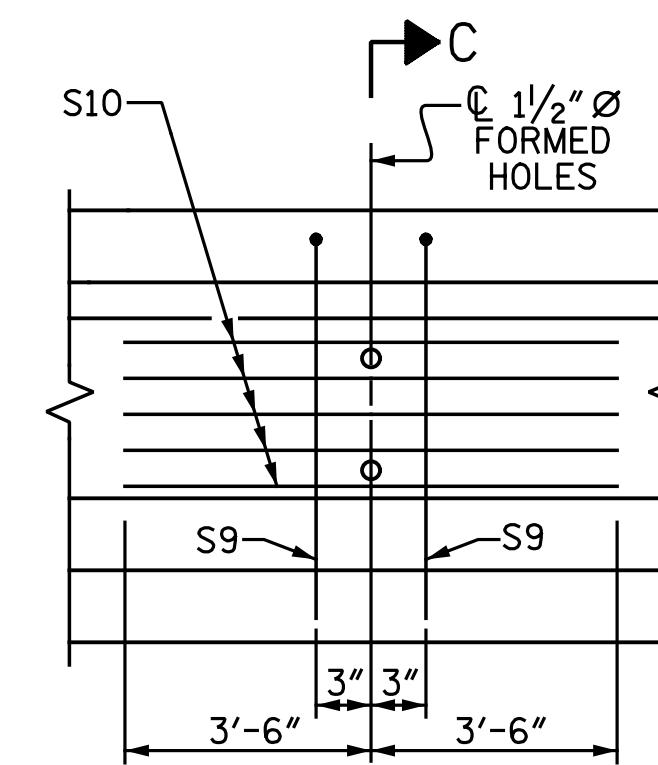
AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT



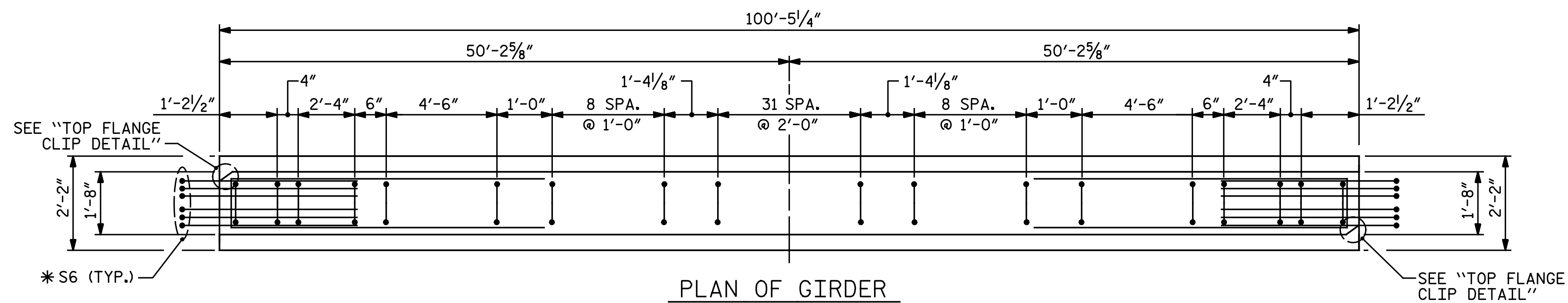
TOP FLANGE CLIP DETAIL

(TYP.)



PARTIAL ELEVATION

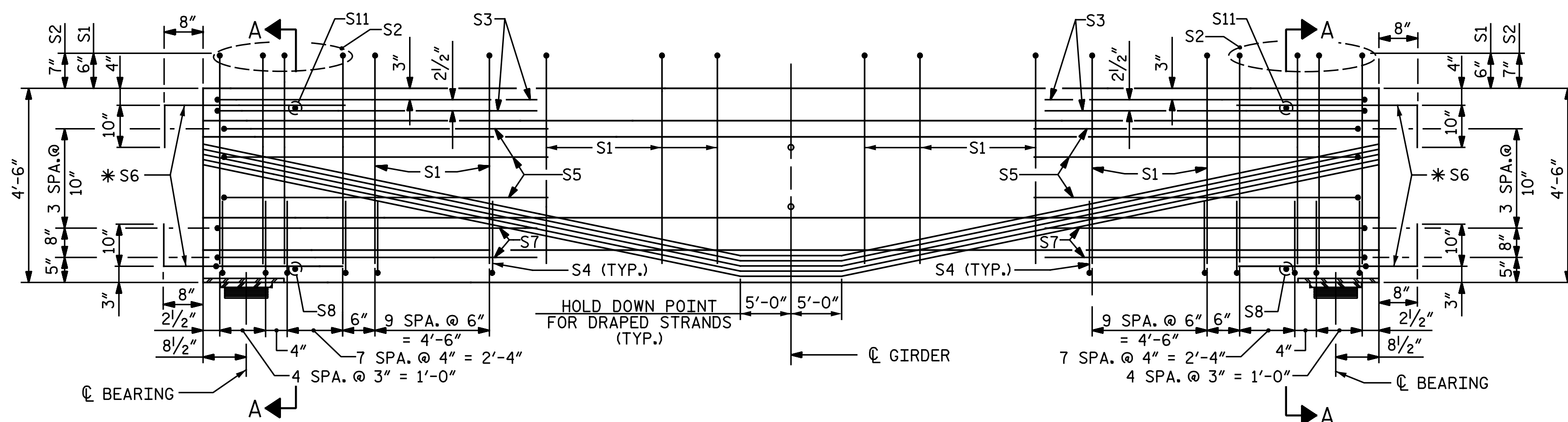
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1 THRU 5



PLAN OF GIRDER

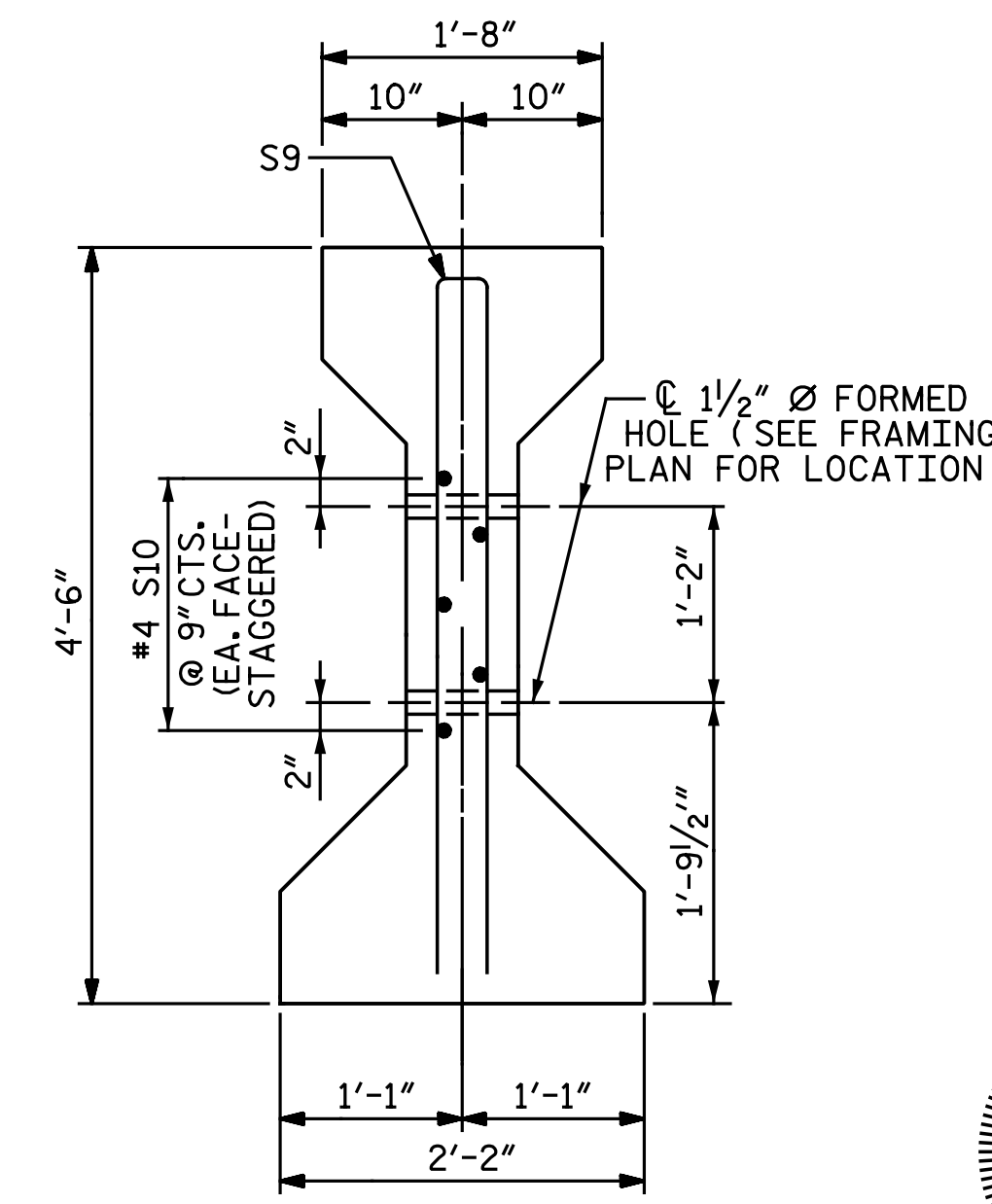
* S6 (TYP.)

SEE "TOP FLANGE CLIP DETAIL"



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



SECTION C-C

(S1 BARS NOT SHOWN)



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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

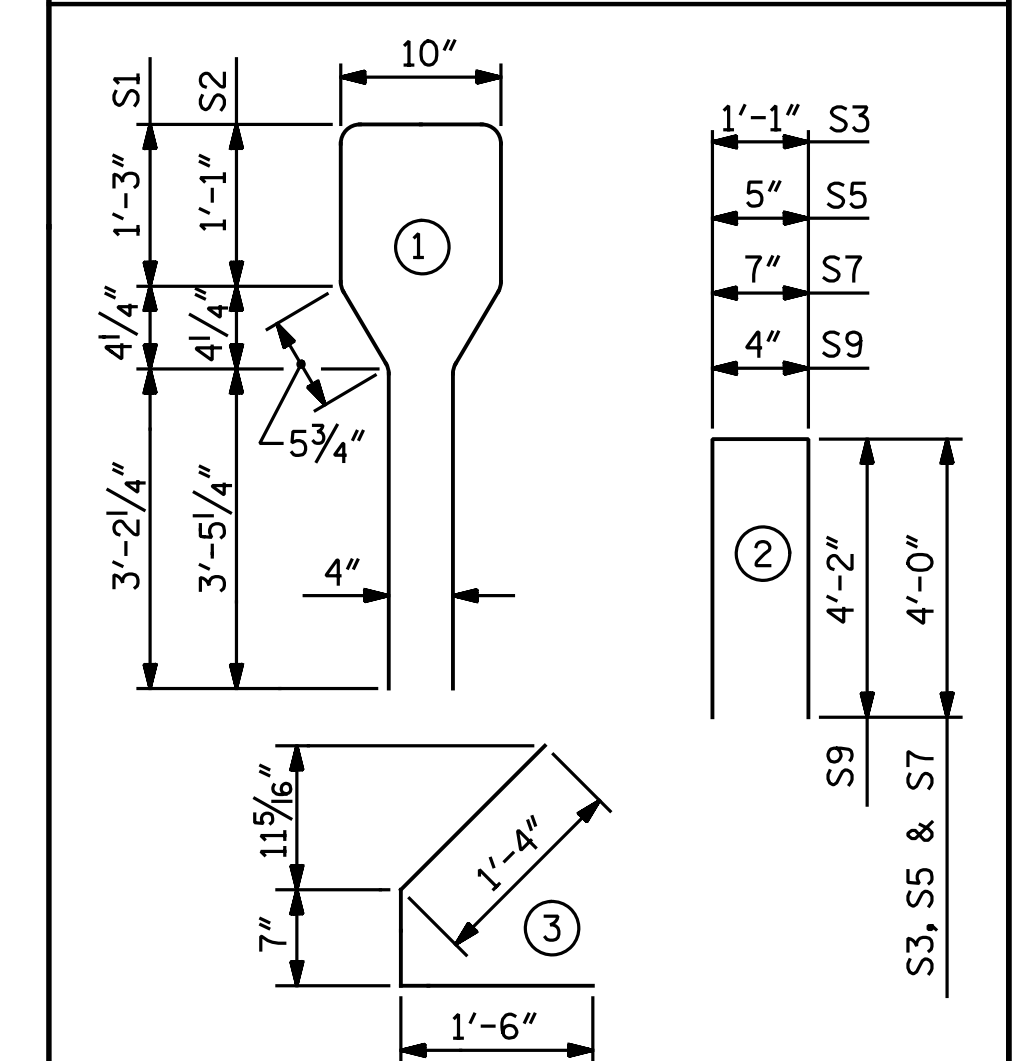
REINFORCING STEEL FOR ONE GIRDER

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

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5	100.44	502.19

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 281+39.19 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER

LEFT LANE

REVISIONS						SHEET NO. S9-9
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

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

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), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

NOTES:

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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.

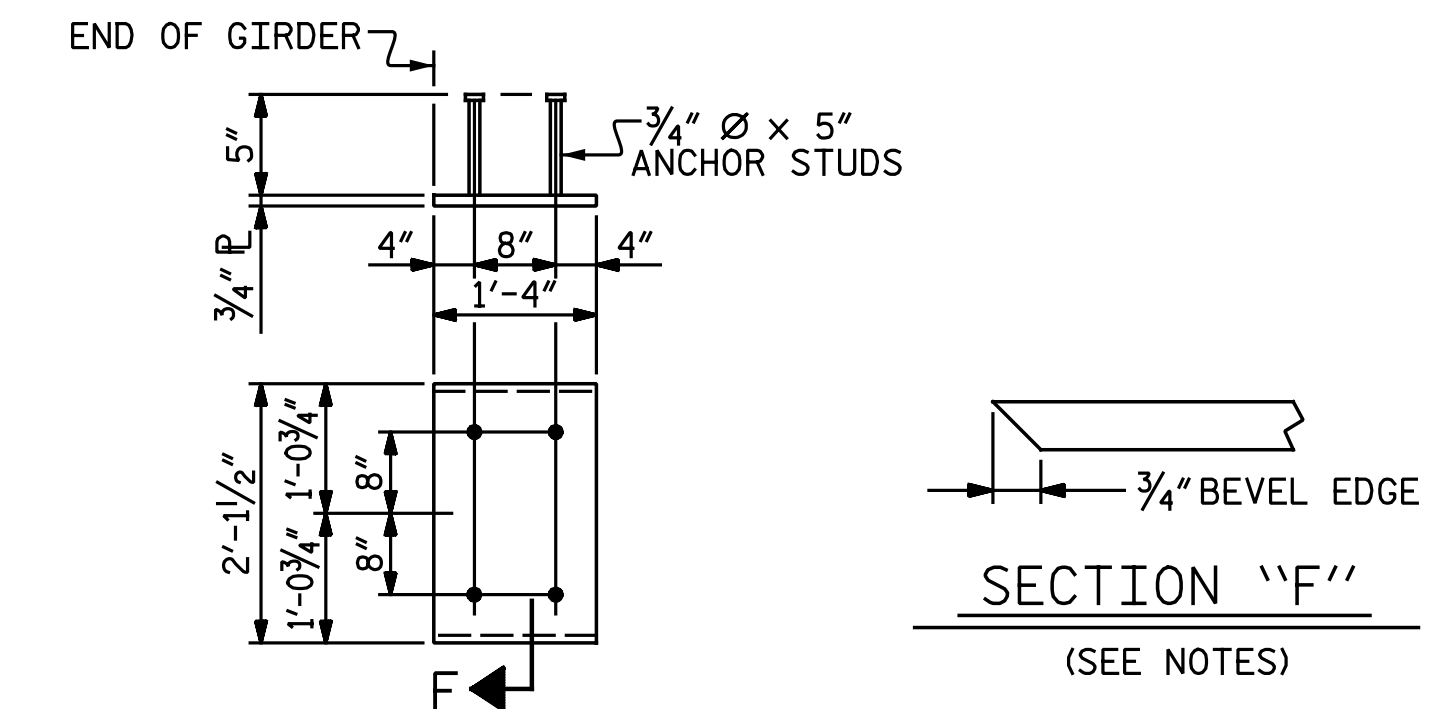
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

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.

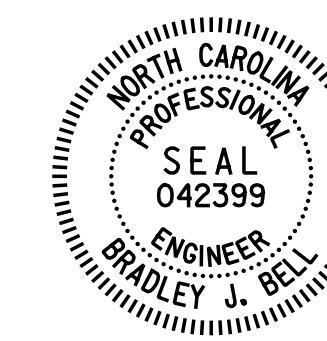
THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4,500 LBS.

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



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

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 281+39.19 -L-



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

LEFT LANE

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:	S9-10
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

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 1/4 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.

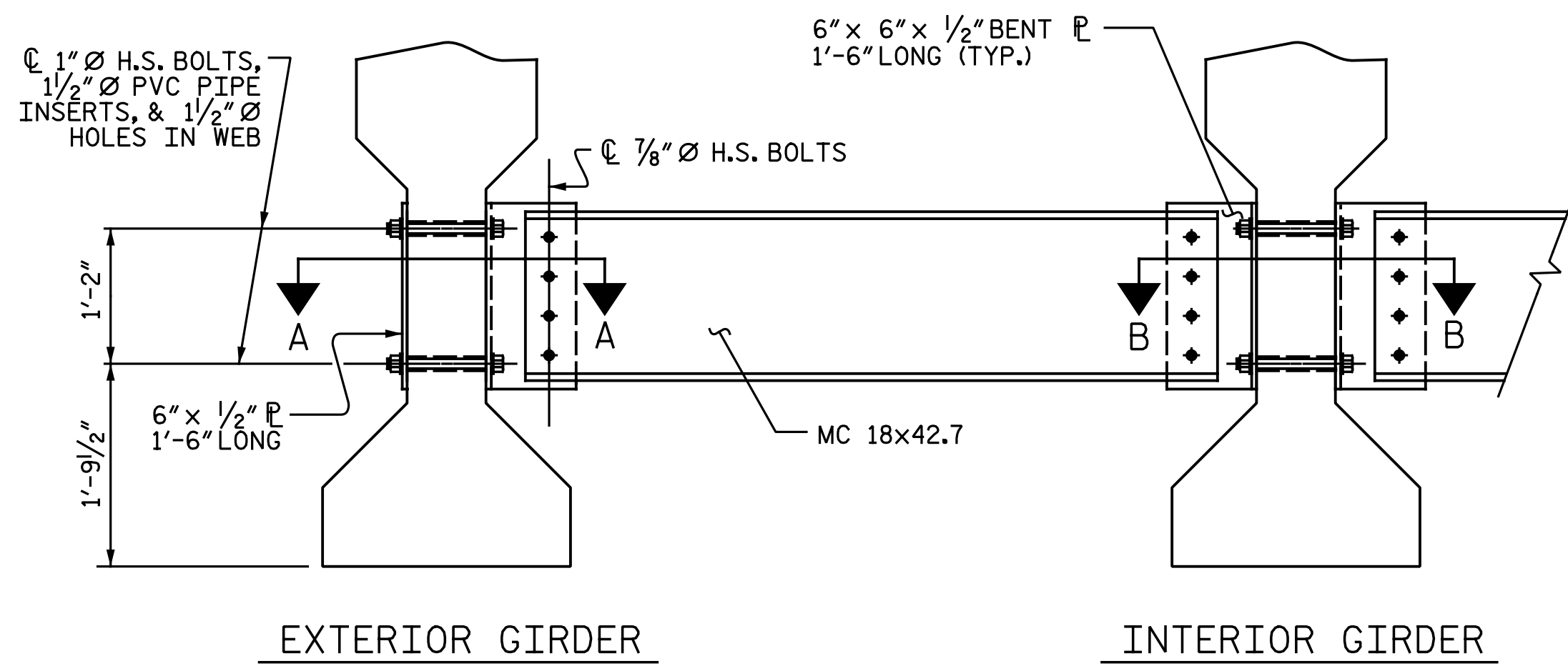
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

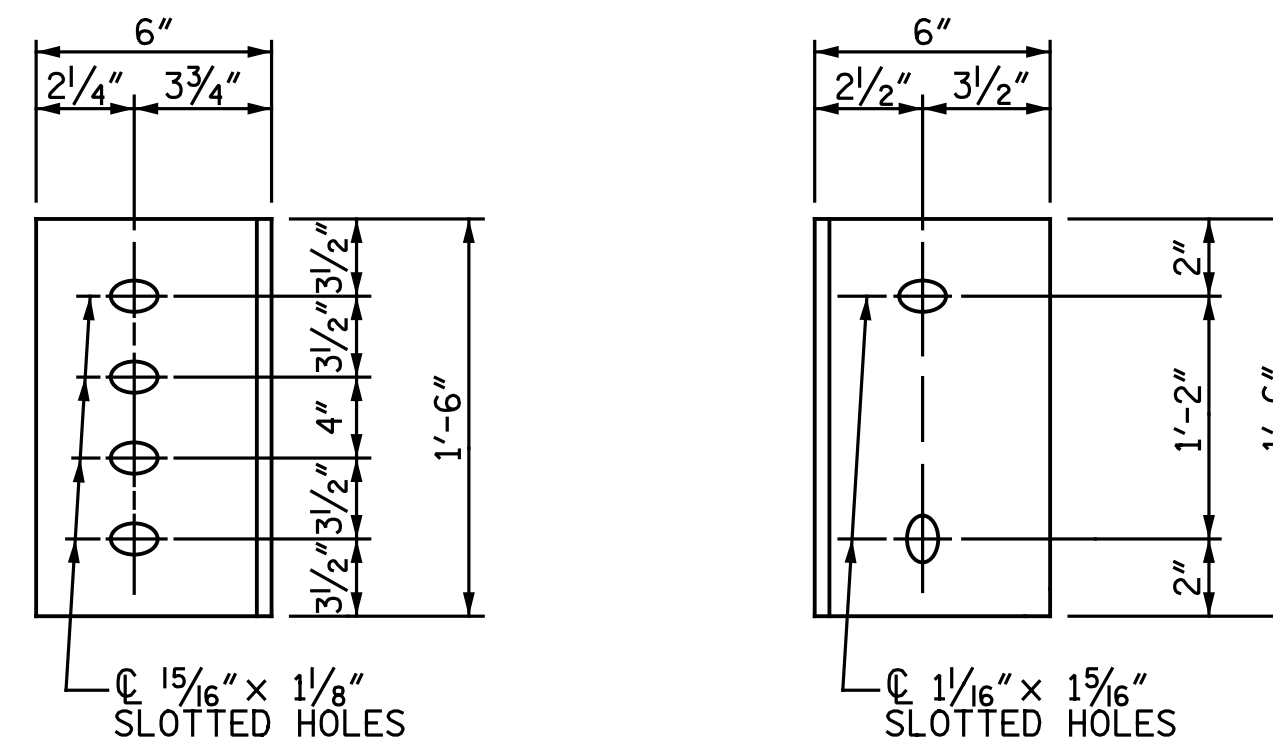
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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.



PART SECTION AT INTERMEDIATE DIAPHRAGM



CONNECTOR PLATE DETAILS

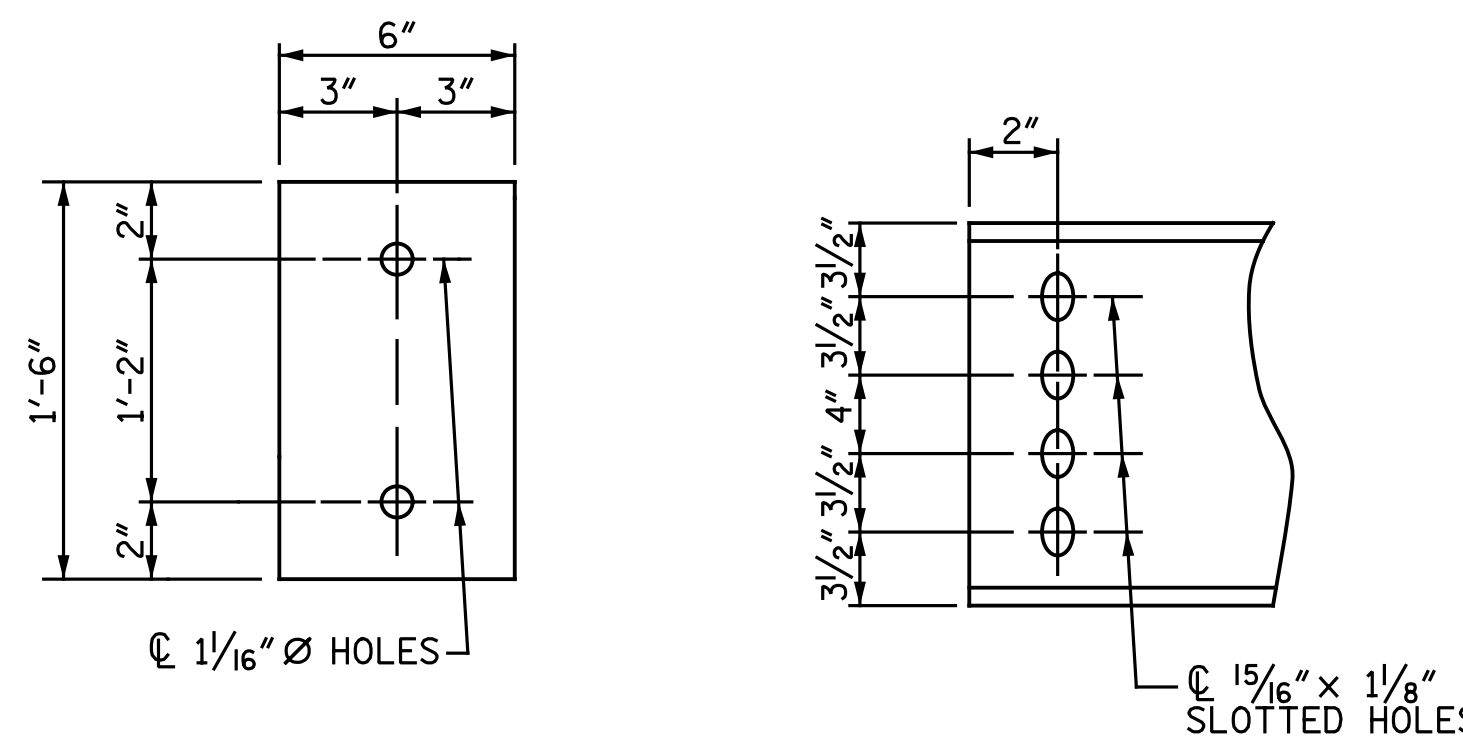
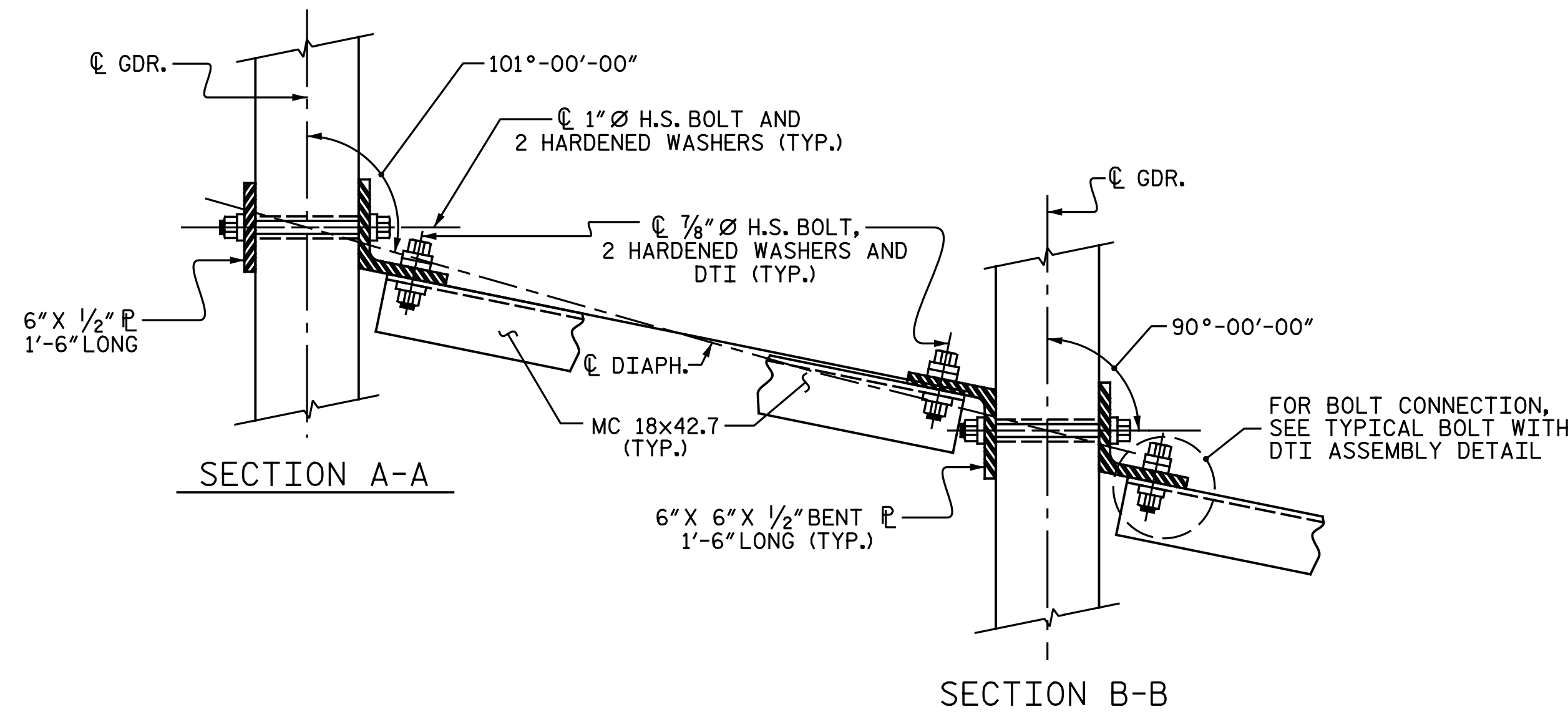
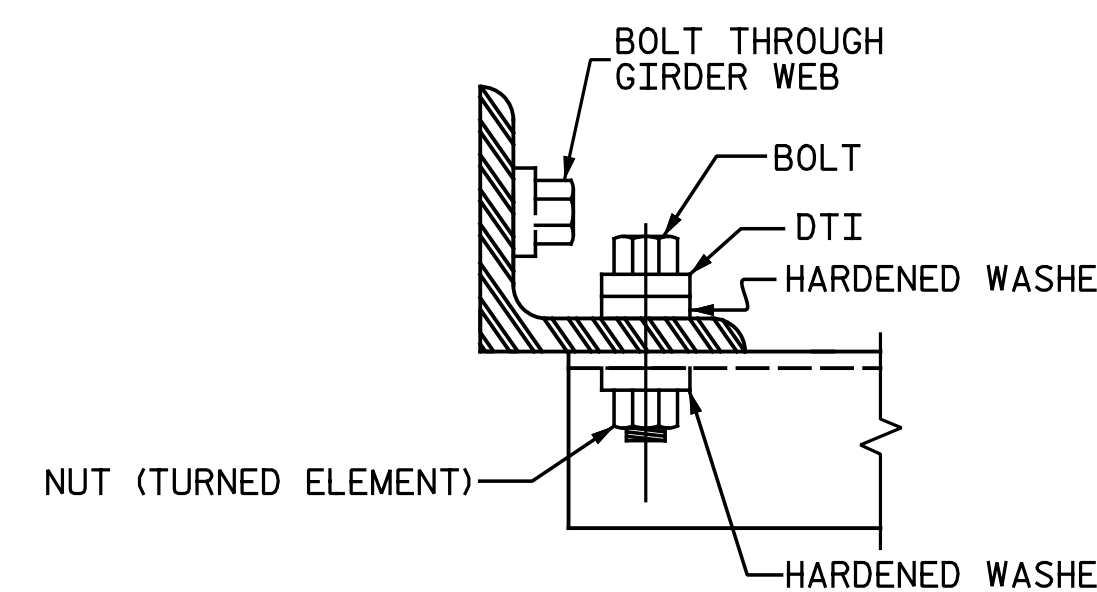


PLATE DETAILS CHANNEL END



CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 281+39.19 -L-



8/10/2017

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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:
1			3		
2			4		
					TOTAL SHEETS 25
					S9-II

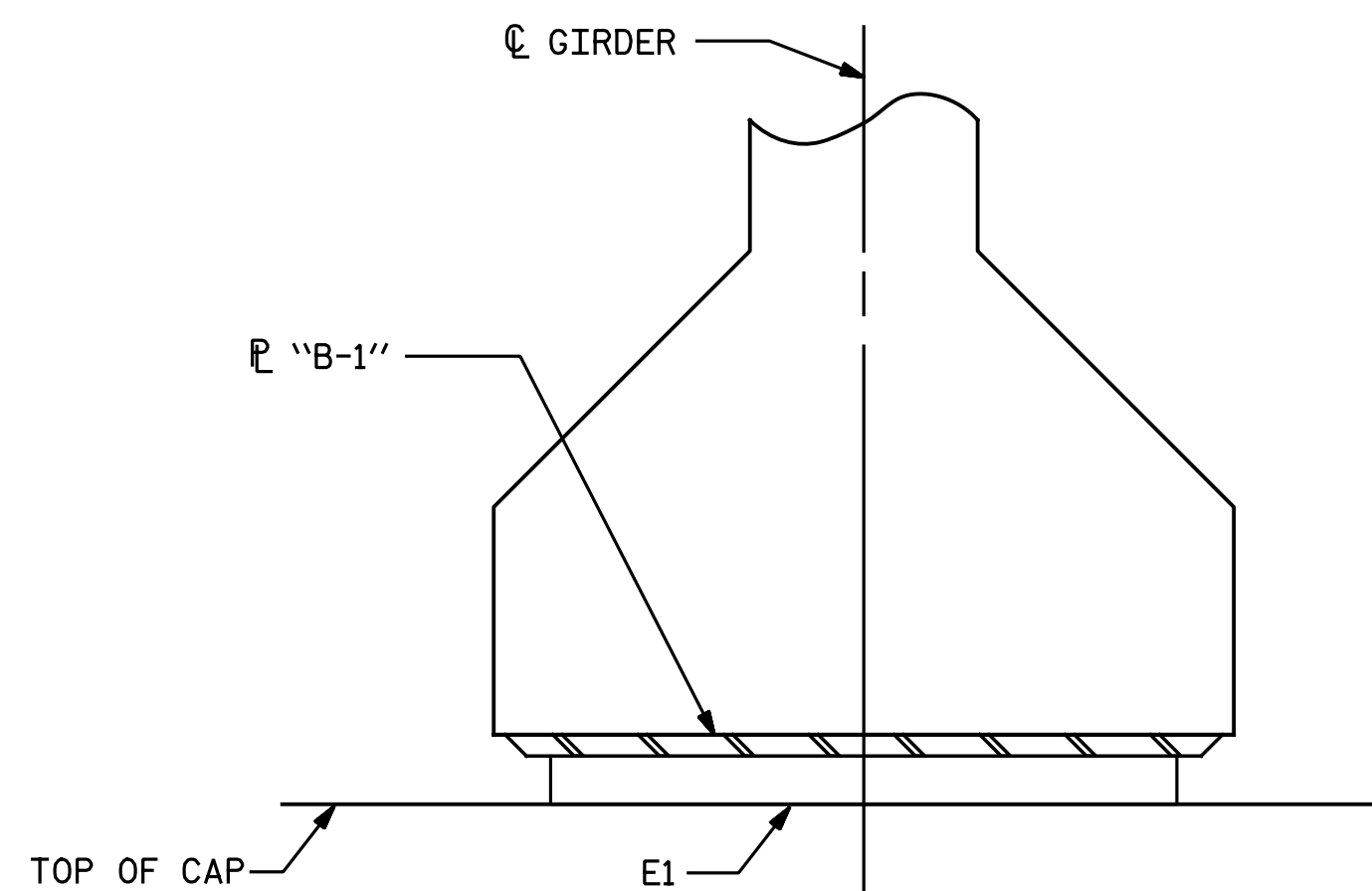
ASSEMBLED BY : M. D. MAYHEW	DATE : 3-15-17
CHECKED BY : B. J. BELL	DATE : 3-29-17
DRAWN BY : TLA 6/05	ADDED 10/21/05
CHECKED BY : VC 6/05	REV. 5/1/06RRR KMM/GM
	REV. 10/1/11 MAA/GM

NOTES

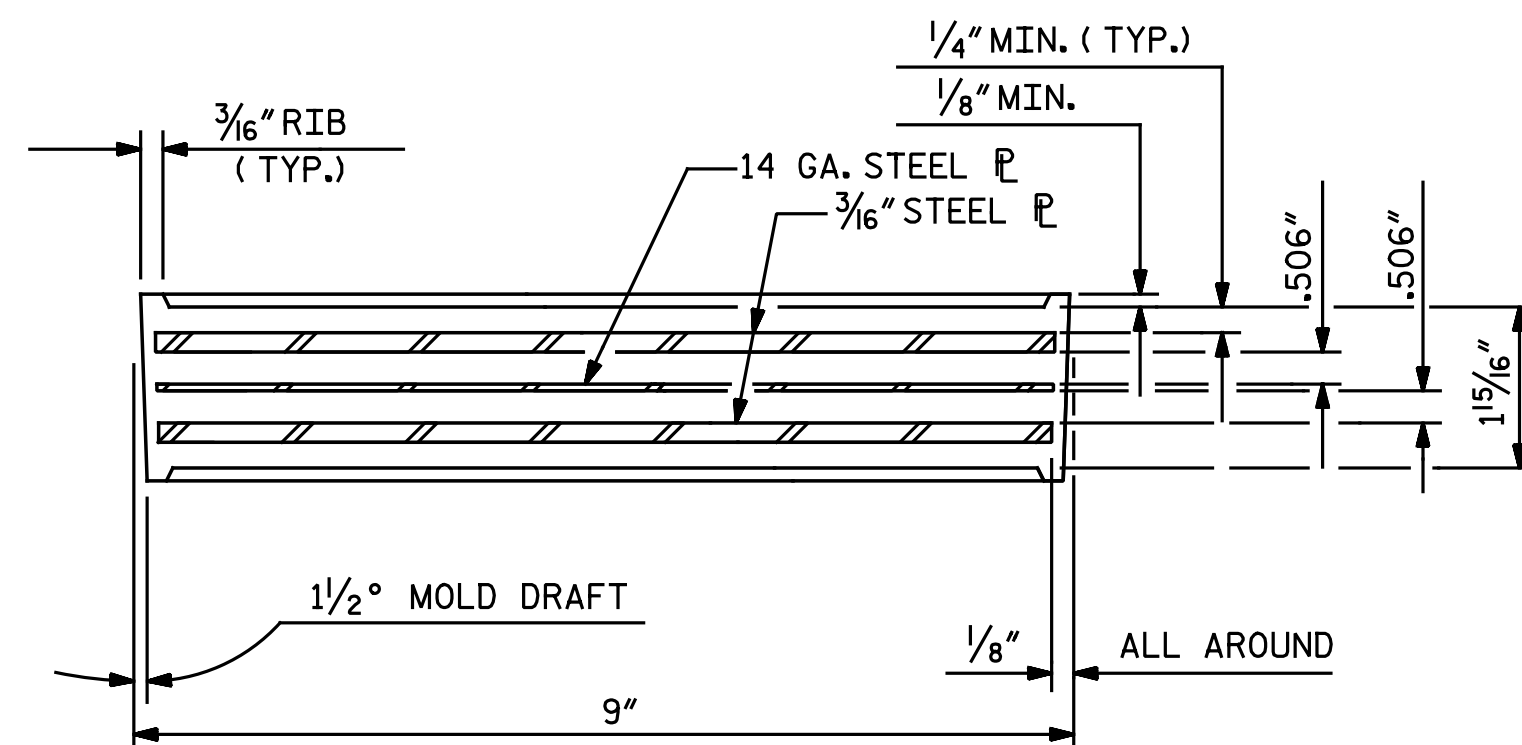
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

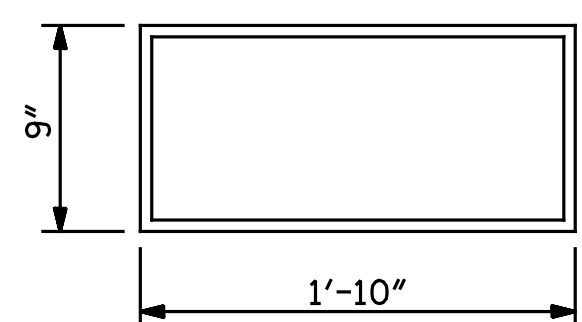
FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.



SECTION
(AT INTEGRAL END BENTS)



TYPICAL SECTION OF ELASTOMERIC BEARINGS



E1 (10 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE IV

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

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 281+39.19 -L-



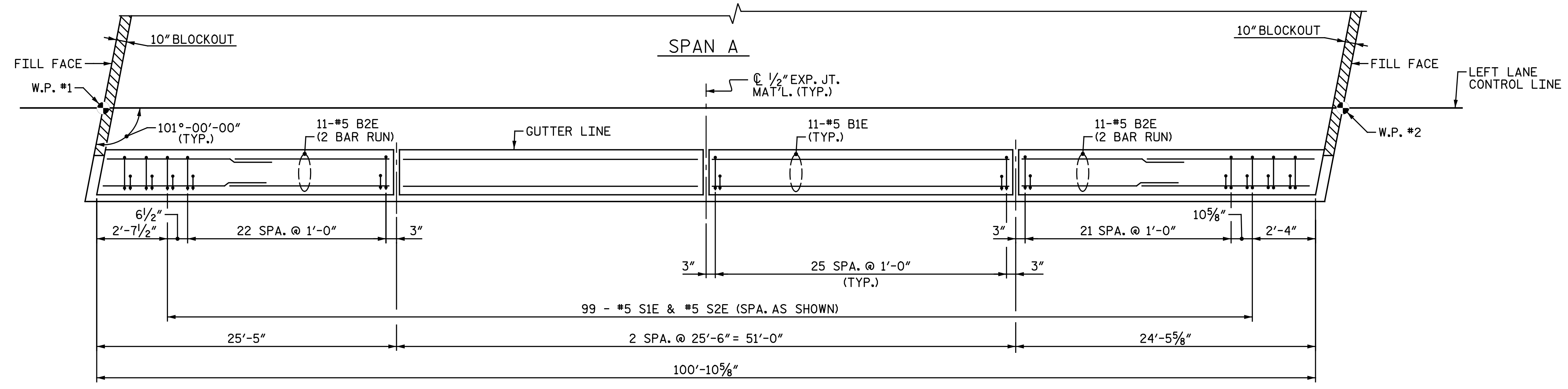
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
ELASTOMERIC BEARING
DETAILS
PRESTRESSED CONCRETE GIRDER
SUPERSTRUCTURE
LEFT LANE

8/10/2017
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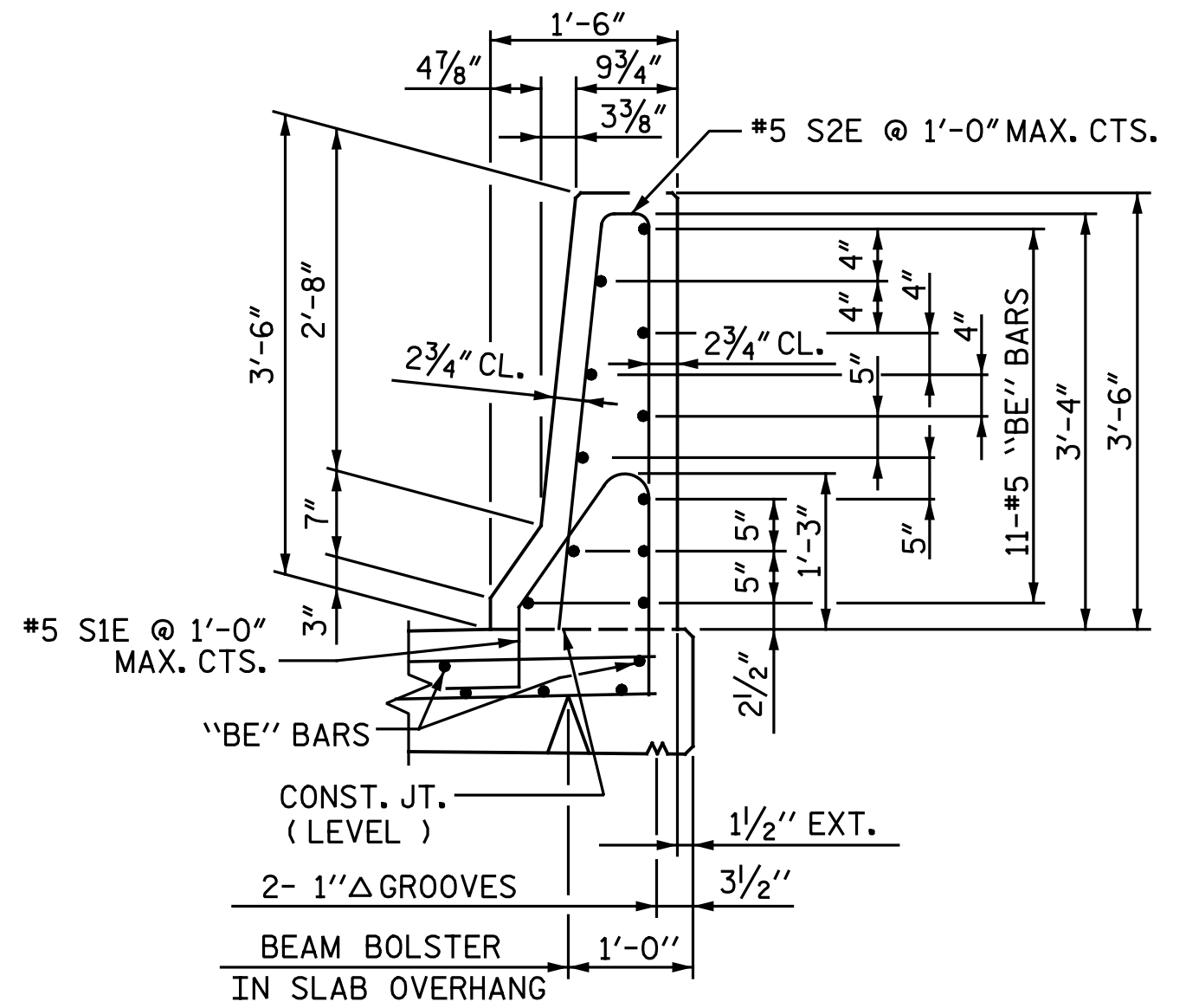
Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S9-12
1			3			TOTAL SHEETS
2			4			25

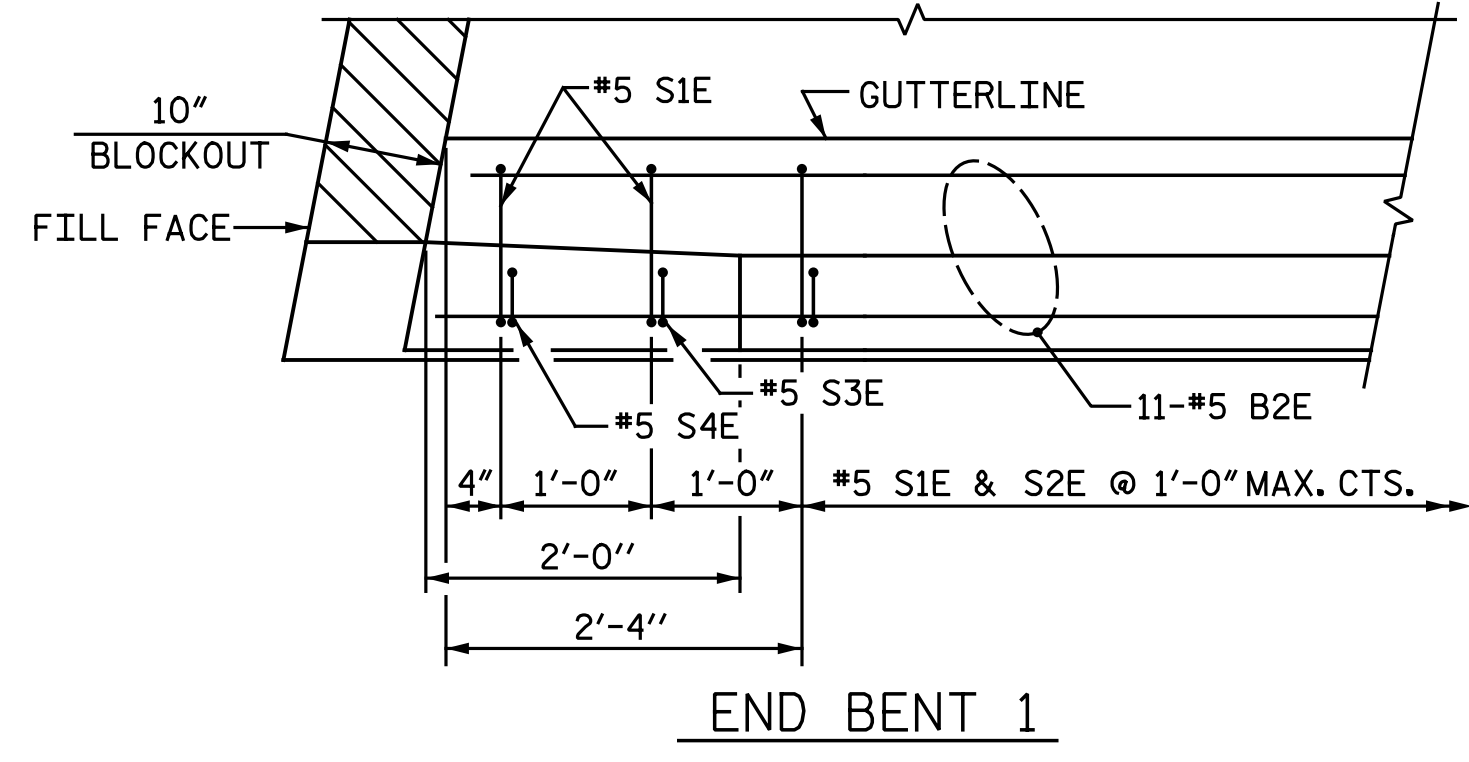
ASSEMBLED BY : N. B. SPEAKS	DATE : 2-10-17
CHECKED BY : B. J. BELL	DATE : 4-6-17
DRAWN BY : WJH 8/89	REV. 10/1/11 MAA/GM
CHECKED BY : CRK 8/89	REV. 6/13 AAC/MAA
	REV. 1/15 MAA/TMG



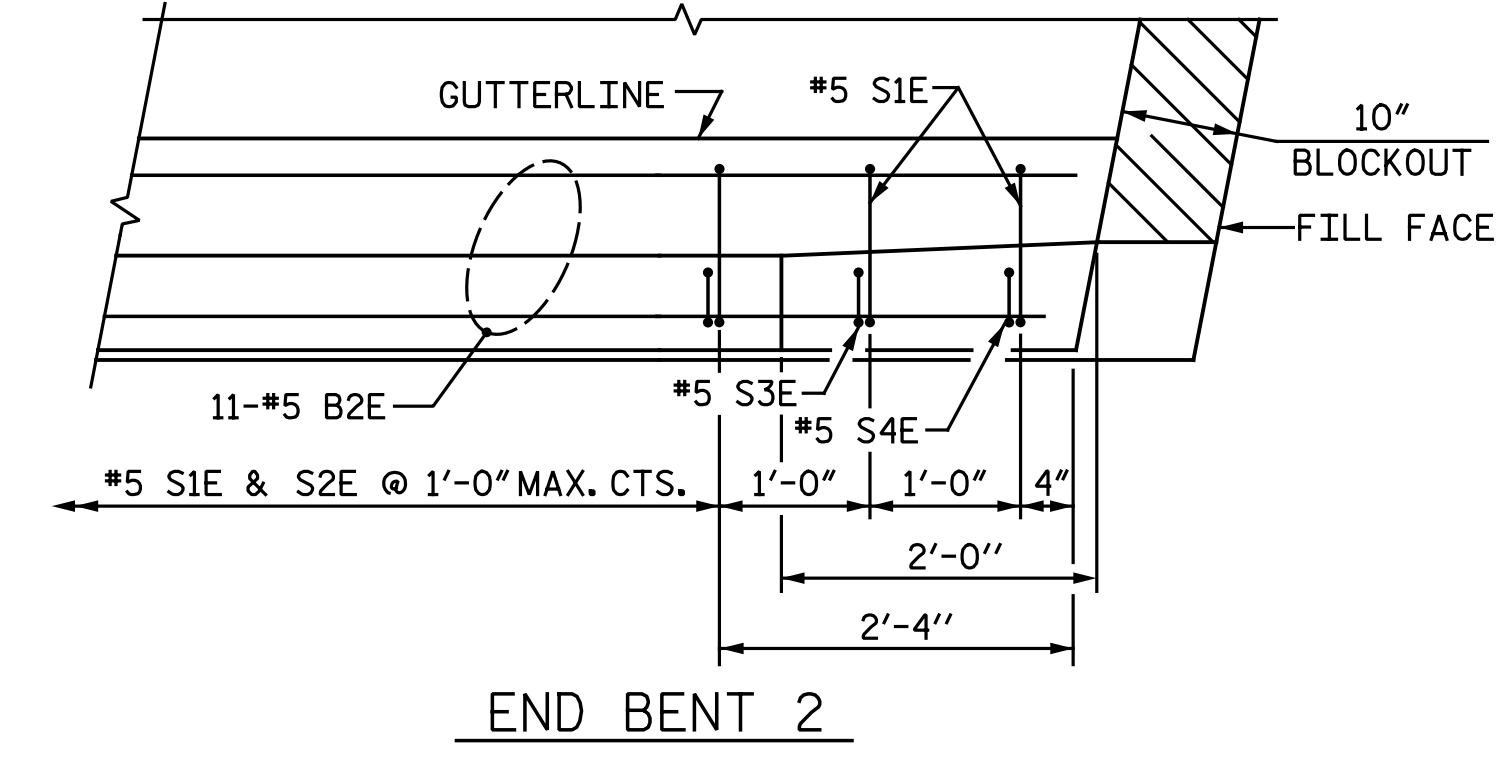
PLAN OF BARRIER RAIL
(RIGHT RAIL SHOWN, LEFT RAIL SIMILAR)



SECTION THRU RAIL

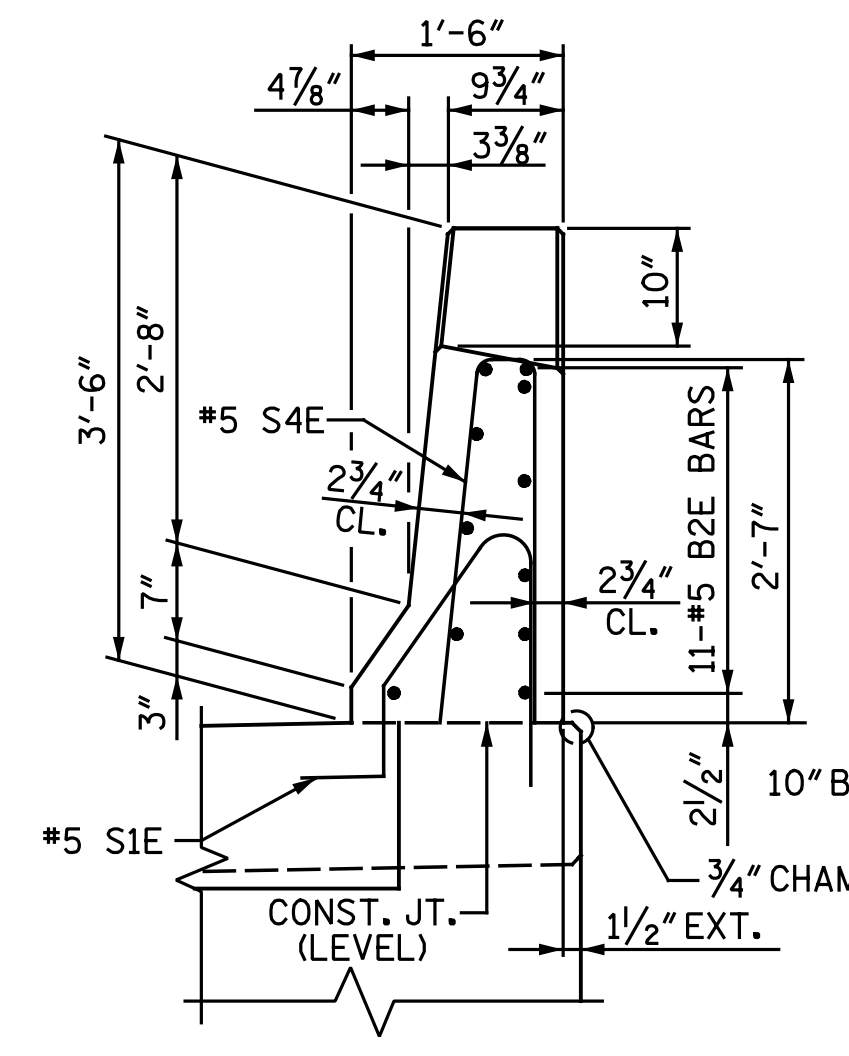


END BENT 1

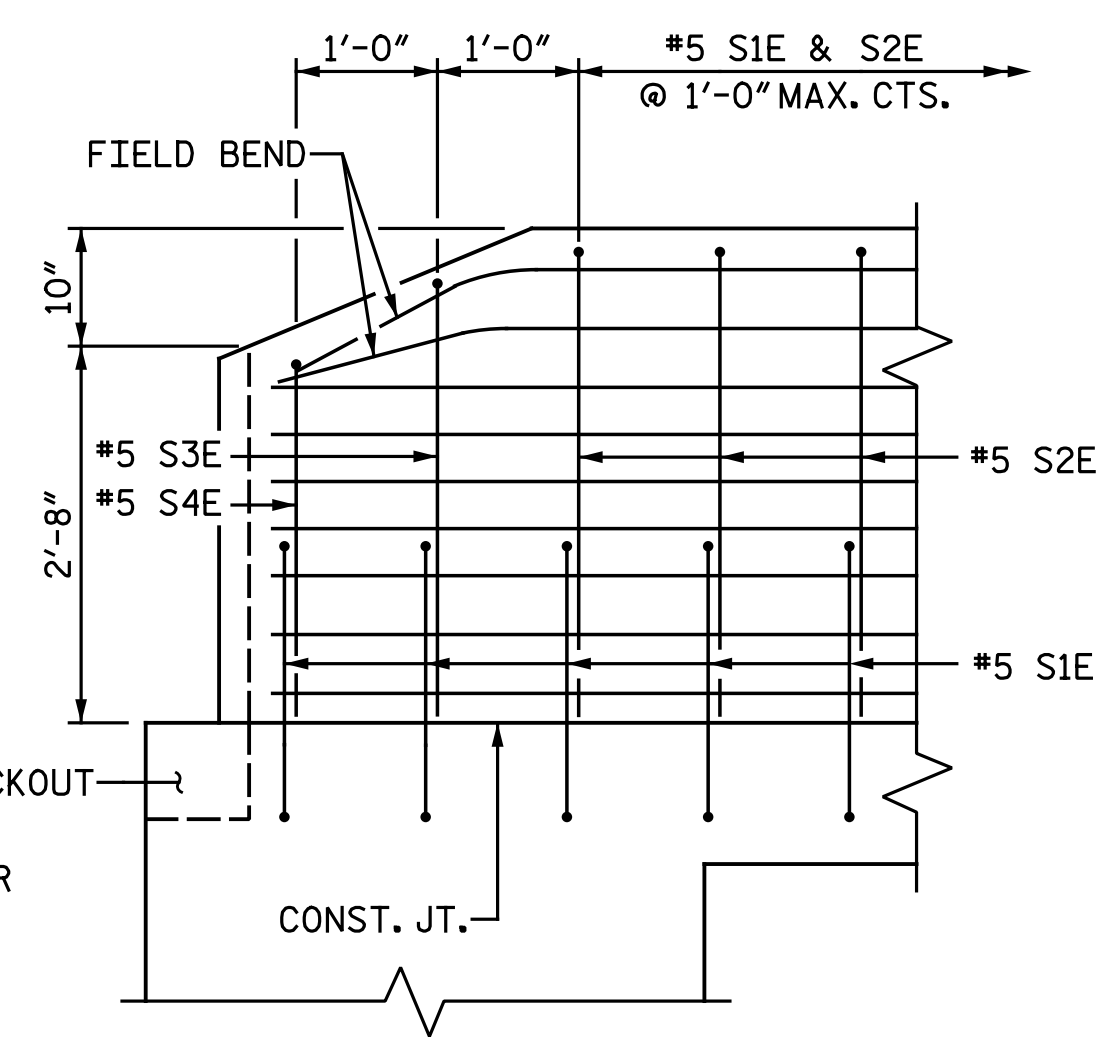


END BENT 2

PLAN
(RIGHT RAIL SHOWN, LEFT RAIL SIMILAR)

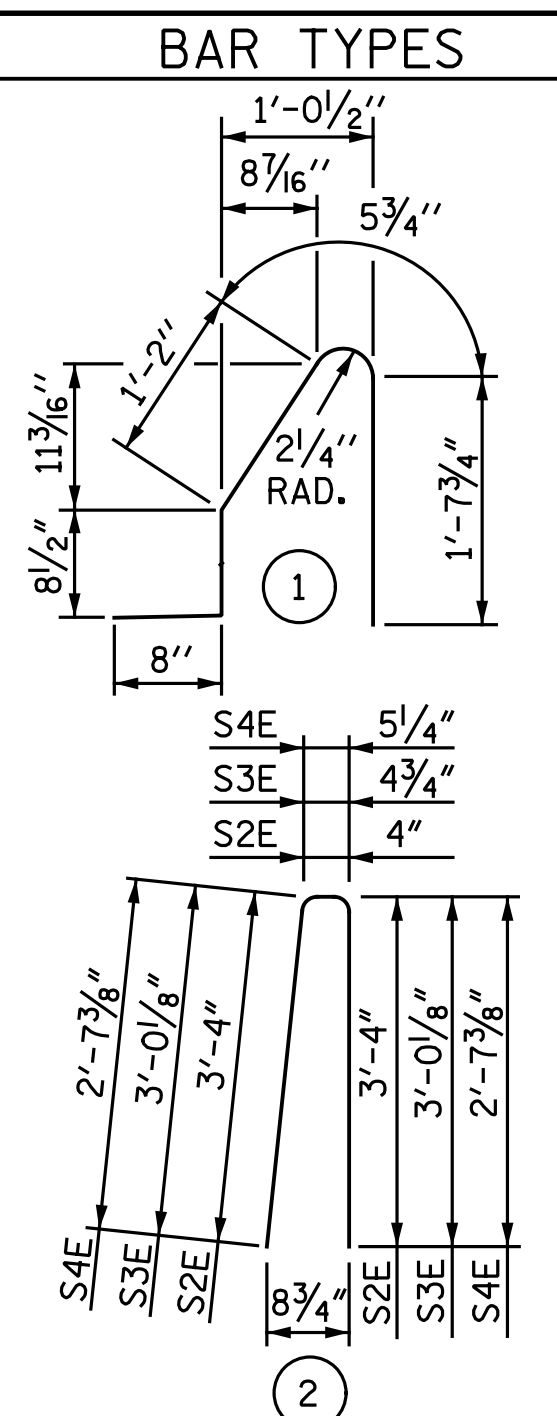


END VIEW



SIDE VIEW

END OF RAIL DETAILS



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: 281+39.19 -L-



9/12/2017
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
STANDARD CONCRETE BARRIER RAIL

LEFT LANE

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

SHEET NO. **S9-13**
 TOTAL SHEETS 25

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

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.)

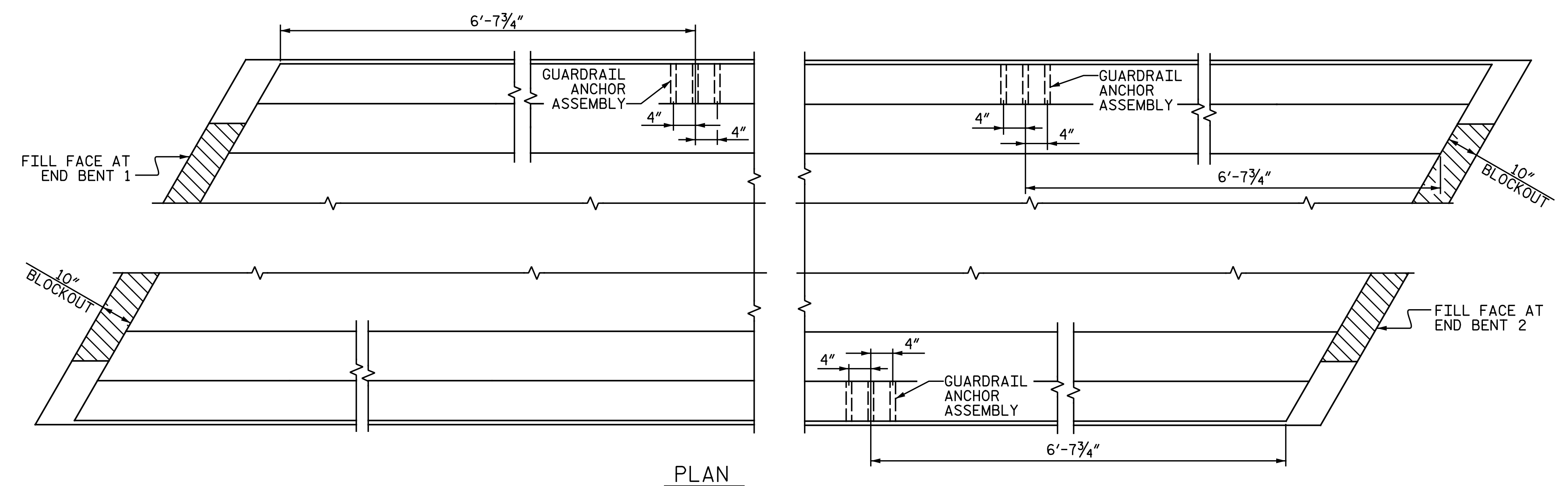
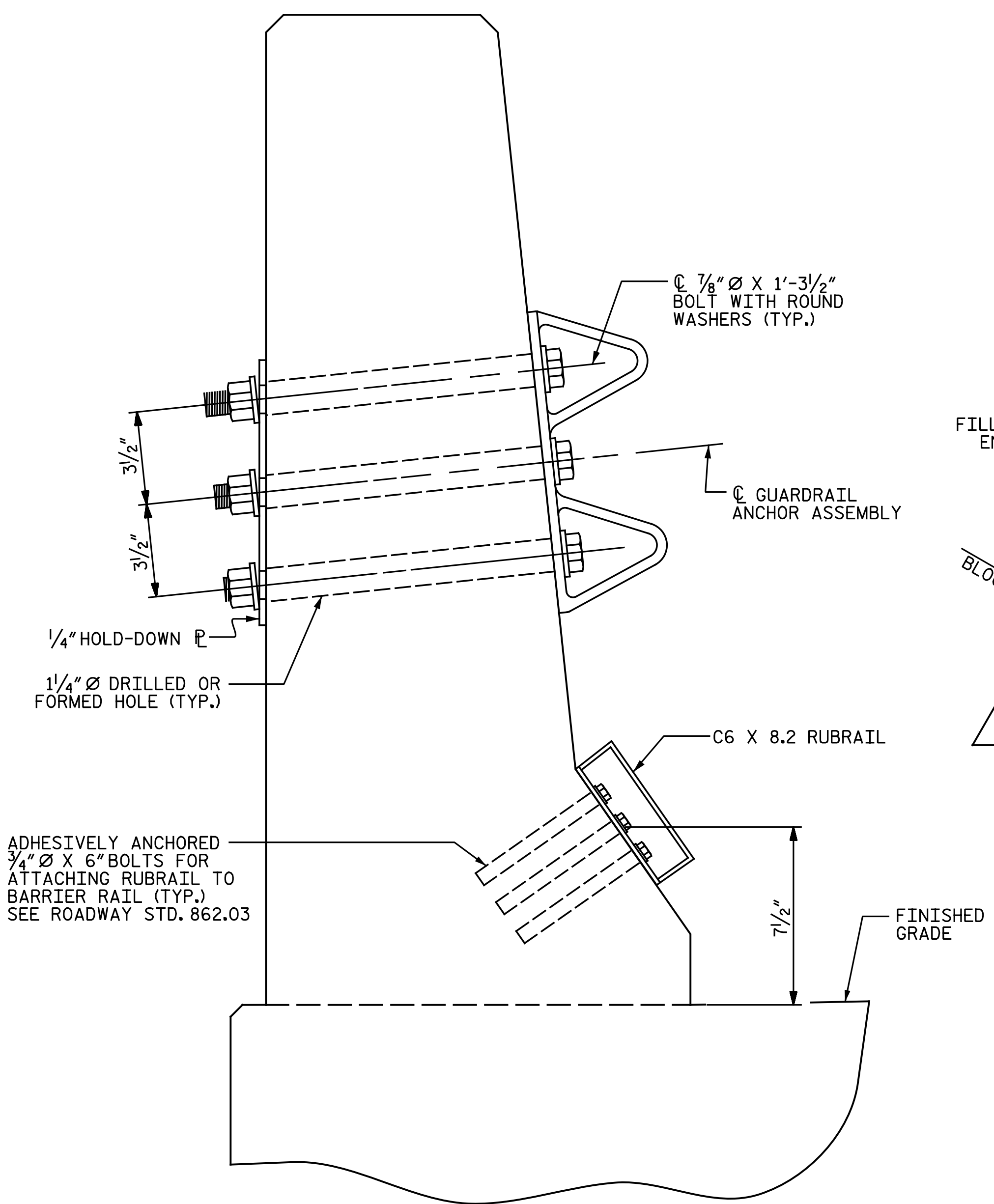
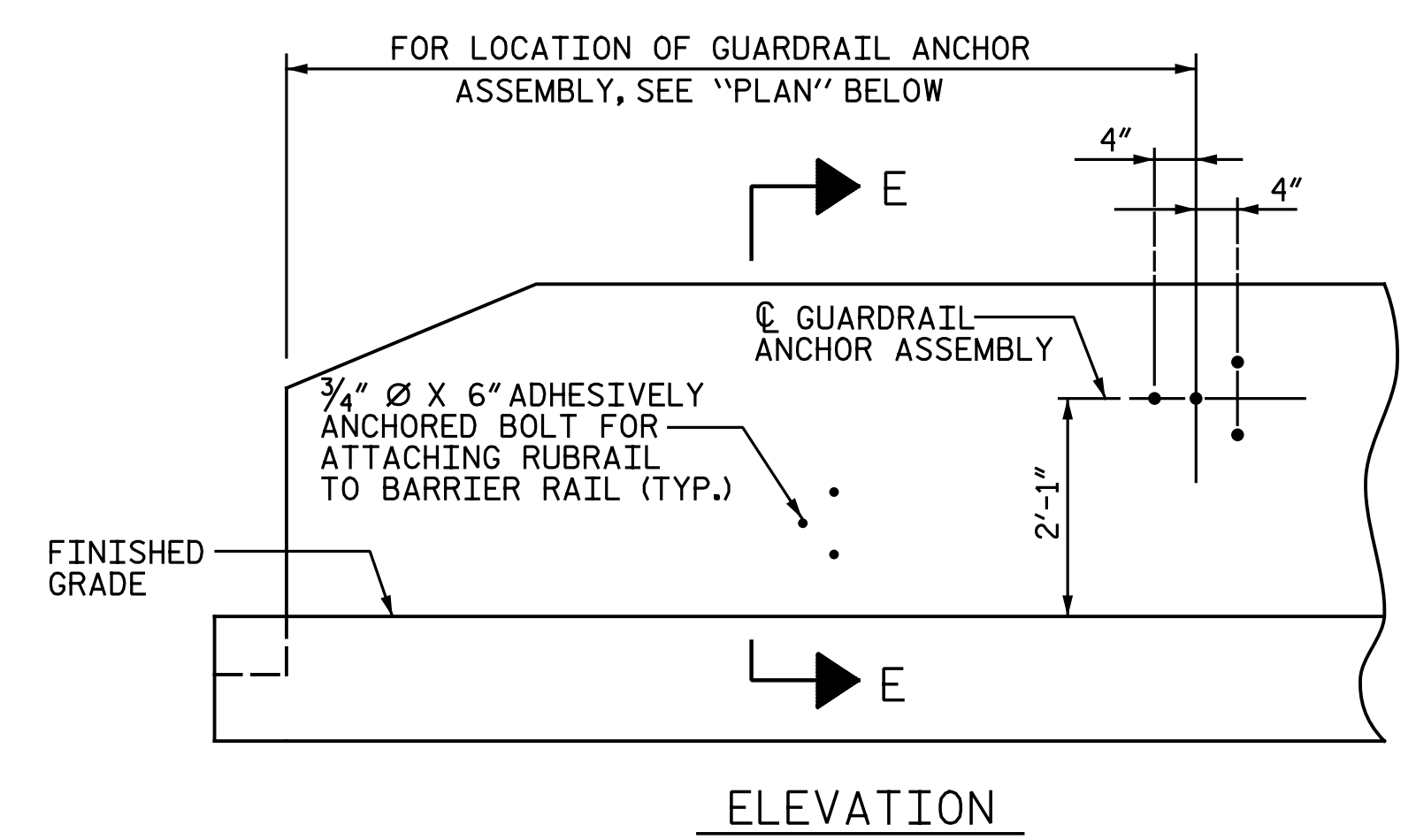
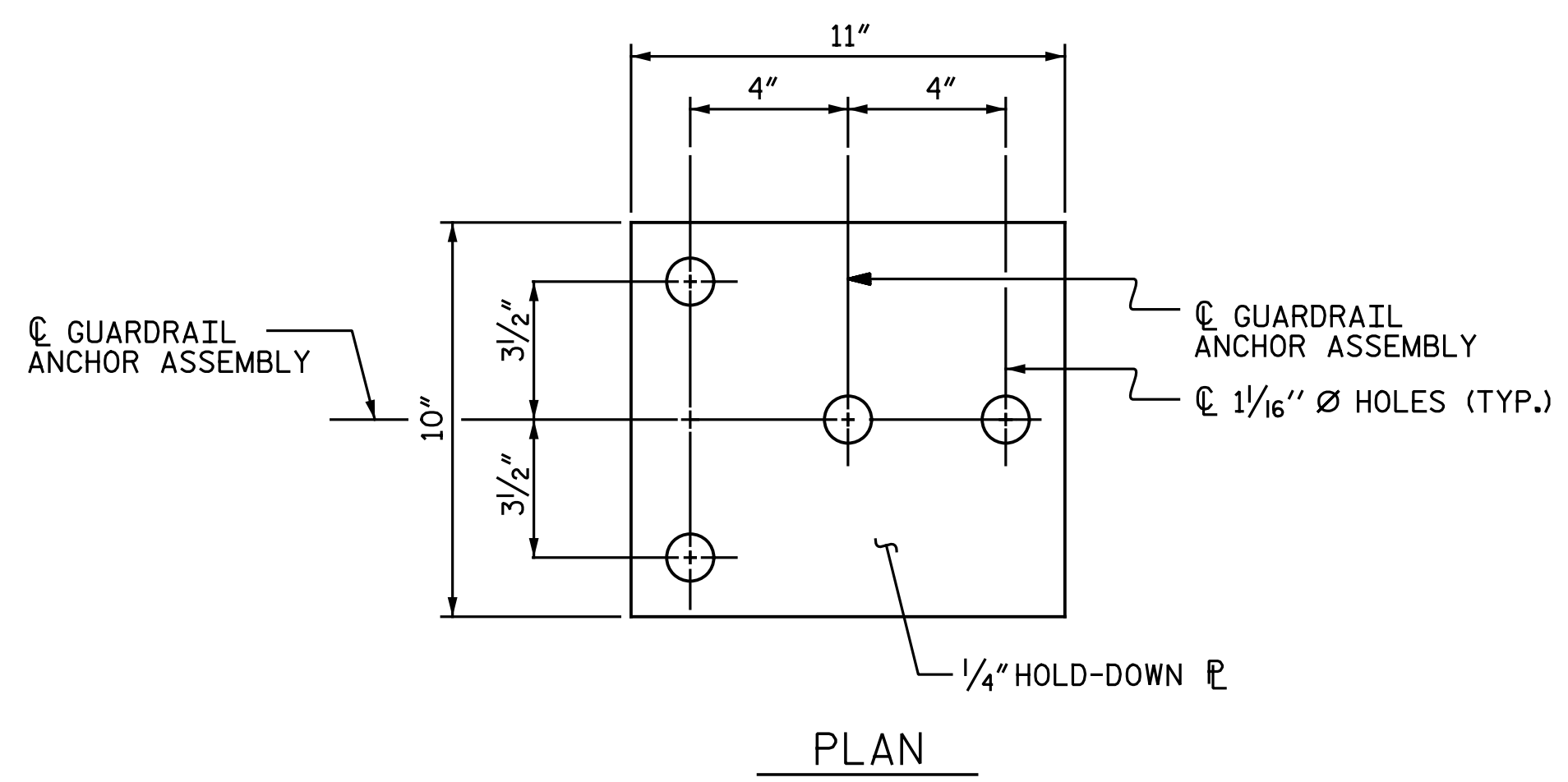
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

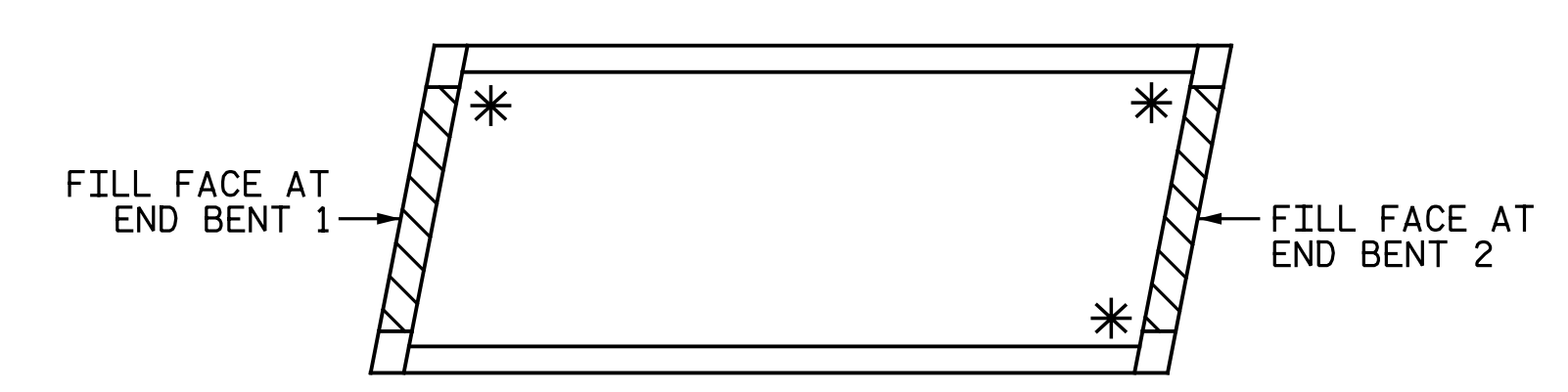
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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.



LOCATION OF ANCHORS FOR GUARDRAIL



* DENOTES GUARDRAIL ANCHOR ASSEMBLY

SECTION E-E GUARDRAIL ANCHOR ASSEMBLY DETAILS

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 281+39.19 -L-

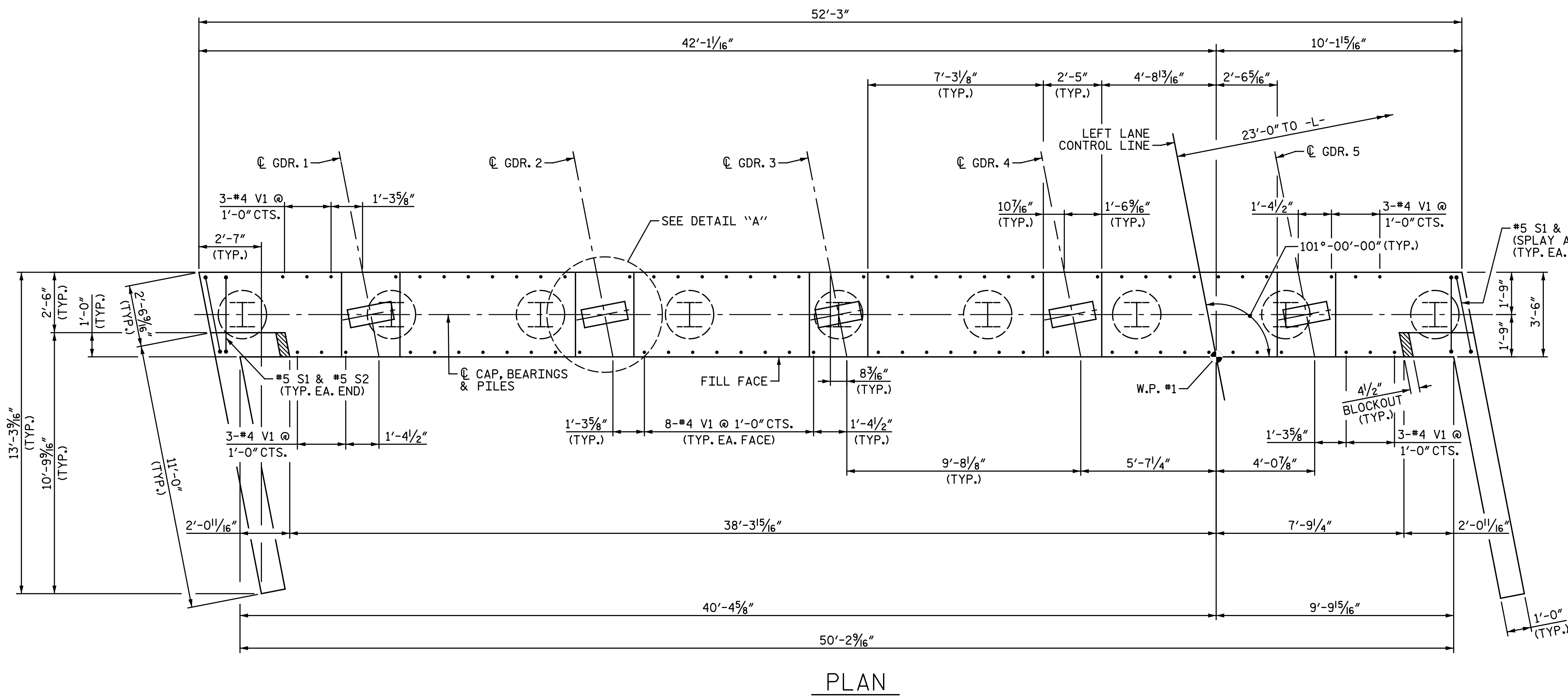


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 FOR BARRIER RAIL

9/12/2017
 DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED
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 Michael Baker Engineering
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 NC License No.: F-1084

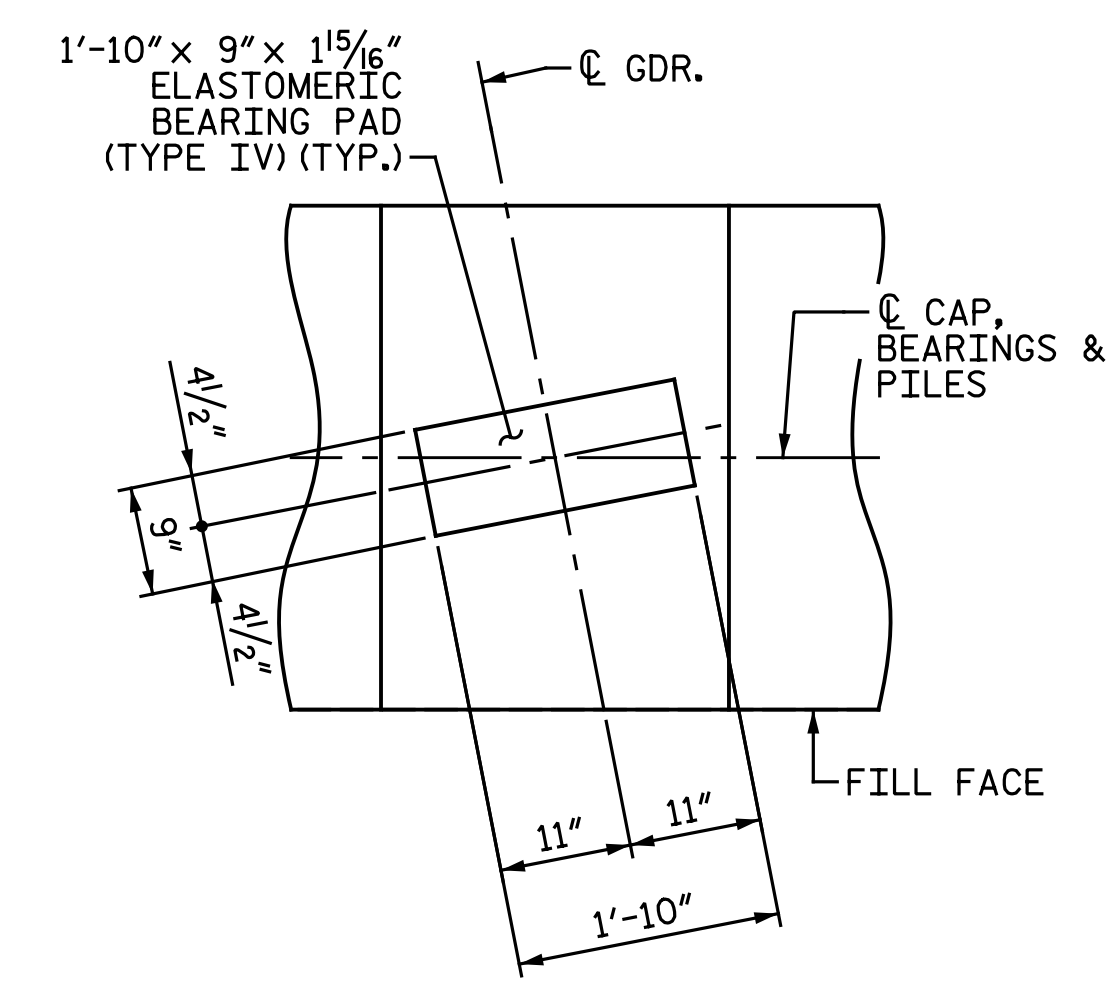
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			25
2			4			

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



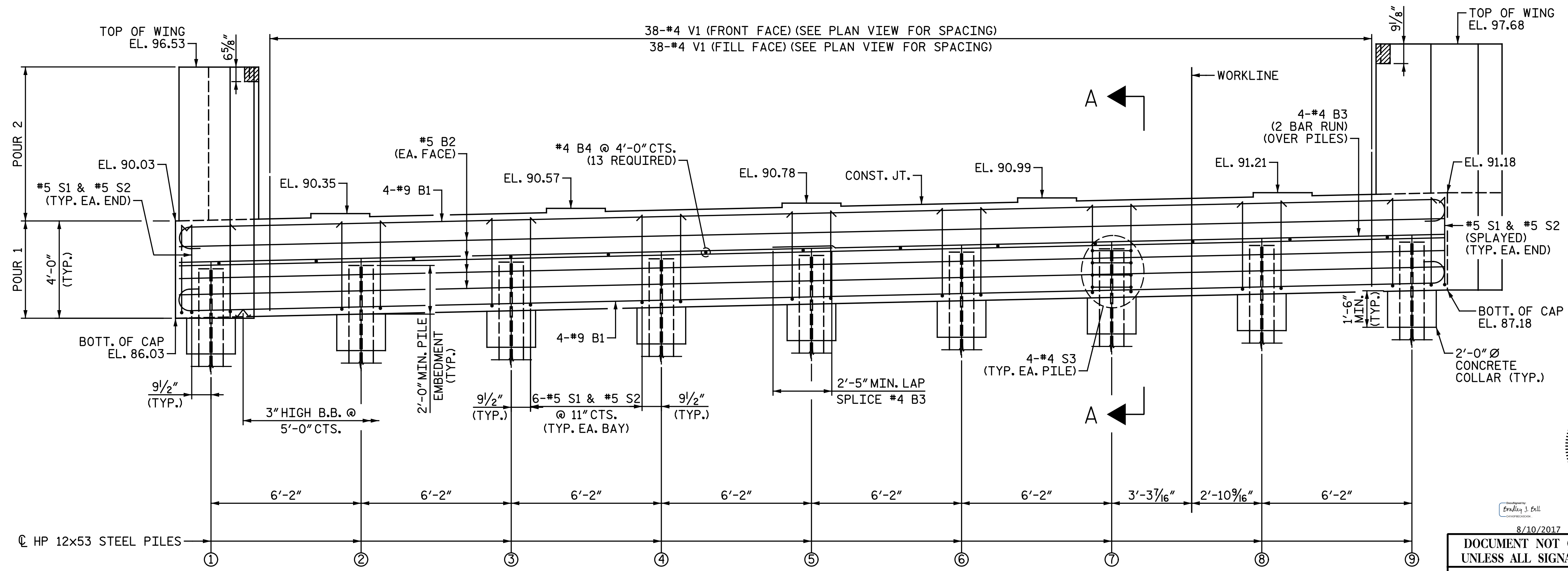
PLAN

NOTES:
 FOR "SECTION A-A", SEE "INTEGRAL END BENT 1 DETAILS" SHEET.
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.
 THE TOP SURFACE OF THE END BENT CAP, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".
 THE CONCRETE IN THE HATCHED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.



DETAIL "A"

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



ELEVATION

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
①	88.06
②	88.20
③	88.33
④	88.47
⑤	88.60
⑥	88.74
⑦	88.87
⑧	89.01
⑨	89.15

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 281+39.19 -L-
 SHEET 1 OF 2



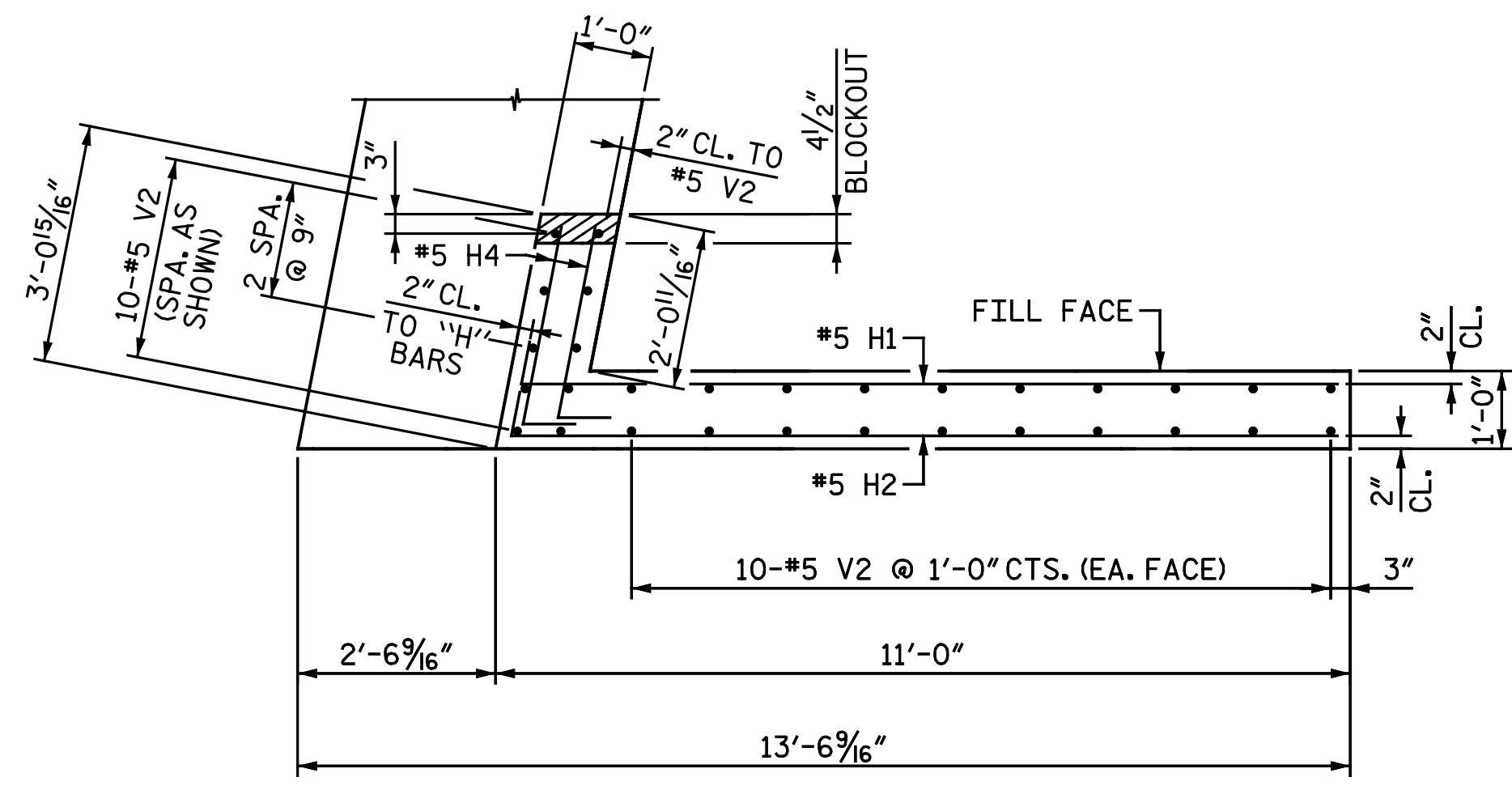
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
INTEGRAL END BENT 1
 LEFT LANE

8/10/2017
 DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

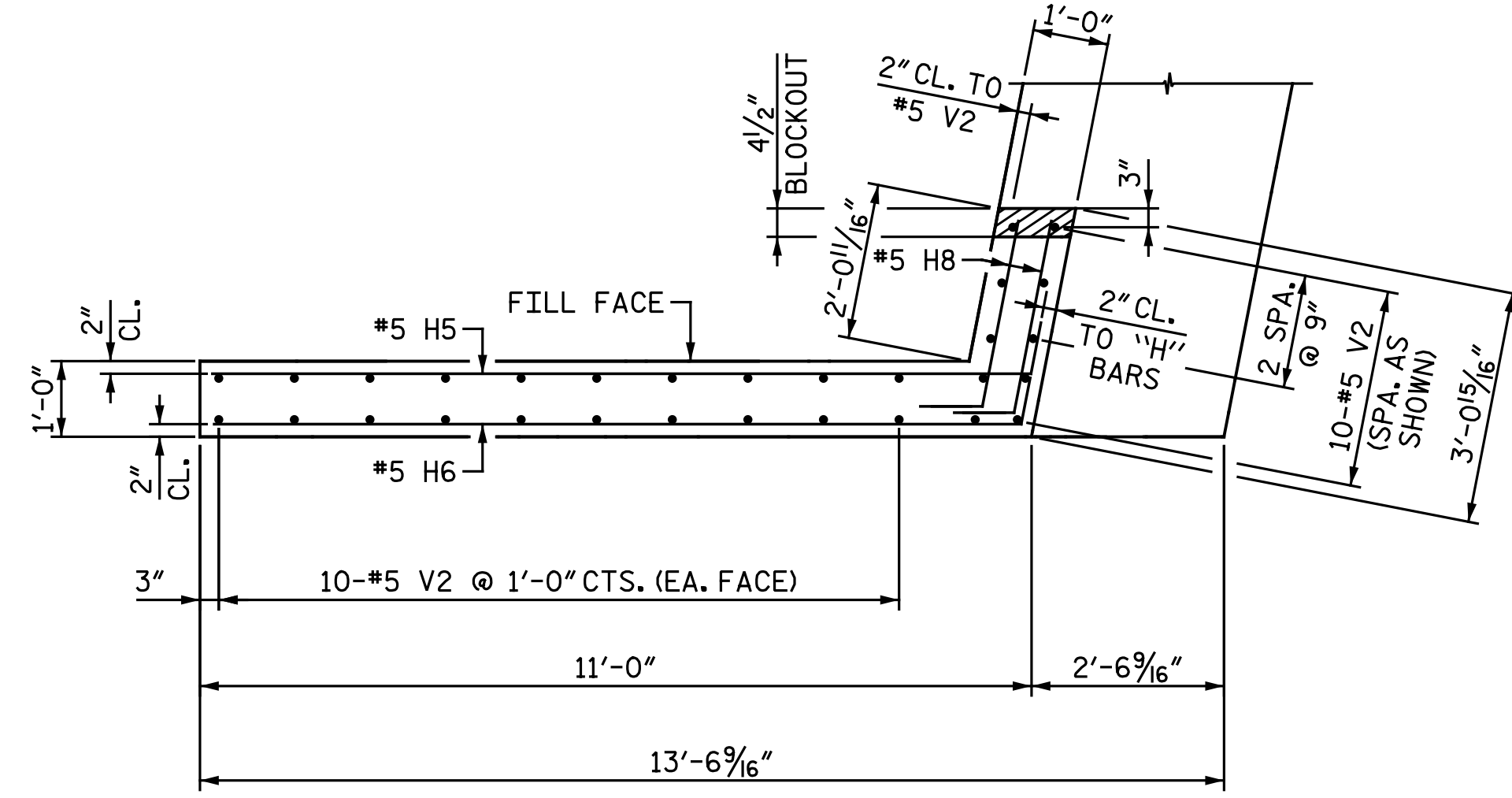
NO.	BY:	DATE:	REVISIONS			SHEET NO.
			NO.	BY:	DATE:	
1			3			S9-16 TOTAL SHEETS 25
2			4			

DRAWN BY: C. E. MAYHEW DATE: 3-16-17
 CHECKED BY: B. J. BELL DATE: 4-4-17

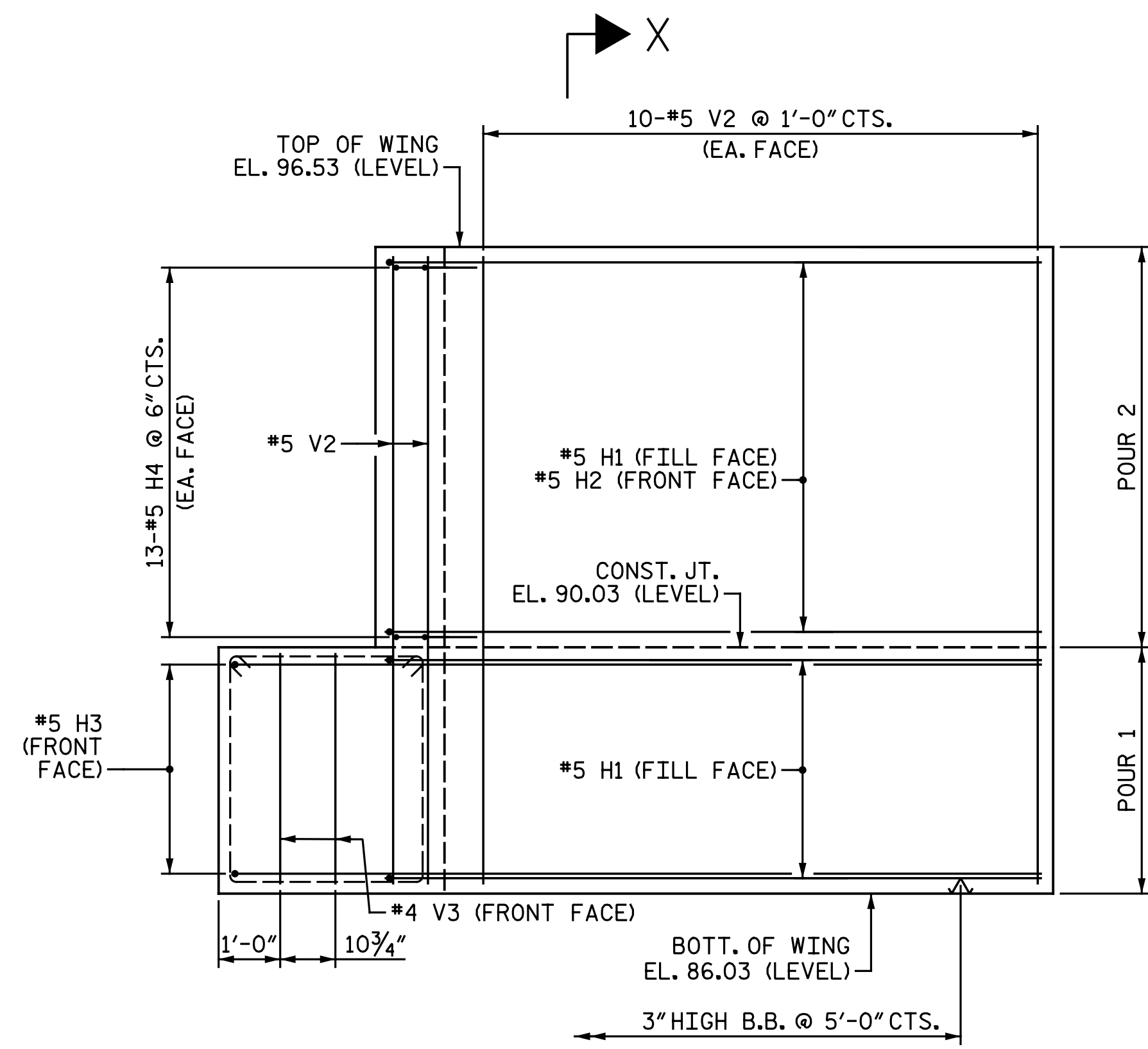
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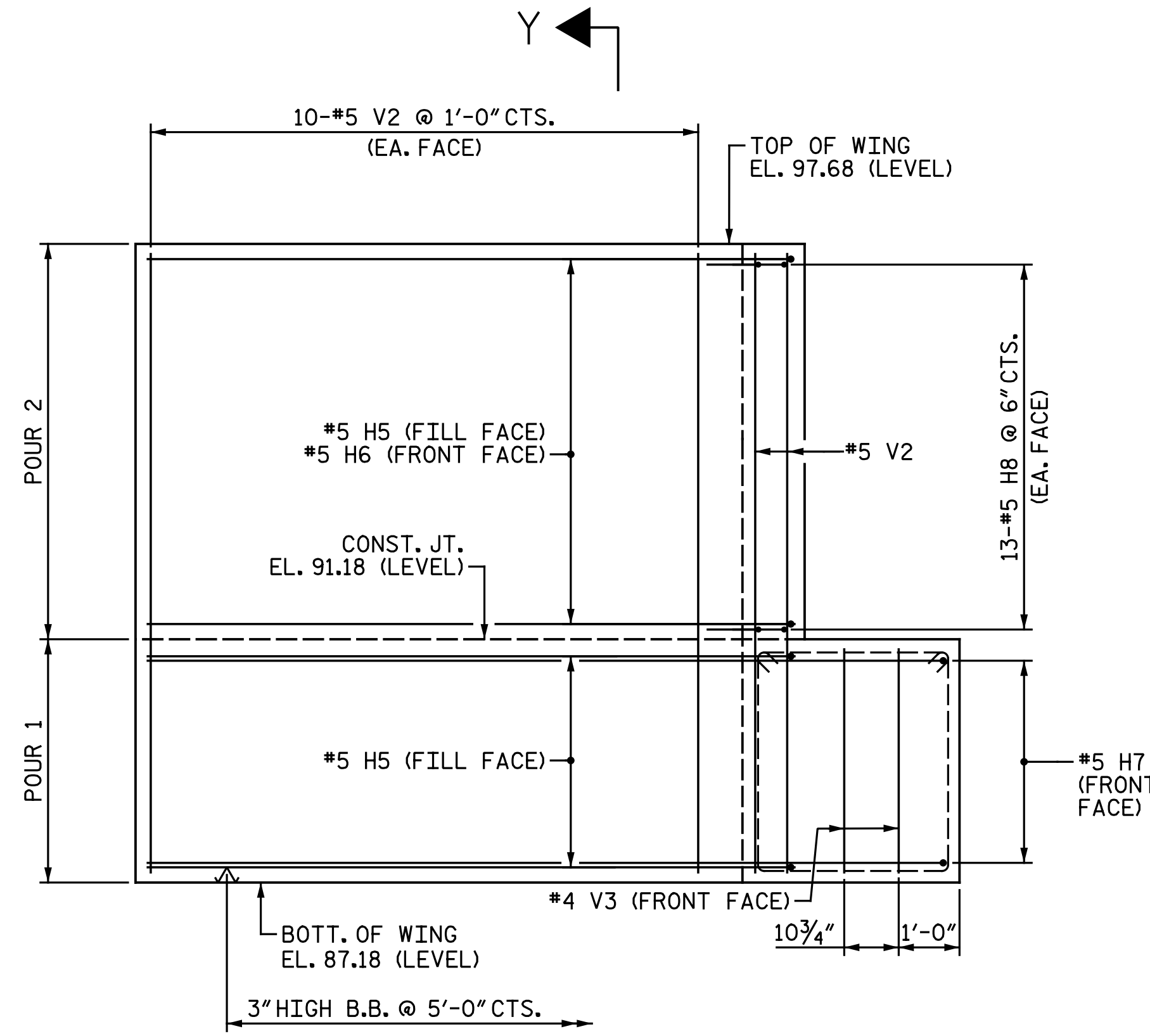
PLAN OF LEFT WING
(H3 BARS NOT SHOWN FOR CLARITY)



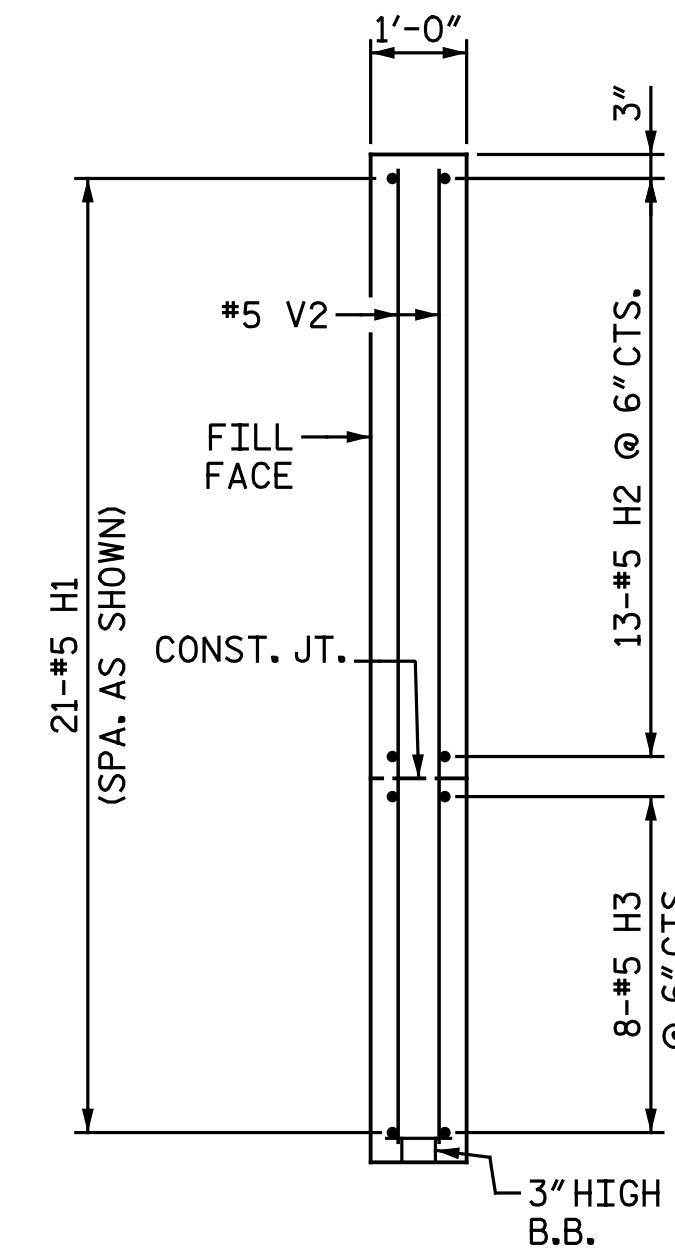
PLAN OF RIGHT WING
(H7 BARS NOT SHOWN FOR CLARITY)



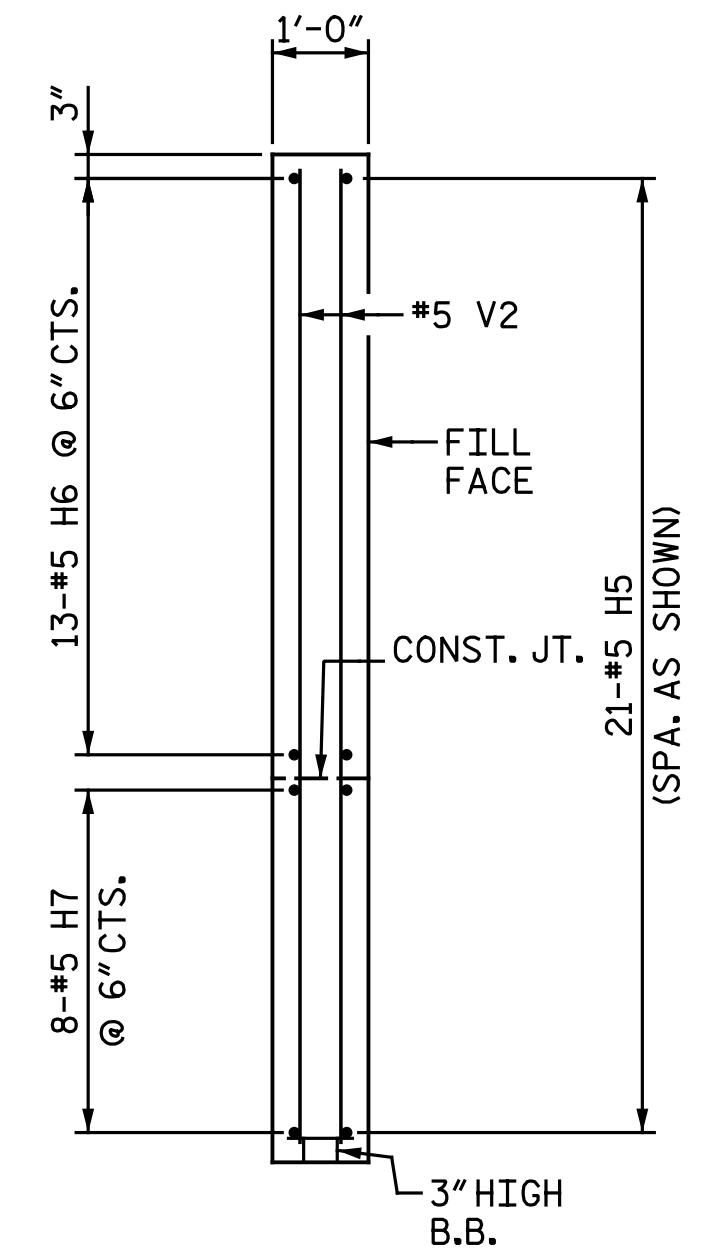
ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING

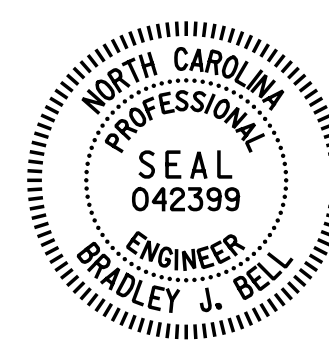


SECTION X-X



SECTION Y-Y

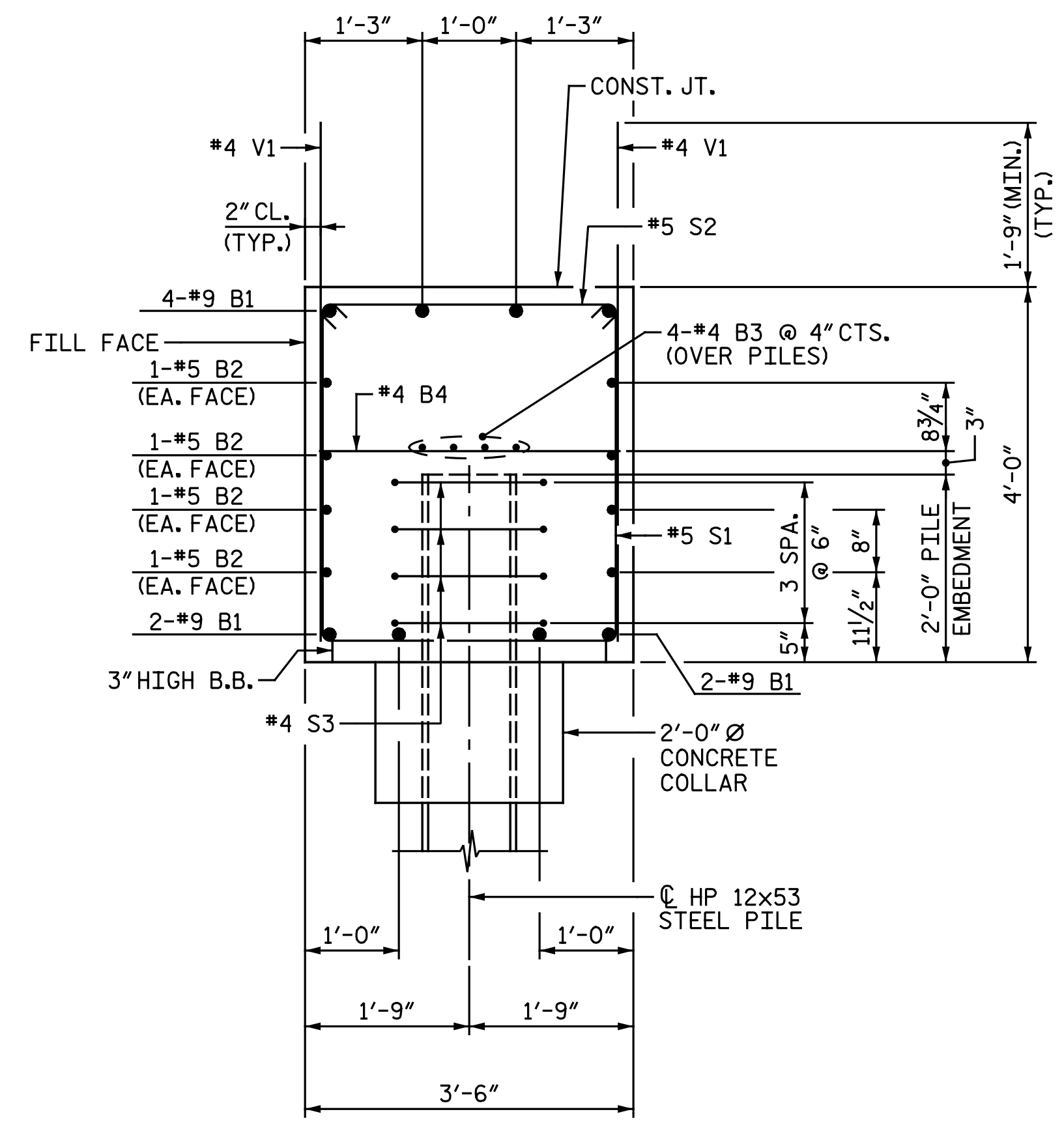
PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 281+39.19 -L-
 SHEET 2 OF 2



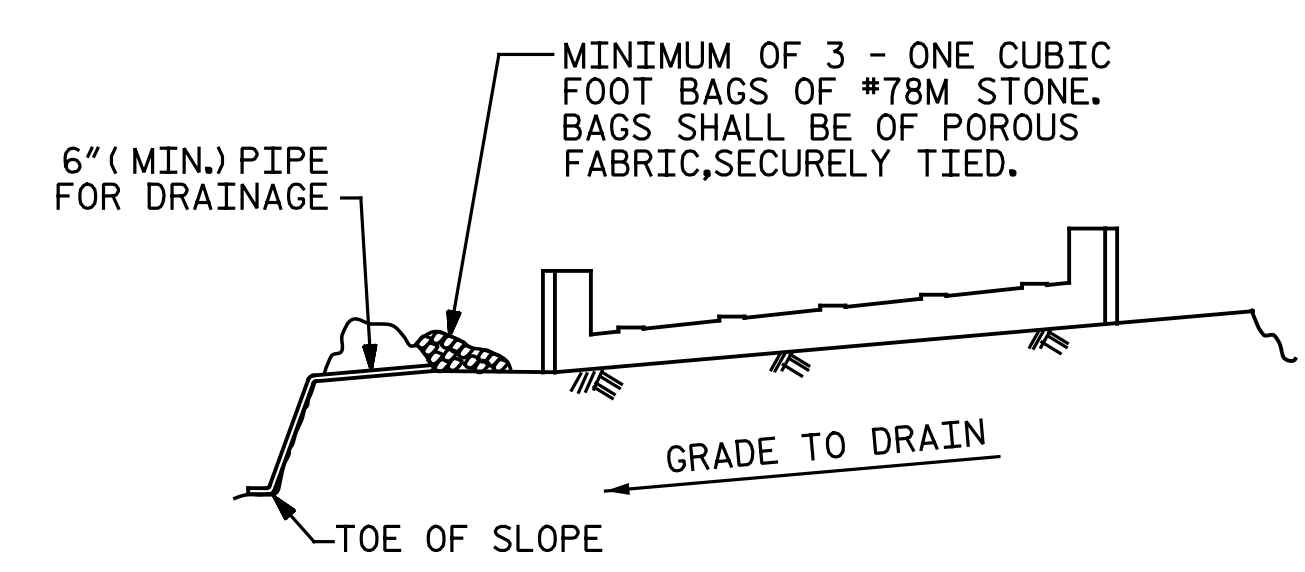
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
INTEGRAL END BENT 1					
LEFT LANE					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					25

DRAWN BY: M. D. MAYHEW DATE: 2-10-17
 CHECKED BY: B. J. BELL DATE: 4-5-17



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

DRAWN BY : M. D. MAYHEW DATE : 3-17-17
 CHECKED BY : B. J. BELL DATE : 4-5-17

BILL OF MATERIAL

INTEGRAL END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		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' - 4"	248
H2	13	#5	4	11' - 5"	155
H3	8	#5	4	13' - 11"	116
H4	26	#5	4	3' - 5"	93
H5	21	#5	5	11' - 7"	254
H6	13	#5	5	11' - 6"	156
H7	8	#5	5	14' - 0"	117
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

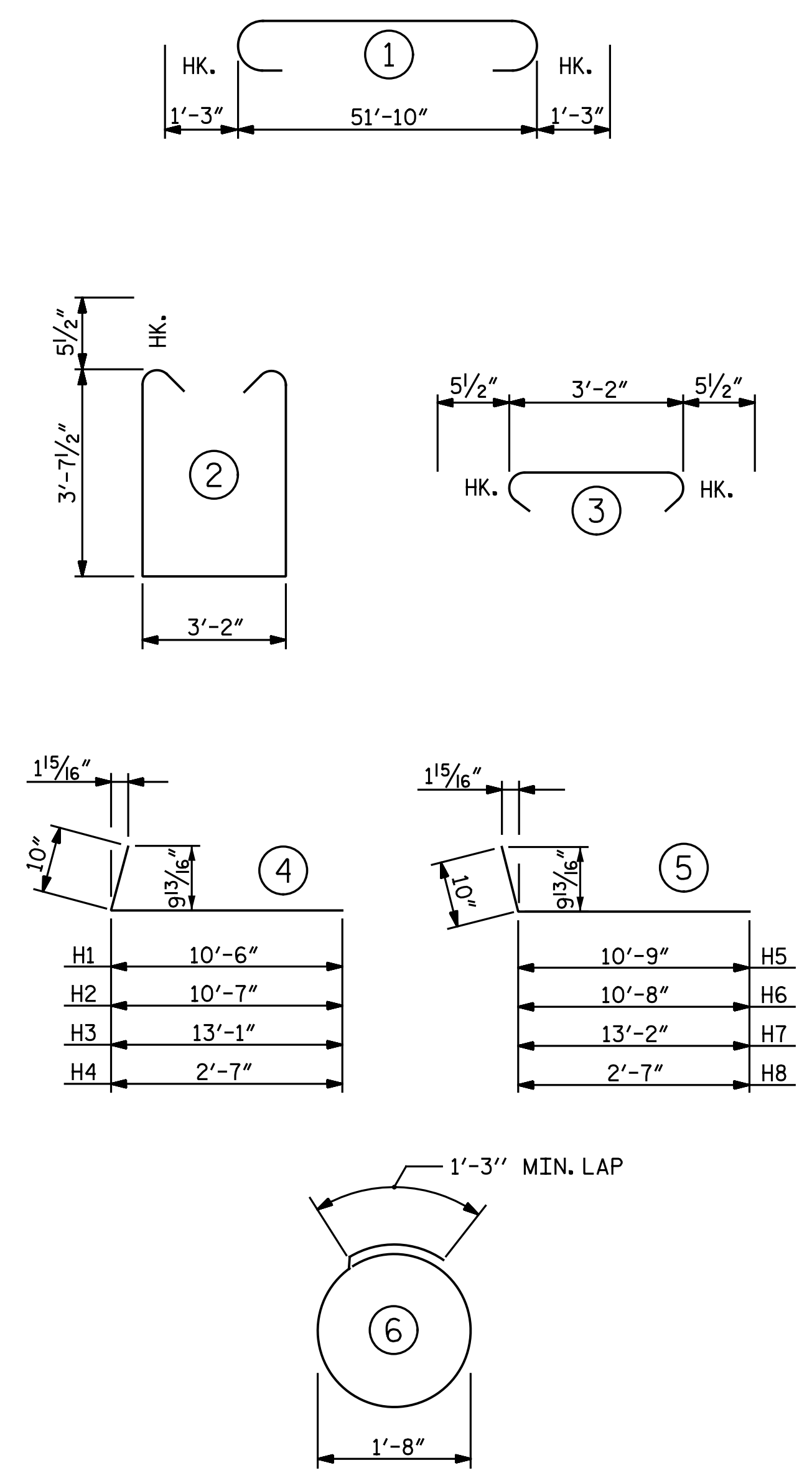
NO.	9	L.F.	630
-----	---	------	-----

PILE REDRIVES

EA.	5
-----	---

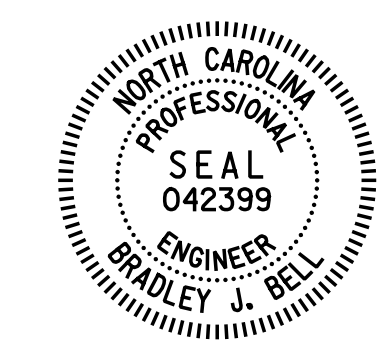
NOTES:
 FOR PILE SPLICE DETAILS, SEE "INTEGRAL END BENT 2 DETAILS" SHEET.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. R-5703
 LENOIR COUNTY
 STATION: 281+39.19 -L-



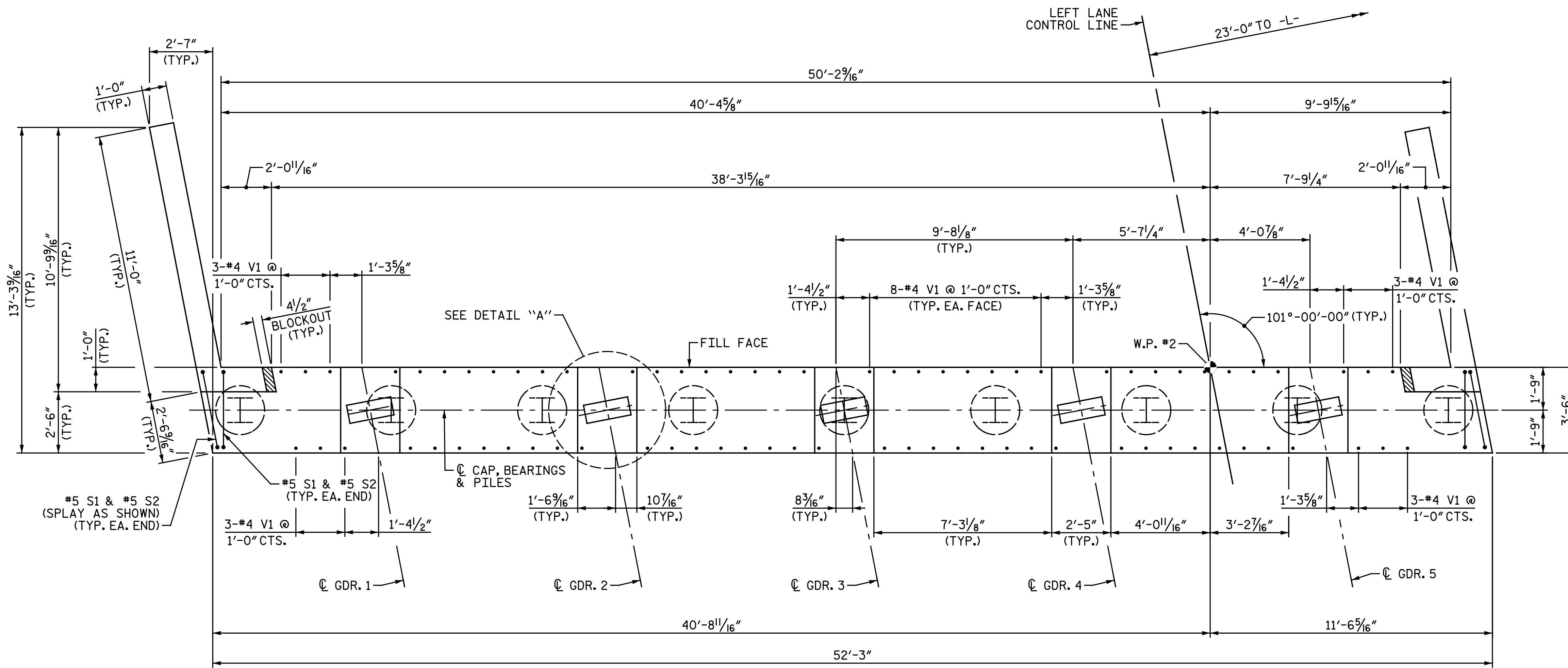
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 INTEGRAL END BENT 1
 DETAILS

8/10/2017
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 NC License No.: F-1084

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S9-18
1			3			TOTAL SHEETS
2			4			25



PLAN

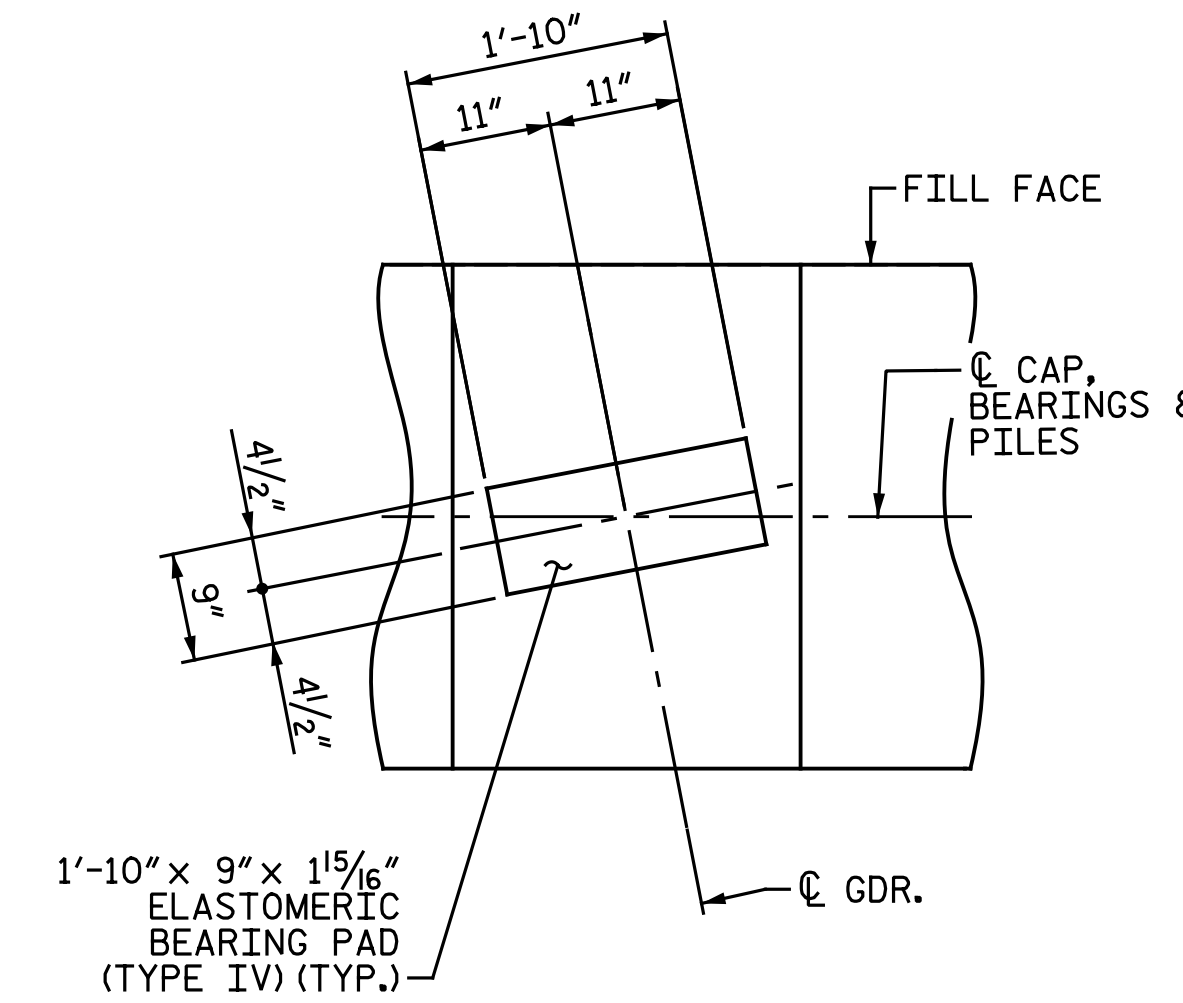
NOTES:

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

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

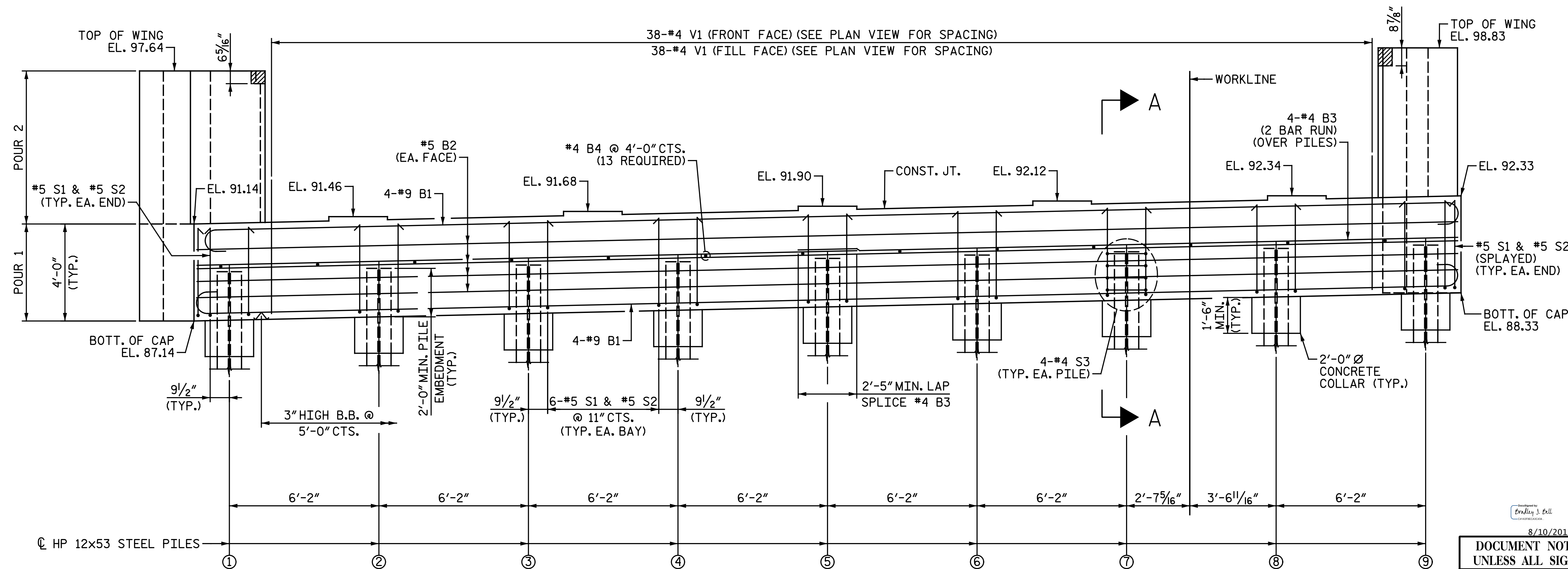
THE TOP SURFACE OF THE END BENT CAP, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4\".

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	89.17
②	89.31
③	89.45
④	89.59
⑤	89.73
⑥	89.87
⑦	90.01
⑧	90.15
⑨	90.29

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 281+39.19 -L-

SHEET 1 OF 2



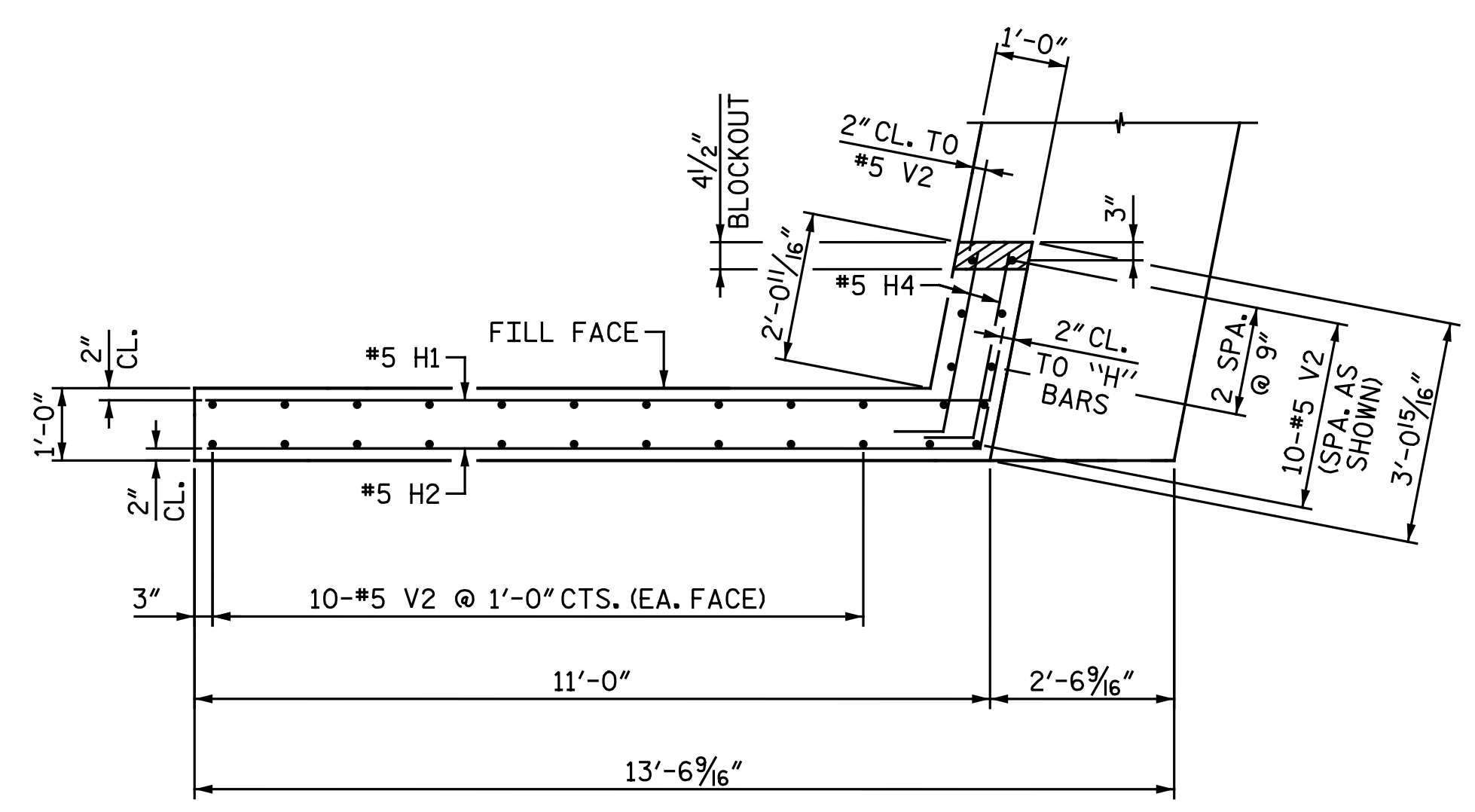
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 INTEGRAL END BENT 2
 LEFT LANE

8/10/2017
 DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

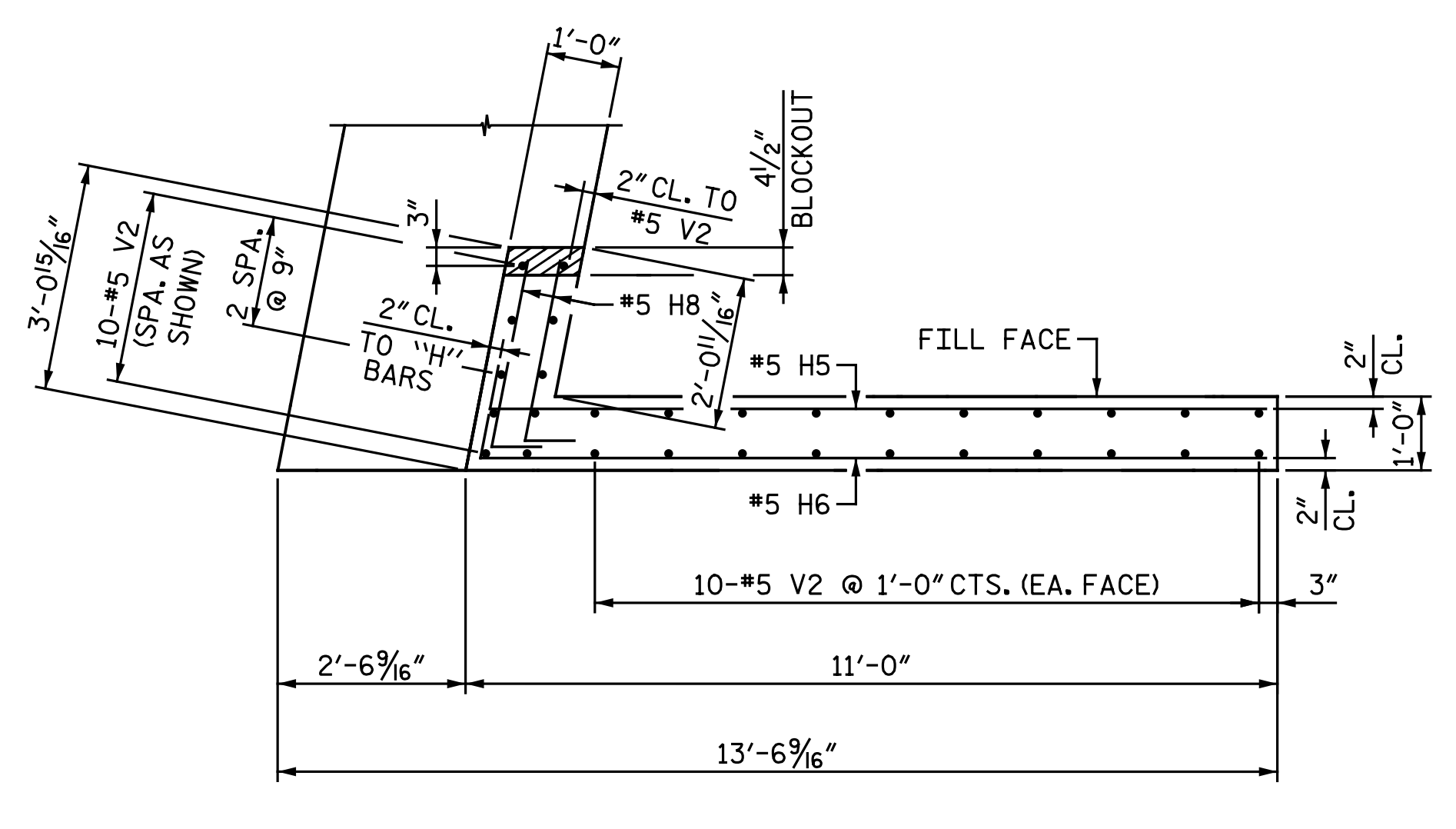
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REVISIONS						SHEET NO. S9-19
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

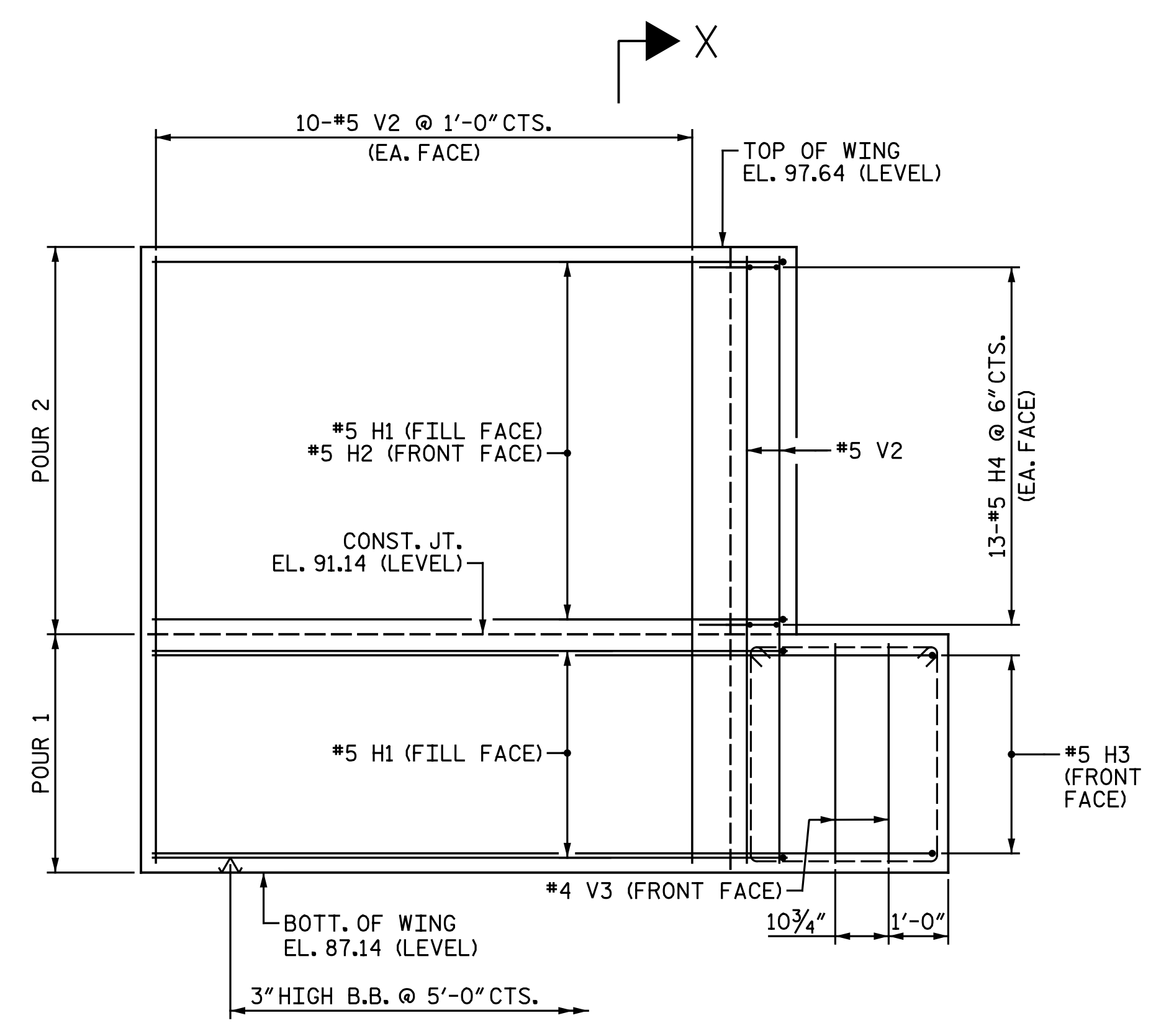
DRAWN BY: C. E. MAYHEW DATE: 3-16-17
 CHECKED BY: B. J. BELL DATE: 4-5-17



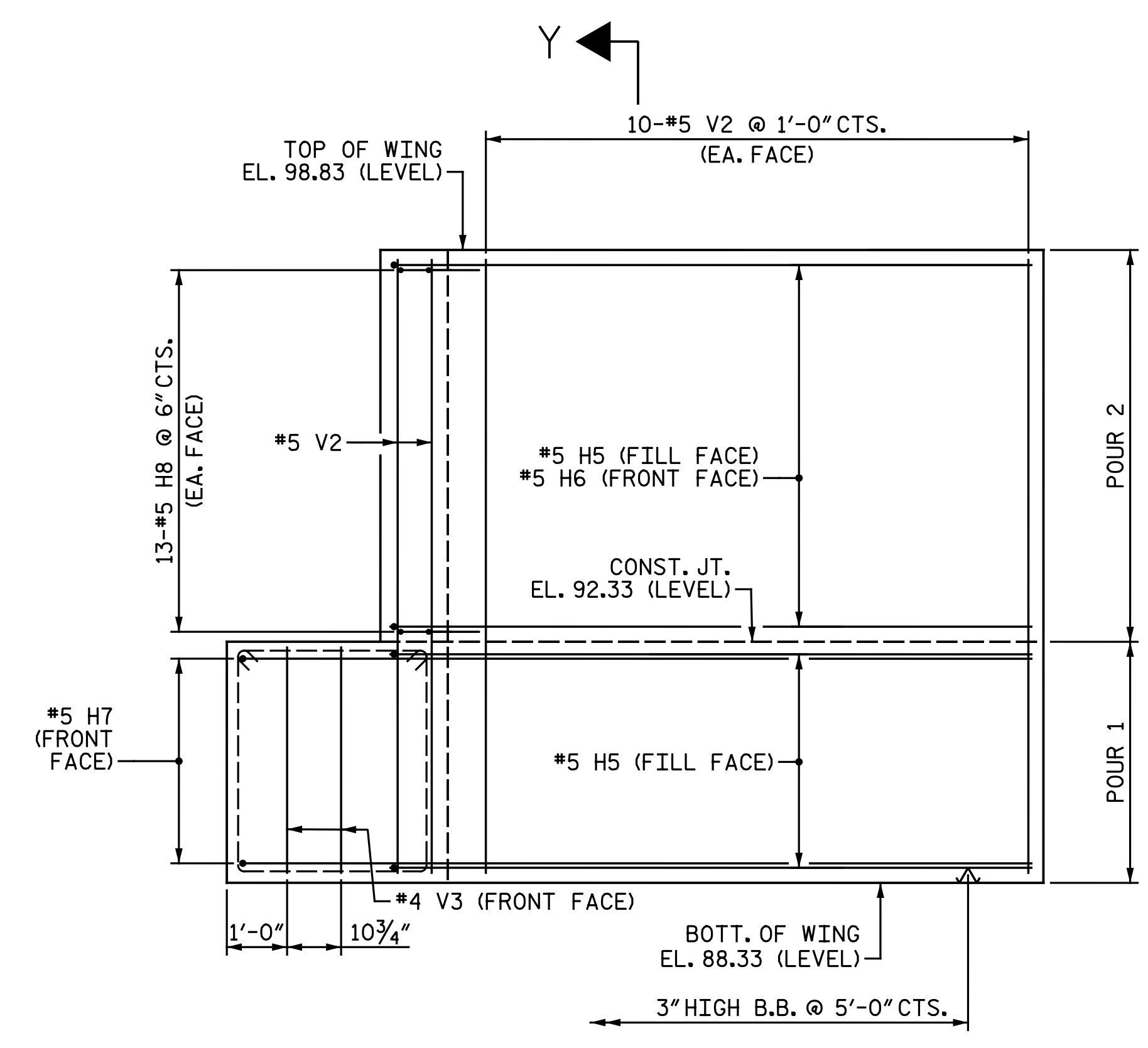
PLAN OF LEFT WING
(H3 BARS NOT SHOWN FOR CLARITY)



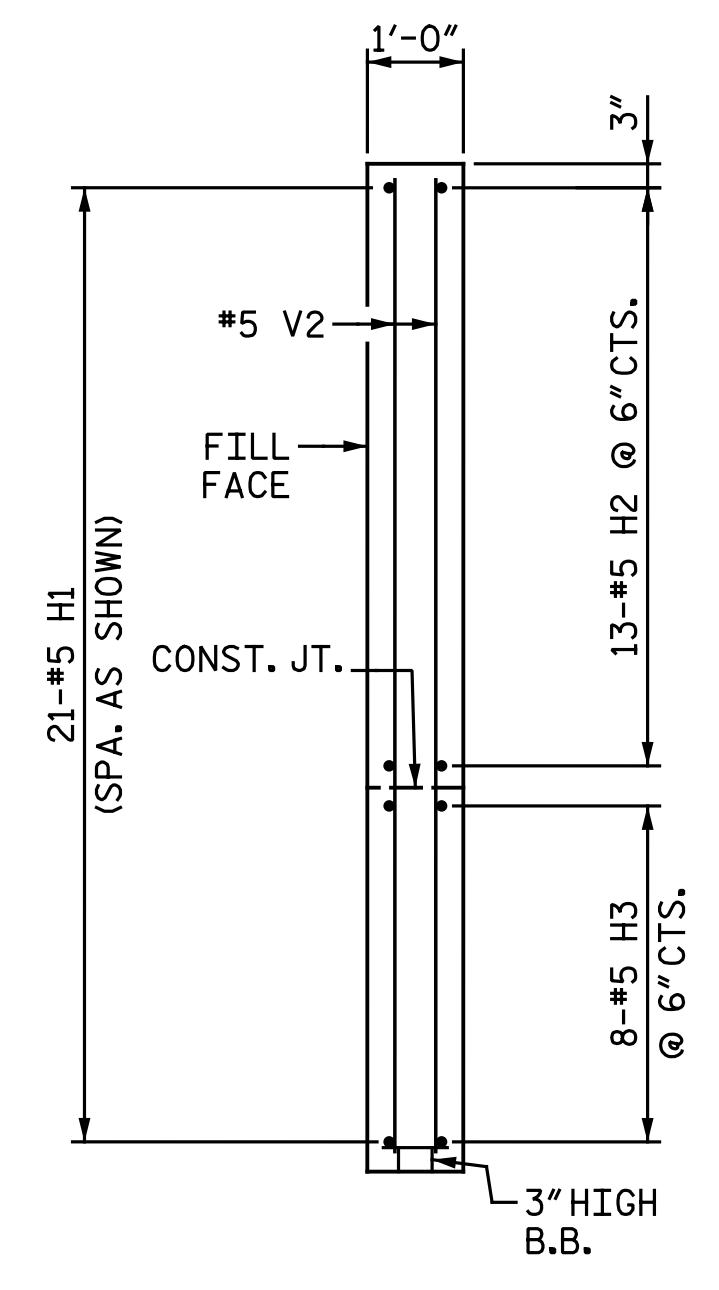
PLAN OF RIGHT WING
(H7 BARS NOT SHOWN FOR CLARITY)



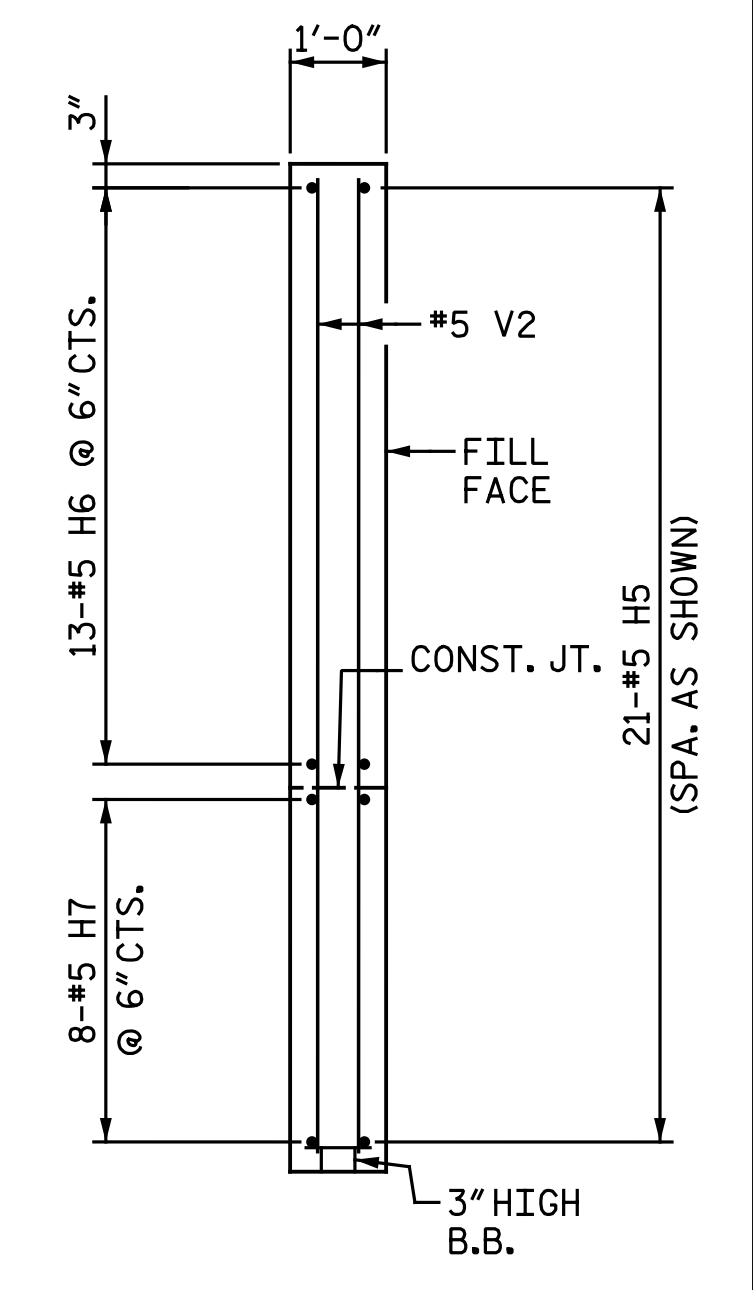
ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING

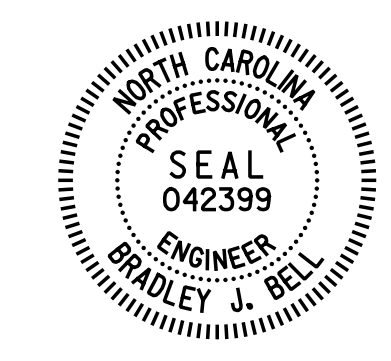


SECTION X-X



SECTION Y-Y

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 281+39.19 -L-
SHEET 2 OF 2



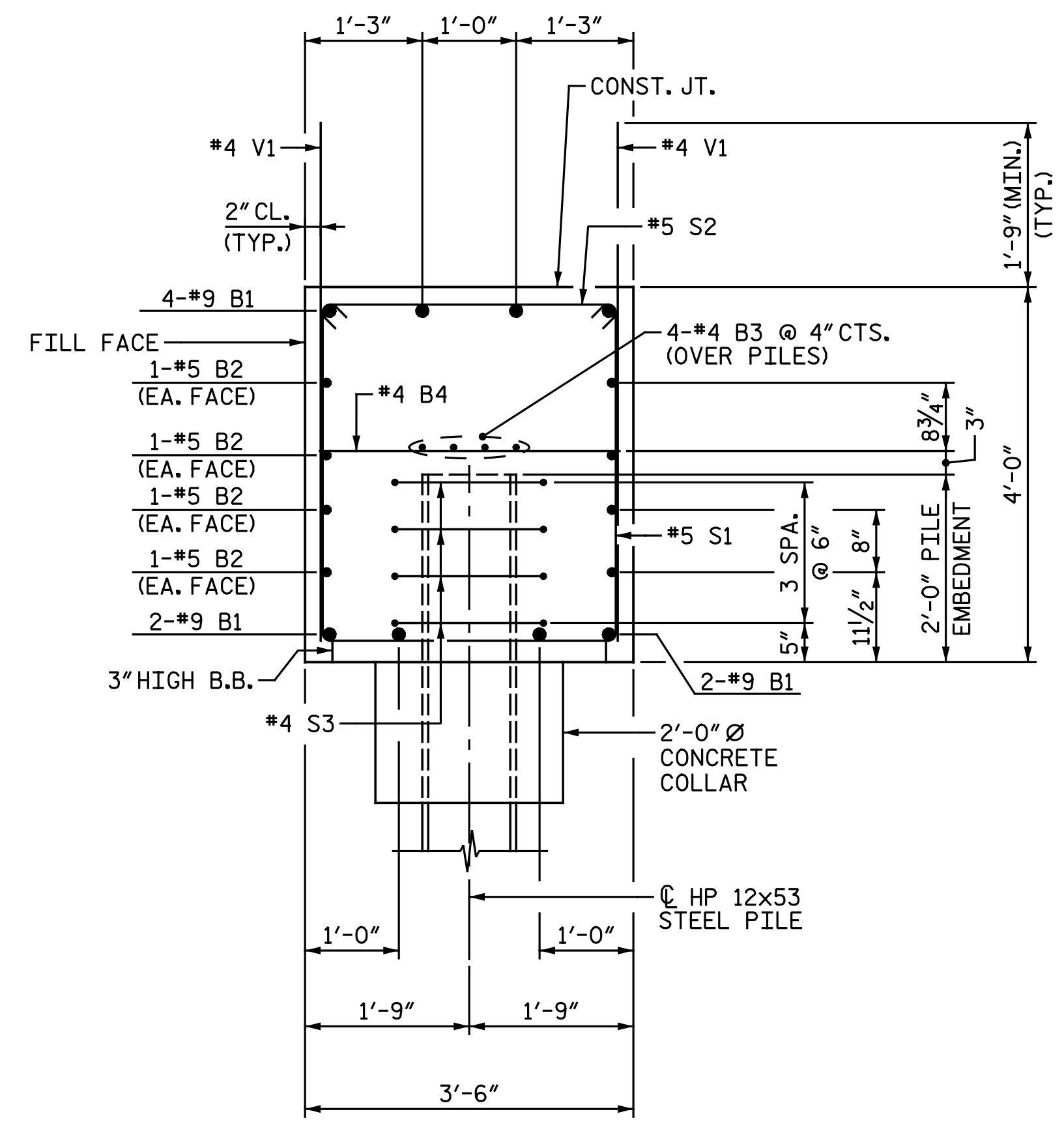
8/10/2017
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Cary, North Carolina 27518
NC License No.: F-1084

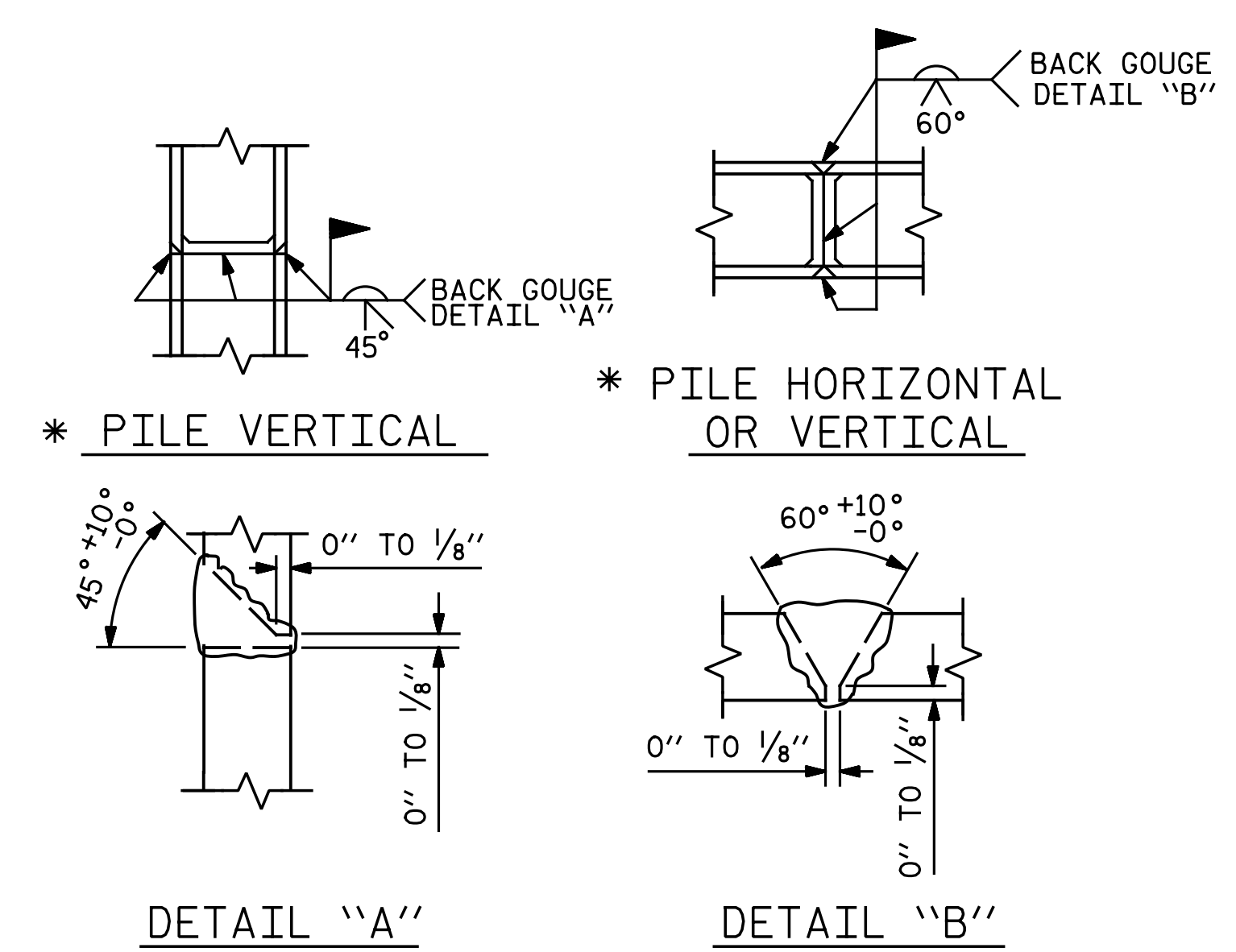
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
INTEGRAL END BENT 2
LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S9-20
1			3			TOTAL SHEETS
2			4			25

DRAWN BY: M. D. MAYHEW DATE: 3-23-17
CHECKED BY: B. J. BELL DATE: 4-5-17



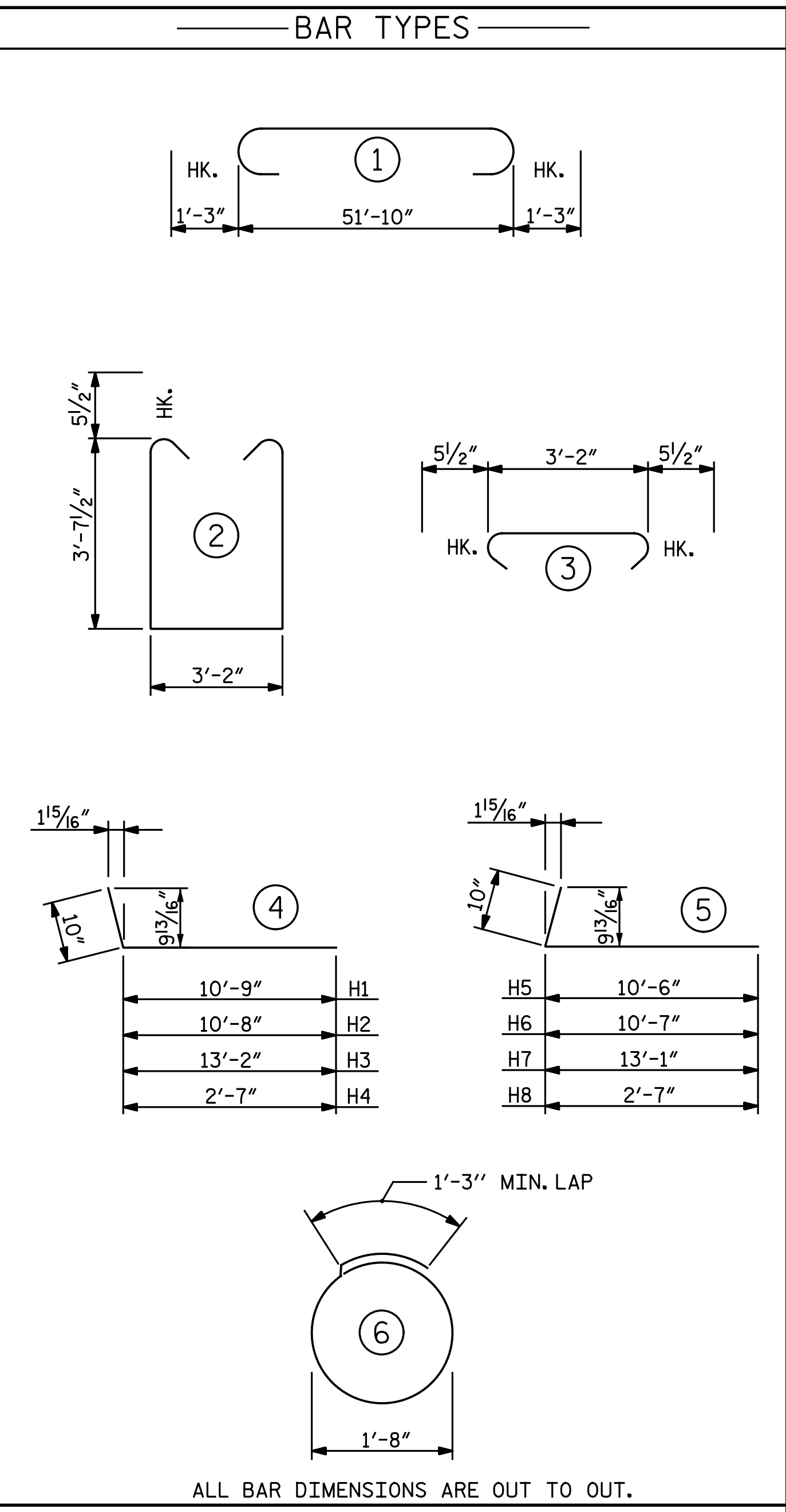
SECTION A-A



PILE SPLICE DETAILS
* POSITION OF PILE DURING WELDING

BILL OF MATERIAL					
INTEGRAL END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		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.	630
PILE REDRIVES				EA.	5

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



PROJECT NO. R-5703
LENOIR COUNTY
STATION: 281+39.19 -L-



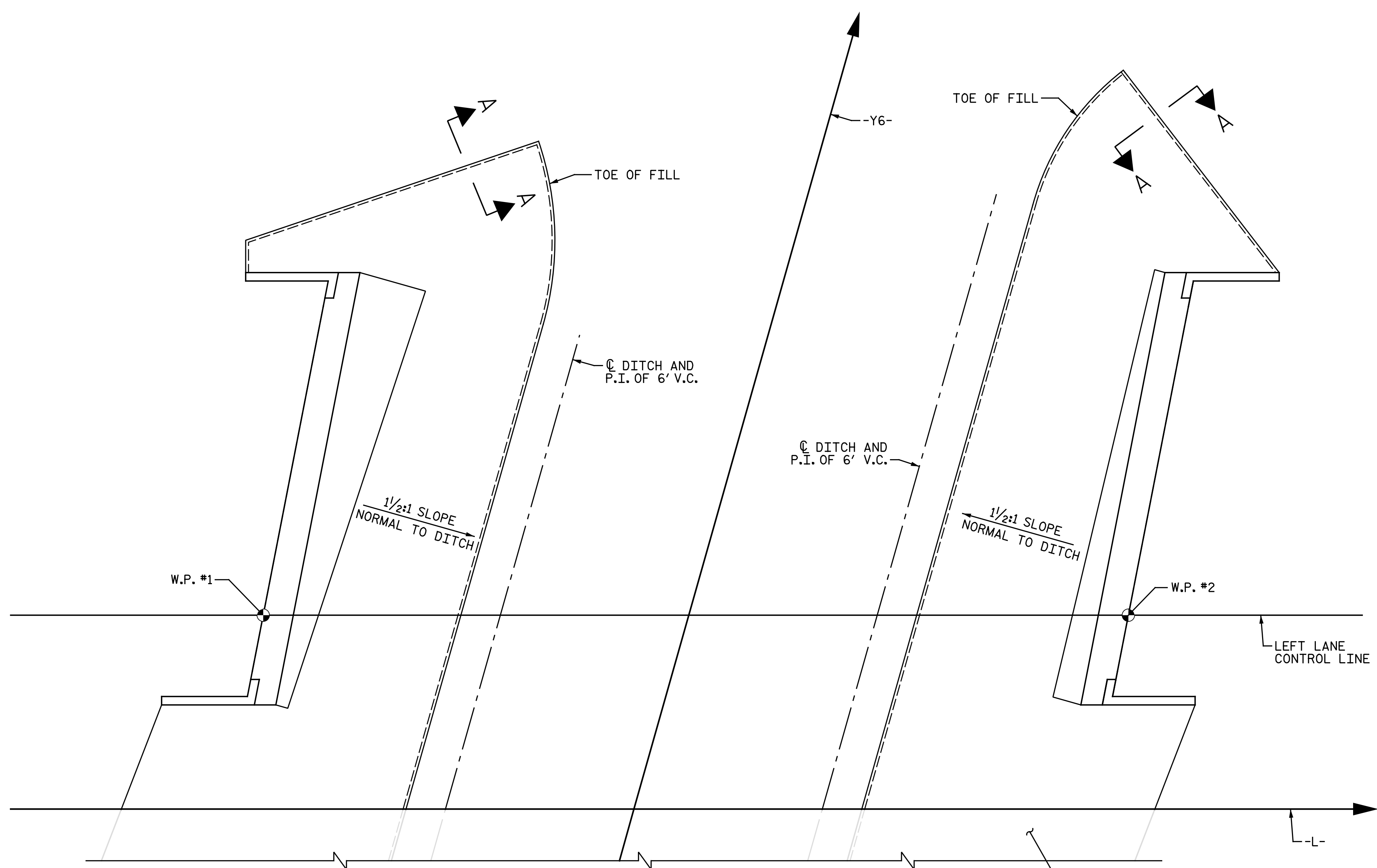
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
INTEGRAL END BENT 2
DETAILS

8/10/2017
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Cary, North Carolina 27518
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LEFT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S9-21
TOTAL SHEETS 25

DRAWN BY: M. D. MAYHEW DATE: 4-4-17
CHECKED BY: B. J. BELL DATE: 4-5-17



PLAN

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.

