

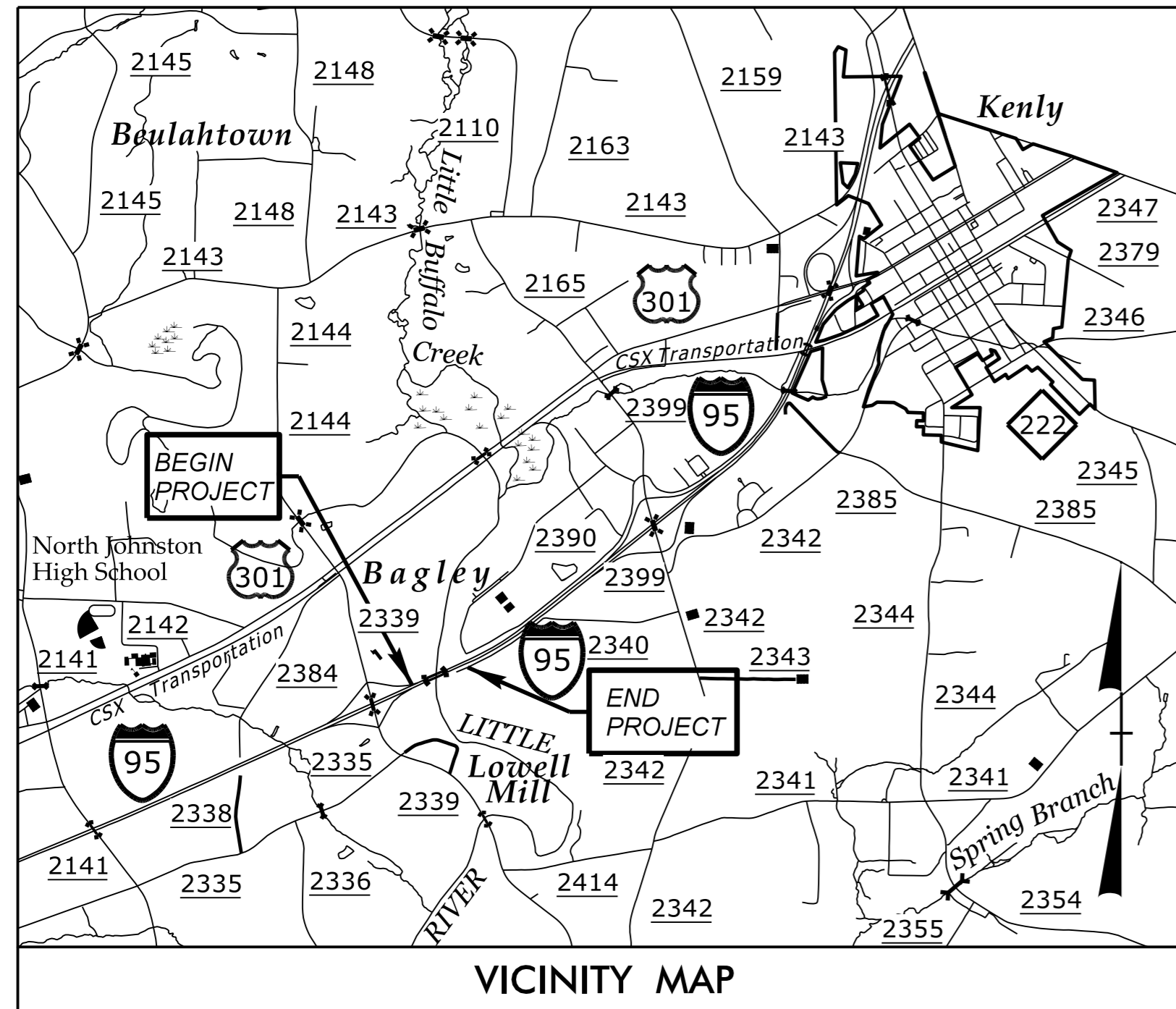
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with their signature on that page.**

**This file or an individual page
shall not be considered a certified document.**

TIP PROJECT: I-3318BB

CONTRACT: C203658

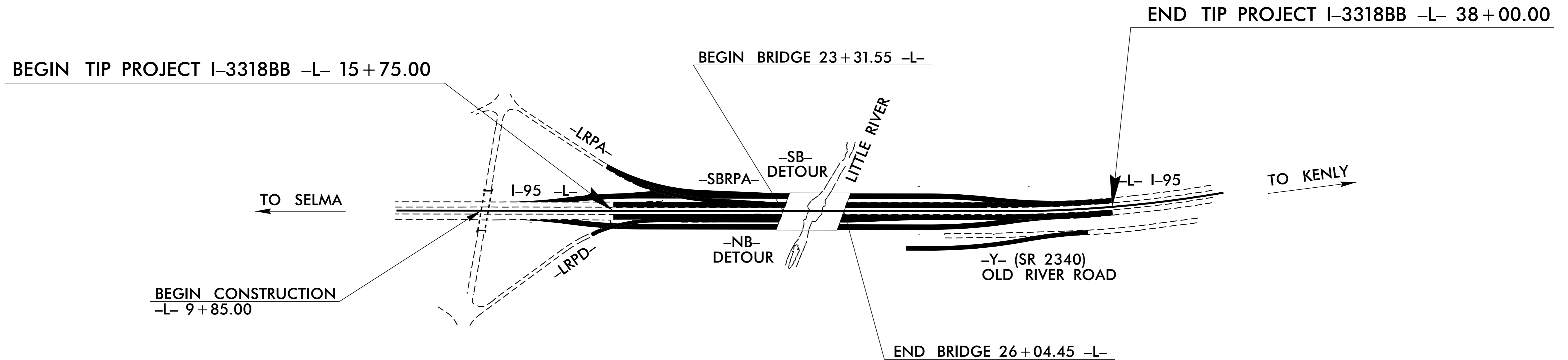
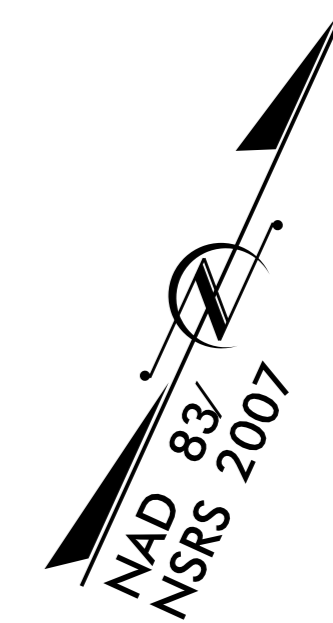


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
JOHNSTON COUNTY

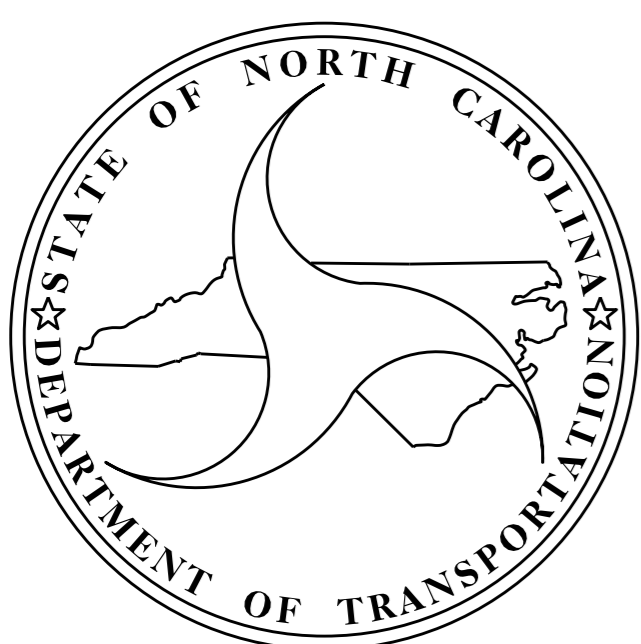
**LOCATION: REPLACE BRIDGES 114 & 116 OVER
THE LITTLE RIVER ON I-95**

**TITLE OF WORK: GRADING, PAVING, RESURFACING, DRAINAGE
AND STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-3318BB		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34182.1.4	IMS-095-2(119)105	P.E.	
34182.2.FS4	IMS-095-2(119)105	CONST.	
34182.3.FS3	IMS-095-2(119)105	R/W	
34182.3FSU3	IMS-095-2(119)105	UTILITIES	



STRUCTURE



DESIGN DATA

ADT 2015 = 34,640
 ADT 2035 = 40,900
 DHV = 12 %
 D = 55 %
 T = 29 % **
 V = 70 MPH
 (TTST 23 %, DUAL 6 %)
 FUNC CLASS=INTERSTATE
 STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-3318BB = 0.369 MILES
 LENGTH STRUCTURE TIP PROJECT I-3318BB = 0.052 MILES
 TOTAL LENGTH TIP PROJECT I-3318BB = 0.421 MILES

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

2012 STANDARD SPECIFICATIONS

LETTING DATE :

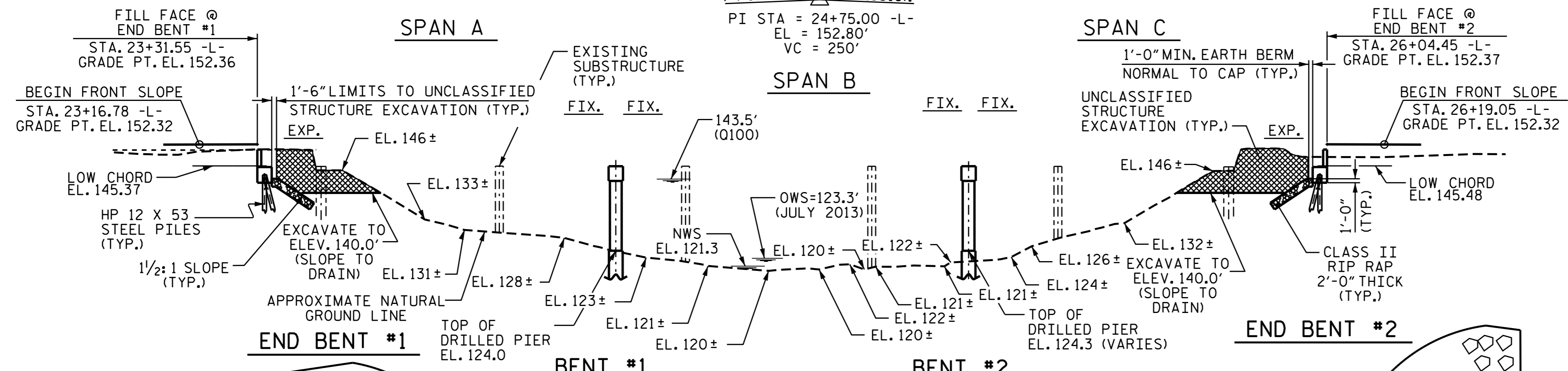
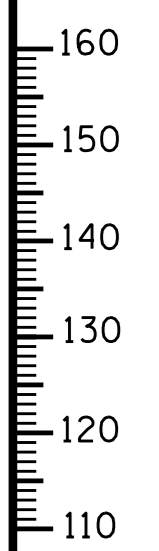
NOVEMBER 17, 2015

E. E. MURRAY, P.E.
PROJECT ENGINEER

G. W. DICKEY, P.E.
PROJECT DESIGN ENGINEER

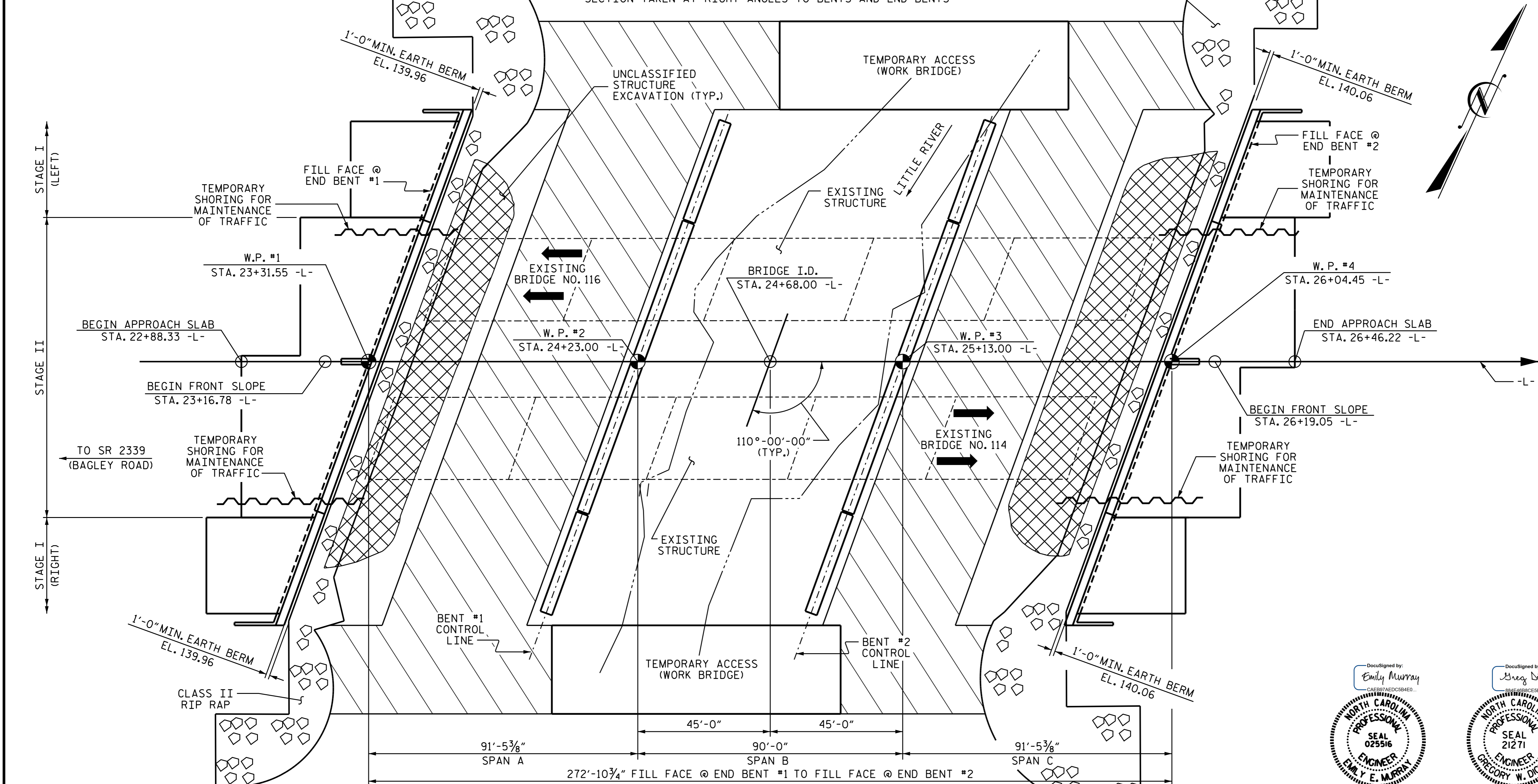
GRADE DATA

(+) 0.3036% (-) 0.3319%
 PI STA = 24+75.00 -L-
 EL = 152.80'
 VC = 250'



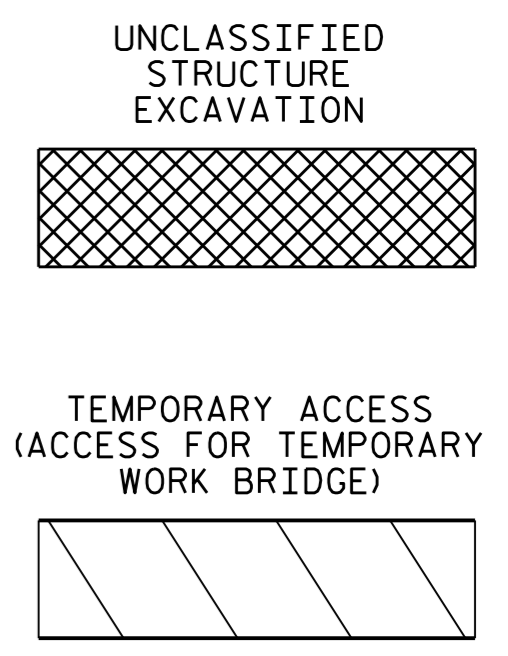
SECTION ALONG -L-

SECTION TAKEN AT RIGHT ANGLES TO BENTS AND END BENTS



PLAN
 (PILES NOT SHOWN FOR CLARITY)

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



PROJECT NO. I-3318BB
 JOHNSTON COUNTY
 STATION: 24+68.00 -L-
 BRIDGE #114 REPLACES BRIDGE #114 & #116

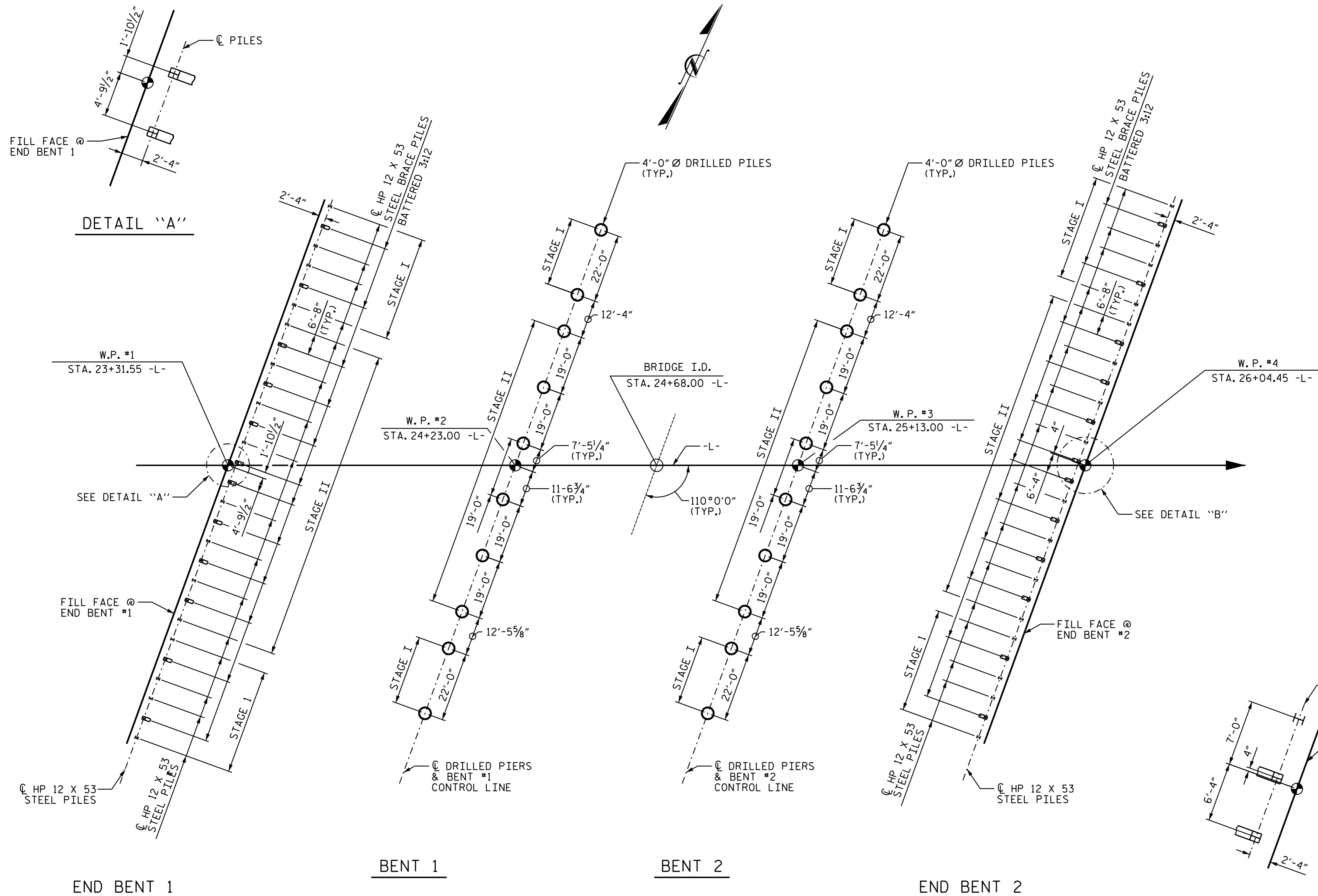
SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 BRIDGE OVER LITTLE RIVER
 ON I-95 BETWEEN
 SR 2339 AND SR 2399



DRAWN BY: P.N.HOLDER DATE: 06/15
 CHECKED BY: B.N.BARODAWALA DATE: 06/15
 DESIGN ENGINEER OF RECORD: G.W.DICKEY DATE: 08/15

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			78



NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 AND END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 120 TONS PER PILE.

DRIVE PILES AT END BENT NO.1 AND END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 200 TONS PER PILE.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 580 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 45 TSF.

DRILLED PIERS AT BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 580 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 80 TSF (L,R) AND 65 TSF (C).

PERMANENT STEEL CASINGS MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO.2. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 111 FT (L,R) AND 117 FT (C) WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT CASINGS.

INSTALL DRILLED PIERS AT BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN 91.0 FT (L) AND 97.0 FT (C,R) WITH THE REQUIRED TIP RESISTANCE.

INSTALL DRILLED PIERS AT BENT NO.2 TO A TIP ELEVATION NO HIGHER THAN 98.0 FT WITH THE REQUIRED TIP RESISTANCE.

THE SCOUR CRITICAL ELEVATIONS FOR BENT NO.1 ARE ELEVATIONS 111.0 FT (L) AND 113.0 FT (C,R). SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATIONS FOR BENT NO.2 ARE ELEVATIONS 108.0 FT (L) AND 114.0 FT (C,R). SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

SPT MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO.1. THE ENGINEER WILL DETERMINE THE NEED FOR SPT. FOR SPT TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

FOR PILES, SEE SPECIAL PROVISIONS.

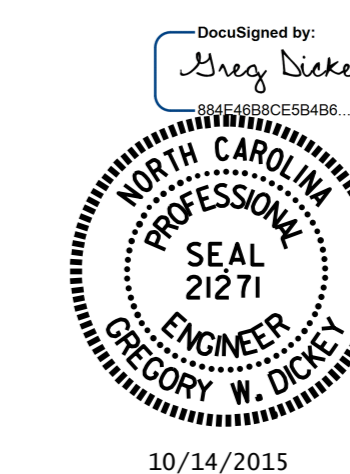
FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 2 OF 4

FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES AND DRILLED PIERS ARE TO THE CENTERLINE OF PILES AND DRILLED PIERS.



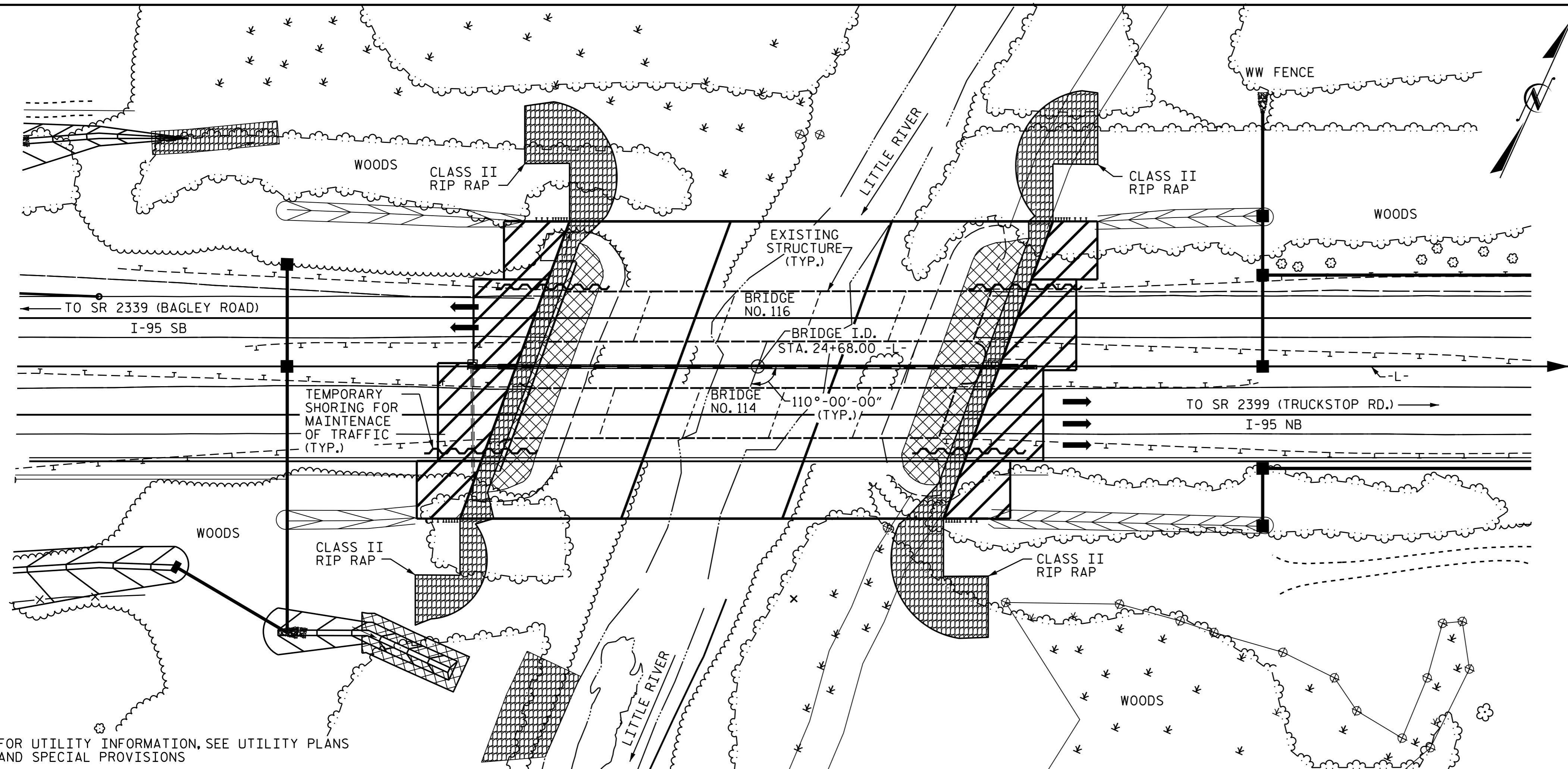
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE OVER LITTLE RIVER
 ON I-95 BETWEEN
 SR 2339 AND SR 2399

REVISIONS						SHEET NO. S-2
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 78
2			4			

DRAWN BY: P.N.HOLDER DATE: 9/14
 CHECKED BY: B.N.BARODAWALA DATE: 6/15
 DESIGN ENGINEER OF RECORD: G.W.DICKEY DATE: 8/15

BM.#2: "X" CHISLED IN CONCRETE APRON: STA 25+59.00 -L, 55.00' RT. EL. = 145.98'



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS

LOCATION SKETCH

HYDRAULIC DATA

DESIGN DISCHARGE = 10,900 CFS
 FREQUENCY OF DESIGN FLOOD = 50 YR.
 DESIGN HIGH WATER ELEVATION = 142.2'
 DRAINAGE AREA = 219 Sq. MILES
 BASE DISCHARGE (Q100) = 12,900 CFS
 BASE HIGH WATER ELEVATION = 143.51'

OVERTOPPING FLOOD DATA

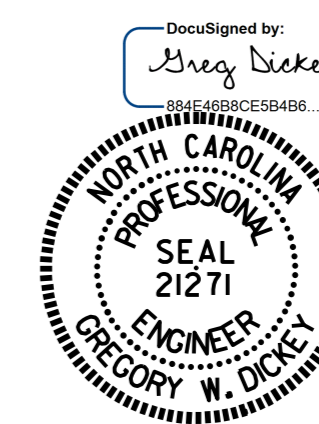
OVERTOPPING DISCHARGE = 23,000+ CFS
 FREQUENCY OF OVERTOPPING FLOOD = 500+ YR.
 OVERTOPPING FLOOD ELEVATION = 151.3'

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE OVER LITTLE RIVER
 ON I-95 BETWEEN
 SR 2339 AND SR 2399



10/14/2015

DRAWN BY : P.N.HOLDER DATE : 06/15
 CHECKED BY : B.N.BARODAWALA DATE : 06/15

14-OCT-2015 11:48
 R:\Structures\Plans\FINAL PLANS\I-3318BB.SMU.GD.dgn
 kpaschal

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			78

TOTAL BILL OF MATERIAL														
	CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURES	4'-0" DIA. DRILLED PIERS		PERMANENT STEEL CASING FOR 4'-0" DIA. DRILLED PIER	SID INSPECTIONS	SPT TESTING	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE		
	LUMP SUM	LUMP SUM	NO.	LIN. FT.	LIN. FT.	EACH	EACH	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.		
SUPERSTRUCTURE										45807	53414			
END BENT 1												167.1		
BENT 1			10	288.0								179.8		
BENT 2			10	263.4	120.5							178.5		
END BENT 2												167.1		
TOTAL	LUMP SUM	LUMP SUM	20	551.4	120.5	2	10	4	LUMP SUM	45807	53414	692.5		
	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS	HP 12 X 53 STEEL PILES	CONCRETE BARRIER RAIL	CONCRETE MEDIAN BARRIER	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS	APPLICATION OF BRIDGE COATING		
	LUMP SUM	LBS.	LBS.	NO.	LIN.FT.	NO.	LIN.FT.	LIN.FT.	LIN.FT.	TONS	SQ. YDS.	LUMP SUM	LUMP SUM	LUMP SUM
SUPERSTRUCTURE	LUMP SUM			57	5082.5			582.19	291.34			LUMP SUM	LUMP SUM	LUMP SUM
END BENT 1		20,937				28	610			705	784			
BENT 1		66,061	12,004											
BENT 2		63,678	11,298											
END BENT 2		20,698				28	610			819	910			
TOTAL	LUMP SUM	171,374	23,302	57	5082.5	56	1220	582.19	291.34	1524	1694	LUMP SUM	LUMP SUM	LUMP SUM

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

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

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORM WORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF APPROXIMATELY 75 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

AFTER SERVING AS TEMPORARY STRUCTURES THE EXISTING STRUCTURES CONSISTING OF 5 SPANS (1 AT 47'-9", 3 AT 47'-6", AND 1 AT 47'-9"), WITH CLEAR ROADWAY WIDTH OF 28'-0" AND REINFORCED CONCRETE FLOOR ON I-BEAMS ON REINFORCED CONCRETE CAP ON TIMBER PILES AT END BENTS AND REINFORCED CONCRETE CAP & COLUMNS WITH STEEL CRUTCH BENTS AT INTERIOR BENT, LOCATED AT PROPOSED BRIDGE LOCATION SHALL BE REMOVED. THE EXISTING BRIDGE NUMBER 114 AND EXISTING BRIDGE NUMBER 116 IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 24+68.00 -L-."

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

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

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE CLOSE PROXIMITY OF TEMPORARY SHORING TO THE PROPOSED END BENTS. SHORING MUST BE INSTALLED ACCURATELY IN ACCORDANCE WITH TRAFFIC CONTROL PLANS.

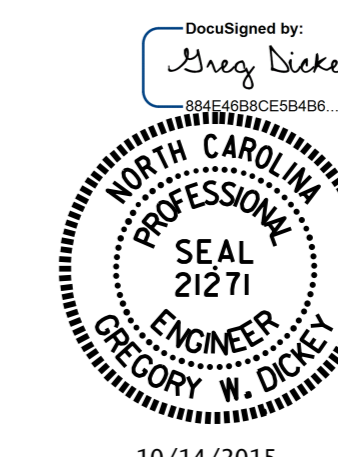
FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISIONS.

FOR APPLICATION OF BRIDGE COATING, SEE SPECIAL PROVISIONS.

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
GENERAL DRAWING					
BRIDGE OVER LITTLE RIVER					
ON I-95 BETWEEN					
SR 2339 AND SR 2399					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-4
TOTAL SHEETS					78

DRAWN BY : P.N.HOLDER DATE : 06/15
 CHECKED BY : B.N.BARODAWALA DATE : 06/15

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 (LRFD) 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			
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	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(Inv)	N/A	1	1.02	--	1.75	0.834	1.67	A	I	43.876	1.051	2.5	A	I	43.876	0.80	1.051	1.02	A	I	43.876		
	HL-93(0pr)	N/A	--	2.16	--	1.35	0.834	2.16	A	I	43.876	1.051	3.24	A	I	43.876	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.39	49.935	1.75	0.834	2.26	A	I	43.876	1.051	2.93	A	I	43.876	0.80	0.834	1.39	A	I	43.876		
	HS-20(0pr)	36.000	--	2.93	105.480	1.35	0.834	2.93	A	I	43.876	1.051	3.8	A	I	43.876	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SH	12.500	--	3.51	43.884	1.4	0.834	7.15	A	I	43.876	1.051	8.87	A	I	43.876	0.80	0.834	3.51	A	I	43.876	
		S3C	21.500	--	2.05	44.149	1.4	0.834	4.18	A	I	43.876	1.051	5.25	A	I	43.876	0.80	0.834	2.05	A	I	43.876	
		S3A	22.750	--	1.95	44.265	1.4	0.834	3.96	A	I	43.876	1.051	5	A	I	43.876	0.80	0.834	1.95	A	I	43.876	
		S4A	26.750	--	1.71	45.795	1.4	0.834	3.49	A	I	43.876	1.051	4.46	A	I	43.876	0.80	0.834	1.71	A	I	43.876	
		S5A	30.500	--	1.51	46.095	1.4	0.834	3.08	A	I	43.876	1.051	4.24	A	I	43.876	0.80	0.834	1.51	A	I	43.876	
		S6A	34.500	--	1.37	47.272	1.4	0.834	2.79	A	I	43.876	1.051	3.9	A	I	43.876	0.80	0.834	1.37	A	I	43.876	
	TTST	S7B	38.500	--	1.25	48.003	1.4	0.834	2.54	A	I	43.876	1.051	3.8	A	I	43.876	0.80	0.834	1.25	A	I	43.876	
		S7A	40.000	3	1.23	49.272	1.4	0.834	2.51	A	I	43.876	1.051	4.14	A	I	43.876	0.80	0.834	1.23	A	I	43.876	
		T4A	28.250	--	1.69	47.647	1.4	0.834	3.44	A	I	43.876	1.051	4.41	A	I	43.876	0.80	0.834	1.69	A	I	43.876	
		T5B	32.000	--	1.48	47.416	1.4	0.834	3.02	A	I	43.876	1.051	4.49	A	I	43.876	0.80	0.834	1.48	A	I	43.876	
		T6A	36.000	--	1.36	48.882	1.4	0.834	2.77	A	I	43.876	1.051	4.26	A	I	43.876	0.80	0.834	1.36	A	I	43.876	
		T7A	40.000	--	1.26	50.350	1.4	0.834	2.56	A	I	43.876	1.051	4.13	A	I	43.876	0.80	0.834	1.26	A	I	43.876	
T7B	40.000	--	1.34	53.667	1.4	0.834	2.73	A	I	43.876	1.051	3.64	A	I	43.876	0.80	0.834	1.34	A	I	43.876			

NOTES:

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

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

COMMENTS:

- 1.
- 2.
- 3.
- 4.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

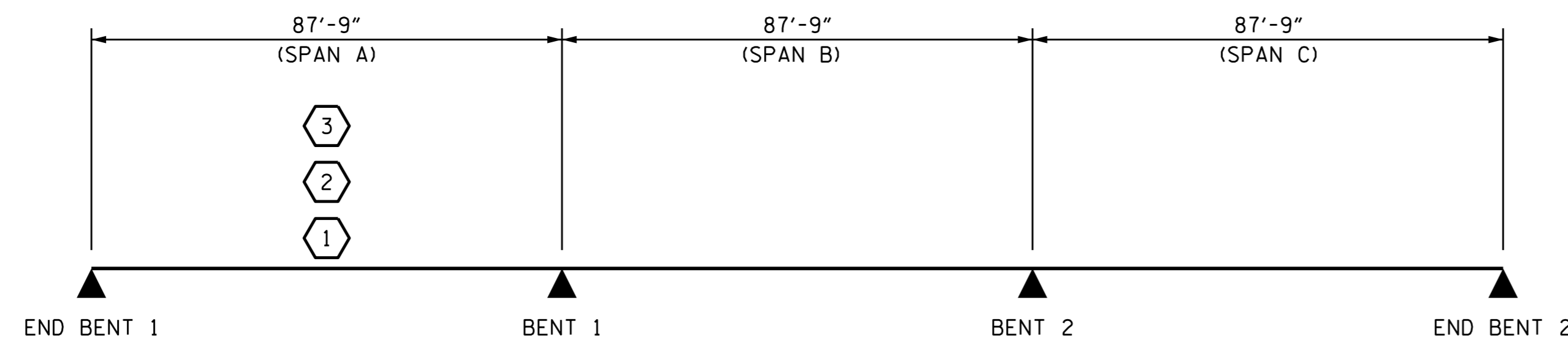
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

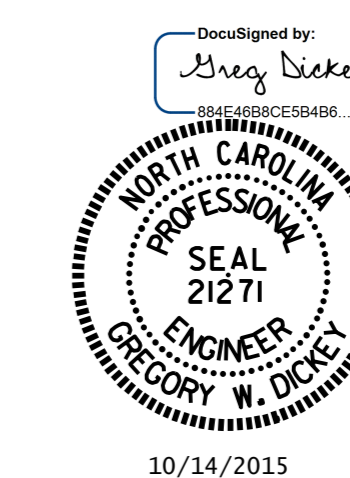
GIRDER LOCATION

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



LRFR SUMMARY
(SPAN LENGTHS SHOWN ARE BEARING TO BEARING.)

PROJECT NO. I-3318BB
JOHNSTON COUNTY
STATION: 24+68.00 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR
PRESTRESSED
CONCRETE GIRDERS
(INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			78

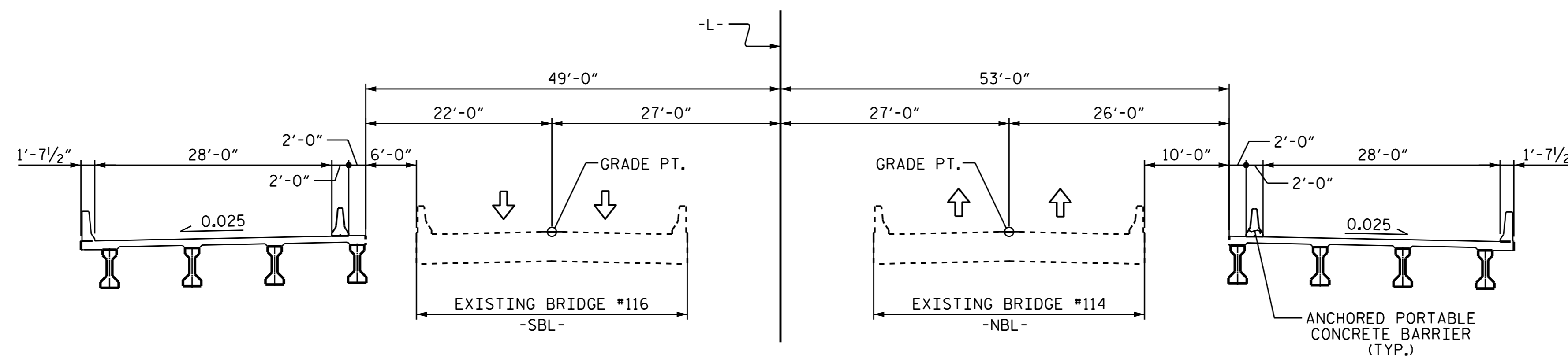
ASSEMBLED BY : M.L. RORIE DATE : 8-14-14
CHECKED BY : M.M.AHMED DATE : 9-30-14
DRAWN BY : MAA 1/08
CHECKED BY : GM/DI 2/08

REV. 11/12/08RR MAA/GM
REV. 10/1/11 MAA/GM

NOTE:

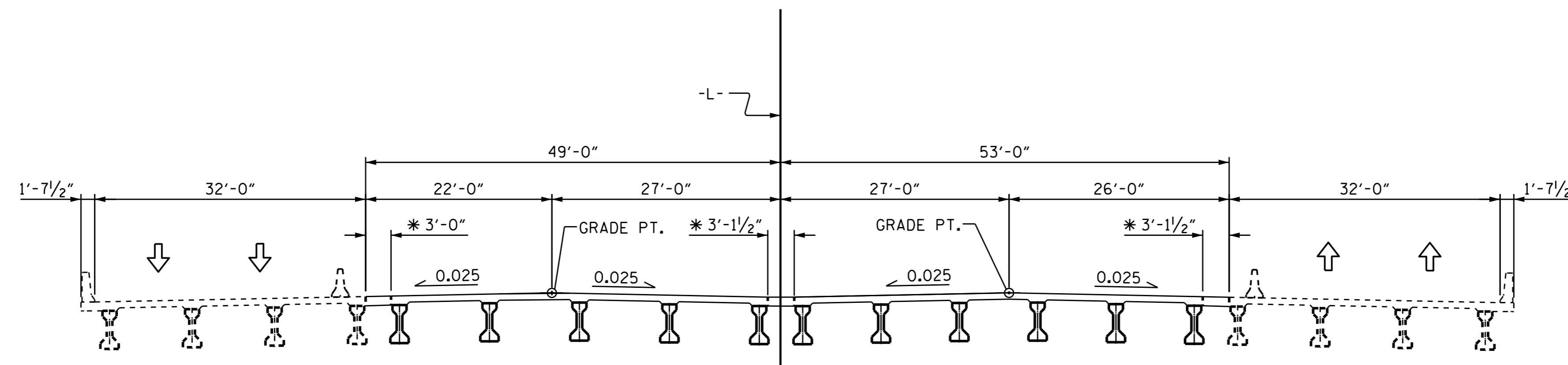
FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS.

FOR LOCATION AND PAY LIMITS OF THE ANCHORED PORTABLE CONCRETE BARRIER, SEE TRAFFIC CONTROL PLANS.



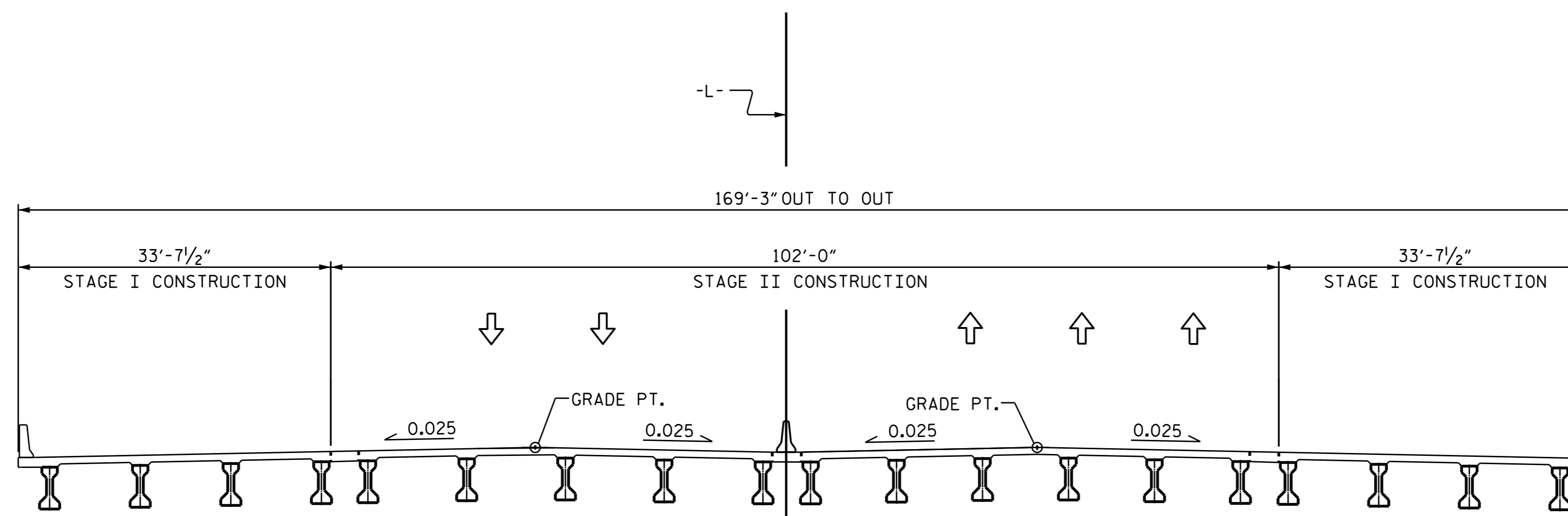
STAGE I

CONSTRUCT LEFT & RIGHT SIDE OF PROPOSED BRIDGE, 2 BAR METAL RAILS, AND MAINTAIN TRAFFIC ON EXISTING BRIDGES #116 & #114



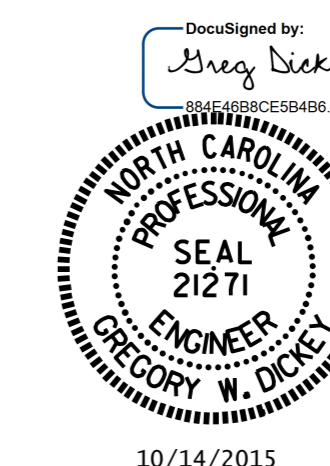
STAGE II

MOVE SOUTHBOUND & NORTHBOUND TRAFFIC ONTO STAGE I, REMOVE EXISTING BRIDGE #116 & BRIDGE #114, CONSTRUCT STAGE II.



FINAL TYPICAL SECTION

REMOVE ANCHORED PORTABLE CONCRETE BARRIER AND SHIFT TRAFFIC TO FINAL PATTERN.



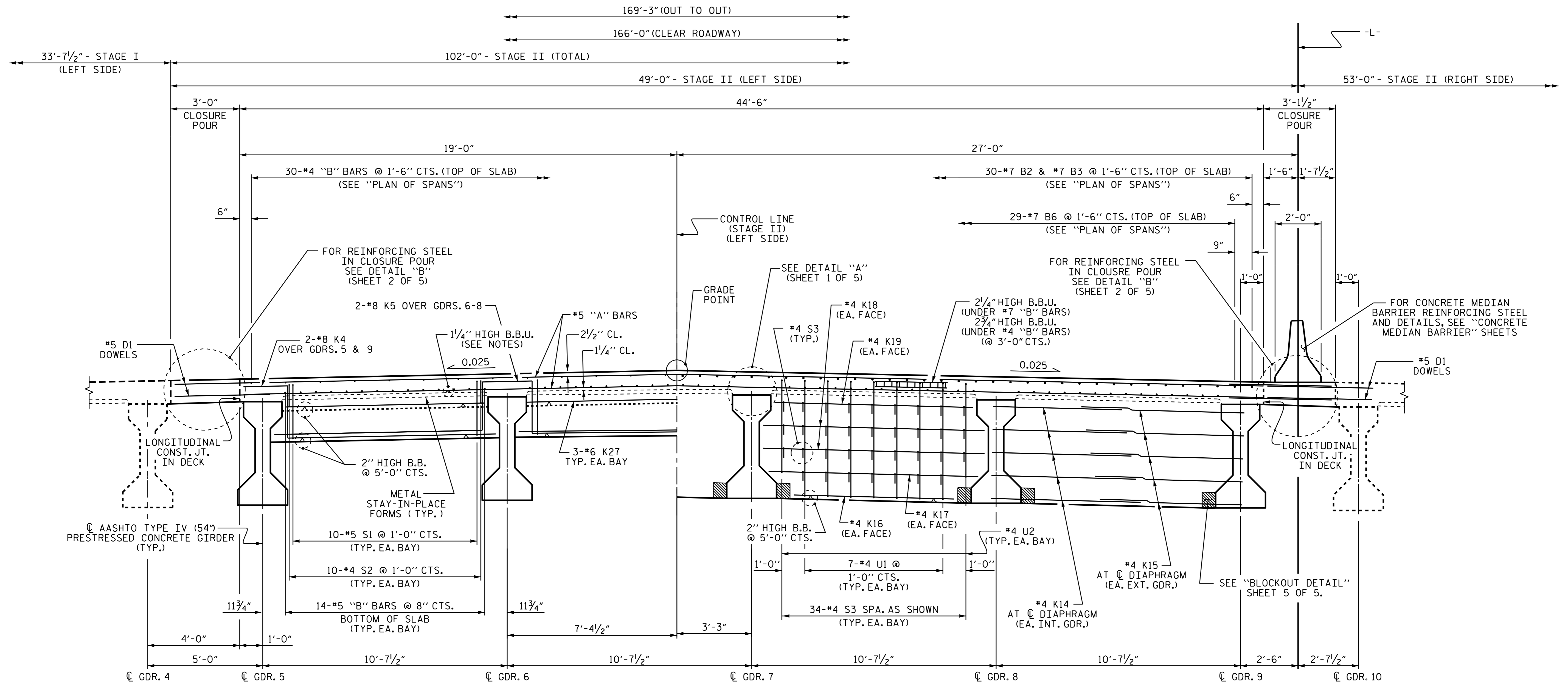
10/14/2015

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
CONSTRUCTION SEQUENCE
 BRIDGE OVER LITTLE RIVER
 ON I-95 BETWEEN
 SR 2339 AND SR 2399

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			78

DRAWN BY : P.N.HOLDER DATE : 7/22/15
 CHECKED BY : D.A.GLADDEN DATE : 7/31/15



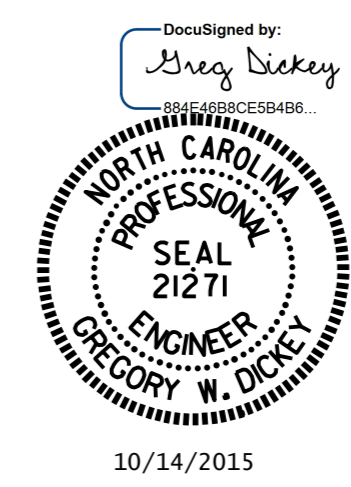
AT END BENT DIAPHRAGMS

AT BENT DIAPHRAGMS

TYPICAL SECTION
STAGE II - LEFT SIDE

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

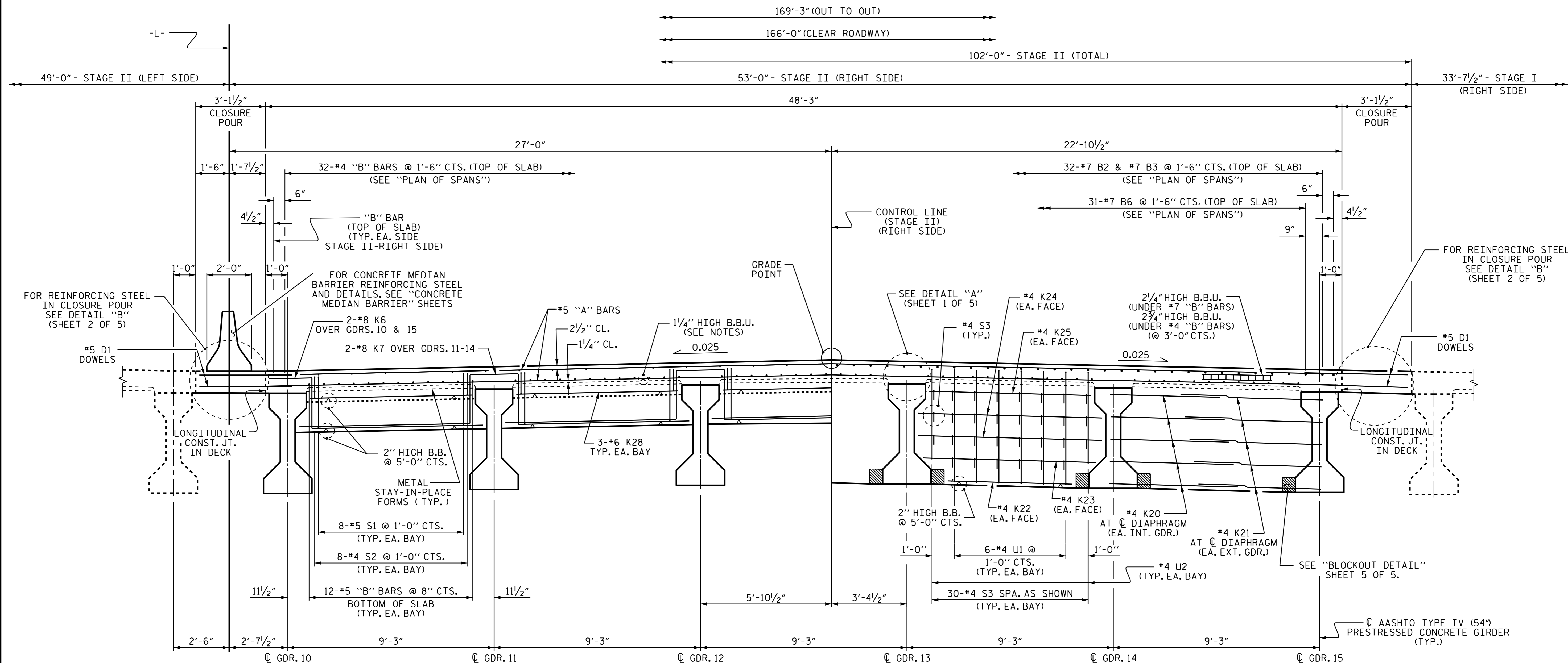
SHEET 3 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION
 STAGE II
 (LEFT SIDE)

DRAWN BY: D. G. ELY DATE: 3/14/15
 CHECKED BY: B. N. BARODAWALA DATE: 5/15
 DESIGN ENGINEER OF RECORD: M. L. RORIE DATE: 8/15

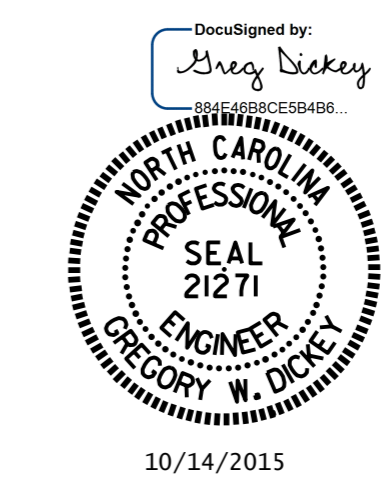
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			78



AT END BENT DIAPHRAGMS AT BENT DIAPHRAGMS
TYPICAL SECTION
 STAGE II - RIGHT SIDE

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 4 OF 5

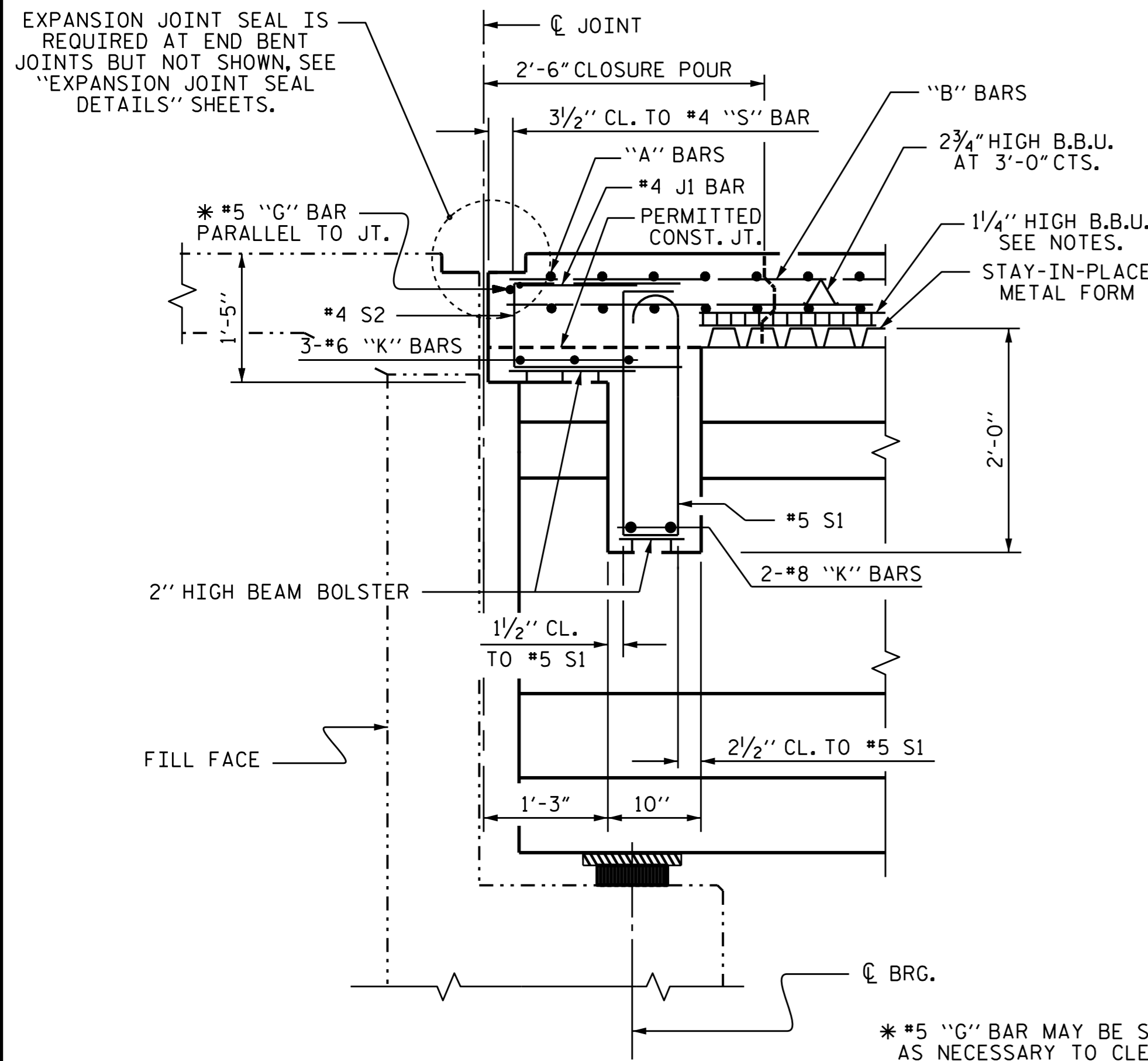


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
TYPICAL SECTION
STAGE II
(RIGHT SIDE)

DRAWN BY : D. G. ELY DATE : 3/13/15
 CHECKED BY : B. N. BARODAWALA DATE : 5/15
 DESIGN ENGINEER OF RECORD : M. L. RORIE DATE : 8/15

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			78

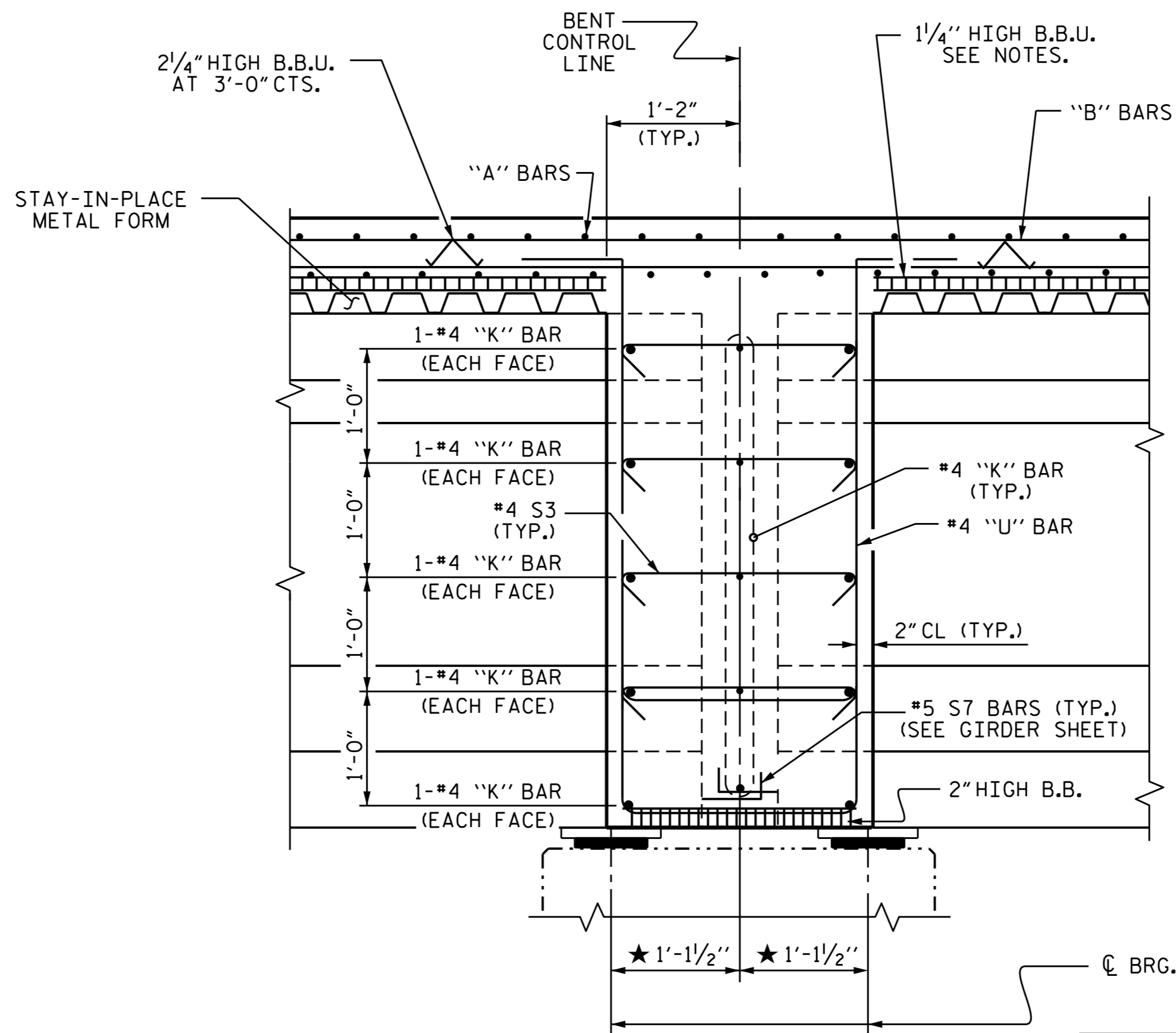
14-OCT-2015 11:48
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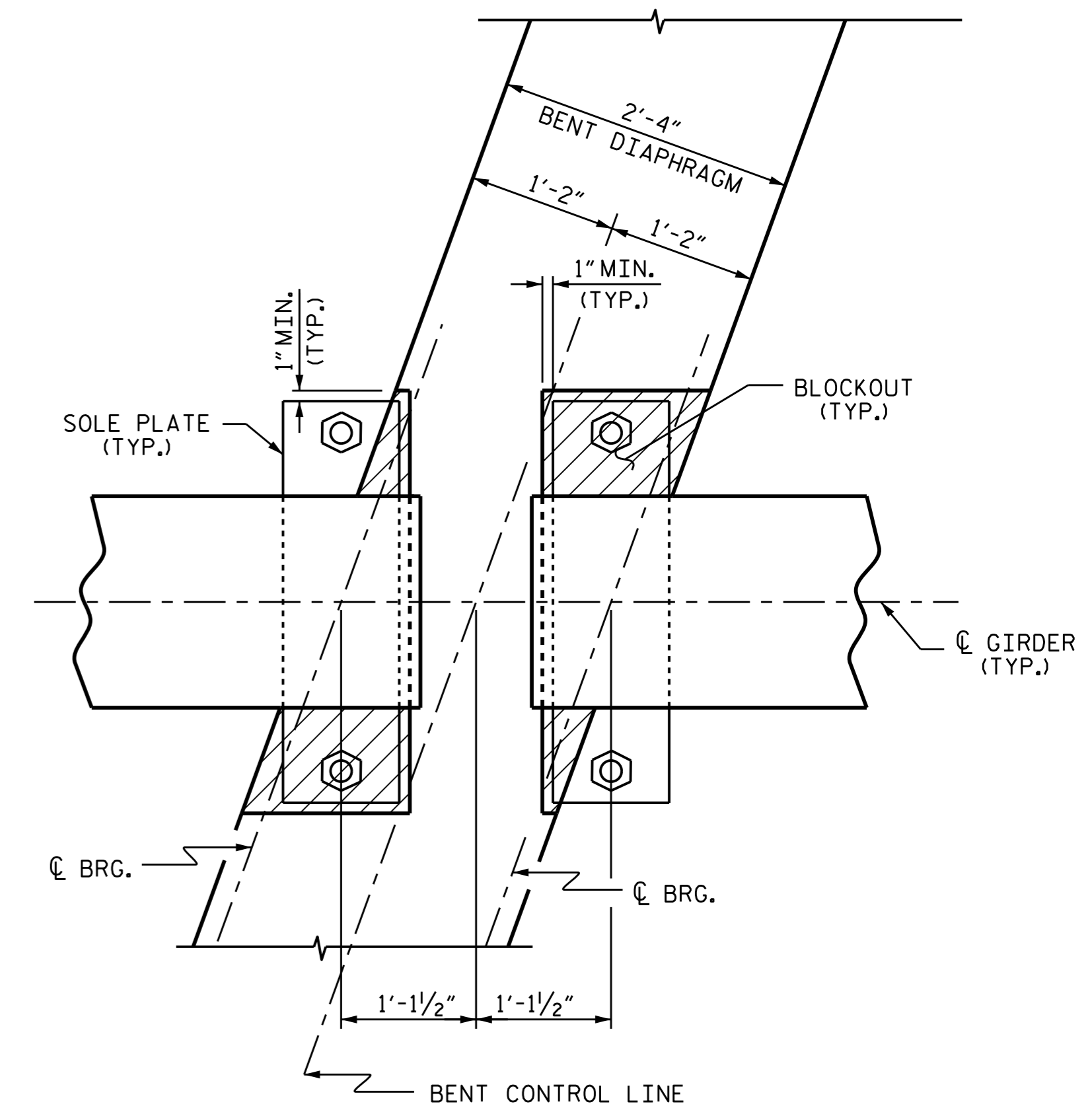
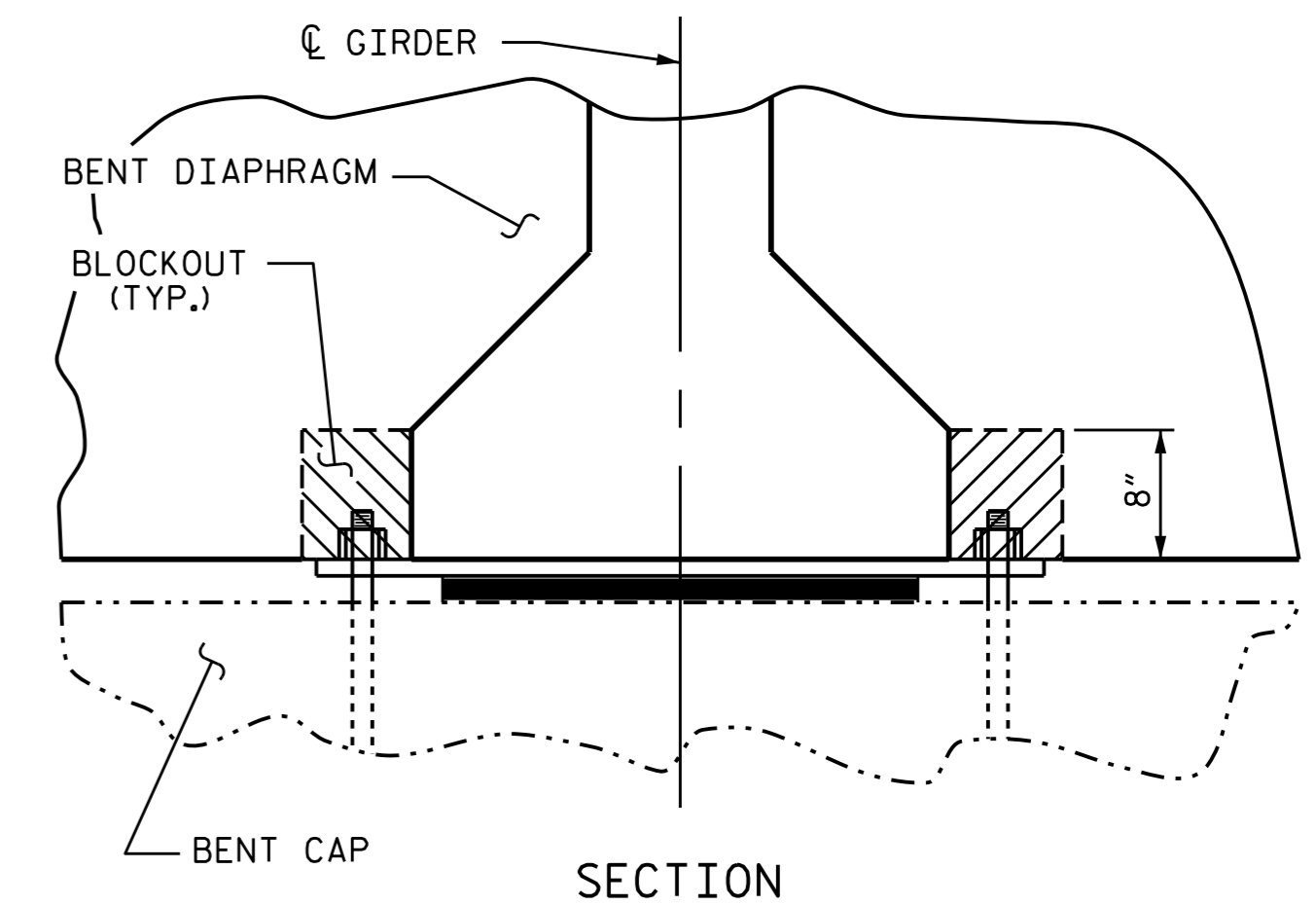
SECTION @ END BENT

END BENT 1 SHOWN,
END BENT 2 SIMILAR BY ROTATION

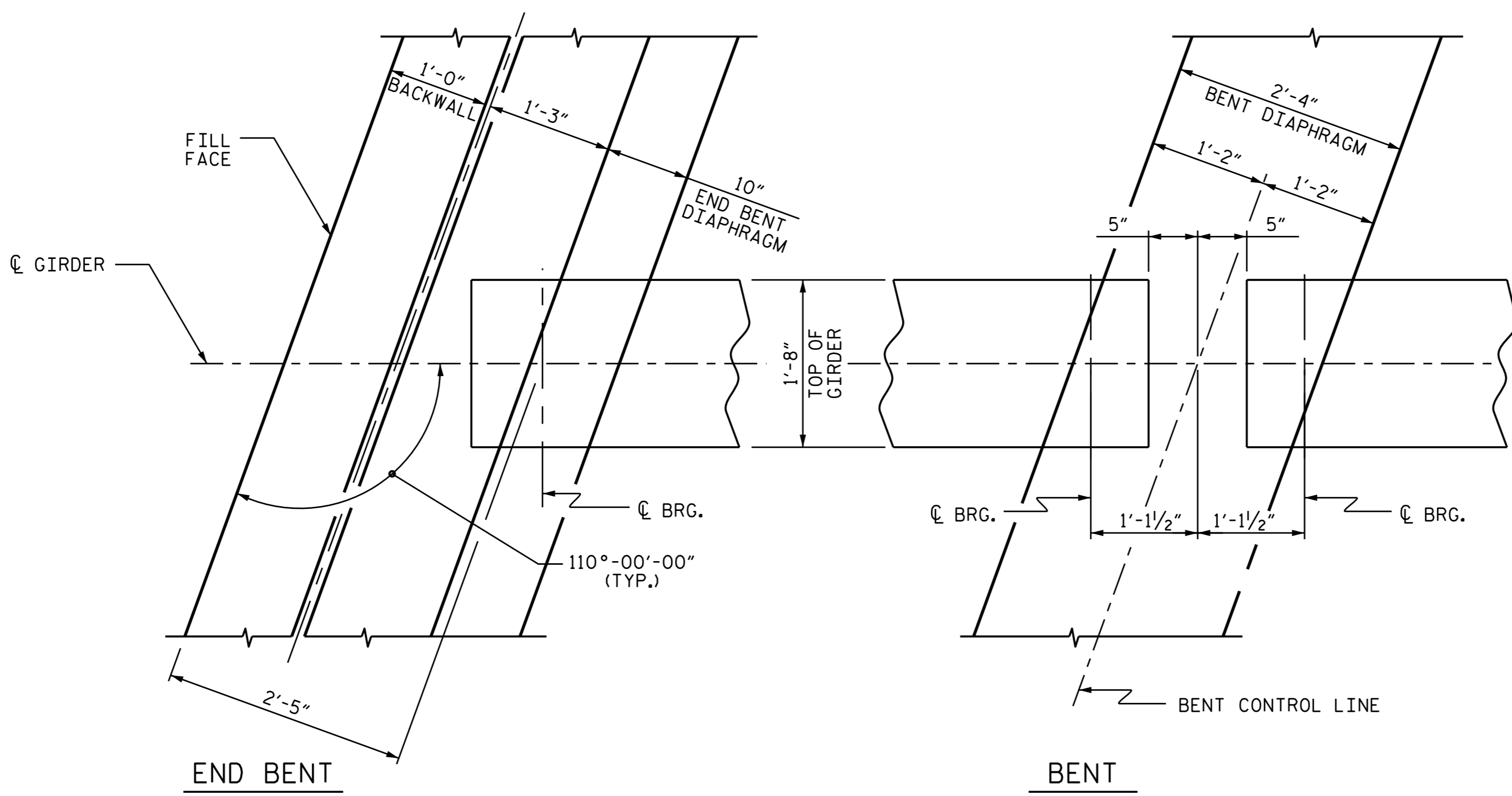
* #5 "G" BAR MAY BE SHIFTED SLIGHTLY,
AS NECESSARY TO CLEAR REINFORCING
STEEL AND STIRRUPS.



SECTION @ CONTINUOUS BENT



**BENT DIAPHRAGM
BLOCKOUT DETAIL**

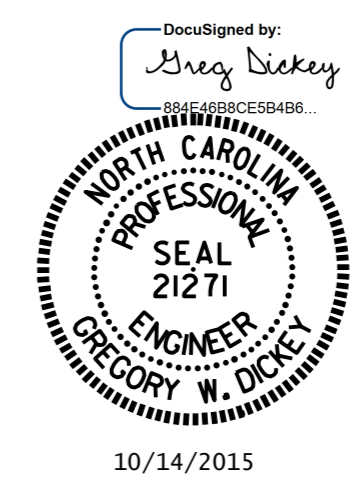


PLAN OF DIAPHRAGMS

END BENT 1 AND BENT 1 SHOWN,
END BENT 2 AND BENT 2 SIMILAR BY ROTATION

PROJECT NO. I-3318BB
JOHNSTON COUNTY
STATION: 24+68.00 -L-

SHEET 5 OF 5

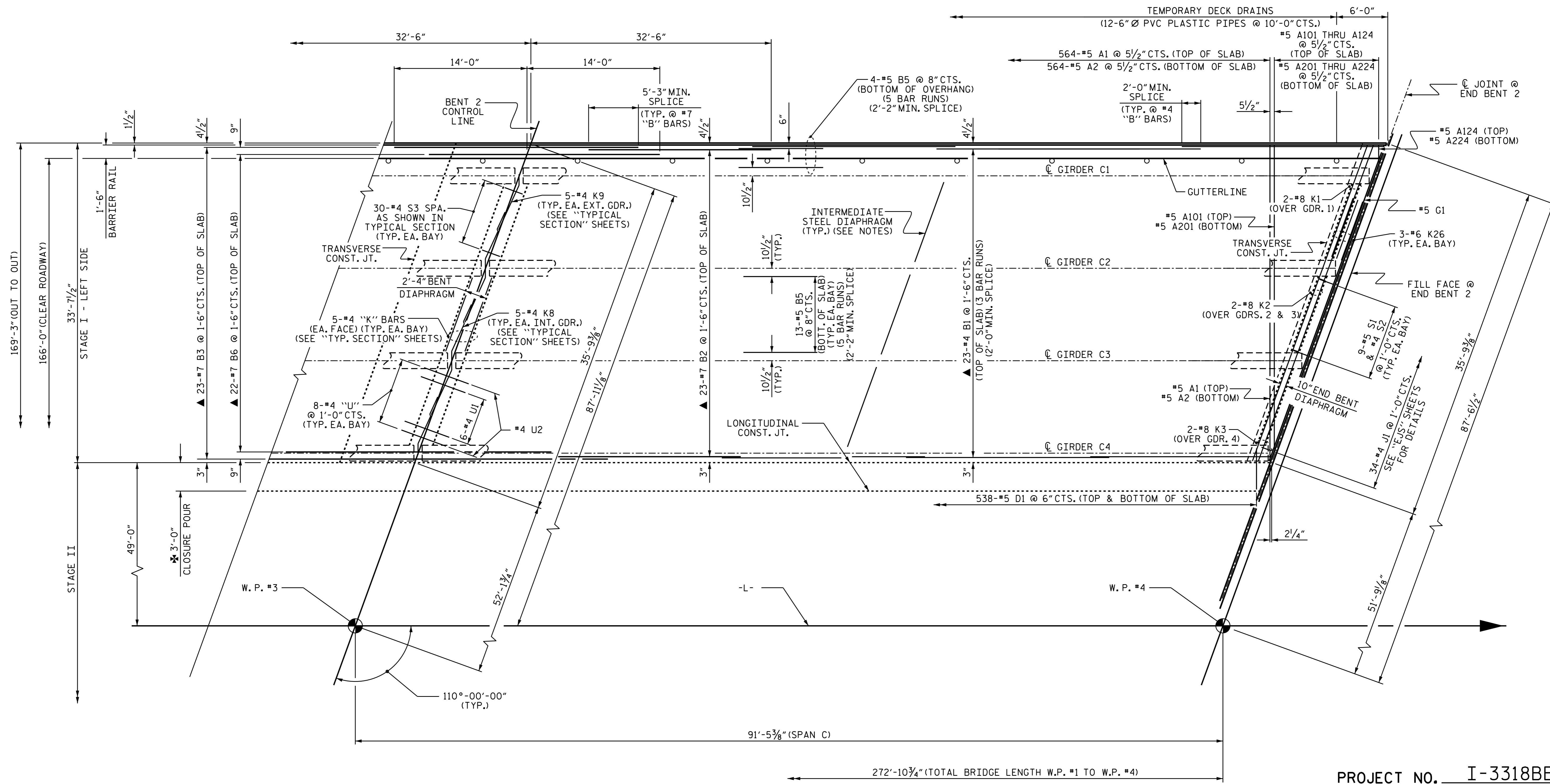


10/14/2015

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION
DETAILS

DRAWN BY: D. G. ELY DATE: 9/17/14
CHECKED BY: B. N. BARODAWALA DATE: 3/15
DESIGN ENGINEER OF RECORD: M. L. RORIE DATE: 8/15

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			78



**PLAN OF SPAN C
STAGE I (LEFT SIDE)**

- NOTES:**
- ▲ SEE "DETAILS OF REINFORCING STEEL LAYOUT" ON SHEET 13 OF 13, FOR REINFORCING STEEL DETAILS.
 - * SEE "CLOSURE POUR DETAILS" ON SHEET 13 OF 13, FOR CLOSURE POUR DETAILS.
- TEMPORARY DRAINS TO BE FILLED WITH APPROVED GROUT AFTER NO LONGER NEEDED.
- FOR INTERMEDIATE STEEL DIAPHRAGMS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS" SHEET.

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 3 OF 13

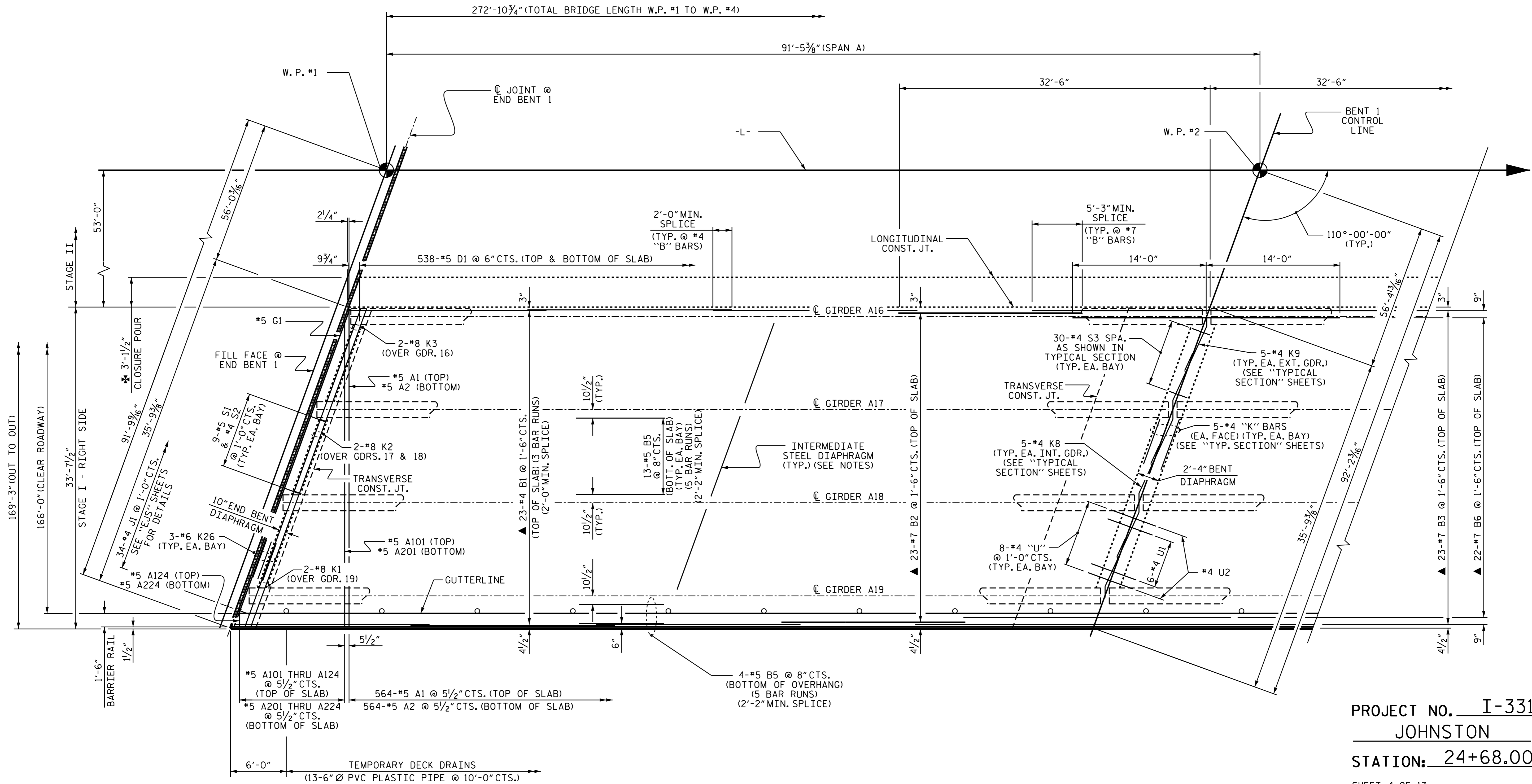


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN C
 STAGE I
 (LEFT SIDE)

DRAWN BY :	D. G. ELY	DATE :	3/20/15
CHECKED BY :	B. N. BARODAWALA	DATE :	5/15
DESIGN ENGINEER OF RECORD :	M. L. RORIE	DATE :	8/15

REVISIONS						SHEET NO. S-14 TOTAL SHEETS 78
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



**PLAN OF SPAN A
STAGE I (RIGHT SIDE)**

- NOTES:**
- ▲ SEE "DETAILS OF REINFORCING STEEL LAYOUT" ON SHEET 13 OF 13, FOR REINFORCING STEEL DETAILS.
 - * SEE "CLOSURE POUR DETAILS" ON SHEET 13 OF 13, FOR CLOSURE POUR DETAILS.
- TEMPORARY DRAINS TO BE FILLED WITH APPROVED GROUT AFTER NO LONGER NEEDED.
- FOR INTERMEDIATE STEEL DIAPHRAGMS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS" SHEET.

