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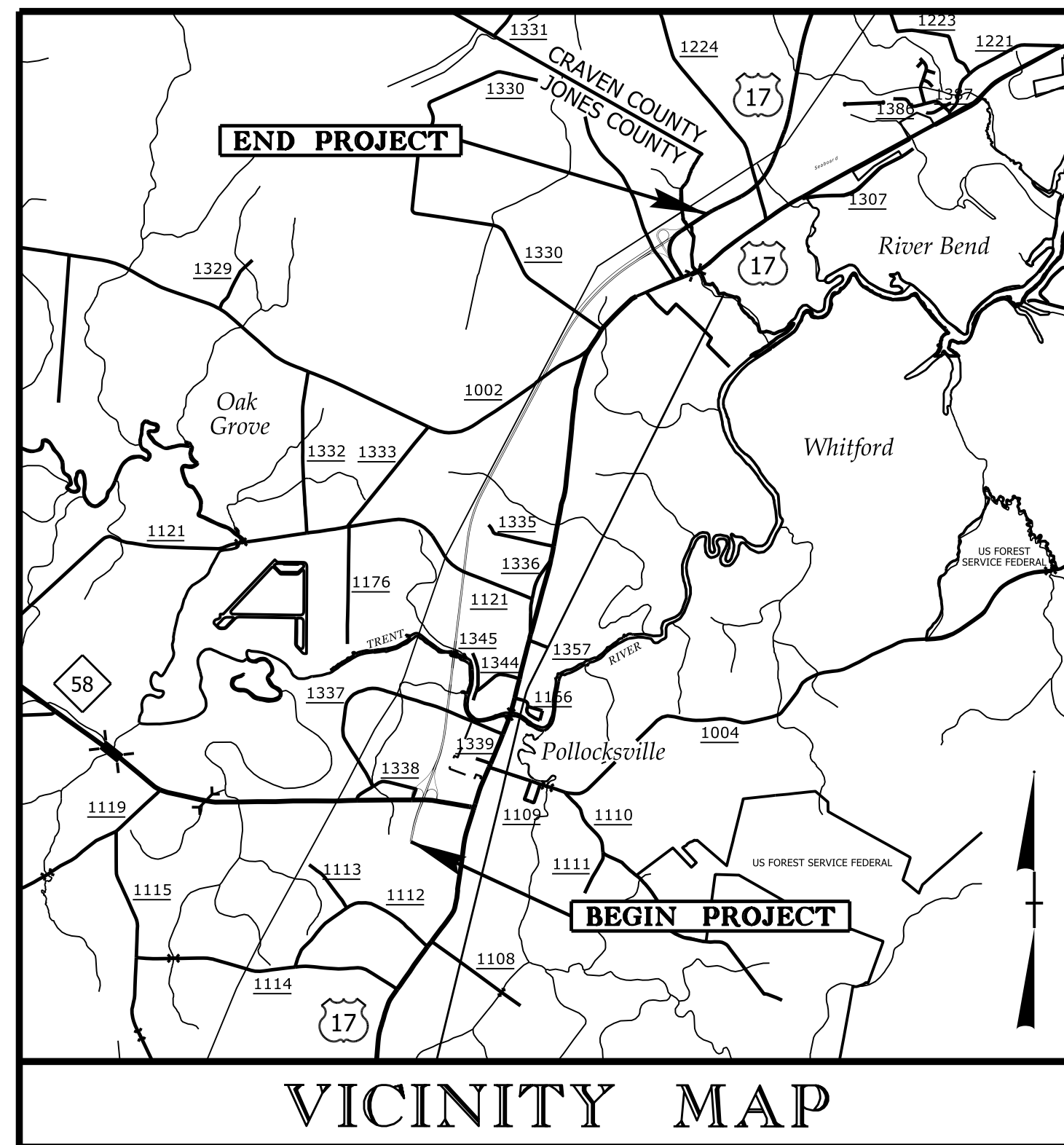
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09/08/99

24-MAR-2015 07:57
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TIP PROJECT: R-2514D

CONTRACT: C203592

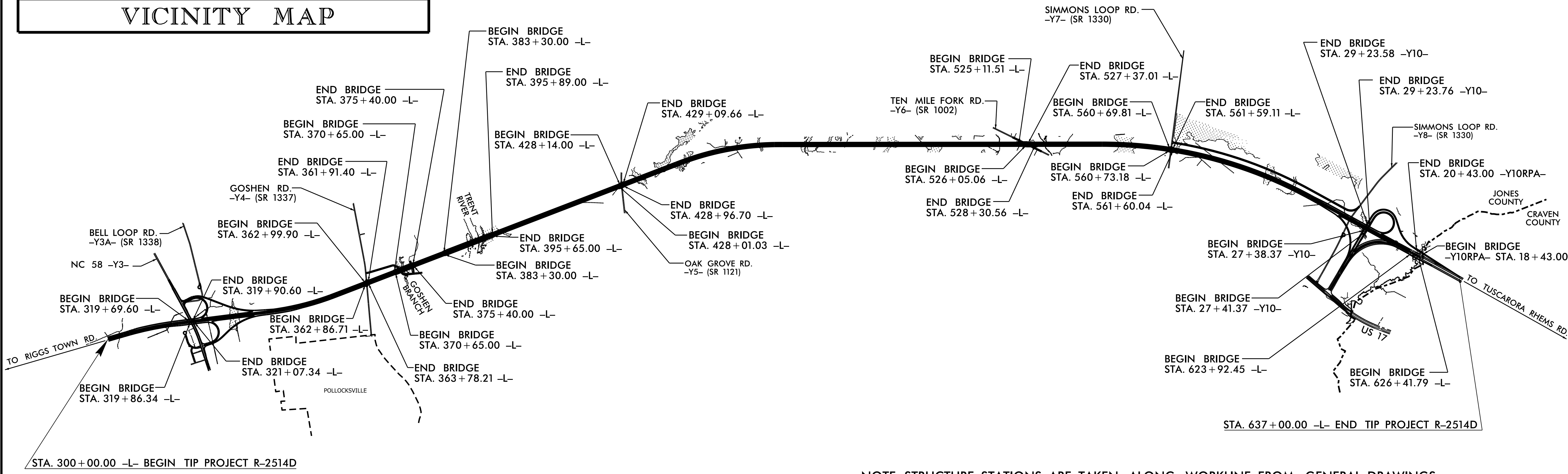
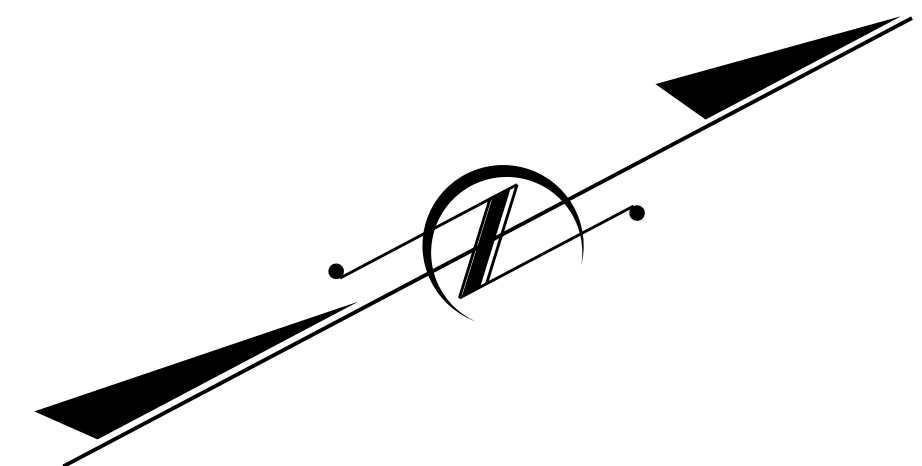


STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

JONES & CRAVEN COUNTIES

STRUCTURES, CULVERTS, & WIDENING

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2514D		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34442.1.5		PE	
34442.2.S5		RW & UTILITIES	
34442.3.S6		CONST.	



DESIGN DATA

ADT 2015 =	10,600
ADT 2035 =	15,700
K =	7 %
D =	65 %
T =	7 % *
V =	70 MPH
* TTST=4 % DUAL =3 %	
FUNC CLASS = FREEWAY	
STATEWIDE TIER	

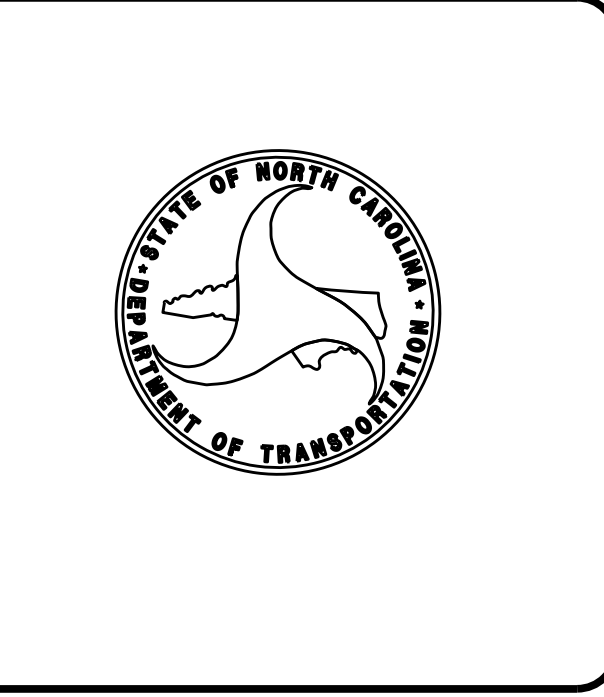
PROJECT LENGTH

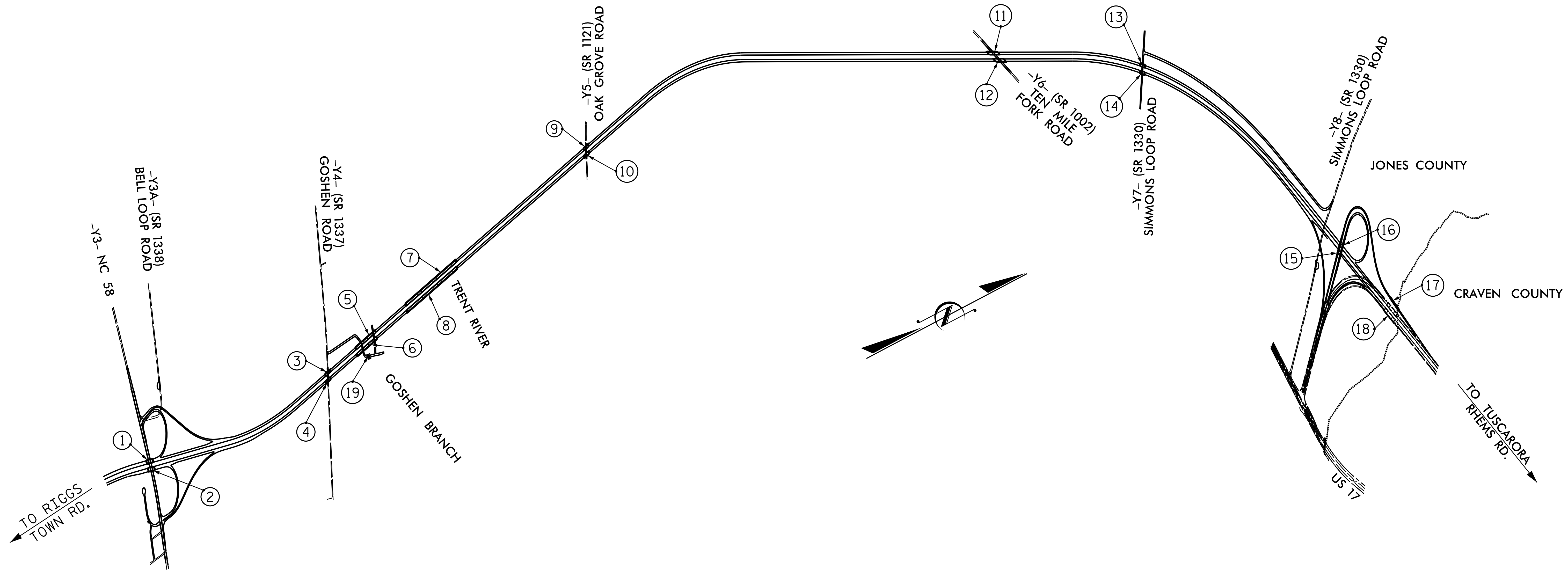
LENGTH OF ROADWAY, TIP PROJECT R-2514D	= 5.894 Miles
LENGTH OF STRUCTURES, TIP PROJECT R-2514D	= 0.489 Miles
TOTAL LENGTH OF TIP PROJECT R-2514D	= 6.383 Miles

Prepared In the Office of:
DIVISION OF HIGHWAYS

2012 STANDARD SPECIFICATIONS	
LETTING DATE: JUNE 16, 2015	E.E.MURRAY, P.E. PROJECT ENGINEER
	T.L.COGGINS, P.E. PROJECT DESIGN ENGINEER

STRUCTURES MANAGEMENT UNIT
 1000 BIRCH RIDGE DR.
 RALEIGH N.C. 27610





INDEX			
STR. NO.	STATION	DESCRIPTION	SHEETS
1	320+39.56 -L- = 25+93.72 -Y3-	LEFT LANE BRIDGE ON US 17 BYPASS OVER NC 58 BETWEEN SR 1112 AND SR 1337	S01-1 THRU S01-24
2	320+39.56 -L- = 25+93.72 -Y3-	RIGHT LANE BRIDGE ON US 17 BYPASS OVER NC 58 BETWEEN SR 1112 AND SR 1337	S02-1 THRU S02-24
3	363+38.90 -L- = 27+95.56 -Y4-	LEFT LANE BRIDGE ON US 17 BYPASS OVER SR 1337 BETWEEN NC 58 AND SR 1330	S03-1 THRU S03-23
4	363+38.90 -L- = 27+95.56 -Y4-	RIGHT LANE BRIDGE ON US 17 BYPASS OVER SR 1337 BETWEEN NC 58 AND SR 1330	S04-1 THRU S04-23
5	373+02.50 -L-	LEFT LANE BRIDGE OVER US 17 BYPASS OVER GOUSHEN BRANCH BETWEEN SR 1337 AND SR 1121	S5-1 THRU S5-34
6	373+02.50 -L-	RIGHT LANE BRIDGE OVER US 17 BYPASS OVER GOUSHEN BRANCH BETWEEN SR 1337 AND SR 1121	S6-1 THRU S6-34
7	389+47.50 -L-	LEFT LANE BRIDGE OVER TRENT RIVER ON US 17 BETWEEN SR 1337 AND SR 1121	S07-1 THRU S07-68
8	389+47.50 -L-	RIGHT LANE BRIDGE OVER TRENT RIVER ON US 17 BETWEEN SR 1337 AND SR 1121	S08-1 THRU S08-68
9	428+53.58 -L- = 13+04.09 -Y5-	LEFT LANE BRIDGE ON US 17 OVER OAK GROVE RD. (SR 1121) BETWEEN TRENT RIVER AND SR 1002	S09-1 THRU S09-24
10	428+53.58 -L- = 13+04.09 -Y5-	RIGHT LANE BRIDGE ON US 17 OVER OAK GROVE RD. (SR 1121) BETWEEN TRENT RIVER AND SR 1002	S10-1 THRU S10-24

INDEX			
STR. NO.	STATION	DESCRIPTION	SHEETS
11	526+71.12 -L- = 16+08.07 -Y6-	LEFT LANE BRIDGE ON US 17 OVER TEN MILE FORK RD. (SR 1002) BETWEEN SR 1121 AND SR SR 1330	S11-1 THRU S11-38
12	526+71.12 -L- = 16+08.07 -Y6-	RIGHT LANE BRIDGE ON US 17 OVER TEN MILE FORK RD. (SR 1002) BETWEEN SR 1121 AND SR SR 1330	S12-1 THRU S12-38
13	561+15.20 -L- = 17+04.80 -Y7-	LEFT LANE BRIDGE OVER SR 1330 ON US 17 BETWEEN NC 58 AND US 17 CONNECTOR	S13-1 THRU S13-21
14	561+15.20 -L- = 17+04.80 -Y7-	RIGHT LANE BRIDGE OVER SR 1330 ON US 17 BETWEEN NC 58 AND US 17 CONNECTOR	S14-1 THRU S14-21
15	611+69.32 -L- = 28+29.35 -Y10-	LEFT LANE BRIDGE ON US 17 CONNECTOR OVER PROPOSED US 17 BETWEEN SR 1330 AND SR 1224	S15-001 THRU S15-030
16	611+69.32 -L- = 28+29.35 -Y10-	RIGHT LANE BRIDGE ON US 17 CONNECTOR OVER PROPOSED US 17 BETWEEN SR 1330 AND SR 1224	S16-001 THRU S16-030
17	19+43.00 -Y10RPA-	BRIDGE OVER DEEP GULY ON RAMP FROM US 17 BYPASS TO EXISTING US 17 BETWEEN SR 1330 AND SR 1224	S17-001 THRU S17-032
18	625+23.28 -L-	WIDENING OF BRIDGE OVER DEEP GULLY ON US 17 BETWEEN SR 1330 AND SR 1224	S18-001 THRU S18-037
19	20+75.75 -DRV3-	DOUBLE 8'-0" X 8'-0" CONCRETE BOX CULVERT ON SERVICE RD. -DRV3-	C19-001 THRU C19-008

PROJECT NO. R-2514D
JONES & CRAVEN COUNTY

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

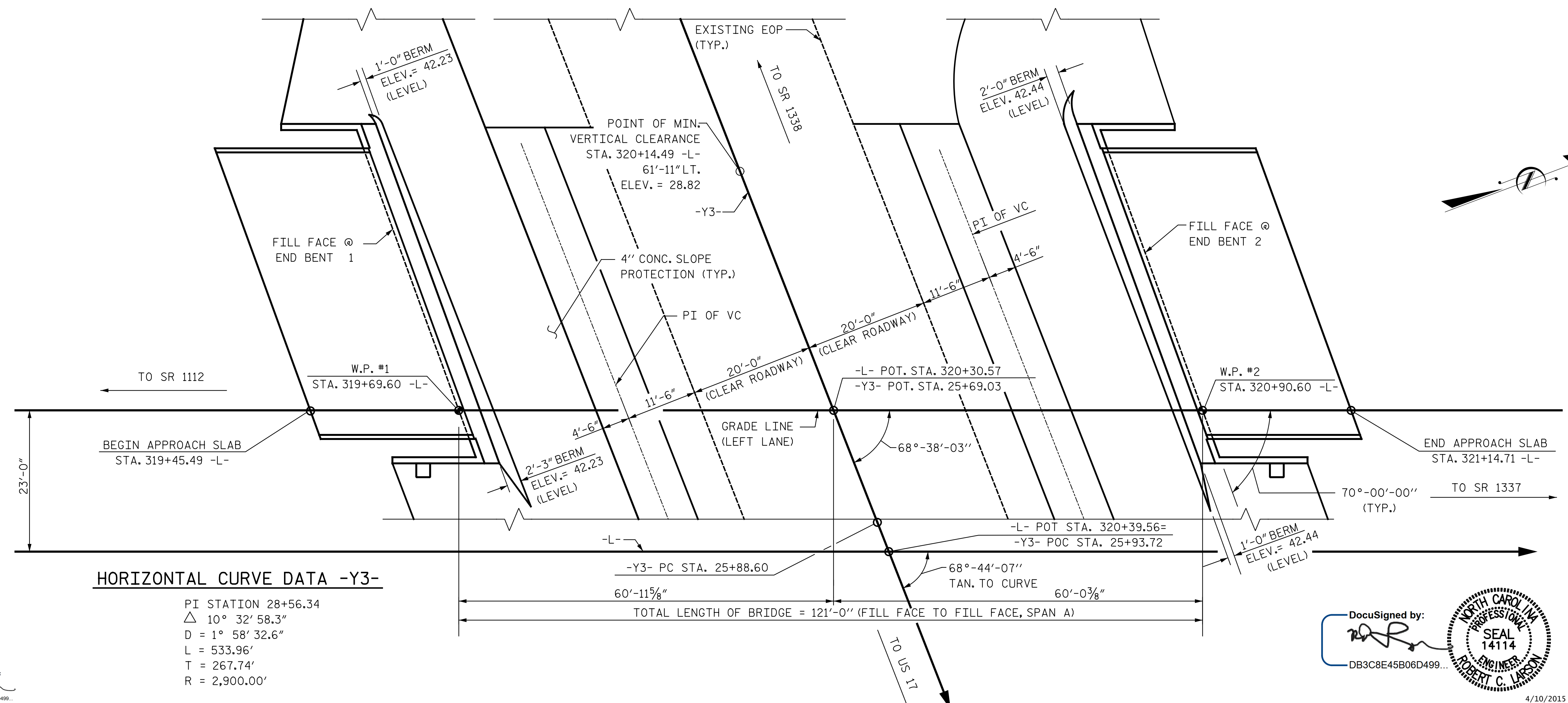
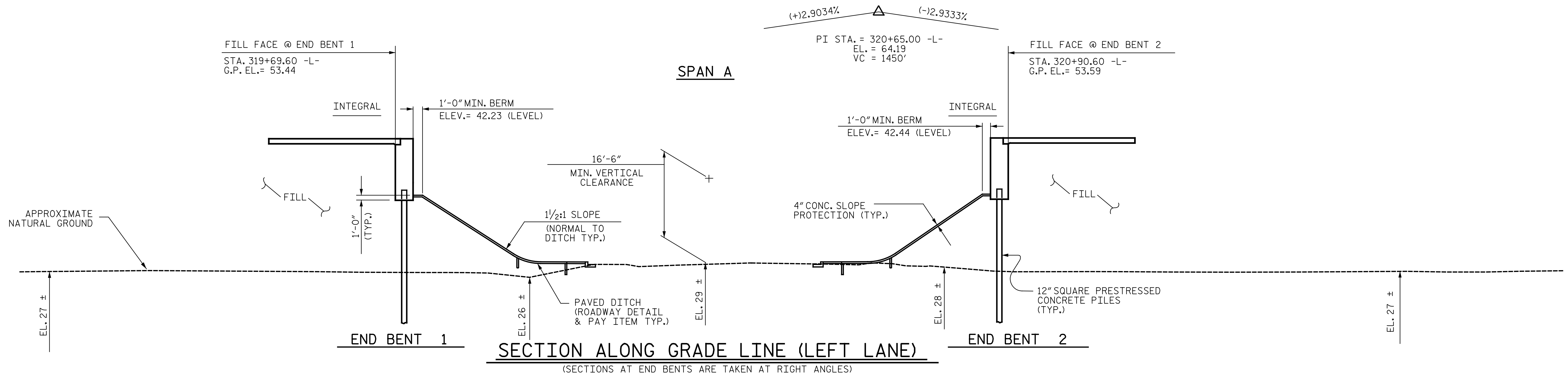
INDEX

DRAWN BY : M.D.PISO DATE : 01-27-15
 CHECKED BY : D.G. ELY DATE : 01-28-15
 DESIGN ENGINEER OF RECORD: _____ DATE : _____

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

319+00 319+50 320+00 320+50 321+00 321+50 322+00

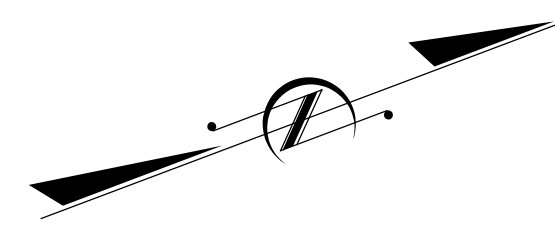
60
50
40
30
20
10
0



HORIZONTAL CURVE DATA -Y3-

PI STATION 28+56.34
 Δ 10° 32' 58.3"
 D = 1° 58' 32.6"
 L = 533.96'
 T = 267.74'
 R = 2,900.00'

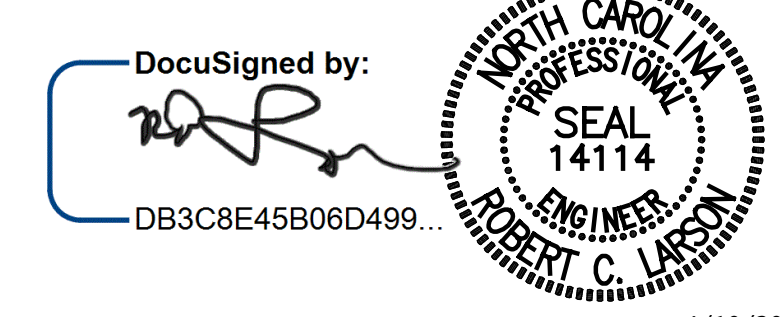
TOTAL LENGTH OF BRIDGE = 121'-0" (FILL FACE TO FILL FACE, SPAN A)



PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-
=25+93.72 -Y3-
 SHEET 1 OF 4 BRIDGE NO. 95

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER NC 58 BETWEEN
 SR 1112 AND SR 1337
 LEFT LANE

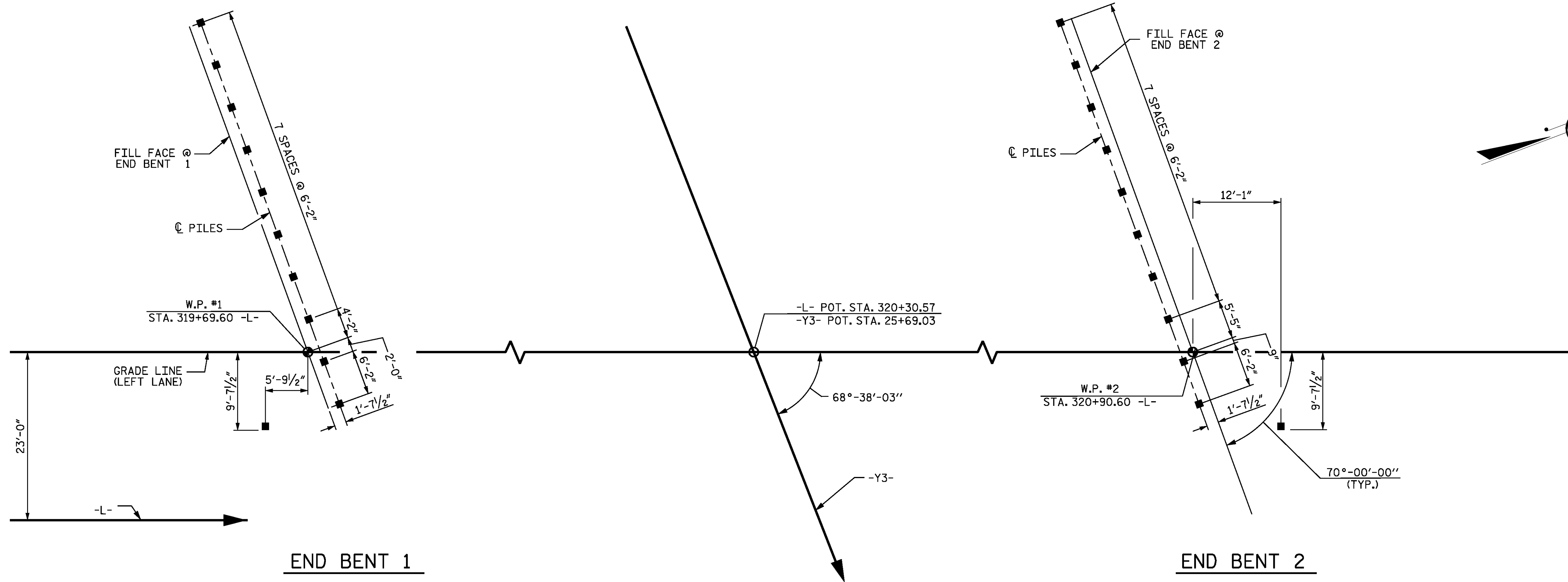
DESIGN ENGINEER OF RECORD: DATE: 4/10/2015
 DRAWN BY: R.J. FLORY DATE: 6/28/13
 CHECKED BY: R.C. LARSON DATE: 5/1/14



KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 1 OF 24

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

STR-#1



FOUNDATION LAYOUT PLAN

ALL PILES ARE VERTICAL 12" PRESTRESSED CONCRETE PILES

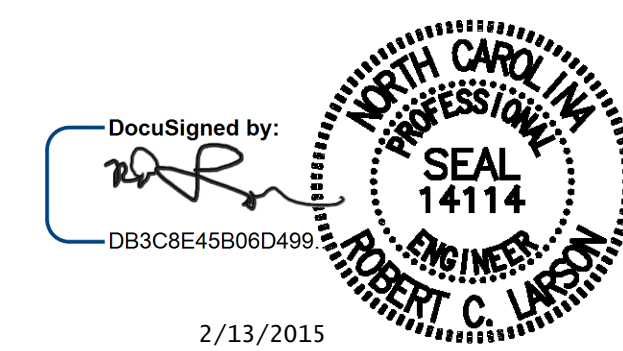
FOUNDATION NOTES

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 112 TONS PER PILE.
 DRIVE PILES AT END BENT 1 AND END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE.
 TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENT 1 OR END BENT 2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER NC 58 BETWEEN
 SR 1112 AND SR 1337
 LEFT LANE



2/13/2015

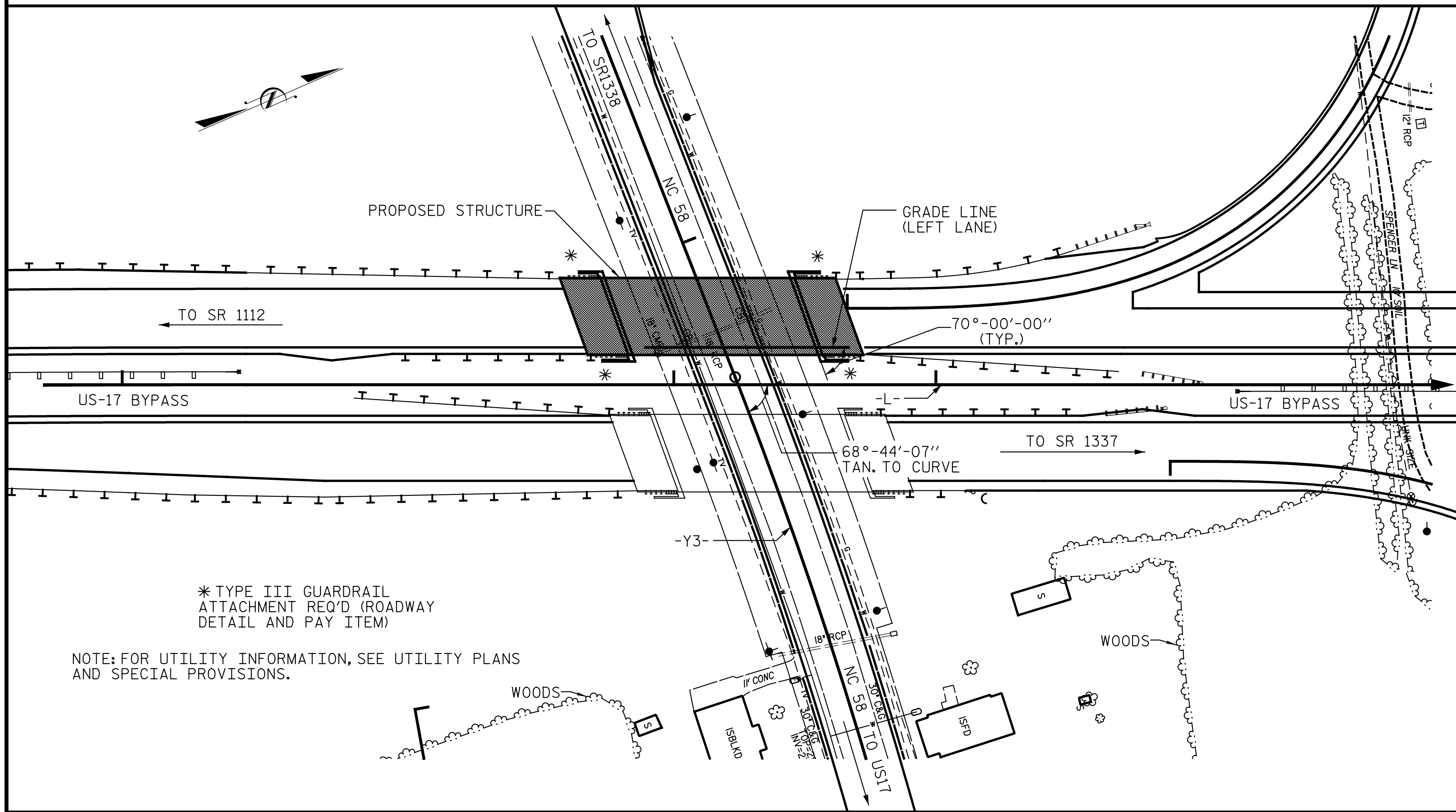
DocuSigned by:

 DB3C8E45B06D499...

DESIGN ENGINEER OF RECORD:	DATE :	2/13/2015
DRAWN BY :	DATE :	6/28/13
CHECKED BY :	DATE :	4/30/14

KCI Associates of North Carolina, P.A. STATE SOIL LANDMARK CENTER 1400 SIX FORKS RD. RALEIGH, N.C. 27609-0300 (919) 783-2044		DWG. REF. NO. 2 OF 24		REVISIONS		SHEET NO. SOI-2	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS SOI-24	
1			3				
2			4				

STR-#1



LOCATION SKETCH

NOTES:

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- THE ELEVATION(S) AND CLEARANCE(S) SHOWN ON THE PLANS AT THE POINT(S) OF MINIMUM CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATION(S) ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.
- FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.
- PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.
- FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

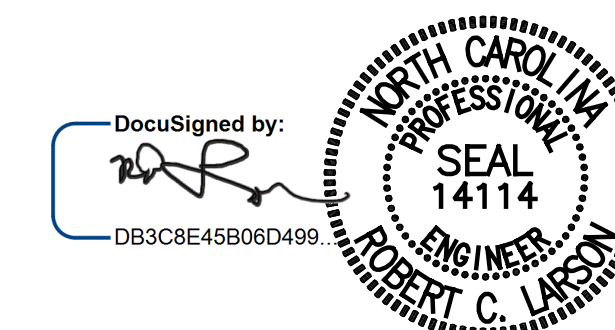
	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	MODIFIED 72" PRESTRESSED CONCRETE GIRDERS		12" PRESTRESSED CONCRETE PILES		PILE REDRIVES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS
	EA	SQ.FT.	SQ.FT.	CU.YDS.	LUMP SUM	LBS.	NO.	LIN.FT.	NO.	LIN.FT.	EA.	LIN.FT.	SQ. YD.	LUMP SUM
SUPERSTRUCTURE		5,959	7,184		LUMP SUM		5	592.08				238.46		LUMP SUM
END BENT 1				35.5		6162			11	605	5		335	
END BENT 2				35.6		6174			11	660	5		485	
TOTAL	1	5,959	7,184	71.1	LUMP SUM	12,336	5	592.08	22	1265	10	238.46	820	LUMP SUM

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER NC 58 BETWEEN
 SR III2 AND SR 1337

LEFT LANE



3/10/2015

DESIGN ENGINEER OF RECORD: R. J. FLORY DATE: 3/10/2015
 DRAWN BY: R. J. FLORY DATE: 06/28/13
 CHECKED BY: R. C. LARSON DATE: 04/24/14

KCI Associates
 of North Carolina, P.A.
 SUITE 220, LANDMARK CENTER # 460 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244
 DWG. REF. NO. 3 OF 24

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

LOAD FACTORS:

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

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.02	--	1.75	0.857	1.35	1	EXT.	58.5	1.053	1.19	1	INT.	46.7	0.80	0.803	1.02	1	INT.	58.5		
	HL-93 (OPERATING)	N/A		1.71	--	1.35	0.857	1.75	1	EXT.	58.5	1.053	1.71	1	INT.	11.1	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.48	53.2	1.75	0.857	1.95	1	EXT.	58.5	1.053	1.83	1	INT.	11.1	0.80	0.803	1.48	1	INT.	58.5		
	HS-20 (OPERATING)	36.000		2.41	86.7	1.35	0.857	2.53	1	EXT.	58.5	1.053	2.41	1	INT.	11.1	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.59	48.4	1.40	0.857	5.91	1	EXT.	58.5	1.053	5.94	1	INT.	11.1	0.80	0.803	3.59	1	INT.	58.5	
		SNGARBS2	20.000		2.57	51.4	1.40	0.857	4.23	1	EXT.	58.5	1.053	4.10	1	INT.	11.1	0.80	0.803	2.57	1	INT.	58.5	
		SNAGRIS2	22.000		2.39	52.5	1.40	0.857	3.94	1	EXT.	58.5	1.053	3.77	1	INT.	11.1	0.80	0.803	2.39	1	INT.	58.5	
		SNCOTTS3	27.250		1.78	48.5	1.40	0.857	2.93	1	EXT.	58.5	1.053	2.90	1	INT.	11.1	0.80	0.803	1.78	1	INT.	58.5	
		SNAGGRS4	34.925		1.45	50.6	1.40	0.857	2.39	1	EXT.	58.5	1.053	2.33	1	INT.	11.1	0.80	0.803	1.45	1	INT.	58.5	
		SNS5A	35.550		1.42	50.4	1.40	0.857	2.34	1	EXT.	58.5	1.053	2.32	1	INT.	11.1	0.80	0.803	1.42	1	INT.	58.5	
		SNS6A	39.950		1.29	51.5	1.40	0.857	2.12	1	EXT.	58.5	1.053	2.09	1	INT.	11.1	0.80	0.803	1.29	1	INT.	58.5	
		SNS7B	42.000		1.22	51.2	1.40	0.857	2.01	1	EXT.	58.5	1.053	2.02	1	INT.	11.1	0.80	0.803	1.22	1	INT.	58.5	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.56	51.4	1.40	0.857	2.57	1	EXT.	58.5	1.053	2.53	1	INT.	11.1	0.80	0.803	1.56	1	INT.	58.5	
		TNT4A	33.075		1.56	51.5	1.40	0.857	2.58	1	EXT.	58.5	1.053	2.49	1	INT.	11.1	0.80	0.803	1.56	1	INT.	58.5	
		TNT6A	41.600		1.26	52.4	1.40	0.857	2.08	1	EXT.	58.5	1.053	2.11	1	INT.	11.1	0.80	0.803	1.26	1	INT.	58.5	
		TNT7A	42.000		1.26	52.9	1.40	0.857	2.08	1	EXT.	58.5	1.053	2.08	1	INT.	11.1	0.80	0.803	1.26	1	INT.	58.5	
		TNT7B	42.000		1.29	54.1	1.40	0.857	2.12	1	EXT.	58.5	1.053	1.99	1	INT.	11.1	0.80	0.803	1.29	1	INT.	58.5	
		TNAGRIT4	43.000		1.24	53.3	1.40	0.857	2.04	1	EXT.	58.5	1.053	1.94	1	INT.	11.1	0.80	0.803	1.24	1	INT.	58.5	
		TNAGT5A	45.000	③	1.17	52.6	1.40	0.857	1.93	1	EXT.	58.5	1.053	1.89	1	INT.	11.1	0.80	0.803	1.17	1	INT.	58.5	
TNAGT5B	45.000	③	1.17	52.6	1.40	0.857	1.92	1	EXT.	58.5	1.053	1.84	1	INT.	11.1	0.80	0.803	1.17	1	INT.	58.5			

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.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

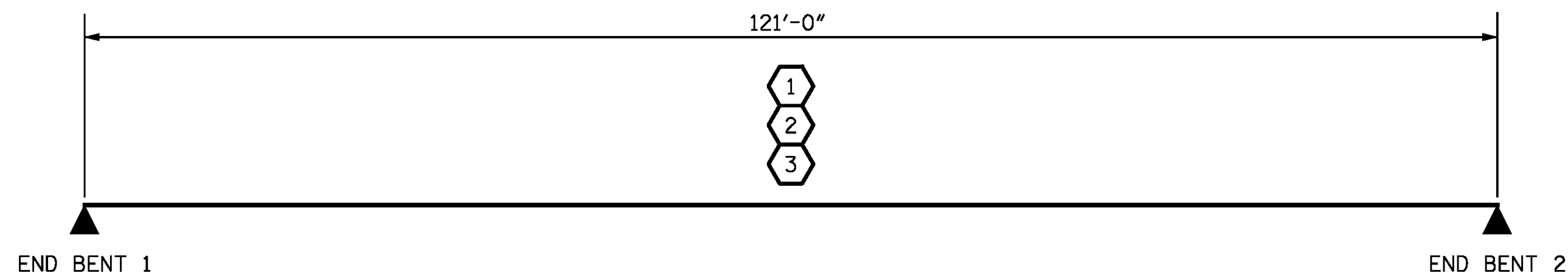
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

INT. - INTERIOR GIRDER
EXT. - EXTERIOR GIRDER

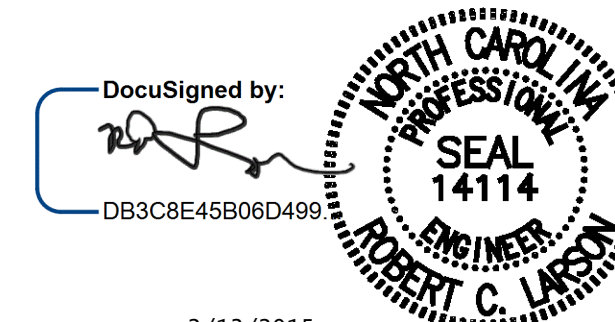


LRFR SUMMARY

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER NC 58 BETWEEN
 SR 1112 AND SR 1337
 STD. NO. LRFR1 LEFT LANE



2/13/2015

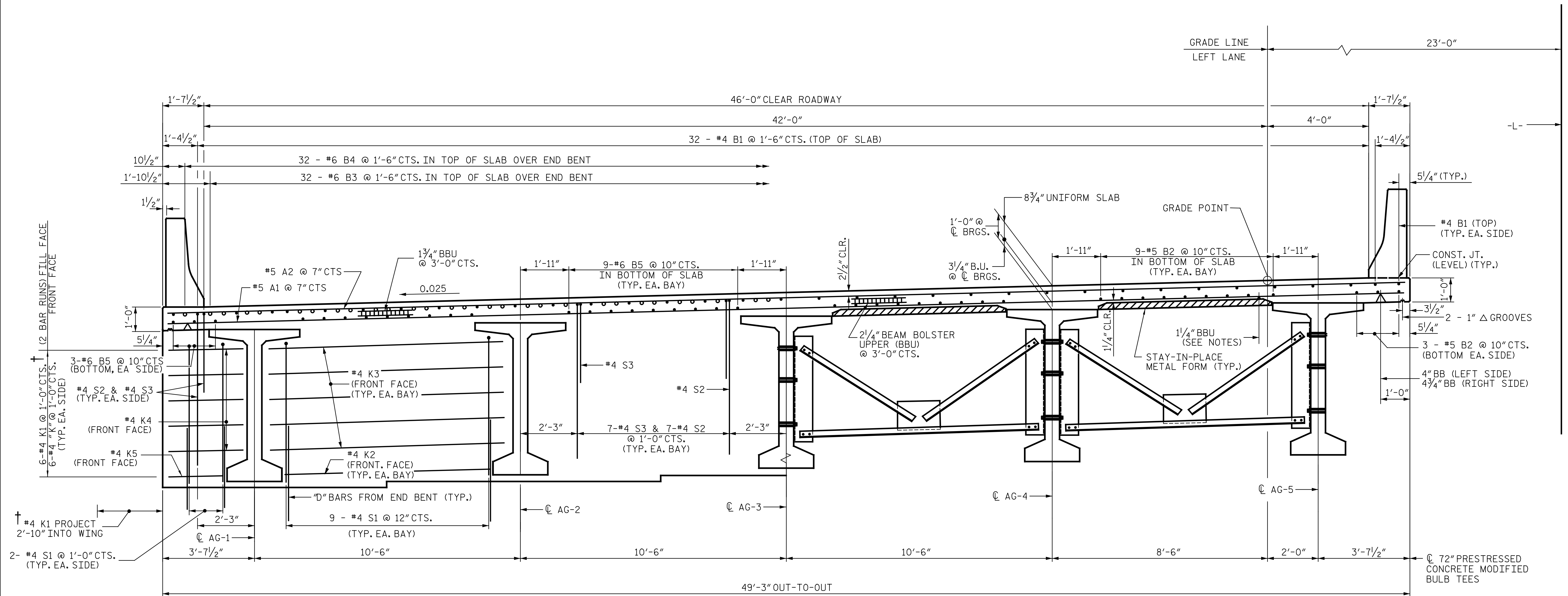
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DESIGN ENGINEER OF RECORD: DATE : 2/13/2015

DRAWN BY : R. A. PRUETT DATE : 10/15/13
 CHECKED BY : K. SU DATE : 10/21/13

KCI Associates of North Carolina, P.A.		REVISIONS		SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
DWG. REF. NO. 4 OF 24				TOTAL SHEETS SOI-24	

STR-#1



TYPICAL HALF SECTION AT END BENT DIAPHRAGM

TYPICAL HALF SECTION AT INTERMEDIATE DIAPHRAGM

TYPICAL SECTION

NOTES

- PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE CHAIRS TO SUPPORT THE BOTTOM MAT OF 'A' BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF 'A' BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.
- LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.
- PREVIOUSLY CAST CONCRETE SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE SPAN.
- THE SKEWED END CONDITIONS ARE SUCH THAT THE USE OF 4' WIDE PRESTRESSED CONCRETE DECK PANELS IS NOT POSSIBLE; USE OF 8' WIDE PRESTRESSED CONCRETE DECK PANELS IS NECESSARY.
- SEE STD. NO. CBR1 FOR ADDITIONAL REINFORCING STEEL EMBEDDED IN DECK.

- INDICATES CONTINUOUS REINFORCING
- INDICATES ADDITIONAL REINFORCING AT END BENT

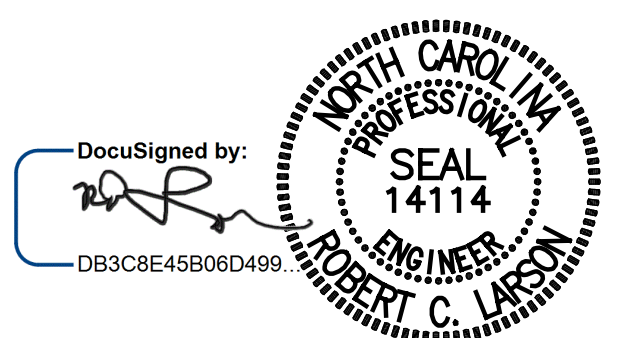
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 TYPICAL SECTION**

LEFT LANE



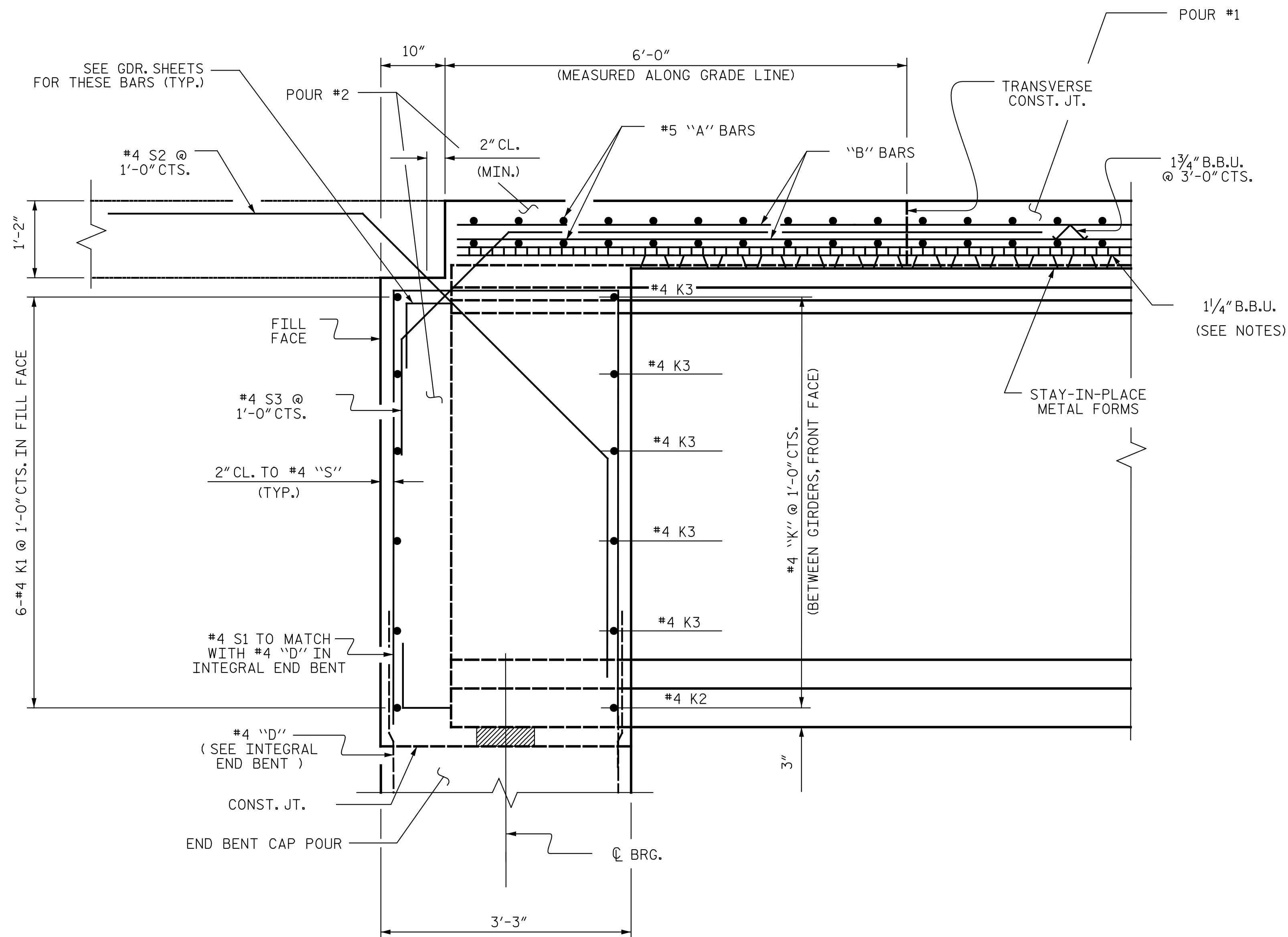
DocuSigned by:
 DB3C8E45B06D499

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 5 OF 24

DESIGN ENGINEER OF RECORD:	DATE :	5/12/2015
DRAWN BY :	DATE :	7/12/13
CHECKED BY :	DATE :	8/15/13

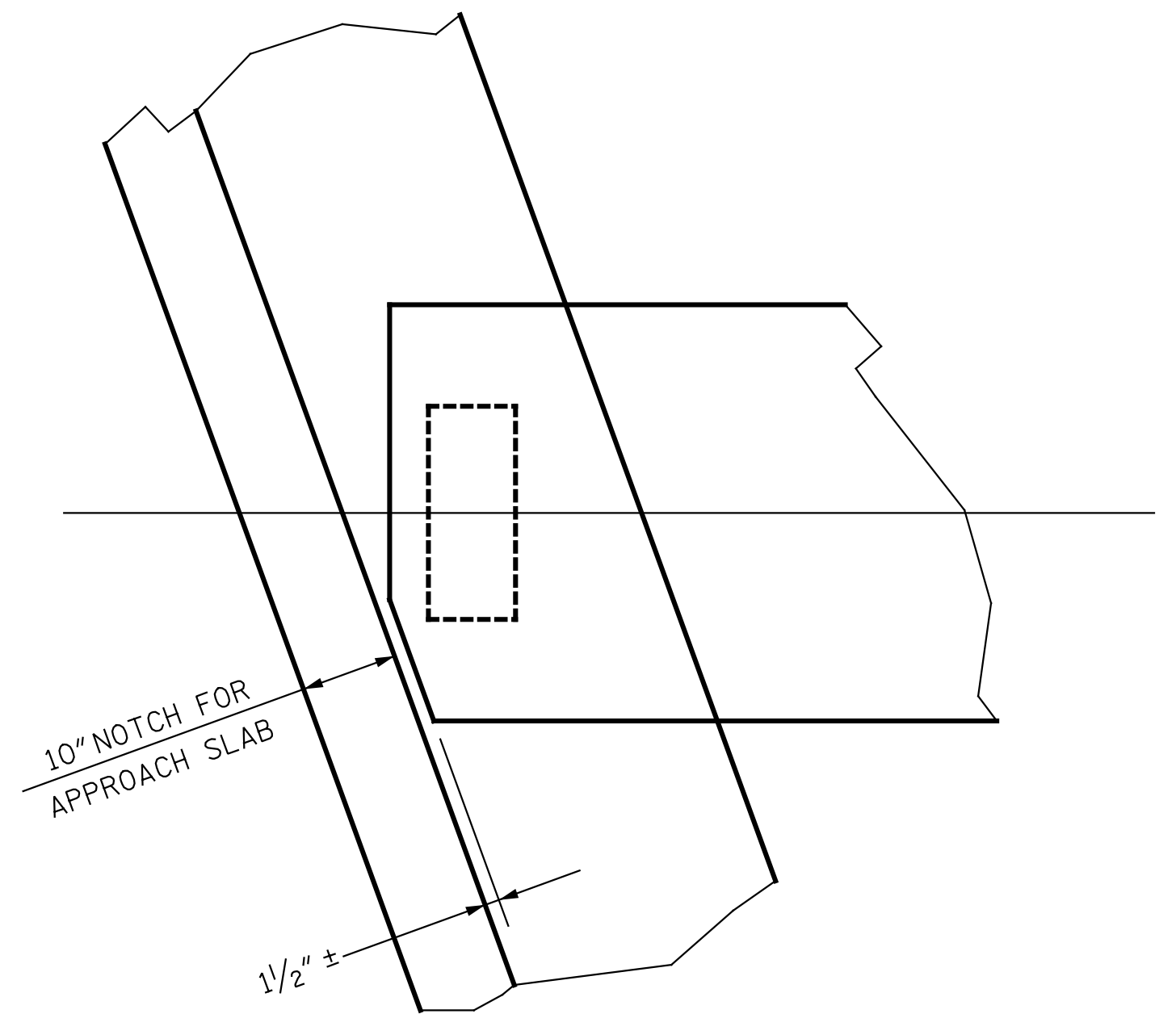
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	SOI-5	
1			3			TOTAL SHEETS	
2			4			SOI-24	

STR-#1



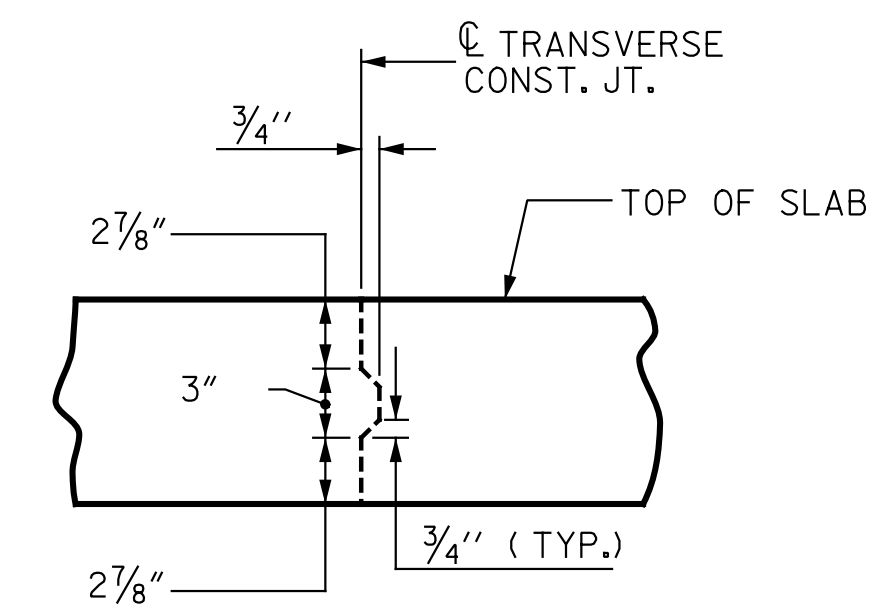
SECTION A-A

(SEE PLAN OF SPAN FOR LOCATION OF SECTION A-A)



END OF GIRDER PLAN

(SHOWING BLOCKOUT IN TOP FLANGE)



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

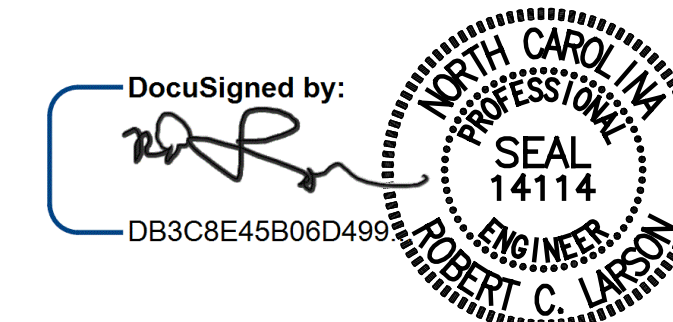
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 TYPICAL SECTION**

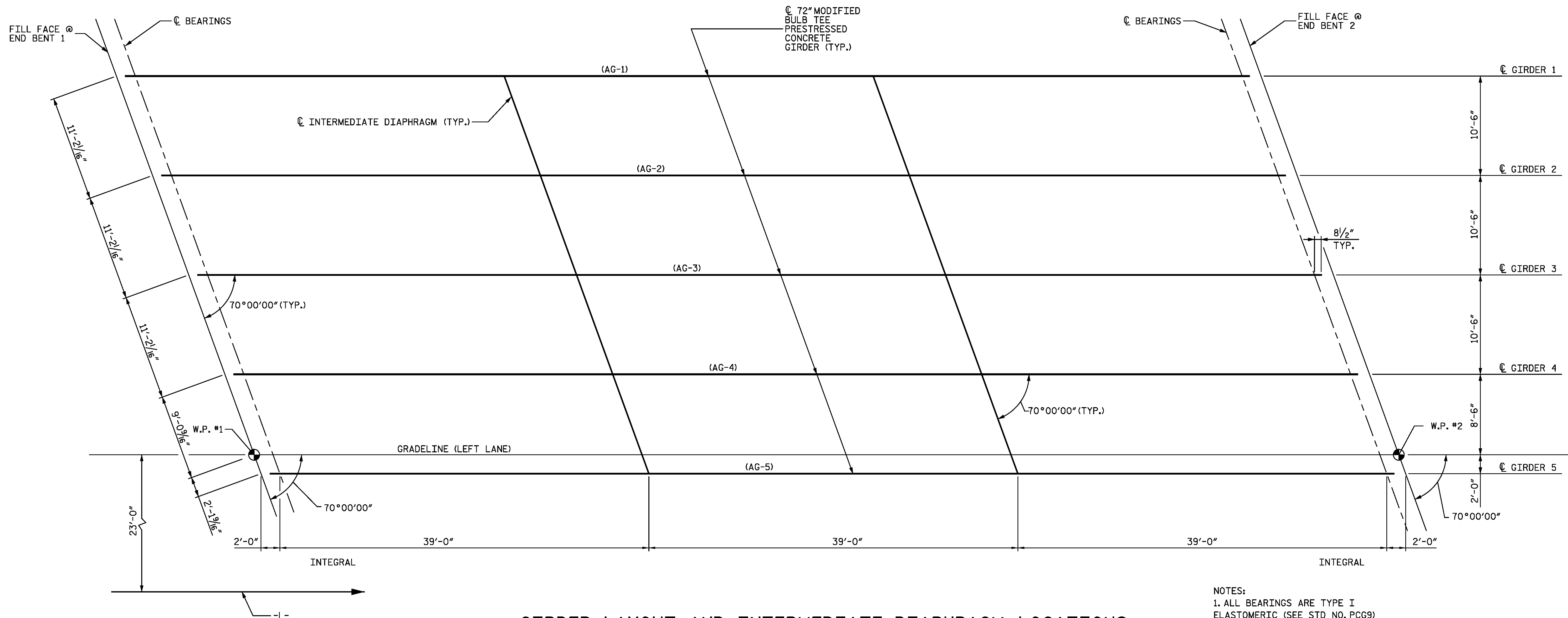
LEFT LANE



4/10/2015

DESIGN ENGINEER OF RECORD:	DATE :	4/10/2015
DRAWN BY :	DATE :	7/12/13
CHECKED BY :	DATE :	8/15/13

KCI Associates of North Carolina, P.A.		REVISIONS		SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			SOI-6
2			4			TOTAL SHEETS SOI-24
DWG. REF. NO. 6 OF 24						STR-#1



GIRDER LAYOUT AND INTERMEDIATE DIAPHRAGM LOCATIONS

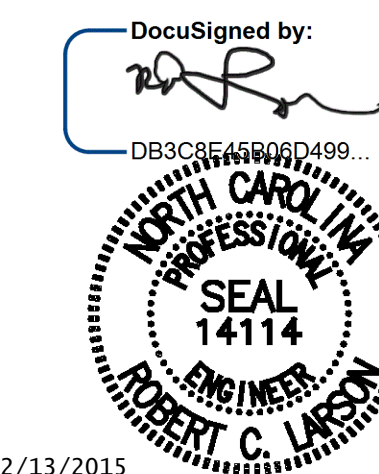
- NOTES:
 1. ALL BEARINGS ARE TYPE I ELASTOMERIC (SEE STD NO. PCG9)
 2. FOR INTERMEDIATE DIAPHRAGMS SEE STD NO. PCG11.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
0.6" Ø LOW RELAXATION STRANDS	SPAN A																					
	GIRDERS 1 AND 5																					
	LOCATION	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE)	↑	0.00	0.07	0.13	0.19	0.23	0.27	0.30	0.33	0.34	0.35	0.36	0.35	0.34	0.33	0.30	0.27	0.23	0.19	0.13	0.07	0.00
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.00	0.03	0.05	0.08	0.10	0.13	0.14	0.16	0.17	0.18	0.18	0.17	0.16	0.14	0.13	0.10	0.08	0.05	0.03	0.00	
FINAL CAMBER	↑	0"	1/2"	15/16"	1 1/4"	1 1/2"	1 3/4"	1 7/8"	2"	2 1/16"	2 1/8"	2 1/8"	2 1/16"	2"	1 7/8"	1 3/4"	1 1/2"	1 1/4"	1 5/16"	1/2"	0"	

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
0.6" Ø LOW RELAXATION STRANDS	SPAN A																					
	GIRDERS 2, 3 AND 4																					
	LOCATION	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE)	↑	0.00	0.07	0.13	0.19	0.23	0.27	0.30	0.33	0.34	0.35	0.36	0.35	0.34	0.33	0.30	0.27	0.23	0.19	0.13	0.07	0.00
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.00	0.03	0.06	0.09	0.12	0.14	0.16	0.18	0.19	0.20	0.20	0.20	0.19	0.18	0.16	0.14	0.12	0.09	0.06	0.03	0.00
FINAL CAMBER	↑	0"	1/2"	7/8"	1 1/16"	1 3/16"	1 1/2"	1 7/16"	1 3/4"	1 13/16"	1 7/8"	1 7/8"	1 13/16"	1 3/4"	1 11/16"	1 3/16"	1 3/8"	1 3/16"	7/8"	1/2"	0"	

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

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 STATION: 320+39.56 -L-



2/13/2015

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE GIRDER LAYOUT

LEFT LANE

DocuSigned by:

 DB3CBF45B06D499

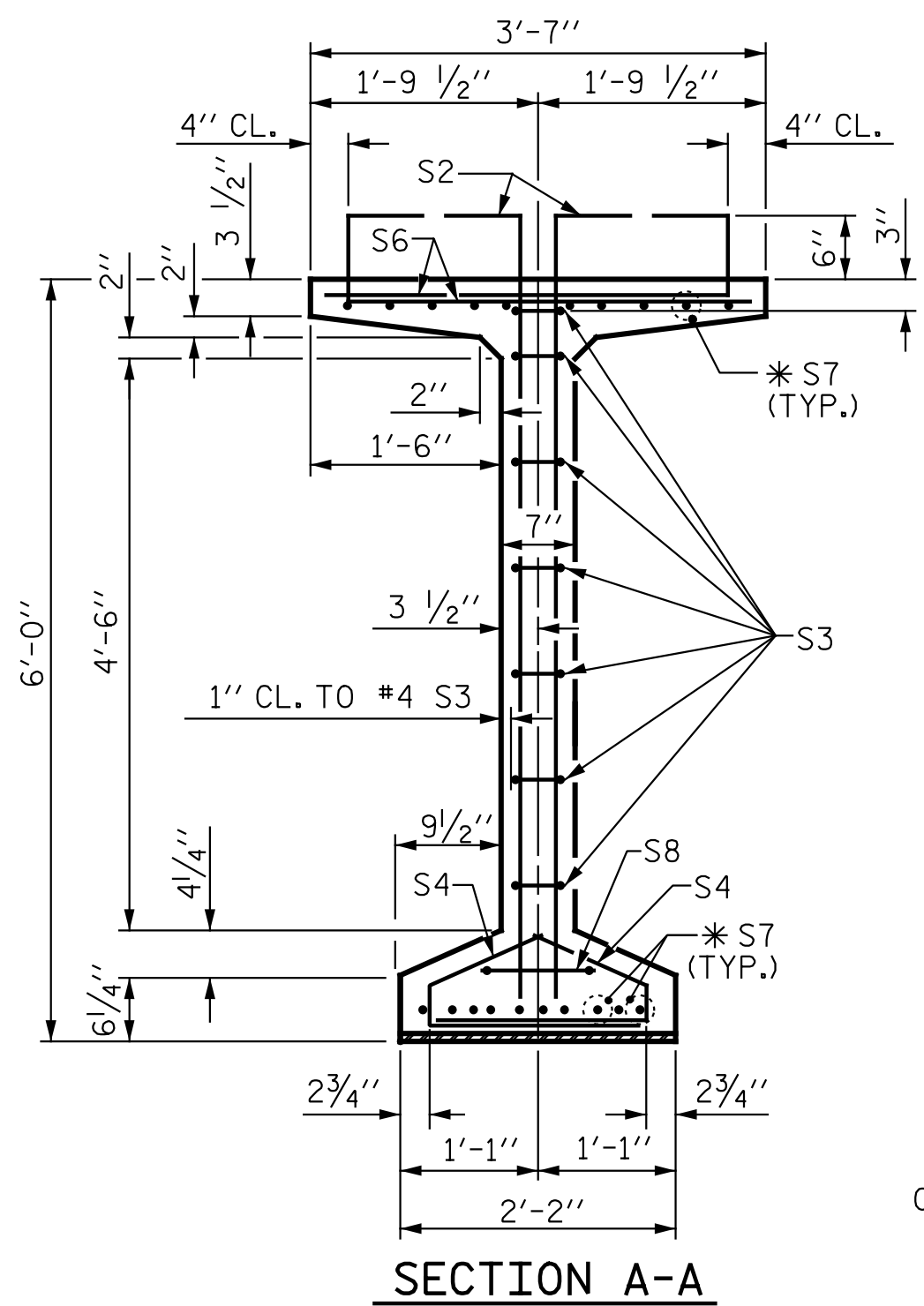
DESIGN ENGINEER OF RECORD: _____ DATE: 2/13/2015

DRAWN BY: J. M. WEATHERBURNE DATE: 6/24/13
 CHECKED BY: R.C. LARSON DATE: 8/20/13

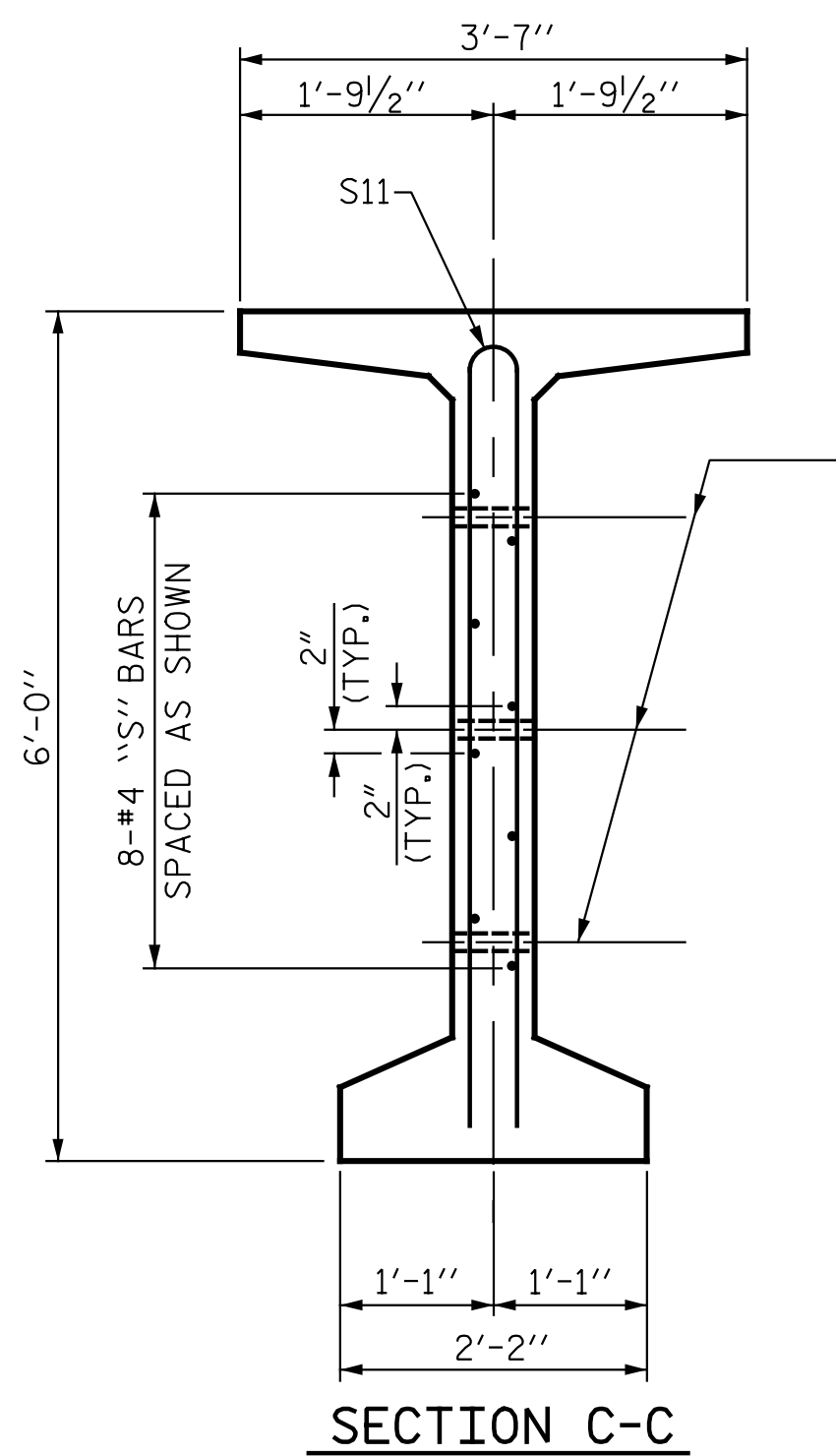
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	SOI-8	
1			3			TOTAL SHEETS	
2			4			SOI-24	

STR-#1

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 8 OF 24



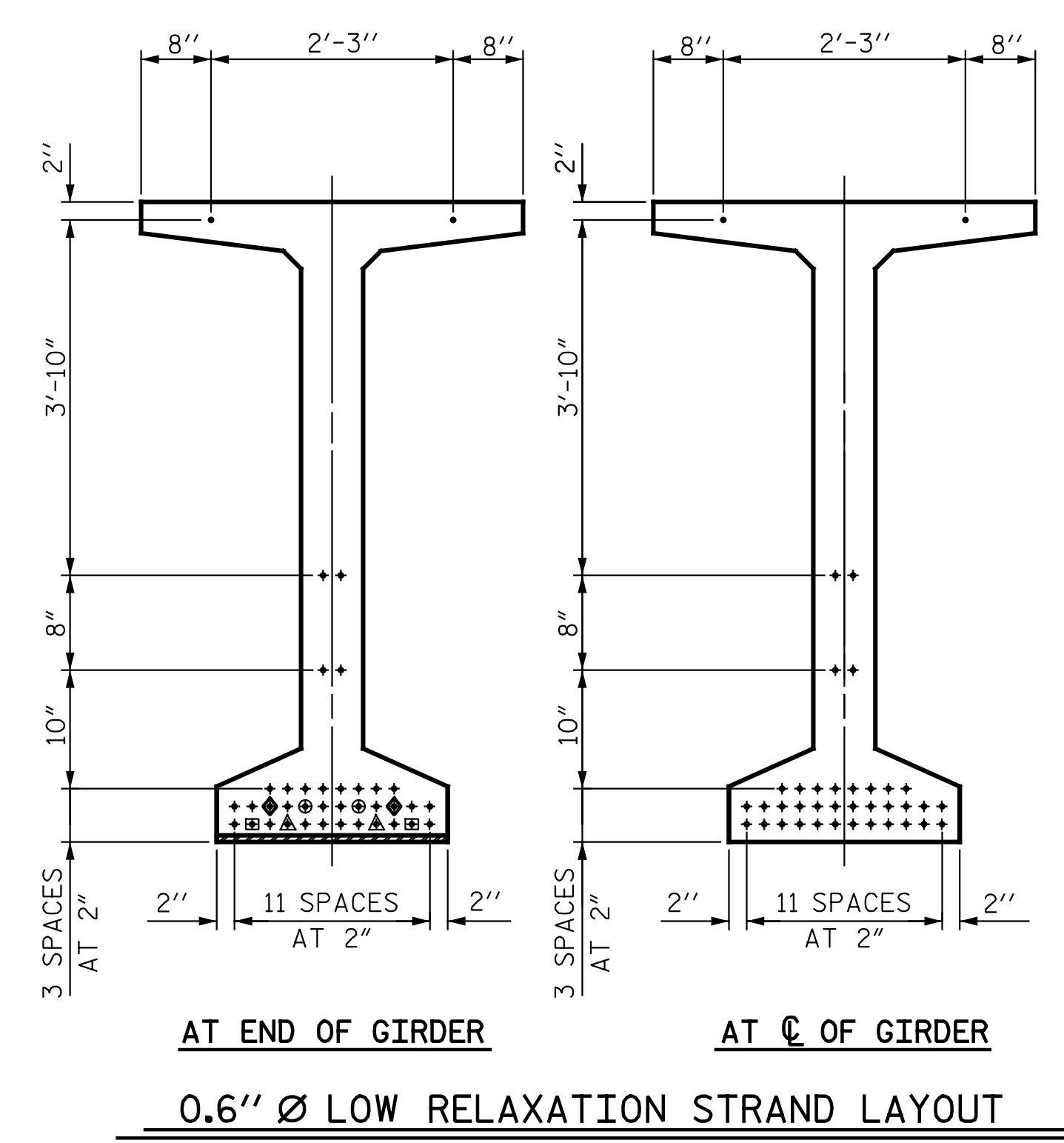
*FOR S7 BARS. SEE
DETAIL "C" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET



1/2" Ø FORMED
HOLE. SEE ELEVATION
FOR LOCATION. FOR
DIM. "A", "B" & "C"
SEE "INTERMEDIATE
STEEL DIAPHRAGMS"
SHEET.)

DEBONDING LEGEND

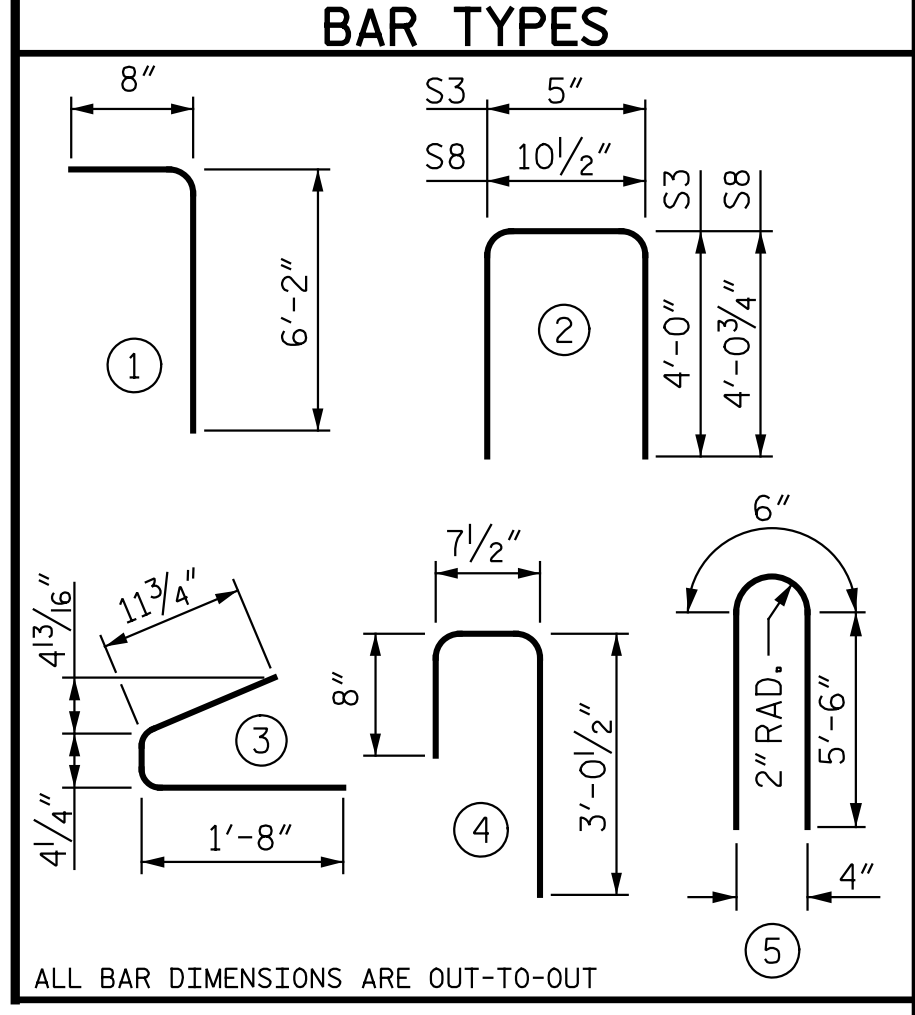
- FULLY BONDED STRANDS
- ◻ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◼ STRANDS DEBONDED FOR 24'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER
- ◊ STRANDS DEBONDED FOR 40'-0" FROM END OF GIRDER



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

REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	228	#4	1	6'-10"	1041
S2	24	#5	1	6'-10"	171
S3	14	#4	2	8'-5"	79
S4	84	#4	3	3'-0"	168
S6	252	#5	4	4'-4"	1139
*S7	40	#5	STR	3'-8"	153
S8	2	#5	2	9'-0"	19
S9	15	#5	STR	3'-3"	51
S10	2	#3	STR	1'-10"	1
S11	8	#5	5	11'-6"	96
S12	16	#4	STR	8'-0"	86

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



QUANTITIES FOR ONE GIRDER			
REINFORCING STEEL	7000 PSI CONCRETE	0.6" Ø L.R. STRANDS	
		LB.	C.Y.
		3004	25.4

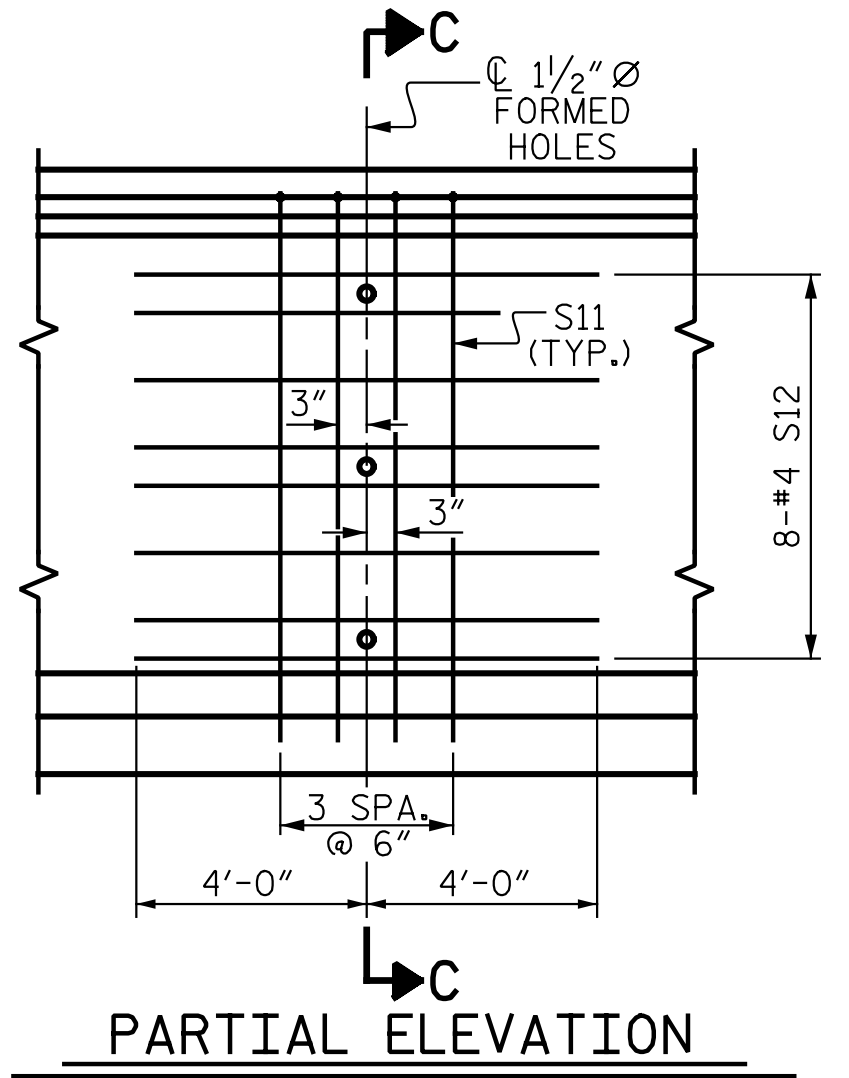
GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
5	118'-5"	592'-1"

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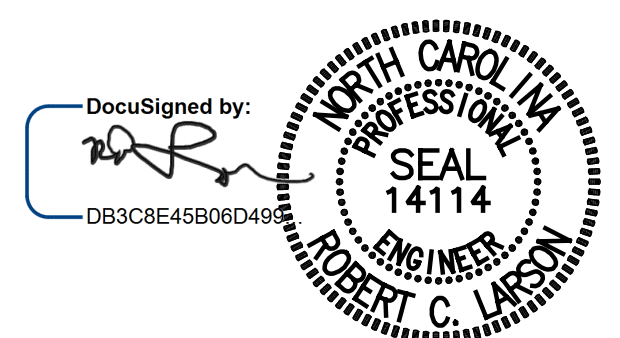
SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

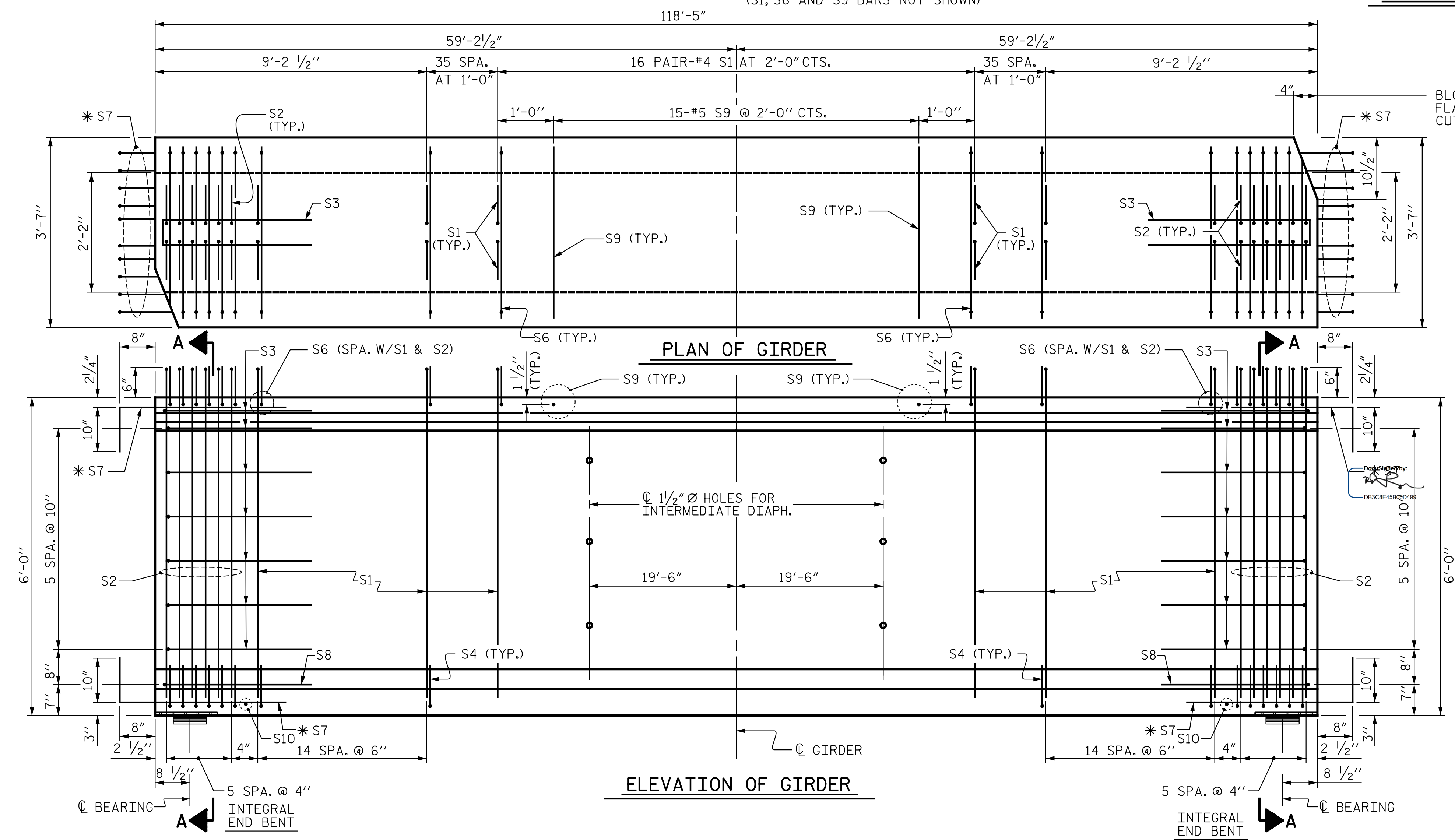
STANDARD
 72" PRESTRESSED CONCRETE
 MODIFIED BULB TEE
 CONTINUOUS FOR LIVE LOAD
 STD. NO. PCG8 LEFT LANE



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



3/10/2015



ASSEMBLED BY : R. C. LARSON DATE : 8/21/13
 CHECKED BY : R. A. PRUETT DATE : 11/06/13
 Design Engineer of Record:
 DRAWN BY : EEM 2/6/97 REV. 5/1/06R TLA/GM
 CHECKED BY : VAP 2/6/97 REV. 10/1/11 MAA/GM
 REV. 6/13 MAA/GM
 3/10/2015

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 9 OF 24

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

SHEET NO. SOI-9
 TOTAL SHEETS SOI-24
 STR-#1

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

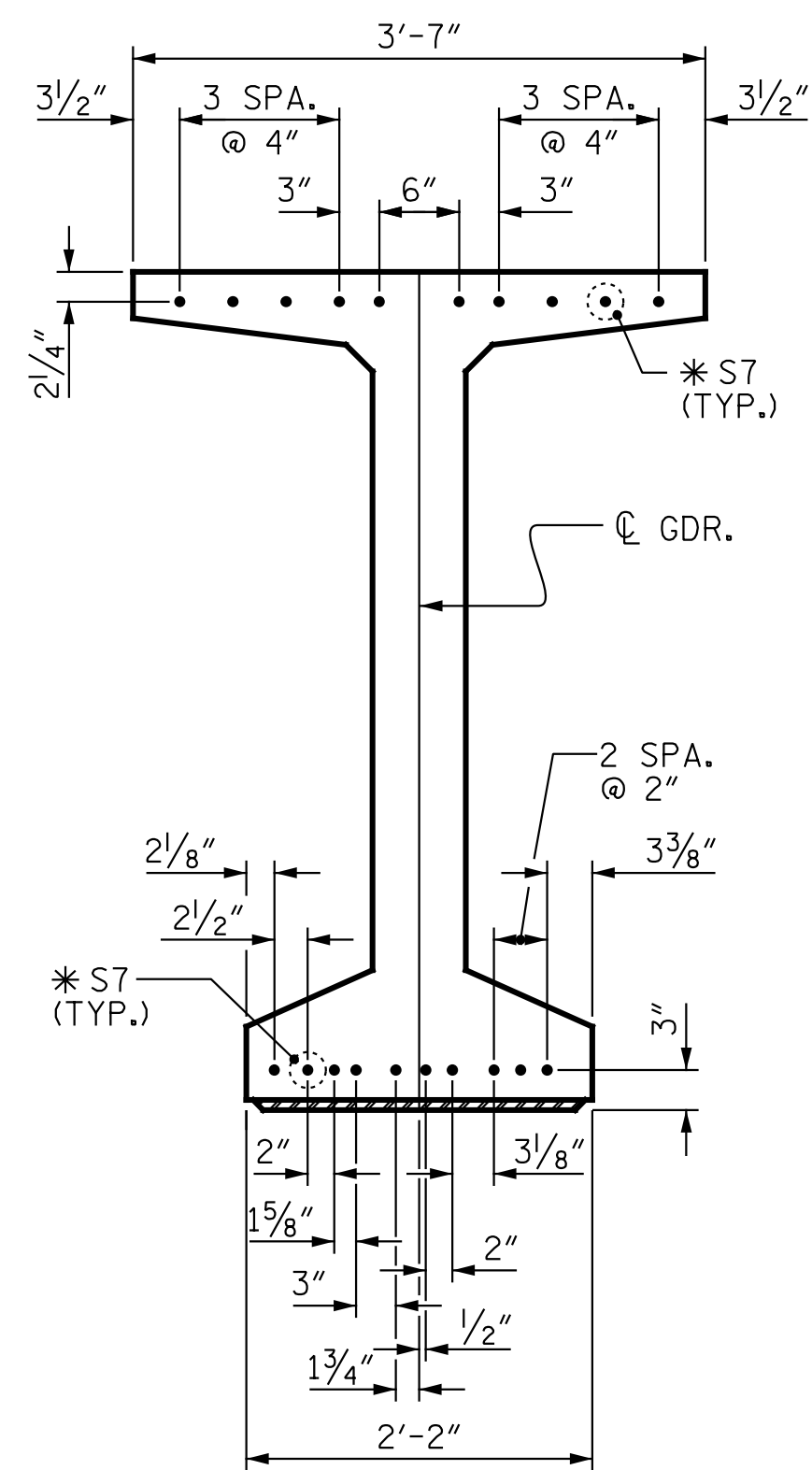
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5700 PSI.

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

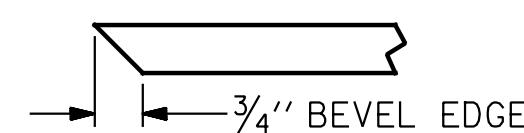
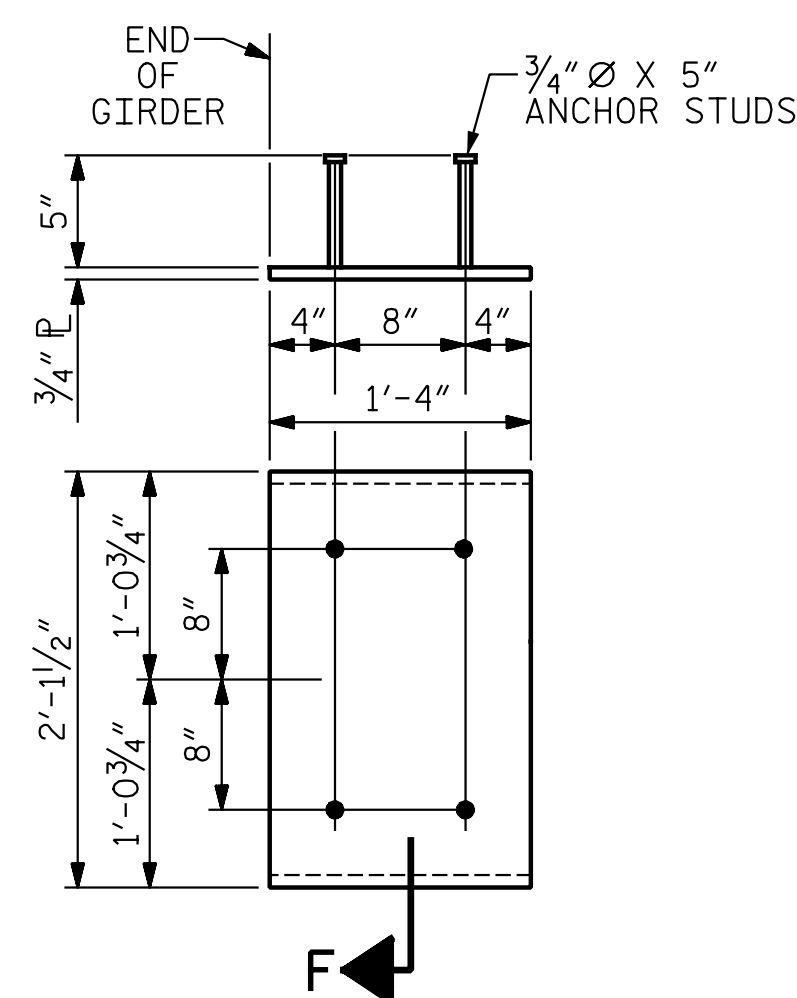
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

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

THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.

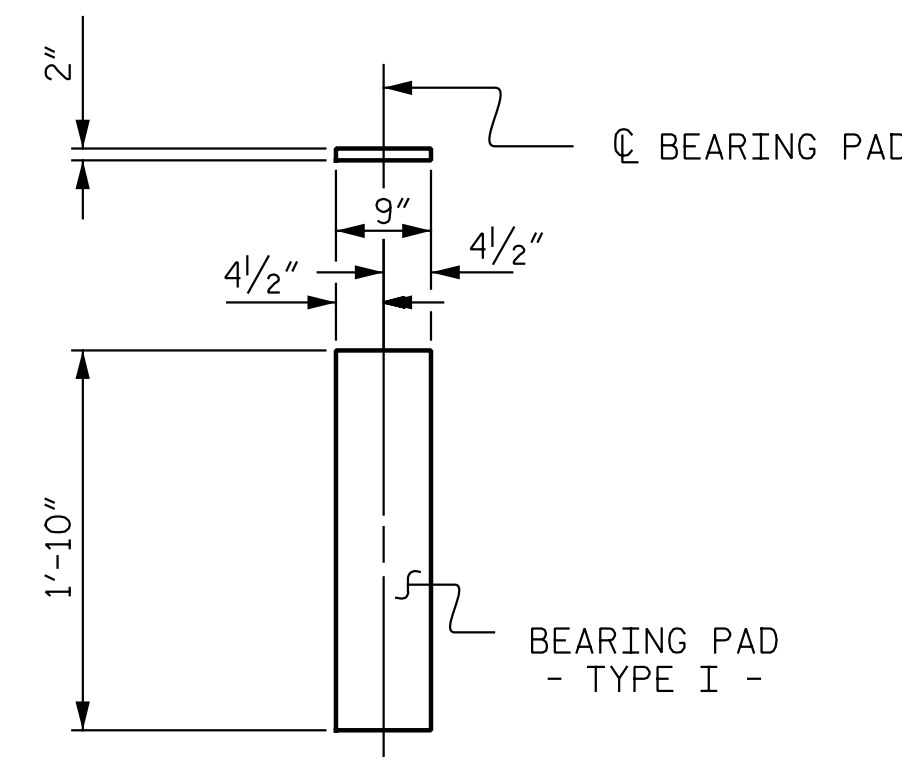


DETAIL "A"

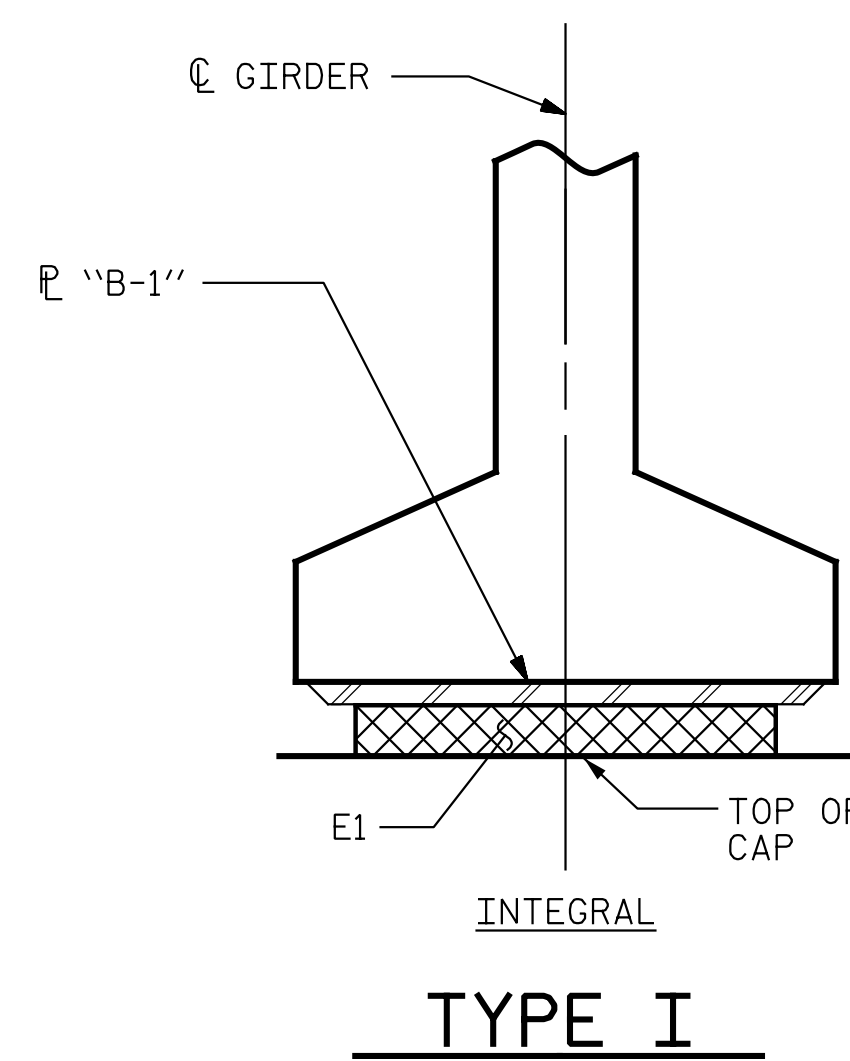


SECTION "F"
(SEE NOTES)

EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER AND 63" & 72" MODIFIED BULB TEES
(2 REQ'D PER GIRDER)



E1 (10 REQ'D)
PLAIN ELASTOMERIC BEARING DETAIL

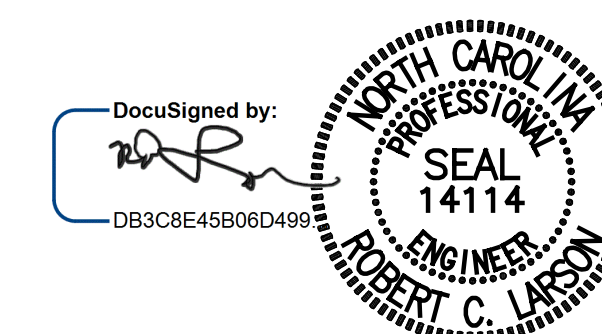


TYPE I

PROJECT NO. R-2514D
JONES COUNTY
STATION: 320+39.56 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
DETAILS
STD. NO. PCG9 LEFT LANE

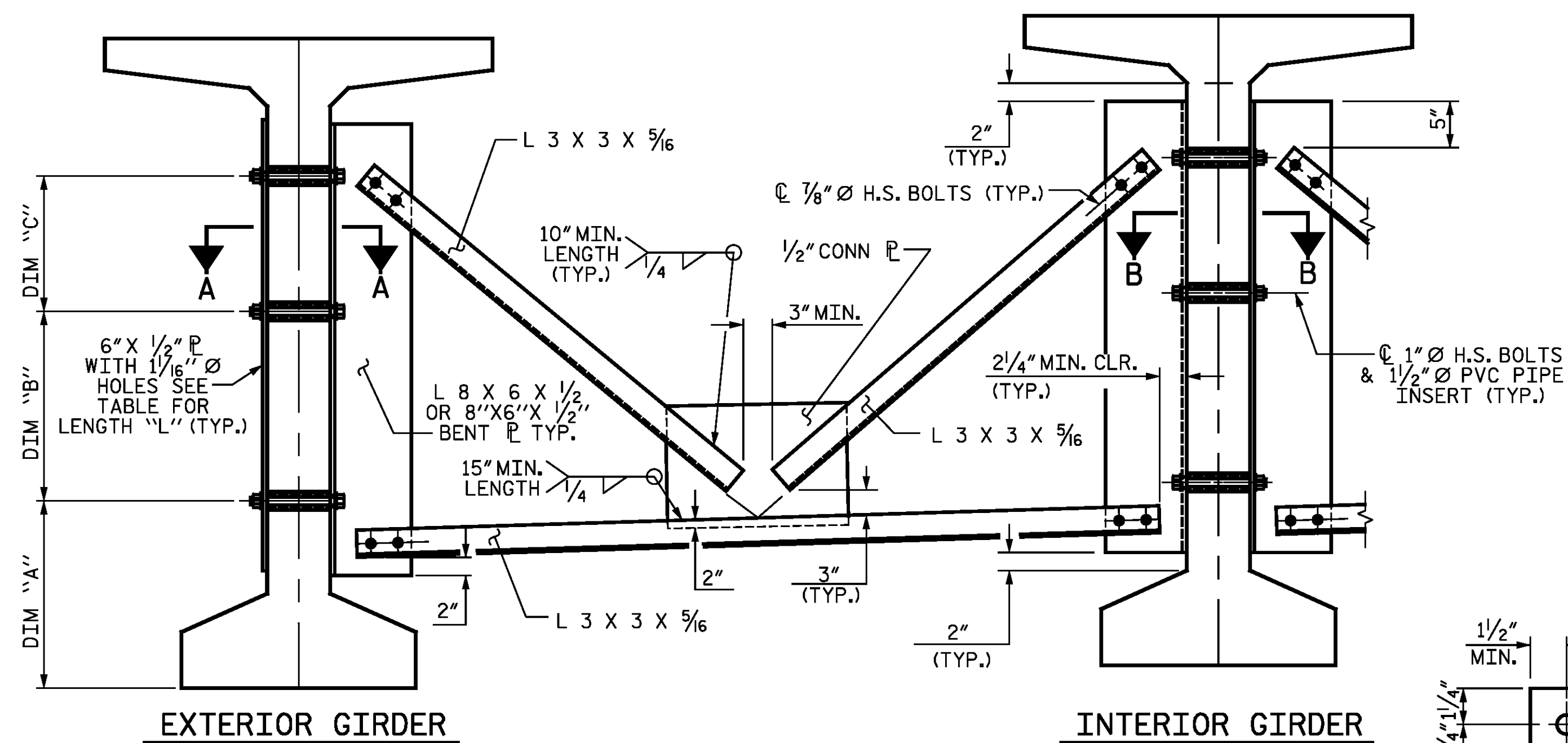


3/10/2015

DESIGN ENGINEER OF RECORD:	DATE:
<i>R. Larson</i>	3/10/2015
DRAWN BY:	DATE:
R. C. LARSON	10/15/13
CHECKED BY:	DATE:
R. A. PRUETT	11/06/13

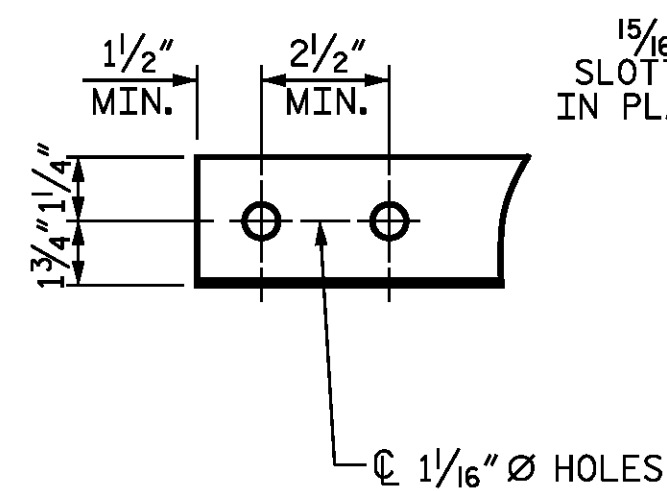
ENGINEER: PLANNERS & ECOLOGISTS LICENSE NUMBER: C-0764		REVISIONS		SHEET NO.
KCI Associates of North Carolina, P.A.		NO.	BY:	DATE:
SUITE 220, LANDMARK CENTER # 4601 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244		1		
DWG. REF. NO. 10 OF 24		2		
		3		
		4		
				TOTAL SHEETS
				SOI-10
				SOI-24

STR-#1



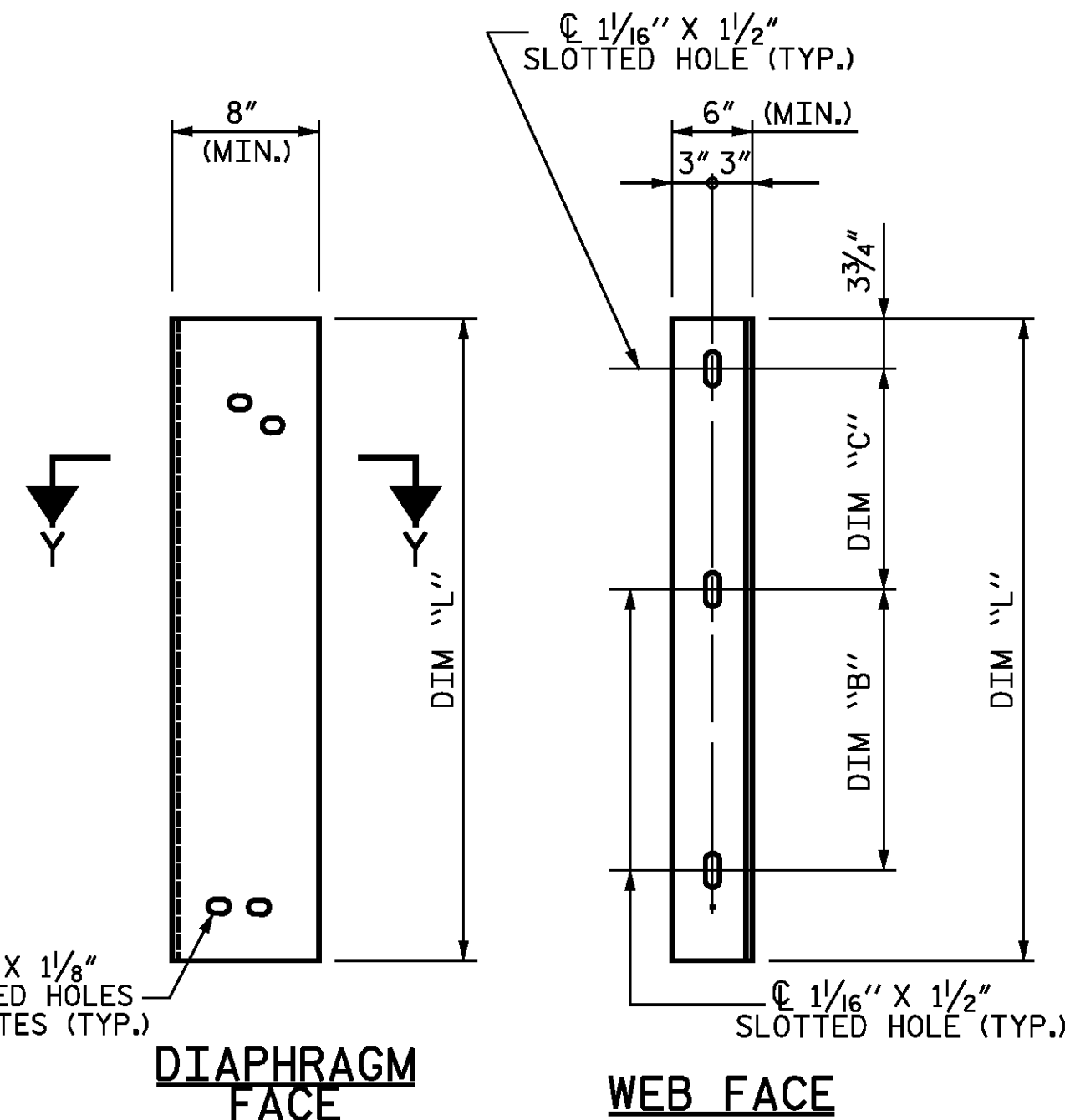
PART SECTION AT INTERMEDIATE DIAPHRAGM

(63" BULB TEE OR 72" BULB TEE GIRDER SHOWN)

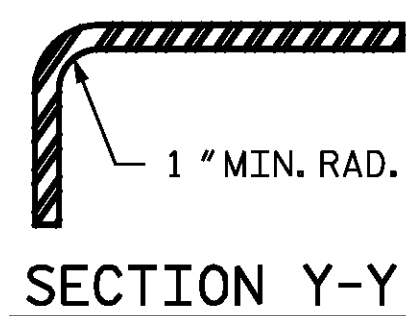


ANGLE END

(L 3 x 3 x 5/16)



CONNECTOR PLATE DETAIL



STRUCTURAL STEEL NOTES

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

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

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

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

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

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

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

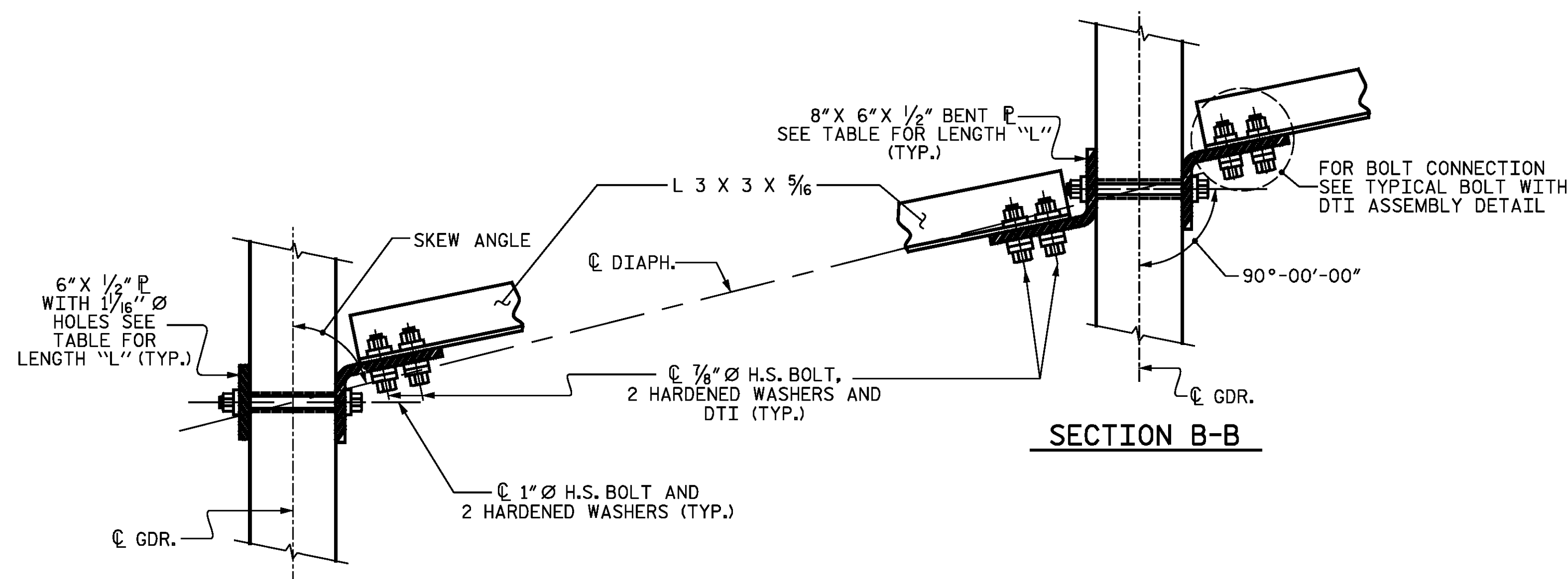
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

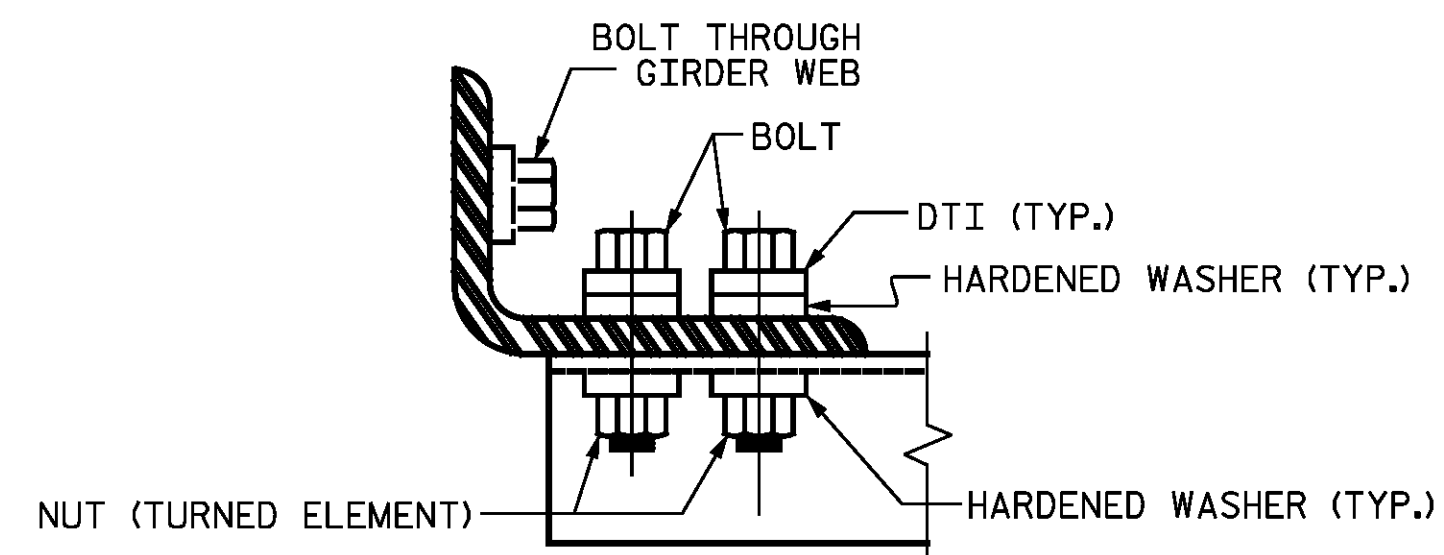
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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

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



CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

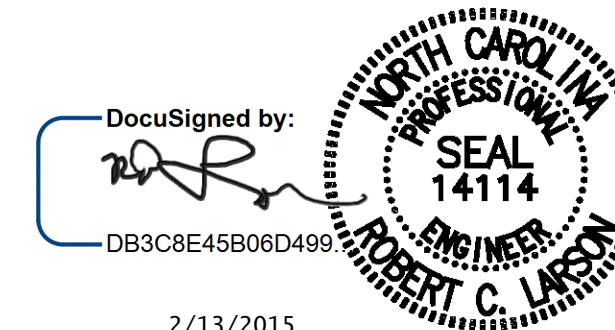
TABLE

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
72" BULB TEE	1'-8"	1'-7"	1'-7 3/4"	4'-2"

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 INTERMEDIATE STEEL
 DIAPHRAGMS FOR 63" & 72"
 MODIFIED BULB TEE
 PRESTRESSED CONCRETE GIRDERS
 LEFT LANE
 STD PCG11



2/13/2015

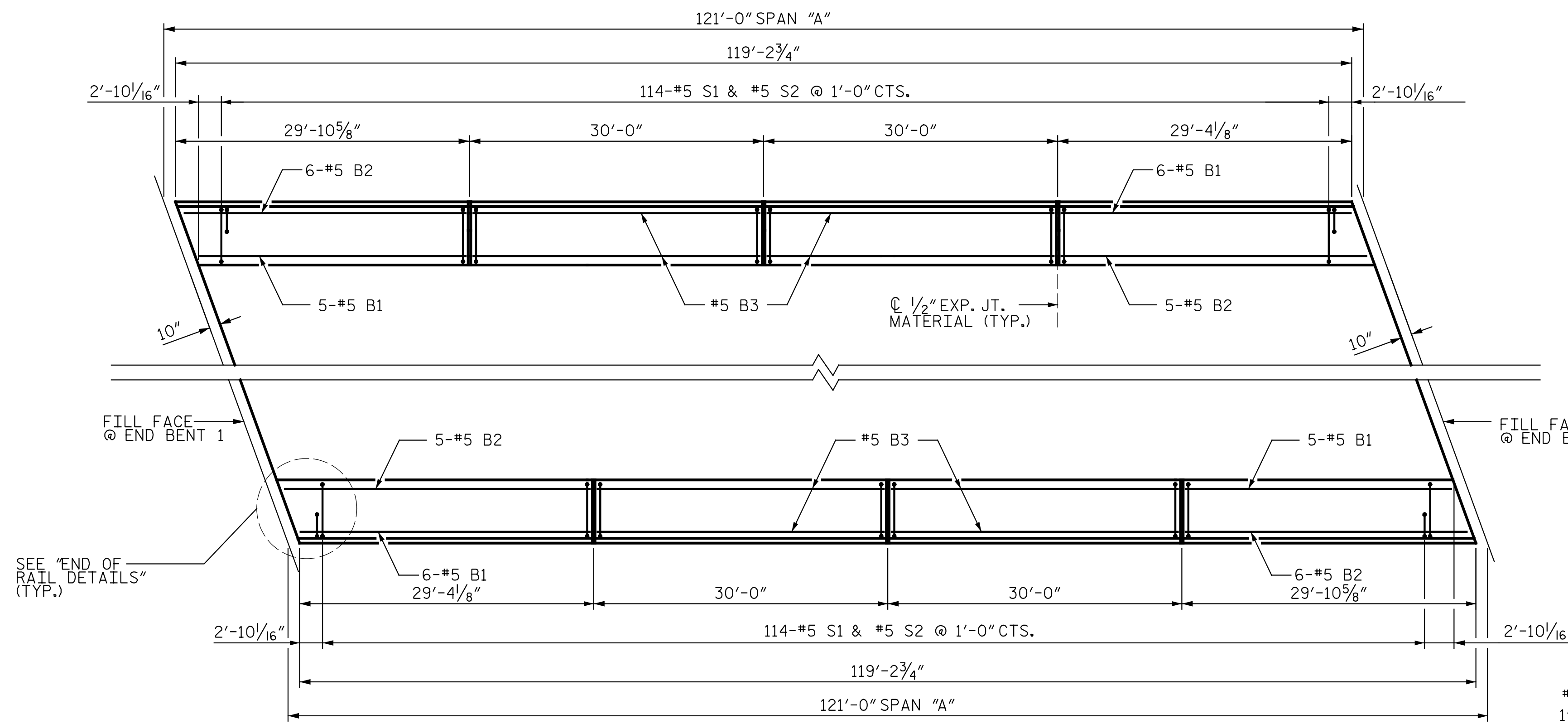
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DESIGN ENGINEER OF RECORD:	DATE: 2/13/2015
ASSEMBLED BY: R.J. FLORY	DATE: 6/28/13
CHECKED BY: R.C. LARSON	DATE: 8/20/13
DRAWN BY: RWW 11/09	ADDED 11/23/09
CHECKED BY: GM 11/09	REV. 10/11

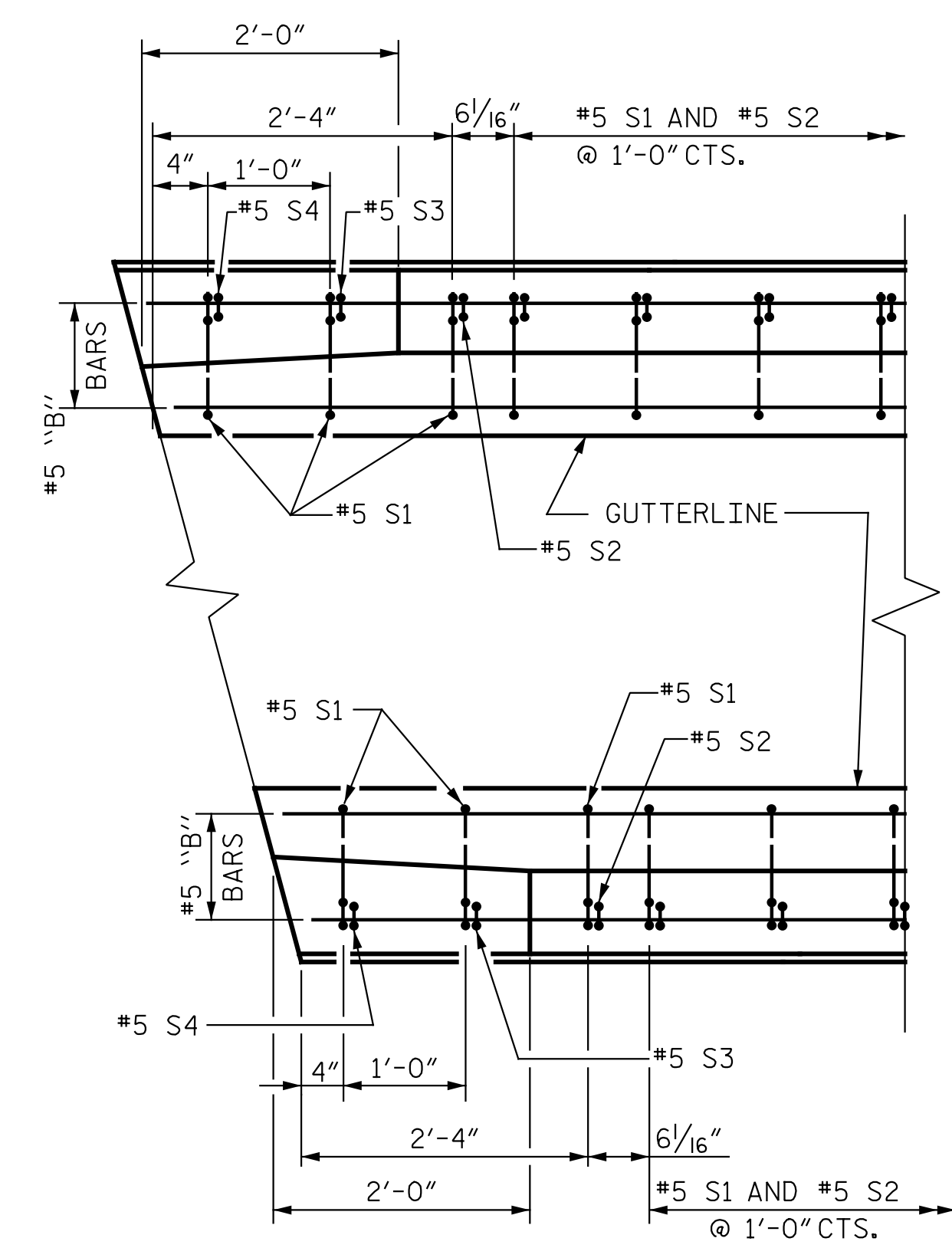
REVISIONS		SHEET NO.	
NO.	DATE	NO.	DATE
1		3	
2		4	

TOTAL SHEETS: SOI-24

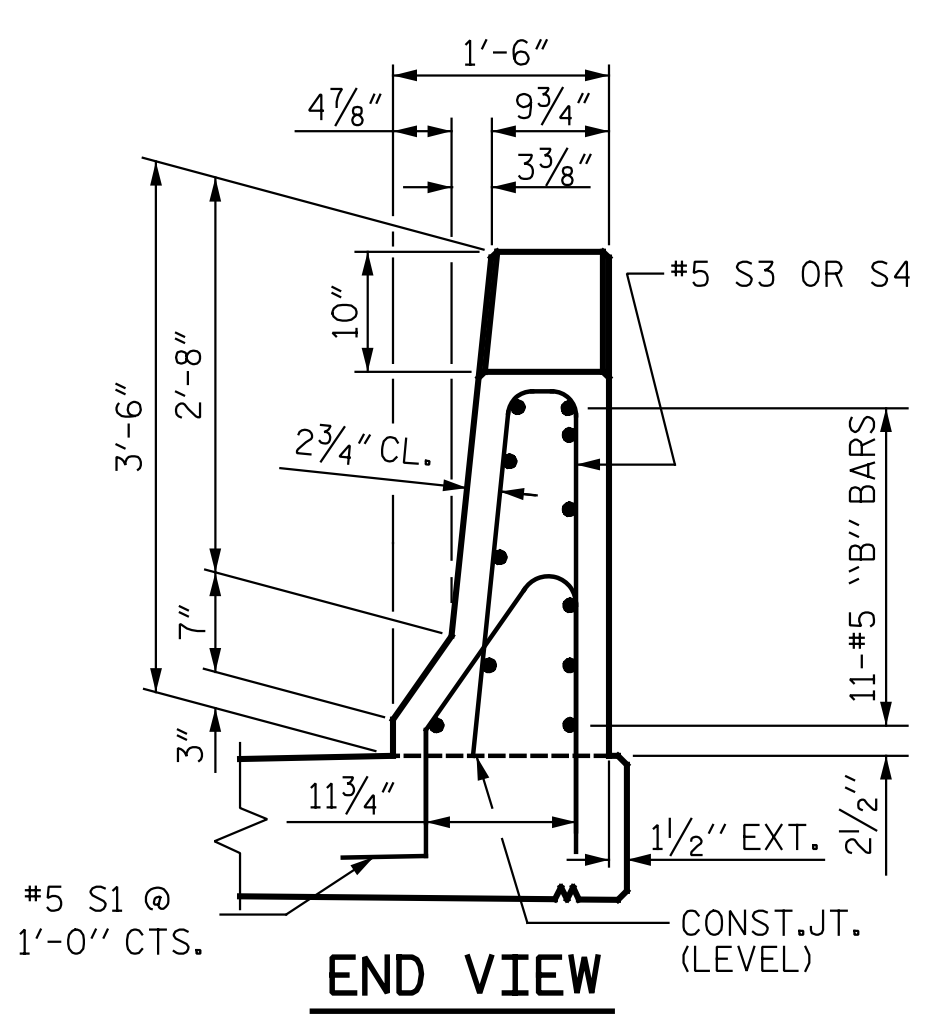
STR-#1



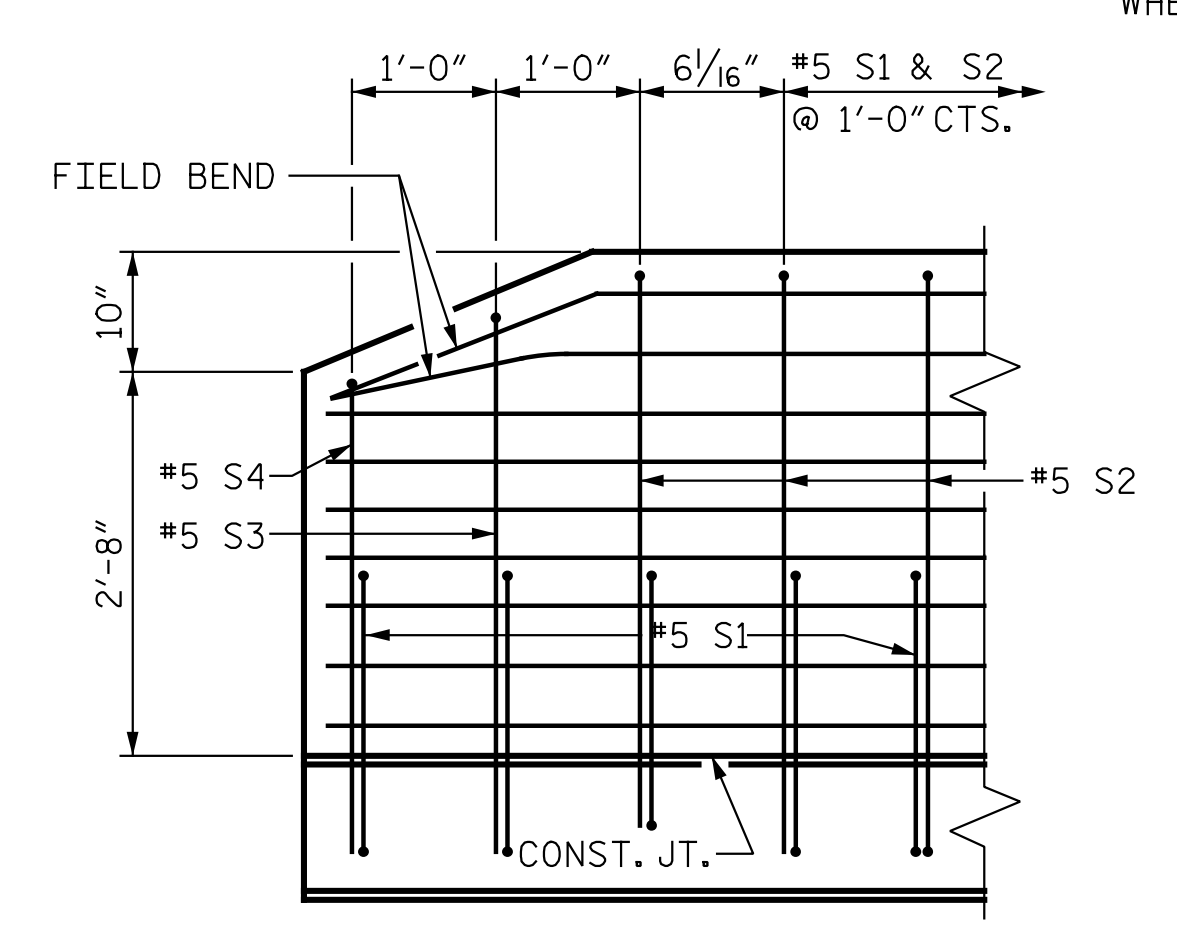
PLAN



PLAN



END VIEW



SIDE VIEW

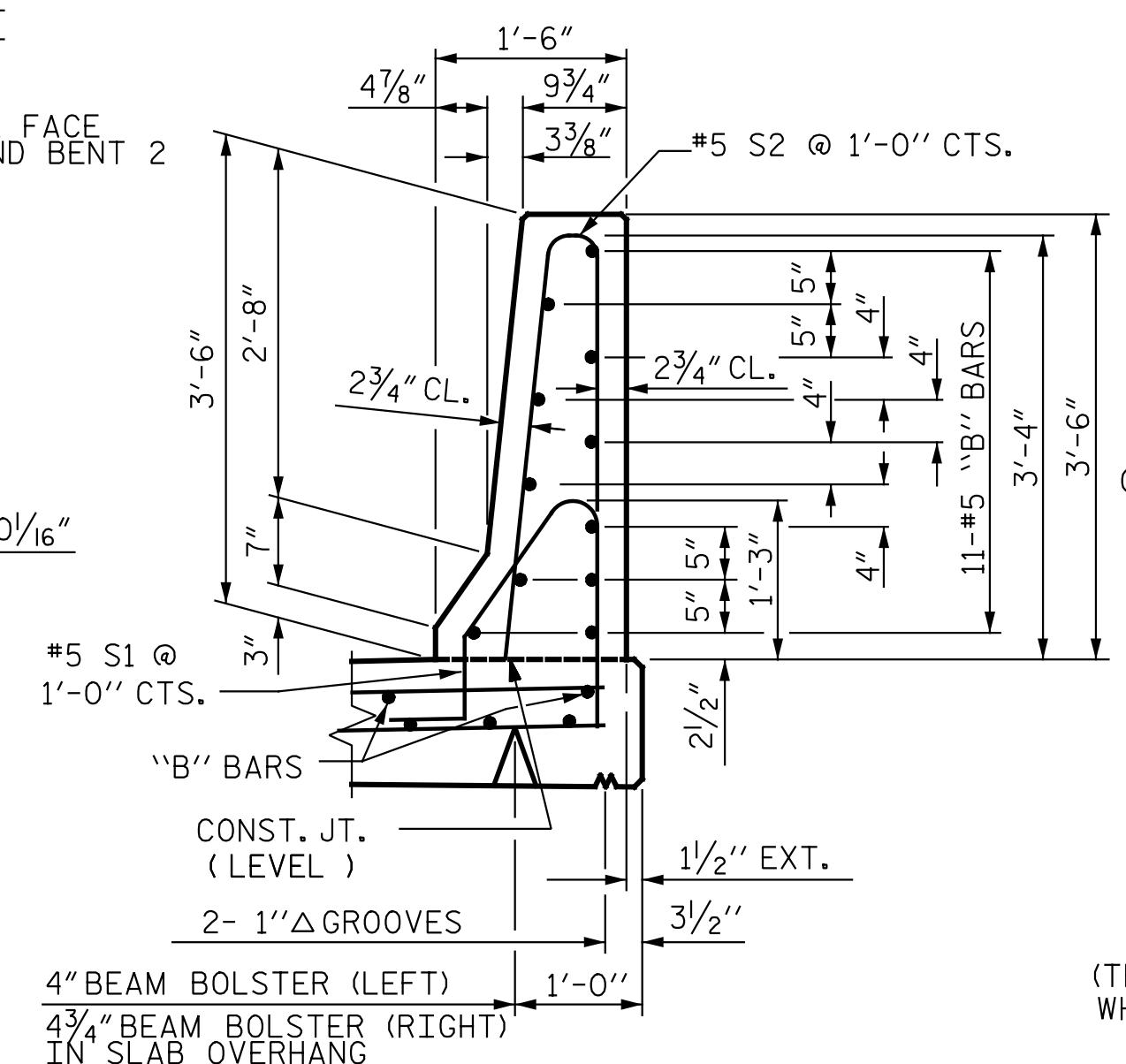
END OF RAIL DETAILS

NOTES

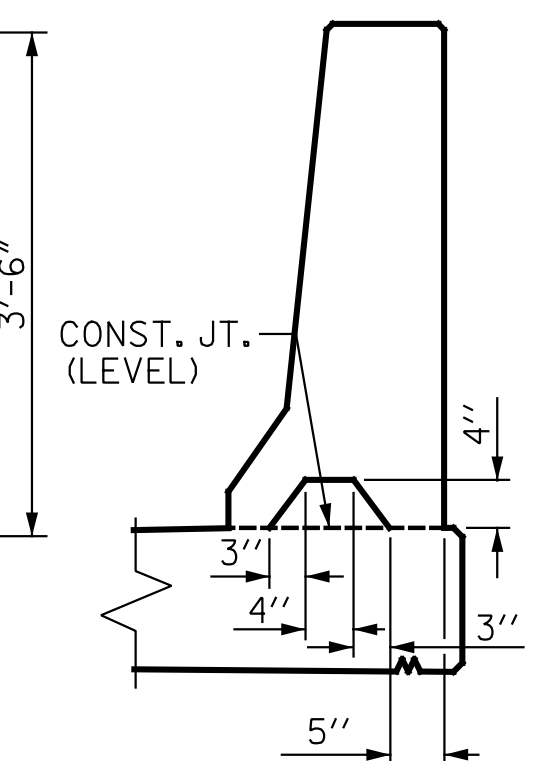
THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

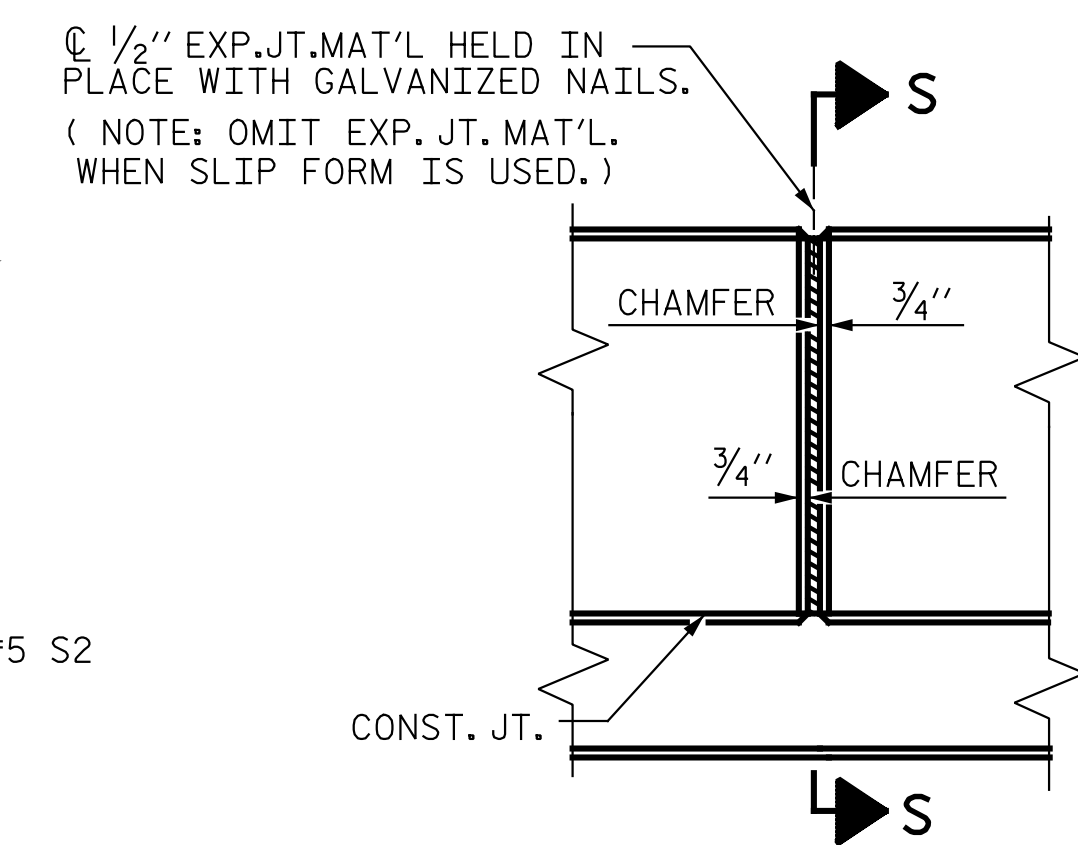


SECTION THRU RAIL

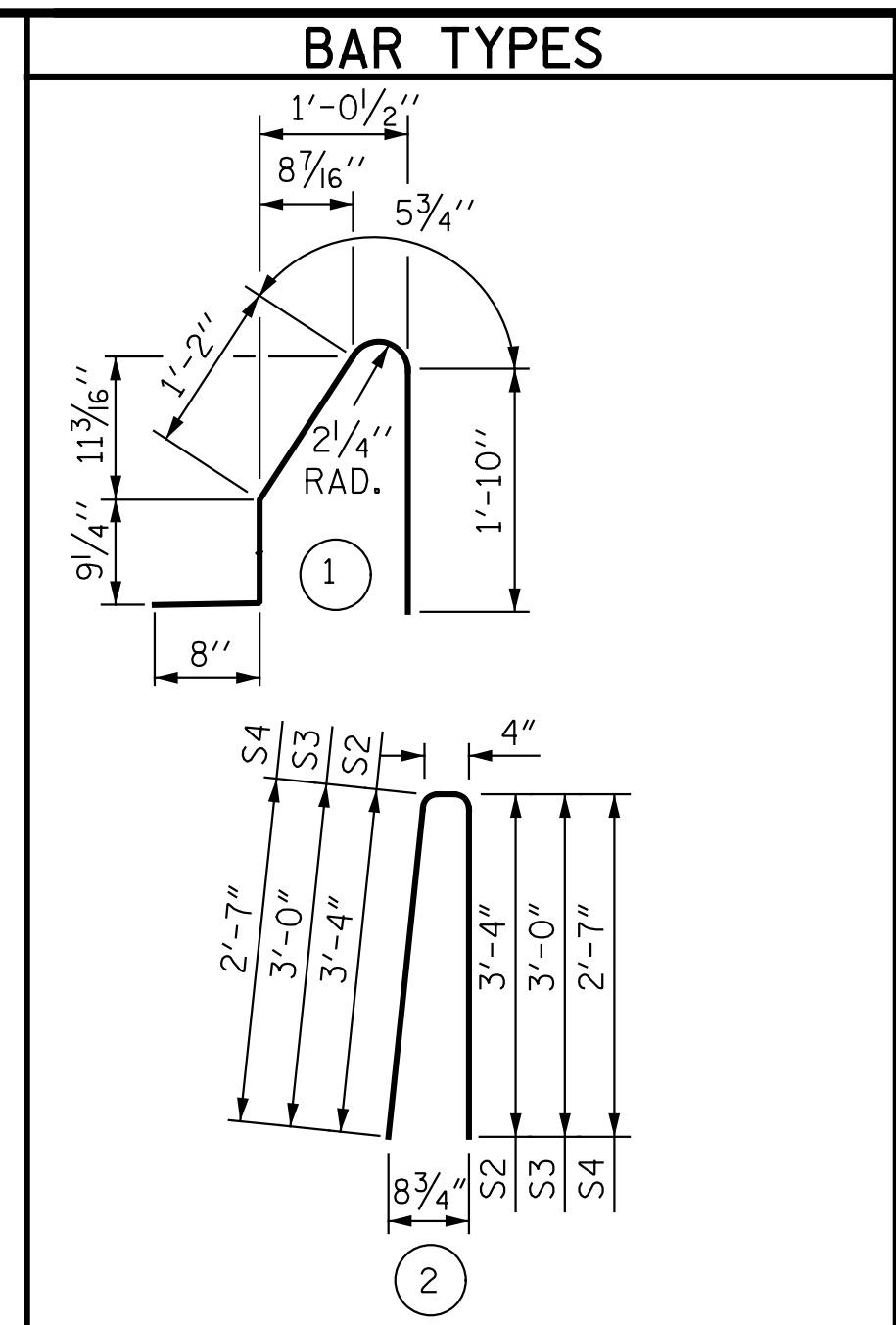


SECTION S-S

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



ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL
FOR CONCRETE BARRIER RAIL ONLY

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
*S1	240 #5	1	4'-11"	1231
*S2	232 #5	2	7'-0"	1694
*S3	4 #5	2	6'-4"	26
*S4	4 #5	2	5'-6"	23
*B1	22 #5	STR.	29'-0"	665
*B2	22 #5	STR.	29'-3"	671
*B3	44 #5	STR.	29'-8"	1361

* EPOXY COATED REINFORCING STEEL	5671 LBS.
CLASS AA CONCRETE	32.3 CU. YDS.
CONCRETE BARRIER RAIL	238.46 LIN. FT.

PROJECT NO. R-2514D
JONES COUNTY
STATION: 320+39.56 -L-

SHEET 1 OF 1

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
CONCRETE
BARRIER RAIL
STD. NO. CBR1 LEFT LANE

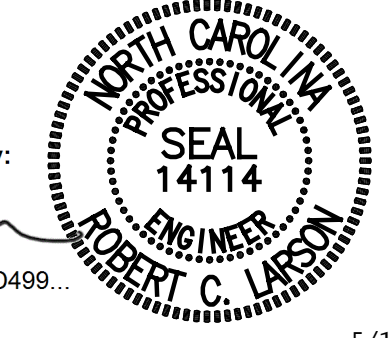
DESIGN ENGINEER OF RECORD: DATE: 5/12/2015

DRAWN BY: J. WEATHERBURNE DATE: 07/14/13
CHECKED BY: R. C. LARSON DATE: 07/15/13

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

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

SHEET NO. SOI-12
TOTAL SHEETS SOI-24



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DWG. REF. NO. 12 OF 24

NOTES

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

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

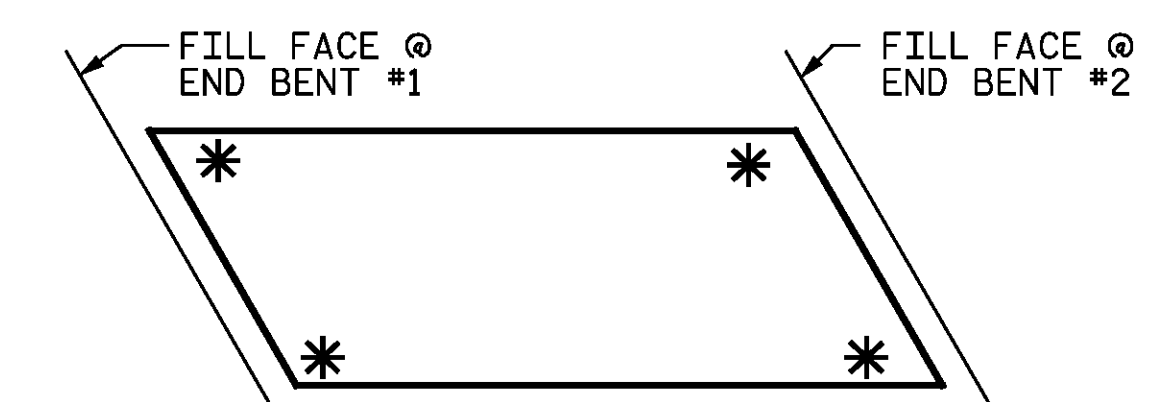
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

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

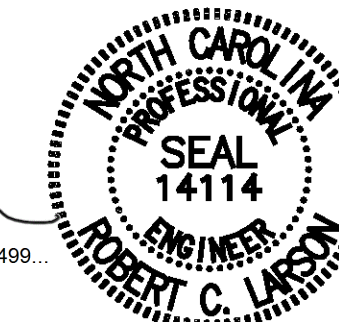


SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
**GUARDRAIL ANCHORAGE
 FOR BARRIER RAIL**
 STD. NO. GRA2 LEFT LANE



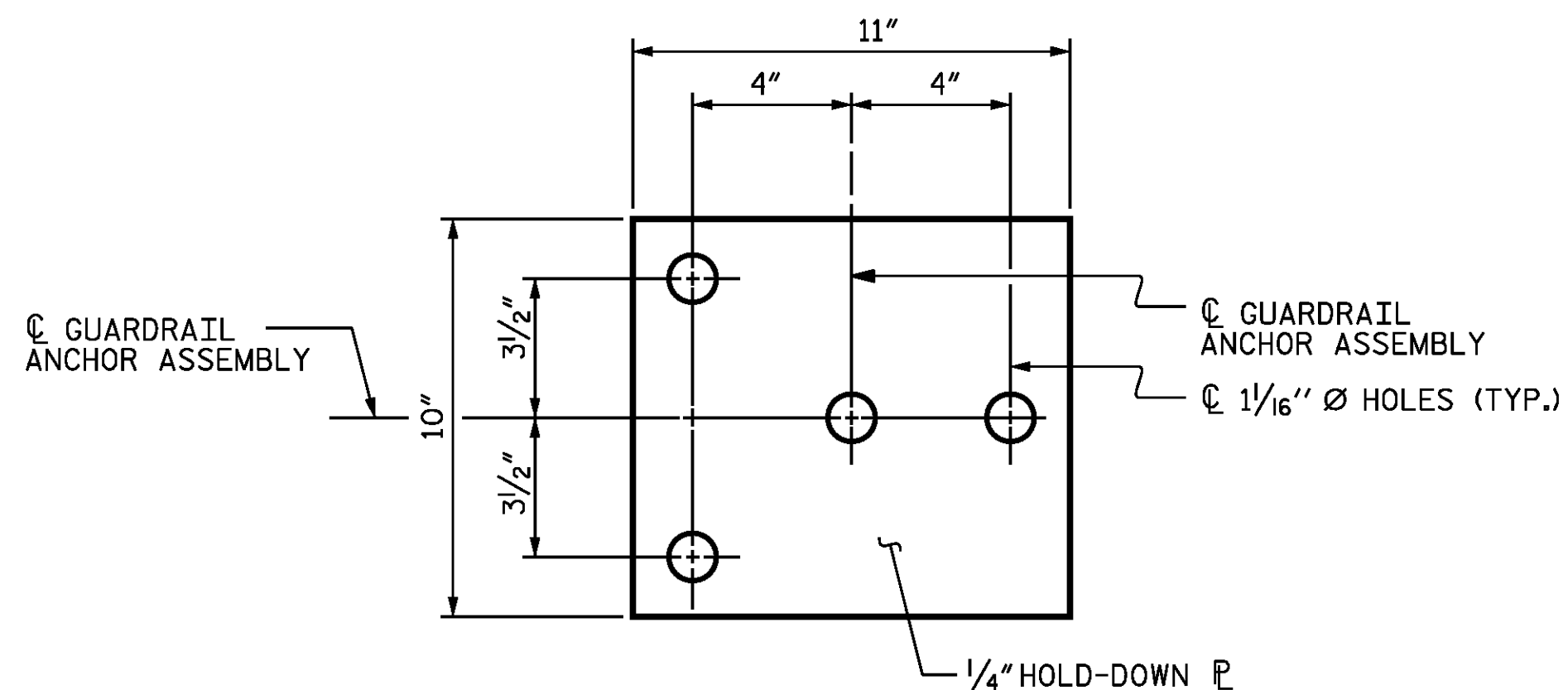
2/13/2015

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

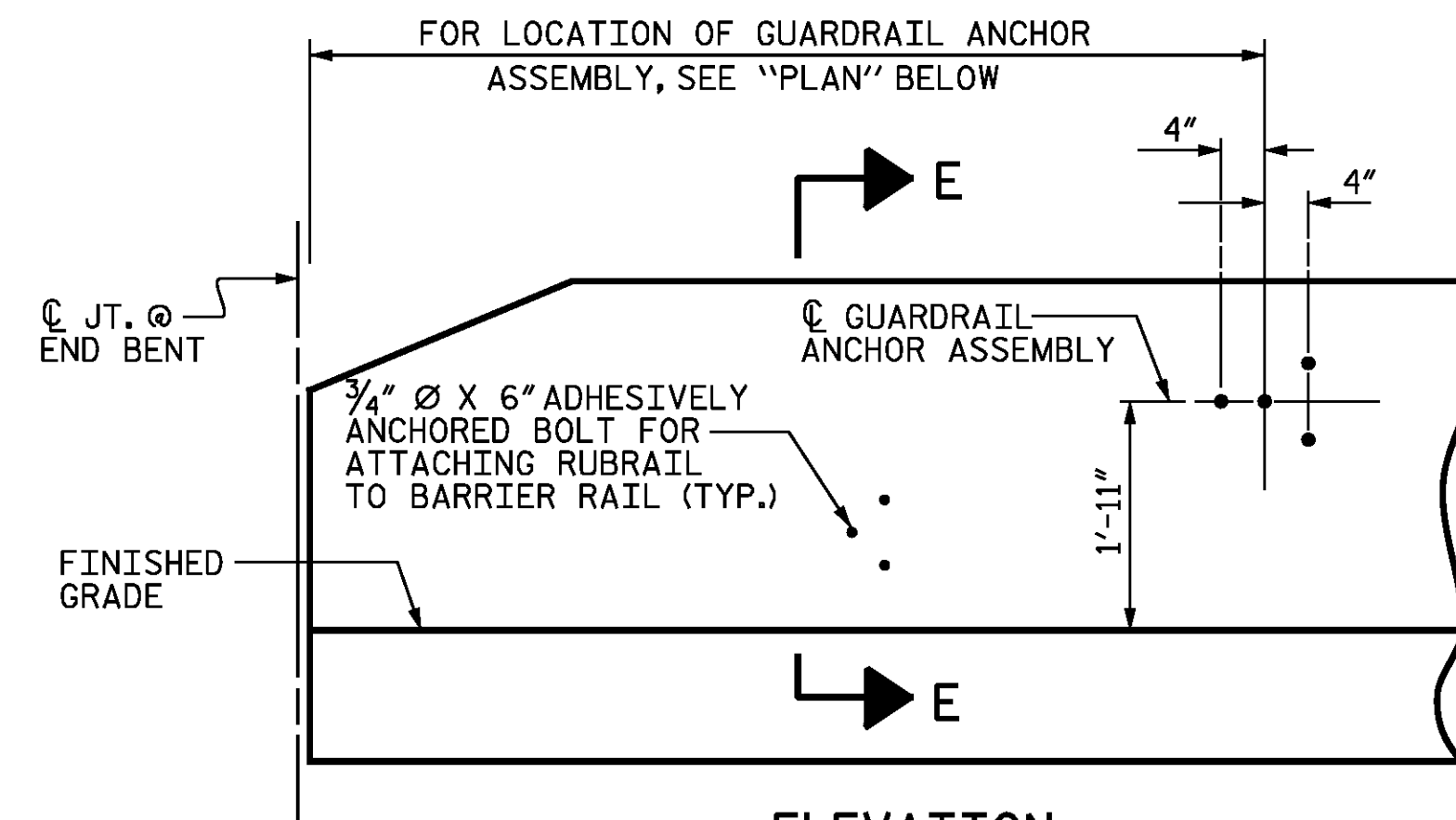
DESIGNED BY: R.C. LARSON
 CHECKED BY: GM
 DATE: 6/28/13
 DATE: 8/20/13
 DRAWN BY: TLA 5/06
 CHECKED BY: GM 5/06
 REV. 10/1/11 MAA/GM
 REV. 7/12 MAA/GM
 REV. 6/13 MAA/GM

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 13 OF 24

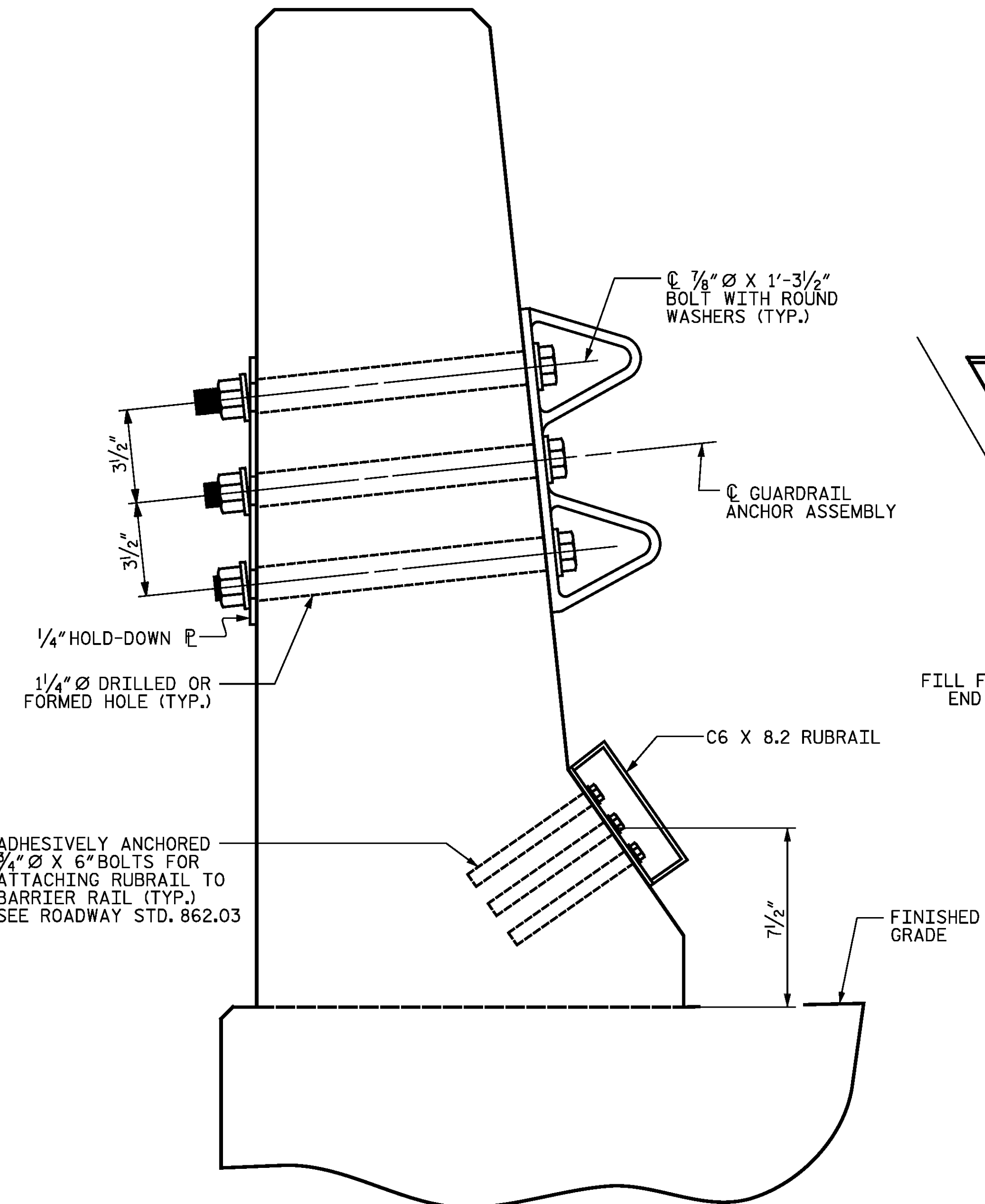
TOTAL SHEETS: SOI-24



PLAN



ELEVATION



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.

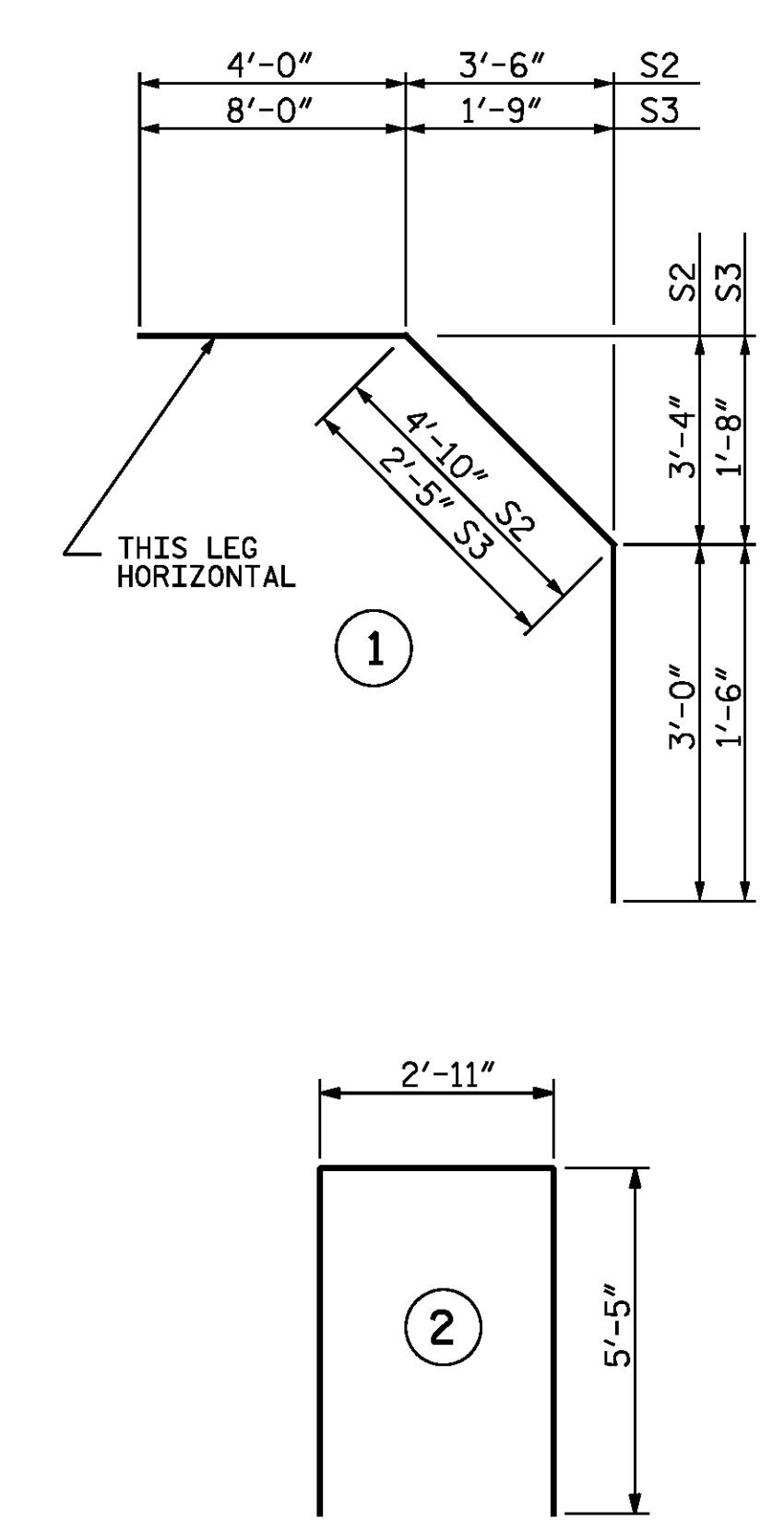
DocuSigned by:
 DB3C8E45806D499

DESIGN ENGINEER OF RECORD:	DATE: 2/13/2015
ASSEMBLED BY: R.J. FLORY	DATE: 6/28/13
CHECKED BY: R.C. LARSON	DATE: 8/20/13
DRAWN BY: TLA 5/06	REV. 10/1/11 MAA/GM
CHECKED BY: GM 5/06	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM

BILL OF MATERIAL

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
A1	174	5	STR.	48'-11"	8878	A39	2	5	STR.	36'-3"	76
*A2	174	5	STR.	48'-11"	8878	A40	2	5	STR.	34'-8"	72
*A3	2	5	STR.	47'-6"	99	A41	2	5	STR.	33'-1"	69
*A4	2	5	STR.	45'-11"	96	A42	2	5	STR.	31'-5"	66
*A5	2	5	STR.	44'-3"	92	A43	2	5	STR.	29'-10"	62
*A6	2	5	STR.	42'-8"	89	A44	2	5	STR.	28'-3"	59
*A7	2	5	STR.	41'-1"	86	A45	2	5	STR.	26'-8"	56
*A8	2	5	STR.	39'-6"	82	A46	2	5	STR.	25'-1"	52
*A9	2	5	STR.	37'-10"	79	A47	2	5	STR.	23'-5"	49
*A10	2	5	STR.	36'-3"	76	A48	2	5	STR.	21'-10"	46
*A11	2	5	STR.	34'-8"	72	A49	2	5	STR.	20'-3"	42
*A12	2	5	STR.	33'-1"	69	A50	2	5	STR.	18'-8"	39
*A13	2	5	STR.	31'-5"	66	A51	2	5	STR.	17'-0"	35
*A14	2	5	STR.	29'-10"	62	A52	2	5	STR.	15'-5"	32
*A15	2	5	STR.	28'-3"	59	A53	2	5	STR.	13'-10"	29
*A16	2	5	STR.	26'-8"	56	A54	2	5	STR.	12'-3"	26
*A17	2	5	STR.	25'-1"	52	A55	2	5	STR.	10'-7"	22
*A18	2	5	STR.	23'-5"	49	A56	2	5	STR.	9'-0"	19
*A19	2	5	STR.	21'-10"	46	A57	2	5	STR.	7'-5"	15
*A20	2	5	STR.	20'-3"	42	A58	2	5	STR.	5'-10"	12
*A21	2	5	STR.	18'-8"	39	A59	2	5	STR.	4'-3"	9
*A22	2	5	STR.	17'-0"	35	A60	2	5	STR.	2'-7"	5
*A23	2	5	STR.	15'-5"	32						
*A24	2	5	STR.	13'-10"	29	*B1	170	4	STR.	25'-5"	2886
*A25	2	5	STR.	12'-3"	26	B2	84	5	STR.	51'-4"	4497
*A26	2	5	STR.	10'-7"	22	*B3	64	6	STR.	24'-0"	2307
*A27	2	5	STR.	9'-0"	19	*B4	64	6	STR.	25'-0"	2403
*A28	2	5	STR.	7'-5"	15	B5	84	6	STR.	24'-0"	3028
*A29	2	5	STR.	5'-10"	12						
*A30	2	5	STR.	4'-3"	9	K1	24	4	STR.	30'-0"	481
*A31	2	5	STR.	2'-7"	5	K2	8	4	STR.	8'-6"	45
A32	2	5	STR.	47'-6"	99	K3	40	4	STR.	10'-2"	272
A33	2	5	STR.	45'-11"	96	K4	20	4	STR.	3'-4"	45
A34	2	5	STR.	44'-3"	92	K5	4	4	STR.	2'-6"	7
A35	2	5	STR.	42'-8"	89						
A36	2	5	STR.	41'-1"	86	S1	80	4	2	13'-9"	735
A37	2	5	STR.	39'-6"	82	*S2	60	4	1	10'-11"	438
A38	2	5	STR.	37'-10"	79	*S3	60	4	1	11'-10"	474

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

—SUPERSTRUCTURE BILL OF MATERIAL—

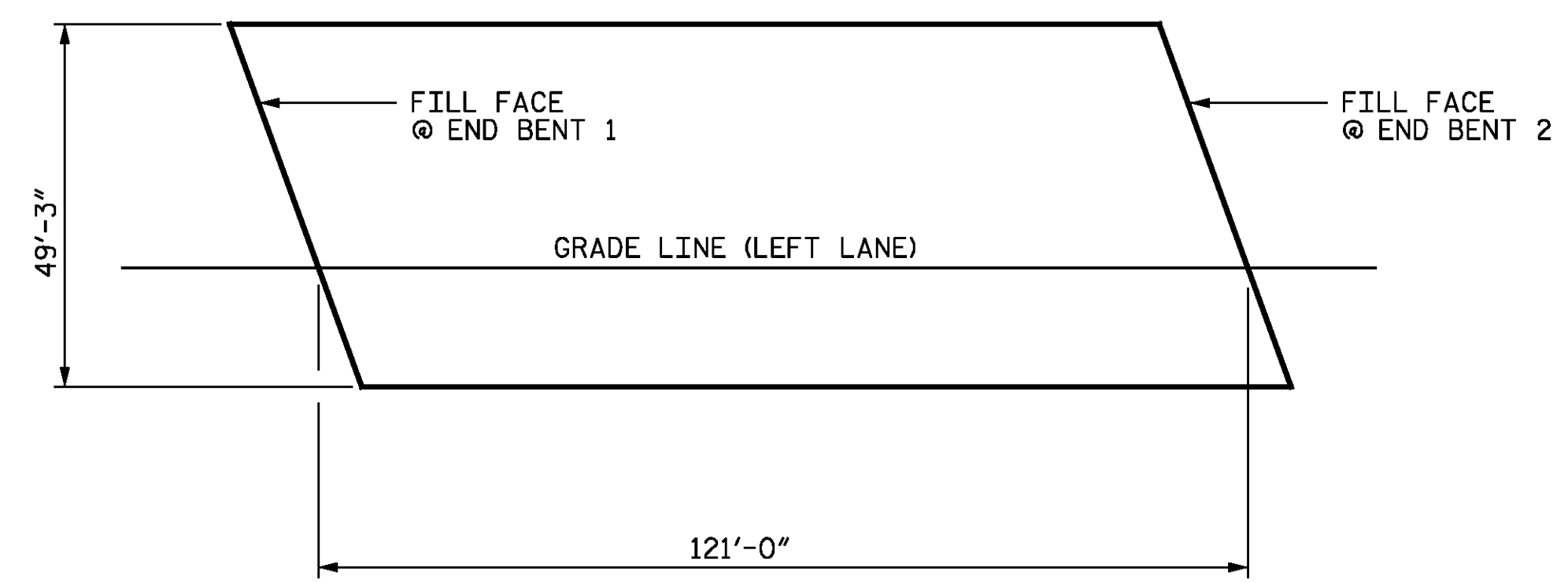
	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	*EPOXY COATED REINFORCING STEEL (LBS.)
SPAN "A"			
POUR 1	169.6		
POUR 2	94		
TOTALS**	263.6	19503	18901

**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 5,959)

GROOVING BRIDGE FLOORS

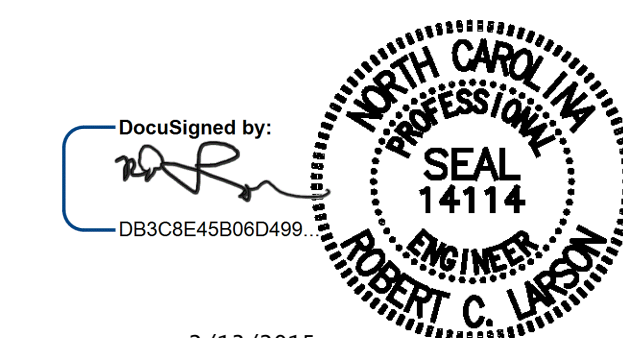
APPROACH SLABS	2073	SQ.FT.
BRIDGE DECK	5111	SQ.FT.
TOTAL	7184	SQ.FT.

DocuSigned by:

 DB3C8E45B06D499...

DESIGN ENGINEER OF RECORD: _____ DATE: 2/13/2015

DRAWN BY: R. C. LARSON DATE: 8/20/13
 CHECKED BY: E. C. DECOLA DATE: 8/27/13



2/13/2015

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD SUPERSTRUCTURE BILL OF MATERIAL

STD NO BOM2 LEFT LANE

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

SHEET NO. SOI-14
 TOTAL SHEETS SOI-24

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 DWG. REF. NO. 14 OF 24

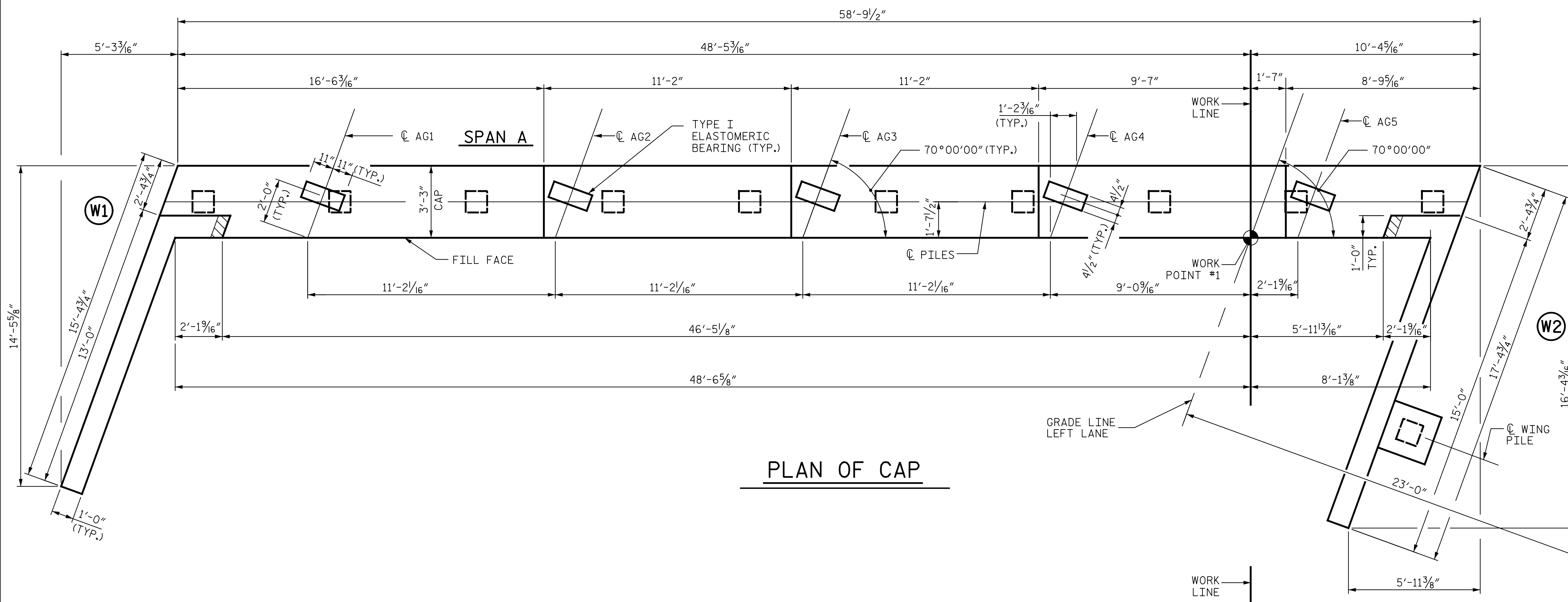
STR-#1

NOTES

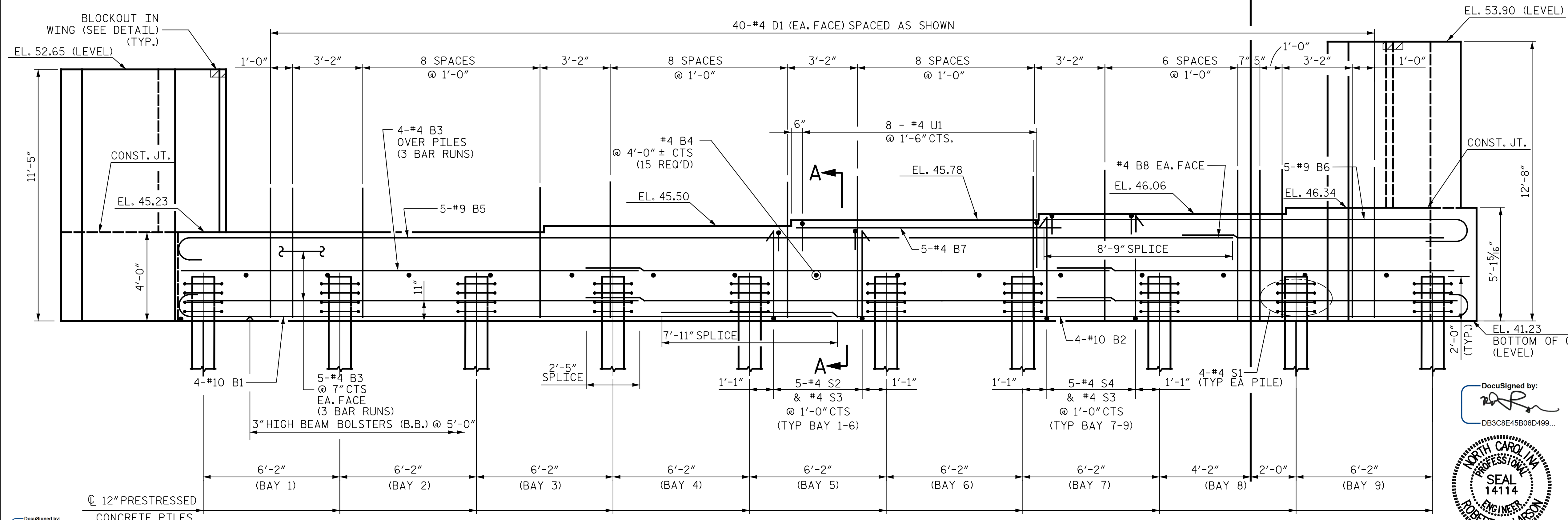
INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

THE PORTIONS OF THE WINGS ABOVE THE CONSTRUCTION JOINT ARE TO BE POURED WITH THE SUPERSTRUCTURE. AT THE CONTRACTOR'S OPTION, THESE PORTIONS MAY BE POURED SEPARATELY FROM THE SUPERSTRUCTURE, IN WHICH CASE CLASS 'A' CONCRETE MAY BE USED.

FOR 'BLOCKOUT IN WINGWALL', SEE END BENT 2.



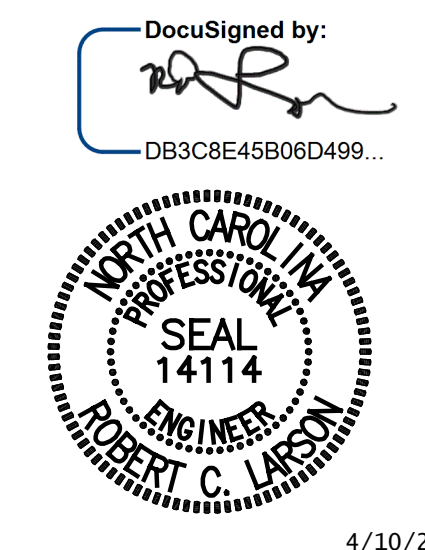
PLAN OF CAP



ELEVATION

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 1 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SUBSTRUCTURE
 END BENT 1**
 LEFT LANE

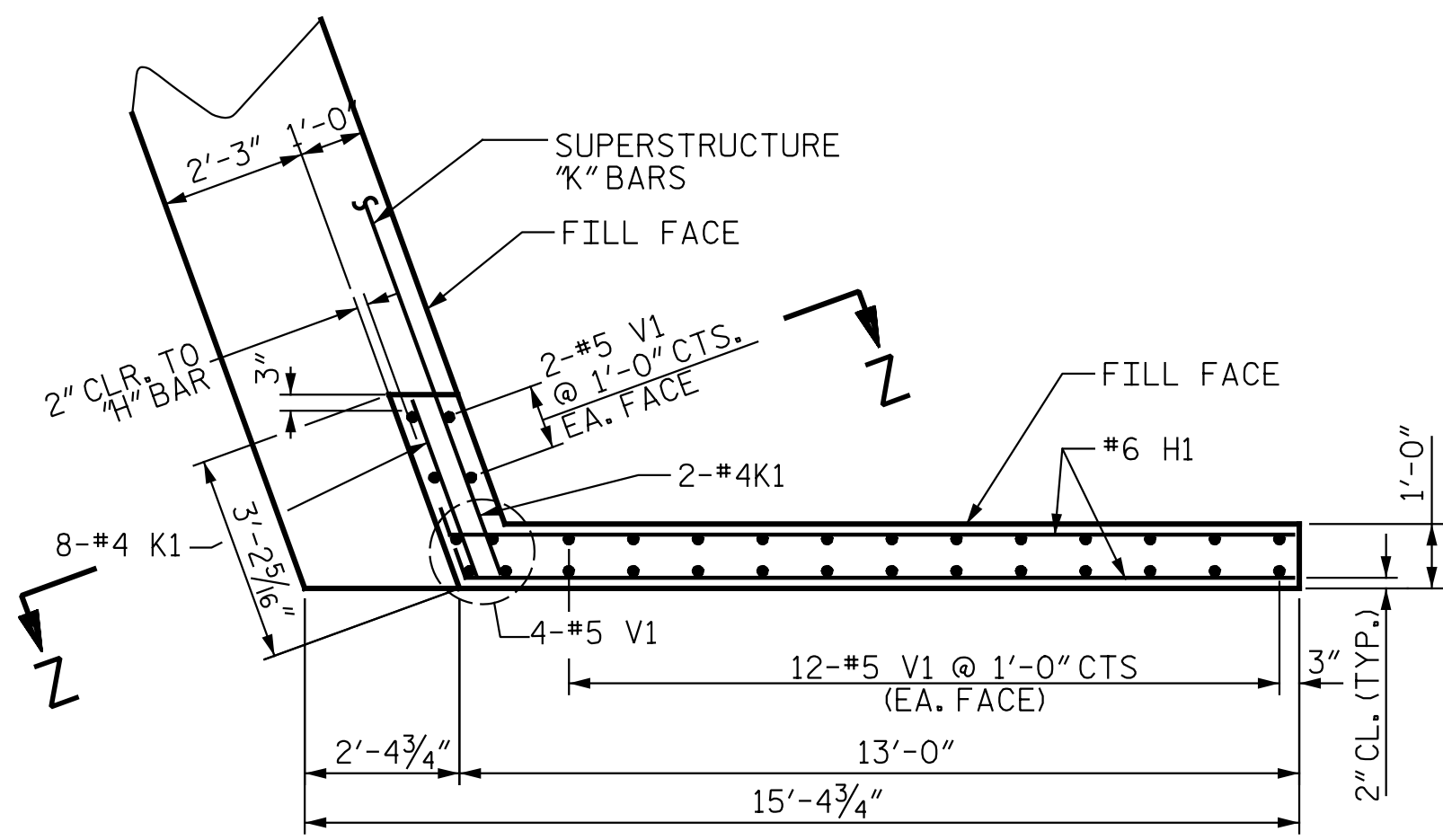


DESIGN ENGINEER OF RECORD: _____ DATE: 4/10/2015
 DRAWN BY: R. J. FLORY DATE: 3/20/14
 CHECKED BY: R. C. LARSON DATE: 4/14/14

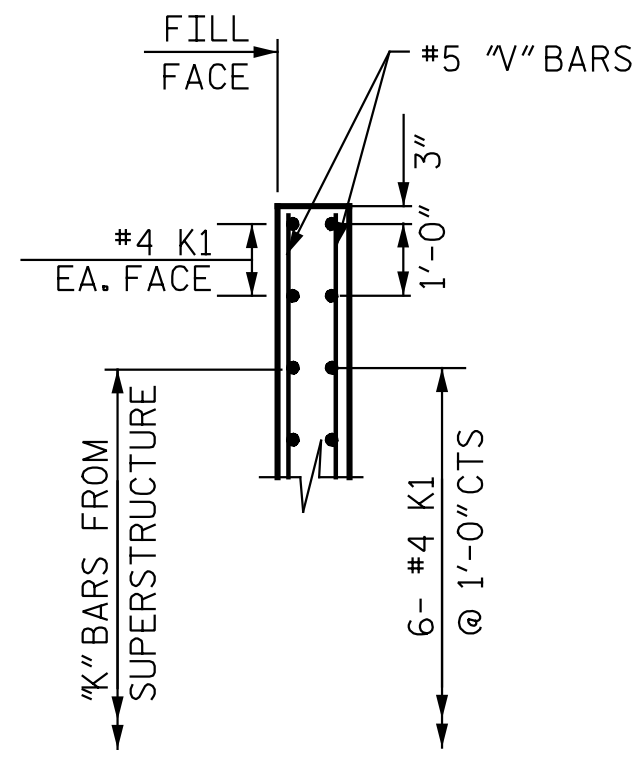
REVISIONS		SHEET NO.	
NO.	DATE	NO.	BY
1		3	
2		4	

SHEET NO. SOI-15
 TOTAL SHEETS SOI-24

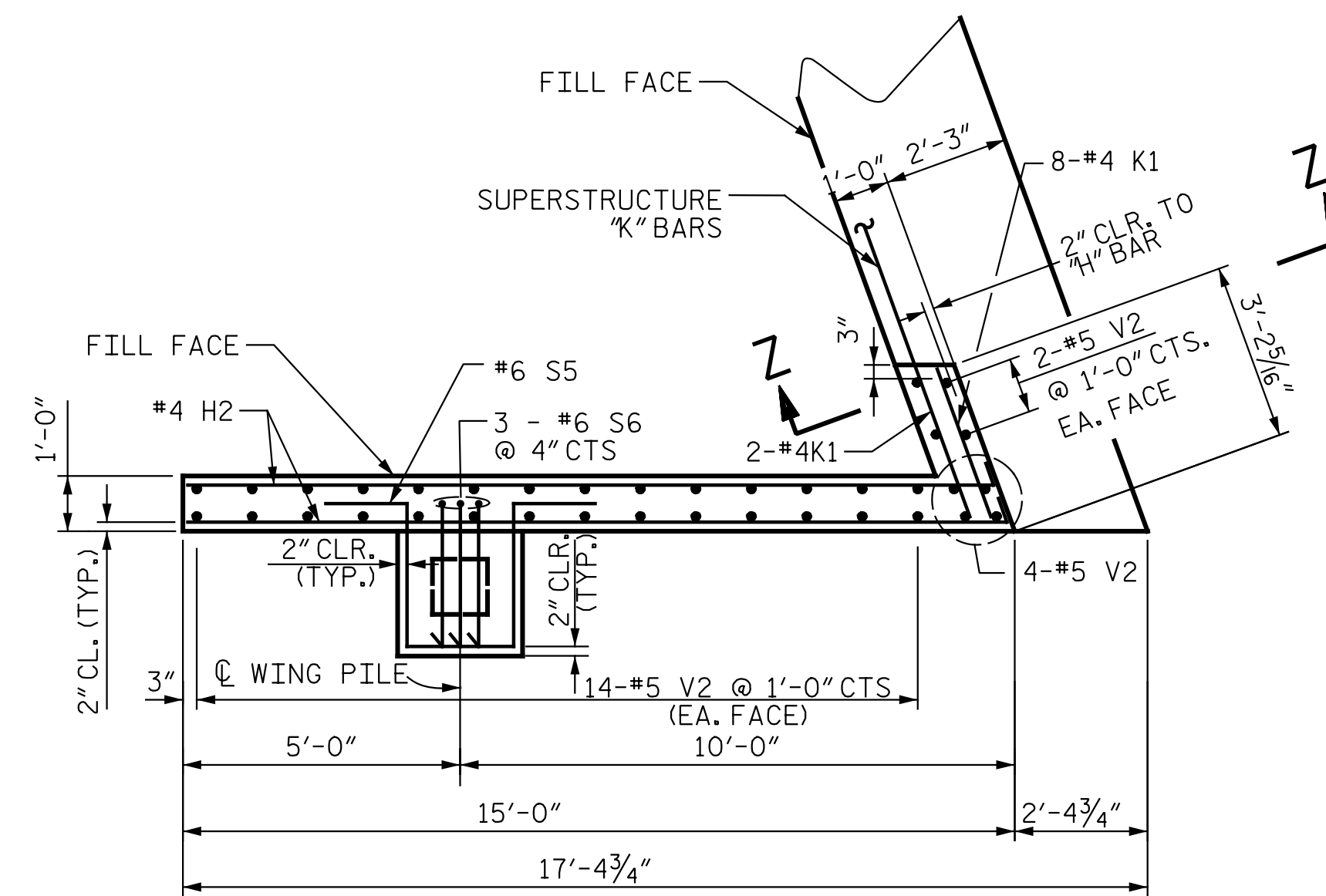
KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 15 OF 24



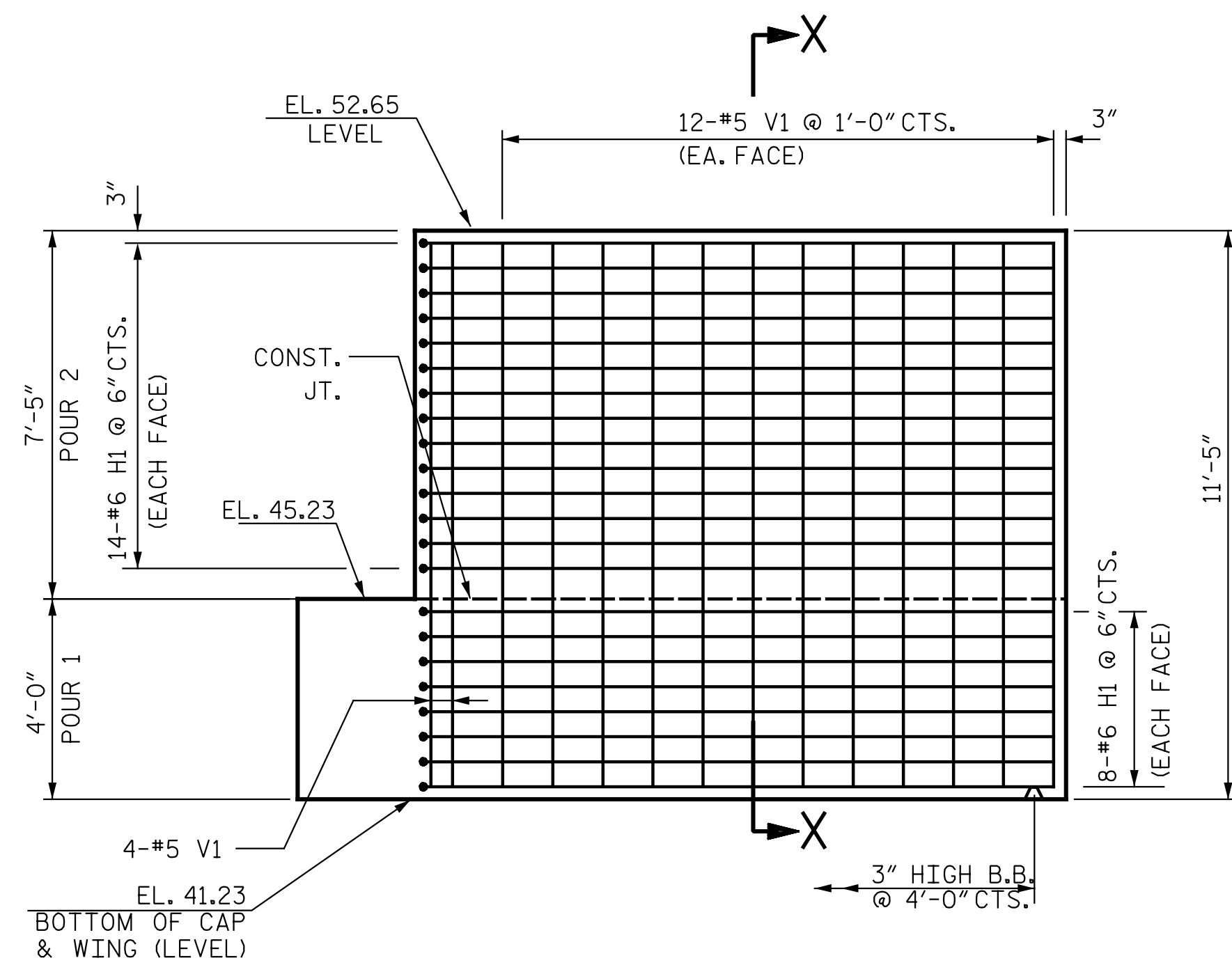
PLAN W1



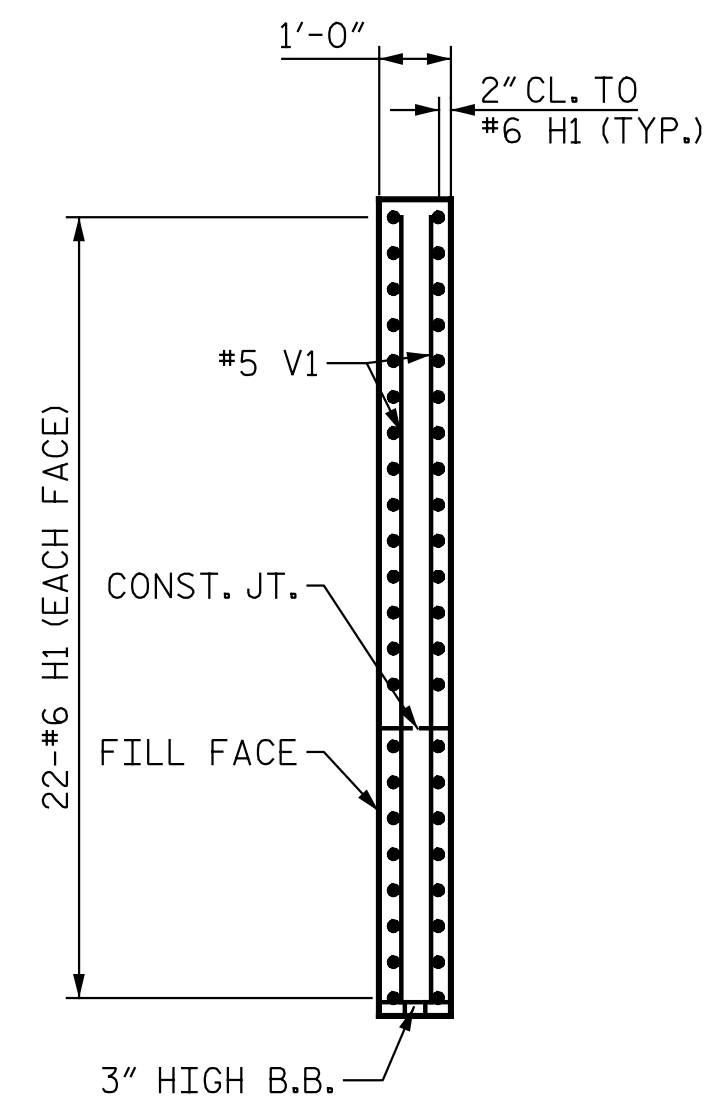
SECTION Z-Z



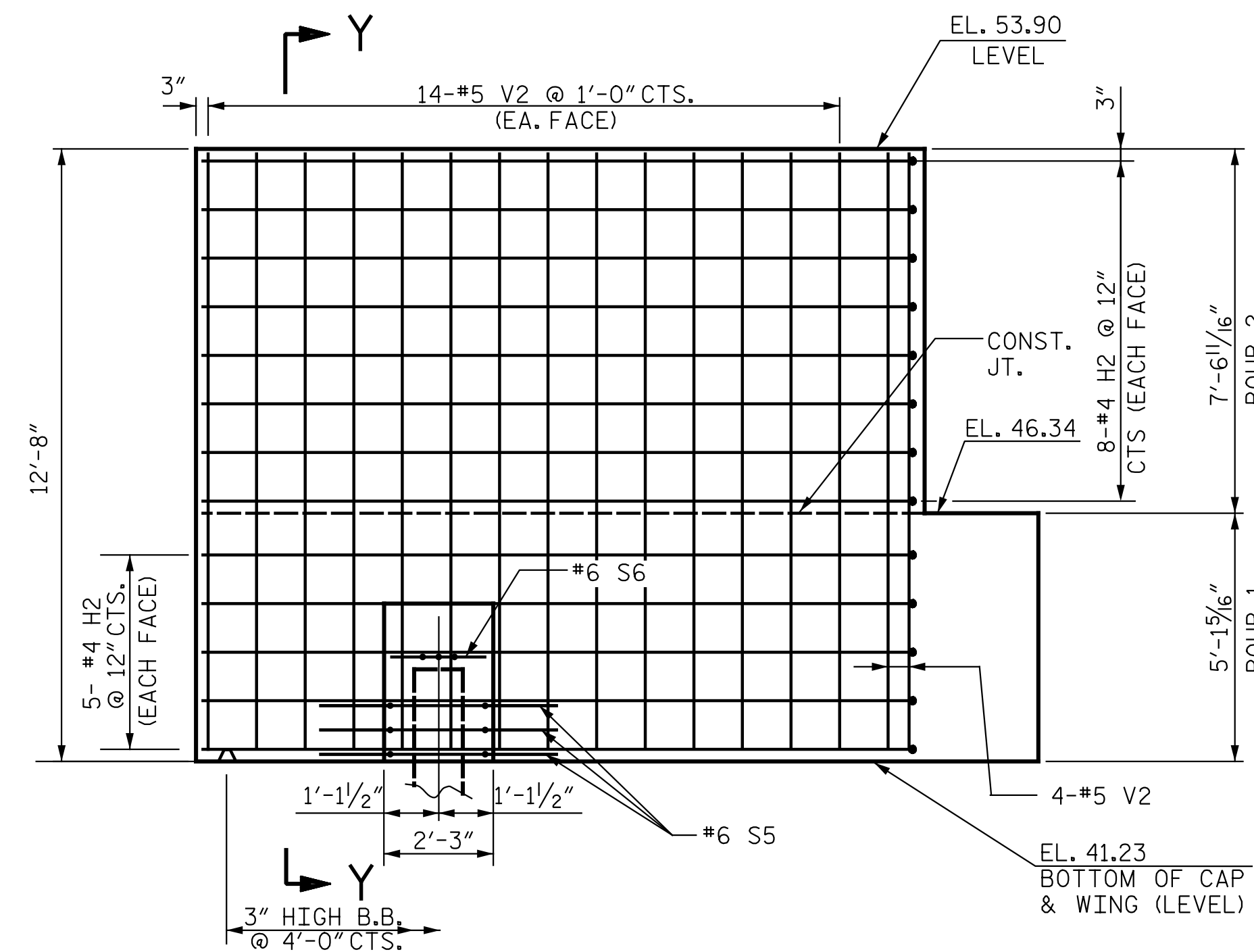
PLAN W2



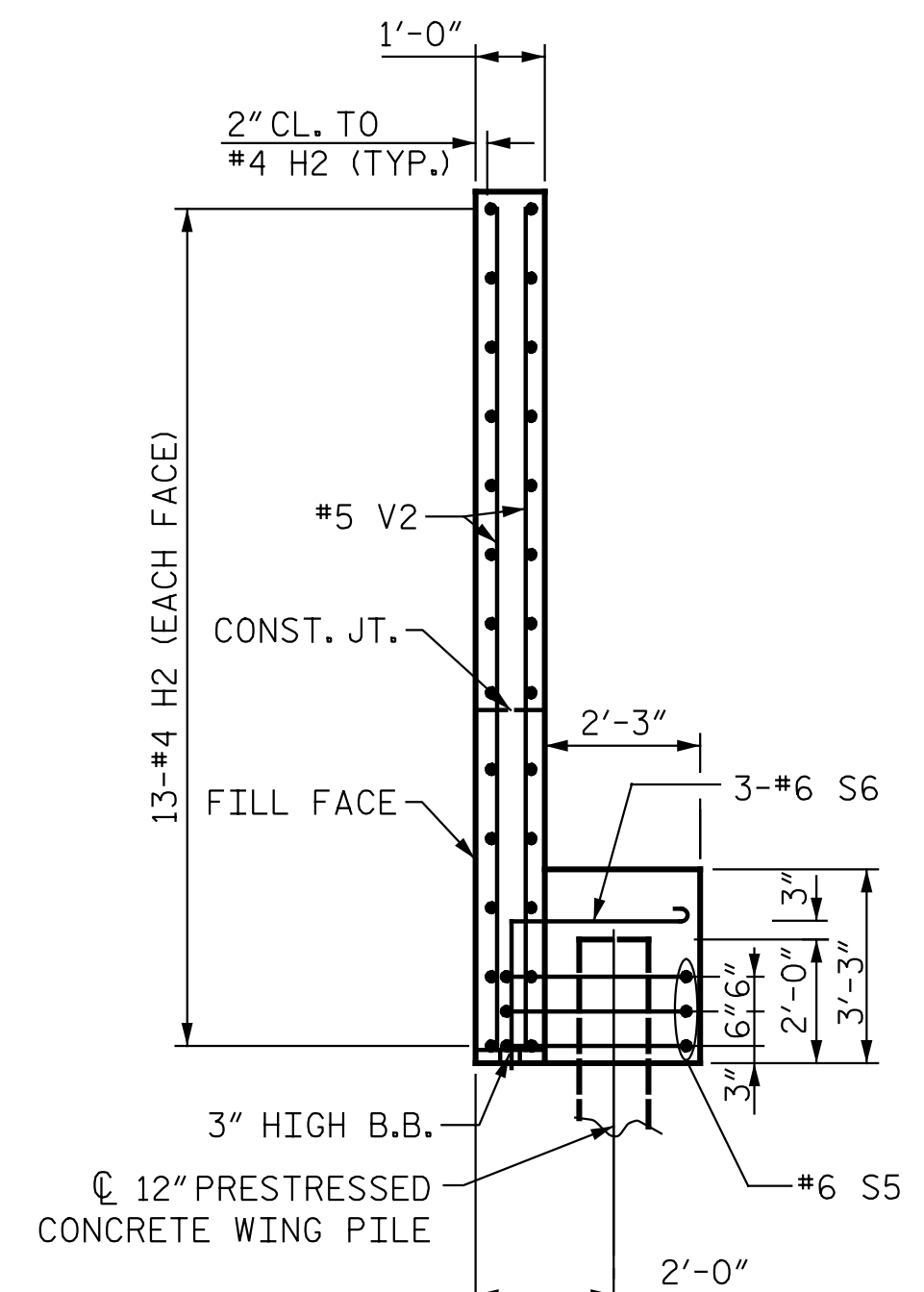
ELEVATION W1



SECTION X-X



ELEVATION W2



SECTION Y-Y

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1

LEFT LANE



4/10/2015

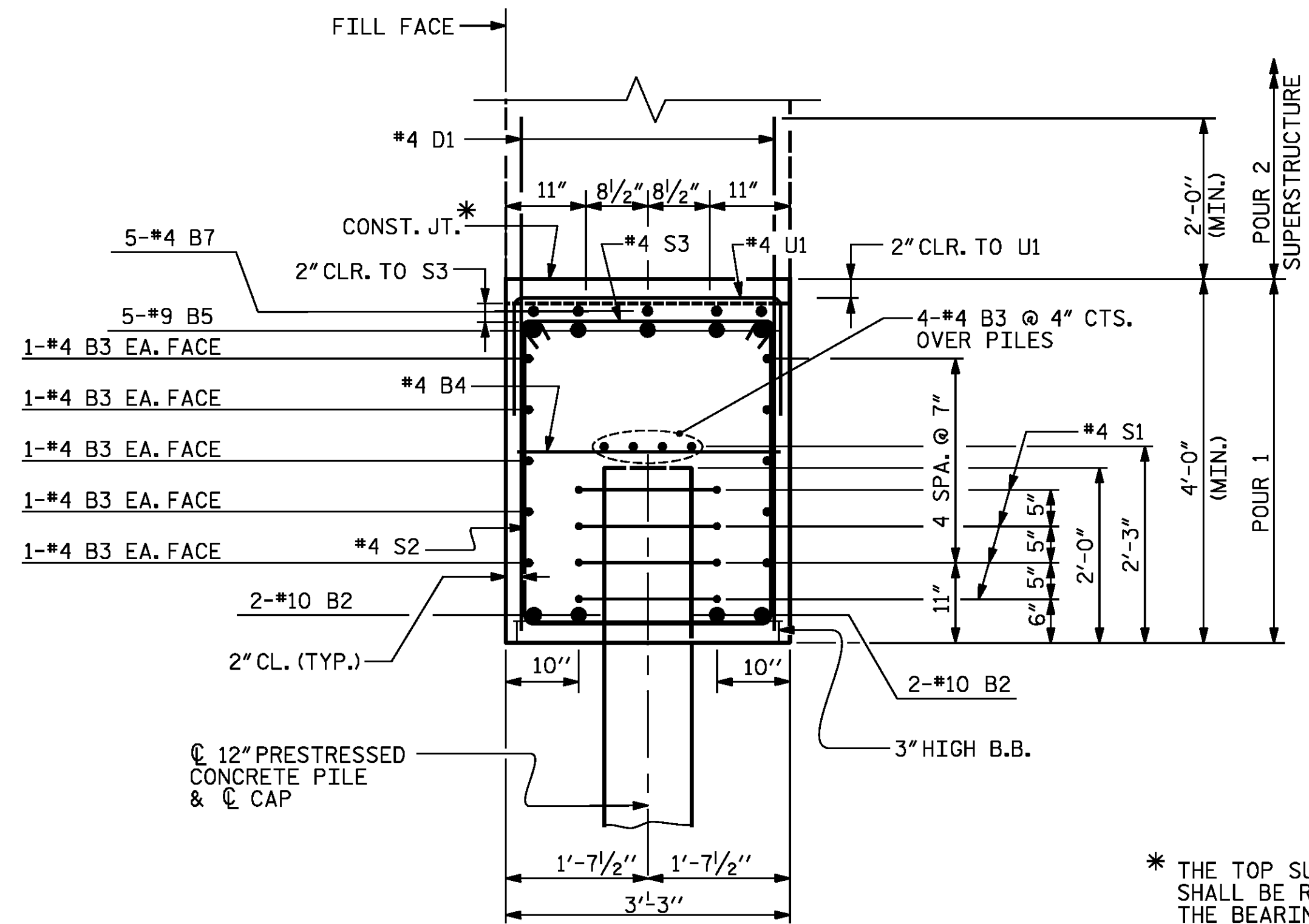
DESIGN ENGINEER OF RECORD:	DATE:
<i>R. J. Flory</i>	4/10/2015
DRAWN BY:	DATE:
R. J. FLORY	3/27/14
CHECKED BY:	DATE:
R. C. LARSON	4/15/14

KCI Associates of North Carolina, P.A.	
SUITES 220, LANDMARK CENTER #400 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244	
DWG. REF. NO. 16 OF 24	

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

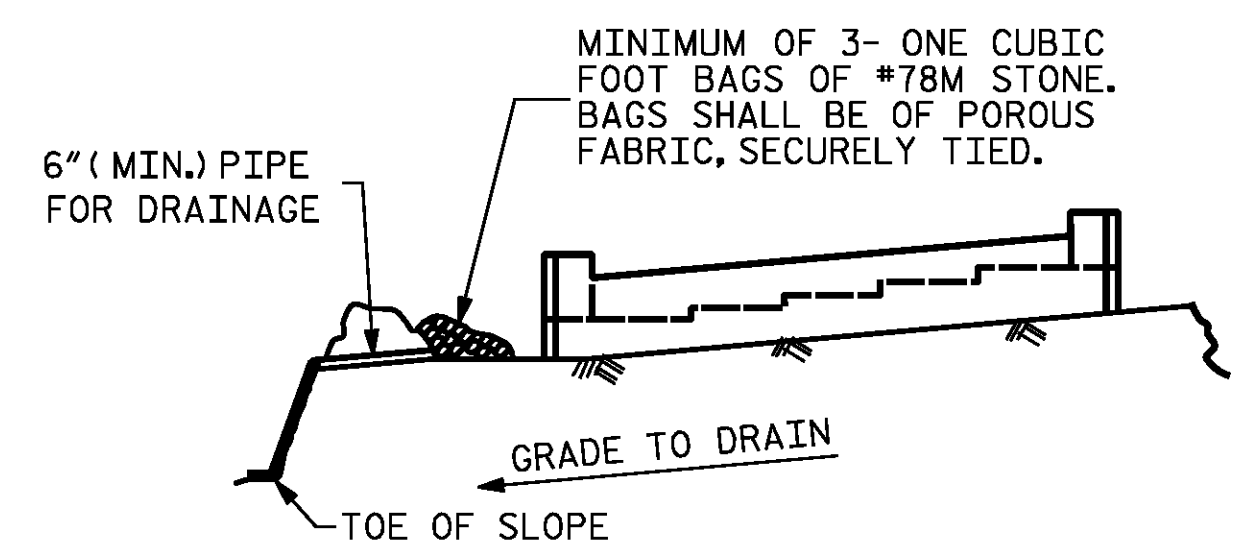
TOTAL SHEETS	SOI-24
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STR-#1



SECTION A-A

* THE TOP SURFACE OF THE CAP AND WINGS SHALL BE RAKED TO A DEPTH OF 1/4" EXCEPT THE BEARING AREAS AND CAP OUTSIDE OF SUPERSTRUCTURE.