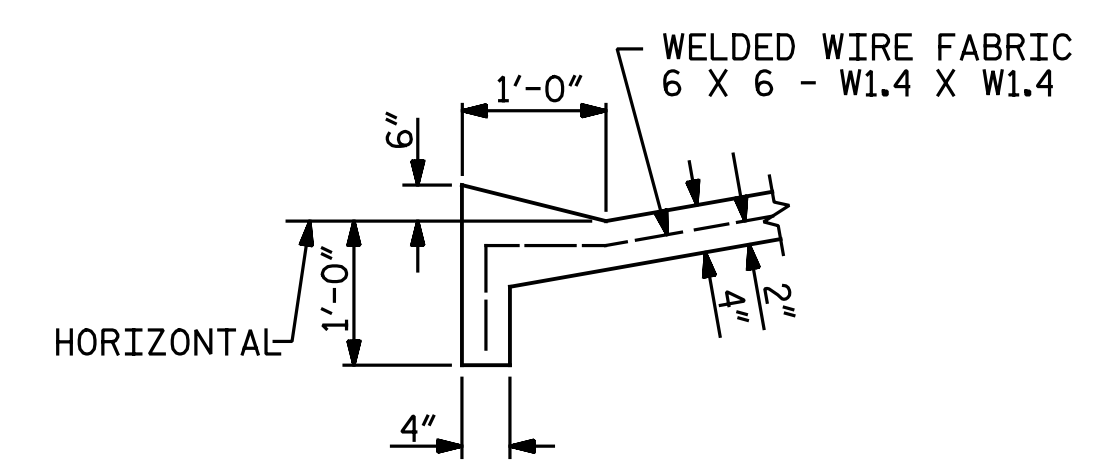
SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING.

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".

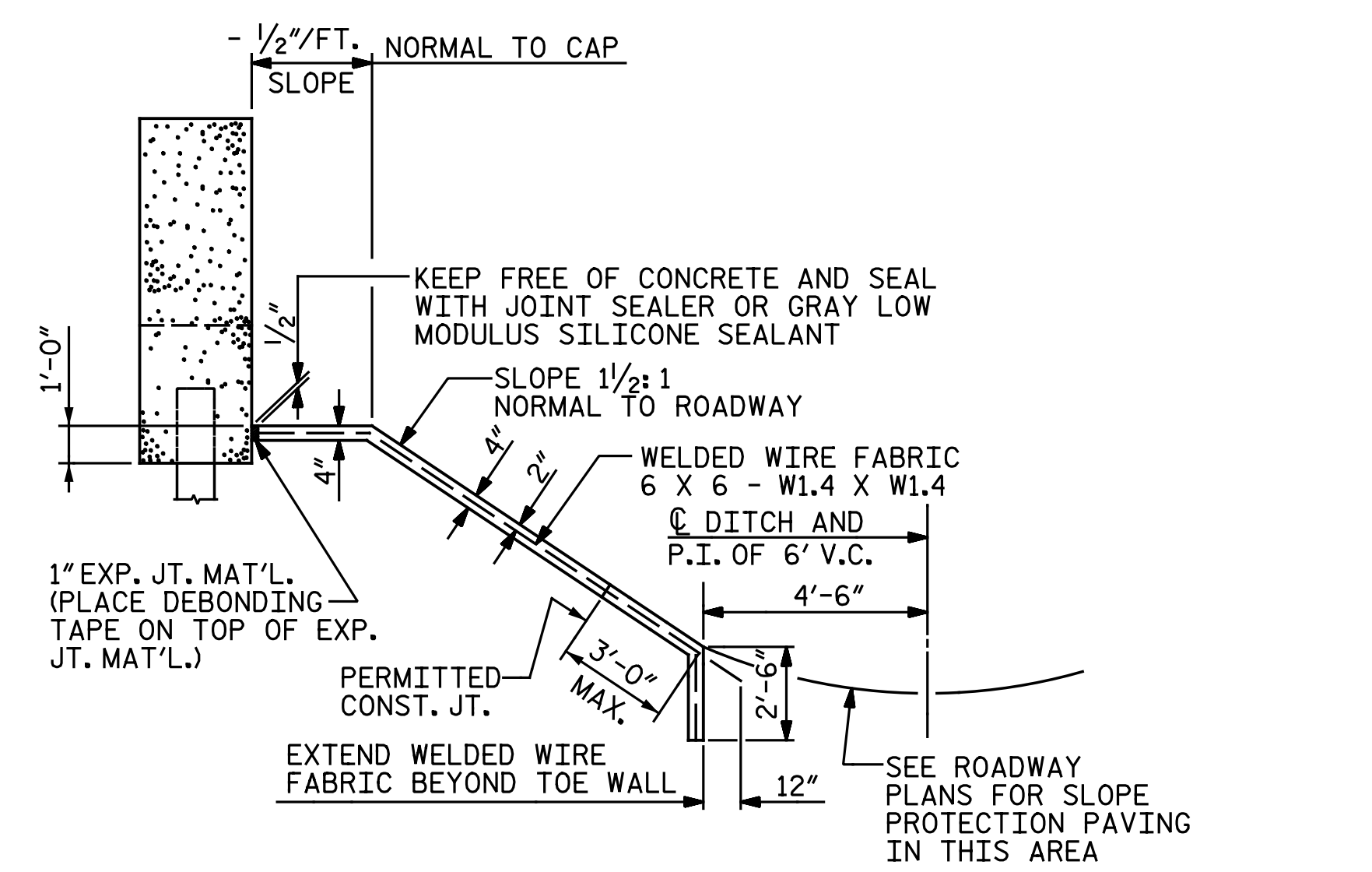
THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

BRIDGE @ STA. 281+39.19 -L- (LEFT LANE)	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	320	580
END BENT 2	320	580

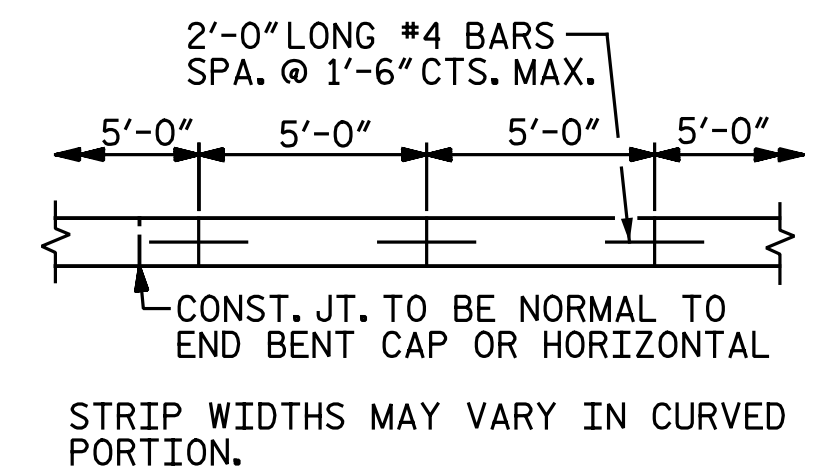
* QUANTITY SHOWN IS BASED ON 5' POURS.



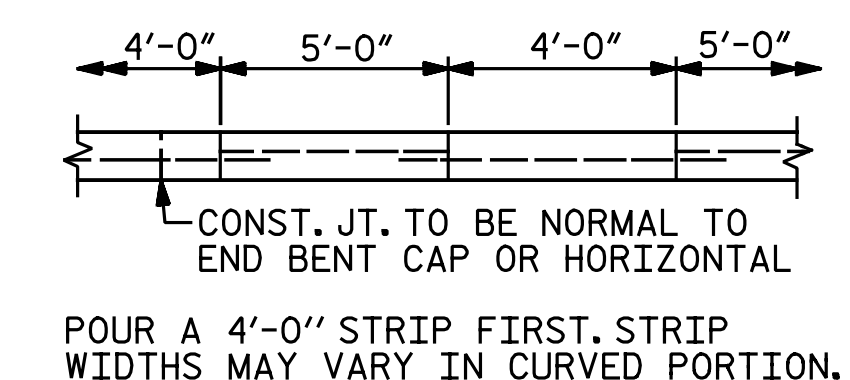
SECTION A-A



SECTION ALONG CONTROL LINE WHEN FILL CATCHES IN DITCH



POURING DETAIL



OPTIONAL POURING DETAIL

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 281+39.19 -L-

SHEET 1 OF 2



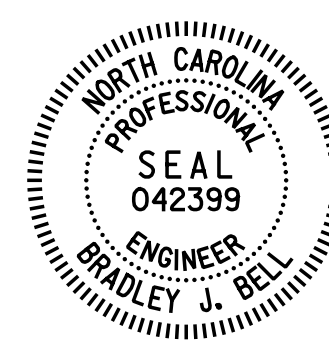
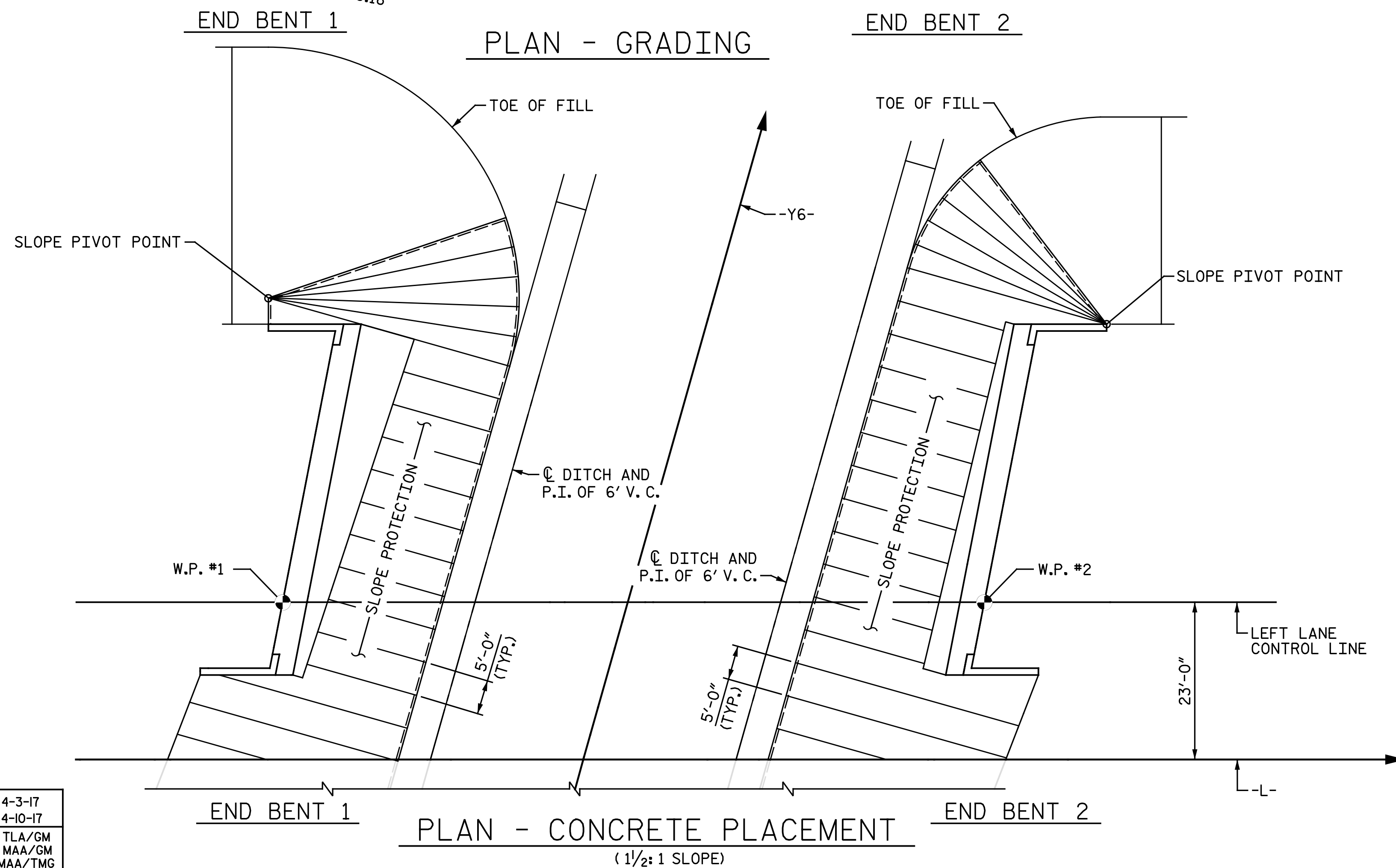
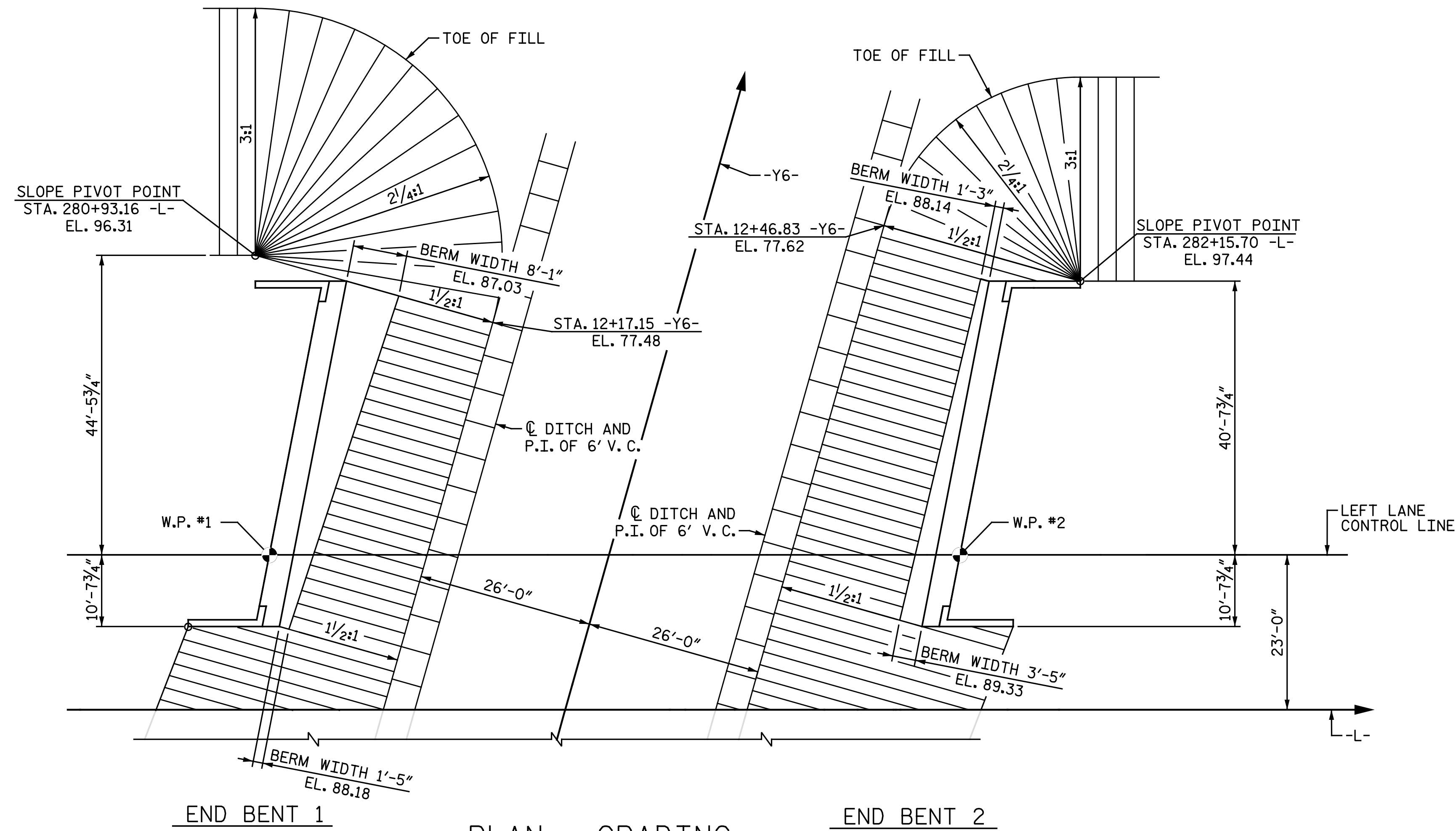
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
SLOPE PROTECTION DETAILS
 LEFT LANE

ASSEMBLED BY : C. E. MAYHEW	DATE : 3-17-17
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

8/10/2017
 DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED
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 Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27518
 NC License No. : F-1084

REVISIONS						SHEET NO. S9-22
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

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



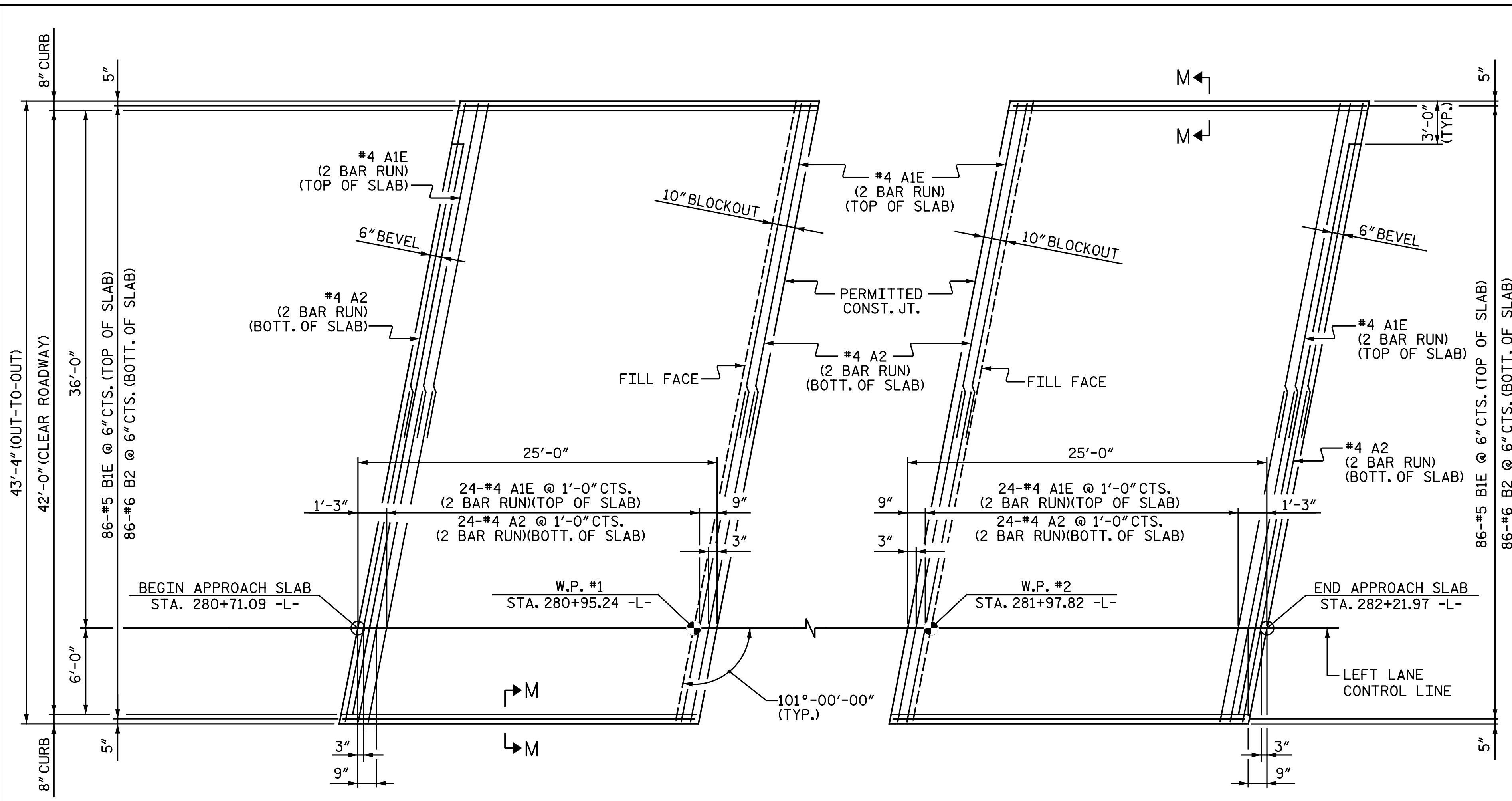
PROJECT NO. R-5703
LENOIR COUNTY
STATION: 281+39.19 -L-
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
SLOPE PROTECTION
DETAILS
LEFT LANE

8/10/2017
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INTERNATIONAL
Michael Baker Engineering
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Cary, North Carolina 27518
NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S9-23
1			3			TOTAL SHEETS
2			4			25

ASSEMBLED BY : C. E. MAYHEW DATE : 4-3-17
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



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 SAWS 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.

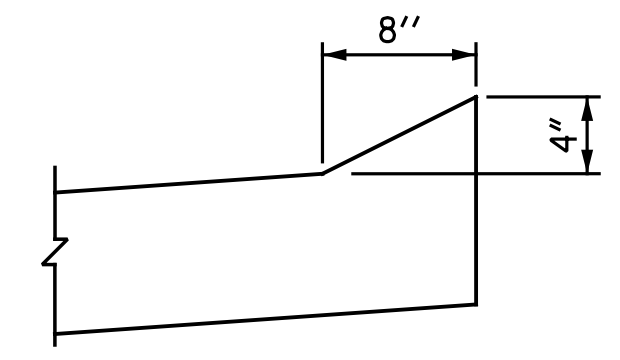
FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

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.

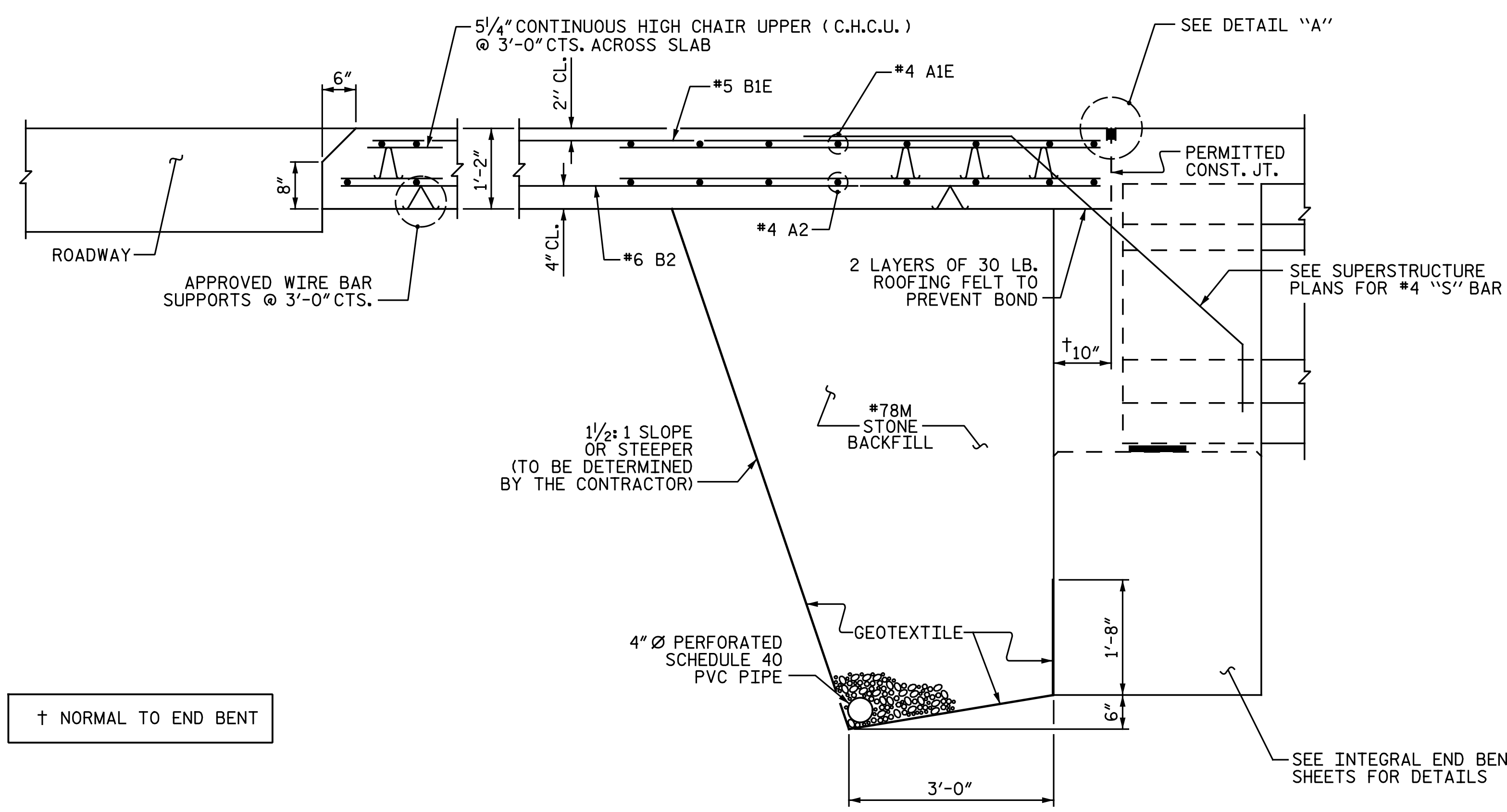


SECTION M-M

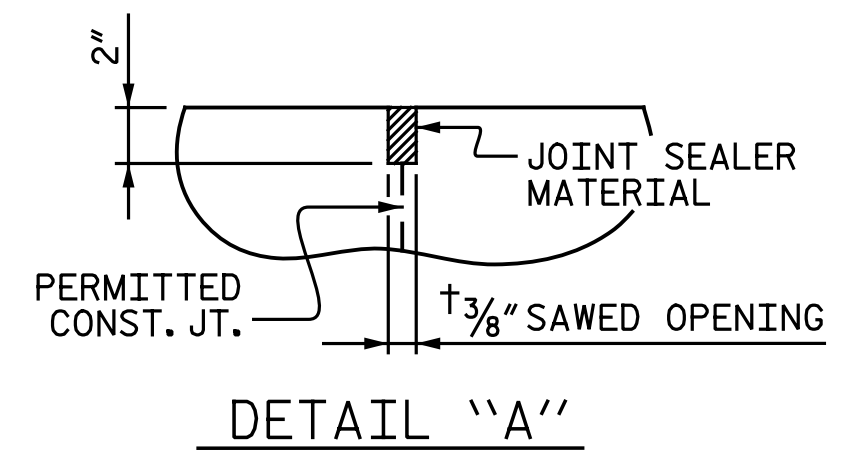
BILL OF MATERIAL					
APPROACH SLAB AT END BENT 1					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
A1E	52	#4	STR.	22' - 11"	796
A2	52	#4	STR.	22' - 10"	793
B1E	86	#5	STR.	24' - 2"	2,168
B2	86	#6	STR.	24' - 8"	3,186
REINFORCING STEEL				LBS.	3,979
EPOXY COATED REINFORCING STEEL				LBS.	2,964
CLASS AA CONCRETE				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

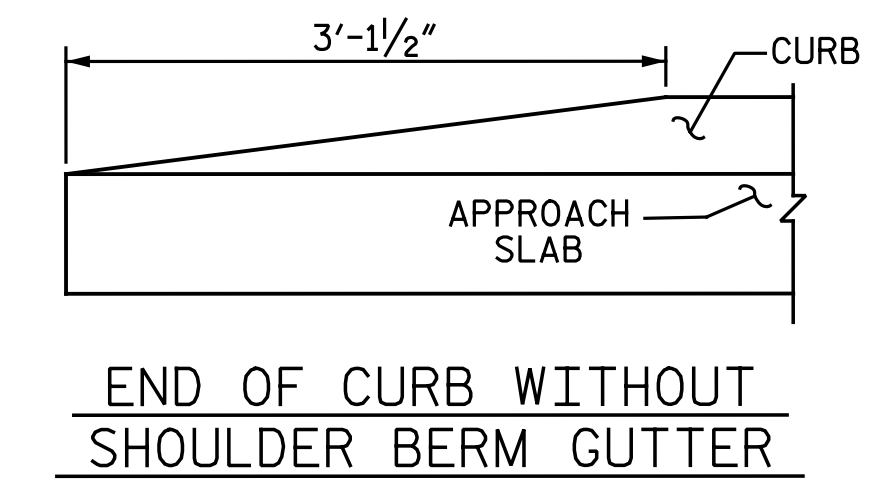
SPlice LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"



SECTION THRU SLAB

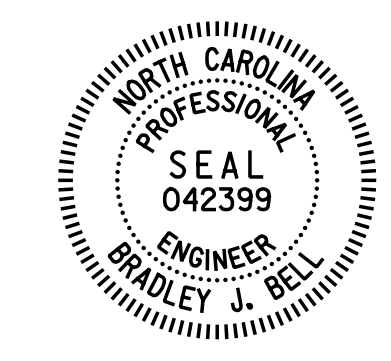


DETAIL "A"



END OF CURB WITHOUT SHOULDER BERM GUTTER

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 281+39.19 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 BRIDGE APPROACH SLAB
 FOR INTEGRAL ABUTMENT

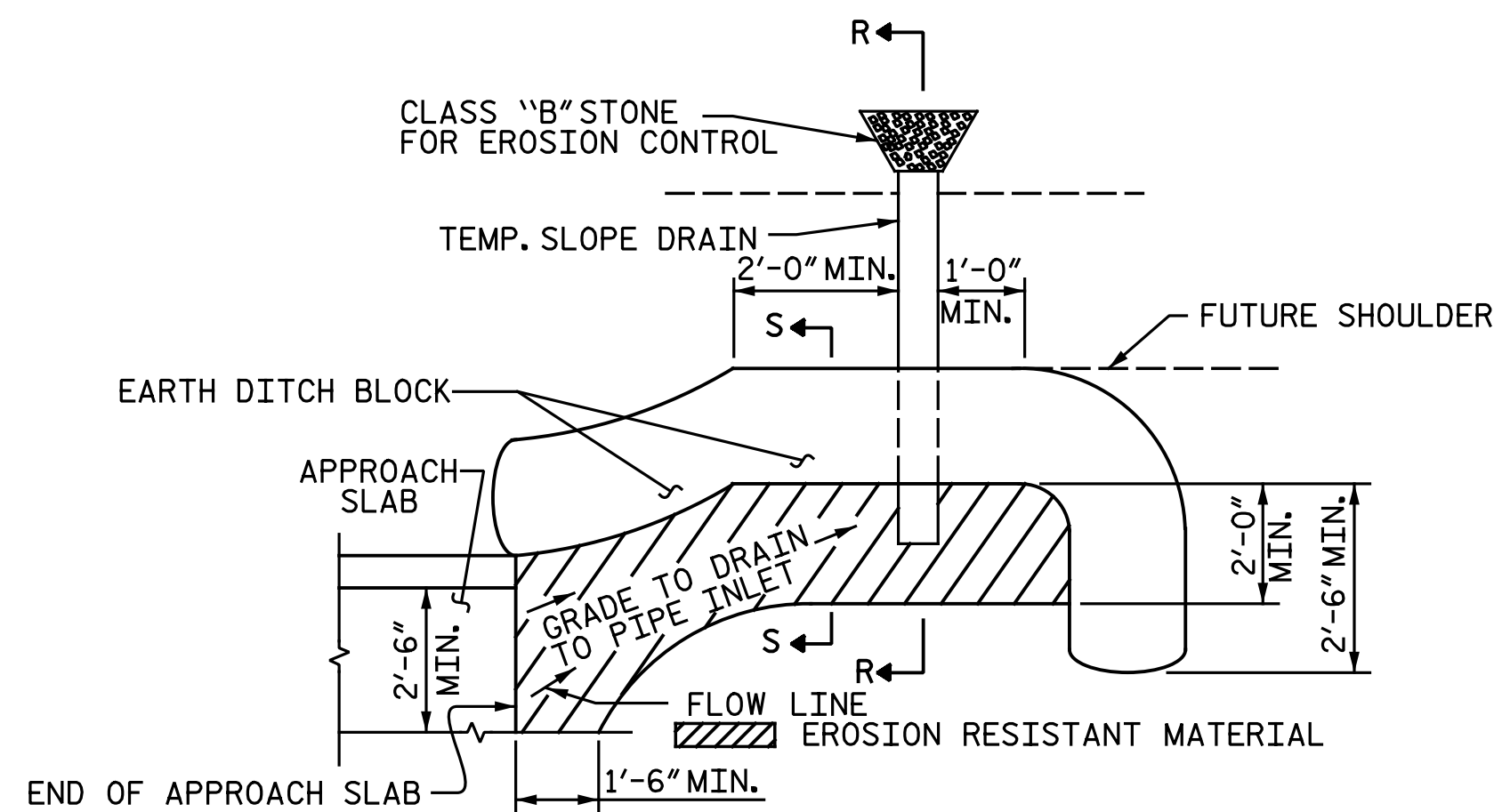
8/10/2017
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 Cary, North Carolina 27518
 NC License No.: F-1084

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

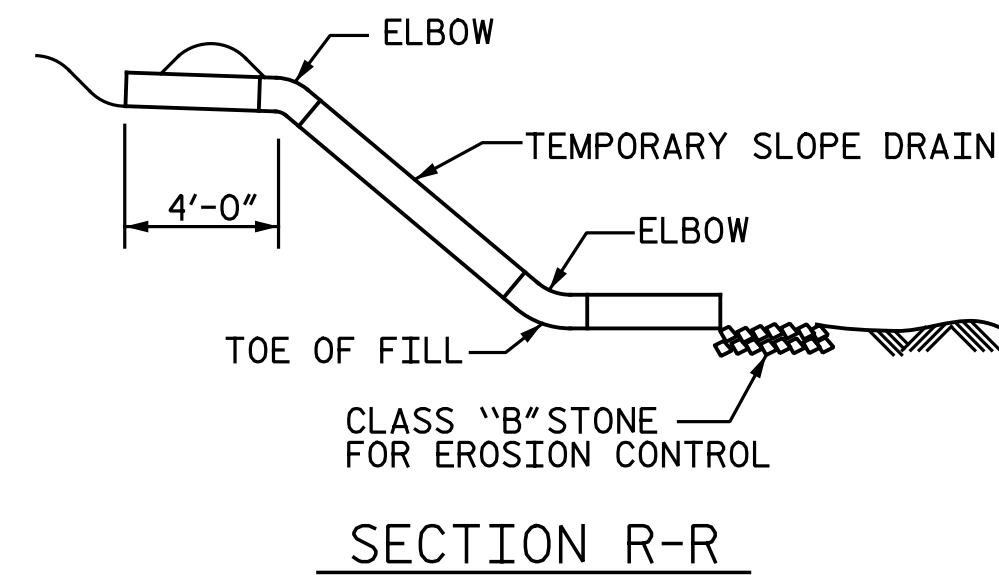
SHEET NO. S9-24	
TOTAL SHEETS	25

DRAWN BY: N. B. SPEAKS DATE: 3-2-17
 CHECKED BY: B. J. BELL DATE: 4-6-17

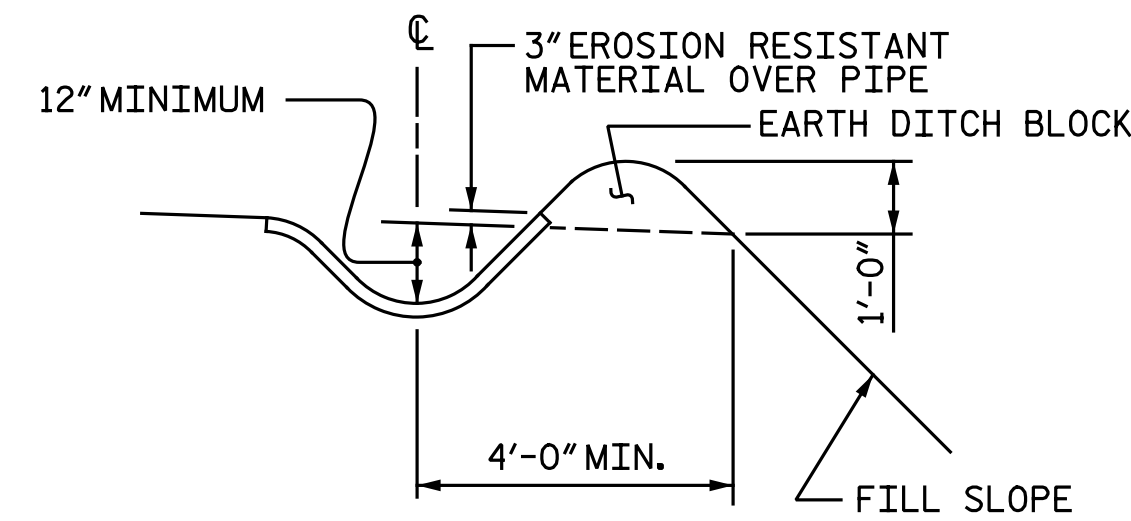


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW



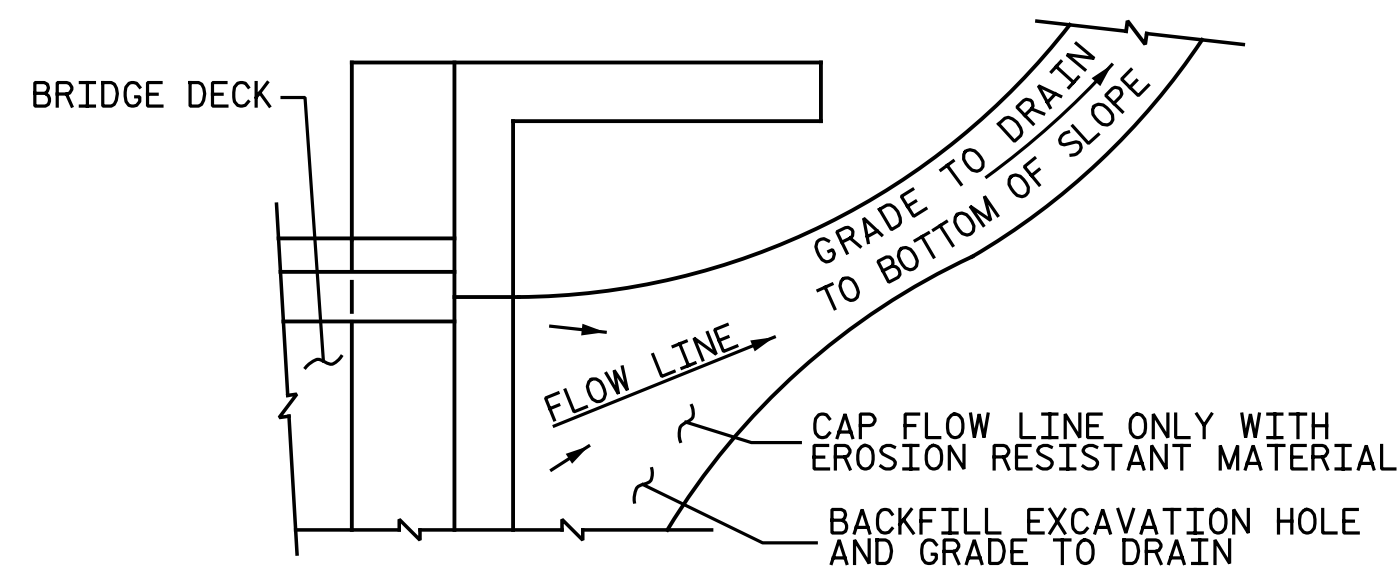
SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 281+39.19 -L-



8/10/2017

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 BRIDGE APPROACH
 SLAB DETAILS

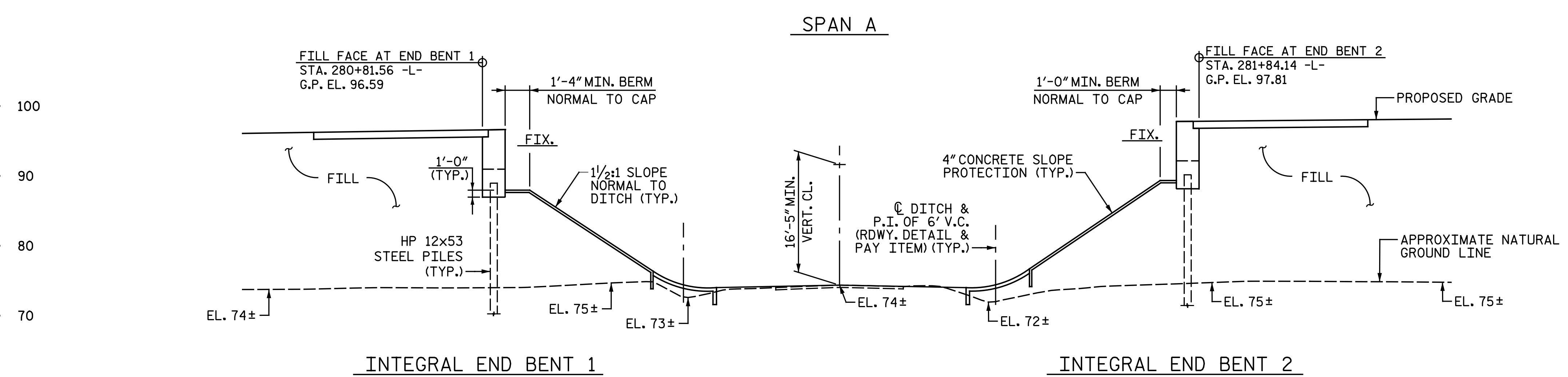
LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S9-25
1			3			TOTAL SHEETS
2			4			25

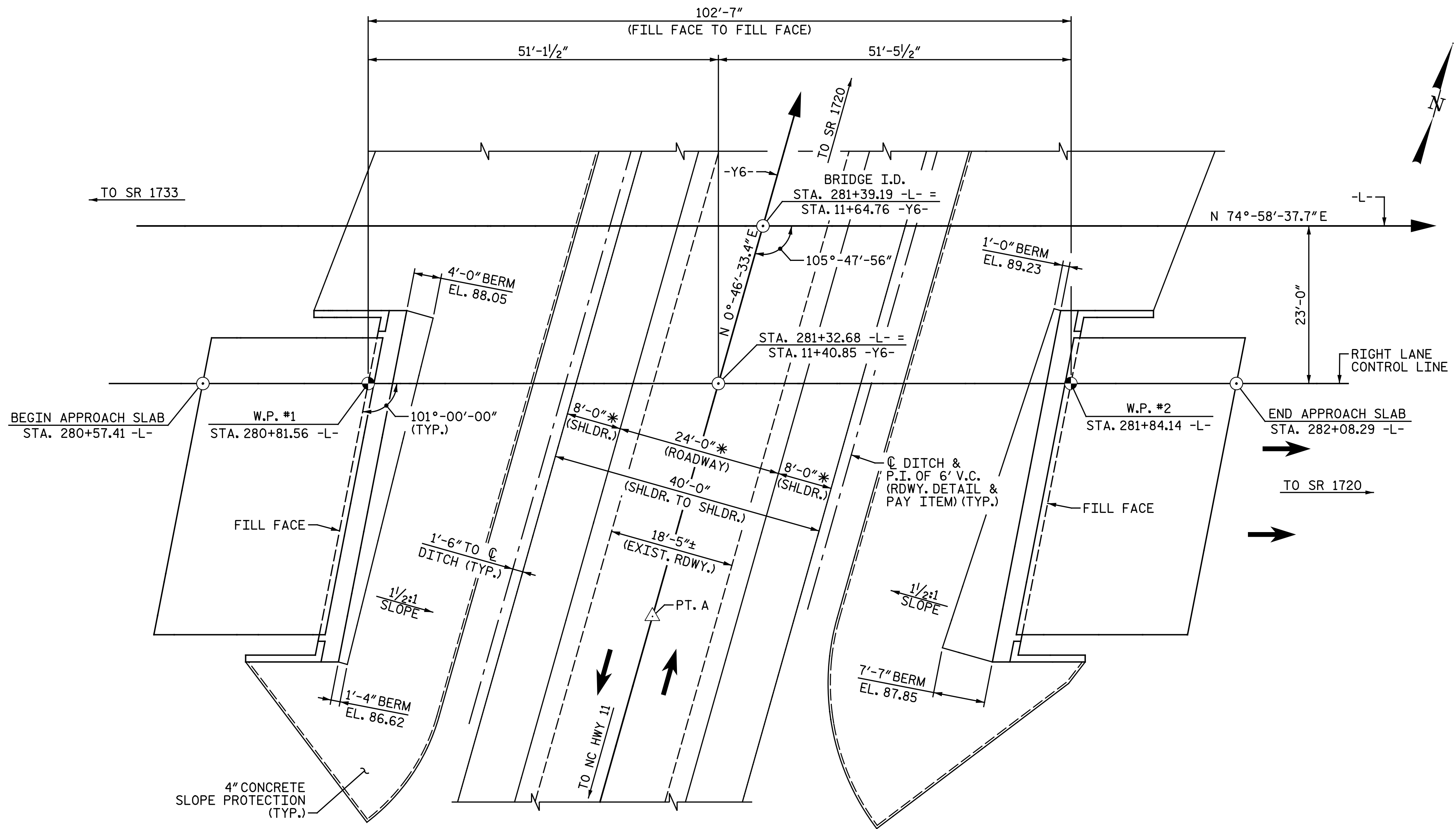
ASSEMBLED BY : N. B. SPEAKS	DATE : 3-6-17
CHECKED BY : B. J. BELL	DATE : 4-6-17
DRAWN BY : FCJ 11/88	REV. 10/11/11 MAA/GM
CHECKED BY : ARB 11/88	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM

280+50 281+00 281+50 282+00 282+50

(+).3.0000% (-).2.2800%
 P.I. STA. = 283+40.00
 EL. = 107.48
 V.C. = 1,305'
 -L- GRADE DATA



SECTION ALONG RIGHT LANE CONTROL LINE
 (END BENTS ON SECTION AT RIGHT ANGLES TO END BENTS)



PLAN
 (PILES NOT SHOWN FOR CLARITY)

POINT	STATION ON -Y6-	OFFSET	ELEVATION ON -Y6-
A	11+04.39	0.00	74.30

△ - POINT OF MINIMUM VERTICAL CLEARANCE OVER EXISTING ROADWAY WITH 1/2\"/>

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 281+39.19 -L-
11+64.76 -Y6-
 SHEET 1 OF 3 BRIDGE NO. 217



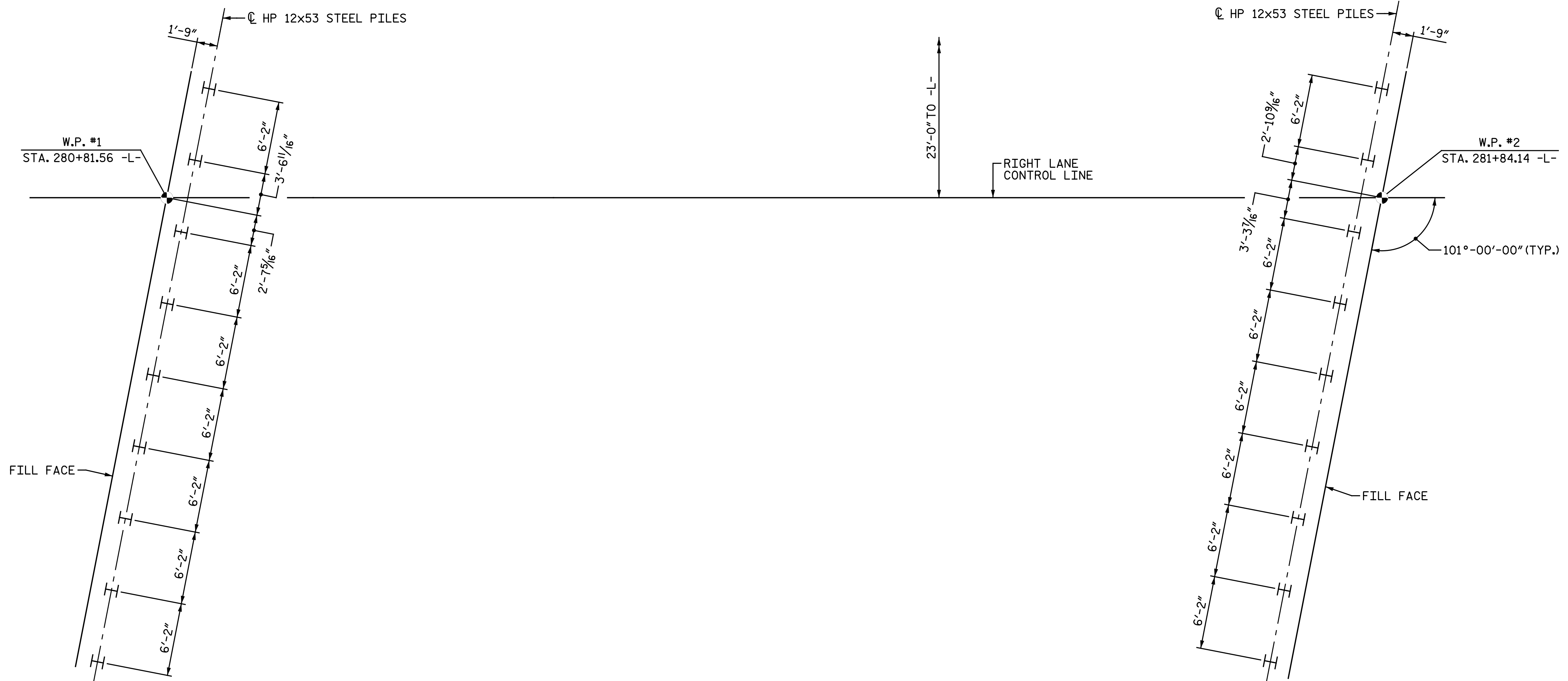
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON C.F. HARVEY
 PARKWAY OVER SR 1735
 BETWEEN SR 1733 AND SR 1720

RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
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: 281+39.19 -L-
11+64.76 -Y6-
 SHEET 2 OF 3

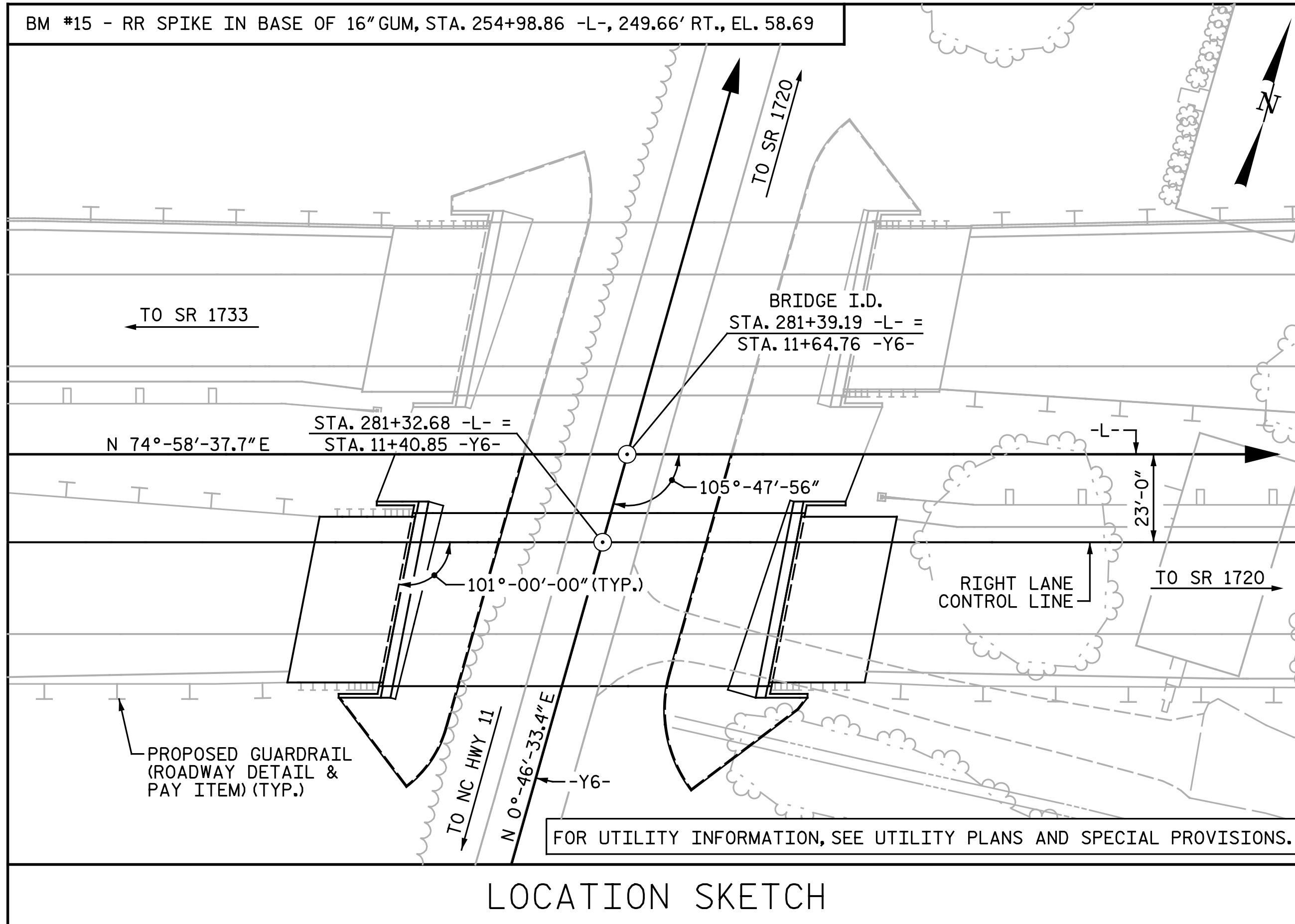


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON C.F. HARVEY
 PARKWAY OVER SR 1735
 BETWEEN SR 1733 AND SR 1720

8/10/2017
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 UNLESS ALL SIGNATURES COMPLETED
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			TOTAL SHEETS
2			4			25

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



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	630	5		300	
END BENT 2				38.1		5,230			9	9	630	5		320	
TOTAL	1	4,642	5,805	76.2	LUMP SUM	10,460	5	502.19	18	18	1,260	10	201.77	620	LUMP SUM

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 281+39.19 -L-
11+64.76 -Y6-
 SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON C.F. HARVEY
 PARKWAY OVER SR 1735
 BETWEEN SR 1733 AND SR 1720

8/10/2017
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			TOTAL SHEETS
2			4			25

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

LOAD FACTORS:

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

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																								
LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE						COMMENT NUMBER		
						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 (TST)	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

NOTES:

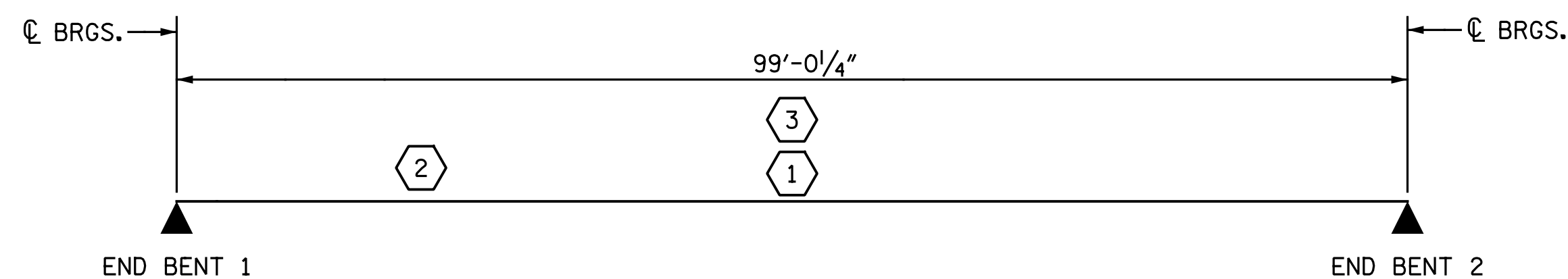
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

COMMENTS:

- A SERVICE III LIVE LOAD FACTOR OF 1.0 WAS USED TO BE CONSISTENT WITH THE VALUE USED DURING DESIGN.
- 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: 281+39.19 -L-



8/10/2017

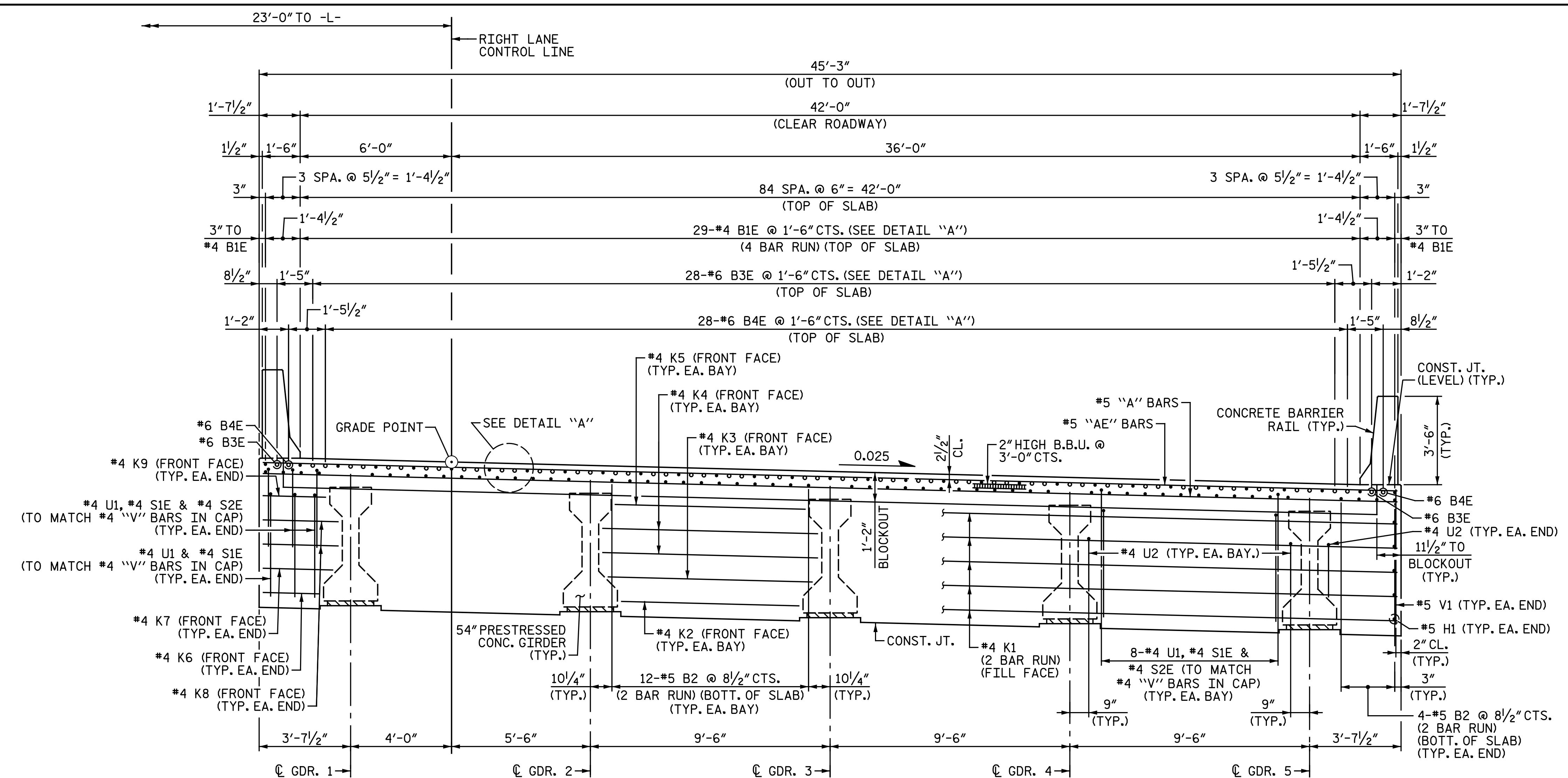
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 Cary, North Carolina 27518
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE GIRDERS
 (NON-INTERSTATE TRAFFIC)
 RIGHT LANE

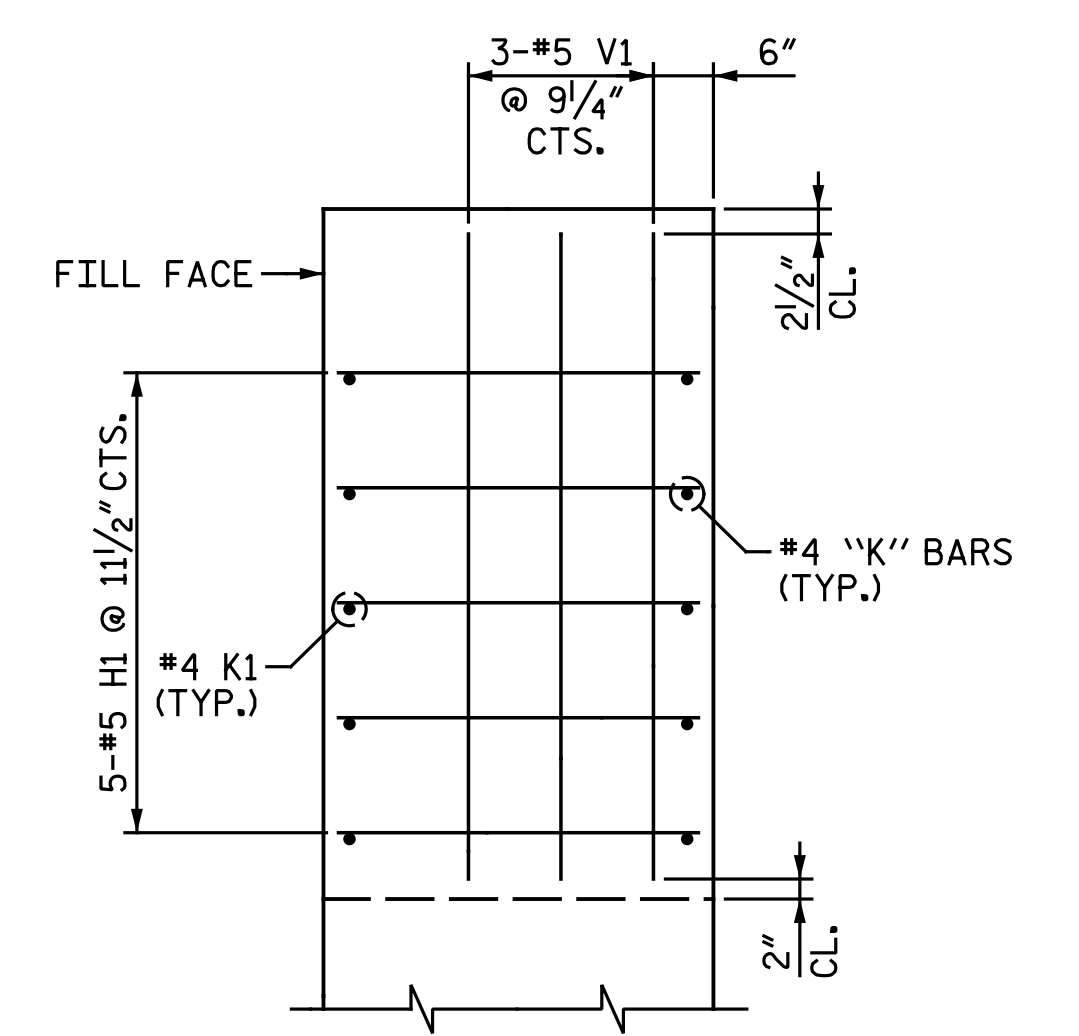
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S10-4
1			3			TOTAL SHEETS
2			4			25

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

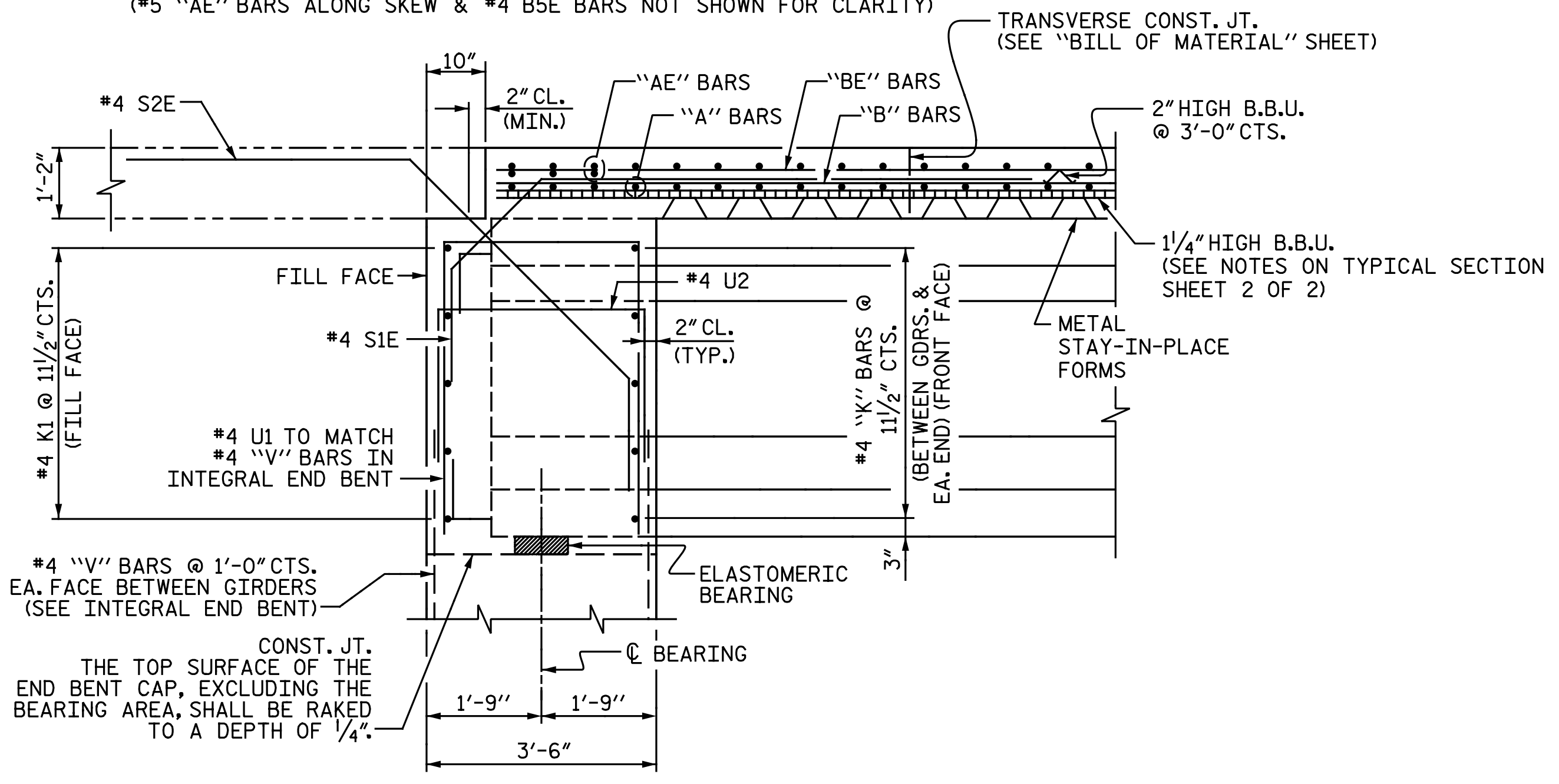


TYPICAL SECTION AT INTEGRAL END BENT

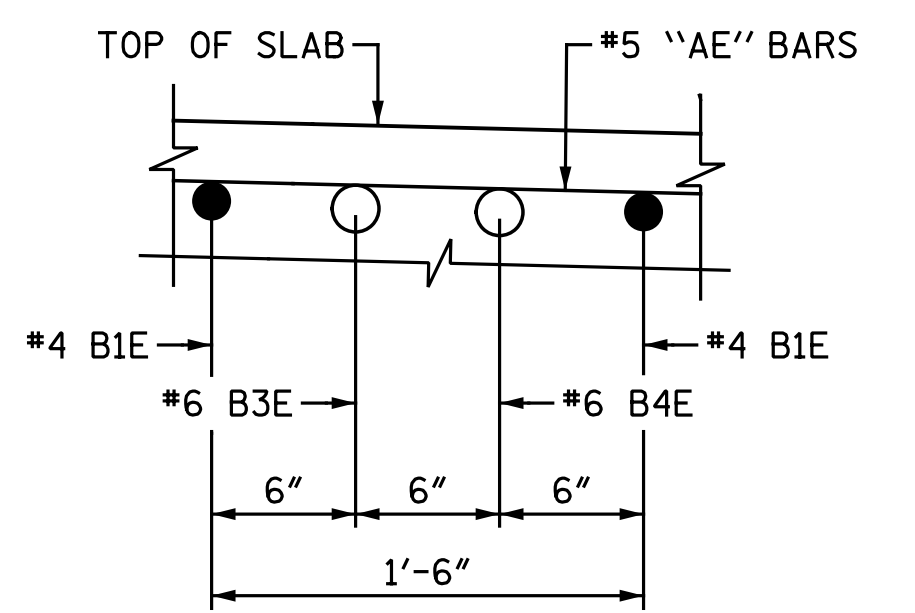
(END BENT 1 SHOWN, END BENT 2 SIMILAR)
 (#5 "AE" BARS ALONG SKEW & #4 B5E BARS NOT SHOWN FOR CLARITY)



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



END OF GIRDER DETAIL AT INTEGRAL END BENT



DETAIL "A"

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 281+39.19 -L-

SHEET 1 OF 2



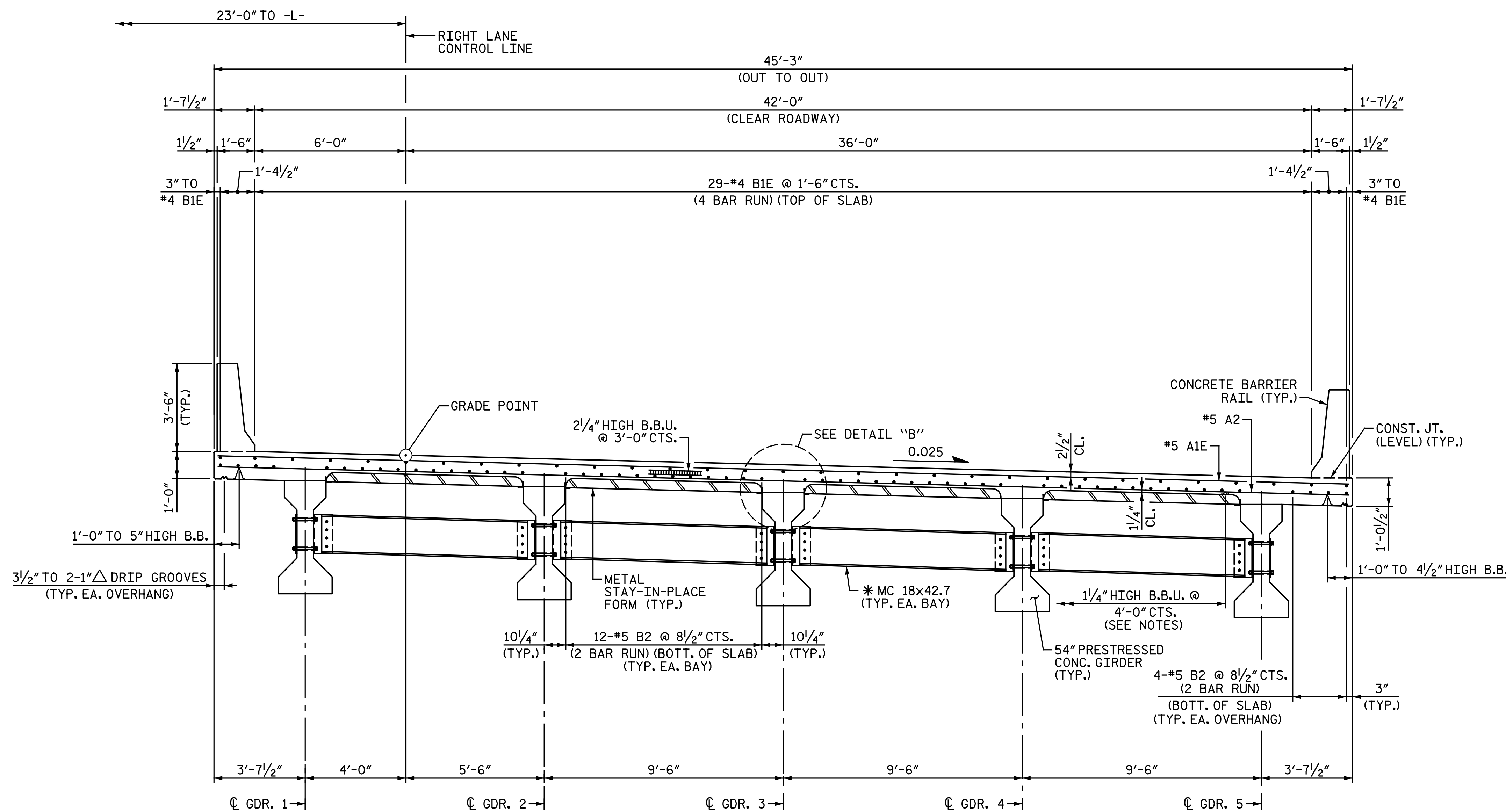
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION

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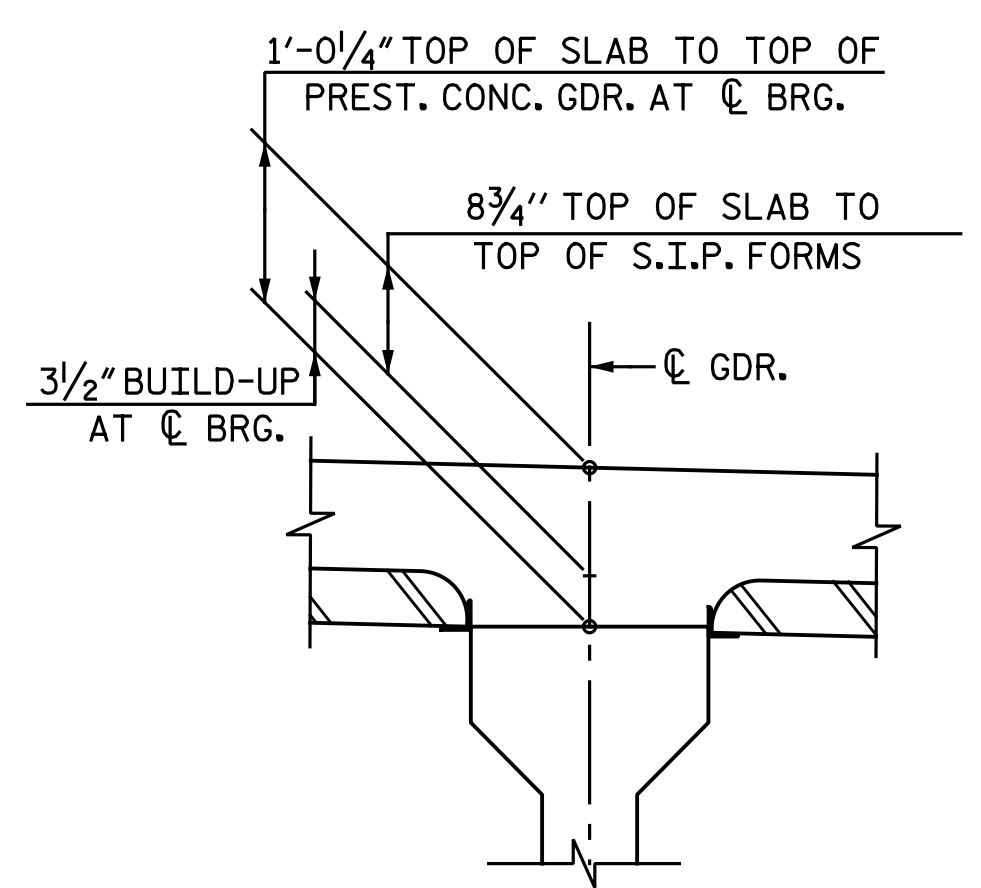
REVISIONS						SHEET NO. S10-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

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



TYPICAL SECTION AT INTERMEDIATE DIAPHRAGM

NOTES:
 PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2" 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: 281+39.19 -L-

SHEET 2 OF 2

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



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

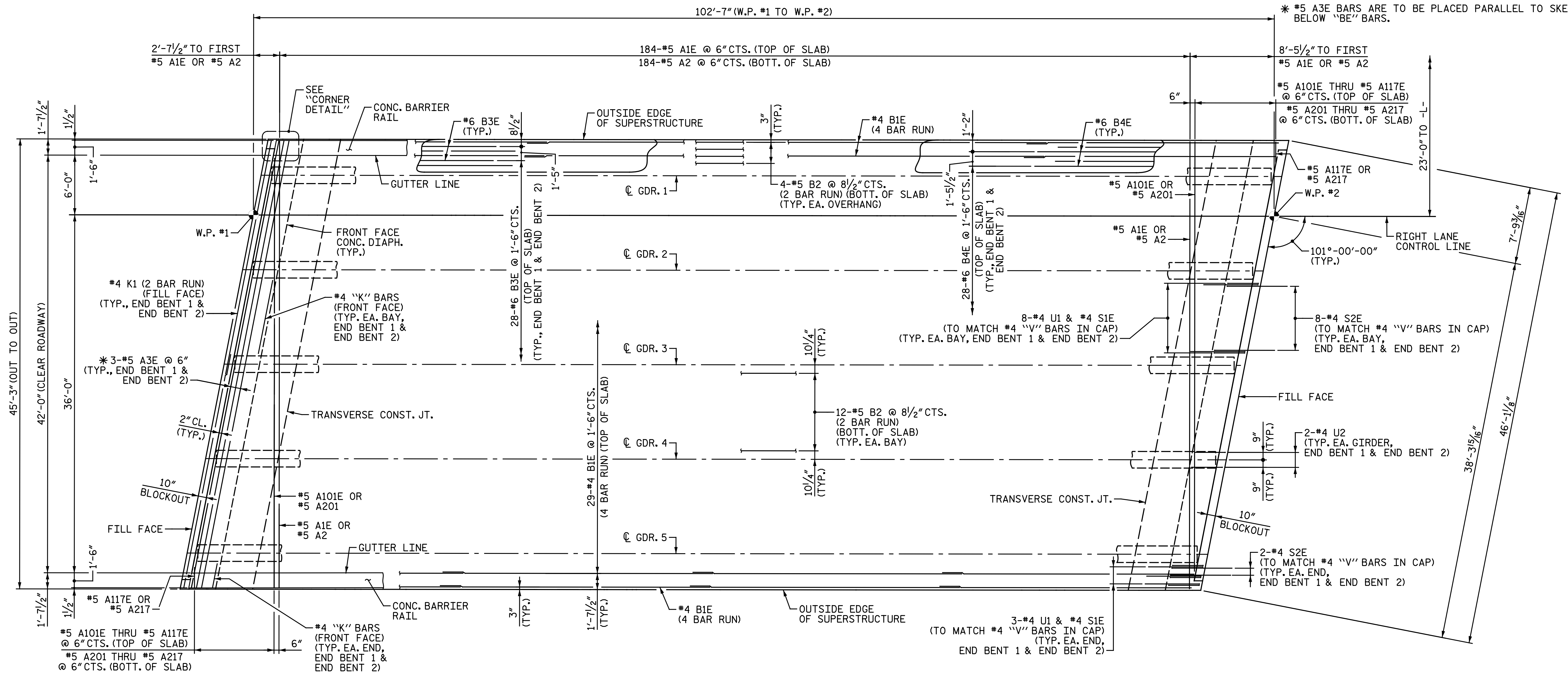
DRAWN BY: M. D. MAYHEW DATE: 4-4-17
 CHECKED BY: B. J. BELL DATE: 4-4-17

NOTES:

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

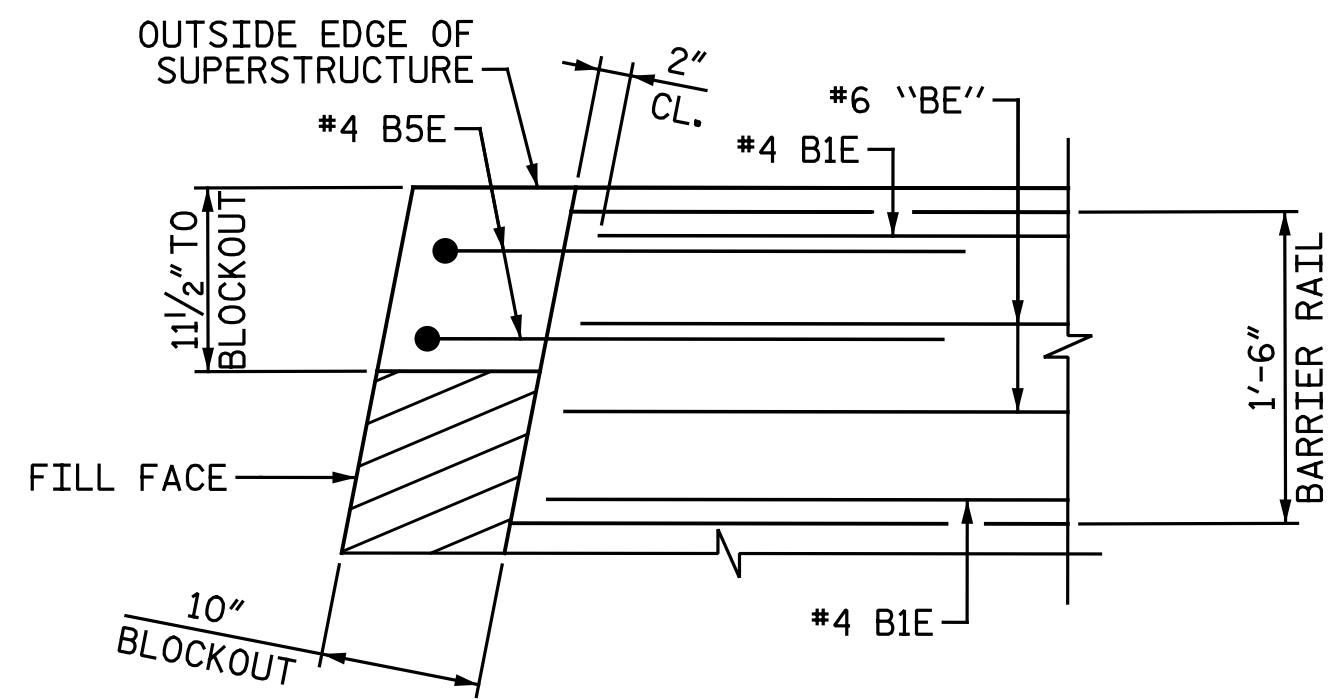
FOR DECK POURING SEQUENCE AND LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE "BILL OF MATERIAL" SHEET.

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



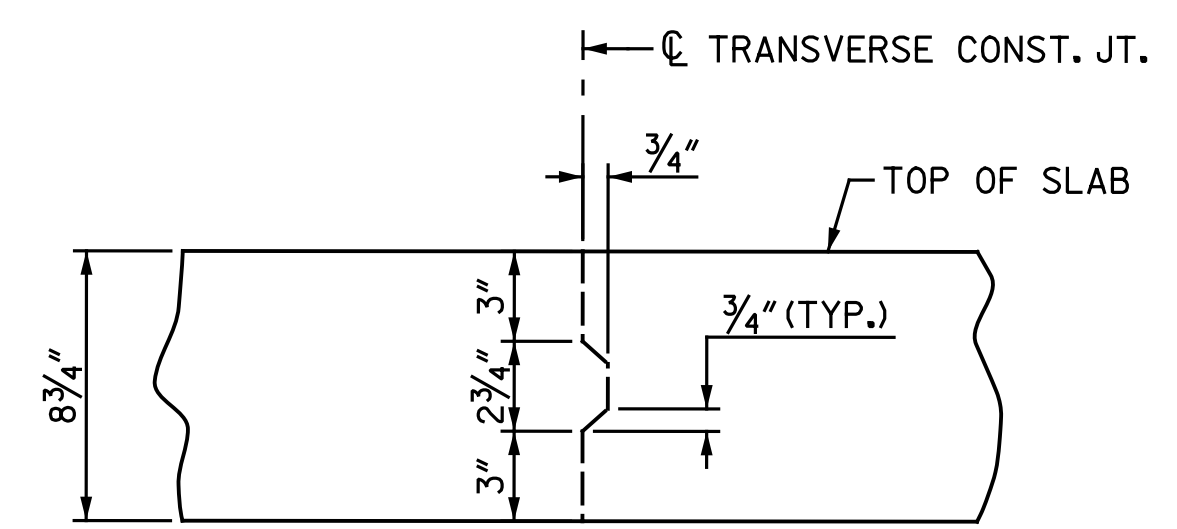
SPAN A

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: 281+39.19 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
PLAN OF SPAN

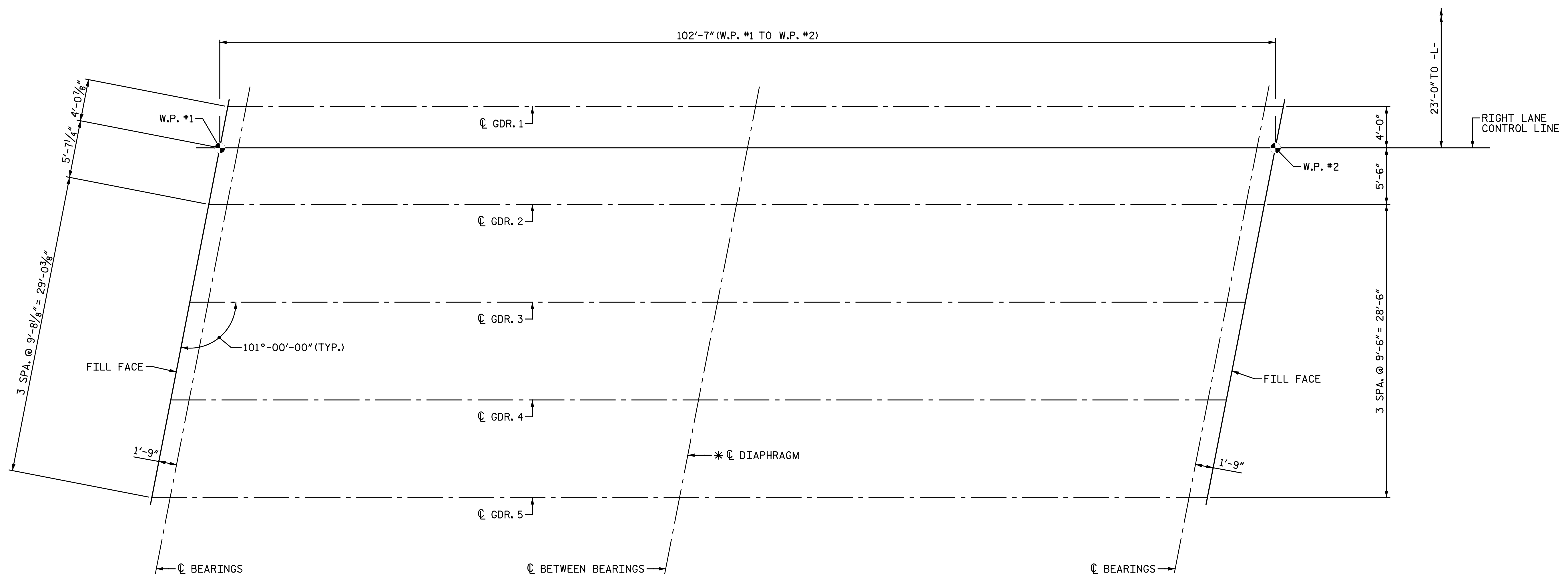
RIGHT LANE

DRAWN BY : D.A. LAMAY DATE : 03-15-17
CHECKED BY : B. J. BELL DATE : 4-4-17

8/10/2017
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REVISIONS						SHEET NO. S10-7
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1			3			TOTAL SHEETS 25
2			4			



FIX.
(E1)

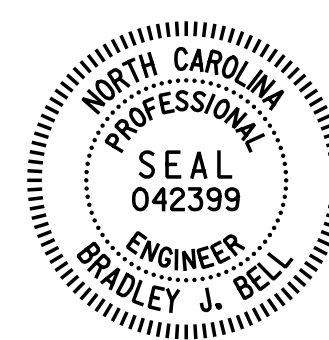
FIX.
(E1)

SPAN A

GIRDER LAYOUT

* INTERMEDIATE STEEL DIAPHRAGMS NOT SHOWN FOR CLARITY

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 281+39.19 -L-

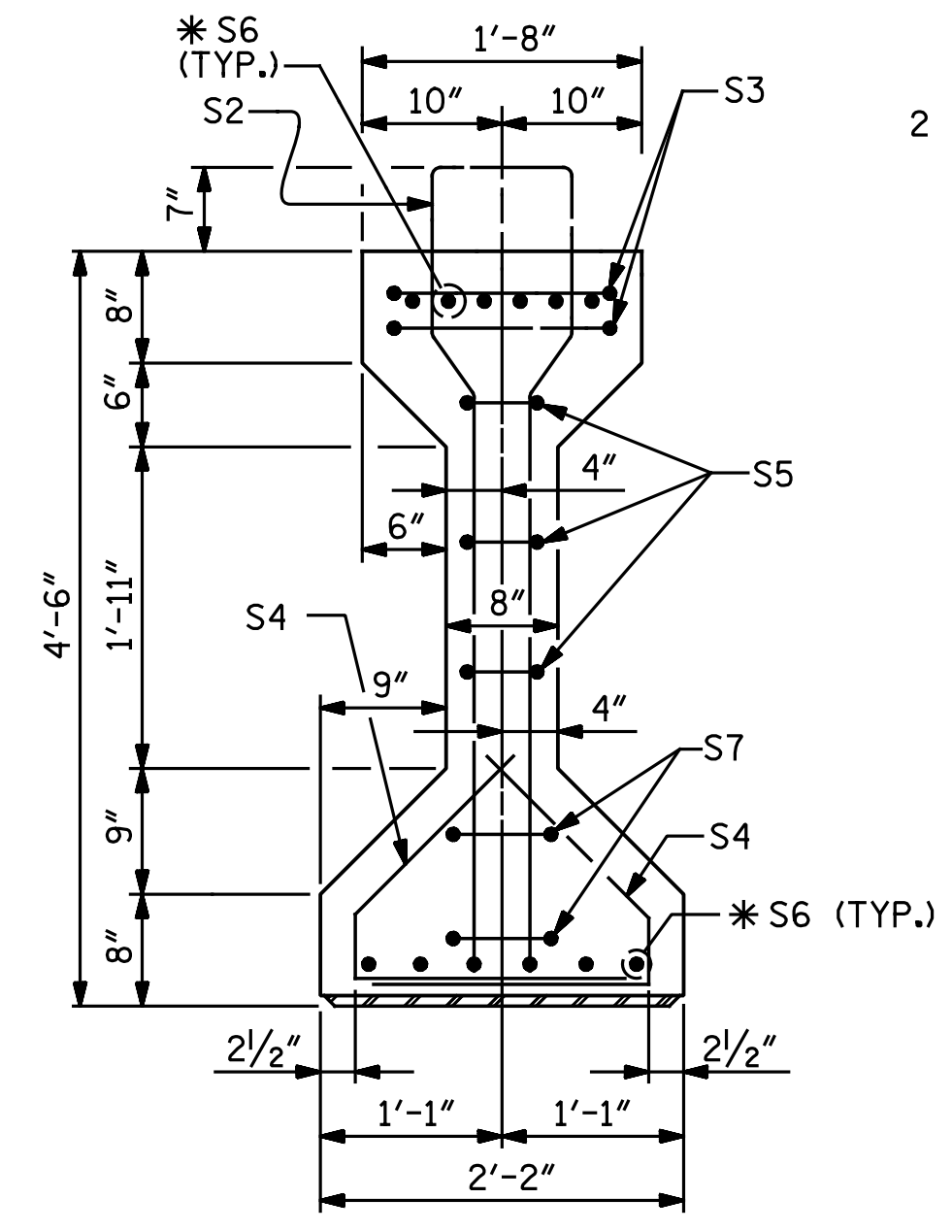


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 GIRDER LAYOUT
 RIGHT LANE

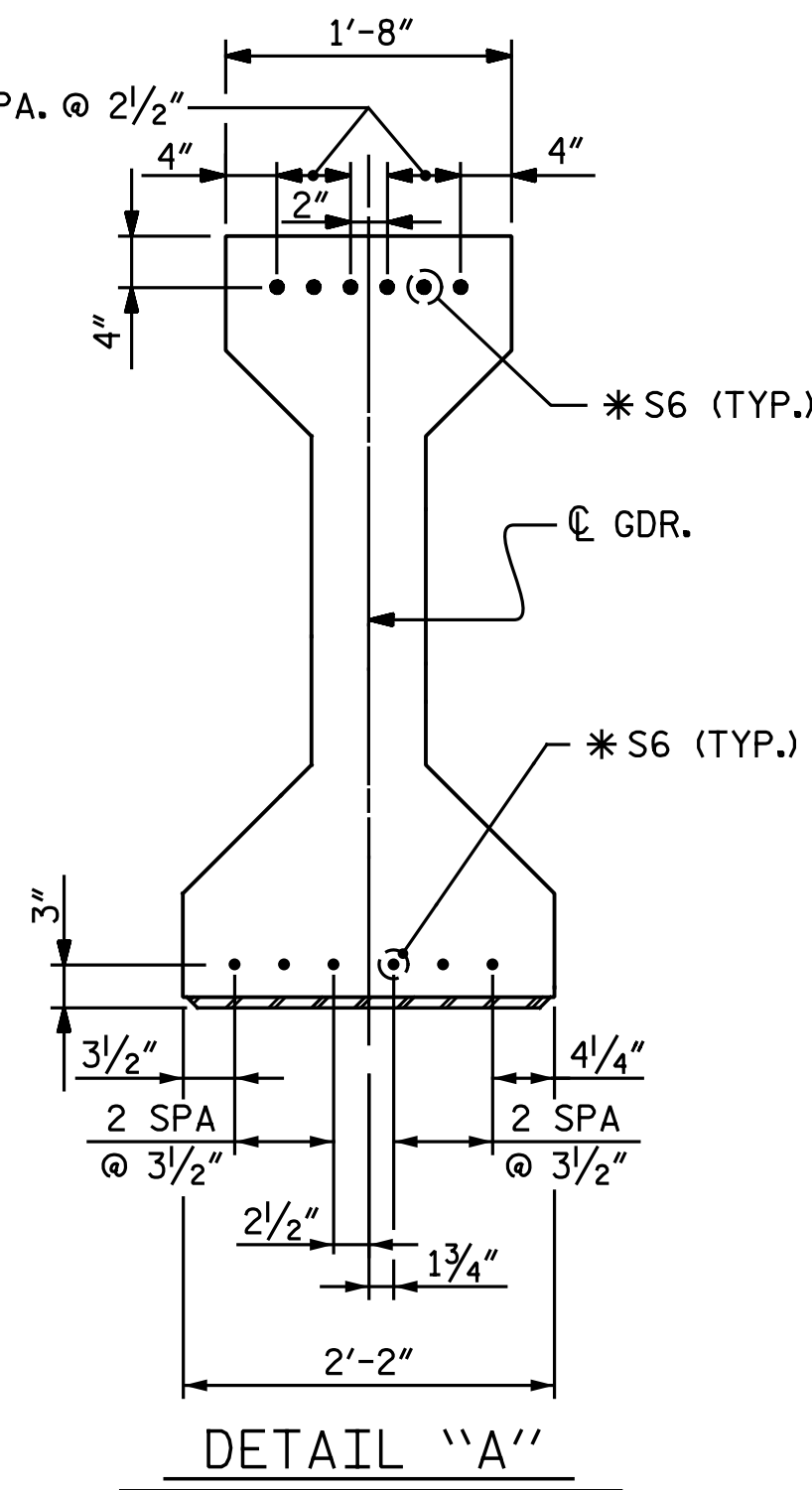
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S10-8
1			3			TOTAL SHEETS
2			4			25

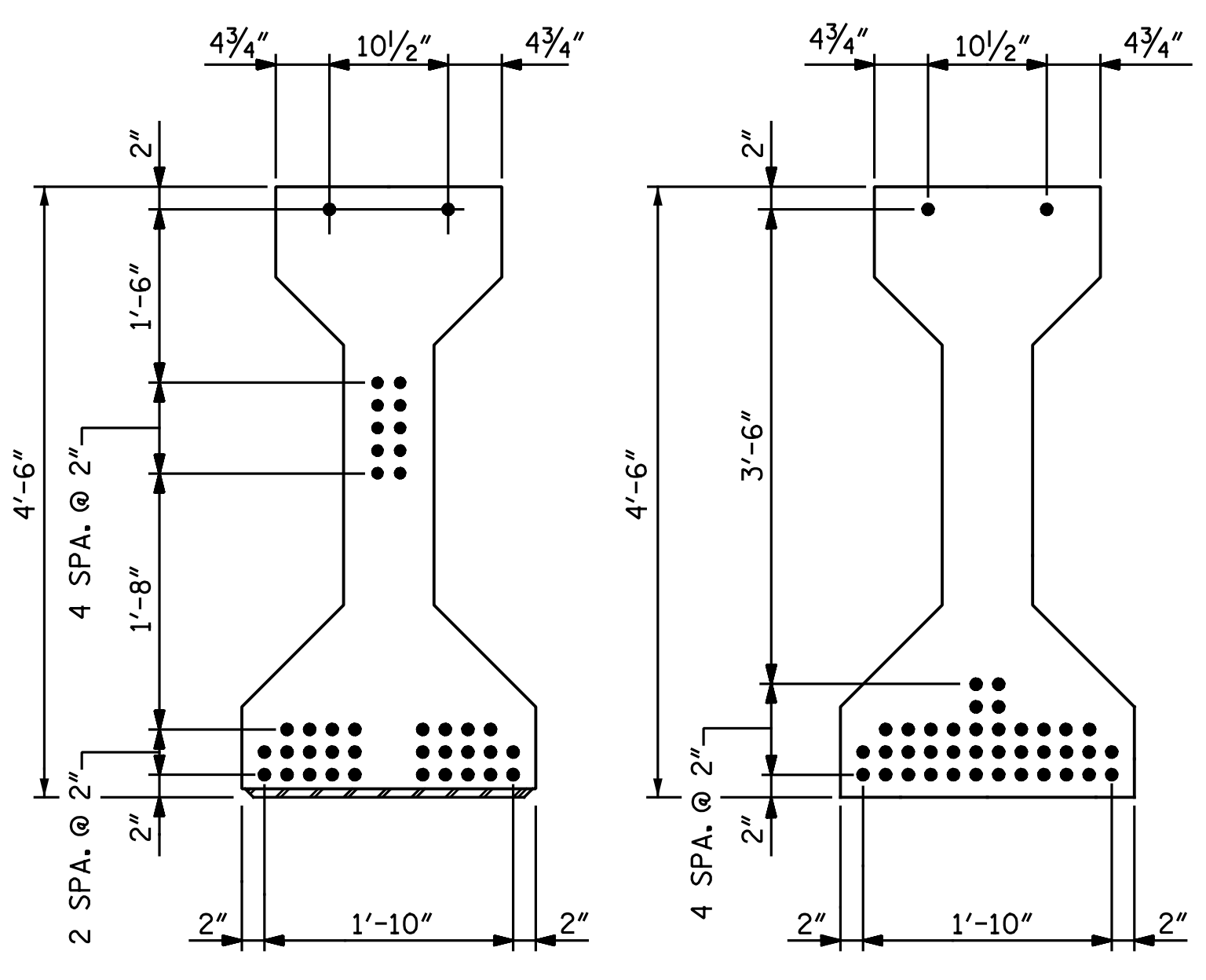
DRAWN BY : C. E. MAYHEW DATE : 3-13-17
 CHECKED BY : B. J. BELL DATE : 4-4-17



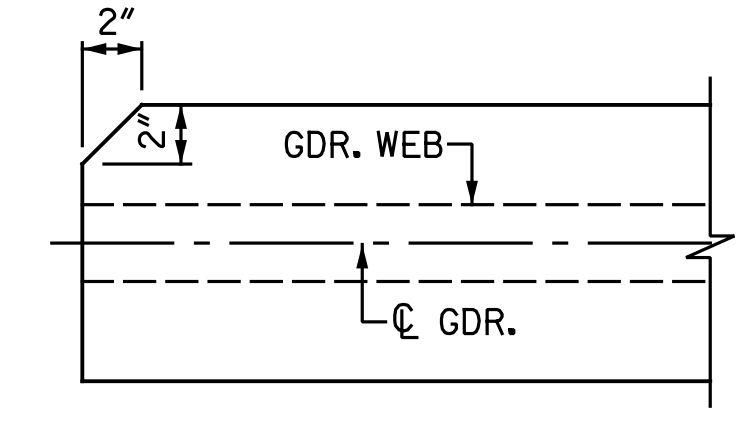
SECTION A-A
* FOR S6 BARS, SEE DETAIL "A"



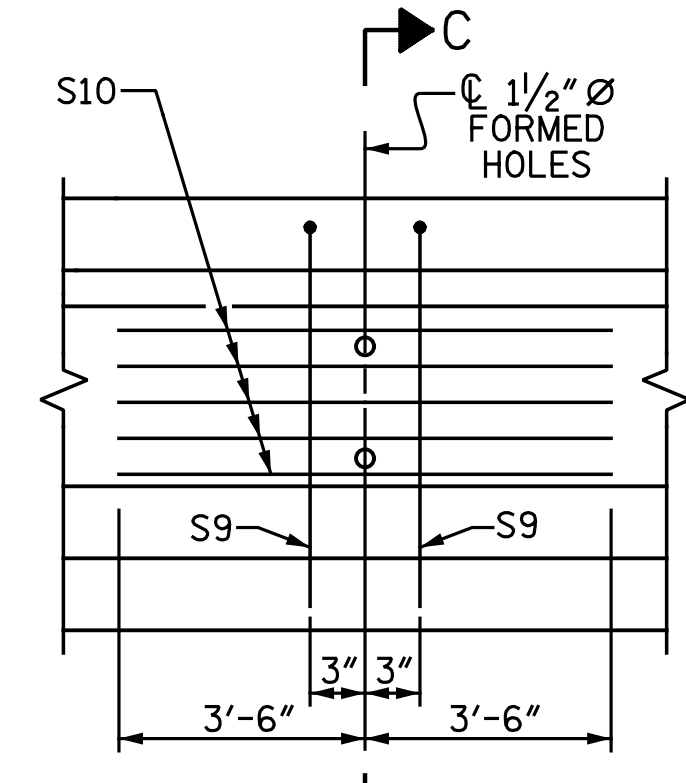
DETAIL "A"



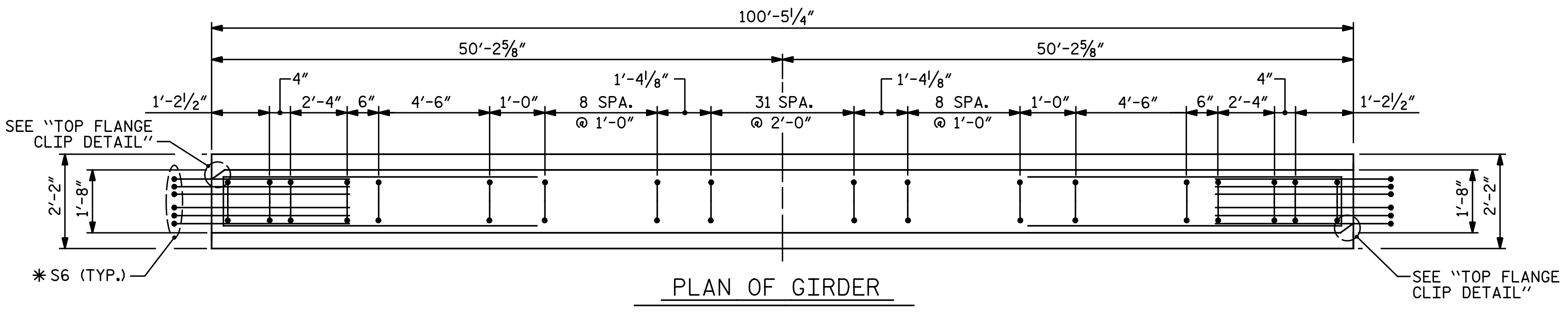
AT END OF GIRDER AT CENTER OF GIRDER
0.6" Ø LOW RELAXATION STRAND LAYOUT



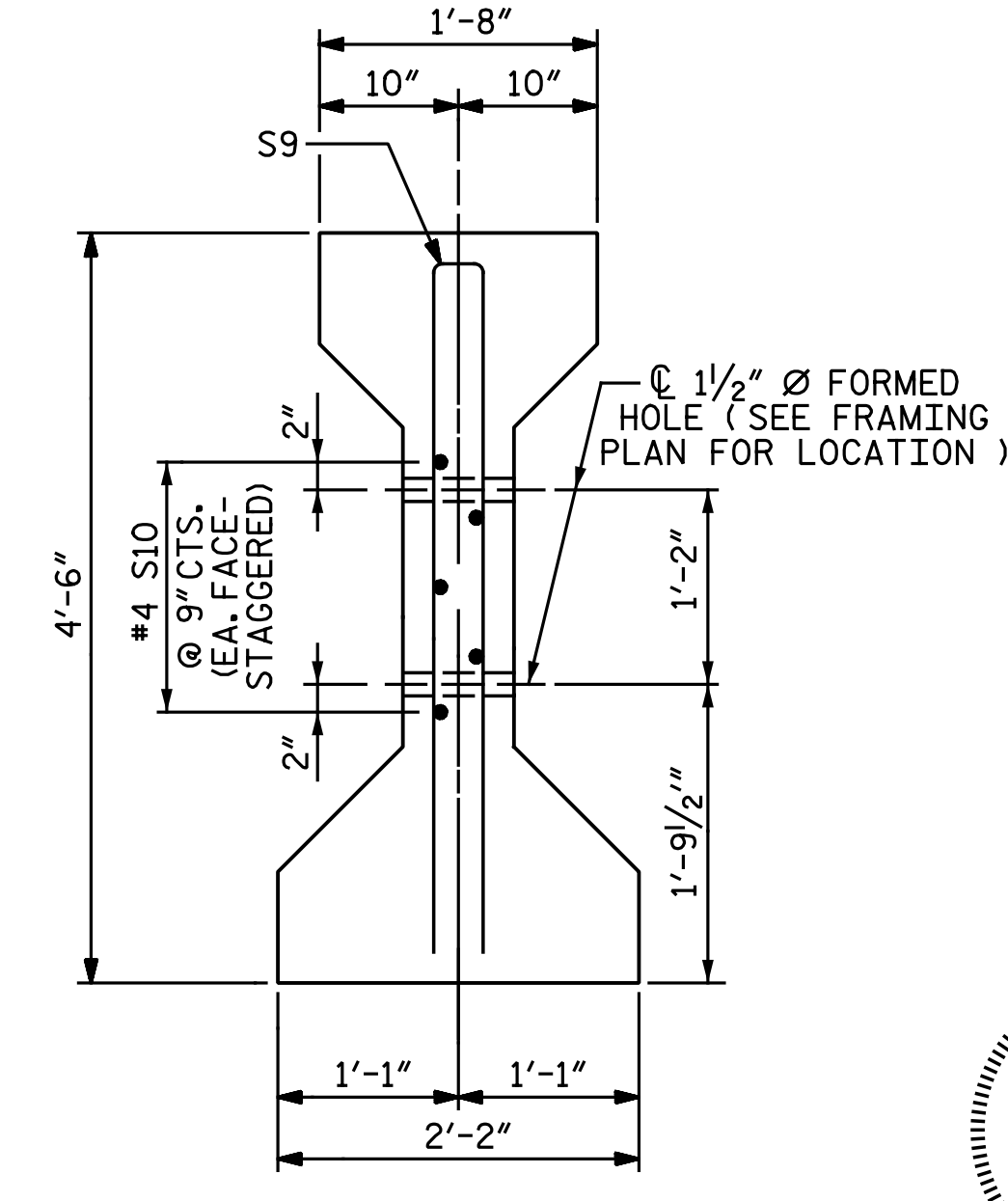
TOP FLANGE CLIP DETAIL
(TYP.)



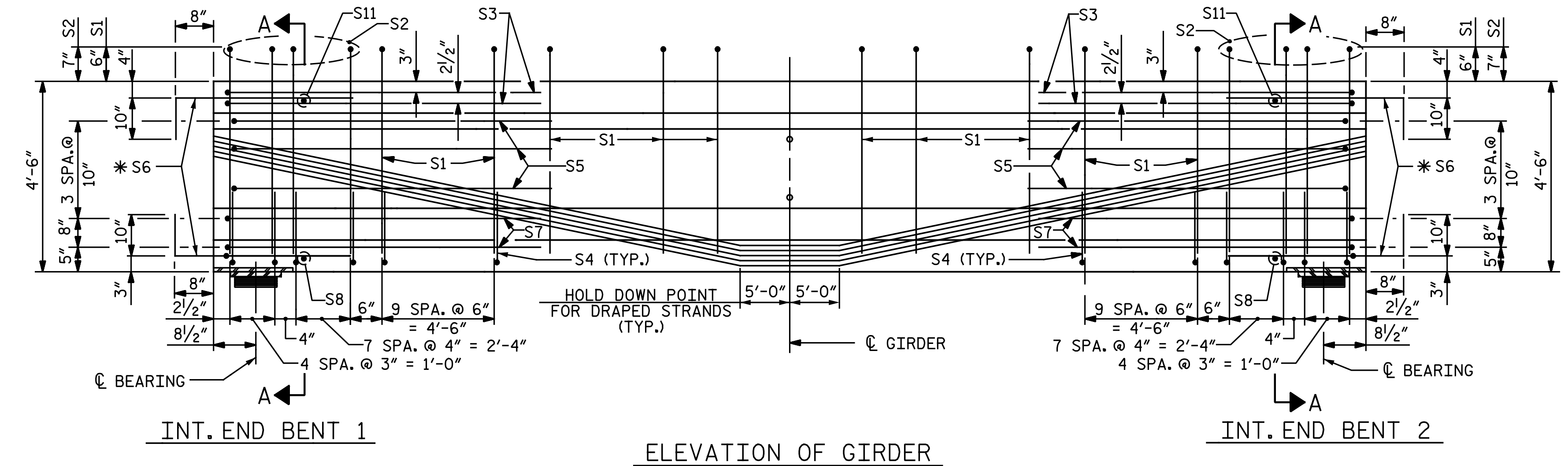
PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1 THRU 5



PLAN OF GIRDER



SECTION C-C
(S1 BARS NOT SHOWN)



ELEVATION OF GIRDER

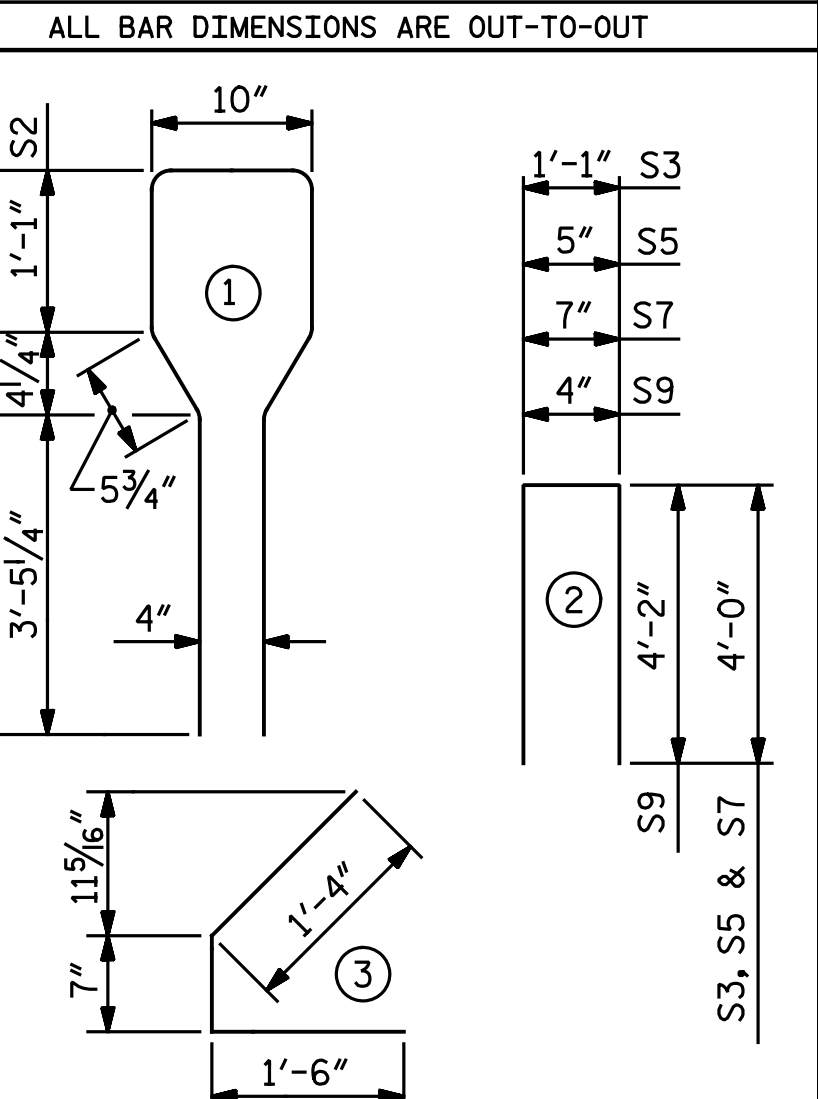
(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQ. 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

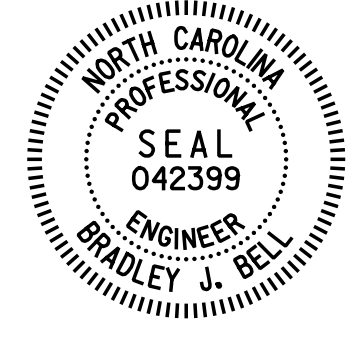


QUANTITIES FOR ONE GIRDER			
REINFORCING STEEL	7,500 PSI CONCRETE	0.6" Ø L. R. STRANDS	
	LB.	C.Y.	No.
	1,348	20.4	40

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5	100.44	502.19

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 281+39.19 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER

RIGHT LANE

REVISIONS						SHEET NO. S10-9
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

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

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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"	1/16"	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), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

NOTES:

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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.

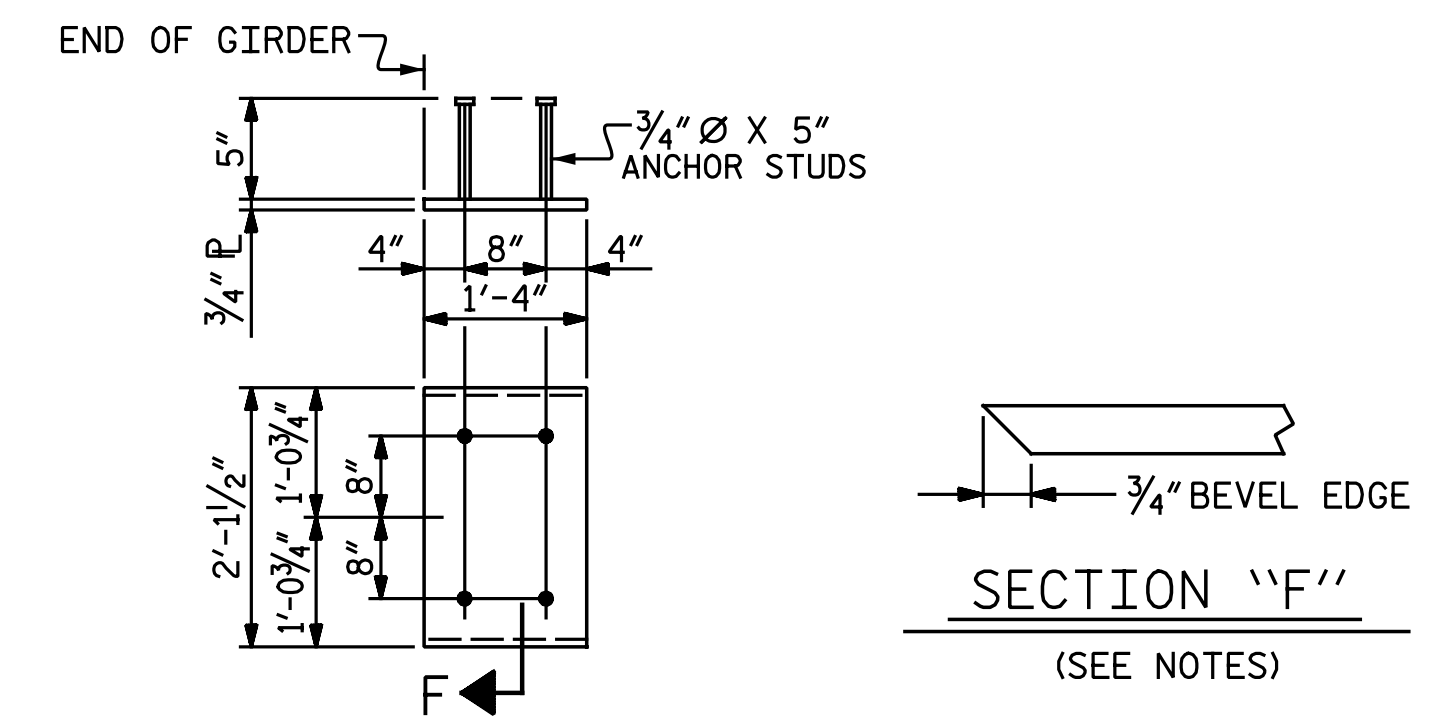
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

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.

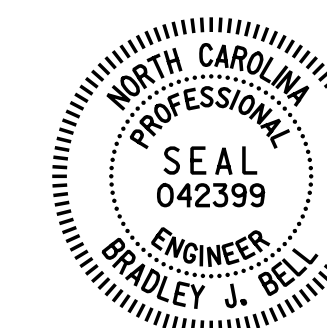
THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4,500 LBS.

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



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

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 281+39.19 -L-



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

RIGHT LANE

8/10/2017
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NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
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

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 1/4 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.

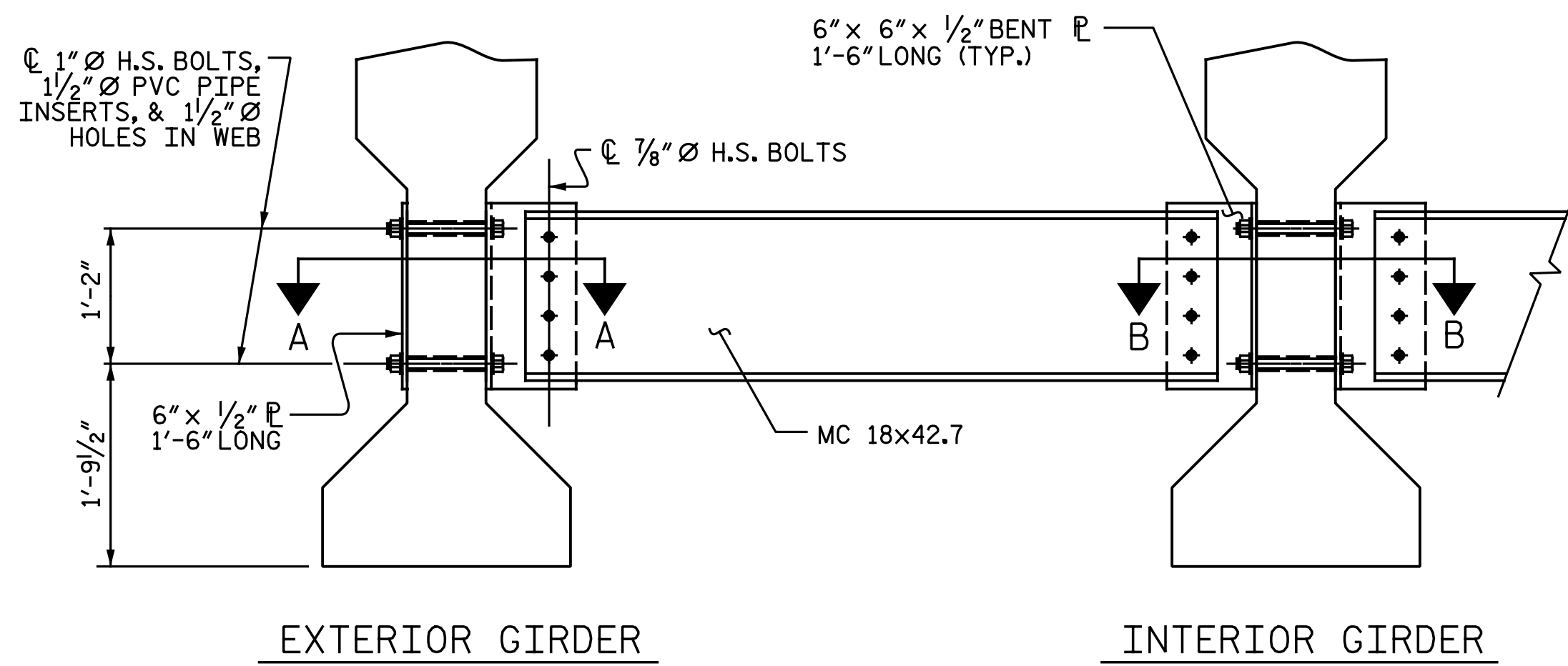
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

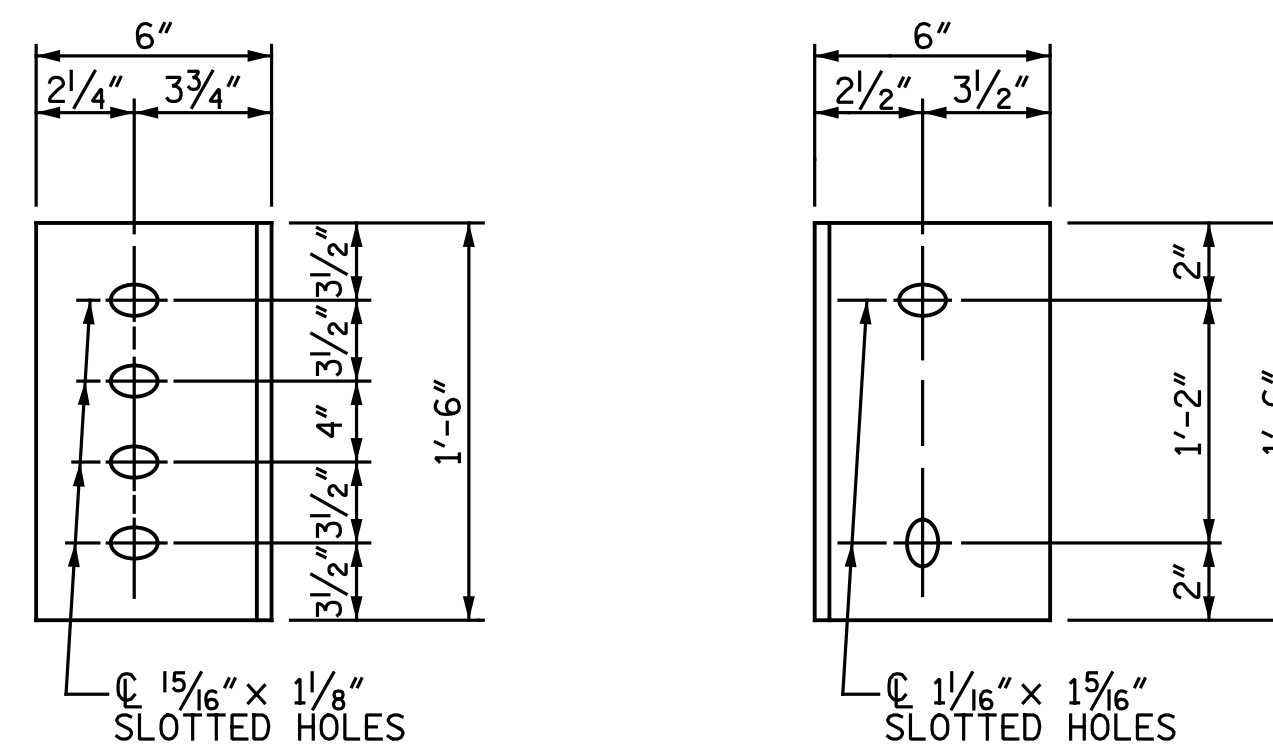
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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.



PART SECTION AT INTERMEDIATE DIAPHRAGM



CONNECTOR PLATE DETAILS

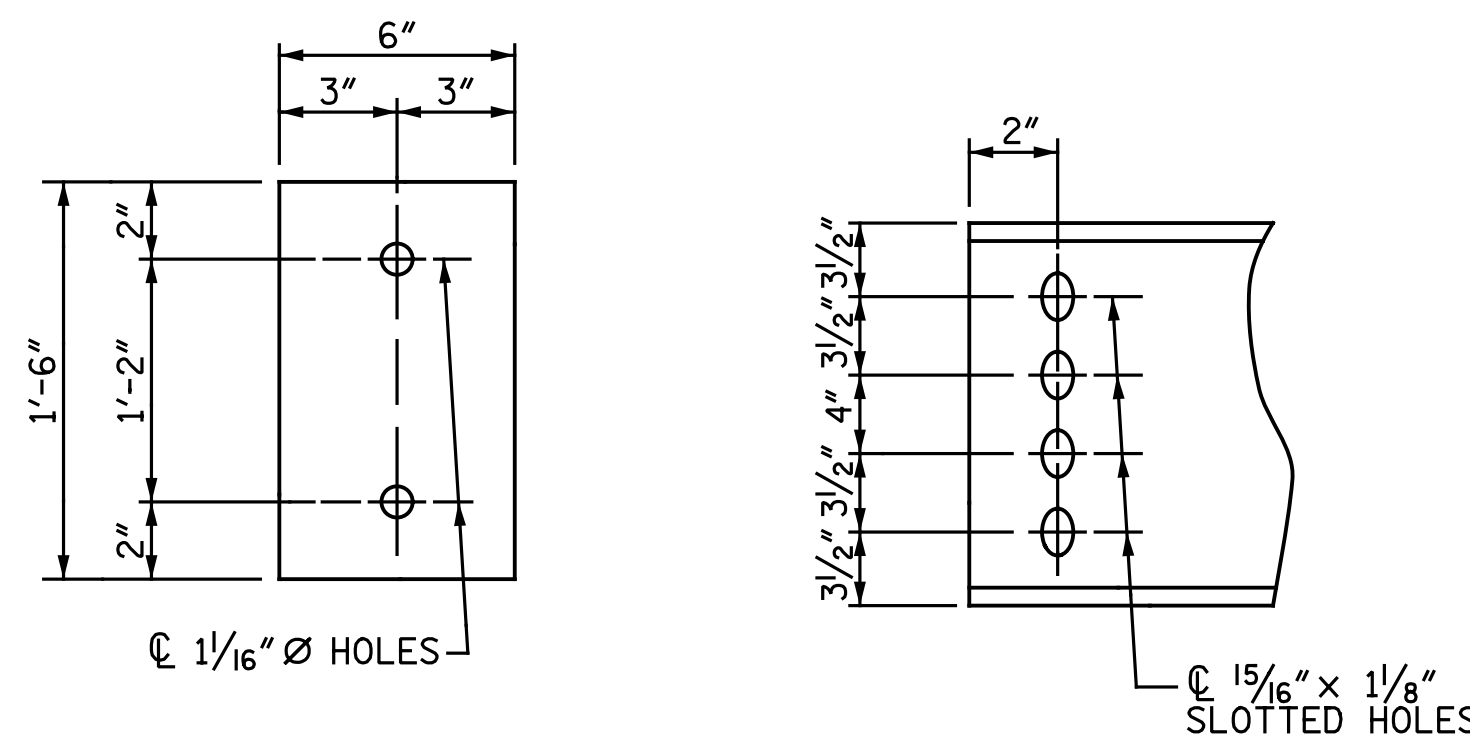
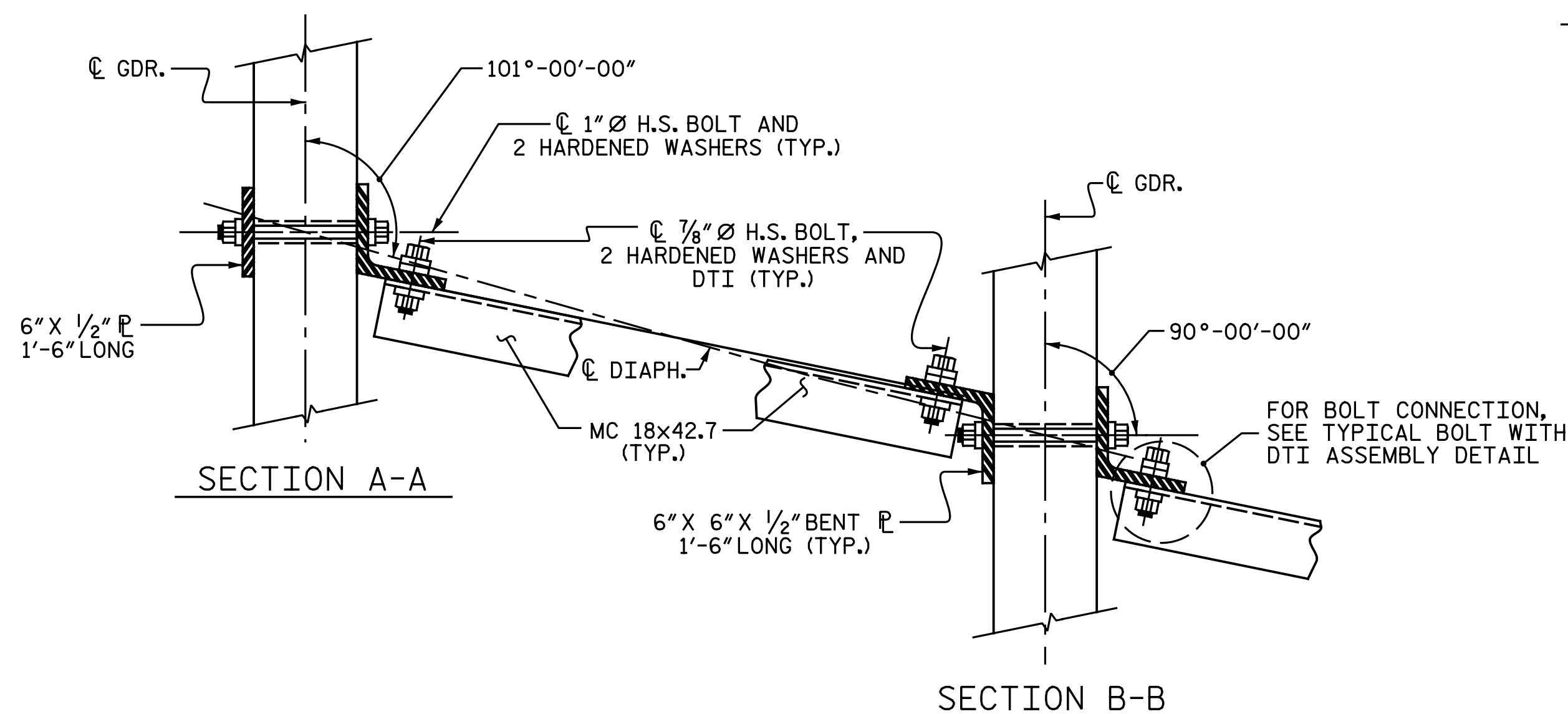
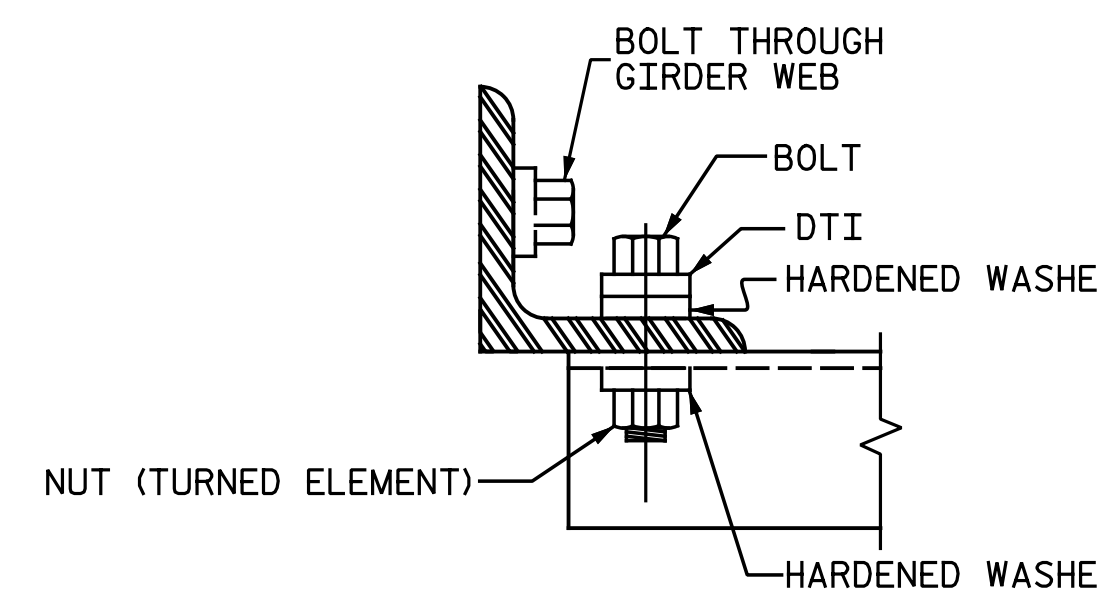


PLATE DETAILS CHANNEL END

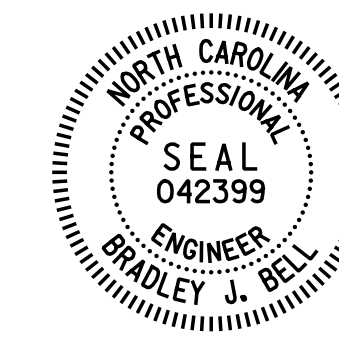


CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 281+39.19 -L-



8/10/2017

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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					
STANDARD INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS RIGHT LANE					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 25
					SHEET NO. S10-II

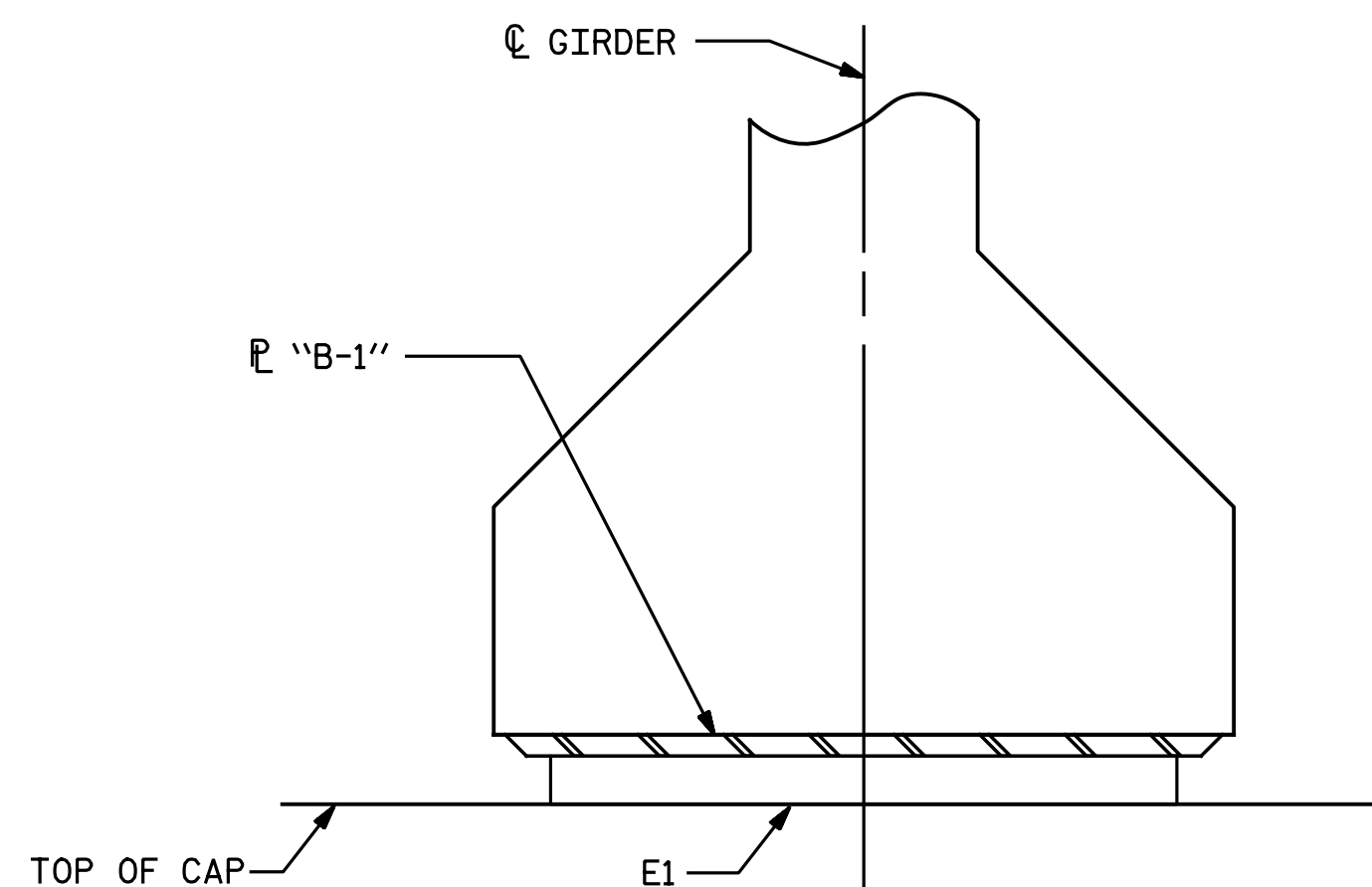
ASSEMBLED BY : M. D. MAYHEW	DATE : 3-15-17
CHECKED BY : B. J. BELL	DATE : 4-4-17
DRAWN BY : TLA 6/05	ADDED 10/21/05
CHECKED BY : VC 6/05	REV. 5/1/06RRR KMM/GM
	REV. 10/1/11 MAA/GM

NOTES

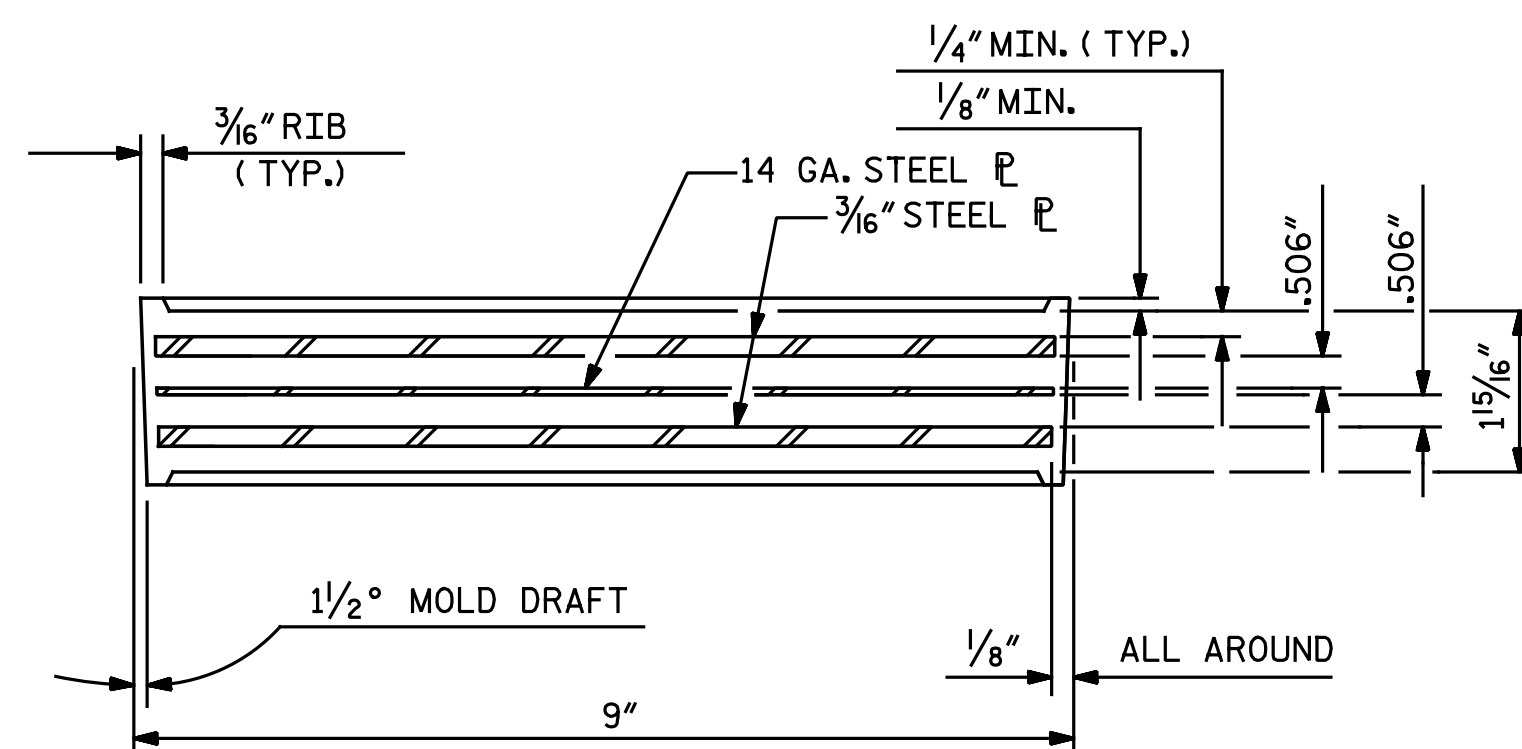
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

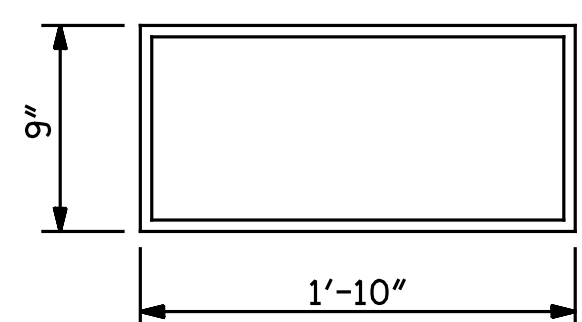
FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.