PROJECT NO. I-3318BB
 JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 4 OF 13



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

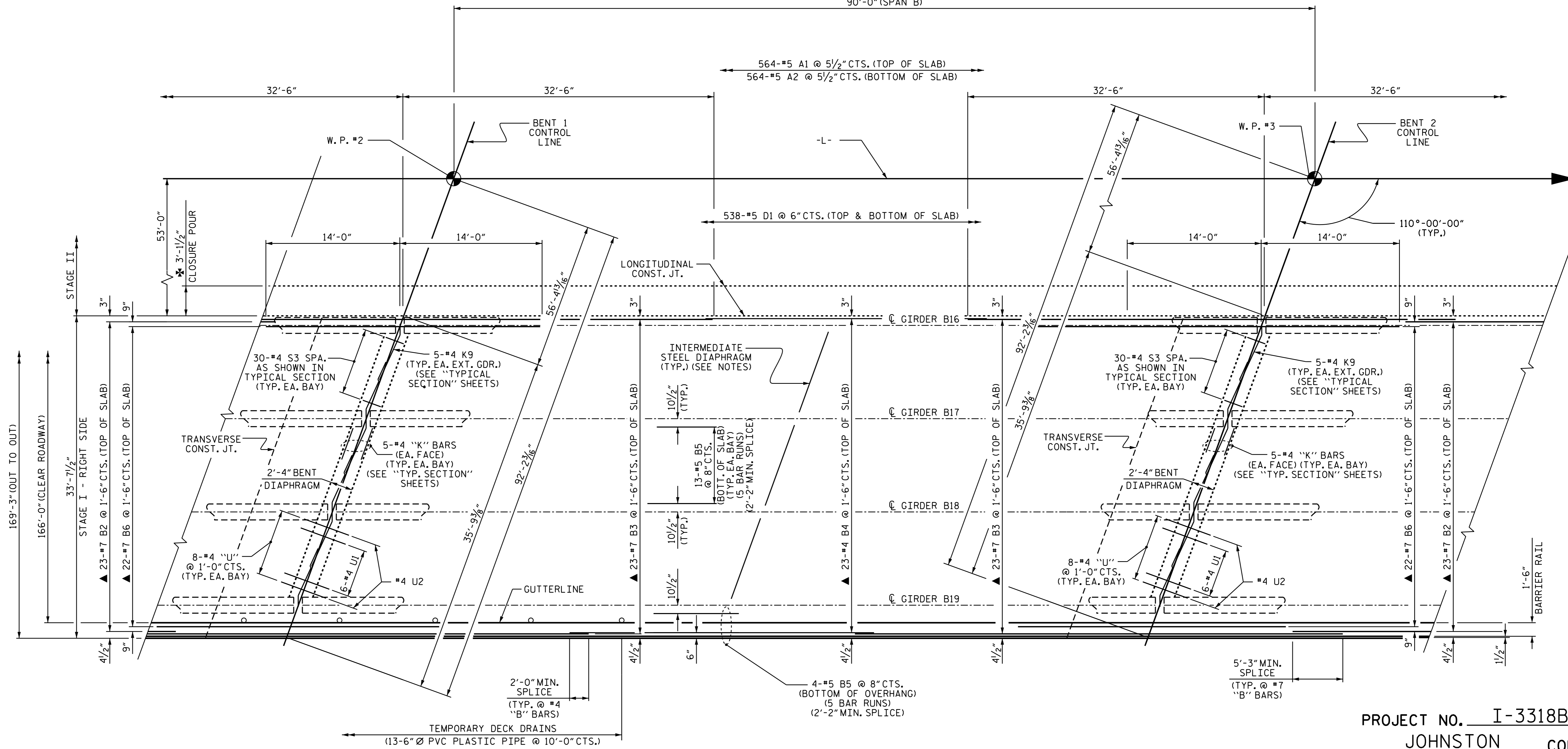
SUPERSTRUCTURE
 PLAN OF SPAN A
 STAGE I
 (RIGHT SIDE)

DRAWN BY: D. G. ELY DATE: 3/20/15
 CHECKED BY: B. N. BARODAWALA DATE: 5/15
 DESIGN ENGINEER OF RECORD: M. L. RORIE DATE: 8/15

REVISIONS						SHEET NO. S-15 TOTAL SHEETS 78
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

272'-10³/₄" (TOTAL BRIDGE LENGTH W.P. #1 TO W.P. #4)

90'-0" (SPAN B)



PLAN OF SPAN B
STAGE I (RIGHT SIDE)

NOTES:

- ▲ SEE "DETAILS OF REINFORCING STEEL LAYOUT" ON SHEET 13 OF 13, FOR REINFORCING STEEL DETAILS.
 - * SEE "CLOSURE POUR DETAILS" ON SHEET 13 OF 13, FOR CLOSURE POUR DETAILS.
- TEMPORARY DRAINS TO BE FILLED WITH APPROVED GROUT AFTER NO LONGER NEEDED.
- FOR INTERMEDIATE STEEL DIAPHRAGMS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS" SHEET.

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

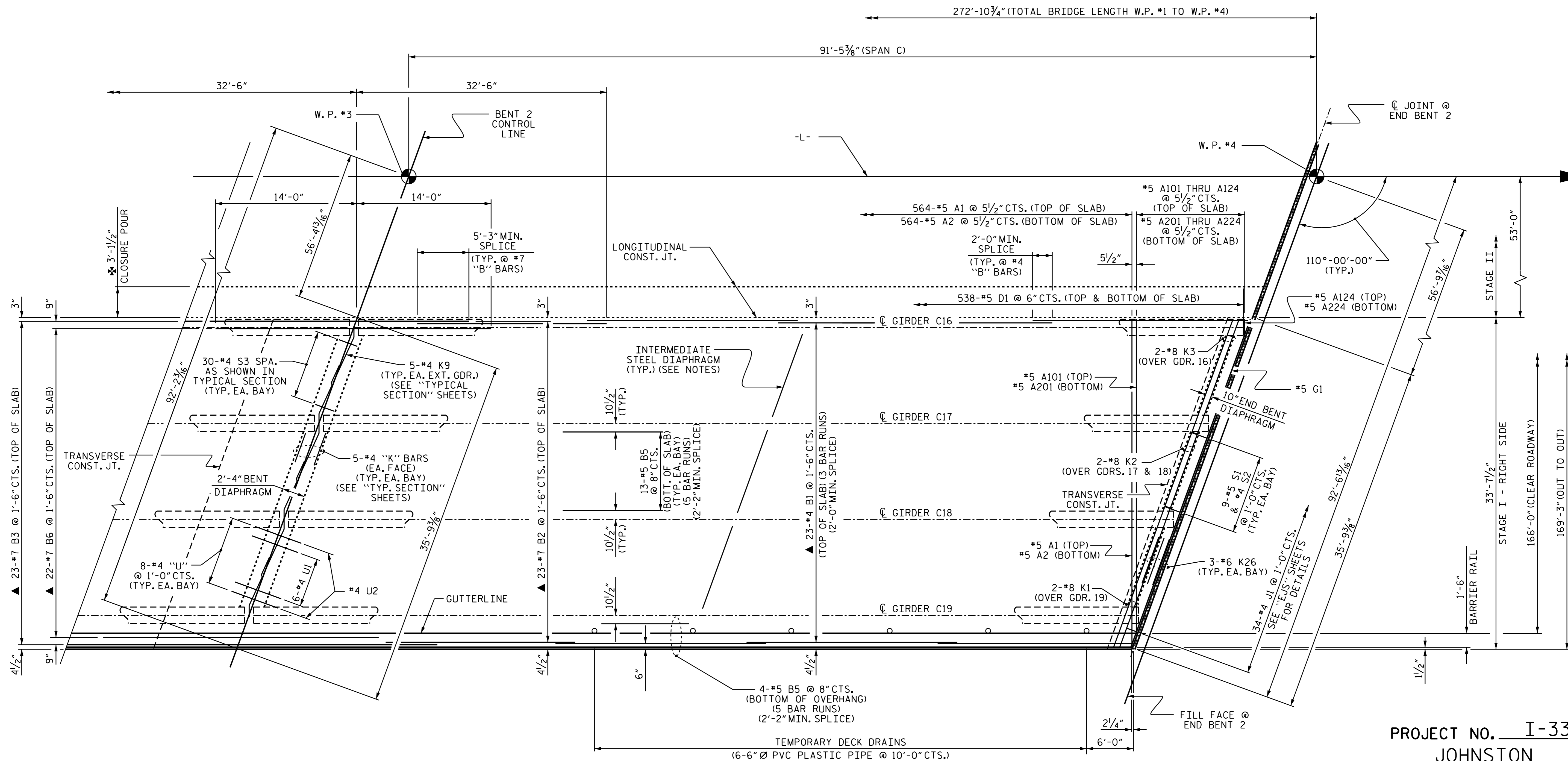
SHEET 5 OF 13



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN B
 STAGE I
 (RIGHT SIDE)

DRAWN BY: D. G. ELY DATE: 3/20/15
 CHECKED BY: B. N. BARODAWALA DATE: 5/15
 DESIGN ENGINEER OF RECORD: M. L. RORIE DATE: 8/15

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			78



**PLAN OF SPAN C
STAGE I (RIGHT SIDE)**

- NOTES:**
- ▲ SEE "DETAILS OF REINFORCING STEEL LAYOUT" ON SHEET 13 OF 13, FOR REINFORCING STEEL DETAILS.
 - * SEE "CLOSURE POUR DETAILS" ON SHEET 13 OF 13, FOR CLOSURE POUR DETAILS.
- TEMPORARY DRAINS TO BE FILLED WITH APPROVED GROUT AFTER NO LONGER NEEDED.
- FOR INTERMEDIATE STEEL DIAPHRAGMS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS" SHEET.

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 6 OF 13

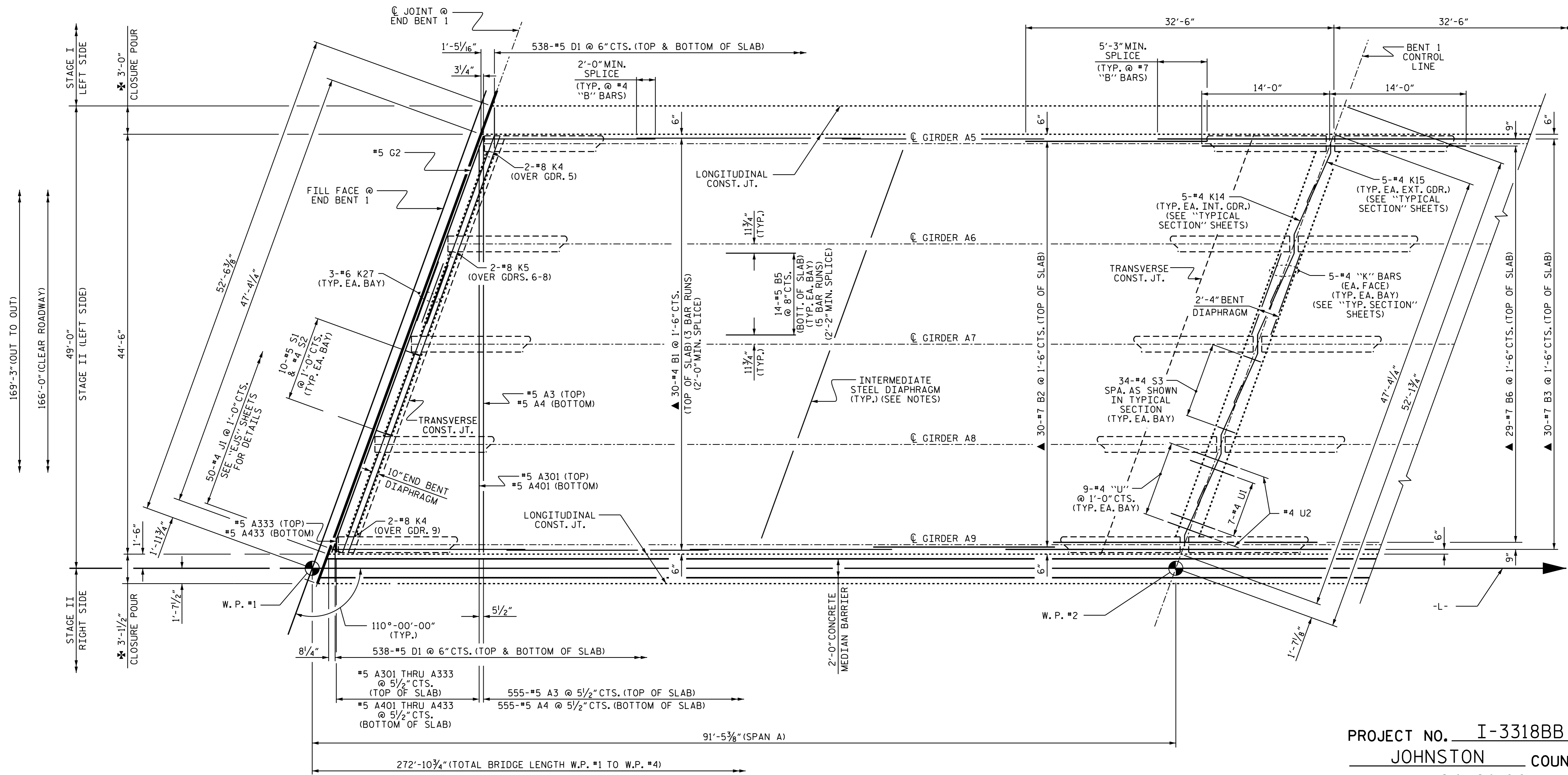


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN C
 STAGE I
 (RIGHT SIDE)

DRAWN BY: D. G. ELY DATE: 3/20/15
 CHECKED BY: B. N. BARODAWALA DATE: 5/15
 DESIGN ENGINEER OF RECORD: M. L. RORIE DATE: 8/15

REVISIONS						SHEET NO. S-17 TOTAL SHEETS 78
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



**PLAN OF SPAN A
STAGE II (LEFT SIDE)**

- NOTES:**
- ▲ SEE "DETAILS OF REINFORCING STEEL LAYOUT" ON SHEET 13 OF 13, FOR REINFORCING STEEL DETAILS.
 - * SEE "CLOSURE POUR DETAILS" ON SHEET 13 OF 13, FOR CLOSURE POUR DETAILS.

FOR INTERMEDIATE STEEL DIAPHRAGMS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS" SHEET.

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

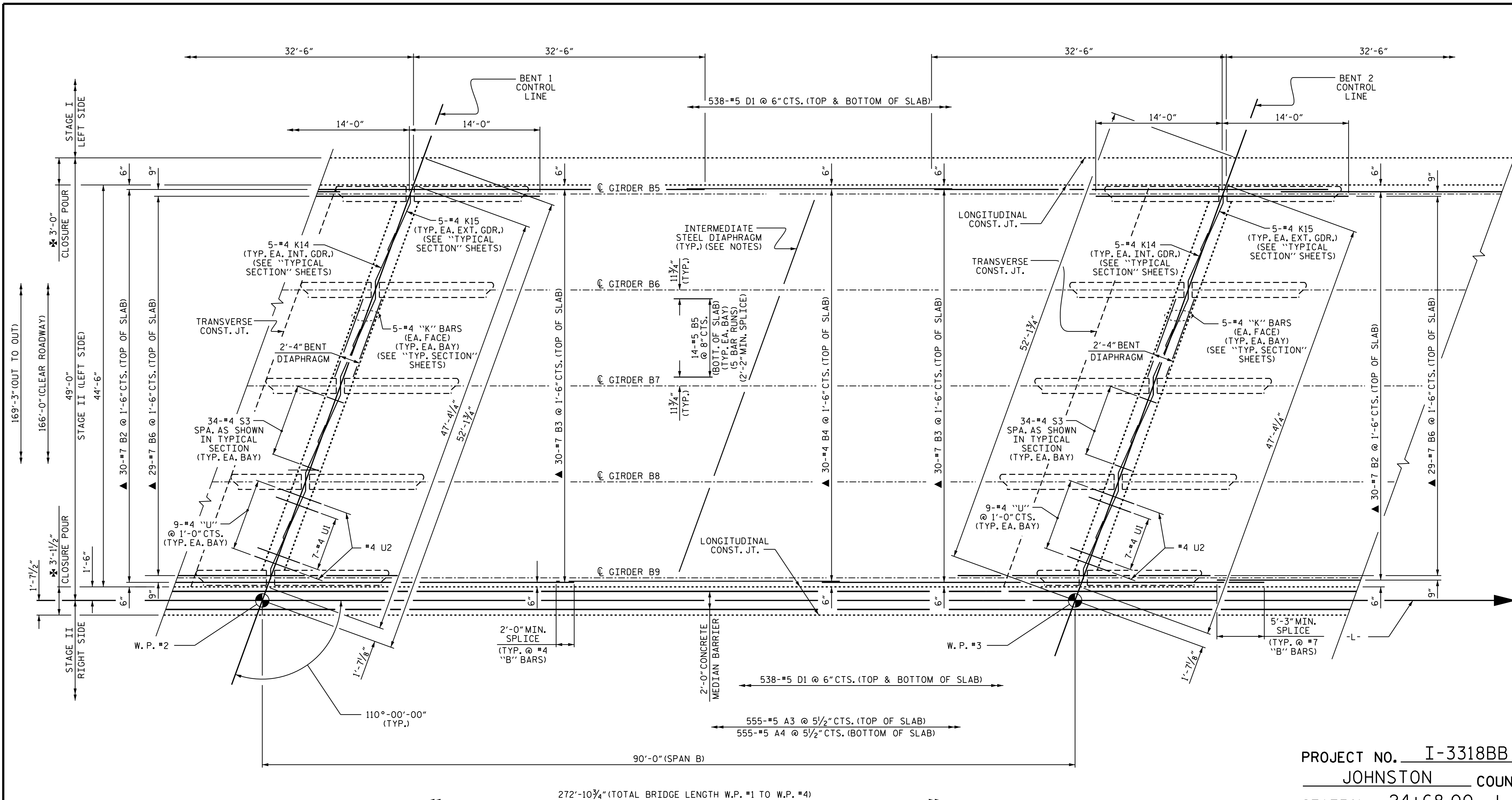
SHEET 7 OF 13



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
**PLAN OF SPAN A
 STAGE II
 (LEFT SIDE)**

DRAWN BY: D. G. ELY DATE: 3/20/15
 CHECKED BY: B. N. BARODAWALA DATE: 5/15
 DESIGN ENGINEER OF RECORD: M. L. RORIE DATE: 8/15

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			78



**PLAN OF SPAN B
STAGE II (LEFT SIDE)**

- NOTES:**
- ▲ SEE "DETAILS OF REINFORCING STEEL LAYOUT" ON SHEET 13 OF 13, FOR REINFORCING STEEL DETAILS.
 - * SEE "CLOSURE POUR DETAILS" ON SHEET 13 OF 13, FOR CLOSURE POUR DETAILS.
- FOR INTERMEDIATE STEEL DIAPHRAGMS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS" SHEET.

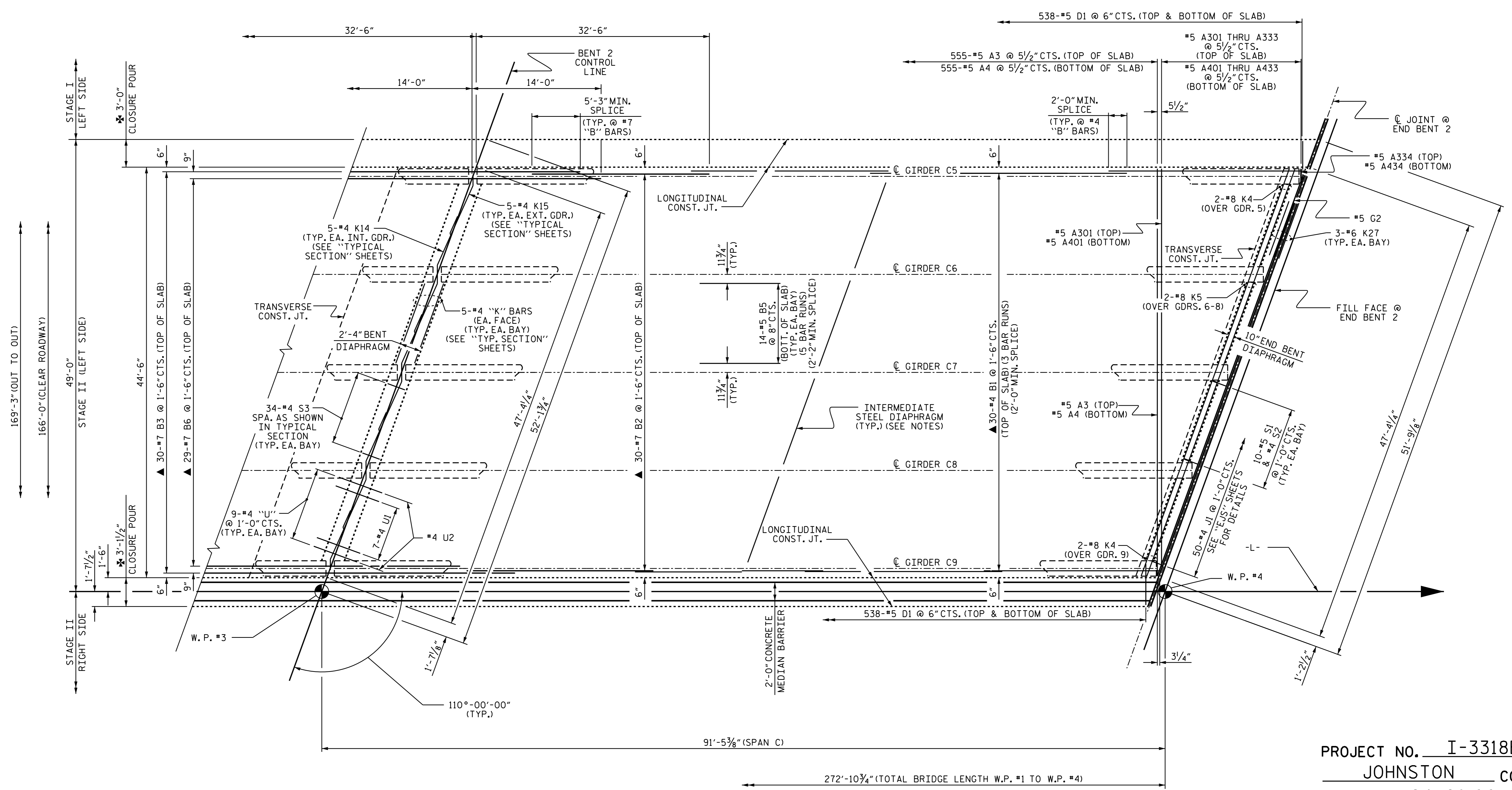
DRAWN BY : D. G. ELY DATE : 3/20/15
 CHECKED BY : B. N. BARODAWALA DATE : 5/15
 DESIGN ENGINEER OF RECORD : M. L. RORIE DATE : 8/15



PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 8 OF 13

REVISIONS						SHEET NO. S-19 TOTAL SHEETS 78
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



**PLAN OF SPAN C
STAGE II (LEFT SIDE)**

- NOTES:**
- ▲ SEE "DETAILS OF REINFORCING STEEL LAYOUT" ON SHEET 13 OF 13, FOR REINFORCING STEEL DETAILS.
 - * SEE "CLOSURE POUR DETAILS" ON SHEET 13 OF 13, FOR CLOSURE POUR DETAILS.
- FOR INTERMEDIATE STEEL DIAPHRAGMS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS" SHEET.

DRAWN BY : D. G. ELY DATE : 3/20/15
 CHECKED BY : B. N. BARODAWALA DATE : 5/15
 DESIGN ENGINEER OF RECORD : M. L. RORIE DATE : 8/15

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 kpaschal



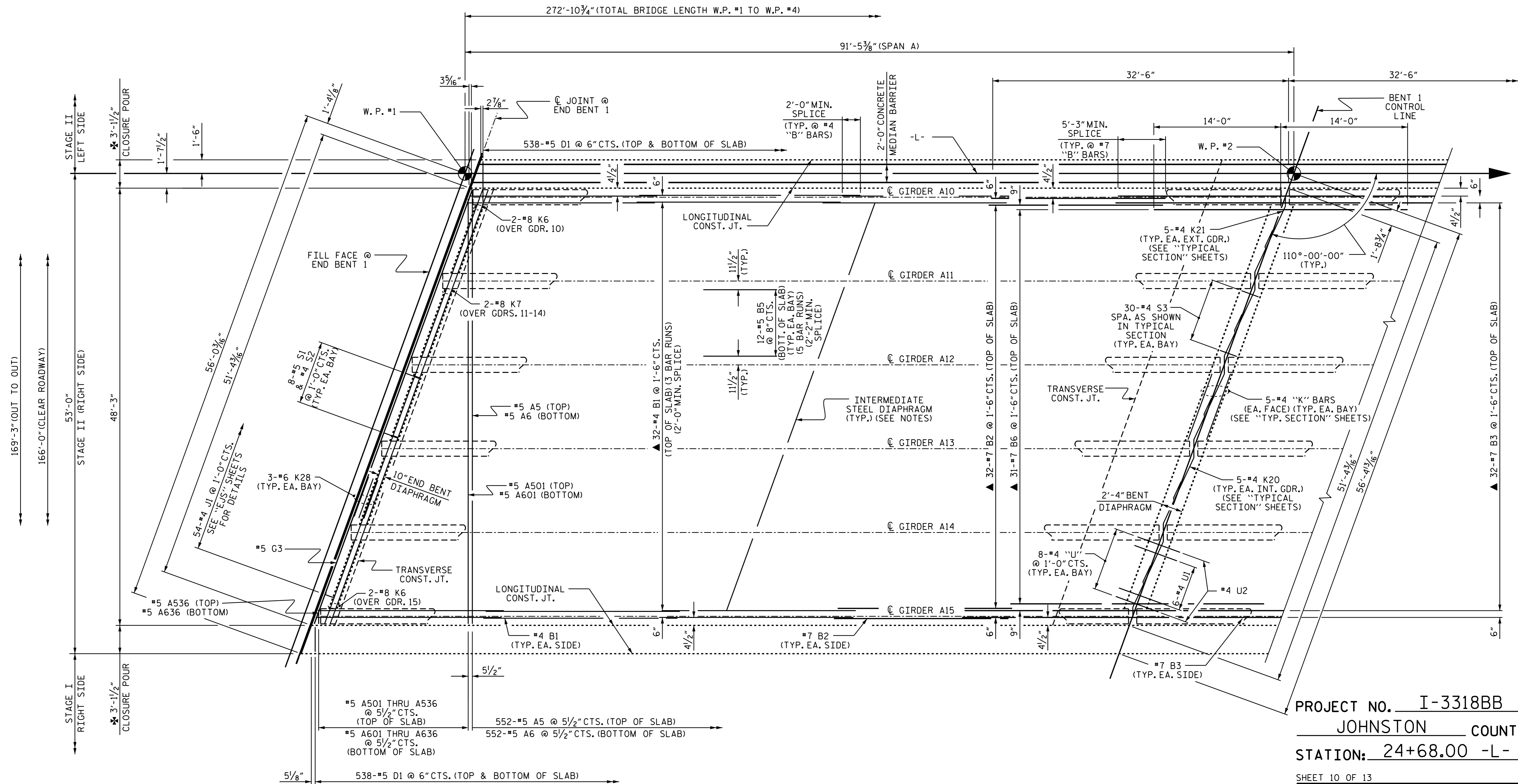
PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 9 OF 13

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN C
 STAGE II
 (LEFT SIDE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS
2			4			78



**PLAN OF SPAN A
STAGE II (RIGHT SIDE)**

- NOTES:**
- ▲ SEE "DETAILS OF REINFORCING STEEL LAYOUT" ON SHEET 13 OF 13, FOR REINFORCING STEEL DETAILS.
 - * SEE "CLOSURE POUR DETAILS" ON SHEET 13 OF 13, FOR CLOSURE POUR DETAILS.

FOR INTERMEDIATE STEEL DIAPHRAGMS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS" SHEET.

PROJECT NO. I-3318BB
 JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 10 OF 13

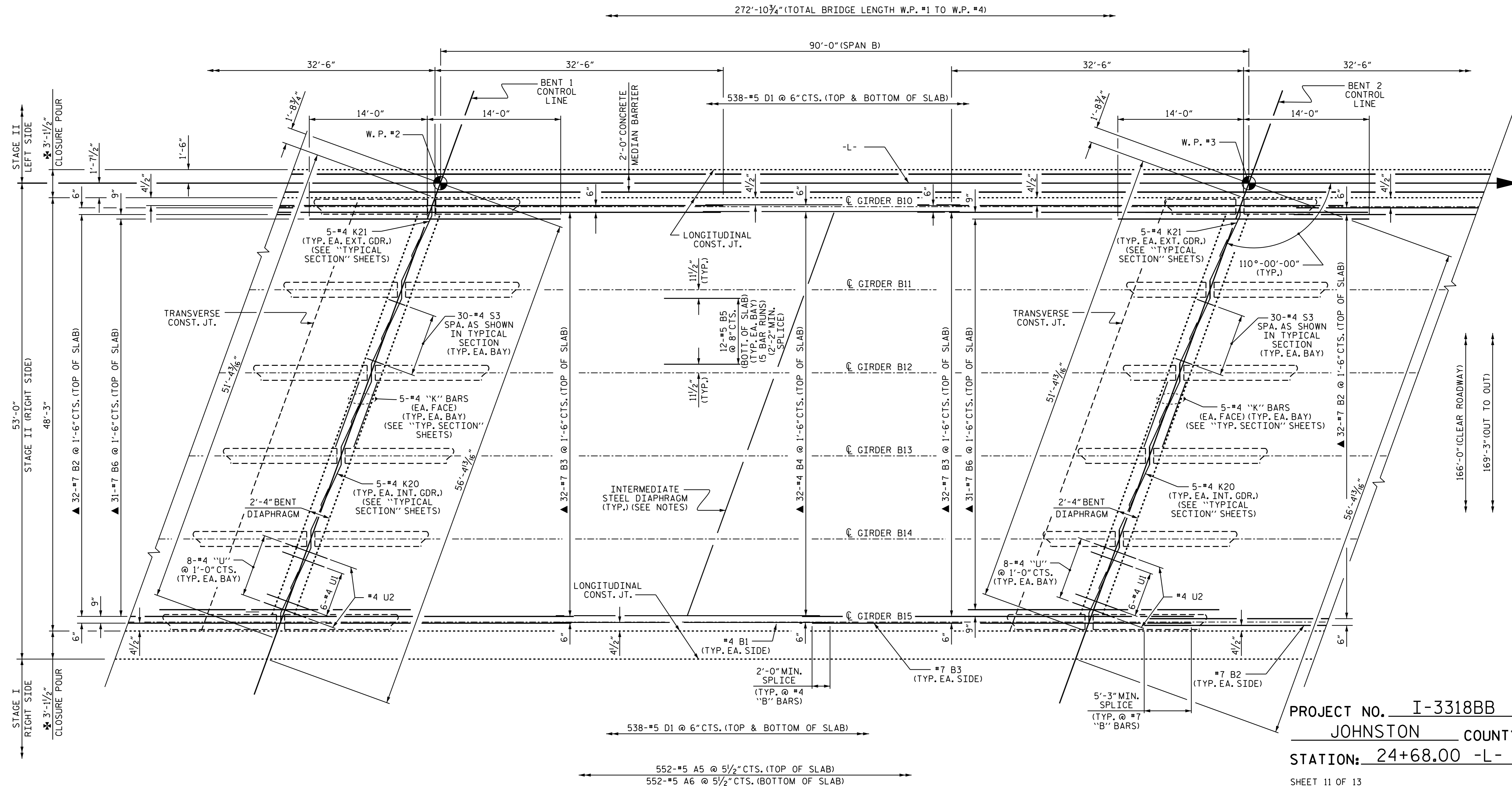


10/14/2015

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN A
 STAGE II
 (RIGHT SIDE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			78

DRAWN BY: D. G. ELY DATE: 3/20/15
 CHECKED BY: B. N. BARODAWALA DATE: 5/15
 DESIGN ENGINEER OF RECORD: M. L. RORIE DATE: 8/15



**PLAN OF SPAN B
STAGE II (RIGHT SIDE)**

- NOTES:**
- ▲ SEE "DETAILS OF REINFORCING STEEL LAYOUT" ON SHEET 13 OF 13, FOR REINFORCING STEEL DETAILS.
 - * SEE "CLOSURE POUR DETAILS" ON SHEET 13 OF 13, FOR CLOSURE POUR DETAILS.

FOR INTERMEDIATE STEEL DIAPHRAGMS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS" SHEET.

DRAWN BY : D. G. ELY DATE : 3/20/15
 CHECKED BY : B. N. BARODAWALA DATE : 5/15
 DESIGN ENGINEER OF RECORD : M. L. RORIE DATE : 8/15

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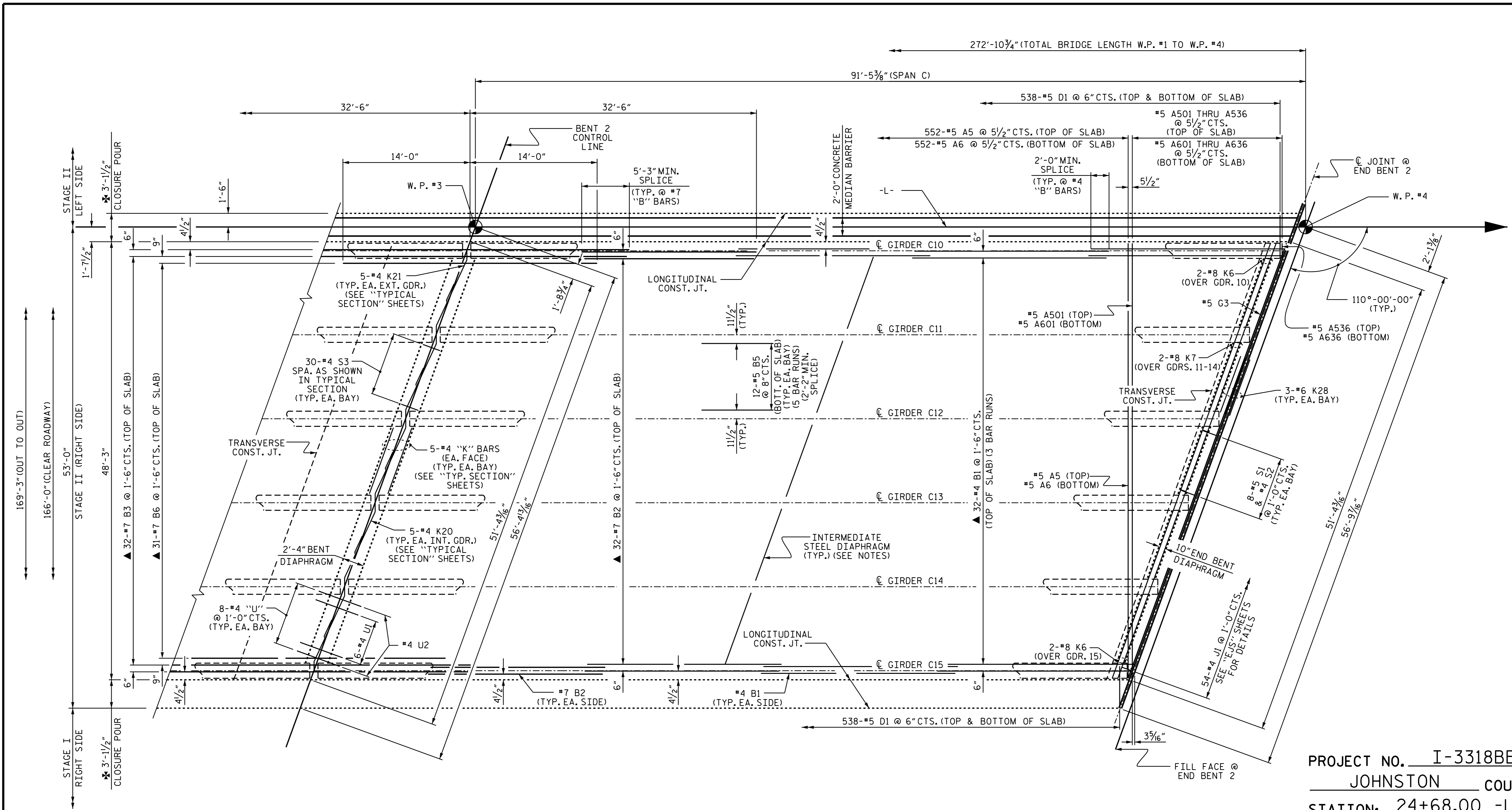


10/14/2015

PROJECT NO. I-3318BB
 JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 11 OF 13

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN B STAGE II (RIGHT SIDE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-22
					TOTAL SHEETS 78



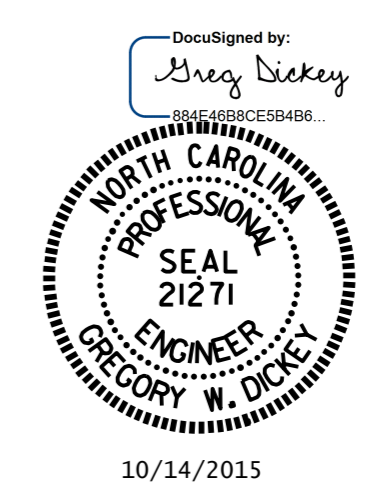
**PLAN OF SPAN C
STAGE II (RIGHT SIDE)**

- NOTES:**
- ▲ SEE "DETAILS OF REINFORCING STEEL LAYOUT" ON SHEET 13 OF 13, FOR REINFORCING STEEL DETAILS.
 - * SEE "CLOSURE POUR DETAILS" ON SHEET 13 OF 13, FOR CLOSURE POUR DETAILS.

FOR INTERMEDIATE STEEL DIAPHRAGMS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS" SHEET.

DRAWN BY : D. G. ELY DATE : 3/20/15
 CHECKED BY : B. N. BARODAWALA DATE : 5/15
 DESIGN ENGINEER OF RECORD : M. L. RORIE DATE : 8/15

14-OCT-2015 11:48
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 kpaschal



10/14/2015

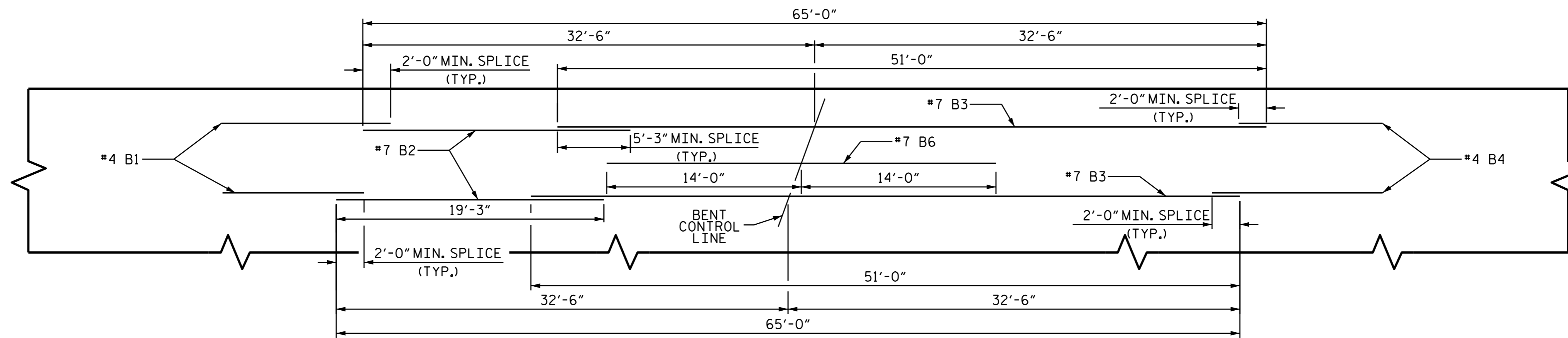
PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 12 OF 13

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

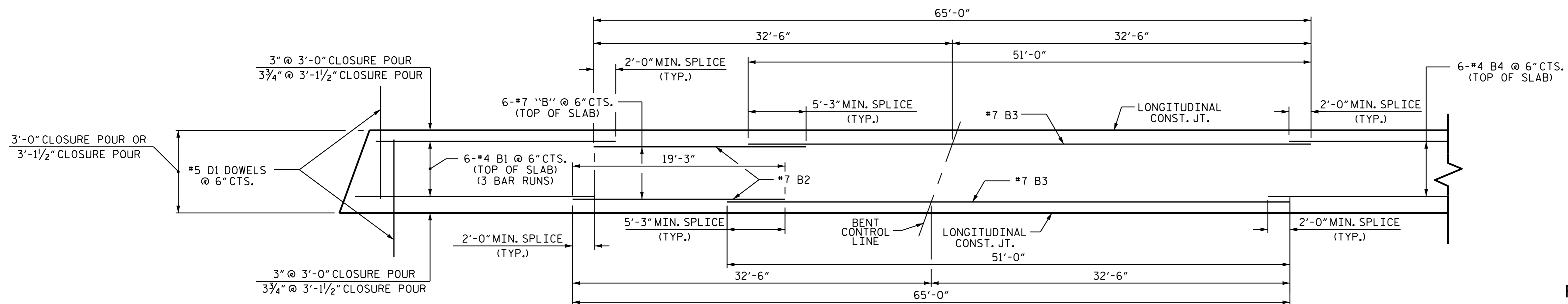
SUPERSTRUCTURE
 PLAN OF SPAN C
 STAGE II
 (RIGHT SIDE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			78



TOP REINFORCING STEEL LAYOUT DETAIL

BENT 1 SHOWN, BENT 2 SIMILAR BY ROTATION



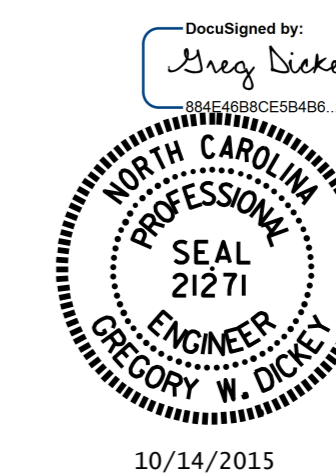
CLOSURE POUR TOP REINFORCING STEEL LAYOUT DETAIL

BENT 1 SHOWN, BENT 2 SIMILAR BY ROTATION

FOR BOTTOM REINFORCING STEEL, SEE DETAIL "B", SHEET 2 OF 5, TYPICAL SECTION.

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 13 OF 13



10/14/2015

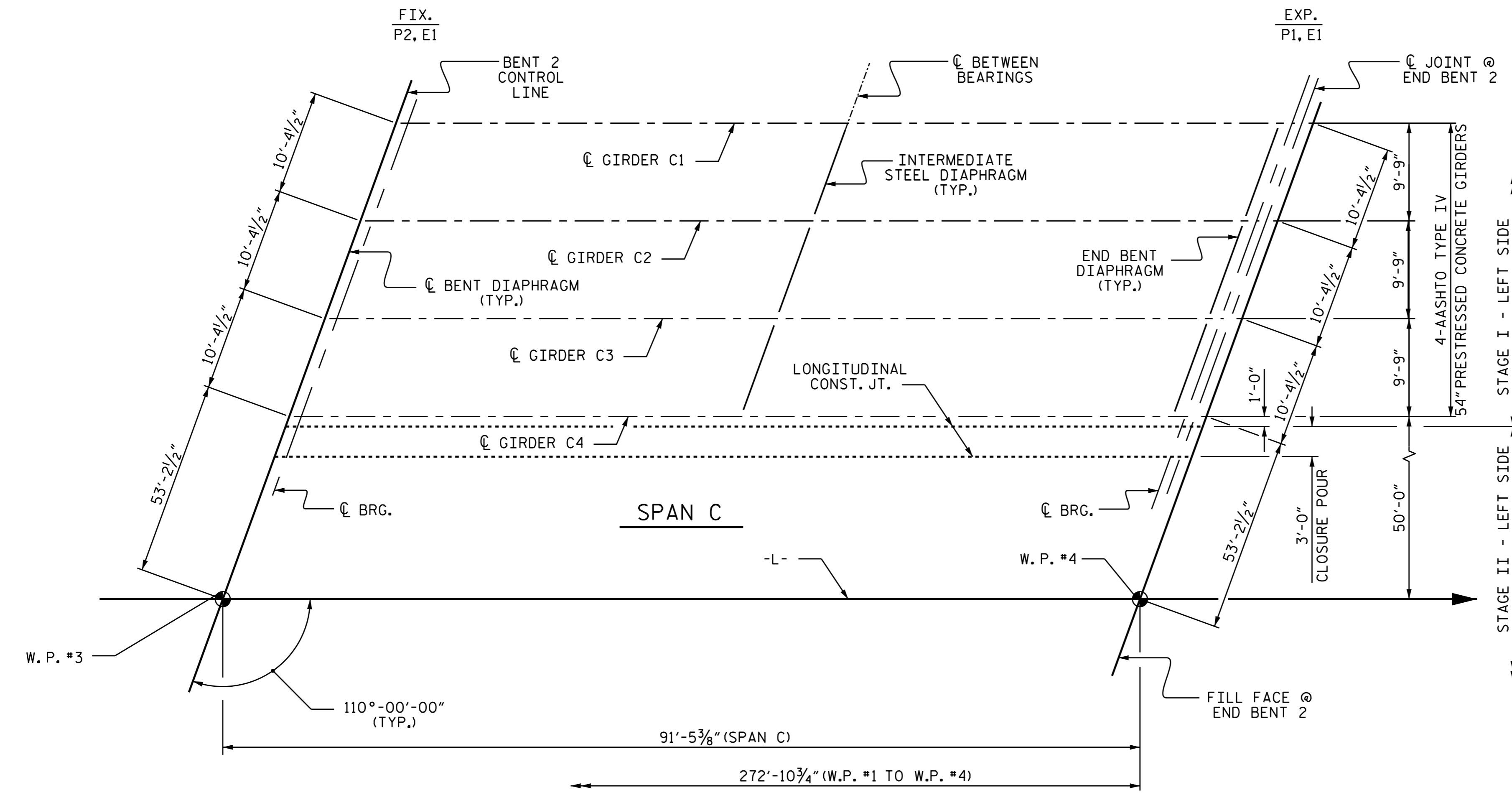
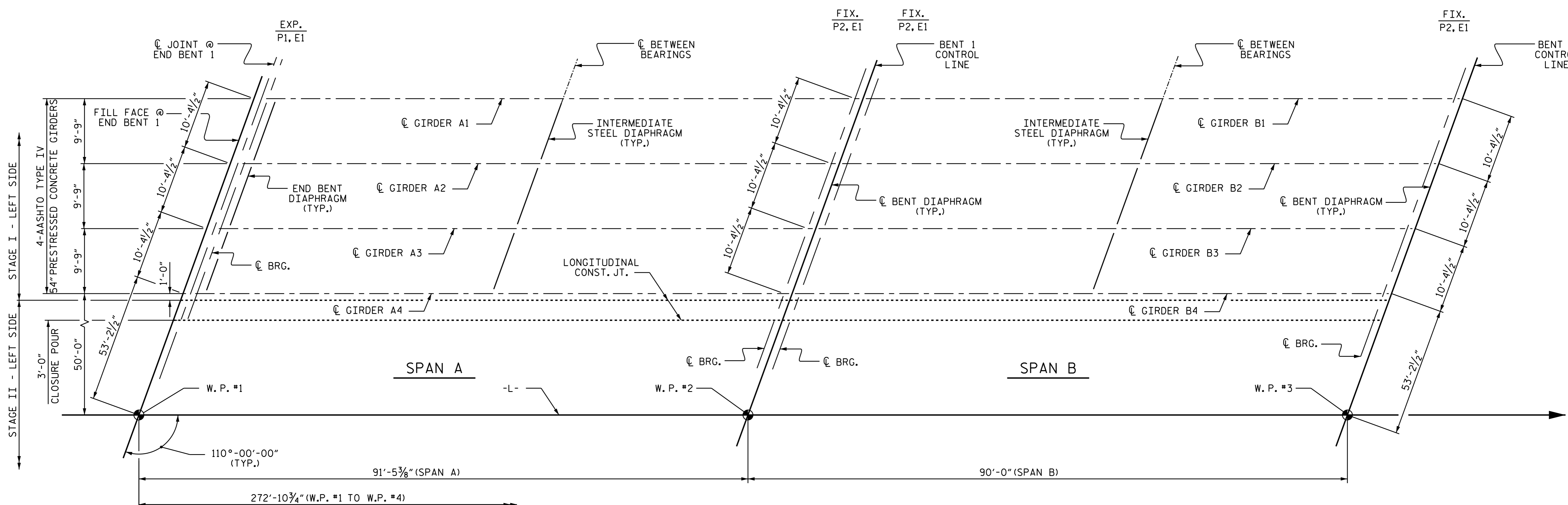
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE

PLAN OF SPANS
 DETAILS

DRAWN BY : D. G. ELY DATE : 3/20/15
 CHECKED BY : B. N. BARODAWALA DATE : 5/15
 DESIGN ENGINEER OF RECORD: M. L. RORIE DATE : 8/15

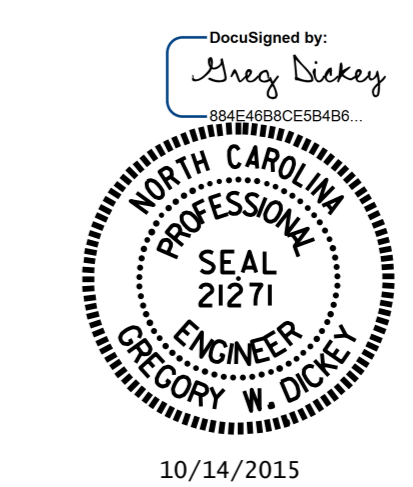
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			78



GIRDER LAYOUT
STAGE I (LEFT SIDE)

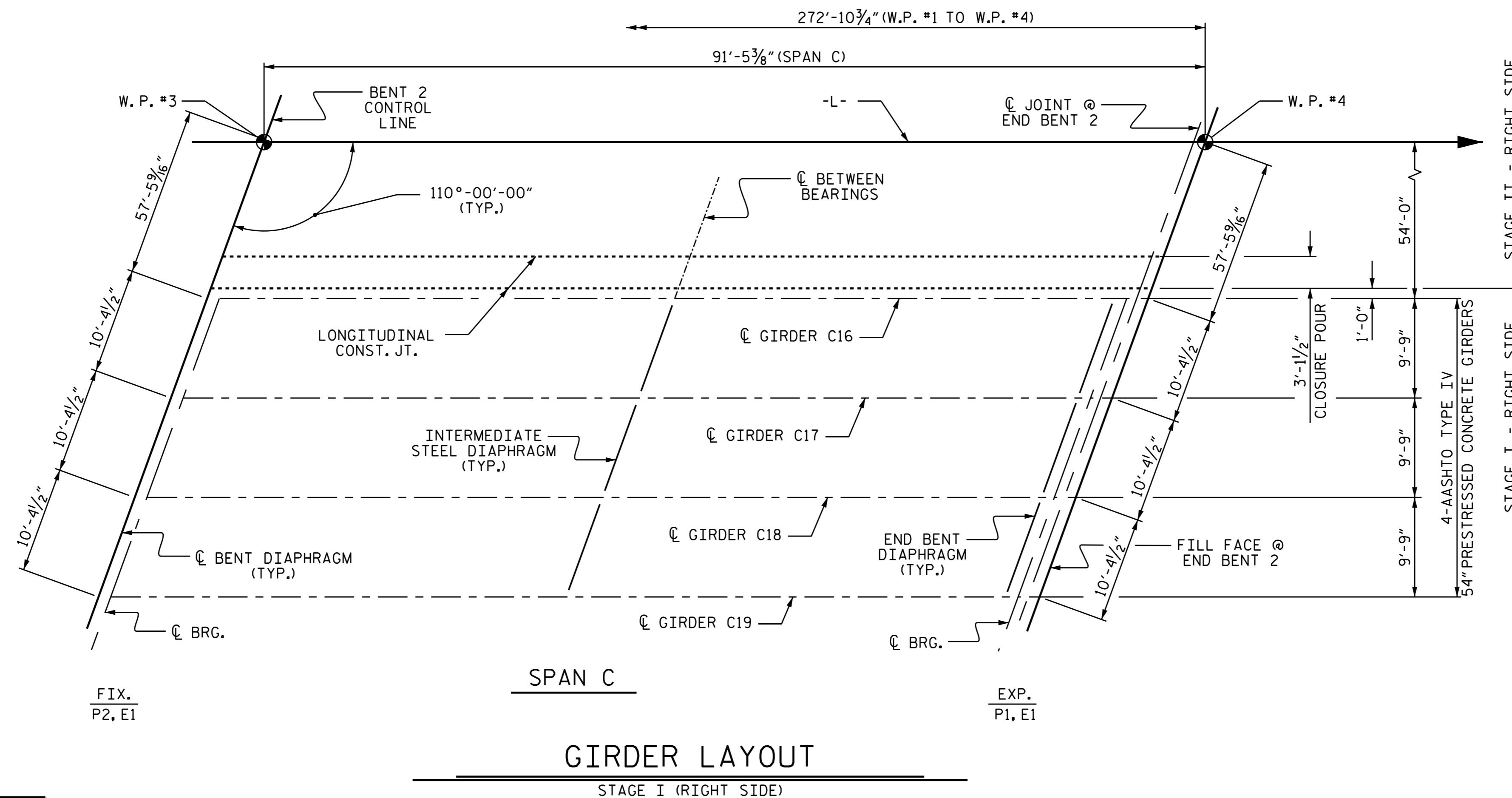
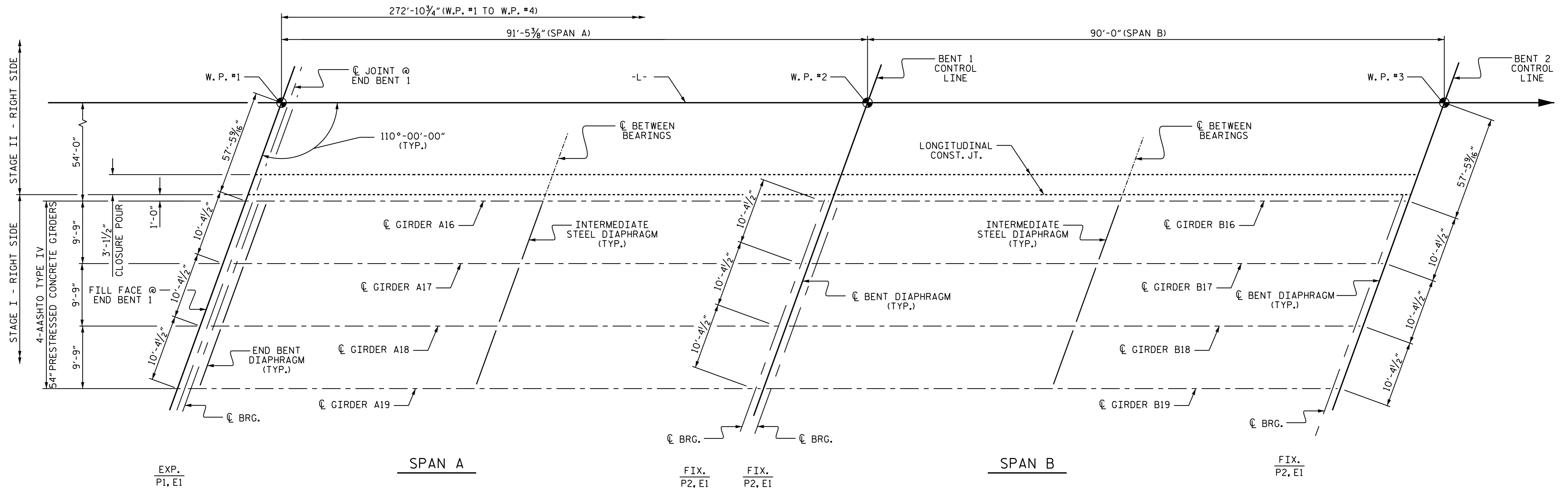
DRAWN BY : D. G. ELY DATE : 10/6/14
 CHECKED BY : B. N. BARODAWALA DATE : 5/15
 DESIGN ENGINEER OF RECORD : M. L. RORIE DATE : 8/15

14-OCT-2015 11:49
 R:\Structures\Plans\FINAL PLANS\I-3318BB.SMU.FP.dgn
 kpaschal



PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-
 SHEET 1 OF 4

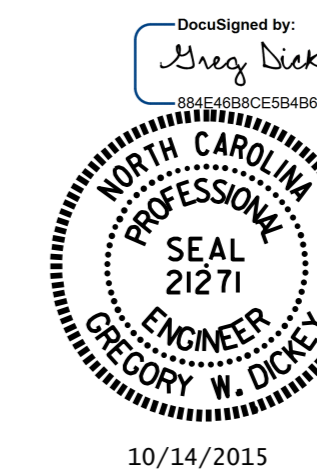
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
SUPERSTRUCTURE GIRDER LAYOUT STAGE I (LEFT SIDE)						S-25
REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	78
1			3			
2			4			



GIRDER LAYOUT
STAGE I (RIGHT SIDE)

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

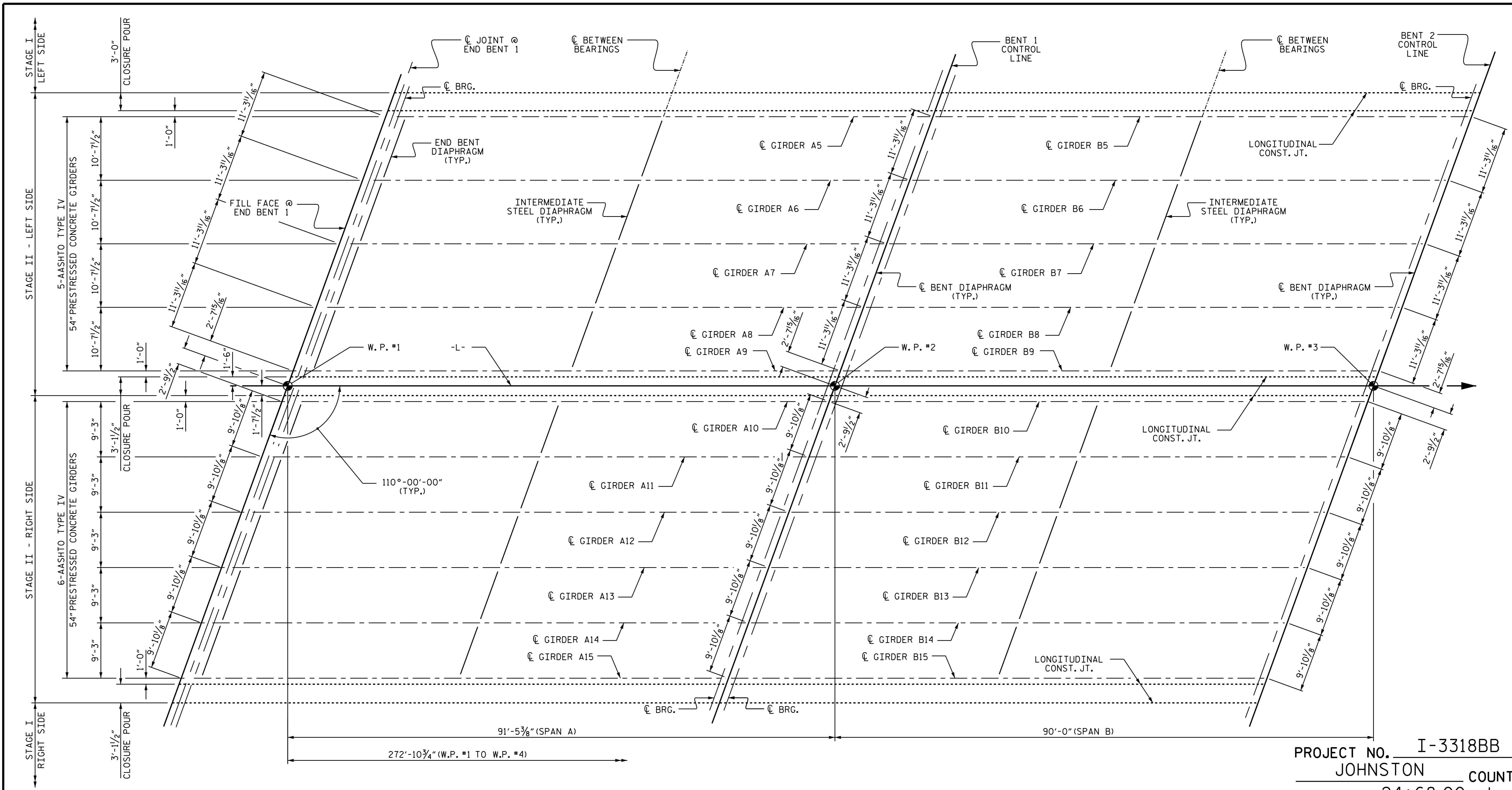
SHEET 2 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 GIRDER LAYOUT
 STAGE I
 (RIGHT SIDE)

DRAWN BY: D. G. ELY DATE: 10/6/14
 CHECKED BY: B. N. BARODAWALA DATE: 5/15
 DESIGN ENGINEER OF RECORD: M. L. RORIE DATE: 8/15

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			78



EXP.
P1, E1

SPAN A

FIX.
* P2, E1
** P3, E1

SPAN B

FIX.
* P2, E1
** P3, E1

* P2, E1 FOR GIRDERS 5-12, AND 14-15
* P3, E1 FOR GIRDER 13

GIRDER LAYOUT
STAGE II - LEFT SIDE & RIGHT SIDE

PROJECT NO. I-3318BB
JOHNSTON COUNTY
STATION: 24+68.00 -L-

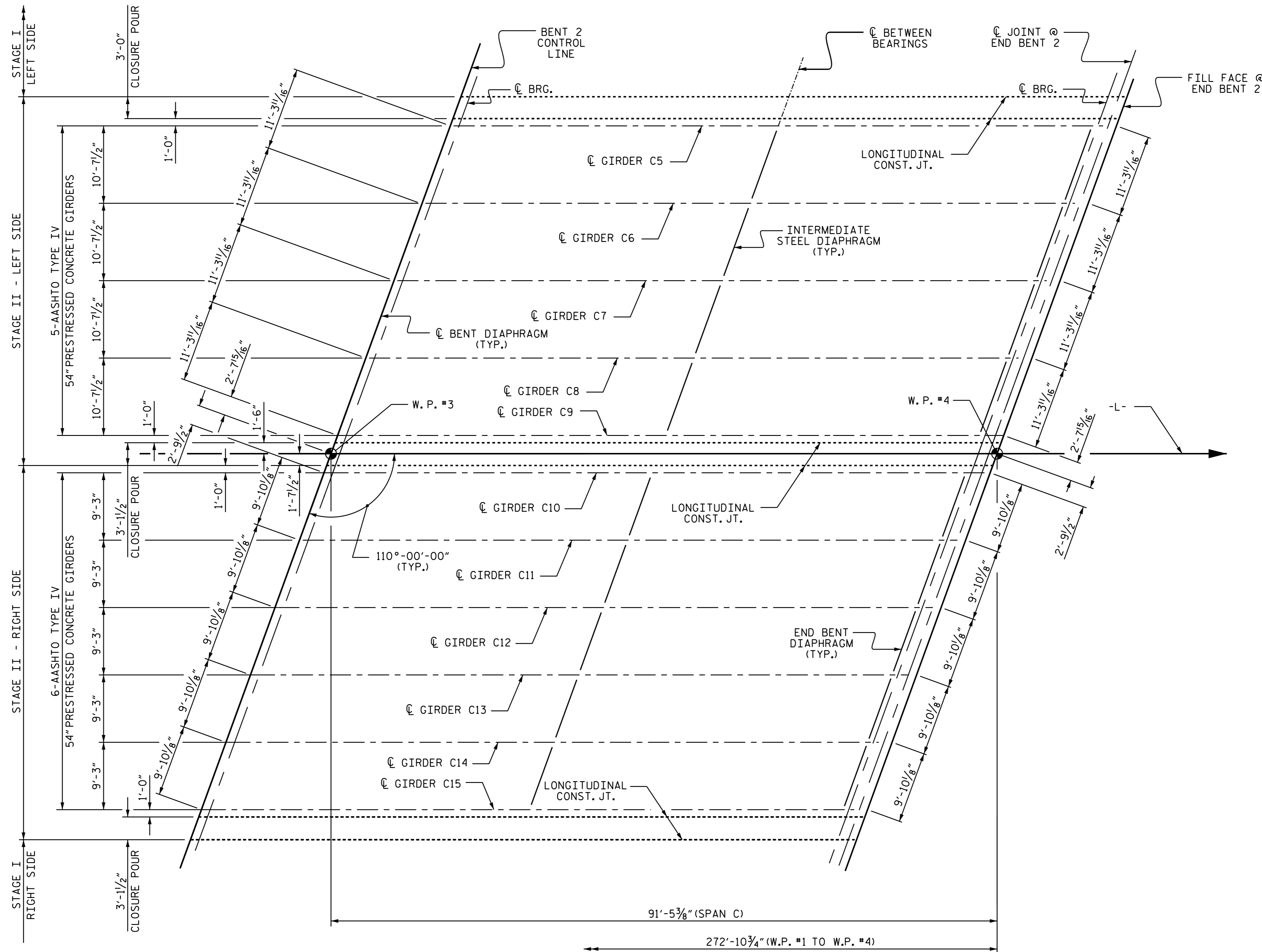
SHEET 3 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
GIRDER LAYOUT
STAGE II
(SPANS A & B)

DRAWN BY: D. G. ELY DATE: 10/6/14
CHECKED BY: B. N. BARODAWALA DATE: 5/15
DESIGN ENGINEER OF RECORD: M. L. RORIE DATE: 8/15

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			78



PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 GIRDER LAYOUT
 STAGE II
 (SPAN C)



10/14/2015

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28
1			3			TOTAL SHEETS
2			4			78

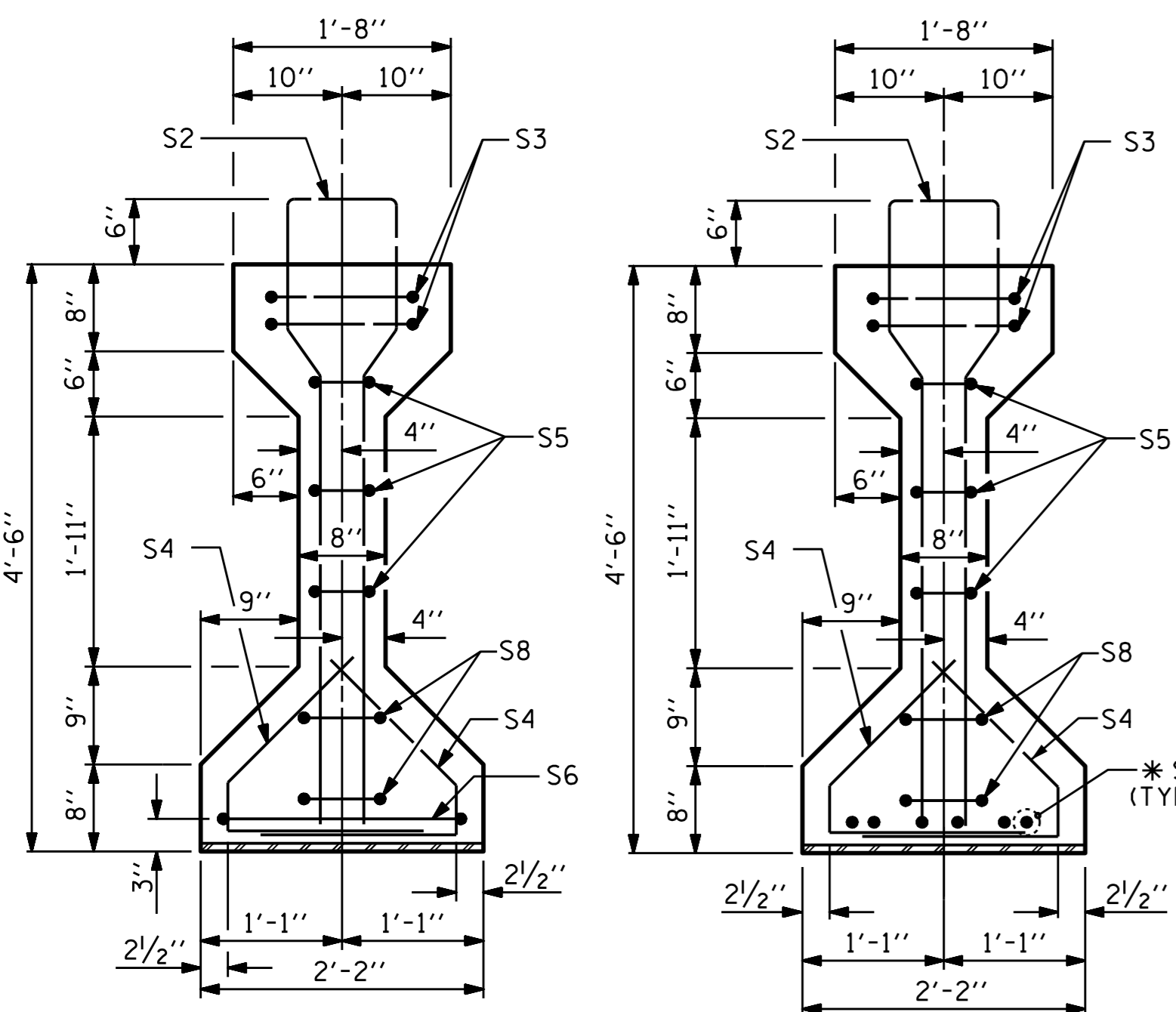
* P2, E1 FOR GIRDERS 5-12, AND 14-15
 * P3, E1 FOR GIRDER 13

FIX.
 * P2, E1
 * P3, E1

EXP.
 P1, E1

SPAN C
GIRDER LAYOUT
 STAGE II - LEFT SIDE & RIGHT SIDE

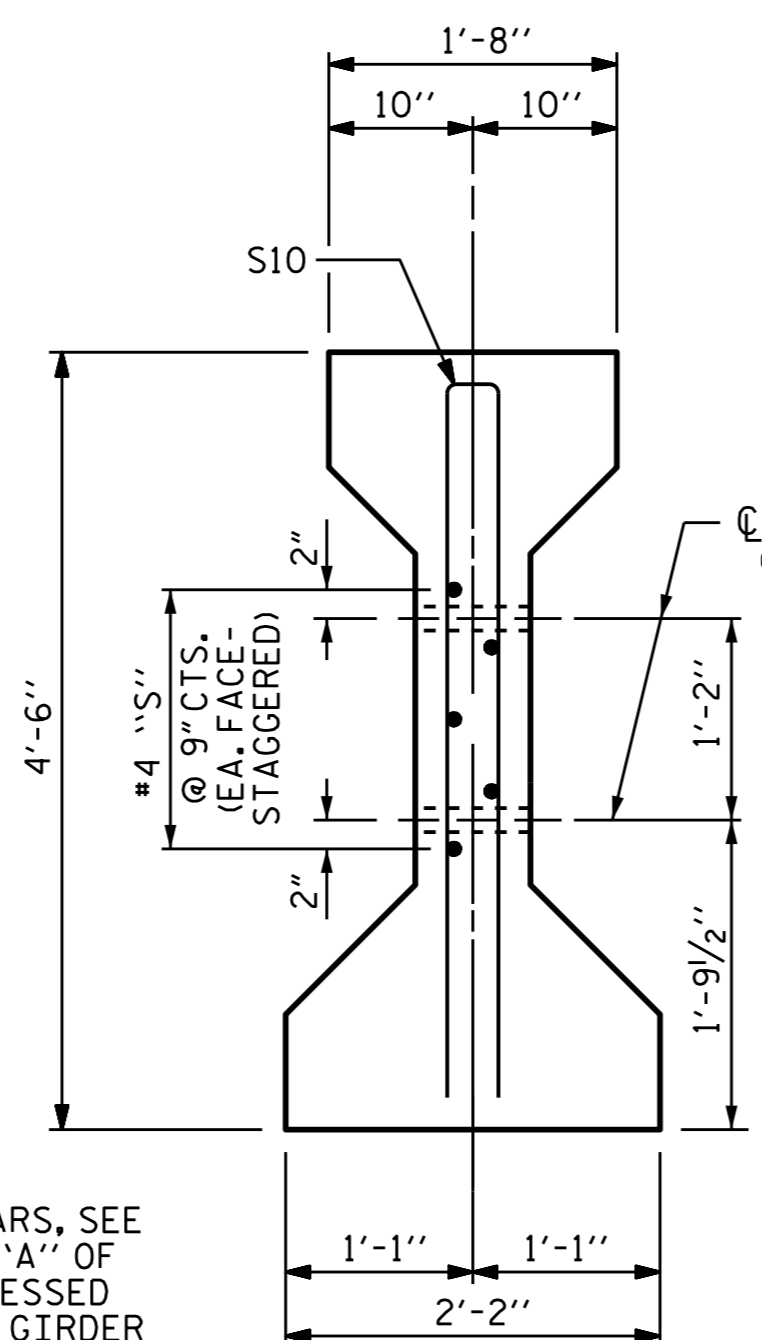
DRAWN BY: D. G. ELY DATE: 10/6/14
 CHECKED BY: B. N. BARODAWALA DATE: 5/15
 DESIGN ENGINEER OF RECORD: M. L. RORIE DATE: 8/15



SECTION A-A

SECTION B-B

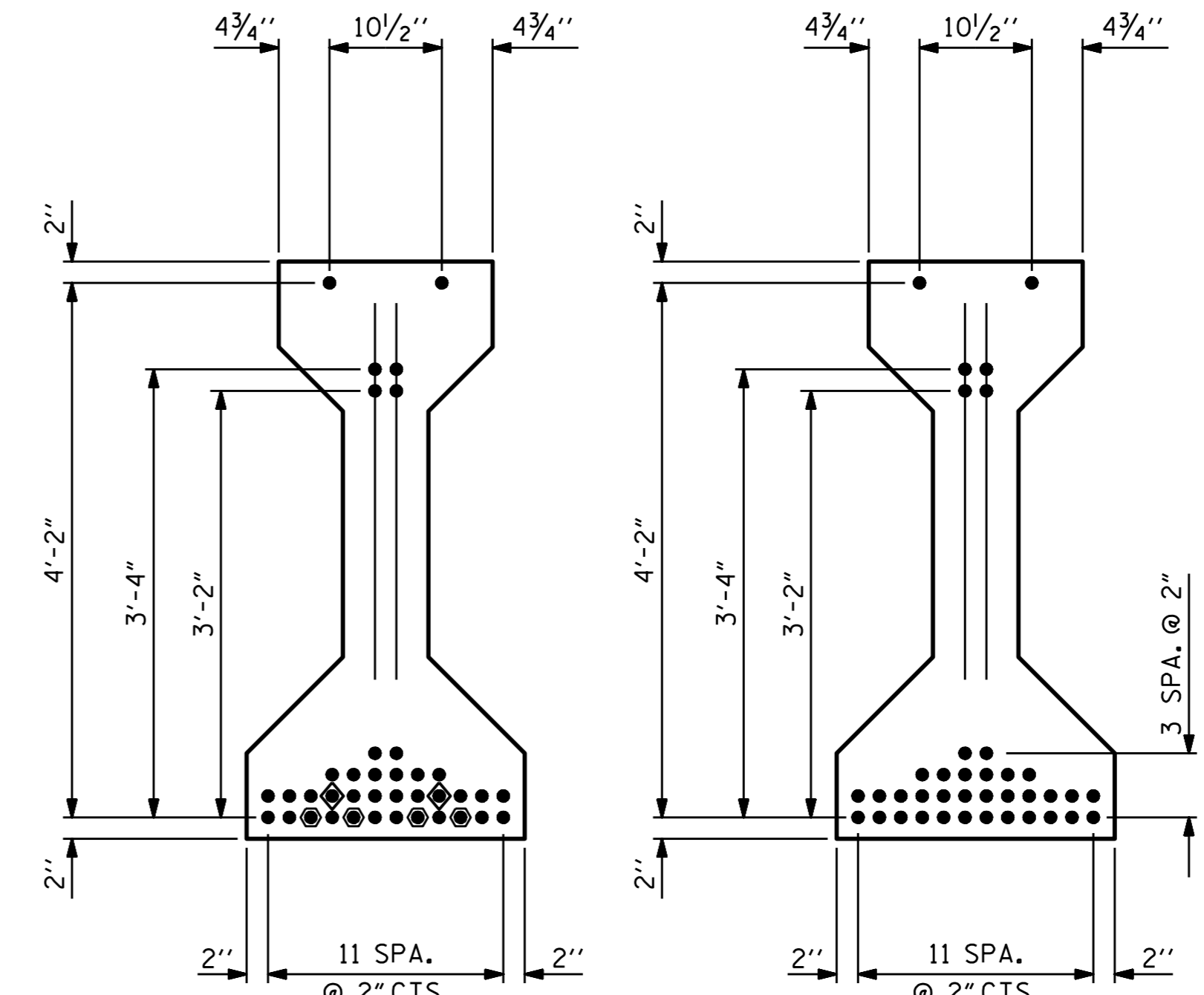
* FOR S7 BARS, SEE
DETAIL "A" OF
"PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS" SHEET



SECTION C-C
(S1 BARS NOT SHOWN)

DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER



AT END OF GIRDER

AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

(38 STRANDS)

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

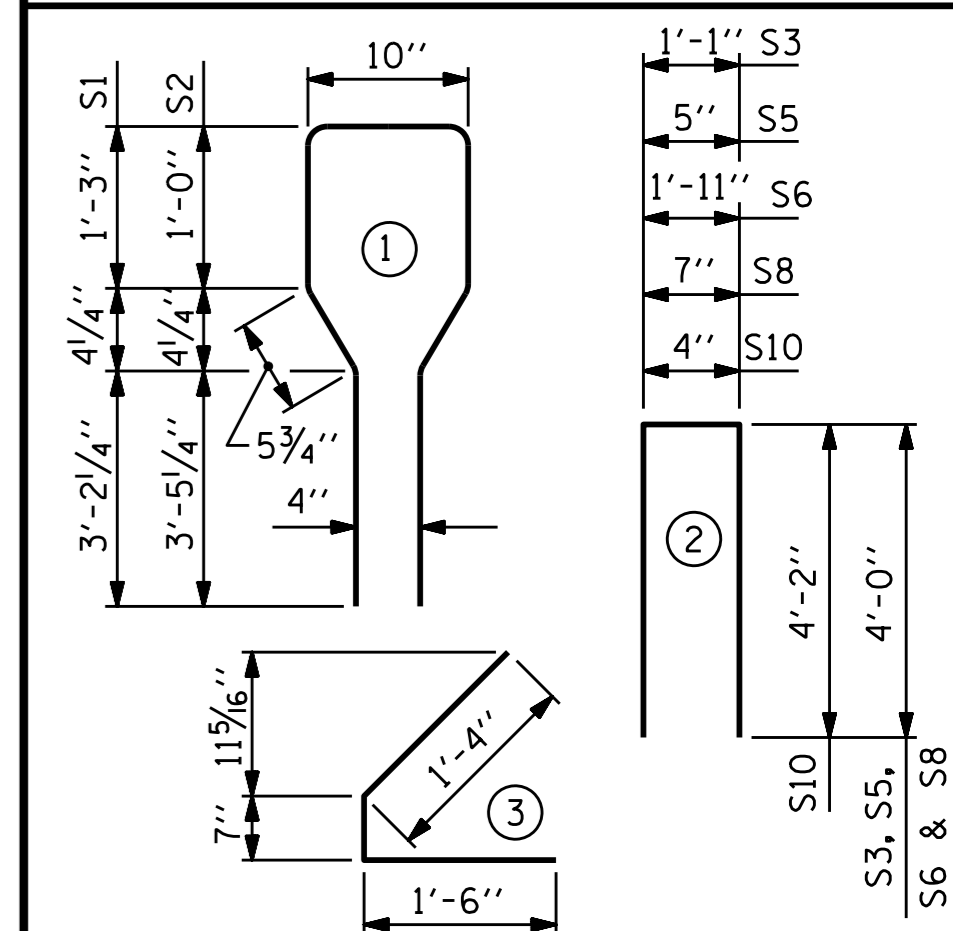
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	182	#4	1	10'-8"	1297
S2	14	#6	1	10'-8"	224
S3	4	#4	2	9'-1"	24
S4	88	#4	3	3'-5"	201
S5	6	#4	2	8'-5"	34
S6	1	#4	2	9'-11"	7
*S7	6	#5	STR	3'-8"	23
S8	4	#4	2	8'-7"	23
S9	1	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23

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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT

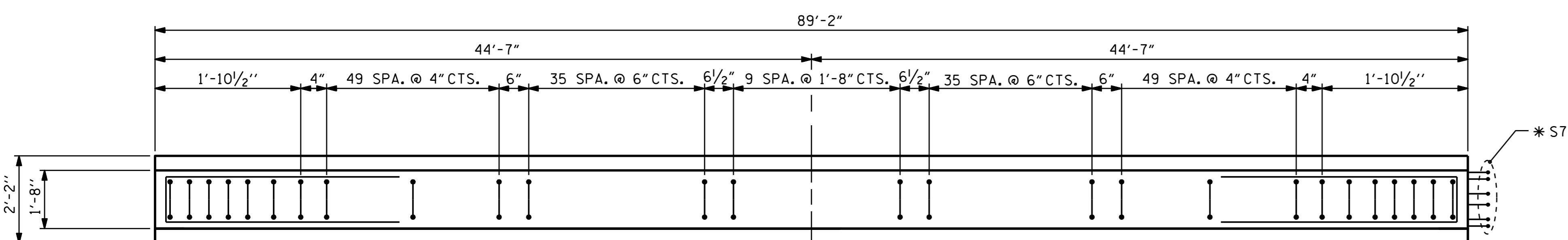


QUANTITIES FOR ONE GIRDER

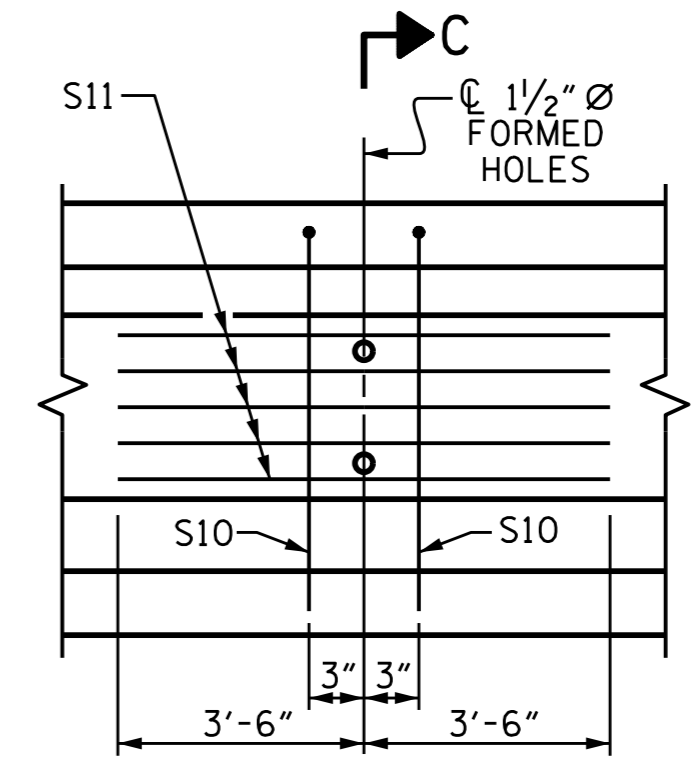
	REINFORCING STEEL	8500 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
SPAN A	1875	18.1	38
SPAN C	1875	18.1	38

GIRDERS REQUIRED

STAGE	NUMBER	LENGTH	TOTAL LENGTH
I	16	89'-2"	1426'-8"
II	22	89'-2"	1961'-8"