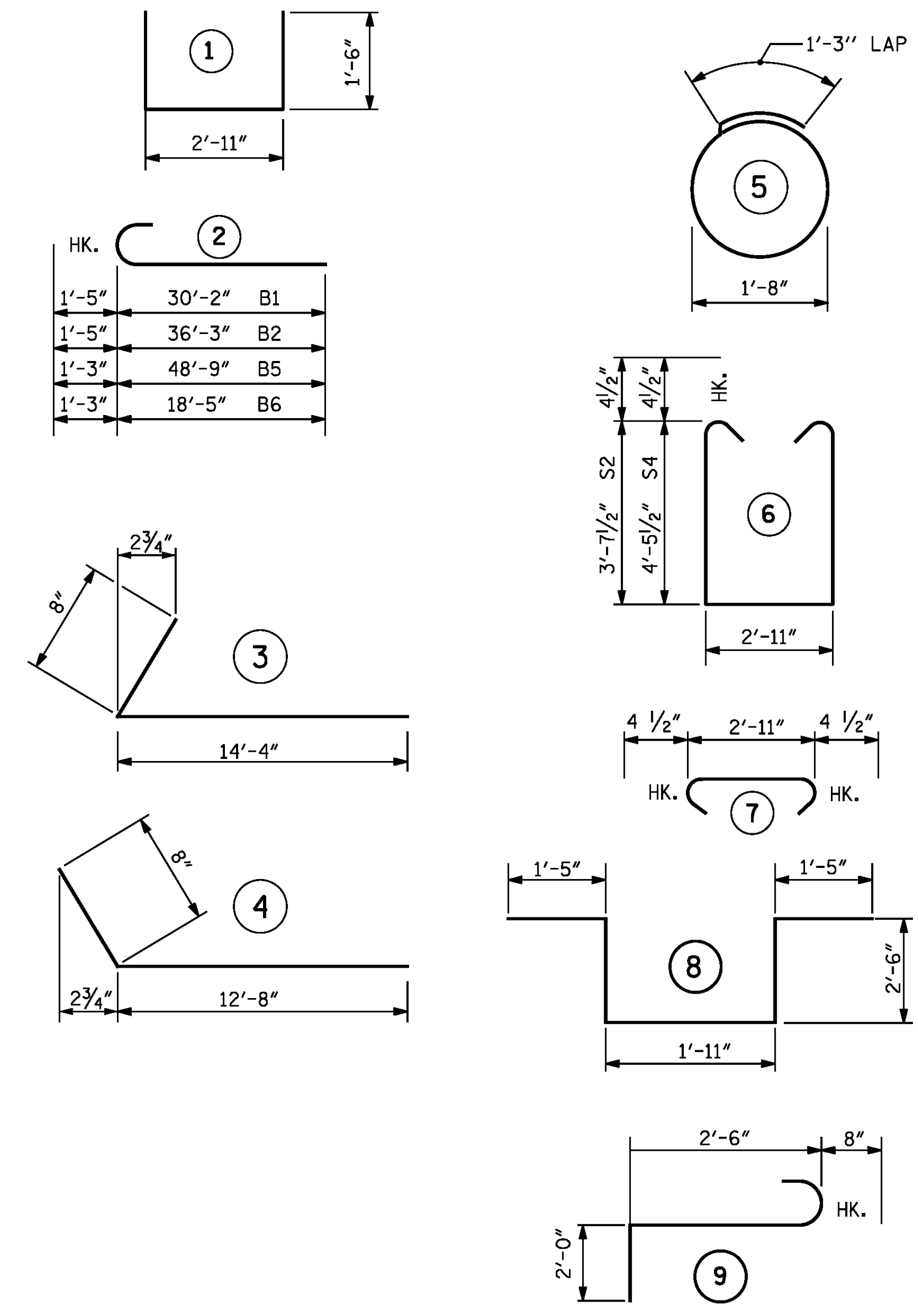
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT

BAR TYPES



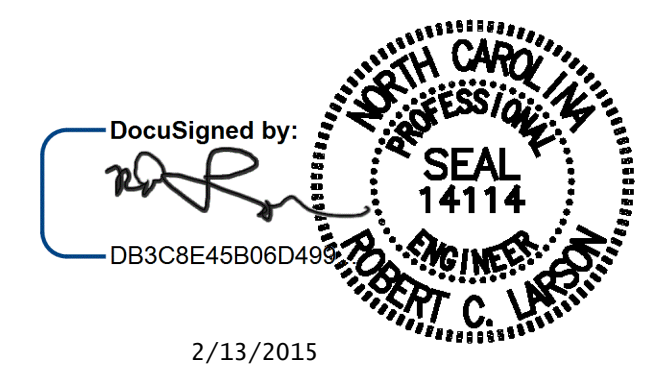
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	10	2	31'-7"	544
B2	4	10	2	37'-8"	648
B3	42	4	STR.	21'-1"	592
B4	15	4	STR.	2'-11"	29
B5	5	9	2	50'-0"	850
B6	5	9	2	19'-8"	334
B7	5	4	STR.	12'-0"	40
B8	2	4	STR.	12'-2"	16
D1	80	4	STR.	7'-0"	374
H1	44	6	4	13'-4"	881
H2	26	4	3	15'-0"	261
K1	20	4	STR.	2'-10"	38
S1	40	4	5	6'-6"	174
S2	30	4	6	10'-11"	219
S3	45	4	7	3'-8"	110
S4	15	4	6	12'-7"	126
S5	3	6	8	9'-9"	44
S6	3	6	9	5'-2"	23
U1	8	4	1	5'-11"	32
V1	32	5	STR.	11'-0"	367
V2	36	5	STR.	12'-3"	460
REINFORCING STEEL, LB					6162
CLASS A CONCRETE, CY POUR 1					35.5
(POUR 2 INCLUDED IN SUPERSTRUCTURE)					
12" PRESTRESSED CONC. PILES					NO. 11 LF 605
PILE REDRIVES, EA					5
NOTE: PILE HEADS HAVE BEEN DEDUCTED FROM CLASS A CONCRETE					

DocuSigned by:

 DB3C8E45B06D499...
 DESIGN ENGINEER OF RECORD: DATE: 2/13/2015
 DRAWN BY: R. J. FLORY DATE: 03/27/14
 CHECKED BY: R. C. LARSON DATE: 04/15/14



2/13/2015

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 DWG. REF. NO. 17 OF 24

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 3 OF 3

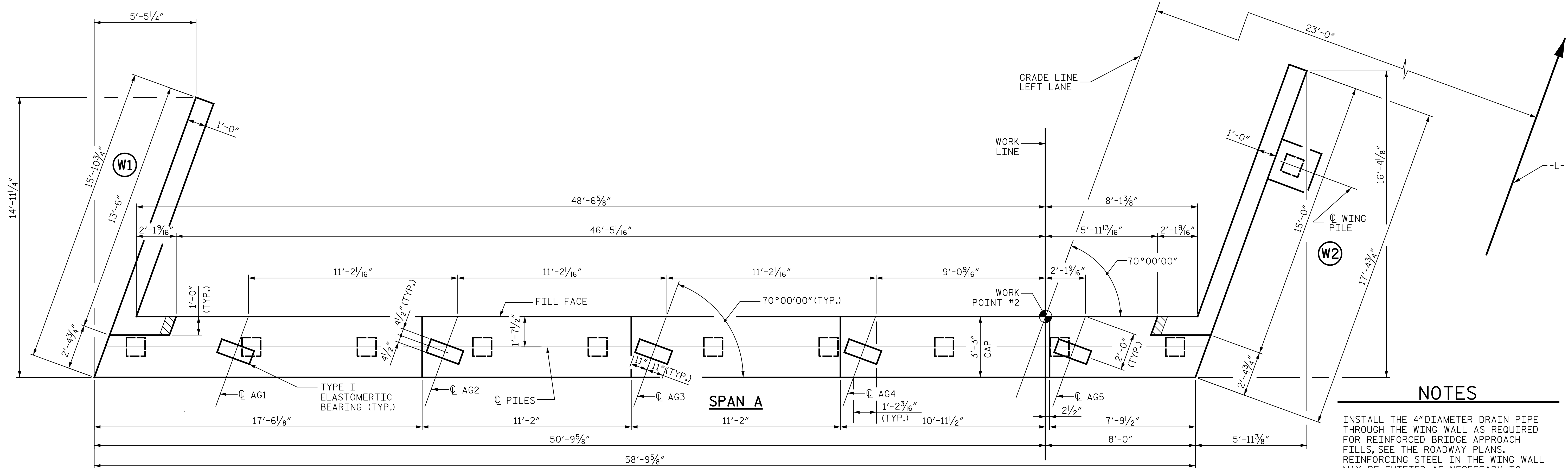
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 1**

LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SOI-17
1			3			TOTAL SHEETS
2			4			SOI-24

STR-#1



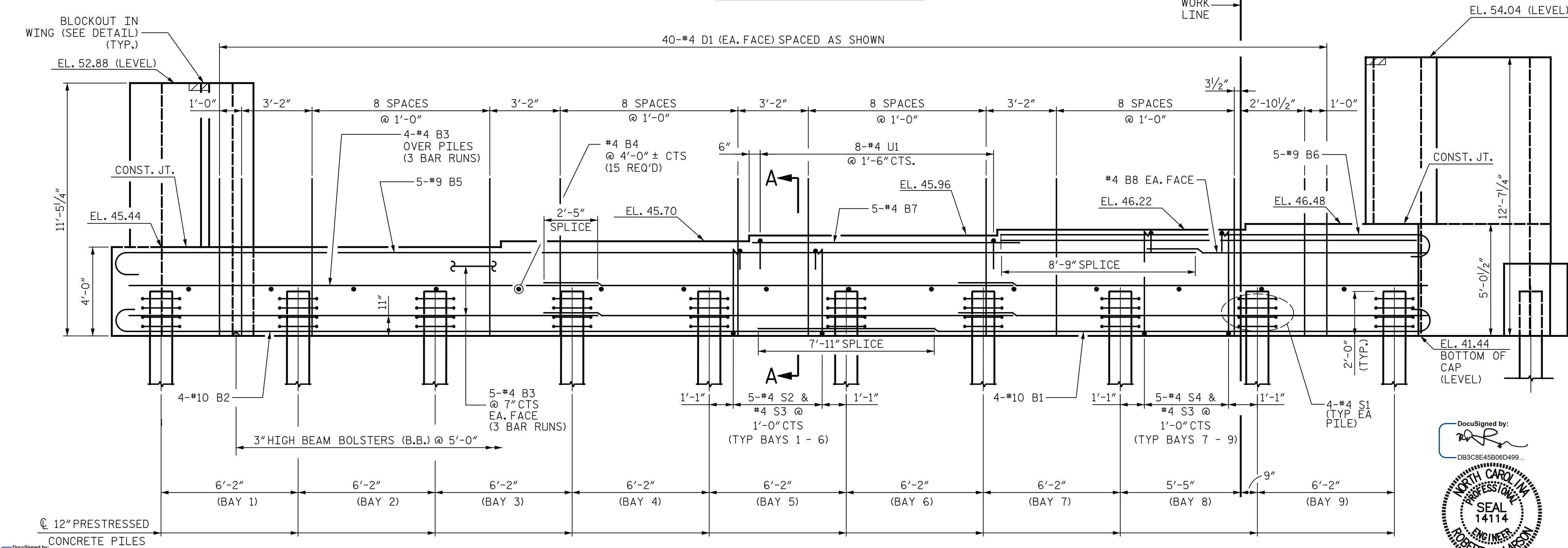
PLAN OF CAP

NOTES

INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

THE PORTIONS OF THE WINGS ABOVE THE CONSTRUCTION JOINT ARE TO BE POURED WITH THE SUPERSTRUCTURE. AT THE CONTRACTOR'S OPTION, THESE PORTIONS MAY BE POURED SEPARATELY FROM THE SUPERSTRUCTURE, IN WHICH CASE CLASS 'A' CONCRETE MAY BE USED.

FOR "TEMPORARY DRAINAGE AT END BENT", SEE END BENT 1.



ELEVATION

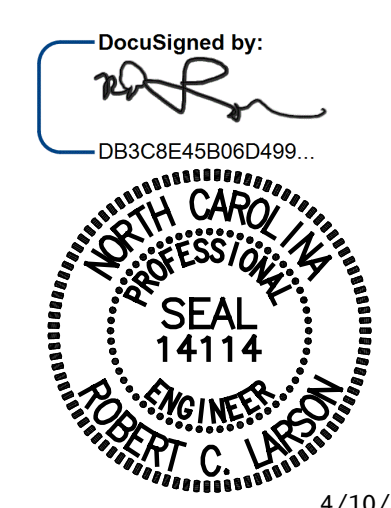
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 2**

LEFT LANE



DESIGN ENGINEER OF RECORD: DATE: 4/10/2015

DRAWN BY: R. J. FLORY DATE: 03/20/14

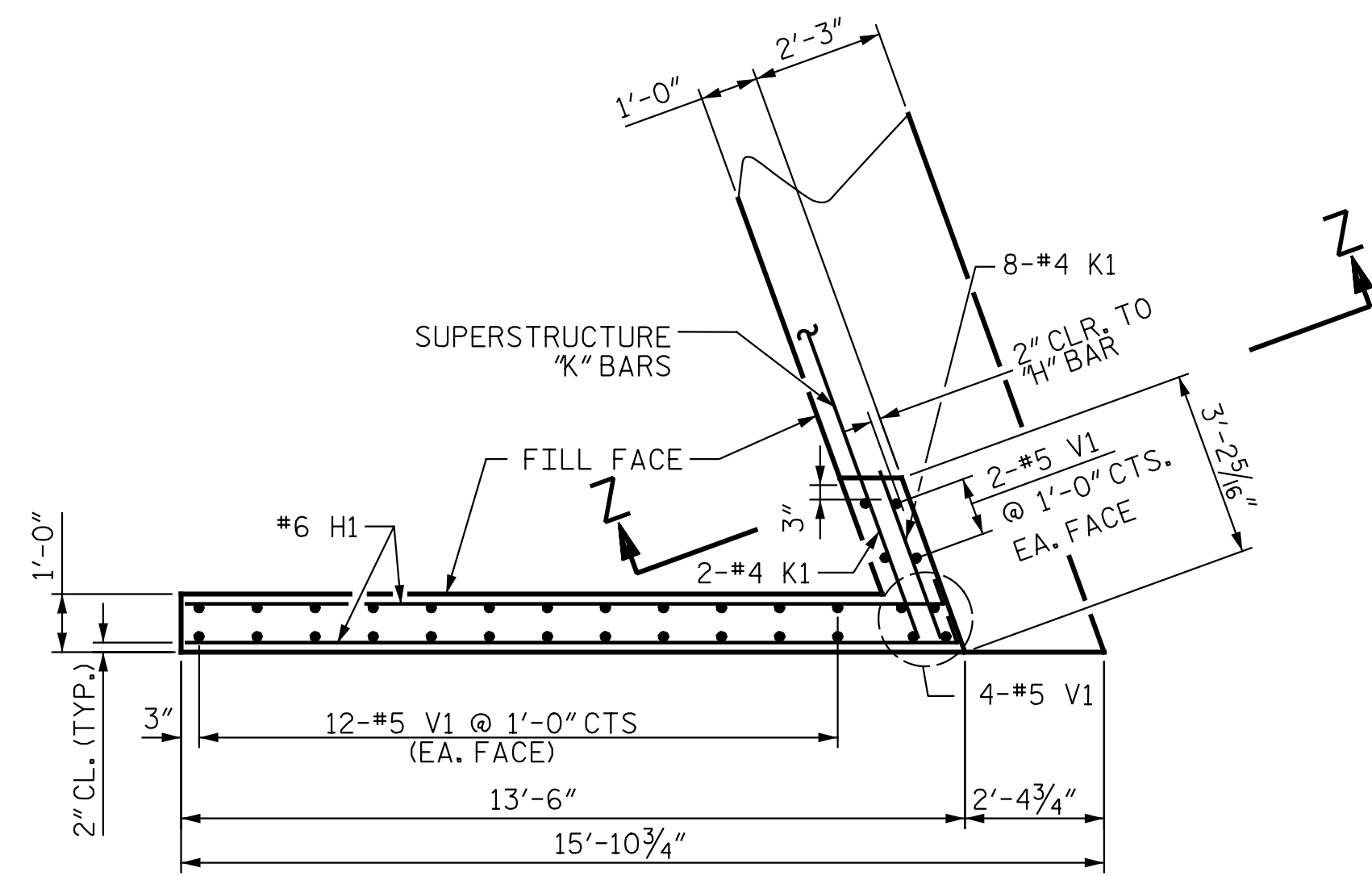
CHECKED BY: R. C. LARSON DATE: 04/15/14

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 18 OF 24

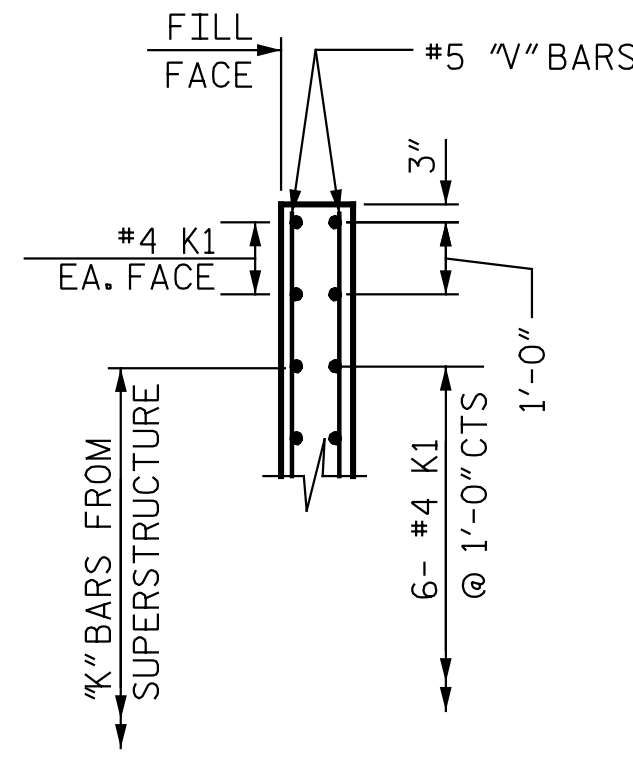
REVISIONS		SHEET NO.	
NO.	DATE	NO.	BY
1		3	
2		4	

TOTAL SHEETS: 3
 SOI-24

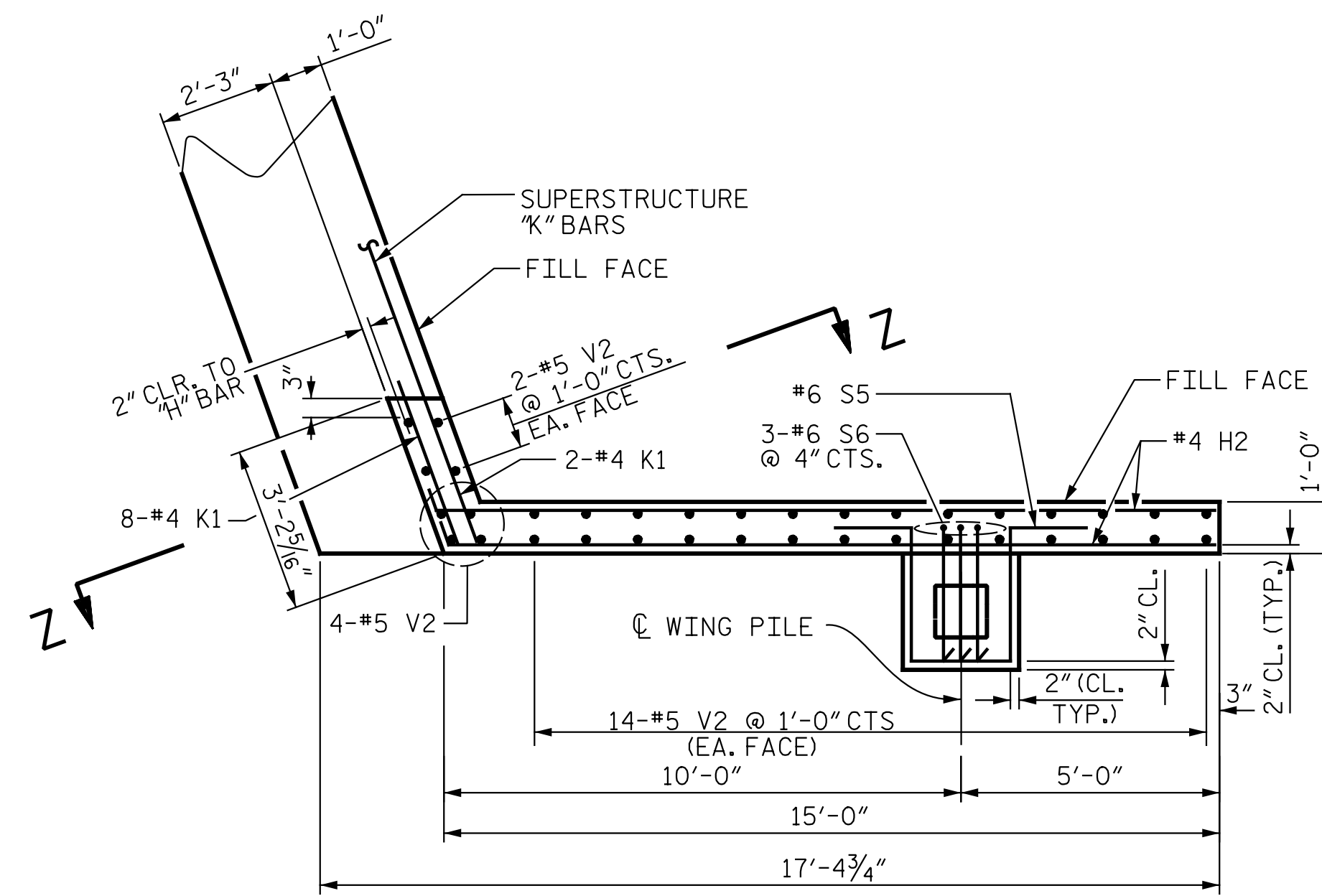
STR-#1



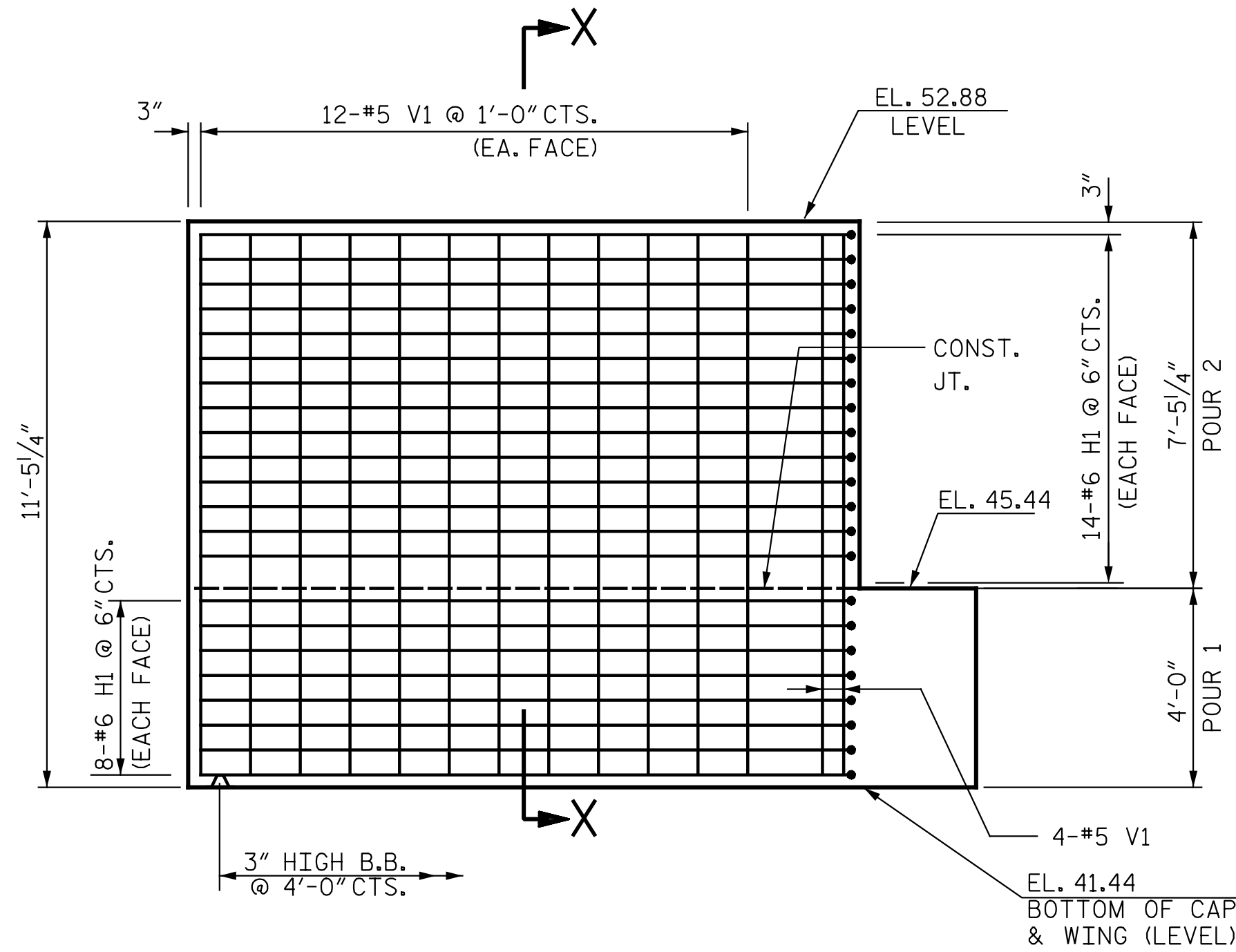
PLAN W1



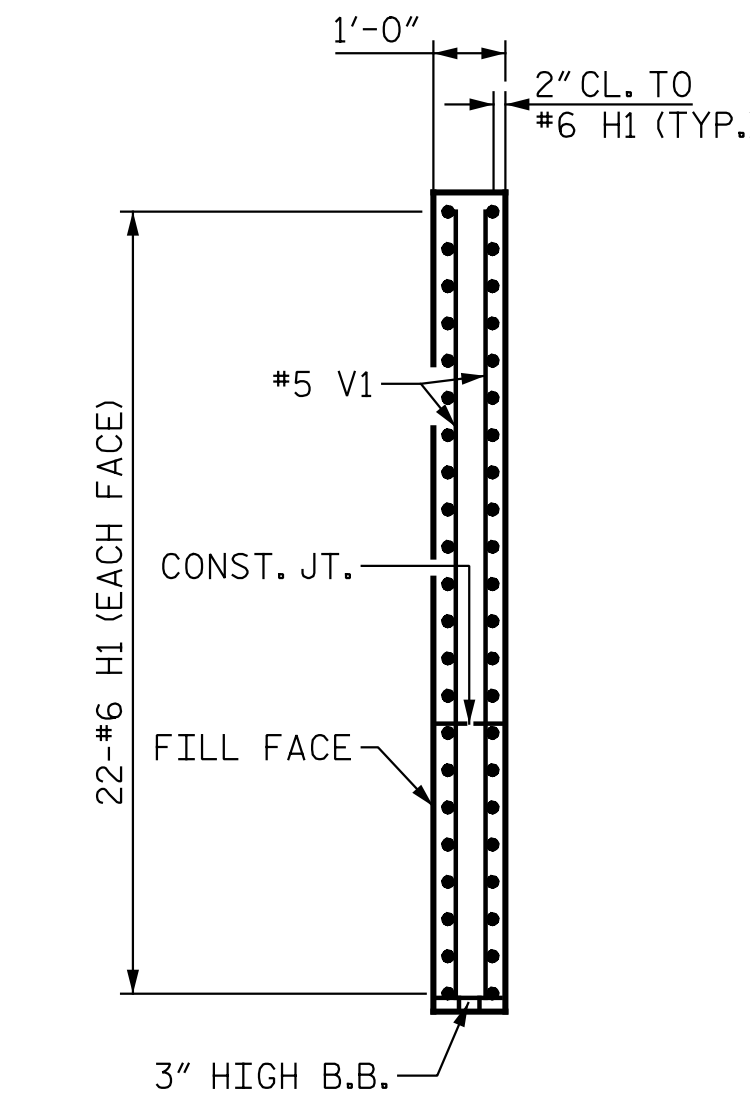
SECTION Z-Z



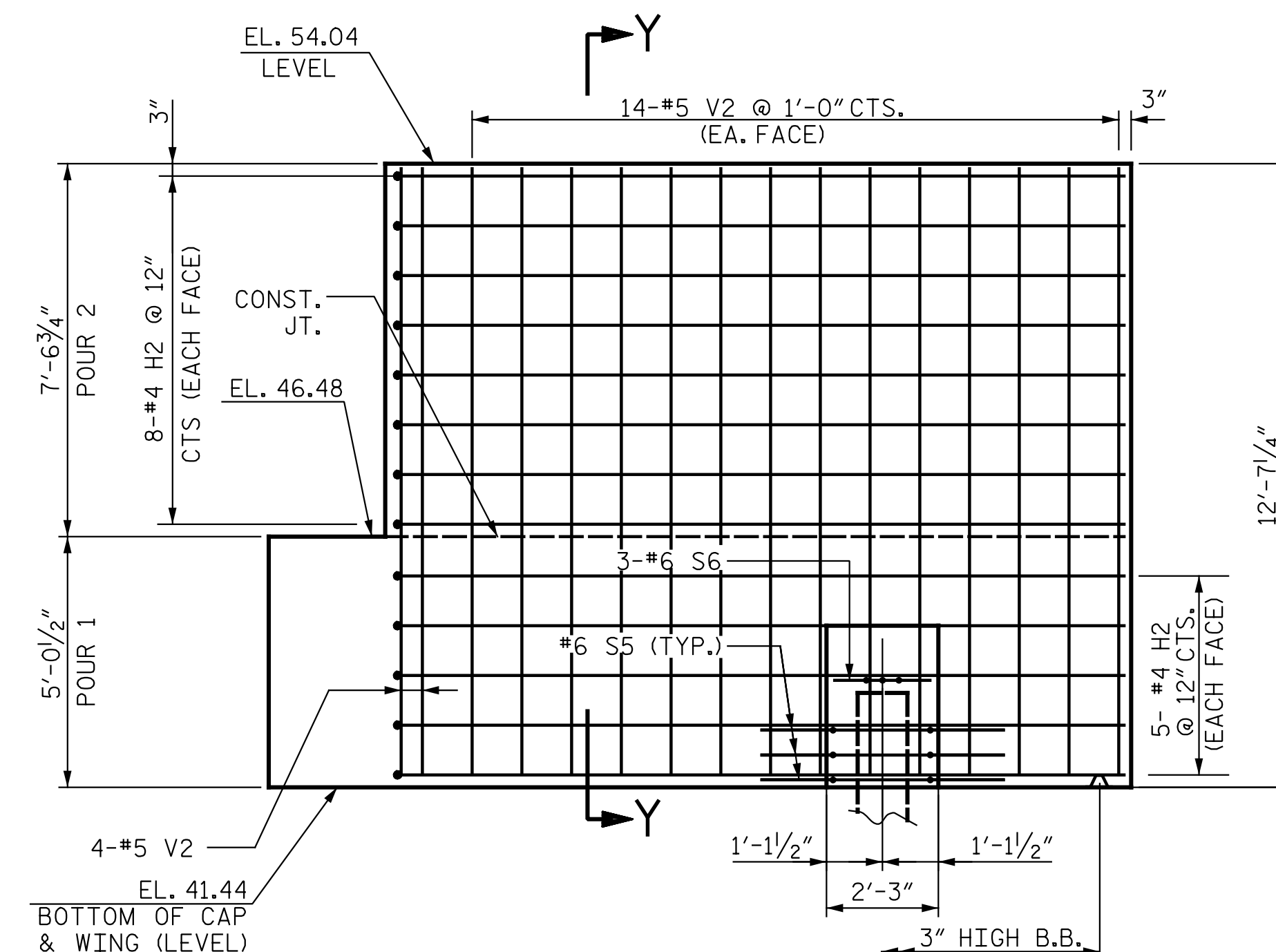
PLAN W2



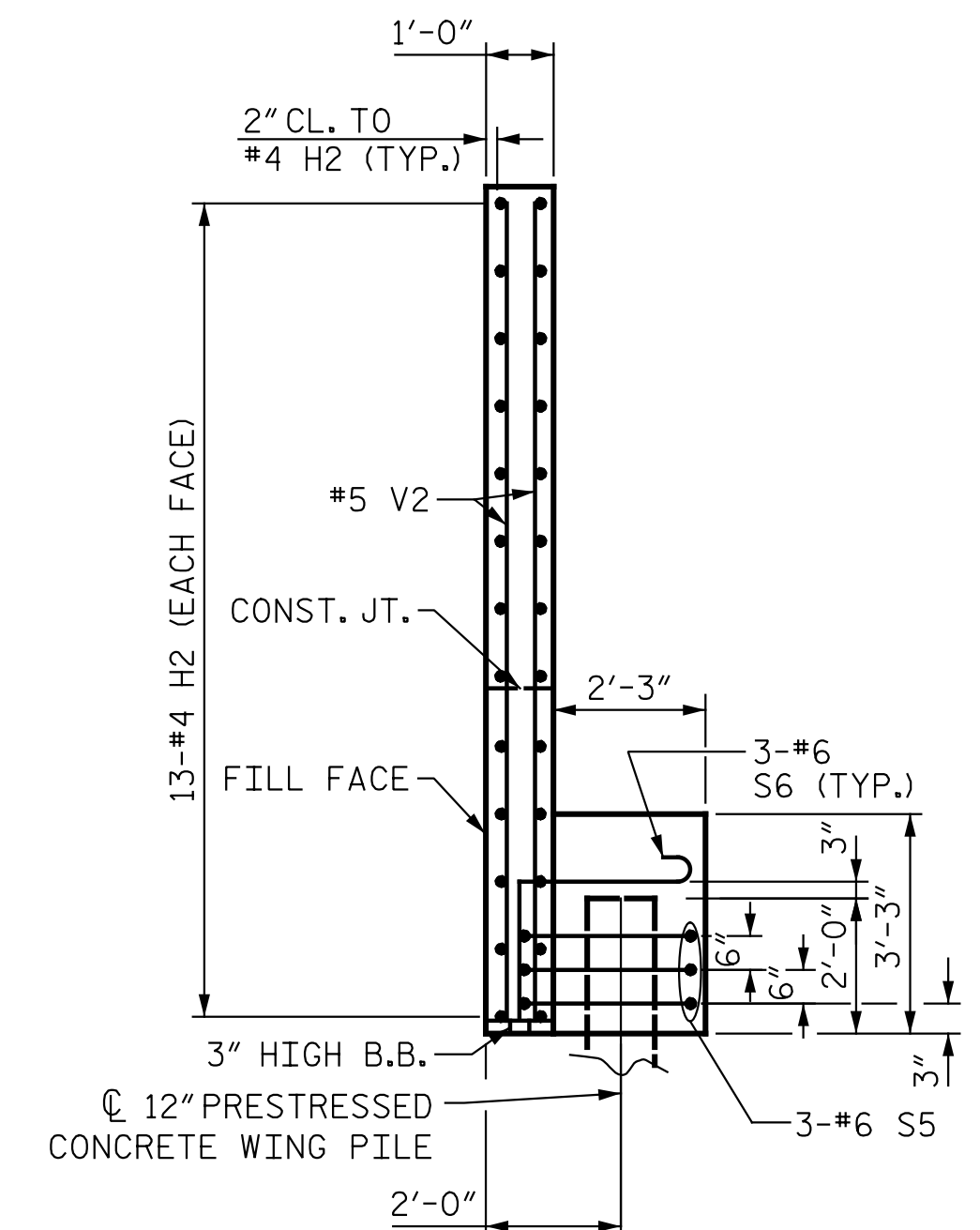
ELEVATION W1



SECTION X-X



ELEVATION W2



SECTION Y-Y

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2

LEFT LANE



4/10/2015

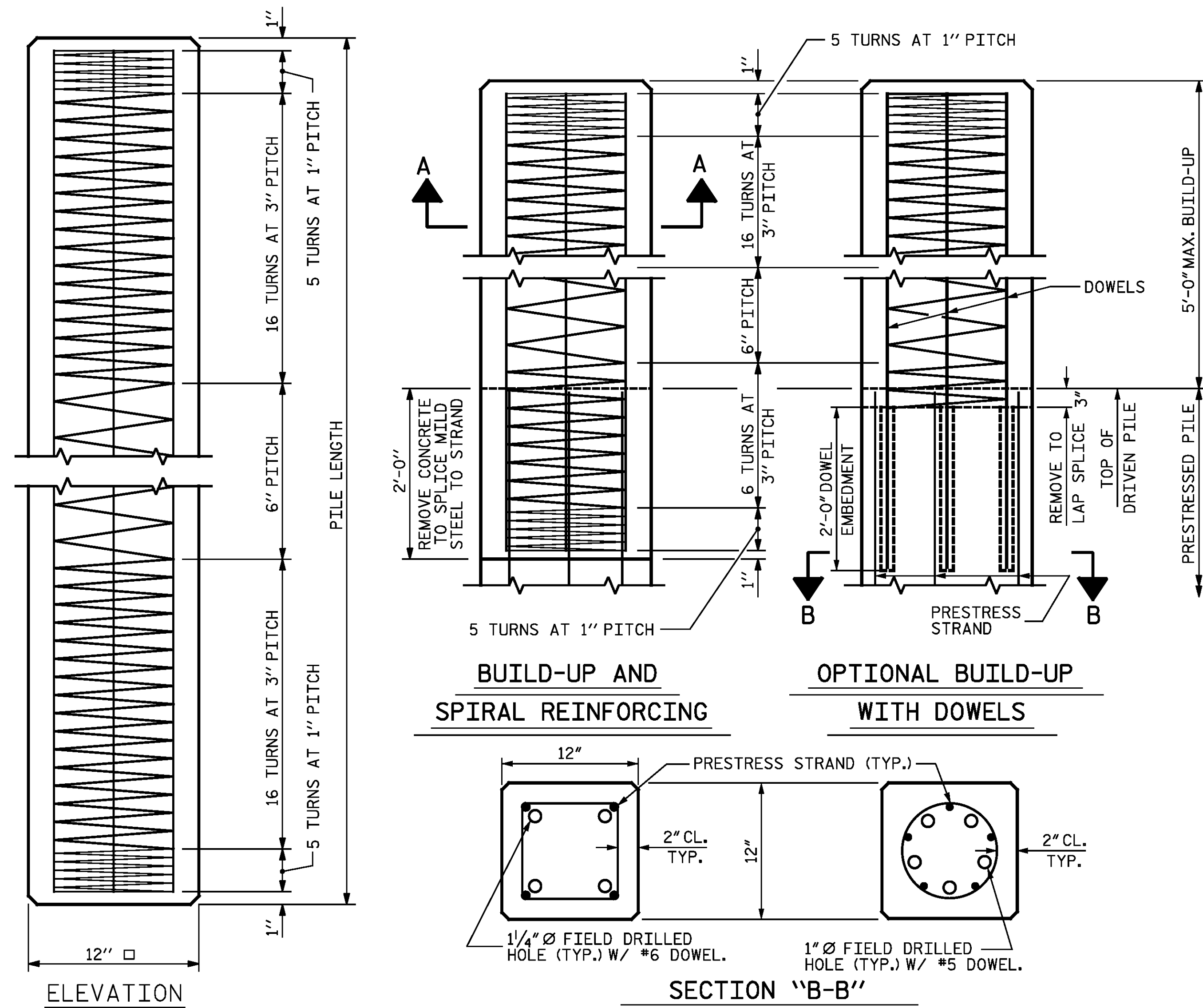
DESIGN ENGINEER OF RECORD:	DATE :	4/10/2015
DRAWN BY :	DATE :	02/19/14
CHECKED BY :	DATE :	04/15/14

KCI Associates of North Carolina, P.A.					
SUTE 220, LANDMARK CENTER # 400 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244					
DWG. REF. NO. 19 OF 24					

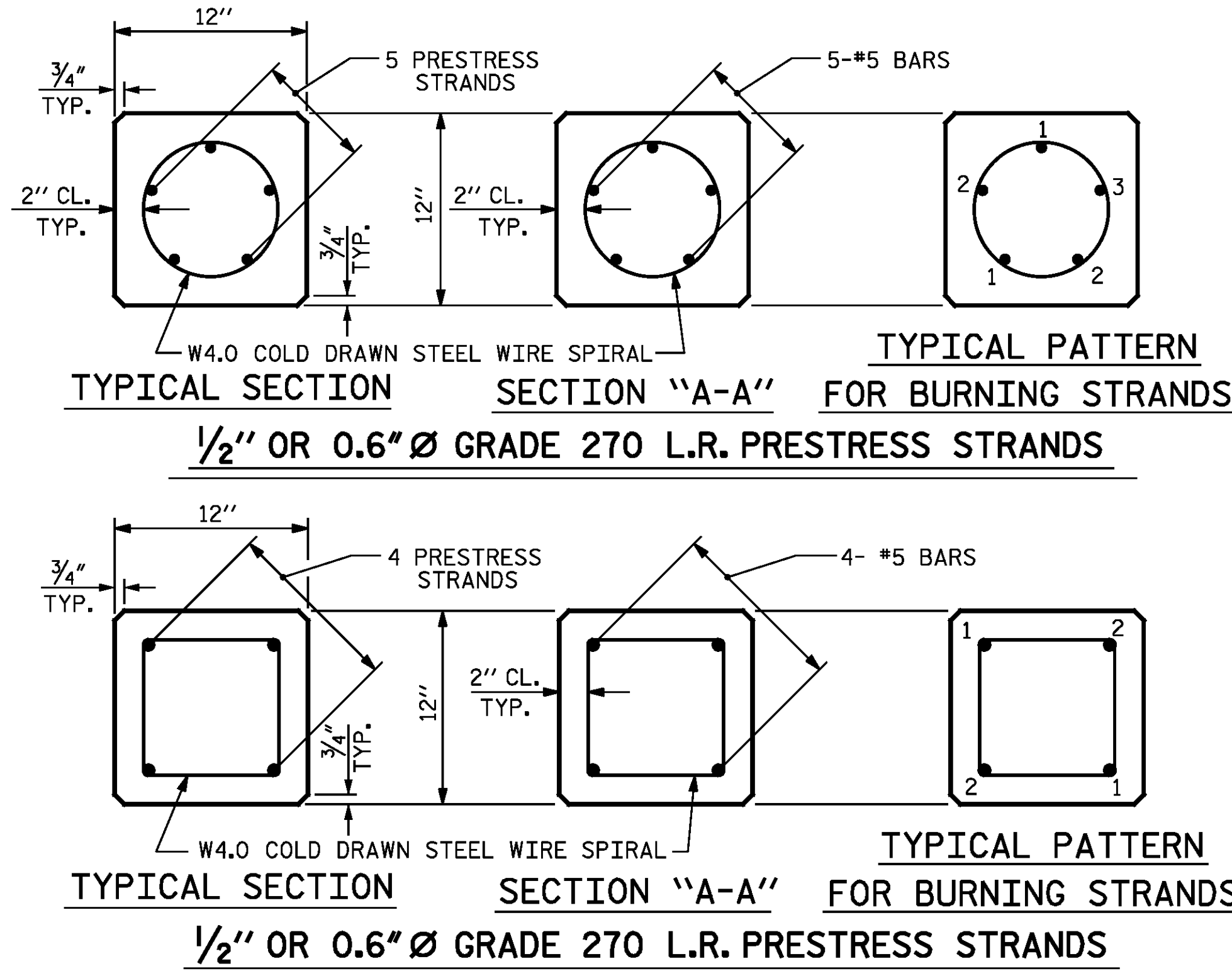
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.	SOI-19
TOTAL SHEETS	SOI-24

STR-#1



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



NOTES

PRESTRESSED CONCRETE STRENGTH : $f'_c = 7,500$ PSI
 BUILD-UP CONCRETE STRENGTH : $f'_c = 7,500$ PSI

STRAND DATA:

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
1/2"	270 L.R.	0.153	41,300* PER STRAND	30,980* PER STRAND
0.6"	270 L.R.	0.217	58,600* PER STRAND	43,940* PER STRAND

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

AT THE CONTRACTOR'S OPTION, 1/2" OR 0.6" STRANDS MAY BE USED IN EITHER THE 4 OR 5 STRAND CONFIGURATION SHOWN IN THE TYPICAL SECTION DETAIL. MIXING OF STRAND SIZE IS NOT ALLOWED.

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

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

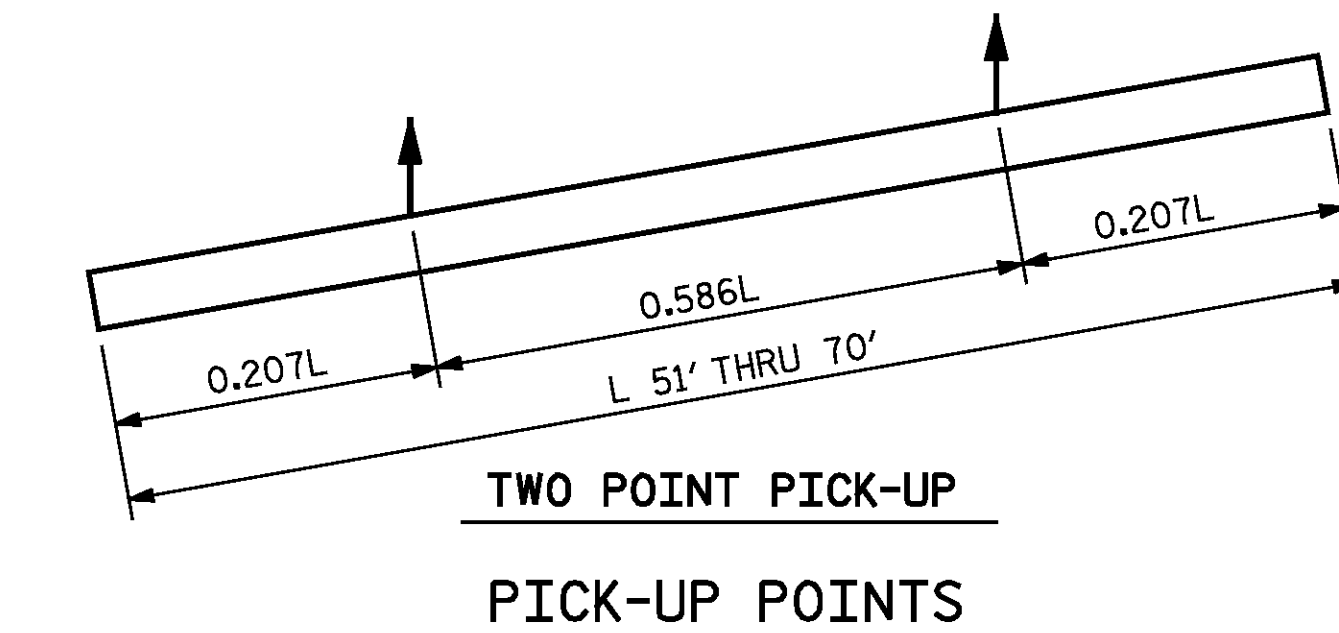
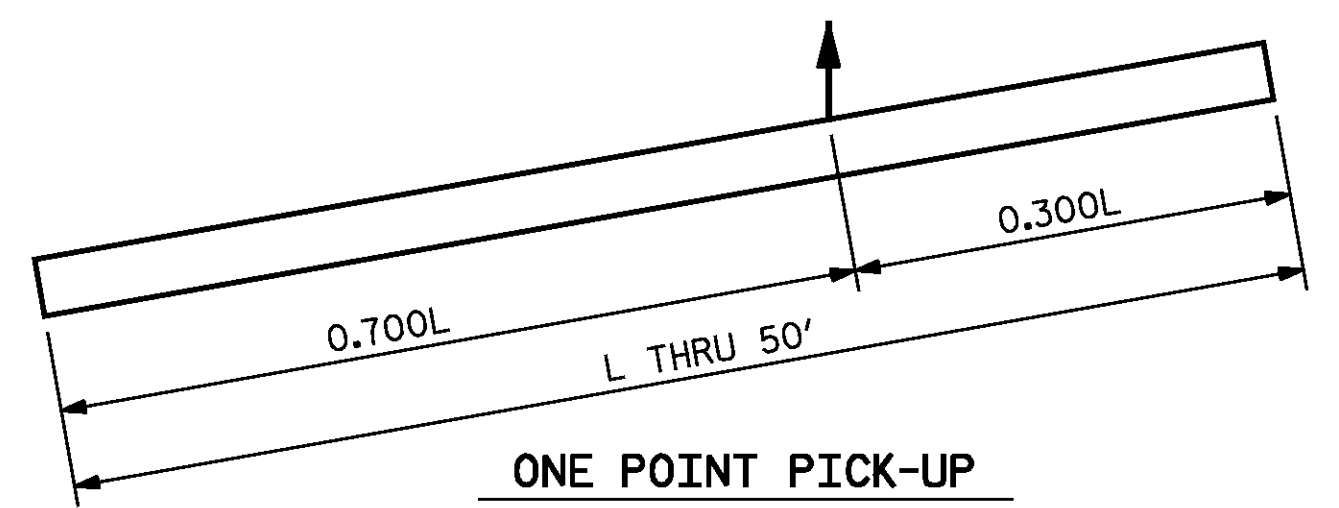
IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN PAIRS, EXCEPT WHERE 5 STRANDS ARE USED, THE LAST STRAND MAY BE BURNED SINGLY ACCORDING TO BURNING PATTERNS SHOWN. NOT MORE THAN 4 STRANDS MAY BE BURNED AT ANY ONE SECTION BEFORE THE SAME STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

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

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

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

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



DOWEL INSTALLATION FOR OPTIONAL BUILD-UP

GROUT COMPRESSIVE STRENGTH: $f'_c = 5,000$ PSI

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

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

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

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

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

STEEL PILE TIP DETAILS

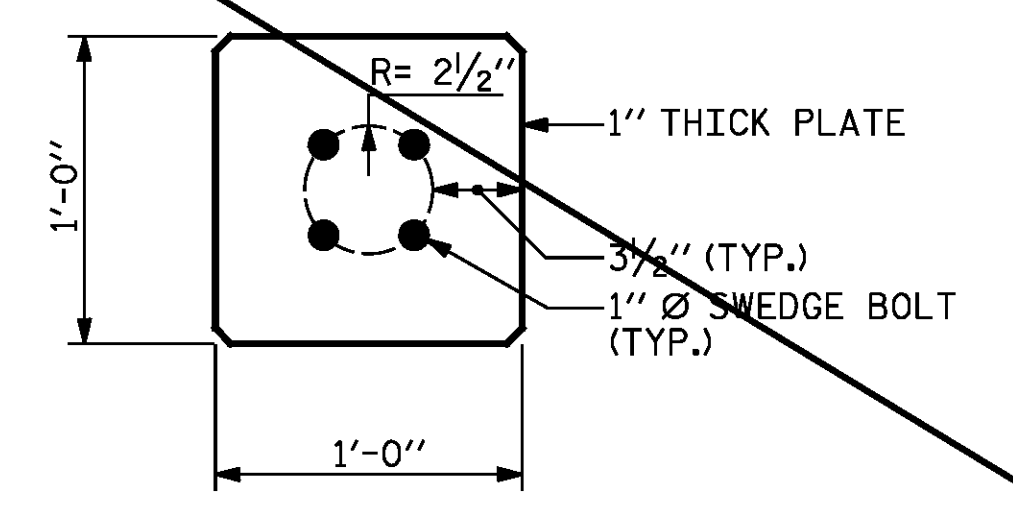
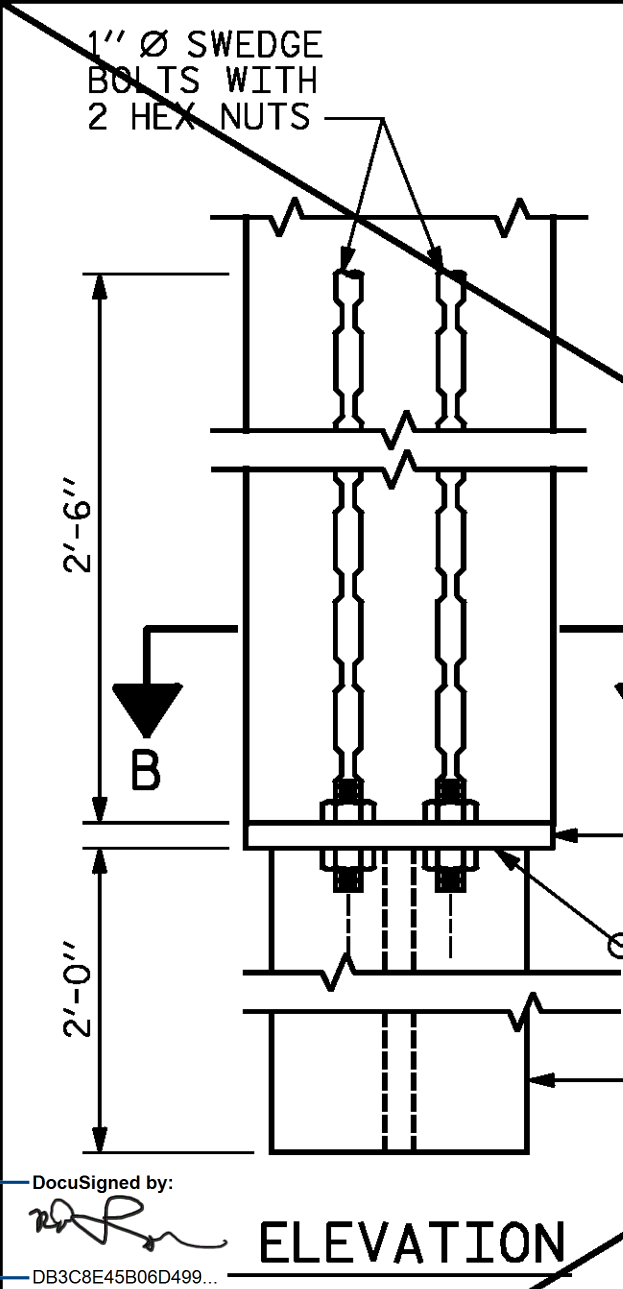
NOTES

PLATE AND SWEDGE BOLTS SHALL MEET THE REQUIREMENTS OF AASHTO M270 GRADE 36. THREADS OF THE SWEDGE BOLTS SHALL BE BURRED AT THE FACE OF THE NUT.

PILE SHALL BE CAST WITH SWEDGE BOLTS AND PLATE IN PLACE.

FOR SPIRAL REINFORCING AND PRESTRESSING STRAND DETAILS, SEE STANDARD 12" PRESTRESSED CONCRETE PILE ELEVATION AND TYPICAL SECTION.

* EXCEPT AS NOTED BELOW, THE HP 10 X 57 SECTION SHALL BE WELDED TO THE STEEL PLATE AFTER STRAND STRESS IS RELIEVED. THE HP 10 X 57 SECTION MAY BE WELDED IN THE PRESTRESSER'S YARD OR IN THE FIELD, WHEN A CIRCULAR STRAND PATTERN AS SHOWN ON THE PLANS IS USED, THE CONTRACTOR, AT HIS OPTION, MAY WELD THE HP 10 X 57 SECTION TO THE STEEL PLATE AT THE FABRICATION PLANT PRIOR TO PLACING THE CONCRETE. THE FLANGES OF THE HP SECTION SHALL BE PARALLEL TO THE EDGES OF THE STEEL PLATE AND CONCRETE PILE.



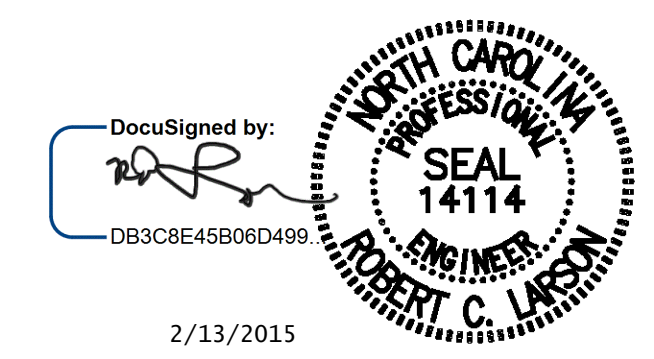
QUANTITIES FOR ONE 12" PRESTRESSED PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE POINT PICK-UP		TWO POINT PICK-UP	
			0.300L	0.700L	0.207L	0.586L
25'-0"	0.91	1.85	7'-6"	17'-6"		
30'-0"	1.10	2.22	9'-0"	21'-0"		
35'-0"	1.28	2.59	10'-6"	24'-6"		
40'-0"	1.46	2.96	12'-0"	28'-0"		
45'-0"	1.64	3.33	13'-6"	31'-6"		
50'-0"	1.83	3.72	15'-0"	35'-0"		
55'-0"	2.01	4.09			11'-4 1/2"	32'-3"
60'-0"	2.19	4.46			12'-5"	35'-2"
65'-0"	2.38	4.81			13'-5 1/2"	38'-1"
70'-0"	2.57	5.18			14'-6"	41'-0"

DESIGN ENGINEER OF RECORD: DATE: 2/13/2015

DRAWN BY: E. C. DECOLA DATE: 03/06/14
 CHECKED BY: R. C. LARSON DATE: 03/24/14

DRAWN BY: FCJ 7/88 REV. 5/1/06R TLA/GM
 CHECKED BY: CRK 3/89 REV. 11/30/10 WMC/GM
 REV. 10/1/11 MAA/GM



PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

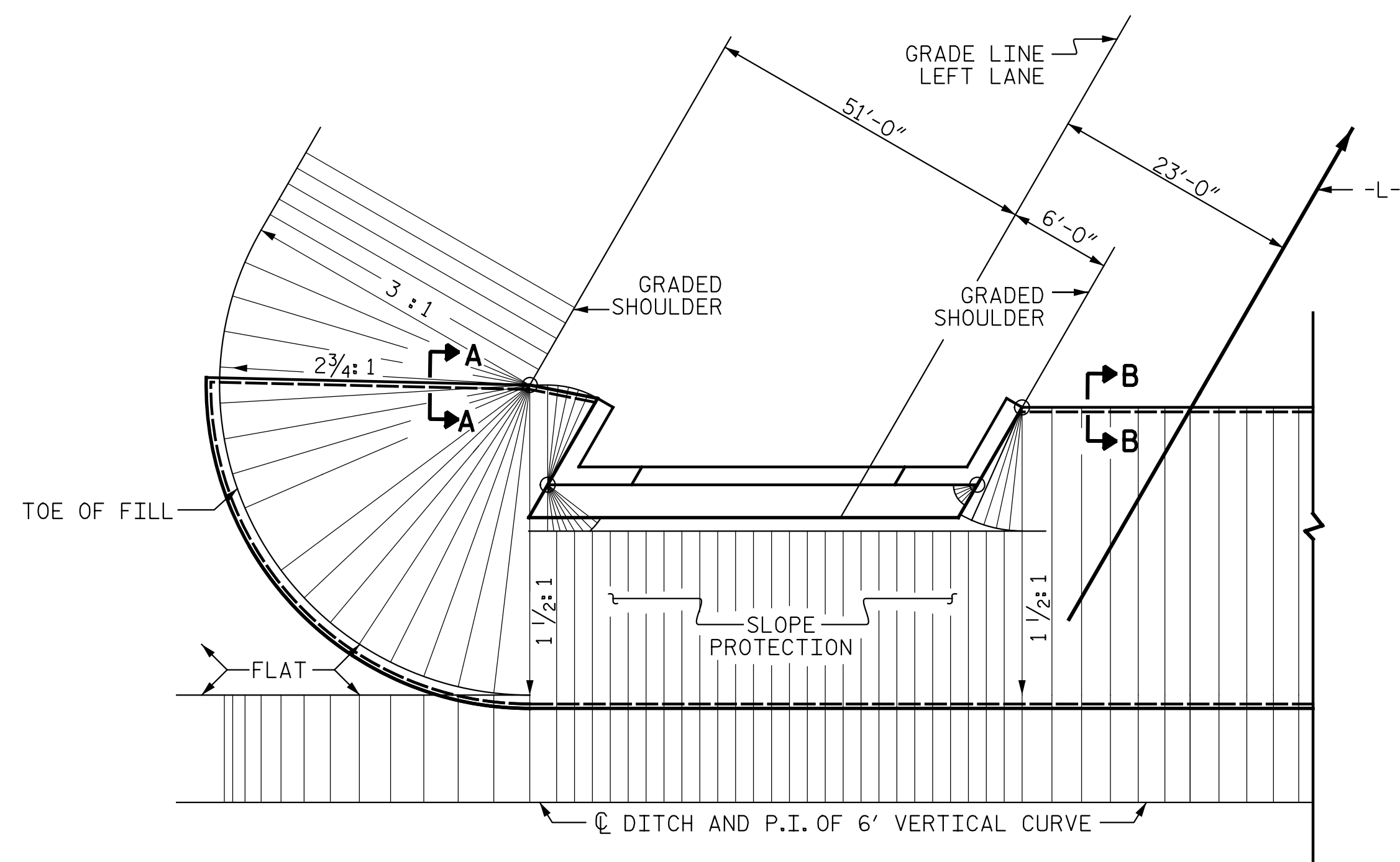
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

12" PRESTRESSED CONCRETE PILES

STD. NO. PCP1 LEFT LANE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SOI-21
1			3			TOTAL SHEETS SOI-24
2			4			

DWG. REF. NO. 21 OF 24



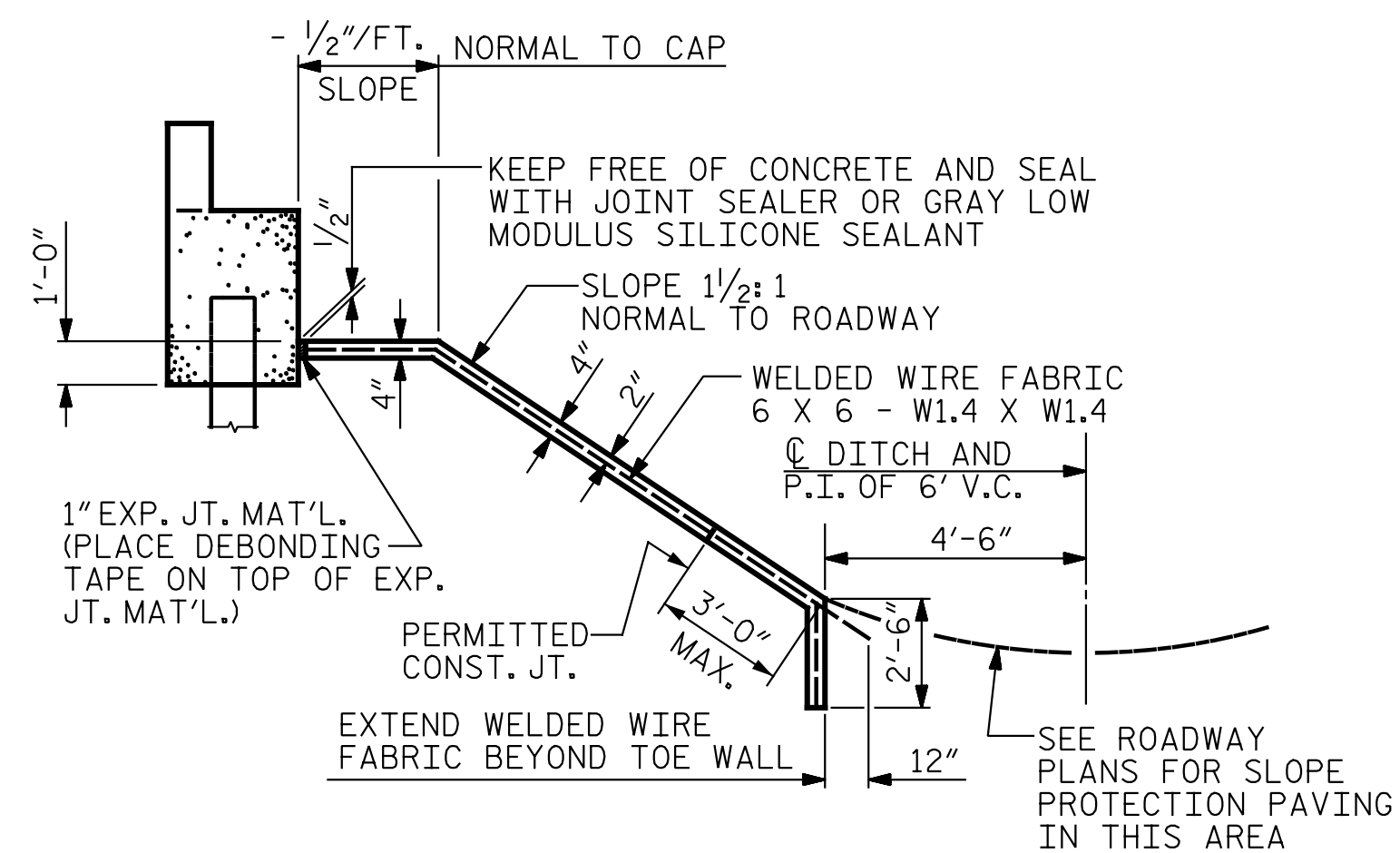
PLAN - END BENT WITH SWEEP BACK WINGS - SKEWED
(1 1/2:1 SLOPE)

BRIDGE @ STA. 320+39.56 LEFT LANE	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	335	675
END BENT 2	485	960

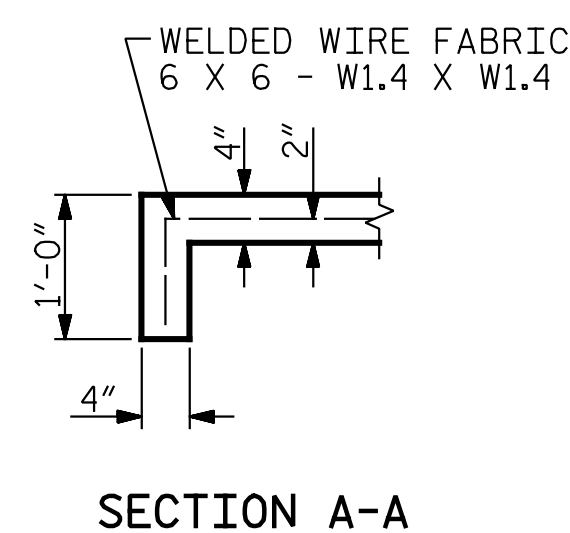
* QUANTITY SHOWN IS BASED ON 5' POURS.

GENERAL NOTES

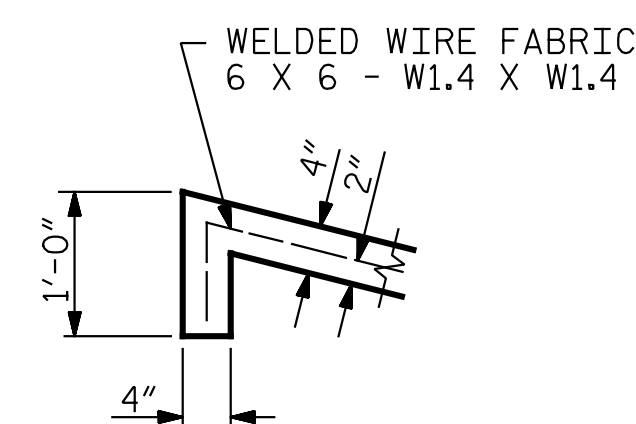
SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING. SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.



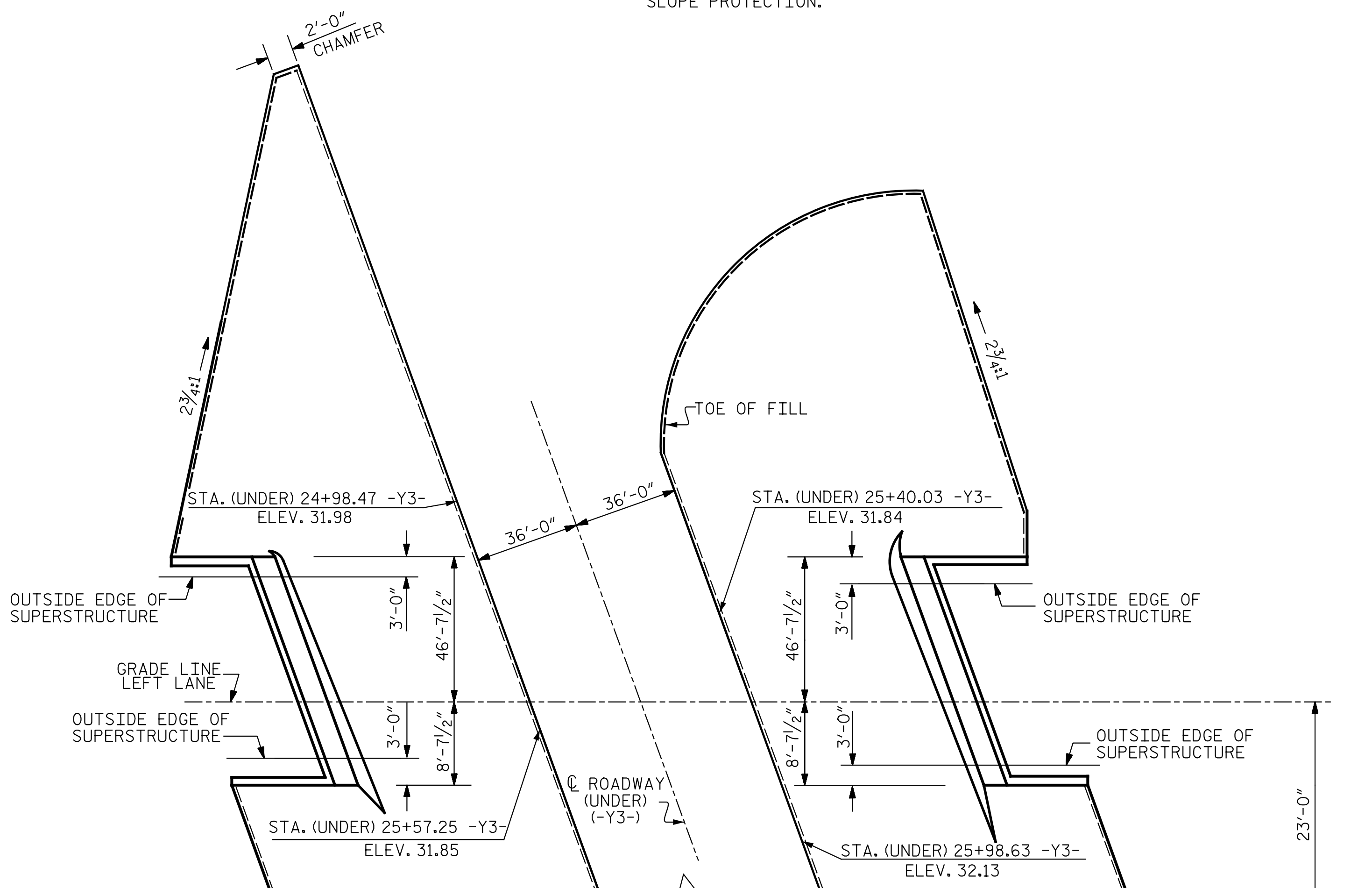
SECTION ALONG C ROADWAY WHEN FILL CATCHES IN DITCH



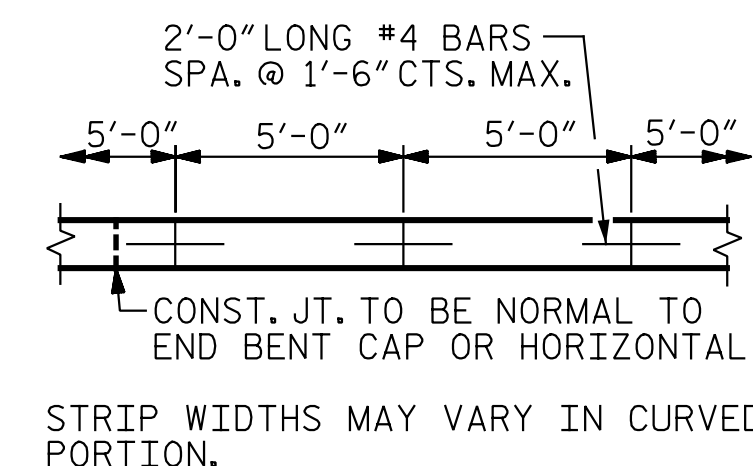
SECTION A-A



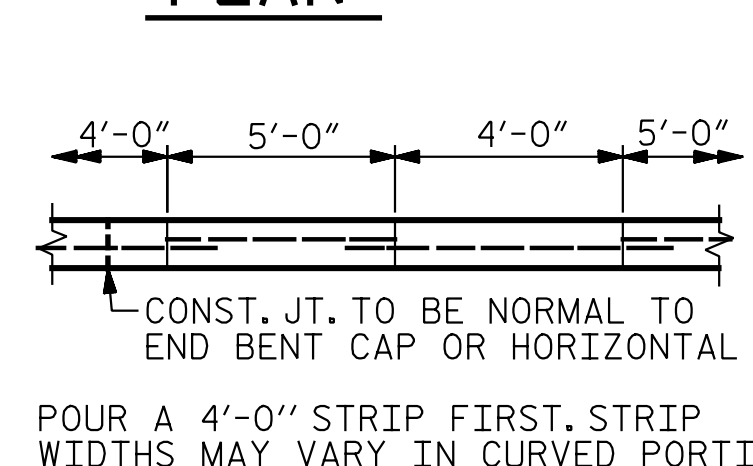
SECTION B-B



PLAN



POURING DETAIL

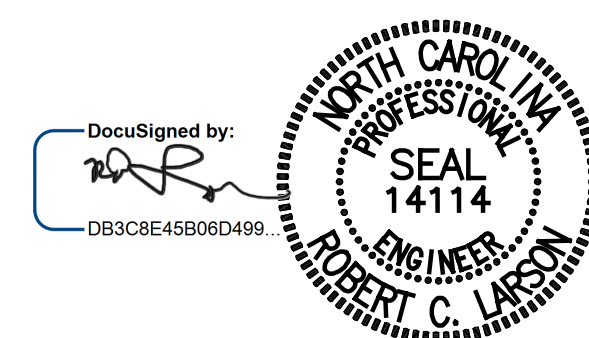


OPTIONAL POURING DETAIL

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

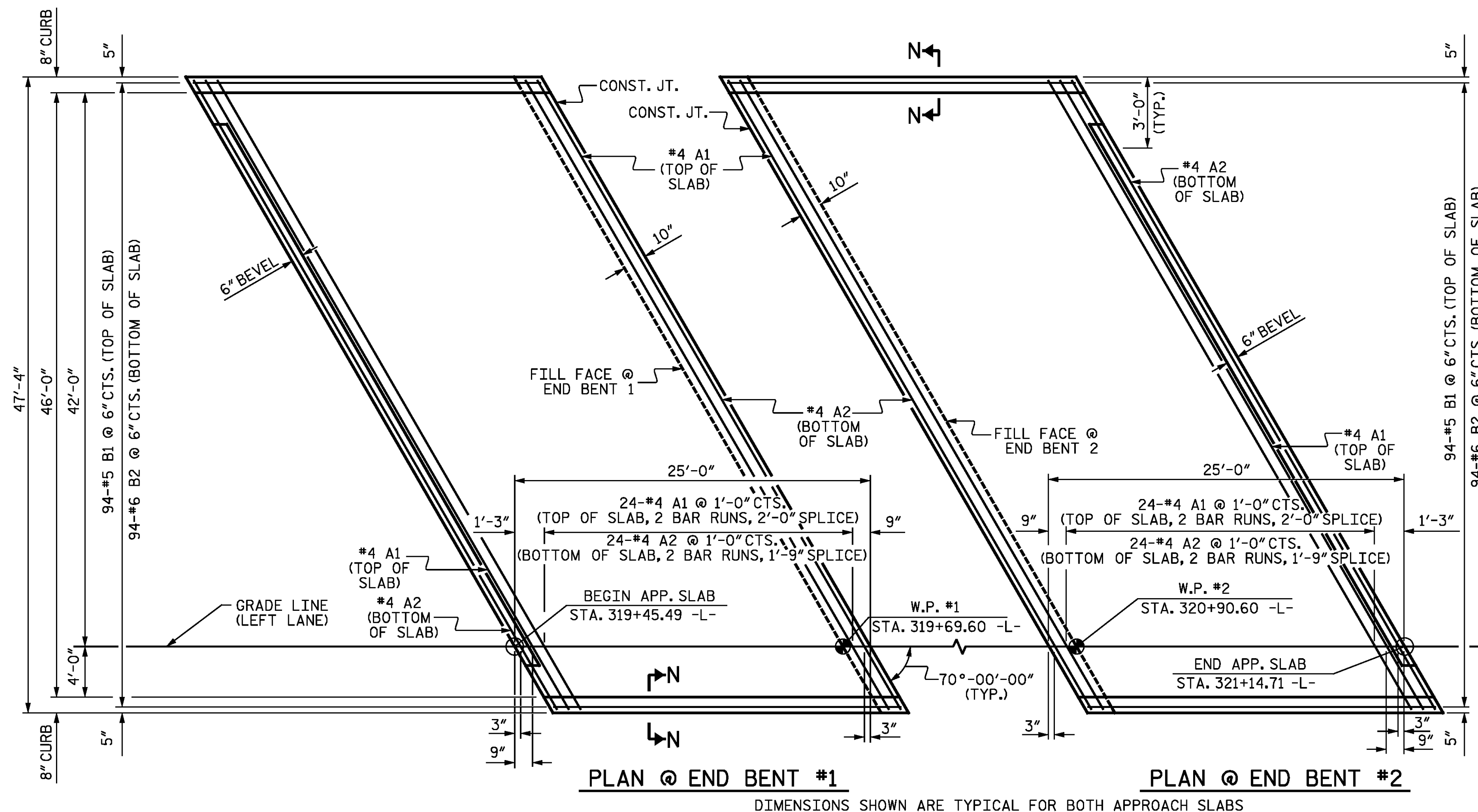
DETAILS FOR ALTERNATE "A"

DESIGN ENGINEER OF RECORD:	DATE:	3/10/2015
DRAWN BY: E. C. DECOLA	DATE:	04/02/14
CHECKED BY: R. C. LARSON	DATE:	04/24/14



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		SHEET NO. SOI-22	
SLOPE PROTECTION DETAILS		TOTAL SHEETS SOI-24	
STD. NO. SP1		LEFT LANE	
REVISIONS			
NO.	BY:	DATE:	NO.
1			3
2			4

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 22 OF 24



PLAN @ END BENT #1 PLAN @ END BENT #2
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

NOTES

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

FOR REINFORCED BRIDGE APPROACH FILL FABRIC WALL INCLUDING GEOTEXTILE, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.

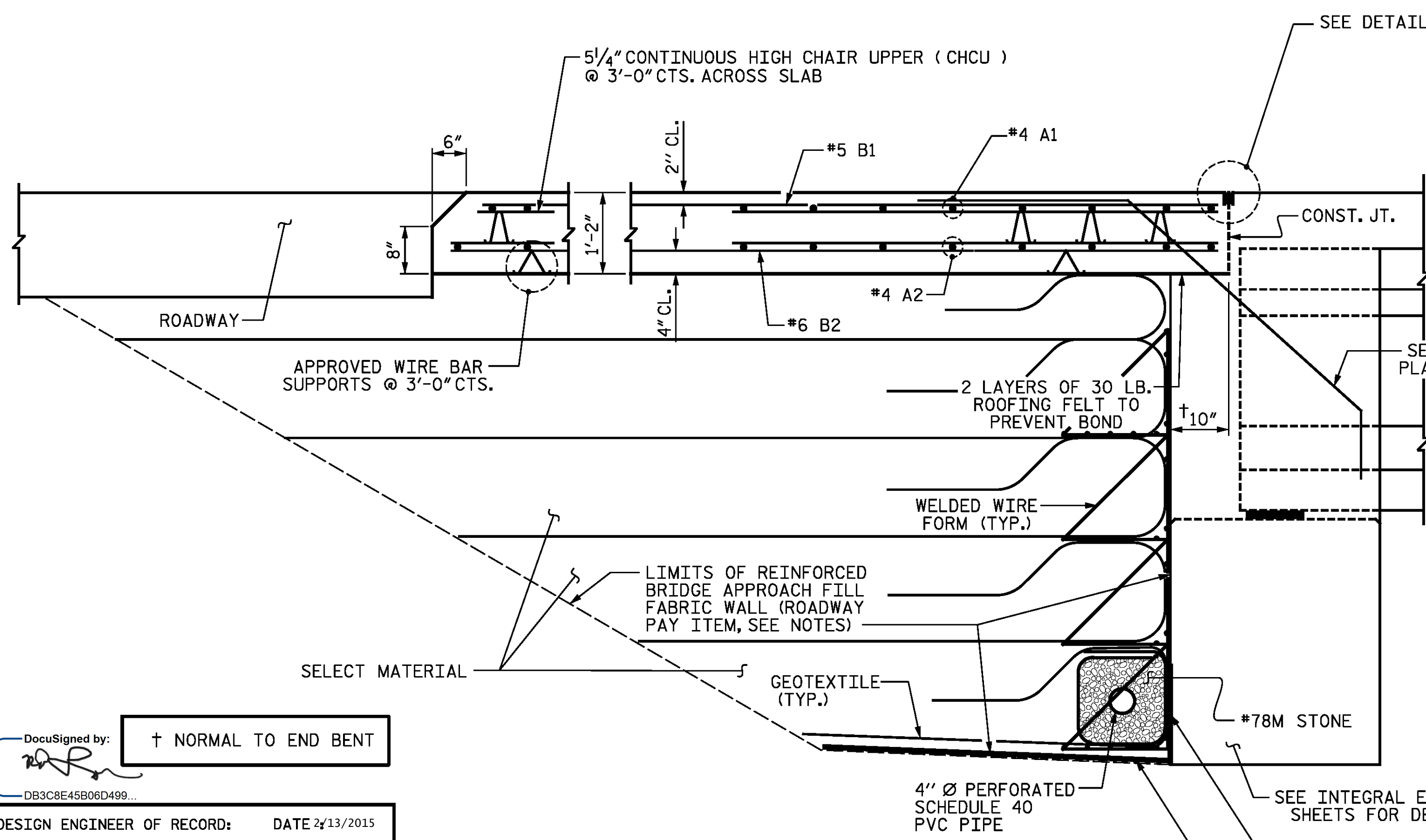
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

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

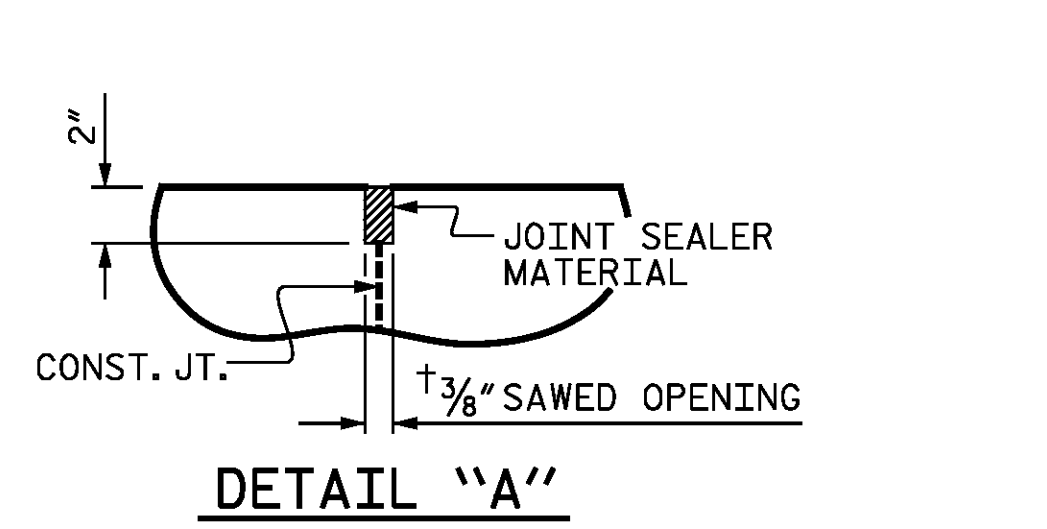
BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

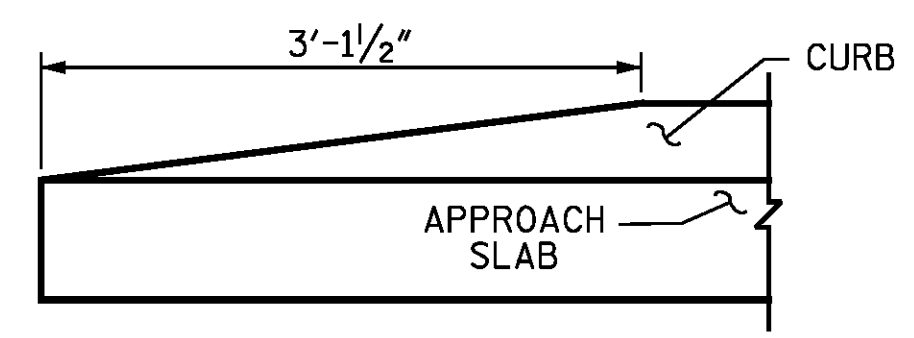
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	52	#4	STR	26'-0"	903
A2	52	#4	STR	25'-11"	900
* B1	94	#5	STR	24'-1"	2361
B2	94	#6	STR	24'-7"	3471
REINFORCING STEEL					4371 LBS.
* EPOXY COATED REINFORCING STEEL					3264 LBS.
CLASS AA CONCRETE					51.2 C. Y.



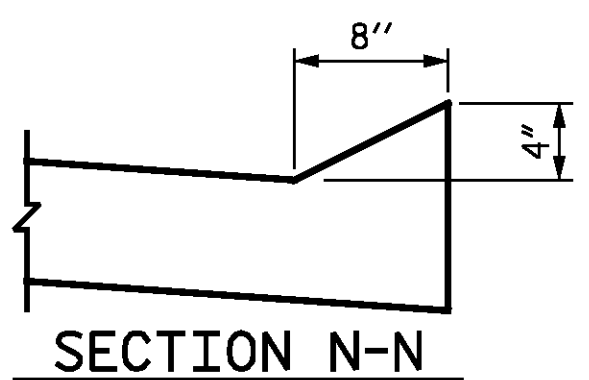
SECTION THRU SLAB



DETAIL "A"



END OF CURB WITHOUT SHOULDER BERM GUTTER



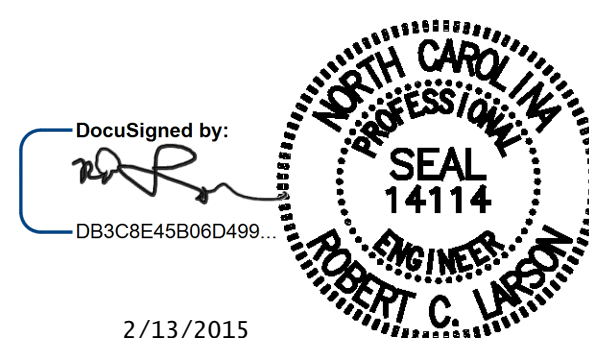
SECTION N-N

DocuSigned by: **† NORMAL TO END BENT**
DB3C8E45B06D499...

DESIGN ENGINEER OF RECORD: DATE 2/13/2015

ASSEMBLED BY: J. M. WEATHERBURNE DATE: 7/20/13
CHECKED BY: R.C. LARSON DATE: 8/20/13

DRAWN BY: TLA 10/05 REV. 10/1/11 MAA/GM
CHECKED BY: GM 5/06 REV. 12/21/11 MAA/GM
REV. 6/13 MAA/GM



2/13/2015

KCI Associates of North Carolina, P.A.
DWG. REF. NO. 23 OF 24

PROJECT NO. R-2514D
JONES COUNTY
STATION: 320+39.56 -L-

SHEET 1 OF 2

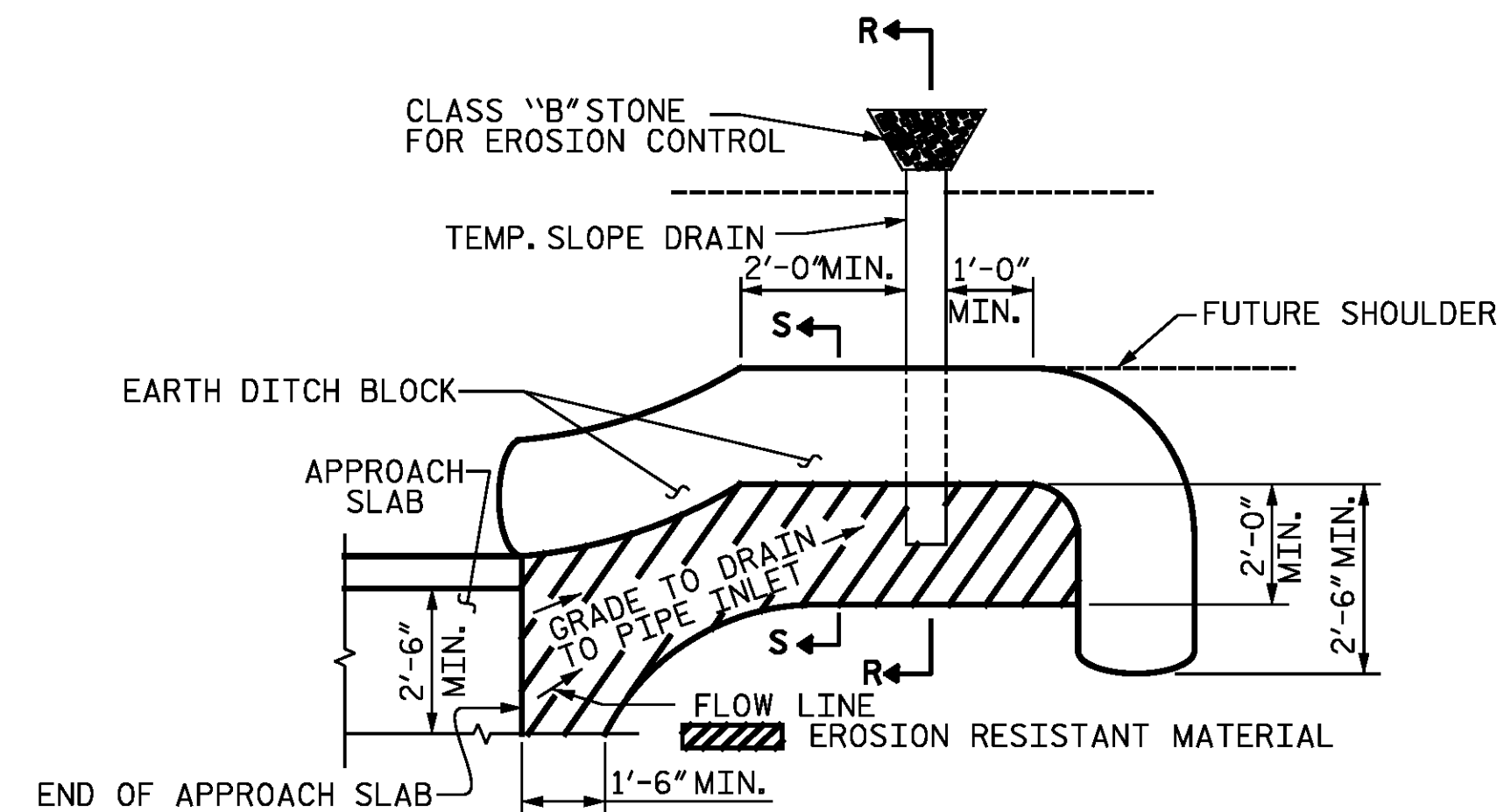
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH SLAB
FOR INTEGRAL ABUTMENT

STD. NO. BAS5 LEFT LANE

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

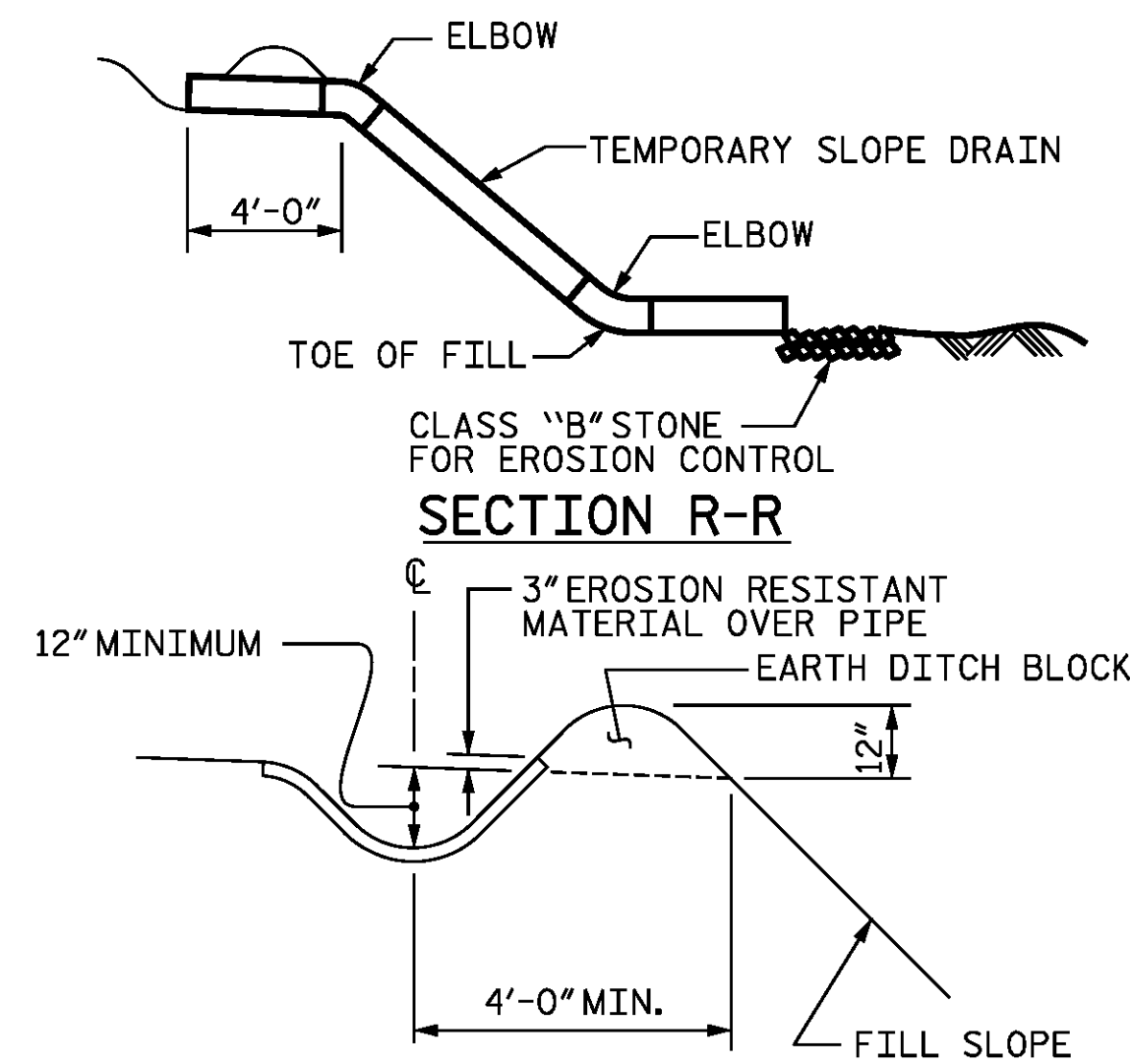
TOTAL SHEETS: SOI-24

STR-#1



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

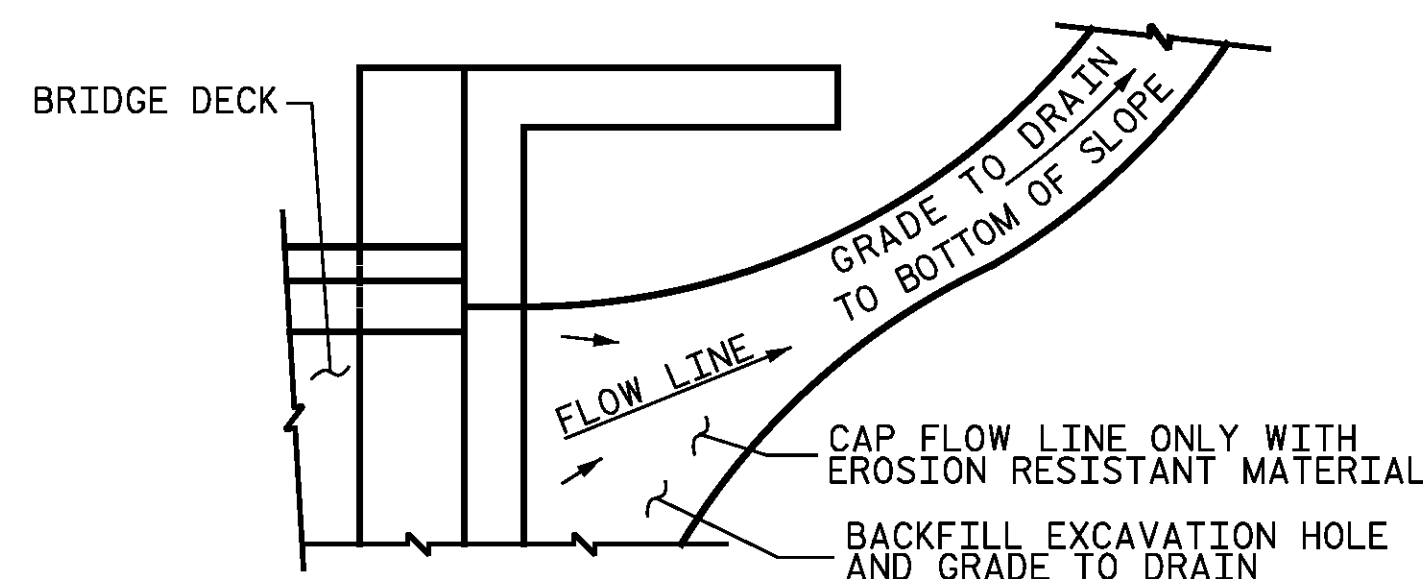
PLAN VIEW



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

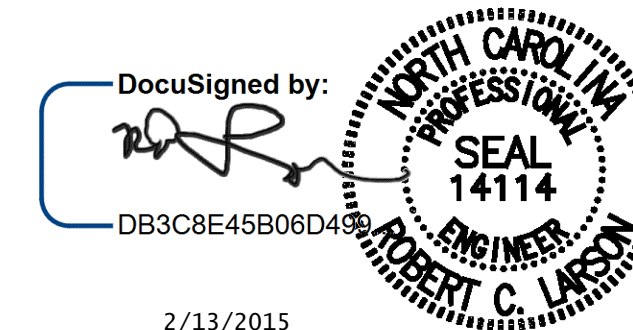
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 BRIDGE APPROACH
 SLAB DETAILS

LEFT LANE
 STD. NO. BAS4

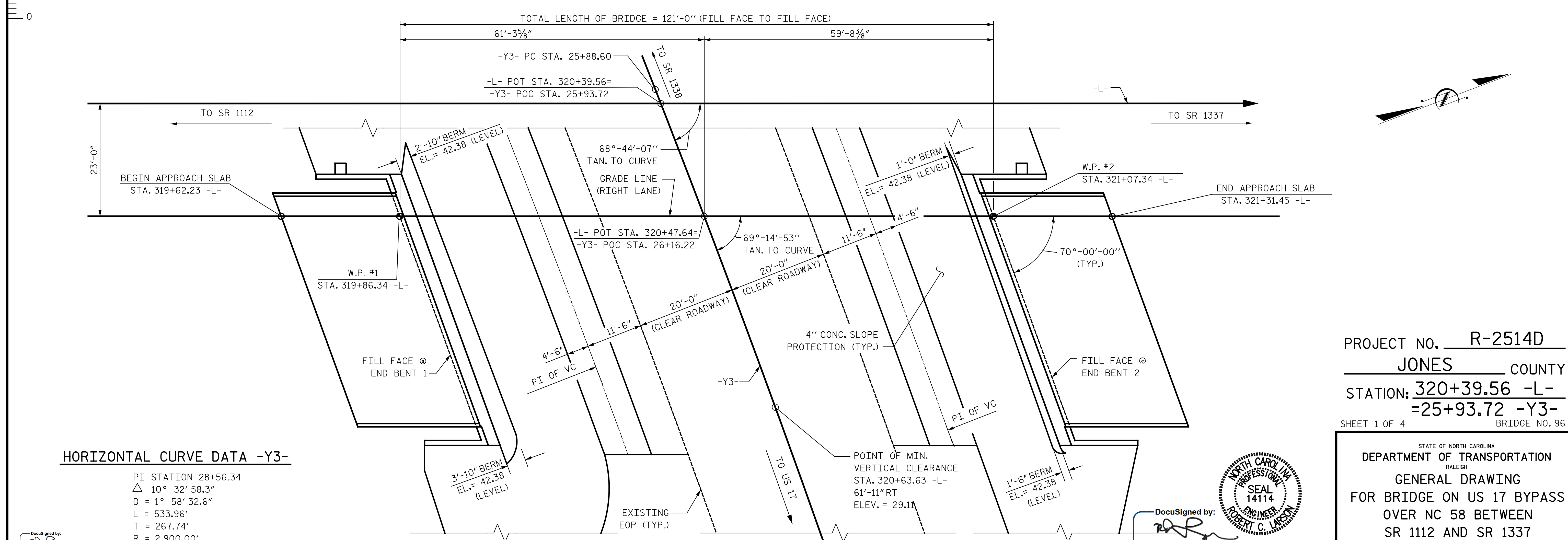
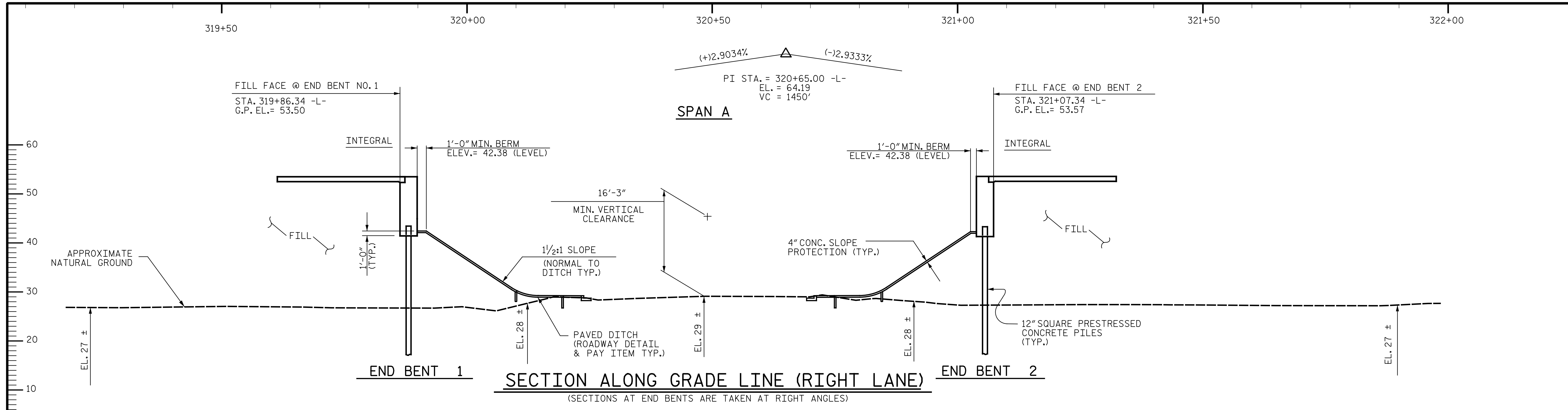


2/13/2015

DESIGN ENGINEER OF RECORD: <u>R.C. LARSON</u> DATE : 2/13/2015	
ASSEMBLED BY : J. M. WEATHERBURN	DATE : 7/20/13
CHECKED BY : R.C. LARSON	DATE : 8/20/13
DRAWN BY : FCJ 11/88	REV. 10/11/11 MAA/GM
CHECKED BY : ARB 11/88	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM

KCI Associates of North Carolina, P.A. STATE SOIL LANDMARK CENTER 1400 SIX FORKS RD. RALEIGH, N.C. 27609-0300 (919) 783-2044		REVISIONS		SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			TOTAL SHEETS
2			4			SOI-24
DWG. REF. NO. 24 OF 24						

STR-#1



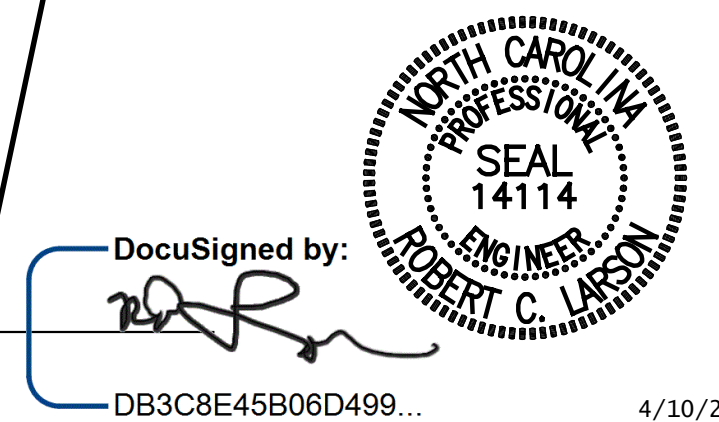
HORIZONTAL CURVE DATA -Y3-

PI STATION 28+56.34
 Δ 10° 32' 58.3"
 D = 1° 58' 32.6"
 L = 533.96'
 T = 267.74'
 R = 2,900.00'

DESIGN ENGINEER OF RECORD: DATE: 4/10/2015

DRAWN BY: R.J. FLORY DATE: 6/30/13

CHECKED BY: R.C. LARSON DATE: 5/1/14



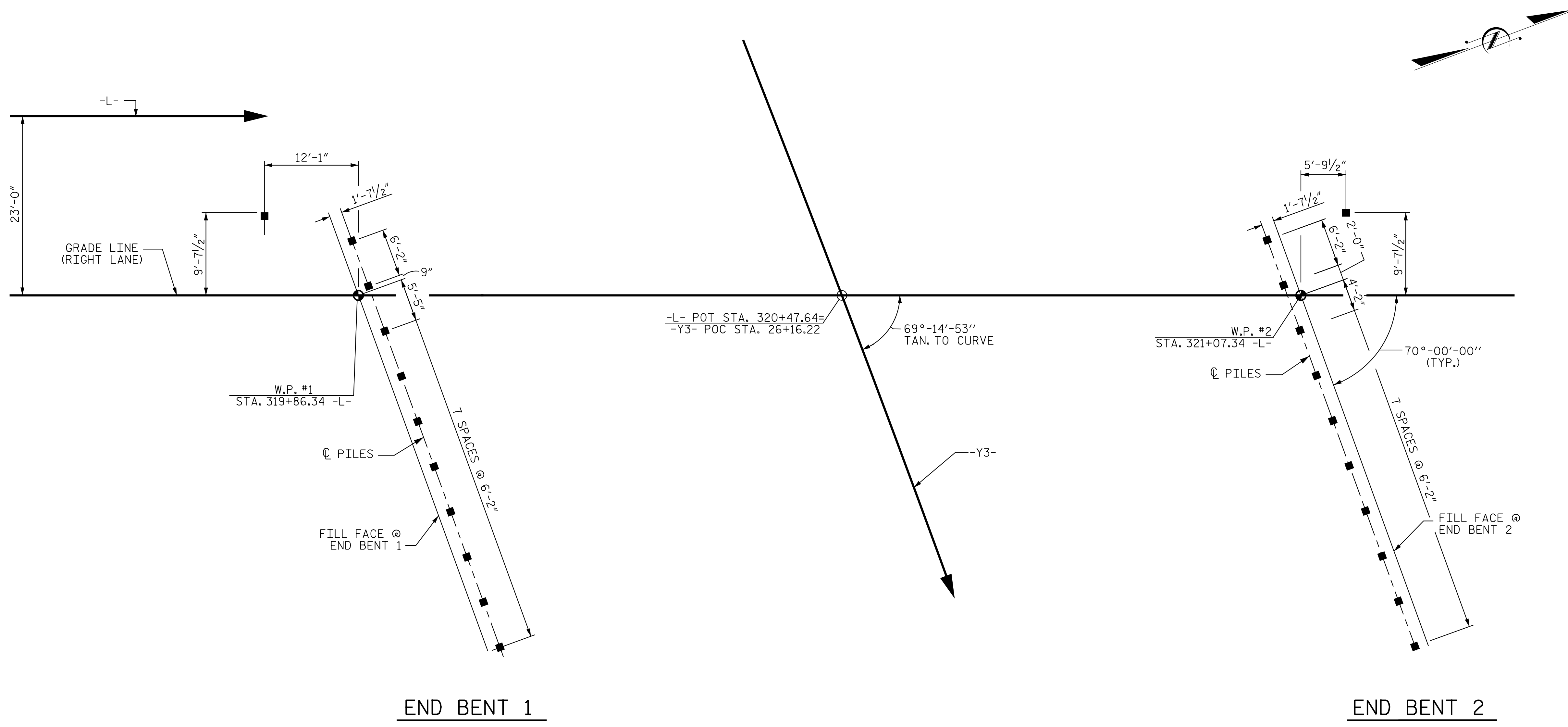
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-
=25+93.72 -Y3-
 SHEET 1 OF 4 BRIDGE NO. 96

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER NC 58 BETWEEN
 SR 1112 AND SR 1337
 RIGHT LANE

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 1 OF 24

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

TOTAL SHEETS: S02-24



FOUNDATION LAYOUT PLAN
 ALL PILES ARE VERTICAL 12" PRESTRESSED CONCRETE PILES

FOUNDATION NOTES

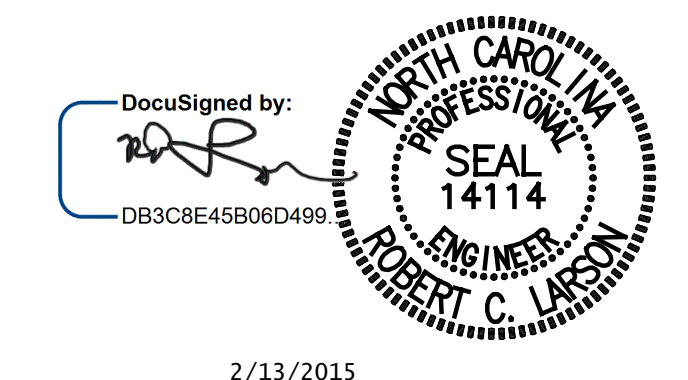
FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
 PILES AT END BENT 1 AND END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 112 TONS PER PILE.
 DRIVE PILES AT END BENT 1 AND END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE.
 TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENT 1 AND END BENT 2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 2 OF 4

DocuSigned by:

DESIGN ENGINEER OF RECORD:	DATE: 2/13/2015
DRAWN BY: R.J. FLORY	DATE: 6/28/13
CHECKED BY: R.C. LARSON	DATE: 5/1/14



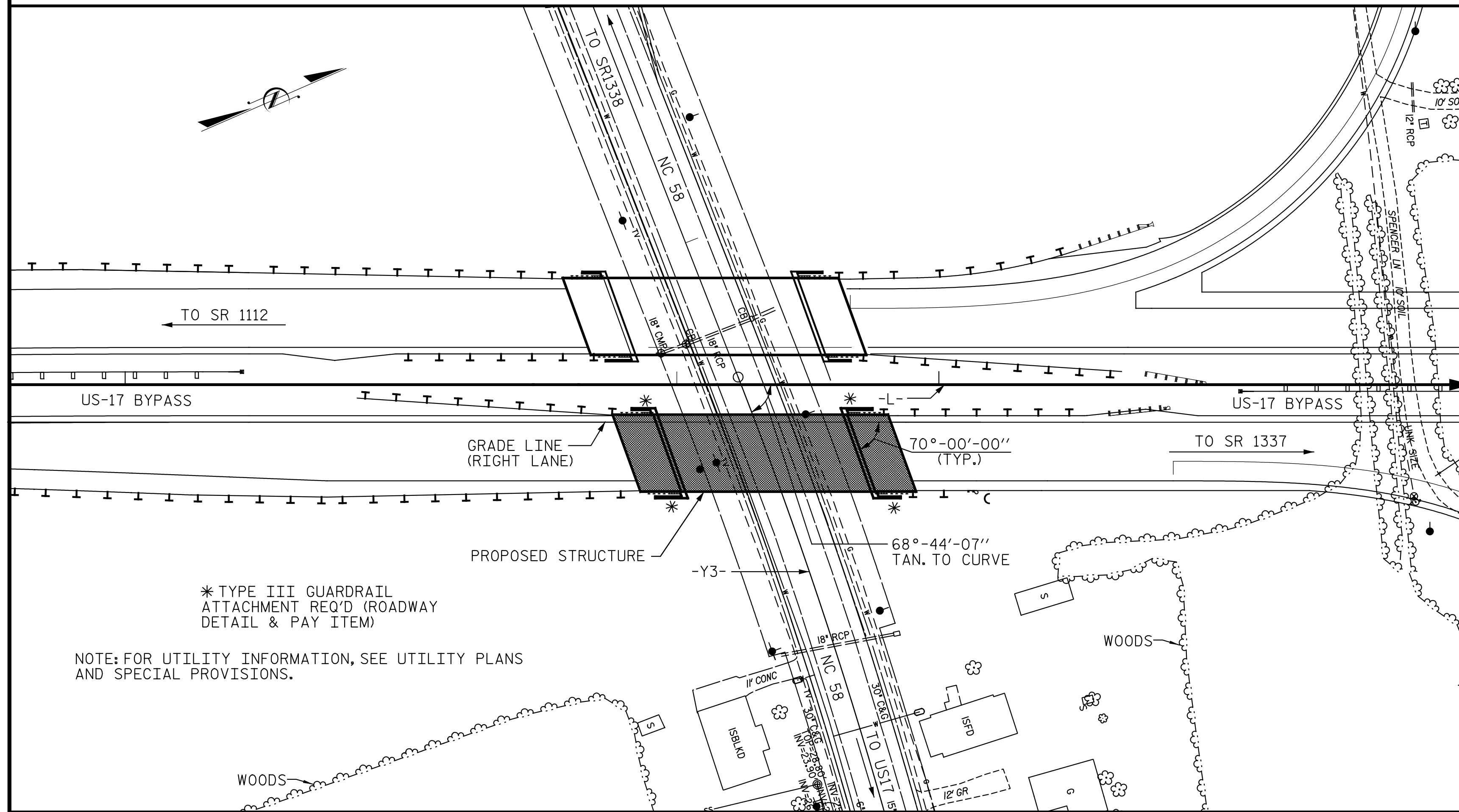
2/13/2015

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER NC 58 BETWEEN
 SR 112 AND SR 1337
 RIGHT LANE

ENGINEER: PLANNERS & ECOLOGISTS LICENSE NUMBER: C-0764		REVISIONS		SHEET NO.				
KCI Associates of North Carolina, P.A.		NO.	BY:	DATE:	NO.	BY:	DATE:	S02-2
SUTE 220, LANDMARK CENTER # 400 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244		1			3			TOTAL SHEETS
DWG. REF. NO. 2 OF 24		2			4			S02-24

STR-#2

BENCHMARK: BM15 RR SPIKE IN POWER POLE -L- STATION 323+74.00 940' LEFT ELEVATION 28.34' NAVD 88



LOCATION SKETCH

NOTES:

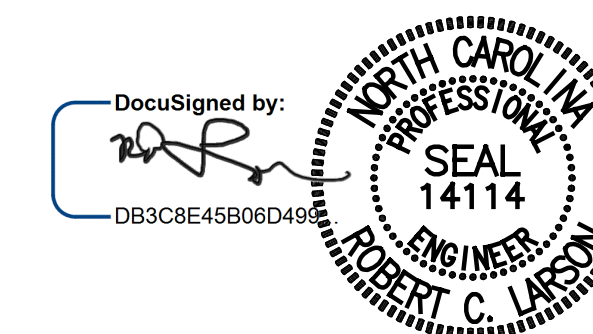
- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- THE ELEVATION(S) AND CLEARANCE(S) SHOWN ON THE PLANS AT THE POINT(S) OF MINIMUM CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATION(S) ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.
- FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.
- PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.
- FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	MODIFIED 72" PRESTRESSED CONCRETE GIRDERS		12" PRESTRESSED CONCRETE PILES		PILE REDRIVES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS
	EA	SQ.FT.	SQ.FT.	CU.YDS.	LUMP SUM	LBS.	NO.	LIN.FT.	NO.	LIN.FT.	EA.	LIN.FT.	SQ. YD.	LUMP SUM
SUPERSTRUCTURE		5,959	7,184		LUMP SUM		5	592.08				238.46		LUMP SUM
END BENT 1				35.6		6,140			11	550	5		510	
END BENT 2				35.9		6,194			11	605	5		325	
TOTAL	1	5,959	7,184	71.5	LUMP SUM	12,334	5	592.08	22	1155	10	238.46	835	LUMP SUM

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 3 OF 4



3/10/2015

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER NC 58 BETWEEN
 SR 1112 AND SR 1337
 RIGHT LANE

DESIGN ENGINEER OF RECORD: DATE : 3/10/2015
 DRAWN BY : R. J. FLORY DATE : 06/28/13
 CHECKED BY : R. C. LARSON DATE : 04/28/14

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

STR-#2

LOAD FACTORS:

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

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE										COMMENT NUMBER
						MOMENT					SHEAR					MOMENT										
						LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)				
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.02	--	1.75	0.857	1.35	1	EXT.	58.5	1.053	1.19	1	INT.	46.7	0.80	0.803	1.02	1	INT.	58.5				
	HL-93 (OPERATING)	N/A		1.71	--	1.35	0.857	1.75	1	EXT.	58.5	1.053	1.71	1	INT.	11.1	N/A	--	--	--	--	--				
	HS-20 (INVENTORY)	36.000	②	1.48	53.2	1.75	0.857	1.95	1	EXT.	58.5	1.053	1.83	1	INT.	11.1	0.80	0.803	1.48	1	INT.	58.5				
	HS-20 (OPERATING)	36.000		2.41	86.7	1.35	0.857	2.53	1	EXT.	58.5	1.053	2.41	1	INT.	11.1	N/A	--	--	--	--	--				
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.59	48.4	1.40	0.857	5.91	1	EXT.	58.5	1.053	5.94	1	INT.	11.1	0.80	0.803	3.59	1	INT.	58.5			
		SNGARBS2	20.000		2.57	51.4	1.40	0.857	4.23	1	EXT.	58.5	1.053	4.10	1	INT.	11.1	0.80	0.803	2.57	1	INT.	58.5			
		SNAGRIS2	22.000		2.39	52.5	1.40	0.857	3.94	1	EXT.	58.5	1.053	3.77	1	INT.	11.1	0.80	0.803	2.39	1	INT.	58.5			
		SNCOTTS3	27.250		1.78	48.5	1.40	0.857	2.93	1	EXT.	58.5	1.053	2.90	1	INT.	11.1	0.80	0.803	1.78	1	INT.	58.5			
		SNAGGRS4	34.925		1.45	50.6	1.40	0.857	2.39	1	EXT.	58.5	1.053	2.33	1	INT.	11.1	0.80	0.803	1.45	1	INT.	58.5			
		SNS5A	35.550		1.42	50.4	1.40	0.857	2.34	1	EXT.	58.5	1.053	2.32	1	INT.	11.1	0.80	0.803	1.42	1	INT.	58.5			
		SNS6A	39.950		1.29	51.5	1.40	0.857	2.12	1	EXT.	58.5	1.053	2.09	1	INT.	11.1	0.80	0.803	1.29	1	INT.	58.5			
		SNS7B	42.000		1.22	51.2	1.40	0.857	2.01	1	EXT.	58.5	1.053	2.02	1	INT.	11.1	0.80	0.803	1.22	1	INT.	58.5			
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.56	51.4	1.40	0.857	2.57	1	EXT.	58.5	1.053	2.53	1	INT.	11.1	0.80	0.803	1.56	1	INT.	58.5			
		TNT4A	33.075		1.56	51.5	1.40	0.857	2.58	1	EXT.	58.5	1.053	2.49	1	INT.	11.1	0.80	0.803	1.56	1	INT.	58.5			
		TNT6A	41.600		1.26	52.4	1.40	0.857	2.08	1	EXT.	58.5	1.053	2.11	1	INT.	11.1	0.80	0.803	1.26	1	INT.	58.5			
		TNT7A	42.000		1.26	52.9	1.40	0.857	2.08	1	EXT.	58.5	1.053	2.08	1	INT.	11.1	0.80	0.803	1.26	1	INT.	58.5			
		TNT7B	42.000		1.29	54.1	1.40	0.857	2.12	1	EXT.	58.5	1.053	1.99	1	INT.	11.1	0.80	0.803	1.29	1	INT.	58.5			
		TNAGRIT4	43.000		1.24	53.3	1.40	0.857	2.04	1	EXT.	58.5	1.053	1.94	1	INT.	11.1	0.80	0.803	1.24	1	INT.	58.5			
		TNAGT5A	45.000	③	1.17	52.6	1.40	0.857	1.93	1	EXT.	58.5	1.053	1.89	1	INT.	11.1	0.80	0.803	1.17	1	INT.	58.5			
TNAGT5B	45.000	③	1.17	52.6	1.40	0.857	1.92	1	EXT.	58.5	1.053	1.84	1	INT.	11.1	0.80	0.803	1.17	1	INT.	58.5					

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.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

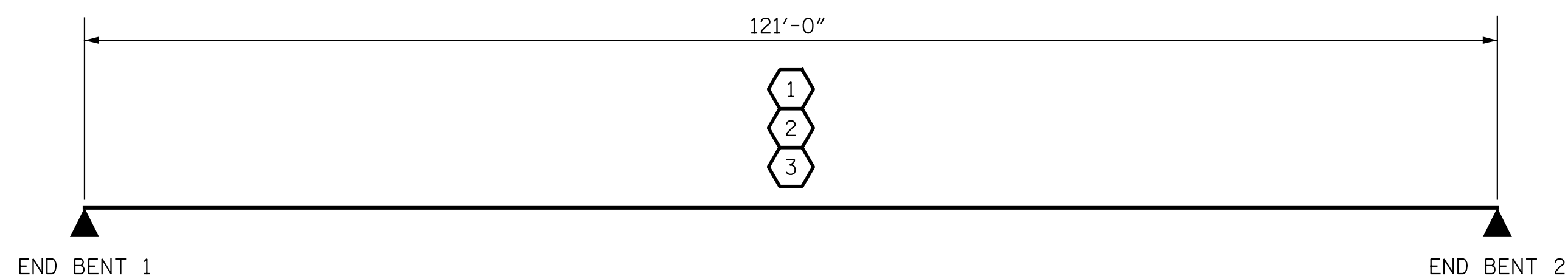
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

INT. - INTERIOR GIRDER
EXT. - EXTERIOR GIRDER

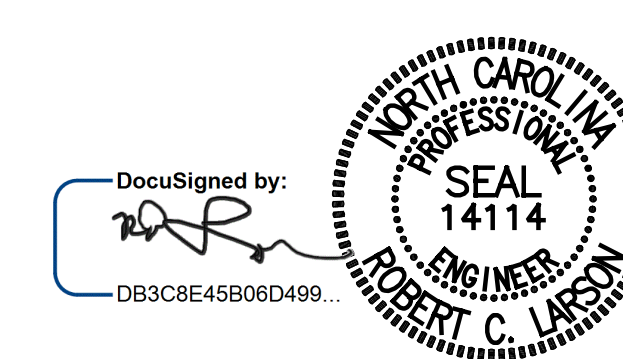


LRFR SUMMARY

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER NC 58 BETWEEN
 SR 1112 AND SR 1337
 STD. NO. LRFR1 RIGHT LANE



2/13/2015

DocuSigned by:

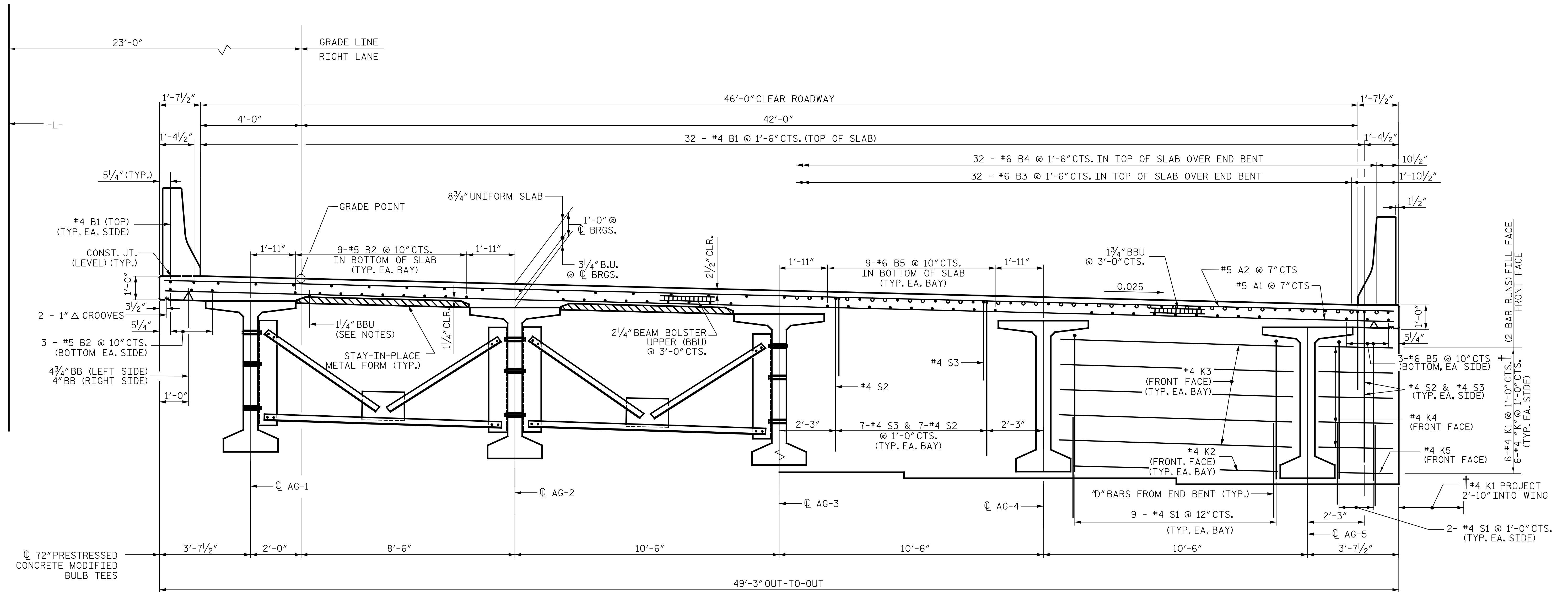
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DESIGN ENGINEER OF RECORD: DATE 2/13/2015

DRAWN BY: R. A. PRUETT DATE: 10/15/13
 CHECKED BY: K. SU DATE: 10/21/13

KCI Associates of North Carolina, P.A.		REVISIONS		SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S02-4
2			4			TOTAL SHEETS S02-24
DWG. REF. NO. 4 OF 24						

STR-#2



TYPICAL HALF SECTION AT INTERMEDIATE DIAPHRAGM

TYPICAL HALF SECTION AT END BENT DIAPHRAGM

TYPICAL SECTION

NOTES

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

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

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

THE SKEWED END CONDITIONS ARE SUCH THAT THE USE OF 4' WIDE PRESTRESSED CONCRETE DECK PANELS IS NOT POSSIBLE; USE OF 8' WIDE PRESTRESSED CONCRETE DECK PANELS IS NECESSARY.

SEE STD. NO. CB1 FOR ADDITIONAL REINFORCING STEEL EMBEDDED IN DECK.

- INDICATES CONTINUOUS REINFORCING
- INDICATES ADDITIONAL REINFORCING AT END BENT

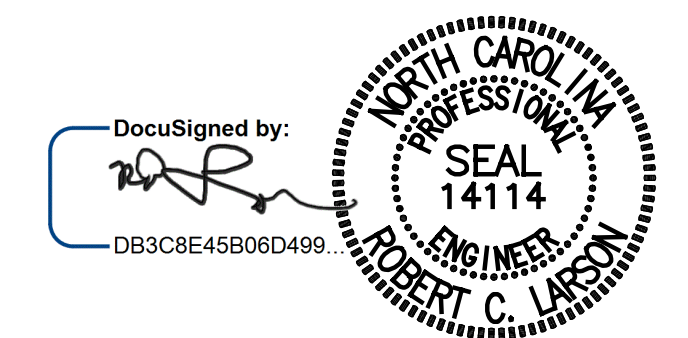
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

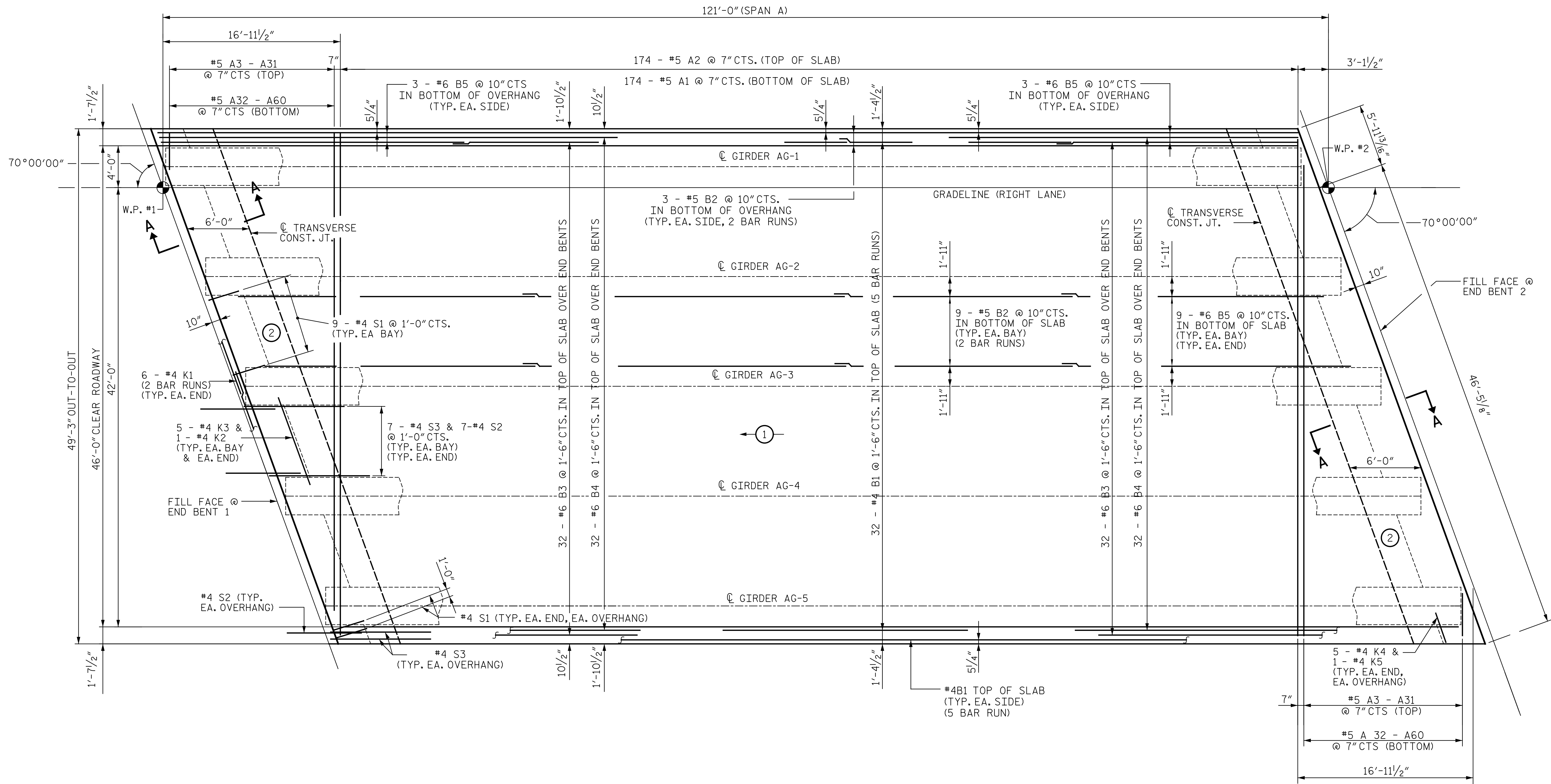
**SUPERSTRUCTURE
 TYPICAL SECTION**

RIGHT LANE



DESIGN ENGINEER OF RECORD:	DATE :	5/12/2015
DRAWN BY :	DATE :	7/12/13
CHECKED BY :	DATE :	5/2/14

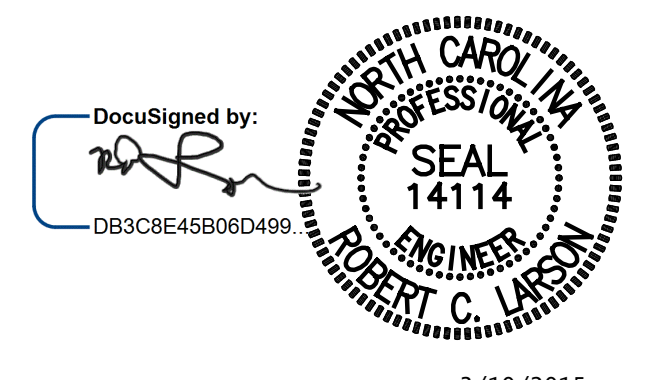
ENGINEERS • PLANNERS • ECOLOGISTS LICENSE NUMBER: C-0764					
KCI Associates of North Carolina, P.A.					
SUITE 220, LANDMARK CENTER #400 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244					
DWG. REF. NO. 5 OF 24					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S02-5
					TOTAL SHEETS S02-24



PLAN - SPAN A

⊙ N INDICATES POUR SEQUENCE AND DIRECTION
 SEE SUPERSTRUCTURE BILL OF MATERIAL FOR REINFORCING SPLICE LENGTHS.
 FOR SECTION A-A, SEE SHEET S02-6

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

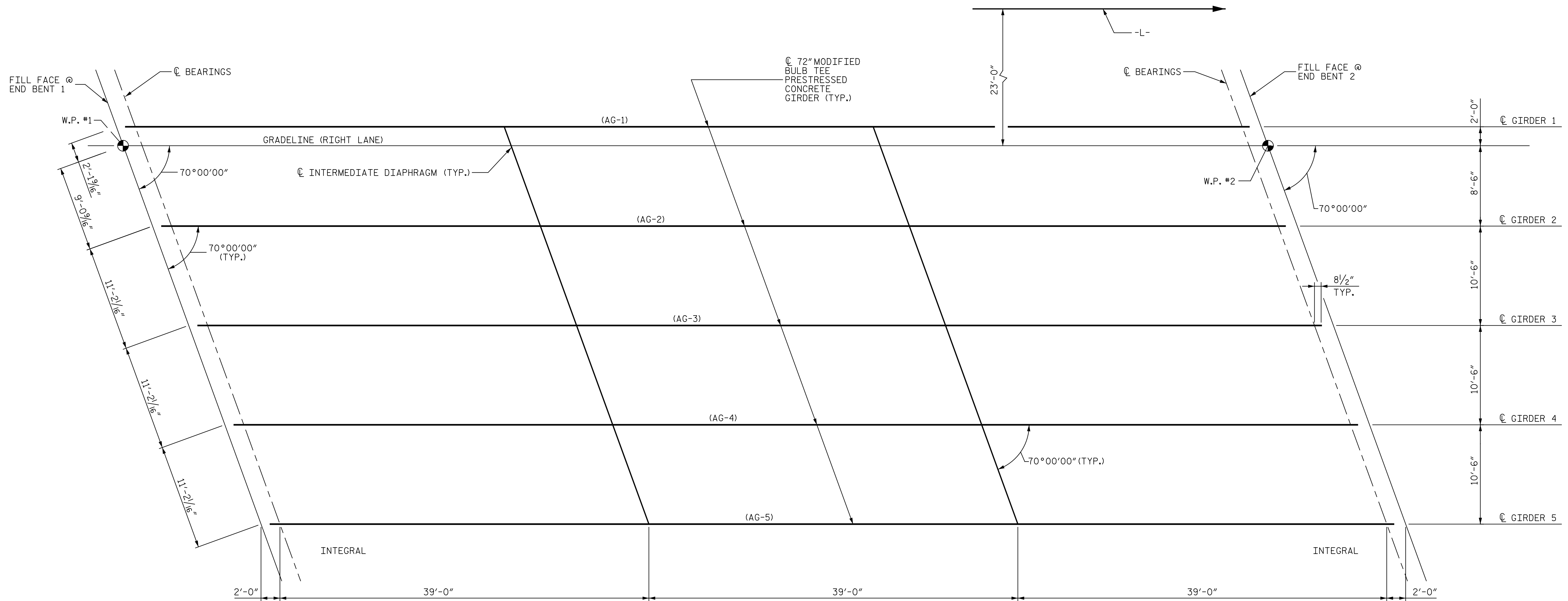


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SUPERSTRUCTURE
 PLAN OF SPAN**
 RIGHT LANE

DESIGN ENGINEER OF RECORD:	DATE :	3/10/2015
DRAWN BY :	DATE :	7/16/13
CHECKED BY :	DATE :	8/16/13

NO.		BY:		DATE:		NO.		BY:		DATE:		SHEET NO.	
1						3						S02-7	
2						4						TOTAL SHEETS S02-24	

ENGINEERS • PLANNERS • ECOLOGISTS LICENSE NUMBER: C-0764
KCI Associates
 of North Carolina, P.A.
 SUITE 220, LANDMARK CENTER # 4601 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244
 DWG. REF. NO. 7 OF 24



GIRDER LAYOUT AND INTERMEDIATE DIAPHRAGM LOCATIONS

- NOTES:
 1. ALL BEARINGS ARE TYPE I ELASTOMERIC (SEE STD NO. PCCG)
 2. FOR INTERMEDIATE DIAPHRAGMS SEE STD NO. PCCII.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
0.6" Ø LOW RELAXATION STRANDS	SPAN A																					
	GIRDERS 1 AND 5																					
	LOCATION	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE)	↑	0.00	0.07	0.13	0.19	0.23	0.27	0.30	0.33	0.34	0.35	0.36	0.35	0.34	0.33	0.30	0.27	0.23	0.19	0.13	0.07	0.00
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.00	0.03	0.05	0.08	0.10	0.13	0.14	0.16	0.17	0.18	0.18	0.17	0.16	0.14	0.13	0.10	0.08	0.05	0.03	0.00	
FINAL CAMBER	↑	0"	1/2"	5/16"	1/4"	1/2"	3/4"	1 1/8"	1 1/4"	1 1/2"	1 3/8"	1 1/2"	1 3/8"	1 1/2"	1 1/4"	1 1/8"	1 1/4"	1 1/2"	1 1/4"	1 1/8"	1/2"	0"

DEAD LOAD DEFLECTION TABLE FOR GIRDERS																						
0.6" Ø LOW RELAXATION STRANDS	SPAN A																					
	GIRDERS 2, 3 AND 4																					
	LOCATION	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
CAMBER (GIRDER ALONE IN PLACE)	↑	0.00	0.07	0.13	0.19	0.23	0.27	0.30	0.33	0.34	0.35	0.36	0.35	0.34	0.33	0.30	0.27	0.23	0.19	0.13	0.07	0.00
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.00	0.03	0.06	0.09	0.12	0.14	0.16	0.18	0.19	0.20	0.20	0.19	0.18	0.16	0.14	0.12	0.09	0.06	0.03	0.00	
FINAL CAMBER	↑	0"	1/2"	7/8"	1 1/8"	1 1/4"	1 1/2"	1 3/4"	1 1/2"	1 1/4"	1 1/8"	1 1/8"	1 1/8"	1 1/4"	1 1/2"	1 3/4"	1 1/2"	1 1/4"	7/8"	1/2"	0"	

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

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

DocuSigned by:

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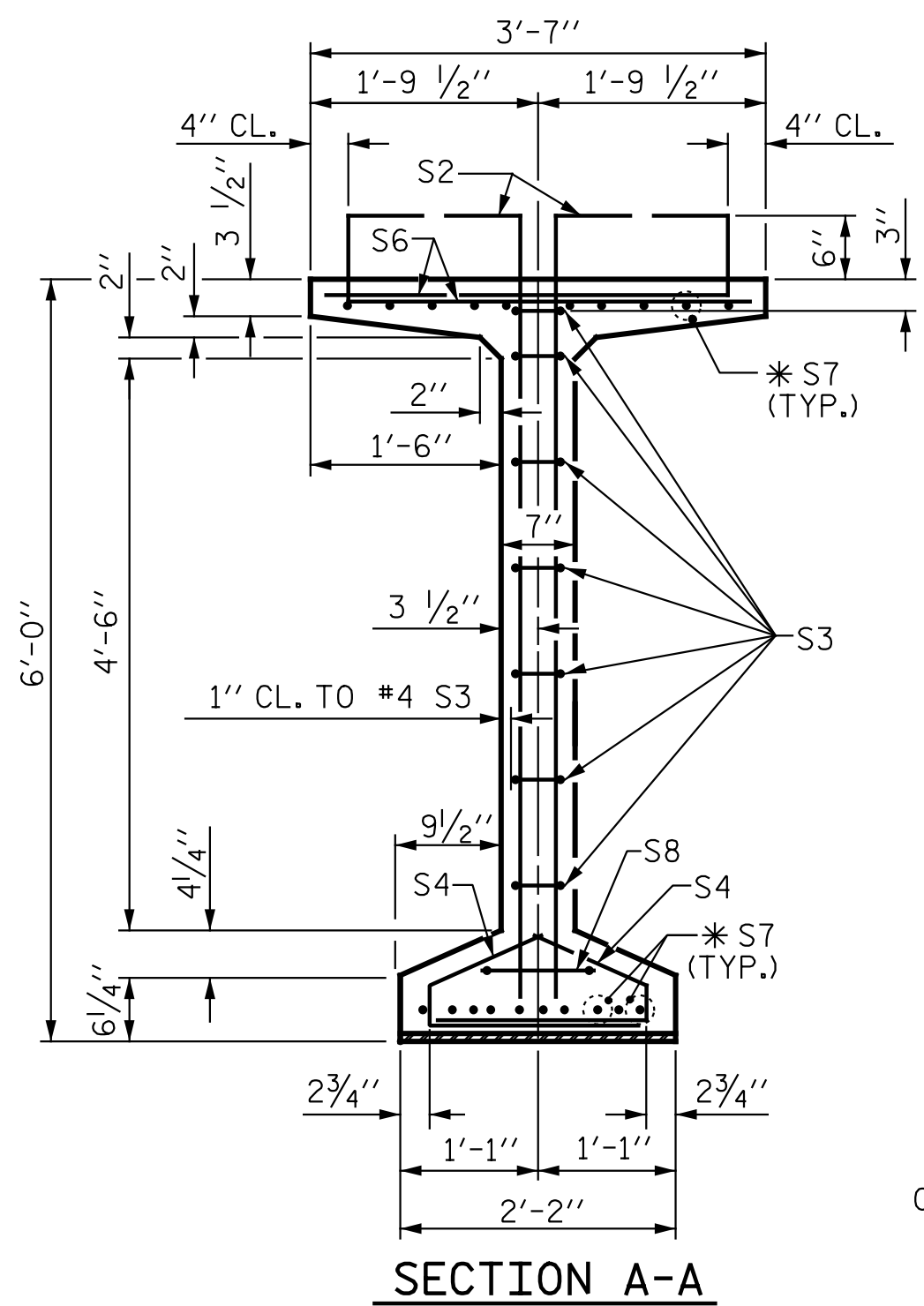
 2/13/2015

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

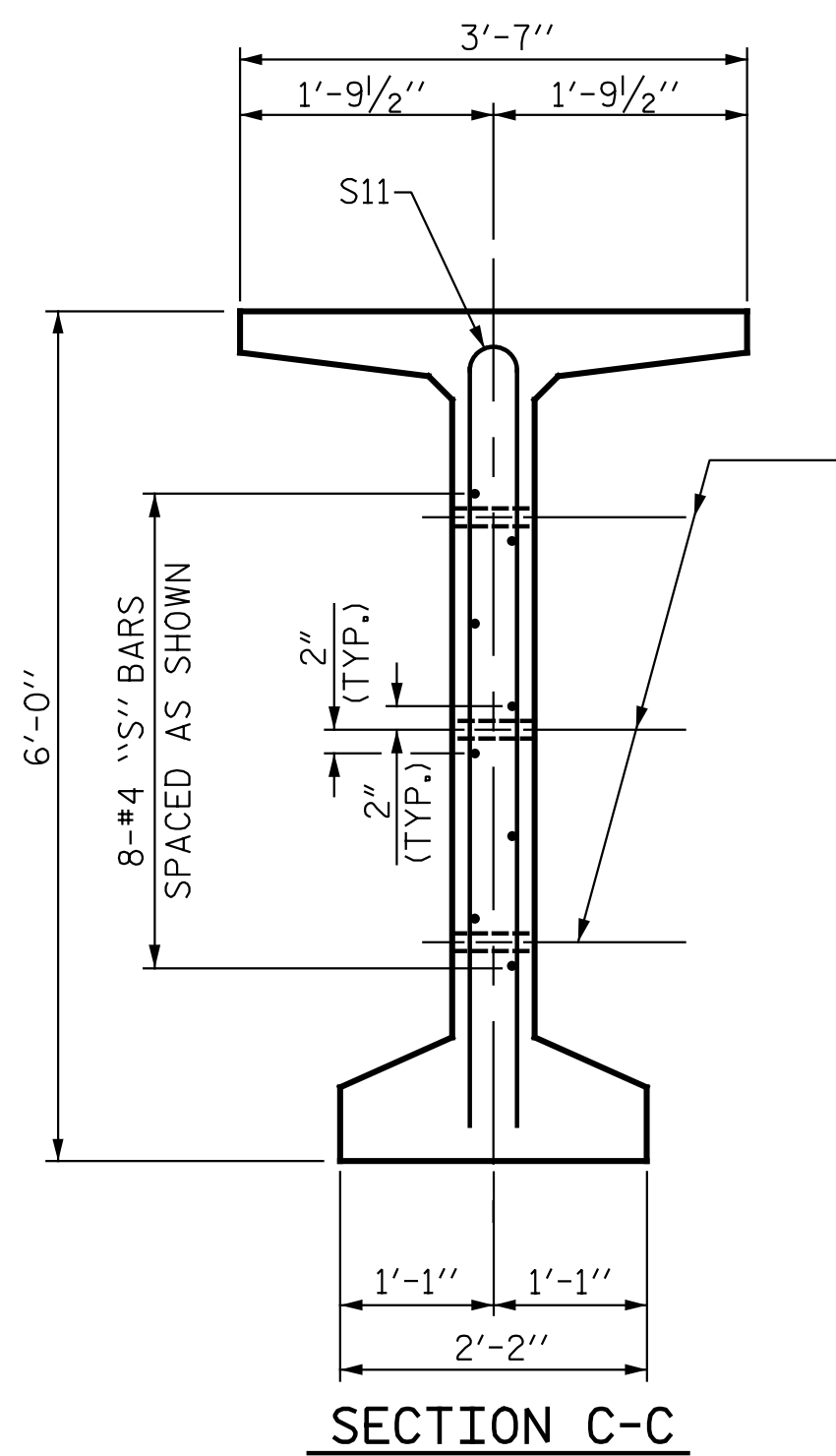
DocuSigned by:

 DB3C8E45B06D499...
 DESIGN ENGINEER OF RECORD: _____ DATE : 2/13/2015
 DRAWN BY : J. M. WEATHERBURNE DATE : 6/24/13
 CHECKED BY : R.C. LARSON DATE : 8/20/13

KCI Associates of North Carolina, P.A. SUNITE 220, LANDMARK CENTER # 4601 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244 DWG. REF. NO. 8 OF 24		REVISIONS				SHEET NO. S02-8
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS S02-24
1			3			
2			4			



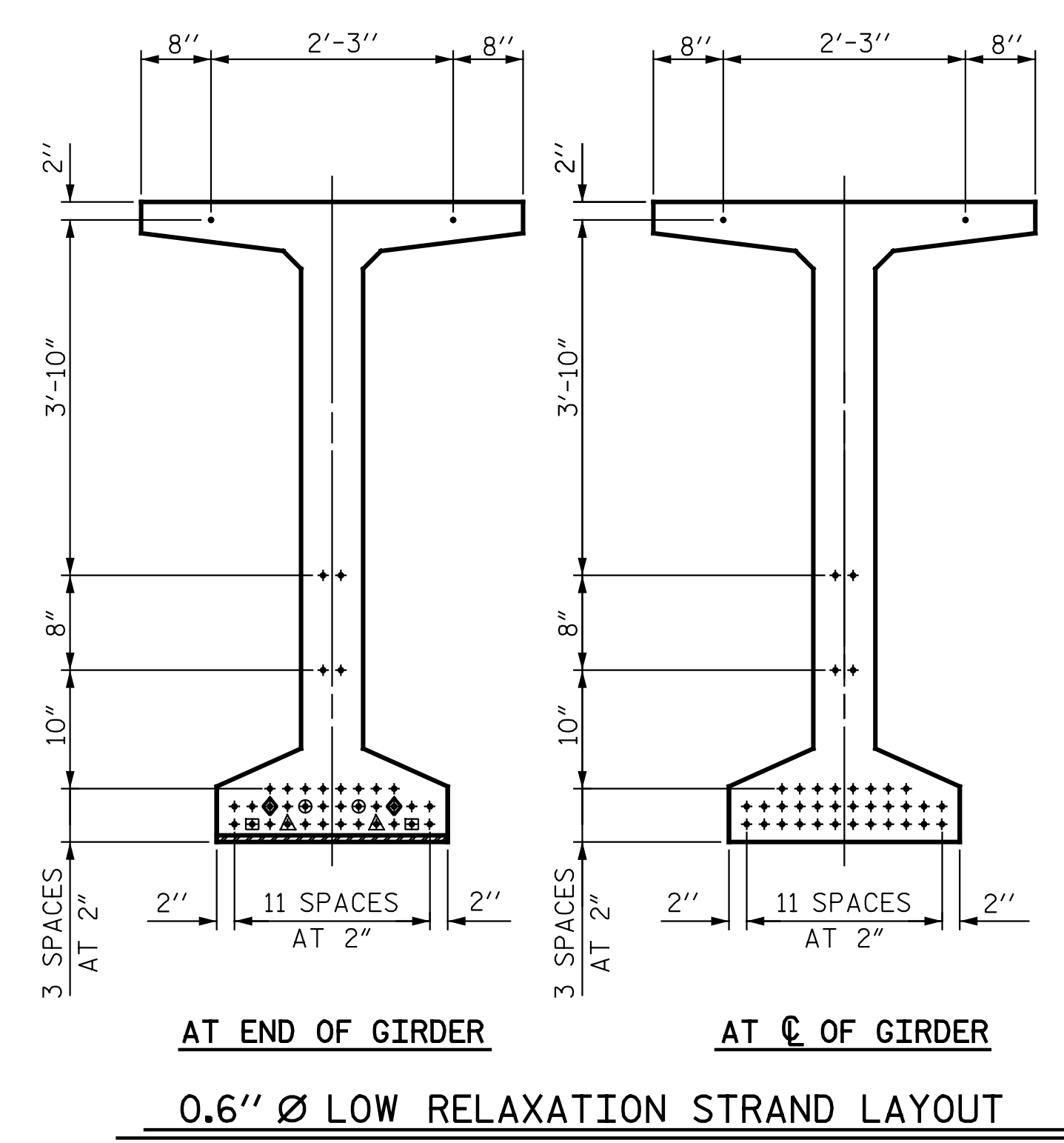
*FOR S7 BARS. SEE DETAIL "C" OF PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS SHEET



1/2" Ø FORMED HOLE. SEE ELEVATION FOR LOCATION. FOR DIM. "A", "B" & "C" SEE "INTERMEDIATE STEEL DIAPHRAGMS" SHEET.)

DEBONDING LEGEND

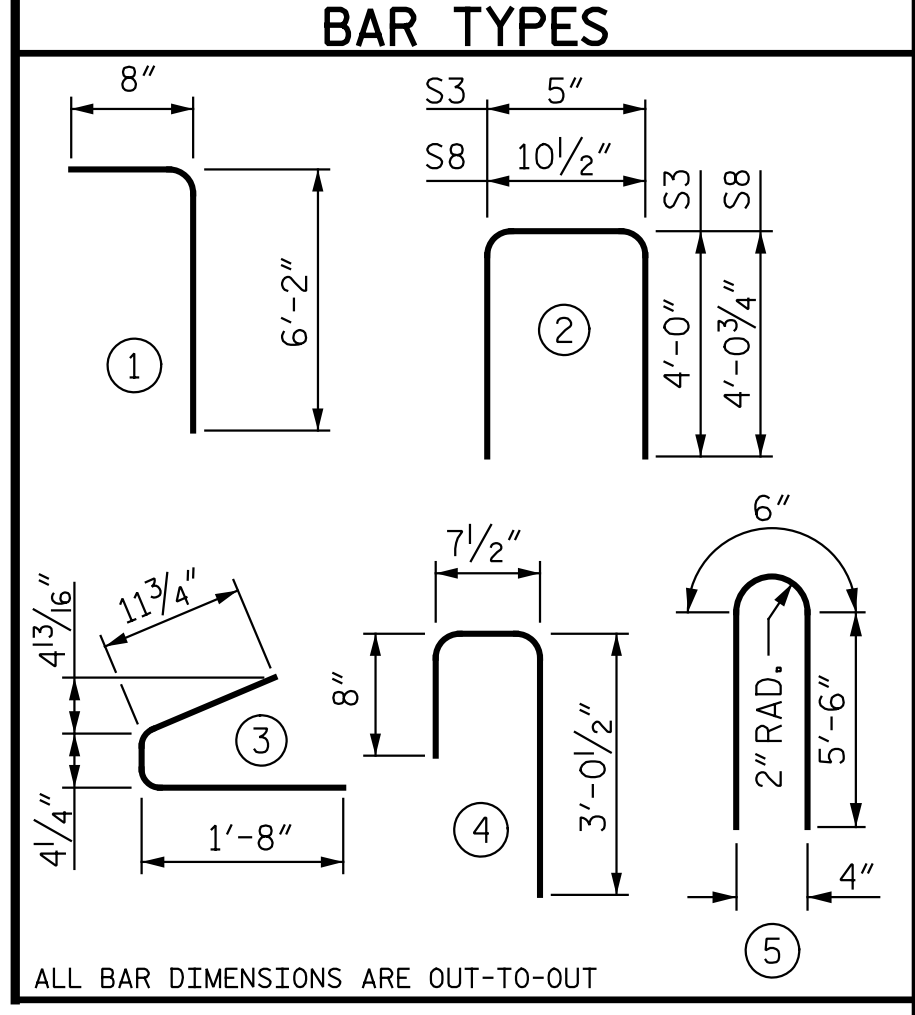
- FULLY BONDED STRANDS
- ◻ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◼ STRANDS DEBONDED FOR 24'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER
- ◊ STRANDS DEBONDED FOR 40'-0" FROM END OF GIRDER



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

REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	228	#4	1	6'-10"	1041
S2	24	#5	1	6'-10"	171
S3	14	#4	2	8'-5"	79
S4	84	#4	3	3'-0"	168
S6	252	#5	4	4'-4"	1139
*S7	40	#5	STR	3'-8"	153
S8	2	#5	2	9'-0"	19
S9	15	#5	STR	3'-3"	51
S10	2	#3	STR	1'-10"	1
S11	8	#5	5	11'-6"	96
S12	16	#4	STR	8'-0"	86

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



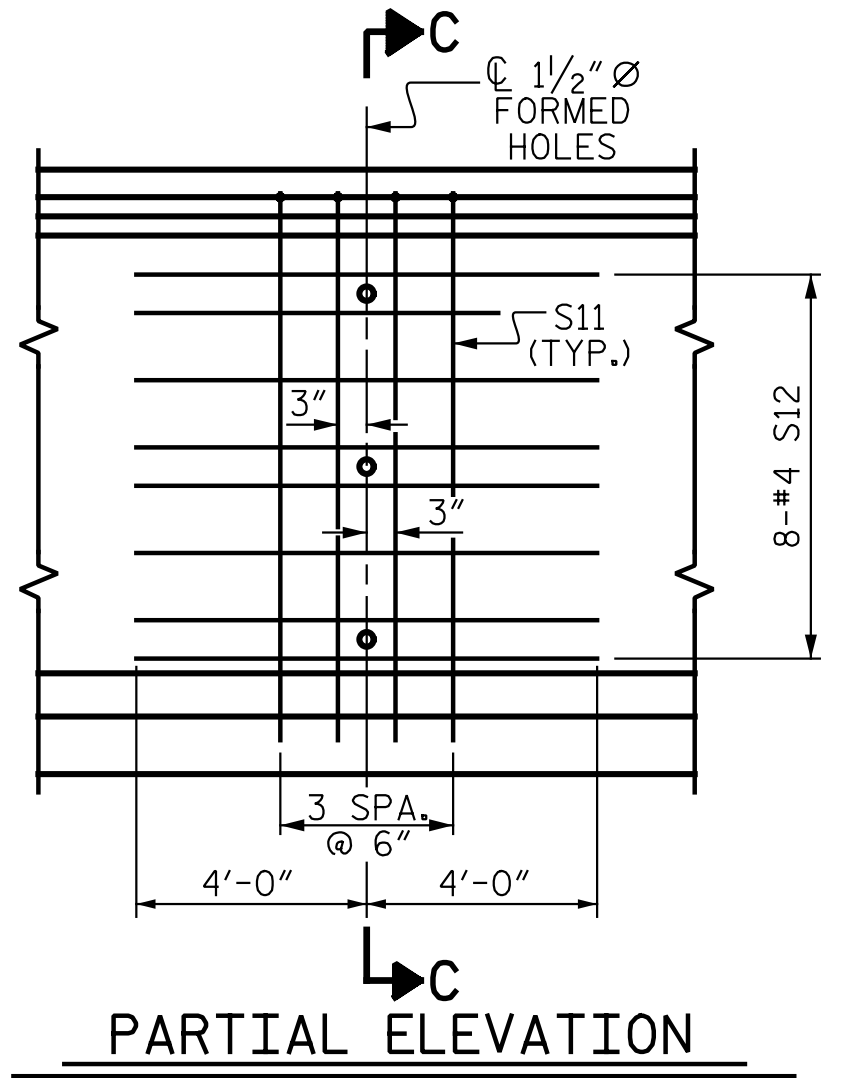
QUANTITIES FOR ONE GIRDER			
REINFORCING STEEL	7000 PSI CONCRETE	0.6" Ø L.R. STRANDS	
		LB.	C.Y.
		3004	25.4

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
5	118'-5"	592'-1"

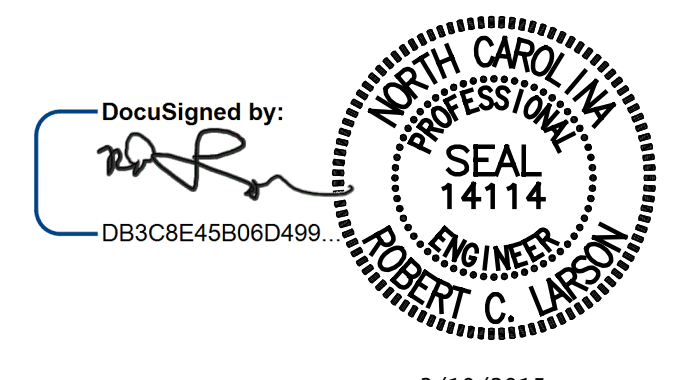
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 1 OF 3

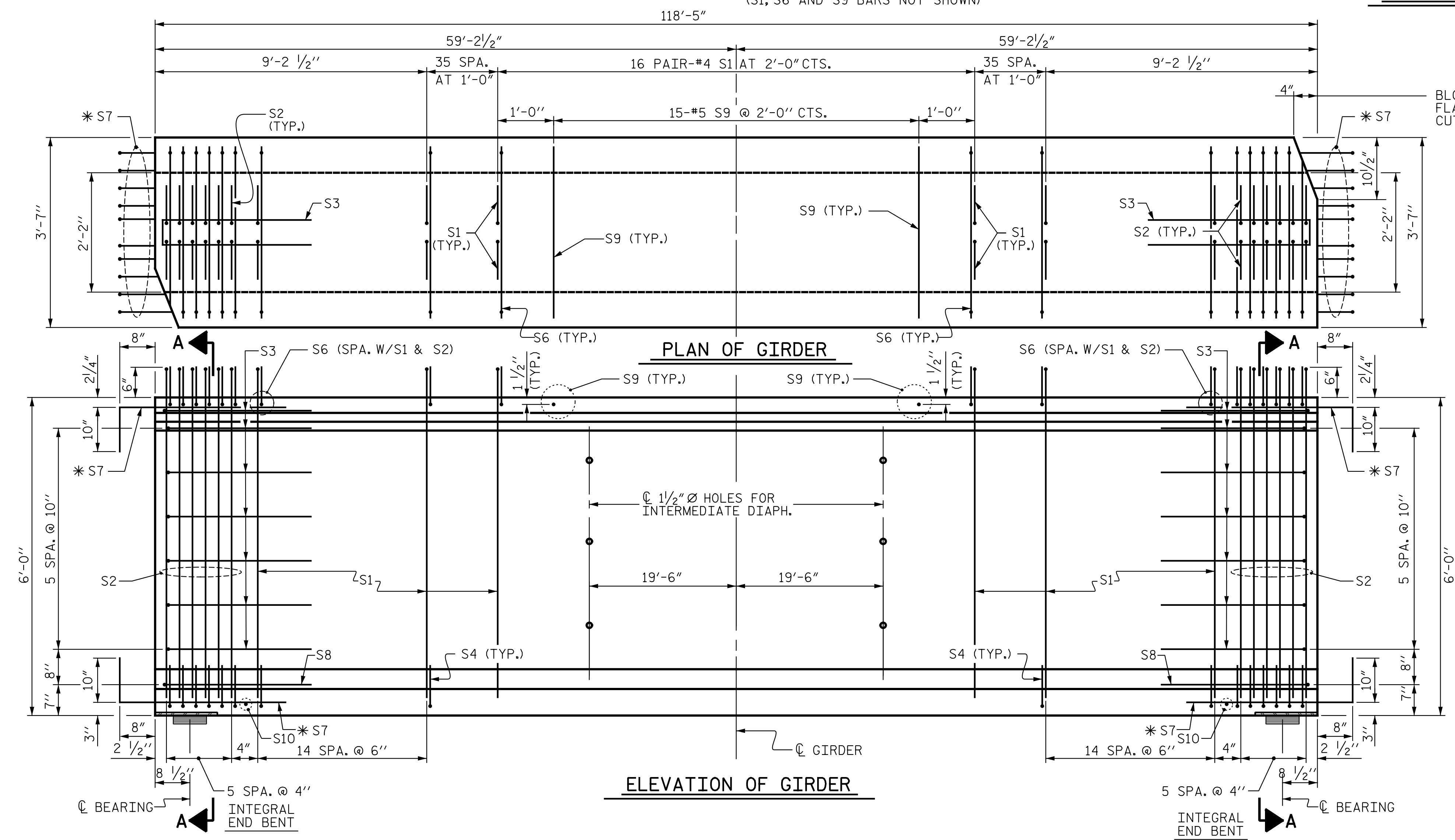
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
STANDARD
72" PRESTRESSED CONCRETE
MODIFIED BULB TEE
CONTINUOUS FOR LIVE LOAD
 STD. NO. PCG8 RIGHT LANE



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



3/10/2015



ASSEMBLED BY : R. C. LARSON DATE : 8/21/13
 CHECKED BY : R. A. PRUETT DATE : 11/06/13
 Design Engineer of Record:
 DRAWN BY : EEM 2/6/97 REV. 5/1/06R TLA/GM
 CHECKED BY : VAP 2/6/97 REV. 10/1/11 MAA/GM
 REV. 6/13 MAA/GM
 3/10/2015

KCI Associates of North Carolina, P.A.
 DWG. REF. NO. 9 OF 24

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

SHEET NO. S02-9
 TOTAL SHEETS S02-24
 STR-#2

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

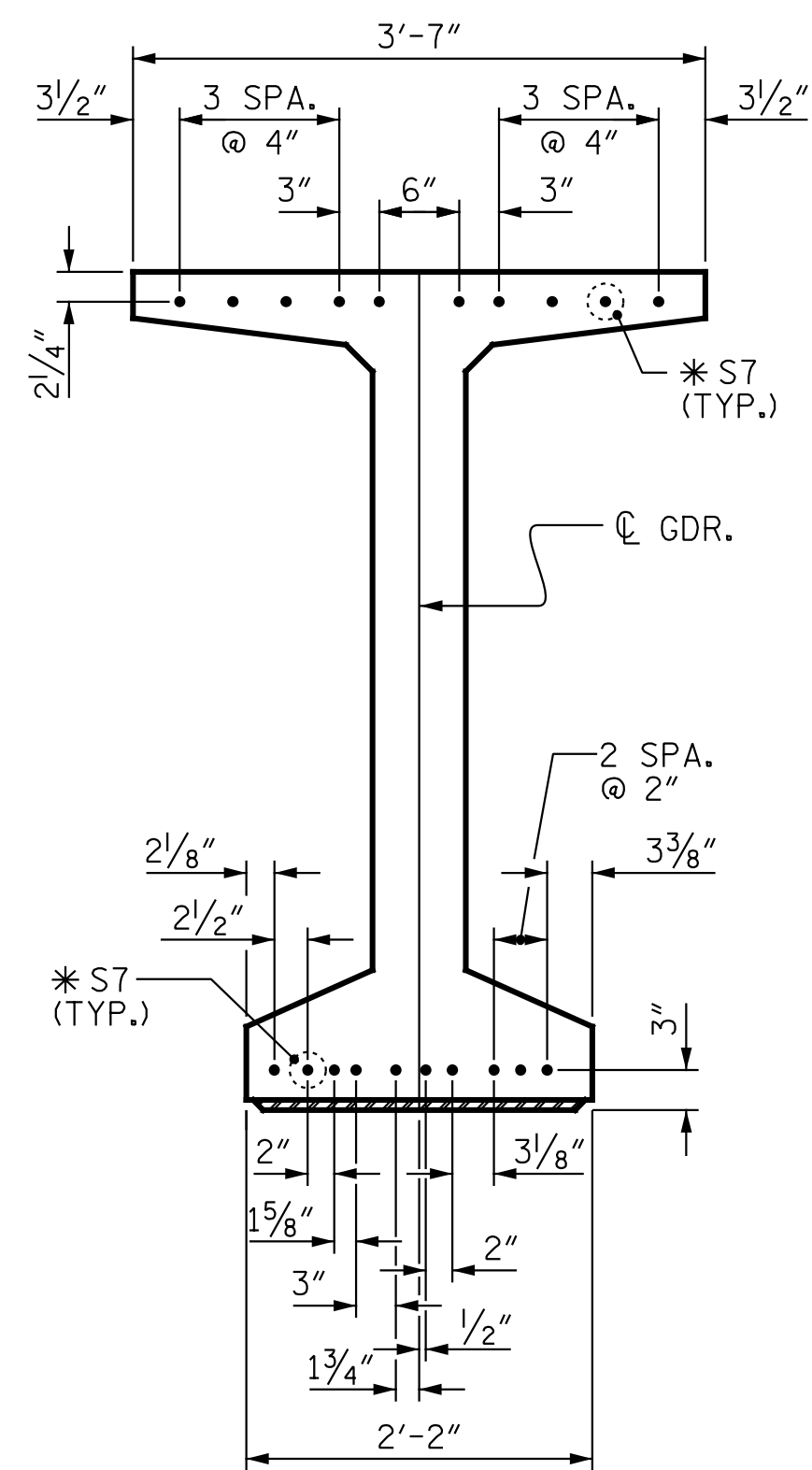
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5700 PSI.

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

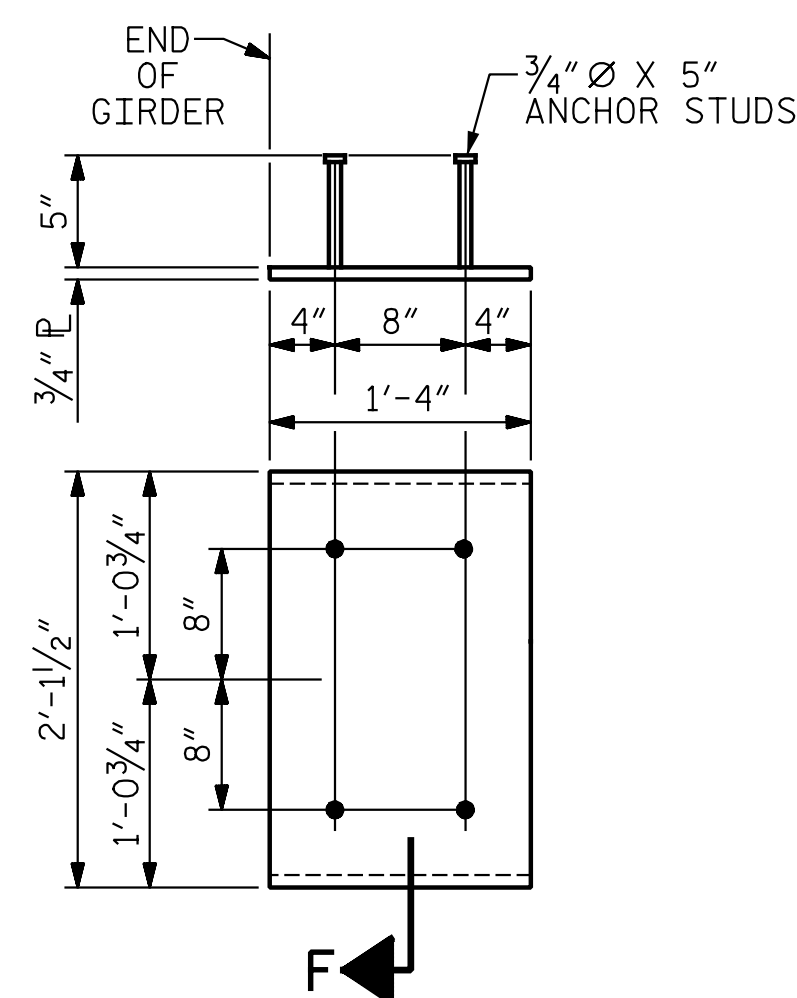
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

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

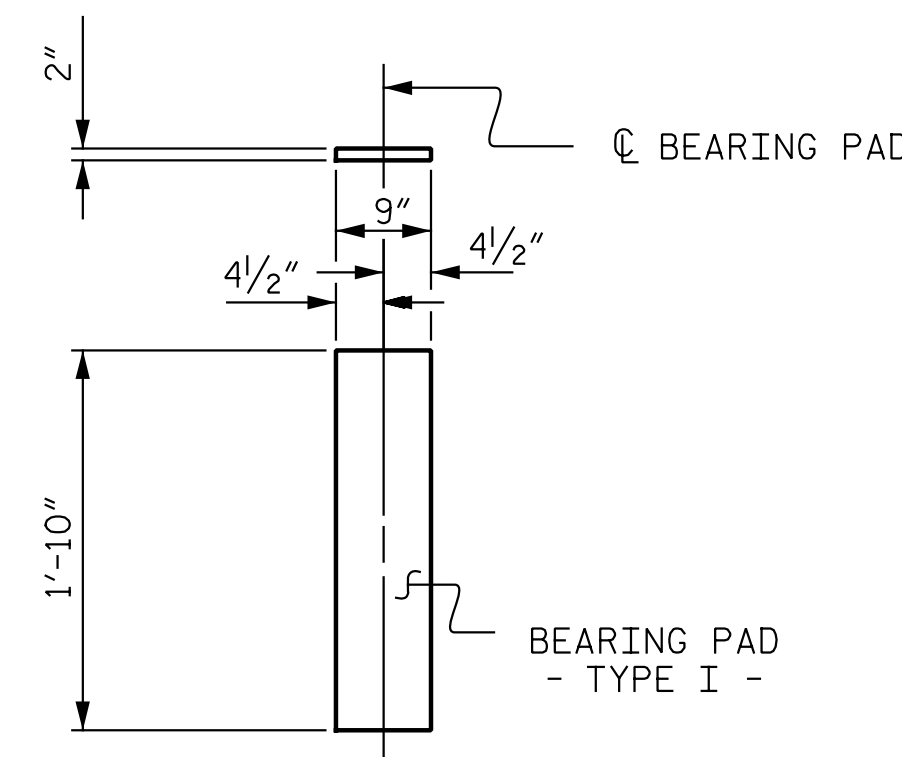
THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.



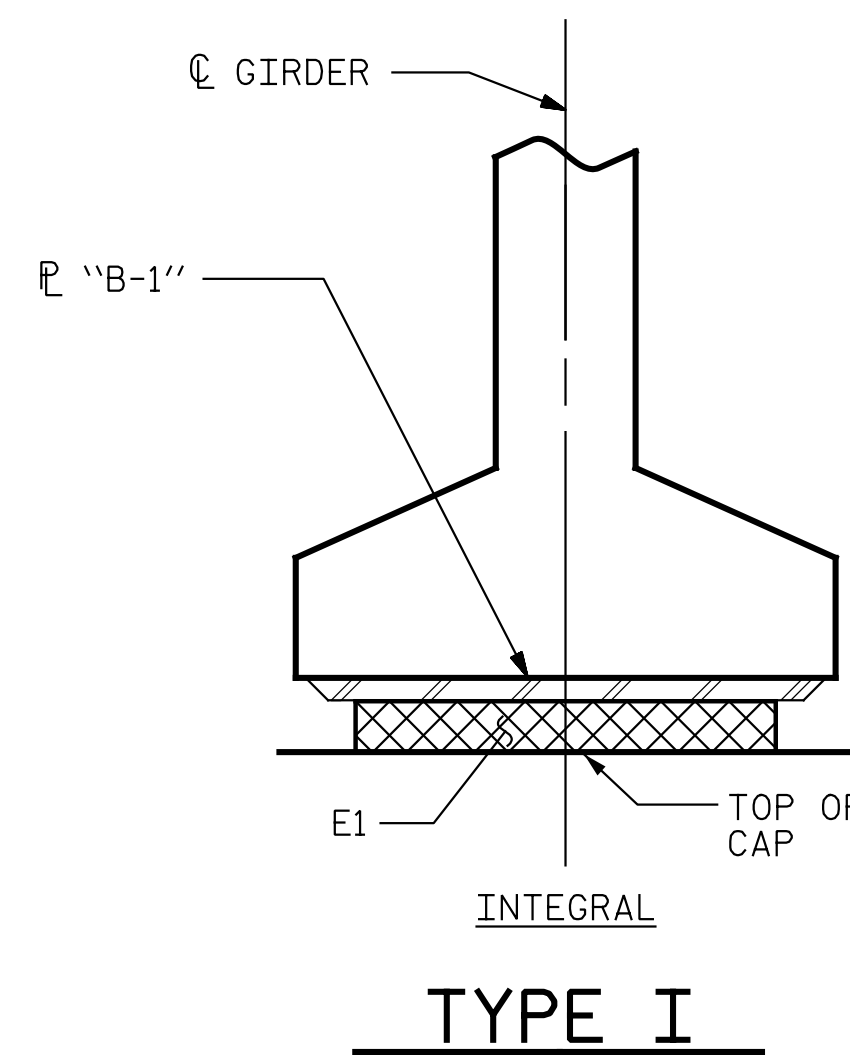
DETAIL "A"



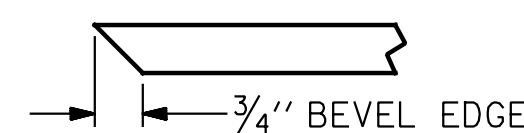
EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER AND 63" & 72" MODIFIED BULB TEES
(2 REQ'D PER GIRDER)



E1 (10 REQ'D)
PLAIN ELASTOMERIC BEARING DETAIL



TYPE I

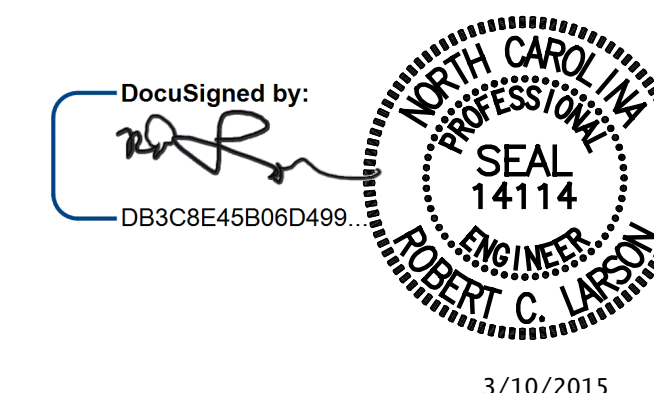


SECTION "F"
(SEE NOTES)

PROJECT NO. R-2514D
JONES COUNTY
STATION: 320+39.56 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
DETAILS
STD. NO. PCG9 RIGHT LANE



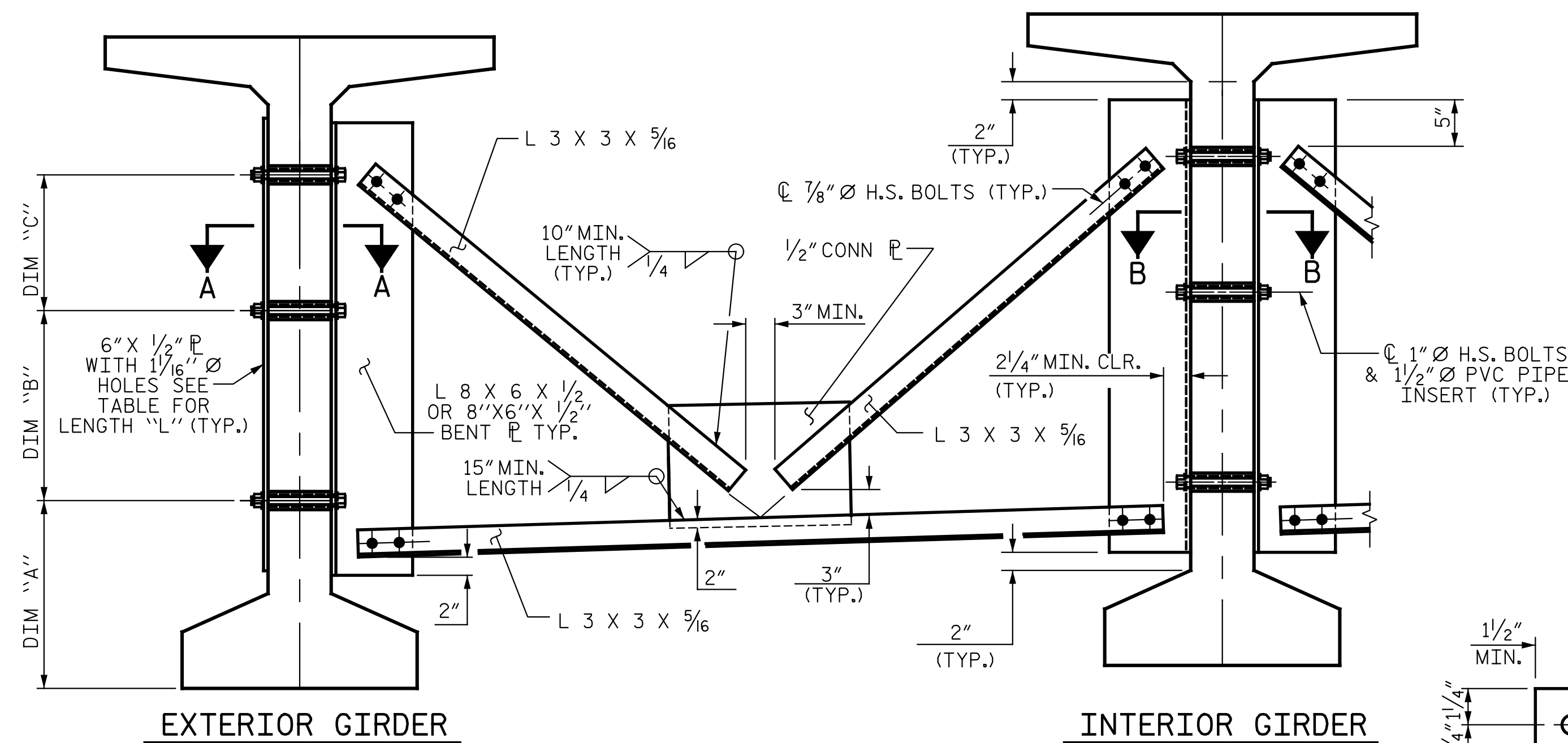
3/10/2015

DESIGN ENGINEER OF RECORD:	DATE:	3/10/2015
DRAWN BY: R. C. LARSON	DATE:	10/15/13
CHECKED BY: R. A. PRUETT	DATE:	11/06/13

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

SHEET NO.	S02-10
TOTAL SHEETS	S02-24

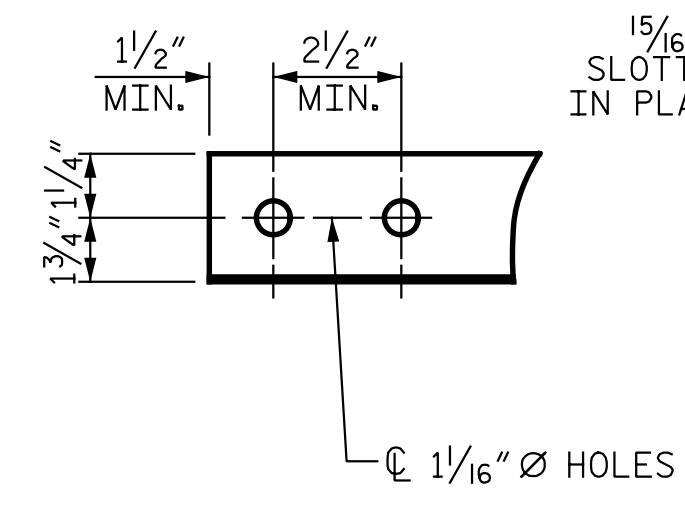
KCI Associates
of North Carolina, P.A.
SUNITE 220, LANDMARK CENTER # 4601 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244
DWG. REF. NO. 10 OF 24



PART SECTION AT INTERMEDIATE DIAPHRAGM

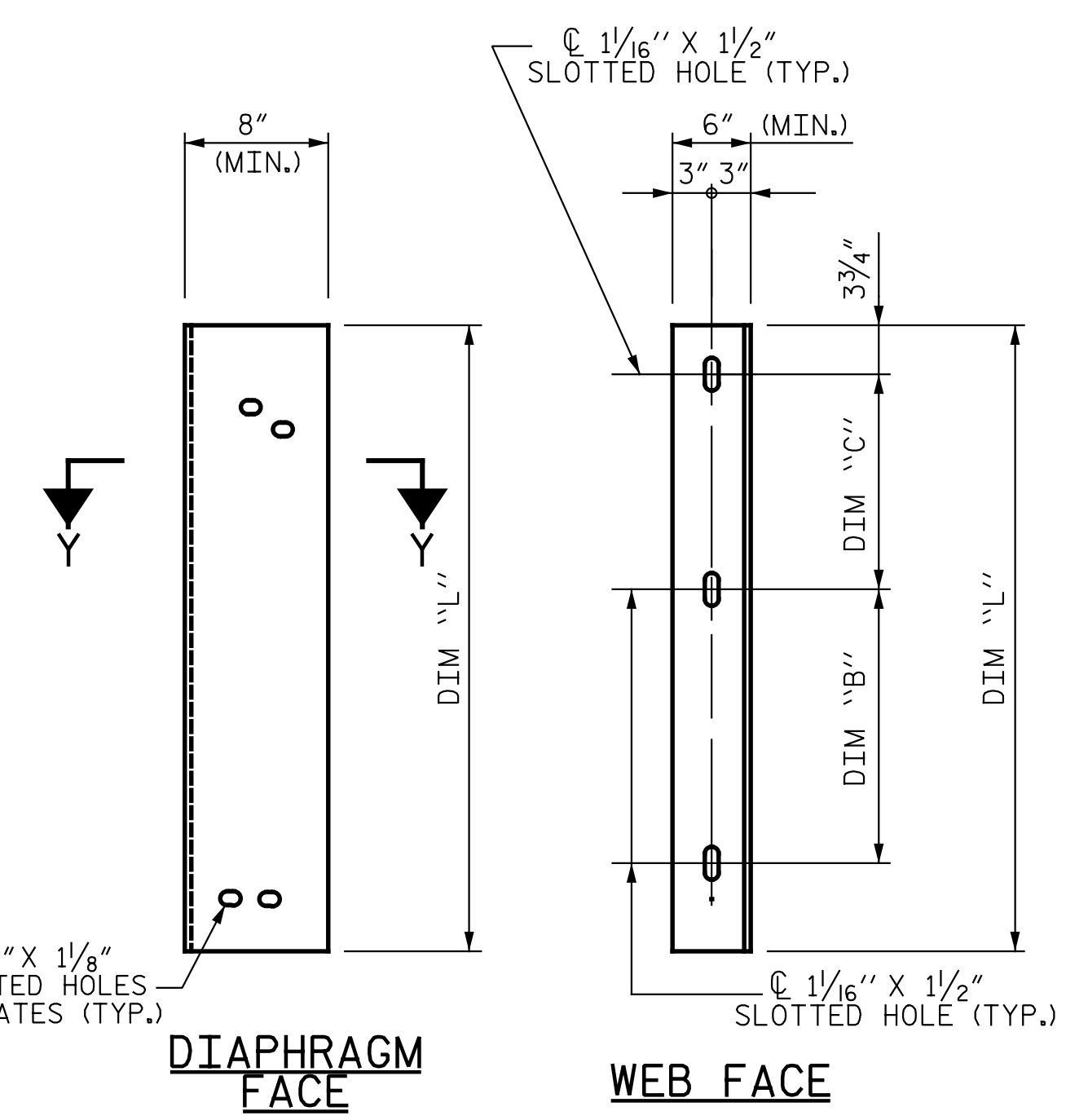
(63" BULB TEE OR 72" BULB TEE GIRDER SHOWN)

DIM "C"
DIM "B"
DIM "A"



ANGLE END

(L 3 X 3 X 5/16)



CONNECTOR PLATE DETAIL

STRUCTURAL STEEL NOTES

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

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

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

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

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

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

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

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

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

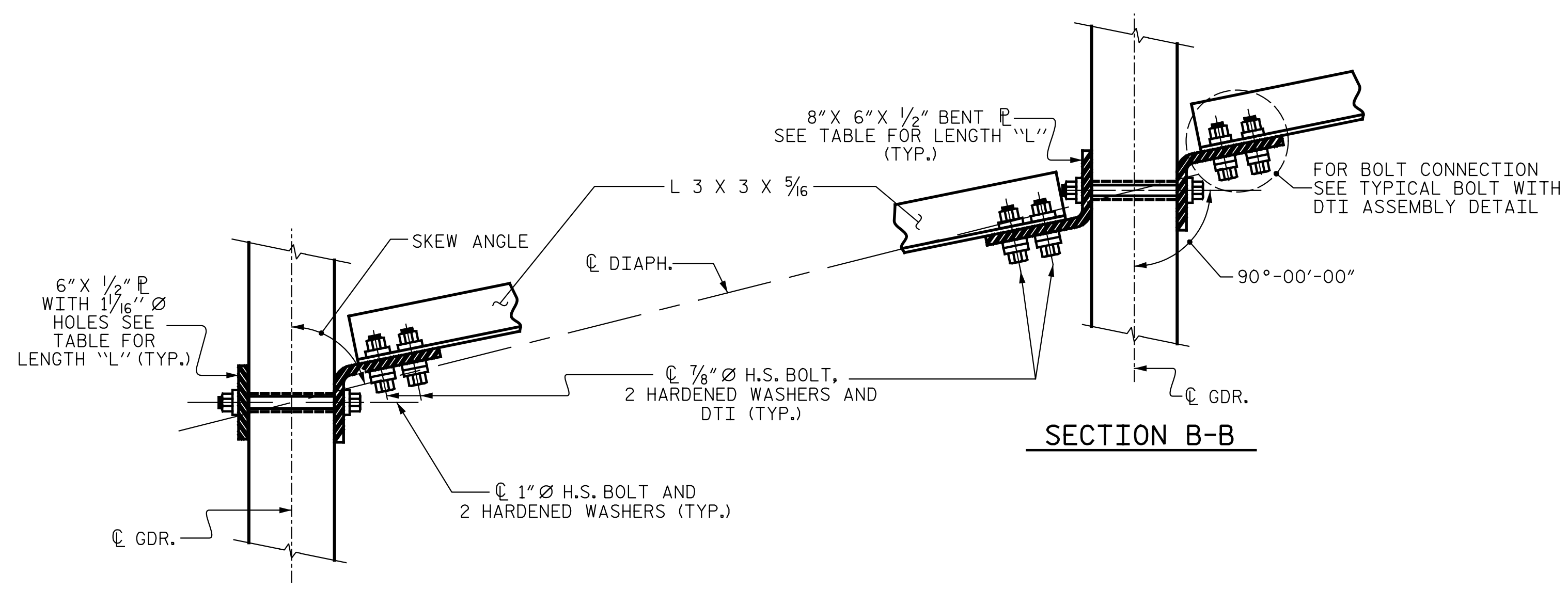
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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

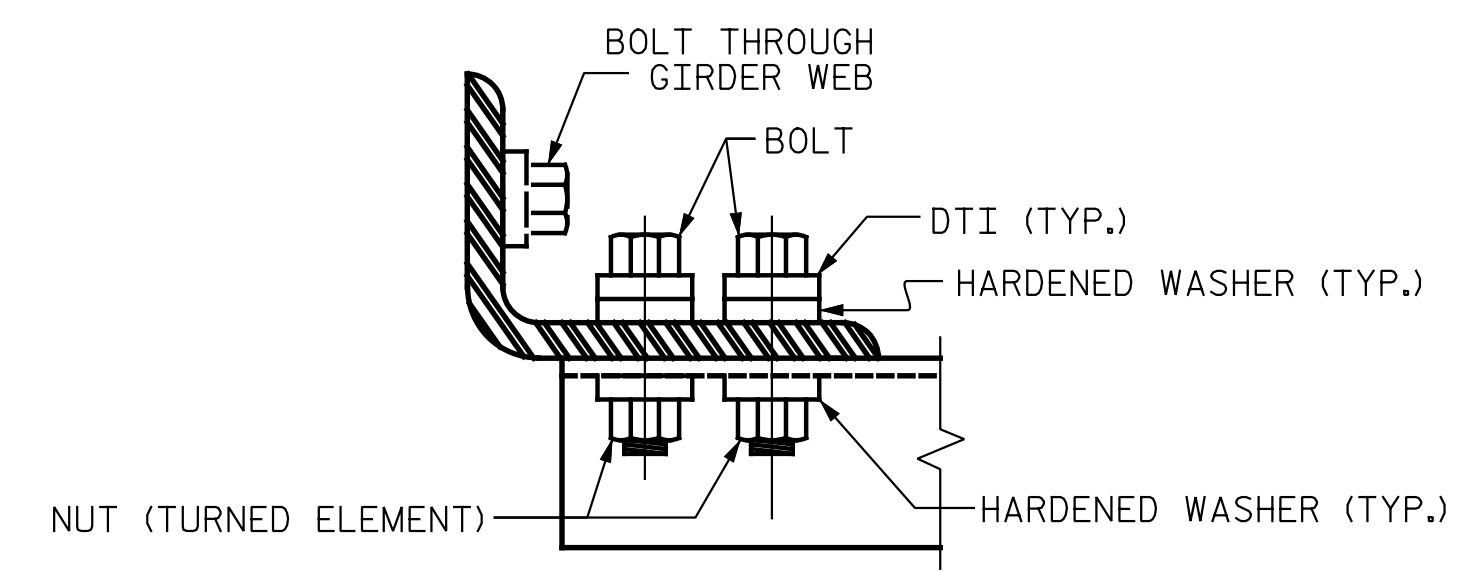
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

TABLE

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
72" BULB TEE	1'-8"	1'-7"	1'-7 3/4"	4'-2"



CONNECTION DETAILS

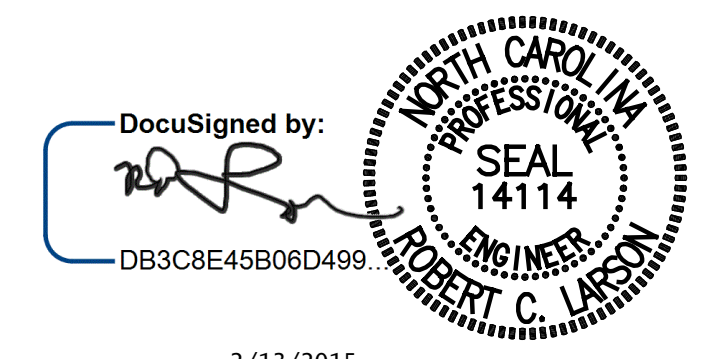


BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 INTERMEDIATE STEEL
 DIAPHRAGMS FOR 63" & 72"
 MODIFIED BULB TEE
 PRESTRESSED CONCRETE GIRDERS
 RIGHT LANE
 STD PCG11



DESIGN ENGINEER OF RECORD: _____ DATE: 2/13/2015

ASSEMBLED BY: R.J. FLORY DATE: 6/28/13
 CHECKED BY: R.C. LARSON DATE: 8/20/13
 DRAWN BY: RWW 11/09
 CHECKED BY: GM 11/09

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 11 OF 24

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

TOTAL SHEETS: S02-24

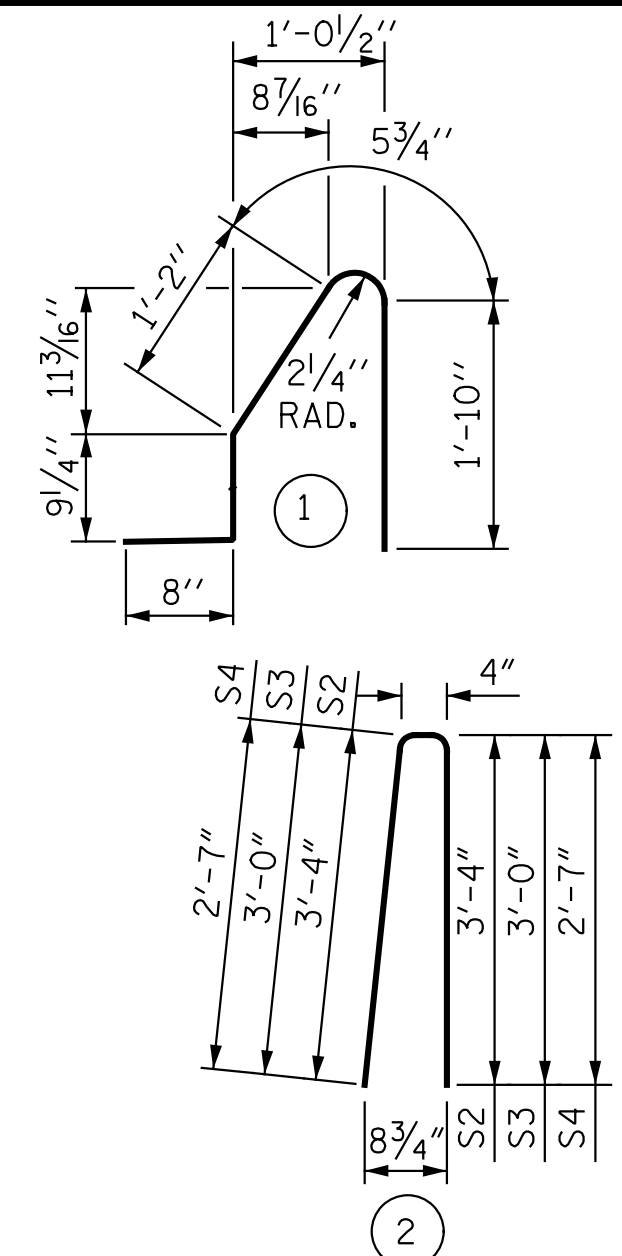
NOTES

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

BAR TYPES

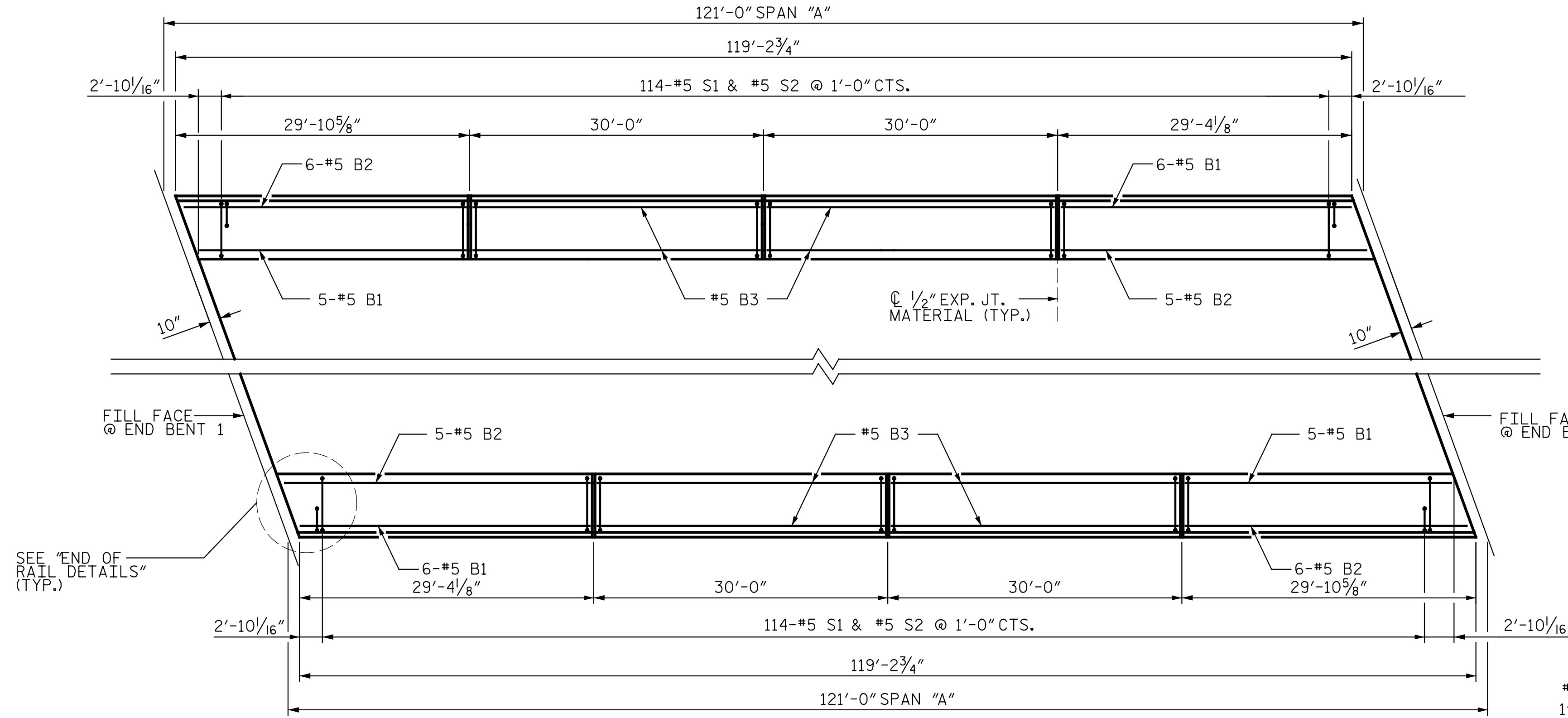


ALL BAR DIMENSIONS ARE OUT TO OUT

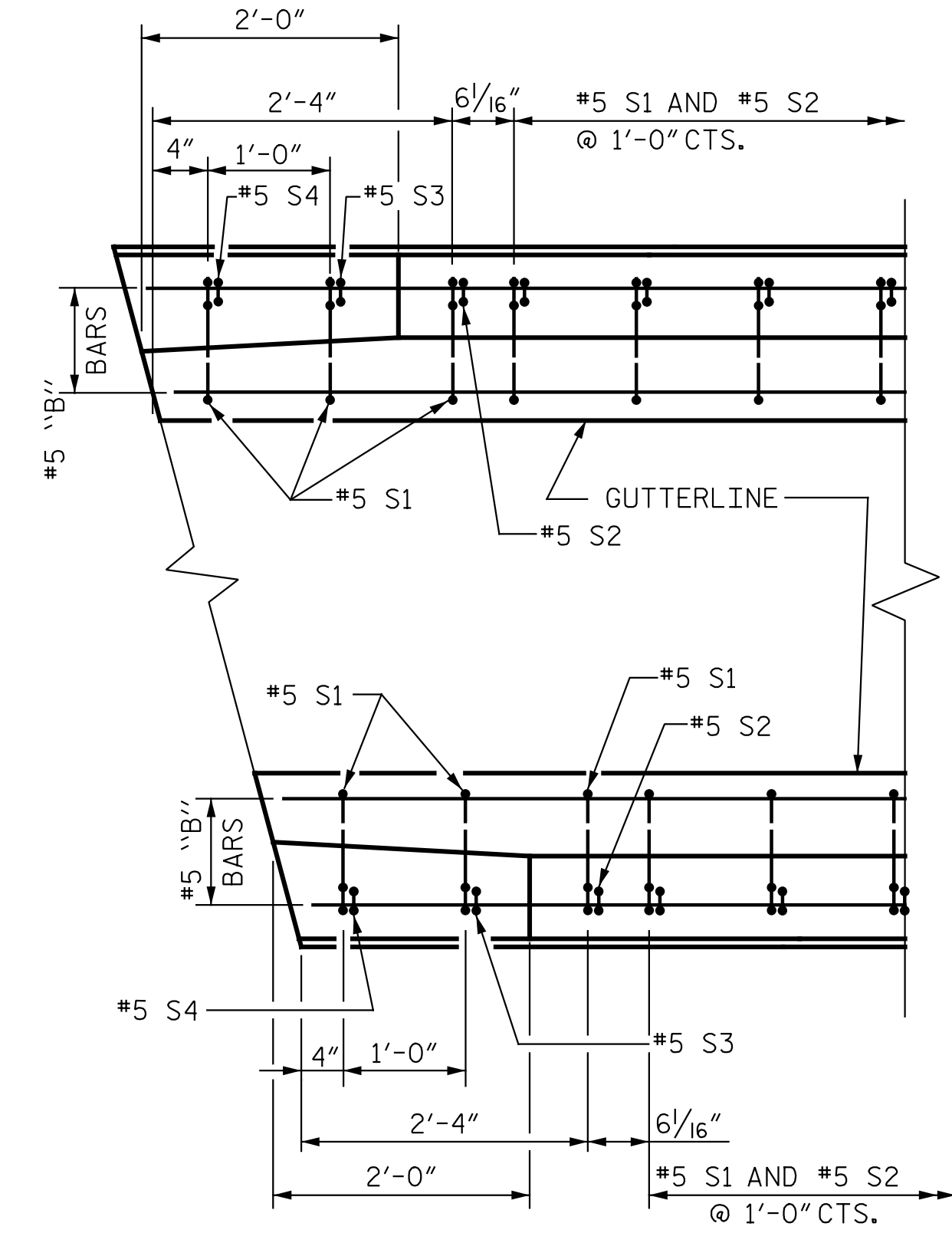
BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

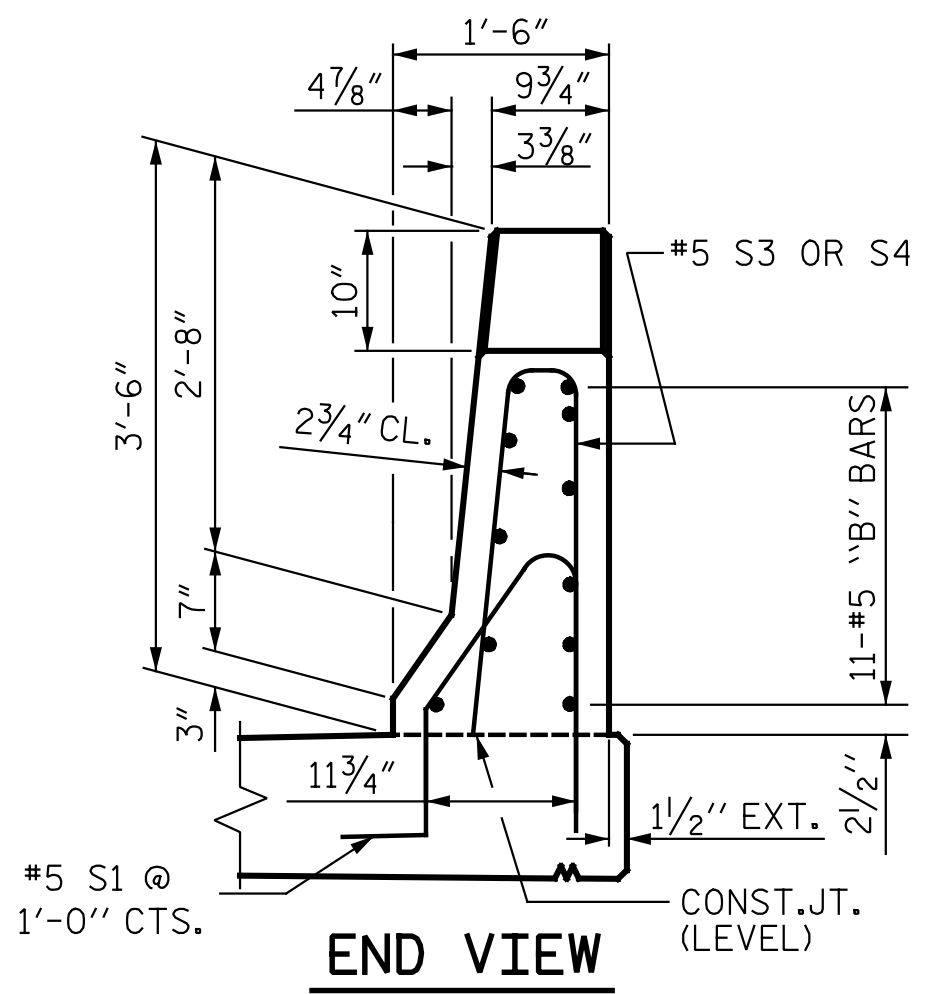
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
*S1	240 #5	1	4'-11"	1231
*S2	232 #5	2	7'-0"	1694
*S3	4 #5	2	6'-4"	26
*S4	4 #5	2	5'-6"	23
*B1	22 #5	STR.	29'-0"	665
*B2	22 #5	STR.	29'-3"	671
*B3	44 #5	STR.	29'-8"	1361
* EPOXY COATED REINFORCING STEEL				5671 LBS.
CLASS AA CONCRETE				32.3 CU. YDS.
CONCRETE BARRIER RAIL				238.46 LIN. FT.