SECTION
(AT INTEGRAL END BENTS)



TYPICAL SECTION OF ELASTOMERIC BEARINGS



E1 (10 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE IV

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

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 281+39.19 -L-



8/10/2017

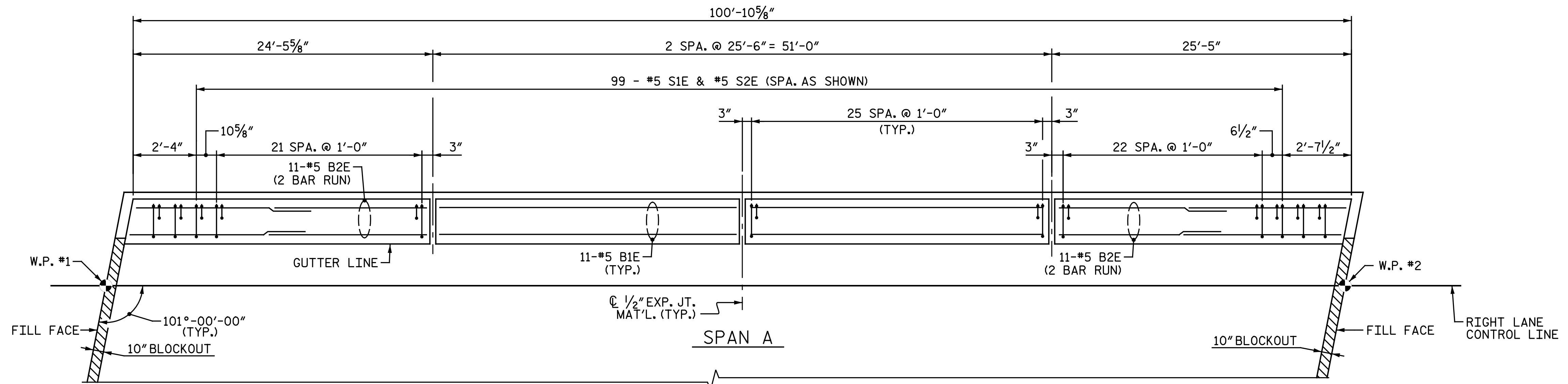
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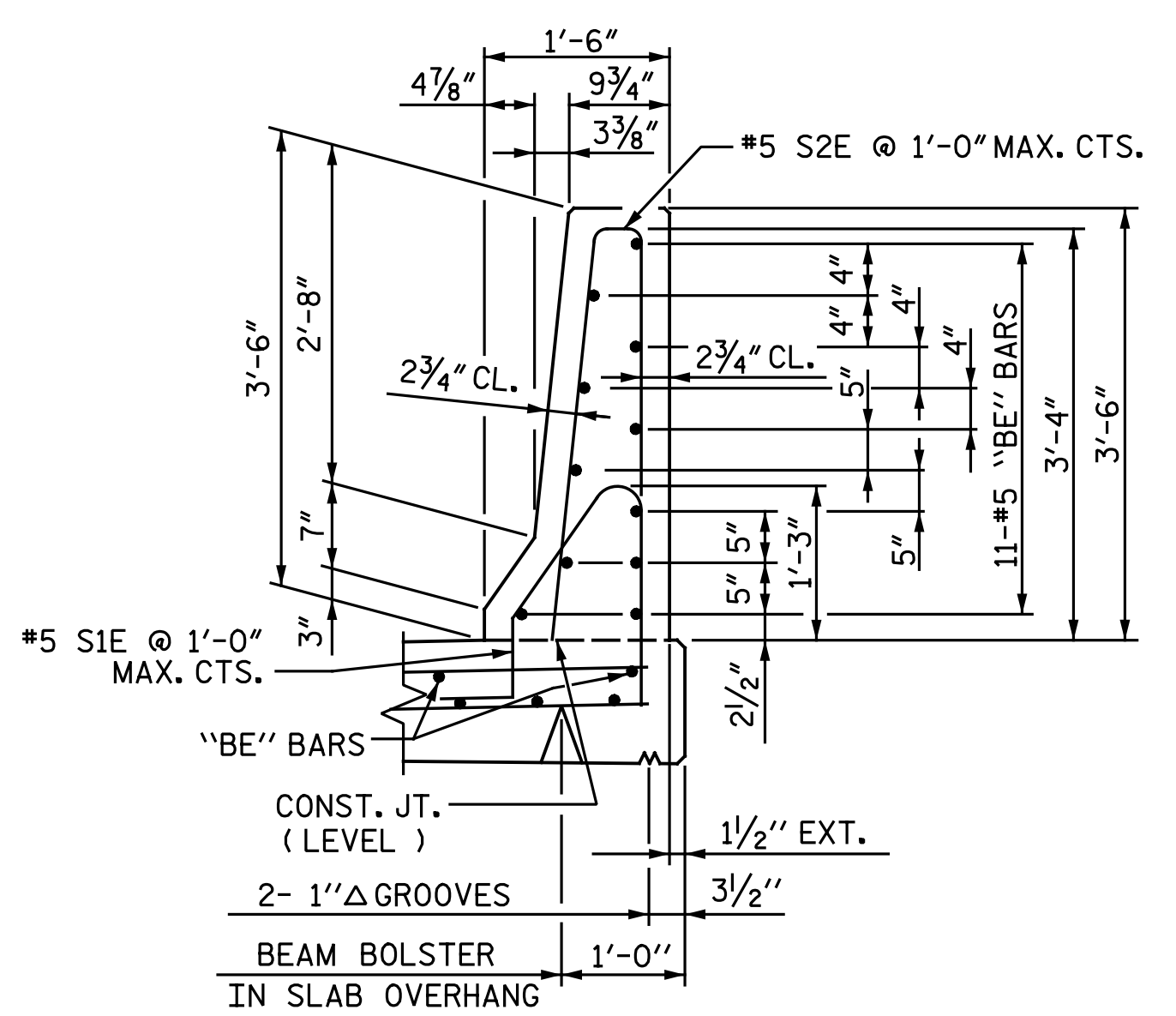
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
ELASTOMERIC BEARING
DETAILS
PRESTRESSED CONCRETE GIRDER
SUPERSTRUCTURE
RIGHT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S10-12
1			3			TOTAL SHEETS
2			4			25

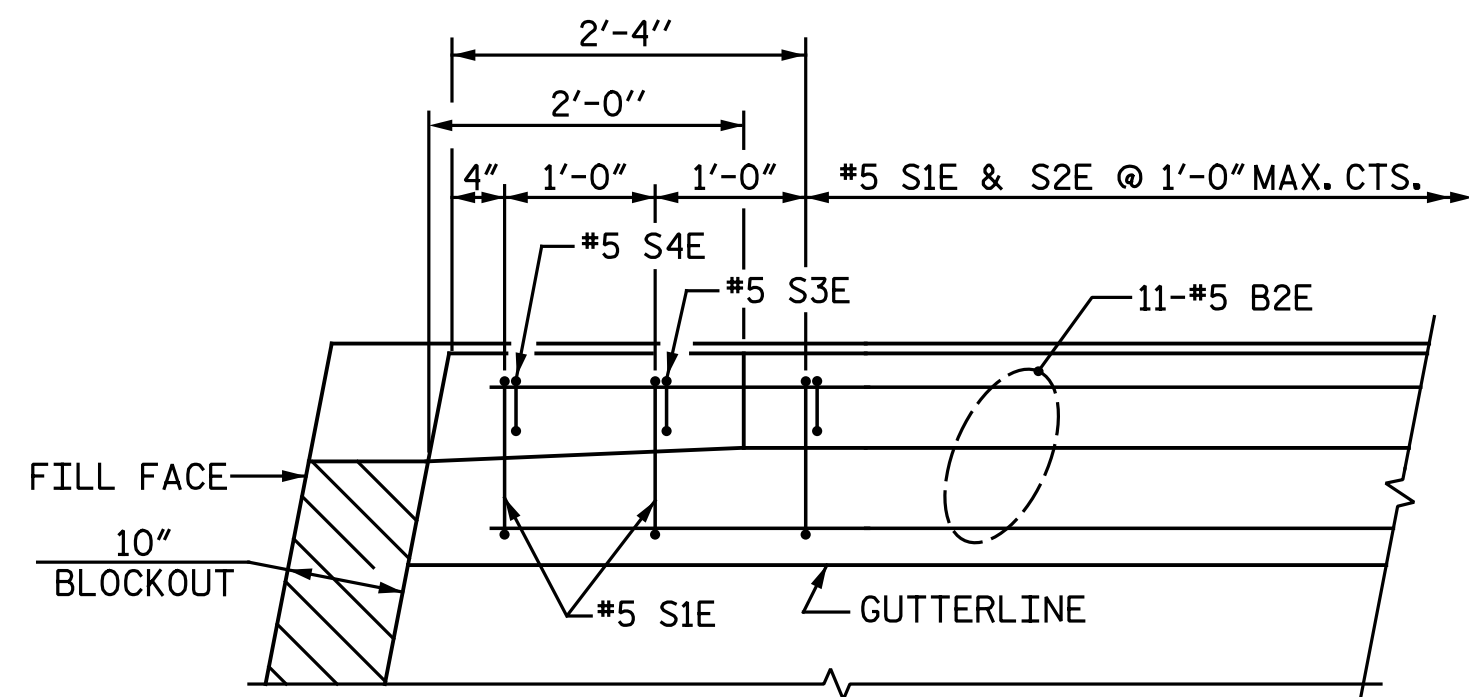
ASSEMBLED BY : N. B. SPEAKS	DATE : 2-10-17
CHECKED BY : B. J. BELL	DATE : 4-6-17
DRAWN BY : WJH 8/89	REV. 10/1/11 MAA/GM
CHECKED BY : CRK 8/89	REV. 6/13 AAC/MAA
	REV. 1/15 MAA/TMG



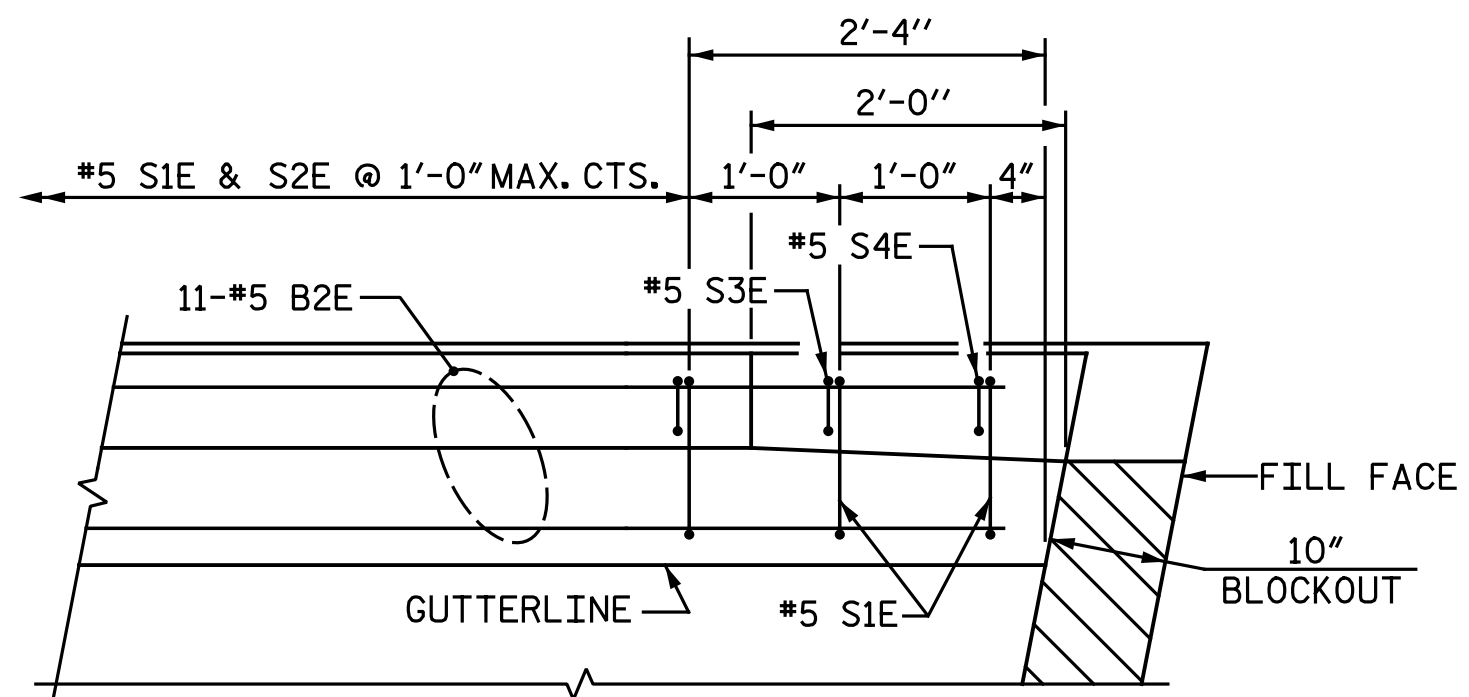
PLAN OF BARRIER RAIL
(LEFT RAIL SHOWN, RIGHT RAIL SIMILAR)



SECTION THRU RAIL

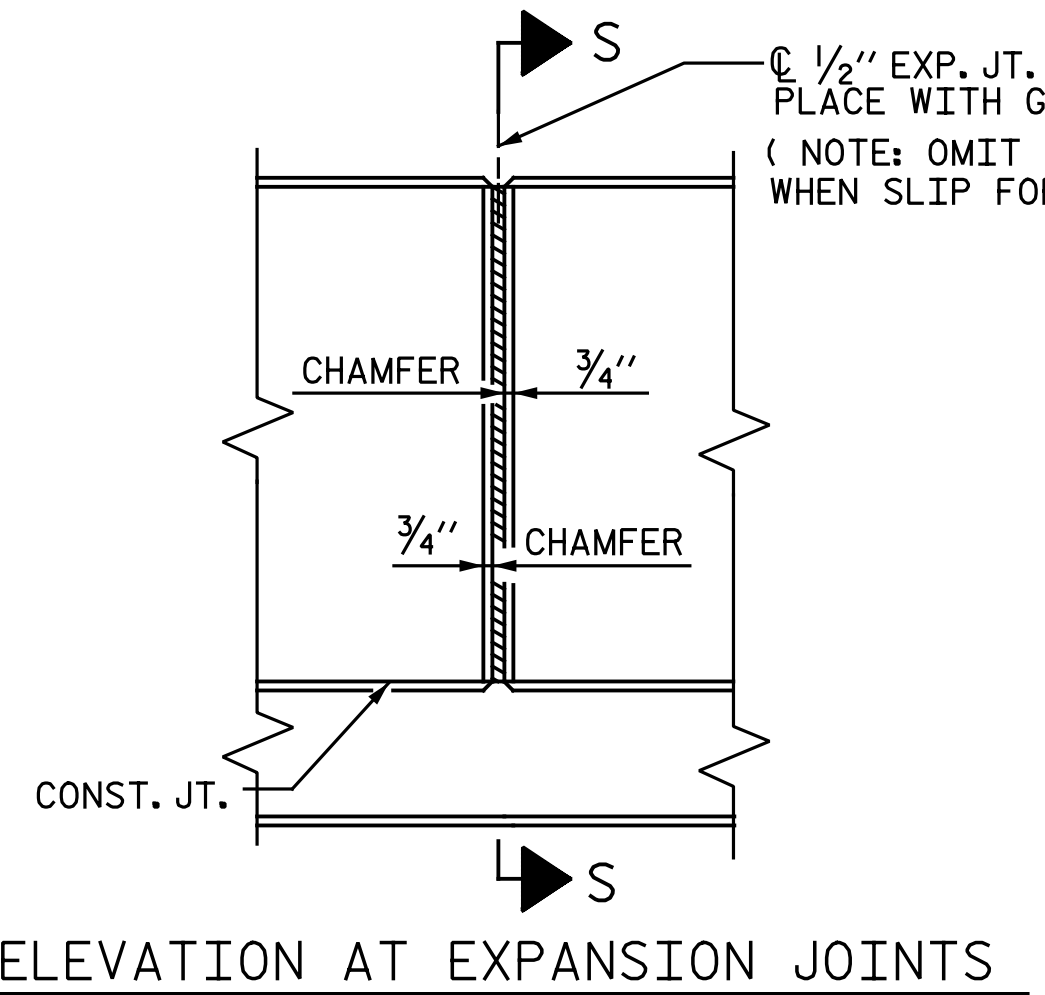


END BENT 1

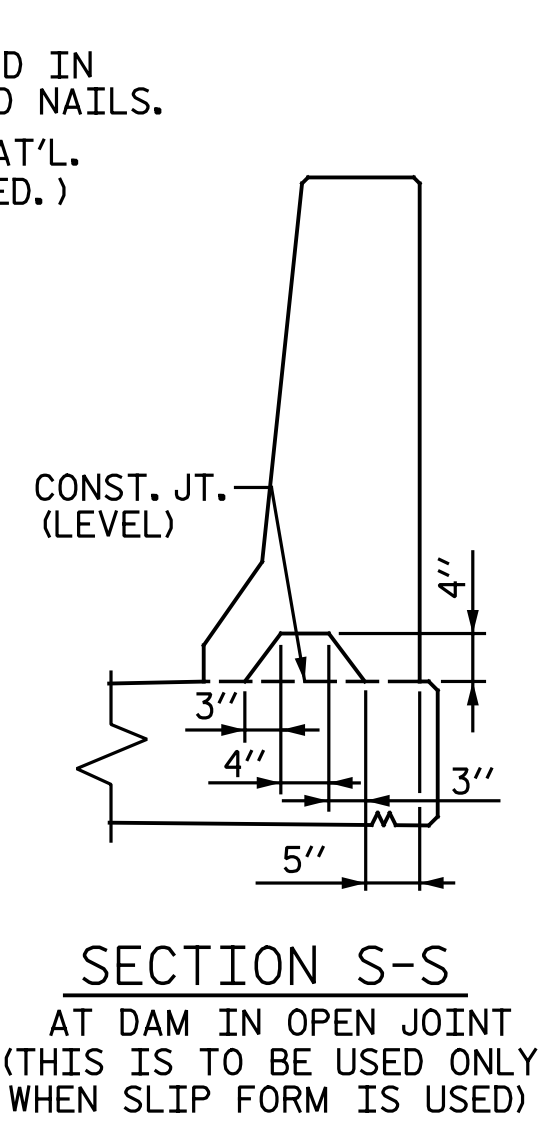


END BENT 2

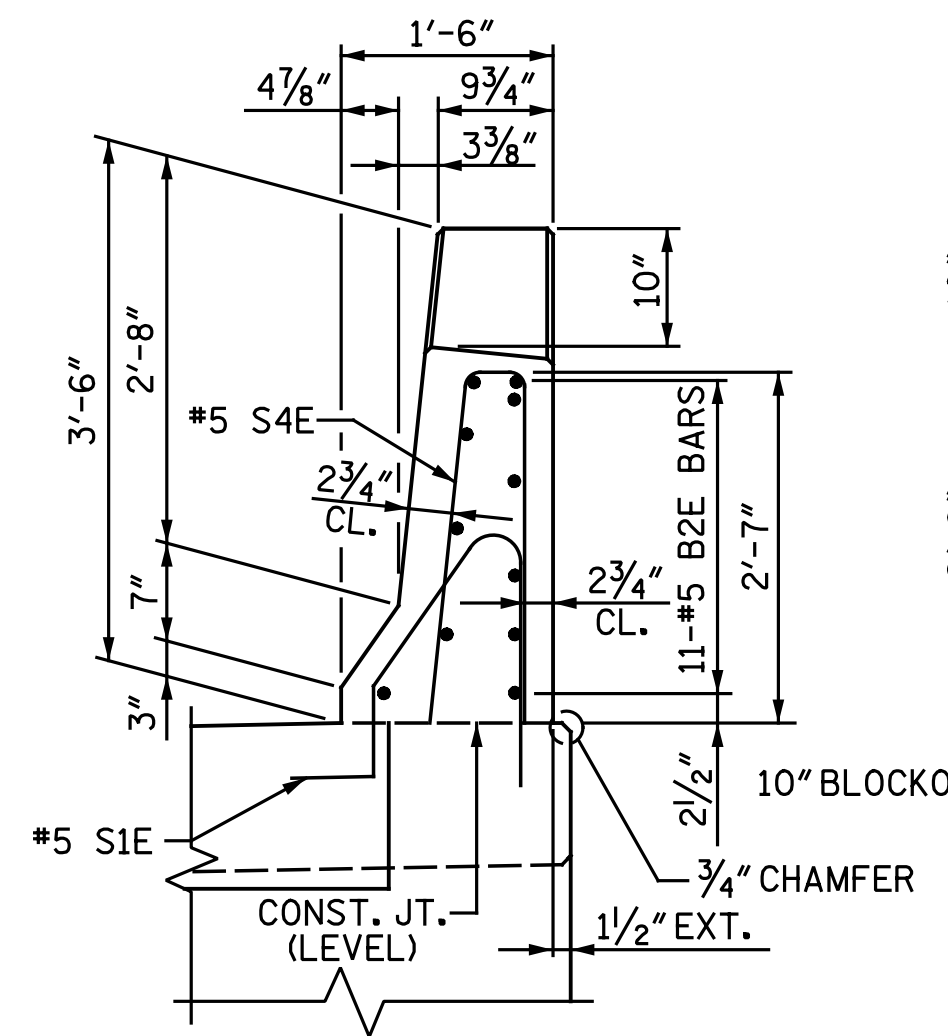
PLAN
(LEFT RAIL SHOWN, RIGHT RAIL SIMILAR)



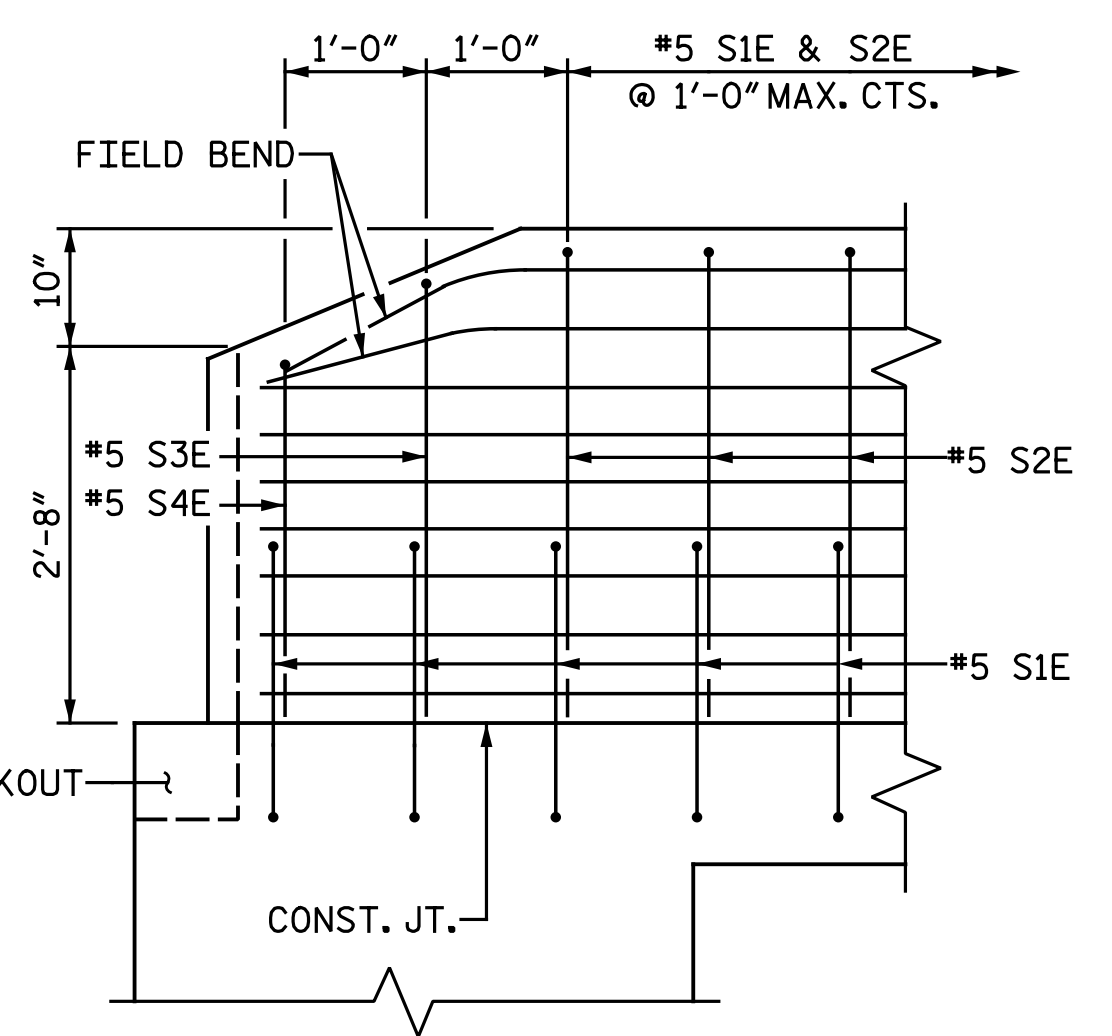
BARRIER RAIL DETAILS



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

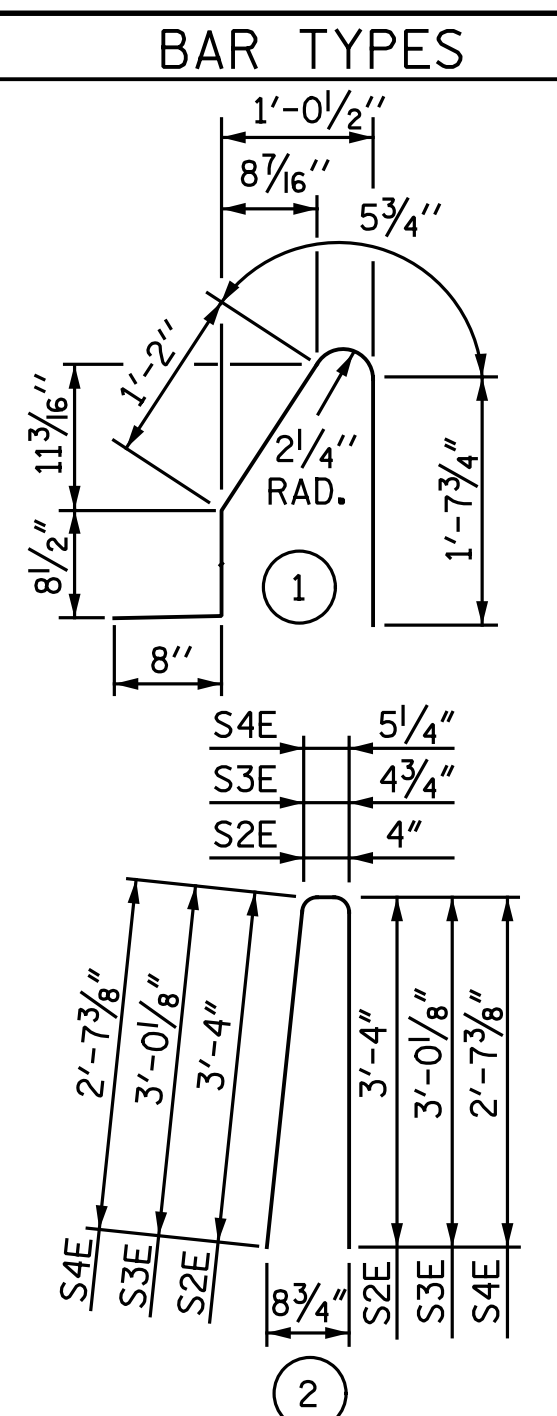


END VIEW



SIDE VIEW

END OF RAIL DETAILS



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: 281+39.19 -L-



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

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

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

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD-DOWN PLATE AND 4 - 1/8" 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 1/8" 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.)

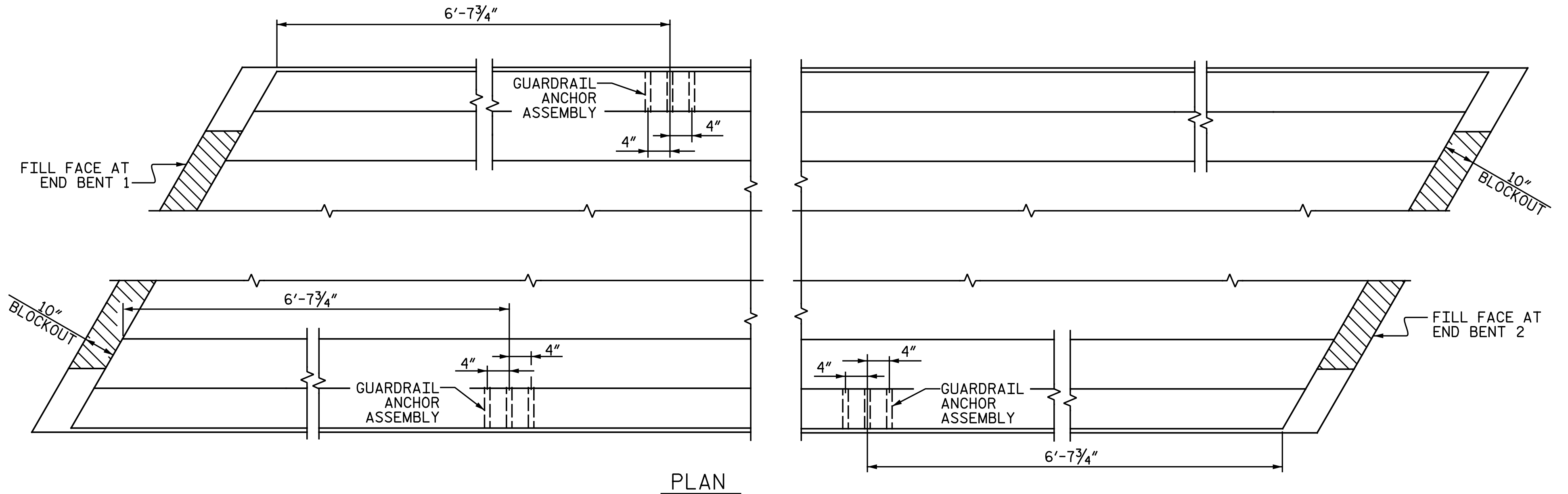
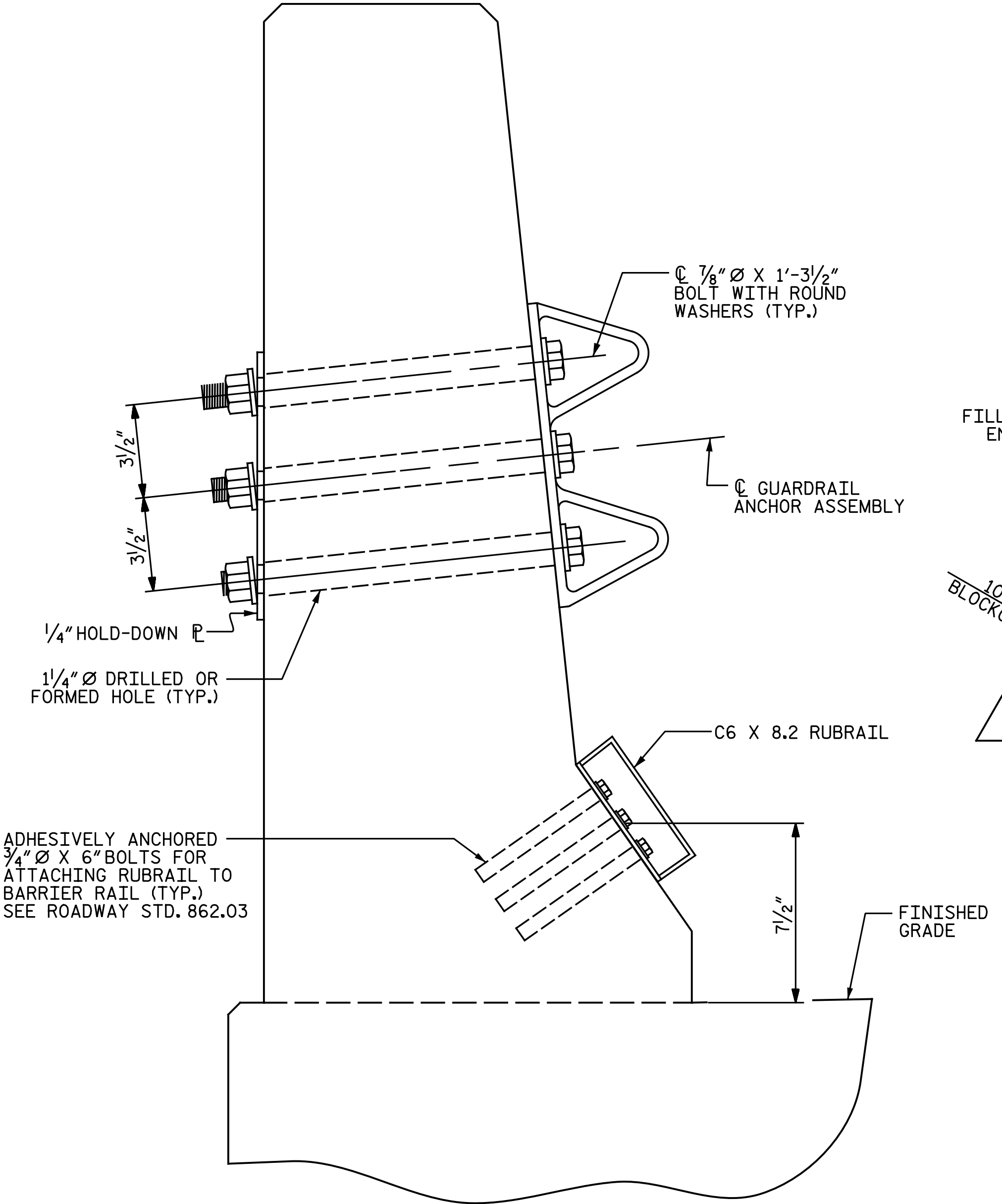
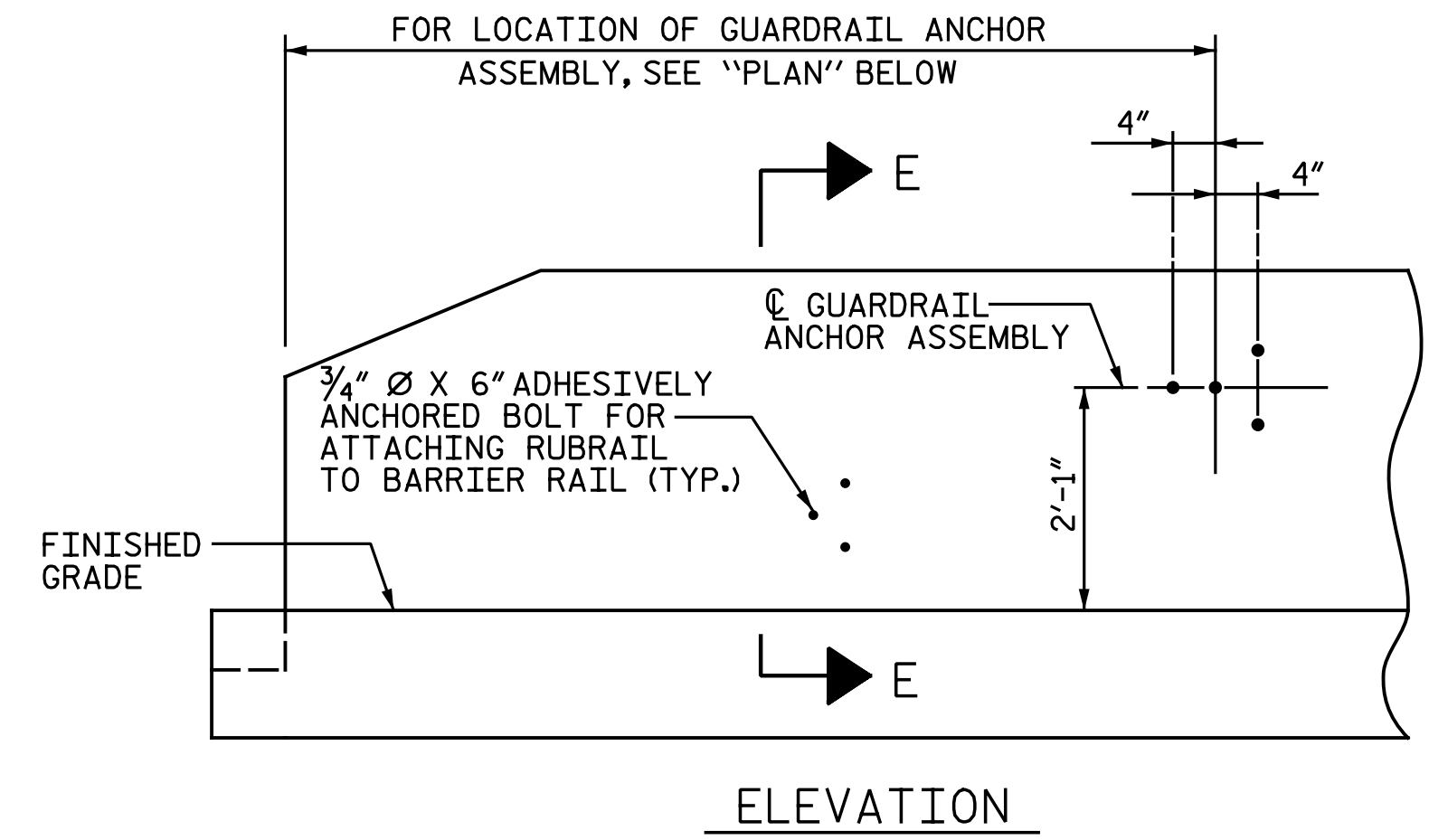
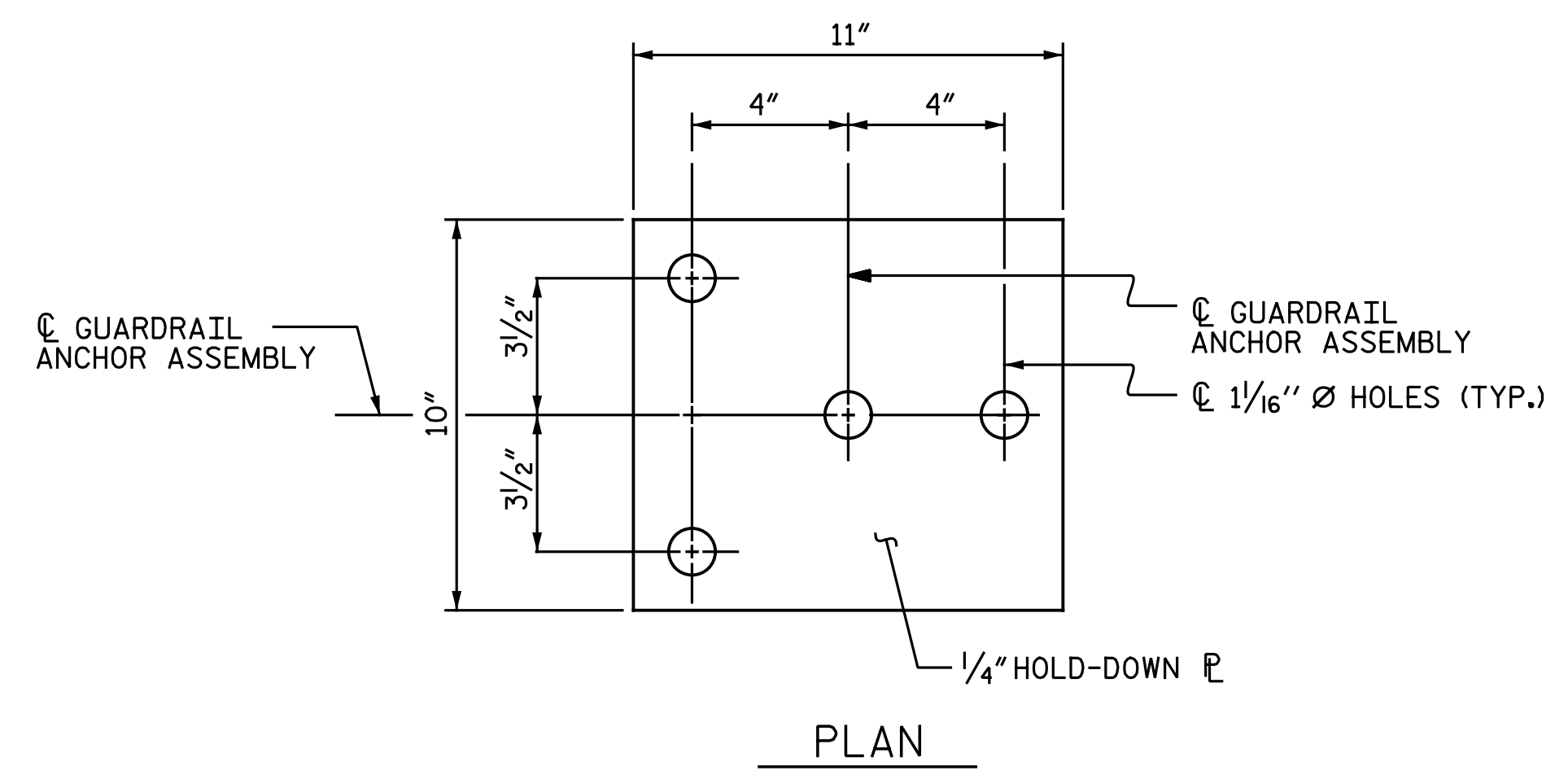
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

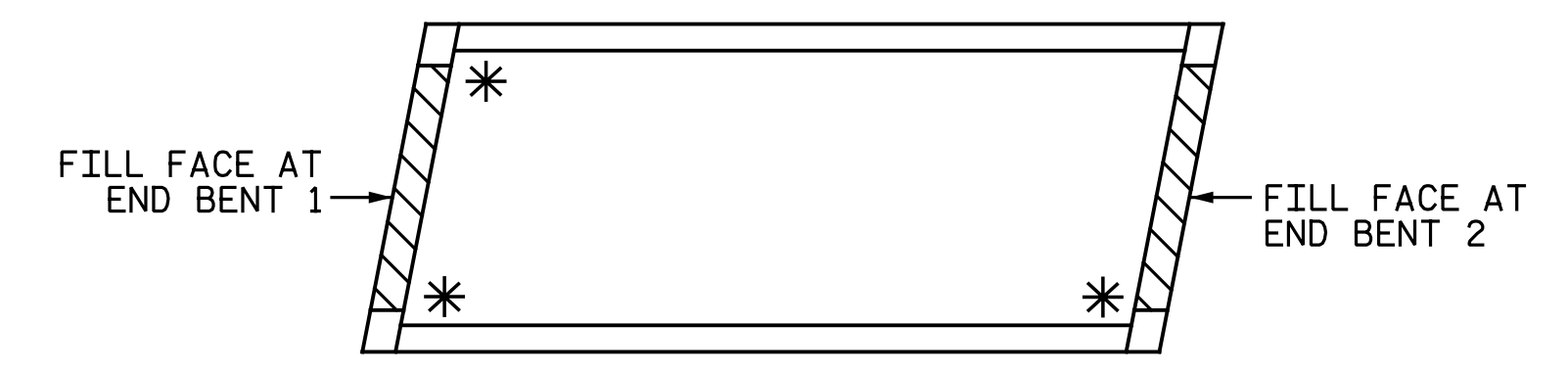
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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.



LOCATION OF ANCHORS FOR GUARDRAIL



* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 281+39.19 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE
FOR BARRIER RAIL

9/12/2017
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
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

SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS

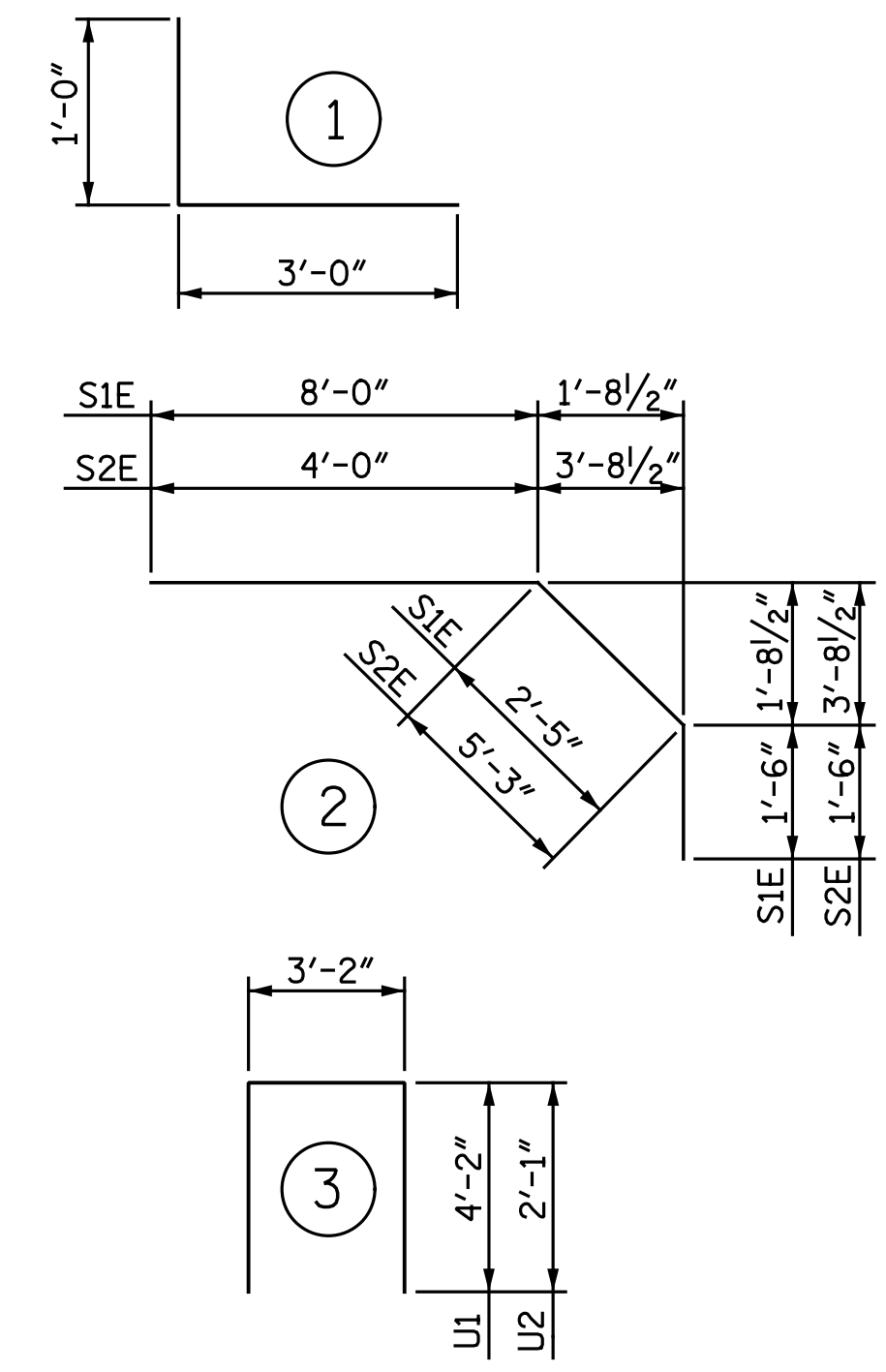
SKETCH SHOWING POINTS OF ATTACHMENTS

RIGHT LANE

REINFORCING BAR SCHEDULE

SPAN A						SPAN A (CONT'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	184	#5	STR.	44' - 11"	8,620	A201	2	#5	STR.	43' - 2"	90
A2	184	#5	STR.	44' - 11"	8,620	A202	2	#5	STR.	40' - 7"	85
A3E	6	#5	STR.	45' - 9"	286	A203	2	#5	STR.	38' - 0"	79
						A204	2	#5	STR.	35' - 5"	74
A101E	2	#5	STR.	43' - 2"	90	A205	2	#5	STR.	32' - 10"	68
A102E	2	#5	STR.	40' - 7"	85	A206	2	#5	STR.	30' - 3"	63
A103E	2	#5	STR.	38' - 0"	79	A207	2	#5	STR.	27' - 8"	58
A104E	2	#5	STR.	35' - 5"	74	A208	2	#5	STR.	25' - 1"	52
A105E	2	#5	STR.	32' - 10"	68	A209	2	#5	STR.	22' - 7"	47
A106E	2	#5	STR.	30' - 3"	63	A210	2	#5	STR.	20' - 0"	42
A107E	2	#5	STR.	27' - 8"	58	A211	2	#5	STR.	17' - 5"	36
A108E	2	#5	STR.	25' - 1"	52	A212	2	#5	STR.	14' - 10"	31
A109E	2	#5	STR.	22' - 7"	47	A213	2	#5	STR.	12' - 3"	26
A110E	2	#5	STR.	20' - 0"	42	A214	2	#5	STR.	9' - 8"	20
A111E	2	#5	STR.	17' - 5"	36	A215	2	#5	STR.	7' - 1"	15
A112E	2	#5	STR.	14' - 10"	31	A216	2	#5	STR.	4' - 6"	9
A113E	2	#5	STR.	12' - 3"	26	A217	2	#5	STR.	2' - 0"	4
A114E	2	#5	STR.	9' - 8"	20						
A115E	2	#5	STR.	7' - 1"	15	B1E	124	#4	STR.	26' - 8"	2,209
A116E	2	#5	STR.	4' - 6"	9	B2	112	#5	STR.	51' - 5"	6,006
A117E	2	#5	STR.	2' - 0"	4	B3E	60	#6	STR.	22' - 6"	2,028
						B4E	60	#6	STR.	24' - 8"	2,223
						B5E	8	#4	STR.	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					

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

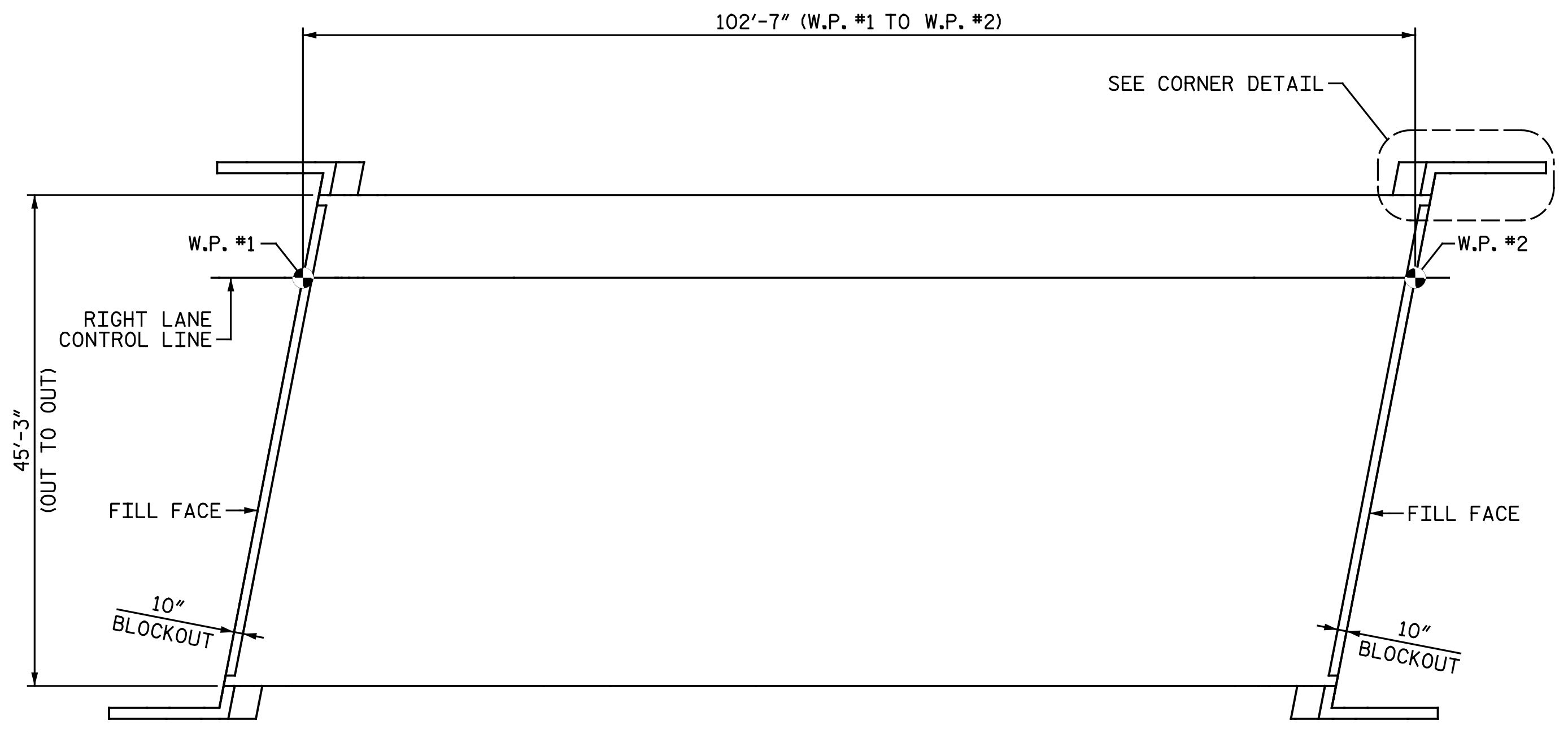
SUPERSTRUCTURE BILL OF MATERIAL

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

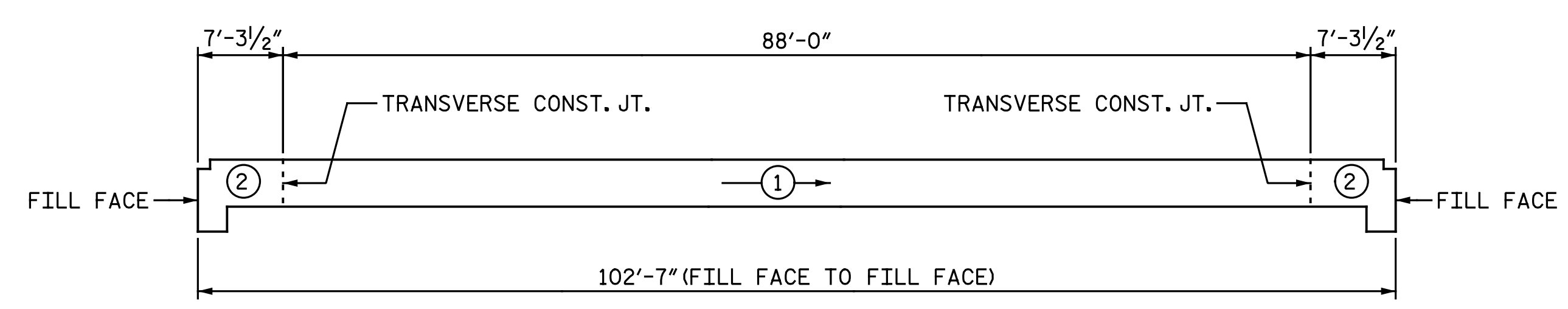
* QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

GROOVING BRIDGE FLOORS

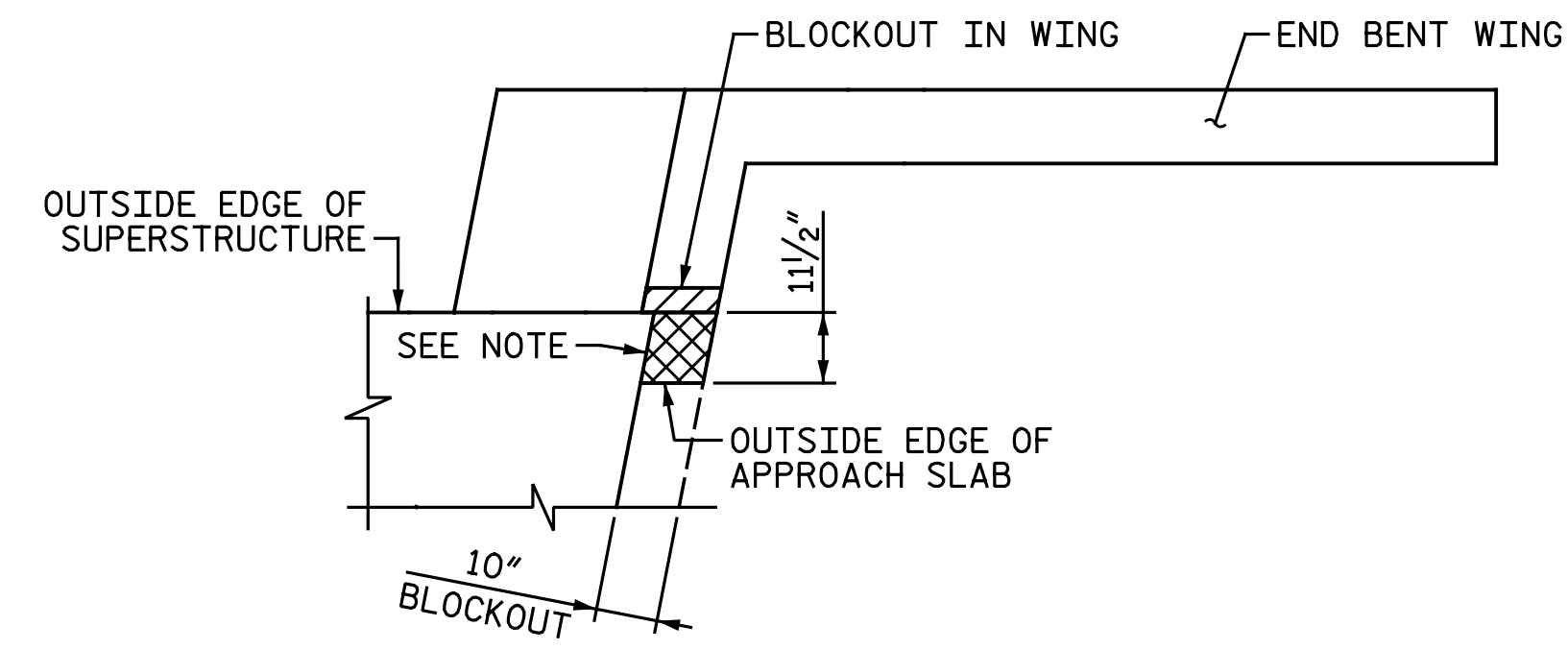
APPROACH SLABS	1,884	SQ.FT.
BRIDGE DECK	3,921	SQ.FT.
TOTAL	5,805	SQ.FT.



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 4,642)

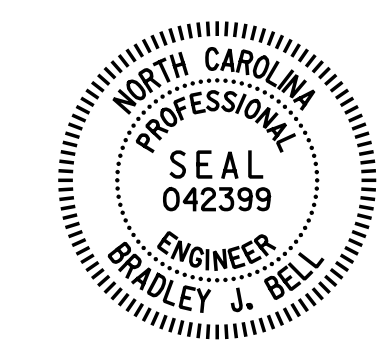


POURING SEQUENCE
← # DENOTES POUR NUMBER AND DIRECTION



CORNER DETAIL

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



PROJECT NO. R-5703
LENOIR COUNTY
STATION: 281+39.19 -L-

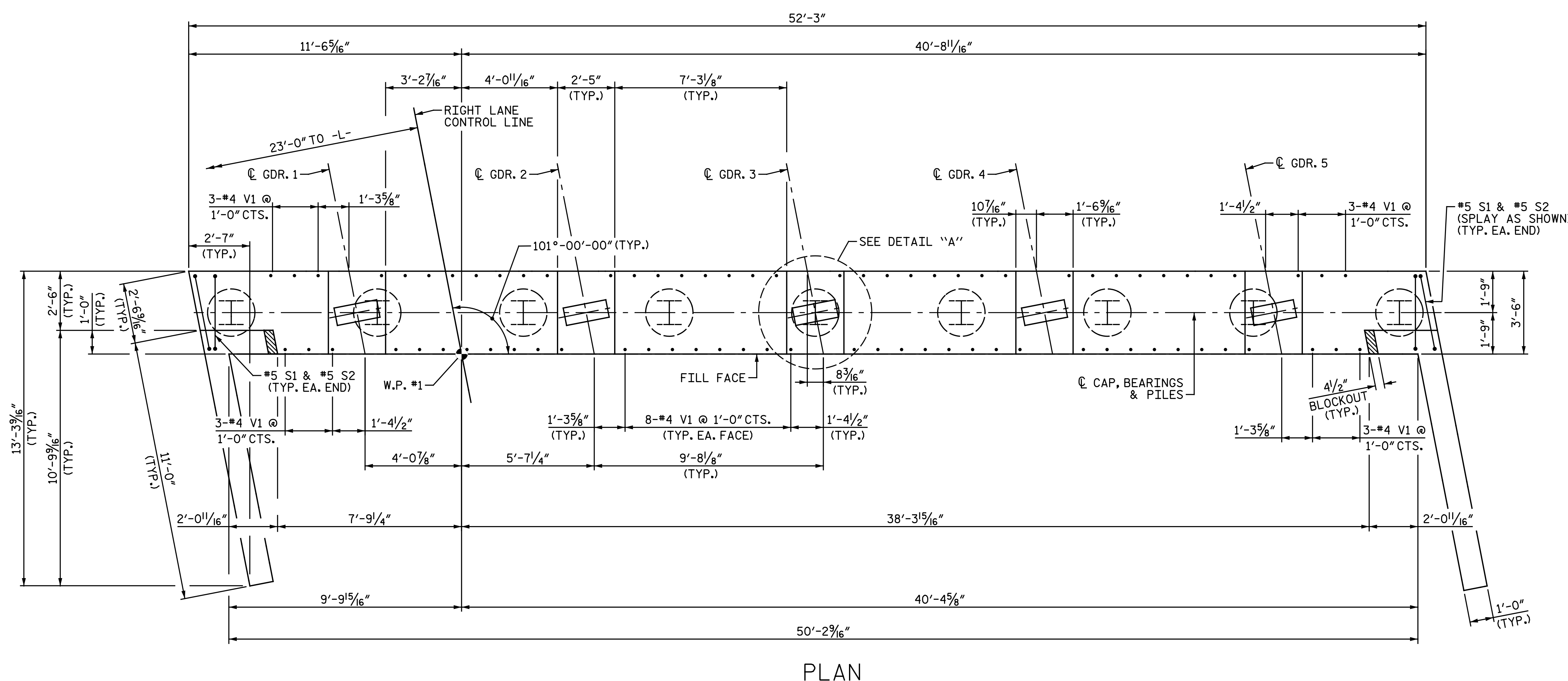
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
BILL OF MATERIAL

RIGHT LANE

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

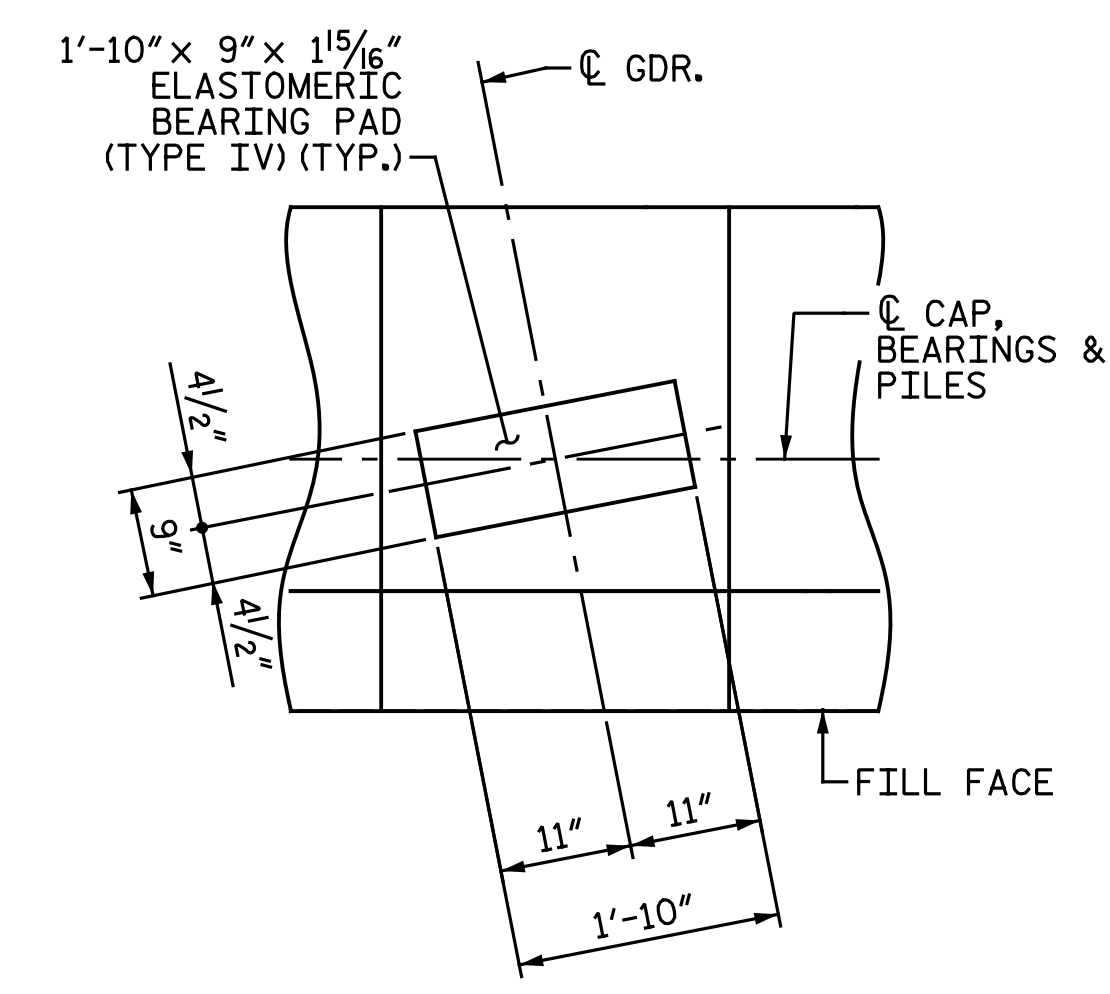
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Michael Baker INTERNATIONAL
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

DRAWN BY: C. E. MAYHEW DATE: 3-15-17
CHECKED BY: B. J. BELL DATE: 4-4-17



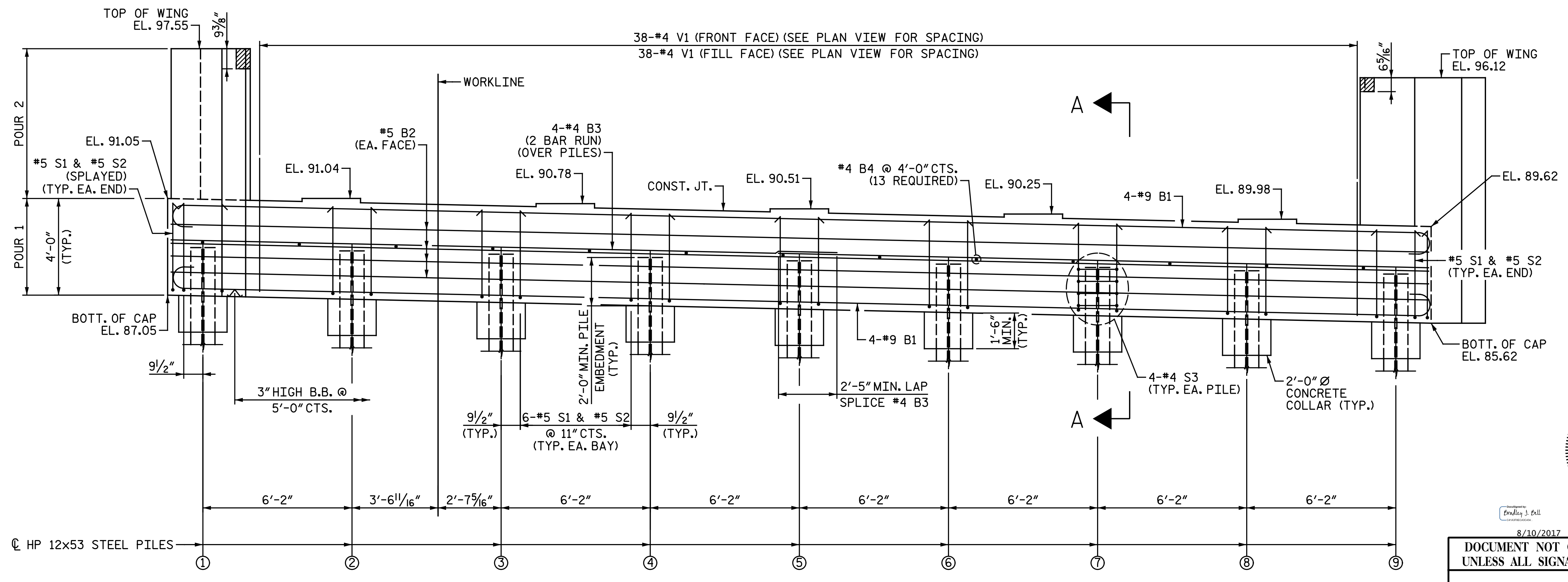
PLAN

NOTES:
 FOR "SECTION A-A", SEE "INTEGRAL END BENT 1 DETAILS" SHEET.
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.
 THE TOP SURFACE OF THE END BENT CAP, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".
 THE CONCRETE IN THE HATCHED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.



DETAIL "A"

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

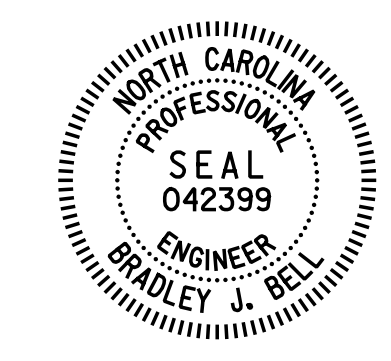


ELEVATION

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
①	89.01
②	88.84
③	88.67
④	88.50
⑤	88.33
⑥	88.17
⑦	88.00
⑧	87.83
⑨	87.66

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 281+39.19 -L-

SHEET 1 OF 2



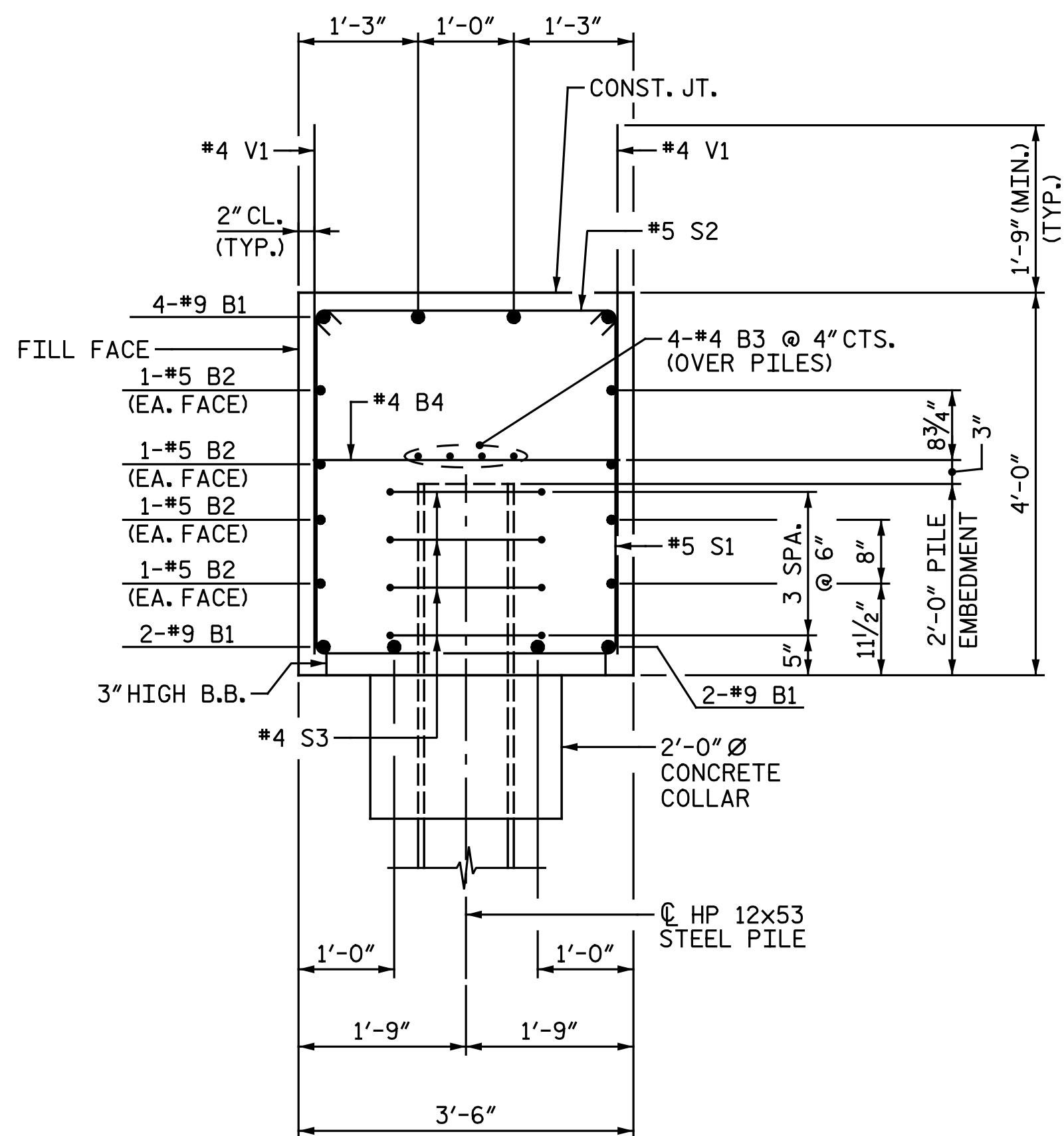
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
INTEGRAL END BENT 1
 RIGHT LANE

8/10/2017
 DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

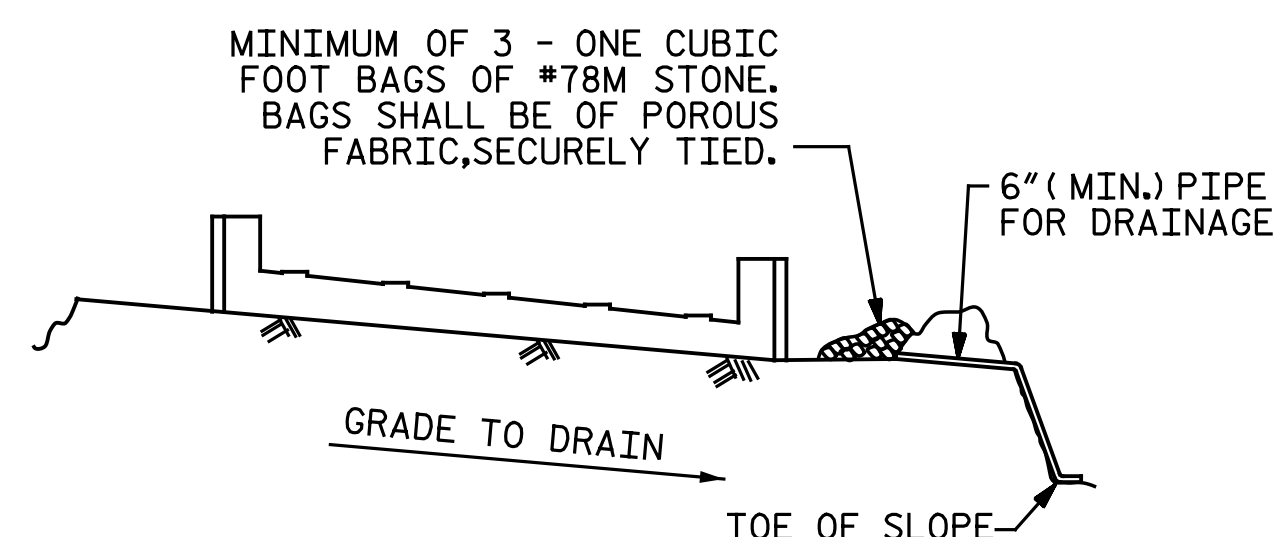
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 Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27518
 NC License No.: F-1084

REVISIONS						SHEET NO. S10-16
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

DRAWN BY: C. E. MAYHEW DATE: 3-16-17
 CHECKED BY: B. J. BELL DATE: 4-5-17



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

DRAWN BY : M. D. MAYHEW DATE : 4-4-17
 CHECKED BY : B. J. BELL DATE : 4-5-17

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' - 4"	248
H2	13	#5	4	11' - 5"	155
H3	8	#5	4	13' - 11"	116
H4	26	#5	4	3' - 5"	93
H5	21	#5	5	11' - 7"	254
H6	13	#5	5	11' - 6"	156
H7	8	#5	5	14' - 0"	117
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

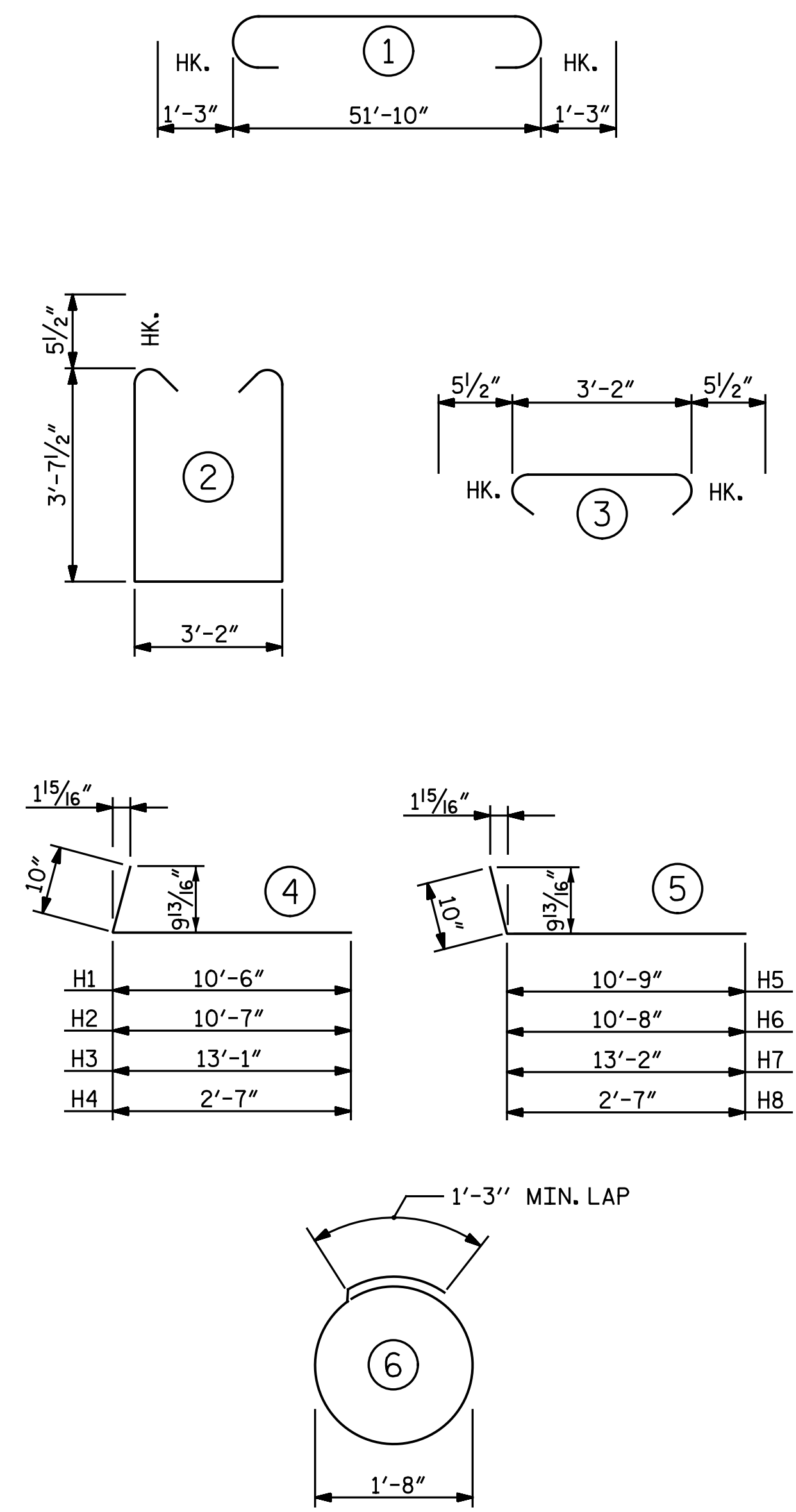
HP 12x53 STEEL PILES
 NO. 9 L.F. 630

PILE REDRIVES EA. 5

NOTES:

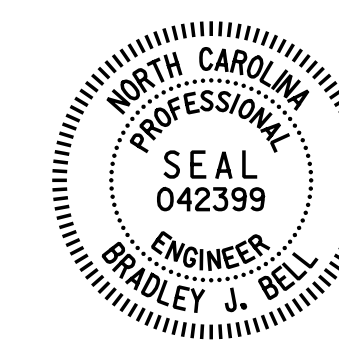
FOR PILE SPLICE DETAILS, SEE "INTEGRAL END BENT 2 DETAILS" SHEET.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. R-5703
 LENOIR COUNTY
 STATION: 281+39.19 -L-



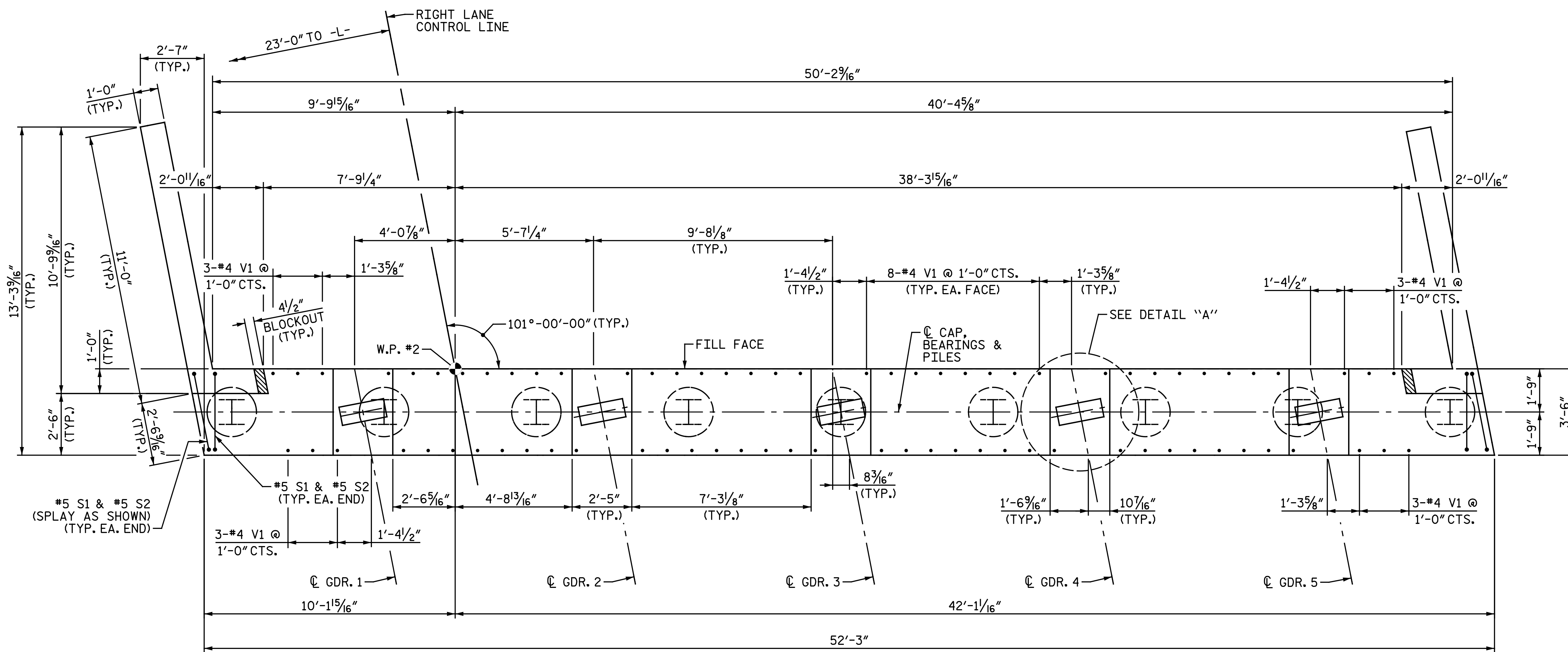
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 INTEGRAL END BENT 1
 DETAILS

RIGHT LANE

8/10/2017
 DOCUMENT NOT CONSIDERED FINAL
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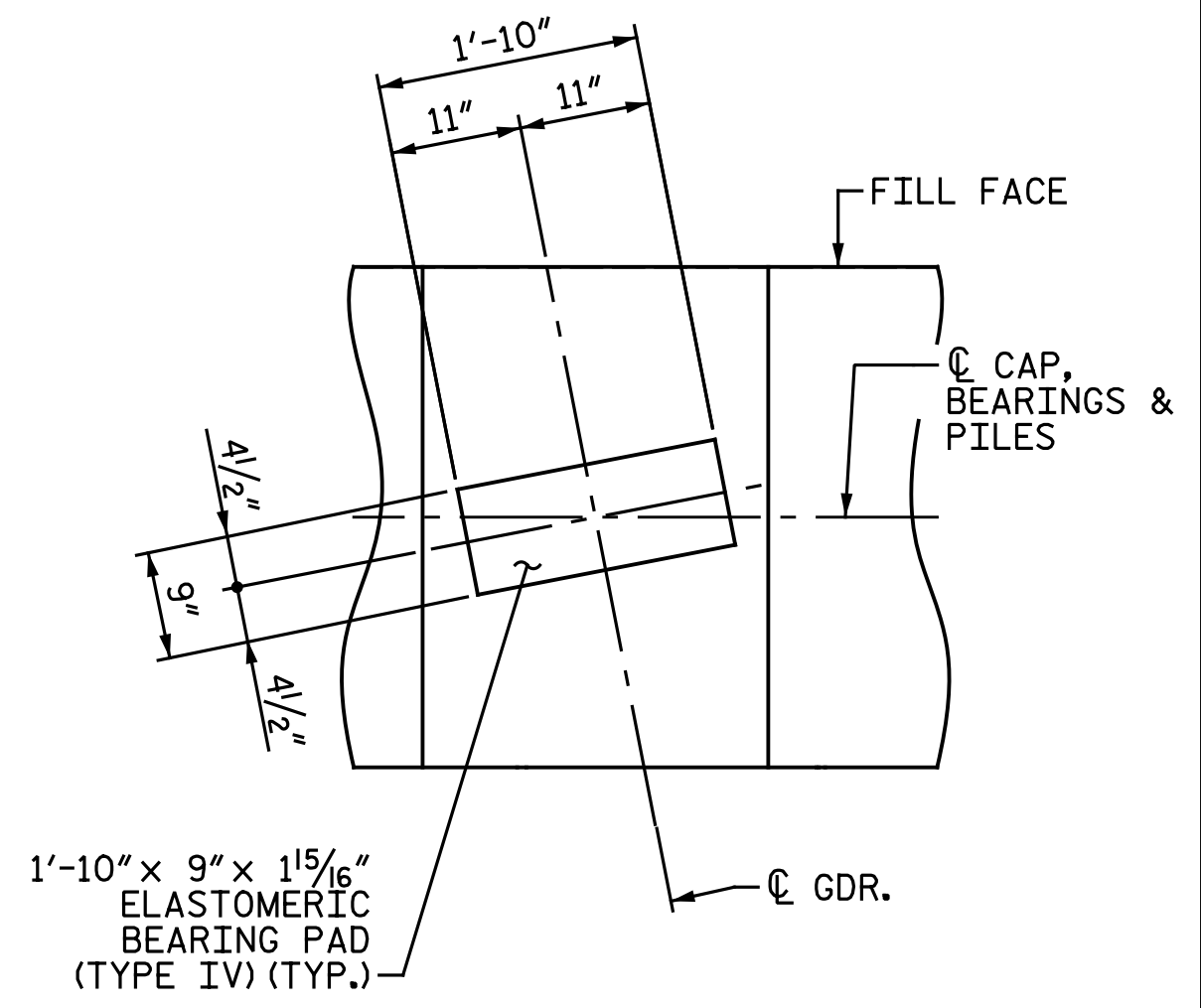
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 Michael Baker Engineering
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 NC License No.: F-1084

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1			3			TOTAL SHEETS
2			4			25



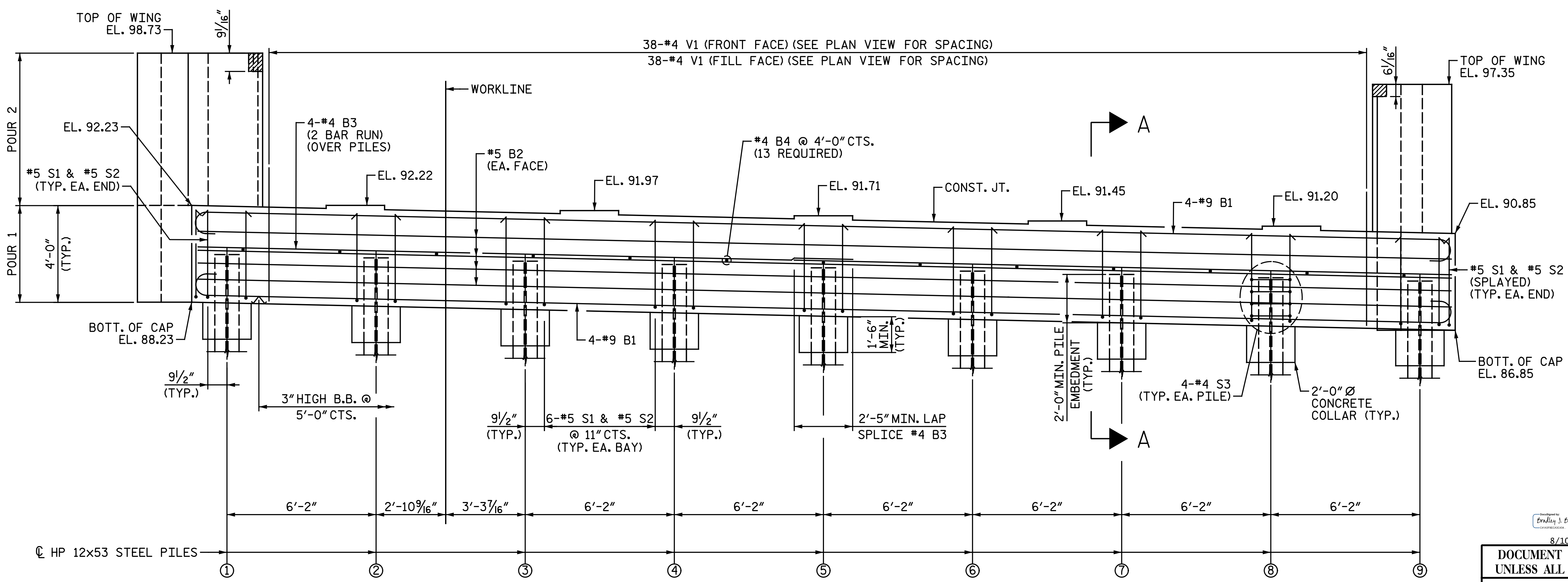
PLAN

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	90.19
②	90.03
③	89.87
④	89.70
⑤	89.54
⑥	89.38
⑦	89.21
⑧	89.05
⑨	88.89

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 281+39.19 -L-
 SHEET 1 OF 2



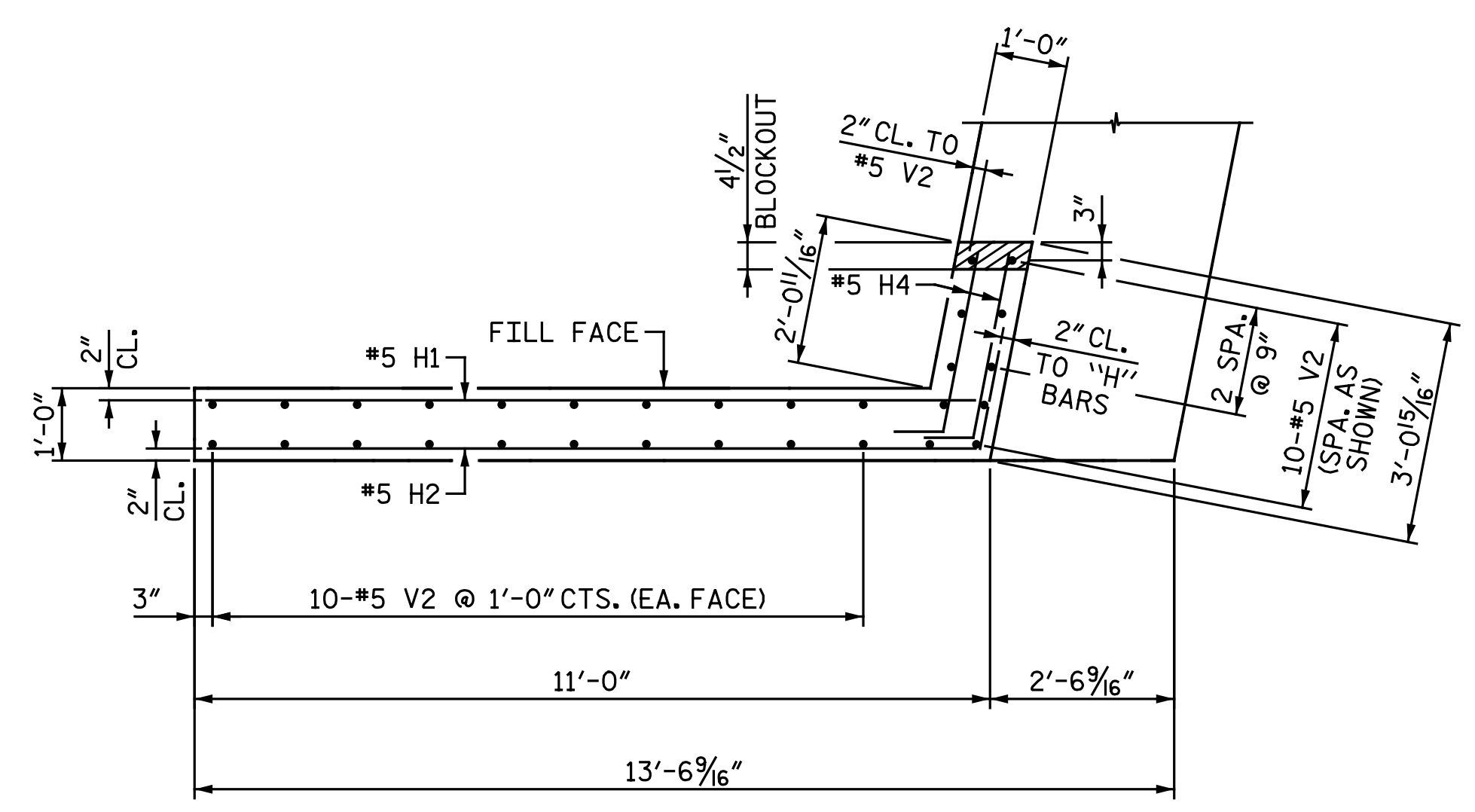
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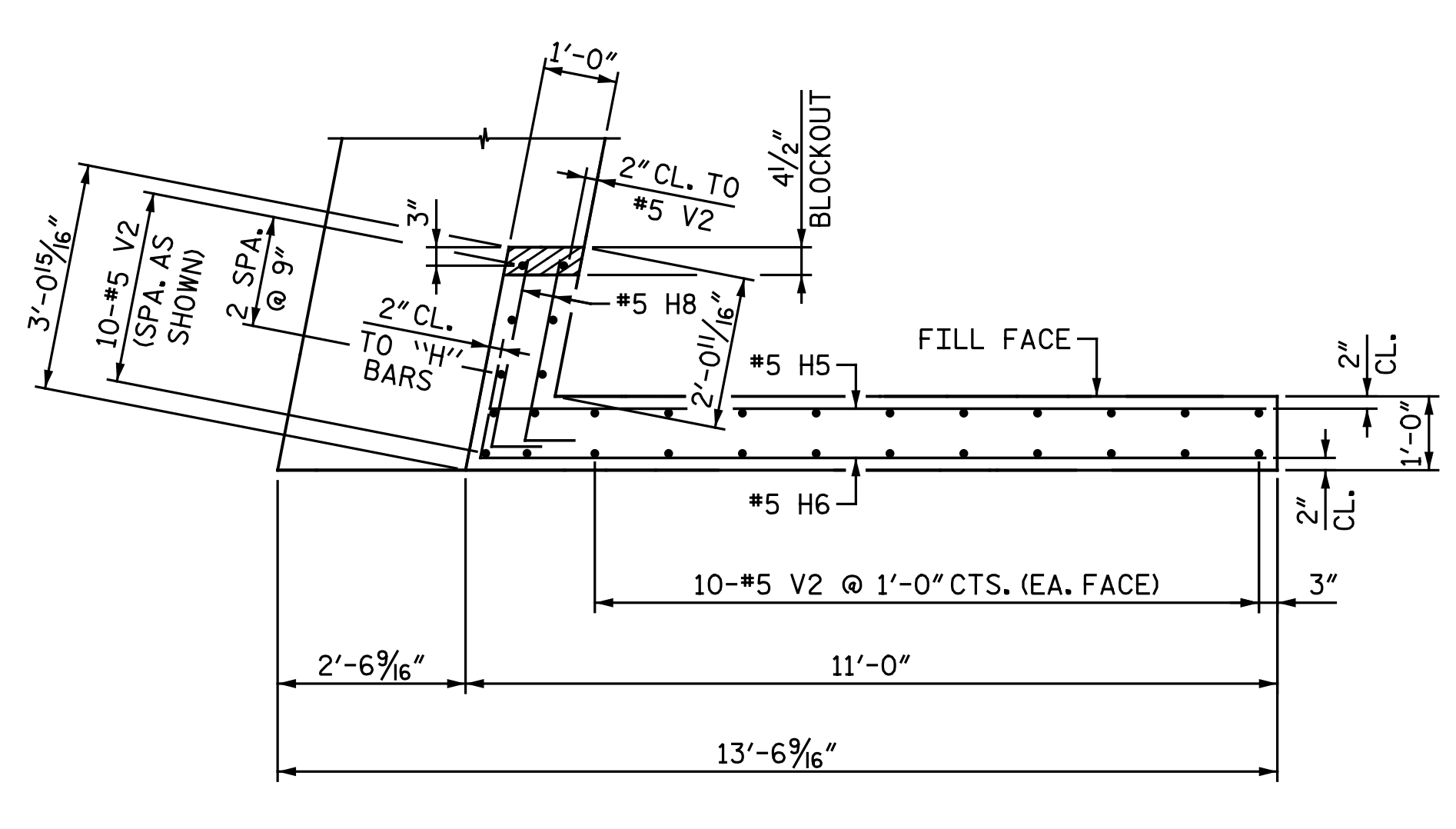
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 INTEGRAL END BENT 2
 RIGHT LANE

REVISIONS						SHEET NO. S10-19
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 25
2			4			

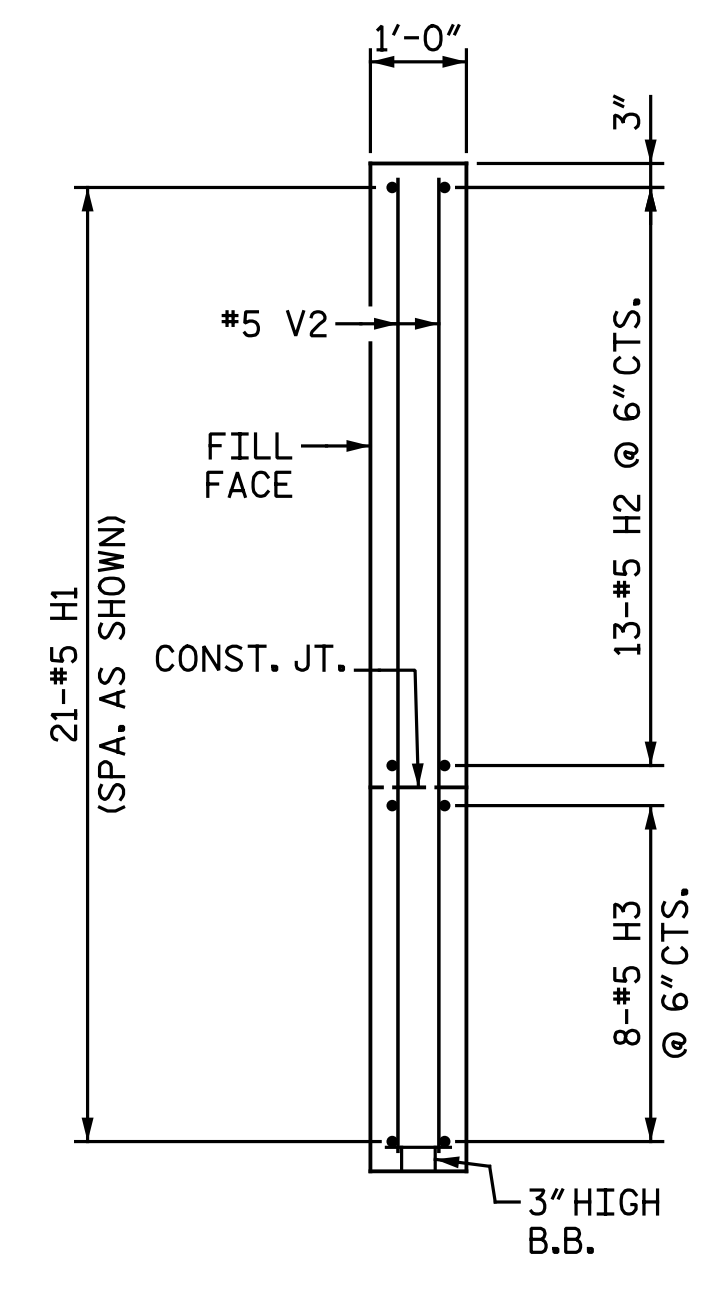
DRAWN BY: C. E. MAYHEW DATE: 3-16-17
 CHECKED BY: B. J. BELL DATE: 4-5-17



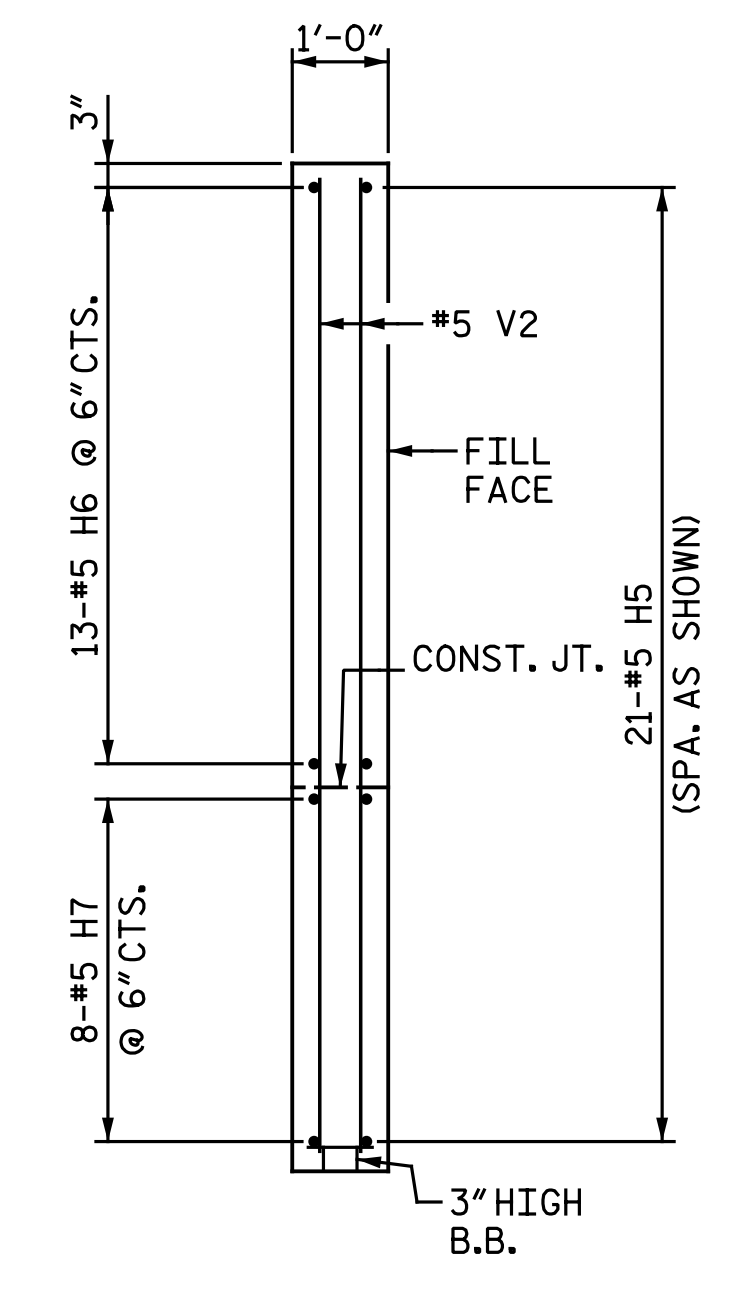
PLAN OF LEFT WING
(H3 BARS NOT SHOWN FOR CLARITY)



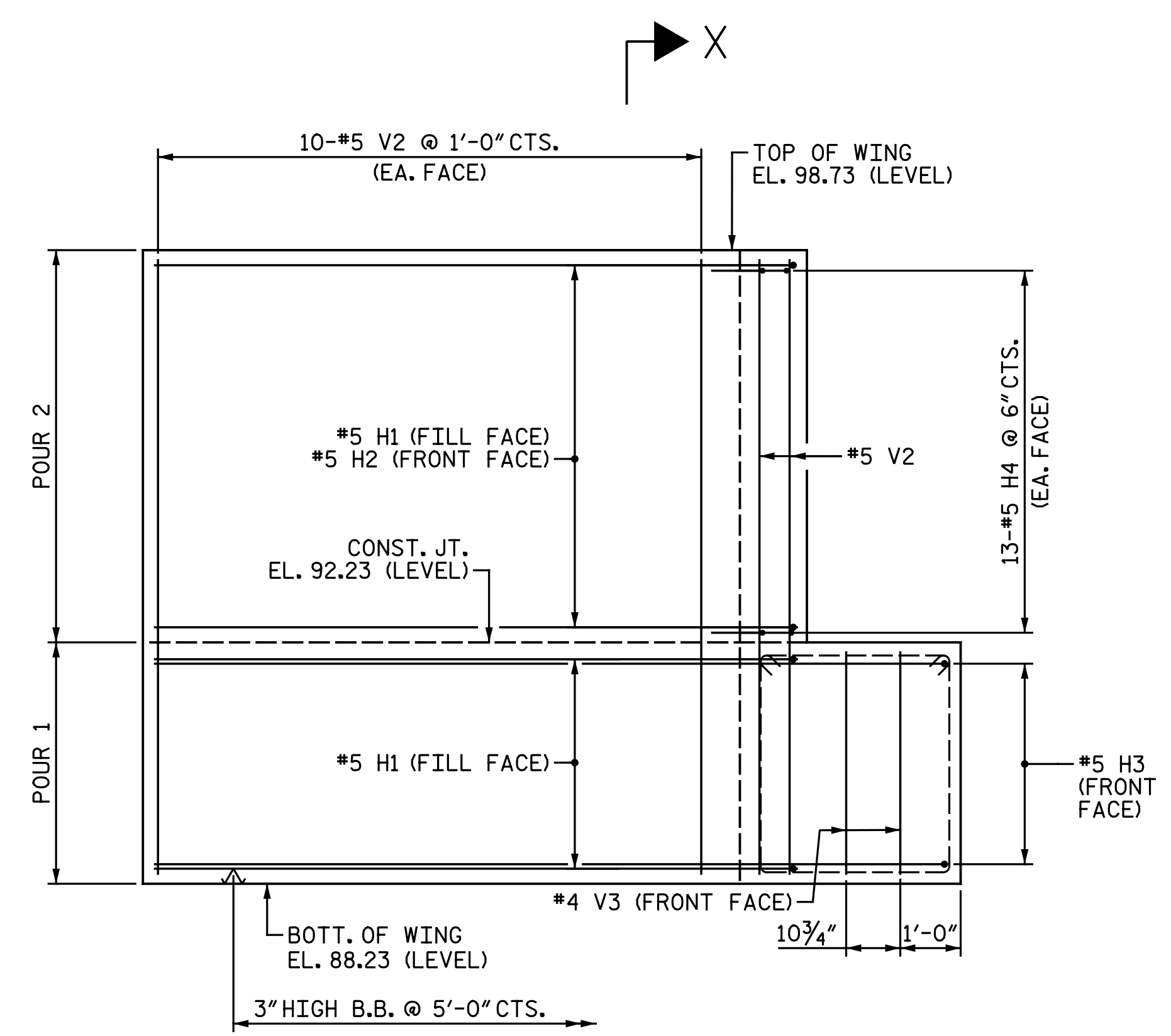
PLAN OF RIGHT WING
(H7 BARS NOT SHOWN FOR CLARITY)



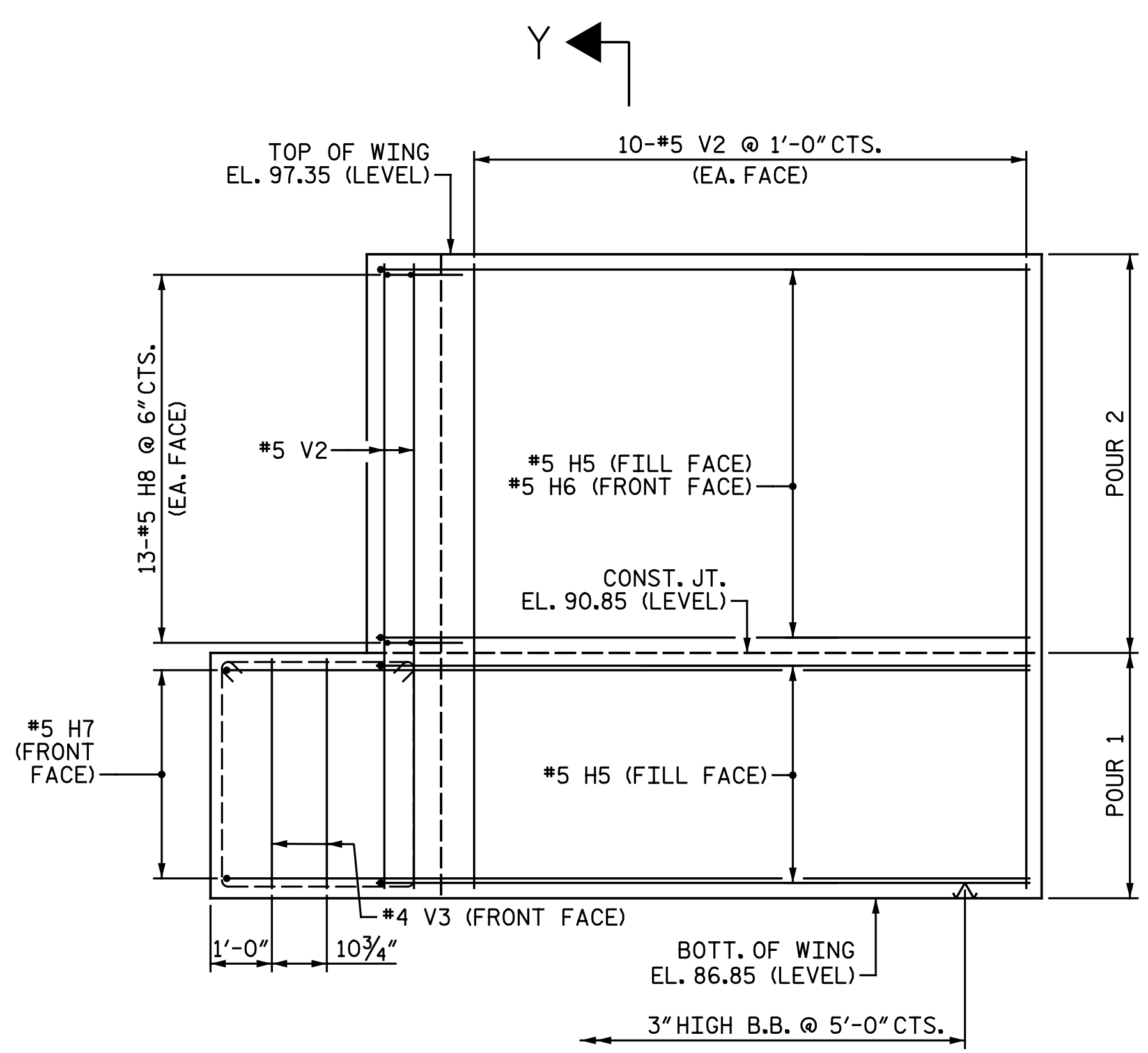
SECTION X-X



SECTION Y-Y

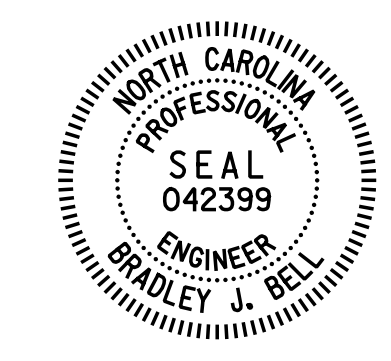


ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING

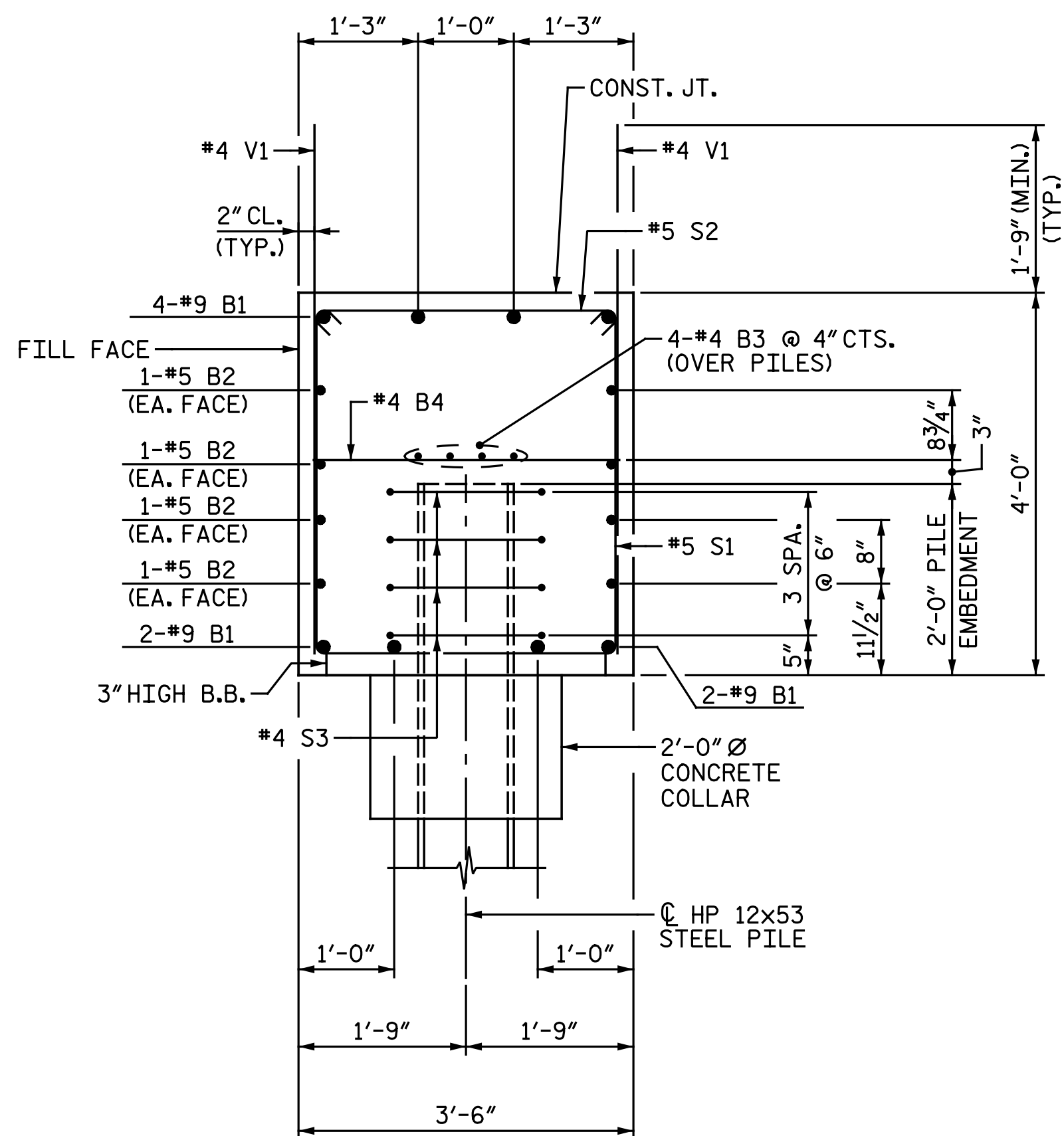
PROJECT NO. R-5703
LENOIR COUNTY
STATION: 281+39.19 -L-
SHEET 2 OF 2



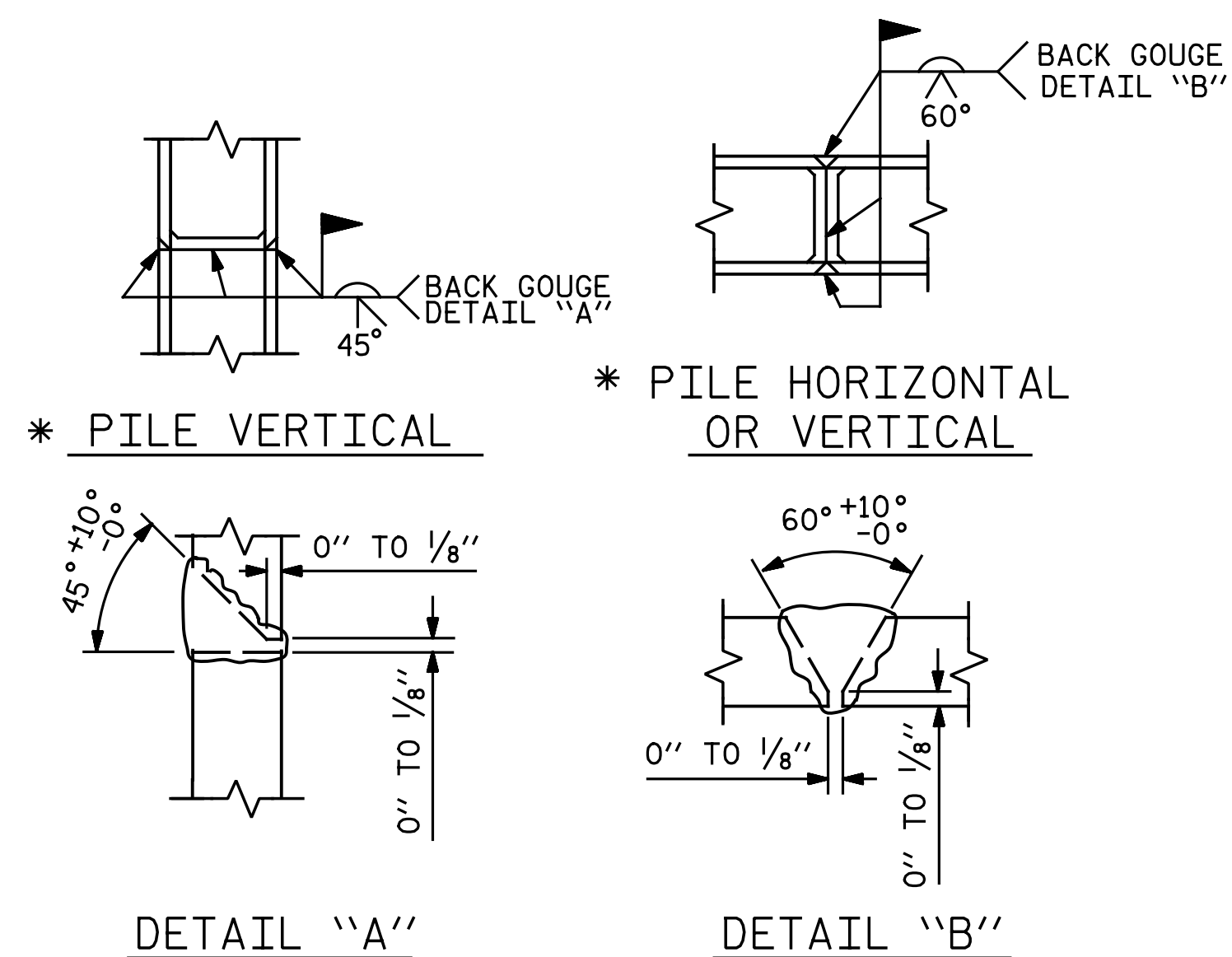
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
INTEGRAL END BENT 2					
RIGHT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S10-20
					TOTAL SHEETS 25

DRAWN BY: M. D. MAYHEW DATE: 3-23-17
CHECKED BY: B. J. BELL DATE: 4-5-17



SECTION A-A



PILE SPLICE DETAILS

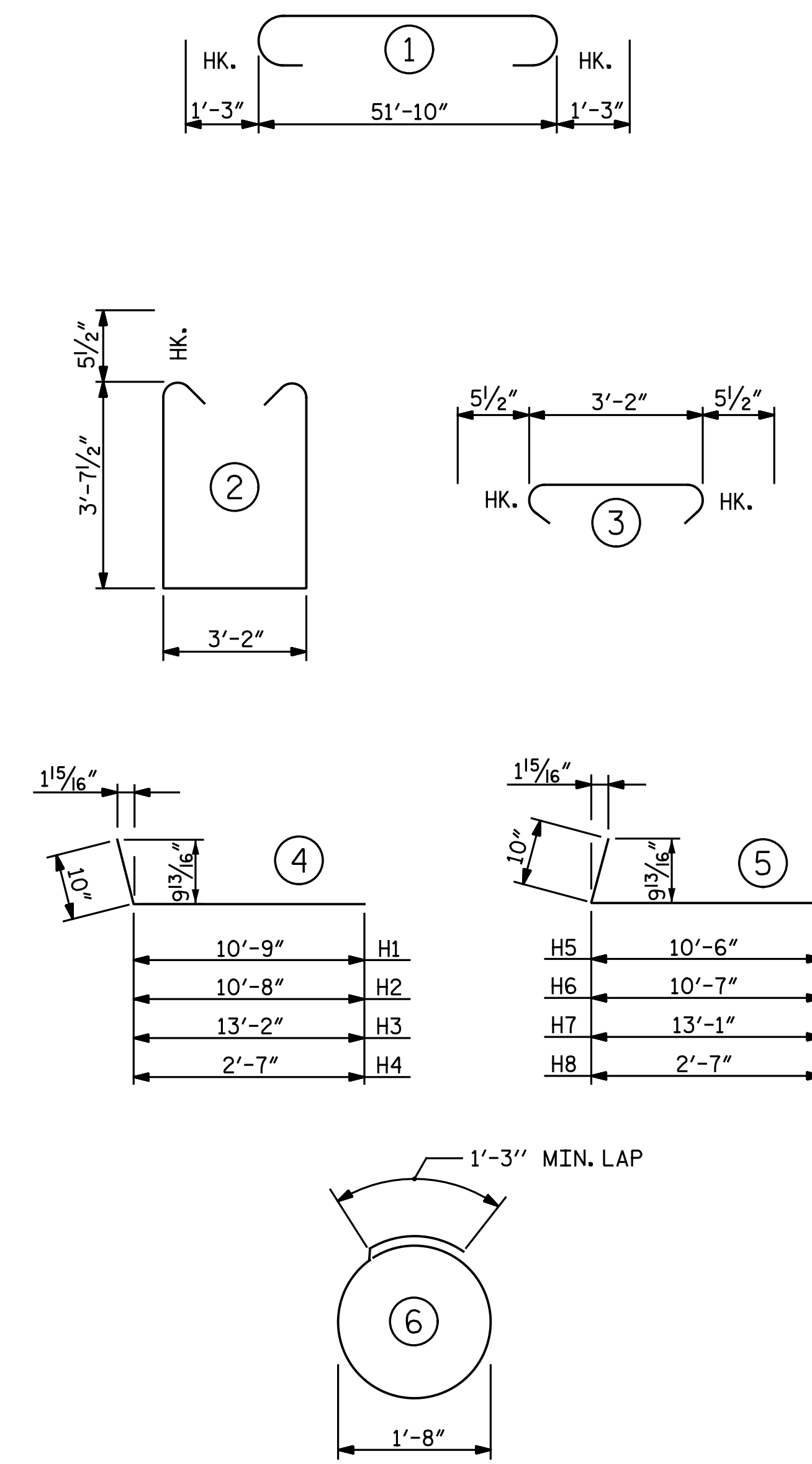
* POSITION OF PILE DURING WELDING

BILL OF MATERIAL					
INTEGRAL END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		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
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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.	630
PILE REDRIVES				EA.	5

NOTES:

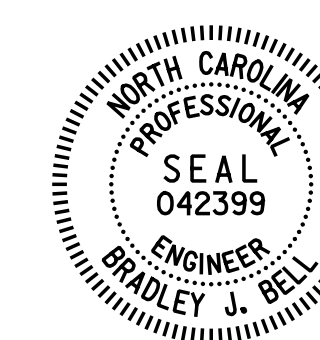
FOR TEMPORARY DRAINAGE AT END BENT DETAILS, SEE "INTEGRAL END BENT 1 DETAILS" SHEET.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 281+39.19 -L-



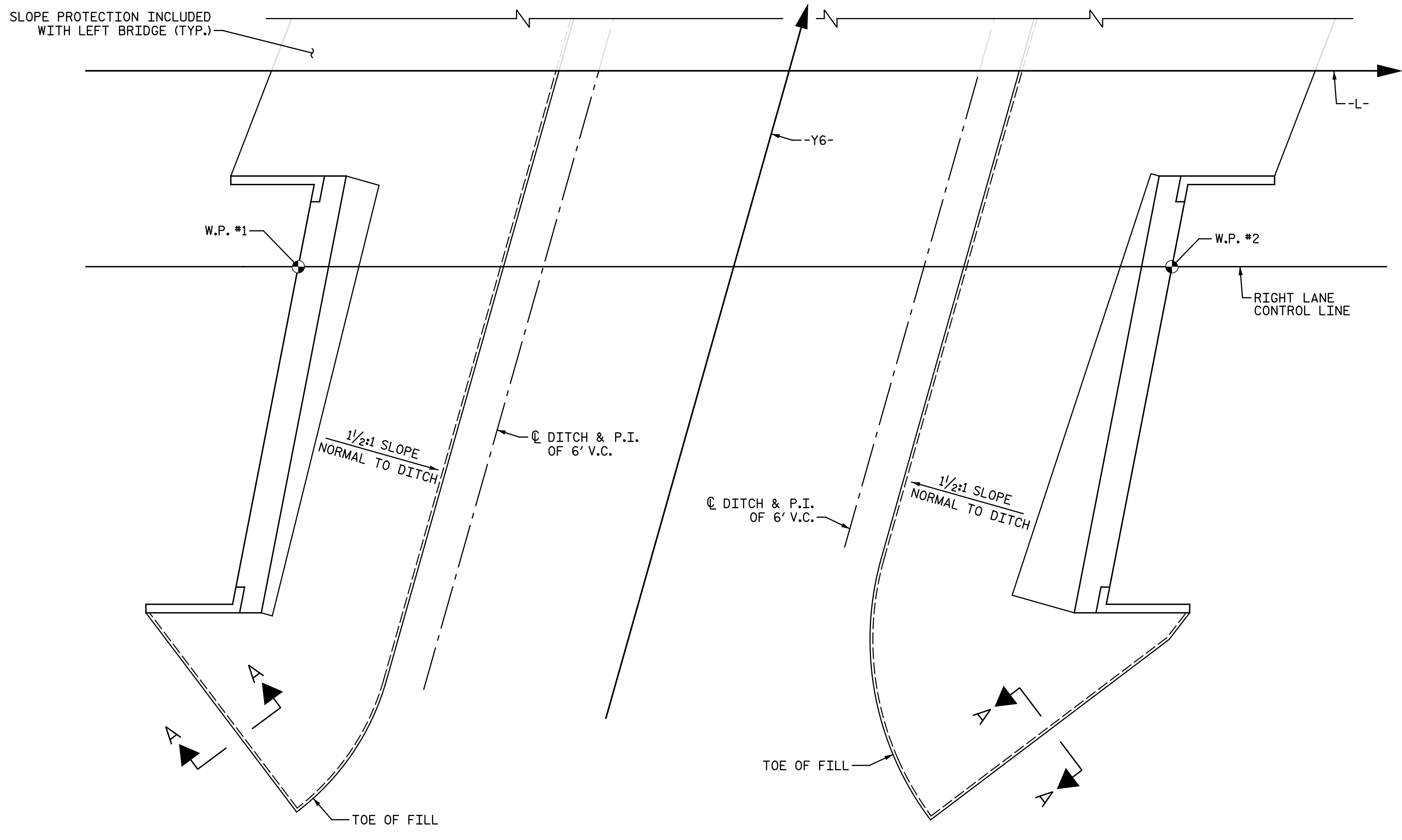
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
INTEGRAL END BENT 2
DETAILS

RIGHT LANE

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S10-21
1			3			TOTAL SHEETS
2			4			25

DRAWN BY: M. D. MAYHEW DATE: 4-4-17
CHECKED BY: B. J. BELL DATE: 4-5-17



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.

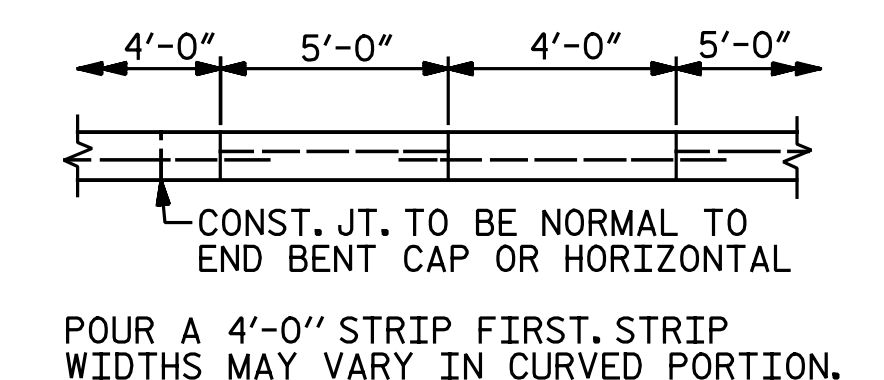
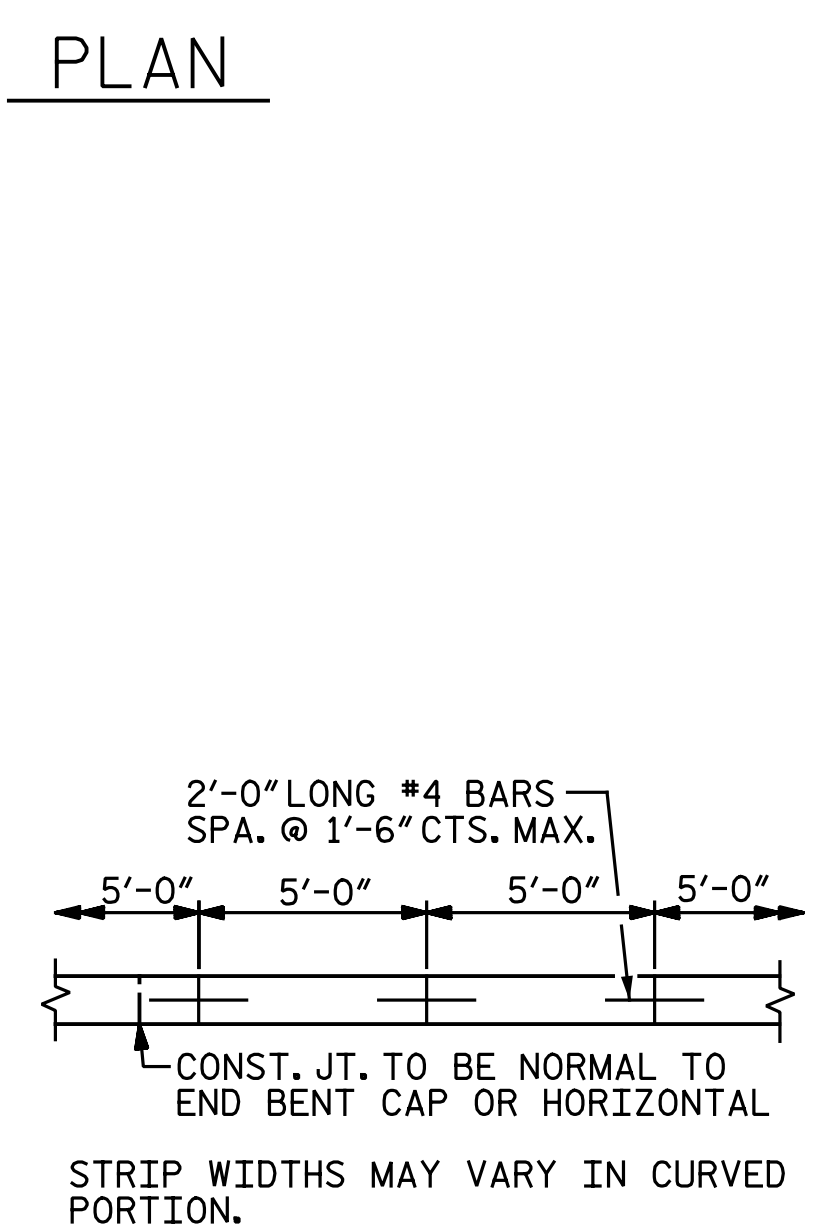
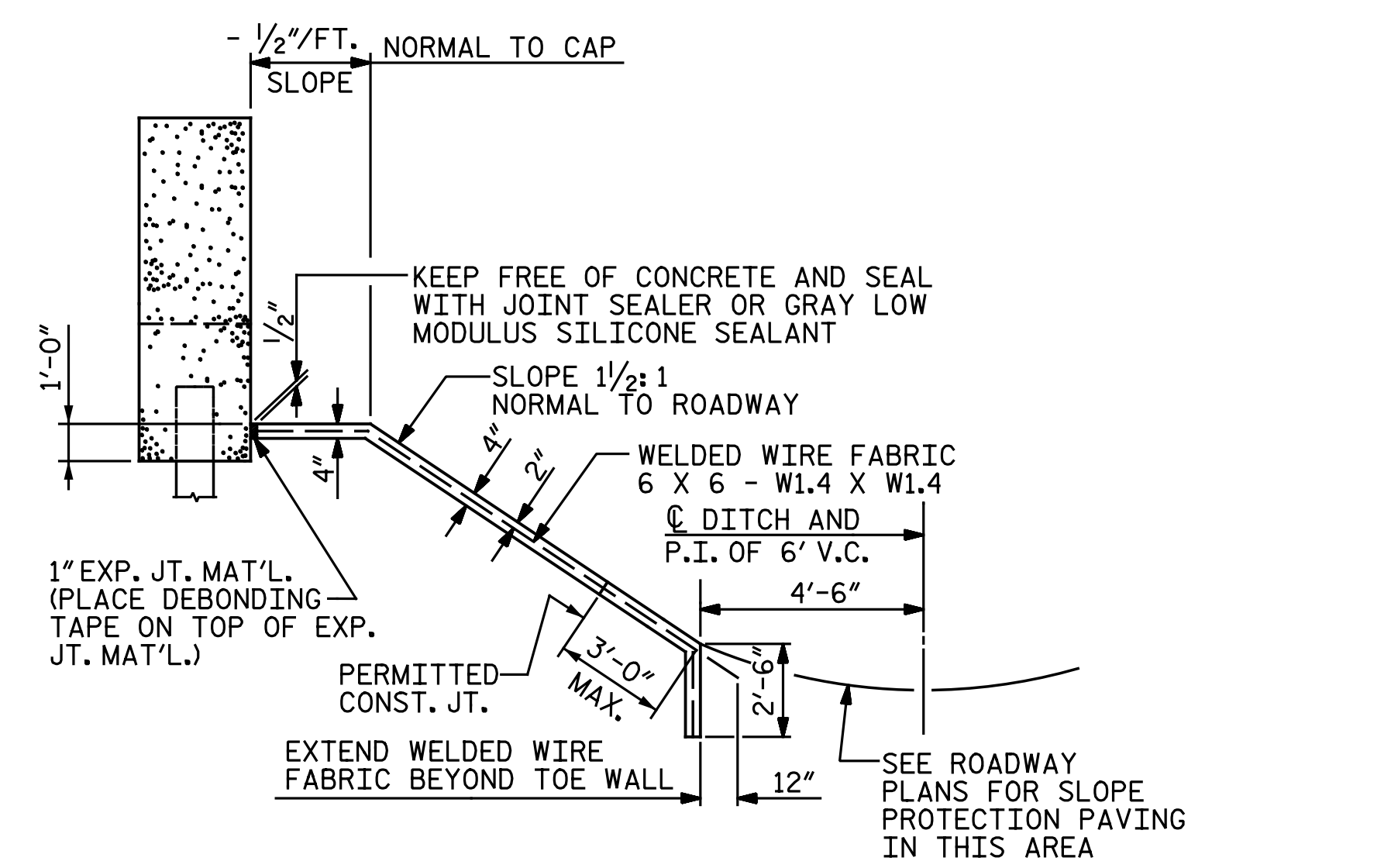
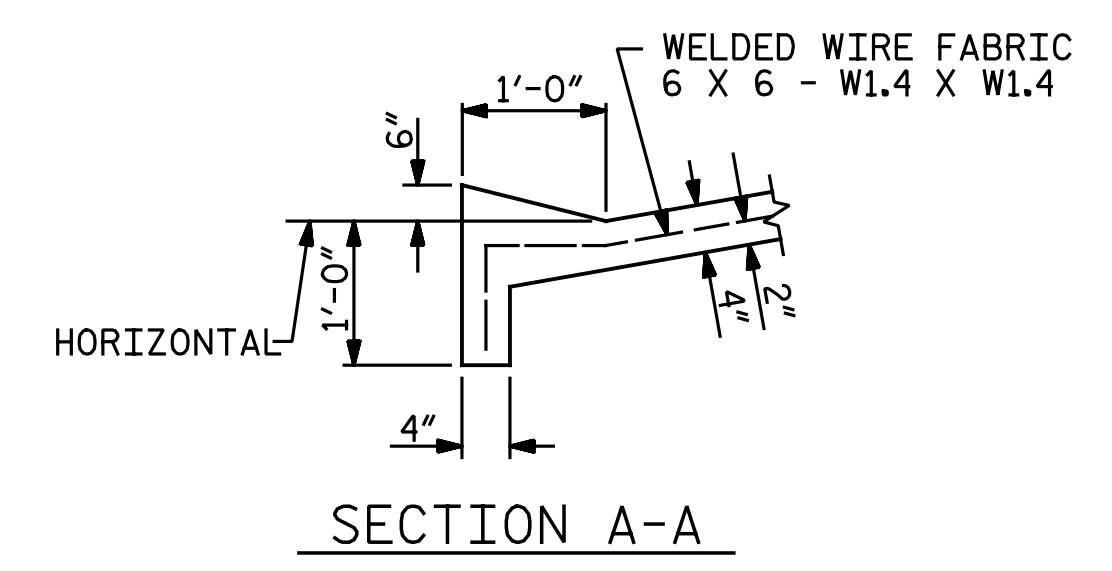
SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING.

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. 281+39.19 -L- (RIGHT LANE)	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	300	540
END BENT 2	320	580

* QUANTITY SHOWN IS BASED ON 5' POURS.



PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 281+39.19 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 SLOPE PROTECTION
 DETAILS
 RIGHT LANE



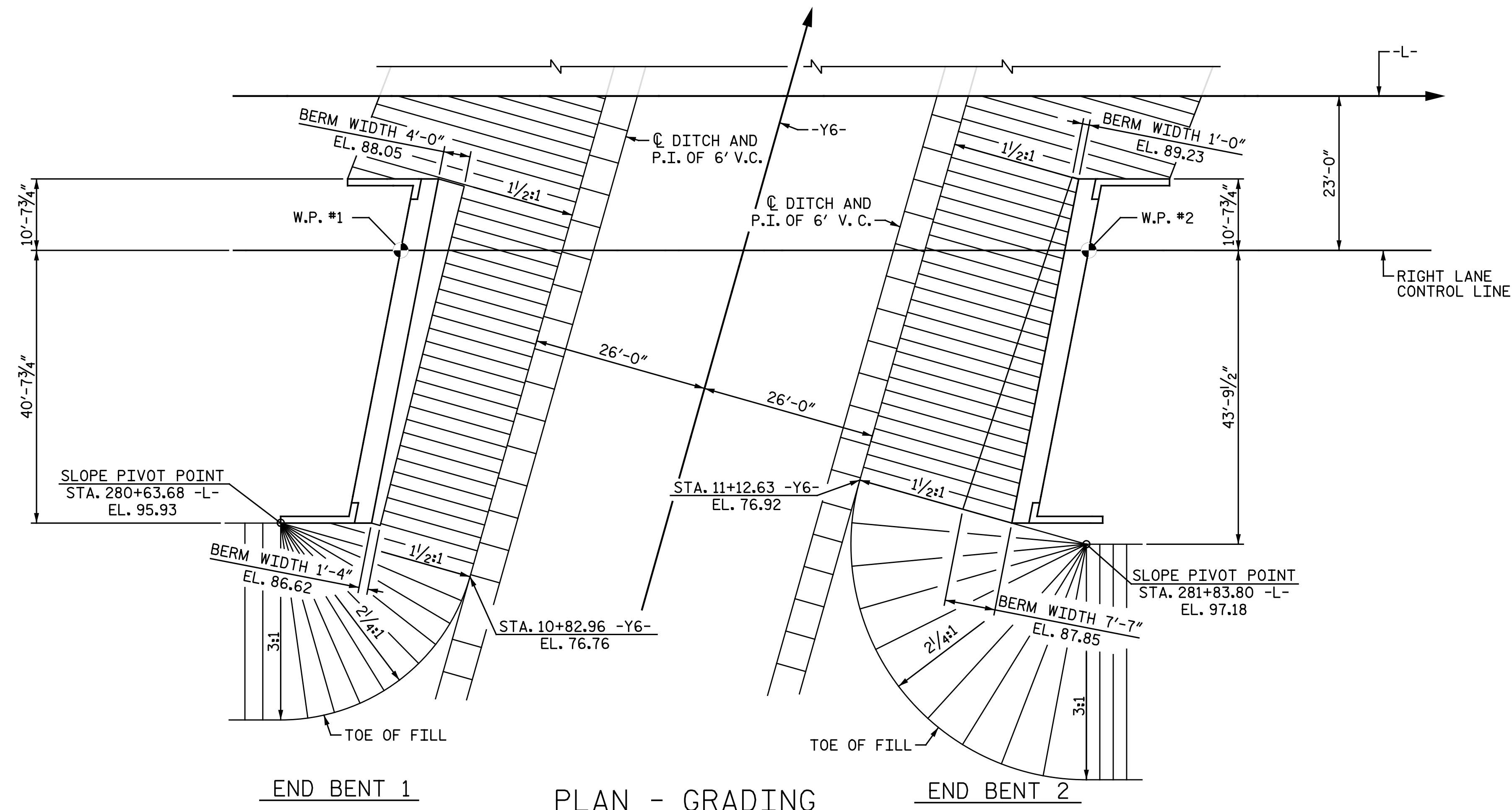
8/10/2017
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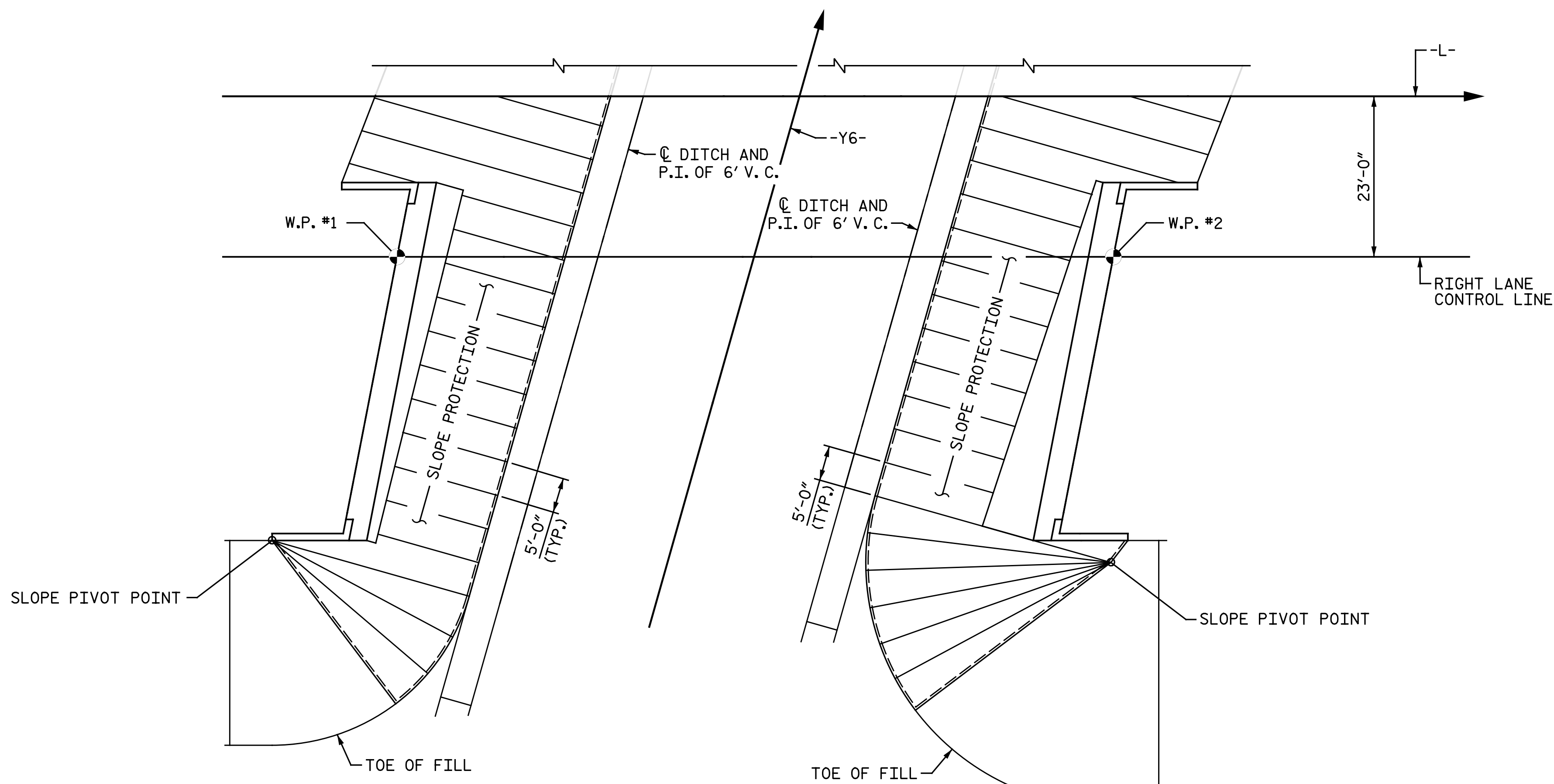
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			25
2			4			

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

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



END BENT 1 PLAN - GRADING END BENT 2



END BENT 1 PLAN - CONCRETE PLACEMENT END BENT 2
(1/2:1 SLOPE)

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 281+39.19 -L-
SHEET 2 OF 2

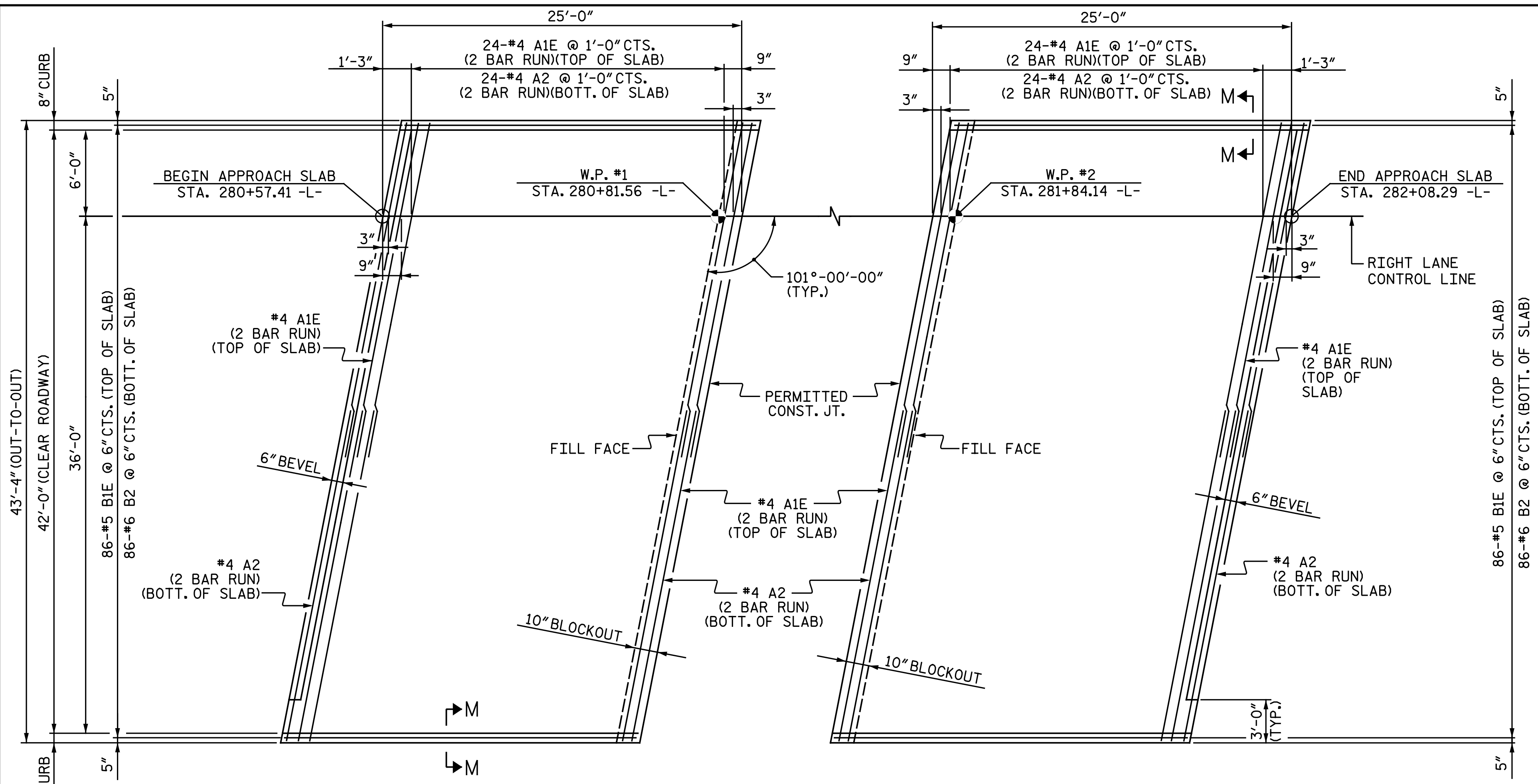


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
SLOPE PROTECTION
DETAILS
RIGHT LANE

8/10/2017
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			TOTAL SHEETS
2			4			25

ASSEMBLED BY : C. E. MAYHEW	DATE : 4-3-17
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



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 SAWS 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.

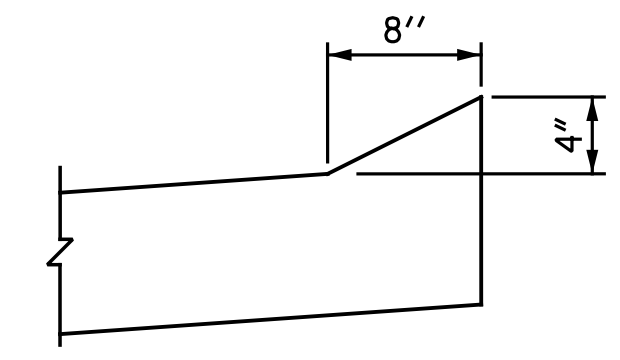
FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

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.

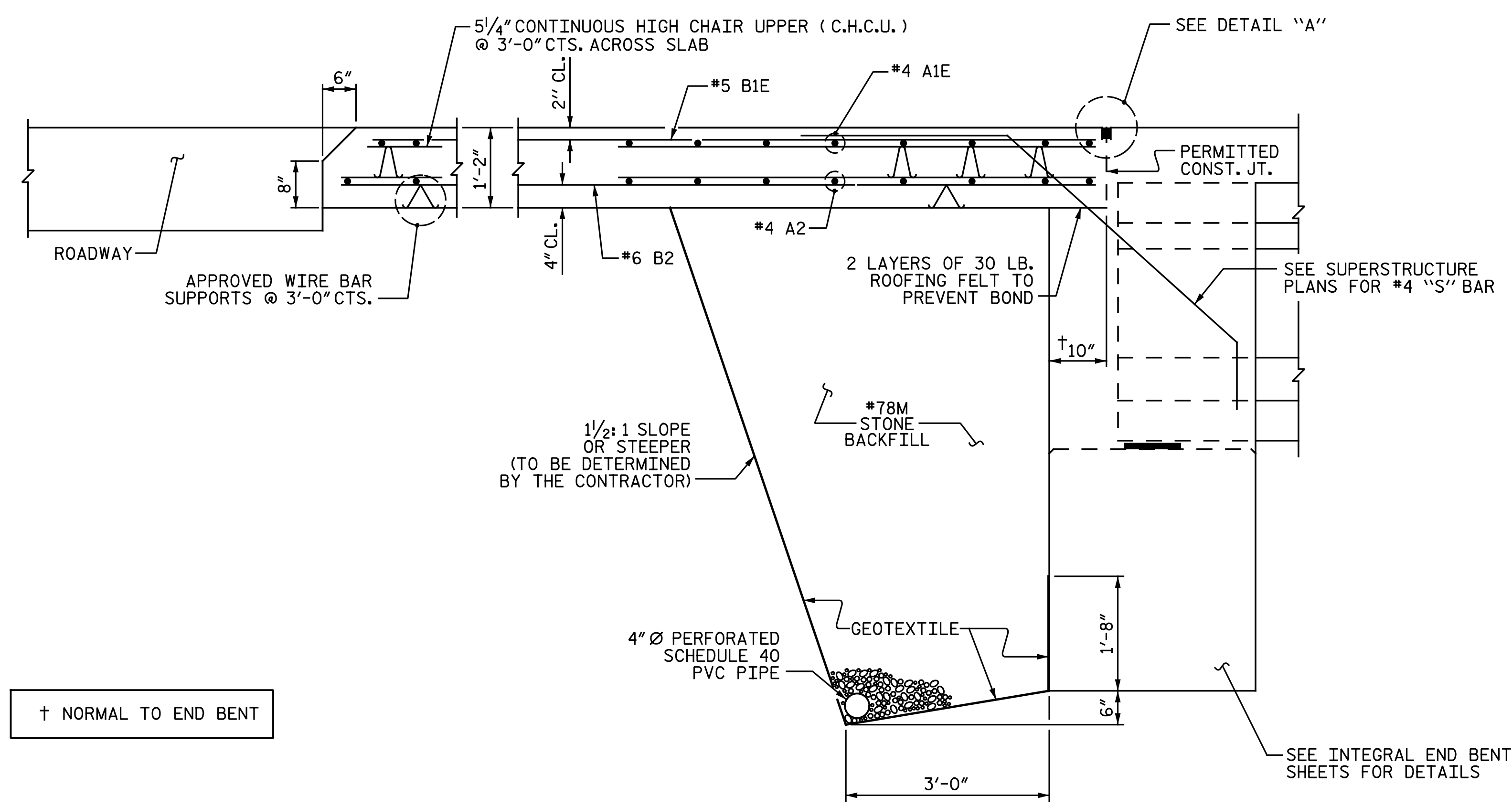
FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.



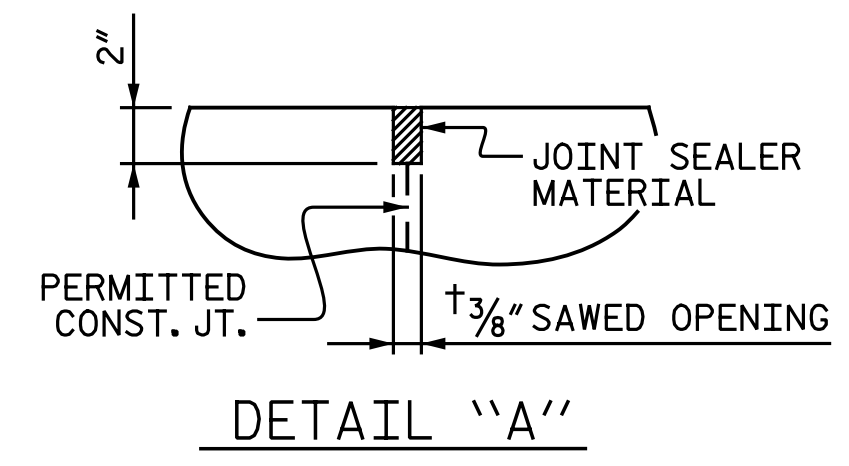
SECTION M-M

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

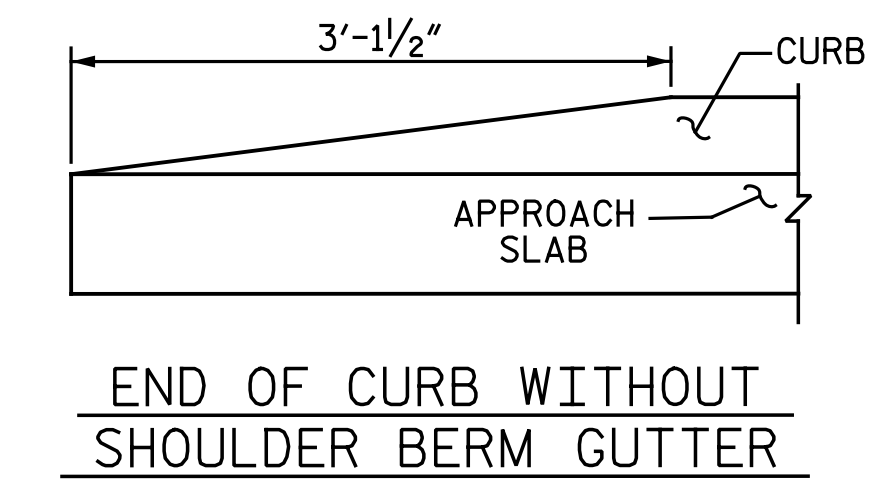
SPlice LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"



SECTION THRU SLAB



DETAIL "A"



END OF CURB WITHOUT SHOULDER BERM GUTTER

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 281+39.19 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT

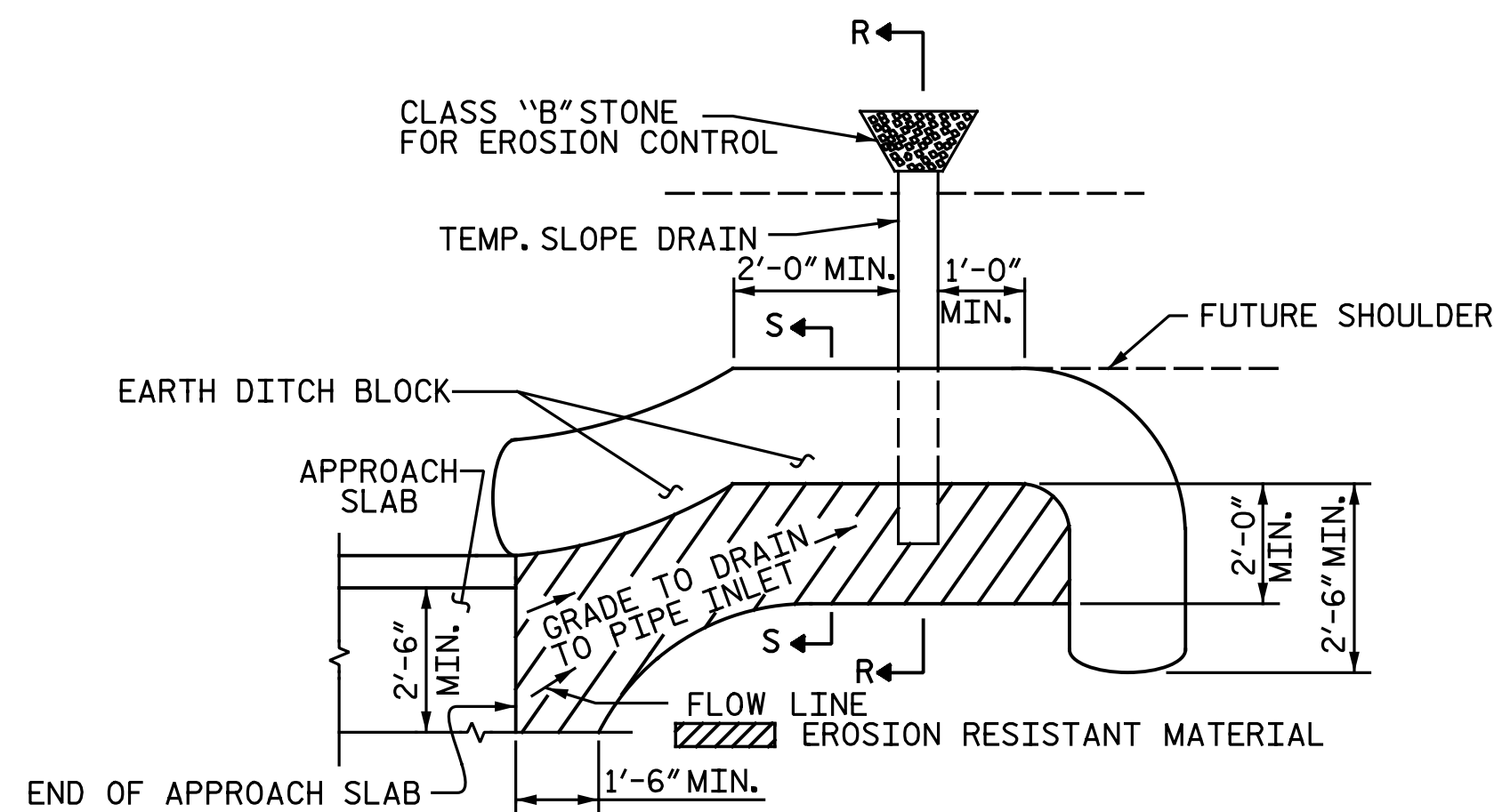
8/10/2017
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

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

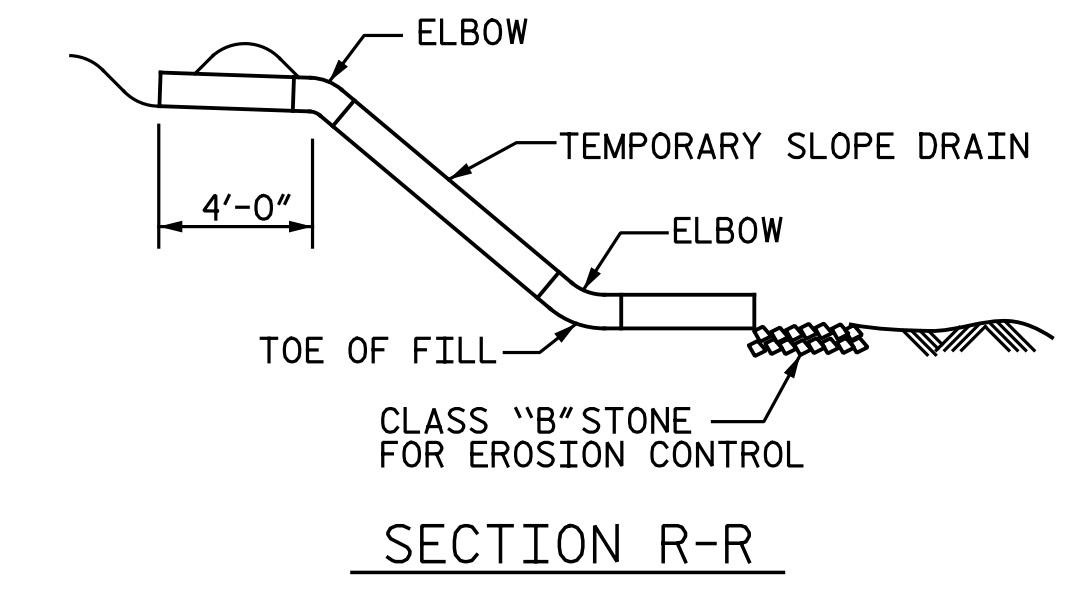
SHEET NO. S10-24				
TOTAL SHEETS 25				

DRAWN BY: N. B. SPEAKS DATE: 3-2-17
CHECKED BY: B. J. BELL DATE: 4-6-17

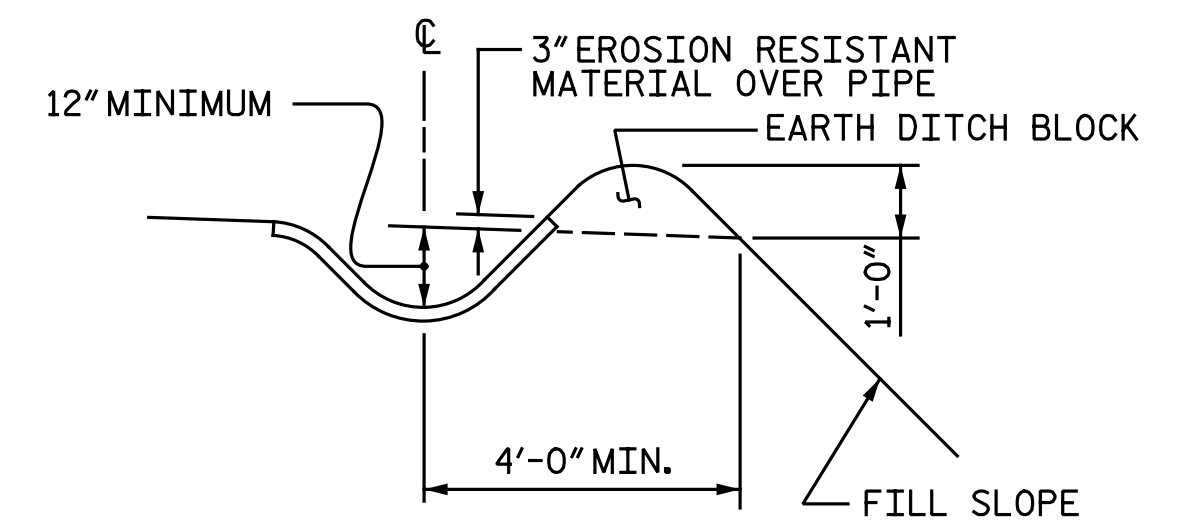


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW

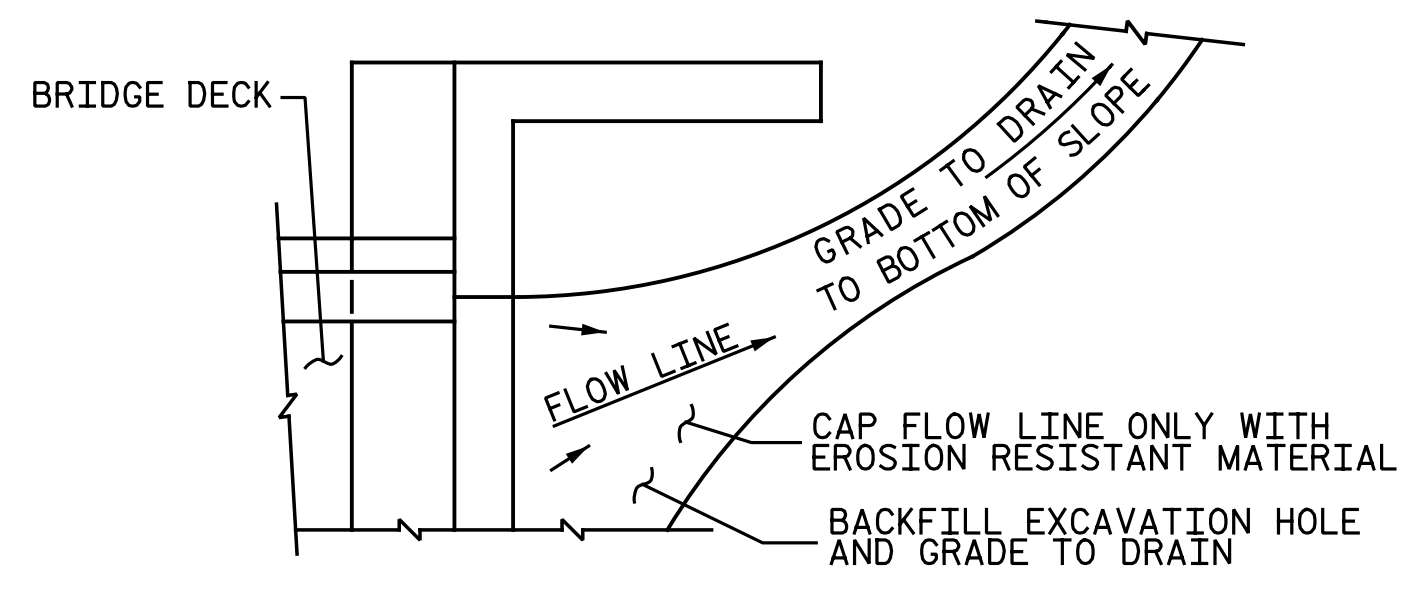


SECTION R-R



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 281+39.19 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH
SLAB DETAILS

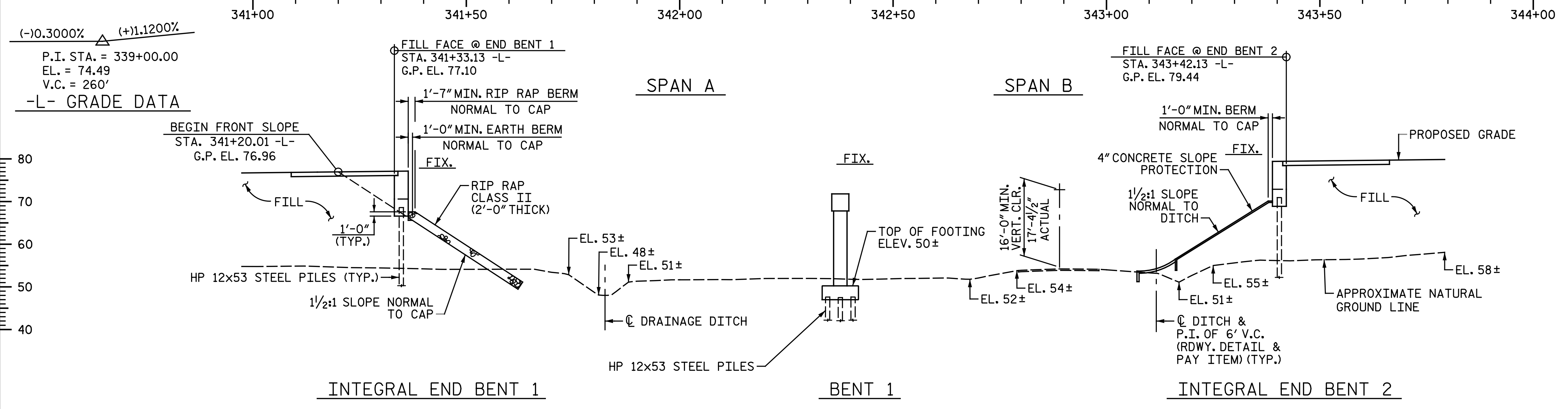
8/10/2017
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RIGHT LANE

ASSEMBLED BY : N. B. SPEAKS	DATE : 1-10-17
CHECKED BY : B. J. BELL	DATE : 4-6-17
DRAWN BY : FCJ 11/88	REV. 10/11/11 MAA/GM
CHECKED BY : ARB 11/88	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM

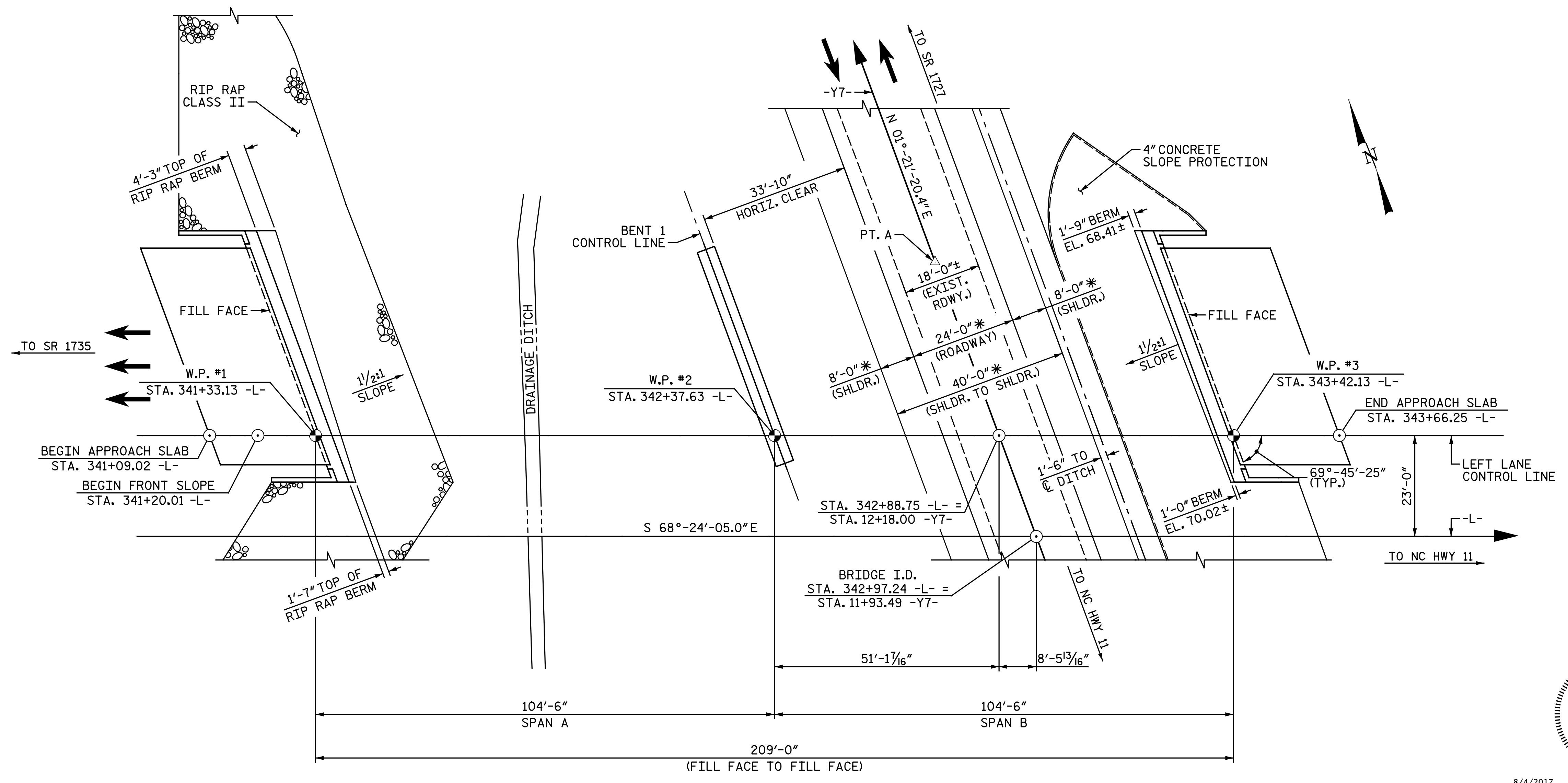
Michael Baker INTERNATIONAL
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8000 Regency Parkway, Suite 600
Cary, North Carolina 27519
NC License No. : F-1084

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



POINT	STATION ON -Y7-	OFFSET	ELEVATION ON -Y7-
A	12+60.10	0.00	53.98

△ - POINT OF MINIMUM VERTICAL CLEARANCE OVER EXISTING ROADWAY WITH 1/2" OVERLAY
 * - FUTURE LANE CONFIGURATION



PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-
11+93.49 -Y7-
 SHEET 1 OF 3 BRIDGE NO. 218



8/4/2017

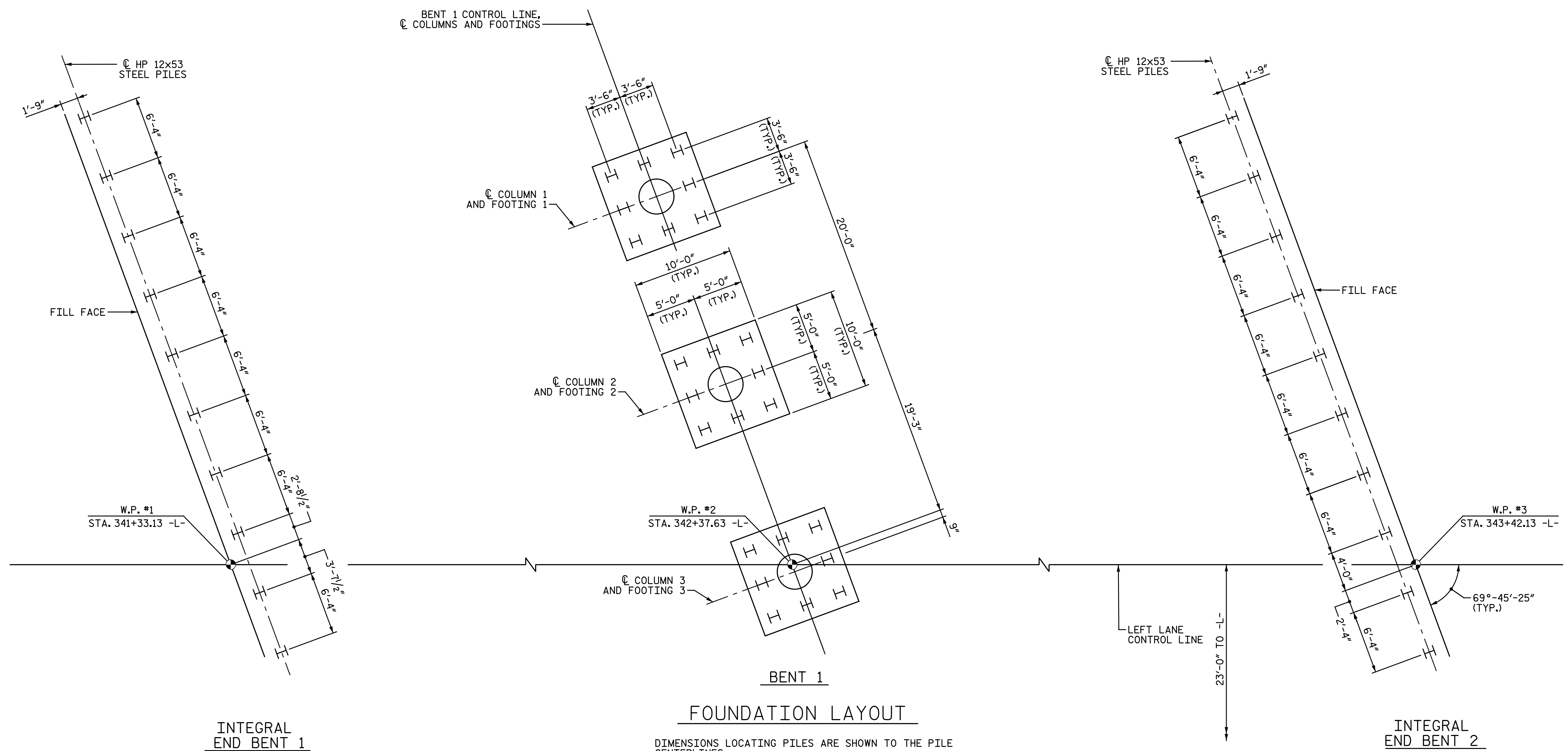
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON C.F. HARVEY
 PARKWAY OVER SR 1720
 BETWEEN SR 1735 AND NC HWY 11
LEFT LANE

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

DRAWN BY: M. D. MAYHEW DATE: 1-3-17
 CHECKED BY: S. H. ROSS DATE: 5-10-17



DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINES.
 ALL INTERIOR BENT PILES ARE HP 12x53 STEEL 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 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILE.
- DRIVE PILES AT END BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 195 TONS PER PILE.
- PILES AT BENT NO. 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILE.
- DRIVE PILES AT BENT NO. 1 TO A REQUIRED DRIVING RESISTANCE OF 195 TONS PER PILE.
- PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILE.
- DRIVE PILES AT END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 195 TONS PER PILE.
- STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO. 1, BENT NO. 1, AND END BENT NO. 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

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, 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.