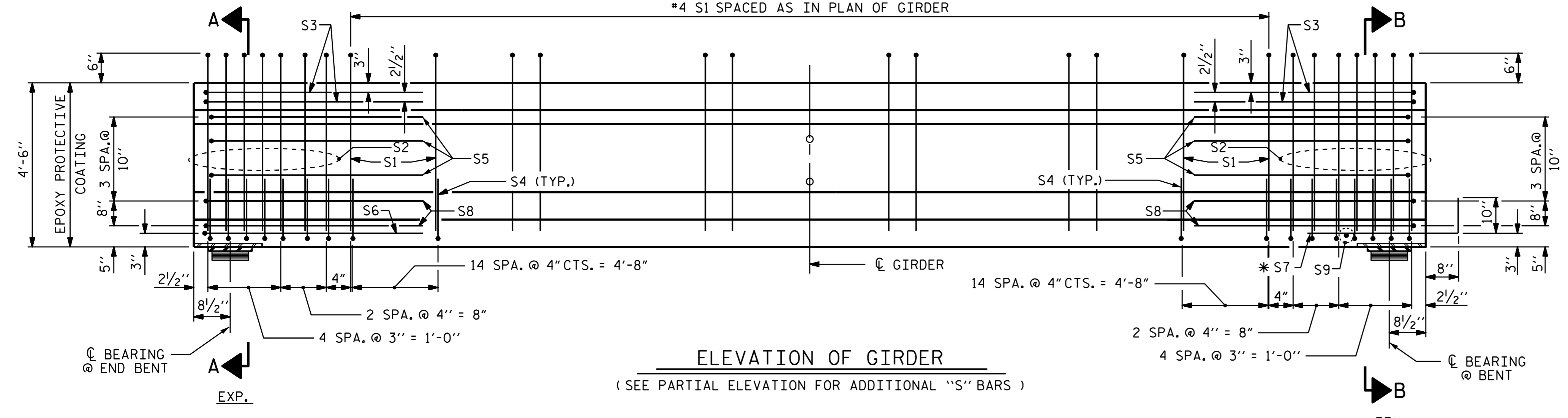


PLAN OF GIRDER



PARTIAL ELEVATION

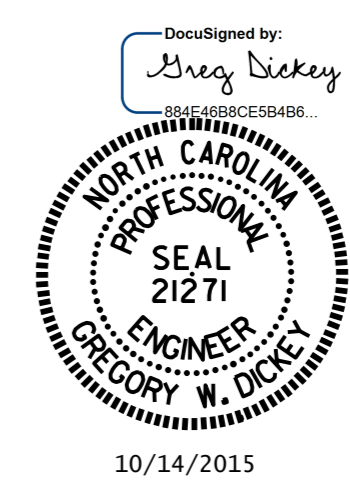
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

ASSEMBLED BY : D. G. ELY	DATE : 10/8/14
CHECKED BY : B. N. BARODAWALA	DATE : 5/15
DESIGN ENGINEER OF RECORD: M. L. RORIE	DATE : 8/15
DRAWN BY : ELR 8/91	REV. 10/17/00R RWW/LES
CHECKED BY : GRP 8/91	REV. 5/1/06R TLA/GM
	REV. 10/1/11 MAA/GM



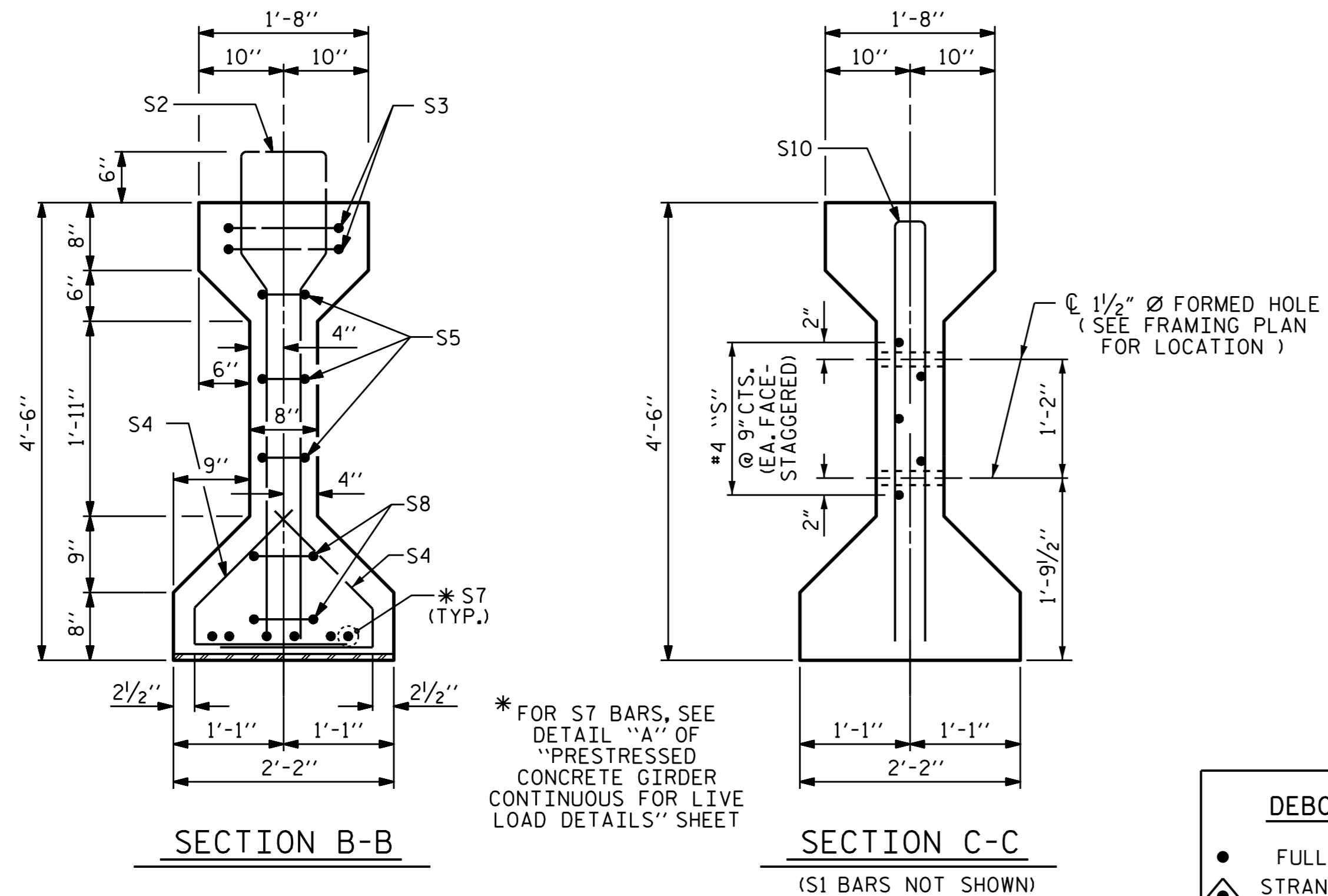
10/14/2015

PROJECT NO. I-3318BB
JOHNSTON COUNTY
STATION: 24+68.00 -L-

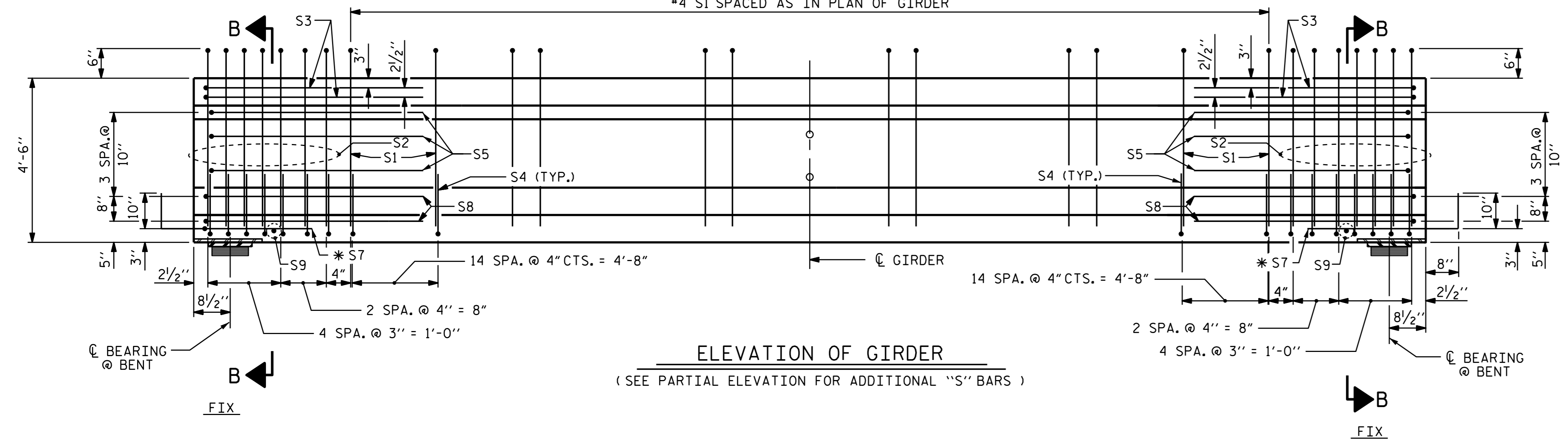
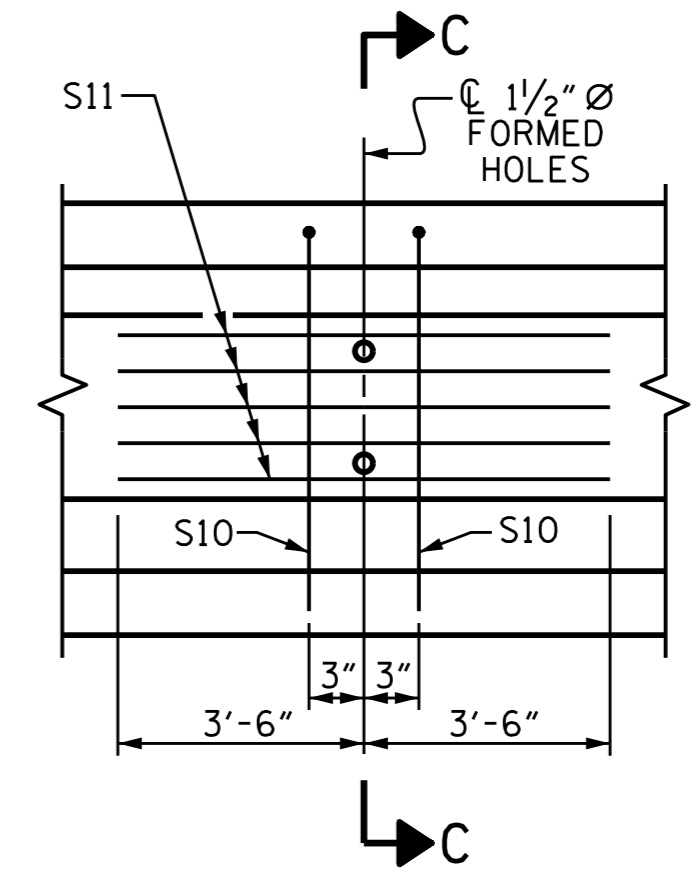
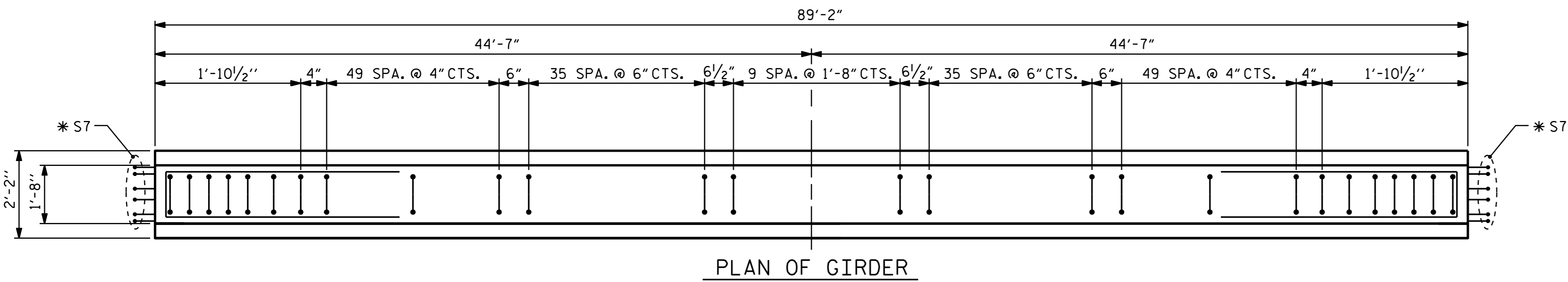
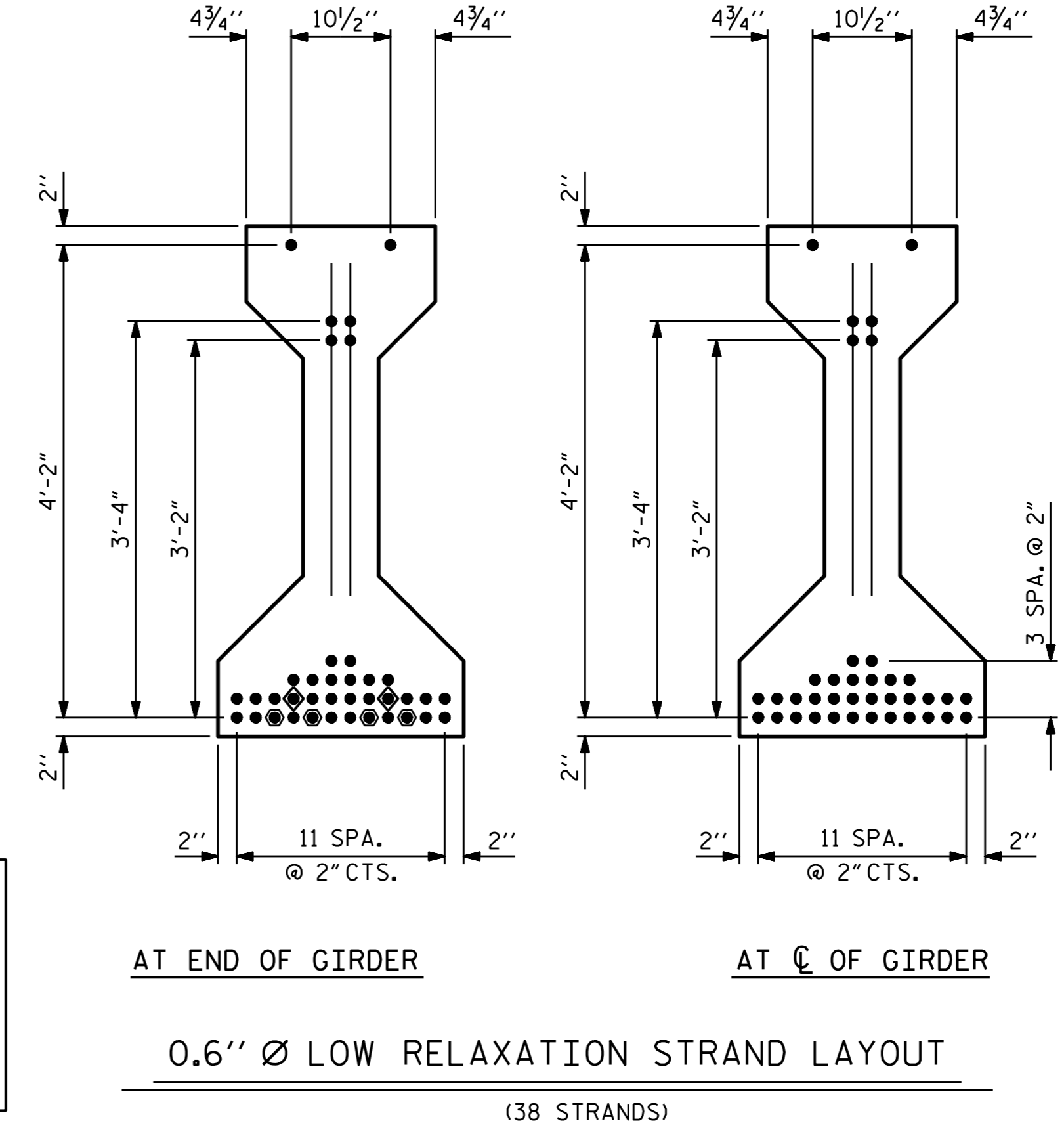
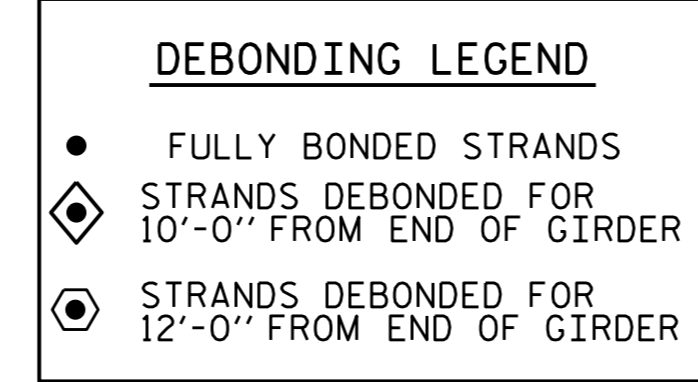
SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
(SPANS A & C)

REVISIONS						SHEET NO. S-29
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 78
2			4			



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



0.6" Ø L. R. GRADE 270 STRANDS

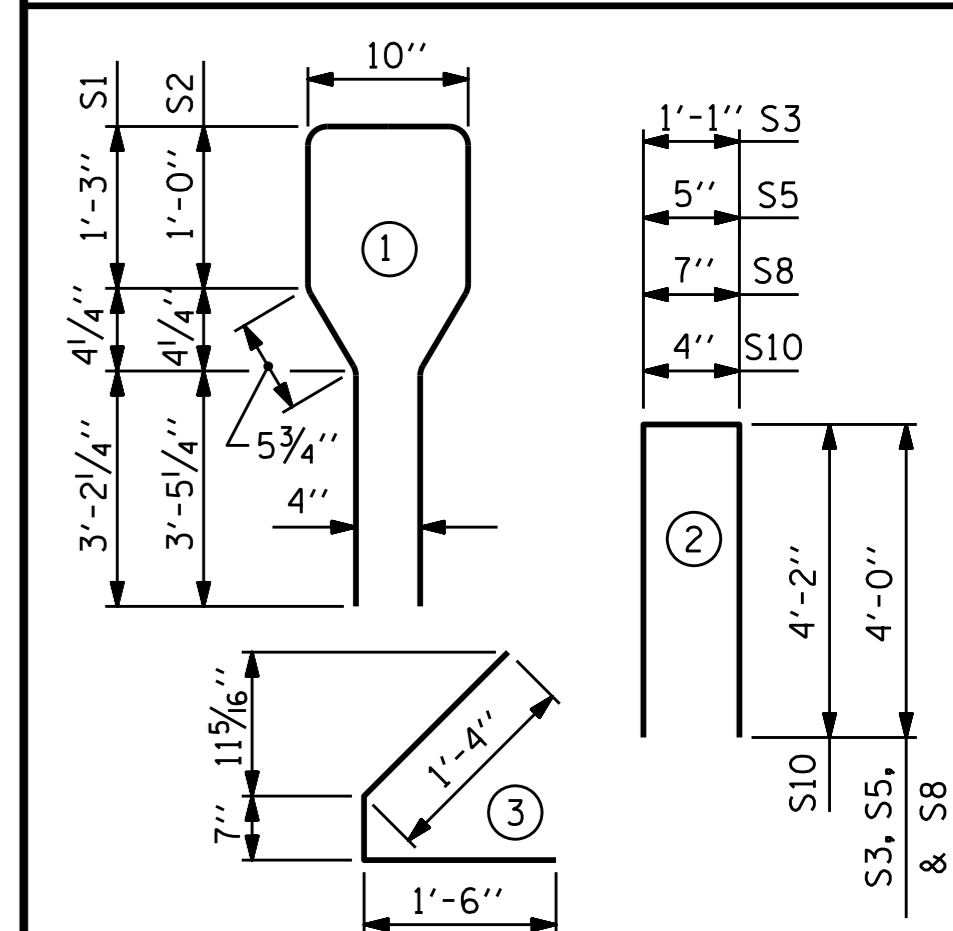
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	182	#4	1	10'-8"	1297
S2	14	#6	1	10'-8"	224
S3	4	#4	2	9'-1"	24
S4	88	#4	3	3'-5"	201
S5	6	#4	2	8'-5"	34
*S7	12	#5	STR	3'-8"	46
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23

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

BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	8500 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
SPAN B	1891	18.1	38

GIRDERS REQUIRED

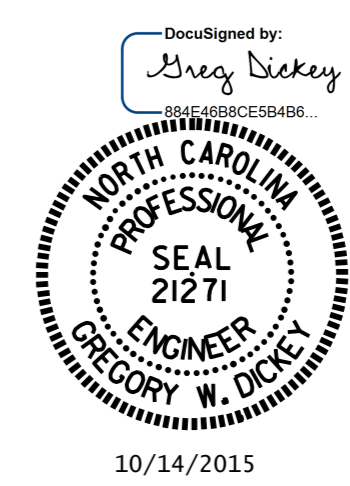
STAGE	NUMBER	LENGTH	TOTAL LENGTH
I	8	89'-2"	713'-4"
II	11	89'-2"	980'-10"

PROJECT NO. I-3318BB
JOHNSTON COUNTY
STATION: 24+68.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
(SPAN B)



ASSEMBLED BY: D. G. ELY DATE: 10/8/14
CHECKED BY: B. N. BARODAWALA DATE: 5/15
DESIGN ENGINEER OF RECORD: M. L. RORIE DATE: 8/15

DRAWN BY: ELR 8/91 REV. 10/17/00R RWW/LES
CHECKED BY: GRP 8/91 REV. 5/1/06R TLA/GM
REV. 10/1/11 MAA/GM

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

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

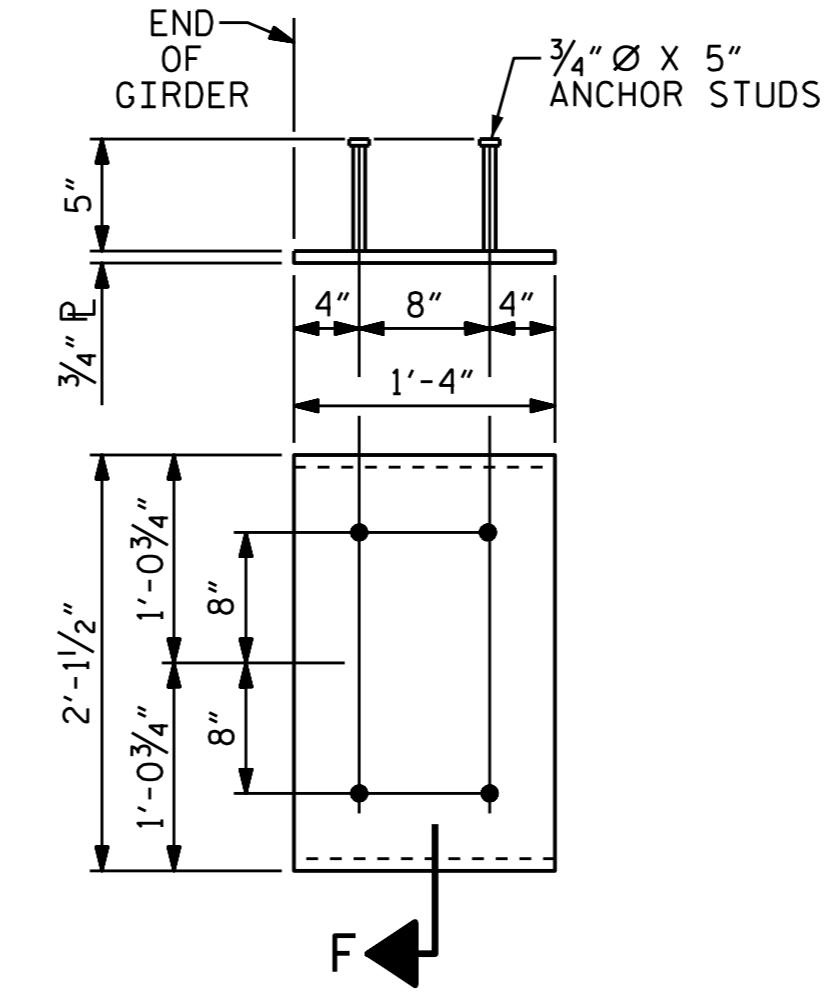
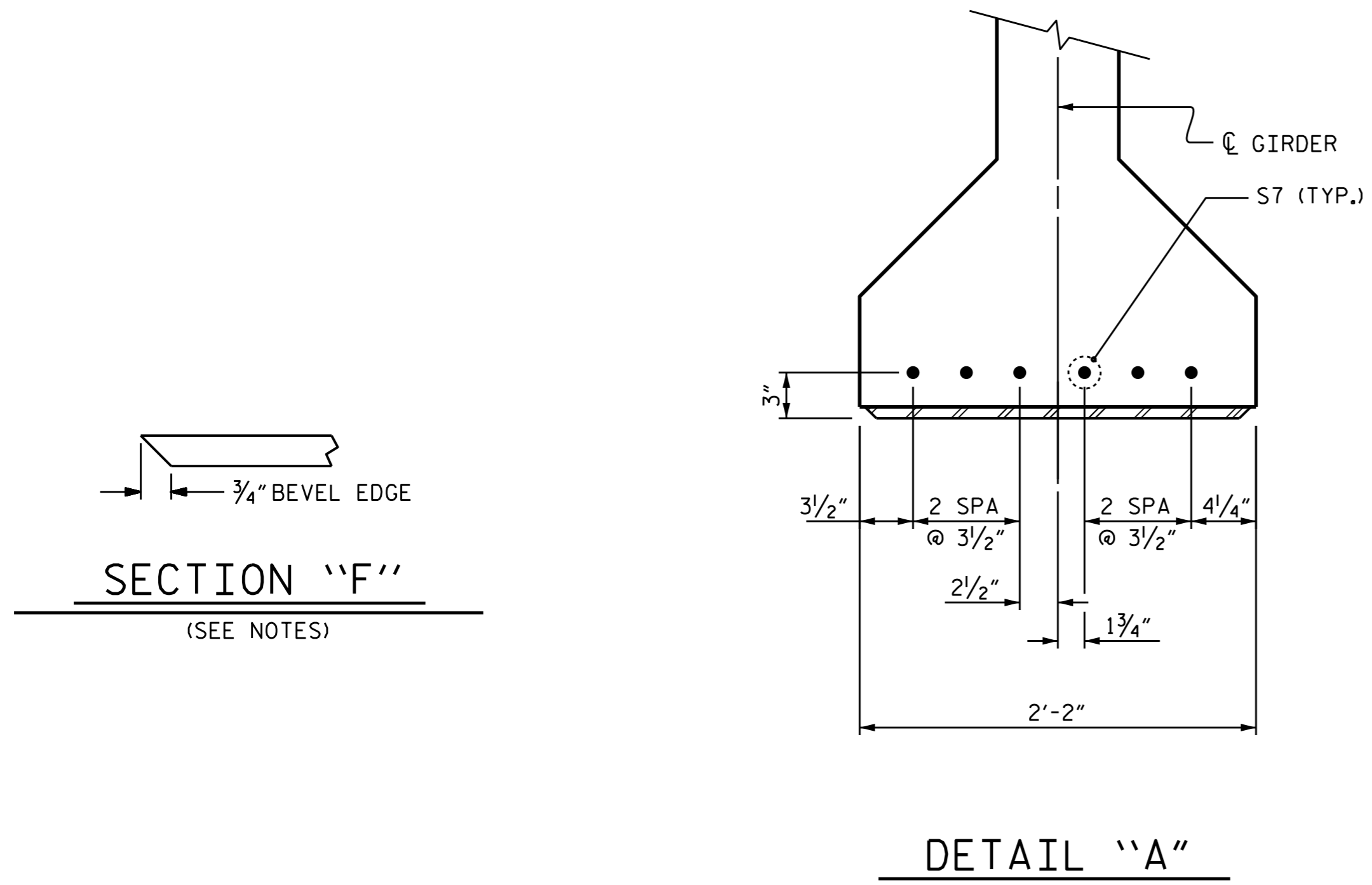
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5800 PSI.

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 4500 lbs.



EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER
(2 REQ'D PER GIRDER)

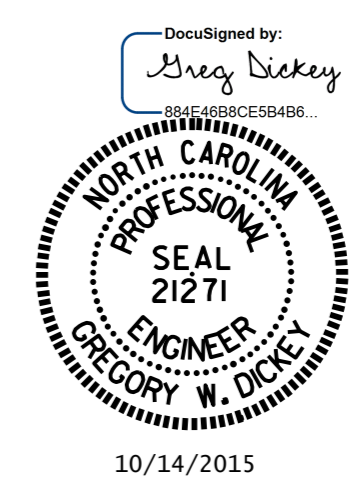
DEAD LOAD DEFLECTION TABLE
SPANS A, B & C

	GIRDERS 1 & 19											GIRDERS 2, 3, 17 & 18										GIRDERS 4 & 16											
	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE)	0	0.062	0.110	0.144	0.164	0.171	0.164	0.144	0.110	0.062	0	0	0.062	0.110	0.144	0.164	0.171	0.164	0.144	0.110	0.062	0	0	0.062	0.110	0.144	0.164	0.171	0.164	0.144	0.110	0.062	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	0	0.033	0.062	0.085	0.100	0.105	0.100	0.085	0.062	0.033	0	0	0.037	0.070	0.096	0.112	0.118	0.112	0.096	0.070	0.037	0	0	0.030	0.056	0.077	0.090	0.095	0.090	0.077	0.056	0.030	0
FINAL CAMBER	0	3/8"	9/16"	1 1/16"	3/4"	13/16"	3/4"	1 1/16"	9/16"	3/8"	0	0	5/16"	1/2"	9/16"	5/8"	5/8"	5/8"	9/16"	1/2"	5/16"	0	0	3/8"	5/8"	13/16"	7/8"	15/16"	7/8"	13/16"	5/8"	3/8"	0
	GIRDER 5											GIRDERS 6, 7 & 8										GIRDER 9											
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE)	0	0.062	0.110	0.144	0.164	0.171	0.164	0.144	0.110	0.062	0	0	0.062	0.110	0.144	0.164	0.171	0.164	0.144	0.110	0.062	0	0	0.062	0.110	0.144	0.164	0.171	0.164	0.144	0.110	0.062	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	0	0.030	0.057	0.078	0.091	0.095	0.091	0.078	0.057	0.030	0	0	0.039	0.074	0.102	0.119	0.125	0.119	0.102	0.074	0.039	0	0	0.030	0.057	0.078	0.092	0.096	0.092	0.078	0.057	0.030	0
FINAL CAMBER	0	3/8"	5/8"	13/16"	7/8"	15/16"	7/8"	13/16"	5/8"	3/8"	0	0	1/4"	7/16"	1/2"	9/16"	9/16"	9/16"	1/2"	7/16"	1/4"	0	0	3/8"	5/8"	13/16"	7/8"	7/8"	7/8"	13/16"	5/8"	3/8"	0
	GIRDER 10											GIRDERS 11, 12, 13 & 14										GIRDER 15											
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE)	0	0.062	0.110	0.144	0.164	0.171	0.164	0.144	0.110	0.062	0	0	0.062	0.110	0.144	0.164	0.171	0.164	0.144	0.110	0.062	0	0	0.062	0.110	0.144	0.164	0.171	0.164	0.144	0.110	0.062	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	0	0.027	0.051	0.069	0.081	0.085	0.081	0.069	0.051	0.027	0	0	0.035	0.066	0.090	0.105	0.111	0.105	0.090	0.066	0.035	0	0	0.028	0.052	0.072	0.084	0.088	0.084	0.072	0.052	0.028	0
FINAL CAMBER	0	7/16"	1 1/16"	7/8"	1"	1 1/16"	1"	7/8"	1 1/16"	7/16"	0	0	5/16"	1/2"	5/8"	1 1/16"	3/4"	1 1/16"	5/8"	1/2"	5/16"	0	0	7/16"	1 1/16"	7/8"	15/16"	1"	15/16"	7/8"	1 1/16"	7/16"	0

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

PROJECT NO. I-3318BB
JOHNSTON COUNTY
STATION: 24+68.00 -L-

SHEET 3 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
DETAILS

ASSEMBLED BY : D. G ELY	DATE : 4/20/15
CHECKED BY : B. N. BARODAWALA	DATE : 5/15
DESIGN ENGINEER OF RECORD : M. L. RORIE	DATE : 8/15
DRAWN BY : ELR 11/91	REV. 10/11/11 MAA/GM
CHECKED BY : GRP 11/91	REV. 1/15 MAA/TMG
	REV. 2/15 MAA/TMG

REVISIONS						SHEET NO. S-31
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 78
2			4			

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.

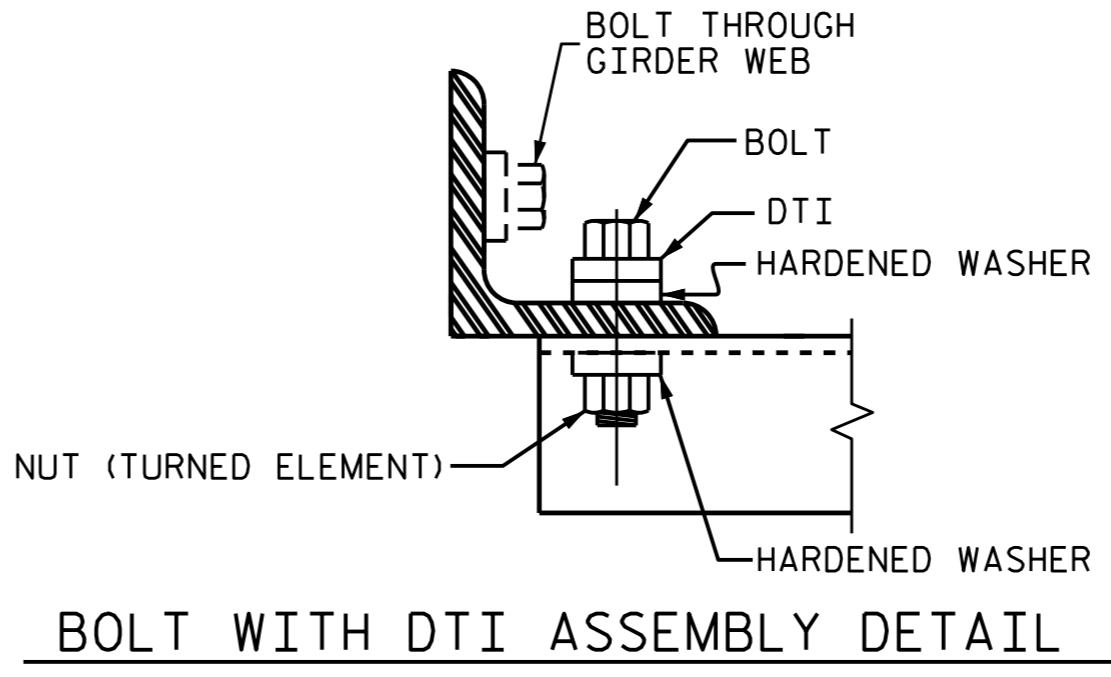
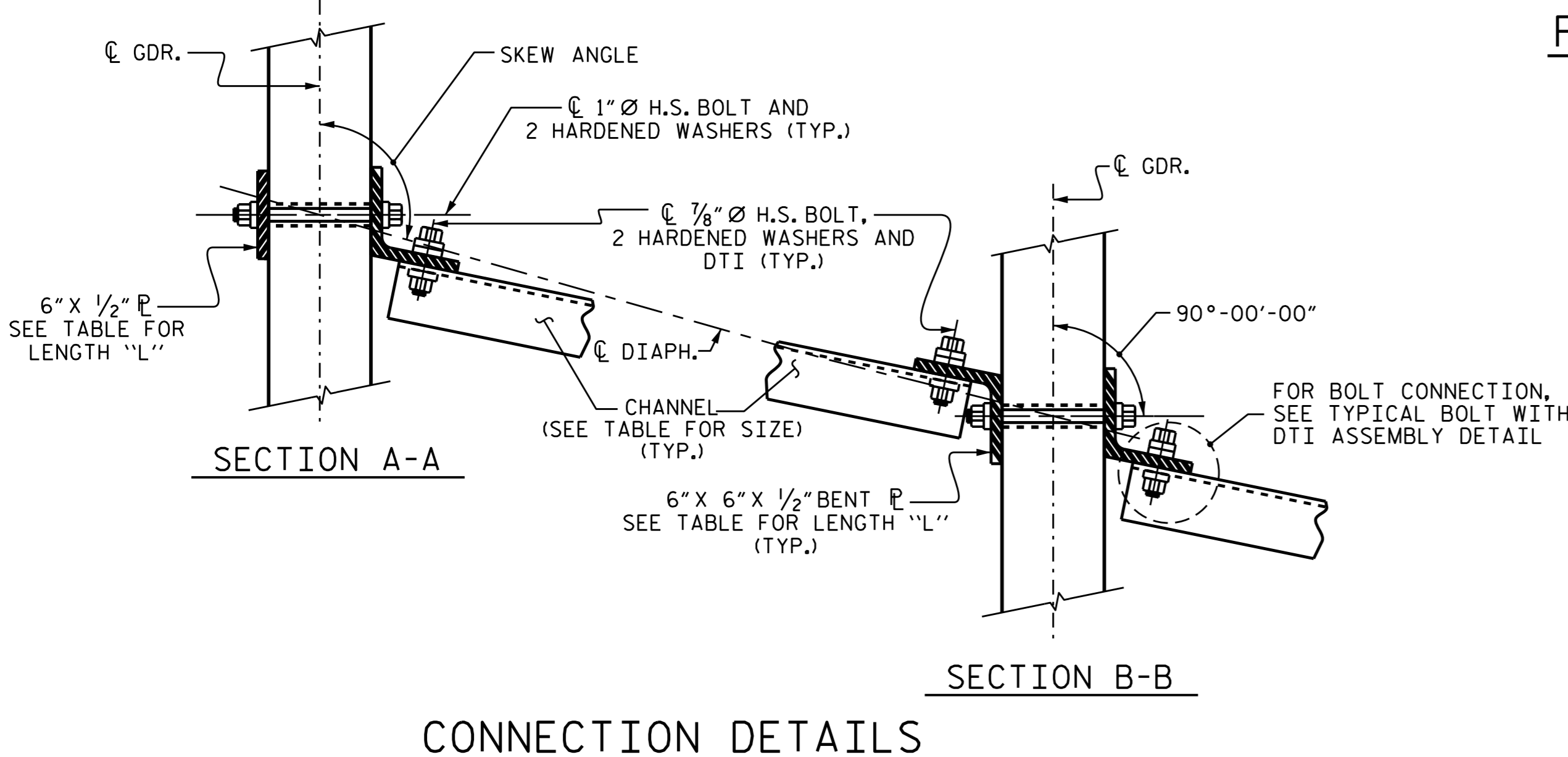
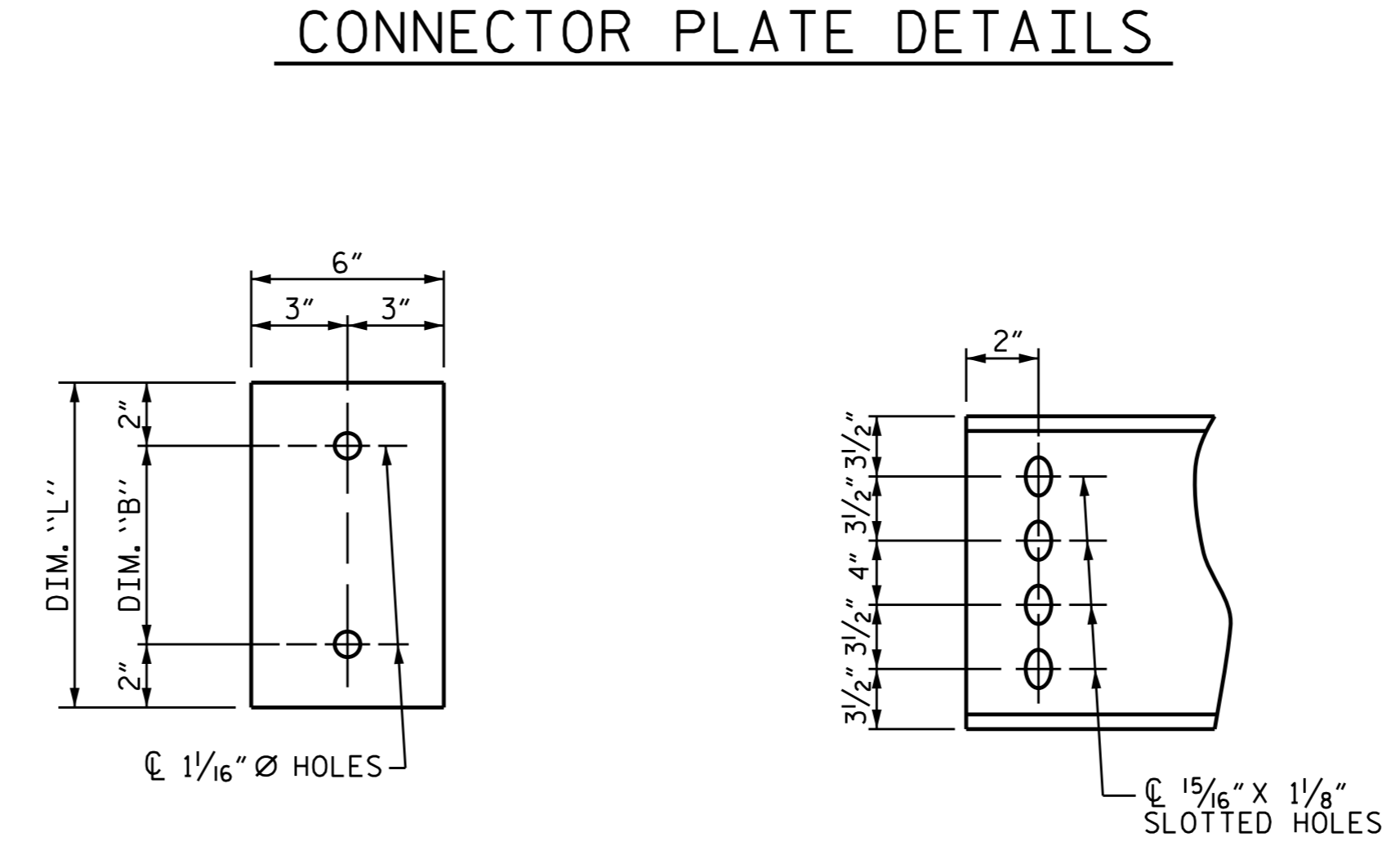
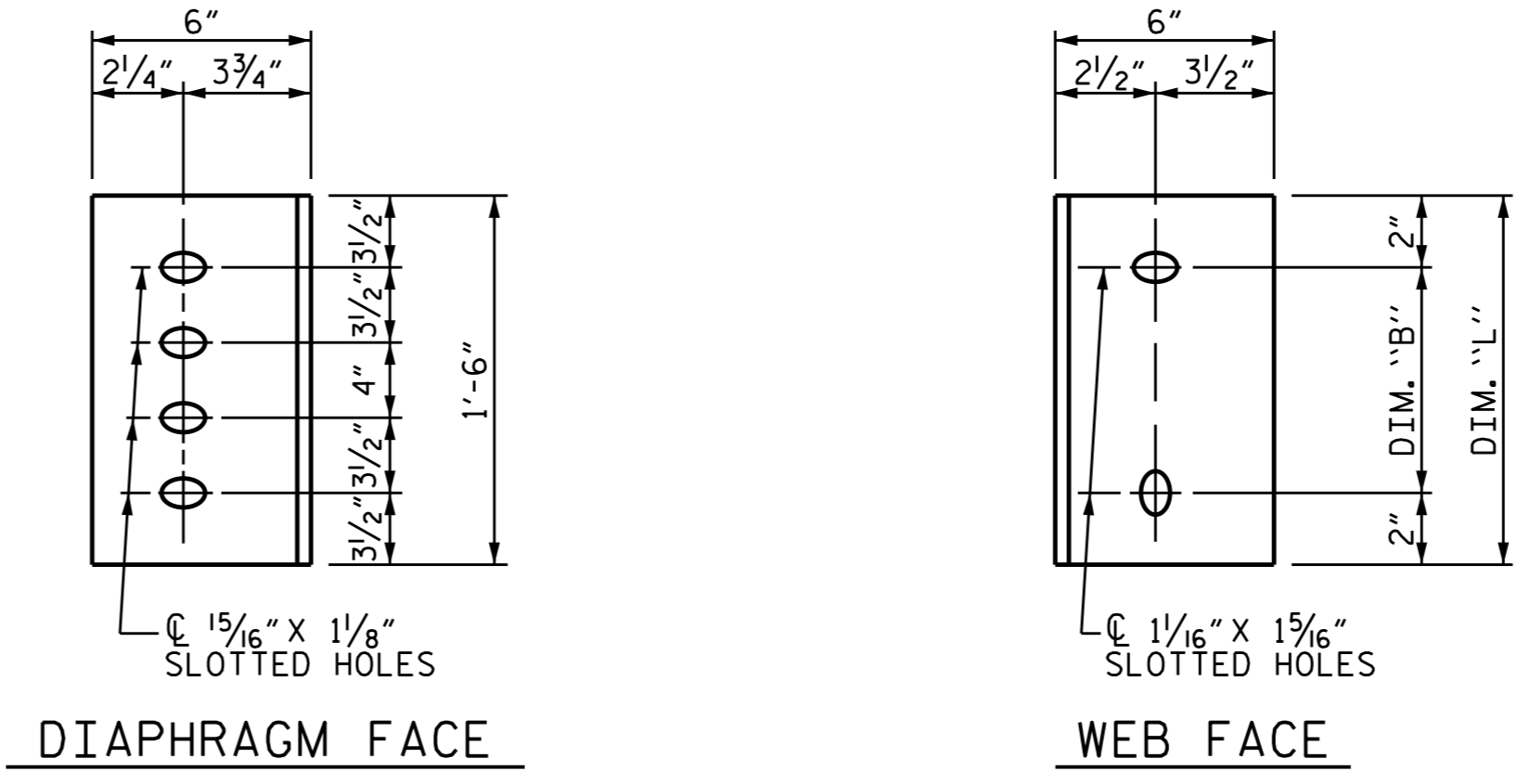
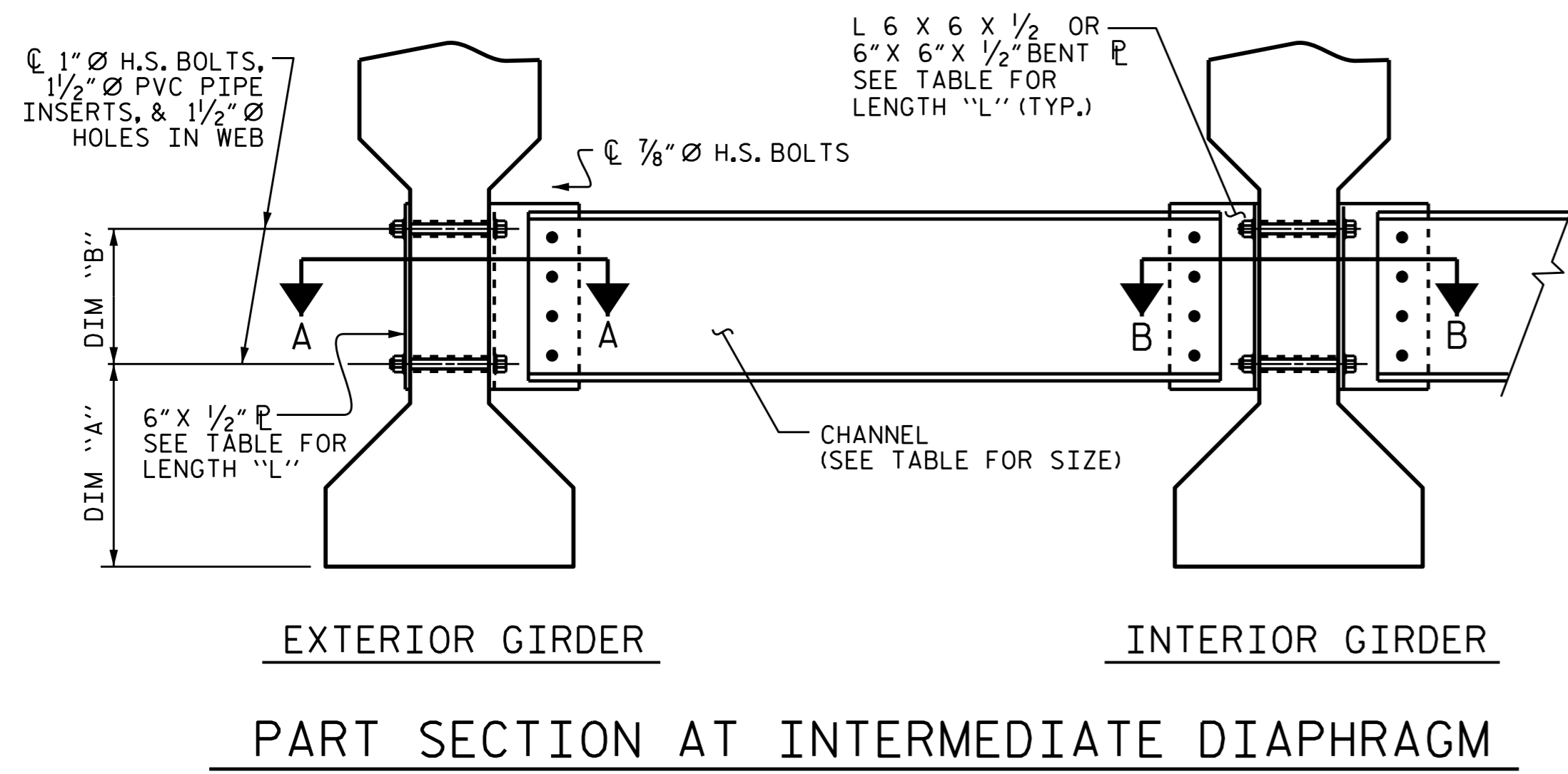
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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.



TABLE

GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
IV	MC 18 x 42.7	1'-9 1/2"	1'-2"	1'-6"

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 INTERMEDIATE
 STEEL DIAPHRAGMS
 FOR TYPE IV
 PRESTRESSED CONCRETE
 GIRDERS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			78

ASSEMBLED BY : D. G. ELY DATE : 10/9/14
 CHECKED BY : B. N. BARODAWALA DATE : 3/15
 DRAWN BY : TLA 6/05
 CHECKED BY : VC 6/05
 ADDED 10/21/05
 REV. 5/1/06RRR KMM/GM
 REV. 10/1/11 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.

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

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

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

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

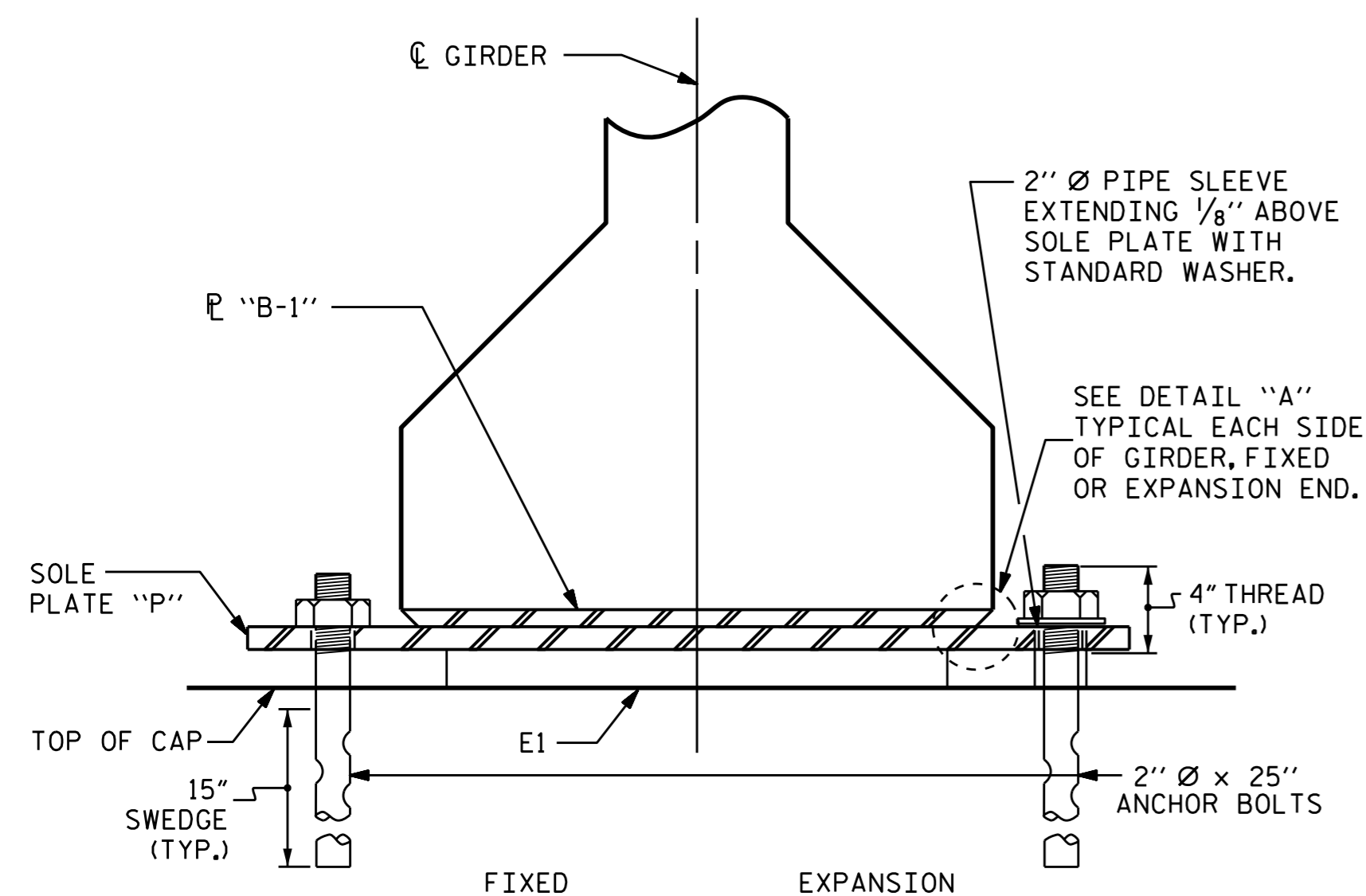
SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

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

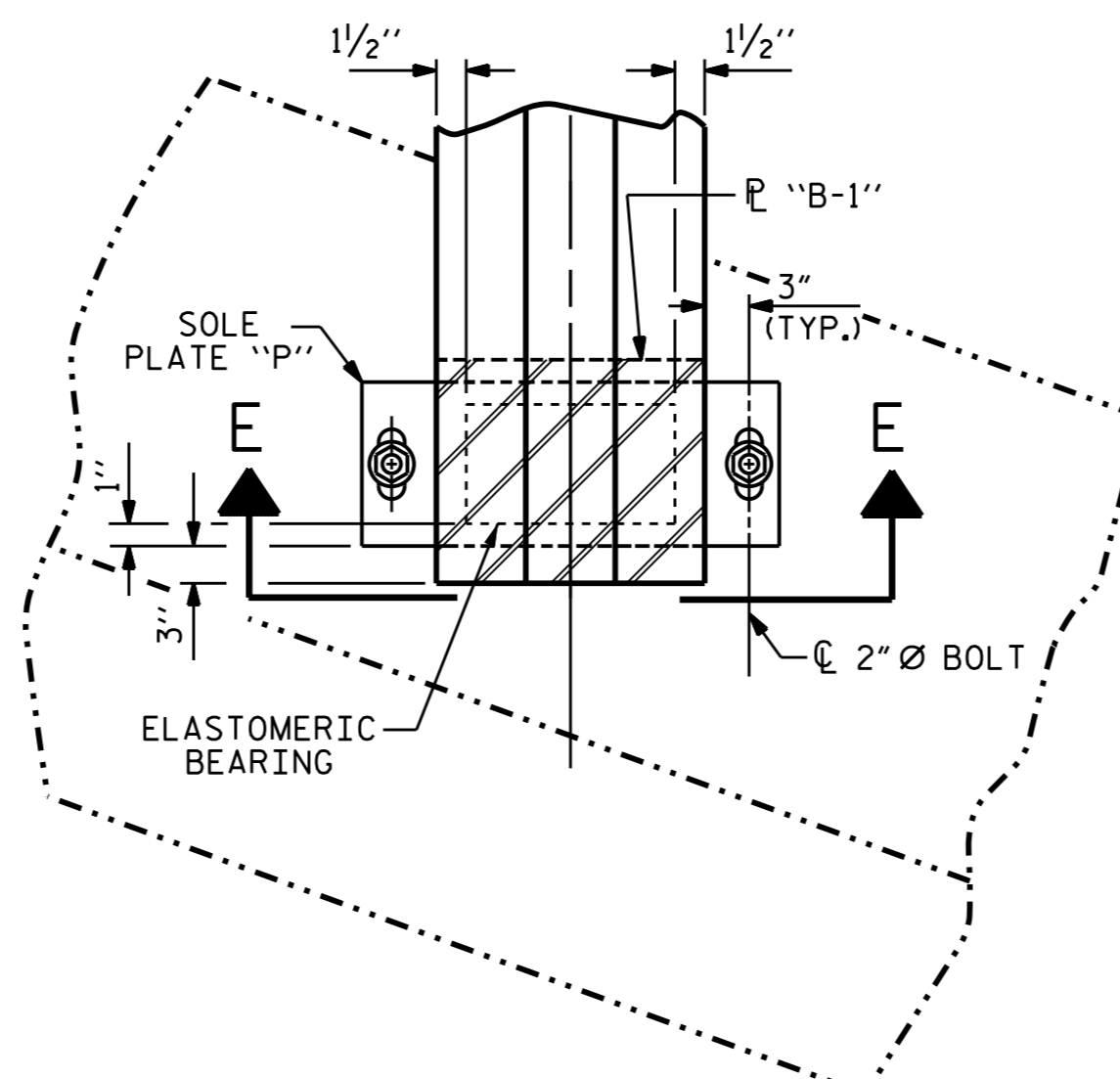
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

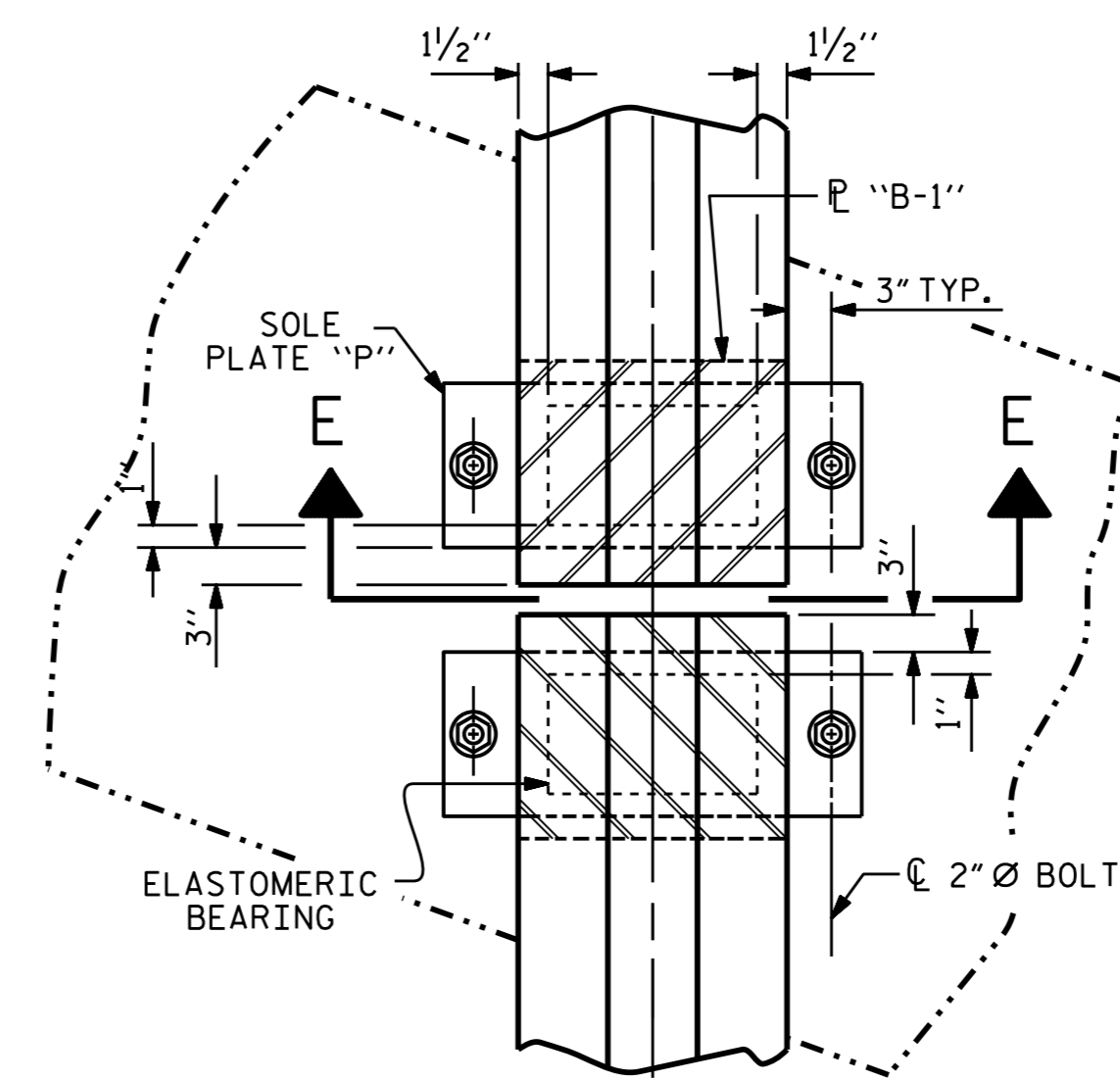
FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.



SECTION E-E

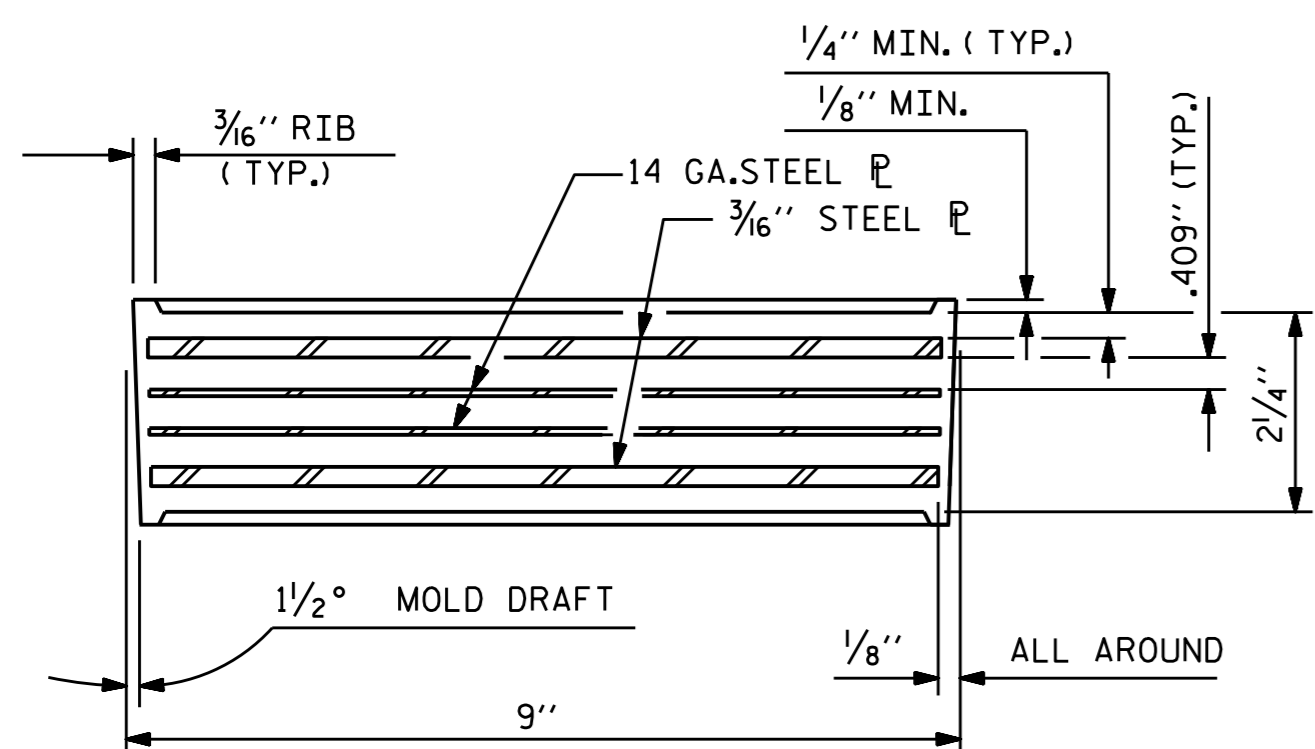


AT END BENT
EXPANSION

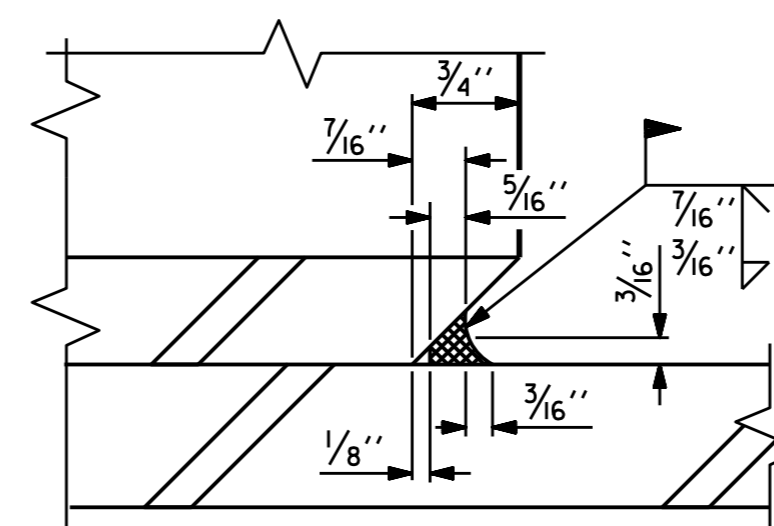


AT BENT
FIXED

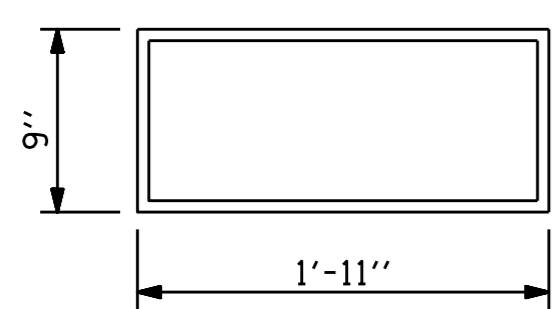
PLAN



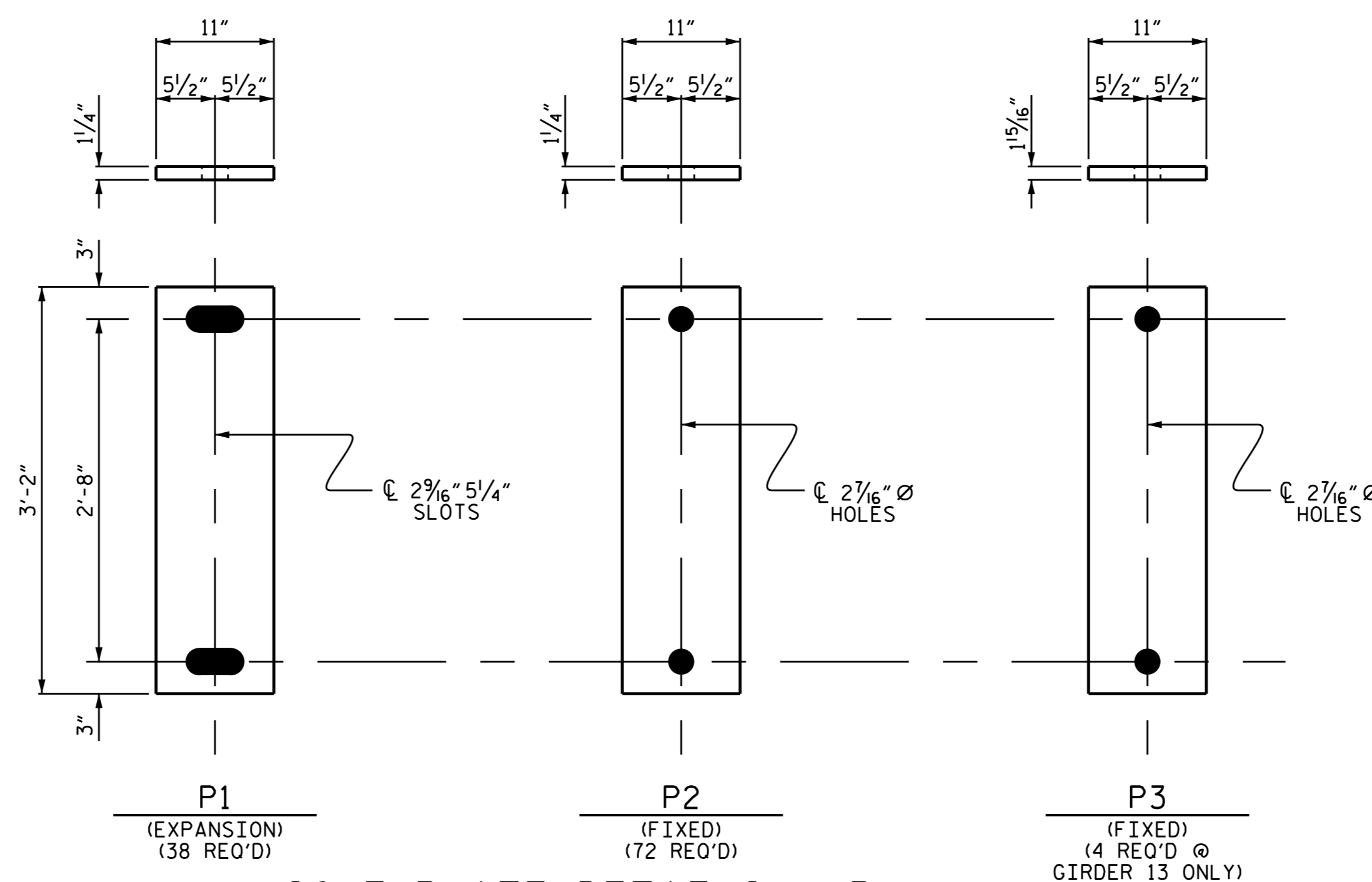
TYPICAL SECTION OF ELASTOMERIC BEARINGS



DETAIL "A"



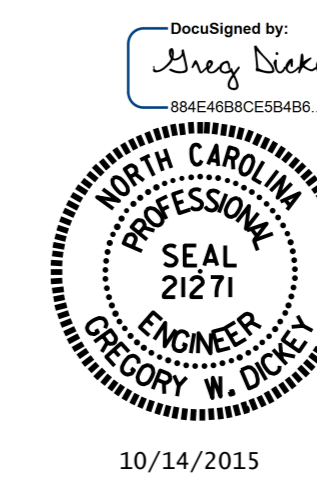
E1 (114 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE V



SOLE PLATE DETAILS ("P")

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE V	320 k

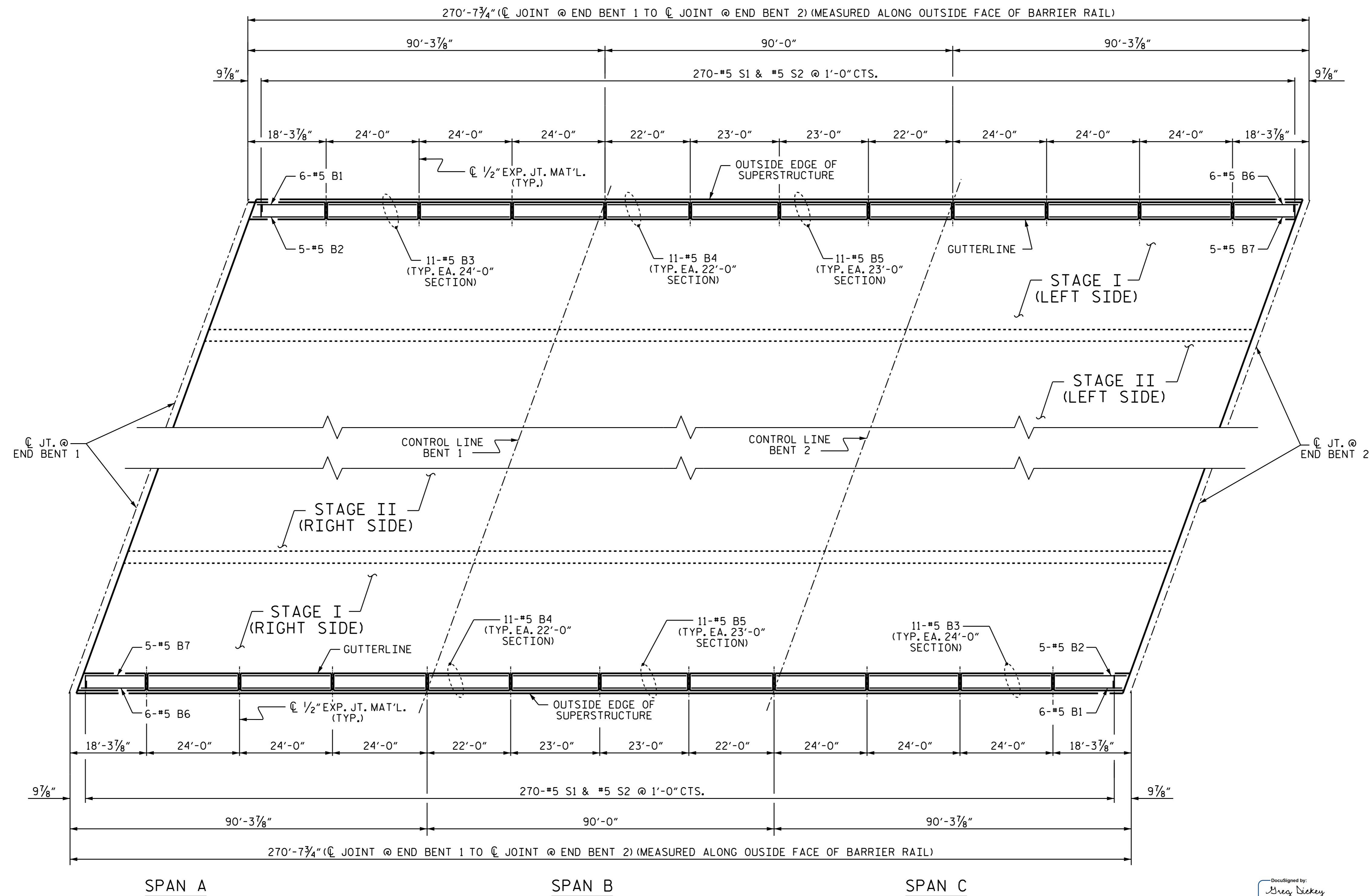
PROJECT NO. I-3318BB
JOHNSTON COUNTY
STATION: 24+68.00 -L-



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

REVISIONS						SHEET NO. S-33
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 78
2			4			

ASSEMBLED BY : D. G. ELY	DATE : 4/20/15
CHECKED BY : B. N. BARODAWALA	DATE : 5/15
DESIGN ENGINEER OF RECORD : M. L. RORIE	DATE : 8/15
DRAWN BY : EEM 2/97	REV. 10/1/11 MAA/GM
CHECKED BY : VAP 2/97	REV. 6/13 AAC/MAA
	REV. 1/15 MAA/TMG



PLAN OF BARRIER RAIL

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 1 OF 2

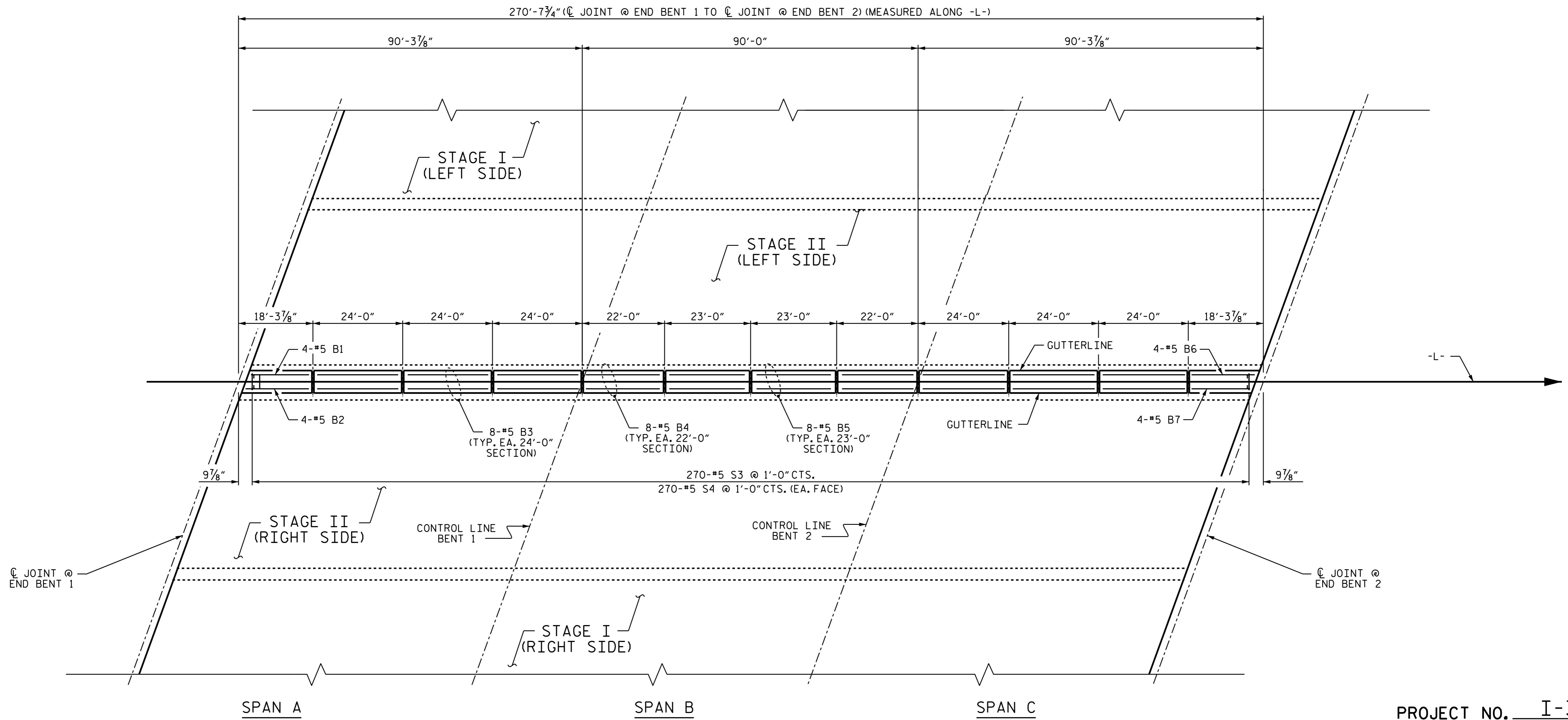


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CONCRETE
 BARRIER RAIL

DRAWN BY: D. G. ELY DATE: 10/15
 CHECKED BY: G. W. DICKEY DATE: 10/15
 DESIGN ENGINEER OF RECORD: M. L. RORIE DATE: 10/15

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34
1			3			TOTAL SHEETS
2			4			78

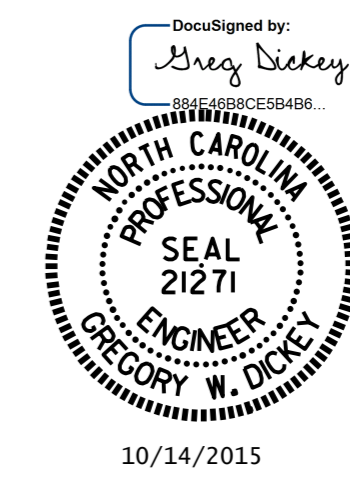
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 kpaschal



PLAN
STAGE II

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

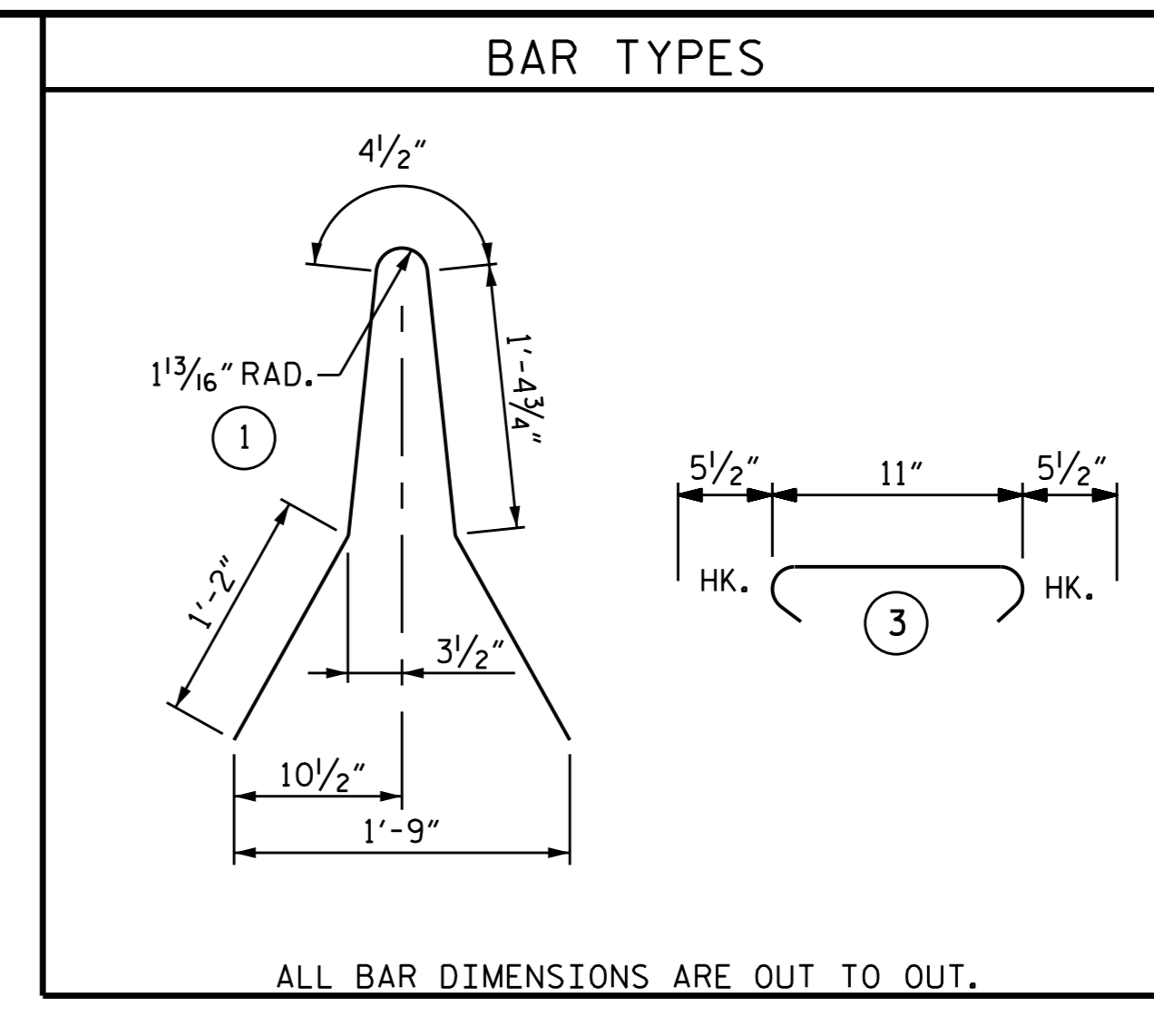
SHEET 1 OF 2



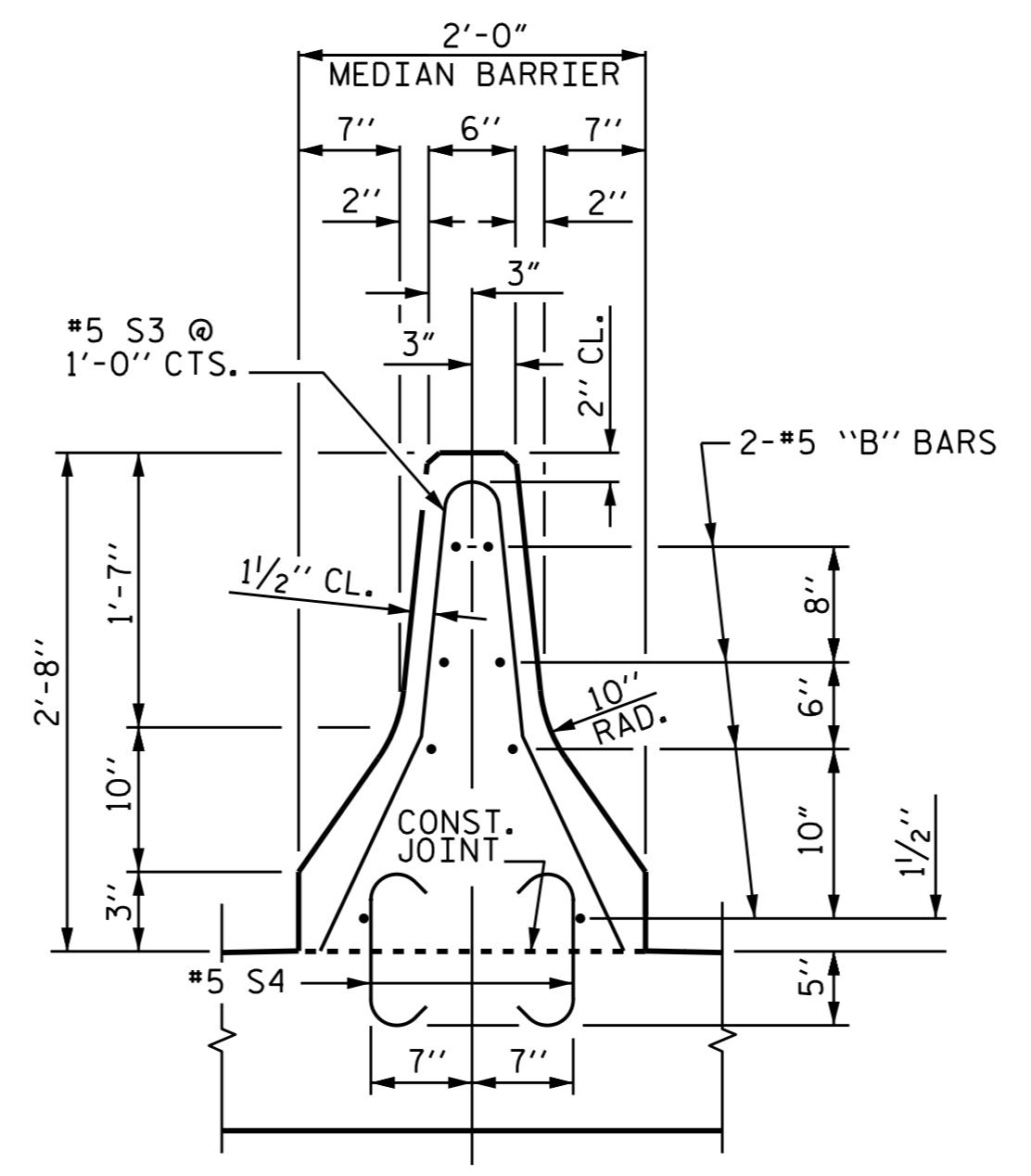
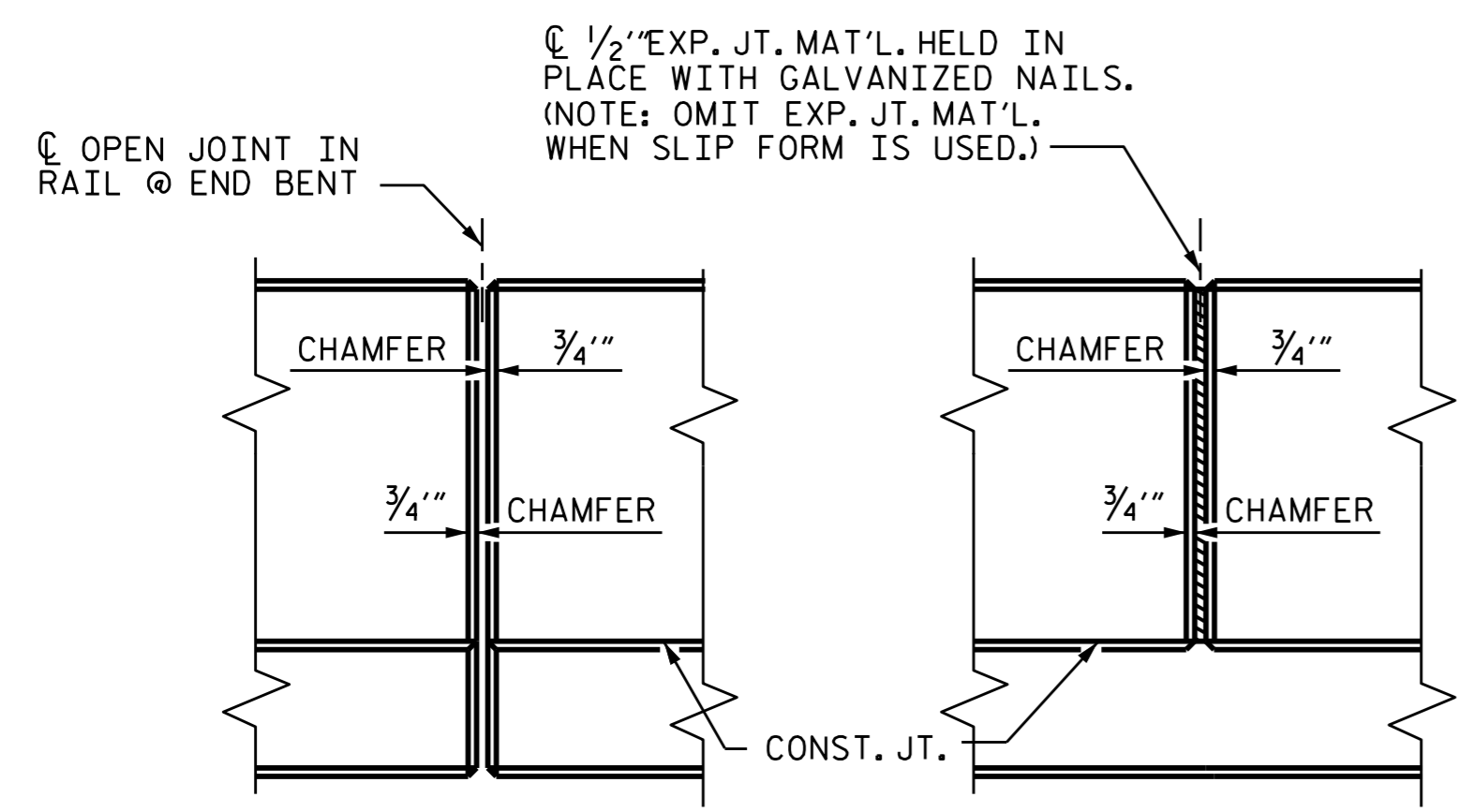
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 CONCRETE MEDIAN
 BARRIER

DRAWN BY : D. G. ELY DATE : 3/25/15
 CHECKED BY : B. N. BARODAWALA DATE : 5/15
 DESIGN ENGINEER OF RECORD: M. L. RORIE DATE : 8/15

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36
1			3			TOTAL SHEETS
2			4			78



BILL OF MATERIAL					
STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	4	#5	STR	17'-8"	74
*B2	4	#5	STR	18'-0"	75
*B3	48	#5	STR	23'-7"	1181
*B4	16	#5	STR	21'-7"	360
*B5	16	#5	STR	22'-7"	377
*B6	4	#5	STR	17'-9"	74
*B7	4	#5	STR	17'-6"	73
*S3	270	#5	1	5'-6"	1549
*S4	540	#5	3	1'-10"	1033
*EPOXY COATED REINFORCING STEEL LBS. 4796					
CLASS AA CONCRETE CU. YDS. 27.5					
CONCRETE MEDIAN BARRIER					
BRIDGE DECK				LIN. FT.	270.64
APPROACH SLABS				LIN. FT.	20.7
TOTAL				LIN. FT.	291.34



NOTES

- THE MEDIAN BARRIER RAILS IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT UNIT HAS BEEN CAST AND HAS REACHED MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.
- THE JOINT IN THE DECK SHALL BE FORMED PRIOR TO THE CASTING OF MEDIAN BARRIER RAIL.
- ALL REINFORCING STEEL IN MEDIAN BARRIER RAIL SHALL BE EPOXY COATED.
- VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE MEDIAN BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT EACH THIRD POINT BETWEEN MEDIAN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF MEDIAN BARRIER SEGMENT LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.
- FOR MEDIAN BARRIER RAIL ON APPROACH SLABS, SEE APPROACH SLAB SHEETS.
- *#5 "S" BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO EXPANSION JOINT SEALS AND TO THE 1/2" EXPANSION JOINT MATERIAL IN MEDIAN BARRIER RAIL.
- FOR APPLICATION OF BRIDGE COATING, SEE SPECIAL PROVISIONS.