PLAN

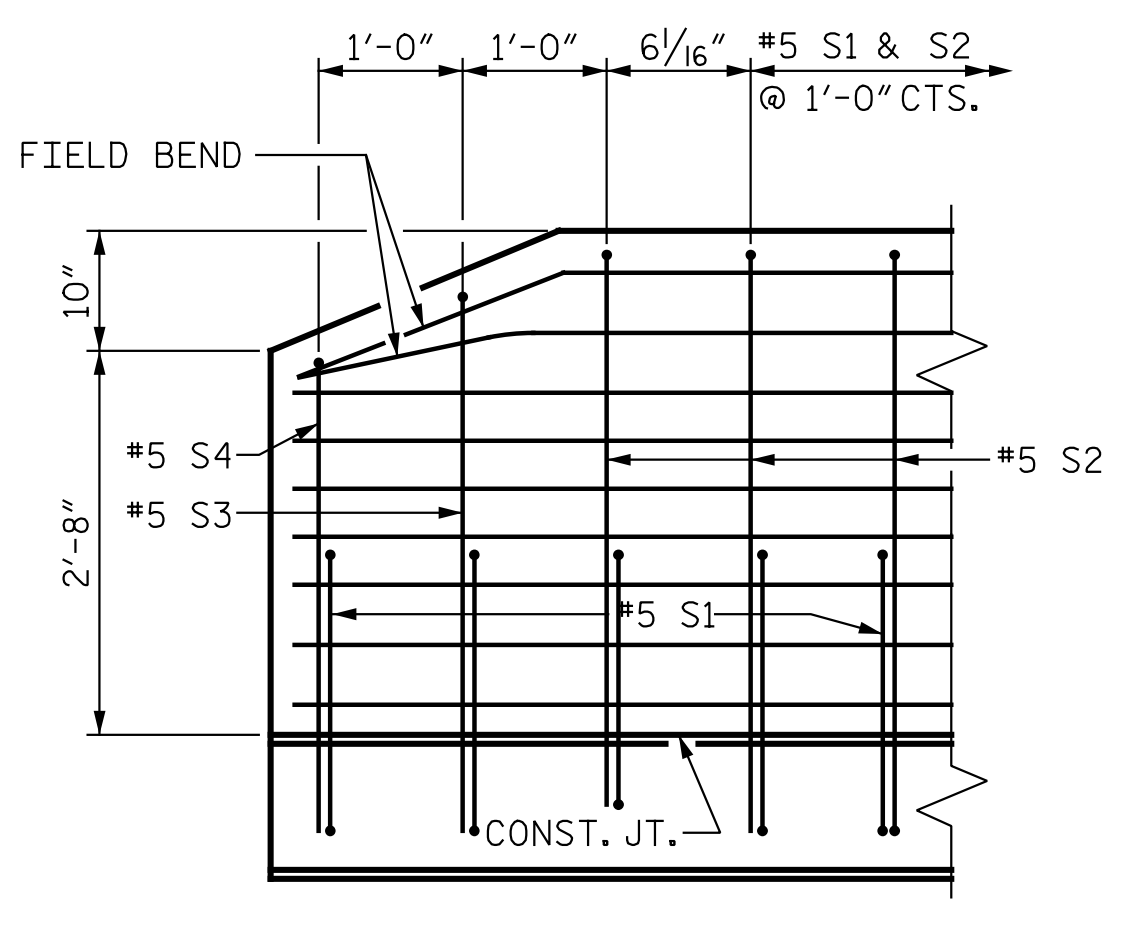


PLAN

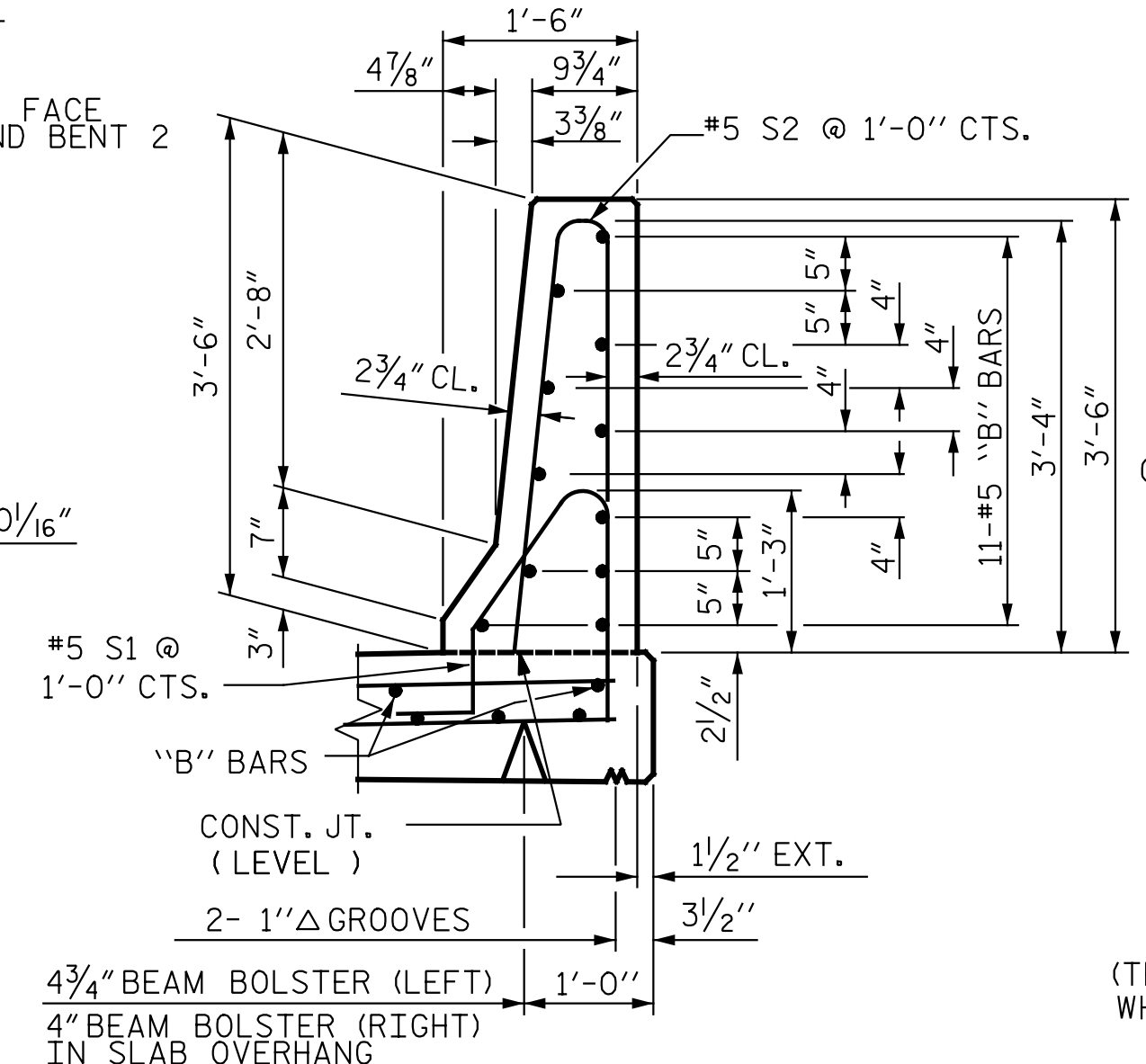


END VIEW

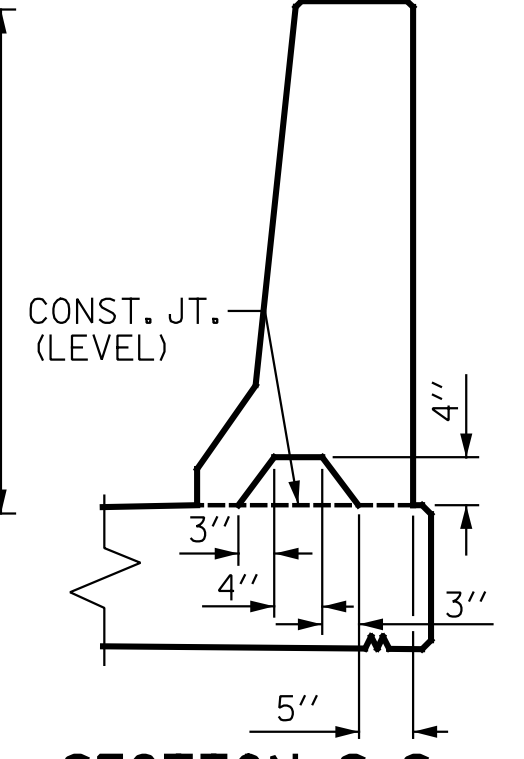
END OF RAIL DETAILS



SIDE VIEW



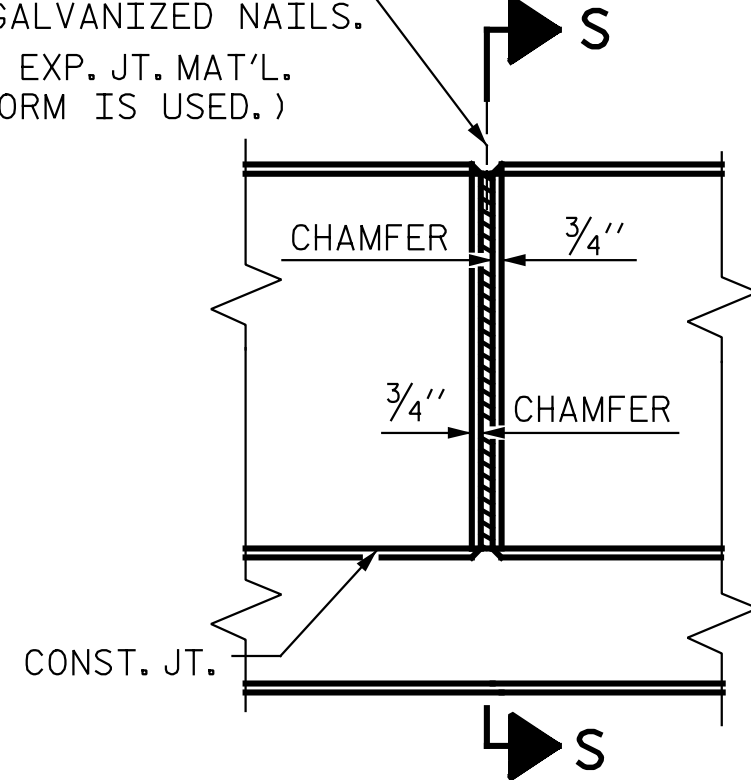
SECTION THRU RAIL



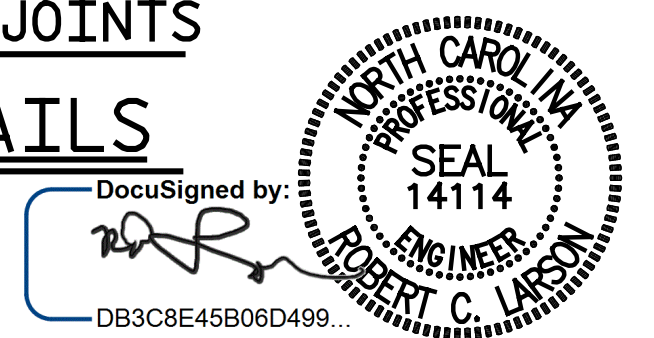
SECTION S-S

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

1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS. (NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED.)



ELEVATION AT EXPANSION JOINTS BARRIER RAIL DETAILS



DESIGN ENGINEER OF RECORD: DATE: 5/12/2015

DRAWN BY: J. WEATHERBURNE DATE: 07/14/13

CHECKED BY: R. C. LARSON DATE: 07/15/13

DRAWN BY: ARB 5/87 REV. 10/1/11 MAA/GM

CHECKED BY: SJD 9/87 REV. 7/12 MAA/GM

REV. 6/13 MAA/GM

5/12/2015

KCI Associates of North Carolina, P.A.

SUITE 220, LANDMARK CENTER #400 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244

DWG. REF. NO. 12 OF 24

PROJECT NO. R-2514D
 JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 1 OF 1

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

STD. NO. CBR1 RIGHT LANE

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

SHEET NO. S02-I2
 TOTAL SHEETS S02-24

STR-#2

NOTES

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

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

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

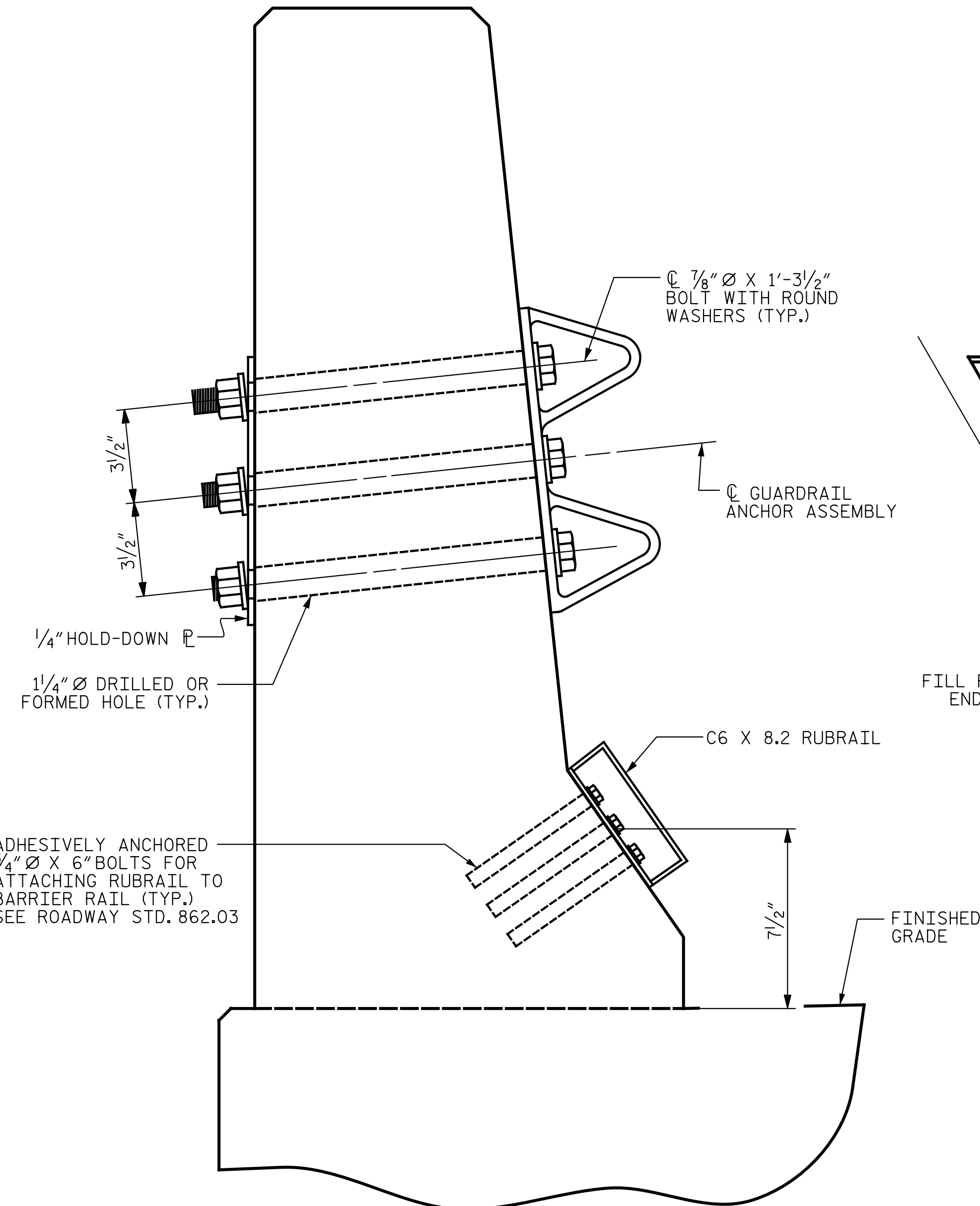
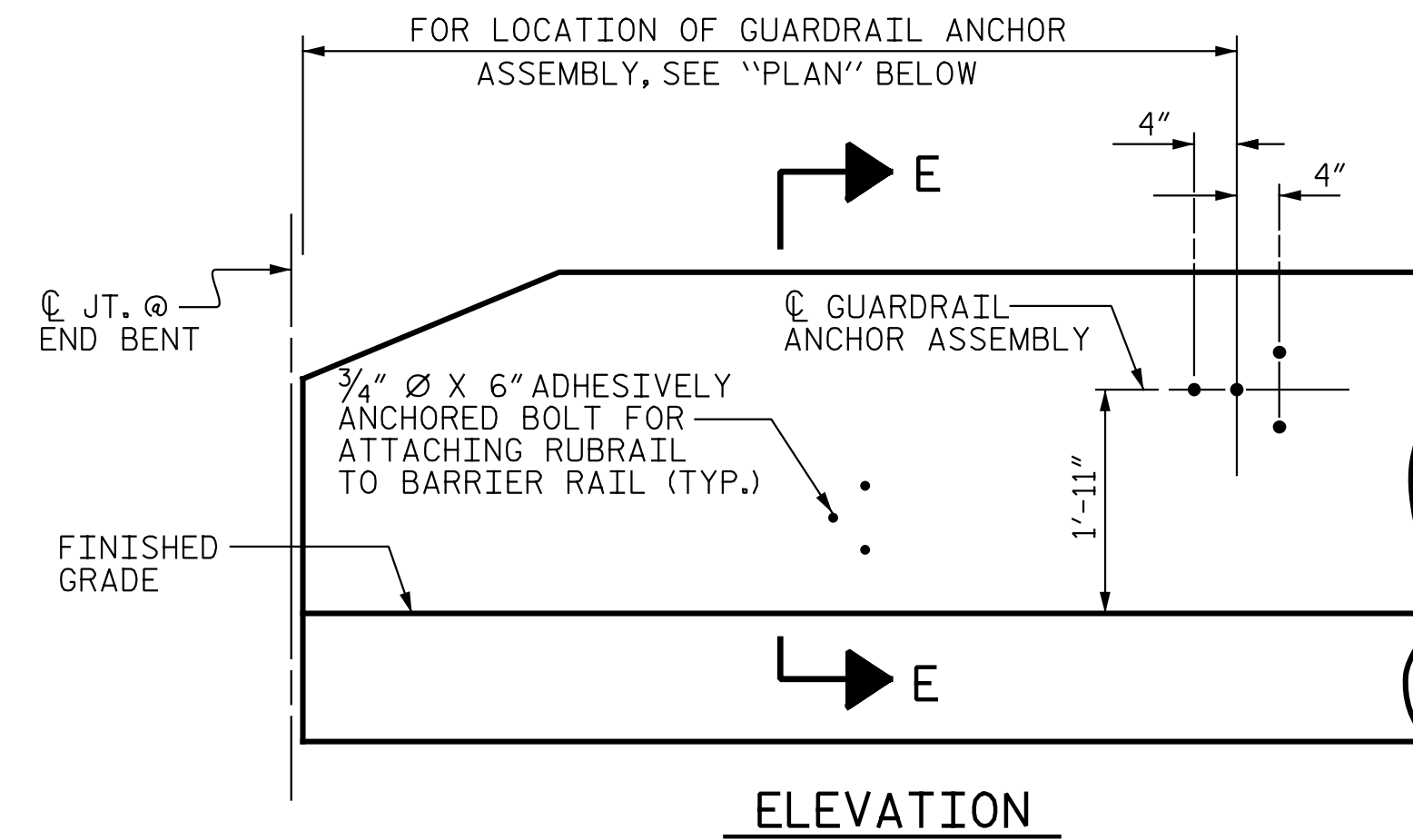
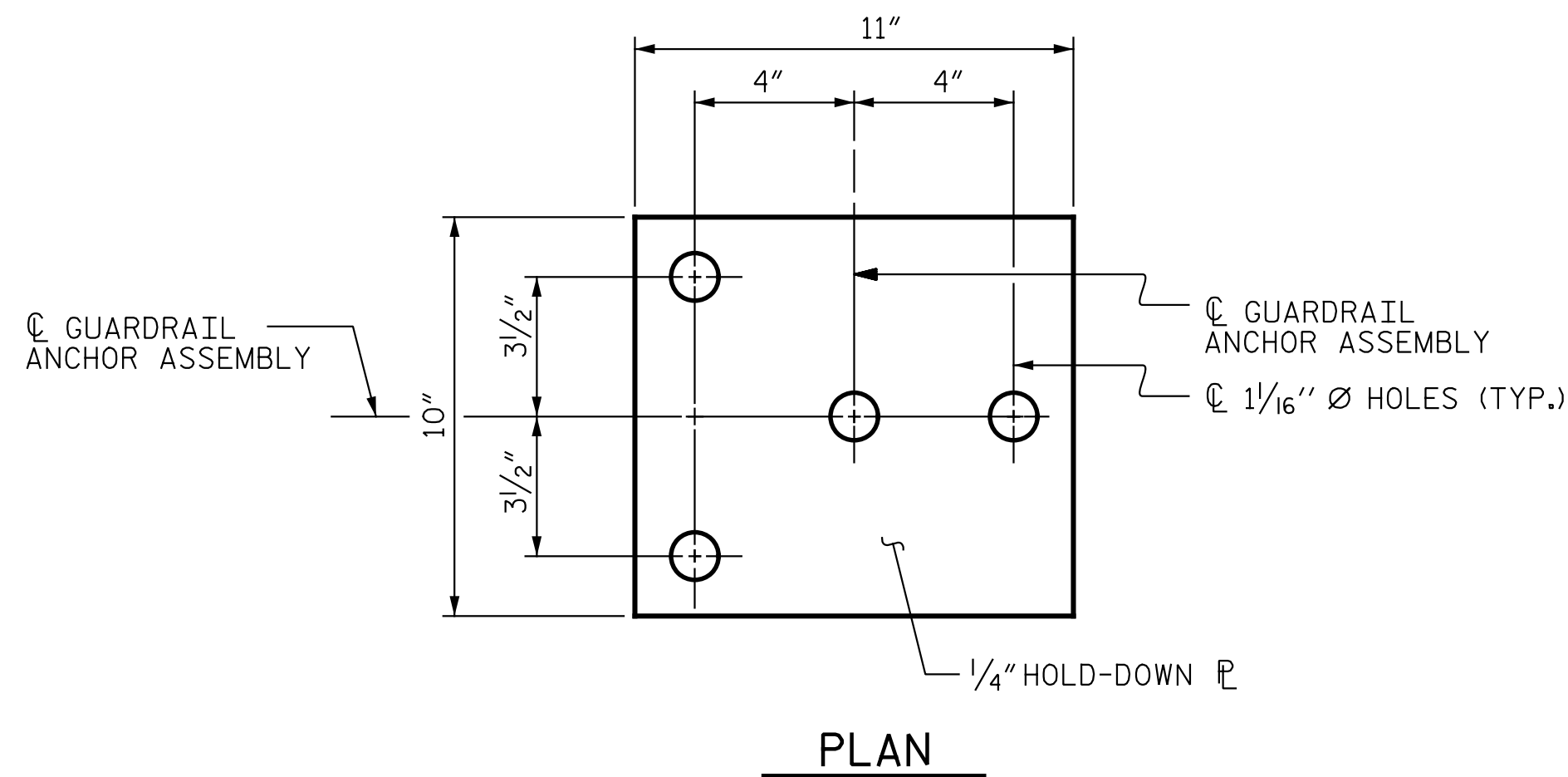
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

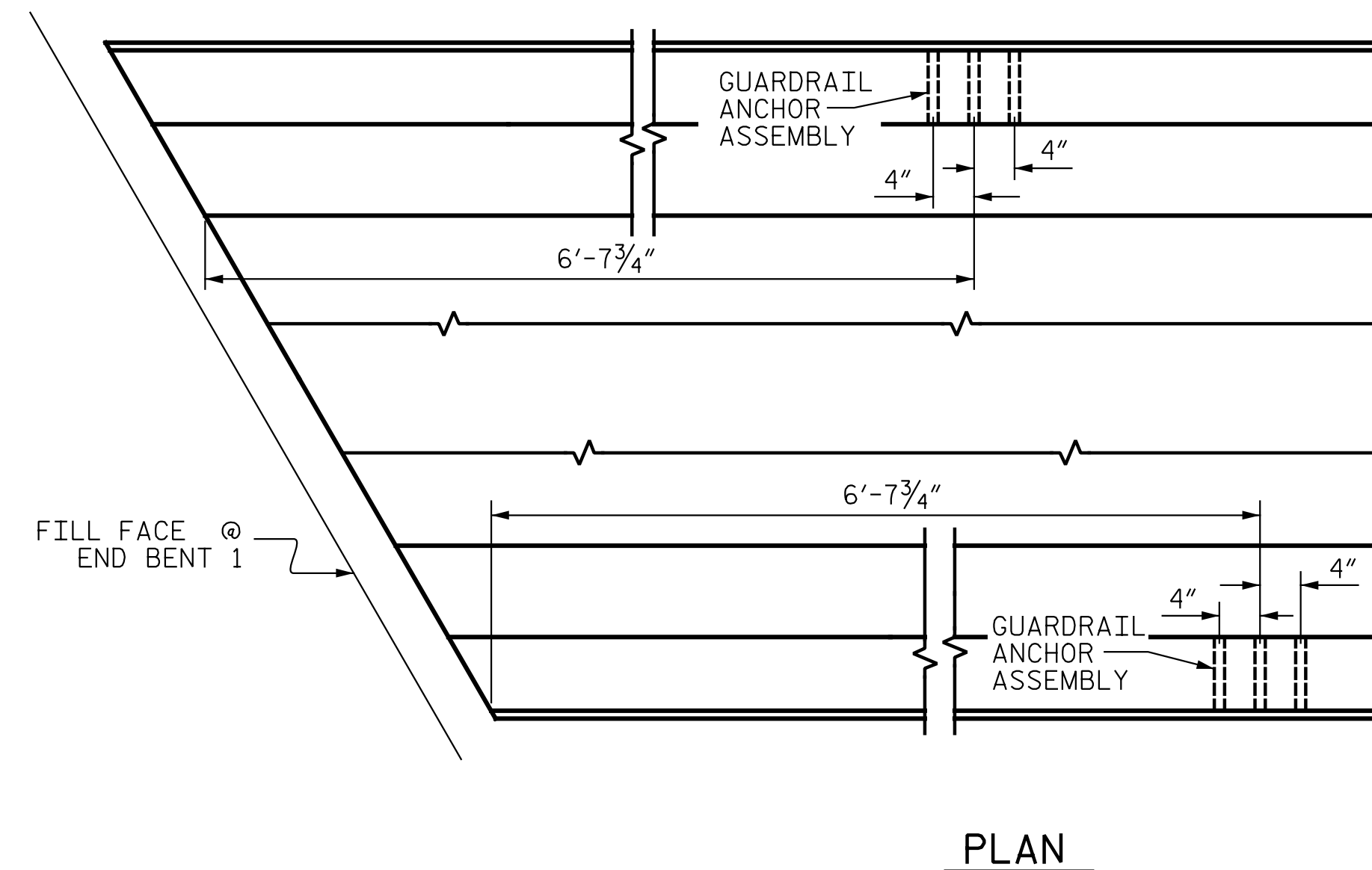
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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

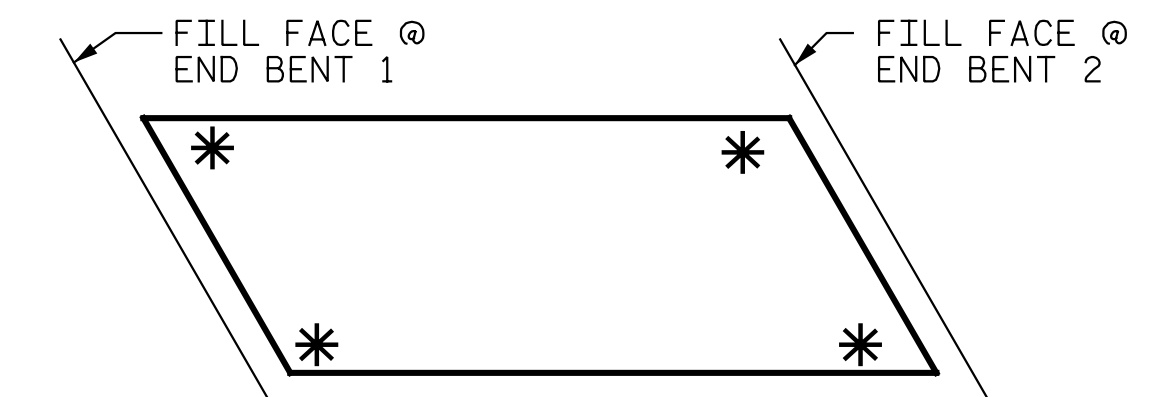
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR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



**SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS**



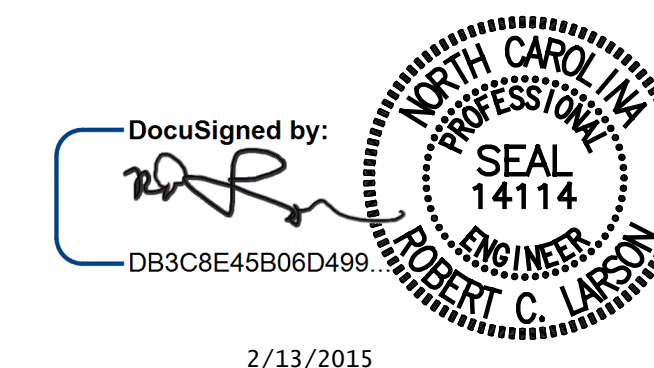
LOCATION OF ANCHORS FOR GUARDRAIL



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-



2/13/2015

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
**GUARDRAIL ANCHORAGE
 FOR BARRIER RAIL**
 STD. NO. GRA2 RIGHT LANE

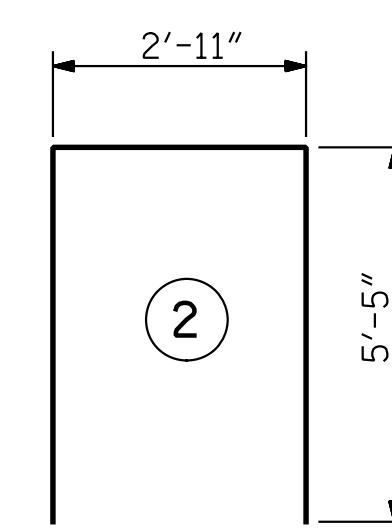
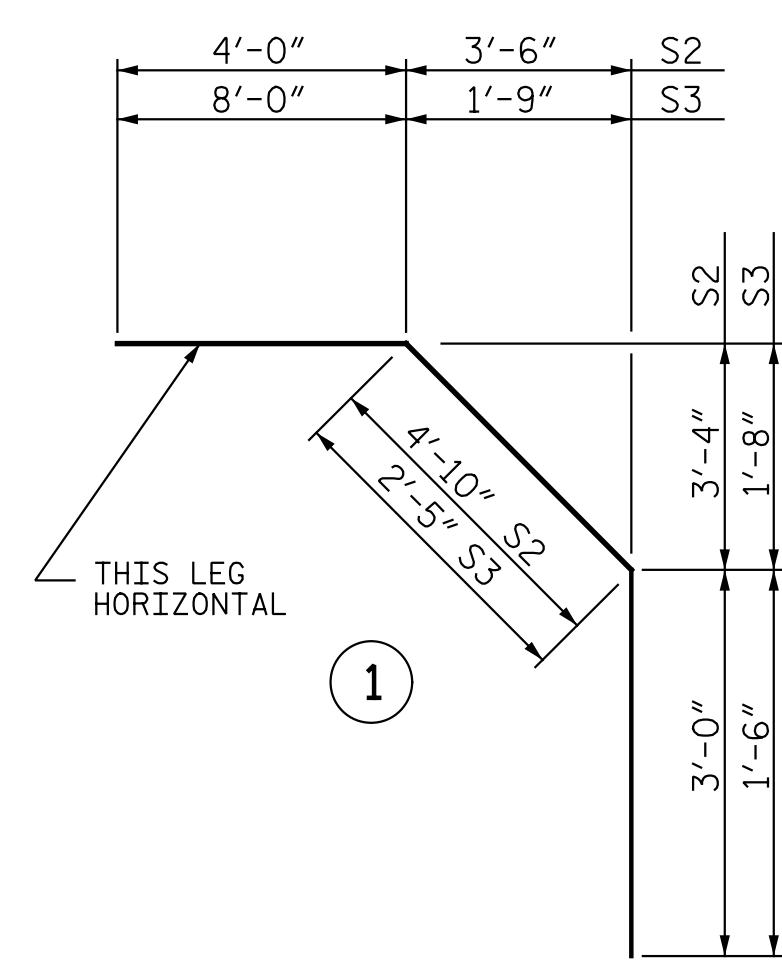
DESIGN ENGINEER OF RECORD:	DATE : 2/13/2015
ASSEMBLED BY : R.J. FLORY	DATE : 6/28/13
CHECKED BY : R.C. LARSON	DATE : 8/20/13
DRAWN BY : TLA 5/06	REV. 10/1/11 MAA/GM
CHECKED BY : GM 5/06	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM

ENGINEER'S PLANNERS & ESTIMATORS LICENSE NUMBER: C-0764		REVISIONS		SHEET NO.
KCI Associates of North Carolina, P.A.		NO.	BY:	DATE:
SUITE 220, LANDMARK CENTER #400 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244		1		
DWG. REF. NO. 13 OF 24		2		
		3		
		4		
				TOTAL SHEETS
				S02-13
				S02-24

BILL OF MATERIAL

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
A1	174	5	STR.	48'-11"	8878	A39	2	5	STR.	36'-3"	76
*A2	174	5	STR.	48'-11"	8878	A40	2	5	STR.	34'-8"	72
*A3	2	5	STR.	47'-6"	99	A41	2	5	STR.	33'-1"	69
*A4	2	5	STR.	45'-11"	96	A42	2	5	STR.	31'-5"	66
*A5	2	5	STR.	44'-3"	92	A43	2	5	STR.	29'-10"	62
*A6	2	5	STR.	42'-8"	89	A44	2	5	STR.	28'-3"	59
*A7	2	5	STR.	41'-1"	86	A45	2	5	STR.	26'-8"	56
*A8	2	5	STR.	39'-6"	82	A46	2	5	STR.	25'-1"	52
*A9	2	5	STR.	37'-10"	79	A47	2	5	STR.	23'-5"	49
*A10	2	5	STR.	36'-3"	76	A48	2	5	STR.	21'-10"	46
*A11	2	5	STR.	34'-8"	72	A49	2	5	STR.	20'-3"	42
*A12	2	5	STR.	33'-1"	69	A50	2	5	STR.	18'-8"	39
*A13	2	5	STR.	31'-5"	66	A51	2	5	STR.	17'-0"	35
*A14	2	5	STR.	29'-10"	62	A52	2	5	STR.	15'-5"	32
*A15	2	5	STR.	28'-3"	59	A53	2	5	STR.	13'-10"	29
*A16	2	5	STR.	26'-8"	56	A54	2	5	STR.	12'-3"	26
*A17	2	5	STR.	25'-1"	52	A55	2	5	STR.	10'-7"	22
*A18	2	5	STR.	23'-5"	49	A56	2	5	STR.	9'-0"	19
*A19	2	5	STR.	21'-10"	46	A57	2	5	STR.	7'-5"	15
*A20	2	5	STR.	20'-3"	42	A58	2	5	STR.	5'-10"	12
*A21	2	5	STR.	18'-8"	39	A59	2	5	STR.	4'-3"	9
*A22	2	5	STR.	17'-0"	35	A60	2	5	STR.	2'-7"	5
*A23	2	5	STR.	15'-5"	32						
*A24	2	5	STR.	13'-10"	29	*B1	170	4	STR.	25'-5"	2886
*A25	2	5	STR.	12'-3"	26	B2	84	5	STR.	51'-4"	4497
*A26	2	5	STR.	10'-7"	22	*B3	64	6	STR.	24'-0"	2307
*A27	2	5	STR.	9'-0"	19	*B4	64	6	STR.	25'-0"	2403
*A28	2	5	STR.	7'-5"	15	B5	84	6	STR.	24'-0"	3028
*A29	2	5	STR.	5'-10"	12						
*A30	2	5	STR.	4'-3"	9	K1	24	4	STR.	30'-0"	481
*A31	2	5	STR.	2'-7"	5	K2	8	4	STR.	8'-6"	45
A32	2	5	STR.	47'-6"	99	K3	40	4	STR.	10'-2"	272
A33	2	5	STR.	45'-11"	96	K4	20	4	STR.	3'-4"	45
A34	2	5	STR.	44'-3"	92	K5	4	4	STR.	2'-6"	7
A35	2	5	STR.	42'-8"	89						
A36	2	5	STR.	41'-1"	86	S1	80	4	2	13'-9"	735
A37	2	5	STR.	39'-6"	82	*S2	60	4	1	10'-11"	438
A38	2	5	STR.	37'-10"	79	*S3	60	4	1	11'-10"	474

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

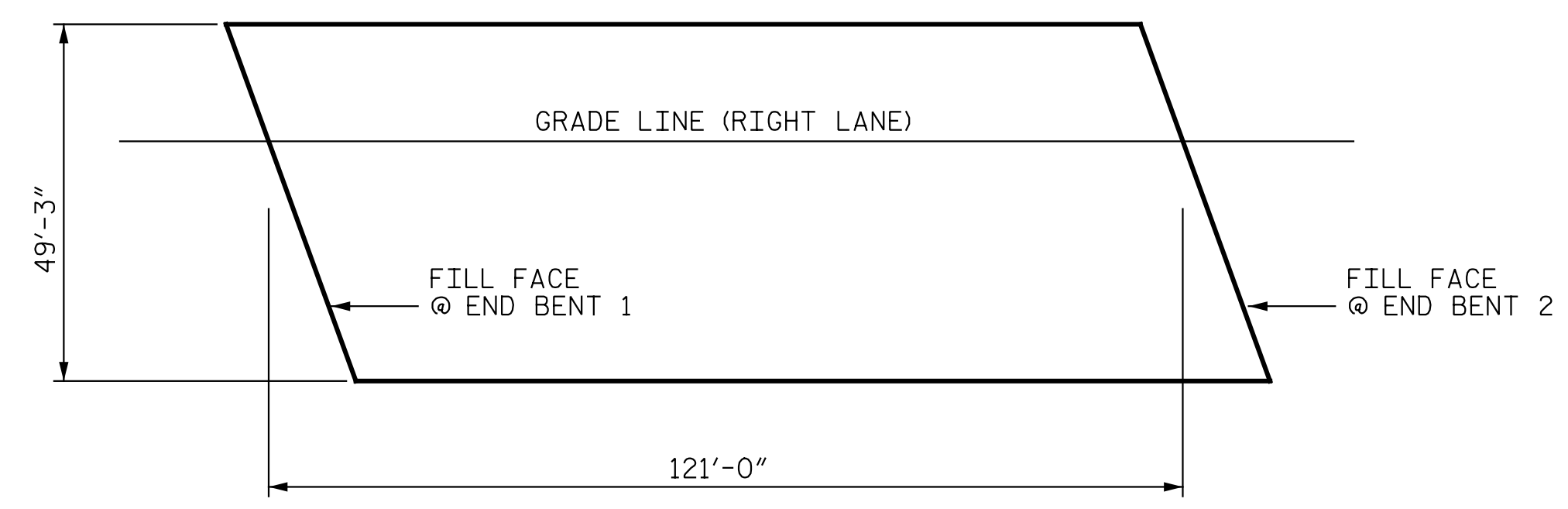
	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	*EPOXY COATED REINFORCING STEEL (LBS.)
SPAN "A"			
POUR 1	169.6		
POUR 2	94		
TOTALS**	263.6	19503	18901

**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

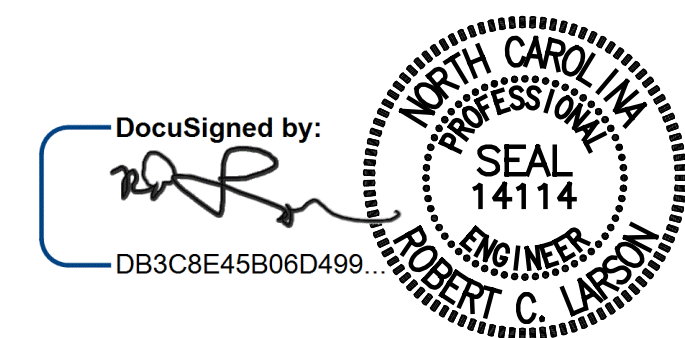
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 5,959)

GROOVING BRIDGE FLOORS

APPROACH SLABS	2073	SQ.FT.
BRIDGE DECK	5111	SQ.FT.
TOTAL	7184	SQ.FT.



2/13/2015

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

STD NO BOM2 RIGHT LANE

DocuSigned by: DB3C8E45B06D499...

DESIGN ENGINEER OF RECORD: DATE: 2/13/2015

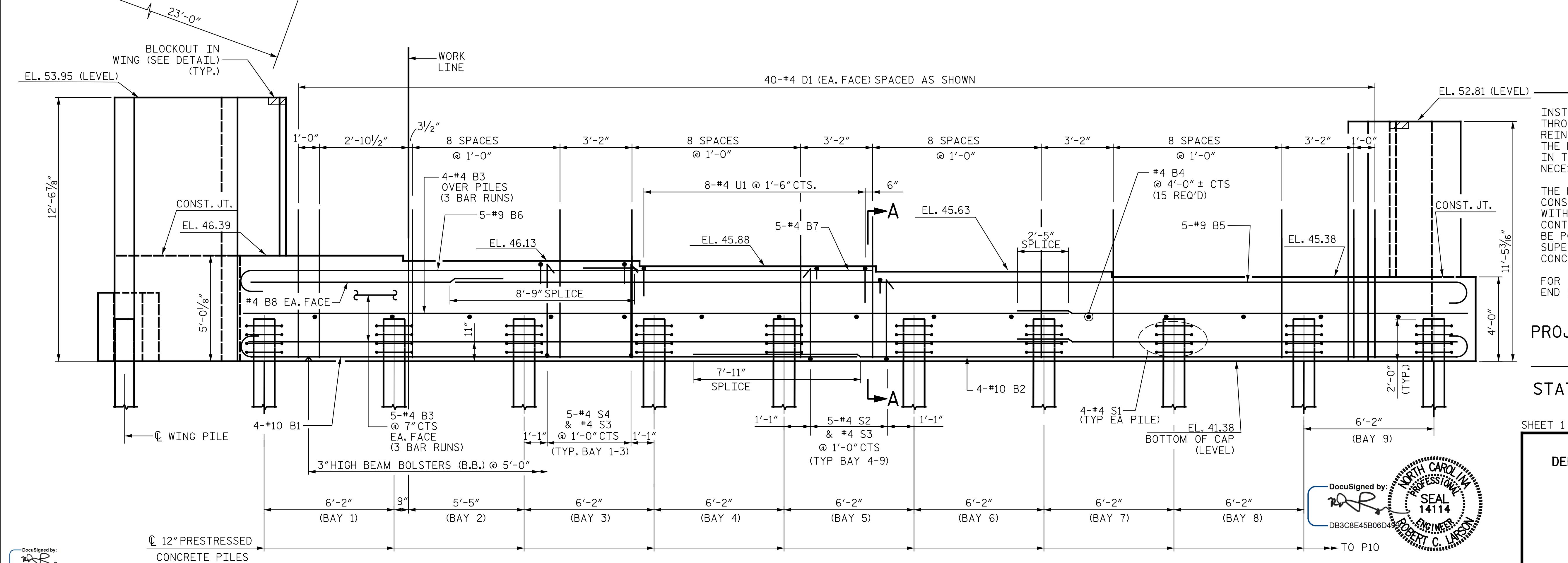
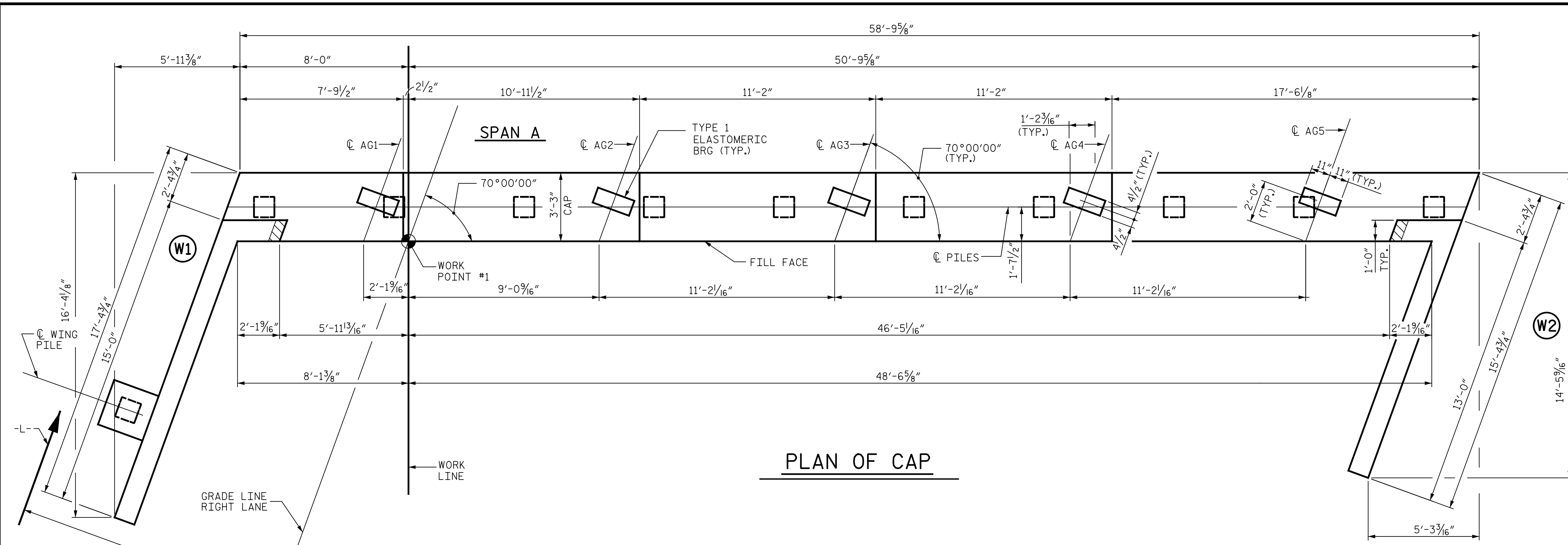
DRAWN BY: R. C. LARSON DATE: 8/20/13
 CHECKED BY: E. C. DECOLA DATE: 8/27/13

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

TOTAL SHEETS: S02-24

KCI Associates of North Carolina, P.A.
 ENGINEERS • PLANNERS • ECOLOGISTS LICENSE NUMBER: C-0764
 SUITE 220, LANDMARK CENTER # 4601 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244
 DWG. REF. NO. 14 OF 24

STR-#2



DESIGN ENGINEER OF RECORD: DATE: 4/10/2015
 DRAWN BY: R. J. FLORY DATE: 03/31/14
 CHECKED BY: R. C. LARSON DATE: 04/16/14

ELEVATION

NOTES

INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

THE PORTIONS OF THE WINGS ABOVE THE CONSTRUCTION JOINT ARE TO BE POURED WITH THE SUPERSTRUCTURE. AT THE CONTRACTOR'S OPTION, THESE PORTIONS MAY BE POURED SEPARATELY FROM THE SUPERSTRUCTURE, IN WHICH CASE CLASS 'A' CONCRETE MAY BE USED.

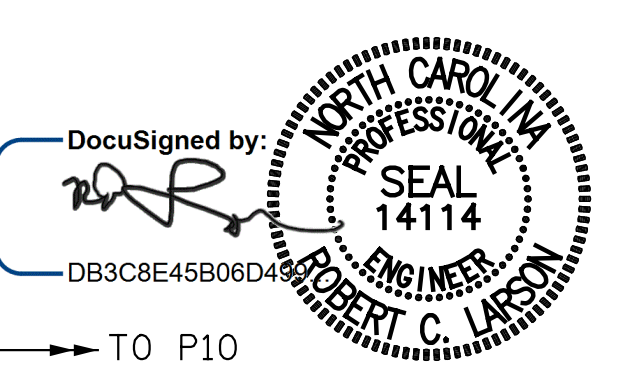
FOR "BLOCKOUT IN WING WALL", SEE END BENT 2.

PROJECT NO. R-2514D
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SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

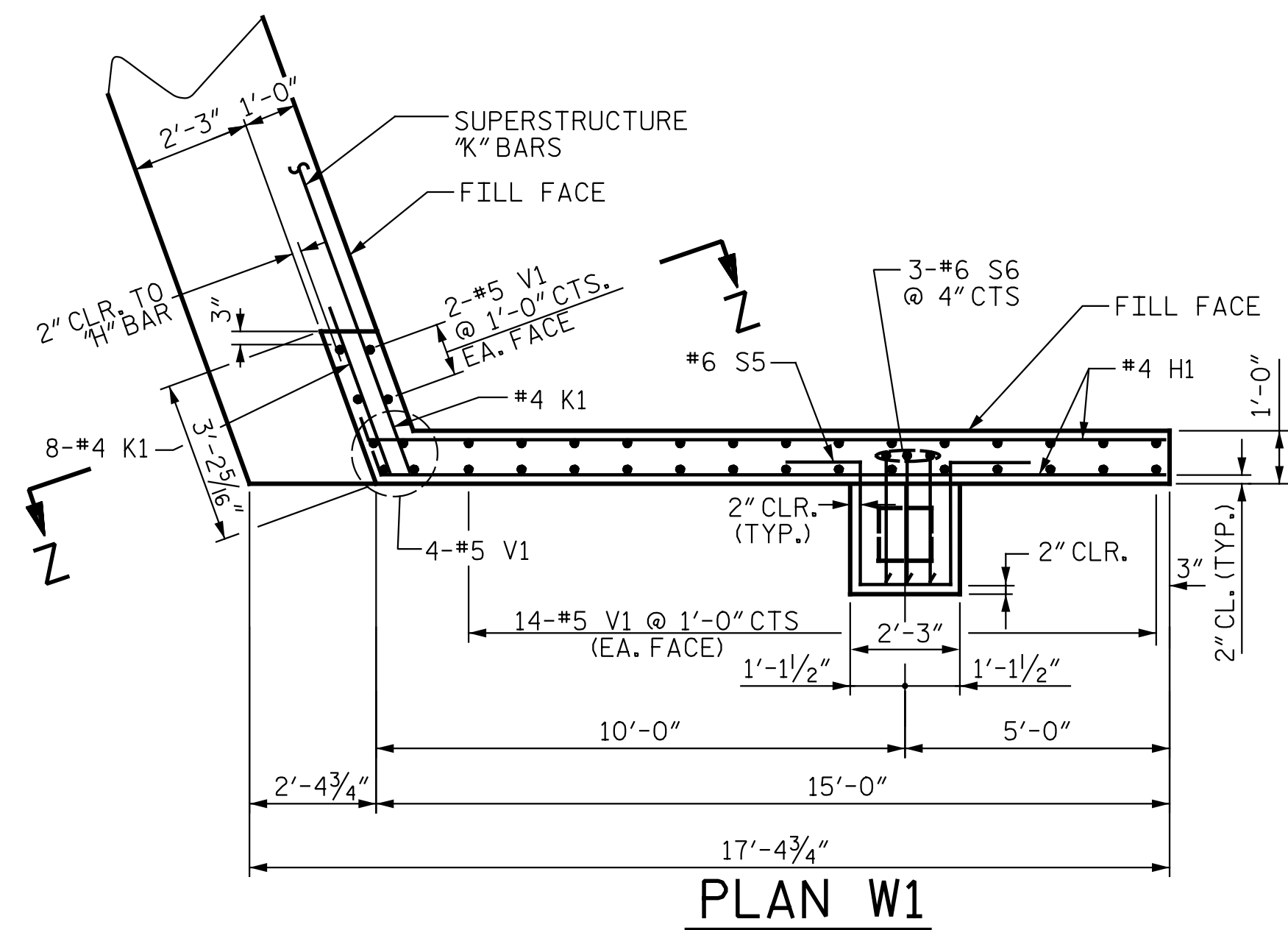
**SUBSTRUCTURE
 END BENT 1
 RIGHT LANE**



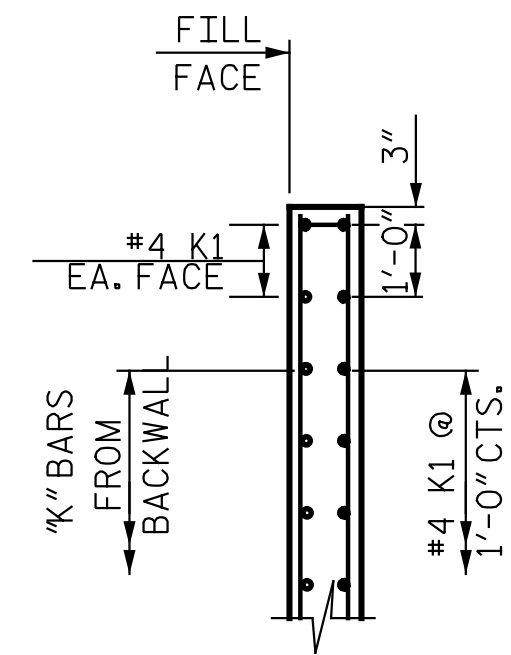
DocuSigned by:
 DB3C8E45B06D4
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 DWG. REF. NO. 15 OF 24

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

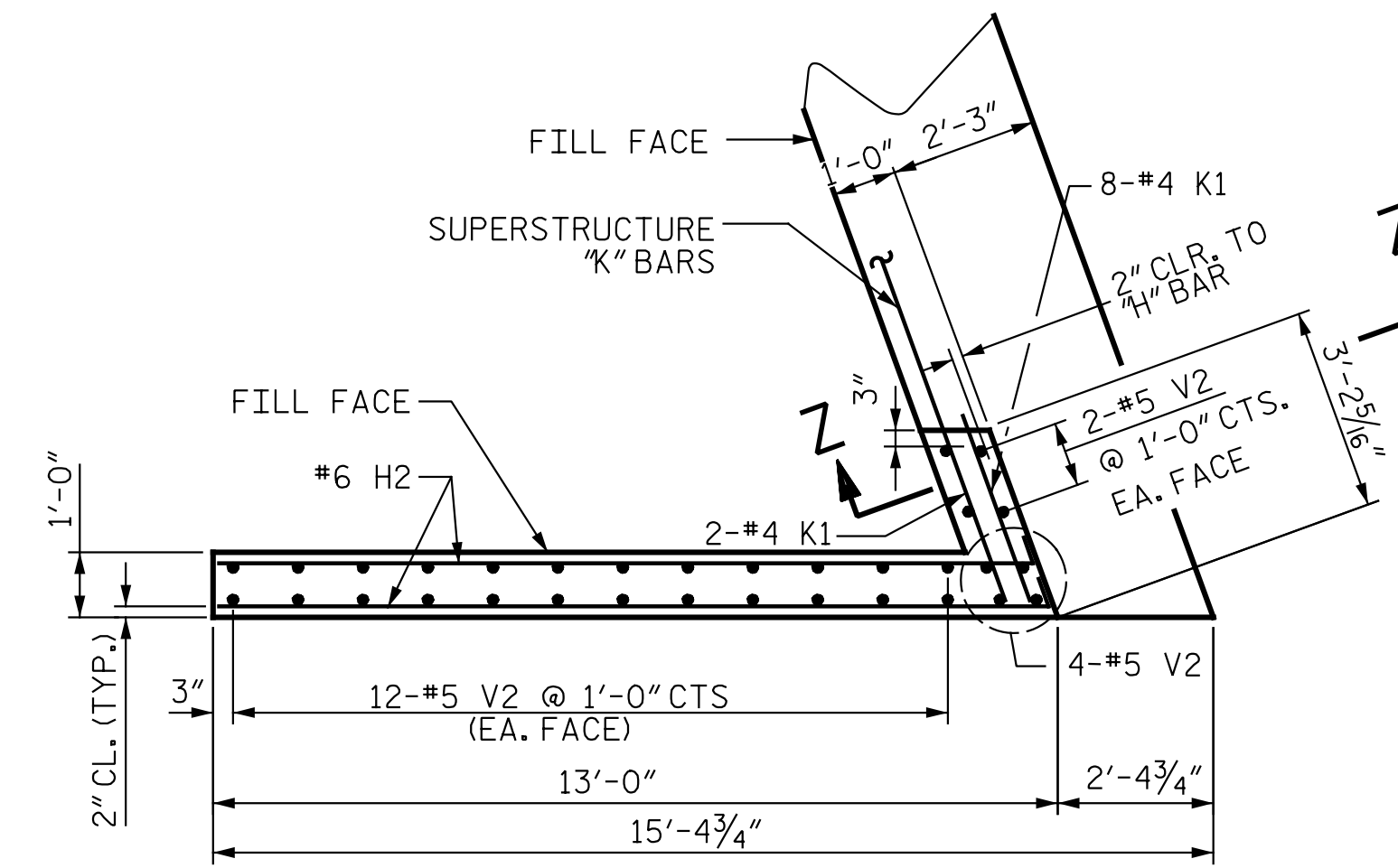
TOTAL SHEETS: 502-24



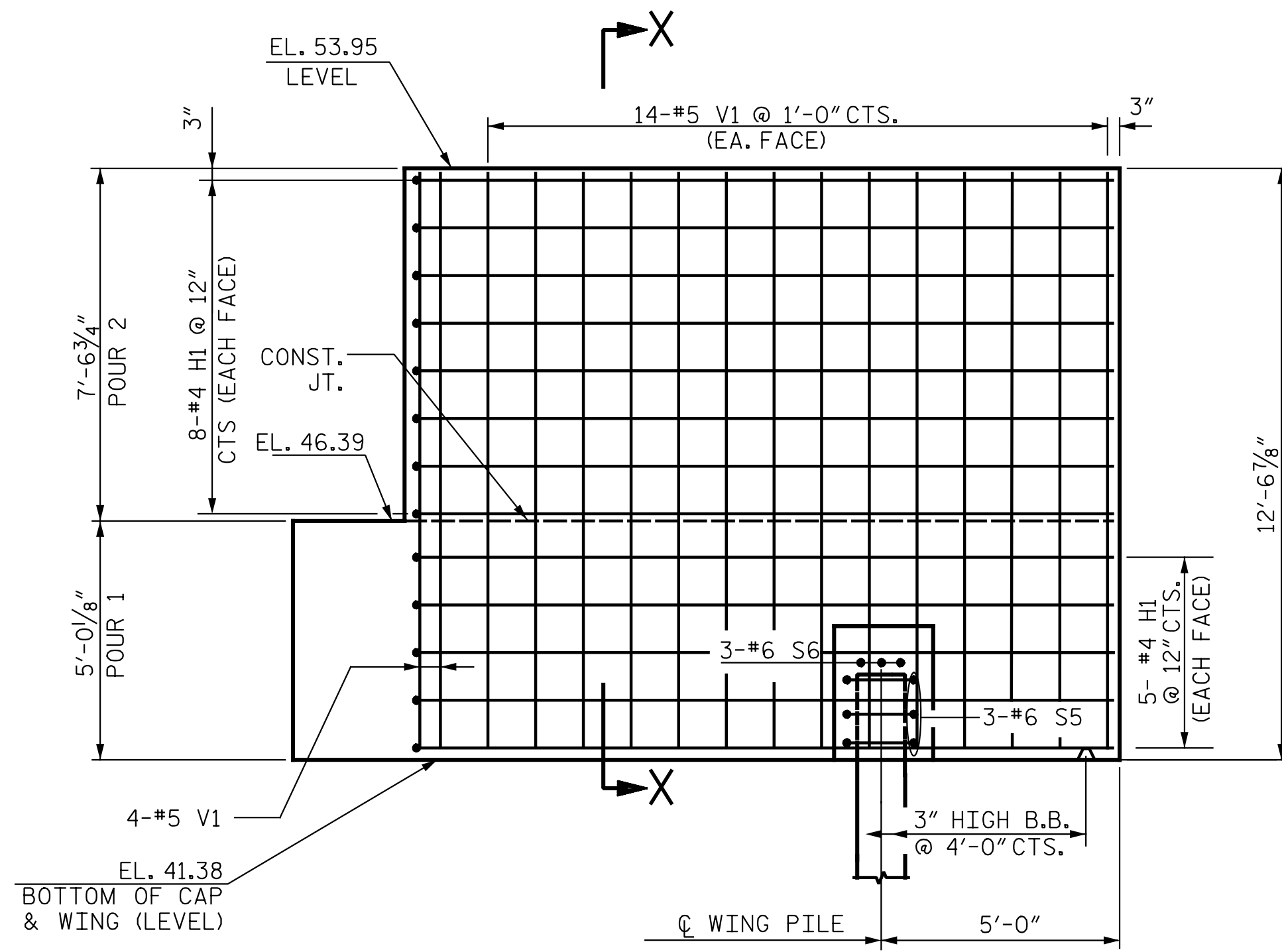
PLAN W1



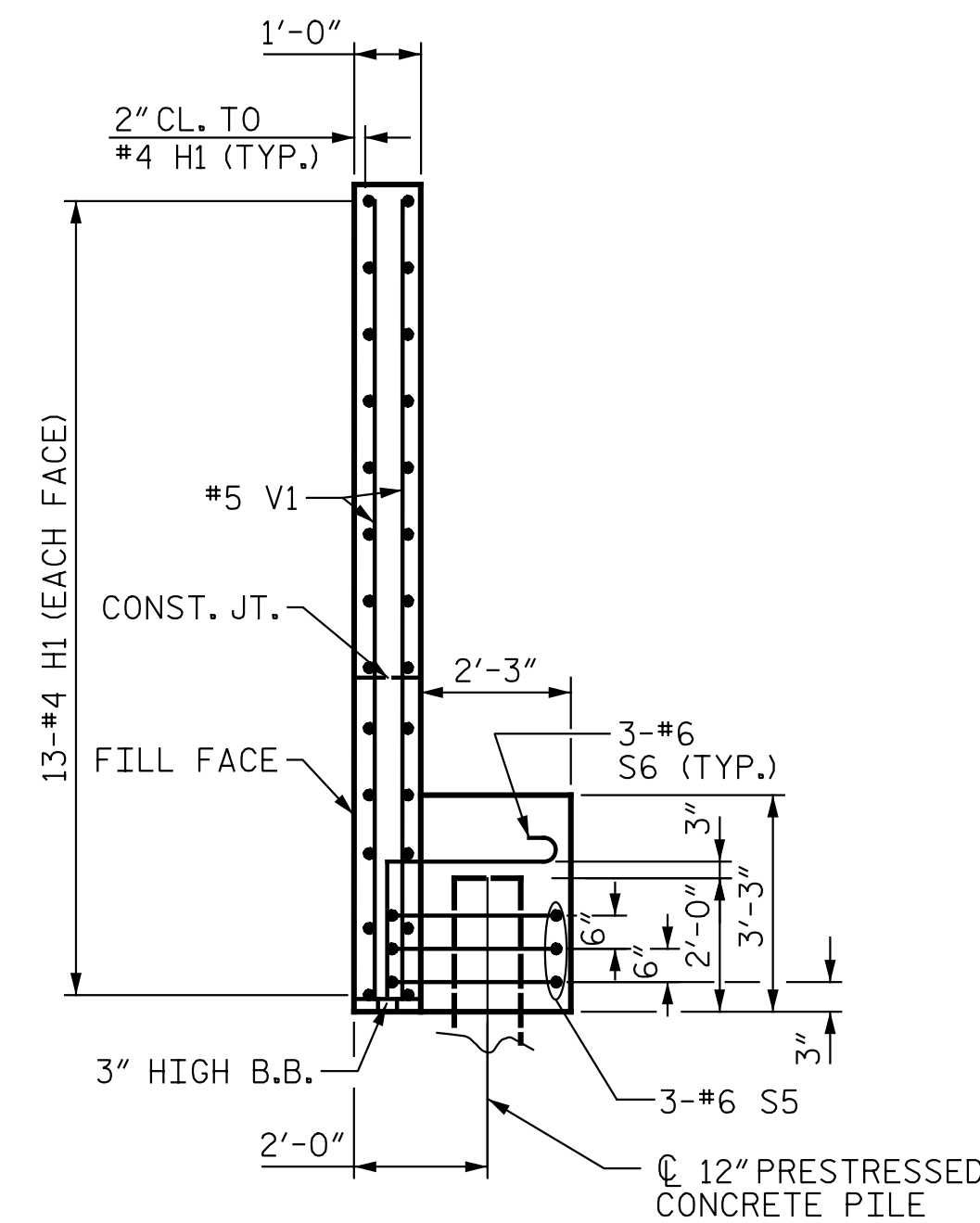
SECTION Z-Z



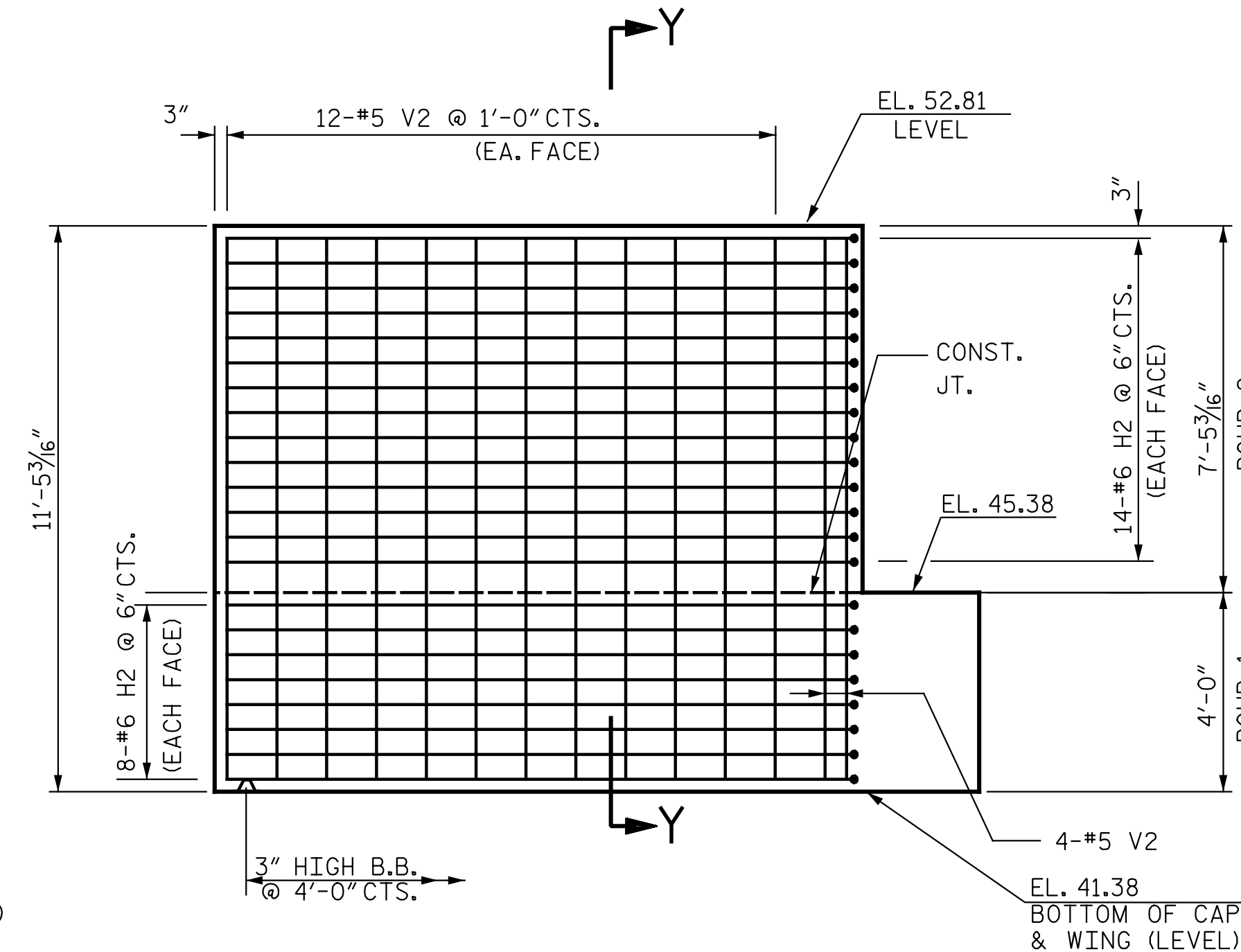
PLAN W2



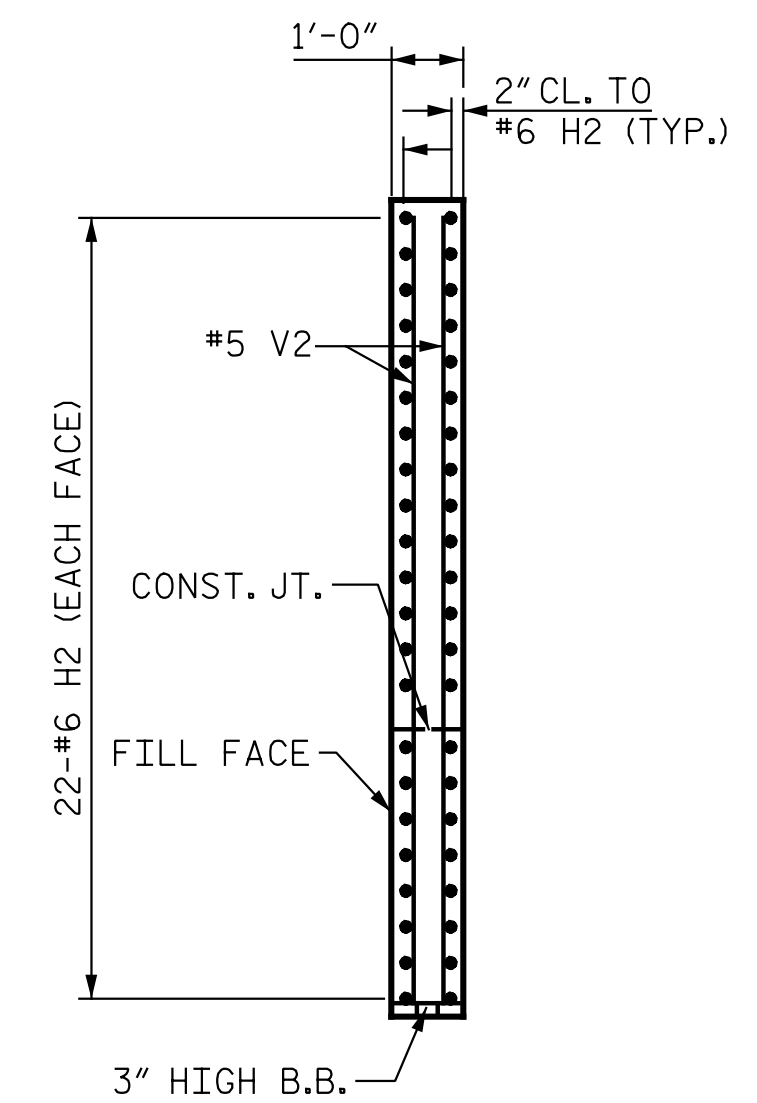
ELEVATION W1



SECTION X-X



ELEVATION W2



SECTION Y-Y

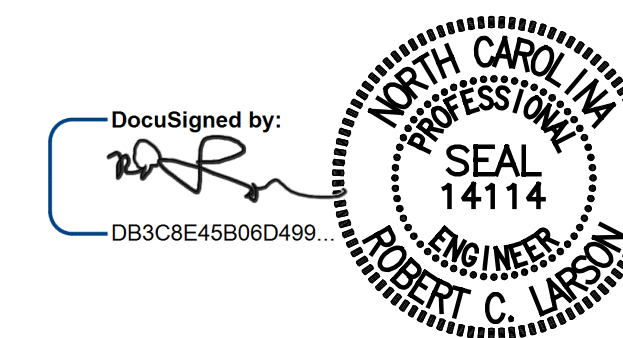
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1

RIGHT LANE



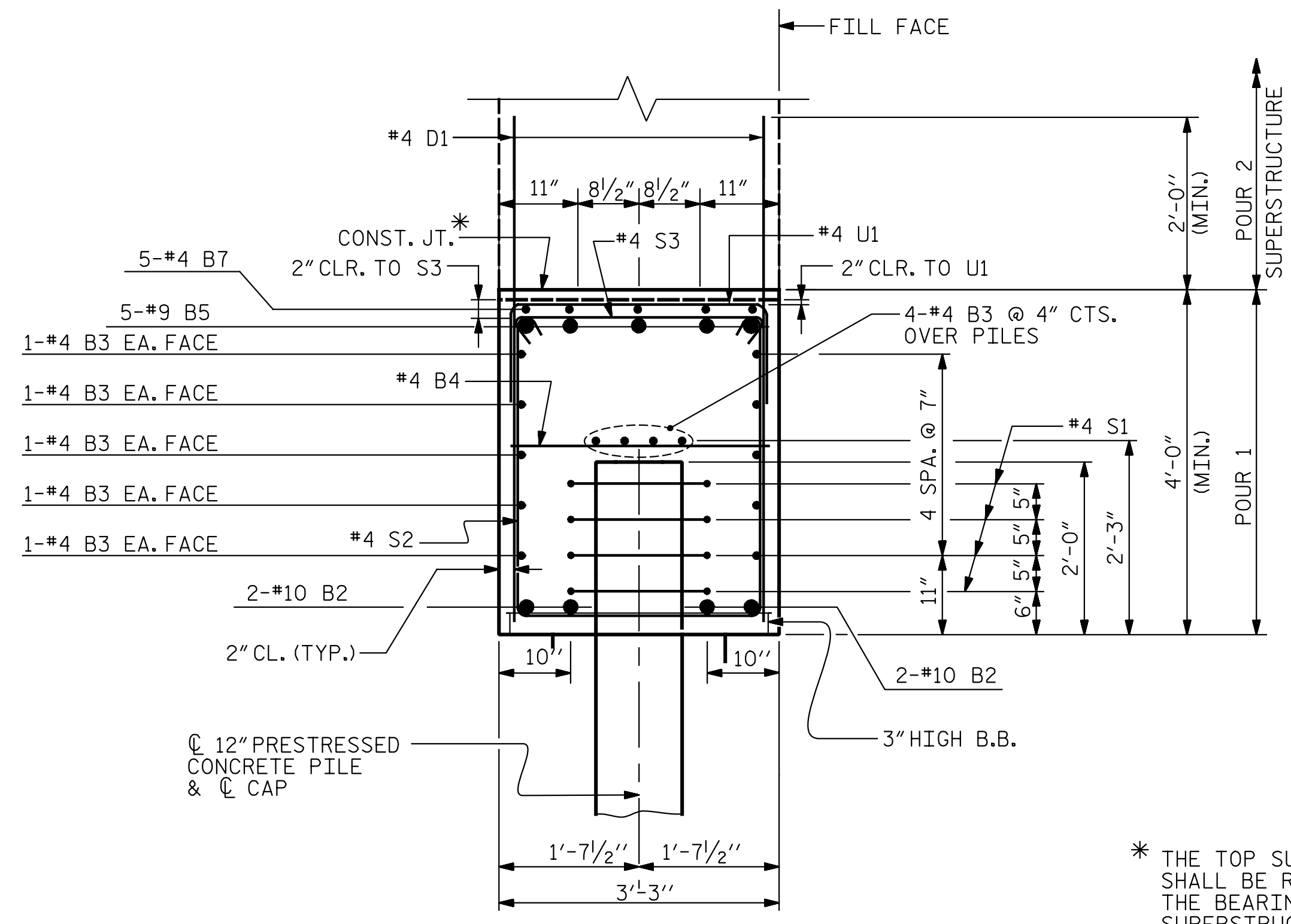
4/10/2015

DESIGN ENGINEER OF RECORD: DATE: 4/10/2015
 DRAWN BY: R. J. FLORY DATE: 03/27/14
 CHECKED BY: R. C. LARSON DATE: 04/16/14

ENGINEERS • PLANNERS • ECOLOGISTS LICENSE NUMBER: C-0764
KCI Associates
 of North Carolina, P.A.
 SUITE 220, LANDMARK CENTER # 400 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244
 DWG. REF. NO. 16 OF 24

REVISIONS						SHEET NO. S02-16
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS S02-24
2			4			

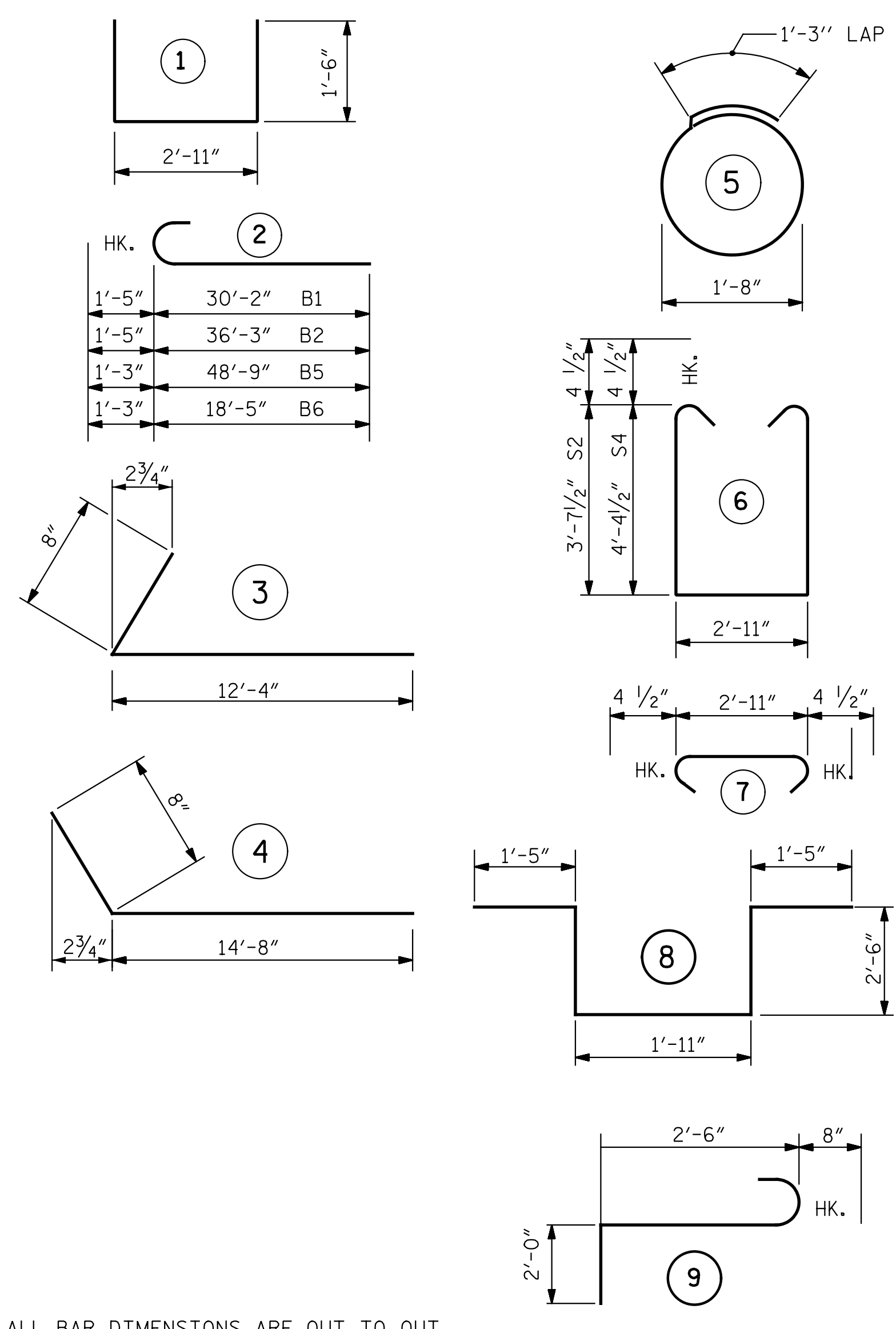
STR-#2



SECTION A-A

* THE TOP SURFACE OF THE CAP AND WINGS SHALL BE RAKED TO A DEPTH OF 1/4" EXCEPT THE BEARING AREAS AND CAP OUTSIDE OF SUPERSTRUCTURE.

BAR TYPES

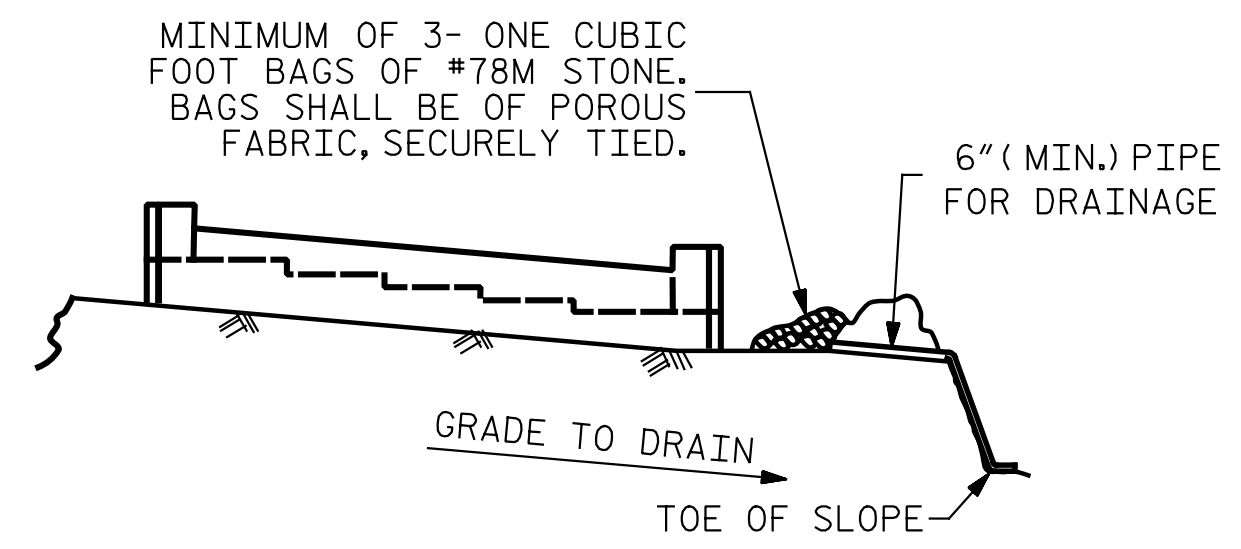


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	10	2	31'-7"	544
B2	4	10	2	37'-8"	648
B3	42	4	STR.	21'-1"	592
B4	15	4	STR.	2'-11"	29
B5	5	9	2	50'-0"	850
B6	5	9	2	19'-8"	334
B7	5	4	STR.	12'-0"	40
B8	2	4	STR.	12'-2"	16
D1	80	4	STR.	7'-0"	374
H1	26	4	4	15'-4"	266
H2	44	6	3	13'-0"	859
K1	20	4	STR.	2'-10"	38
S1	40	4	5	6'-6"	174
S2	30	4	6	10'-11"	219
S3	45	4	7	3'-8"	110
S4	15	4	6	12'-5"	124
S5	3	6	8	9'-9"	44
S6	3	6	9	5'-2"	23
U1	8	4	1	5'-11"	32
V1	36	5	STR.	12'-2"	457
V2	32	5	STR.	11'-0"	367

REINFORCING STEEL, LB	6140
CLASS A CONCRETE, CY POUR 1	35.6
(POUR 2 INCLUDED IN SUPERSTRUCTURE)	
HP 12X53 STEEL PILES NO.	11
LF	550
PILE REDRIVES, EA	5
NOTE: PILE HEADS HAVE BEEN DEDUCTED FROM CLASS A CONCRETE.	



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

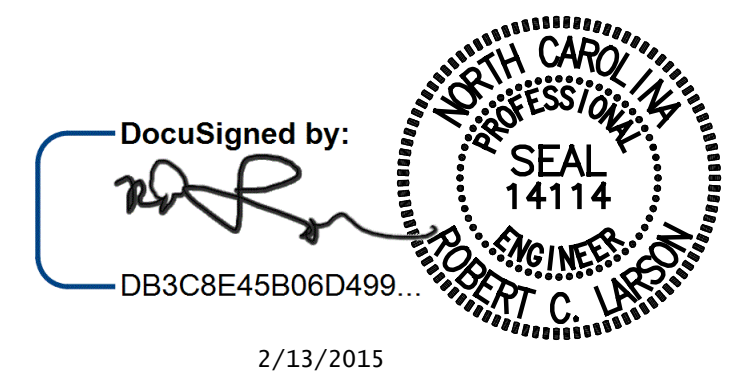
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT

DocuSigned by:
DB3C8E45B06D499...

DESIGN ENGINEER OF RECORD:	DATE :2/13/2015
DRAWN BY : R. J. FLORY	DATE :01/27/14
CHECKED BY : R. C. LARSON	DATE :04/16/14



PROJECT NO. R-2514D
JONES COUNTY
STATION: 320+39.56 -L-

SHEET 3 OF 3

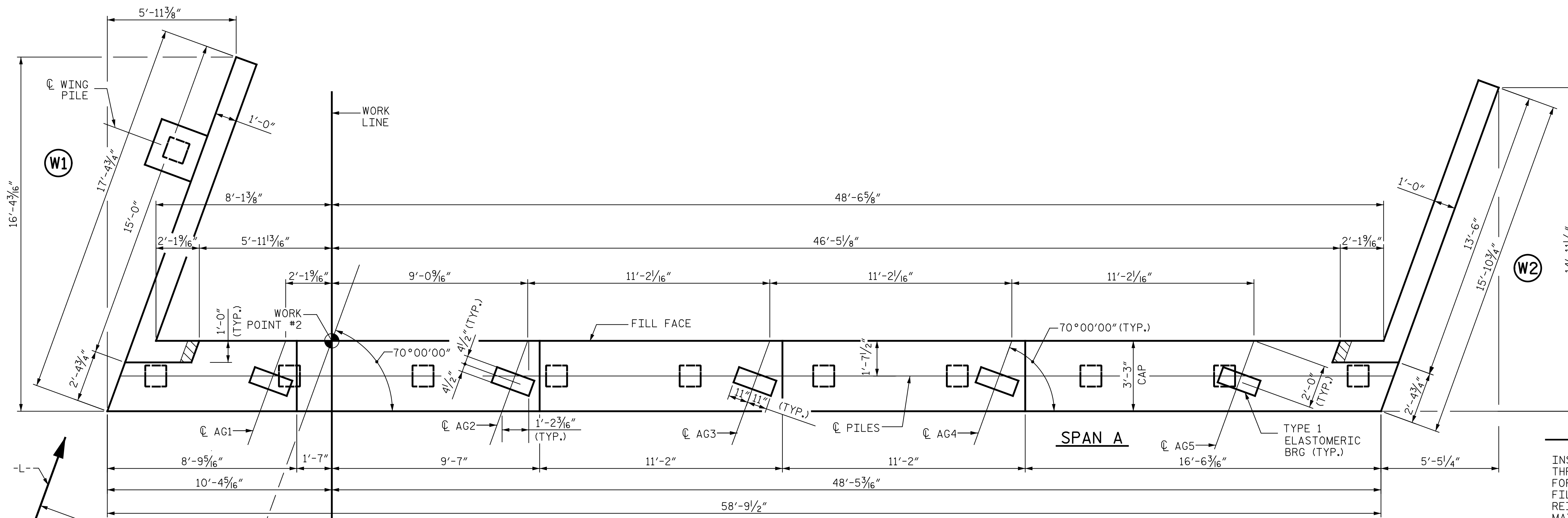
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUBSTRUCTURE
END BENT 1**

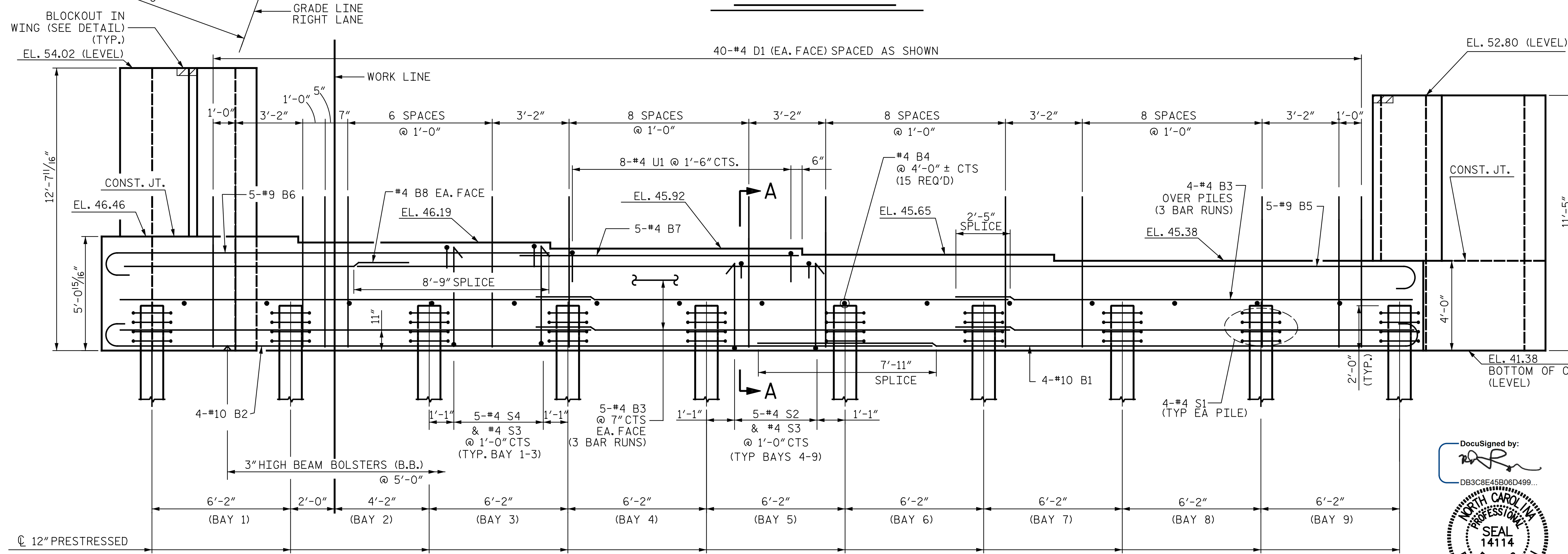
RIGHT LANE

REVISIONS						NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			1			2			S02-17
2			4									TOTAL SHEETS S02-24

DWG. REF. NO. 17 OF 24



PLAN OF CAP



ELEVATION

NOTES

- INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS; SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
- THE PORTIONS OF THE WINGS ABOVE THE CONSTRUCTION JOINT ARE TO BE POURED WITH THE SUPERSTRUCTURE. AT THE CONTRACTORS OPTION, THESE PORTIONS MAY BE POURED SEPARATELY FROM THE SUPERSTRUCTURE, IN WHICH CASE CLASS 'A' CONCRETE MAY BE USED.
- FOR 'TEMPORARY DRAINAGE AT END BENT', SEE END BENT 1.

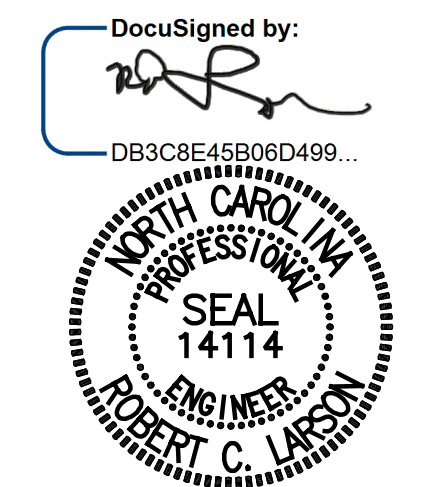
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 2**

RIGHT LANE



DESIGN ENGINEER OF RECORD: DATE: 4/10/2015

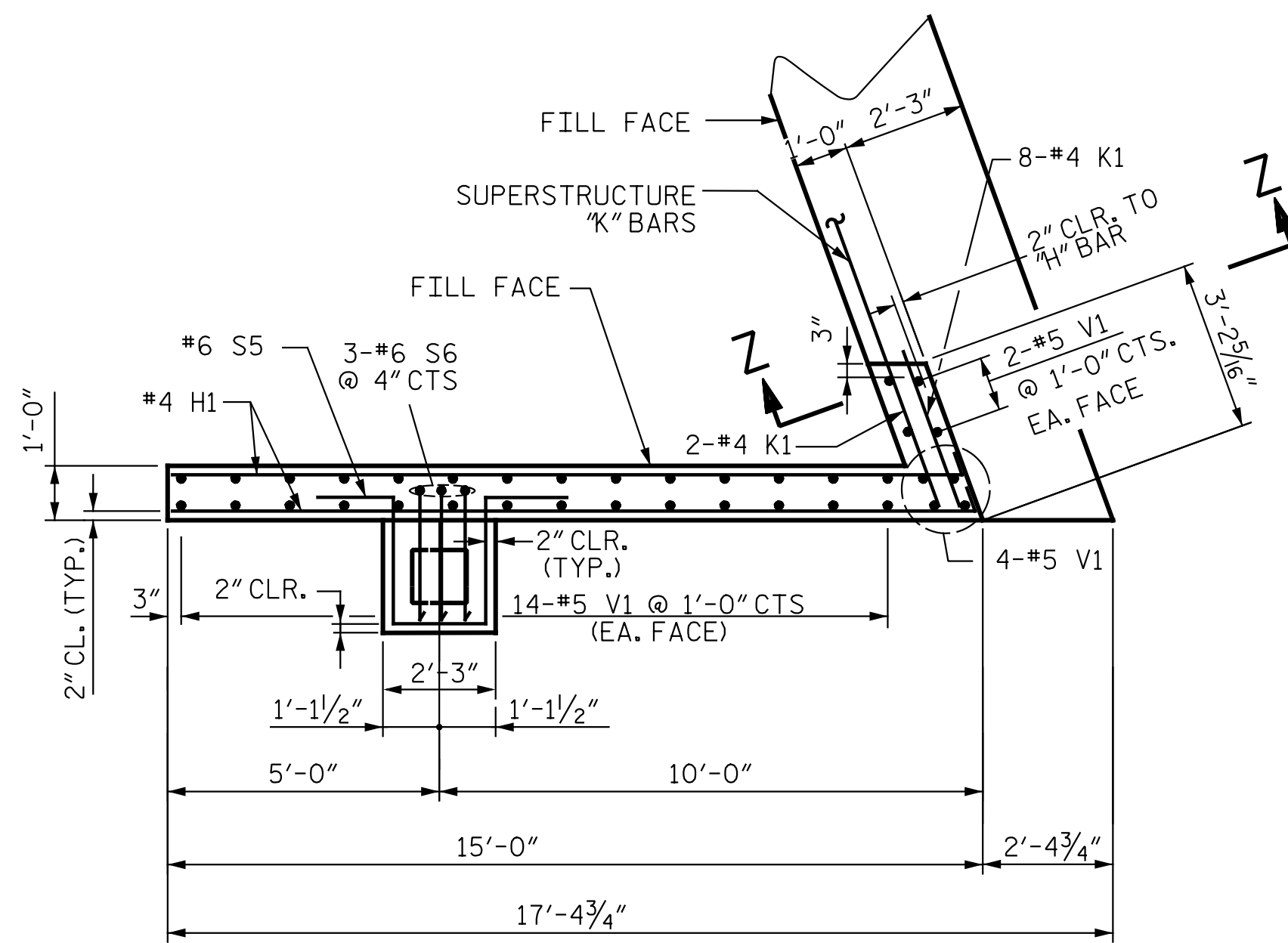
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CHECKED BY: R. C. LARSON DATE: 4/16/14

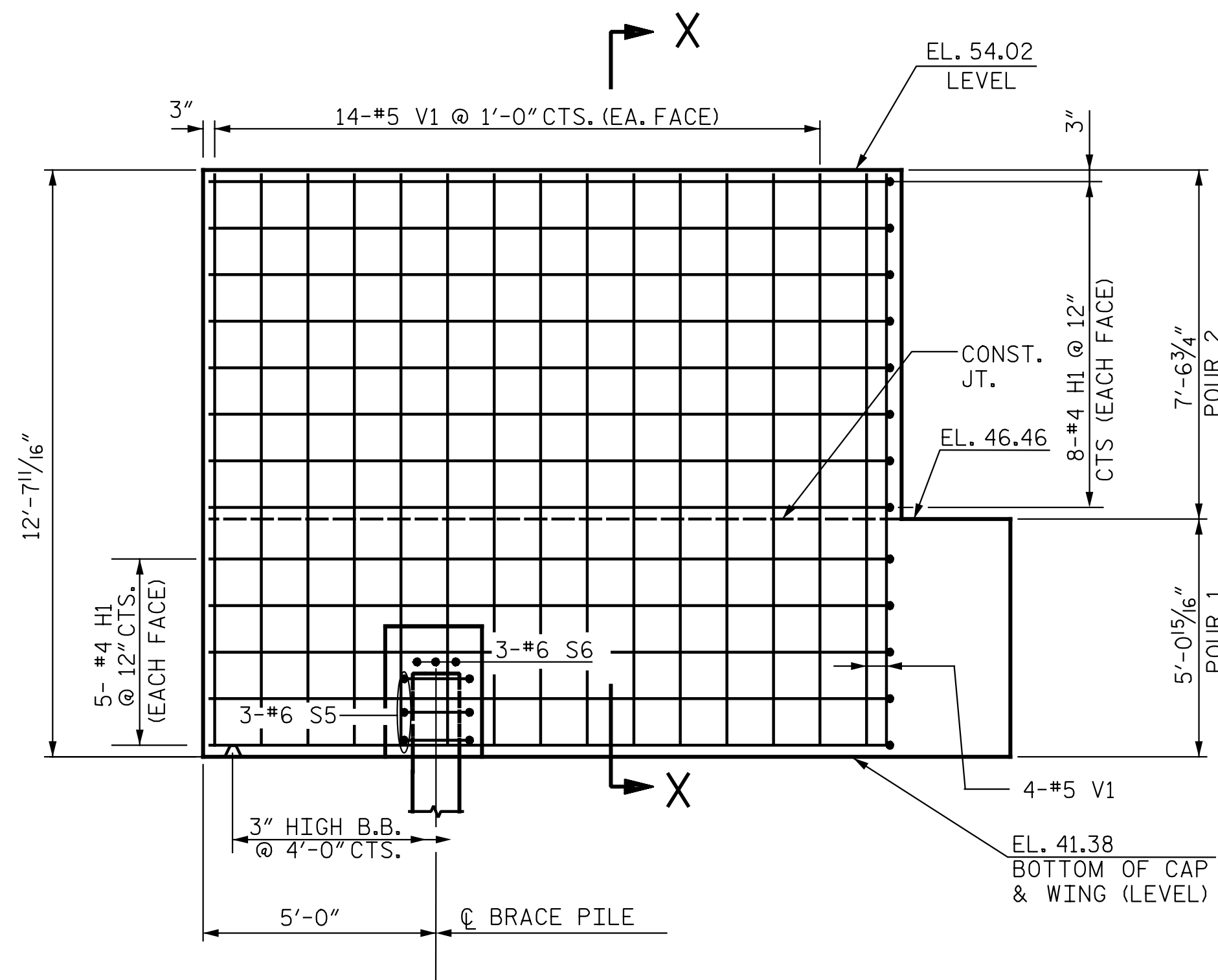
REVISIONS		SHEET NO.	
NO.	DATE	NO.	BY
1		3	
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SHEET NO. S02-18
 TOTAL SHEETS S02-24

KCI Associates of North Carolina, P.A.
 DWG. REF. NO. 18 OF 24

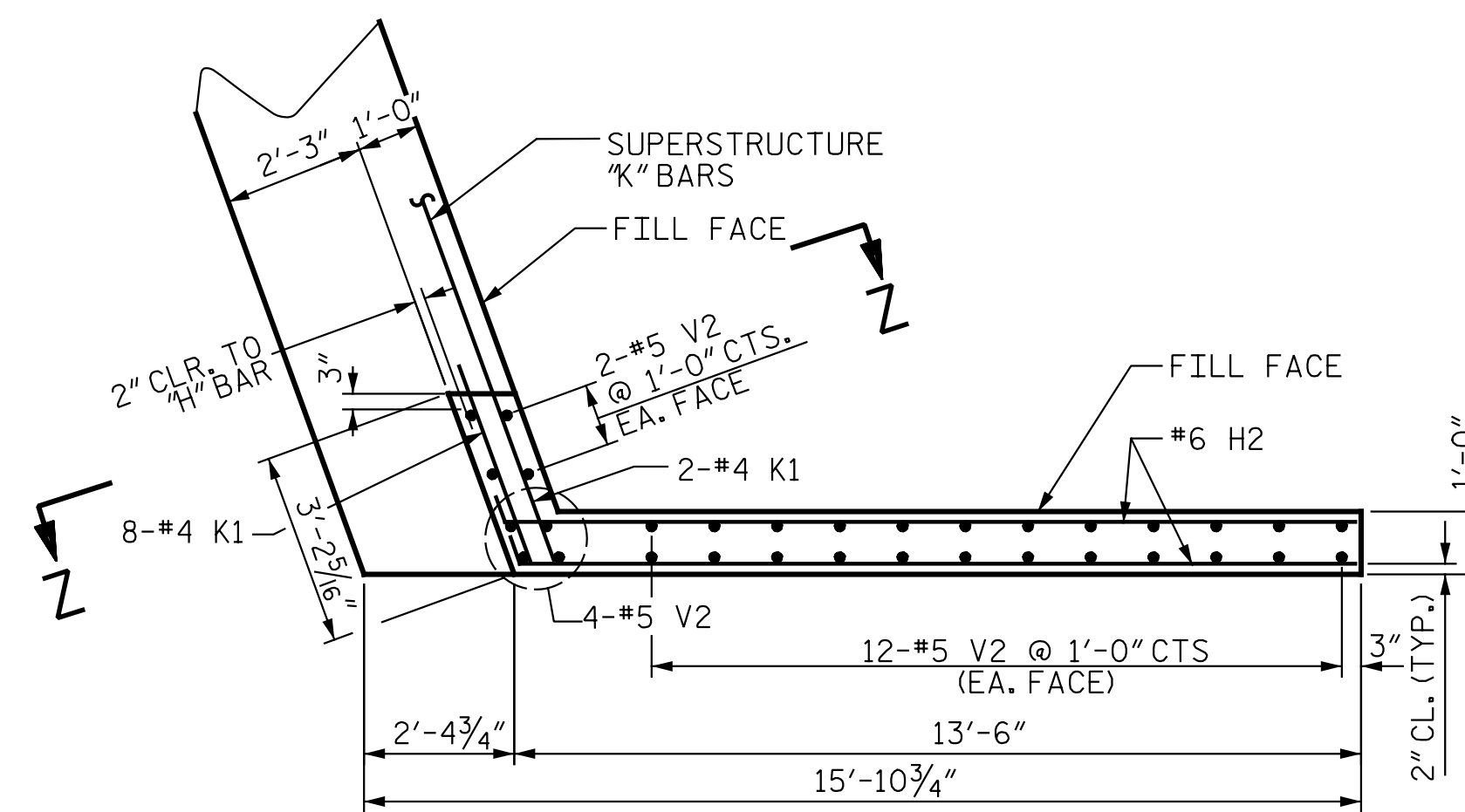
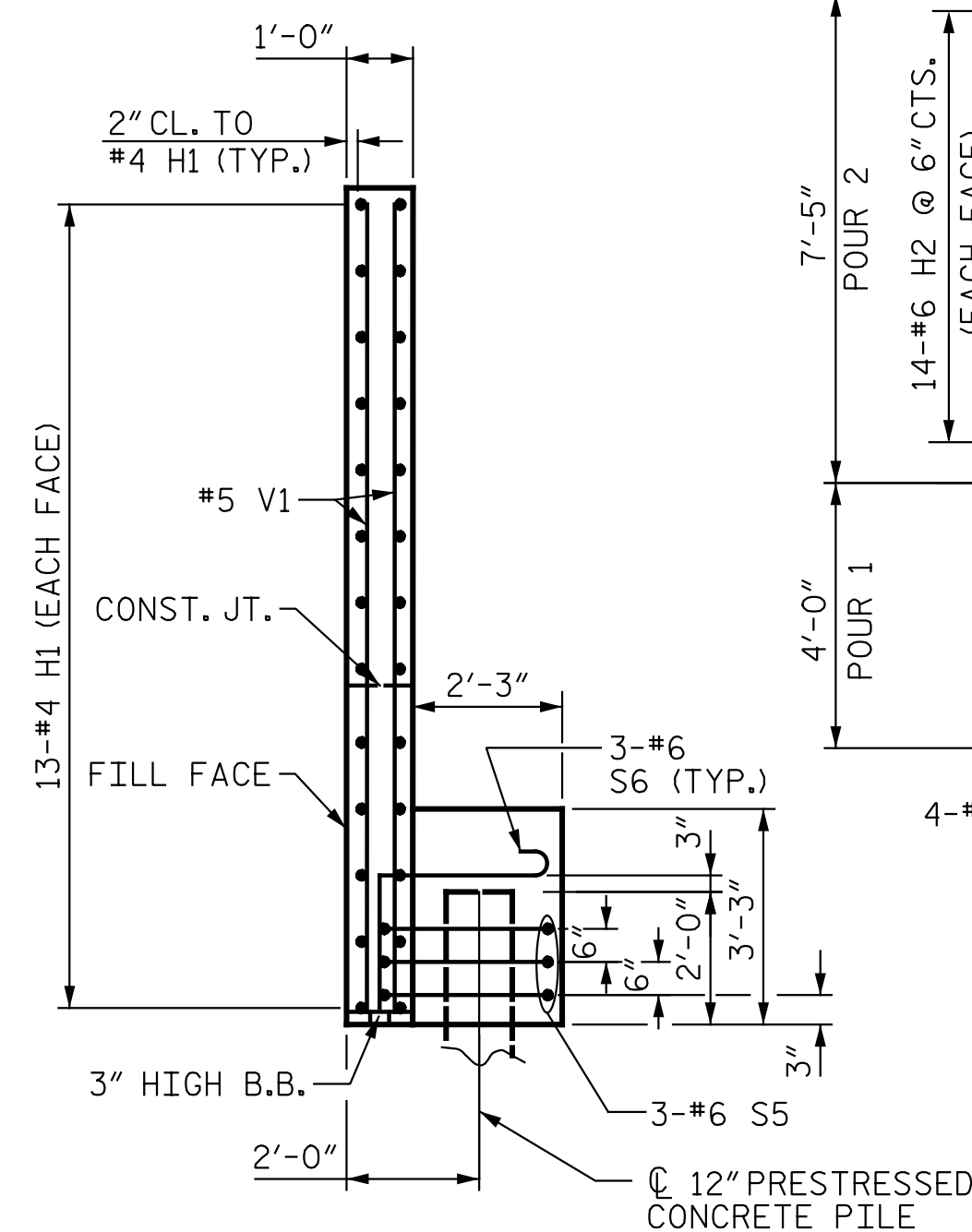


PLAN W1

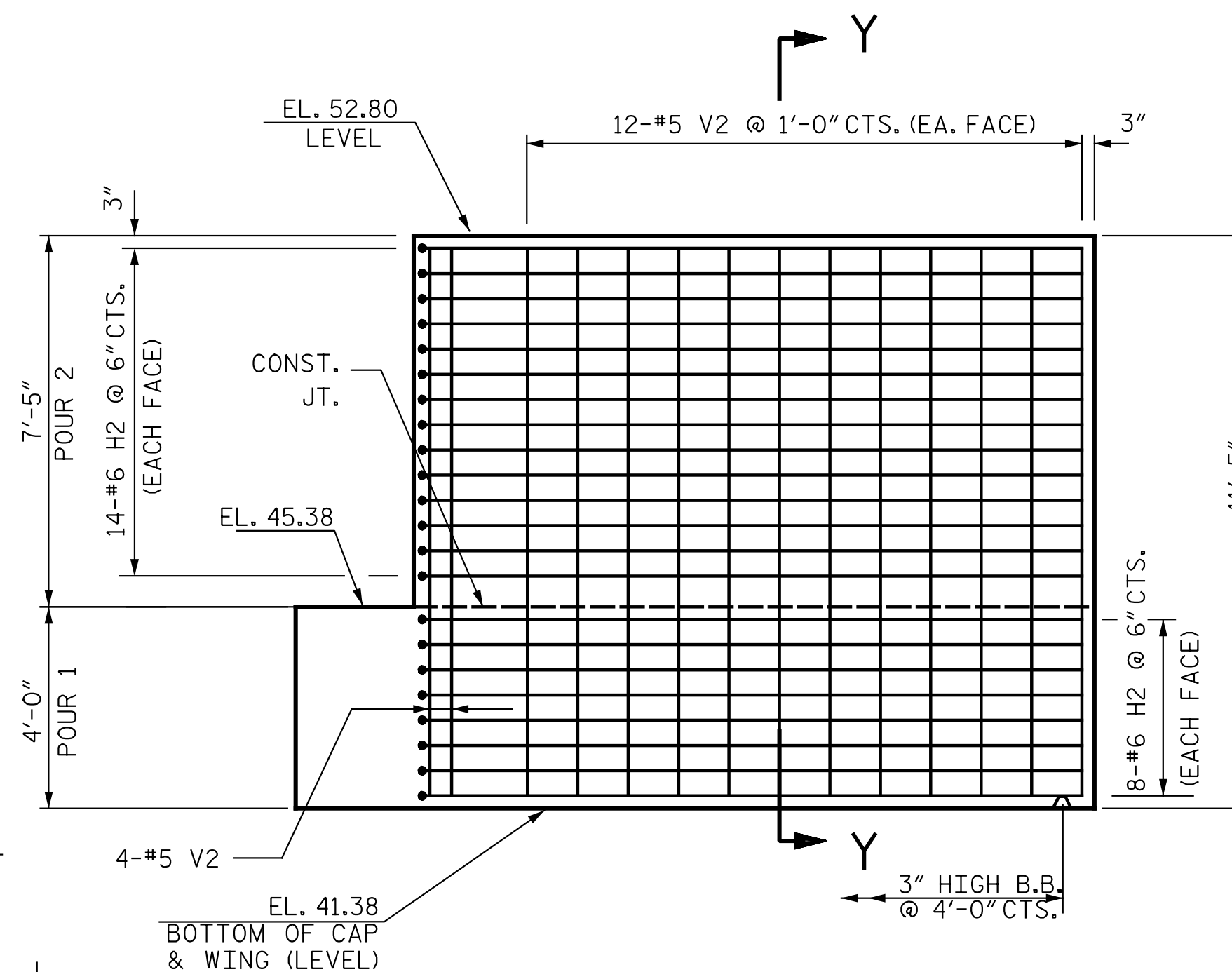


ELEVATION W1

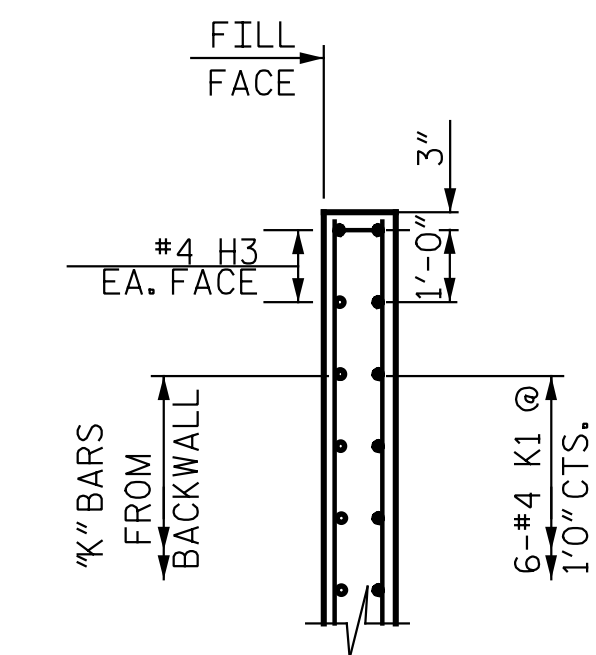
SECTION X-X



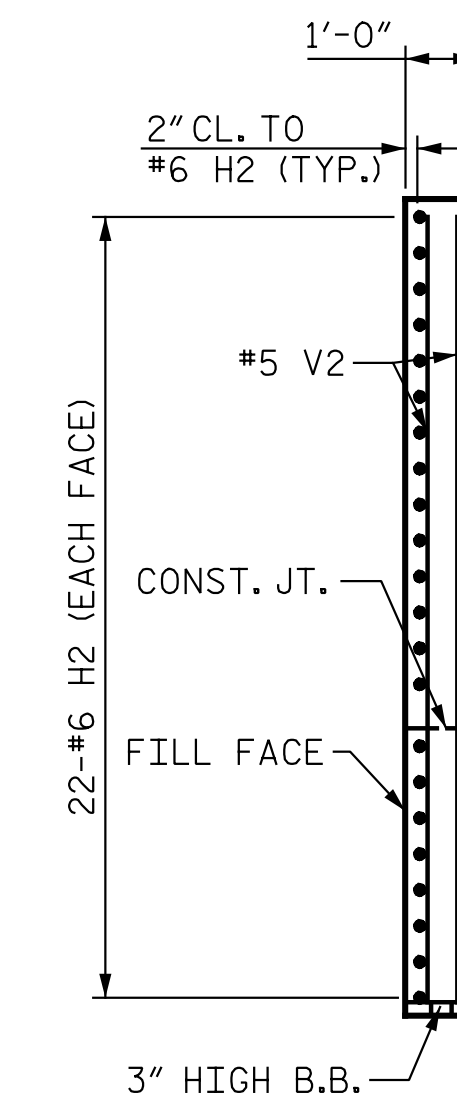
PLAN W2



ELEVATION W2



SECTION Z-Z



SECTION Y-Y

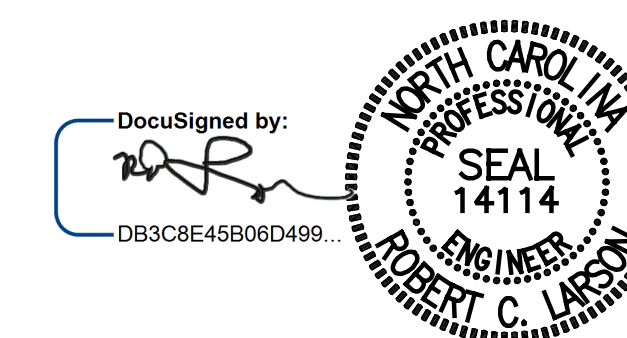
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2

RIGHT LANE

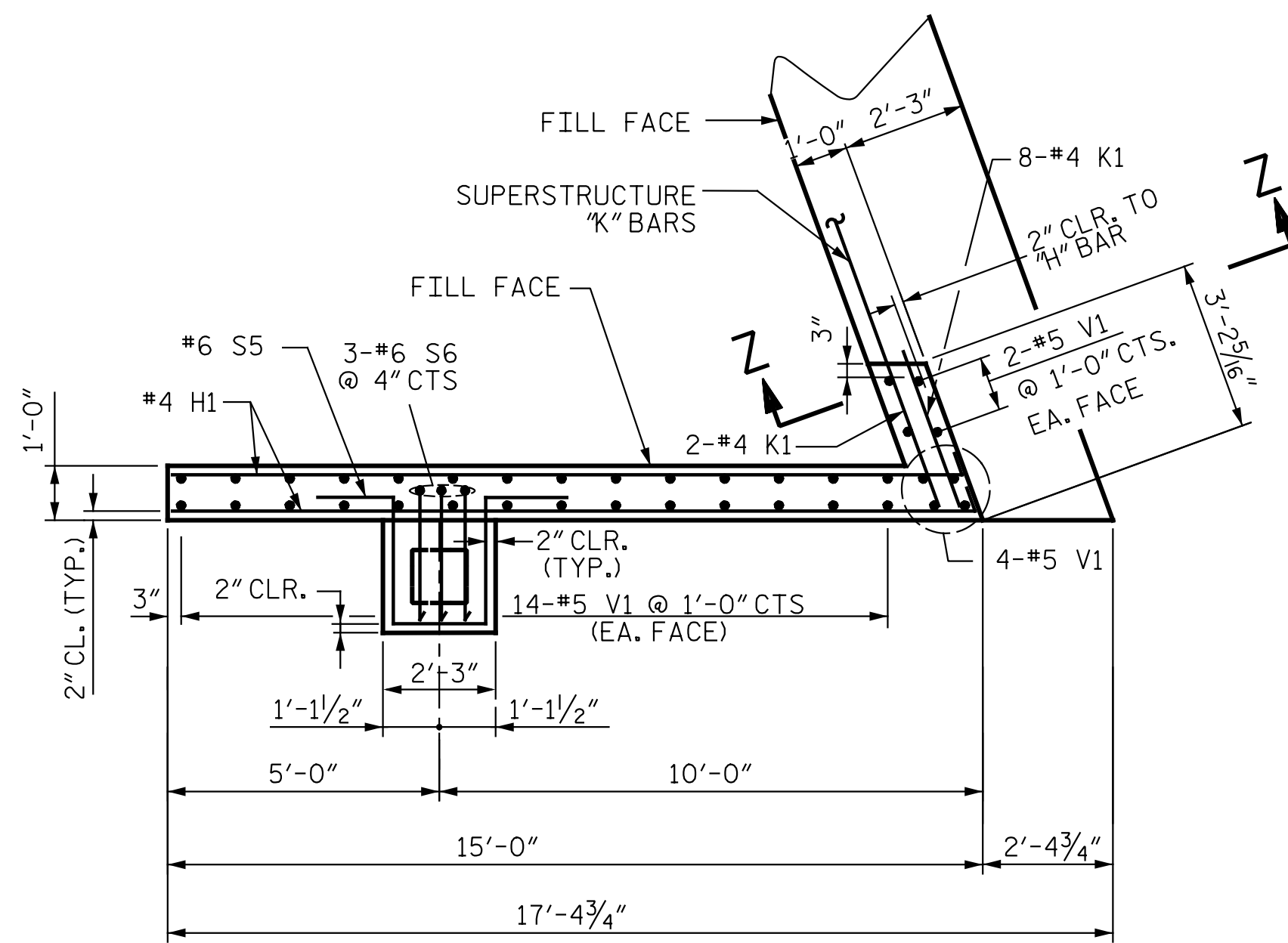


4/10/2015

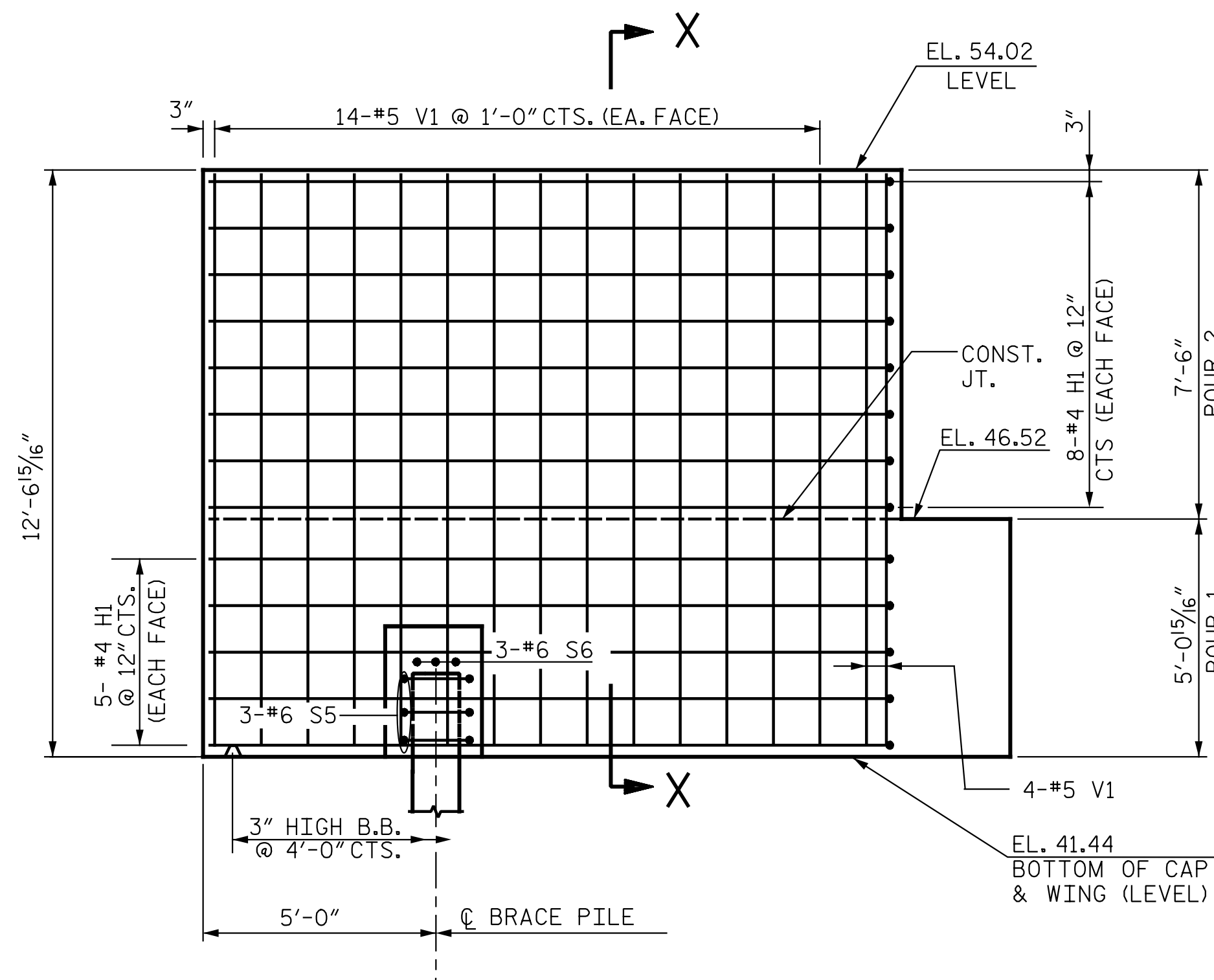
DESIGN ENGINEER OF RECORD:	DATE :	4/10/2015
DRAWN BY : R. J. FLORY	DATE :	03/27/14
CHECKED BY : R. C. LARSON	DATE :	04/16/14

KCI Associates of North Carolina, P.A.		REVISIONS		SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
DWG. REF. NO. 19 OF 24			TOTAL SHEETS		S02-19
					S02-24

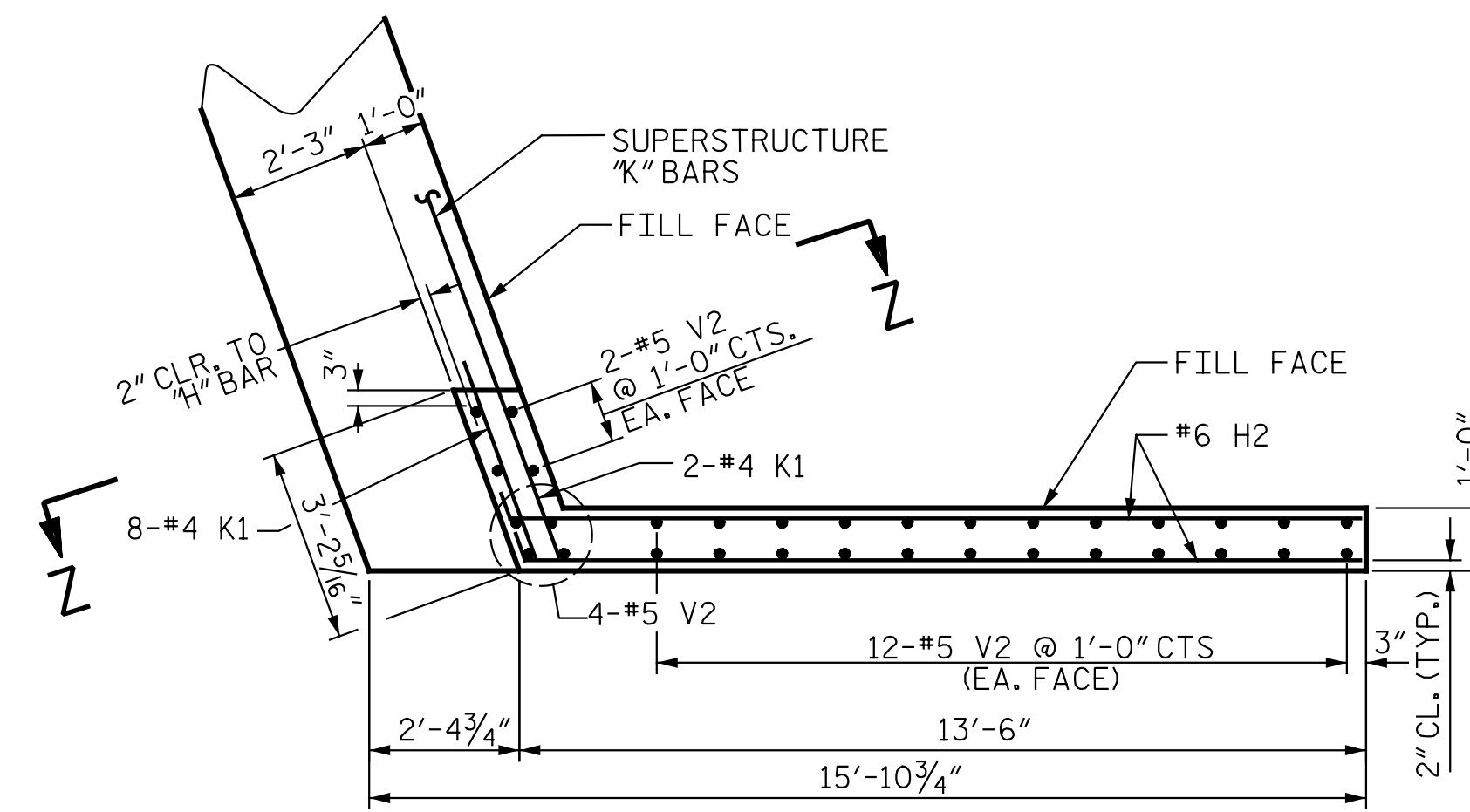
STR-#2



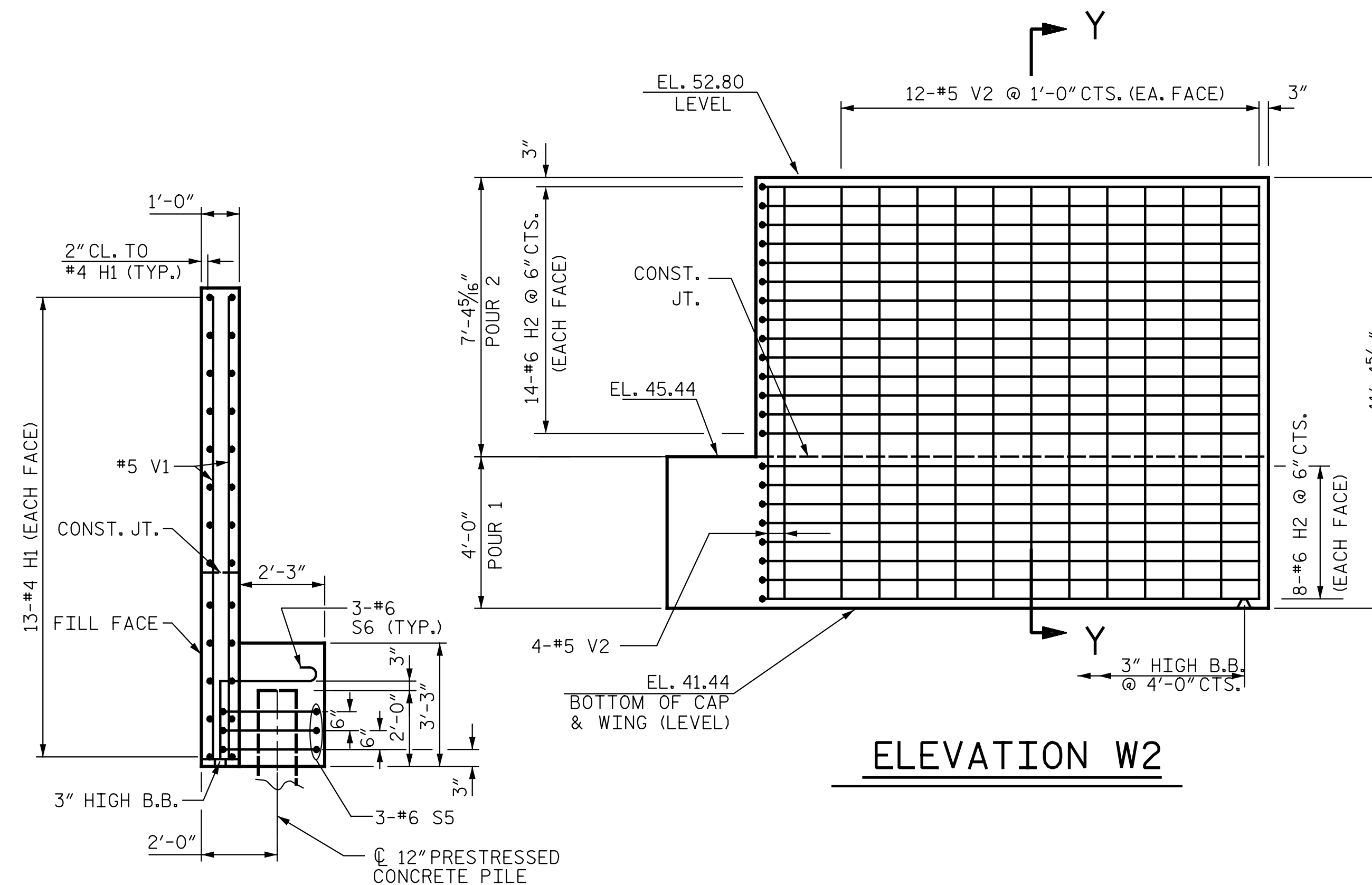
PLAN W1



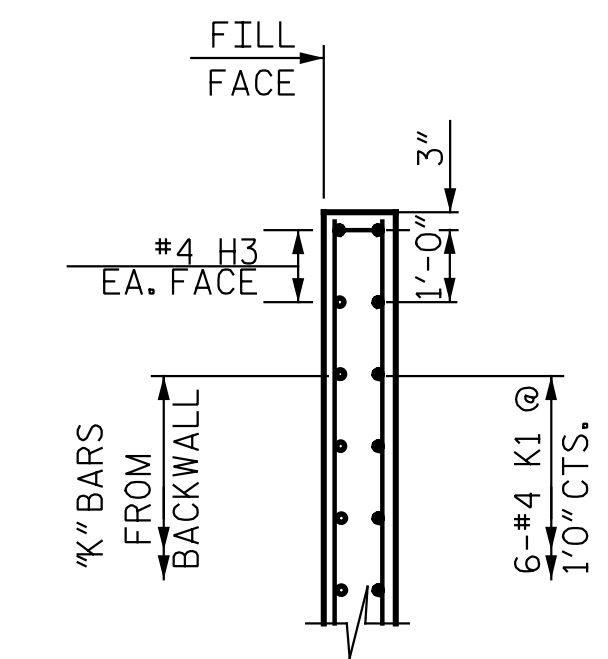
ELEVATION W1



PLAN W2

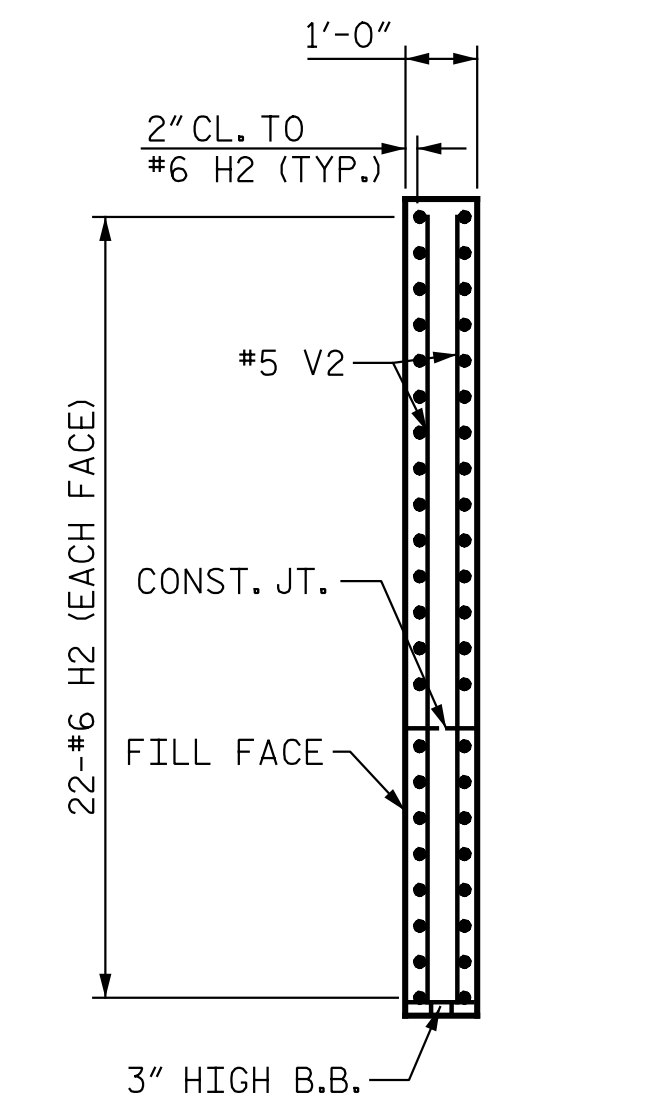


ELEVATION W2



SECTION Z-Z

SECTION X-X



SECTION Y-Y

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2

RIGHT LANE



2/13/2015

DocuSigned by:
 R. J. Flory

DESIGN ENGINEER OF RECORD: DATE : 2/13/2015

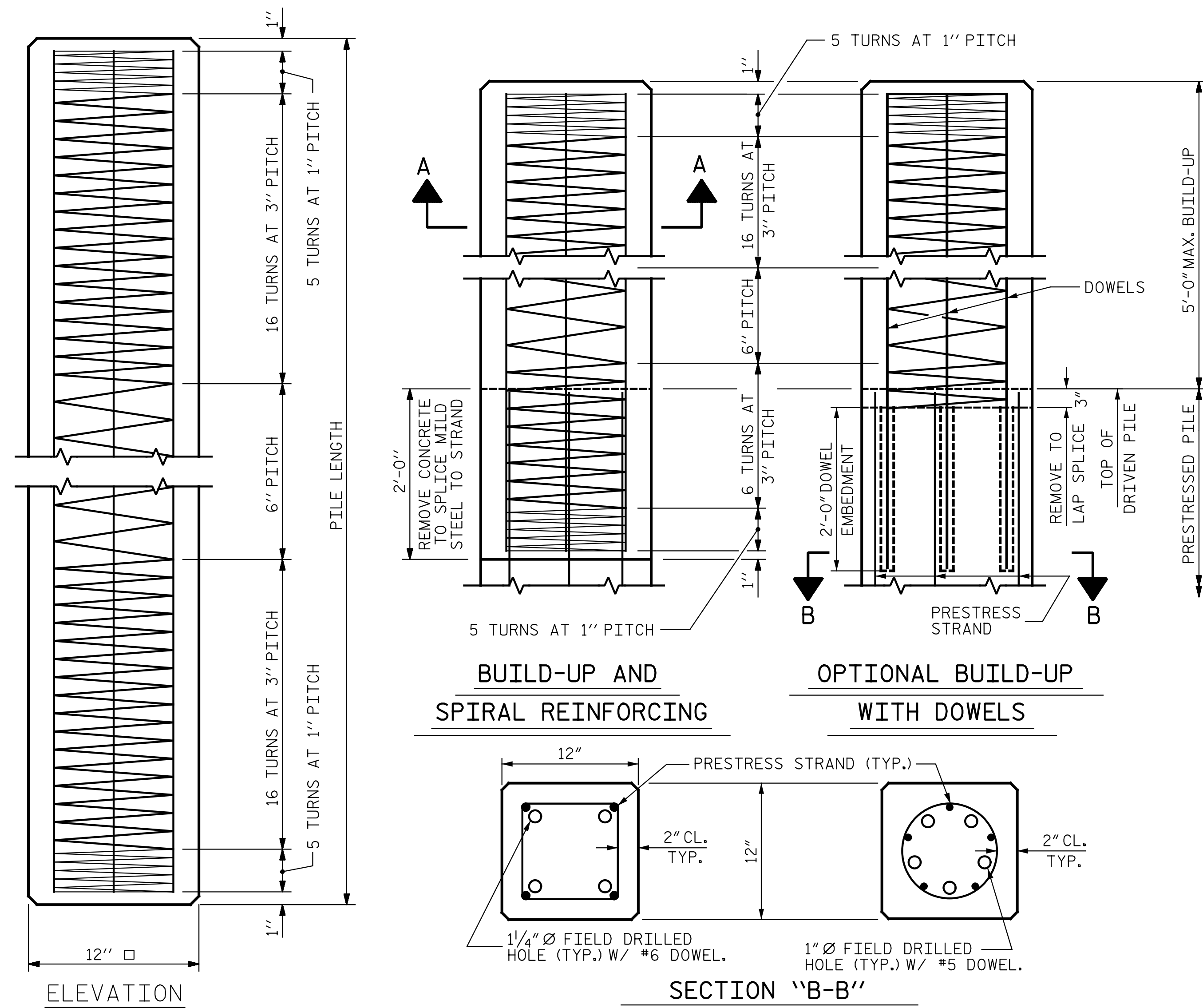
DRAWN BY : R. J. FLORY DATE : 03/27/14
 CHECKED BY : R. C. LARSON DATE : 04/16/14

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 DWG. REF. NO. 19 OF 24

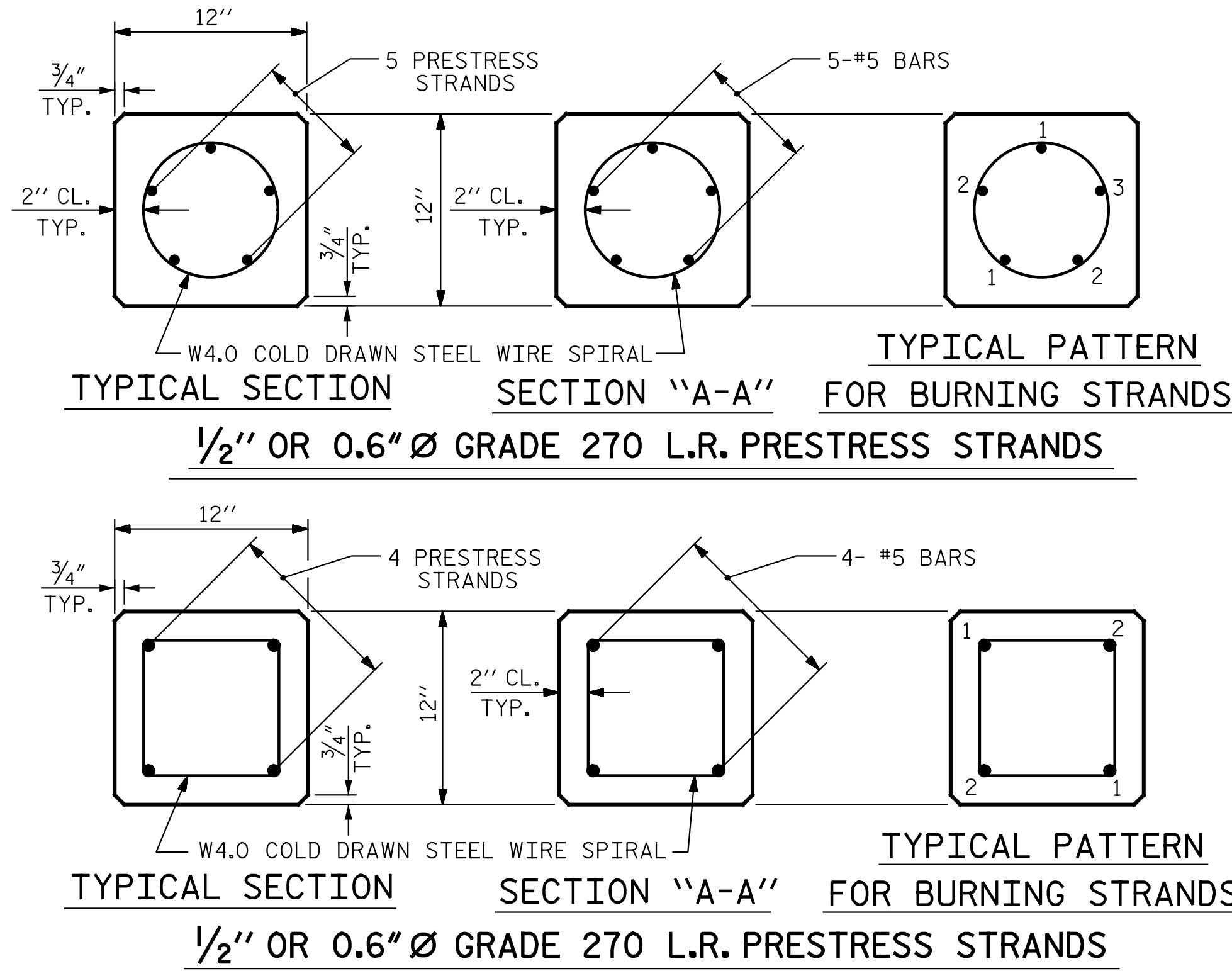
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: S02-24

STR-#2



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



NOTES

PRESTRESSED CONCRETE STRENGTH : $f'_c = 7,500$ PSI
 BUILD-UP CONCRETE STRENGTH : $f'_c = 7,500$ PSI
 STRAND DATA:

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
1/2"	270 L.R.	0.153	41,300* PER STRAND	30,980* PER STRAND
0.6"	270 L.R.	0.217	58,600* PER STRAND	43,940* PER STRAND

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

AT THE CONTRACTOR'S OPTION, 1/2" OR 0.6" STRANDS MAY BE USED IN EITHER THE 4 OR 5 STRAND CONFIGURATION SHOWN IN THE TYPICAL SECTION DETAIL. MIXING OF STRAND SIZE IS NOT ALLOWED.

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

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

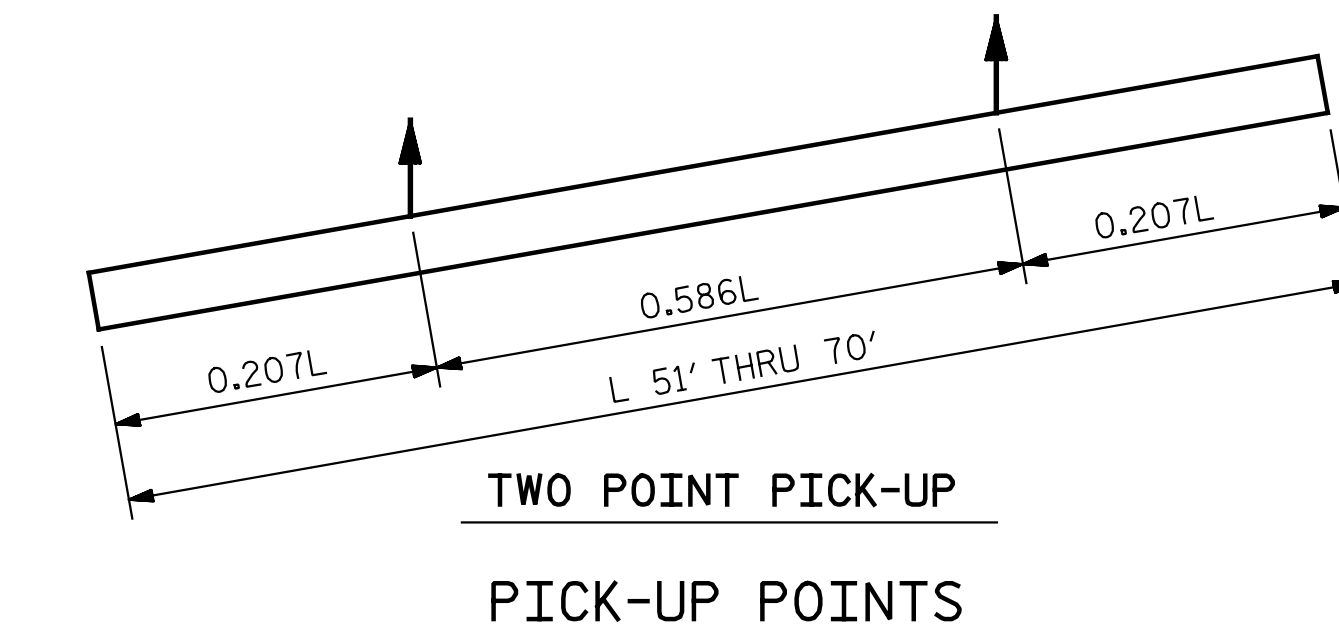
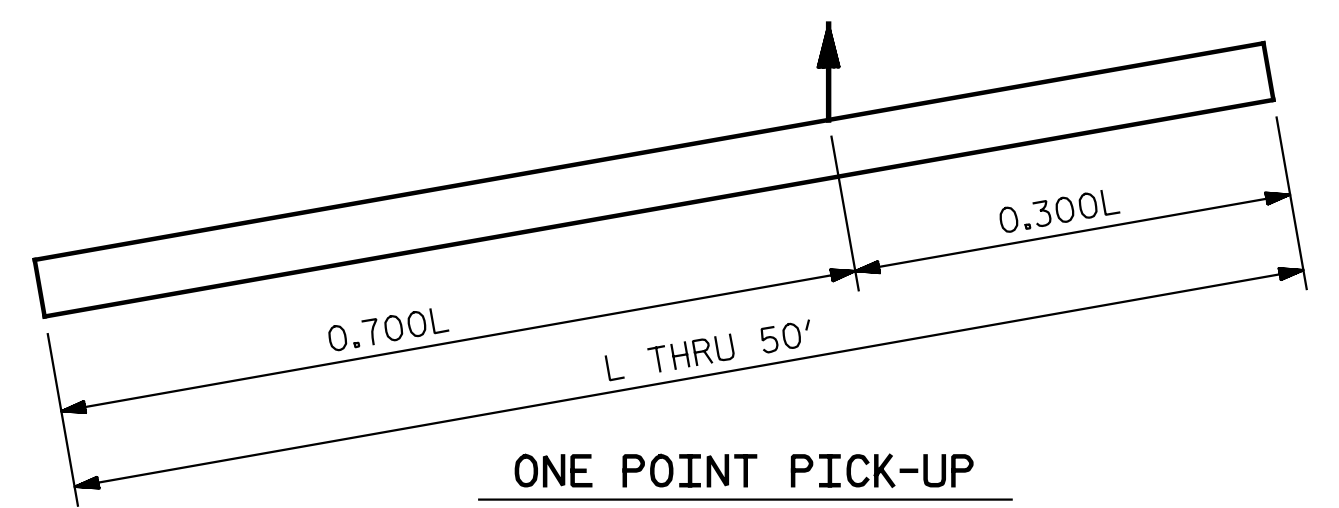
IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN PAIRS, EXCEPT WHERE 5 STRANDS ARE USED, THE LAST STRAND MAY BE BURNED SINGLY ACCORDING TO BURNING PATTERNS SHOWN. NOT MORE THAN 4 STRANDS MAY BE BURNED AT ANY ONE SECTION BEFORE THE SAME STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

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

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

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

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



DOWEL INSTALLATION FOR OPTIONAL BUILD-UP

GROUT COMPRESSIVE STRENGTH: $f'_c = 5,000$ PSI

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

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

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

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

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

STEEL PILE TIP DETAILS

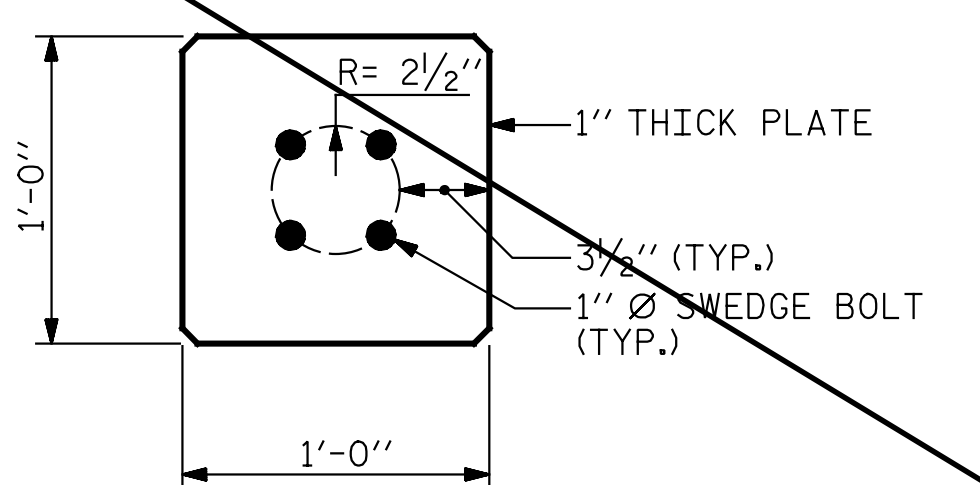
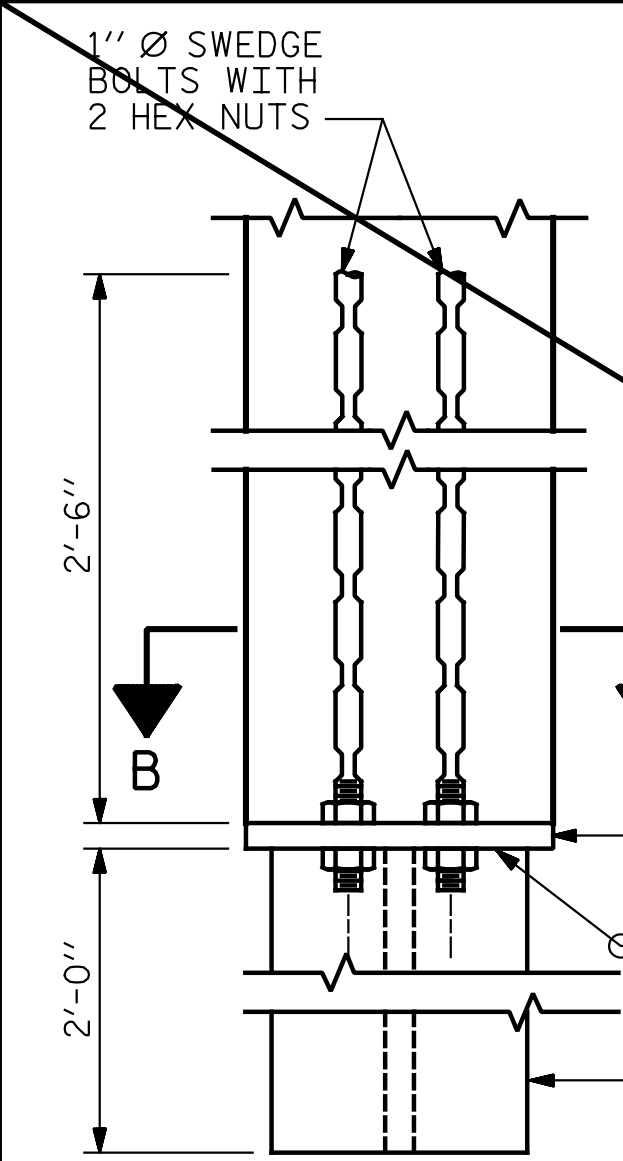
NOTES

PLATE AND SWEDGE BOLTS SHALL MEET THE REQUIREMENTS OF AASHTO M270 GRADE 36. THREADS OF THE SWEDGE BOLTS SHALL BE BURRED AT THE FACE OF THE NUT.

PILE SHALL BE CAST WITH SWEDGE BOLTS AND PLATE IN PLACE.

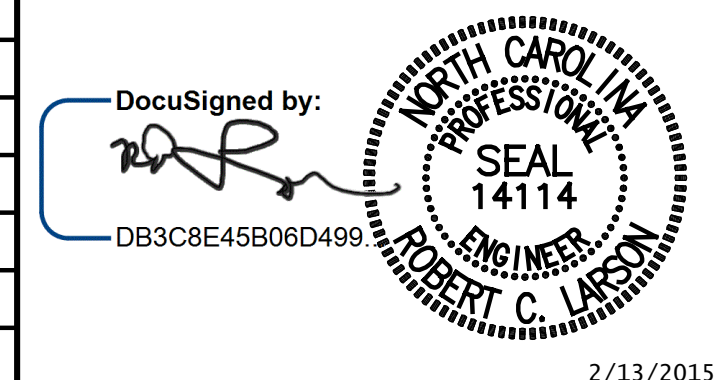
FOR SPIRAL REINFORCING AND PRESTRESSING STRAND DETAILS, SEE STANDARD 12" PRESTRESSED CONCRETE PILE ELEVATION AND TYPICAL SECTION.

* EXCEPT AS NOTED BELOW, THE HP 10 X 57 SECTION SHALL BE WELDED TO THE STEEL PLATE AFTER STRAND STRESS IS RELIEVED. THE HP 10 X 57 SECTION MAY BE WELDED IN THE PRESTRESSER'S YARD OR IN THE FIELD. WHEN A CIRCULAR STRAND PATTERN AS SHOWN ON THE PLANS IS USED, THE CONTRACTOR, AT HIS OPTION, MAY WELD THE HP 10 X 57 SECTION TO THE STEEL PLATE AT THE FABRICATION PLANT PRIOR TO PLACING THE CONCRETE. THE FLANGES OF THE HP SECTION SHALL BE PARALLEL TO THE EDGES OF THE STEEL PLATE AND CONCRETE PILE.



QUANTITIES FOR ONE 12" PRESTRESSED PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE POINT PICK-UP		TWO POINT PICK-UP	
			0.300L	0.700L	0.207L	0.586L
25'-0"	0.91	1.85	7'-6"	17'-6"		
30'-0"	1.10	2.22	9'-0"	21'-0"		
35'-0"	1.28	2.59	10'-6"	24'-6"		
40'-0"	1.46	2.96	12'-0"	28'-0"		
45'-0"	1.64	3.33	13'-6"	31'-6"		
50'-0"	1.83	3.72	15'-0"	35'-0"		
55'-0"	2.01	4.09			11'-4 1/2"	32'-3"
60'-0"	2.19	4.46			12'-5"	35'-2"
65'-0"	2.38	4.81			13'-5 1/2"	38'-1"
70'-0"	2.57	5.18			14'-6"	41'-0"



PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

12" PRESTRESSED CONCRETE PILES

STD. NO. PCP1 RIGHT LANE

DESIGN ENGINEER OF RECORD: DATE : 2/13/2015

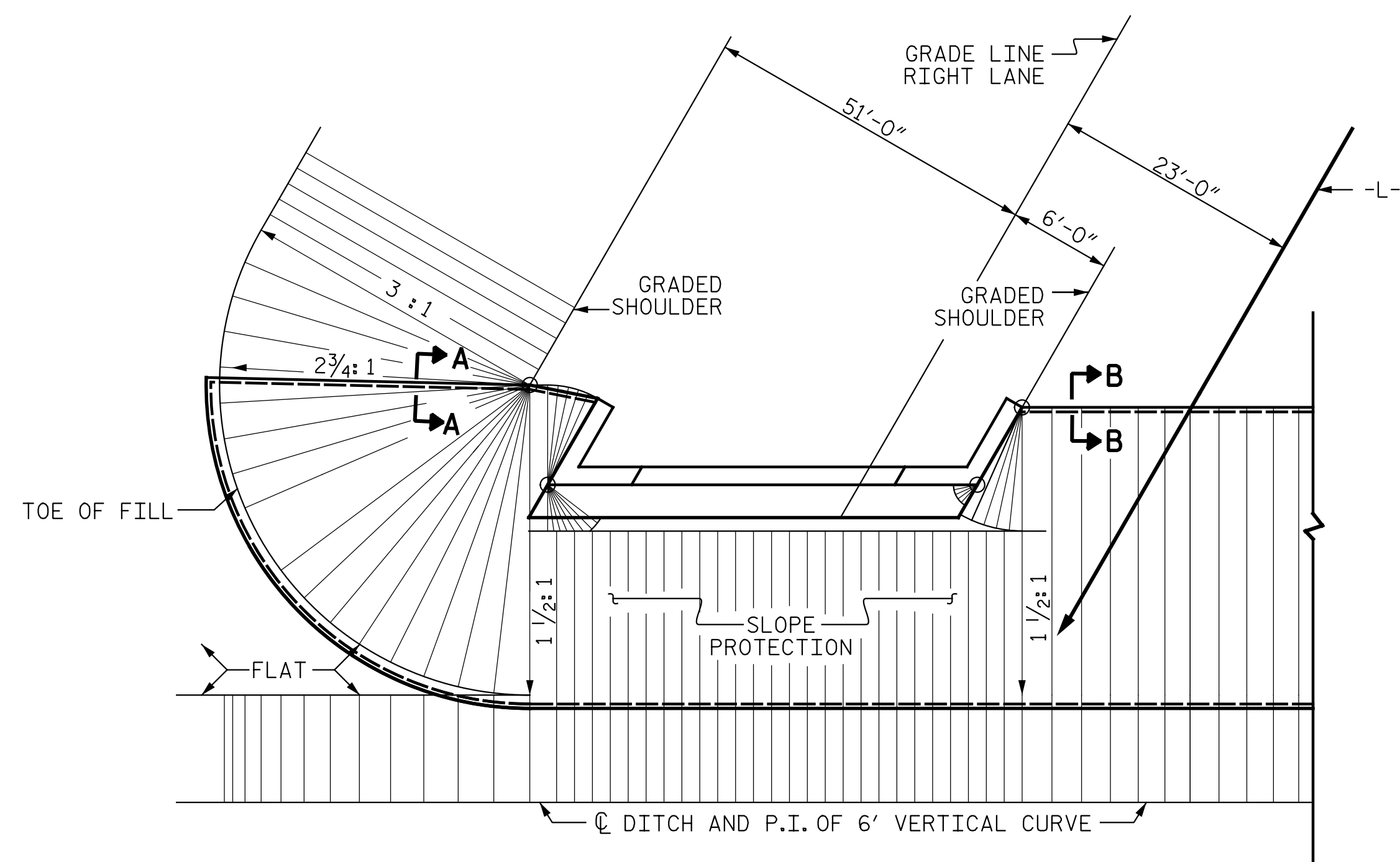
DRAWN BY : E. C. DECOLA DATE : 03/06/14
 CHECKED BY : R. C. LARSON DATE : 03/24/14

DRAWN BY : FCJ 7/88 REV. 5/1/06R TLA/GM
 CHECKED BY : CRK 3/89 REV. 11/30/10 WMC/GM
 REV. 10/12/11 MAA/GM

REVISIONS

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

SHEET NO. S02-21
 TOTAL SHEETS S02-24



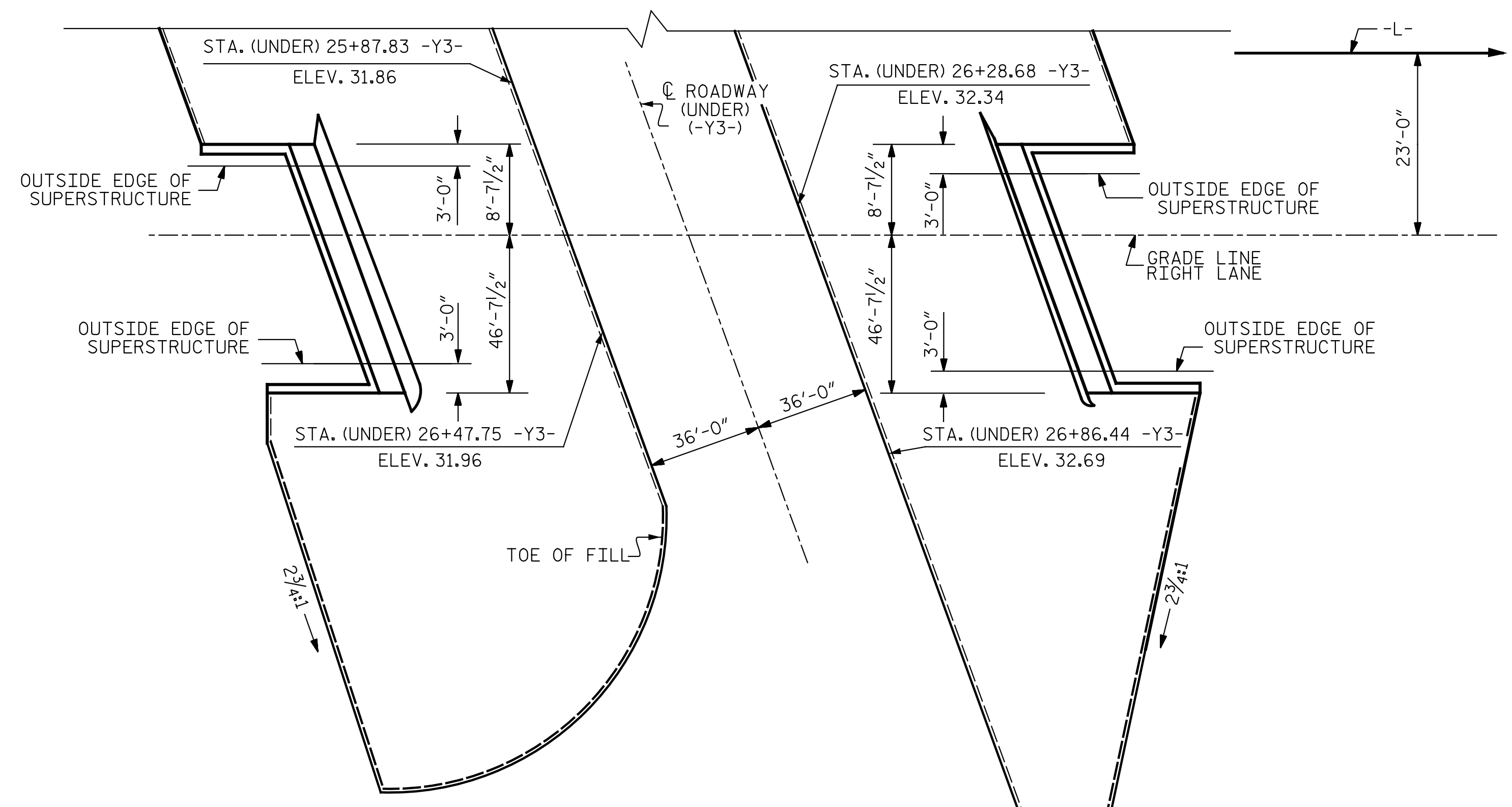
PLAN - END BENT WITH SWEEP BACK WINGS - SKEWED
(1 1/2:1 SLOPE)

BRIDGE @ STA. 320+39.56 RIGHT LANE	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	510	1000
END BENT 2	325	655

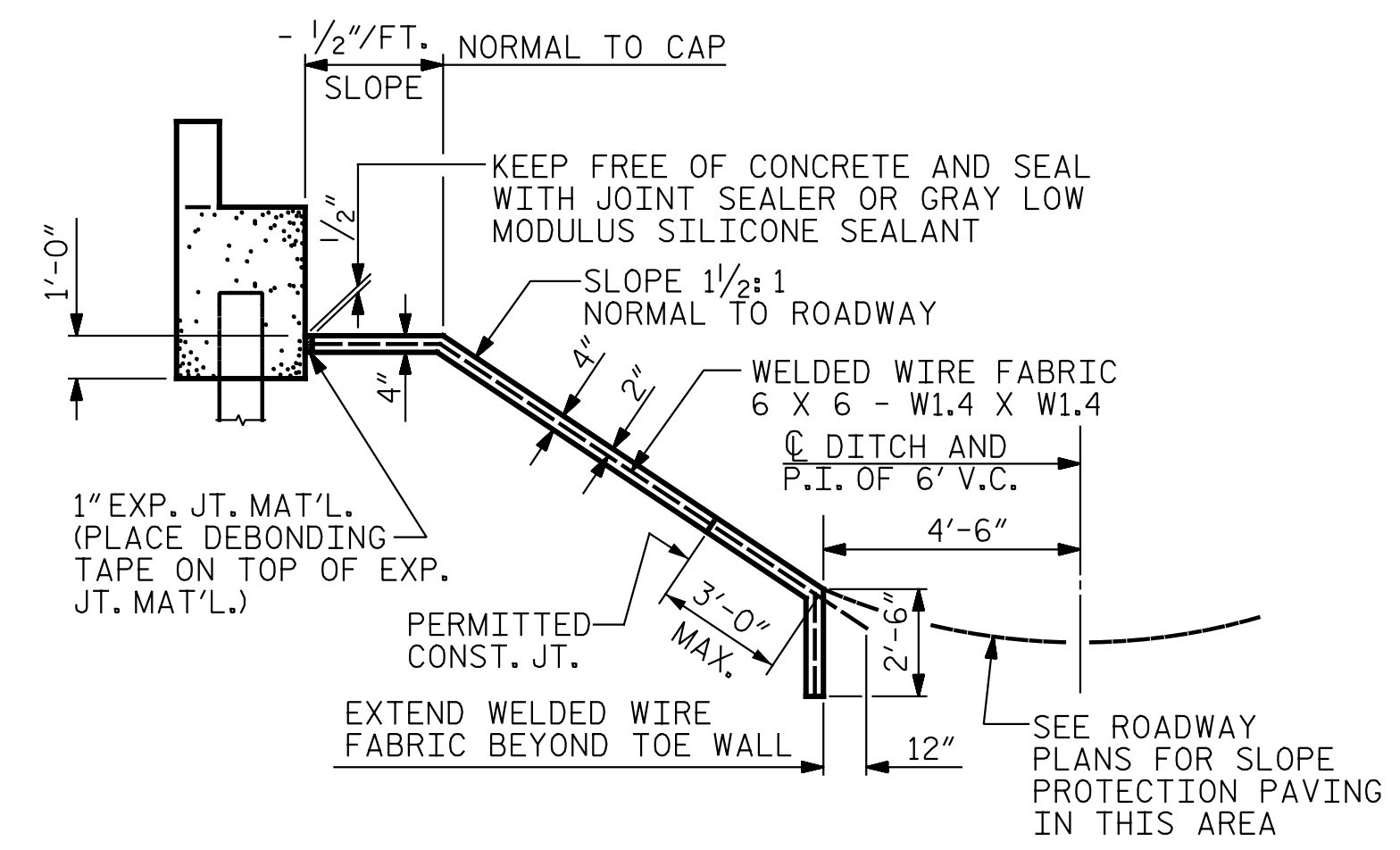
* QUANTITY SHOWN IS BASED ON 5' POURS.

GENERAL NOTES

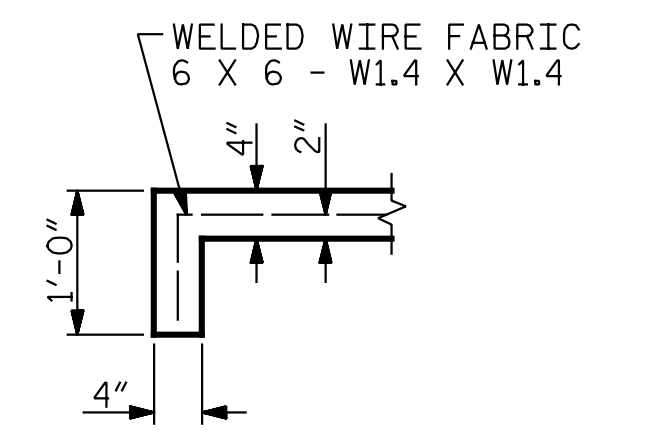
SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING. SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.



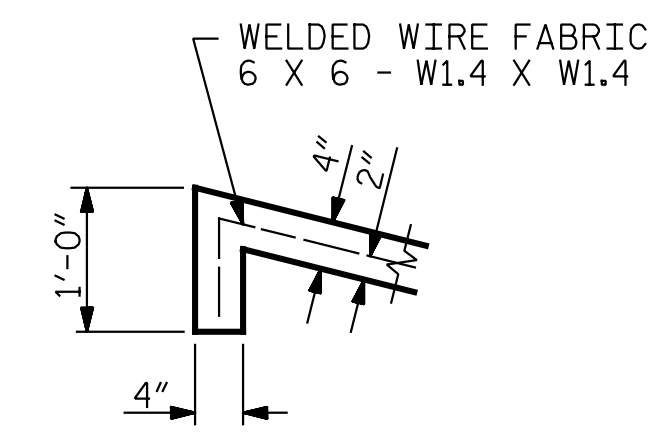
PLAN



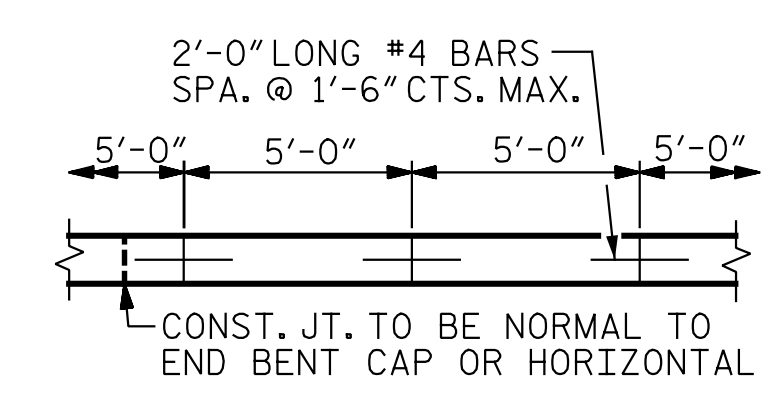
SECTION ALONG ROADWAY WHEN FILL CATCHES IN DITCH



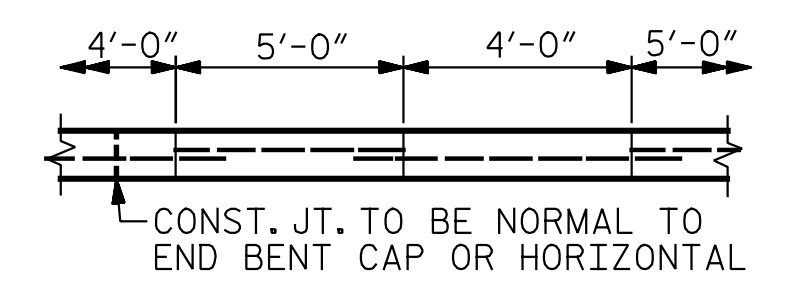
SECTION A-A



SECTION B-B



POURING DETAIL



OPTIONAL POURING DETAIL

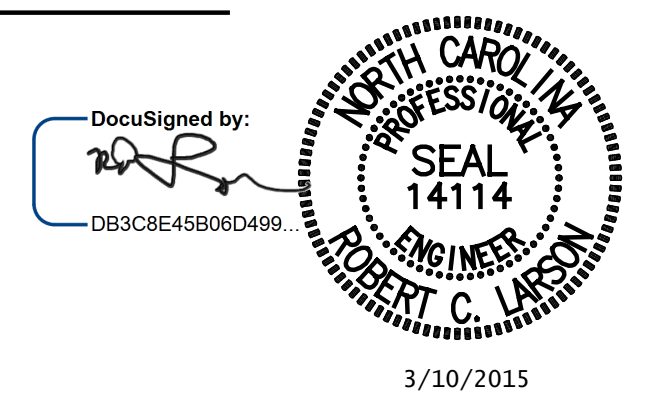
PROJECT NO. R-2514D
JONES COUNTY
STATION: 320+39.56 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SLOPE PROTECTION
DETAILS**

RIGHT LANE

STD. NO. SP1

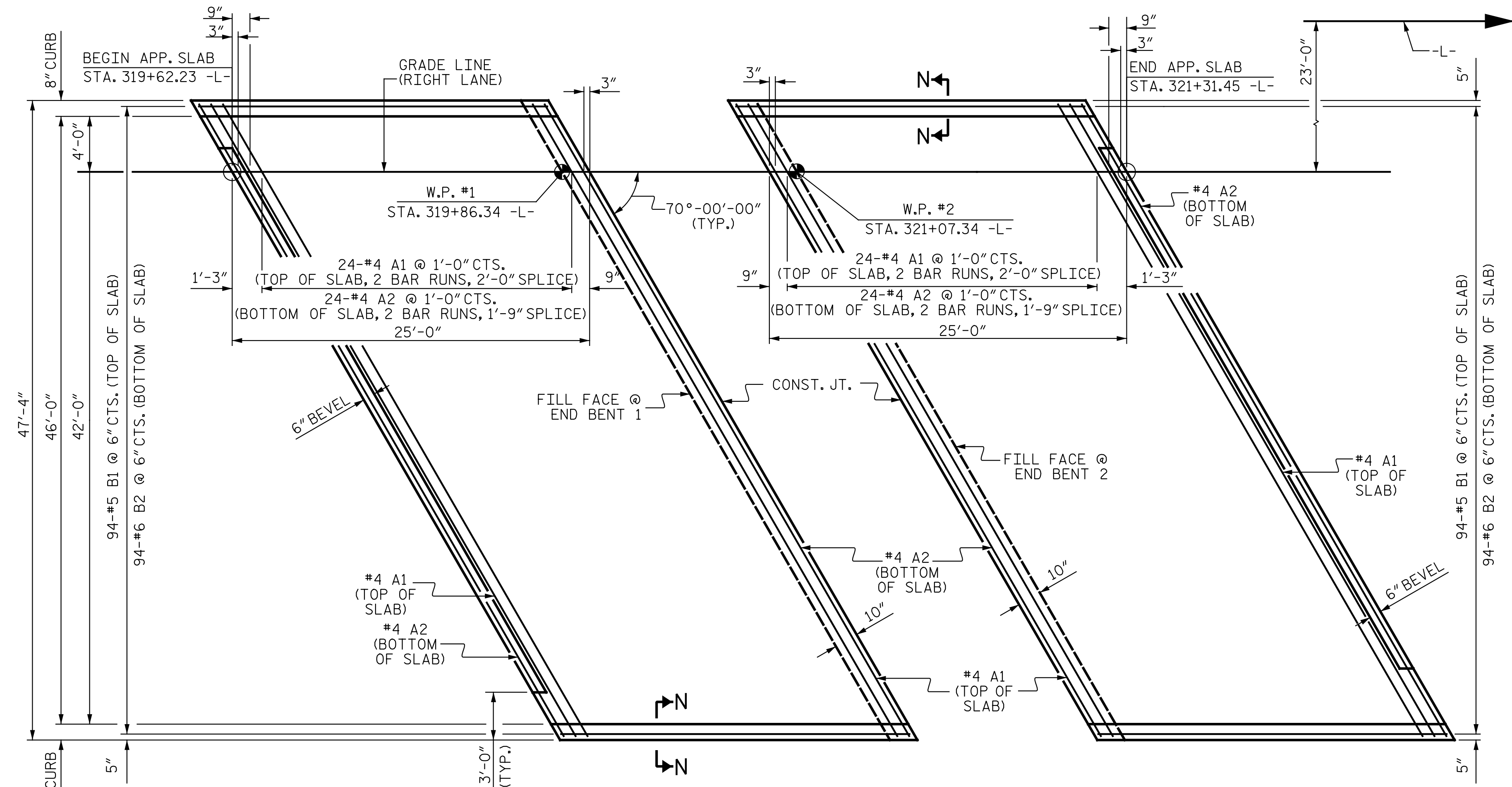


DESIGN ENGINEER OF RECORD:	DATE:	3/10/2015
DRAWN BY: E. C. DECOLA	DATE:	04/28/14
CHECKED BY: R. C. LARSON	DATE:	05/13/14

KCI Associates
of North Carolina, P.A.
SLOPE PROTECTION

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

TOTAL SHEETS: 502-24



PLAN @ END BENT #1 PLAN @ END BENT #2
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

NOTES

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

FOR REINFORCED BRIDGE APPROACH FILL FABRIC WALL INCLUDING GEOTEXTILE, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.

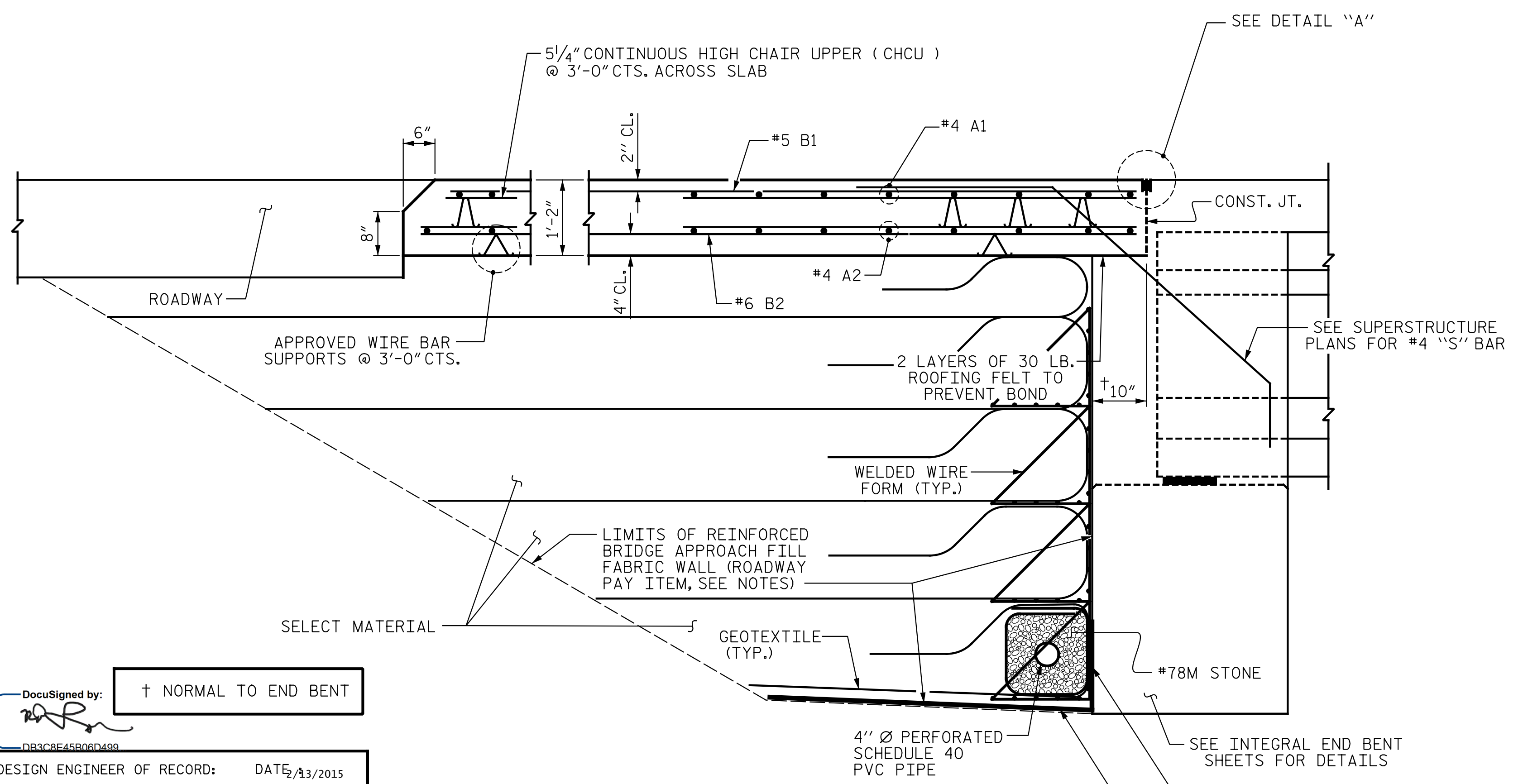
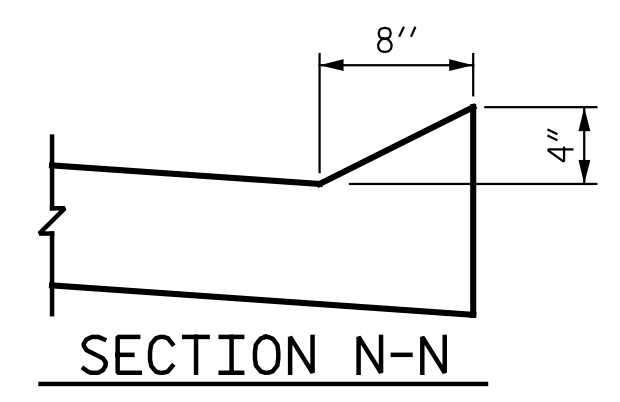
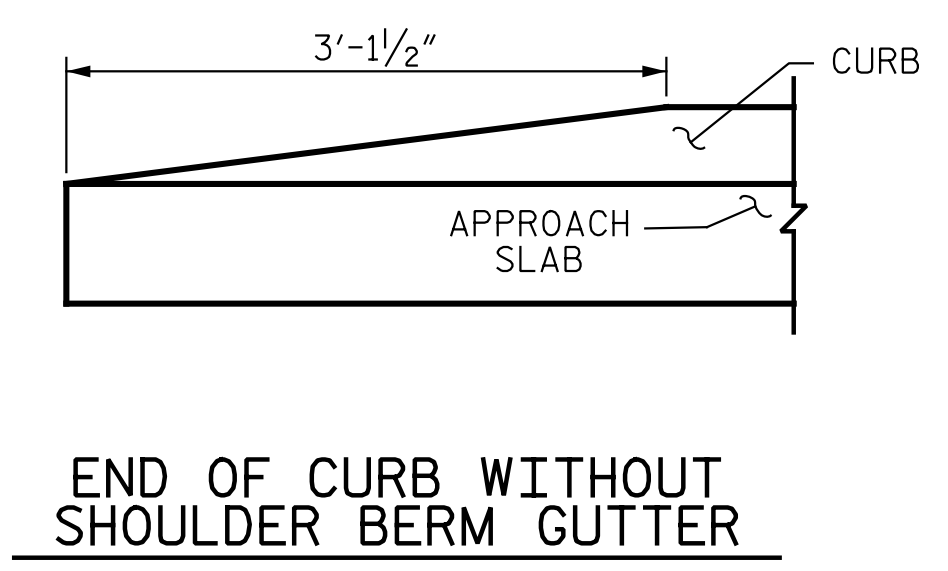
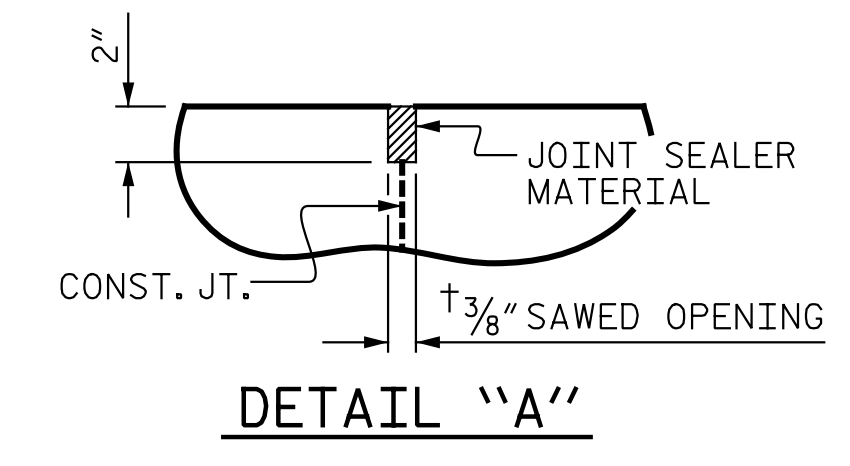
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

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

BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	52	#4	STR	26'-0"	903
A2	52	#4	STR	25'-11"	900
* B1	94	#5	STR	24'-1"	2361
B2	94	#6	STR	24'-7"	3471
REINFORCING STEEL					4371 LBS.
* EPOXY COATED REINFORCING STEEL					3264 LBS.
CLASS AA CONCRETE					51.2 C. Y.