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

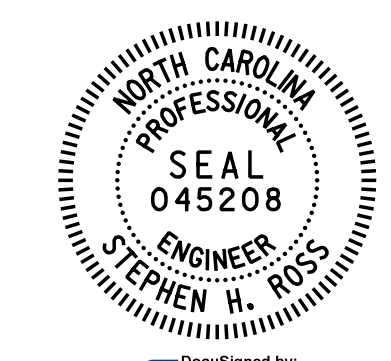
DRILLED-IN PILES ARE REQUIRED FOR BENT NO. 1 EXCAVATE HOLES AT PILE LOCATIONS TO ELEVATION 36.0 FT. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

CONTRACTOR SHALL STAGGER EXCAVATIONS SUCH THAT ADJACENT HOLES ARE NOT OPEN SIMULTANEOUSLY.

CONCRETE OR GROUT IS REQUIRED TO FILL HOLES FOR PILE EXCAVATION AT BENT NO. 1

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.

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-
11+93.49 -Y7-
 SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING

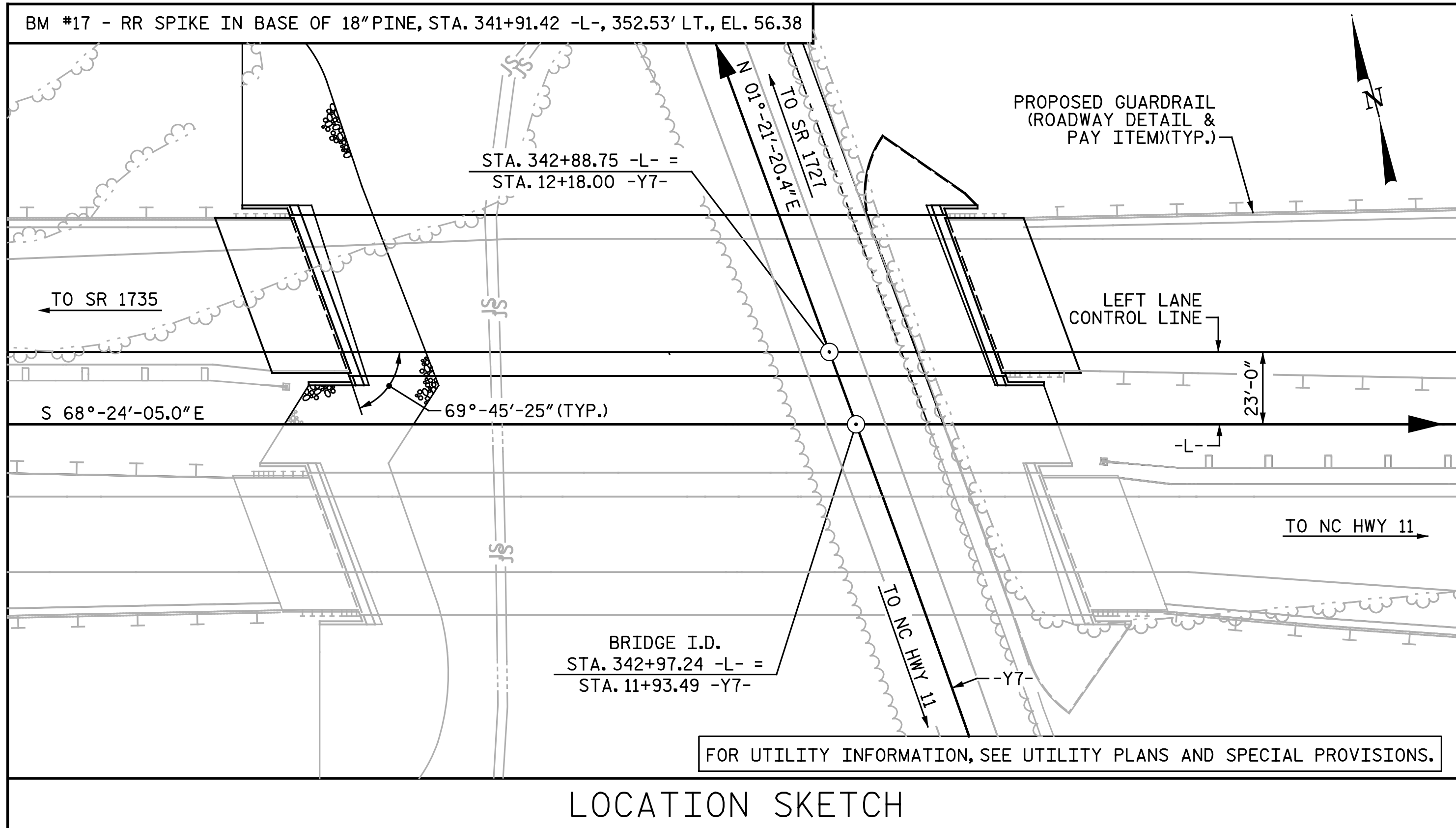
FOR BRIDGE ON C.F. HARVEY
 PARKWAY OVER SR 1720
 BETWEEN SR 1735 AND NC HWY 11
 LEFT LANE

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

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

DRAWN BY : P. SMITH DATE : 4-3-17
 CHECKED BY : S. H. ROSS DATE : 5-10-17

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



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(S) AND CLEARANCE(S) SHOWN ON THE PLANS AT THE POINT(S) OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATION(S) 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	FOUNDATION EXCAVATION FOR BENT 1	PILE EXCAVATION IN SOIL	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	MODIFIED 63" PRESTRESSED CONCRETE GIRDERS	PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	HP 12x53 STEEL PILES	STEEL PILE POINTS	PILE REDRIVES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS		
	LUMP SUM	LIN. FT.	EA.	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	EA.	NO.	LIN. FT.	EA.	EA.	LIN. FT.	SQ. YDS.	TON	SQ. YDS	LUMP SUM
SUPERSTRUCTURE				10,711	11,482					10	1029.3				414.45					LUMP SUM	
END BENT 1						46.6		8,418			10	10	300	10	5				485	539	
BENT 1	LUMP SUM	240				95.7		13,756	1,363		24	24	360	24	12						
END BENT 2						44.3		6,243			10	10	250	10	5		312				
TOTAL	LUMP SUM	240	1	10,711	11,482	186.6	LUMP SUM	28,417	1,363	10	1029.3	44	44	910	44	22	414.45	312	485	539	LUMP SUM

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-
11+93.49 -Y7-
 SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON C.F. HARVEY
 PARKWAY OVER SR 1720
 BETWEEN SR 1735 AND NC HWY 11

9/13/2017
 DOCUMENT NOT CONSIDERED FINAL
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 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:	SII-3
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : J. R. METZ DATE : 9-11-17
 CHECKED BY : S. H. ROSS DATE : 9-12-17

LOAD FACTORS:

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

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																								
LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						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	1.00	--	1.75	0.921	1.39	A / B	5	50.80	1.072	1.20	A / B	3	30.20	1.00	0.921	1.00	A / B	5	50.80	1,2	
	HL-93 (OPERATING)	N/A		1.66	--	1.35	0.921	1.80	A / B	5	50.80	1.072	1.66	A / B	3	9.60	N/A	-	-	-	-	-	-	2
	HS-20 (INVENTORY)	36.000	2	1.40	50.40	1.75	0.921	1.95	A / B	5	50.80	1.072	1.72	A / B	3	9.60	1.00	0.921	1.40	A / B	5	50.80	1,2	
	HS-20 (OPERATING)	36.000		2.27	81.72	1.35	0.921	2.53	A / B	5	50.80	1.072	2.27	A / B	3	9.60	N/A	-	-	-	-	-	-	2
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH		3.33	44.96	1.40	0.921	5.80	A / B	5	50.80	1.072	5.53	A / B	3	9.60	1.00	0.921	3.33	A / B	5	50.80	1,2	
		SNGARBS2	20.000		2.41	48.20	1.40	0.921	4.19	A / B	5	50.80	1.072	3.84	A / B	3	9.60	1.00	0.921	2.41	A / B	5	50.80	1,2
		SNAGRIS2	22.000		2.25	49.50	1.40	0.921	3.92	A / B	5	50.80	1.072	3.53	A / B	3	9.60	1.00	0.921	2.25	A / B	5	50.80	1,2
		SNCOTTS3	27.250		1.66	45.24	1.40	0.921	2.88	A / B	5	50.80	1.072	2.70	A / B	3	9.60	1.00	0.921	1.66	A / B	5	50.80	1,2
		SNAGGRS4	34.925		1.36	47.50	1.40	0.921	2.36	A / B	5	50.80	1.072	2.18	A / B	3	9.60	1.00	0.921	1.36	A / B	5	50.80	1,2
		SNS5A	35.550		1.33	47.28	1.40	0.921	2.31	A / B	5	50.80	1.072	2.19	A / B	3	9.60	1.00	0.921	1.33	A / B	5	50.80	1,2
		SNS6A	39.950		1.21	48.34	1.40	0.921	2.10	A / B	5	50.80	1.072	1.97	A / B	3	9.60	1.00	0.921	1.21	A / B	5	50.80	1,2
		SNS7B	42.000		1.15	48.30	1.40	0.921	2.00	A / B	5	50.80	1.072	1.91	A / B	3	9.60	1.00	0.921	1.15	A / B	5	50.80	1,2
	TRUCK TRACTOR SEMI-TRAILER (T/S)	TNAGRIT3	33.000		1.47	48.51	1.40	0.921	2.55	A / B	5	50.80	1.072	2.38	A / B	3	9.60	1.00	0.921	1.47	A / B	5	50.80	1,2
		TNT4A	33.075		1.47	48.62	1.40	0.921	2.56	A / B	5	50.80	1.072	2.33	A / B	3	9.60	1.00	0.921	1.47	A / B	5	50.80	1,2
		TNT6A	41.600		1.19	49.50	1.40	0.921	2.07	A / B	5	50.80	1.072	2.01	A / B	3	9.60	1.00	0.921	1.19	A / B	5	50.80	1,2
		TNT7A	42.000		1.19	49.98	1.40	0.921	2.07	A / B	5	50.80	1.072	1.97	A / B	3	9.60	1.00	0.921	1.19	A / B	5	50.80	1,2
		TNT7B	42.000		1.22	51.24	1.40	0.921	2.12	A / B	5	50.80	1.072	1.88	A / B	3	9.60	1.00	0.921	1.22	A / B	5	50.80	1,2
		TNAGRIT4	43.000		1.17	50.31	1.40	0.921	2.03	A / B	5	50.80	1.072	1.82	A / B	3	9.60	1.00	0.921	1.17	A / B	5	50.80	1,2
		TNAGT5A	45.000		1.11	49.95	1.40	0.921	1.93	A / B	5	50.80	1.072	1.79	A / B	3	9.60	1.00	0.921	1.11	A / B	5	50.80	1,2
		TNAGT5B	45.000	3	1.10	49.50	1.40	0.921	1.91	A / B	5	50.80	1.072	1.73	A / B	3	9.60	1.00	0.921	1.10	A / B	5	50.80	1,2

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)

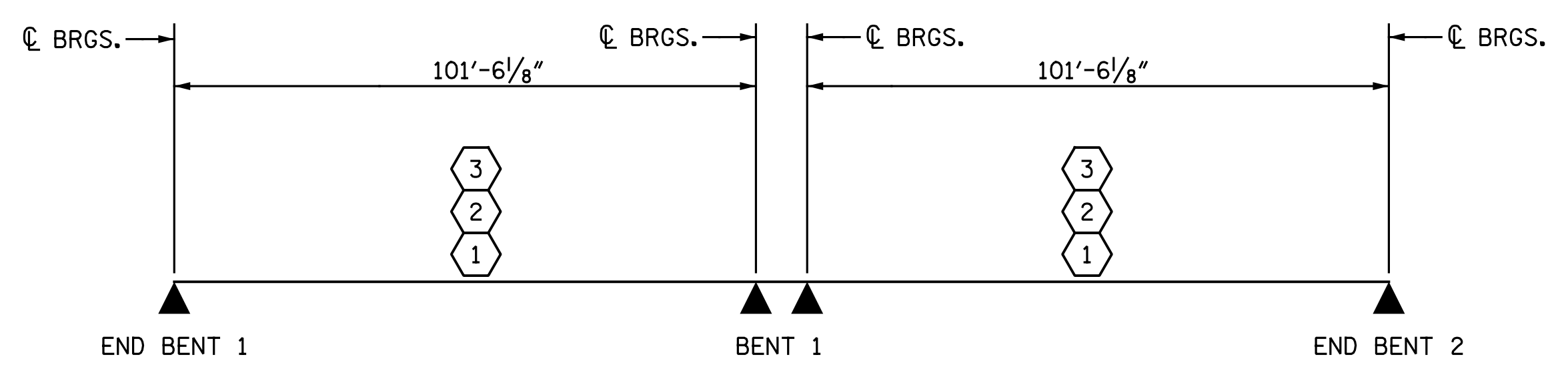
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

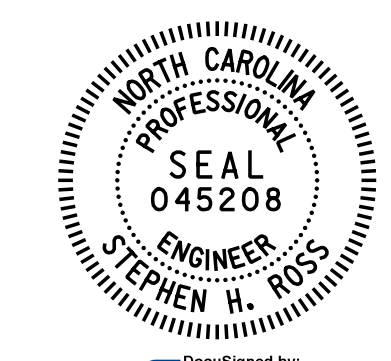
GIRDER LOCATION

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: 342+97.24 -L-

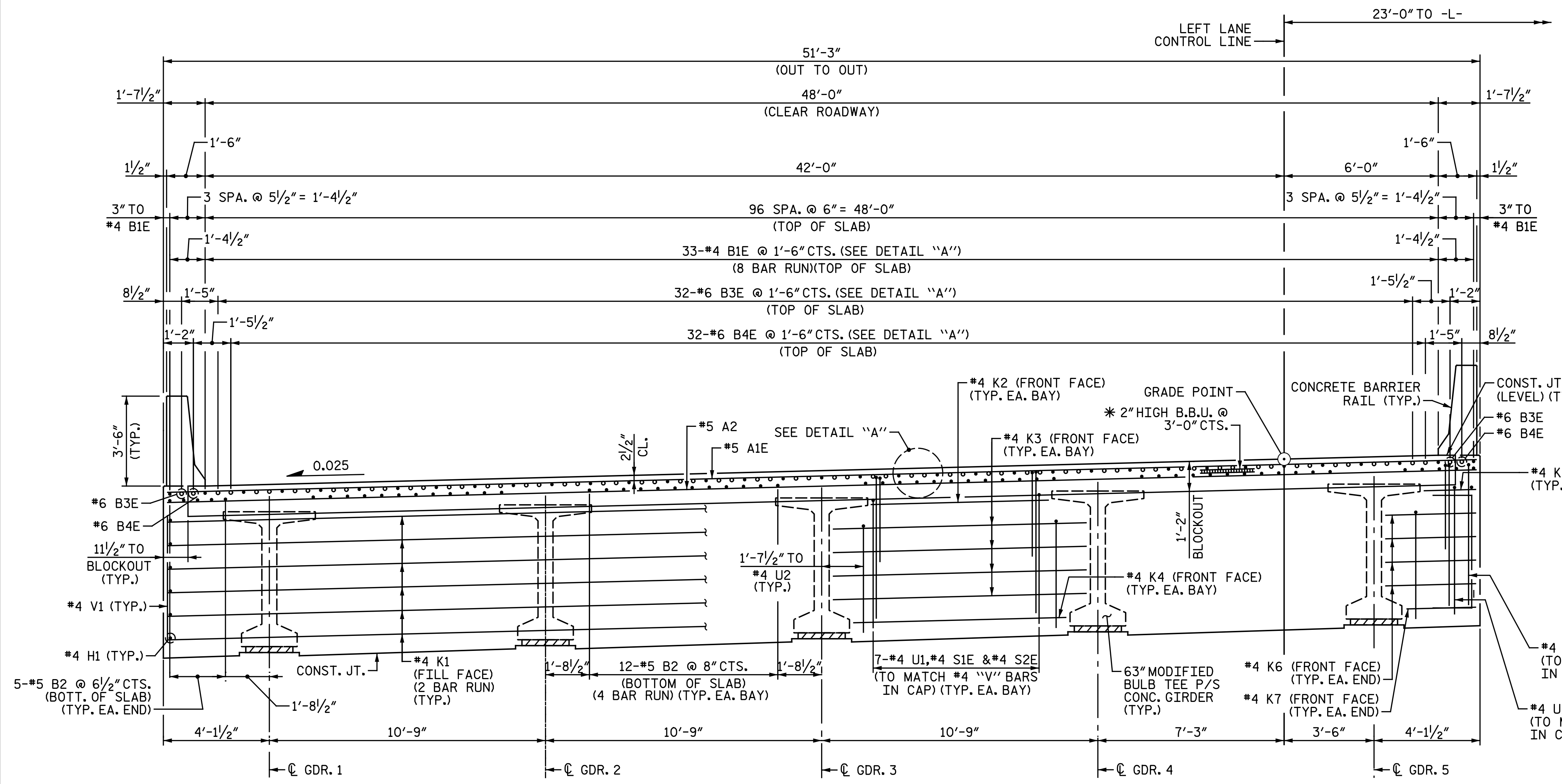


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS (NON-INTERSTATE TRAFFIC) LEFT LANE

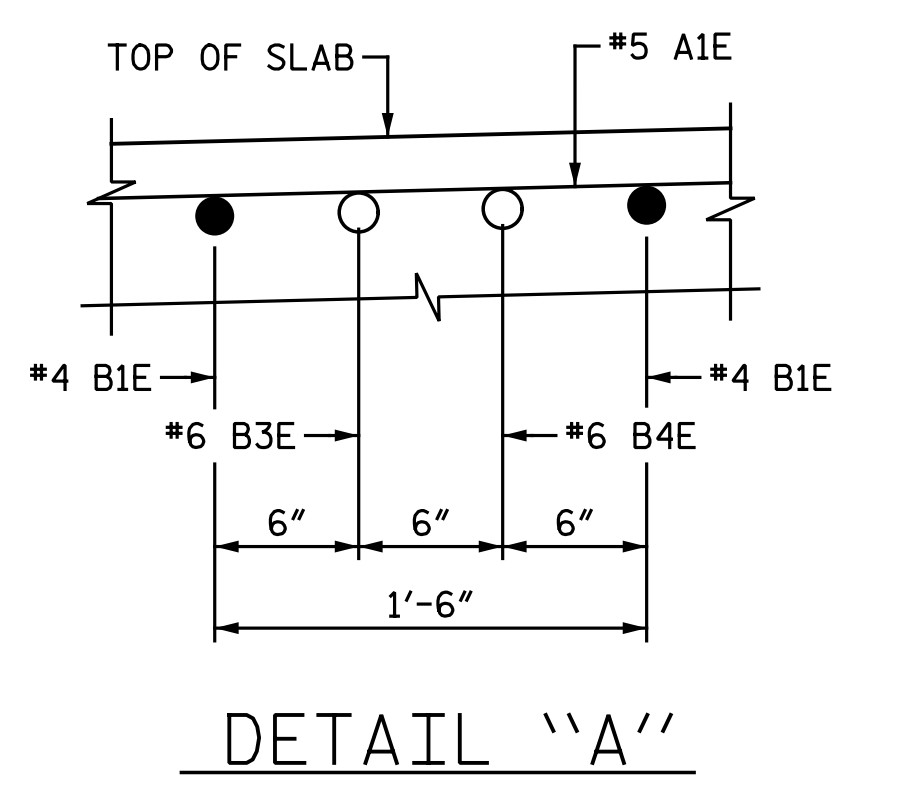
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Michael Baker INTERNATIONAL	Michael Baker Engineering 8000 Regency Parkway, Suite 600 Cary, North Carolina 27518 NC License No.: F-1084		REVISIONS			SHEET NO. SII-4
	NO.	BY:	DATE:	NO.	BY:	DATE:
1				3		
2				4		
TOTAL SHEETS						29

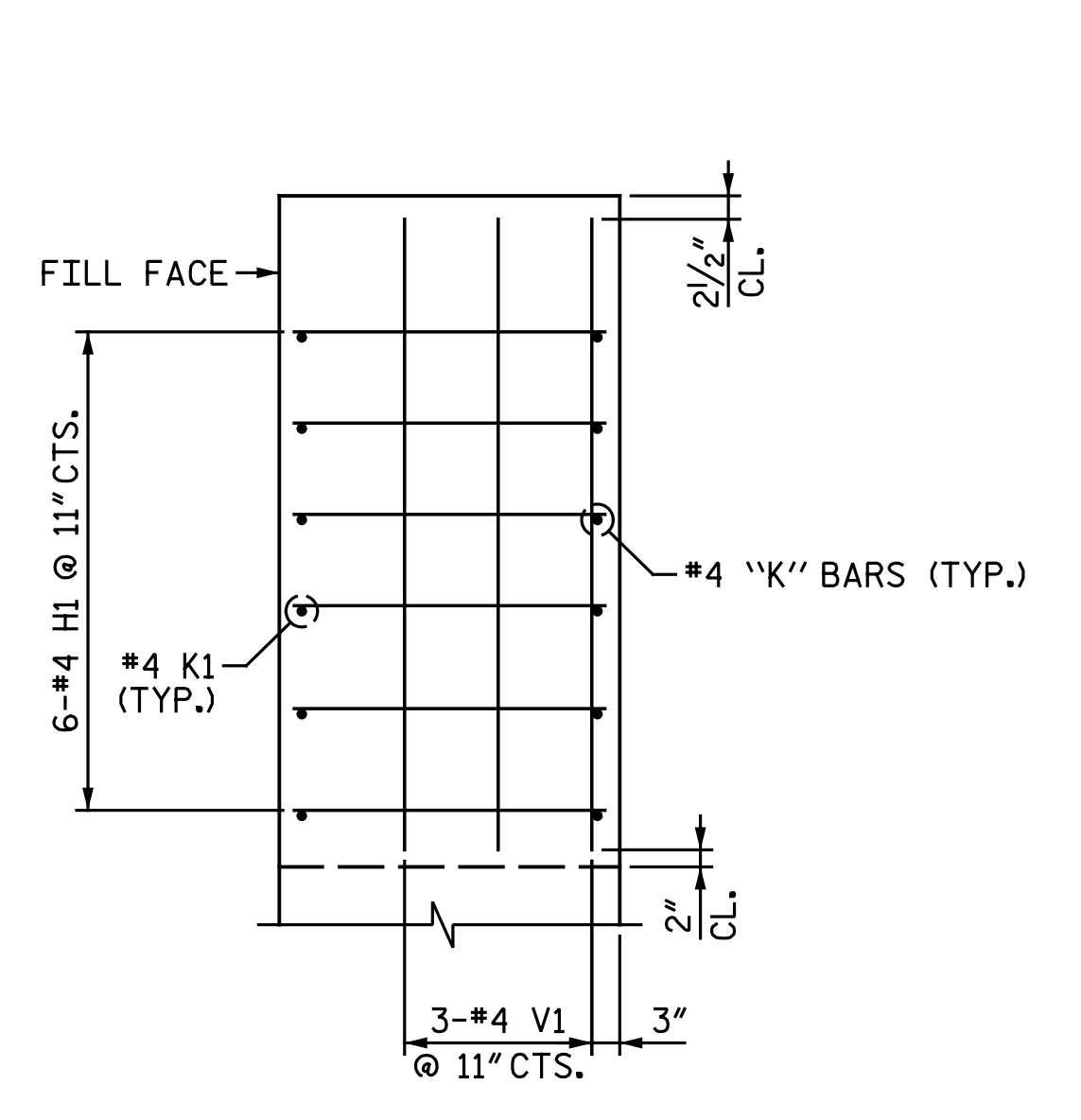
ASSEMBLED BY : P. SMITH	DATE : 4/21/17
CHECKED BY : S. H. ROSS	DATE : 5-10-17
DRAWN BY : MAA 1/08	REV. 11/2/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM



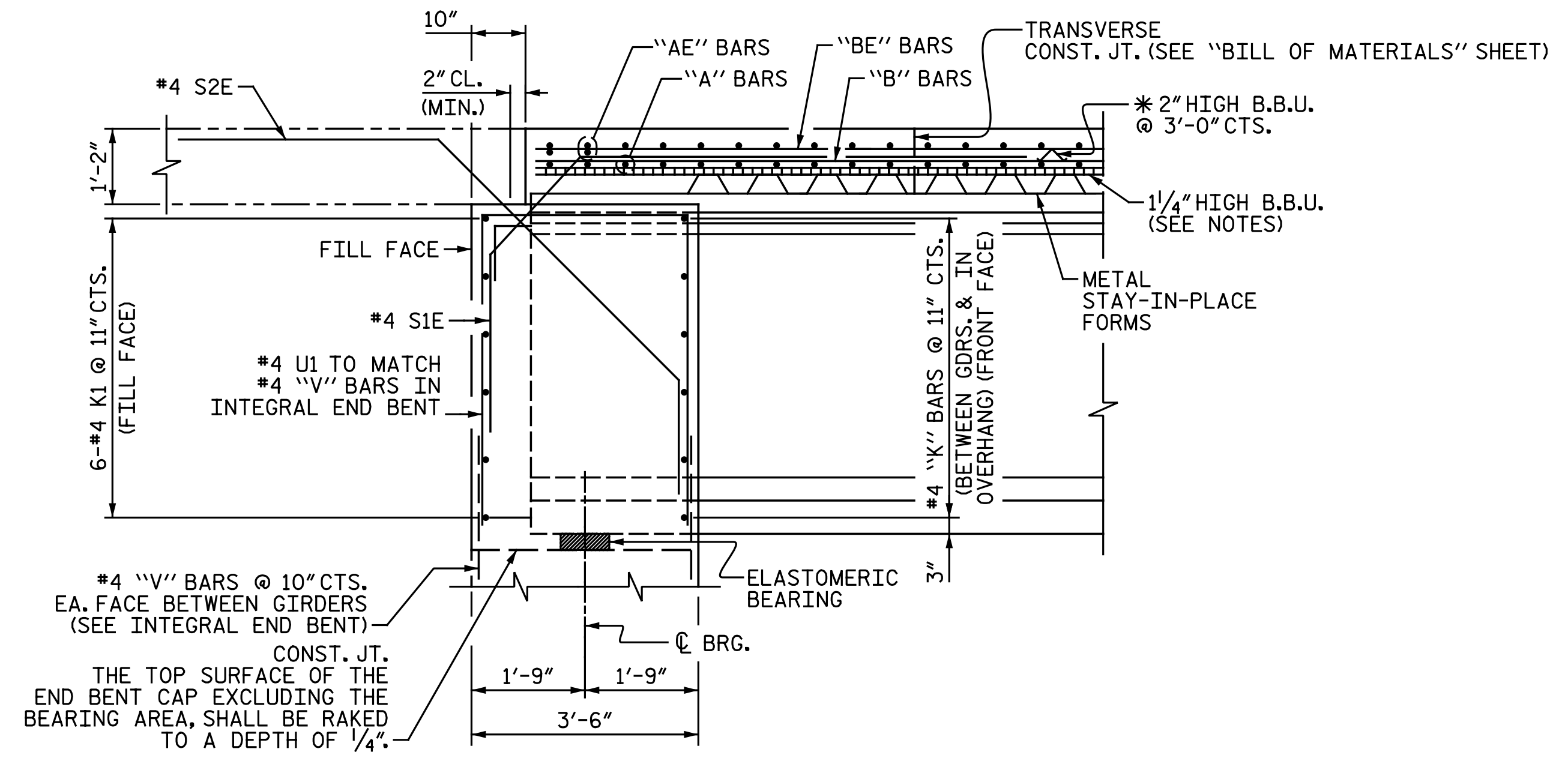
TYPICAL SECTION AT INTEGRAL END BENT
(END BENT 1 SHOWN, END BENT 2 SIMILAR)



NOTES:
 PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2/2" ABOVE THE TOP OF THE REMOVABLE FORM.
 LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS AND TO FACILITATE INSTALLATION OF CONCRETE BARRIER RAIL REINFORCEMENT.
 FOR CONCRETE BARRIER RAIL DETAILS, SEE "CONCRETE BARRIER RAIL" SHEET.
 PREVIOUSLY CAST CONCRETE IN A SPAN UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

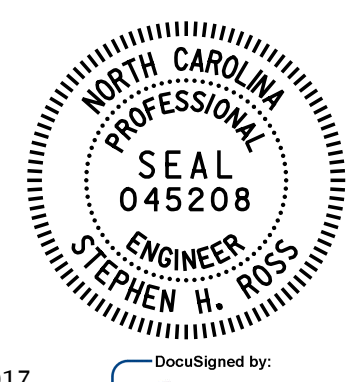


END OF END BENT DIAPHRAGM DETAIL



END OF GIRDER DETAIL AT INTEGRAL END BENT
(DIMENSIONS SHOWN ARE NORMAL TO END BENT, U.N.O.)
(END BENT 1 SHOWN, END BENT 2 SIMILAR)

* - 2" HIGH B.B.U. WITH #6 BARS IN NEG. MOMENT AREAS, 2/4" HIGH B.B.U. IN ALL OTHER AREAS.



PROJECT NO. R-5703
 LENOIR COUNTY
 STATION: 342+97.24 -L-
 SHEET 1 OF 2

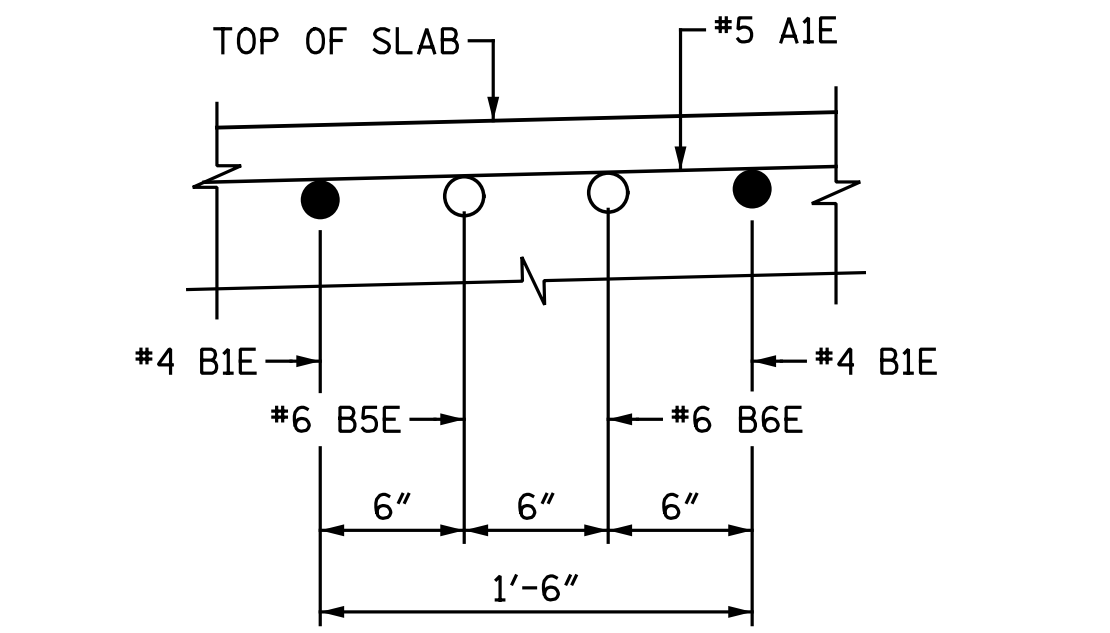
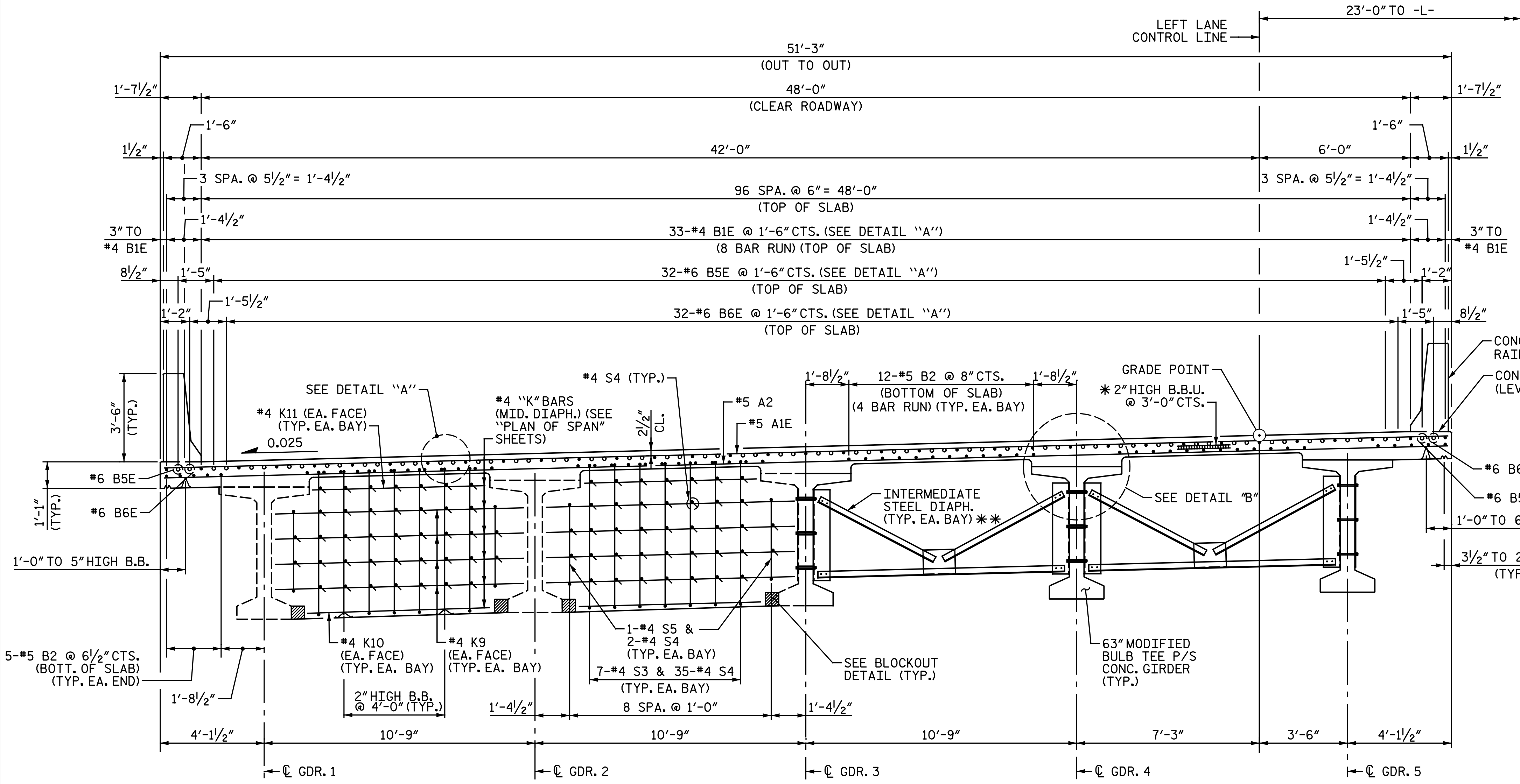
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION

DOCUMENT NOT CONSIDERED FINAL
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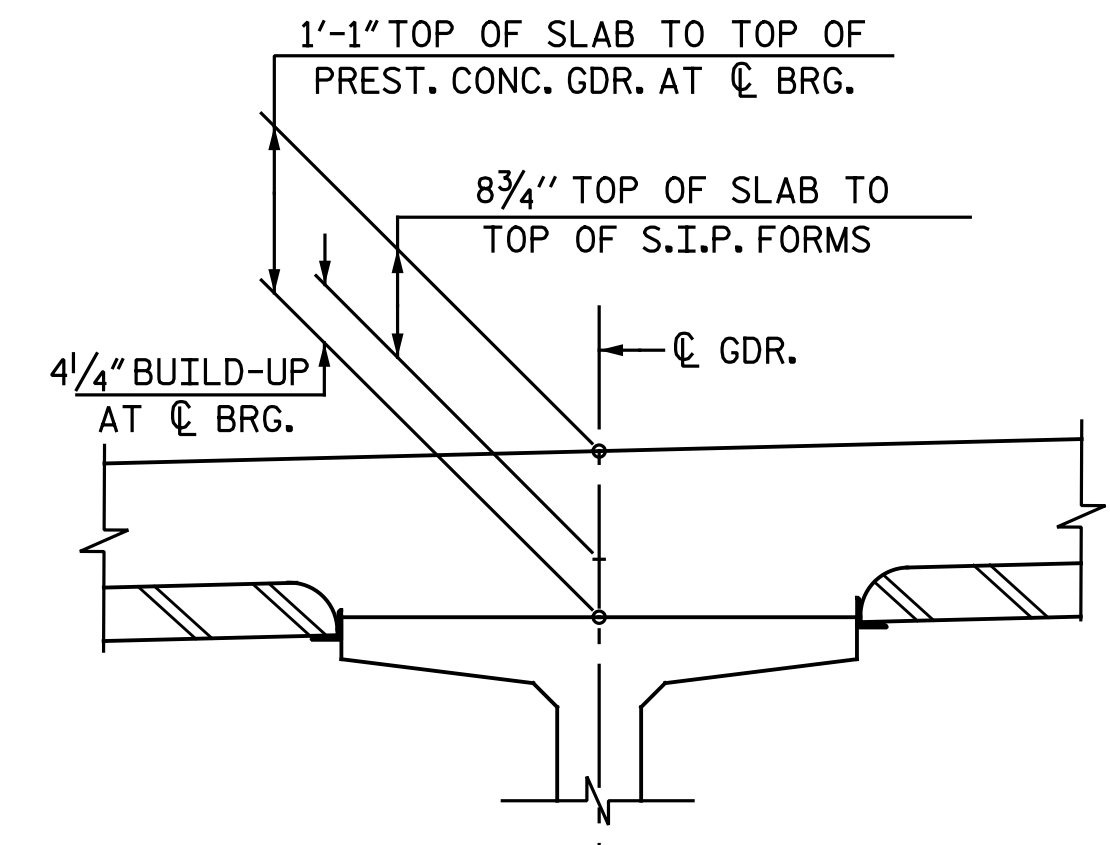
REVISIONS		SHEET NO.	
NO.	DATE	NO.	DATE
1		3	
2		4	

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

DRAWN BY: P. SMITH DATE: 1-30-17
 CHECKED BY: S. H. ROSS DATE: 5-10-17



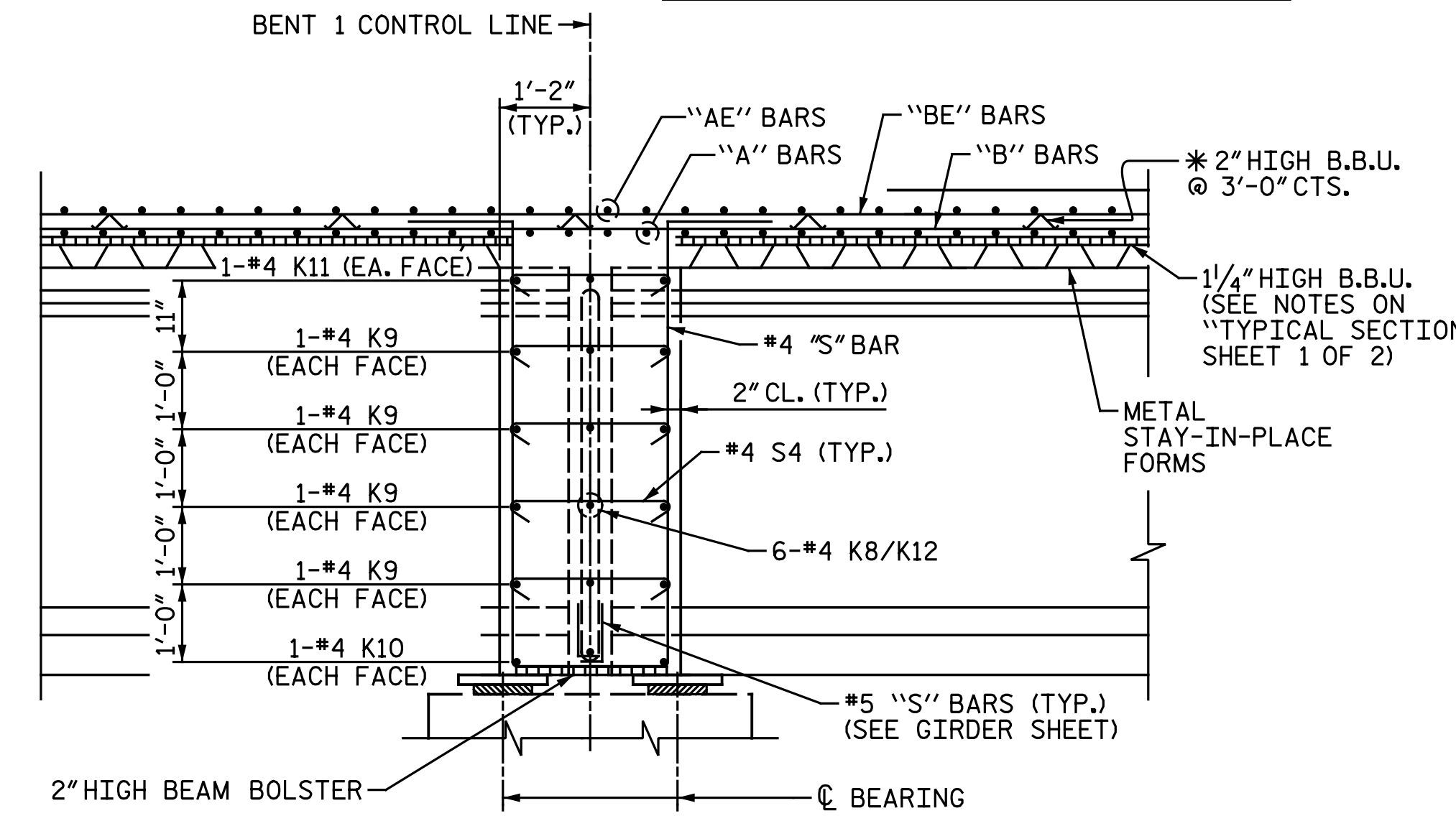
DETAIL "A"



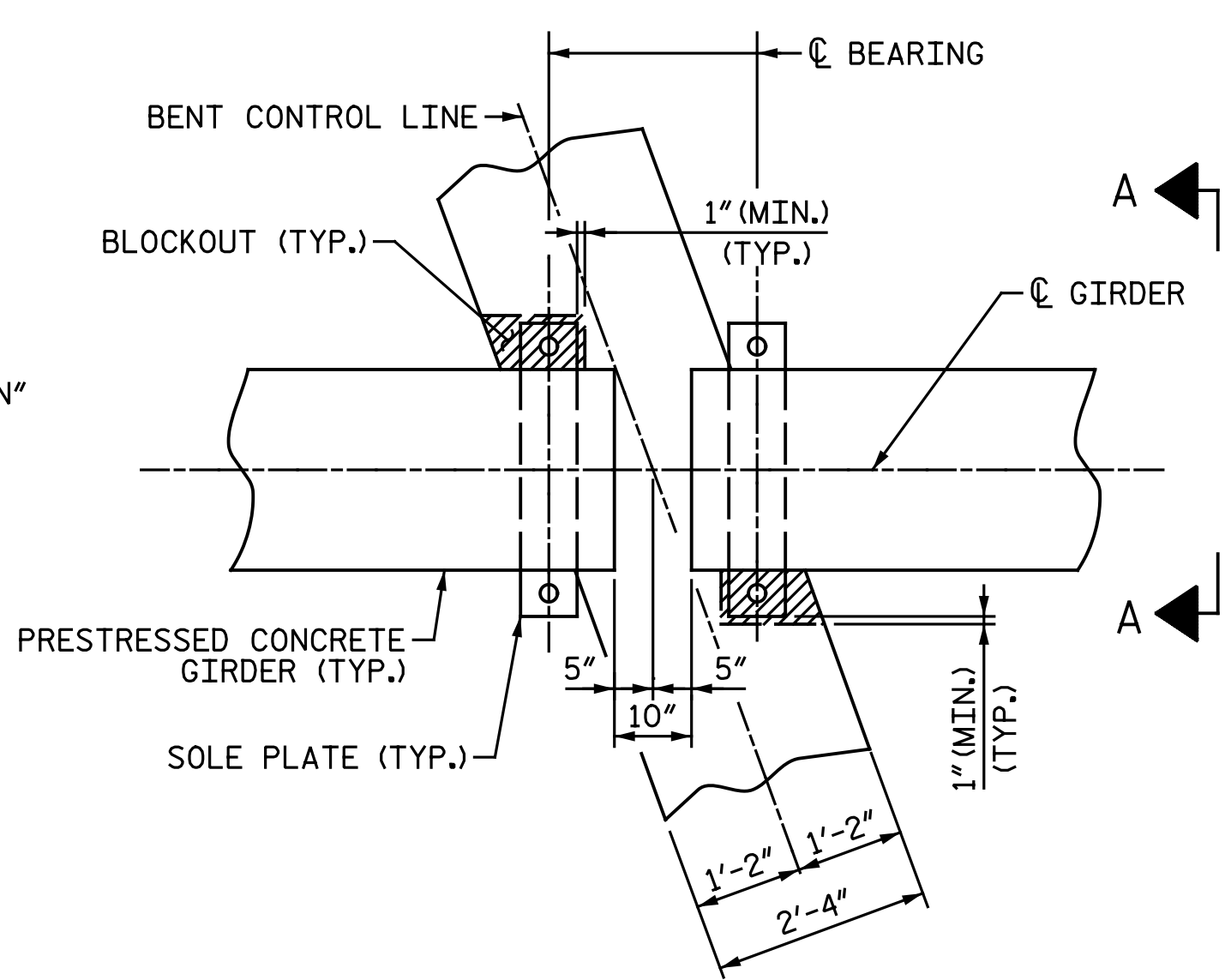
DETAIL "B"

TYPICAL HALF SECTION AT BENT DIAPHRAGM

TYPICAL HALF SECTION AT INTERMEDIATE DIAPHRAGM

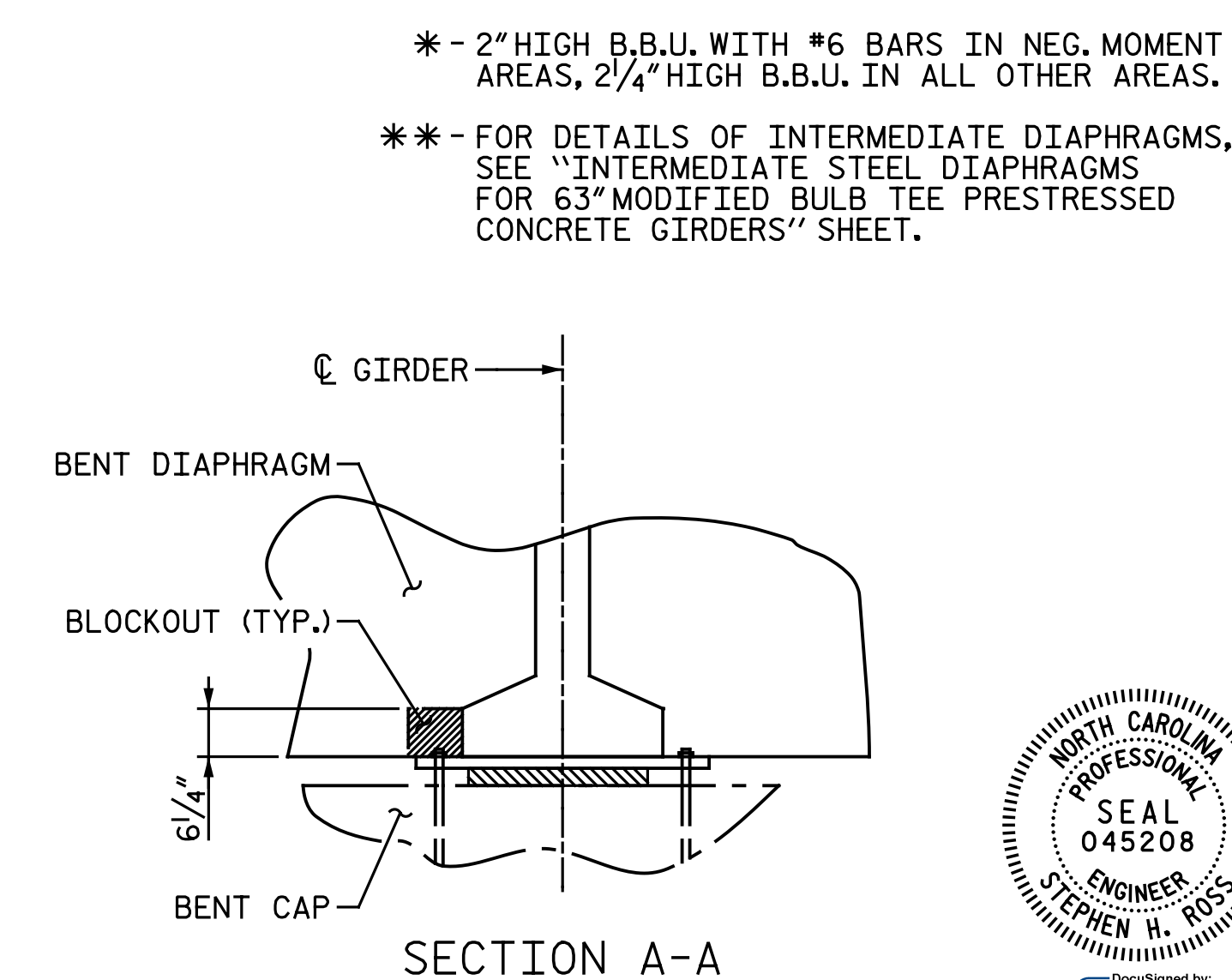


SECTION THRU BENT DIAPHRAGM



PLAN

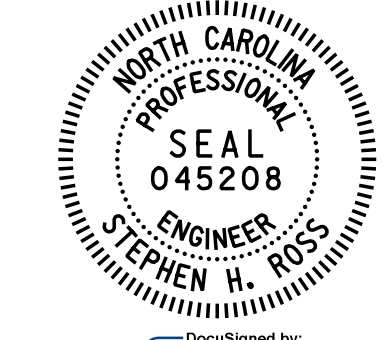
BENT DIAPHRAGM BLOCKOUT DETAIL



SECTION A-A

* - 2" HIGH B.B.U. WITH #6 BARS IN NEG. MOMENT AREAS, 1/4" HIGH B.B.U. IN ALL OTHER AREAS.
 ** - FOR DETAILS OF INTERMEDIATE DIAPHRAGMS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 63" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET.

PROJECT NO. R-5703
 LENOIR COUNTY
 STATION: 342+97.24 -L-
 SHEET 2 OF 2



8/4/2017

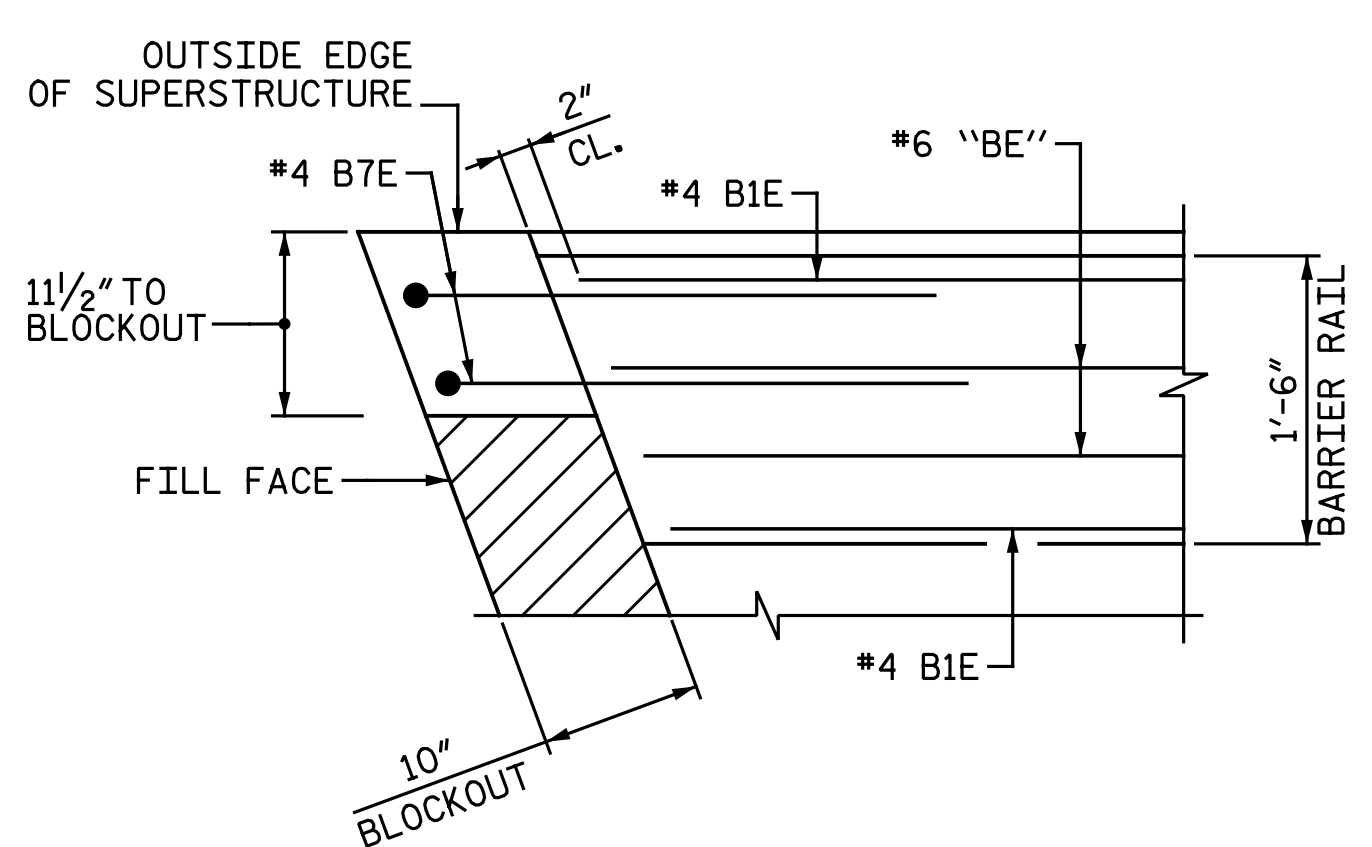
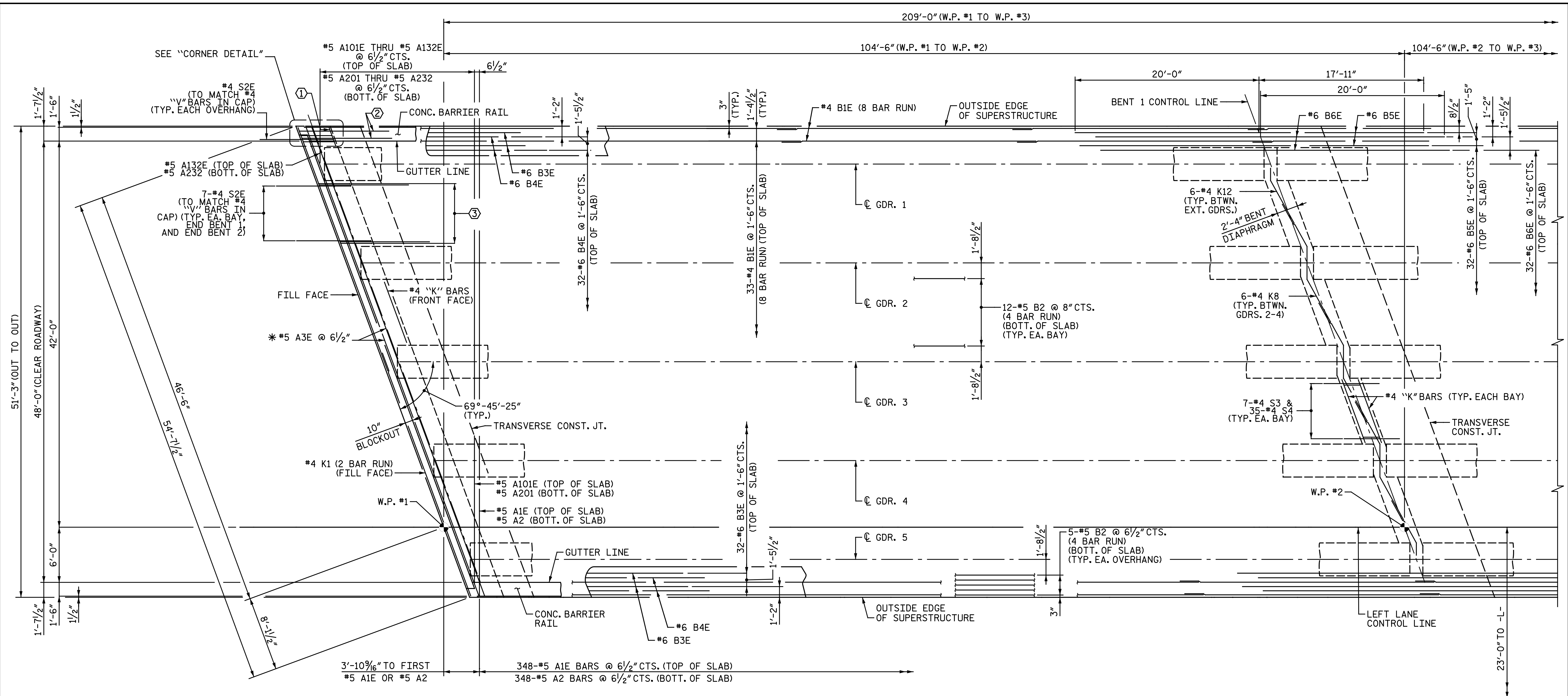
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 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION

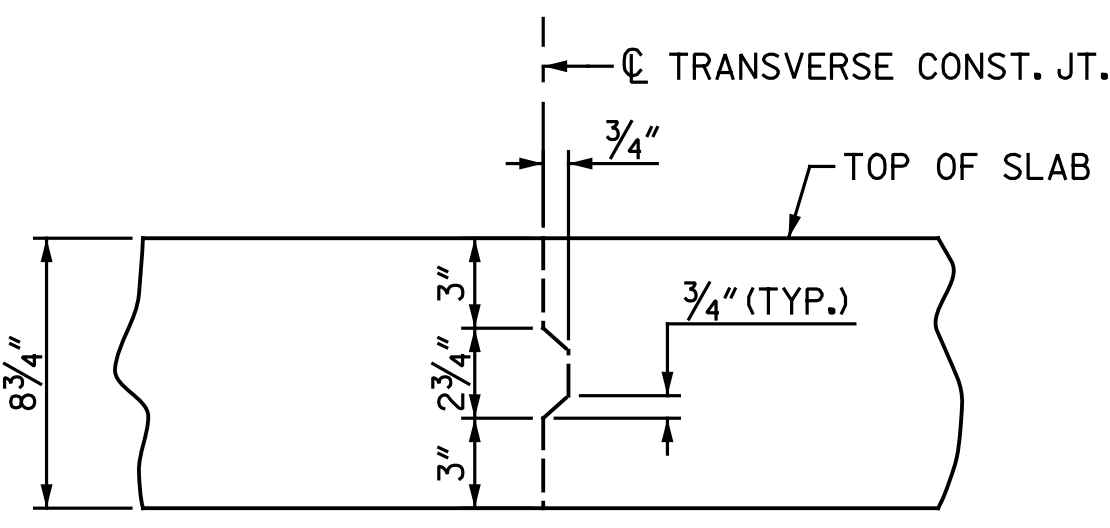
LEFT LANE

DRAWN BY: P. SMITH DATE: 2-1-17
 CHECKED BY: S.H. ROSS DATE: 5-10-17

NO.		BY:	DATE:	NO.		BY:	DATE:	SHEET NO.
1				3				TOTAL SHEETS 29
2				4				



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.

PLAN OF SPAN A

NOTES:
 FOR REINFORCING STEEL IN CONCRETE BARRIER RAIL, SEE "CONCRETE BARRIER RAIL" SHEET.
 FOR DECK POURING SEQUENCE AND LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.
 * #5 "AE" BARS ARE TO BE PLACED PARALLEL TO SKEW AND BELOW "BE" BARS.
 LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

- ① #4 "K" BARS (FRONT FACE) (TYP. EA. END)
- ② #4 U1 & #4 S1E (TO MATCH #4 "V" BARS IN CAP) (TYP. EA. OVERHANG, END BENT 1 AND END BENT 2)
- ③ 7-#4 U1 & #4 S1E (TO MATCH #4 "V" BARS IN CAP) (TYP. EA. BAY, END BENT 1 AND END BENT 2)

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

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-

SHEET 1 OF 2



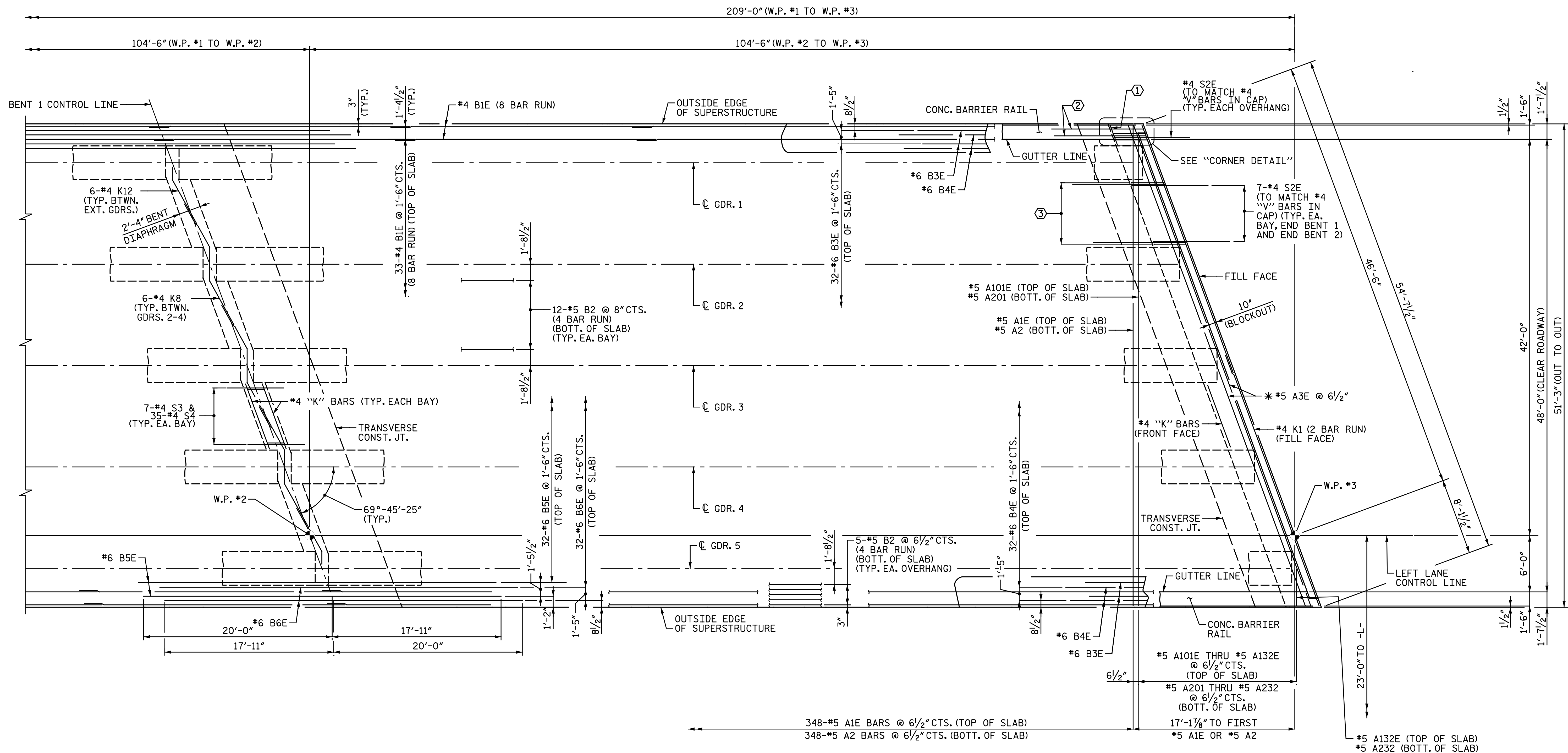
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 NC License No.: F-1084

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPANS
 LEFT LANE

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

DRAWN BY: P. SMITH DATE: 1-24-17
 CHECKED BY: S.H. ROSS DATE: 5-10-17



PLAN OF SPAN B

NOTES:
 FOR REINFORCING STEEL IN CONCRETE BARRIER RAIL, SEE "CONCRETE BARRIER RAIL" SHEET.
 FOR DECK POURING SEQUENCE AND LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.
 * #5 "AE" BARS ARE TO BE PLACED PARALLEL TO SKEW AND BELOW "BE" BARS.
 LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

- ① #4 "K" BARS (FRONT FACE) (TYP. EA. END)
- ② #4 U1 & #4 S1E (TO MATCH #4 "V" BARS IN CAP) (TYP. EA. OVERHANG, END BENT 1 AND END BENT 2)
- ③ 7-#4 U1 & #4 S1E (TO MATCH #4 "V" BARS IN CAP) (TYP. EA. BAY, END BENT 1 AND END BENT 2)

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



8/4/2017
 Documented by: [Signature]

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PROJECT NO. R-5703
 LENOIR COUNTY
 STATION: 342+97.24 -L-

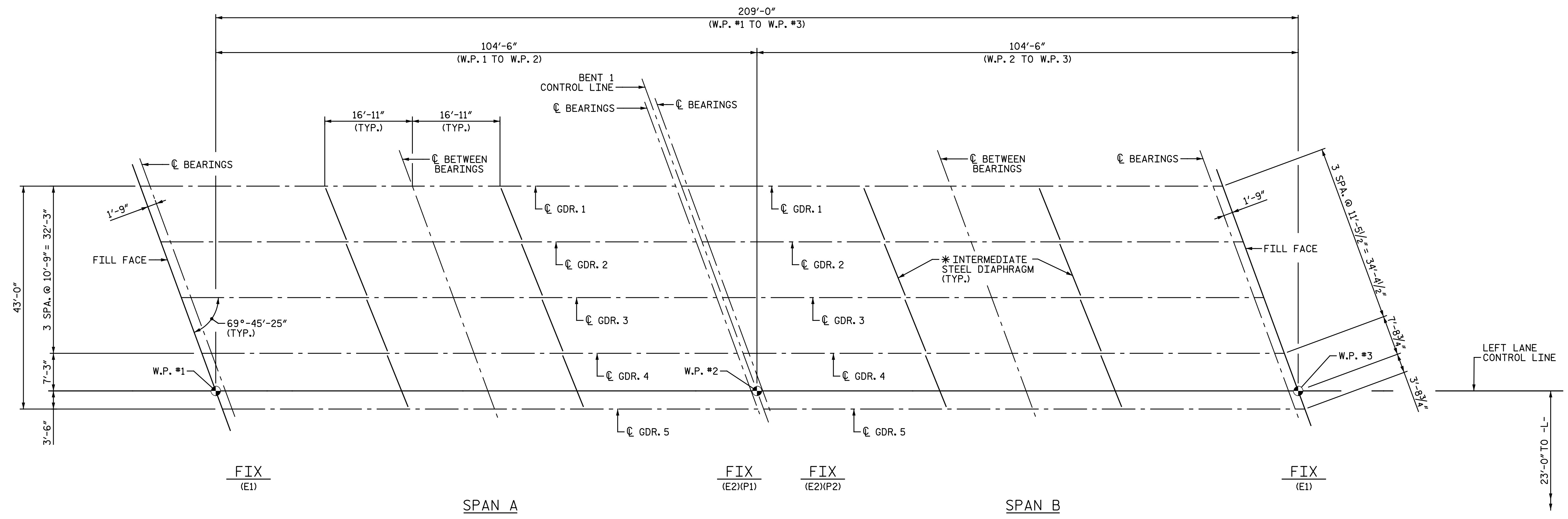
SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPANS

LEFT LANE

REVISIONS						SHEET NO. S11-8 TOTAL SHEETS 29
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DRAWN BY: P. SMITH DATE: 1-26-17
 CHECKED BY: S.H. ROSS DATE: 5-10-17



GIRDER LAYOUT

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

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-



8/4/2017
 Documented by: *[Signature]*

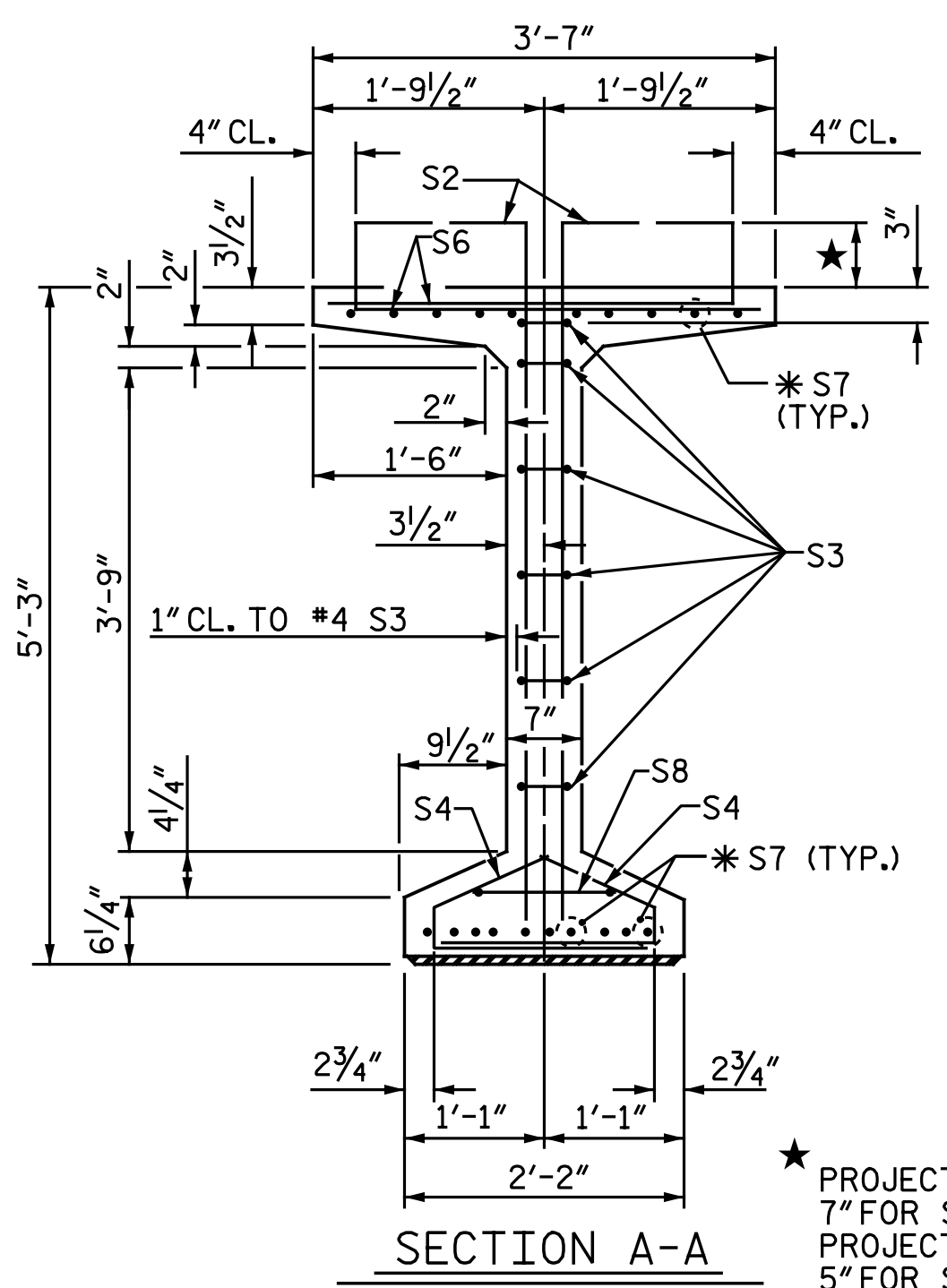
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 GIRDER LAYOUT
 LEFT LANE

DOCUMENT NOT CONSIDERED FINAL
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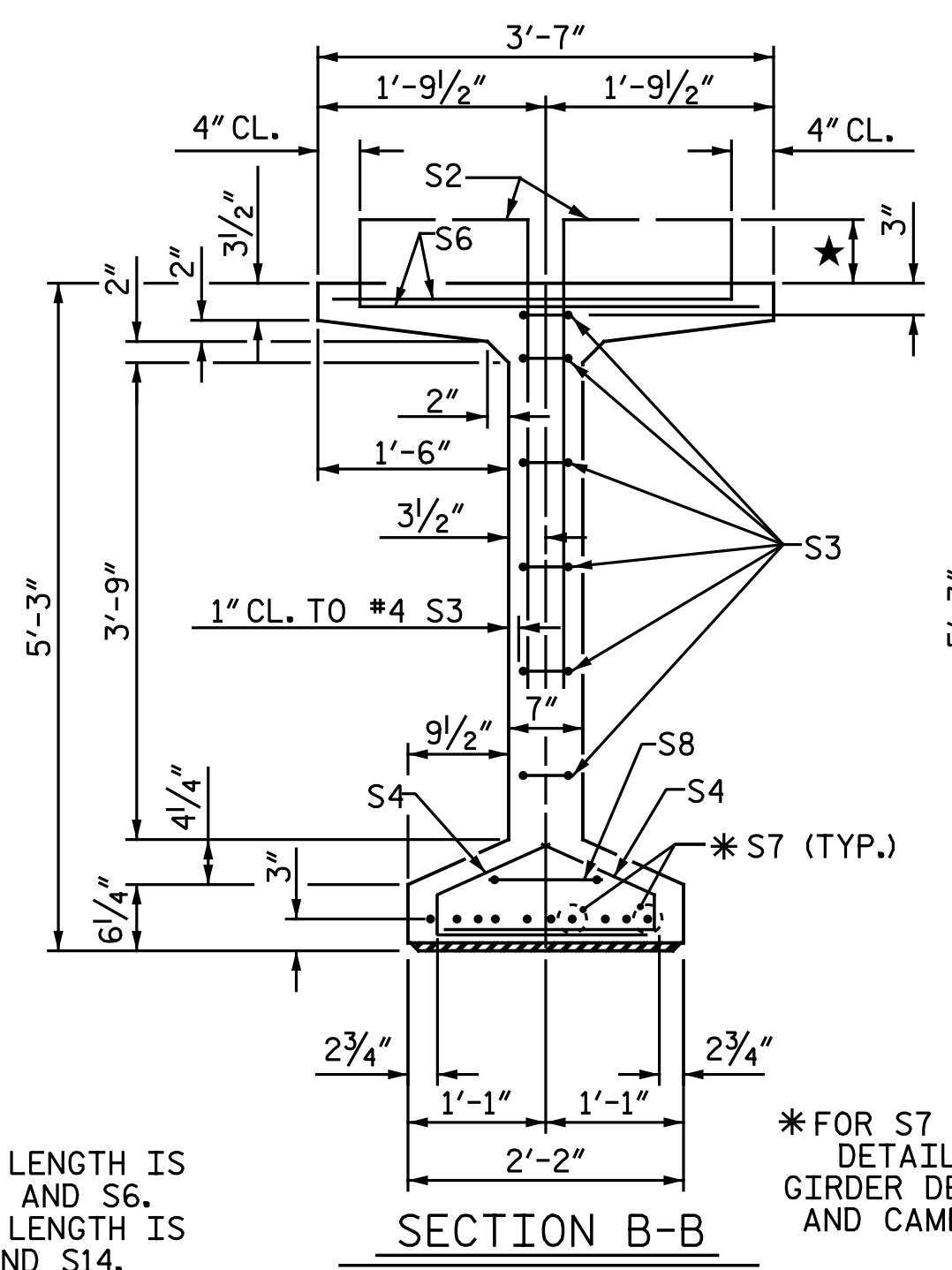
Michael Baker INTERNATIONAL
 Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27518
 NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SII-9
1			3			TOTAL SHEETS
2			4			29

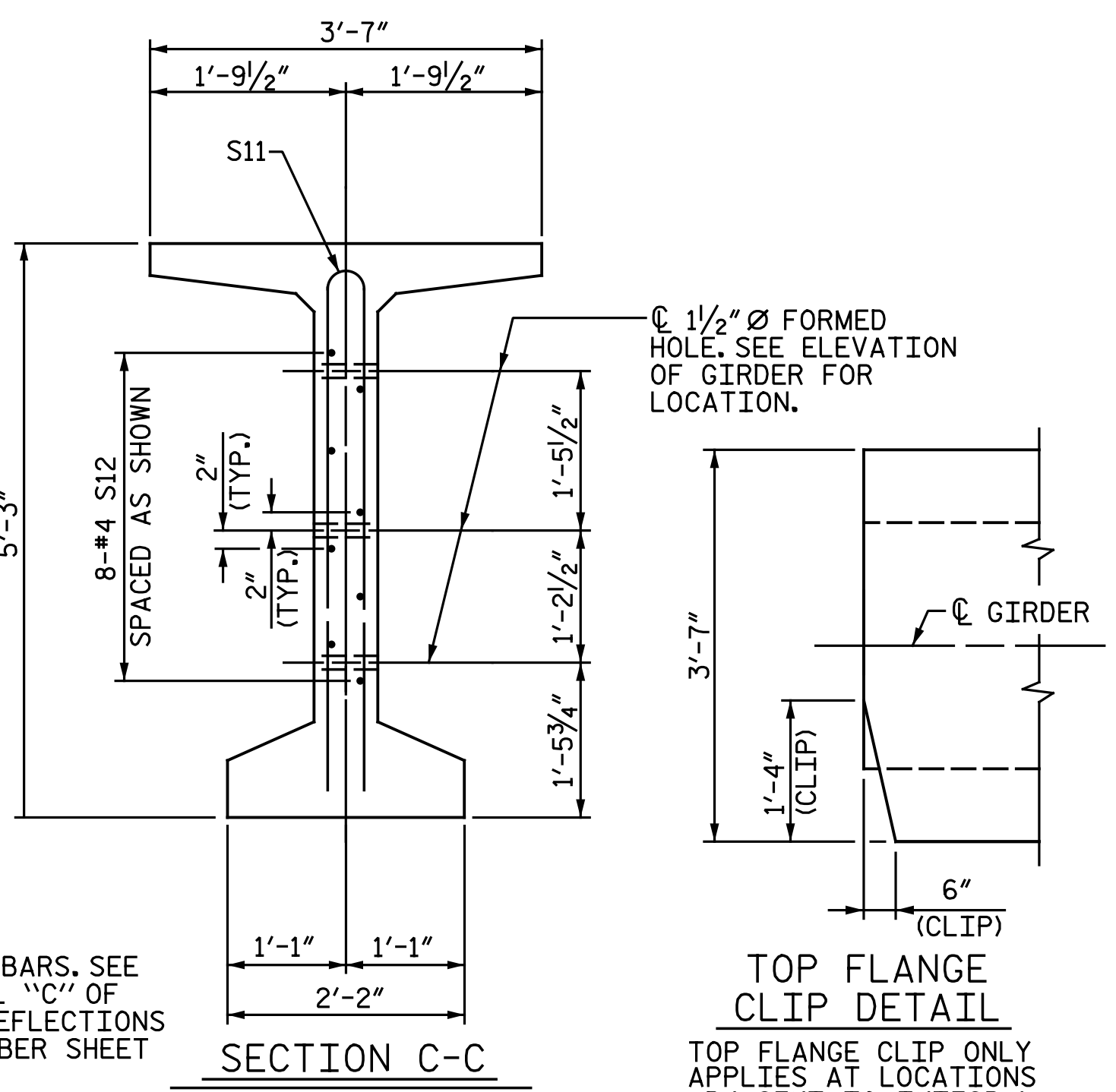
DRAWN BY : P. SMITH DATE : 1-6-17
 CHECKED BY : S.H. ROSS DATE : 5-10-17



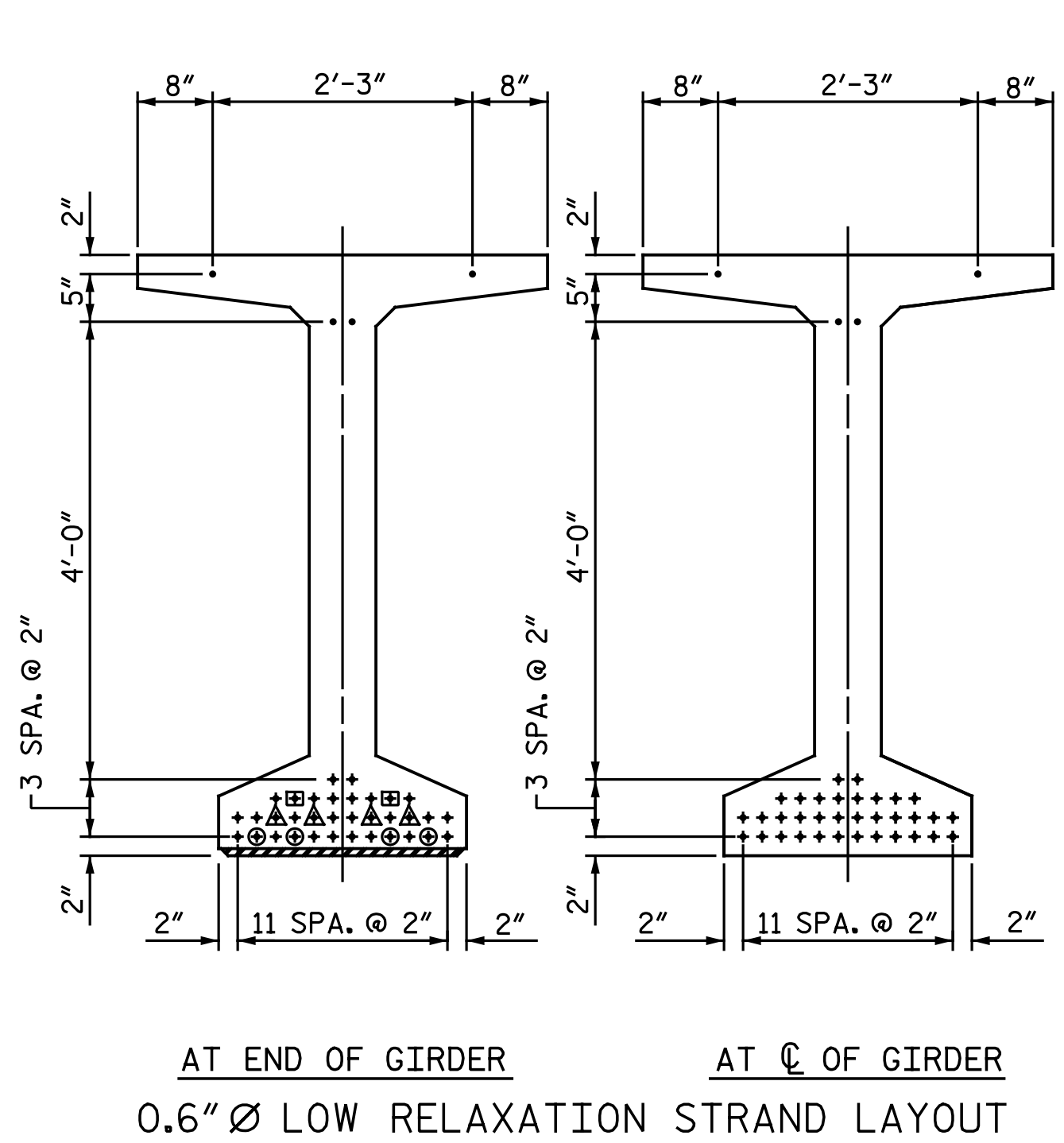
PROJECTION LENGTH IS 7" FOR S1, S2 AND S6.
PROJECTION LENGTH IS 5" FOR S13 AND S14.



* FOR S7 BARS. SEE DETAIL "C" OF GIRDER DEFLECTIONS AND CAMBER SHEET



TOP FLANGE CLIP DETAIL
TOP FLANGE CLIP ONLY APPLIES AT LOCATIONS ADJACENT TO INTEGRAL END BENTS.



AT END OF GIRDER AT CENTER OF GIRDER
0.6" Ø LOW RELAXATION STRAND LAYOUT

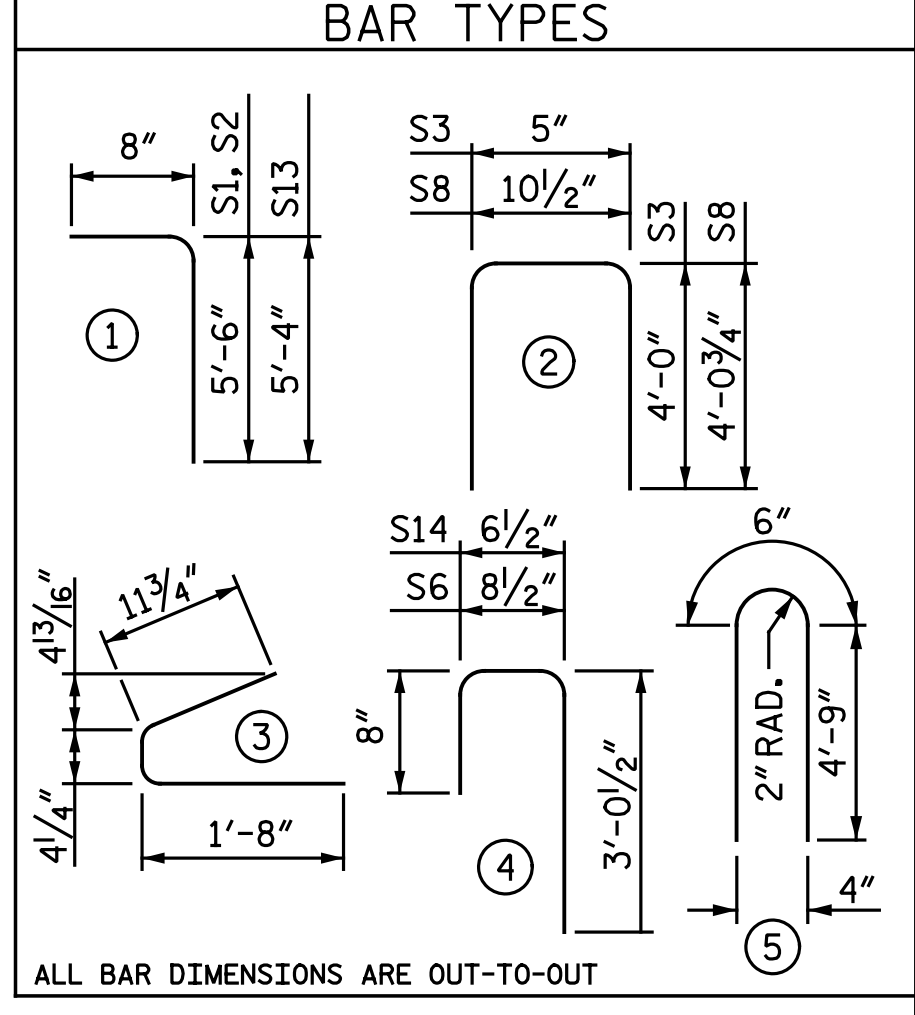
0.6" Ø L. R. GRADE 270 STRANDS

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

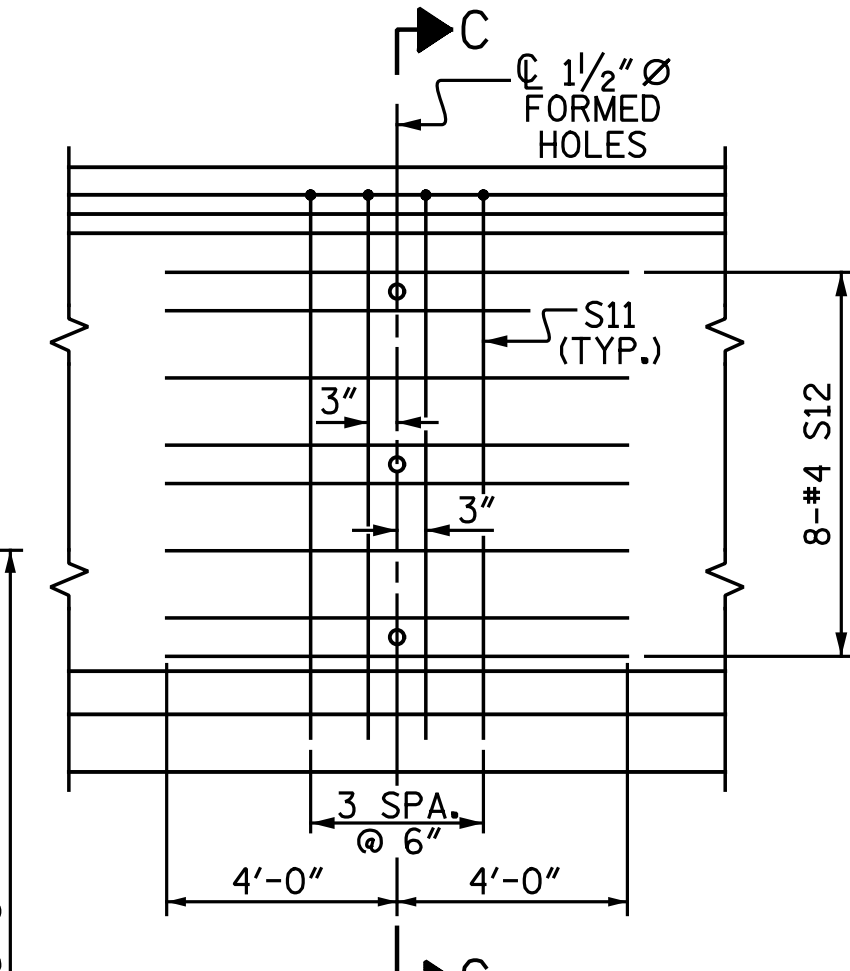
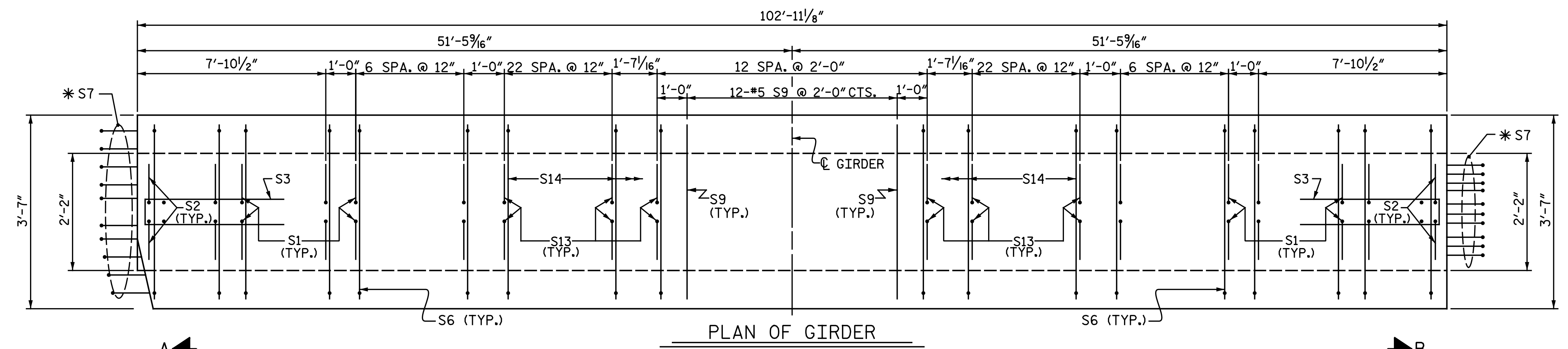
REINFORCING STEEL FOR ONE GDR

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	60	#4	1	6'-2"	247
S2	48	#5	1	6'-2"	309
S3	12	#4	2	8'-5"	67
S4	80	#4	3	3'-0"	160
S6	108	#5	4	4'-5"	498
*S7	30	#5	STR	3'-8"	115
S8	2	#5	2	9'-0"	19
S9	12	#5	STR	3'-3"	41
S10	2	#3	STR	1'-10"	1
S11	8	#5	5	10'-0"	83
S12	16	#4	STR	8'-0"	86
S13	118	#4	1	6'-0"	473
S14	118	#5	4	4'-3"	523

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



- DEBONDING LEGEND
- FULLY BONDED STRANDS
 - STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 22'-0" FROM END OF GIRDER



SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR ALL GIRTERS.

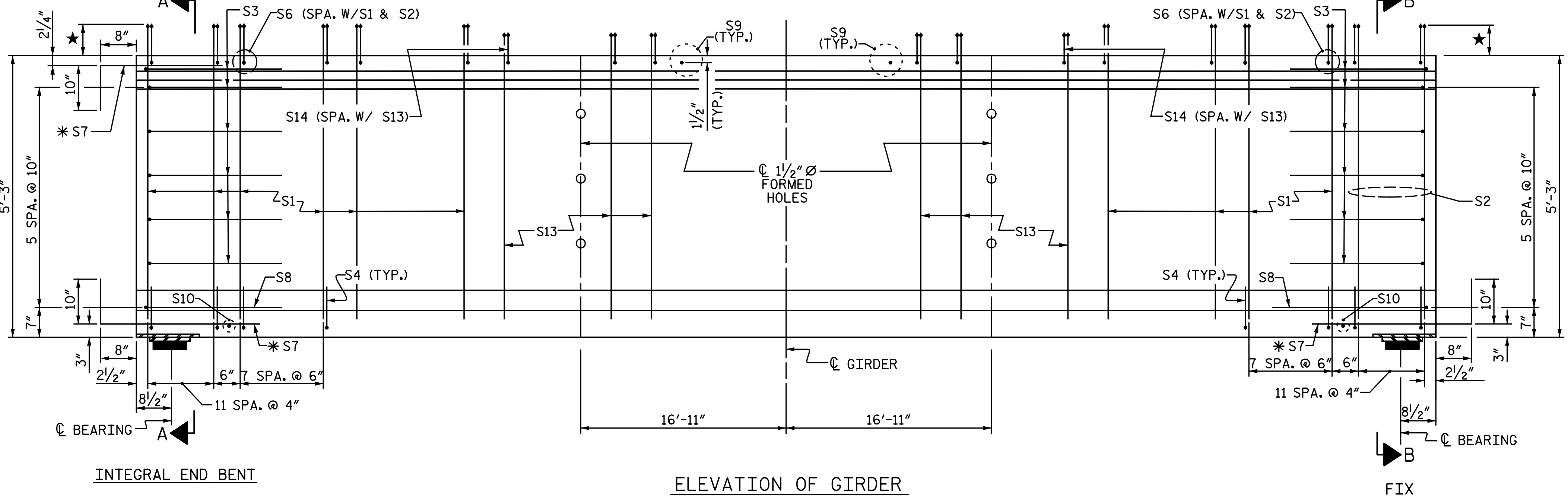
QUANTITIES FOR ONE GIRDER

REINFORCING STEEL	8000 PSI CONCRETE		0.6" Ø L.R. STRANDS
	LB.	C.Y.	
PER GIRDER	2622	20.4	38

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
10	102.9'	1029.3'

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 342+97.24 -L-



INTEGRAL END BENT

ELEVATION OF GIRDER

FIX

ASSEMBLED BY: W. D. MCGREADDY DATE: 1-31-17
CHECKED BY: S. H. ROSS DATE: 5-10-17
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



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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
63" PRESTRESSED CONCRETE
MODIFIED BULB TEE
CONTINUOUS FOR LIVE LOAD

LEFT LANE

REVISIONS						SHEET NO. S11-10
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 29
2			4			

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" Ø LOW RELAXATION STRANDS		SPAN A & B																				
		GIRDER 1																				
TWENTIETH POINTS		0.0	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	1.0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.039	0.076	0.112	0.144	0.173	0.198	0.217	0.231	0.240	0.243	0.240	0.231	0.217	0.198	0.173	0.144	0.112	0.076	0.039	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.024	0.044	0.068	0.086	0.106	0.120	0.132	0.141	0.146	0.148	0.146	0.141	0.132	0.120	0.106	0.086	0.068	0.044	0.024	0.000
FINAL CAMBER	↑	0	1/8"	3/8"	1/2"	11/16"	3/4"	7/8"	1"	1 1/16"	1 1/8"	1 1/8"	1 1/8"	1 1/16"	1"	7/8"	3/4"	11/16"	1/2"	3/8"	1/8"	0

0.6" Ø LOW RELAXATION STRANDS		SPAN A & B																				
		GIRDER 2 & 4																				
TWENTIETH POINTS		0.0	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	1.0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.039	0.076	0.112	0.144	0.173	0.198	0.217	0.231	0.240	0.243	0.240	0.231	0.217	0.198	0.173	0.144	0.112	0.076	0.039	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.025	0.047	0.072	0.091	0.112	0.127	0.140	0.149	0.155	0.157	0.155	0.149	0.140	0.127	0.112	0.091	0.072	0.047	0.025	0.000
FINAL CAMBER	↑	0	1/8"	5/16"	7/16"	5/8"	11/16"	13/16"	7/8"	15/16"	1"	1"	1"	15/16"	7/8"	13/16"	11/16"	5/8"	7/16"	5/16"	1/8"	0

0.6" Ø LOW RELAXATION STRANDS		SPAN A & B																				
		GIRDER 3																				
TWENTIETH POINTS		0.0	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	1.0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.039	0.076	0.112	0.144	0.173	0.198	0.217	0.231	0.240	0.243	0.240	0.231	0.217	0.198	0.173	0.144	0.112	0.076	0.039	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.025	0.047	0.074	0.093	0.114	0.129	0.143	0.152	0.158	0.160	0.158	0.152	0.143	0.129	0.114	0.093	0.074	0.047	0.025	0.000
FINAL CAMBER	↑	0	1/8"	5/16"	7/16"	9/16"	11/16"	13/16"	7/8"	15/16"	15/16"	15/16"	15/16"	15/16"	7/8"	13/16"	11/16"	9/16"	7/16"	5/16"	1/8"	0

0.6" Ø LOW RELAXATION STRANDS		SPAN A & B																				
		GIRDER 5																				
TWENTIETH POINTS		0.0	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	1.0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.039	0.076	0.112	0.144	0.173	0.198	0.217	0.231	0.240	0.243	0.240	0.231	0.217	0.198	0.173	0.144	0.112	0.076	0.039	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.024	0.044	0.069	0.087	0.107	0.121	0.134	0.142	0.148	0.150	0.148	0.142	0.134	0.121	0.107	0.087	0.069	0.044	0.024	0.000
FINAL CAMBER	↑	0	1/8"	3/8"	1/2"	5/8"	3/4"	7/8"	1"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1 1/16"	1"	7/8"	3/4"	5/8"	1/2"	3/8"	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).

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 6,500 PSI.

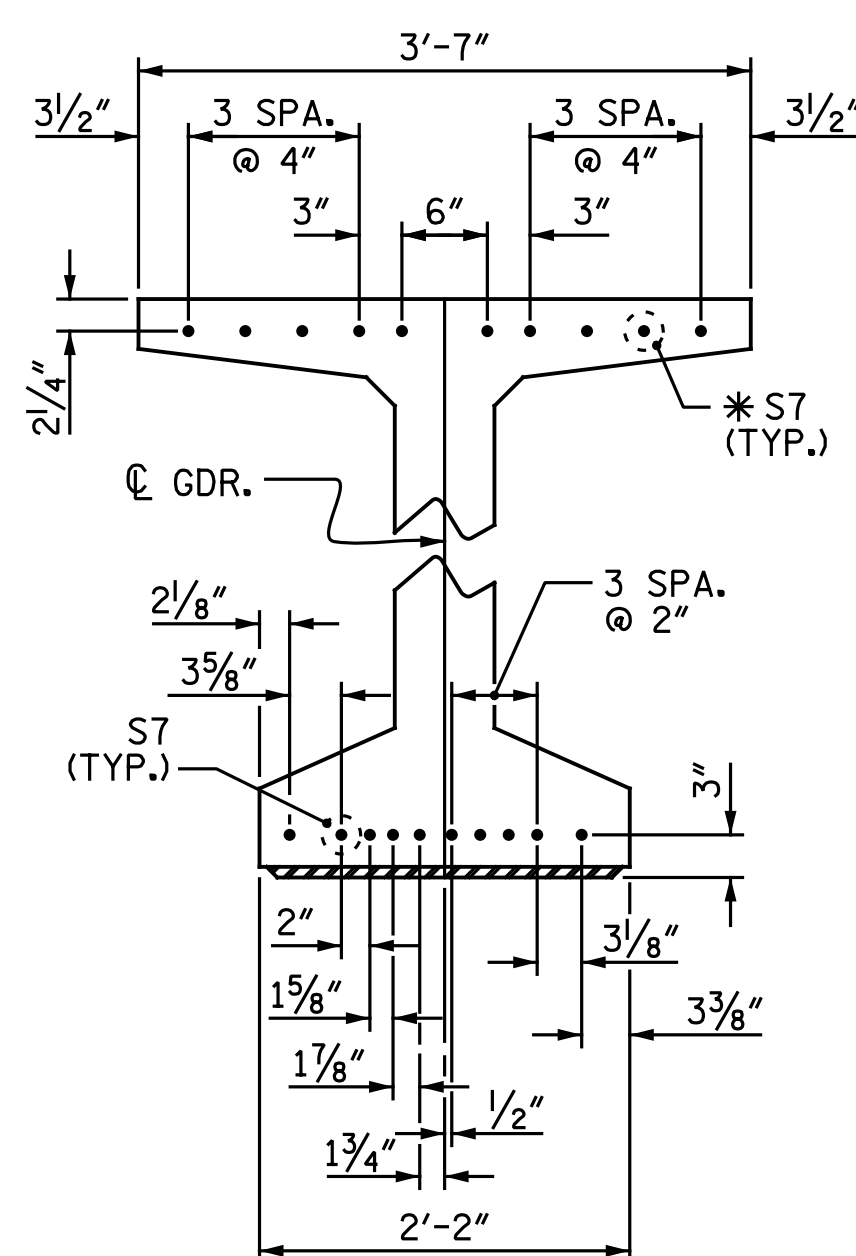
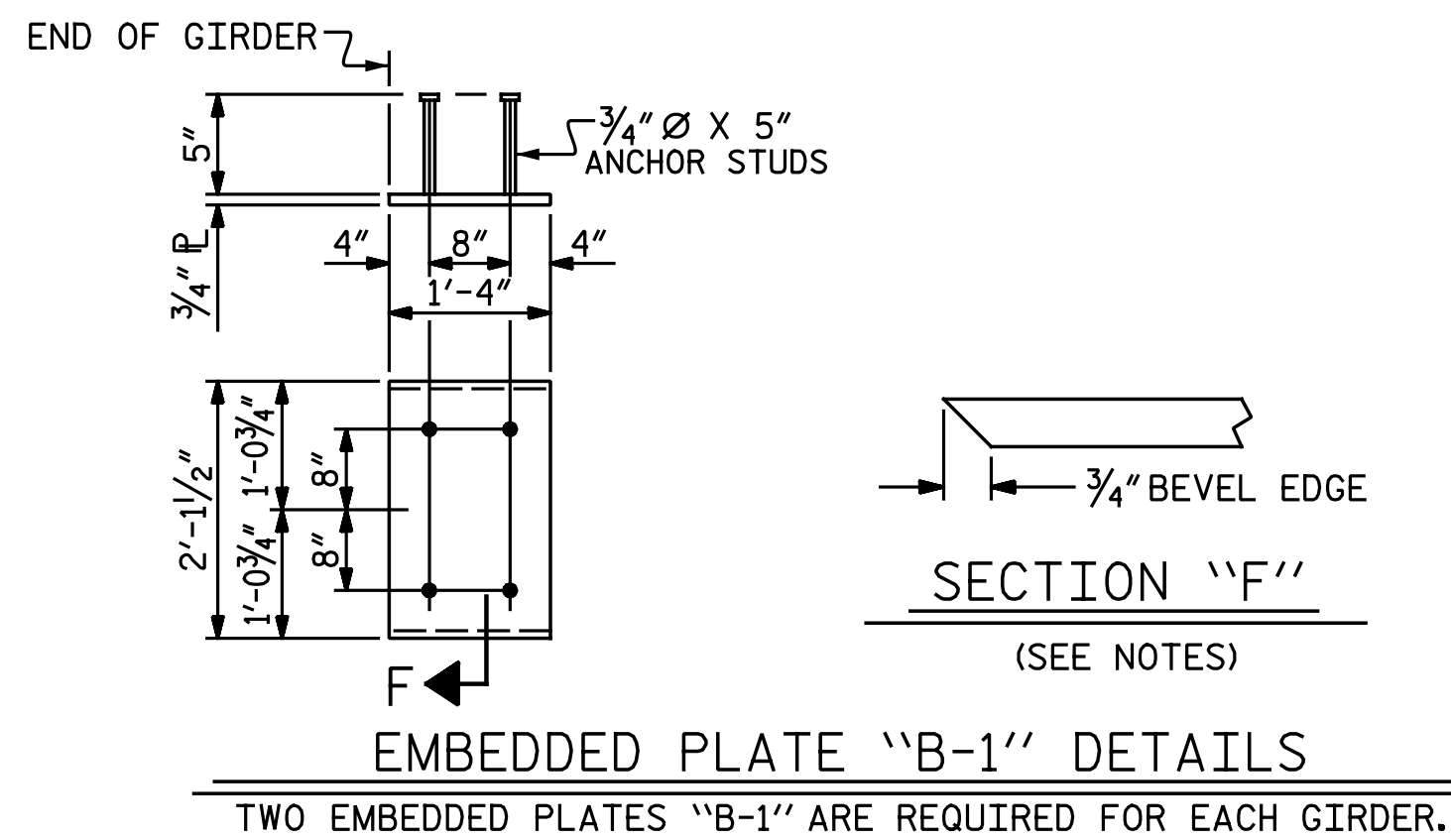
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

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

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

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

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



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

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 342+97.24 -L-



8/4/2017

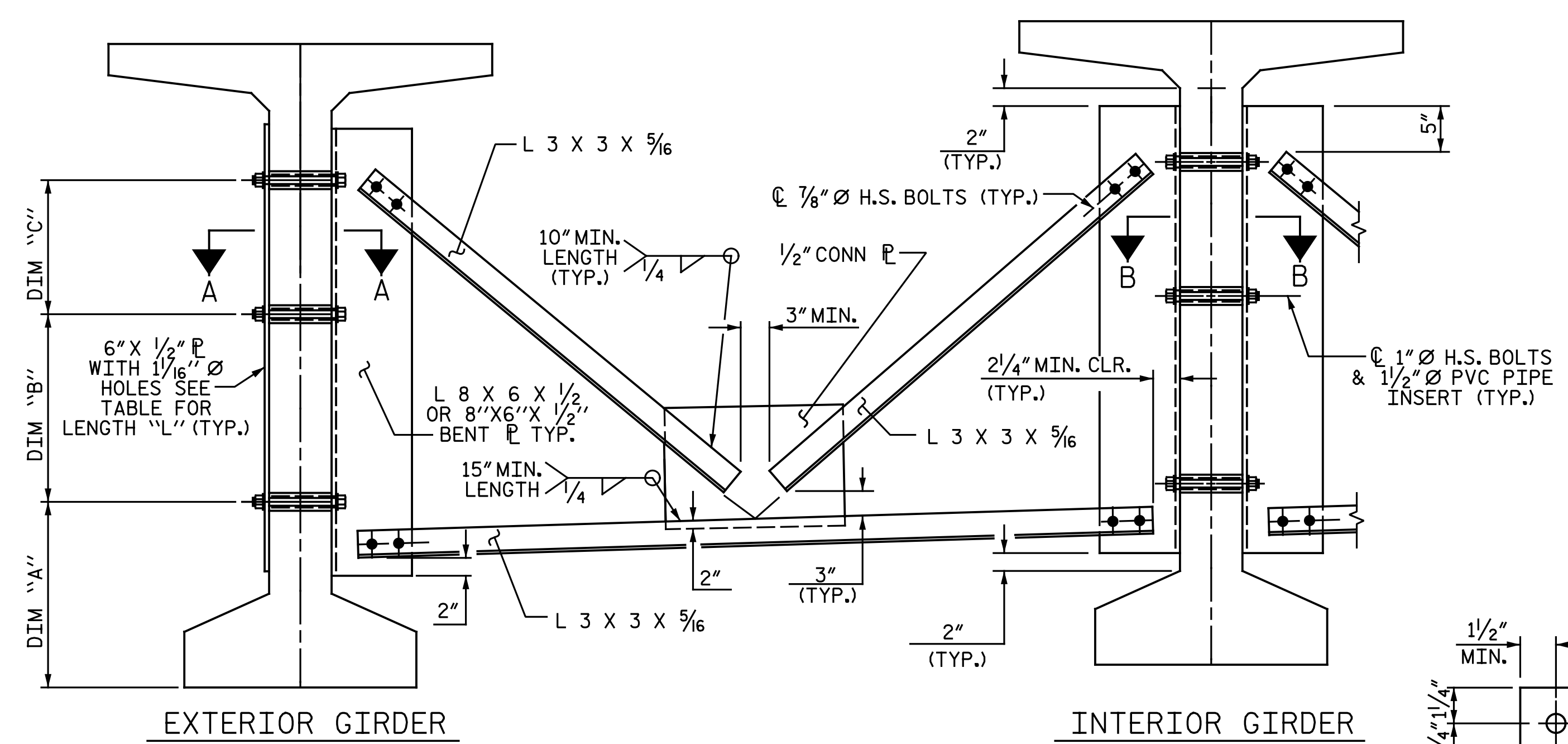
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NC License No.: F-1084

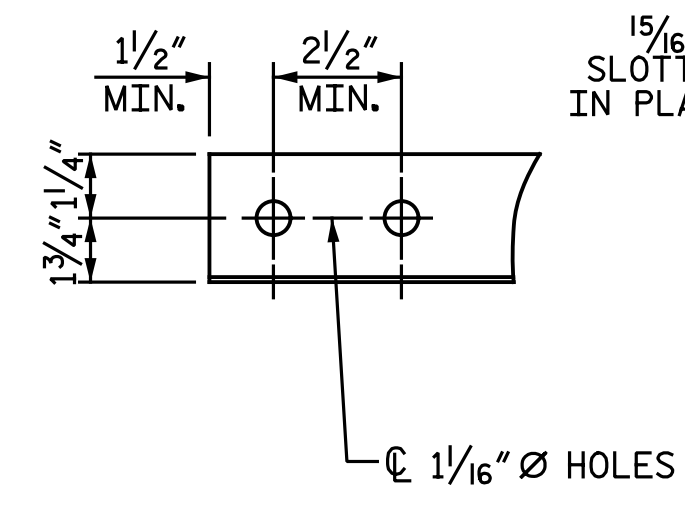
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE GIRDER DEFLECTIONS AND CAMBER					
LEFT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S11-II
TOTAL SHEETS 29

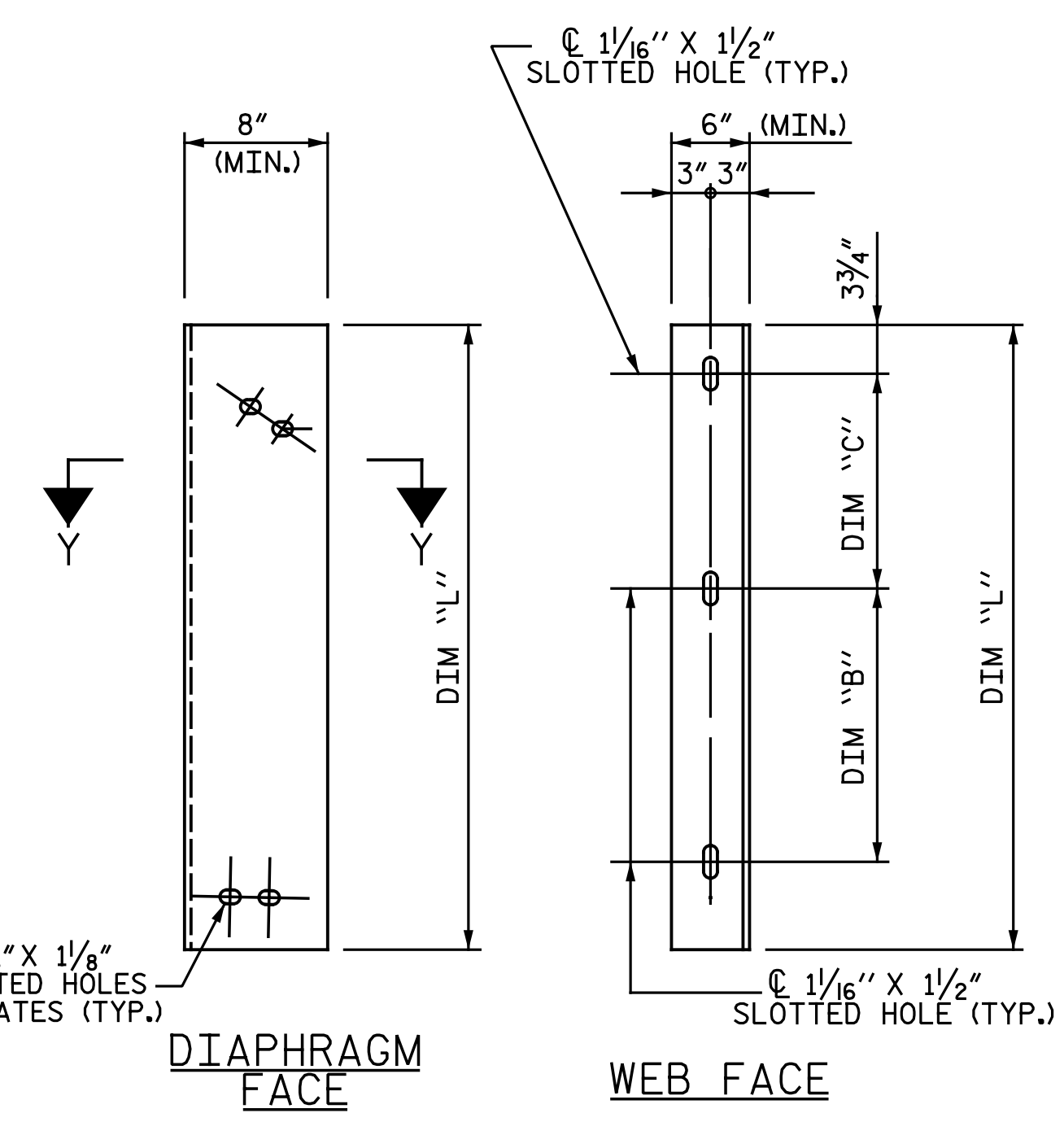
DRAWN BY : W. D. MCGREADY DATE : 04-14-17
CHECKED BY : S.H. ROSS DATE : 05-10-17



PART SECTION AT INTERMEDIATE DIAPHRAGM
(63" BULB TEE OR 72" BULB TEE GIRDER SHOWN)



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



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.

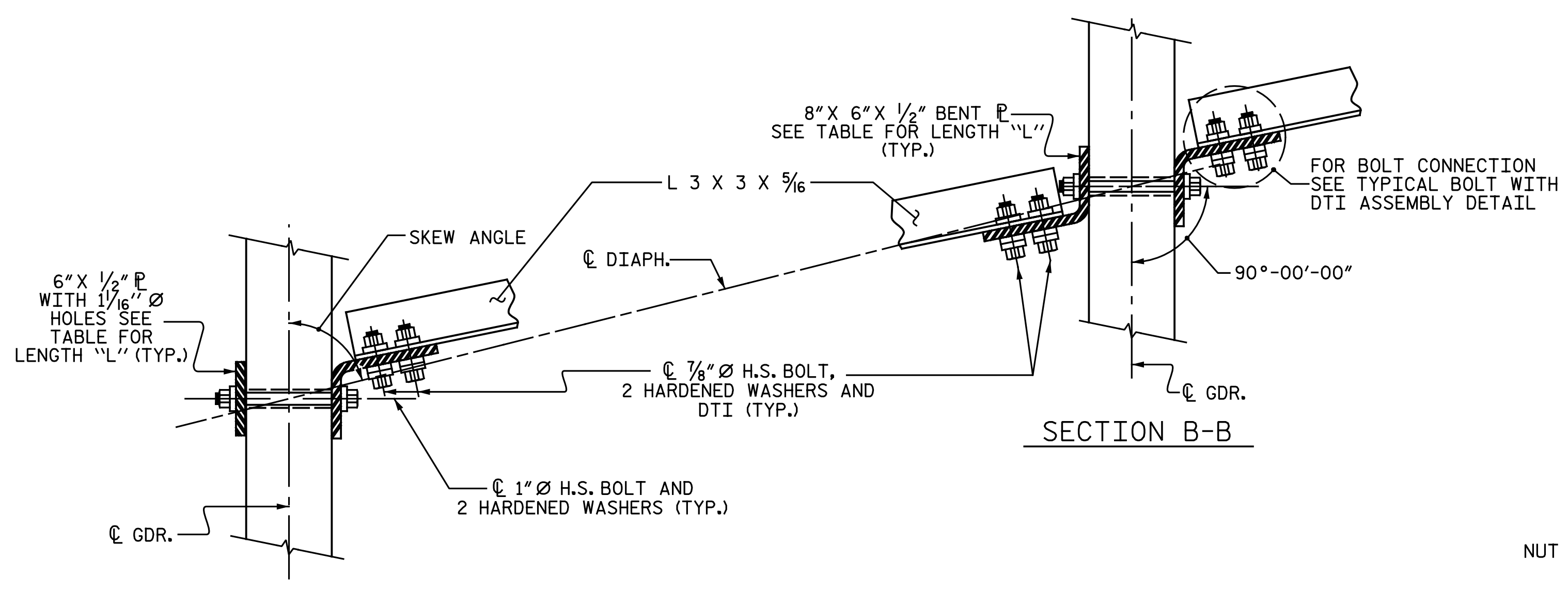
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

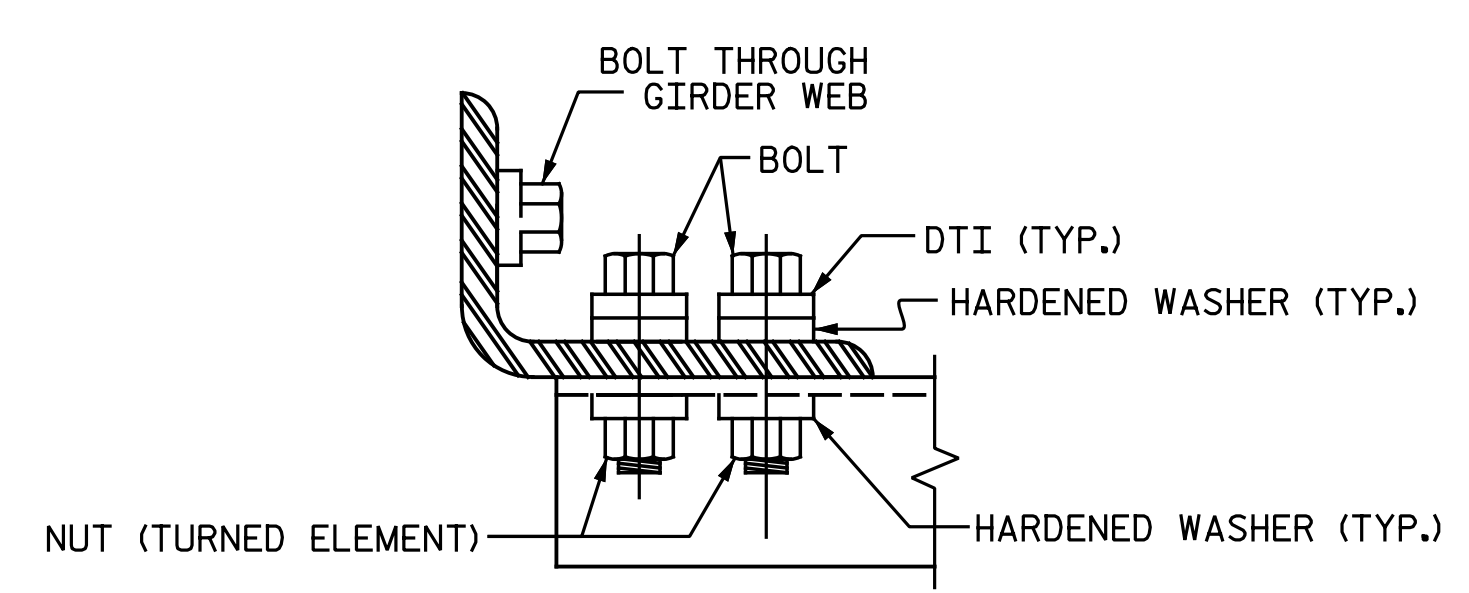
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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.



CONNECTION DETAILS
(90° < SKEW < 110° SHOWN
70° ≤ SKEW < 90° SIM.)

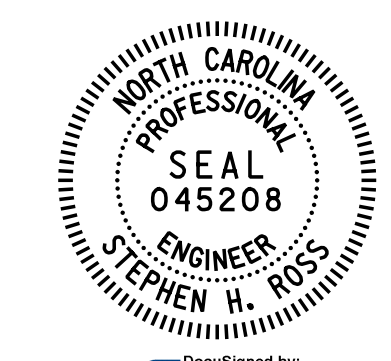


BOLT WITH DTI ASSEMBLY DETAIL

TABLE

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

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 342+97.24 -L-



8/4/2017

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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
LEFT LANE

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

ASSEMBLED BY : W. D. MCGREADY DATE : 01-30-17
CHECKED BY : S. H. ROSS DATE : 05-10-17
DRAWN BY : RWW 11/09
CHECKED BY : GM 11/09
ADDED 11/23/09R
REV. 10/11/11 MAA/GM

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.

STEEL SOLE PLATES, ANCHOR BOLTS AND NUTS 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.

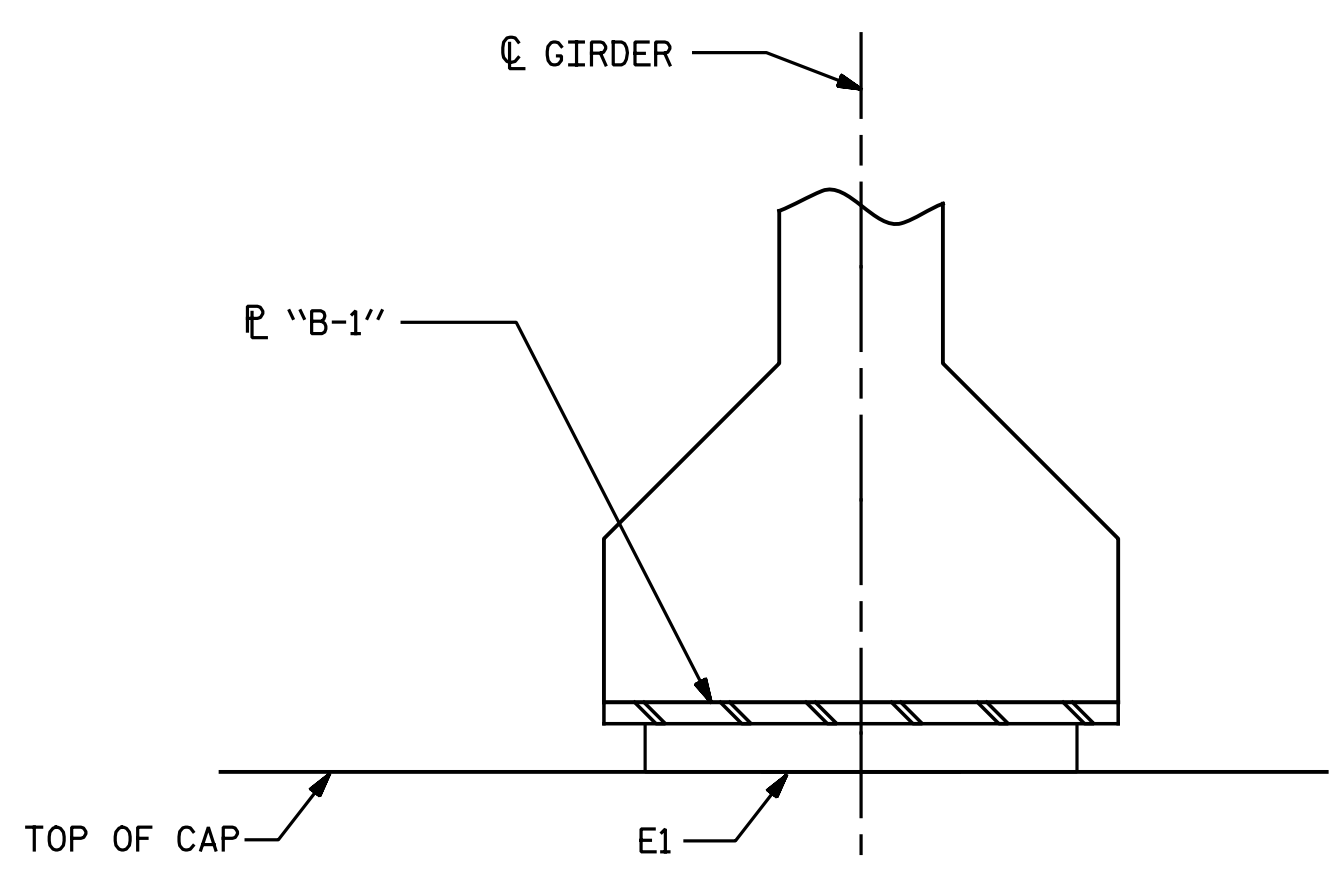
SOLE PLATE "P", BOLTS AND NUTS SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

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

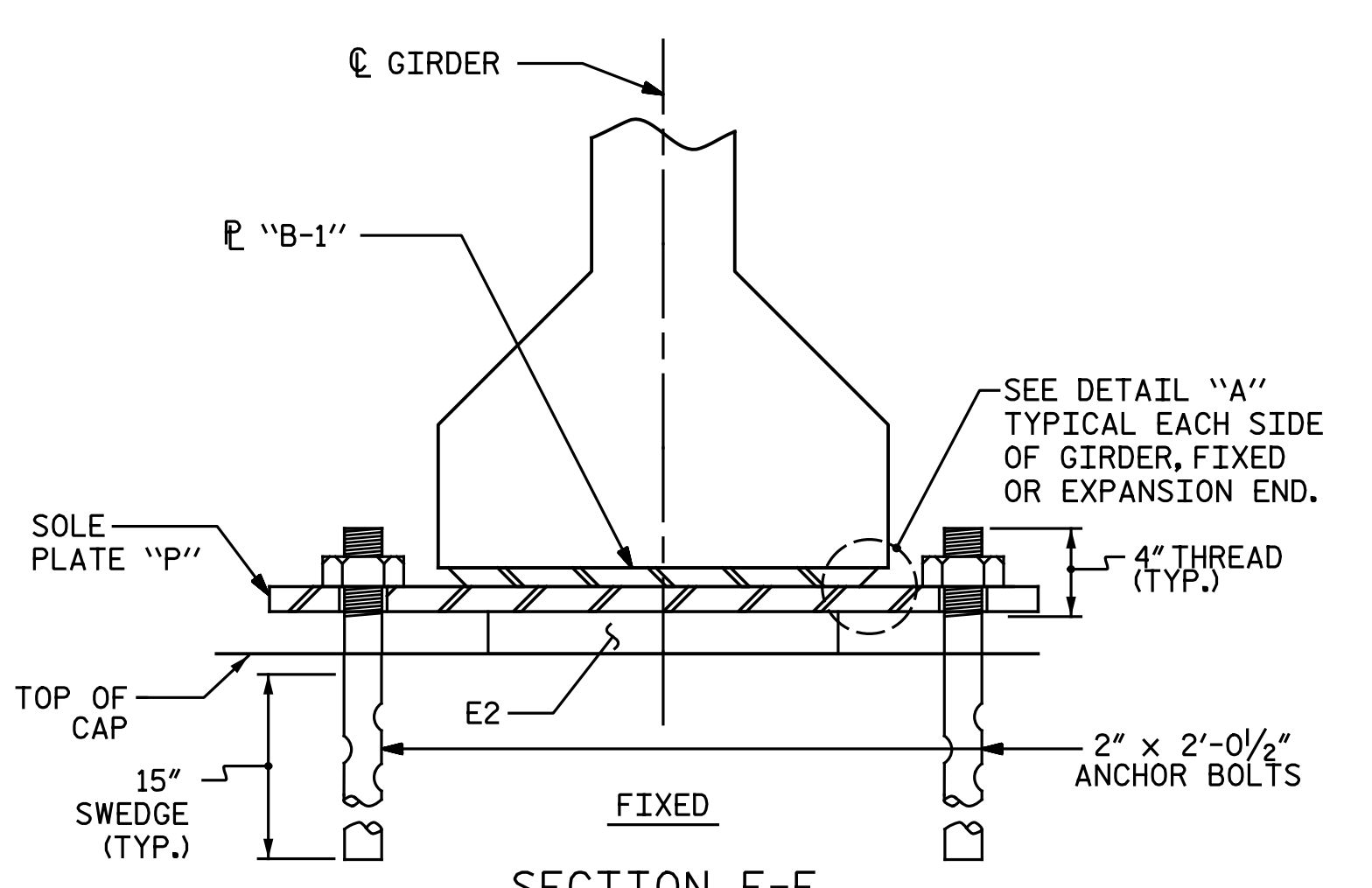
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

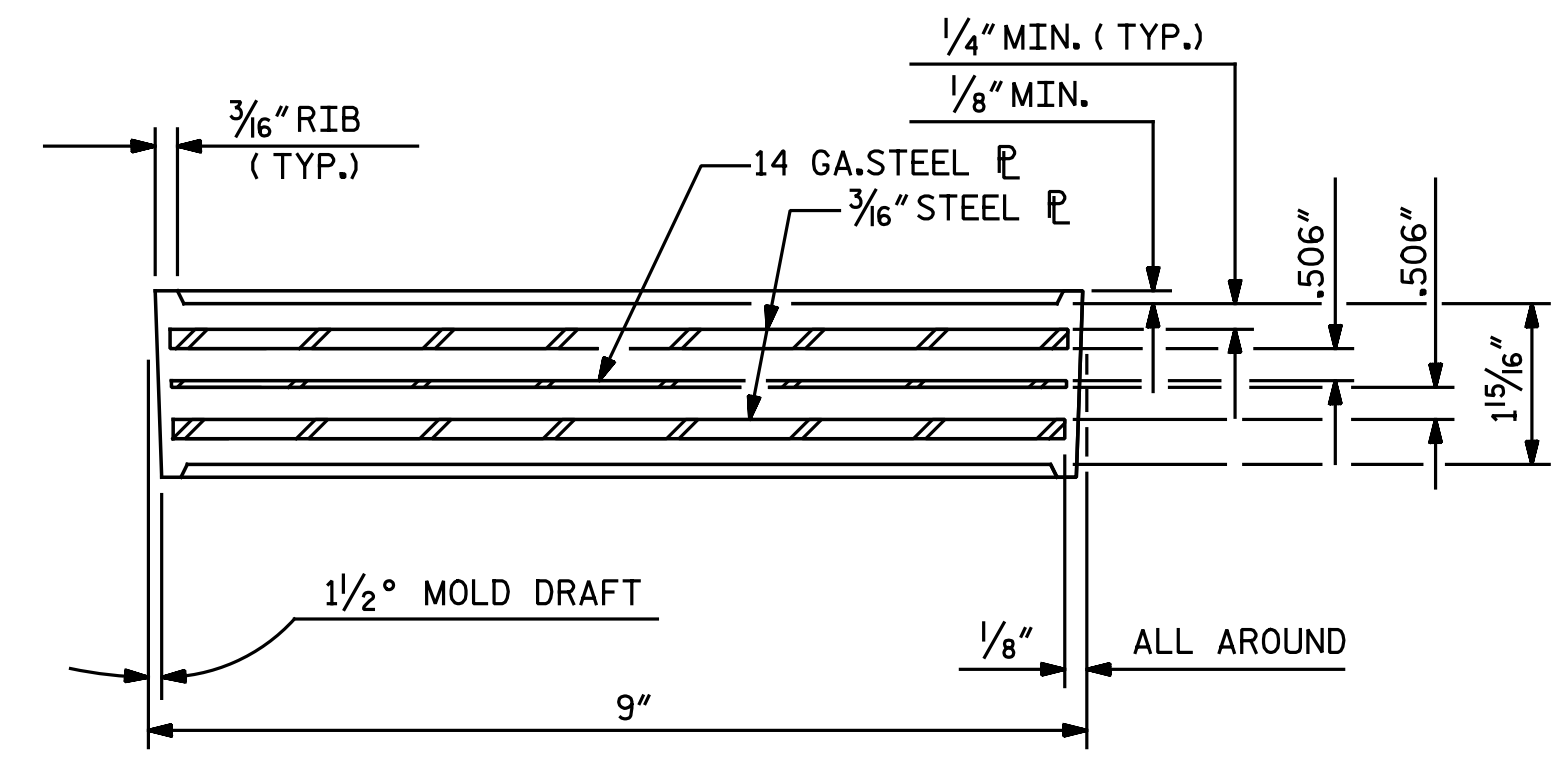
FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.



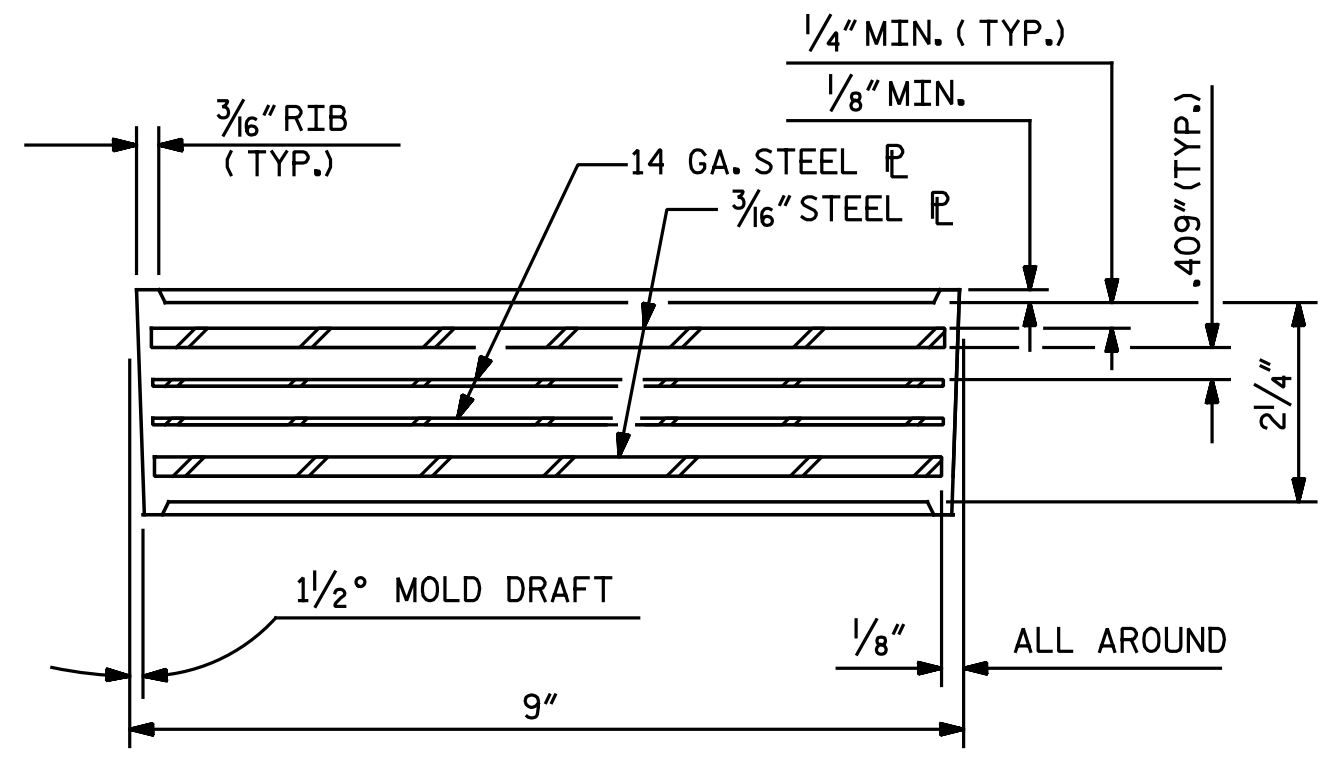
SECTION
(AT INTEGRAL END BENTS)



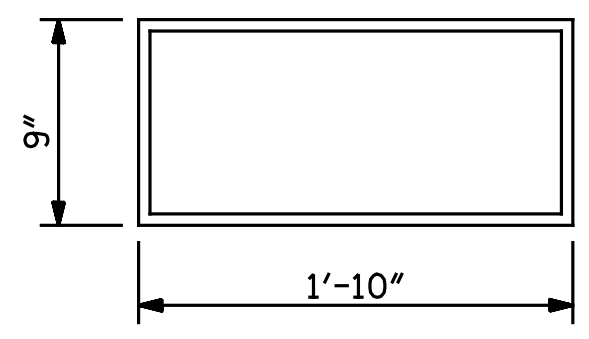
SECTION E-E
(AT BENT)



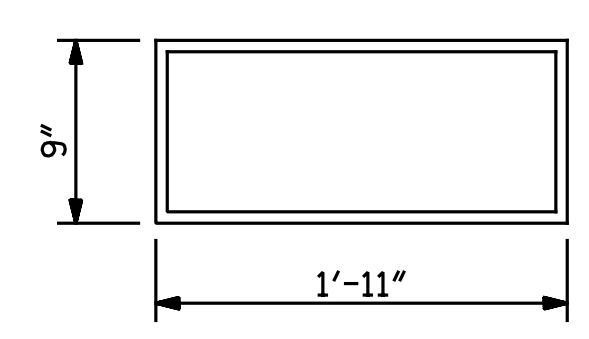
TYPICAL SECTION OF ELASTOMERIC BEARINGS



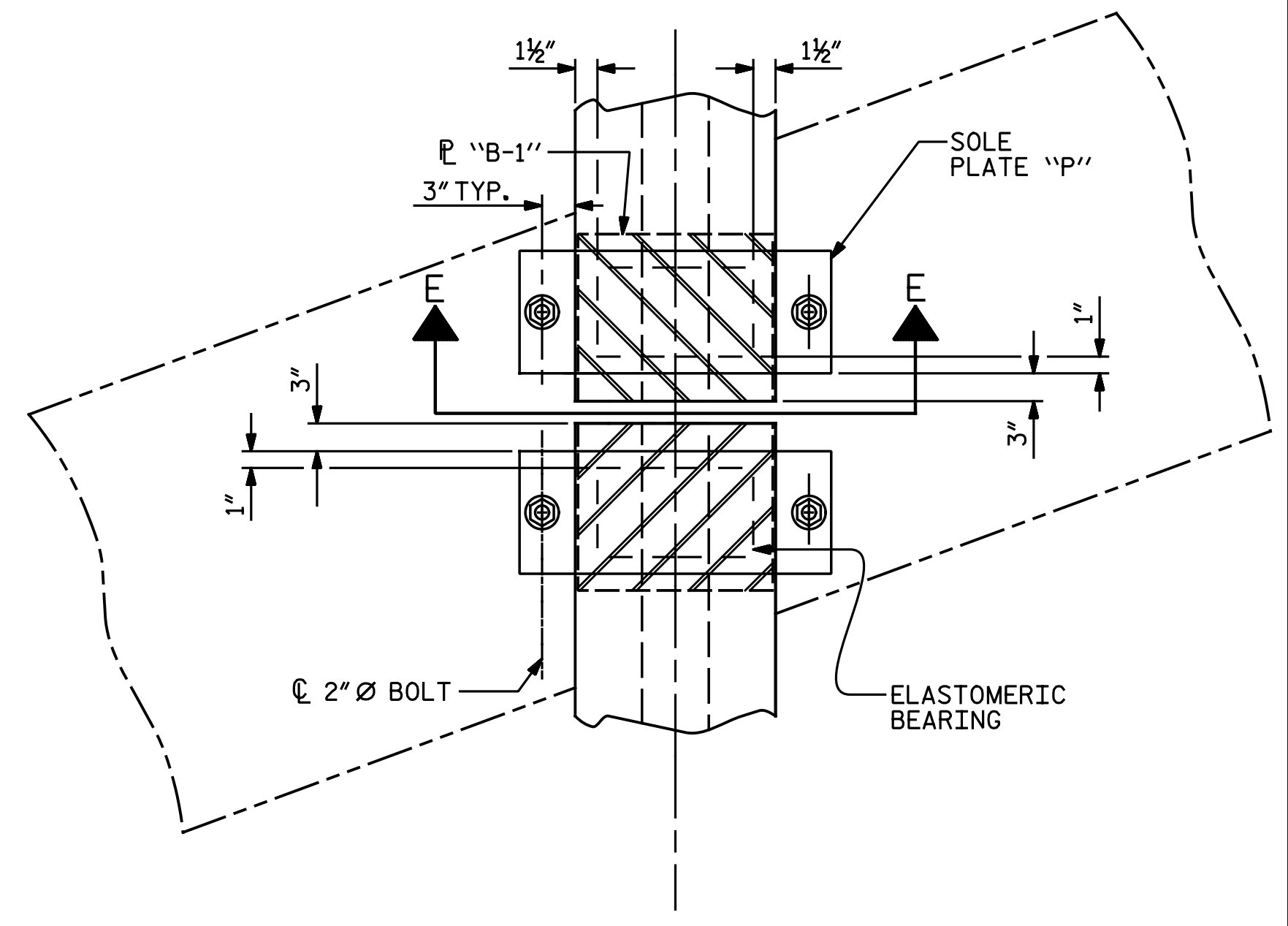
TYPICAL SECTION OF ELASTOMERIC BEARINGS



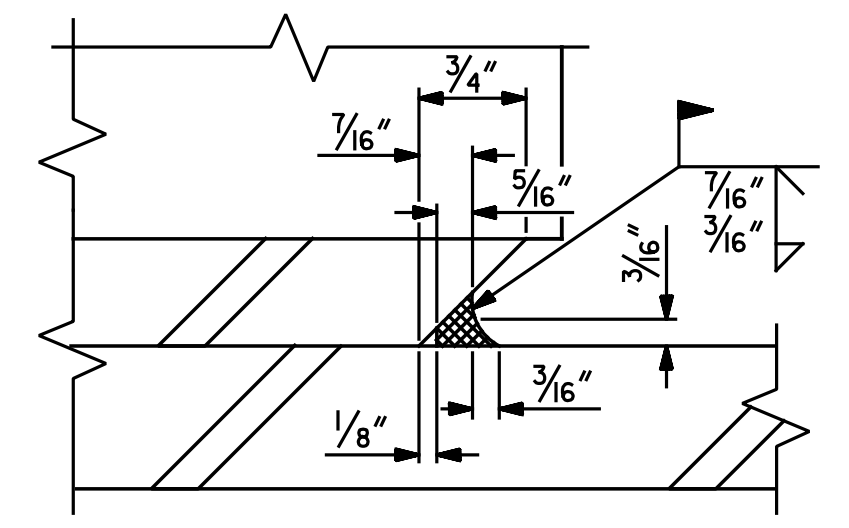
E1 (10 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE IV



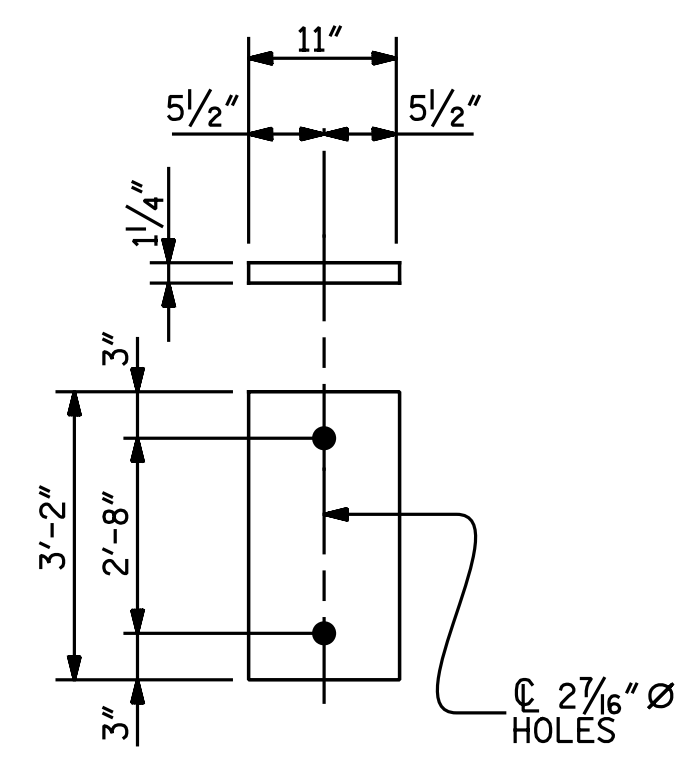
E2 (10 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE V



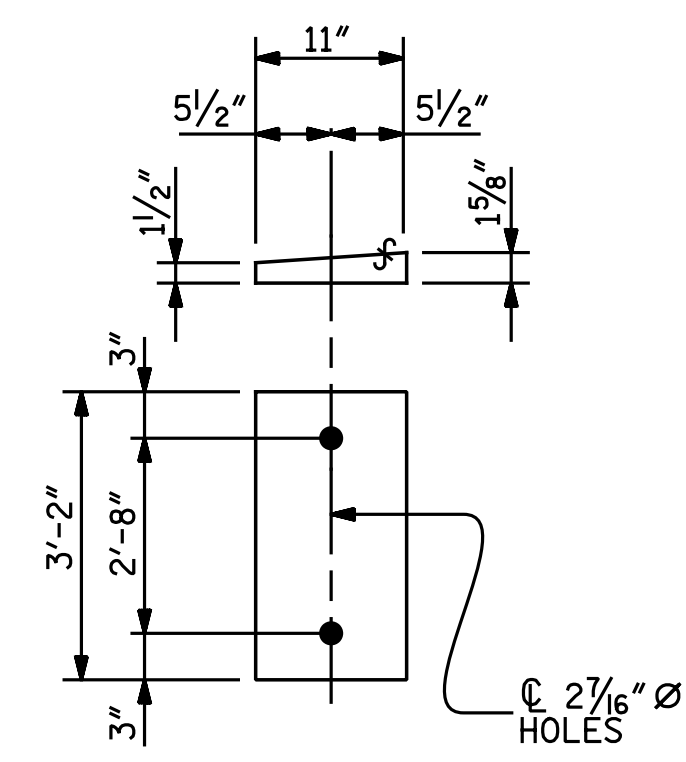
TYPICAL PLAN



DETAIL "A"



P1
(FIXED)
(5 REQ'D)

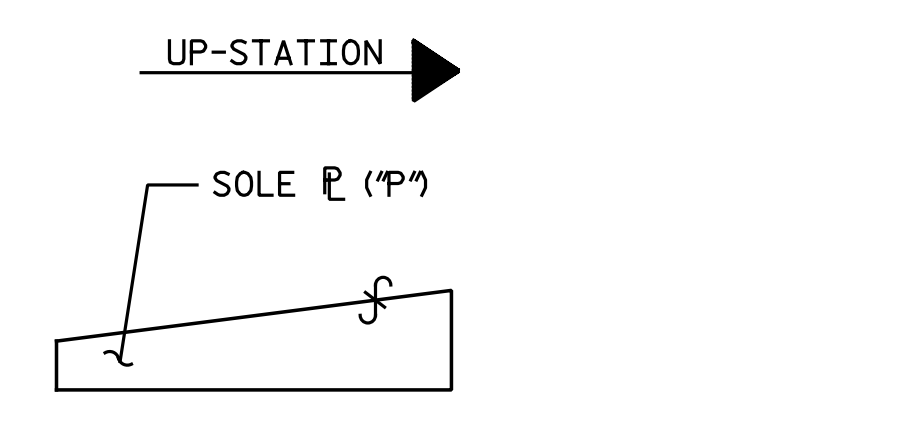


P2
(FIXED)
(5 REQ'D)

SOLE PLATE DETAILS ("P")

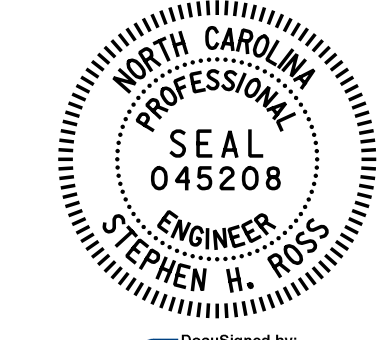
FOR BEARING AND SOLE PLATES PLACEMENT SEE "FRAMING PLAN" SHEET

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



SOLE P PLACEMENT DETAIL

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LENOIR COUNTY
STATION: 342+97.24 -L-



8/4/2017

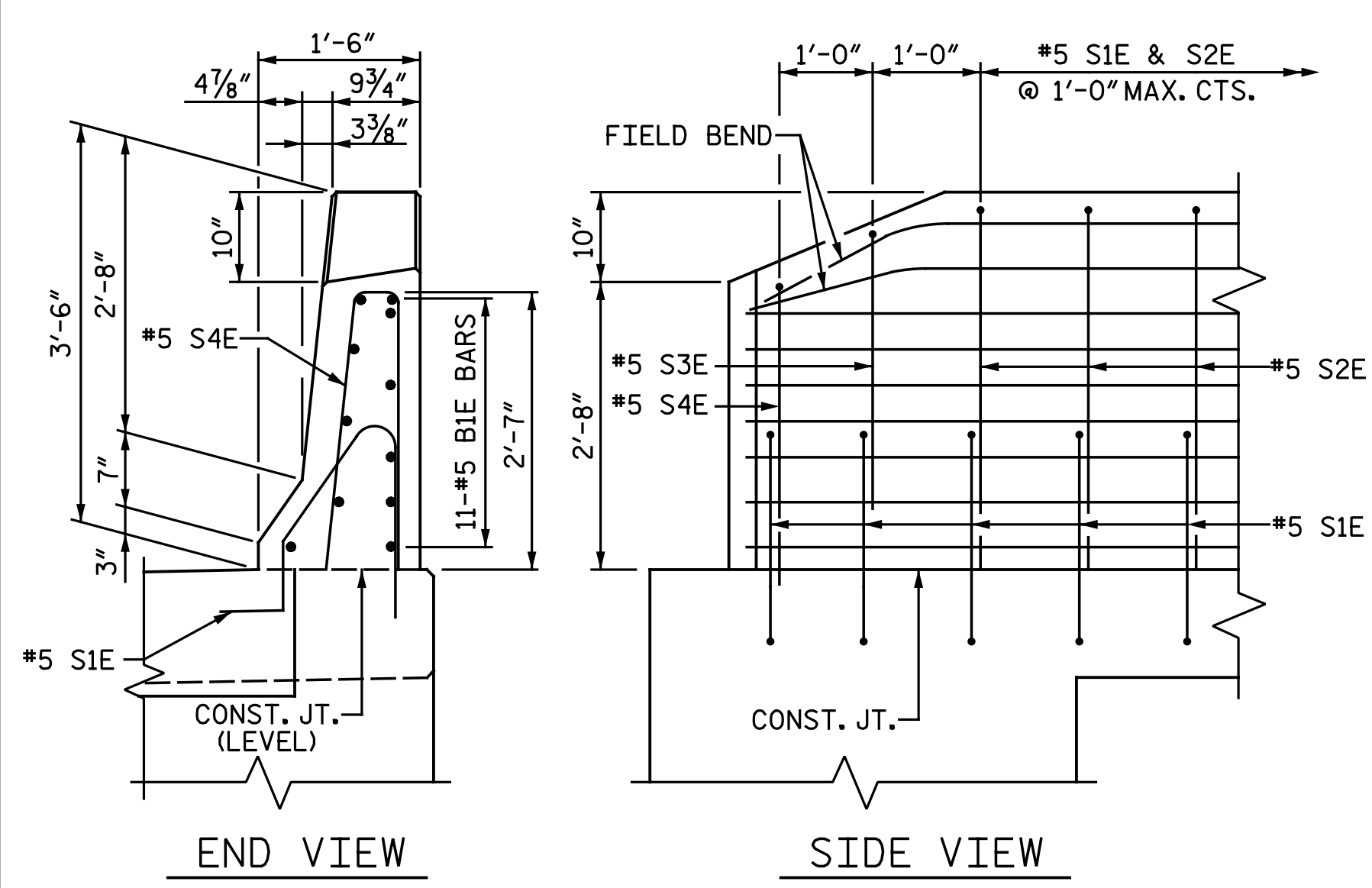
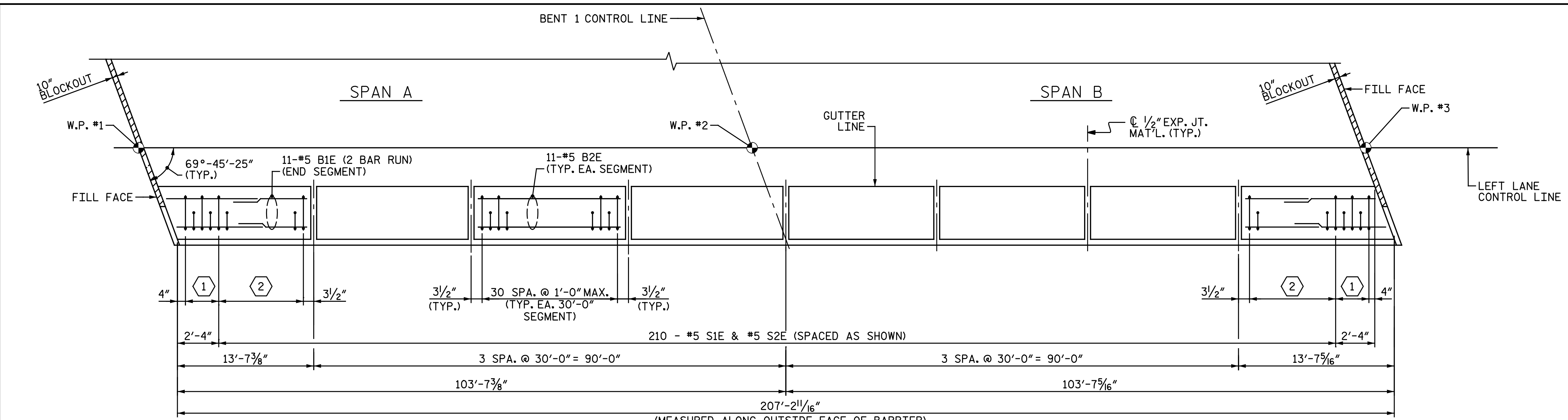
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Michael Baker Engineering
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
ELASTOMERIC BEARING
DETAILS
PRESTRESSED CONCRETE GIRDER
LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SII-13
1			3			TOTAL SHEETS
2			4			29

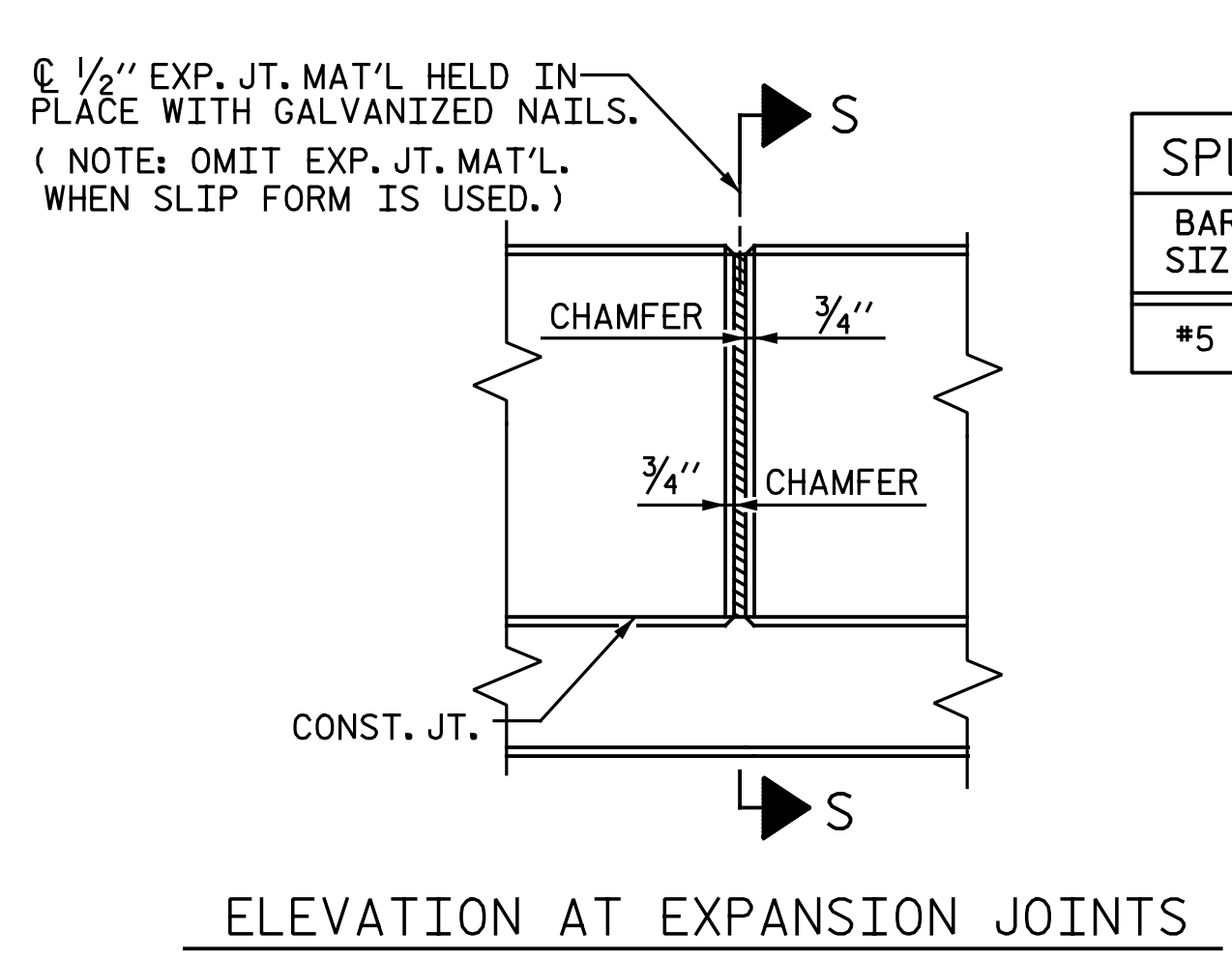
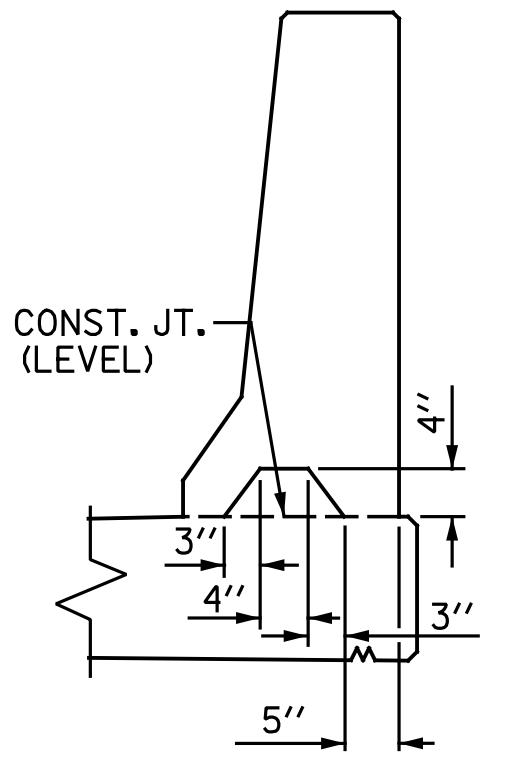
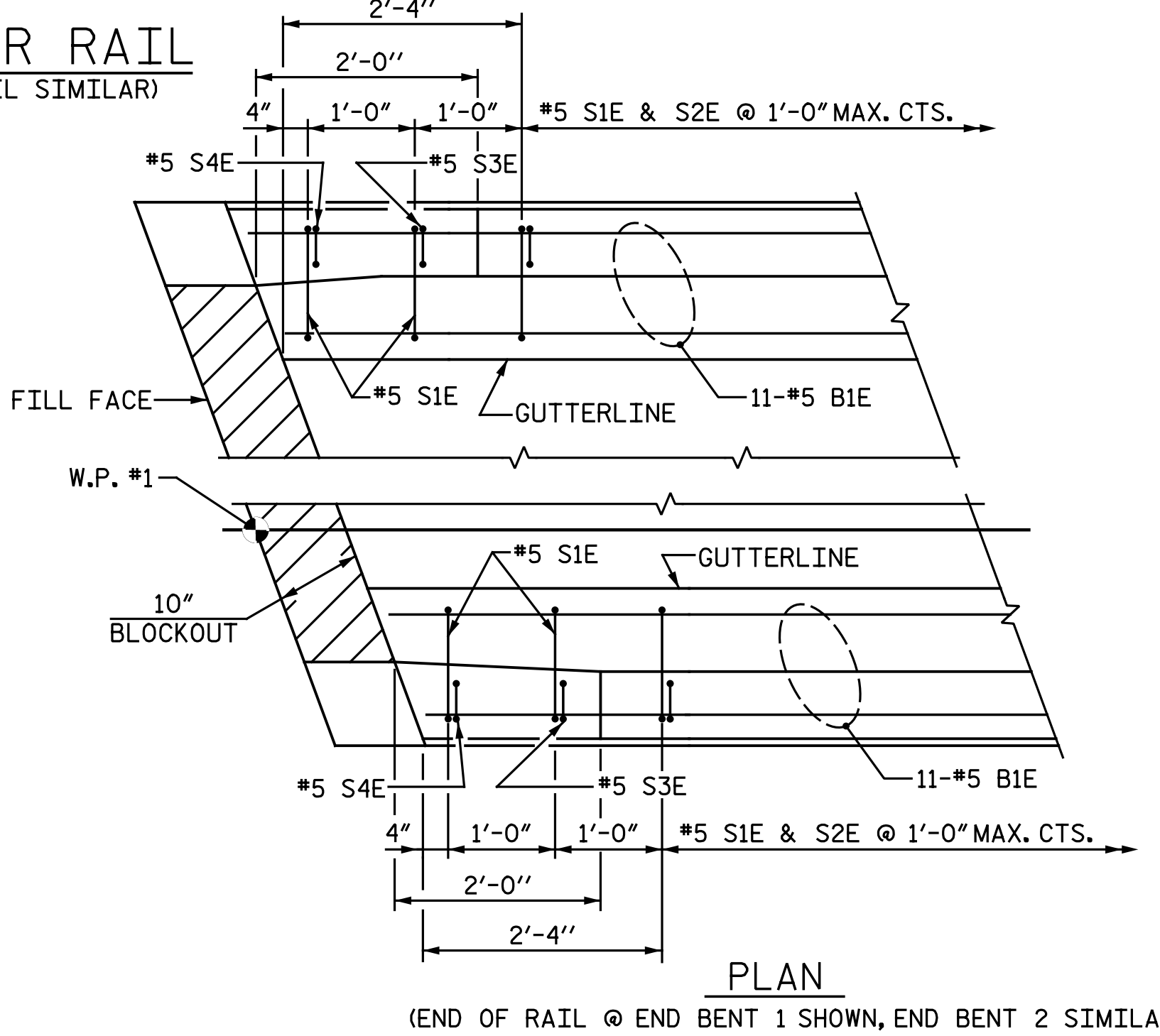
ASSEMBLED BY : W.D. MCGREADY	DATE : 02-02-17
CHECKED BY : S.H. ROSS	DATE : 05-10-17
DRAWN BY : EEM 2/97	REV. 10/1/11
CHECKED BY : VAP 2/97	REV. 6/13
	REV. 1/15
	MAA/GM
	AAC/MAA
	MAA/TMG



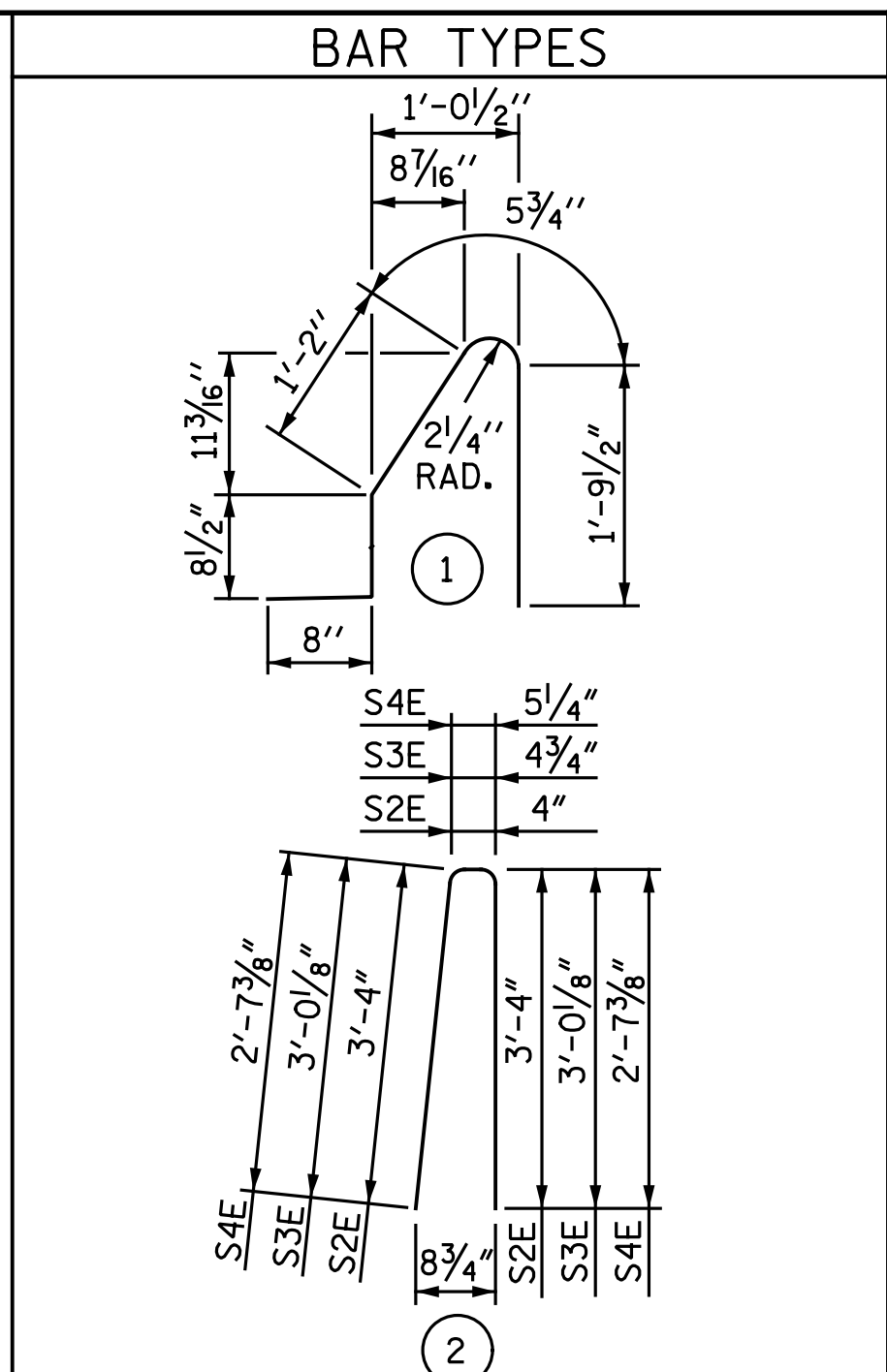
PLAN OF BARRIER RAIL
(RIGHT RAIL SHOWN, LEFT RAIL SIMILAR)

1 2 SPA @ 1'-0"

2 11 SPA @ 1'-0" MAX.