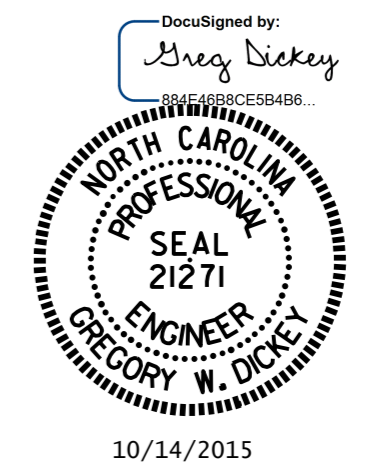
PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 2 OF 2

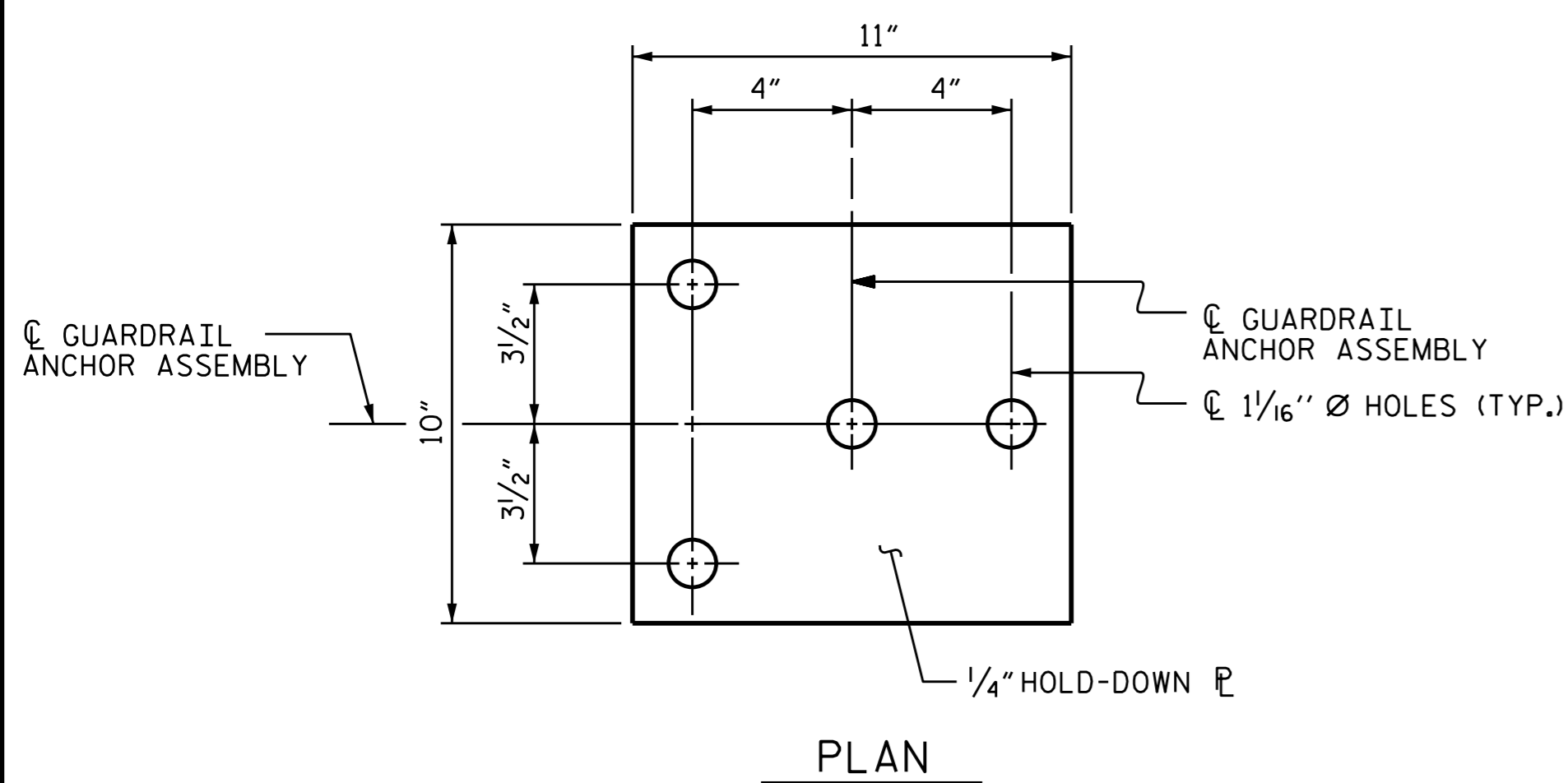
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 CONCRETE MEDIAN BARRIER

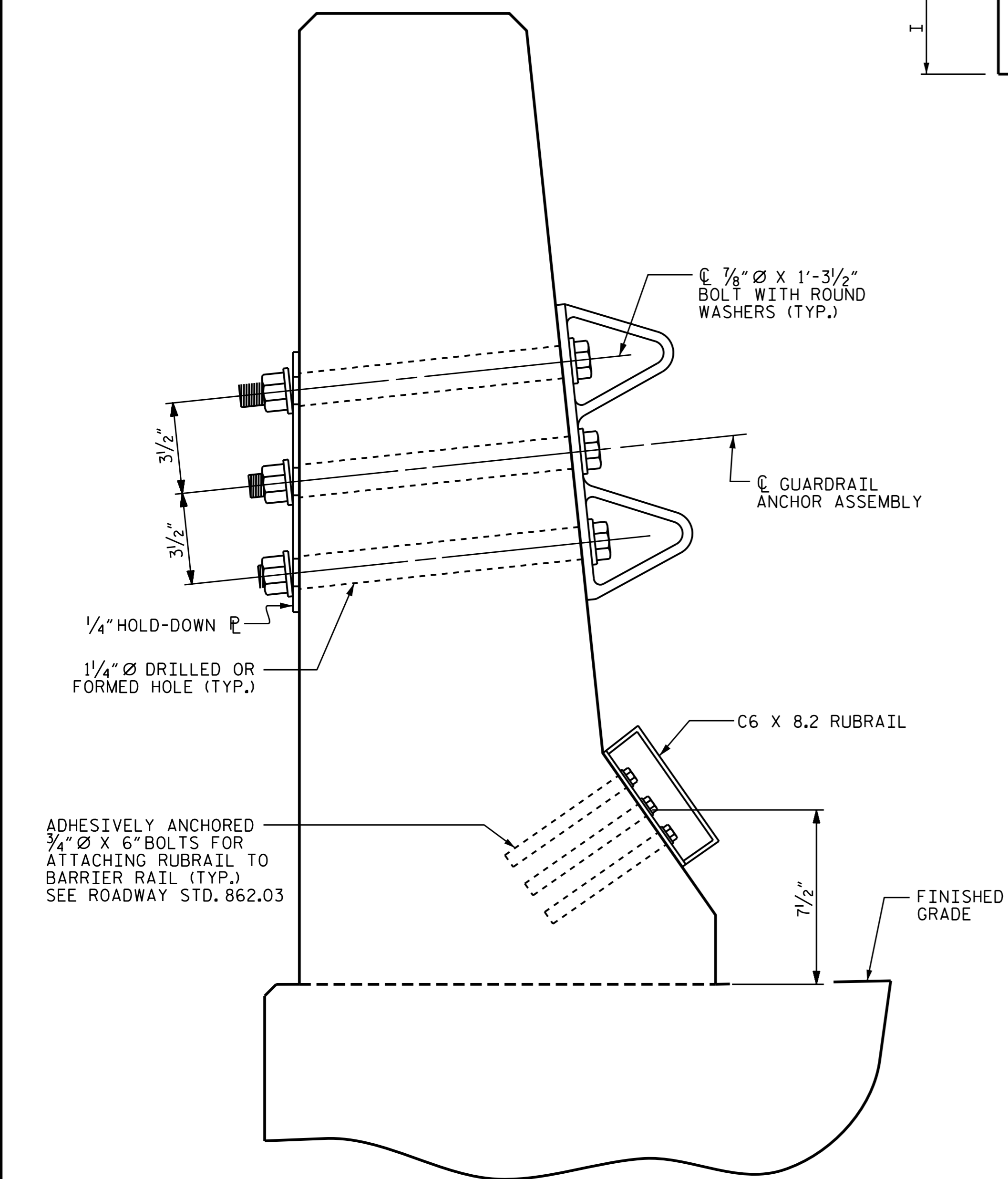
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-37	
1			3			TOTAL SHEETS	
2			4			78	



DRAWN BY : D. G. ELY DATE : 3/27/15
 CHECKED BY : B. N. BARODAWALA DATE : 5/15
 DESIGN ENGINEER OF RECORD : M. L. RORIE DATE : 8/15

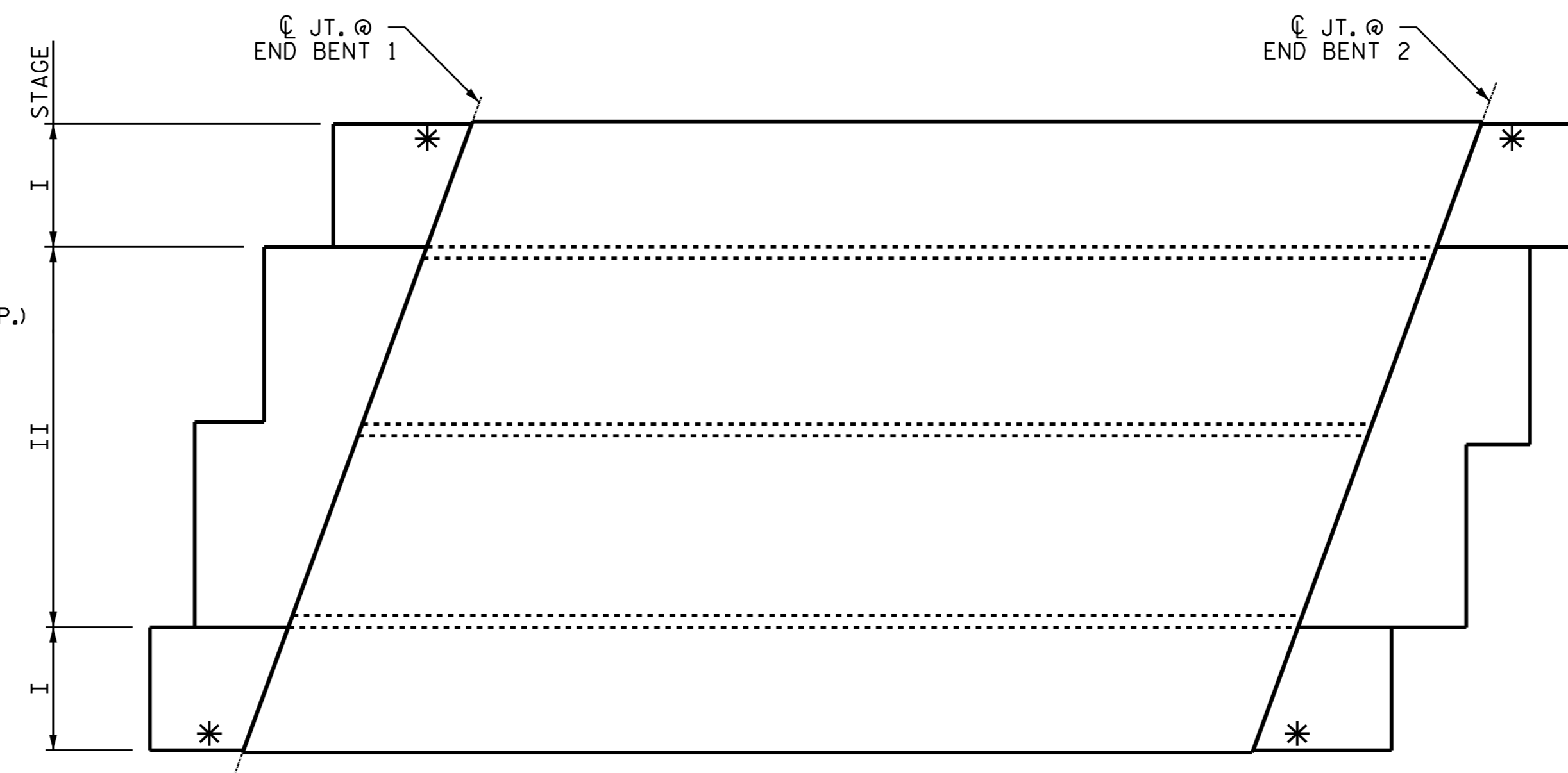


PLAN

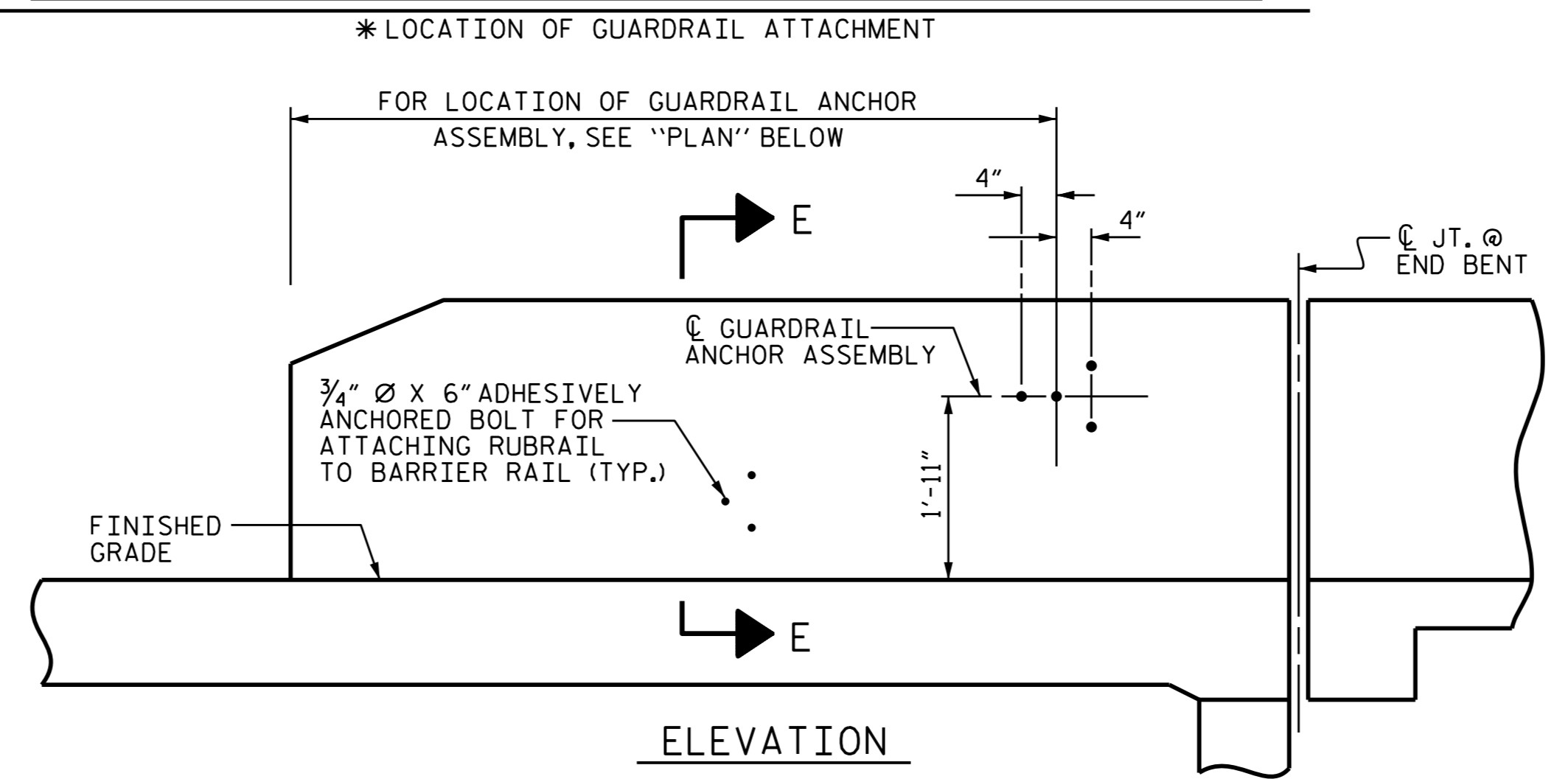


SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS

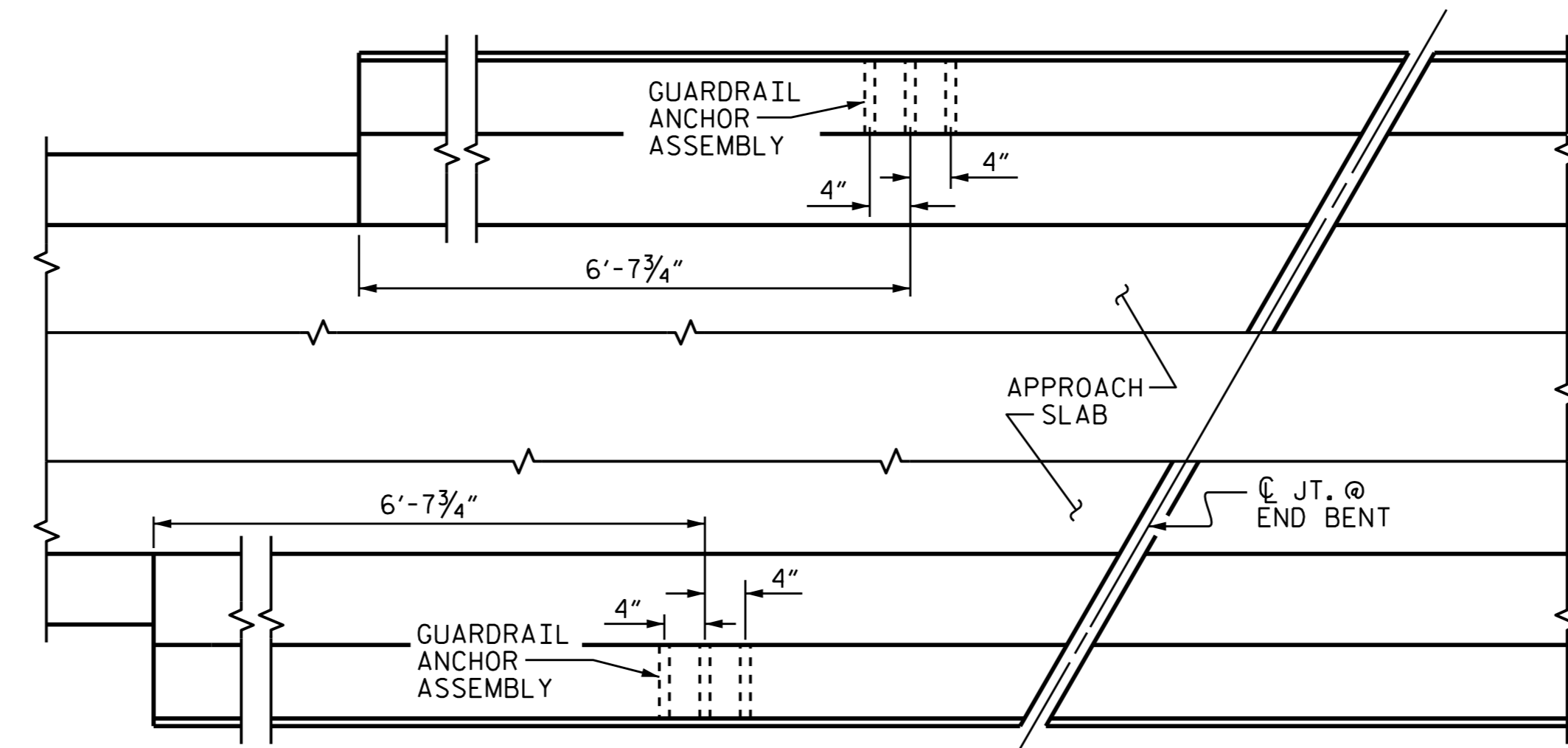
ASSEMBLED BY : D. G. ELY	DATE : 4/21/15
CHECKED BY : B. N. BARODAWALA	DATE : 5/15
DRAWN BY : TLA	5/06
CHECKED BY : GM	5/06
REV. 10/1/11	MAA/GM
REV. 7/12	MAA/GM
REV. 6/13	MAA/GM



SKETCH SHOWING POINTS OF ATTACHMENT



ELEVATION



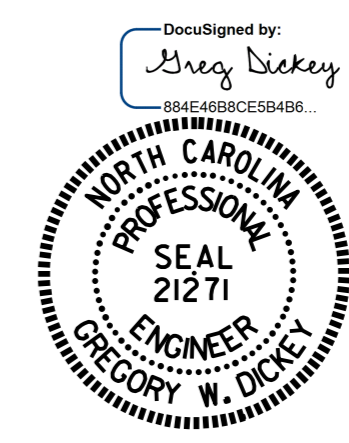
PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.

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 M11.
- 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 1/4" 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.



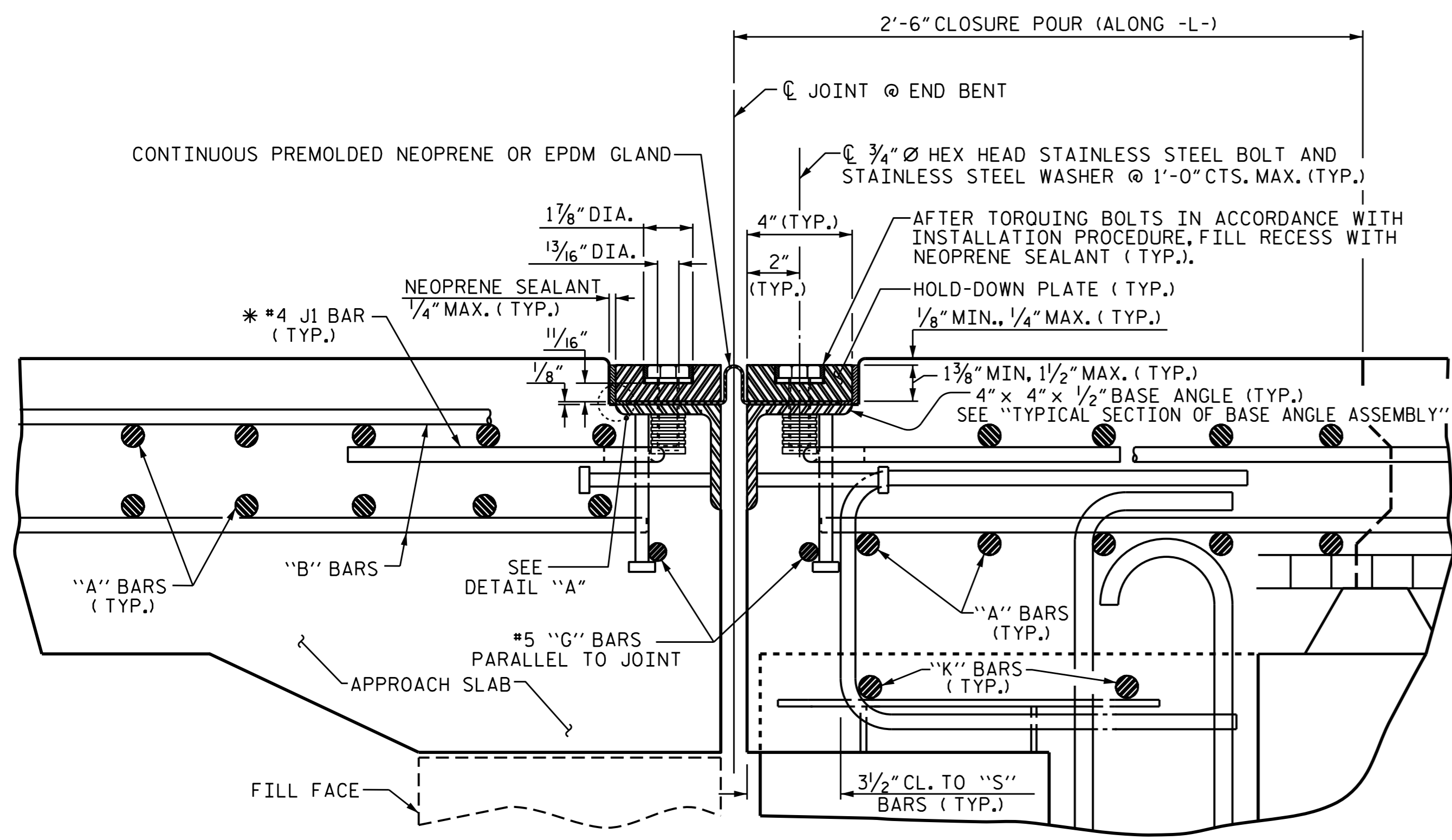
10/14/2015

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

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

REVISIONS						SHEET NO. S-38
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 78
2			4			

(SHT 3b) STD. NO. GRA2



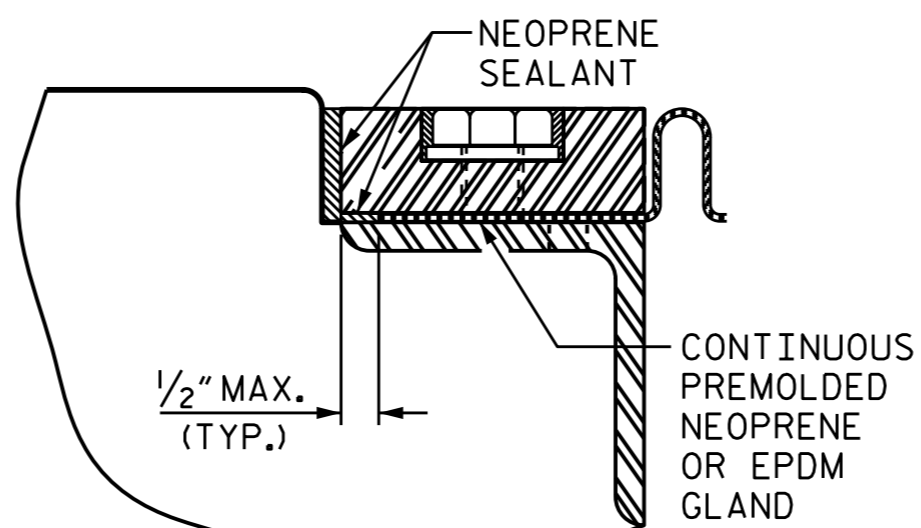
EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT -- PRESTRESSED GIRDER SUPERSTRUCTURE

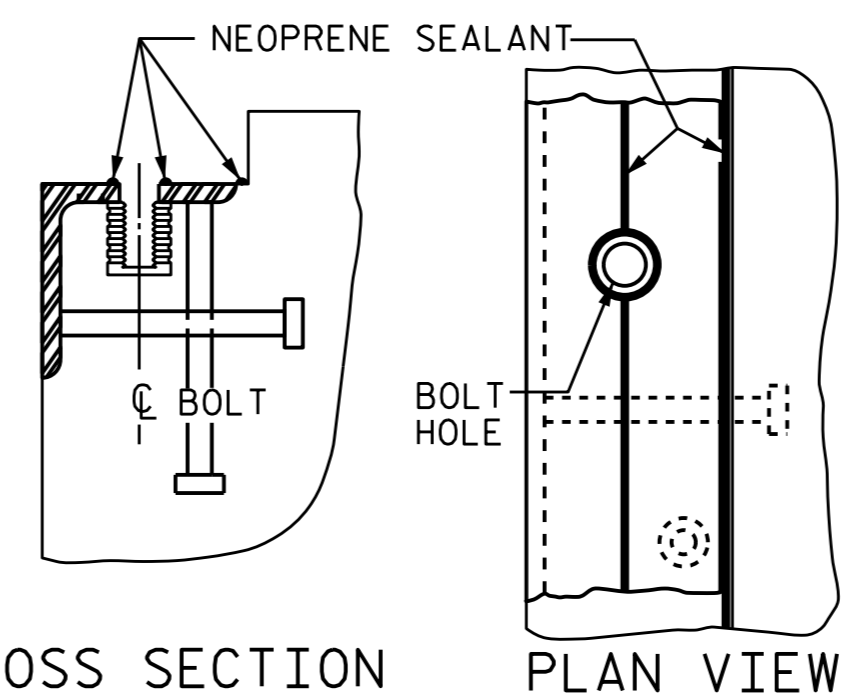
* THE QUANTITY OF #4 J1 BARS ON THE BILL OF MATERIAL IS BASED ON 1'-0" CENTERS. J1 BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF J1 BARS SPECIFIED, ADDITIONAL J1 BARS WILL NOT BE REQUIRED.

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

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

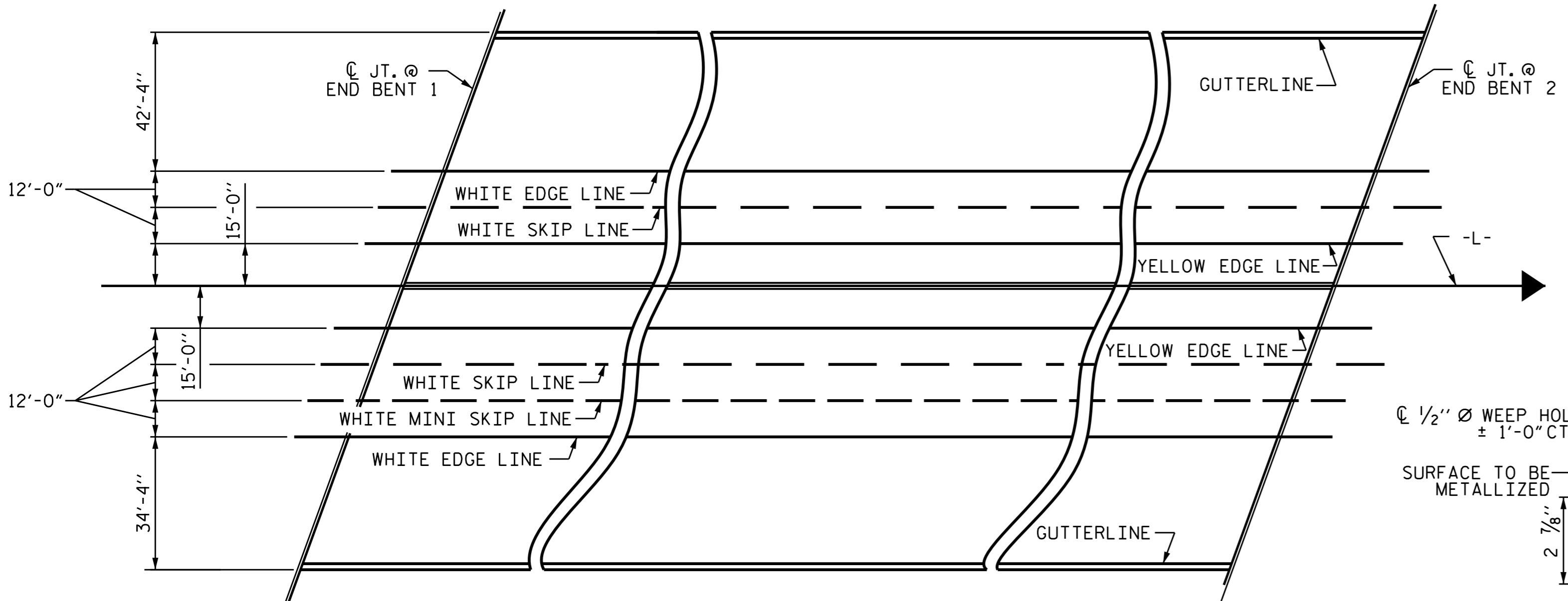


DETAIL "A"



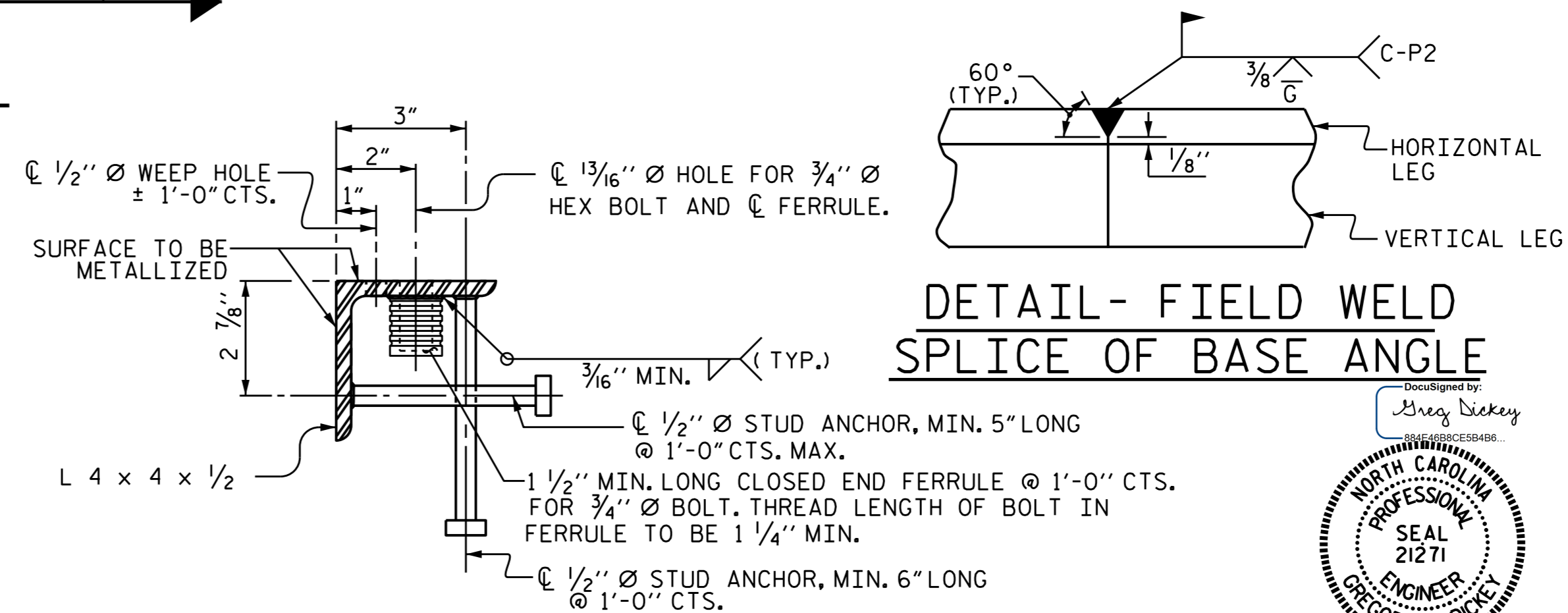
CROSS SECTION
PLAN VIEW
INSTALLATION SKETCH

CONTRACTOR SHALL PROVIDE SACRIFICIAL JOINT MEMBRANE MATERIAL TO BE USED IN STAGE I AND INSTALL A FULL WIDTH JOINT MEMBRANE FOR THE FINISHED STRUCTURE.

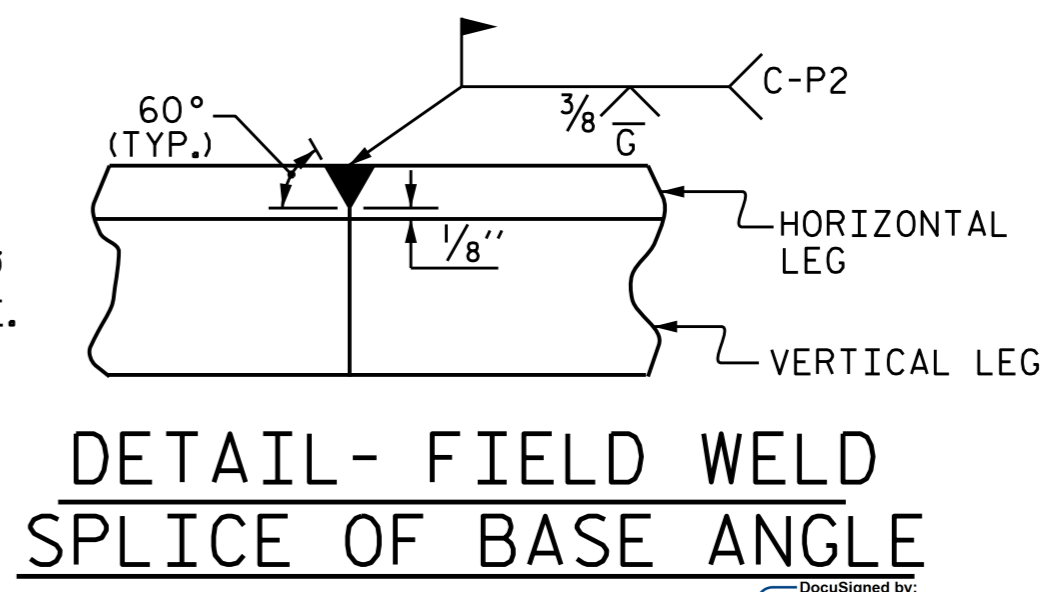


PAVEMENT MARKING ALIGNMENT SKETCH

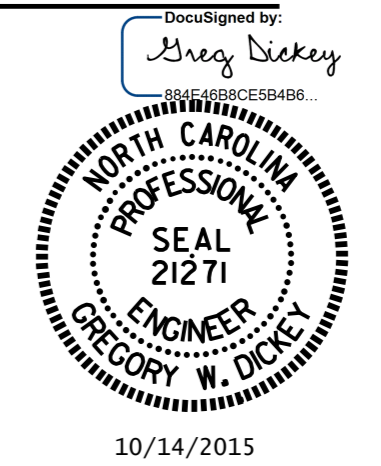
MOVEMENT AND SETTING AT JOINT					
LOCATION	SKEW ANGLE	TOTAL MOVEMENT (ALONG C/RDWAY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
END BENT 1	110°-00'-00"	1 3/16"	1 1/16"	1 1/16"	1 1/8"
END BENT 2	110°-00'-00"	1 3/16"	1 1/16"	1 1/16"	1 1/8"



TYPICAL SECTION OF BASE ANGLE ASSEMBLY



DETAIL- FIELD WELD SPLICE OF BASE ANGLE



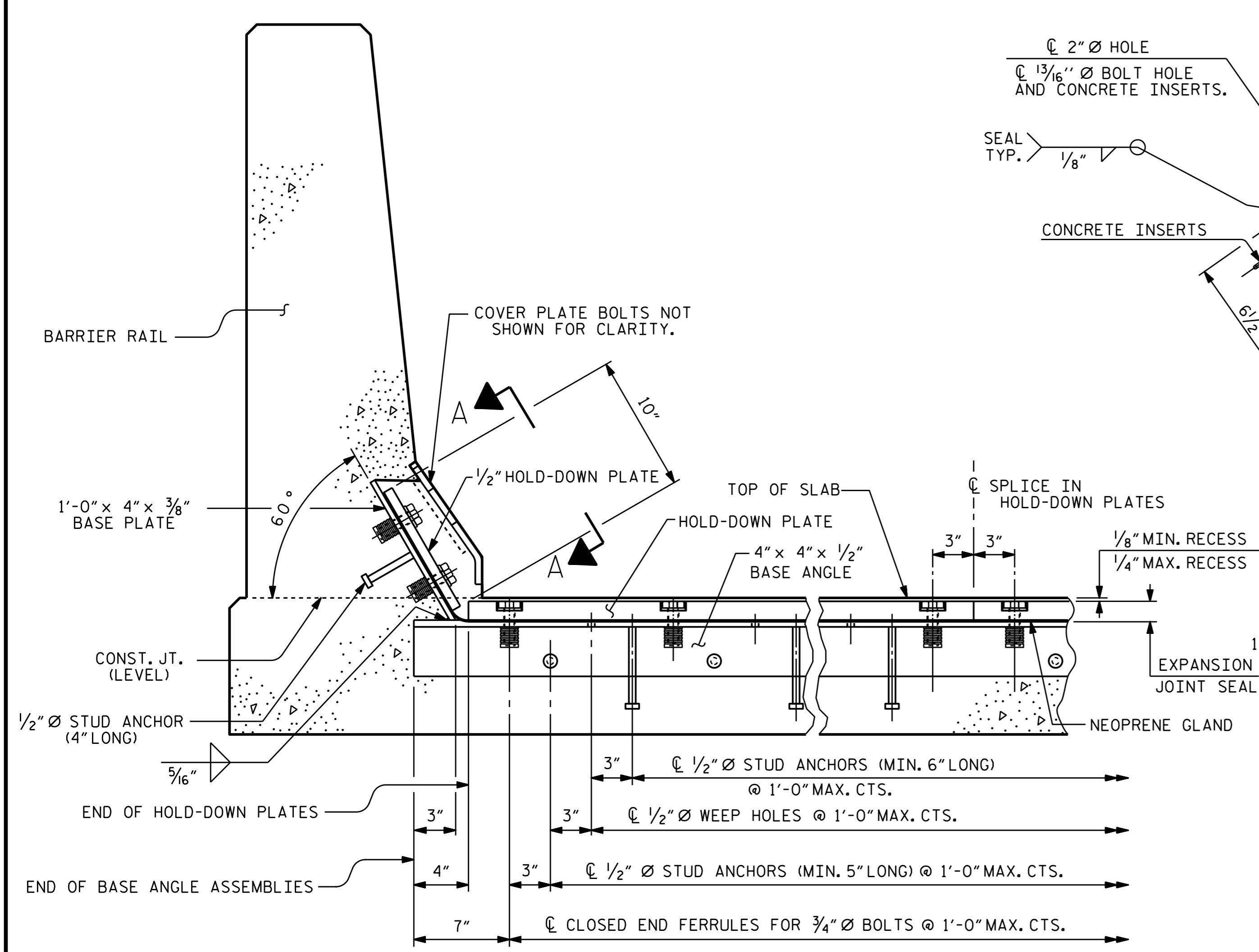
PROJECT NO. I-3318BB
 JOHNSTON COUNTY
 STATION: 24+68.00 -L-
 SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD EXPANSION JOINT SEAL DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

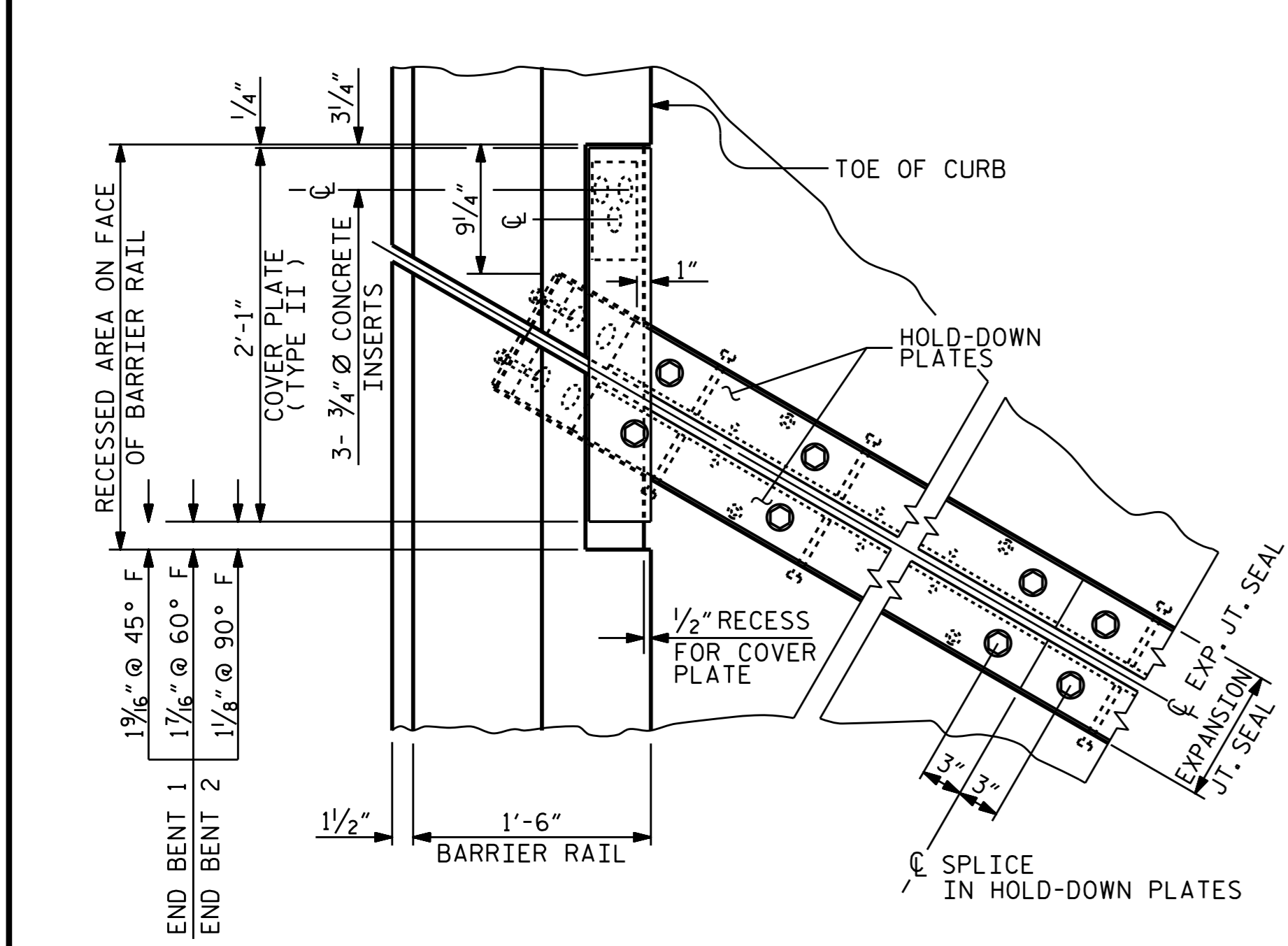
SHEET NO. S-39
TOTAL SHEETS 78

ASSEMBLED BY : D. G. ELY DATE : 10/15/14
 CHECKED BY : B. N. BARODAWALA DATE : 5/15
 DRAWN BY : REK 9/87
 CHECKED BY : CRK 10/87

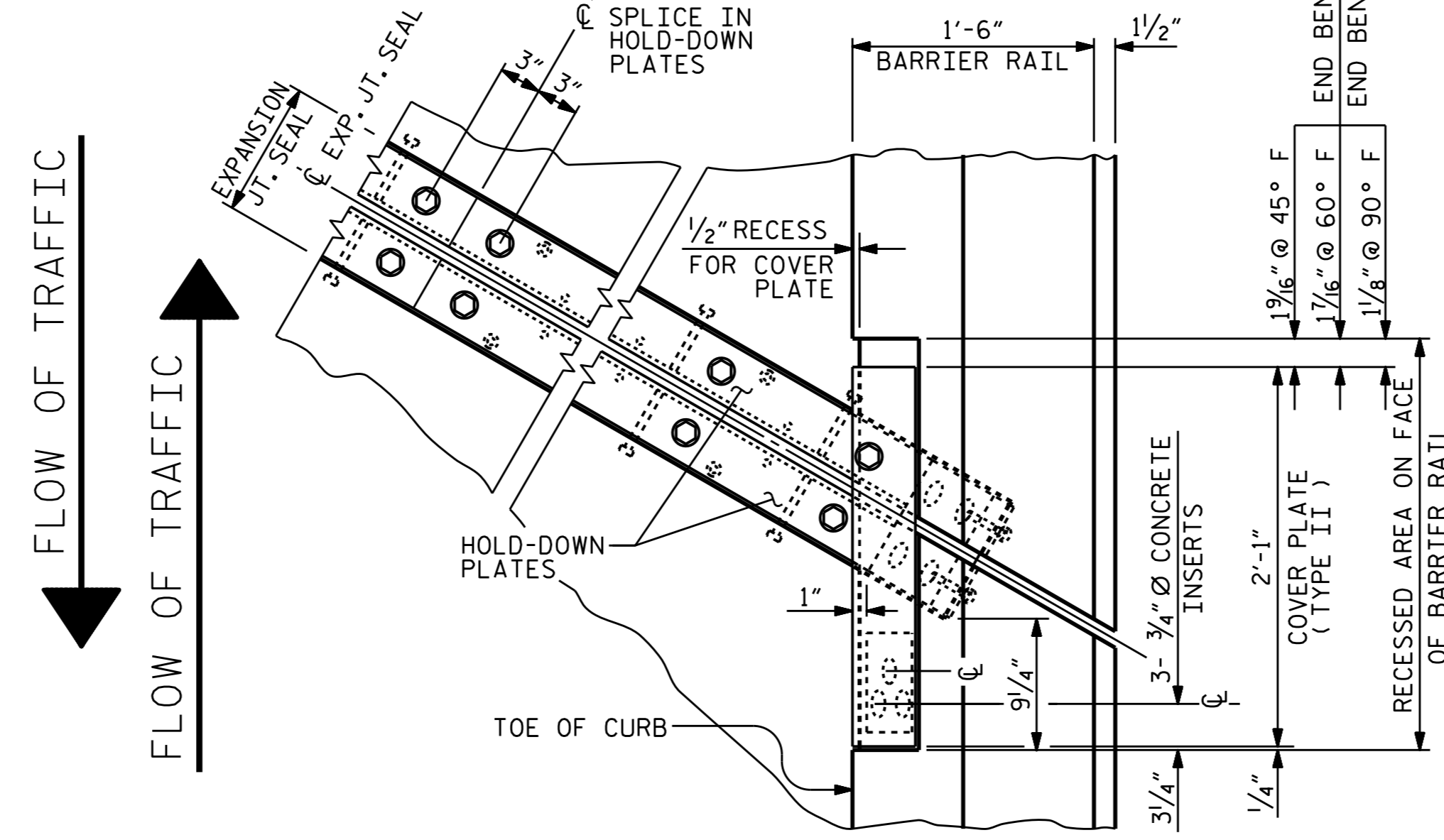
REV. 5/7/03R RWN/JTE
 REV. 5/1/06R TLA/GM
 REV. 10/1/11 MAA/GM



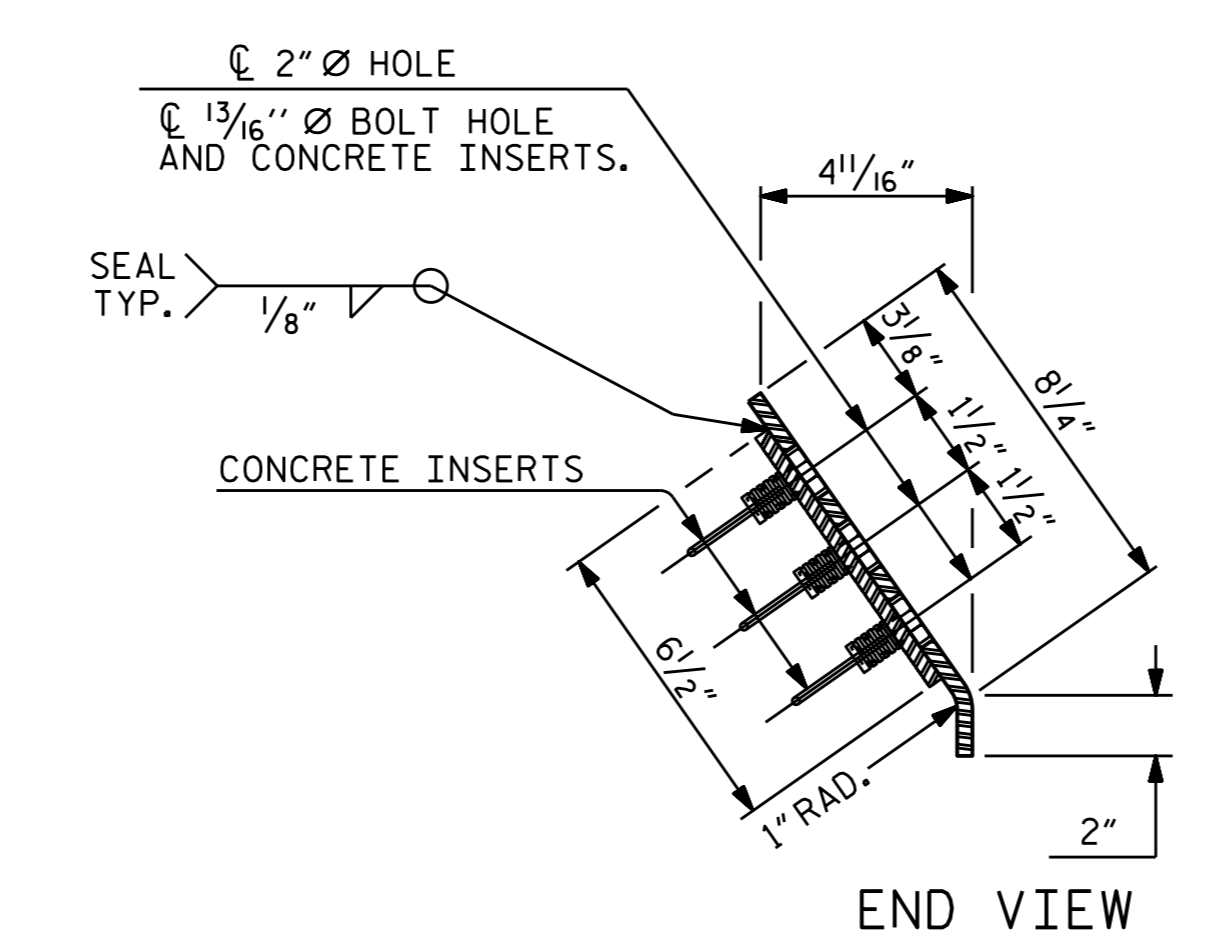
SECTION THRU RAIL NORMAL TO JOINT



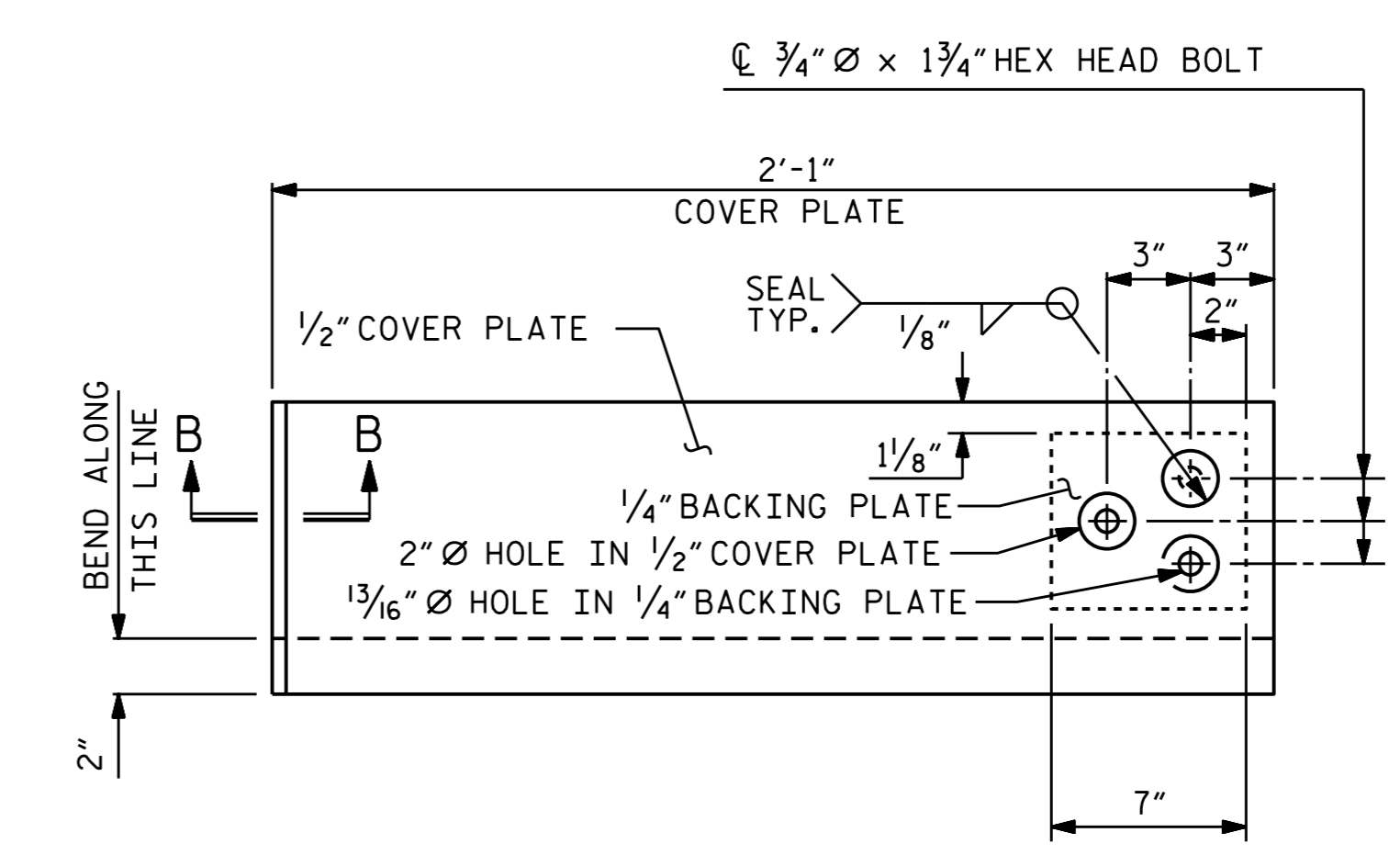
PLAN OF EXPANSION JOINT SEAL



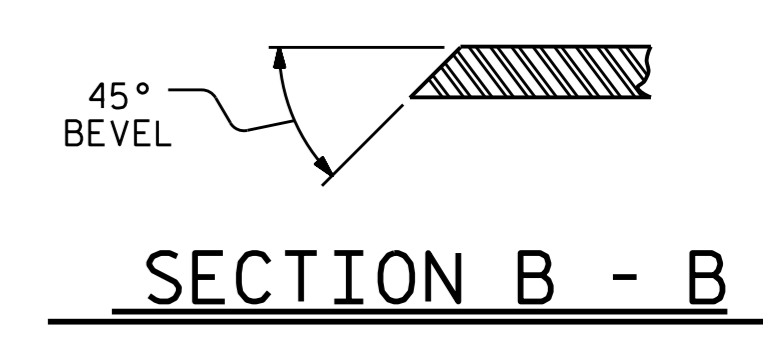
SECTION A - A



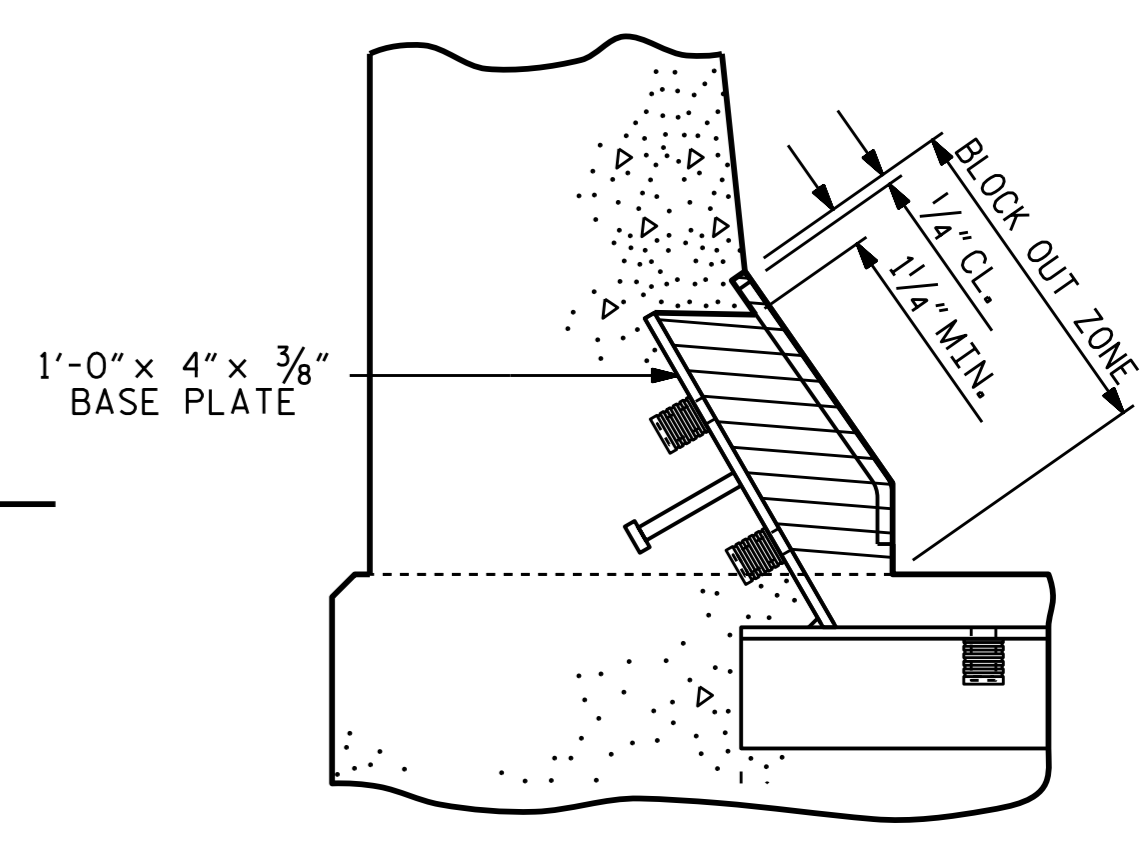
END VIEW



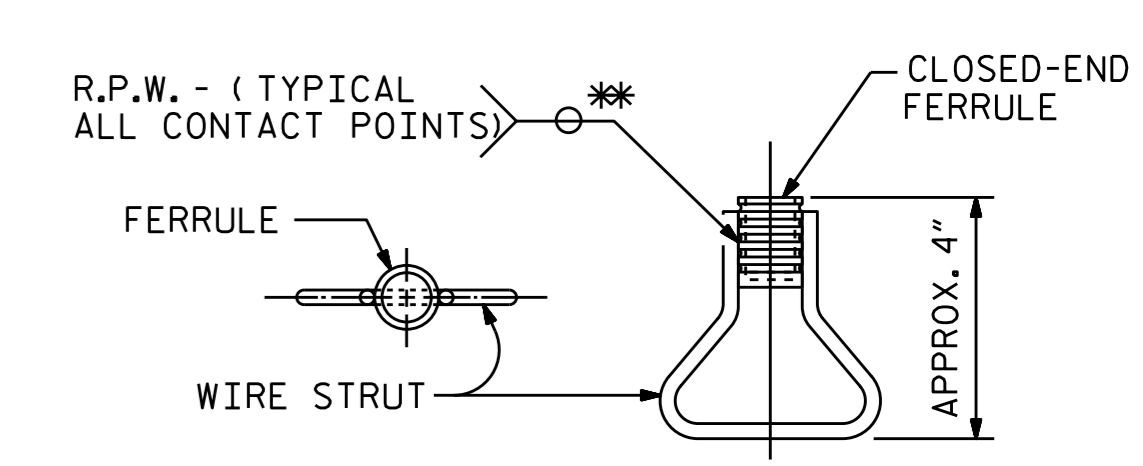
**TYPE II - ELEVATION VIEW
COVER PLATE DETAILS**



SECTION B - B



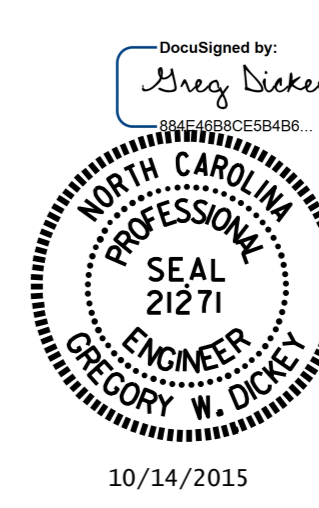
BLOCK OUT DETAIL
SEE "SECTION A - A" FOR OTHER DETAILS.