SECTION THRU SLAB

DocuSigned by: **† NORMAL TO END BENT**
DB3C8E45B06D499

DESIGN ENGINEER OF RECORD: DATE: 8/13/2015

ASSEMBLED BY: J. M. WEATHERBURNE DATE: 7/20/13
CHECKED BY: R.C. LARSON DATE: 8/20/13

DRAWN BY: TLA 10/05 REV. 10/1/11 MAA/GM
CHECKED BY: GM 5/06 REV. 12/21/11 MAA/GM
REV. 6/13 MAA/GM

DocuSigned by: **ROBERT C. LARSON**
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14114
DB3C8E45B06D499...
2/13/2015

ENGINEERS * PLANNERS * ECOLOGISTS LICENSE NUMBER: C-0764
KCI Associates of North Carolina, P.A.
SUITE 220, LANDMARK CENTER # 4601 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244
DWG. REF. NO. 23 OF 24

PROJECT NO. R-2514D
JONES COUNTY
STATION: 320+39.56 -L-

SHEET 1 OF 2

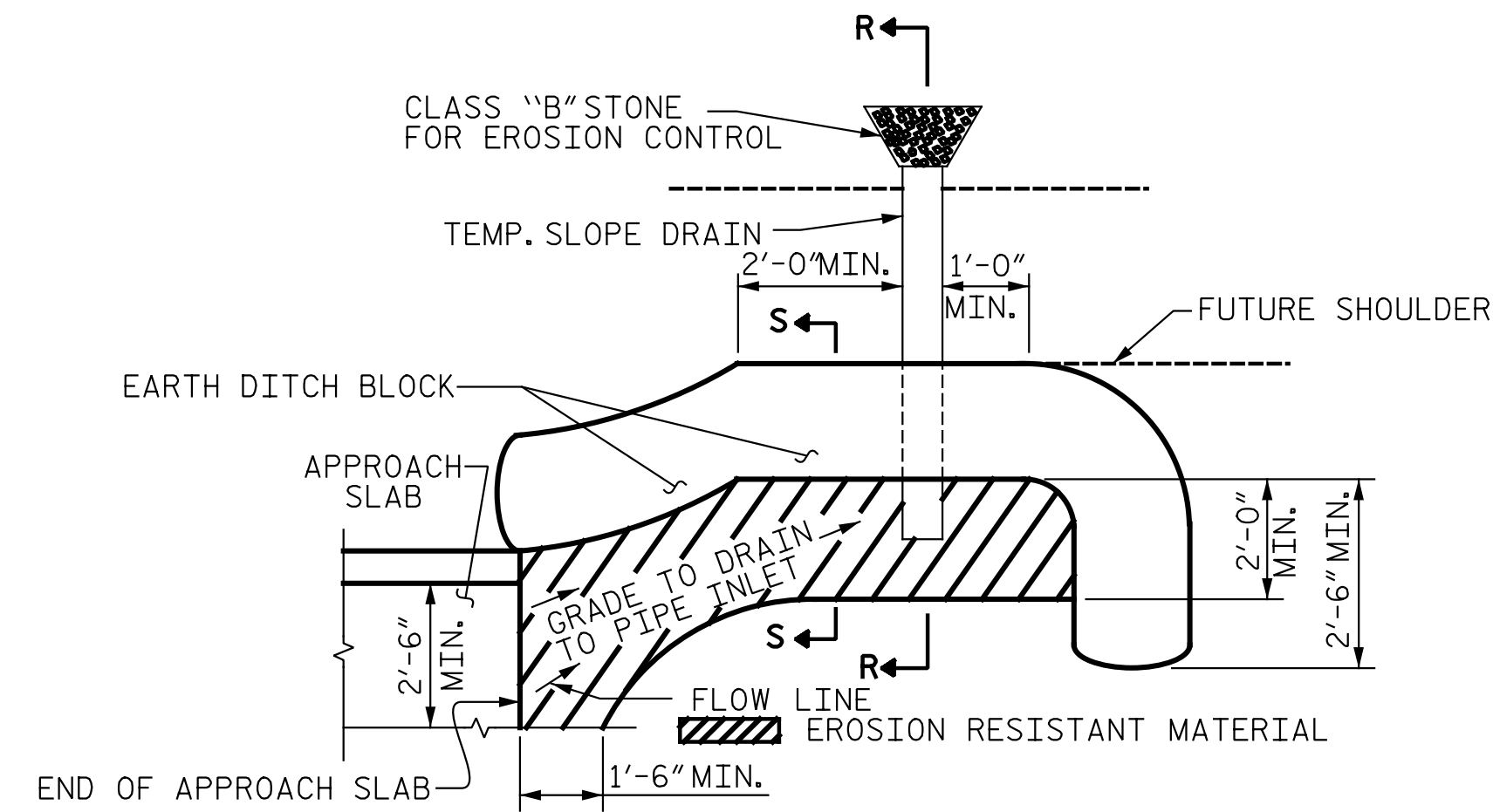
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB
FOR INTEGRAL ABUTMENT

STD. NO. BAS5 RIGHT LANE

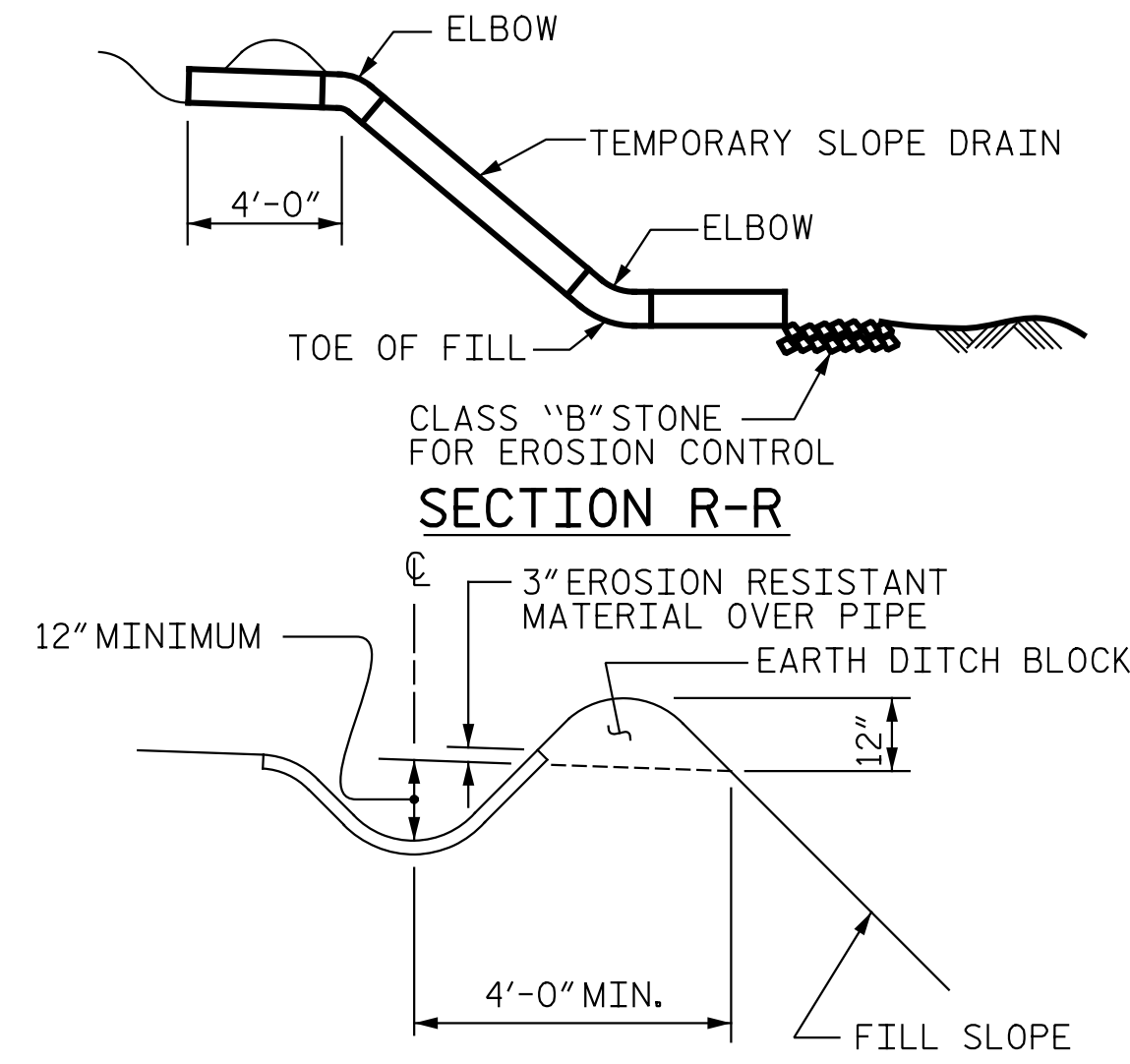
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S02-23
TOTAL SHEETS S02-24



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

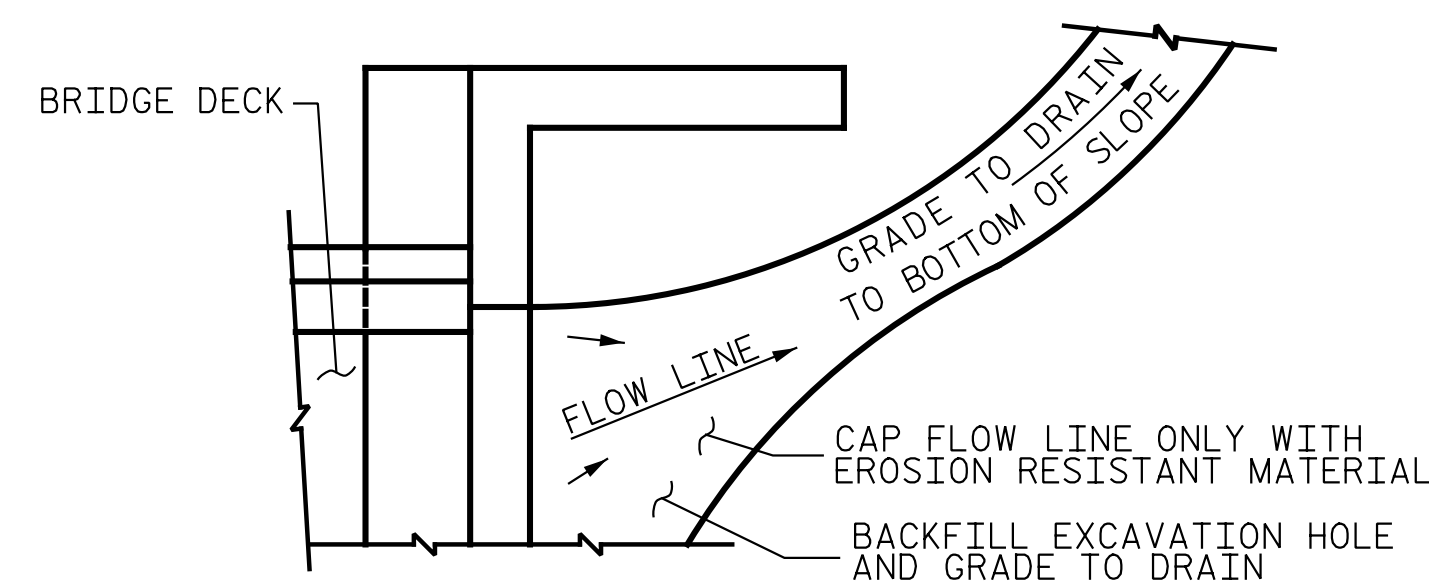
PLAN VIEW



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

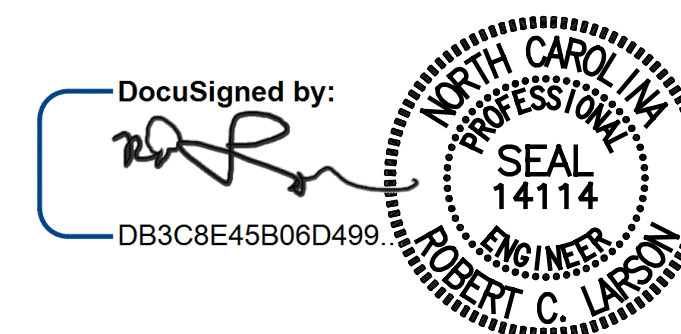
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 320+39.56 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 BRIDGE APPROACH
 SLAB DETAILS

STD. NO. BAS4 RIGHT LANE



2/13/2015

ENGINEERS • PLANNERS • ECOLOGISTS LICENSE NUMBER: C-0764
KCI Associates
 of North Carolina, P.A.
 SUITE 220, LANDMARK CENTER # 4603 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244
 DWG. REF. NO. 24 OF 24

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

TOTAL SHEETS: 24
 SHEET NO.: S02-24

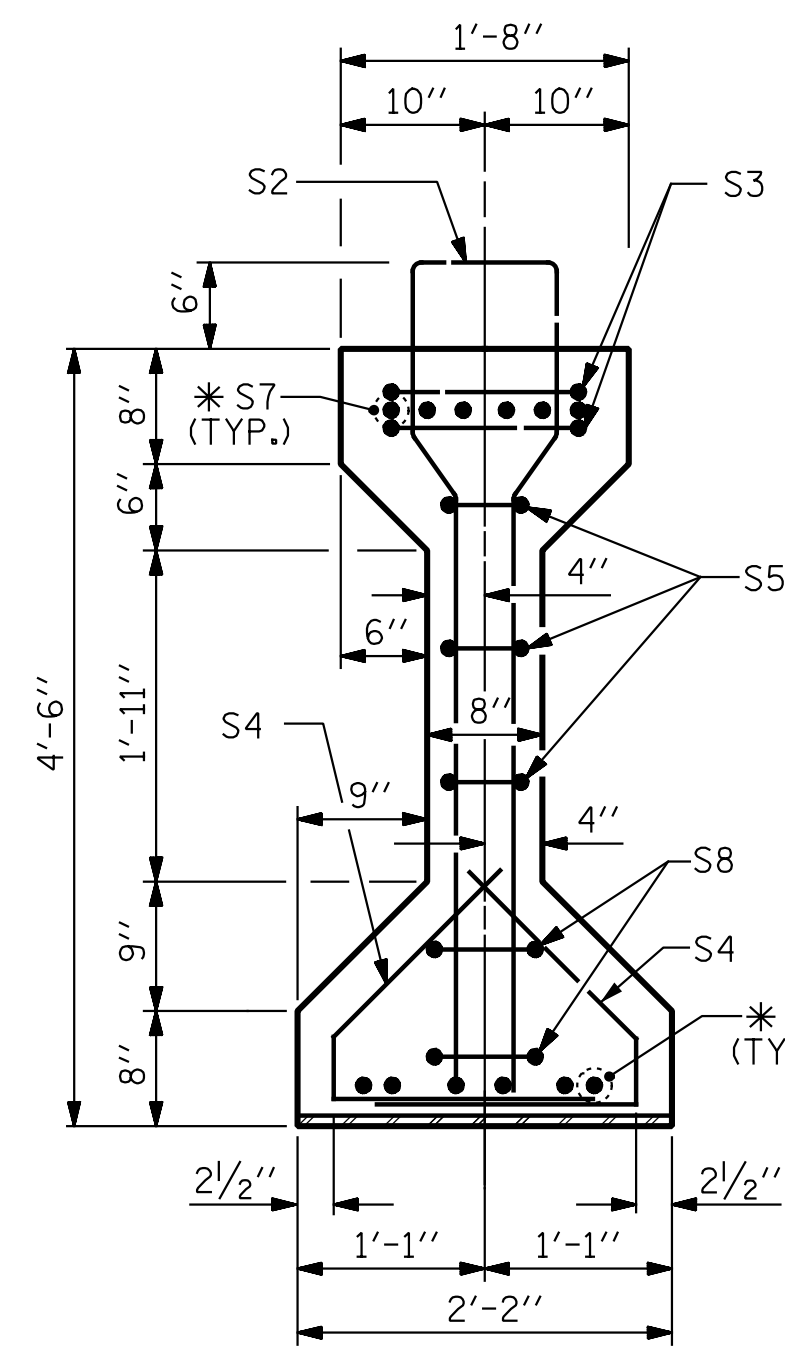
DocuSigned by:

DESIGN ENGINEER OF RECORD: DATE : 2/13/2015

ASSEMBLED BY : J. M. WEATHERBURN DATE : 7/20/13
 CHECKED BY : R.C. LARSON DATE : 8/20/13

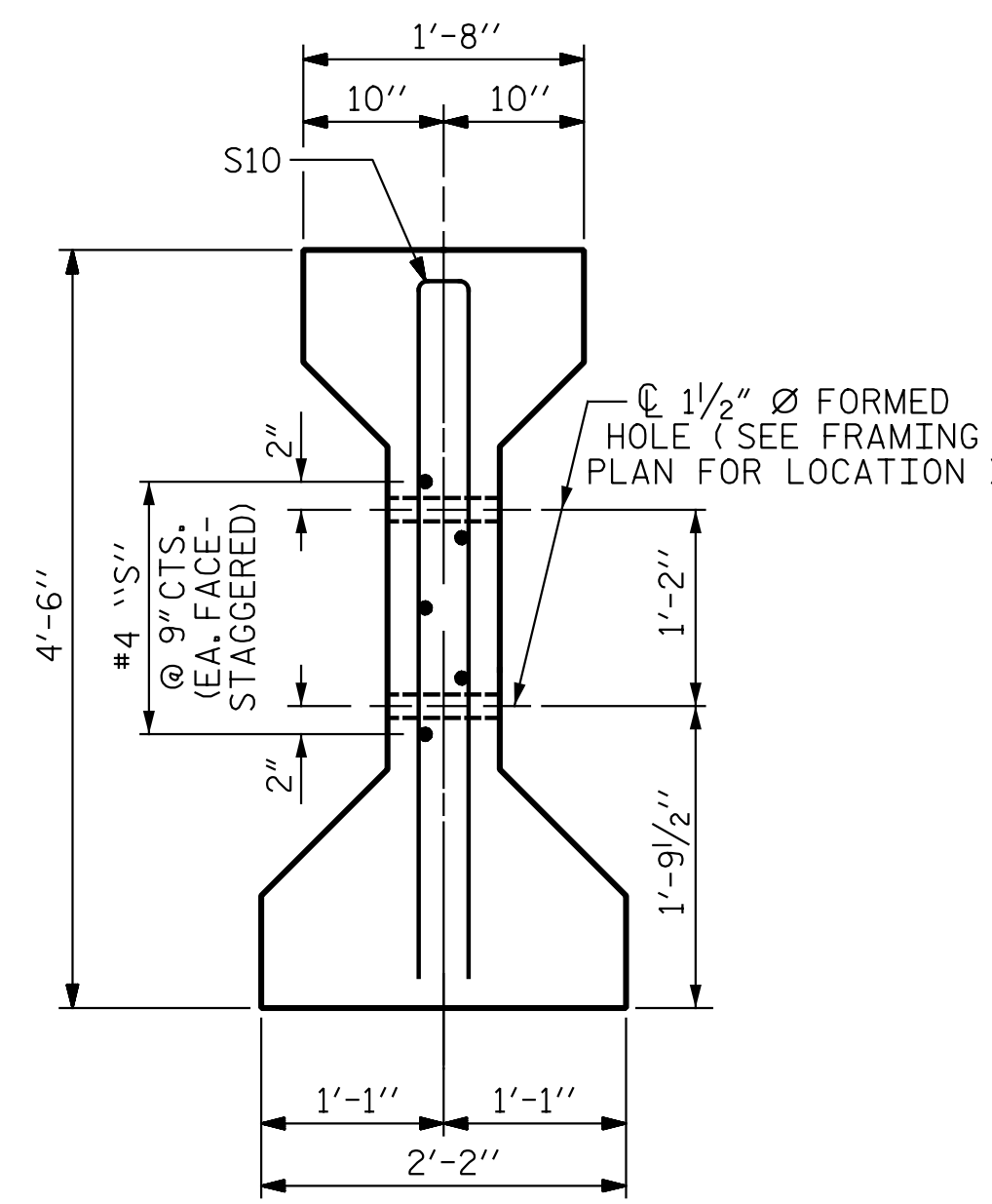
DRAWN BY : FCJ 11/88 MAA/GM
 CHECKED BY : ARB 11/88 MAA/GM

STR-#2

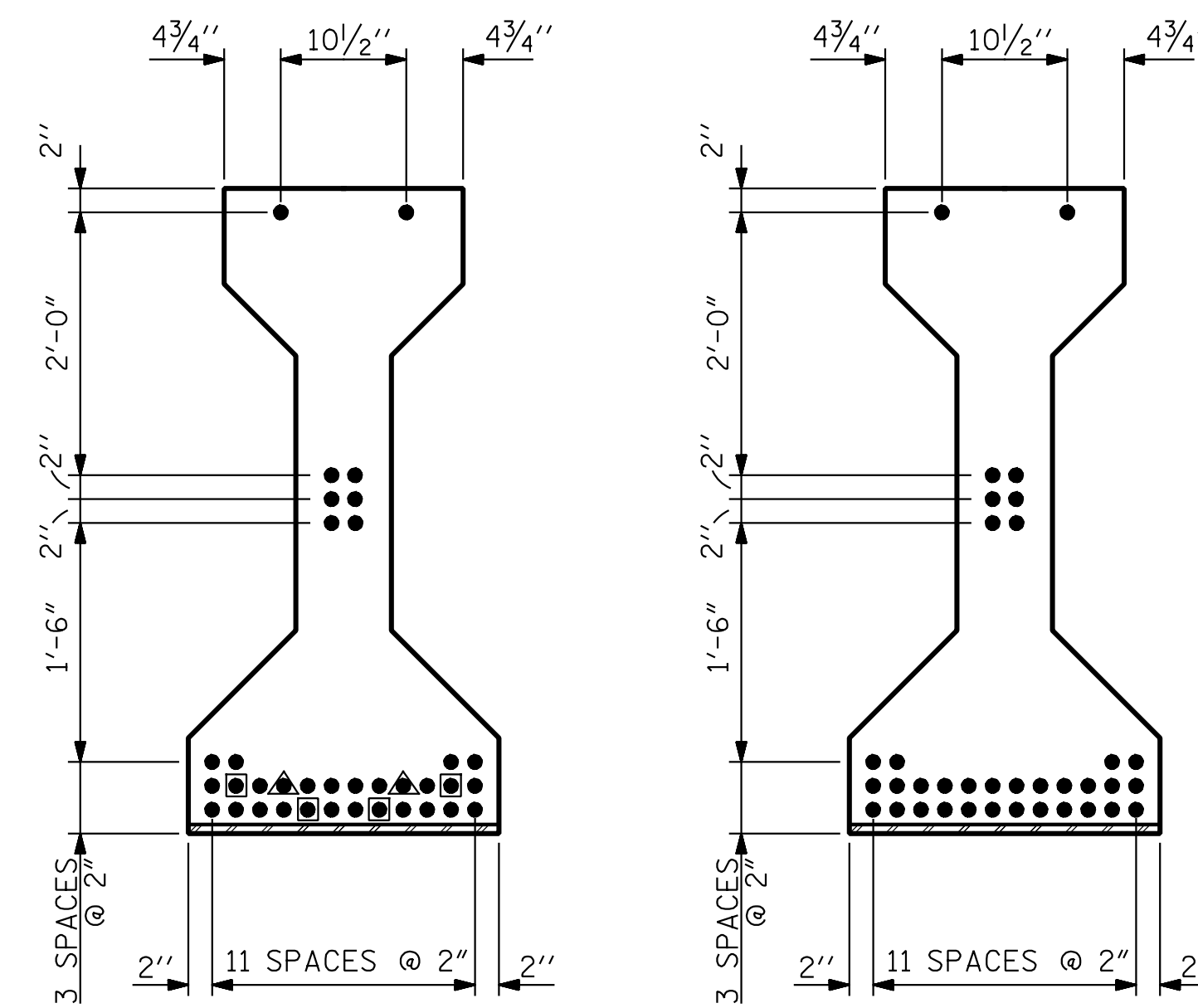


SECTION A-A

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



SECTION C-C
(S1 BARS NOT SHOWN)



AT END OF GIRDER

AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- FULLY BONDED STRAND
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ▲ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

0.6" Ø L. R. GRADE 270 STRANDS

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

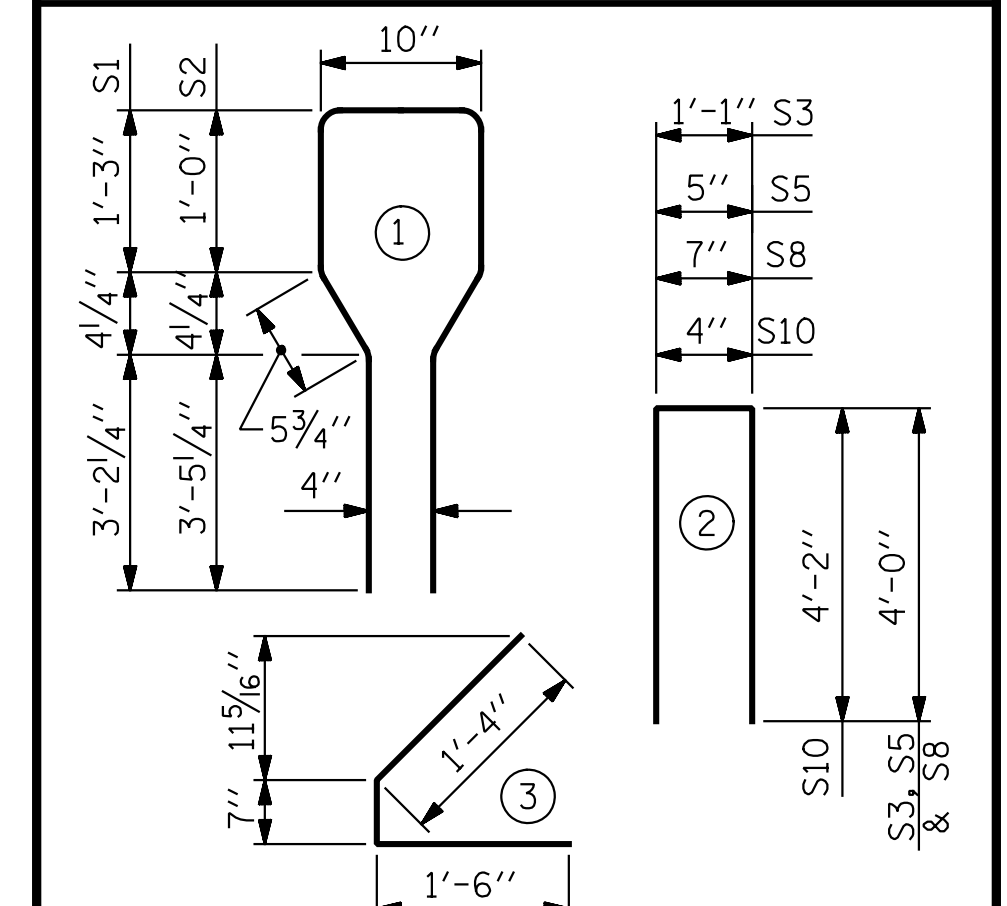
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	87	#4	1	10'-8"	620
S2	16	#6	1	10'-8"	256
S3	4	#4	2	9'-1"	24
S4	108	#4	3	3'-5"	246
S5	6	#4	2	8'-5"	34
*S7	24	#5	STR	3'-8"	92
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
S12	2	#3	STR	1'-4"	1
REINFORCING STEEL					1338

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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT

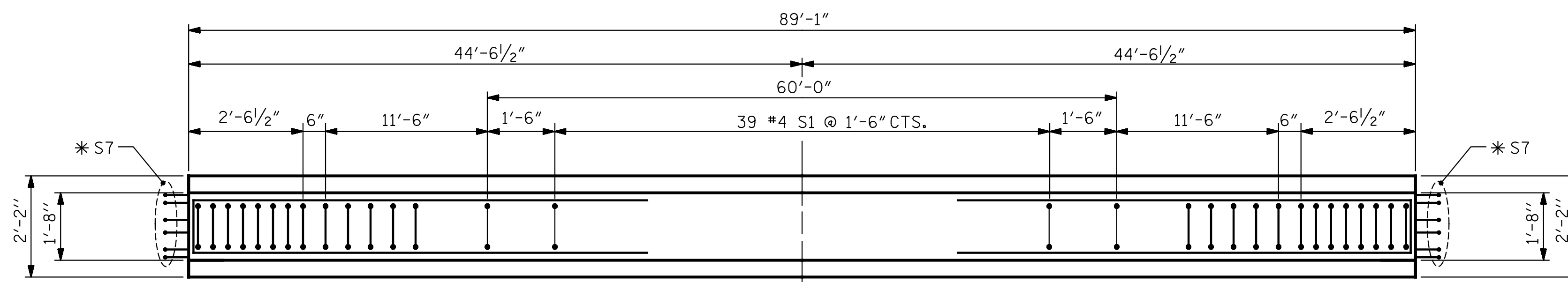


QUANTITIES FOR ONE GIRDER

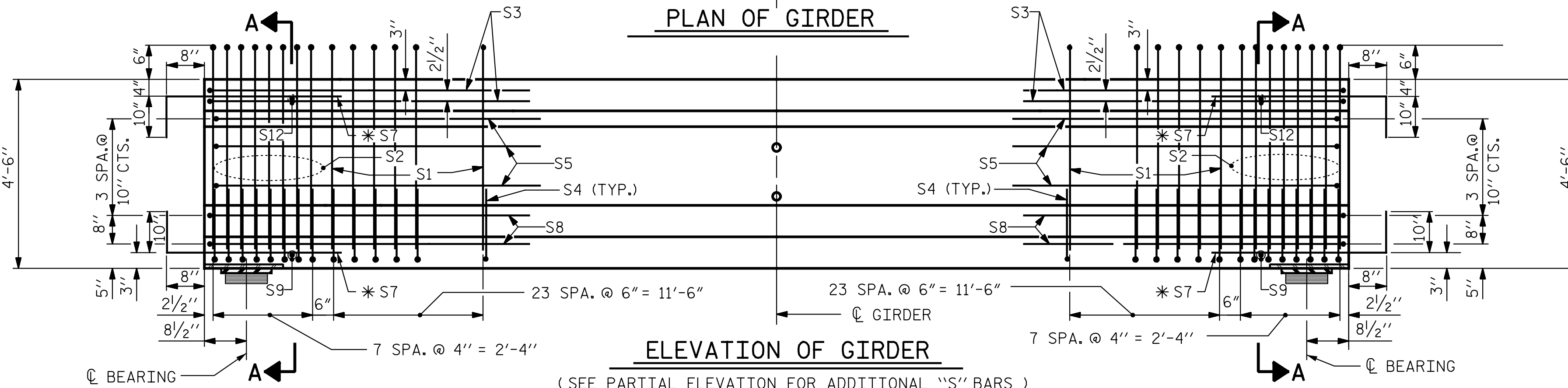
REINFORCING STEEL	8000 PSI CONCRETE	0.6" Ø L. R. STRANDS
LB.	C.Y.	No.
1338	18.1	36

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	89'-1"	356'-4"

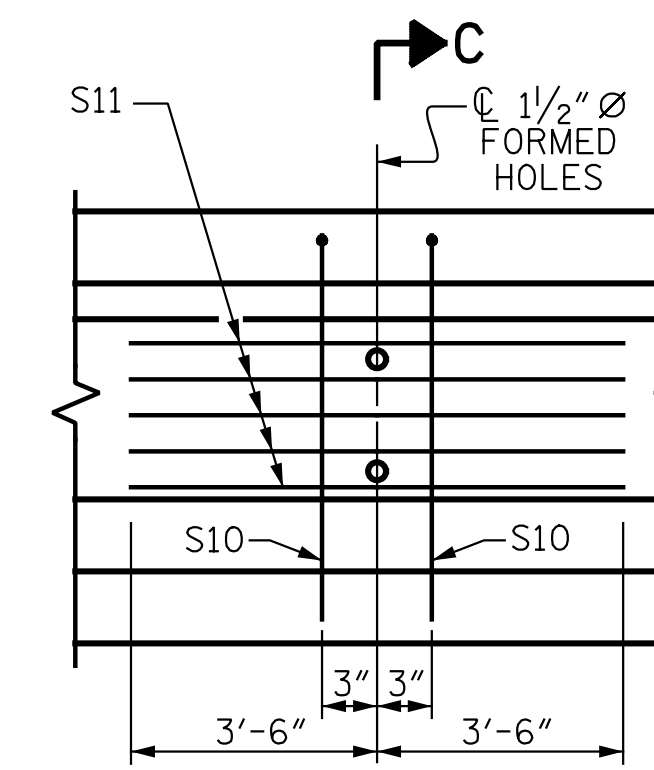


PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

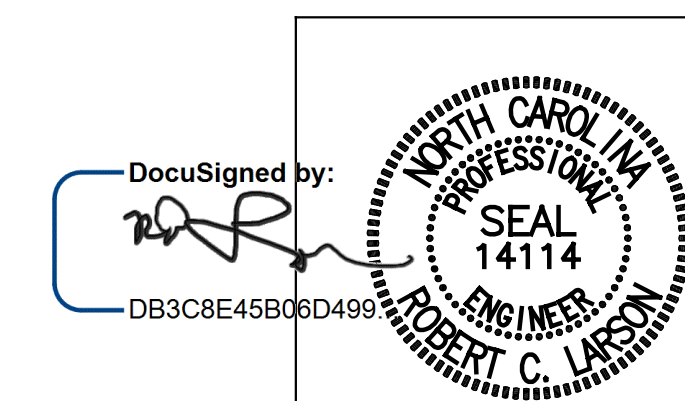
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1-4

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

SHEET 1 OF 3

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

STD. NO. PCG3 LEFT LANE STR-#3

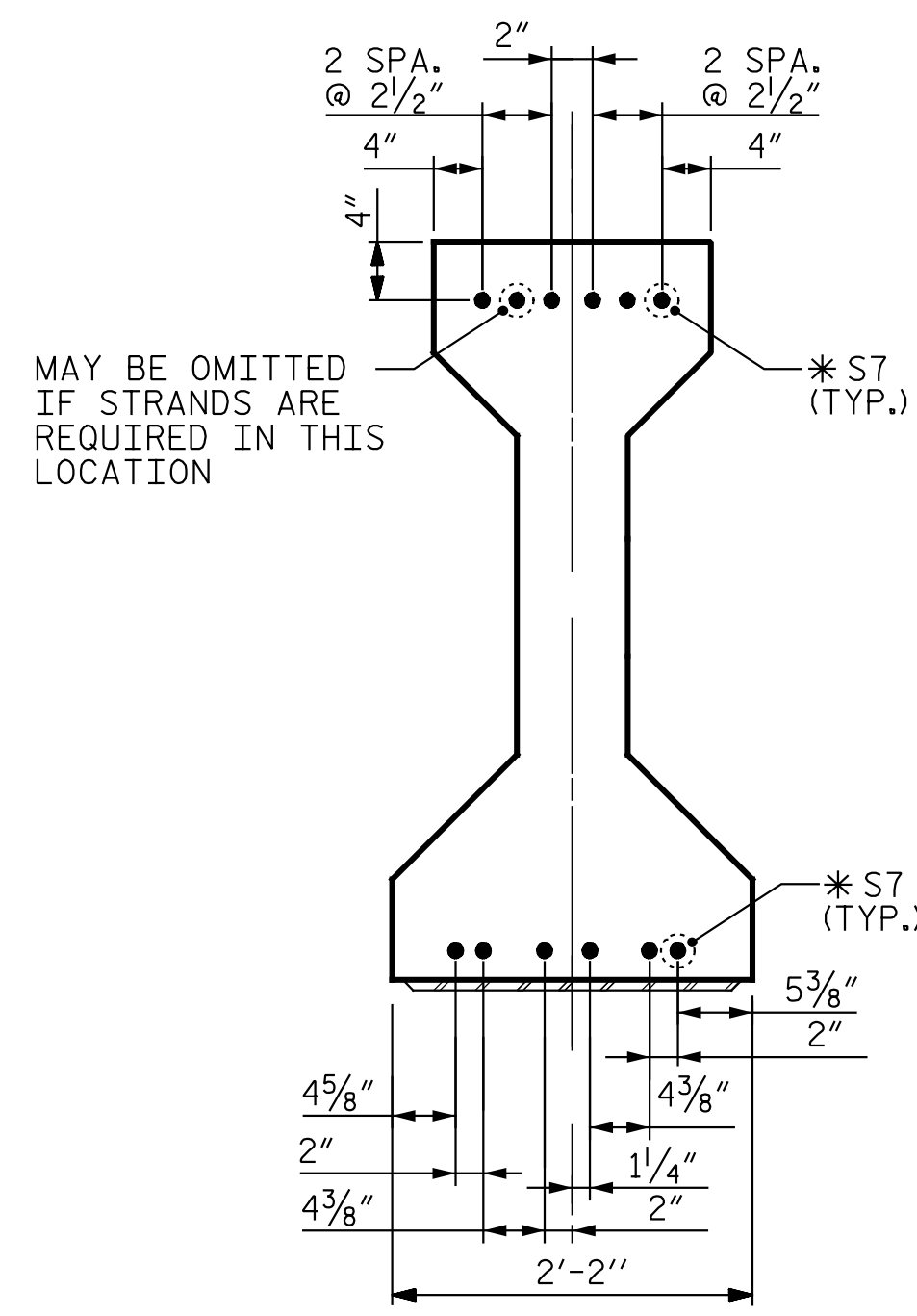


DESIGNED BY: R.C. LARSON
 CHECKED BY: R.C. LARSON
 DATE: 4/10/2015

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

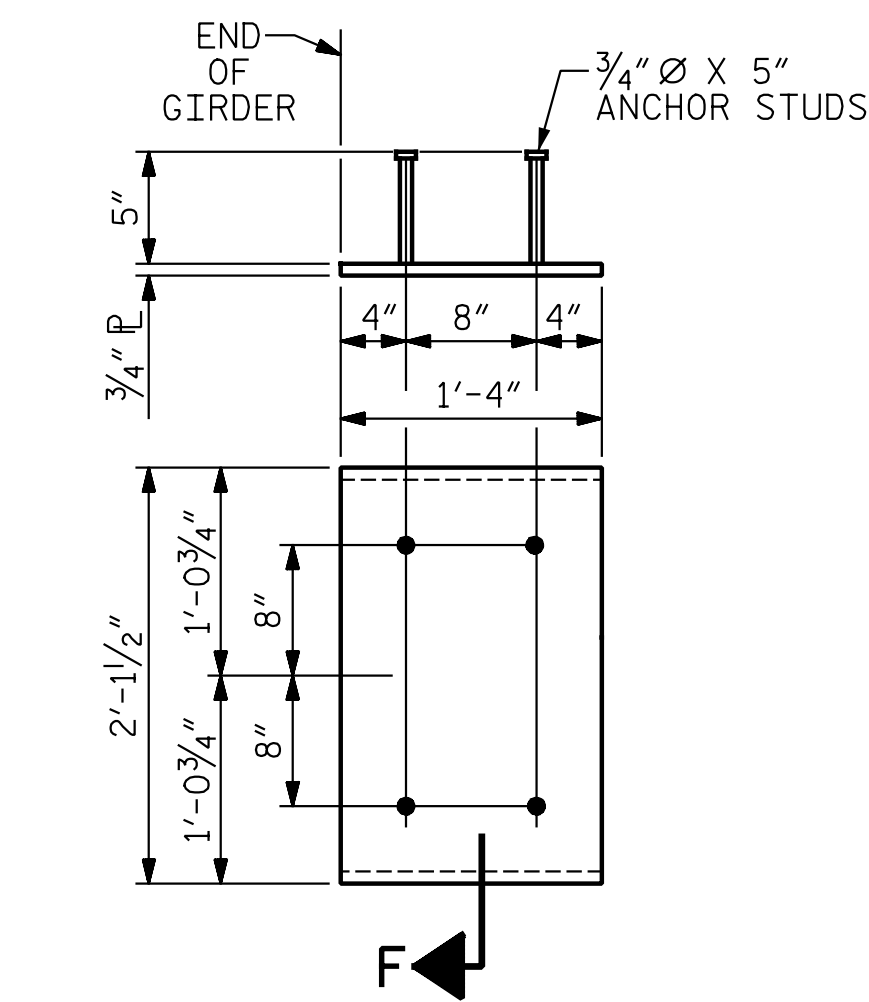
DESIGN ENGINEER OF RECORD:	DATE:	4/10/2015
ASSEMBLED BY: R.A. PRUETT	DATE:	10/25/13
CHECKED BY: R.C. LARSON	DATE:	12/13/13
DRAWN BY: JMB 12/87	REV. 8/16/99RR	RWW/LES
CHECKED BY: ARB 12/87	REV. 5/1/06R	TLA/GM
	REV. 10/1/11	MAA/GM

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 9 OF 23



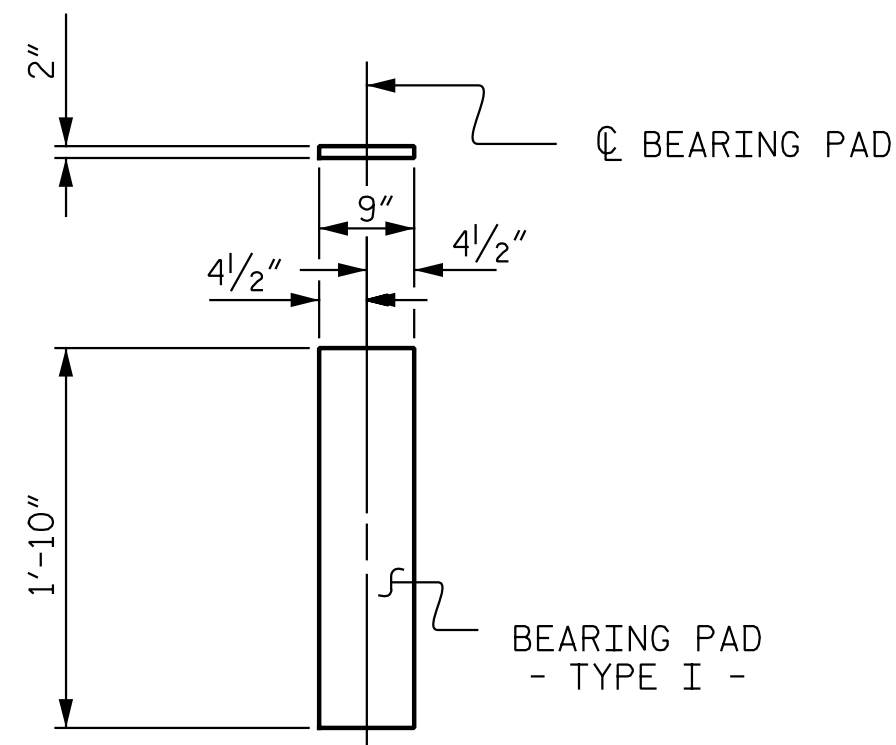
DETAIL "A"

(FOR AASHTO TYPE IV GIRDERS)



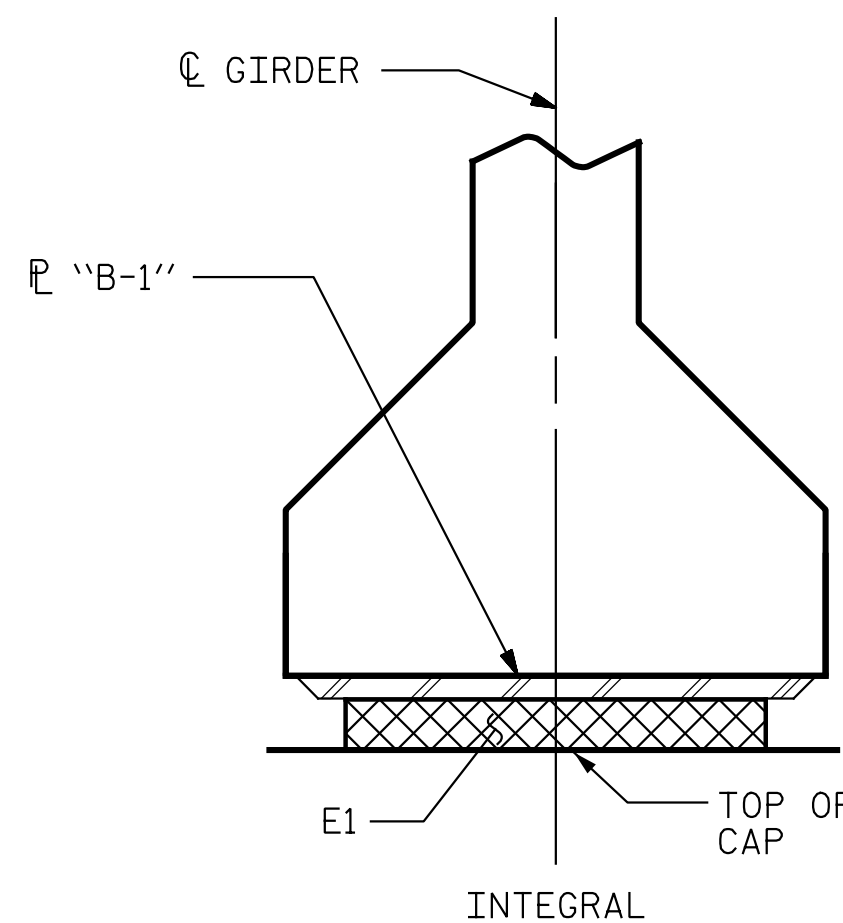
EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER AND 63" & 72" MODIFIED BULB TEES

(2 REQ'D PER GIRDER)



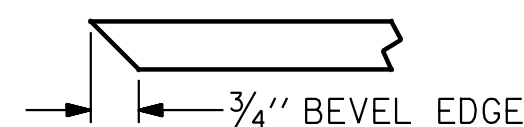
E1 (8 REQ'D)

SECTION "E"



PLAIN ELASTOMERIC BEARING DETAIL

TYPE I



SECTION "F"

(SEE NOTES)

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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 6000 PSI.

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

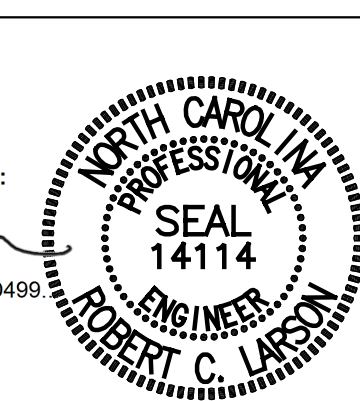
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

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.

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

SHEET 2 OF 3

DocuSigned by:
 DB3C8E45B06D499

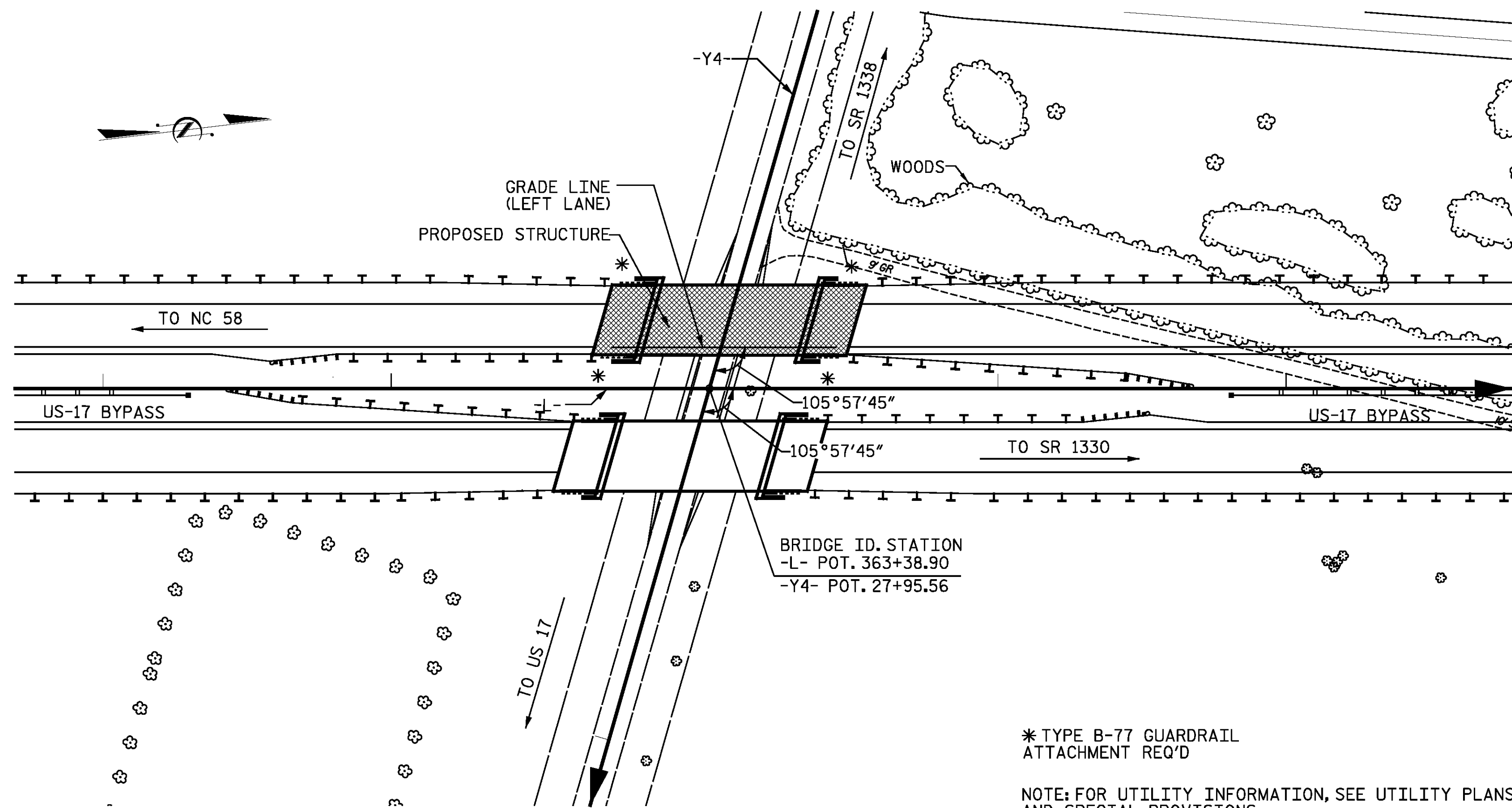


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 DETAILS
 LEFT LANE STR-#3

DESIGN ENGINEER OF RECORD:	DATE :	4/10/2015
ASSEMBLED BY : R.A. PRUETT	DATE :	10/25/13
CHECKED BY : R.C. LARSON	DATE :	12/13/13
DRAWN BY : ELR 11/91	REV. 7/10/01RR LES/RDR	
CHECKED BY : GRP 11/91	REV. 5/1/06 TLA/GM	
	REV. 10/1/11 MAA/GM	

KCI Associates
 of North Carolina, P.A.
 ENGINEERS • PLANNERS • ECOLOGISTS LICENSE NUMBER: C-0764
 SUITE 220, LANDMARK CENTER # 4601 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244
 DWG. REF. NO. 10 OF 23

NO.		BY:		DATE:		REVISIONS		SHEET NO.	
1						3		503-10	TOTAL SHEETS
2						4		503-23	



LOCATION SKETCH

NOTES:

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- THE ELEVATION(S) AND CLEARANCE(S) SHOWN ON THE PLANS AT THE POINT(S) OF MINIMUM CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATION(S) ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.
- FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.
- PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- ALL METALIZED SURFACES SHALL RECEIVE A SEAL COATING AS SPECIFIED IN THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALIZATION).
- FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.
- FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REIN-FORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS		HP12 X 53 STEEL PILES		PILE REDRIVES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS
	EA	SQ.FT.	SQ.FT.	CU.YDS.	LUMP SUM	LBS.	NO.	LIN.FT.	NO.	LIN.FT.	EA.	LIN.FT.	SQ. YD.	LUMP SUM
SUPERSTRUCTURE		3,774	4,819		LUMP SUM		4	356.33				179.53		LUMP SUM
END BENT 1				30.4		4855			7	420	3		375	
END BENT 2				30.5		4886			7	420	4		330	
TOTAL	1	3,774	4,819	60.9	LUMP SUM	9741	4	356.33	14	840	7	179.53	705	LUMP SUM

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

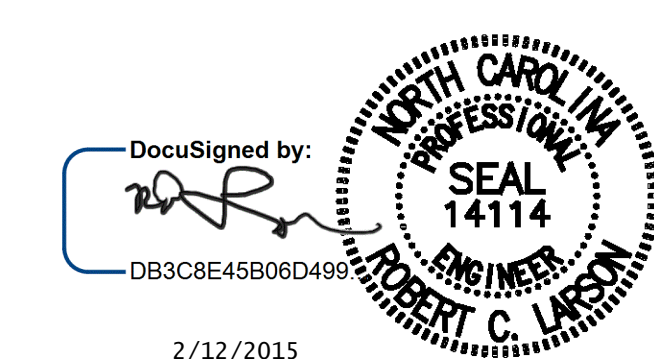
SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER SR 1337 BETWEEN
 NC 58 AND SR 1330

LEFT LANE STR-#3

DocuSigned by:

 DB3C8E45B06D499...



DESIGN ENGINEER OF RECORD: DATE : 2/12/2015
 DRAWN BY : R. J. FLORY DATE : 08/24/13
 CHECKED BY : R. C. LARSON DATE : 03/19/14

REVISIONS						SHEET NO. S03-3
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS S03-23
2			4			

DWG. REF. NO. 3 OF 23

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FH)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FH)	LIVE-LOAD FACTORS (γ _{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FH)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.02	--	1.75	0.917	1.47	1	EXT.	43.8	1.115	1.11	1	INT.	17.1	0.80	0.917	1.02	1	INT.	43.8		
	HL-93 (OPERATING)	N/A		1.48	--	1.35	0.917	1.90	1	EXT.	43.8	1.115	1.48	1	INT.	17.1	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.39	50.0	1.75	0.917	1.99	1	EXT.	43.8	1.115	1.45	1	INT.	17.1	0.80	0.917	1.39	1	INT.	43.8		
	HS-20 (OPERATING)	36.000		1.92	69.1	1.35	0.917	2.58	1	EXT.	43.8	1.115	1.92	1	INT.	17.1	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.23	43.6	1.40	0.917	5.80	1	EXT.	43.8	1.115	4.61	1	INT.	17.1	0.80	0.917	3.23	1	INT.	43.8	
		SNGARBS2	20.000		2.36	47.2	1.40	0.917	4.24	1	EXT.	43.8	1.115	3.23	1	INT.	17.1	0.80	0.917	2.36	1	INT.	43.8	
		SNAGRIS2	22.000		2.22	48.8	1.40	0.917	3.98	1	EXT.	43.8	1.115	2.98	1	INT.	17.1	0.80	0.917	2.22	1	INT.	43.8	
		SNCOTTS3	27.250		1.61	43.8	1.40	0.917	2.88	1	EXT.	43.8	1.115	2.23	1	INT.	17.1	0.80	0.917	1.61	1	INT.	43.8	
		SNAGGRS4	34.925		1.33	46.4	1.40	0.917	2.38	1	EXT.	43.8	1.115	1.82	1	INT.	17.1	0.80	0.917	1.33	1	INT.	43.8	
		SNS5A	35.550		1.30	46.2	1.40	0.917	2.33	1	EXT.	43.8	1.115	1.84	1	INT.	17.1	0.80	0.917	1.30	1	INT.	43.8	
		SNS6A	39.950		1.18	47.1	1.40	0.917	2.12	1	EXT.	43.8	1.115	1.67	1	INT.	17.1	0.80	0.917	1.18	1	INT.	43.8	
	SNS7B	42.000		1.13	47.4	1.40	0.917	2.02	1	EXT.	43.8	1.115	1.63	1	INT.	17.1	0.80	0.917	1.13	1	INT.	43.8		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.44	47.5	1.40	0.917	2.59	1	EXT.	43.8	1.115	2.00	1	INT.	17.1	0.80	0.917	1.44	1	INT.	43.8	
		TNT4A	33.075		1.45	47.9	1.40	0.917	2.59	1	EXT.	43.8	1.115	1.96	1	INT.	17.1	0.80	0.917	1.45	1	INT.	43.8	
		TNT6A	41.600		1.18	49.0	1.40	0.917	2.11	1	EXT.	43.8	1.115	1.74	1	INT.	17.1	0.80	0.917	1.18	1	INT.	43.8	
		TNT7A	42.000		1.18	49.5	1.40	0.917	2.11	1	EXT.	43.8	1.115	1.70	1	INT.	17.1	0.80	0.917	1.18	1	INT.	43.8	
		TNT7B	42.000		1.21	50.8	1.40	0.917	2.17	1	EXT.	43.8	1.115	1.59	1	INT.	17.1	0.80	0.917	1.21	1	INT.	43.8	
		TNAGRIT4	43.000		1.16	49.8	1.40	0.917	2.08	1	EXT.	43.8	1.115	1.54	1	INT.	17.1	0.80	0.917	1.16	1	INT.	43.8	
TNAGT5A		45.000		1.09	49.0	1.40	0.917	1.96	1	EXT.	43.8	1.115	1.52	1	INT.	17.1	0.80	0.917	1.09	1	INT.	43.8		
TNAGT5B	45.000	③	1.08	48.6	1.40	0.917	1.94	1	EXT.	43.8	1.115	1.46	1	INT.	17.1	0.80	0.917	1.08	1	INT.	43.8			

LOAD FACTORS:

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

NOTES:

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

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

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

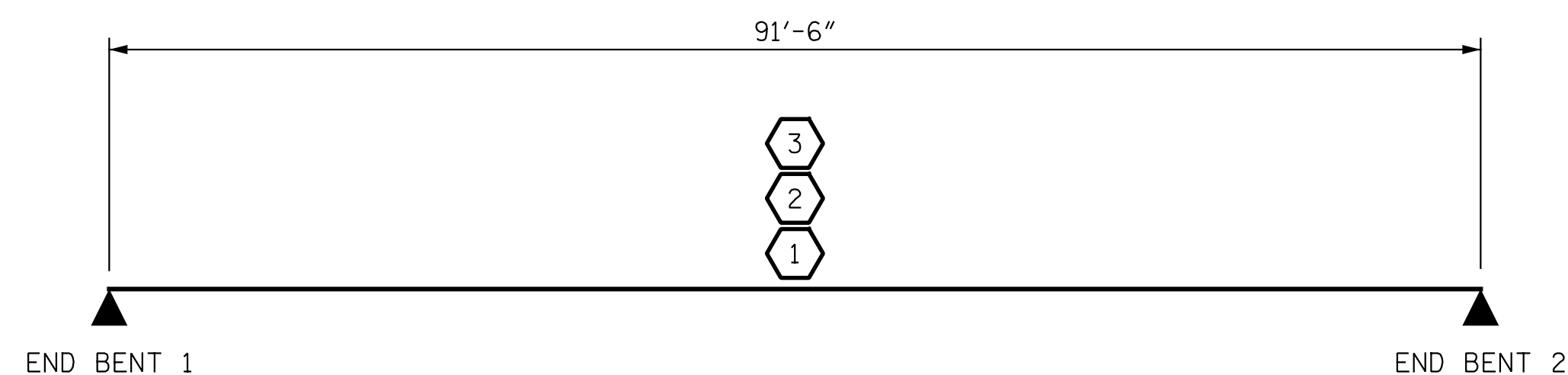
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

INT. - INTERIOR GIRDER
EXT. - EXTERIOR GIRDER



LRFR SUMMARY

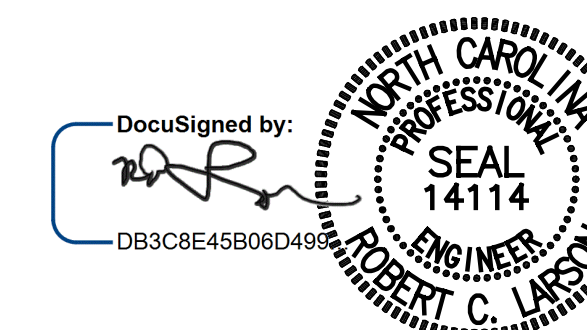
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

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

STD. NO. LRFR1 LEFT LANE STR-#3



DocuSigned by:
 DB3C8E45B06D499

4/10/2015

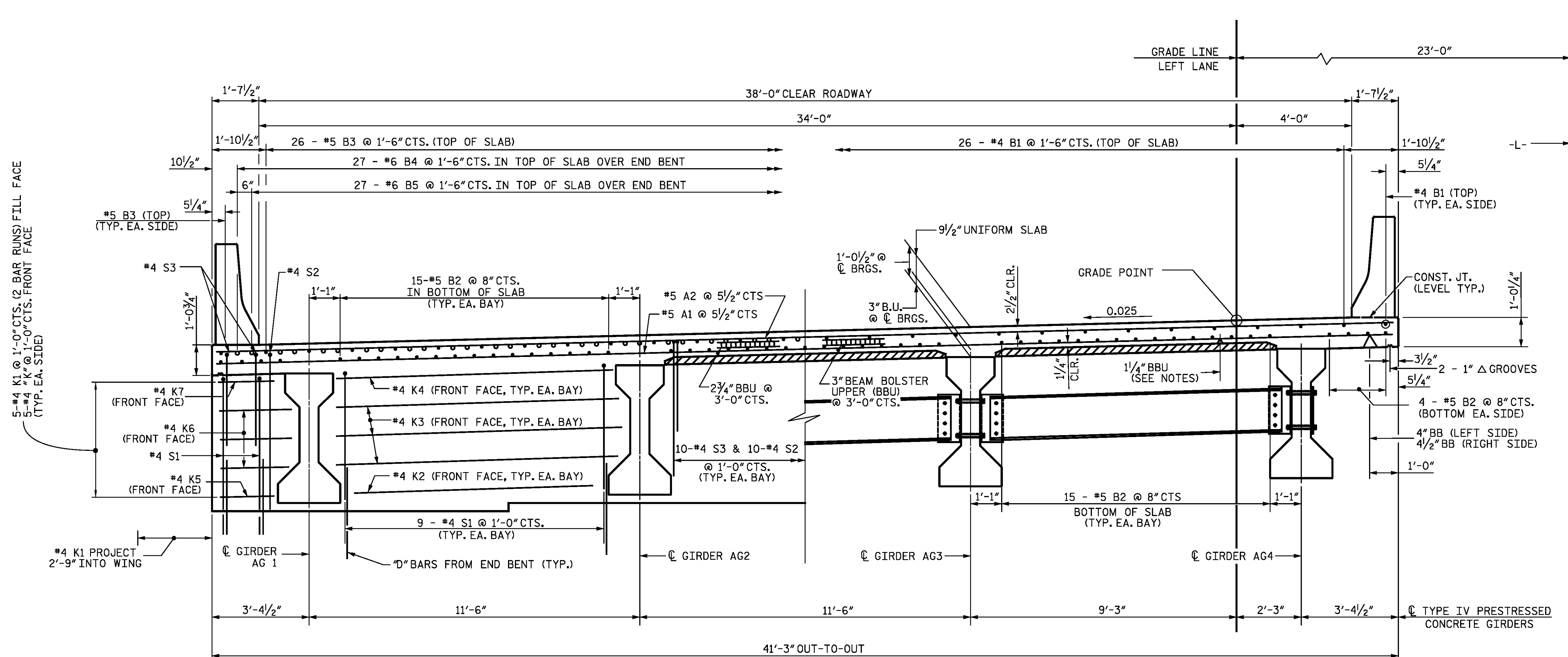
**KCI Associates
 of North Carolina, P.A.**

SUITES 220, LANDMARK CENTER # 400 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244

DWG. REF. NO. 4 OF 23

REVISIONS						SHEET NO. S03-4
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS S03-23
2			4			

DESIGN ENGINEER OF RECORD:	DATE :	4/10/2015
DRAWN BY : E. C. DECOLA	DATE :	03/02/14
CHECKED BY : R. C. LARSON	DATE :	03/07/14
DRAWN BY : MAA 1/08	REV. 11/2/08RR	MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11	MAA/GM



TYPICAL HALF SECTION AT END BENT DIAPHRAGM

TYPICAL HALF SECTION AT INTERMEDIATE DIAPHRAGM

TYPICAL SECTION

NOTES

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

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

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

THE SKEWED END CONDITIONS ARE SUCH THAT THE USE OF 4' WIDE PRESTRESSED CONCRETE DECK PANELS IS NOT POSSIBLE; USE OF 8' WIDE PRESTRESSED CONCRETE DECK PANELS IS NECESSARY.

DocuSigned by: SEE STD NO. CBRI FOR ADDITIONAL REINFORCING STEEL EMBEDDED IN SLAB.

- INDICATES CONTINUOUS REINFORCING
- INDICATES ADDITIONAL REINFORCING AT END BENT

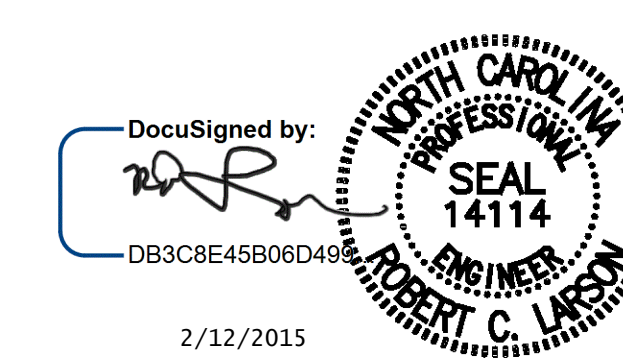
PROJECT NO. R-2514D
JONES COUNTY
STATION: 363+38.90 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION

LEFT LANE STR-#3

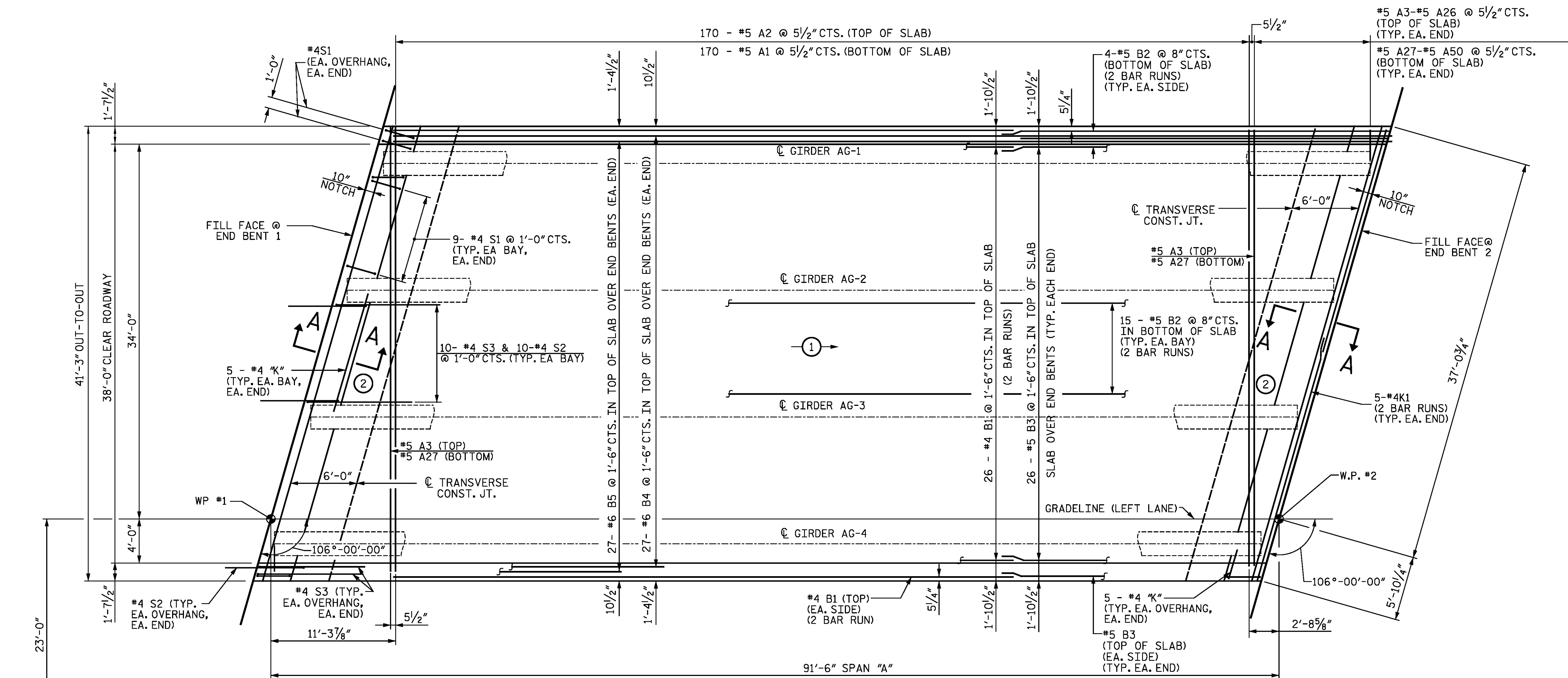


2/12/2015

DESIGN ENGINEER OF RECORD:	DATE :	2/12/2015
DRAWN BY :	DATE :	7/23/13
CHECKED BY :	DATE :	01/24/14

KCI Associates
of North Carolina, P.A.
DWG. REF. NO. 5 OF 23

REVISIONS						SHEET NO. S03-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS S03-23
2			4			



PLAN - SPAN A

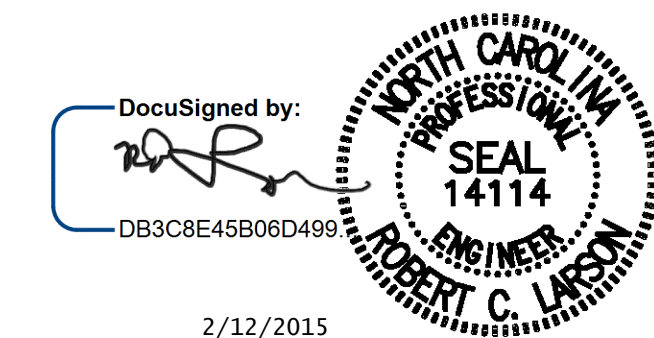
INDICATES POUR SEQUENCE AND DIRECTION
SEE SUPERSTRUCTURE BILL OF MATERIAL
FOR REINFORCING SPLICE LENGTHS.

PROJECT NO. R-2514D
JONES COUNTY
STATION: 363+38.90 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUPERSTRUCTURE
PLAN - SPAN A**

LEFT LANE STR-#3



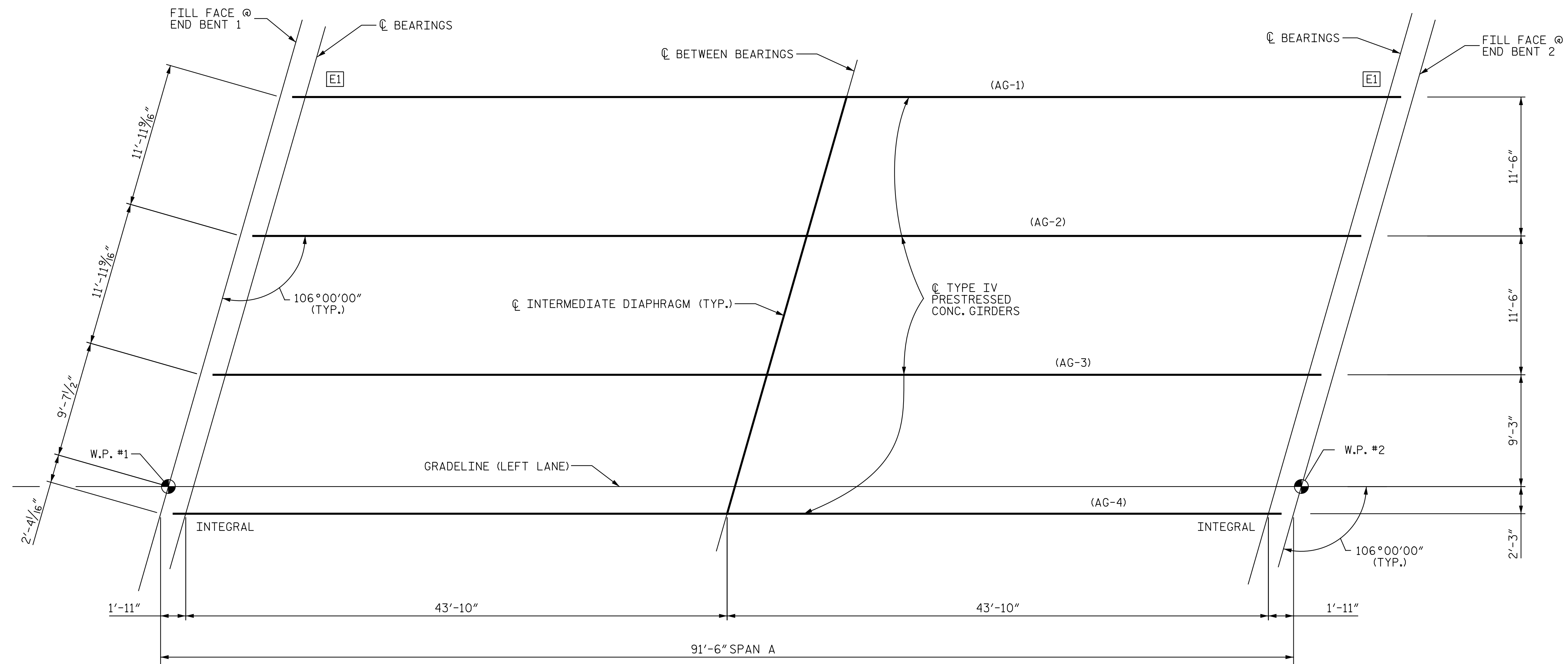
2/12/2015

DocuSigned by:
DB3C8E45B06D499...

DESIGN ENGINEER OF RECORD:	DATE :	2/12/2015
DRAWN BY :	DATE :	7/22/13
CHECKED BY :	DATE :	1/24/13

REVISIONS						SHEET NO. S03-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS S03-23
2			4			

KCI Associates
of North Carolina, P.A.
DWG. REF. NO. 7 OF 23



GIRDER LAYOUT AND INTERMEDIATE DIAPHRAGM LOCATIONS

[E1] INDICATES ELASTOMERIC BEARING TYPE

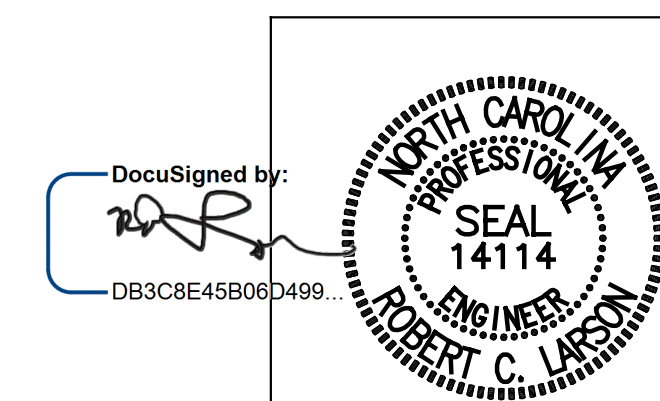
FOR INTERMEDIATE DIAPHRAGMS SEE STD. NO. PCC10

DEAD LOAD DEFLECTION TABLE FOR GIRDERS												
0.6" Ø LOW RELAXATION STRANDS	SPAN A											
	GIRDERS 1 AND 4											
	LOCATION	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
CAMBER (GIRDER ALONE IN PLACE)	↑	0.00	0.09	0.15	0.20	0.22	0.22	0.22	0.20	0.15	0.09	0.00
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.00	0.04	0.07	0.10	0.11	0.11	0.11	0.10	0.07	0.04	0.00
FINAL CAMBER	↑	0"	5/8"	1"	1 3/16"	1 5/16"	1 5/16"	1 5/16"	1 3/16"	1"	5/8"	0"

0.6" Ø LOW RELAXATION STRANDS	SPAN A											
	GIRDERS 2 AND 3											
	LOCATION	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
CAMBER (GIRDER ALONE IN PLACE)	↑	0.00	0.09	0.15	0.20	0.22	0.22	0.22	0.20	0.15	0.09	0.00
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.00	0.04	0.08	0.11	0.13	0.13	0.13	0.11	0.08	0.04	0.00
FINAL CAMBER	↑	0"	9/16"	7/8"	1"	1 1/16"	1 1/16"	1 1/16"	1"	7/8"	9/16"	0"

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

PROJECT NO. R-2514D
JONES COUNTY
STATION: 363+38.90 -L-



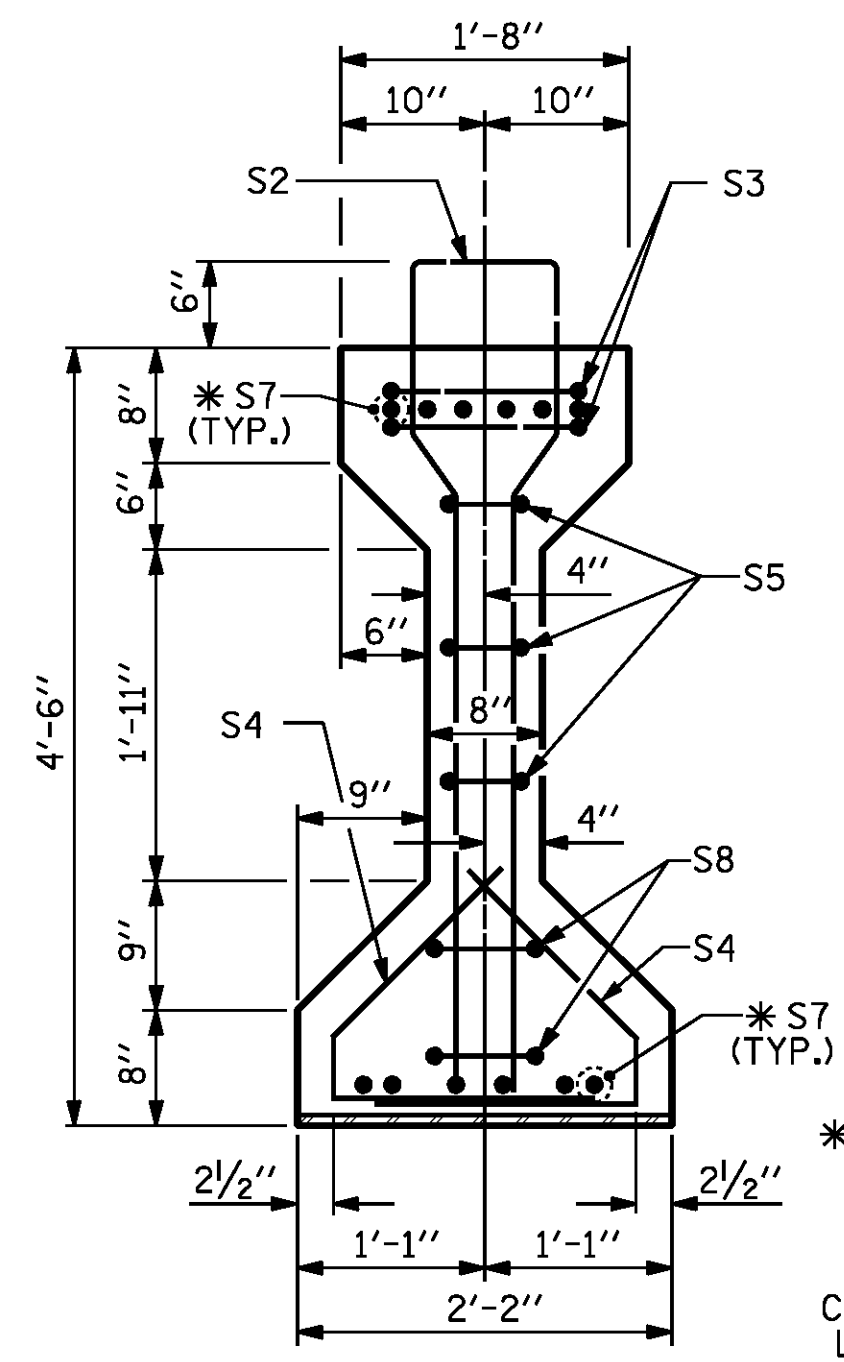
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**SUPERSTRUCTURE
GIRDER LAYOUT**
LEFT LANE STR-#3

DESIGN ENGINEER OF RECORD: R.C. LARSON DATE: 4/10/2015
DRAWN BY: R.J. FLORY DATE: 7/23/13
CHECKED BY: R.C. LARSON DATE: 12/13/13

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

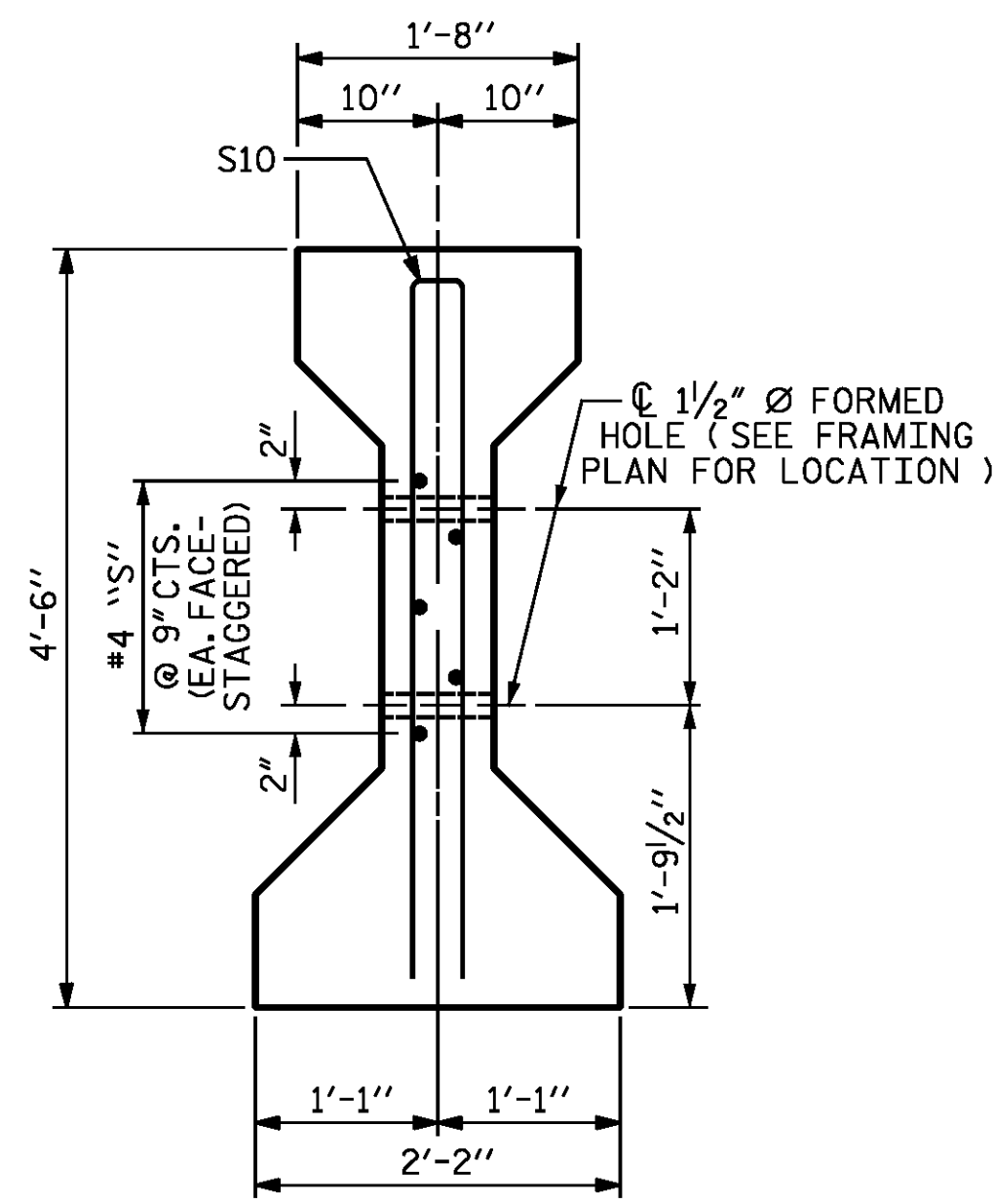
TOTAL SHEETS: S03-23

KCI Associates of North Carolina, P.A.
DWG. REF. NO. 8 OF 23

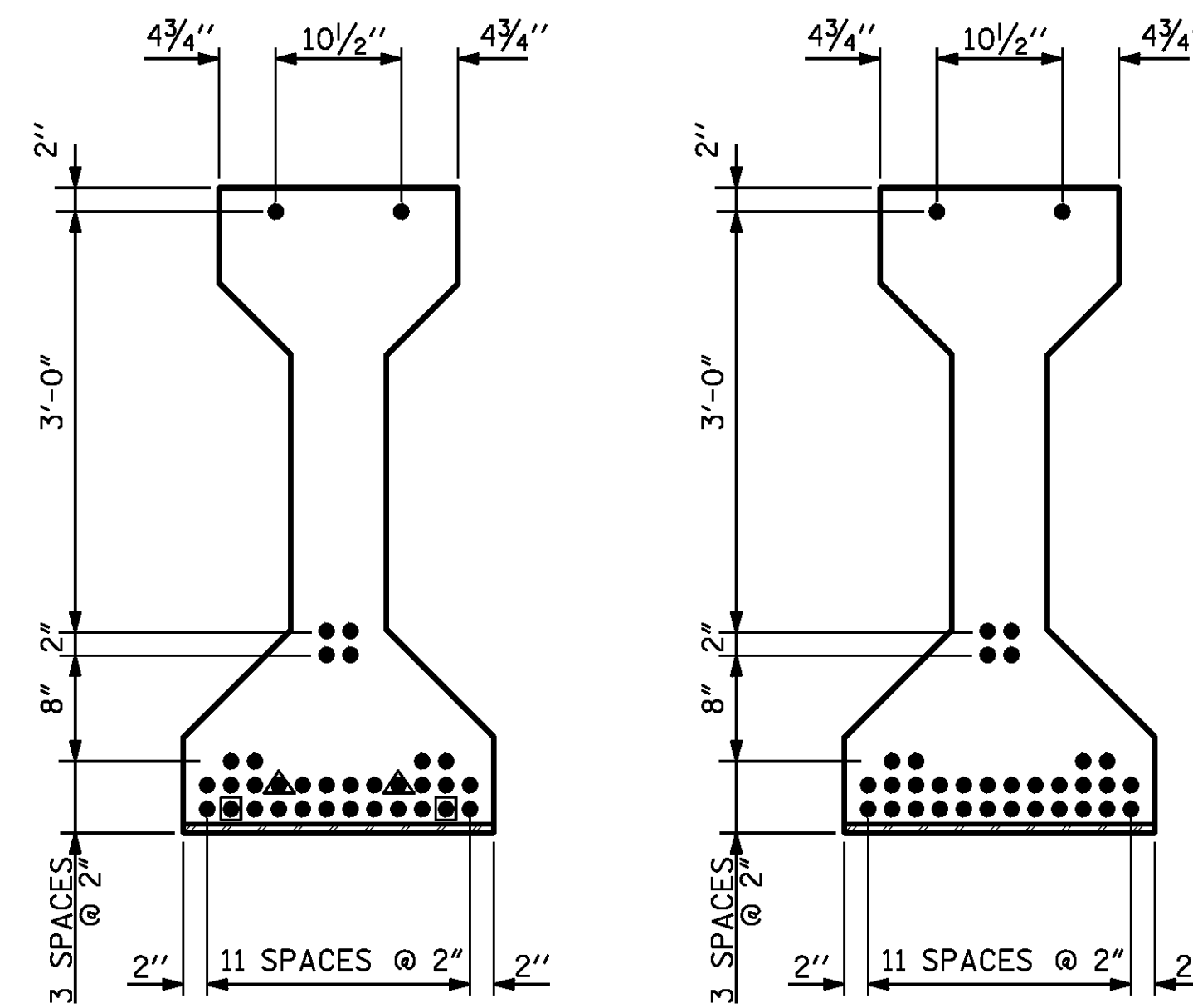


SECTION A-A

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



SECTION C-C
(S1 BARS NOT SHOWN)



AT END OF GIRDER

AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- FULLY BONDED STRAND
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ▲ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

0.6" Ø L. R. GRADE 270 STRANDS

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

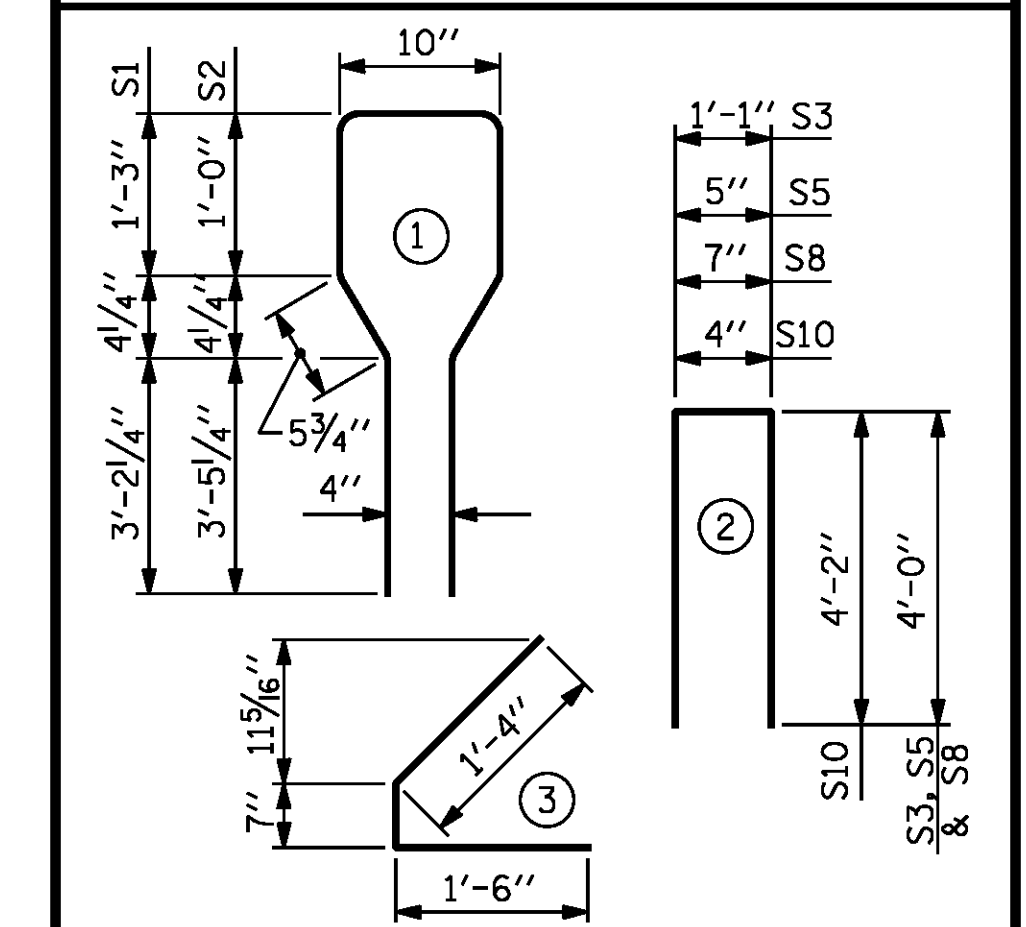
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	81	#4	1	10'-8"	577
S2	16	#6	1	10'-8"	256
S3	4	#4	2	9'-1"	24
S4	108	#4	3	3'-5"	246
S5	6	#4	2	8'-5"	34
*S7	24	#5	STR	3'-8"	92
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
S12	2	#3	STR	1'-4"	1
REINFORCING STEEL					1295

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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT

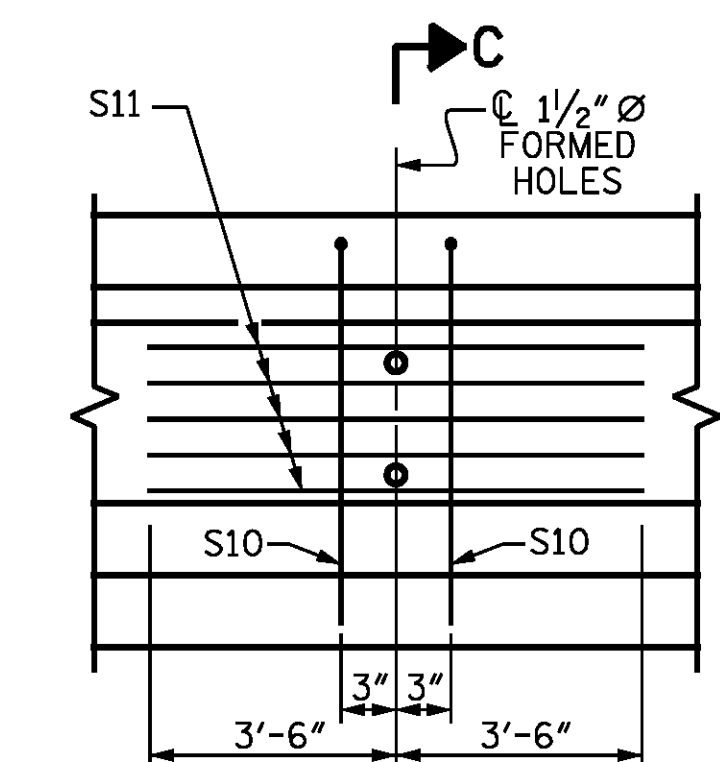


QUANTITIES FOR ONE GIRDER

REINFORCING STEEL	9000 PSI CONCRETE	0.6" Ø L. R. STRANDS
L.B.	C.Y.	No.
1295	18.1	34

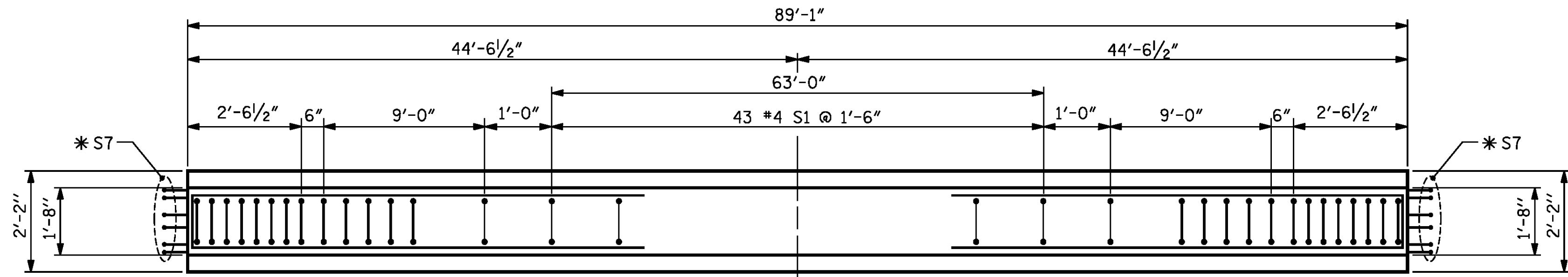
GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	89'-1"	356'-4"

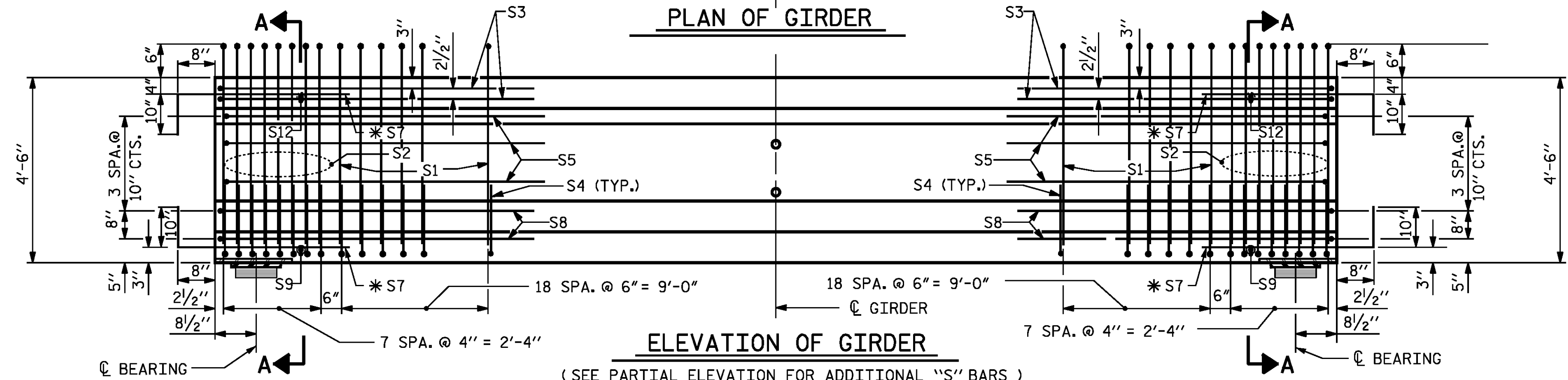


PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1-4



PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

INTEGRAL

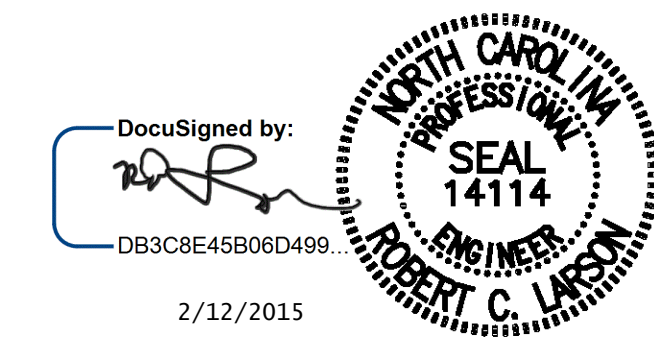
INTEGRAL

PROJECT NO. R-2514D
JONES COUNTY
STATION: 363+38.90 -L-

SHEET 1 OF 3

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

STD. NO. PCG3 LEFT LANE STR-#3

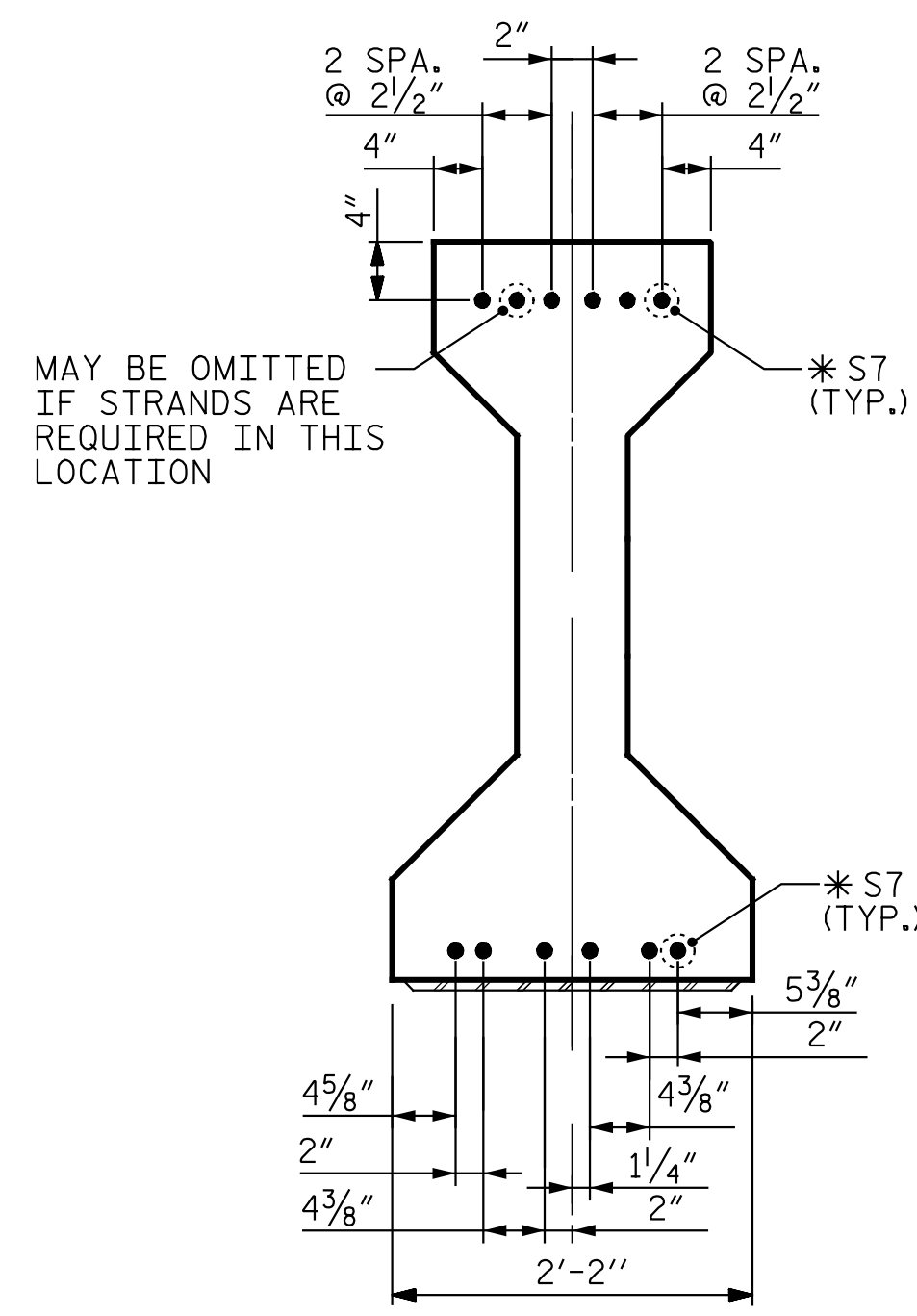


DocuSigned by:
DB3C8E45B06D499
2/12/2015

KCI Associates
of North Carolina, P.A.
DWG. REF. NO. 9 OF 23

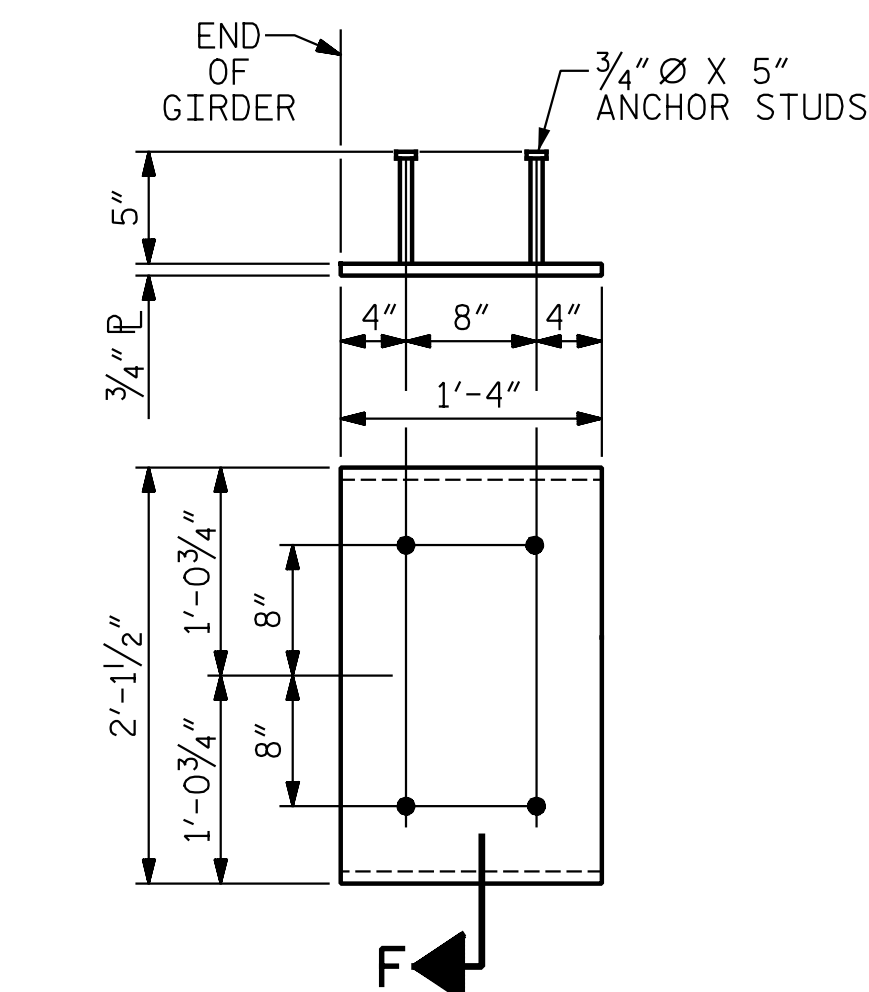
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S03-9
2			4			TOTAL SHEETS S03-23

DESIGN ENGINEER OF RECORD:	DATE : 2/12/2015
ASSEMBLED BY : R.A. PRUETT	DATE : 10/25/13
CHECKED BY : R.C. LARSON	DATE : 12/13/13
DRAWN BY : JMB 12/87	REV. 8/16/99RR RWW/LES
CHECKED BY : ARB 12/87	REV. 5/1/06R TLA/GM
	REV. 10/1/11 MAA/GM



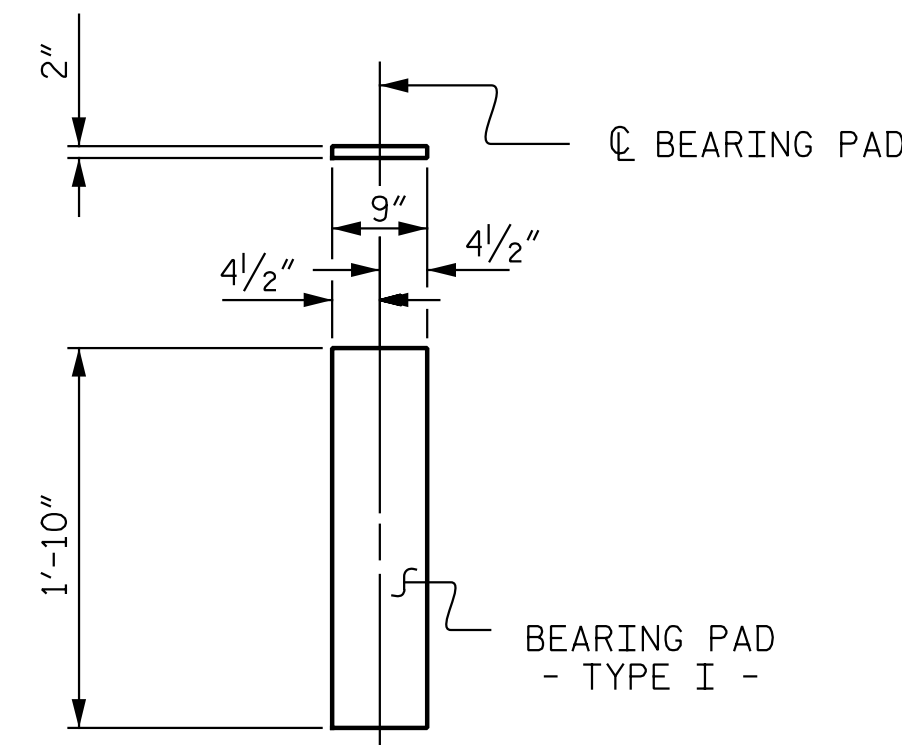
DETAIL "A"

(FOR AASHTO TYPE IV GIRDERS)



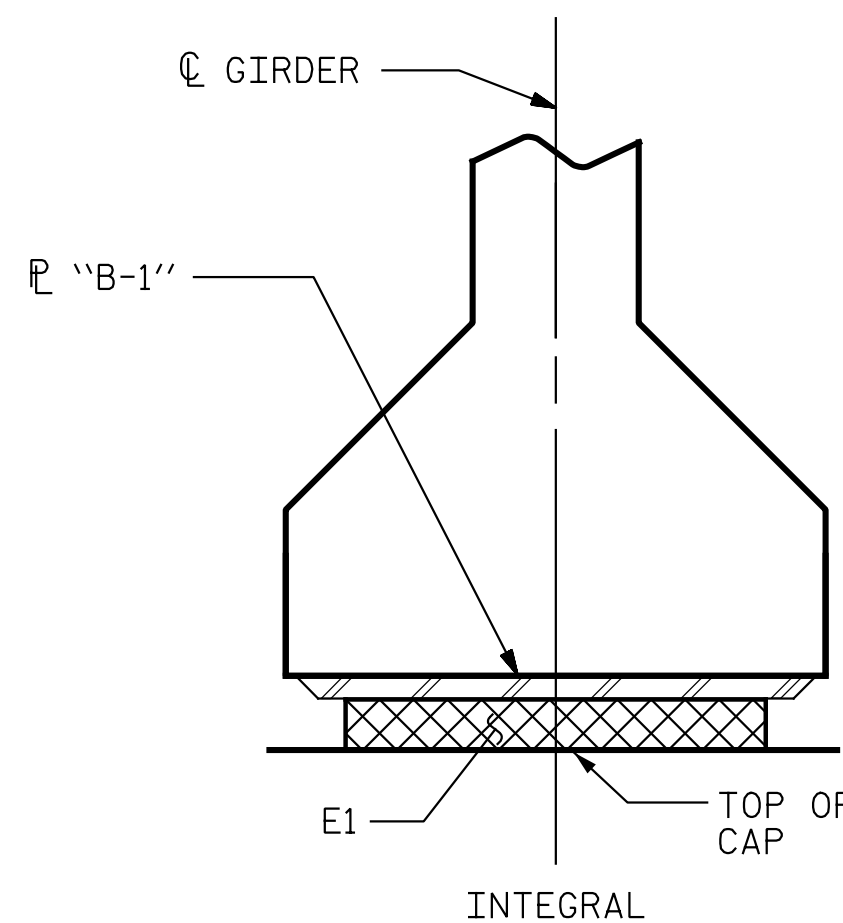
EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER AND 63" & 72" MODIFIED BULB TEES

(2 REQ'D PER GIRDER)



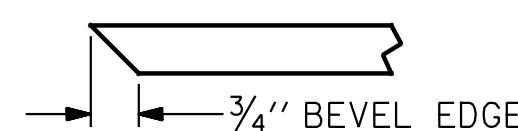
E1 (8 REQ'D)

SECTION "E"



PLAIN ELASTOMERIC BEARING DETAIL

TYPE I



SECTION "F"

(SEE NOTES)

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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 7000 PSI.

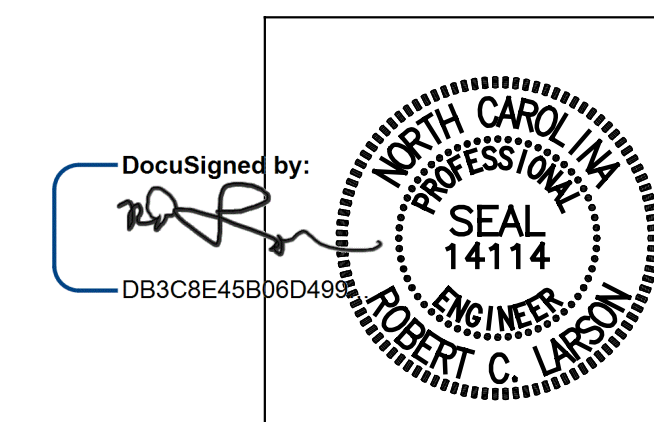
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

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

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.

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 DETAILS
 STD. NO. PCC9 LEFT LANE STR-#3

DESIGN ENGINEER OF RECORD:	DATE :	3/10/2015
ASSEMBLED BY : R.A. PRUETT	DATE :	10/25/13
CHECKED BY : R.C. LARSON	DATE :	12/13/13
DRAWN BY : ELR 11/91	REV. 7/10/01RR LES/RDR	
CHECKED BY : GRP 11/91	REV. 5/1/06 TLA/GM	
	REV. 10/1/11 MAA/GM	

KCI Associates of North Carolina, P.A.		REVISIONS		SHEET NO. S03-10		
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS S03-23
1			3			
2			4			

DWG. REF. NO. 10 OF 23

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.

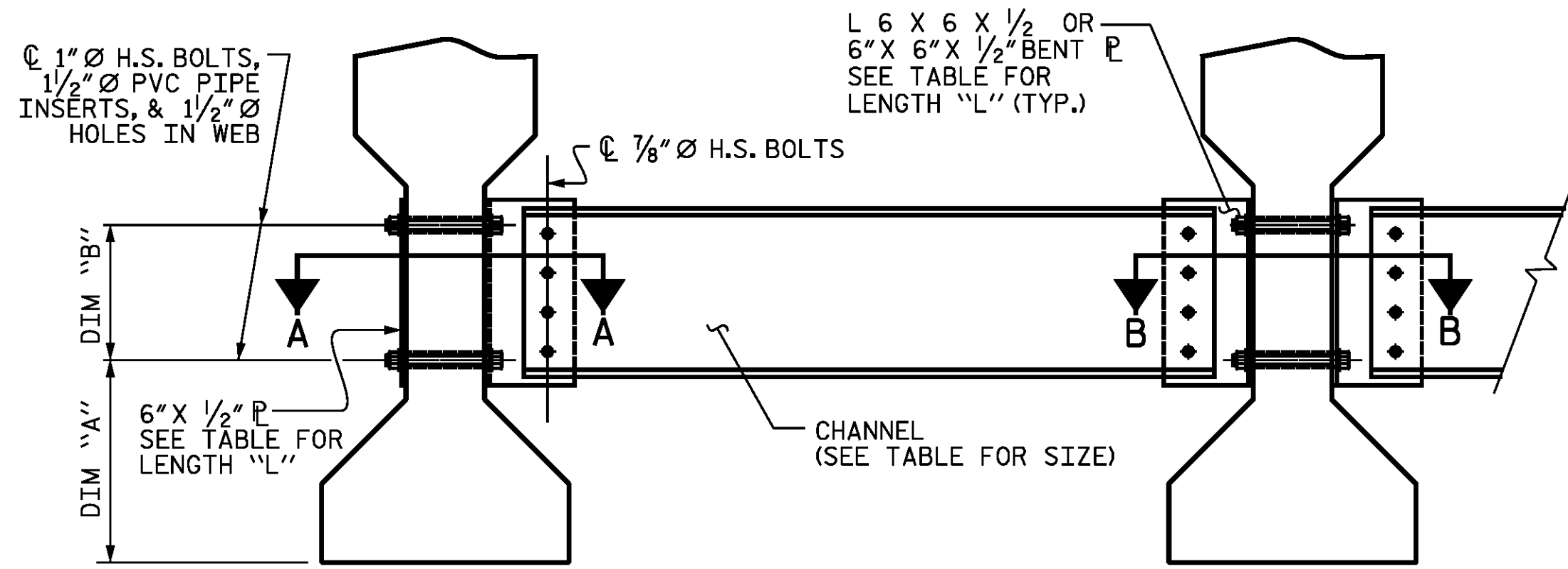
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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.

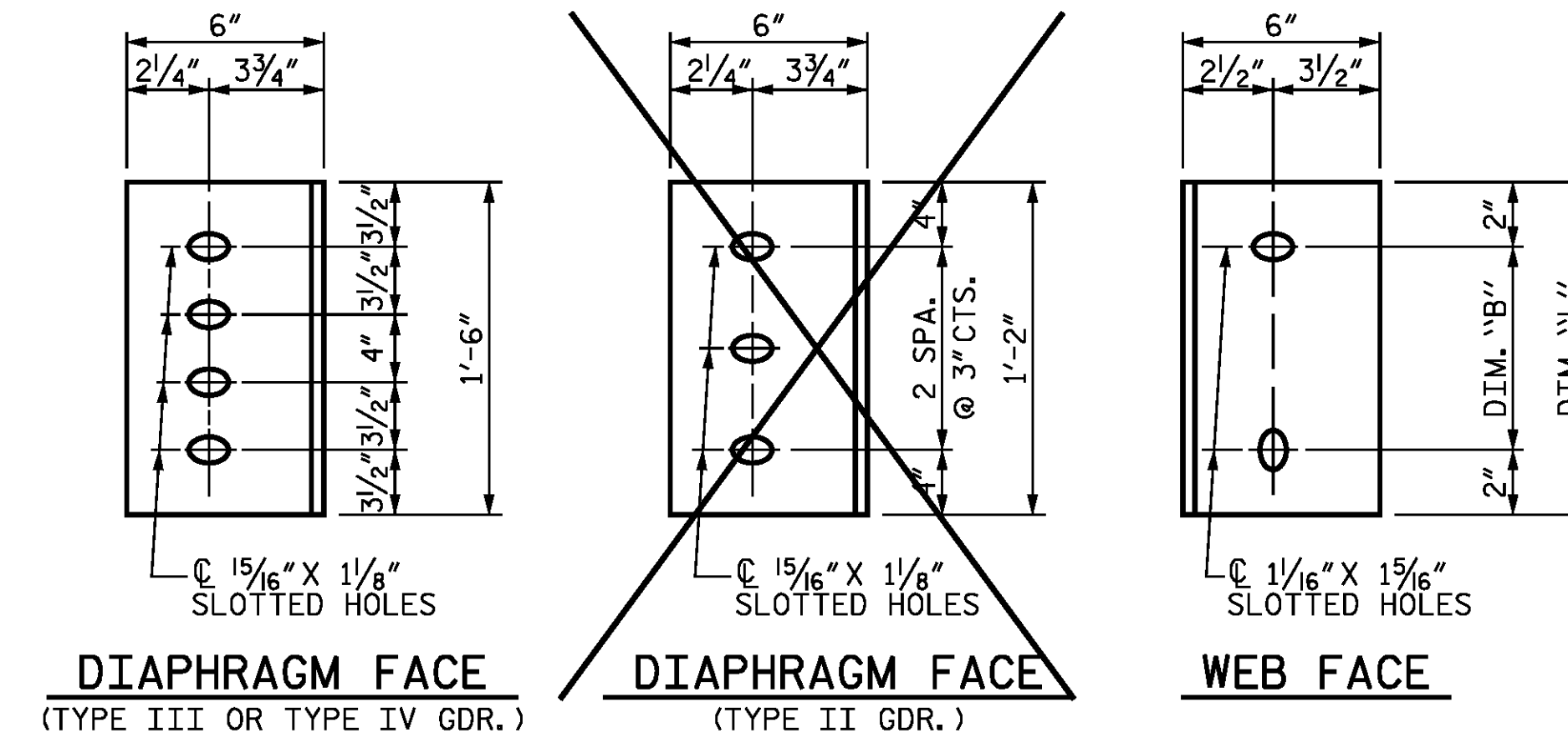


EXTERIOR GIRDER

INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM

(TYPE III OR TYPE IV GIRDER SHOWN)



DIAPHRAGM FACE
(TYPE III OR TYPE IV GDR.)

DIAPHRAGM FACE
(TYPE II GDR.)

WEB FACE

CONNECTOR PLATE DETAILS

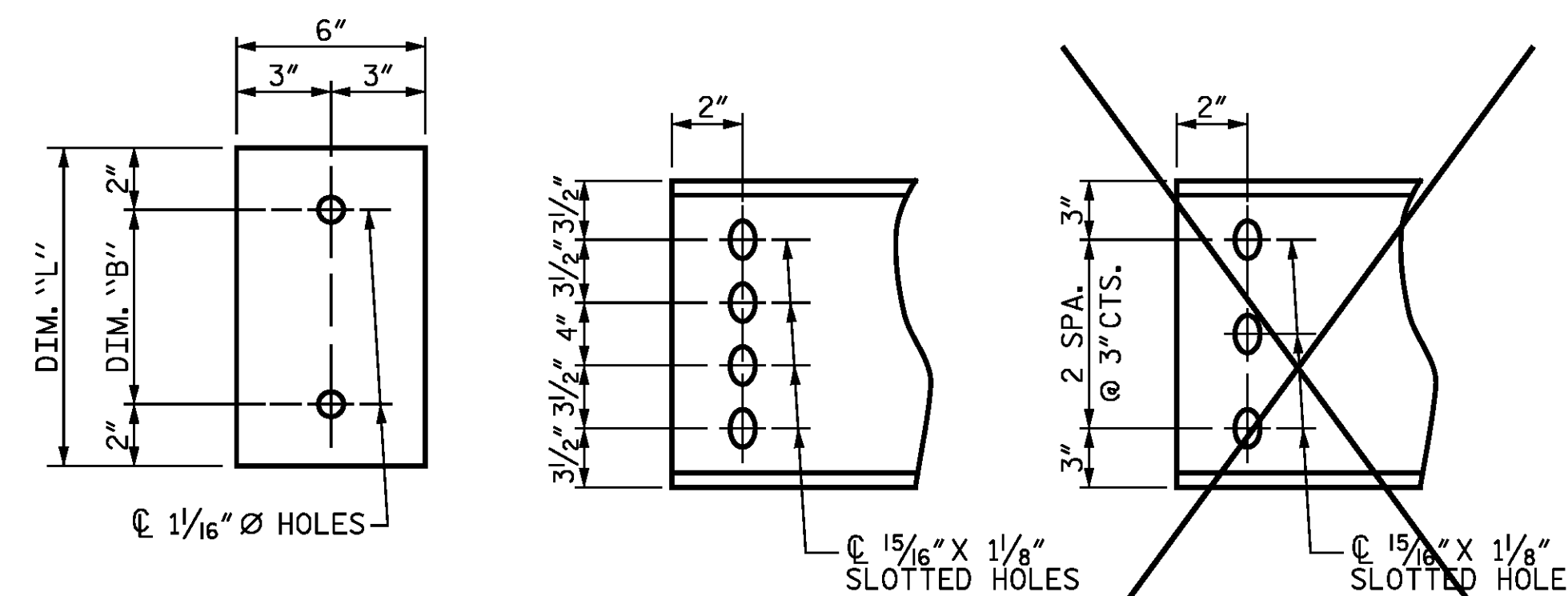
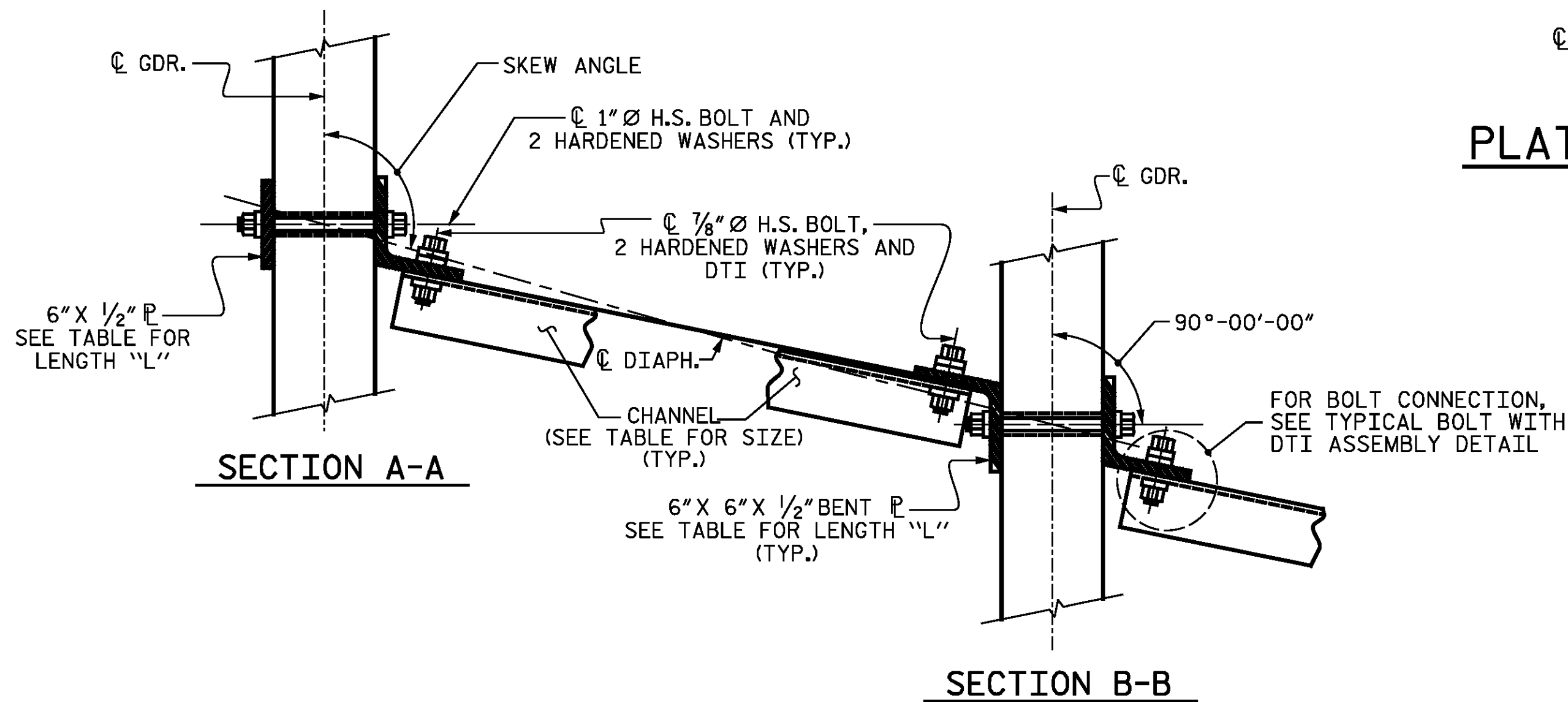


PLATE DETAILS

CHANNEL END
(TYPE III OR TYPE IV GDR.)

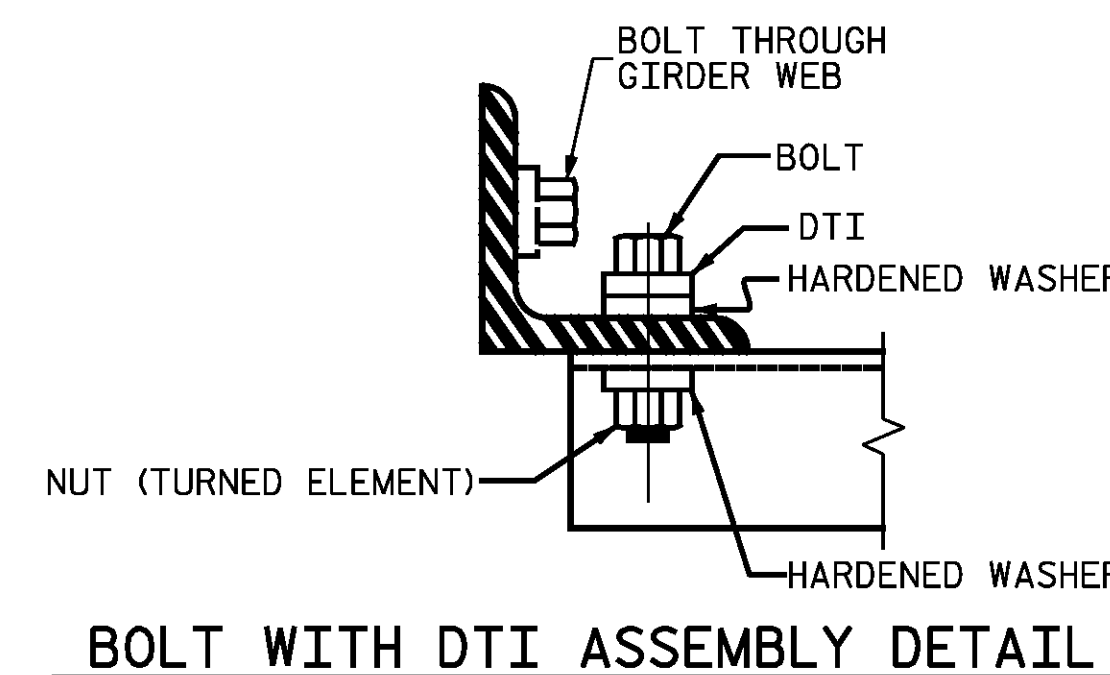
CHANNEL END
(TYPE II GDR.)



SECTION A-A

SECTION B-B

CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

TABLE

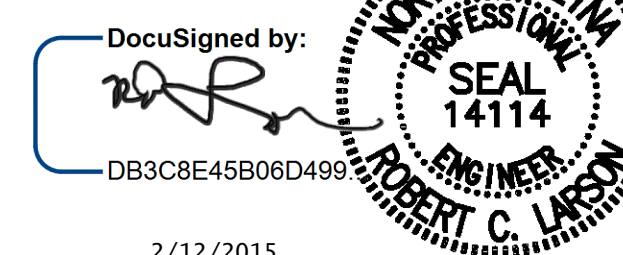
GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
II	MC 12 x 31	1'-2 1/2"	10"	1'-2"
III	MC 10 x 42.7	1'-5"	1'-2"	1'-6"
IV	MC 18 x 42.7	1'-9 1/2"	1'-2"	1'-6"

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

SHEET 3 OF 3

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

STD. NO. PCG10 LEFT LANE STR-#3



2/12/2015

DocuSigned by:

 DB3C8E45B06D499

DESIGN ENGINEER OF RECORD:	DATE 2/12/2015
ASSEMBLED BY : R.A. PRUETT	DATE :10/25/13
CHECKED BY : R.C. LARSON	DATE : 12/13/13
DRAWN BY : TLA 6/05	ADDED 10/21/05
CHECKED BY : VC 6/05	REV. 5/1/06RRR KMM/GM
	REV. 10/1/11 MAA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S03-II
1			3			TOTAL SHEETS
2			4			S03-23

DWG. REF. NO. 11 OF 23

NOTES

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

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

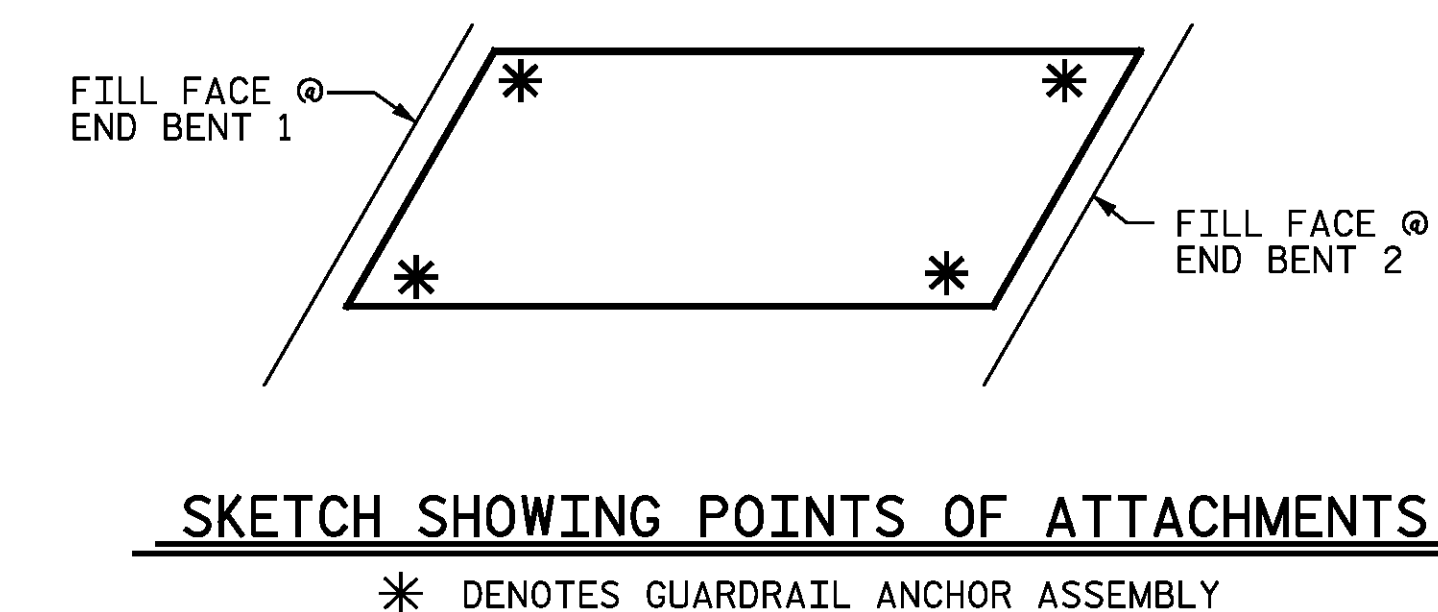
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

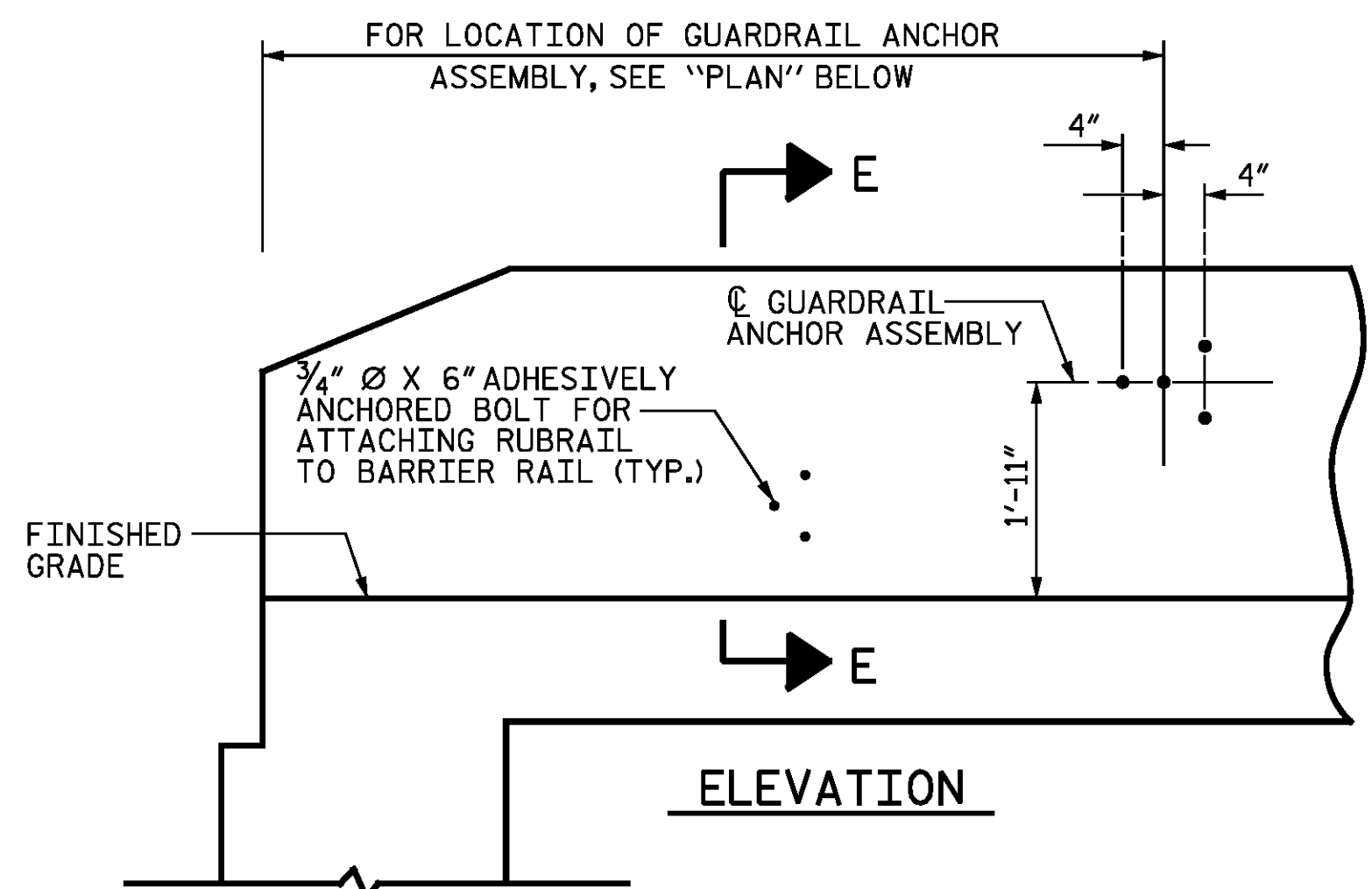
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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

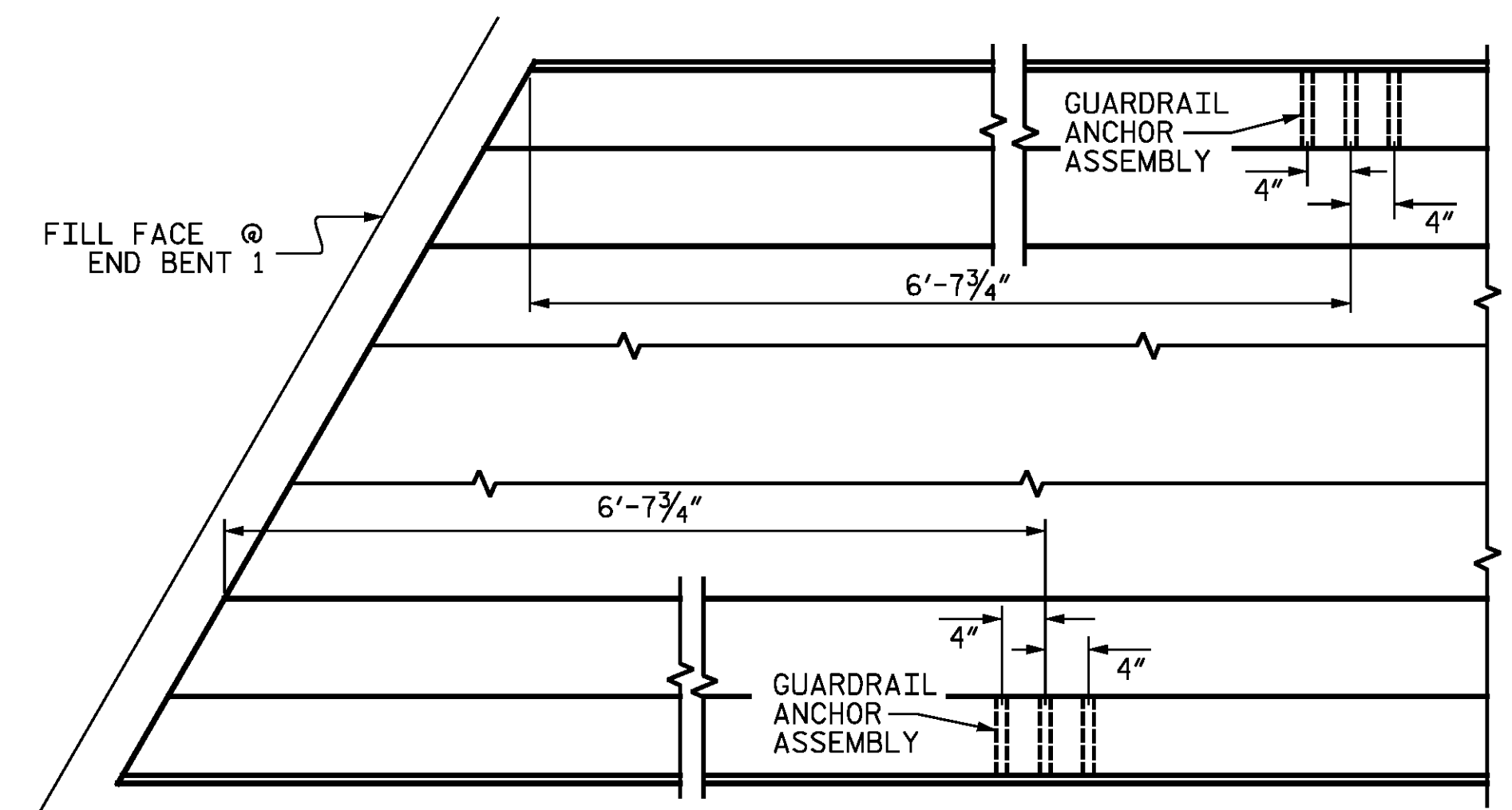
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR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



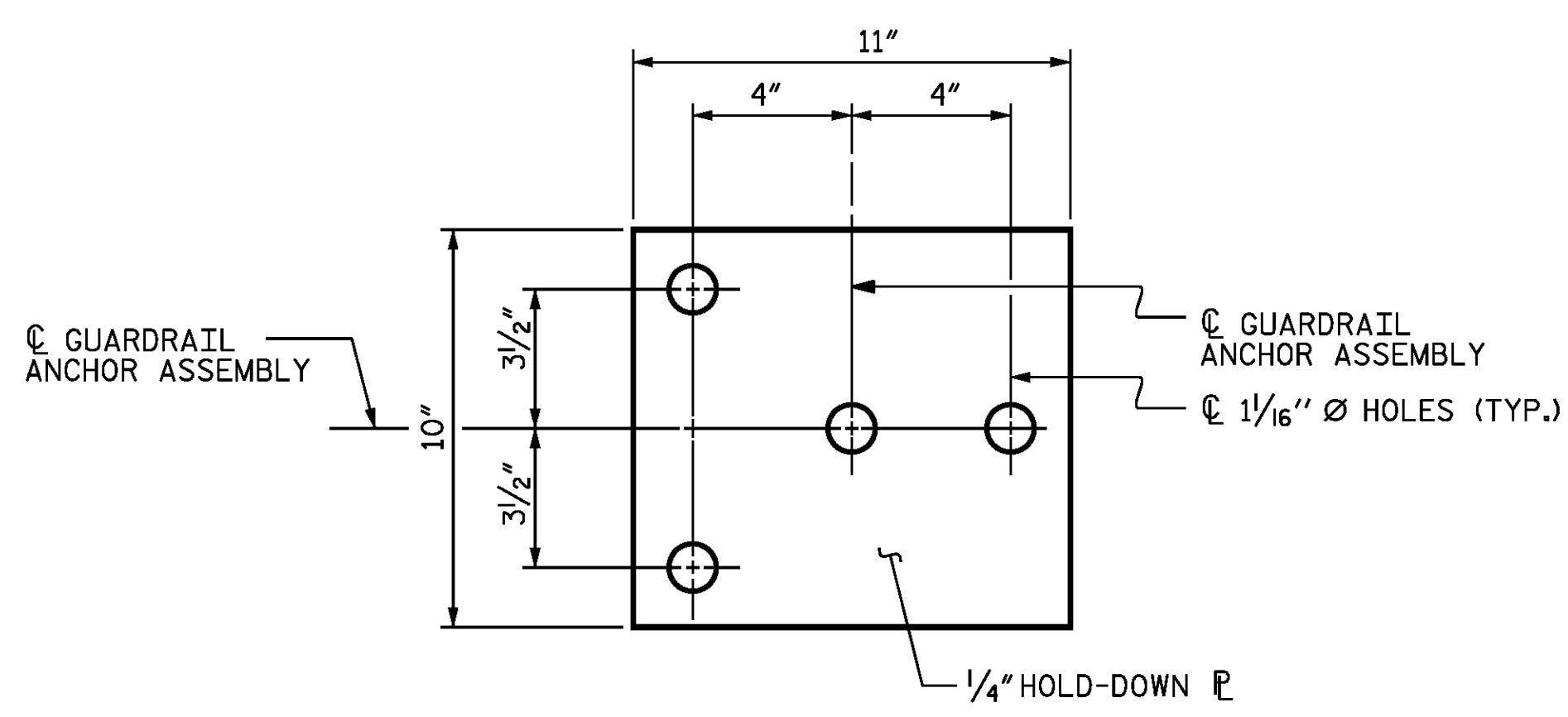
SKETCH SHOWING POINTS OF ATTACHMENTS
* DENOTES GUARDRAIL ANCHOR ASSEMBLY



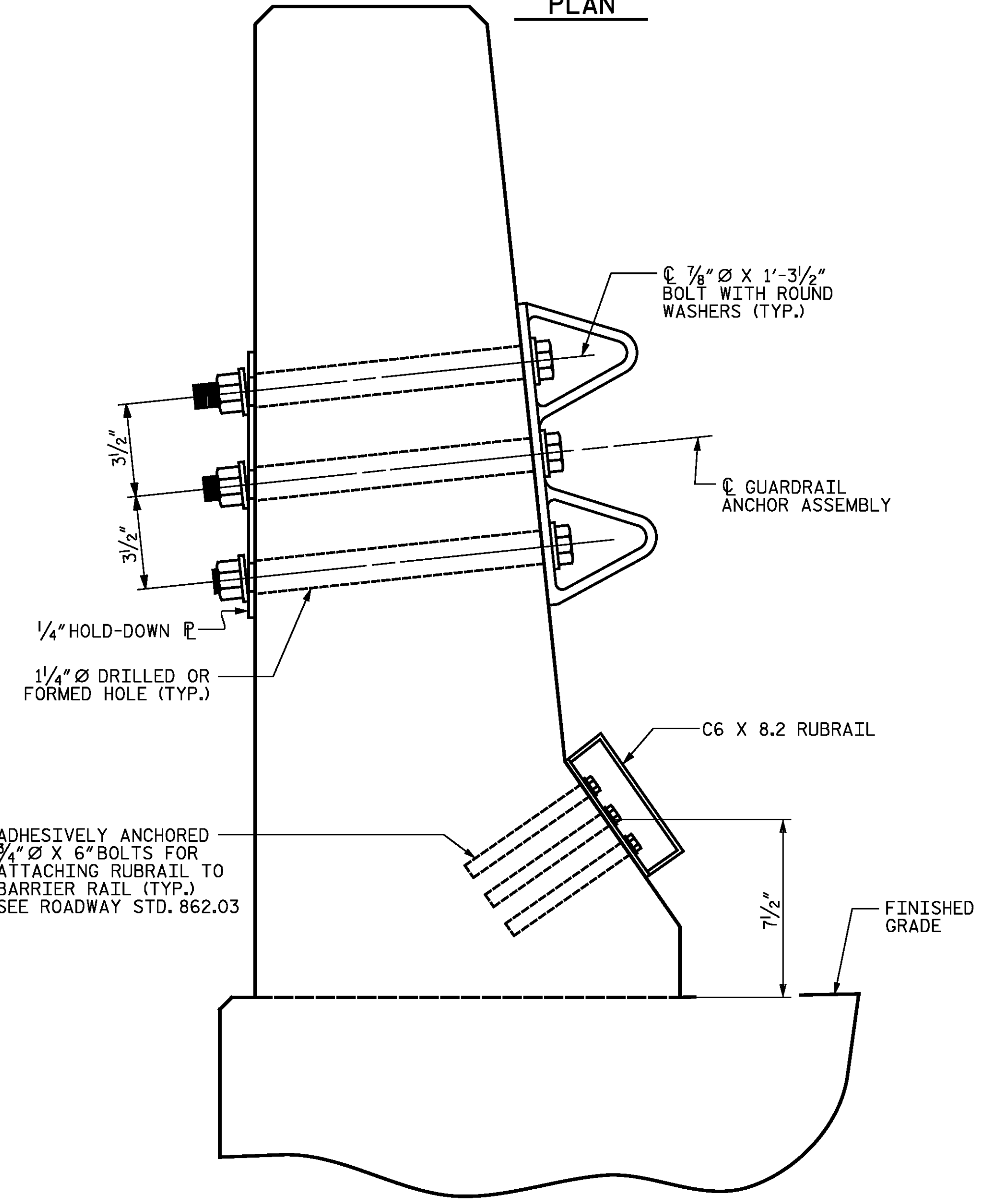
ELEVATION



PLAN
LOCATION OF ANCHORS FOR GUARDRAIL
END BENT 1 SHOWN, END BENT 2 SIMILAR.

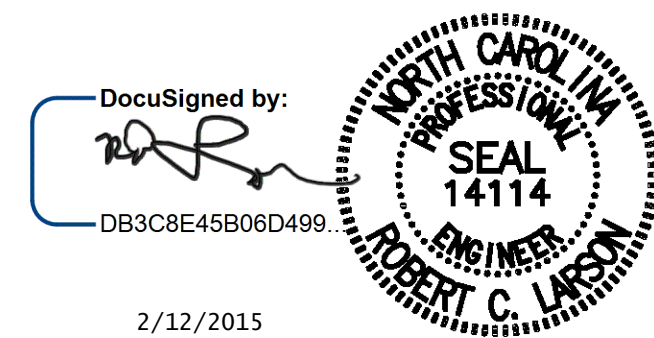


PLAN



SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS

PROJECT NO. R-2514D
JONES COUNTY
STATION: 363+38.90 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE
FOR BARRIER RAIL
STD NO. GRA2 LEFT LANE STR-#3

DESIGN ENGINEER OF RECORD:	DATE	2/12/2015
ASSEMBLED BY : R. J. FLORY	DATE :	6/28/13
CHECKED BY : R. A. PRUETT	DATE :	11/04/13
DRAWN BY : TLA 5/06	REV. 10/1/11	MAA/GM
CHECKED BY : GM 5/06	REV. 7/12	MAA/GM
	REV. 6/13	MAA/GM

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

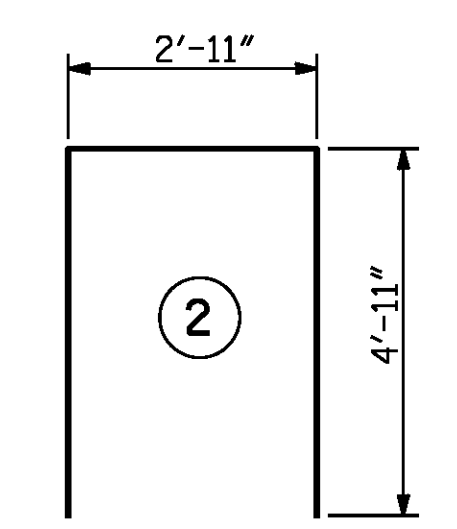
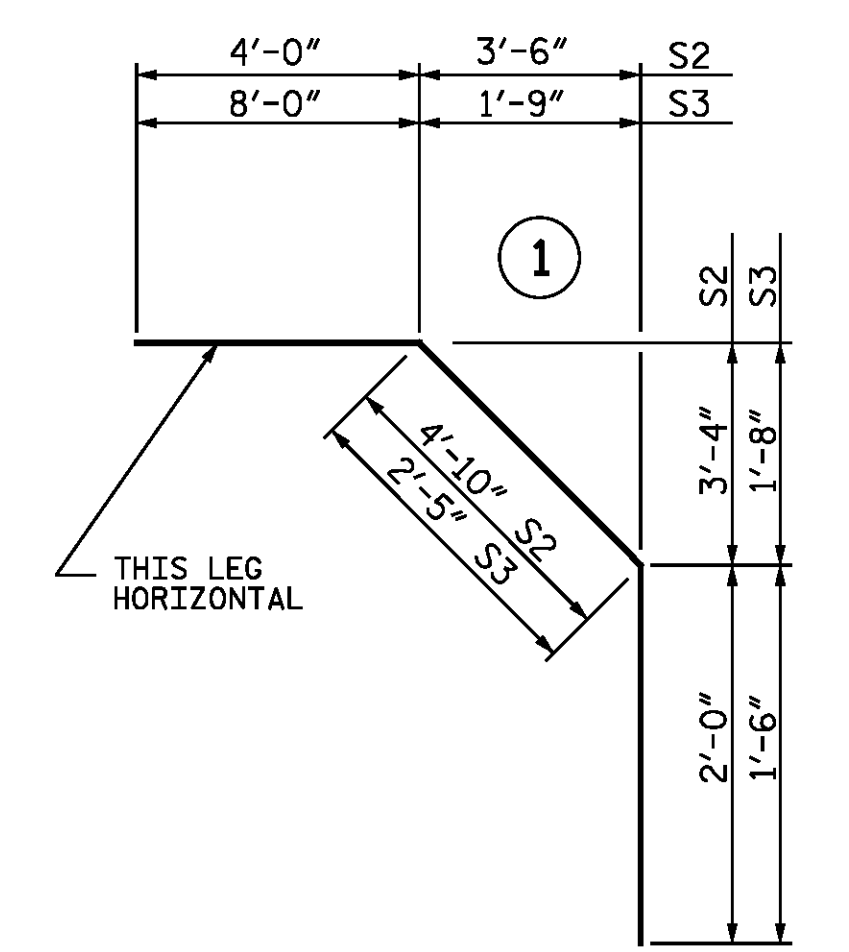
TOTAL SHEETS: 503-23

KCI Associates
of North Carolina, P.A.
DWG. REF. NO. 13 OF 23

BILL OF MATERIAL														
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	170	5	STR.	40'-11"	7255	A39	2	5	STR.	20'-5"				43
*A2	170	5	STR.	40'-11"	7255	A40	2	5	STR.	18'-10"				39
*A3	2	5	STR.	39'-7"	83	A41	2	5	STR.	17'-3"				36
*A4	2	5	STR.	38'-0"	79	A42	2	5	STR.	15'-8"				33
*A5	2	5	STR.	36'-5"	76	A43	2	5	STR.	14'-0"				29
*A6	2	5	STR.	34'-10"	73	A44	2	5	STR.	12'-5"				26
*A7	2	5	STR.	33'-3"	69	A45	2	5	STR.	10'-10"				23
*A8	2	5	STR.	31'-7"	66	A46	2	5	STR.	9'-3"				19
*A9	2	5	STR.	30'-0"	63	A47	2	5	STR.	7'-8"				16
*A10	2	5	STR.	28'-5"	59	A48	2	5	STR.	6'-0"				13
*A11	2	5	STR.	26'-10"	56	A49	2	5	STR.	4'-5"				9
*A12	2	5	STR.	25'-3"	53	A50	2	5	STR.	2'-10"				6
*A13	2	5	STR.	23'-7"	49									
*A14	2	5	STR.	22'-0"	46	*B1	56	4	STR.	27'-9"				1038
*A15	2	5	STR.	20'-5"	43	B2	106	5	STR.	45'-10"				5067
*A16	2	5	STR.	18'-10"	39	*B3	56	5	STR.	20'-0"				1168
*A17	2	5	STR.	17'-3"	36	*B4	54	6	STR.	19'-0"				1541
*A18	2	5	STR.	15'-8"	33	*B5	54	6	STR.	18'-0"				1460
*A19	2	5	STR.	14'-0"	29									
*A20	2	5	STR.	12'-5"	26	K1	20	4	STR.	25'-1"				335
*A21	2	5	STR.	10'-10"	23	K2	6	4	STR.	9'-4"				37
*A22	2	5	STR.	9'-3"	19	K3	18	4	STR.	10'-5"				125
*A23	2	5	STR.	7'-8"	16	K4	6	4	STR.	9'-10"				39
*A24	2	5	STR.	6'-0"	13	K5	4	4	STR.	2'-0"				5
*A25	2	5	STR.	4'-5"	9	K6	12	4	STR.	2'-9"				22
*A26	2	5	STR.	2'-10"	6	K7	4	4	STR.	2'-3"				6
A27	2	5	STR.	39'-7"	83									
A28	2	5	STR.	38'-0"	79	S1	62	4	2	12'-9"				528
A29	2	5	STR.	36'-5"	76	*S2	64	4	1	10'-10"				463
A30	2	5	STR.	34'-10"	73	*S3	68	4	1	11'-11"				541
A31	2	5	STR.	33'-3"	69									
A32	2	5	STR.	31'-7"	66									
A33	2	5	STR.	30'-0"	63									
A34	2	5	STR.	28'-5"	59									
A35	2	5	STR.	26'-10"	56									
A36	2	5	STR.	25'-3"	53									
A37	2	5	STR.	23'-7"	49									
A38	2	5	STR.	22'-0"	46									

*EPOXY COATED REINFORCING STEEL

BAR TYPES



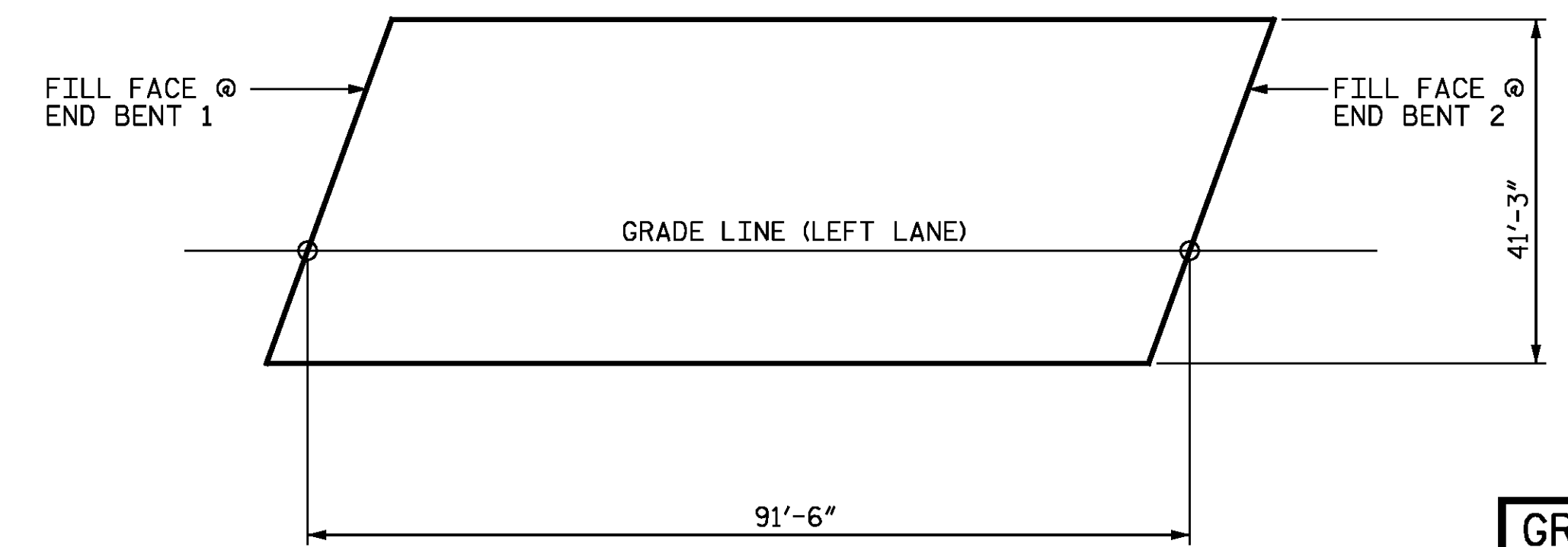
ALL BAR DIMENSIONS ARE OUT TO OUT

—SUPERSTRUCTURE BILL OF MATERIAL—			
	CLASS AA CONCRETE	REINFORCING STEEL	*EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
SPAN "A"			
POUR 1	109.7		
POUR 2†	75.2		
TOTALS**	184.9	14483	14530

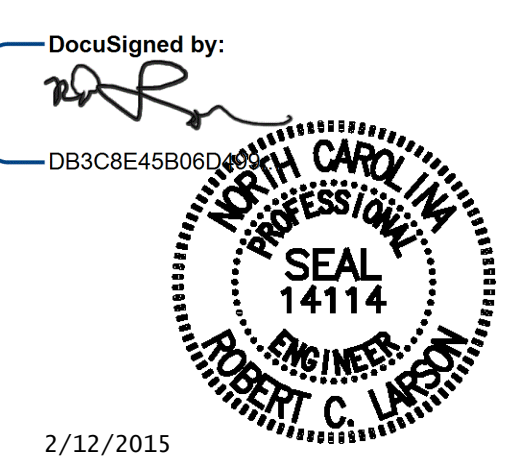
**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED
 †POUR 2 INCLUDES 6.2 AND 6.3 CY FOR UPPER PORTIONS OF WINGWALLS AT END BENTS 1 AND 2 RESPECTIVELY.

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			



GROOVING BRIDGE FLOORS		
APPROACH SLABS	1689	SQ.FT.
BRIDGE DECK	3130	SQ.FT.
TOTAL	4819	SQ.FT.



PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

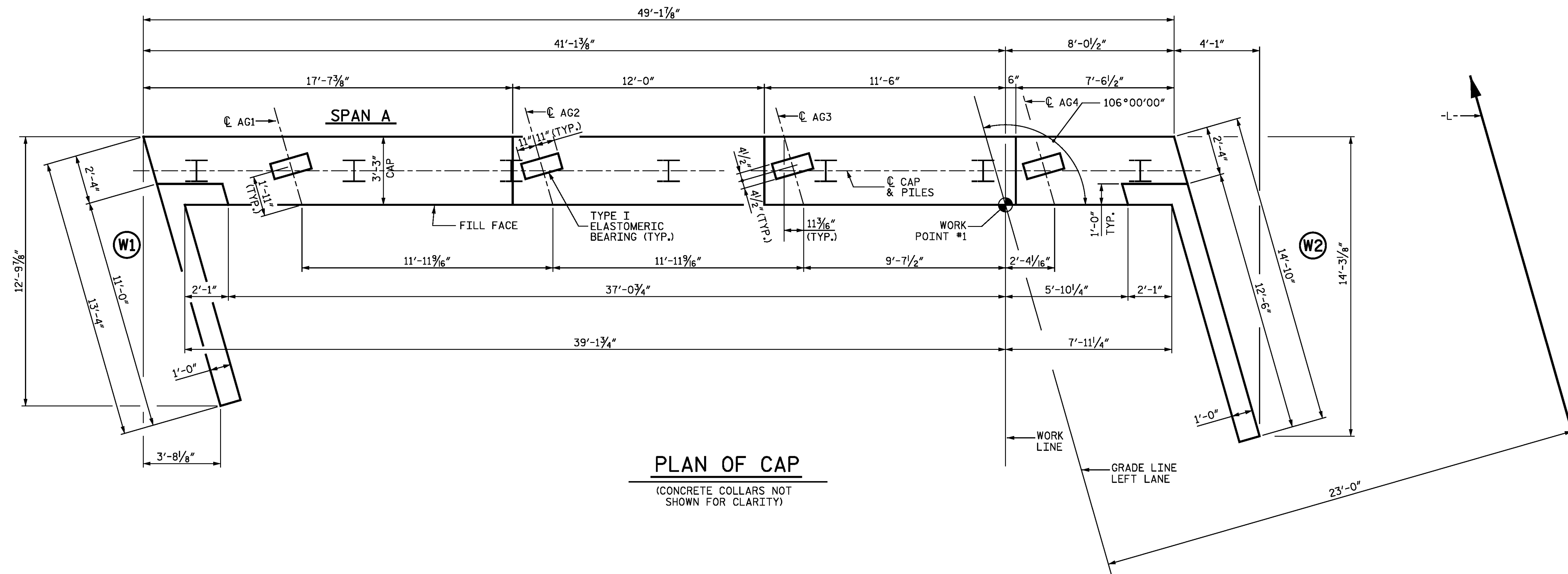
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 SUPERSTRUCTURE
 BILL OF MATERIAL
 LEFT LANE STR-#3

DESIGN ENGINEER OF RECORD: DATE: 2/12/2015
 ASSEMBLED BY: R. C. LARSON DATE: 8/22/13
 CHECKED BY: E. C. DECOLA DATE: 01/27/14
 DRAWN BY: JMB 5/87 REV. 8/16/99 RWW/LES
 CHECKED BY: SJD 9/87 REV. 5/1/06 TLA/GM
 REV. 10/1/11 MAA/GM

LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 3,774)

REVISIONS				SHEET NO. S03-14
NO.	BY:	DATE:	NO.	
1			3	TOTAL SHEETS S03-23
2			4	

KCI Associates of North Carolina, P.A.
 DWG. REF. NO. 14 OF 23



PLAN OF CAP

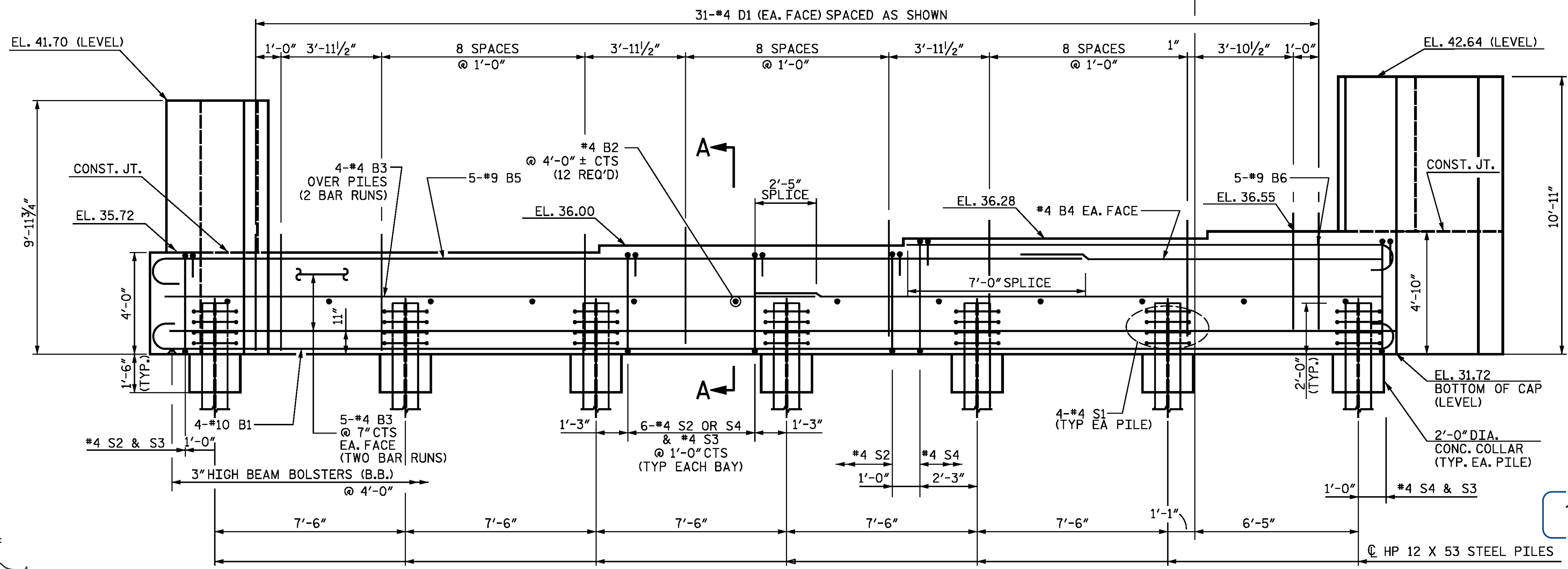
(CONCRETE COLLARS NOT SHOWN FOR CLARITY)

NOTES

INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

THE PORTIONS OF THE WINGS ABOVE THE CONSTRUCTION JOINT ARE TO BE POURED WITH THE SUPERSTRUCTURE. AT THE CONTRACTOR'S OPTION, THESE PORTIONS MAY BE POURED SEPARATELY FROM THE SUPERSTRUCTURE, IN WHICH CASE CLASS 'A' CONCRETE MAY BE USED.

FOR 'BLOCKOUT IN WINGWALL,' SEE END BENT 2.



ELEVATION

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 1**

LEFT LANE STR-#3

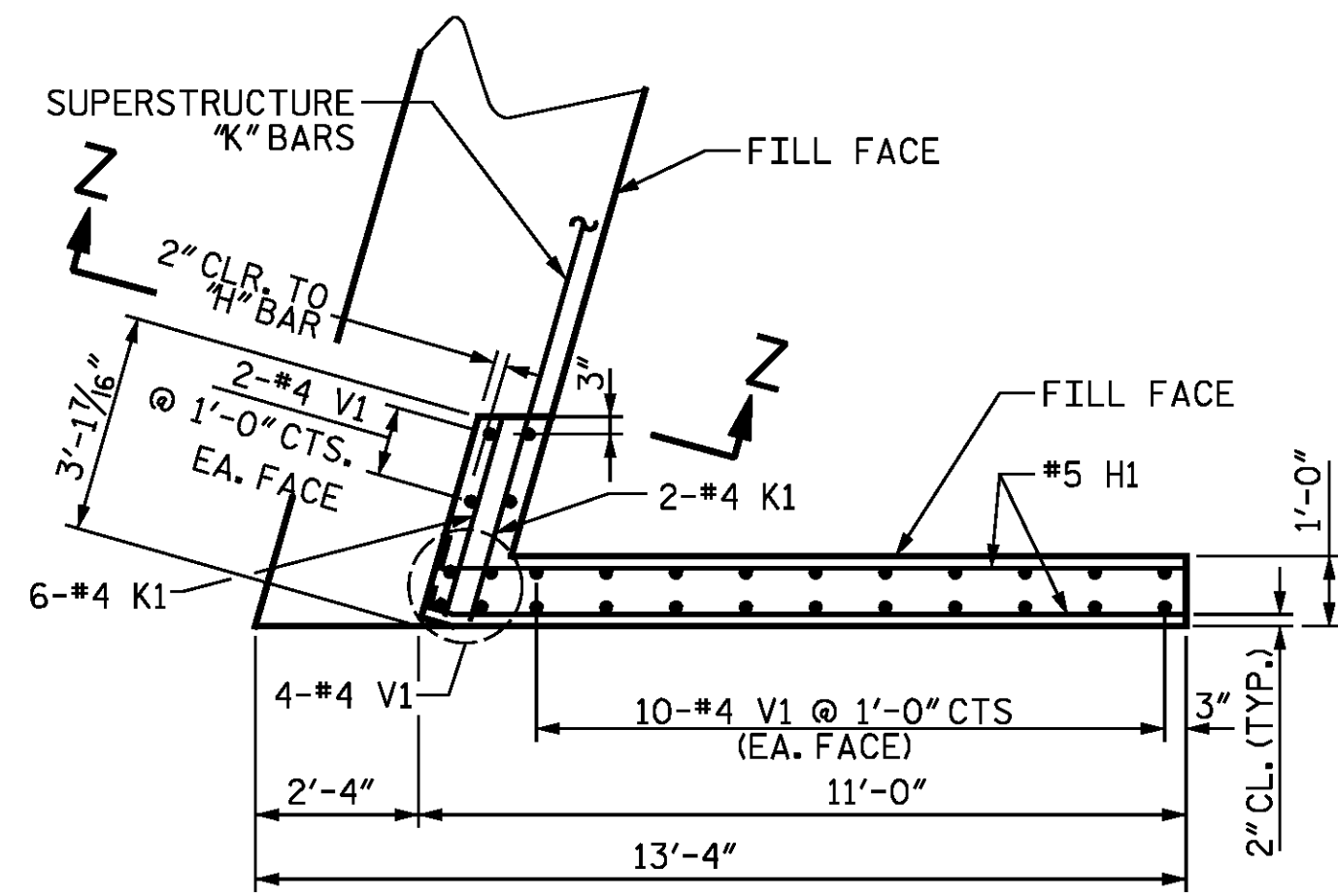


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 2/12/2015

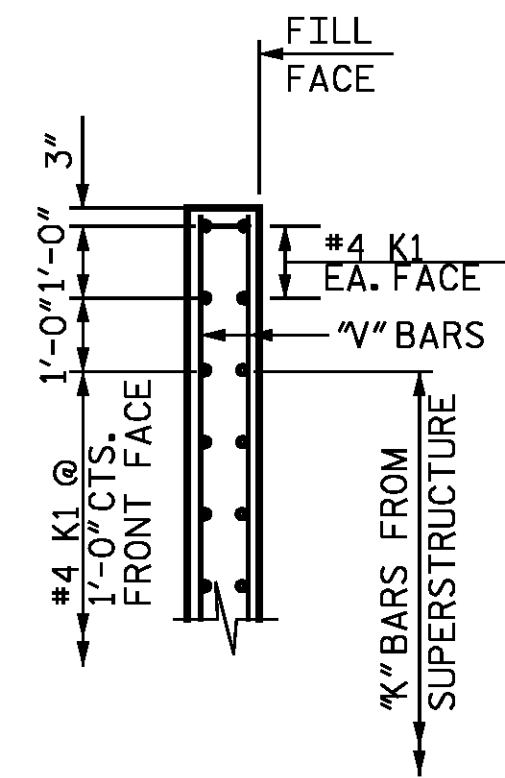
DocuSigned by:
 DB3C8E45B06D499...

DESIGN ENGINEER OF RECORD:	DATE :	2/12/2015
DRAWN BY :	R. J. FLORY	DATE : 1/27/14
CHECKED BY :	R. C. LARSON	DATE : 1/28/14

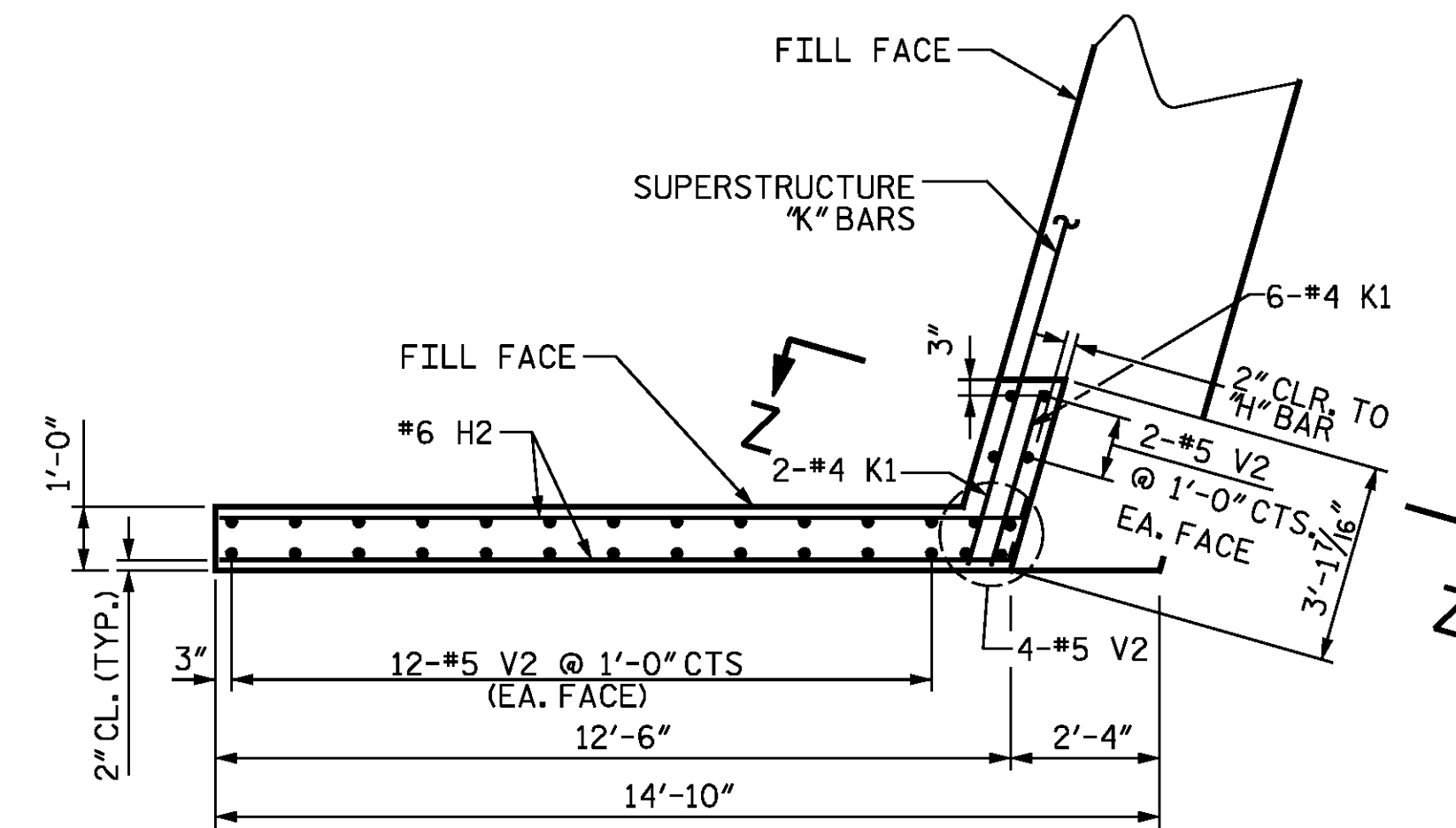
DWG. REF. NO. 15 OF 23		REVISIONS		SHEET NO. S03-15	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
				TOTAL SHEETS S03-23	



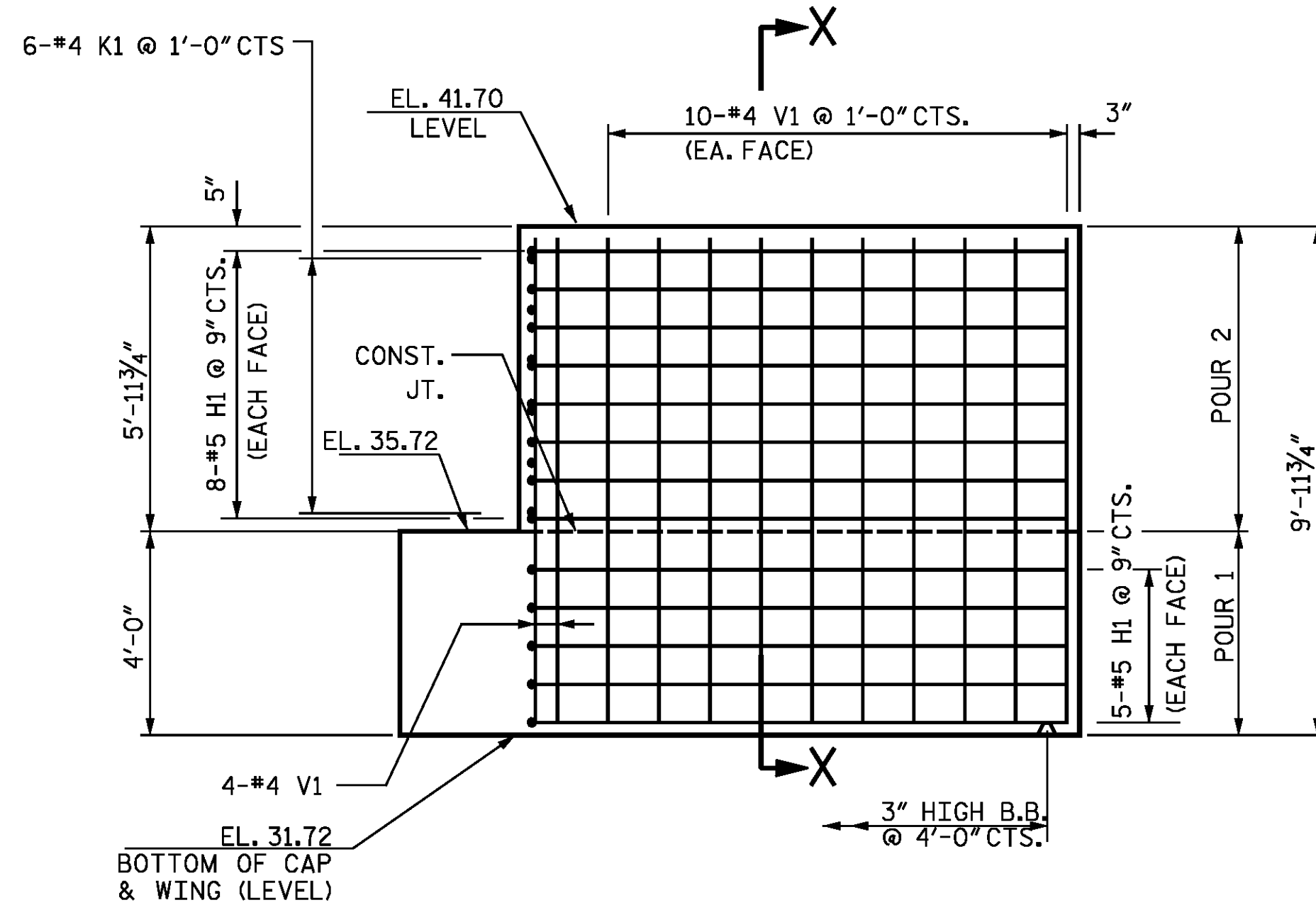
PLAN W1



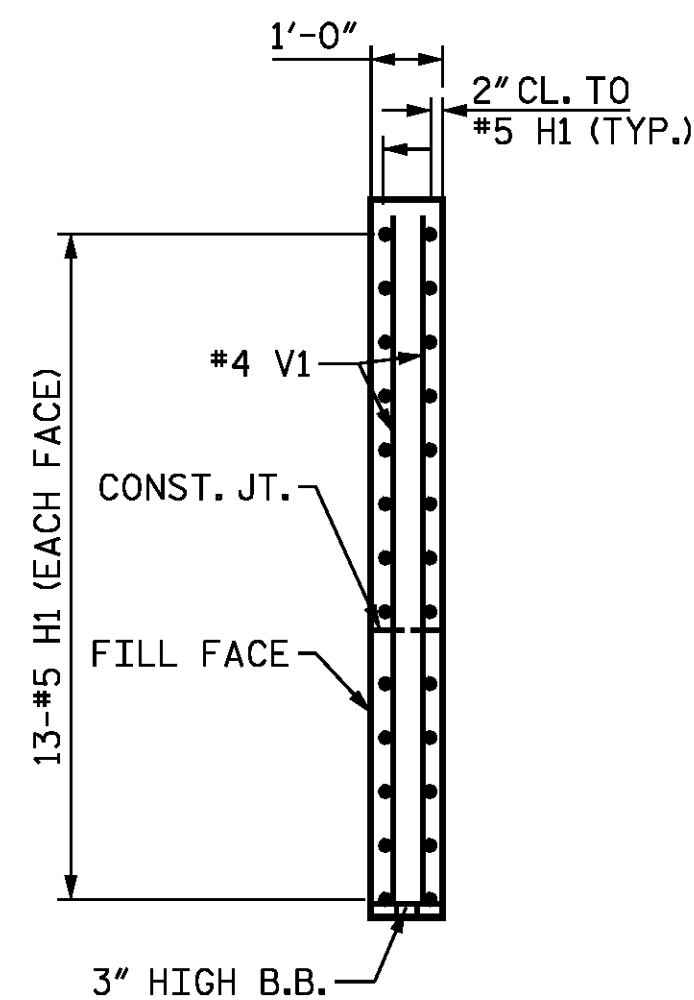
SECTION Z-Z



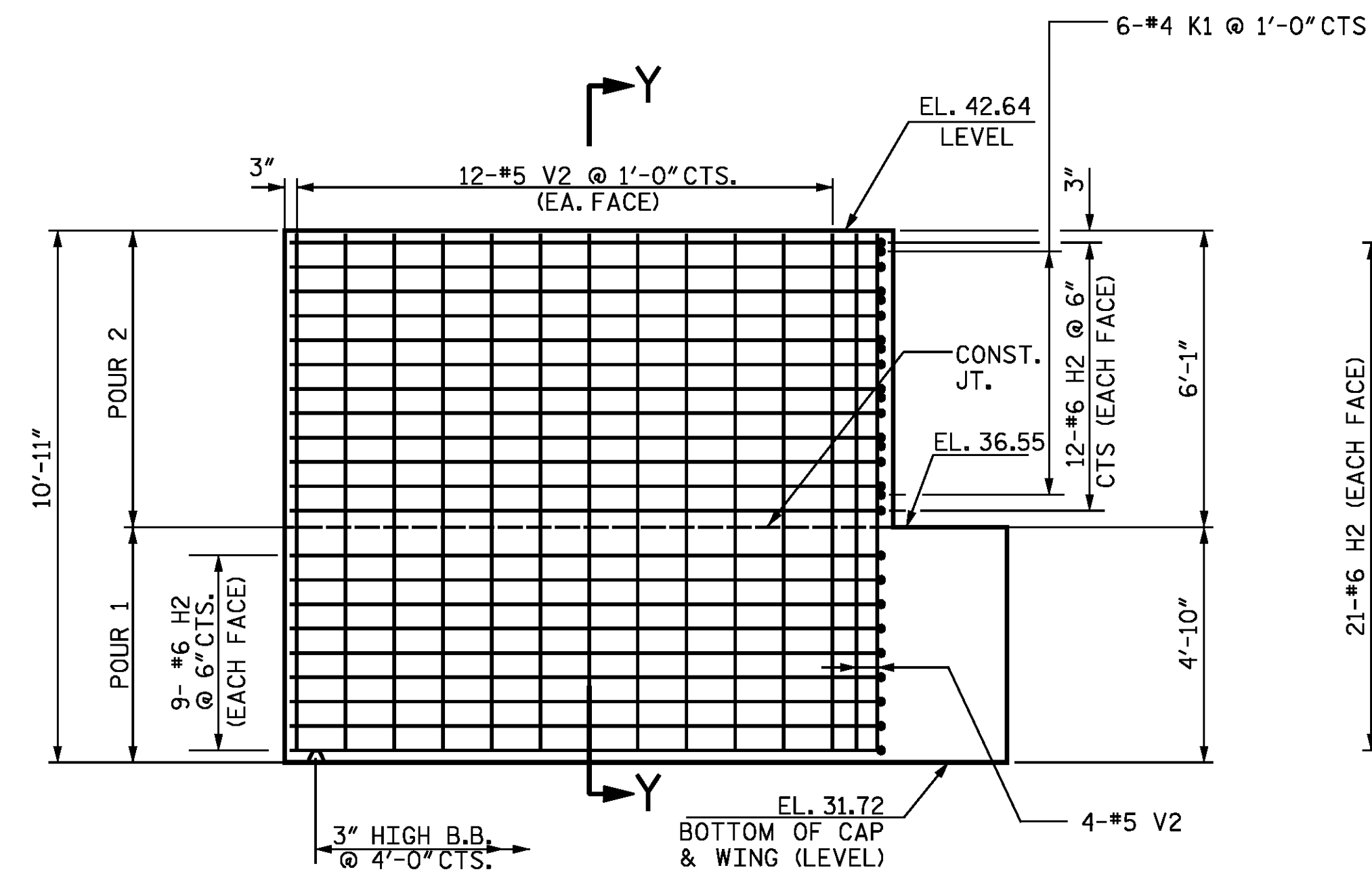
PLAN W2



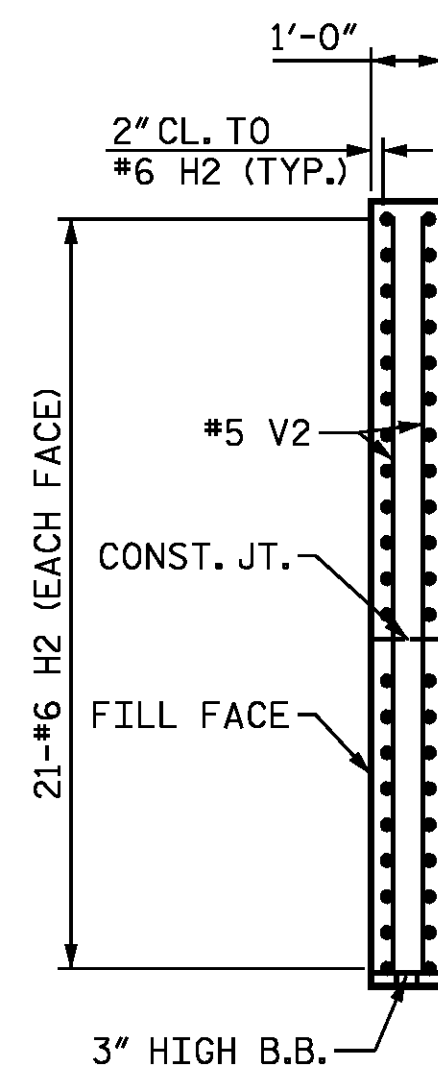
ELEVATION W1



SECTION X-X



ELEVATION W2



SECTION Y-Y

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1

LEFT LANE

STR-#3



DocuSigned by:

DB3C8E45B06D499...

2/12/2015

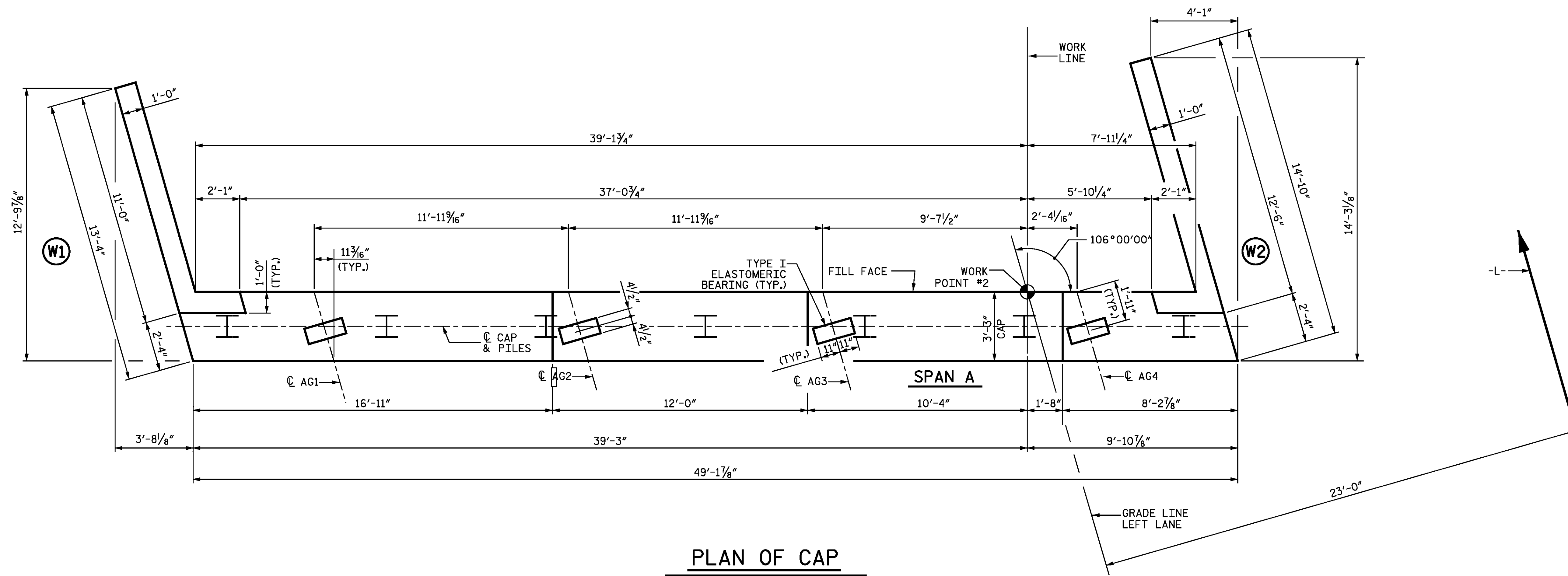
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DESIGN ENGINEER OF RECORD: DATE : 2/12/2015

DRAWN BY : R. J. FLORY DATE : 1/27/14
 CHECKED BY : R. C. LARSON DATE : 2/05/14

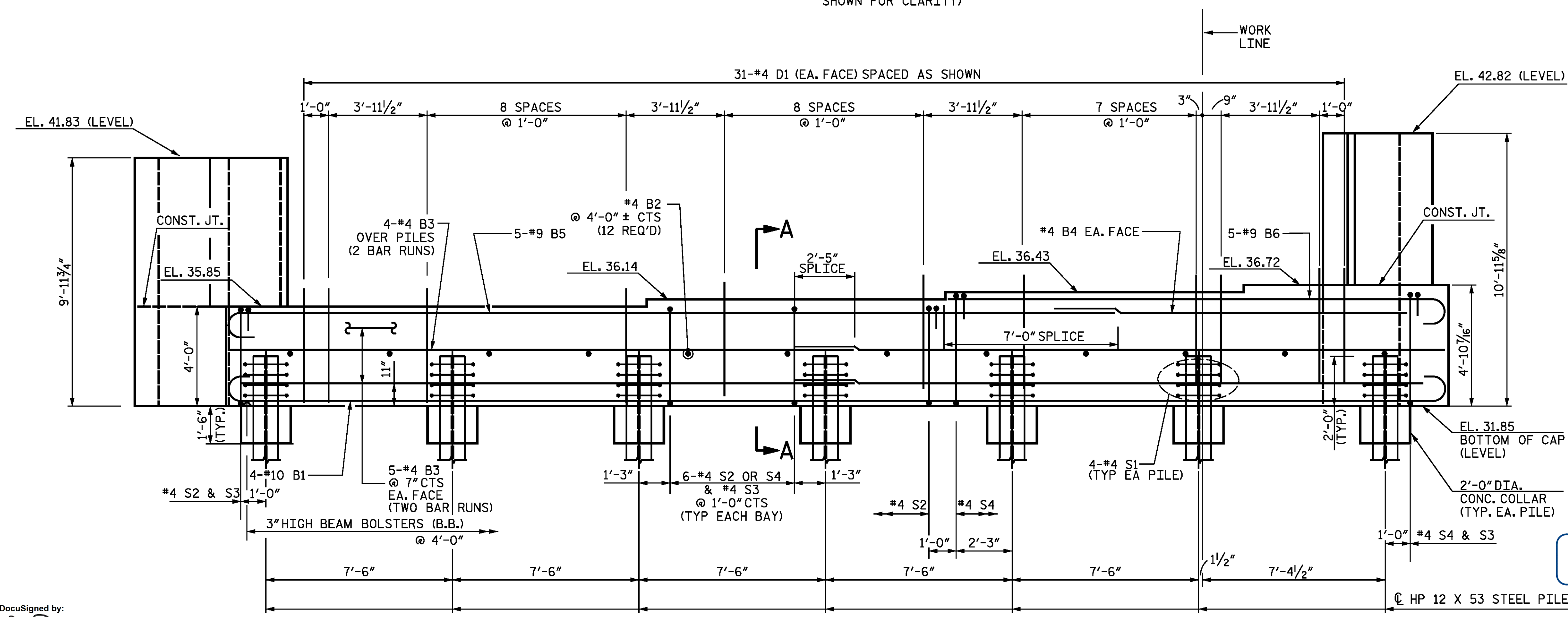
KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 16 OF 23

REVISIONS						SHEET NO. S03-16
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS S03-23
2			4			



PLAN OF CAP

(CONCRETE COLLARS NOT SHOWN FOR CLARITY)



ELEVATION

NOTES

- INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
- THE PORTIONS OF THE WINGS ABOVE THE CONSTRUCTION JOINT ARE TO BE POURED WITH THE SUPERSTRUCTURE. AT THE CONTRACTOR'S OPTION, THESE PORTIONS MAY BE POURED SEPARATELY FROM THE SUPERSTRUCTURE, IN WHICH CASE CLASS 'A' CONCRETE MAY BE USED.
- FOR "PILE SPLICE DETAIL" AND "TEMPORARY DRAINAGE AT END BENT," SEE END BENT 1.

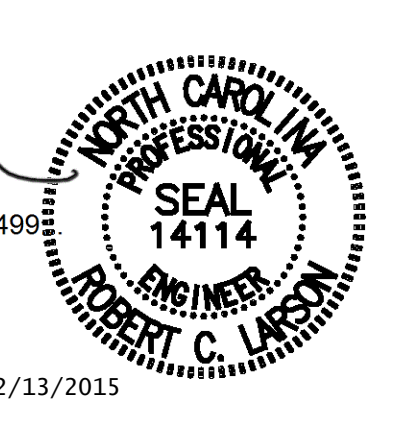
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 2**

LEFT LANE STR-#3



DocuSigned by:
 DB3C8E45B06D498

DocuSigned by:
 DB3C8E45B06D498

DESIGN ENGINEER OF RECORD: DATE: 2/13/2015

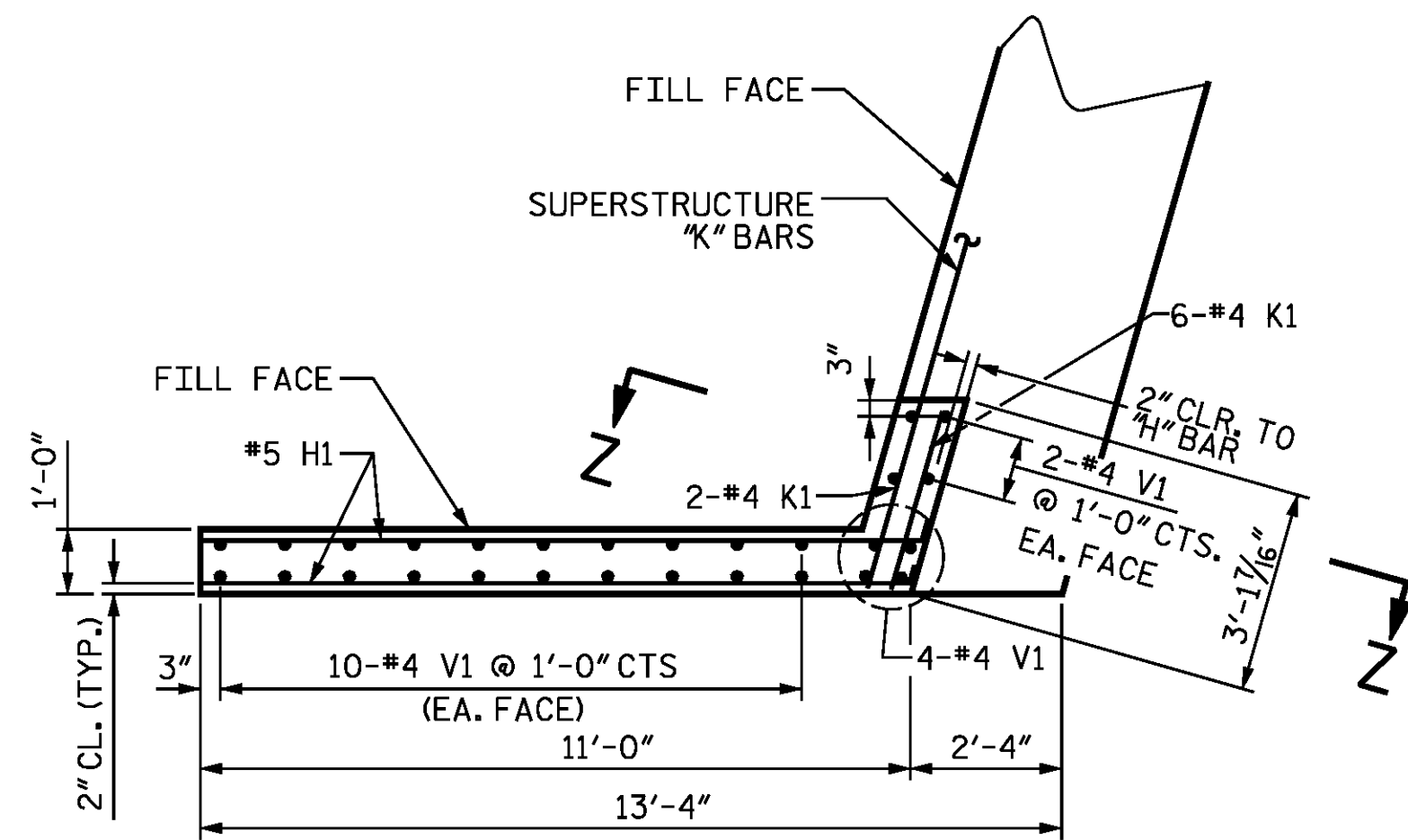
DRAWN BY: R. J. FLORY DATE: 2/11/14

CHECKED BY: R. C. LARSON DATE: 2/12/14

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

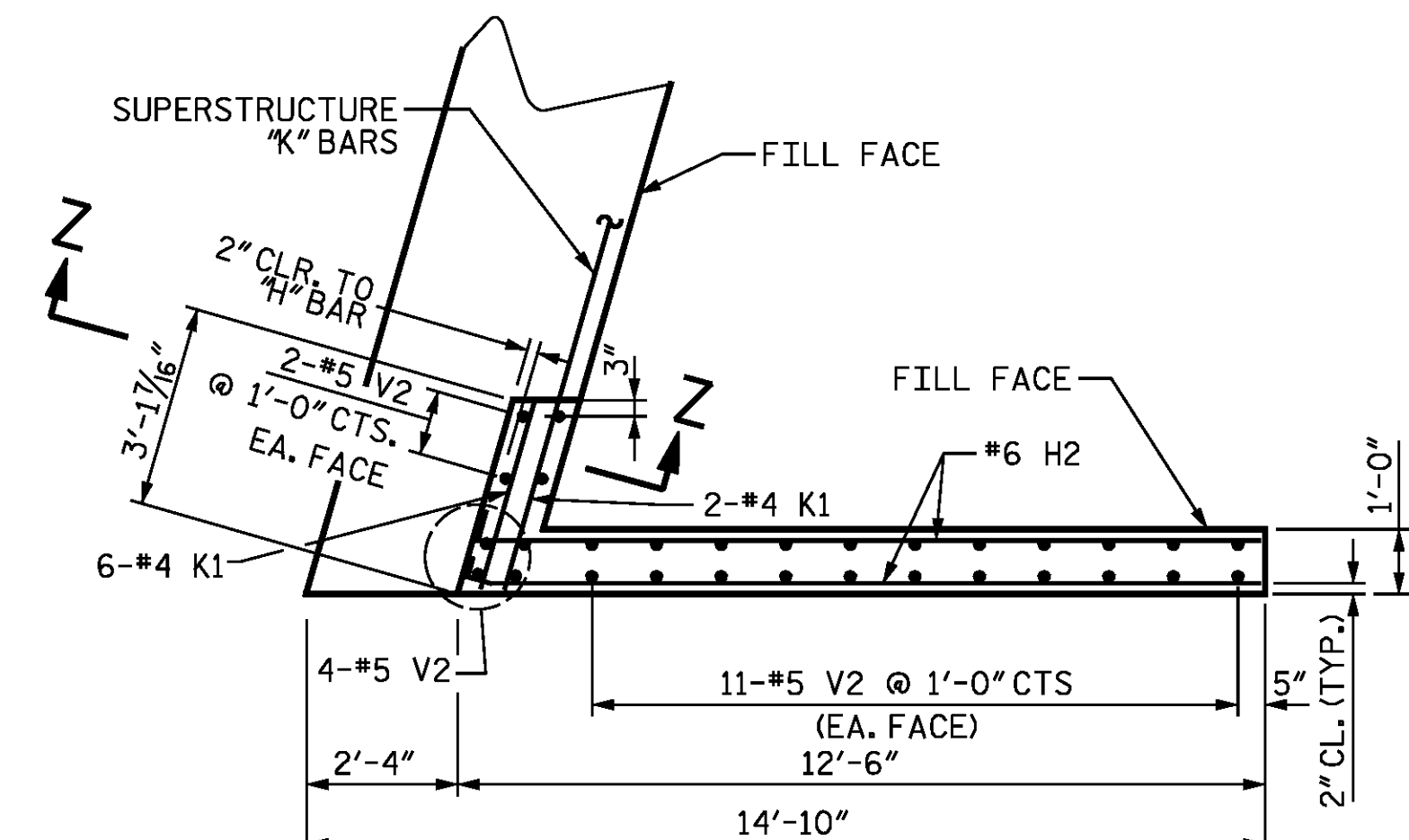
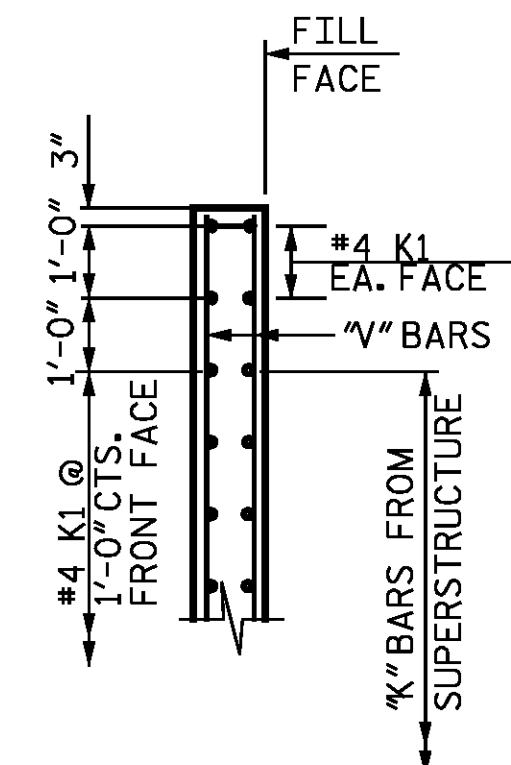
TOTAL SHEETS: 503-23

KCI Associates
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 DWG. REF. NO. 18 OF 23

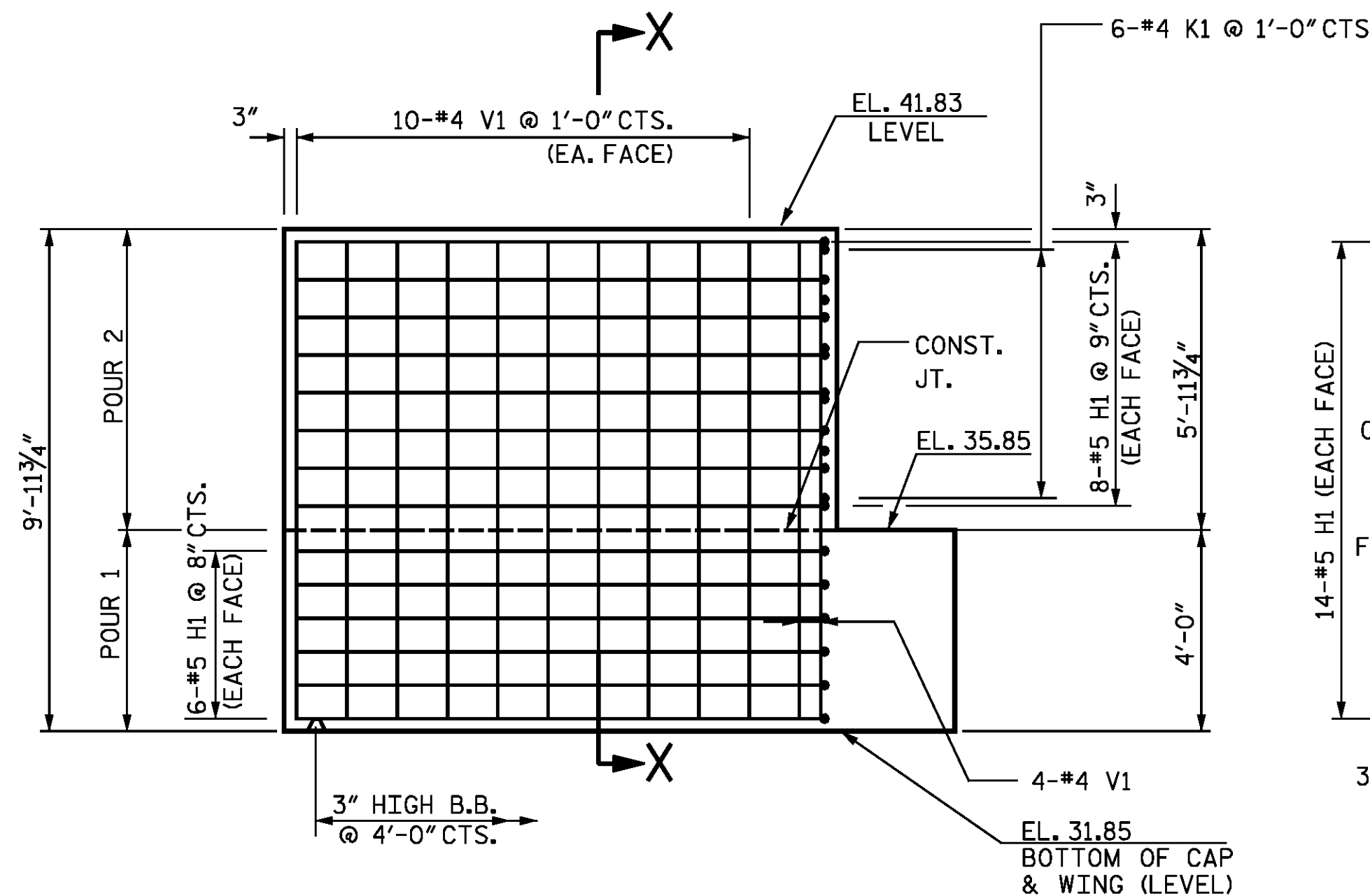


PLAN W1

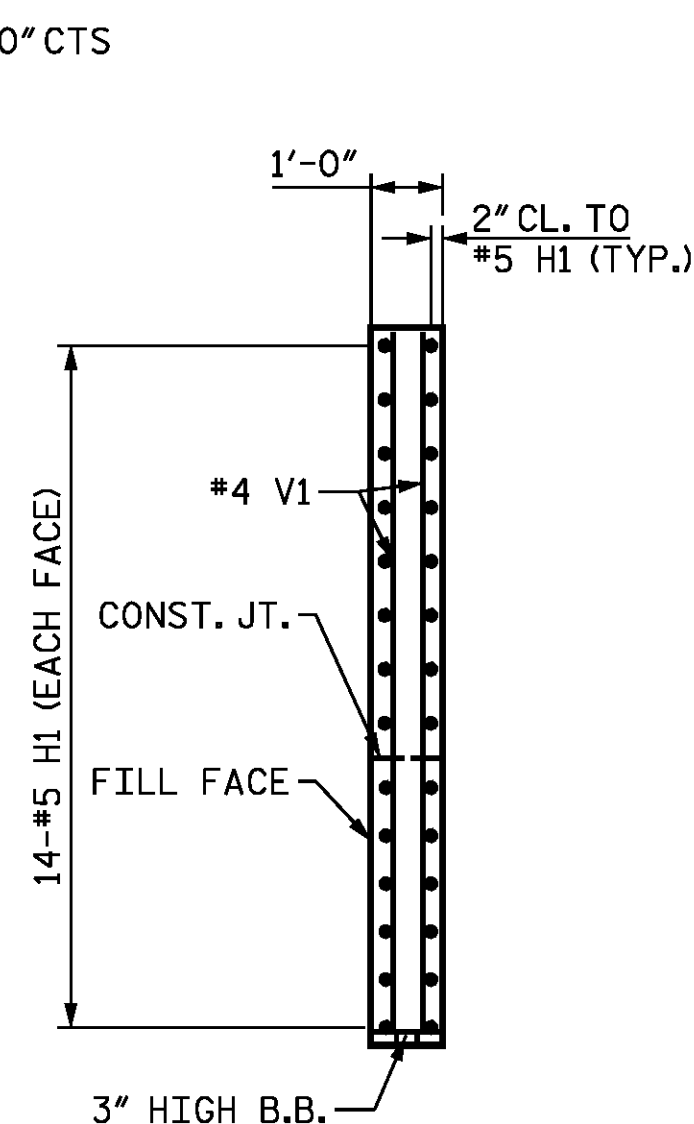
SECTION Z-Z



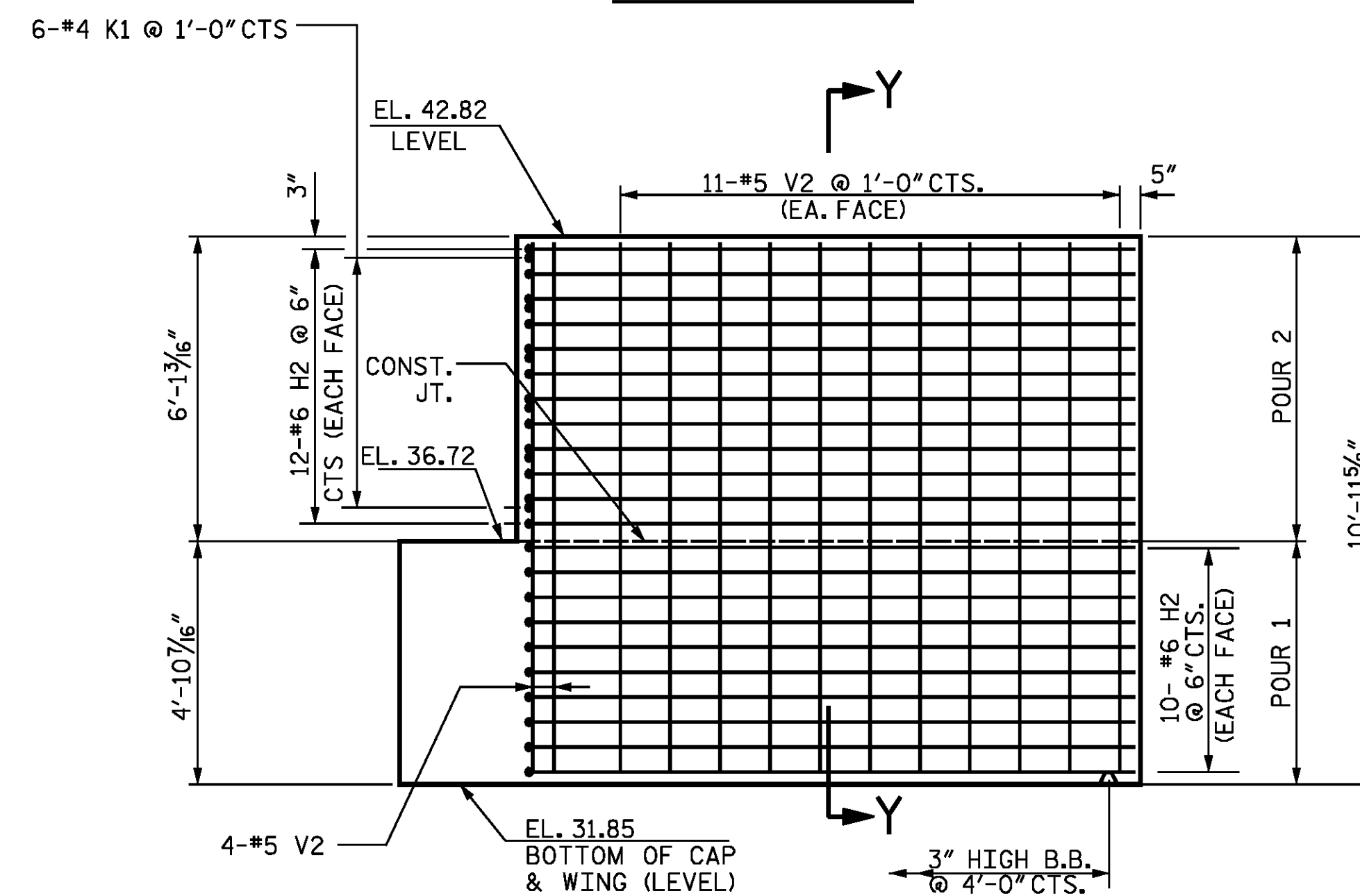
PLAN W2



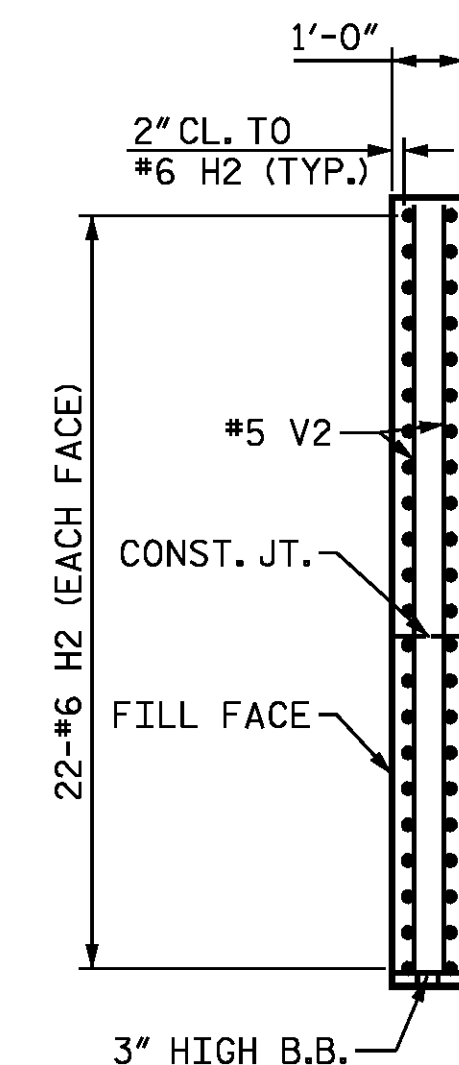
ELEVATION W1



SECTION X-X



ELEVATION W2



SECTION Y-Y

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

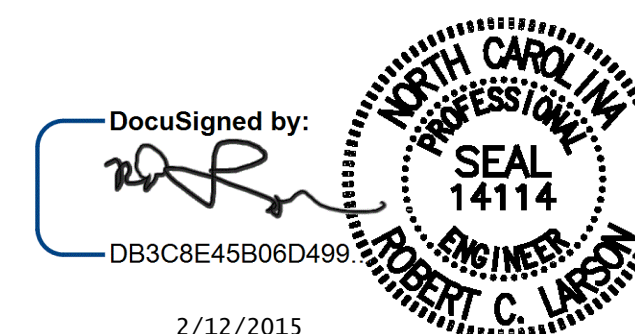
SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2

LEFT LANE

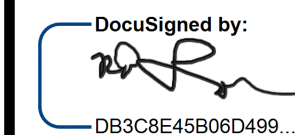
STR-#3



DocuSigned by:

DB3C8E45B06D499

2/12/2015



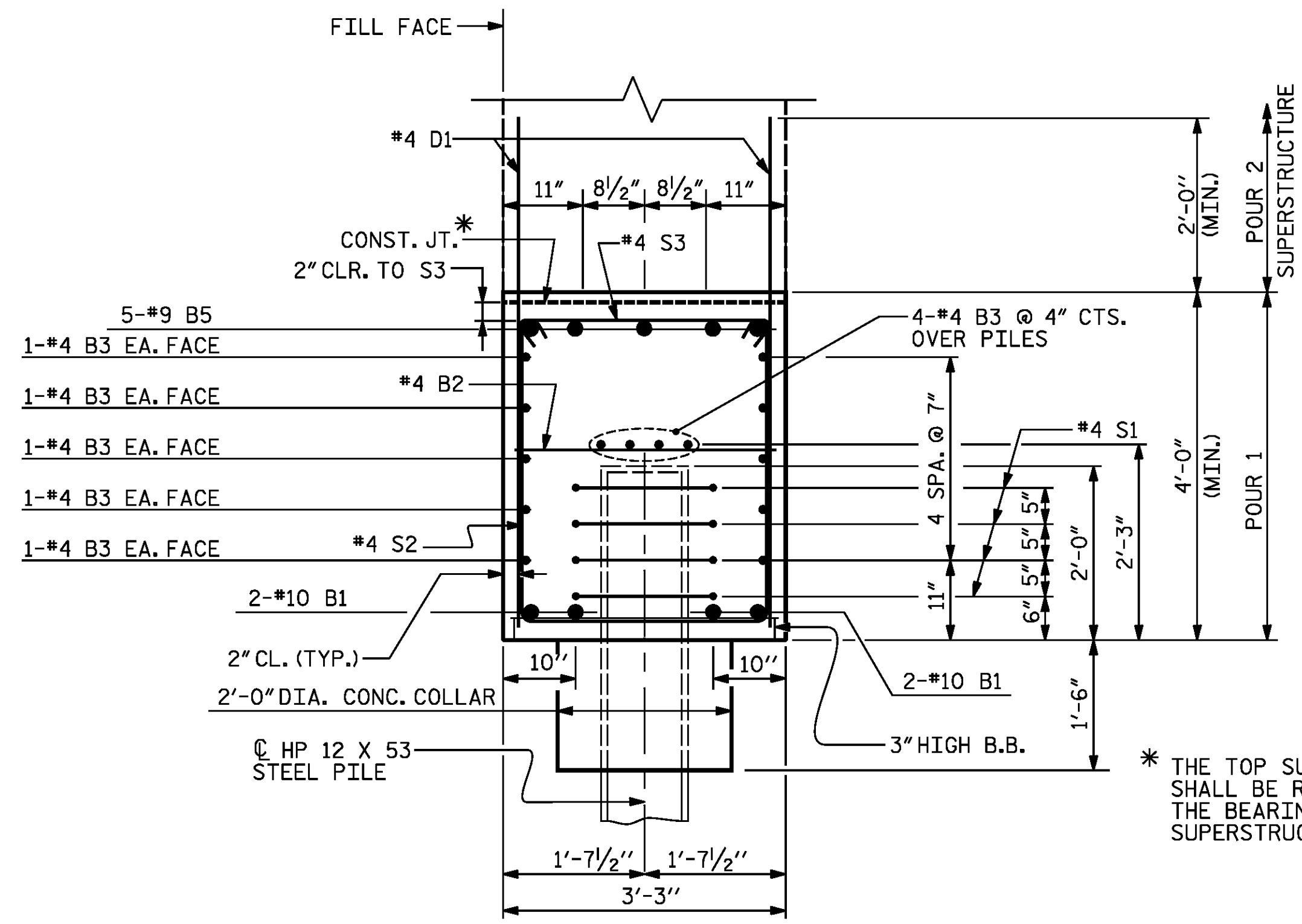
DESIGN ENGINEER OF RECORD: DATE: 2/12/2015

DRAWN BY: R. J. FLORY DATE: 2/19/14
 CHECKED BY: R. C. LARSON DATE: 2/21/14

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 19 OF 23

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

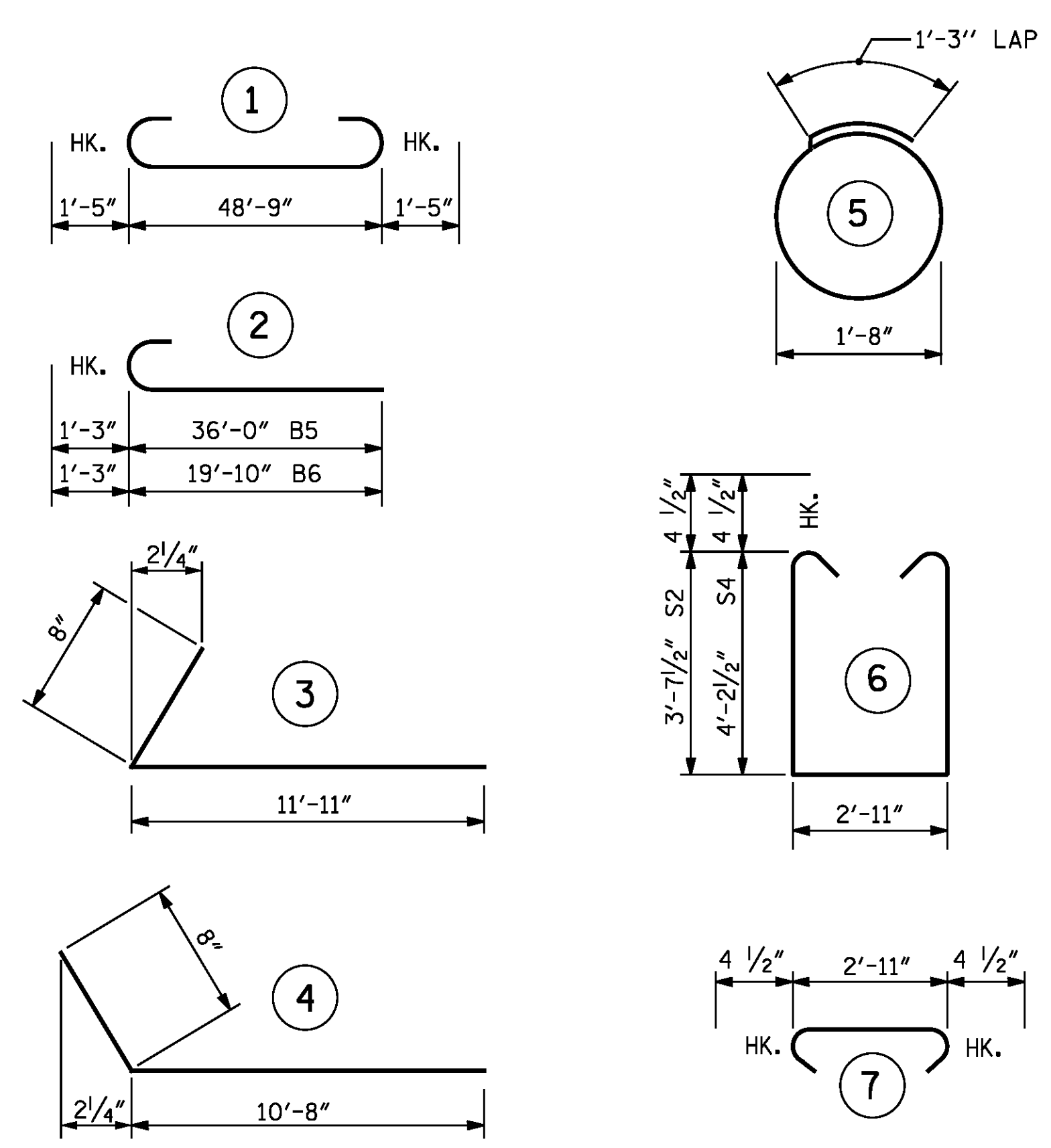
TOTAL SHEETS: 503-23



SECTION A-A

* THE TOP SURFACE OF THE CAP AND WINGS SHALL BE RAKED TO A DEPTH OF 1/4" EXCEPT THE BEARING AREAS AND CAP OUTSIDE OF SUPERSTRUCTURE.