SPLICE LENGTHS	
BAR SIZE	BARRIER RAIL (EPOXY COATED)
#5	3'-5"



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL
FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1E	88	#5	STR	8' - 8"	795
B2E	132	#5	STR	29' - 7"	4,073
S1E	428	#5	1	4' - 10"	2,157
S2E	420	#5	2	7' - 0"	3,066
S3E	4	#5	2	6' - 5"	27
S4E	4	#5	2	5' - 8"	24
EPOXY COATED REINFORCING					LBS. 10,142
CLASS AA CONCRETE					C.Y. 56.3
CONCRETE BARRIER RAIL					L.F. 414.45

NOTES

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, 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.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 342+97.24 -L-



9/13/2017

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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD CONCRETE BARRIER RAIL LEFT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. **S11-14**

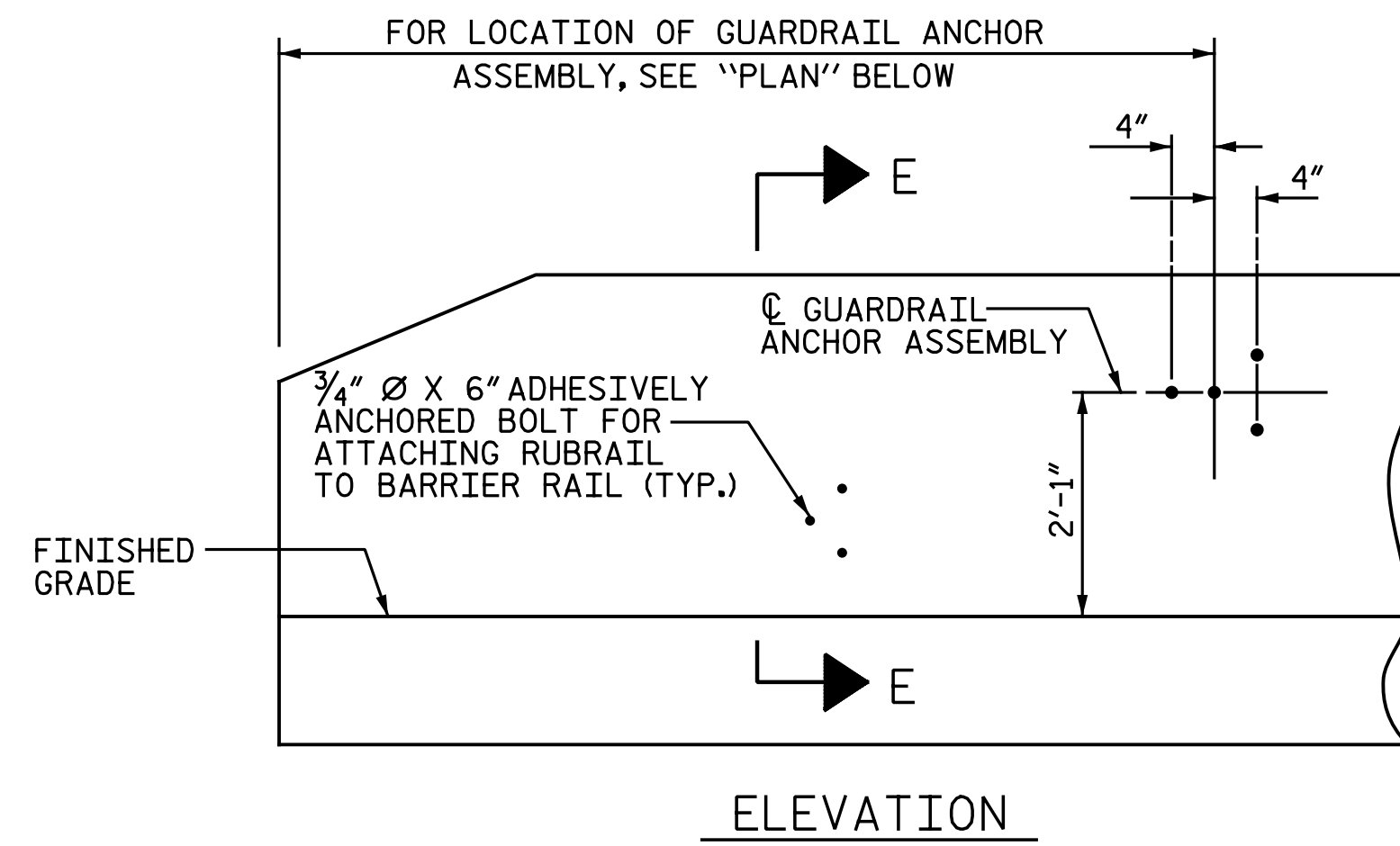
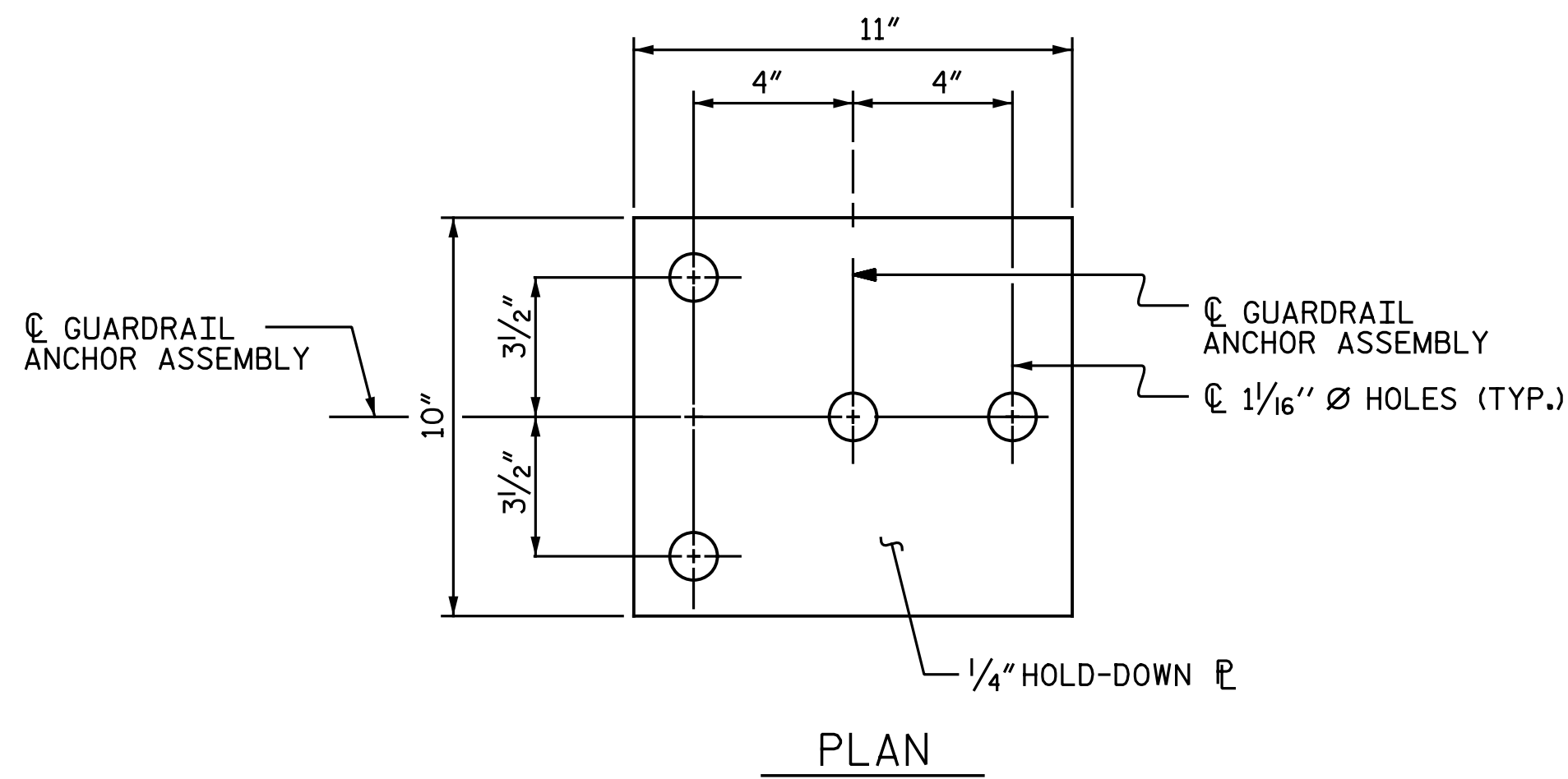
TOTAL SHEETS **29**

ASSEMBLED BY : W. D. MCGREADY DATE : 9-11-17
CHECKED BY : S. H. ROSS 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

SECTION THRU RAIL

BARRIER RAIL DETAILS



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.)

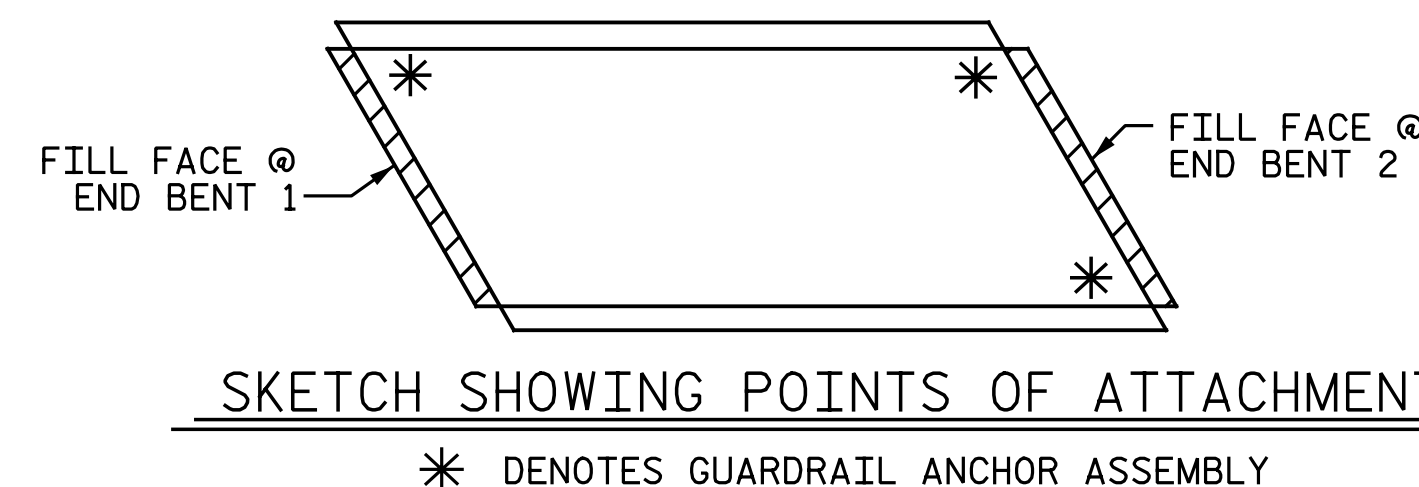
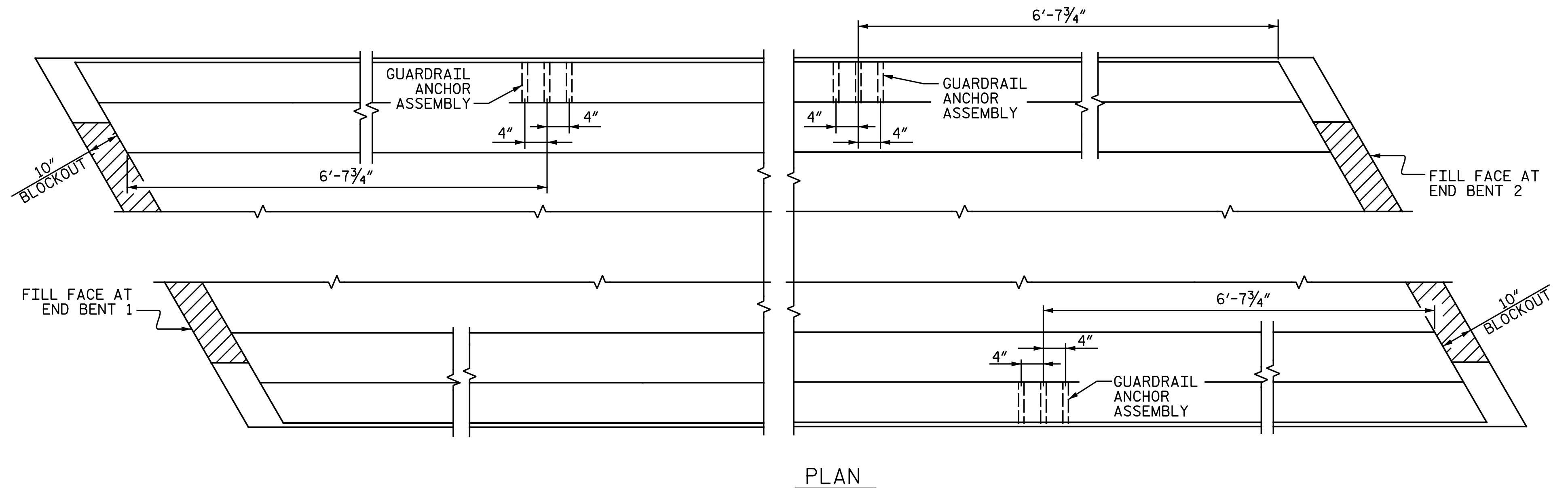
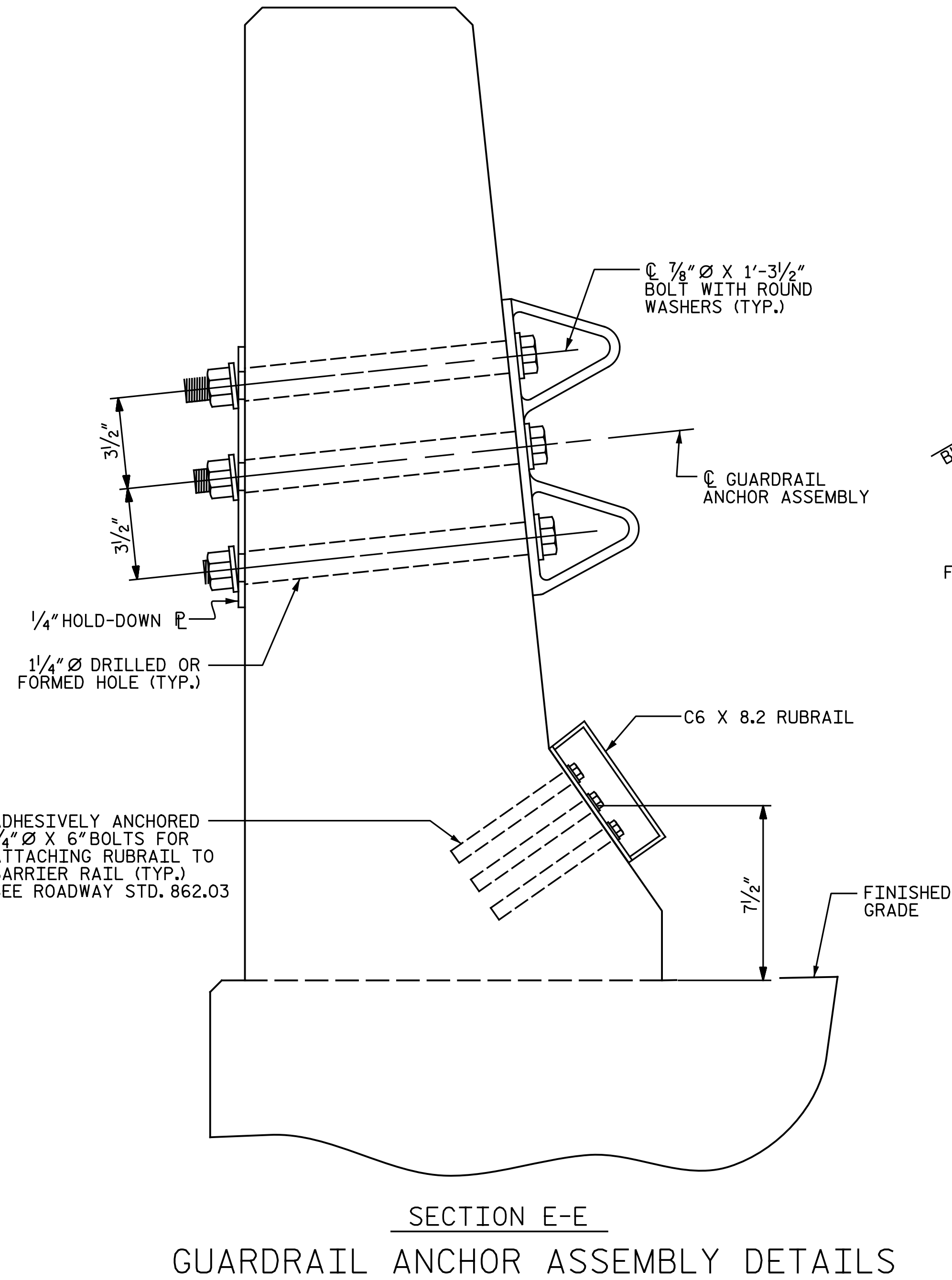
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

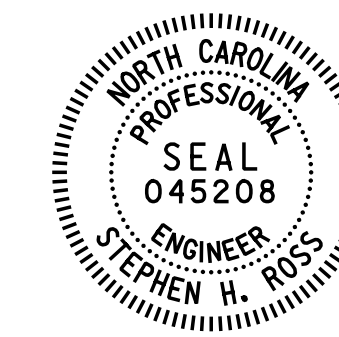
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

THE 1/4" 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.



PROJECT NO. R-5703
LENOIR COUNTY
STATION: 342+97.24 -L-

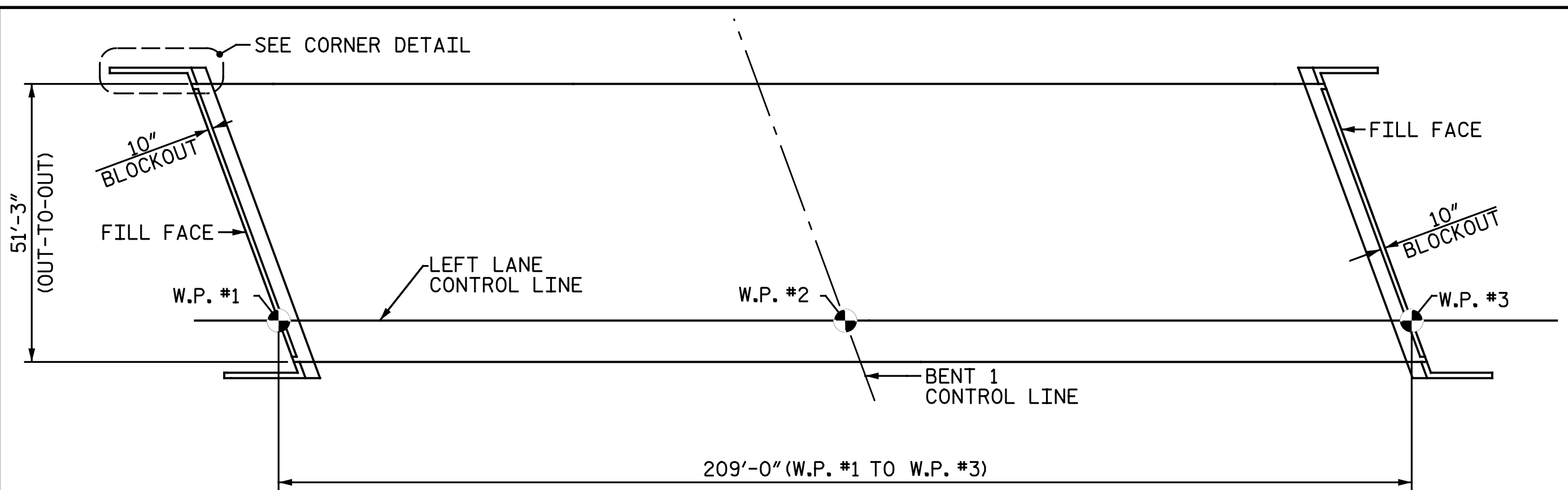


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE
FOR BARRIER RAIL

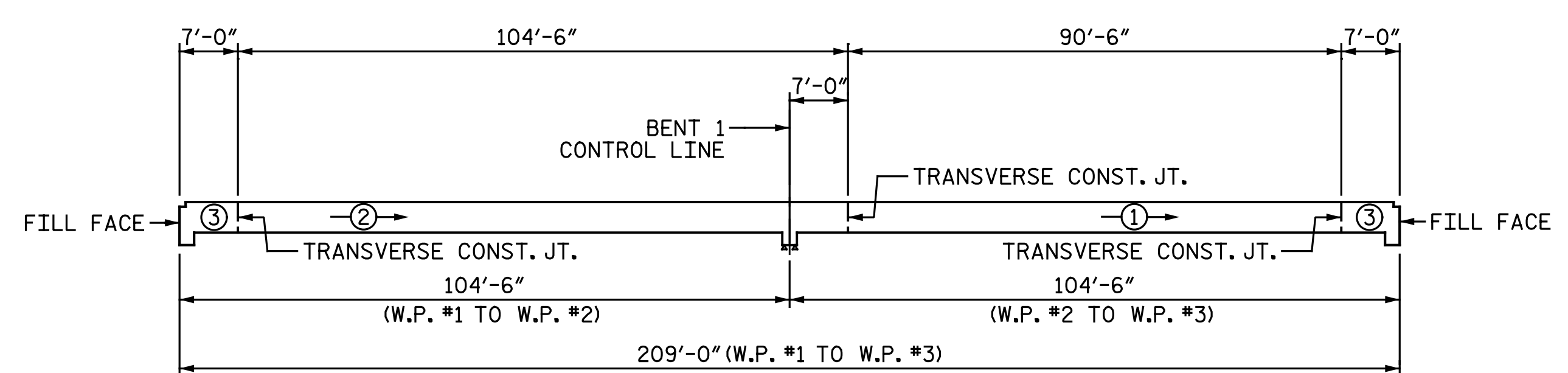
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REVISIONS						SHEET NO. S11-15
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 29
2			4			

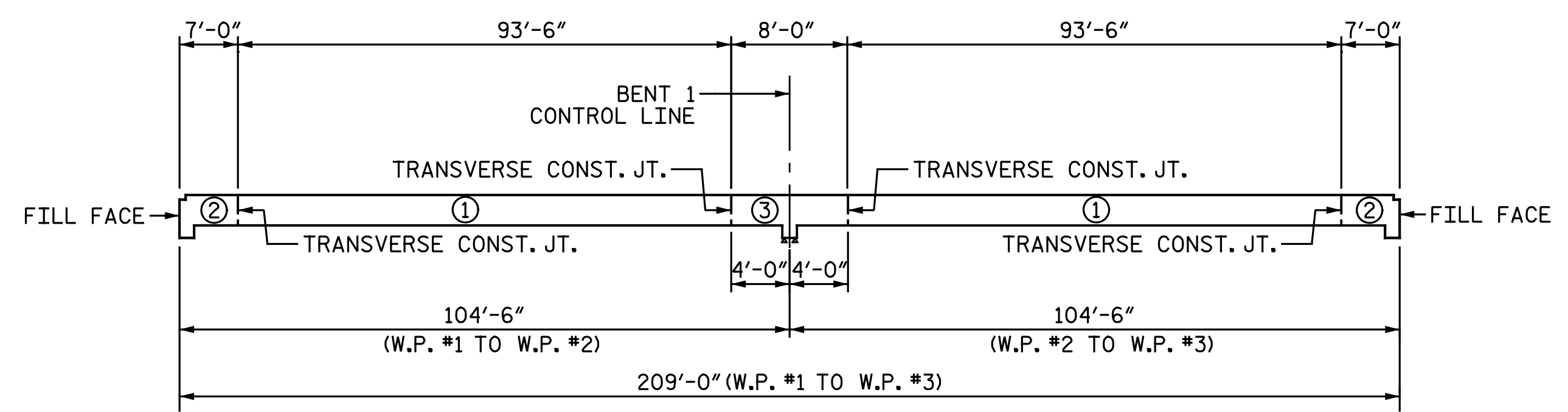
ASSEMBLED BY : W. D. MCGREADY	DATE : 9-11-17
CHECKED BY : S. H. ROSS	DATE : 9-12-17
DRAWN BY : TLA 5/06	REV. 10/1/11 MAA/GM
CHECKED BY : GM 5/06	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 10,711)

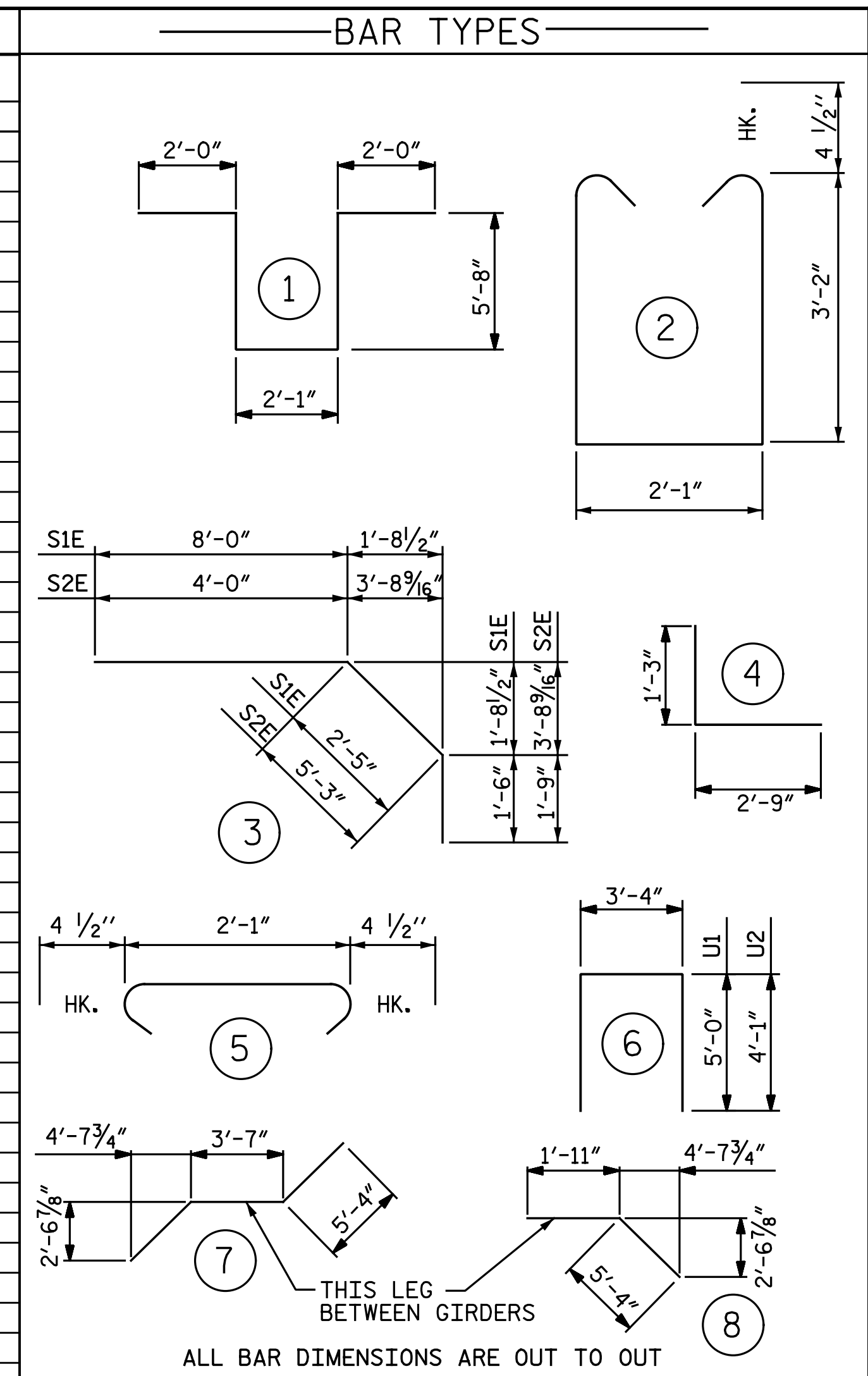


POURING SEQUENCE
 (⊕) DENOTES POUR NUMBER AND DIRECTION



OPTIONAL POURING SEQUENCE

BILL OF MATERIAL SPANS A & B					BILL OF MATERIAL SPANS A & B						
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
A1E	348	#5	STR.	50' - 11"	18,481	A217	2	#5	STR.	26' - 2"	55
A2	348	#5	STR.	50' - 11"	18,481	A218	2	#5	STR.	24' - 8"	51
A3E	4	#5	STR.	54' - 4"	227	A219	2	#5	STR.	23' - 2"	48
A101E	2	#5	STR.	49' - 8"	104	A220	2	#5	STR.	21' - 9"	45
A102E	2	#5	STR.	48' - 2"	100	A221	2	#5	STR.	20' - 3"	42
A103E	2	#5	STR.	46' - 8"	97	A222	2	#5	STR.	18' - 9"	39
A104E	2	#5	STR.	45' - 3"	94	A223	2	#5	STR.	17' - 4"	36
A105E	2	#5	STR.	43' - 9"	91	A224	2	#5	STR.	15' - 10"	33
A106E	2	#5	STR.	42' - 3"	88	A225	2	#5	STR.	14' - 5"	30
A107E	2	#5	STR.	40' - 10"	85	A226	2	#5	STR.	12' - 11"	27
A108E	2	#5	STR.	39' - 4"	82	A227	2	#5	STR.	11' - 5"	24
A109E	2	#5	STR.	37' - 11"	79	A228	2	#5	STR.	10' - 0"	21
A110E	2	#5	STR.	36' - 5"	76	A229	2	#5	STR.	8' - 6"	18
A111E	2	#5	STR.	34' - 11"	73	A230	2	#5	STR.	7' - 0"	15
A112E	2	#5	STR.	33' - 6"	70	A231	2	#5	STR.	5' - 7"	12
A113E	2	#5	STR.	32' - 0"	67	A232	2	#5	STR.	4' - 1"	9
A114E	2	#5	STR.	30' - 6"	64	B1E	280	#4	STR.	27' - 8"	5,175
A115E	2	#5	STR.	29' - 1"	61	B2	232	#5	STR.	53' - 5"	12,926
A116E	2	#5	STR.	27' - 7"	58	B3E	68	#6	STR.	23' - 1"	2,358
A117E	2	#5	STR.	26' - 2"	55	B4E	68	#6	STR.	25' - 3"	2,579
A118E	2	#5	STR.	24' - 8"	51	B5E	34	#6	STR.	37' - 11"	1,936
A119E	2	#5	STR.	23' - 2"	48	B6E	34	#6	STR.	37' - 11"	1,936
A120E	2	#5	STR.	21' - 9"	45	B7E	8	#4	4	4' - 0"	21
A121E	2	#5	STR.	20' - 3"	42						
A122E	2	#5	STR.	18' - 9"	39	H1	24	#4	STR.	3' - 2"	51
A123E	2	#5	STR.	17' - 4"	36						
A124E	2	#5	STR.	15' - 10"	33	K1	24	#4	STR.	28' - 5"	456
A125E	2	#5	STR.	14' - 5"	30	K2	8	#4	STR.	7' - 3"	39
A126E	2	#5	STR.	12' - 11"	27	K3	32	#4	STR.	10' - 5"	223
A127E	2	#5	STR.	11' - 5"	24	K4	8	#4	STR.	8' - 9"	47
A128E	2	#5	STR.	10' - 0"	21	K5	4	#4	STR.	2' - 1"	6
A129E	2	#5	STR.	8' - 6"	18	K6	16	#4	STR.	3' - 8"	39
A130E	2	#5	STR.	7' - 0"	15	K7	4	#4	STR.	2' - 10"	8
A131E	2	#5	STR.	5' - 7"	12	K8	18	#4	7	14' - 3"	171
A132E	2	#5	STR.	4' - 1"	9	K9	32	#4	STR.	10' - 5"	223
						K10	8	#4	STR.	8' - 2"	44
A201	2	#5	STR.	49' - 8"	104	K11	8	#4	STR.	7' - 3"	39
A202	2	#5	STR.	48' - 2"	100	K12	12	#4	8	7' - 3"	58
A203	2	#5	STR.	46' - 8"	97						
A204	2	#5	STR.	45' - 3"	94	S1E	64	#4	3	11' - 11"	509
A205	2	#5	STR.	43' - 9"	91	S2E	60	#4	3	11' - 0"	441
A206	2	#5	STR.	42' - 3"	88	S3	28	#4	1	17' - 5"	326
A207	2	#5	STR.	40' - 10"	85	S4	156	#4	5	2' - 10"	295
A208	2	#5	STR.	39' - 4"	82	S5	8	#4	2	9' - 2"	49
A209	2	#5	STR.	37' - 11"	79						
A210	2	#5	STR.	36' - 5"	76	U1	64	#4	6	13' - 4"	570
A211	2	#5	STR.	34' - 11"	73	U2	20	#4	6	11' - 6"	154
A212	2	#5	STR.	33' - 6"	70						
A213	2	#5	STR.	32' - 0"	67	V1	12	#4	STR.	6' - 1"	49
A214	2	#5	STR.	30' - 6"	64						
A215	2	#5	STR.	29' - 1"	61						
A216	2	#5	STR.	27' - 7"	58						

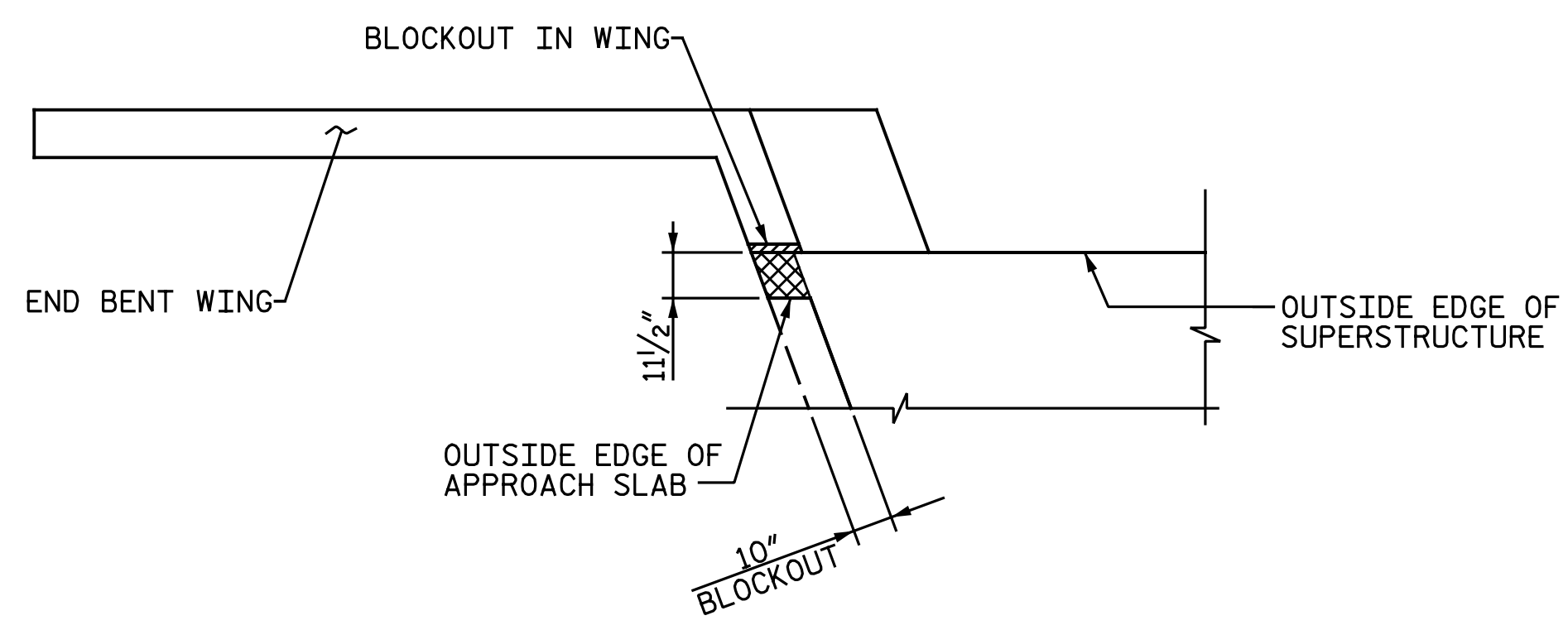


ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL			
	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
SPAN A & B			
POUR 1	162.3	36,048	35,457
POUR 2	207.7		
POUR 3	94.7		
TOTALS**	464.7	36,048	35,457

** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

"E" SUFFIX DENOTES EPOXY COATED REINFORCING STEEL



CORNER DETAIL

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

GROOVING BRIDGE FLOORS		
APPROACH SLABS	2,173	SQ.FT.
BRIDGE DECK	9,309	SQ.FT.
TOTAL	11,482	SQ.FT.

DRAWN BY: W. D. MCGREADY DATE: 02-06-17
 CHECKED BY: S. H. ROSS DATE: 05-10-17



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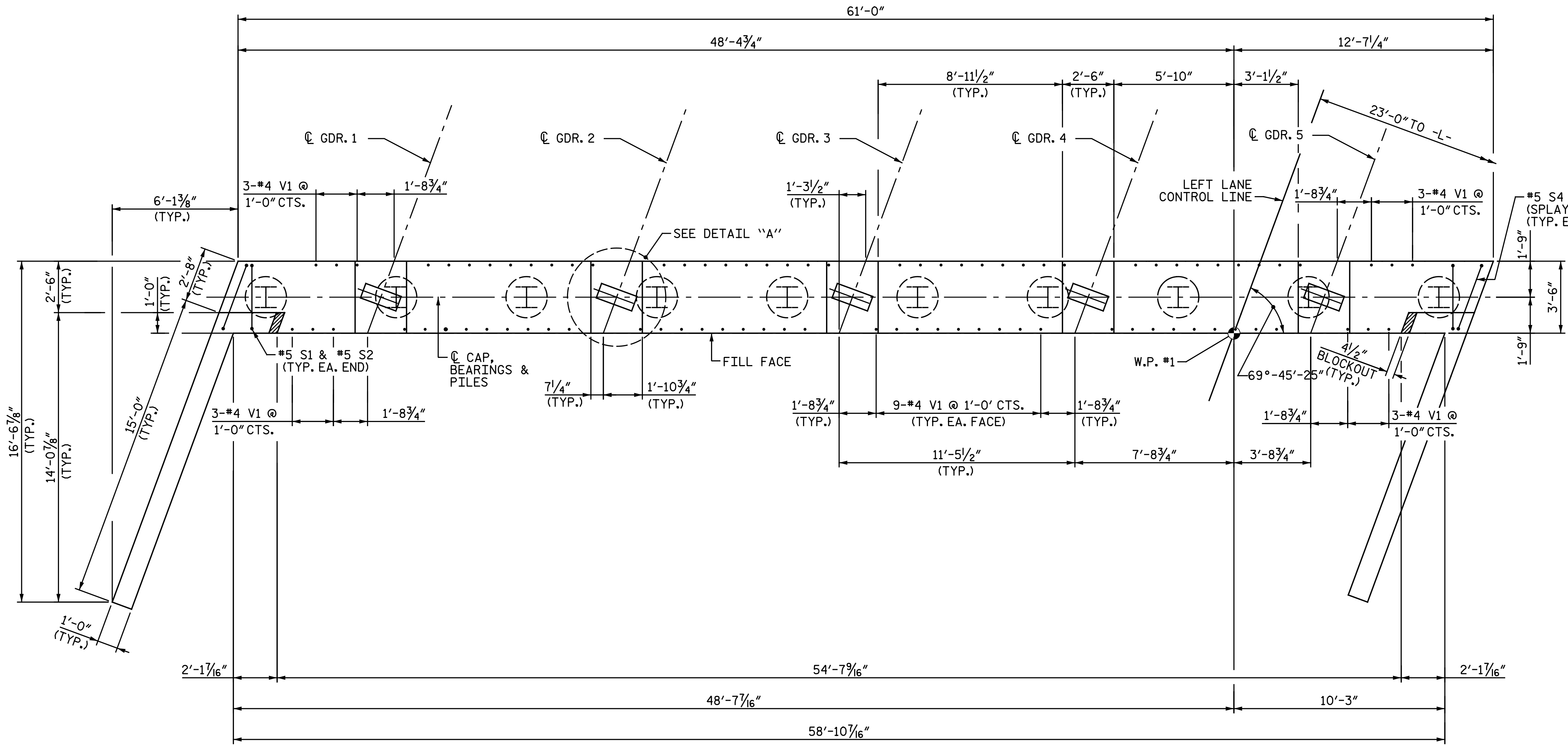
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE

BILL OF MATERIAL

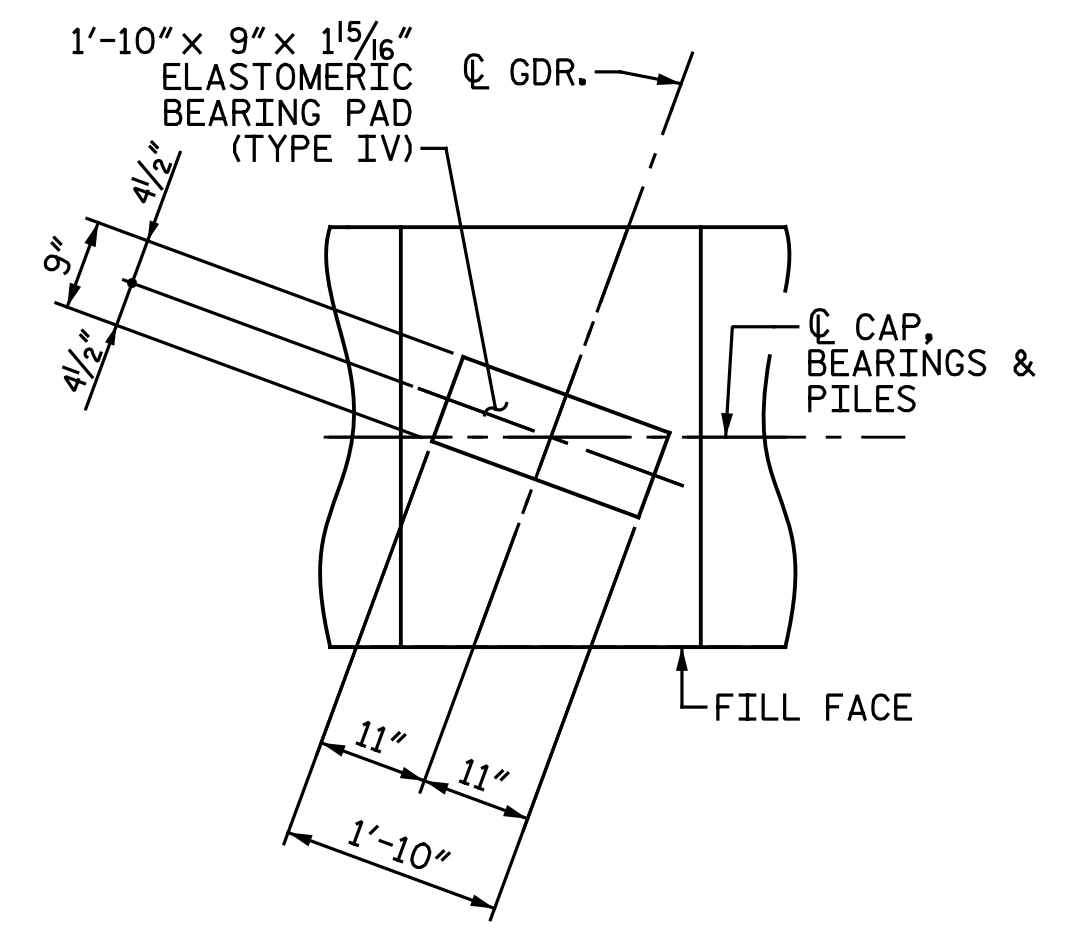
LEFT LANE

REVISIONS						SHEET NO. S11-16 TOTAL SHEETS 29
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



PLAN

NOTES:
 FOR "SECTION A-A", SEE "INTEGRAL END BENT 1 DETAILS" SHEET.
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.
 THE TOP SURFACE OF THE END BENT CAP, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

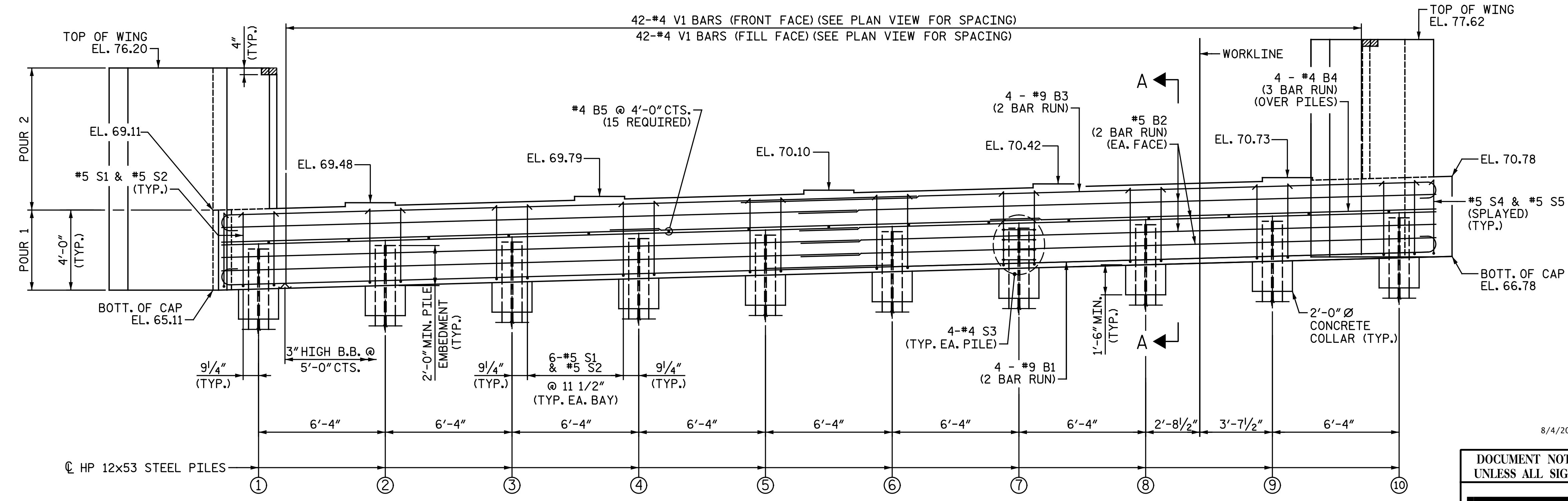


DETAIL "A"

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

REINFORCING STEEL SPLICE LENGTHS	
BAR & SIZE	UNCOATED
#4 B4	2'-5"
#5 B2	3'-0"
#9 B1	6'-3"
#9 B3	8'-9"

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
①	67.16
②	67.34
③	67.51
④	67.68
⑤	67.86
⑥	68.03
⑦	68.21
⑧	68.38
⑨	68.55
⑩	68.73



ELEVATION

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-
 SHEET 1 OF 2



8/4/2017

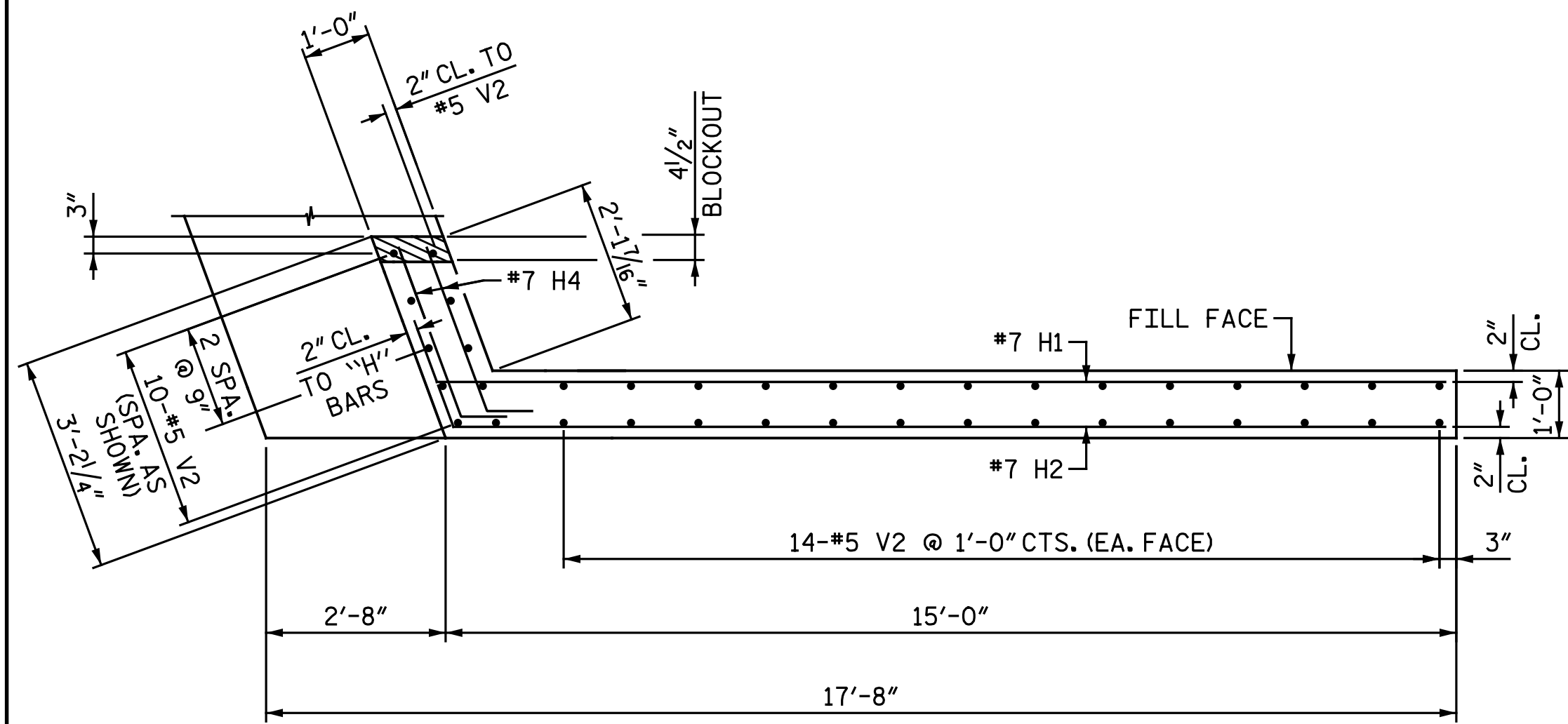
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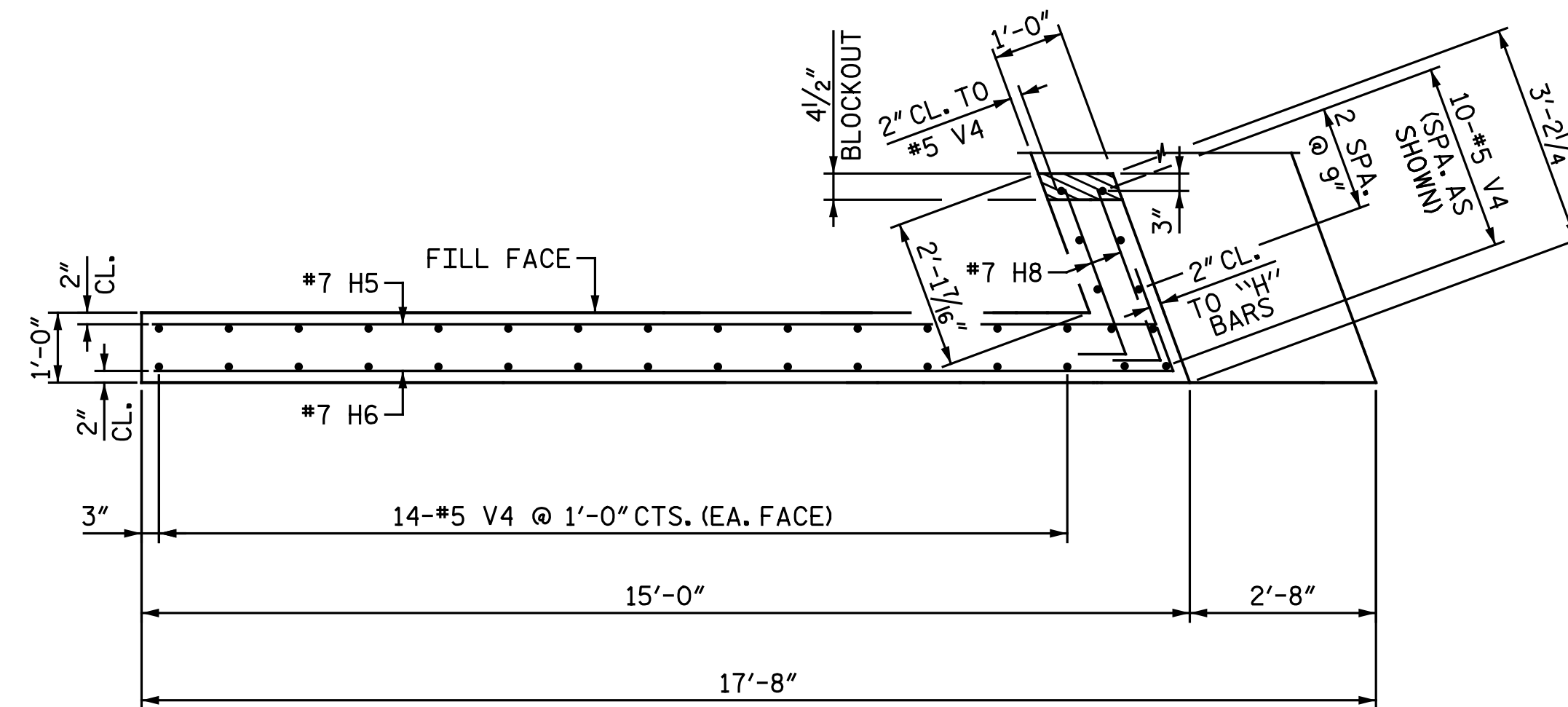
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 INTEGRAL END BENT 1
 LEFT LANE

REVISIONS						SHEET NO. S11-17
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 29
2			4			

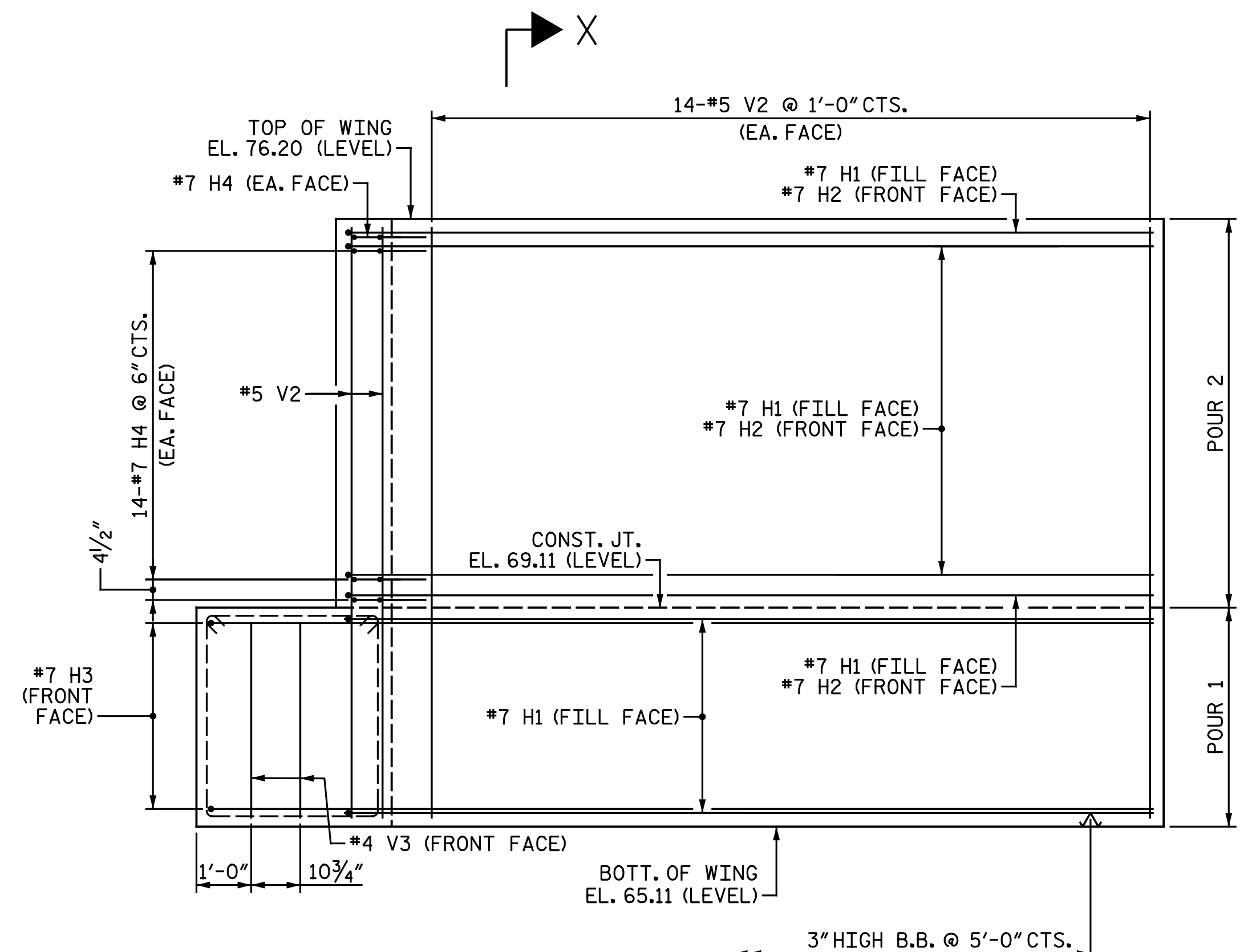
DRAWN BY: W. D. MCGREADY DATE: 03-20-17
 CHECKED BY: S. H. ROSS DATE: 05-10-17



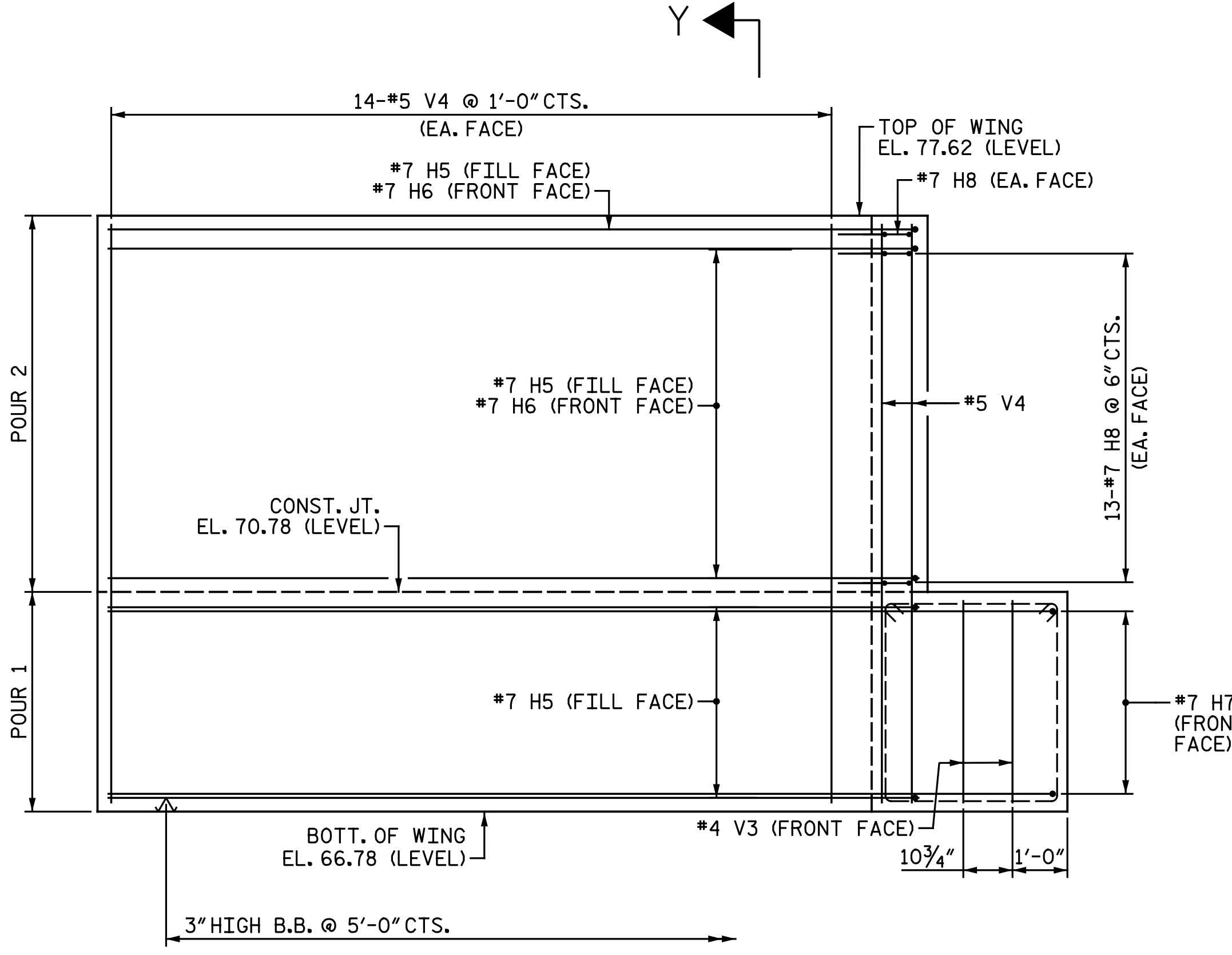
PLAN OF LEFT WING
(H3 BARS NOT SHOWN FOR CLARITY)



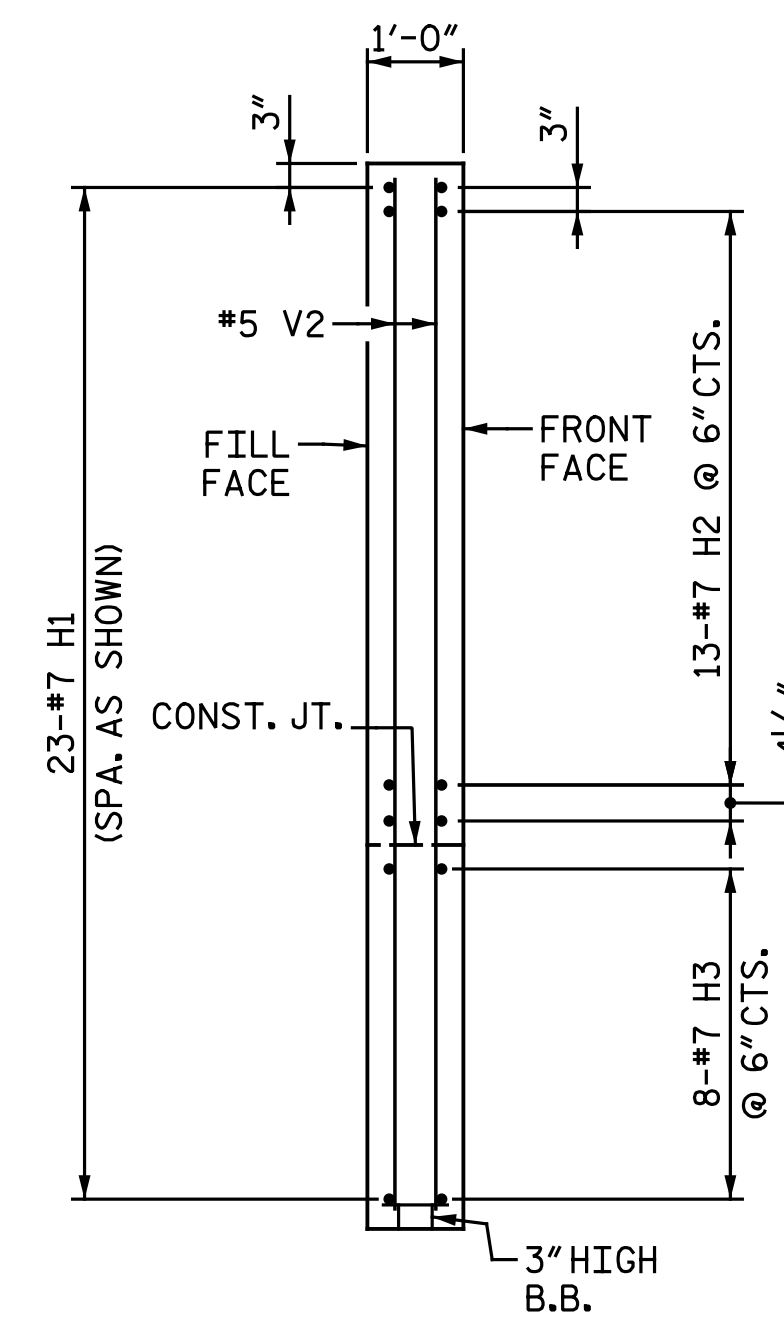
PLAN OF RIGHT WING
(H7 BARS NOT SHOWN FOR CLARITY)



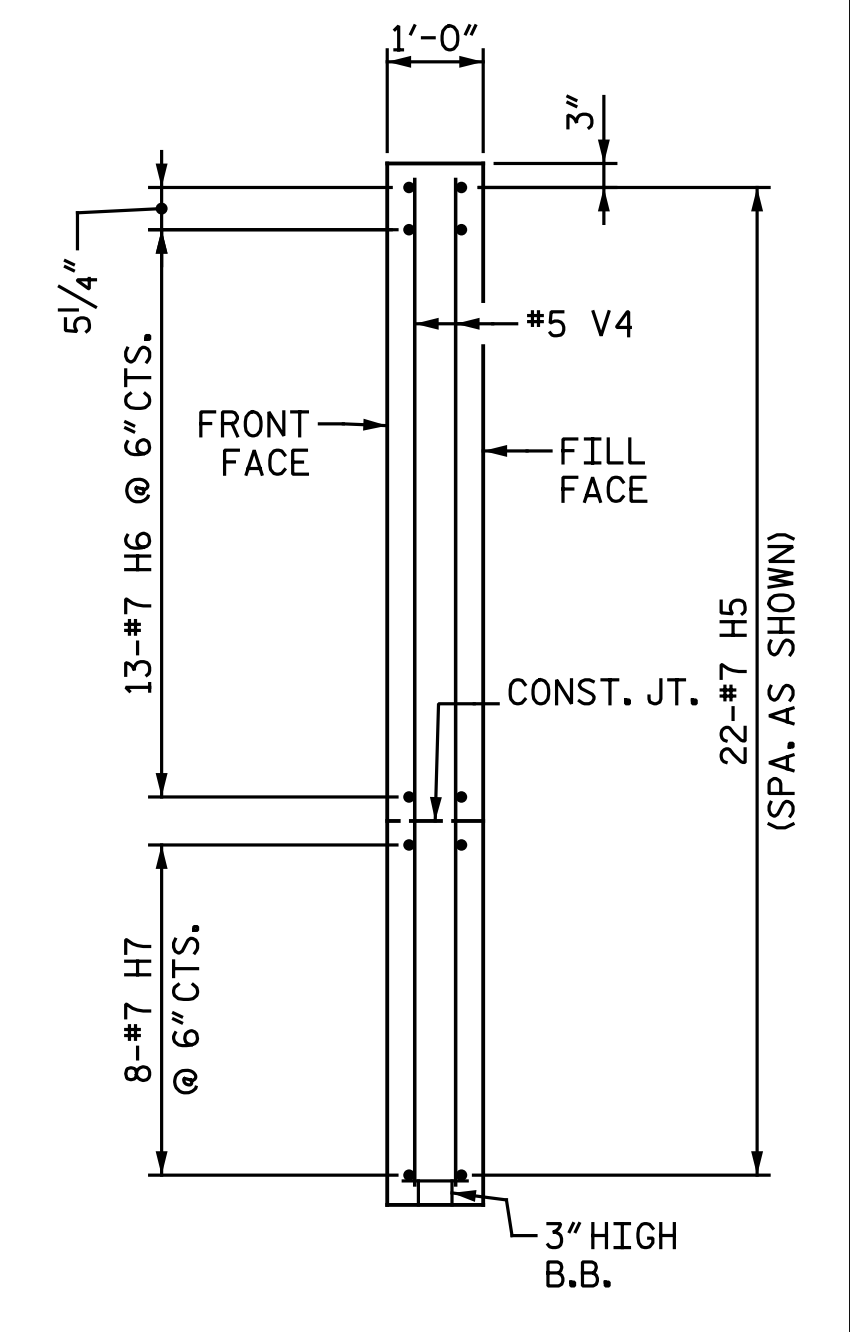
ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING



SECTION X-X



SECTION Y-Y

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-
 SHEET 2 OF 2



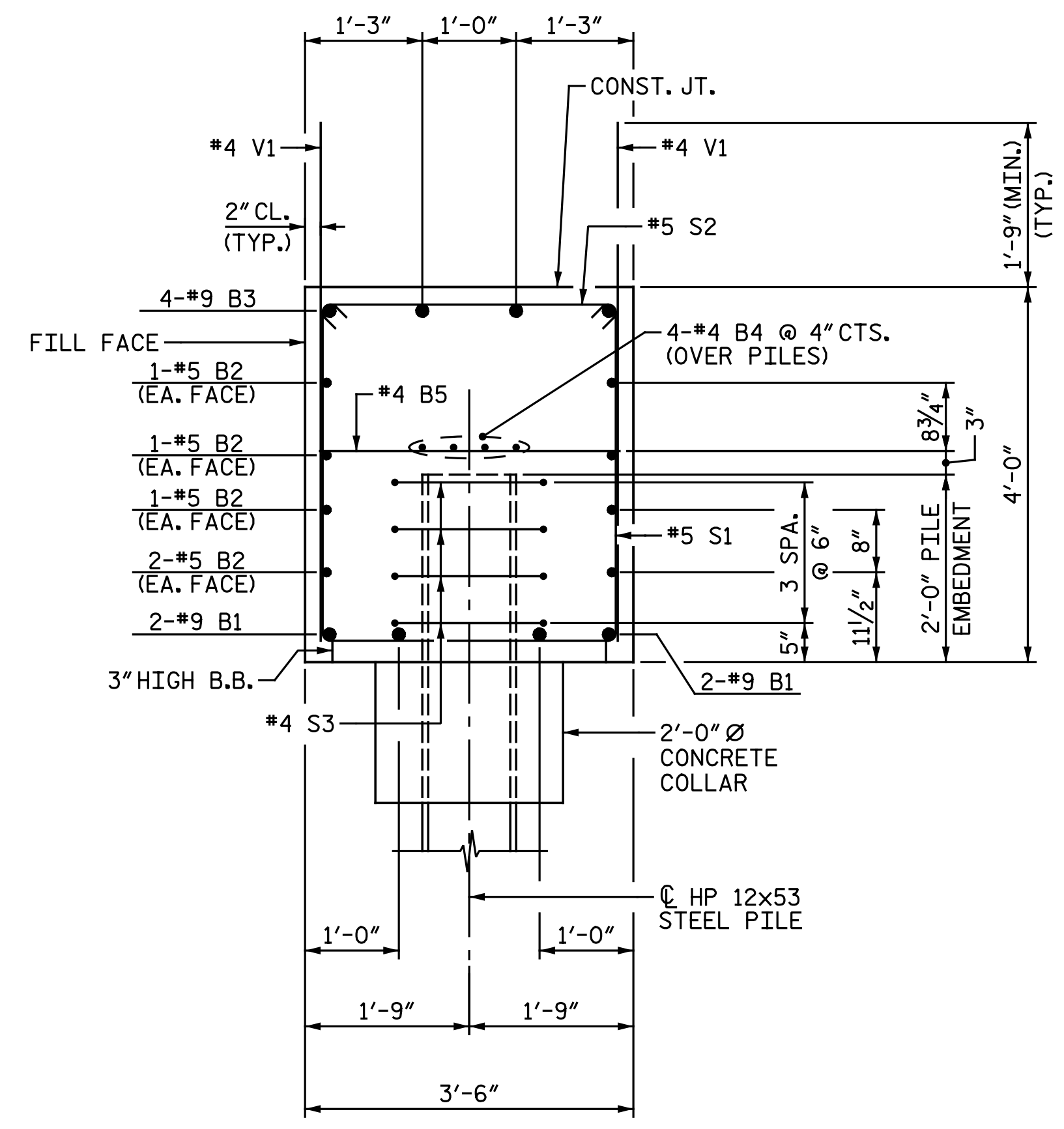
8/4/2017

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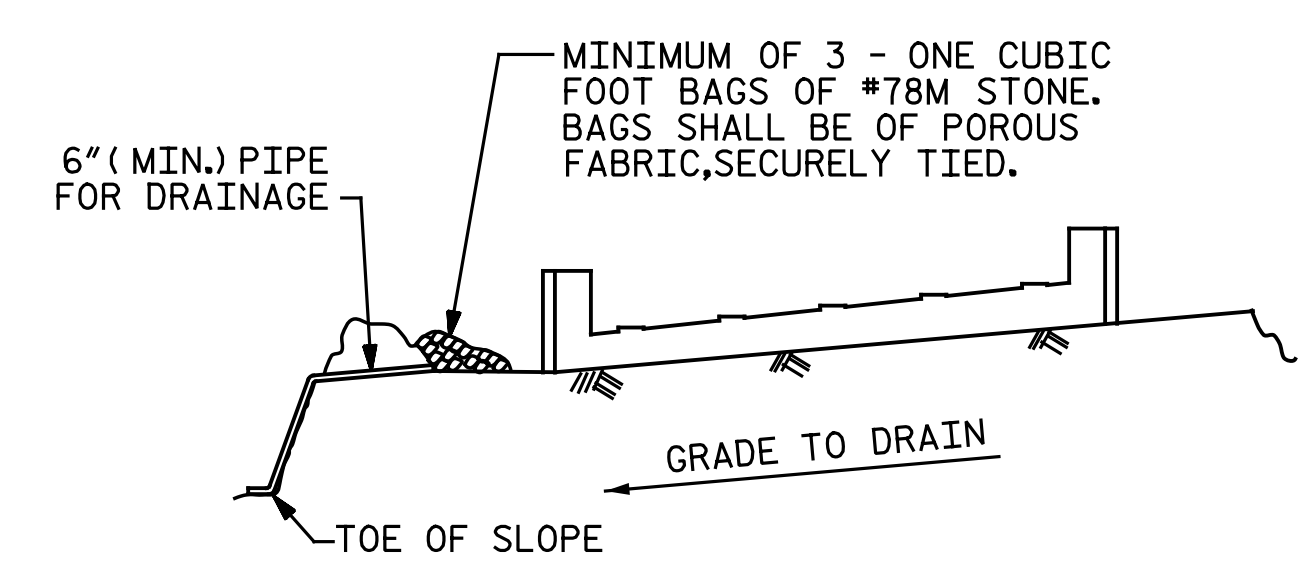
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
INTEGRAL END BENT 1					
LEFT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					SHEET NO.
					SII-18
TOTAL SHEETS					29

DRAWN BY: W. D. MCGREADY DATE: 3-29-17
 CHECKED BY: S. H. ROSS DATE: 5-10-17



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.

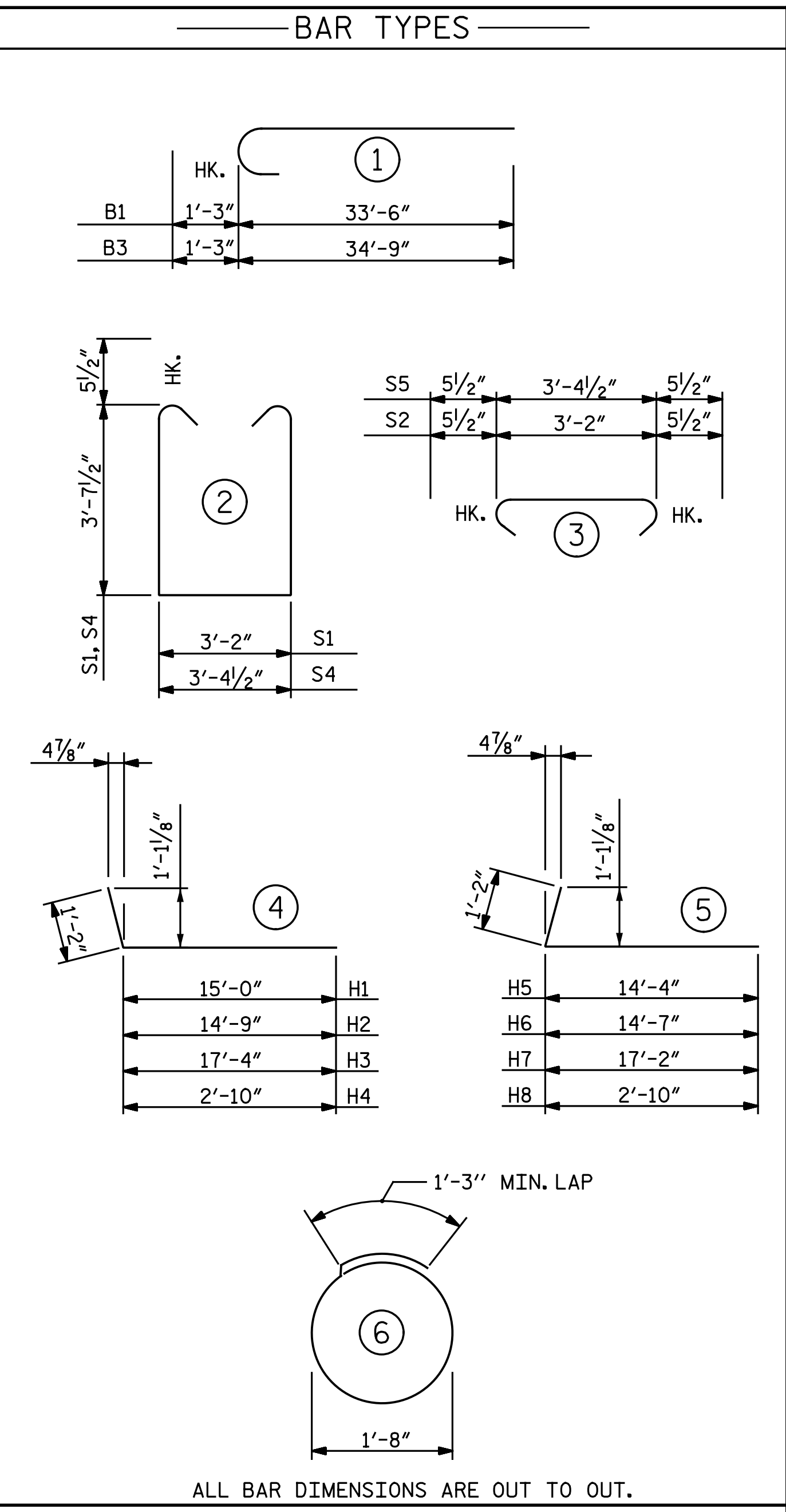
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

DRAWN BY : W. D. MCGREADY DATE : 3-24-17
 CHECKED BY : S. H. ROSS DATE : 5-10-17

BILL OF MATERIAL					
INTEGRAL END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		34' - 9"	945
B2	16	#5	STR.	31' - 10"	531
B3	8	#9		36' - 0"	979
B4	12	#4	STR.	21' - 10"	175
B5	15	#4	STR.	3' - 2"	32
H1	23	#7		16' - 2"	760
H2	15	#7		15' - 11"	488
H3	8	#7		18' - 6"	303
H4	32	#7		4' - 0"	262
H5	22	#7		15' - 6"	697
H6	14	#7		15' - 9"	451
H7	8	#7		18' - 4"	300
H8	28	#7		4' - 0"	229
S1	56	#5		11' - 4"	662
S2	56	#5		4' - 1"	238
S3	40	#4		6' - 6"	174
S4	2	#5		11' - 7"	24
S5	2	#5		4' - 4"	9
V1	84	#4	STR.	5' - 7"	313
V2	38	#5	STR.	10' - 8"	423
V3	4	#4	STR.	3' - 7"	10
V4	38	#5	STR.	10' - 5"	413
REINFORCING STEEL				LBS.	8,418
CLASS A CONCRETE					
POUR 1 -					
CAP, LOWER PART OF WINGS & COLLARS					
				C.Y.	37.7
POUR 2 -					
UPPER PART OF WINGS					
				C.Y.	8.9
TOTAL				C.Y.	46.6
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES					
				EA.	10
HP 12x53 STEEL PILES					
NO. 10				L.F.	300
STEEL PILE POINTS					
				EA.	10
PILE REDRIVES					
				EA.	5

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



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-



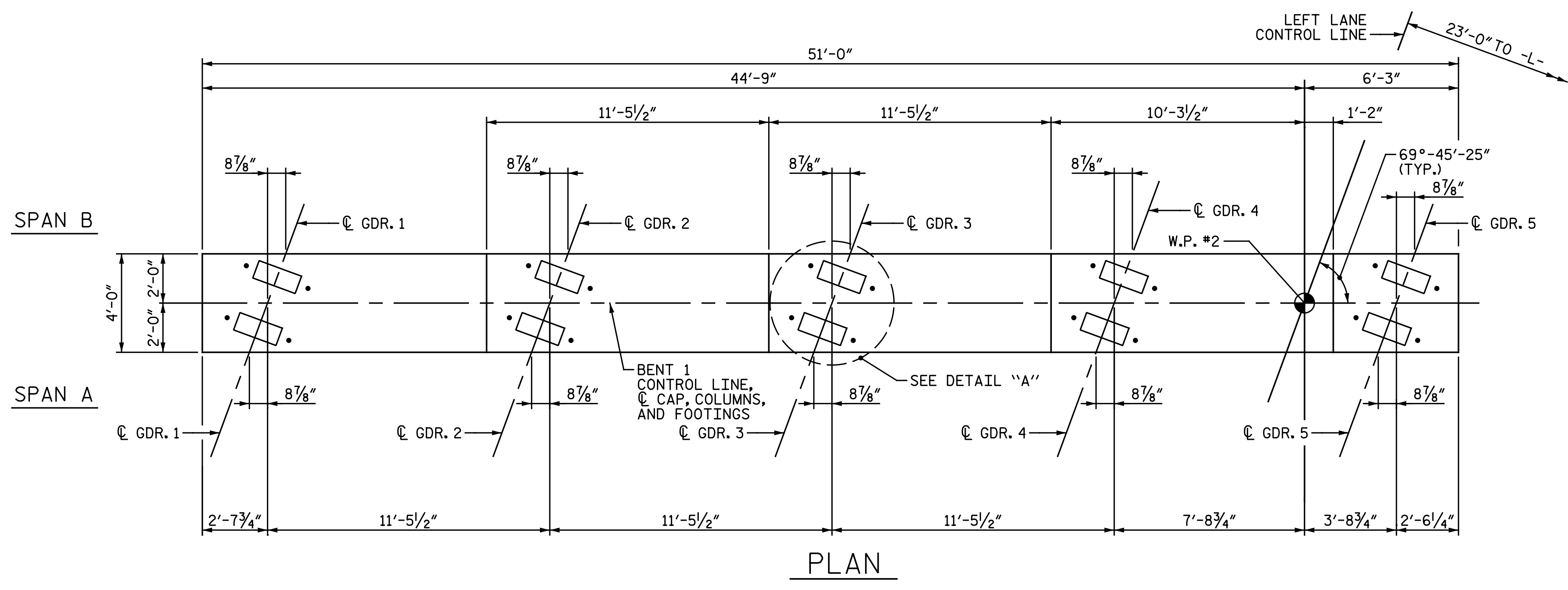
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 INTEGRAL END BENT 1
 DETAILS

DOCUMENT NOT CONSIDERED FINAL
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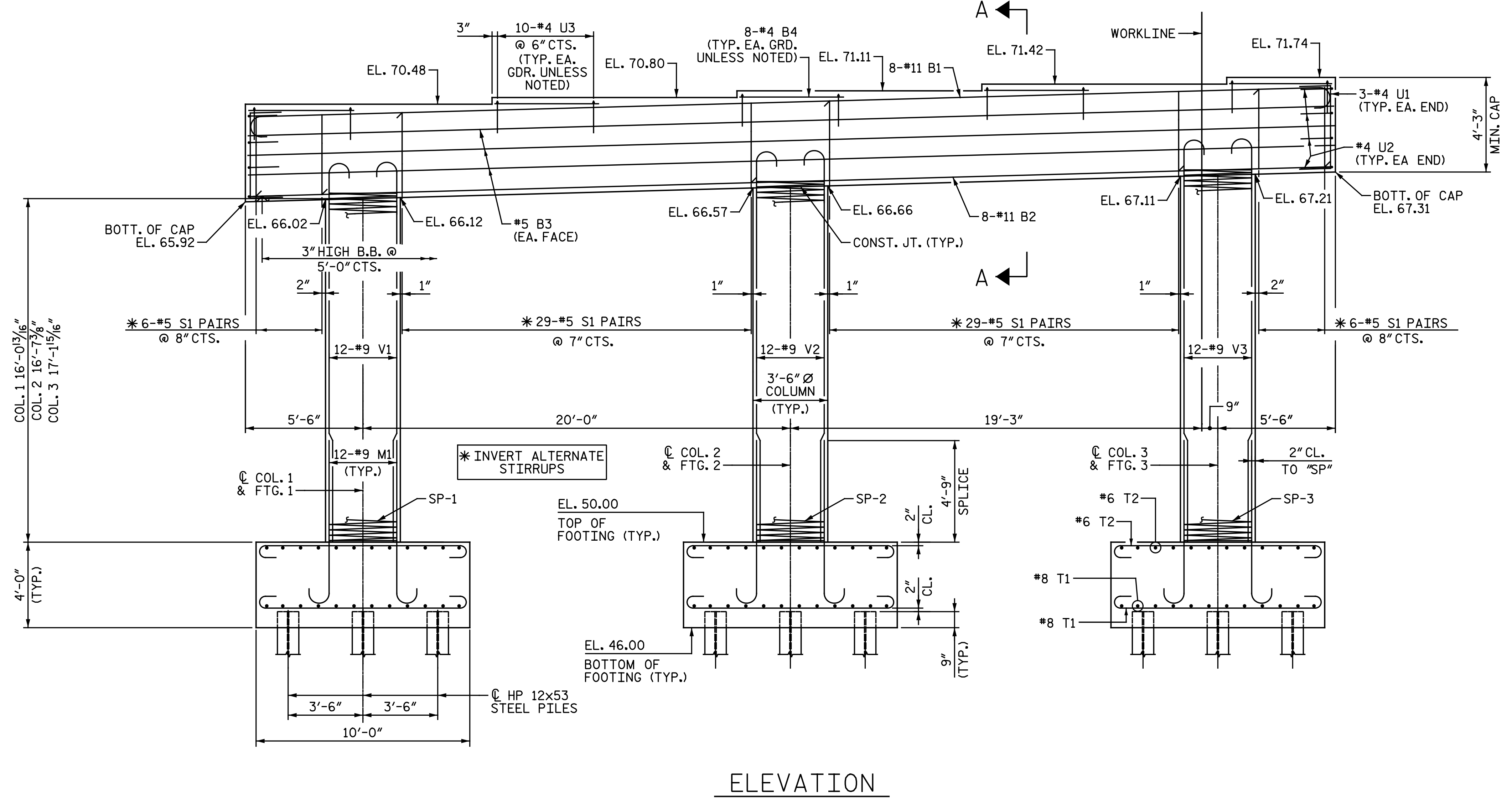
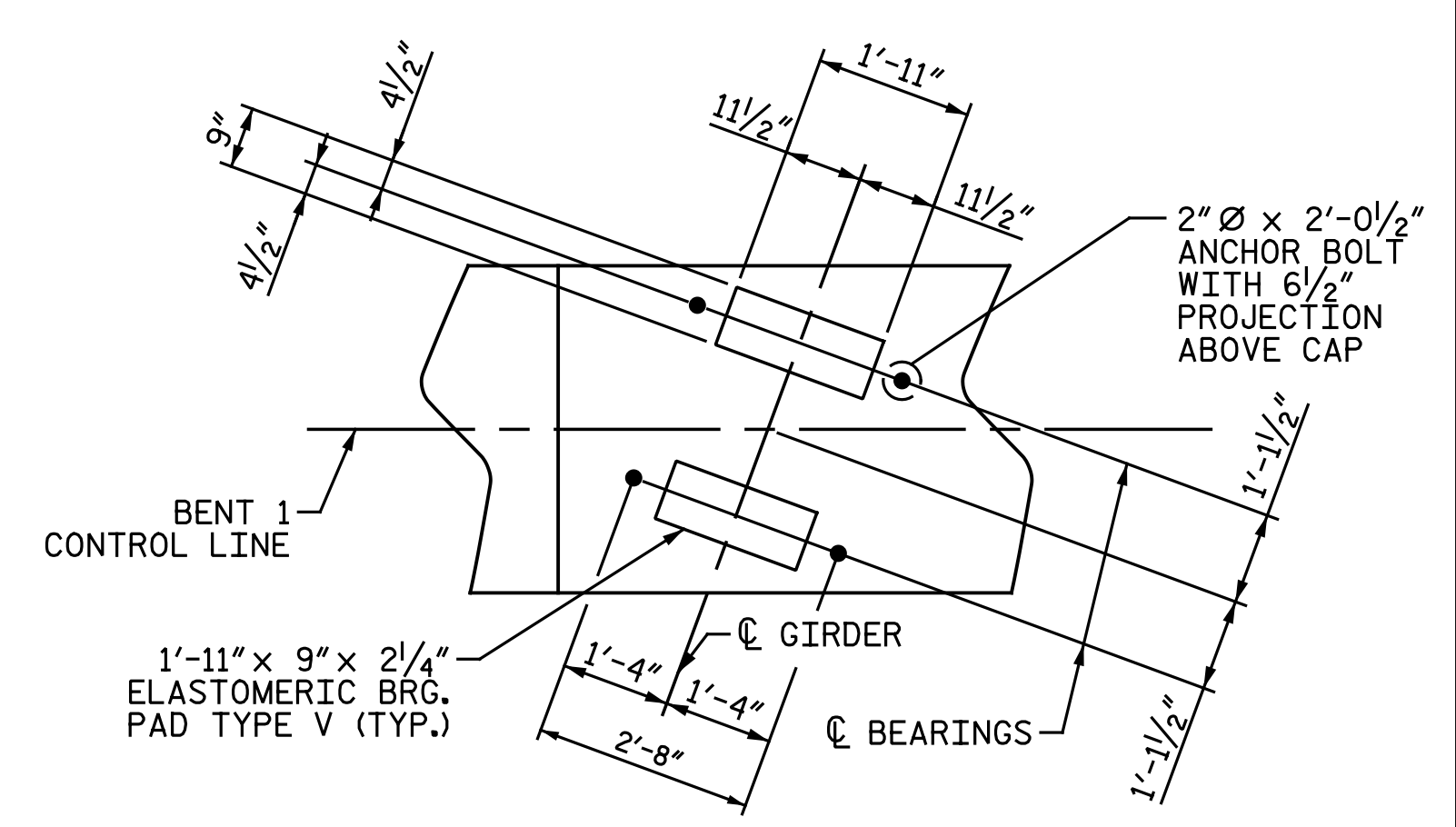
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LEFT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

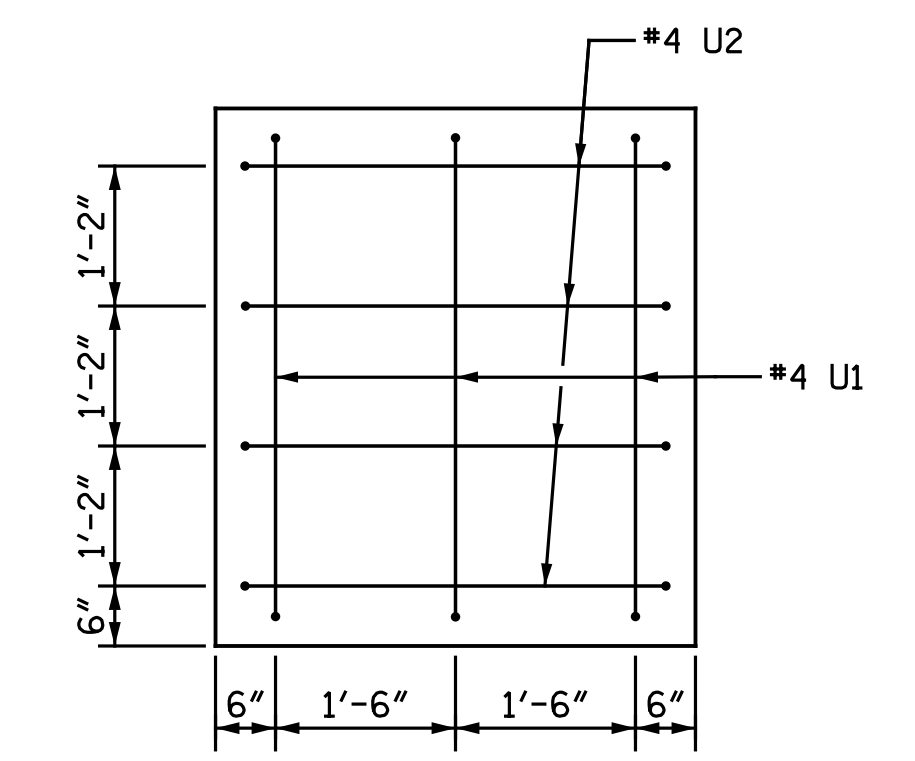
SHEET NO.	S11-19
TOTAL SHEETS	29



NOTES:
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 FOR SECTION A-A, SEE "BENT 1 DETAILS" SHEET.



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



PROJECT NO. R-5703
 LENOIR COUNTY
 STATION: 342+97.24 -L-



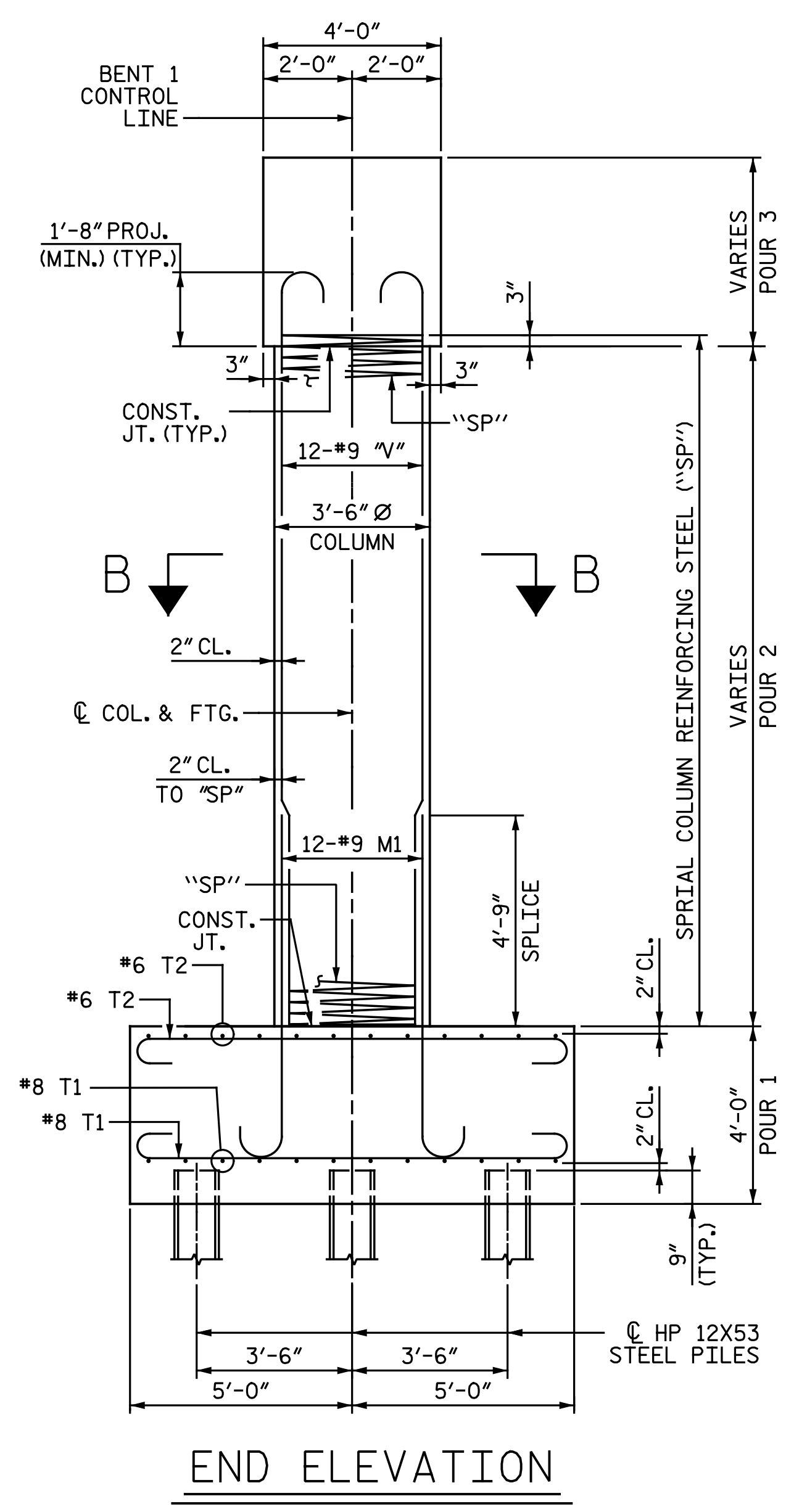
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1
 LEFT LANE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

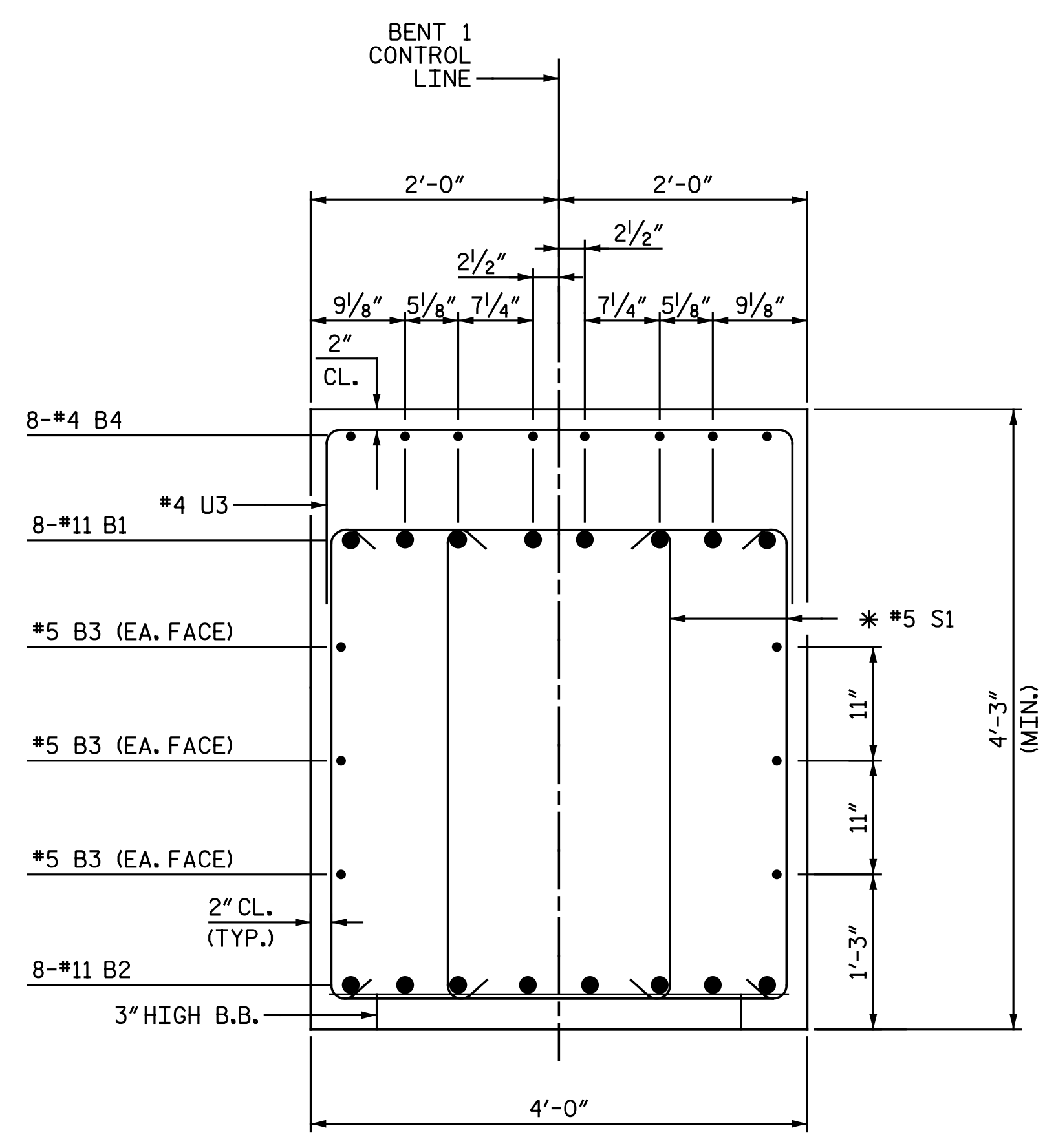
NO.		BY:	DATE:	NO.		BY:	DATE:	SHEET NO.
1				3				TOTAL SHEETS
2				4				29

DRAWN BY: P. SMITH DATE: 4-10-17
 CHECKED BY: S.H. ROSS DATE: 5-11-17

ALL DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH FOOTING UNLESS OTHERWISE NOTED.

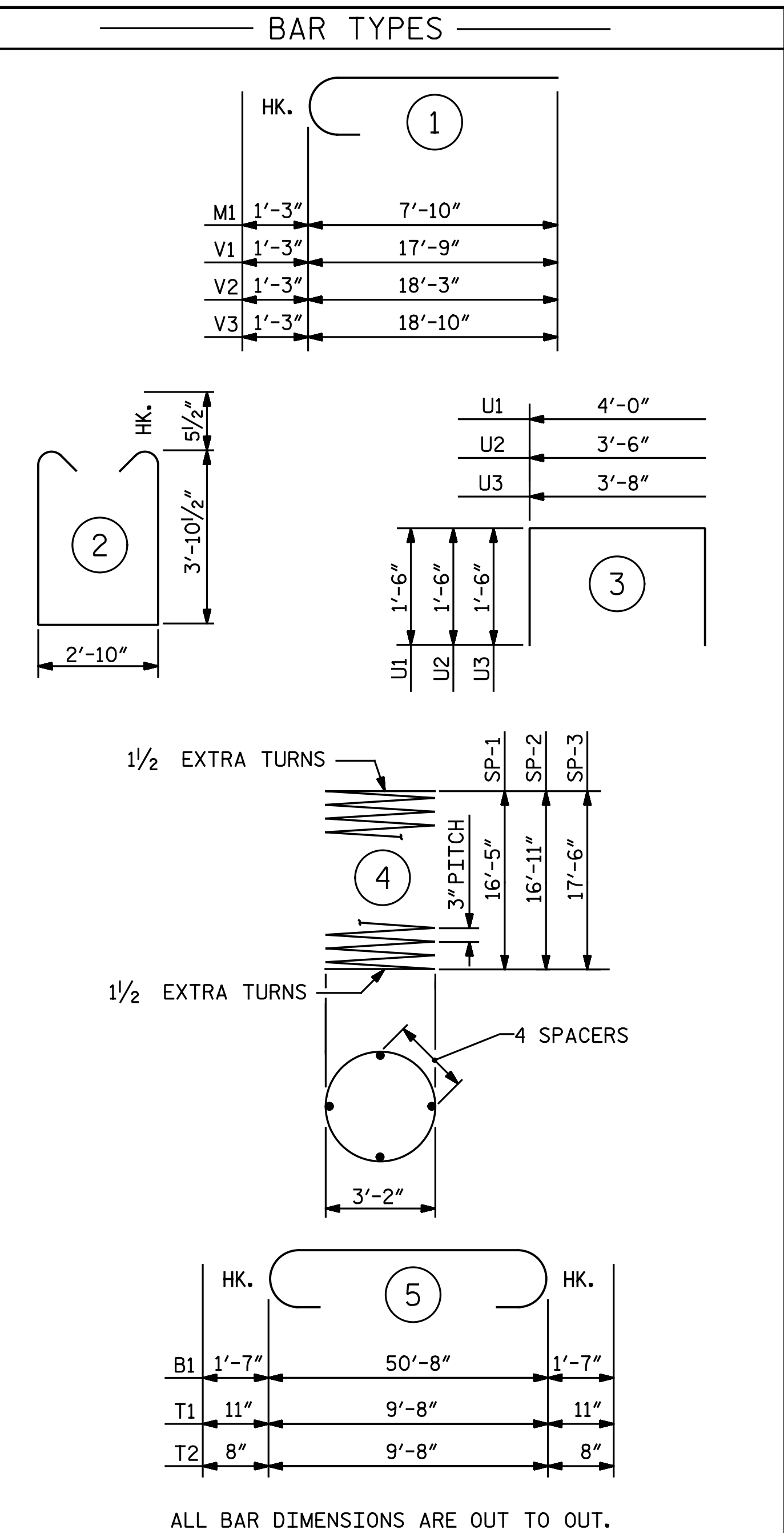


END ELEVATION



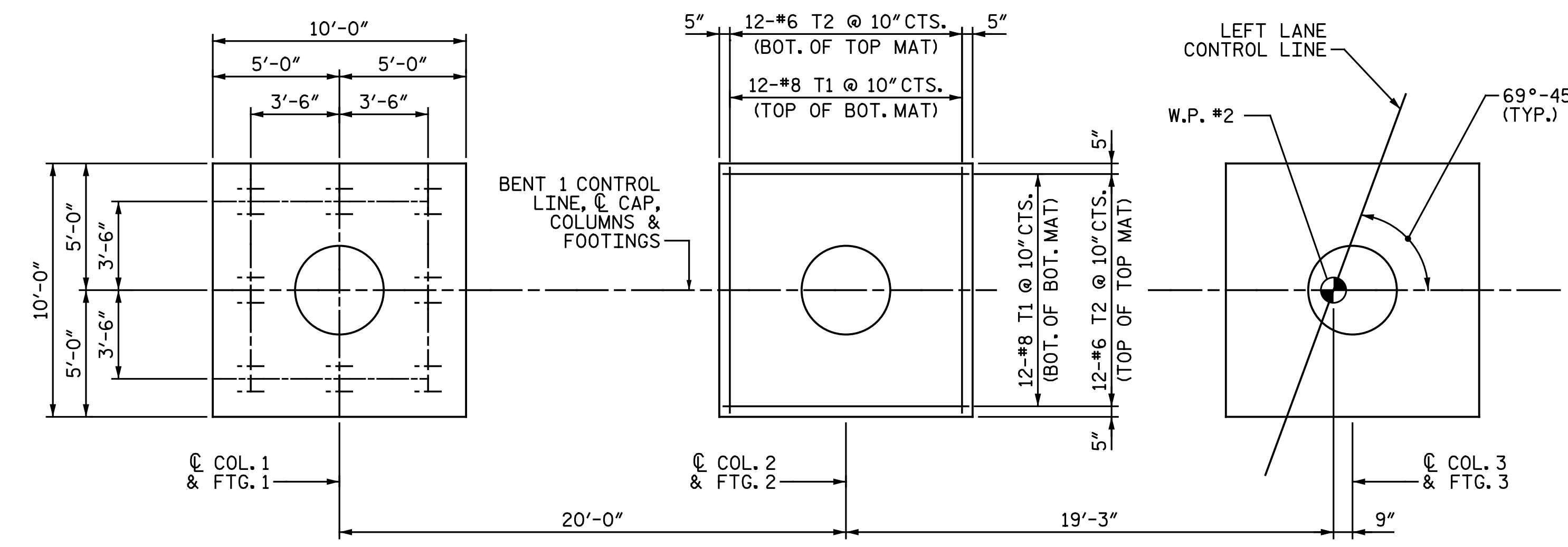
SECTION A-A
* INVERT ALTERNATE STIRRUPS

BILL OF MATERIAL					
BENT 1					
B1	8	#11	5	53' - 10"	2,288
B2	8	#11	STR.	50' - 8"	2,154
B3	6	#5	STR.	50' - 8"	317
B4	40	#4	STR.	4' - 10"	129
M1	36	#9	1	9' - 1"	1,112
S1	140	#5	2	11' - 6"	1,679
T1	72	#8	5	11' - 6"	2,211
T2	72	#6	5	11' - 0"	1,190
U1	6	#4	3	7' - 0"	28
U2	8	#4	3	6' - 6"	35
U3	50	#4	3	6' - 8"	223
V1	12	#9	1	19' - 0"	775
V2	12	#9	1	19' - 6"	796
V3	12	#9	1	20' - 1"	819
REINFORCING STEEL				LBS.	13,756
SP-1	1	**	4	659' - 7"	441
SP-2	1	**	4	679' - 3"	454
SP-3	1	**	4	702' - 2"	469
SPIRAL COLUMN REINFORCING STEEL				LBS.	1,363
CLASS A CONCRETE				C.Y.	
POUR 1 - FOOTINGS				C.Y.	44.4
POUR 2 - COLUMNS				C.Y.	17.8
POUR 3 - CAP				C.Y.	33.5
TOTAL CLASS A CONCRETE				C.Y.	95.7
FOUNDATION EXCAVATION				LUMP SUM	
PILE EXCAVATION IN SOIL				LIN.FT.	240
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES				EA.	24
HP 12x53 STEEL PILES NO. 24				L.F.	360
STEEL PILE POINTS				EA.	24
PILE REDRIVES				EA.	12



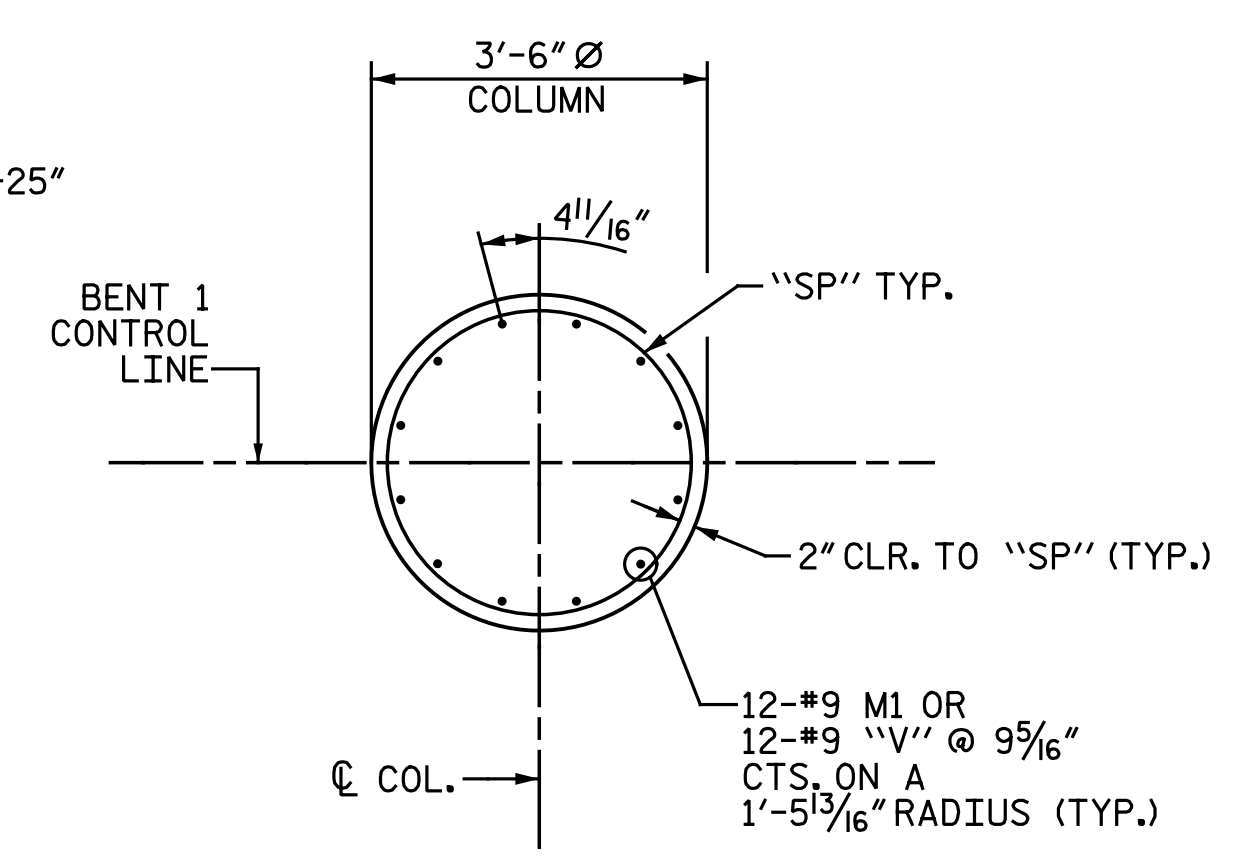
ALL BAR DIMENSIONS ARE OUT TO OUT.

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



PLAN OF COLUMNS & FOOTINGS

REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH FOOTING UNLESS OTHERWISE NOTED.



SECTION B-B

PROJECT NO. R-5703
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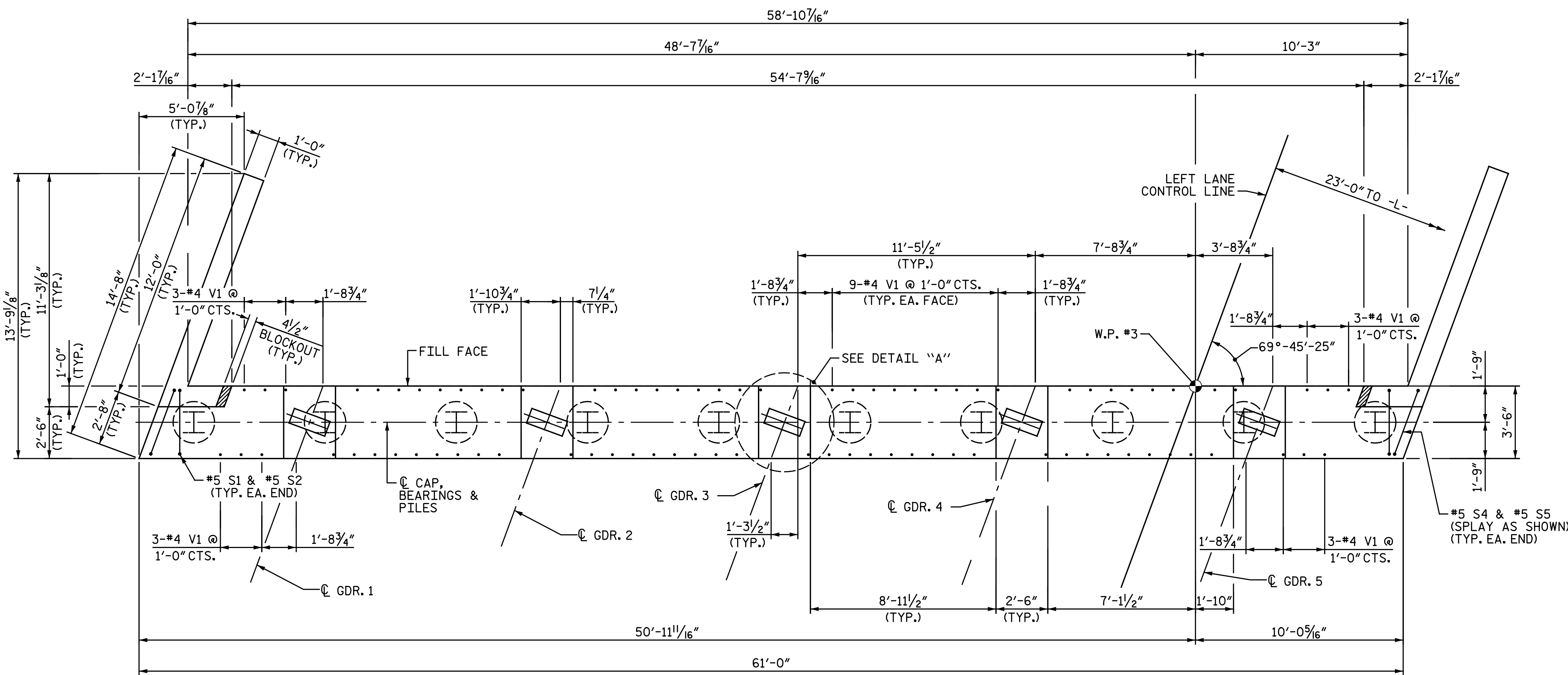
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 1 DETAILS

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

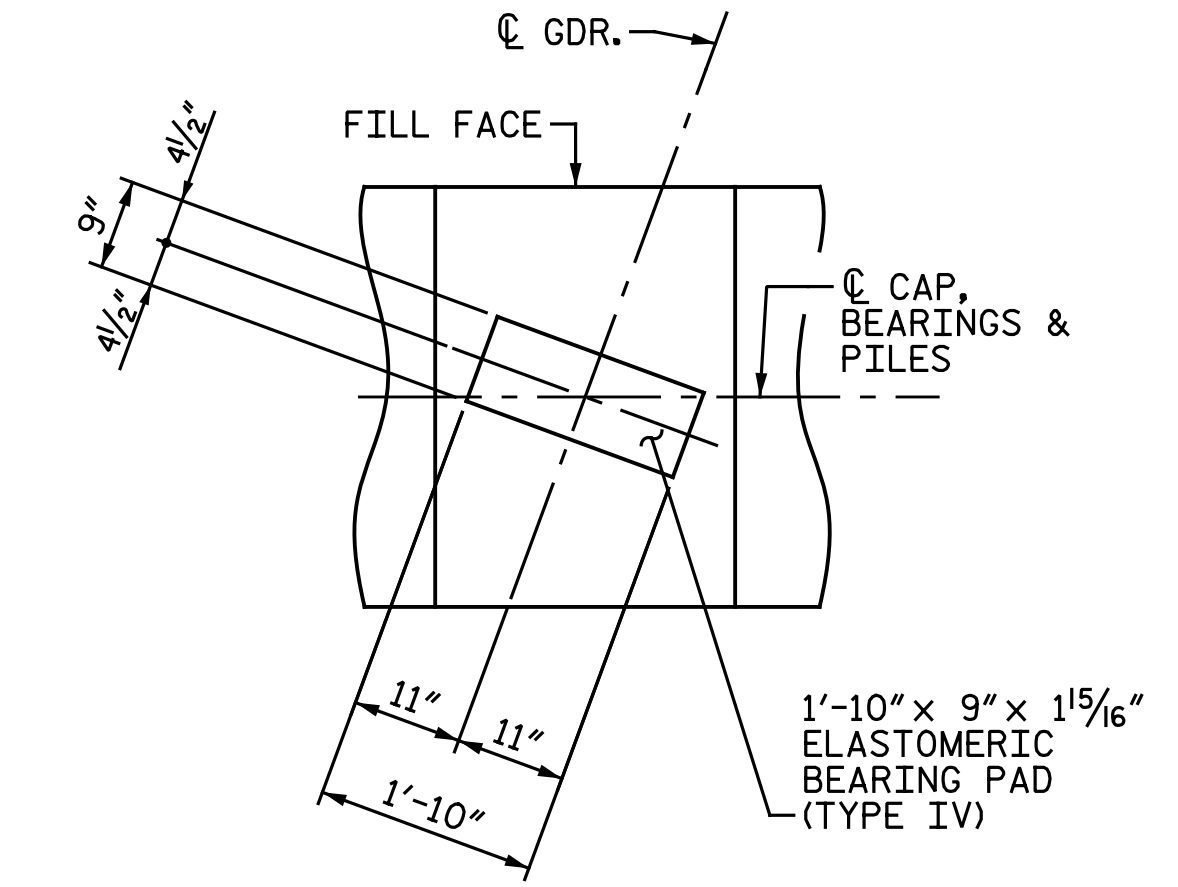
DRAWN BY: P. SMITH DATE: 04-13-17
CHECKED BY: S.H. ROSS DATE: 05-11-17

SHEET NO. S11-21
TOTAL SHEETS 29



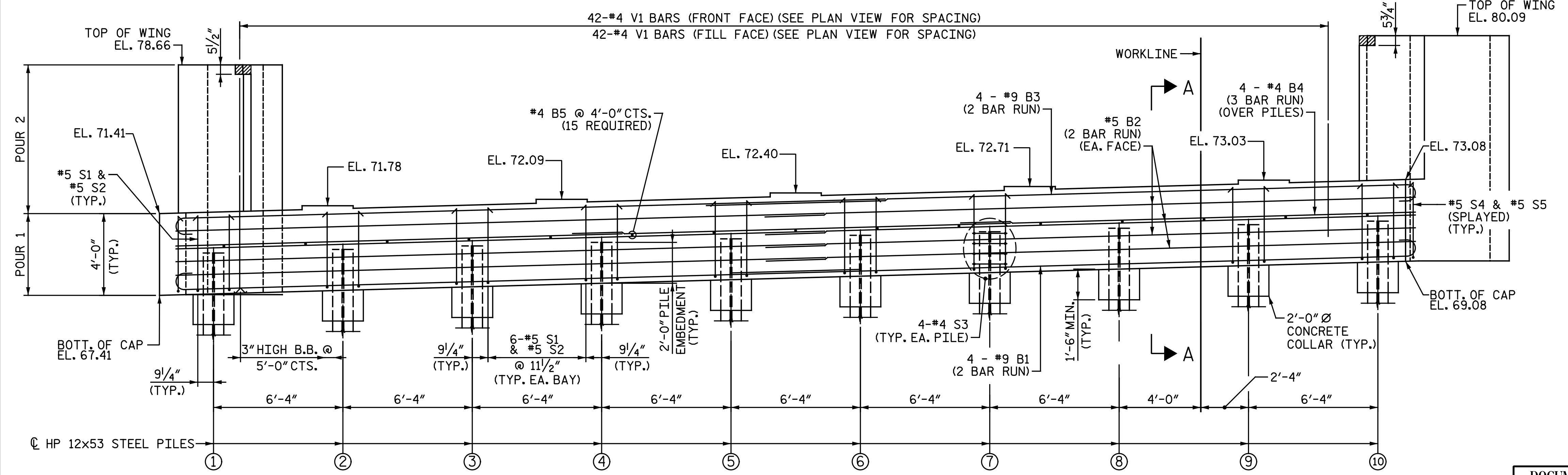
PLAN

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\"/>



DETAIL "A"

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



ELEVATION

REINFORCING STEEL SPLICE LENGTHS	
BAR & SIZE	END BENT 2
#4 B4	2'-5"
#5 B2	3'-0"
#9 B1	6'-3"
#9 B3	8'-9"

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
1	69.46
2	69.64
3	69.81
4	69.98
5	70.16
6	70.33
7	70.51
8	70.68
9	70.85
10	71.03

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-

SHEET 1 OF 2



8/4/2017

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
INTEGRAL END BENT 2

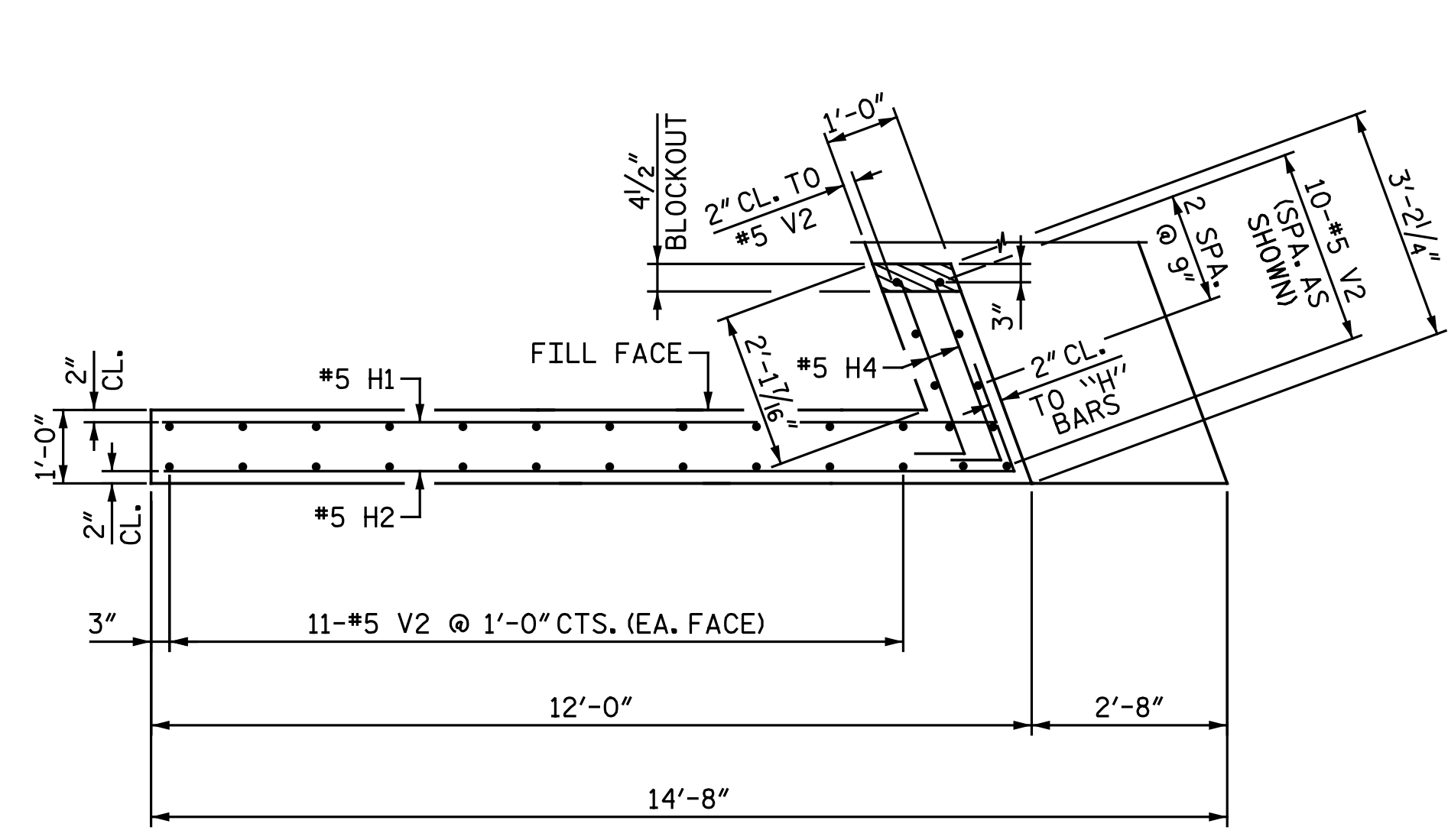
LEFT LANE

REVISIONS

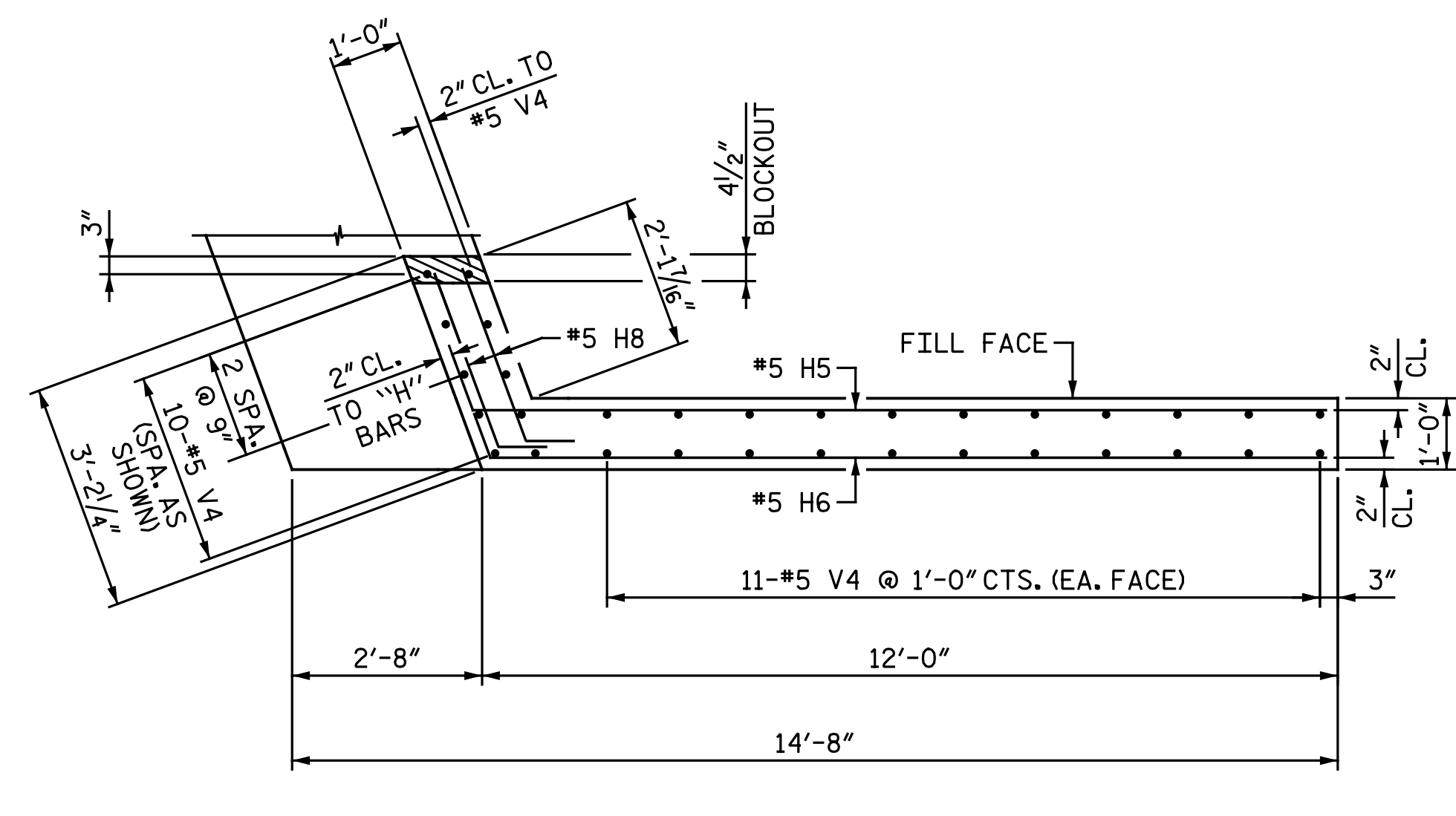
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S11-22
2			4			TOTAL SHEETS 29

DRAWN BY: W. D. MCGREADY DATE: 03-20-17
 CHECKED BY: S. H. ROSS DATE: 05-10-17

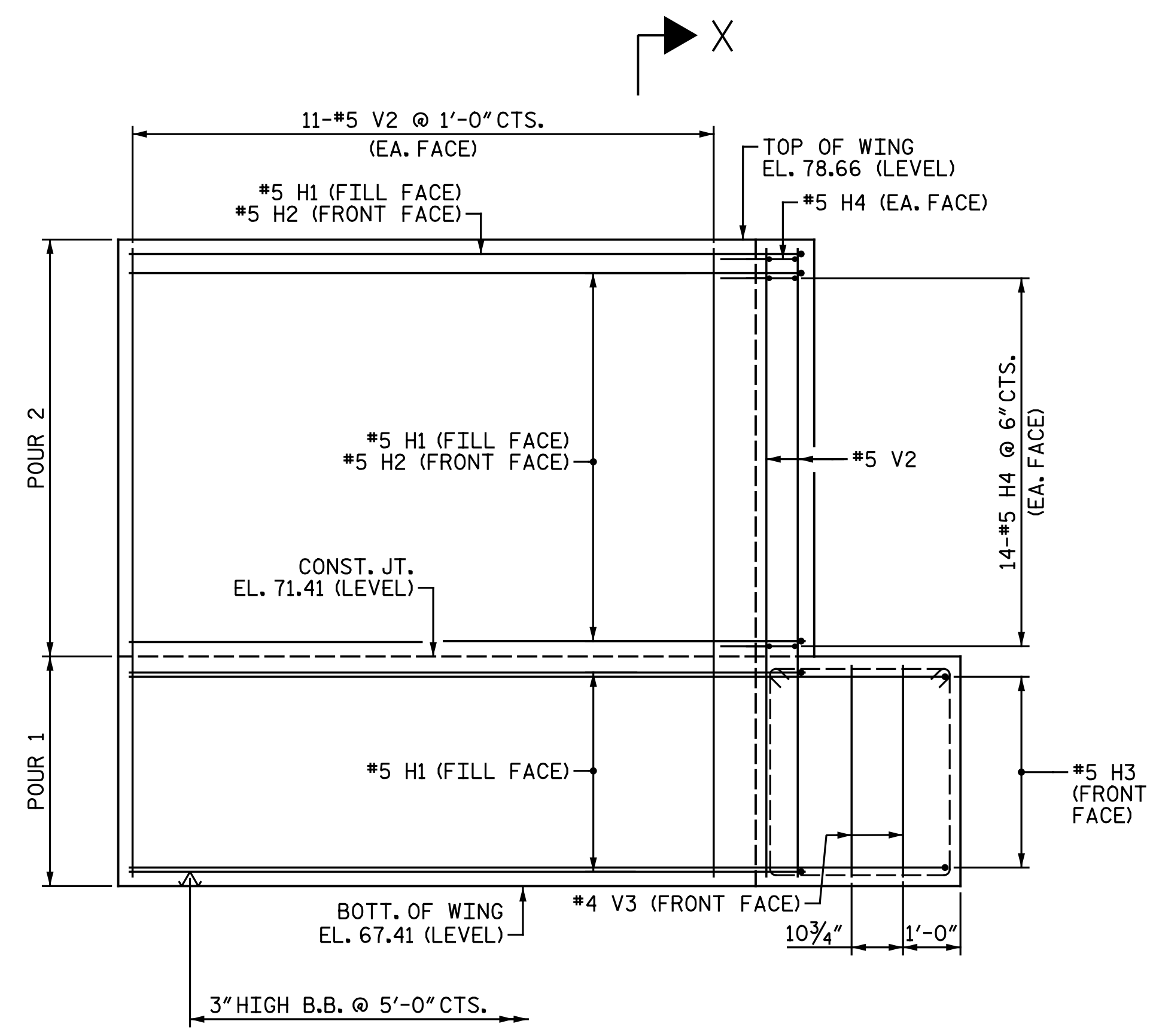
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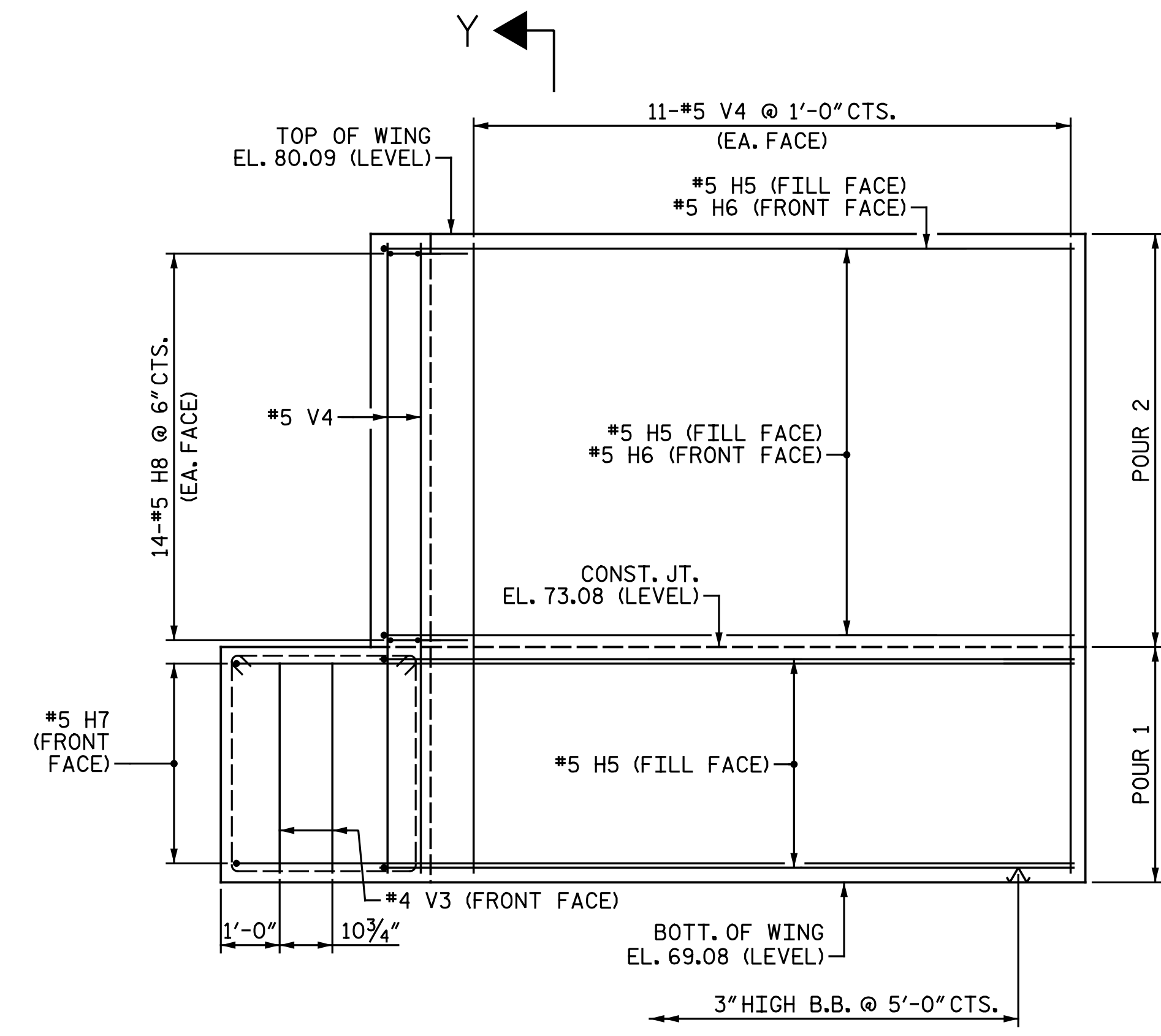
PLAN OF LEFT WING
(H3 BARS NOT SHOWN FOR CLARITY)



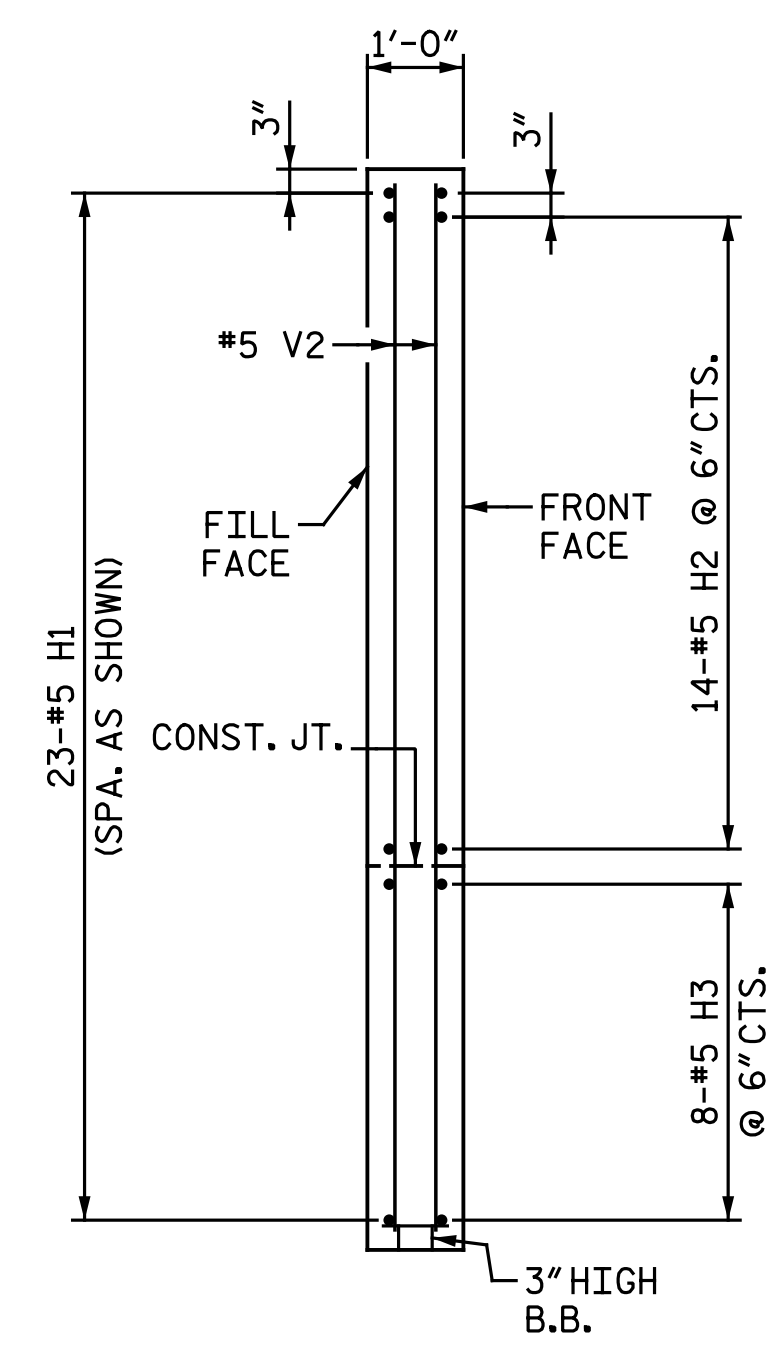
PLAN OF RIGHT WING
(H7 BARS NOT SHOWN FOR CLARITY)



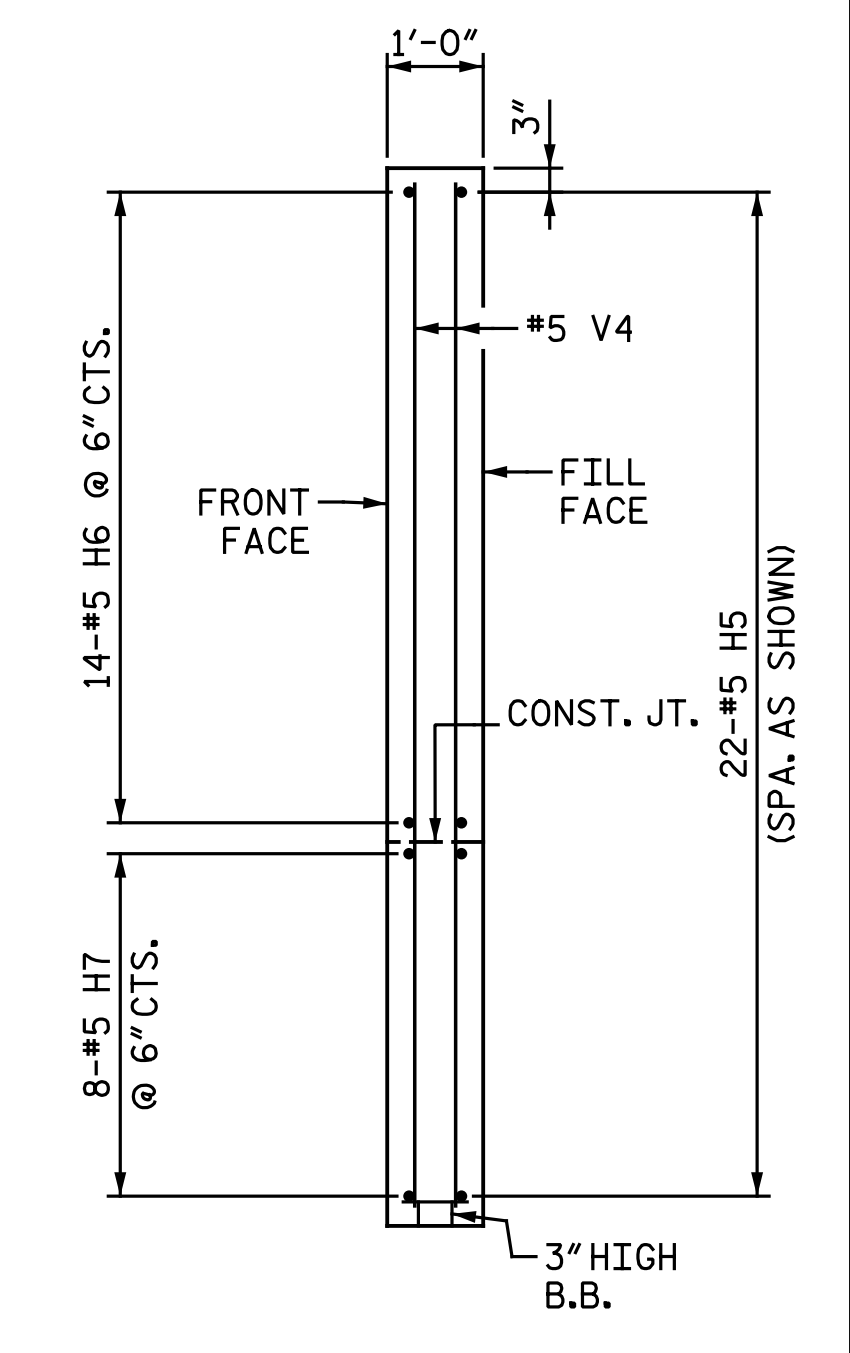
ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING



SECTION X-X



SECTION Y-Y

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-
 SHEET 2 OF 2



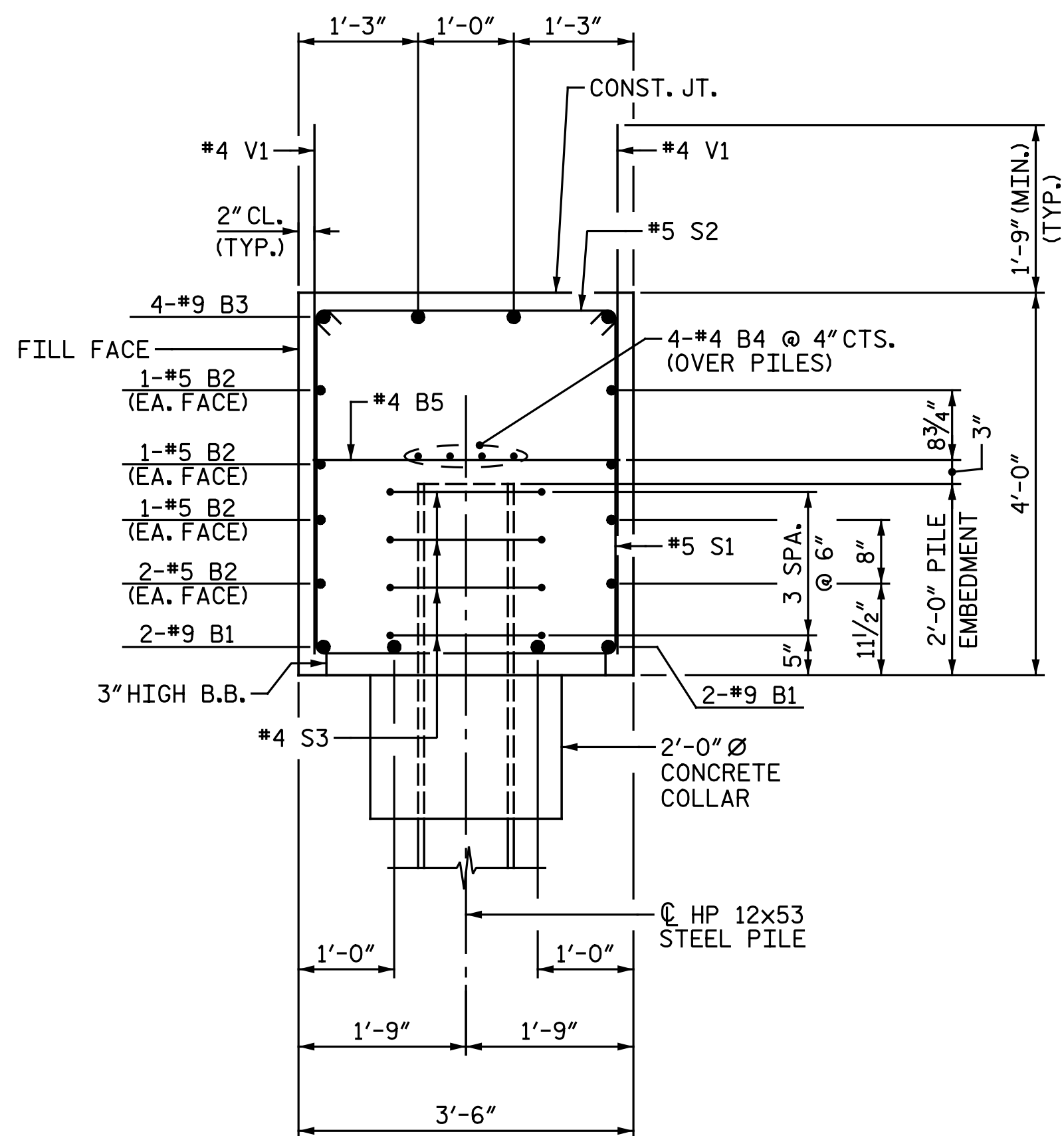
8/4/2017

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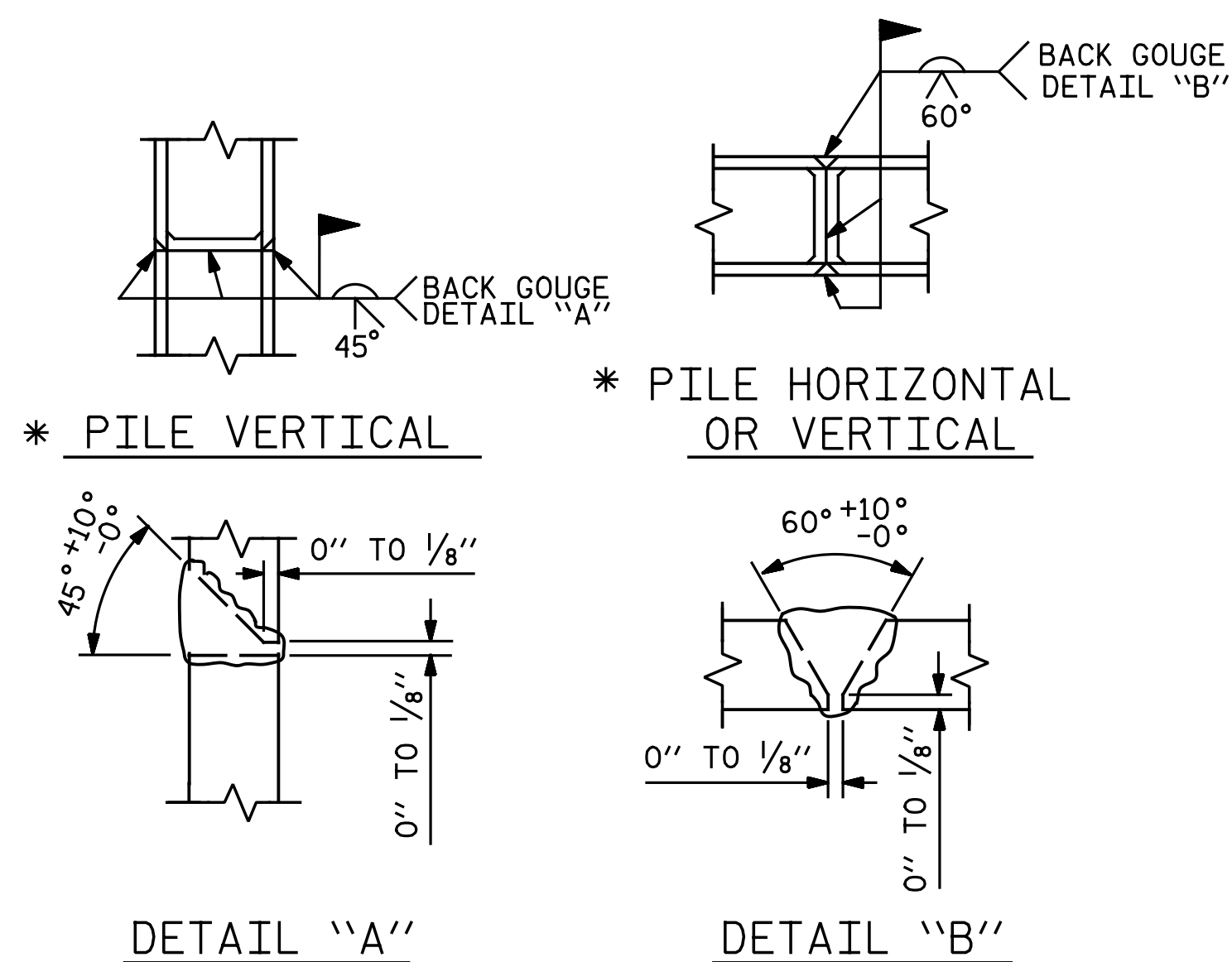
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 INTEGRAL END BENT 2
 LEFT LANE