**PLAN ELEVATION
CONCRETE INSERT**

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

ASSEMBLED BY : D. G. ELY	DATE : 04/21/15
CHECKED BY : B. N. BARODAWALA	DATE : 5/15
DESIGN ENGINEER OF RECORD : M. L. RORIE	DATE : 8/15
DRAWN BY : REK 9/87	MAA/GM
CHECKED BY : CRK 10/87	MAA/GM
REV. 10/1/11	MAA/GM
REV. 7/12	MAA/GM
REV. 6/13	MAA/GM



10/14/2015

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

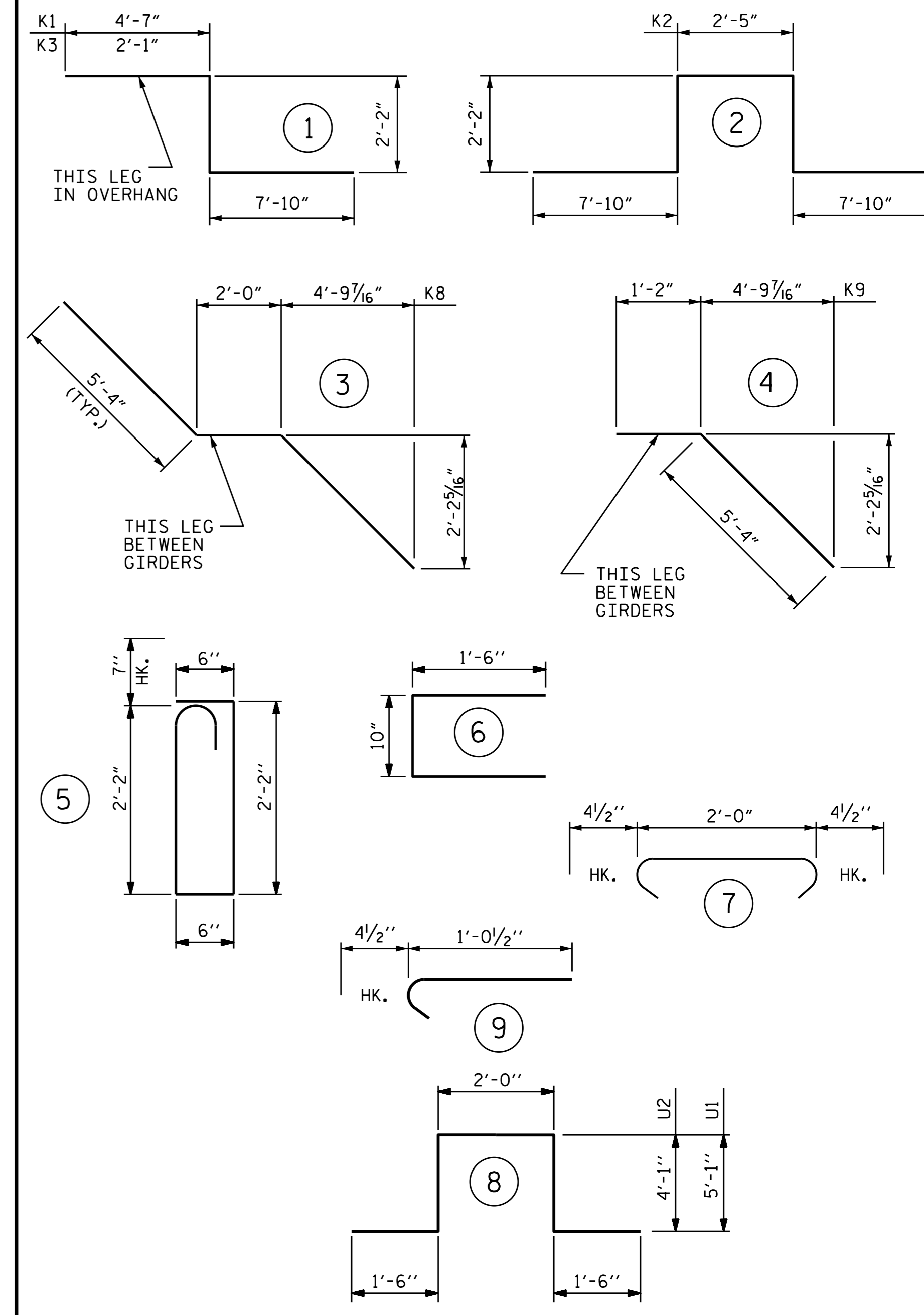
SHEET 2 OF 3

REVISIONS						SHEET NO. 5-40
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 78
2			4			

REINFORCING BAR SCHEDULE

STAGE I - LEFT SIDE										STAGE I - RIGHT SIDE													
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	564	#5	STR	33'-3"	19559	A216	2	#5	STR	13'-2"	27	* A1	564	#5	STR	33'-3"	19559	A216	2	#5	STR	13'-2"	27
A2	564	#5	STR	33'-3"	19559	A217	2	#5	STR	11'-10"	25	A2	564	#5	STR	33'-3"	19559	A217	2	#5	STR	11'-10"	25
						A218	2	#5	STR	10'-7"	22							A218	2	#5	STR	10'-7"	22
* A101	2	#5	STR	32'-0"	67	A219	2	#5	STR	9'-4"	19	* A101	2	#5	STR	32'-0"	67	A219	2	#5	STR	9'-4"	19
* A102	2	#5	STR	30'-9"	64	A220	2	#5	STR	8'-1"	17	* A102	2	#5	STR	30'-9"	64	A220	2	#5	STR	8'-1"	17
* A103	2	#5	STR	29'-6"	62	A221	2	#5	STR	6'-10"	14	* A103	2	#5	STR	29'-6"	62	A221	2	#5	STR	6'-10"	14
* A104	2	#5	STR	28'-3"	59	A222	2	#5	STR	5'-7"	12	* A104	2	#5	STR	28'-3"	59	A222	2	#5	STR	5'-7"	12
* A105	2	#5	STR	27'-0"	56	A223	2	#5	STR	4'-4"	9	* A105	2	#5	STR	27'-0"	56	A223	2	#5	STR	4'-4"	9
* A106	2	#5	STR	25'-9"	54	A224	2	#5	STR	3'-1"	6	* A106	2	#5	STR	25'-9"	54	A224	2	#5	STR	3'-1"	6
* A107	2	#5	STR	24'-5"	51							* A107	2	#5	STR	24'-5"	51						
* A108	2	#5	STR	23'-2"	48							* A108	2	#5	STR	23'-2"	48						
* A109	2	#5	STR	21'-11"	46	* B1	138	#4	STR	21'-3"	1959	* A109	2	#5	STR	21'-11"	46	* B1	138	#4	STR	21'-3"	1959
* A110	2	#5	STR	20'-8"	43	* B2	46	#7	STR	19'-3"	1810	* A110	2	#5	STR	20'-8"	43	* B2	46	#7	STR	19'-3"	1810
* A111	2	#5	STR	19'-5"	41	* B3	46	#7	STR	51'-0"	4795	* A111	2	#5	STR	19'-5"	41	* B3	46	#7	STR	51'-0"	4795
* A112	2	#5	STR	18'-2"	38	* B4	23	#4	STR	29'-5"	452	* A112	2	#5	STR	18'-2"	38	* B4	23	#4	STR	29'-5"	452
* A113	2	#5	STR	16'-11"	35	* B5	215	#5	STR	55'-10"	12520	* A113	2	#5	STR	16'-11"	35	* B5	215	#5	STR	55'-10"	12520
* A114	2	#5	STR	15'-8"	33	* B6	44	#7	STR	28'-0"	2518	* A114	2	#5	STR	15'-8"	33	* B6	44	#7	STR	28'-0"	2518
* A115	2	#5	STR	14'-4"	30							* A115	2	#5	STR	14'-4"	30						
* A116	2	#5	STR	13'-2"	27	* D1	1076	#5	STR	4'-8"	5237	* A116	2	#5	STR	13'-2"	27	* D1	1076	#5	STR	4'-8"	5237
* A117	2	#5	STR	11'-10"	25							* A117	2	#5	STR	11'-10"	25						
* A118	2	#5	STR	10'-7"	22	* G1	2	#5	STR	35'-5"	74	* A118	2	#5	STR	10'-7"	22	* G1	2	#5	STR	35'-5"	74
* A119	2	#5	STR	9'-4"	19							* A119	2	#5	STR	9'-4"	19						
* A120	2	#5	STR	8'-1"	17	* J1	68	#4	9	1'-5"	64	* A120	2	#5	STR	8'-1"	17	* J1	68	#4	9	1'-5"	64
* A121	2	#5	STR	6'-10"	14							* A121	2	#5	STR	6'-10"	14						
* A122	2	#5	STR	5'-7"	12	* K1	4	#8	1	14'-7"	156	* A122	2	#5	STR	5'-7"	12	* K1	4	#8	1	14'-7"	156
* A123	2	#5	STR	4'-4"	9	* K2	8	#8	2	22'-5"	479	* A123	2	#5	STR	4'-4"	9	* K2	8	#8	2	22'-5"	479
* A124	2	#5	STR	3'-1"	6	* K3	4	#8	1	12'-1"	129	* A124	2	#5	STR	3'-1"	6	* K3	4	#8	1	12'-1"	129
						K8	20	#4	3	12'-8"	169							K8	20	#4	3	12'-8"	169
						K9	20	#4	4	6'-6"	87							K9	20	#4	4	6'-6"	87
A201	2	#5	STR	32'-0"	67	K10	12	#4	STR	6'-7"	53	A201	2	#5	STR	32'-0"	67	K10	12	#4	STR	6'-7"	53
A202	2	#5	STR	30'-9"	64	K11	12	#4	STR	8'-6"	68	A202	2	#5	STR	30'-9"	64	K11	12	#4	STR	8'-6"	68
A203	2	#5	STR	29'-6"	62	K12	24	#4	STR	9'-3"	148	A203	2	#5	STR	29'-6"	62	K12	24	#4	STR	9'-3"	148
A204	2	#5	STR	28'-3"	59	K13	12	#4	STR	8'-3"	66	A204	2	#5	STR	28'-3"	59	K13	12	#4	STR	8'-3"	66
A205	2	#5	STR	27'-0"	56	* K26	18	#6	STR	8'-3"	223	A205	2	#5	STR	27'-0"	56	* K26	18	#6	STR	8'-3"	223
A206	2	#5	STR	25'-9"	54							A206	2	#5	STR	25'-9"	54						
A207	2	#5	STR	24'-5"	51	* S1	54	#5	5	5'-11"	333	A207	2	#5	STR	24'-5"	51	* S1	54	#5	5	5'-11"	333
A208	2	#5	STR	23'-2"	48	* S2	54	#4	6	3'-10"	138	A208	2	#5	STR	23'-2"	48	* S2	54	#4	6	3'-10"	138
A209	2	#5	STR	21'-11"	46	S3	180	#4	7	2'-9"	331	A209	2	#5	STR	21'-11"	46	S3	180	#4	7	2'-9"	331
A210	2	#5	STR	20'-8"	43							A210	2	#5	STR	20'-8"	43						
A211	2	#5	STR	19'-5"	41	U1	36	#4	8	15'-2"	365	A211	2	#5	STR	19'-5"	41	U1	36	#4	8	15'-2"	365
A212	2	#5	STR	18'-2"	38	U2	12	#4	8	13'-2"	106	A212	2	#5	STR	18'-2"	38	U2	12	#4	8	13'-2"	106
A213	2	#5	STR	16'-11"	35	REINFORCING STEEL LBS. 34,019					A213	2	#5	STR	16'-11"	35	REINFORCING STEEL LBS. 34,019						
A214	2	#5	STR	15'-8"	33	* EPOXY COATED REINFORCING STEEL LBS. 38,804					A214	2	#5	STR	15'-8"	33	* EPOXY COATED REINFORCING STEEL LBS. 38,804						
A215	2	#5	STR	14'-4"	30						A215	2	#5	STR	14'-4"	30							

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

SUPERSTRUCTURE BILL OF MATERIAL

	STAGE I-LEFT SIDE (LBS.)	STAGE I-RIGHT SIDE (LBS.)	TOTAL STAGE I** (LBS.)
REINFORCING STEEL	34,019	34,019	68,038
* EPOXY COATED REINFORCING STEEL	38,804	38,804	77,608

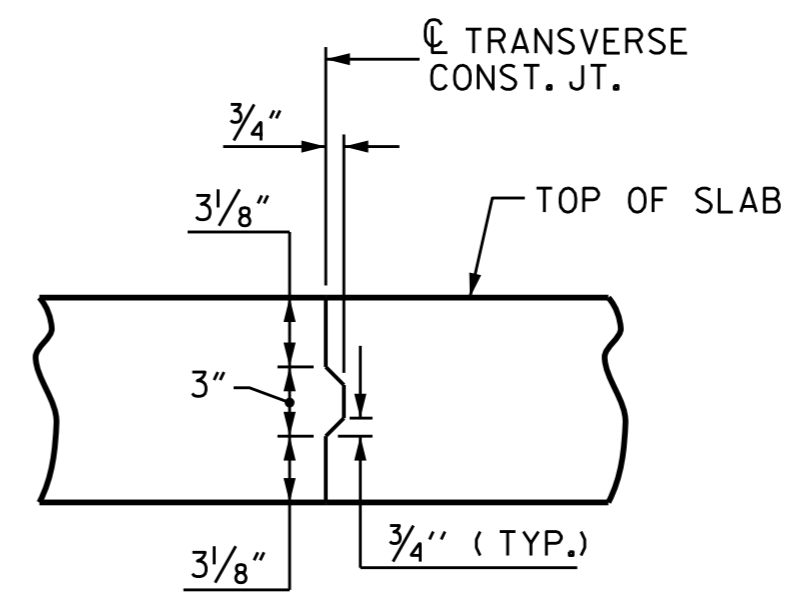
GROOVING BRIDGE FLOORS

	BRIDGE DECK (SQ. FT.)	APPROACH SLABS (SQ. FT.)
STAGE I-LEFT SIDE	8,308	1,886
STAGE I-RIGHT SIDE	8,308	1,886
STAGE I TOTALS	16,616	3,772

CONCRETE QUANTITIES

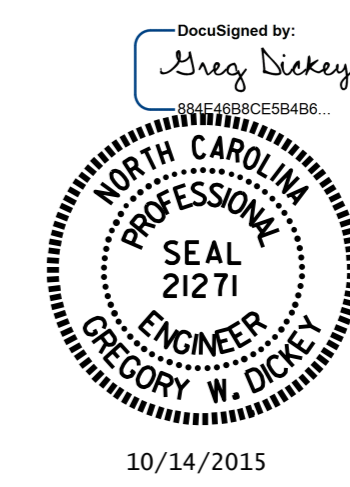
	STAGE I-LEFT SIDE (CU. YDS.)	STAGE I-RIGHT SIDE (CU. YDS.)	TOTAL STAGE I (CU. YDS.)
POUR 1	90.8	90.8	181.6
POUR 2	110.7	110.7	221.4
POUR 3	116.1	116.1	232.2
POUR 4	10.0	10.0	20.0
TOTAL **	327.6	327.6	655.2

**QUANTITIES FOR PARAPETS AND MEDIAN BARRIER RAILS ARE NOT INCLUDED



TRANSVERSE CONSTRUCTION JOINT DETAIL

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



PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 1 OF 3

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-42
3						TOTAL SHEETS
4						78

DRAWN BY: D. G. ELY DATE: 4/2/15
 CHECKED BY: B. N. BARODAWALA DATE: 5/15
 DESIGN ENGINEER OF RECORD: M. L. RORIE DATE: 8/15

REINFORCING BAR SCHEDULE

STAGE II - LEFT SIDE										STAGE II - RIGHT SIDE																			
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT						
*A3	555	#5	STR	44'-2"	25567	A416	2	#5	STR	24'-3"	51	*A5	552	#5	STR	47'-11"	27,587	A615	2	#5	STR	29'-3"	61						
A4	555	#5	STR	44'-2"	25567	A417	2	#5	STR	22'-11"	48	A6	552	#5	STR	47'-11"	27,587	A616	2	#5	STR	28'-0"	58						
						A418	2	#5	STR	21'-9"	45							A617	2	#5	STR	26'-9"	56						
*A301	2	#5	STR	43'-1"	90	A419	2	#5	STR	20'-5"	43	*A501	2	#5	STR	46'-11"	98	A618	2	#5	STR	25'-6"	53						
*A302	2	#5	STR	41'-10"	87	A420	2	#5	STR	19'-2"	40	*A502	2	#5	STR	45'-8"	95	A619	2	#5	STR	24'-3"	51						
*A303	2	#5	STR	40'-7"	85	A421	2	#5	STR	17'-11"	37	*A503	2	#5	STR	44'-4"	92	A620	2	#5	STR	22'-11"	48						
*A304	2	#5	STR	39'-4"	82	A422	2	#5	STR	16'-8"	35	*A504	2	#5	STR	43'-1"	90	A621	2	#5	STR	21'-8"	45						
*A305	2	#5	STR	38'-1"	79	A423	2	#5	STR	15'-5"	32	*A505	2	#5	STR	41'-10"	87	A622	2	#5	STR	20'-5"	43						
*A306	2	#5	STR	36'-10"	77	A424	2	#5	STR	14'-2"	30	*A506	2	#5	STR	40'-7"	85	A623	2	#5	STR	19'-2"	40						
*A307	2	#5	STR	35'-7"	74	A425	2	#5	STR	12'-11"	27	*A507	2	#5	STR	39'-4"	82	A624	2	#5	STR	17'-11"	37						
*A308	2	#5	STR	34'-4"	71	A426	2	#5	STR	11'-8"	24	*A508	2	#5	STR	38'-1"	79	A625	2	#5	STR	16'-8"	35						
*A309	2	#5	STR	33'-1"	69	A427	2	#5	STR	10'-5"	22	*A509	2	#5	STR	36'-10"	77	A626	2	#5	STR	15'-5"	32						
*A310	2	#5	STR	31'-9"	66	A428	2	#5	STR	9'-1"	19	*A510	2	#5	STR	35'-7"	74	A627	2	#5	STR	14'-2"	30						
*A311	2	#5	STR	30'-6"	64	A429	2	#5	STR	7'-10"	16	*A511	2	#5	STR	34'-4"	72	A628	2	#5	STR	12'-11"	27						
*A312	2	#5	STR	29'-3"	61	A430	2	#5	STR	6'-7"	14	*A512	2	#5	STR	33'-0"	69	A629	2	#5	STR	11'-8"	24						
*A313	2	#5	STR	28'-0"	58	A431	2	#5	STR	5'-4"	11	*A513	2	#5	STR	31'-9"	66	A630	2	#5	STR	10'-4"	22						
*A314	2	#5	STR	26'-9"	56	A432	2	#5	STR	4'-1"	9	*A514	2	#5	STR	30'-6"	64	A631	2	#5	STR	9'-1"	19						
*A315	2	#5	STR	25'-6"	53	A433	2	#5	STR	2'-10"	6	*A515	2	#5	STR	29'-3"	61	A632	2	#5	STR	7'-10"	16						
*A316	2	#5	STR	24'-3"	51							*A516	2	#5	STR	28'-0"	58	A633	2	#5	STR	6'-7"	14						
*A317	2	#5	STR	22'-11"	48							*A517	2	#5	STR	26'-9"	56	A634	2	#5	STR	5'-4"	11						
*A318	2	#5	STR	21'-9"	45	*B1	180	#4	STR	21'-3"	2555	*A518	2	#5	STR	25'-6"	53	A635	2	#5	STR	4'-1"	9						
*A319	2	#5	STR	20'-5"	43	*B2	60	#7	STR	19'-3"	2361	*A519	2	#5	STR	24'-3"	51	A636	2	#5	STR	2'-10"	6						
*A320	2	#5	STR	19'-2"	40	*B3	60	#7	STR	51'-0"	6255	*A520	2	#5	STR	22'-11"	48												
*A321	2	#5	STR	17'-11"	37	*B4	30	#4	STR	29'-5"	590	*A521	2	#5	STR	21'-8"	45												
*A322	2	#5	STR	16'-8"	35	B5	280	#5	STR	55'-10"	16306	*A522	2	#5	STR	20'-5"	43	*B1	204	#4	STR	21'-3"	2896						
*A323	2	#5	STR	15'-5"	32	*B6	58	#7	STR	28'-0"	3319	*A523	2	#5	STR	19'-2"	40	*B2	68	#7	STR	19'-3"	2676						
*A324	2	#5	STR	14'-2"	30							*A524	2	#5	STR	17'-11"	37	*B3	68	#7	STR	51'-0"	7089						
*A325	2	#5	STR	12'-11"	27	*D1	1076	#5	STR	4'-8"	5237	*A525	2	#5	STR	16'-8"	35	*B4	34	#4	STR	29'-5"	668						
*A326	2	#5	STR	11'-8"	24							*A526	2	#5	STR	15'-5"	32	B5	300	#5	STR	55'-10"	17,470						
*A327	2	#5	STR	10'-5"	22	*G2	2	#5	STR	47'-0"	98	*A527	2	#5	STR	14'-2"	30	*B6	62	#7	STR	28'-0"	3548						
*A328	2	#5	STR	9'-1"	19							*A528	2	#5	STR	12'-11"	27												
*A329	2	#5	STR	7'-10"	16	*J1	100	#4	5	1'-5"	95	*A529	2	#5	STR	11'-8"	24	*D1	1076	#5	STR	4'-8"	5237						
*A330	2	#5	STR	6'-7"	14							*A530	2	#5	STR	10'-4"	22												
*A331	2	#5	STR	5'-4"	11	*K4	8	#8	1	12'-2"	260	*A531	2	#5	STR	9'-1"	19	*G3	2	#5	STR	50'-11"	106						
*A332	2	#5	STR	4'-1"	9	*K5	12	#8	2	22'-7"	724	*A532	2	#5	STR	7'-10"	16												
*A333	2	#5	STR	2'-10"	6	K14	30	#4	3	13'-6"	271	*A533	2	#5	STR	6'-7"	14	*J1	108	#4	9	1'-5"	102						
						K15	20	#4	4	6'-4"	85	*A534	2	#5	STR	5'-4"	11												
						K16	16	#4	STR	7'-7"	81	*A535	2	#5	STR	4'-1"	9	*K6	8	#8	1	11'-7"	247						
A401	2	#5	STR	43'-1"	90	K17	16	#4	STR	9'-2"	98	*A536	2	#5	STR	2'-10"	6	*K7	16	#8	2	21'-5"	915						
A402	2	#5	STR	41'-10"	87	K18	32	#4	STR	10'-3"	219							K20	40	#4	3	12'-0"	321						
A403	2	#5	STR	40'-7"	85	K19	16	#4	STR	9'-2"	98							K21	20	#4	4	6'-2"	82						
A404	2	#5	STR	39'-4"	82	*K27	24	#6	STR	9'-2"	330	A601	2	#5	STR	46'-11"	98	K22	20	#4	STR	6'-1"	81						
A405	2	#5	STR	38'-1"	79							A602	2	#5	STR	45'-8"	95	K23	20	#4	STR	8'-0"	107						
A406	2	#5	STR	36'-10"	77	*S1	80	#5	5	5'-11"	494	A603	2	#5	STR	44'-4"	92	K24	40	#4	STR	8'-9"	234						
A407	2	#5	STR	35'-7"	74	*S2	80	#4	6	3'-10"	205	A604	2	#5	STR	43'-1"	90	K25	20	#4	STR	7'-8"	102						
A408	2	#5	STR	34'-4"	71	S3	272	#4	7	2'-9"	500	A605	2	#5	STR	41'-10"	87	*K28	30	#6	STR	7'-8"	345						
A409	2	#5	STR	33'-1"	69							A606	2	#5	STR	40'-7"	85												
A410	2	#5	STR	31'-9"	66	U1	56	#4	8	15'-2"	567	A607	2	#5	STR	39'-4"	82	*S1	80	#5	5	5'-11"	494						
A411	2	#5	STR	30'-6"	64	U2	16	#4	8	13'-2"	141	A608	2	#5	STR	38'-1"	79	*S2	80	#4	6	3'-10"	205						
A412	2	#5	STR	29'-3"	61	REINFORCING STEEL LBS. 45,514					A609	2	#5	STR	36'-10"	77	S3	300	#4	7	2'-9"	551							
A413	2	#5	STR	28'-0"	58	*EPOXY COATED REINFORCING STEEL LBS. 49,671					A610	2	#5	STR	35'-7"	74													
A414	2	#5	STR	26'-9"	56							A611	2	#5	STR	34'-4"	72	U1	60	#4	8	15'-2"	608						
A415	2	#5	STR	25'-6"	53							A612	2	#5	STR	33'-0"	69	U2	20	#4	8	13'-2"	176						
												A613	2	#5	STR	31'-9"	66	REINFORCING STEEL LBS. 48,635											
												A614	2	#5	STR	30'-6"	64	*EPOXY COATED REINFORCING STEEL LBS. 53,982											

CLOSURE POURS

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	108	#4	STR	21'-3"	1533
*B2	36	#7	STR	19'-3"	1416
*B3	36	#7	STR	51'-0"	3753
*B4	18	#4	STR	29'-5"	354
B5	75	#5	STR	55'-10"	4367
REINFORCING STEEL					LBS. 4367
*EPOXY COATED REINFORCING STEEL					LBS. 7056

SUPERSTRUCTURE BILL OF MATERIAL

	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
STAGE II-LEFT SIDE	45,514	49,671
STAGE II-RIGHT SIDE	48,635	53,982
CLOSURE POURS	4,367	7,056
STAGE II TOTALS **	98,516	110,709

CONCRETE QUANTITIES

	STAGE II-LEFT SIDE (CU. YDS.)	STAGE II-RIGHT SIDE (CU. YDS.)	TOTAL STAGE II (CU. YDS.)
POUR 5	118.3	129.0	247.3
POUR 6	147.0	160.1	307.1
POUR 7	153.0	166.7	319.7
POUR 8	14.4	15.4	29.8
CLOSURE POURS	-	-	92.7
TOTAL **	432.7	471.2	996.6

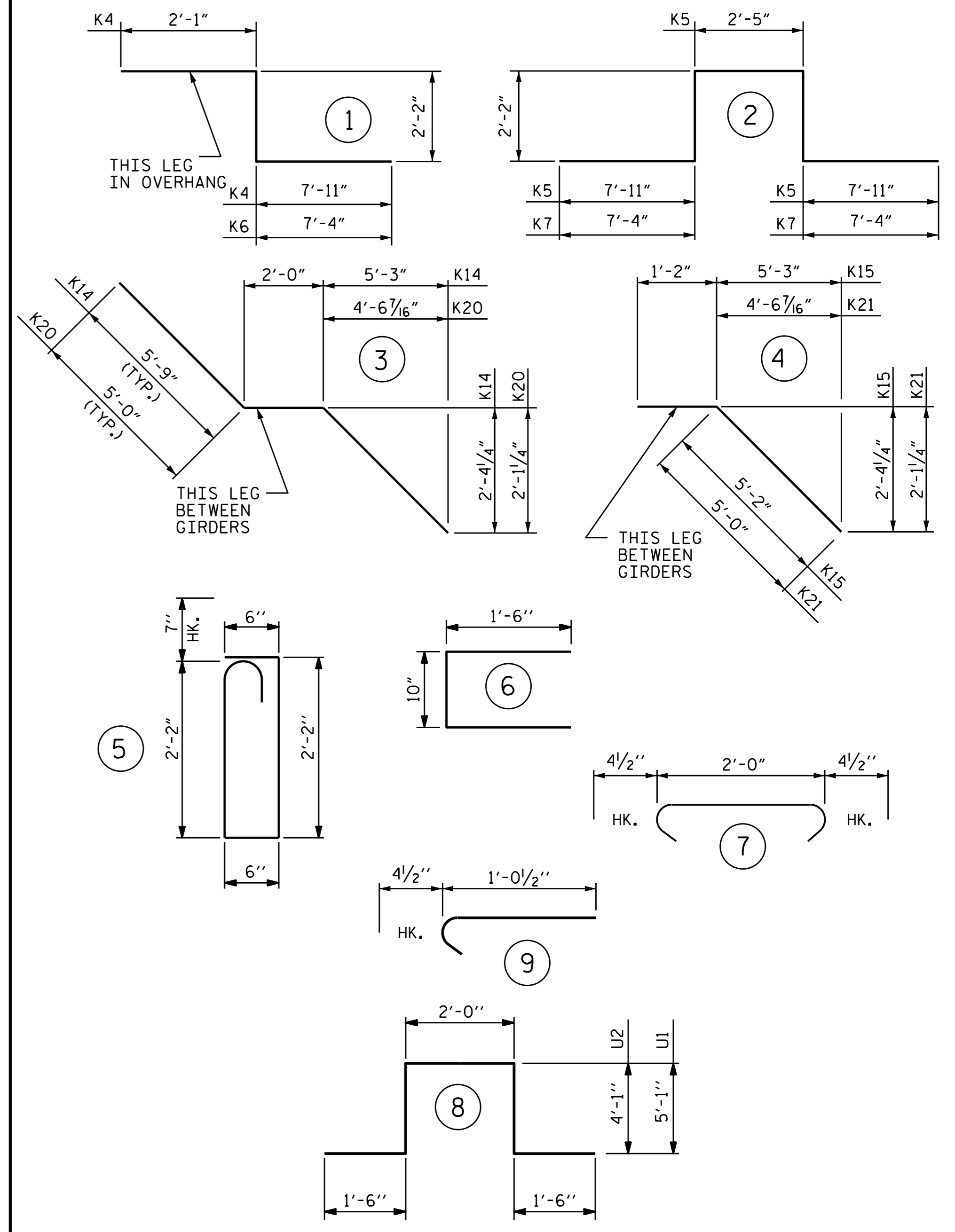
** QUANTITIES FOR PARAPETS AND MEDIAN BARRIER RAILS ARE NOT INCLUDED

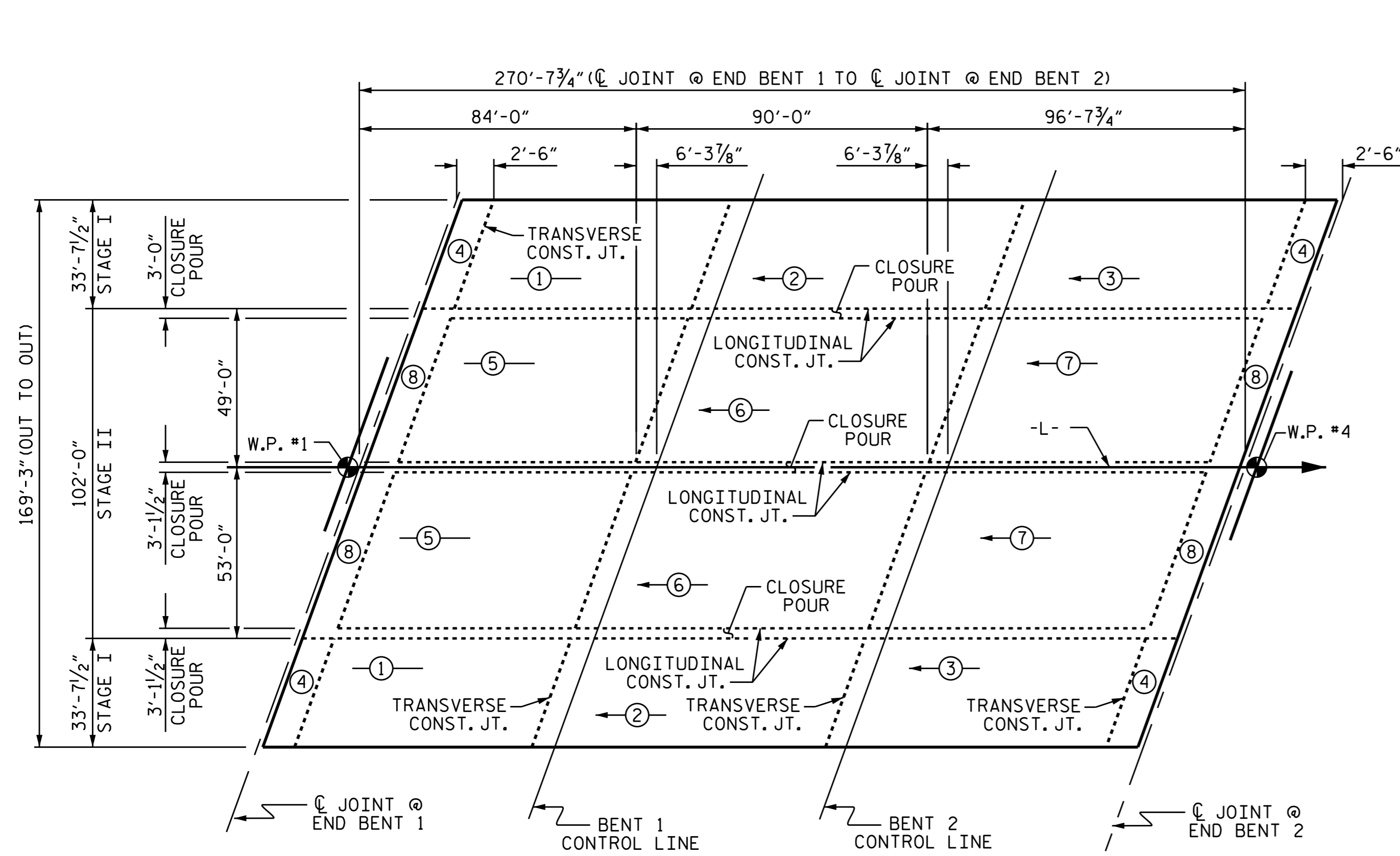
GROOVING BRIDGE FLOORS

	BRIDGE DECK (SQ. FT.)	APPROACH SLABS (SQ. FT.)
STAGE II-LEFT SIDE	12,529	6,890
STAGE II-RIGHT SIDE	13,607	
STAGE II TOTALS	26,136	

DRAWN BY: D. G. ELY DATE: 4/2/15
 CHECKED BY: B. N. BARODAWALA DATE: 5/15
 DESIGN ENGINEER OF RECORD: M. L. RORIE DATE: 8/15

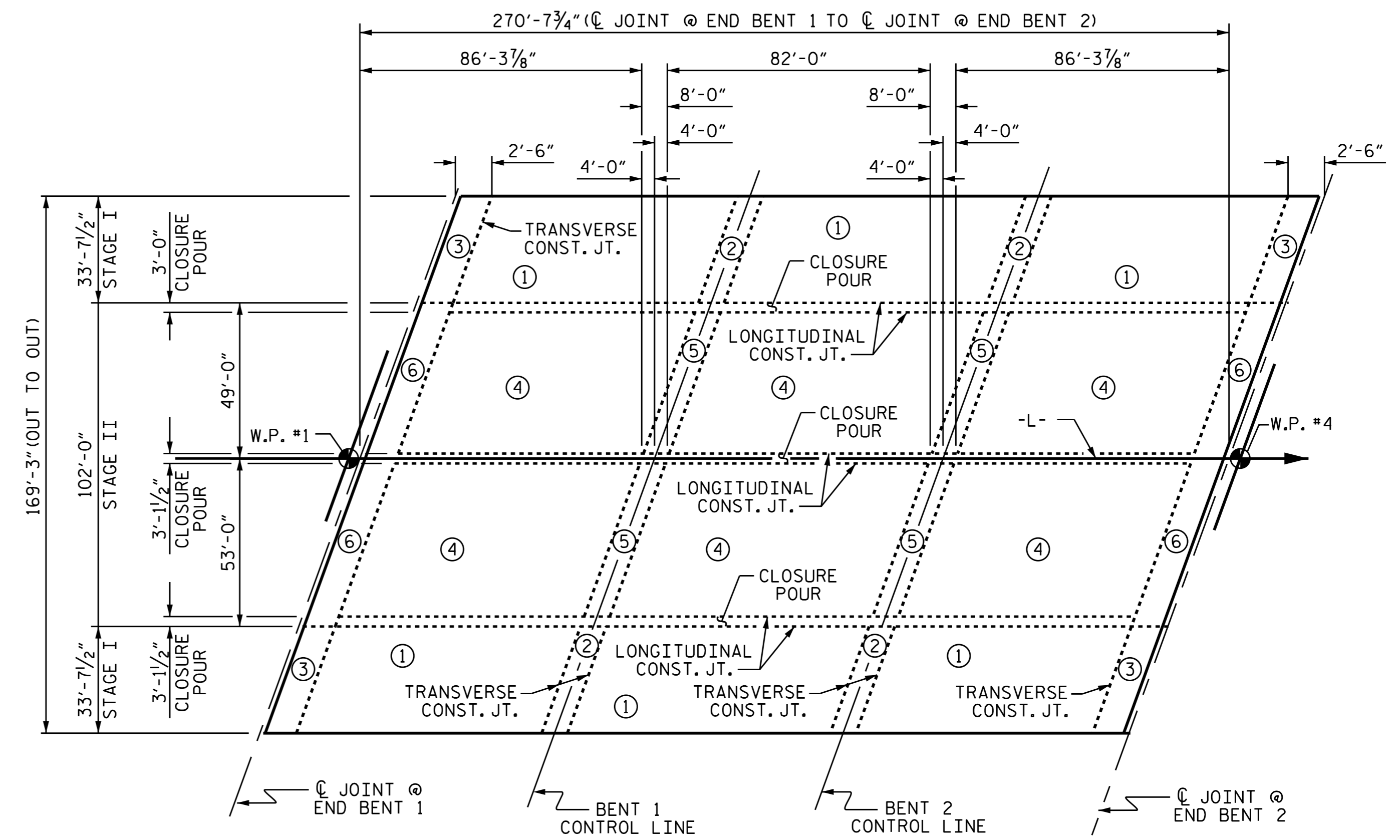
BAR TYPES





POURING SEQUENCE

←○ INDICATES DIRECTION OF POUR



OPTIONAL POURING SEQUENCE

POURS #2 OF STAGE I CANNOT BE STARTED UNTIL ADJACENT POURS REACH A MINIMUM OF 3000 PSI.

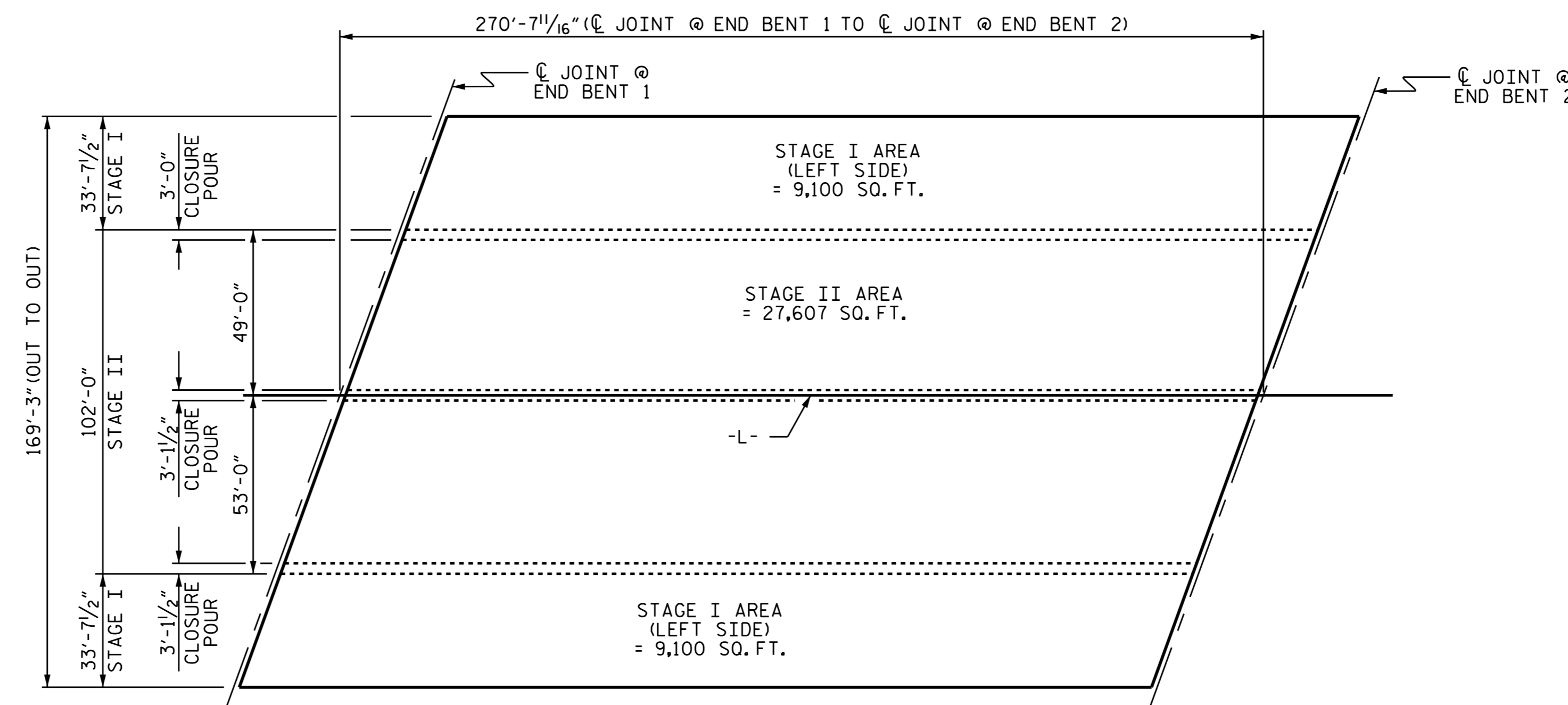
POURS #5 OF STAGE II CANNOT BE STARTED UNTIL ADJACENT POURS REACH A MINIMUM OF 3000 PSI.

— SUPERSTRUCTURE BILL OF MATERIAL —

	REINFORCING STEEL (LBS)	EPOXY COATED REINFORCING STEEL (LBS)			
STAGE I	68,038	77,608			
STAGE II	98,516	110,709			
TOTALS	166,554	188,317			
CONCRETE QUANTITIES (CU. YDS.)					
STAGE I	POUR 1	POUR 2	POUR 3	POUR 4	TOTAL
	181.6	221.4	232.2	20.0	655.2
STAGE II	POUR 5	POUR 6	POUR 7	POUR 8	
	247.3	307.1	319.7	29.8	903.9
CLOSURE POURS					92.7
TOTALS					1651.8

** QUANTITIES FOR PARAPETS AND MEDIAN BARRIER RAILS ARE NOT INCLUDED

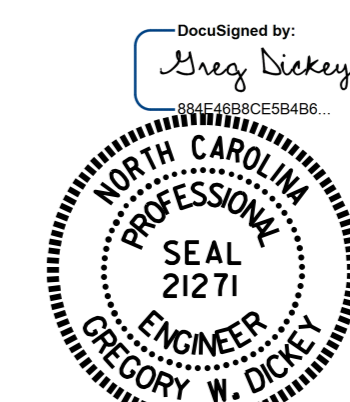
GROOVING BRIDGE FLOORS	
STAGE I	
APPROACH SLABS	3,772 SQ.FT.
BRIDGE DECK	16,616 SQ.FT.
TOTAL	20,388 SQ.FT.
STAGE II	
APPROACH SLABS	6,890 SQ.FT.
BRIDGE DECK	26,136 SQ.FT.
TOTAL	33,026 SQ.FT.
TOTAL	
APPROACH SLABS	10,662 SQ.FT.
BRIDGE DECK	42,752 SQ.FT.
TOTAL	53,414 SQ.FT.



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 45,807)

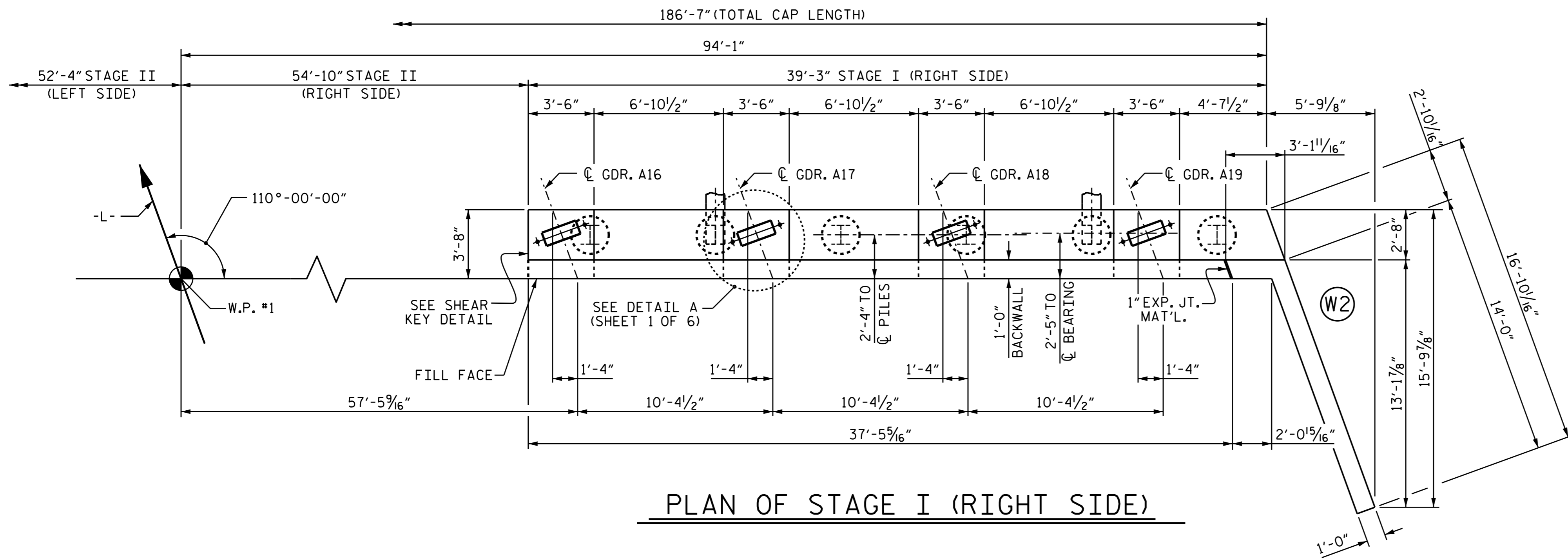
PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 3 OF 3

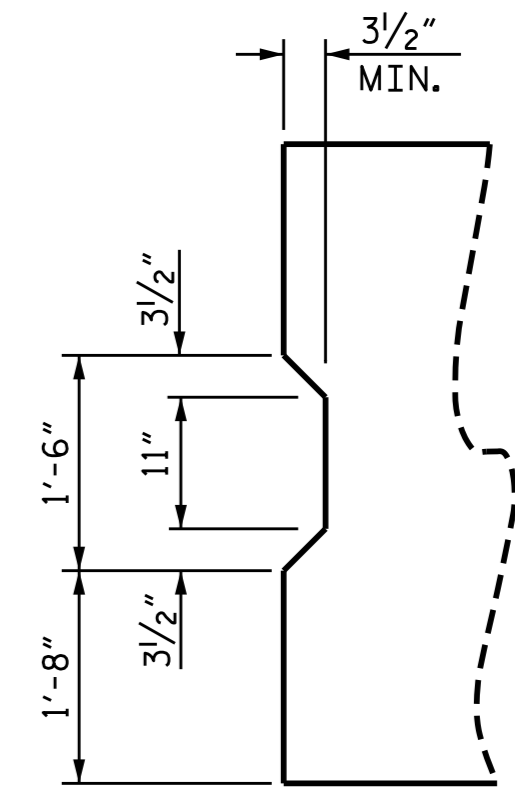


STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
SUPERSTRUCTURE					
BILL OF MATERIAL					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
			3		
			4		
					S-44
					TOTAL SHEETS
					78

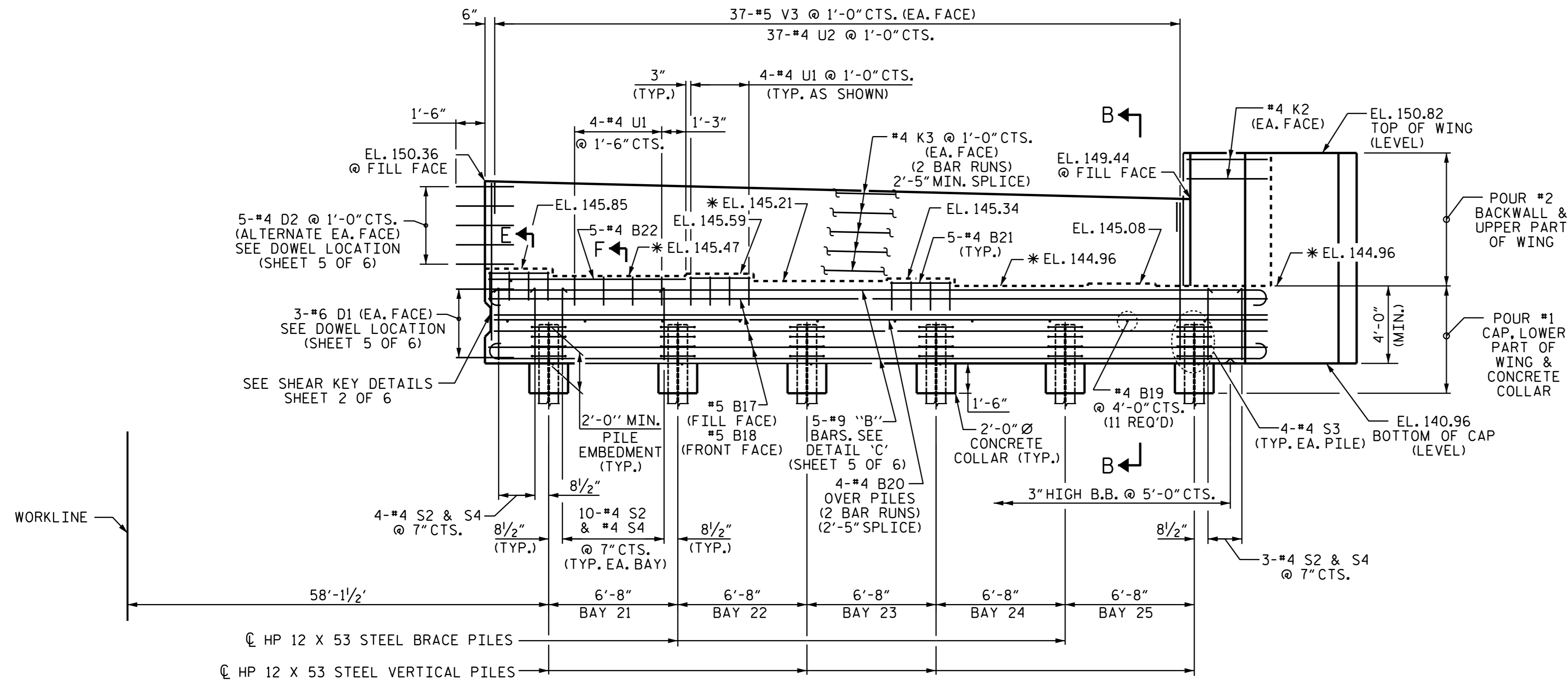
DRAWN BY: D. G. ELY DATE: 4/22/15
 CHECKED BY: B. N. BARODAWALA DATE: 5/15
 DESIGN ENGINEER OF RECORD: M. L. RORIE DATE: 8/15



PLAN OF STAGE I (RIGHT SIDE)



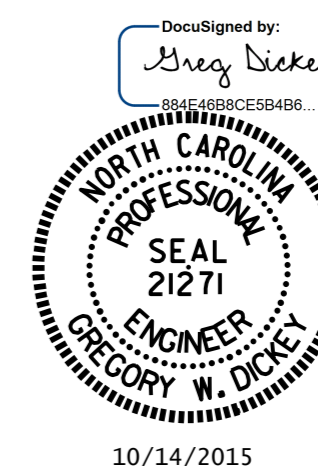
SHEAR KEY DETAIL



ELEVATION OF STAGE I (RIGHT SIDE)

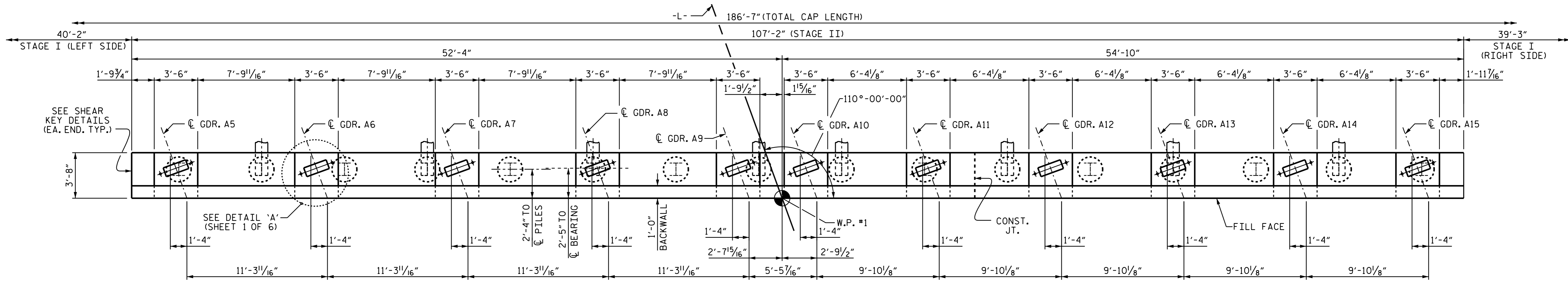
PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 2 OF 6

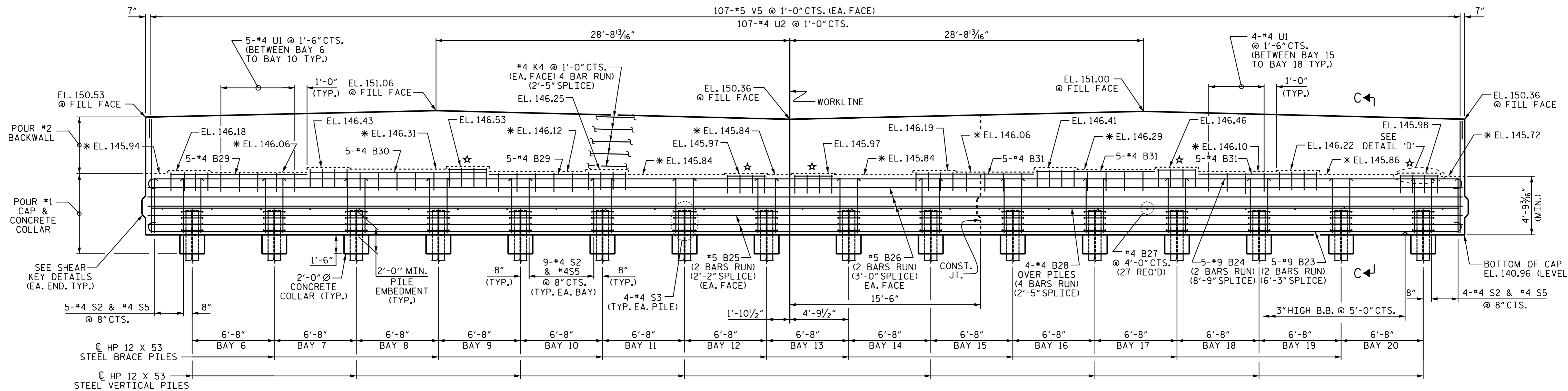


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			78

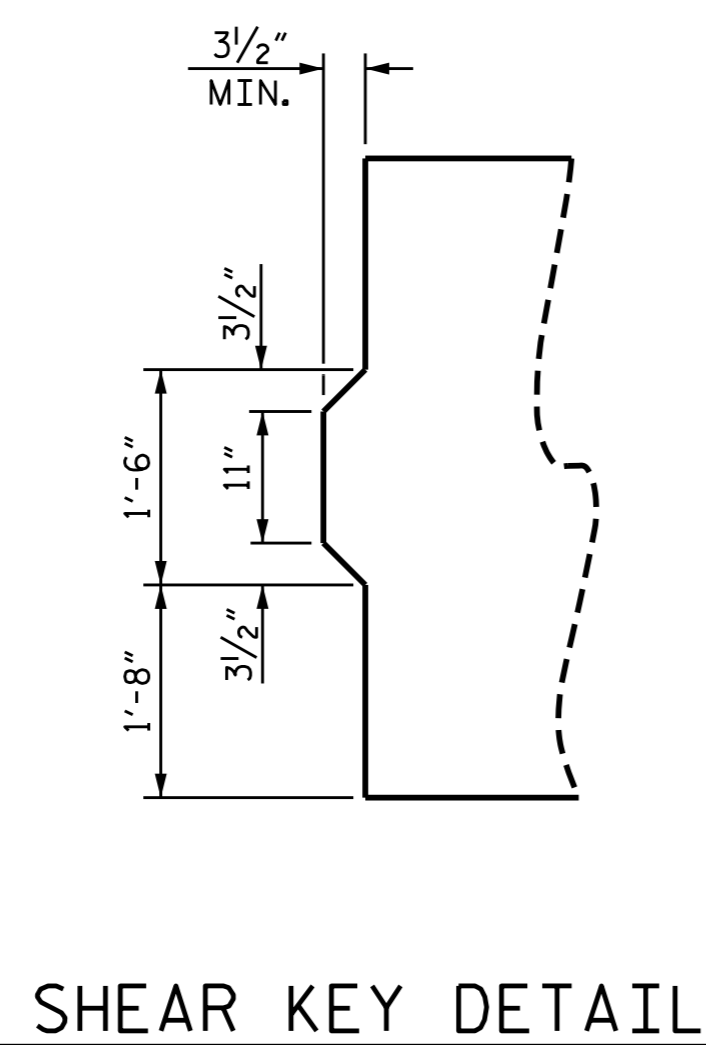
DRAWN BY: B.N. BARODAWALA DATE: 4-6-15
 CHECKED BY: DAVID GLADDEN DATE: 4-6-15
 DESIGN ENGINEER OF RECORD: ASHVIN PATEL DATE: 8-6-15



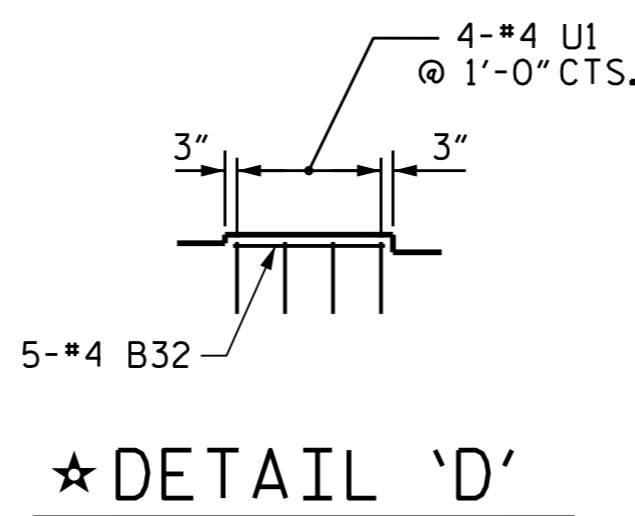
PLAN - STAGE II



ELEVATION - STAGE II



SHEAR KEY DETAIL



*DETAIL 'D'

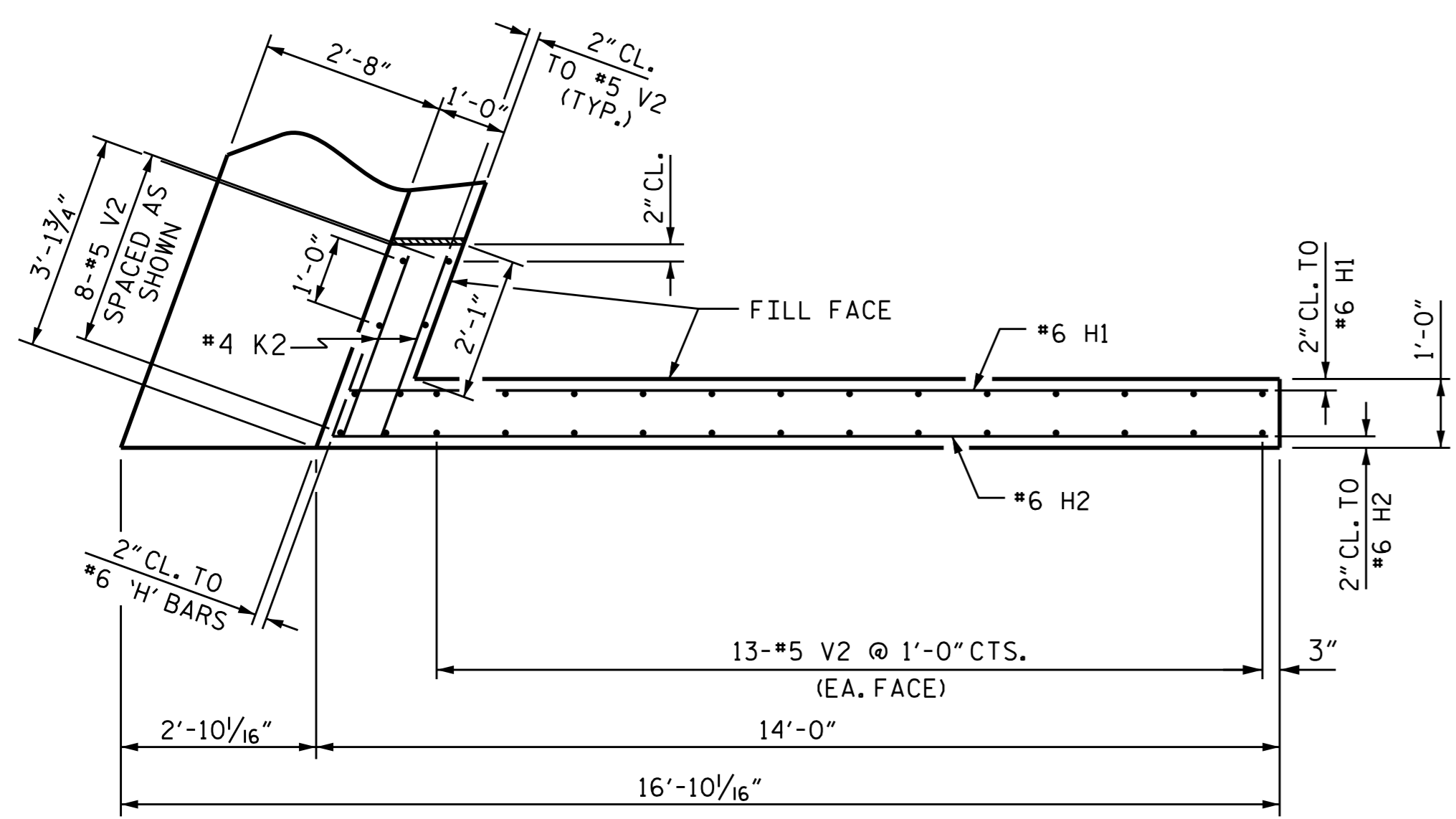
PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 3 OF 6

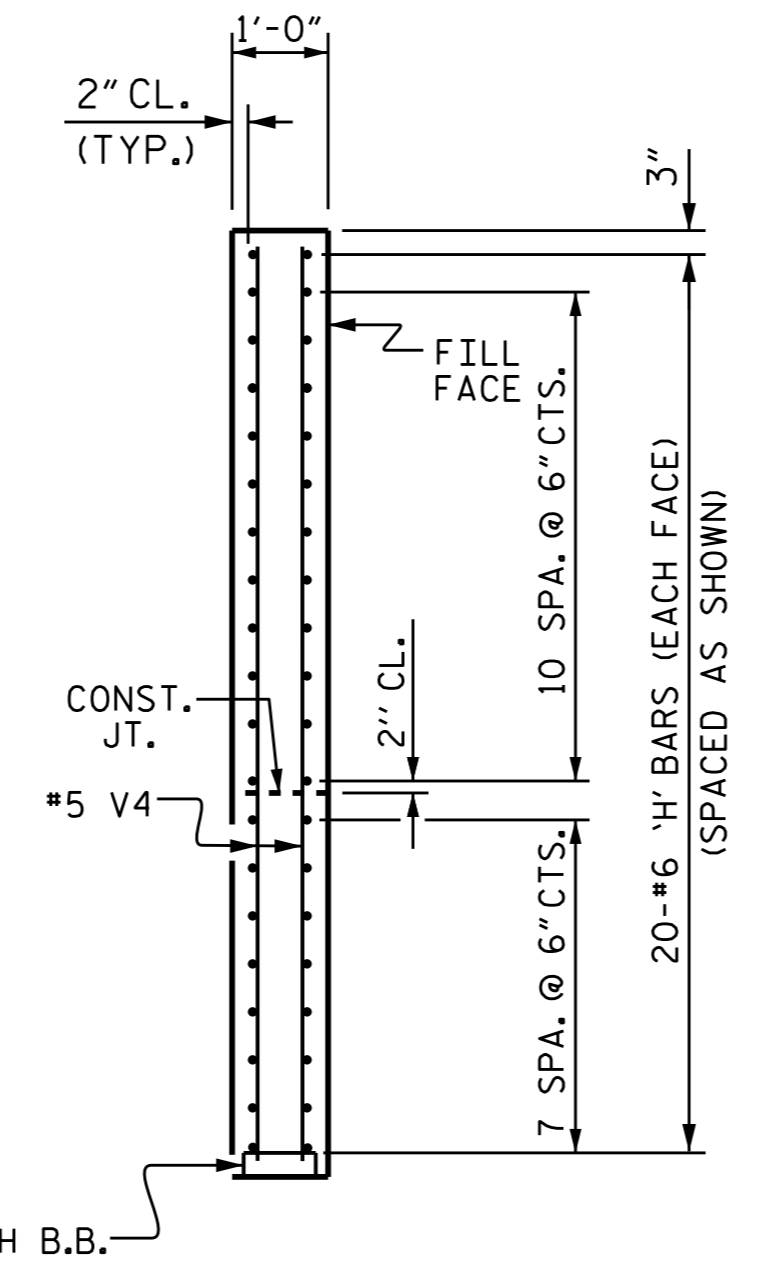
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
END BENT #1 STAGE II					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-47
					TOTAL SHEETS 78



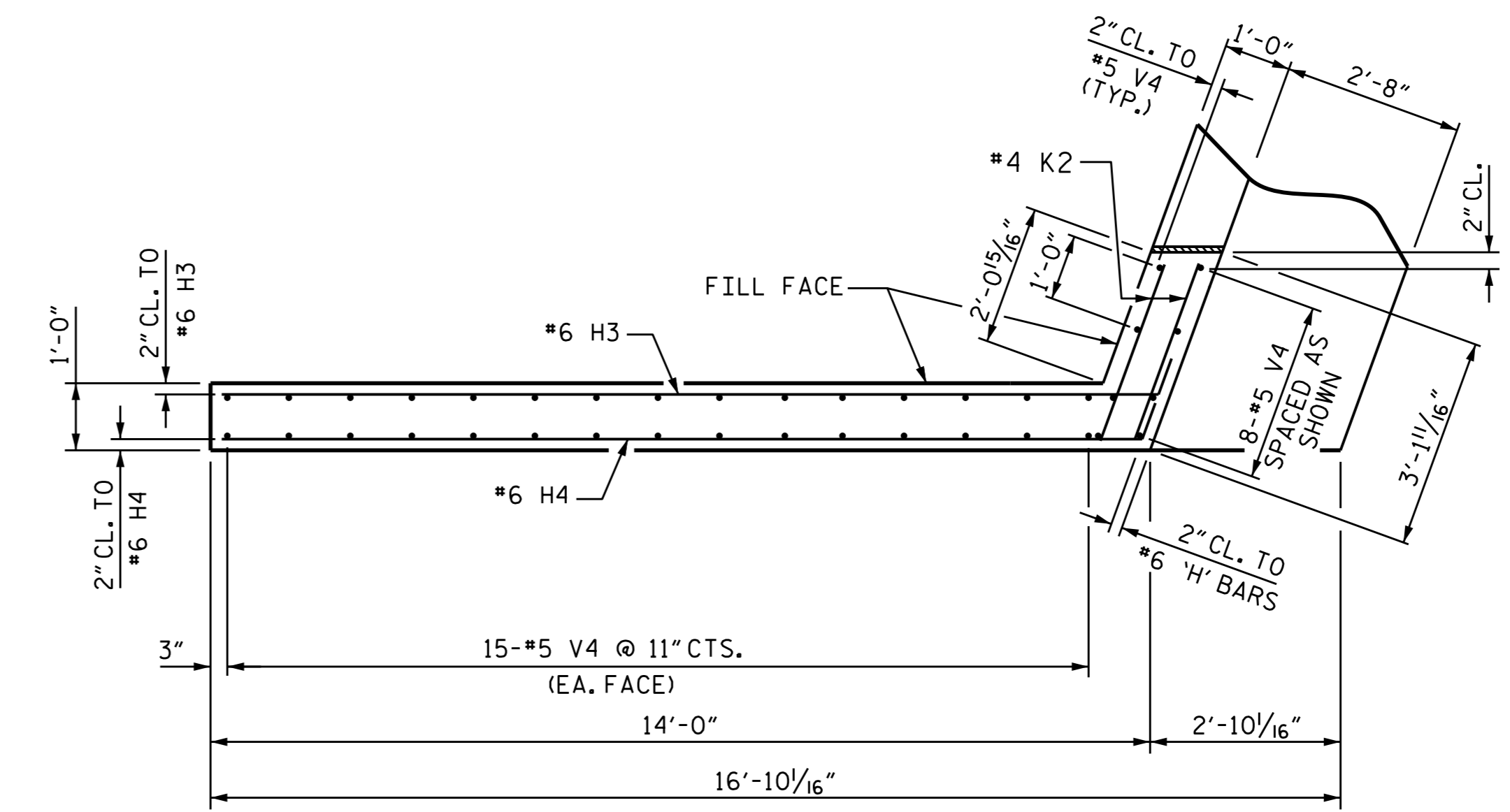
DRAWN BY: B.N. BARODAWALA DATE: 4-6-15
 CHECKED BY: DAVID GLADDEN DATE: 4-6-15
 DESIGN ENGINEER OF RECORD: ASHVIN PATEL DATE: 8-6-15



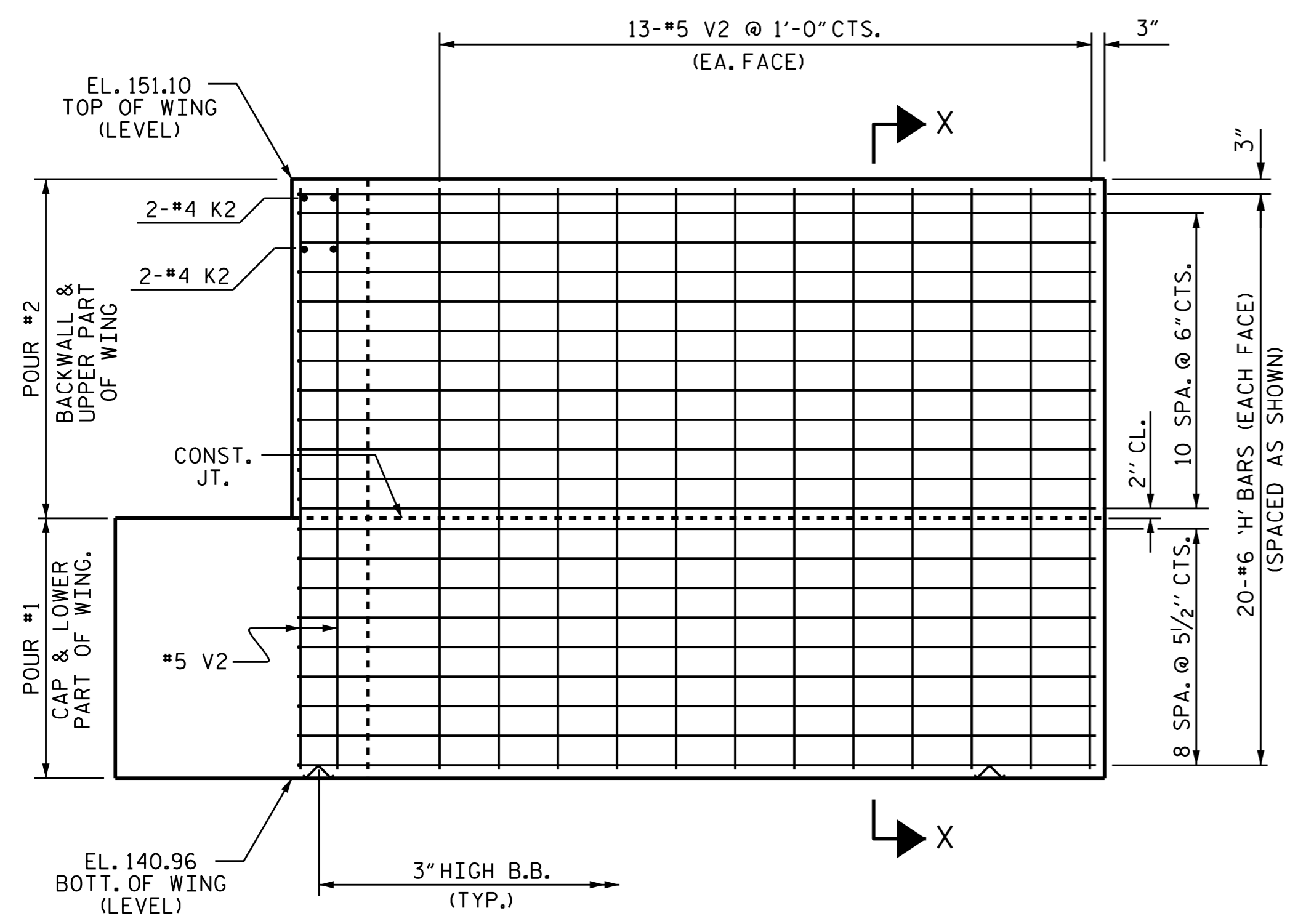
PLAN OF WING W1



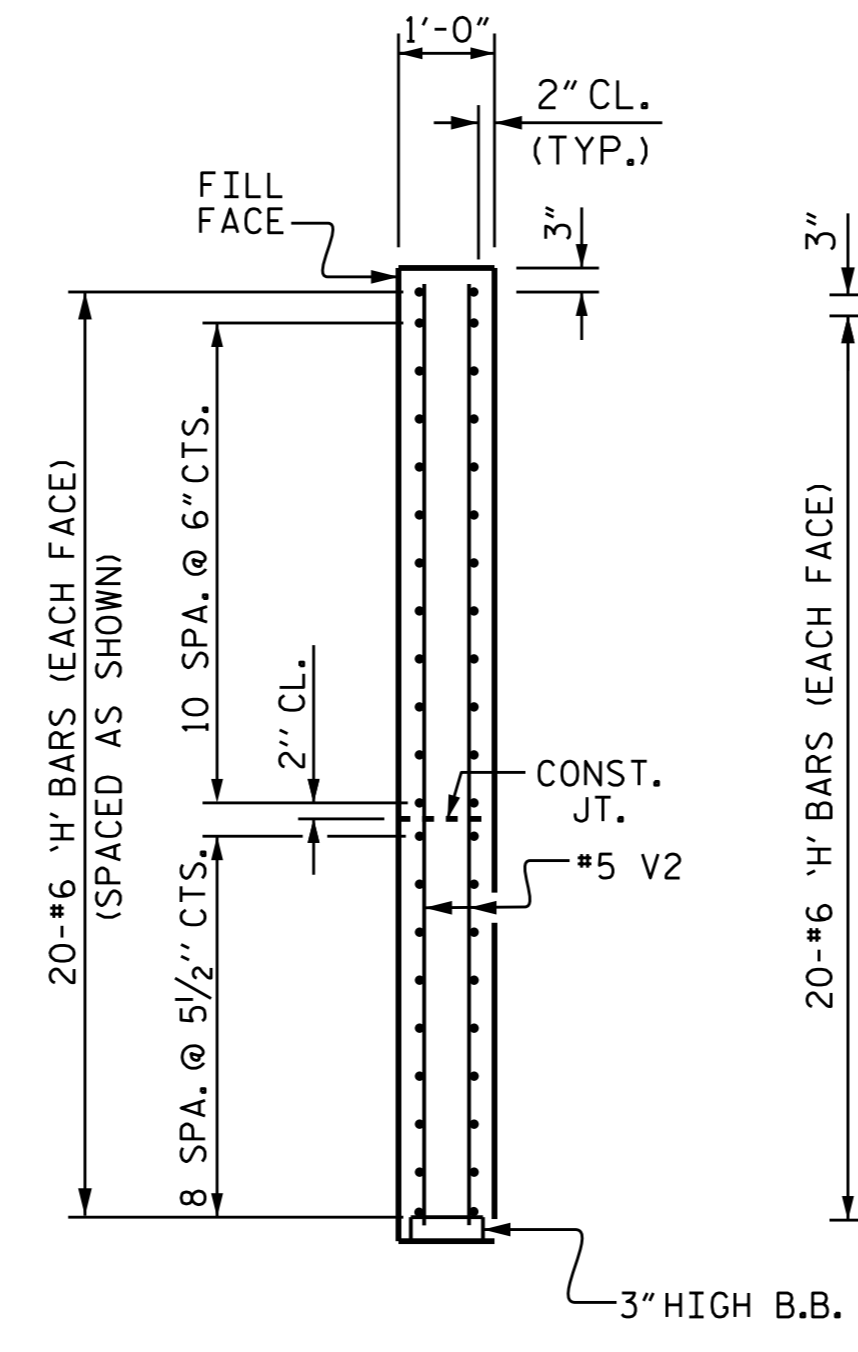
SECTION Y-Y



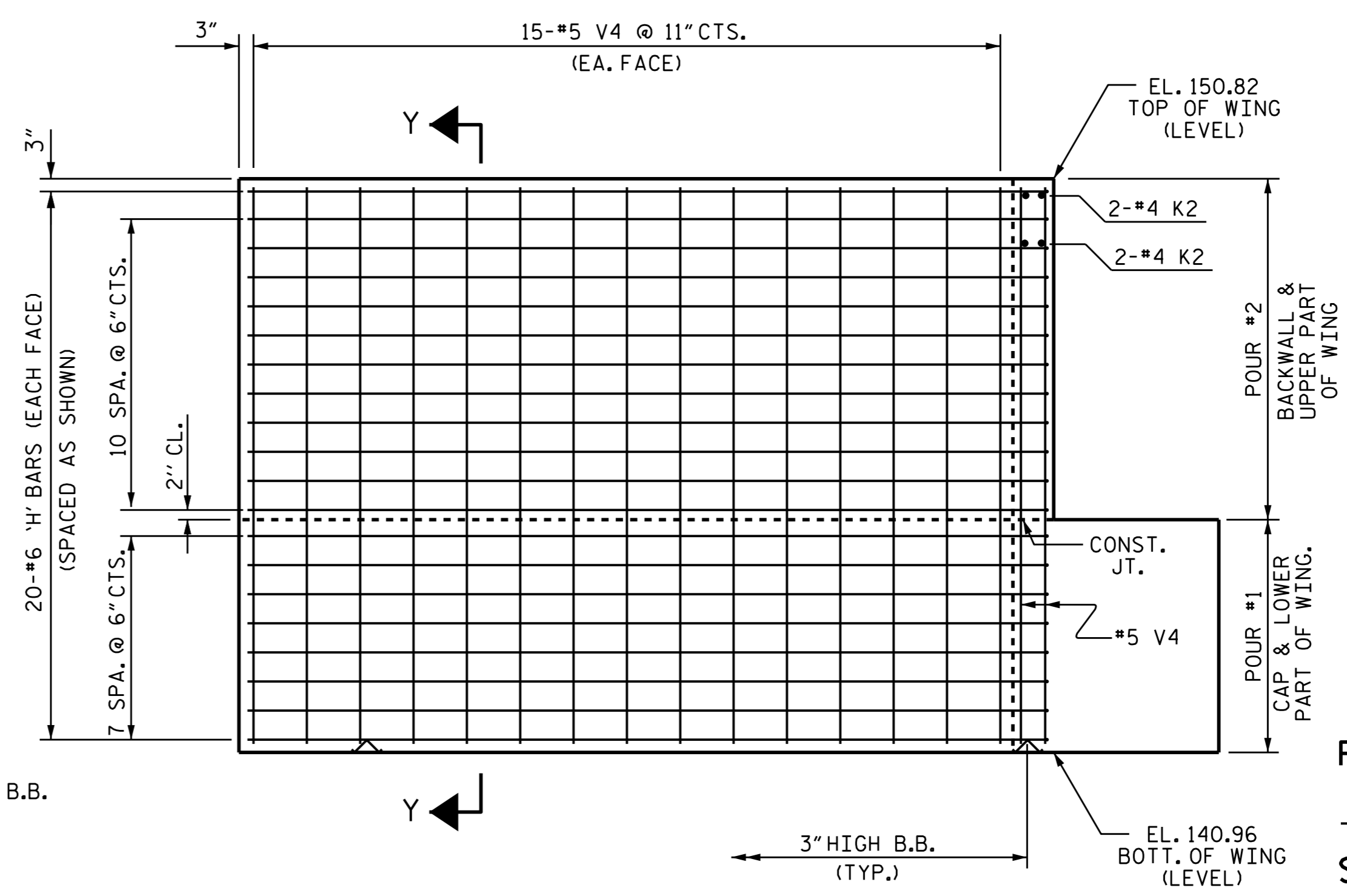
PLAN OF WING W2



ELEVATION OF WING W1



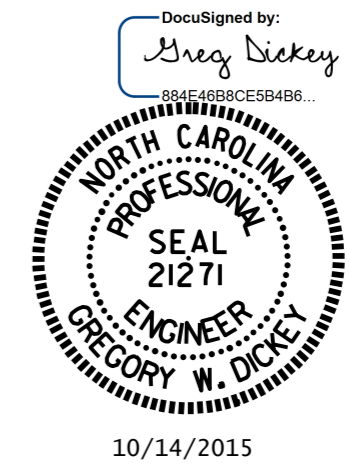
SECTION X-X



ELEVATION OF WING W2

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

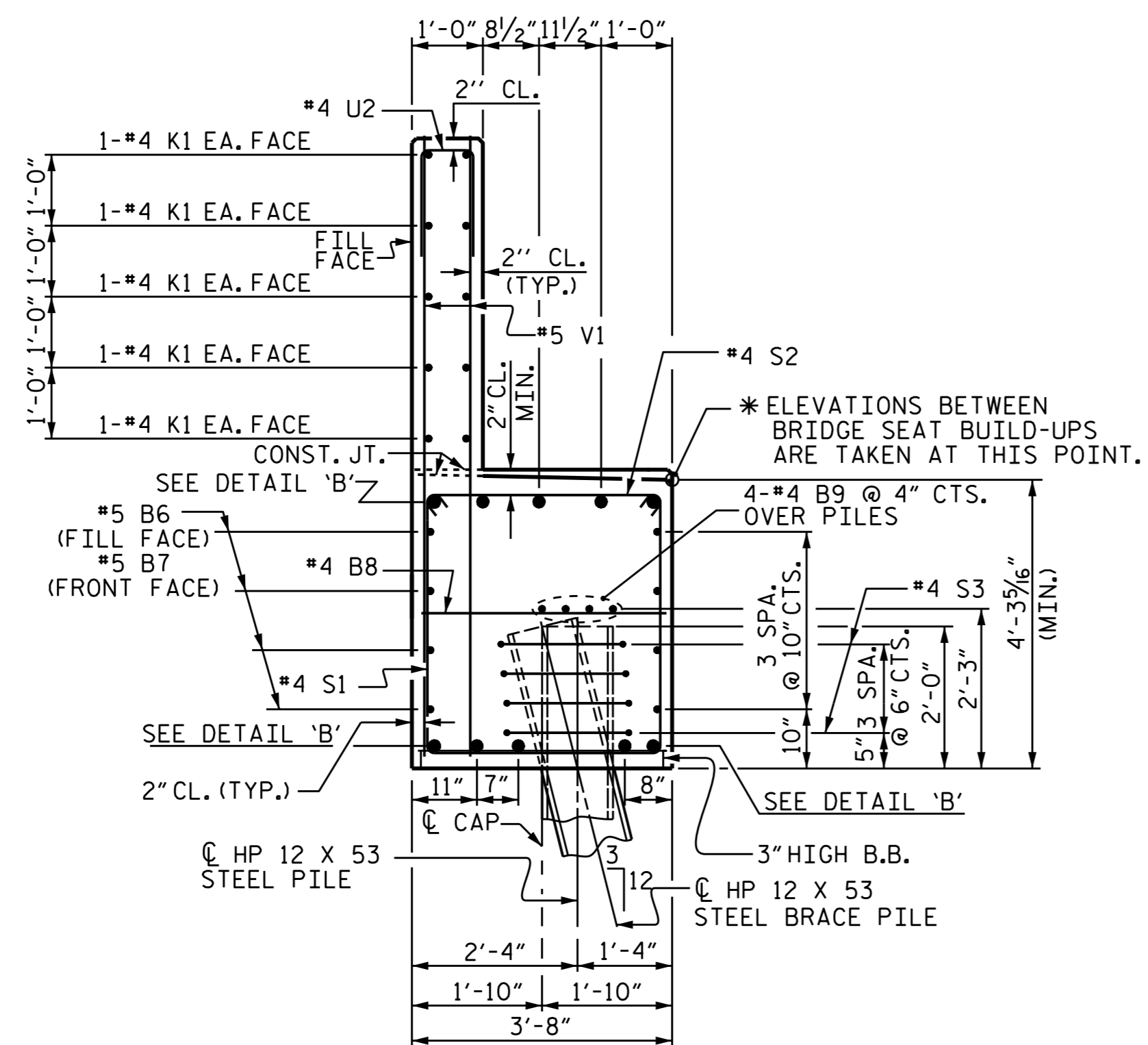
SHEET 4 OF 6



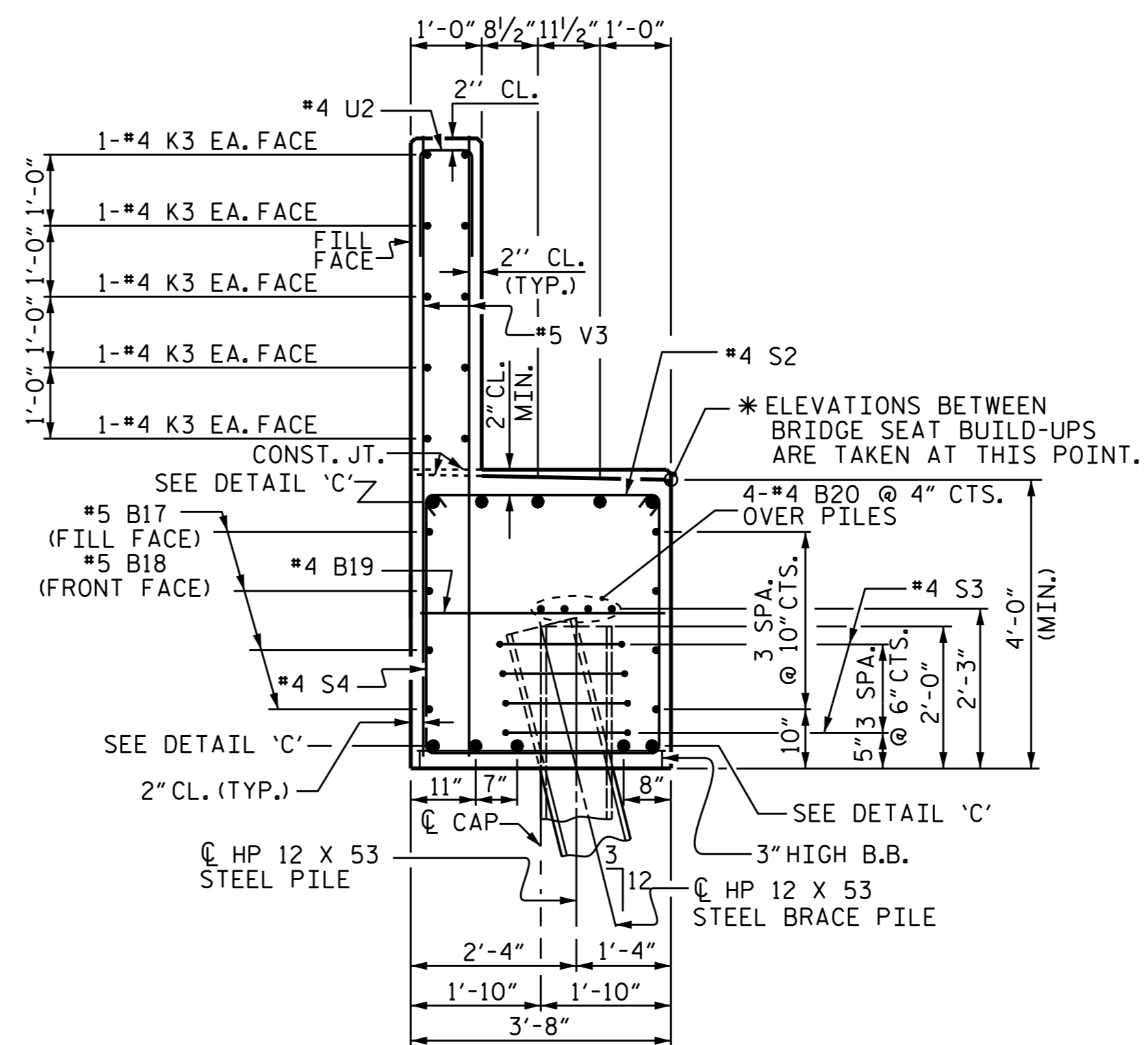
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT #1 STAGE I					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-48 TOTAL SHEETS 78

DRAWN BY: B.N.BARODAWALA DATE: 4-6-15
 CHECKED BY: DAVID GLADDEN DATE: 4-6-15
 DESIGN ENGINEER OF RECORD: ASHVIN PATEL DATE: 8-6-15

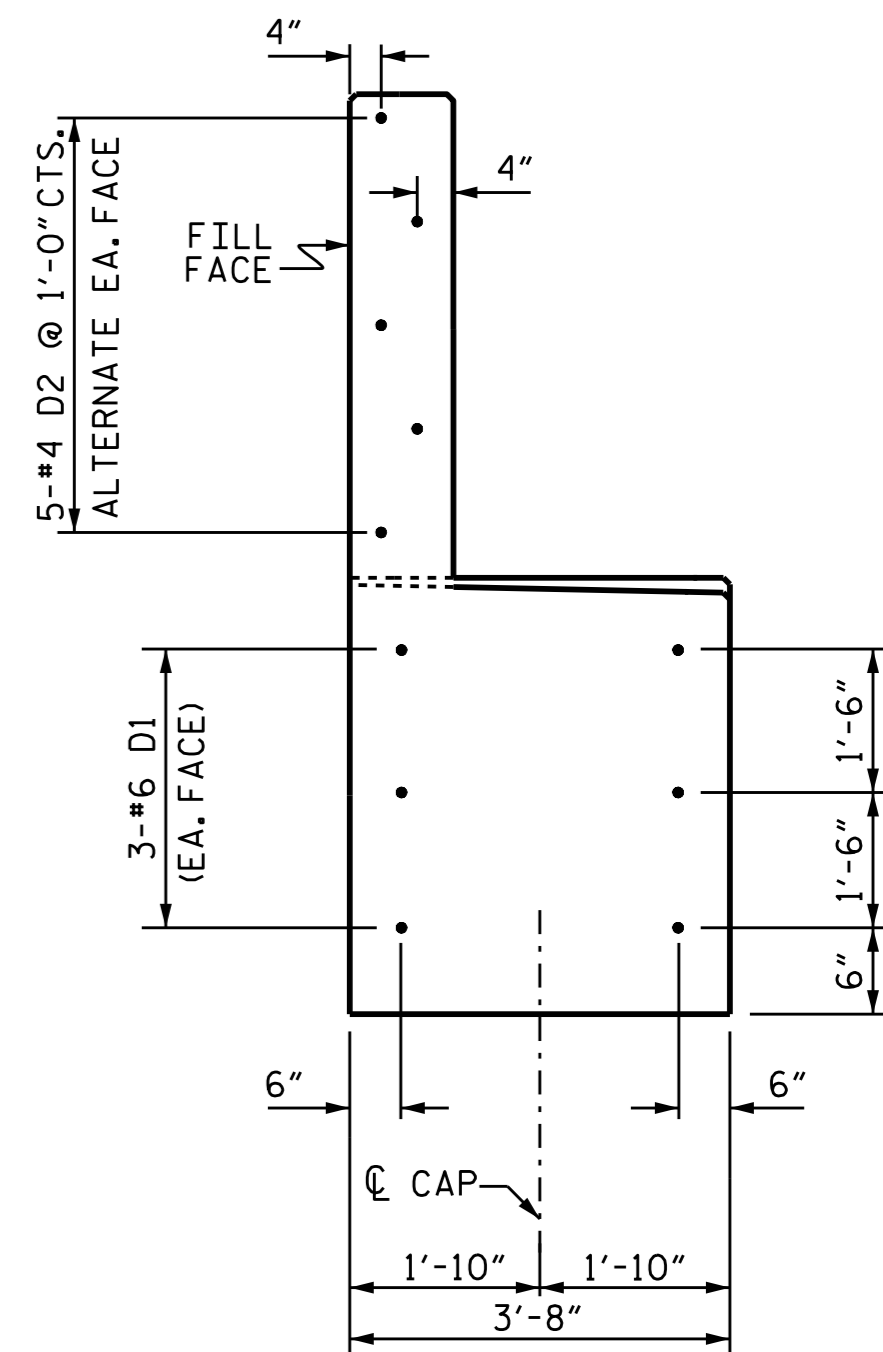
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SECTION A-A