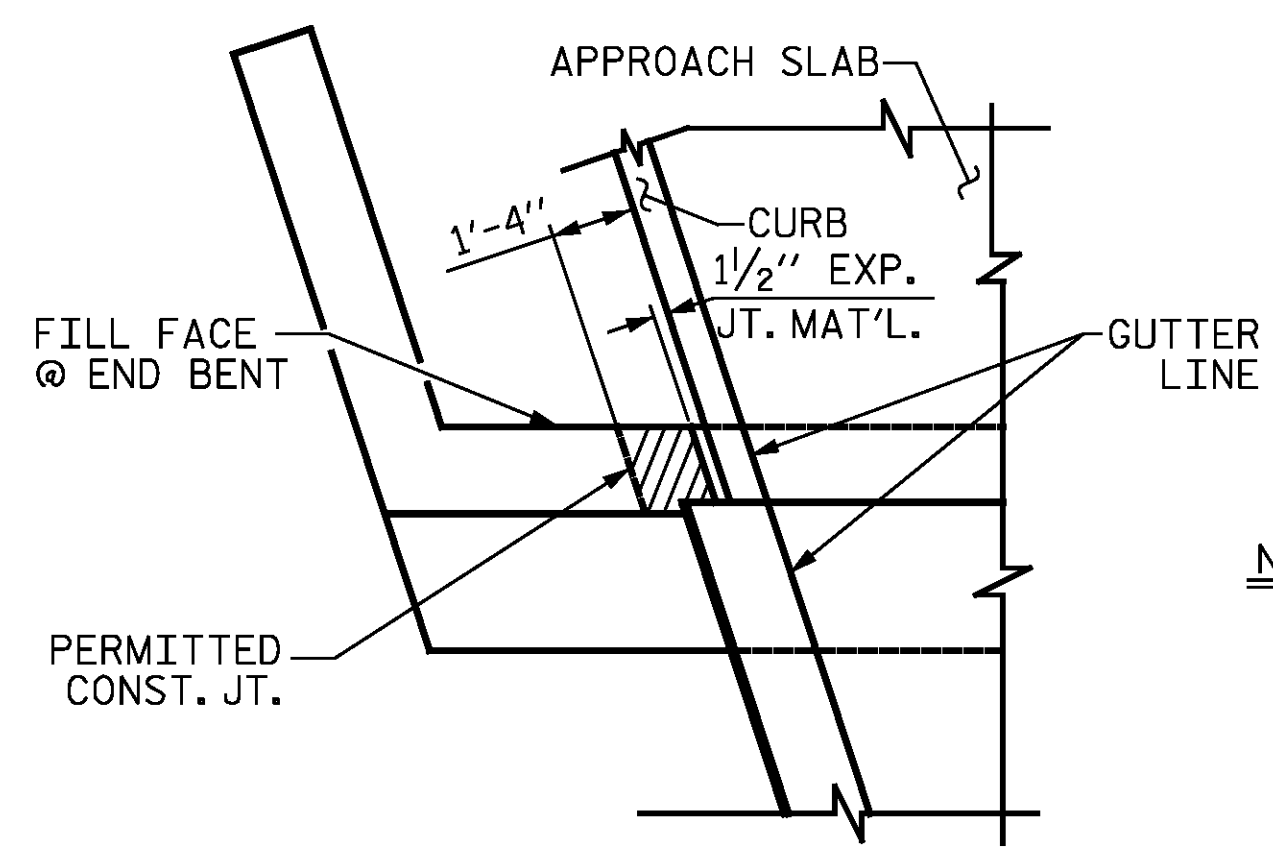
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

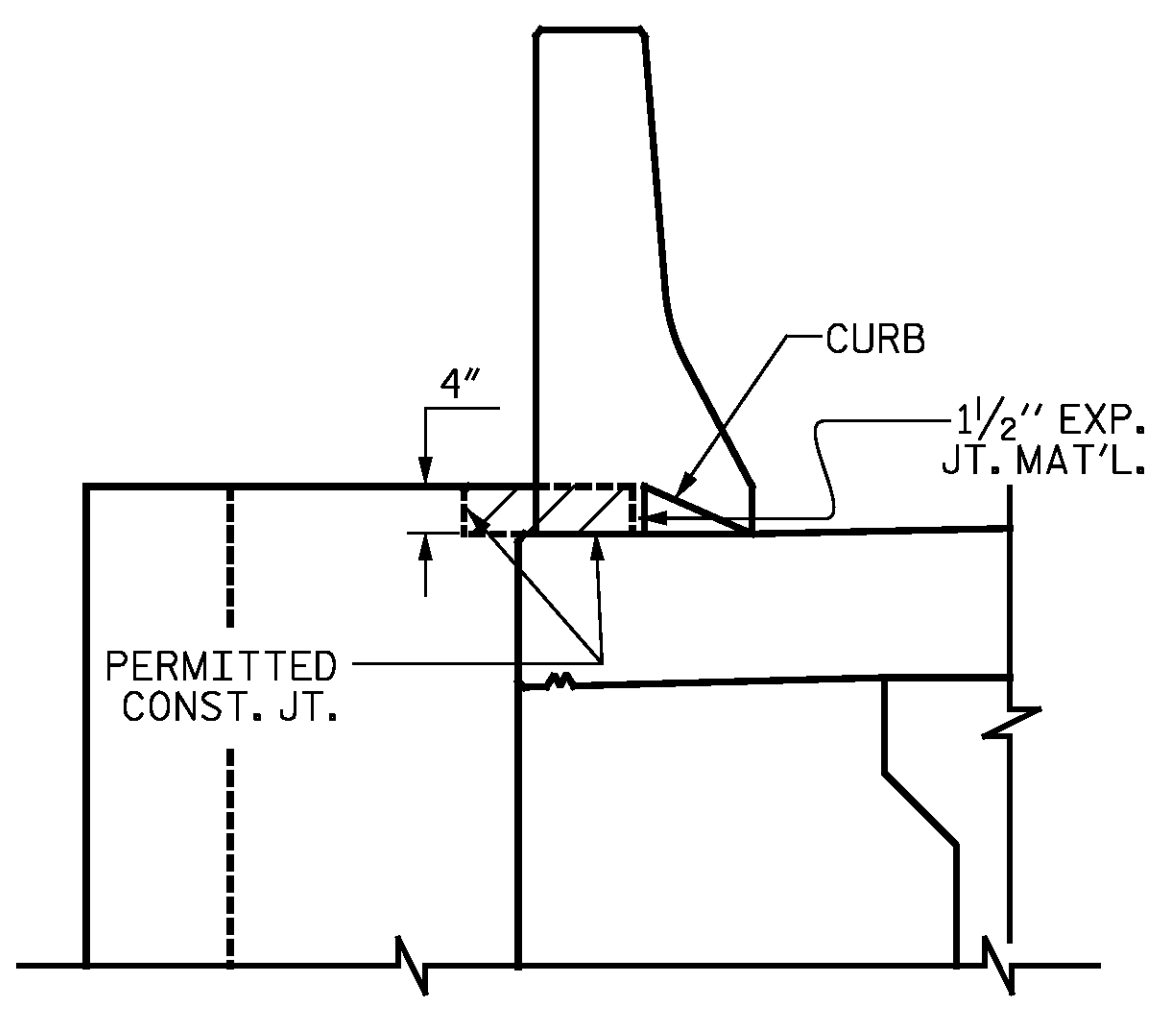
BILL OF MATERIAL

END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	10	1	51'-7"	888
B2	12	4	STR.	2'-11"	23
B3	28	4	STR.	25'-8"	480
B4	2	4	STR.	15'-3"	20
B5	5	9	2	37'-3"	633
B6	5	9	2	21'-1"	358
D1	62	4	STR.	6'-8"	276
H1	28	5	4	11'-4"	331
H2	44	6	3	12'-7"	832
K1	16	4	STR.	2'-9"	29
S1	28	4	5	6'-6"	122
S2	23	4	6	10'-11"	168
S3	38	4	7	3'-8"	93
S4	15	4	6	12'-1"	121
V1	28	4	STR.	9'-8"	181
V2	30	5	STR.	10'-7"	331
REINFORCING STEEL, LB					4886
CLASS A CONCRETE, CY POUR 1					30.5
(POUR 2 INCLUDED IN SUPERSTRUCTURE)					
HP 12X53 STEEL PILES					NO. 7
					LF 420
PILE REDRIVES, EA					4



PLAN

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



ELEVATION

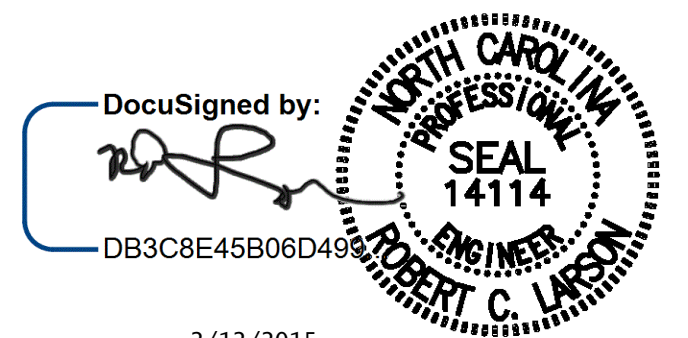
PROJECT NO. R-2514D
JONES COUNTY
STATION: 363+38.90 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUBSTRUCTURE
END BENT 2**

LEFT LANE STR-#3



2/12/2015

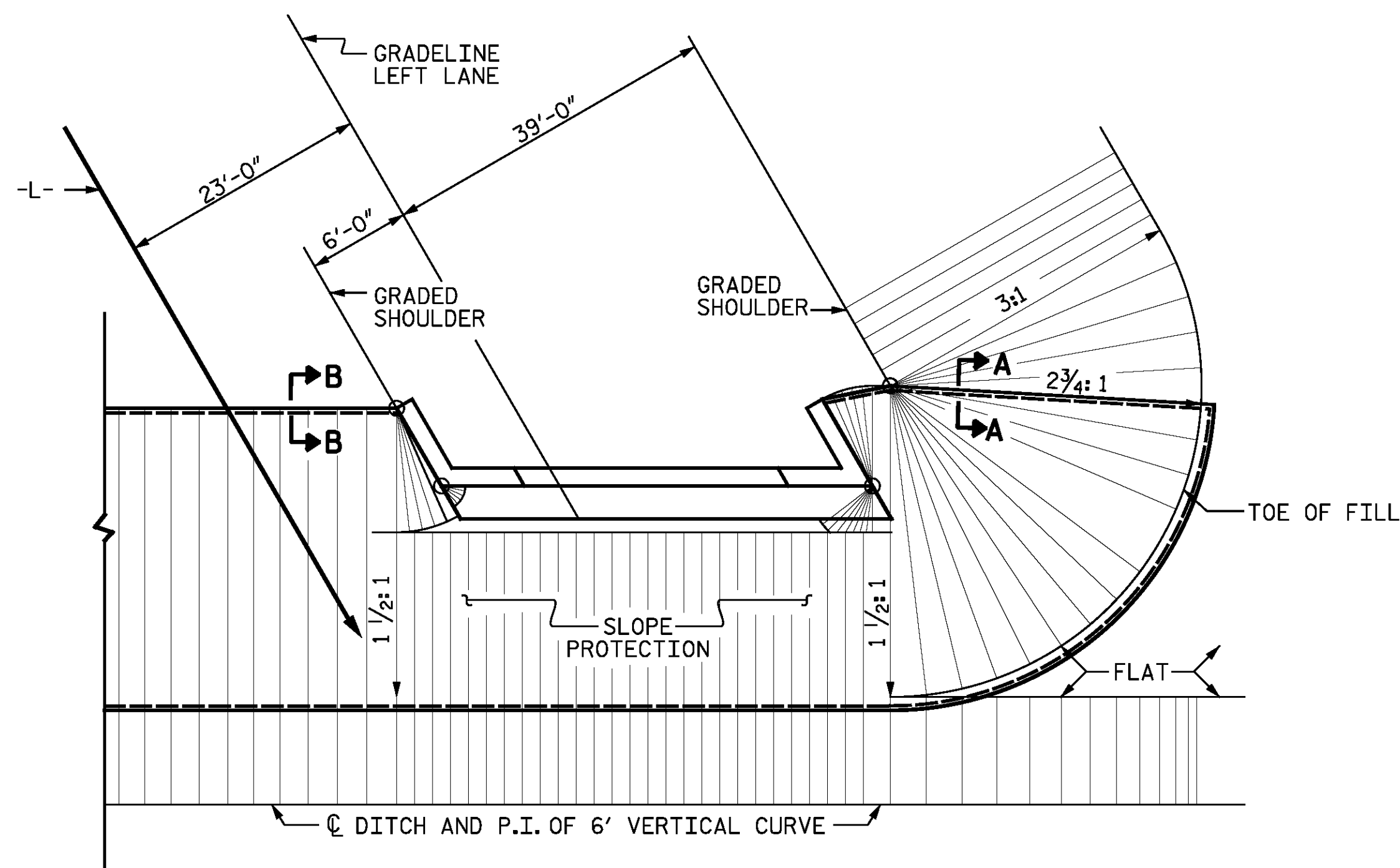
DocuSigned by:
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DESIGN ENGINEER OF RECORD:	DATE :	2/12/2015
DRAWN BY :	DATE :	2/10/14
CHECKED BY :	DATE :	2/12/14

BLOCKOUT IN WING WALL

REVISIONS						SHEET NO. S03-20
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS S03-23
2			4			

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DWG. REF. NO. 20 OF 23



PLAN - END BENT WITH SWEEP BACK WINGS - SKEWED
(1 1/2:1 SLOPE)

BRIDGE @ STA. 363+38.90 LEFT LANE	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	375	750
END BENT 2	330	660

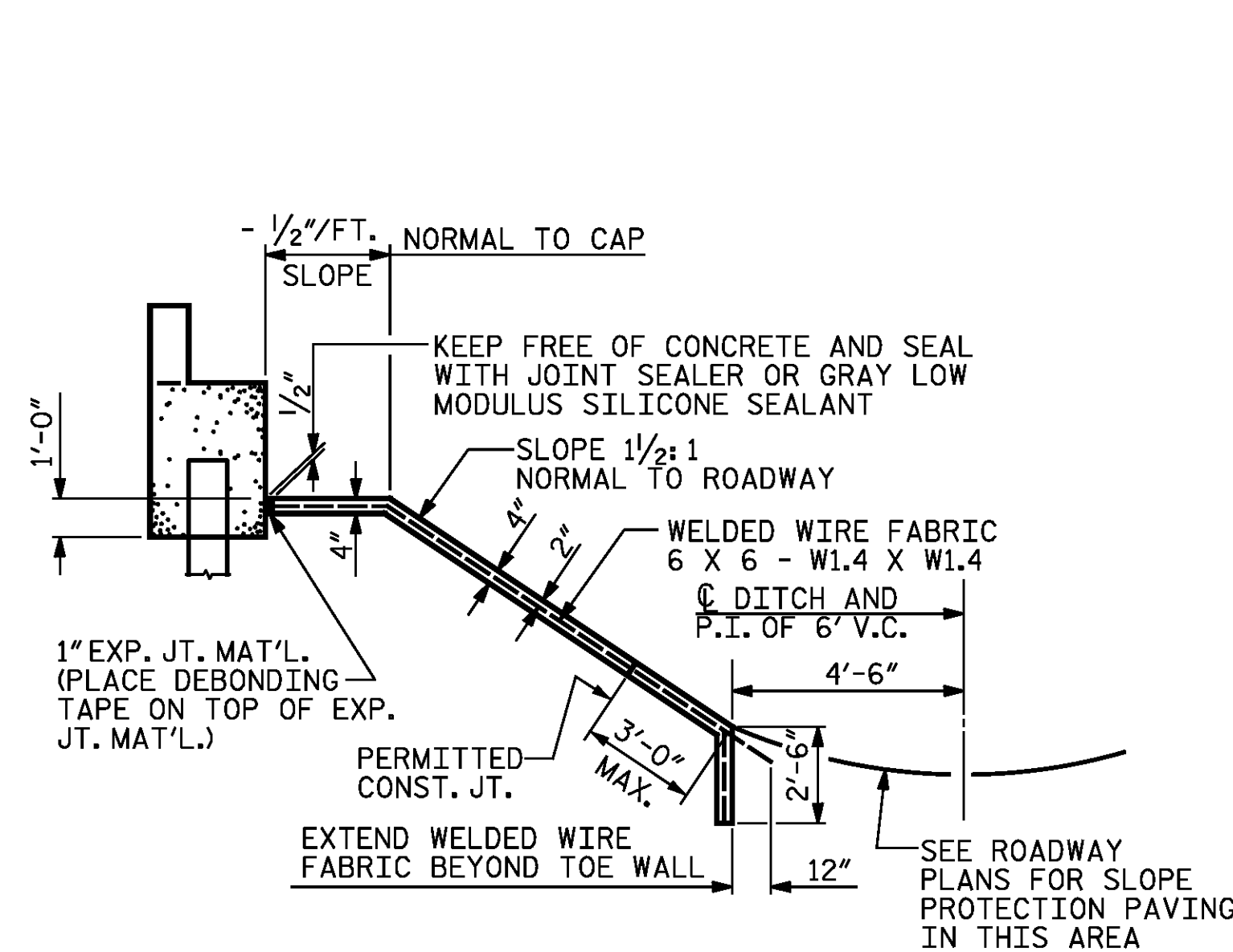
* QUANTITY SHOWN IS BASED ON 5' POURS.

GENERAL NOTES

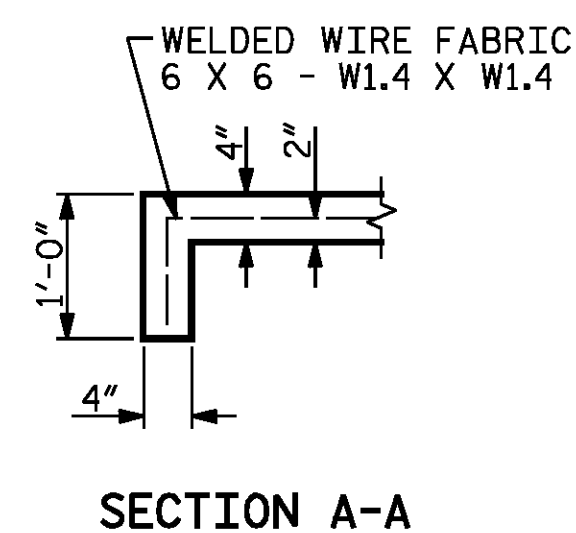
SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. THE CONTRACTOR, AT HIS OPTION, MAY USE ALTERNATE "B" ONLY FOR HIGHWAY OVER HIGHWAY GRADE SEPARATIONS WITH 2:1 END BENT SLOPE IN RURAL, UNPOPULATED AREAS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING.

ALTERNATE "A"

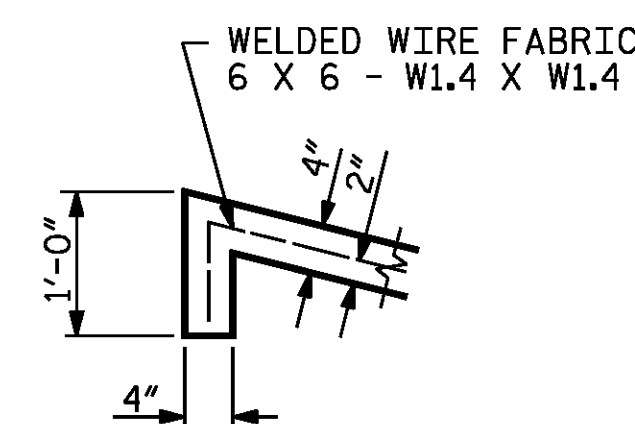
ALTERNATE "A" SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.



SECTION ALONG C ROADWAY WHEN FILL CATCHES IN DITCH

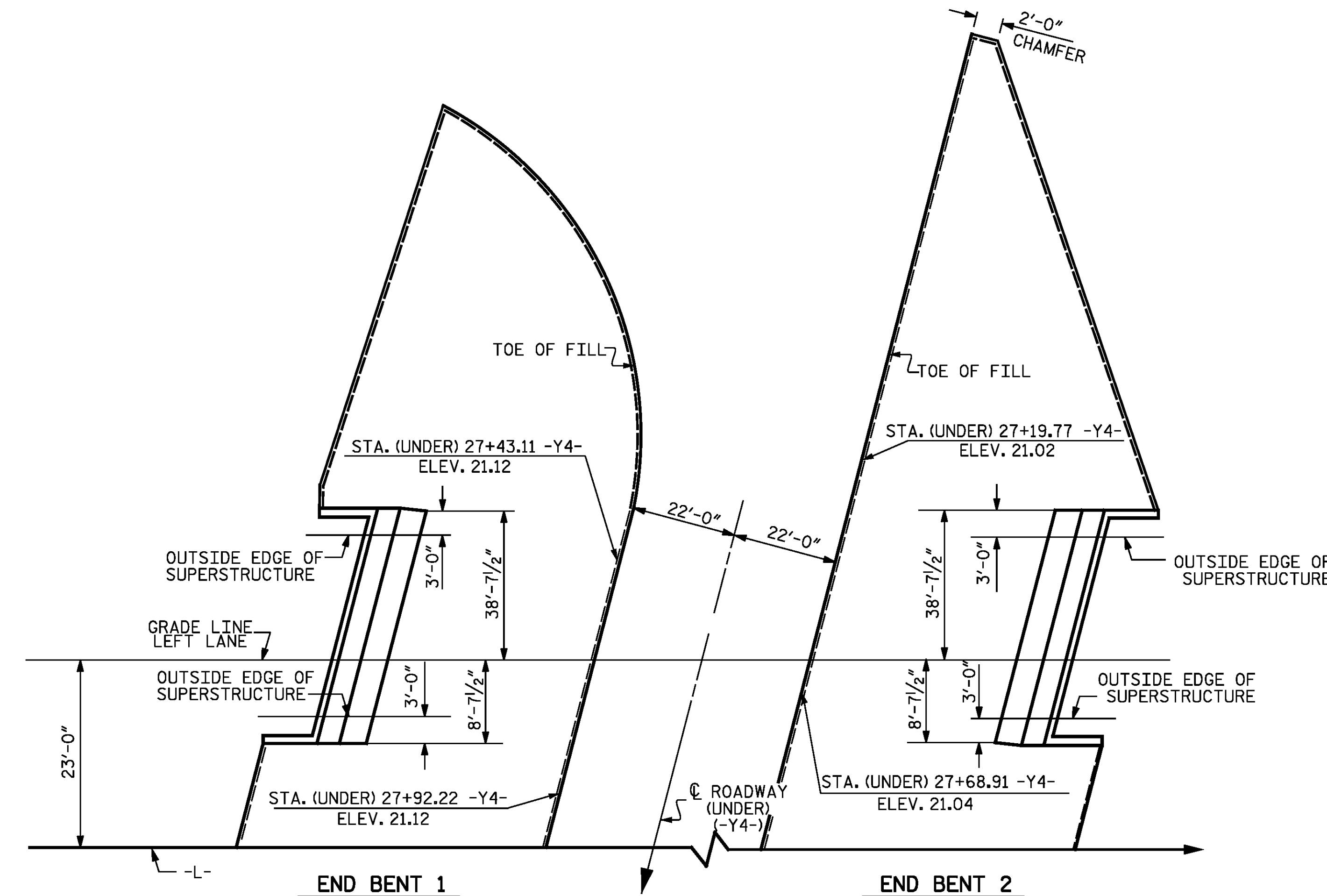


SECTION A-A

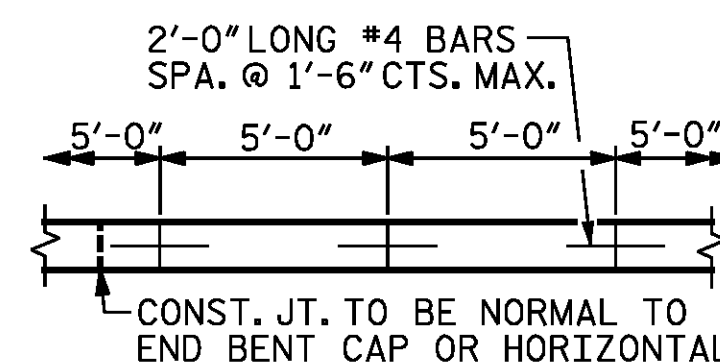


SECTION B-B

DETAILS FOR ALTERNATE "A"

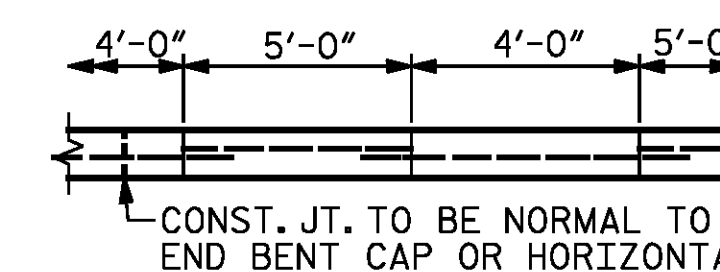


PLAN



STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL



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

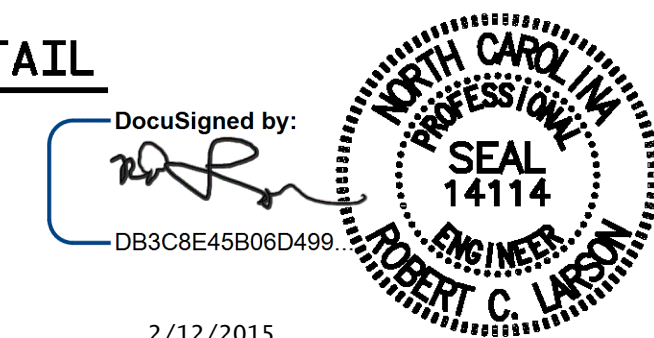
OPTIONAL POURING DETAIL

PROJECT NO. R-2514D
JONES COUNTY
STATION: 363+38.90 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SLOPE PROTECTION
DETAILS**

STD. NO. SP1 LEFT LANE STR-#3

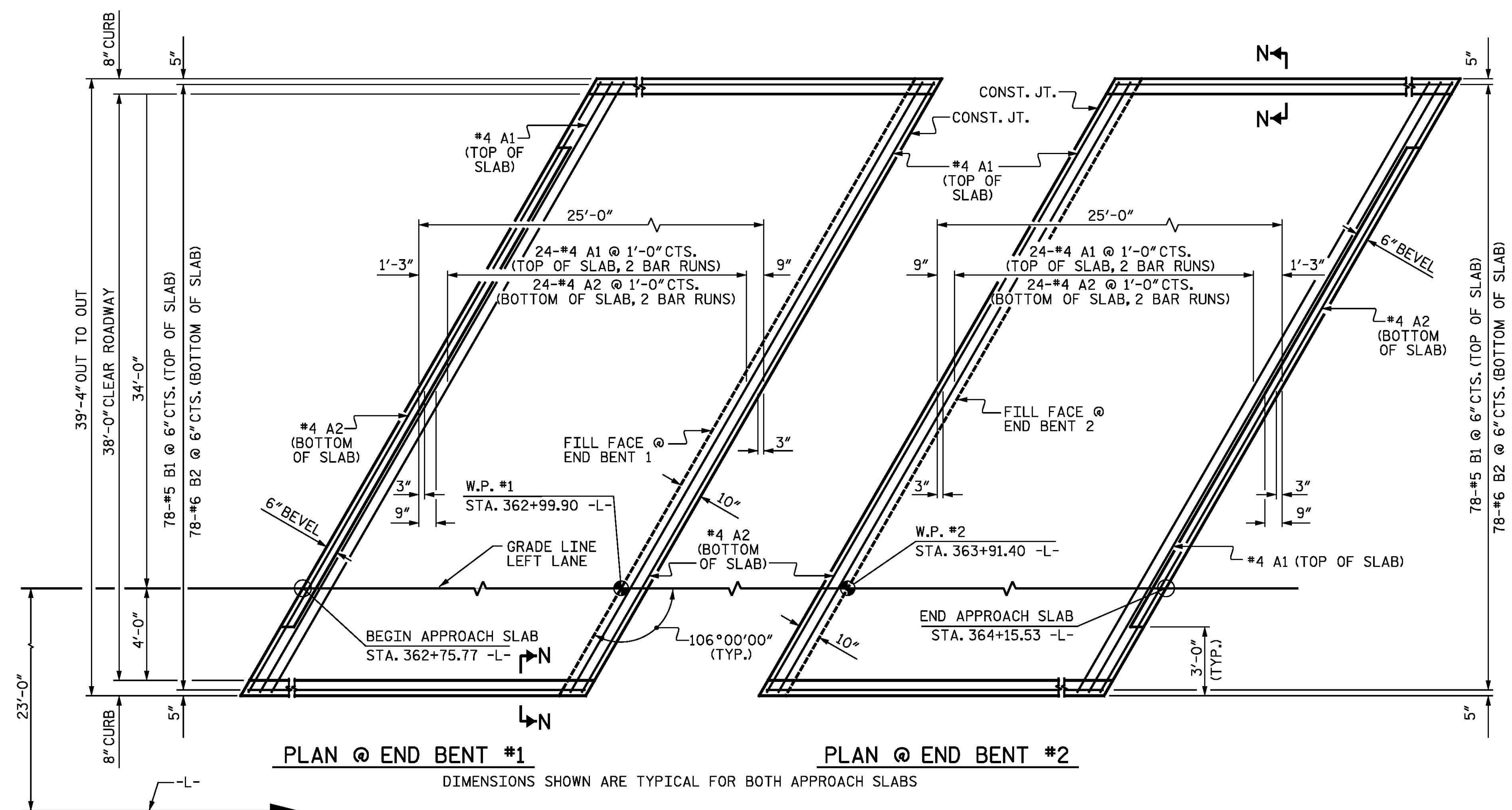


2/12/2015

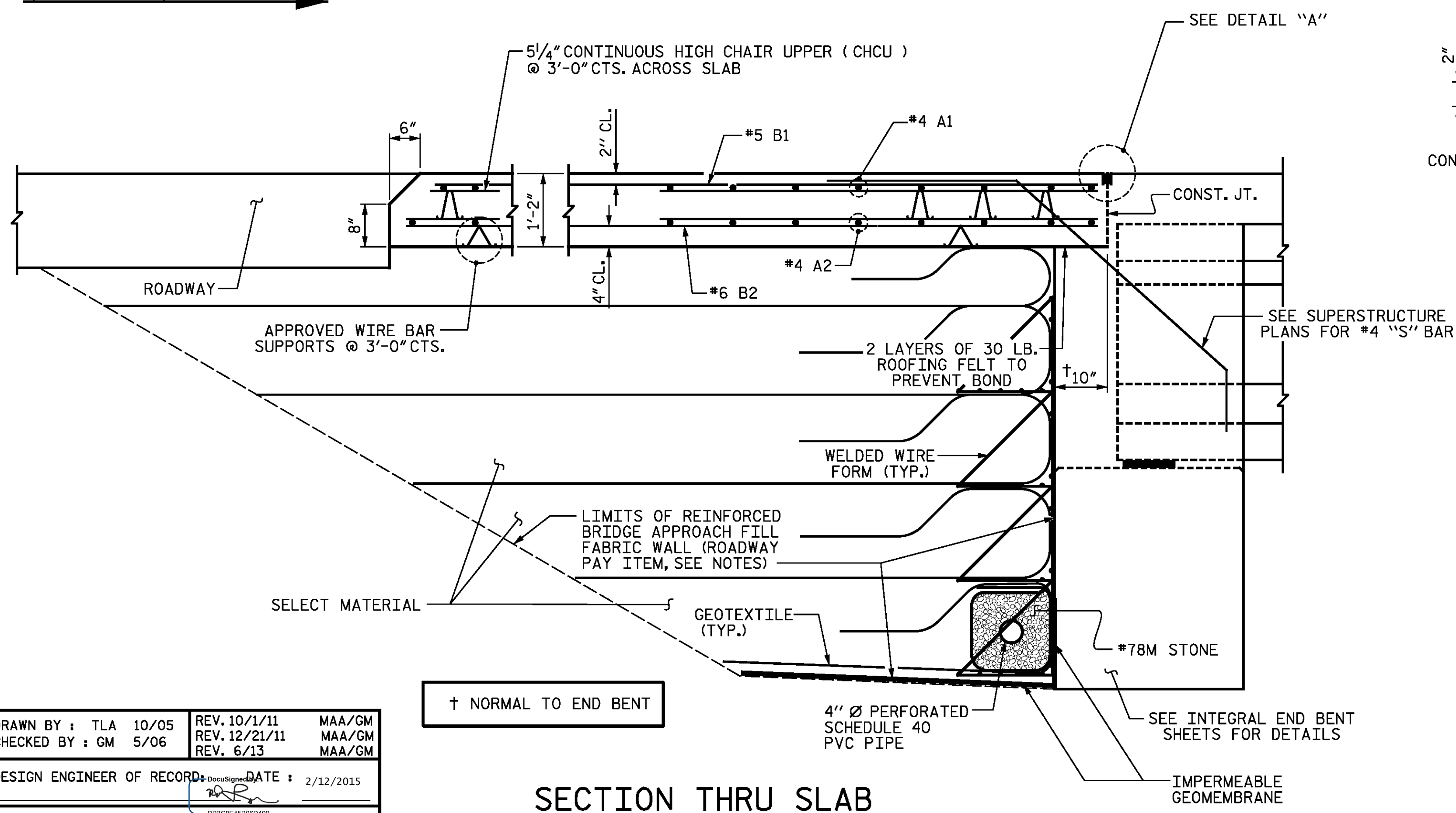
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DESIGN ENGINEER OF RECORD:	DATE : 2/12/2015
DRAWN BY : E. C. DECOLA	DATE : 10/29/13
CHECKED BY : R. C. LARSON	DATE : 02/18/14

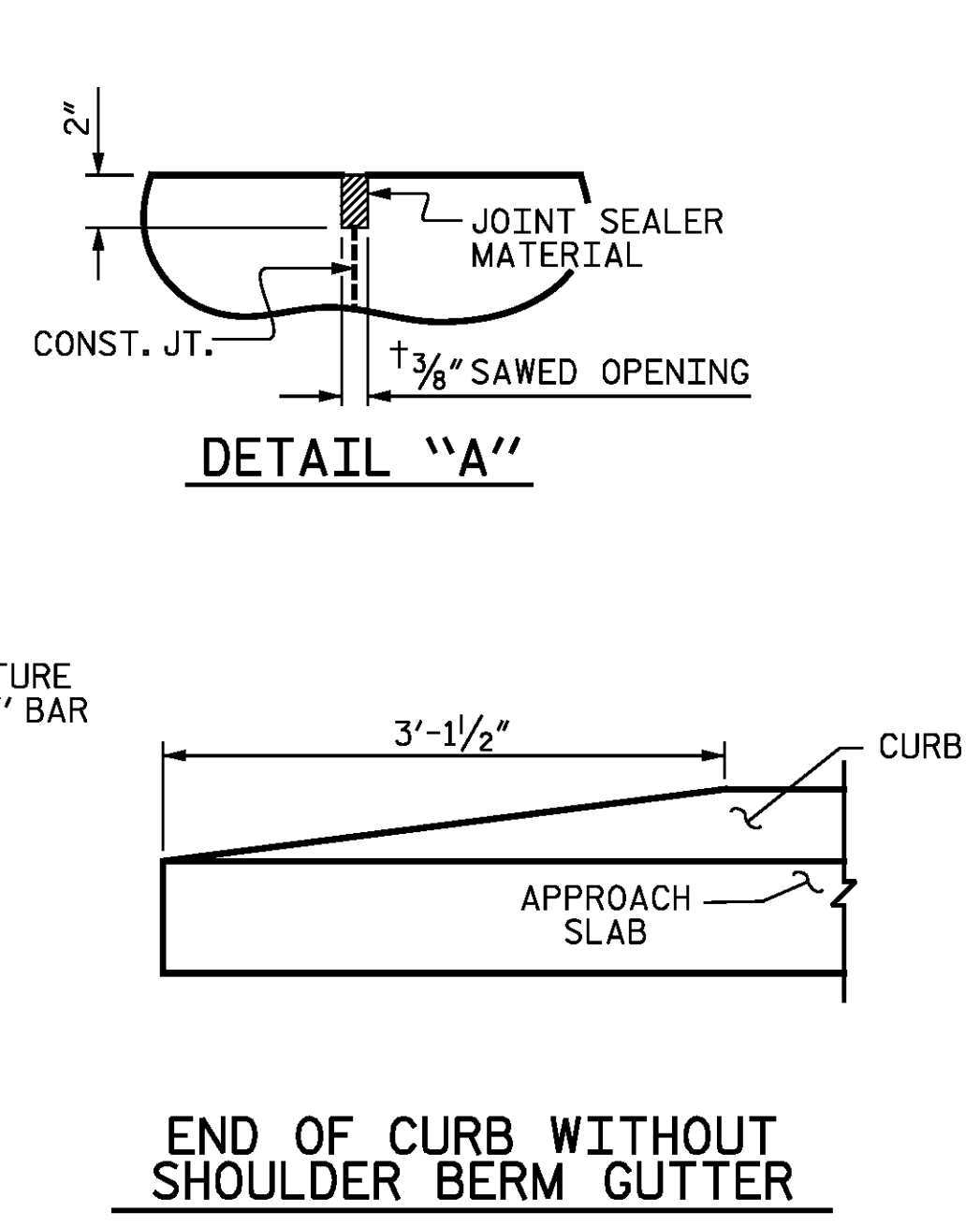
KCI Associates of North Carolina, P.A.		REVISIONS		SHEET NO. S03-21	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
DWG. REF. NO. 21 OF 23				TOTAL SHEETS S03-23	



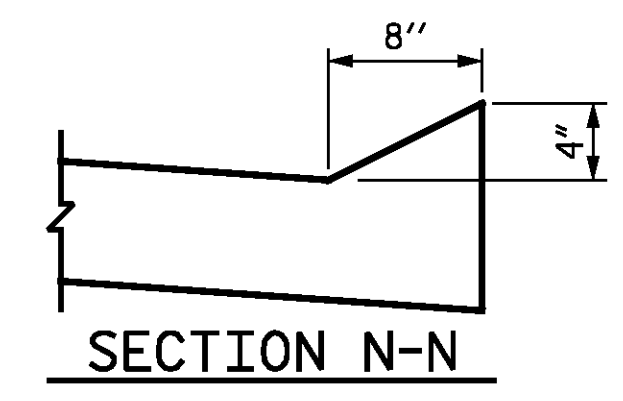
PLAN @ END BENT #1
 PLAN @ END BENT #2
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB



DETAIL "A"



SECTION N-N

NOTES

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

FOR REINFORCED BRIDGE APPROACH FILL FABRIC WALL INCLUDING GEOTEXTILE, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.

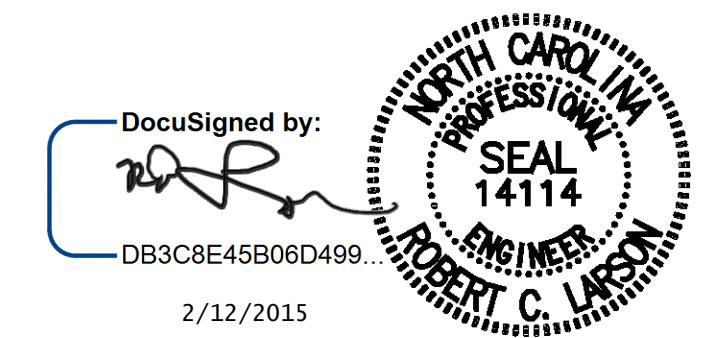
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

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

BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	52	#4	STR	21'-3"	738
A2	52	#4	STR	21'-2"	735
* B1	78	#5	STR	24'-1"	1959
B2	78	#6	STR	24'-7"	2882
REINFORCING STEEL					3617 LBS.
* EPOXY COATED REINFORCING STEEL					2697 LBS.
CLASS AA CONCRETE					42.6 C.Y.

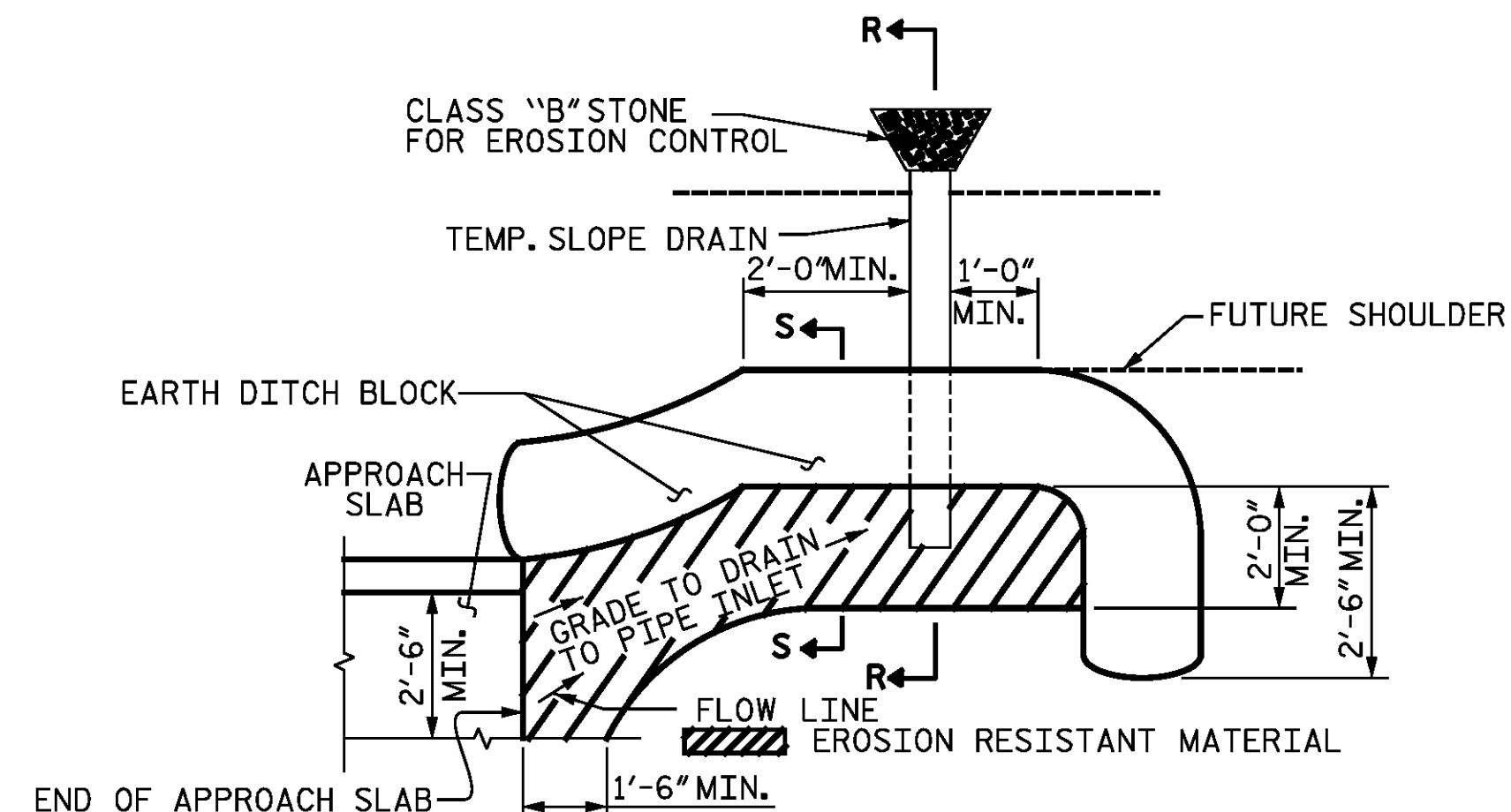
DRAWN BY : TLA 10/05	REV. 10/1/11	MAA/GM
CHECKED BY : GM 5/06	REV. 12/21/11	MAA/GM
	REV. 6/13	MAA/GM
DESIGN ENGINEER OF RECORD	DATE : 2/12/2015	
DRAWN BY : R.J. FLORY	DATE : 8/27/13	
CHECKED BY : ERIN DECOLA	DATE : 10/29/13	



PROJECT NO. R-2514D
 JONES COUNTY
 STATION: 363+38.90 -L-
 SHEET 1 OF 3

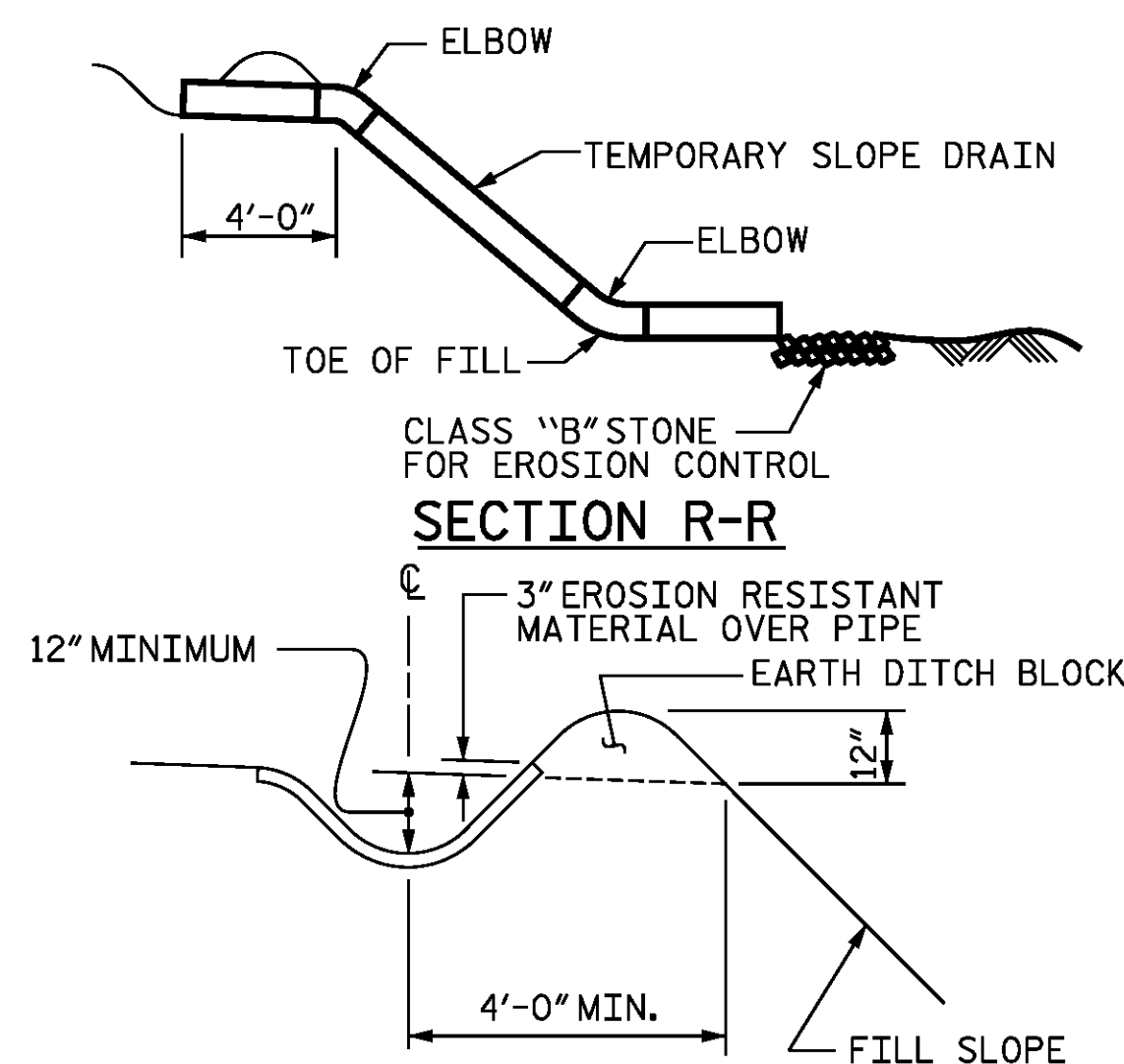
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD					
BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT					
STD. NO. BAS5		LEFT LANE		STR-#3	
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S03-22
					TOTAL SHEETS S03-23

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 of North Carolina, P.A.
 DWG. REF. NO. 22 OF 23



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

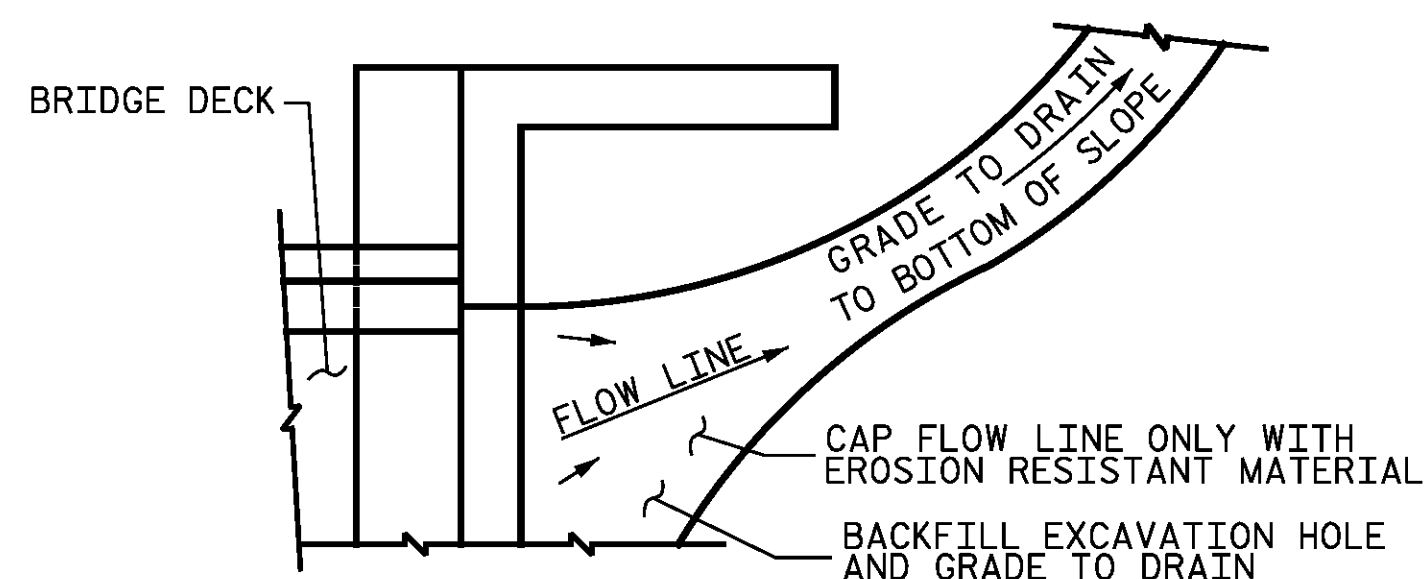
PLAN VIEW



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



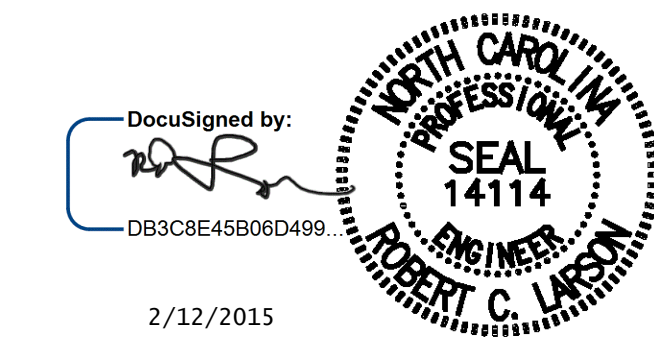
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH
 SLAB DETAILS
 STD. NO. BAS4 LEFT LANE STR-#3



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 DB3C8E45B06D499...
 2/12/2015

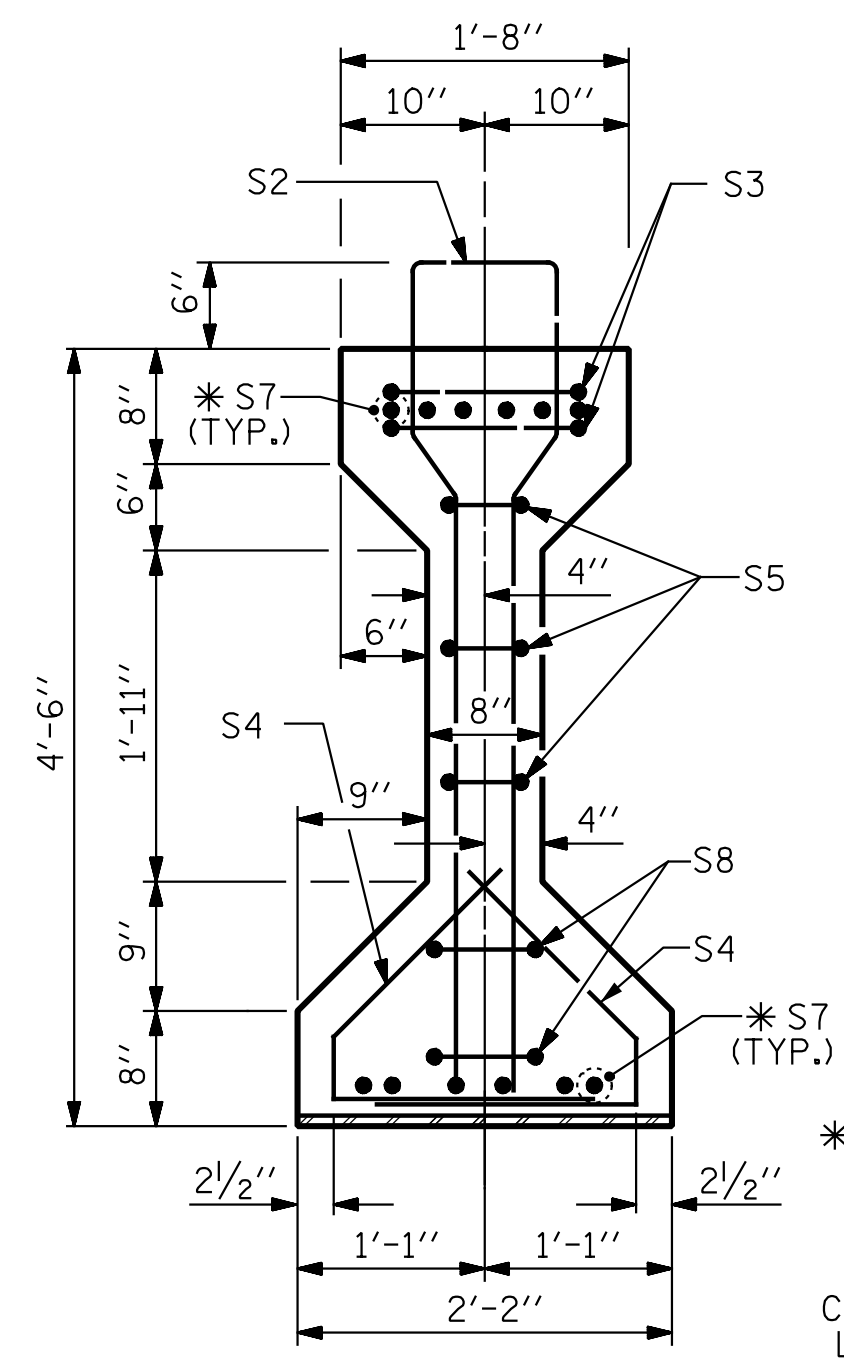
DocuSigned by:

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
DESIGN ENGINEER OF RECORD:		DATE : 2/12/2015	
DRAWN BY :	R.J. FLORY	DATE :	8/28/13
CHECKED BY :	R.C. LARSON	DATE :	8/29/13

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

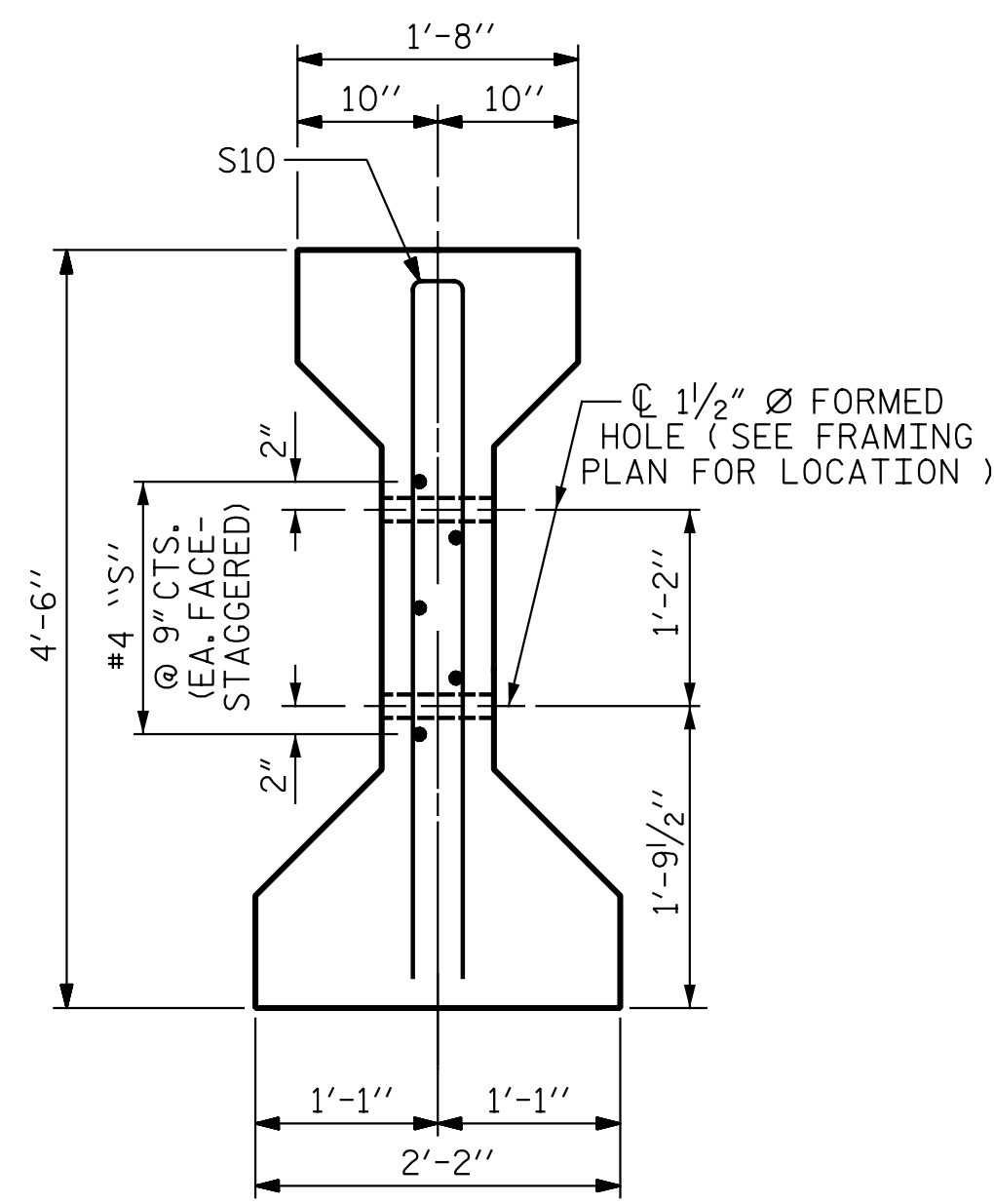
TOTAL SHEETS: 23
 SHEET NO.: S03-23

KCI Associates
 of North Carolina, P.A.
 1400 SIX FORKS RD. RALEIGH, N.C. 27609-5300 (919) 783-2044
 DWG. REF. NO. 23 OF 23

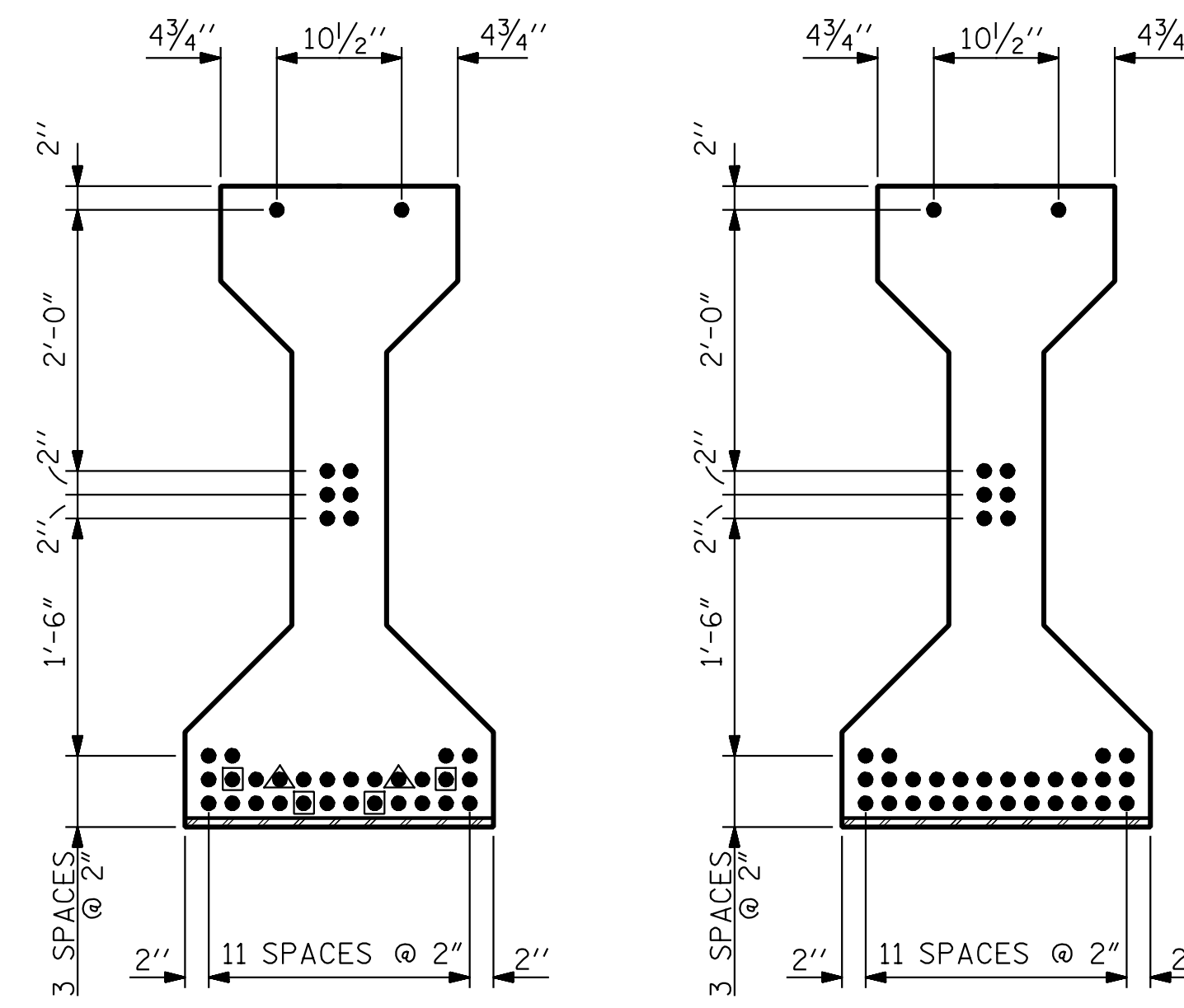


SECTION A-A

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



SECTION C-C
(S1 BARS NOT SHOWN)



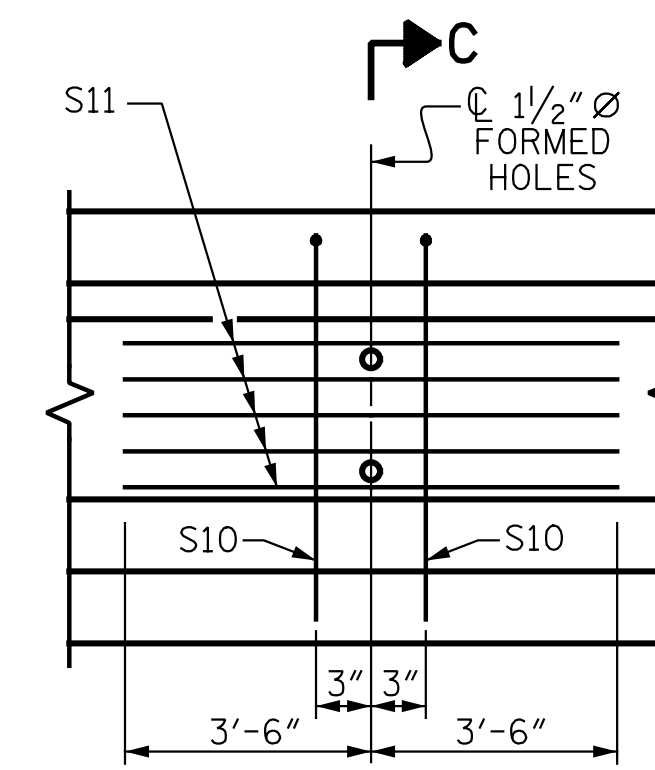
AT END OF GIRDER

AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

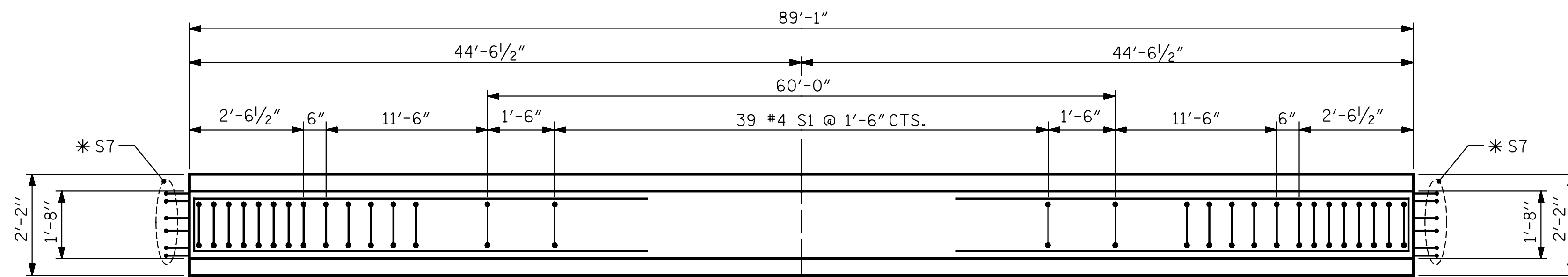
DEBONDING LEGEND

- FULLY BONDED STRAND
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ▲ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

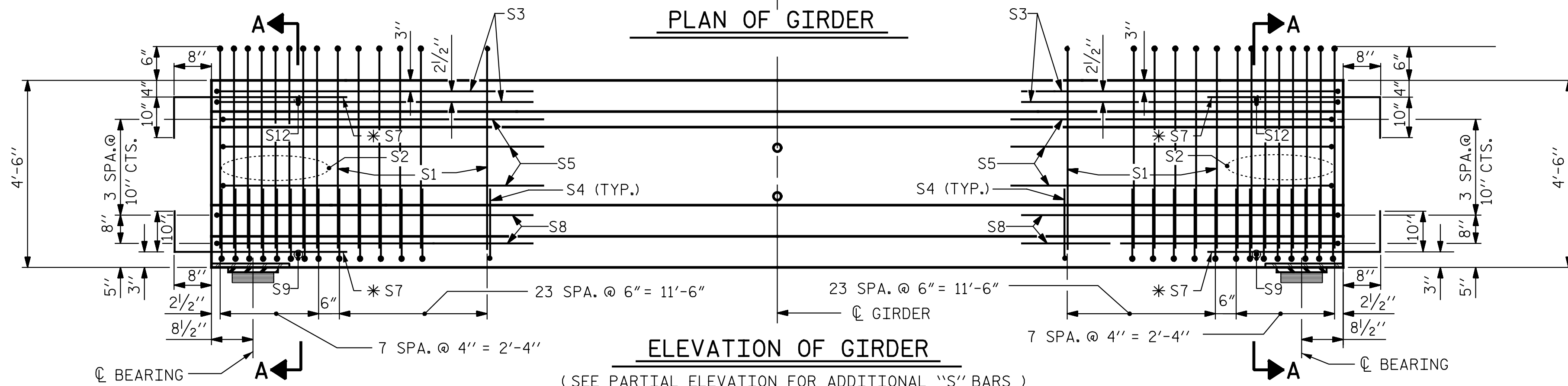


PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1-4



PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

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

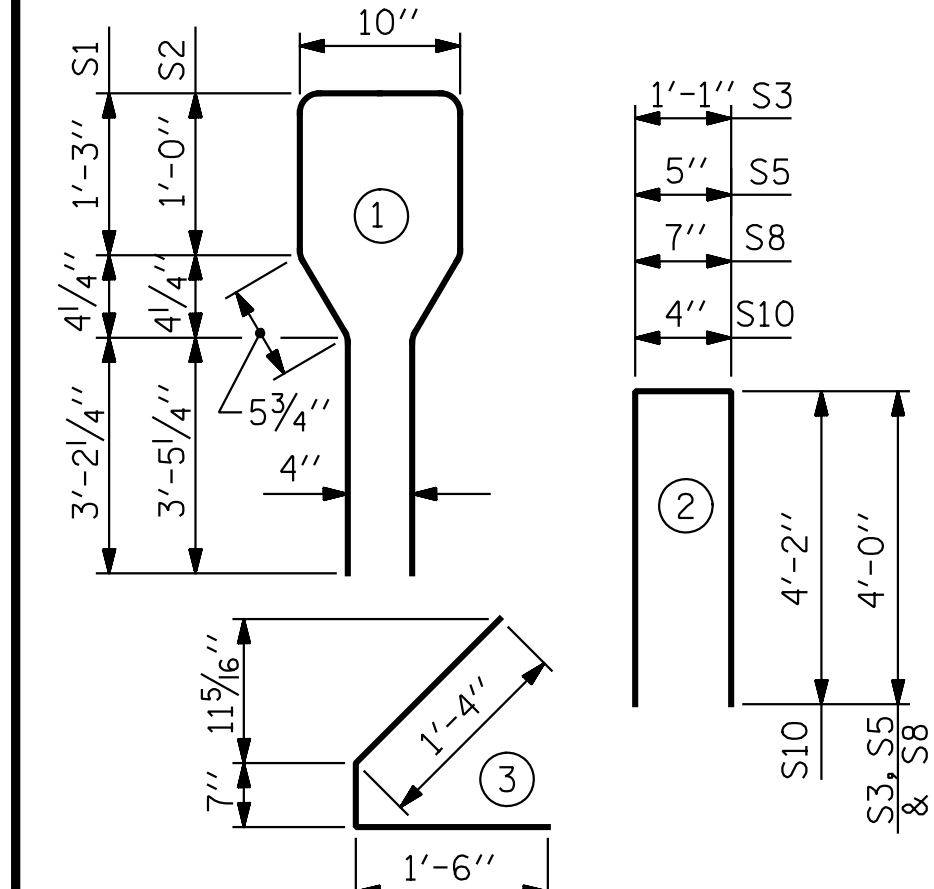
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	87	#4	1	10'-8"	620
S2	16	#6	1	10'-8"	256
S3	4	#4	2	9'-1"	24
S4	108	#4	3	3'-5"	246
S5	6	#4	2	8'-5"	34
*S7	24	#5	STR	3'-8"	92
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
S12	2	#3	STR	1'-4"	1
REINFORCING STEEL					1338

* 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 LB.	8000 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
1338	18.1	36

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	89'-1"	356'-4"

PROJECT NO. R-2514D

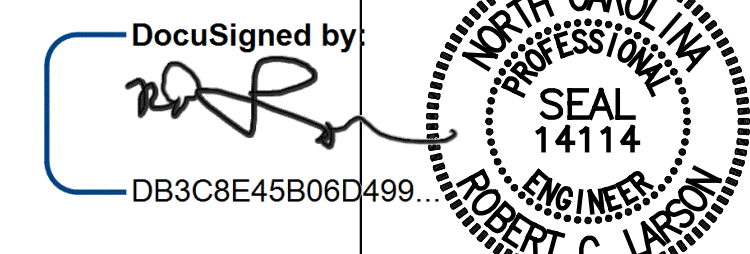
JONES COUNTY

STATION: 363+38.90 -L-

SHEET 1 OF 3

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

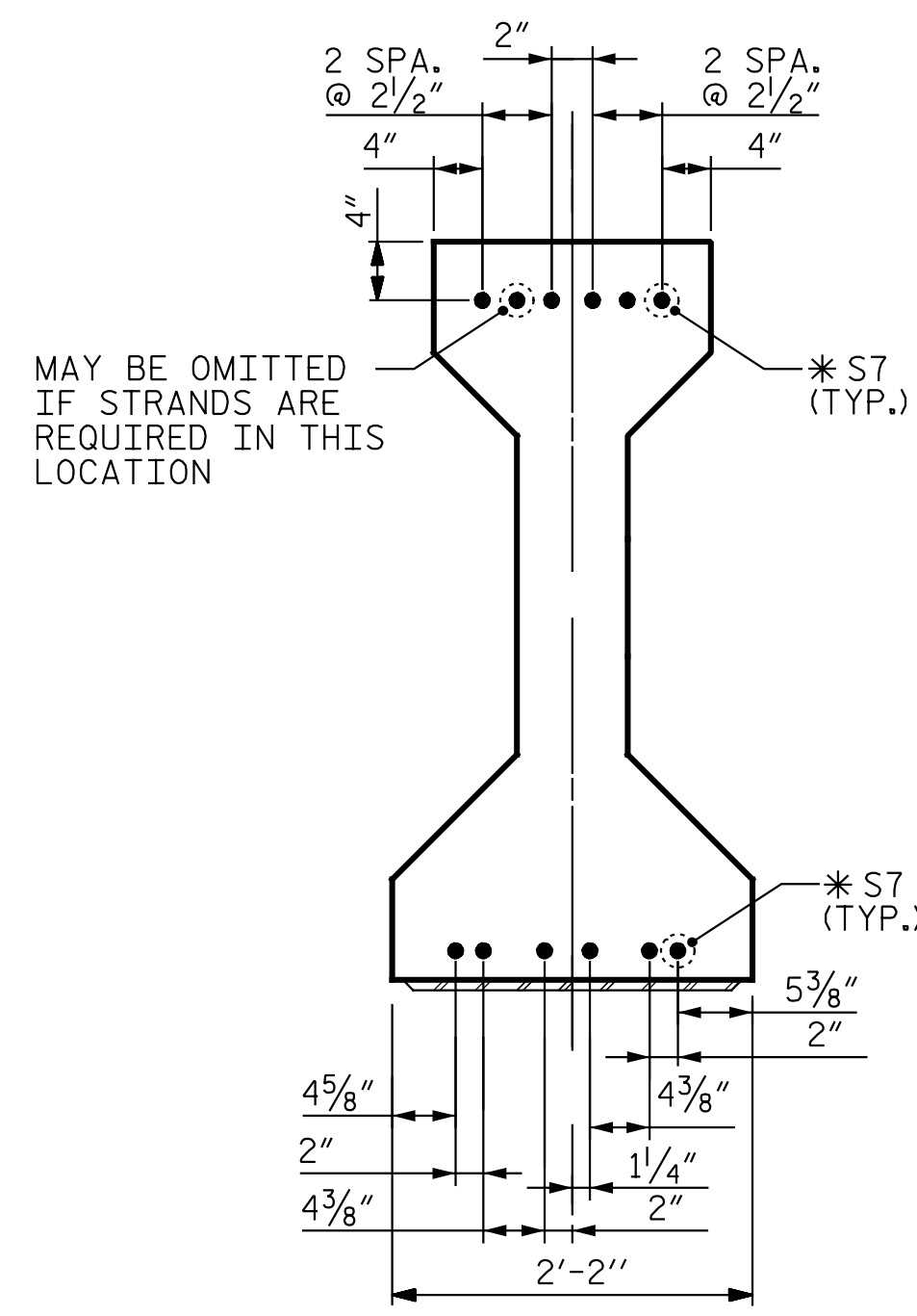
STD. NO. PCG3 RIGHT LANE STR-#4



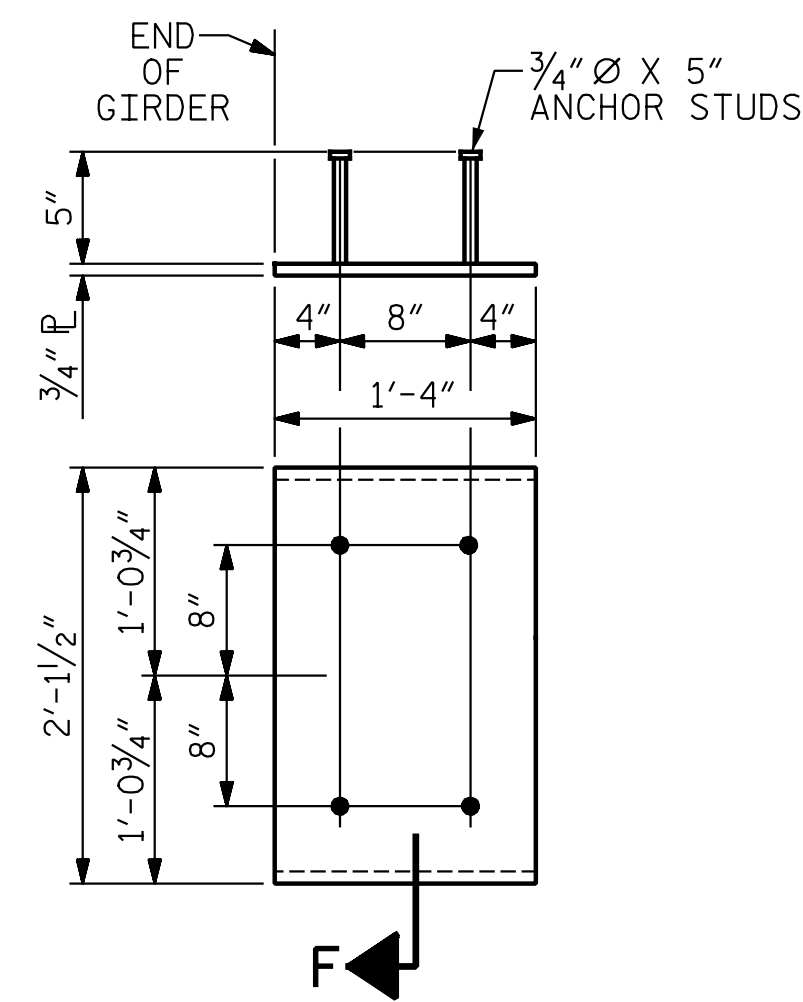
KCI Associates
of North Carolina, P.A.
DWG. REF. NO. 9 OF 23

DESIGN ENGINEER OF RECORD:	DATE:	4/10/2015
DRAWN BY: E. C. DECOLA	DATE:	02/13/14
CHECKED BY: R. C. LARSON	DATE:	02/18/14
DRAWN BY: JMB 12/87	REV. 8/16/99RR	RWW/LES
CHECKED BY: ARB 12/87	REV. 5/1/06R	TLA/GM
	REV. 10/1/11	MAA/GM

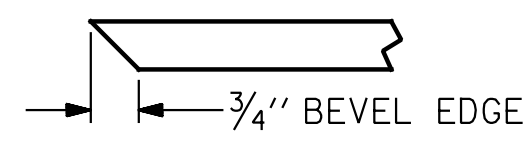
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-9
1			3			TOTAL SHEETS
2			4			S04-23



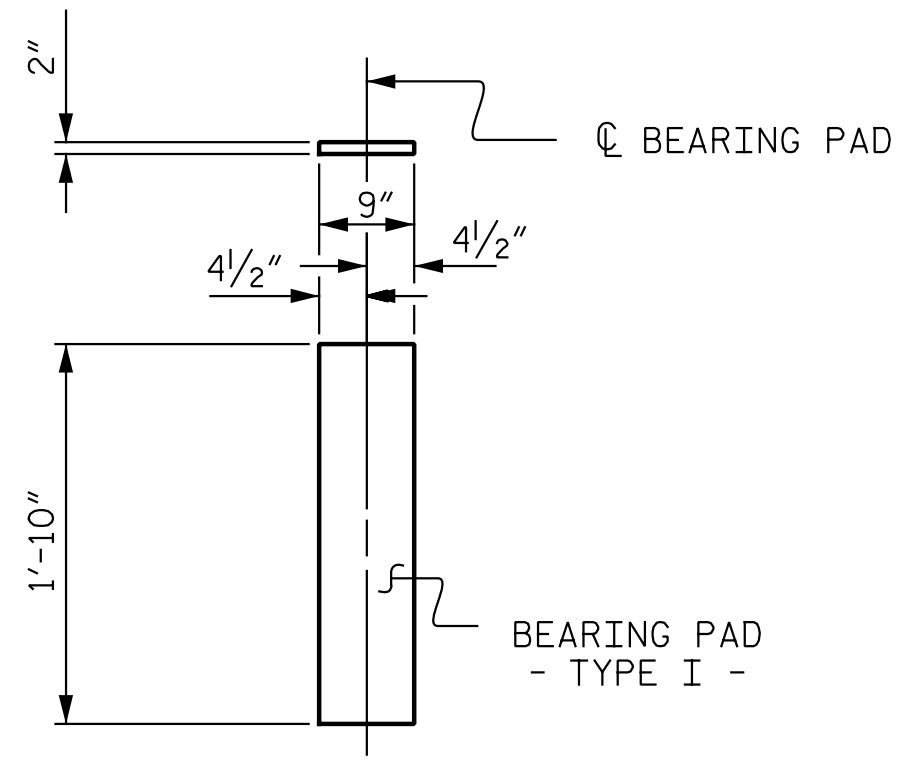
DETAIL "A"
(FOR AASHTO TYPE IV GIRDERS)



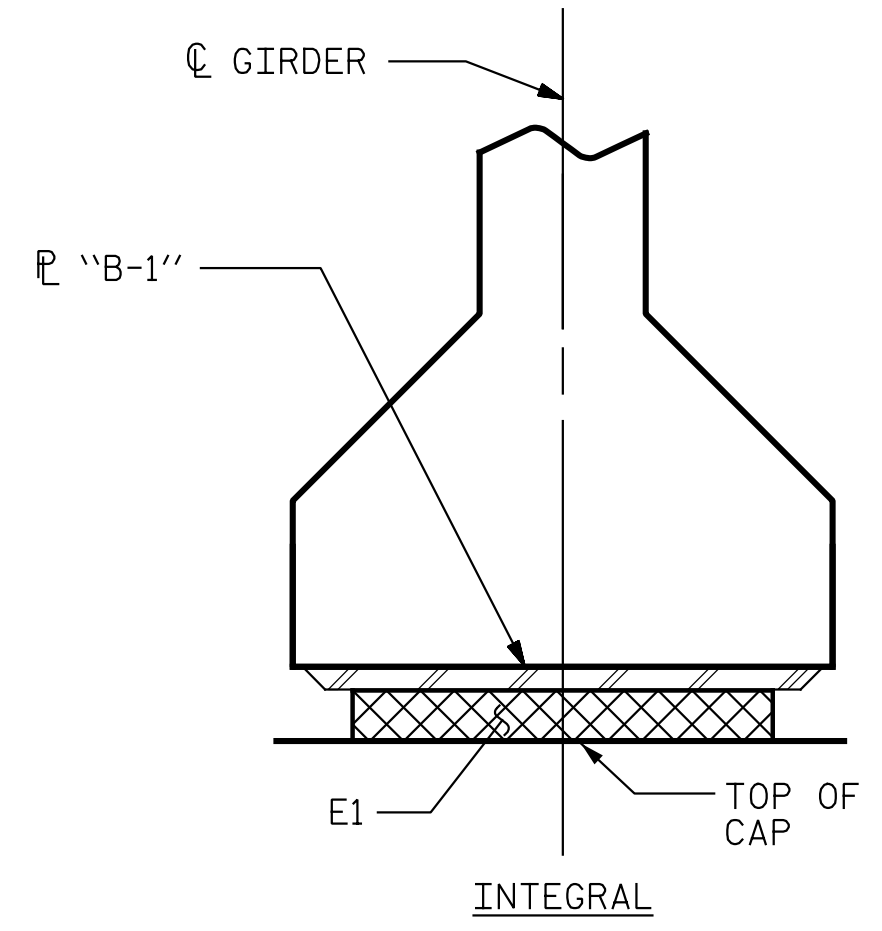
EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER AND 63" & 72" MODIFIED BULB TEES
(2 REQ'D PER GIRDER)



SECTION "F"
(SEE NOTES)



E1 (8 REQ'D)
SECTION "E"



PLAIN ELASTOMERIC BEARING DETAIL
TYPE I

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 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".

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.

PROJECT NO. R-2514D
JONES COUNTY
STATION: 363+38.90 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
DETAILS

RIGHT LANE STR-#4

STD. NO. PCC9

DocuSigned by:
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4/10/2015

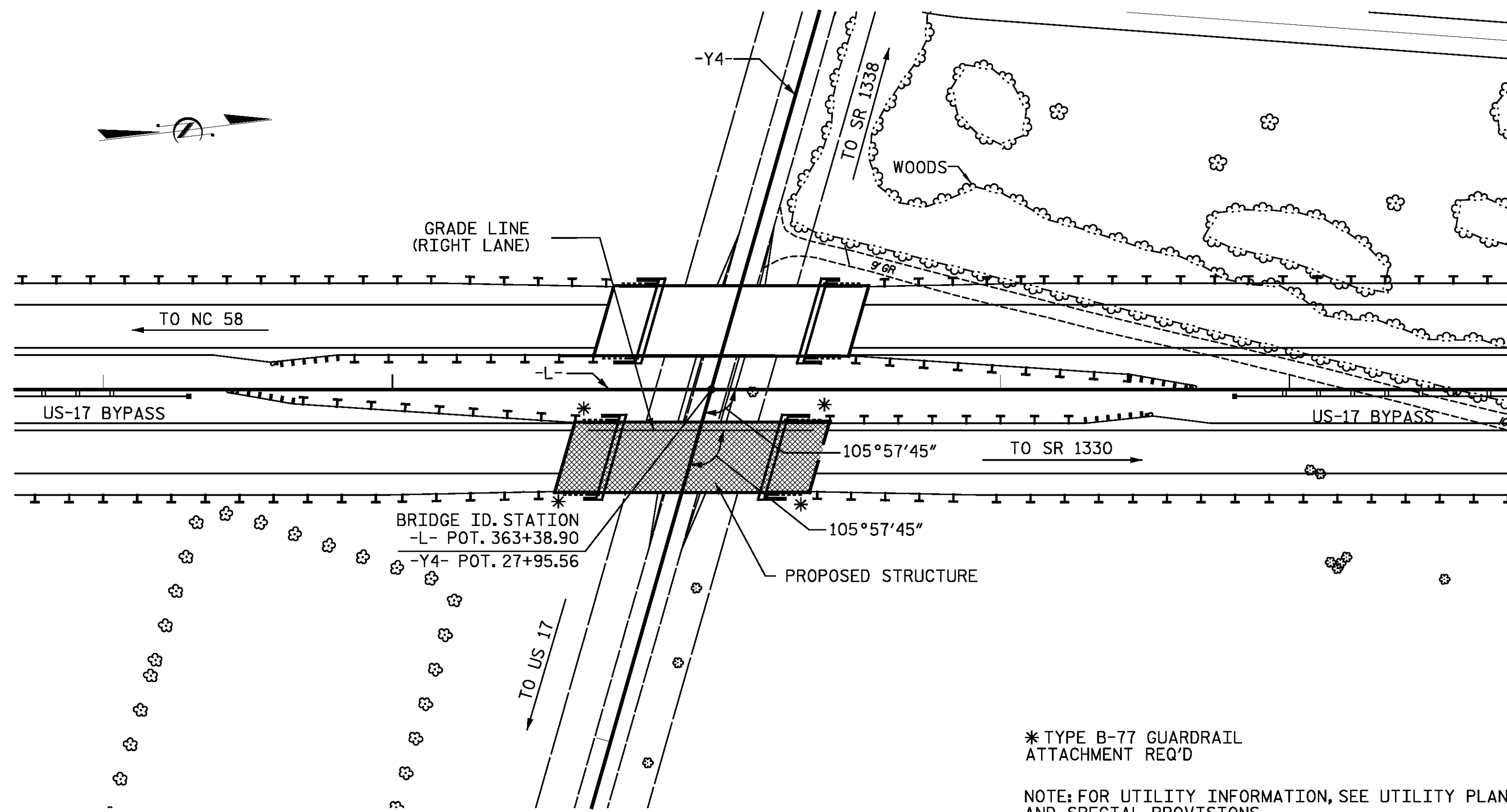
SEAL
14114
ENGINEER
ROBERT C. LARSON

KCI Associates
of North Carolina, P.A.
SUTE 220, LANDMARK CENTER # 402 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244
DWG. REF. NO. 10 OF 23

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

TOTAL SHEETS: S04-23

DESIGN ENGINEER OF RECORD:	DATE:	4/10/2015
DRAWN BY: E. C. DECOLA	DATE:	02/13/14
CHECKED BY: R. C. LARSON	DATE:	02/18/14
DRAWN BY: ELR 11/91	REV. 7/10/01RR LES/RDR	
CHECKED BY: GRP 11/91	REV. 5/1/06 TLA/GM	
	REV. 10/1/11 MAA/GM	



LOCATION SKETCH

NOTES:

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- THE ELEVATION(S) AND CLEARANCE(S) SHOWN ON THE PLANS AT THE POINT(S) OF MINIMUM CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATION(S) ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.
- FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.
- PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- ALL METALIZED SURFACES SHALL RECEIVE A SEAL COATING AS SPECIFIED IN THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALIZATION).
- FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.
- FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

* TYPE B-77 GUARDRAIL ATTACHMENT REQ'D

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

TOTAL BILL OF MATERIAL

	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS		HP12 X 53 STEEL PILES		PILE REDRIVES	CONCRETE BARRIER RAIL	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS
							NO.	LIN.FT.	NO.	LIN.FT.				
SUPERSTRUCTURE	EA	SQ.FT.	SQ.FT.	CU.YDS.	LUMP SUM	LBS.	NO.	LIN.FT.	NO.	LIN.FT.	EA.	LIN.FT.	SQ. YD.	LUMP SUM
END BENT 1				30.6		4887			7	420	4		325	
END BENT 2				30.5		4855			7	420	3		355	
TOTAL	1	3,774	4,819	61.1	LUMP SUM	9742	4	356.33	14	840	7	179.53	680	LUMP SUM

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER SR 1337 BETWEEN
 NC 58 AND SR 1330

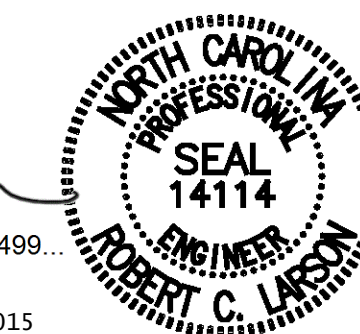
RIGHT LANE STR-#4

DocuSigned by:

[Signature]

DB3C8E45B06D499

2/12/2015



DocuSigned by:

[Signature]

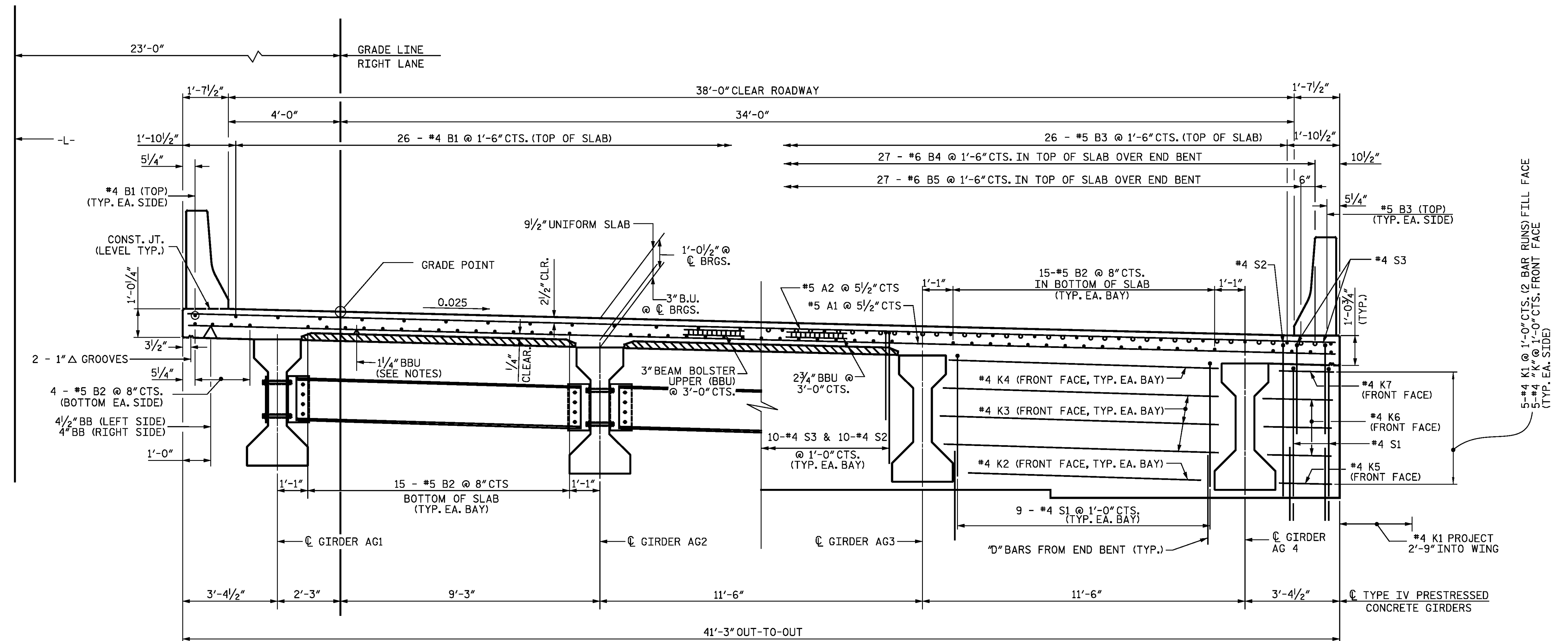
DB3C8E45B06D499

DESIGN ENGINEER OF RECORD: DATE : 2/12/2015

DRAWN BY : E. C. DECOLA DATE : 02/17/14
 CHECKED BY : R. C. LARSON DATE : 03/06/14

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 3 OF 23

REVISIONS						SHEET NO. S04-3
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS S04-23
2			4			



TYPICAL HALF SECTION AT INTERMEDIATE DIAPHRAGM

TYPICAL HALF SECTION AT END BENT DIAPHRAGM

TYPICAL SECTION

NOTES

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

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

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

THE SKEWED END CONDITIONS ARE SUCH THAT THE USE OF 4' WIDE PRESTRESSED CONCRETE DECK PANELS IS NOT POSSIBLE; USE OF 8' WIDE PRESTRESSED CONCRETE DECK PANELS IS NECESSARY.

DocuSigned by: SEE STD. NO. CBR1 FOR ADDITIONAL REINFORCING STEEL EMBEDDED IN SLAB.

- INDICATES CONTINUOUS REINFORCING
- INDICATES ADDITIONAL REINFORCING AT END BENT

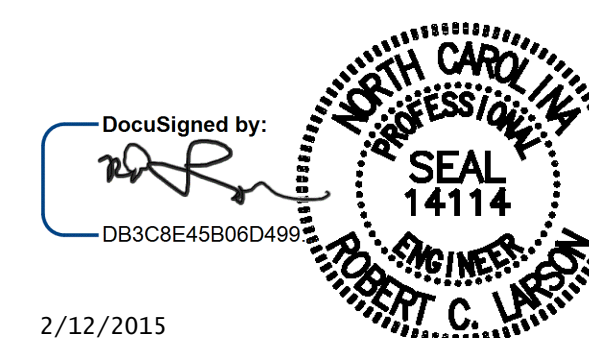
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTION

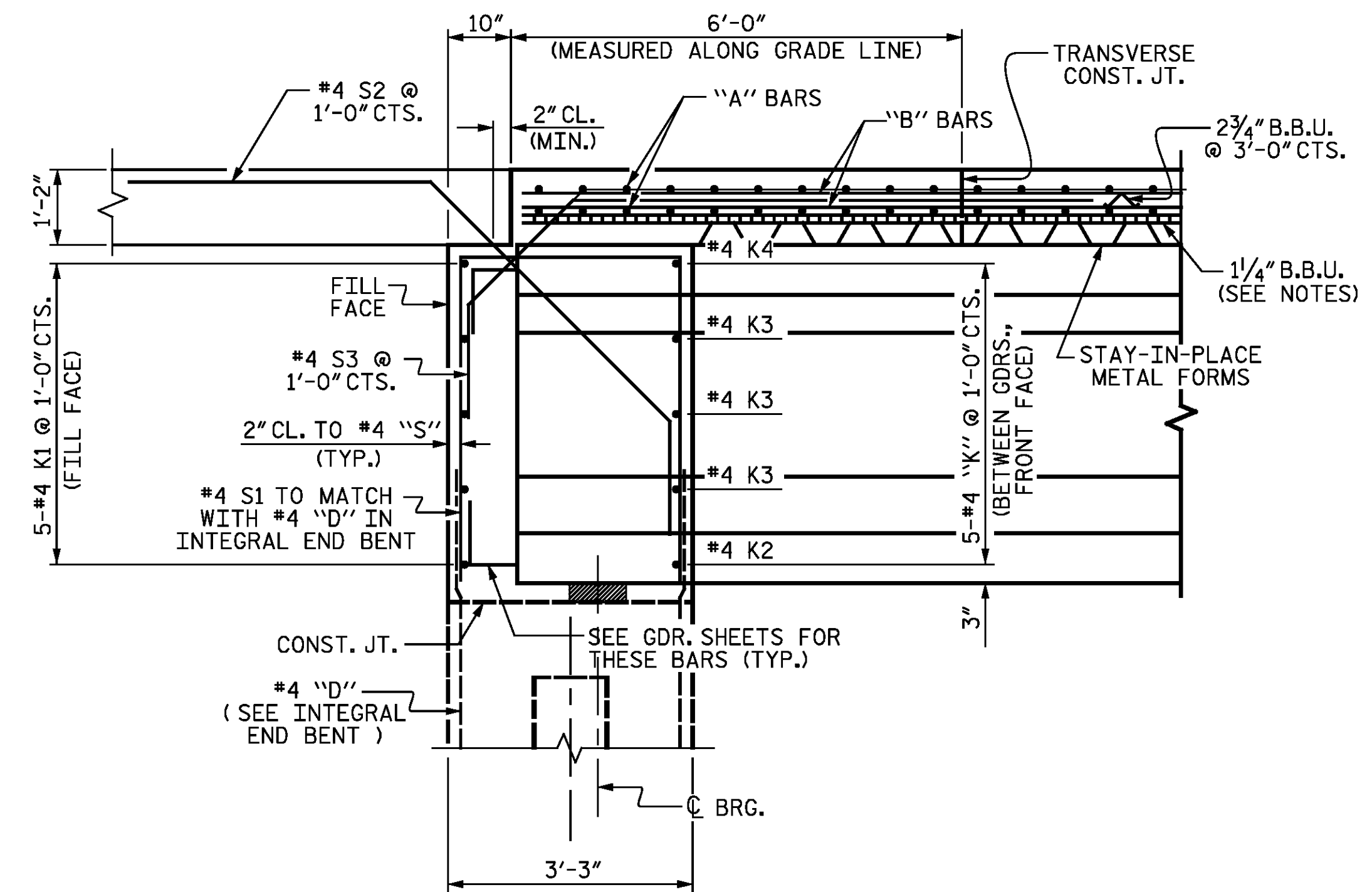
RIGHT LANE STR-#4



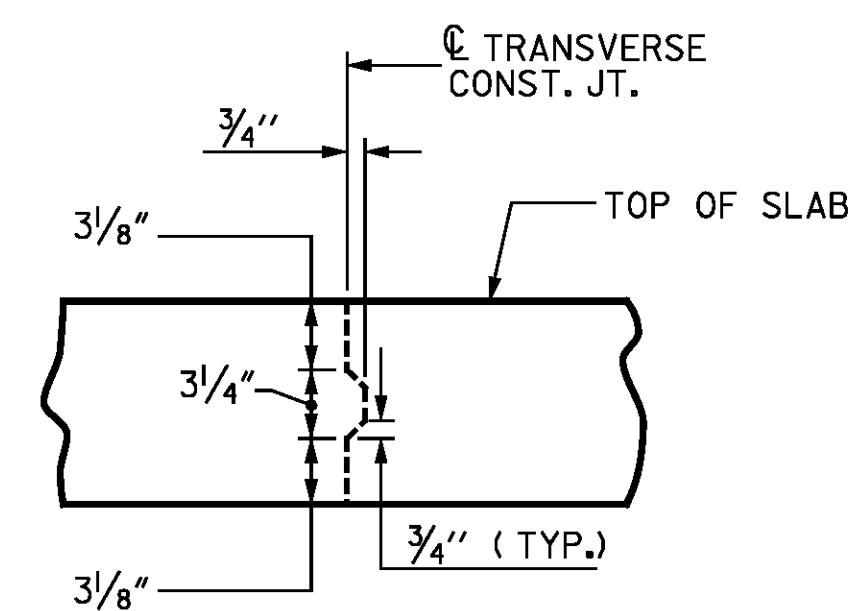
2/12/2015

DESIGN ENGINEER OF RECORD:	DATE :	2/12/2015
DRAWN BY :	E. C. DECOLA	DATE : 02/13/14
CHECKED BY :	R. C. LARSON	DATE : 02/17/14

KCI Associates of North Carolina, P.A.		REVISIONS		SHEET NO. S04-5	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
DWG. REF. NO. 5 OF 23				TOTAL SHEETS S04-23	



SECTION A-A THRU INTEGRAL END BENT



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

PROJECT NO. R-2514D

JONES COUNTY

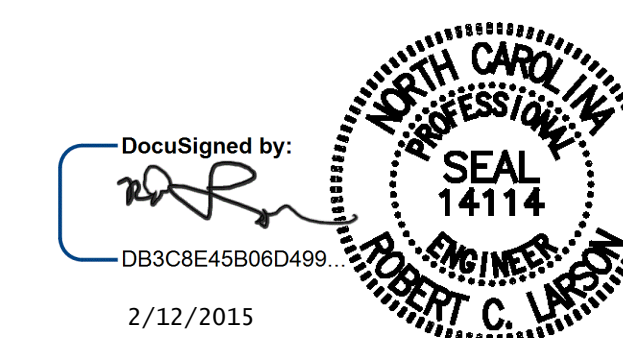
STATION: 363+38.90 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUPERSTRUCTURE
TYPICAL SECTION**

RIGHT LANE STR-#4

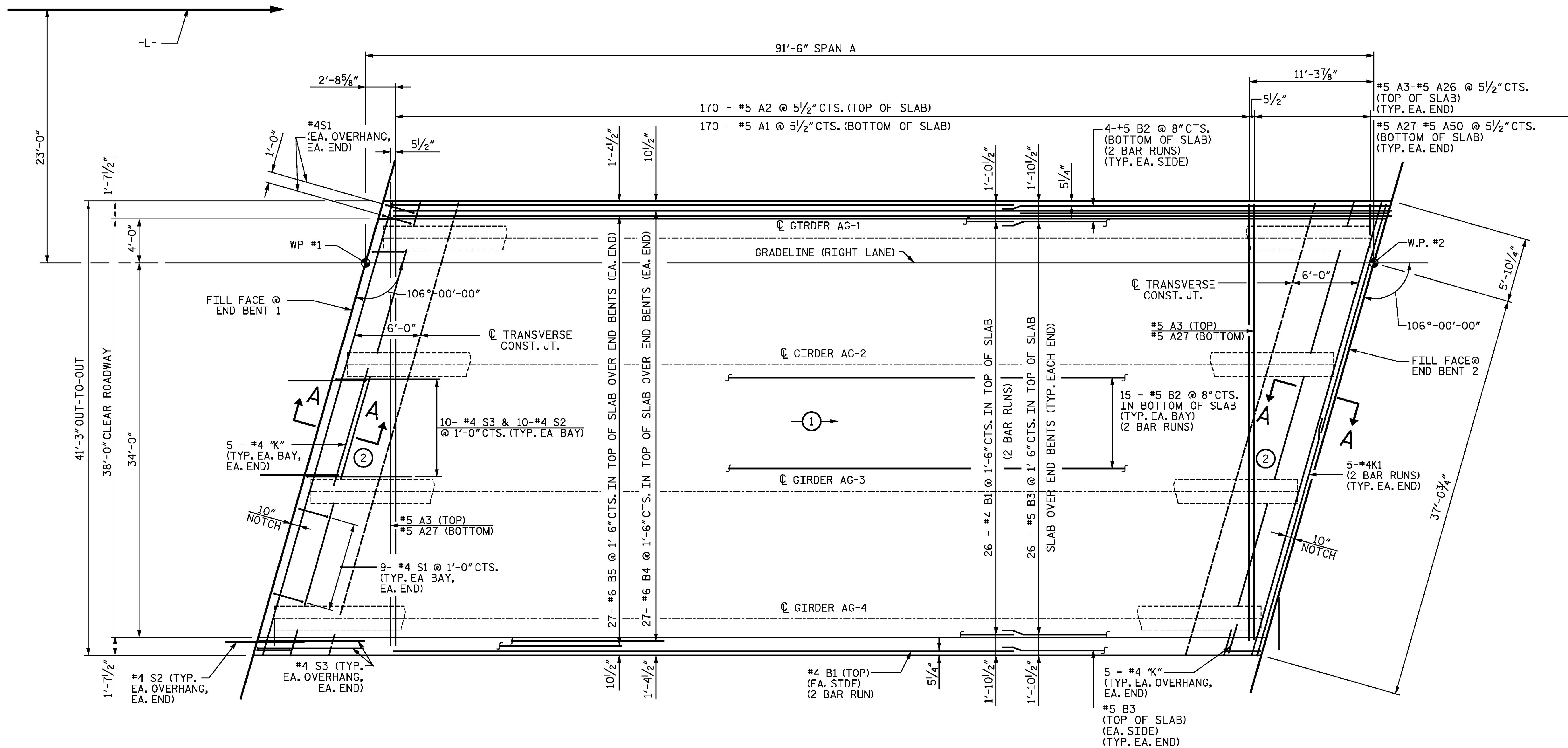


DocuSigned by:
DB3C8E45B06D499...
2/12/2015

DocuSigned by:
DB3C8E45B06D499...

DESIGN ENGINEER OF RECORD:	DATE :	2/12/2015
DRAWN BY :	E. C. DECOLA	DATE : 02/13/14
CHECKED BY :	R. C. LARSON	DATE : 02/17/14

KCI Associates of North Carolina, P.A. STATE E.O. LANDMARK CENTER 1400 SIX FORKS RD. RALEIGH, N.C. 27609-2300 (919) 783-2044		DWG. REF. NO. 6 OF 23	
REVISIONS			
NO.	BY:	DATE:	SHEET NO.
1			3
2			4
TOTAL SHEETS			S04-6
S04-23			



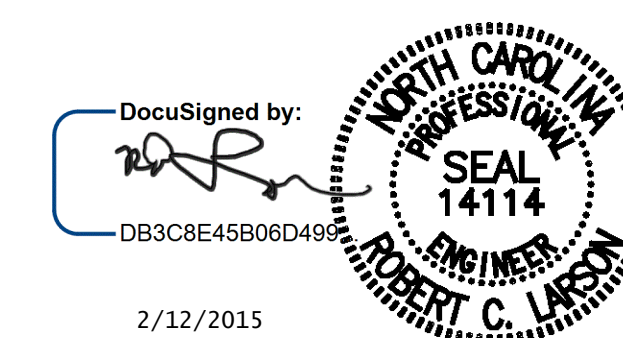
PLAN - SPAN A

INDICATES POUR SEQUENCE AND DIRECTION
SEE SUPERSTRUCTURE BILL OF MATERIAL
FOR REINFORCING SPLICE LENGTHS.

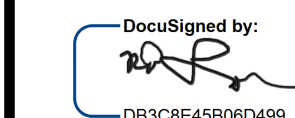
PROJECT NO. R-2514D
JONES COUNTY
STATION: 363+38.90 -L-

**SUPERSTRUCTURE
PLAN - SPAN A**

RIGHT LANE STR-#4



2/12/2015

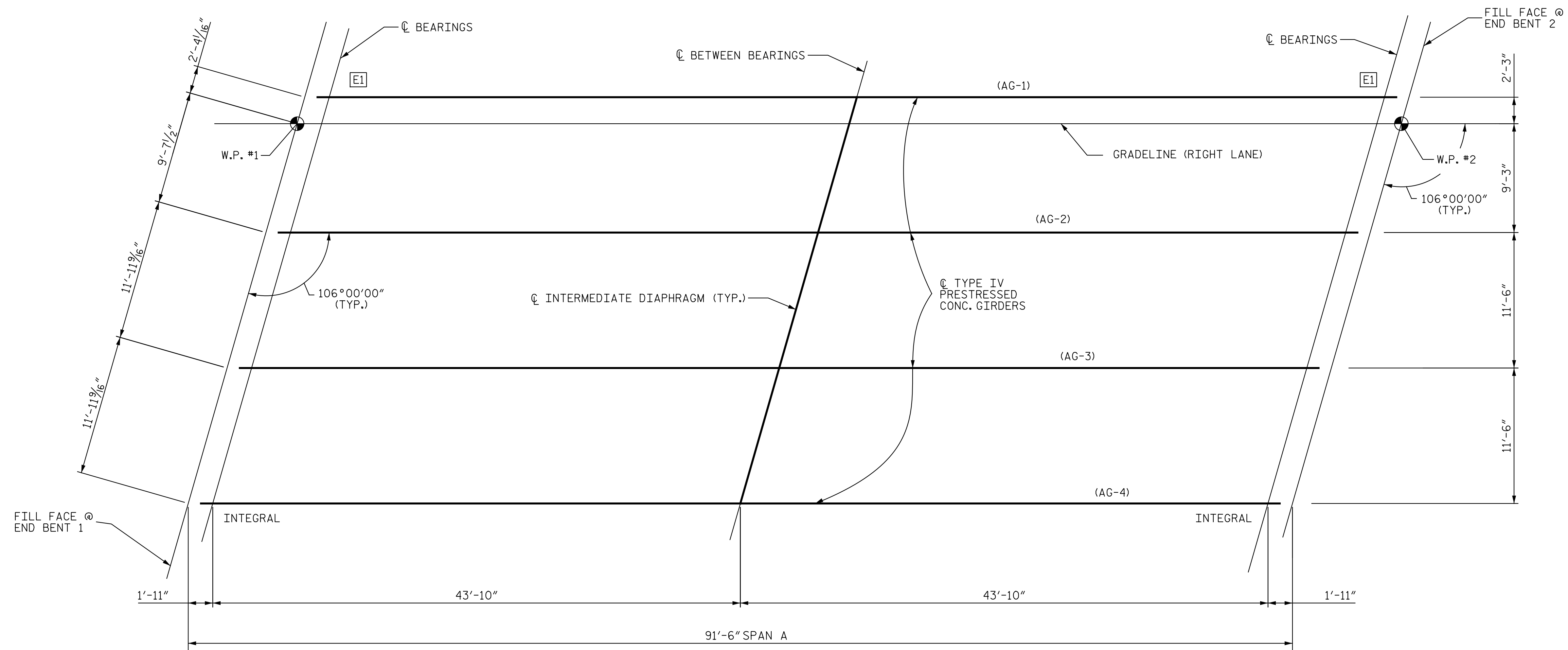


DESIGN ENGINEER OF RECORD: DATE : 2/12/2015

DRAWN BY : E. C. DECOLA DATE : 02/13/14
CHECKED BY : R. C. LARSON DATE : 02/17/14

KCI Associates
of North Carolina, P.A.
DWG. REF. NO. 7 OF 23

REVISIONS						SHEET NO. S04-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS S04-23
2			4			



GIRDER LAYOUT AND INTERMEDIATE DIAPHRAGM LOCATIONS

E1 INDICATES ELASTOMERIC BEARING TYPE
FOR INTERMEDIATE DIAPHRAGMS SEE STD PCG10.

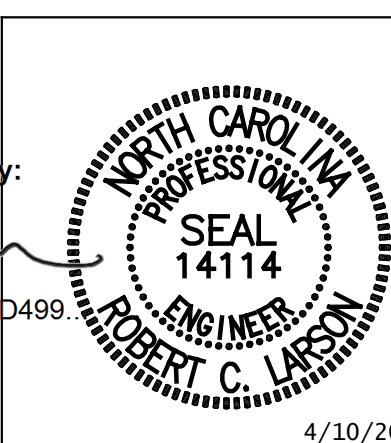
DEAD LOAD DEFLECTION TABLE FOR GIRDERS												
0.6" Ø LOW RELAXATION STRANDS	SPAN A											
	GIRDERS 1 AND 4											
	LOCATION	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
CAMBER (GIRDER ALONE IN PLACE)	↑	0.00	0.09	0.15	0.20	0.22	0.22	0.22	0.20	0.15	0.09	0.00
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.00	0.04	0.07	0.10	0.11	0.11	0.11	0.10	0.07	0.04	0.00
FINAL CAMBER	↑	0"	5/8"	1"	1 1/16"	1 1/8"	1 1/8"	1 1/8"	1 1/8"	1"	5/8"	0"
0.6" Ø LOW RELAXATION STRANDS	SPAN A											
	GIRDERS 2 AND 3											
	LOCATION	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
CAMBER (GIRDER ALONE IN PLACE)	↑	0.00	0.09	0.15	0.20	0.22	0.22	0.20	0.15	0.09	0.00	
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.00	0.04	0.08	0.11	0.13	0.13	0.13	0.11	0.08	0.04	0.00
FINAL CAMBER	↑	0"	3/16"	7/8"	1"	1 1/16"	1 1/16"	1 1/16"	1"	7/8"	3/16"	0"

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

PROJECT NO. R-2514D
JONES COUNTY
STATION: 363+38.90 -L-

DocuSigned by:

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4/10/2015



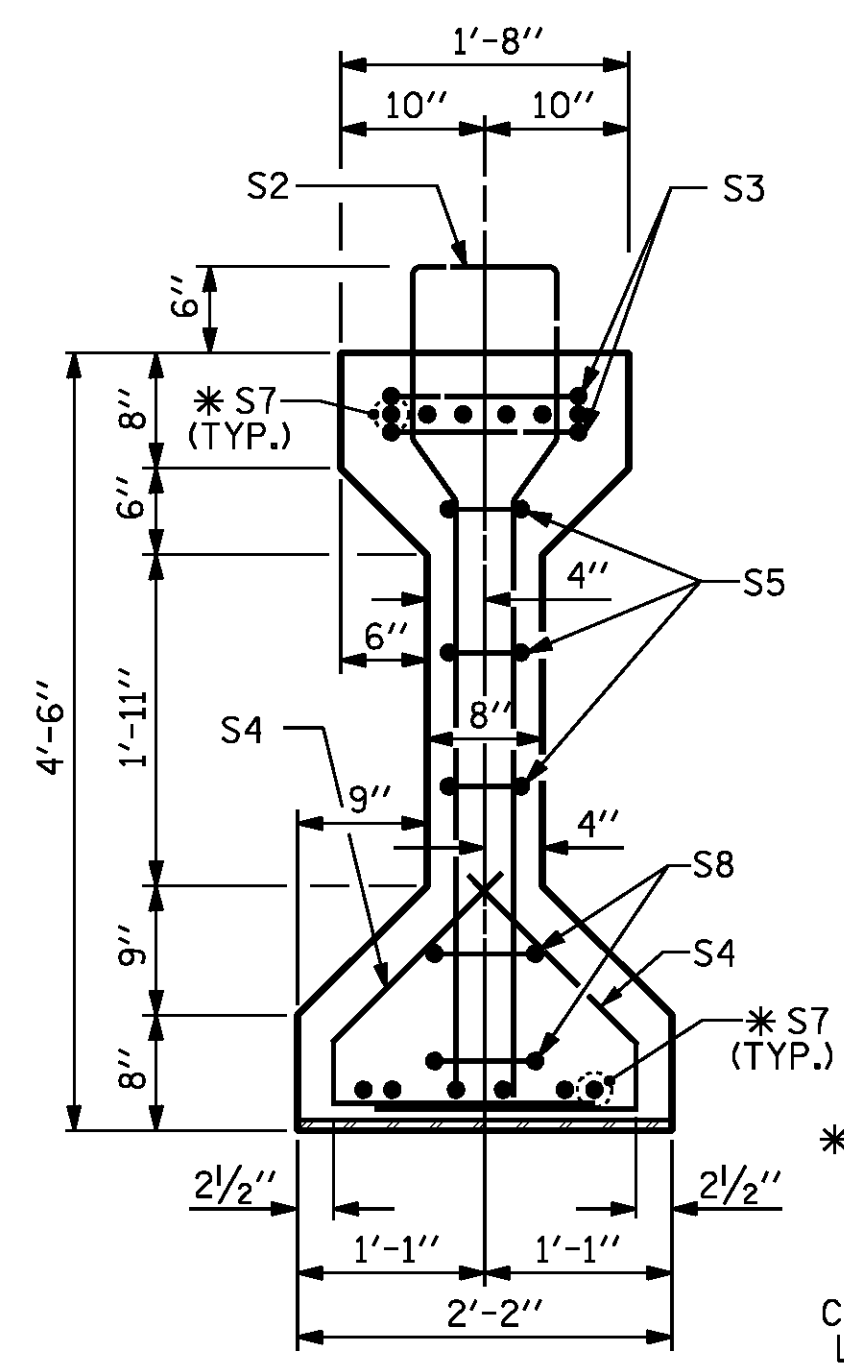
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**SUPERSTRUCTURE
GIRDER LAYOUT**
RIGHT LANE STR-#4

DESIGN ENGINEER OF RECORD: E. C. DECOLA DATE: 4/10/2015
DRAWN BY: E. C. DECOLA DATE: 02/13/14
CHECKED BY: R. C. LARSON DATE: 02/18/14

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

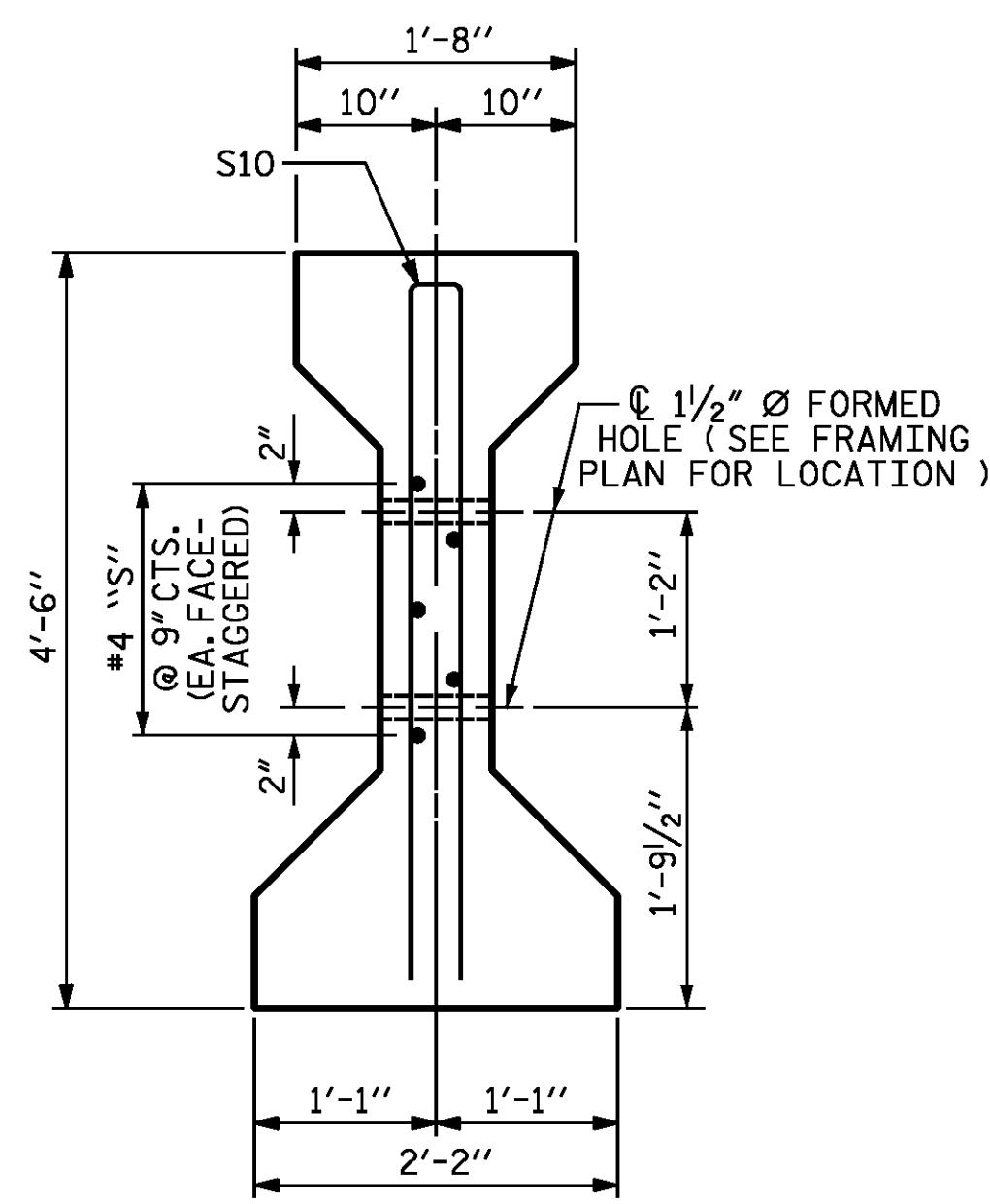
TOTAL SHEETS: S04-23

KCI Associates
of North Carolina, P.A.
SUNITE 220, LANDMARK CENTER # 4602 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244
DWG. REF. NO. 8 OF 23

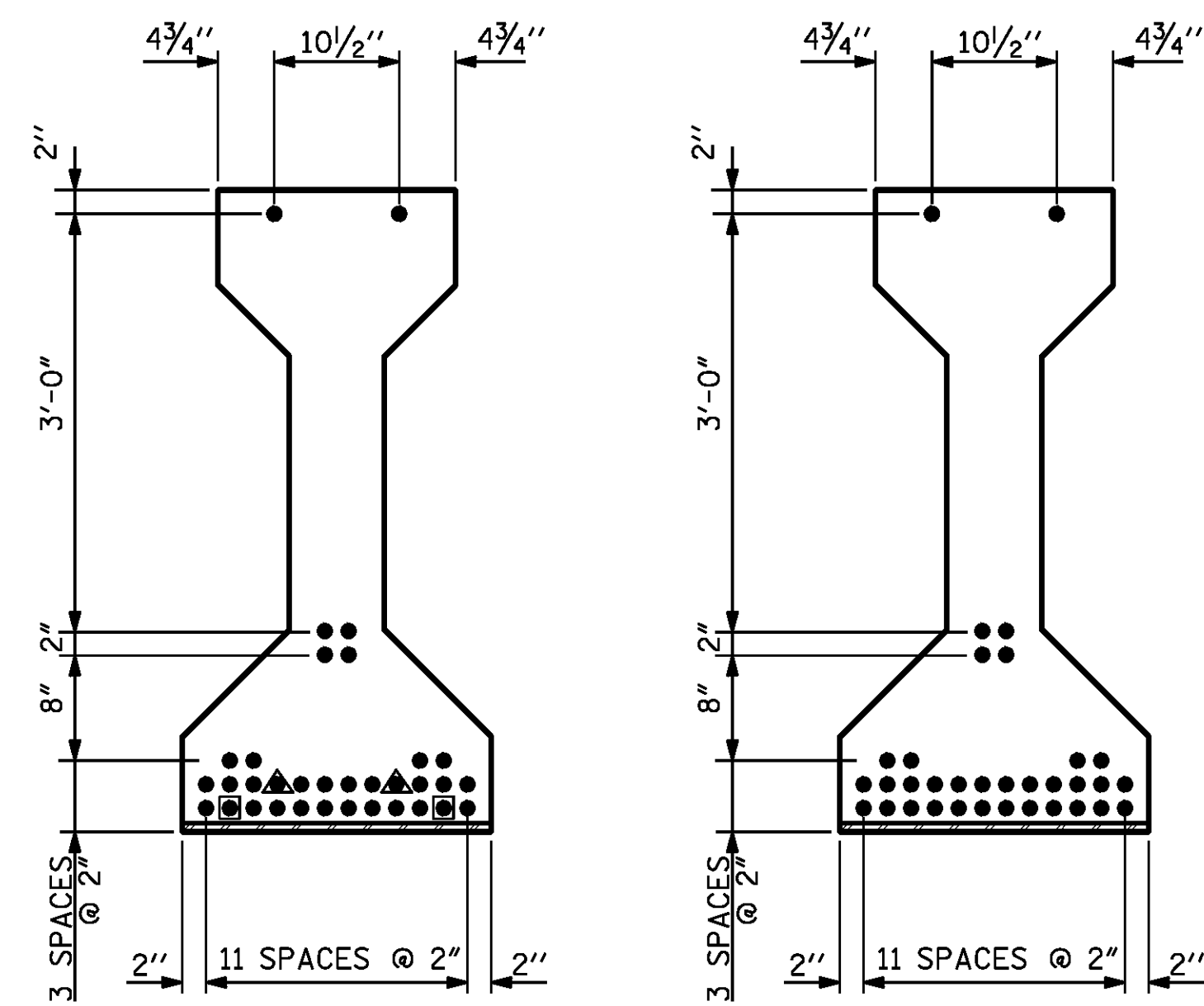


SECTION A-A

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



SECTION C-C
(S1 BARS NOT SHOWN)



AT END OF GIRDER

AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- FULLY BONDED STRAND
- STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ▲ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

0.6" Ø L. R. GRADE 270 STRANDS

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

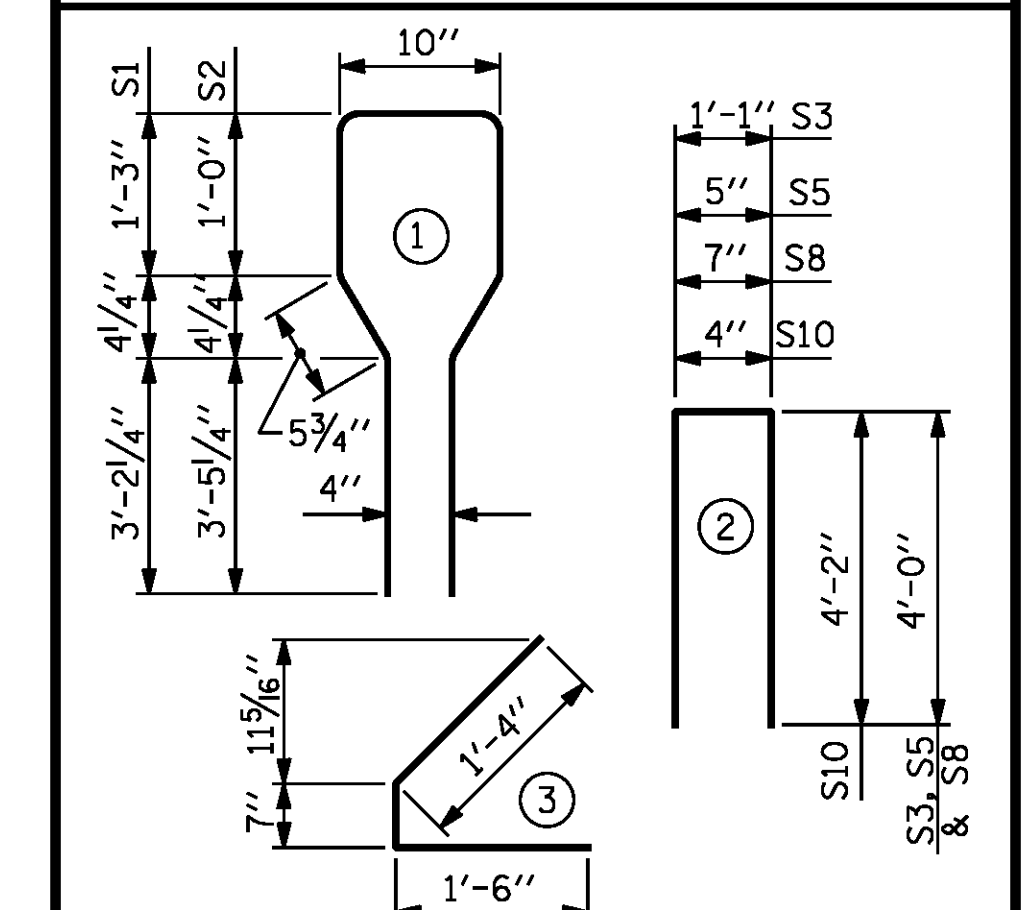
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	81	#4	1	10'-8"	577
S2	16	#6	1	10'-8"	256
S3	4	#4	2	9'-1"	24
S4	108	#4	3	3'-5"	246
S5	6	#4	2	8'-5"	34
*S7	24	#5	STR	3'-8"	92
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
S12	2	#3	STR	1'-4"	1
REINFORCING STEEL					1295

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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT

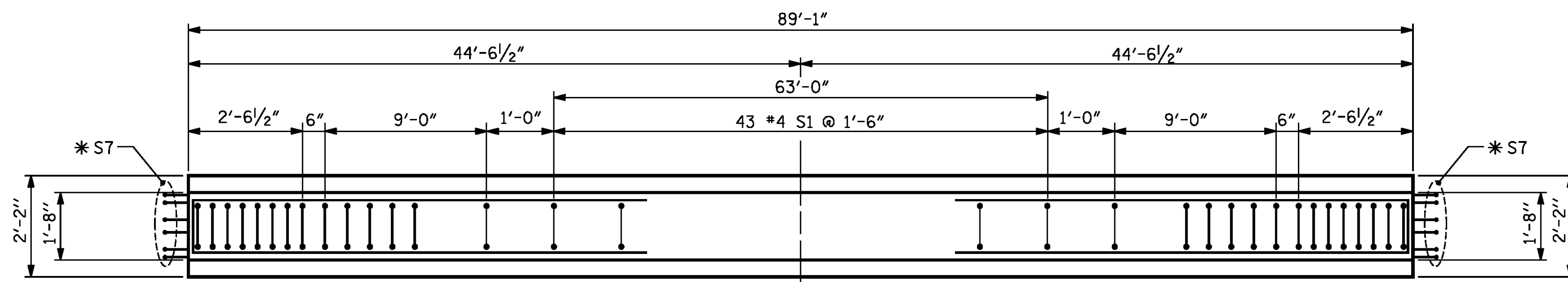


QUANTITIES FOR ONE GIRDER

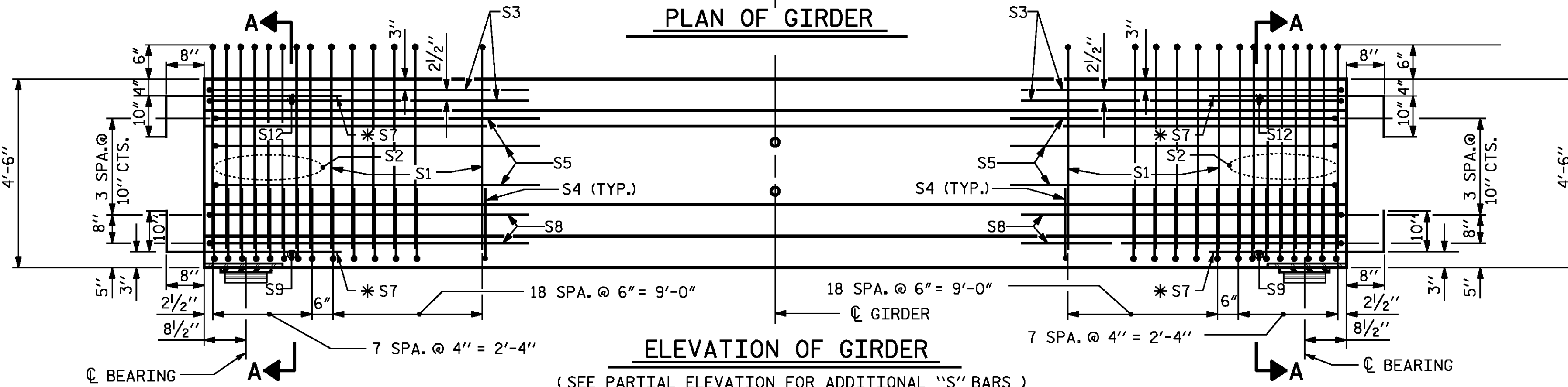
REINFORCING STEEL LB.	9000 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
1295	18.1	34

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	89'-1"	356'-4"

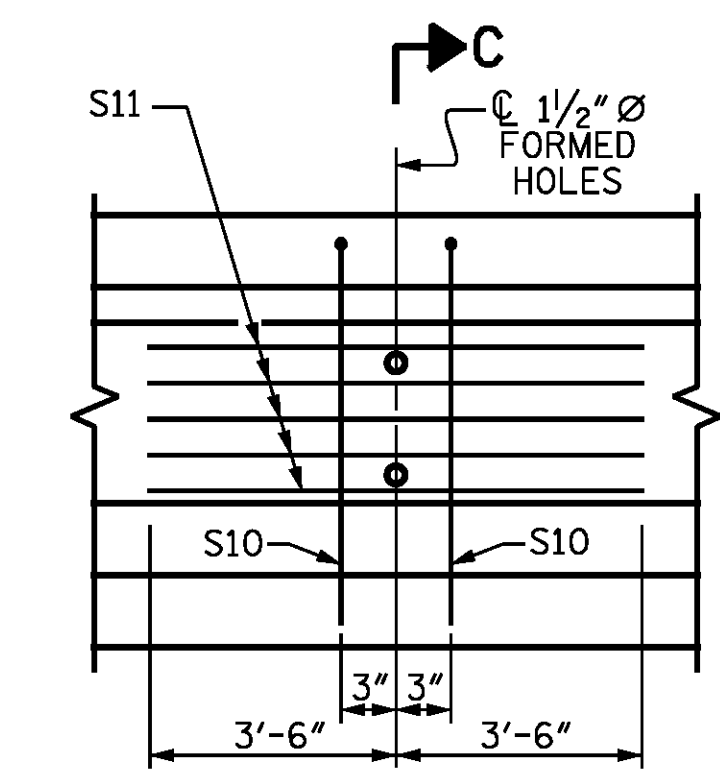


PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

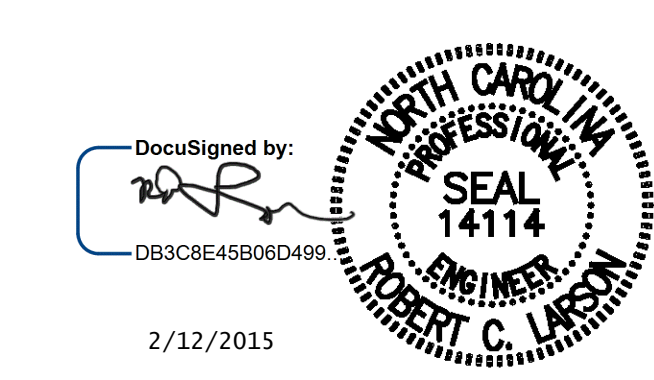
SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR GIRDER Nos. 1-4

PROJECT NO. R-2514D
JONES COUNTY
STATION: 363+38.90 -L-

SHEET 1 OF 3

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

RIGHT LANE STR-#4
STD. NO. PCG3

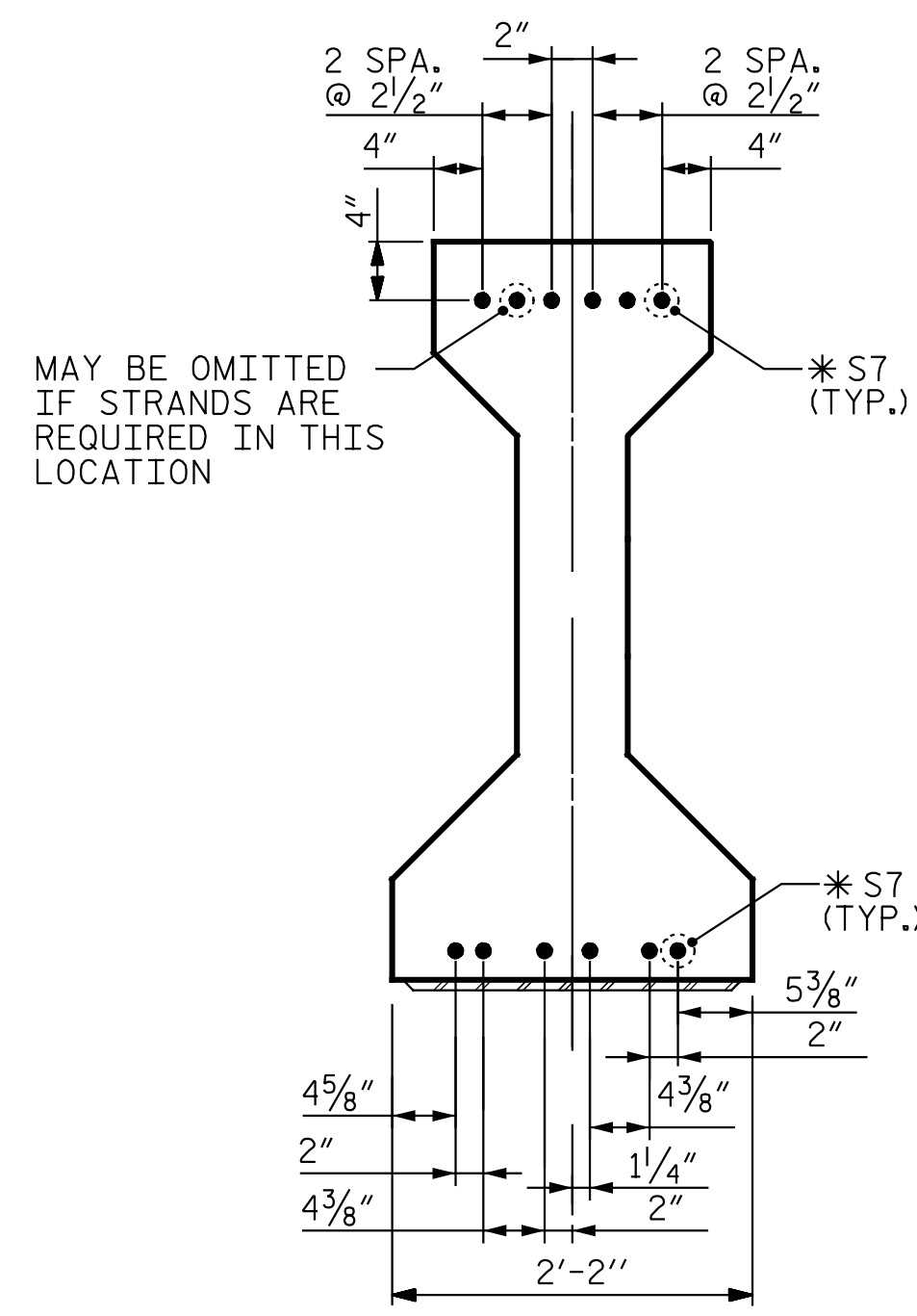


KCI Associates
of North Carolina, P.A.
DWG. REF. NO. 9 OF 23

DocuSigned by:
DB3C8E45B06D499

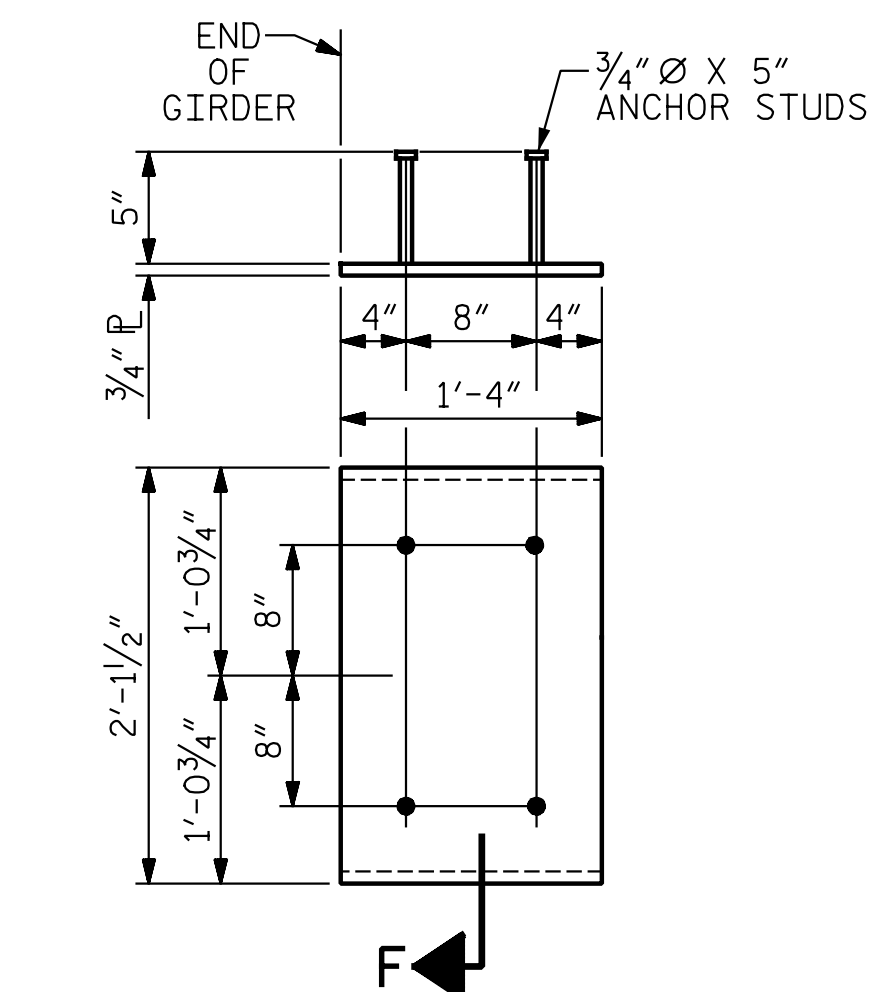
DESIGN ENGINEER OF RECORD:	DATE :	2/12/2015
DRAWN BY : E. C. DECOLA	DATE :	02/13/14
CHECKED BY : R. C. LARSON	DATE :	02/18/14
DRAWN BY : JMB 12/87	REV. 8/16/99RR	RWW/LES
CHECKED BY : ARB 12/87	REV. 5/1/06R	TLA/GM
	REV. 10/1/11	MAA/GM

REVISIONS						SHEET NO. S04-9
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS S04-23
2			4			



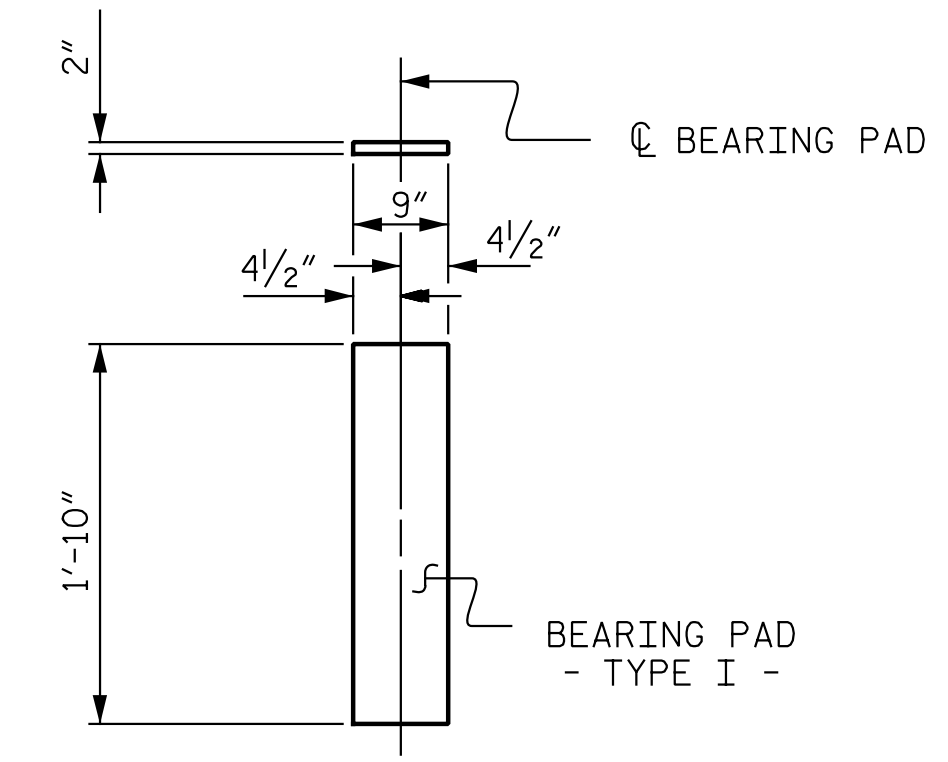
DETAIL "A"

(FOR AASHTO TYPE IV GIRDERS)



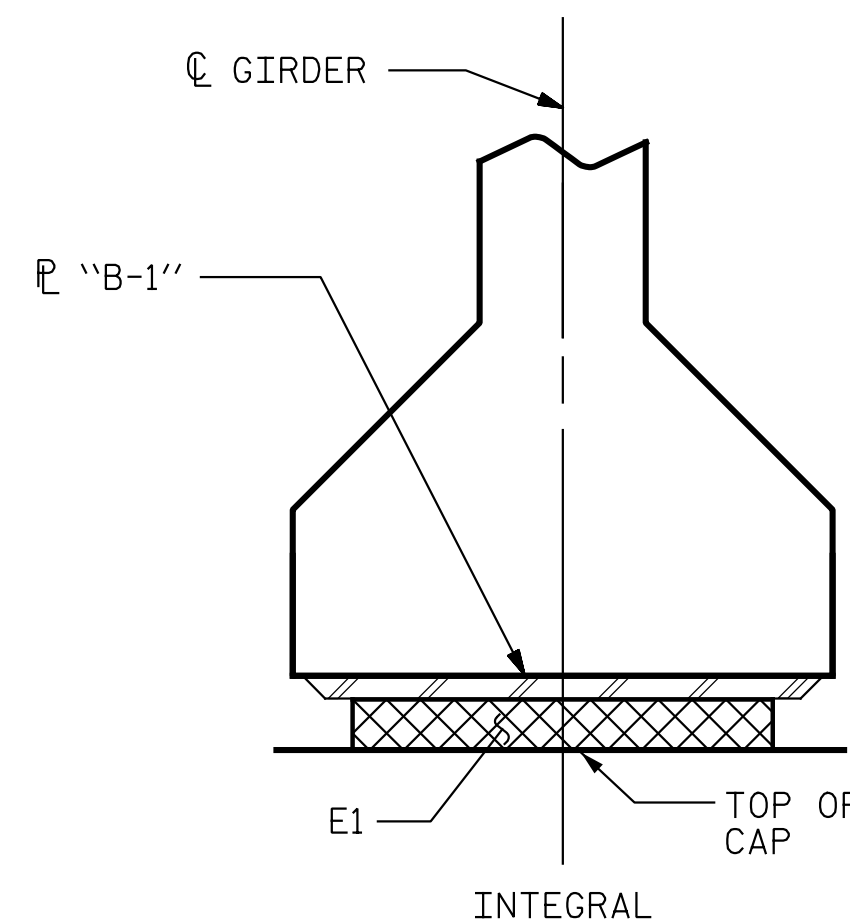
EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER AND 63" & 72" MODIFIED BULB TEES

(2 REQ'D PER GIRDER)



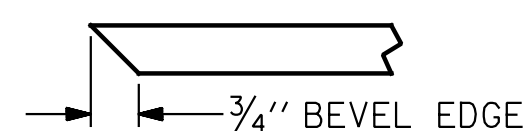
E1 (8 REQ'D)

SECTION "E"



PLAIN ELASTOMERIC BEARING DETAIL

TYPE I



SECTION "F"

(SEE NOTES)

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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 7000 PSI.

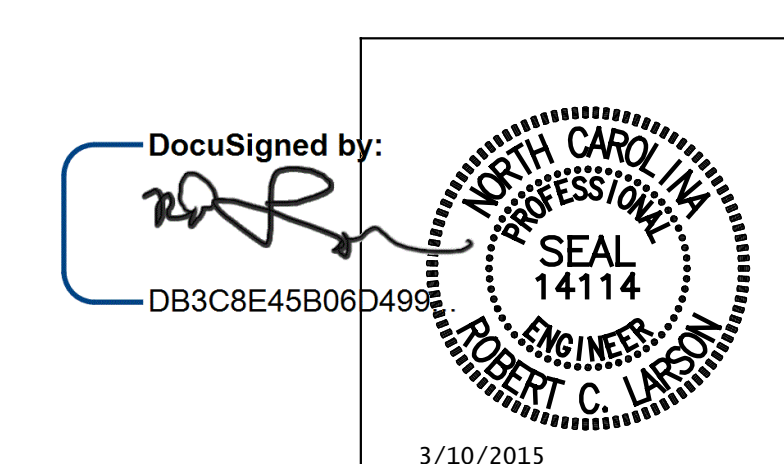
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

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

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.

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 DETAILS
 RIGHT LANE STR-#4
 STD. NO. PCC9

DESIGN ENGINEER OF RECORD:	DATE :	3/10/2015
DRAWN BY :	E. C. DECOLA	DATE : 02/13/14
CHECKED BY :	R. C. LARSON	DATE : 02/18/14
DRAWN BY :	ELR 11/91	REV. 7/10/01RR LES/RDR
CHECKED BY :	GRP 11/91	REV. 5/1/06 TLA/GM
		REV. 10/1/11 MAA/GM

KCI Associates of North Carolina, P.A.		REVISIONS		SHEET NO. S04-10		
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS S04-23
1			3			
2			4			

3/10/2015
 DB3C8E45B06D496
 DWG. REF. NO. 10 OF 23

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.

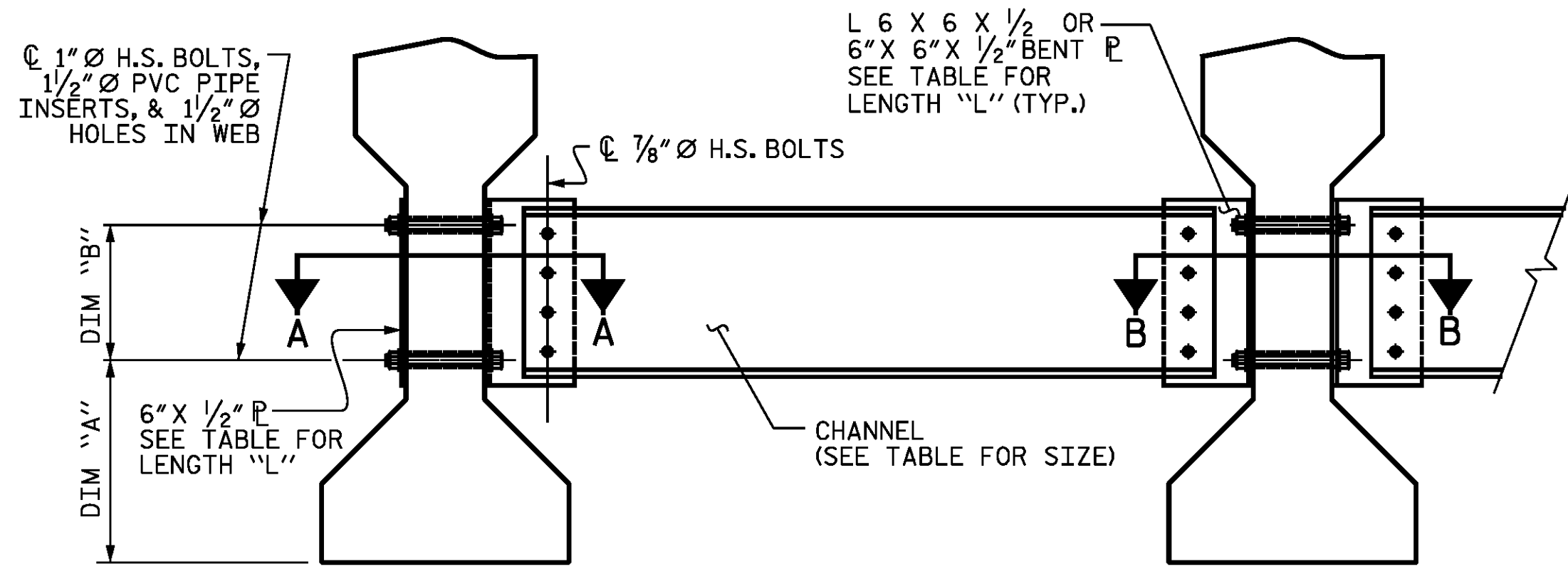
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

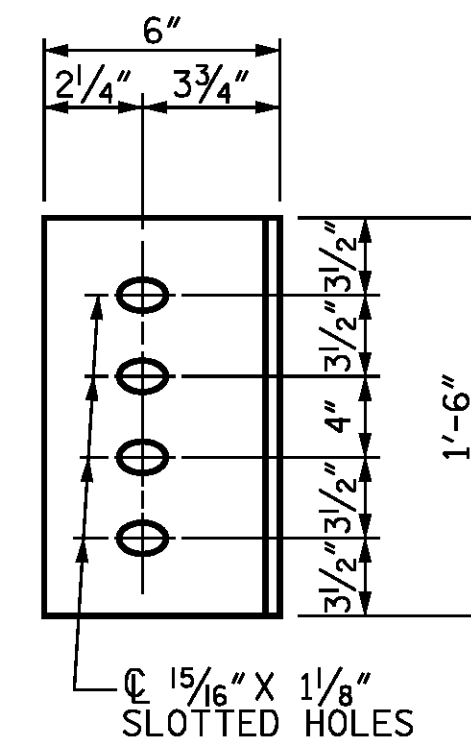
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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.

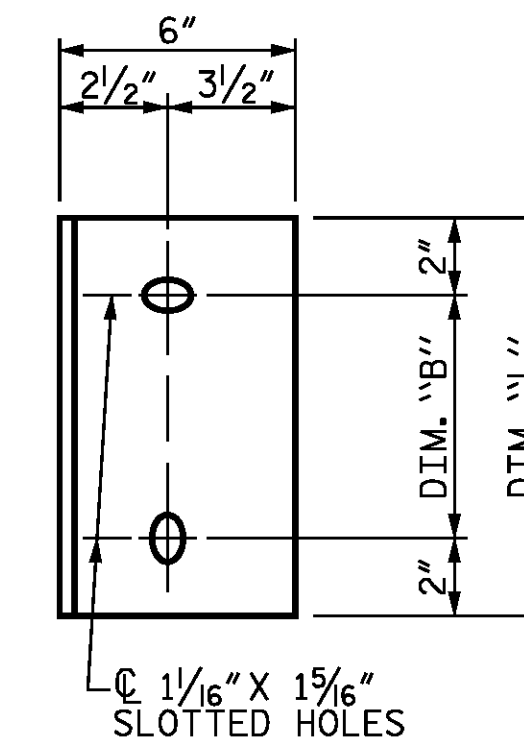
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



EXTERIOR GIRDER **INTERIOR GIRDER**
PART SECTION AT INTERMEDIATE DIAPHRAGM
 (TYPE III OR TYPE IV GIRDER SHOWN)



DIAPHRAGM FACE
 (TYPE III OR TYPE IV GDR.)



WEB FACE

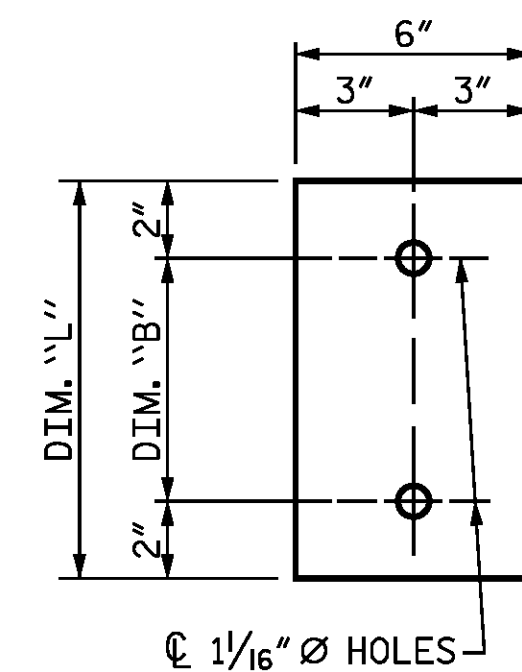
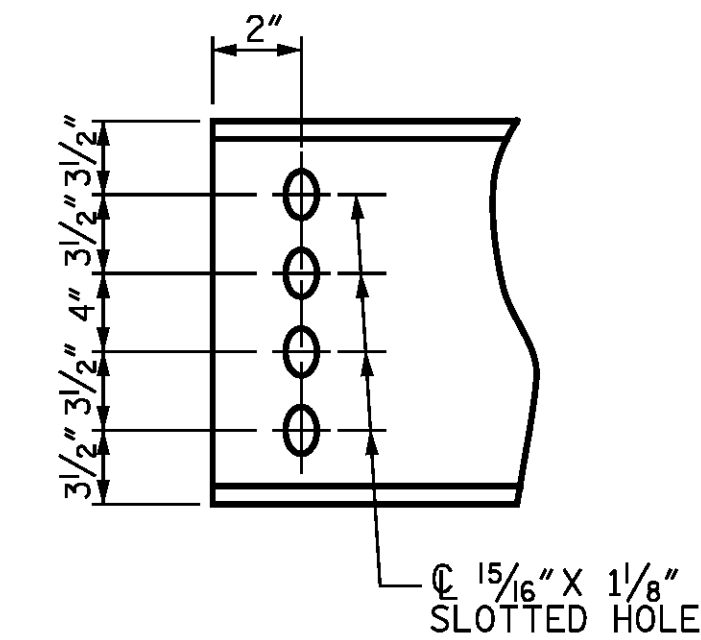
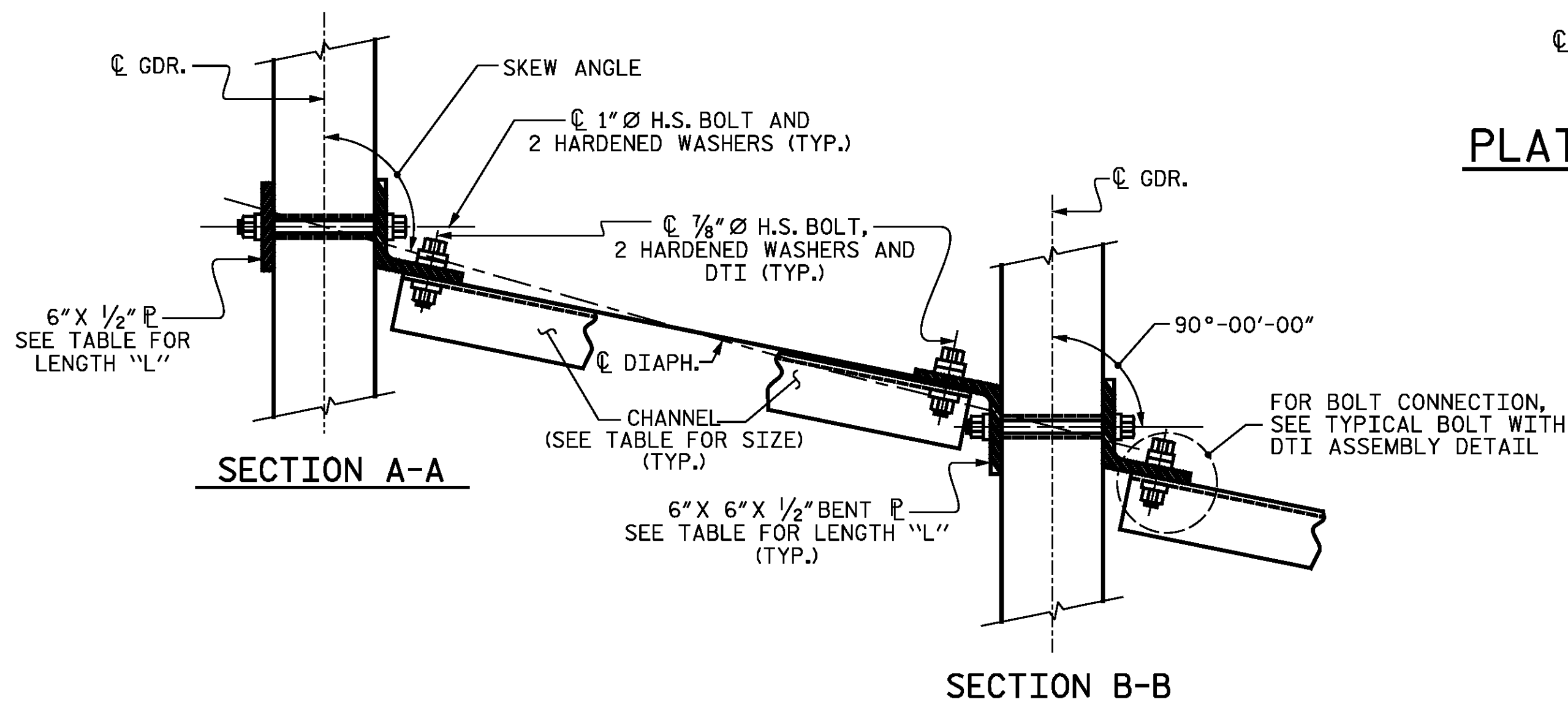


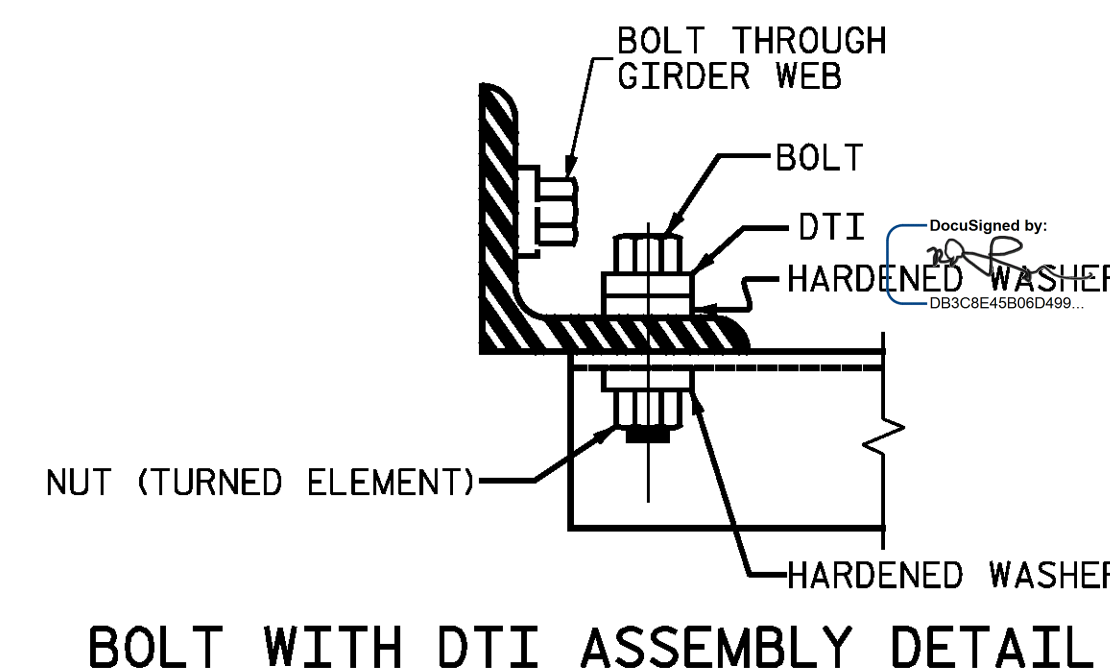
PLATE DETAILS



CHANNEL END
 (TYPE III OR TYPE IV GDR.)



CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

TABLE

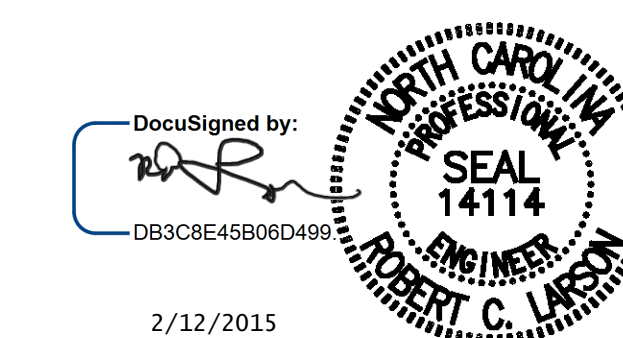
GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
II	MC 12 x 31	1'-2 1/2"	10"	1'-2"
III	MC 10 x 42.7	1'-5"	1'-2"	1'-6"
IV	MC 18 x 42.7	1'-9 1/2"	1'-2"	1'-6"

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

SHEET 3 OF 3

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

STD. NO. PCG10 RIGHT LANE STR-#4



2/12/2015

REVISIONS						SHEET NO. S04-II
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS S04-23
2			4			

DRS225 01/11/AMERS 01/20/05/TS LESLIE NUMBER 0-0784
KCI Associates
 of North Carolina, P.A.
 SUITE 200, LANDMARK CENTER 1400 SIX FORKS RD, RALEIGH, N.C. 27609-2000 (919) 783-2004
 DWG. REF. NO. 11 OF 23

DocuSigned by:

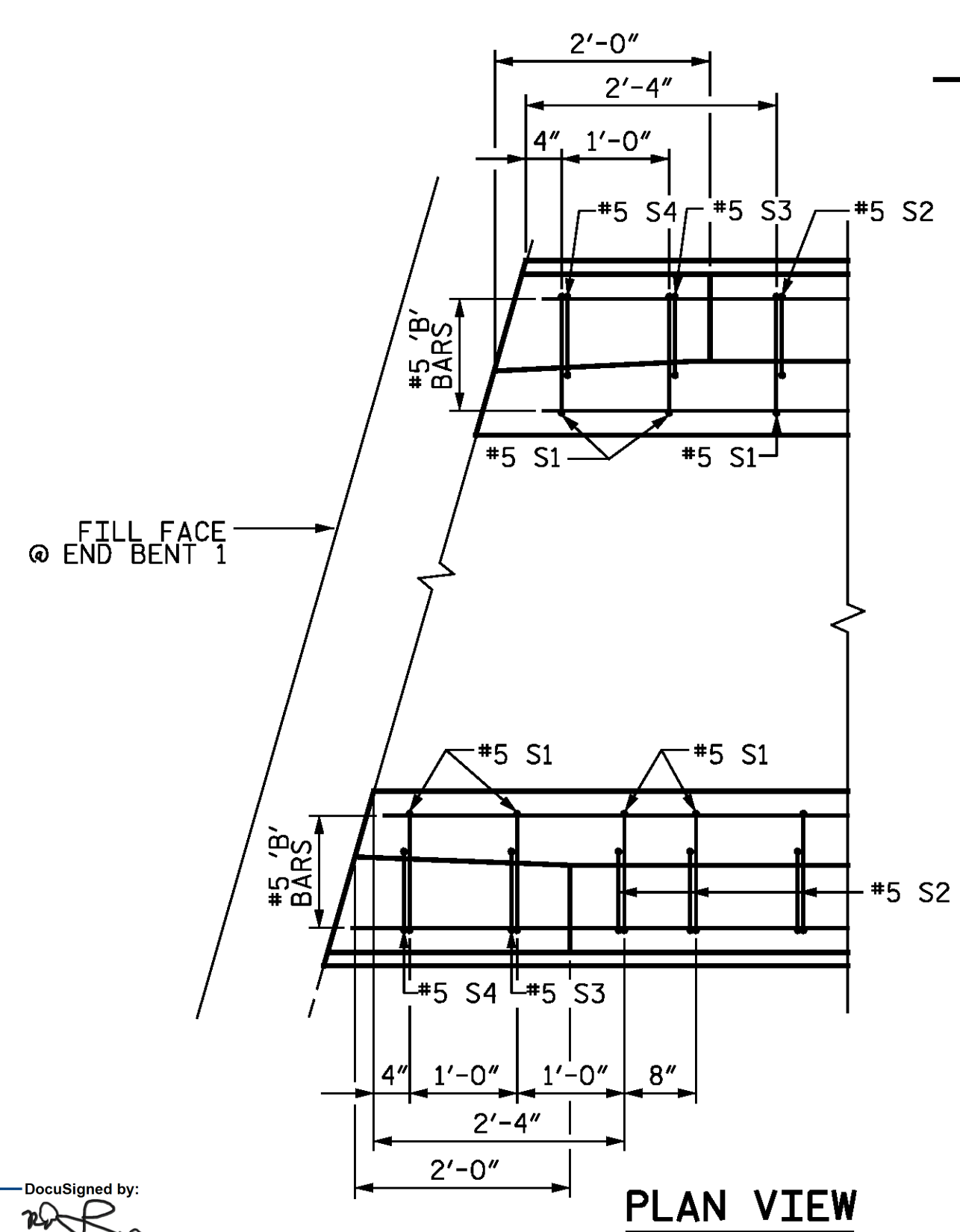
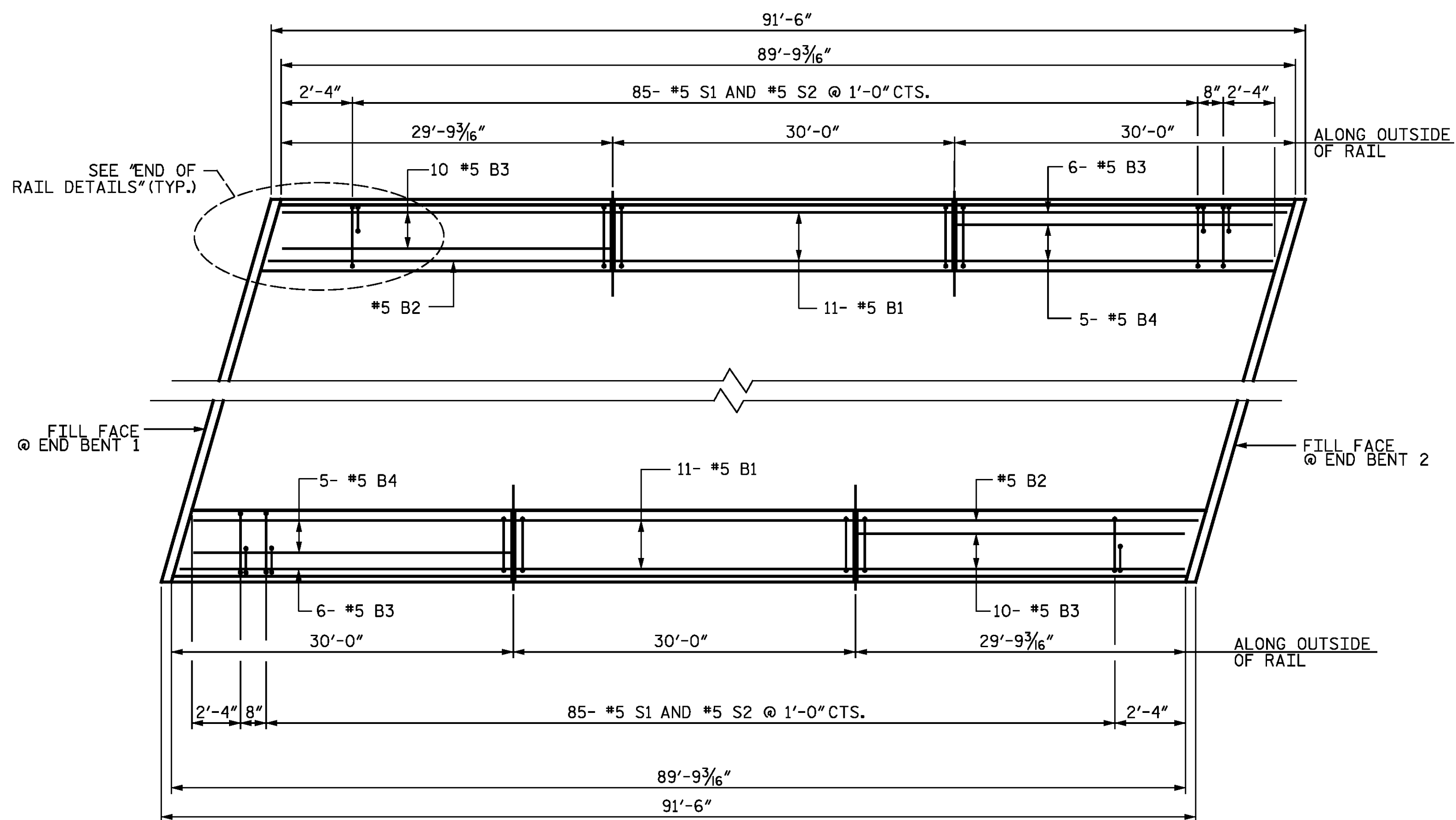
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DESIGN ENGINEER OF RECORD: DATE: 2/12/2015

DRAWN BY: E. C. DECOLA DATE: 02/13/14
 CHECKED BY: R. C. LARSON DATE: 02/18/14

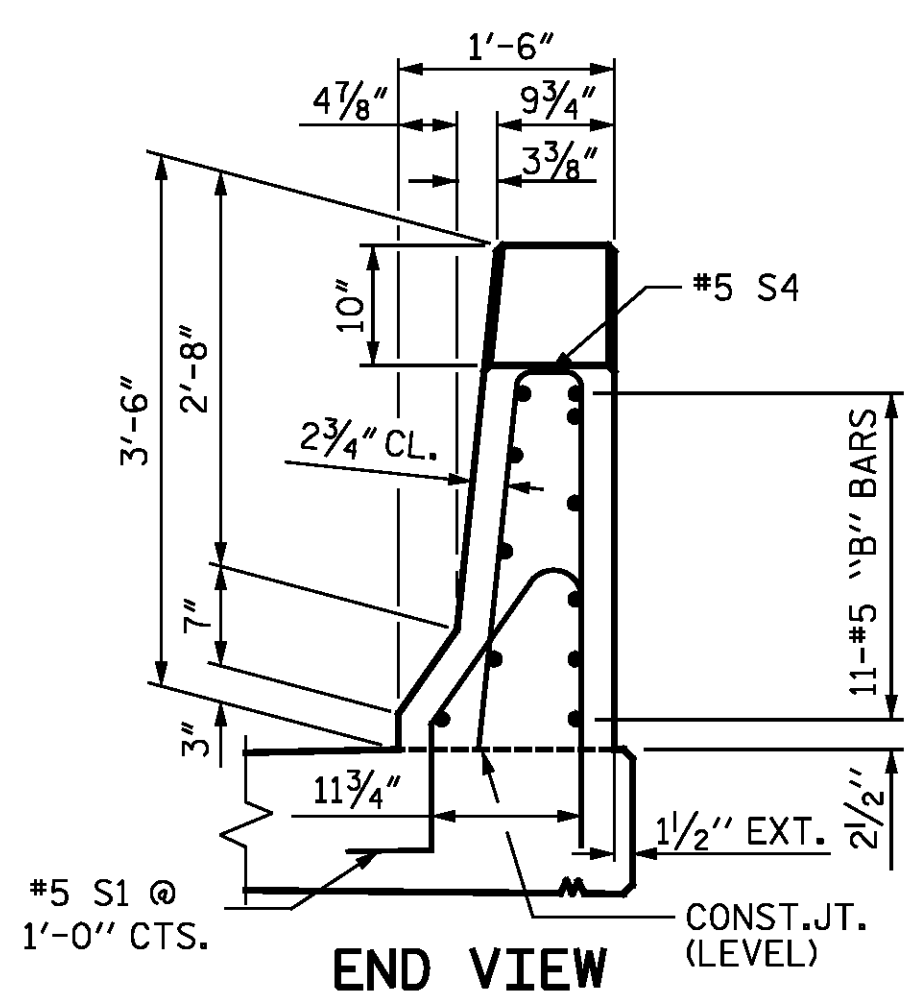
DRAWN BY: TLA 6/05
 CHECKED BY: VC 6/05

ADDED 10/21/05
 REV. 5/1/06RRR KMM/GM
 REV. 10/1/11 MAA/GM

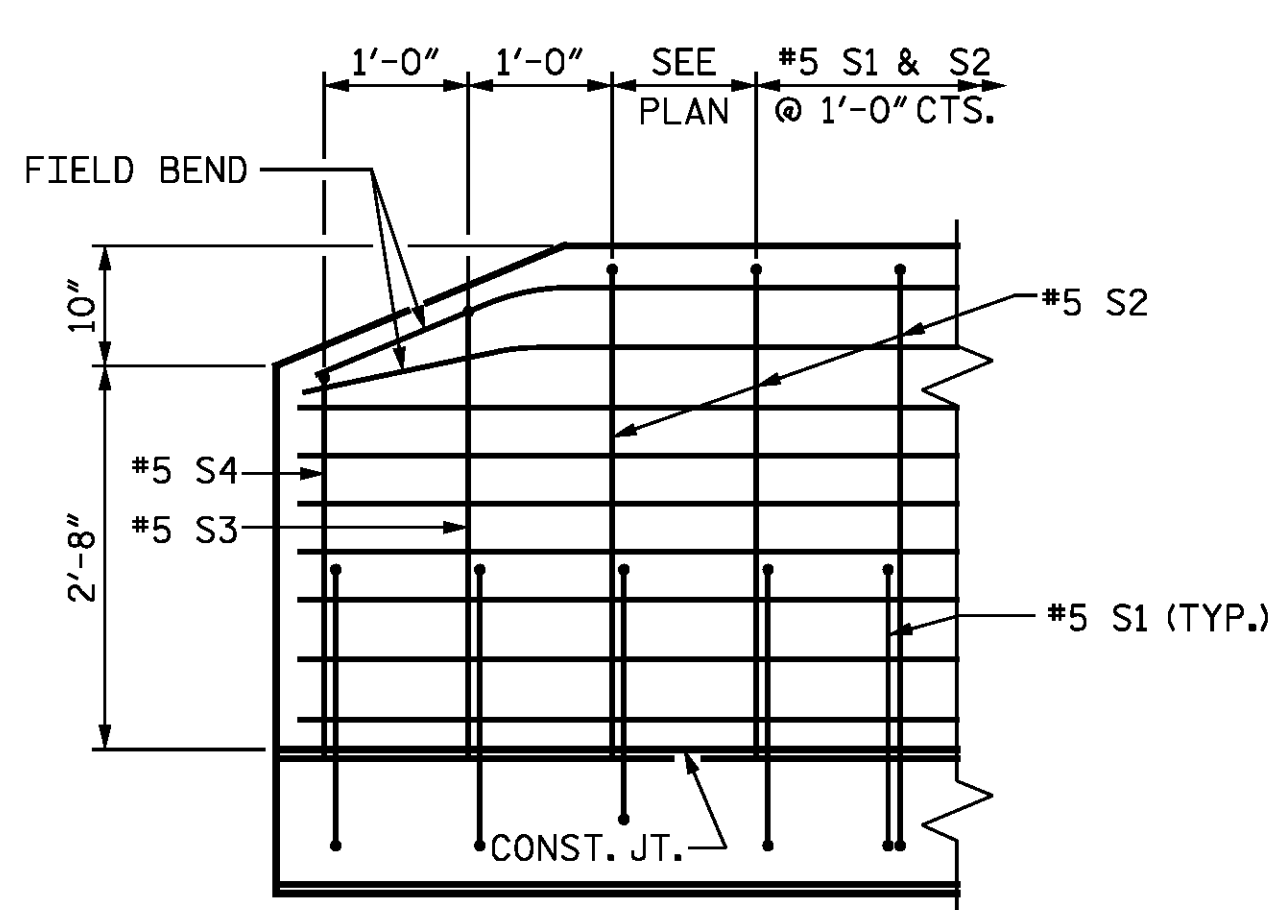


PLAN VIEW

PLAN



END VIEW



SIDE VIEW

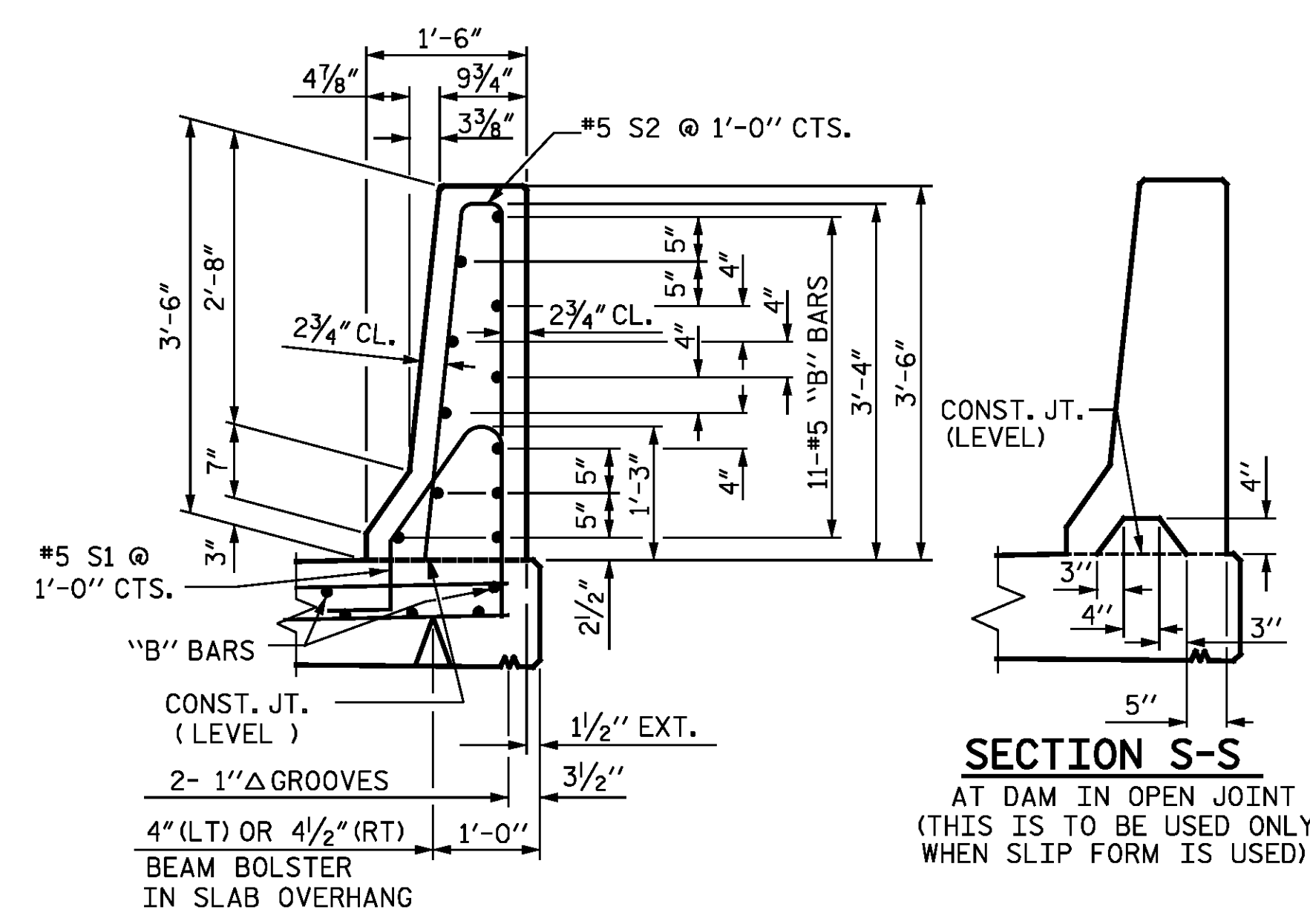
END OF RAIL DETAILS

NOTES

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

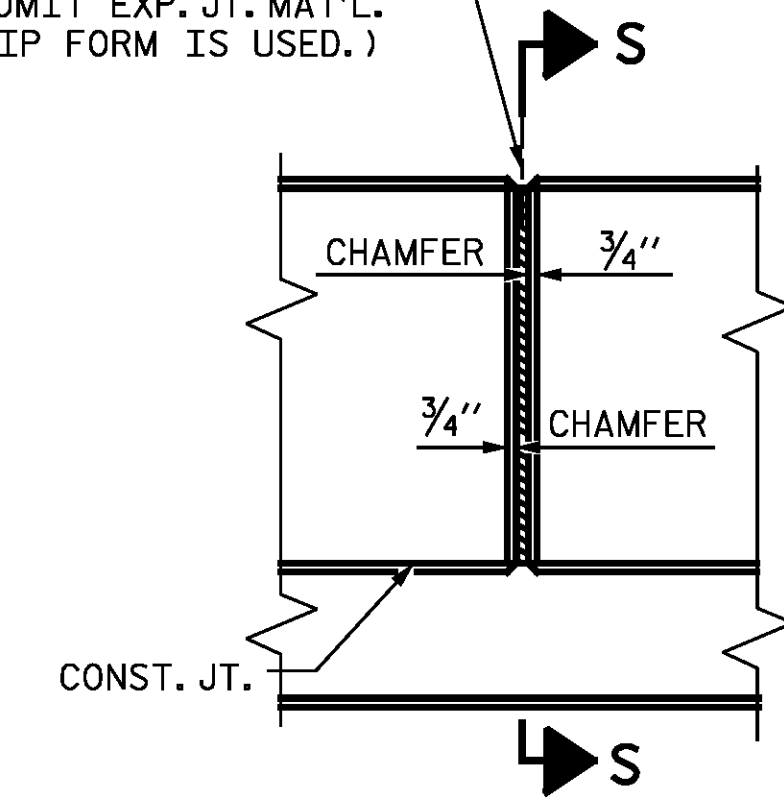
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.



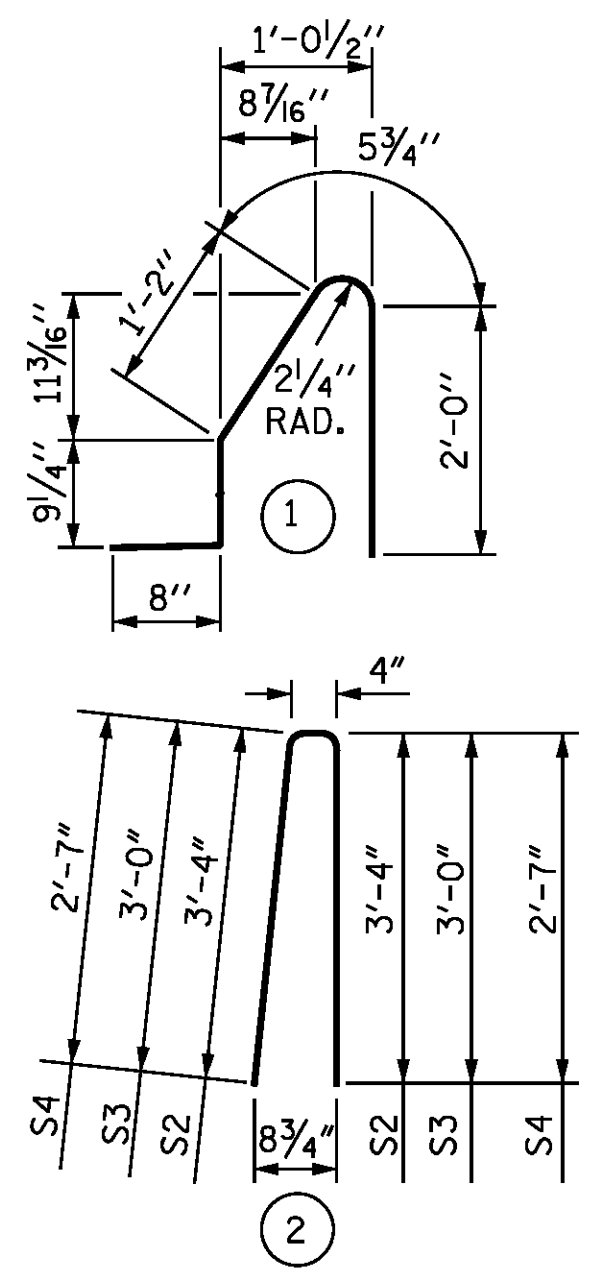
SECTION THRU RAIL

1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS. (NOTE: OMIT EXP. JT. MAT'L WHEN SLIP FORM IS USED.)



ELEVATION AT EXPANSION JOINTS BARRIER RAIL DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
*S1	180	#5	1	5'-1"	954
*S2	172	#5	2	7'-0"	1256
*S3	4	#5	2	6'-4"	26
*S4	4	#5	2	5'-6"	23
*B1	22	#5	STR.	29'-8"	681
*B2	2	#5	STR.	29'-9"	62
*B3	32	#5	STR.	29'-6"	985
*B4	10	#5	STR.	29'-2"	304

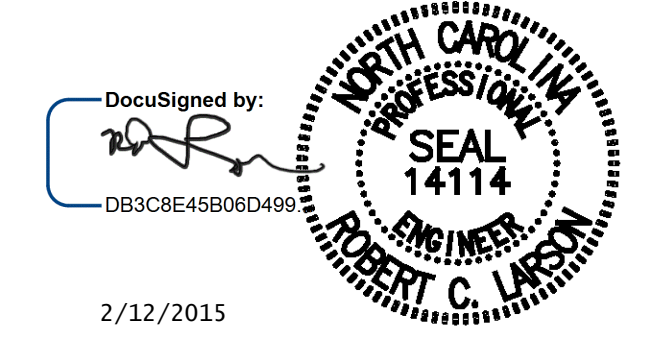
* EPOXY COATED REINFORCING STEEL	4291 LBS.
CLASS AA CONCRETE	24.3 CU. YDS.
CONCRETE BARRIER RAIL	179.53 LIN. FT.

PROJECT NO. R-2514D
 JONES COUNTY
 STATION: 363+38.90 -L-

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

STD. NO. CBR1 RIGHT LANE STR-#4

DESIGN ENGINEER OF RECORD: DATE: 2/12/2015
 DRAWN BY: E. C. DECOLA DATE: 02/13/14
 CHECKED BY: R. C. LARSON DATE: 02/18/14
 DRAWN BY: MAA/GM
 CHECKED BY: MAA/GM



2/12/2015

KCI Associates of North Carolina, P.A.
 DWG. REF. NO. 12 OF 23

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

SHEET NO. S04-12
 TOTAL SHEETS S04-23

NOTES

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

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

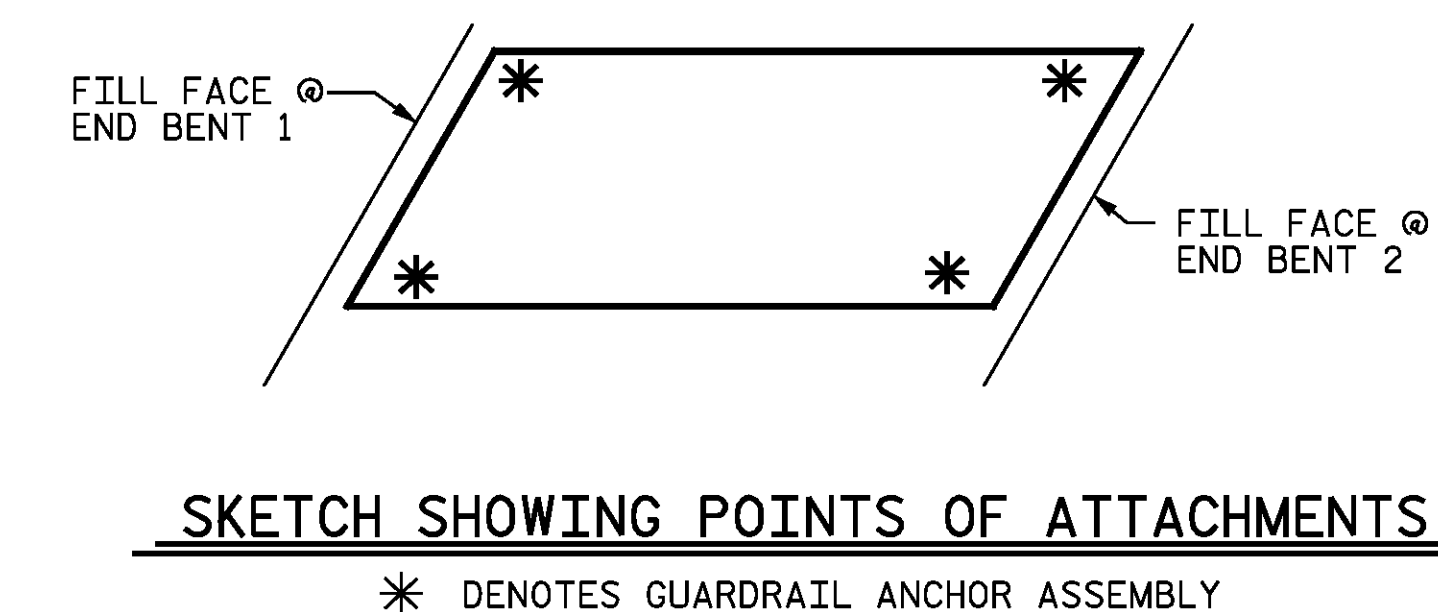
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

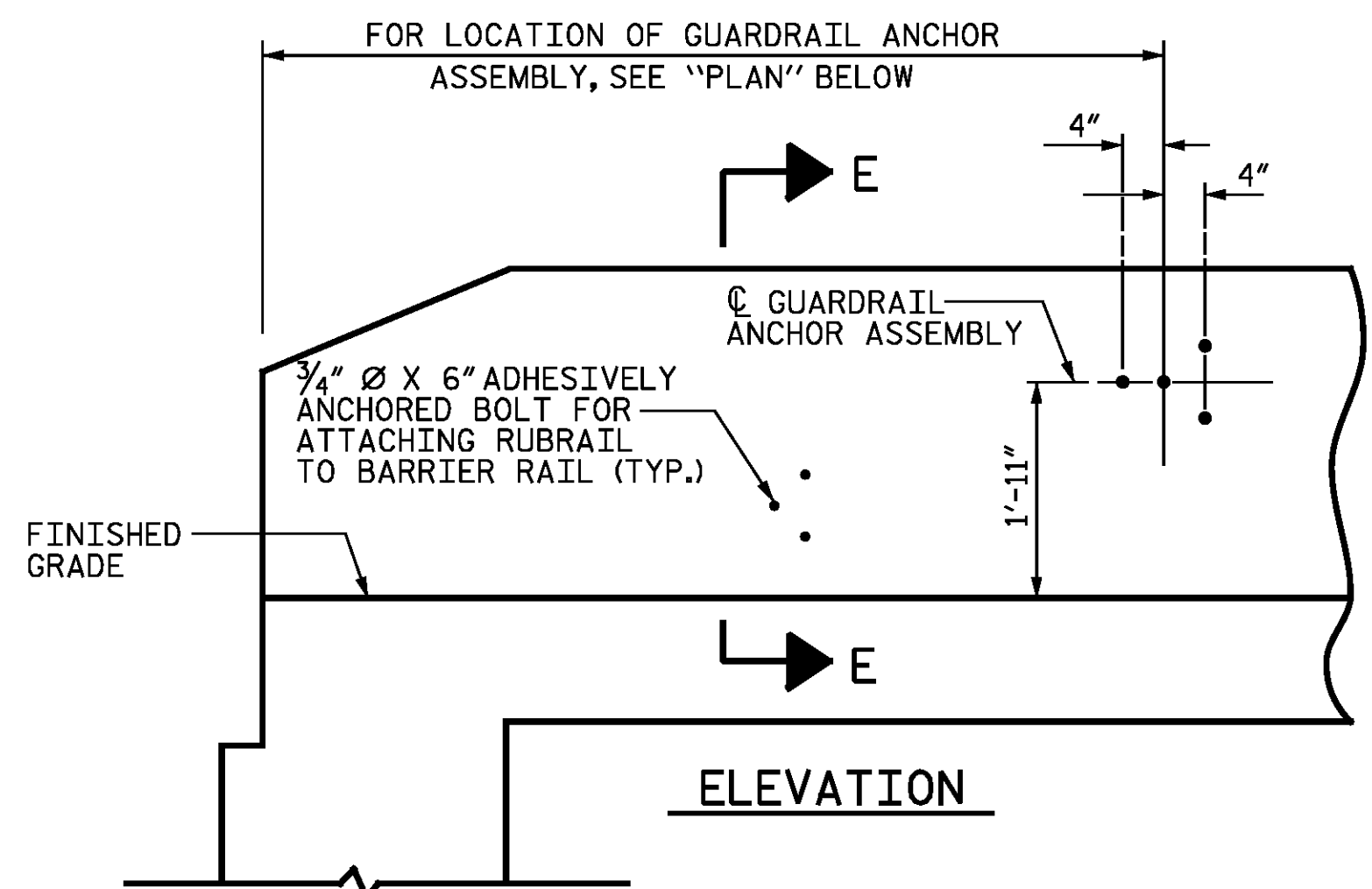
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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

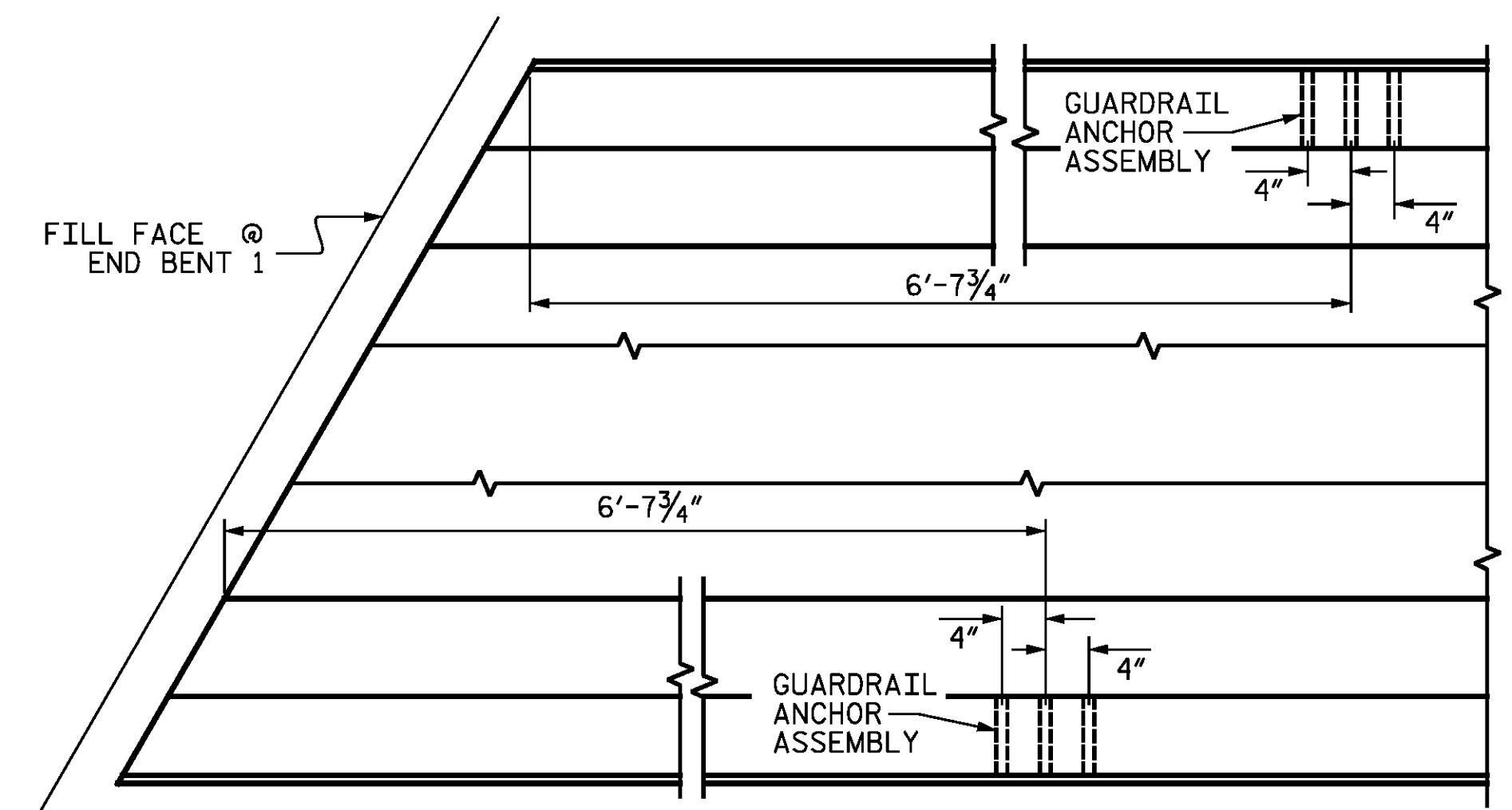
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR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



SKETCH SHOWING POINTS OF ATTACHMENTS
* DENOTES GUARDRAIL ANCHOR ASSEMBLY



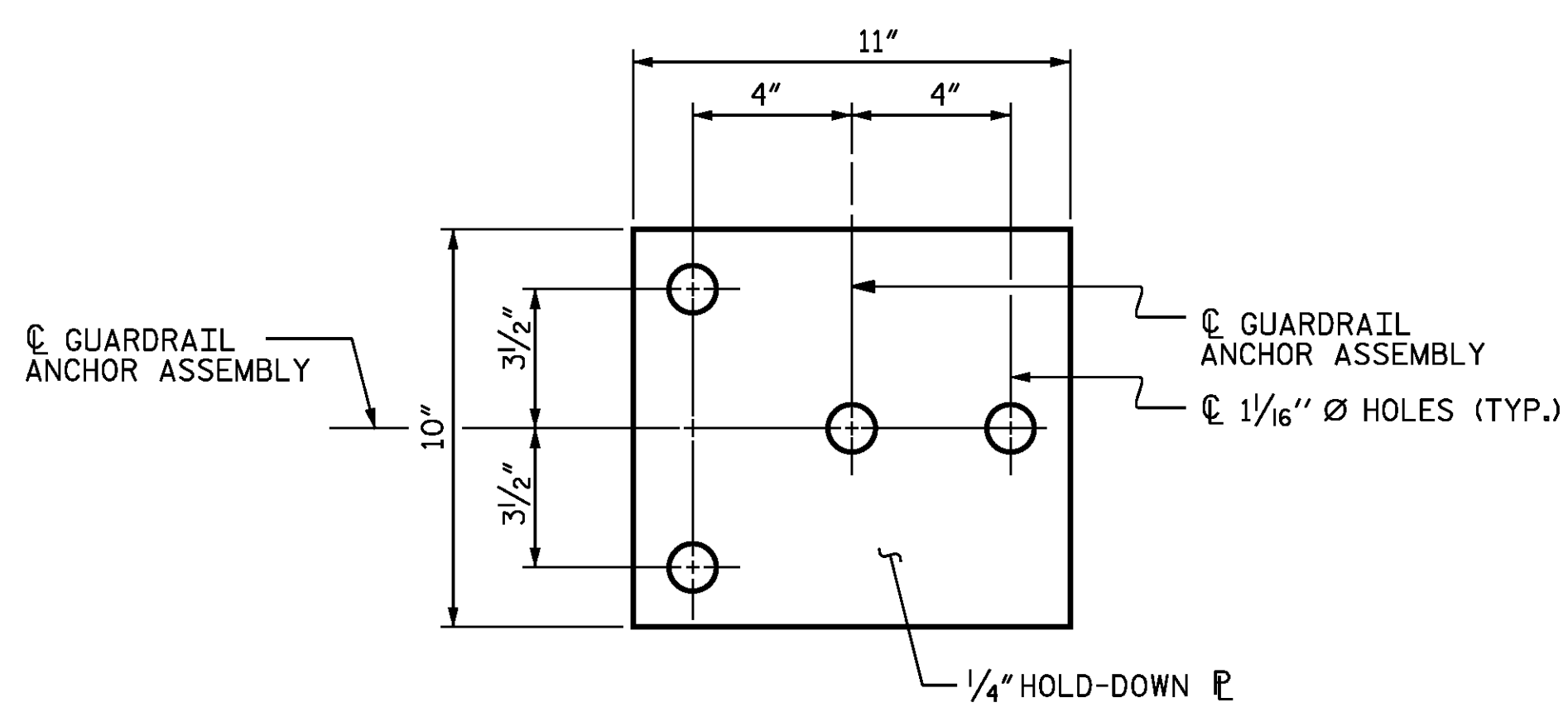
ELEVATION



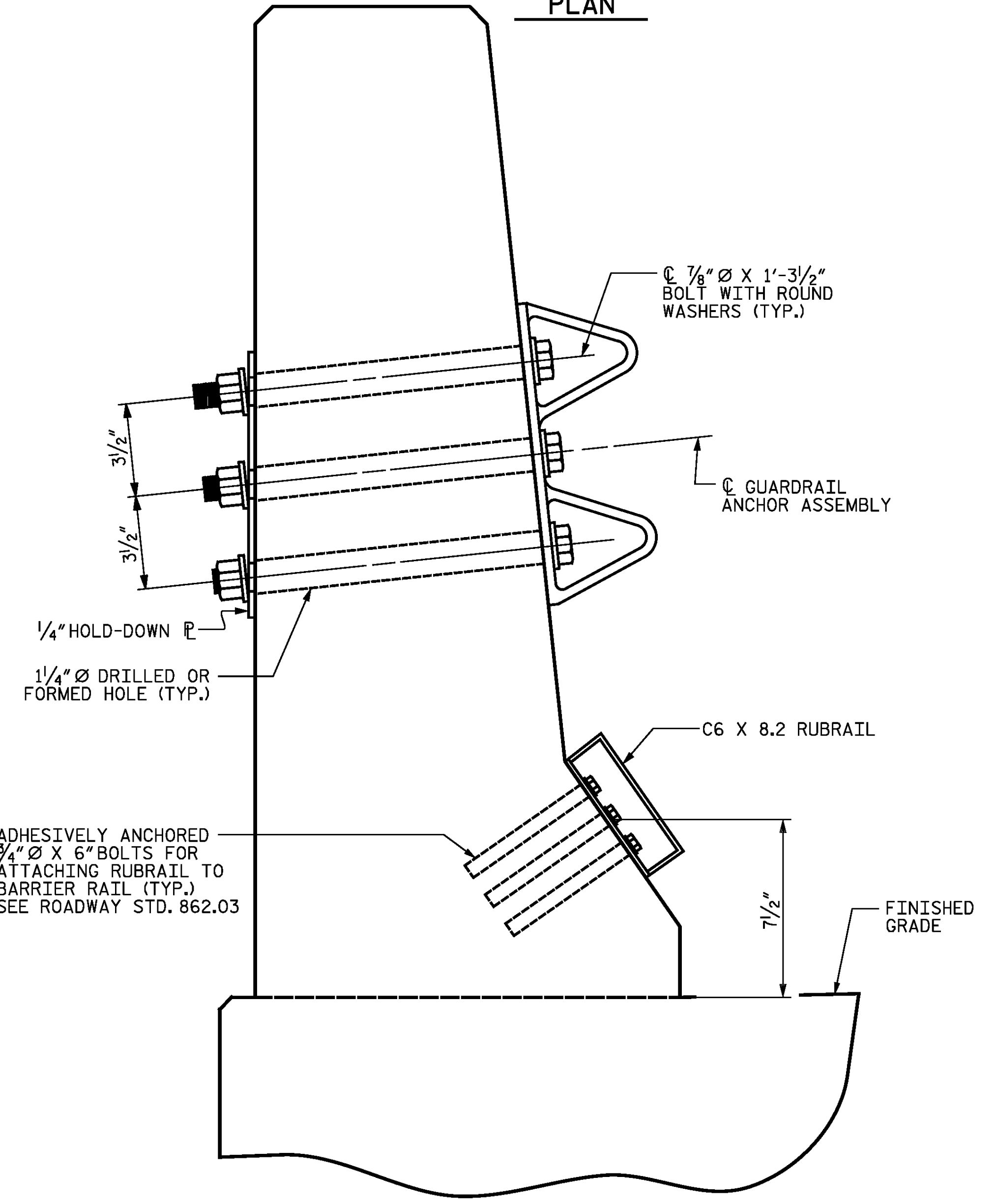
PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.