DRAWN BY : W. D. MCGREADY DATE : 3-29-17
 CHECKED BY : S. H. ROSS DATE : 5-10-17

REVISIONS		SHEET NO.	
NO.	BY:	DATE:	SHEET NO.
1			SII-23
2			TOTAL SHEETS 29



SECTION A-A



PILE SPLICE DETAILS

* POSITION OF PILE DURING WELDING

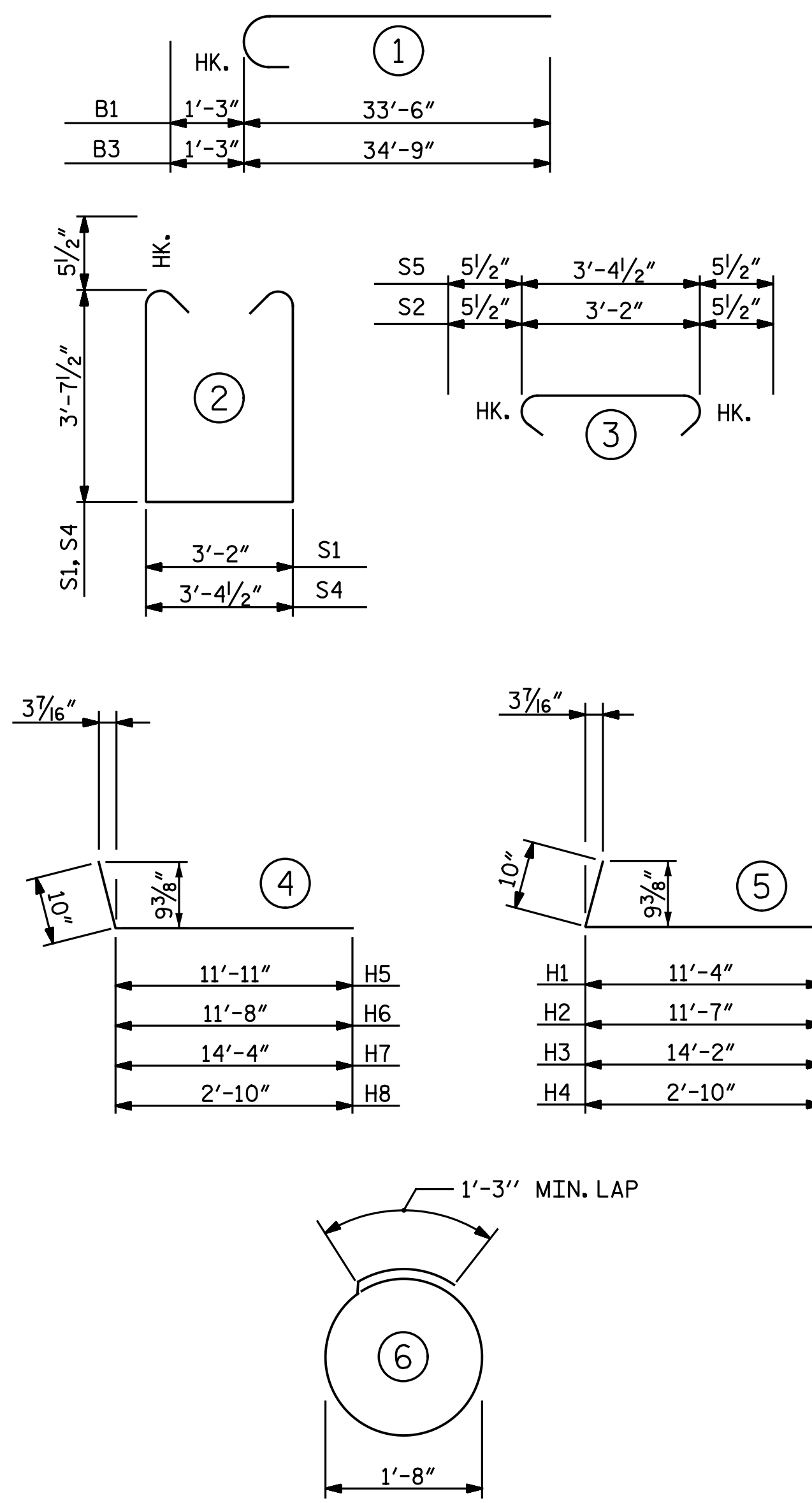
BILL OF MATERIAL
INTEGRAL END BENT 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	34' - 9"	945
B2	16	#5	STR.	31' - 10"	531
B3	8	#9	1	36' - 0"	979
B4	12	#4	STR.	21' - 10"	175
B5	15	#4	STR.	3' - 2"	32
H1	23	#5	5	12' - 2"	292
H2	15	#5	5	12' - 5"	194
H3	8	#5	5	15' - 0"	125
H4	30	#5	5	3' - 8"	115
H5	22	#5	4	12' - 9"	293
H6	14	#5	4	12' - 6"	183
H7	8	#5	4	15' - 2"	127
H8	28	#5	4	3' - 8"	107
S1	56	#5	2	11' - 4"	662
S2	56	#5	3	4' - 1"	238
S3	40	#4	6	6' - 6"	174
S4	2	#5	2	11' - 7"	24
S5	2	#5	3	4' - 4"	9
V1	84	#4	STR.	5' - 7"	313
V2	32	#5	STR.	10' - 10"	362
V3	4	#4	STR.	3' - 7"	10
V4	32	#5	STR.	10' - 7"	353
REINFORCING STEEL					LBS. 6,243
CLASS A CONCRETE					
POUR 1 -					
CAP, LOWER PART OF					
WINGS & COLLARS					C.Y. 36.8
POUR 2 -					
UPPER PART OF WINGS					C.Y. 7.5
TOTAL					C.Y. 44.3
PILE DRIVING					
EQUIPMENT SETUP FOR					
HP 12x53 STEEL PILES					EA. 10
HP 12x53 STEEL PILES					
NO. 10					L.F. 250
STEEL PILE POINTS					EA. 10
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: 342+97.24 -L-



8/4/2017

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
INTEGRAL END BENT 2
DETAILS

LEFT LANE

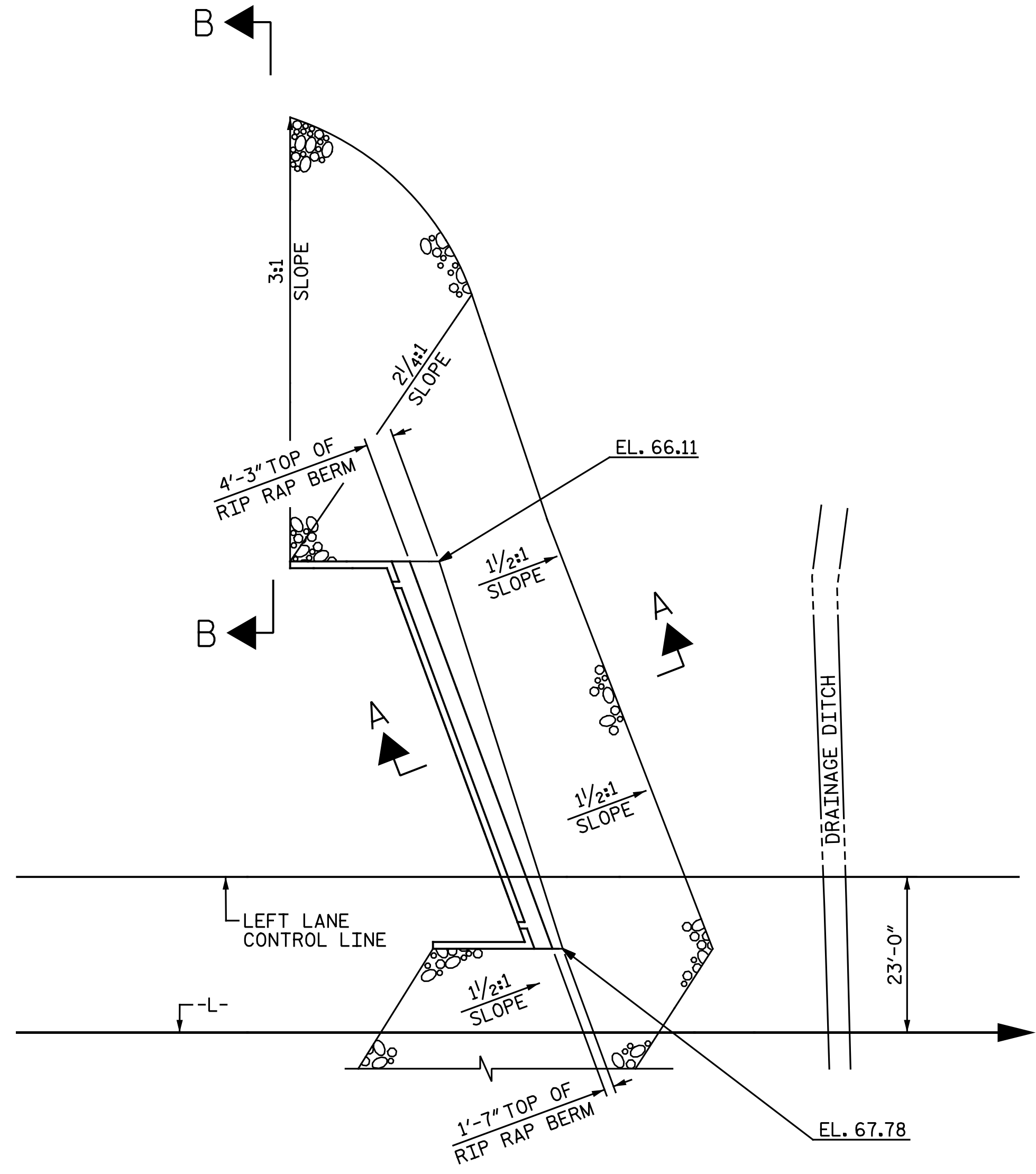
REVISIONS

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

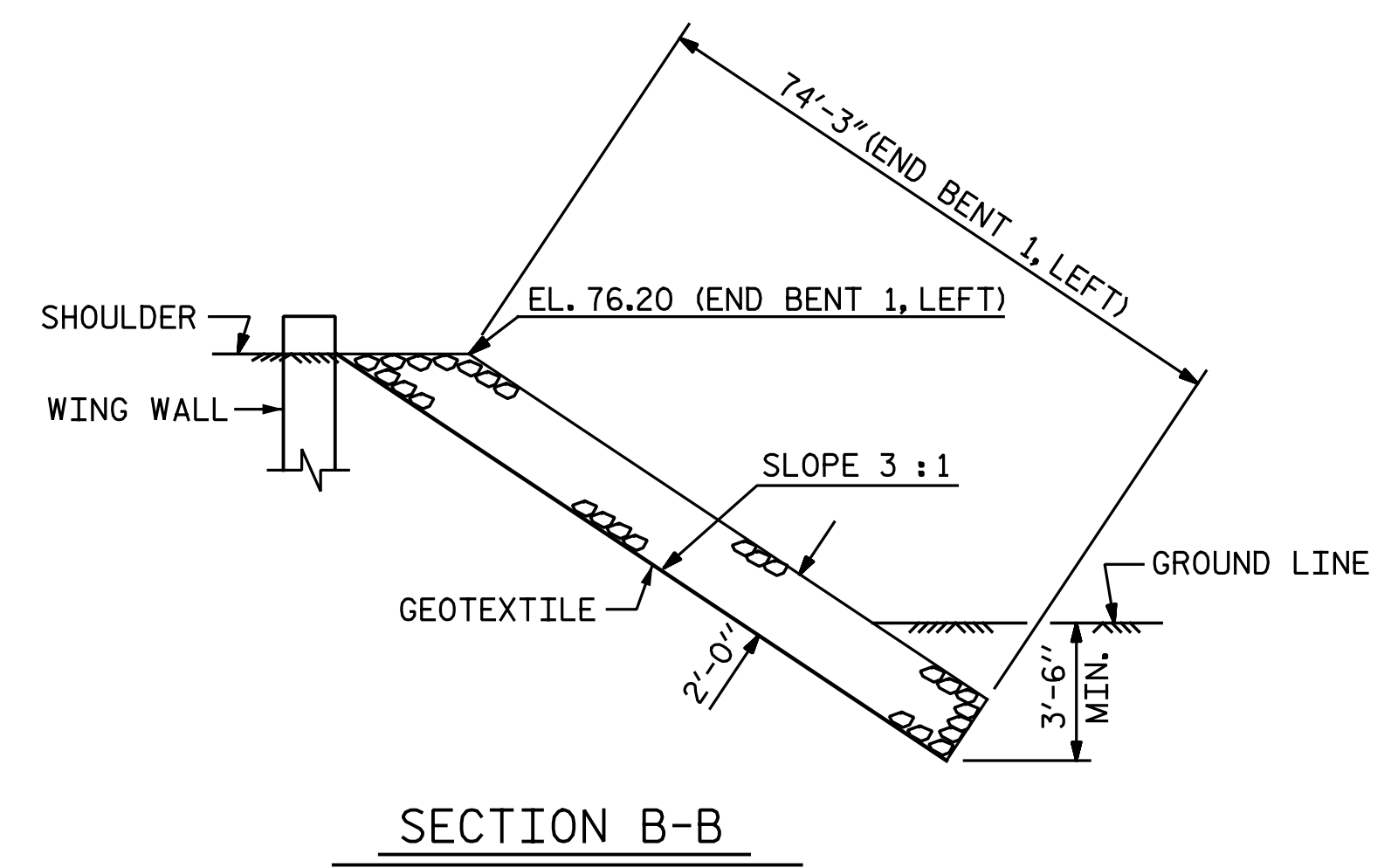
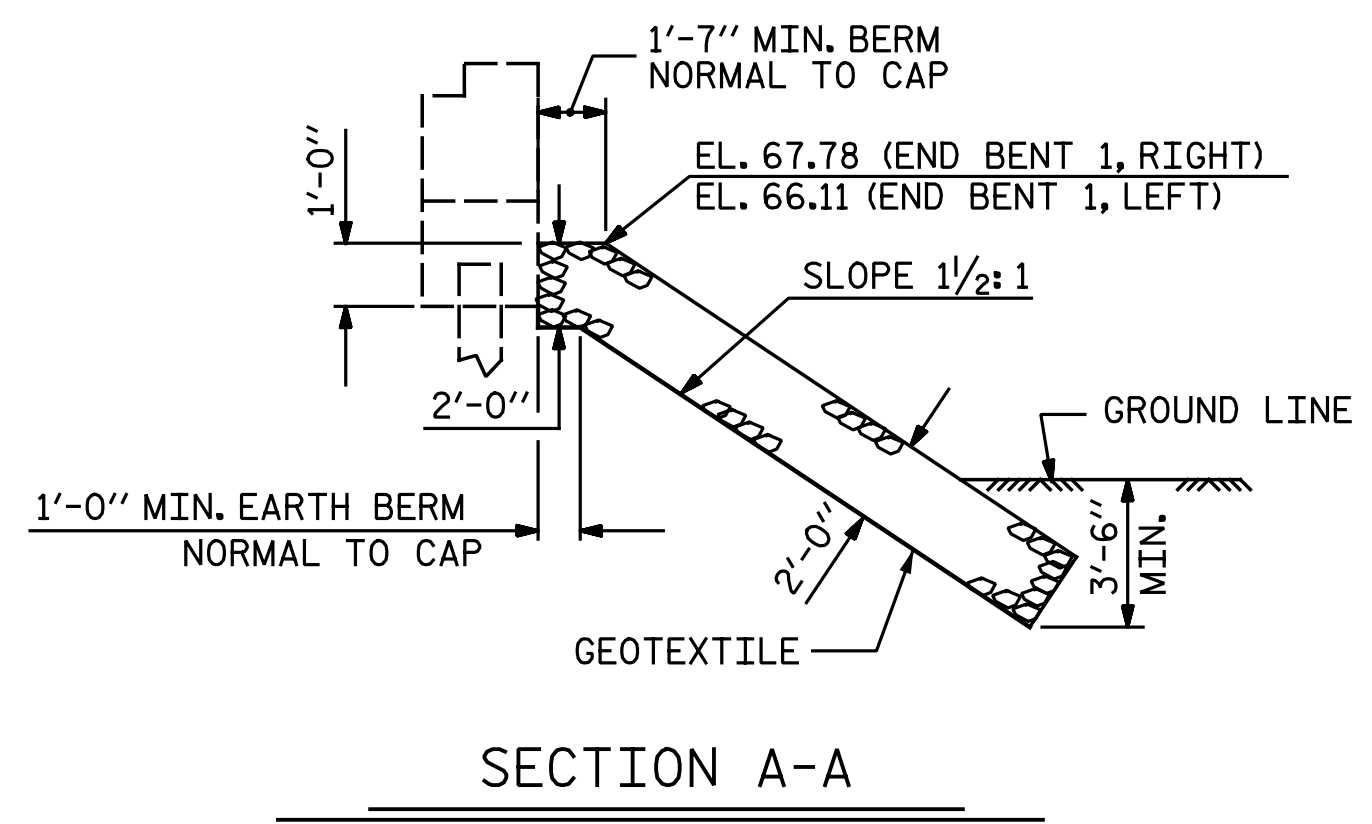
SHEET NO.
S11-24
TOTAL SHEETS
29

DRAWN BY: W. D. MCGREADY DATE: 3-24-17
CHECKED BY: S. H. ROSS DATE: 5-10-17

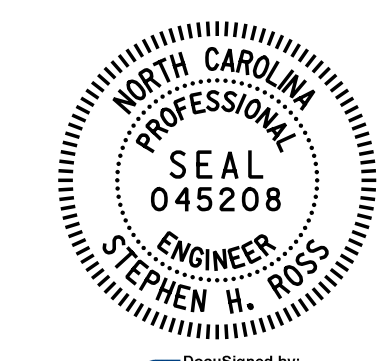
ESTIMATED QUANTITIES		
BRIDGE @ STA. 342+97.24 -L- (LEFT LANE)	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	485	539



END BENT 1
SHOULDER RIP RAP IS HIGHER THAN BERM RIP RAP



PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

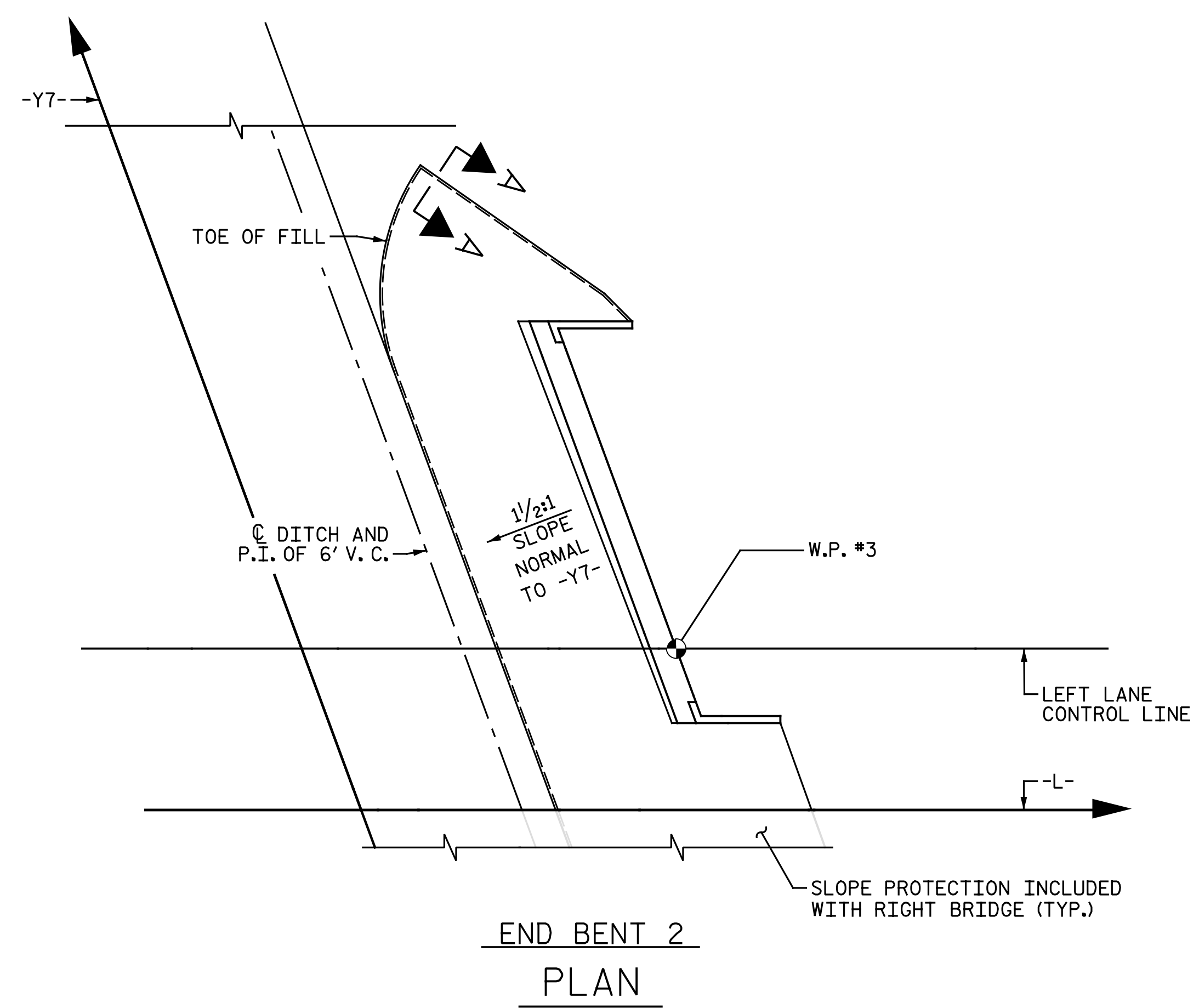
RIP RAP DETAILS

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SII-25
1			3			TOTAL SHEETS
2			4			29

DRAWN BY : W. D. MCGREADY DATE : 2-16-17
 CHECKED BY : S. H. ROSS DATE : 5-10-17

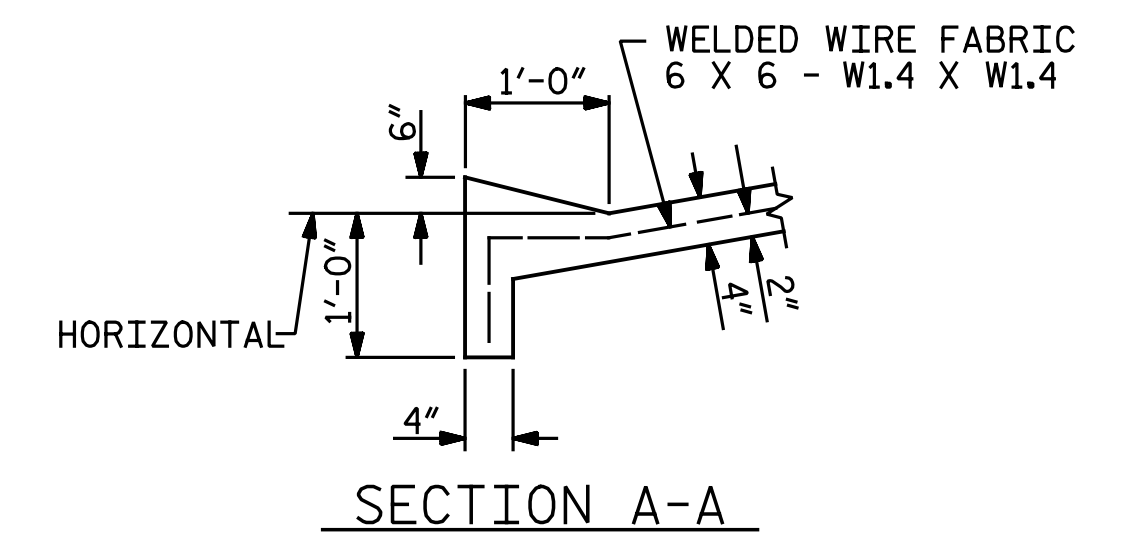
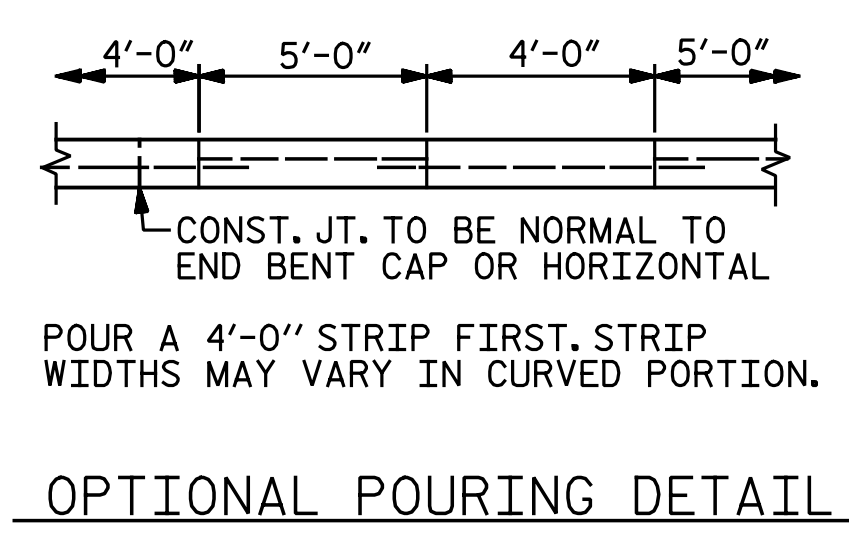
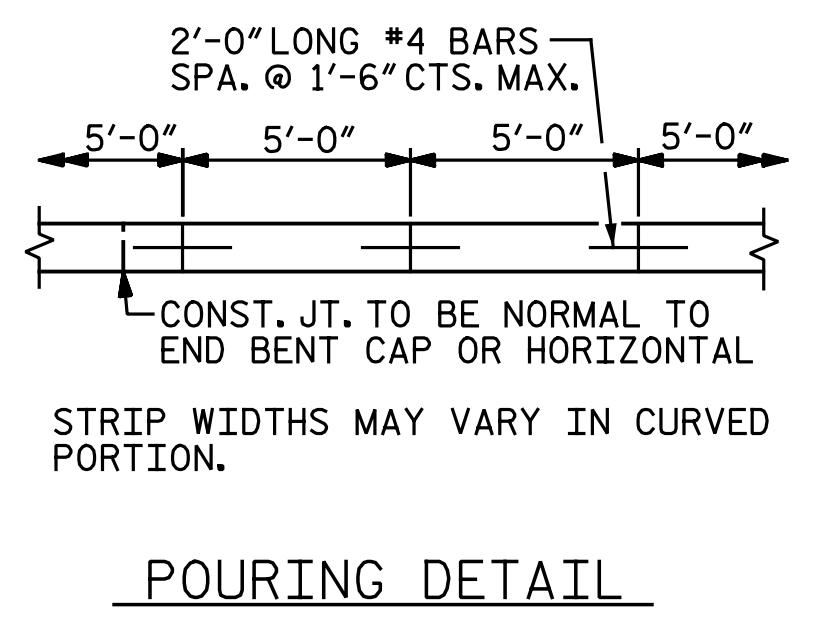
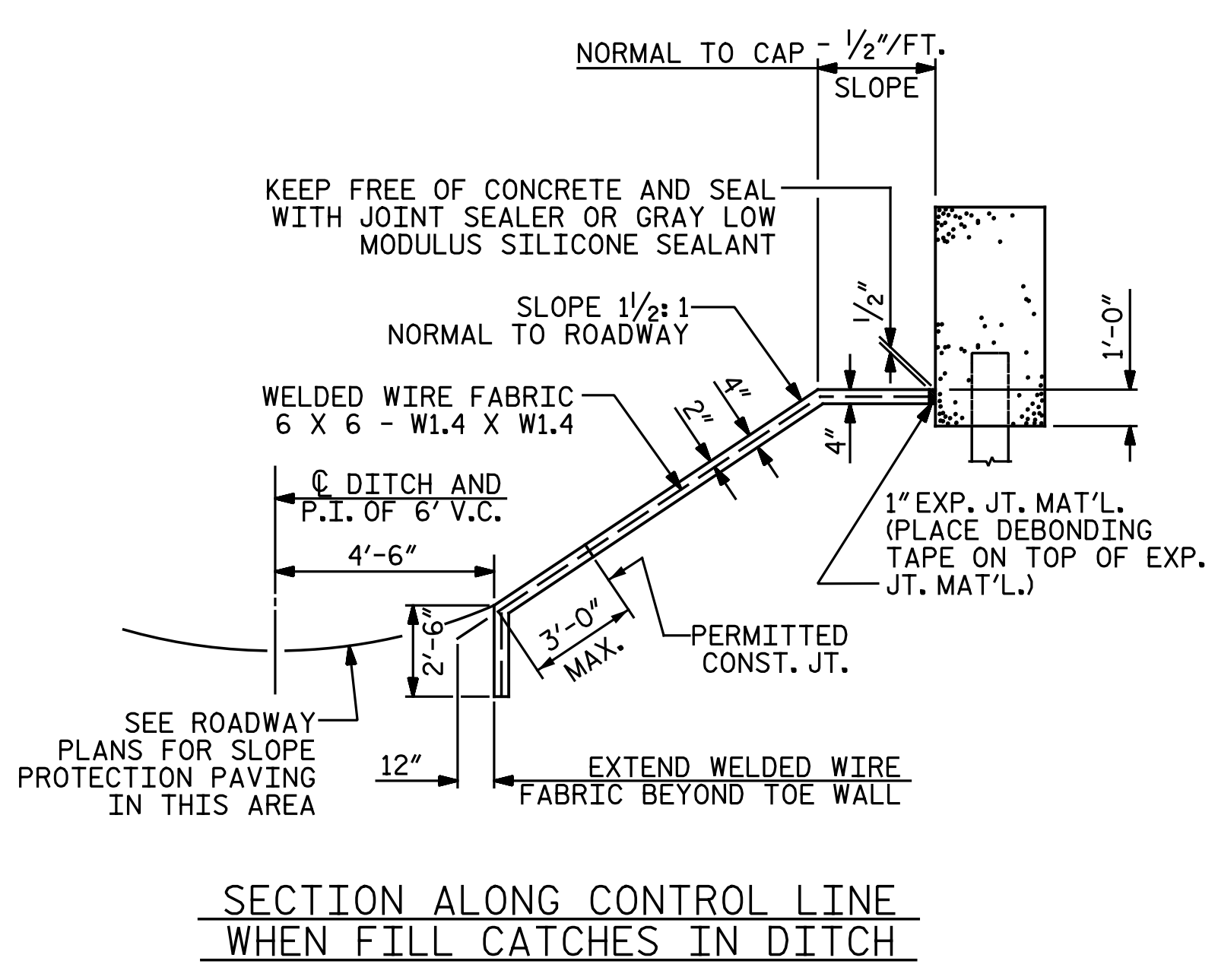
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GENERAL NOTES:
 STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT.
 MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.
 FOR BERM WIDTHS 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. 342+97.24 -L- (LEFT LANE)	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 2	312	895

* QUANTITY SHOWN IS BASED ON 5' POURS.



PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-
 SHEET 1 OF 2



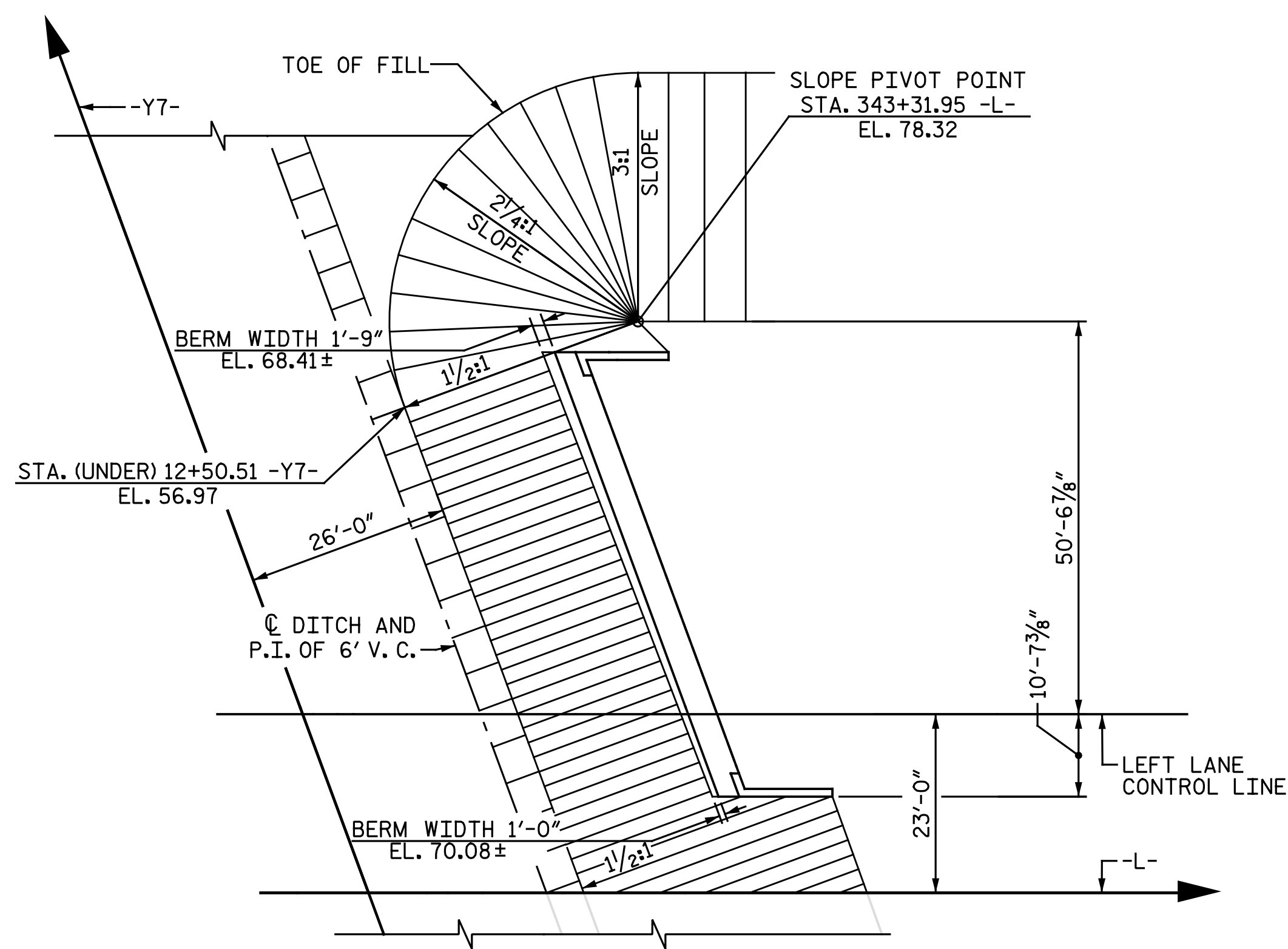
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 SLOPE PROTECTION
 DETAILS
 LEFT LANE

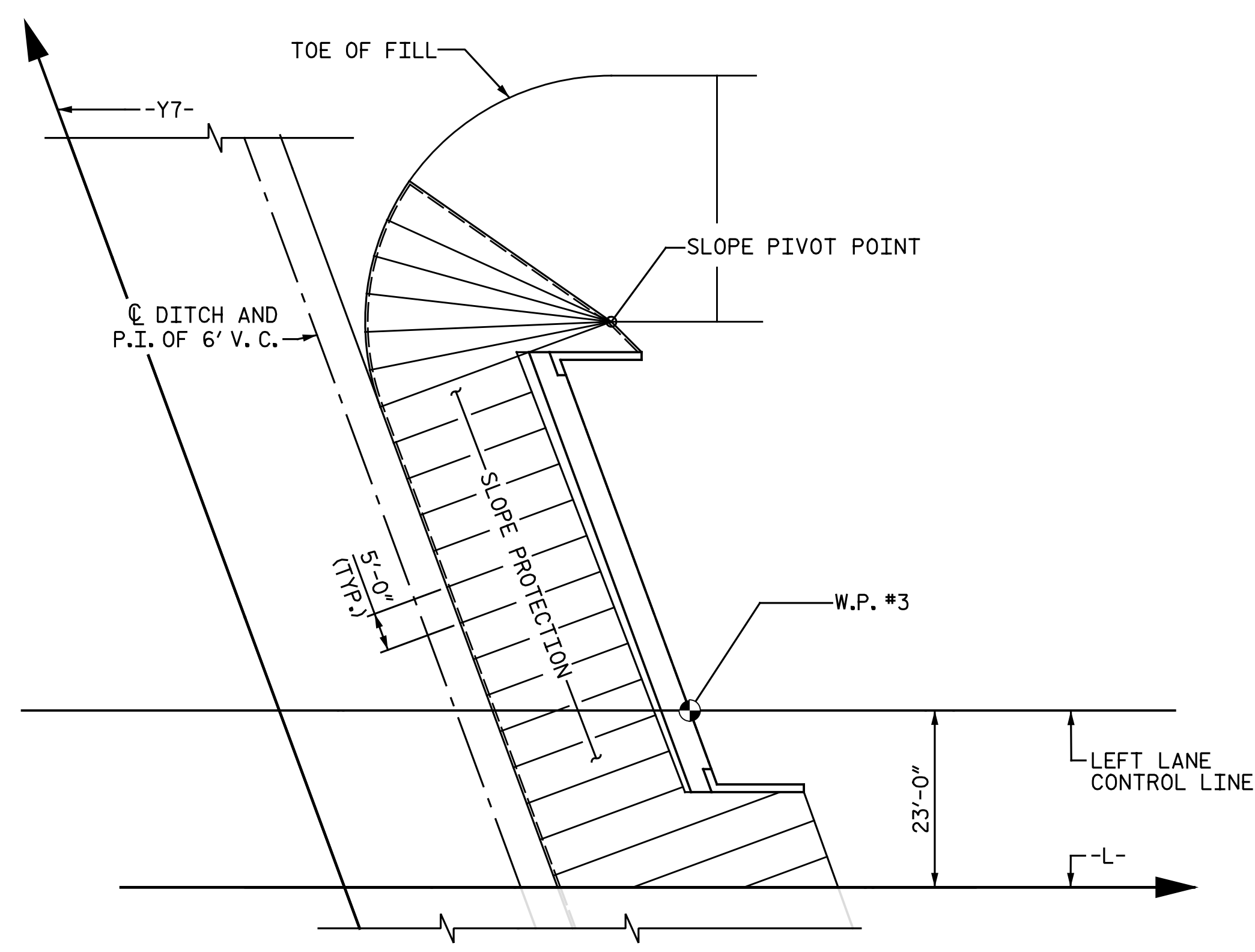
ASSEMBLED BY : W. D. MCGREADY	DATE : 2-21-17
CHECKED BY : S. H. ROSS	DATE : 5-10-17
DRAWN BY : REK 1/84	REV. 5/1/06 MAA/GM
CHECKED BY : RDU 1/84	REV. 10/1/11 MAA/GM
	REV. 1/16 MAA/TGM

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	NO.	DATE
1		3
2		4

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

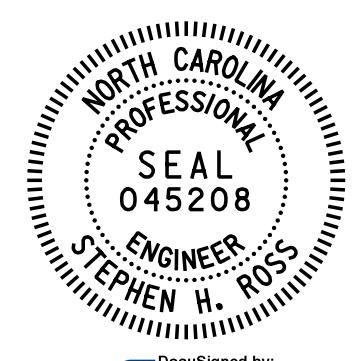


END BENT 2
PLAN - GRADING



END BENT 2
PLAN - CONCRETE PLACEMENT
(1 1/2:1 SLOPE)

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 342+97.24 -L-
SHEET 2 OF 2



8/4/2017

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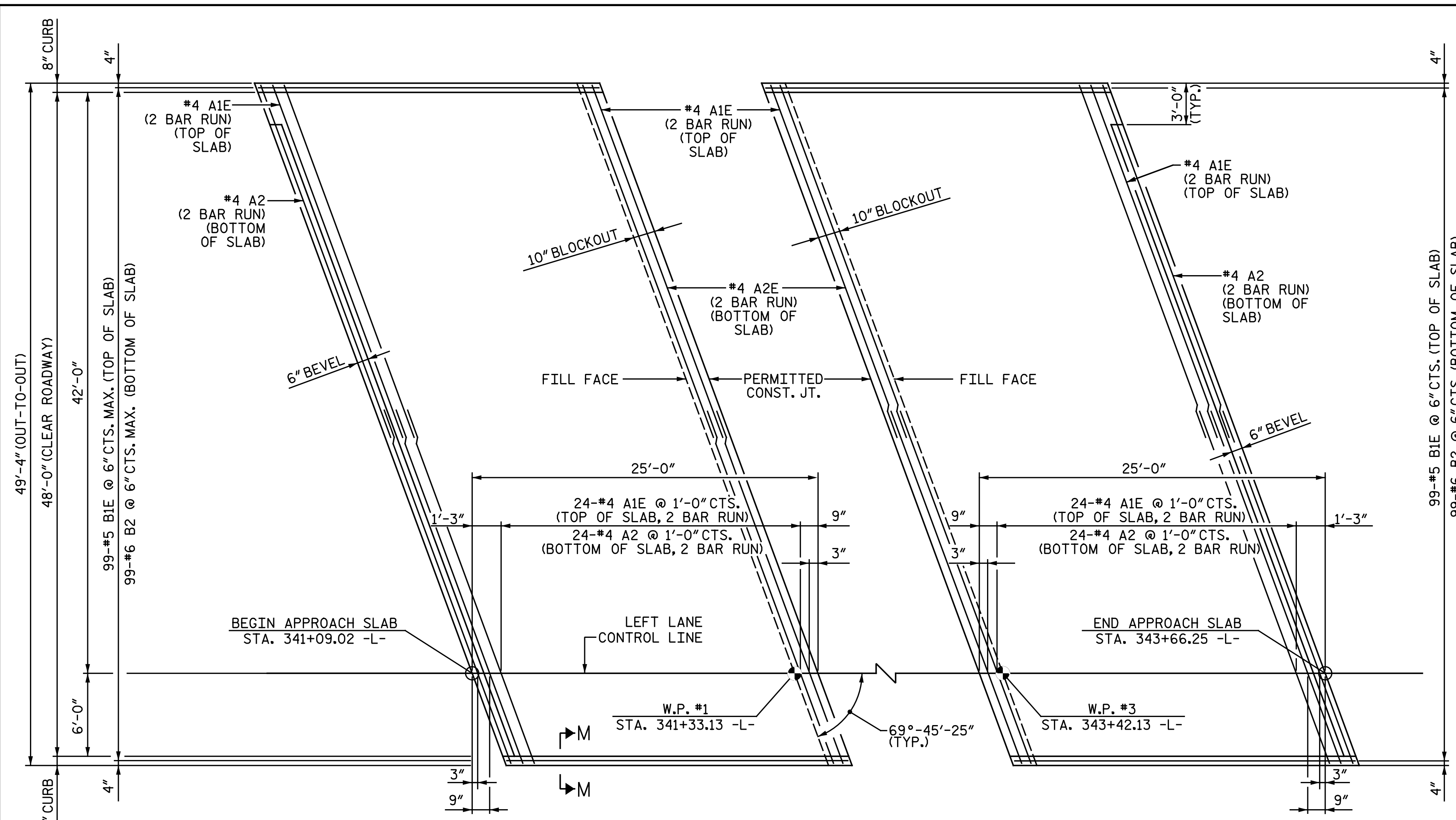
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
SLOPE PROTECTION
DETAILS
LEFT LANE

ASSEMBLED BY : W. D. MCGREADY	DATE : 02-21-17
CHECKED BY : S. H. ROSS	DATE : 05-10-17
DRAWN BY : WJH 10/88	REV. 5/1/06 MAA/GM
CHECKED BY : FCJ 10/88	REV. 10/1/11 MAA/GM
	REV. 1/16 MAA/TGM

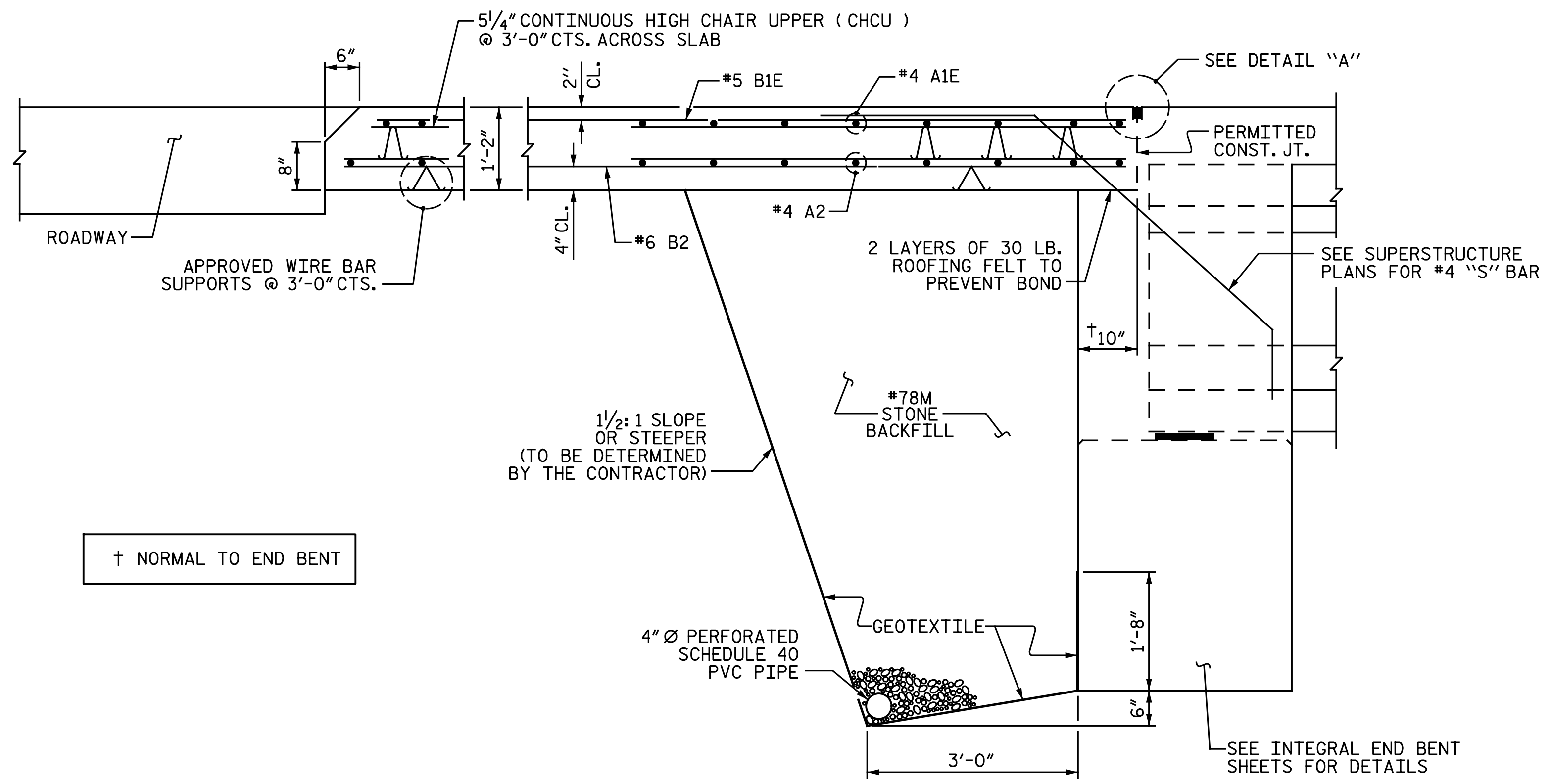
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2			4			29

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



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.

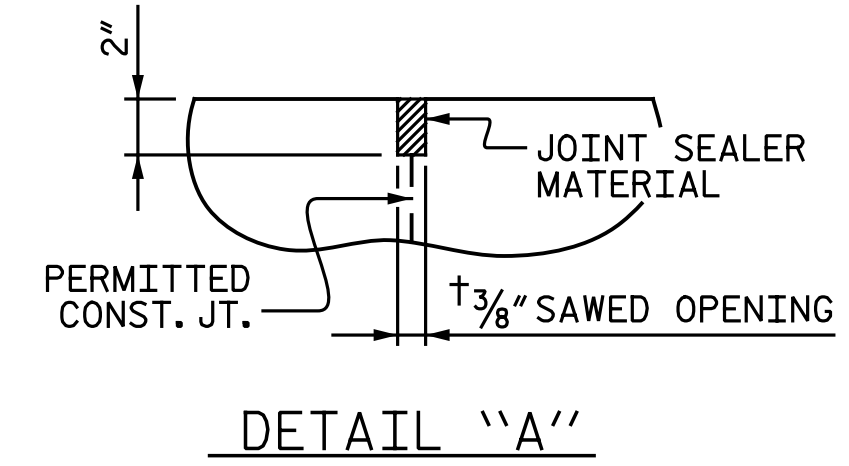
FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

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

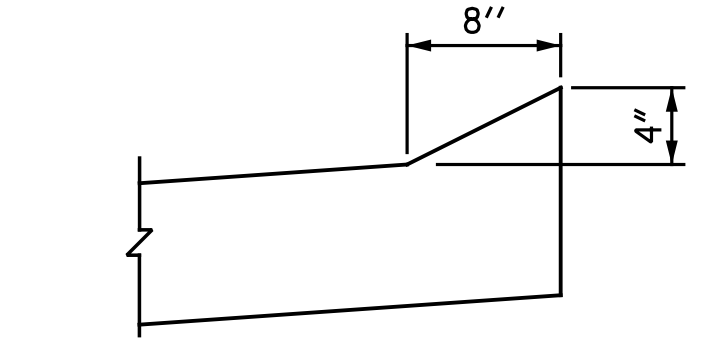
*78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

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

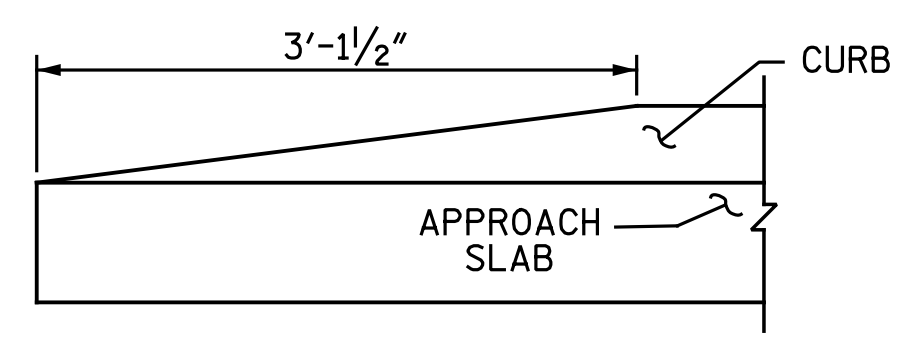
FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.



DETAIL "A"



SECTION M-M



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	27' - 2"	944
A2	52	#4	STR	27' - 0"	938
B1E	99	#5	STR	24' - 2"	2,495
B2	99	#6	STR	24' - 8"	3,668
EPOXY COATED REINFORCING STEEL				LBS.	3,439
REINFORCING STEEL				LBS.	4,606
CLASS AA CONCRETE				C.Y.	53.1

BILL OF MATERIAL					
APPROACH SLAB AT END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	52	#4	STR	27' - 2"	944
A2	52	#4	STR	27' - 0"	938
B1E	99	#5	STR	24' - 2"	2,495
B2	99	#6	STR	24' - 8"	3,668
EPOXY COATED REINFORCING STEEL				LBS.	3,439
REINFORCING STEEL				LBS.	4,606
CLASS AA CONCRETE				C.Y.	53.1

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

DRAWN BY : W. D. MCGREADY DATE : 01-25-17
 CHECKED BY : S. H. ROSS DATE : 05-10-17

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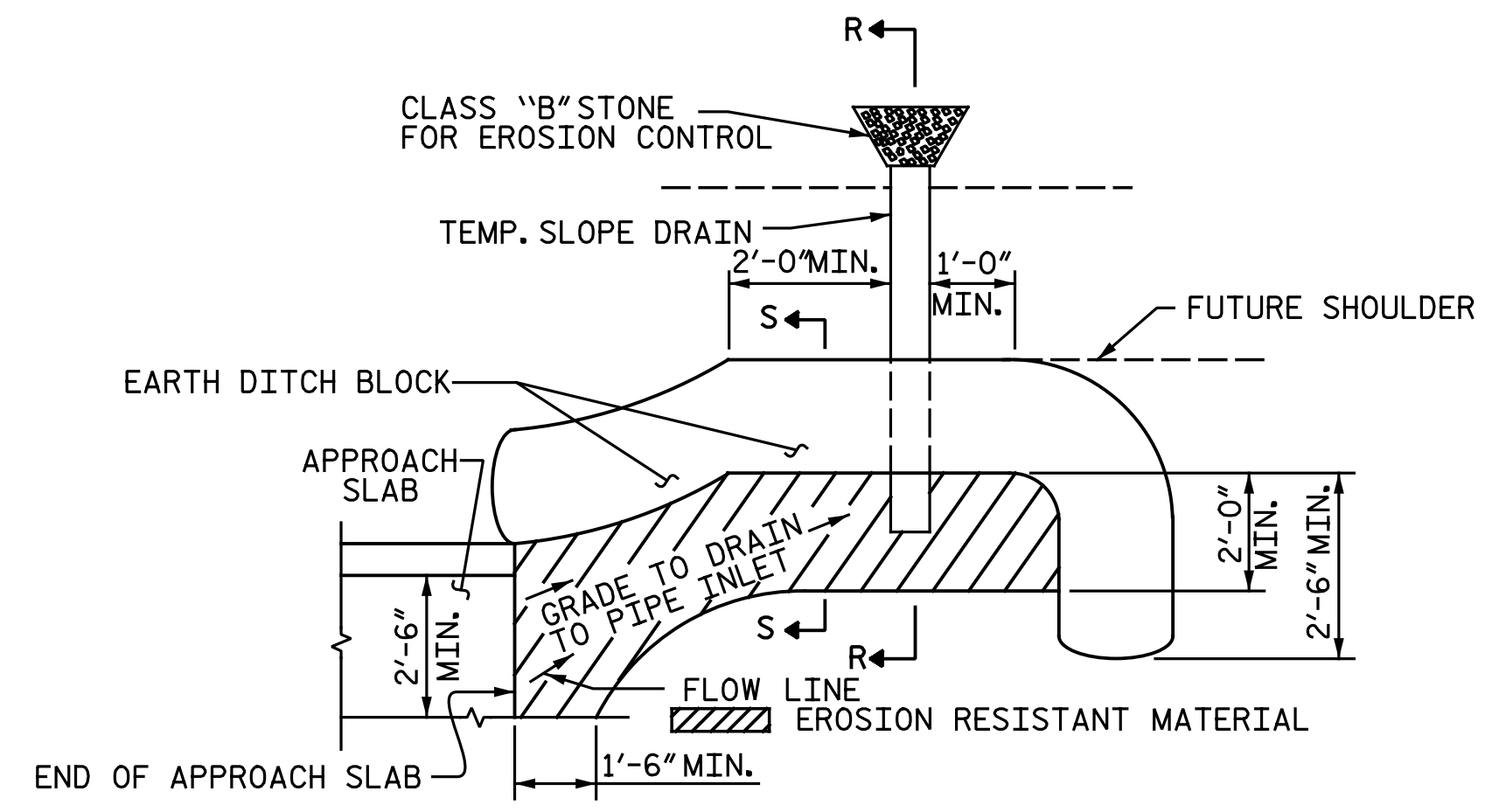
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 LENOIR COUNTY
 STATION: 342+97.24 -L-

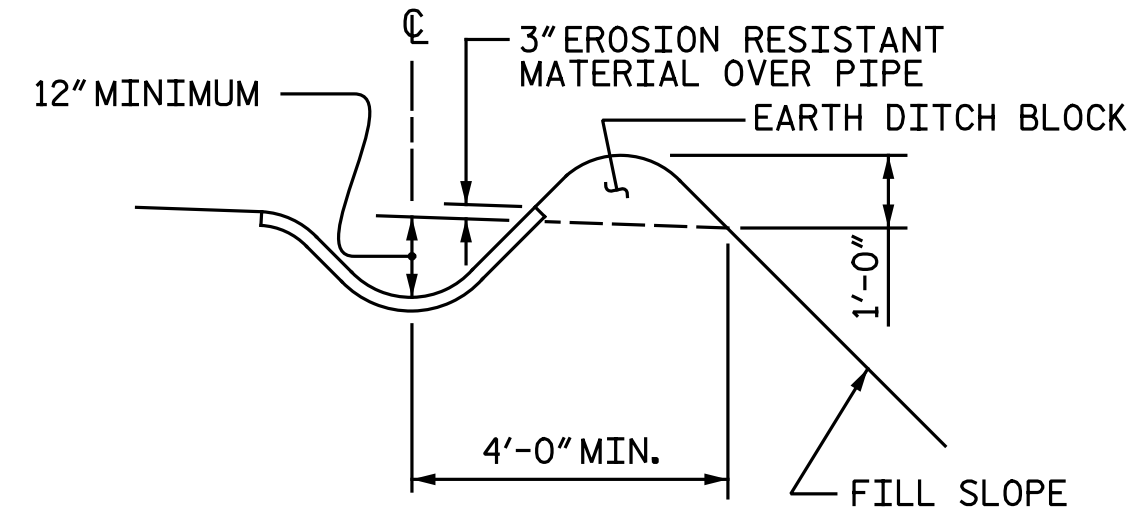
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT					
LEFT LANE					
REVISIONS					
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1			3		
2			4		

SHEET NO. SII-28	
TOTAL SHEETS 29	

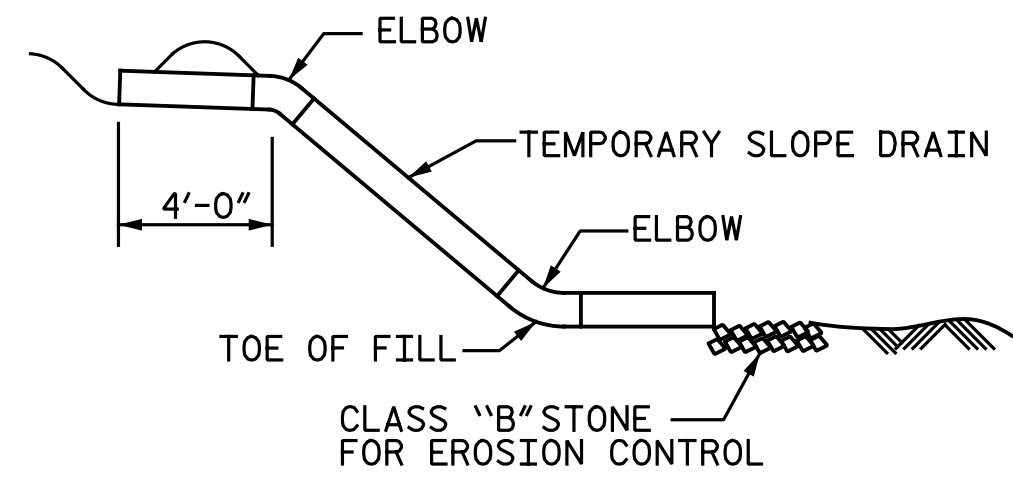


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW

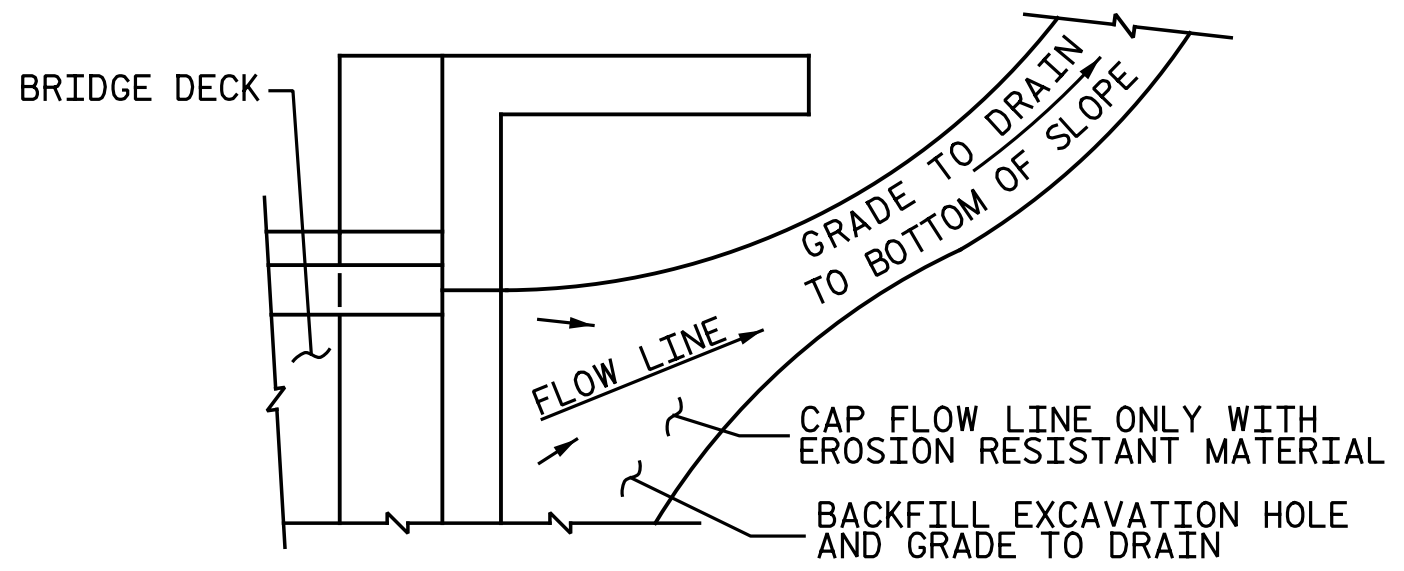


SECTION S-S



SECTION R-R

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

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LENOIR COUNTY
 STATION: 342+97.24 -L-



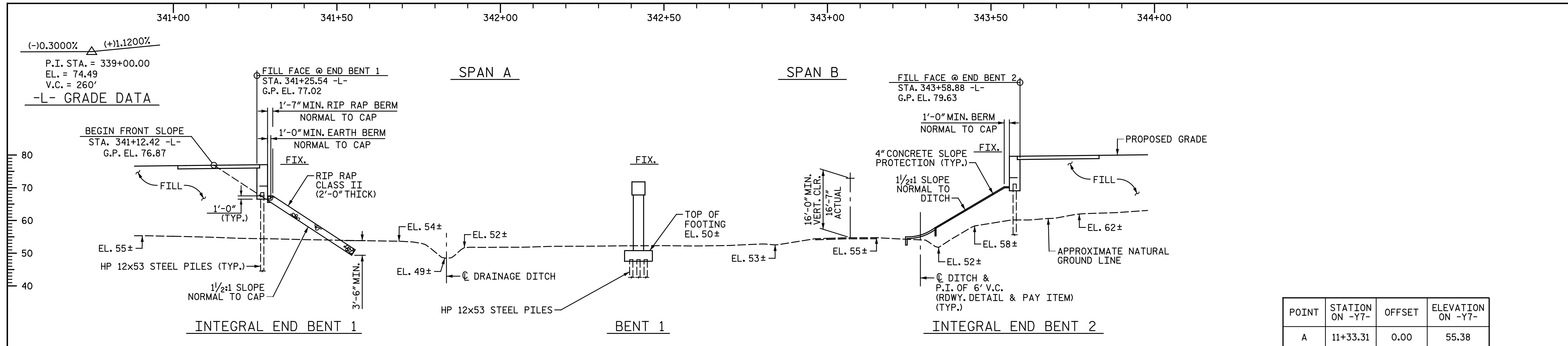
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 DETAILS
 LEFT LANE

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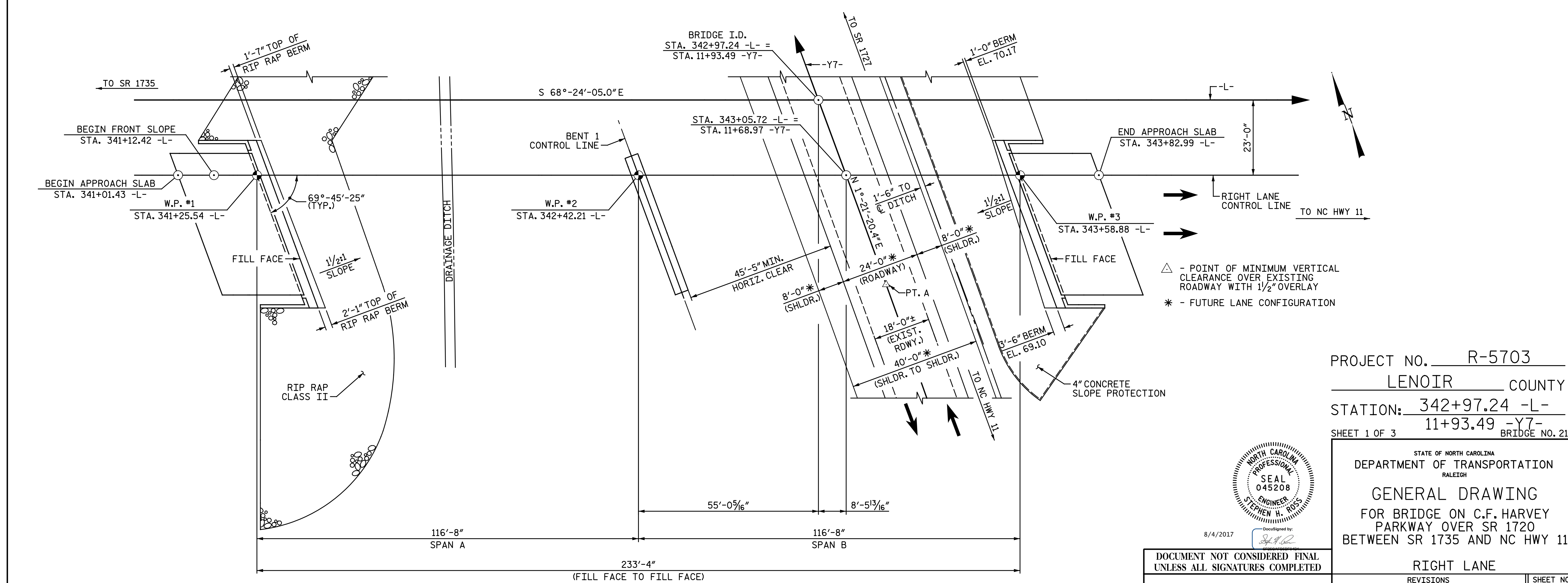
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1			3			TOTAL SHEETS
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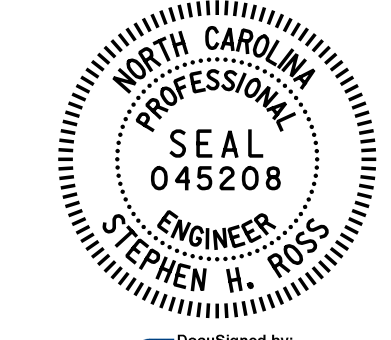
ASSEMBLED BY : W. D. MCGREADY	DATE : 1-20-17
CHECKED BY : S. H. ROSS	DATE : 05-10-17
DRAWN BY : FCJ 11/88	REV. 10/11/11 MAA/GM
CHECKED BY : ARB 11/88	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM



SECTION ALONG RIGHT LANE CONTROL LINE
(END BENTS & BENT ON SECTION AT RIGHT ANGLES TO END BENTS & BENT)



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LENOIR COUNTY
 STATION: 342+97.24 -L-
11+93.49 -Y7- BRIDGE NO. 219
 SHEET 1 OF 3



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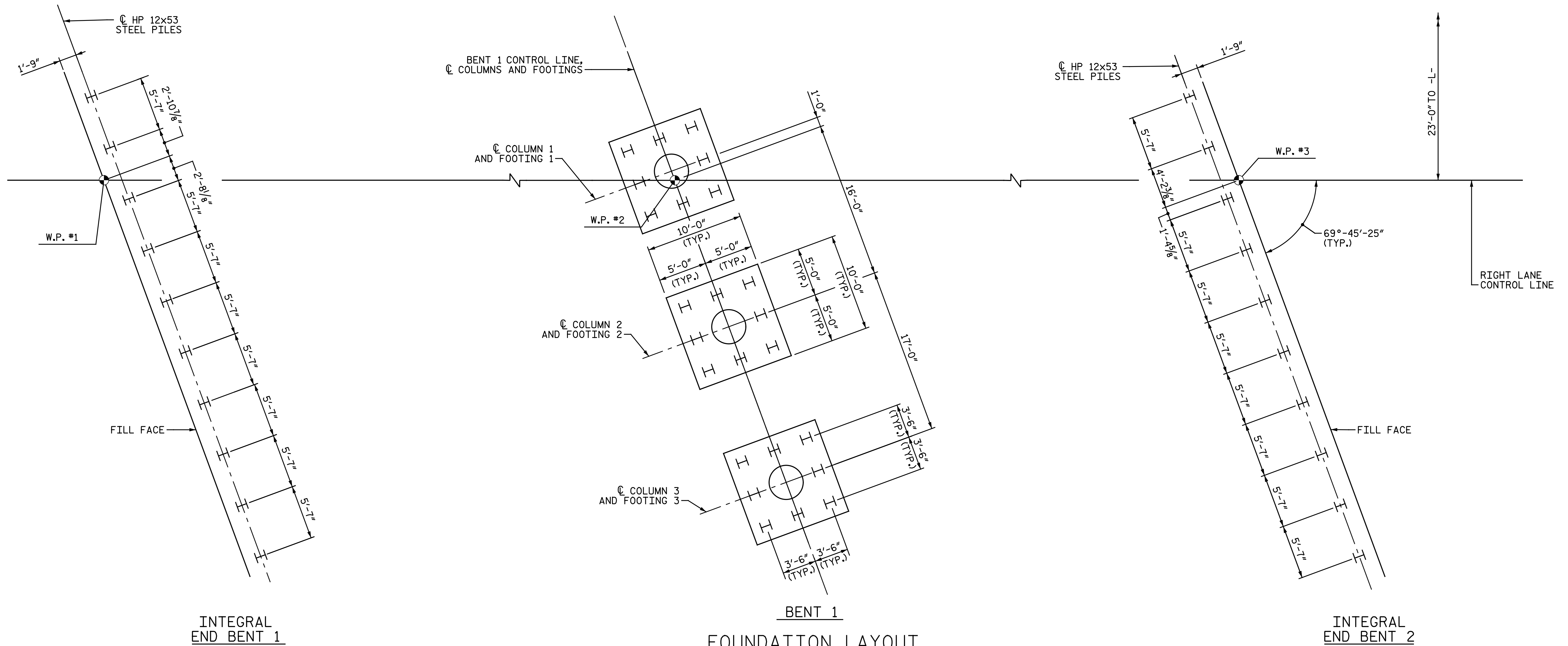
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON C.F. HARVEY
 PARKWAY OVER SR 1720
 BETWEEN SR 1735 AND NC HWY 11
RIGHT LANE

DRAWN BY: M. D. MAYHEW DATE: 1-3-17
 CHECKED BY: S. H. ROSS DATE: 5-10-17

PLAN
(PILES NOT SHOWN FOR CLARITY)

REVISIONS		SHEET NO.	
NO.	DATE	NO.	DATE
1		3	
2		4	

TOTAL SHEETS: 29



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINES.

ALL INTERIOR BENT PILES ARE HP 12x53 STEEL 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 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE.

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

PILES AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILE.

DRIVE PILES AT BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 195 TONS PER PILE.

PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE.

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

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO.1, BENT NO.1, AND END BENT NO.2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

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, 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 450-3D(2) OF THE STANDARD SPECIFICATIONS.

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

DRILLED-IN PILES ARE REQUIRED FOR BENT NO.1 EXCAVATE HOLES AT PILE LOCATIONS TO ELEVATION 36.0 FT. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

CONTRACTOR SHALL STAGGER EXCAVATIONS SUCH THAT ADJACENT HOLES ARE NOT OPEN SIMULTANEOUSLY.

CONCRETE OR GROUT IS REQUIRED TO FILL HOLES FOR PILE EXCAVATION AT BENT NO.1

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.

PROJECT NO. R-5703

LENOIR COUNTY

STATION: 342+97.24 -L-

11+93.49 -Y7-

SHEET 2 OF 3



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON C.F. HARVEY
PARKWAY OVER SR 1720
BETWEEN SR 1735 AND NC HWY 11
RIGHT LANE

DRAWN BY : P. SMITH DATE : 4-4-17

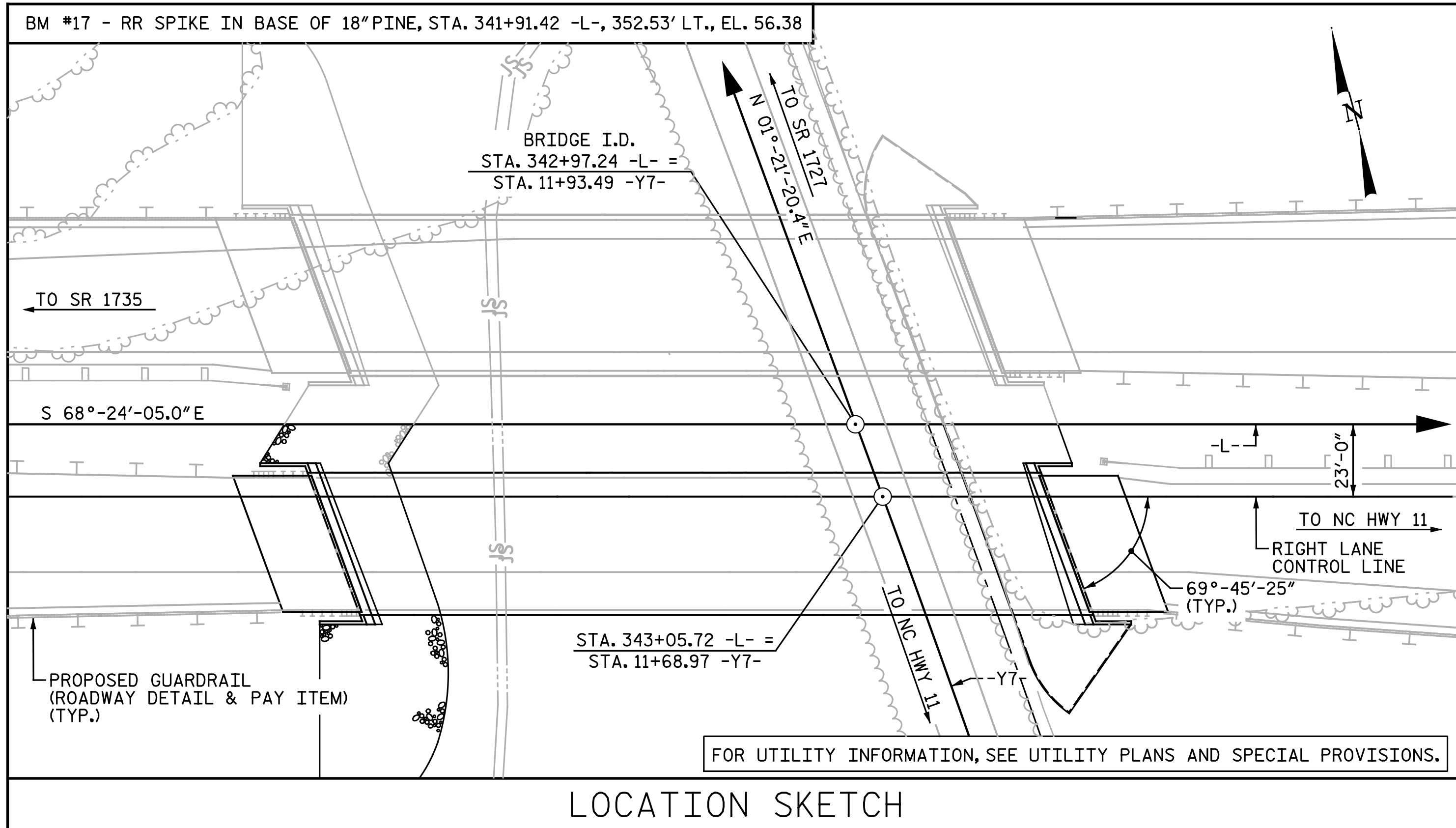
CHECKED BY : S. H. ROSS DATE : 5-10-17

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NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			TOTAL SHEETS
2			4			29



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(S) AND CLEARANCE(S) SHOWN ON THE PLANS AT THE POINT(S) OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATION(S) 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	FOUNDATION EXCAVATION FOR BENT 1	PILE EXCAVATION IN SOIL	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	MODIFIED 63" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	HP 12x53 STEEL PILES		STEEL PILE POINTS	PILE REDRIVES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	
										NO.	LIN. FT.		EA.	NO.								LIN. FT.
SUPERSTRUCTURE	LUMP SUM			10,559	10,900					10	1151							463.11				LUMP SUM
END BENT 1						43.3		7,741				10	10	750	10	5				523	581	
BENT 1	LUMP SUM	240				91.3		13,728	1,387			24	24	360	24	12						
END BENT 2						41.0		5,582				10	10	250	10	5			301			
TOTAL	LUMP SUM	240	1	10,559	10,900	175.6	LUMP SUM	27,051	1,387	10	1151	44	44	1,360	44	22		463.11	301	523	581	LUMP SUM

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-
11+93.49 -Y7-
 SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON C.F. HARVEY
 PARKWAY OVER SR 1720
 BETWEEN SR 1735 AND NC HWY 11

9/13/2017
 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

RIGHT LANE

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			29

DRAWN BY : J. R. METZ DATE : 9-11-17
 CHECKED BY : S. H. ROSS DATE : 9-12-17

LOAD FACTORS:

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						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	1.08	--	1.75	0.876	1.51	A / B	1	56.80	0.924	1.16	A / B	1	33.80	1.00	0.876	1.08	A / B	1	56.80	1,2	
	HL-93 (OPERATING)	N/A		1.81	--	1.35	0.876	1.96	A / B	1	56.80	0.964	1.81	A / B	3	22.30	N/A	-	-	-	-	-	-	2
	HS-20 (INVENTORY)	36.000	2	1.55	55.80	1.75	0.876	2.17	A / B	1	56.80	0.964	1.87	A / B	3	22.30	1.00	0.876	1.55	A / B	1	56.80	1,2	
	HS-20 (OPERATING)	36.000		2.48	89.28	1.35	0.876	2.82	A / B	1	56.80	0.964	2.48	A / B	3	22.30	N/A	-	-	-	-	-	-	2
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH		3.73	50.36	1.40	0.876	6.55	A / B	1	56.80	0.964	6.16	A / B	3	22.30	1.00	0.876	3.73	A / B	1	56.80	1,2	
		SNGARBS2	20.000		2.68	53.60	1.40	0.876	4.70	A / B	1	56.80	0.964	4.25	A / B	3	22.30	1.00	0.876	2.68	A / B	1	56.80	1,2
		SNAGRIS2	22.000		2.49	54.78	1.40	0.876	4.37	A / B	1	56.80	0.964	3.91	A / B	3	22.30	1.00	0.876	2.49	A / B	1	56.80	1,2
		SNCOTTS3	27.250		1.86	50.69	1.40	0.876	3.25	A / B	1	56.80	0.964	2.97	A / B	3	22.30	1.00	0.876	1.86	A / B	1	56.80	1,2
		SNAGGRS4	34.925		1.51	52.74	1.40	0.876	2.65	A / B	1	56.80	0.964	2.38	A / B	3	22.30	1.00	0.876	1.51	A / B	1	56.80	1,2
		SNS5A	35.550		1.48	52.61	1.40	0.876	2.59	A / B	1	56.80	0.964	2.39	A / B	3	22.30	1.00	0.876	1.48	A / B	1	56.80	1,2
		SNS6A	39.950		1.34	53.53	1.40	0.876	2.35	A / B	1	56.80	0.964	2.15	A / B	3	22.30	1.00	0.876	1.34	A / B	1	56.80	1,2
		SNS7B	42.000		1.28	53.76	1.40	0.876	2.24	A / B	1	56.80	0.964	2.08	A / B	3	91.40	1.00	0.876	1.28	A / B	1	56.80	1,2
	TRUCK TRACTOR SEMI-TRAILER (T/S)	TNAGRIT3	33.000		1.63	53.79	1.40	0.876	2.86	A / B	1	56.80	0.964	2.61	A / B	3	22.30	1.00	0.876	1.63	A / B	1	56.80	1,2
		TNT4A	33.075		1.63	53.91	1.40	0.876	2.86	A / B	1	56.80	0.964	2.56	A / B	3	22.30	1.00	0.876	1.63	A / B	1	56.80	1,2
		TNT6A	41.600		1.32	54.91	1.40	0.876	2.32	A / B	1	56.80	0.964	2.19	A / B	3	22.30	1.00	0.876	1.32	A / B	1	56.80	1,2
		TNT7A	42.000		1.32	55.44	1.40	0.876	2.31	A / B	1	56.80	0.964	2.15	A / B	3	22.30	1.00	0.876	1.32	A / B	1	56.80	1,2
		TNT7B	42.000		1.35	56.70	1.40	0.876	2.36	A / B	1	56.80	0.964	2.05	A / B	3	22.30	1.00	0.876	1.35	A / B	1	56.80	1,2
		TNAGRIT4	43.000		1.29	55.47	1.40	0.876	2.27	A / B	1	56.80	0.964	1.98	A / B	3	22.30	1.00	0.876	1.29	A / B	1	56.80	1,2
		TNAGT5A	45.000		1.23	55.35	1.40	0.876	2.15	A / B	1	56.80	0.964	1.94	A / B	3	22.30	1.00	0.876	1.23	A / B	1	56.80	1,2
		TNAGT5B	45.000	3	1.22	54.90	1.40	0.876	2.14	A / B	1	56.80	0.964	1.88	A / B	3	22.30	1.00	0.876	1.22	A / B	1	56.80	1,2

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)

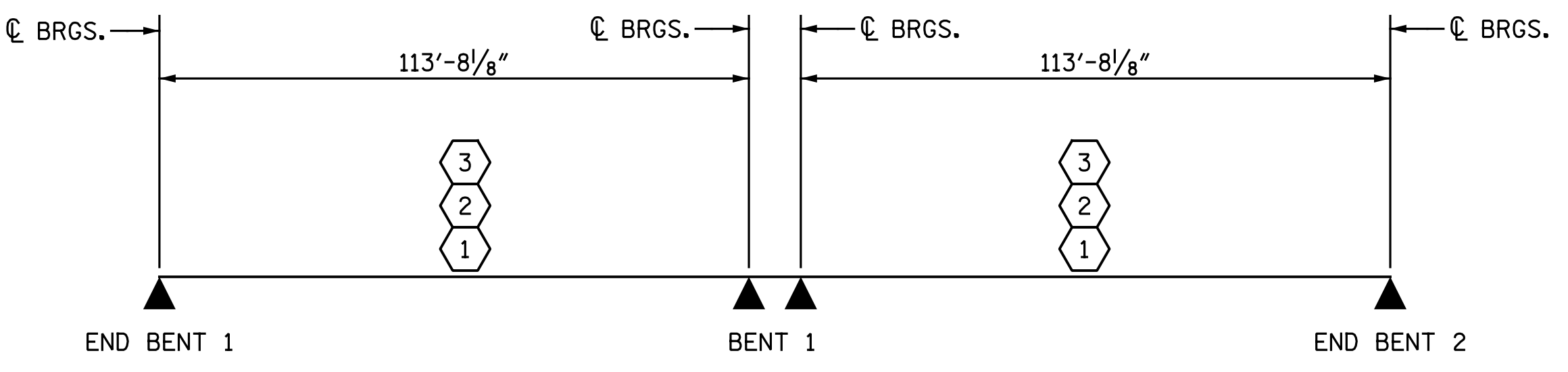
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

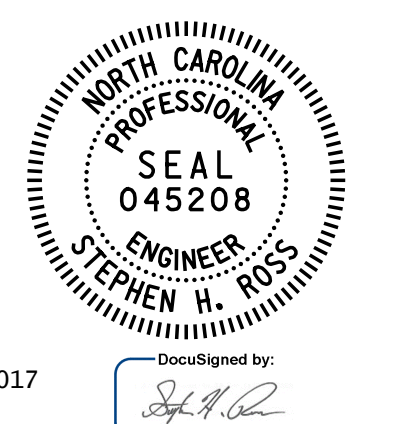
** SEE CHART FOR VEHICLE TYPE

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.



PROJECT NO. R-5703
 LENOIR COUNTY
 STATION: 342+97.24 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

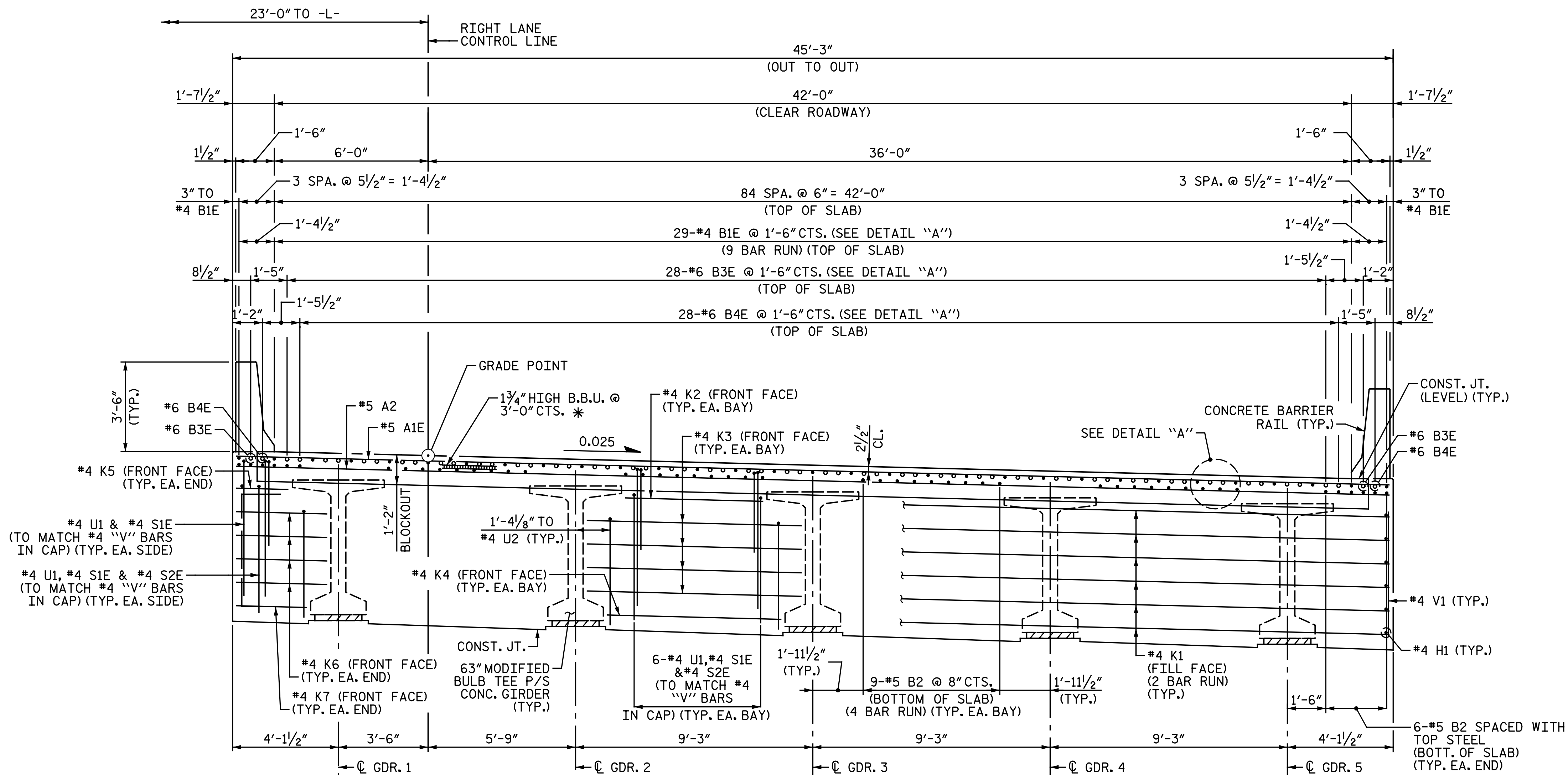
STANDARD
 LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE GIRDERS
 (NON-INTERSTATE TRAFFIC)
 RIGHT LANE

DOCUMENT NOT CONSIDERED FINAL
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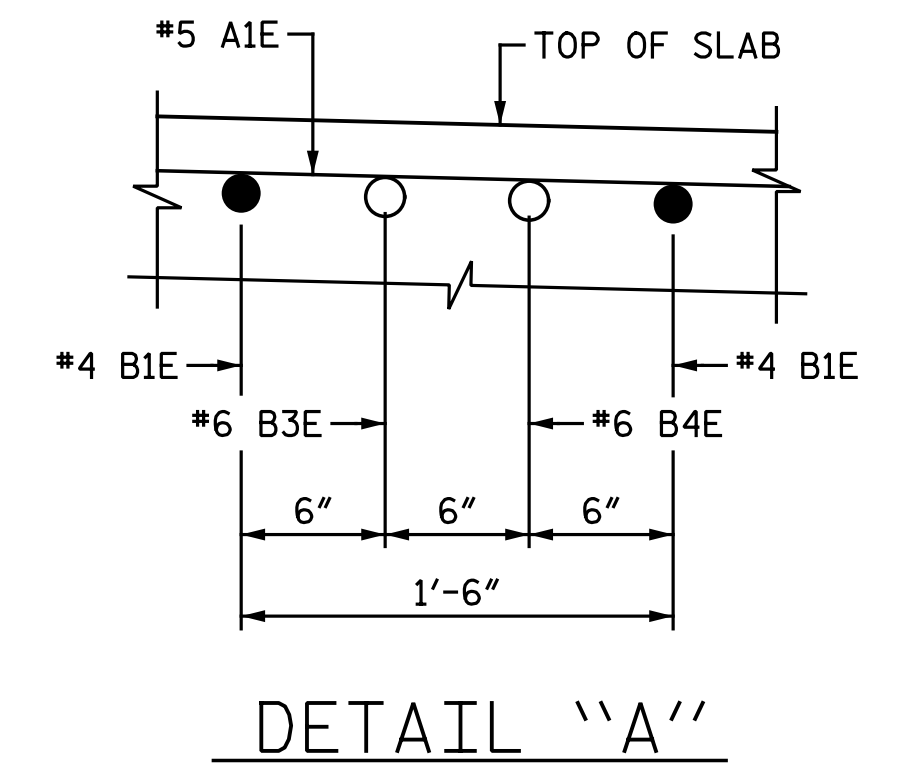
ASSEMBLED BY: B. A. MURRAH DATE: 4-27-17
 CHECKED BY: S. H. ROSS DATE: 5-10-17

DRAWN BY: MAA 1/08 REV. 11/2/08RR MAA/GM
 CHECKED BY: GM/DI 2/08 REV. 10/1/11 MAA/GM

REVISIONS		SHEET NO.	
NO.	BY:	DATE:	SHEET NO.
1			SI2-4
2			TOTAL SHEETS 29



TYPICAL SECTION AT INTEGRAL END BENT
(END BENT 1 SHOWN, END BENT 2 SIMILAR)



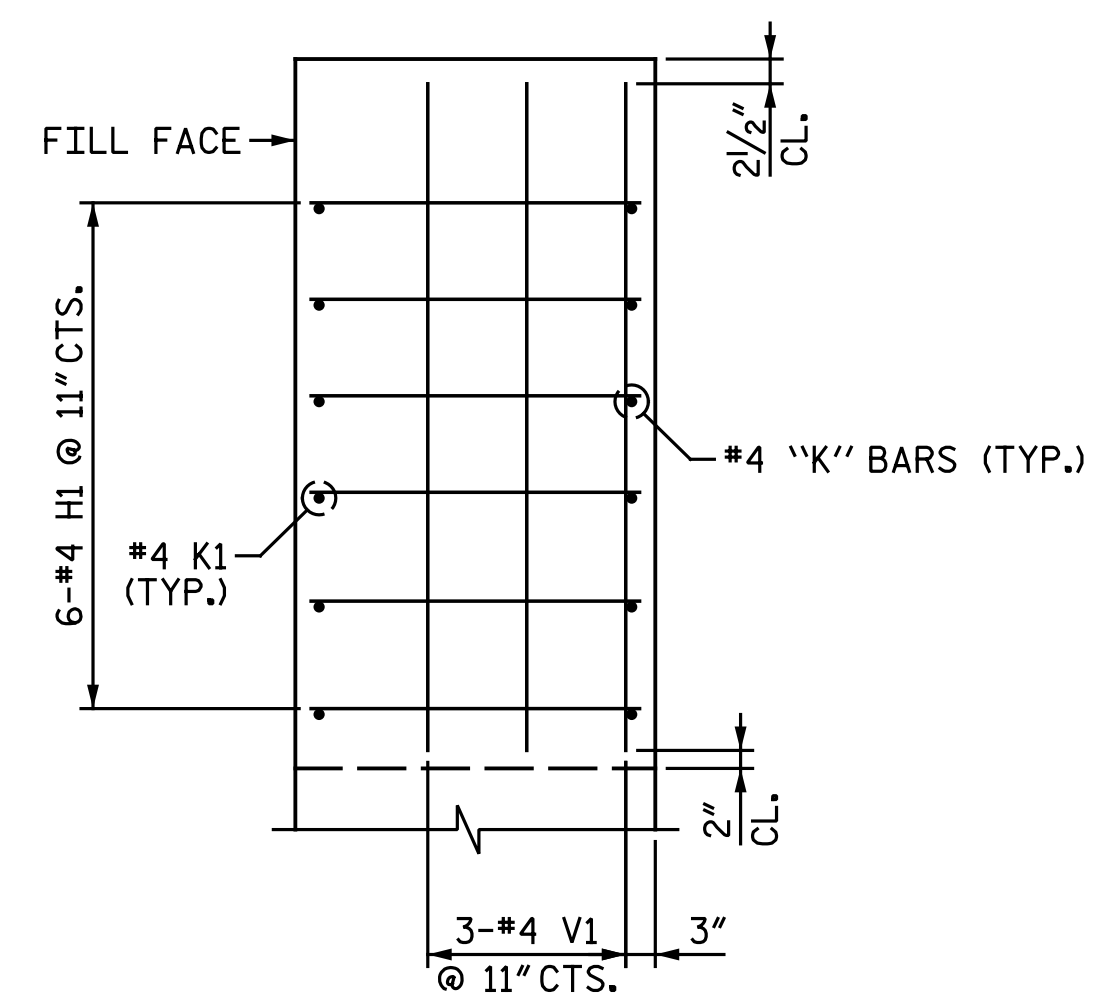
DETAIL "A"

NOTES:
PROVIDE 1 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.

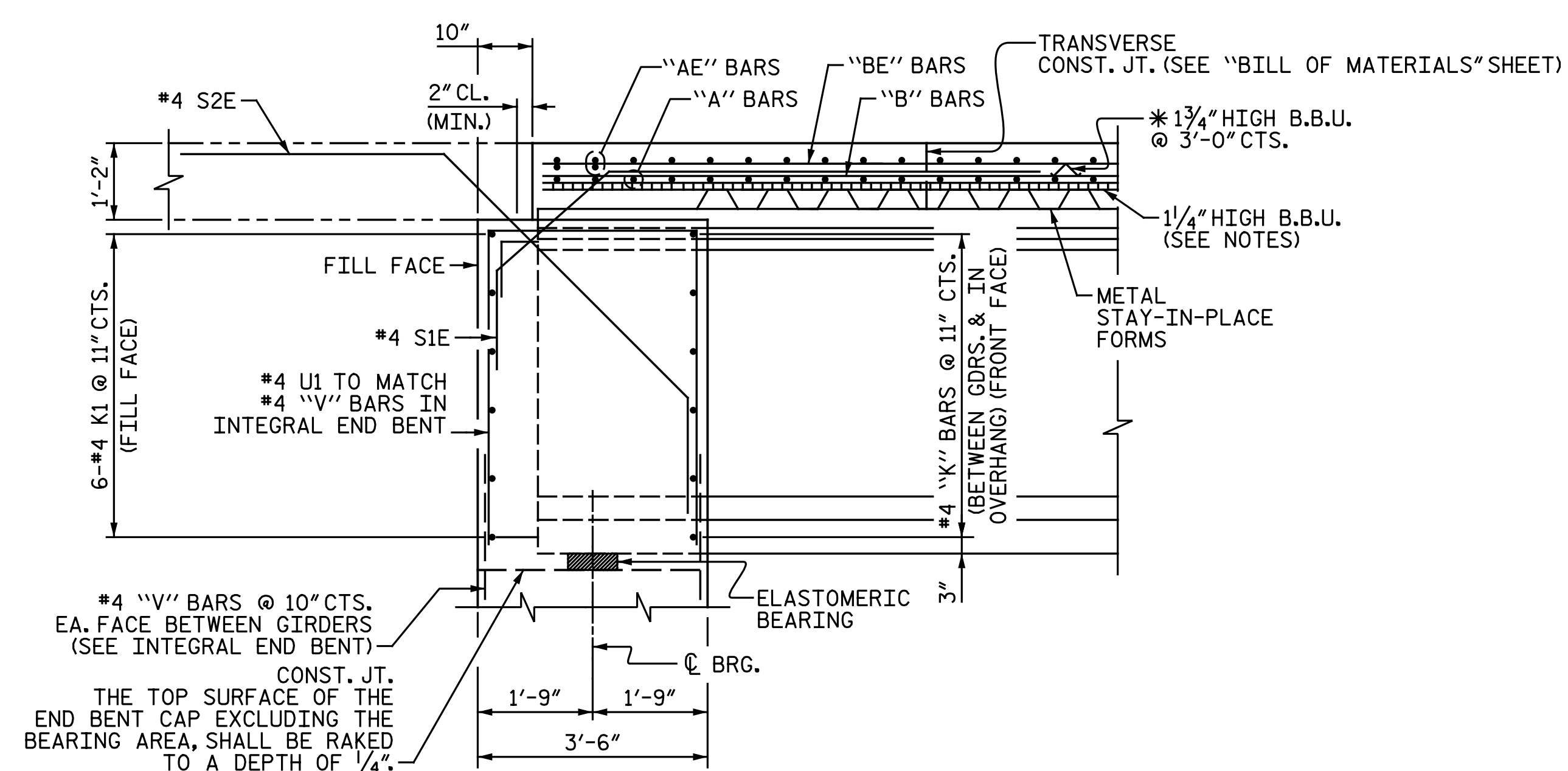
LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS AND TO FACILITATE INSTALLATION OF CONCRETE BARRIER RAIL REINFORCEMENT.

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

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



END OF END BENT DIAPHRAGM DETAIL



END OF GIRDER DETAIL AT INTEGRAL END BENT
(DIMENSIONS SHOWN ARE NORMAL TO END BENT, U.N.O.)
(END BENT 1 SHOWN, END BENT 2 SIMILAR)

* - 1 1/4" HIGH B.B.U. WITH #6 BARS IN NEG. MOMENT AREAS, 2" HIGH B.B.U. IN ALL OTHER AREAS.

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 342+97.24 -L-

SHEET 1 OF 2



STATE OF NORTH CAROLINA
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RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION

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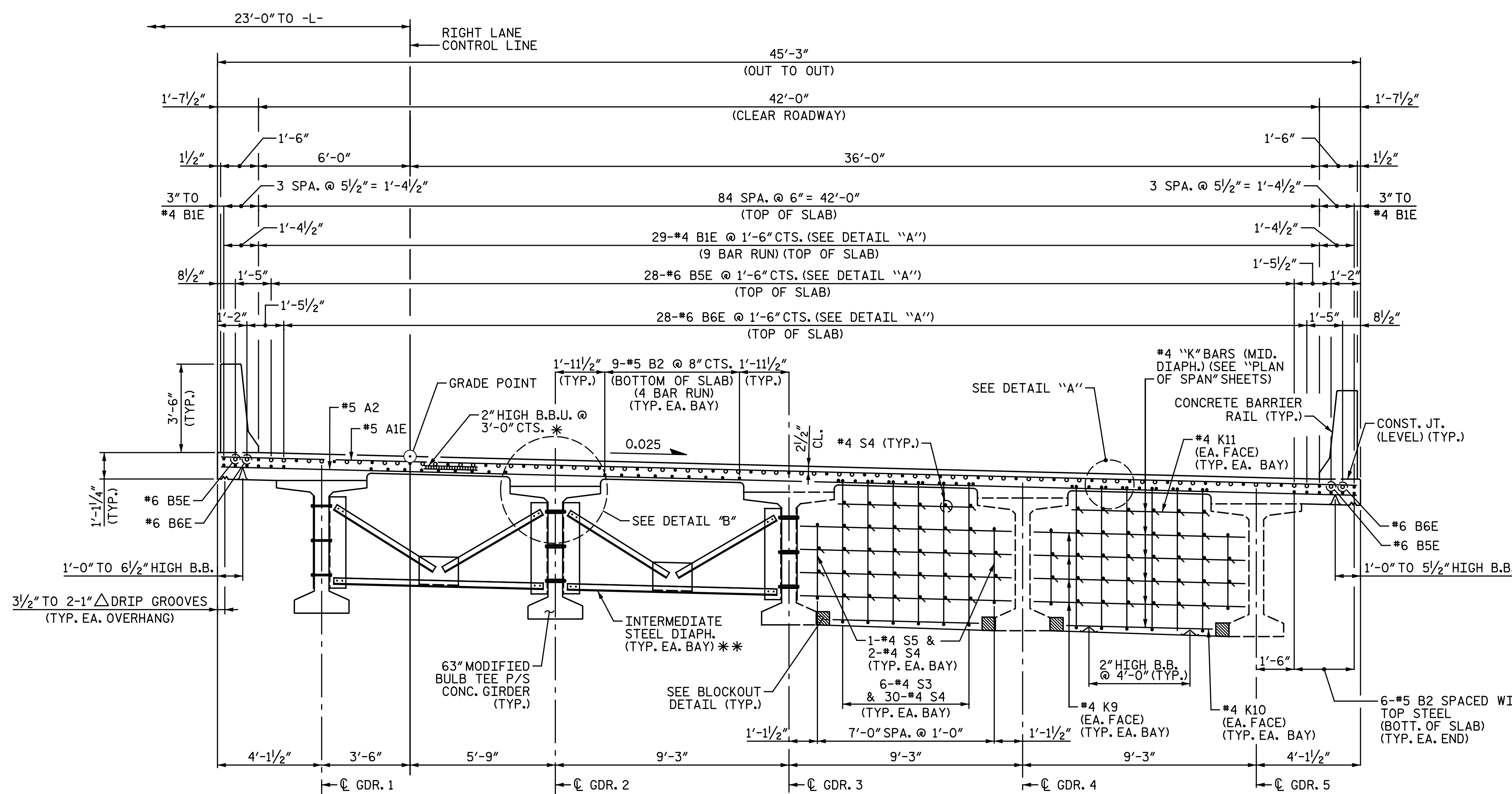
RIGHT LANE

DRAWN BY: P. SMITH DATE: 1-30-17
CHECKED BY: S. H. ROSS DATE: 5-10-17

REVISIONS		SHEET NO.	
NO.	DATE	NO.	DATE
1		3	
2		4	

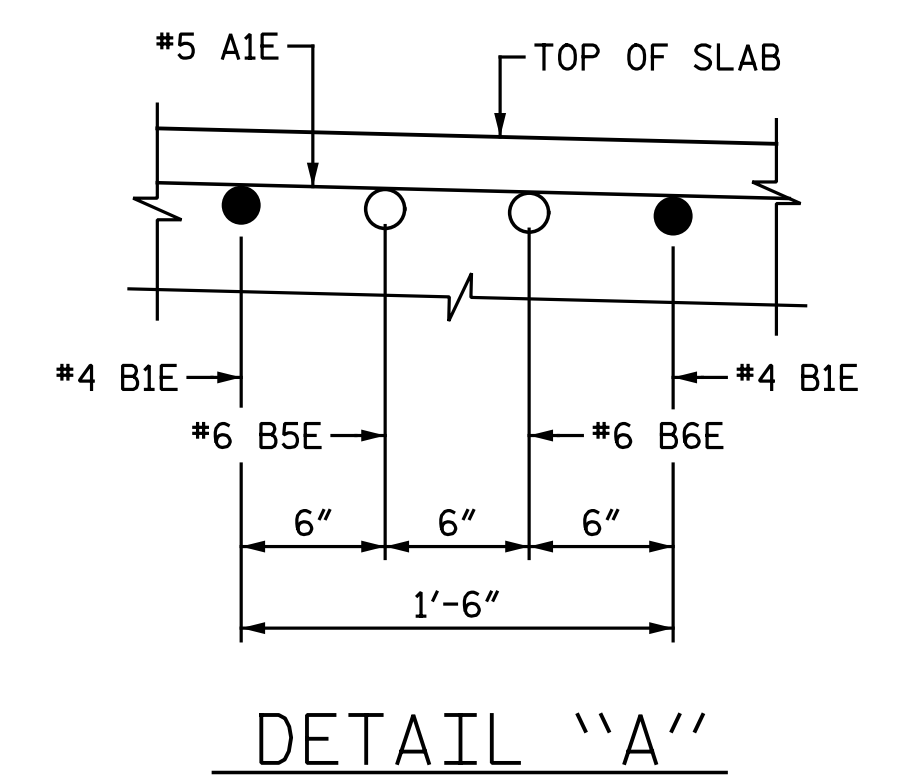
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Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

TOTAL SHEETS
29

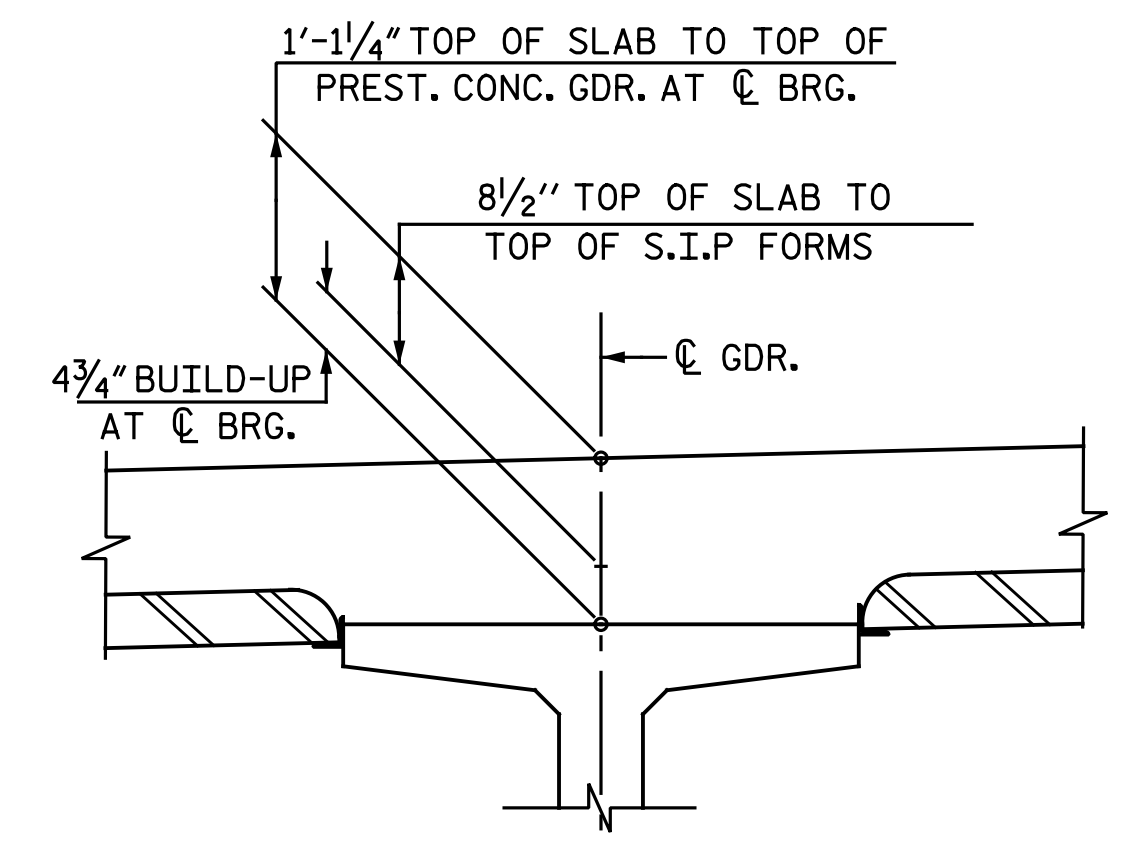


TYPICAL HALF SECTION AT INTERMEDIATE DIAPHRAGM

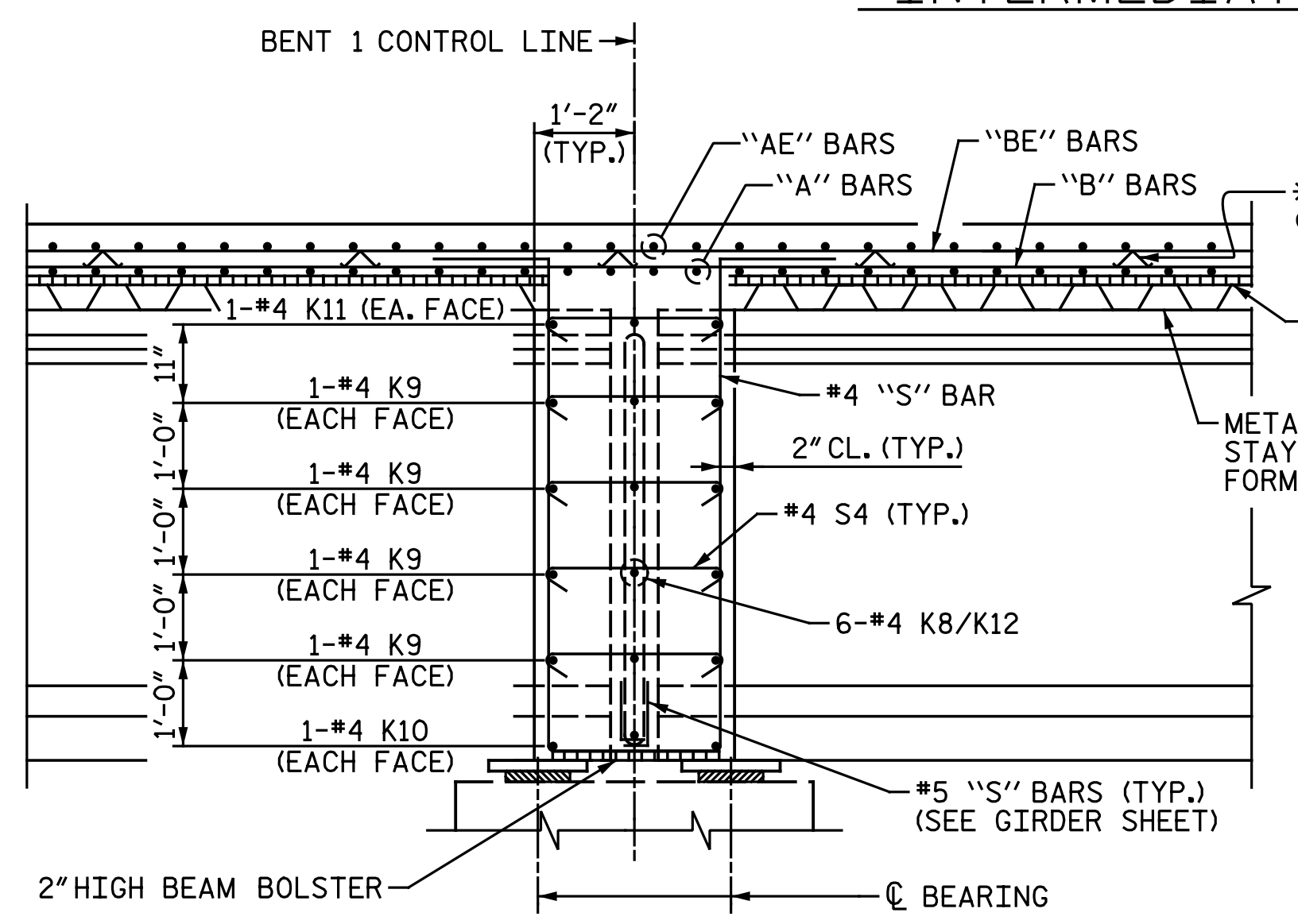
TYPICAL HALF SECTION AT BENT DIAPHRAGM



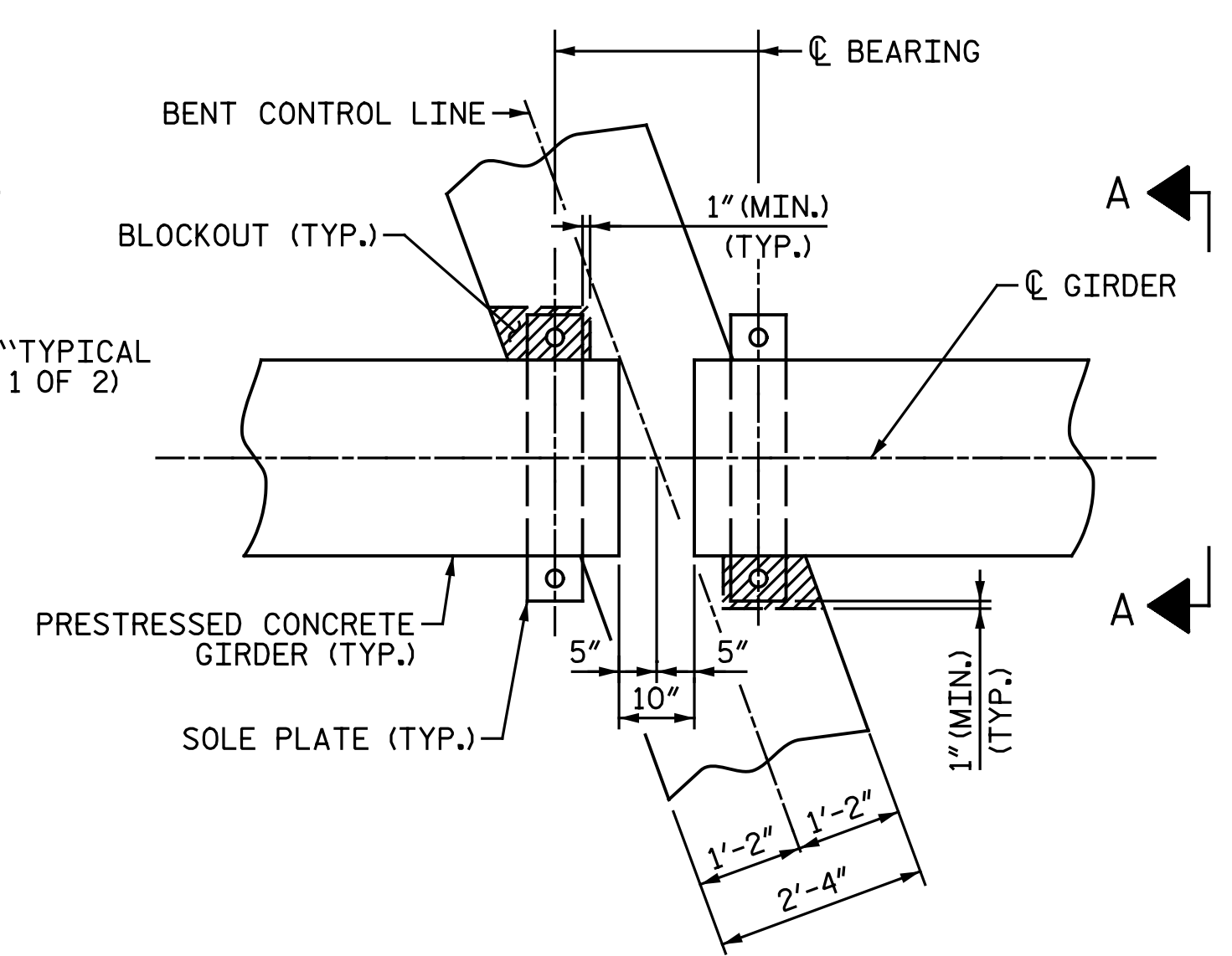
DETAIL "A"



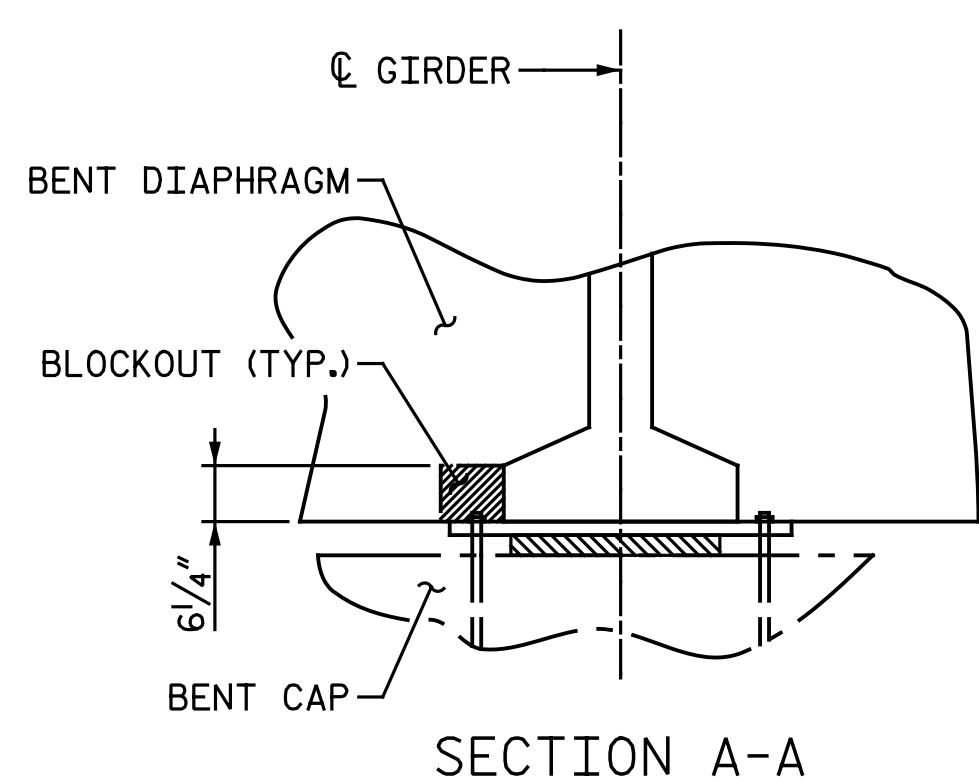
DETAIL "B"



SECTION THRU BENT DIAPHRAGM



PLAN



SECTION A-A

- * - 1 3/4" HIGH B.B.U. WITH #6 BARS IN NEG. MOMENT AREAS, 2" HIGH B.B.U. IN ALL OTHER AREAS.
- ** - FOR DETAILS OF INTERMEDIATE DIAPHRAGMS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 63" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET.

PROJECT NO. R-5703
 LENOIR COUNTY
 STATION: 342+97.24 -L-
 SHEET 2 OF 2



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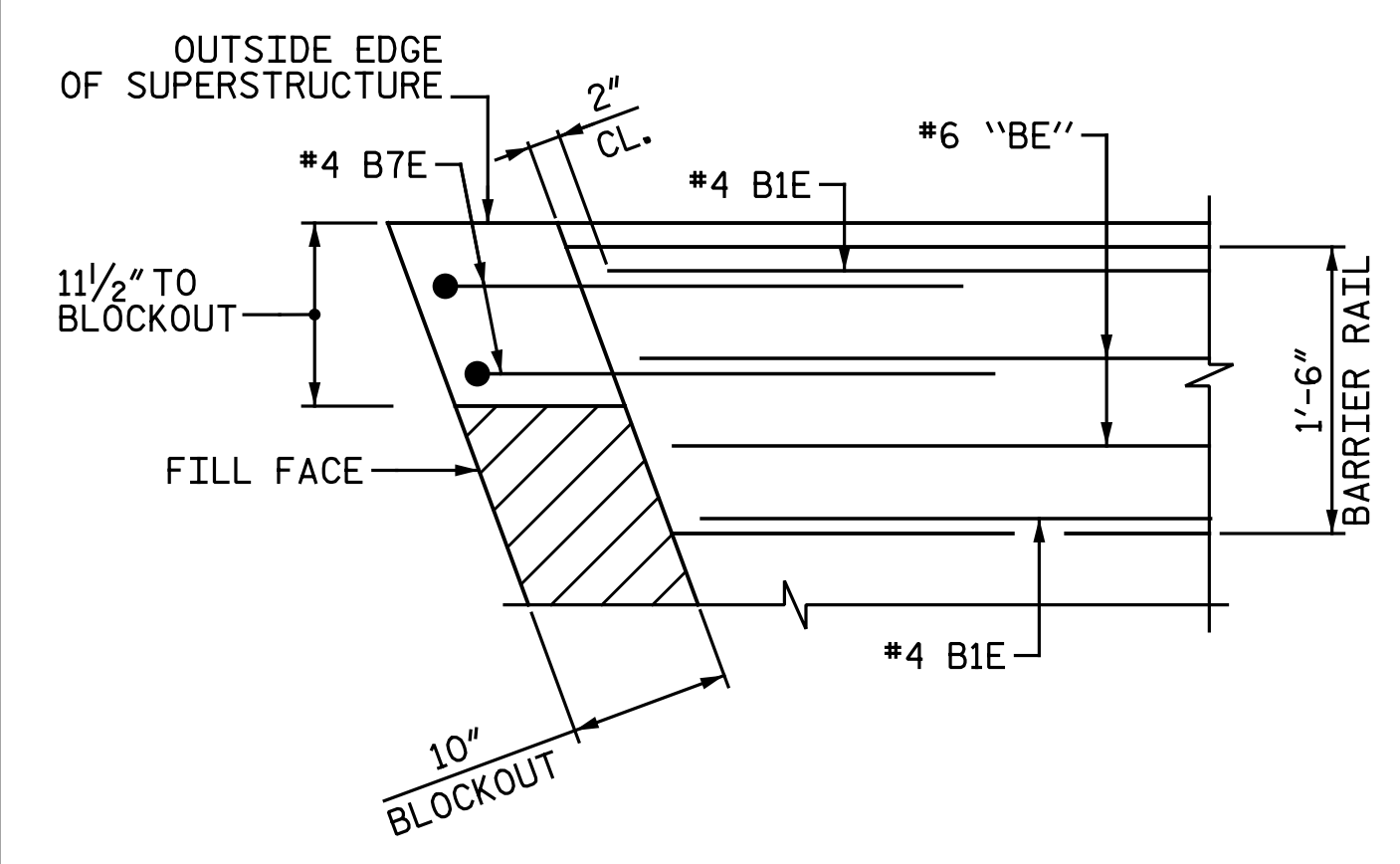
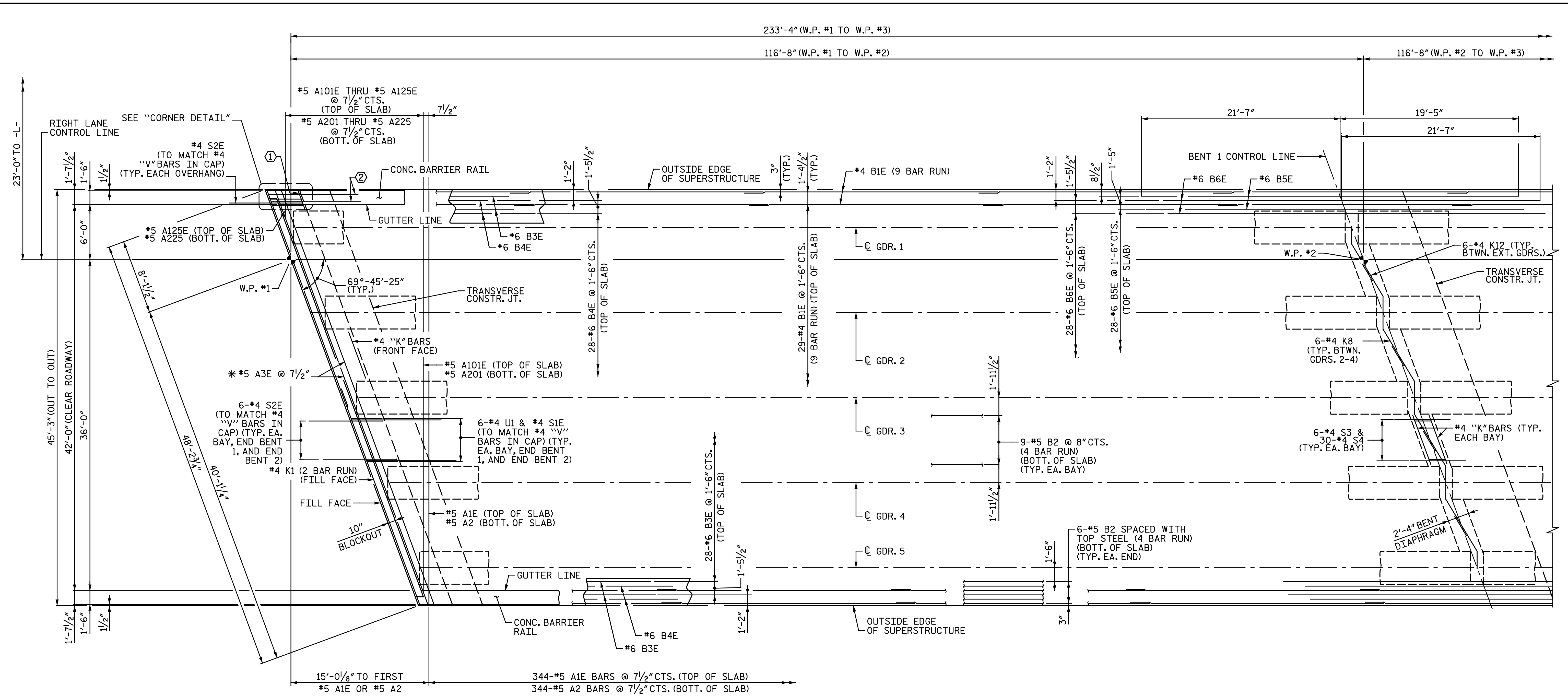
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION

RIGHT LANE

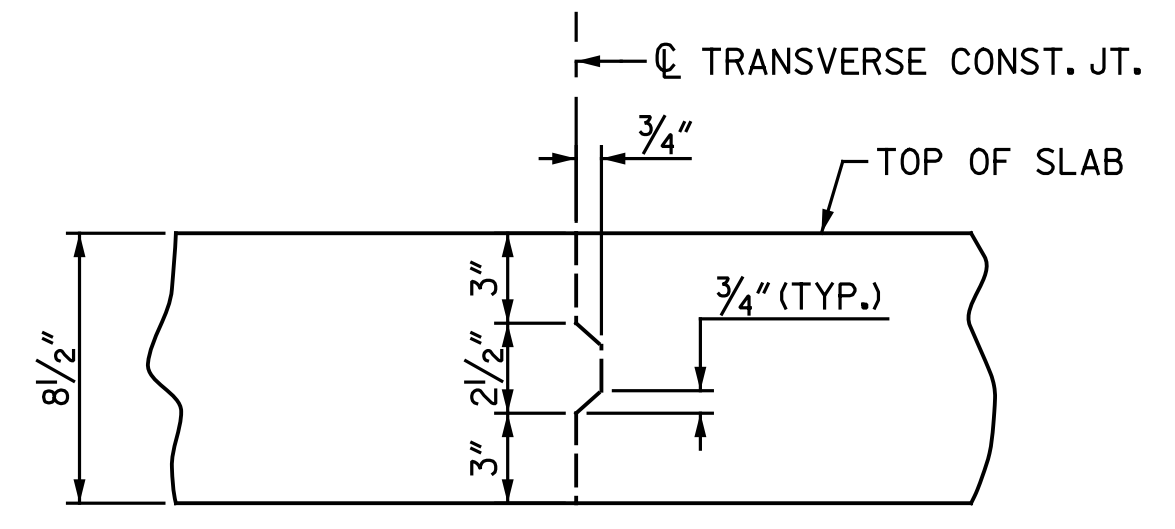
REVISIONS						SHEET NO. S12-6
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 29
2			4			

DRAWN BY: P. SMITH DATE: 1-30-17
 CHECKED BY: S.H. ROSS DATE: 5-10-17

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 NC License No.: F-1084



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.

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"
#4 K	-	2'-5"

NOTES:

- FOR REINFORCING STEEL IN CONCRETE BARRIER RAIL, SEE "CONCRETE BARRIER RAIL" SHEET.
- FOR DECK POURING SEQUENCE AND LOCATION OF TRANSVERSE CONSTRUCTION JOINTS, SEE "SUPERSTRUCTURE" BILL OF MATERIAL SHEET.
- * #5 "AE" BARS ARE TO BE PLACED PARALLEL TO SKEW AND BELOW "BE" BARS.
- LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

- ① #4 "K" BARS (FRONT FACE) (TYP. EA. END)
- ② #4 U1 & #4 S1E (TO MATCH #4 "V" BARS IN CAP) (TYP. EA. OVERHANG, END BENT 1, AND END BENT 2)

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 342+97.24 -L-

SHEET 1 OF 2

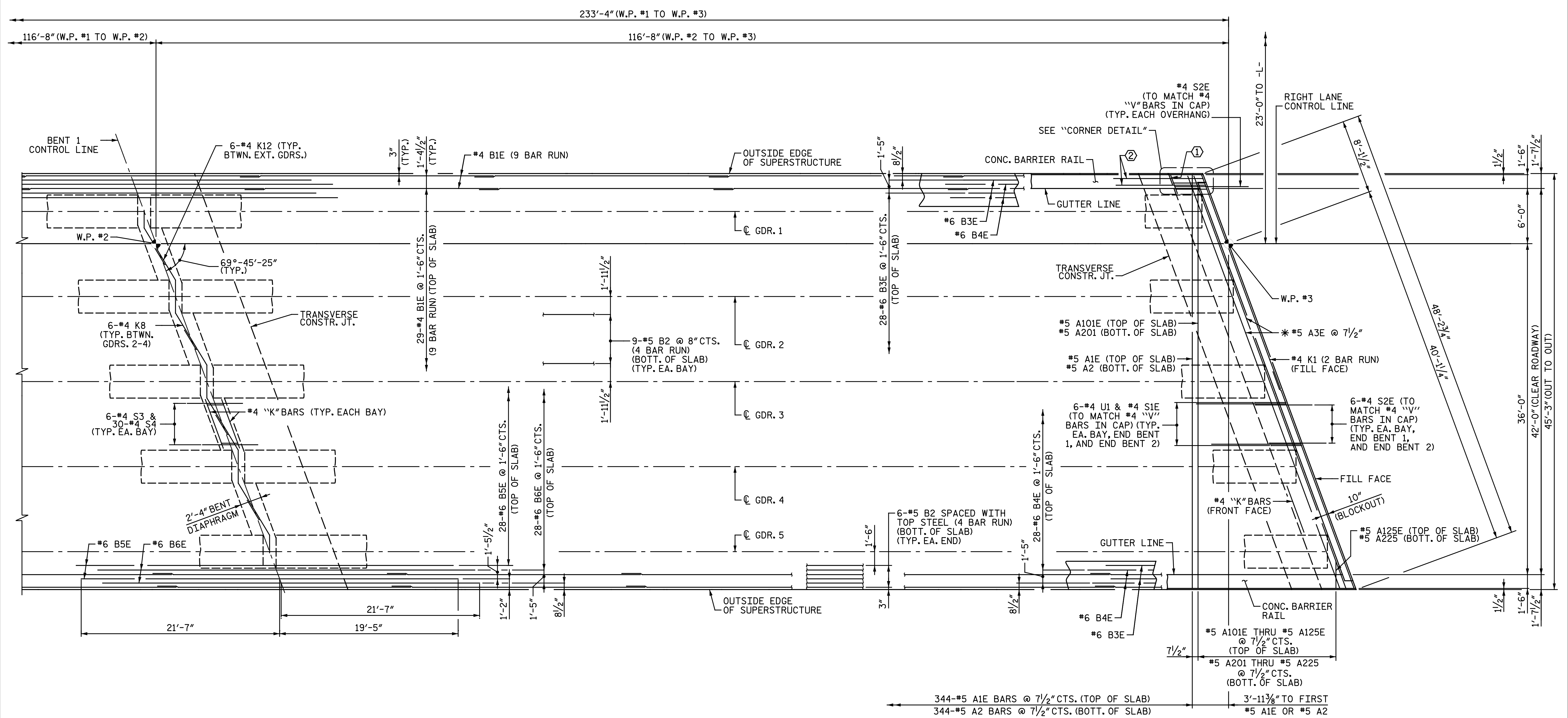


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
PLAN OF SPANS
RIGHT LANE

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1					
2		4			



PLAN OF SPAN B

NOTES:

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

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

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

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

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



8/4/2017

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PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-

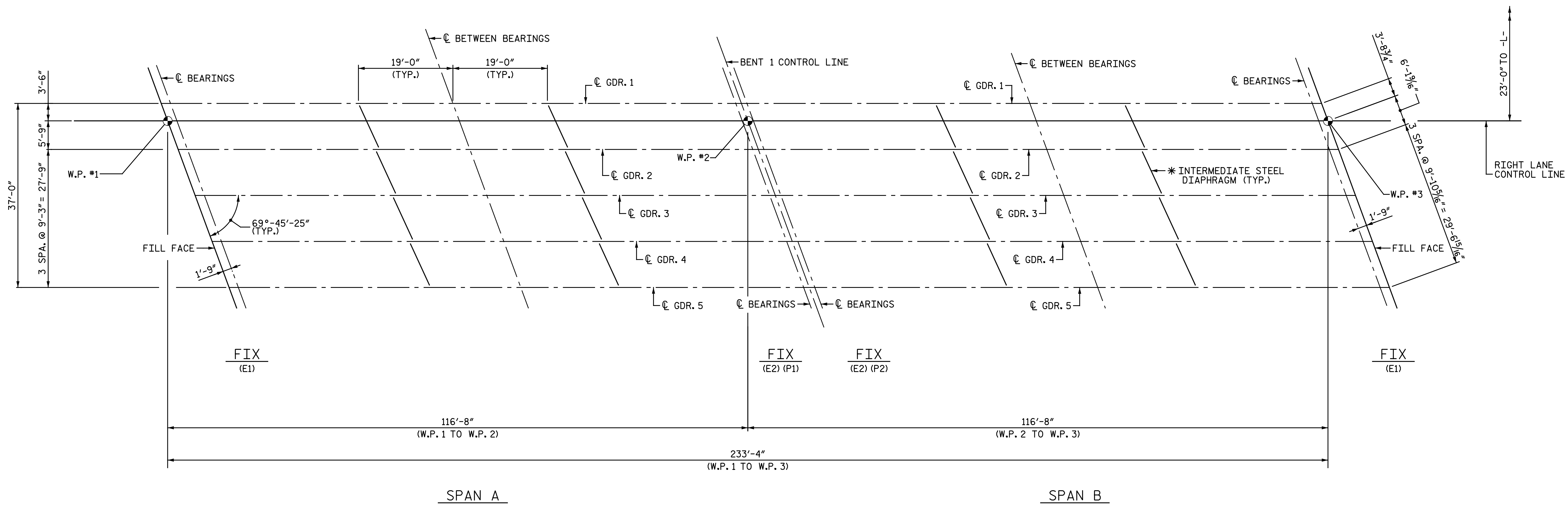
SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPANS
 RIGHT LANE

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

TOTAL SHEETS: **29**

DRAWN BY : P. SMITH DATE : 1-27-17
 CHECKED BY : S.H. ROSS DATE : 5-10-17



GIRDER LAYOUT

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

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-



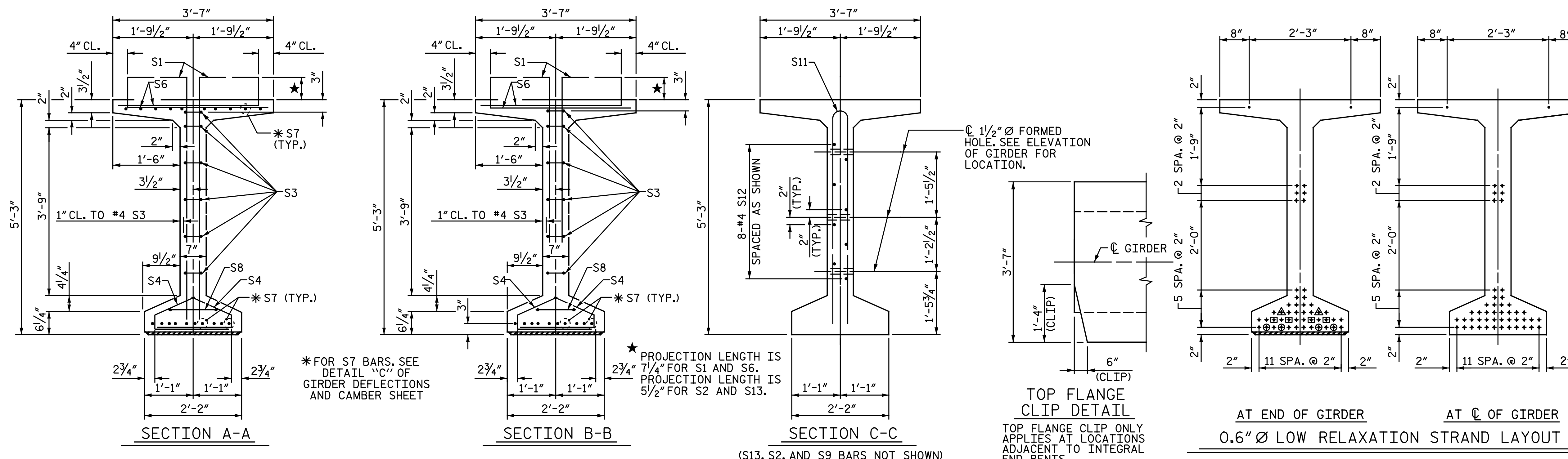
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 GIRDER LAYOUT
 RIGHT LANE

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

DRAWN BY : W. D. MCGREADY DATE : 1-9-17
 CHECKED BY : S.H. ROSS DATE : 5-10-17

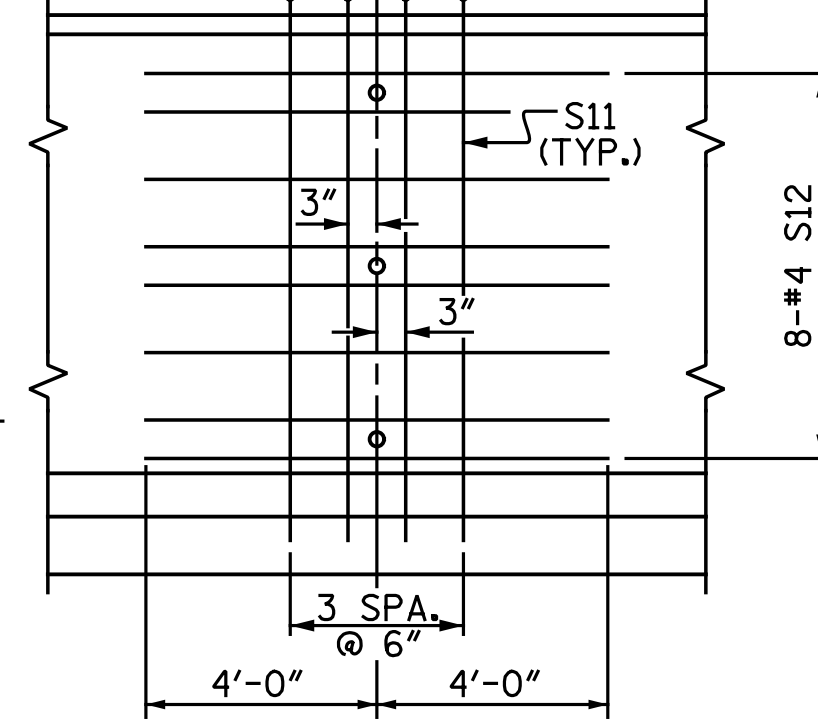
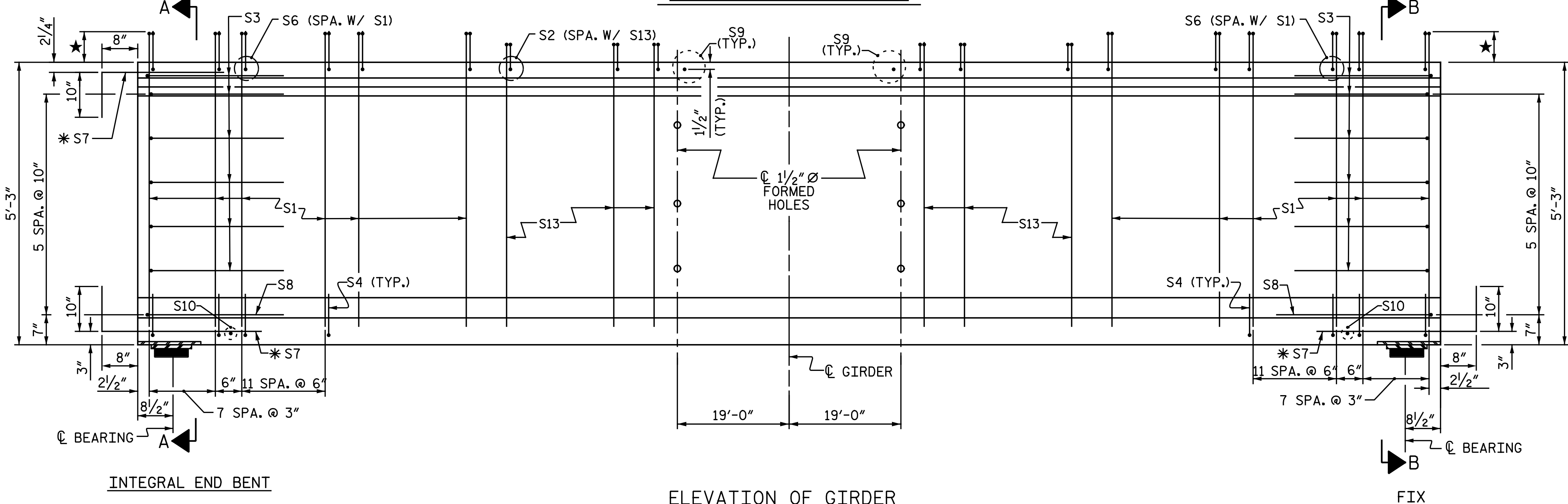
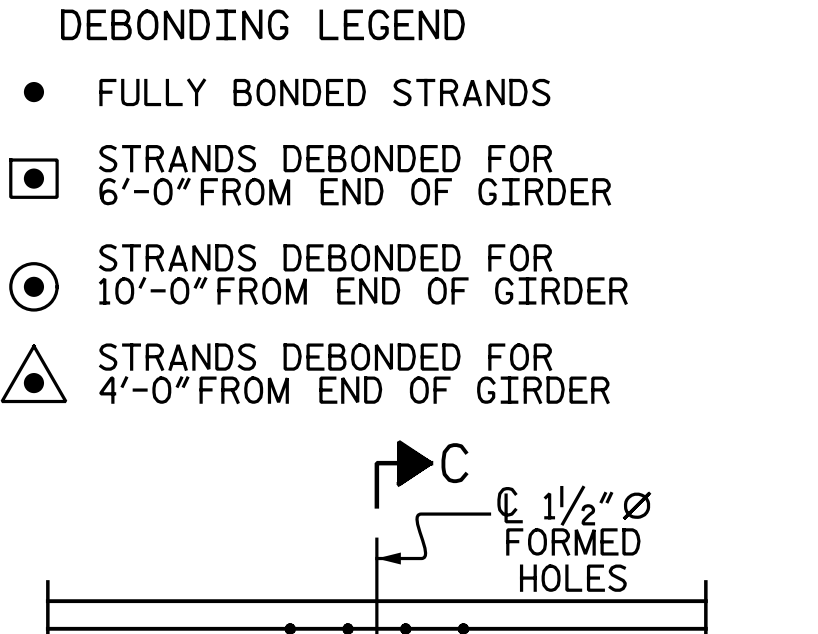
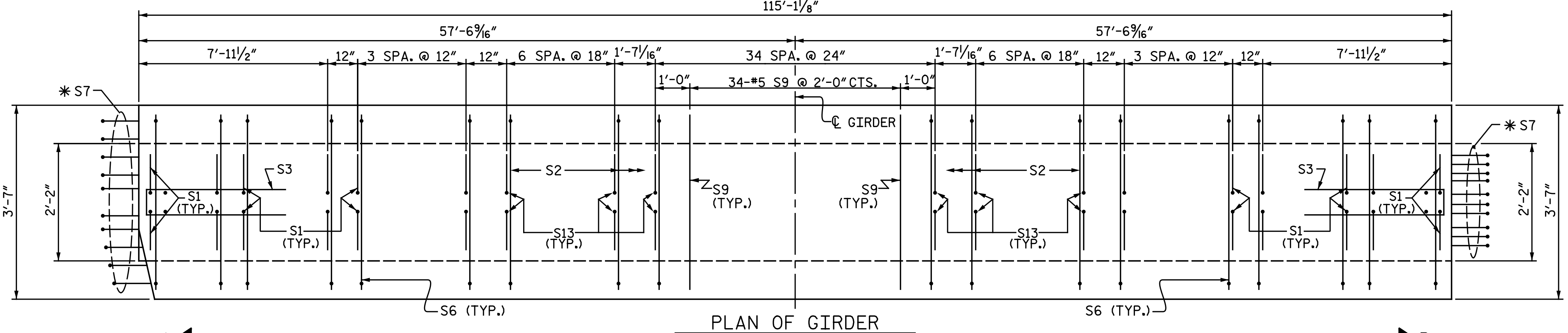
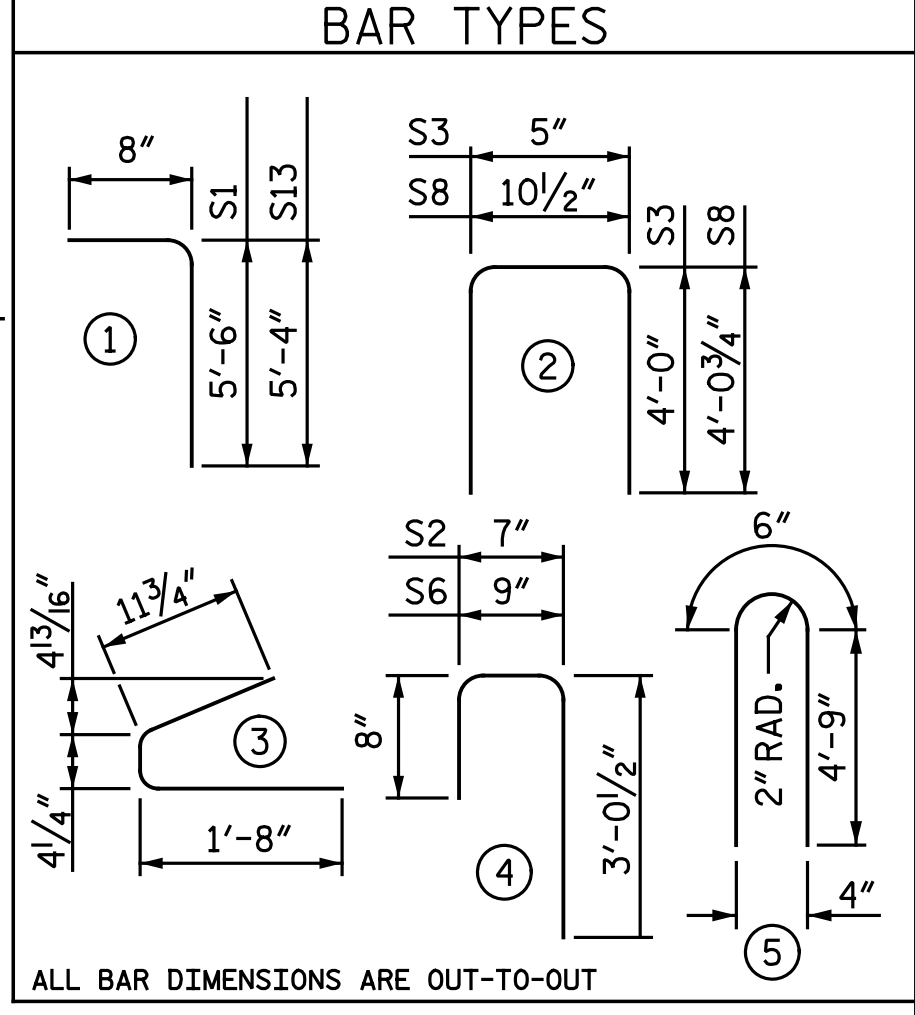
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 Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27518
 NC License No. : F-1084



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	96	#5	1	6'-2"	618
S2	98	#5	4	4'-4"	443
S3	12	#4	2	8'-5"	67
S4	80	#4	3	3'-0"	160
S6	96	#5	4	4'-6"	451
*S7	30	#5	STR	3'-8"	115
S8	2	#5	2	9'-0"	19
S9	34	#5	STR	3'-3"	115
S10	2	#3	STR	1'-10"	1
S11	8	#5	5	10'-0"	83
S12	16	#4	STR	8'-0"	86
S13	98	#4	1	6'-0"	393

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



QUANTITIES FOR ONE GIRDER			
PER GIRDER	REINFORCING STEEL	9500 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
	2551	22.8	48

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
10	115.1'	1151'

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 342+97.24 -L-



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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
RIGHT LANE

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

ASSEMBLED BY : W. D. MCGREADY	DATE : 1-31-17
CHECKED BY : S. H. ROSS	DATE : 5-10-17
DRAWN BY : EEM 2/6/97	REV. 10/1/11
CHECKED BY : VAP 2/6/97	REV. 6/13
	REV. 1/15
	MAA/GM
	MAA/GM
	MAA/TMG

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

0.6" Ø LOW RELAXATION STRANDS		SPAN A & B																				
		GIRDER 1																				
TWENTIETH POINTS		0.0	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	1.0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.052	0.102	0.150	0.193	0.232	0.264	0.291	0.310	0.321	0.325	0.321	0.310	0.291	0.264	0.232	0.193	0.150	0.102	0.052	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.031	0.059	0.091	0.115	0.141	0.159	0.176	0.188	0.195	0.197	0.195	0.188	0.176	0.159	0.141	0.115	0.091	0.059	0.031	0.000
FINAL CAMBER	↑	0	3/16"	1/2"	11/16"	7/8"	1 1/16"	1 1/4"	1 5/16"	1 7/16"	1 1/2"	1 1/2"	1 1/2"	1 7/16"	1 5/16"	1 1/4"	1 1/16"	7/8"	11/16"	1/2"	3/16"	0

0.6" Ø LOW RELAXATION STRANDS		SPAN A & B																				
		GIRDER 2 & 4																				
TWENTIETH POINTS		0.0	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	1.0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.052	0.102	0.150	0.193	0.232	0.264	0.291	0.310	0.321	0.325	0.321	0.310	0.291	0.264	0.232	0.193	0.150	0.102	0.052	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.029	0.056	0.085	0.108	0.132	0.150	0.166	0.176	0.183	0.185	0.183	0.176	0.166	0.150	0.132	0.108	0.085	0.056	0.029	0.000
FINAL CAMBER	↑	0	1/4"	1/2"	3/4"	1"	1 3/16"	1 5/16"	1 1/2"	1 9/16"	1 5/8"	1 5/8"	1 5/8"	1 9/16"	1 1/2"	1 5/16"	1 3/16"	1"	3/4"	1/2"	1/4"	0

0.6" Ø LOW RELAXATION STRANDS		SPAN A & B																				
		GIRDER 3																				
TWENTIETH POINTS		0.0	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	1.0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.052	0.102	0.150	0.193	0.232	0.264	0.291	0.310	0.321	0.325	0.321	0.310	0.291	0.264	0.232	0.193	0.150	0.102	0.052	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.030	0.057	0.087	0.111	0.135	0.153	0.169	0.180	0.187	0.190	0.187	0.180	0.169	0.153	0.135	0.111	0.087	0.057	0.030	0.000
FINAL CAMBER	↑	0	1/4"	1/2"	11/16"	15/16"	1 1/8"	1 5/16"	1 7/16"	1 1/2"	1 9/16"	1 5/8"	1 9/16"	1 1/2"	1 7/16"	1 5/16"	1 1/8"	15/16"	11/16"	1/2"	1/4"	0

0.6" Ø LOW RELAXATION STRANDS		SPAN A & B																				
		GIRDER 5																				
TWENTIETH POINTS		0.0	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	1.0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.000	0.052	0.102	0.150	0.193	0.232	0.264	0.291	0.310	0.321	0.325	0.321	0.310	0.291	0.264	0.232	0.193	0.150	0.102	0.052	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.000	0.031	0.058	0.089	0.114	0.139	0.157	0.174	0.185	0.192	0.195	0.192	0.185	0.174	0.157	0.139	0.114	0.089	0.058	0.031	0.000
FINAL CAMBER	↑	0	3/16"	1/2"	11/16"	15/16"	1 1/16"	1 1/4"	1 3/8"	1 7/16"	1 1/2"	1 9/16"	1 1/2"	1 7/16"	1 3/8"	1 1/4"	1 1/16"	15/16"	11/16"	1/2"	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).

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 7,600 PSI.

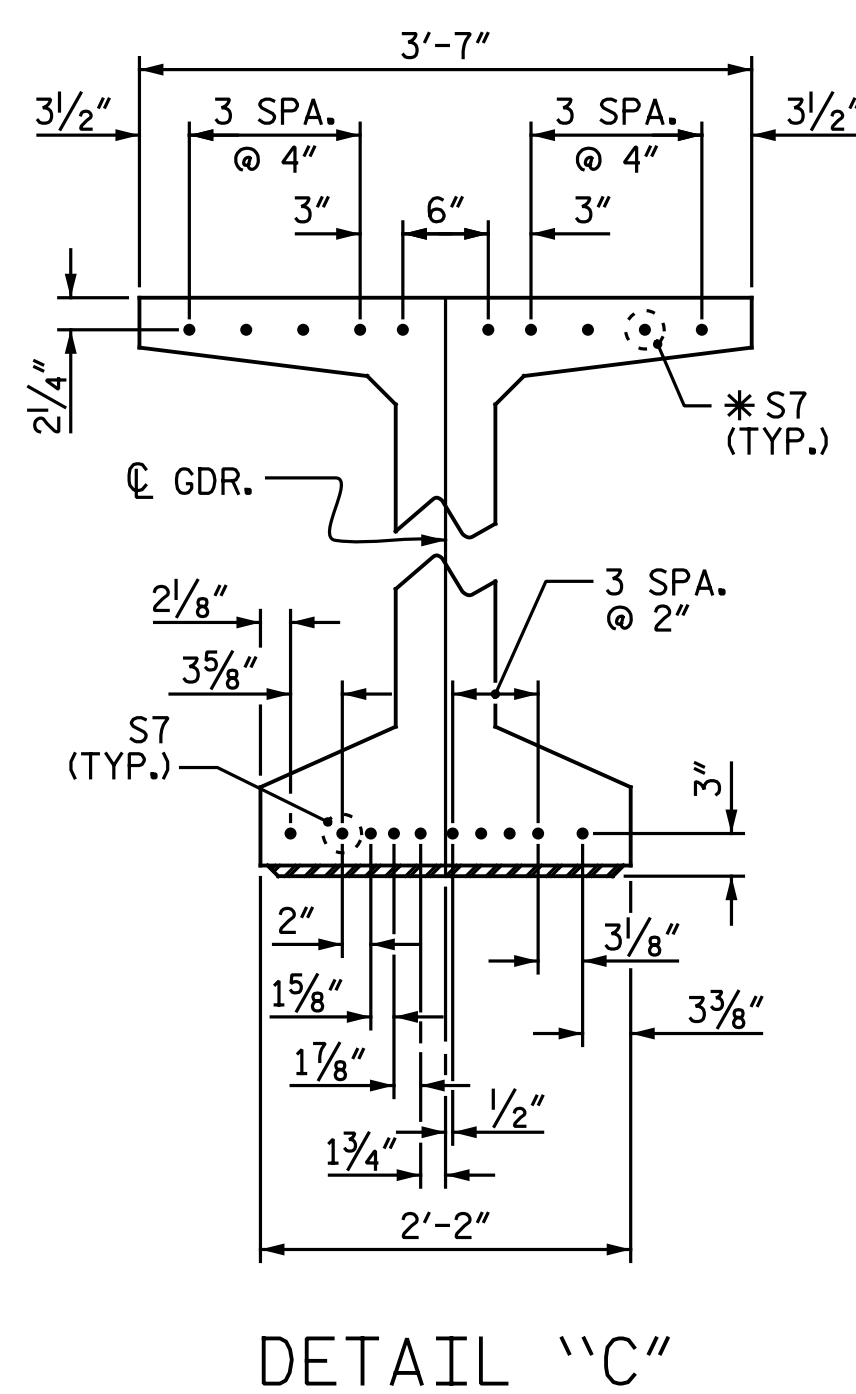
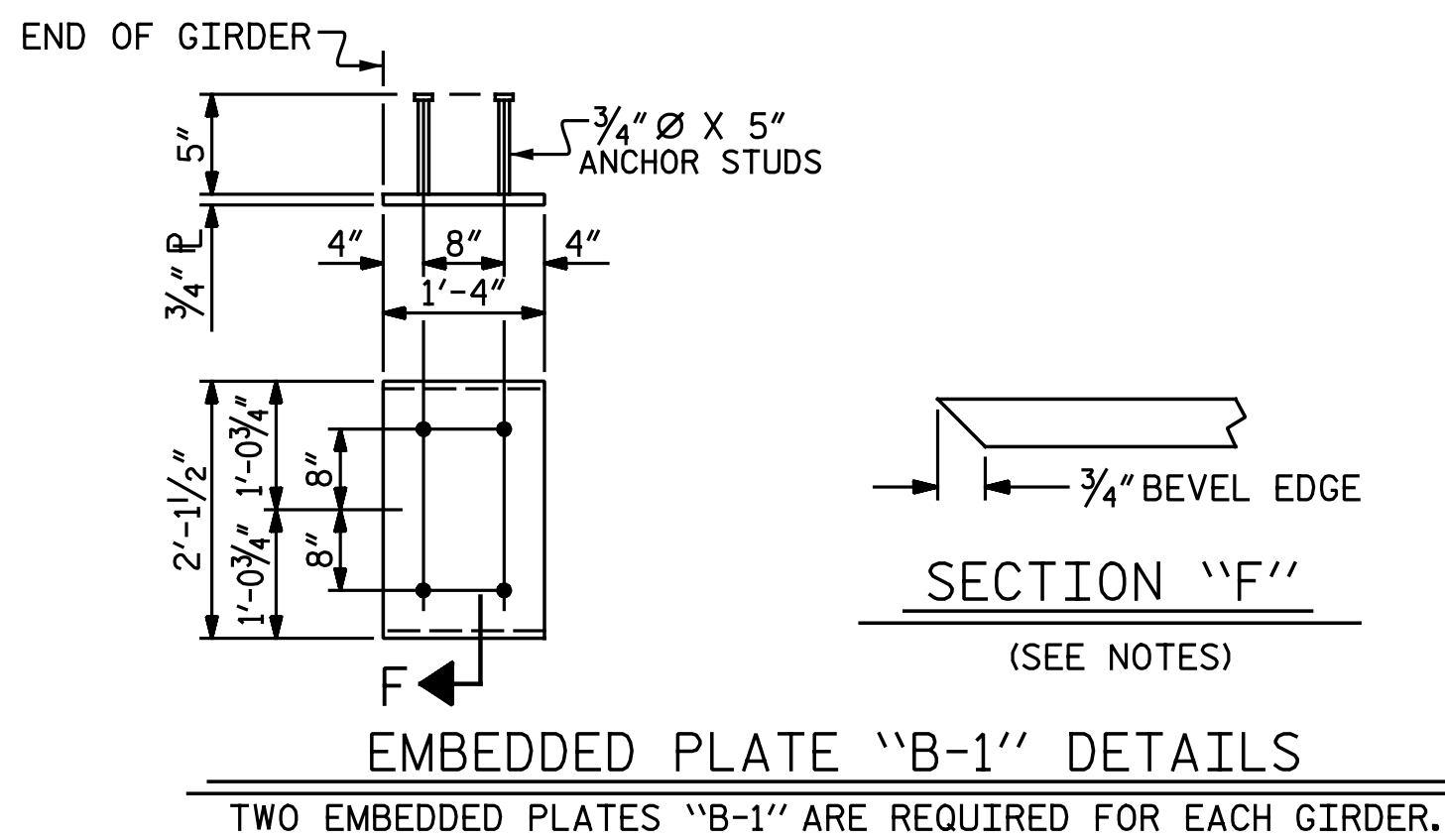
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

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

A 2"x2" 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.