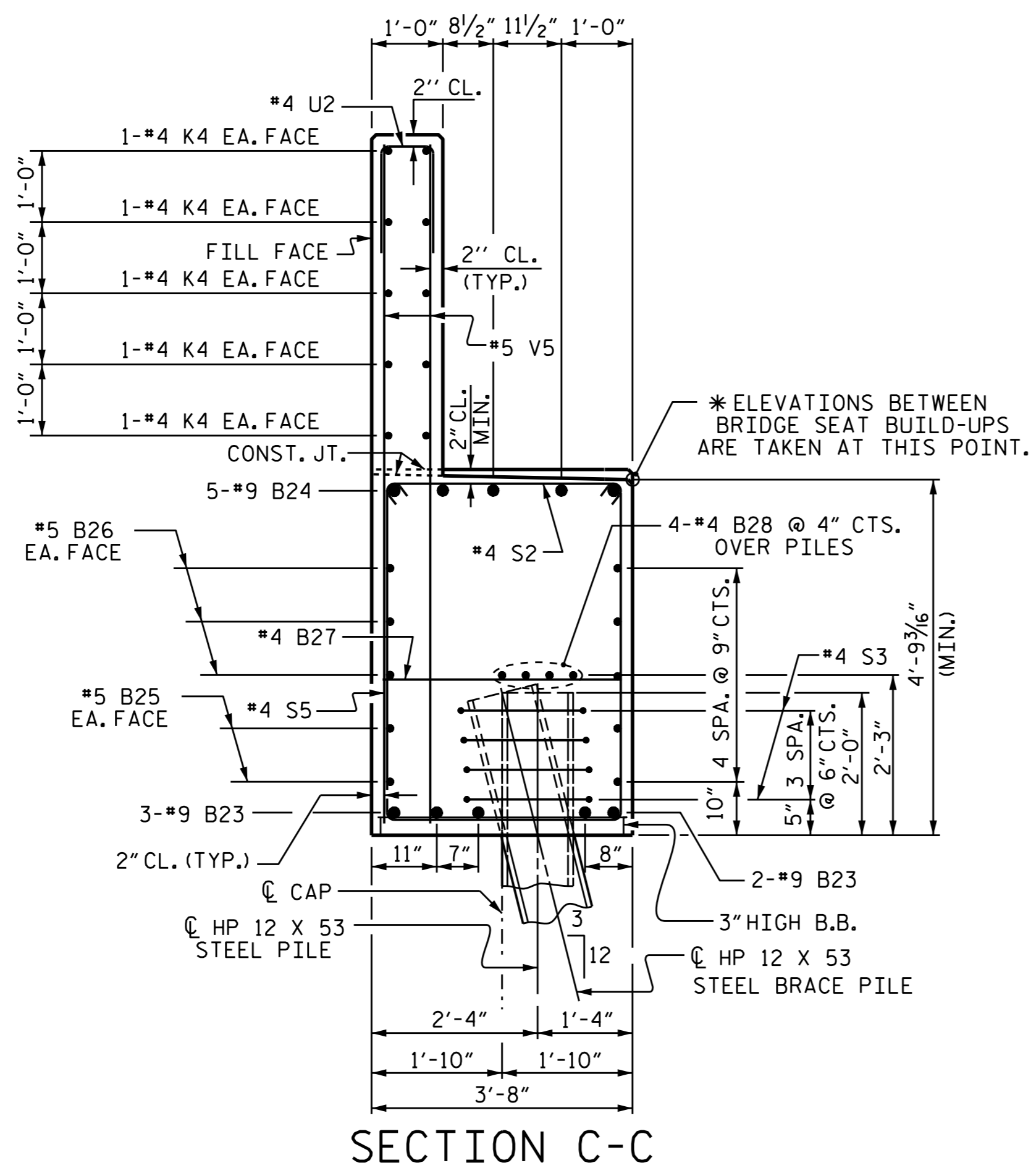


SECTION B-B

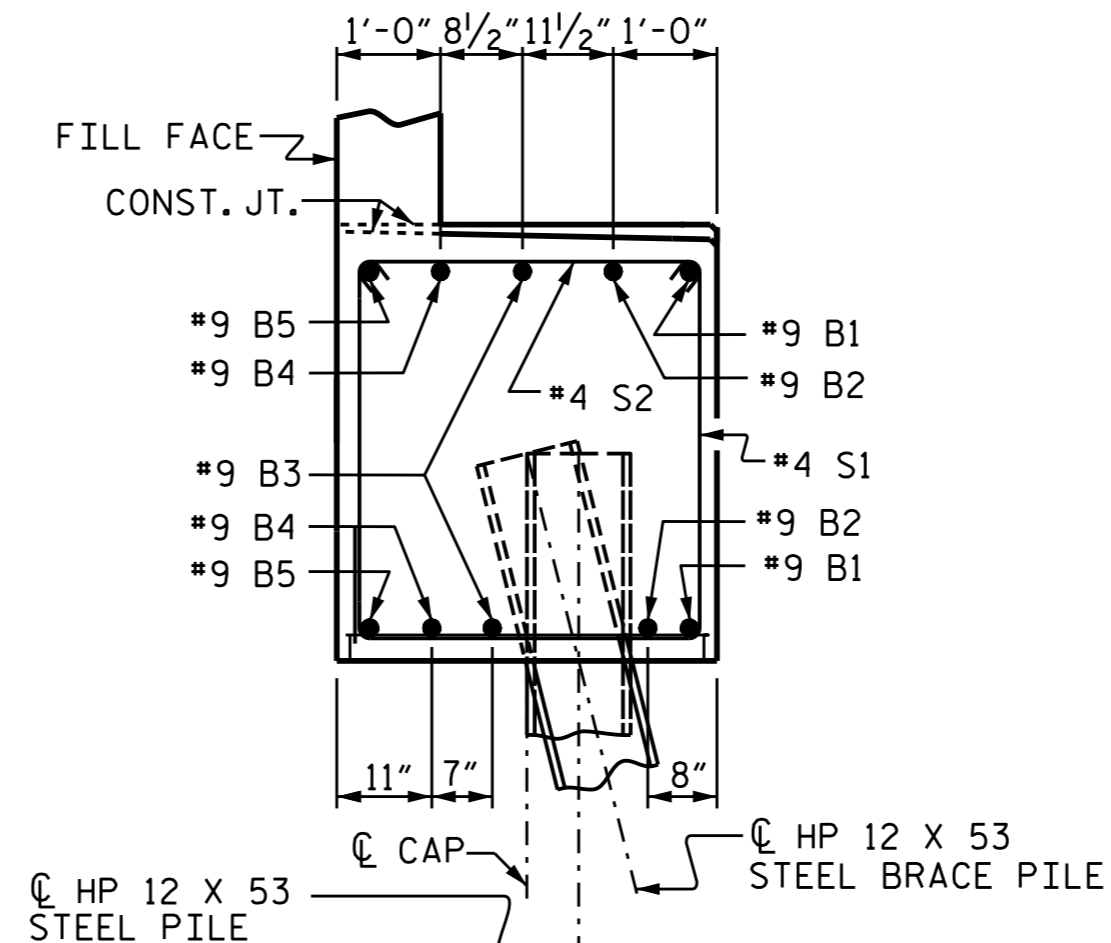


DOWEL LOCATION

CONCRETE COLLAR
NOT SHOWN FOR CLARITY

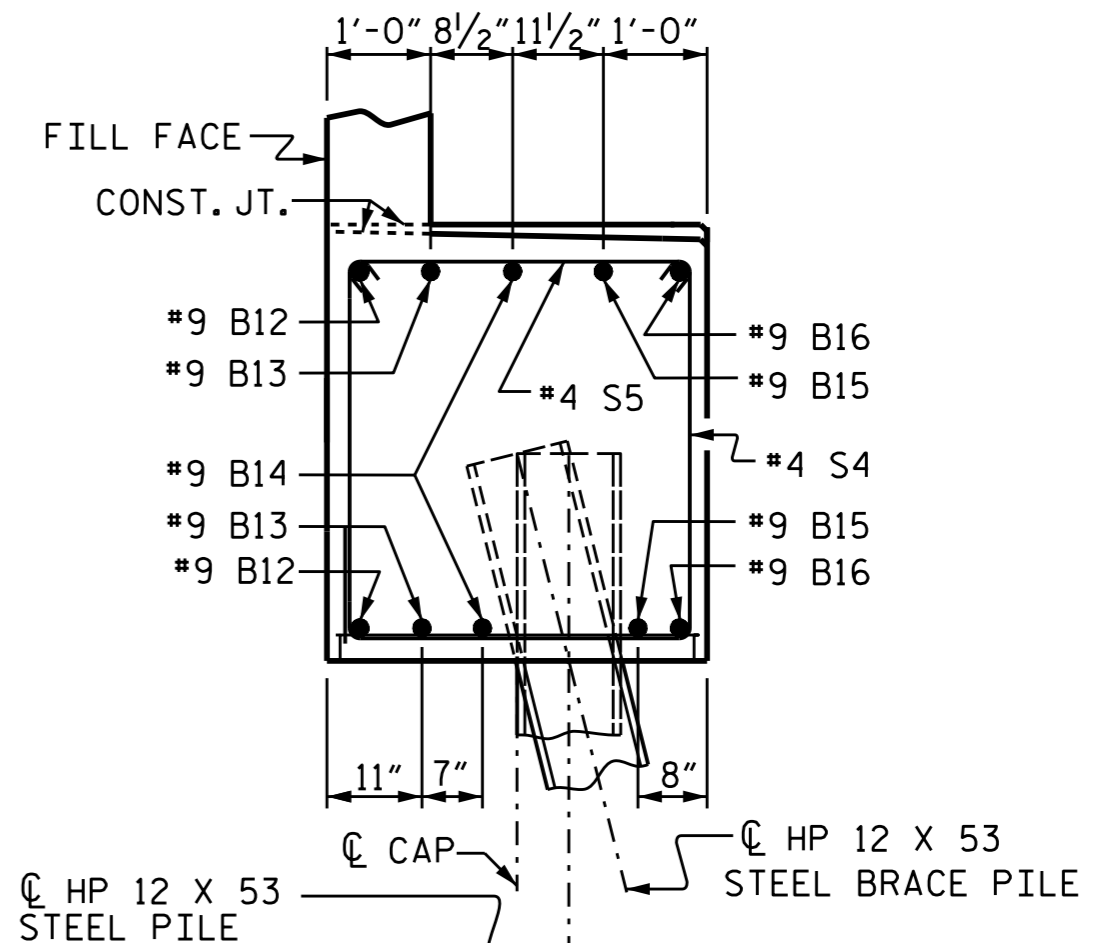


SECTION C-C



DETAIL 'B'

STAGE I (LEFT)

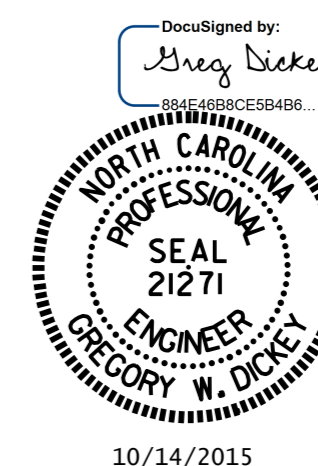


DETAIL 'C'

STAGE I (RIGHT)

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 5 OF 6



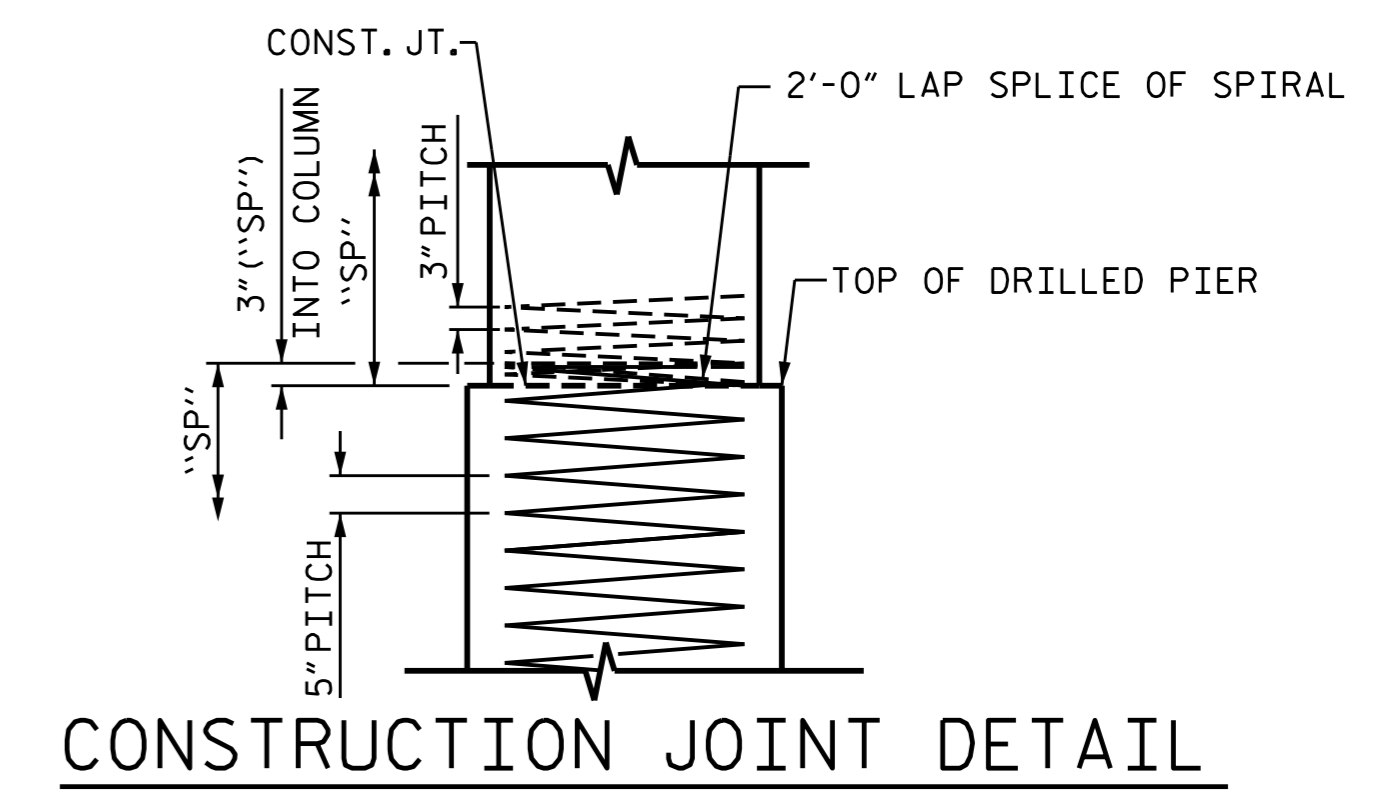
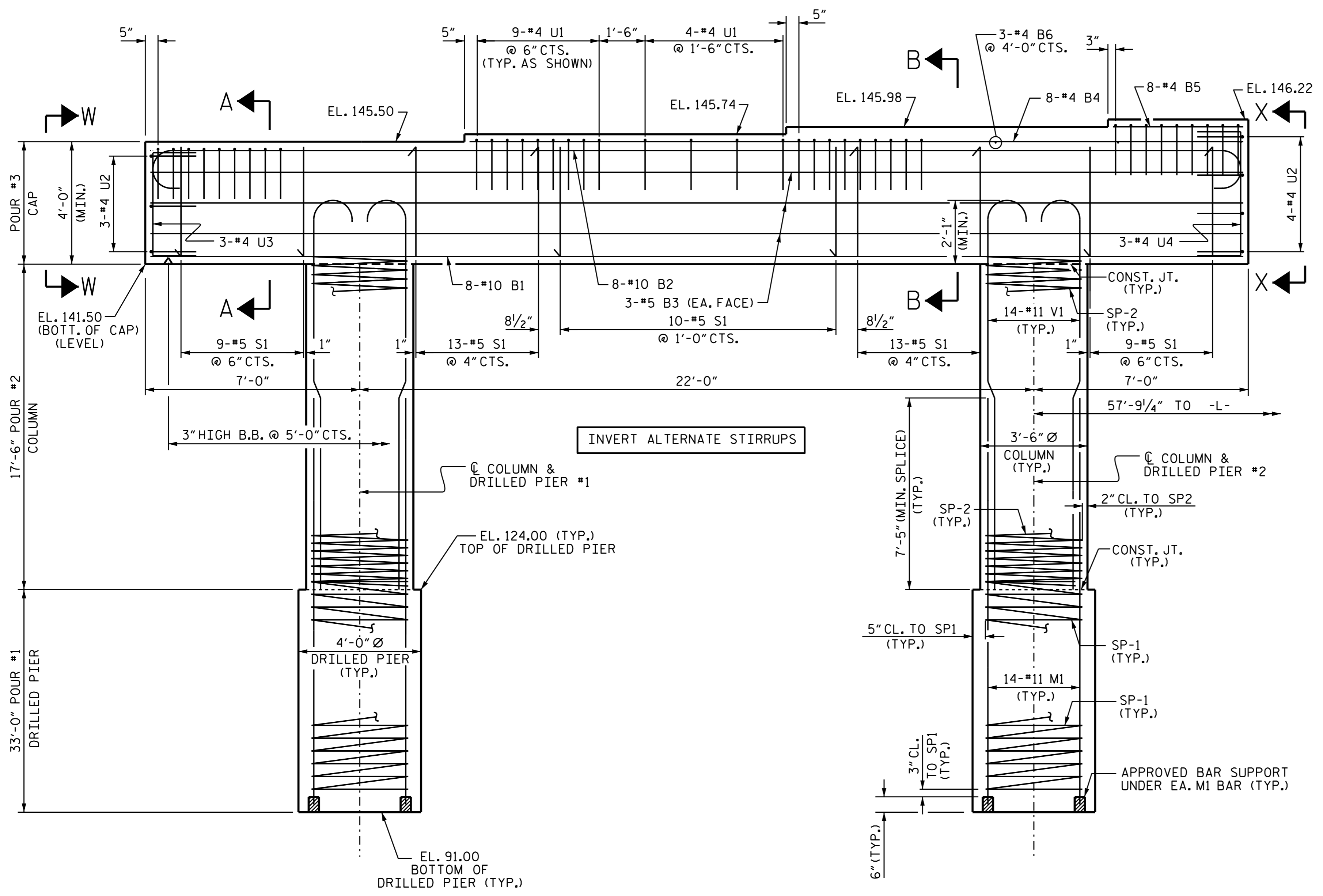
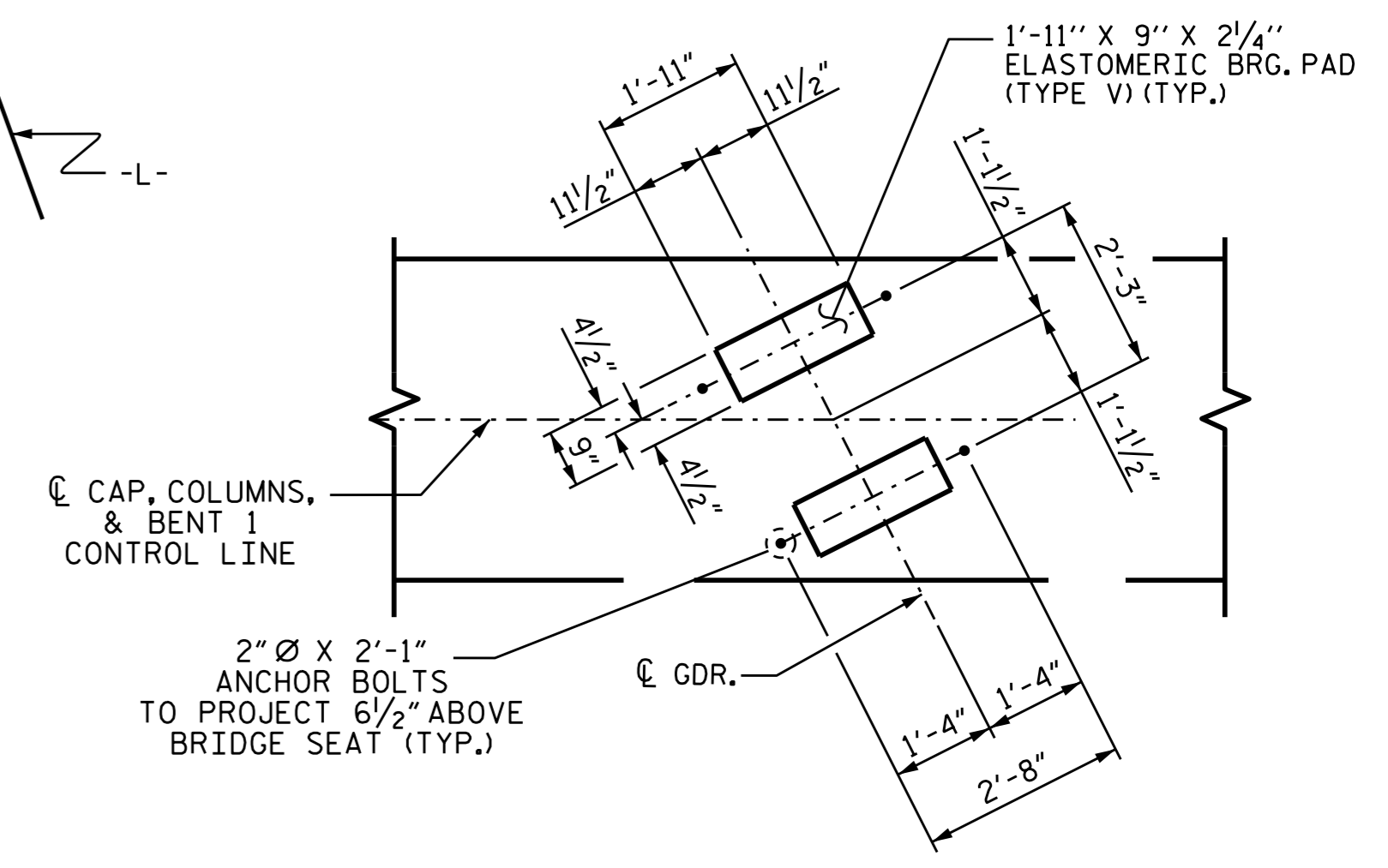
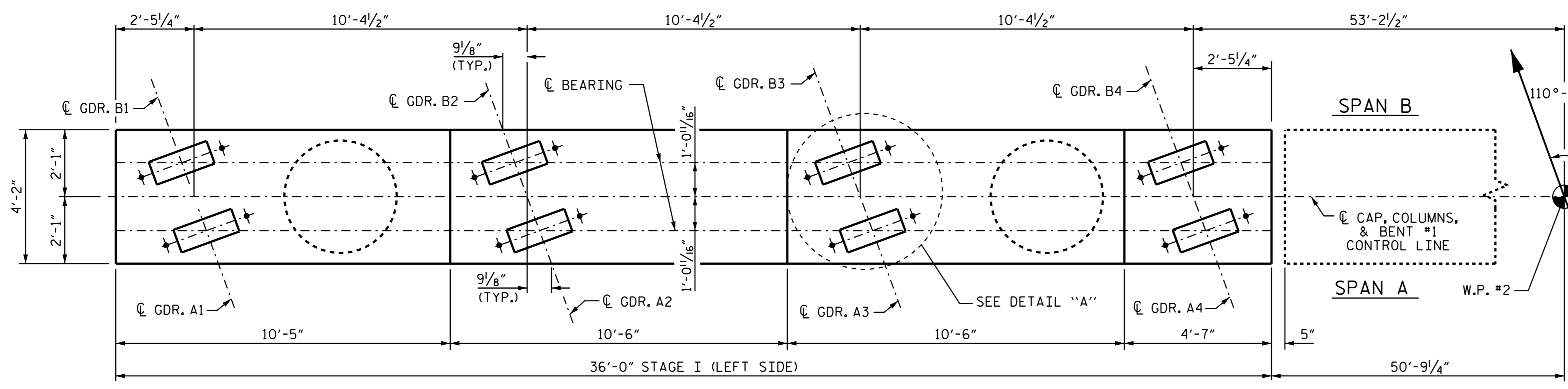
10/14/2015

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-49
1			3			TOTAL SHEETS
2			4			78

DRAWN BY: B.N.BARODAWALA DATE: 4-6-15
 CHECKED BY: DAVID GLADDEN DATE: 4-6-15
 DESIGN ENGINEER OF RECORD: ASHVIN PATEL DATE: 8-6-15

NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.
 NO SEPARATE PAYMENT WILL BE MADE FOR CSL TUBES. CSL TUBES WILL BE INCLUDED IN THE UNIT BID PRICE FOR DRILLED PIERS.
 THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FOOT BELOW THE GROUND LINE.



ELEVATION

FOR SECTION A-A, B-B, X-X & W-W
 SEE SHEET 5 OF 5

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

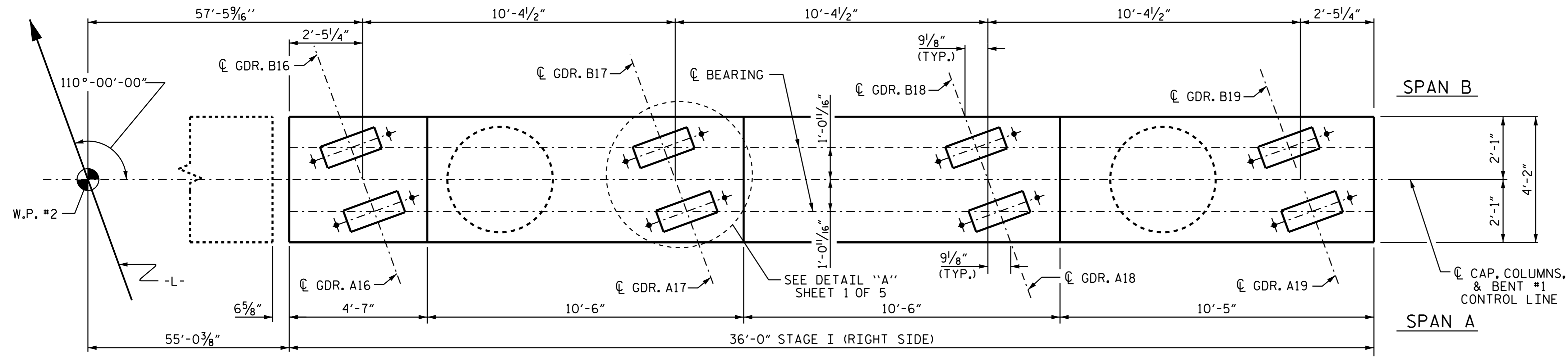
SHEET 1 OF 5



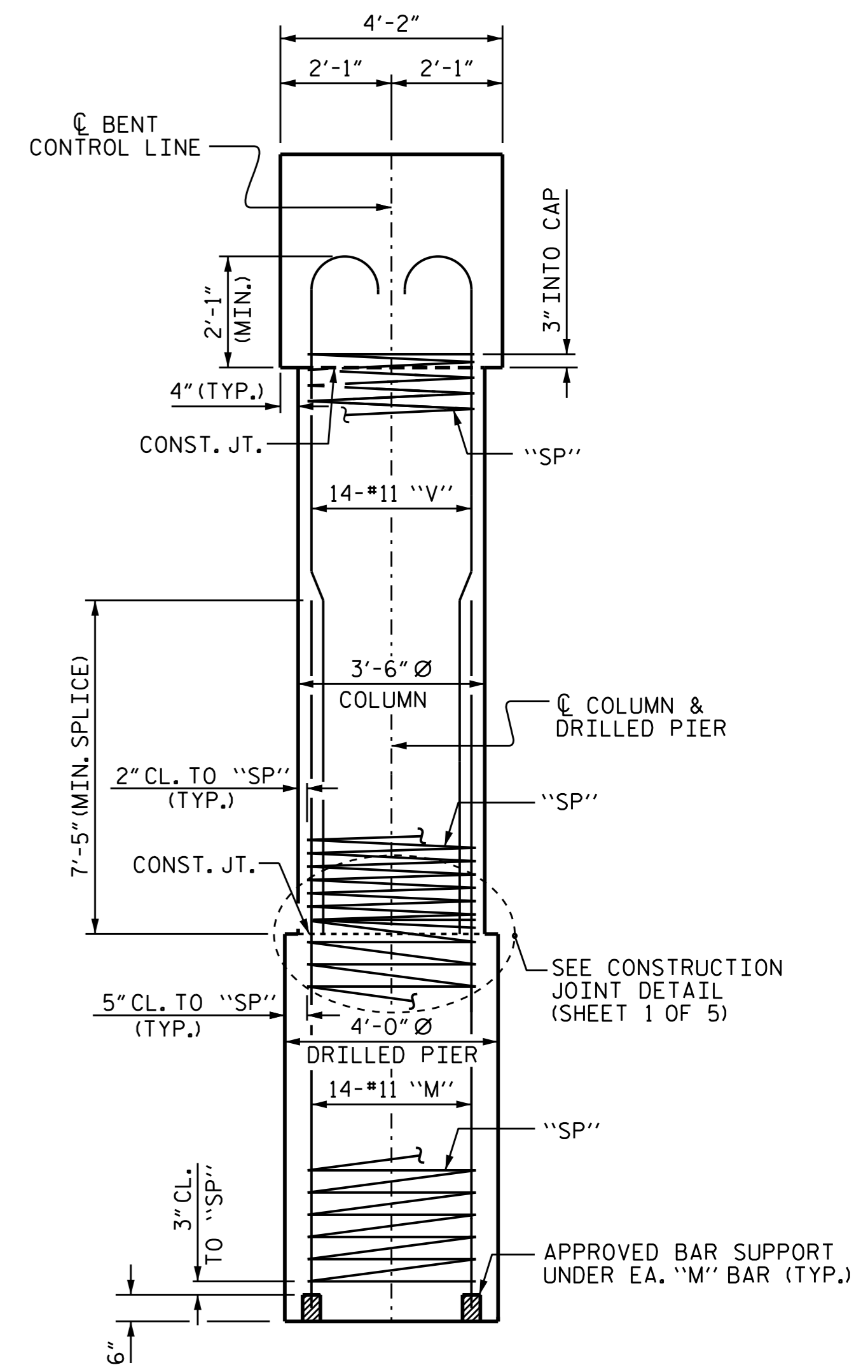
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
BENT #1
STAGE I
(LEFT SIDE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-51
1			3			TOTAL SHEETS
2			4			78

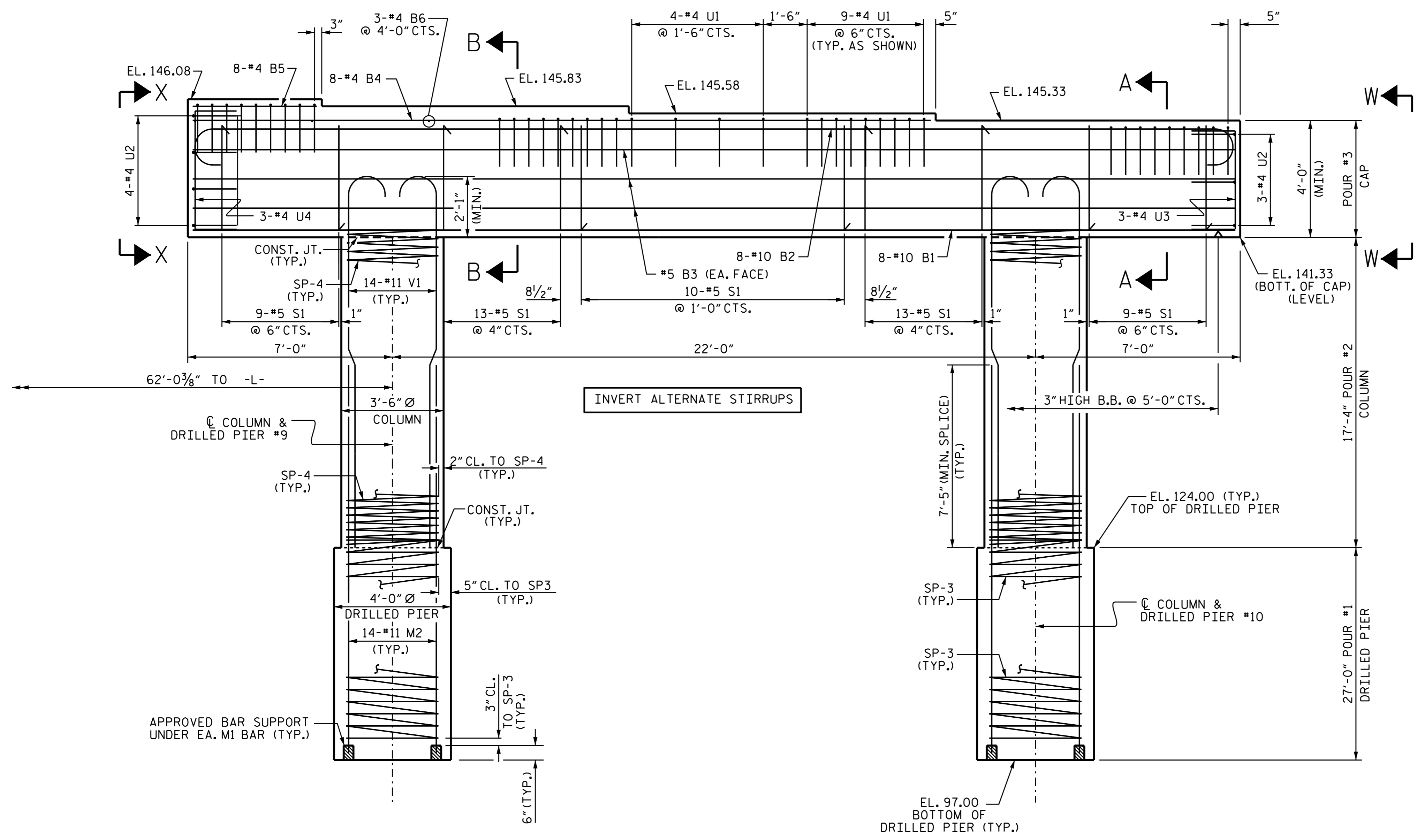
DRAWN BY: B. N. BARODAWALA DATE: 4-22-15
 CHECKED BY: D. G. ELY DATE: 6-3-15
 DESIGN ENGINEER OF RECORD: M. AHMED DATE: 8-6-15



PLAN



END ELEVATION



ELEVATION

FOR SECTION A-A, B-B, X-X & W-W
SEE SHEET 5 OF 5

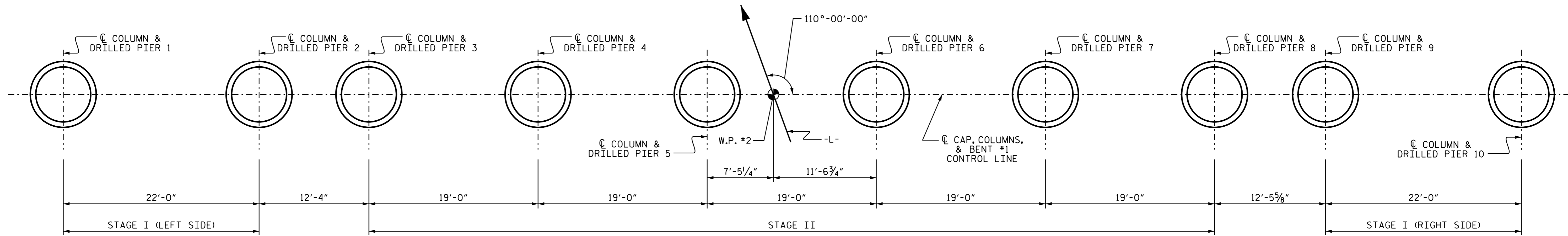
PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 2 OF 5

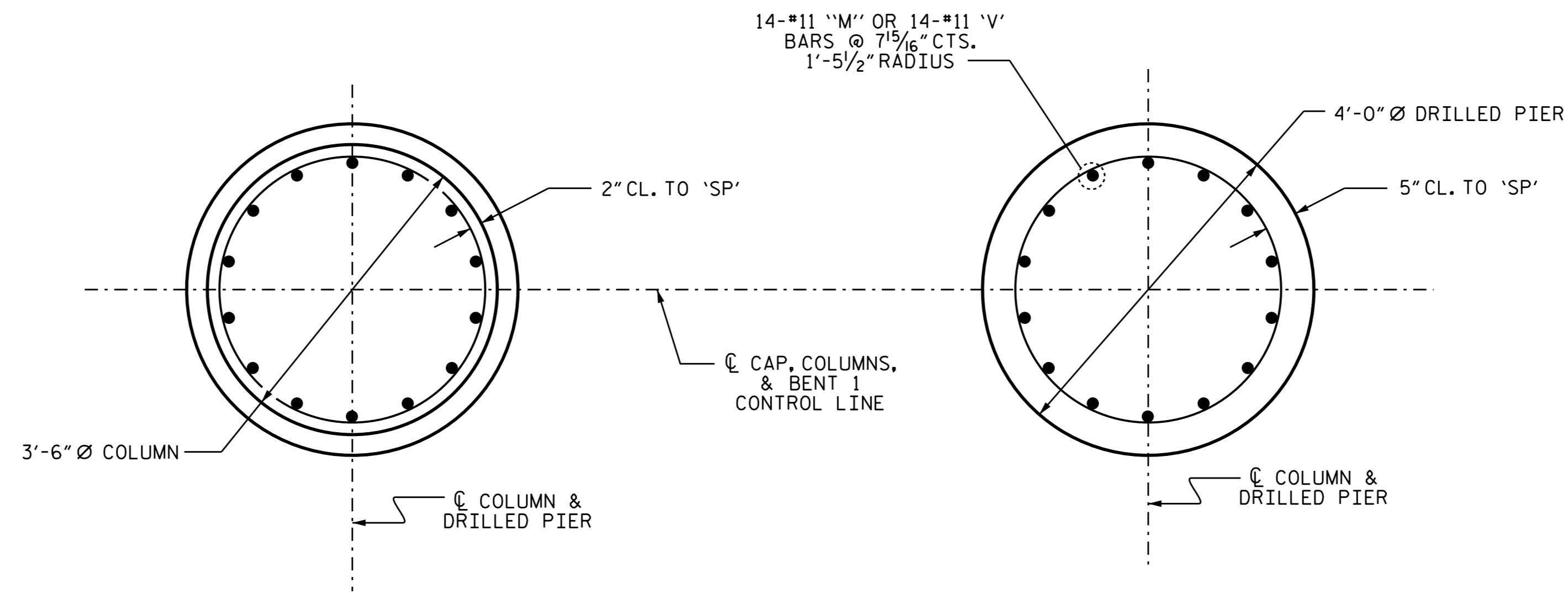
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
BENT #1 STAGE I (RIGHT SIDE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-52
					TOTAL SHEETS 78



DRAWN BY: B. N. BARODAWALA DATE: 4-22-15
 CHECKED BY: D. G. ELY DATE: 6-3-15
 DESIGN ENGINEER OF RECORD: M. AHMED DATE: 8-6-15



COLUMNS AND DRILLED PIERS LAYOUT (STAGE I AND STAGE II)



DETAILS OF COLUMNS AND DRILLED PIERS

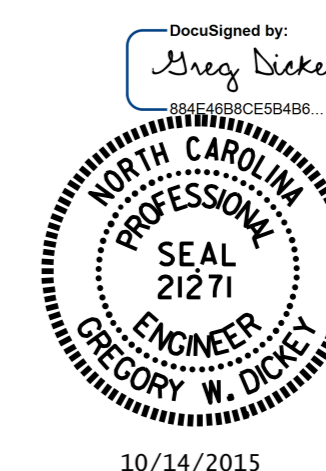
(DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN, AND DRILLED PIERS.)

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

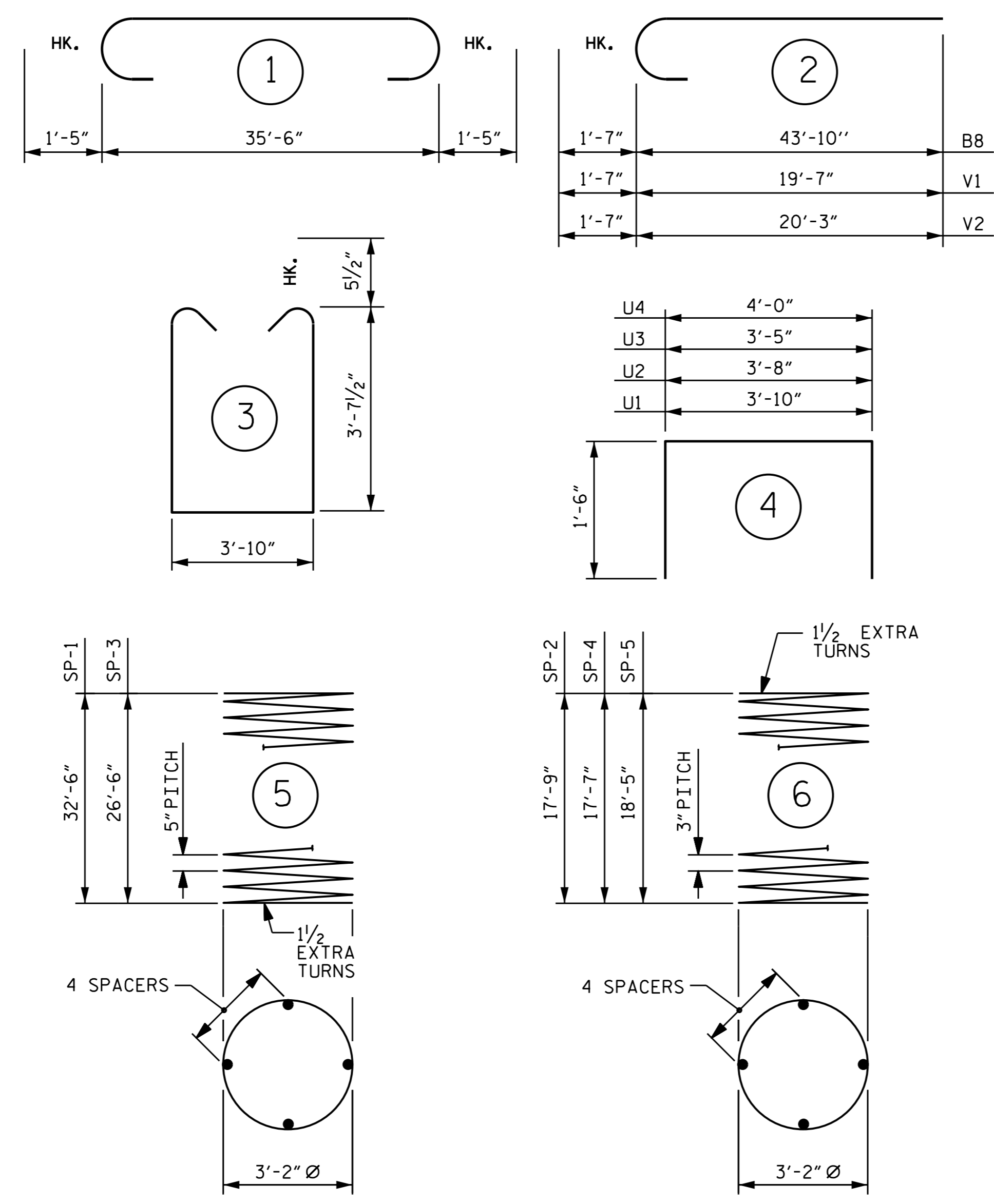
BENT #1
STAGE I & II



DRAWN BY : B. N. BARODAWALA DATE : 4-22-15
 CHECKED BY : D. G. ELY DATE : 6-3-15
 DESIGN ENGINEER OF RECORD: M. AHMED DATE : 8-6-15

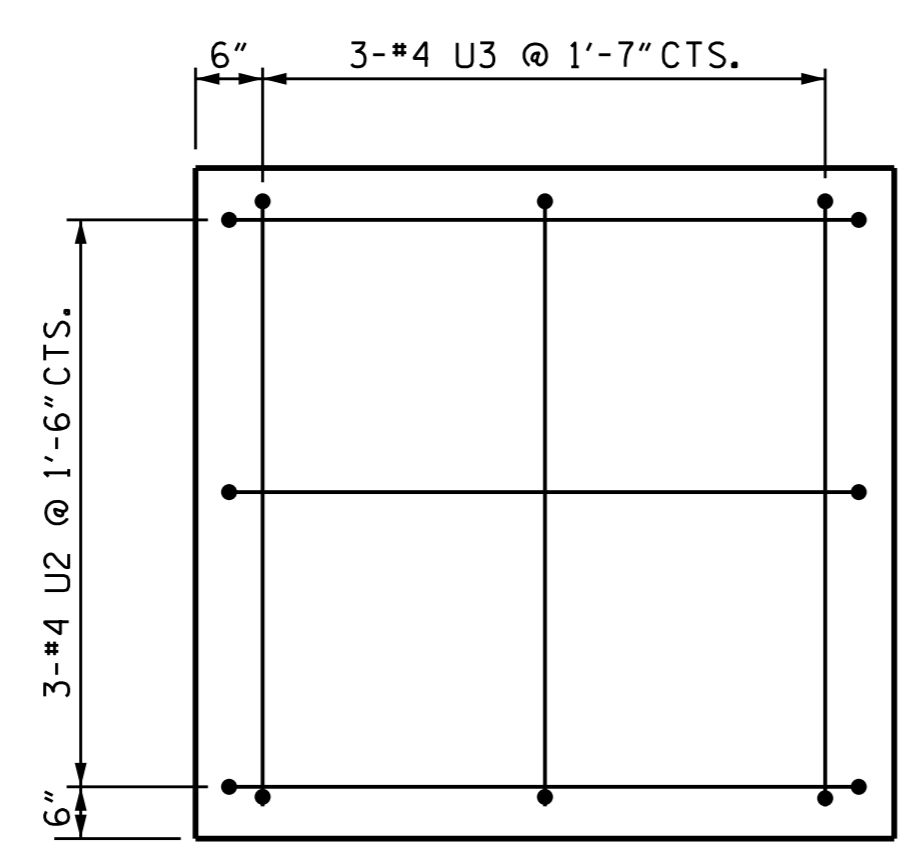
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-54
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BAR TYPES

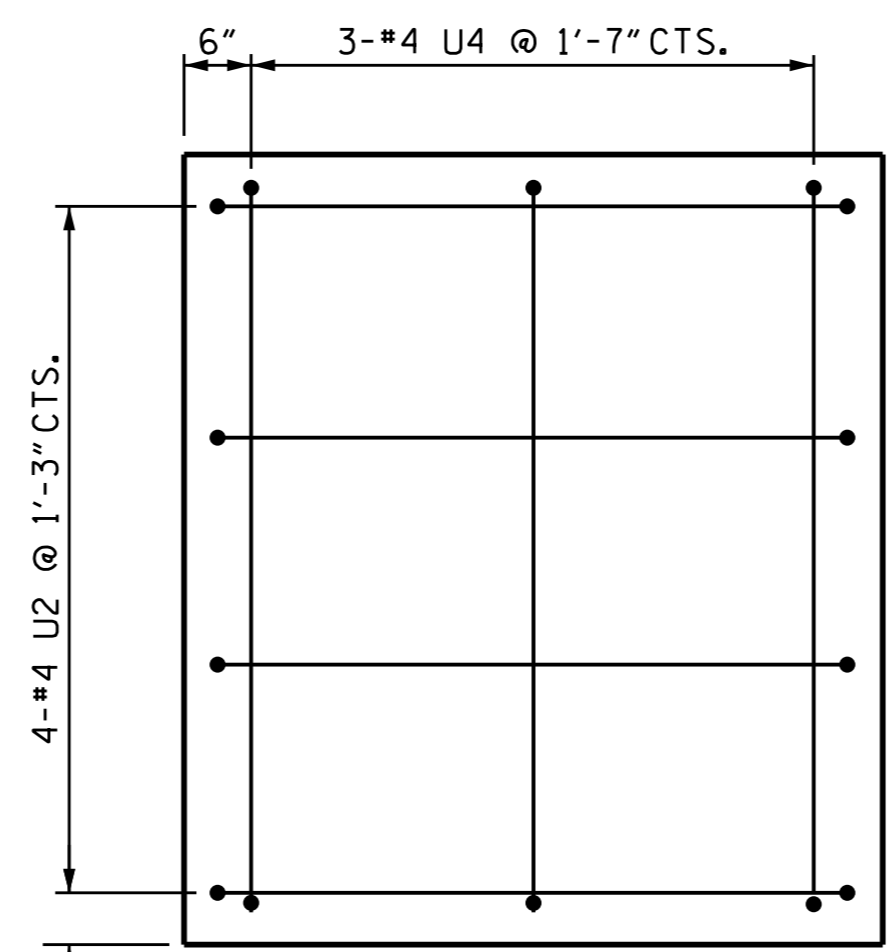


ALL BAR DIMENSIONS ARE OUT TO OUT.

** THE SP-1 & SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
 * THE SP-2, SP-4 & SP-5 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.



VIEW W-W
STAGE I & II



VIEW X-X
STAGE I

BILL OF MATERIAL

BENT #1

STAGE I (LEFT SIDE)						STAGE I (RIGHT SIDE)						STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	STR	35'-8"	1228	B1	8	#10	STR	35'-8"	1228	B7	16	#11	STR	57'-2"	4860
B2	8	#10	1	38'-4"	1320	B2	8	#10	1	38'-4"	1320	B8	16	#11	2	45'-5"	3861
B3	6	#5	STR	35'-8"	223	B3	6	#5	STR	35'-8"	223	B9	12	#5	STR	53'-9"	673
B4	8	#4	STR	25'-3"	135	B4	8	#4	STR	25'-3"	135	B10	8	#4	STR	26'-8"	143
B5	8	#4	STR	4'-3"	23	B5	8	#4	STR	4'-3"	23	B11	16	#4	STR	18'-0"	192
B6	3	#4	STR	3'-10"	8	B6	3	#4	STR	3'-10"	8	B12	8	#11	STR	43'-10"	1863
M1	28	#11	STR	42'-11"	6384	M2	28	#11	STR	36'-11"	5492	M1	14	#11	STR	42'-11"	3192
S1	54	#5	3	12'-0"	676	S1	54	#5	3	12'-0"	676	M2	70	#11	STR	36'-11"	13730
U1	40	#4	4	6'-10"	183	U1	40	#4	4	6'-10"	183	S1	107	#5	3	12'-0"	1339
U2	7	#4	4	6'-8"	31	U2	7	#4	4	6'-8"	31	U1	116	#4	4	6'-10"	529
U3	3	#4	4	6'-5"	13	U3	3	#4	4	6'-5"	13	U2	6	#4	4	6'-8"	27
U4	3	#4	4	7'-0"	14	U4	3	#4	4	7'-0"	14	U3	6	#4	4	6'-5"	26
V1	28	#11	2	21'-2"	3149	V1	28	#11	2	21'-2"	3149	V2	84	#11	2	21'-10"	9744

REINFORCING STEEL FOR BENT No. 1 13387 LBS. REINFORCING STEEL FOR BENT No. 1 12495 LBS. REINFORCING STEEL FOR BENT No. 1 40179 LBS.

SP-1	2	**	5	784'-6"	1636	SP-3	2	**	5	643'-6"	1342	SP-1	1	**	5	784'-6"	818
SP-2	2	*	6	712'-0"	951	SP-4	2	*	6	705'-9"	942	SP-3	5	**	5	643'-5"	3356

SPIRAL COLUMN REINFORCING STEEL 2587 LBS. SPIRAL COLUMN REINFORCING STEEL 2284 LBS. SPIRAL COLUMN REINFORCING STEEL 7133 LBS.

CLASS A CONCRETE BREAKDOWN			CLASS A CONCRETE BREAKDOWN			CLASS A CONCRETE BREAKDOWN		
POUR #2 (COLUMNS)	12.5 C.Y.		POUR #2 (COLUMNS)	12.4 C.Y.		POUR #2 (COLUMNS)	38.9 C.Y.	
POUR #3 (CAP)	23.9 C.Y.		POUR #3 (CAP)	23.9 C.Y.		POUR #3 (CAP)	68.2 C.Y.	
TOTAL	36.4 C.Y.		TOTAL	36.3 C.Y.		TOTAL	107.1 C.Y.	

DRILLED PIERS		DRILLED PIERS		DRILLED PIERS	
DRILLED PIER CONCRETE		DRILLED PIER CONCRETE		DRILLED PIER CONCRETE	
POUR 1 (DRILLED PIERS):	30.7 C.Y.	POUR 1 (DRILLED PIERS):	25.1 C.Y.	POUR 1 (DRILLED PIERS):	78.2 C.Y.
CSL TUBES	276 FT.	CSL TUBES	228 FT.	CSL TUBES	708 FT.
4'-0" Ø DRILLED PIERS	66.0 LIN. FT.	4'-0" Ø DRILLED PIERS	54.0 LIN. FT.	4'-0" Ø DRILLED PIERS	168 LIN. FT.

SUMMARY BILL OF MATERIAL

REINFORCING STEEL _____ 66061 LBS.
 SPIRAL COLUMN REINFORCING STEEL _____ 12004 LBS.
 CLASS A CONCRETE _____ 179.8 C.Y.
 4'-0" Ø DRILLED PIERS _____ 288.0 LIN. FT.

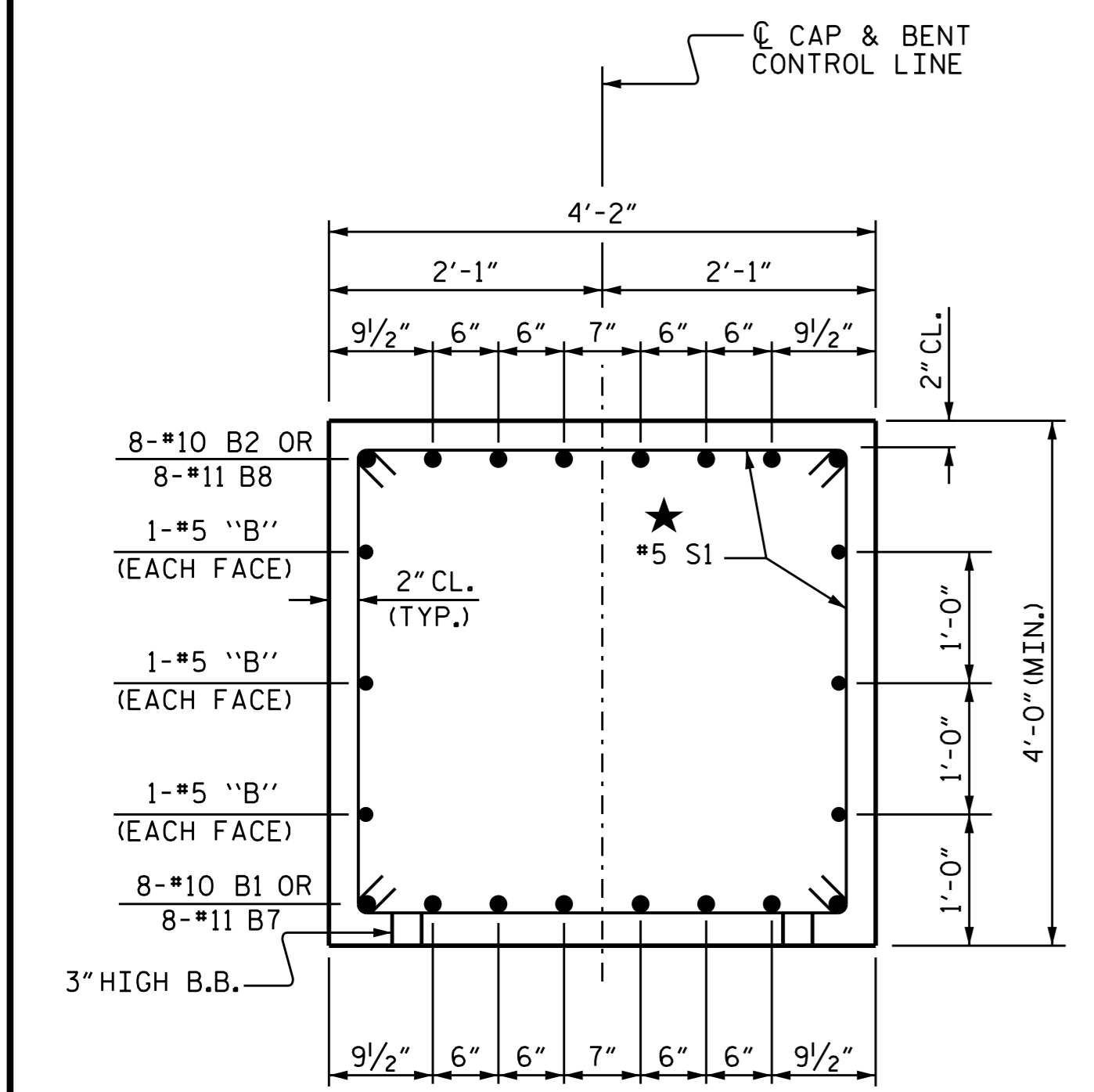
PROJECT NO. I-3318BB
 JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 5 OF 5

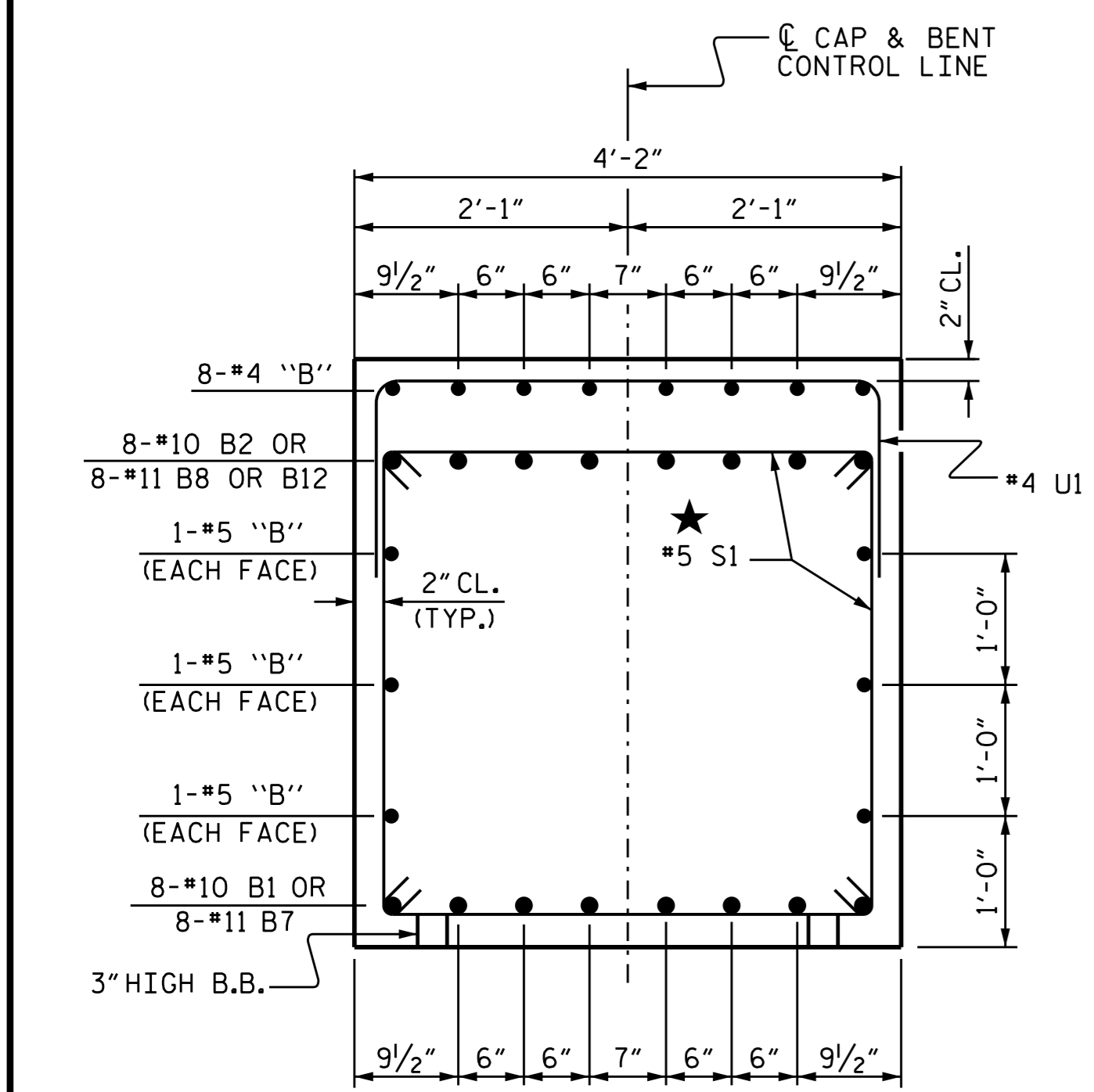
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BENT #1
STAGE I & II

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-55	
1			3			TOTAL SHEETS 78	
2			4				



SECTION A-A
STAGE I & II



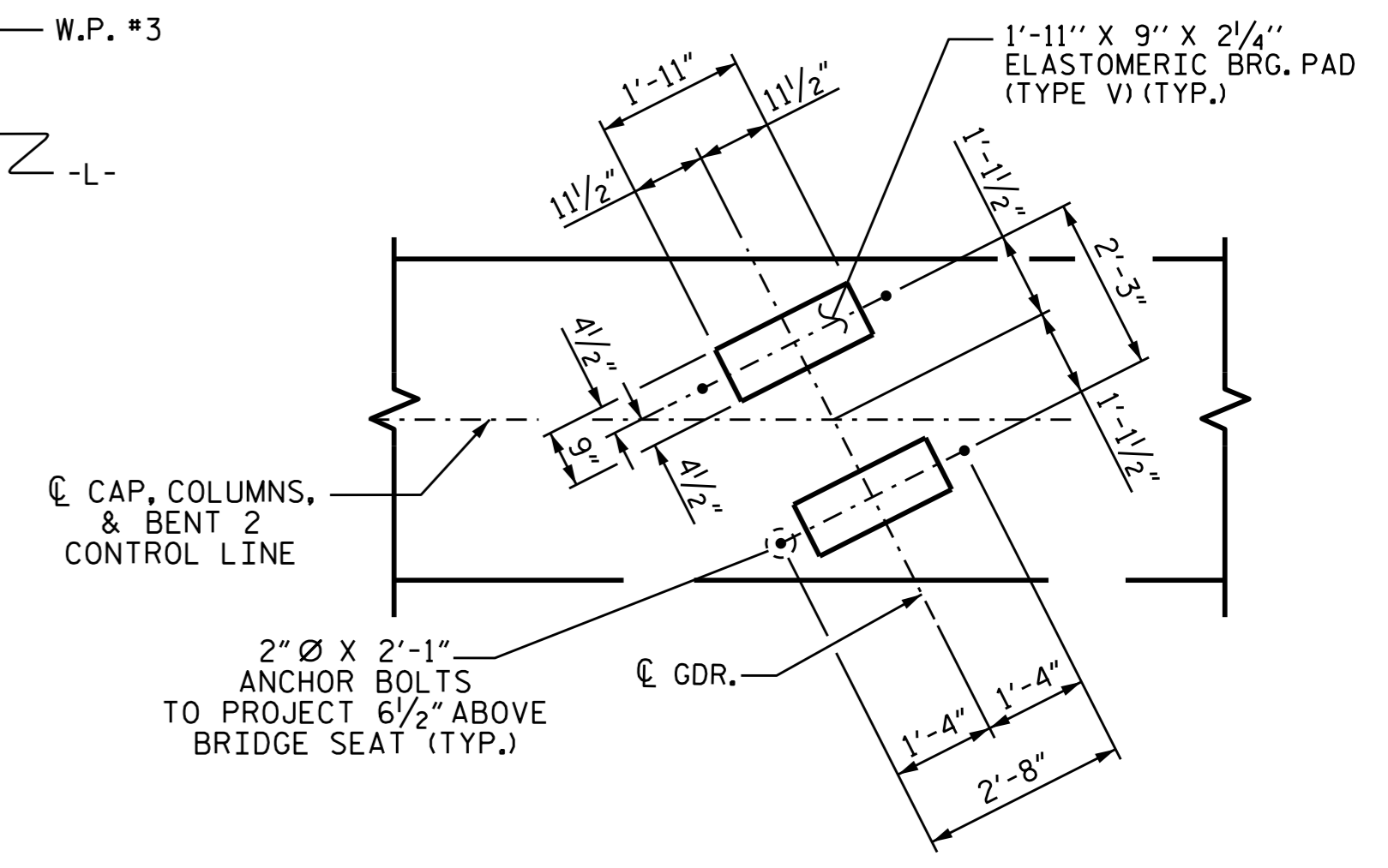
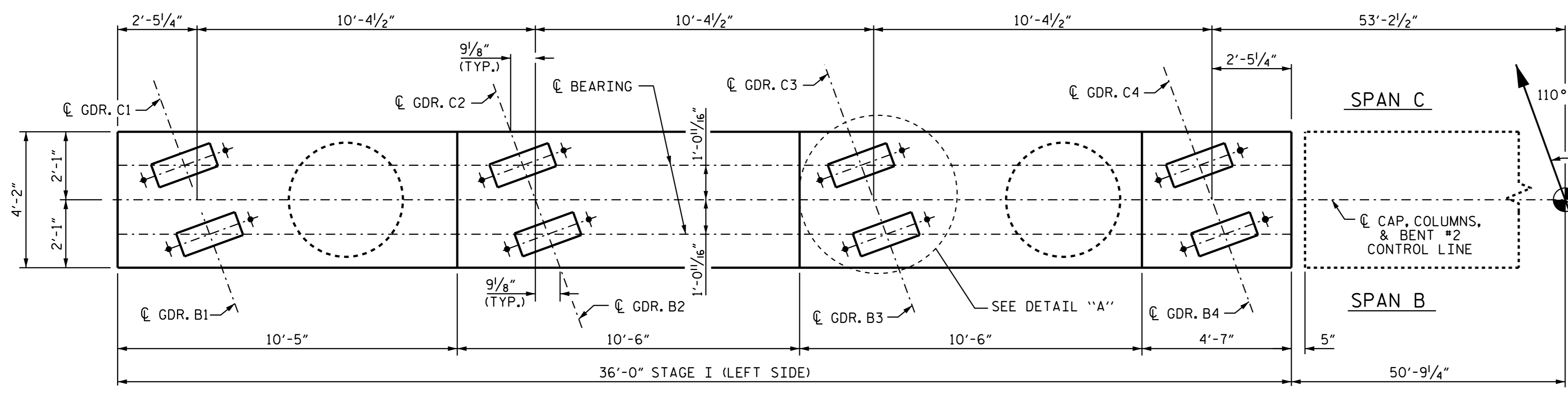
SECTION B-B
STAGE I & II

★ INVERT ALTERNATE STIRRUPS

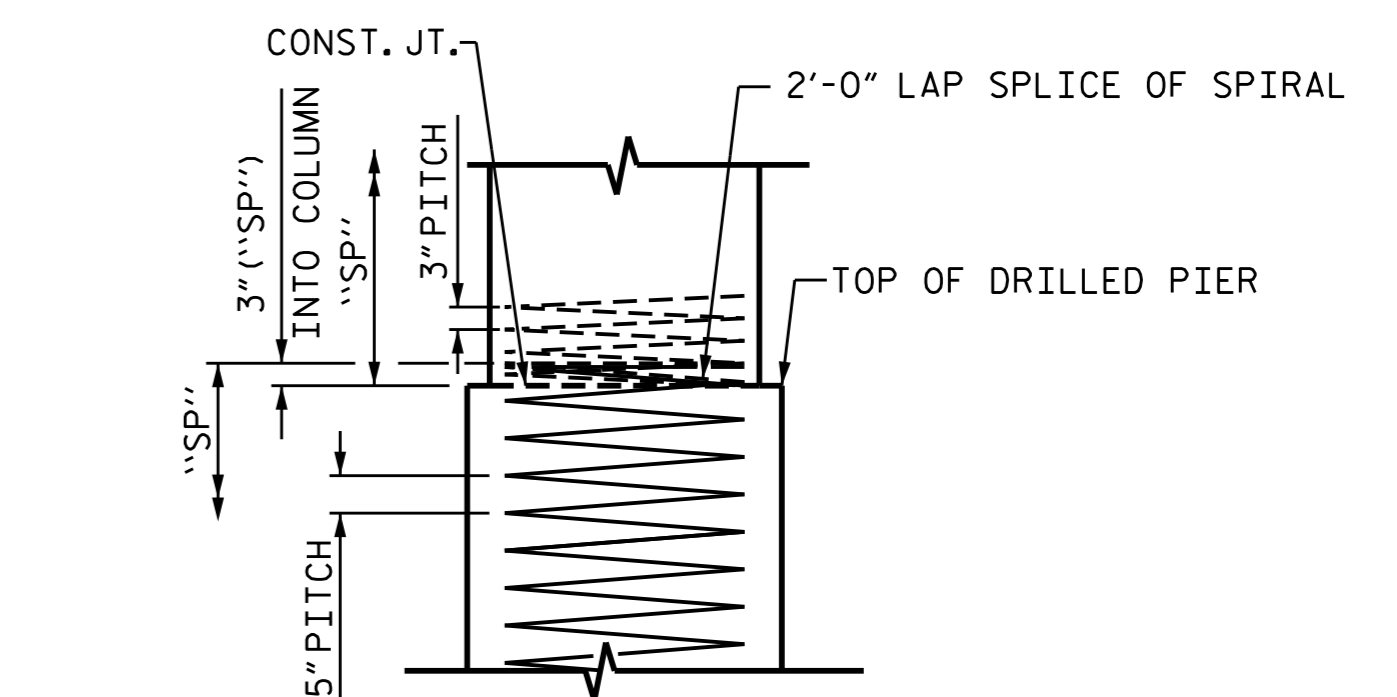
DRAWN BY: B. N. BARODAWALA DATE: 4-22-15
 CHECKED BY: D. G. ELY DATE: 6-3-15
 DESIGN ENGINEER OF RECORD: M. AHMED DATE: 8-6-15

NOTES

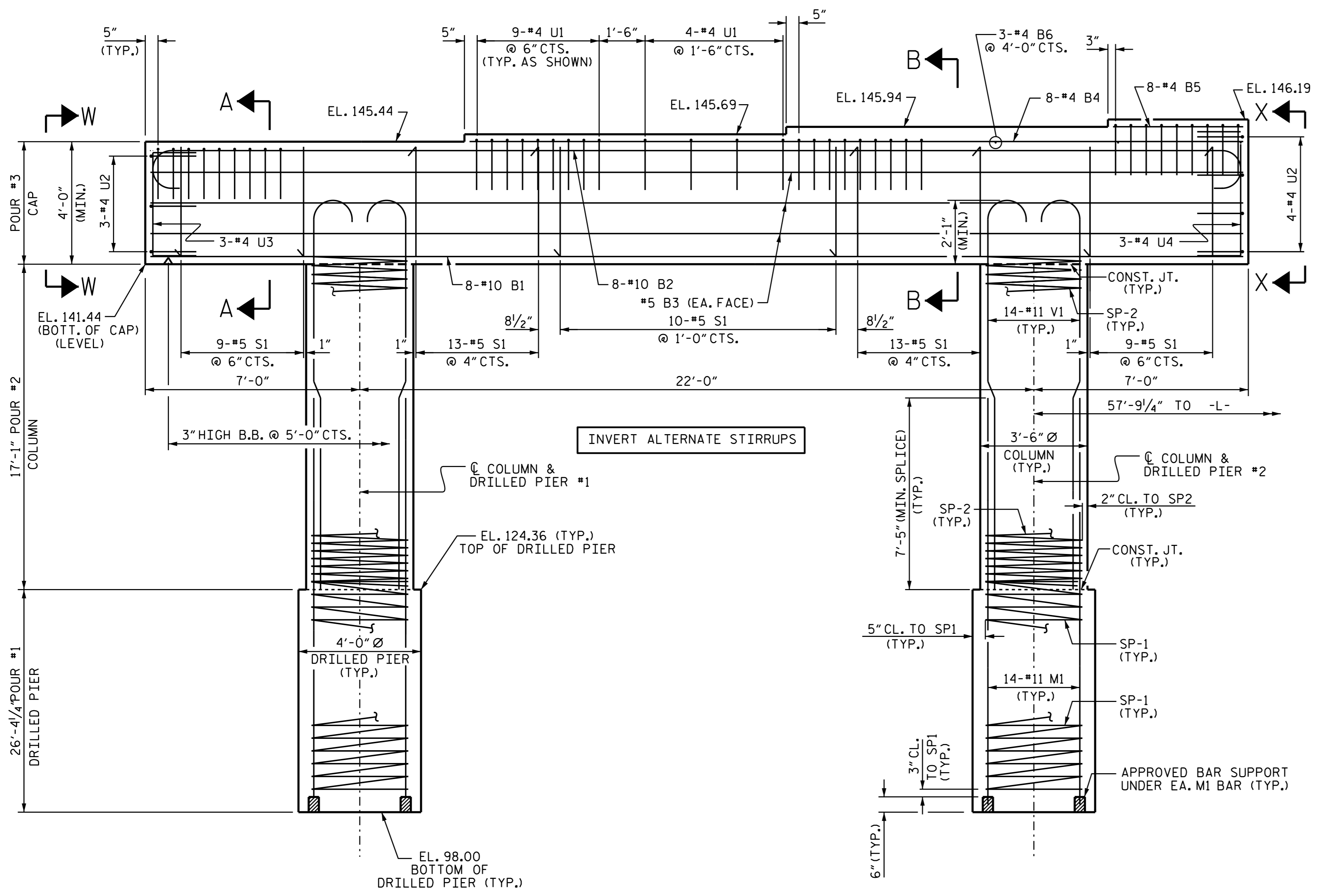
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
 ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".
 THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.
 NO SEPARATE PAYMENT WILL BE MADE FOR CSL TUBES. CSL TUBES WILL BE INCLUDED IN THE UNIT BID PRICE FOR DRILLED PIERS.



DETAIL "A"
(DIMENSIONS TYP. EA. GDR.)



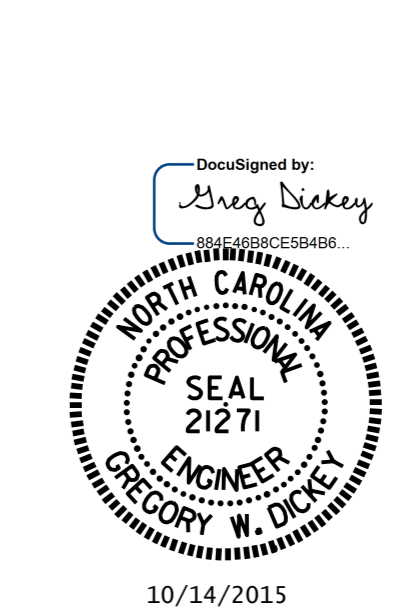
CONSTRUCTION JOINT DETAIL



ELEVATION
FOR SECTION A-A, B-B, X-X & W-W
SEE SHEET 5 OF 5

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 1 OF 5

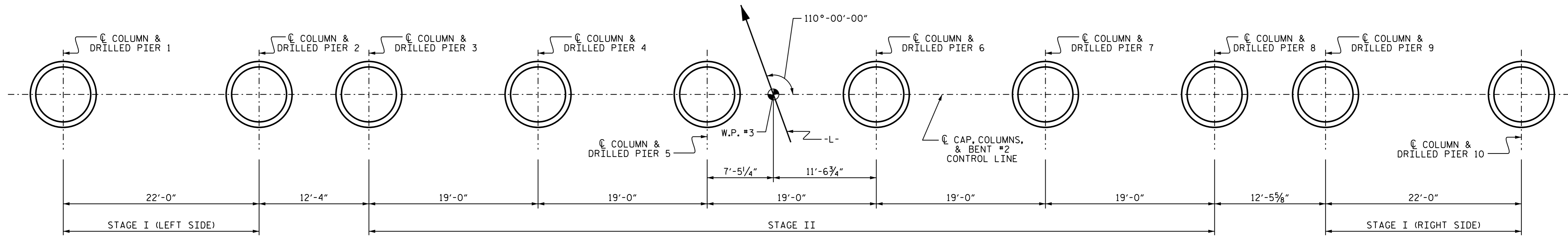


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
BENT #2
STAGE I
(LEFT SIDE)

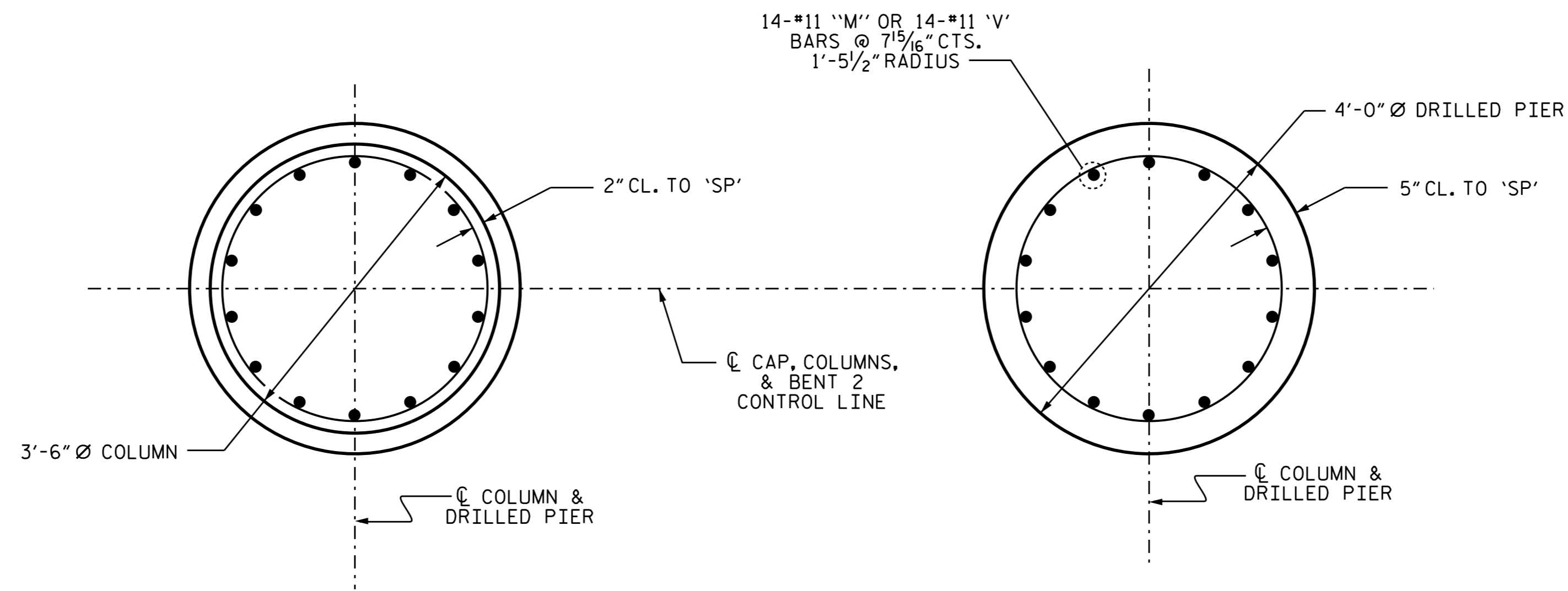
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-56
1			3			TOTAL SHEETS
2			4			78

DRAWN BY: B. N. BARODAWALA DATE: 4-22-15
 CHECKED BY: D. G. ELY DATE: 6-3-15
 DESIGN ENGINEER OF RECORD: M. AHMED DATE: 8-6-15

14-OCT-2015 11:49
 R:\Structures\Plans\FINAL PLANS\I-3318BB.SMU.B2.dgn
 kpaschal



COLUMNS AND DRILLED PIERS LAYOUT (STAGE I AND STAGE II)



DETAILS OF COLUMNS AND DRILLED PIERS

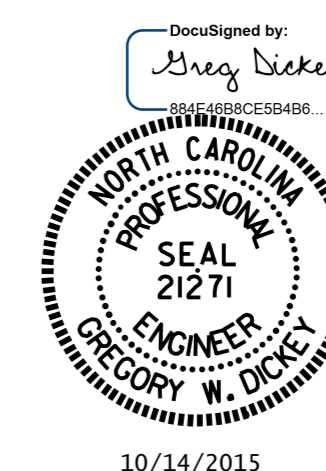
(DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN, AND DRILLED PIERS.)

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

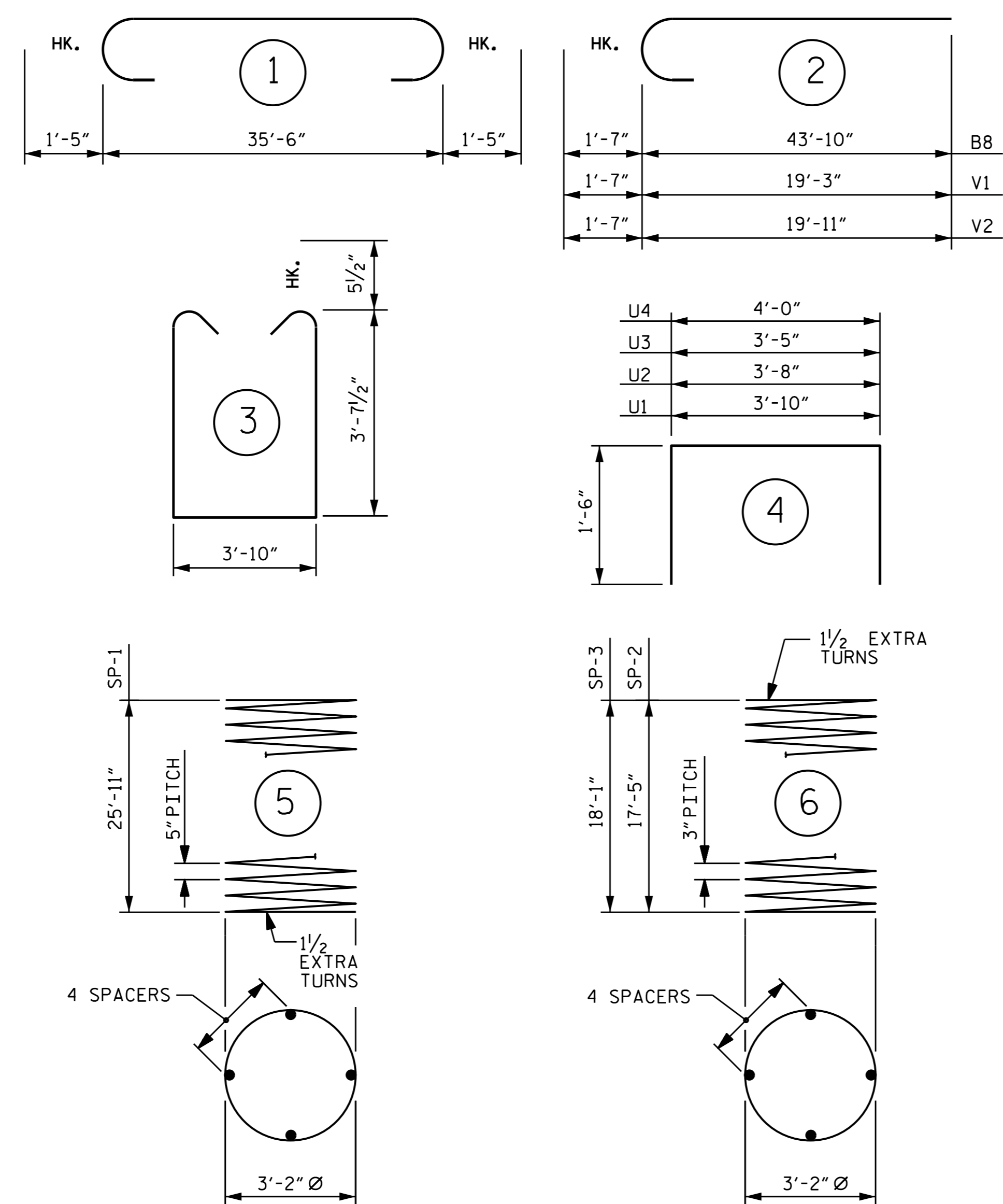
BENT #2
STAGE I & II



DRAWN BY : B. N. BARODAWALA DATE : 4-22-15
 CHECKED BY : D. G. ELY DATE : 6-3-15
 DESIGN ENGINEER OF RECORD: M. AHMED DATE : 8-6-15

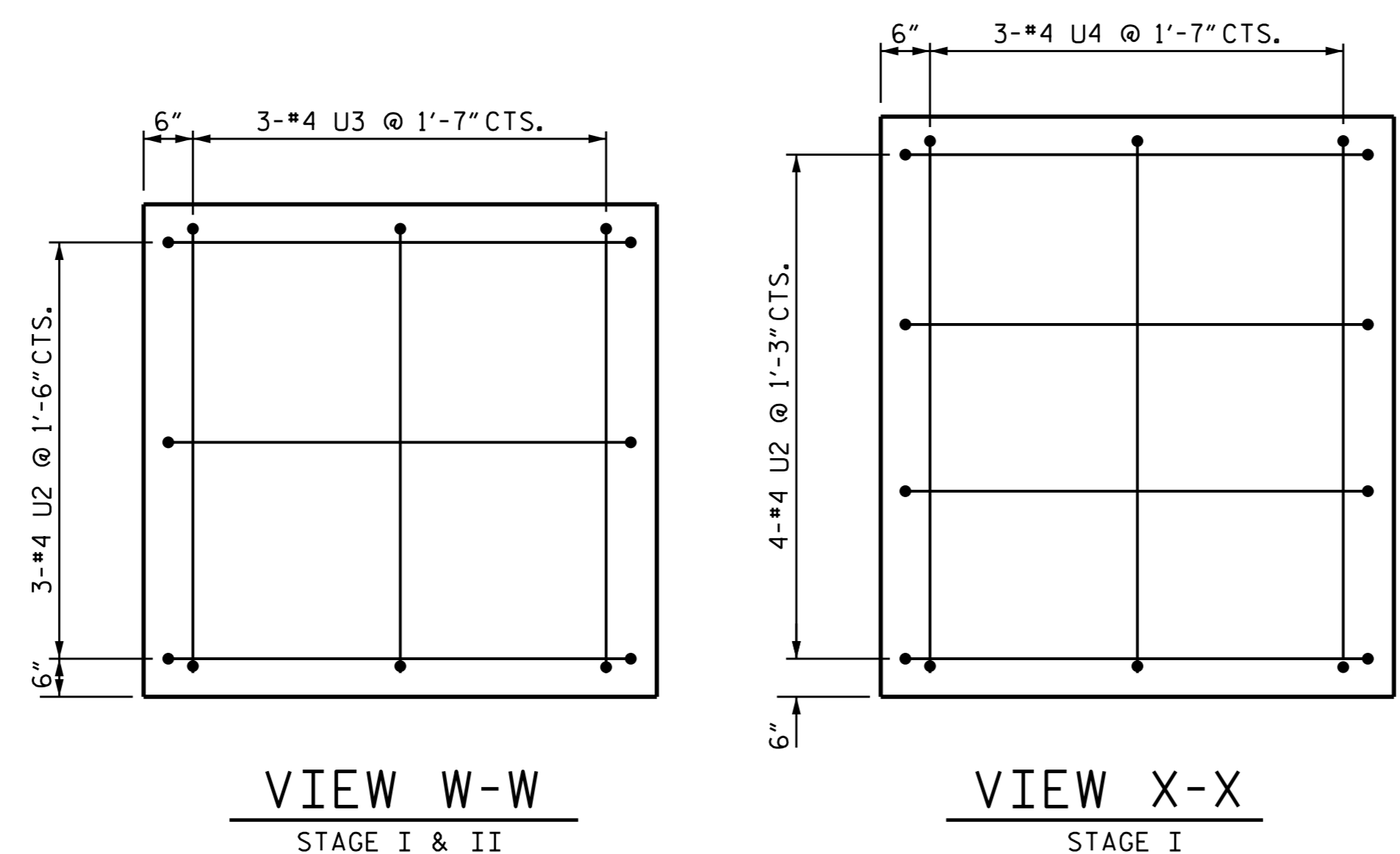
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-59
1			3			TOTAL SHEETS
2			4			78

BAR TYPES



** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
 * THE SP-2 & SP-3 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

ALL BAR DIMENSIONS ARE OUT TO OUT.