PLAN

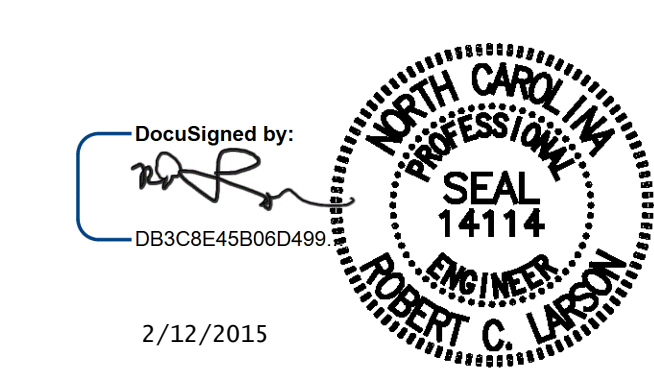


SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS

DocuSigned by:
740
DB3C8E45B06D499

DESIGN ENGINEER OF RECORD:	DATE :	2/12/2015
DRAWN BY :	E. C. DECOLA	DATE : 02/14/14
CHECKED BY :	R. C. LARSON	DATE : 02/18/14
DRAWN BY :	TLA 5/06	REV. 10/1/11 MAA/GM
CHECKED BY :	GM 5/06	REV. 7/12 MAA/GM
		REV. 6/13 MAA/GM



2/12/2015

PROJECT NO. R-2514D
JONES COUNTY
STATION: 363+38.90 -L-

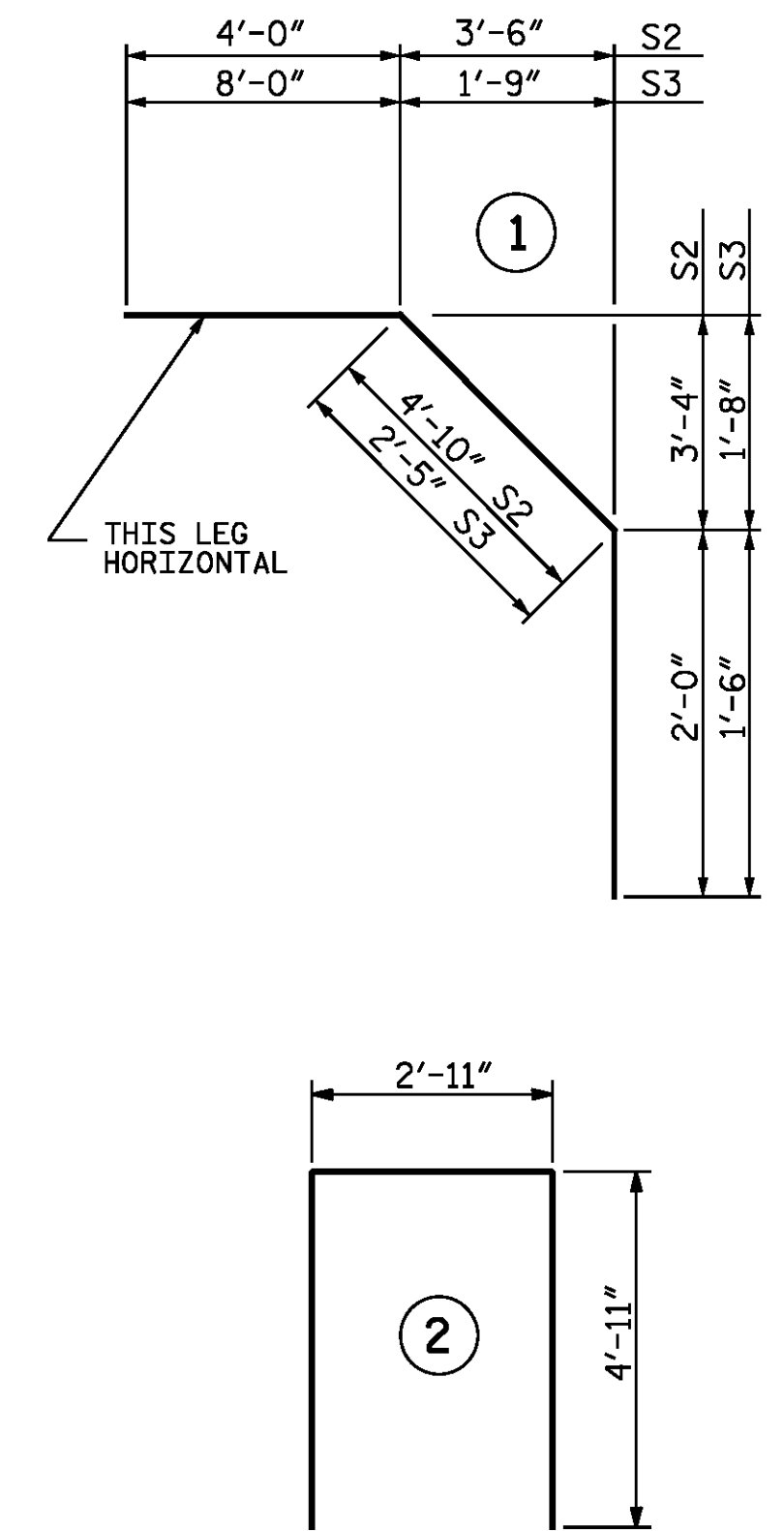
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
**STANDARD
GUARDRAIL ANCHORAGE
FOR BARRIER RAIL**
STD NO. GRA2 RIGHT LANE STR-#4

KCI Associates of North Carolina, P.A. STATE SOIL LANDMARK CENTER 1400 SIX FORKS RD. RALEIGH, N.C. 27609-0000 (919) 783-2044		DWG. REF. NO. 13 OF 23	
REVISIONS			
NO.	BY:	DATE:	NO.
1			3
2			4
SHEET NO. S04-13			TOTAL SHEETS S04-23

BILL OF MATERIAL											
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
A1	170	5	STR.	40'-11"	7255	A39	2	5	STR.	20'-5"	43
*A2	170	5	STR.	40'-11"	7255	A40	2	5	STR.	18'-10"	39
*A3	2	5	STR.	39'-7"	83	A41	2	5	STR.	17'-3"	36
*A4	2	5	STR.	38'-0"	79	A42	2	5	STR.	15'-8"	33
*A5	2	5	STR.	36'-5"	76	A43	2	5	STR.	14'-0"	29
*A6	2	5	STR.	34'-10"	73	A44	2	5	STR.	12'-5"	26
*A7	2	5	STR.	33'-3"	69	A45	2	5	STR.	10'-10"	23
*A8	2	5	STR.	31'-7"	66	A46	2	5	STR.	9'-3"	19
*A9	2	5	STR.	30'-0"	63	A47	2	5	STR.	7'-8"	16
*A10	2	5	STR.	28'-5"	59	A48	2	5	STR.	6'-0"	13
*A11	2	5	STR.	26'-10"	56	A49	2	5	STR.	4'-5"	9
*A12	2	5	STR.	25'-3"	53	A50	2	5	STR.	2'-10"	6
*A13	2	5	STR.	23'-7"	49						
*A14	2	5	STR.	22'-0"	46	*B1	56	4	STR.	27'-9"	1038
*A15	2	5	STR.	20'-5"	43	B2	106	5	STR.	45'-10"	5067
*A16	2	5	STR.	18'-10"	39	*B3	56	5	STR.	20'-0"	1168
*A17	2	5	STR.	17'-3"	36	*B4	54	6	STR.	19'-0"	1541
*A18	2	5	STR.	15'-8"	33	*B5	54	6	STR.	18'-0"	1460
*A19	2	5	STR.	14'-0"	29						
*A20	2	5	STR.	12'-5"	26	K1	20	4	STR.	25'-1"	335
*A21	2	5	STR.	10'-10"	23	K2	6	4	STR.	9'-4"	37
*A22	2	5	STR.	9'-3"	19	K3	18	4	STR.	10'-5"	125
*A23	2	5	STR.	7'-8"	16	K4	6	4	STR.	9'-10"	39
*A24	2	5	STR.	6'-0"	13	K5	4	4	STR.	2'-0"	5
*A25	2	5	STR.	4'-5"	9	K6	12	4	STR.	2'-9"	22
*A26	2	5	STR.	2'-10"	6	K7	4	4	STR.	2'-3"	6
A27	2	5	STR.	39'-7"	83						
A28	2	5	STR.	38'-0"	79	S1	62	4	2	12'-9"	528
A29	2	5	STR.	36'-5"	76	*S2	64	4	1	10'-10"	463
A30	2	5	STR.	34'-10"	73	*S3	68	4	1	11'-11"	541
A31	2	5	STR.	33'-3"	69						
A32	2	5	STR.	31'-7"	66						
A33	2	5	STR.	30'-0"	63						
A34	2	5	STR.	28'-5"	59						
A35	2	5	STR.	26'-10"	56						
A36	2	5	STR.	25'-3"	53						
A37	2	5	STR.	23'-7"	49						
A38	2	5	STR.	22'-0"	46						

*EPOXY COATED REINFORCING STEEL

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

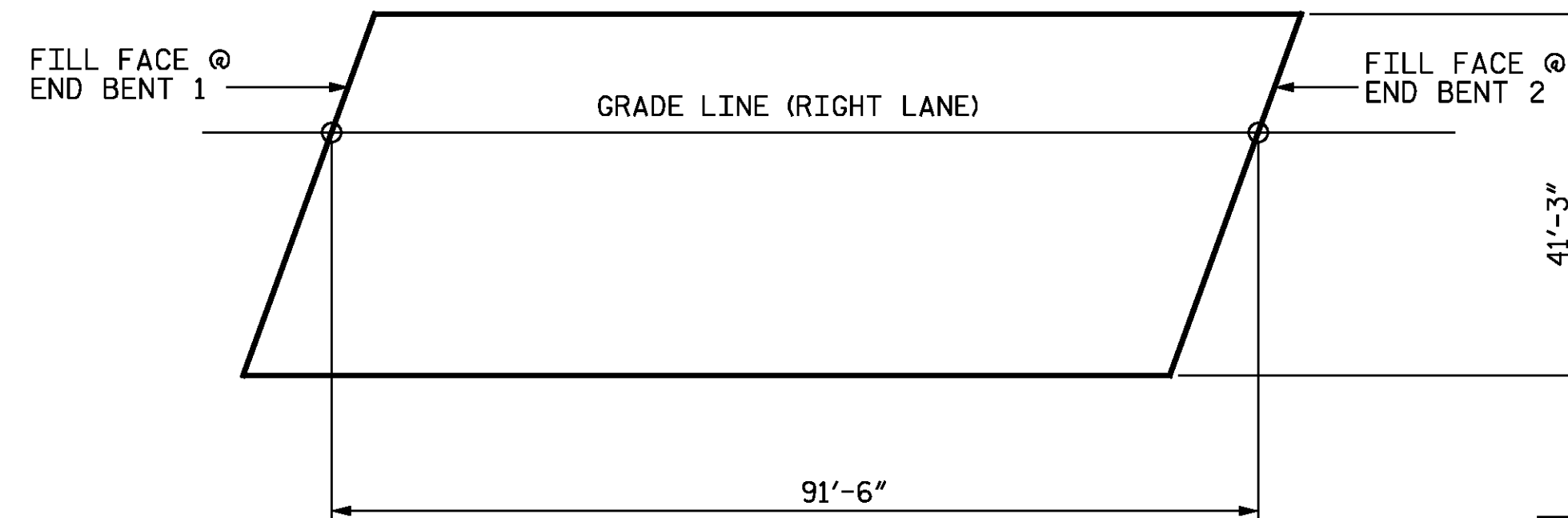
—SUPERSTRUCTURE BILL OF MATERIAL—

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	*EPOXY COATED REINFORCING STEEL (LBS.)
SPAN "A"			
POUR 1	109.7		
POUR 2	75.1		
TOTALS**	184.8	14483	14530

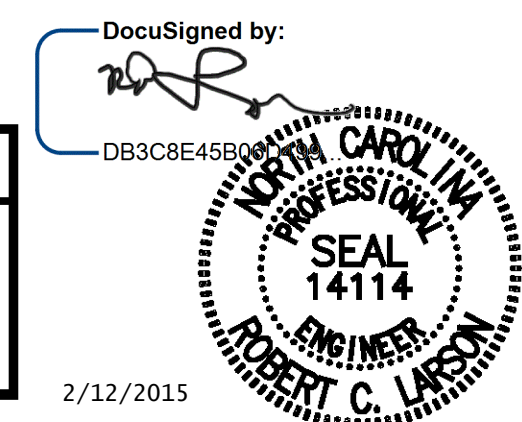
**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED
† POUR 2 INCLUDES 6.2 CY EACH FOR UPPER PORTIONS OF WINGWALLS AT END BENTS 1 & 2.

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			



GROOVING BRIDGE FLOORS		
APPROACH SLABS	1689	SQ.FT.
BRIDGE DECK	3130	SQ.FT.
TOTAL	4819	SQ.FT.



PROJECT NO. R-2514D
JONES COUNTY
STATION: 363+38.90 -L-

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

LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 3,774)

DESIGN ENGINEER OF RECORD:	DATE :	2/12/2015	
DRAWN BY :	E. C. DECOLA	DATE :	
CHECKED BY :	R. C. LARSON	DATE :	
DRAWN BY :	JMB 5/87	REV. 8/16/99	RWW/LES
CHECKED BY :	SJD 9/87	REV. 5/1/06	TLA/GM
		REV. 10/1/11	MAA/GM

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

SHEET NO. S04-14
TOTAL SHEETS S04-23

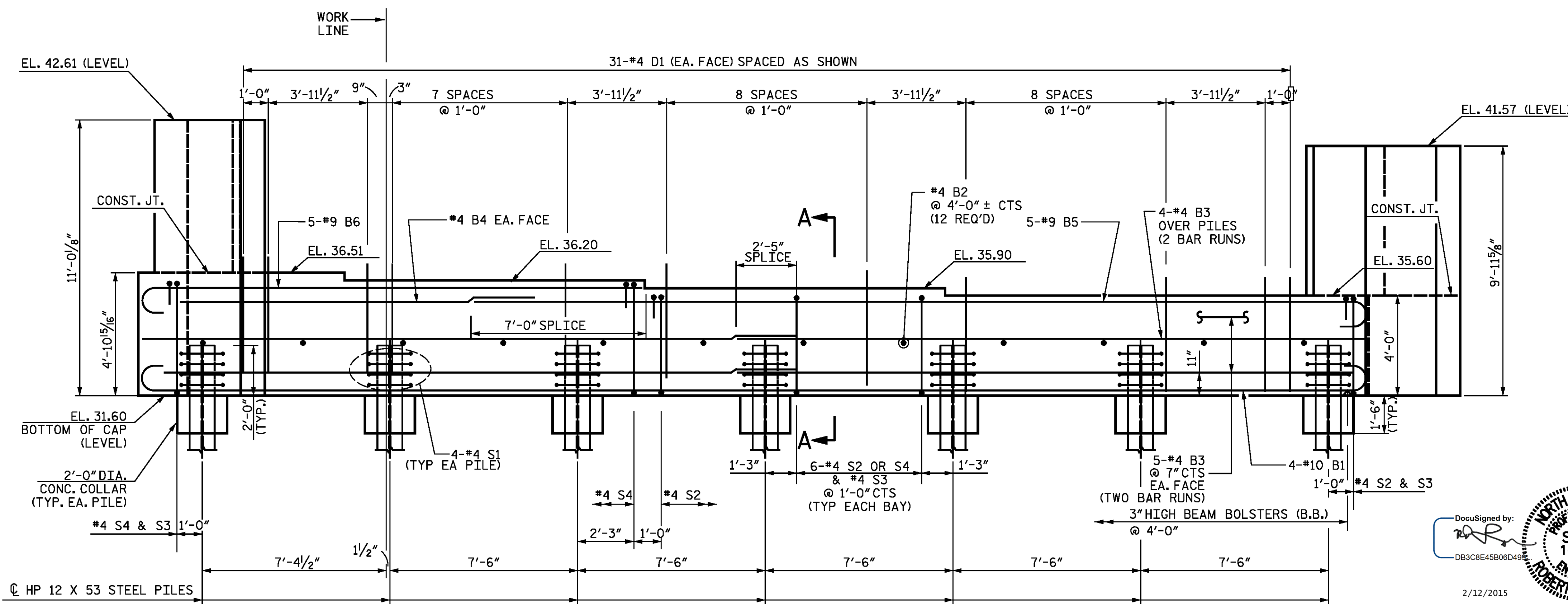
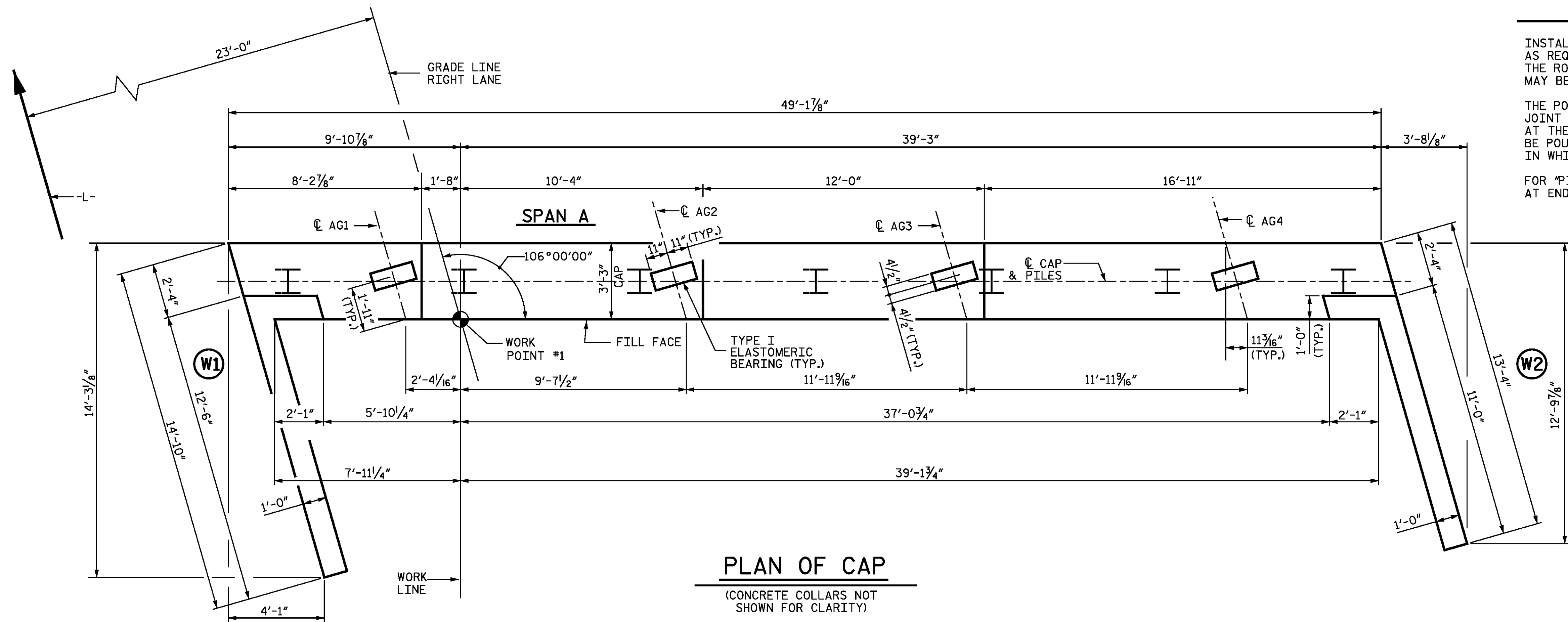
KCI Associates of North Carolina, P.A.
DWG. REF. NO. 14 OF 23

NOTES

INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

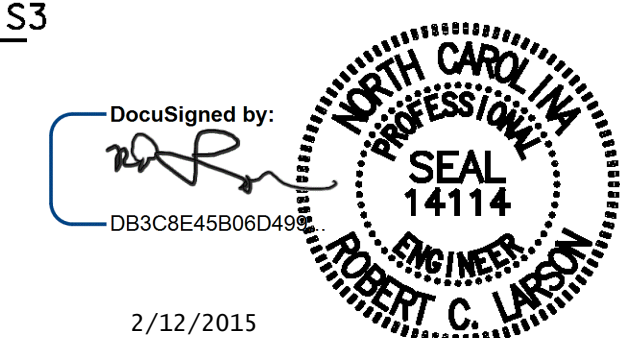
THE PORTIONS OF THE WINGS ABOVE THE CONSTRUCTION JOINT ARE TO BE POURED WITH THE SUPERSTRUCTURE. AT THE CONTRACTOR'S OPTION, THESE PORTIONS MAY BE POURED SEPARATELY FROM THE SUPERSTRUCTURE, IN WHICH CASE CLASS 'A' CONCRETE MAY BE USED.

FOR "PILE SPLICE DETAIL" AND "TEMPORARY DRAINAGE AT END BENT", SEE END BENT 2.



PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

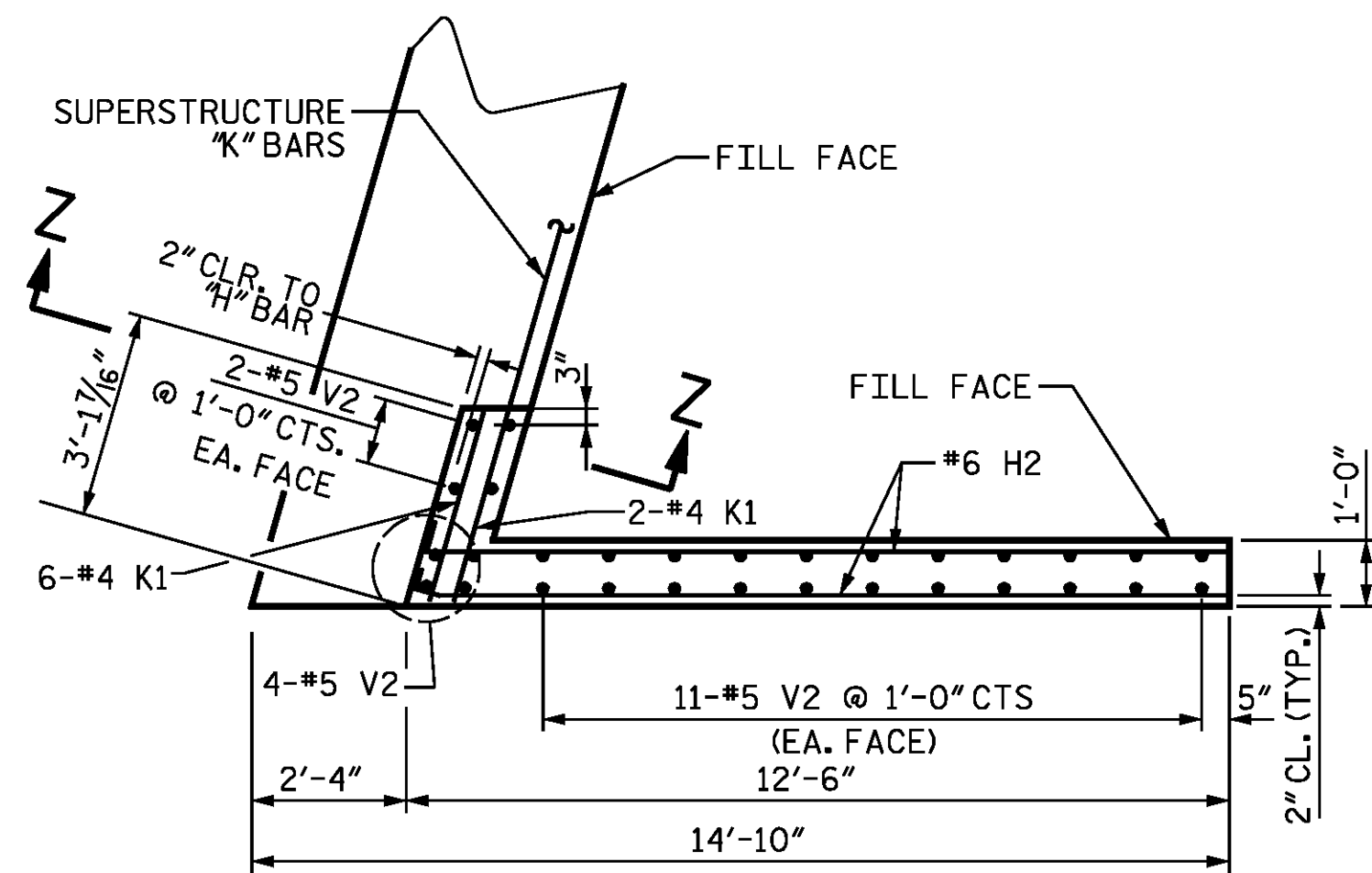
SHEET 1 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SUBSTRUCTURE
 END BENT 1**
 RIGHT LANE STR-#4



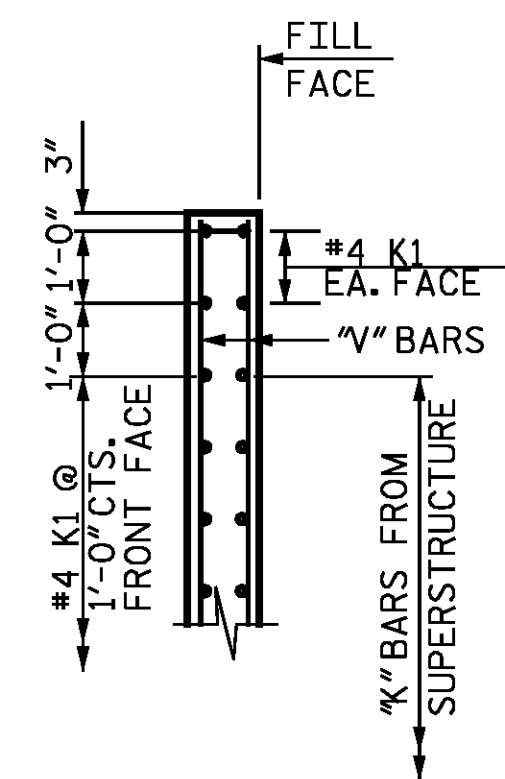
DESIGN ENGINEER OF RECORD: DATE: 2/12/2015
 DRAWN BY: R. J. FLORY DATE: 2/24/14
 CHECKED BY: R. C. LARSON DATE: 2/27/14

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

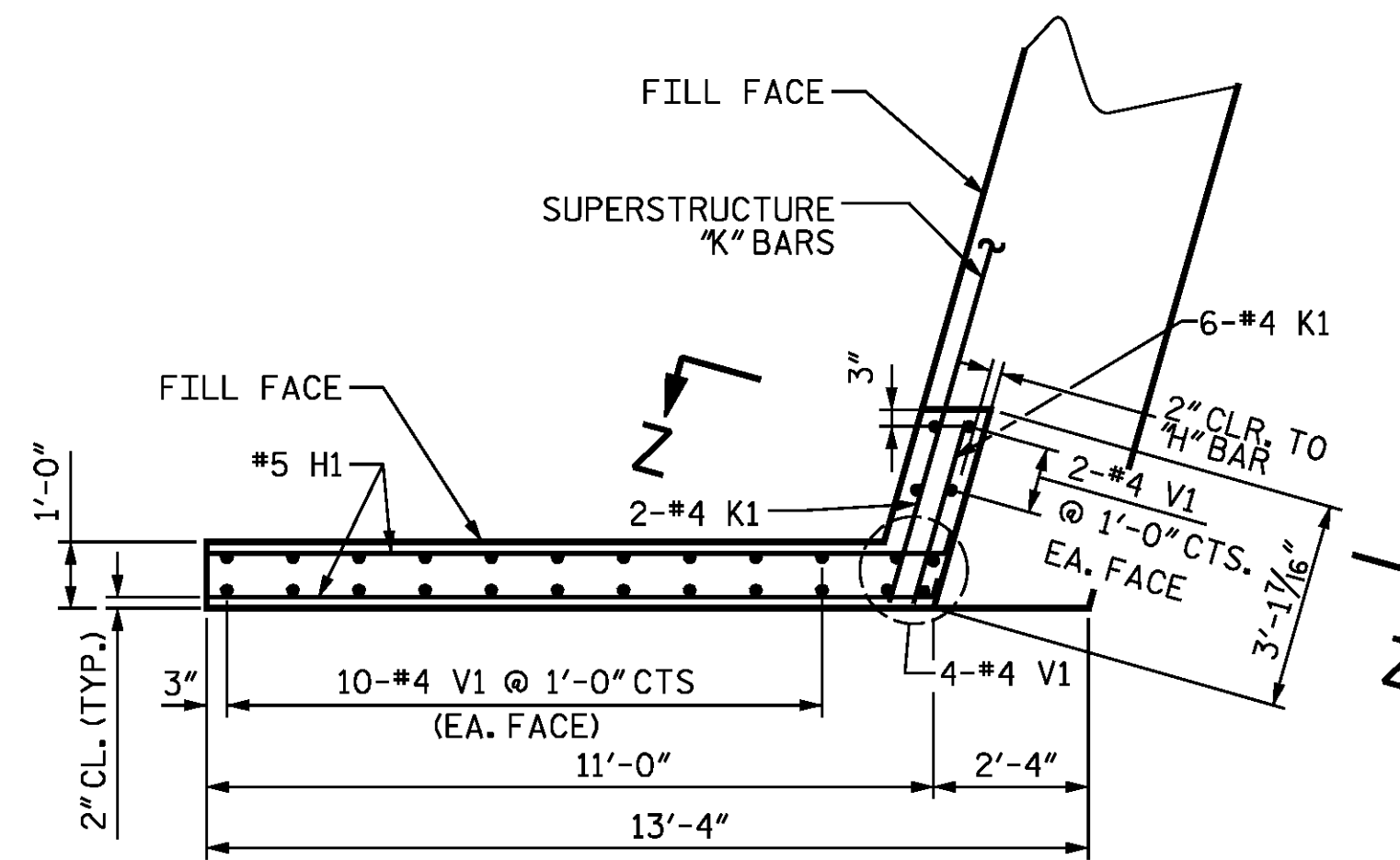
TOTAL SHEETS: S04-23
 DWG. REF. NO. 15 OF 23



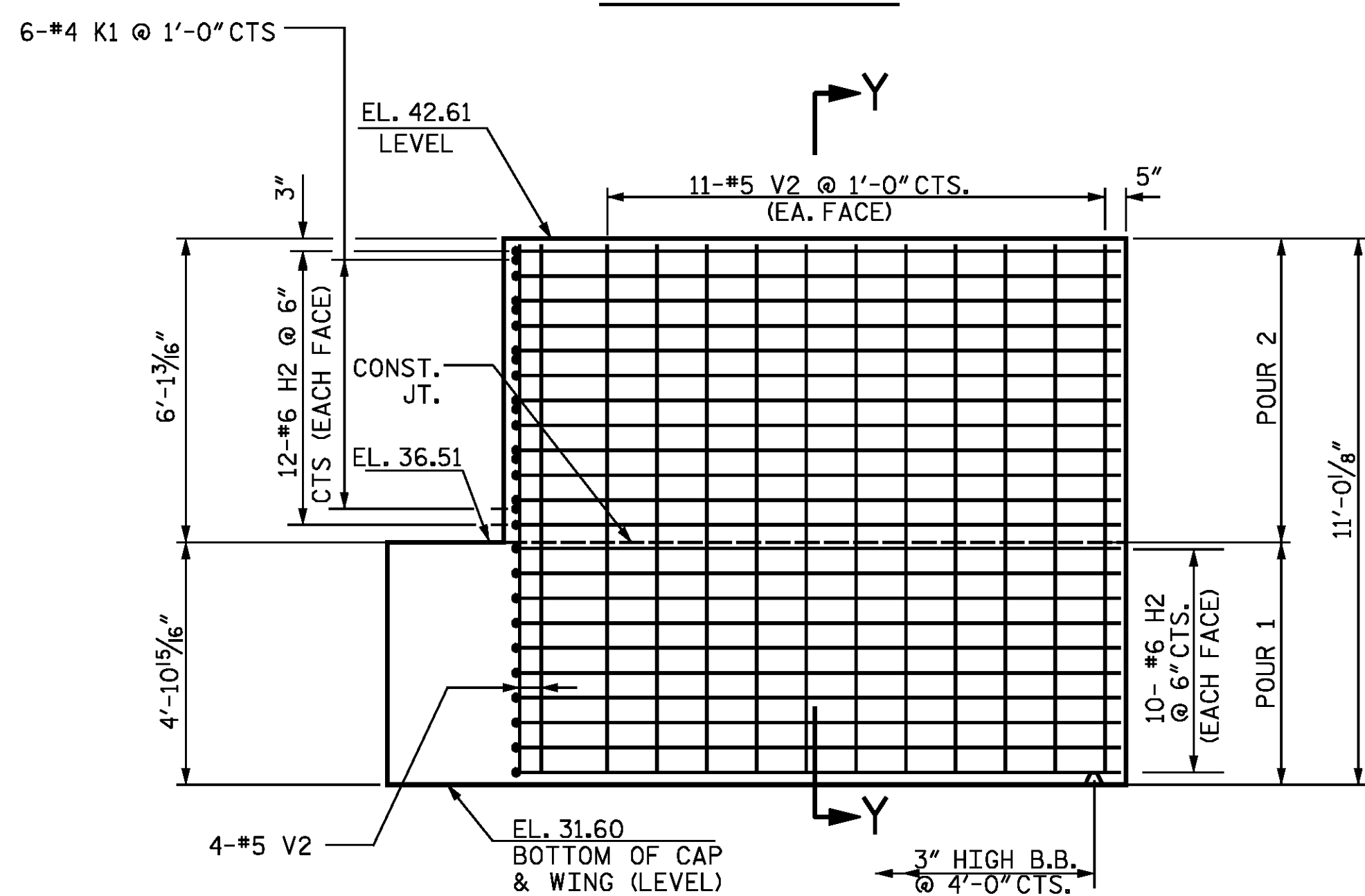
PLAN W1



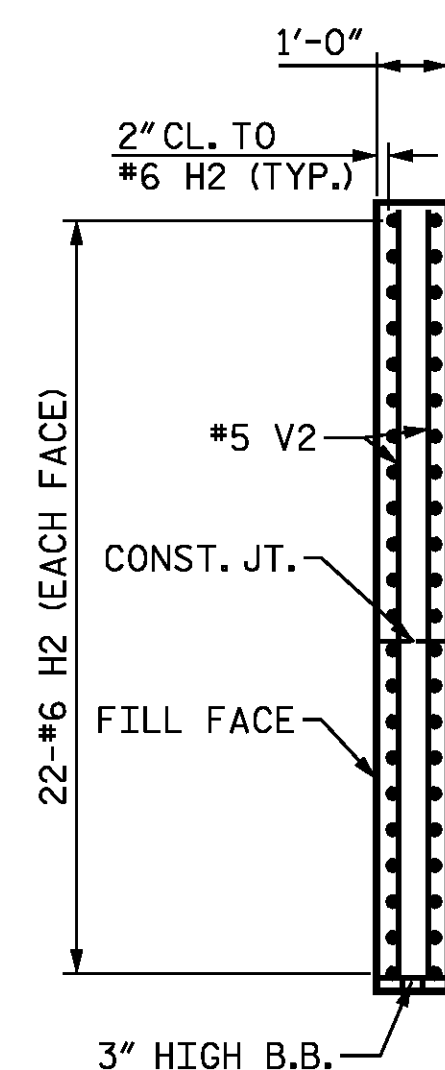
SECTION Z-Z



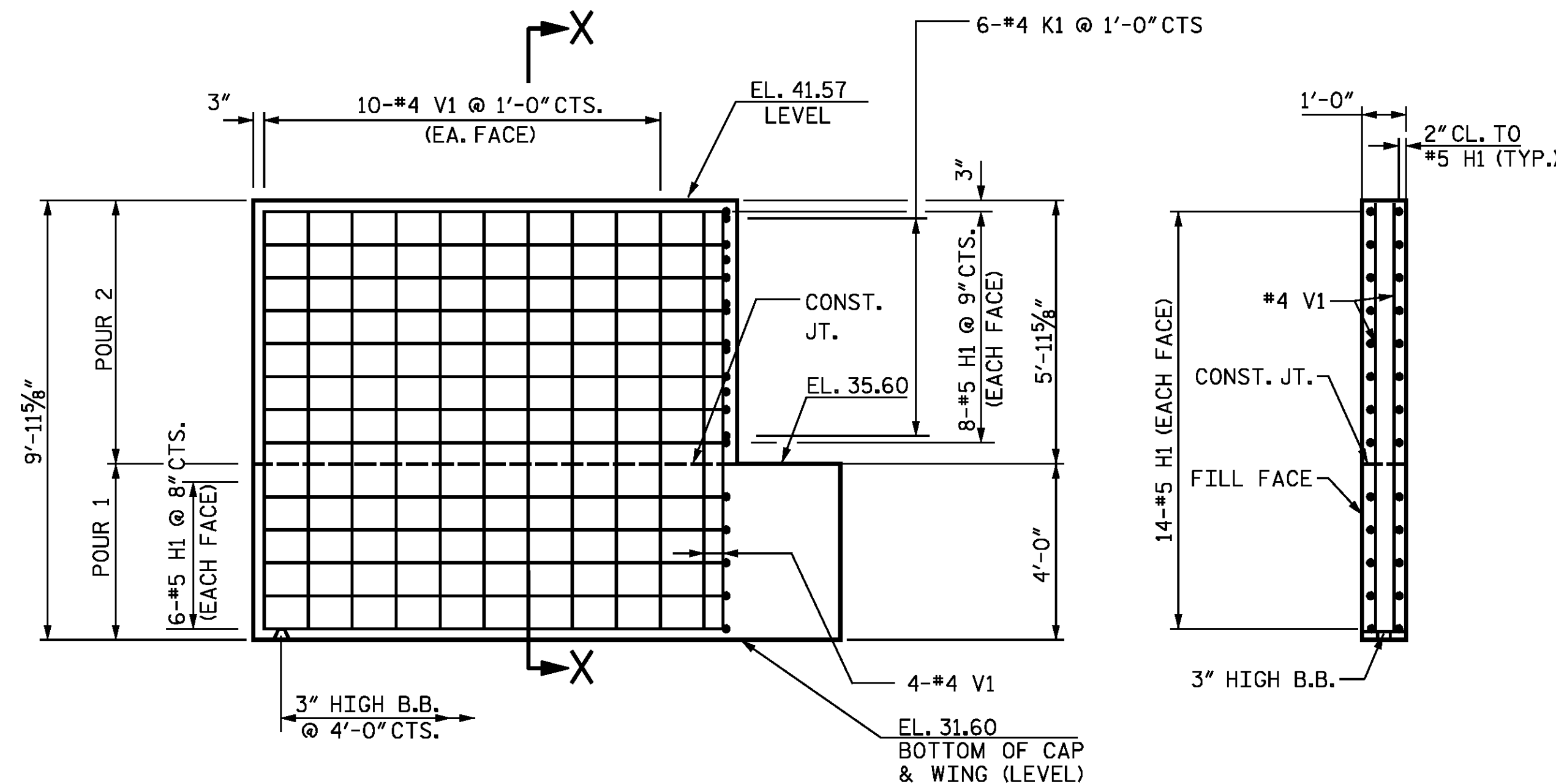
PLAN W2



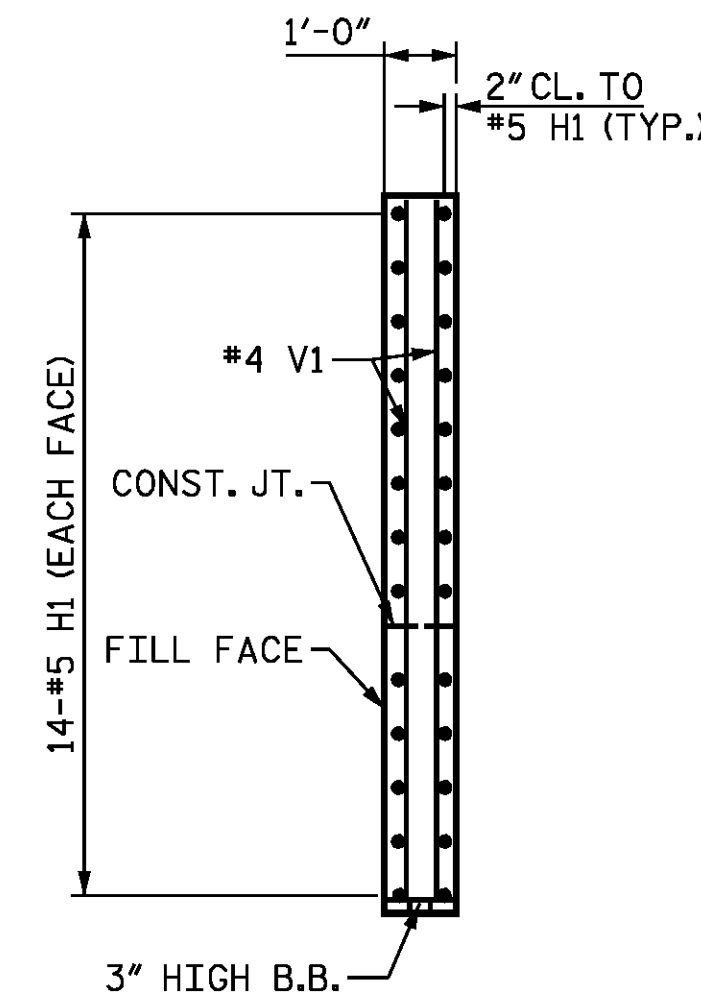
ELEVATION W1



SECTION Y-Y



ELEVATION W2



SECTION X-X

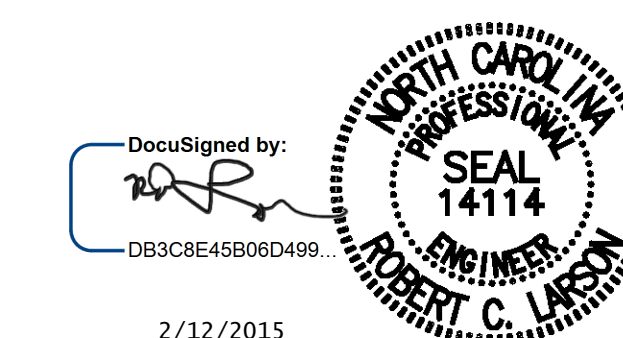
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1

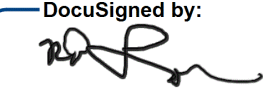
RIGHT LANE STR-#4



DocuSigned by:

DB3C8E45B06D499

2/12/2015

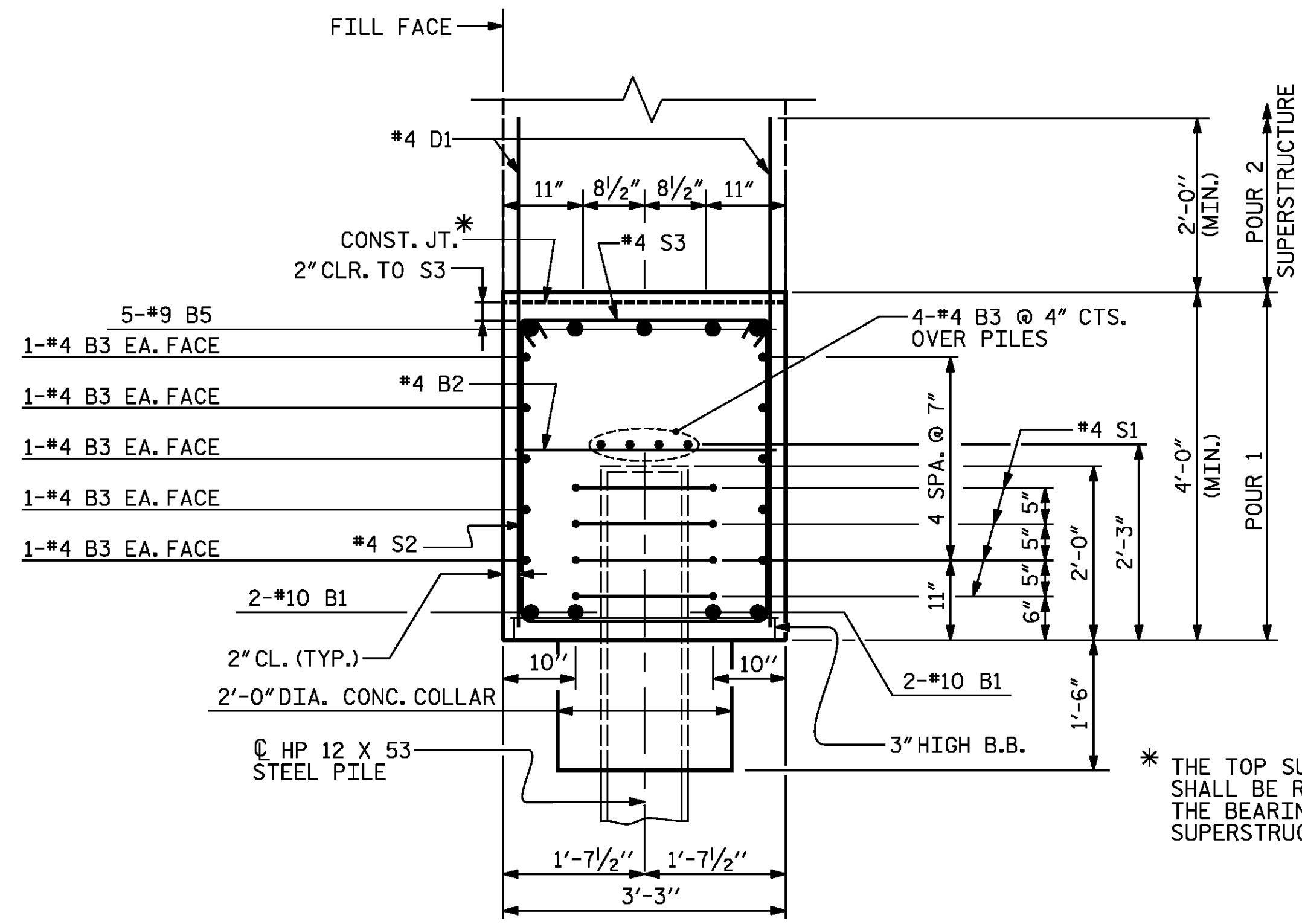
DocuSigned by:

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DESIGN ENGINEER OF RECORD: DATE : 2/12/2015

DRAWN BY : R. C. LARSON DATE : 02/28/14
 CHECKED BY : R. J. FLORY DATE : 03/03/14

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 of North Carolina, P.A.
 DWG. REF. NO. 16 OF 23

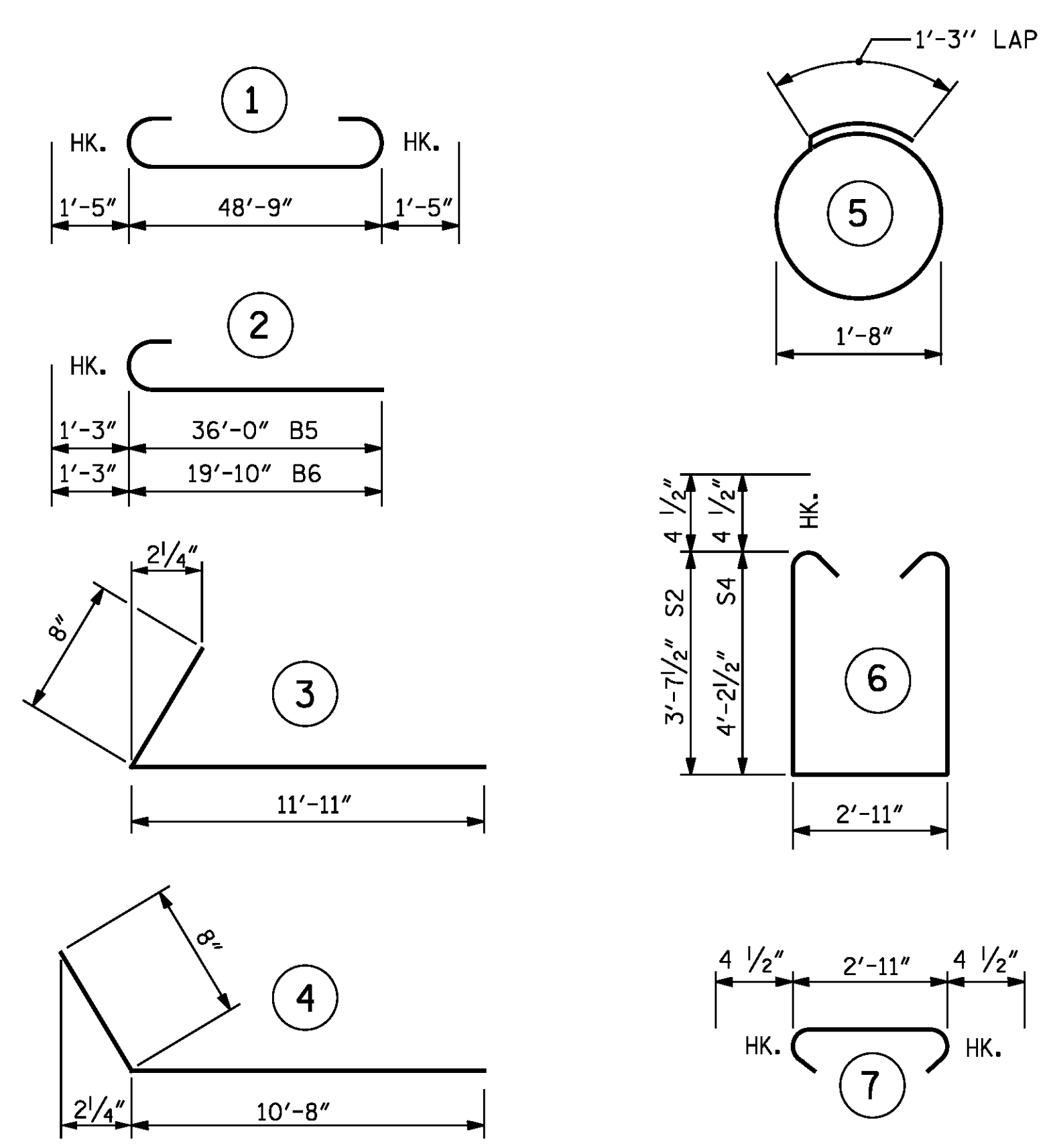
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S04-16	
1			3			TOTAL SHEETS	
2			4			S04-23	



SECTION A-A

* THE TOP SURFACE OF THE CAP AND WINGS SHALL BE RAKED TO A DEPTH OF 1/4" EXCEPT THE BEARING AREAS AND CAP OUTSIDE OF SUPERSTRUCTURE.

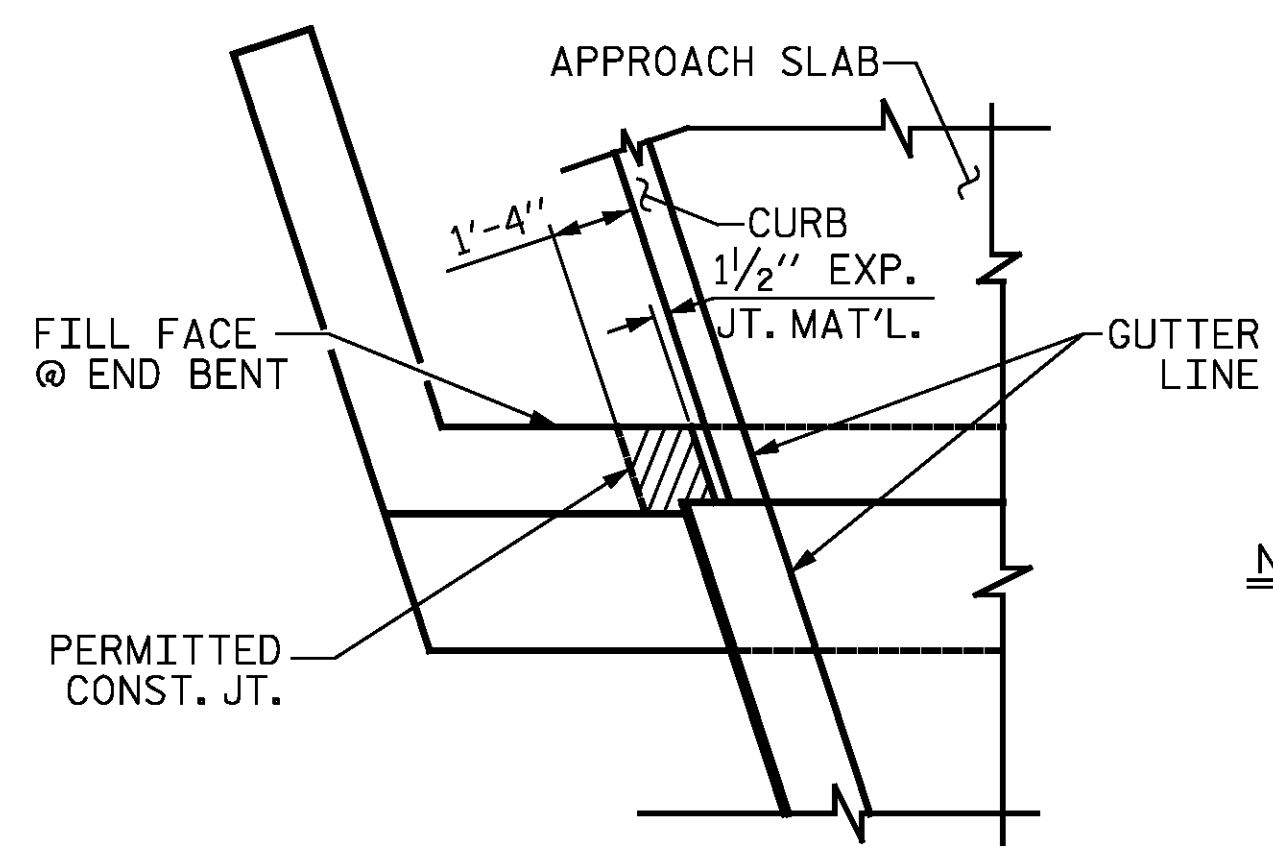
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

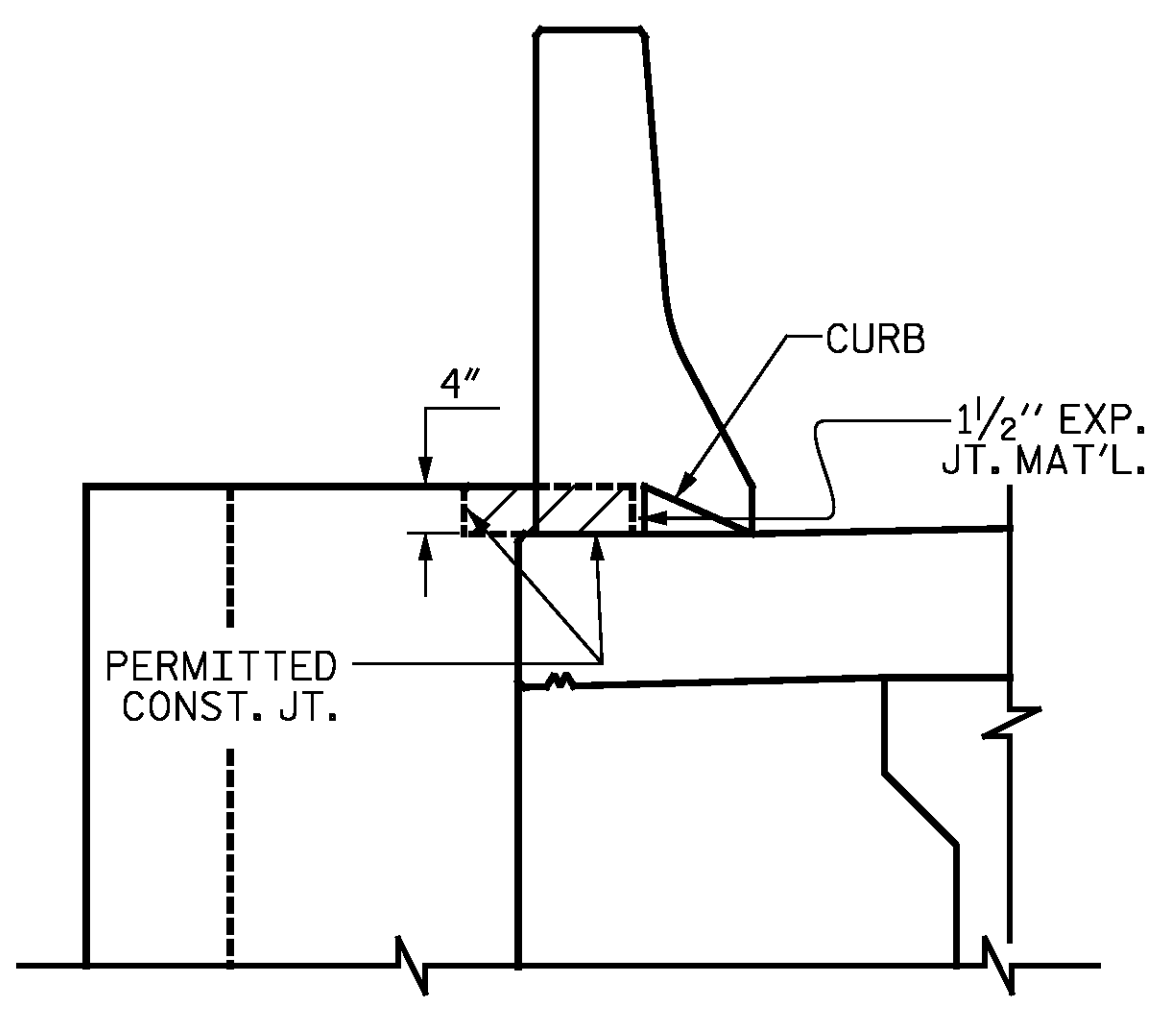
BILL OF MATERIAL

END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	10	1	51'-7"	888
B2	12	4	STR.	2'-11"	23
B3	28	4	STR.	25'-8"	480
B4	2	4	STR.	15'-3"	20
B5	5	9	2	37'-3"	633
B6	5	9	2	21'-1"	358
D1	62	4	STR.	6'-8"	276
H1	28	5	4	11'-4"	331
H2	44	6	3	12'-7"	832
K1	16	4	STR.	2'-9"	29
S1	28	4	5	6'-6"	122
S2	23	4	6	10'-11"	168
S3	38	4	7	3'-8"	93
S4	15	4	6	12'-1"	121
V1	28	4	STR.	9'-7"	179
V2	30	5	STR.	10'-8"	334
REINFORCING STEEL, LB					4887
CLASS A CONCRETE, CY POUR 1					30.6
(POUR 2 INCLUDED IN SUPERSTRUCTURE)					
HP 12X53 STEEL PILES					NO. 7
					LF 420
PILE REDRIVES, EA					4



PLAN

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



ELEVATION

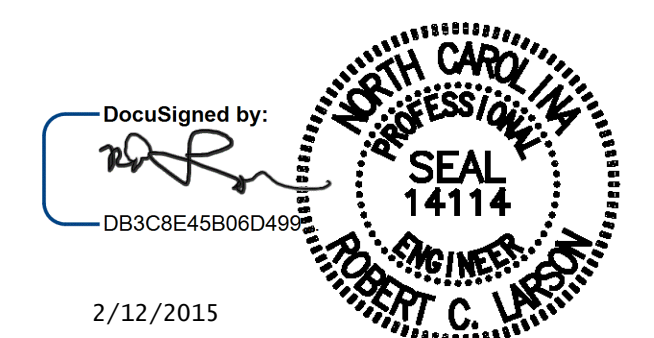
PROJECT NO. R-2514D
JONES COUNTY
STATION: 363+38.90 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUBSTRUCTURE
END BENT 1**

RIGHT LANE STR-#4



2/12/2015

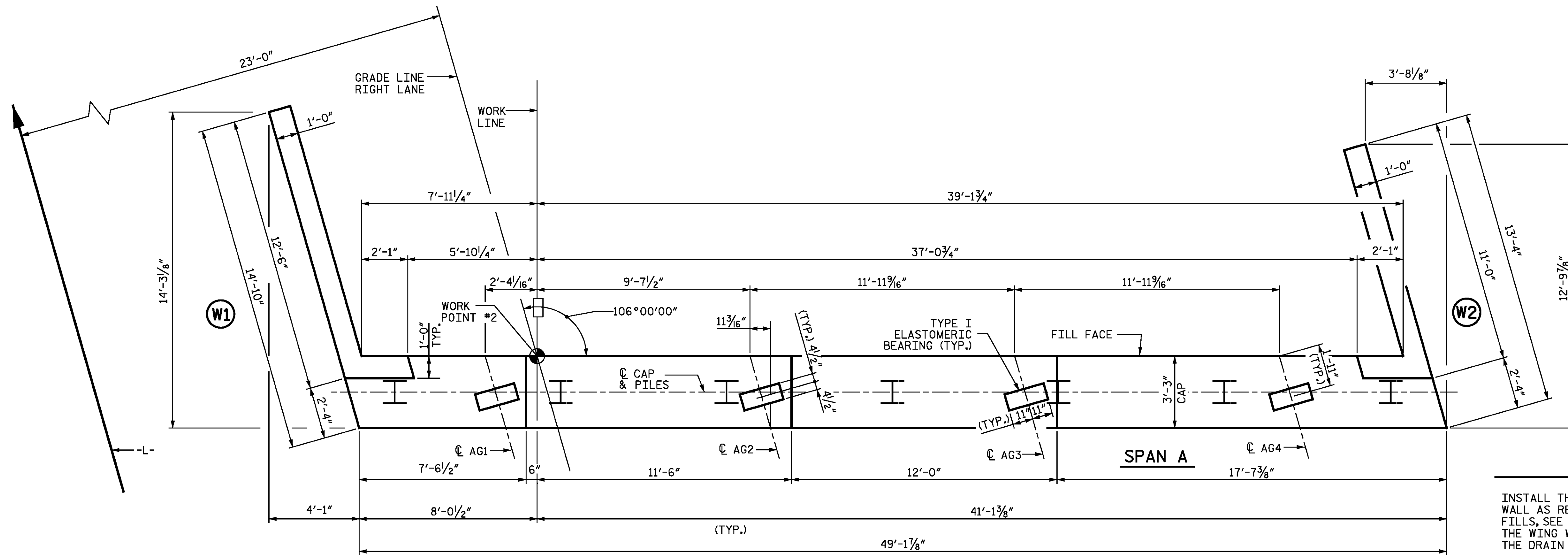
DocuSigned by:
R. C. Larson
DB3C8E45806D499

DESIGN ENGINEER OF RECORD:	DATE :	2/12/2015
DRAWN BY :	DATE :	2/28/14
CHECKED BY :	DATE :	3/3/14

KCI Associates of North Carolina, P.A.					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					S04-17
					S04-23

DWG. REF. NO. 17 OF 23

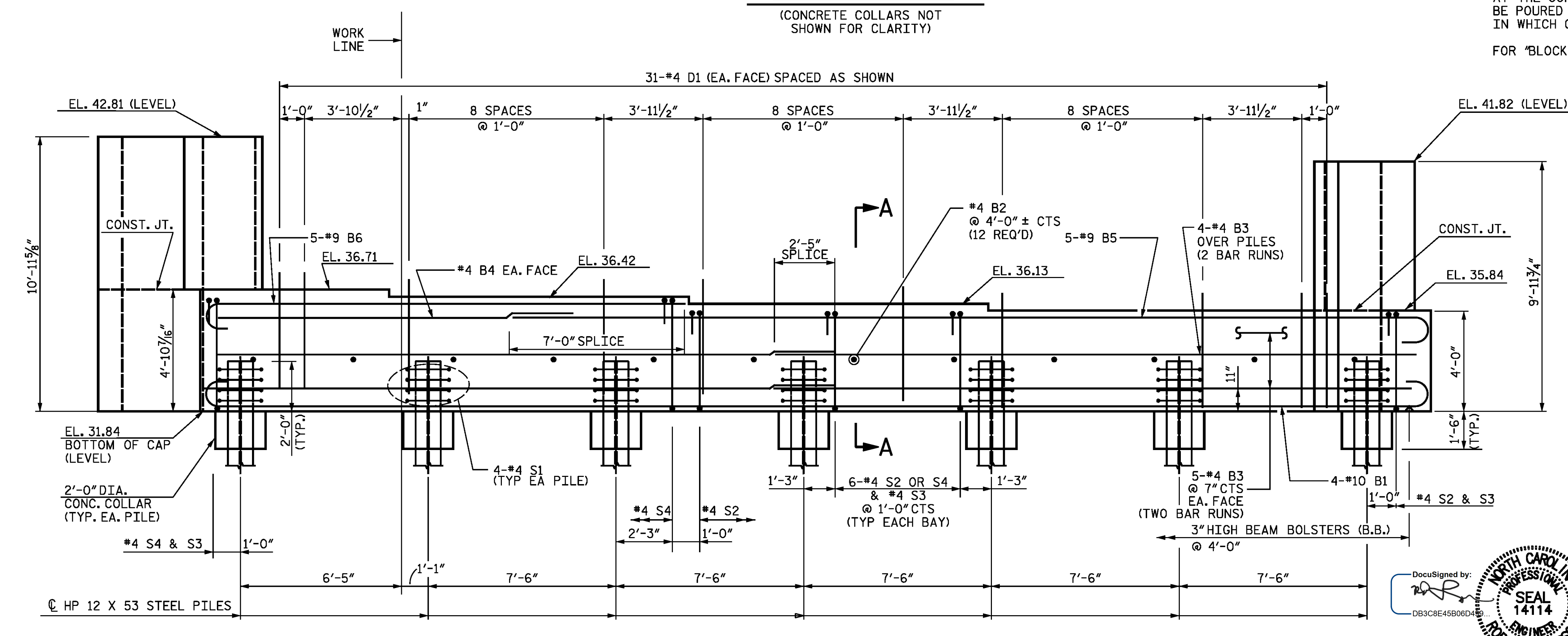


NOTES

INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

THE PORTIONS OF THE WINGS ABOVE THE CONSTRUCTION JOINT ARE TO BE POURED WITH THE SUPERSTRUCTURE. AT THE CONTRACTOR'S OPTION, THESE PORTIONS MAY BE POURED SEPARATELY FROM THE SUPERSTRUCTURE, IN WHICH CASE CLASS 'A' CONCRETE MAY BE USED.

FOR "BLOCKOUT IN WINGWALL," SEE END BENT 1.



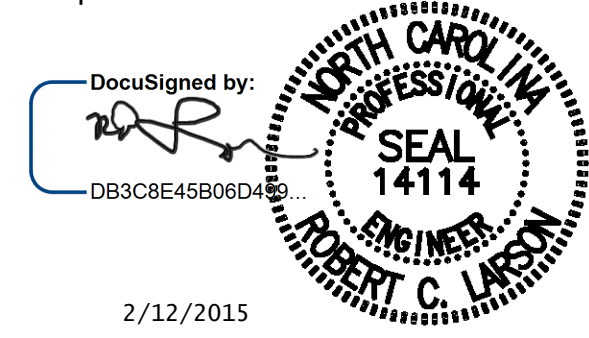
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 2**

RIGHT LANE STR-#4



DocuSigned by:
 DB3C8E45B06D499...

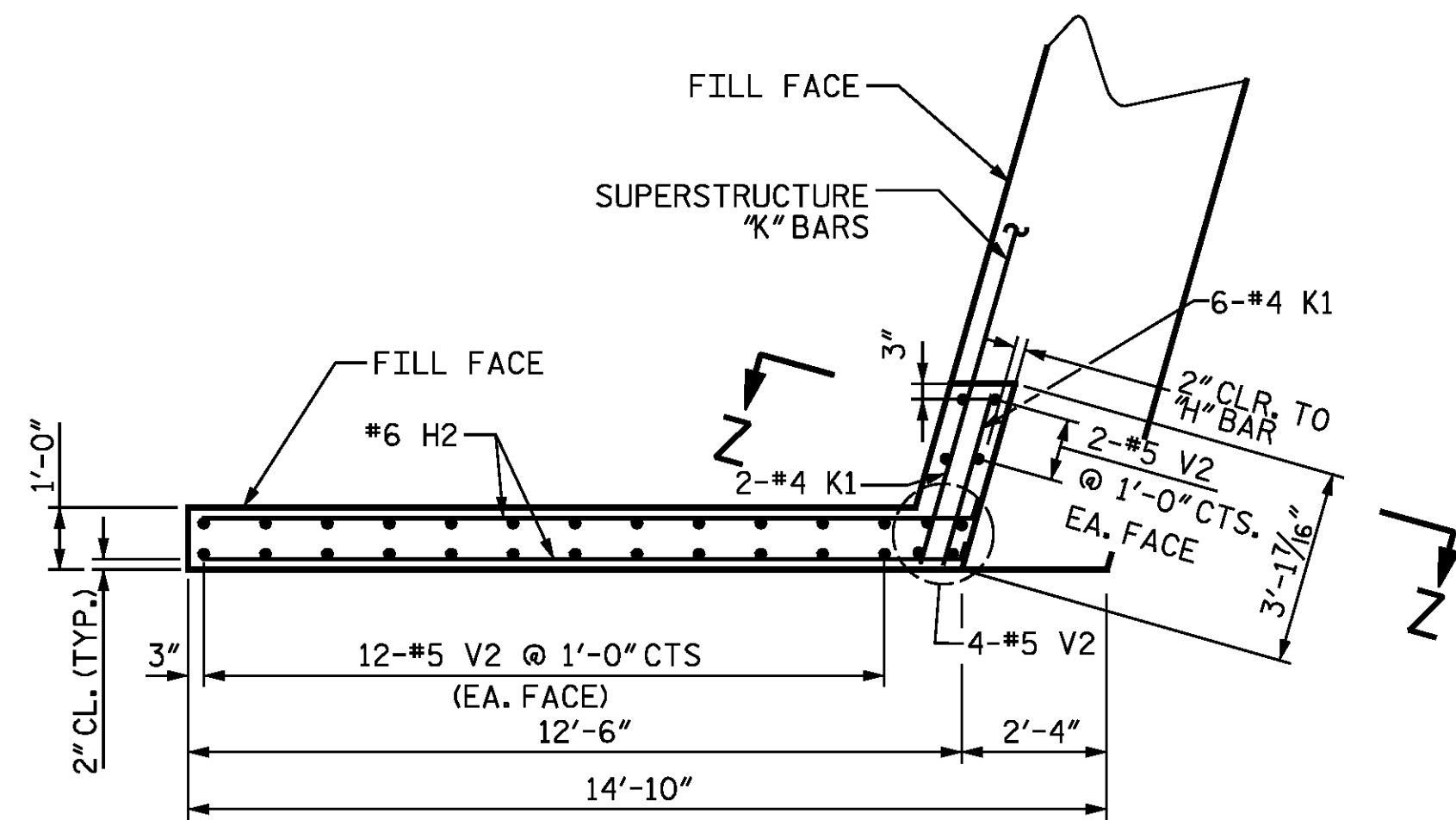
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DRAWN BY: R. J. FLORY DATE: 2/26/14
 CHECKED BY: R. C. LARSON DATE: 2/28/14

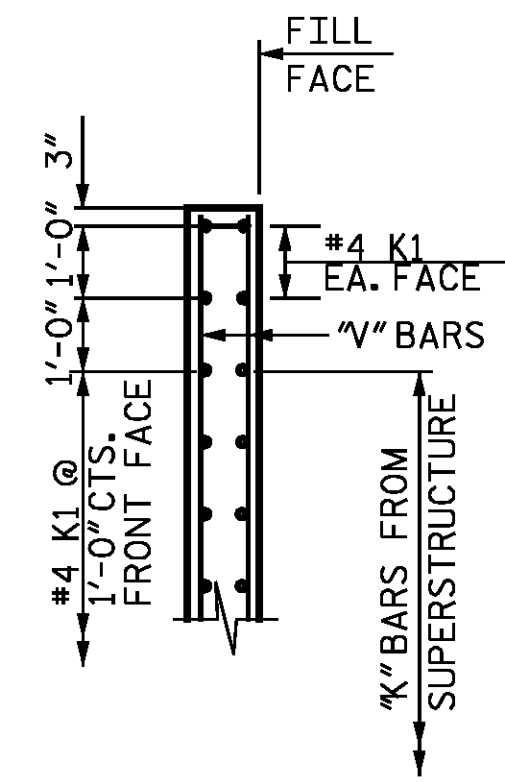
REVISIONS		SHEET NO.	
NO.	DATE	NO.	DATE
1		3	
2		4	

TOTAL SHEETS: S04-23

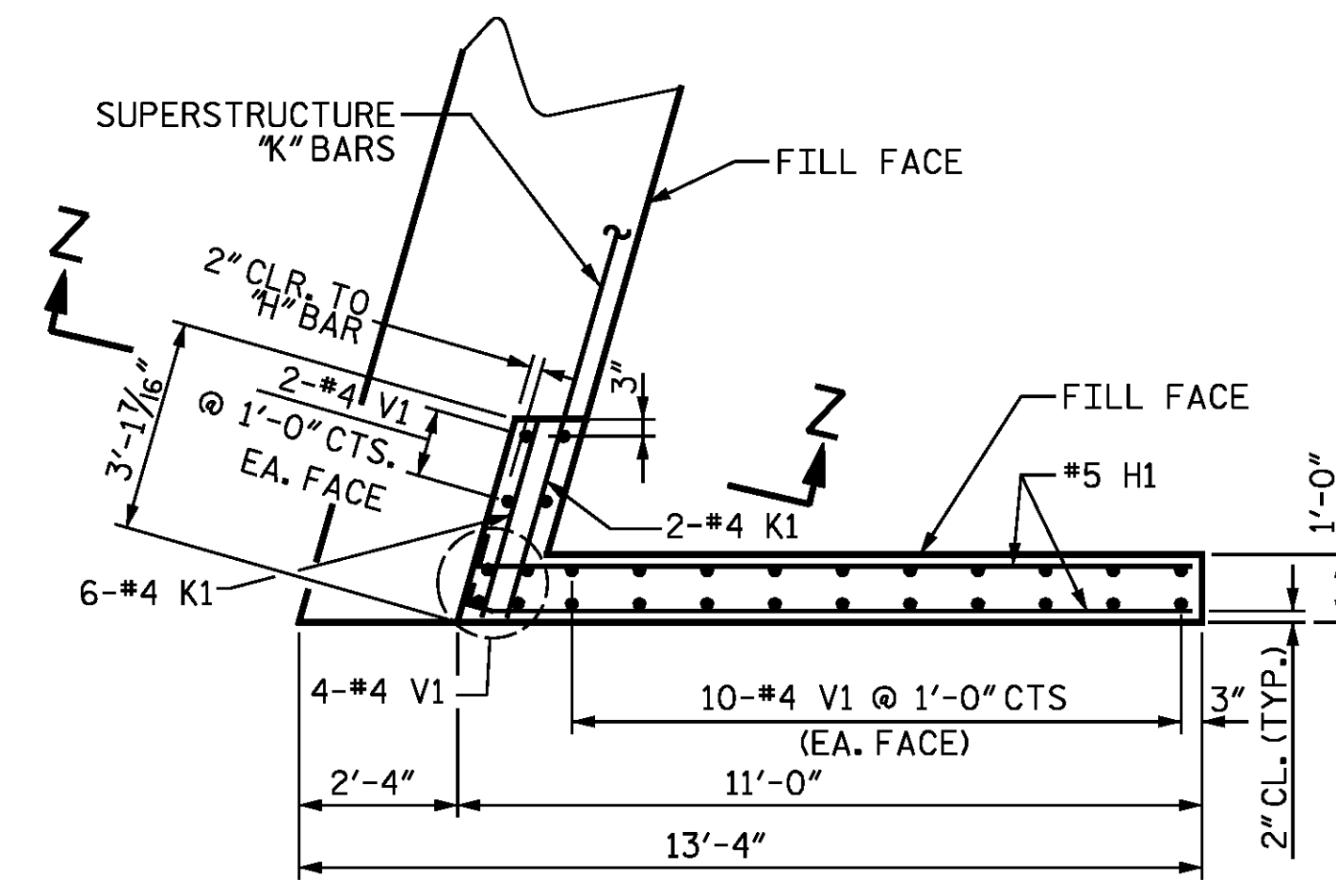
KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 18 OF 23



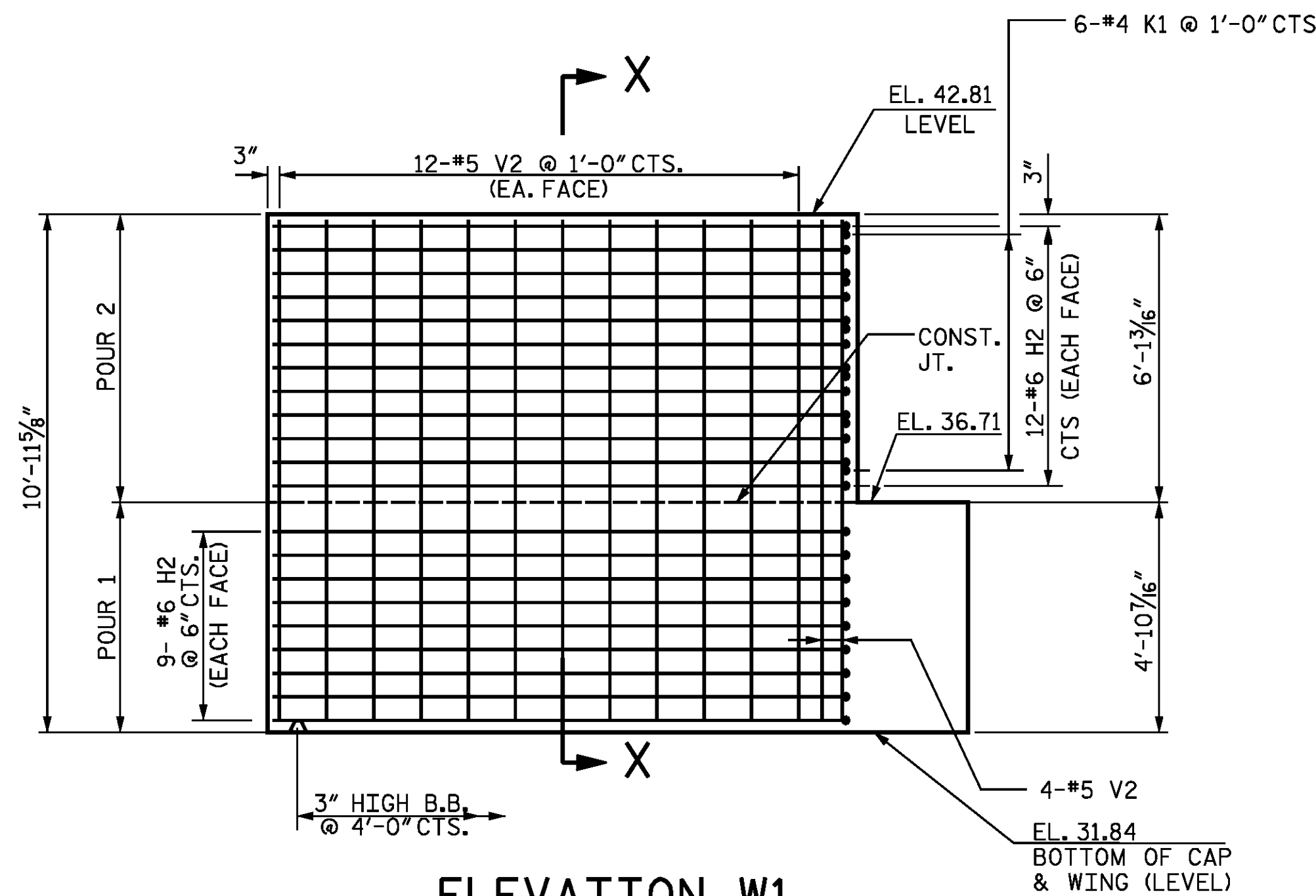
PLAN W1



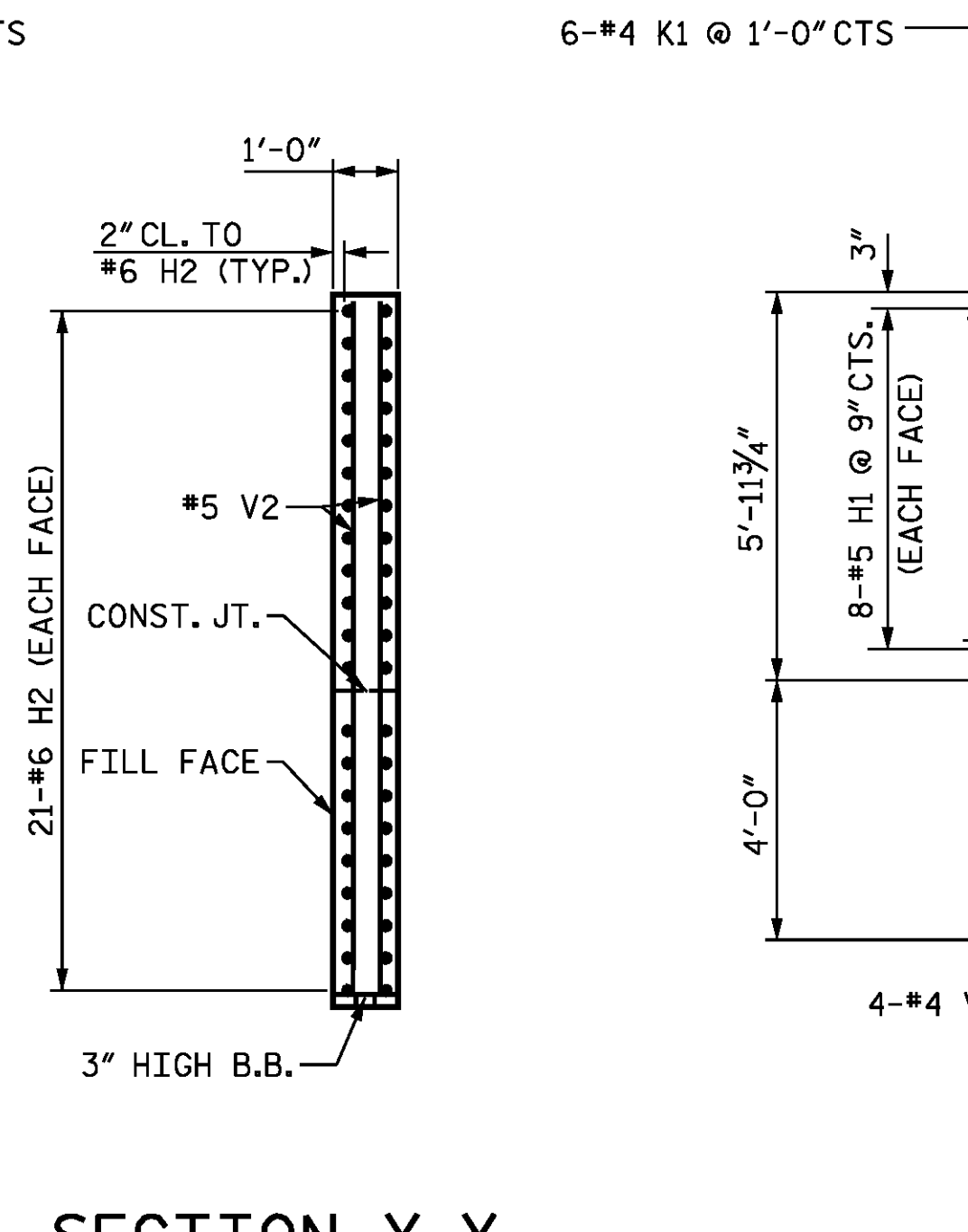
SECTION Z-Z



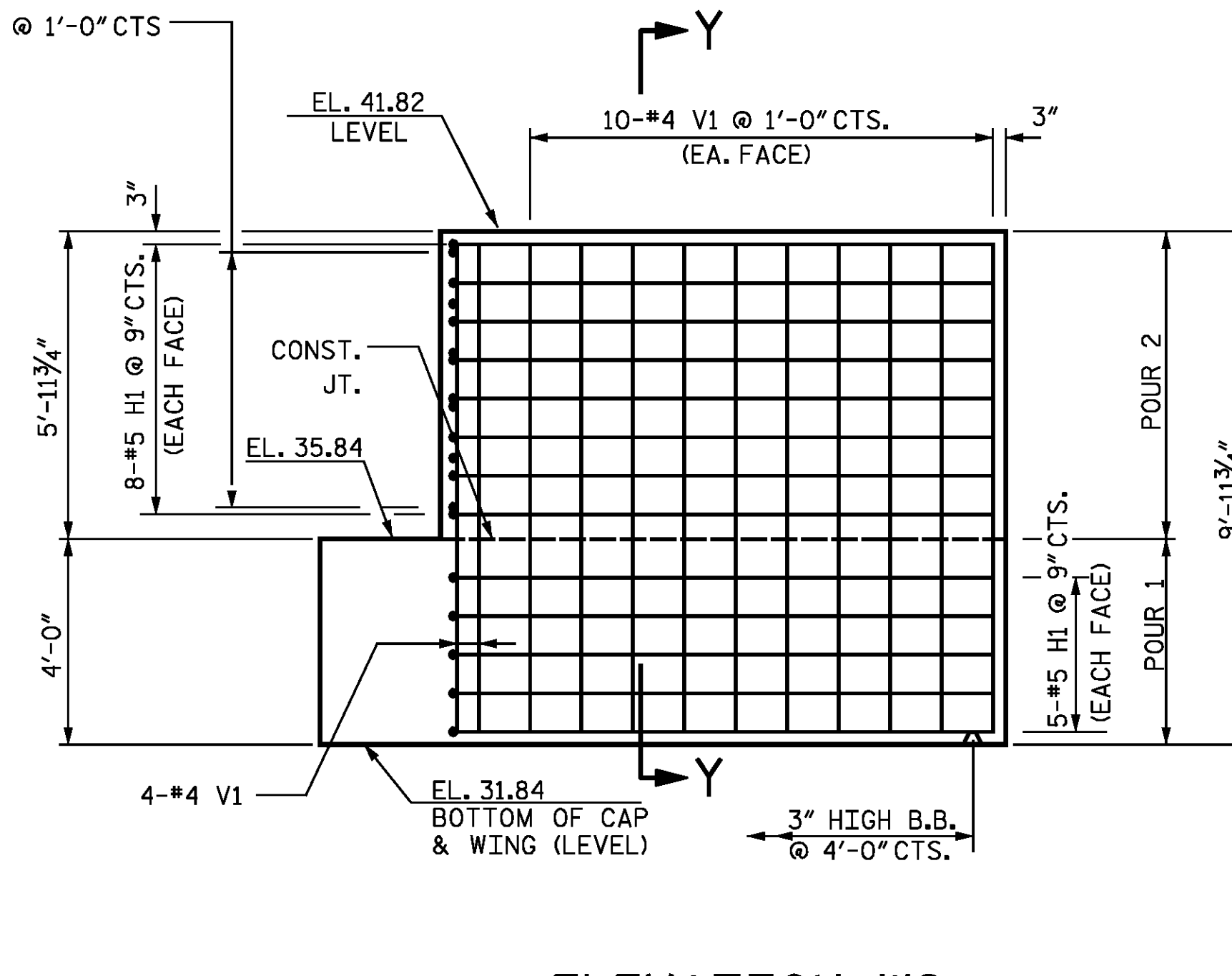
PLAN W2



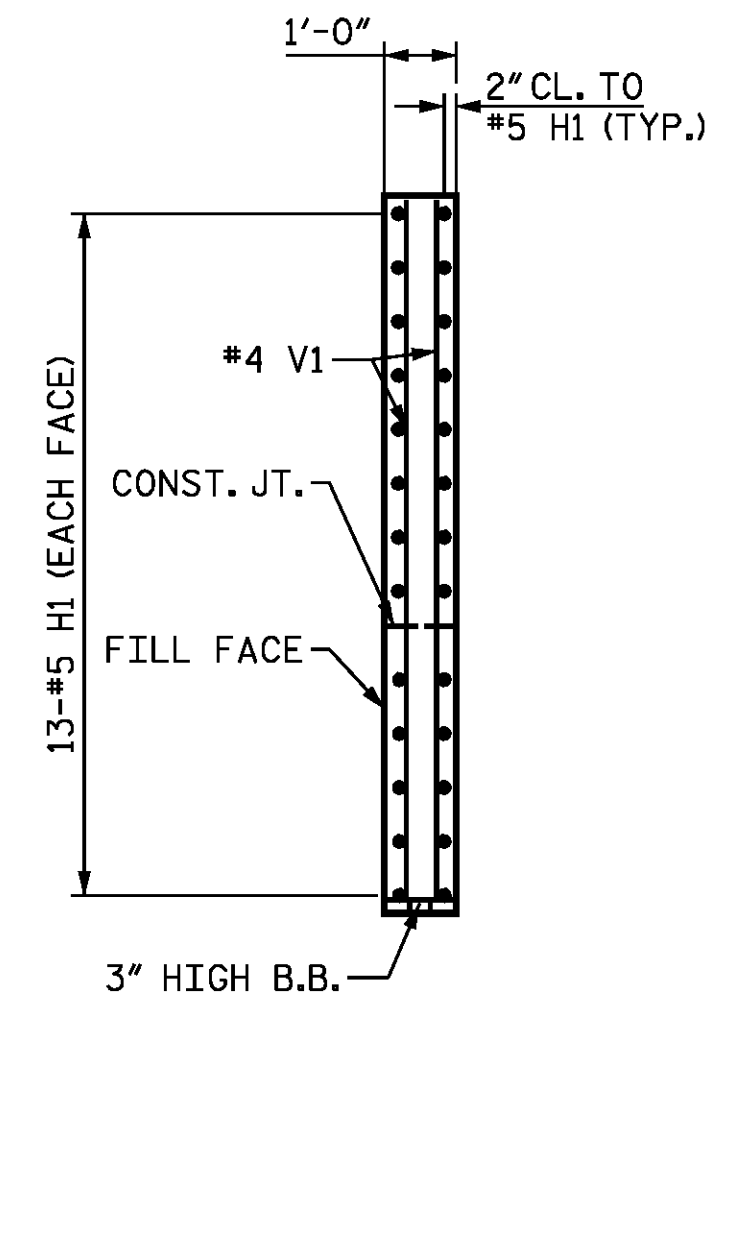
ELEVATION W1



SECTION X-X



ELEVATION W2



SECTION Y-Y

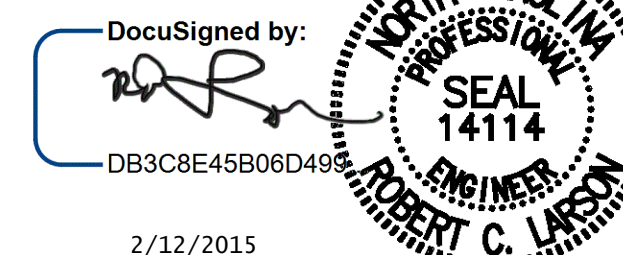
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2

RIGHT LANE STR-#4

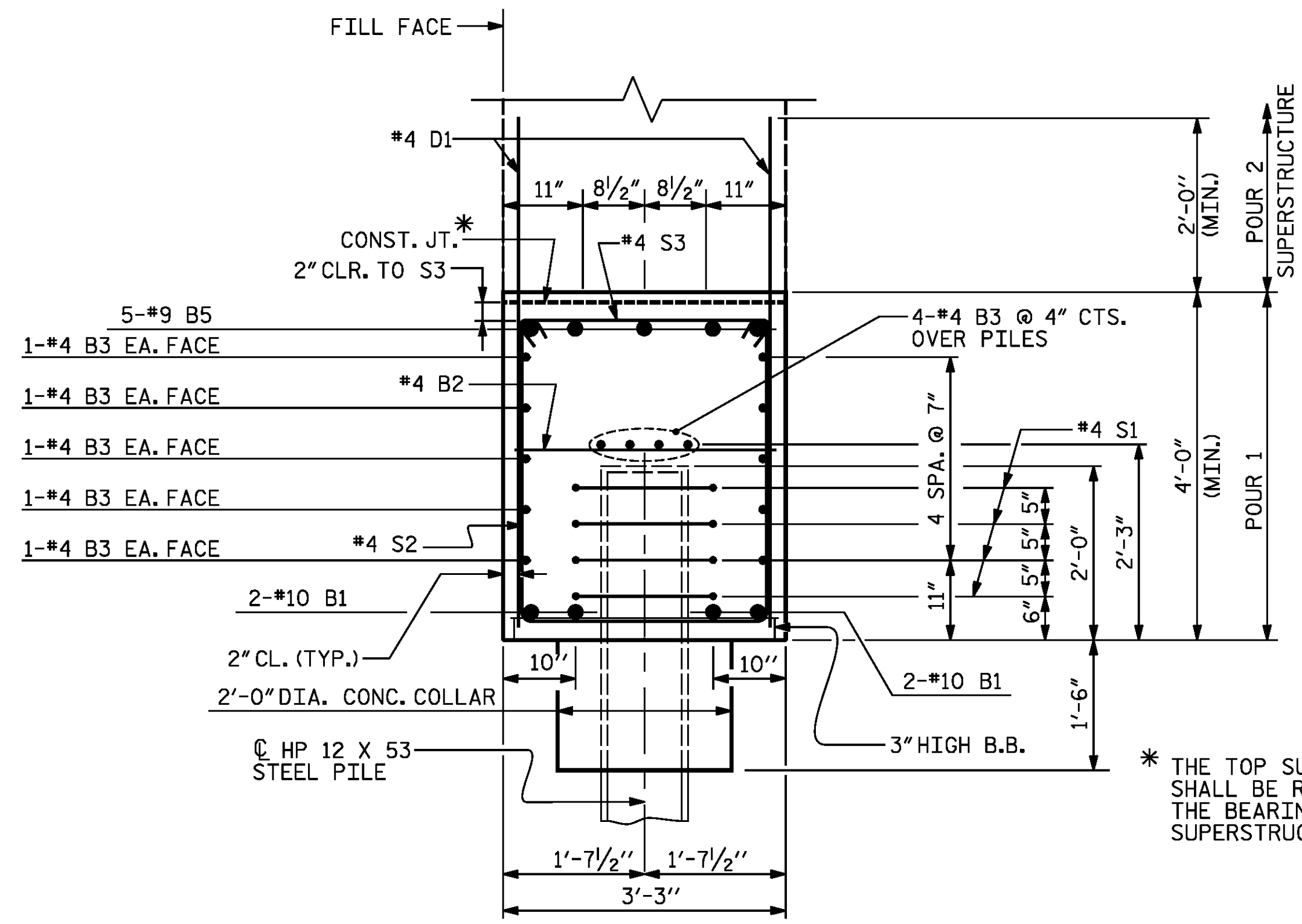


DocuSigned by:
 DB3C8E45B06D499...

DESIGN ENGINEER OF RECORD: _____ DATE: 2/12/2015
 DRAWN BY: R. J. FLORY DATE: 3/04/14
 CHECKED BY: R. C. LARSON DATE: 3/05/14

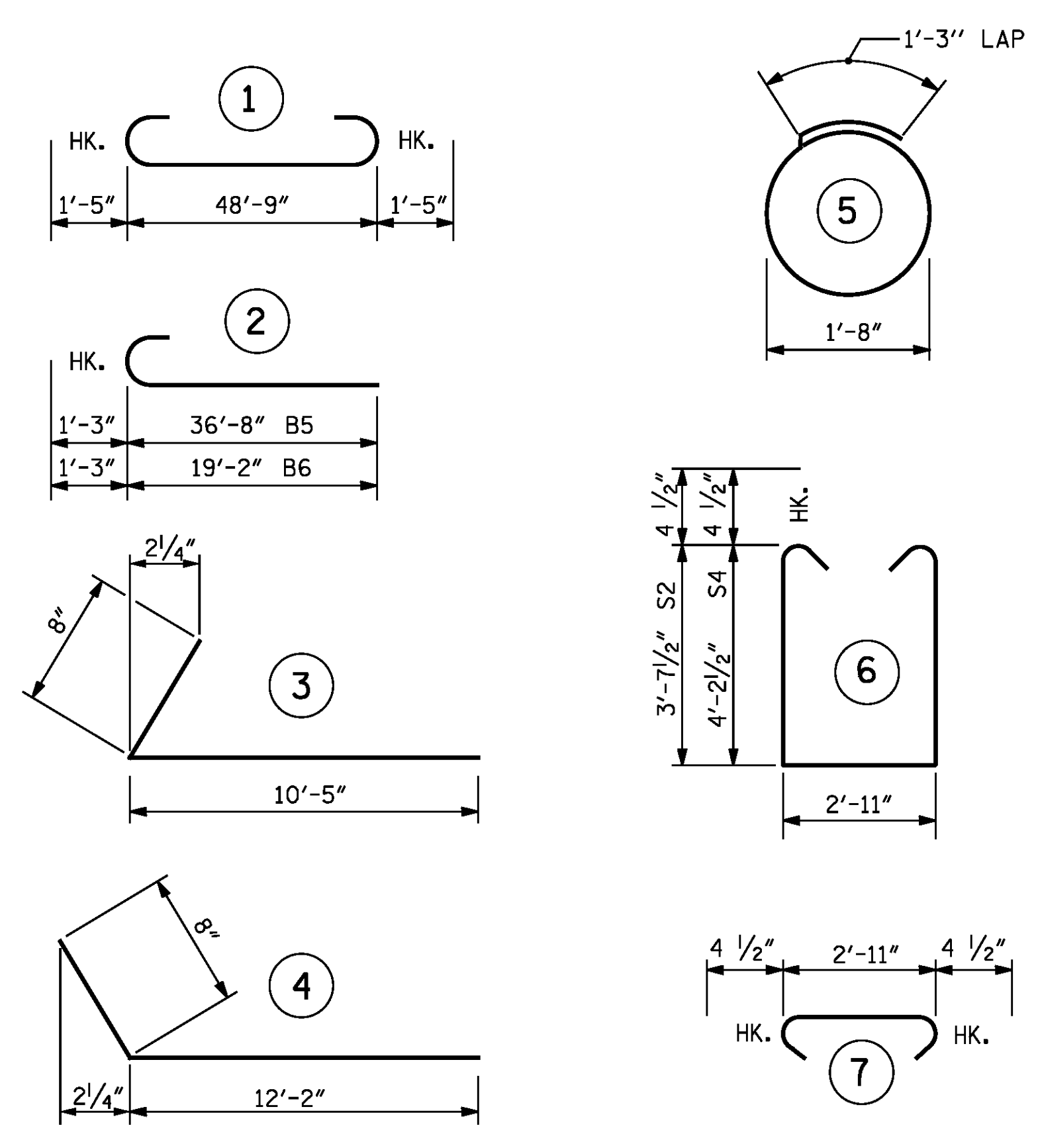
KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 19 OF 23

REVISIONS						SHEET NO. S04-19
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS S04-23
2			4			



SECTION A-A

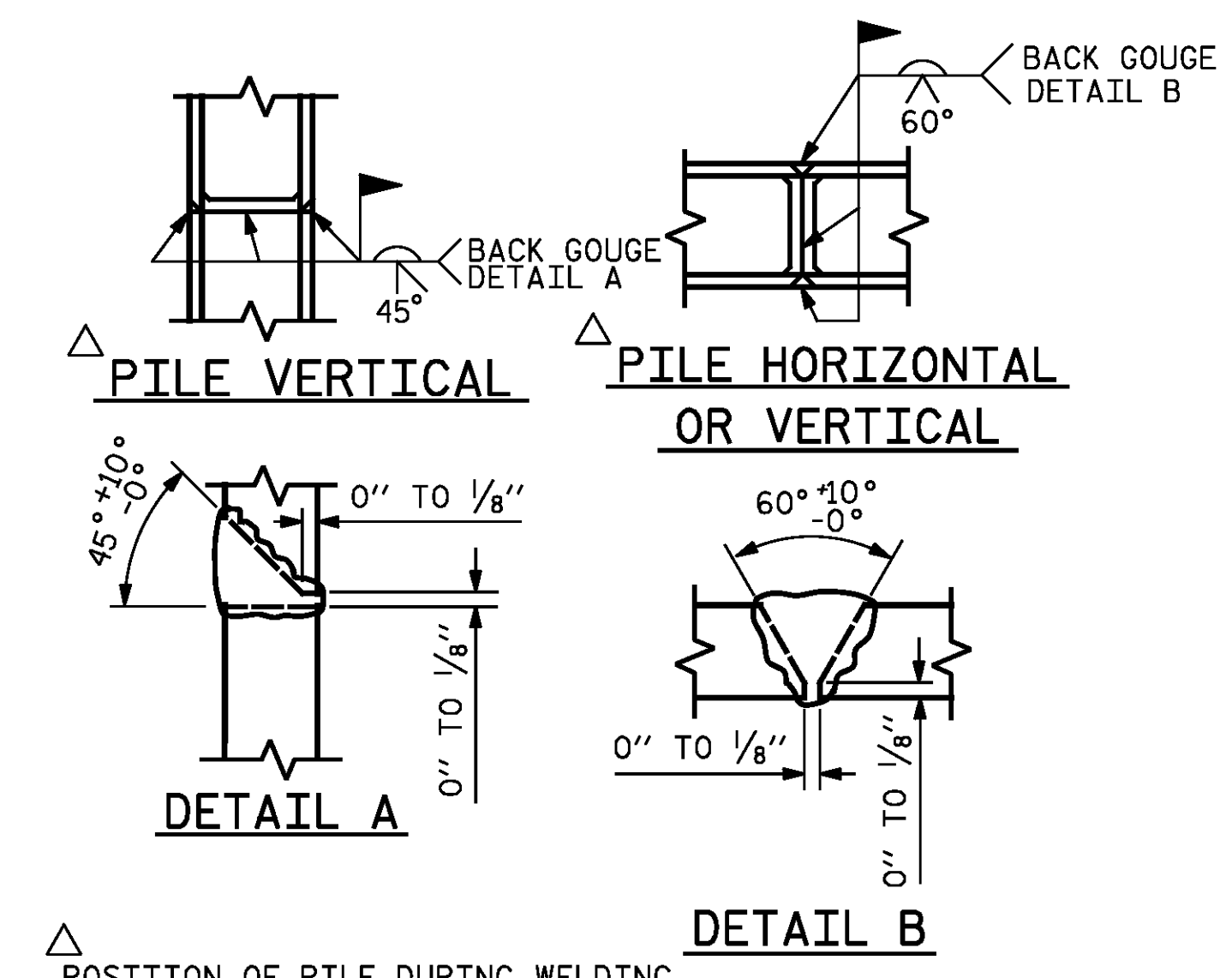
BAR TYPES



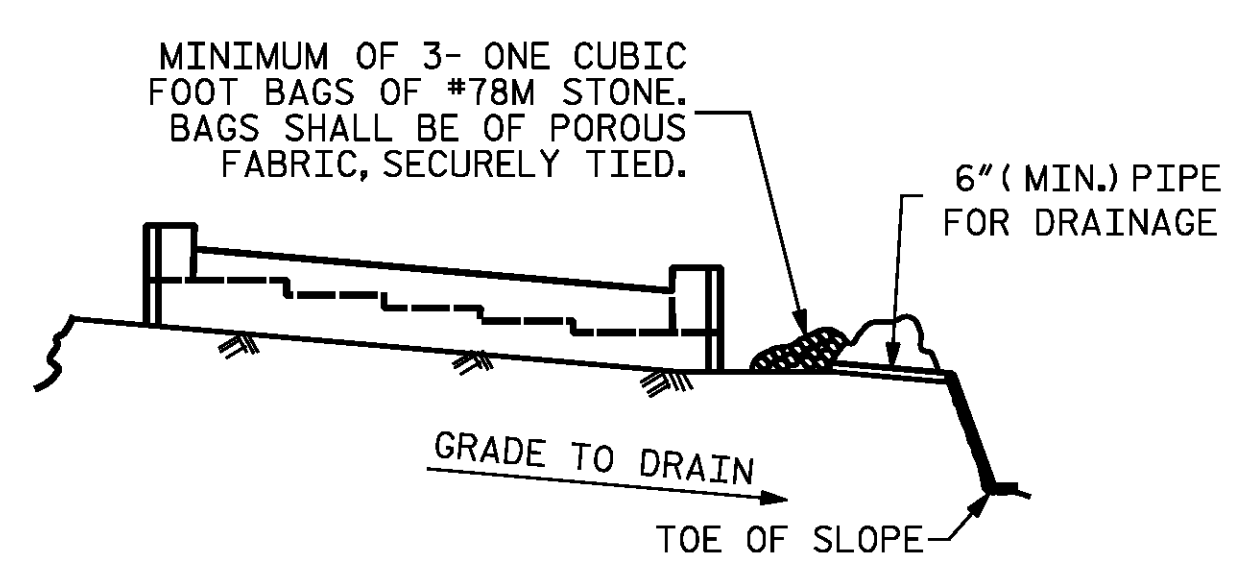
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	10	1	51'-7"	888
B2	12	4	STR.	2'-11"	23
B3	28	4	STR.	25'-8"	480
B4	2	4	STR.	14'-7"	19
B5	5	9	2	37'-11"	645
B6	5	9	2	20'-5"	347
D1	62	4	STR.	6'-8"	276
H1	26	5	3	11'-1"	301
H2	42	6	4	12'-10"	810
K1	16	4	STR.	2'-9"	29
S1	28	4	5	6'-6"	122
S2	23	4	6	10'-11"	168
S3	38	4	7	3'-8"	93
S4	15	4	6	12'-0"	120
V1	28	4	STR.	9'-8"	181
V2	32	5	STR.	10'-7"	353
REINFORCING STEEL, LB					4855
CLASS A CONCRETE, CY POUR 1					30.5
(POUR 2 INCLUDED IN SUPERSTRUCTURE)					
HP 12X53 STEEL PILES NO.					7
LF					420
PILE REDRIVES, EA					3



PILE SPLICE DETAILS



MINIMUM OF 3- ONE CUBIC FOOT BAGS OF #78M STONE. BAGS SHALL BE OF POROUS FABRIC, SECURELY TIED.

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

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

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

TEMPORARY DRAINAGE AT END BENT

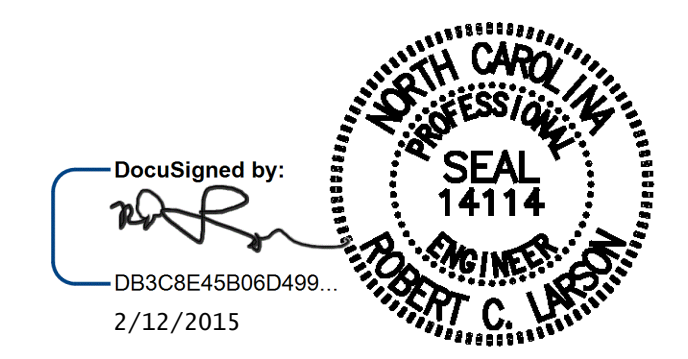
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 363+38.90 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 2**

RIGHT LANE STR-#4



DocuSigned by:
 DB3C8E45B06D499...
 2/12/2015

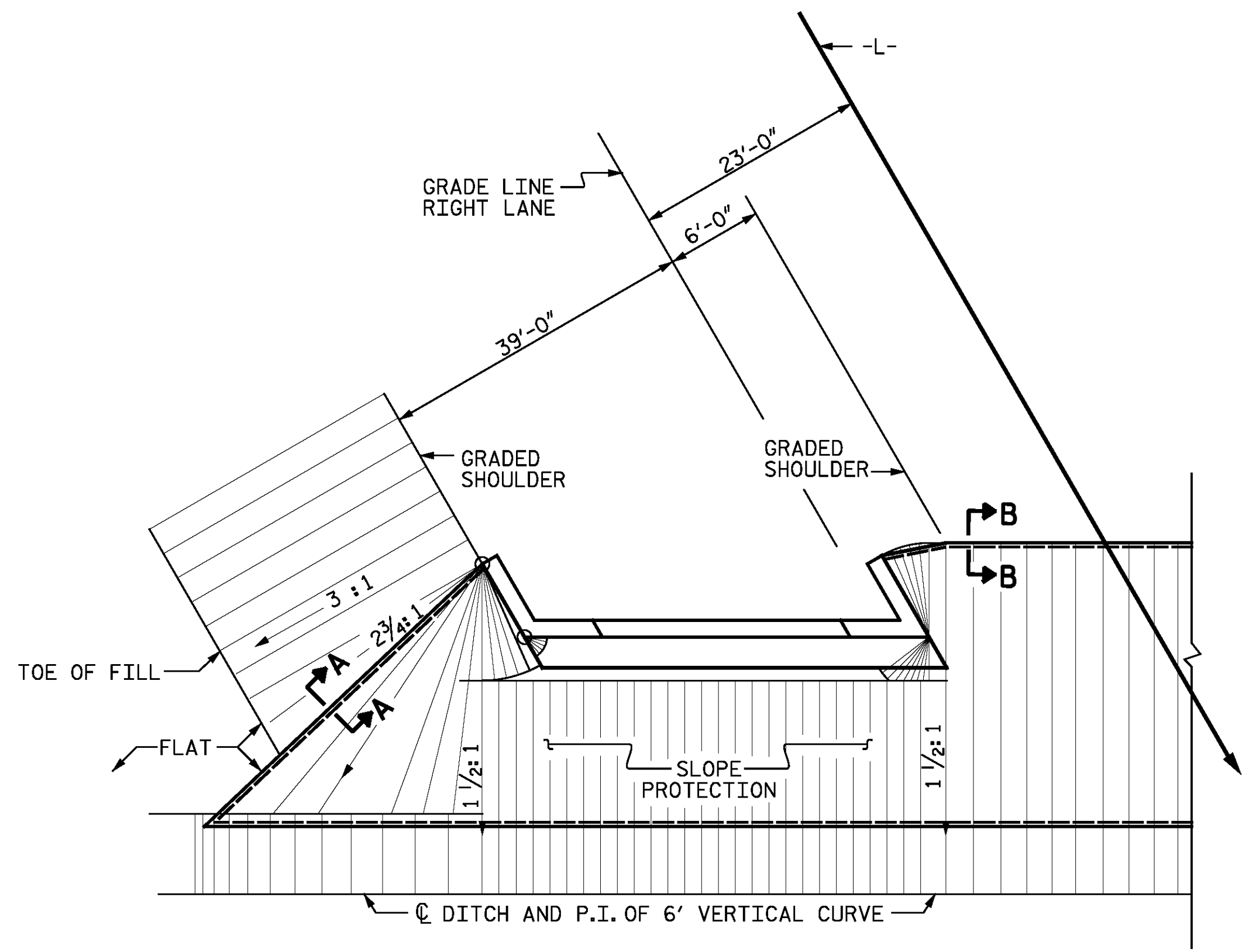
DESIGN ENGINEER OF RECORD: DATE: 2/12/2015

DRAWN BY: R. J. FLORY DATE: 3/02/14

CHECKED BY: R. C. LARSON DATE: 3/05/14

REVISIONS						SHEET NO. S04-20
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS S04-23
2			4			

DWG. REF. NO. 20 OF 23



PLAN - END BENT WITH SWEEP BACK WINGS - SKEWED
(1 1/2:1 SLOPE)

BRIDGE @ STA. 363+38.90 -L- RIGHT LANE	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	325	650
END BENT 2	355	705

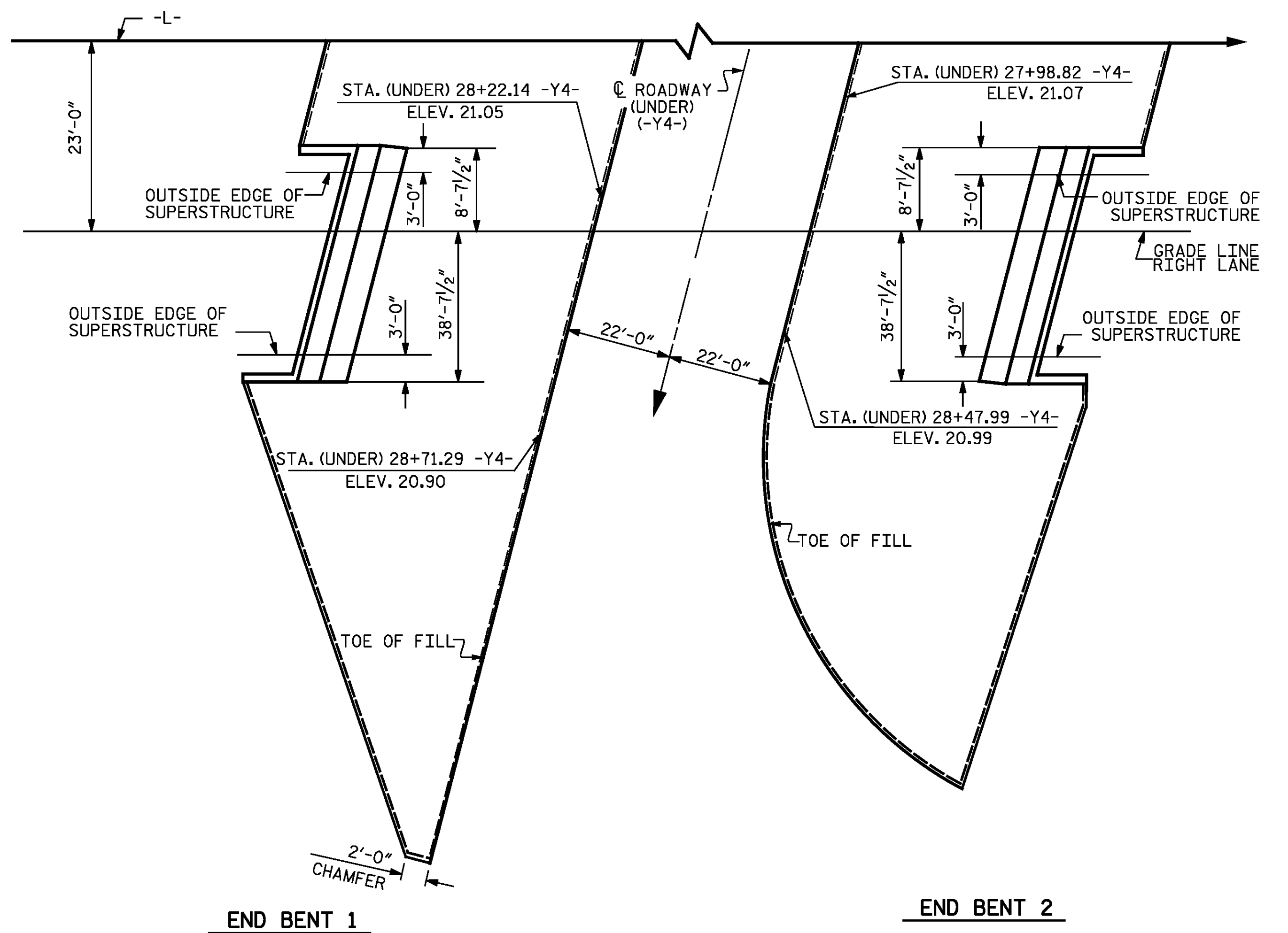
* QUANTITY SHOWN IS BASED ON 5' POURS.

GENERAL NOTES

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. THE CONTRACTOR, AT HIS OPTION, MAY USE ALTERNATE "B" ONLY FOR HIGHWAY OVER HIGHWAY GRADE SEPARATIONS WITH 2:1 END BENT SLOPE IN RURAL, UNPOPULATED AREAS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING.

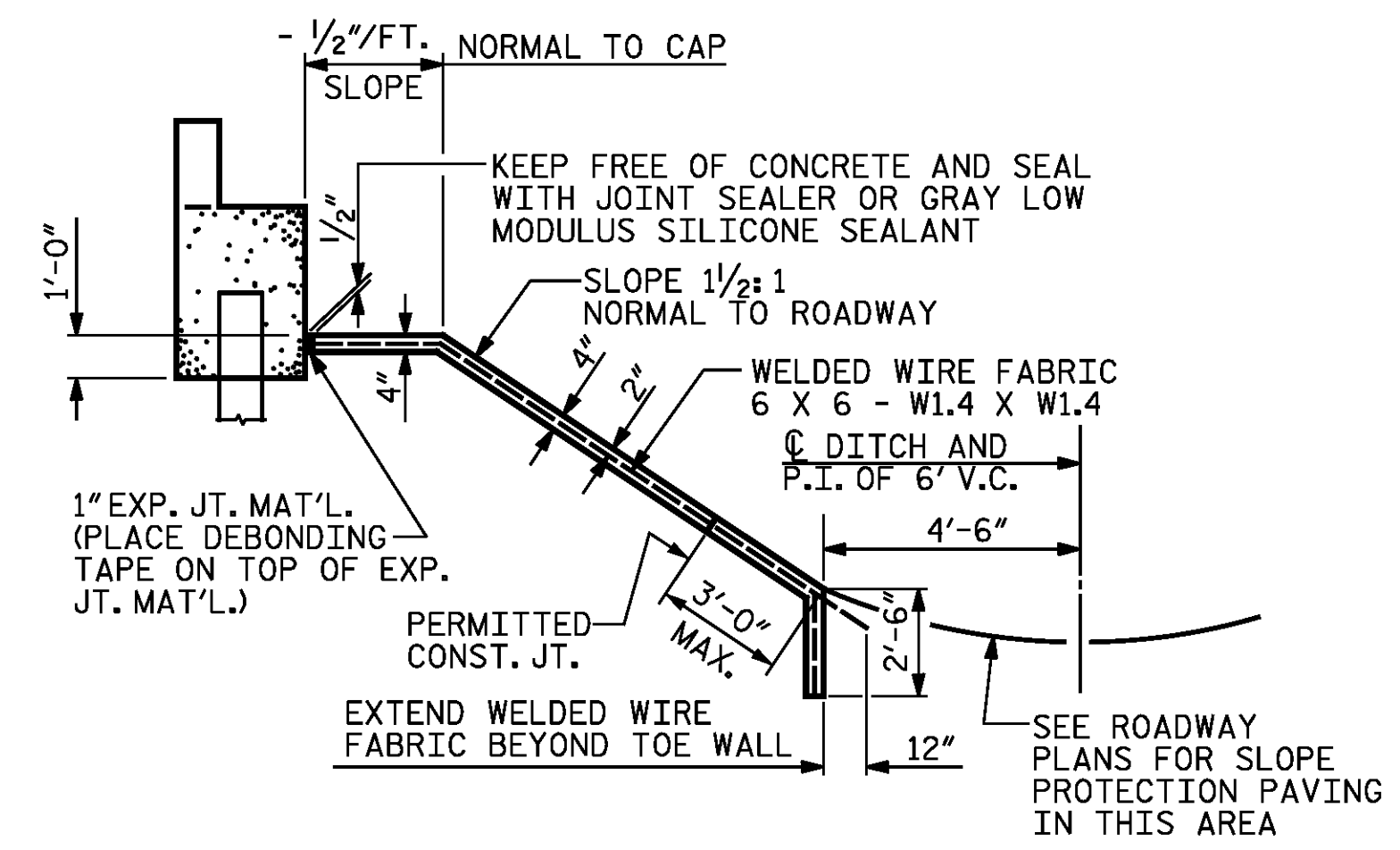
ALTERNATE "A"

ALTERNATE "A" SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

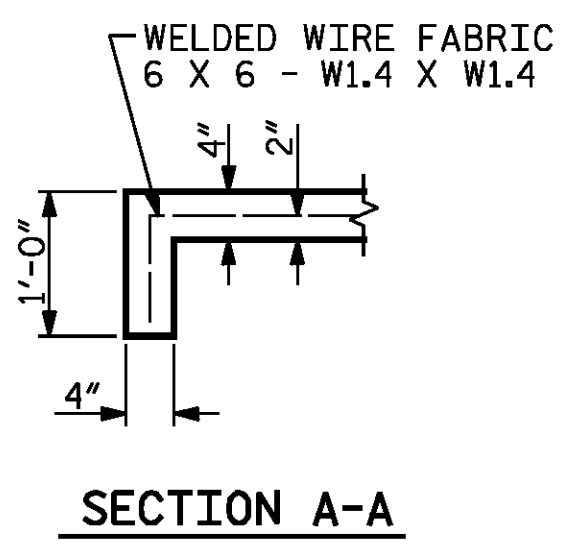


PLAN

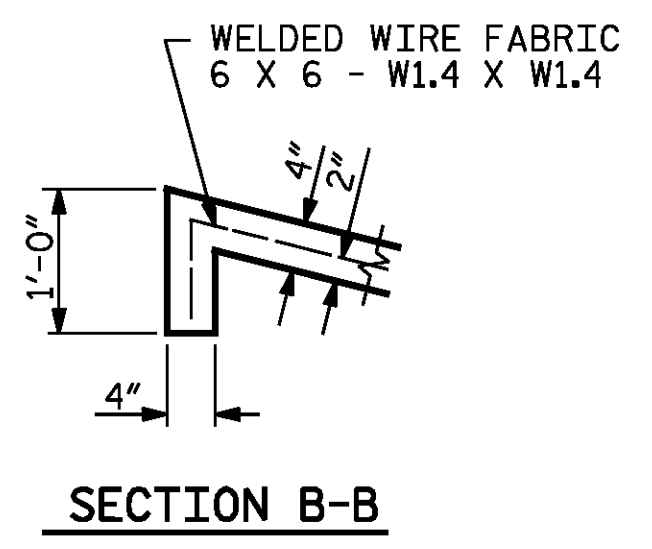
PROJECT NO. R-2514D
JONES COUNTY
STATION: 363+38.90 -L-



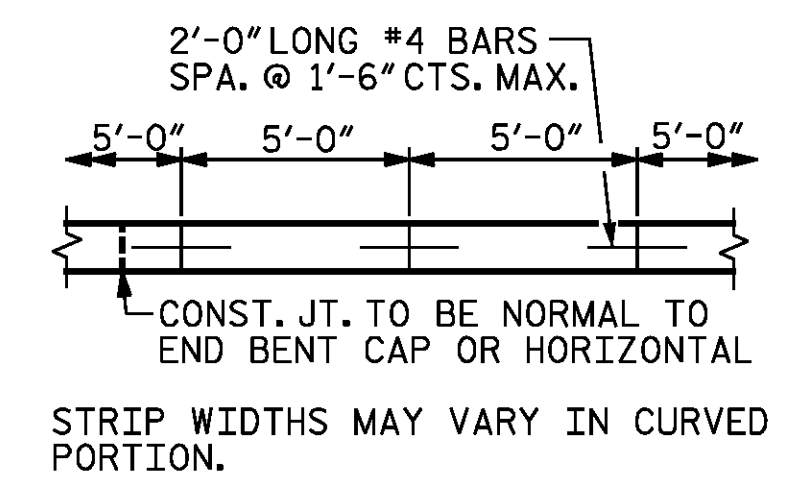
SECTION ALONG ROADWAY WHEN FILL CATCHES IN DITCH



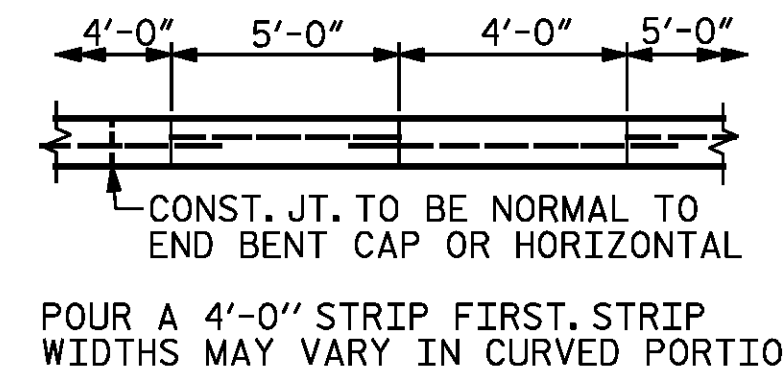
SECTION A-A



SECTION B-B



POURING DETAIL



OPTIONAL POURING DETAIL

DocuSigned by:
DB3C8E45B...
PROFESSIONAL ENGINEER
SEAL 14114
ROBERT C. LARSON
2/12/2015

DETAILS FOR ALTERNATE "A"

DESIGN ENGINEER OF RECORD: DATE: 2/12/2015
DRAWN BY: E. C. DECOLA DATE: 02/14/14
CHECKED BY: R. C. LARSON DATE: 02/18/14

KCI Associates of North Carolina, P.A.
DWG. REF. NO. 21 OF 23

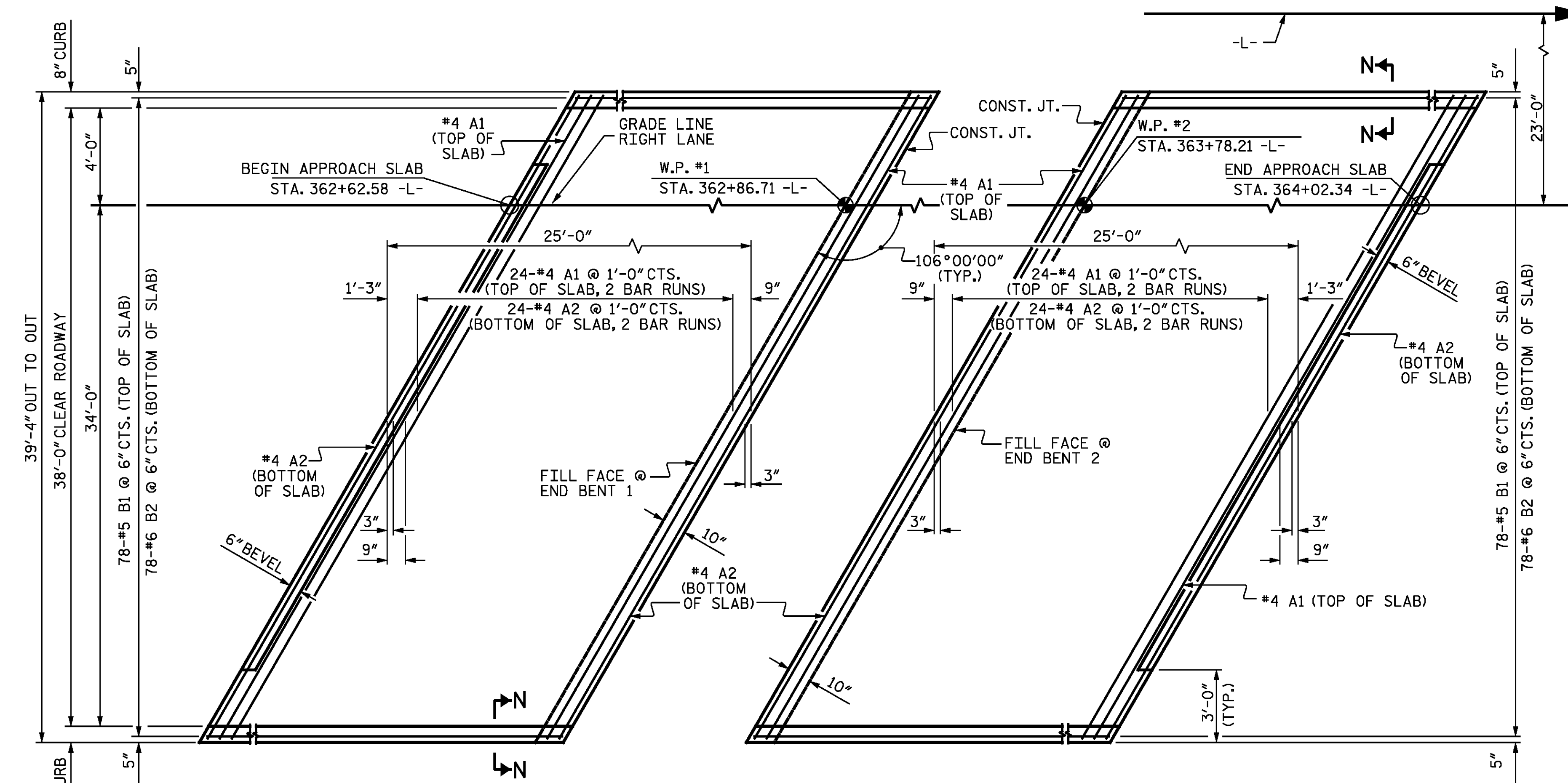
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SLOPE PROTECTION DETAILS

STD. NO. SP1 RIGHT LANE STR-#4

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

SHEET NO. S04-21
TOTAL SHEETS S04-23



PLAN @ END BENT #1
 PLAN @ END BENT #2
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

NOTES

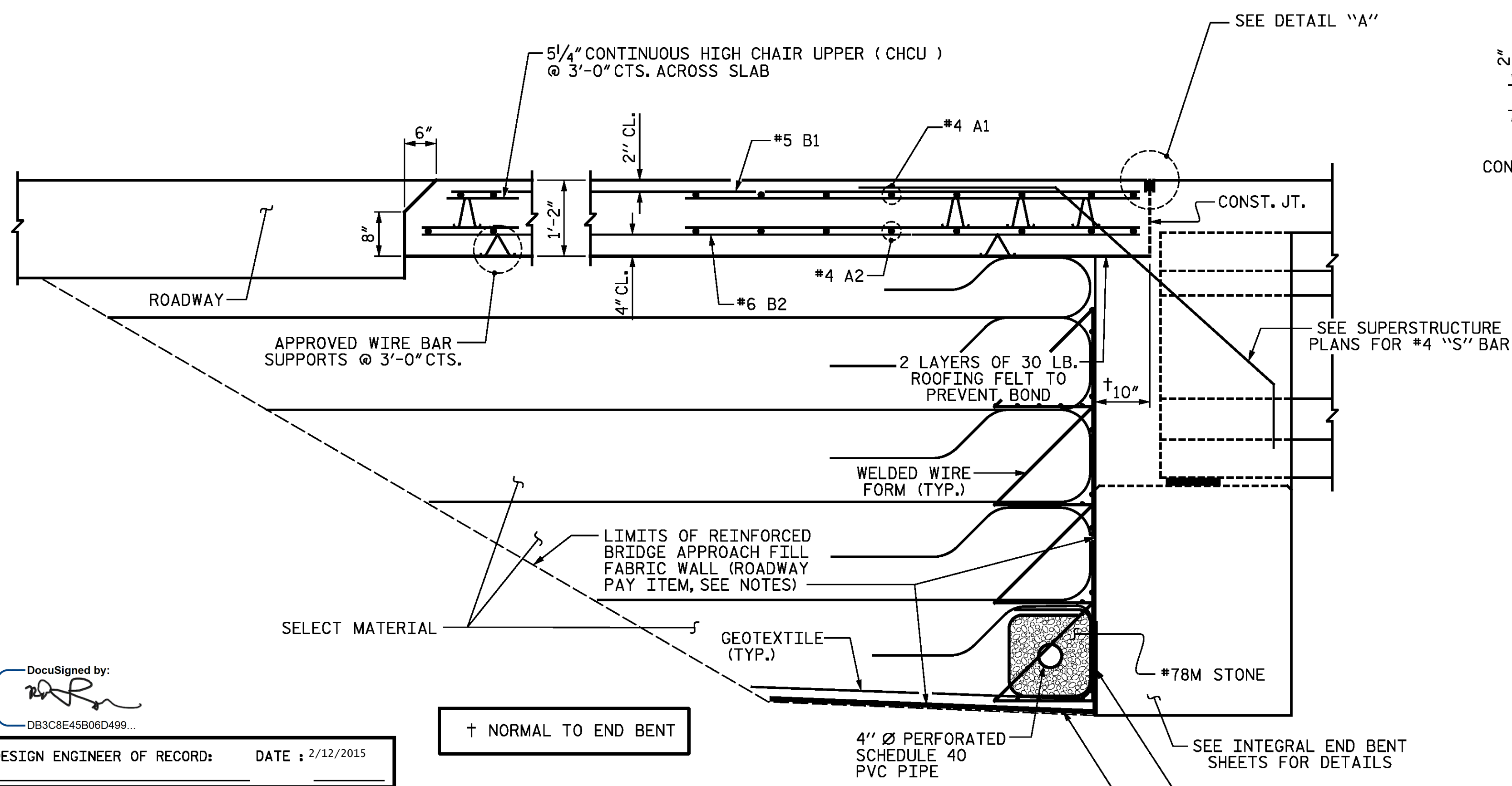
APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

FOR REINFORCED BRIDGE APPROACH FILL FABRIC WALL INCLUDING GEOTEXTILE, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.

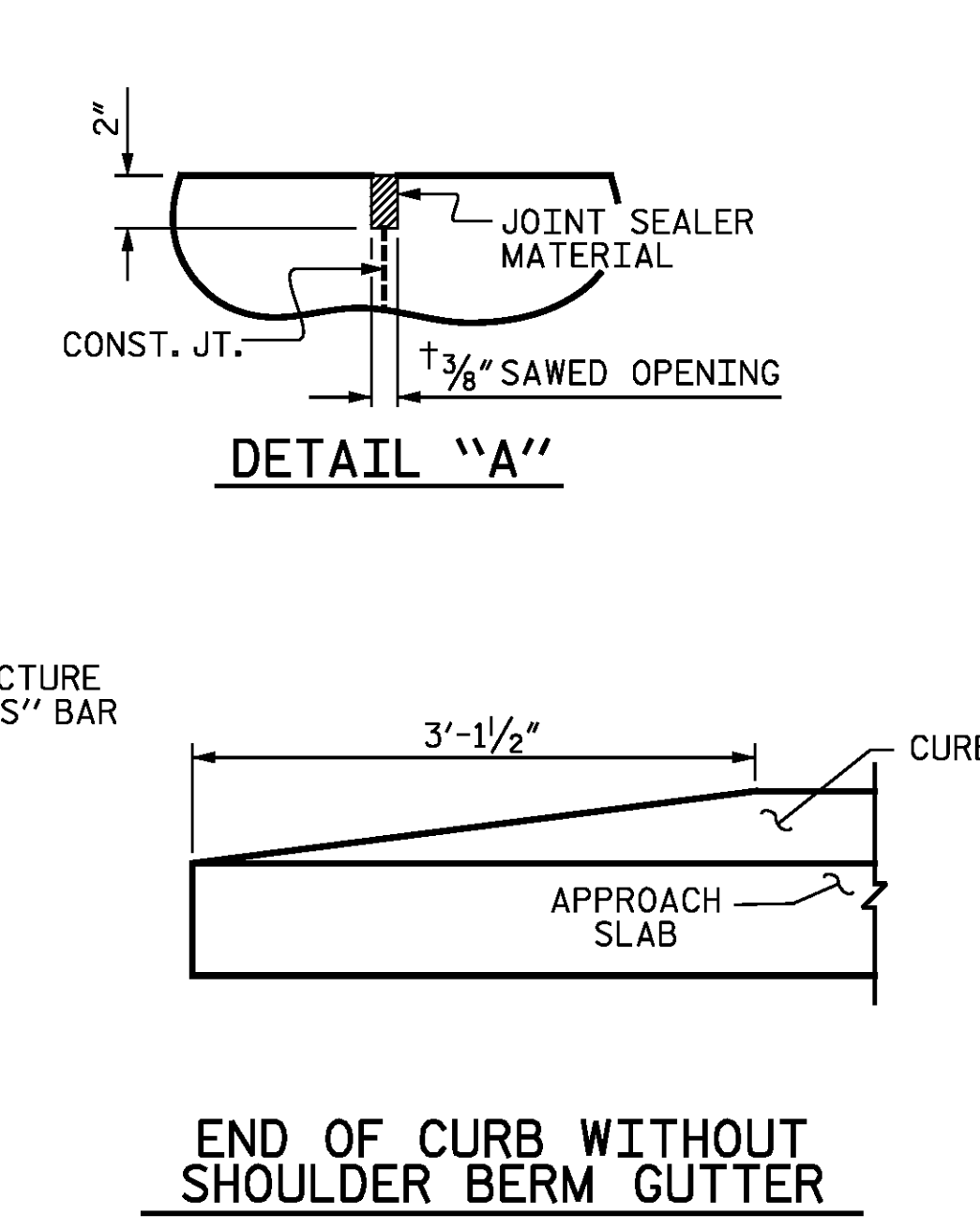
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

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

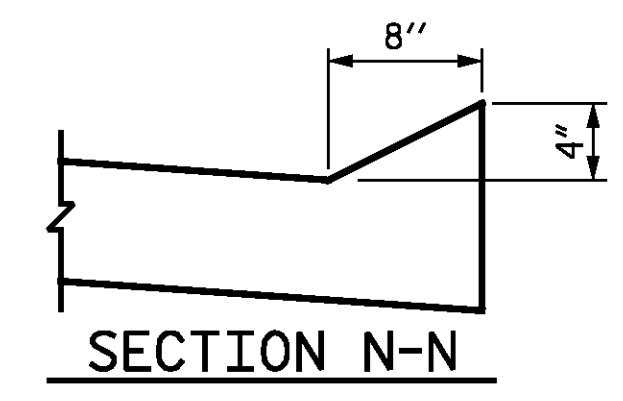
BILL OF MATERIAL					
FOR ONE APPROACH SLAB (2 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	52	#4	STR	21'-3"	738
A2	52	#4	STR	21'-2"	735
* B1	78	#5	STR	24'-1"	1959
B2	78	#6	STR	24'-7"	2882
REINFORCING STEEL					3617 LBS.
* EPOXY COATED REINFORCING STEEL					2697 LBS.
CLASS AA CONCRETE					42.6 C.Y.



SECTION THRU SLAB



DETAIL "A"
 END OF CURB WITHOUT SHOULDER BERM GUTTER



SECTION N-N

DocuSigned by:
 DB3C8E45B06D499...

DESIGN ENGINEER OF RECORD: DATE: 2/12/2015

DRAWN BY: E. C. DECOLA DATE: 02/14/14
 CHECKED BY: R. C. LARSON DATE: 03/08/14

DRAWN BY: TLA 10/05 REV. 10/1/11 MAA/GM
 CHECKED BY: GM 5/06 REV. 12/21/11 MAA/GM
 REV. 6/13 MAA/GM

DocuSigned by:
 DB3C8E45B06D499...

2/12/2015

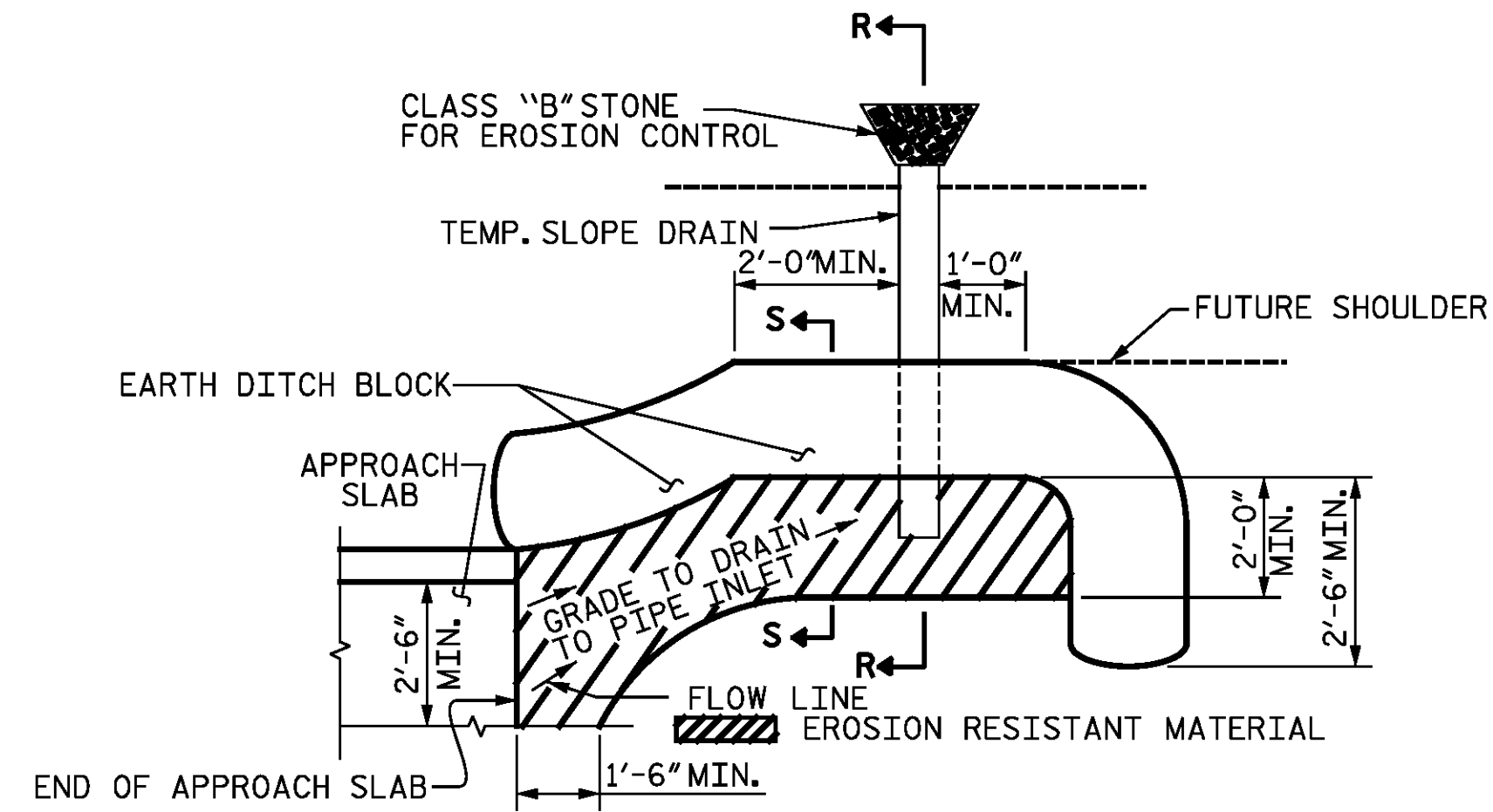
PROFESSIONAL ENGINEER
 SEAL 14114
 ROBERT C. LARSON

PROJECT NO. R-2514D
 JONES COUNTY
 STATION: 363+38.90 -L-
 SHEET 1 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD					
BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT					
STD. NO. BAS5 RIGHT LANE STR-#4					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

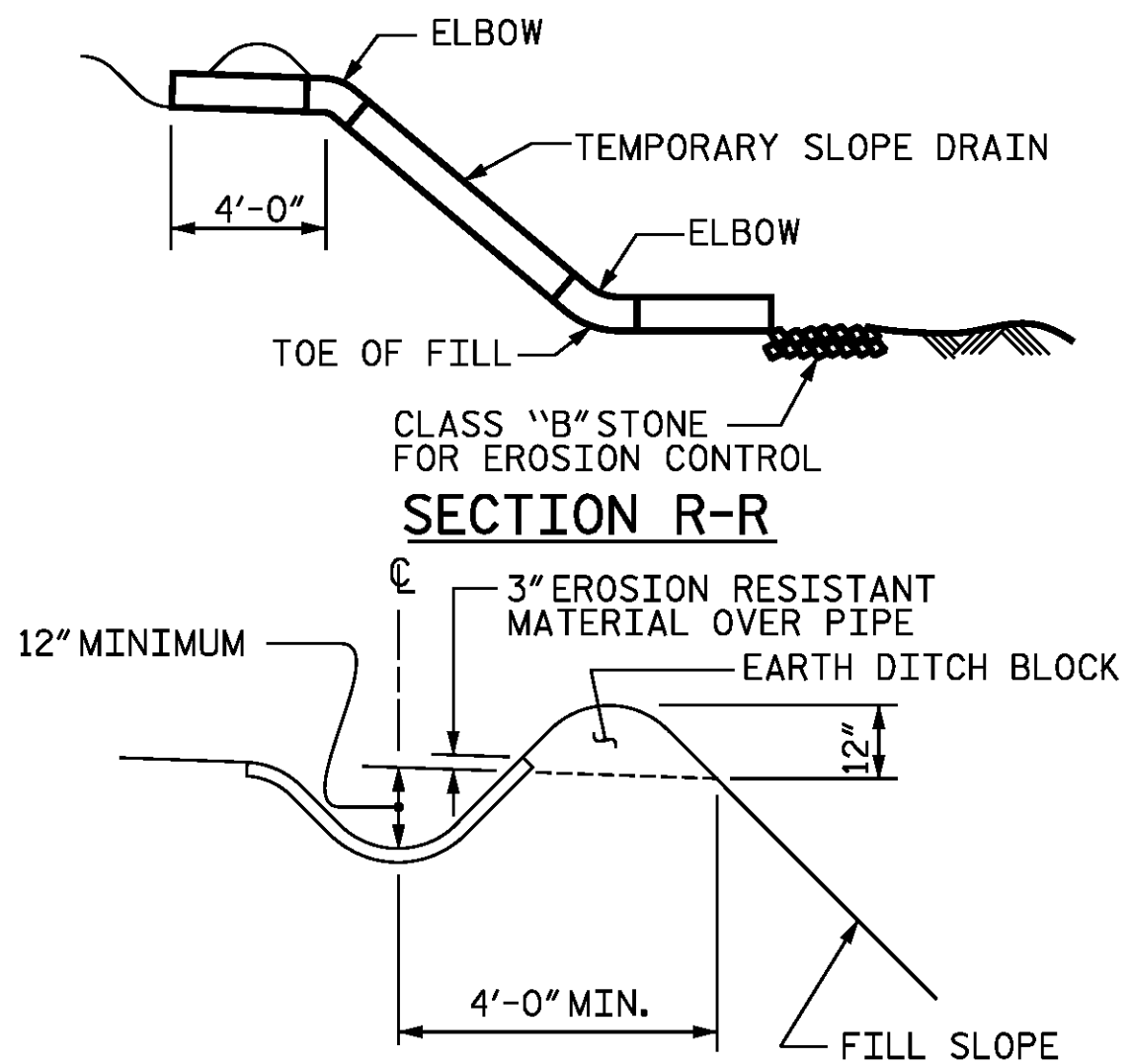
TOTAL SHEETS: S04-22
 S04-23

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 22 OF 23



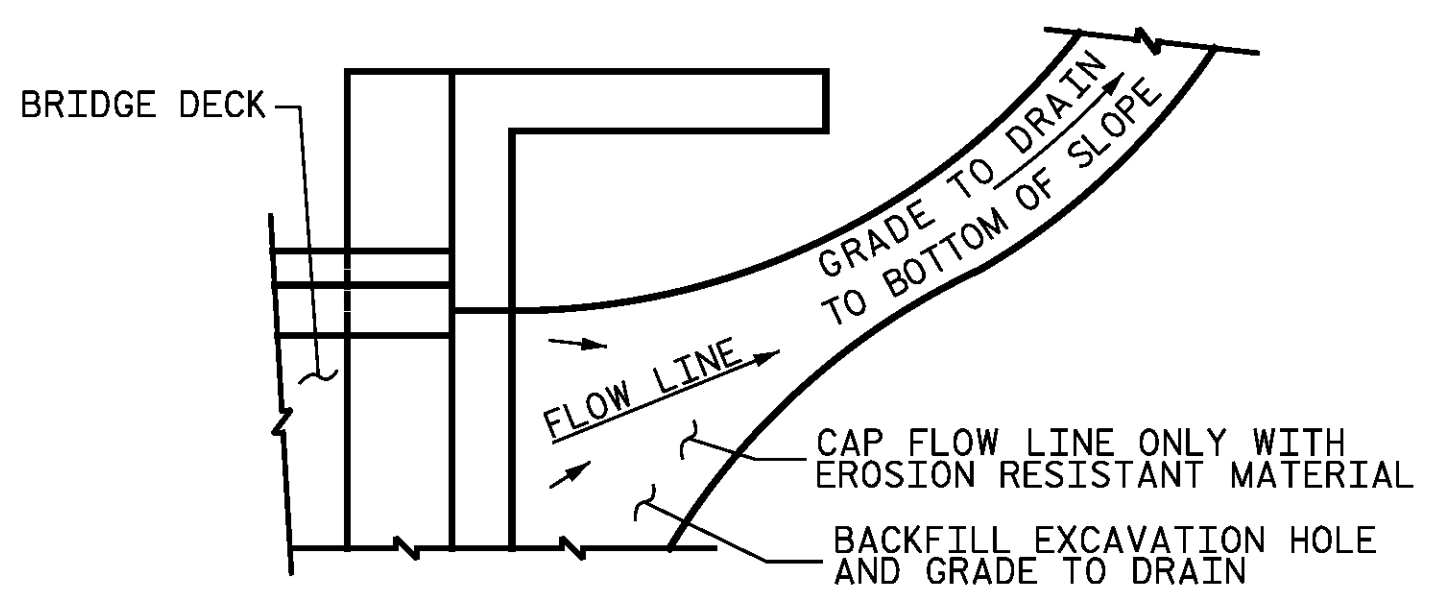
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW



SECTION S-S

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



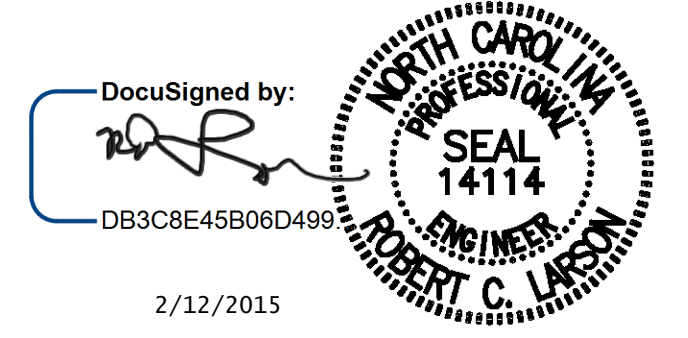
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. R-2514D
JONES COUNTY
STATION: 363+38.90 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH
SLAB DETAILS
STD. NO. BAS4 RIGHT LANE STR-#4



DocuSigned by:
DB3C8E45B06D499...
2/12/2015

DESIGN ENGINEER OF RECORD: DATE : 2/12/2015

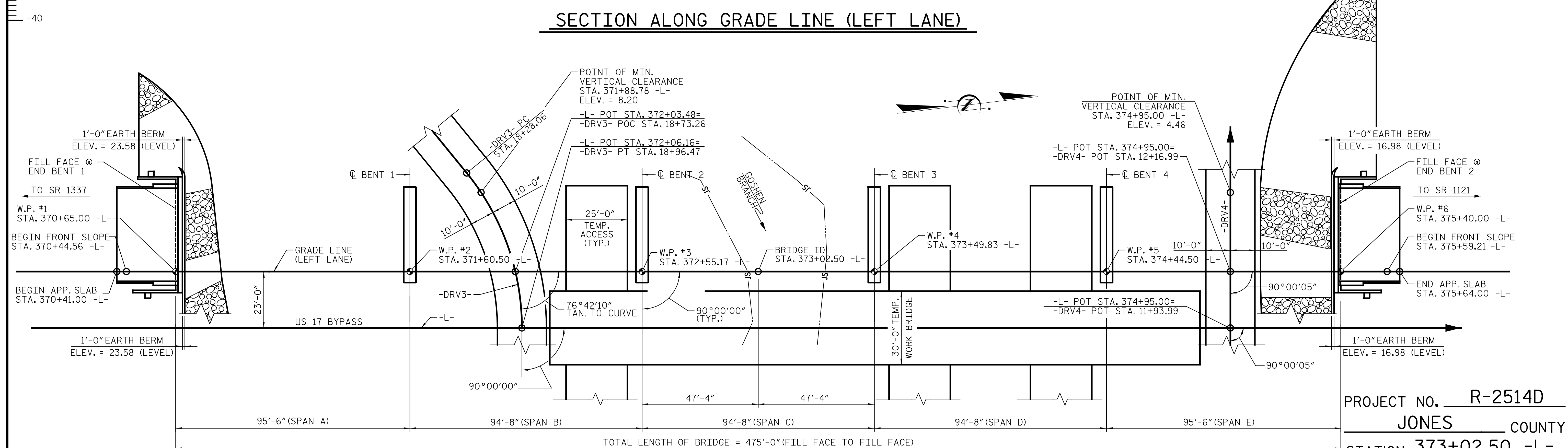
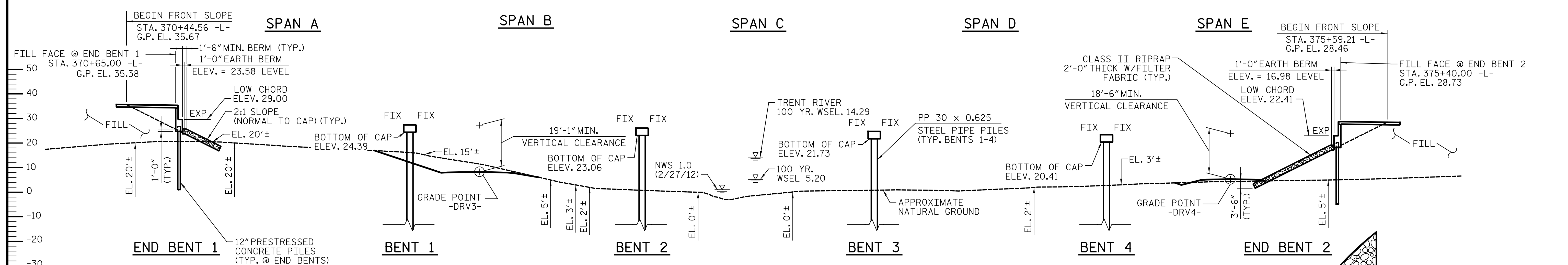
DRAWN BY : E. C. DECOLA DATE : 02/14/14
CHECKED BY : R. C. LARSON DATE : 03/08/14

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

REVISIONS		NO.		DATE		BY:		DATE		SHEET NO.	
1		3									TOTAL SHEETS
2		4									S04-23

DWG. REF. NO. 23 OF 23

(+)2.7000% (-)1.4000% 371+00 (-)3.0500% (-)0.3000% 372+00 373+00 374+00 375+00 376+00
 PI STA. = 362+30.00 -L- EL. = 47.07 VC = 1020'
 GRADE DATA -L-
 PI STA. = 17+50.00 -DRV3- EL. = 8.45 VC = 200'
 GRADE DATA -DRV3-
 PI STA. = 10+10.00 -DRV4- EL. = 8.45
 GRADE DATA -DRV4-



BRIDGE HYDRAULIC DATA

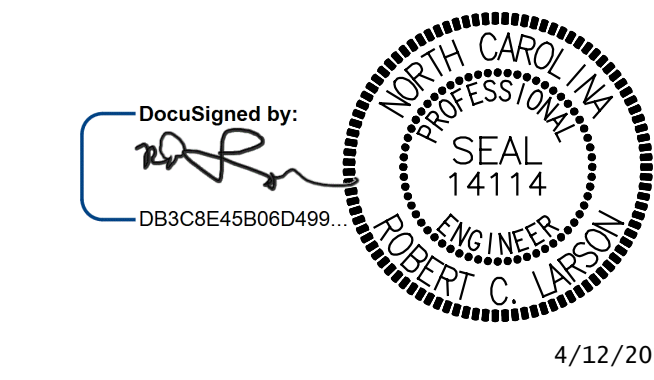
DESIGN DISCHARGE	= 480 CFS
DESIGN FREQUENCY	= 50 YR.
DESIGN HW ELEV.	= 4.4 FT.
DRAINAGE AREA	= 2.1 SQ. MI.
BASE DISCHARGE	= 600 CFS
BASE FREQUENCY	= 100 YR.
BASE HW ELEV.	= 5.20 FT.
OVERTOPPING DISCHARGE	= N/A
OVERTOPPING FREQUENCY	= 500+ YR.
OVERTOPPING ELEV.	= 15.8 FT.*

* OVERTOPS DRAINAGE DIVIDE @ STA. 371+50 -L- (LT.)

HORIZONTAL CURVE DATA -DRV3-

PI STATION	18+63.66
Δ	39° 11' 47.4" (RT)
D	57° 17' 44.8"
L	68.41'
T	35.60'
R	100.00'

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

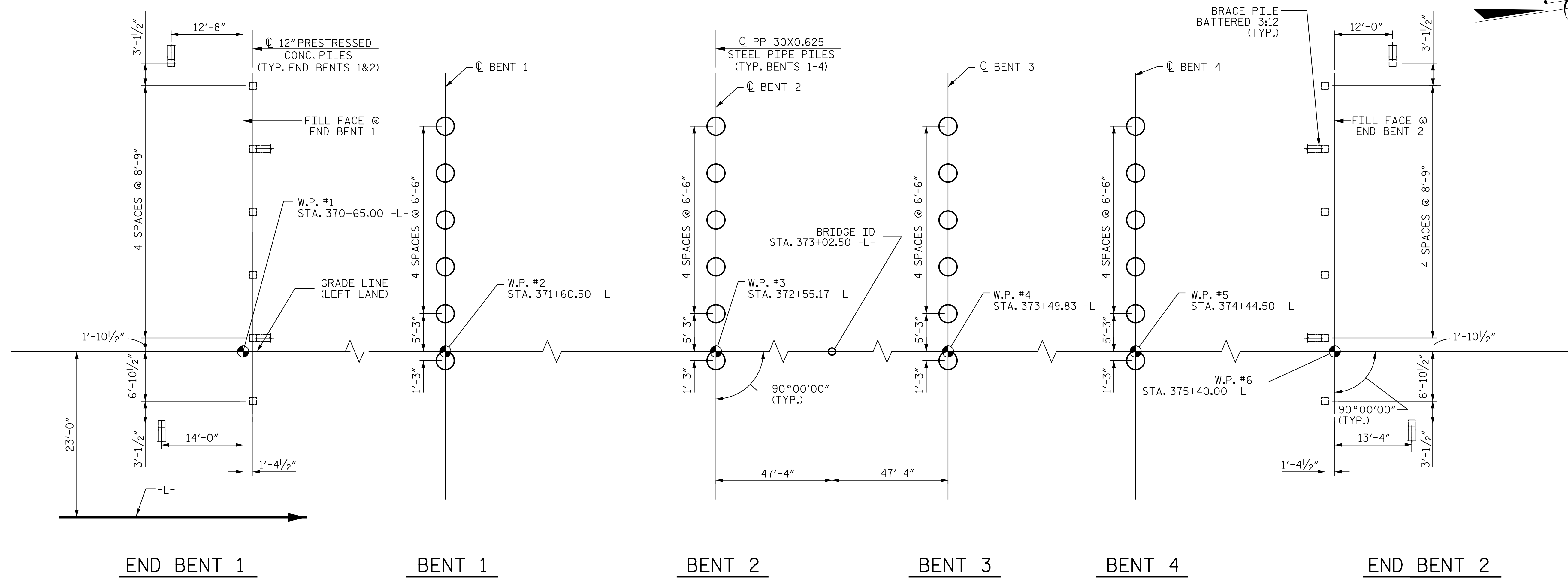
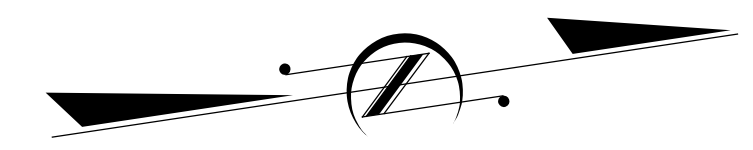


PROJECT NO. R-2514D
 JONES COUNTY
 STATION: 373+02.50 -L-
 SHEET 1 OF 4 BRIDGE NO. 99
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER GOSHEN BRANCH
 BETWEEN SR 1337 AND SR 1121
 LEFT LANE STR-#5

DESIGN ENGINEER OF RECORD: DATE: 4/12/2015
 DRAWN BY: D.R. CLAYTON DATE: 07/29/13
 CHECKED BY: R. C. LARSON DATE: 04/03/14

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

DWG. REF. NO. 1 OF 34
 TOTAL SHEETS 505-34



FOUNDATION LAYOUT PLAN

FOUNDATION 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 1 AND END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 160 TONS PER PILE.

PILES AT BENT 1 THROUGH BENT 4 ARE DESIGNED FOR A FACTORED RESISTANCE OF 225 TONS PER PILE. DRIVE PILES AT BENT 1 THROUGH BENT 4 TO A REQUIRED DRIVING RESISTANCE OF 305 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAW OR SCOUR.

INSTALL PILES AT BENT 1, BENT 2, BENT 3 AND BENT 4 TO A TIP ELEVATION NO HIGHER THAN -30 FT, -45 FT, -45 FT AND -35 FT, RESPECTIVELY.

STEEL PIPE PILE CUTTING SHOES ARE REQUIRED FOR STEEL PIPE PILES AT BENT 1 THROUGH BENT 4. USE "INSIDE FIT" PIPE PILE CUTTING SHOES. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATIONS FOR BENT 2, BENT 3 AND BENT 4 ARE ELEVATION -11 FT, -11 FT AND -3 FT, RESPECTIVELY. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 82,000 FT-LBS TO 152,500 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT 1 THROUGH BENT 4. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

TESTING THE FIRST 12" PRESTRESSED CONCRETE PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENT 1 OR END BENT 2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

TESTING THE FIRST 30" DIA. PRODUCTION STEEL PIPE PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

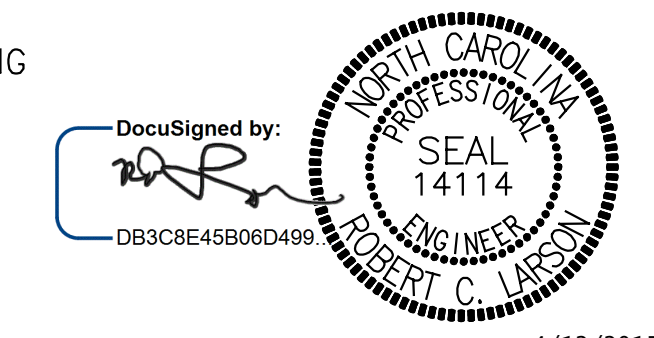
IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT 1 THROUGH BENT 4 TO NO LOWER THAN ELEVATION -30 FT, -45 FT, -45 FT AND -35 FT, RESPECTIVELY, WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 30". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

CONTRACTOR MAY PREDRILL THROUGH THE CENTER OF THE 30" DIA. STEEL PIPE PILES WITH CUTTING SHOES TO ELEVATIONS AS NOTED IN THE PLANS AT BENT 1 THROUGH BENT 4.

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 2 OF 4

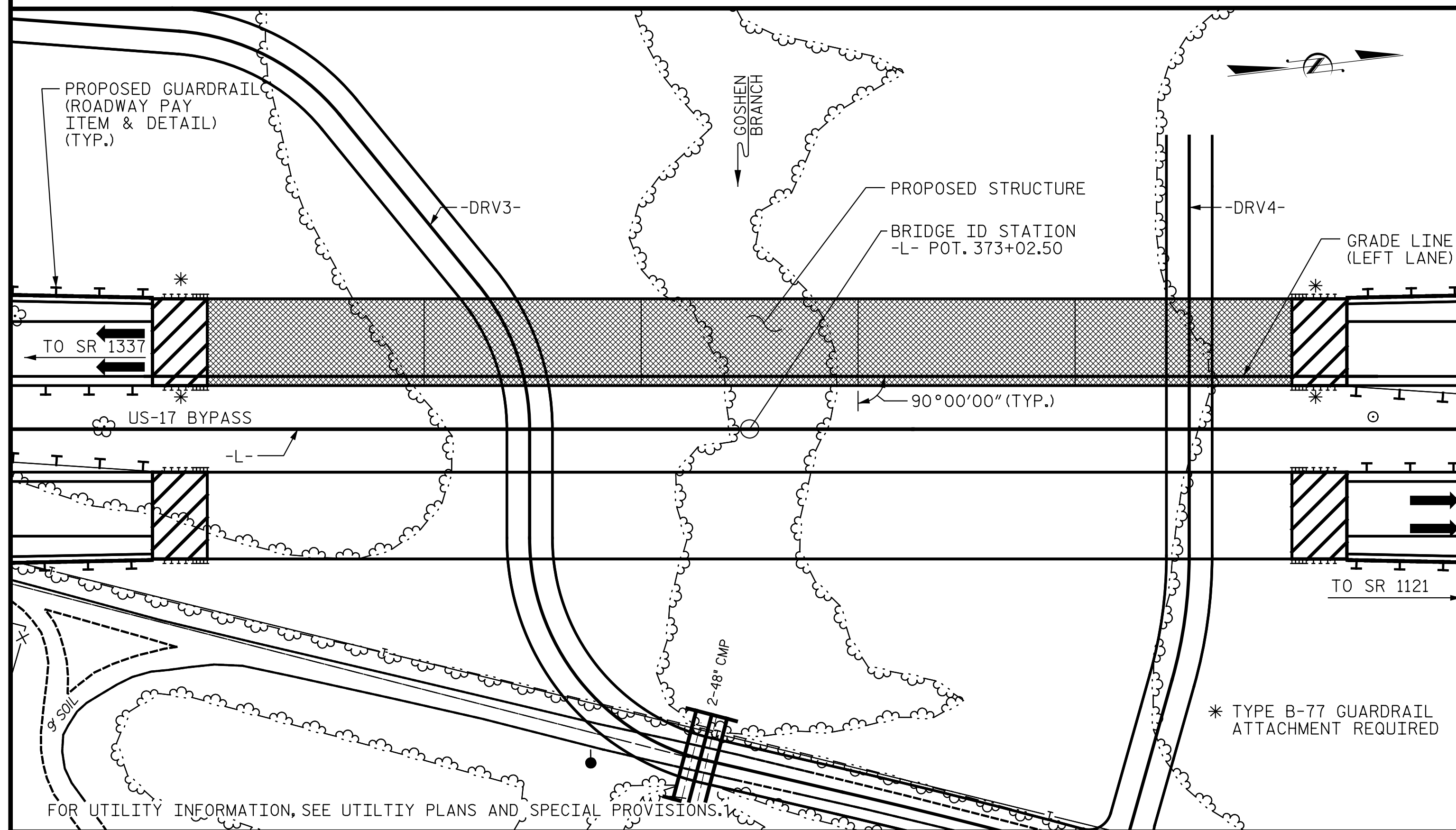
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER GOSHEN BRANCH
 BETWEEN SR 1337 AND SR 1121
 LEFT LANE STR-#5



DESIGN ENGINEER OF RECORD:	DATE :	4/12/2015
DRAWN BY : R.J. FLORY	DATE :	3/17/14
CHECKED BY : R.C. LARSON	DATE :	4/01/14

KCI Associates of North Carolina, P.A.		REVISIONS		SHEET NO. S05-2
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	
DWG. REF. NO. 2 OF 34				TOTAL SHEETS S05-34

BENCHMARK: BM18 RR SPIKE IN GUY POLE -L- STATION 373+45.00 127' RIGHT ELEVATION 9.42' NAVD 88



LOCATION SKETCH

NOTES:

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- ALL METALIZED SURFACES SHALL RECEIVE A SEAL COATING AS SPECIFIED IN THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALIZATION).
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."
- THE SCOUR CRITICAL ELEVATION FOR BENT NO. 2 IS ELEVATION -7.6 FT. BENT NO. 3 IS ELEVATION -7.6 FT. BENT NO. 4 IS ELEVATION 1.8 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- FOR INTERIOR BENTS 1-4 ONLY PARTIAL GALVANIZING OF THE PILES IS REQUIRED. SEE INTERIOR BENT SHEETS FOR REQUIRED GALVANIZED LENGTHS. PAYMENT FOR PARTIALLY GALVANIZED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR GALVANIZED STEEL PILES.
- FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.
- FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.
- FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMP ACCESS AT STA. 373+02.50 -L-	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REIN-FORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS	12" PRESTRESSED CONCRETE PILES	PP 30X0.625 GALVANIZED STEEL PILES	STEEL PILE POINTS	PREDRILLING FOR PILES	PILE REDRIVES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS				
	LUMP SUM	EA	SQ.FT.	SQ.FT.	CU.YDS.	LUMP SUM	LBS.	NO.	LIN.FT.	NO.	LIN.FT.	NO.	LIN.FT.	EA	LIN.FT.	EA.	LIN.FT.	TON	SY	LUMP SUM	LUMP SUM	
SUPERSTRUCTURE			19505	18178		LUMP SUM		20	1876.0											LUMP SUM	LUMP SUM	
END BENT 1					46.7		5516		8	240												
BENT 1					23.1		3696				6	510	6		3				305	340		
BENT 2					23.1		3696				6	510	6		3							
BENT 3					23.1		3696				6	510	6		3							
BENT 4					23.1		3696				6	510	6		3							
END BENT 2					45.2		5421		8	480					3			630	700			
TOTAL	LUMP SUM	3	19505	18178	184.3	LUMP SUM	25,721	20	1876.0	16	720	24	2040	24	1010	18	986.0	935	1040	LUMP SUM	LUMP SUM	

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 3 OF 4

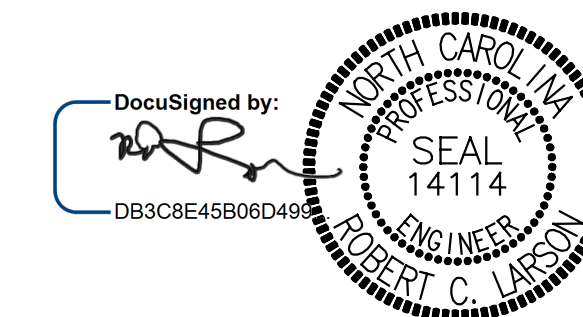
DocuSigned by:

 DB3C8E45B06D499

DESIGN ENGINEER OF RECORD: DATE : 4/12/2015

DRAWN BY : E.C. DECOLA DATE : 02/03/14

CHECKED BY : R.C. LARSON DATE : 04/11/14



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER GOSHEN BRANCH
 BETWEEN SR 1337 AND SR 1121
 LEFT LANE STR-#5

4/12/2015

KCI Associates
 of North Carolina, P.A.
 SUITE 220, LANDMARK CENTER #400 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244
 DWG. REF. NO. 3 OF 34

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-3
1			3			TOTAL SHEETS S05-34
2			4			

LOAD FACTORS:

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

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE										COMMENT NUMBER
						MOMENT					SHEAR					MOMENT										
						LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)				
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.02	--	1.75	0.917	1.68	1	E	36.8	1.066	1.20	1	I	87.6	0.80	0.858	1.02	1	I	46.2				
	HL-93 (OPERATING)	N/A		1.53	--	1.35	0.917	2.18	1	E	36.8	1.066	1.53	1	I	87.6	N/A	--	--	--	--	--				
	HS-20 (INVENTORY)	36.000	②	1.41	50.8	1.75	0.858	2.31	1	E	36.8	1.066	1.49	1	I	87.6	0.80	0.858	1.41	1	I	46.2				
	HS-20 (OPERATING)	36.000		2.20	79.2	1.35	0.858	2.99	1	E	36.8	1.066	2.20	1	I	55.5	N/A	--	--	--	--	--				
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.26	44.0	1.40	0.917	6.69	1	E	36.8	1.066	5.30	1	I	55.5	0.80	0.858	3.26	1	I	46.2			
		SNGARBS2	20.000		2.38	47.6	1.40	0.917	4.88	1	E	36.8	1.066	3.70	1	I	55.5	0.80	0.858	2.38	1	I	46.2			
		SNAGRIS2	22.000		2.24	49.2	1.40	0.917	4.58	1	E	36.8	1.066	3.41	1	I	55.5	0.80	0.858	2.24	1	I	46.2			
		SNCOTTS3	27.250		1.62	44.1	1.40	0.917	3.34	1	E	36.8	1.066	2.57	1	I	55.5	0.80	0.858	1.62	1	I	46.2			
		SNAGGRS4	34.925		1.34	46.7	1.40	0.917	2.76	1	E	36.8	1.066	2.09	1	I	55.5	0.80	0.858	1.34	1	I	46.2			
		SNS5A	35.550		1.32	46.9	1.40	0.917	2.71	1	E	36.8	1.066	1.85	1	I	87.6	0.80	0.858	1.32	1	I	46.2			
		SNS6A	39.950		1.21	48.3	1.40	0.917	2.47	1	E	36.8	1.066	1.65	1	I	87.6	0.80	0.858	1.21	1	I	46.2			
		SNS7B	42.000		1.15	48.3	1.40	0.917	2.36	1	E	36.8	1.066	1.60	1	I	87.6	0.80	0.858	1.15	1	I	46.2			
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.47	48.5	1.40	0.917	3.03	1	E	36.8	1.066	1.99	1	I	87.6	0.80	0.858	1.47	1	I	46.2			
		TNT4A	33.075		1.47	48.6	1.40	0.917	3.00	1	E	36.8	1.066	1.99	1	I	87.6	0.80	0.858	1.47	1	I	46.2			
		TNT6A	41.600		1.20	49.9	1.40	0.917	2.46	1	E	36.8	1.066	1.67	1	I	87.6	0.80	0.858	1.20	1	I	46.2			
		TNT7A	42.000		1.20	50.4	1.40	0.917	2.46	1	E	36.8	1.066	1.65	1	I	87.6	0.80	0.858	1.20	1	I	46.2			
		TNT7B	42.000		1.22	51.2	1.40	0.917	2.50	1	E	36.8	1.066	1.57	1	I	87.6	0.80	0.858	1.22	1	I	46.2			
		TNAGRIT4	43.000		1.18	50.7	1.40	0.917	2.41	1	E	36.8	1.066	1.54	1	I	87.6	0.80	0.858	1.18	1	I	46.2			
TNAGT5A	45.000		1.12	50.4	1.40	0.917	2.30	1	E	36.8	1.066	1.50	1	I	87.6	0.80	0.858	1.12	1	I	46.2					
TNAGT5B	45.000		③	1.10	49.5	1.40	0.917	2.26	1	E	36.8	1.066	1.47	1	I	87.6	0.80	0.858	1.10	1	I	46.2				

NOTES:

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

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

⊛ CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

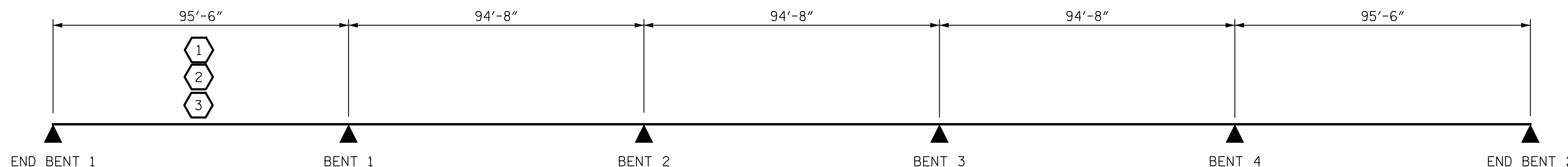
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
E - EXTERIOR GIRDER



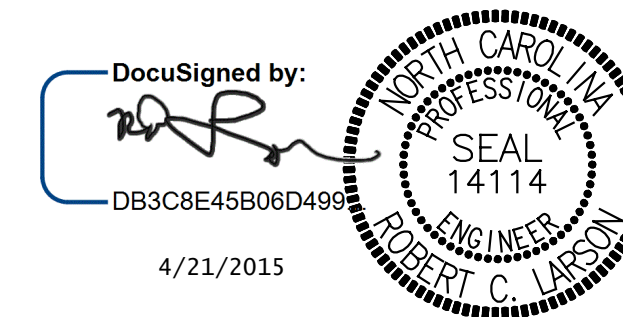
LRFR SUMMARY

PROJECT NO. R-2514D
JONES COUNTY
STATION: 373+02.50 -L-

SHEET 4 OF 4

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

STD. NO. LRFR1 LEFT LANE STR-#5



DocuSigned by:
DB3C8E45B06D499
4/21/2015

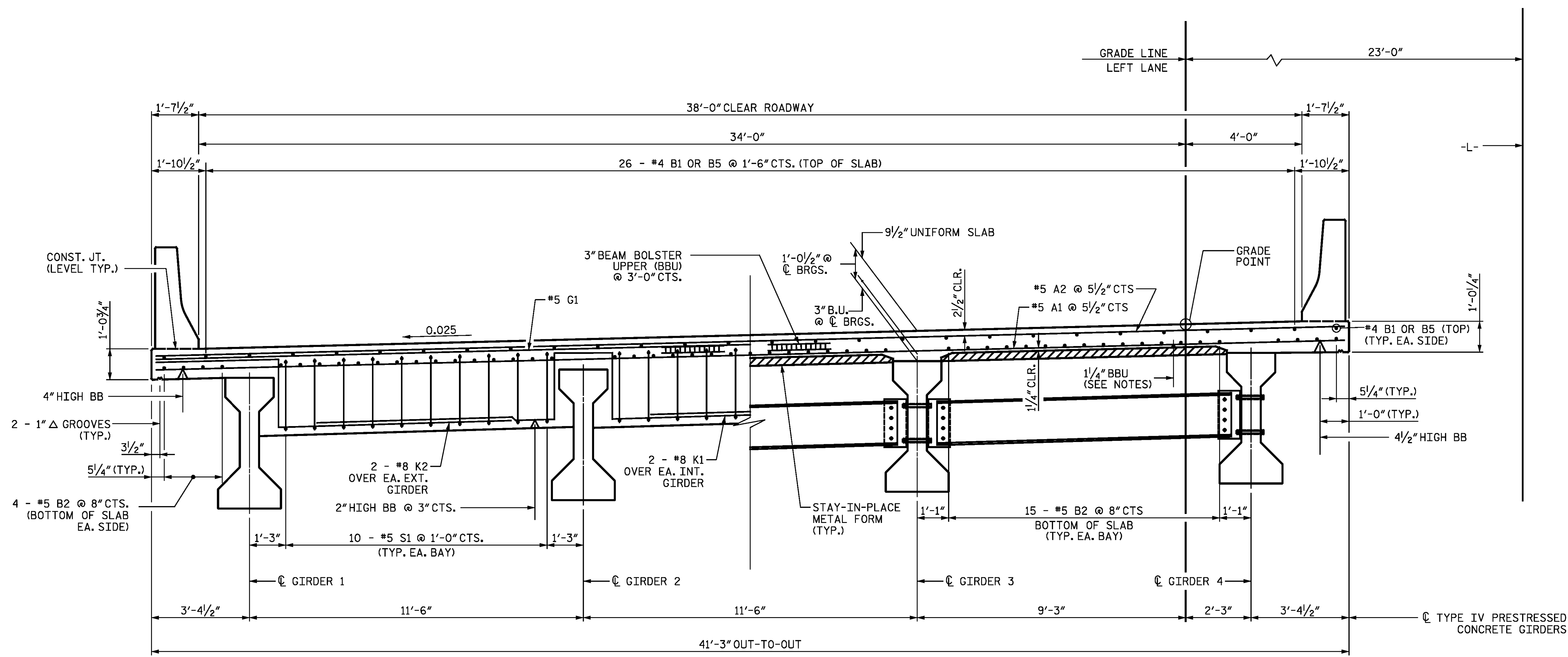
KCI Associates
of North Carolina, P.A.
SHEET NO. 4 OF 34

REVISIONS						SHEET NO. S05-4
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS S05-34
2			4			

DESIGN ENGINEER OF RECORD: E. C. DECOLA DATE: 4/21/2015

DRAWN BY: E. C. DECOLA DATE: 01/21/14
CHECKED BY: R. C. LARSON DATE: 04/10/14

DRAWN BY: MAA 1/08 REV. 11/12/08RR MAA/GM
CHECKED BY: GM/DI 2/08 REV. 10/11/11 MAA/GM



TYPICAL HALF SECTION AT END BENT DIAPHRAGM

TYPICAL HALF SECTION AT INTERMEDIATE DIAPHRAGM

TYPICAL SECTION

NOTES

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

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

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

FOR ADDITIONAL REINFORCING EMBEDDED IN SLAB SEE STD NO. CBR1.

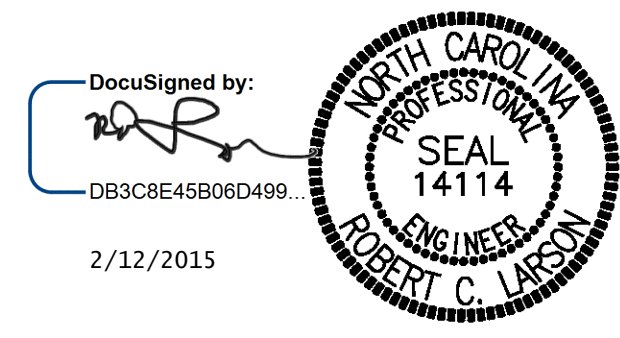
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 TYPICAL SECTION**

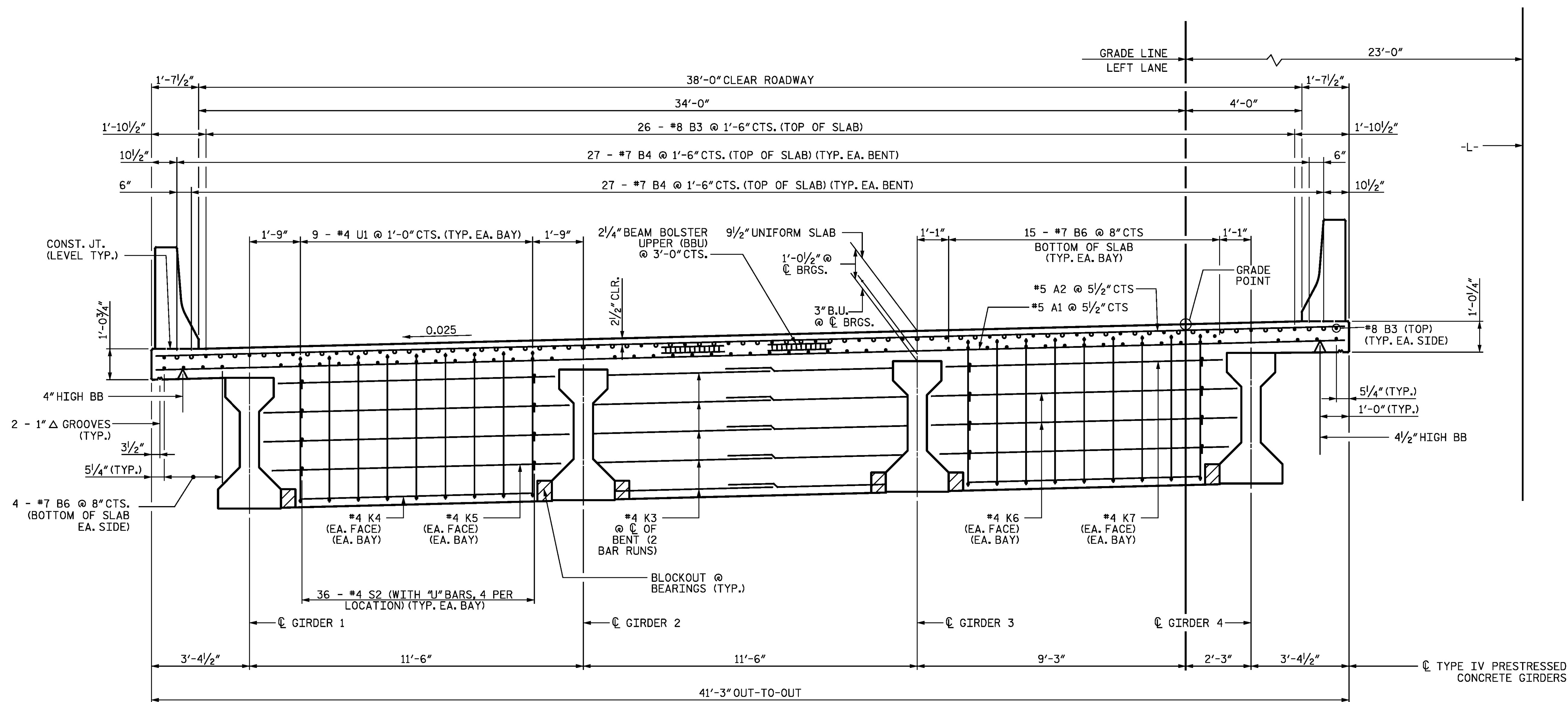
LEFT LANE STR-#5



DocuSigned by:
 DB3C8E45B06D499...

DESIGN ENGINEER OF RECORD:	DATE: 2/12/2015
DRAWN BY: Z. SU	DATE: 11/19/13
CHECKED BY: R. C. LARSON	DATE: 01/16/14

KCI Associates of North Carolina, P.A.		REVISIONS		SHEET NO. S05-5	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
DWG. REF. NO. 5 OF 34				TOTAL SHEETS S05-34	



TYPICAL SECTION AT BENT DIAPHRAGM

- INDICATES CONTINUOUS REINFORCING
- INDICATES ADDITIONAL REINFORCING AT BENT

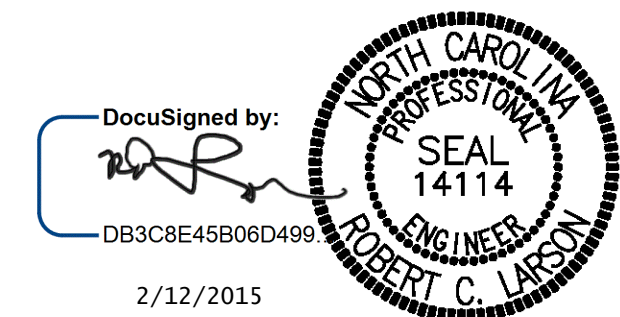
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 TYPICAL SECTION**

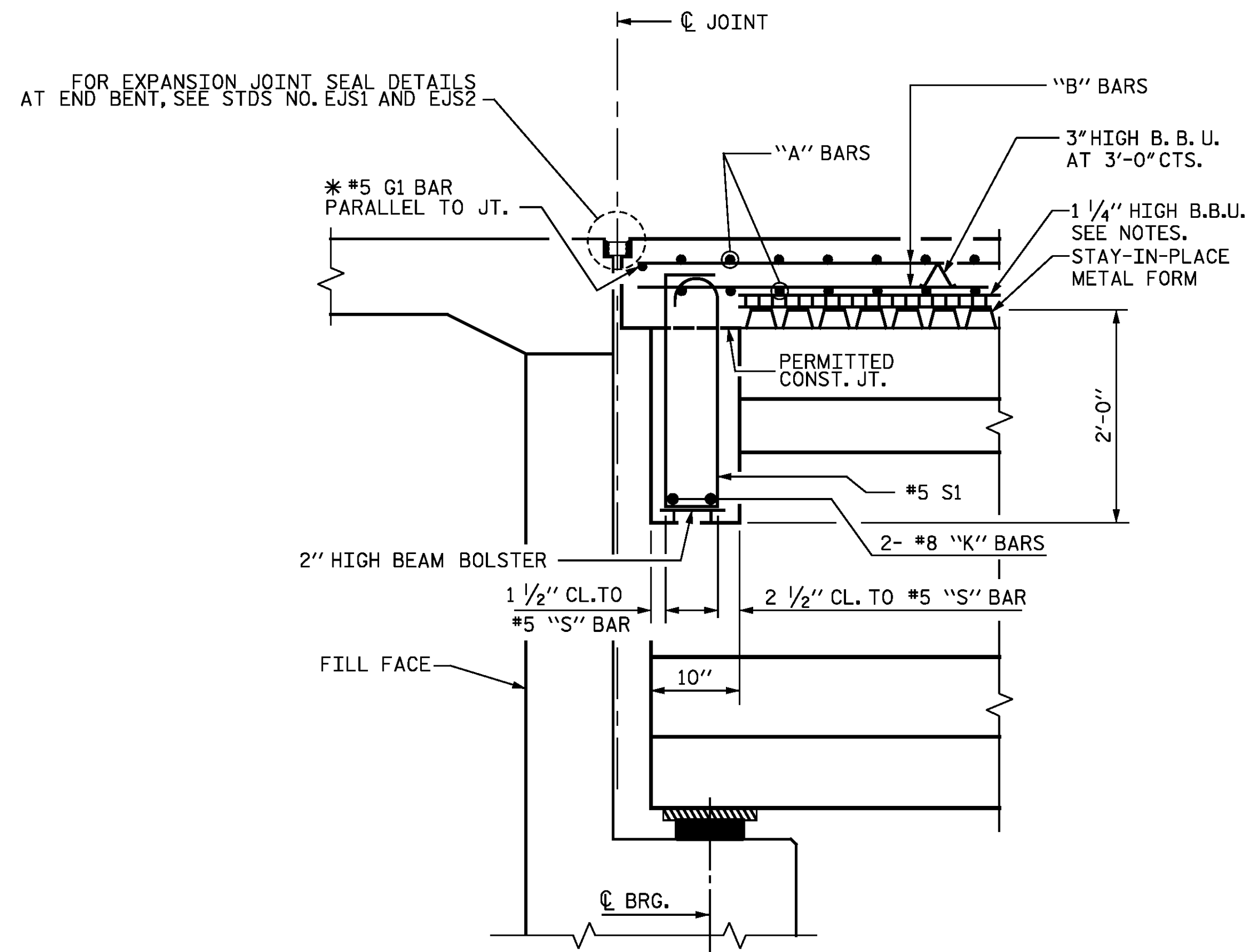
LEFT LANE STR-#5



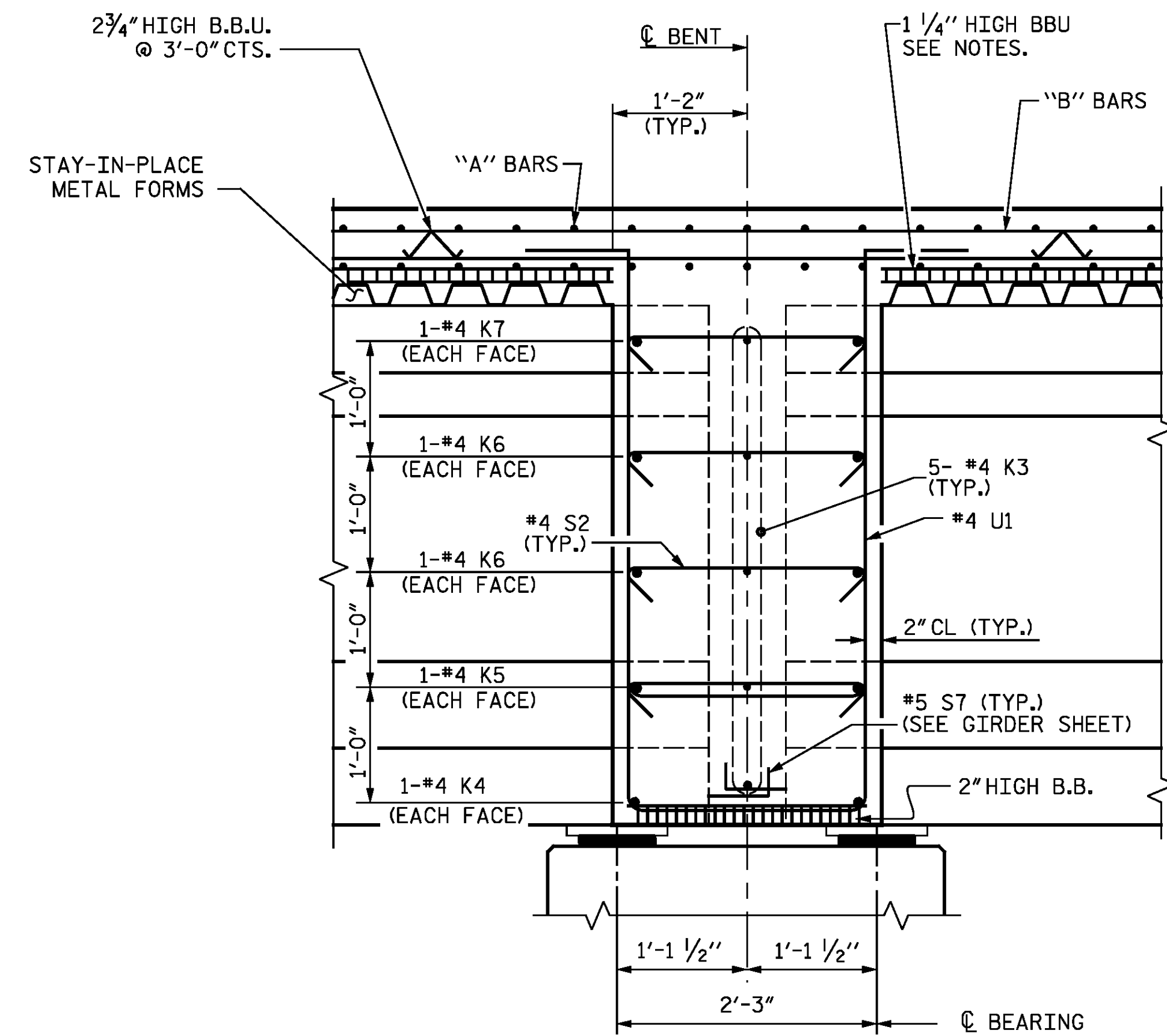
KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 6 OF 34

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-6	
1			3			TOTAL SHEETS	
2			4			S05-34	

DESIGN ENGINEER OF RECORD: _____ DATE: 2/12/2015
 DRAWN BY: Z. SU DATE: 11/19/13
 CHECKED BY: R. C. LARSON DATE: 01/16/14

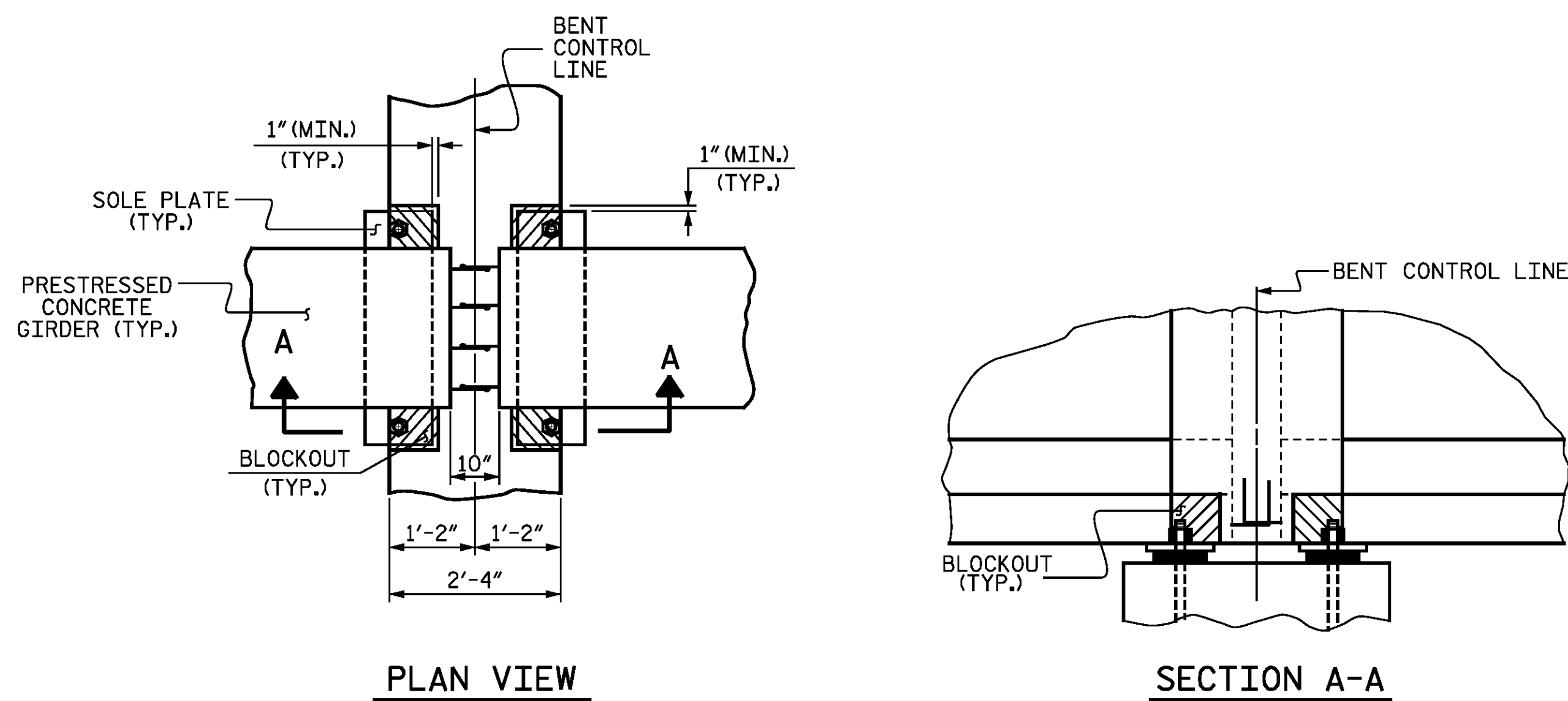


SECTION A-A THRU END BENT DIAPHRAGM



SECTION B-B THRU BENT DIAPHRAGM

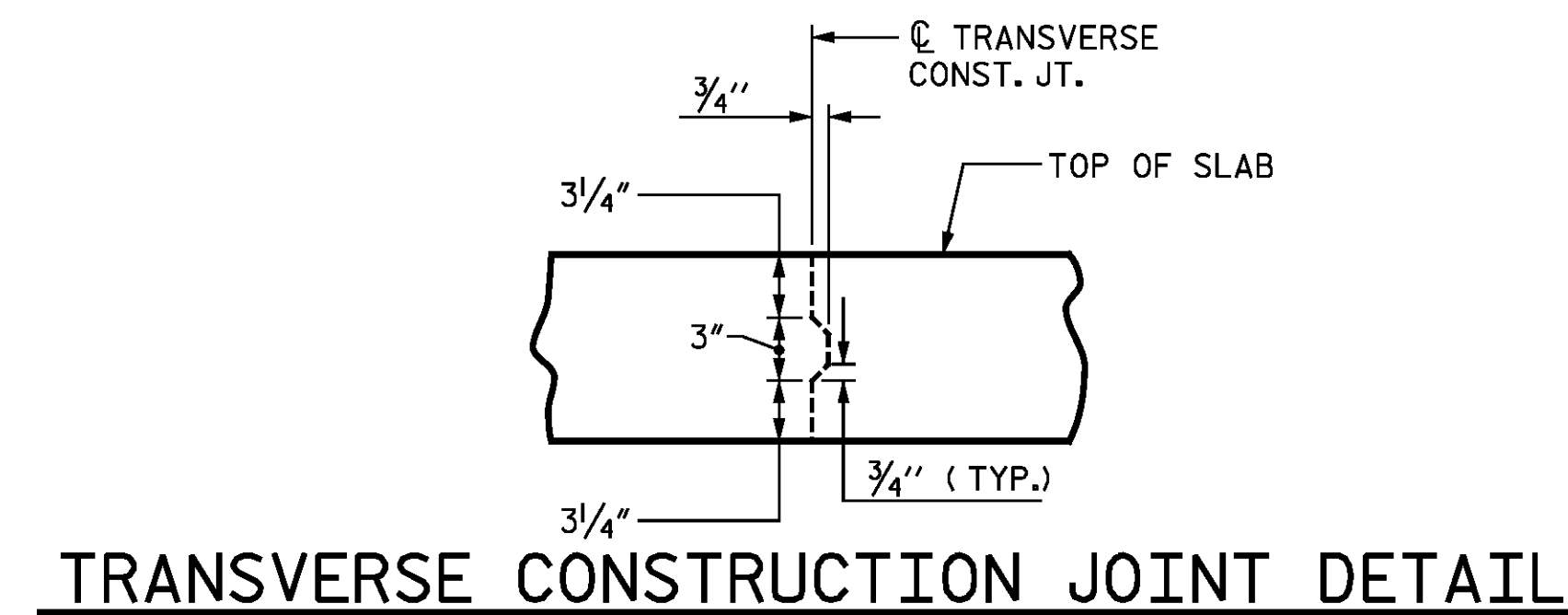
* #5 G1 MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR REINFORCING STEEL AND STIRRUPS



PLAN VIEW

SECTION A-A

BENT DIAPHRAGM BLOCKOUT DETAIL
(PRESTRESSED GIRDERS WITH CONTINUOUS DECK SLAB)



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

PROJECT NO. R-2514D
JONES COUNTY
STATION: 373+02.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUPERSTRUCTURE
TYPICAL SECTION**

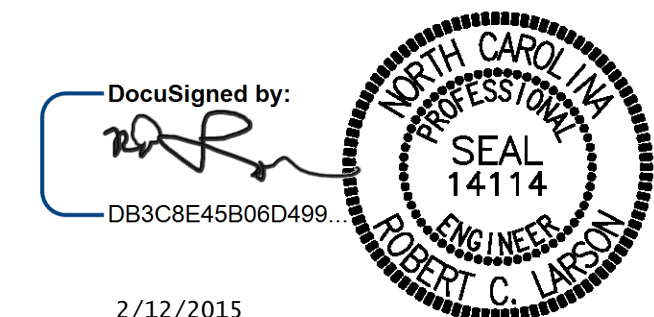
LEFT LANE STR-#5

DocuSigned by:
[Signature]
DB3C8E45B06D499

DESIGN ENGINEER OF RECORD: DATE : 2/12/2015

DRAWN BY : Z. SU DATE : 11/19/13

CHECKED BY : R. C. LARSON DATE : 01/16/14



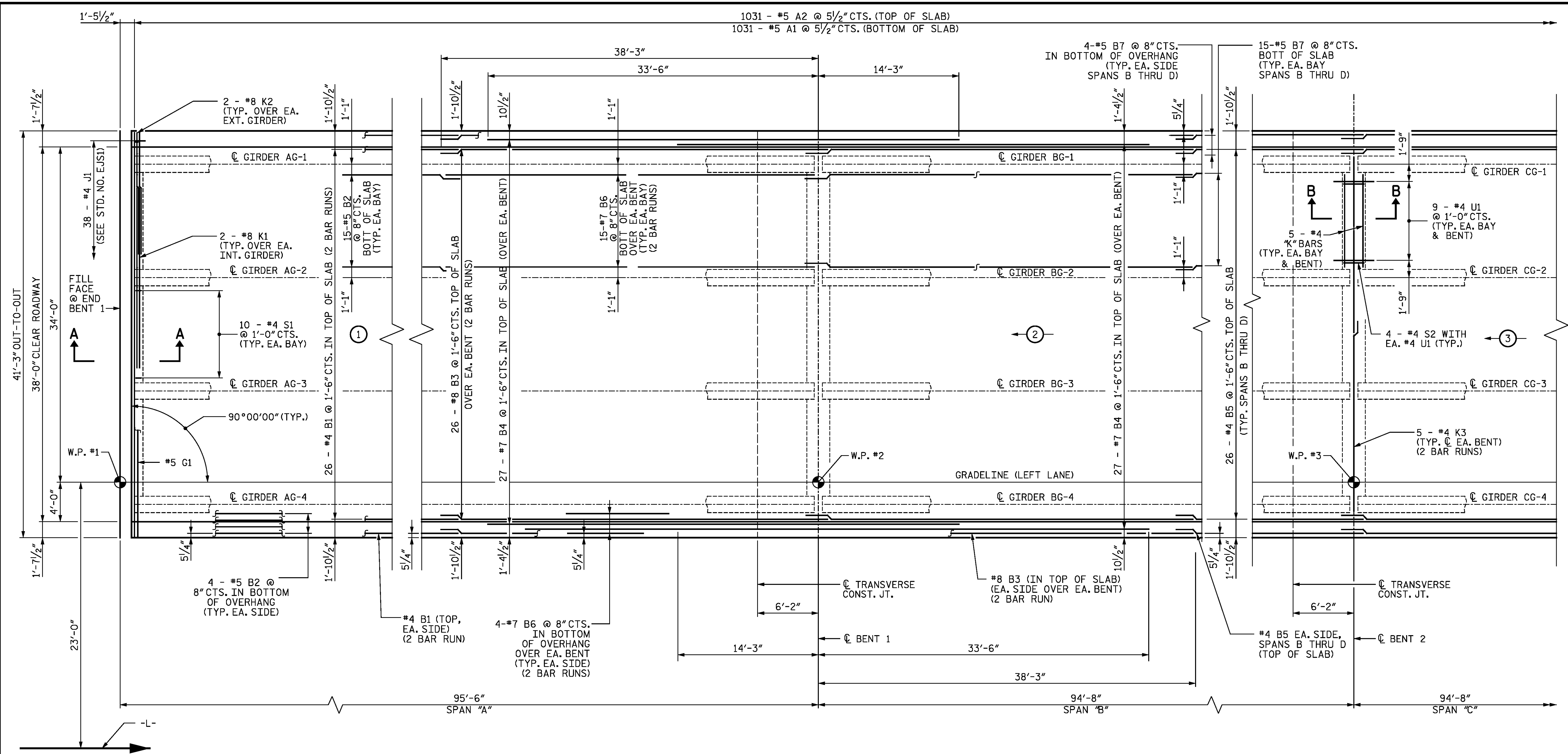
2/12/2015

DocuSigned by:
[Signature]
DB3C8E45B06D499

KCI Associates
of North Carolina, P.A.
DWG. REF. NO. 7 OF 34

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

TOTAL SHEETS: S05-34



PLAN - SPANS A-C

← (N) INDICATES POUR SEQUENCE AND DIRECTION
 SEE STD EJS1 FOR CLOSURE POURS AT EXPANSION JOINT IN SPANS A AND E
 SEE SUPERSTRUCTURE BILL OF MATERIALS FOR REINFORCING SPLICE LENGTHS.