8/4/2017

DocuSigned by: Stephen H. Ross

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 342+97.24 -L-

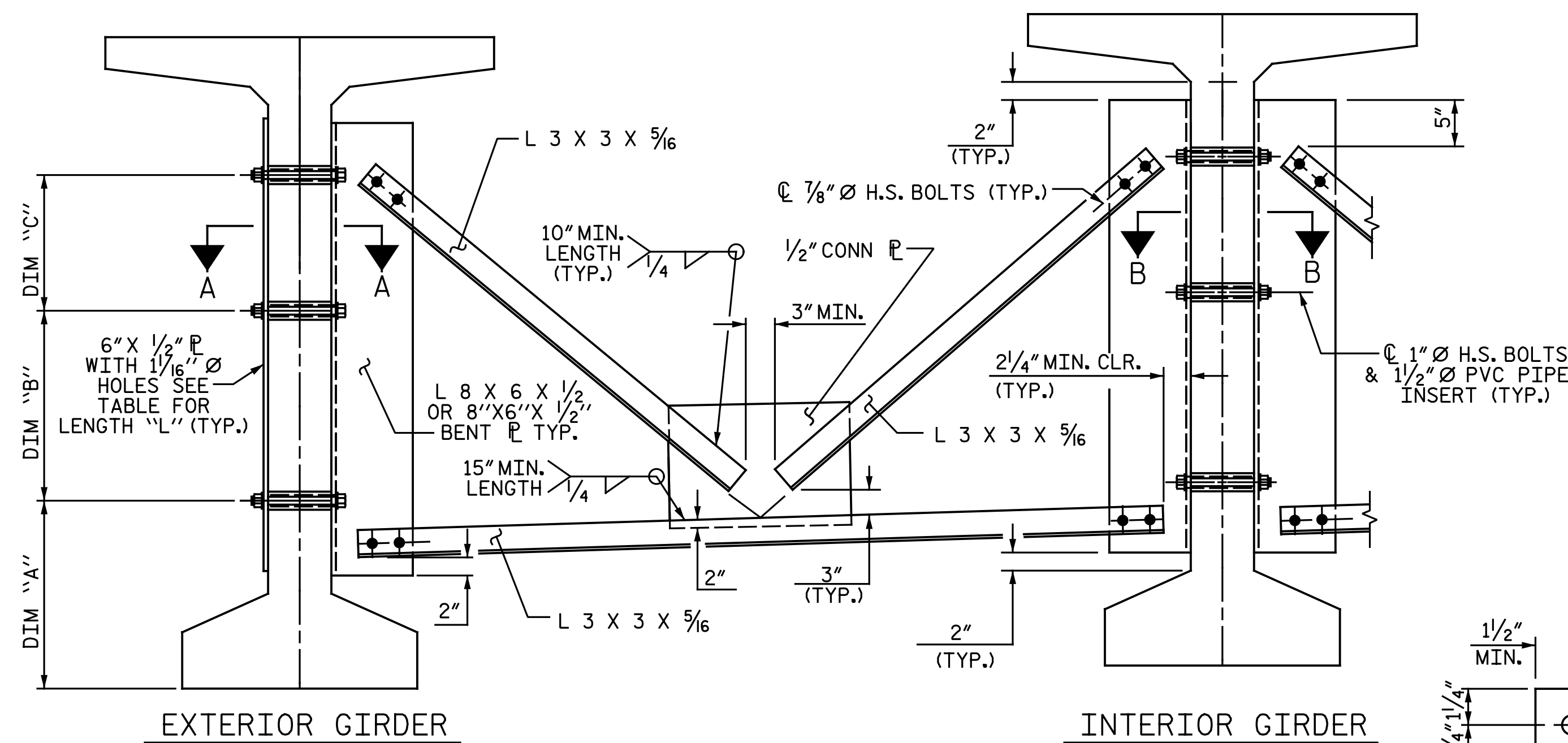
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
GIRDER DEFLECTIONS
AND CAMBER

RIGHT LANE

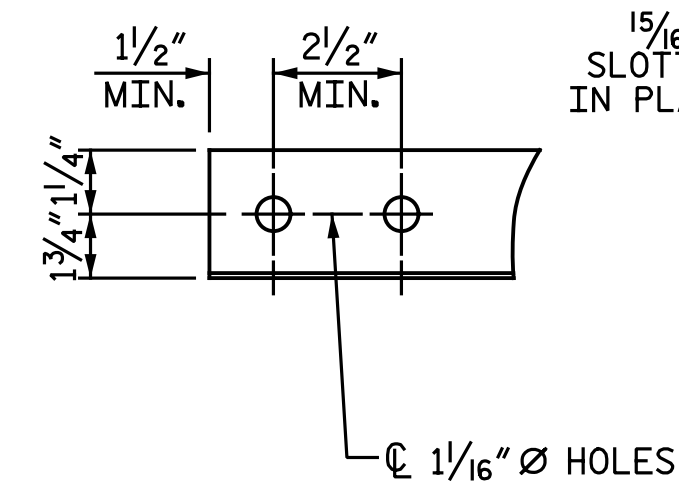
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			TOTAL SHEETS
2			4			29

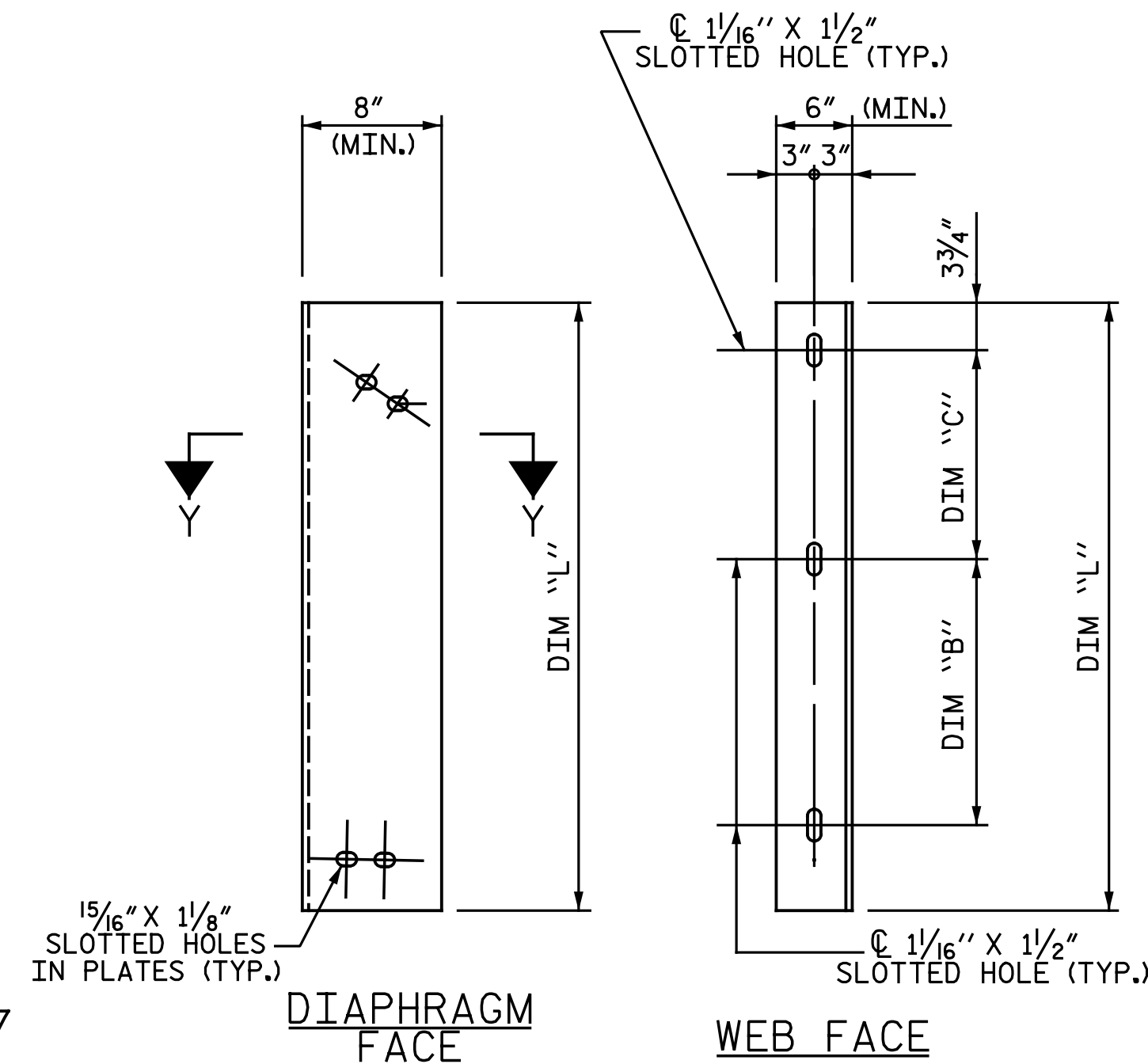
DRAWN BY: W.D. MCGREADY DATE: 04-18-17
CHECKED BY: S.H. ROSS DATE: 05-10-17



PART SECTION AT INTERMEDIATE DIAPHRAGM



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



CONNECTOR PLATE DETAIL

STRUCTURAL STEEL NOTES

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

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

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

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

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

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

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

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

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

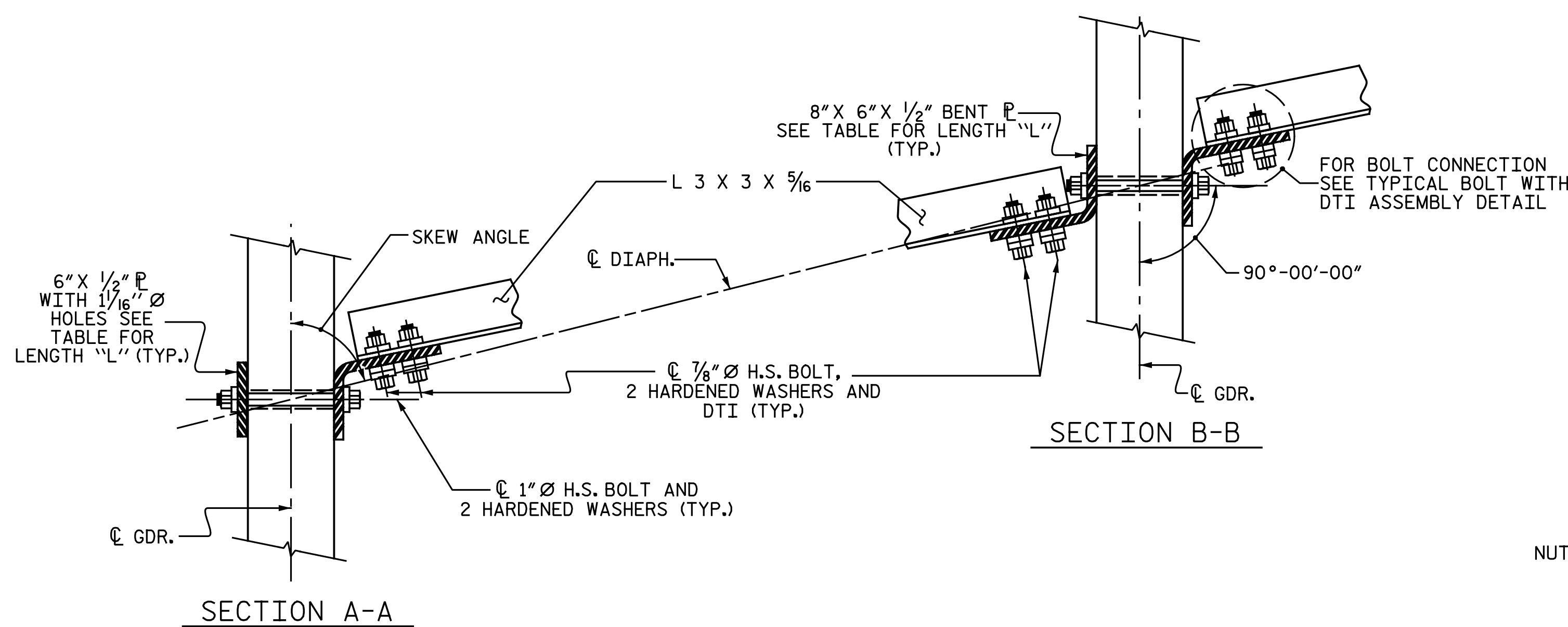
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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

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

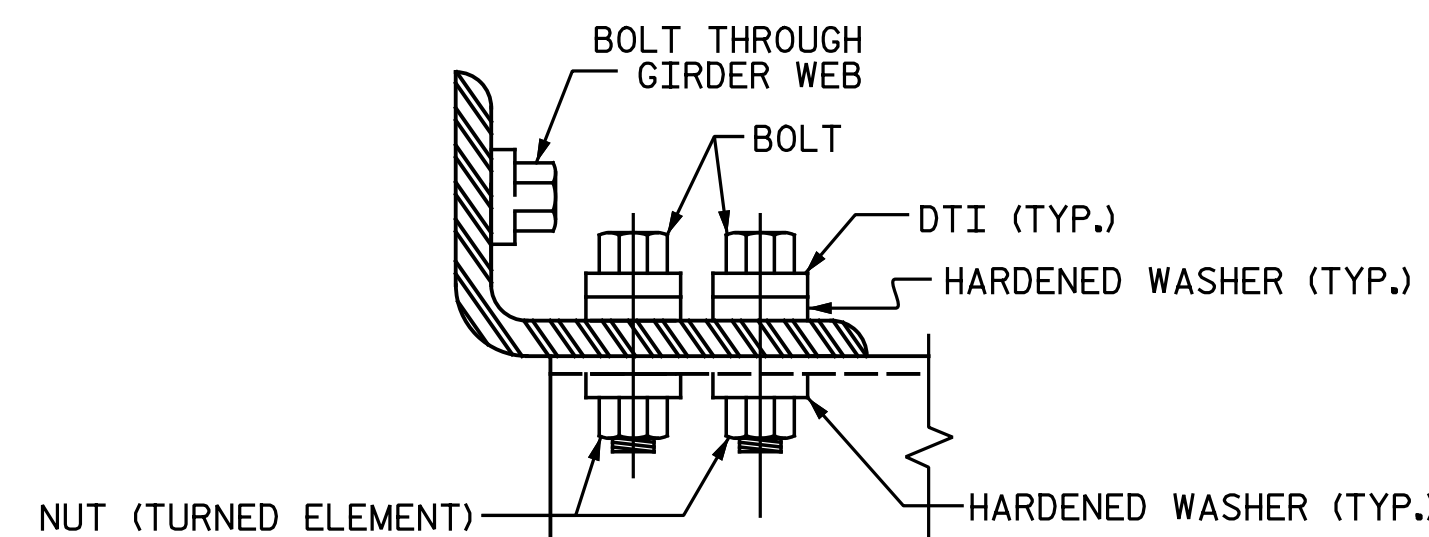
TABLE

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



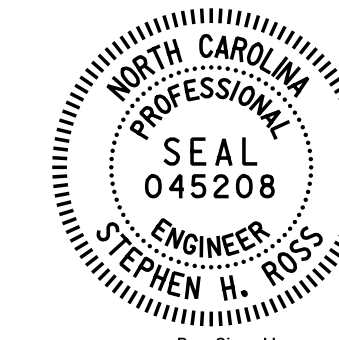
CONNECTION DETAILS

(90° < SKEW < 110° SHOWN
70° ≤ SKEW < 90° SIM.)



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 342+97.24 -L-



8/4/2017

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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:	S12-12
1			3			TOTAL SHEETS
2			4			29

STD. NO. PGG11

ASSEMBLED BY : W. D. MCGREADY DATE : 01-30-17
CHECKED BY : S. H. ROSS DATE : 05-10-17
DRAWN BY : RWW 11/09
CHECKED BY : GM 11/09
ADDED 11/23/09R
REV. 10/11/11 MAA/GM

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.

STEEL SOLE PLATES, ANCHOR BOLTS, AND NUTS 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.

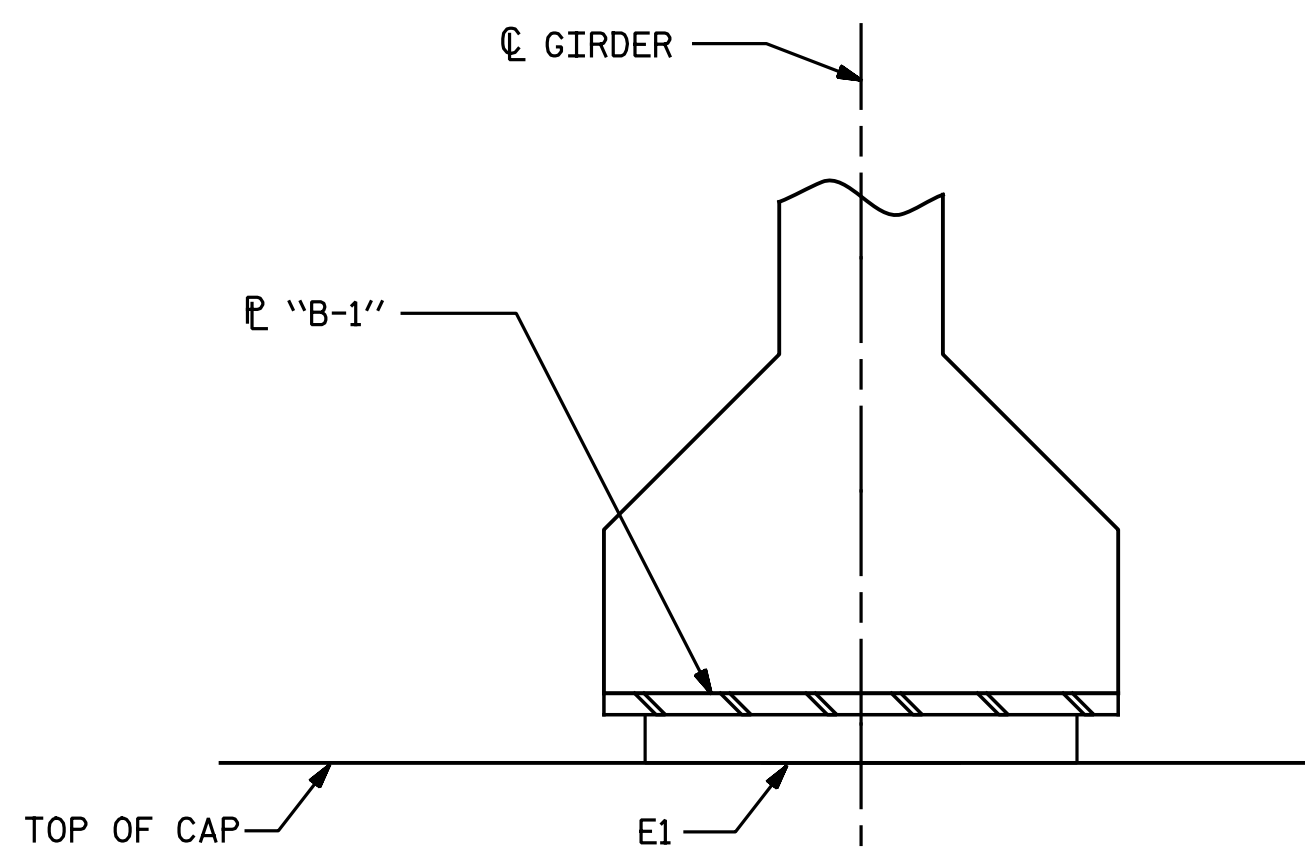
SOLE PLATE "P", BOLTS, AND NUTS SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

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

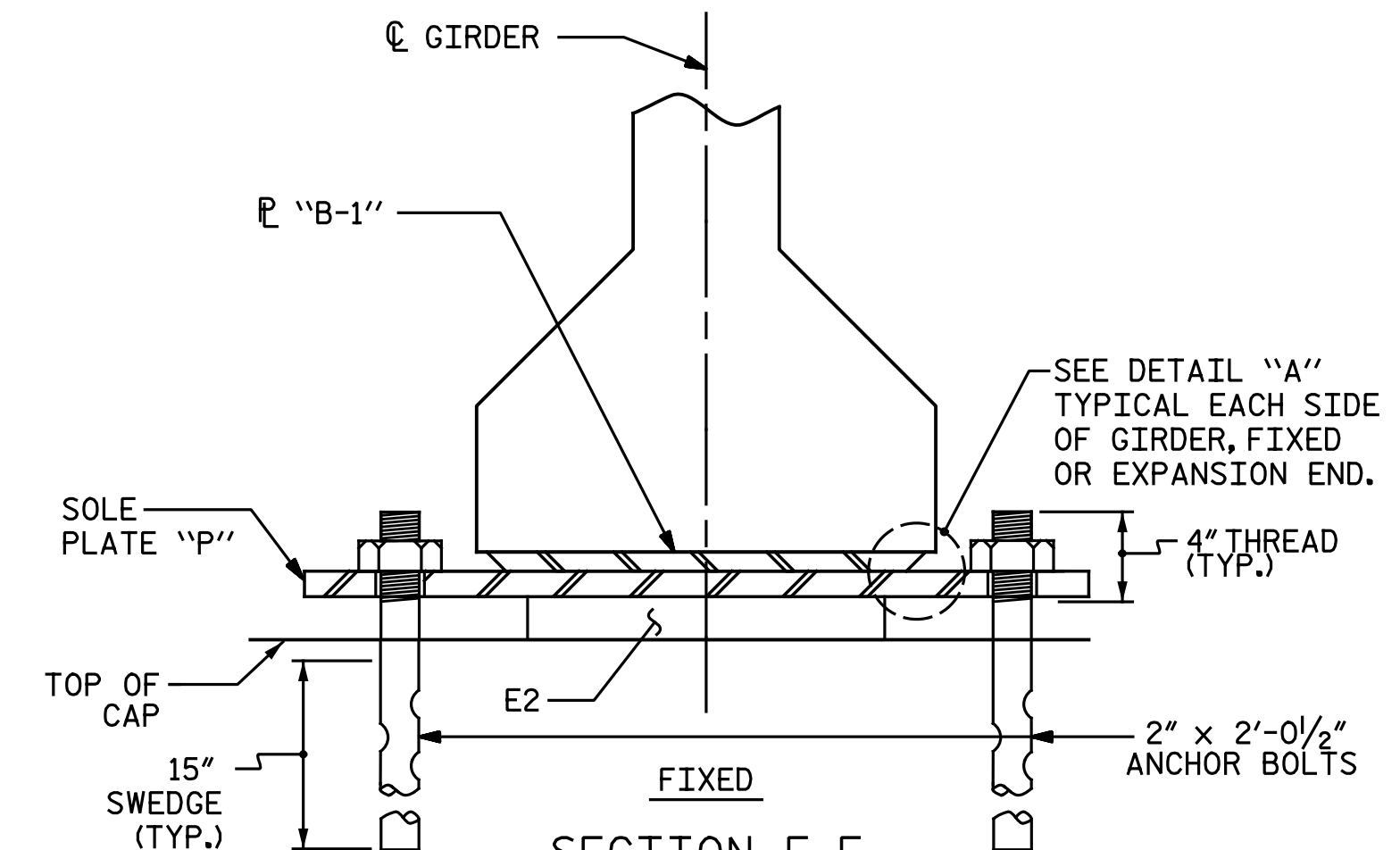
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

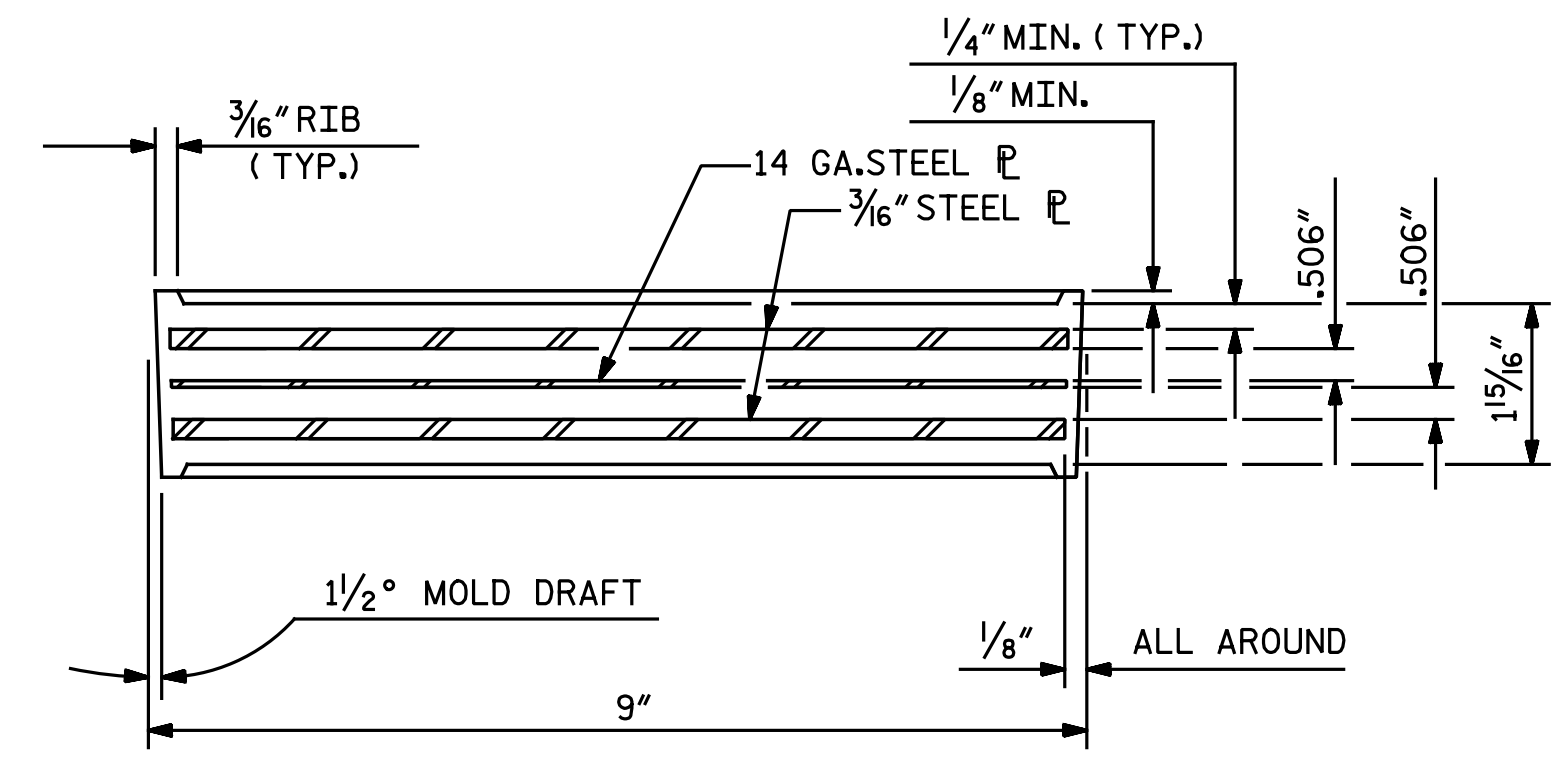
FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.



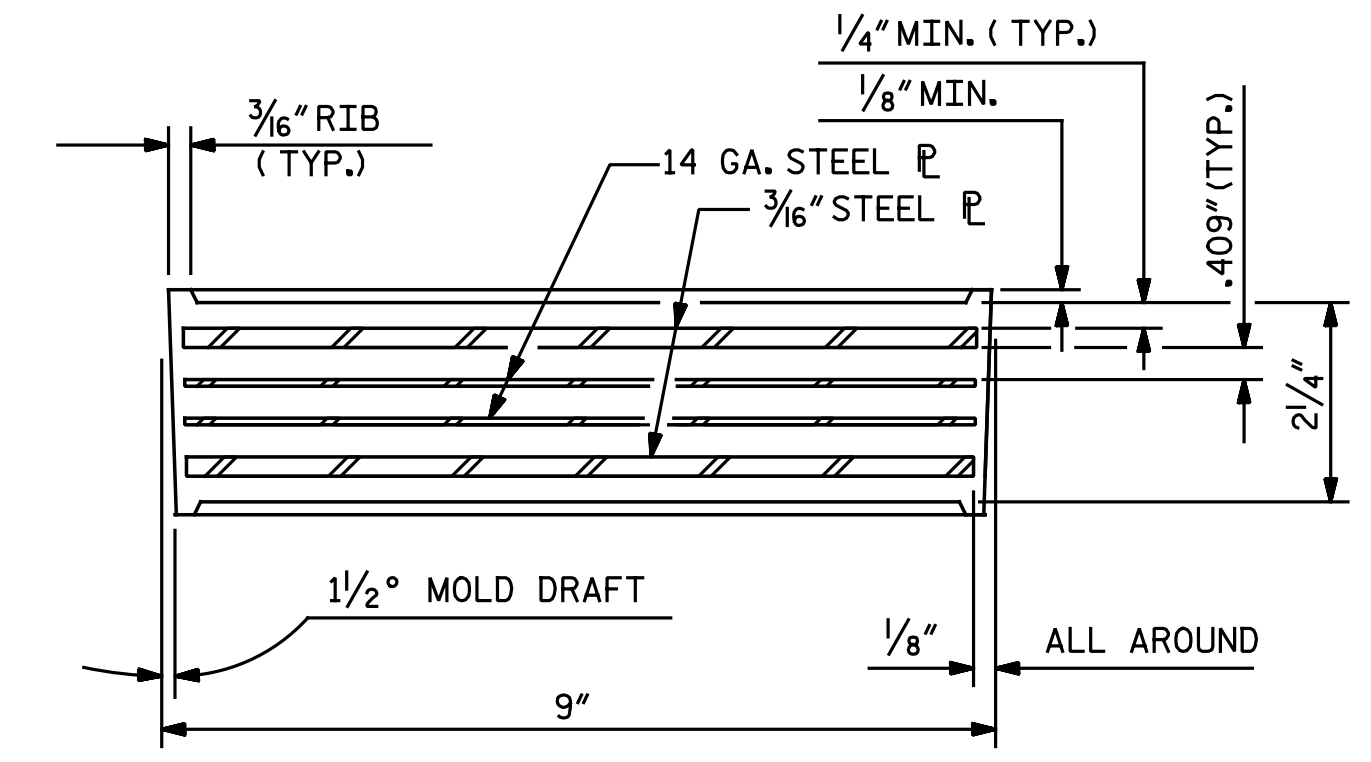
SECTION (AT INTEGRAL END BENTS)



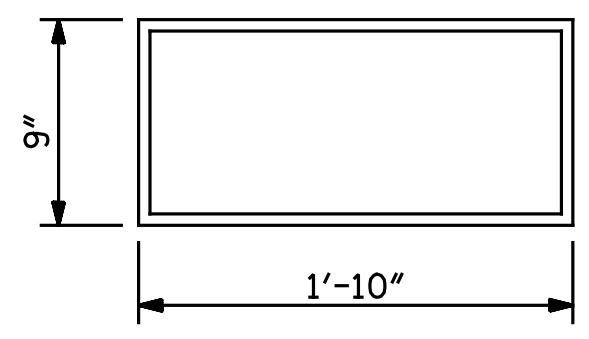
SECTION E-E (AT BENT)



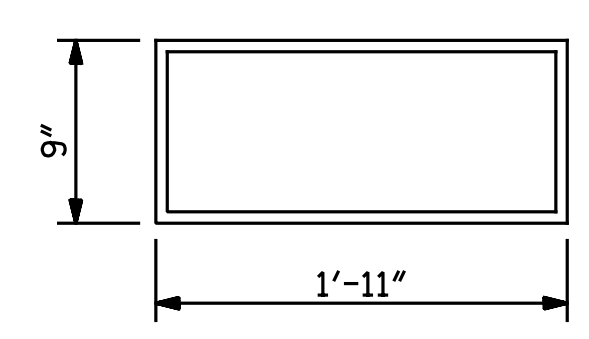
TYPICAL SECTION OF ELASTOMERIC BEARINGS



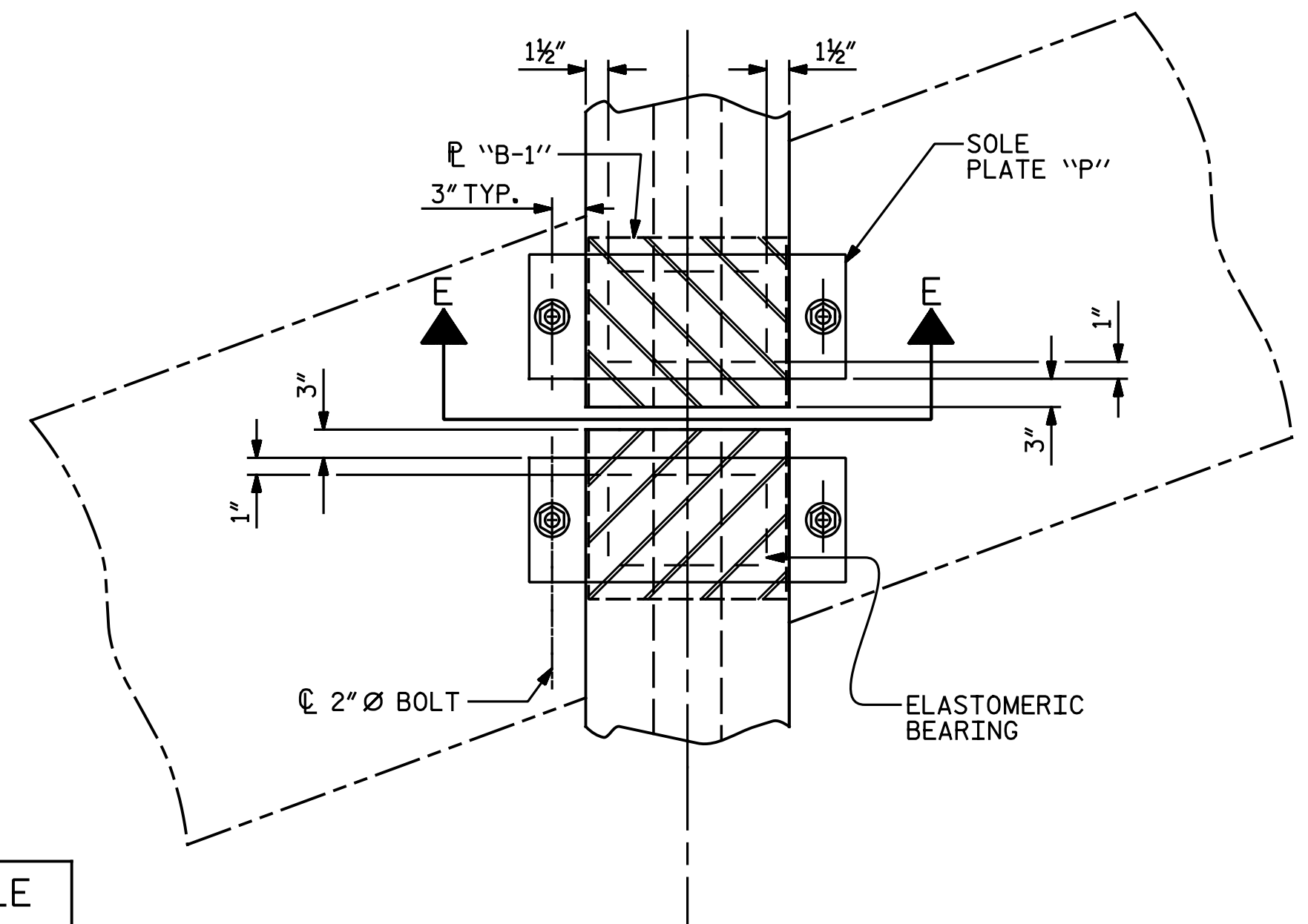
TYPICAL SECTION OF ELASTOMERIC BEARINGS



E1 (10 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE IV



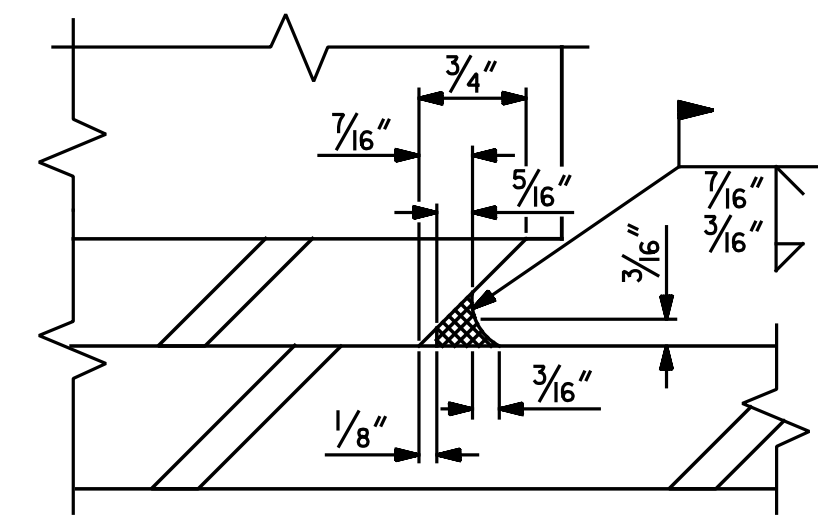
E2 (10 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE V



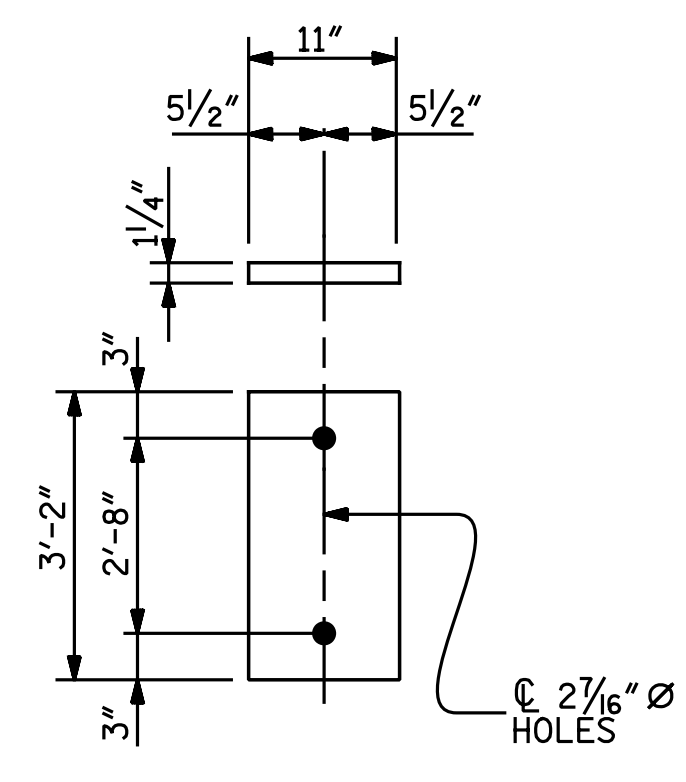
TYPICAL PLAN

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

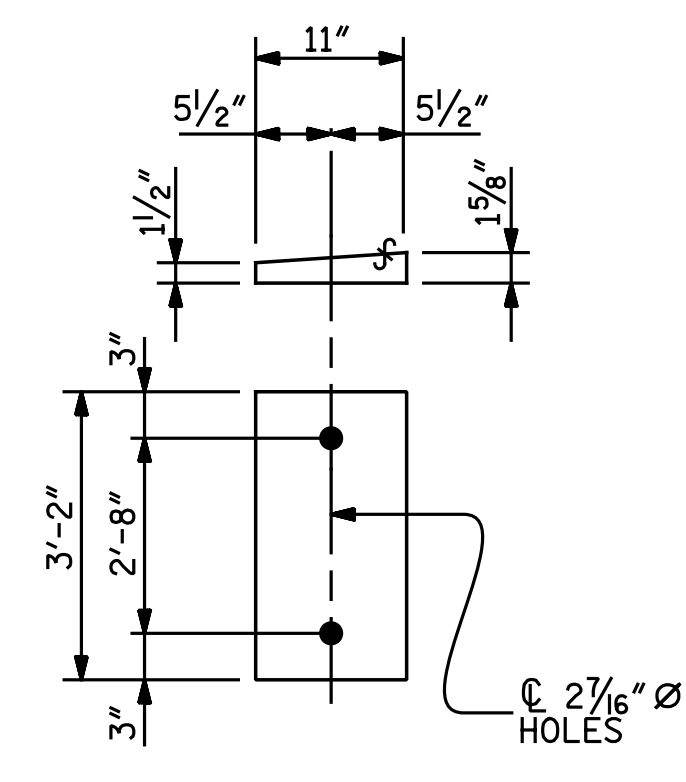
PROJECT NO. R-5703
LENOIR COUNTY
STATION: 342+97.24 -L-



DETAIL "A"

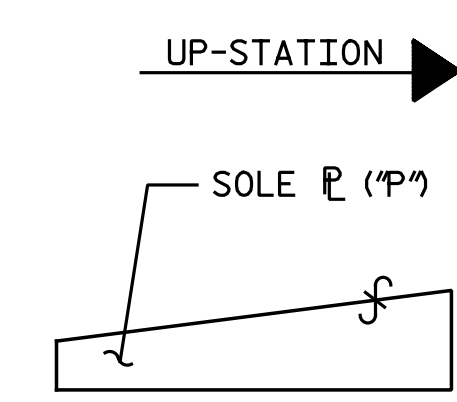


P1 (FIXED)
(5 REQ'D)



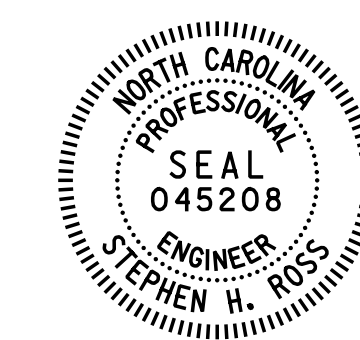
P2 (FIXED)
(5 REQ'D)

SOLE P PLACEMENT DETAIL



SOLE PLATE DETAILS ("P")

FOR BEARING AND SOLE PLATES PLACEMENT SEE "FRAMING PLAN" SHEET



8/4/2017

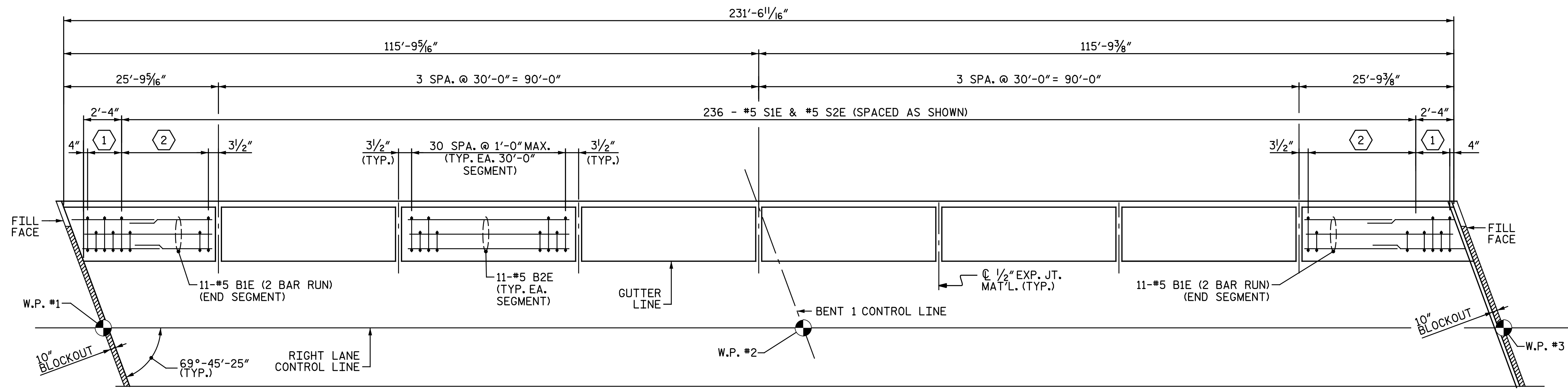
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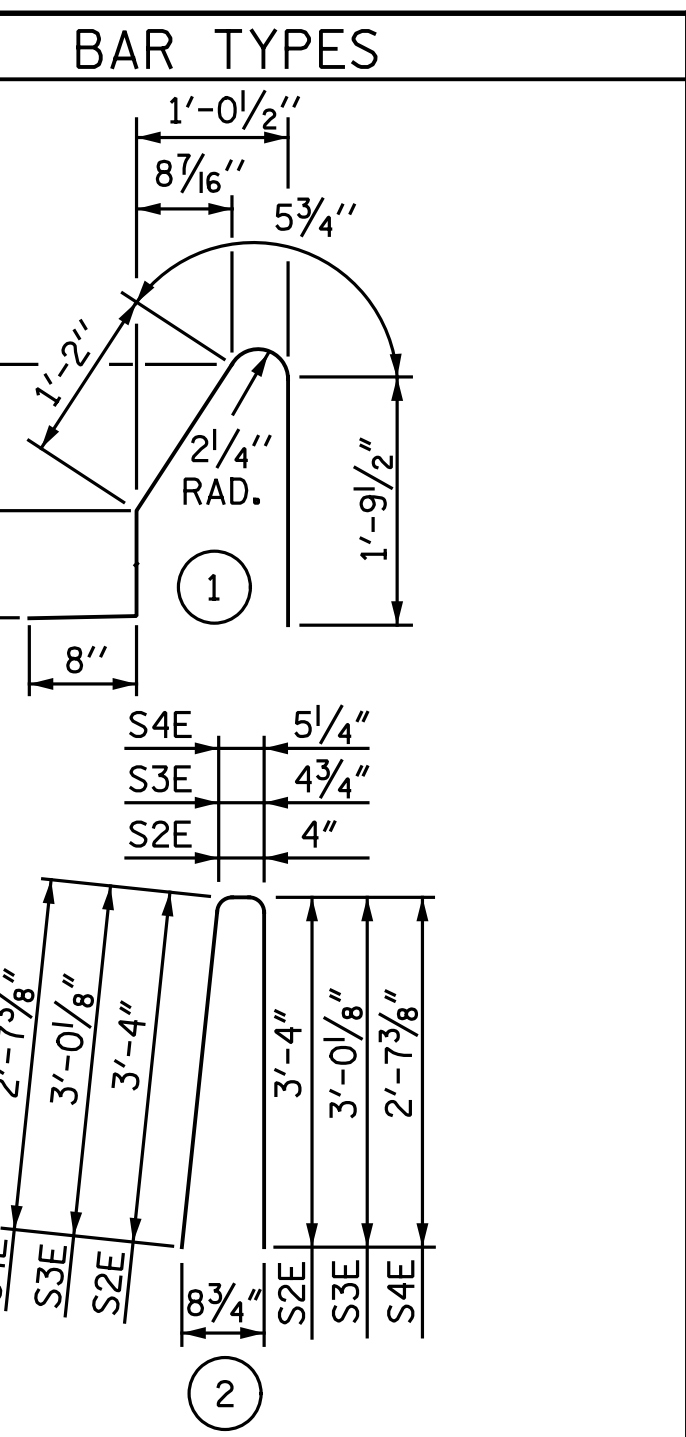
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
ELASTOMERIC BEARING
DETAILS
PRESTRESSED CONCRETE GIRDER
SUPERSTRUCTURE
RIGHT LANE

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

ASSEMBLED BY : W.D. MCGREADY	DATE : 02-02-17
CHECKED BY : S.H. ROSS	DATE : 05-10-17
DRAWN BY : EEM 2/97	REV. 10/1/11
CHECKED BY : VAP 2/97	REV. 6/13
	REV. 1/15
	MAA/GM
	AAC/MAA
	MAA/TMG

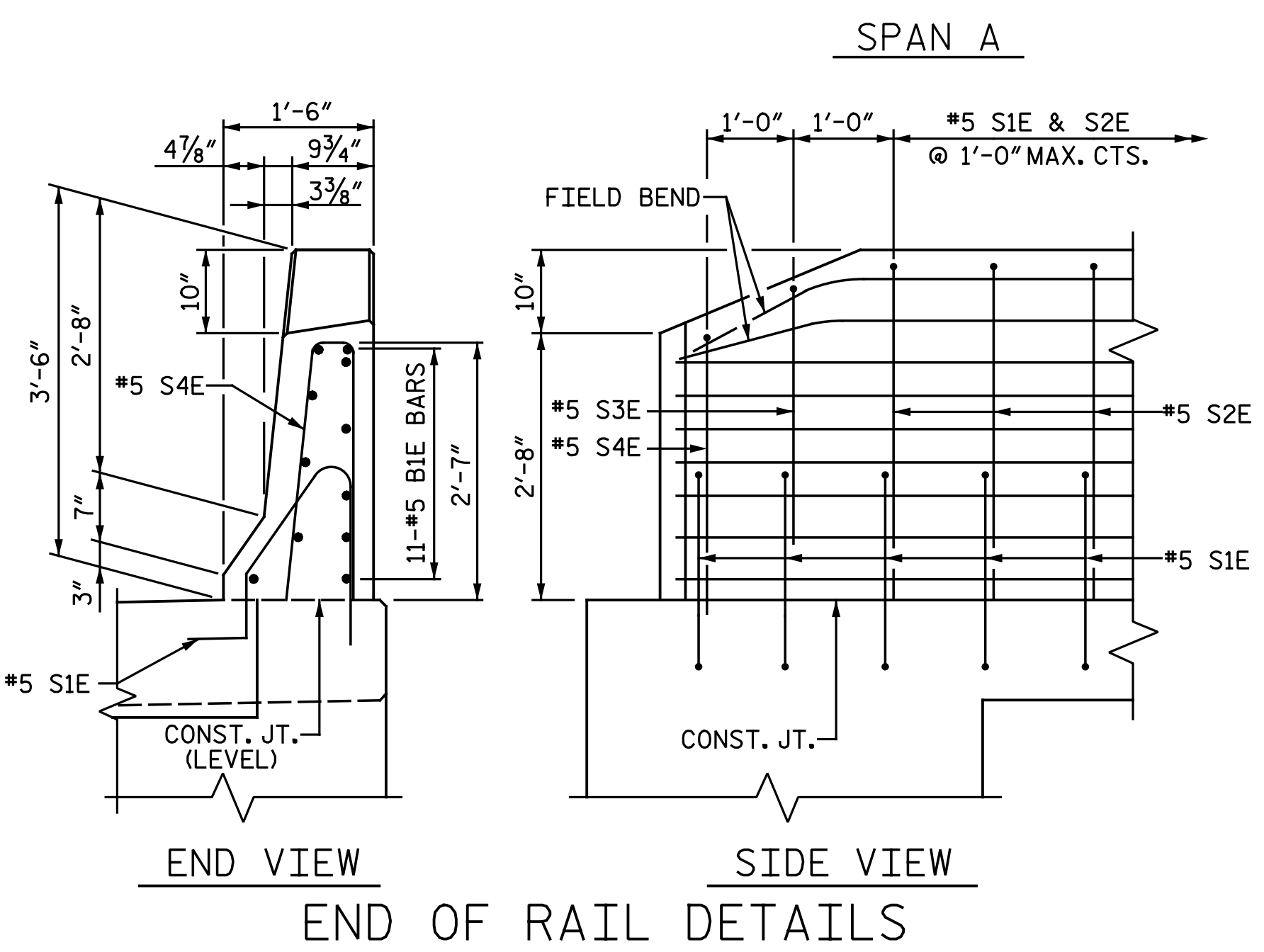


PLAN OF BARRIER RAIL
(LEFT RAIL SHOWN, RIGHT RAIL SIMILAR)

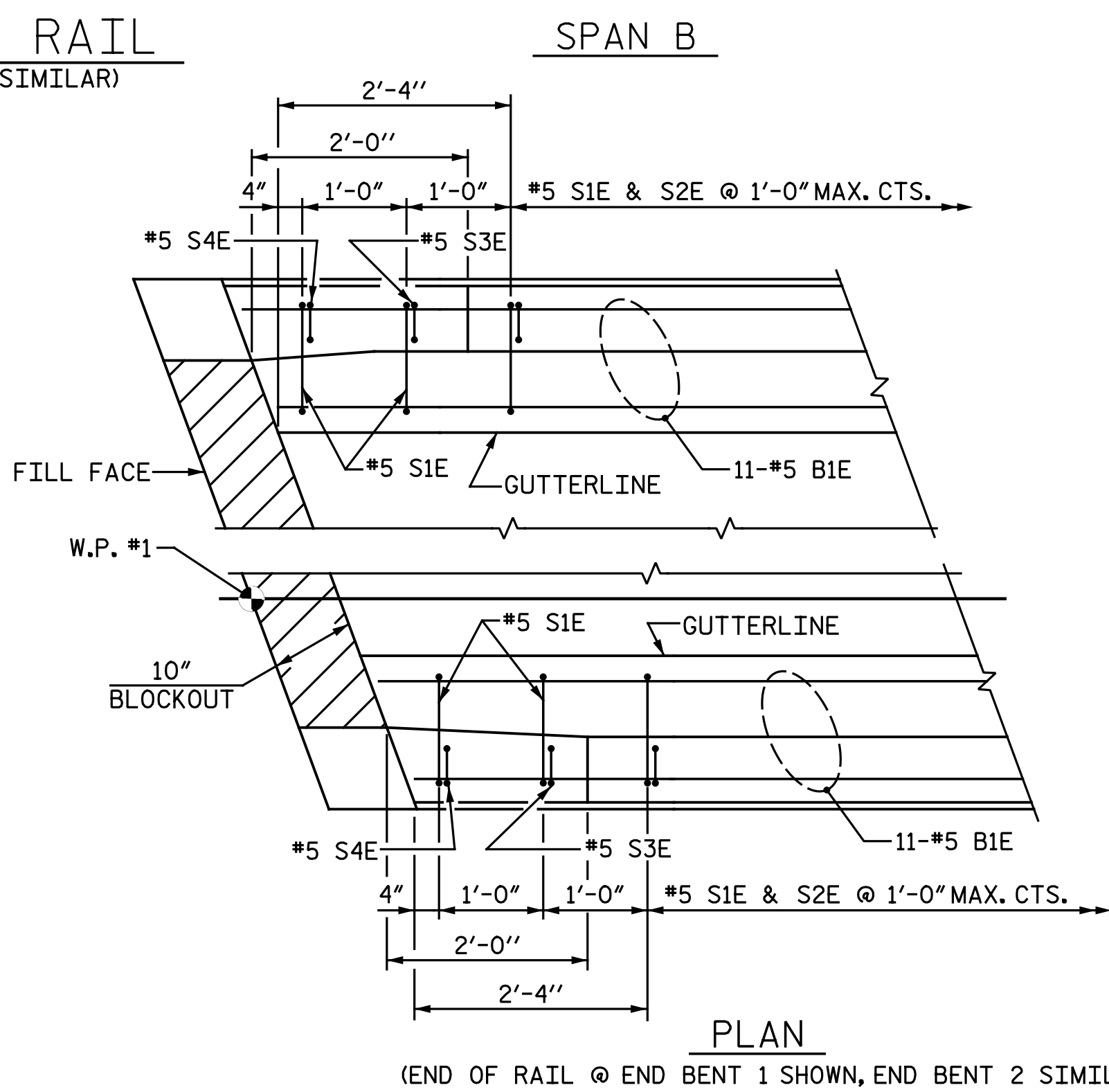


ALL BAR DIMENSIONS ARE OUT TO OUT

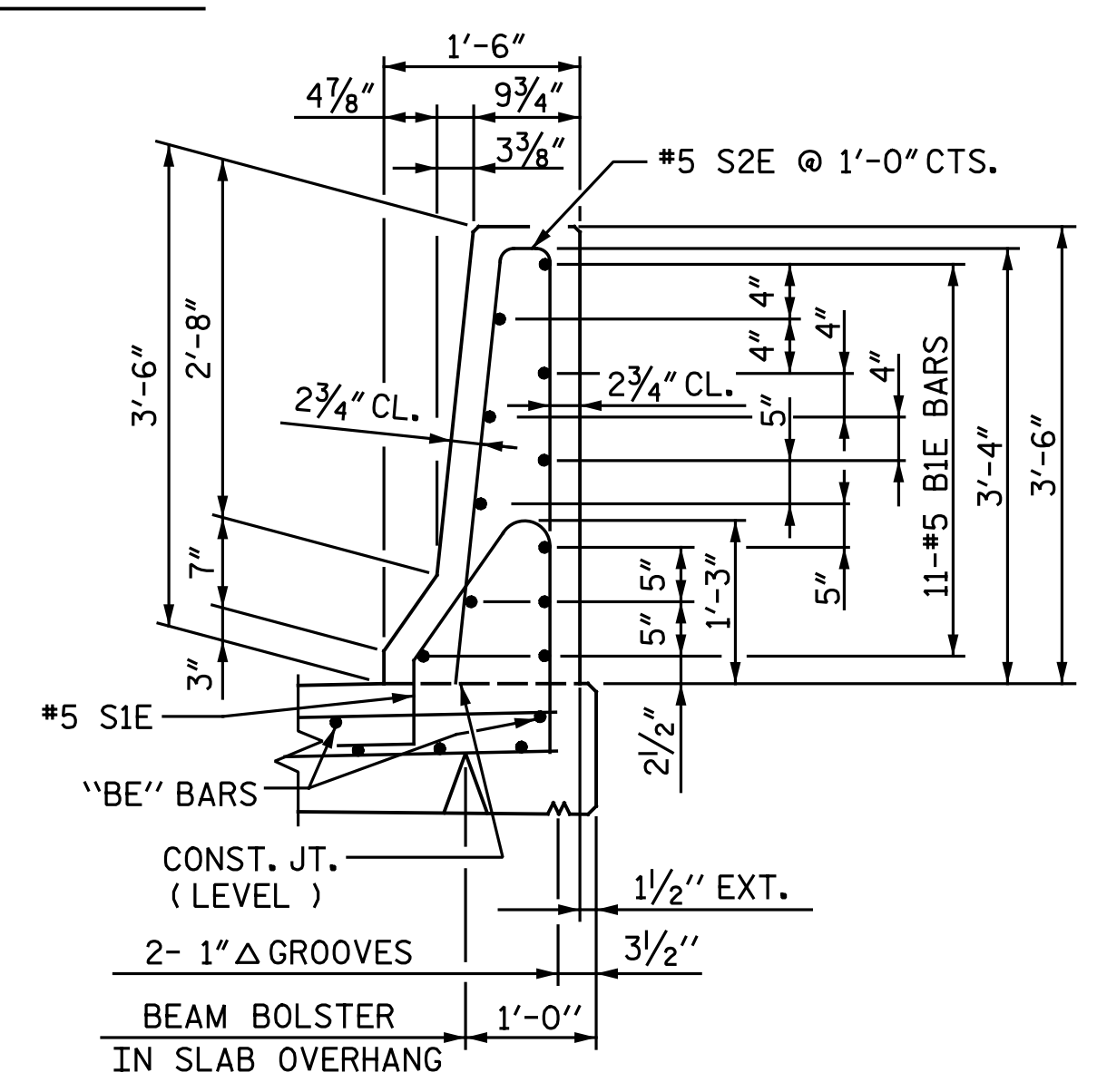
BILL OF MATERIAL					
FOR CONCRETE BARRIER RAIL ONLY					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1E	88	#5	STR	14' - 8"	1,346
B2E	132	#5	STR	29' - 7"	4,073
S1E	480	#5	1	4' - 9"	2,378
S2E	472	#5	2	7' - 0"	3,446
S3E	4	#5	2	6' - 5"	27
S4E	4	#5	2	5' - 8"	24
EPOXY COATED REINFORCING				LBS.	11,294
CLASS AA CONCRETE			C.Y.	62.9	
CONCRETE BARRIER RAIL			L.F.	463.11	



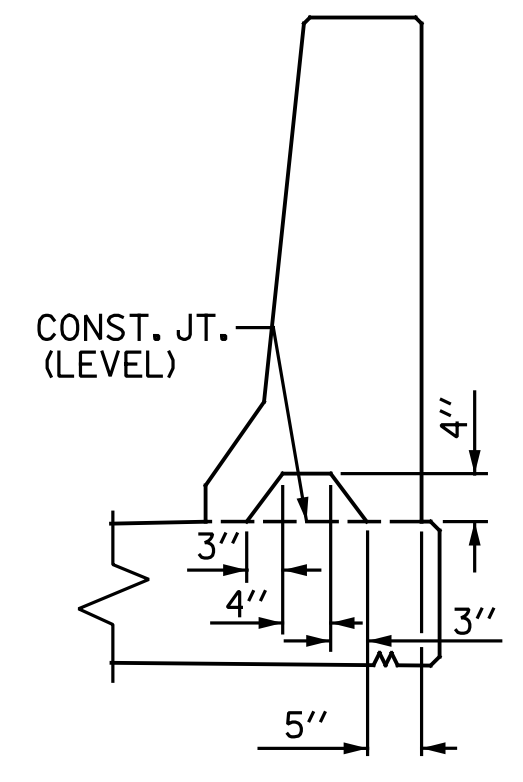
END VIEW
SIDE VIEW
END OF RAIL DETAILS



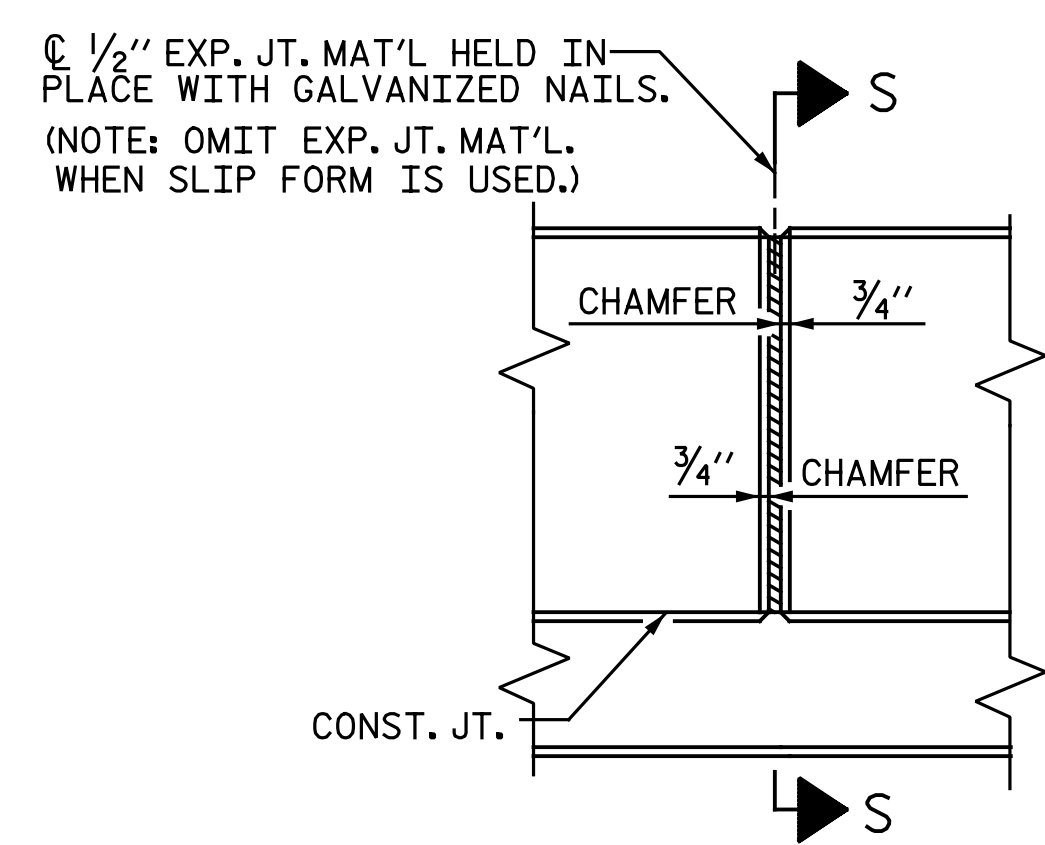
PLAN
(END OF RAIL @ END BENT 1 SHOWN, END BENT 2 SIMILAR)



SECTION THRU RAIL



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



ELEVATION AT EXPANSION JOINTS

SPLICE LENGTHS	
BAR SIZE	BARRIER RAIL (EPOXY COATED)
#5	3'-5"

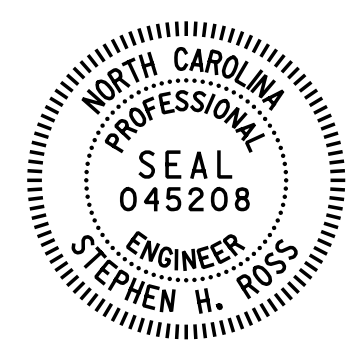
NOTES

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, 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.

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-

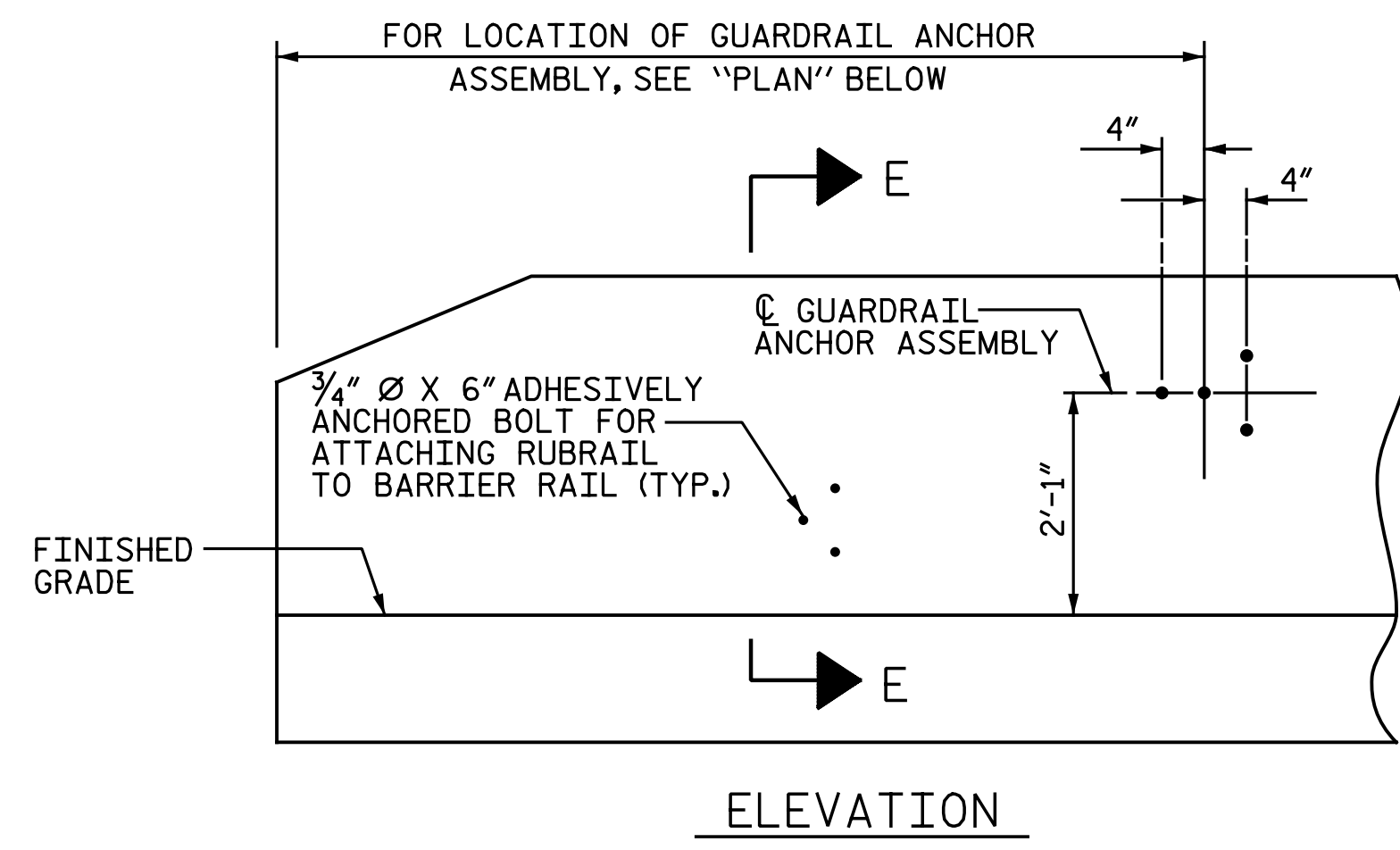
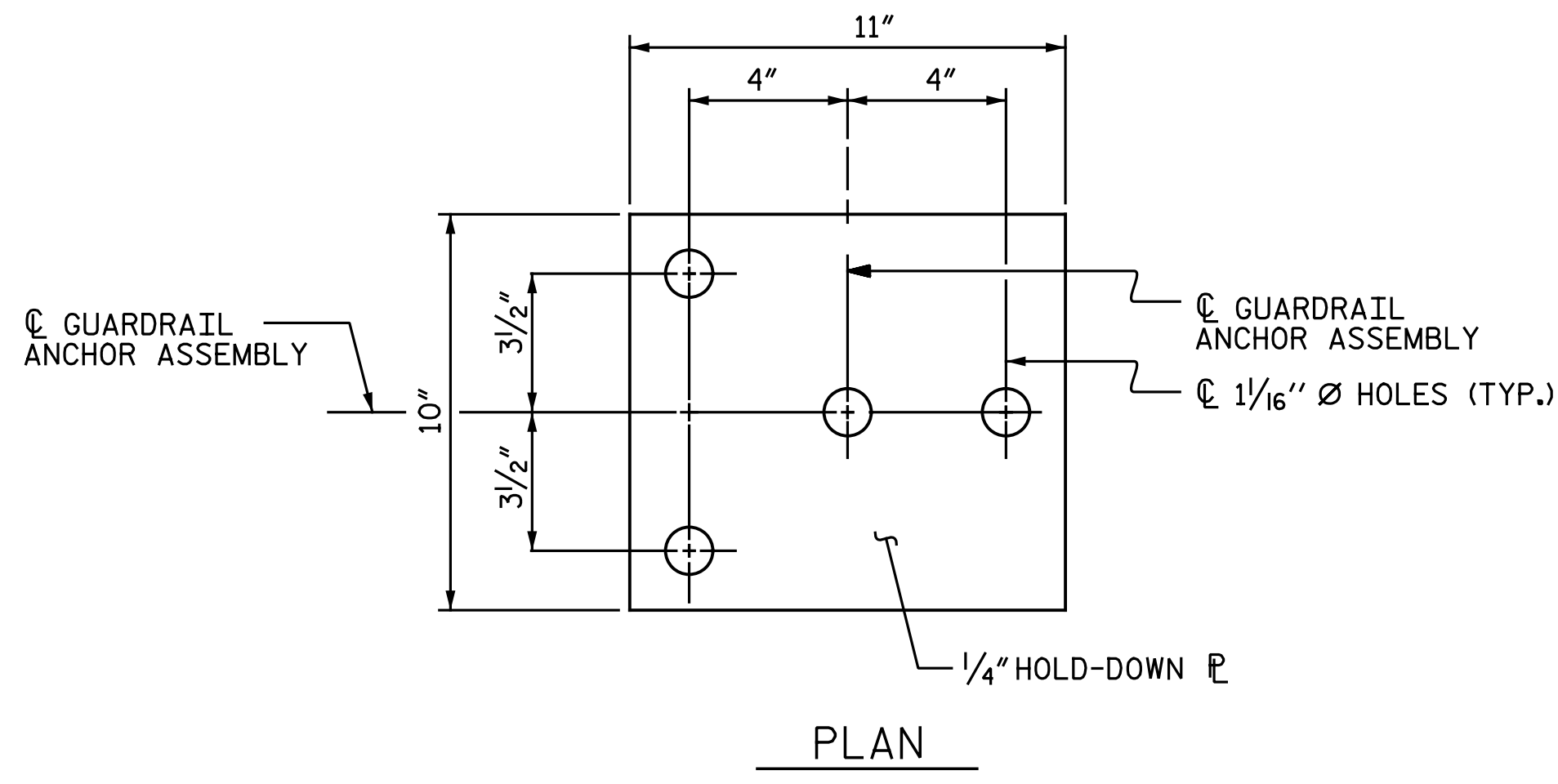


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
CONCRETE BARRIER RAIL
 RIGHT LANE

ASSEMBLED BY : W. D. MCGREADY	DATE : 9-11-17
CHECKED BY : S. H. ROSS	DATE : 9-12-17
DRAWN BY : ARB 5/87	REV. 10/1/11
CHECKED BY : SJD 9/87	REV. 7/12
	REV. 6/13
MAA/GM	MAA/GM
MAA/GM	MAA/GM

9/13/2017
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 Michael Baker Engineering
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 Cary, North Carolina 27518
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1			3		
2			4		



NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD-DOWN PLATE AND 4 - 1/8" 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 1/8" 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.)

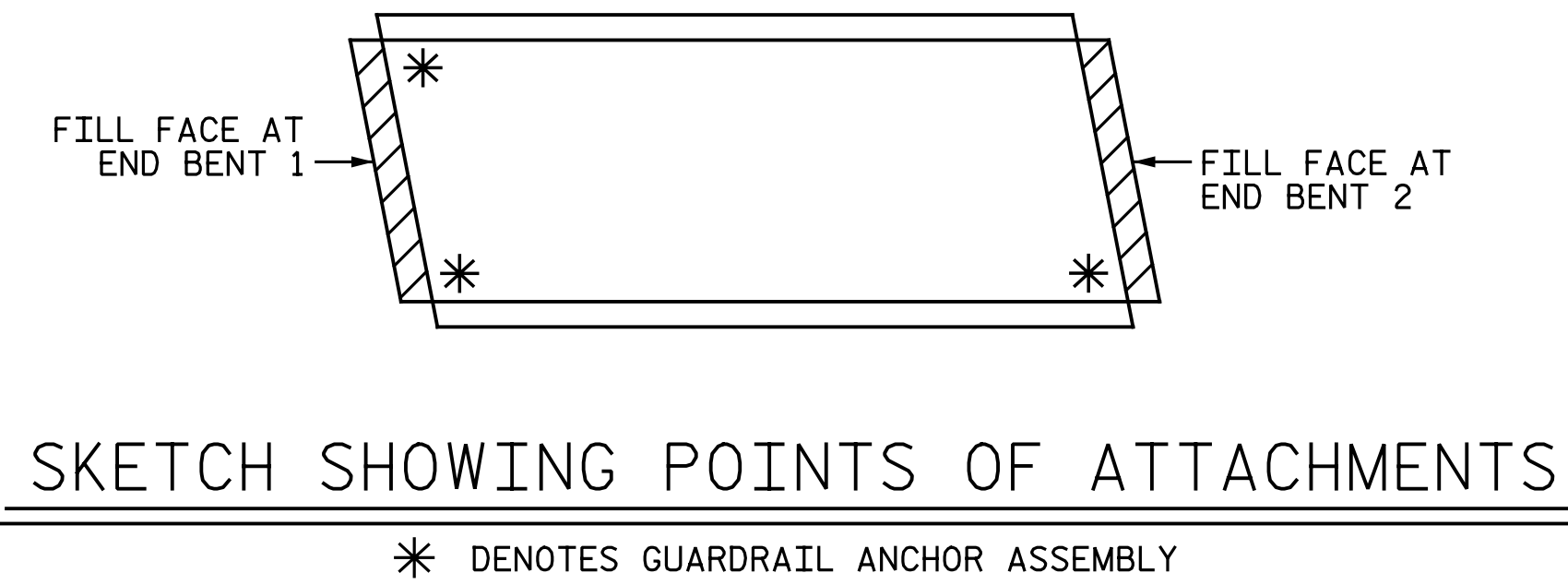
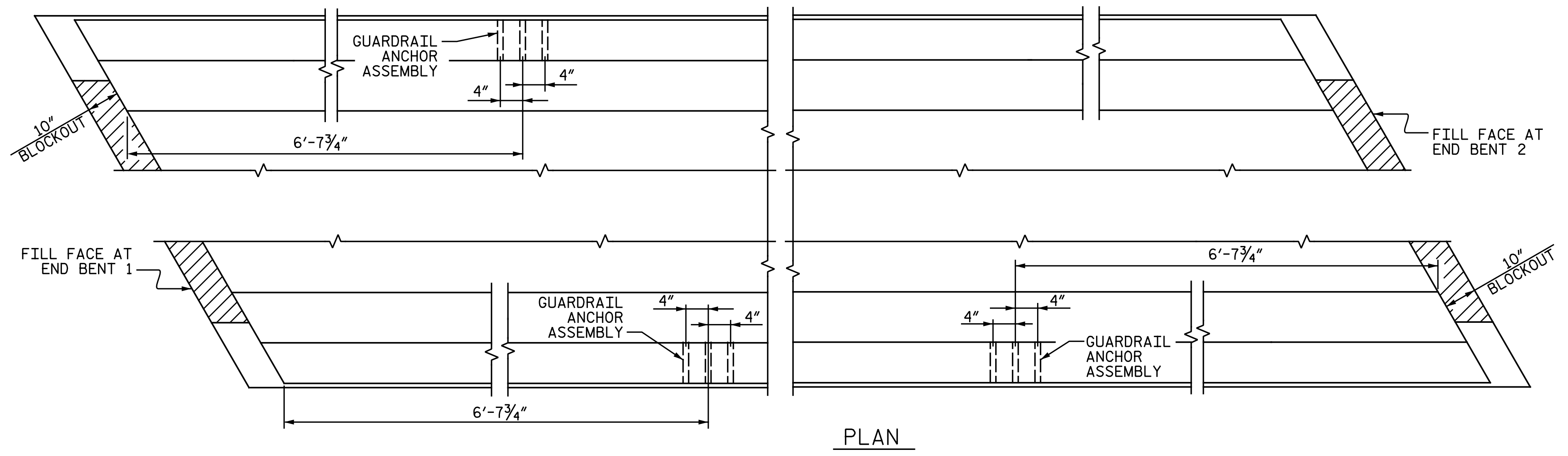
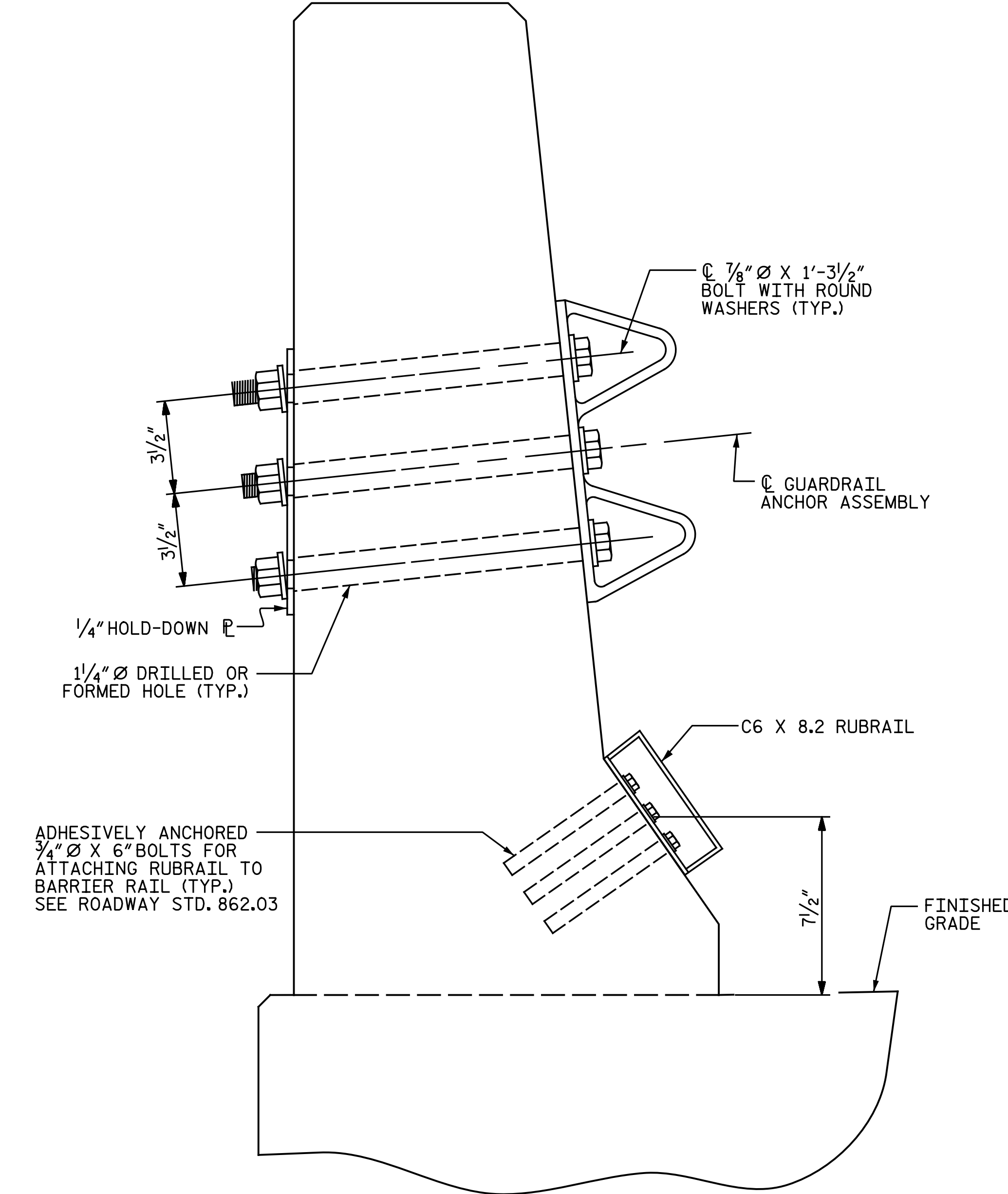
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

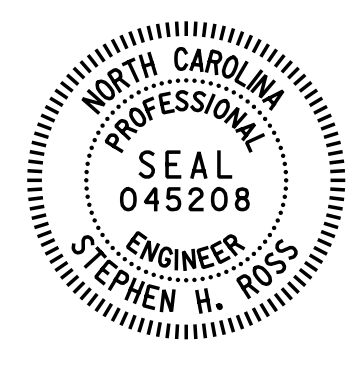
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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.



* DENOTES GUARDRAIL ANCHOR ASSEMBLY



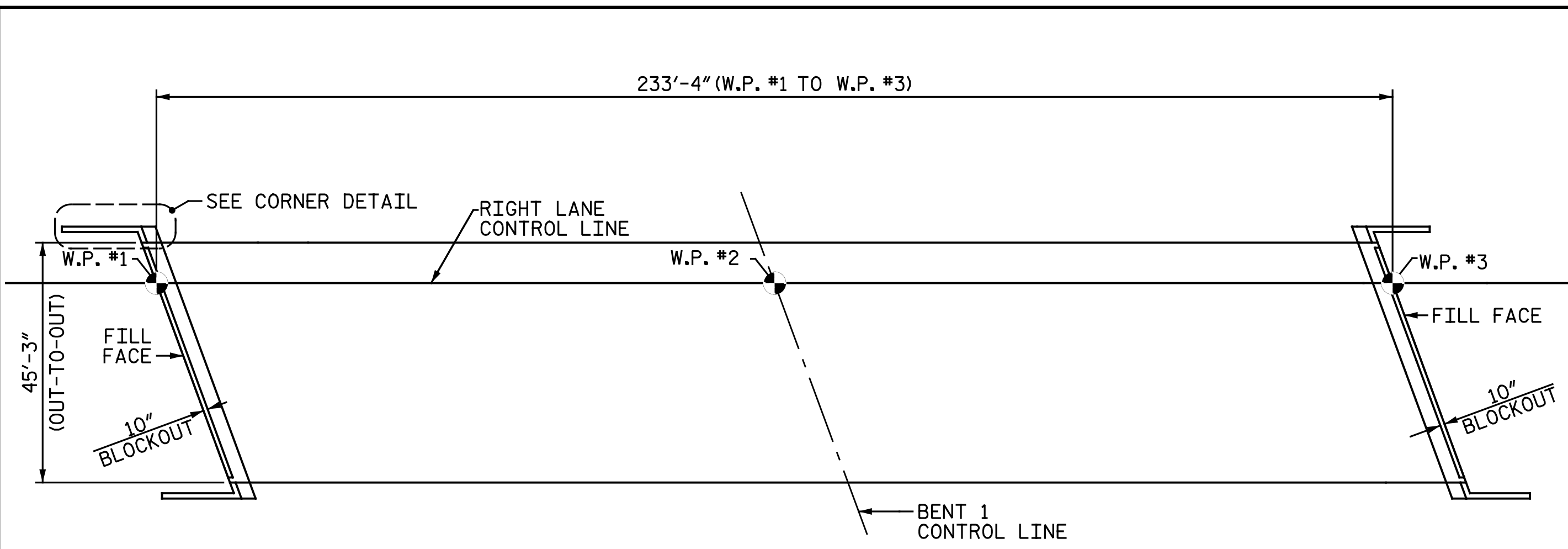
PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 FOR BARRIER RAIL

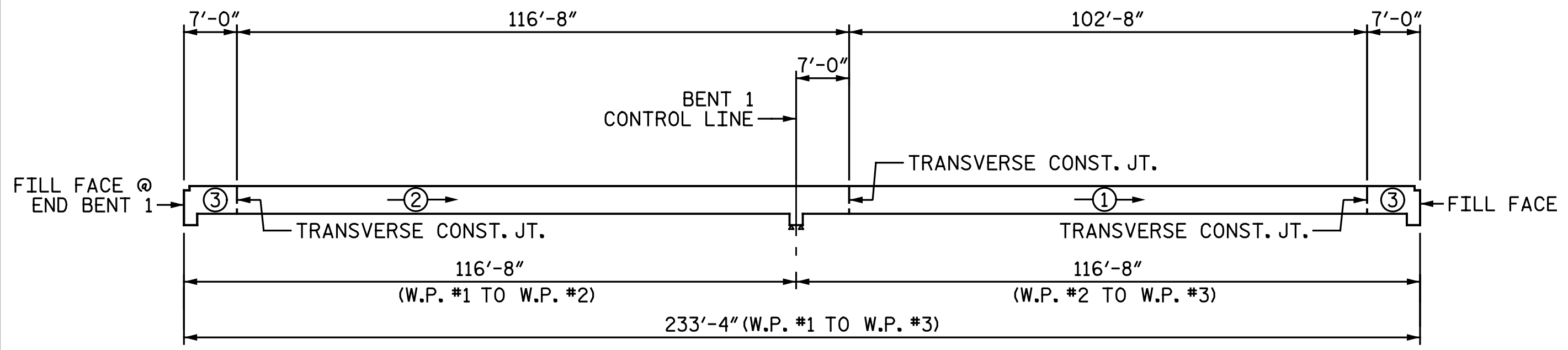
REVISIONS						SHEET NO. S12-15
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 29
2			4			

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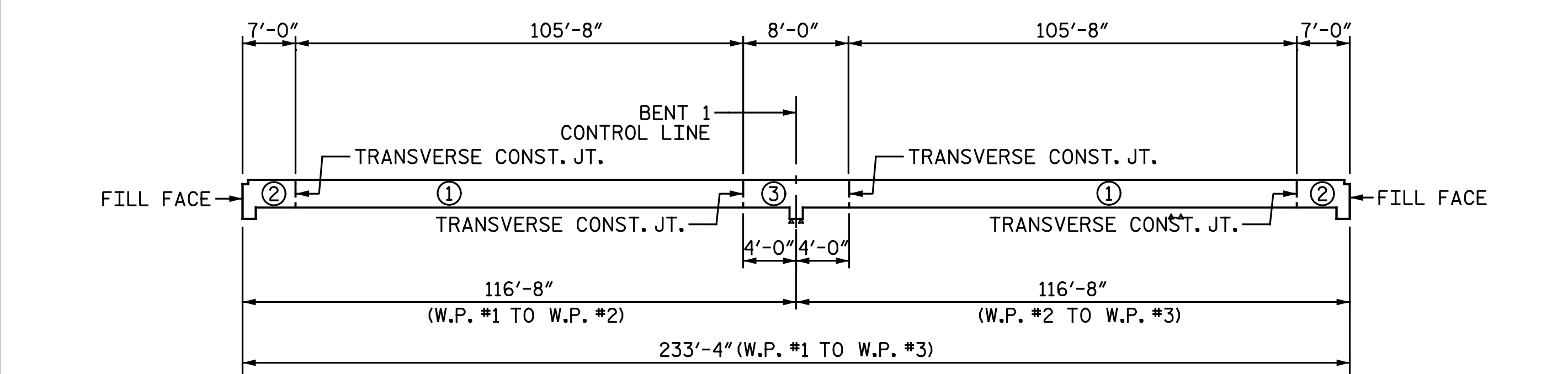
ASSEMBLED BY : W. D. MCGREADY	DATE : 9-11-17
CHECKED BY : S. H. ROSS	DATE : 9-12-17
DRAWN BY : TLA 5/06	REV. 10/1/11 MAA/GM
CHECKED BY : GM 5/06	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 10,559)

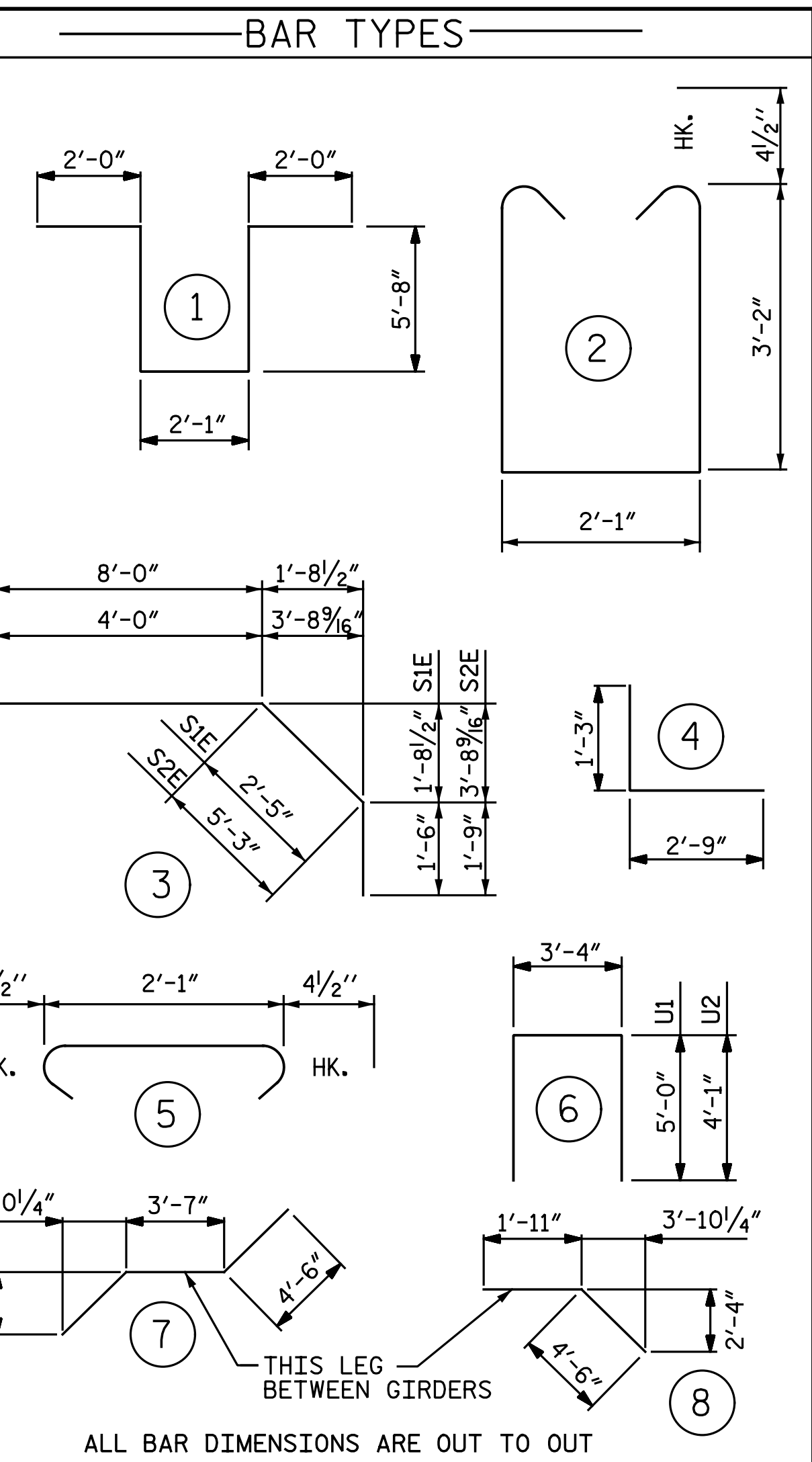
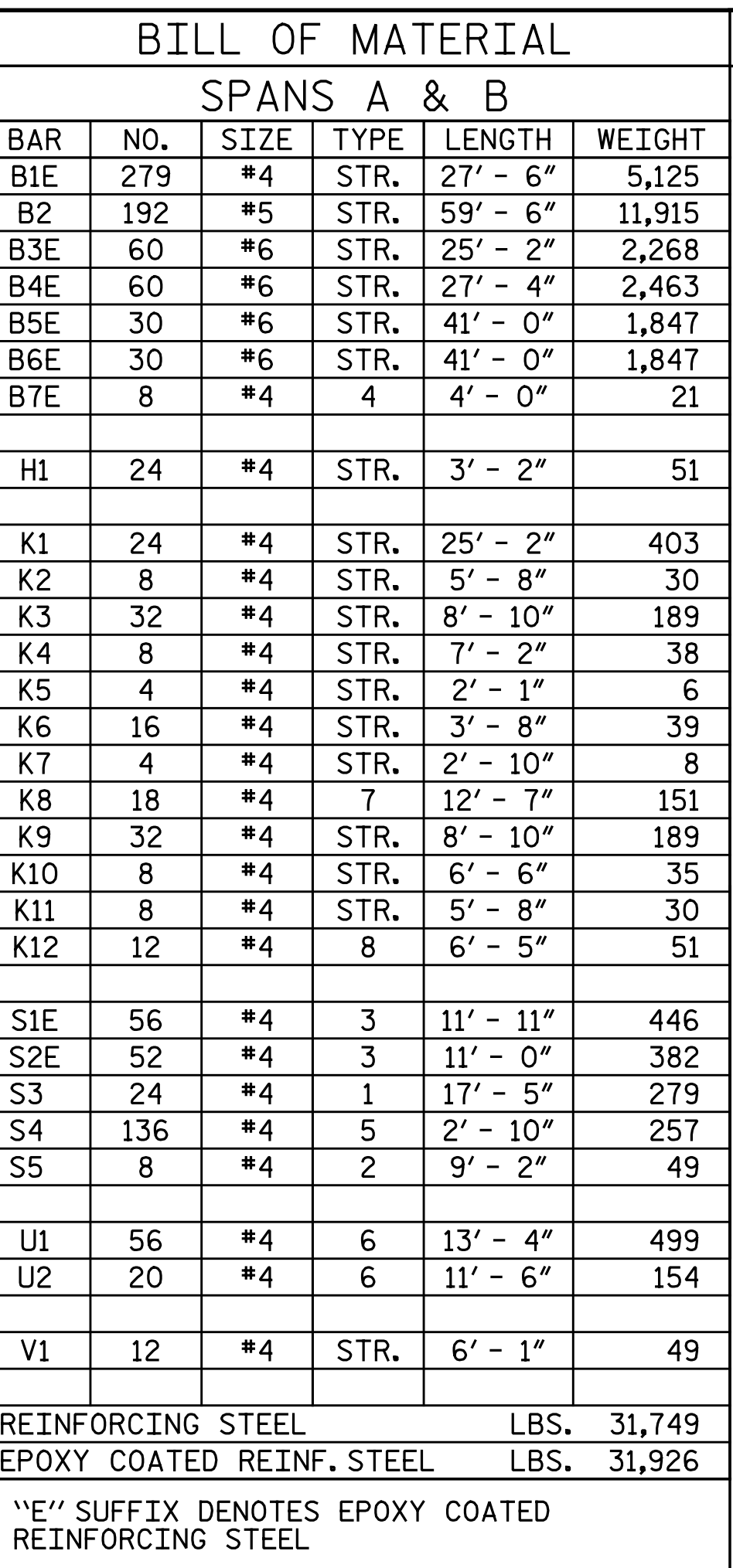


POURING SEQUENCE
⊕ DENOTES POUR NUMBER AND DIRECTION



OPTIONAL POURING SEQUENCE

BILL OF MATERIAL						BILL OF MATERIAL					
SPANS A & B						SPANS A & B					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	344	#5	STR.	44' - 11"	16,116	B1E	279	#4	STR.	27' - 6"	5,125
A2	344	#5	STR.	44' - 11"	16,116	B2	192	#5	STR.	59' - 6"	11,915
A3E	4	#5	STR.	47' - 11"	200	B3E	60	#6	STR.	25' - 2"	2,268
A101E	2	#5	STR.	43' - 7"	91	B4E	60	#6	STR.	27' - 4"	2,463
A102E	2	#5	STR.	41' - 10"	87	B5E	30	#6	STR.	41' - 0"	1,847
A103E	2	#5	STR.	40' - 2"	84	B6E	30	#6	STR.	41' - 0"	1,847
A104E	2	#5	STR.	38' - 5"	80	B7E	8	#4	STR.	4' - 0"	21
A105E	2	#5	STR.	36' - 9"	77	H1	24	#4	STR.	3' - 2"	51
A106E	2	#5	STR.	35' - 1"	73	K1	24	#4	STR.	25' - 2"	403
A107E	2	#5	STR.	33' - 4"	70	K2	8	#4	STR.	5' - 8"	30
A108E	2	#5	STR.	31' - 8"	66	K3	32	#4	STR.	8' - 10"	189
A109E	2	#5	STR.	30' - 0"	63	K4	8	#4	STR.	7' - 2"	38
A110E	2	#5	STR.	28' - 3"	59	K5	4	#4	STR.	2' - 1"	6
A111E	2	#5	STR.	26' - 7"	55	K6	16	#4	STR.	3' - 8"	39
A112E	2	#5	STR.	24' - 11"	52	K7	4	#4	STR.	2' - 10"	8
A113E	2	#5	STR.	23' - 2"	48	K8	18	#4	STR.	12' - 7"	151
A114E	2	#5	STR.	21' - 6"	45	K9	32	#4	STR.	8' - 10"	189
A115E	2	#5	STR.	19' - 10"	41	K10	8	#4	STR.	6' - 6"	35
A116E	2	#5	STR.	18' - 1"	38	K11	8	#4	STR.	5' - 8"	30
A117E	2	#5	STR.	16' - 5"	34	K12	12	#4	STR.	6' - 5"	51
A118E	2	#5	STR.	14' - 9"	31	S1E	56	#4	STR.	11' - 11"	446
A119E	2	#5	STR.	13' - 0"	27	S2E	52	#4	STR.	11' - 0"	382
A120E	2	#5	STR.	11' - 4"	24	S3	24	#4	STR.	17' - 5"	279
A121E	2	#5	STR.	9' - 8"	20	S4	136	#4	STR.	2' - 10"	257
A122E	2	#5	STR.	7' - 11"	17	S5	8	#4	STR.	9' - 2"	49
A123E	2	#5	STR.	6' - 3"	13	U1	56	#4	STR.	13' - 4"	499
A124E	2	#5	STR.	4' - 7"	10	U2	20	#4	STR.	11' - 6"	154
A125E	2	#5	STR.	2' - 10"	6	V1	12	#4	STR.	6' - 1"	49
A201	2	#5	STR.	43' - 7"	91	REINFORCING STEEL		LBS.		31,749	
A202	2	#5	STR.	41' - 10"	87	EPOXY COATED REINF. STEEL		LBS.		31,926	
A203	2	#5	STR.	40' - 2"	84	"E" SUFFIX DENOTES EPOXY COATED REINFORCING STEEL					
A204	2	#5	STR.	38' - 5"	80						
A205	2	#5	STR.	36' - 9"	77						
A206	2	#5	STR.	35' - 1"	73						
A207	2	#5	STR.	33' - 4"	70						
A208	2	#5	STR.	31' - 8"	66						
A209	2	#5	STR.	30' - 0"	63						
A210	2	#5	STR.	28' - 3"	59						
A211	2	#5	STR.	26' - 7"	55						
A212	2	#5	STR.	24' - 11"	52						
A213	2	#5	STR.	23' - 2"	48						
A214	2	#5	STR.	21' - 6"	45						
A215	2	#5	STR.	19' - 10"	41						
A216	2	#5	STR.	18' - 1"	38						
A217	2	#5	STR.	16' - 5"	34						
A218	2	#5	STR.	14' - 9"	31						
A219	2	#5	STR.	13' - 0"	27						
A220	2	#5	STR.	11' - 4"	24						
A221	2	#5	STR.	9' - 8"	20						
A222	2	#5	STR.	7' - 11"	17						
A223	2	#5	STR.	6' - 3"	13						
A224	2	#5	STR.	4' - 7"	10						
A225	2	#5	STR.	2' - 10"	6						

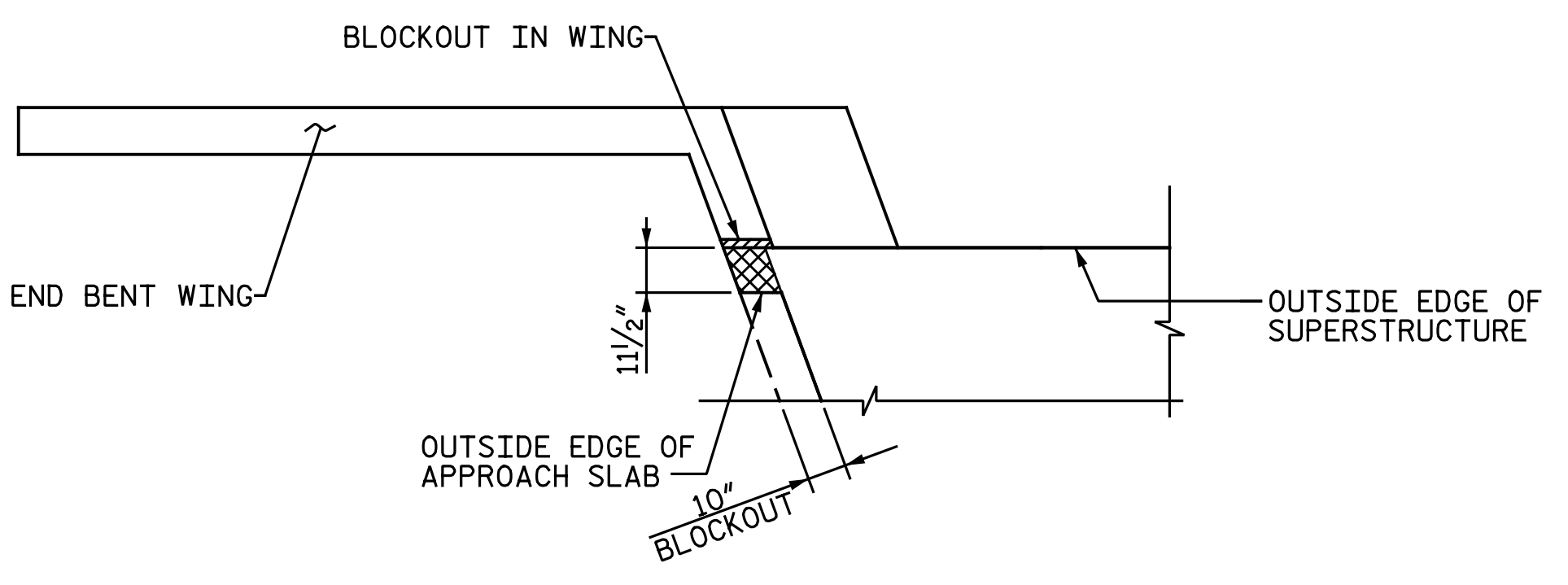


GROOVING BRIDGE FLOORS		
APPROACH SLABS	1884	SQ.FT.
BRIDGE DECK	9016	SQ.FT.
TOTAL	10,900	SQ.FT.

SUPERSTRUCTURE BILL OF MATERIAL			
	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
SPAN "A" & "B"		31,749	31,926
POUR 1	165.6		
POUR 2	205.5		
POUR 3	83.5		
TOTALS **	454.6	31,749	31,926

** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 342+97.24 -L-



CORNER DETAIL

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

DRAWN BY : W. D. MCGREADY DATE : 02-06-17
CHECKED BY : S. H. ROSS DATE : 05-10-17

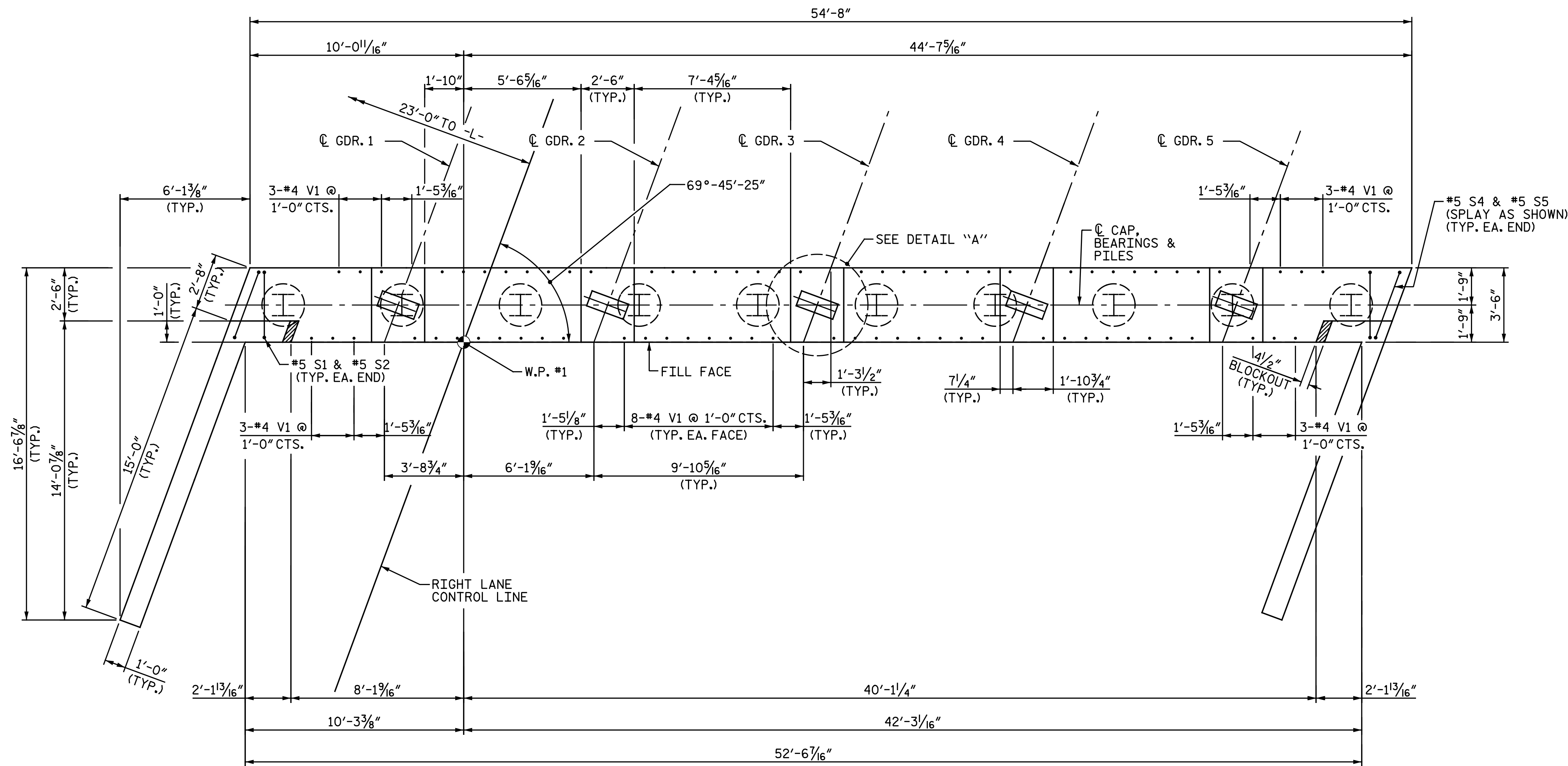


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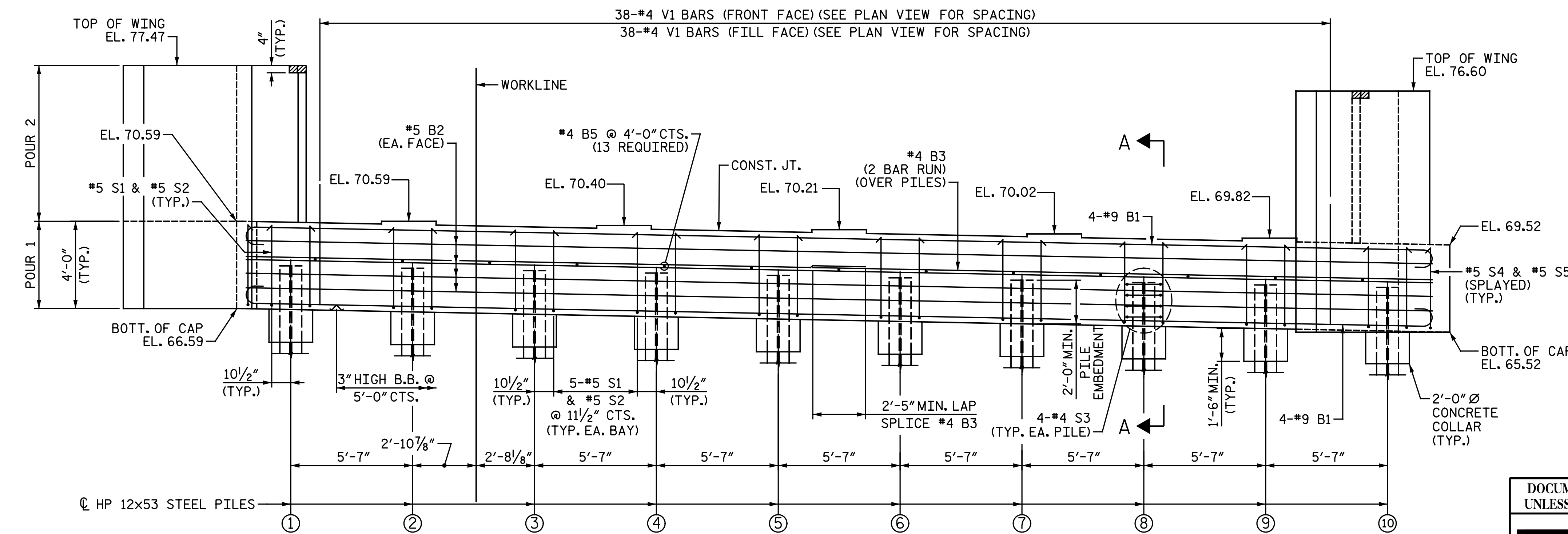
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
BILL OF MATERIAL
RIGHT LANE

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

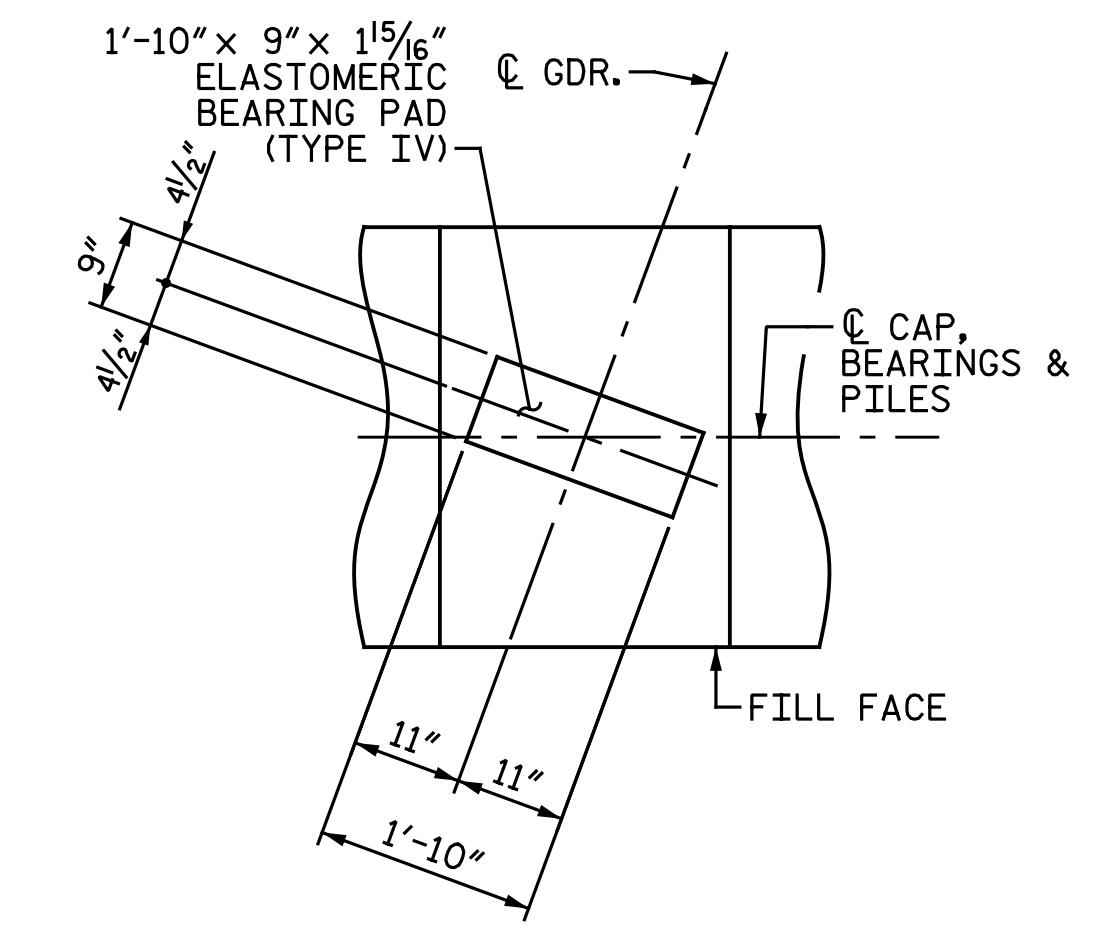


PLAN



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

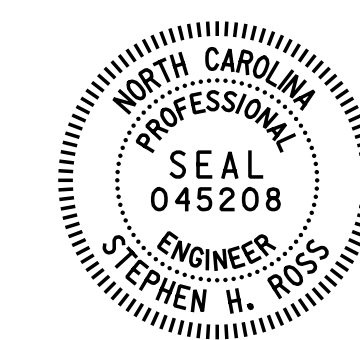


DETAIL "A"

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

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
1	68.55
2	68.44
3	68.33
4	68.22
5	68.11
6	68.00
7	67.89
8	67.79
9	67.68
10	67.57

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-
 SHEET 1 OF 2



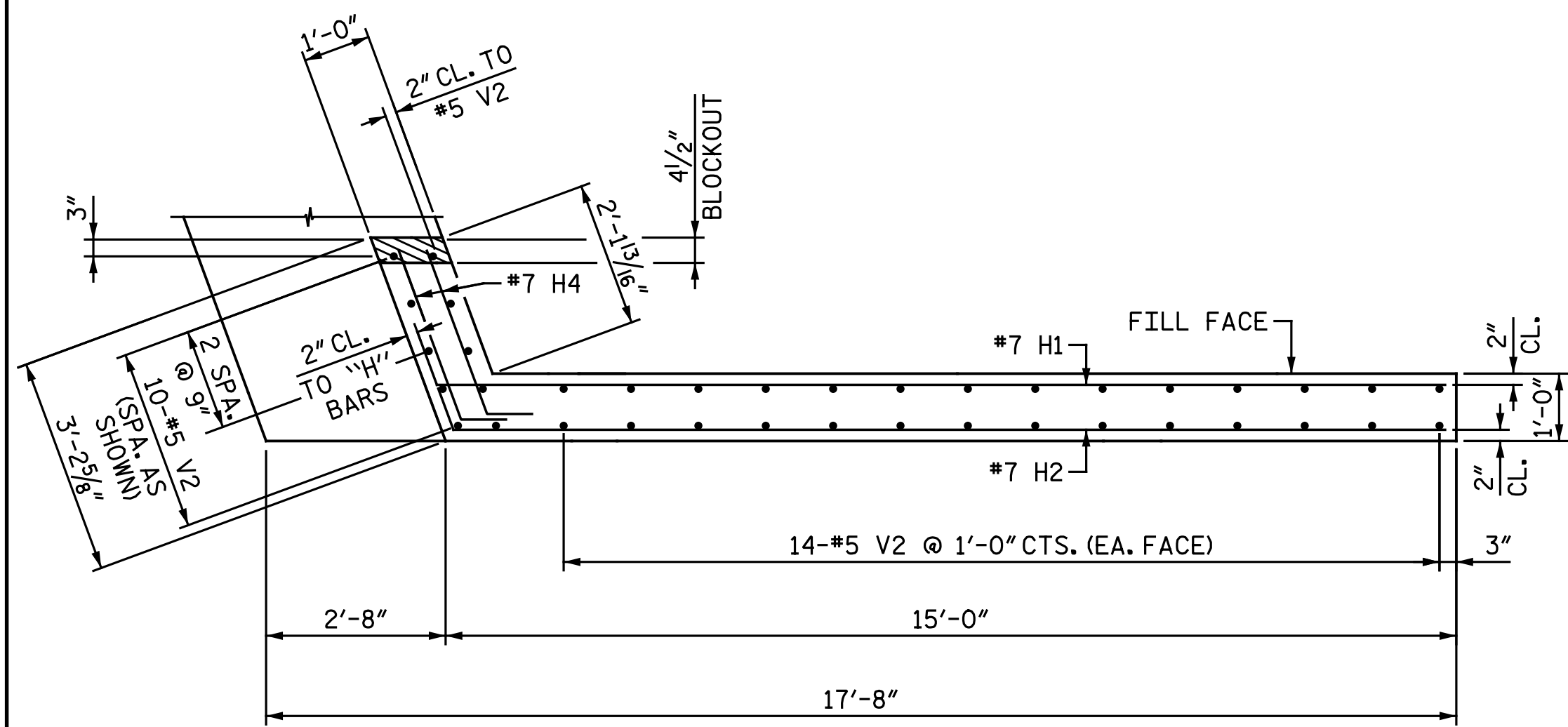
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 INTEGRAL END BENT 1
 RIGHT LANE

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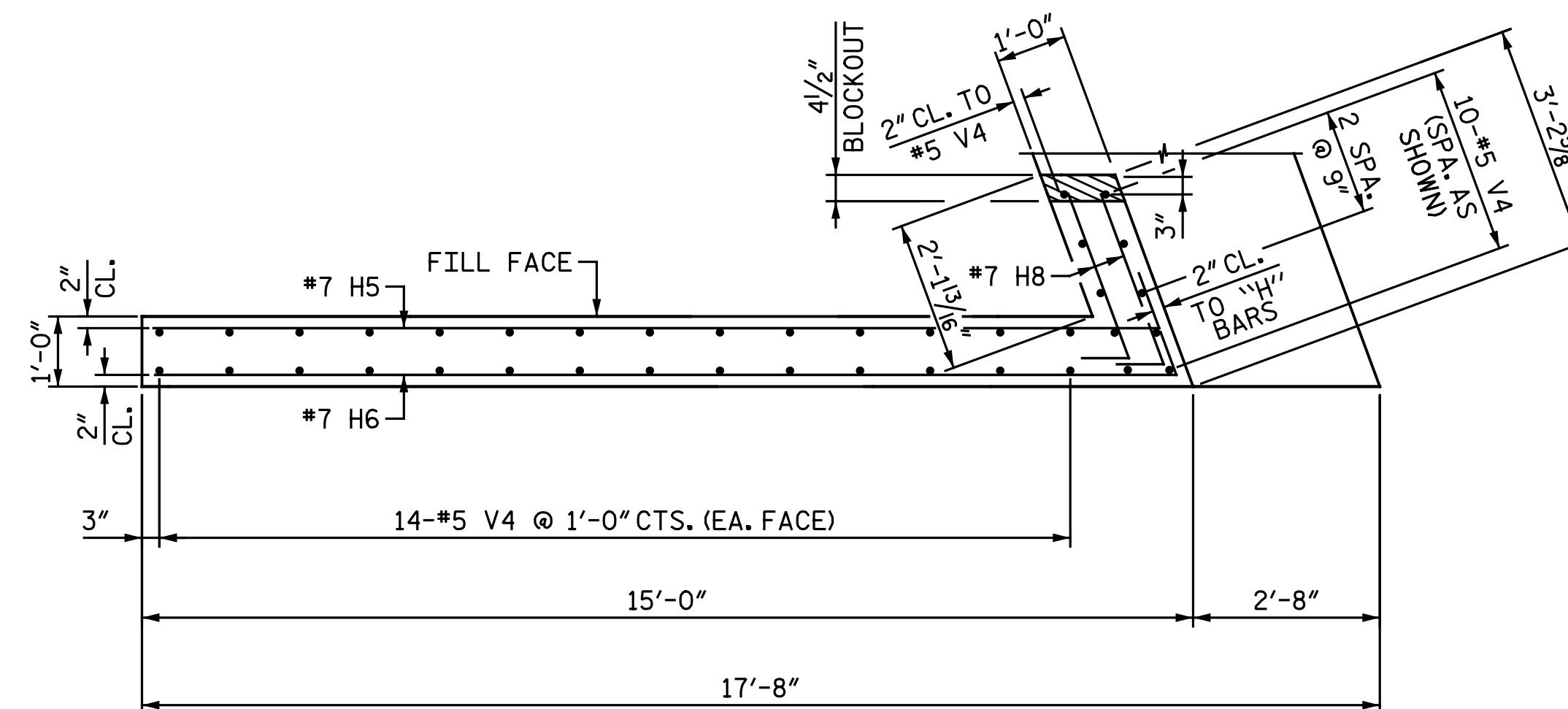
NO.	BY:	DATE:	REVISIONS			SHEET NO.
			NO.	BY:	DATE:	
1			3			S12-17 TOTAL SHEETS 29
2			4			

DRAWN BY: W. D. MCGREADY DATE: 03-21-17
 CHECKED BY: S. H. ROSS DATE: 05-10-17

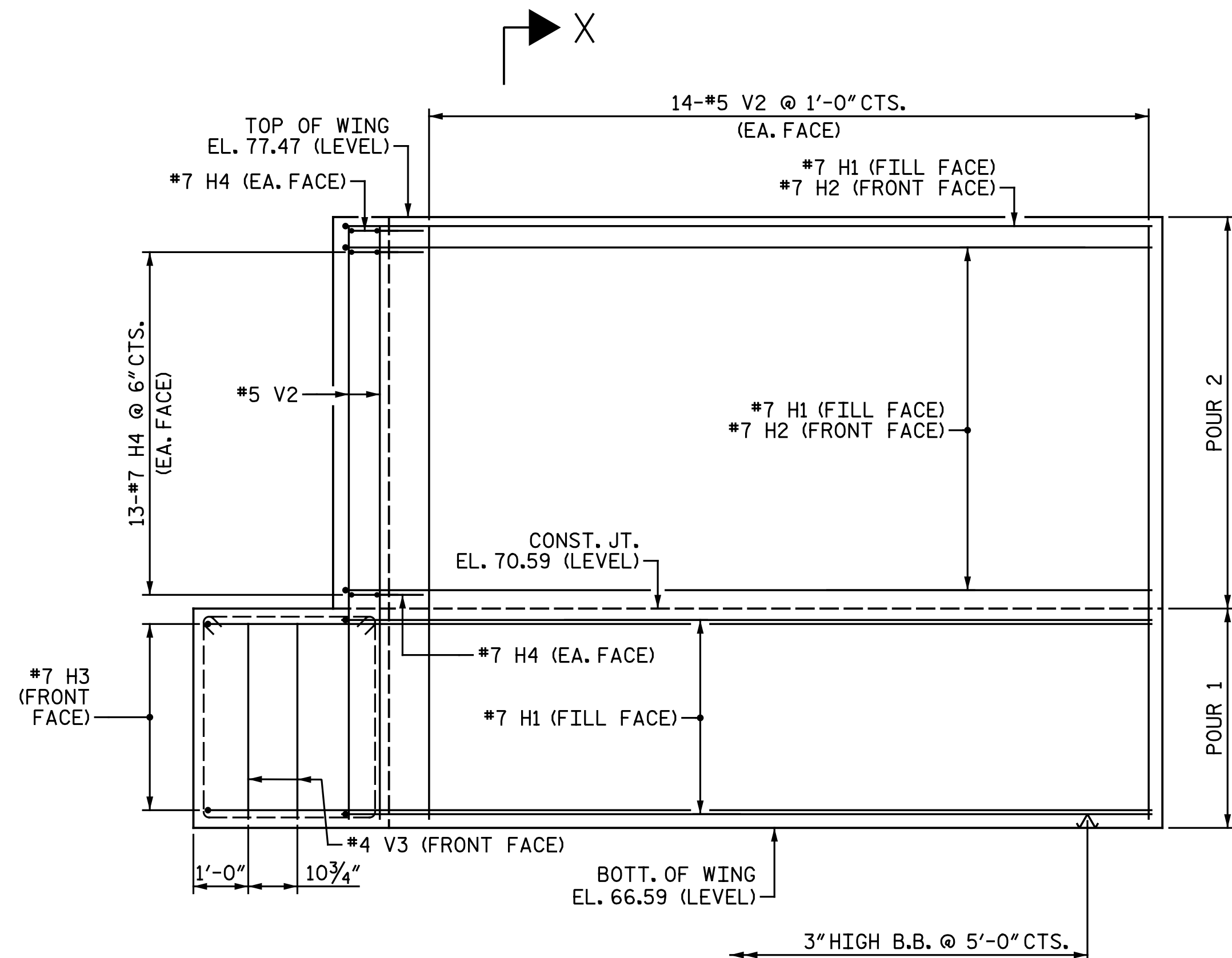
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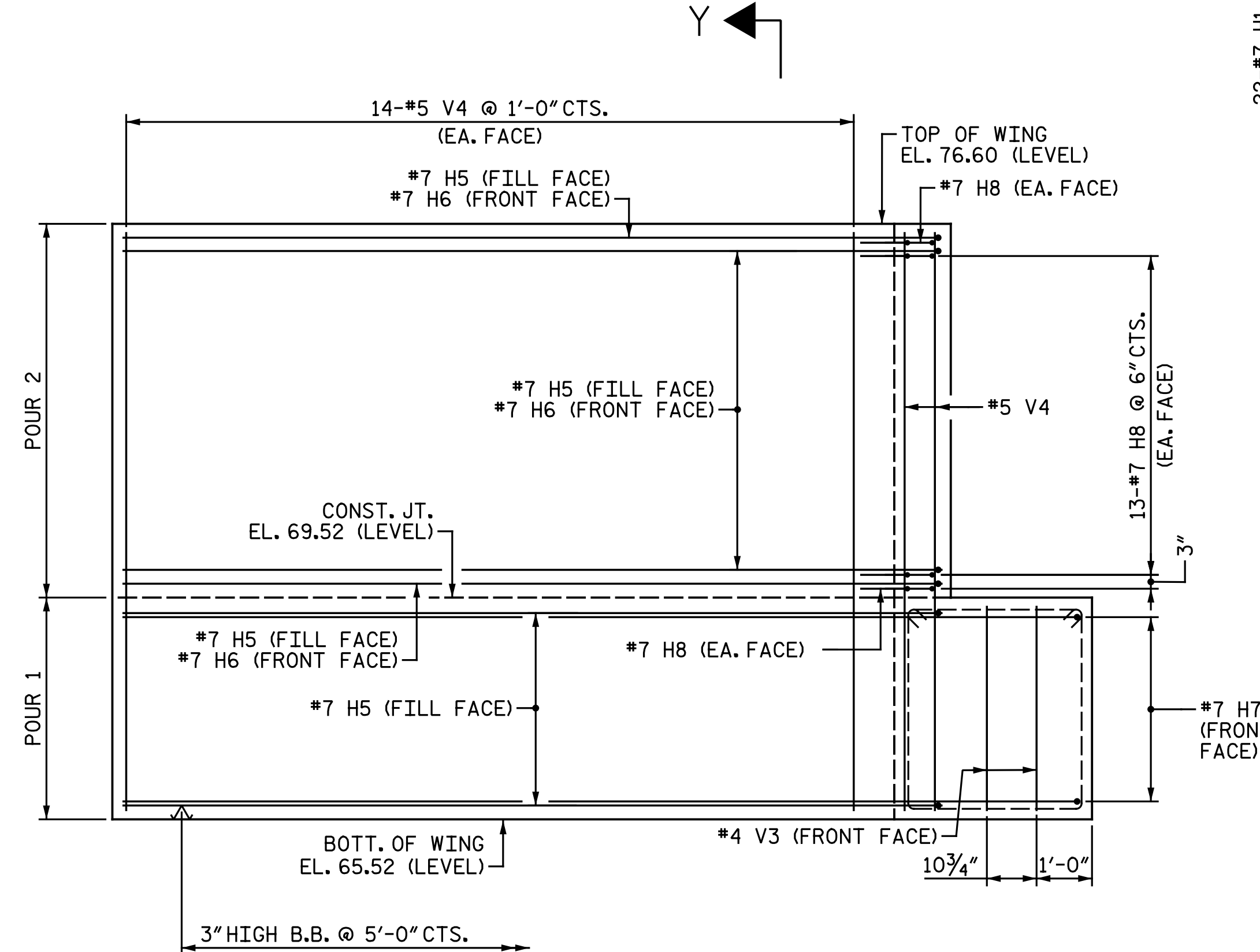
PLAN OF LEFT WING
(H3 BARS NOT SHOWN FOR CLARITY)



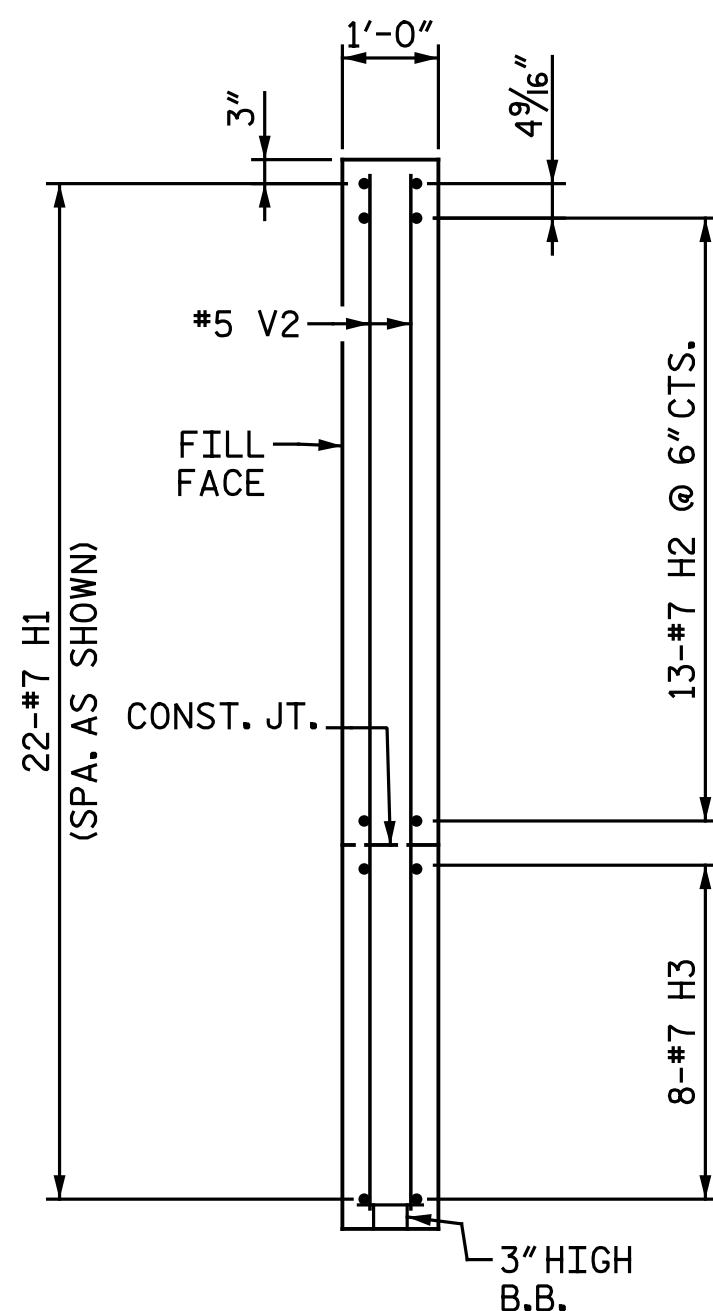
PLAN OF RIGHT WING
(H7 BARS NOT SHOWN FOR CLARITY)



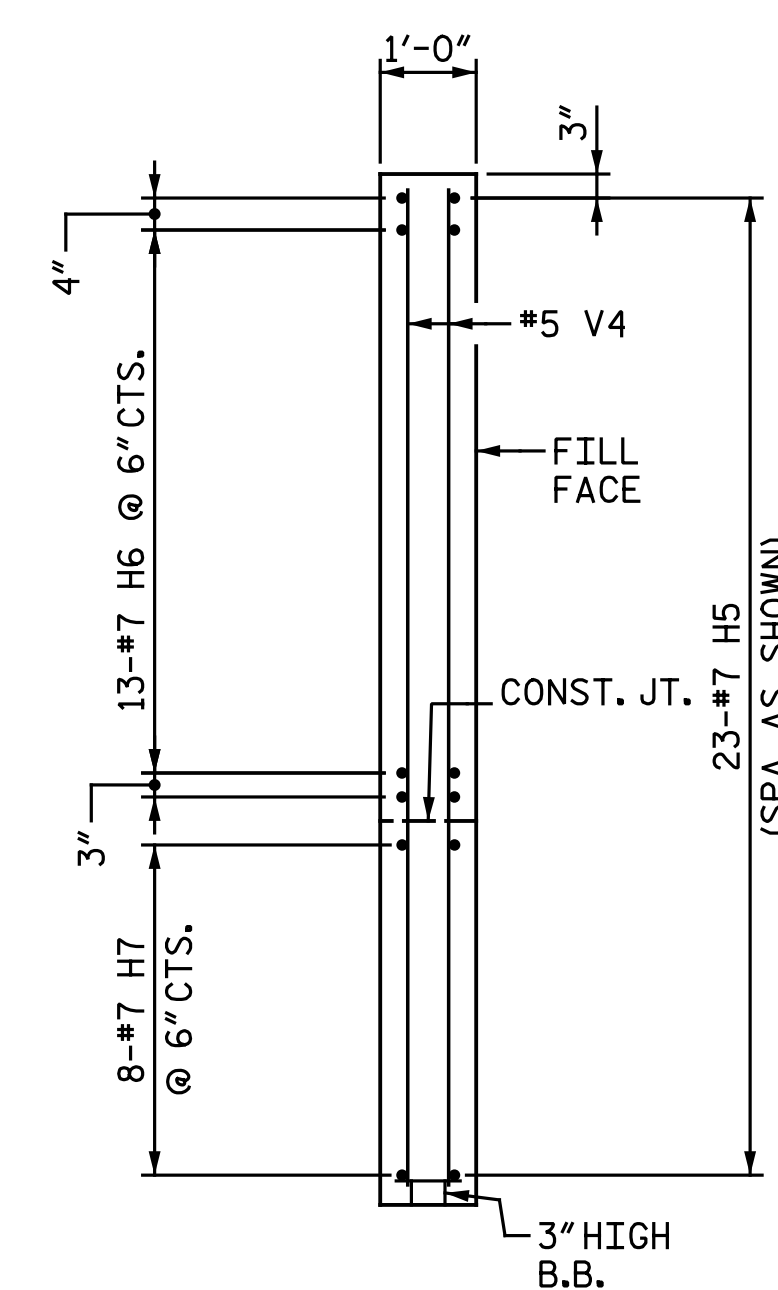
ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING



SECTION X-X



SECTION Y-Y

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-

SHEET 2 OF 2



8/4/2017

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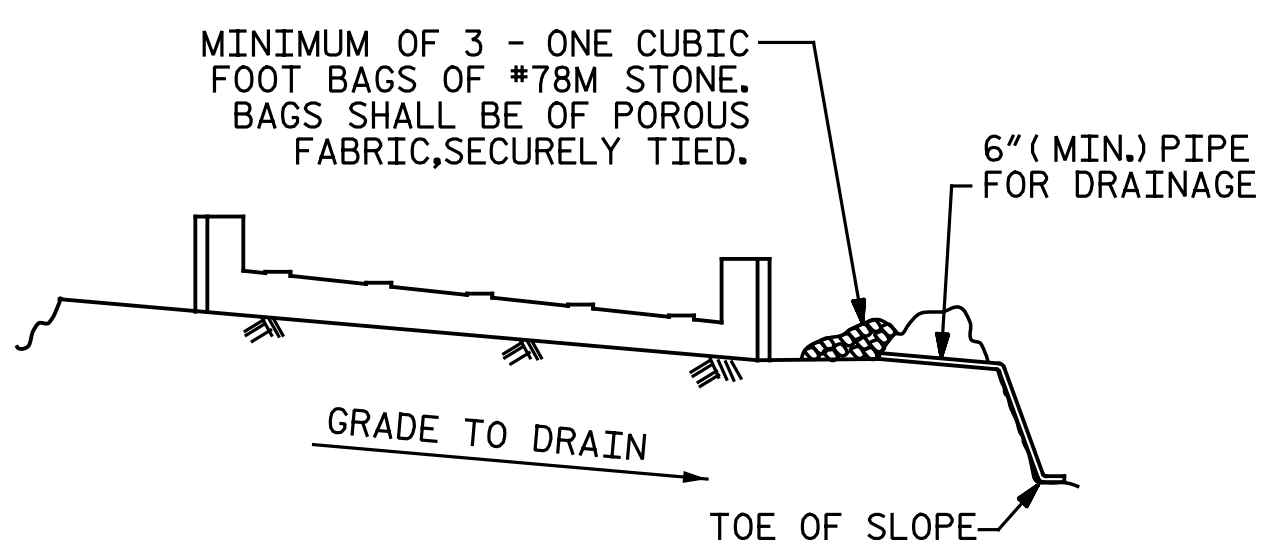
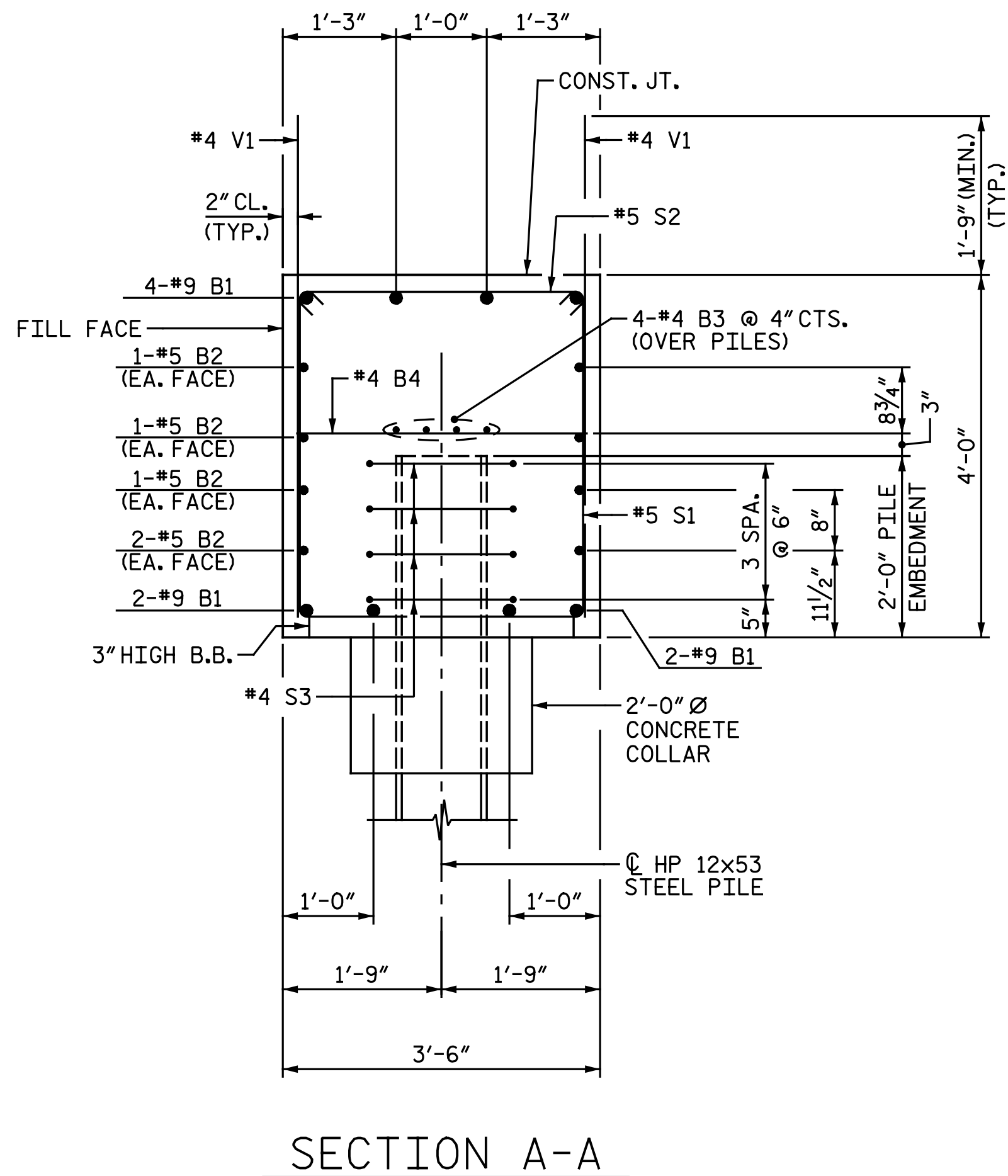
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 INTEGRAL END BENT 1

RIGHT LANE

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			TOTAL SHEETS
2			4			29

DRAWN BY: W. D. MCGREADY DATE: 3-29-17
 CHECKED BY: S. H. ROSS DATE: 5-10-17



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

DRAWN BY : W. D. MCGREADY DATE : 3-24-17
 CHECKED BY : S. H. ROSS DATE : 5-10-17

BILL OF MATERIAL

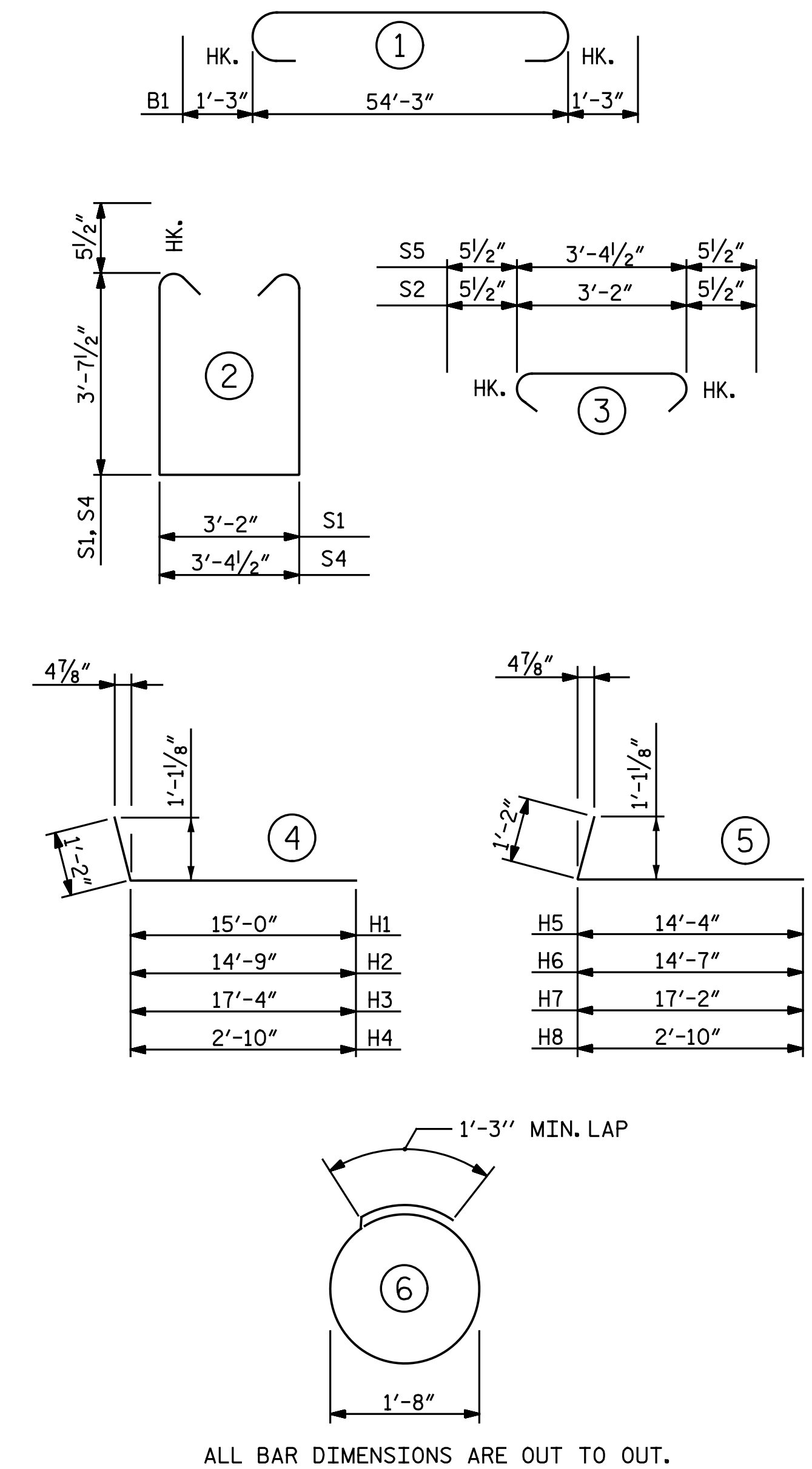
INTEGRAL END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		56' - 9"	1,544
B2	8	#5	STR.	54' - 3"	453
B3	8	#4	STR.	28' - 5"	152
B4	13	#4	STR.	3' - 2"	27
H1	22	#7	4	16' - 2"	727
H2	14	#7	4	15' - 11"	455
H3	8	#7	4	18' - 6"	303
H4	28	#7	4	4' - 0"	229
H5	23	#7	5	15' - 6"	729
H6	15	#7	5	15' - 9"	483
H7	8	#7	5	18' - 4"	300
H8	30	#7	5	4' - 0"	245
S1	47	#5	2	11' - 4"	556
S2	47	#5	3	4' - 1"	200
S3	40	#4	6	6' - 6"	174
S4	2	#5	2	11' - 7"	24
S5	2	#5	3	4' - 4"	9
V1	76	#4	STR.	5' - 7"	283
V2	38	#5	STR.	10' - 6"	415
V3	4	#4	STR.	3' - 7"	10
V4	38	#5	STR.	10' - 8"	423
REINFORCING STEEL					LBS. 7,741
CLASS A CONCRETE					
POUR 1 -					
CAP, LOWER PART OF WINGS & COLLARS					C.Y. 34.4
POUR 2 -					
UPPER PART OF WINGS					C.Y. 8.9
TOTAL					C.Y. 43.3
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES					
					EA. 10
HP 12x53 STEEL PILES					
NO. 10					L.F. 750
STEEL PILE POINTS					
					EA. 10
PILE REDRIVES					
					EA. 5

NOTES:

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

BAR TYPES



PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
INTEGRAL END BENT 1
 DETAILS

8/4/2017
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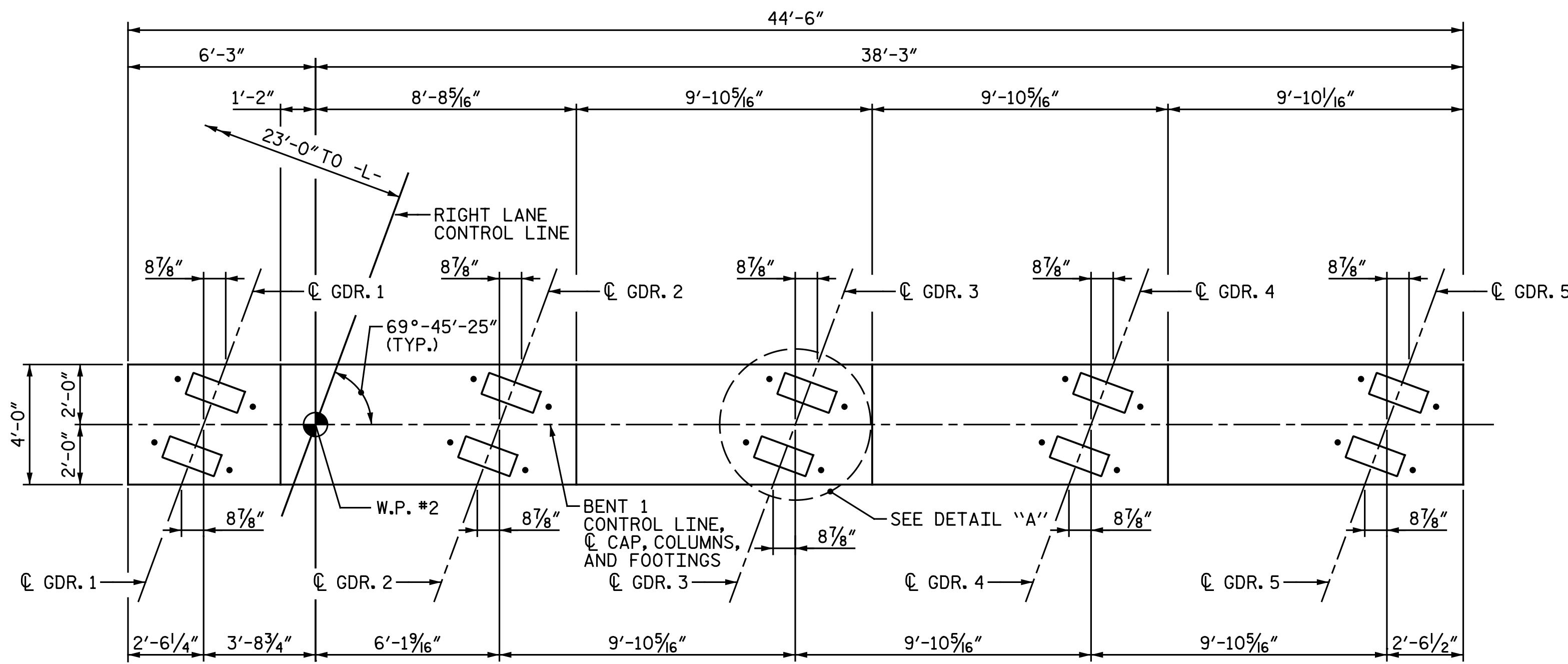
RIGHT LANE

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

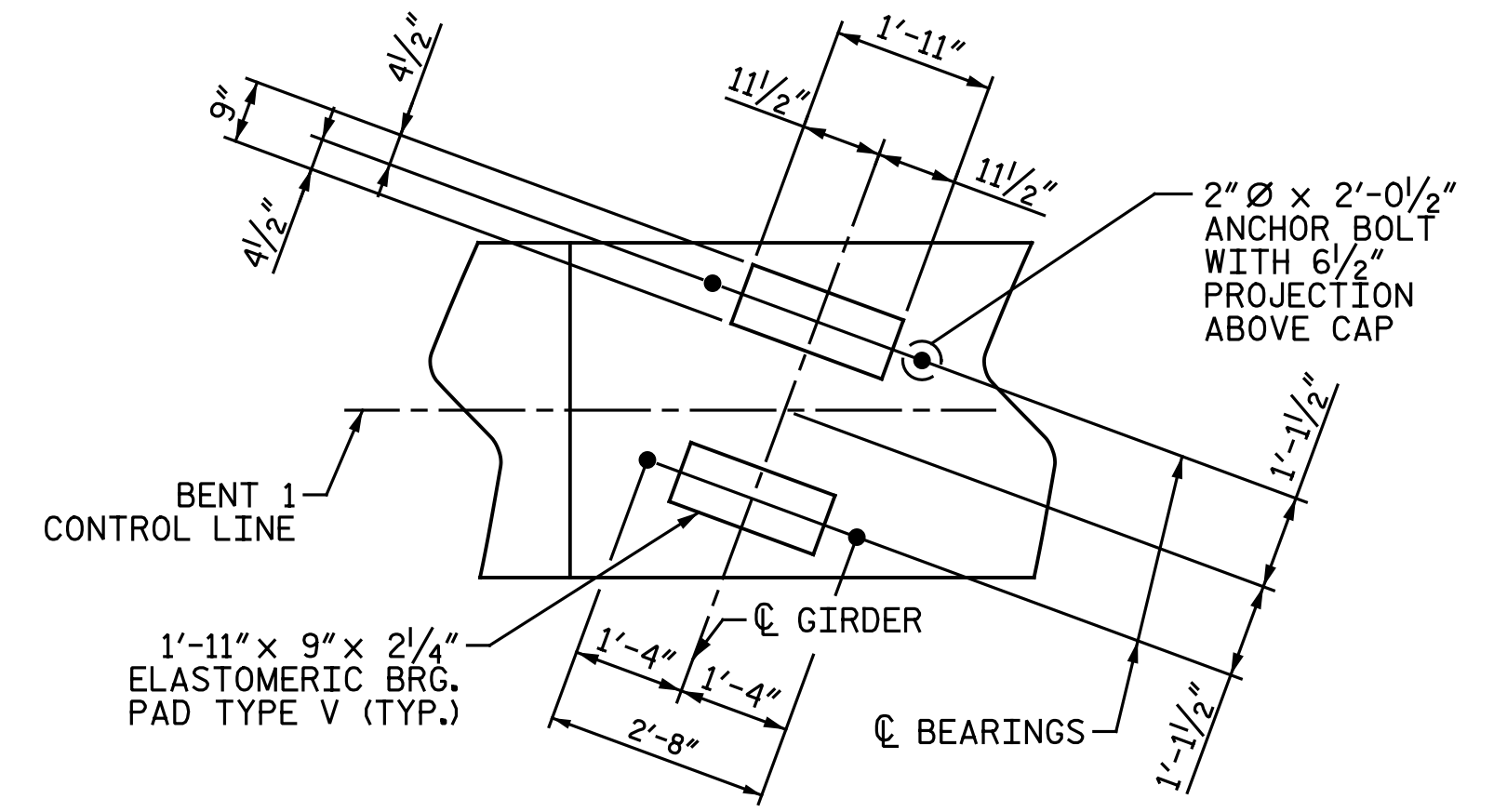
NOTES:
 HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 FOR SECTION A-A, SEE "BENT 1 DETAILS" SHEET.

SPAN B

SPAN A

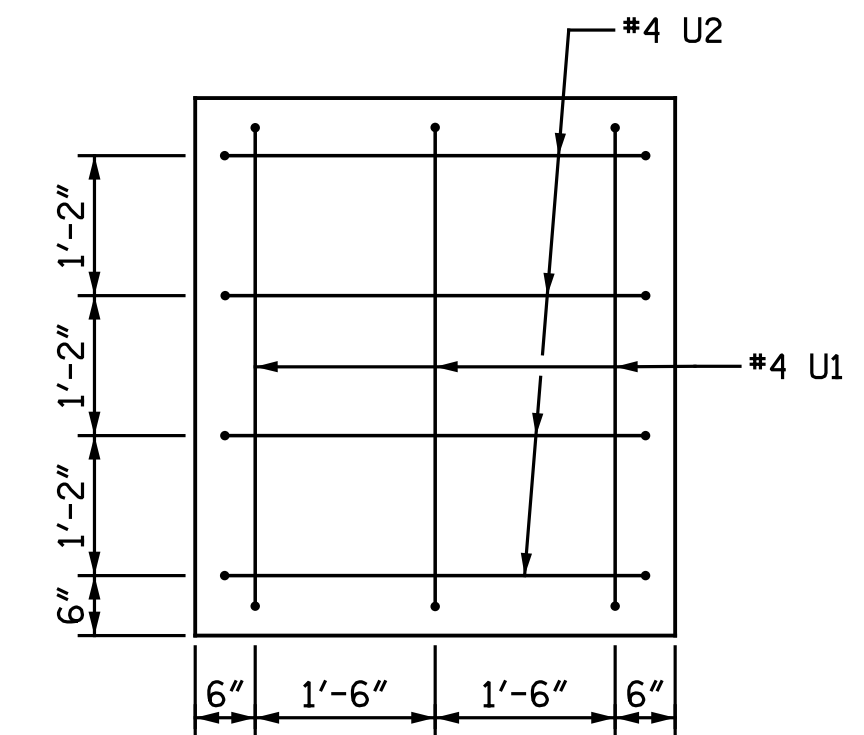


PLAN

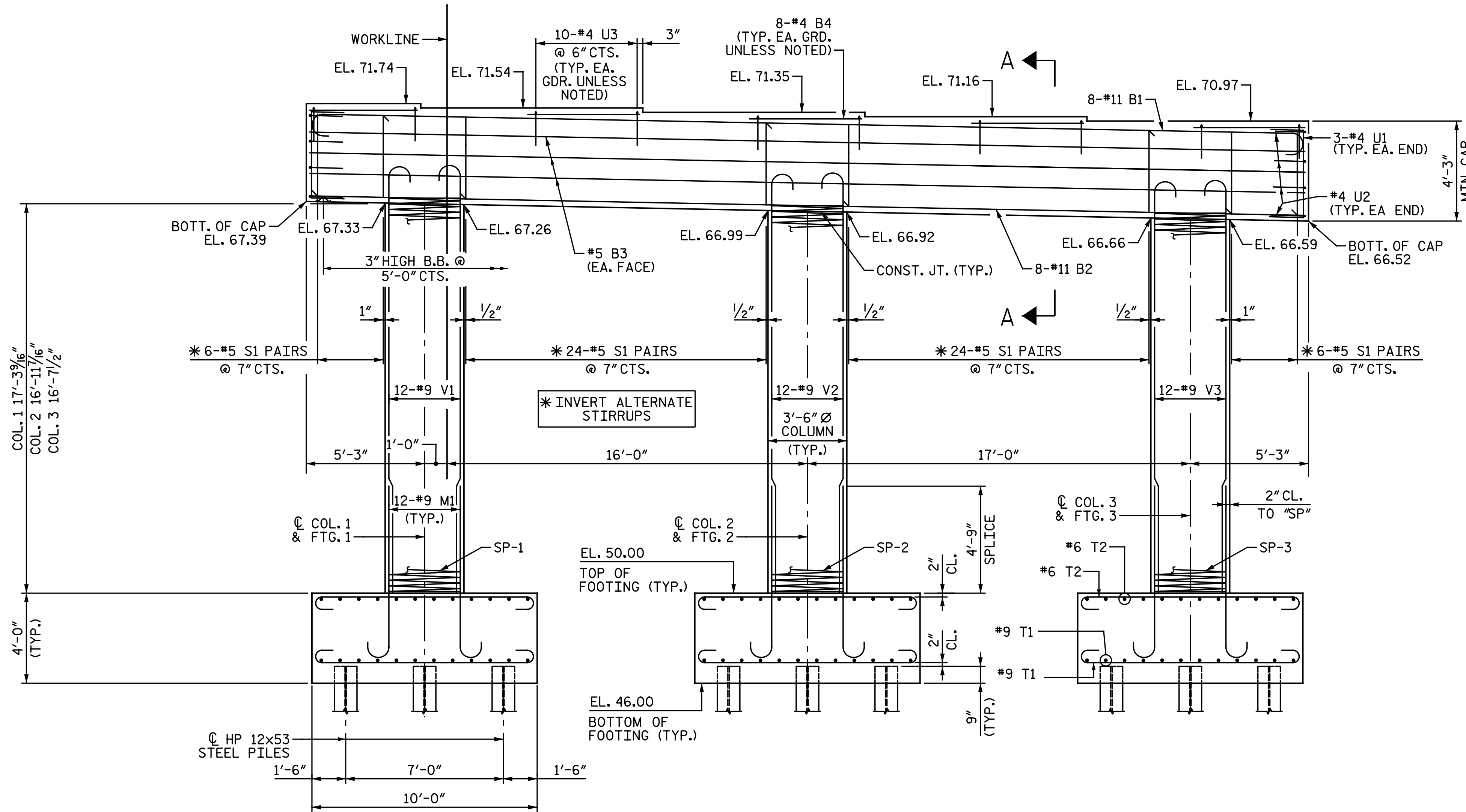


DETAIL "A"

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



END VIEW



ELEVATION

ALL DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH FOOTING UNLESS OTHERWISE NOTED.