VIEW W-W
STAGE I & II

VIEW X-X
STAGE I

BILL OF MATERIAL

BENT #2

STAGE I (LEFT SIDE)						STAGE I (RIGHT SIDE)						STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	STR	35'-8"	1228	B1	8	#10	STR	35'-8"	1228	B7	16	#11	STR	57'-2"	4860
B2	8	#10	1	38'-4"	1320	B2	8	#10	1	38'-4"	1320	B8	16	#11	2	45'-5"	3861
B3	6	#5	STR	35'-8"	223	B3	6	#5	STR	35'-8"	223	B9	12	#5	STR	53'-9"	673
B4	8	#4	STR	25'-3"	135	B4	8	#4	STR	25'-3"	135	B10	8	#4	STR	26'-8"	143
B5	8	#4	STR	4'-3"	23	B5	8	#4	STR	4'-3"	23	B11	16	#4	STR	18'-0"	192
B6	3	#4	STR	3'-10"	8	B6	3	#4	STR	3'-10"	8	B12	8	#11	STR	43'-10"	1863
M1	28	#11	STR	36'-3"	5393	M1	28	#11	STR	36'-3"	5393	M1	84	#11	STR	36'-3"	16178
S1	54	#5	3	12'-0"	676	S1	54	#5	3	12'-0"	676	S1	107	#5	3	12'-0"	1339
U1	40	#4	4	6'-10"	183	U1	40	#4	4	6'-10"	183	U1	116	#4	4	6'-10"	529
U2	7	#4	4	6'-8"	31	U2	7	#4	4	6'-8"	31	U2	6	#4	4	6'-8"	27
U3	3	#4	4	6'-5"	13	U3	3	#4	4	6'-5"	13	U3	6	#4	4	6'-5"	26
U4	3	#4	4	7'-0"	14	U4	3	#4	4	7'-0"	14						
V1	28	#11	2	20'-10"	3099	V1	28	#11	2	20'-10"	3099	V2	84	#11	2	21'-6"	9595

REINFORCING STEEL FOR BENT No. 2						REINFORCING STEEL FOR BENT No. 2						REINFORCING STEEL FOR BENT No. 2					
12,346 LBS.						12,346 LBS.						38986 LBS.					
SP-1	2	**	5	625'-5"	1305	SP-1	2	**	5	625'-5"	1305	SP-1	6	**	5	625'-5"	3914
SP-2	2	*	6	698'-7"	933	SP-2	2	*	6	698'-7"	933	SP-2	6	*	6	725'-7"	2908
2238 LBS.						2238 LBS.						6822 LBS.					
CLASS A CONCRETE BREAKDOWN						CLASS A CONCRETE BREAKDOWN						CLASS A CONCRETE BREAKDOWN					
POUR #2 (COLUMNS) 12.2 C.Y.						POUR #2 (COLUMNS) 12.2 C.Y.						POUR #2 (COLUMNS) 38.1 C.Y.					
POUR #3 (CAP) 23.9 C.Y.						POUR #3 (CAP) 23.9 C.Y.						POUR #3 (CAP) 68.2 C.Y.					
TOTAL 36.1 C.Y.						TOTAL 36.1 C.Y.						TOTAL 106.3 C.Y.					
DRILLED PIERS						DRILLED PIERS						DRILLED PIERS					
DRILLED PIER CONCRETE						DRILLED PIER CONCRETE						DRILLED PIER CONCRETE					
POUR 1 (DRILLED PIERS): 24.5 C.Y.						POUR 1 (DRILLED PIERS): 24.5 C.Y.						POUR 1 (DRILLED PIERS): 73.6 C.Y.					
PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIER 26.7 LIN. FT.						PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIER 26.7 LIN. FT.						PERMANENT STEEL CASING FOR 4'-0" Ø DRILLED PIER 67.1 LIN. FT.					
CSL TUBES 223 FT.						CSL TUBES 223 FT.						CSL TUBES 668 FT.					
4'-0" Ø DRILLED PIERS 52.7 LIN. FT.						4'-0" Ø DRILLED PIERS 52.6 LIN. FT.						4'-0" Ø DRILLED PIERS 158.1 LIN. FT.					

SUMMARY BILL OF MATERIAL

REINFORCING STEEL _____ 63,678 LBS.
 SPIRAL COLUMN REINFORCING STEEL _____ 11,298 LBS.
 CLASS A CONCRETE _____ 178.5 C.Y.
 4'-0" Ø DRILLED PIERS _____ 263.4 LIN. FT.
 PERMANENT STEEL CASING _____ 120.5 FT.

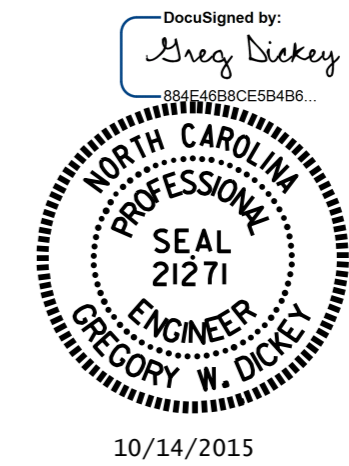
PROJECT NO. I-3318BB
 JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 5 OF 5

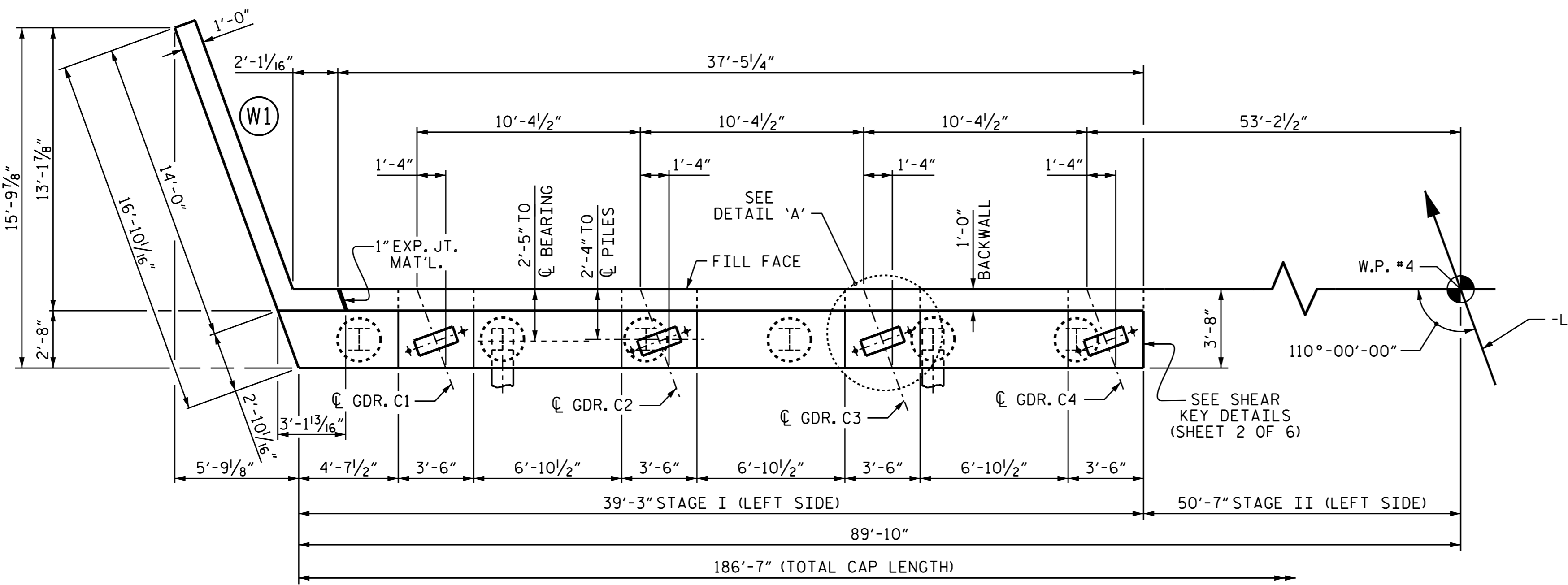
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BENT #2
STAGE I & II

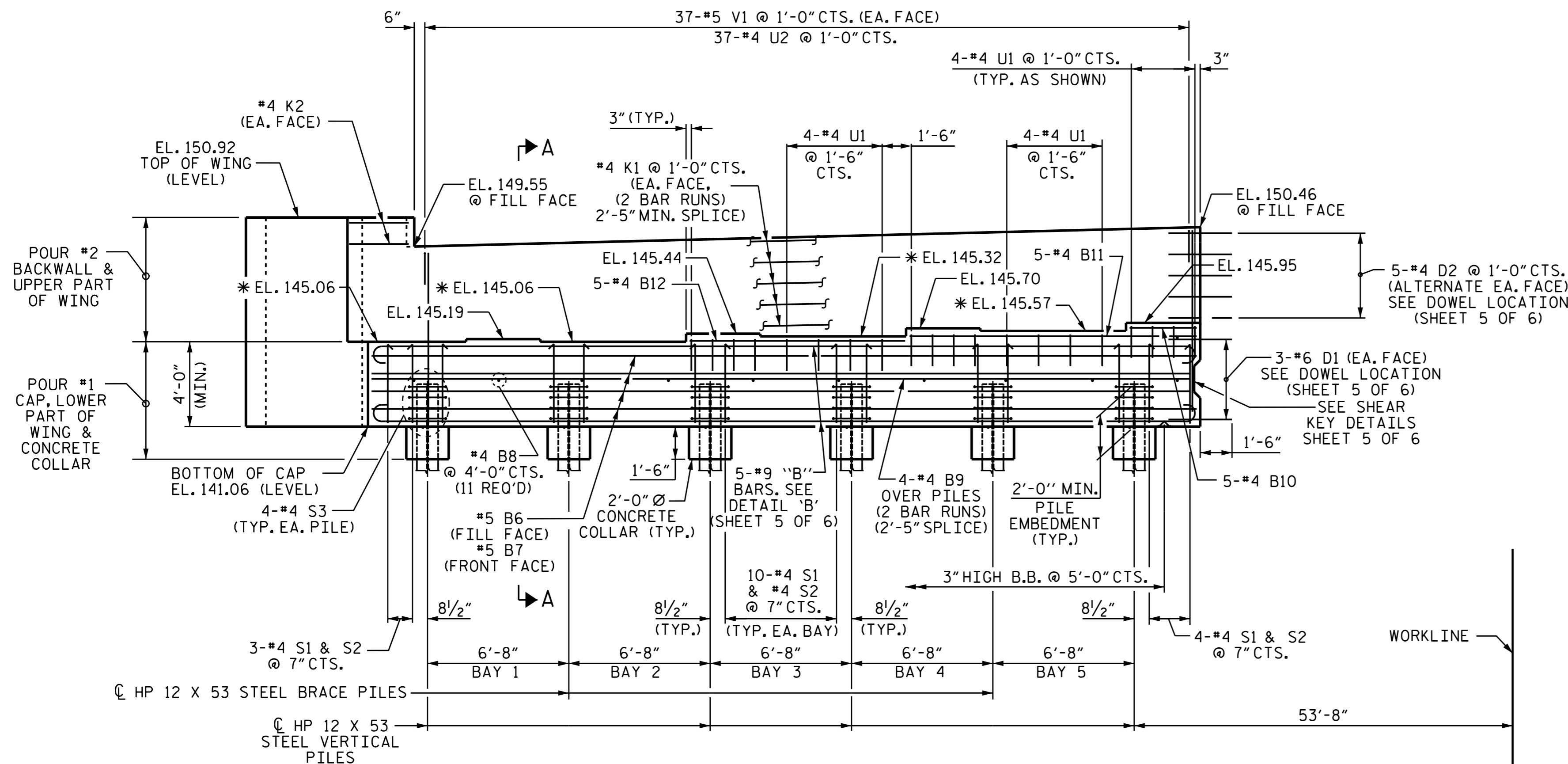
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-60	
1			3			TOTAL SHEETS 78	
2			4				



DRAWN BY: B. N. BARODAWALA DATE: 4-22-15
 CHECKED BY: D. G. ELY DATE: 6-3-15
 DESIGN ENGINEER OF RECORD: M. AHMED DATE: 8-6-15



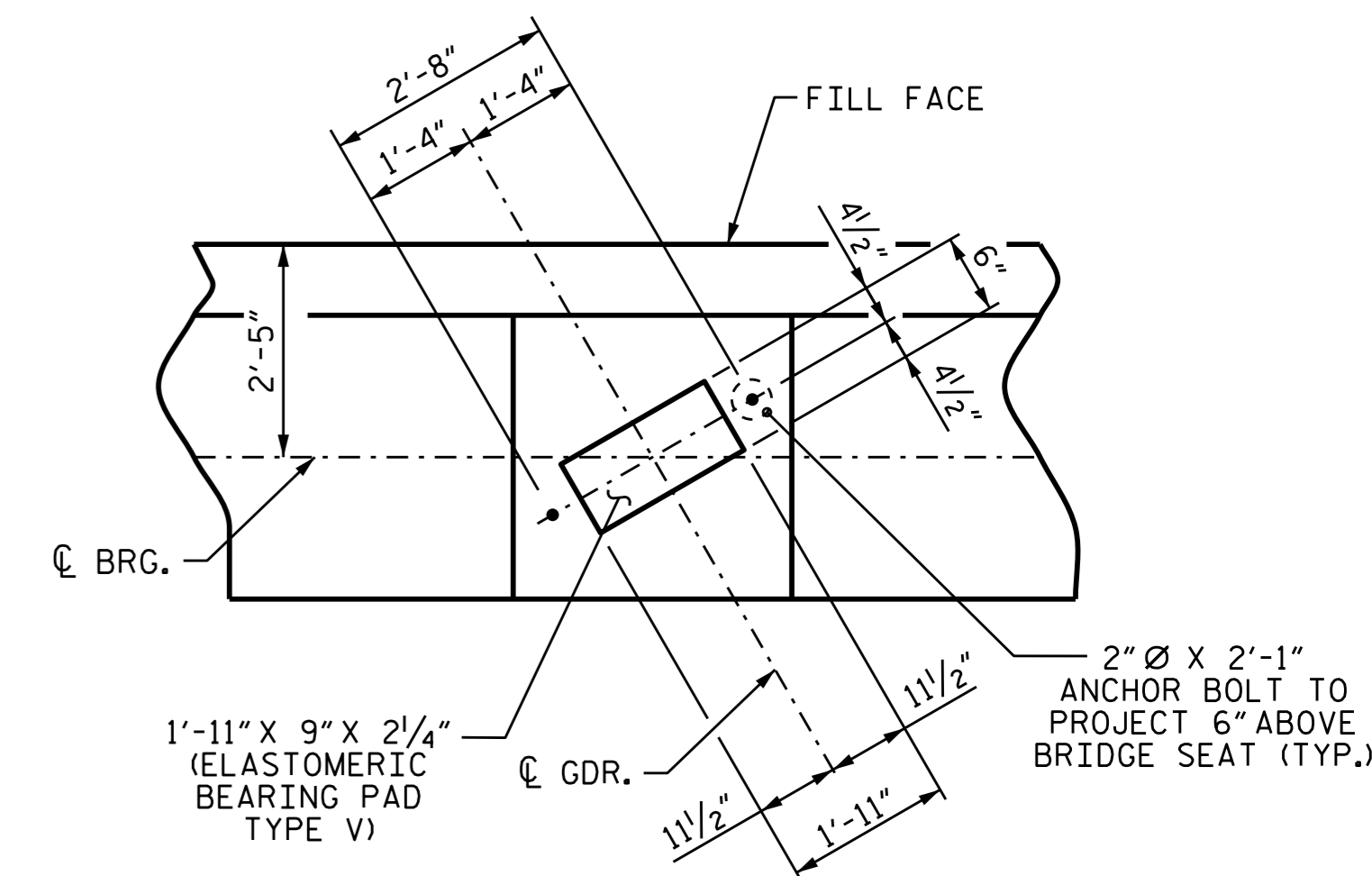
PLAN OF STAGE I (LEFT SIDE)



ELEVATION OF STAGE I (LEFT SIDE)

NOTES

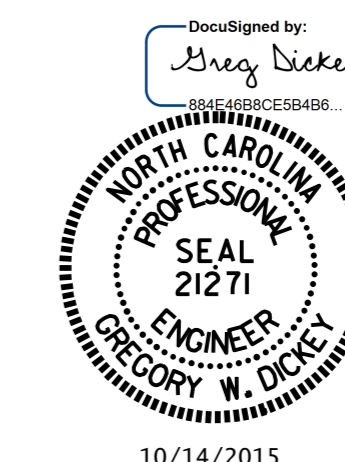
- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.



DETAIL 'A'
(TYP. EACH GIRDER)

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

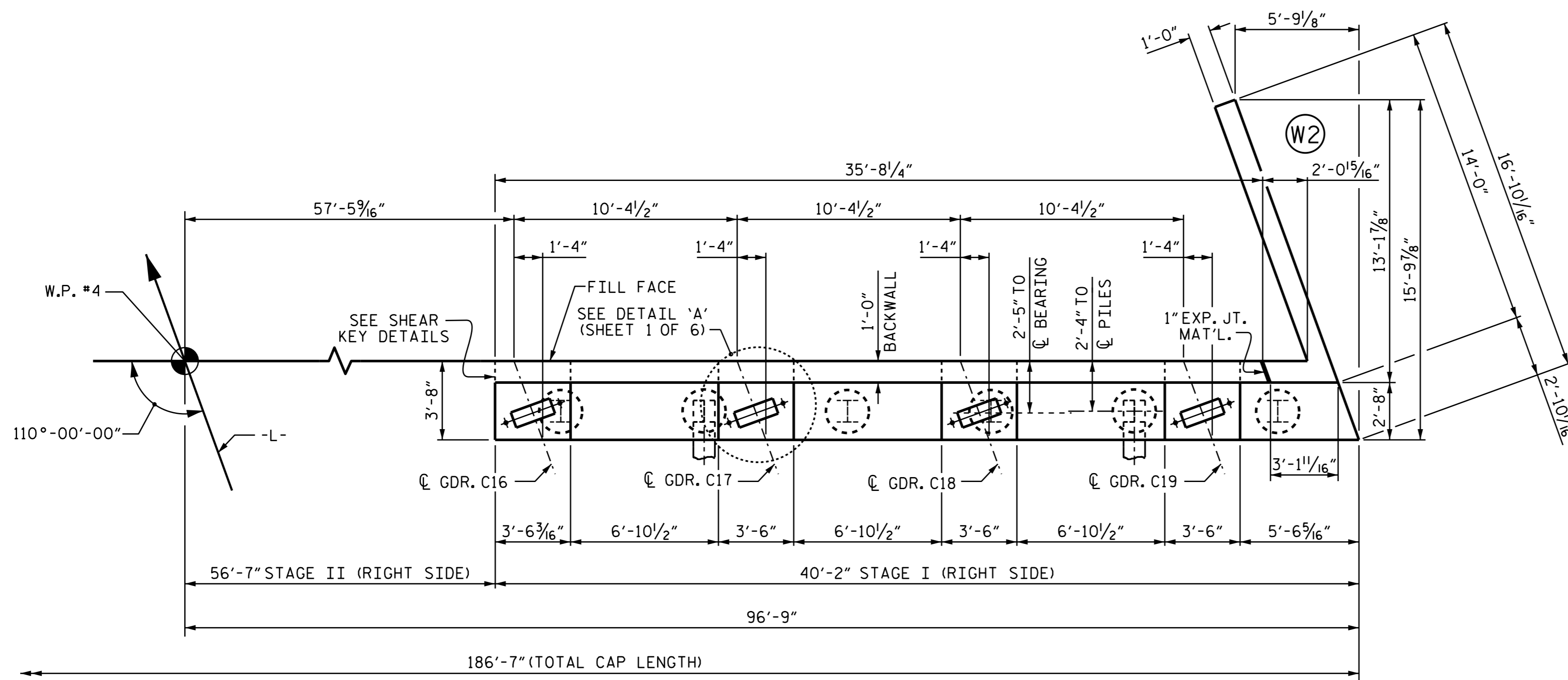
SHEET 1 OF 6



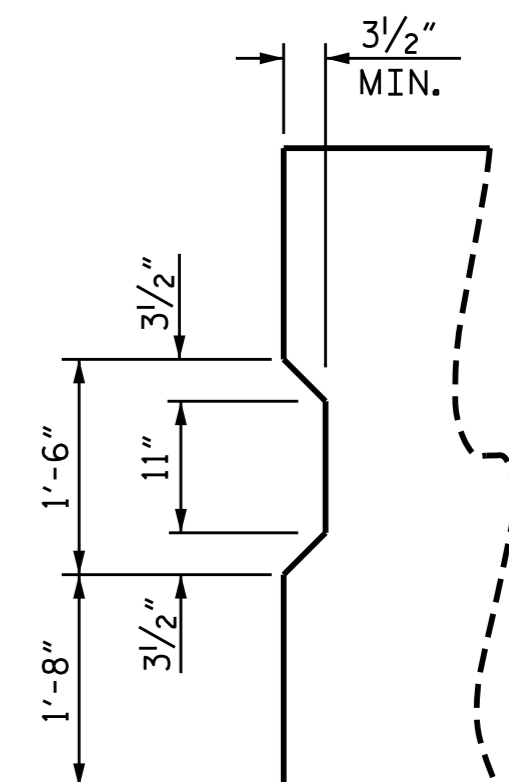
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT #2
 STAGE I
 (LEFT SIDE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-61
1			3			TOTAL SHEETS
2			4			78

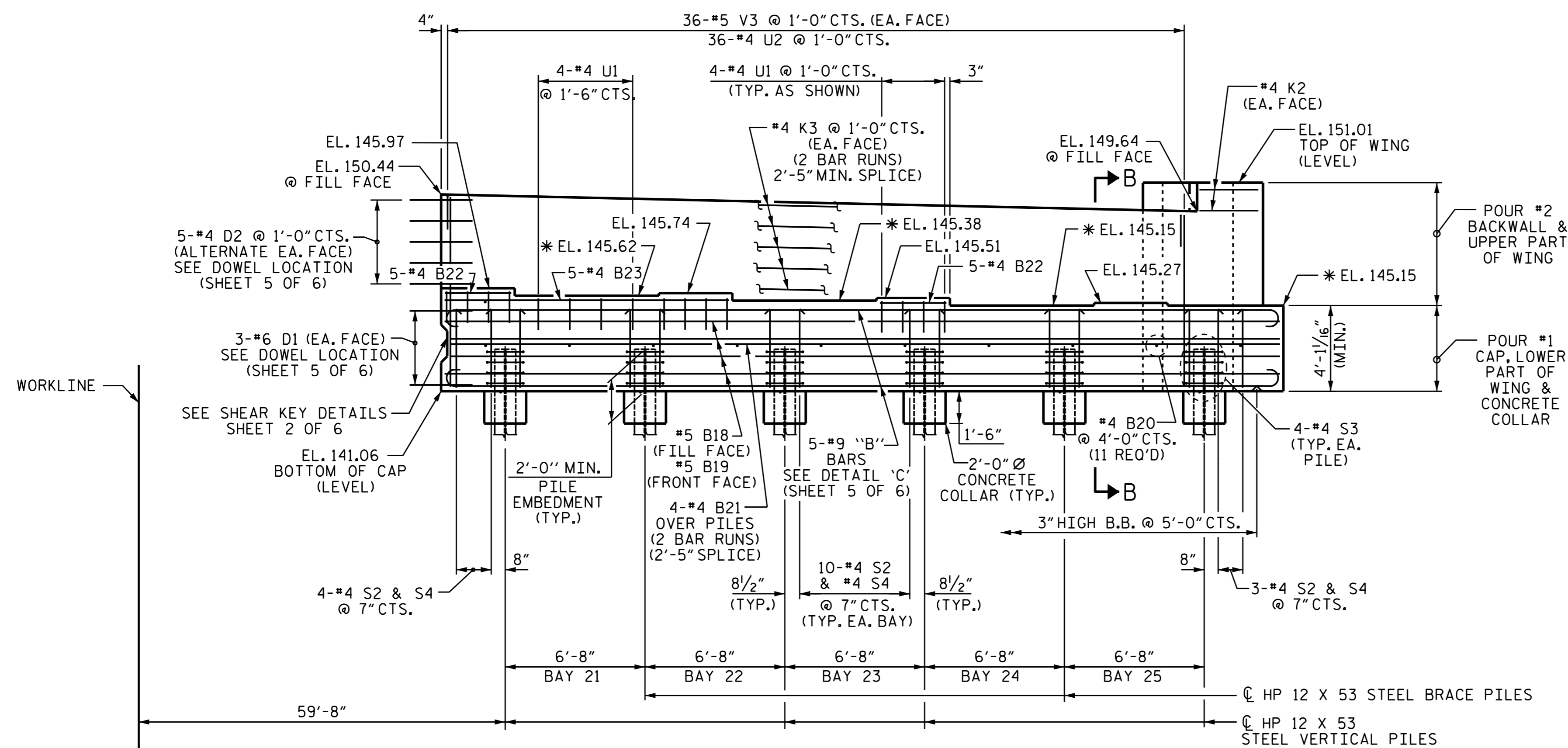
DRAWN BY: B.N.BARODAWALA DATE: 4-6-15
 CHECKED BY: DAVID GLADDEN DATE: 4-6-15
 DESIGN ENGINEER OF RECORD: ASHVIN PATEL DATE: 8-6-15



PLAN OF STAGE I (RIGHT SIDE)



SHEAR KEY DETAIL



ELEVATION OF STAGE I (RIGHT SIDE)

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

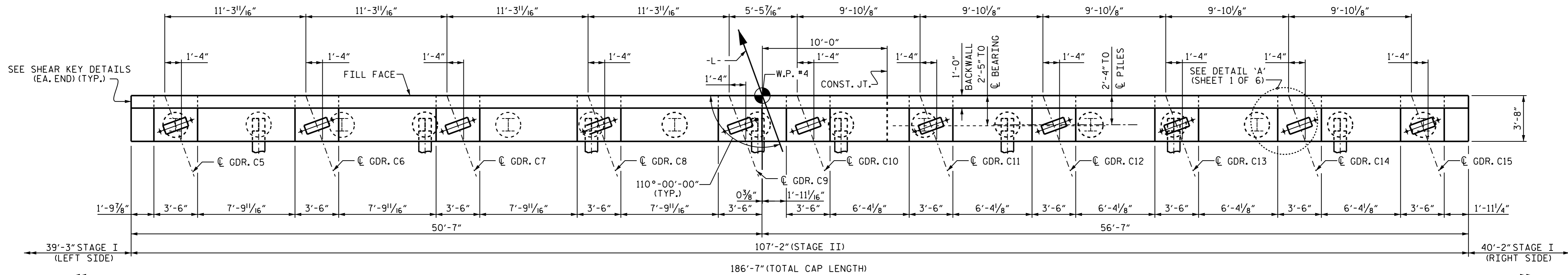
SHEET 2 OF 6



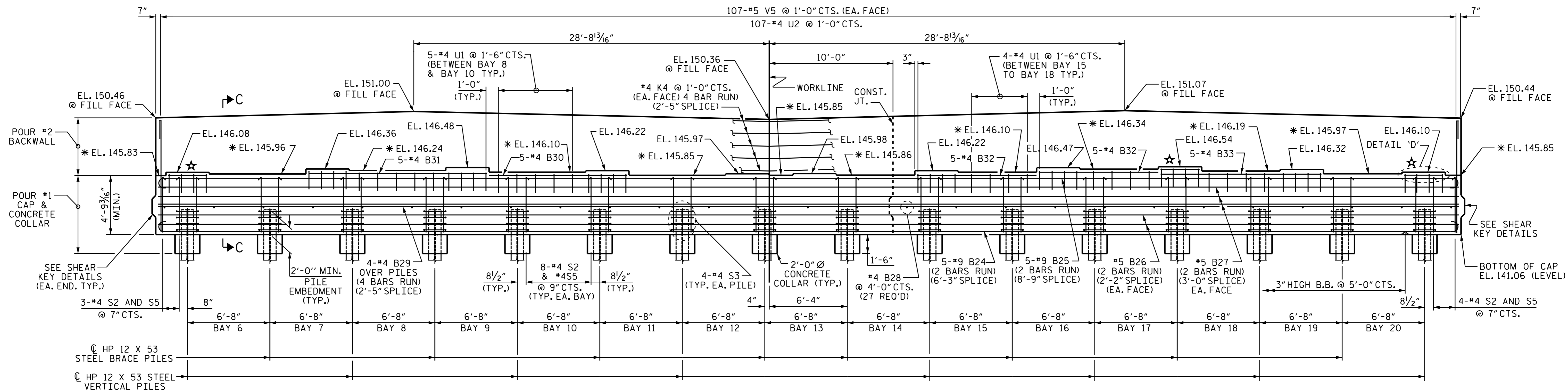
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT #2
 STAGE I
 (RIGHT SIDE)

DRAWN BY: B.N.BARODAWALA DATE: 4-6-15
 CHECKED BY: DAVID GLADDEN DATE: 4-6-15
 DESIGN ENGINEER OF RECORD: ASHVIN PATEL DATE: 8-6-15

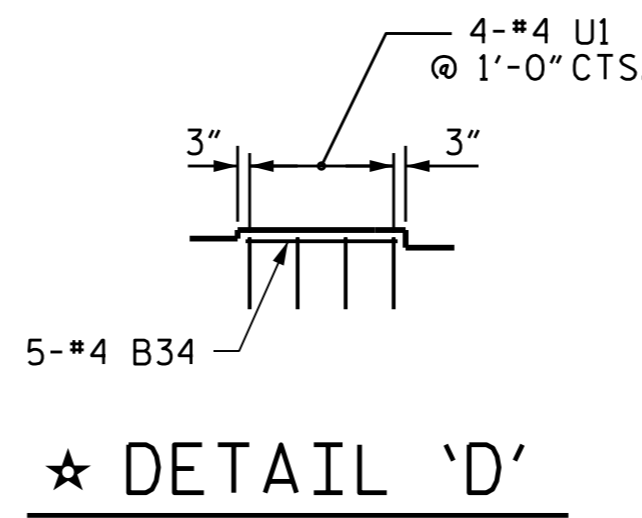
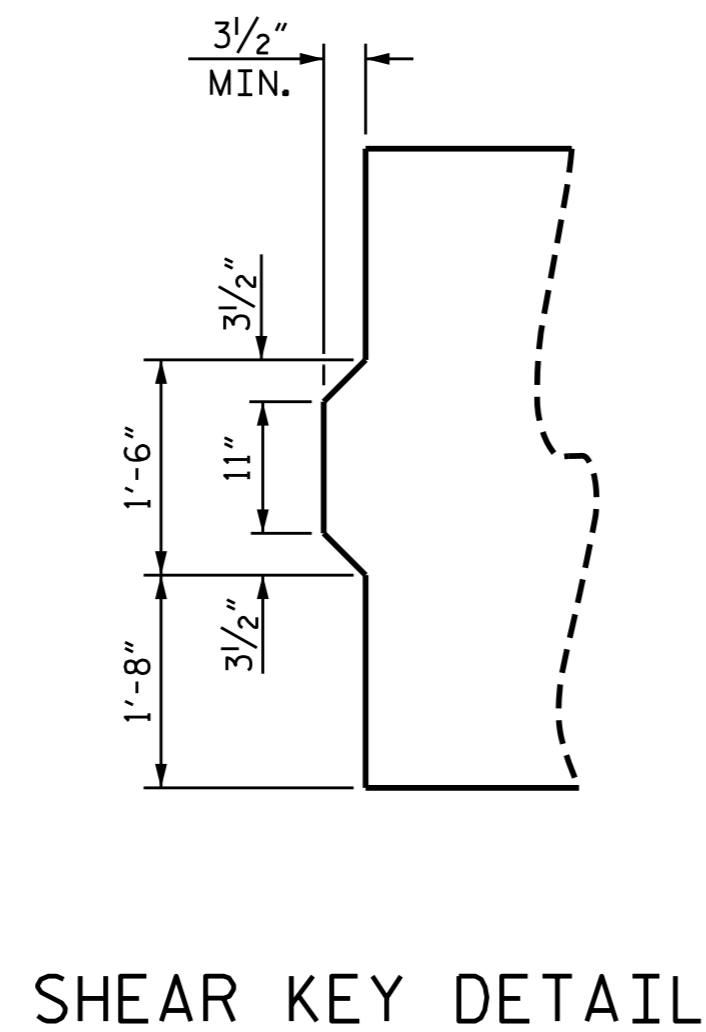
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-62
1			3			TOTAL SHEETS
2			4			78



PLAN - STAGE II



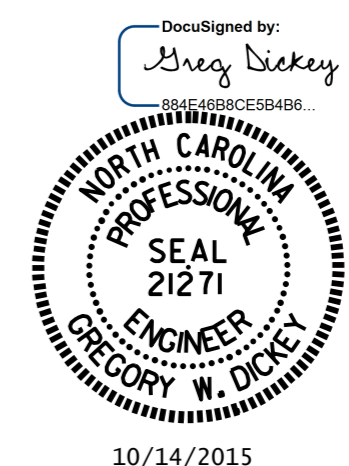
ELEVATION - STAGE II



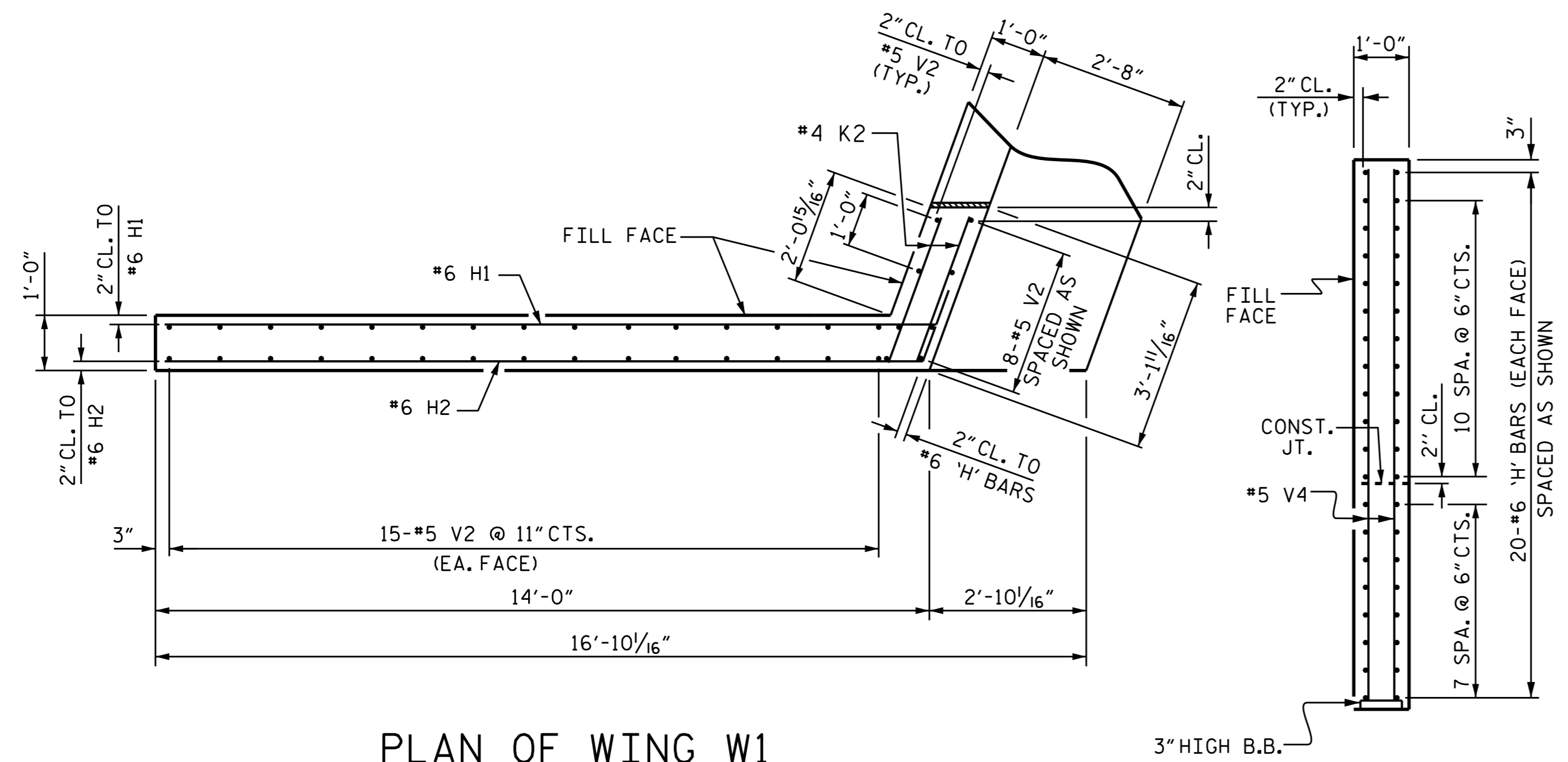
PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 3 OF 6

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT #2 STAGE II					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-63
					TOTAL SHEETS 78

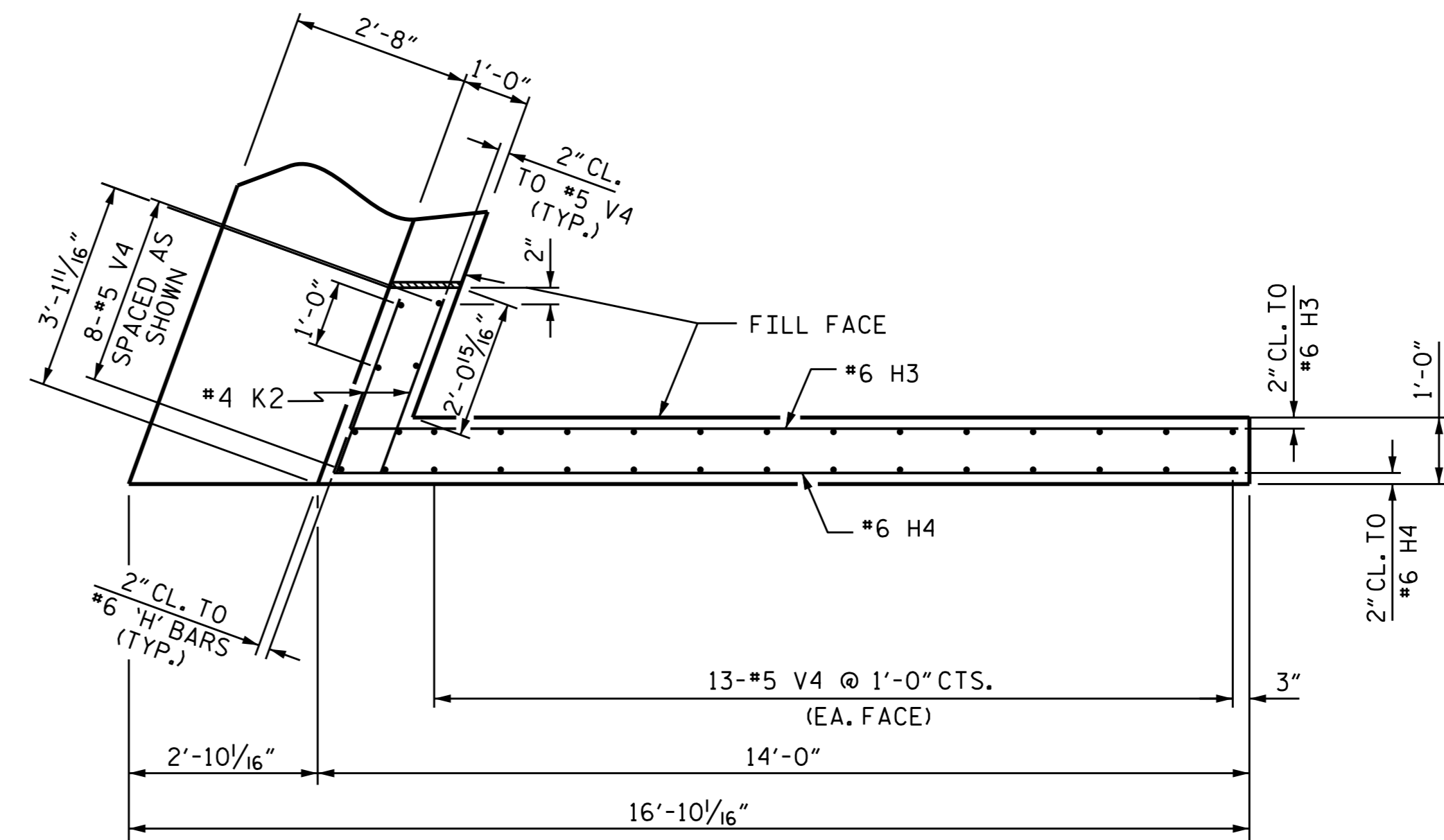


DRAWN BY: B.N.BARODAWALA DATE: 4-6-15
 CHECKED BY: DAVID GLADDEN DATE: 4-6-15
 DESIGN ENGINEER OF RECORD: ASHVIN PATEL DATE: 8-6-15

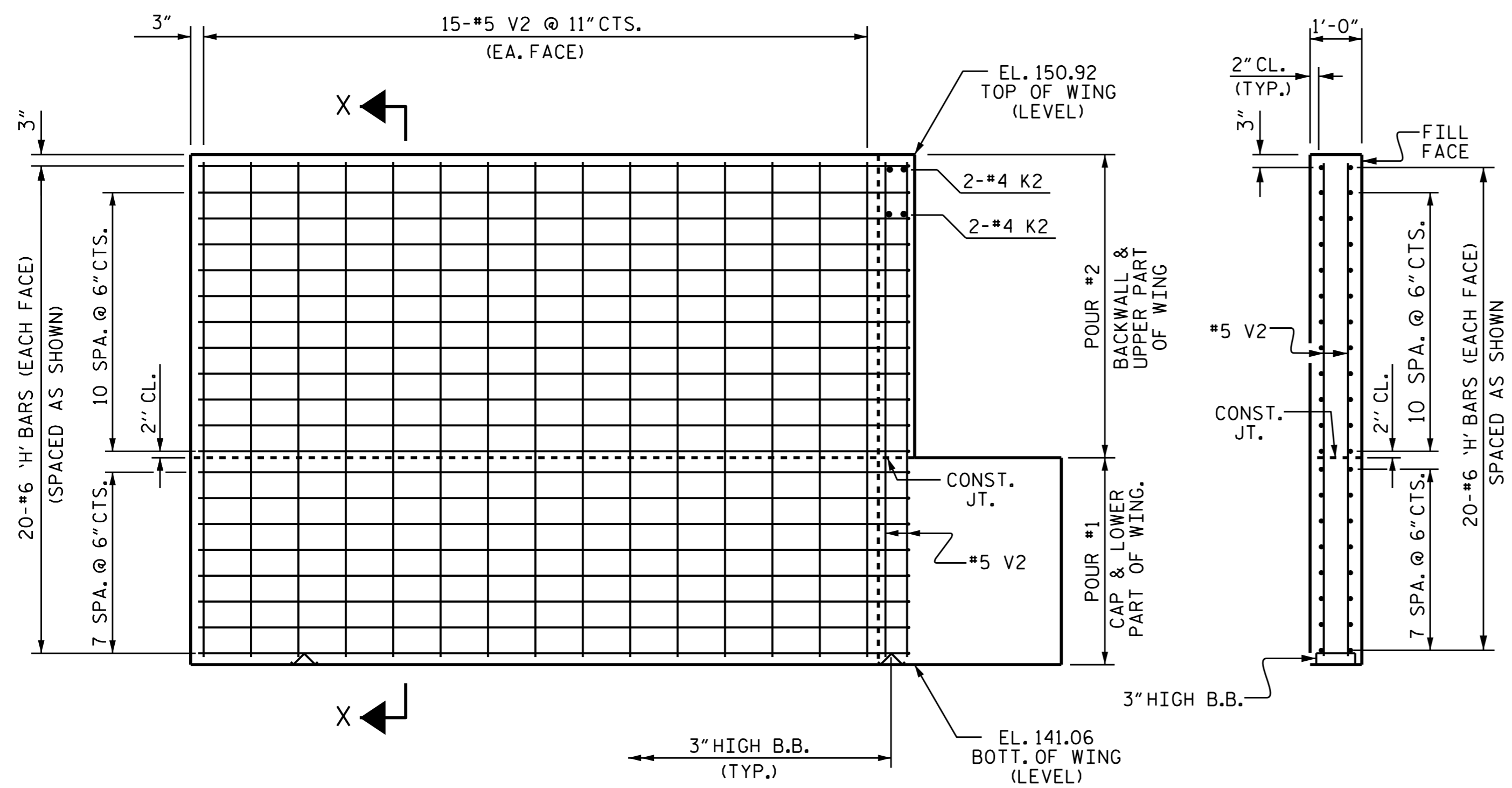


PLAN OF WING W1

SECTION Y-Y

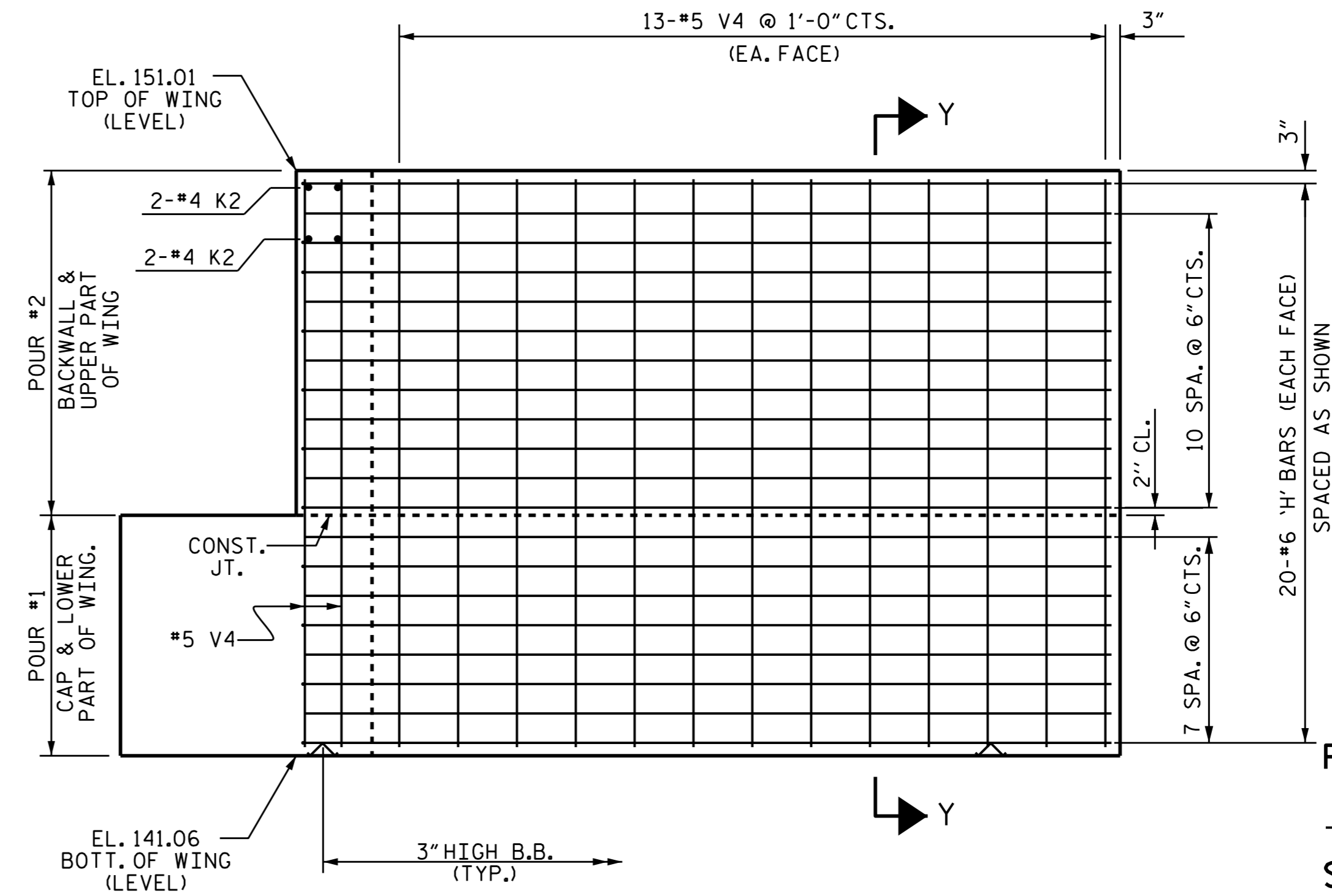


PLAN OF WING W2



ELEVATION OF WING W1

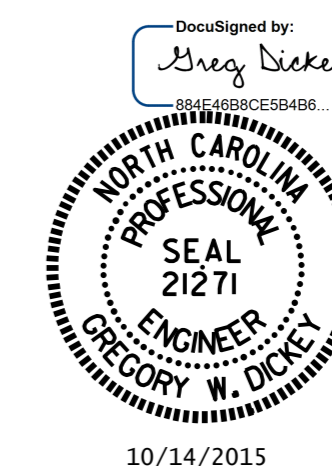
SECTION X-X



ELEVATION OF WING W2

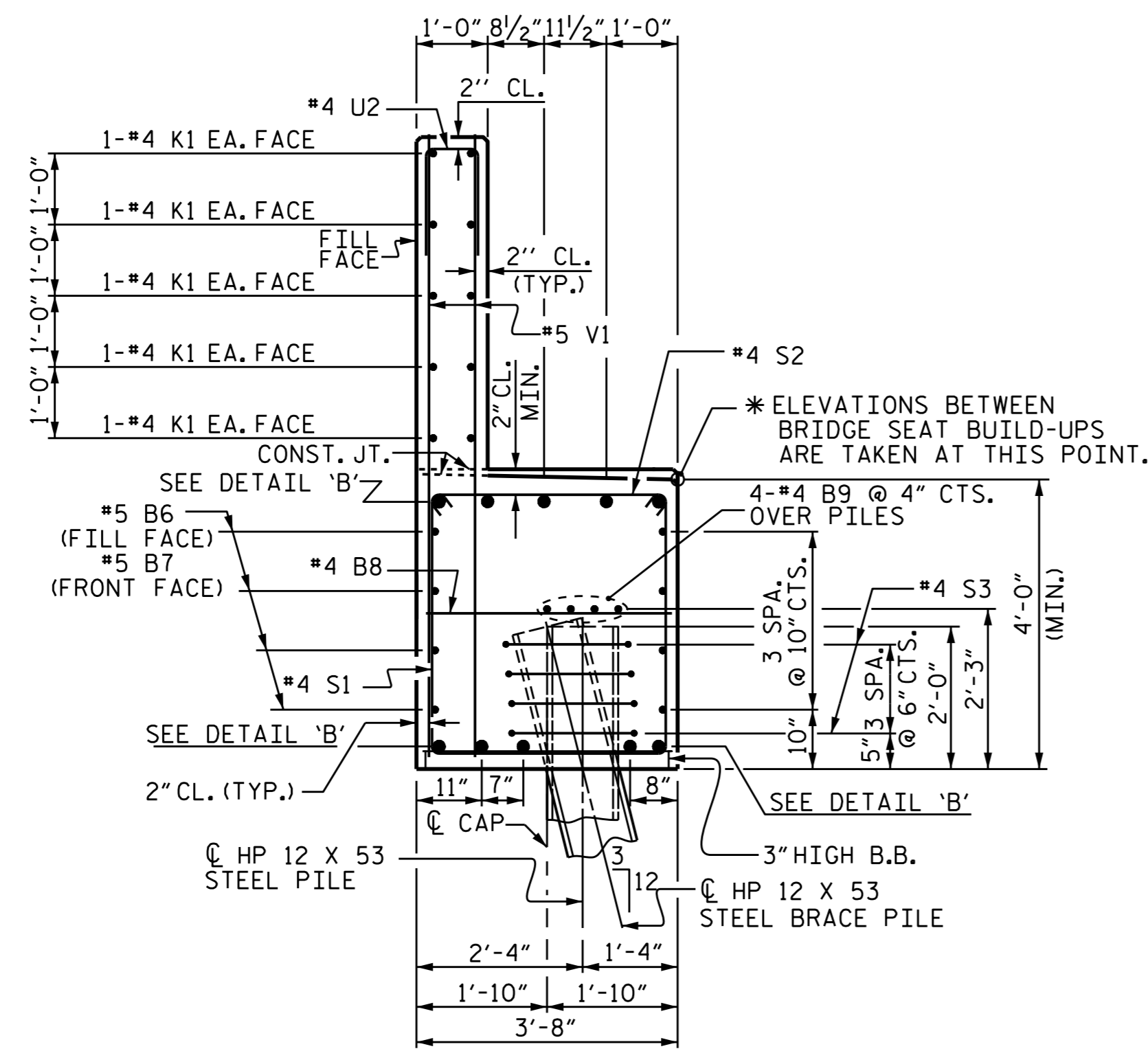
PROJECT NO. I-3318BB
 JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 4 OF 6

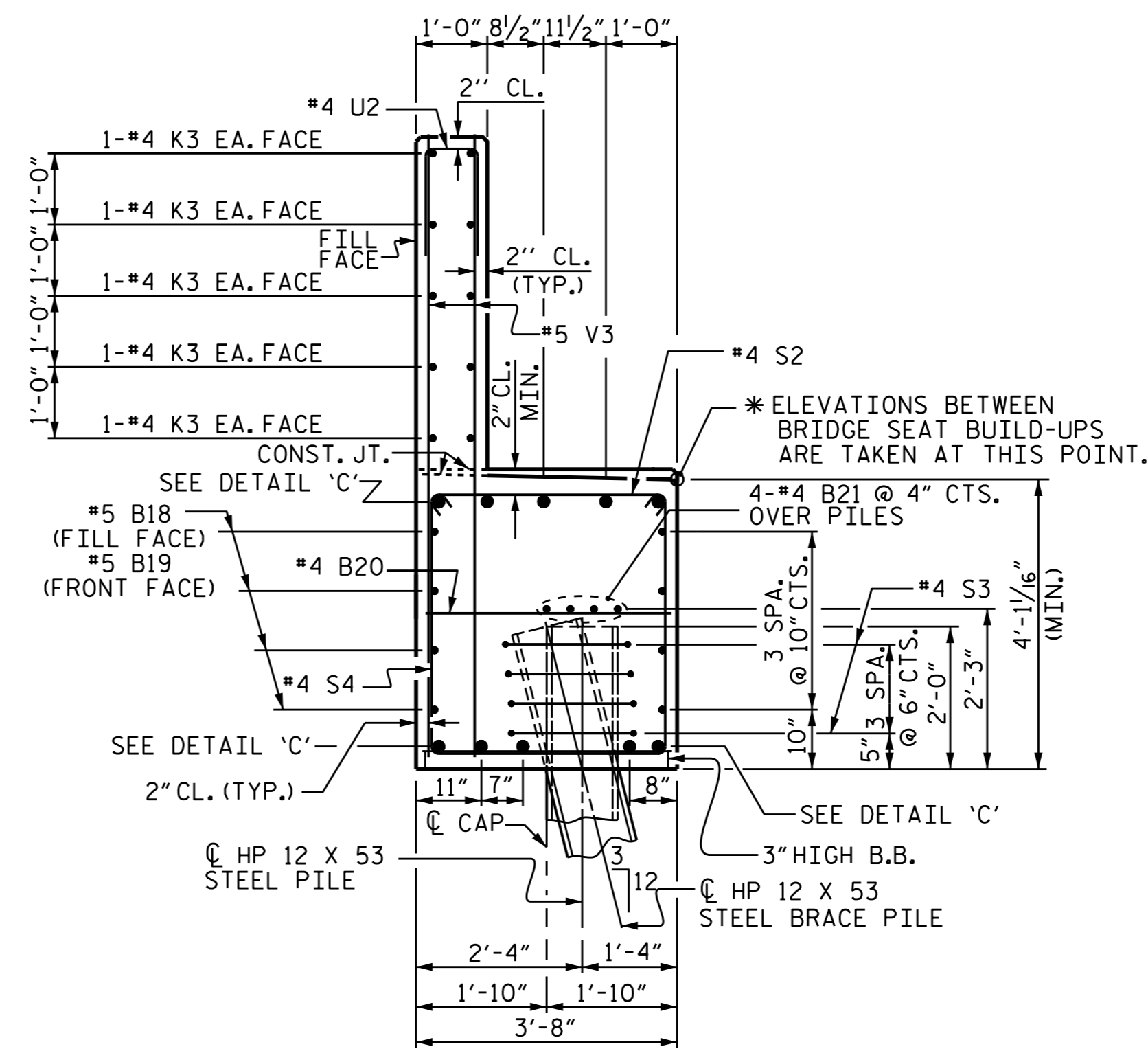


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT #2 STAGE I					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-64 TOTAL SHEETS 78

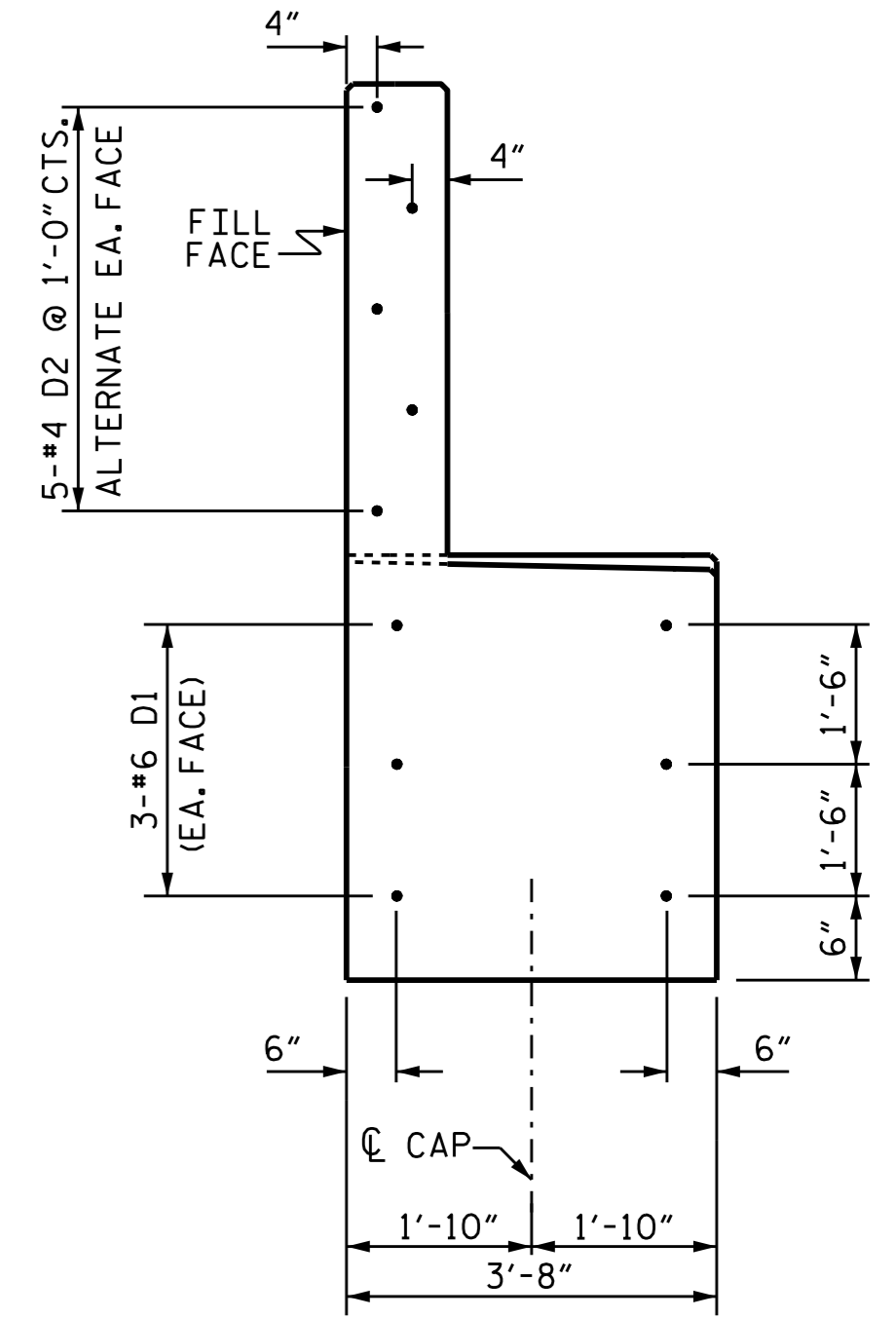
DRAWN BY: B.N.BARODAWALA DATE: 4-6-15
 CHECKED BY: DAVID GLADDEN DATE: 4-6-15
 DESIGN ENGINEER OF RECORD: ASHVIN PATEL DATE: 8-6-15



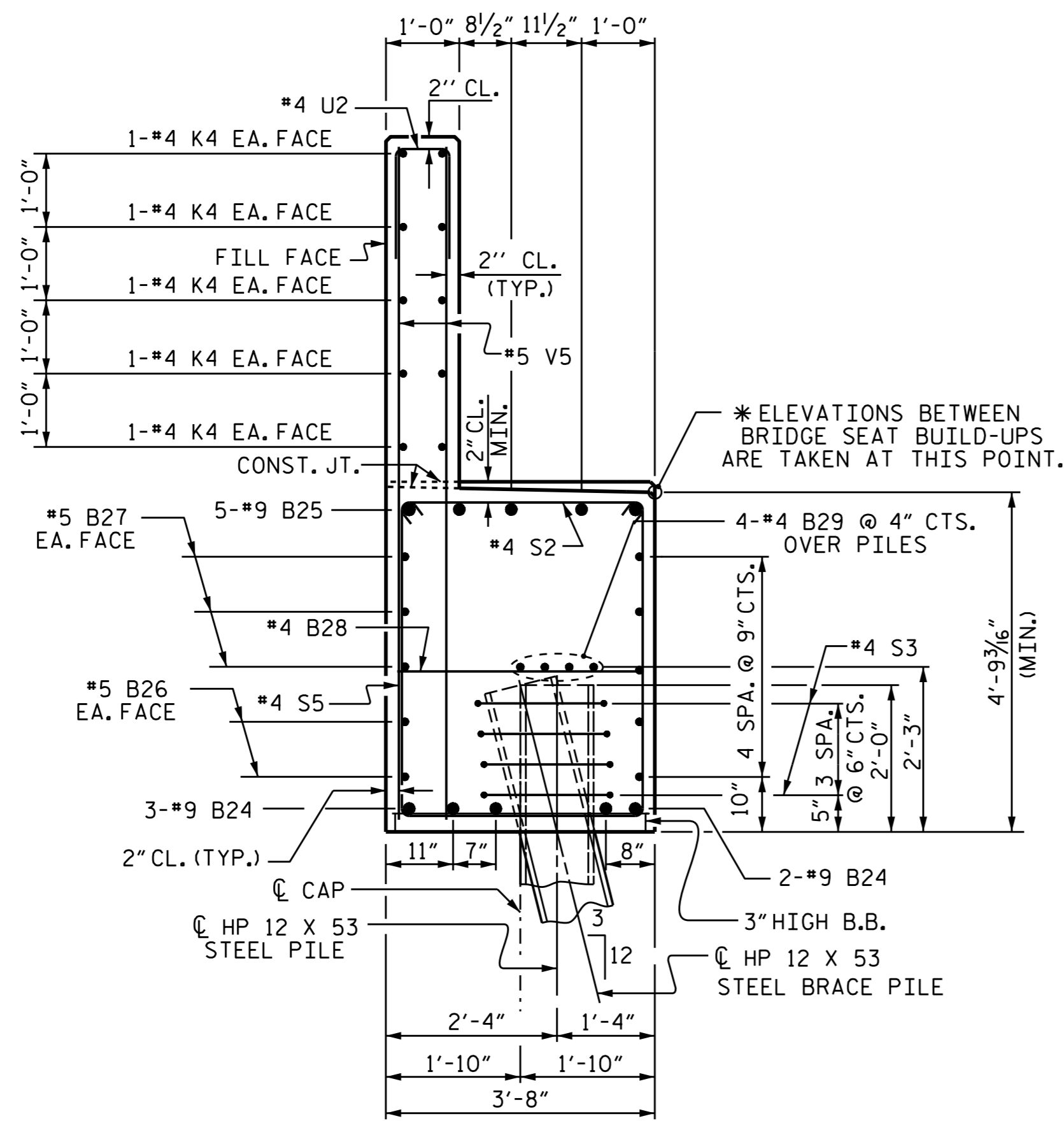
SECTION A-A



SECTION B-B

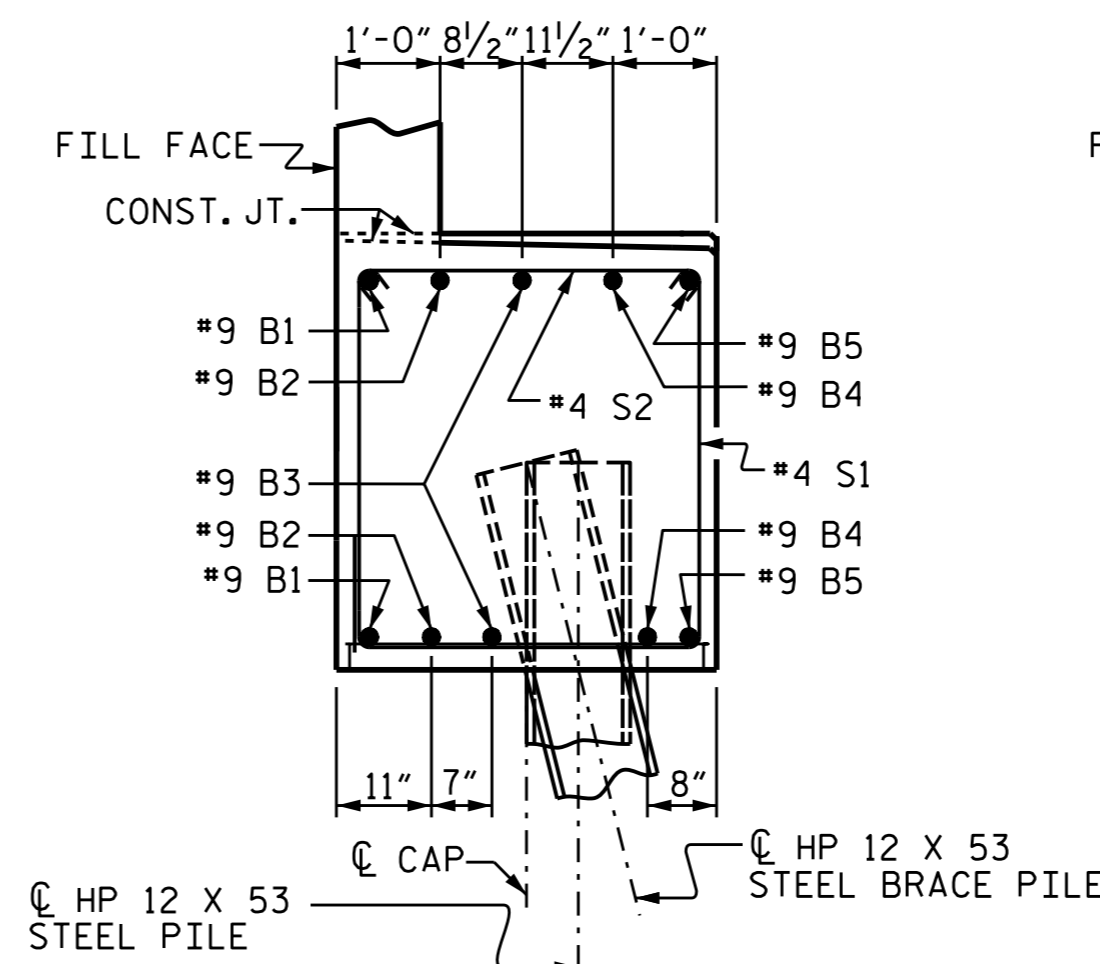


DOWEL LOCATION

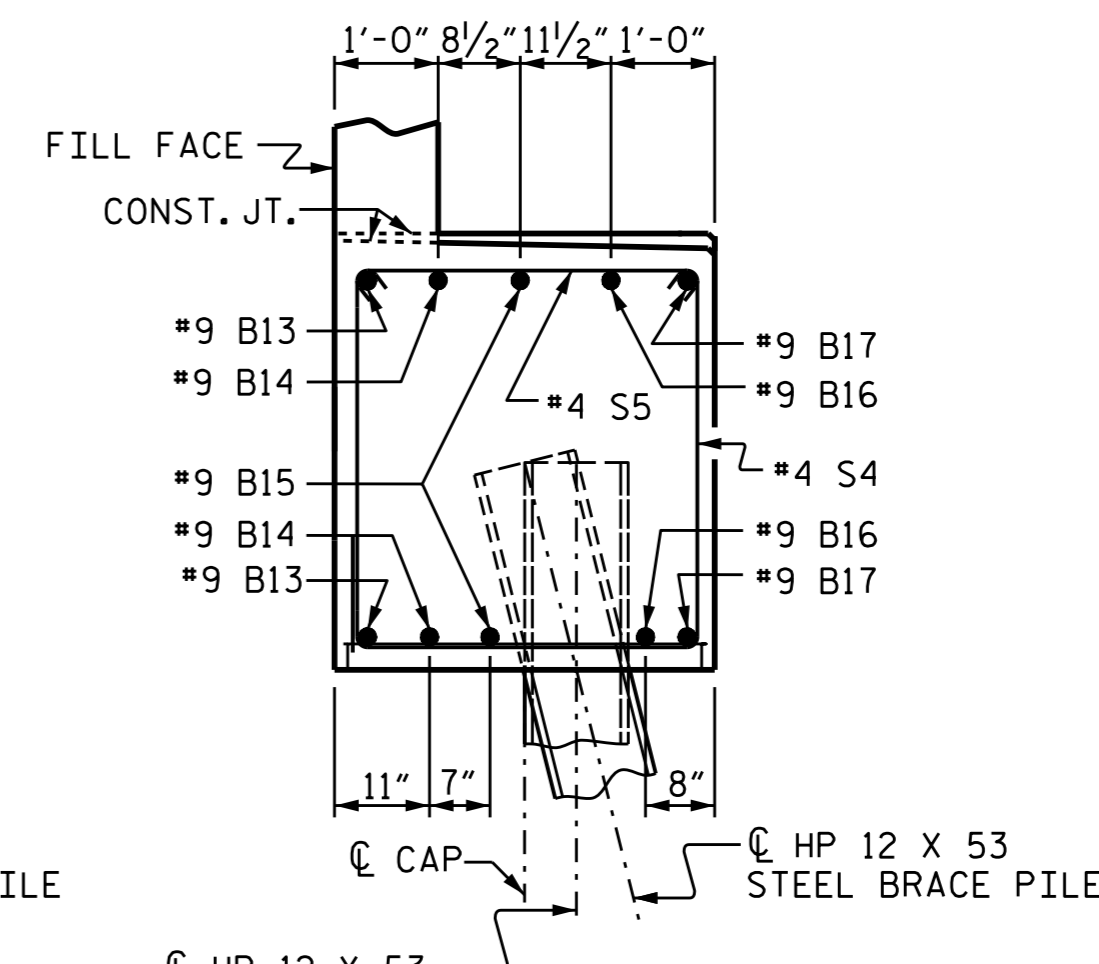


SECTION C-C

(CONCRETE COLLAR NOT SHOWN)



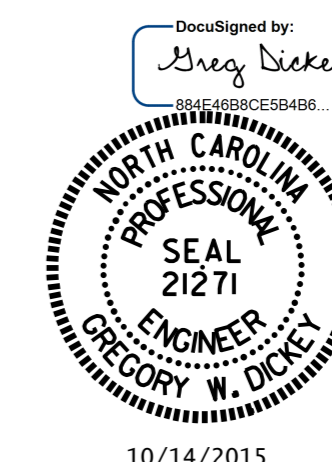
DETAIL 'B'



DETAIL 'C'

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

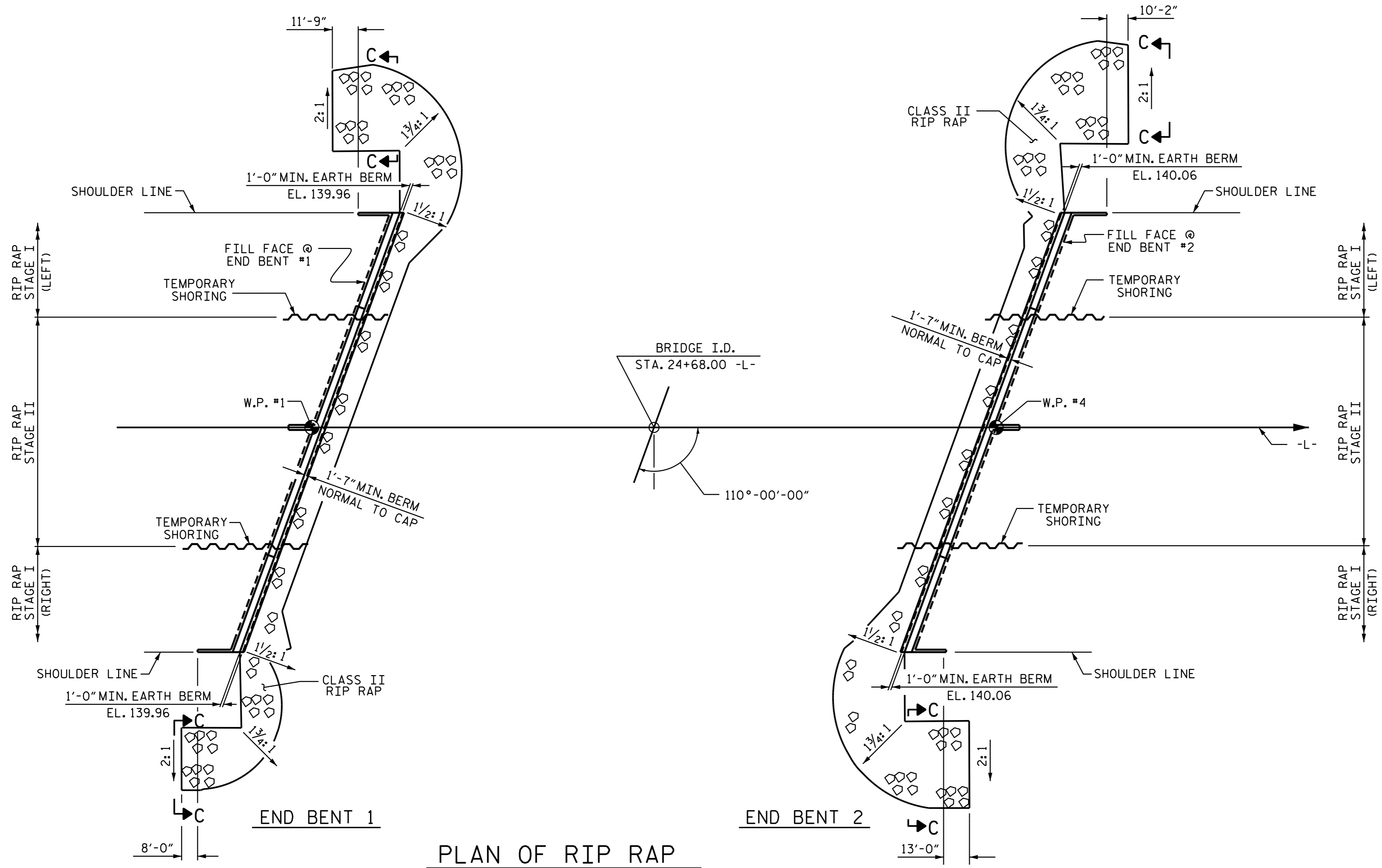
SHEET 5 OF 6



10/14/2015

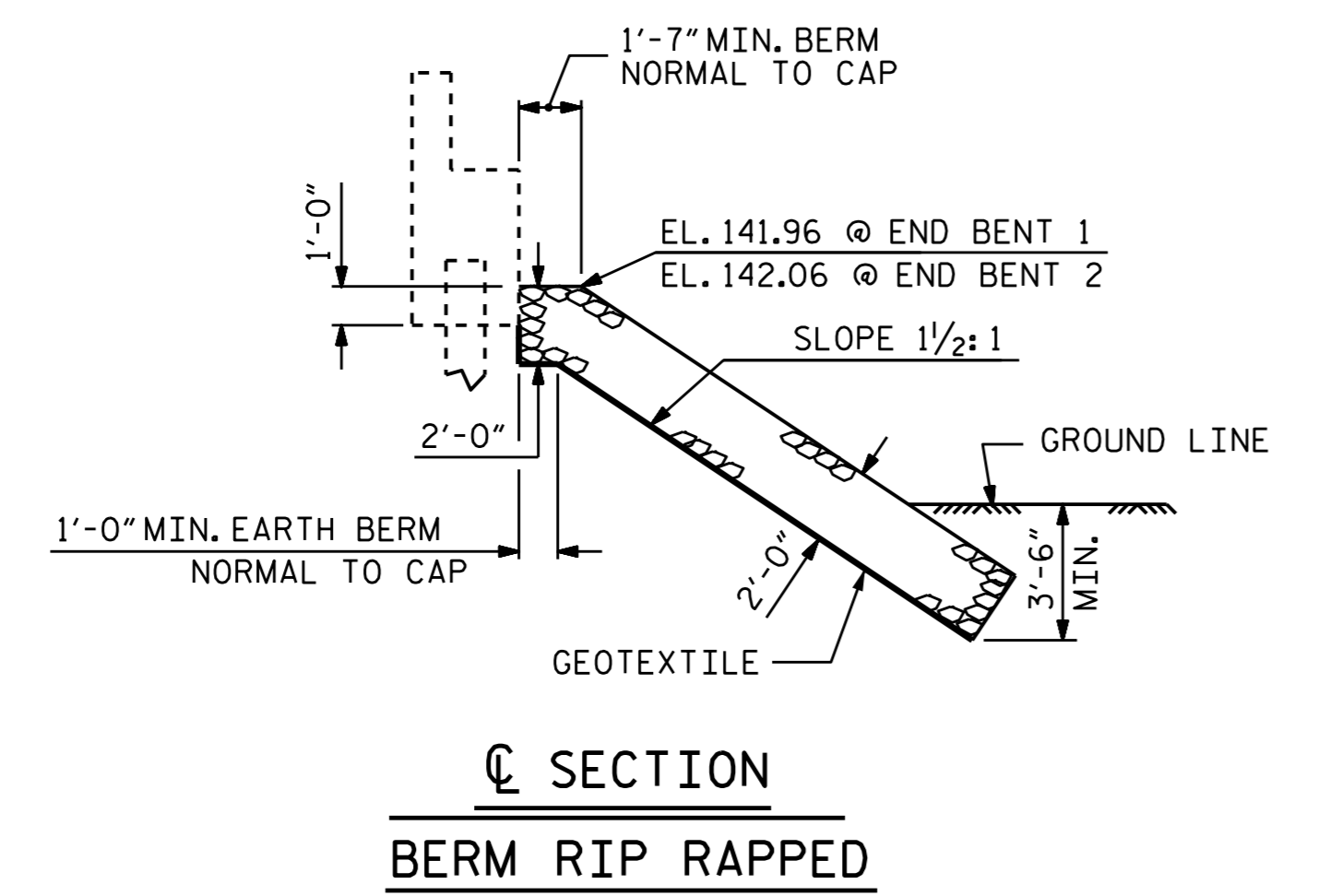
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.	
SUBSTRUCTURE						S-65	
END BENT #2 STAGE I & II						TOTAL SHEETS	
REVISIONS						78	
NO.	BY:	DATE:	NO.	BY:	DATE:		
1			3				
2			4				

DRAWN BY: B.N.BARODAWALA DATE: 4-6-15
 CHECKED BY: DAVID GLADDEN DATE: 4-6-15
 DESIGN ENGINEER OF RECORD: ASHVIN PATEL DATE: 8-6-15

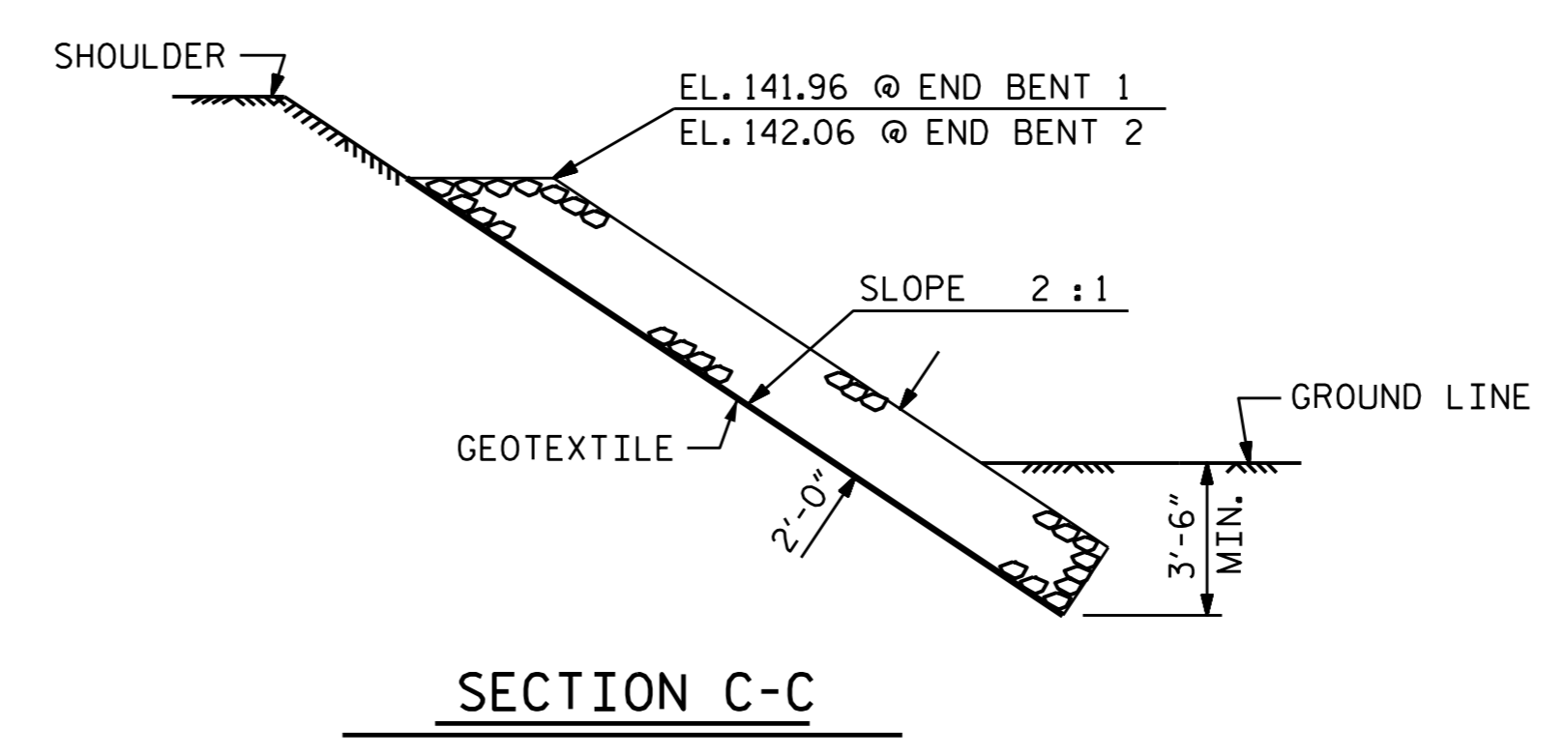


PLAN OF RIP RAP

ESTIMATED QUANTITIES		
BRIDGE @ STA. 24+68.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	705	784
END BENT 2	819	910



SECTION BERM RIP RAPPED



SECTION C-C



PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

RIP RAP DETAILS

ASSEMBLED BY : D. G. ELY	DATE : 7/28/15
CHECKED BY : D. A. GLADDEN	DATE : 7/30/15
DRAWN BY : REK 1/84	REV. 5/1/06R TLA/GM
CHECKED BY : RDU 1/84	REV. 10/1/11 MAA/GM
	REV. 12/21/11 MAA/GM

REVISIONS						SHEET NO. S-67
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 78
2			4			

NOTES

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.