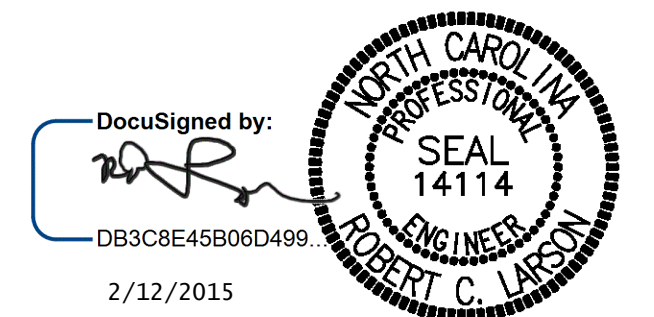
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPANS**

LEFT LANE STR-#5



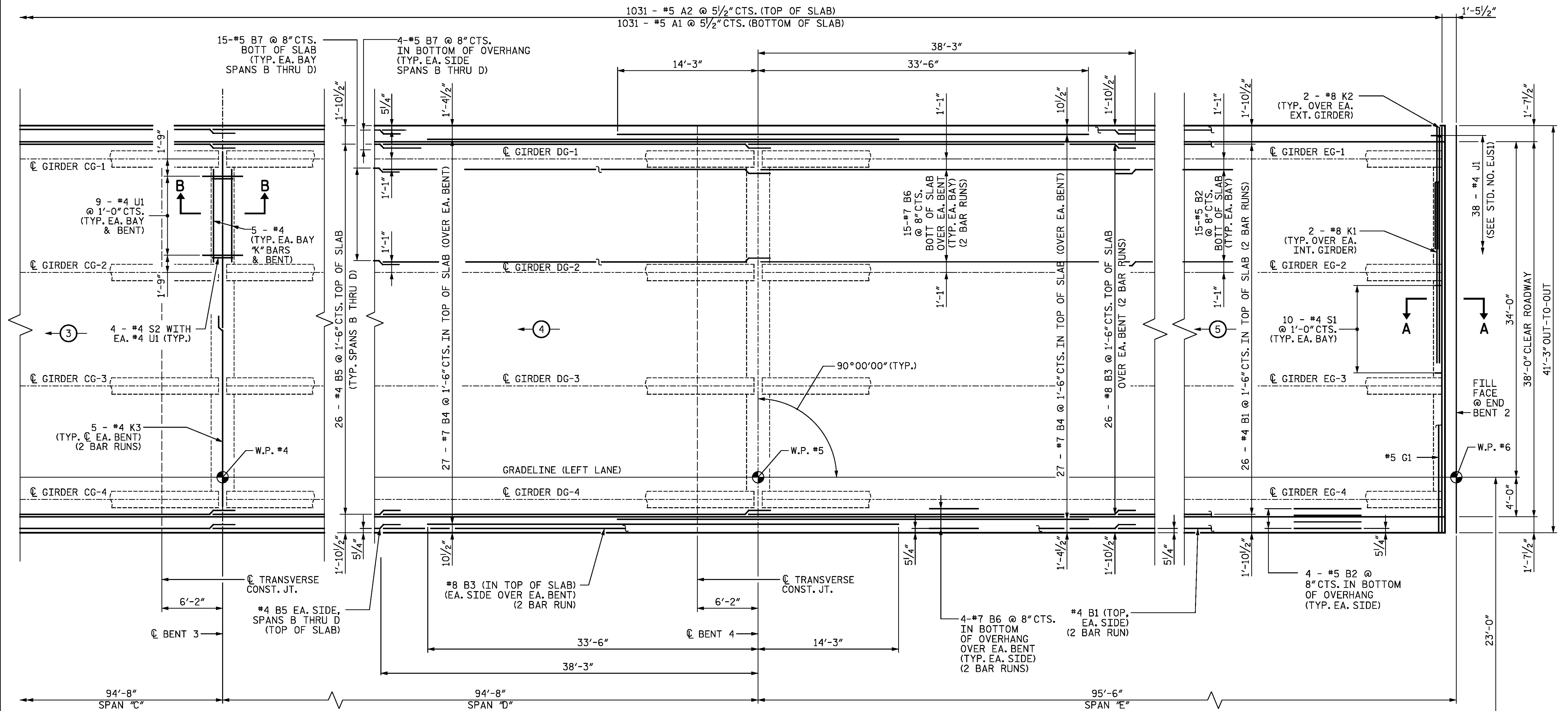
DESIGN ENGINEER OF RECORD: DATE: 2/12/2015

DRAWN BY: Z. SU DATE: 11/19/13
 CHECKED BY: R. C. LARSON DATE: 01/16/14

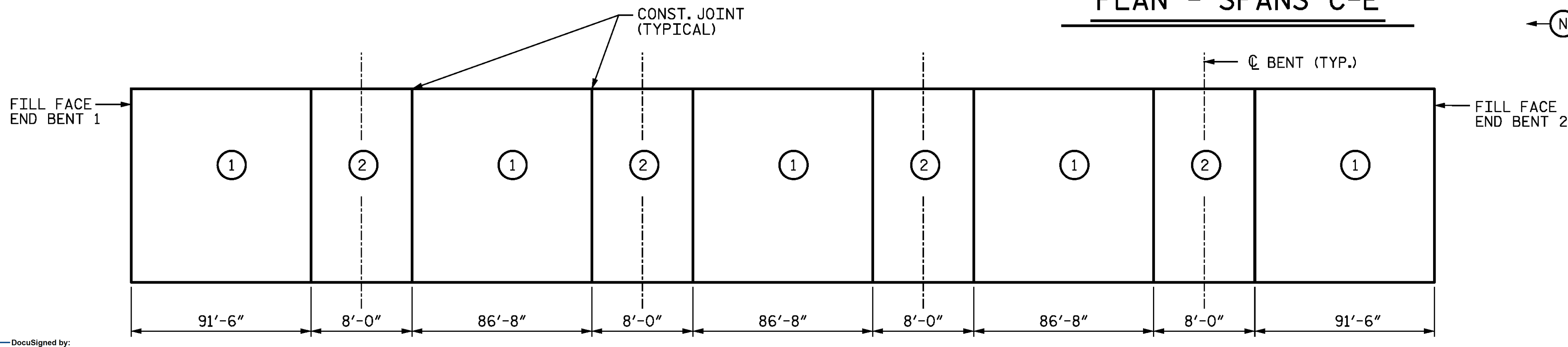
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1			3			S05-8	
2			4			S05-34	

DWG. REF. NO. 8 OF 34

1031 - #5 A2 @ 5 1/2" CTS. (TOP OF SLAB)
 1031 - #5 A1 @ 5 1/2" CTS. (BOTTOM OF SLAB)



PLAN - SPANS C-E



OPTIONAL POUR SEQUENCE

INDICATES POUR SEQUENCE AND DIRECTION
 SEE STD EJS1 FOR CLOSURE POURS AT EXPANSION JOINT IN SPANS A AND E
 SEE SUPERSTRUCTURE BILL OF MATERIAL FOR REINFORCING SPLICE LENGTHS.

SEE STD EJS1 FOR CLOSURE POURS AT EXPANSION JOINT IN SPANS A AND E.
 POUR 2 CANNOT BE STARTED UNTIL BOTH ADJACENT POURS 1 HAVE REACHED A MINIMUM STRENGTH OF 3000 PSI.

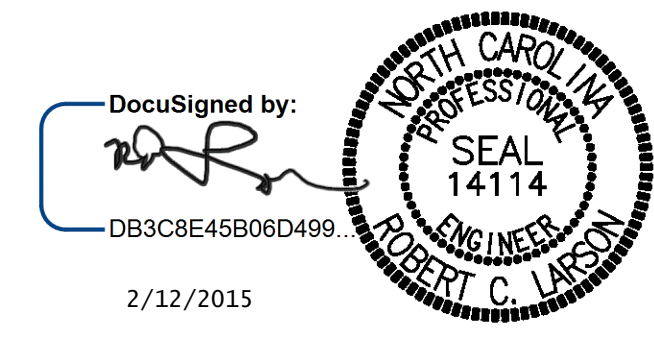
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE PLAN OF SPANS

LEFT LANE STR-#5

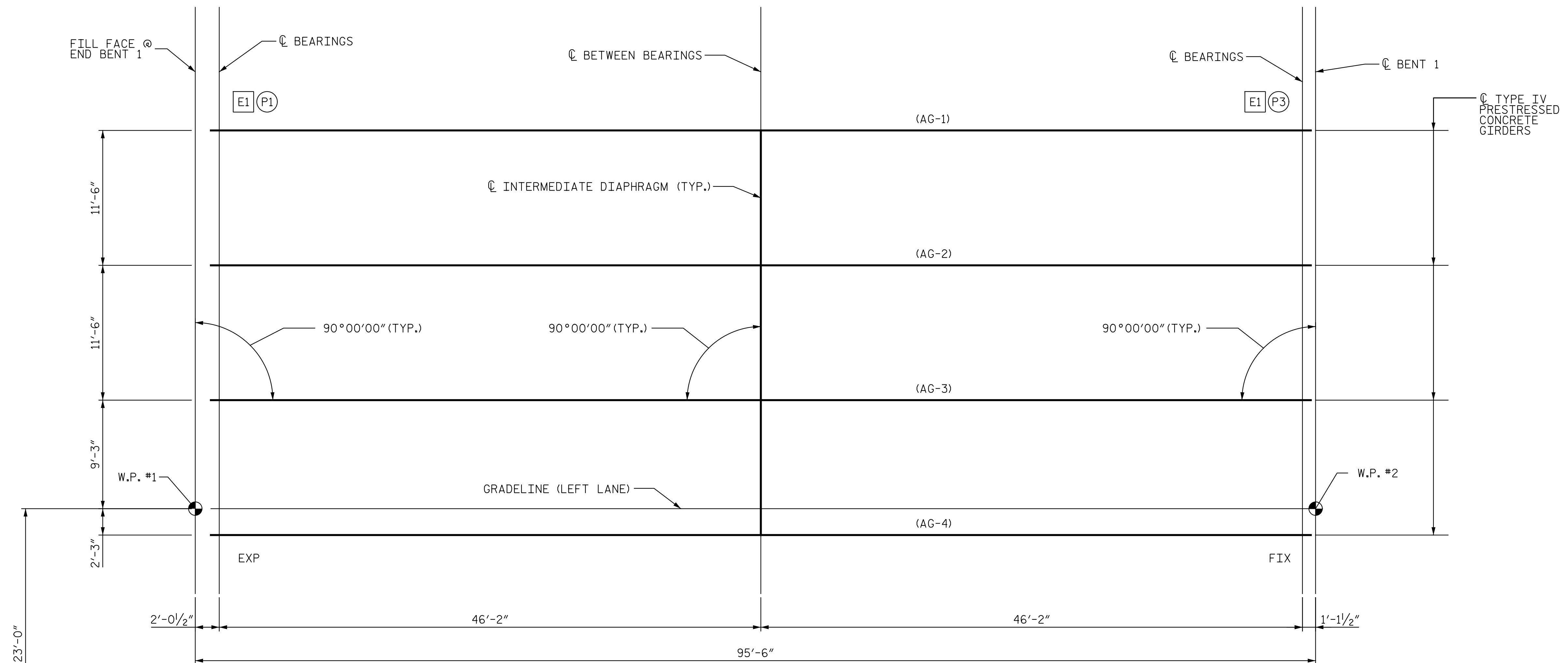


DESIGN ENGINEER OF RECORD: DATE: 2/12/2015
 DRAWN BY: Z. SU DATE: 11/19/13
 CHECKED BY: R. C. LARSON DATE: 01/16/14

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

TOTAL SHEETS: 505-34

KCI Associates of North Carolina, P.A.
 DWG. REF. NO. 9 OF 34



GIRDER LAYOUT AND INTERMEDIATE DIAPHRAGM LOCATIONS (SPANS A AND E)

(SPAN A SHOWN, SPAN E SIMILAR EXCEPT USE (P2) @ END BENT 2 AND (P4) @ BENT 4)

NOTES

- ELASTIC BEARINGS INDICATED THUS:
EN (N = NUMBER)
- SOLE PLATES INDICATED THUS:
PN (N = NUMBER)
- FOR INTERMEDIATE DIAPHRAGMS SEE STD PCC10.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS												
0.6" Ø LOW RELAXATION STRANDS	SPANS A THRU E											
	GIRDERS 1 THRU 4											
LOCATION	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00	
CAMBER (GIRDER ALONE IN PLACE)	↑	0.00	0.09	0.16	0.21	0.23	0.24	0.23	0.21	0.16	0.09	0.00
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.00	0.05	0.09	0.13	0.15	0.16	0.15	0.13	0.09	0.05	0.00
FINAL CAMBER	↑	0"	9/16"	13/16"	15/16"	15/16"	15/16"	15/16"	13/16"	9/16"	0"	

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

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE GIRDER LAYOUT

LEFT LANE STR-#5



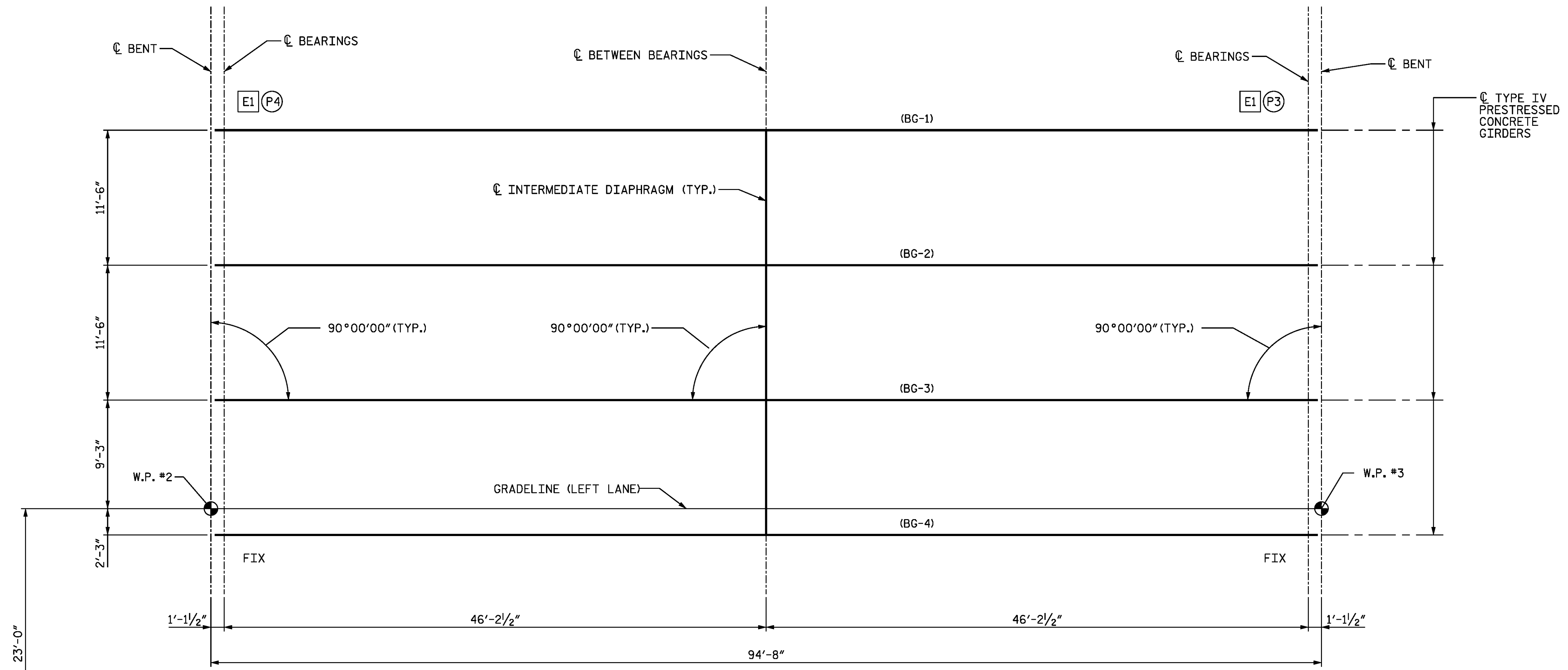
4/12/2015

DocuSigned by:
 R. C. LARSON
 DB3C8E45B06D499

KCI Associates
 of North Carolina, P.A.
 SUITE 220, LANDMARK CENTER # 460 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244
 DWG. REF. NO. 10 OF 34

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-10	
1			3			TOTAL SHEETS	
2			4			S05-34	

DESIGN ENGINEER OF RECORD: Z. SU DATE: 4/12/2015
 DRAWN BY: Z. SU DATE: 11/19/13
 CHECKED BY: R. C. LARSON DATE: 01/15/14



GIRDER LAYOUT AND INTERMEDIATE DIAPHRAGM LOCATIONS (SPANS B, C, AND D)
 (SPAN B SHOWN, SPANS C AND D SIMILAR)

NOTES

1. ELASTIC BEARINGS INDICATED THUS:
E1 (N = NUMBER)
2. SOLE PLATES INDICATED THUS:
P4 (N = NUMBER)
3. FOR INTERMEDIATE DIAPHRAGMS SEE STD PGG10.

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

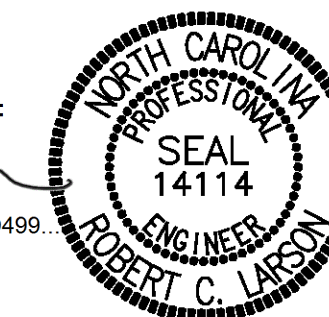
SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 GIRDER LAYOUT**

LEFT LANE STR-#5

DocuSigned by:
 DB3C8E45B06D499
 2/12/2015

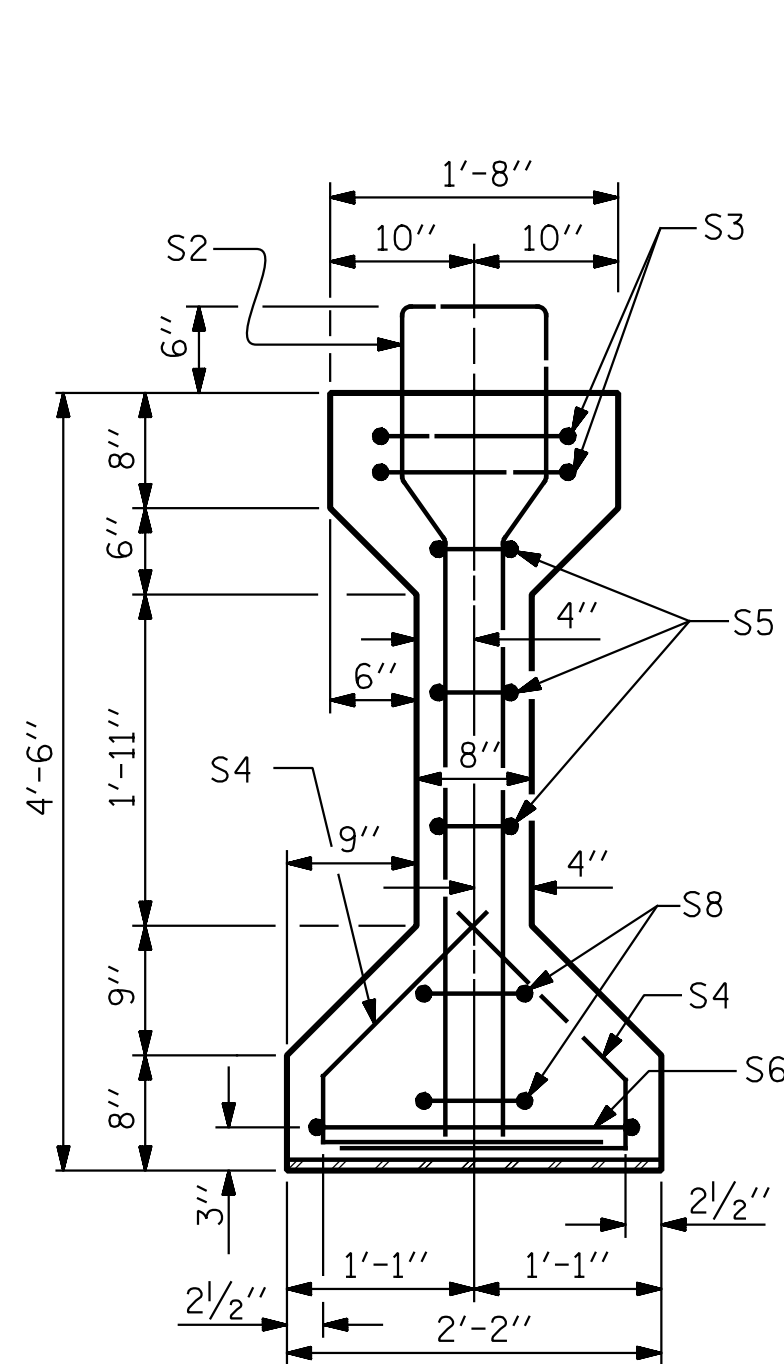


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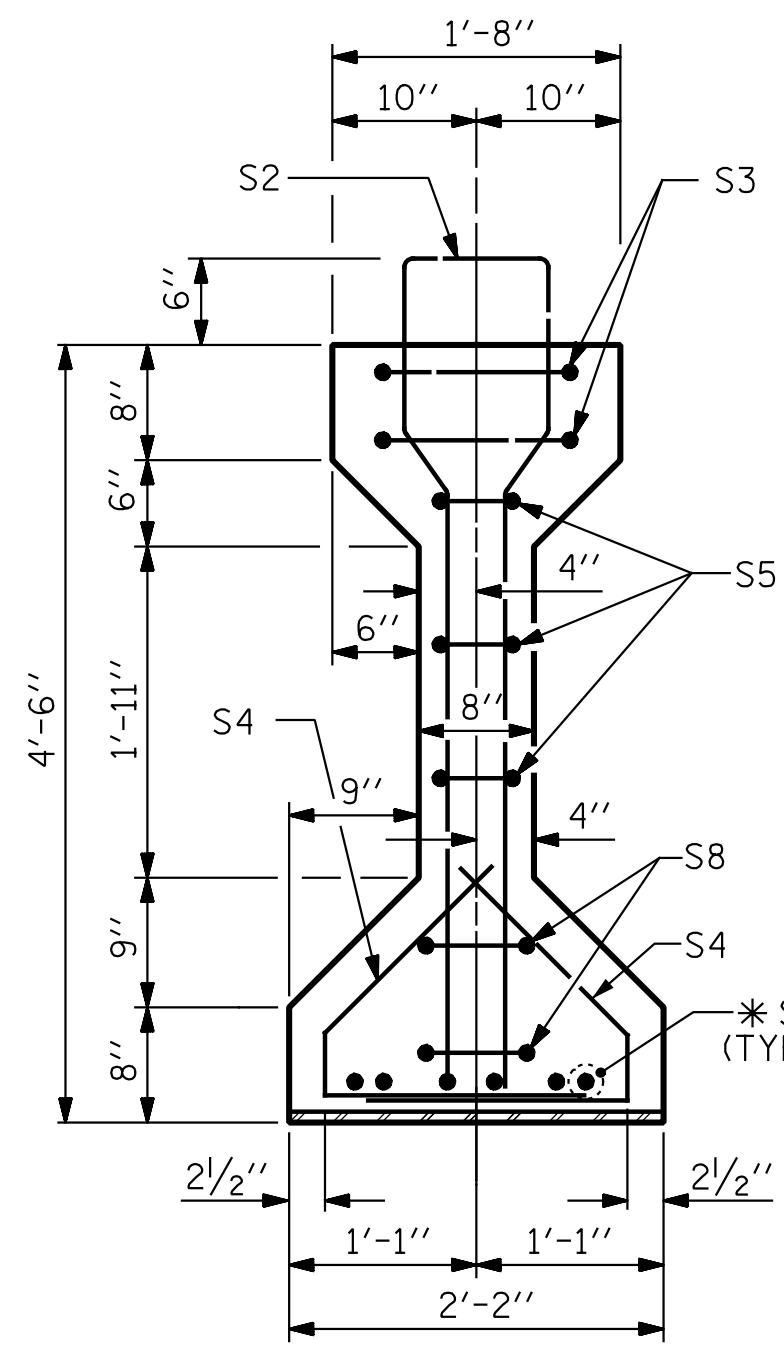
DESIGN ENGINEER OF RECORD:	DATE : 2/12/2015
DRAWN BY : Z. SU	DATE : 11/19/13
CHECKED BY : R. C. LARSON	DATE : 01/15/14

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 11 OF 34

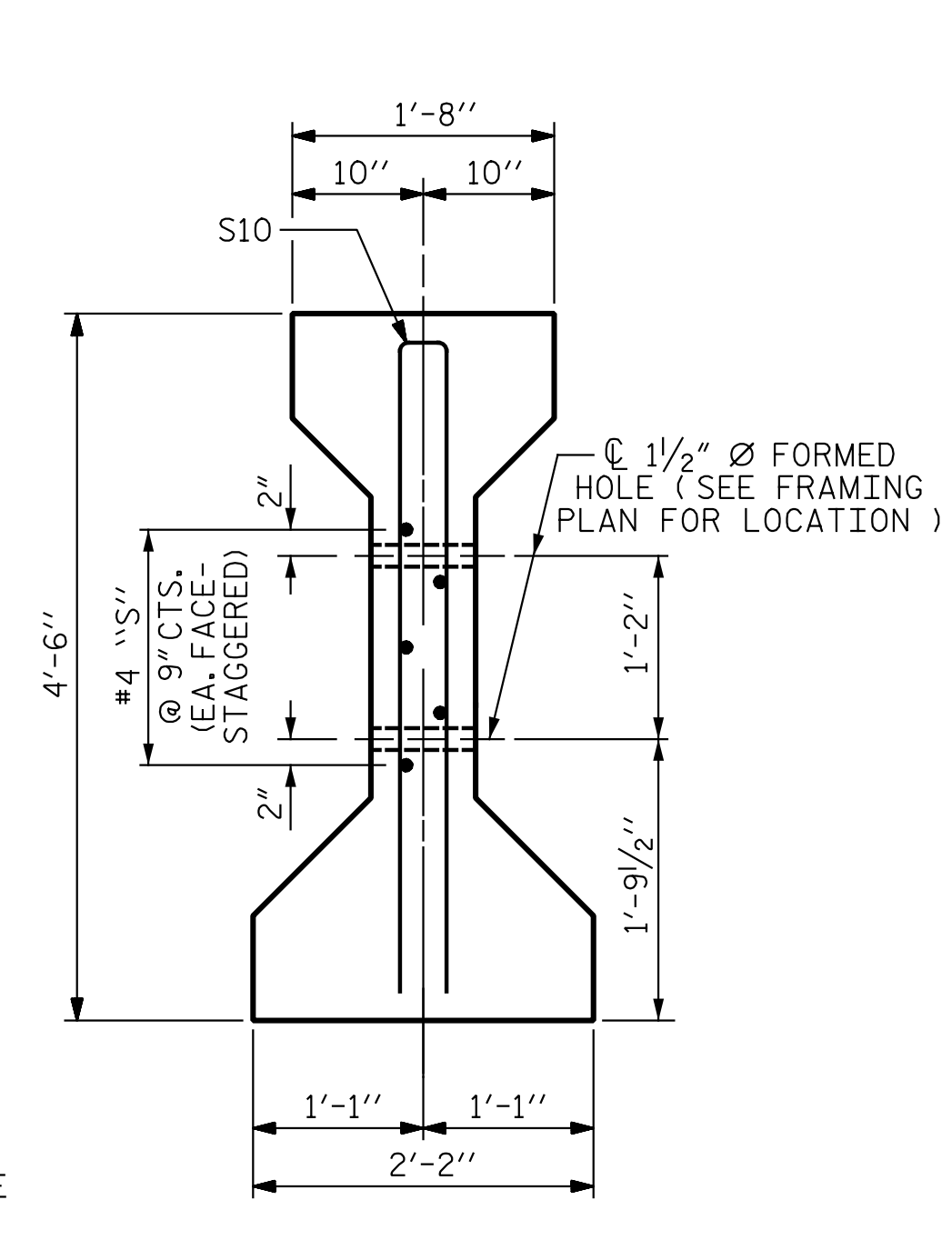
REVISIONS						SHEET NO. S05-II
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS S05-34
2			4			



SECTION A-A

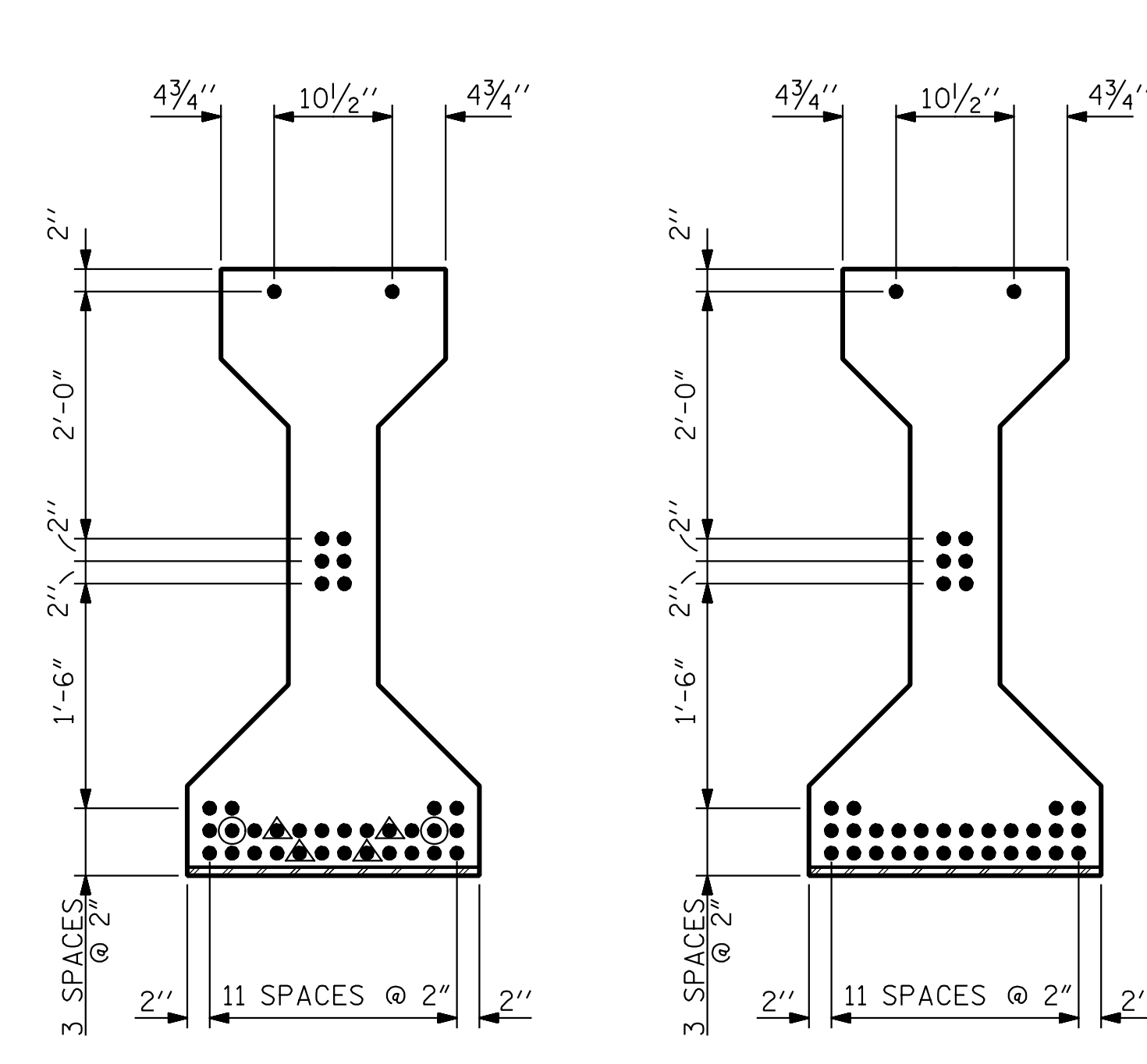


SECTION B-B



SECTION C-C
(S1 BARS NOT SHOWN)

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



AT END OF GIRDER AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- FULLY BONDED STRAND
- ▲ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ⊙ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

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

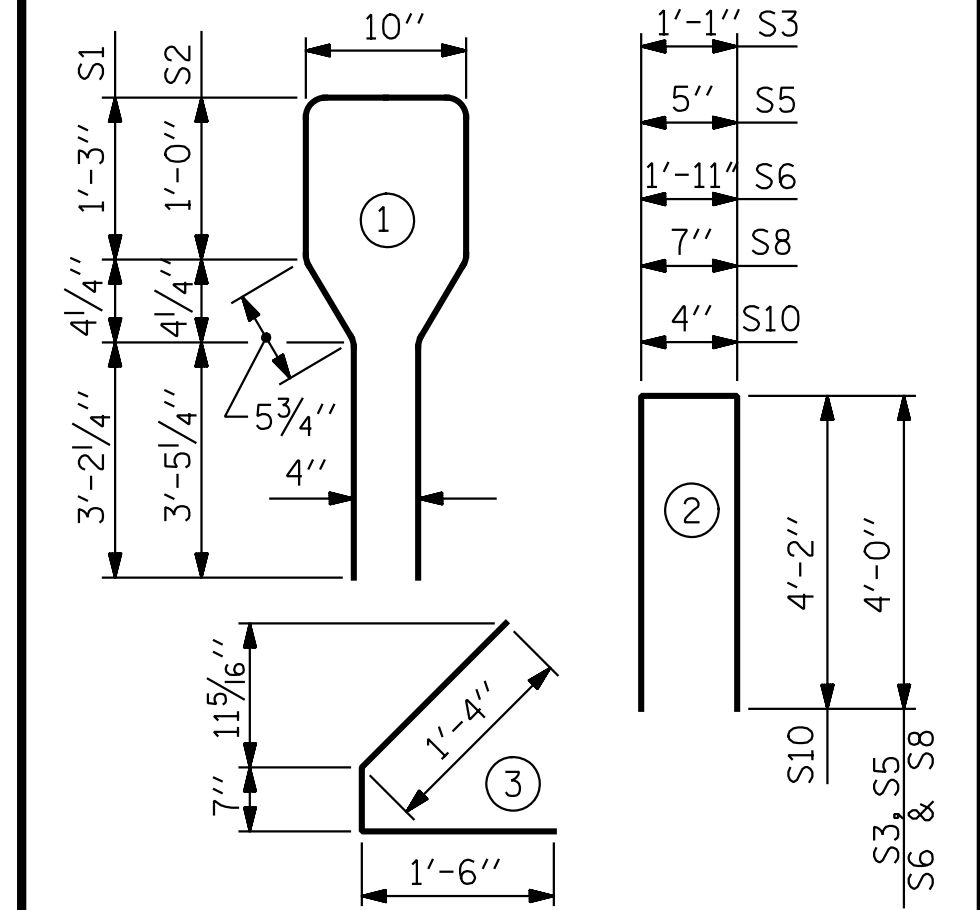
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	108	#4	1	10'-8"	770
S2	12	#6	1	10'-8"	192
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

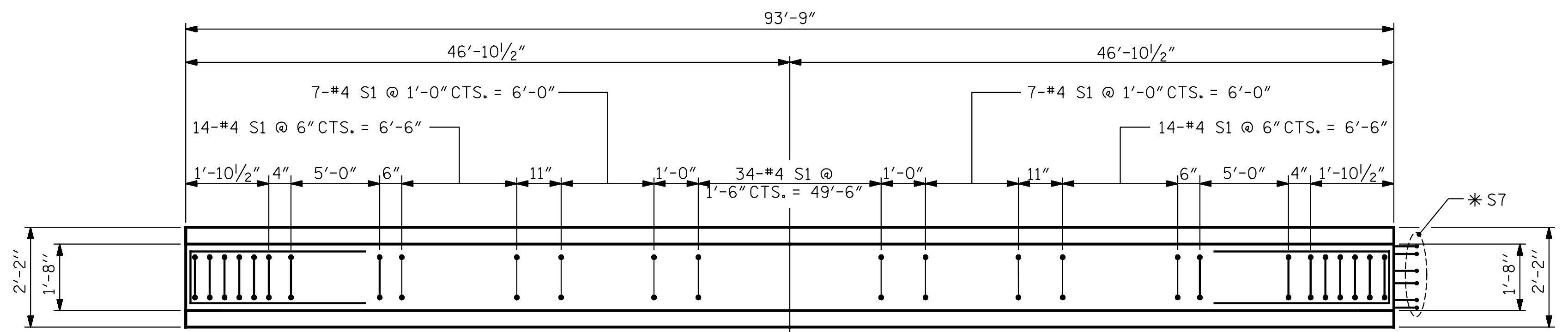


QUANTITIES FOR ONE GIRDER

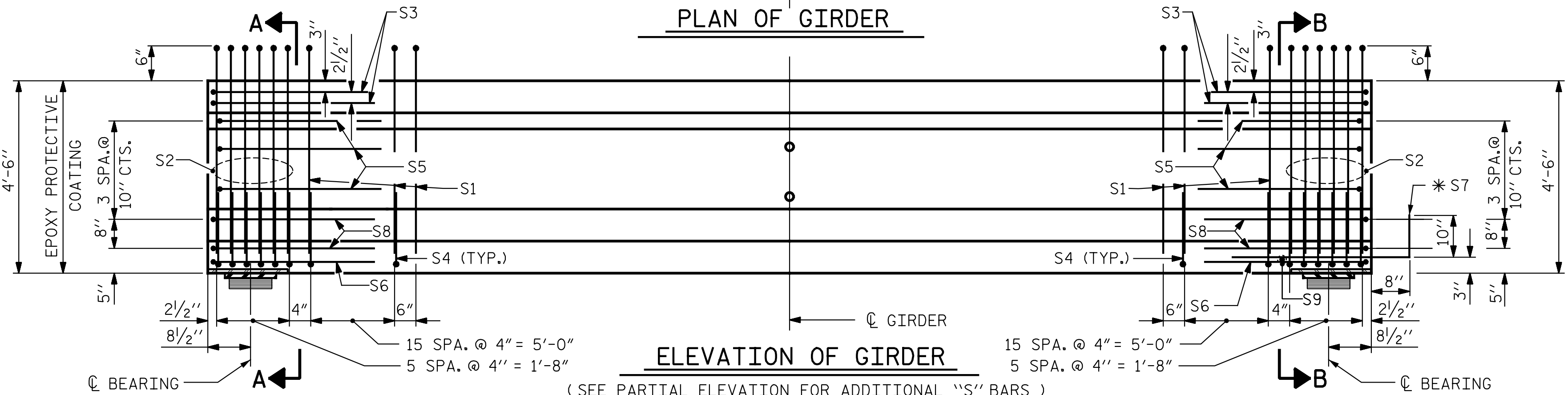
REINFORCING STEEL LB.	8000 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
1316	19.0	36

GIRDERS REQUIRED

SPAN	NUMBER	LENGTH	TOTAL LENGTH
SPAN A	4	93'-9"	375'-0"
SPAN E	4	93'-9"	375'-0"

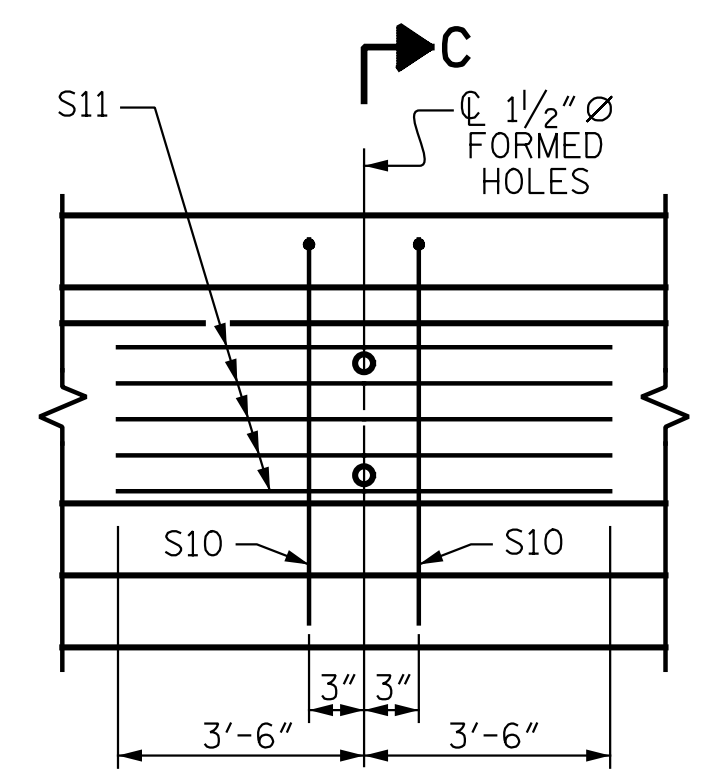


PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

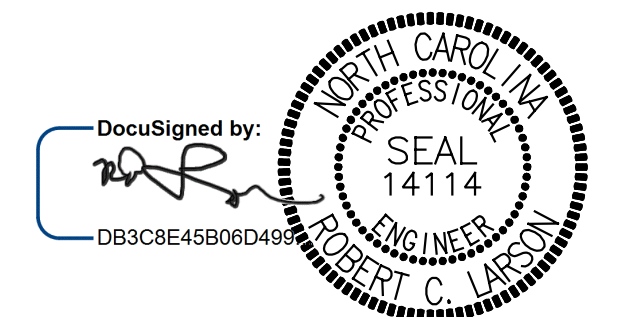
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 1 OF 4

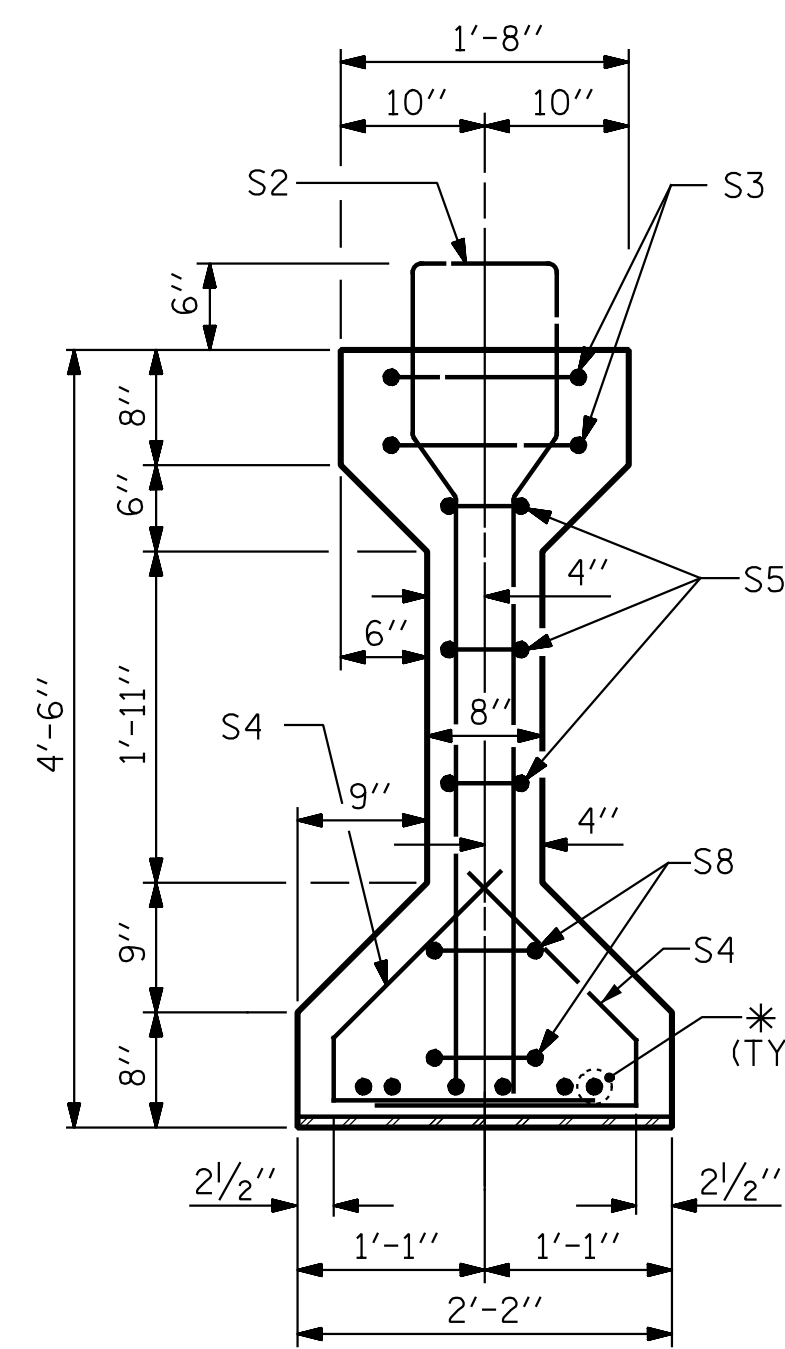
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 AASHTO TYPE IV
 PRESTRESSED CONCRETE GIRDER
 SPAN A OR E

STD. NO. PCG6 LEFT LANE STR-#5

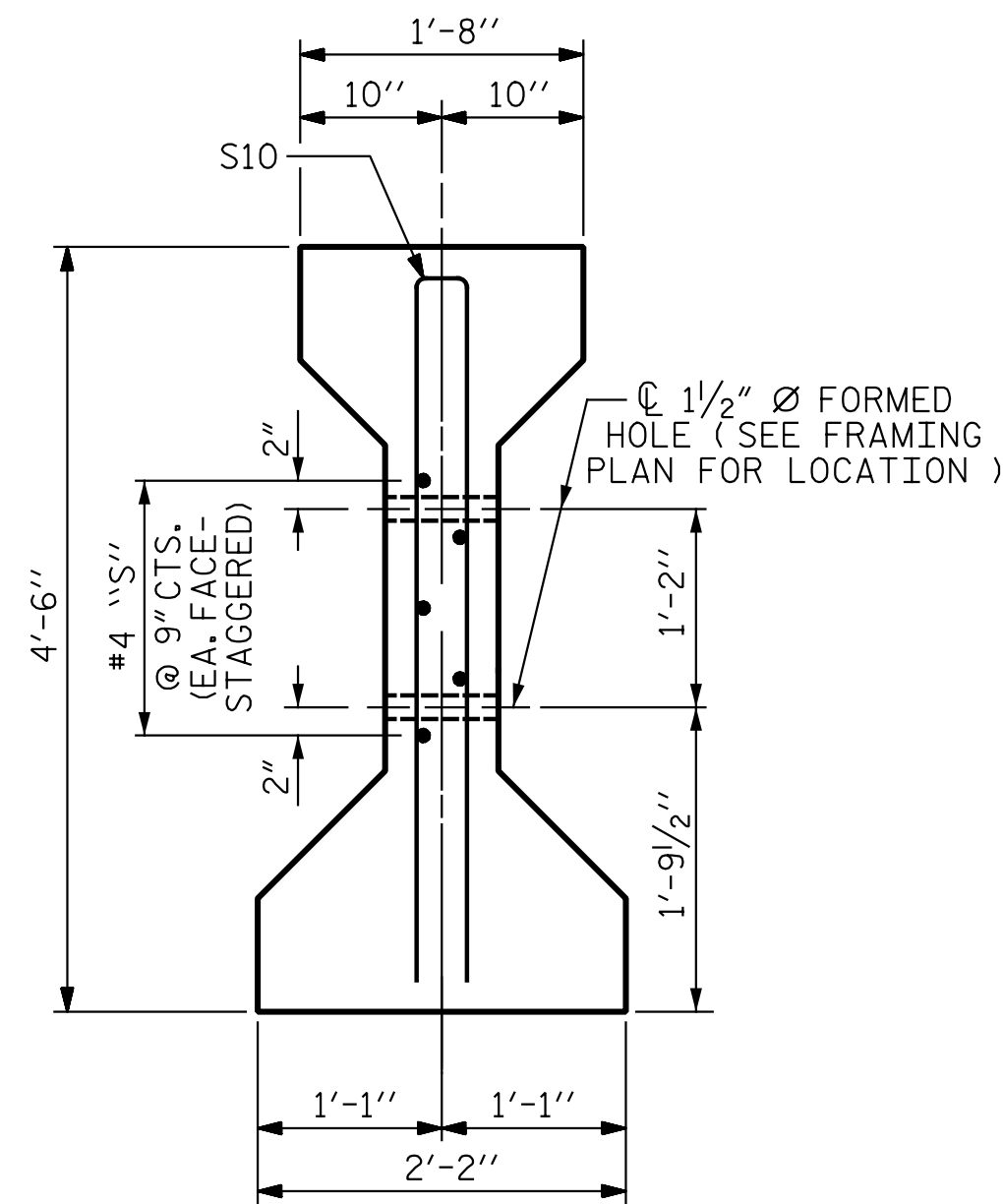


KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 12 OF 34

DRAWN BY : JMB 12/87	REV. 8/16/99RR RWW/LES
CHECKED BY : ARB 12/87	REV. 5/1/06R TLA/GM
	REV. 10/1/11 MAA/GM
DESIGN ENGINEER OF RECORD	DATE : 4/12/2015
DRAWN BY : Z. SU	DATE : 11/21/13
CHECKED BY : R. C. LARSON	DATE : 01/16/14



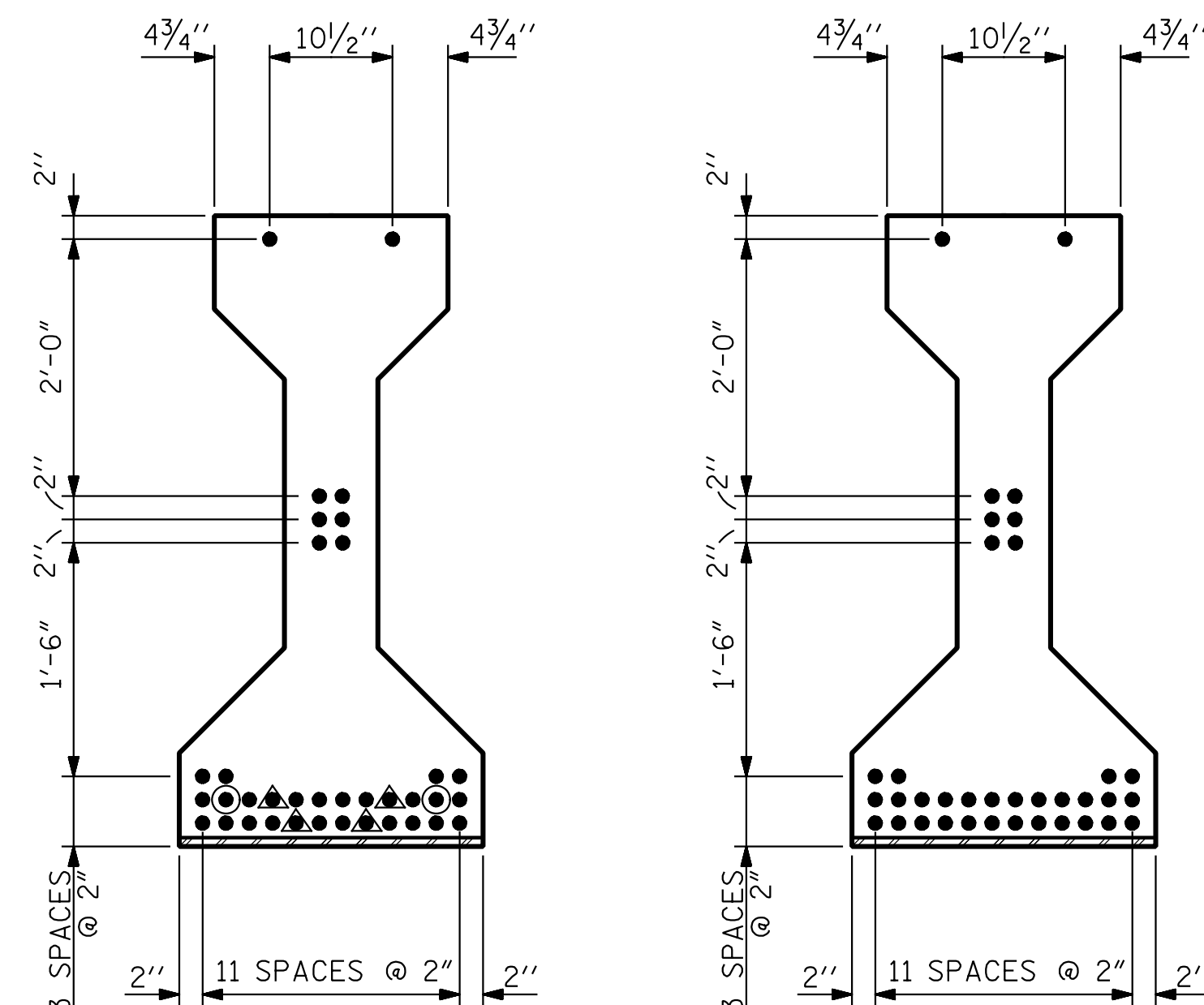
SECTION A-A



SECTION B-B

(S1 BARS NOT SHOWN)

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



AT END OF GIRDER

AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- FULLY BONDED STRAND
- ▲ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

0.6" Ø L. R. GRADE 270 STRANDS

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

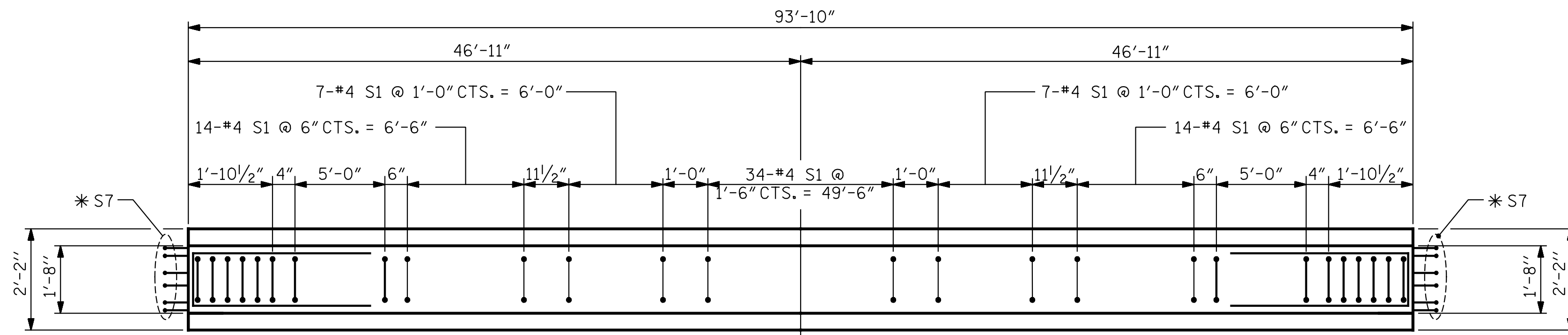
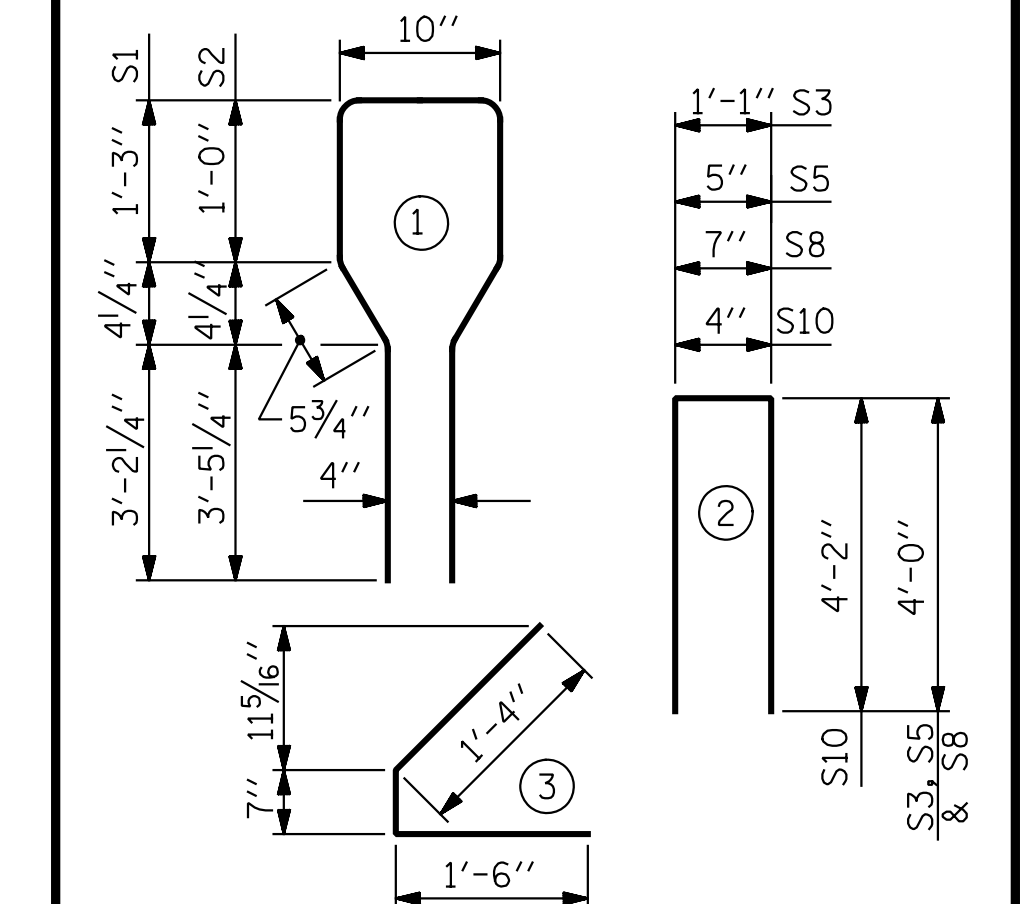
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	108	#4	1	10'-8"	770
S2	12	#6	1	10'-8"	192
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	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

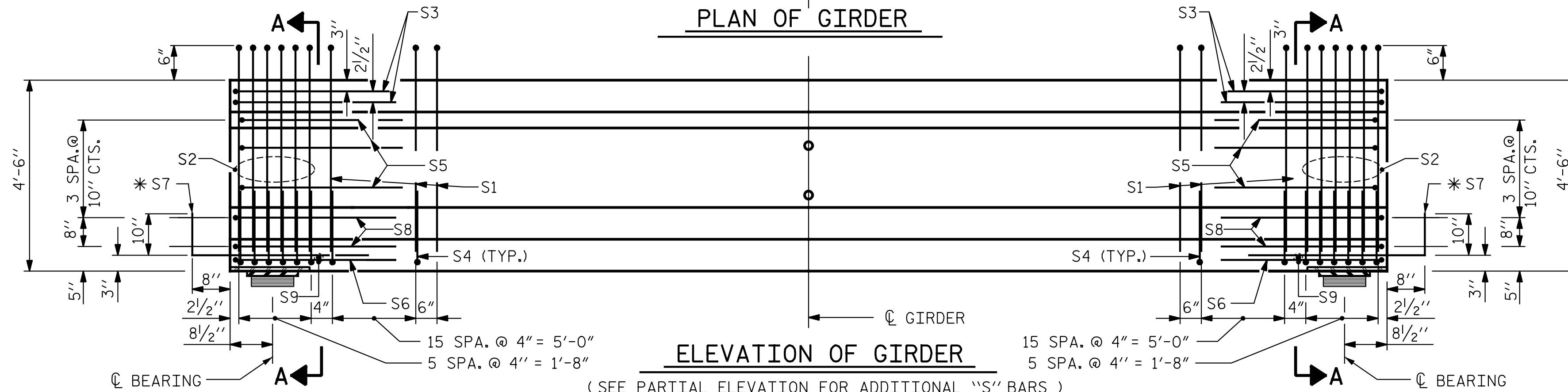
* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT

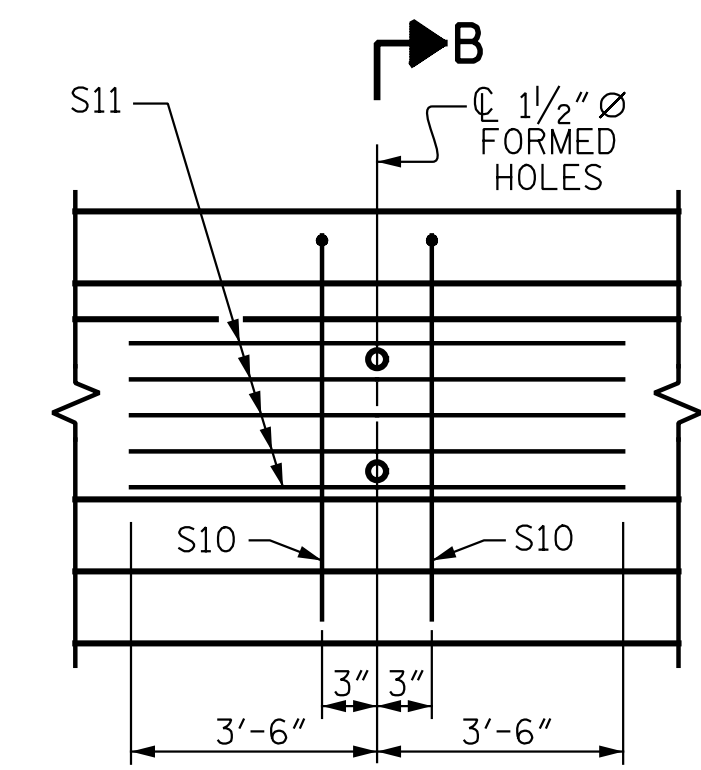


PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL

QUANTITIES FOR ONE GIRDER

REINFORCING STEEL LB.	8000 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
1332	19.0	36

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH	
SPAN B	4	93'-10"	375'-4"
SPAN C	4	93'-10"	375'-4"
SPAN D	4	93'-10"	375'-4"

PROJECT NO. R-2514D

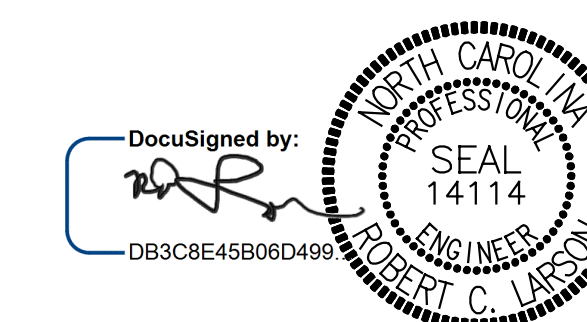
JONES COUNTY

STATION: 373+02.50 -L-

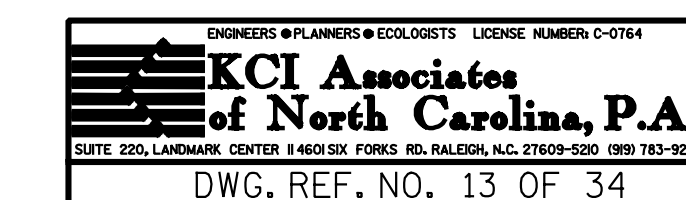
SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
SPAN B, C, OR D

LEFT LANE STR-#5
STD. NO. PCG6



4/12/2015



DWG. REF. NO. 13 OF 34

DRAWN BY : JMB I2/87	REV. 8/16/99RR RWW/LES
CHECKED BY : ARB I2/87	REV. 5/1/06R TLA/GM
	REV. 10/1/11 MAA/GM
DESIGN ENGINEER OF RECORD:	DATE : 4/12/2015
DRAWN BY : Z. SU	DATE : 11/21/13
CHECKED BY : R. C. LARSON	DATE : 01/16/14

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

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.

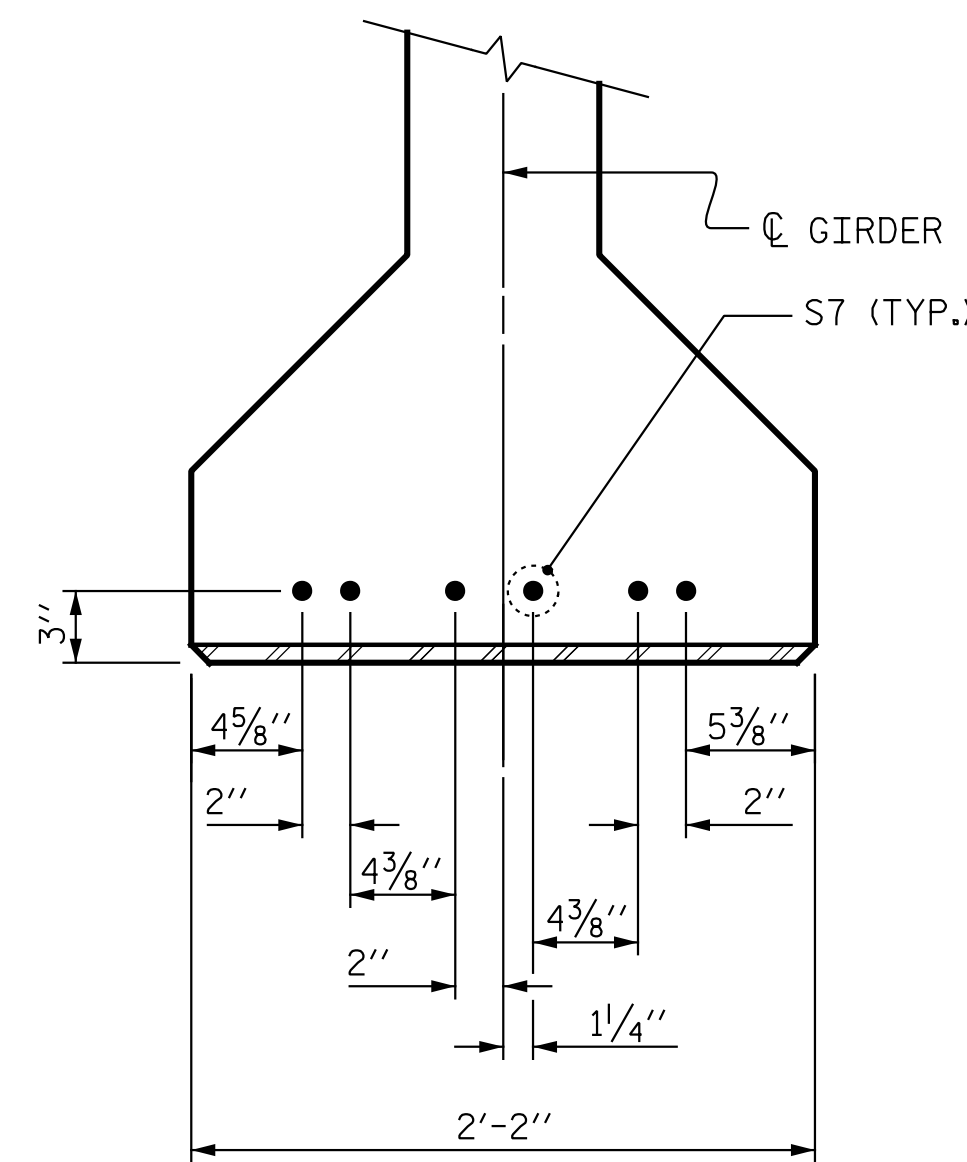
AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI.

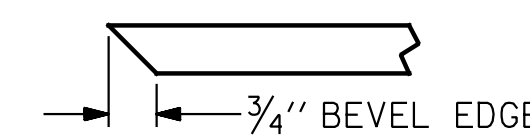
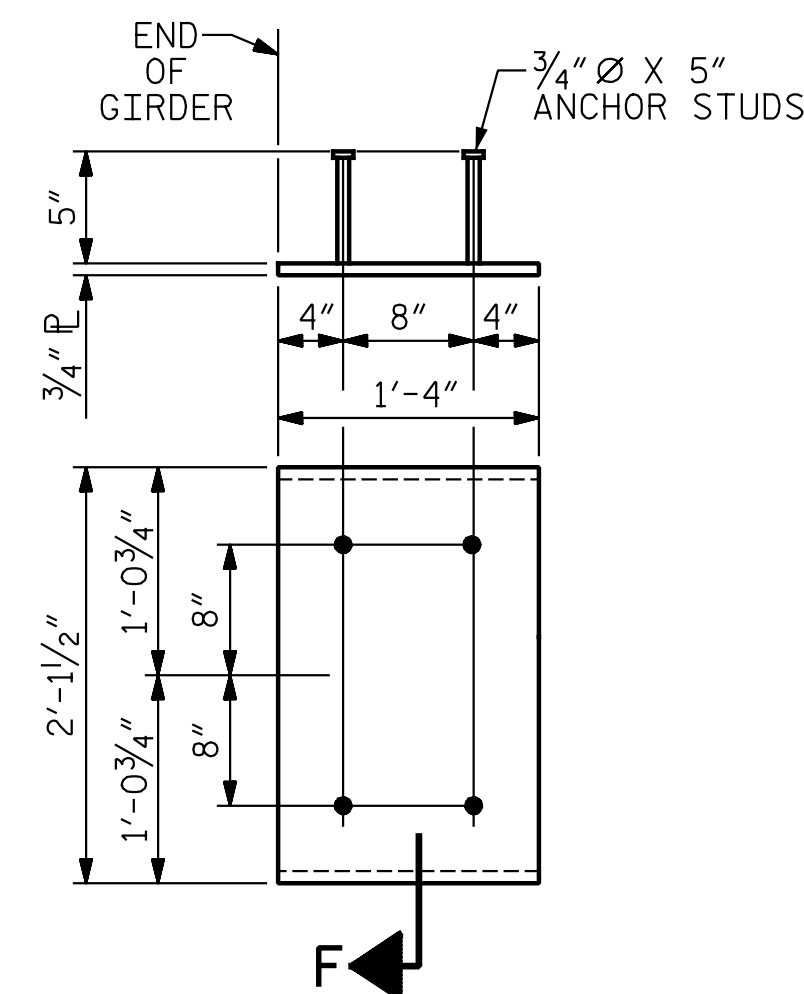
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

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

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.



DETAIL "A"



SECTION "F"

(SEE NOTES)

EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER AND 63" & 72" MODIFIED BULB TEES

(2 REQ'D PER GIRDER)

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS
 LEFT LANE STR-#5



4/12/2015

DRAWN BY : ELR 11/91	REV. 7/10/01RR LES/RDR
CHECKED BY : GRP 11/91	REV. 5/1/06 TLA/GM
	REV. 10/1/11 MAA/GM
DESIGN ENGINEER OF RECORD	DATE : 4/12/2015
DRAWN BY : Z. SU	DATE : 11/25/13
CHECKED BY : R. C. LARSON	DATE : 02/05/14

KCI Associates of North Carolina, P.A.		REVISIONS		SHEET NO. S05-14		
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS S05-34
1			3			
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.

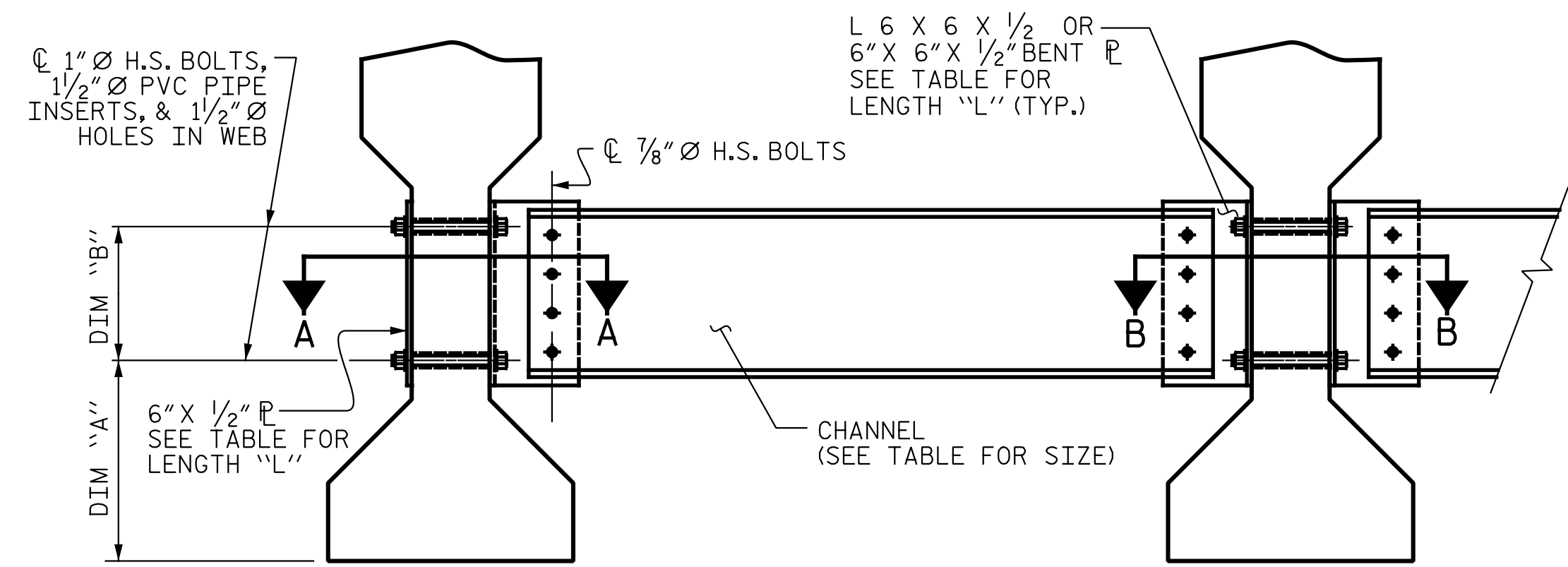
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

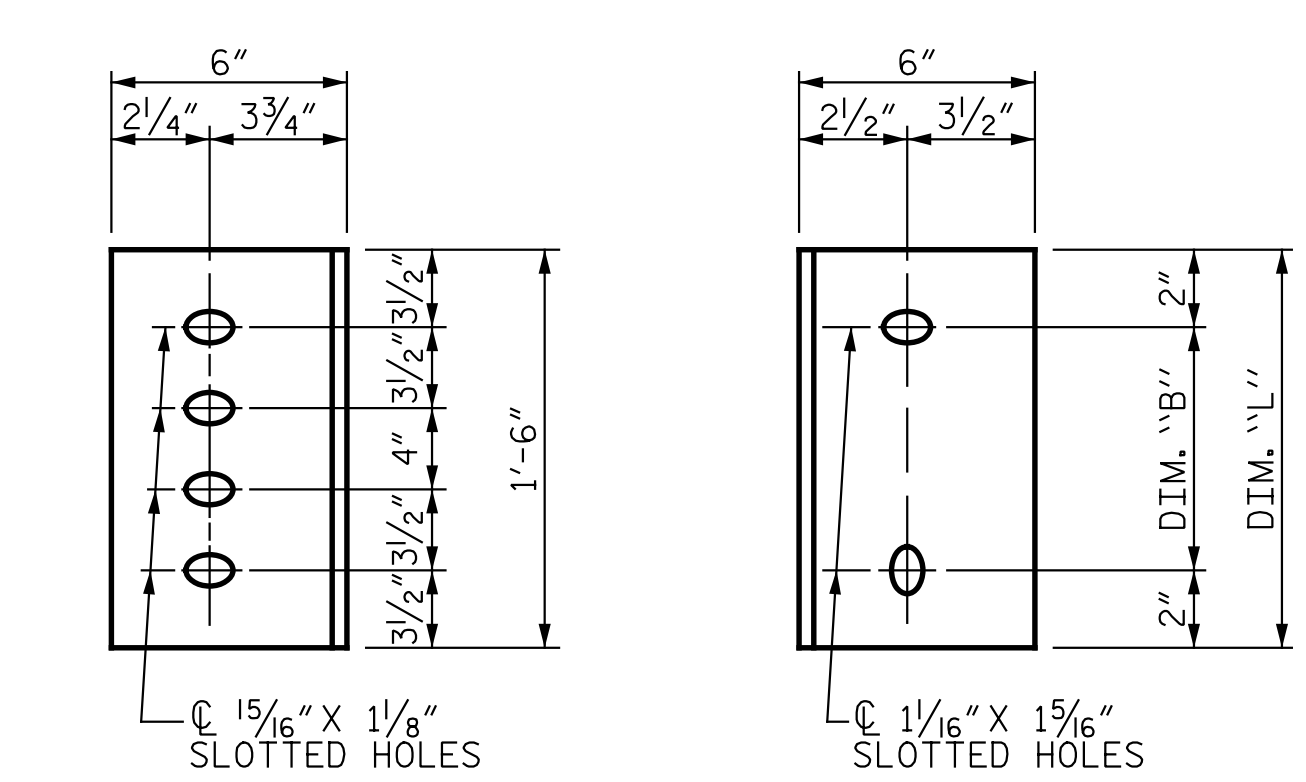
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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.



EXTERIOR GIRDER **INTERIOR GIRDER**
PART SECTION AT INTERMEDIATE DIAPHRAGM



DIAPHRAGM FACE **WEB FACE**
(TYPE III OR TYPE IV GDR.)
CONNECTOR PLATE DETAILS

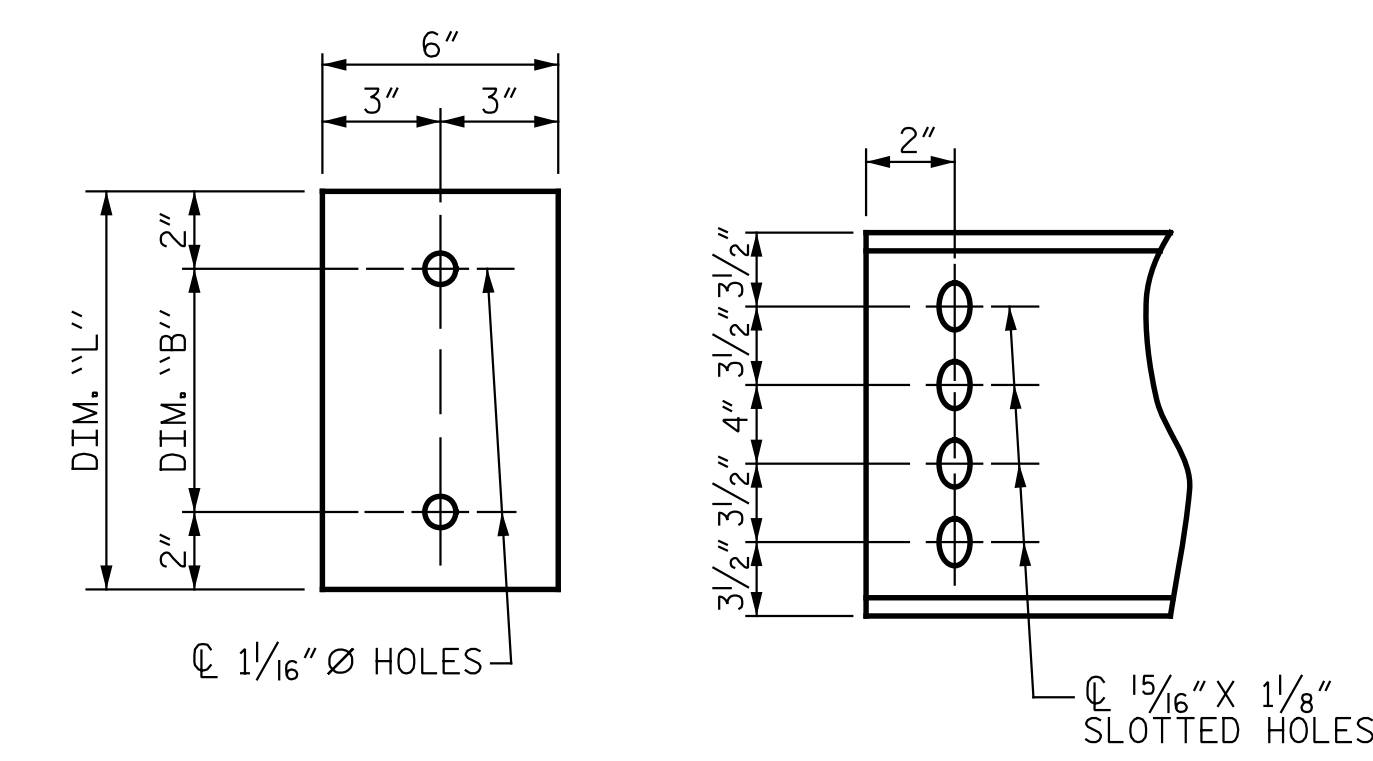
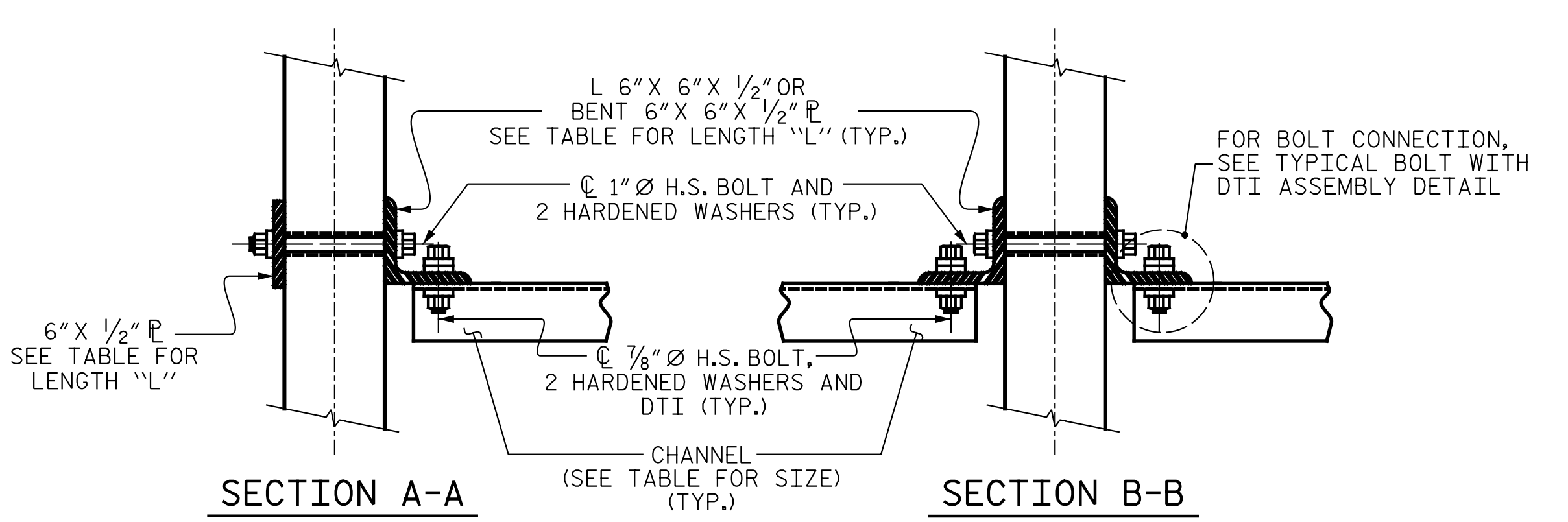
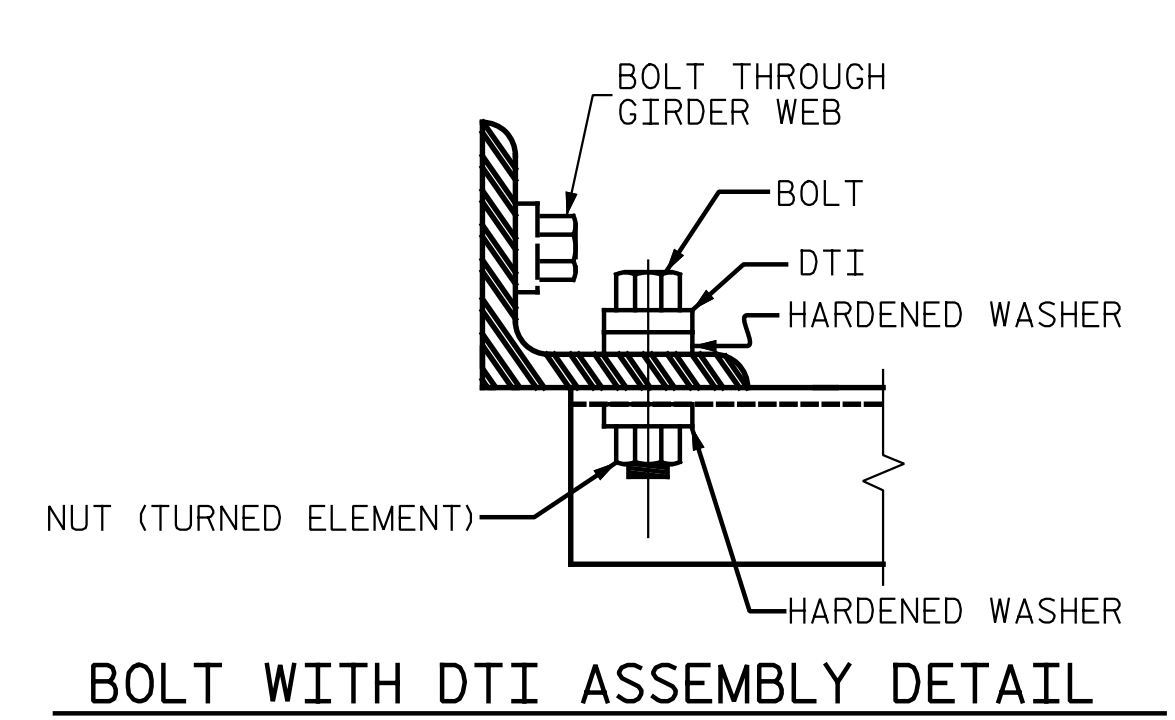


PLATE DETAILS **CHANNEL END**



SECTION A-A **SECTION B-B**
CONNECTION DETAILS

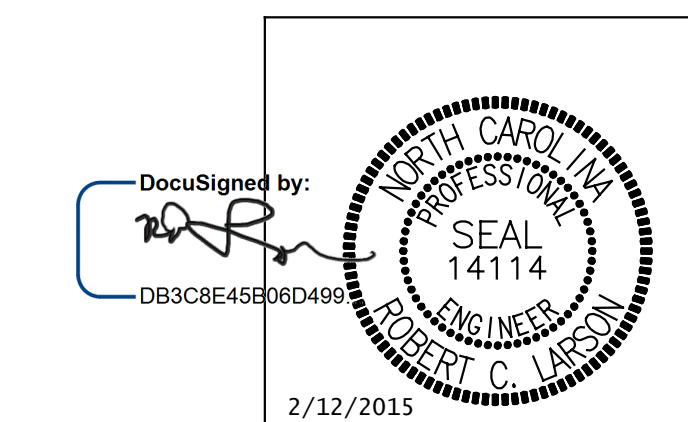


BOLT WITH DTI ASSEMBLY DETAIL

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"

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JONES COUNTY
STATION: 373+02.50 -L-
SHEET 4 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
INTERMEDIATE STEEL
DIAPHRAGMS
FOR TYPE II, III, & IV
PRESTRESSED CONCRETE GIRDERS
STD. NO. PCG10 LEFT LANE STR-#5

DRAWN BY : TLA	6/05	ADDED	10/21/05
CHECKED BY : VC	6/05	REV.	5/1/06RRR KMM/GM
		REV.	10/1/11 MAA/GM
DESIGN ENGINEER OF RECORD	DATE : 2/12/2015		
DRAWN BY :	Z. SU	DATE :	11/25/13
CHECKED BY :	R. C. LARSON	DATE :	02/05/14

NO.	BY:	DATE:	REVISIONS			SHEET NO.
			NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			S05-34

DWG. REF. NO. 15 OF 34

NOTES

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

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

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

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

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

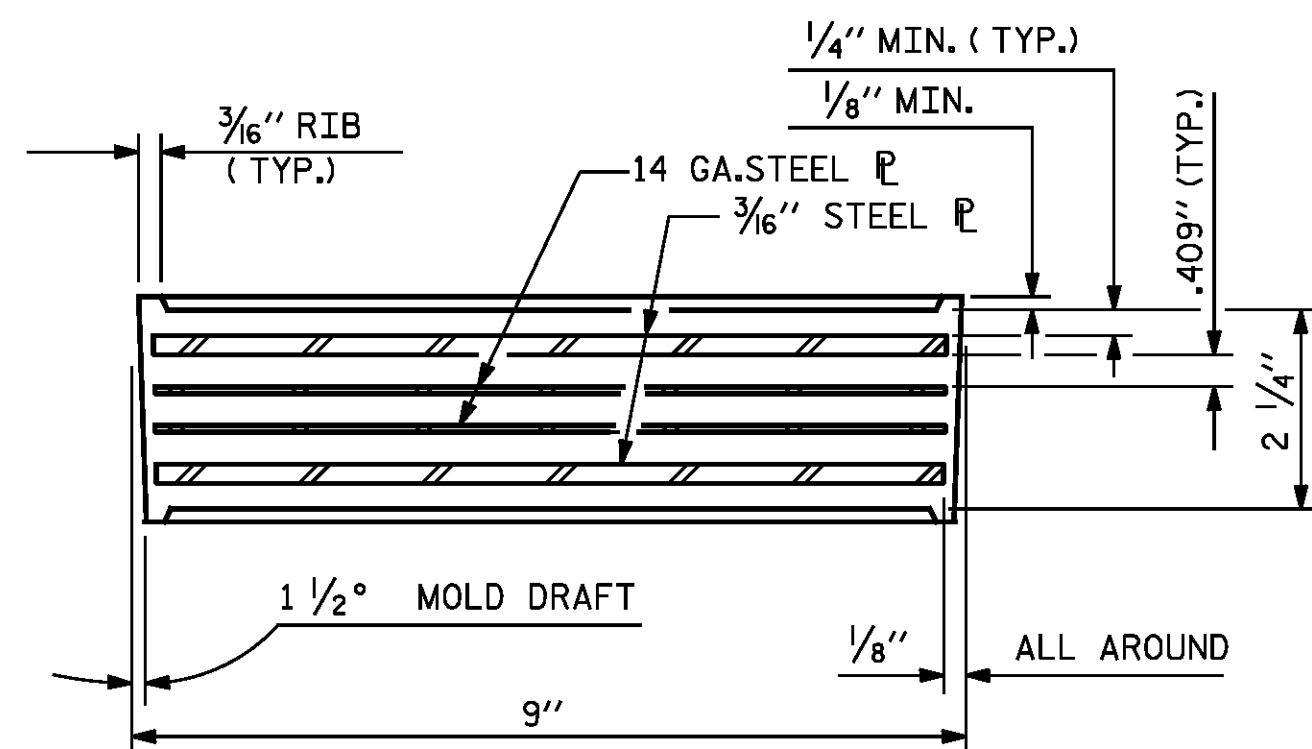
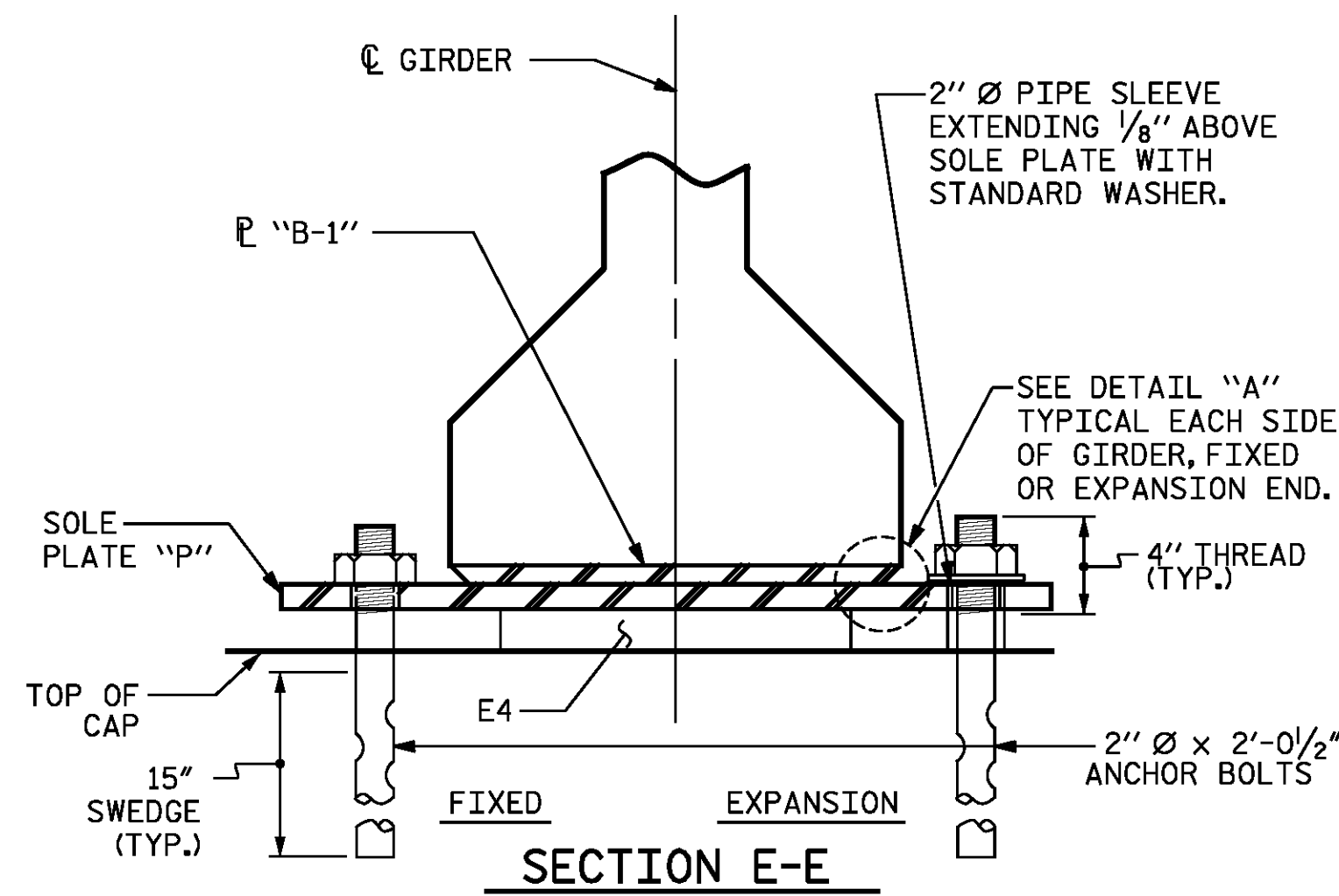
SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

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

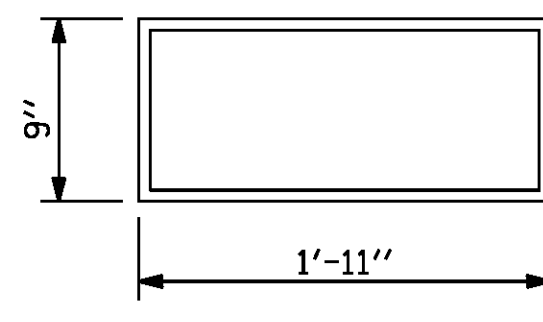
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.



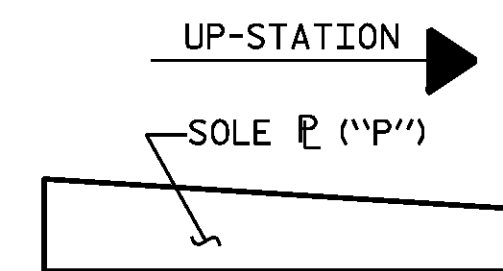
TYPICAL SECTION OF ELASTOMERIC BEARINGS



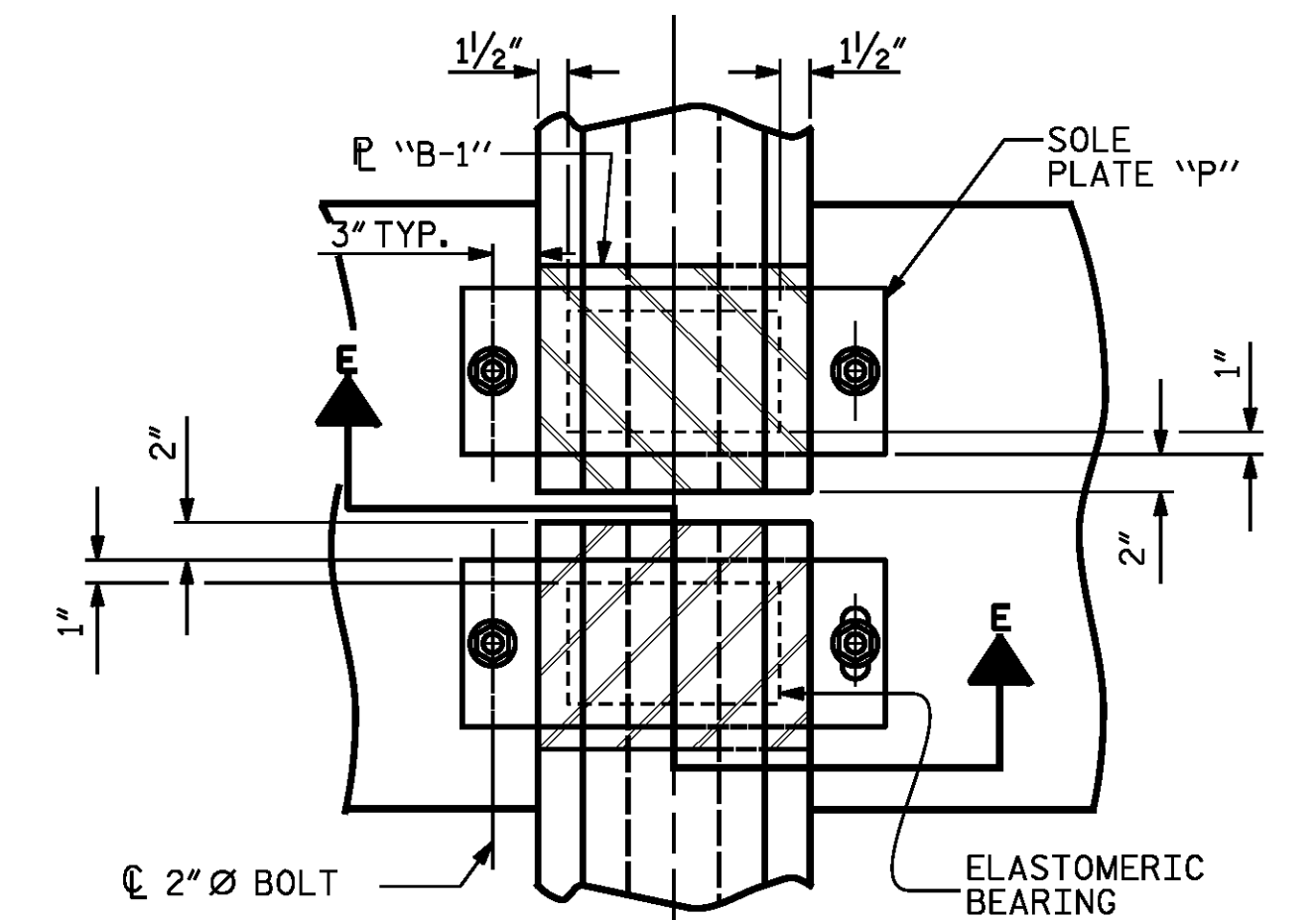
E1 (40 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE V

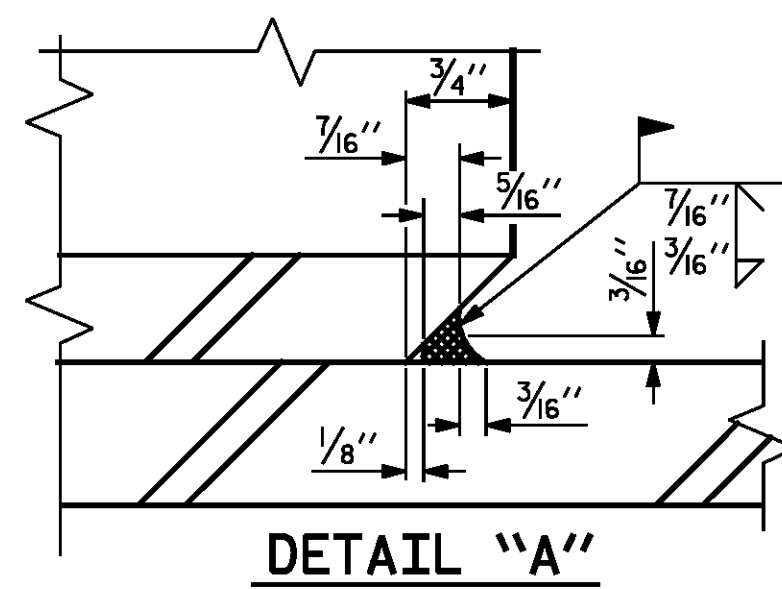


SOLE P PLACEMENT DETAIL

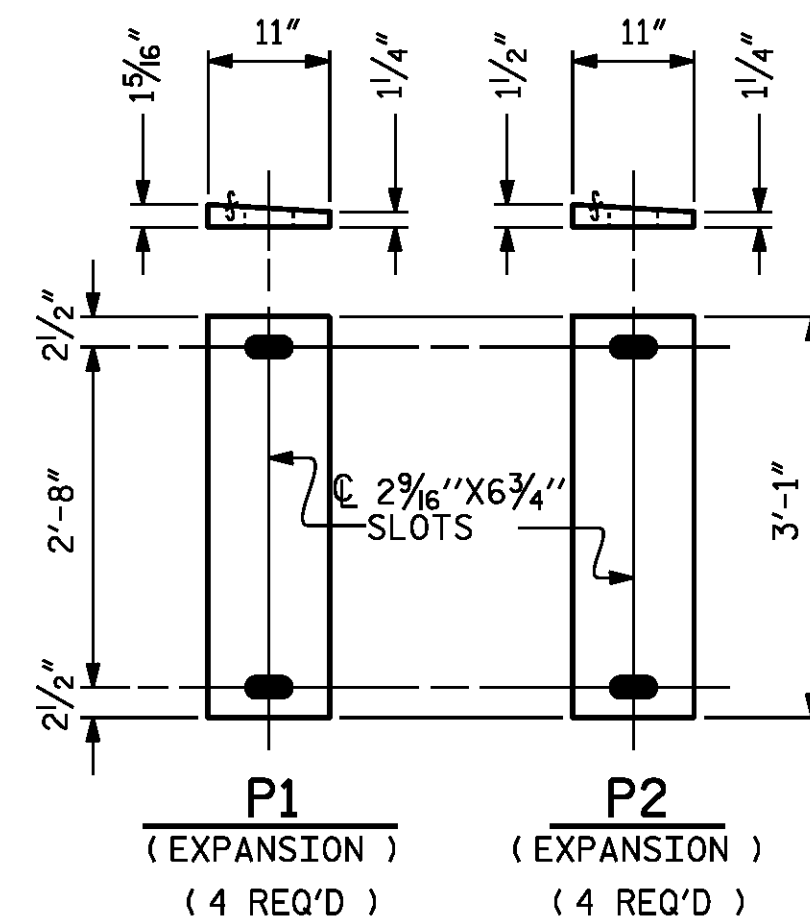


TYPICAL HALF-PLAN (SHOWING CONTINUOUS BENT)

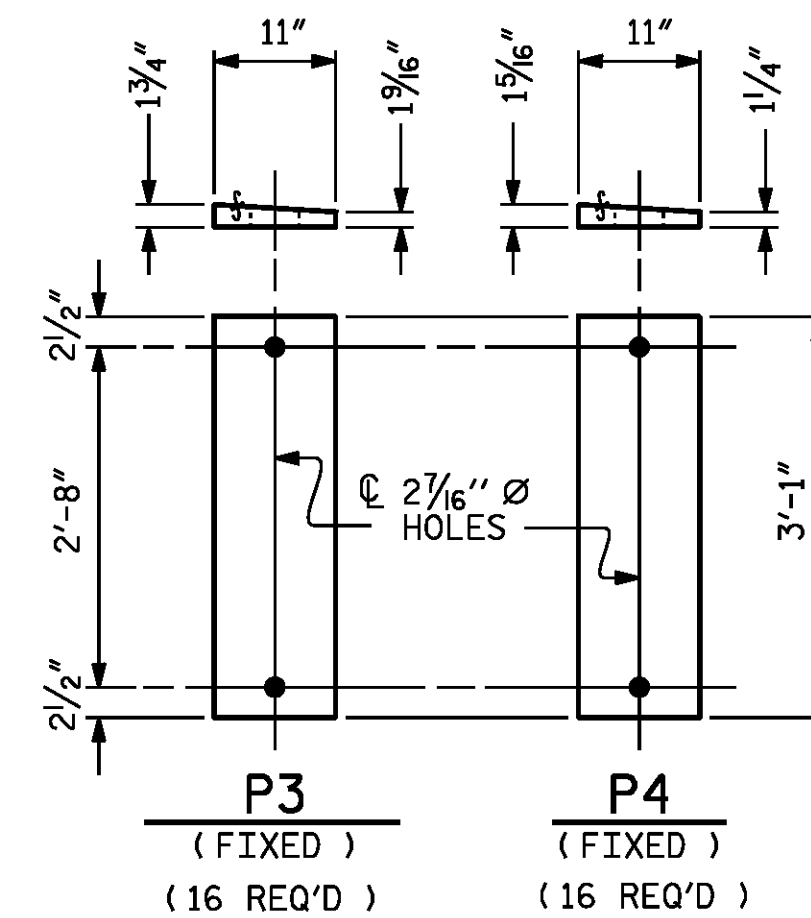
TYPICAL HALF-PLAN (SHOWING SIMPLE SPAN BENT)



DETAIL "A"



P1 (EXPANSION) (4 REQ'D)
P2 (EXPANSION) (4 REQ'D)

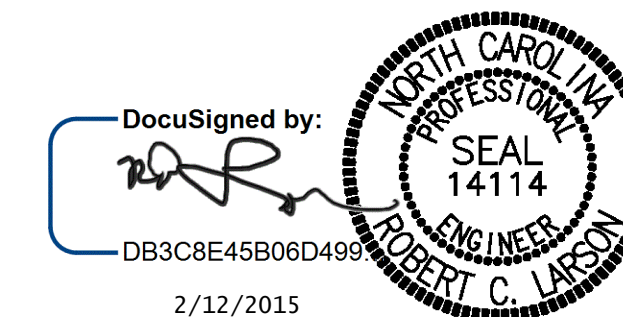


P3 (FIXED) (16 REQ'D)
P4 (FIXED) (16 REQ'D)

SOLE PLATE DETAILS ("P")

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

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-



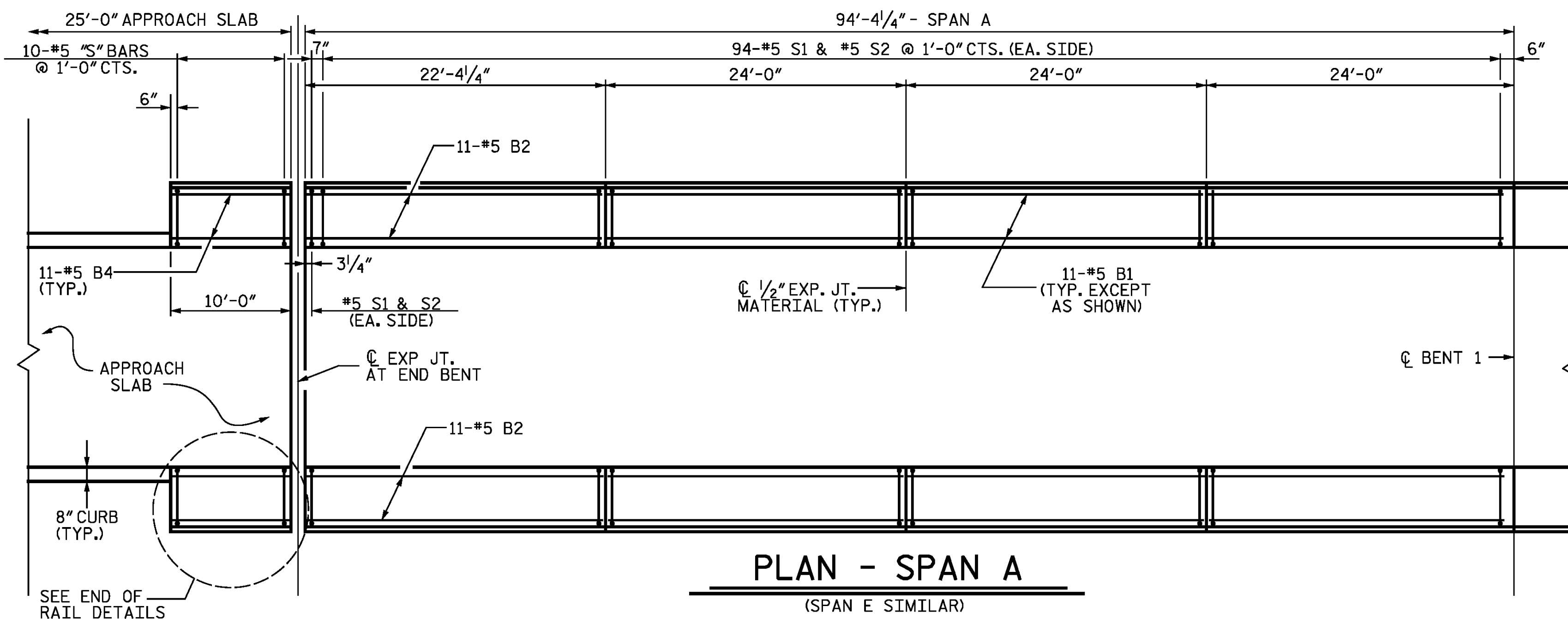
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
ELASTOMERIC BEARING DETAILS
 LEFT LANE
 STD. NO. EB4 STR-#5

DESIGN ENGINEER OF RECORD: DATE : 2/12/2015

DRAWN BY : E. C. DECOLA DATE : 11/25/13
 CHECKED BY : R. C. LARSON DATE : 01/15/14

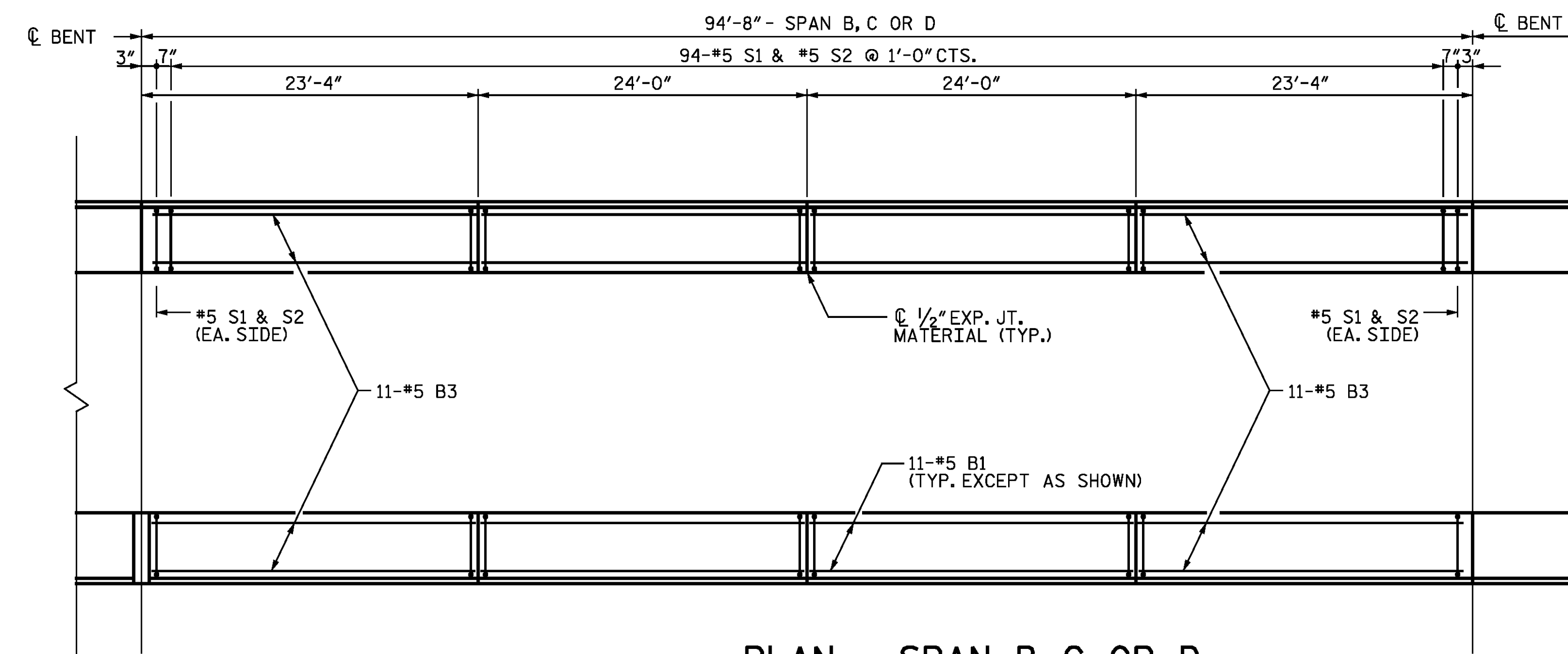
DRAWN BY : EEM 2/97
 CHECKED BY : VAP 2/97
 REV. 5/1/06 TLA/GM
 REV. 10/1/11 MAA/GM
 REV. 6/13 AAC/MAA

KCI Associates of North Carolina, P.A.		REVISIONS		SHEET NO. S05-16	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
DWG. REF. NO. 16 OF 34				TOTAL SHEETS S05-34	

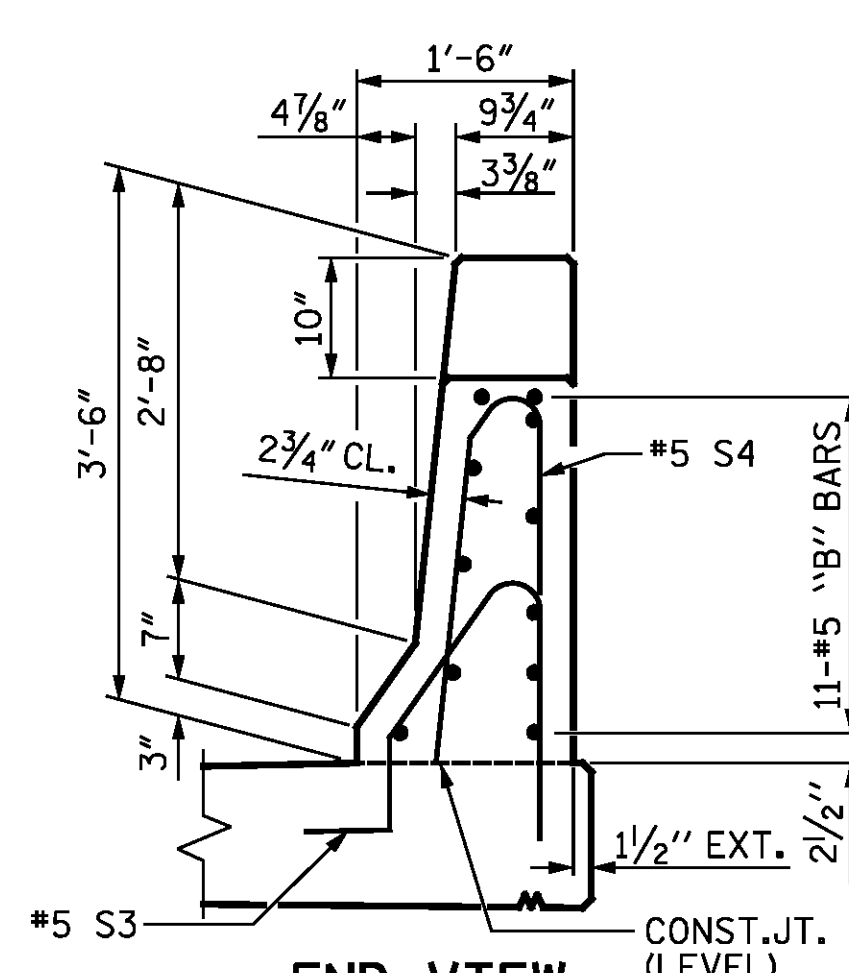


PLAN - SPAN A

(SPAN E SIMILAR)

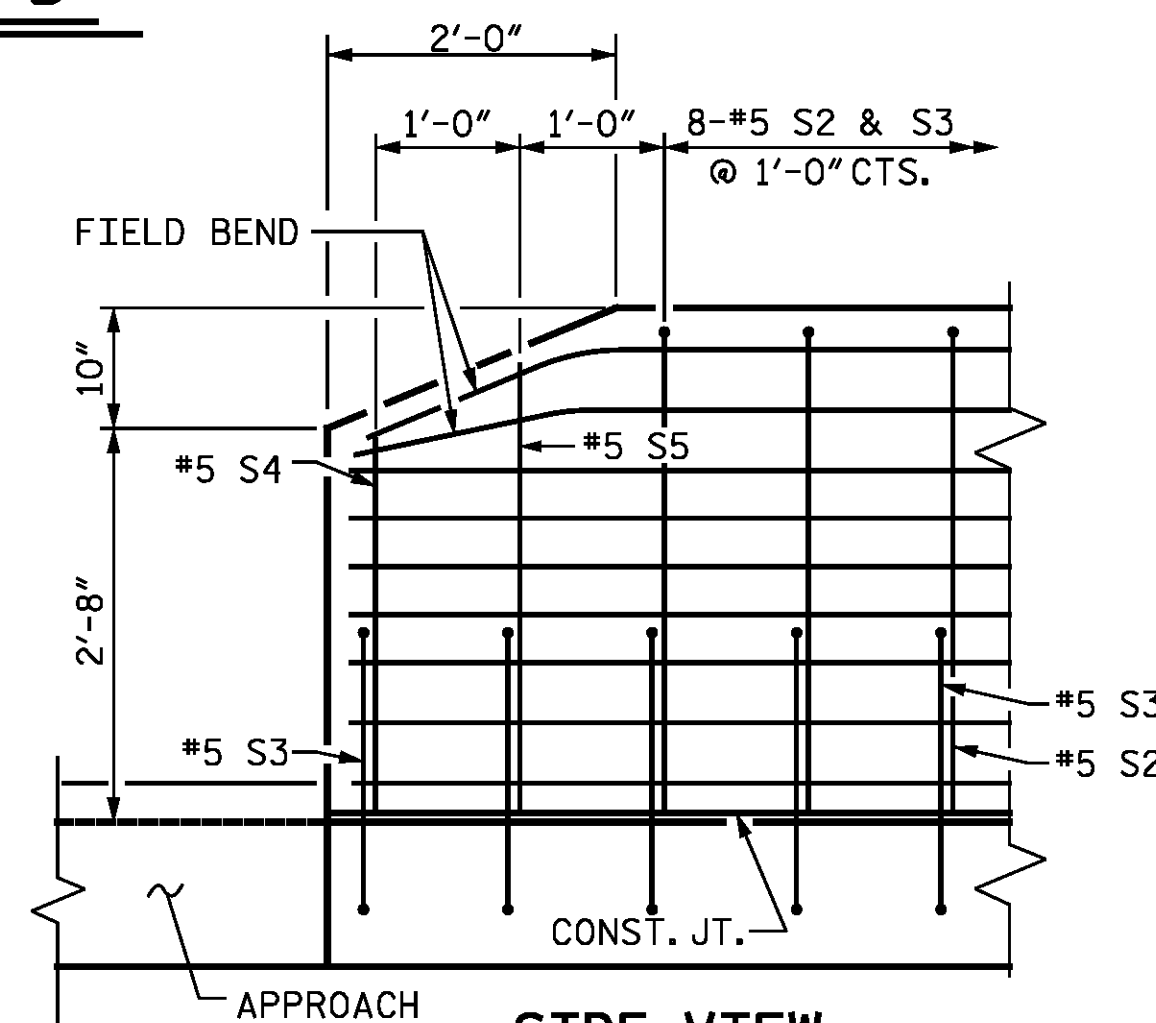


PLAN - SPAN B, C OR D



END VIEW

CONST. JT. (LEVEL)



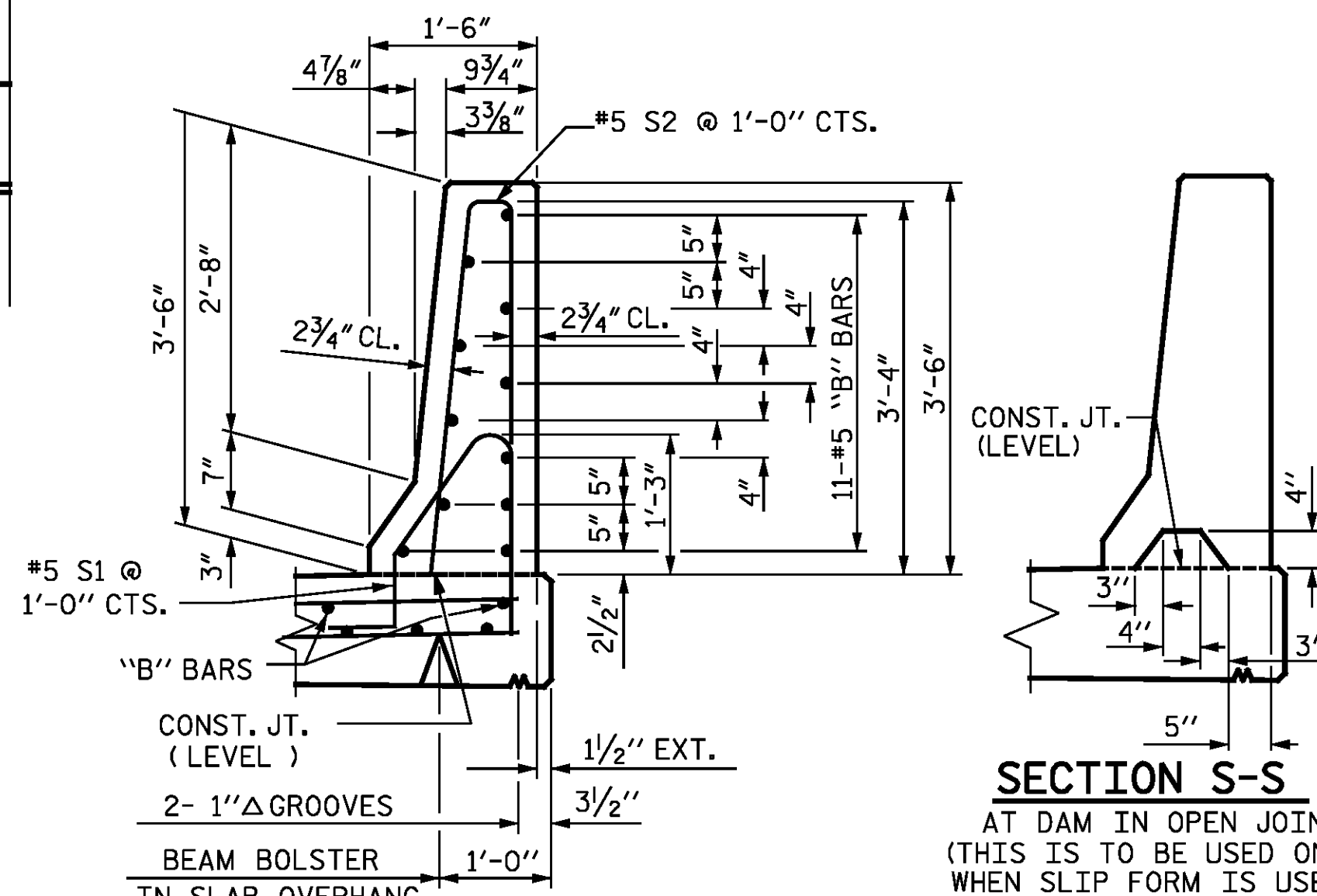
SIDE VIEW

NOTES

THE BARRIER RAIL SHALL NOT BE CAST UNTIL ALL 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.

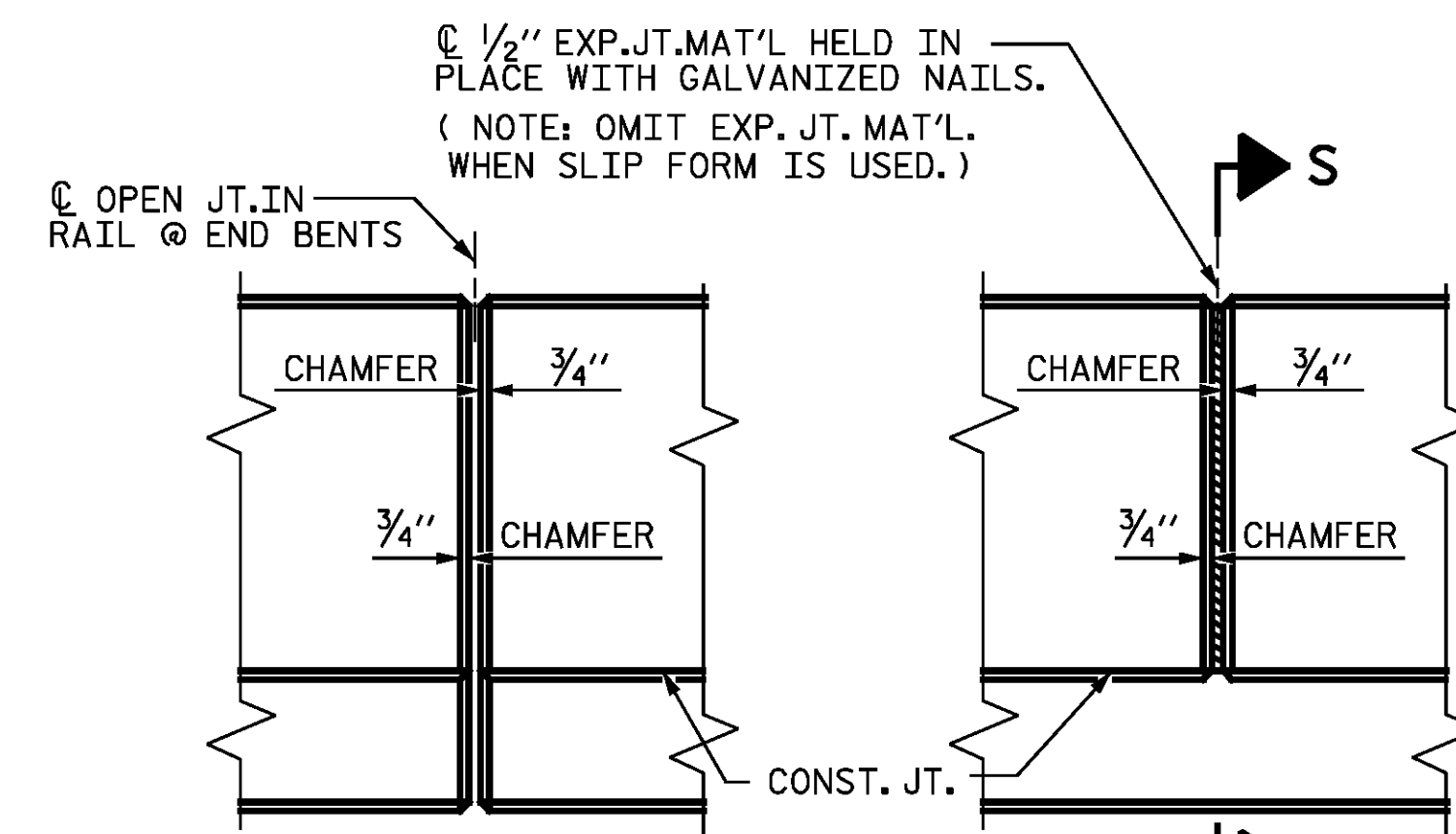
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS, THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.



SECTION THRU RAIL

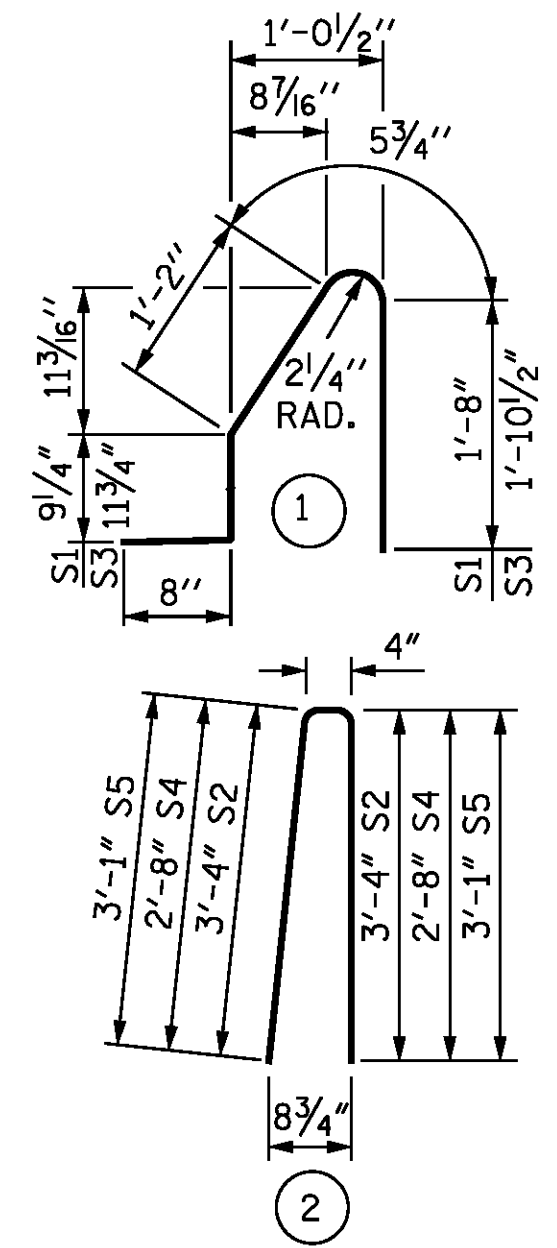
SECTION S-S

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



**ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS**

BAR TYPES

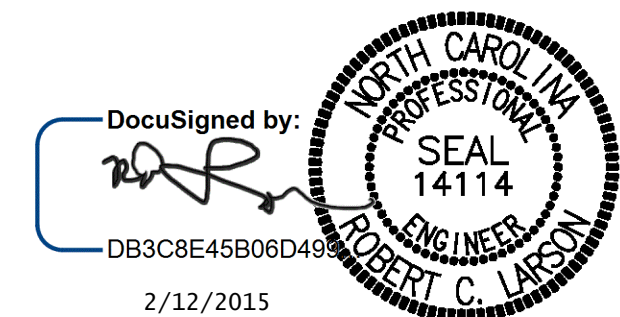


ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*B1	264	#5	STR.	23'-7"	6494	
*B2	44	#5	STR.	22'-0"	1010	
*B3	132	#5	STR.	23'-0"	3167	
*B4	44	#5	STR.	9'-8"	444	
*S1	956	#5	1	4'-9"	4736	
*S2	988	#5	2	7'-0"	7213	
*S3	40	#5	1	5'-2"	216	
*S4	4	#5	2	5'-8"	24	
*S5	4	#5	2	6'-6"	27	
* EPOXY COATED REINFORCING STEEL					23331	
CLASS AA CONCRETE				133.4	CU. YDS.	
CONCRETE BARRIER RAIL				986.00	LTN. FT.	

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
CONCRETE BARRIER RAIL
 LEFT LANE STR-#5

REV. 10/1/11	MAA/GM
REV. 7/12	MAA/GM
REV. 10/12	MAA/GM
DESIGN ENGINEER OF RECORD: <u>[Signature]</u> DATE: 12/12/2015	
DRAWN BY: <u>E. C. DECOLA</u> DATE: 11/22/13	
CHECKED BY: <u>R. C. LARSON</u> DATE: 01/21/14	

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

TOTAL SHEETS: S05-34

KCI Associates of North Carolina, P.A.
 DWG. REF. NO. 17 OF 34

NOTES

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

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

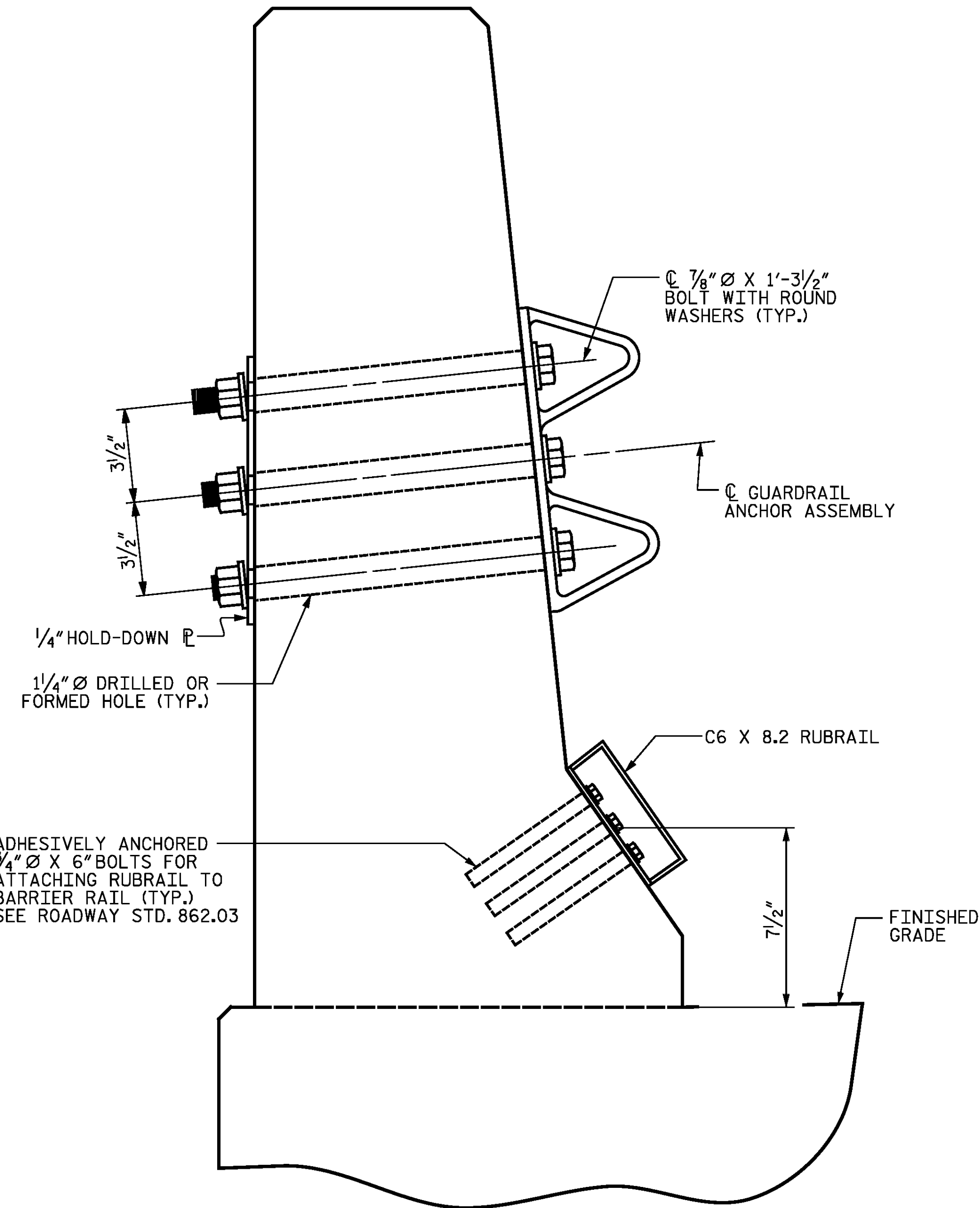
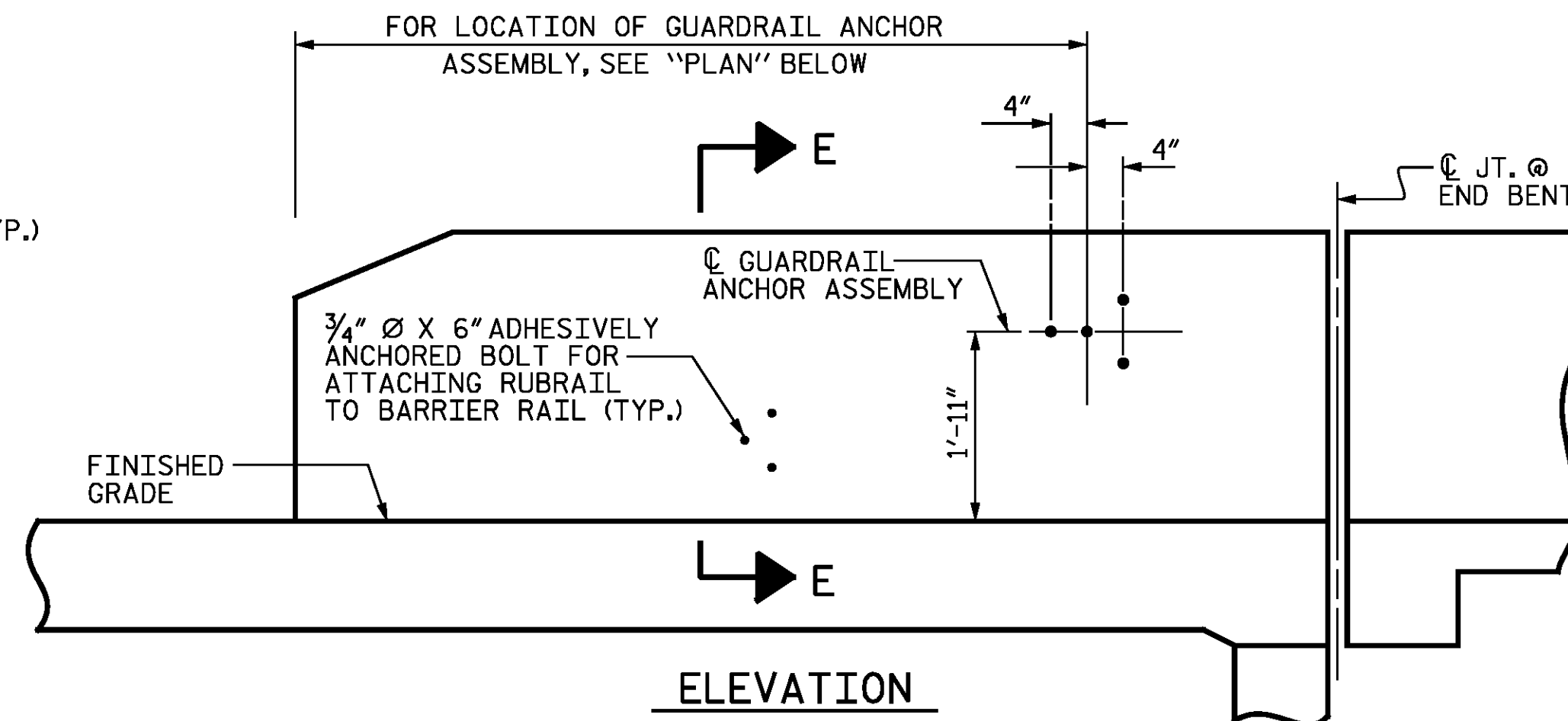
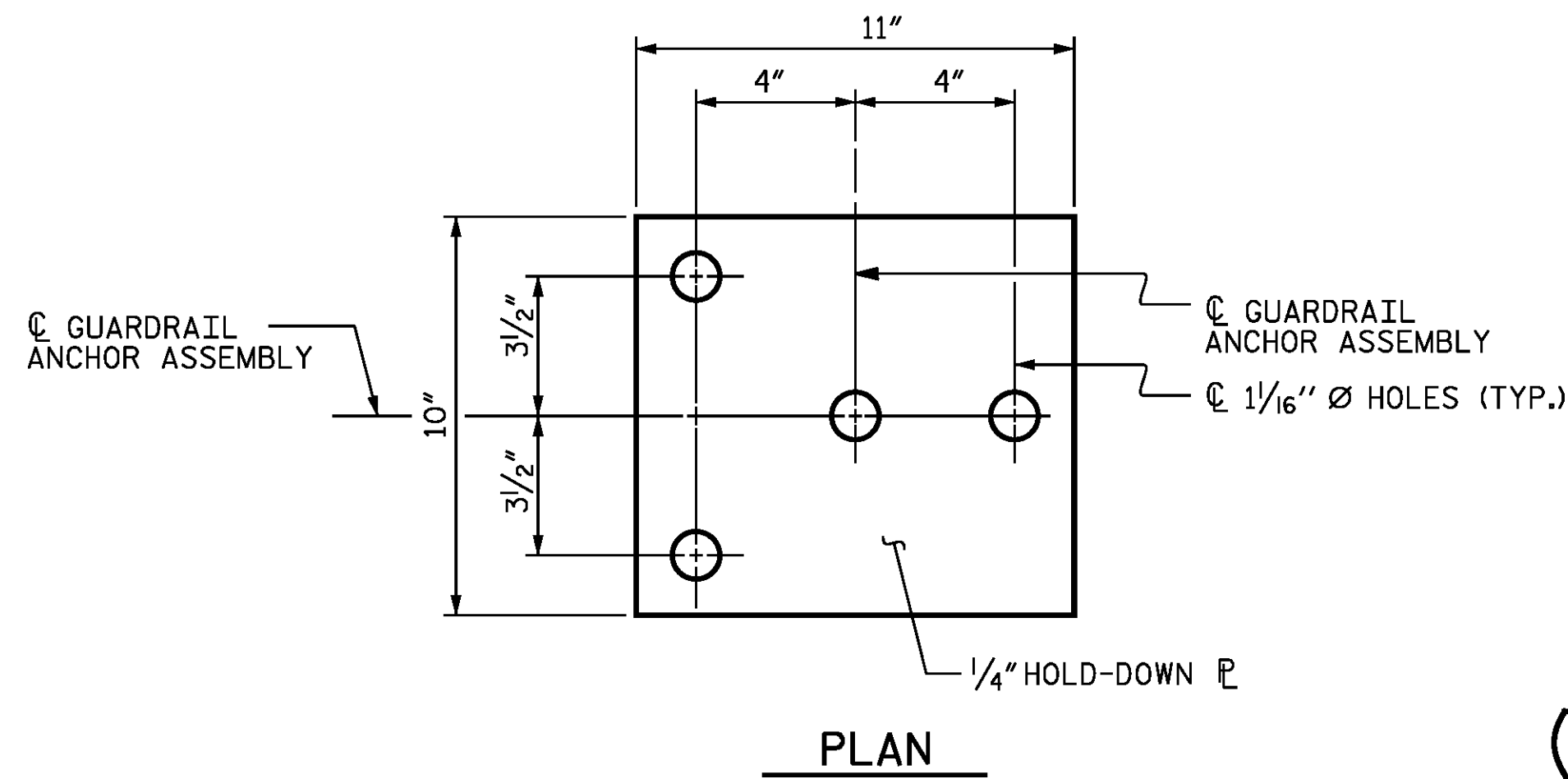
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

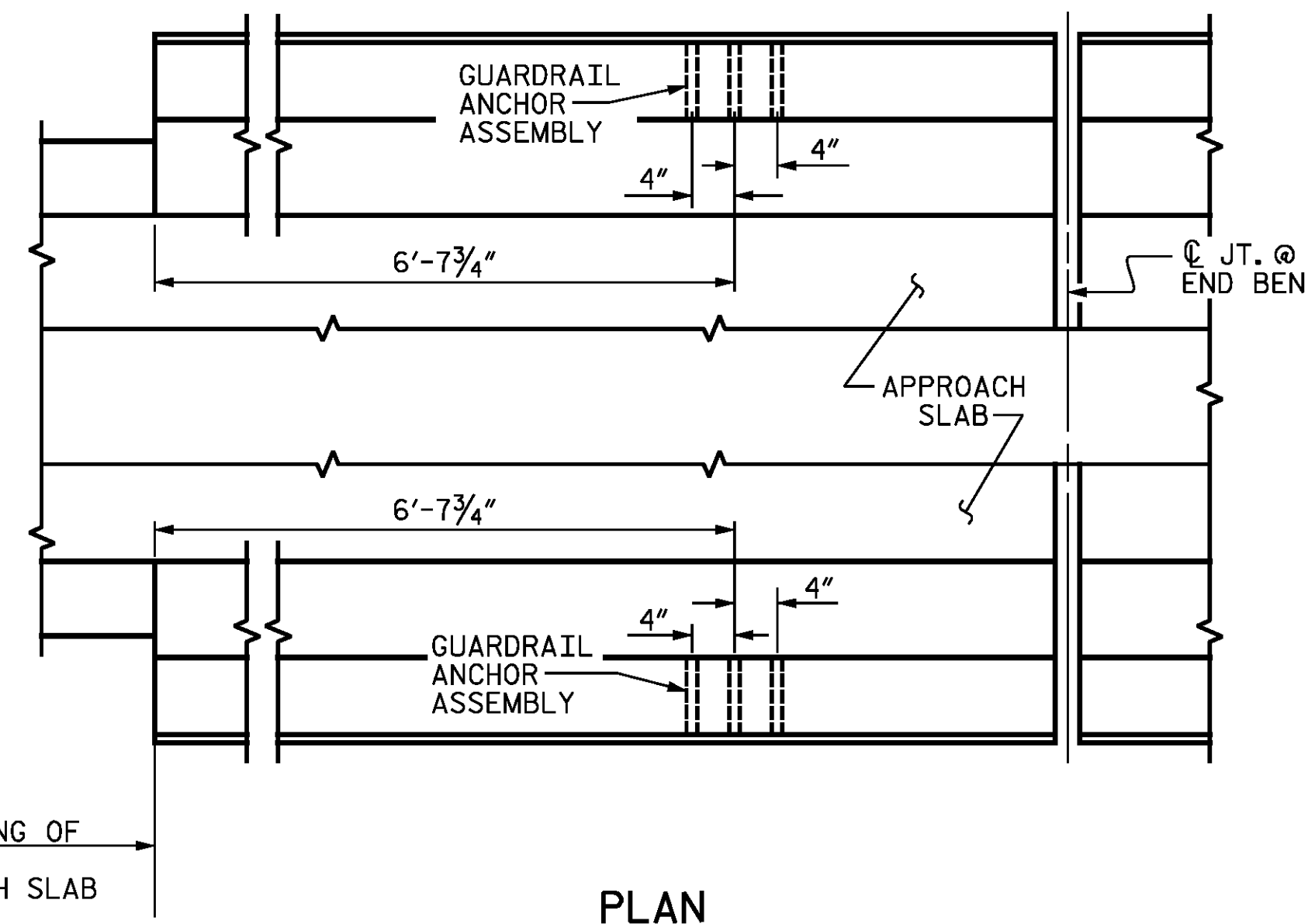
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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

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

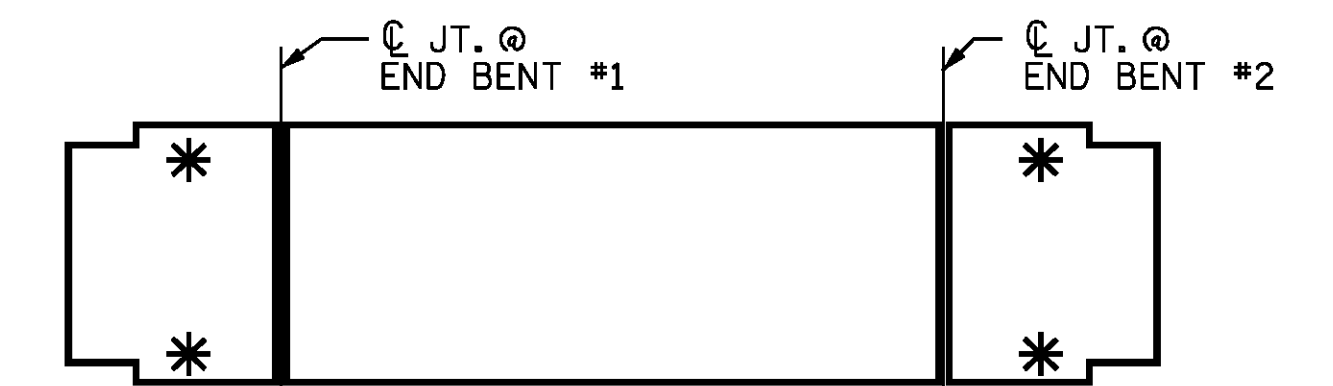


**SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS**



LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-2514D

JONES COUNTY

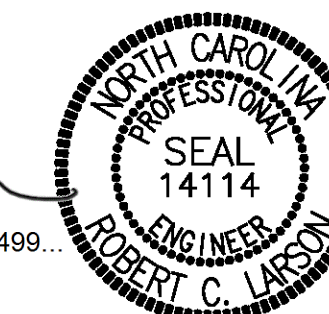
STATION: 373+02.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**GUARDRAIL ANCHORAGE
FOR BARRIER RAIL**

STD. NO. GRA2 LEFT LANE STR-#5

DocuSigned by:
[Signature]
DB3C8E45B06D499...
2/12/2015



DESIGN ENGINEER OF RECORD: DATE : 2/12/2015

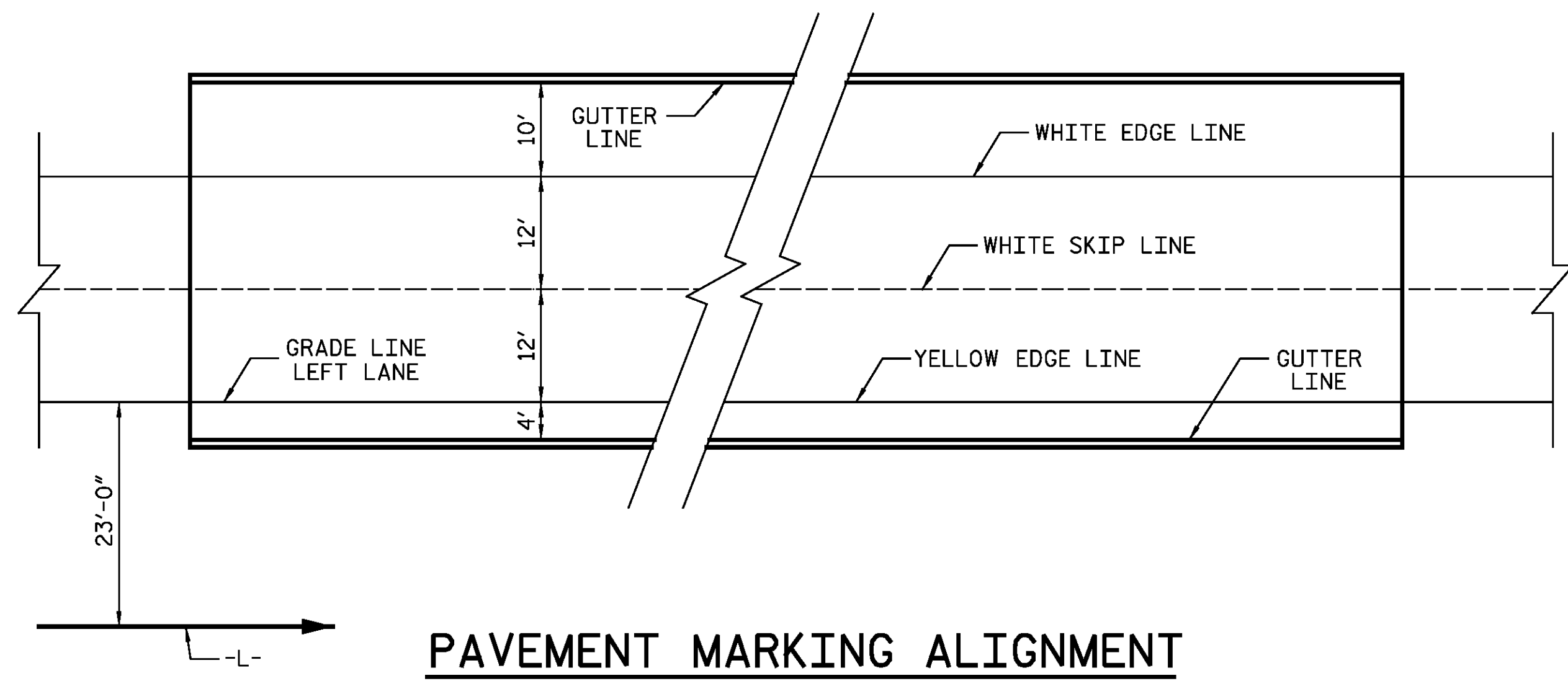
DRAWN BY : E. C. DECOLA DATE : 11/22/13

CHECKED BY : R. C. LARSON DATE : 2/5/14

REVISIONS		SHEET NO.	
NO.	DATE	NO.	DATE
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2		4	

TOTAL SHEETS: S05-34

KCI Associates
of North Carolina, P.A.
DWG. REF. NO. 18 OF 34



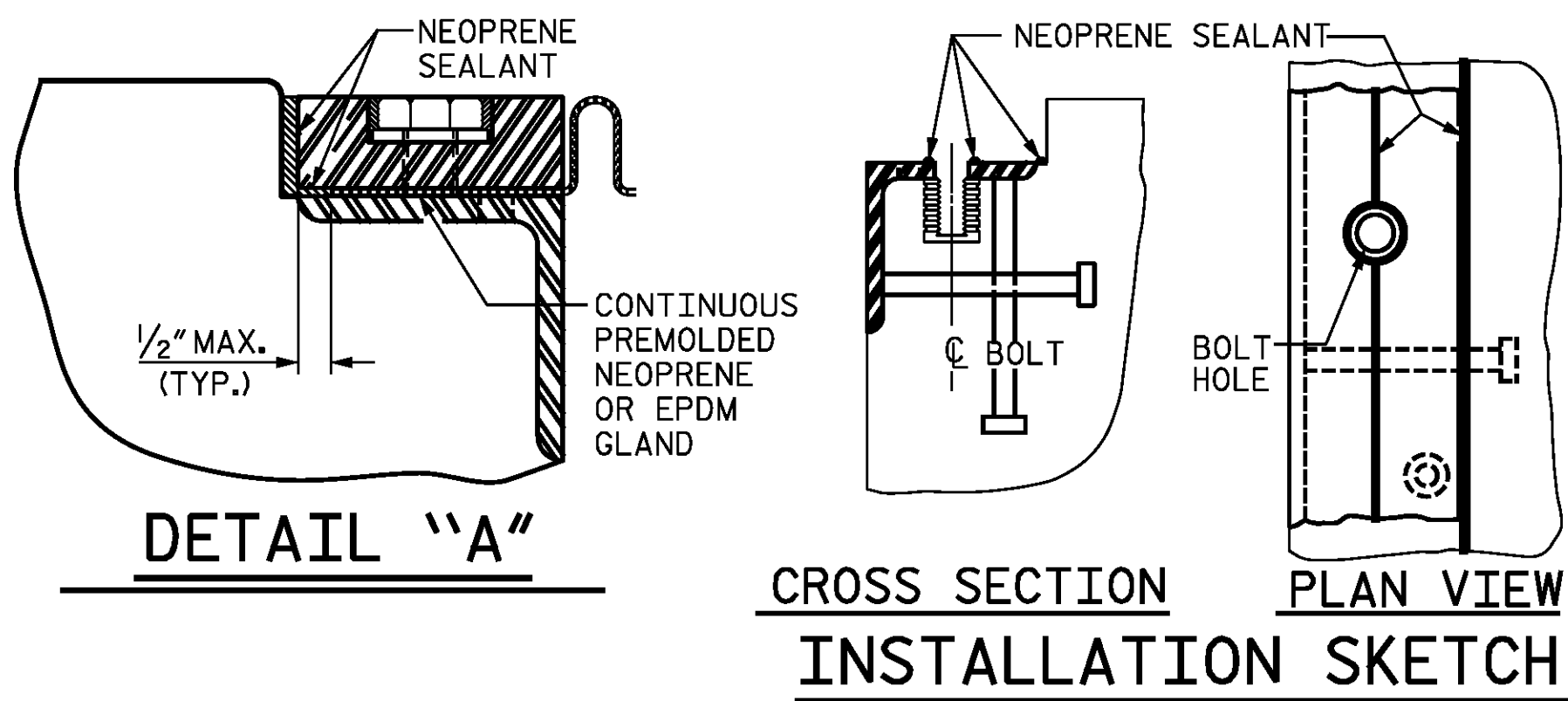
PAVEMENT MARKING ALIGNMENT

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 4/8" TO 4/4" 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.

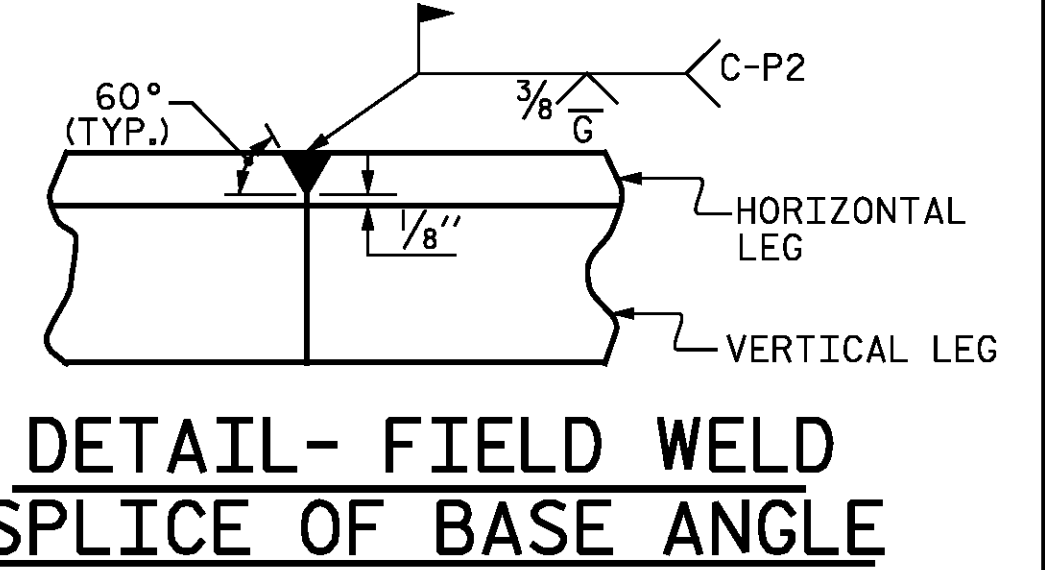
GENERAL NOTES

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 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.

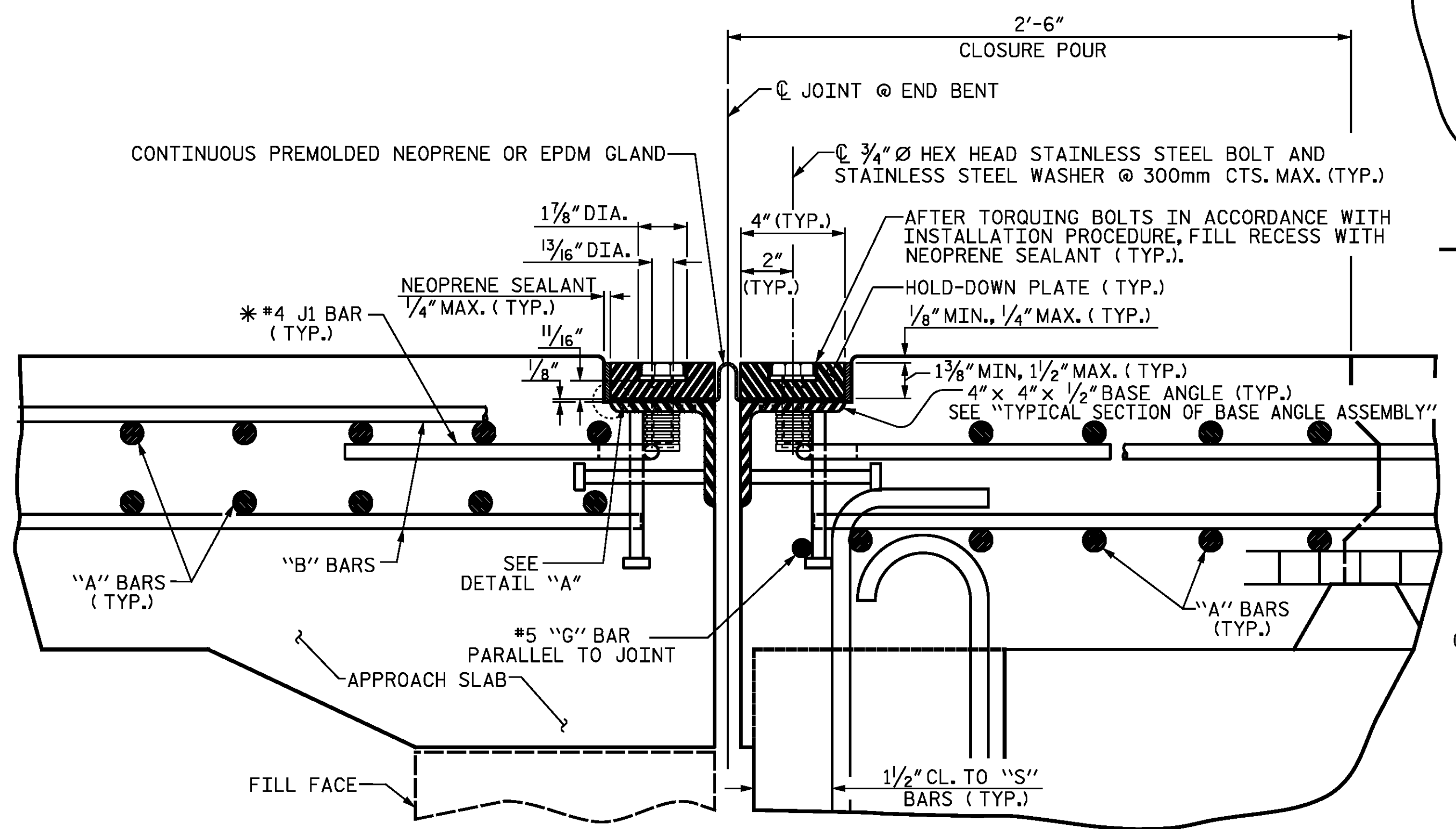


DETAIL "A"

**CROSS SECTION
PLAN VIEW
INSTALLATION SKETCH**



**DETAIL - FIELD WELD
SPLICE OF BASE ANGLE**

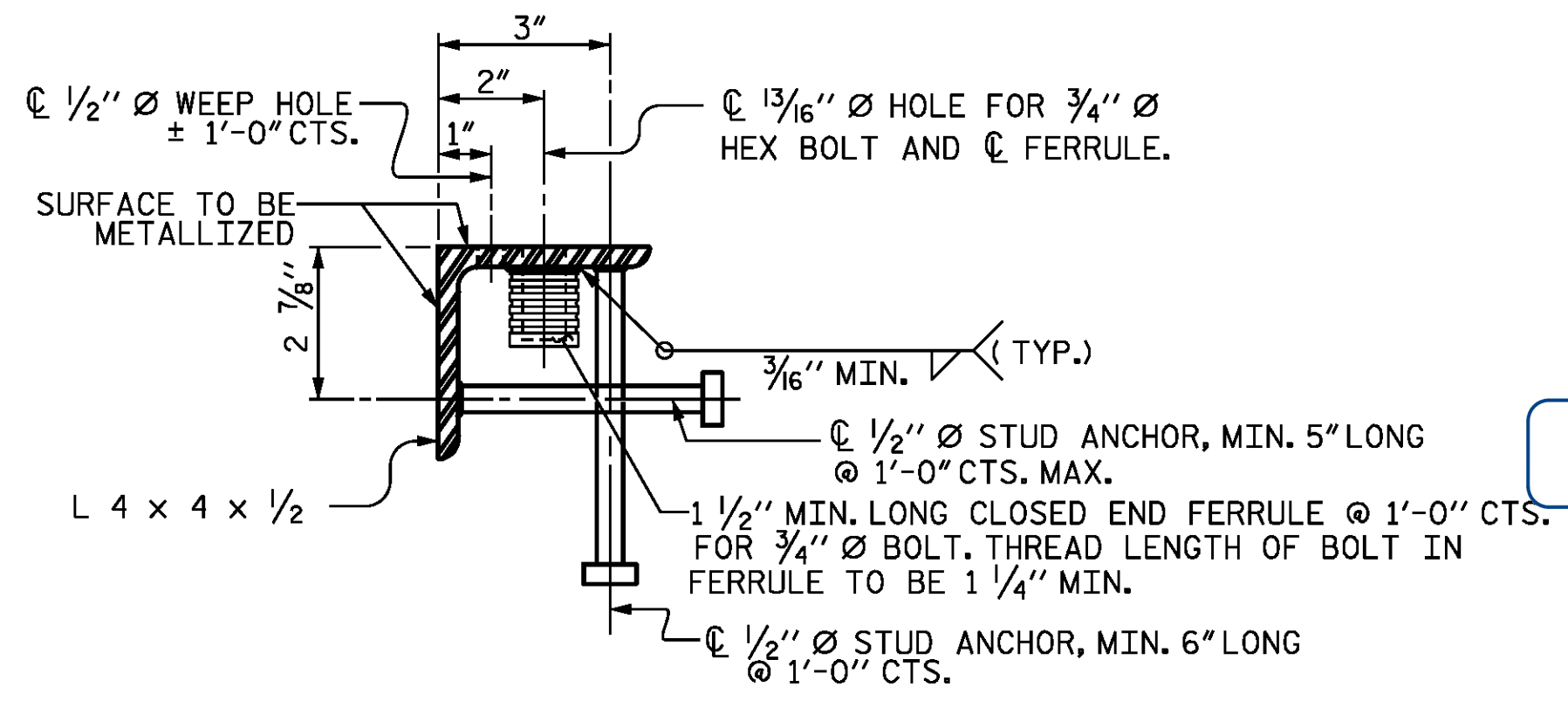


EXPANSION JOINT DETAILS

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 BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF J1 BARS SPECIFIED, ADDITIONAL J1 BARS WILL NOT BE REQUIRED.

MOVEMENT AND SETTING AT JOINT					
END BENT NO.	SKEW ANGLE	TOTAL MOVEMENT (ALONG C ROWY)	PERPENDICULAR JOINT OPENING AT 30° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
1	90°	1/16"	2/4"	1/4"	1/4"
2	90°	1/16"	2/4"	1/4"	1/4"



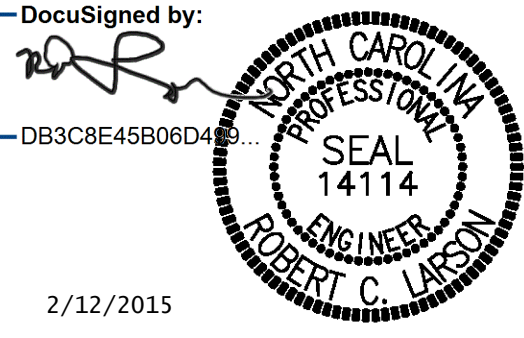
TYPICAL SECTION OF BASE ANGLE ASSEMBLY

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 1 OF 2
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
**EXPANSION JOINT
 SEAL DETAILS**

STD. NO. EJS1 LEFT LANE STR-#5

DocuSigned by:
 DB3C8E45B06D499
 DESIGN ENGINEER OF RECORD: DATE: 2/12/2015
 DRAWN BY: Z. SU DATE: 01/15/14
 CHECKED BY: R. C. LARSON DATE: 01/15/14

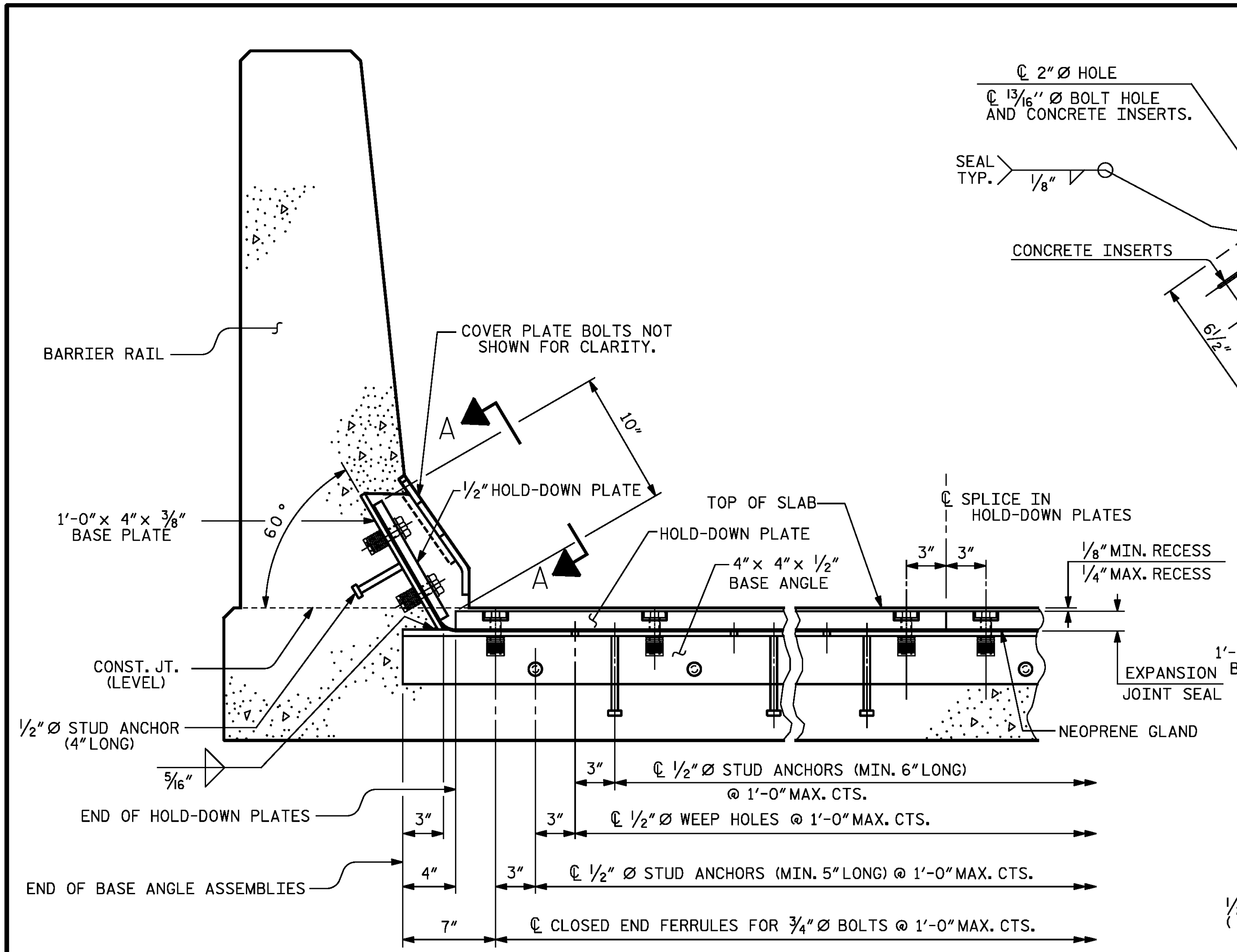


2/12/2015

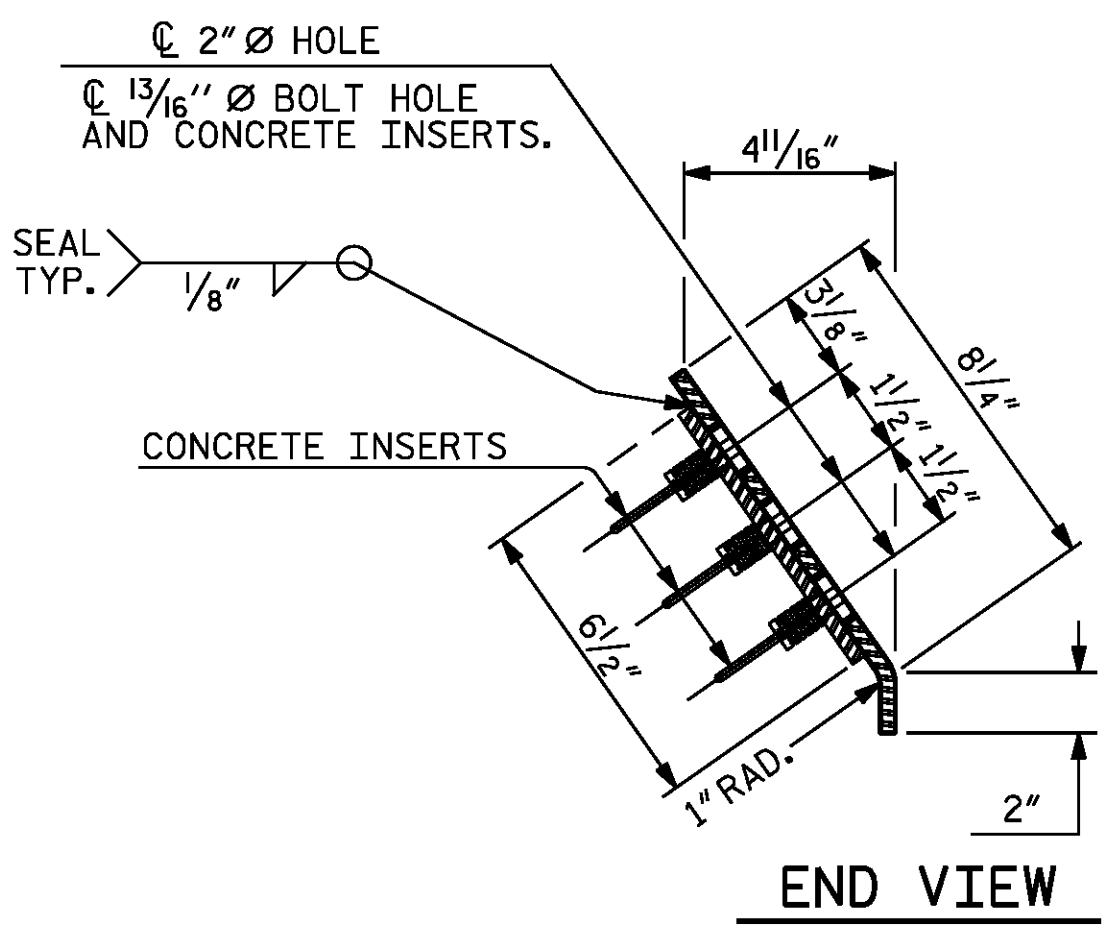
KCI Associates
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REVISIONS		SHEET NO.	
NO.	DATE	NO.	DATE
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2		4	

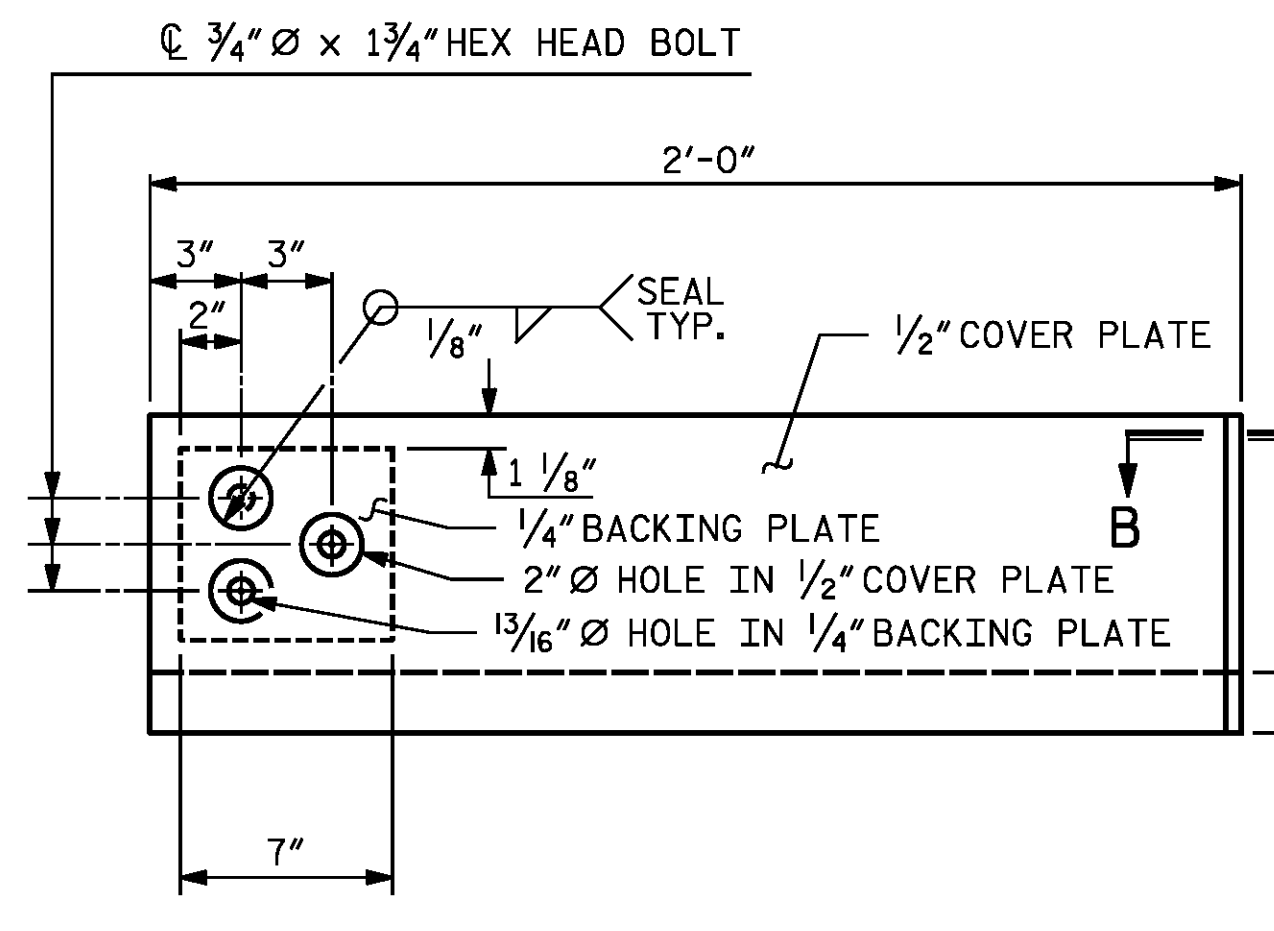
TOTAL SHEETS: 505-34



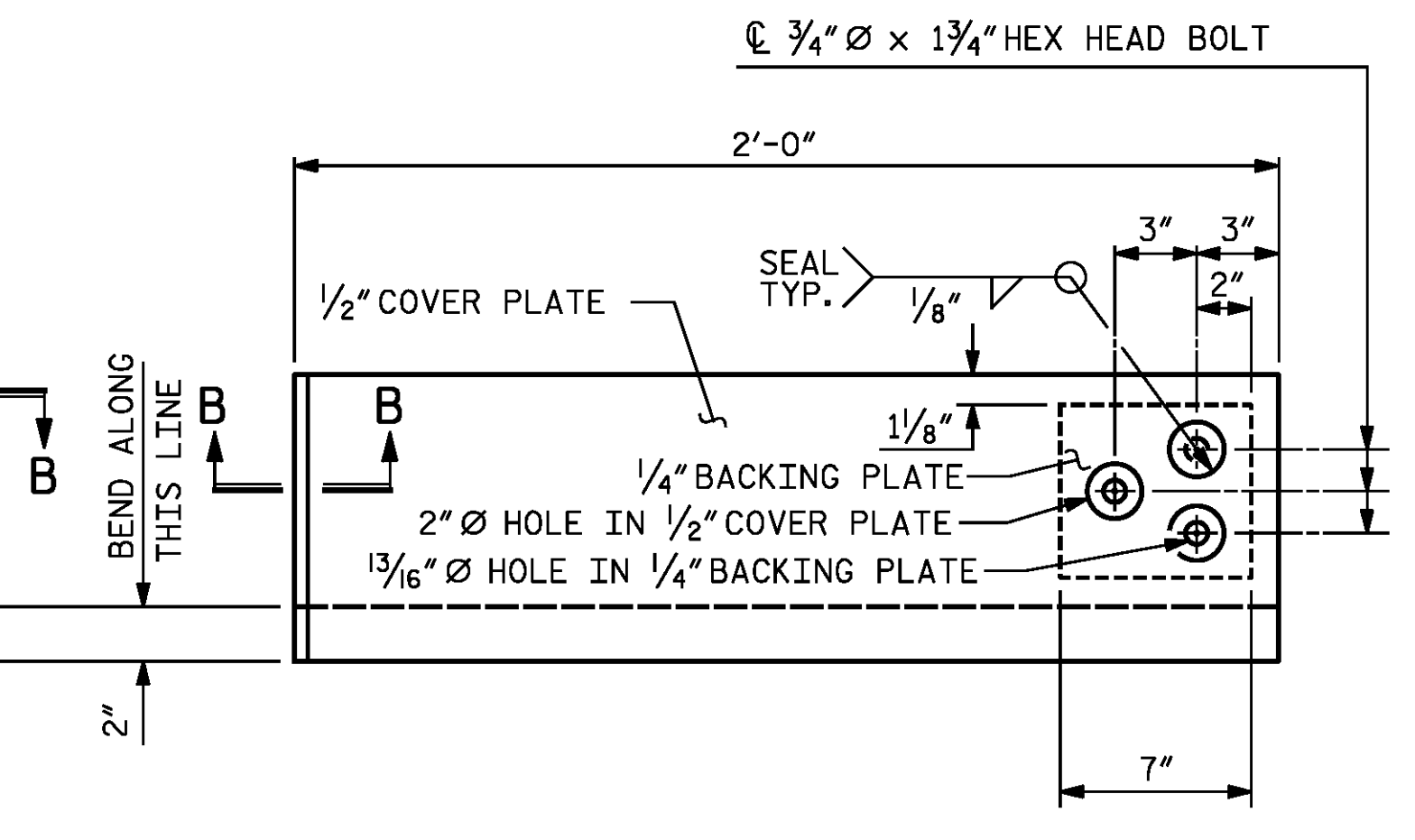
SECTION THRU RAIL NORMAL TO JOINT



END VIEW

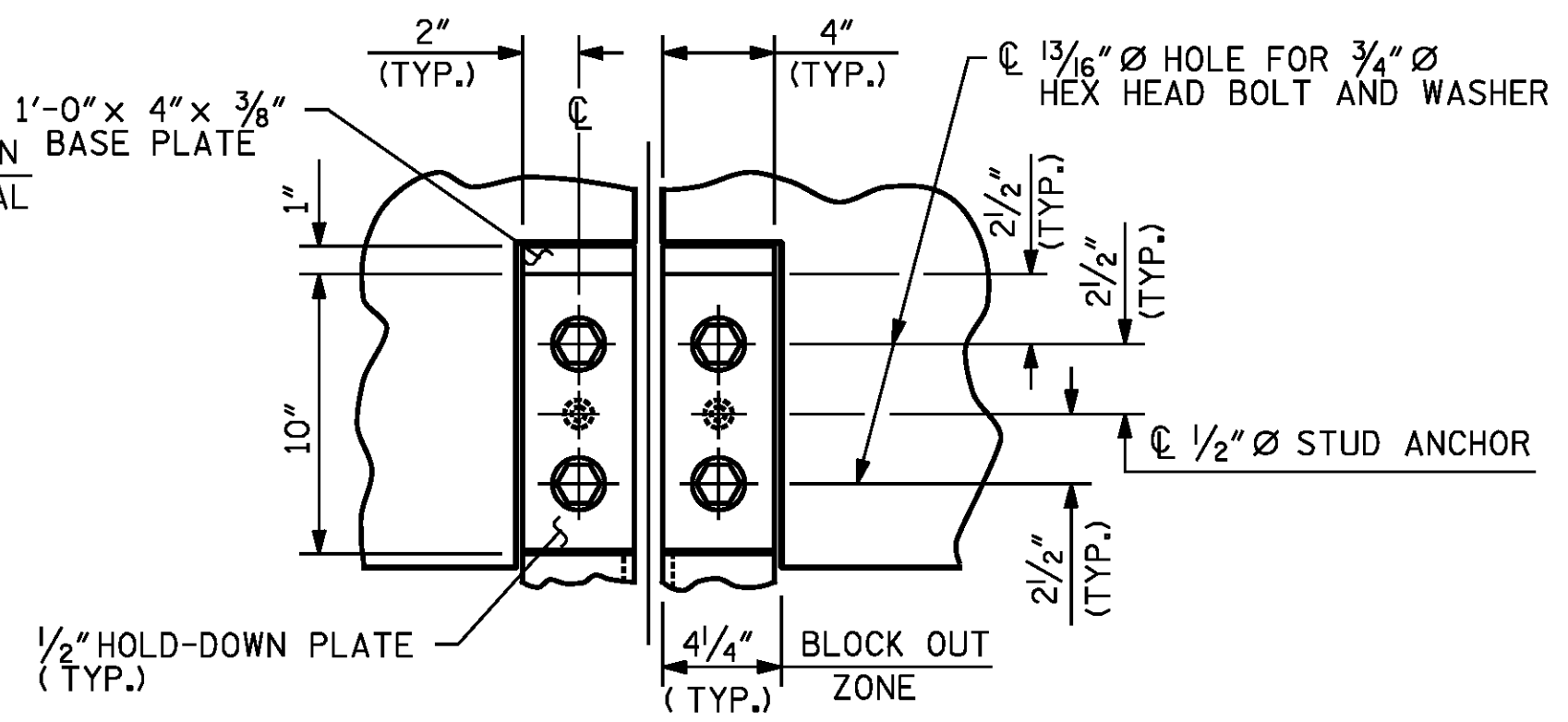


TYPE I - ELEVATION VIEW

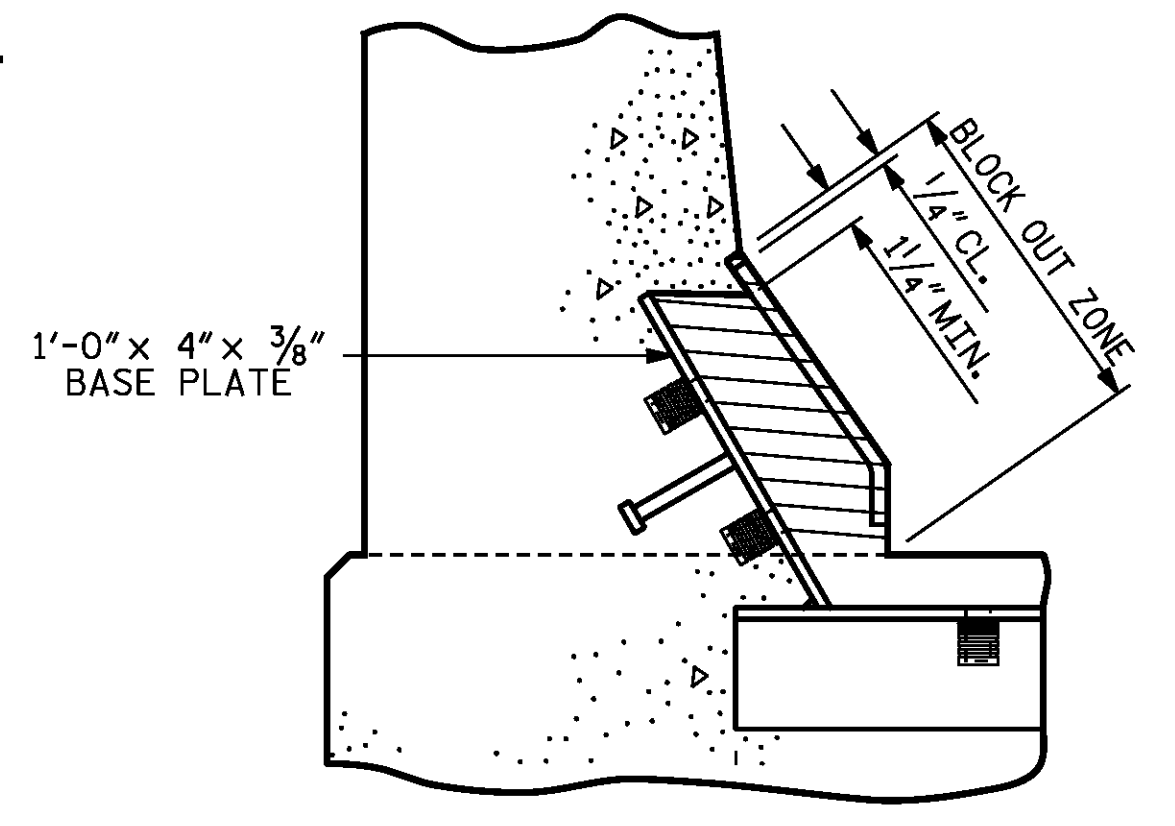


TYPE II - ELEVATION VIEW

COVER PLATE DETAILS

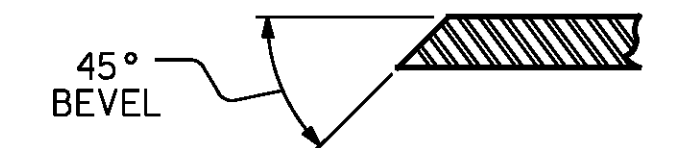


SECTION A - A

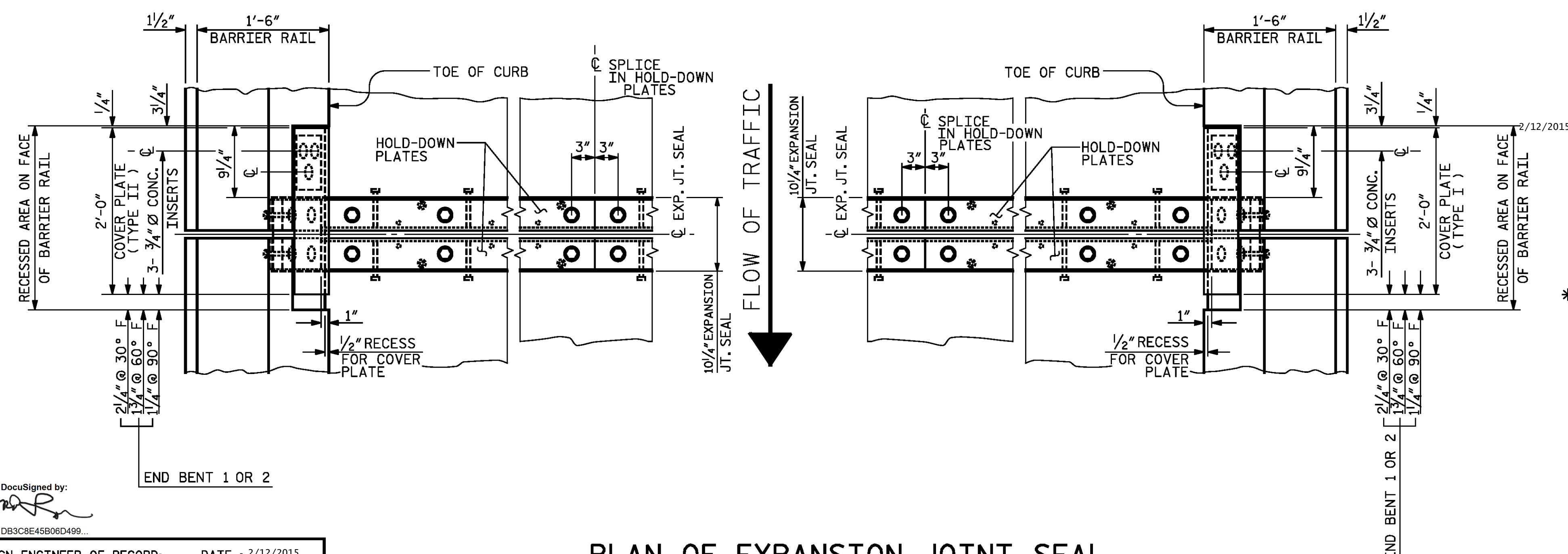


BLOCK OUT DETAIL

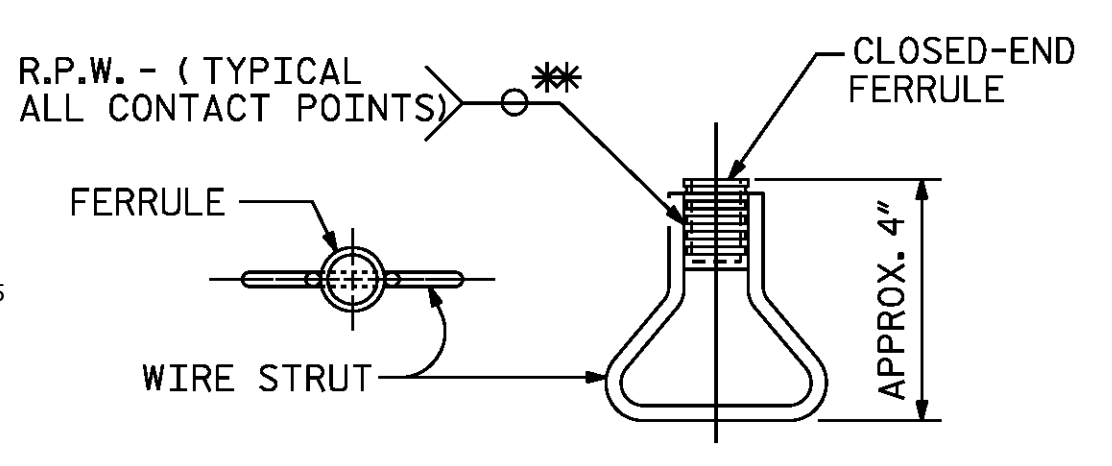
SEE "SECTION A - A" FOR OTHER DETAILS.



SECTION B - B



PLAN OF EXPANSION JOINT SEAL

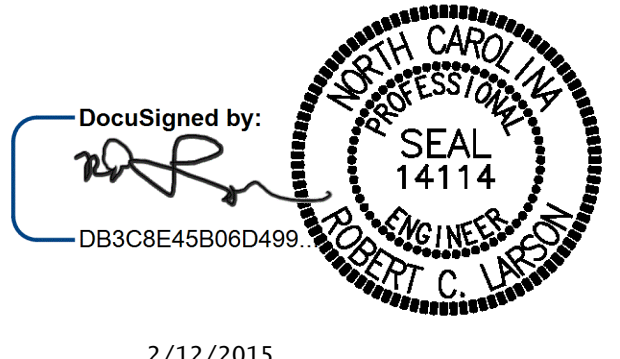


PLAN ELEVATION

CONCRETE INSERT

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

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-
 SHEET 2 OF 2



2/12/2015

DESIGN ENGINEER OF RECORD:	DATE :	2/12/2015
DRAWN BY :	DATE :	01/15/14
CHECKED BY :	DATE :	01/15/14

NO. 1				NO. 2			
BY: Z. SU				BY: R. C. LARSON			
DATE: 01/15/14				DATE: 01/15/14			

REVISIONS						SHEET NO. S05-20
NO.	BY:	DATE:	NO.	BY:	DATE:	
1	Z. SU	01/15/14	3	R. C. LARSON	01/15/14	TOTAL SHEETS S05-34
2	R. C. LARSON	01/15/14	4	R. C. LARSON	01/15/14	

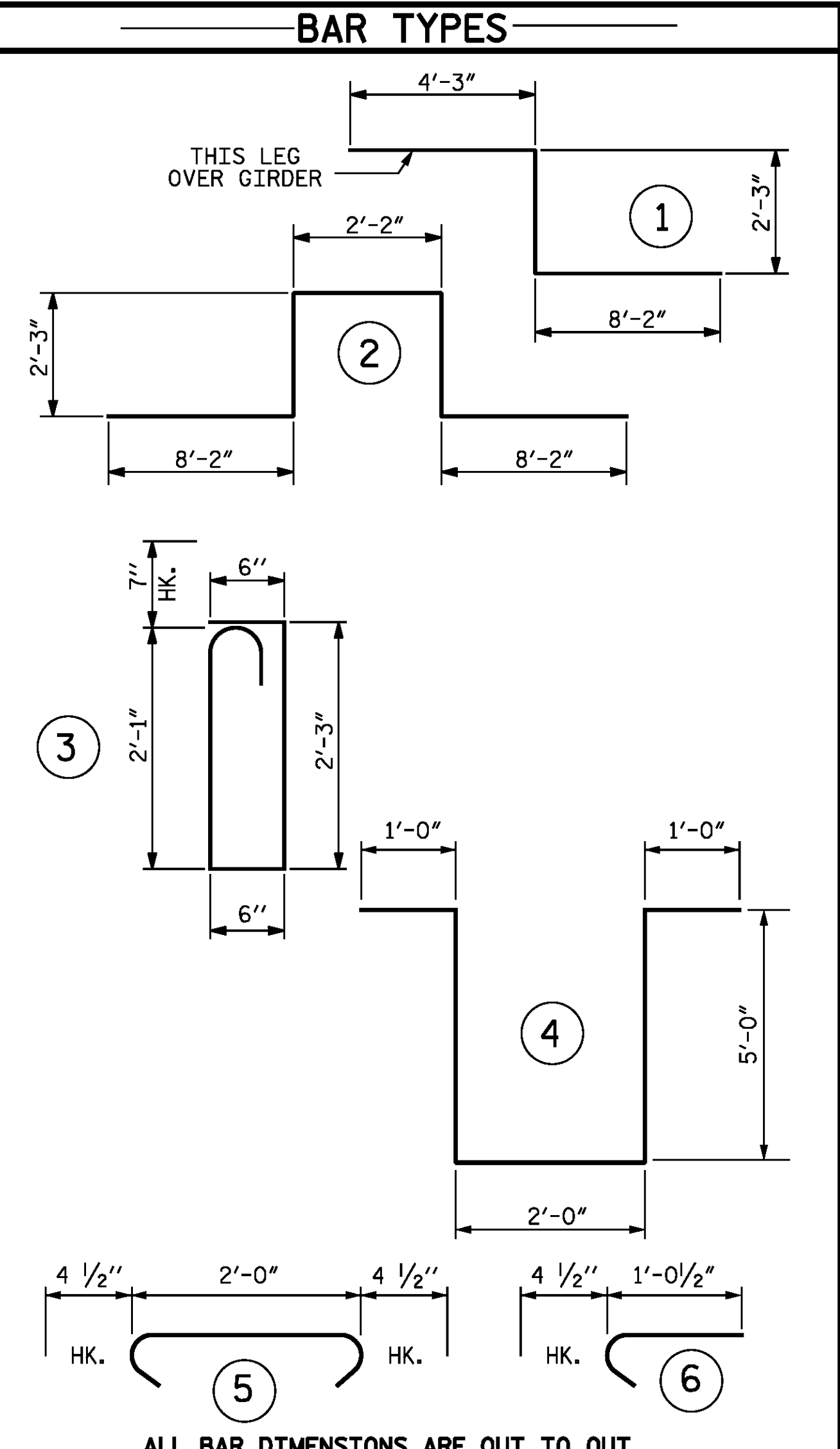
STD. NO. EJS2 LEFT LANE STR-#5

EXPANSION JOINT SEAL DETAILS FOR BARRIER RAIL

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

KCI Associates of North Carolina, P.A.
 DWG. REF. NO. 20 OF 34

BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	1030	5	STR.	40'-11"	43956
*A2	1030	5	STR.	40'-11"	43956
*B1	112	4	STR.	30'-0"	2244
B2	106	5	STR.	58'-2"	6431
*B3	224	8	STR.	41'-8"	24920
*B4	216	7	STR.	47'-9"	21082
*B5	84	4	STR.	22'-2"	1244
B6	424	7	STR.	40'-0"	34666
B7	159	5	STR.	22'-6"	3731
*G1	2	5	STR.	40'-11"	85
*J1	76	4	6	1'-5"	72
*K1	8	8	2	23'-0"	491
*K2	8	8	1	14'-8"	313
K3	40	4	STR.	18'-4"	490
K4	24	4	STR.	8'-0"	128
K5	24	4	STR.	9'-11"	159
K6	48	4	STR.	10'-6"	337
K7	24	4	STR.	9'-6"	152
*S1	60	5	3	5'-11"	370
S2	432	4	5	2'-9"	794
*U1	108	4	4	14'-0"	1010
REINFORCING STEEL					90844
*EPOXY COATED REINFORCING STEEL					95787

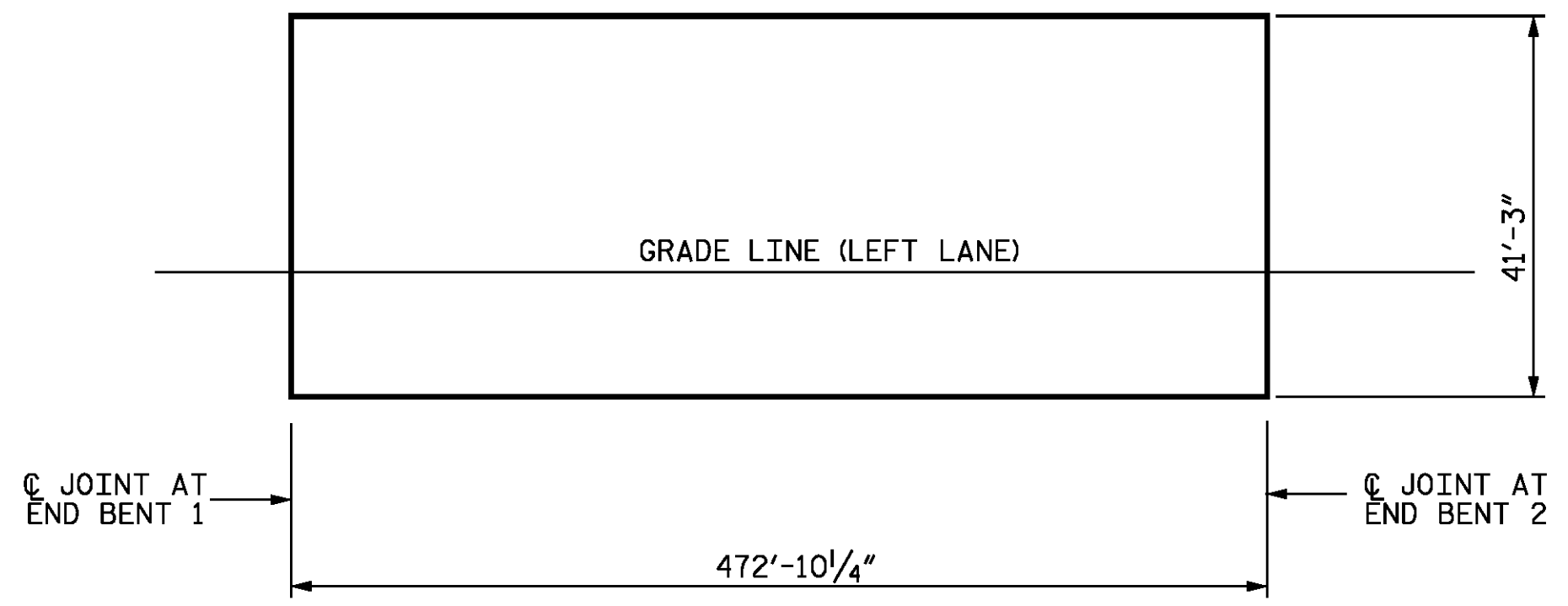


SUPERSTRUCTURE BILL OF MATERIAL			
	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
POUR 1	126.3†		
POUR 2	146.8		
POUR 3	146.8		
POUR 4	146.8		
POUR 5	156.9†		
TOTALS**	723.6	90844	95787

**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED
† INCLUDES CLOSURE POUR AT EXPANSION JOINT

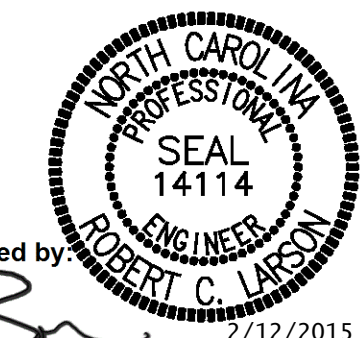
PROJECT NO. R-2514D
JONES COUNTY
STATION: 373+02.50 -L-

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 19,505)

GROOVING BRIDGE FLOORS	
APPROACH SLABS	1,668 SQ.FT.
BRIDGE DECK	16,510 SQ.FT.
TOTAL	18,178 SQ.FT.