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-



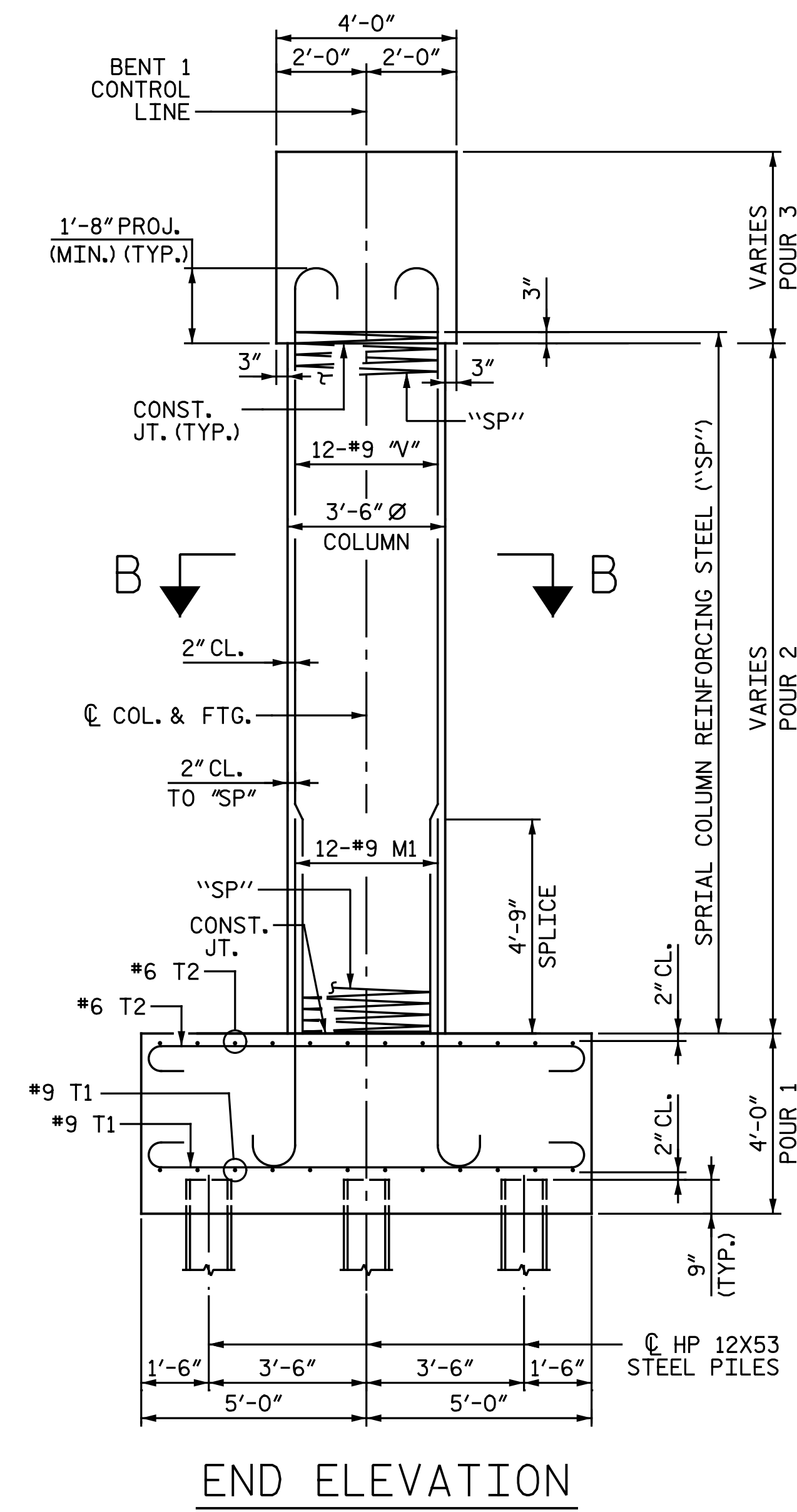
8/4/2017

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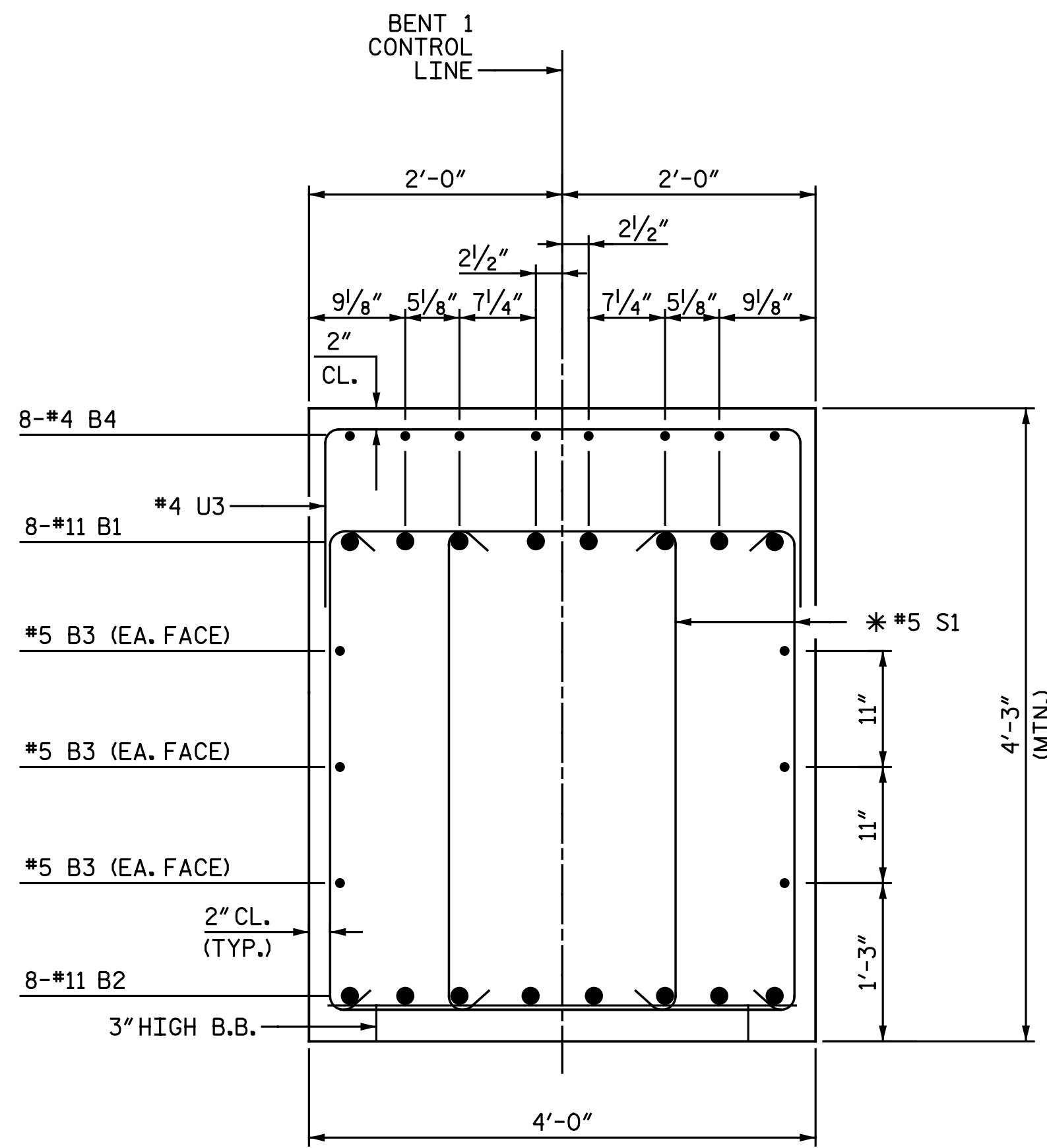
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		SUBSTRUCTURE		BENT 1		RIGHT LANE		SHEET NO. S12-20	
REVISIONS									
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS			
1			3			29			
2			4						

DRAWN BY: P. SMITH DATE: 4-26-17
 CHECKED BY: S.H. ROSS DATE: 5-11-17



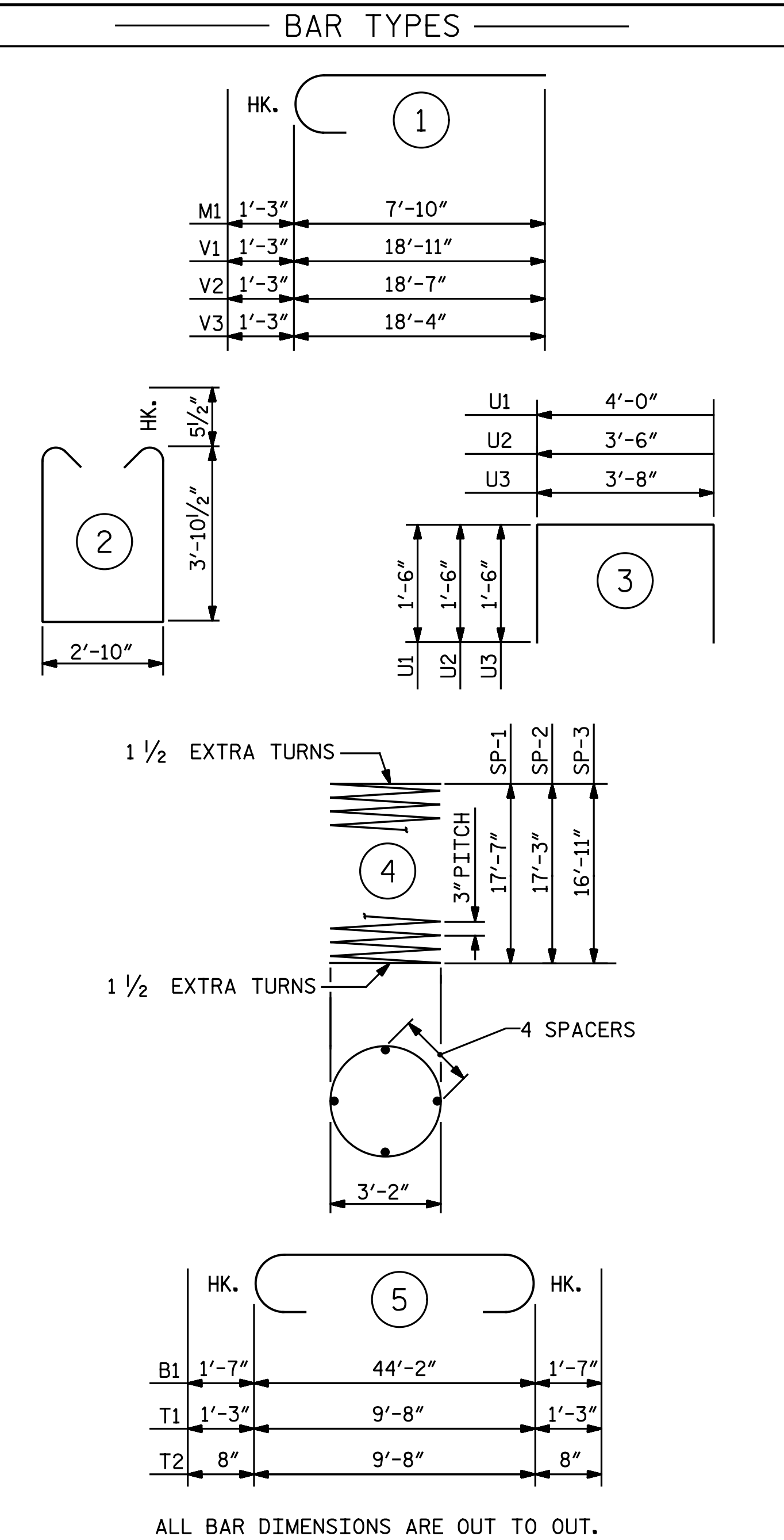
END ELEVATION



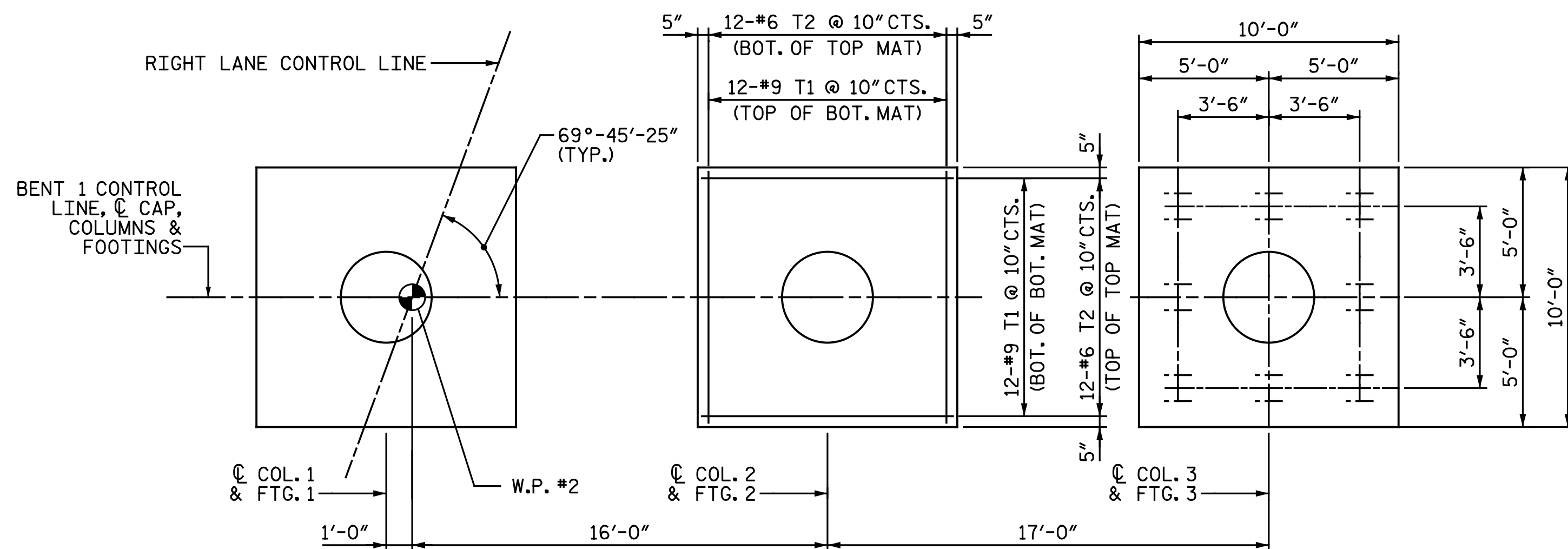
SECTION A-A

* INVERT ALTERNATE STIRRUPS

BILL OF MATERIAL					
BENT 1					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	8	#11	5	47' - 4"	2,012
B2	8	#11	STR.	44' - 2"	1,877
B3	6	#5	STR.	44' - 2"	276
B4	40	#4	STR.	4' - 9"	127
M1	36	#9	1	9' - 1"	1,112
S1	120	#5	2	11' - 6"	1,439
T1	72	#9	5	12' - 2"	2,978
T2	72	#6	5	11' - 0"	1,190
U1	6	#4	3	7' - 0"	28
U2	8	#4	3	6' - 6"	35
U3	50	#4	3	6' - 8"	223
V1	12	#9	1	20' - 2"	823
V2	12	#9	1	19' - 10"	809
V3	12	#9	1	19' - 7"	799
REINFORCING STEEL				LBS.	13,728
SP-1	1	**	4	705' - 5"	471
SP-2	1	**	4	692' - 4"	462
SP-3	1	**	4	679' - 3"	454
SPIRAL COLUMN REINFORCING STEEL				LBS.	1,387
CLASS A CONCRETE					
POUR 1 - FOOTINGS			C.Y.	44.4	
POUR 2 - COLUMNS			C.Y.	18.2	
POUR 3 - CAP			C.Y.	28.7	
TOTAL CLASS A CONCRETE				C.Y.	91.3
FOUNDATION EXCAVATION				LUMP SUM	
PILE EXCAVATION IN SOIL			LIN.FT.	240	
PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES			EA.	24	
HP 12x53 STEEL PILES			L.F.	360	
STEEL PILE POINTS			EA.	24	
PILE REDRIVES			EA.	12	

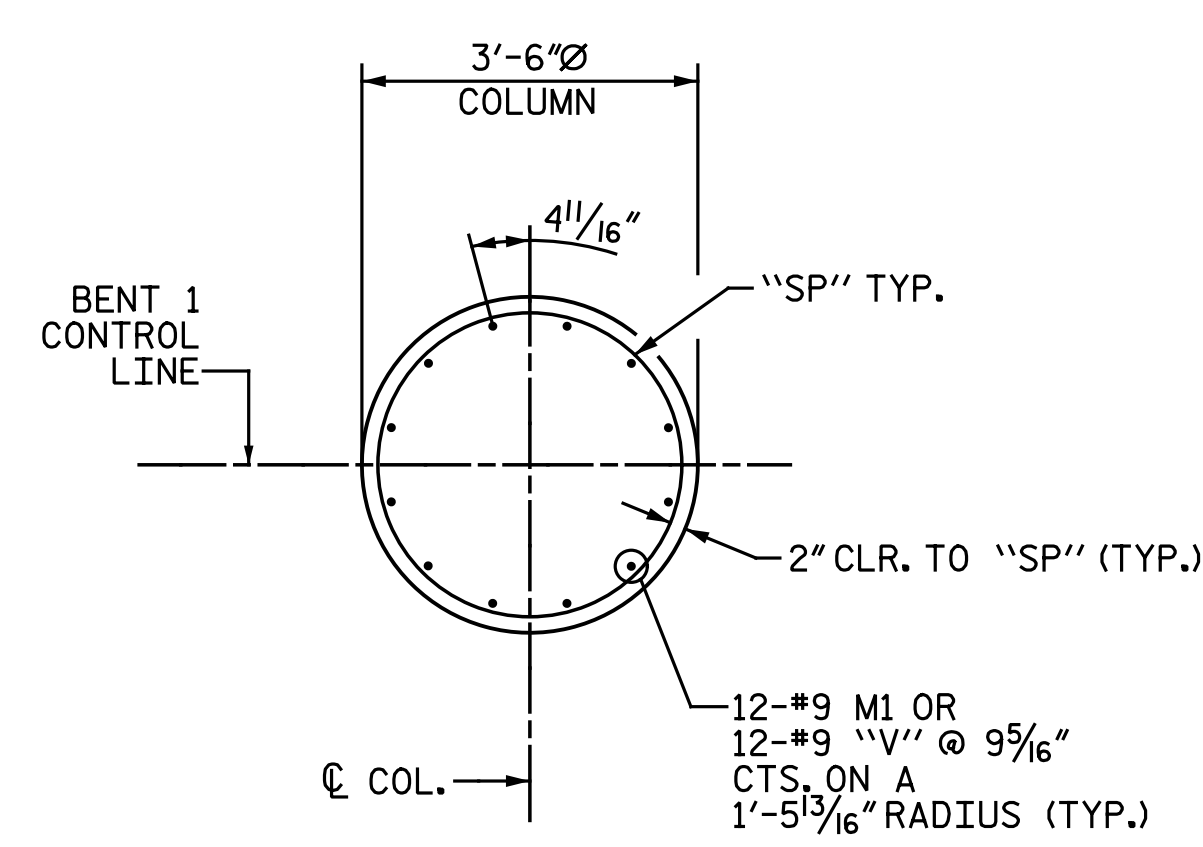


** THE "SP" SPIRAL REINFORCING STEEL SHALL BE W-20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.



PLAN OF COLUMNS & FOOTINGS

REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH FOOTING UNLESS OTHERWISE NOTED.



SECTION B-B

DRAWN BY : P. SMITH DATE : 04-27-17
 CHECKED BY : S.H. ROSS DATE : 05-11-17

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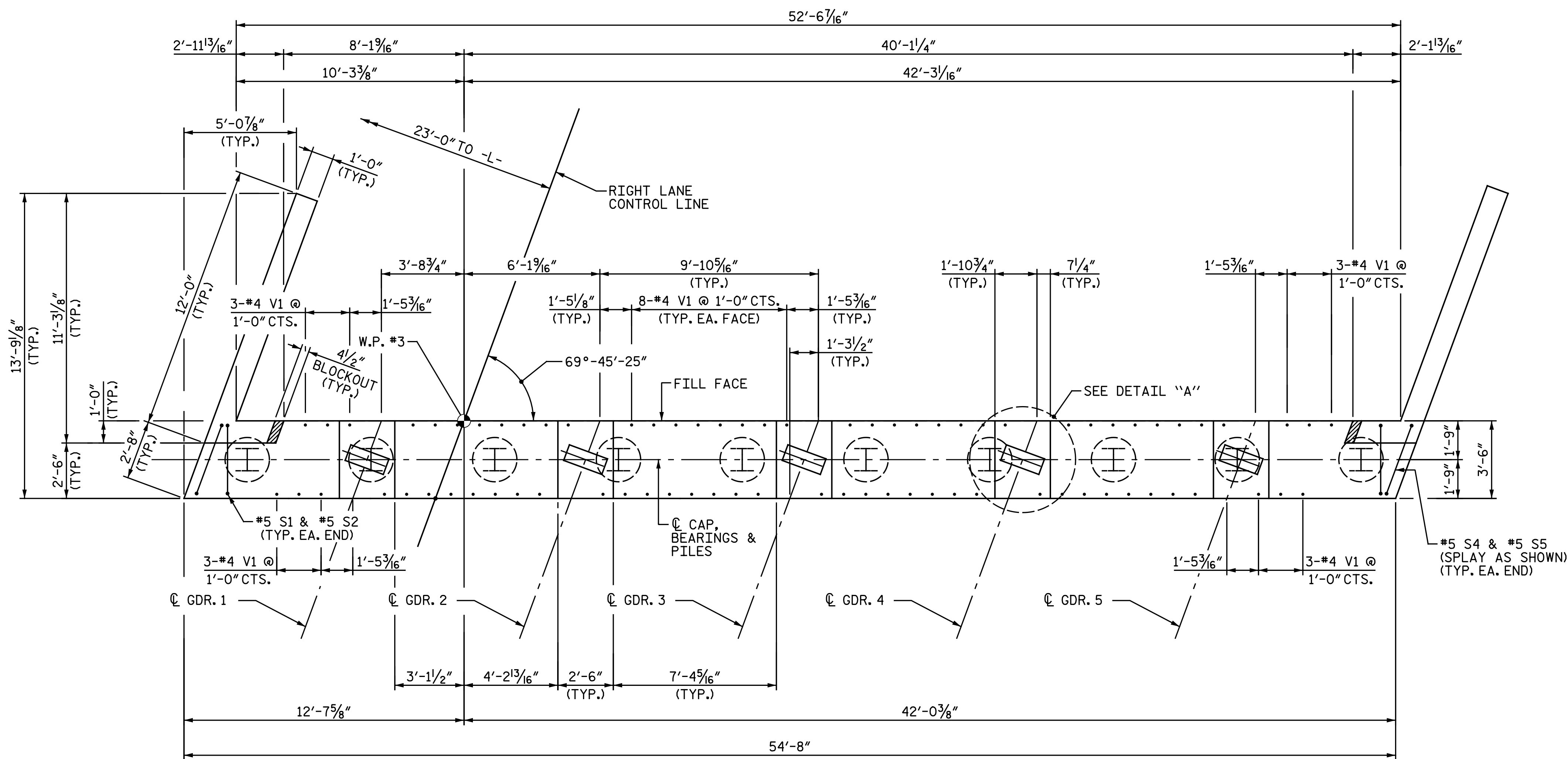
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PROJECT NO. R-5703
 LENOIR COUNTY
 STATION: 342+97.24 -L-

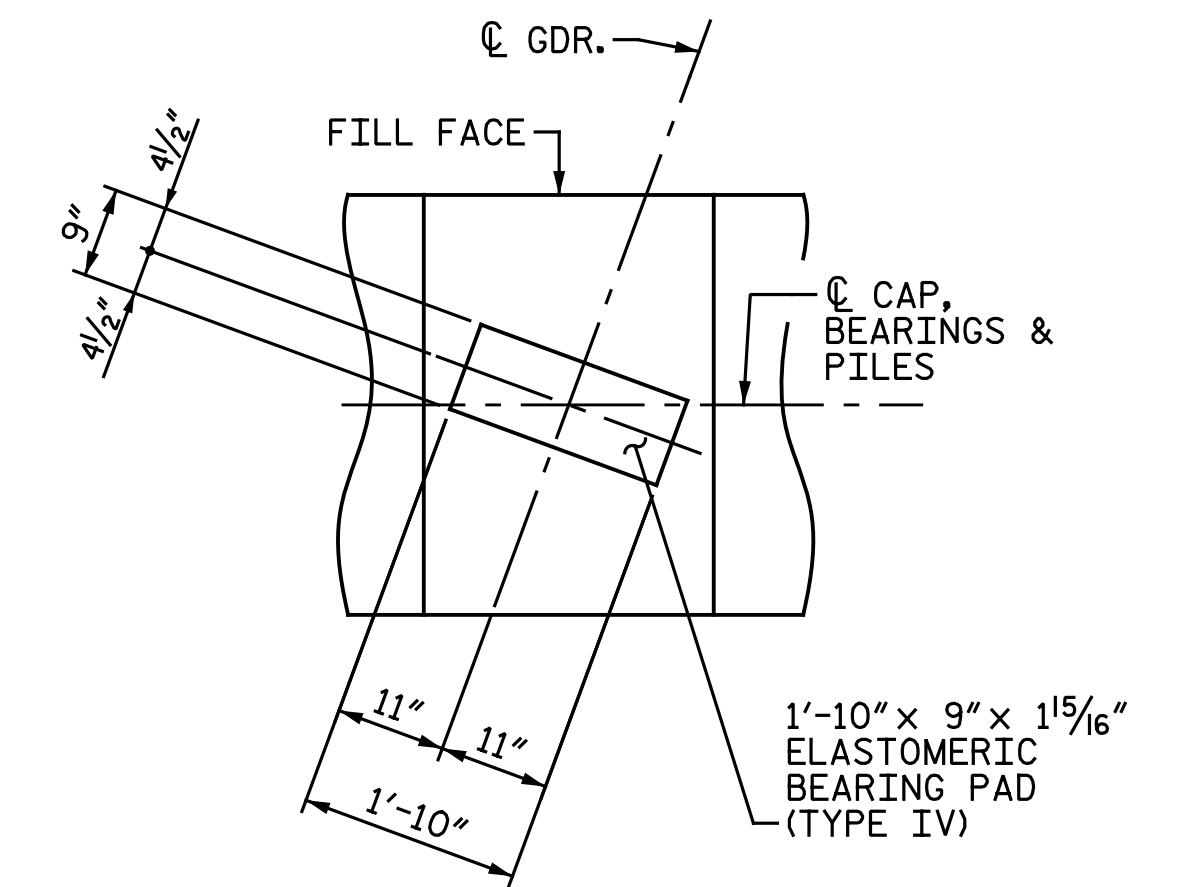
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
BENT 1 DETAILS					
RIGHT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S12-21
 TOTAL SHEETS 29



PLAN

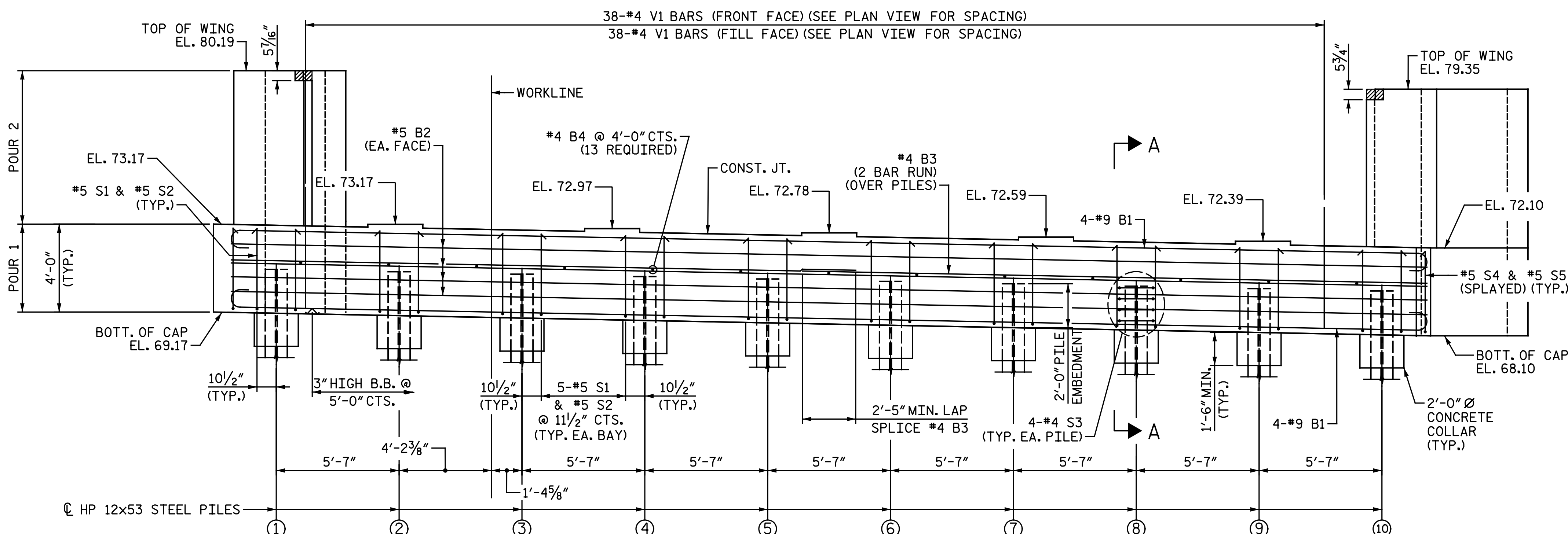
NOTES:
 FOR "SECTION A-A", SEE "INTEGRAL END BENT 2 DETAILS" SHEET.
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.
 THE TOP SURFACE OF THE END BENT CAP, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4\"/>



DETAIL "A"

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

TOP OF PILE ELEVATIONS	
PILE	ELEVATION
1	71.13
2	71.02
3	70.91
4	70.80
5	70.69
6	70.58
7	70.47
8	70.36
9	70.25
10	70.14



ELEVATION

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-
 SHEET 1 OF 2



8/4/2017

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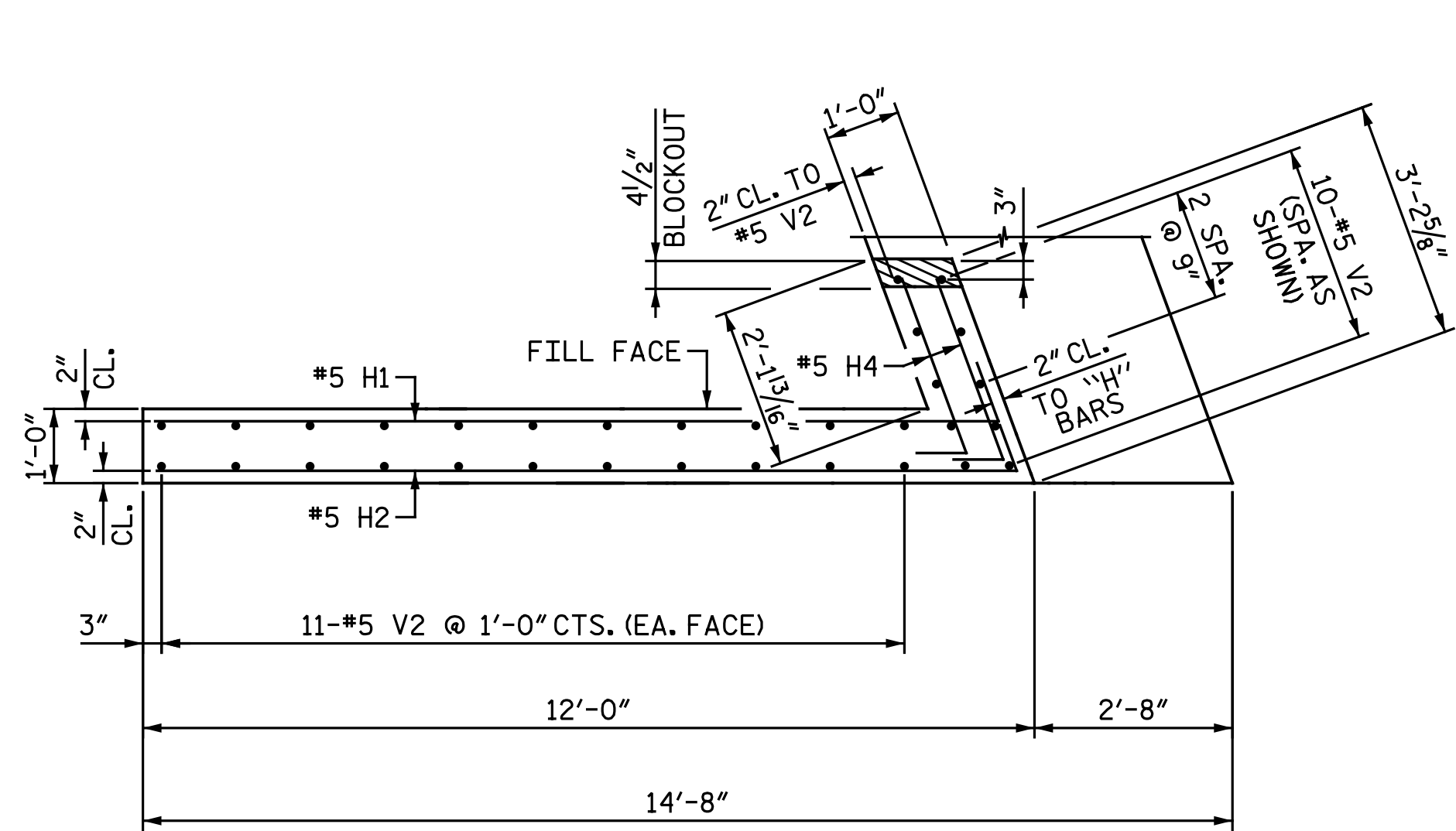
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 SUBSTRUCTURE
 INTEGRAL END BENT 2
 RIGHT LANE

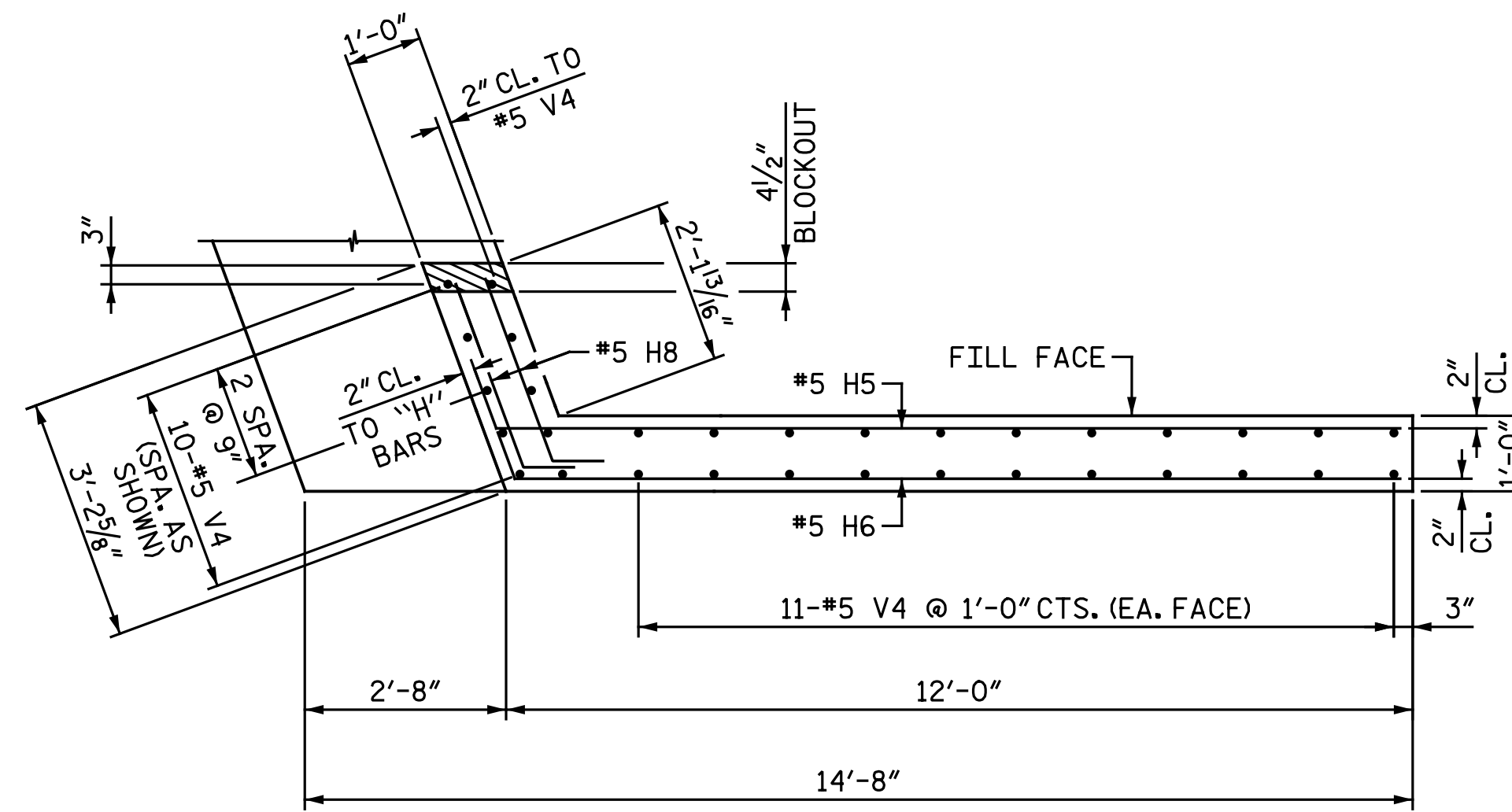
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NO.	BY:	DATE:	NO.	BY:	DATE:
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SHEET NO. **S12-22**
 TOTAL SHEETS **29**

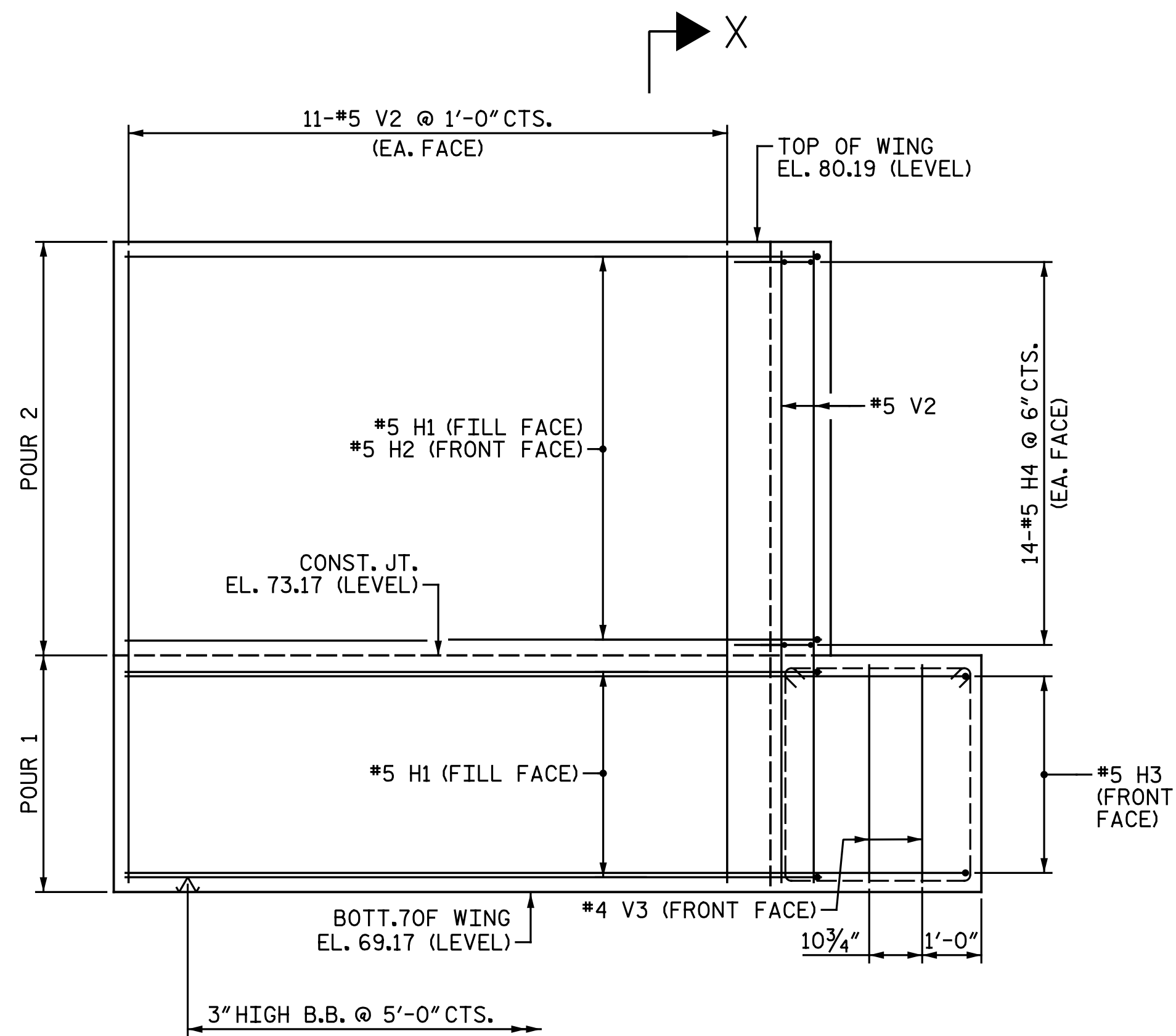
DRAWN BY: W. D. MCGREADY DATE: 03-21-17
 CHECKED BY: S. H. ROSS DATE: 05-10-17



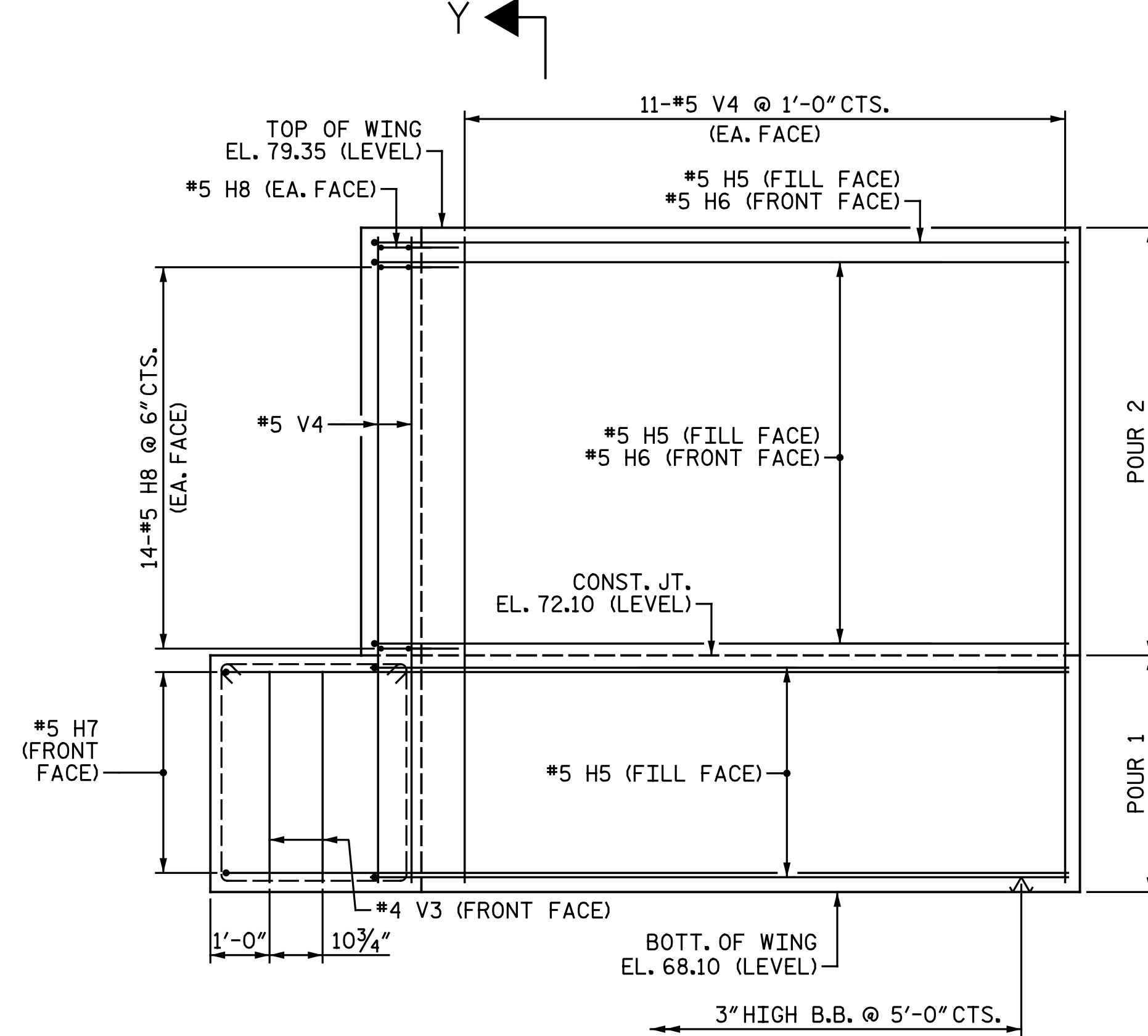
PLAN OF LEFT WING
(H3 BARS NOT SHOWN FOR CLARITY)



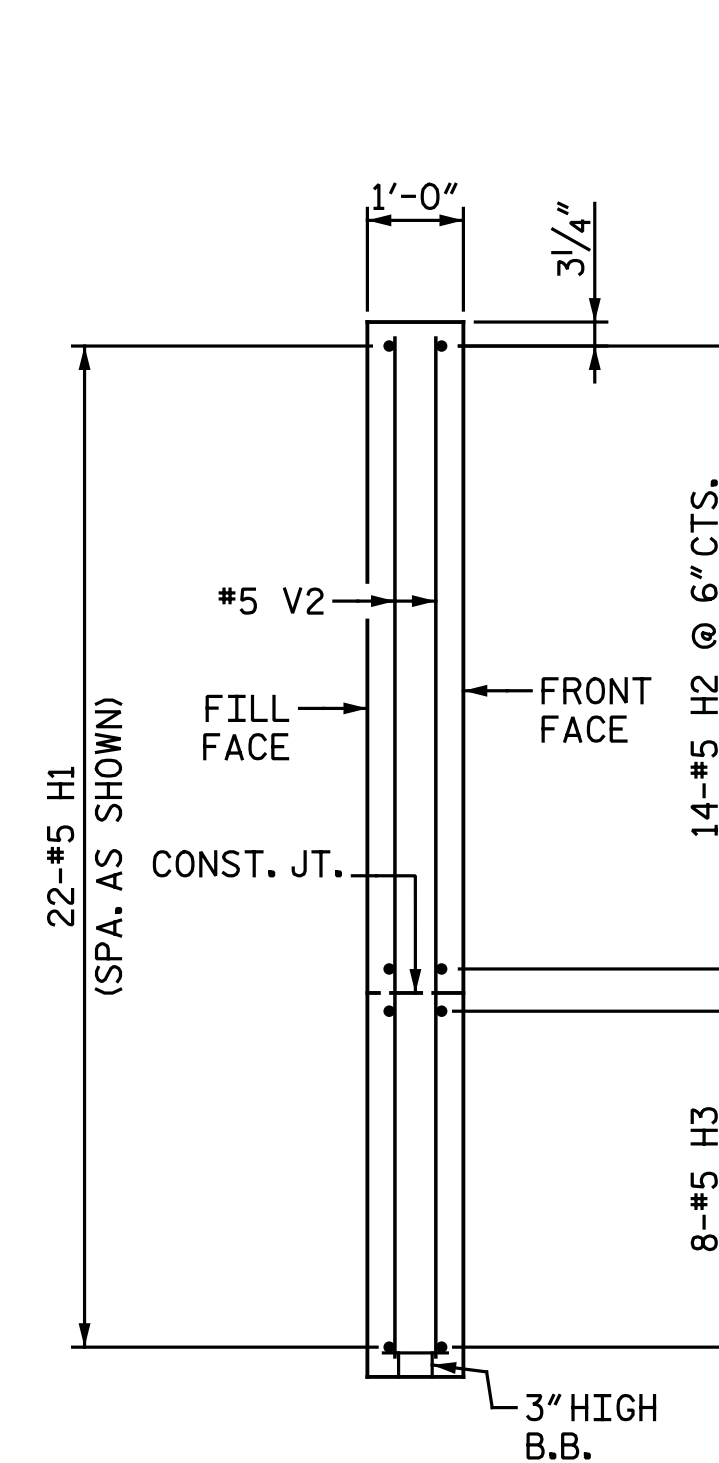
PLAN OF RIGHT WING
(H7 BARS NOT SHOWN FOR CLARITY)



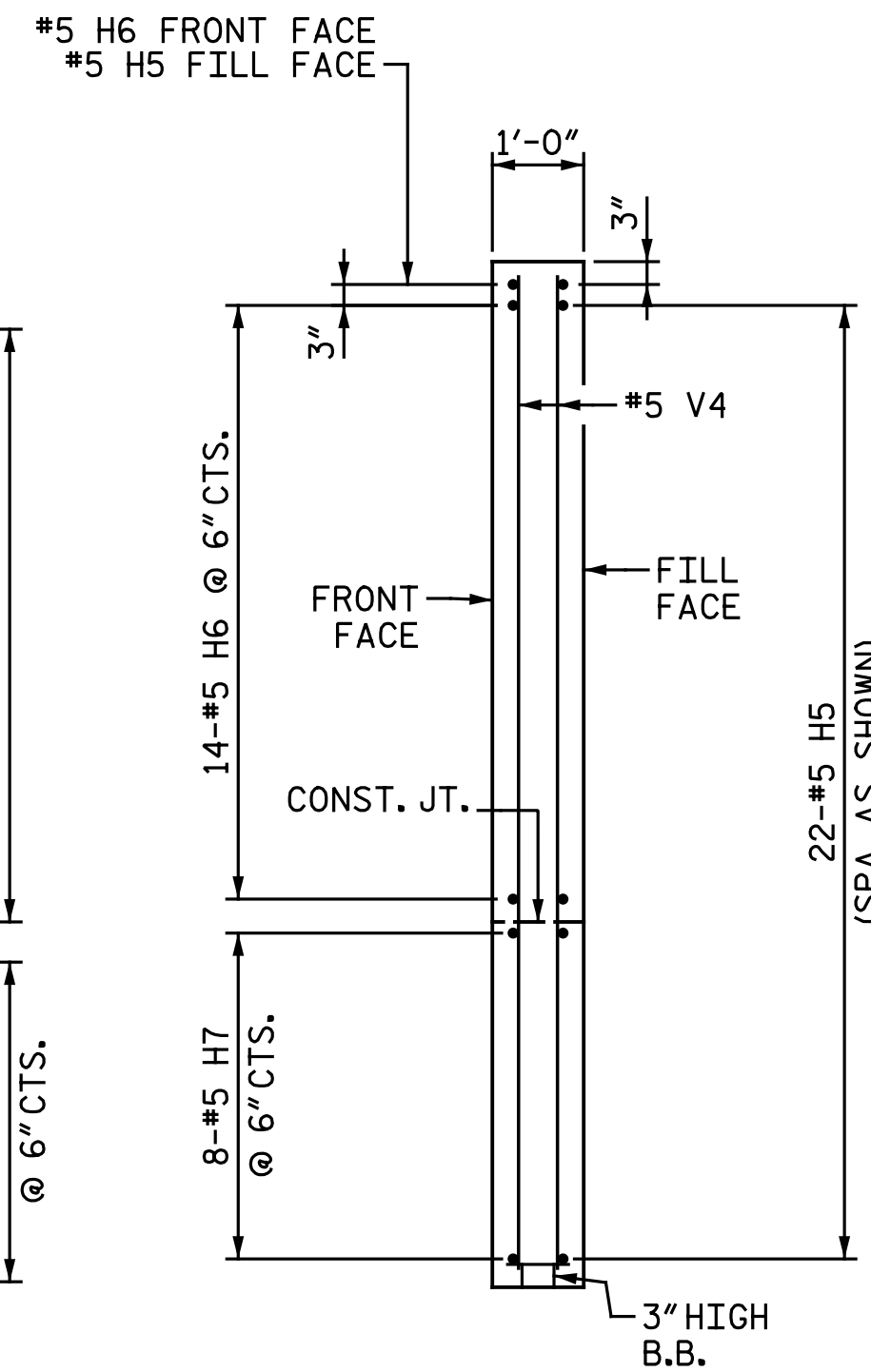
ELEVATION OF LEFT WING



ELEVATION OF RIGHT WING



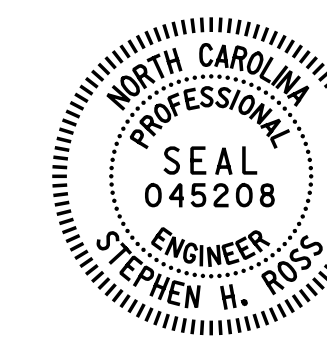
SECTION X-X



SECTION Y-Y

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 342+97.24 -L-

SHEET 2 OF 2



8/4/2017

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INTEGRAL END BENT 2

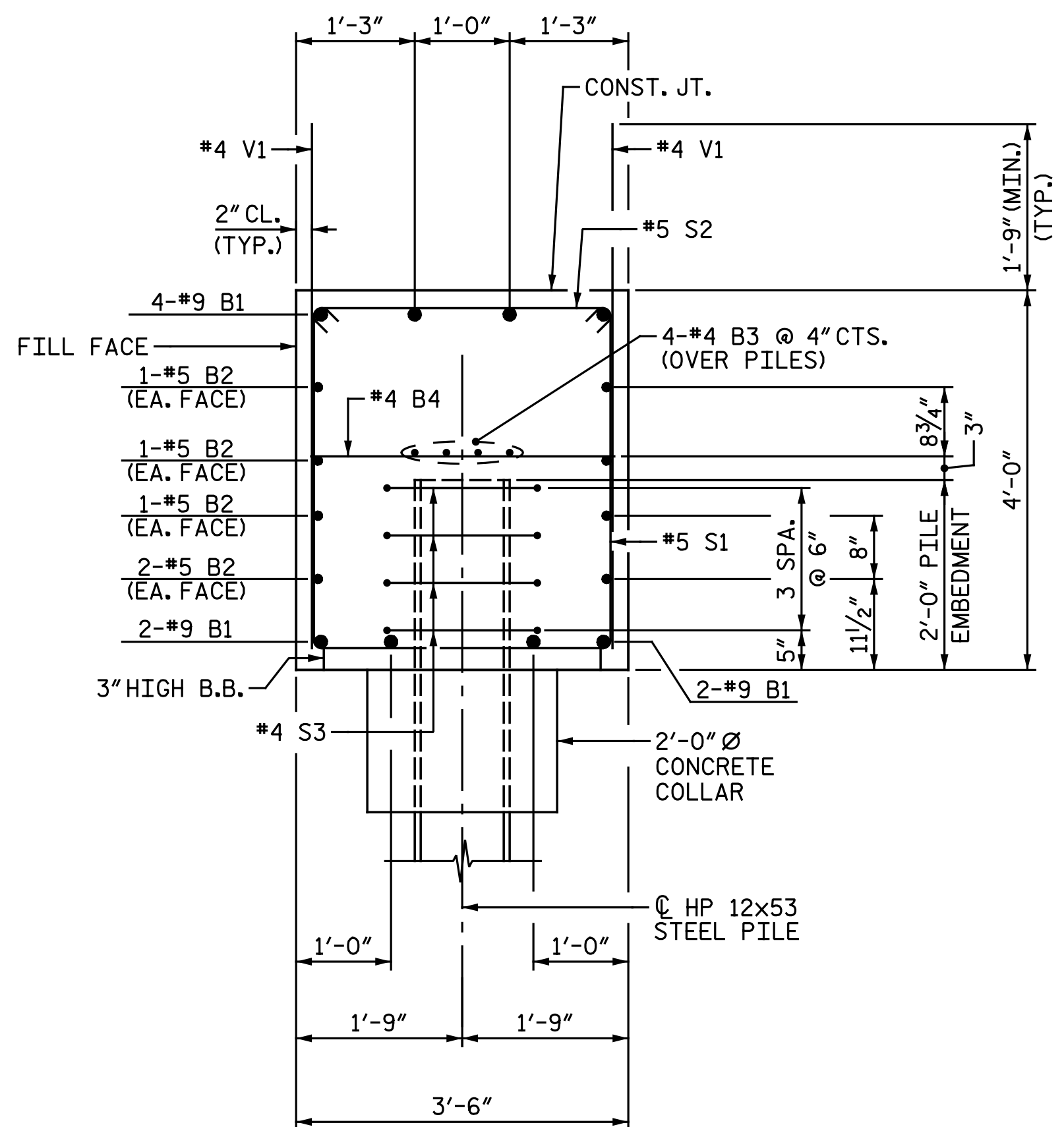
RIGHT LANE

REVISIONS

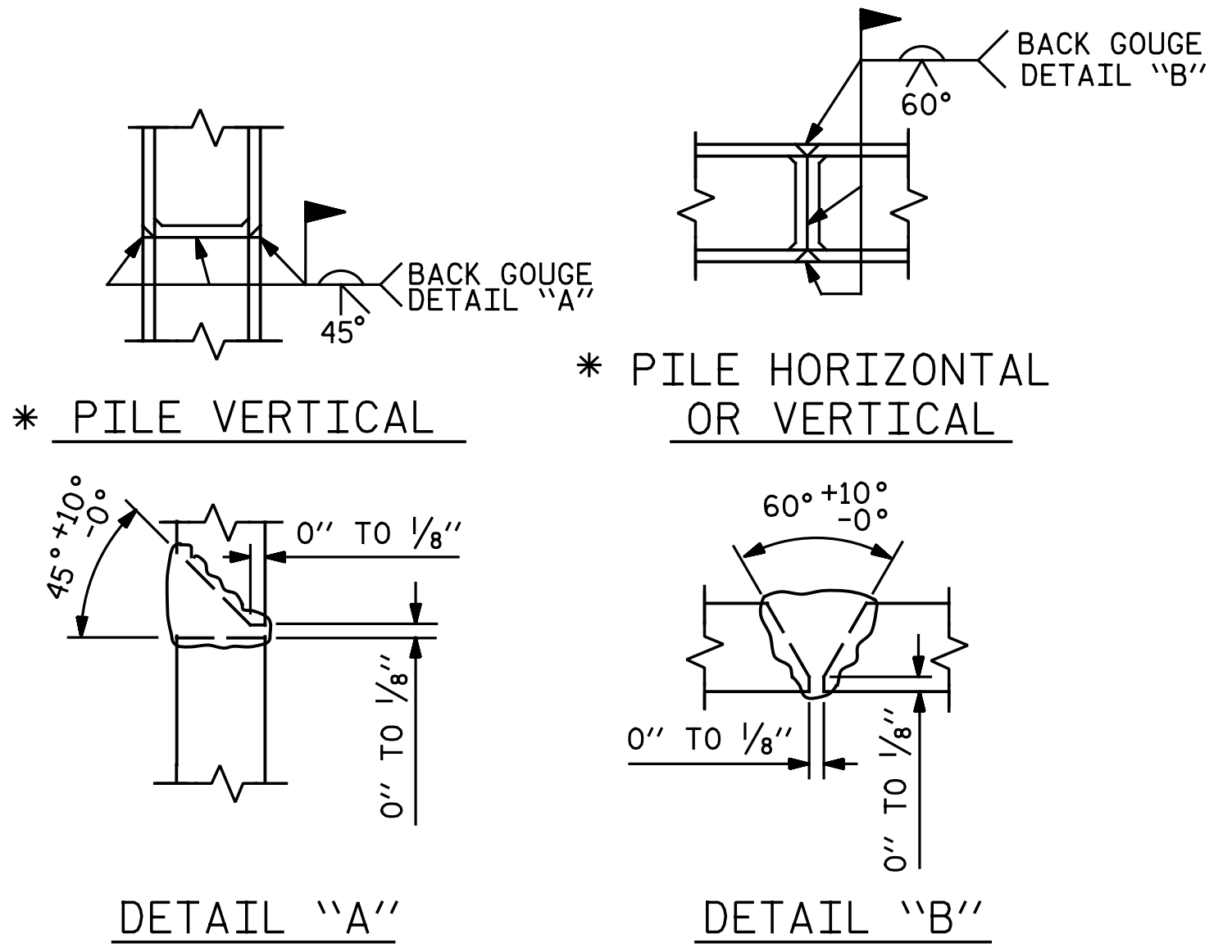
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S12-23
TOTAL SHEETS
29

DRAWN BY: W. D. MCGREADY DATE: 3-29-17
CHECKED BY: S. H. ROSS DATE: 5-10-17



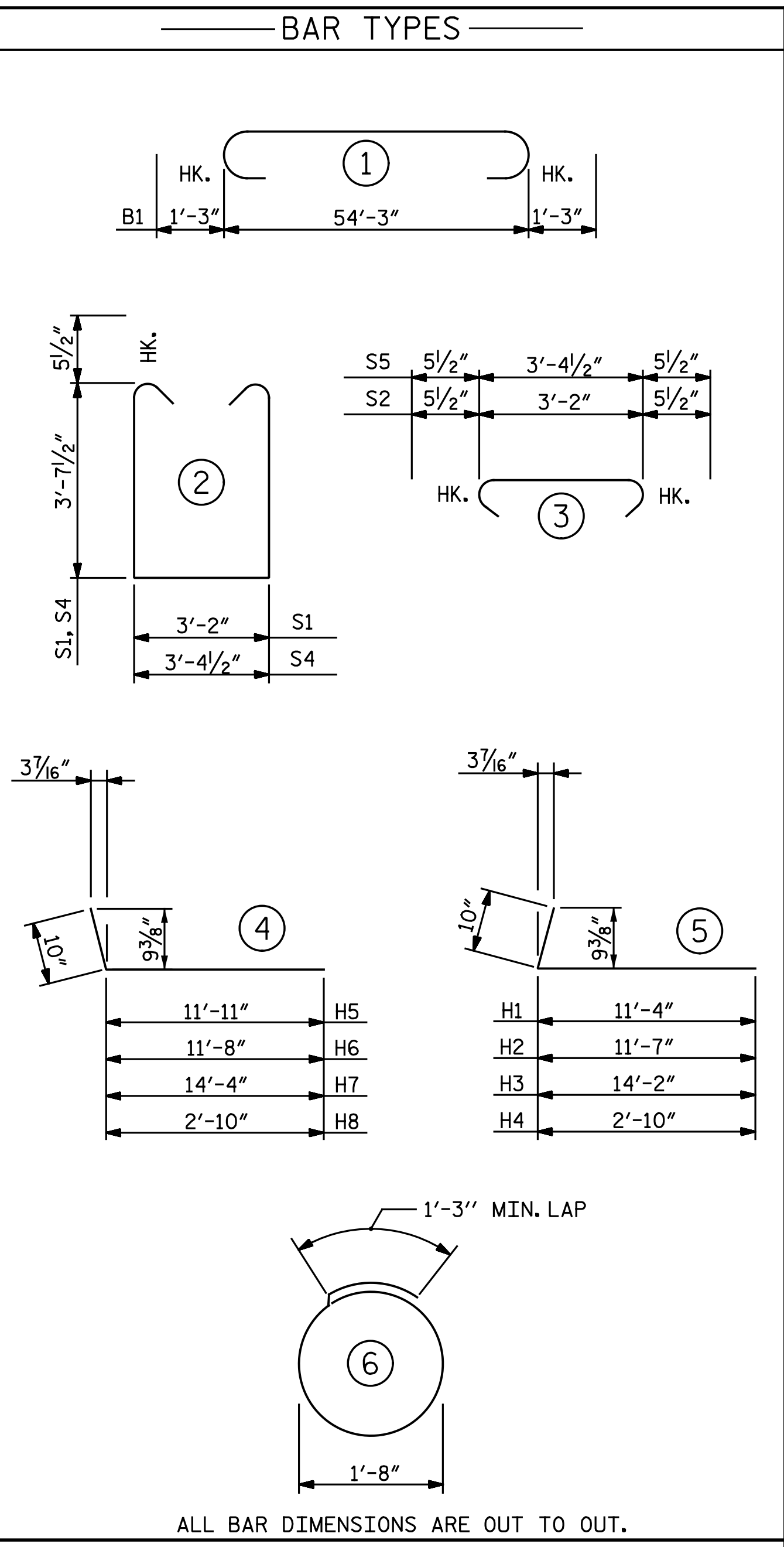
SECTION A-A



PILE SPLICE DETAILS
* POSITION OF PILE DURING WELDING

BILL OF MATERIAL					
INTEGRAL END BENT 2					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	56' - 9"	1,544
B2	8	#5	STR.	54' - 3"	453
B3	8	#4	STR.	28' - 5"	152
B4	13	#4	STR.	3' - 2"	27
H1	22	#5	5	12' - 2"	279
H2	14	#5	5	12' - 5"	181
H3	8	#5	5	15' - 0"	125
H4	28	#5	5	3' - 8"	107
H5	23	#5	4	12' - 9"	306
H6	15	#5	4	12' - 6"	196
H7	8	#5	4	15' - 2"	127
H8	30	#5	4	3' - 8"	115
S1	47	#5	2	11' - 4"	556
S2	47	#5	3	4' - 1"	200
S3	40	#4	6	6' - 6"	174
S4	2	#5	2	11' - 7"	24
S5	2	#5	3	4' - 4"	9
V1	76	#4	STR.	5' - 7"	283
V2	32	#5	STR.	10' - 7"	353
V3	4	#4	STR.	3' - 7"	10
V4	32	#5	STR.	10' - 10"	361
REINFORCING STEEL				LBS.	5,582
CLASS A CONCRETE					
POUR 1 -					
CAP, LOWER PART OF					
WINGS & COLLARS				C.Y.	33.5
POUR 2 -					
UPPER PART OF WINGS				C.Y.	7.5
TOTAL				C.Y.	41.0
PILE DRIVING					
EQUIPMENT SETUP FOR					
HP 12x53 STEEL PILES				EA.	10
HP 12x53 STEEL PILES					
NO. 10				L.F.	250
STEEL PILE POINTS				EA.	10
PILE REDRIVES				EA.	5

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



ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 342+97.24 -L-



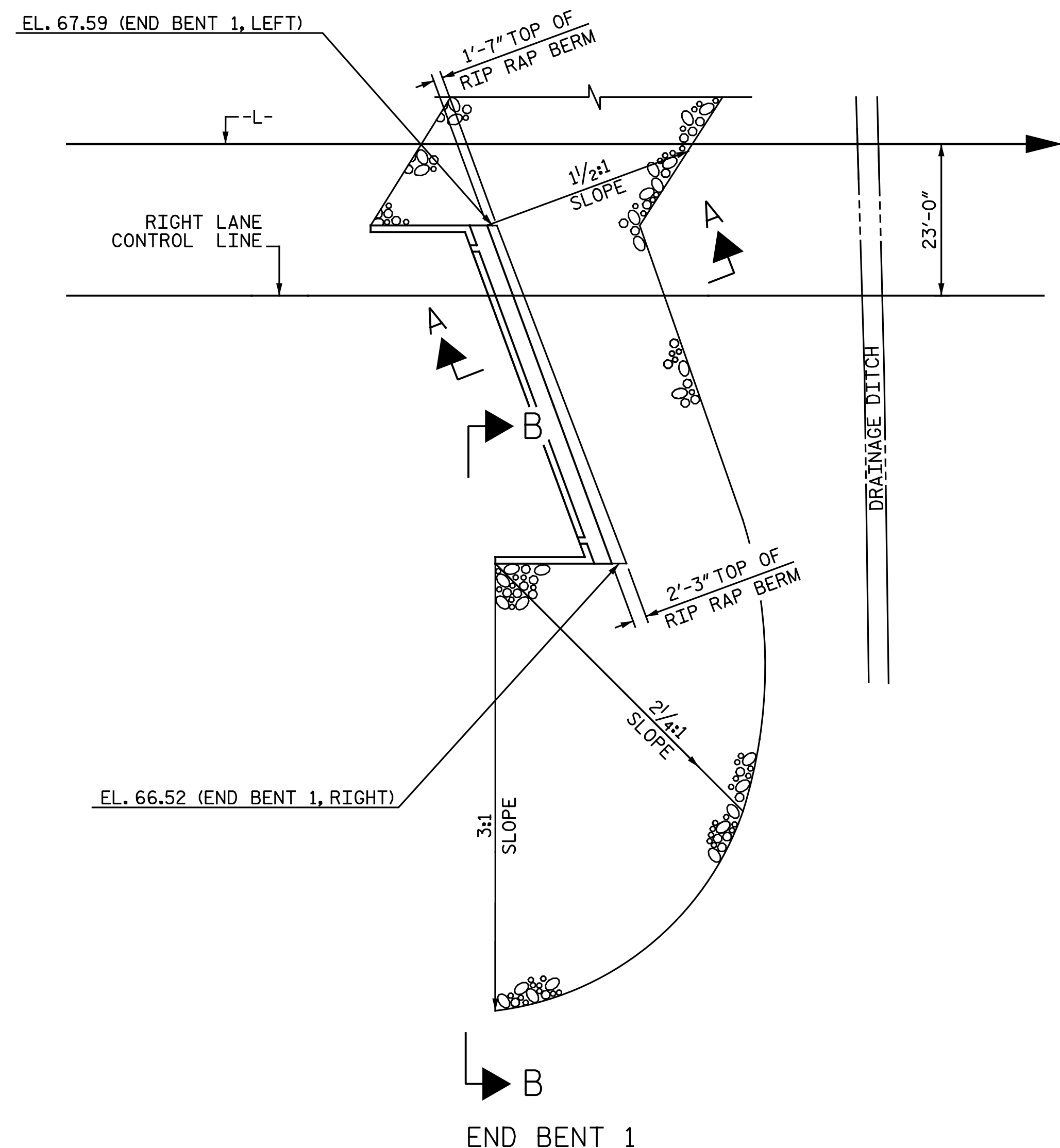
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SUBSTRUCTURE
INTEGRAL END BENT 2
DETAILS

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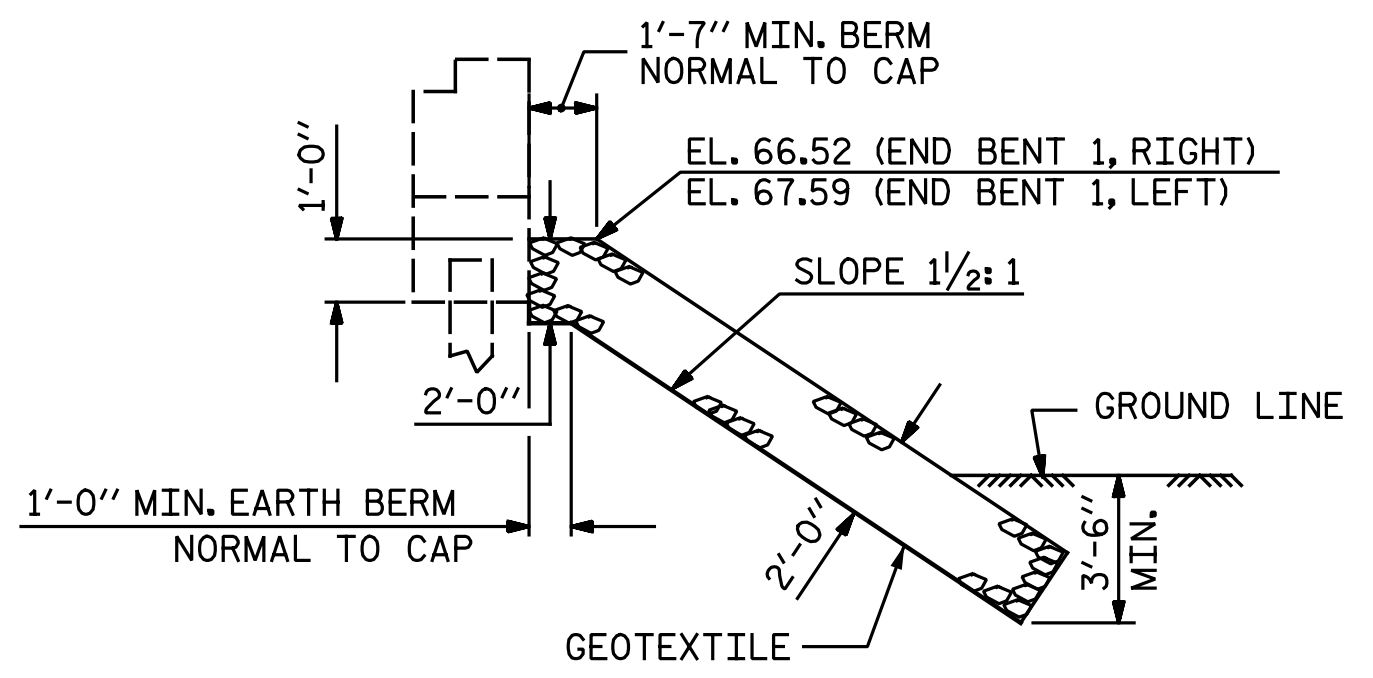
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 29
2			4			

DRAWN BY: W. D. MCGREADY DATE: 3-24-17
CHECKED BY: S. H. ROSS DATE: 5-10-17

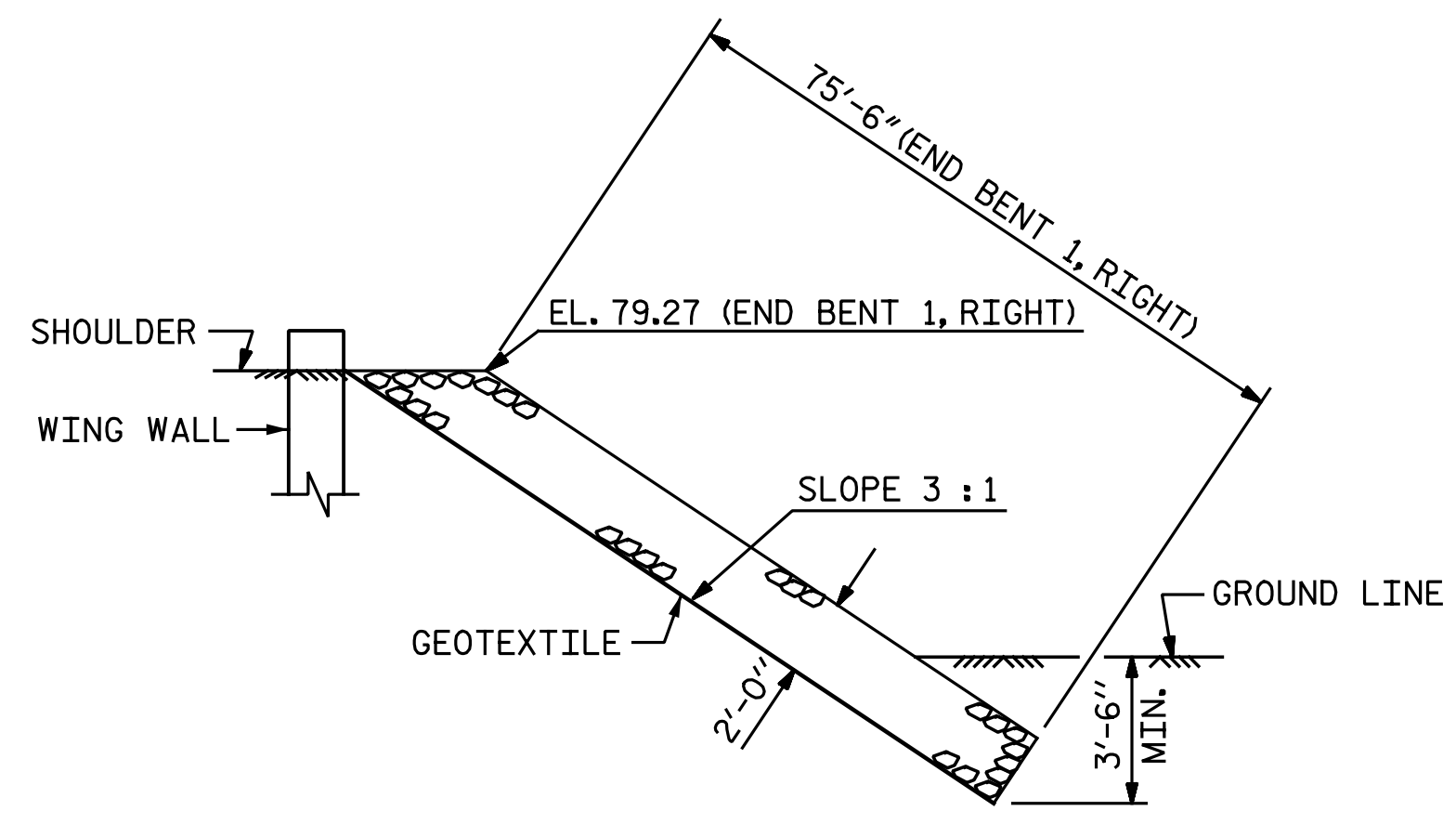


SHOULDER RIP RAP IS HIGHER THAN BERM RIP RAP

ESTIMATED QUANTITIES		
BRIDGE @ STA. 342+97.24 -L- (RIGHT LANE)	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	523	581

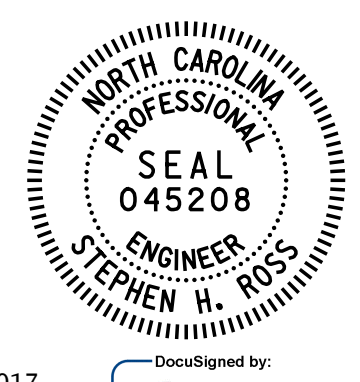


SECTION A-A



SECTION B-B

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-



8/4/2017

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

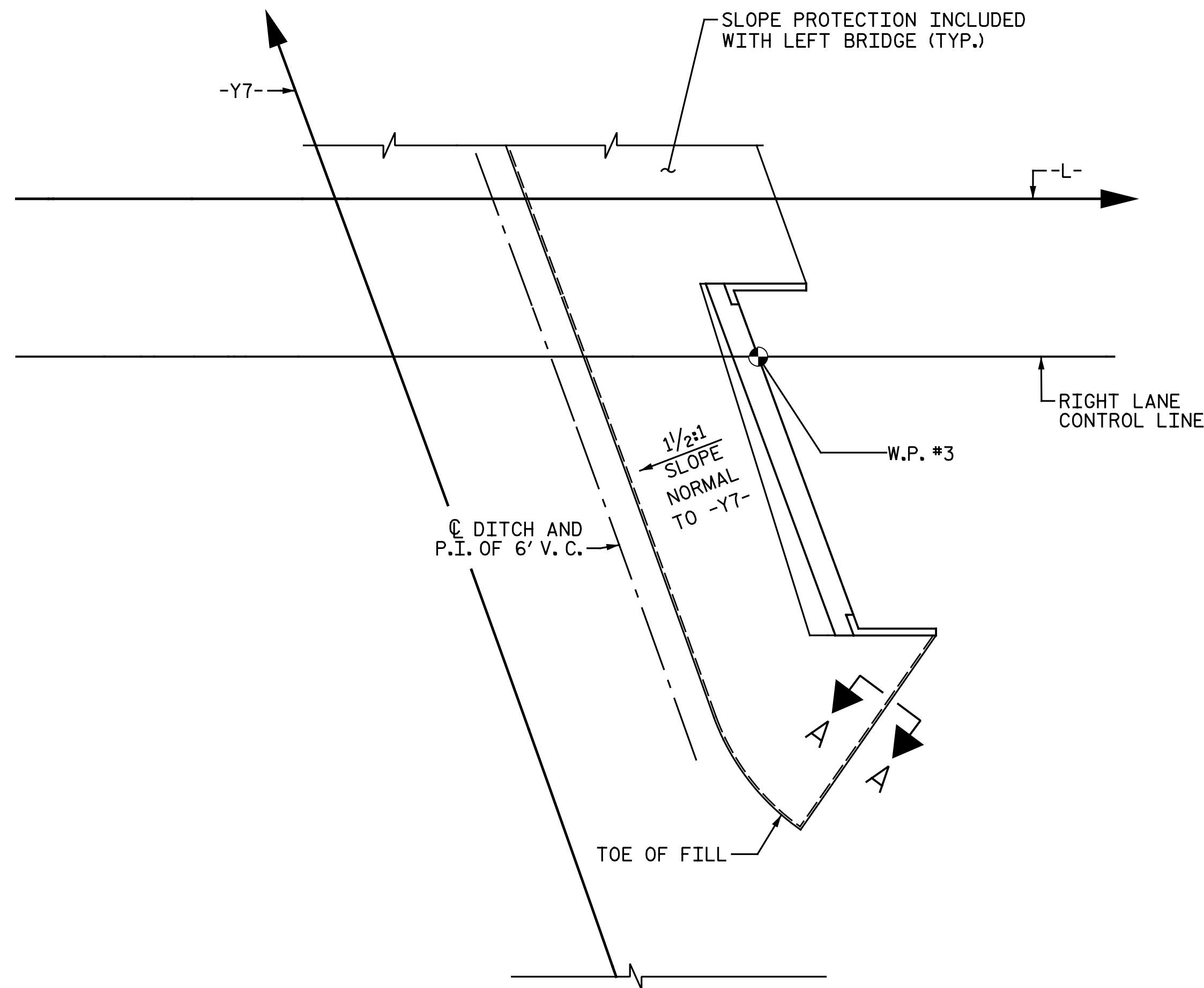
RIP RAP DETAILS

RIGHT LANE

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

DRAWN BY : W. D. MCGREADY DATE : 2-16-17
 CHECKED BY : S. H. ROSS DATE : 5-10-17

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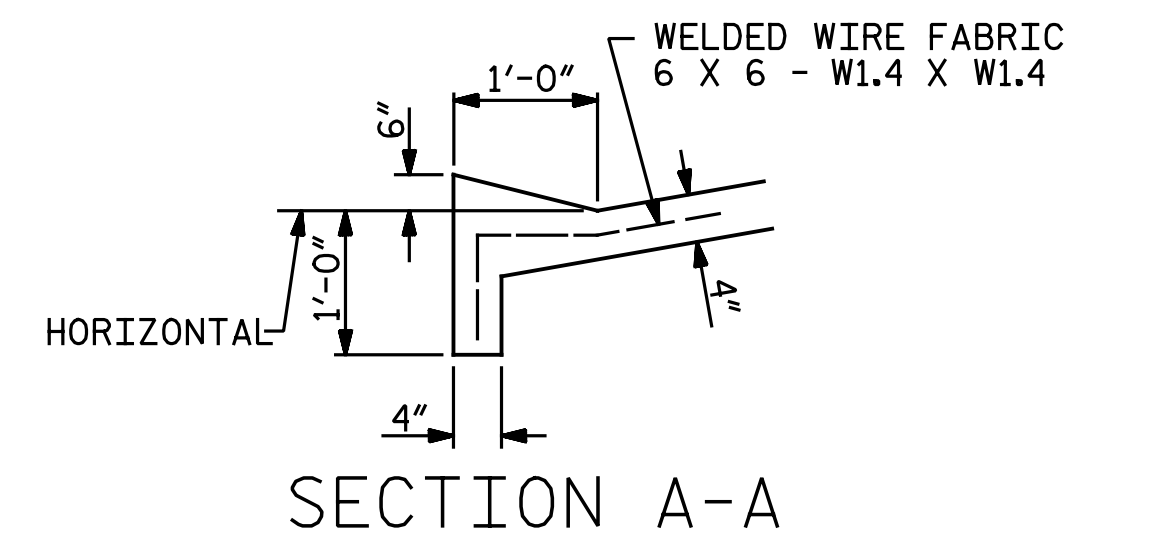


END BENT 2
PLAN

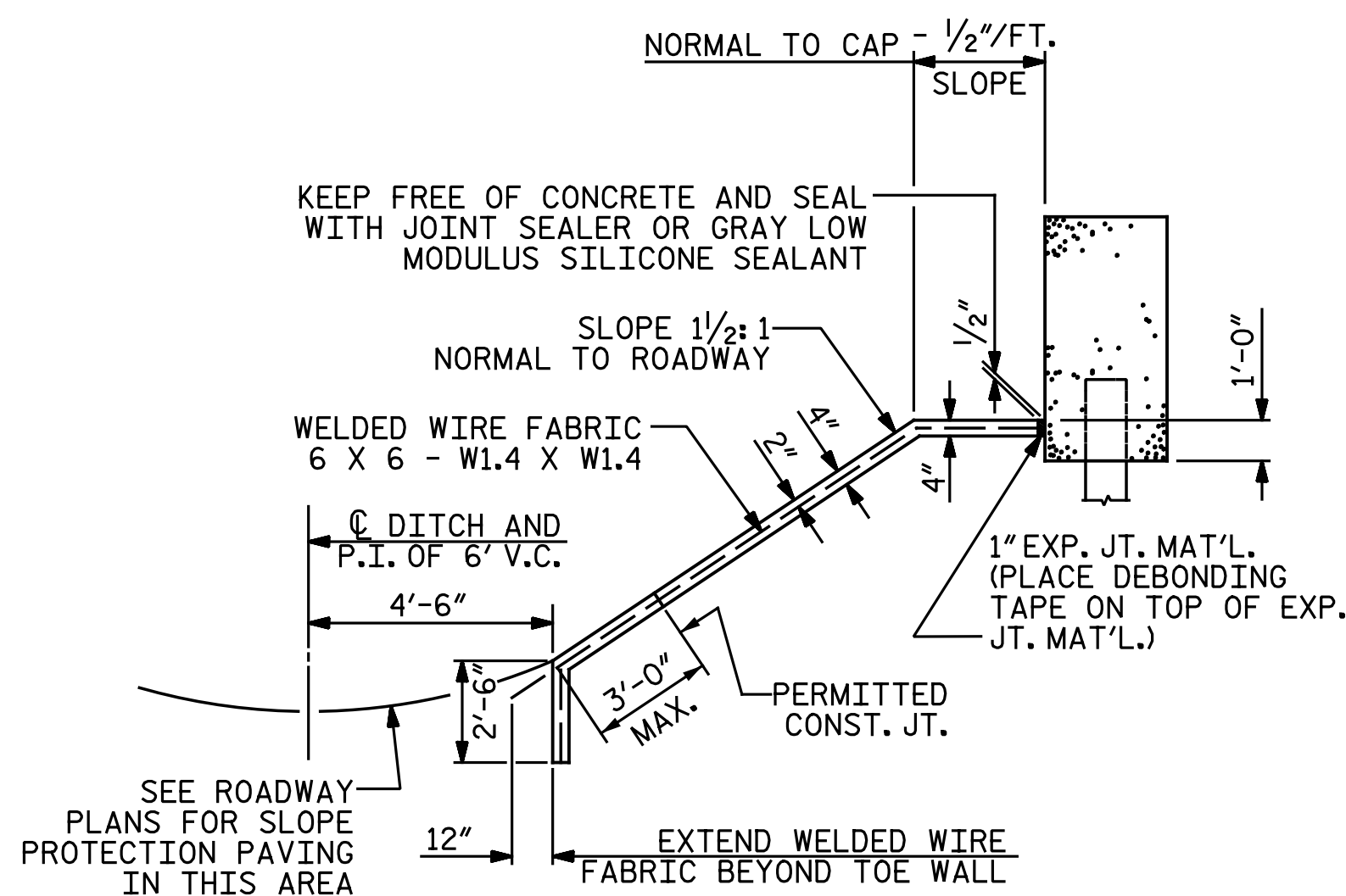
GENERAL NOTES:
 STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT.
 MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.
 FOR BERM WIDTHS AND ELEVATIONS SEE GENERAL DRAWING AND "SLOPE PROTECTION 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. 342+97.24 -L- (RIGHT LANE)	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 2	301	812

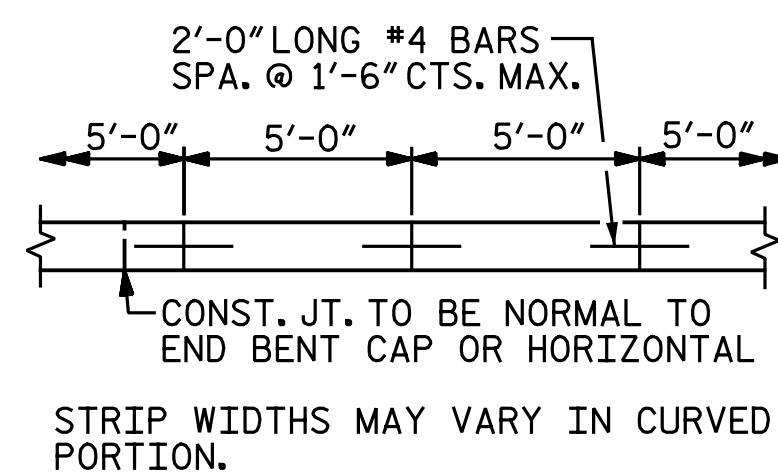
* QUANTITY SHOWN IS BASED ON 5' POURS.



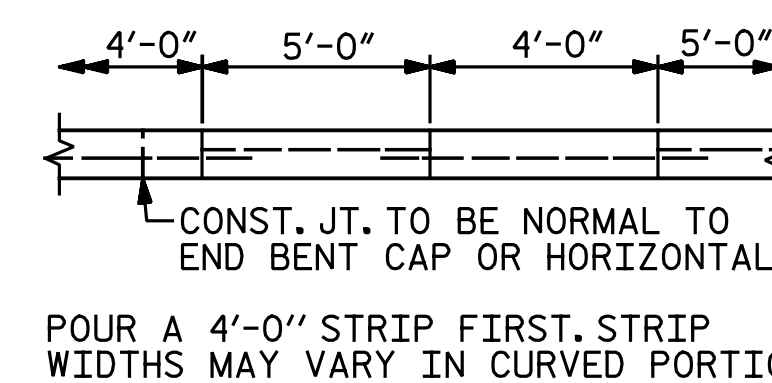
SECTION A-A



SECTION ALONG CONTROL LINE
WHEN FILL CATCHES IN DITCH



POURING DETAIL



OPTIONAL POURING DETAIL

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-

SHEET 1 OF 2



8/4/2017

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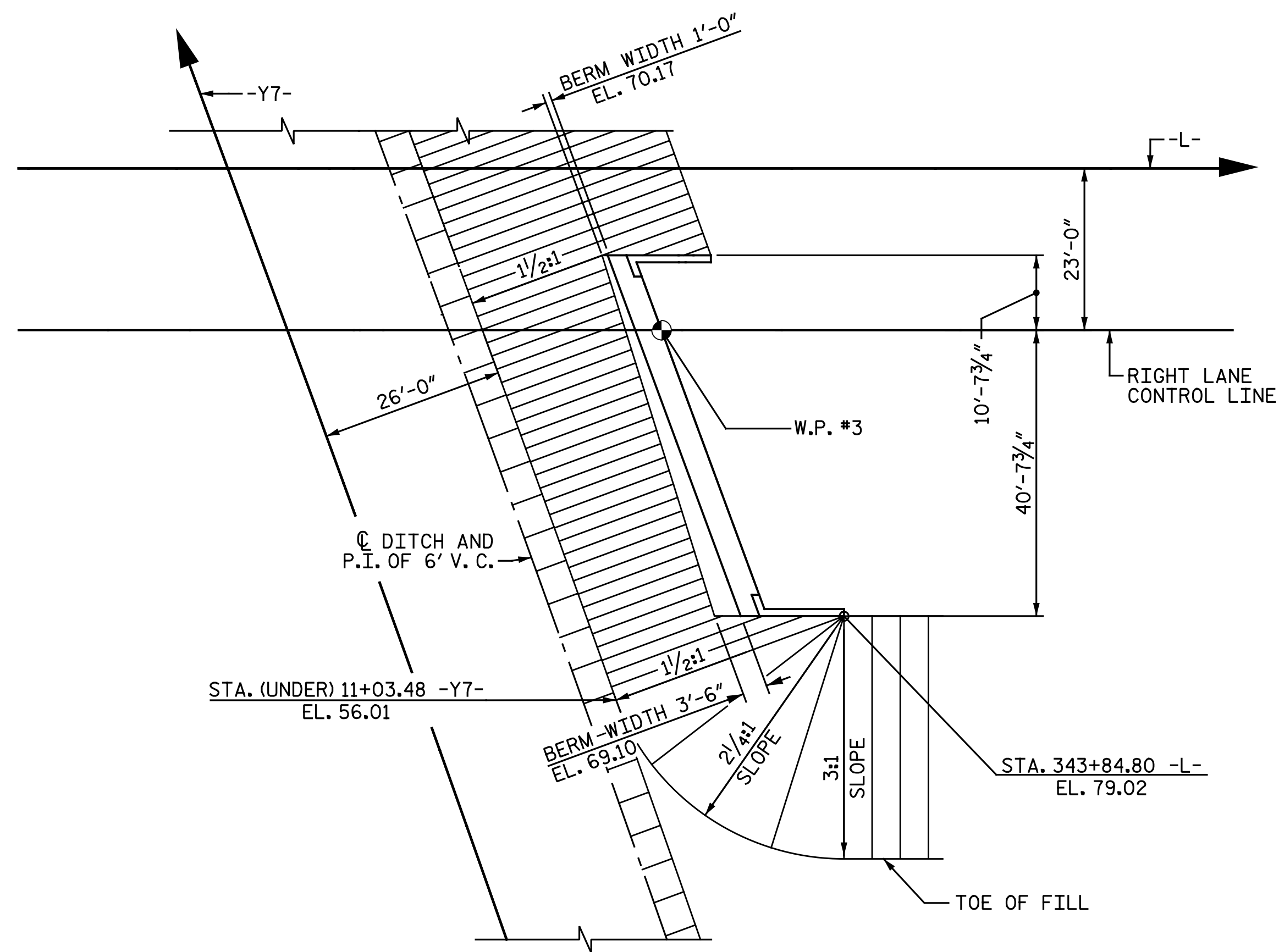
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 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 SLOPE PROTECTION
 DETAILS
 RIGHT LANE

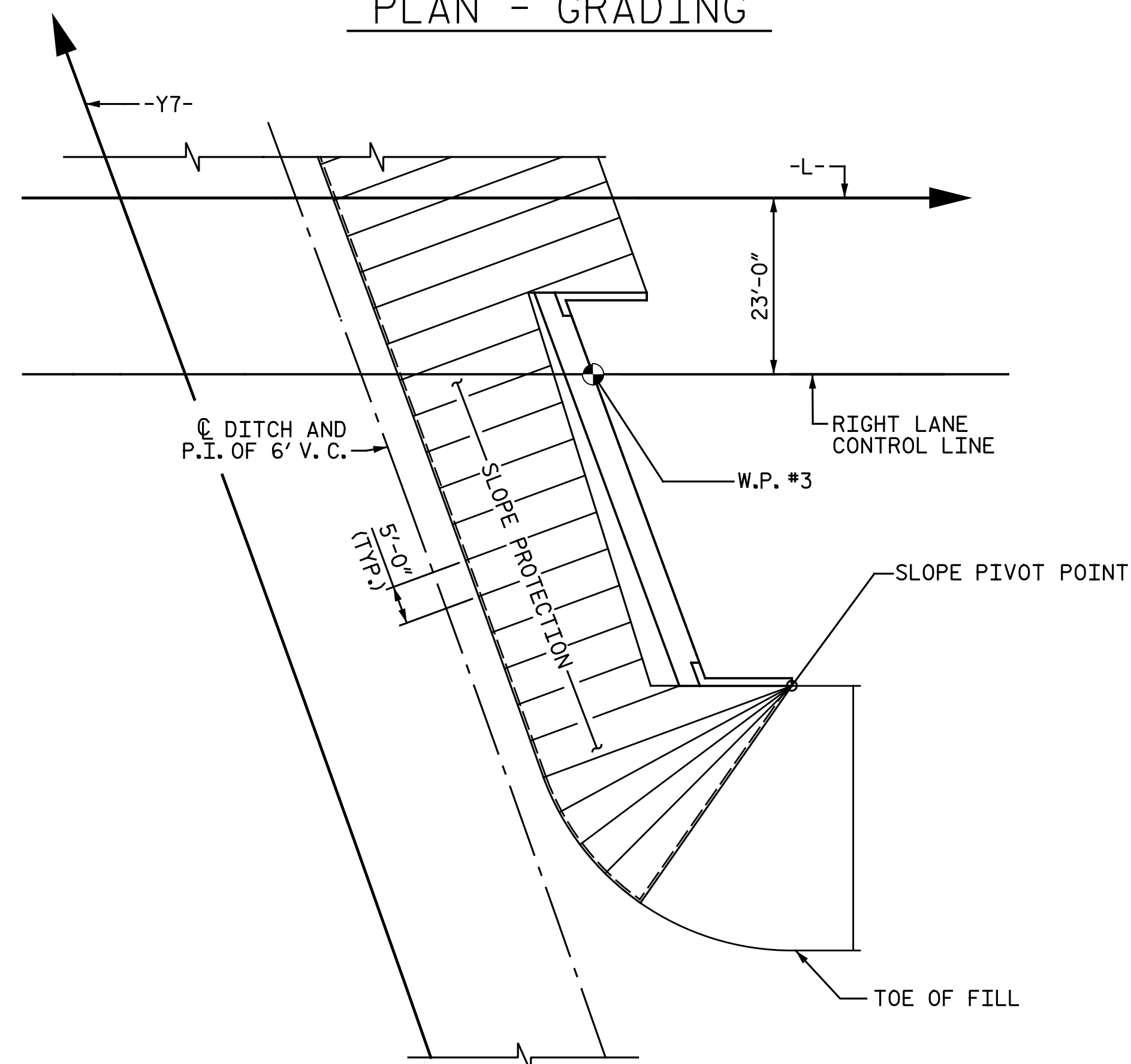
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			29
2			4			

ASSEMBLED BY : W. D. MCGREADY	DATE : 2-21-17
CHECKED BY : S. H. ROSS	DATE : 5-10-17
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/TGM

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



END BENT 2
PLAN - GRADING



END BENT 2
PLAN - CONCRETE PLACEMENT
(1/2:1 SLOPE)

PROJECT NO. R-5703
LENOIR COUNTY
STATION: 342+97.24 -L-

SHEET 2 OF 2



8/4/2017

DocuSigned by:
Stephen H. Ross

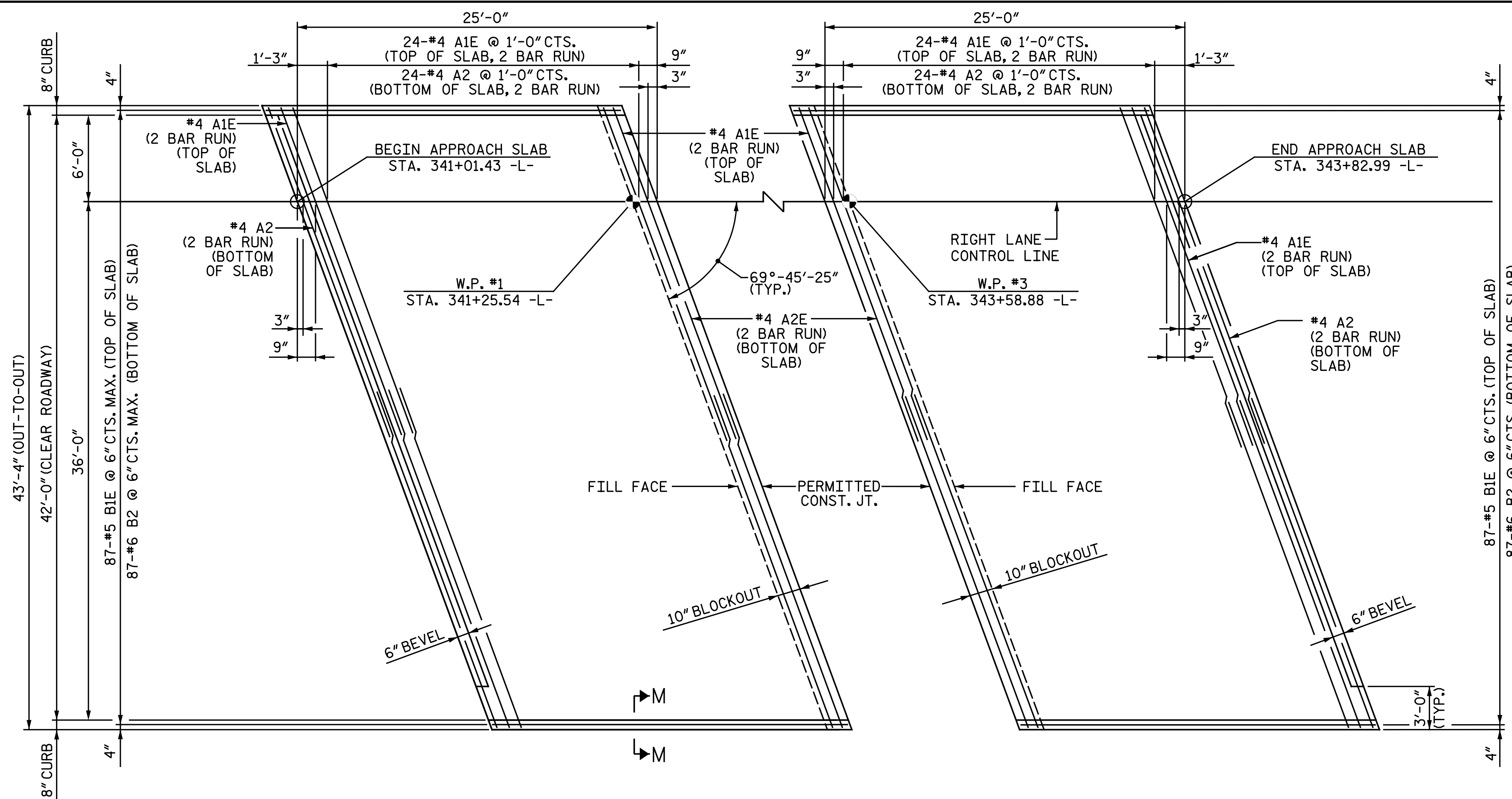
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
SLOPE PROTECTION
DETAILS
RIGHT LANE

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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			29
2			4			

ASSEMBLED BY : W. D. MCGREADY	DATE : 02-21-17
CHECKED BY : S. H. ROSS	DATE : 05-10-17
DRAWN BY : WJH 10/88	REV. 5/1/06 MAA/GM
CHECKED BY : FCJ 10/88	REV. 10/1/11 MAA/GM
	REV. 1/16 MAA/TGM



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 SAWS 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	23' - 11"	831
A2	52	#4	STR	23' - 10"	828
B1E	87	#5	STR	24' - 2"	2,193
B2	87	#6	STR	24' - 8"	3,223

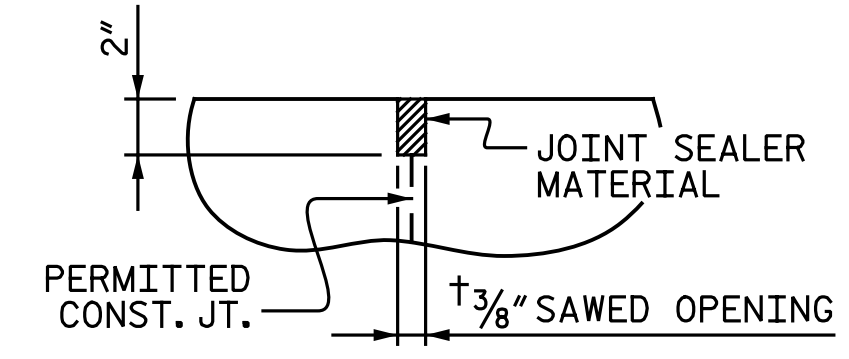
EPOXY COATED REINFORCING STEEL	LBS.	3,024
REINFORCING STEEL	LBS.	4,051
CLASS AA CONCRETE	C.Y.	46.7

BILL OF MATERIAL

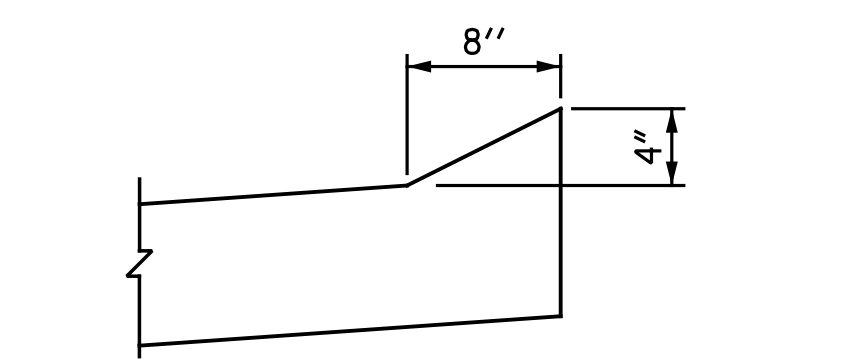
APPROACH SLAB AT END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	52	#4	STR	23' - 11"	831
A2	52	#4	STR	23' - 10"	828
B1E	87	#5	STR	24' - 2"	2,193
B2	87	#6	STR	24' - 8"	3,223

EPOXY COATED REINFORCING STEEL	LBS.	3,024
REINFORCING STEEL	LBS.	4,051
CLASS AA CONCRETE	C.Y.	46.7

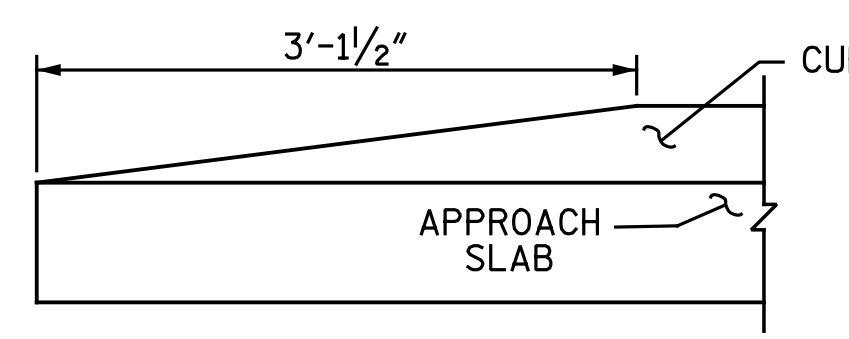
ALL BAR DIMENSIONS ARE OUT TO OUT.



DETAIL "A"

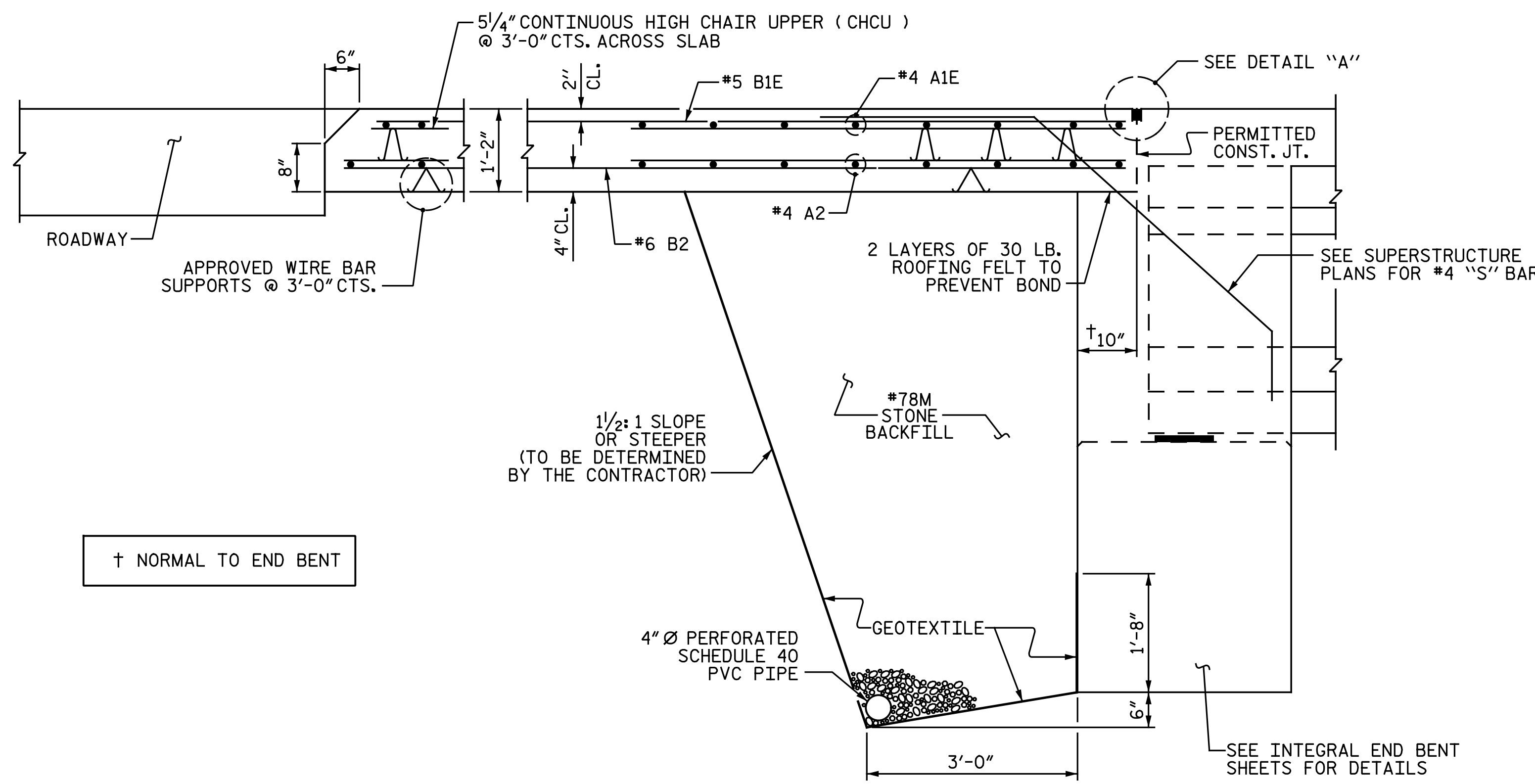


SECTION M-M



END OF CURB WITHOUT SHOULDER BERM GUTTER

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 342+97.24 -L-



SECTION THRU SLAB



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

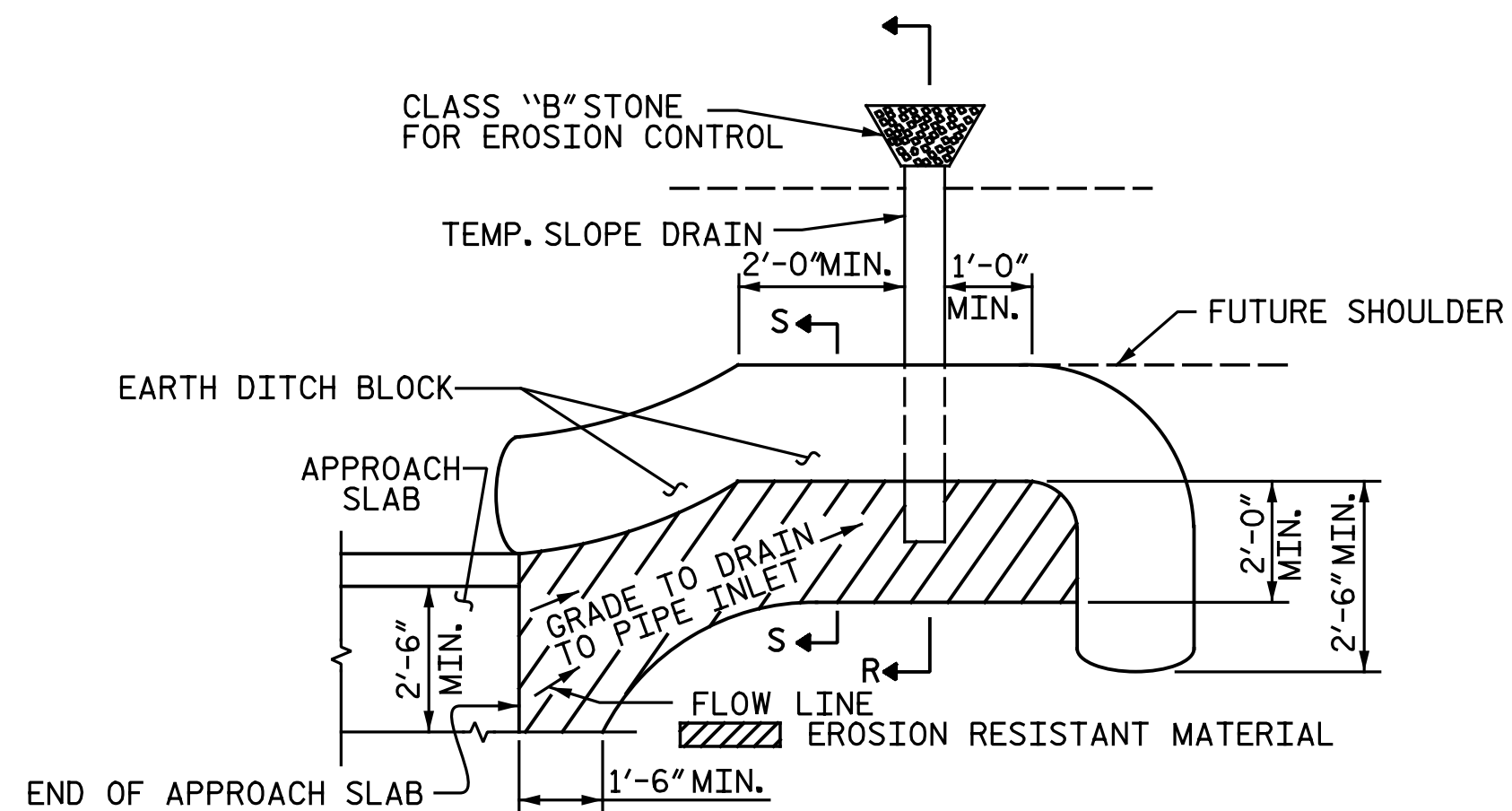
Michael Baker INTERNATIONAL
 Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27518
 NC License No.: F-1084

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT

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

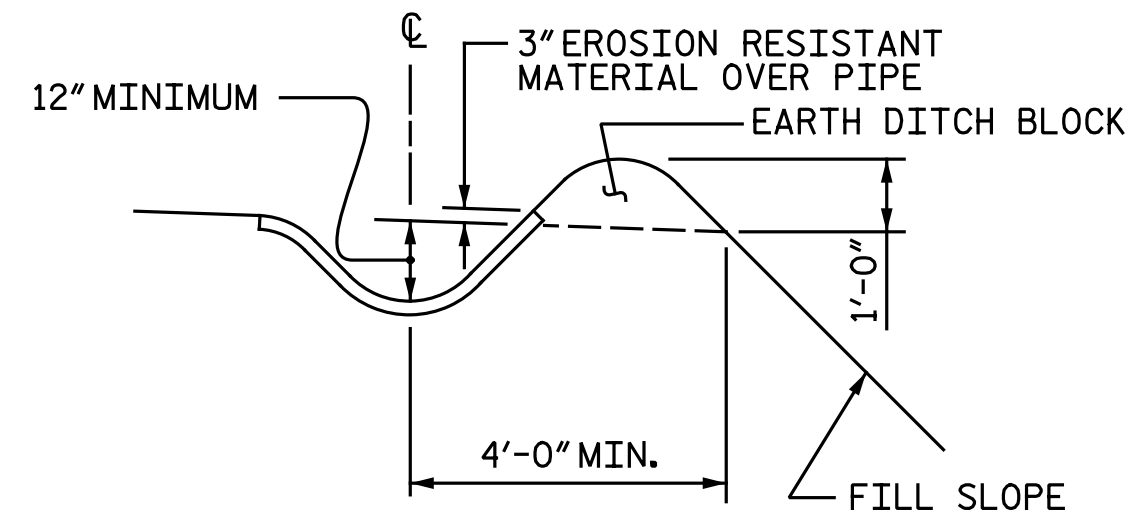
DRAWN BY: W. D. MCGREADY DATE: 01-25-17
 CHECKED BY: S. H. ROSS DATE: 05-10-17

SHEET NO. S12-28
 TOTAL SHEETS 29

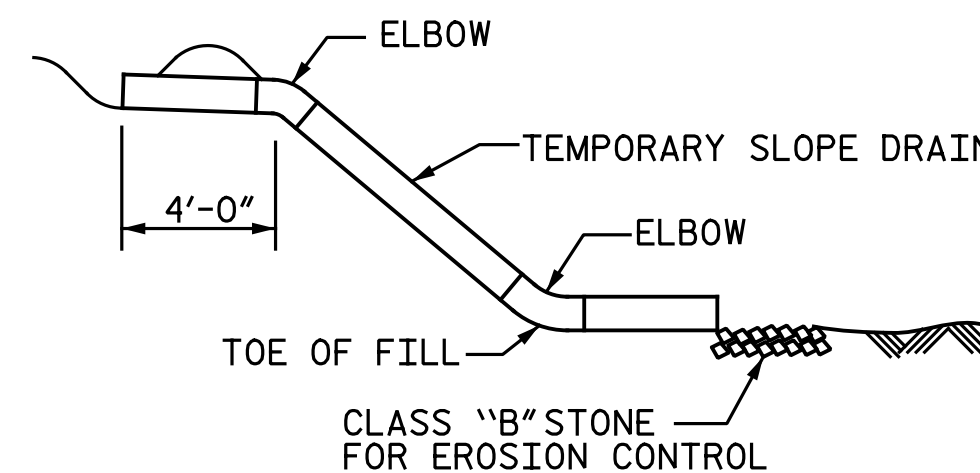


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW



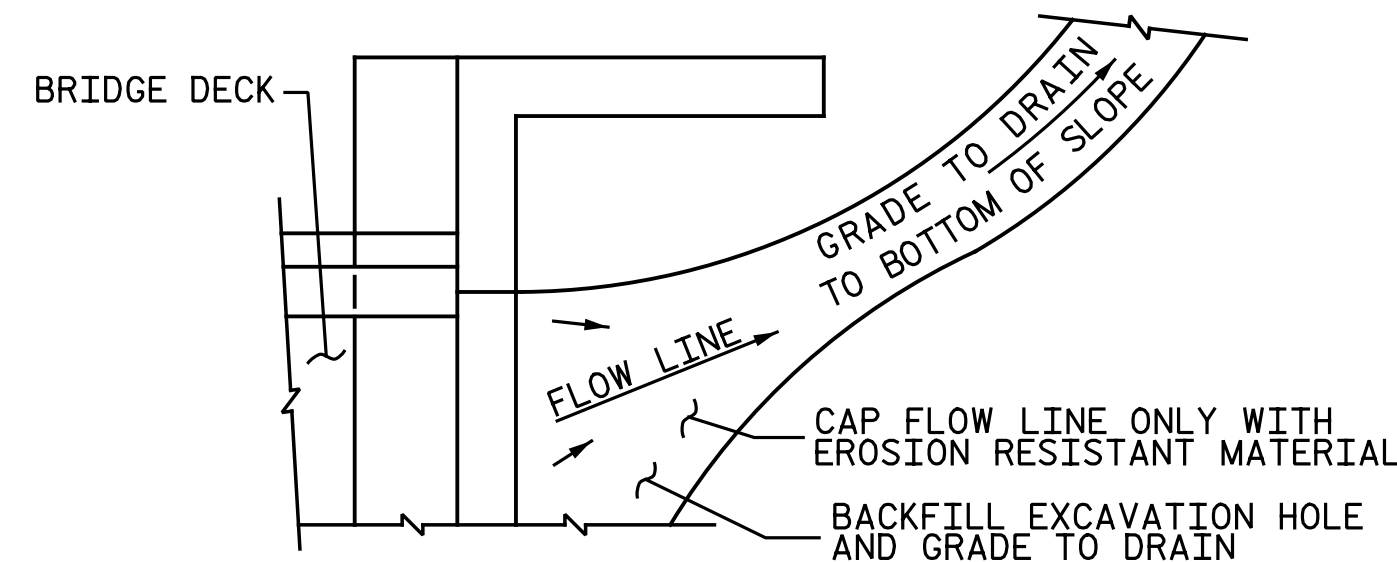
SECTION S-S



SECTION R-R

TEMPORARY BERM AND SLOPE DRAIN DETAILS

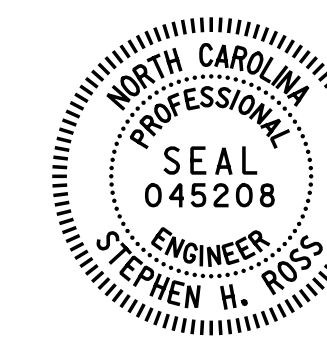
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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: 342+97.24 -L-



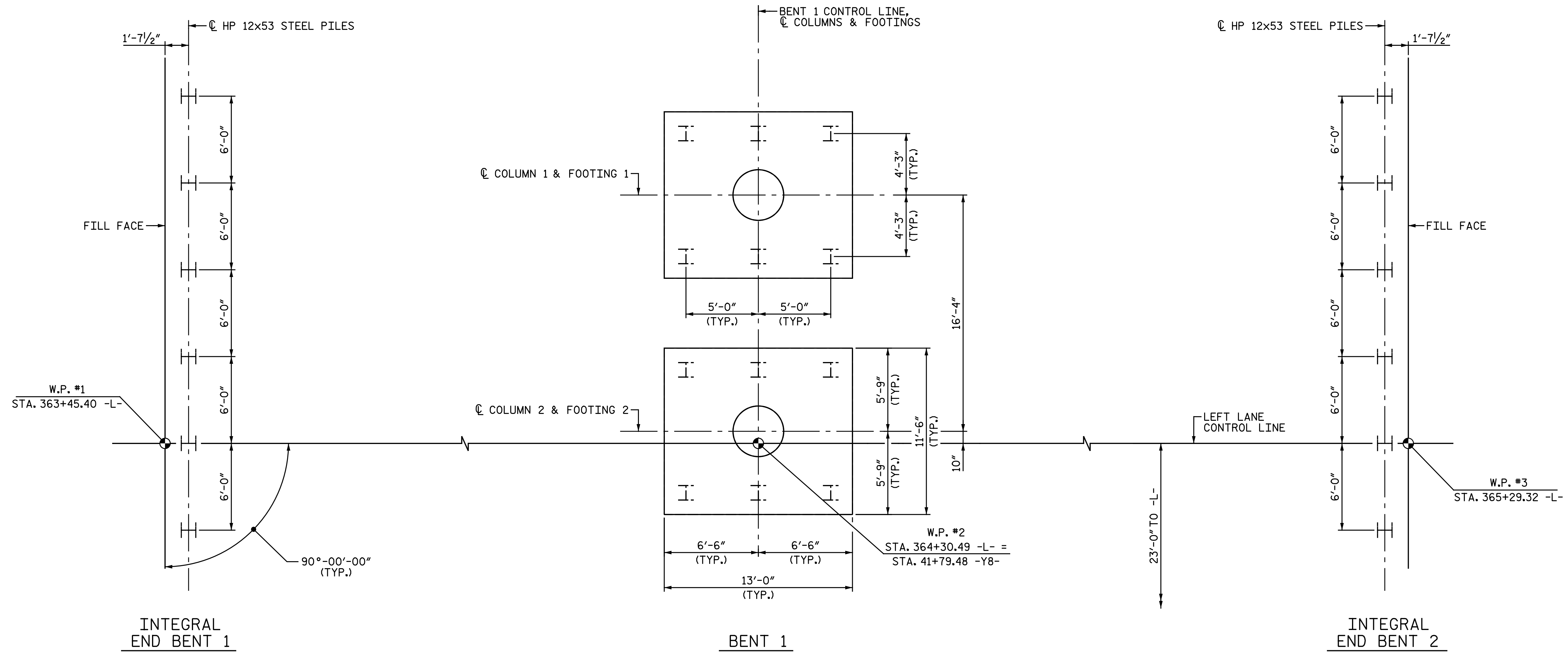
8/4/2017

DocuSigned by:
Stephen H. Ross
 ENGINEER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB DETAILS					
RIGHT LANE					
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED					SHEET NO. S12-29
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					29

ASSEMBLED BY : W. D. MCGREADY	DATE : 1-20-17
CHECKED BY : S. H. ROSS	DATE : 05-10-17
DRAWN BY : FCJ 11/88	REV. 10/11/11 MAA/GM
CHECKED BY : ARB 11/88	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM

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 Michael Baker Engineering
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 NC License No. : F-1084



FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE.

ALL INTERIOR BENT PILES ARE HP 12x53 STEEL 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 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILE.

DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 195 TONS PER PILE.

PILES AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILE.

DRIVE PILES AT BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 195 TONS PER PILE.

PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILE.

DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 195 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO.1, BENT NO.1 AND END BENT NO.2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

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 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.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENT NO.1, BENT NO.1, OR END BENT NO.2. 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 : M. D. MAYHEW DATE : 4-12-17
 CHECKED BY : A. H. SHARPE DATE : 4-25-17

PROJECT NO. R-5703
 LENOIR COUNTY
 STATION: 364+28.98 -L-
 41+56.43 -Y8-
 SHEET 2 OF 3



8/8/2017

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 UNLESS ALL SIGNATURES COMPLETED

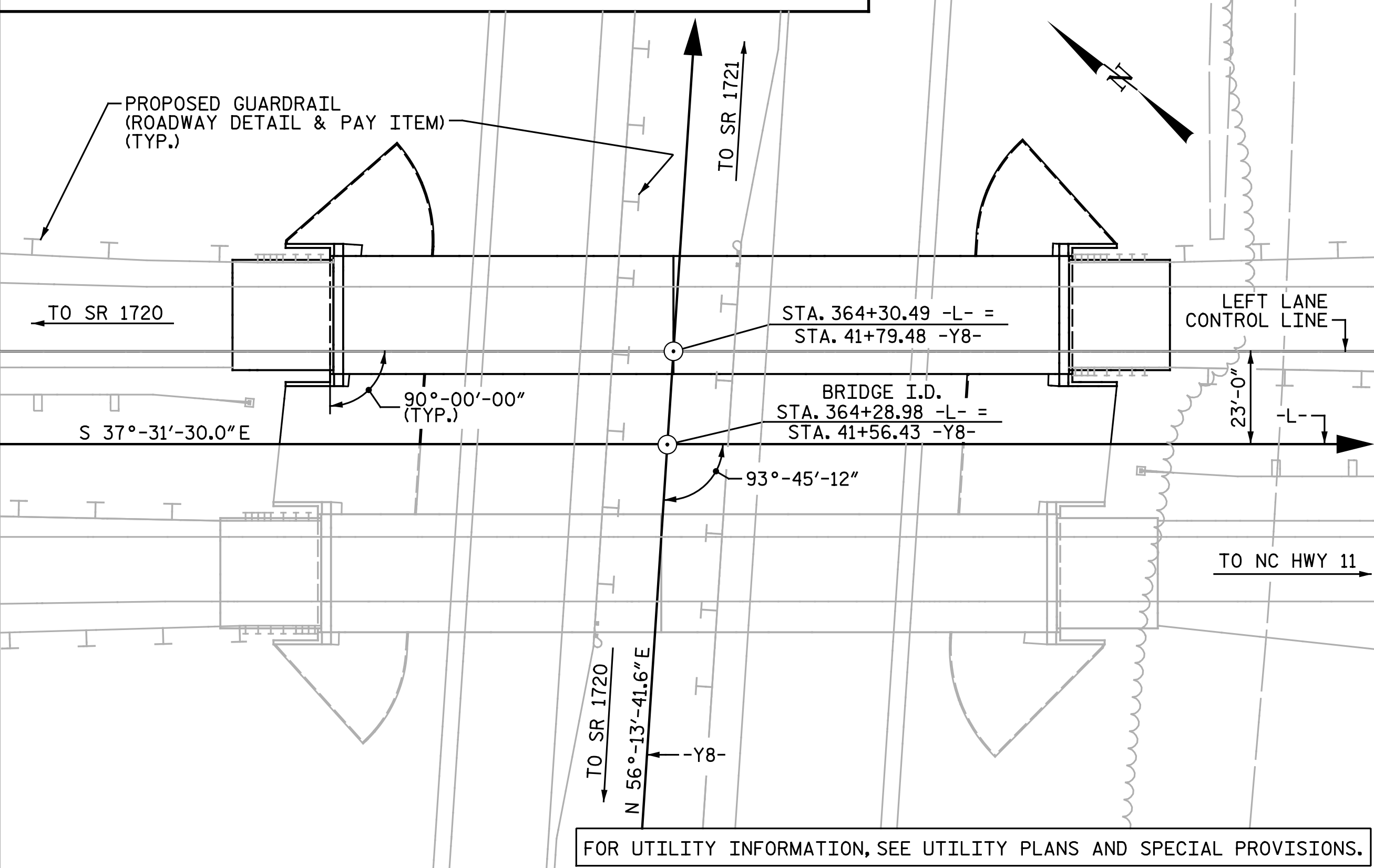
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 Cary, North Carolina 27518
 NC License No.: F-1084

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON C.F. HARVEY
 PARKWAY OVER NC HWY 11
 BETWEEN SR 1720 AND NC HWY 11

LEFT LANE

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

BM #18 - RR SPIKE IN BASE OF 24" PINE, STA. 367+35.50 -L-, 170.71' RT., EL. 56.27



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

NOTES:

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.
- PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

TOTAL BILL OF MATERIAL

LOCATION	FOUNDATION EXCAVATION FOR BENT 1	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	MODIFIED 63" PRESTRESSED CONCRETE GIRDERS	PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	HP 12x53 STEEL PILES	STEEL PILE POINTS	PILE REDRIVES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS
	LUMP SUM	EA.	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO. LIN. FT.	EA.	NO. LIN. FT.	EA.	EA.	LIN. FT.	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE			5,380	5,296					6 543.8					364.50		LUMP SUM
END BENT 1					28.7		4,698			6	6 312	6	5		290	
BENT 1	LUMP SUM				71.2		9,230	1002		12	12 249	12	6			
END BENT 2					28.7		4,698			6	6 252	6	5		300	
TOTAL	LUMP SUM	1	5,380	5,296	128.6	LUMP SUM	18,626	1002	6 543.8	24	24 813	24	16	364.50	590	LUMP SUM

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 364+28.98 -L-
41+56.43 -Y8-
 SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON C.F. HARVEY
 PARKWAY OVER NC HWY 11
 BETWEEN SR 1720 AND NC HWY 11

9/13/2017
 DOCUMENT NOT CONSIDERED FINAL
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 Michael Baker Engineering
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 Cary, North Carolina 27518
 NC License No.: F-1084

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

DRAWN BY: M. D. MAYHEW DATE: 9-11-17
 CHECKED BY: A. H. SHARPE DATE: 9-12-17

LOAD FACTORS:

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						LIVE-LOAD FACTORS (%LL)	MOMENT					SHEAR					LIVE-LOAD FACTORS (%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	1.02	--	1.75	0.90	1.25	A	ER	41.22	1.05	1.17	B	I	87.00	1.00	0.90	1.02	A	ER	41.22	1,2	
	HL-93 (OPERATING)	N/A		1.54	--	1.35	0.90	1.62	A	ER	41.22	1.05	1.54	B	I	9.00	N/A	--	--	--	--	--	--	1,2
	HS-20 (INVENTORY)	36.000	2	1.37	49.32	1.75	0.90	1.67	A	ER	41.22	1.05	1.58	B	I	87.00	1.00	0.90	1.37	A	ER	41.22	1,2	
	HS-20 (OPERATING)	36.000		2.08	74.88	1.35	0.90	2.17	A	ER	41.22	1.05	2.08	B	I	9.00	N/A	--	--	--	--	--	--	1,2
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.15	42.53	1.40	0.90	4.82	A	ER	41.22	1.05	5.07	B	I	87.00	1.00	0.90	3.15	A	ER	41.22	1,2
		SNGARBS2	20.000		2.32	46.40	1.40	0.90	3.55	A	ER	41.22	1.05	3.52	B	I	87.00	1.00	0.90	2.32	A	ER	41.22	1,2
		SNAGRIS2	22.000		2.18	47.96	1.40	0.90	3.34	A	ER	41.22	1.05	3.24	B	I	87.00	1.00	0.90	2.18	A	ER	41.22	1,2
		SNCOTTS3	27.250		1.57	42.78	1.40	0.90	2.40	A	ER	41.22	1.05	2.47	B	I	87.00	1.00	0.90	1.57	A	ER	41.22	1,2
		SNAGGRS4	34.925		1.30	45.40	1.40	0.90	1.99	A	ER	41.22	1.05	2.00	B	I	87.00	1.00	0.90	1.30	A	ER	41.22	1,2
		SNS5A	35.550		1.27	45.15	1.40	0.90	1.94	A	ER	41.22	1.05	2.01	B	I	9.00	1.00	0.90	1.27	A	ER	41.22	1,2
		SNS6A	39.950		1.16	46.34	1.40	0.90	1.78	A	ER	41.22	1.05	1.81	B	I	87.00	1.00	0.90	1.16	A	ER	41.22	1,2
		SNSTB	42.000		1.11	46.62	1.40	0.90	1.69	A	ER	41.22	1.05	1.76	B	I	9.00	1.00	0.90	1.11	A	ER	41.22	1,2
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.41	46.53	1.40	0.90	2.16	A	ER	41.22	1.05	2.19	B	I	87.00	1.00	0.90	1.41	A	ER	41.22	1,2
		TNT4A	33.075		1.42	46.97	1.40	0.90	2.17	A	ER	41.22	1.05	2.14	B	I	9.00	1.00	0.90	1.42	A	ER	41.22	1,2
		TNT6A	41.600		1.16	48.26	1.40	0.90	1.77	A	ER	41.22	1.05	1.85	B	I	87.00	1.00	0.90	1.16	A	ER	41.22	1,2
		TNT7A	42.000		1.16	48.72	1.40	0.90	1.77	A	ER	41.22	1.05	1.82	B	I	9.00	1.00	0.90	1.16	A	ER	41.22	1,2
		TNT7B	42.000		1.19	49.98	1.40	0.90	1.83	A	ER	41.22	1.05	1.73	B	I	9.00	1.00	0.90	1.19	A	ER	41.22	1,2
		TNAGRIT4	43.000		1.14	49.02	1.40	0.90	1.74	A	ER	41.22	1.05	1.67	B	I	87.00	1.00	0.90	1.14	A	ER	41.22	1,2
TNACT5A	45.000		1.08	48.60	1.40	0.90	1.65	A	ER	41.22	1.05	1.64	B	I	9.00	1.00	0.90	1.08	A	ER	41.22	1,2		
TNAGT5B	45.000		3	1.07	48.15	1.40	0.90	1.63	A	ER	41.22	1.05	1.59	B	I	9.00	1.00	0.90	1.07	A	ER	41.22	1,2	

NOTES:

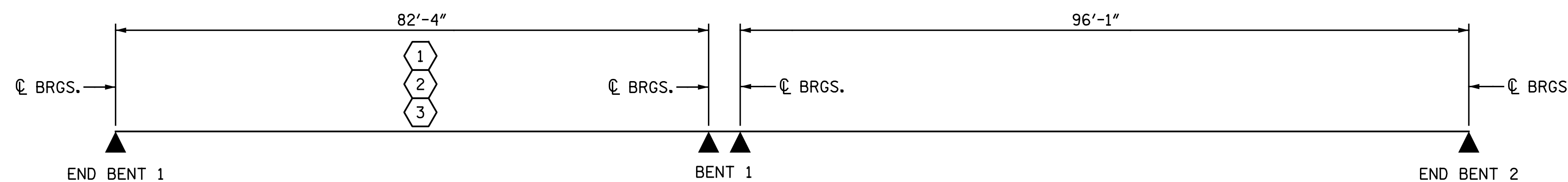
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

COMMENTS:

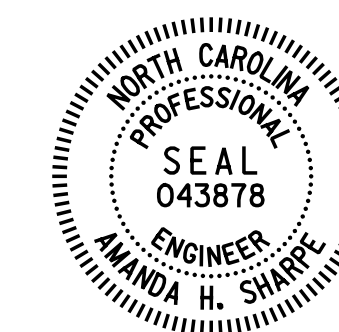
- A SERVICE III LIVE LOAD FACTOR OF 1.0 WAS USED TO BE CONSISTENT WITH THE VALUE USED DURING DESIGN.
- DISTANCE FROM LEFT END OF SPAN IS GIVEN WITH RESPECT TO CENTERLINE OF BEARING AND IS MEASURED ALONG THE CONTROLLING GIRDER.

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



LRFR SUMMARY

PROJECT NO. R-5703
LENOIR COUNTY
 STATION: 364+28.98 -L-
41+56.43 -Y8-



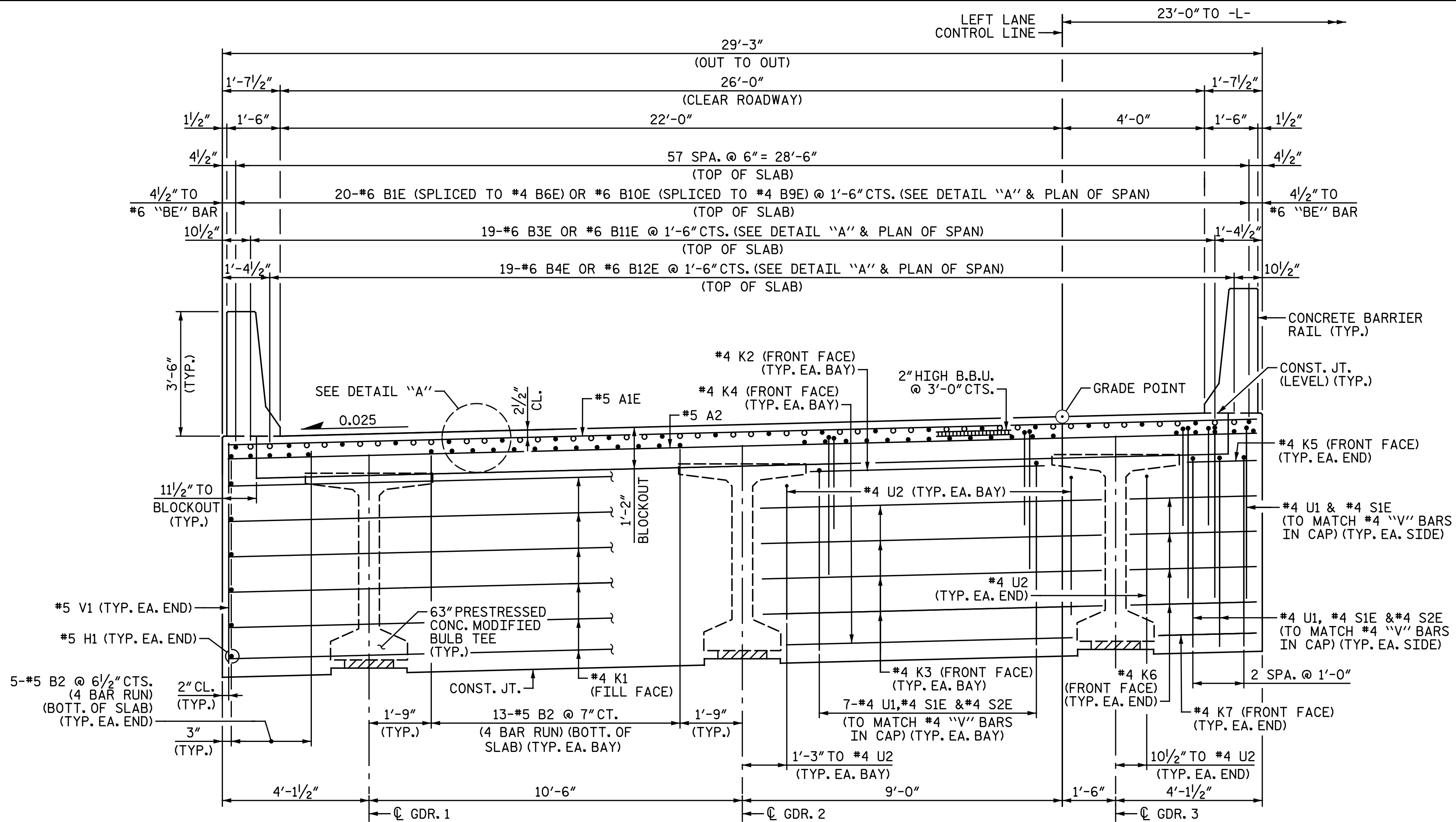
8/8/2017

DOCUMENT NOT CONSIDERED FINAL
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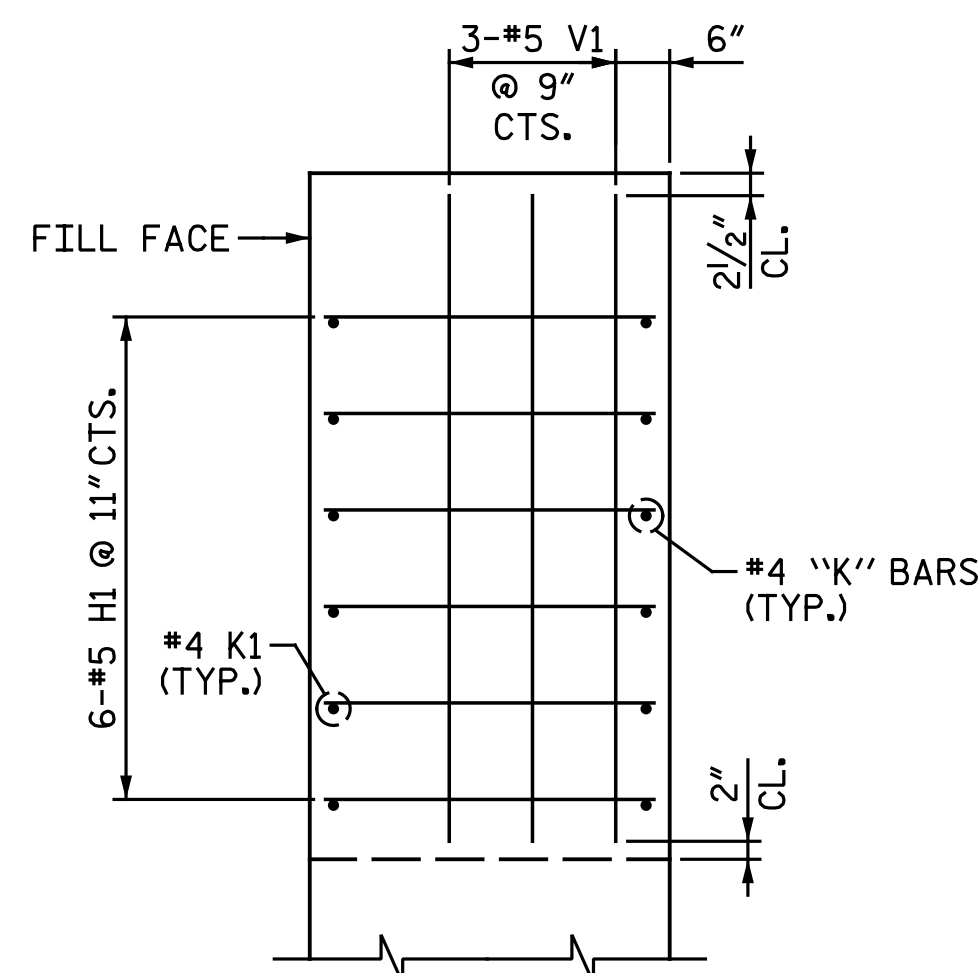
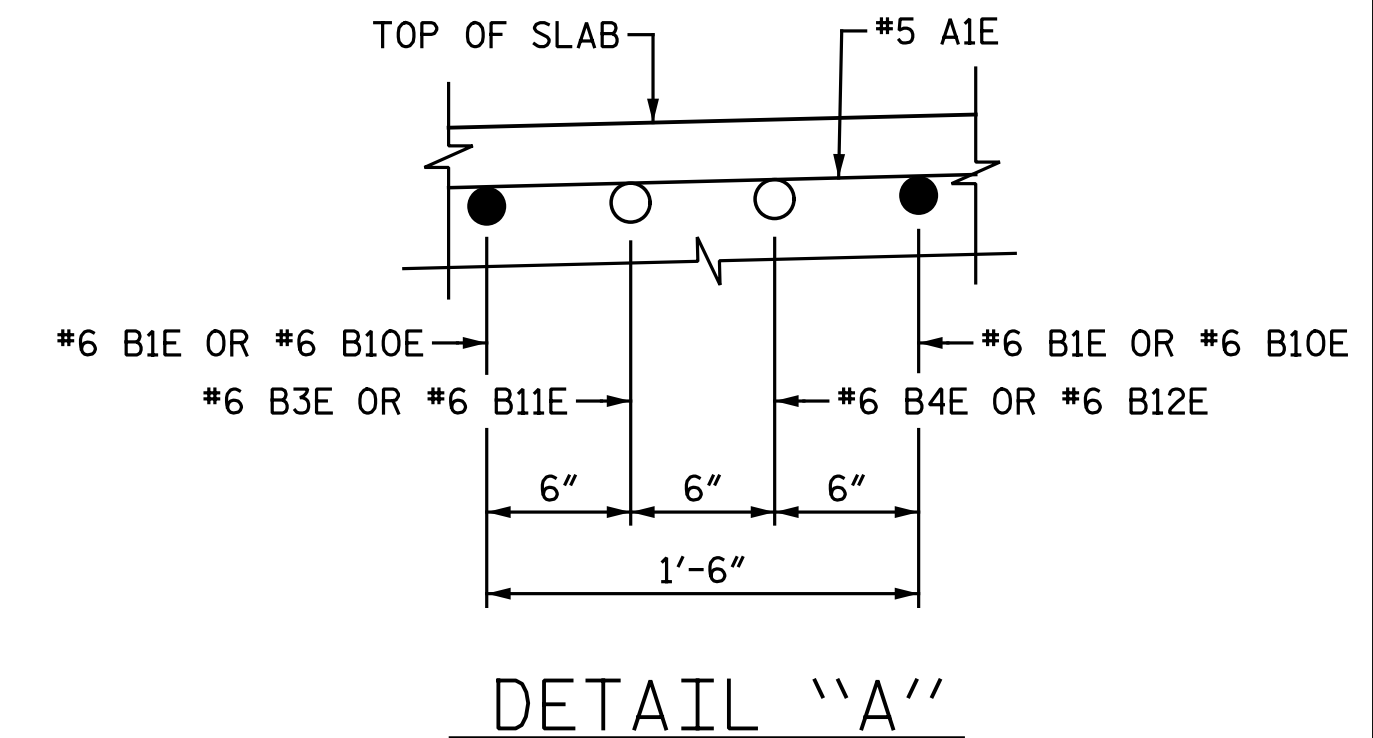
Michael Baker INTERNATIONAL
 Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27518
 NC License No.: F-1084

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS (NON-INTERSTATE TRAFFIC) LEFT LANE					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 29
					SHEET NO. S13-4

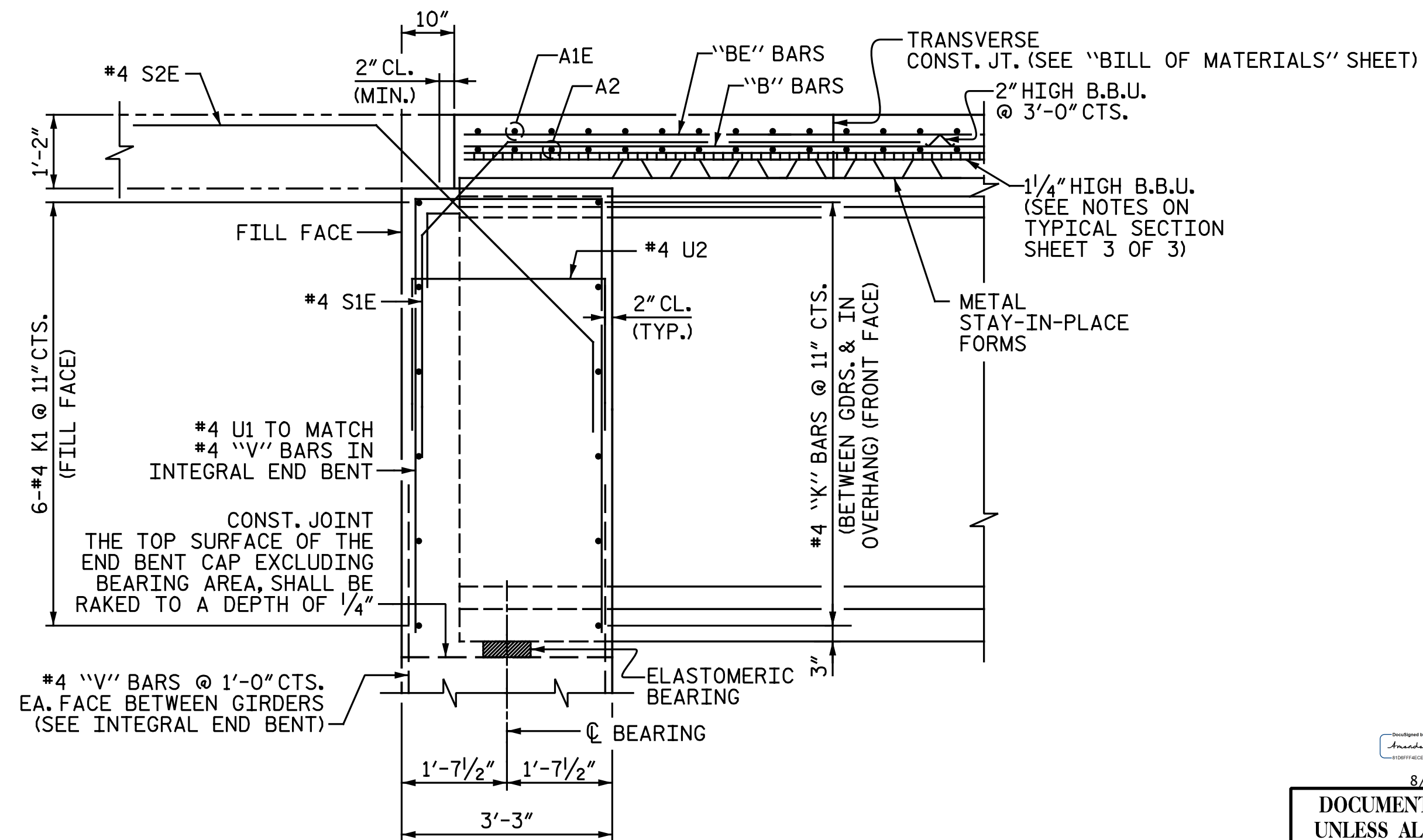
ASSEMBLED BY : N. B. SPEAKS DATE : 4-13-17
 CHECKED BY : A. H. SHARPE DATE : 5-3-17
 DRAWN BY : MAA 1/08 REV. 11/2/08RR MAA/GM
 CHECKED BY : GM/DI 2/08 REV. 10/1/11 MAA/GM



TYPICAL SECTION AT INTEGRAL END BENT
(END BENT 1 SHOWN, END BENT 2 SIMILAR)



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: 364+28.98 -L-
SHEET 1 OF 3



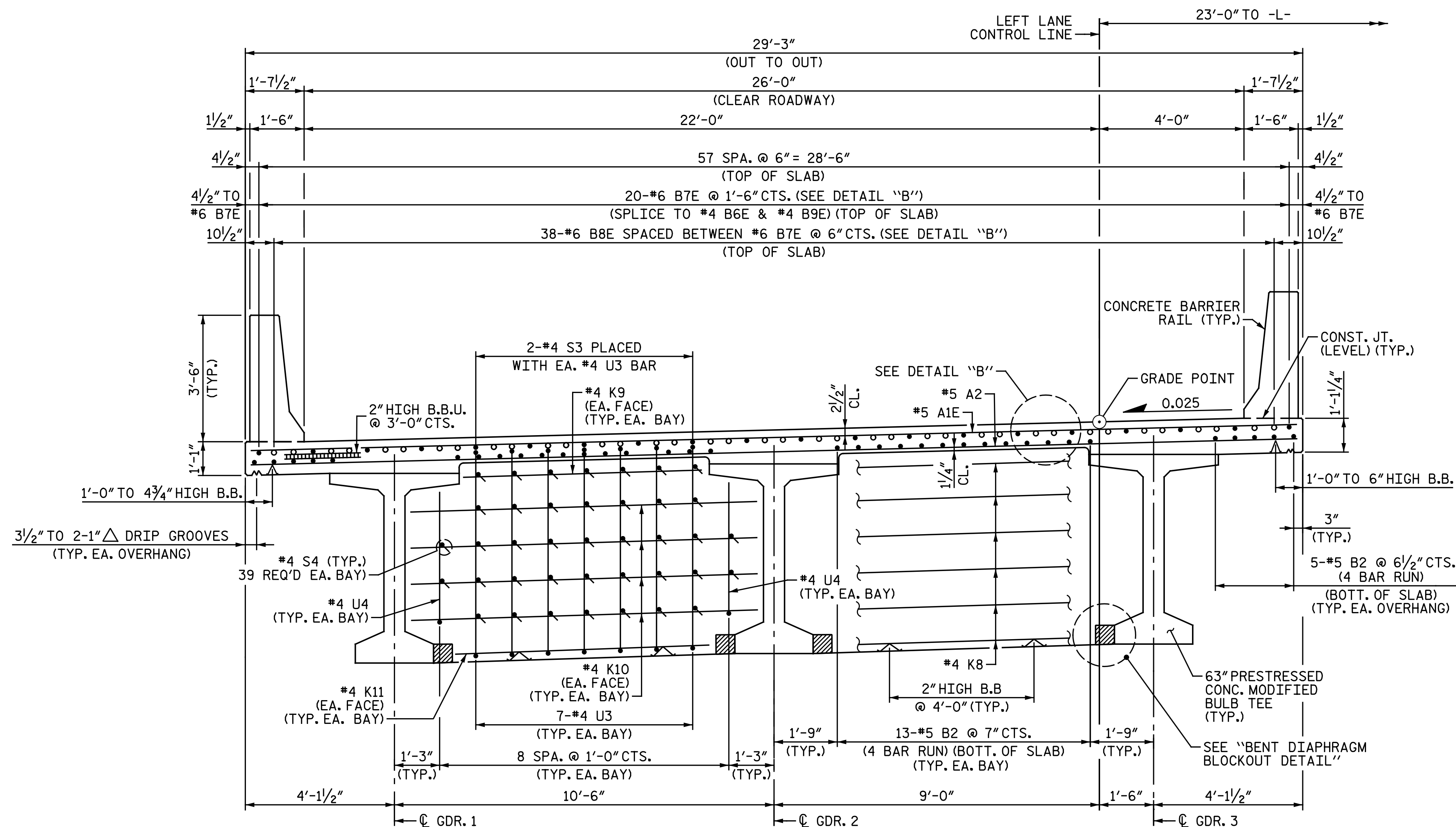
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION

DOCUMENT NOT CONSIDERED FINAL
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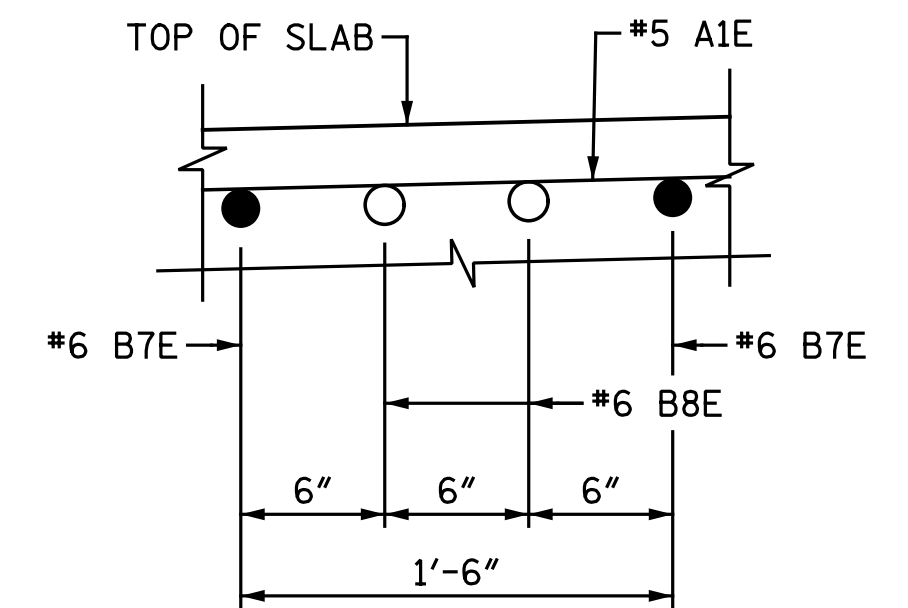
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Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

REVISIONS						SHEET NO. S13-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 29
2			4			

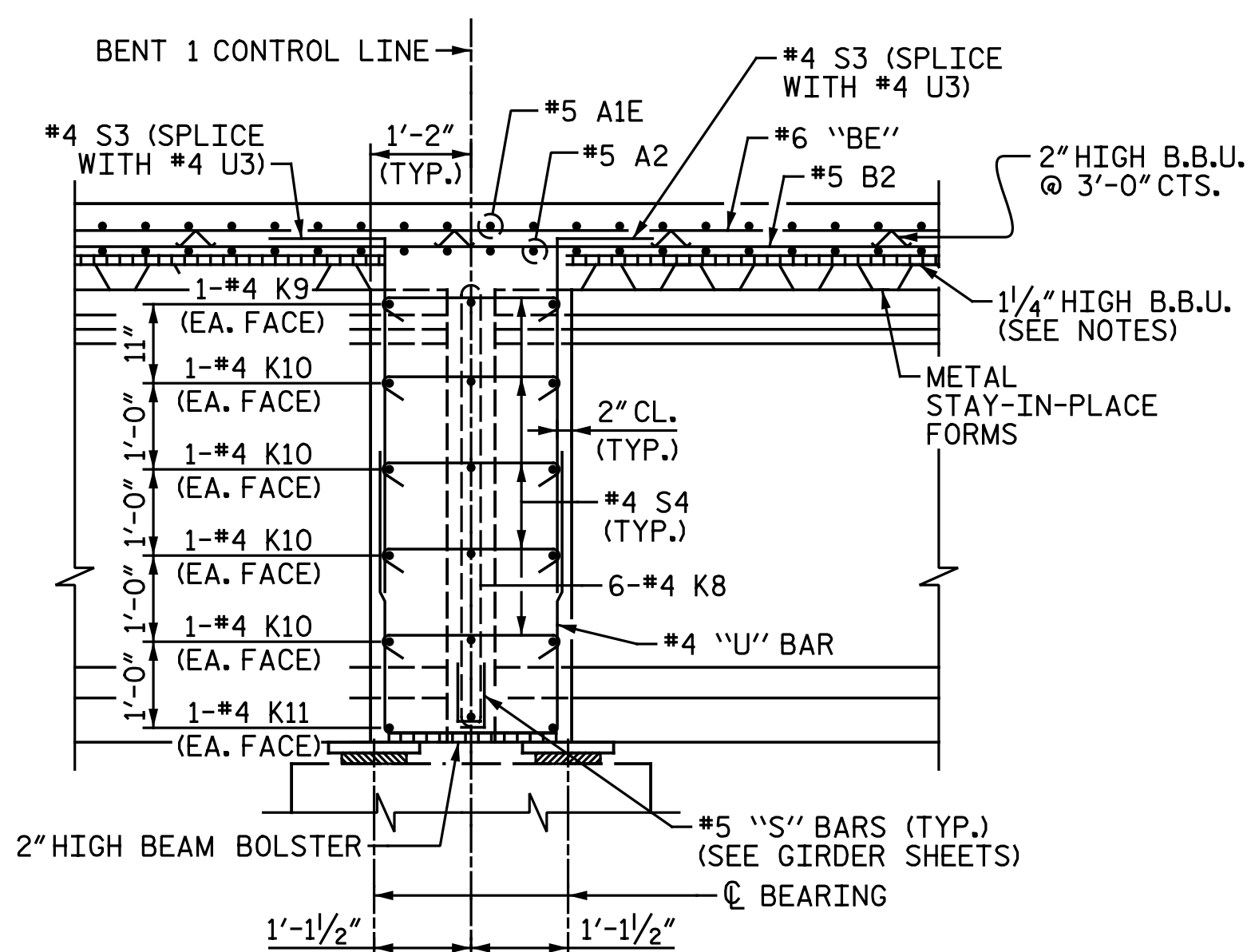
DRAWN BY: D. A. LAMAY DATE: 4-27-17
CHECKED BY: A. H. SHARPE DATE: 5-1-17



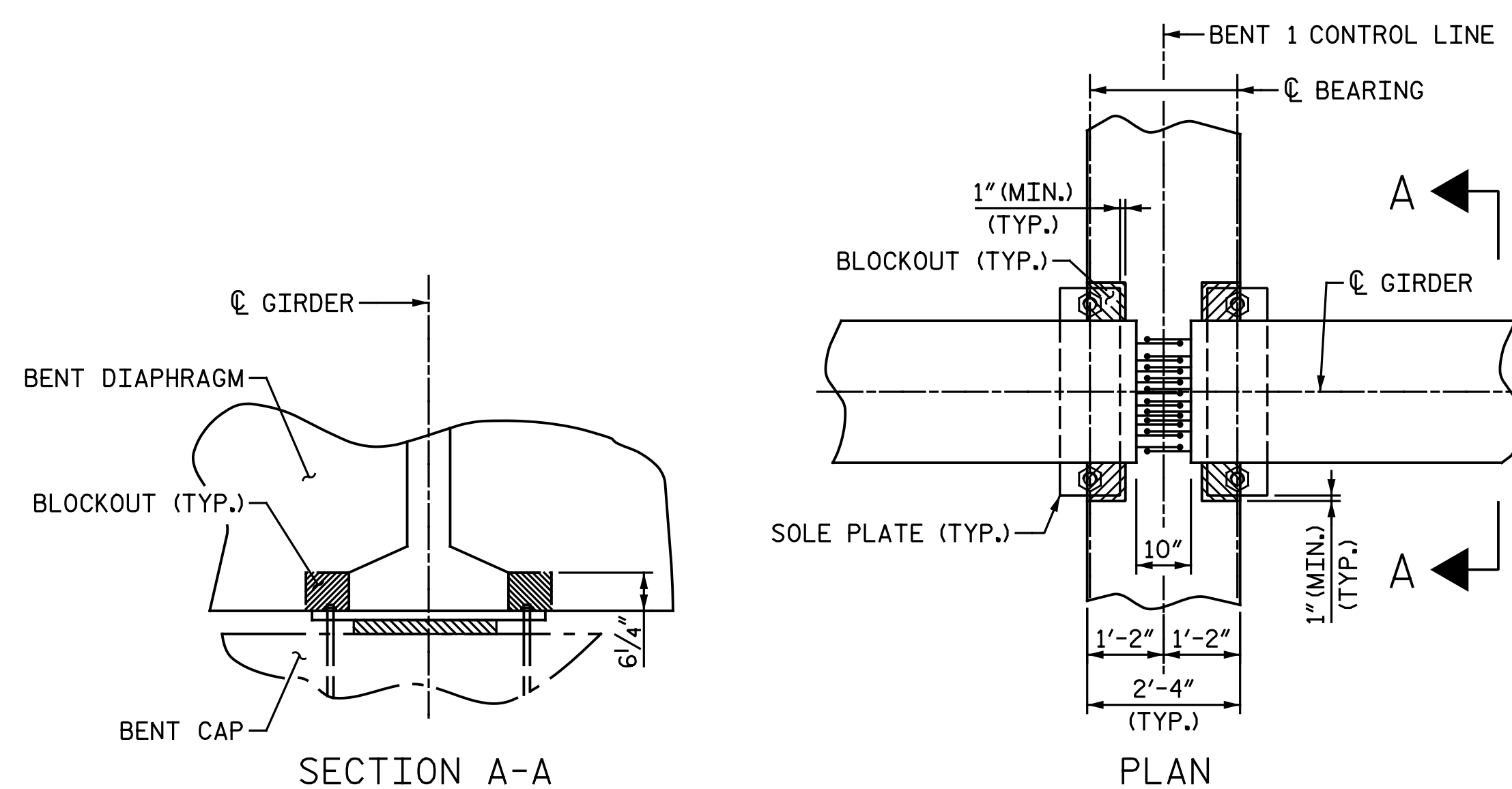
TYPICAL SECTION AT BENT



DETAIL 'B'



SECTION THRU BENT DIAPHRAGM



BENT DIAPHRAGM BLOCKOUT DETAIL

PROJECT NO. R-5703
 LENOIR COUNTY
 STATION: 364+28.98 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION

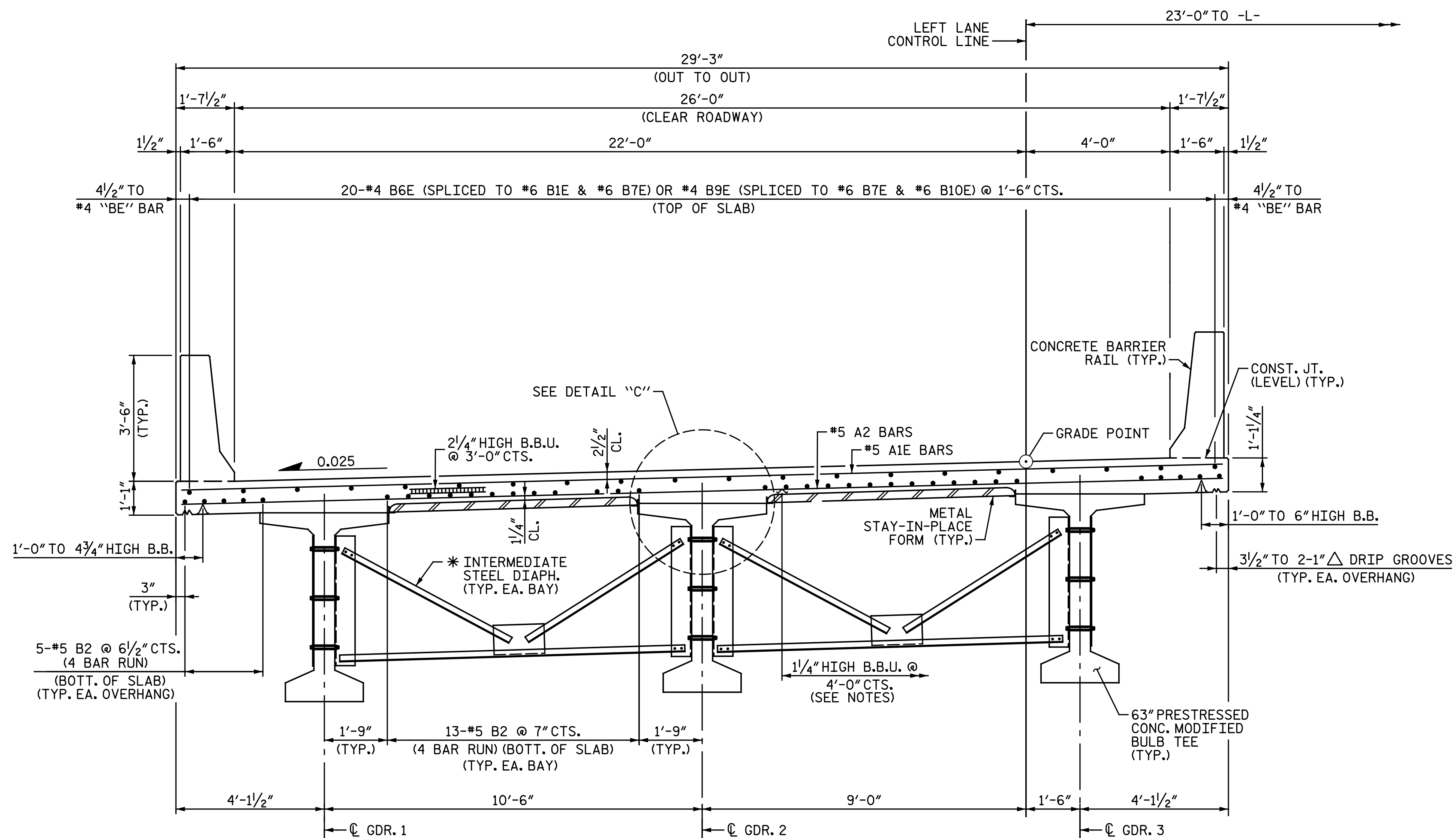
LEFT LANE

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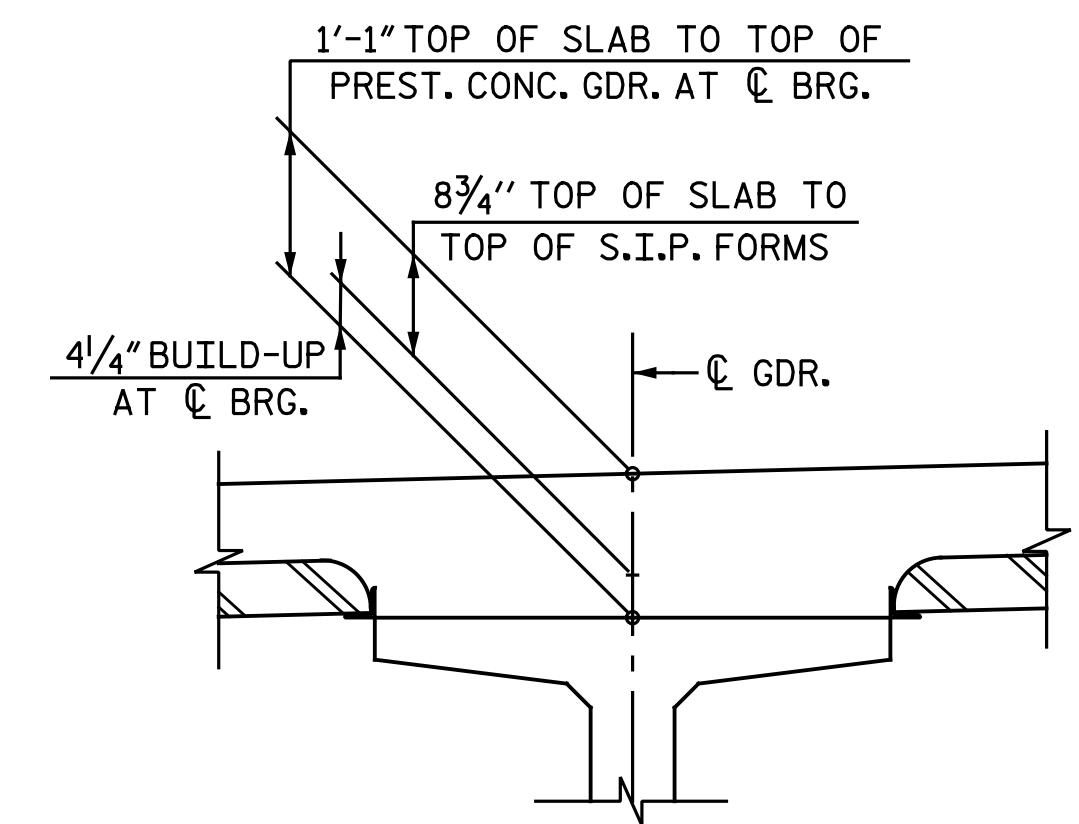
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			TOTAL SHEETS
2			4			29

DRAWN BY: M. D. MAYHEW DATE: 4-25-17
 CHECKED BY: A. H. SHARPE DATE: 5-1-17



TYPICAL SECTION AT INTERMEDIATE DIAPHRAGM

NOTES:
 PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.
 LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS AND TO FACILITATE INSTALLATION OF CONCRETE BARRIER RAIL REINFORCEMENT.
 FOR CONCRETE BARRIER RAIL DETAILS, SEE "CONCRETE BARRIER RAIL" SHEET.
 PREVIOUSLY CAST CONCRETE IN A SPAN 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.



DETAIL "C"

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SHEET 3 OF 3



STATE OF NORTH CAROLINA
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2			4			29

DRAWN BY: D.A.L. / M.D.M. DATE: 4-25-17
 CHECKED BY: A.H. SHARPE DATE: 5-1-17