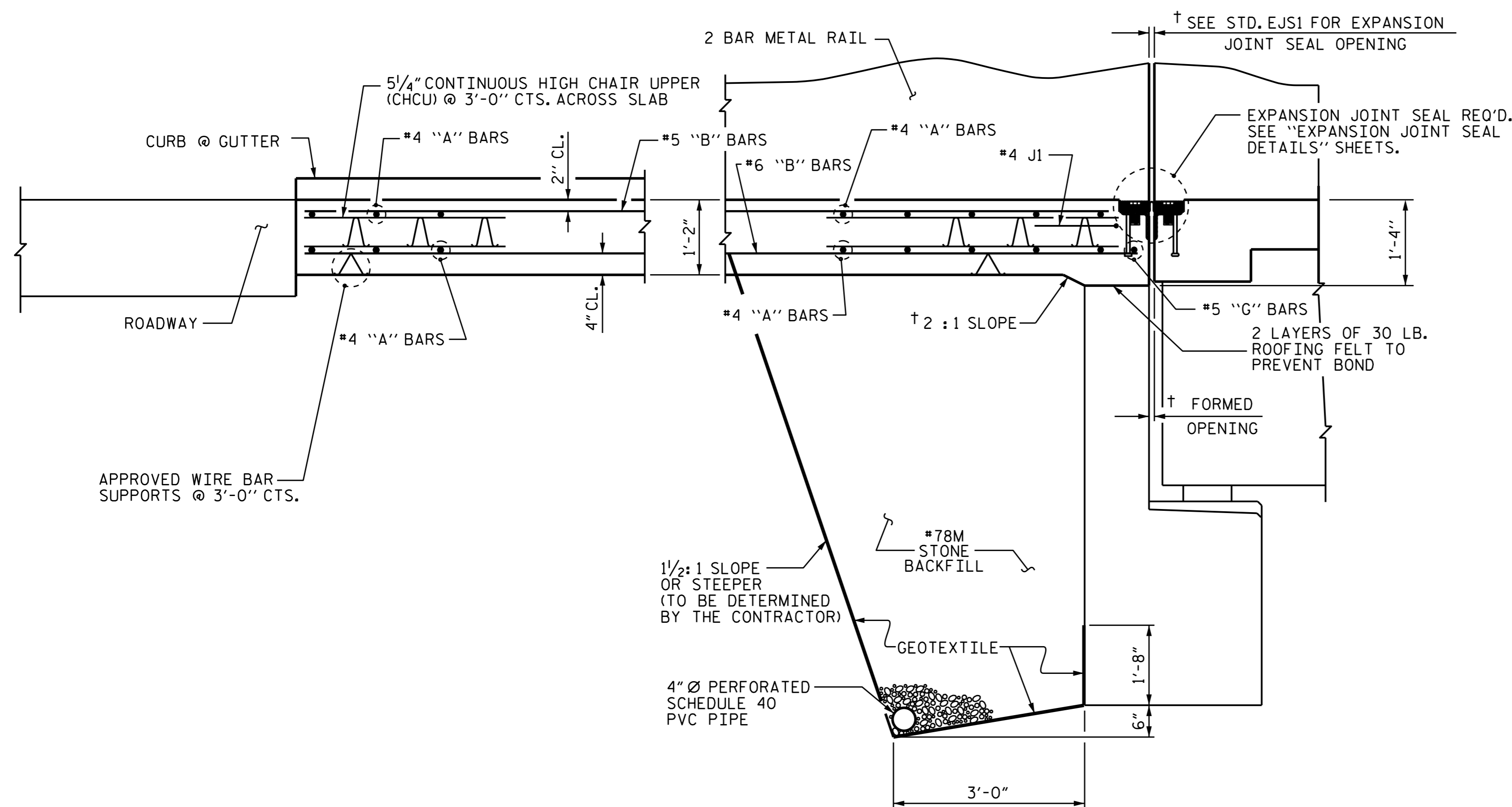
*78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

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

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

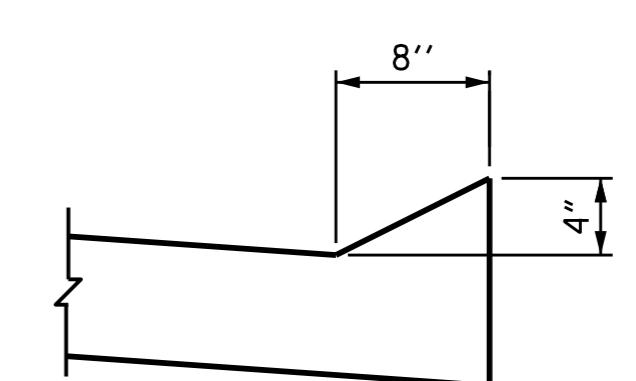
FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.



† NORMAL TO END BENT

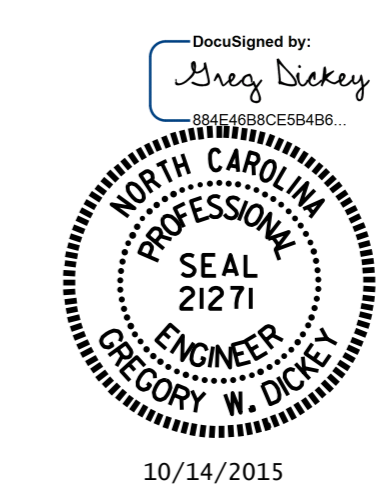
SECTION THRU SLAB



CURB DETAILS

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

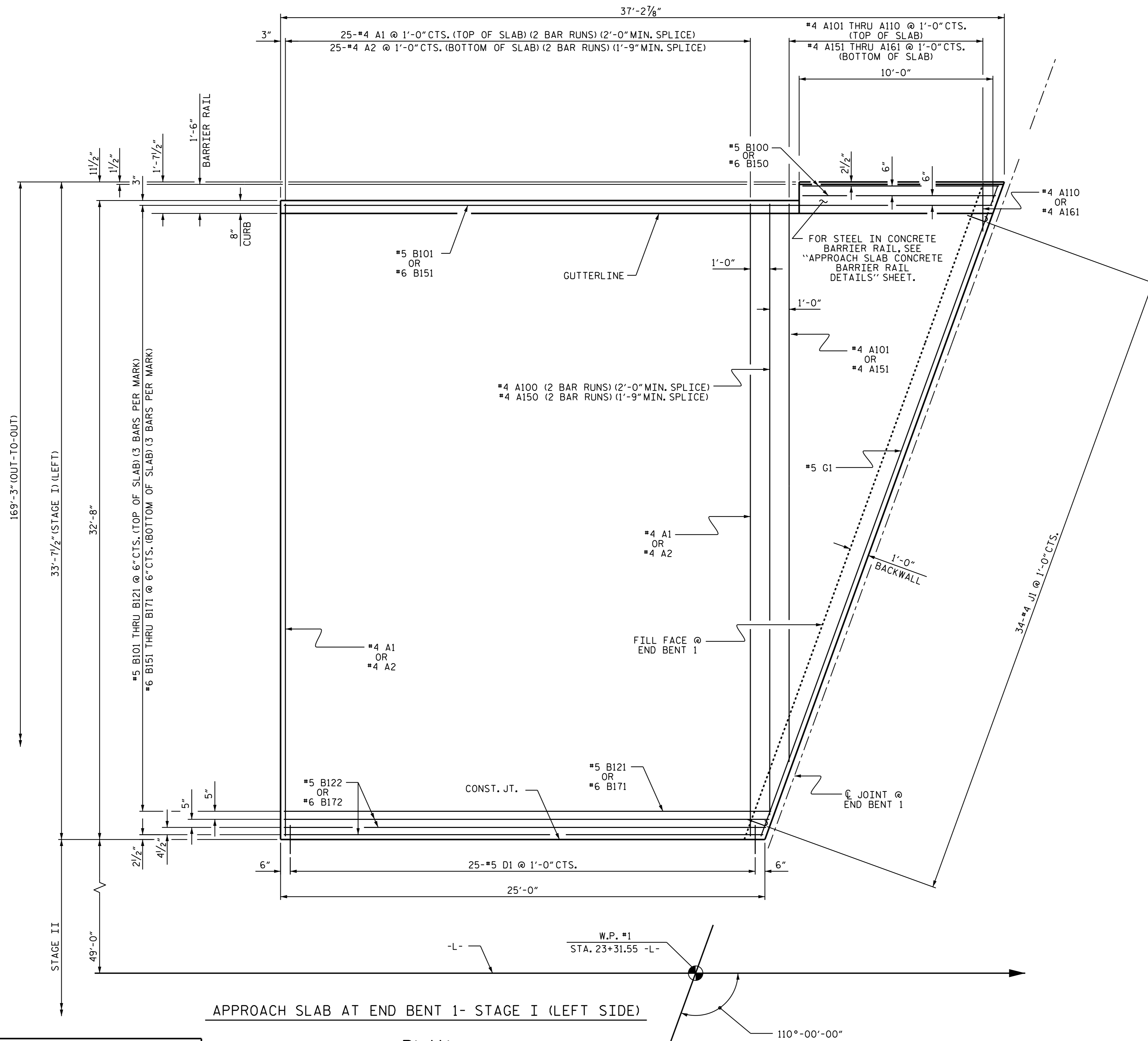
SHEET 1 OF 11



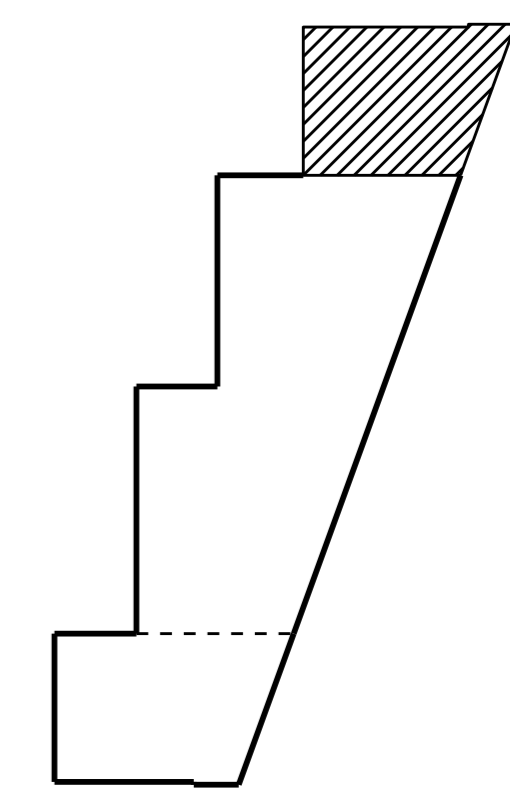
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR RIGID PAVEMENT

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-68	
1			3			TOTAL	68
2			4			SHEETS	78

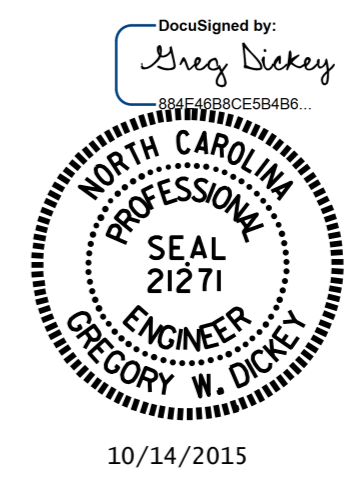
ASSEMBLED BY : D. G. ELY	DATE : 5/14/15
CHECKED BY : B. N. BARODAWAL	DATE : 6/19/15
DRAWN BY : RH 5/99	REV. 10/1/11 MAA/GM
CHECKED BY : RDR 5/99	REV. 12/21/11 MAA/GM
	REV. 6/13 MAA/GM



PLAN @ END BENT 1



PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-
 SHEET 2 OF 11

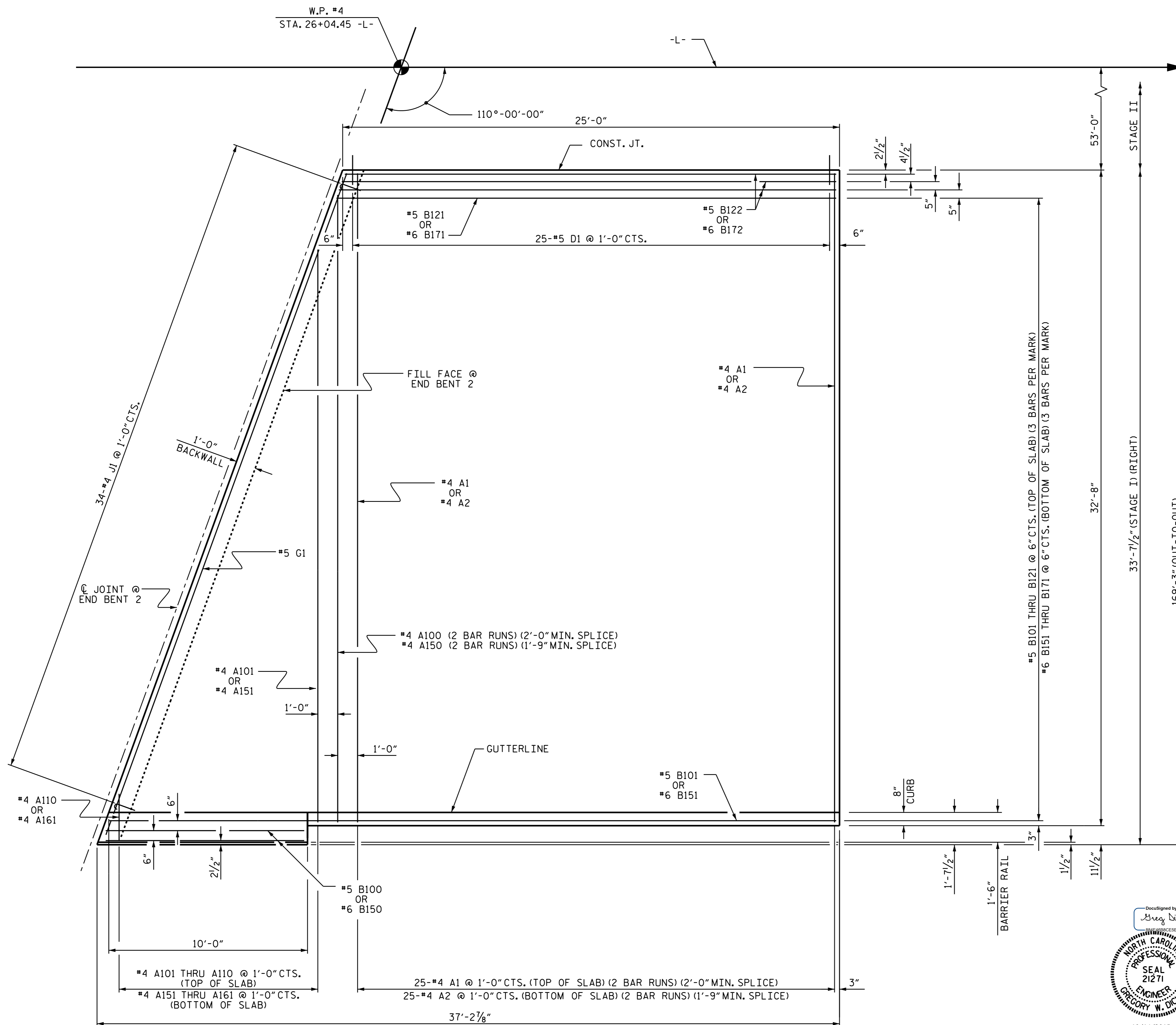


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 BRIDGE APPROACH SLAB
 FOR RIGID PAVEMENT
 STAGE I
 (LEFT SIDE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-69
1			3			TOTAL SHEETS
2			4			78

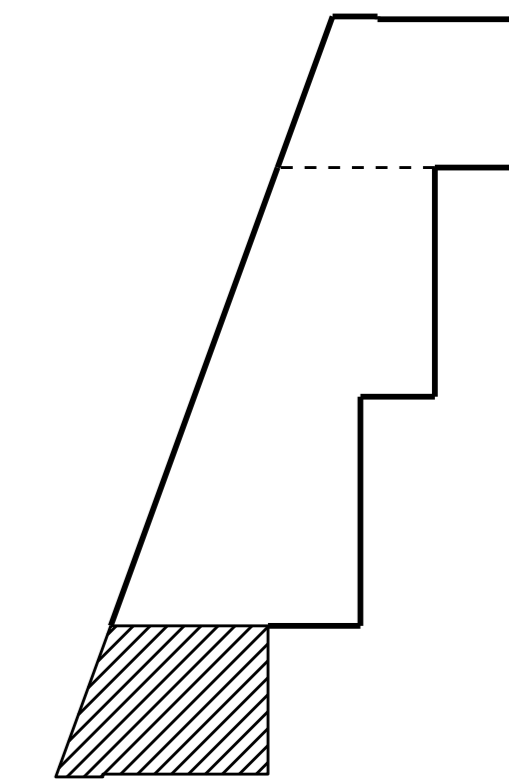
DRAWN BY : D. G. ELY DATE : 4/29/15
 CHECKED BY : B. N. BARODAWALA DATE : 6/19/15
 DESIGN ENGINEER OF RECORD: M. L. RORIE DATE : 8/15

PLAN



APPROACH SLAB AT END BENT 2 - STAGE I (RIGHT SIDE)

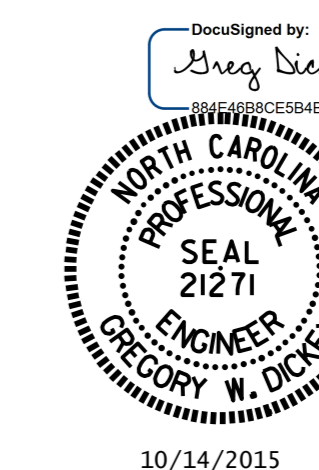
PLAN



PLAN @ END BENT 2

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

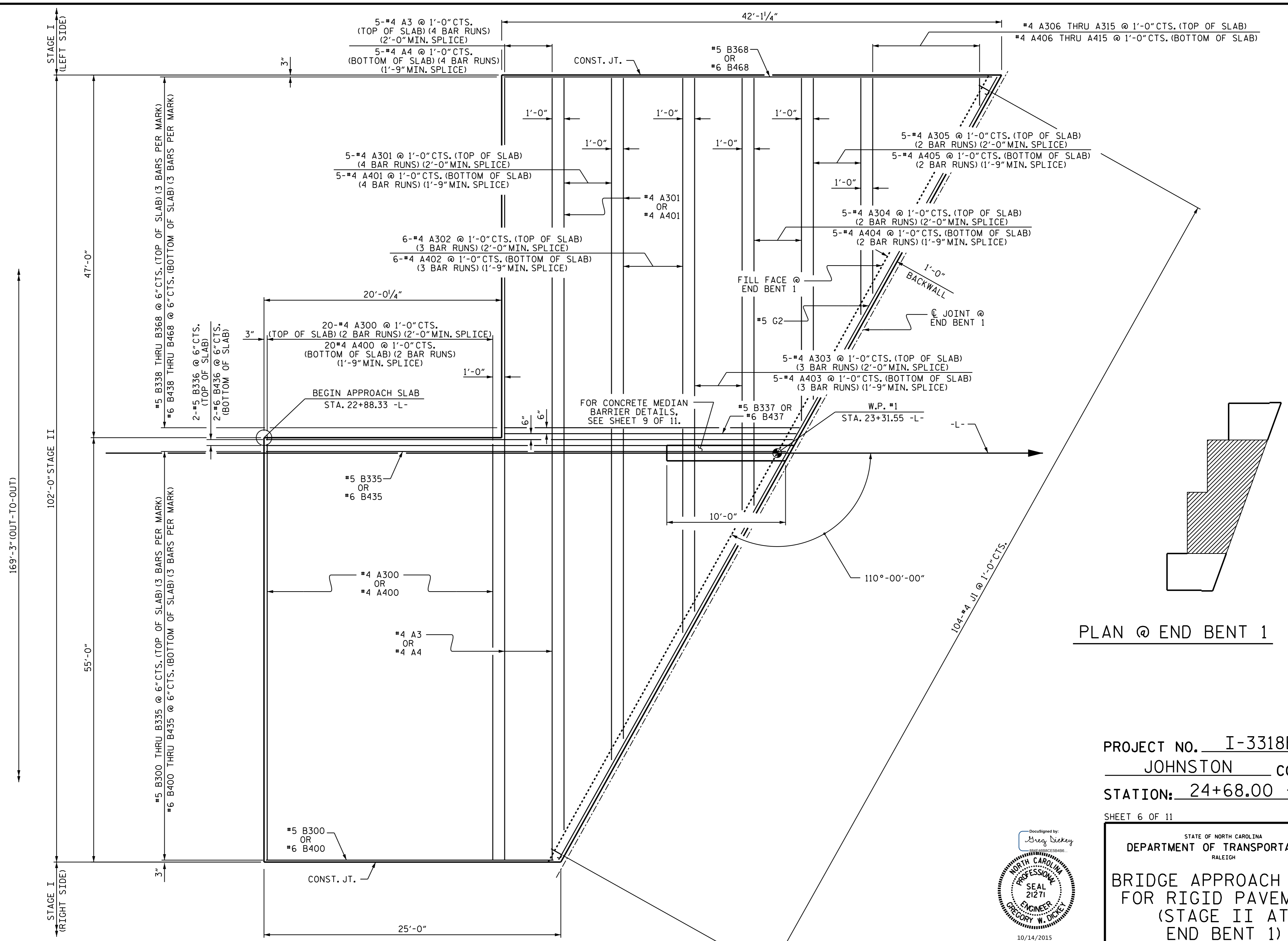
SHEET 5 OF 11



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 BRIDGE APPROACH SLAB
 FOR RIGID PAVEMENT
 STAGE I
 (RIGHT SIDE)

DRAWN BY : D. G. ELY DATE : 4/29/15
 CHECKED BY : B. N. BARODAWALA DATE : 6/19/15
 DESIGN ENGINEER OF RECORD : M. L. RORIE DATE : 8/15

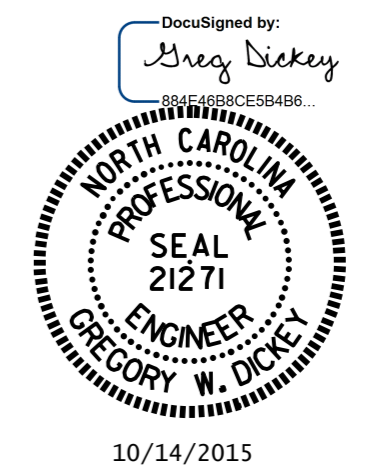
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-72
1			3			TOTAL SHEETS
2			4			78



PLAN @ END BENT 1

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 6 OF 11

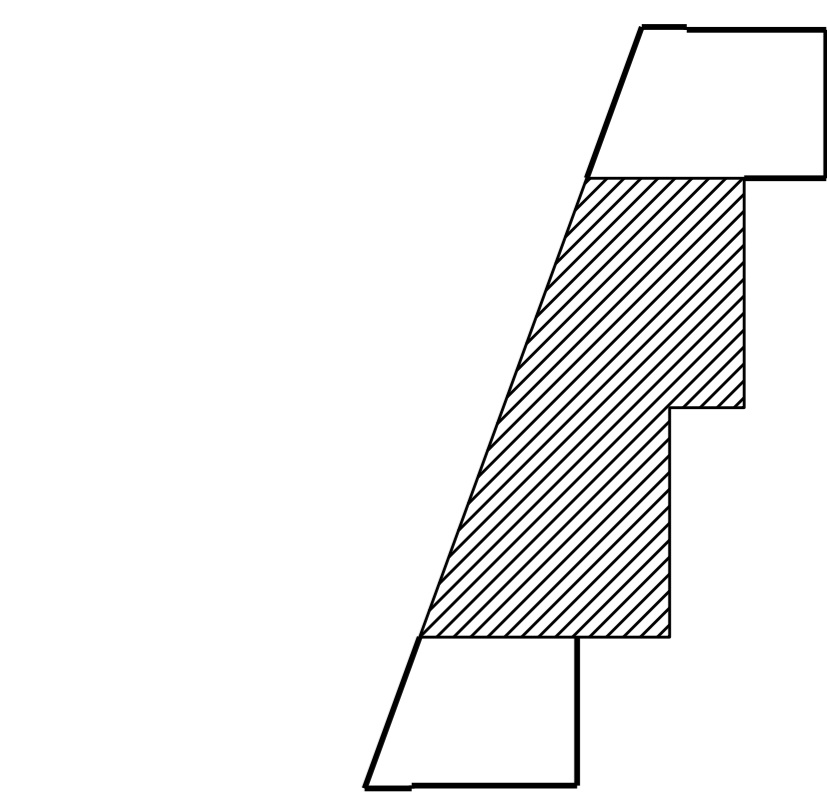
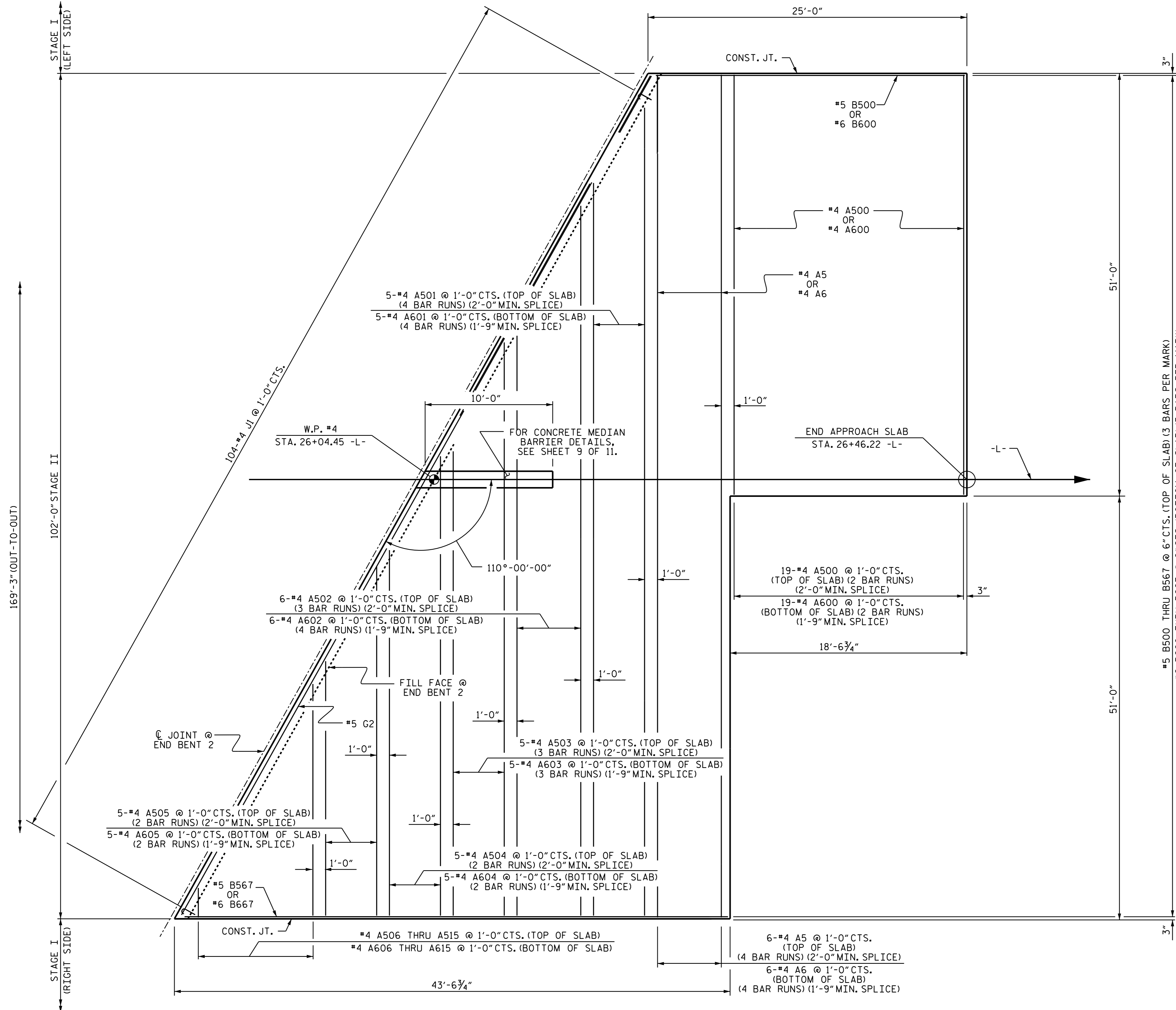


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 BRIDGE APPROACH SLAB
 FOR RIGID PAVEMENT
 (STAGE II AT
 END BENT 1)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			78
2			4			

DRAWN BY: D. G. ELY DATE: 6/29/15
 CHECKED BY: B. N. BARODAWALA DATE: 6/29/15
 DESIGN ENGINEER OF RECORD: M. L. RORIE DATE: 8/15

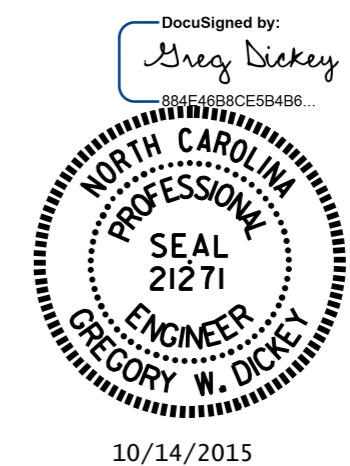
APPROACH SLAB AT END BENT 1 - STAGE II
 PLAN



PLAN @ END BENT 2

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 7 OF 11



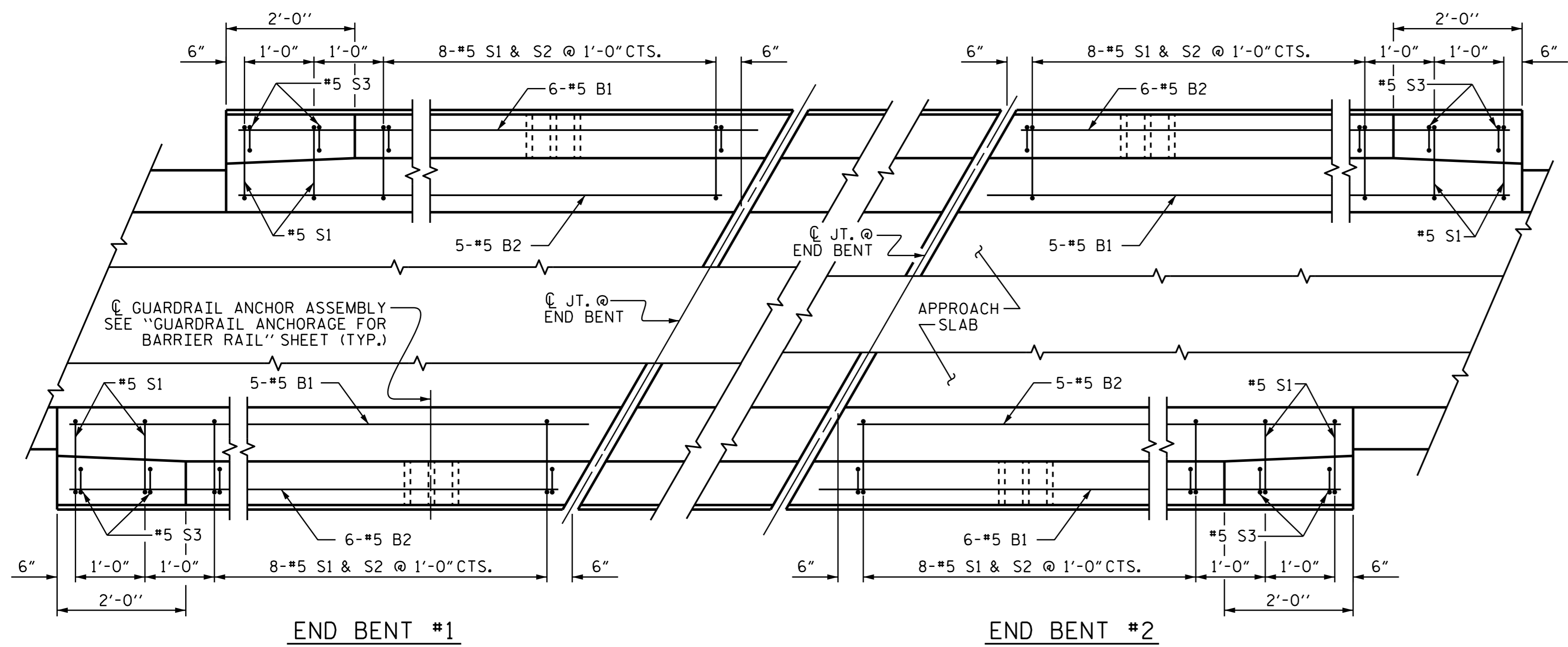
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 BRIDGE APPROACH SLAB
 FOR RIGID PAVEMENT
 (STAGE II AT
 END BENT 2)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			78
2			4			

APPROACH SLAB AT END BENT 2 - STAGE II

PLAN

DRAWN BY: D. G. ELY DATE: 6/30/15
 CHECKED BY: B. N. BARODAWALA DATE: 6/29/15
 DESIGN ENGINEER OF RECORD: M. L. RORIE DATE: 8/15



PLAN OF BARRIER RAIL

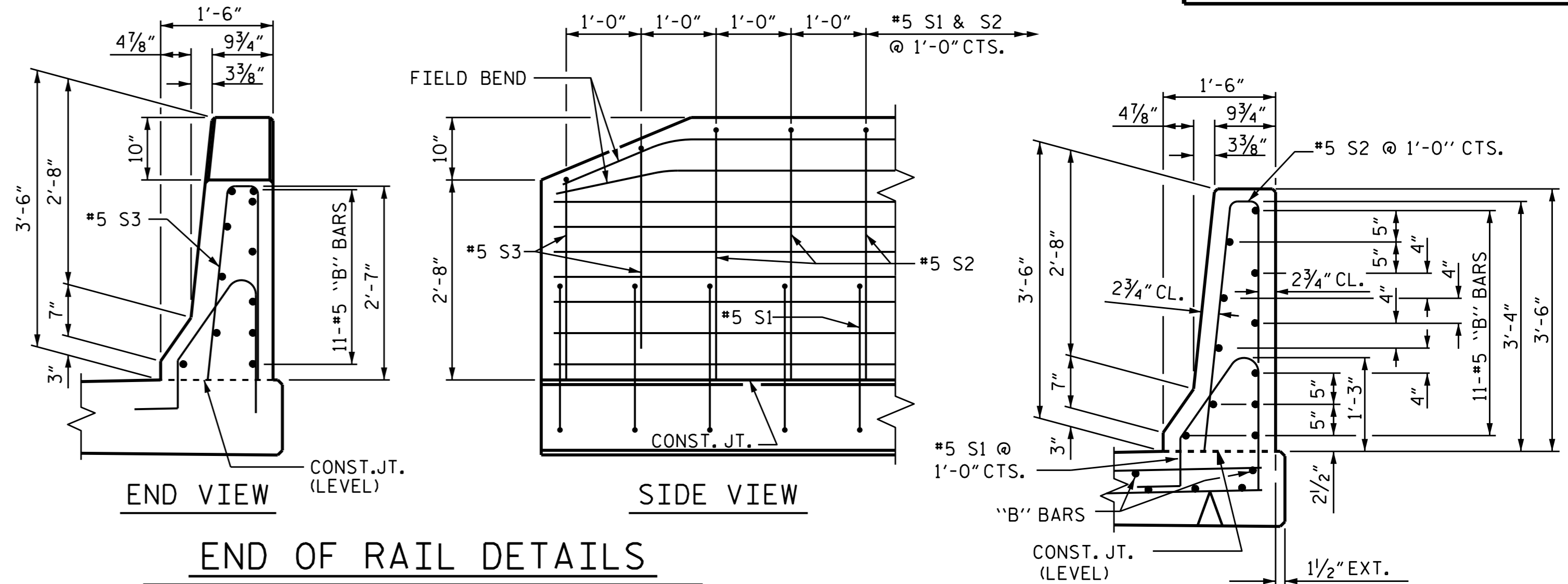
NOTES

THE COST OF THE BARRIER RAIL ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LINEAR FOOT CONTRACT PRICE BID FOR "CONCRETE BARRIER RAIL".
 THE BARRIER RAIL ON EACH APPROACH SLAB SHALL NOT BE CAST UNTIL ALL APPROACH SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.
 ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.
 FOR APPLICATION OF BRIDGE COATING, SEE SPECIAL PROVISIONS.

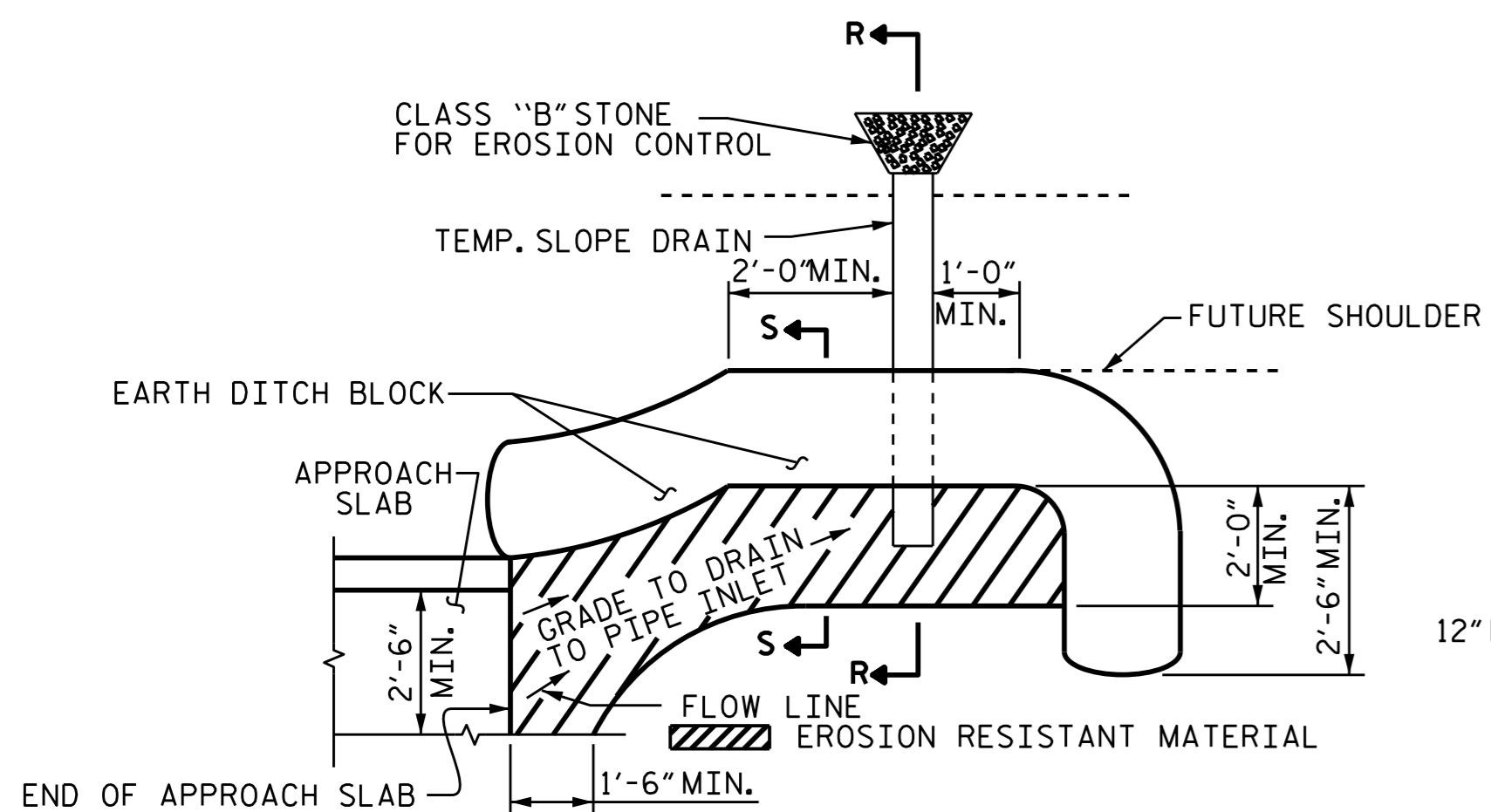
BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT

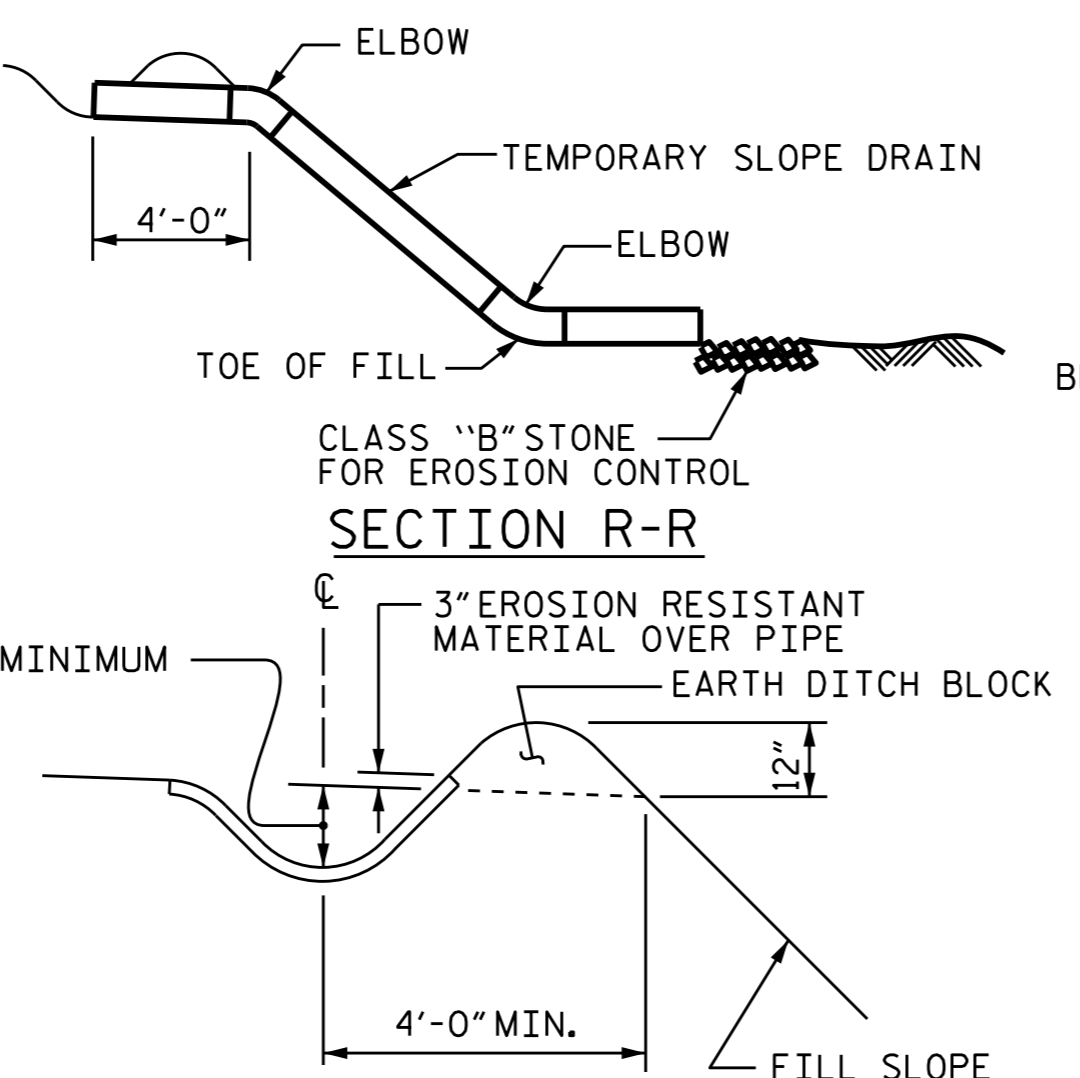
BILL OF MATERIAL					
BARRIER RAIL ONLY					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
* B1	22	#5	STR	10'-0"	229
* B2	22	#5	STR	9'-8"	222
* S1	40	#5	1	5'-1"	212
* S2	32	#5	2	7'-0"	234
* S3	8	#5	2	5'-6"	46
* EPOXY COATED REINFORCING STEEL				LBS.	943
CLASS AA CONCRETE				C. Y.	5.6
CONCRETE BARRIER RAIL				LIN. FT.	40.9



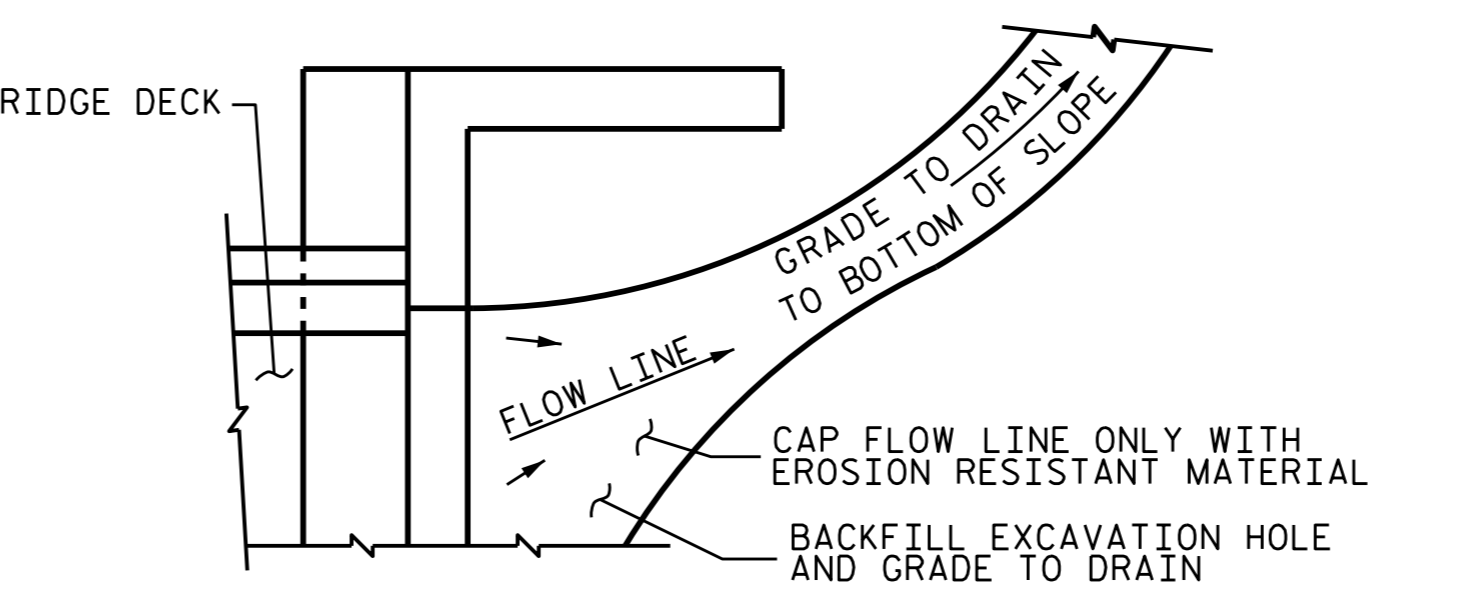
END OF RAIL DETAILS



PLAN VIEW



SECTION S-S



TEMPORARY DRAINAGE DETAIL

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.

PROJECT NO. I-3318BB
 JOHNSTON COUNTY
 STATION: 24+68.00 -L-



SHEET 8 OF 11

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

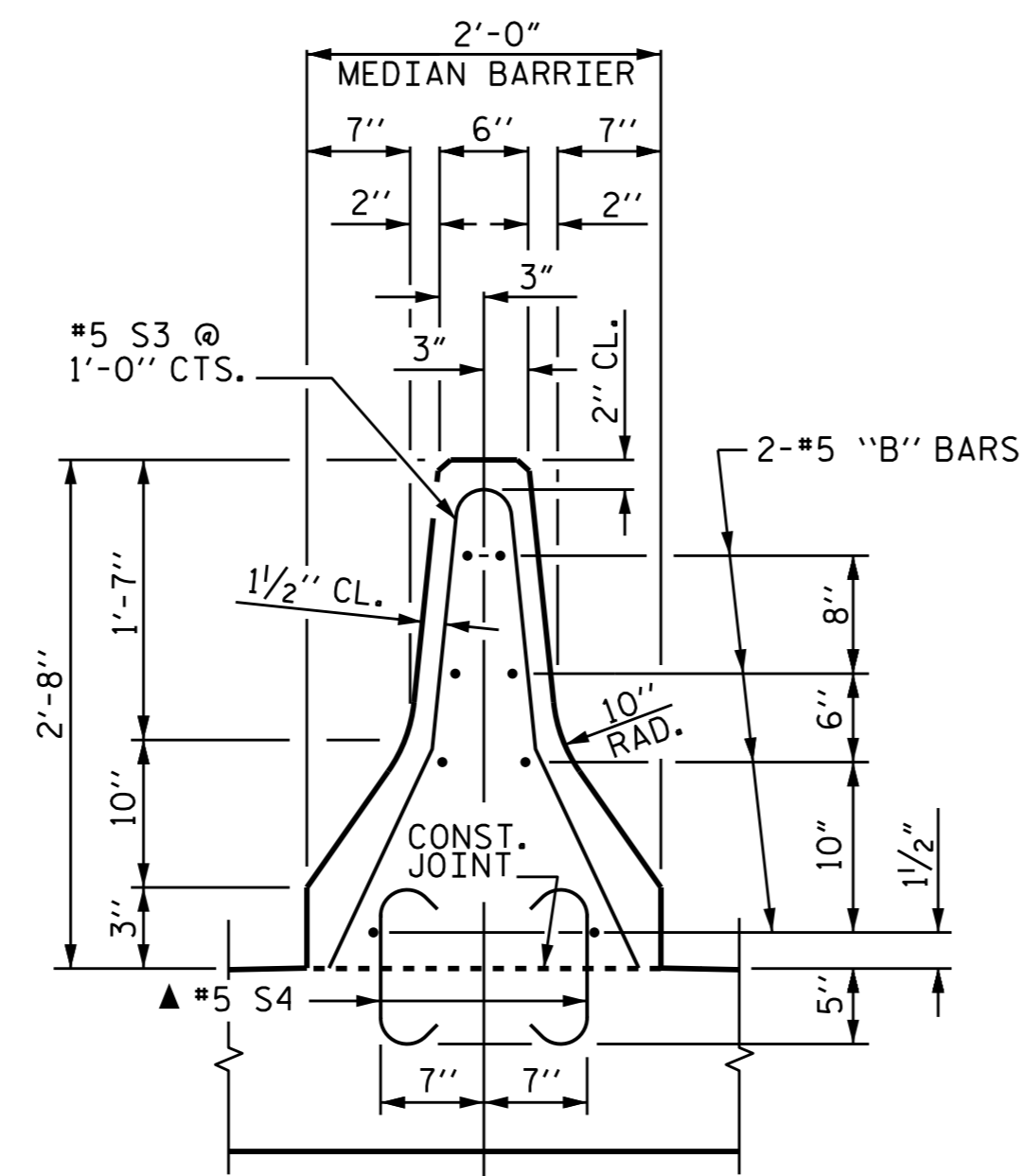
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH
 SLAB DETAILS

SHEET NO.	S-75
TOTAL SHEETS	78

ASSEMBLED BY :	D. G. ELY	DATE :	10/15
CHECKED BY :	G. W. DICKEY	DATE :	10/15
DRAWN BY :	FCJ 11/88	REV. 10/1/11	MAA/GM
CHECKED BY :	ARB 11/88	REV. 7/12	MAA/GM
		REV. 6/13	MAA/GM

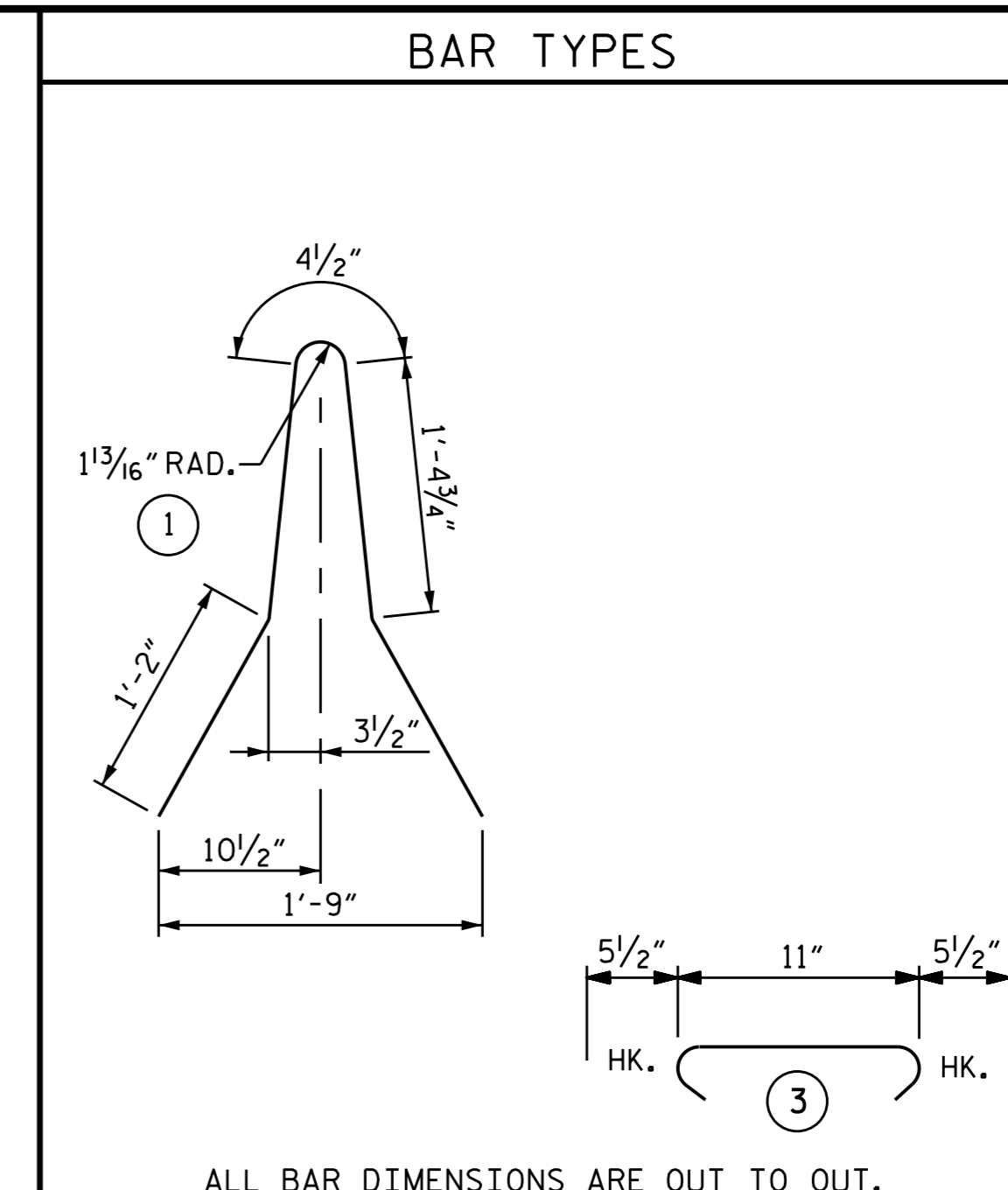
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION THRU MEDIAN BARRIER

▲ #5 S4 MAY BE PUSHED INTO GREEN CONCRETE AFTER SCREEDING

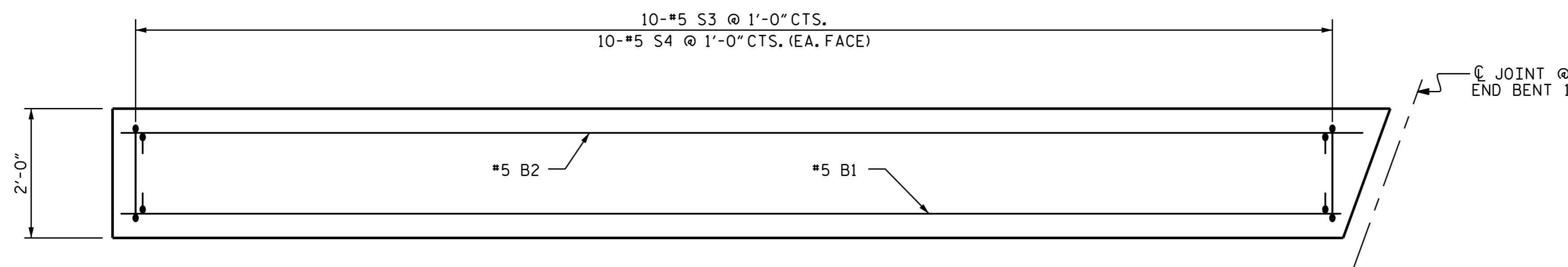


BILL OF MATERIAL FOR
CONCRETE MEDIAN BARRIER
ON APPROACH SLABS
ON END BENT 1
AND END BENT 2

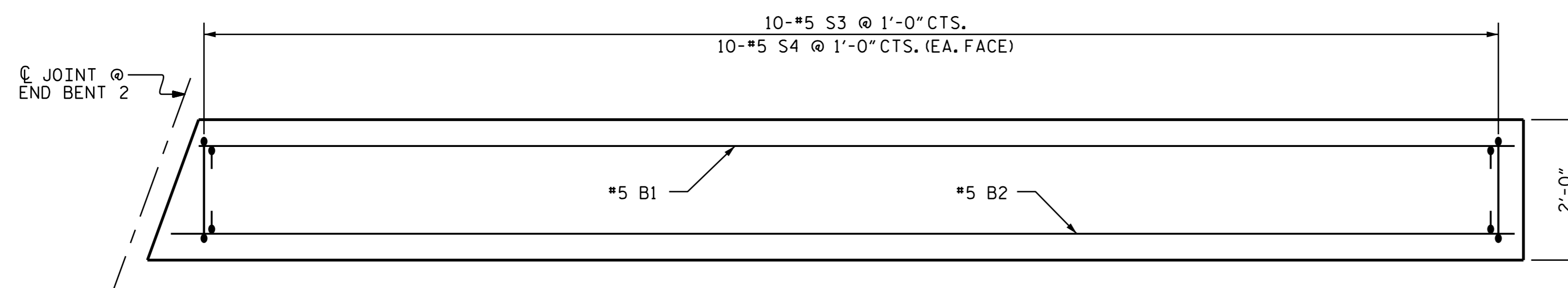
STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	8	#5	STR	9'-8"	81
*B2	8	#5	STR	10'-3"	86
*S3	20	#5	1	5'-6"	115
*S4	40	#5	3	1'-10"	76
*EPOXY COATED REINFORCING STEEL					LBS. 358
CLASS AA CONCRETE					CU. YDS. 2.1
CONC. MEDIAN BARRIER					LIN. FT. 20.7

NOTES

- THE JOINT IN THE DECK SHALL BE FORMED PRIOR TO THE CASTING OF MEDIAN BARRIER RAIL.
- ALL REINFORCING STEEL IN MEDIAN BARRIER RAIL SHALL BE EPOXY COATED.
- VERTICAL GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE MEDIAN BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT EACH THIRD POINT BETWEEN MEDIAN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF MEDIAN BARRIER SEGMENT LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.
- #5 "S" BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO EXPANSION JOINT SEALS AND TO THE 1/2" EXPANSION JOINT MATERIAL IN MEDIAN BARRIER RAIL.



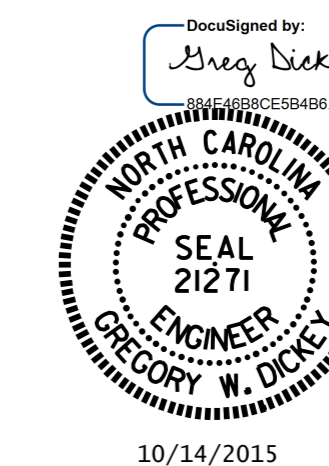
PLAN OF MEDIAN BARRIER RAIL - END BENT 1



PLAN OF MEDIAN BARRIER RAIL - END BENT 2

PROJECT NO. I-3318BB
JOHNSTON COUNTY
STATION: 24+68.00 -L-

SHEET 9 OF 11



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

APPROACH SLAB
CONCRETE MEDIAN
BARRIER
(STAGE II)

DRAWN BY : D. G. ELY DATE : 6/17/15
CHECKED BY : B. N. BARODAWALA DATE : 6/19/15
DESIGN ENGINEER OF RECORD : M. L. RORIE DATE : 8/15

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-76
1			3			TOTAL SHEETS
2			4			78

REINFORCING BAR SCHEDULE																BAR TYPE							
APPROACH SLAB AT END BENT 1 - STAGE I (LEFT SIDE)								APPROACH SLAB AT END BENT 2 - STAGE I (LEFT SIDE)															
APPROACH SLAB AT END BENT 2- STAGE I (RIGHT SIDE)								APPROACH SLAB AT END BENT 1 - STAGE I (RIGHT SIDE)															
(ONE SIDE LISTED BELOW - TWO REQUIRED)																							
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	50	#4	STR	17'-2"	573	* B115	3	#5	STR	28'-1"	88	* A1	30	#4	STR	17'-2"	344	* B213	3	#5	STR	29'-5"	92
A2	50	#4	STR	17'-1"	571	* B116	3	#5	STR	27'-6"	86	A2	30	#4	STR	17'-1"	342	* B214	3	#5	STR	28'-10"	90
						* B117	3	#5	STR	27'-0"	84							* B215	3	#5	STR	28'-4"	89
* A100	2	#4	STR	16'-3"	22	* B118	3	#5	STR	26'-5"	83	* A200	20	#4	STR	17'-8"	236	* B216	3	#5	STR	27'-9"	87
* A101	1	#4	STR	27'-7"	18	* B119	3	#5	STR	25'-10"	81	* A201	2	#4	STR	16'-5"	22	* B217	3	#5	STR	27'-2"	85
* A102	1	#4	STR	25'-9"	17	* B120	3	#5	STR	25'-4"	79	* A202	1	#4	STR	27'-11"	19	* B218	3	#5	STR	26'-8"	83
* A103	1	#4	STR	23'-0"	15	* B121	3	#5	STR	24'-9"	77	* A203	1	#4	STR	25'-2"	17	* B219	3	#5	STR	26'-1"	82
* A104	1	#4	STR	20'-3"	14	* B122	3	#5	STR	24'-4"	76	* A204	1	#4	STR	22'-5"	15	* B220	3	#5	STR	25'-7"	80
* A105	1	#4	STR	17'-6"	12							* A205	1	#4	STR	19'-8"	13	* B221	3	#5	STR	25'-0"	78
* A106	1	#4	STR	14'-9"	10	B150	2	#6	STR	9'-11"	30	* A206	1	#4	STR	16'-11"	11	* B222	3	#5	STR	24'-6"	77
* A107	1	#4	STR	12'-0"	8	B151	3	#6	STR	36'-1"	163	* A207	1	#4	STR	14'-2"	9						
* A108	1	#4	STR	9'-3"	6	B152	3	#6	STR	35'-6"	160	* A208	1	#4	STR	11'-5"	8	B250	2	#6	STR	9'-7"	29
* A109	1	#4	STR	6'-7"	4	B153	3	#6	STR	35'-0"	158	* A209	1	#4	STR	8'-8"	6	B251	3	#6	STR	36'-4"	164
* A110	1	#4	STR	3'-10"	3	B154	3	#6	STR	34'-5"	155	* A210	1	#4	STR	5'-11"	4	B252	3	#6	STR	35'-9"	161
						B155	3	#6	STR	33'-10"	152	* A211	1	#4	STR	3'-2"	2	B253	3	#6	STR	35'-2"	158
A150	2	#4	STR	16'-7"	22	B156	3	#6	STR	33'-4"	150							B254	3	#6	STR	34'-8"	156
A151	1	#4	STR	28'-6"	19	B157	3	#6	STR	32'-9"	148	A250	20	#4	STR	17'-7"	235	B255	3	#6	STR	34'-1"	154
A152	1	#4	STR	26'-9"	18	B158	3	#6	STR	32'-3"	145	A251	2	#4	STR	16'-9"	22	B256	3	#6	STR	33'-7"	151
A153	1	#4	STR	24'-0"	16	B159	3	#6	STR	31'-8"	143	A252	1	#4	STR	28'-10"	19	B257	3	#6	STR	33'-0"	149
A154	1	#4	STR	21'-3"	14	B160	3	#6	STR	31'-2"	140	A253	1	#4	STR	26'-1"	17	B258	3	#6	STR	32'-6"	146
A155	1	#4	STR	18'-6"	12	B161	3	#6	STR	30'-7"	138	A254	1	#4	STR	23'-5"	16	B259	3	#6	STR	31'-11"	144
A156	1	#4	STR	15'-9"	11	B162	3	#6	STR	30'-1"	136	A255	1	#4	STR	20'-8"	14	B260	3	#6	STR	31'-5"	142
A157	1	#4	STR	13'-0"	9	B163	3	#6	STR	29'-6"	133	A256	1	#4	STR	17'-11"	12	B261	3	#6	STR	30'-10"	139
A158	1	#4	STR	10'-3"	7	B164	3	#6	STR	28'-11"	130	A257	1	#4	STR	15'-2"	10	B262	3	#6	STR	30'-3"	136
A159	1	#4	STR	7'-6"	5	B165	3	#6	STR	28'-5"	128	A258	1	#4	STR	12'-5"	8	B263	3	#6	STR	29'-9"	134
A160	1	#4	STR	4'-9"	3	B166	3	#6	STR	27'-10"	125	A259	1	#4	STR	9'-8"	6	B264	3	#6	STR	29'-2"	131
A161	1	#4	STR	2'-0"	1	B167	3	#6	STR	27'-4"	123	A260	1	#4	STR	6'-11"	5	B265	3	#6	STR	28'-8"	129
						B168	3	#6	STR	26'-9"	121	A261	1	#4	STR	4'-2"	3	B266	3	#6	STR	28'-1"	127
* B100	2	#5	STR	9'-7"	20	B169	3	#6	STR	26'-3"	118	A262	1	#4	STR	1'-5"	1	B267	3	#6	STR	27'-7"	124
* B101	3	#5	STR	35'-8"	112	B170	3	#6	STR	25'-8"	116							B268	3	#6	STR	27'-0"	122
* B102	3	#5	STR	35'-2"	110	B171	3	#6	STR	25'-2"	113	* B200	2	#5	STR	9'-3"	19	B269	3	#6	STR	26'-6"	119
* B103	3	#5	STR	34'-7"	108	B172	3	#6	STR	24'-8"	111	* B201	3	#5	STR	35'-11"	112	B270	3	#6	STR	25'-11"	117
* B104	3	#5	STR	34'-1"	107							* B202	3	#5	STR	35'-5"	111	B271	3	#6	STR	25'-5"	115
* B105	3	#5	STR	33'-6"	105	* D1	25	#5	STR	1'-6"	39	* B203	3	#5	STR	34'-10"	109	B272	3	#6	STR	24'-10"	112
* B106	3	#5	STR	32'-10"	103							* B204	3	#5	STR	34'-4"	107						
* B107	3	#5	STR	32'-5"	101	* G1	1	#5	STR	35'-5"	37	* B205	3	#5	STR	33'-9"	106	* D1	25	#5	STR	1'-6"	39
* B108	3	#5	STR	31'-11"	100							* B206	3	#5	STR	33'-3"	104	* G1	1	#5	STR	35'-5"	37
* B109	3	#5	STR	31'-4"	98	* J1	34	#4	1	1'-5"	32	* B207	3	#5	STR	32'-8"	102						
* B110	3	#5	STR	30'-9"	96							* B208	3	#5	STR	32'-1"	100						
* B111	3	#5	STR	30'-3"	95	REINFORCING STEEL **			LBS.	3744	* B209	3	#5	STR	31'-7"	99	* J1	34	#4	1	1'-5"	32	
* B112	3	#5	STR	29'-8"	93	* EPOXY COATED					* B210	3	#5	STR	31'-0"	97							
* B113	3	#5	STR	29'-2"	91	REINFORCING STEEL **			LBS.	2892	* B211	3	#5	STR	30'-6"	95	REINFORCING STEEL **			LBS.	3769		
* B114	3	#5	STR	28'-7"	89	CLASS AA CONCRETE **			C. Y.	44.6	* B212	3	#5	STR	29'-11"	94	* EPOXY COATED			LBS.	2912		
																	CLASS AA CONCRETE **			C. Y.	45.0		

** QUANTITIES FOR END POSTS AND PARAPETS ARE NOT INCLUDED.

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



APPROACH SLAB LAYOUT SKETCH

PROJECT NO. I-3318BB
JOHNSTON COUNTY
 STATION: 24+68.00 -L-

SHEET 10 OF 11



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
			③			78	
			④				

DRAWN BY: D. G. ELY DATE: 5/1/15
 CHECKED BY: B. N. BARODAWALA DATE: 6/19/15
 DESIGN ENGINEER OF RECORD: M. L. RORIE DATE: 8/15

APPROACH SLAB REINFORCING BAR SCHEDULE - STAGE II

END BENT 1												END BENT 2																							
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT						
*A3	20	#4	STR	26'-11"	360	*B334	3	#5	STR	42'-11"	134	B435	3	#6	STR	43'-10"	199	*A5	24	#4	STR	26'-11"	432	*B534	3	#5	STR	24'-4"	76	B636	3	#6	STR	25'-10"	116
A4	20	#4	STR	26'-9"	357	*B335	3	#5	STR	43'-6"	136	B436	2	#6	STR	44'-4"	133	A6	24	#4	STR	26'-9"	429	*B535	3	#5	STR	24'-11"	78	B637	3	#6	STR	26'-4"	119
						*B336	2	#5	STR	44'-2"	92	B437	1	#6	STR	24'-8"	37							*B536	3	#5	STR	25'-5"	80	B638	3	#6	STR	26'-11"	121
*A300	40	#4	STR	28'-4"	757	*B337	1	#5	STR	28'-4"	25	B438	3	#6	STR	24'-11"	112	*A500	38	#4	STR	26'-4"	668	*B537	3	#5	STR	26'-0"	81	B639	3	#6	STR	27'-5"	124
*A301	20	#4	STR	26'-6"	354	*B338	3	#5	STR	24'-6"	77	B439	3	#6	STR	25'-5"	115	*A501	20	#4	STR	26'-6"	354	*B538	3	#5	STR	26'-6"	83	B640	3	#6	STR	28'-0"	126
*A302	18	#4	STR	30'-0"	361	*B339	3	#5	STR	25'-1"	78	B440	3	#6	STR	26'-0"	117	*A502	18	#4	STR	30'-0"	361	*B539	3	#5	STR	27'-1"	85	B641	3	#6	STR	28'-6"	128
*A303	15	#4	STR	24'-6"	245	*B340	3	#5	STR	25'-8"	80	B441	3	#6	STR	26'-6"	119	*A503	15	#4	STR	24'-6"	245	*B540	3	#5	STR	27'-8"	87	B642	3	#6	STR	29'-1"	131
*A304	10	#4	STR	28'-11"	193	*B341	3	#5	STR	26'-2"	82	B442	3	#6	STR	27'-1"	122	*A504	10	#4	STR	28'-11"	193	*B541	3	#5	STR	28'-2"	88	B643	3	#6	STR	29'-7"	133
*A305	10	#4	STR	22'-0"	147	*B342	3	#5	STR	26'-9"	84	B443	3	#6	STR	27'-7"	124	*A505	10	#4	STR	22'-0"	147	*B542	3	#5	STR	28'-9"	90	B644	3	#6	STR	30'-2"	136
*A306	1	#4	STR	28'-3"	19	*B343	3	#5	STR	27'-3"	85	B444	3	#6	STR	28'-2"	127	*A506	1	#4	STR	28'-3"	19	*B543	3	#5	STR	29'-3"	92	B645	3	#6	STR	30'-9"	139
*A307	1	#4	STR	25'-6"	17	*B344	3	#5	STR	27'-10"	87	B445	3	#6	STR	28'-9"	130	*A507	1	#4	STR	25'-6"	17	*B544	3	#5	STR	29'-10"	93	B646	3	#6	STR	31'-3"	141
*A308	1	#4	STR	22'-9"	15	*B345	3	#5	STR	28'-4"	89	B446	3	#6	STR	29'-3"	132	*A508	1	#4	STR	22'-9"	15	*B545	3	#5	STR	30'-4"	95	B647	3	#6	STR	31'-10"	143
*A309	1	#4	STR	20'-0"	13	*B346	3	#5	STR	28'-11"	90	B447	3	#6	STR	29'-10"	134	*A509	1	#4	STR	20'-0"	13	*B546	3	#5	STR	30'-11"	97	B648	3	#6	STR	32'-4"	146
*A310	1	#4	STR	17'-3"	12	*B347	3	#5	STR	29'-5"	92	B448	3	#6	STR	30'-4"	137	*A510	1	#4	STR	17'-3"	12	*B547	3	#5	STR	31'-5"	98	B649	3	#6	STR	32'-11"	148
*A311	1	#4	STR	14'-6"	10	*B348	3	#5	STR	30'-0"	94	B449	3	#6	STR	30'-11"	139	*A511	1	#4	STR	14'-6"	10	*B548	3	#5	STR	32'-0"	100	B650	3	#6	STR	33'-5"	151
*A312	1	#4	STR	11'-9"	8	*B349	3	#5	STR	30'-6"	95	B450	3	#6	STR	31'-5"	142	*A512	1	#4	STR	11'-9"	8	*B549	3	#5	STR	32'-7"	102	B651	3	#6	STR	34'-0"	153
*A313	1	#4	STR	9'-0"	6	*B350	3	#5	STR	31'-1"	97	B451	3	#6	STR	32'-0"	144	*A513	1	#4	STR	9'-0"	6	*B550	3	#5	STR	33'-1"	104	B652	3	#6	STR	34'-6"	155
*A314	1	#4	STR	6'-3"	4	*B351	3	#5	STR	31'-8"	99	B452	3	#6	STR	32'-6"	146	*A514	1	#4	STR	6'-3"	4	*B551	3	#5	STR	33'-8"	105	B653	3	#6	STR	35'-1"	158
*A315	1	#4	STR	3'-6"	2	*B352	3	#5	STR	32'-2"	101	B453	3	#6	STR	33'-1"	149	*A515	1	#4	STR	3'-6"	2	*B552	3	#5	STR	34'-2"	107	B654	3	#6	STR	35'-8"	161
						*B353	3	#5	STR	32'-9"	102	B454	3	#6	STR	33'-8"	152							*B553	3	#5	STR	34'-9"	109	B655	3	#6	STR	36'-2"	163
A400	40	#4	STR	28'-3"	755	*B354	3	#5	STR	33'-3"	104	B455	3	#6	STR	34'-2"	154	A600	38	#4	STR	26'-3"	666	*B554	3	#5	STR	35'-3"	110	B656	3	#6	STR	36'-9"	166
A401	20	#4	STR	26'-6"	354	*B355	3	#5	STR	33'-10"	106	B456	3	#6	STR	34'-9"	157	A601	20	#4	STR	26'-6"	354	*B555	3	#5	STR	35'-10"	112	B657	3	#6	STR	37'-3"	168
A402	24	#4	STR	23'-1"	370	*B356	3	#5	STR	34'-4"	107	B457	3	#6	STR	35'-3"	159	A602	24	#4	STR	23'-1"	370	*B556	3	#5	STR	36'-4"	114	B658	3	#6	STR	37'-10"	170
A403	15	#4	STR	24'-8"	247	*B357	3	#5	STR	34'-11"	109	B458	3	#6	STR	35'-10"	161	A603	15	#4	STR	24'-8"	247	*B557	3	#5	STR	36'-11"	116	B659	3	#6	STR	38'-4"	173
A404	10	#4	STR	29'-3"	195	*B358	3	#5	STR	35'-5"	111	B459	3	#6	STR	36'-4"	164	A604	10	#4	STR	29'-3"	195	*B558	3	#5	STR	37'-5"	117	B660	3	#6	STR	38'-11"	175
A405	10	#4	STR	22'-4"	149	*B359	3	#5	STR	35'-0"	113	B460	3	#6	STR	36'-11"	166	A605	10	#4	STR	22'-4"	149	*B559	3	#5	STR	38'-0"	119	B661	3	#6	STR	39'-5"	178
A406	1	#4	STR	29'-2"	19	*B360	3	#5	STR	36'-7"	114	B461	3	#6	STR	37'-5"	169	A606	1	#4	STR	29'-2"	19	*B560	3	#5	STR	38'-7"	121	B662	3	#6	STR	40'-0"	180
A407	1	#4	STR	26'-5"	18	*B361	3	#5	STR	37'-1"	116	B462	3	#6	STR	38'-0"	171	A607	1	#4	STR	26'-5"	18	*B561	3	#5	STR	39'-1"	122	B663	3	#6	STR	40'-6"	182
A408	1	#4	STR	23'-8"	16	*B362	3	#5	STR	37'-8"	118	B463	3	#6	STR	38'-6"	173	A608	1	#4	STR	23'-8"	16	*B562	3	#5	STR	39'-8"	124	B664	3	#6	STR	41'-1"	185
A409	1	#4	STR	20'-11"	14	*B363	3	#5	STR	38'-2"	119	B464	3	#6	STR	39'-1"	176	A609	1	#4	STR	20'-11"	14	*B563	3	#5	STR	40'-2"	126	B665	3	#6	STR	41'-8"	188
A410	1	#4	STR	18'-2"	12	*B364	3	#5	STR	38'-9"	121	B465	3	#6	STR	39'-8"	179	A610	1	#4	STR	18'-2"	12	*B564	3	#5	STR	40'-9"	128	B666	3	#6	STR	42'-2"	190
A411	1	#4	STR	15'-5"	10	*B365	3	#5	STR	39'-3"	123	B466	3	#6	STR	40'-2"	181	A611	1	#4	STR	15'-5"	10	*B565	3	#5	STR	41'-3"	129	B667	3	#6	STR	42'-9"	193
A412	1	#4	STR	12'-8"	8	*B366	3	#5	STR	39'-10"	125	B467	3	#6	STR	40'-9"	184	A612	1	#4	STR	12'-8"	8	*B566	3	#5	STR	41'-10"	131						
A413	1	#4	STR	9'-11"	7	*B367	3	#5	STR	40'-4"	126	B468	3	#6	STR	41'-3"	186	A613	1	#4	STR	9'-11"	7	*B567	3	#5	STR	42'-4"	132	*G2	2	#5	STR	55'-5"	116
A414	1	#4	STR	7'-2"	5	*B368	3	#5	STR	40'-11"	128							A614	1	#4	STR	7'-2"	5												
A415	1	#4	STR	4'-5"	3							*G2	2	#5	STR	55'-5"	116	A615	1	#4	STR	4'-5"	3												
						B400	3	#6	STR	24'-8"	111							B600	3	#6	STR	24'-8"	111	*J1	104	#4	1	1'-5"	98						
*B300	3	#5	STR	24'-4"	76	B401	3	#6	STR	25'-3"	114	*J1	104	#4	1	1'-5"	98	*B500	3	#5	STR	24'-4"	76	B601	3	#6	STR	25'-3"	114	REINFORCING STEEL ** LBS. 12,852					
*B301	3	#5	STR	24'-11"	78	B402	3	#6	STR	25'-10"	116	REINFORCING STEEL ** LBS. 12,888	*B501	3	#5	STR	24'-11"	78	B602	3	#6	STR	25'-10"	116	*EPOXY COATED REINFORCING STEEL ** LBS. 9822										
*B302	3	#5	STR	25'-5"	80	B403	3	#6	STR	26'-4"	119	*EPOXY COATED REINFORCING STEEL ** LBS. 9847	*B502	3	#5	STR	25'-5"	80	B603	3	#6	STR	26'-4"	119	CLASS AA CONCRETE ** C. Y. 152.0										
*B303	3	#5	STR	26'-0"	81	B404	3	#6	STR	26'-11"	121	CLASS AA CONCRETE ** C. Y. 152.3	*B503	3	#5	STR	26'-0"	81	B604	3	#6	STR	26'-11"	121											
*B304	3	#5	STR	26'-6"	83	B405	3	#6	STR	27'-5"	124		*B504	3	#5	STR	26'-6"	83	B605	3	#6	STR	27'-5"	124											
*B305	3	#5	STR	27'-1"	85	B406	3	#6	STR	28'-0"	126		*B505	3	#5	STR	27'-1"	85	B606	3	#6	STR	28'-0"	126											
*B306	3	#5	STR	27'-8"	87	B407	3	#6	STR	28'-6"	128		*B506	3	#5	STR	27'-8"	87	B607	3	#6	STR	28'-6"	128											
*B307	3	#5	STR	28'-2"	88	B408	3	#6	STR	29'-1"	131		*B507	3	#5	STR	28'-2"	88	B608	3	#6	STR	29'-1"	131											
*B308	3	#5	STR	28'-9"	90	B409	3	#6	STR	29'-7"	133		*B508	3	#5	STR	28'-9"	90	B609	3	#6	STR	29'-7"	133											
*B309	3	#5	STR	29'-3"	92	B410	3	#6	STR	30'-2"	136		*B509	3	#5	STR	29'-3"	92	B610	3	#6	STR	30'-2"	136											
*B310	3	#5	STR	29'-10"	93	B411	3	#6	STR	30'-9"	139		*B510	3	#5	STR	29'-10"	93	B611	3	#6	STR	30'-9"	139											
*B311	3	#5																																	

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

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

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

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

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

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

REINFORCING STEEL:

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

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

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

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

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

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB. METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINISHES AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

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

ENGLISH

JANUARY, 1990