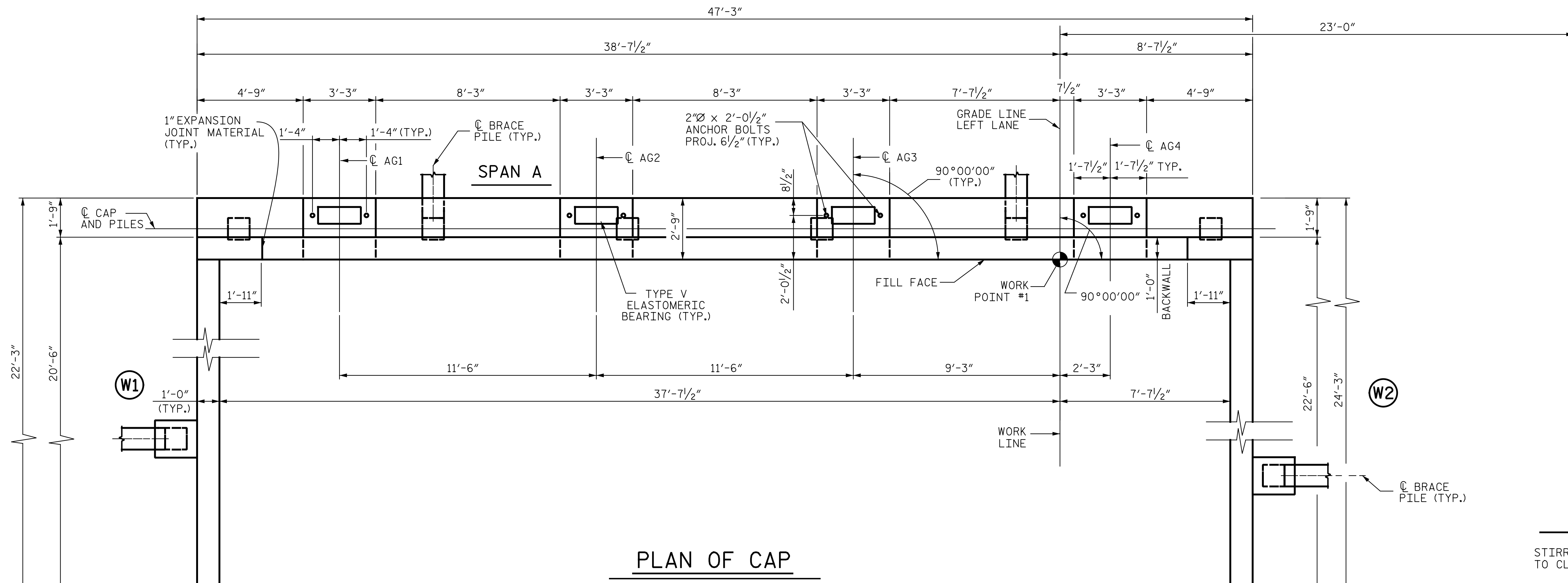


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE BILL OF MATERIAL
STD NO. BOM2 LEFT LANE STR-#5

DocuSigned by:
[Signature]
DESIGN ENGINEER OF RECORD: DATE: 2/12/2015
DRAWN BY: E. C. DECOLA DATE: 01/17/14
CHECKED BY: R. C. LARSON DATE: 01/20/14

REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
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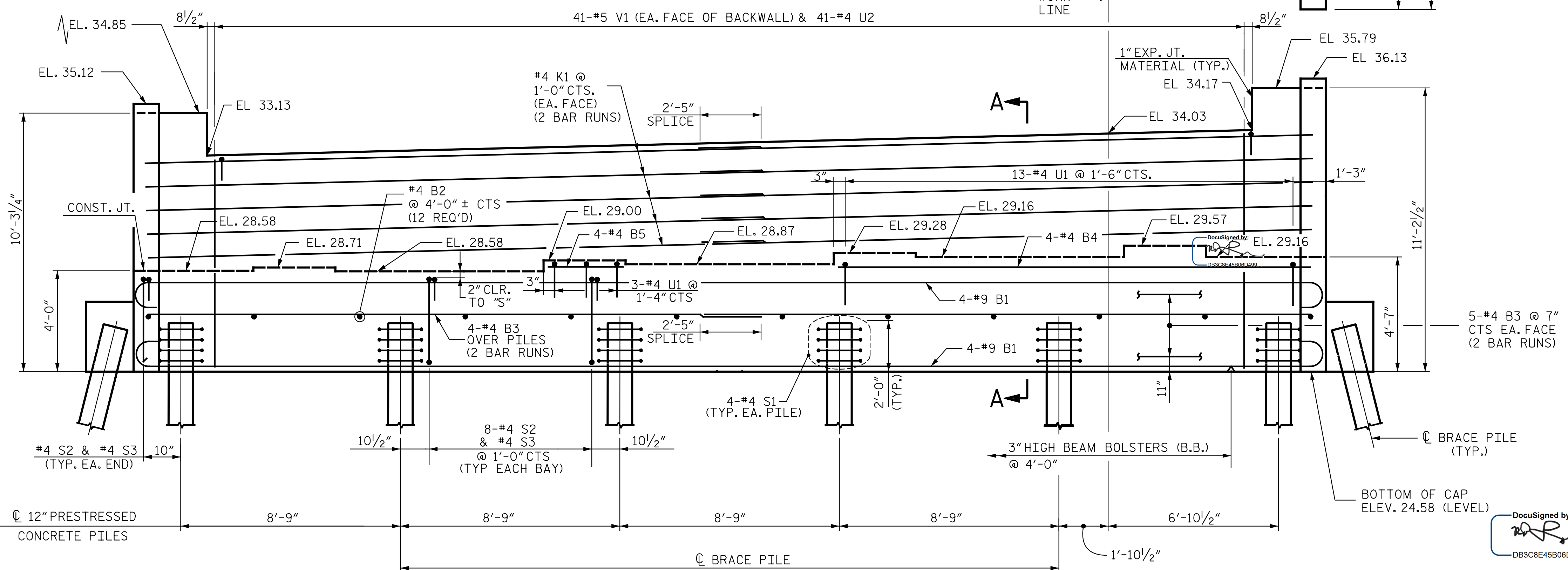
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PLAN OF CAP

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE TOP SURFACE AREAS OF THE 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%.
- FOR "BLOCKOUT IN WINGWALL", SEE END BENT 2.



ELEVATION

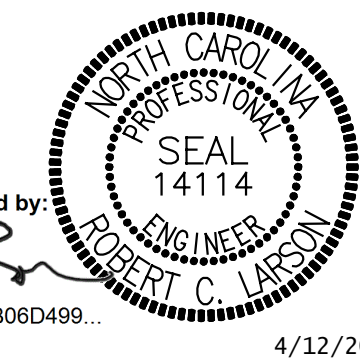
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 1**

LEFT LANE STR-#5



DESIGN ENGINEER OF RECORD:	DATE:
<i>E. C. Decola</i>	4/12/2015
DRAWN BY:	DATE:
<i>R. C. Larson</i>	02/26/14
CHECKED BY:	DATE:
<i>R. C. Larson</i>	02/28/14

NO.		BY:		DATE:		NO.		BY:		DATE:		SHEET NO.	
1						3						S05-22	
2						4						TOTAL SHEETS S05-34	

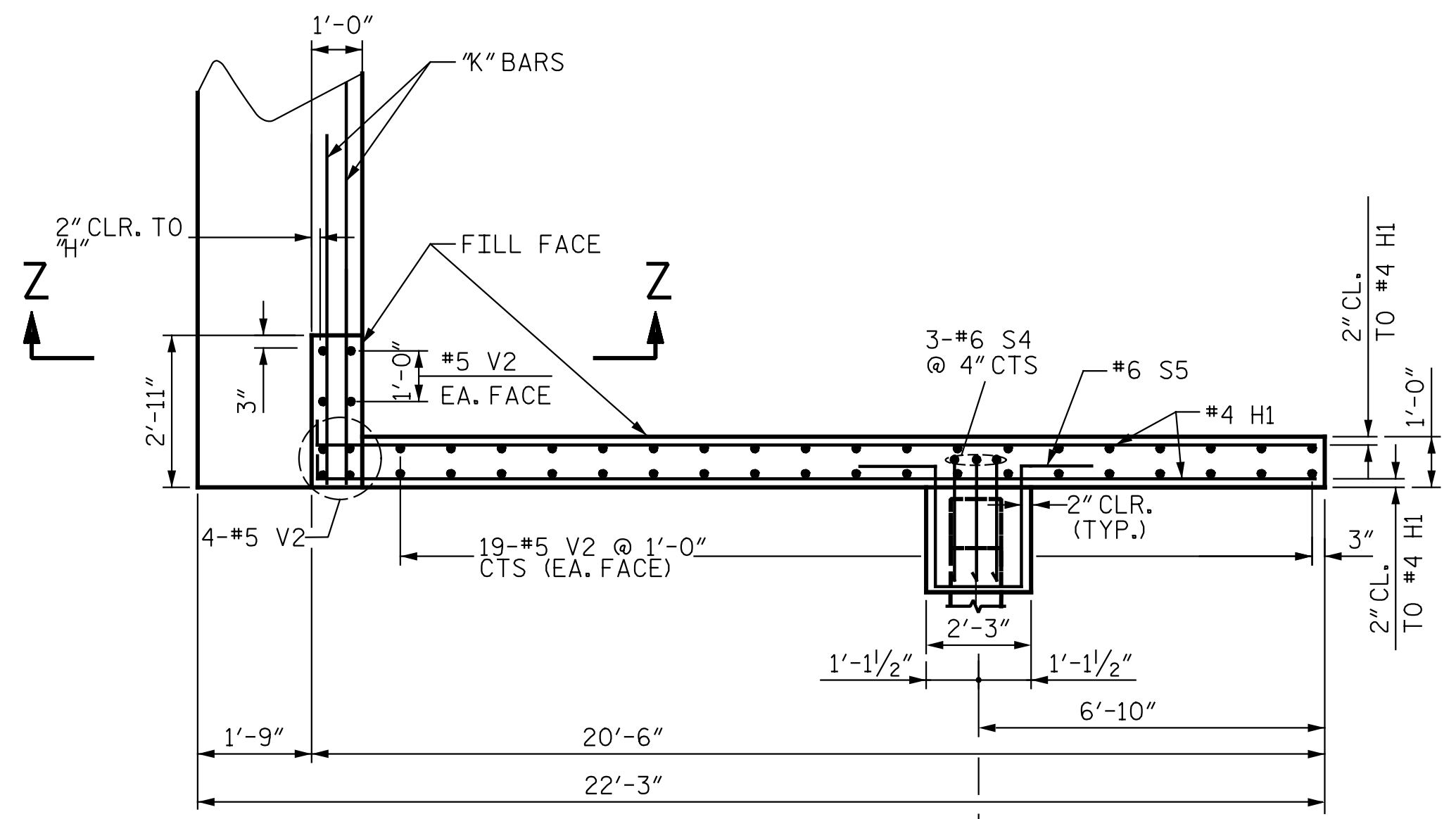
REVISIONS

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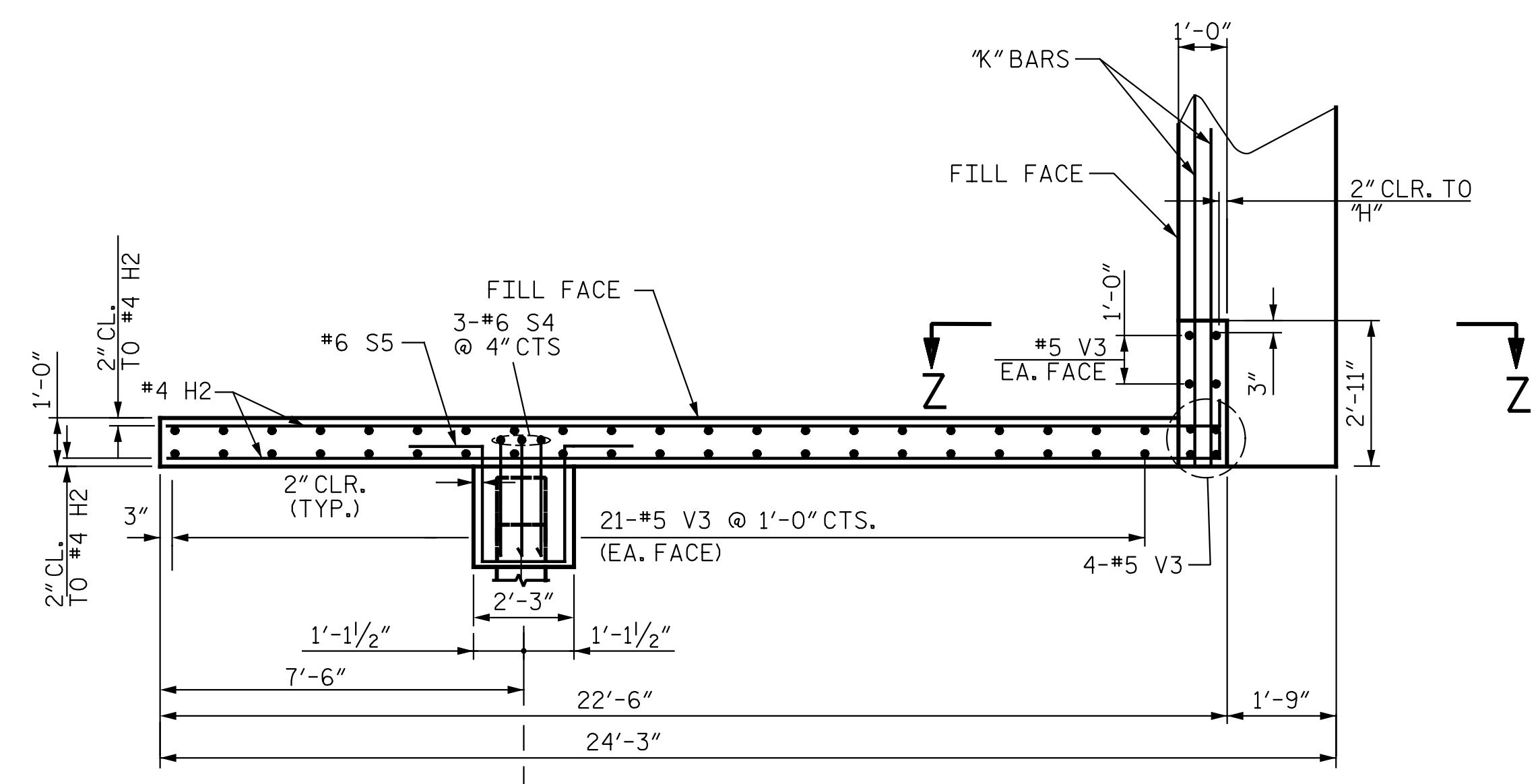
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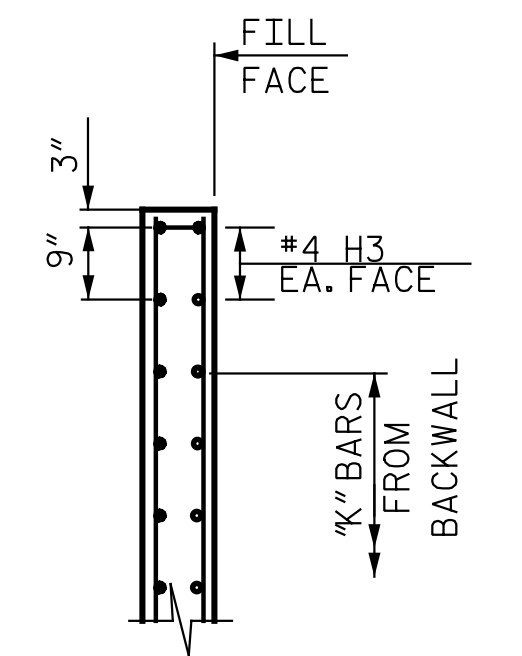
KCI Associates of North Carolina, P.A.
 ENGINEERS • PLANNERS • ECOLOGISTS LICENSE NUMBER: C-0764
 SUITE 220, LANDMARK CENTER # 4603 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244
 DWG. REF. NO. 22 OF 34



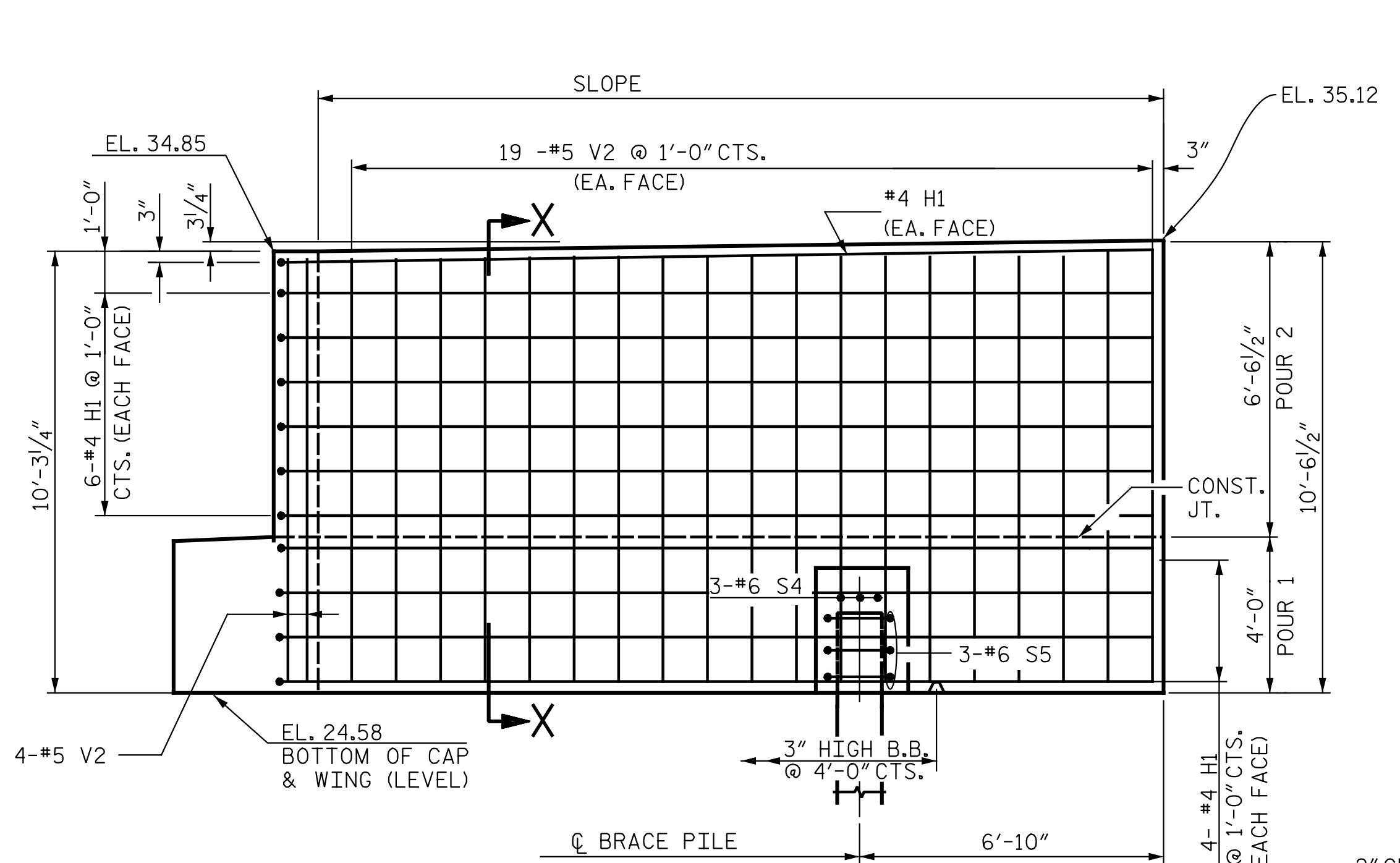
PLAN W1



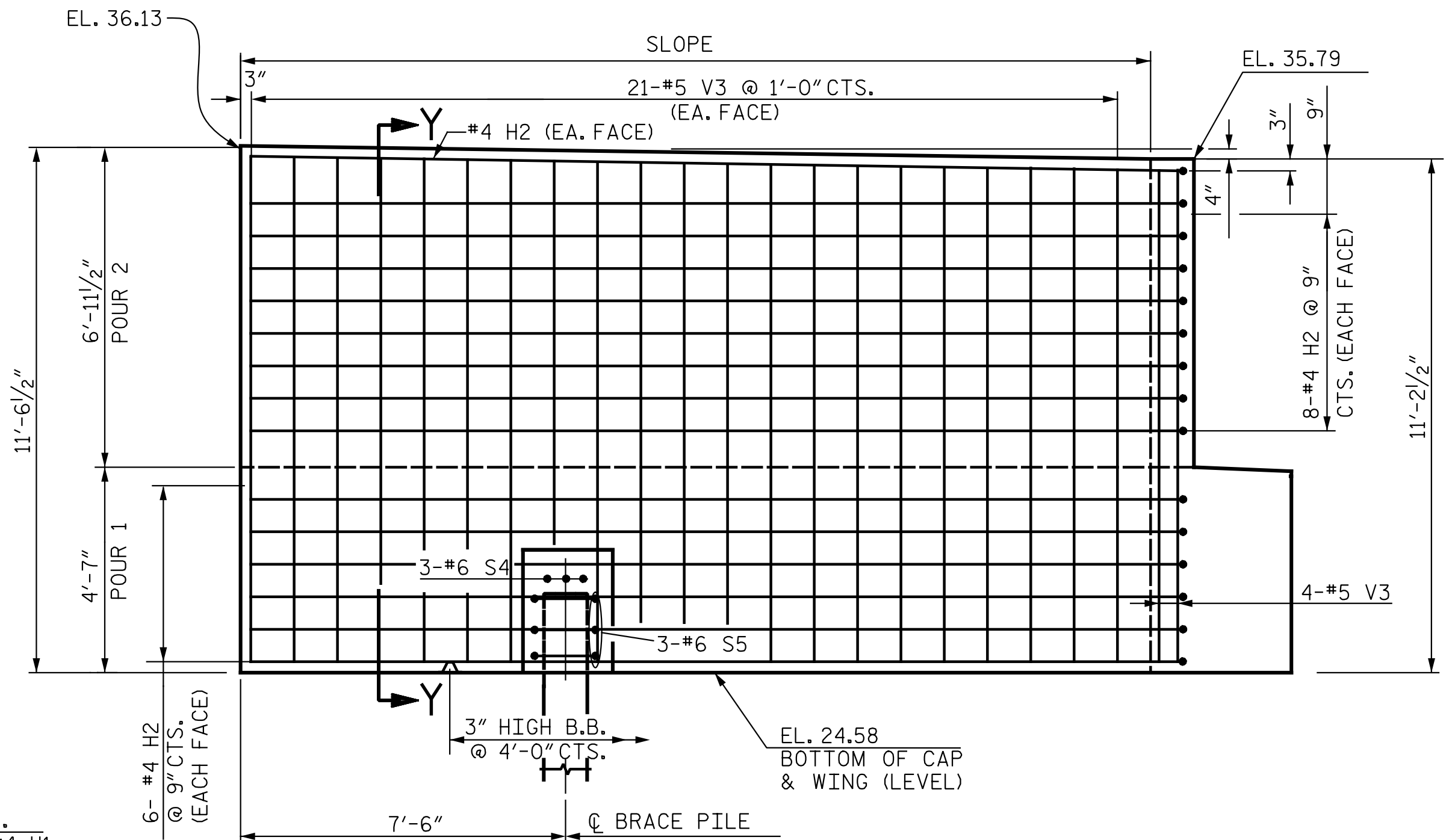
PLAN W2



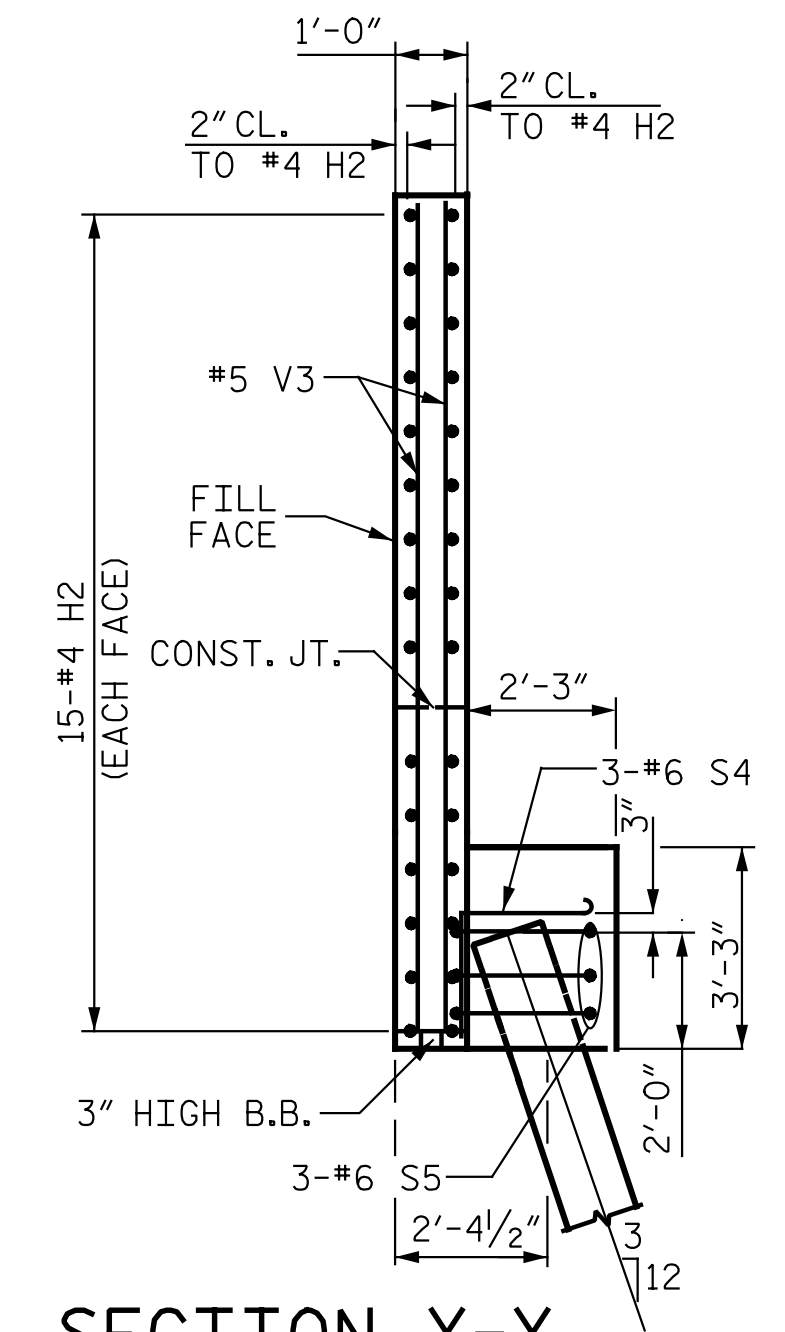
SECTION Z-Z



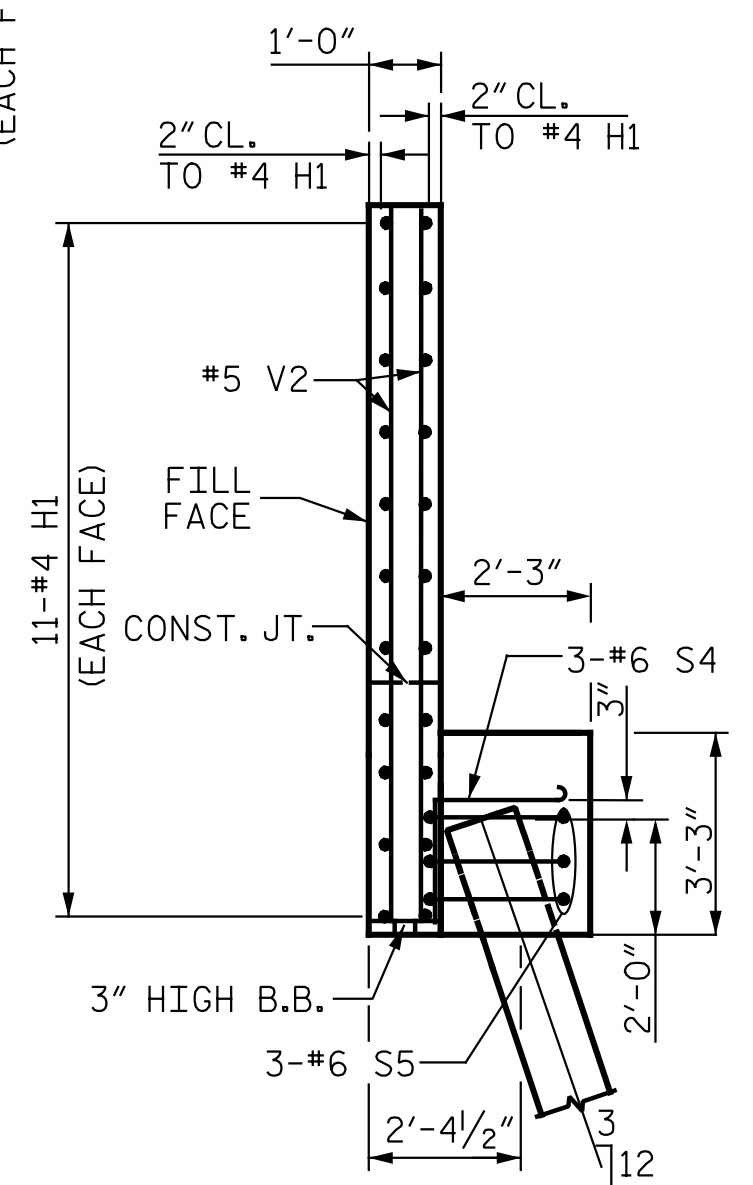
ELEVATION W1



ELEVATION W2



SECTION Y-Y

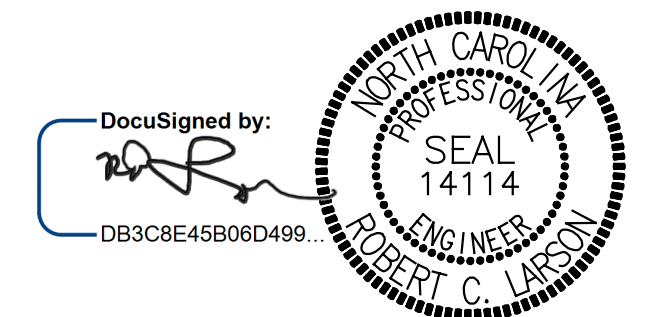


SECTION X-X

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 1					
LEFT LANE					
STR-#5					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S05-23 TOTAL SHEETS S05-34					



DocuSigned by:
 DB3C8E45B06D499

4/12/2015

ENGINEERS • PLANNERS • GEOLOGISTS LICENSE NUMBER: C-0764
KCI Associates
 of North Carolina, P.A.
 SUITE 220, LANDMARK CENTER 14600 SIX FORKS RD, RALEIGH, NC 27609-5200 (919) 783-9200
 DWG. REF. NO. 23 OF 34

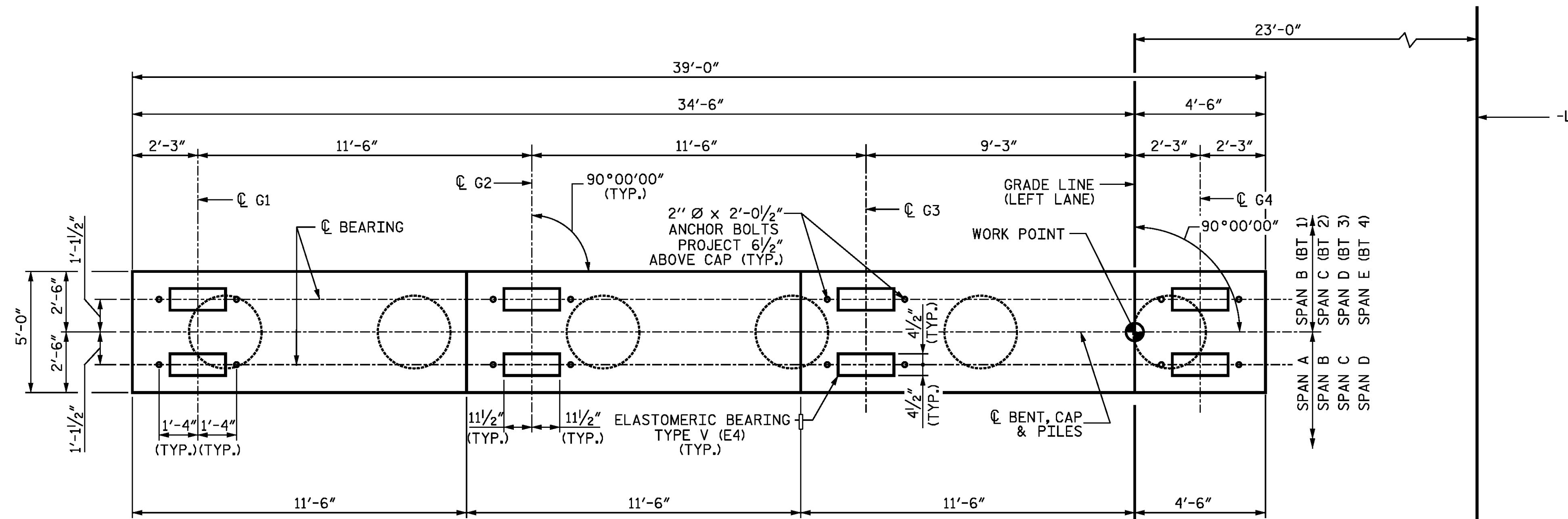
DESIGN ENGINEER OF RECORD: DATE: 4/12/2015
 DRAWN BY: E. C. DECOLA DATE: 02/27/14
 CHECKED BY: R. C. LARSON DATE: 03/14/14

NOTES

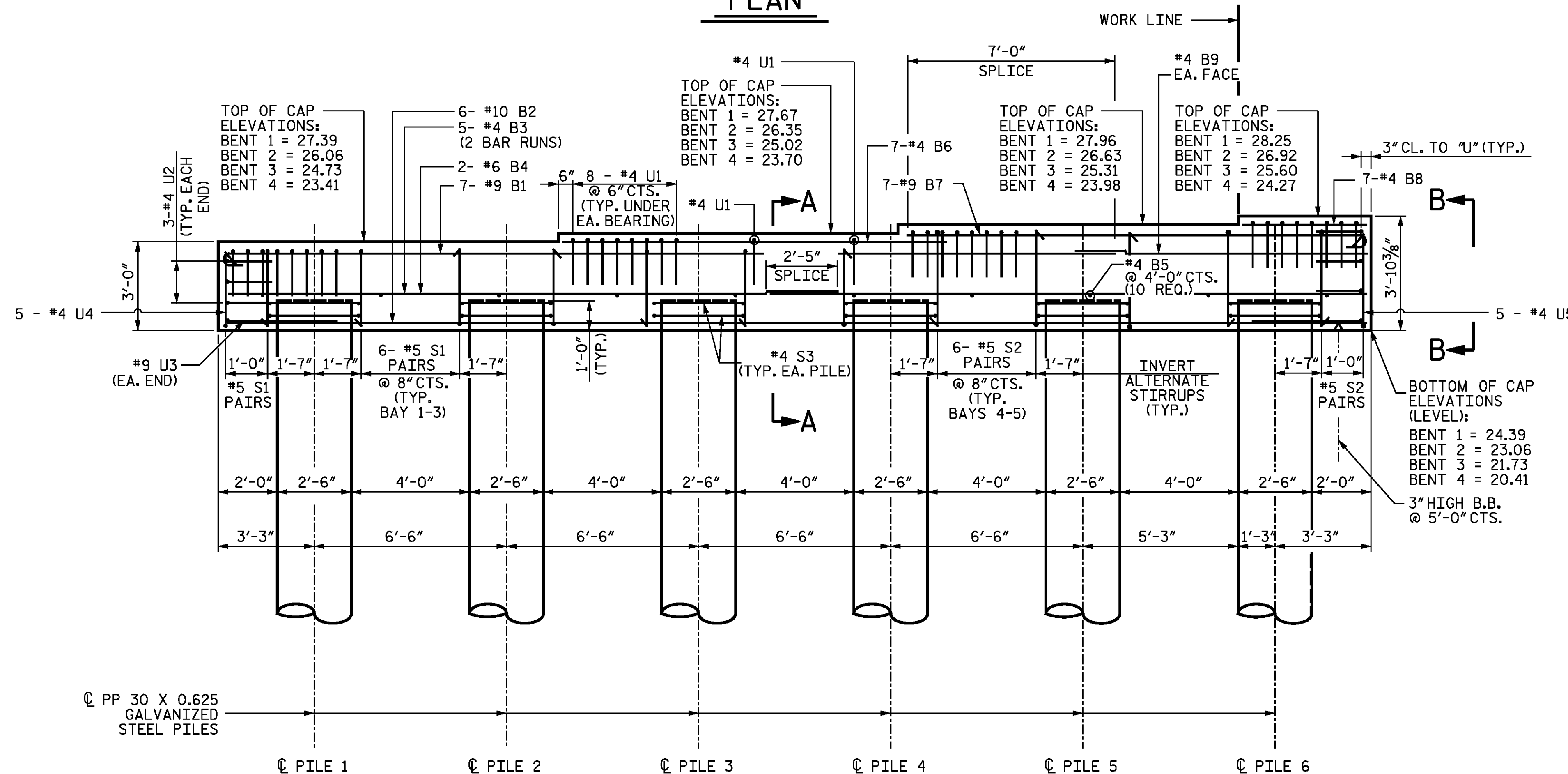
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 45'. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

FOR CONCRETE PLUG AND REINFORCING IN PILES SEE STD DWG NO. SPP4.



PLAN



ELEVATION

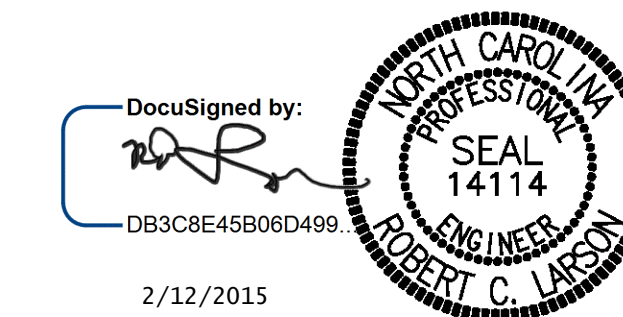
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 BENT 1-4**

LEFT LANE STR-#5



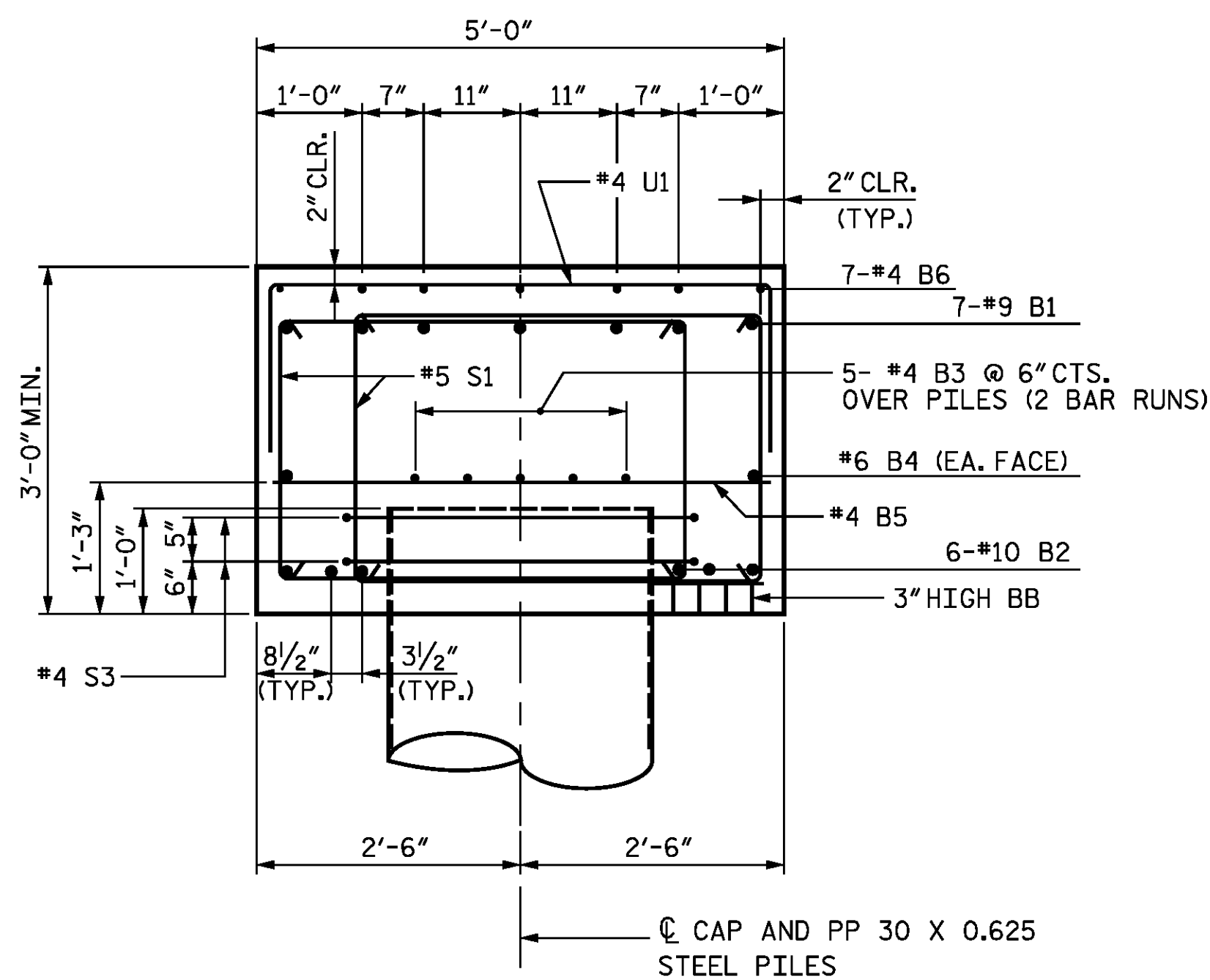
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 2/12/2015

DESIGN ENGINEER OF RECORD:	DATE: 2/12/2015
DRAWN BY: R. A. PRUETT	DATE: 03/15/14
CHECKED BY: R. C. LARSON	DATE: 03/25/14

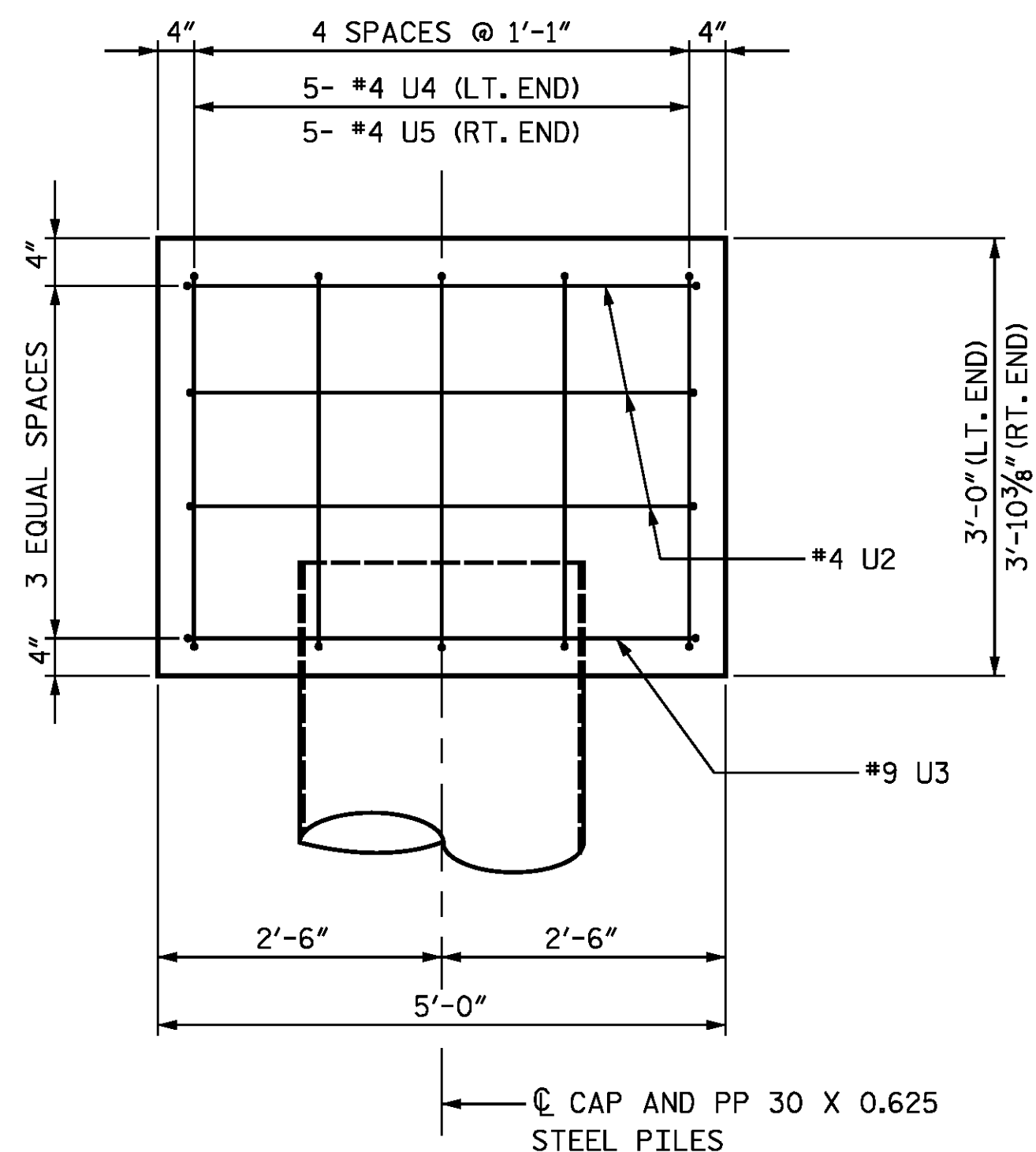
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NO.	DATE	NO.	DATE
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2		4	

TOTAL SHEETS: S05-25, S05-34

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 25 OF 34

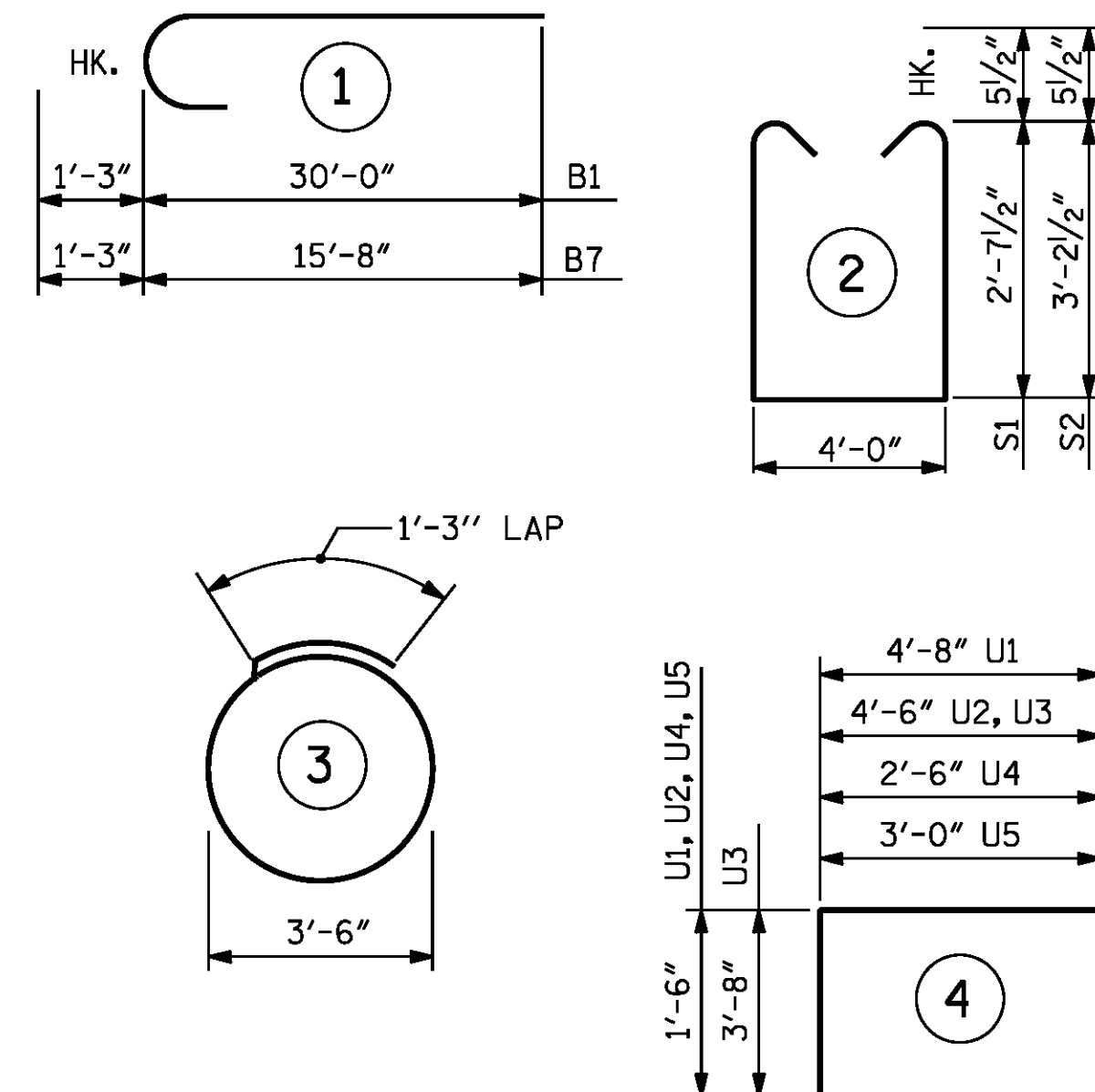


SECTION A-A



END OF CAP VIEW B-B
(TYP. EA. END)

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR ONE BENT

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	9	1	31'-3"	744
B2	6	10	STR.	38'-8"	998
B3	10	4	STR.	20'-7"	137
B4	2	6	STR.	38'-8"	116
B5	10	4	STR.	4'-8"	31
B6	7	4	STR.	12'-6"	58
B7	7	9	1	16'-11"	403
B8	7	4	STR.	4'-2"	19
B9	2	4	STR.	11'-1"	15
S1	40	5	2	10'-2"	424
S2	28	5	2	11'-4"	331
S3	12	4	3	12'-3"	98
U1	34	4	4	7'-8"	174
U2	6	4	4	7'-6"	30
U3	2	9	4	11'-10"	80
U4	5	4	4	5'-6"	18
U5	5	4	4	6'-0"	20
REINFORCING STEEL, LBS.					3696
CLASS A CONCRETE, CU. YD.					23.1
PP 30 X 0.625 GALVANIZED STEEL PILES					
NO.					6
LIN. FT.					510
STEEL PILE POINTS, EA.					6
PILE REDRIVES, EA.					3
(NOTE: PILE HEADS HAVE BEEN DEDUCTED FROM CLASS A CONCRETE)					

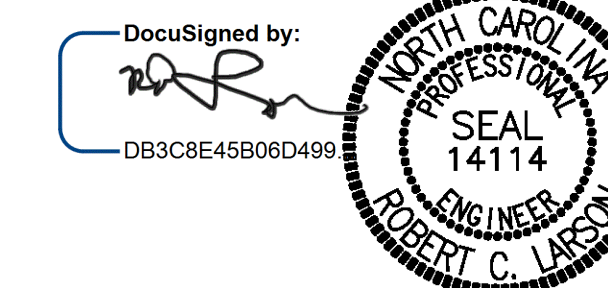
PROJECT NO. R-2514D
JONES COUNTY
STATION: 373+02.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE BENT 1-4

LEFT LANE STR-#5

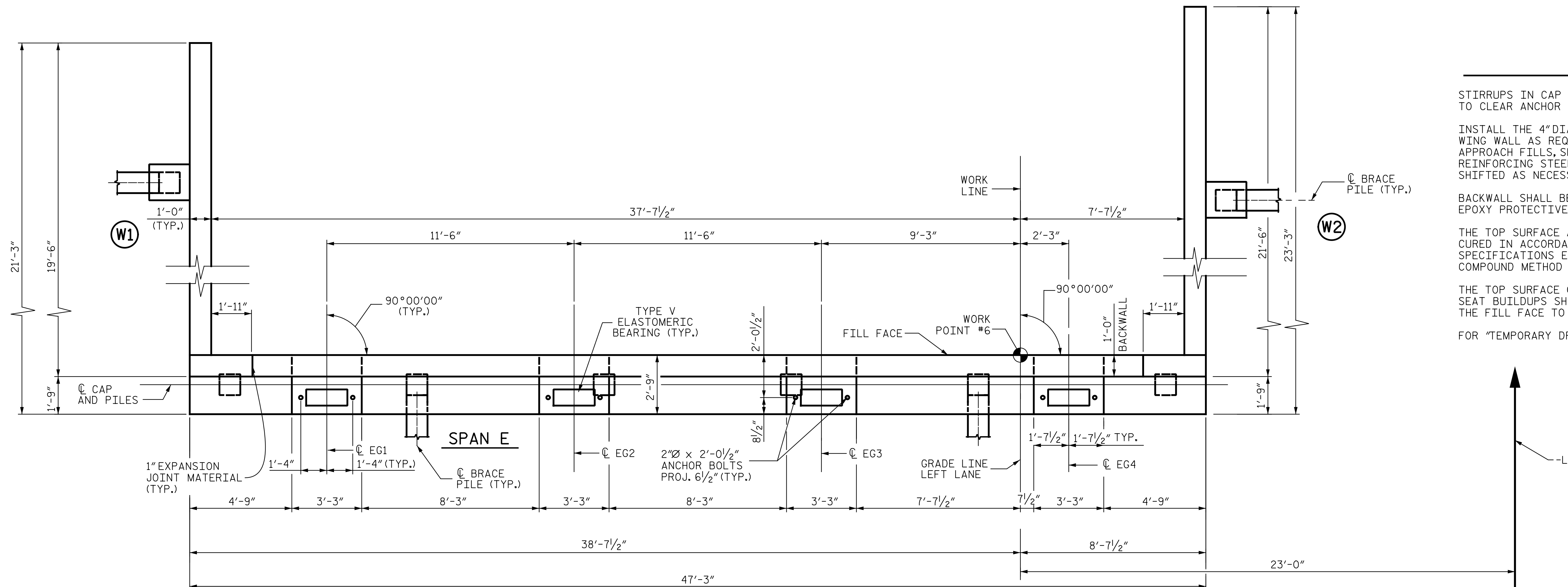


3/10/2015

DESIGN ENGINEER OF RECORD:	DATE :	3/10/2015
DRAWN BY :	DATE :	03/01/14
CHECKED BY :	DATE :	03/26/14

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-26
1			3			TOTAL SHEETS
2			4			S05-34

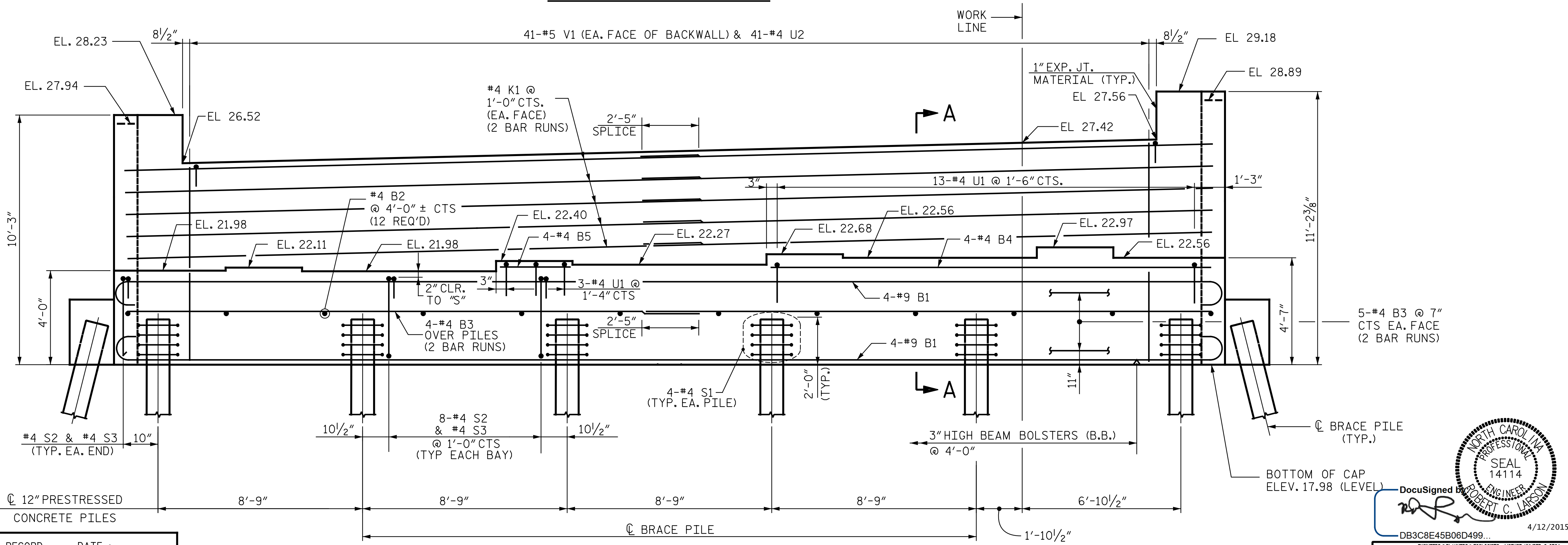
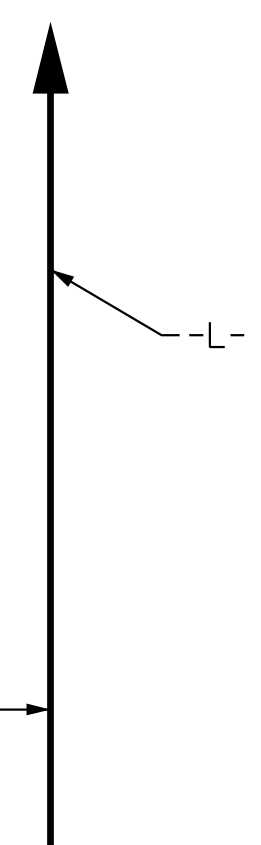
ADDRESS: #1, AMERS @ ECOLOISTS LESSEE NUMBER: C-0764
KCI Associates of North Carolina, P.A.
STATE: SOI, LANDMARK CENTER 1400 SIX FORKS RD. RALEIGH, N.C. 27609-5300 (919) 783-2044
DWG. REF. NO. 26 OF 34



PLAN OF CAP

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE TOP SURFACE AREAS OF THE 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%.
- FOR "TEMPORARY DRAINAGE AT END BENT" SEE END BENT 1.



ELEVATION

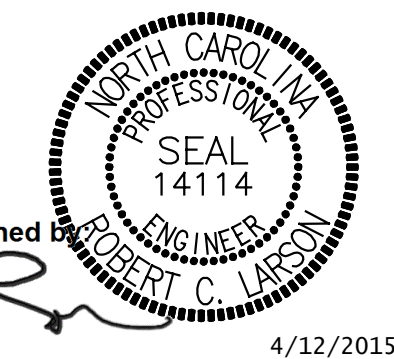
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 2**

LEFT LANE STR-#5



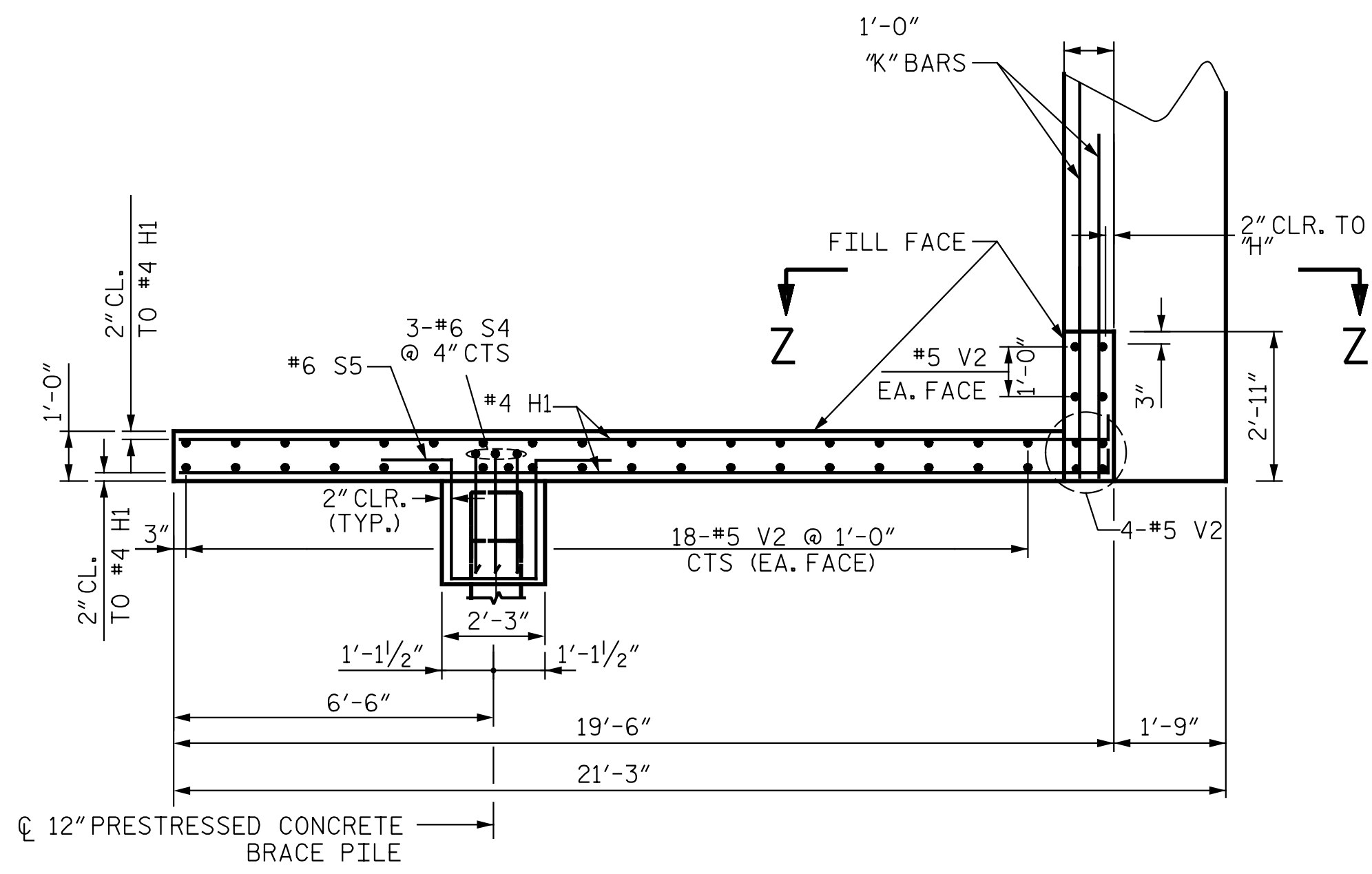
DocuSigned by:
 Robert C. Larson
 DB3C8E45B06D499... 4/12/2015

DESIGN ENGINEER OF RECORD: DATE: 4/12/2015
 DRAWN BY: E. C. DECOLA DATE: 03/06/14
 CHECKED BY: R. C. LARSON DATE: 03/18/14

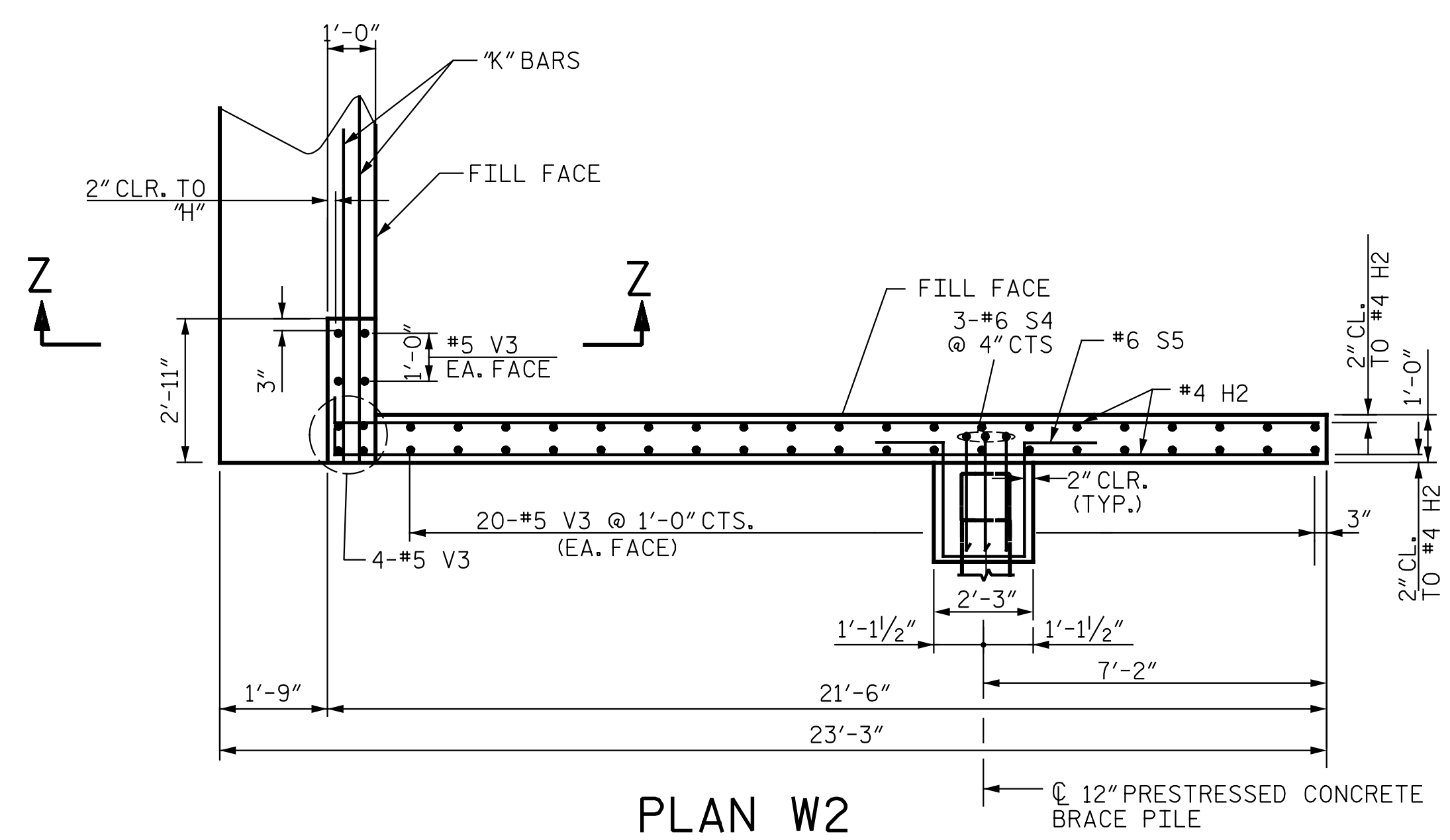
REVISIONS		SHEET NO.	
NO.	DATE	NO.	DATE
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2		4	

TOTAL SHEETS: S05-34

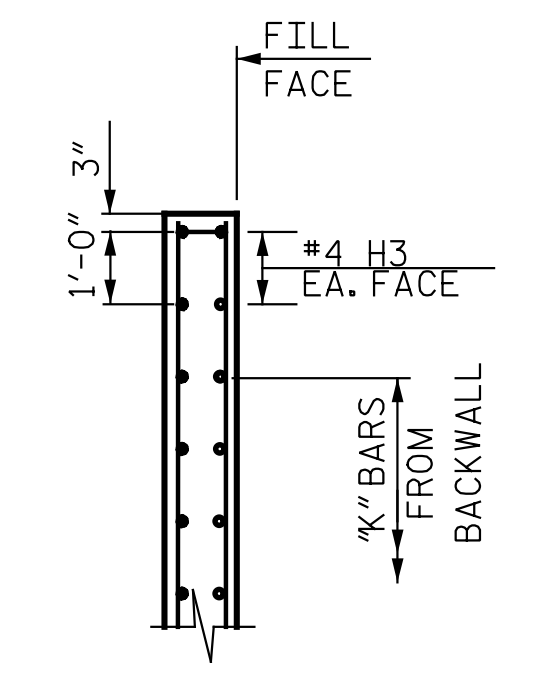
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 DWG. REF. NO. 27 OF 34



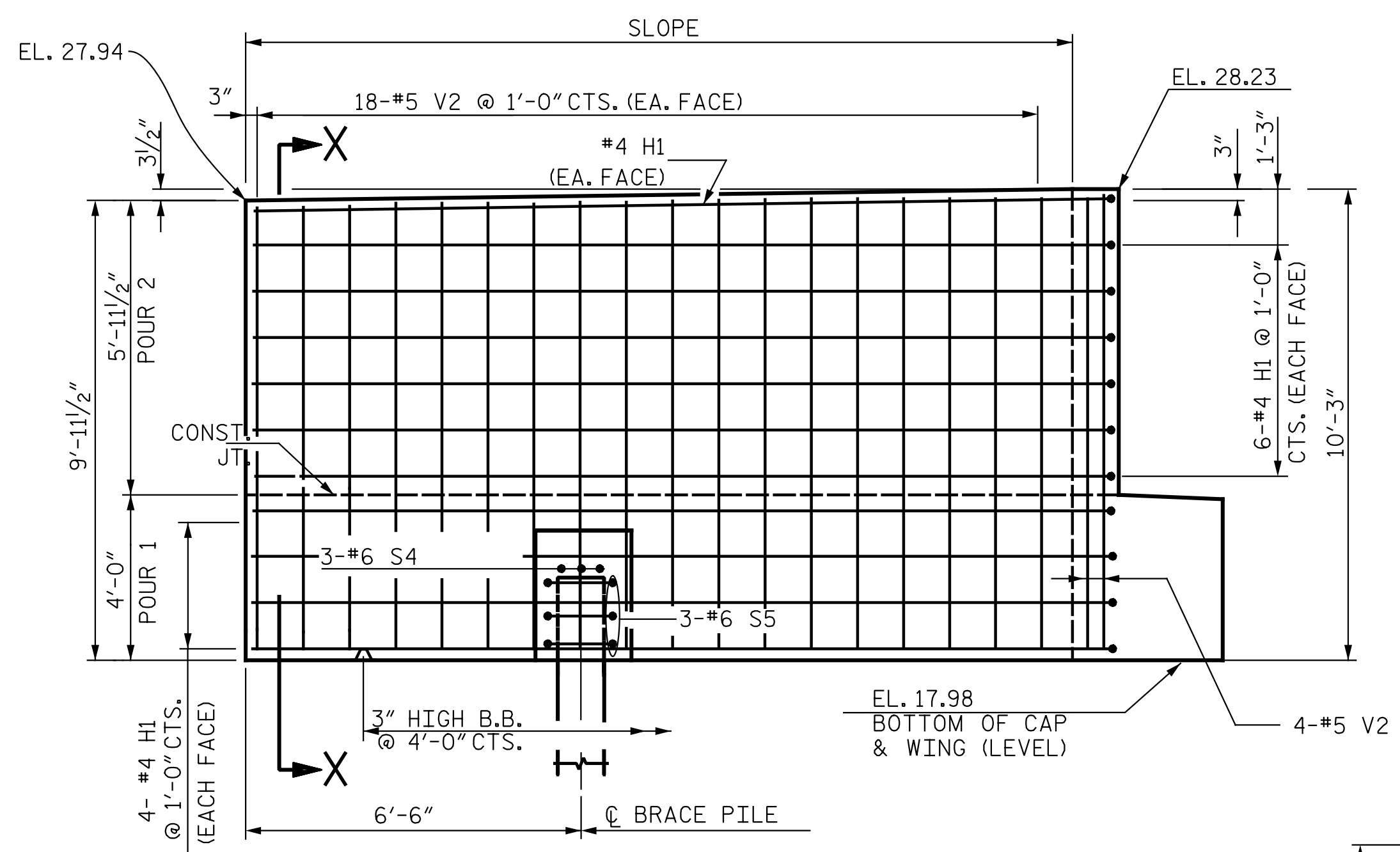
PLAN W1



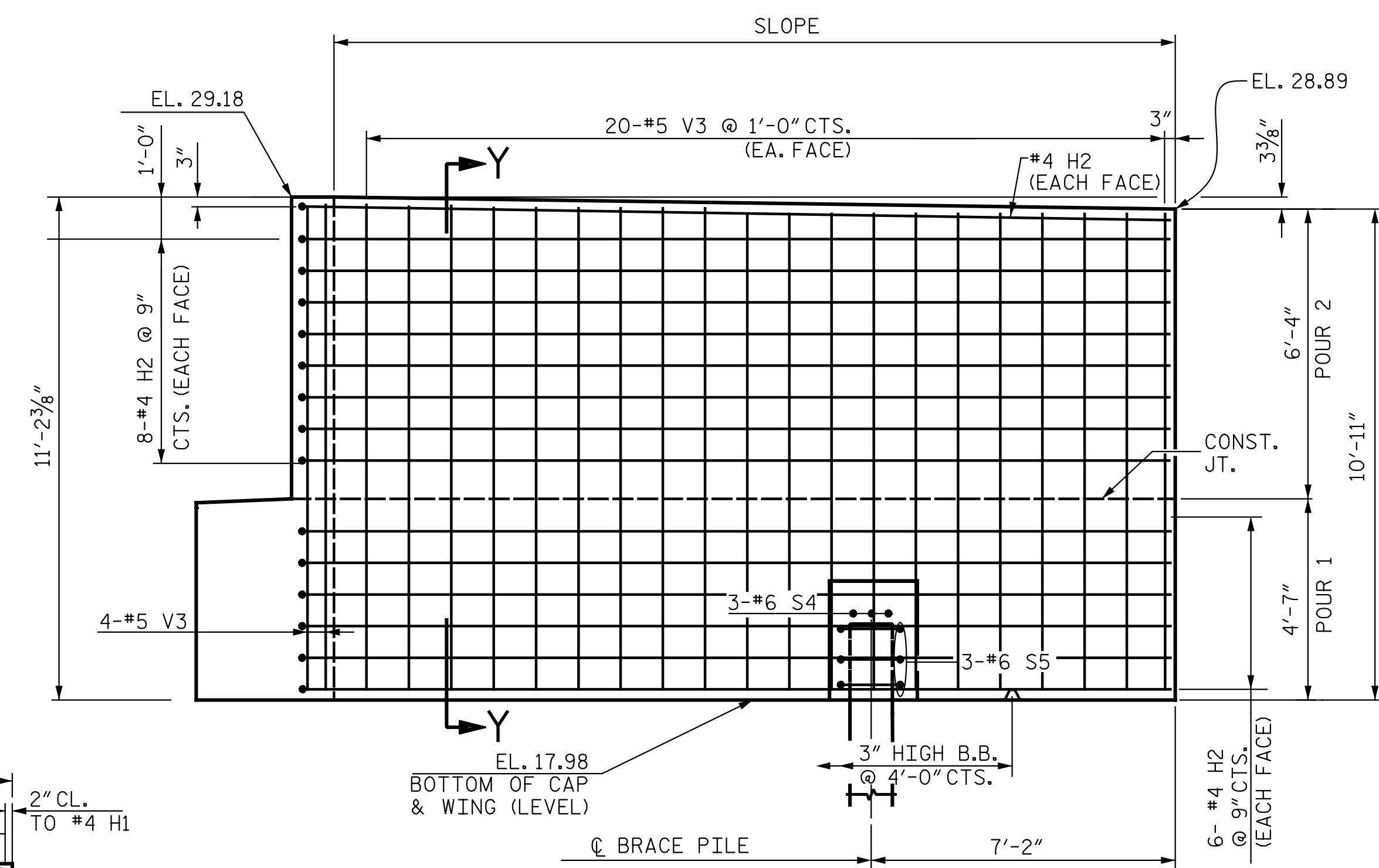
PLAN W2



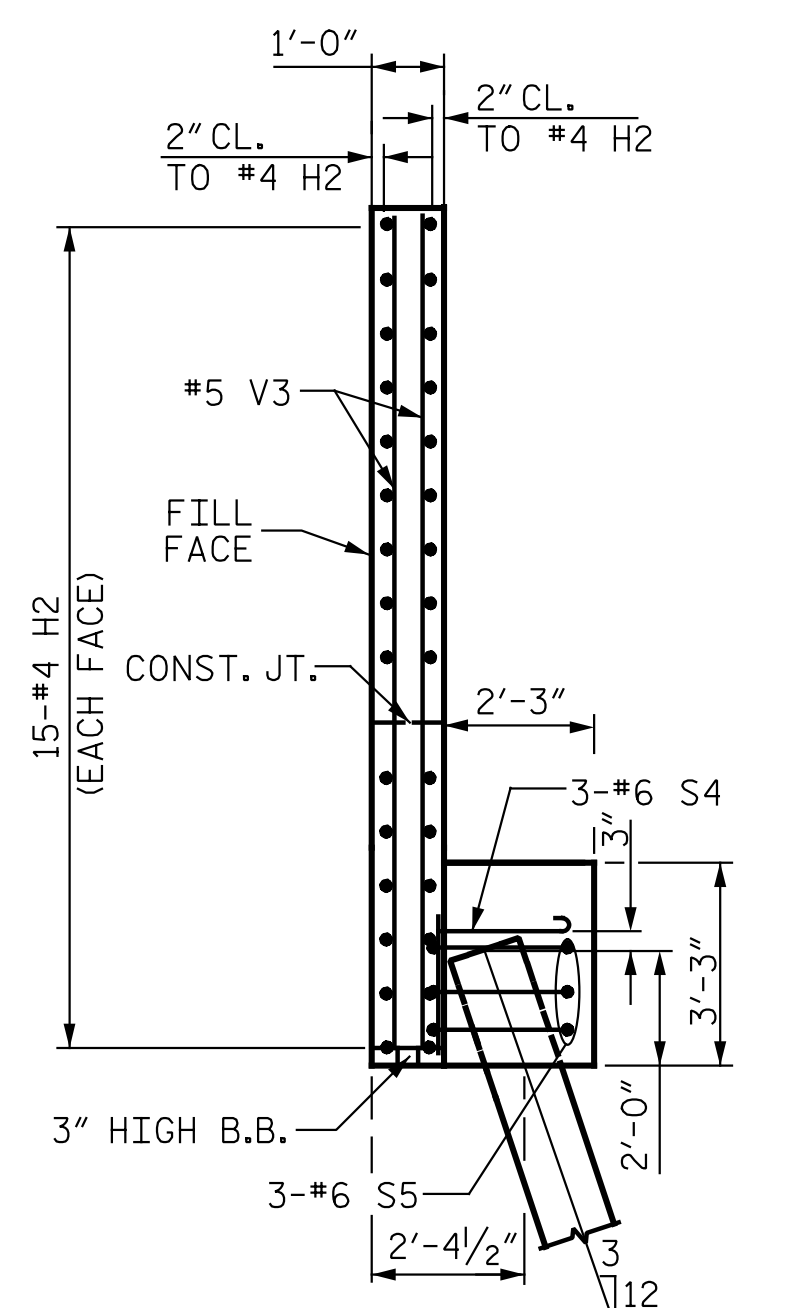
SECTION Z-Z



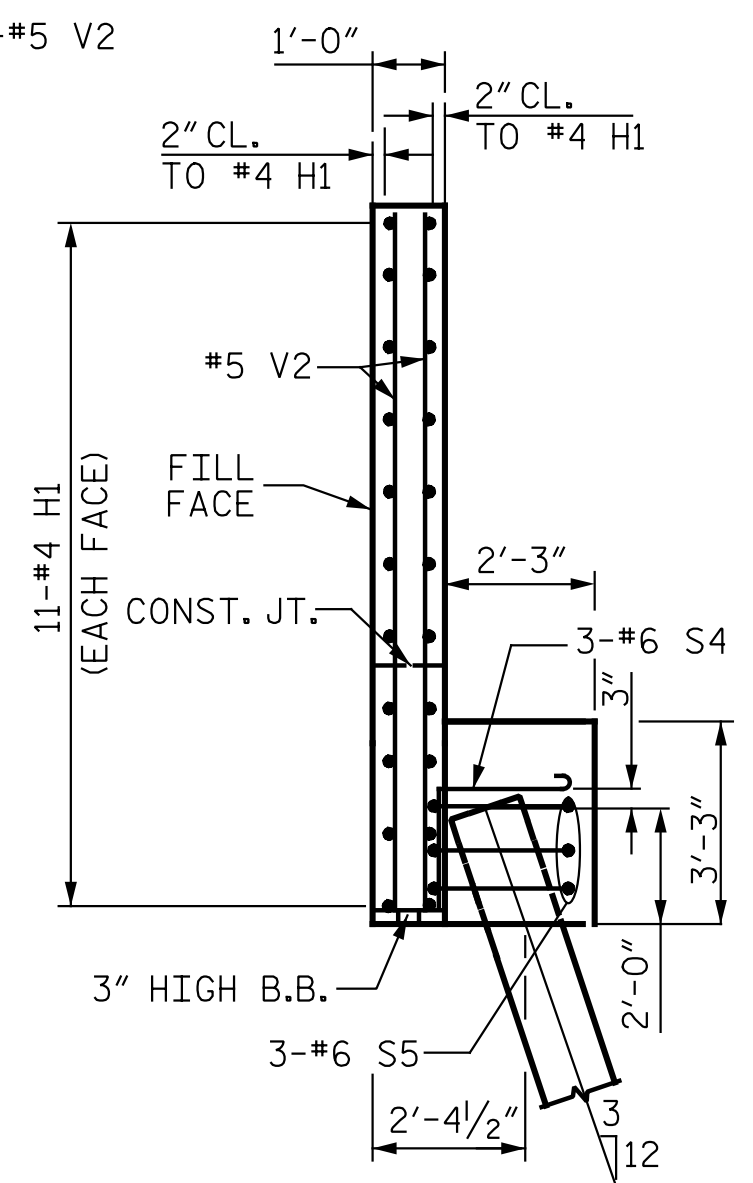
ELEVATION W1



ELEVATION W2



SECTION Y-Y



SECTION X-X

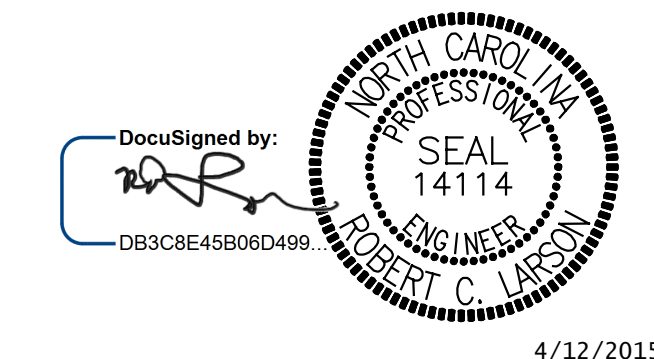
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 2**

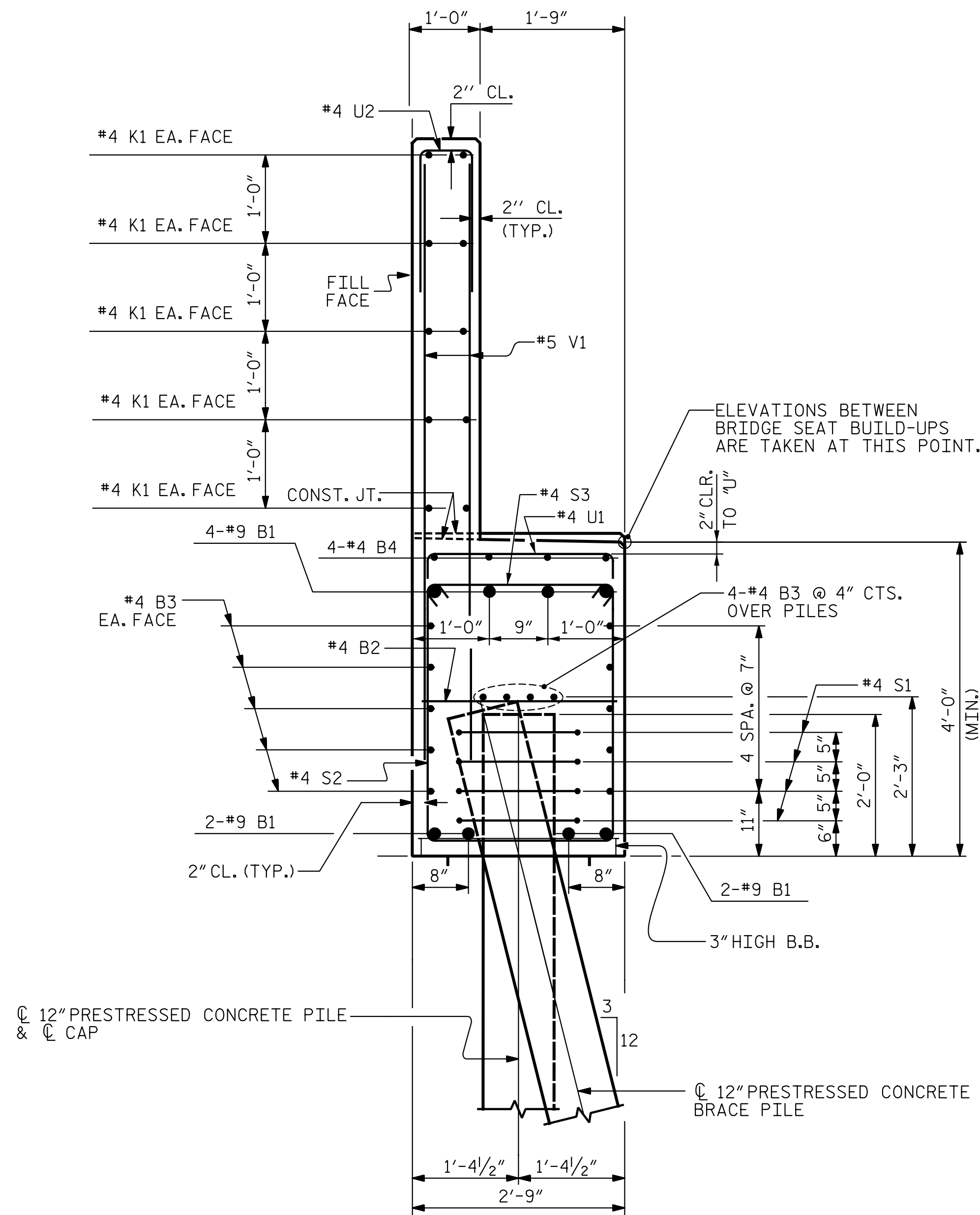
LEFT LANE STR-#5



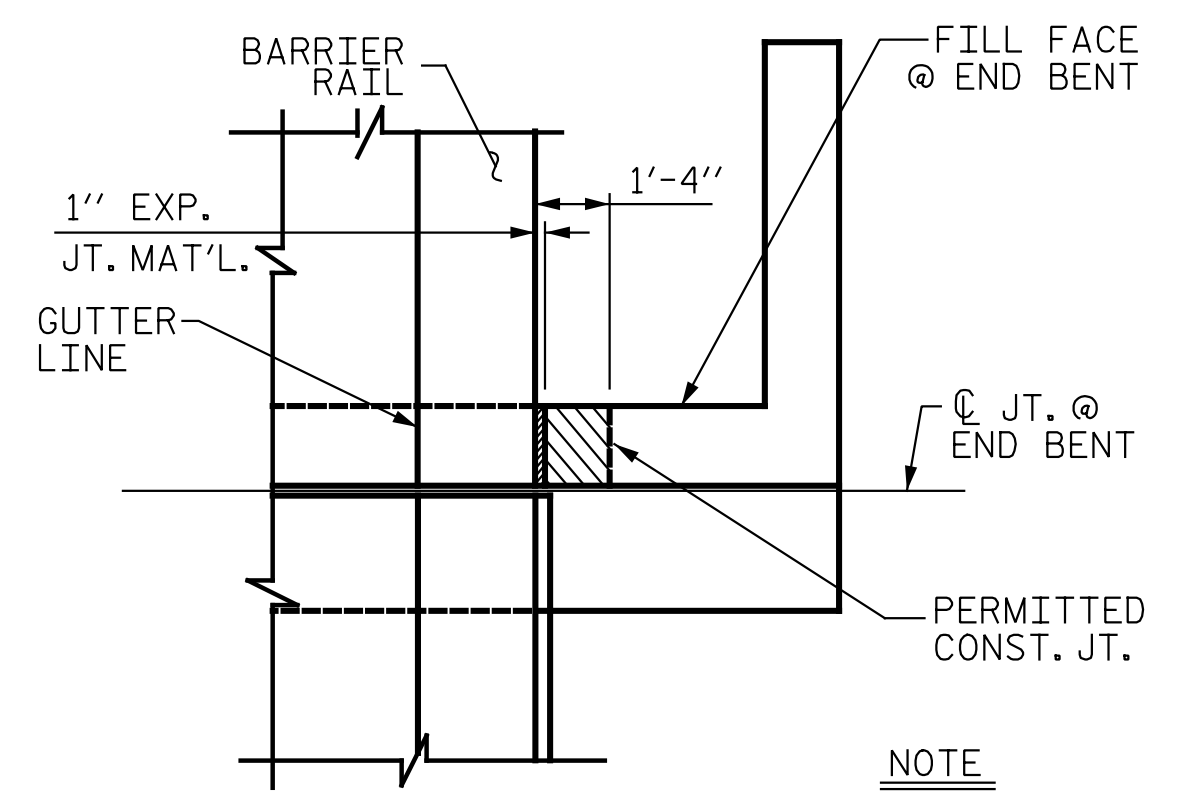
KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 28 OF 34

DESIGN ENGINEER OF RECORD:	DATE :	4/12/2015
DRAWN BY :	DATE :	03/06/14
CHECKED BY :	DATE :	03/21/14

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-28
1			3			TOTAL SHEETS
2			4			S05-34



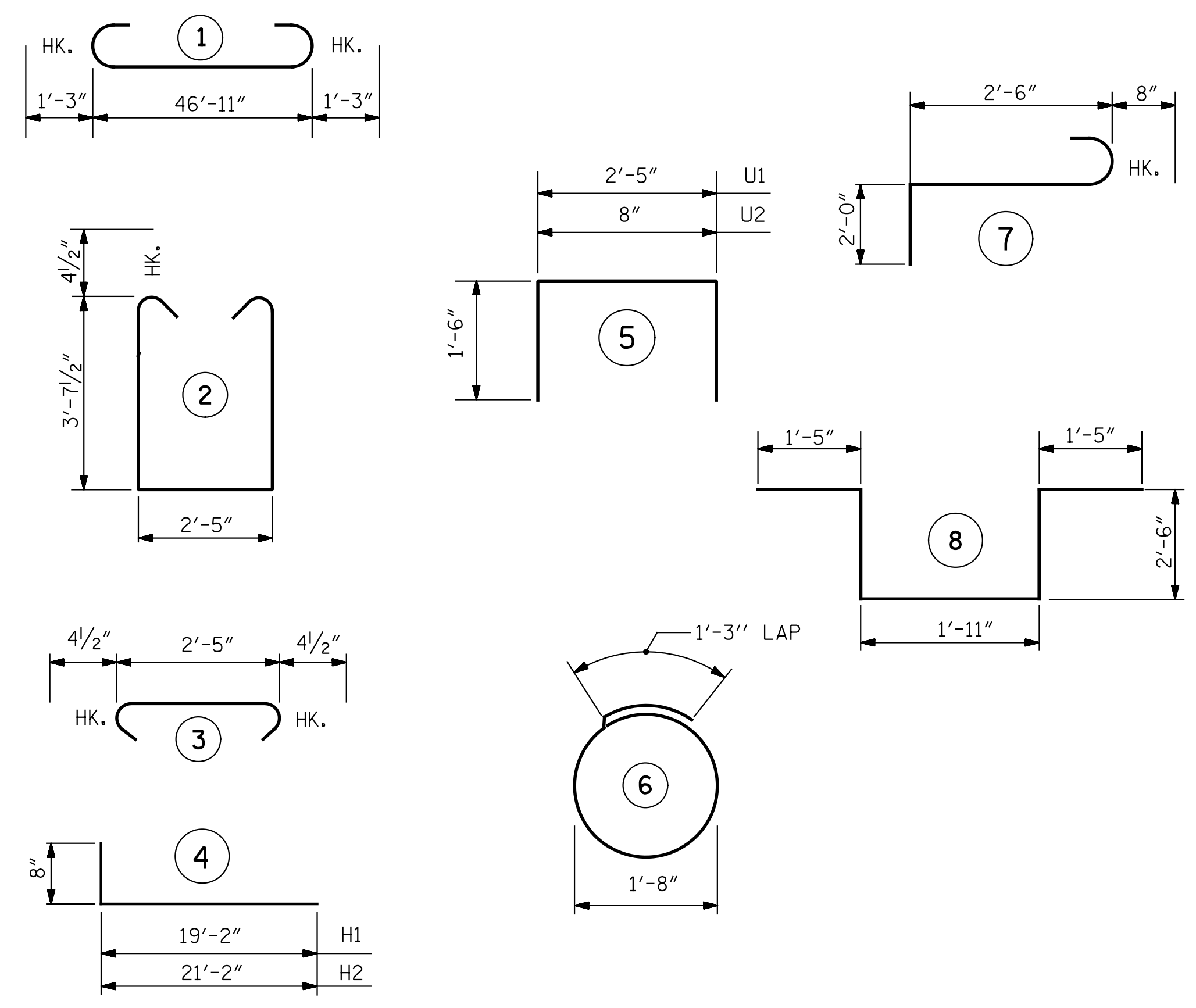
SECTION A-A



PLAN

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

BLOCKOUT IN WING WALL

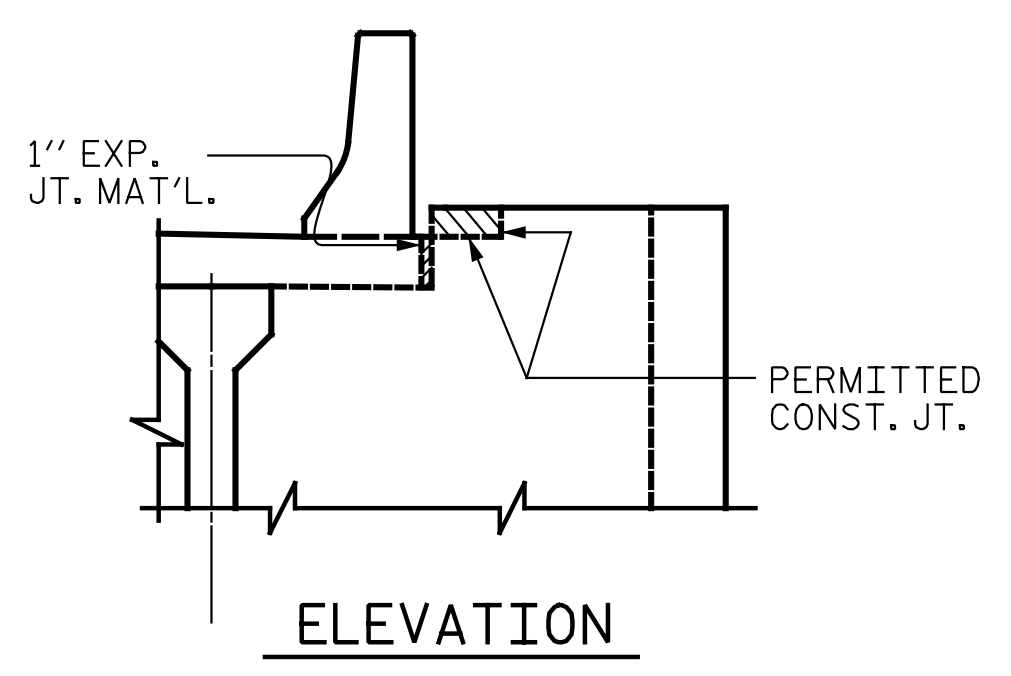


ALL BAR DIMENSIONS ARE OUT TO OUT.

BAR TYPES

BILL OF MATERIAL

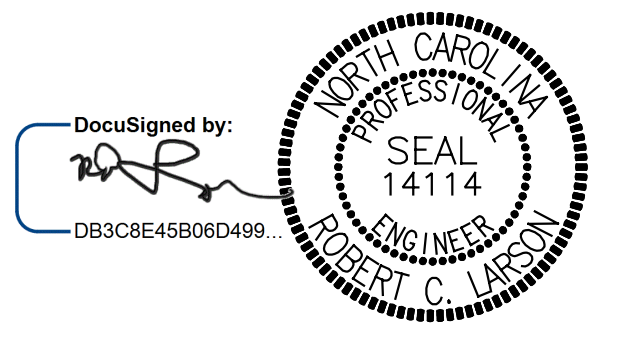
END BENT 2					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	9	1	49'-5"	1344
B2	12	4	STR.	2'-5"	19
B3	28	4	STR.	24'-8"	461
B4	4	4	STR.	19'-2"	51
B5	4	4	STR.	2'-11"	8
H1	22	4	4	19'-10"	291
H2	30	4	4	21'-10"	438
H3	8	4	STR.	2'-7"	14
K1	20	4	STR.	24'-8"	330
S1	24	4	6	6'-6"	104
S2	42	4	2	10'-5"	292
S3	42	4	3	3'-2"	89
S4	6	6	7	5'-2"	47
S5	6	6	8	9'-9"	88
U1	16	4	5	5'-5"	58
U2	41	4	5	3'-8"	100
V1	82	5	STR.	8'-4"	713
V2	44	5	STR.	9'-8"	444
V3	48	5	STR.	10'-7"	530
REINFORCING STEEL, LB					5421
CLASS A CONCRETE, CY					POUR 1 27.9
					POUR 2 17.3
					TOTAL 45.2
12" PRESTRESSED CONCRETE PILES					
					NO. 8
					LF 480
PILE REDRIVES					EA. 3
NOTE: PILE HEADS HAVE BEEN DEDUCTED FROM CLASS A CONCRETE.					



ELEVATION

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-
 SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
SUBSTRUCTURE
END BENT 2
 LEFT LANE STR-#5

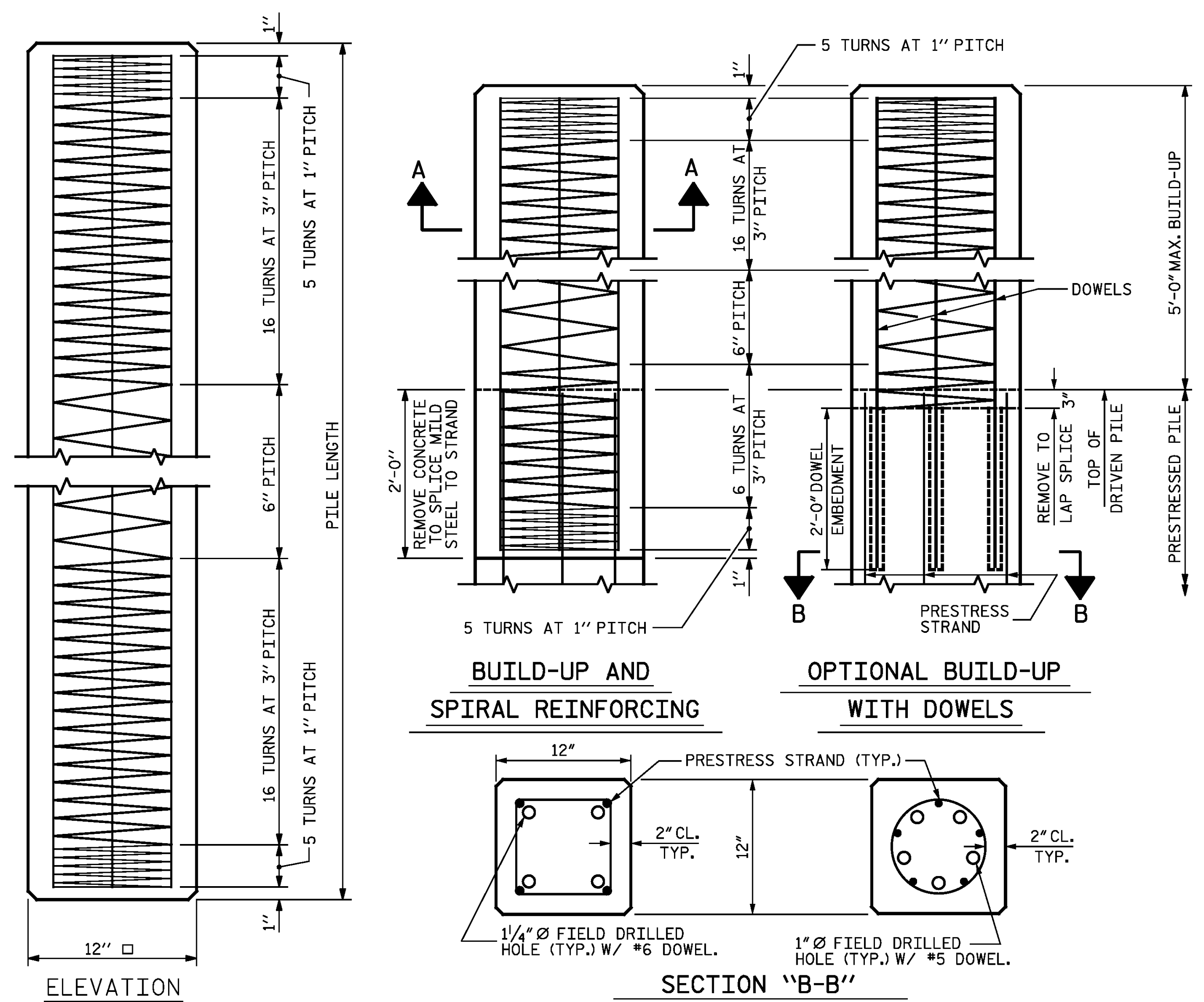


KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 29 OF 34

DESIGN ENGINEER OF RECORD:	DATE:
<i>R. Larson</i>	4/12/2015
DRAWN BY:	DATE:
E. C. DECOLA	03/06/14
CHECKED BY:	DATE:
R. C. LARSON	03/18/14

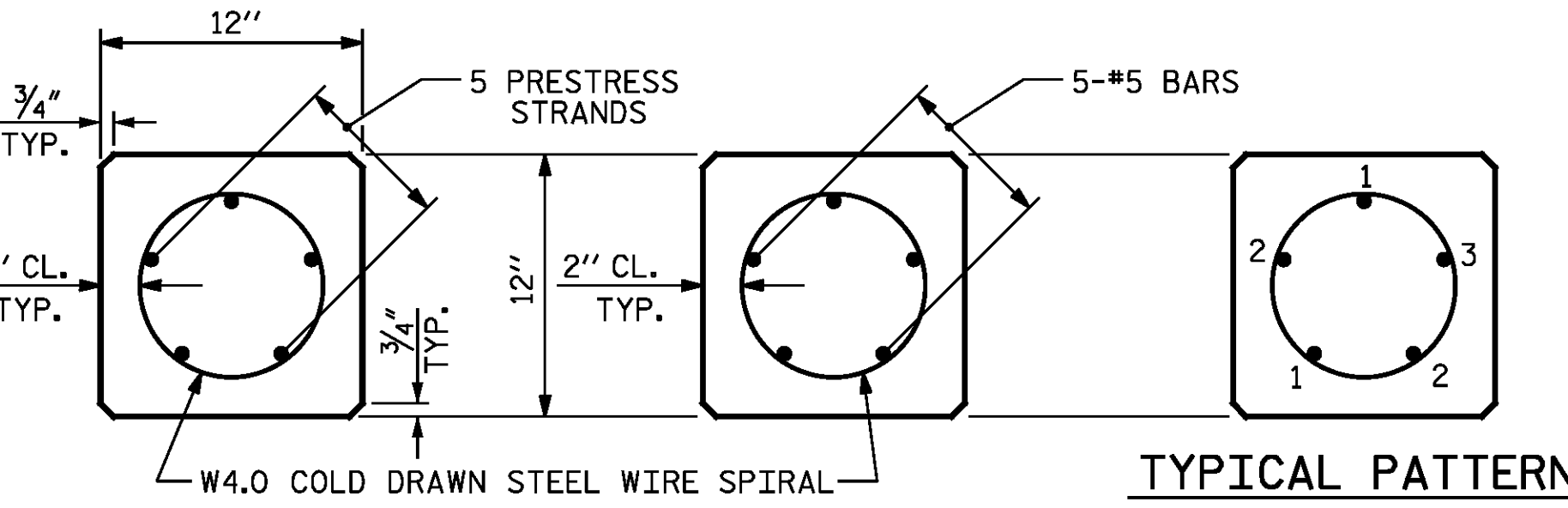
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.	S05-29
TOTAL SHEETS	S05-34

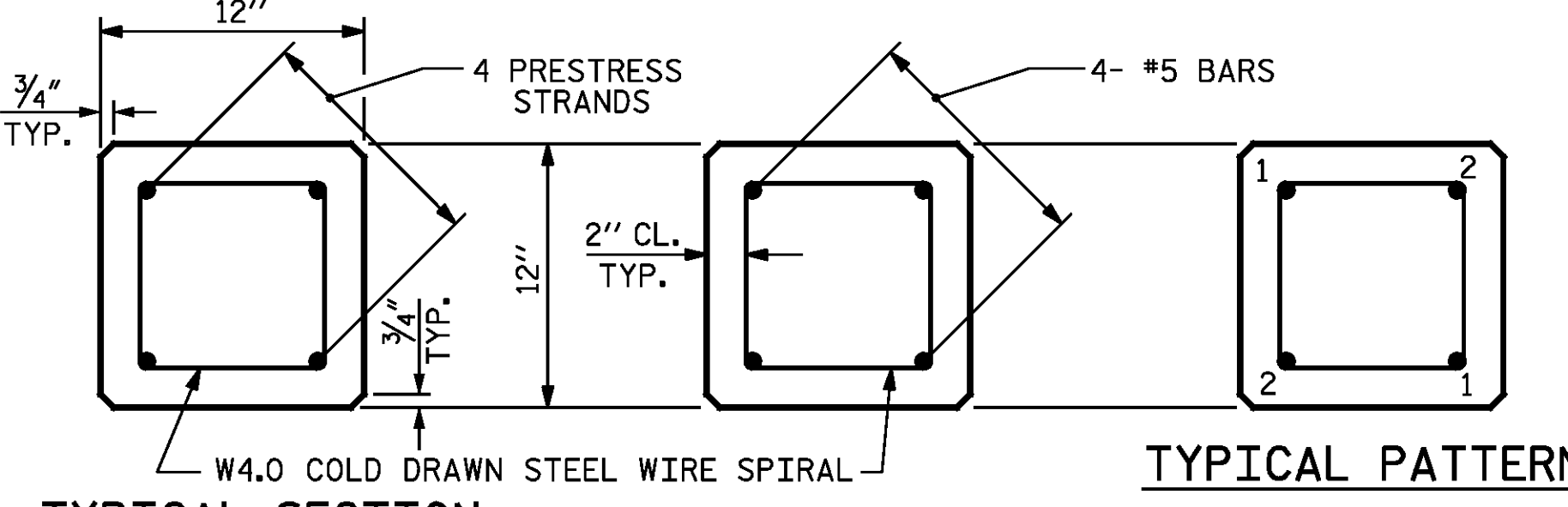


SECTION "B-B"

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



TYPICAL SECTION SECTION "A-A" FOR BURNING STRANDS
1/2" OR 0.6" Ø GRADE 270 L.R. PRESTRESS STRANDS



TYPICAL SECTION SECTION "A-A" FOR BURNING STRANDS
1/2" OR 0.6" Ø GRADE 270 L.R. PRESTRESS STRANDS

NOTES

PRESTRESSED CONCRETE STRENGTH : $f'_c = 7,500$ PSI
 BUILD-UP CONCRETE STRENGTH : $f'_c = 7,500$ PSI
 STRAND DATA:

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
1/2"	270 L.R.	0.153	41,300* PER STRAND	30,980* PER STRAND
0.6"	270 L.R.	0.217	58,600* PER STRAND	43,940* PER STRAND

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

AT THE CONTRACTOR'S OPTION, 1/2" OR 0.6" STRANDS MAY BE USED IN EITHER THE 4 OR 5 STRAND CONFIGURATION SHOWN IN THE TYPICAL SECTION DETAIL. MIXING OF STRAND SIZE IS NOT ALLOWED.

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

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

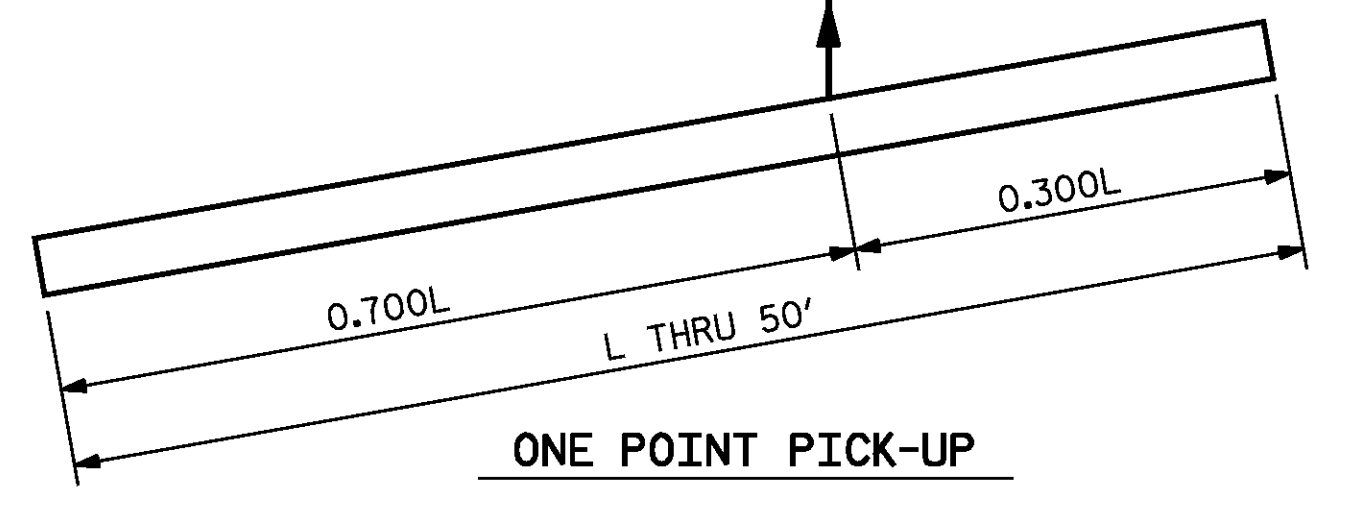
IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN PAIRS, EXCEPT WHERE 5 STRANDS ARE USED, THE LAST STRAND MAY BE BURNED SINGLY ACCORDING TO BURNING PATTERNS SHOWN. NOT MORE THAN 4 STRANDS MAY BE BURNED AT ANY ONE SECTION BEFORE THE SAME STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

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

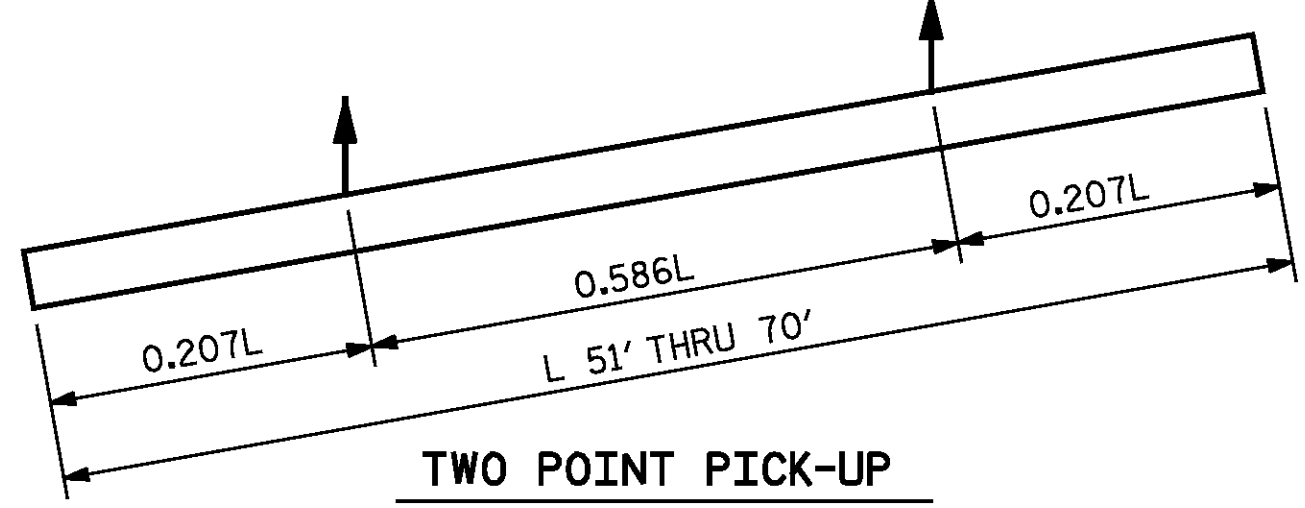
WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS ARE TO BE INDICATED WITH A 2" WIDE BLACK MARK.

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

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



ONE POINT PICK-UP



TWO POINT PICK-UP

PICK-UP POINTS

DOWEL INSTALLATION FOR OPTIONAL BUILD-UP

GROUT COMPRESSIVE STRENGTH: $f'_c = 5,000$ PSI

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

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

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

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

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

STEEL PILE TIP DETAILS

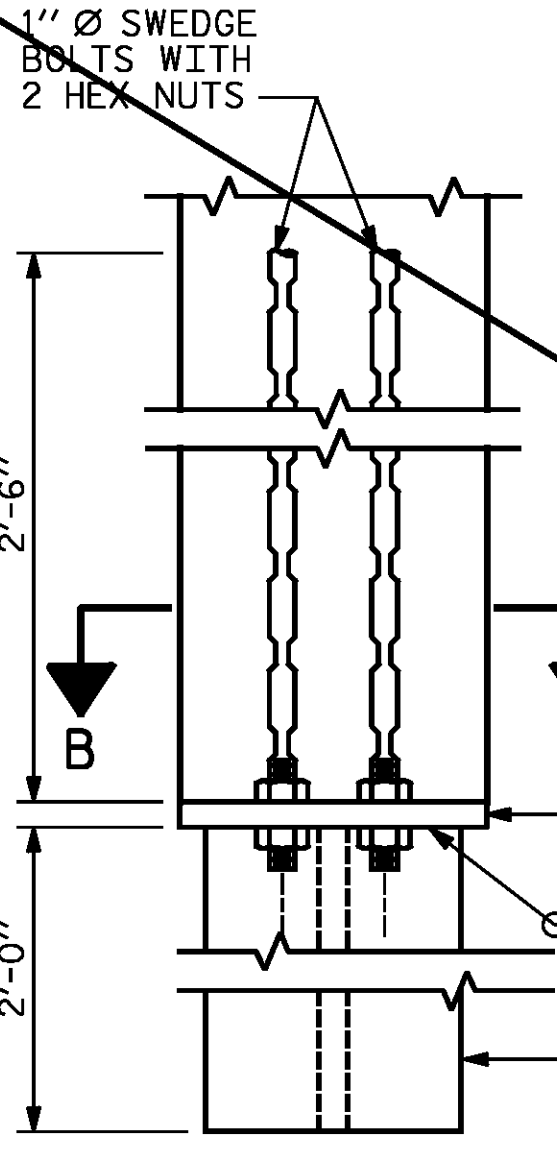
NOTES

PLATE AND SWEDGE BOLTS SHALL MEET THE REQUIREMENTS OF AASHTO M270 GRADE 36. THREADS OF THE SWEDGE BOLTS SHALL BE BURRED AT THE FACE OF THE NUT.

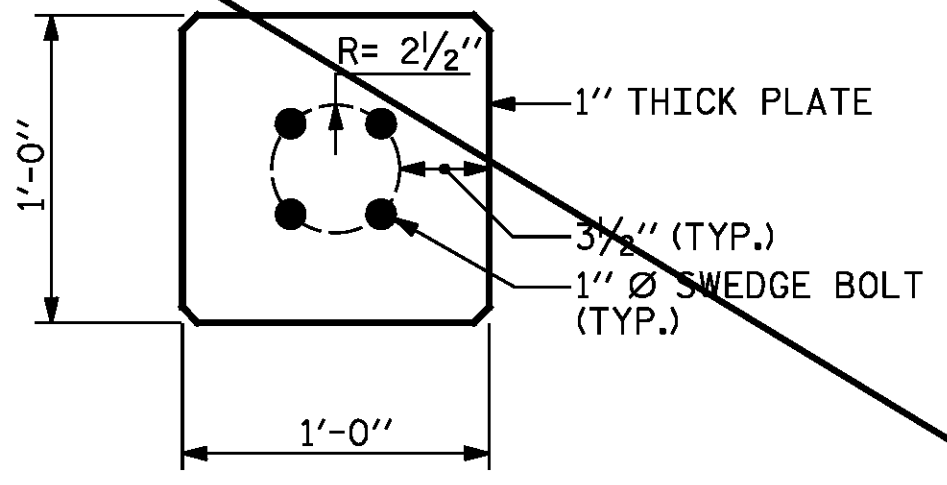
PILE SHALL BE CAST WITH SWEDGE BOLTS AND PLATE IN PLACE.

FOR SPIRAL REINFORCING AND PRESTRESSING STRAND DETAILS, SEE STANDARD 12" PRESTRESSED CONCRETE PILE ELEVATION AND TYPICAL SECTION.

* EXCEPT AS NOTED BELOW, THE HP 10 X 57 SECTION SHALL BE WELDED TO THE STEEL PLATE AFTER STRAND STRESS IS RELIEVED. THE HP 10 X 57 SECTION MAY BE WELDED IN THE PRESTRESSER'S YARD OR IN THE FIELD. WHEN A CIRCULAR STRAND PATTERN AS SHOWN ON THE PLANS IS USED, THE CONTRACTOR, AT HIS OPTION, MAY WELD THE HP 10 X 57 SECTION TO THE STEEL PLATE AT THE FABRICATION PLANT PRIOR TO PLACING THE CONCRETE. THE FLANGES OF THE HP SECTION SHALL BE PARALLEL TO THE EDGES OF THE STEEL PLATE AND CONCRETE PILE.



ELEVATION



SECTION B-B

(HOLES FOR STRANDS NOT SHOWN)

QUANTITIES FOR ONE 12" PRESTRESSED PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE POINT PICK-UP		TWO POINT PICK-UP	
			0.300L	0.700L	0.207L	0.586L
25'-0"	0.91	1.85	7'-6"	17'-6"		
30'-0"	1.10	2.22	9'-0"	21'-0"		
35'-0"	1.28	2.59	10'-6"	24'-6"		
40'-0"	1.46	2.96	12'-0"	28'-0"		
45'-0"	1.64	3.33	13'-6"	31'-6"		
50'-0"	1.83	3.72	15'-0"	35'-0"		
55'-0"	2.01	4.09			11'-4 1/2"	32'-3"
60'-0"	2.19	4.46			12'-5"	35'-2"
65'-0"	2.38	4.81			13'-5 1/2"	38'-1"
70'-0"	2.57	5.18			14'-6"	41'-0"

DESIGN ENGINEER OF RECORD: DATE: 2/12/2015

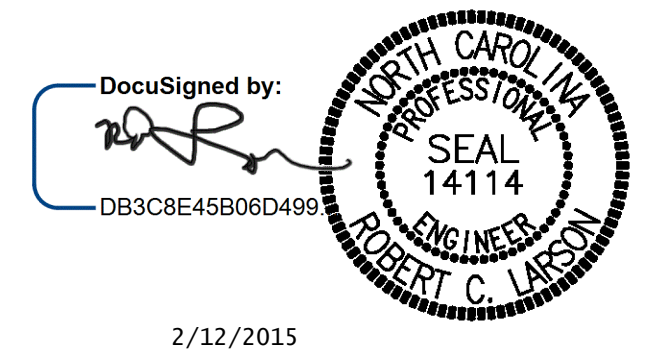
DRAWN BY: E. C. DECOLA DATE: 03/06/14

CHECKED BY: R. C. LARSON DATE: 03/24/14

DRAWN BY: FCJ 7/88 REV. 5/1/06R TLA/GM

CHECKED BY: CRK 3/89 REV. 11/30/10 WMC/GM

REV. 10/17/11 MAA/GM



2/12/2015

PROJECT NO. R-2514D
 JONES COUNTY
 STATION: 373+02.50 -L-

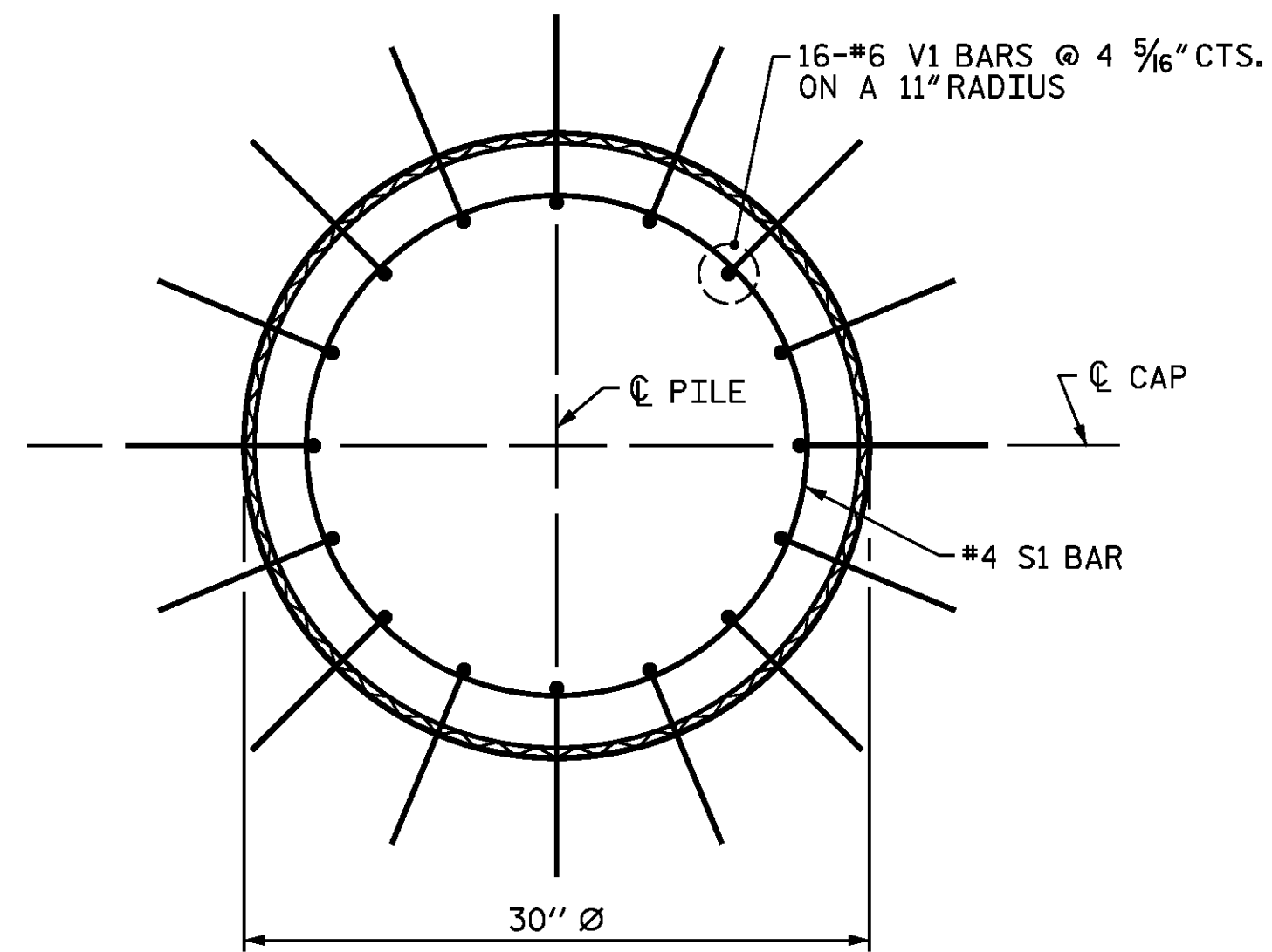
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

12" PRESTRESSED CONCRETE PILES

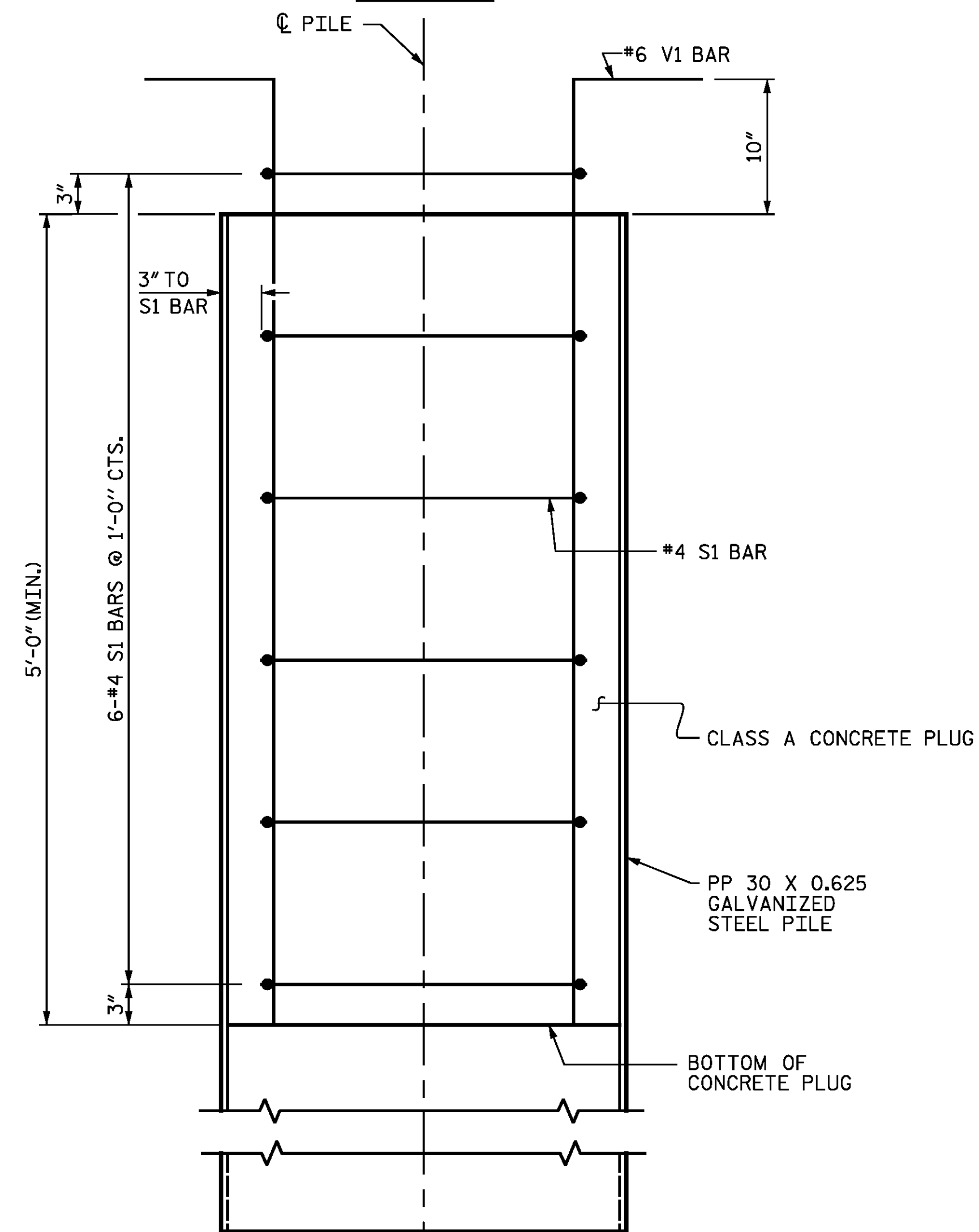
STD. NO. PCP1 LEFT LANE STR-#5

REVISIONS						SHEET NO. S05-30
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS S05-34
2			4			

KCI Associates of North Carolina, P.A.
 DWG. REF. NO. 30 OF 34



PLAN



ELEVATION

PP 30 X 0.625 GALVANIZED STEEL PILE
(OPEN END)

NOTES

PIPE PILES SHALL BE IN ACCORDANCE WITH SECTION 1084 OF THE STANDARD SPECIFICATIONS.

GALVANIZE STEEL PIPE PILES IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS UNLESS METALLIZING IS REQUIRED. GALVANIZING OR METALLIZING PIPE PILE PLATES IS NOT REQUIRED.

PIPE PILE PLATES, IF REQUIRED, SHALL BE IN ACCORDANCE WITH SECTION 450 OF THE STANDARD SPECIFICATIONS.

REMOVE AND REPLACE OR REPAIR TO THE SATISFACTION OF THE ENGINEER PILES THAT ARE DAMAGED, DEFORMED OR COLLAPSED DURING INSTALLATION OR DRIVING.

PILE SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND AWS D1.1.

FOR CLOSED END PIPE PILES, REMOVE ALL SOIL AND WATER FROM INSIDE THE PILES JUST PRIOR TO PLACING REINFORCING STEEL AND CONCRETE FOR THE CONCRETE PLUG.

FOR OPEN END PIPE PILES, REMOVE ENOUGH SOIL AND WATER FROM INSIDE THE PILES TO CONSTRUCT THE CONCRETE PLUG WITHOUT FOULING THE CONCRETE.

FORM THE CONCRETE PLUG SUCH THAT THE REINFORCING STEEL OR CONCRETE DOES NOT MOVE AND THE CLEARANCE FROM THE REINFORCING STEEL TO THE INSIDE OF THE PILE IS MAINTAINED AFTER CONCRETE PLACEMENT. DO NOT PLACE CONCRETE IN THE BENT CAP UNTIL THE CONCRETE PLUG HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

THE REINFORCING STEEL, CLASS A CONCRETE, AND GALVANIZING ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR PP 30 X 0.625 GALVANIZED STEEL PILES.

BILL OF MATERIAL FOR ONE PP 30 X 0.625 GALVANIZED STEEL PILE

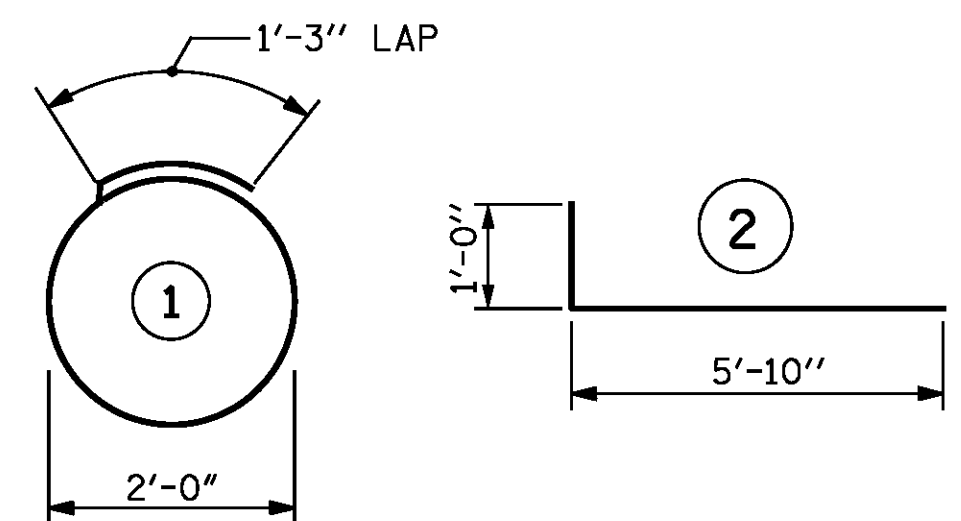
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	6	#4	1	7'-7"	30
V1	16	#6	2	6'-10"	164
REINFORCING STEEL =				194	lbs

CLASS A CONCRETE

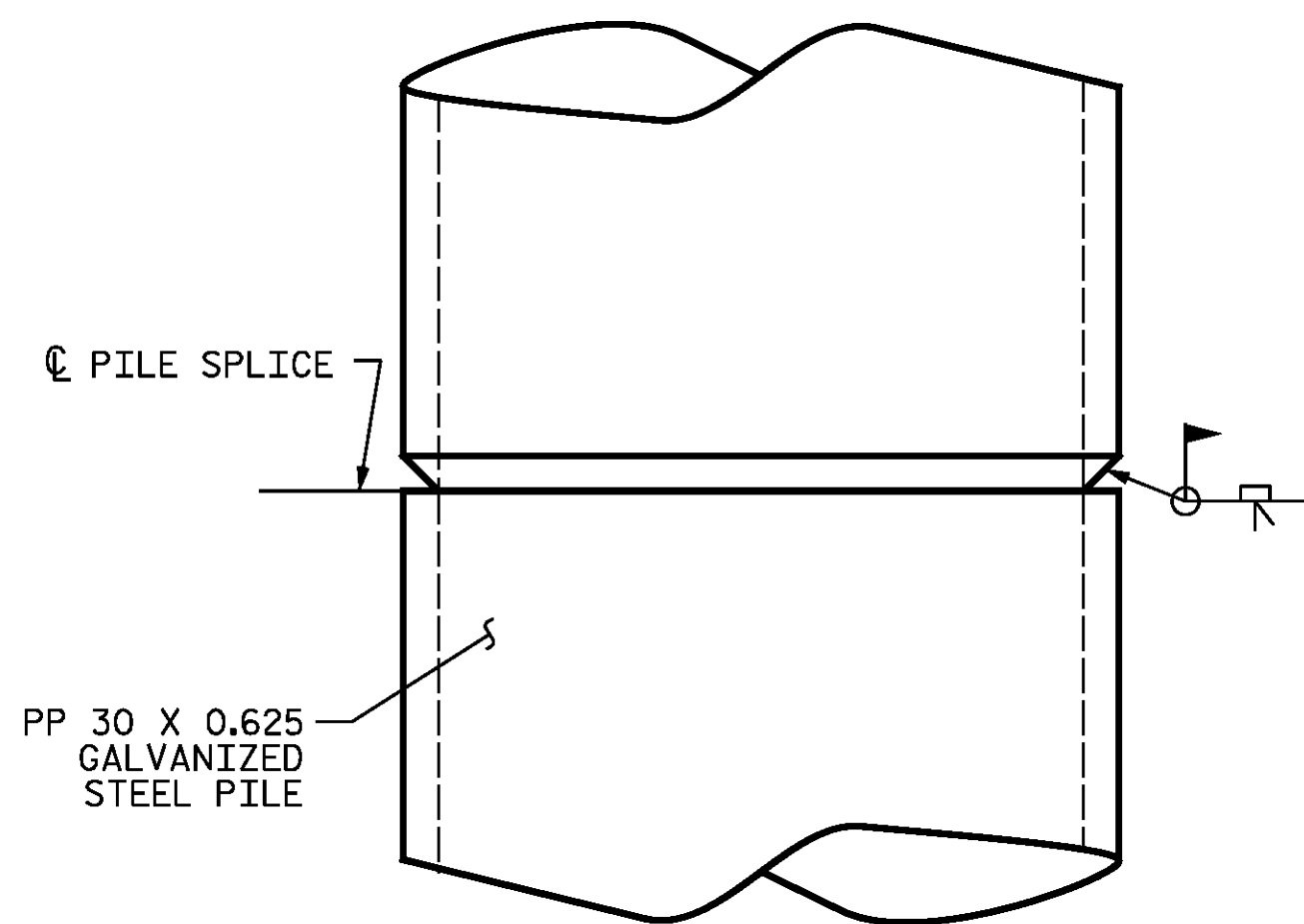
5'-0" MINIMUM PLUG

0.8 CY

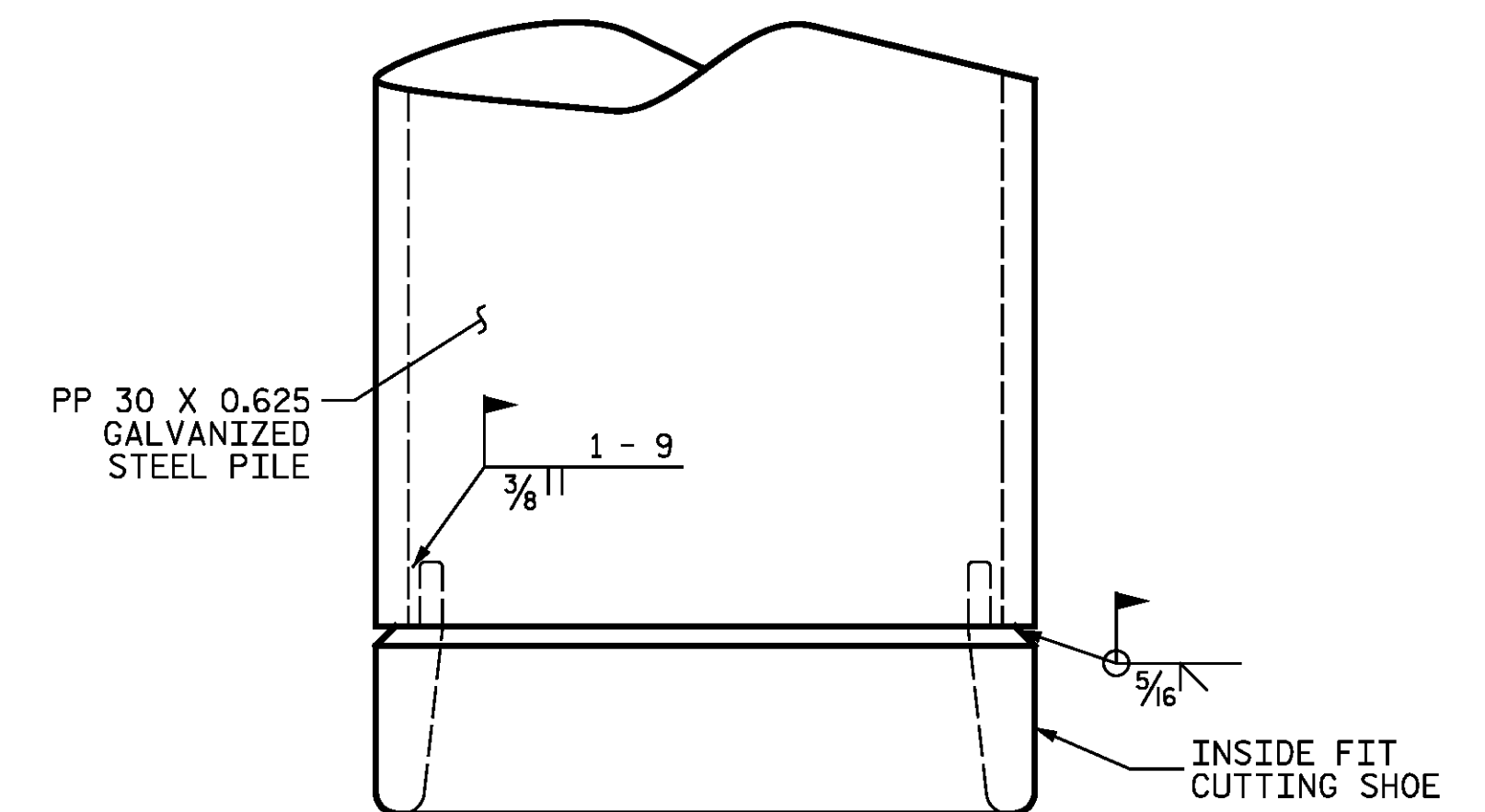
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.



PIPE PILE SPLICE DETAIL

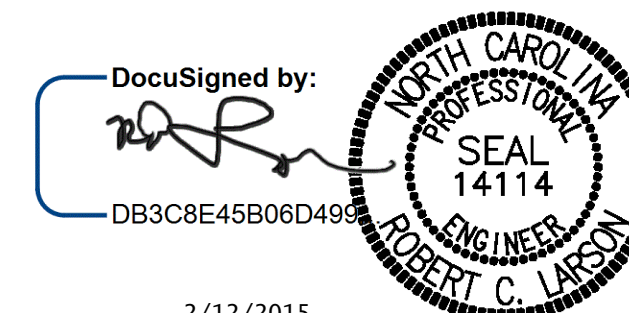


OPEN END CUTTING SHOE DETAIL

PROJECT NO. R-2514D

JONES COUNTY

STATION: 373+02.50 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**STANDARD
30" STEEL PIPE PILE**

STD. NO. SPP5 LEFT LANE STR-#5

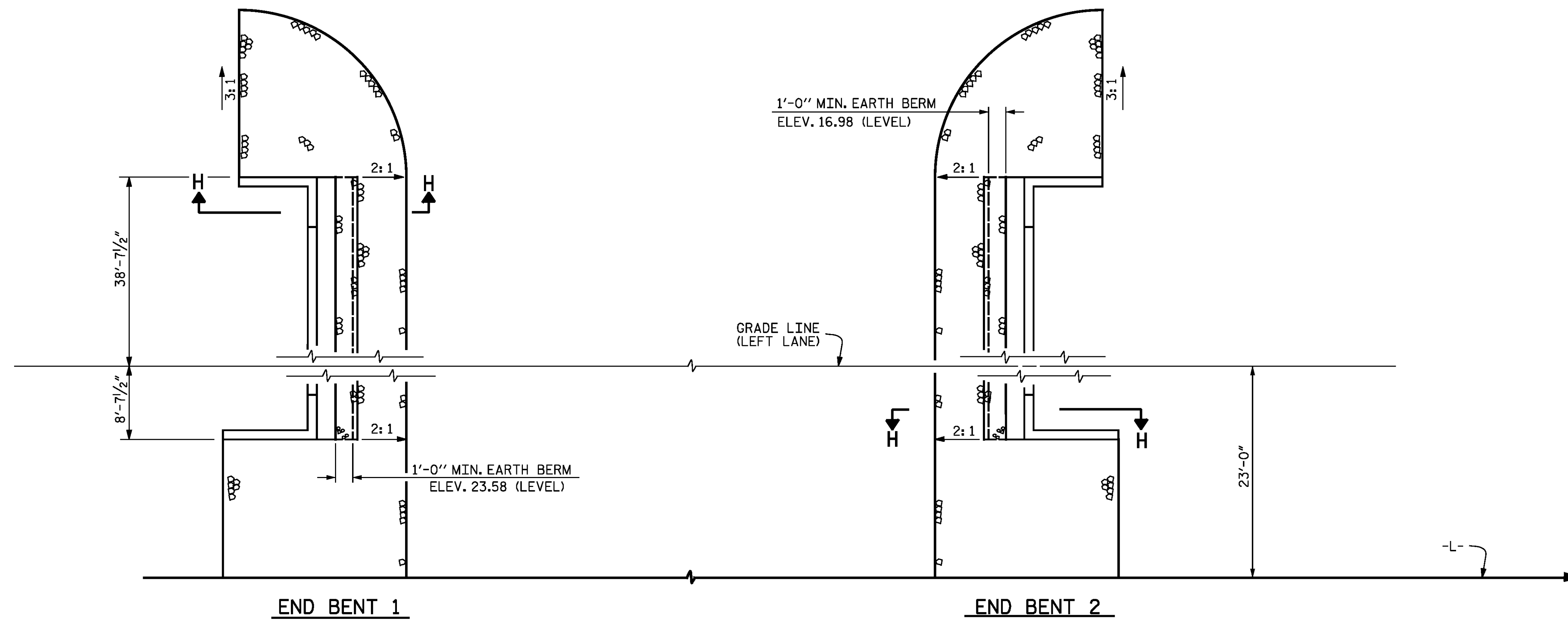
DESIGN ENGINEER OF RECORD:	DATE 2/12/2015
ASSEMBLED BY : R. C. LARSON	DATE : 03/17/14
CHECKED BY : Z. SU	DATE : 04/21/14
DRAWN BY : TLA 8/05	ADDED 10/1/05
CHECKED BY : GM 9/05	REV. 5/1/06R MAA/KMM
	REV. 10/1/11 MAA/GM

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

TOTAL SHEETS: S05-34

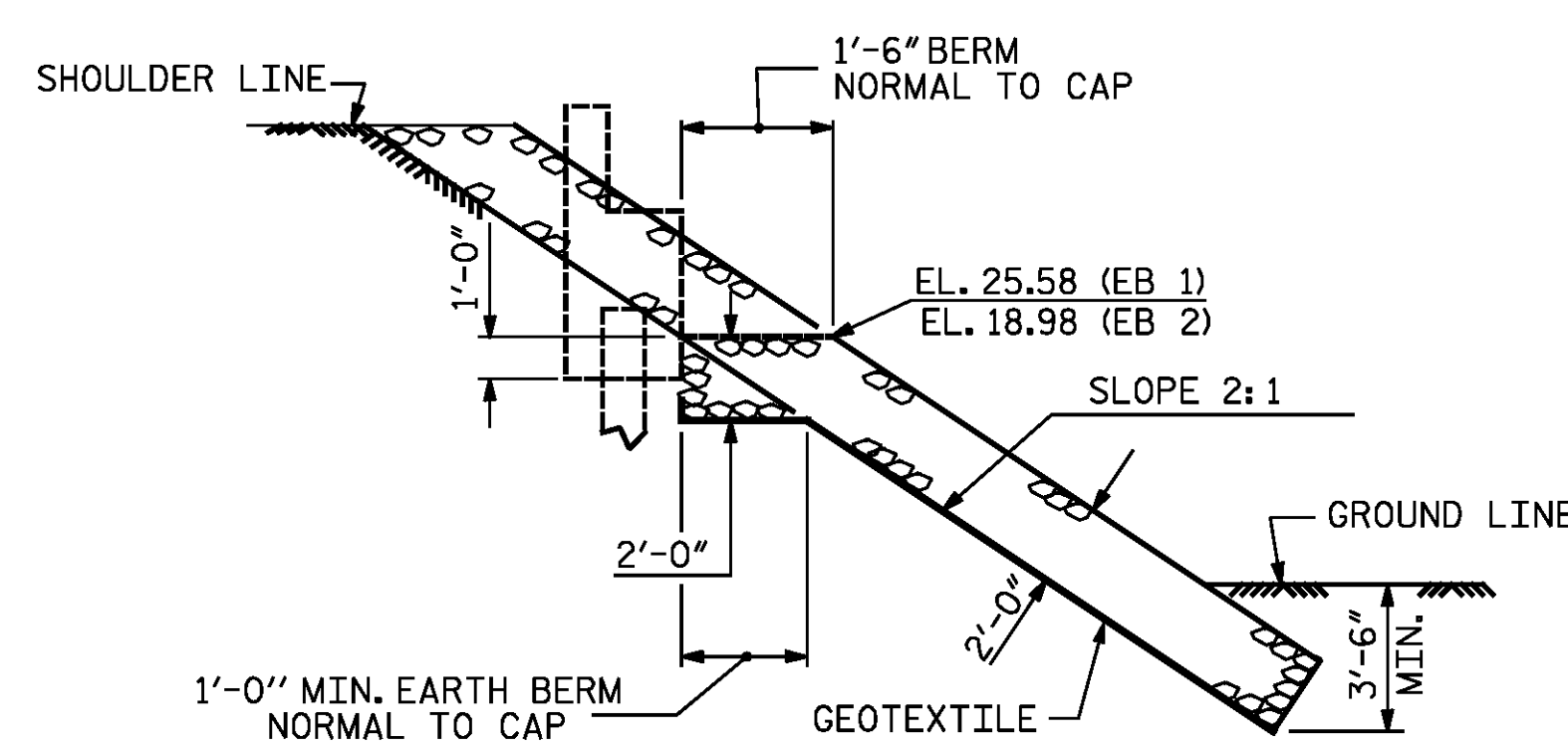
KCI Associates
of North Carolina, P.A.
STATE SOIL LANDMARK CENTER 1400 SIX FORKS RD. RALEIGH, N.C. 27609-5300 (919) 783-2544
DWG. REF. NO. 31 OF 34

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

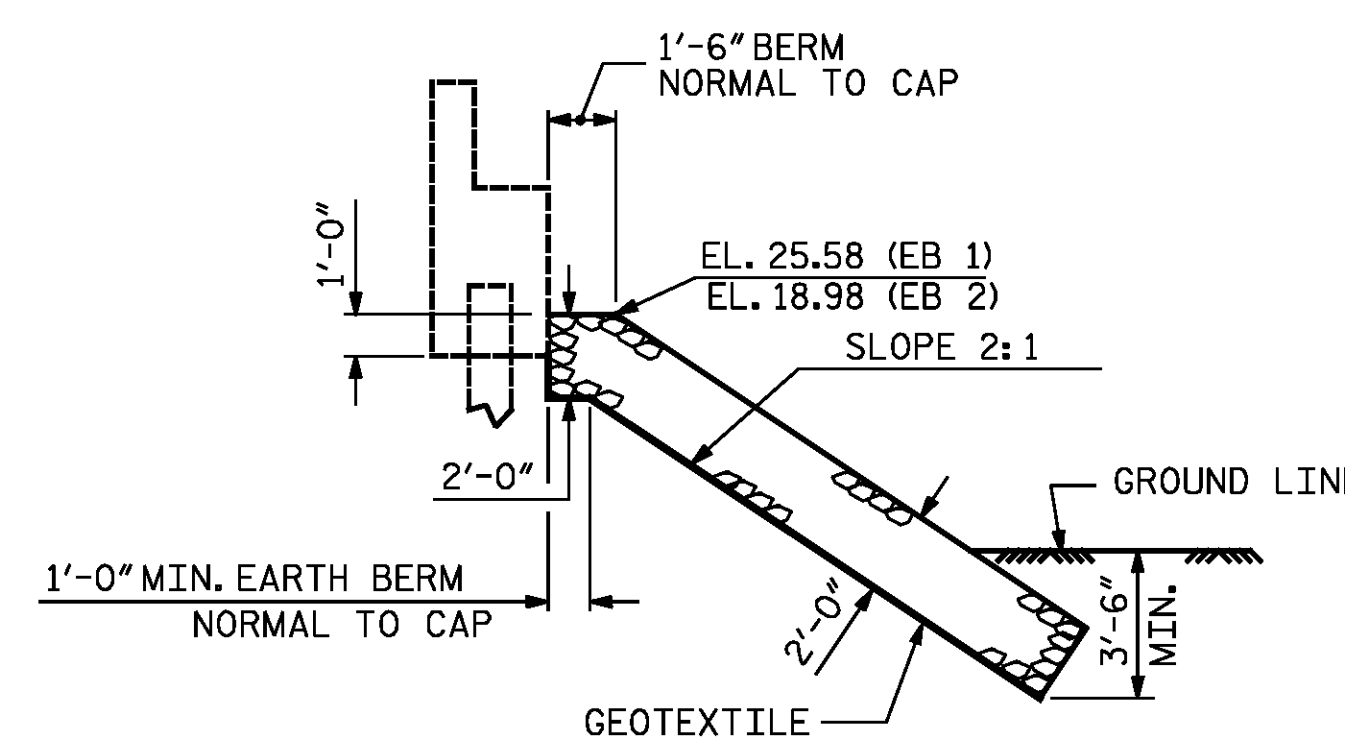


PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 373+02.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	305	340
END BENT 2	630	700



SECTION H-H



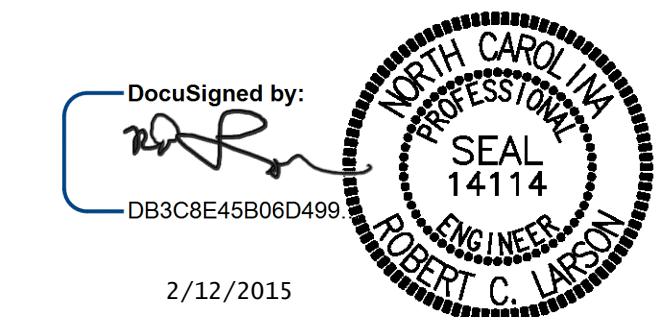
**SECTION
BERM RIP RAPPED**

PROJECT NO. R-2514D
JONES COUNTY
STATION: 373+02.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**RIP RAP
DETAILS**

STD. NO. RR1 LEFT LANE STR-#5



DocuSigned by:
DB3C8E45B06D499...

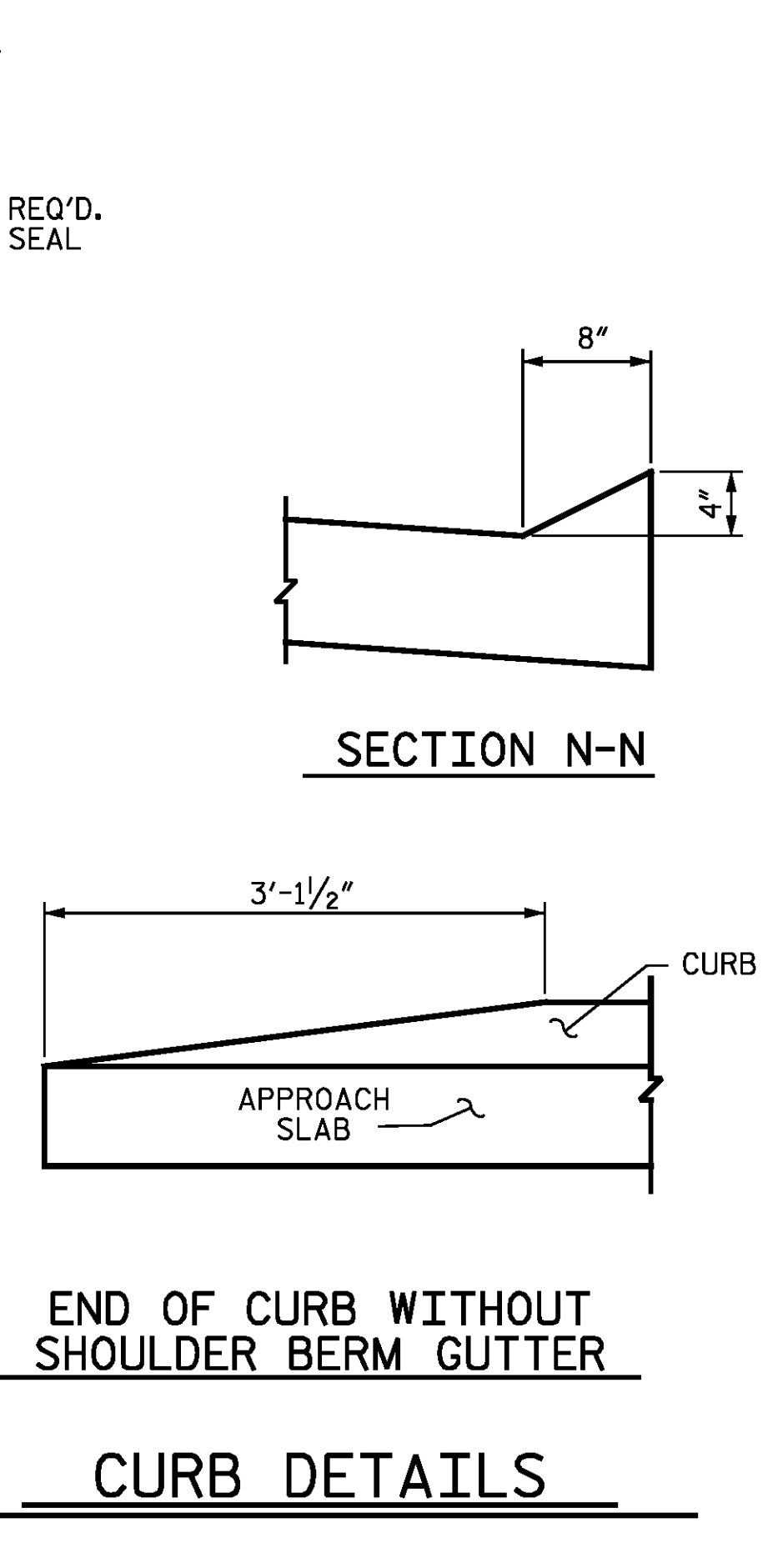
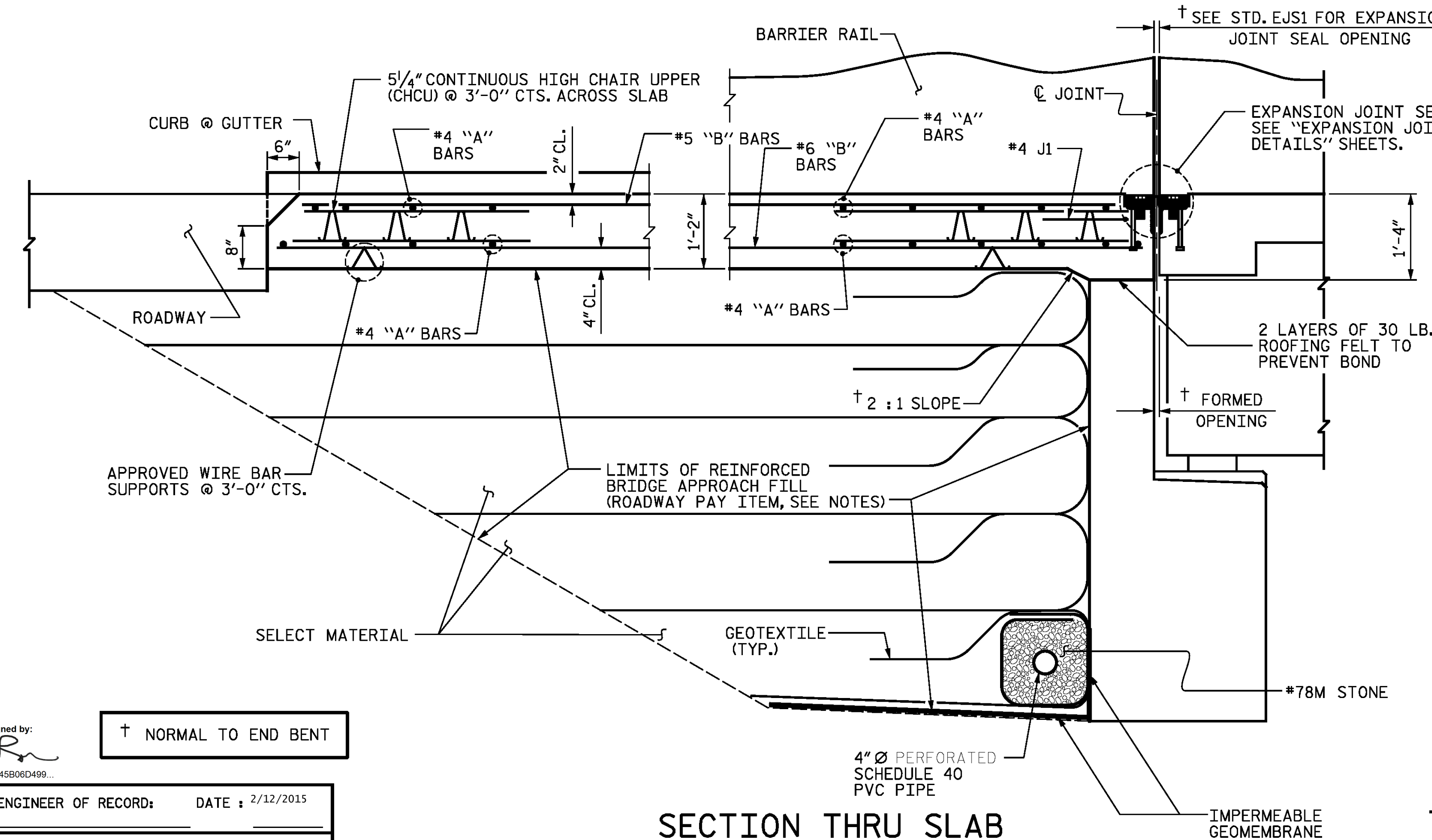
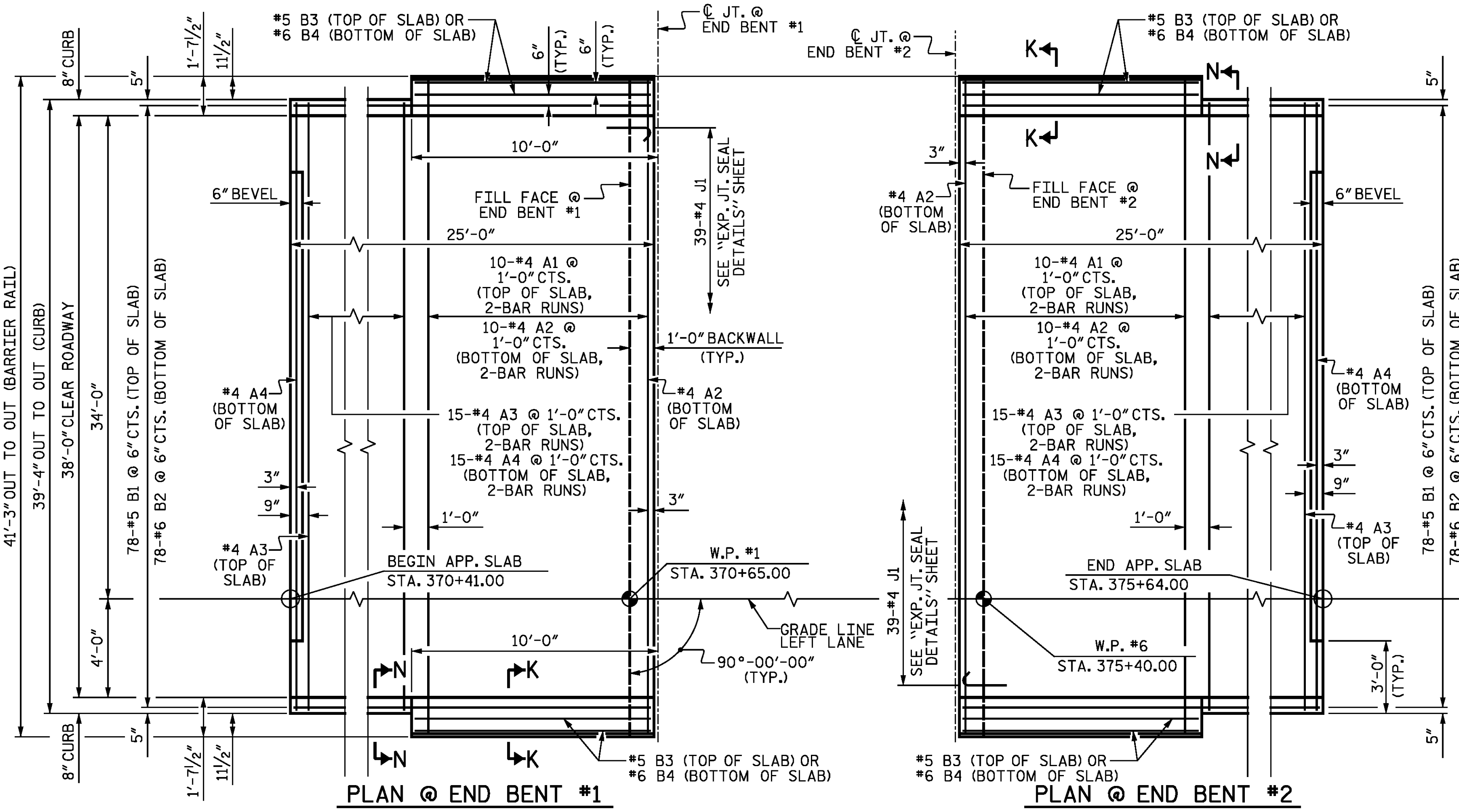
DESIGN ENGINEER OF RECORD: DATE : 2/12/2015

DRAWN BY : E. C. DECOLA DATE : 03/17/14
CHECKED BY : R. C. LARSON DATE : 03/27/14

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

KCI Associates of North Carolina, P.A.		REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-32
1			3			TOTAL SHEETS
2			4			S05-34

DWG. REF. NO. 32 OF 34



NOTES

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

FOR REINFORCED BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, AND SELECT MATERIAL, SEE ROADWAY PLANS.

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

FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL

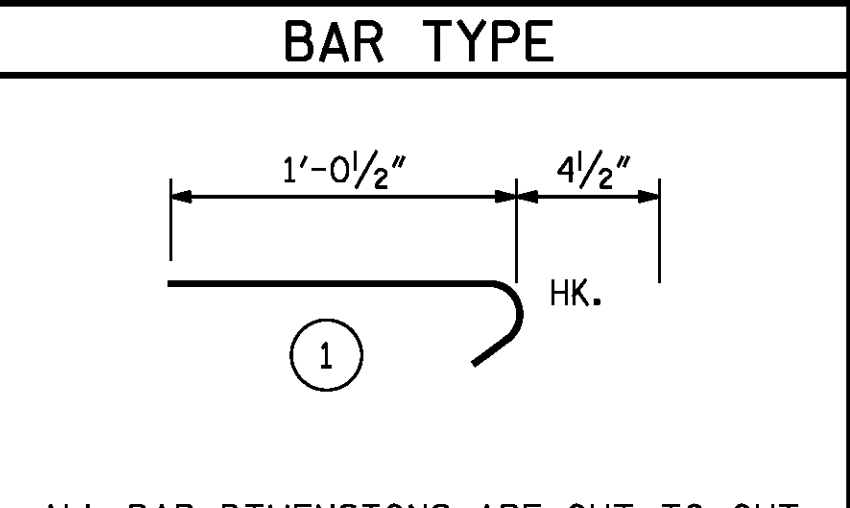
FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	20	#4	STR	21'-6"	287
A2	20	#4	STR	21'-4"	285
*A3	30	#4	STR	20'-6"	411
A4	32	#4	STR	20'-5"	436
*B1	78	#5	STR	23'-10"	1939
B2	78	#6	STR	24'-8"	2890
*B3	4	#5	STR	9'-8"	40
B4	4	#6	STR	9'-8"	58
*J1	39	#4	1	1'-5"	37

REINFORCING STEEL ** LBS. 3669

EPOXY COATED REINFORCING STEEL ** LBS. 2714

CLASS AA CONCRETE ** C. Y. 43.4



** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED. SEE STD. NO. CBRI.

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 BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF J1 BARS SPECIFIED, ADDITIONAL J1 BARS WILL NOT BE REQUIRED.

SPLICE LENGTHS

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

PROJECT NO. R-2514D

JONES COUNTY

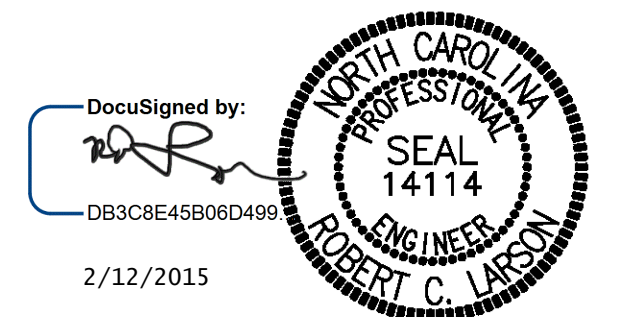
STATION: 373+02.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT



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 2/12/2015

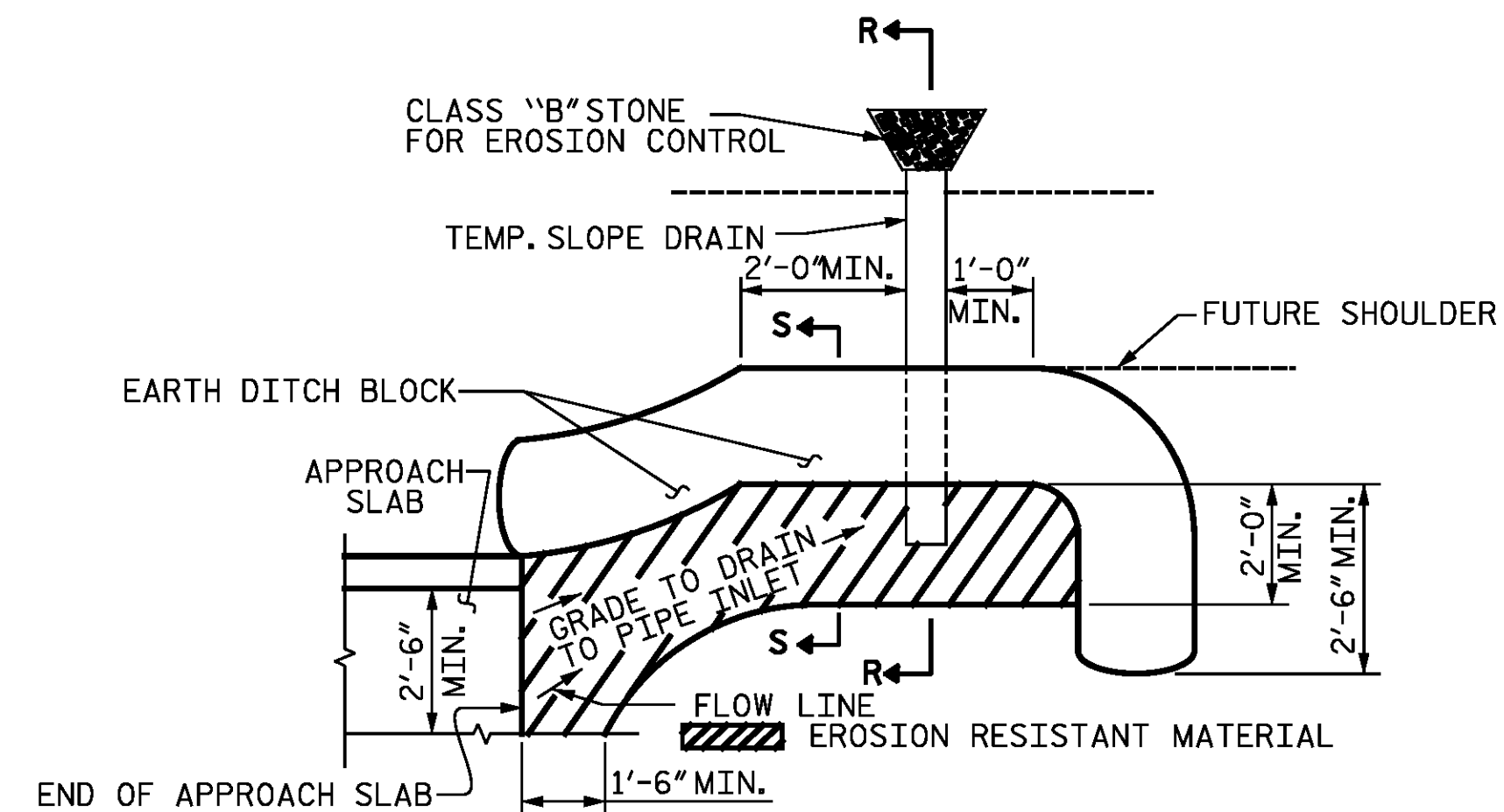
KCI Associates of North Carolina, P.A.
 DWG. REF. NO. 33 OF 34

DESIGN ENGINEER OF RECORD: DATE: 2/12/2015

DRAWN BY: Z. SU DATE: 12/09/13

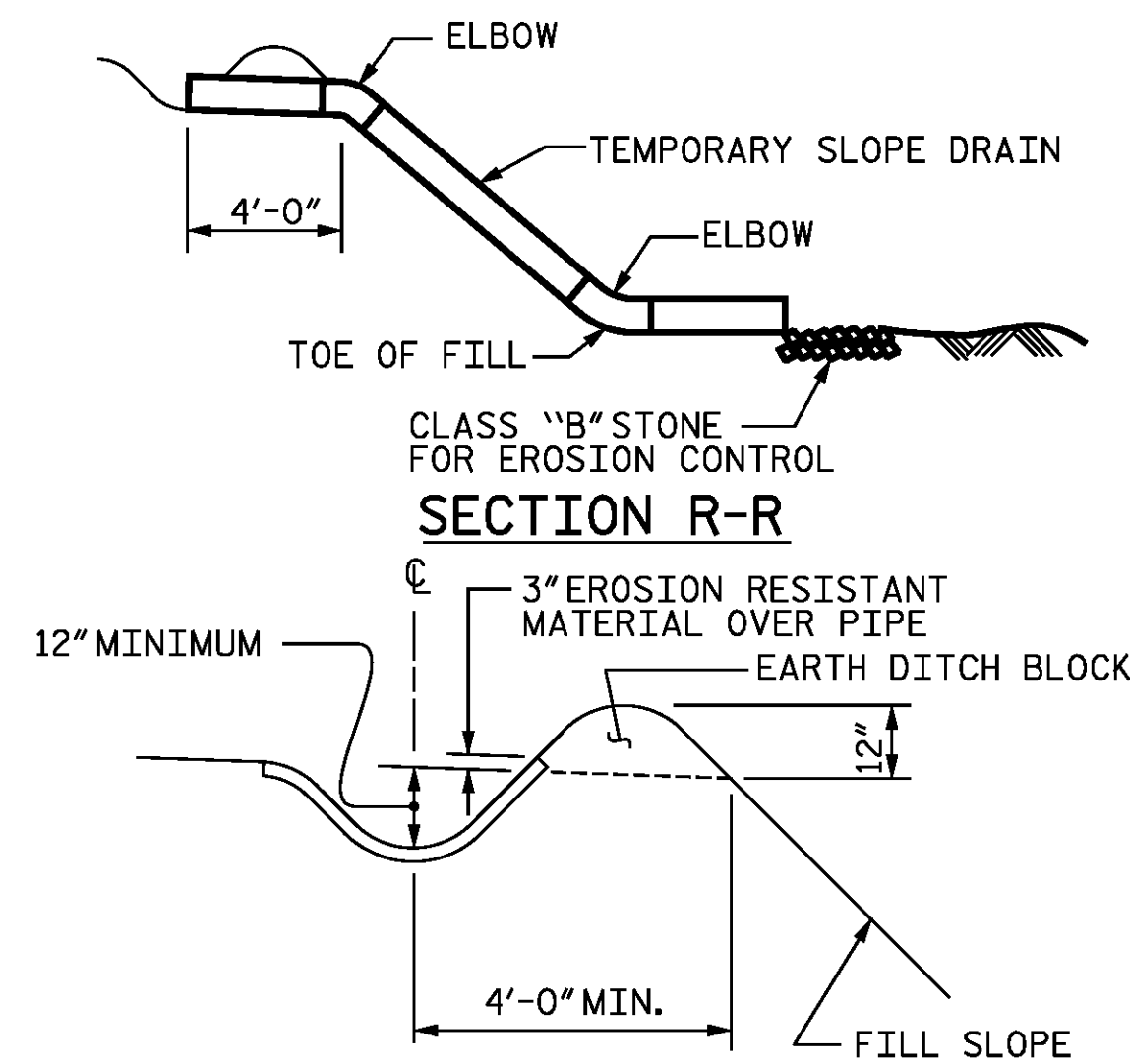
CHECKED BY: R.C. LARSON DATE: 03/03/14

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S05-33
2			4			TOTAL SHEETS S05-34



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

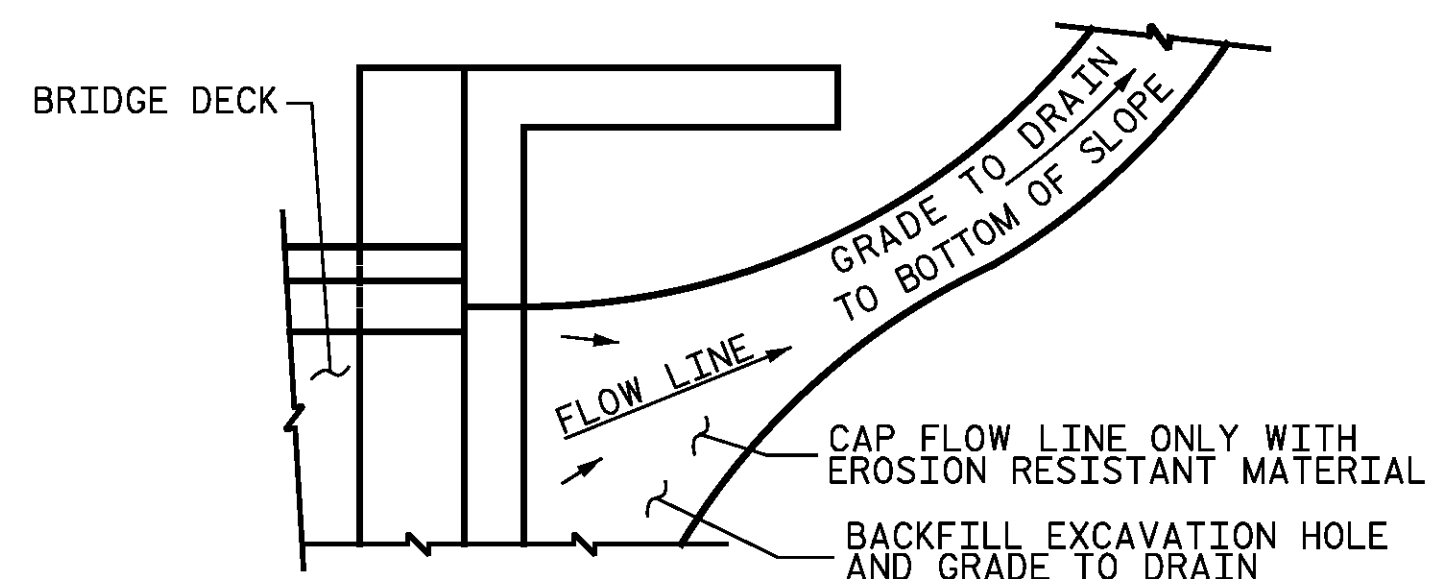
PLAN VIEW



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

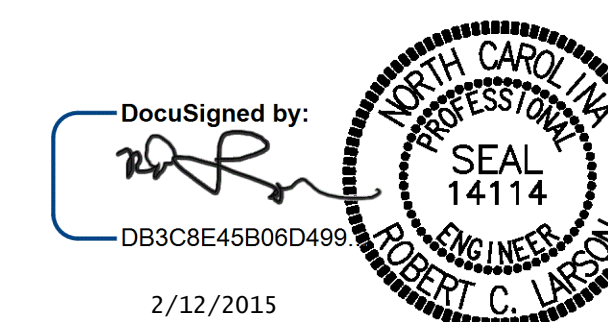
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 BRIDGE APPROACH
 SLAB DETAILS

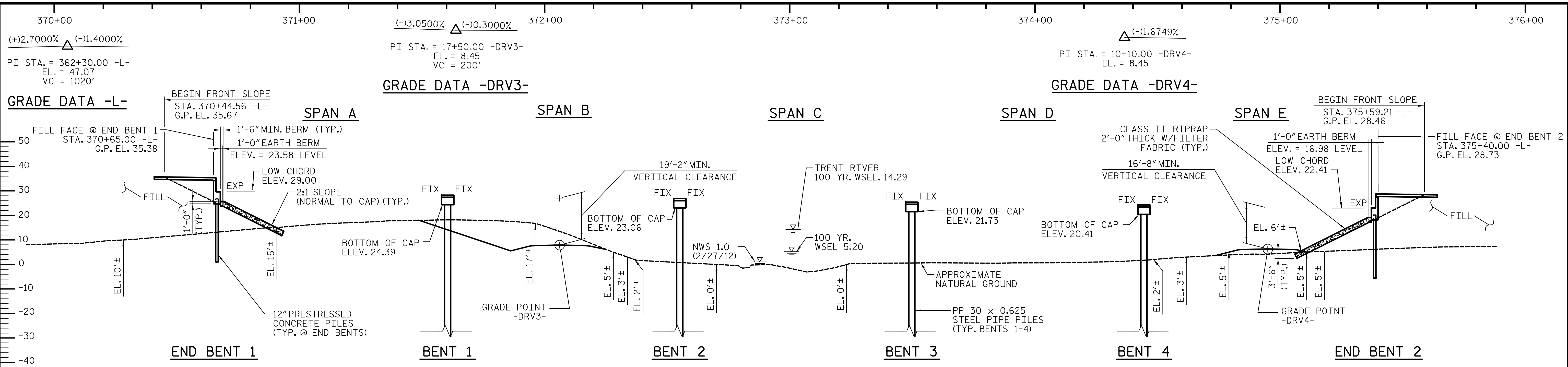
STD. NO. BAS4 LEFT LANE STR-#5



DESIGN ENGINEER OF RECORD: DATE : 2/12/2015
 DRAWN BY : Z. SU DATE : 12/10/13
 CHECKED BY : R.C. LARSON DATE : 03/04/14

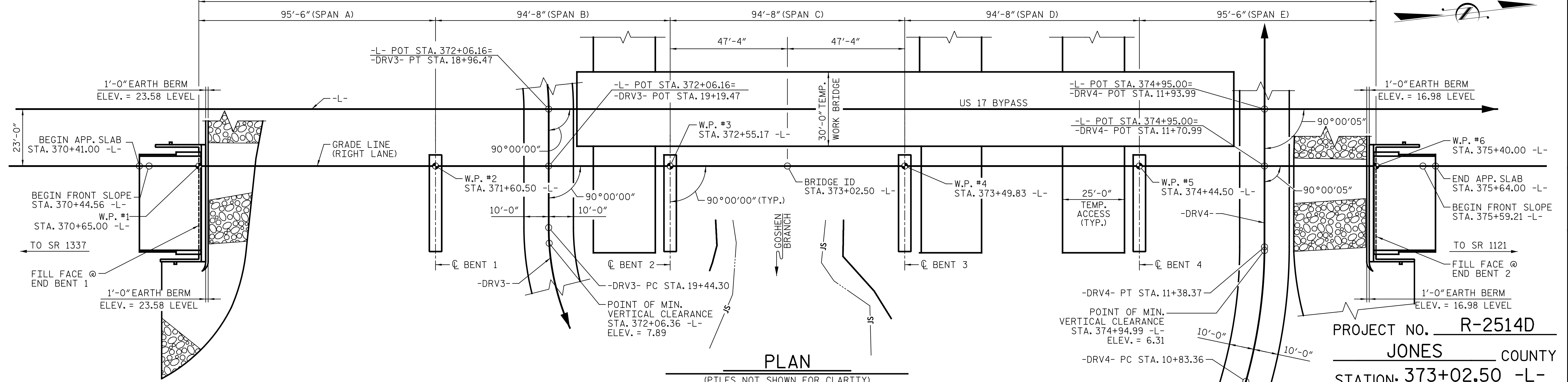
REVISIONS		SHEET NO.	
NO.	DATE	NO.	DATE
1		3	
2		4	

TOTAL SHEETS: 34 OF 34



SECTION ALONG GRADE LINE (RIGHT LANE)

TOTAL LENGTH OF BRIDGE = 475'-0" (FILL FACE TO FILL FACE)



PLAN

(PILES NOT SHOWN FOR CLARITY)

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 480 CFS
DESIGN FREQUENCY	= 50 YR.
DESIGN HW ELEV.	= 4.4 FT.
DRAINAGE AREA	= 2.1 SQ. MI.
BASE DISCHARGE	= 600 CFS
BASE FREQUENCY	= 100 YR.
BASE HW ELEV.	= 5.20 FT
OVERTOPPING DISCHARGE	= N/A
OVERTOPPING FREQUENCY	= 500+ YR.
OVERTOPPING ELEV.	= 15.8 FT.*

* OVERTOPS DRAINAGE DIVIDE @ STA. 371+50 -L- (LT.)

HORIZONTAL CURVE DATA -DRV3-

PI STATION	18+63.66	20+23.73
Δ	39° 11' 47.4" (RT)	76° 55' 03.6" (LT)
D	57° 17' 44.8"	57° 17' 44.8"
L	68.41'	134.25'
T	35.60'	79.43'
R	100.00'	100.00'

HORIZONTAL CURVE DATA -DRV4-

PI STATION	11+11.04
Δ	15° 45' 34.5" (LT)
D	28° 38' 52.4"
L	55.01'
T	27.68'
R	200.00'

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

DESIGN ENGINEER OF RECORD: *[Signature]* DATE: 2/12/2015
 DRAWN BY: D.R. CLAYTON DATE: 7/29/13
 CHECKED BY: R.C. LARSON DATE: 04/03/14

PROJECT NO. **R-2514D**
JONES COUNTY
 STATION: **373+02.50 -L-**
 SHEET 1 OF 4 BRIDGE NO. 100

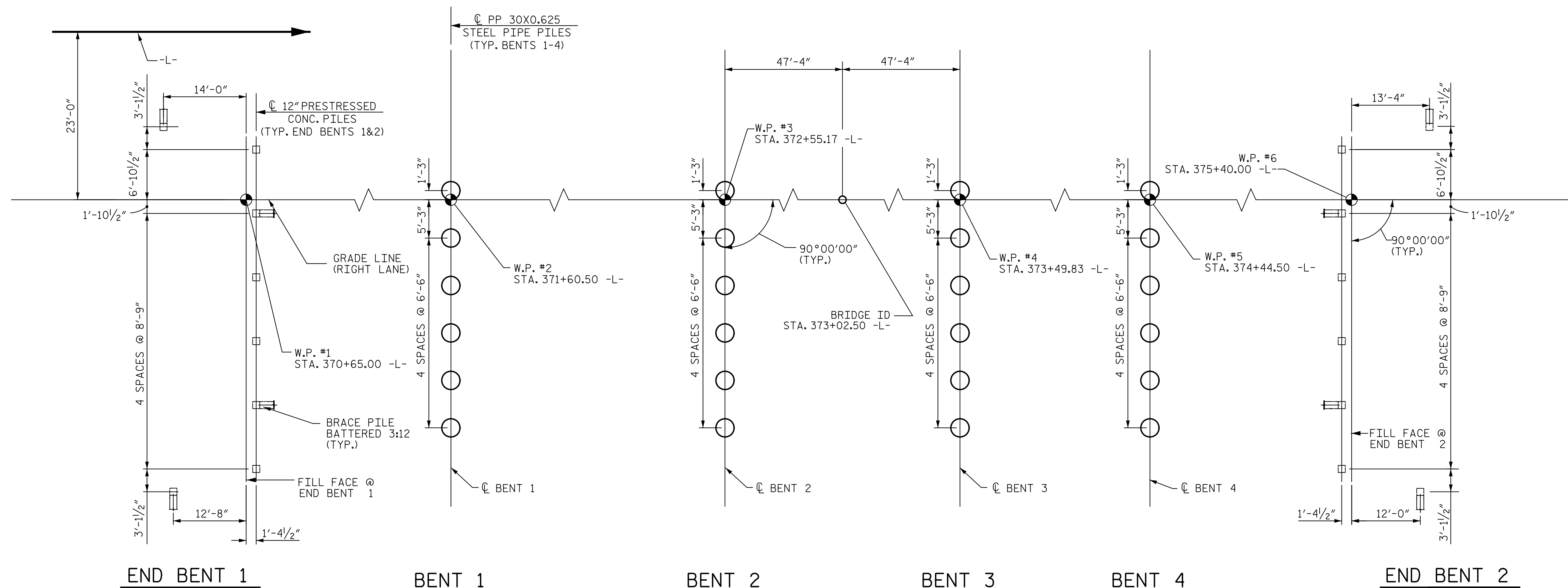
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER GOSHEN BRANCH
 BETWEEN SR 1337 AND SR 1121
 RIGHT LANE STR-#6

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

SHEET NO. S06-1
 TOTAL SHEETS S06-34

DocuSigned by:
[Signature]
 DB3C8E45B06D499...
 2/12/2015

KCI Associates
 of North Carolina, P.A.
 ENGINEERS • PLANNERS • ECOCLOGISTS LICENSE NUMBER: C-0764
 SUITE 220, LANDMARK CENTER #400 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244
 DWG. REF. NO. 1 OF 34



FOUNDATION LAYOUT PLAN

FOUNDATION 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 1 AND END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 160 TONS PER PILE.

PILES AT BENT 1 THROUGH BENT 4 ARE DESIGNED FOR A FACTORED RESISTANCE OF 225 TONS PER PILE.

DRIVE PILES AT BENT 1 THROUGH BENT 4 TO A REQUIRED DRIVING RESISTANCE OF 305 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAW OR SCOUR.

INSTALL PILES AT BENT 1, BENT 2, BENT 3 AND BENT 4 TO A TIP ELEVATION NO HIGHER THAN -30 FT, -45 FT, -45 FT AND -35 FT, RESPECTIVELY.

STEEL PIPE PILE CUTTING SHOES ARE REQUIRED FOR STEEL PIPE PILES AT BENT 1 THROUGH BENT 4. USE "INSIDE FIT" PIPE PILE CUTTING SHOES. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATIONS FOR BENT 2, BENT 3 AND BENT 4 ARE ELEVATION -11 FT, -11 FT AND -3 FT, RESPECTIVELY. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 82,000 FT-LBS TO 152,500 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT 1 THROUGH BENT 4. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

TESTING THE FIRST 12" PRESTRESSED CONCRETE PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENT 1 OR END BENT 2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

TESTING THE FIRST 30" DIA. PRODUCTION STEEL PIPE PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

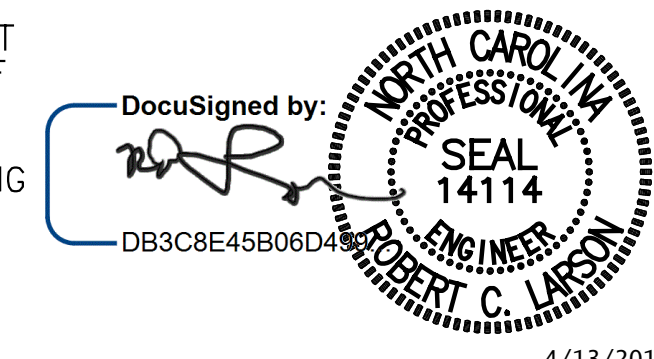
IF NECESSARY, PREDRILL PILE LOCATIONS AT BENT 1 THROUGH BENT 4 TO NO LOWER THAN ELEVATION -30 FT, -45 FT, -45 FT AND -35 FT, RESPECTIVELY, WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 30". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

CONTRACTOR MAY PREDRILL THROUGH THE CENTER OF THE 30" DIA. STEEL PIPE PILES WITH CUTTING SHOES TO ELEVATIONS AS NOTED IN THE PLANS AT BENT 1 THROUGH BENT 4.

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER GOSHEN BRANCH
 BETWEEN SR 1337 AND SR 1121
 RIGHT LANE

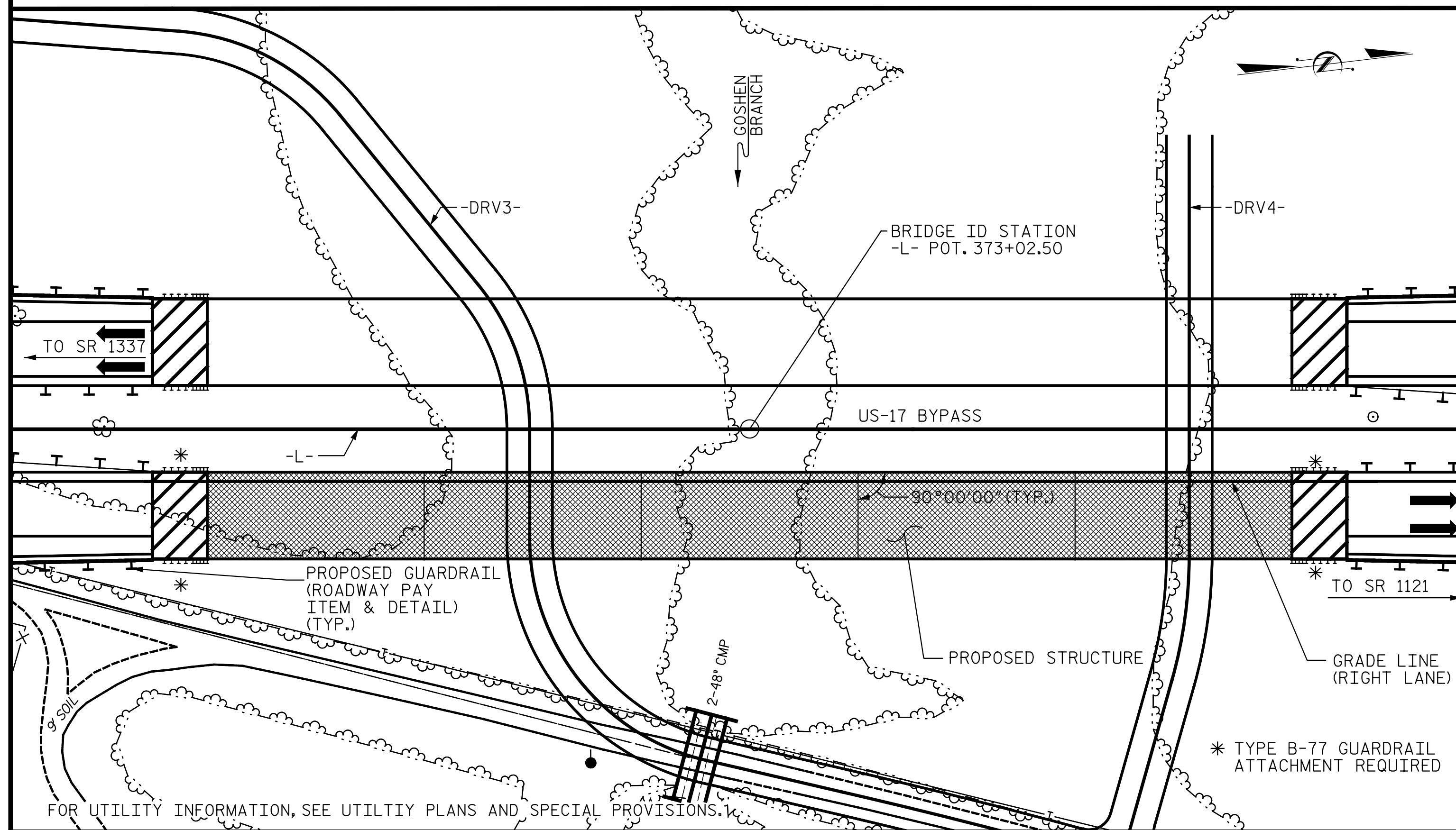


DESIGN ENGINEER OF RECORD:	DATE :	4/13/2015
DRAWN BY :	DATE :	03/17/14
CHECKED BY :	DATE :	4/01/14

KCI Associates
 of North Carolina, P.A.
 ENGINEERS • PLANNERS • ECOLOGISTS LICENSE NUMBER: C-0714
 SUITE 220, LANDMARK CENTER # 400 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244
 DWG. REF. NO. 2 OF 34

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S06-2
1			3			TOTAL SHEETS
2			4			S06-34

BENCHMARK: BM18 RR SPIKE IN GUY POLE -L- STATION 373+45.00 127' RIGHT ELEVATION 9.42' NAVD 88



LOCATION SKETCH

NOTES:

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- ALL METALIZED SURFACES SHALL RECEIVE A SEAL COATING AS SPECIFIED IN THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALIZATION).
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."
- THE SCOUR CRITICAL ELEVATION FOR BENT NO. 2 IS ELEVATION -7.7 FT. BENT NO. 3 IS ELEVATION -7.7 FT. BENT NO. 4 IS ELEVATION -0.1 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- FOR INTERIOR BENTS 1-4 ONLY PARTIAL GALVANIZING OF THE PILES IS REQUIRED. SEE INTERIOR BENT SHEETS FOR REQUIRED GALVANIZED LENGTHS. PAYMENT FOR PARTIALLY GALVANIZED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR GALVANIZED STEEL PILES.
- FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.
- FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.
- FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISIONS. PAYMENT FOR THIS ACCESS IS INCLUDED IN THE LEFT LANE PAY ITEMS.

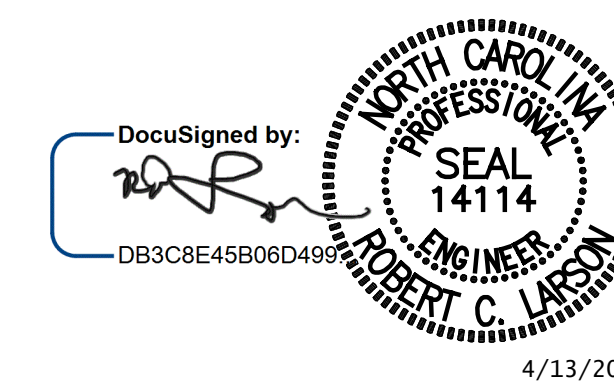
TOTAL BILL OF MATERIAL

	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS	12" PRESTRESSED CONCRETE PILES	PP 30X0.625 GALVANIZED STEEL PILES	STEEL PILE POINTS	PREDRILLING FOR PILES	PILE REDRIVES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS
	EA	SQ.FT.	SQ.FT.	CU.YDS.	LUMP SUM	LBS.	NO. LIN.FT.	NO. LIN.FT.	NO. LIN.FT.	EA	LIN.FT.	EA.	LIN.FT.	TON	SY	LUMP SUM	LUMP SUM
SUPERSTRUCTURE		19505	18178		LUMP SUM		20 1876.0						986.0			LUMP SUM	LUMP SUM
END BENT 1				46.7		5516		8 280				3		630	700		
BENT 1				23.1		3696			6 510	6		3					
BENT 2				23.1		3696			6 510	6		3					
BENT 3				23.1		3696			6 510	6		3					
BENT 4				23.1		3696			6 510	6		3					
END BENT 2				45.2		5421		8 480				3		540	600		
TOTAL	3	19505	18178	184.3	LUMP SUM	25,721	20 1876.0	16 760	24 2040	24	1010	18	986.0	1170	1300	LUMP SUM	LUMP SUM

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON US 17 BYPASS
 OVER GOSHEN BRANCH
 BETWEEN SR 1337 AND SR 1121
 RIGHT LANE STR-#6



DocuSigned by:

 DB3C8E45B06D499

DESIGN ENGINEER OF RECORD: DATE: 4/13/2015

DRAWN BY: R.J. FLORY DATE: 03/14/14
 CHECKED BY: R.C. LARSON DATE: 04/14/14

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

TOTAL SHEETS: 34
 SHEET NO.: S06-3

KCI Associates
 of North Carolina, P.A.
 SUITE 220, LANDMARK CENTER #402 SIX FORKS RD. RALEIGH, N.C. 27609-5200 (919) 783-9244
 DWG. REF. NO. 3 OF 34

LOAD FACTORS:

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

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (FT)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.02	--	1.75	0.917	1.68	1	E	36.8	1.066	1.20	1	I	87.6	0.80	0.858	1.02	1	I	46.2		
	HL-93 (OPERATING)	N/A		1.53	--	1.35	0.917	2.18	1	E	36.8	1.066	1.53	1	I	87.6	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.41	50.8	1.75	0.858	2.31	1	E	36.8	1.066	1.49	1	I	87.6	0.80	0.858	1.41	1	I	46.2		
	HS-20 (OPERATING)	36.000		2.20	79.2	1.35	0.858	2.99	1	E	36.8	1.066	2.20	1	I	55.5	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.26	44.0	1.40	0.917	6.69	1	E	36.8	1.066	5.30	1	I	55.5	0.80	0.858	3.26	1	I	46.2	
		SNGARBS2	20.000		2.38	47.6	1.40	0.917	4.88	1	E	36.8	1.066	3.70	1	I	55.5	0.80	0.858	2.38	1	I	46.2	
		SNAGRIS2	22.000		2.24	49.2	1.40	0.917	4.58	1	E	36.8	1.066	3.41	1	I	55.5	0.80	0.858	2.24	1	I	46.2	
		SNCOTTS3	27.250		1.62	44.1	1.40	0.917	3.34	1	E	36.8	1.066	2.57	1	I	55.5	0.80	0.858	1.62	1	I	46.2	
		SNAGGRS4	34.925		1.34	46.7	1.40	0.917	2.76	1	E	36.8	1.066	2.09	1	I	55.5	0.80	0.858	1.34	1	I	46.2	
		SNS5A	35.550		1.32	46.9	1.40	0.917	2.71	1	E	36.8	1.066	1.85	1	I	87.6	0.80	0.858	1.32	1	I	46.2	
		SNS6A	39.950		1.21	48.3	1.40	0.917	2.47	1	E	36.8	1.066	1.65	1	I	87.6	0.80	0.858	1.21	1	I	46.2	
		SNS7B	42.000		1.15	48.3	1.40	0.917	2.36	1	E	36.8	1.066	1.60	1	I	87.6	0.80	0.858	1.15	1	I	46.2	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.47	48.5	1.40	0.917	3.03	1	E	36.8	1.066	1.99	1	I	87.6	0.80	0.858	1.47	1	I	46.2	
		TNT4A	33.075		1.47	48.6	1.40	0.917	3.00	1	E	36.8	1.066	1.99	1	I	87.6	0.80	0.858	1.47	1	I	46.2	
		TNT6A	41.600		1.20	49.9	1.40	0.917	2.46	1	E	36.8	1.066	1.67	1	I	87.6	0.80	0.858	1.20	1	I	46.2	
		TNT7A	42.000		1.20	50.4	1.40	0.917	2.46	1	E	36.8	1.066	1.65	1	I	87.6	0.80	0.858	1.20	1	I	46.2	
		TNT7B	42.000		1.22	51.2	1.40	0.917	2.50	1	E	36.8	1.066	1.57	1	I	87.6	0.80	0.858	1.22	1	I	46.2	
		TNAGRIT4	43.000		1.18	50.7	1.40	0.917	2.41	1	E	36.8	1.066	1.54	1	I	87.6	0.80	0.858	1.18	1	I	46.2	
TNAGT5A	45.000		1.12	50.4	1.40	0.917	2.30	1	E	36.8	1.066	1.50	1	I	87.6	0.80	0.858	1.12	1	I	46.2			
TNAGT5B	45.000		③	1.10	49.5	1.40	0.917	2.26	1	E	36.8	1.066	1.47	1	I	87.6	0.80	0.858	1.10	1	I	46.2		

NOTES:

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

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

⊛ CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

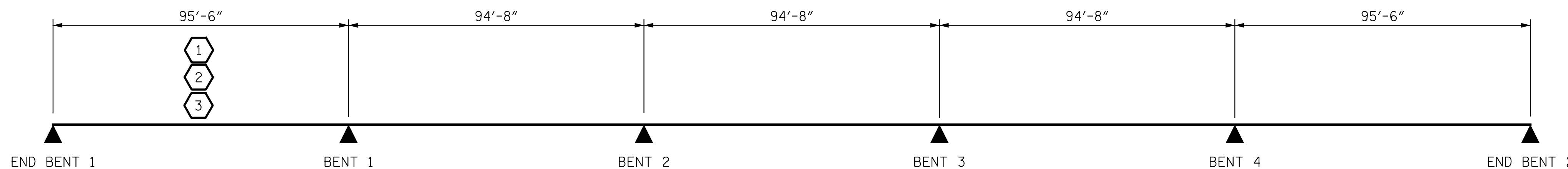
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
E - EXTERIOR GIRDER



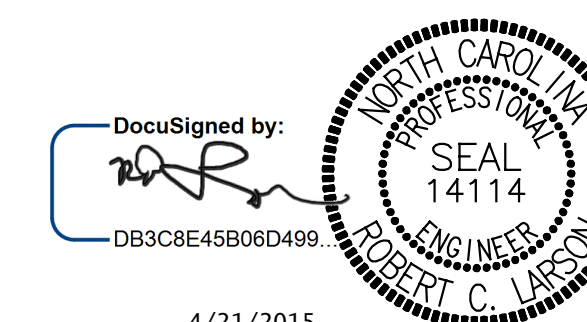
LRFR SUMMARY

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 4 OF 4

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

STD. NO. LRFR1 RIGHT LANE STR-#6



4/21/2015

DocuSigned by:

 DB3C8E45B06D499

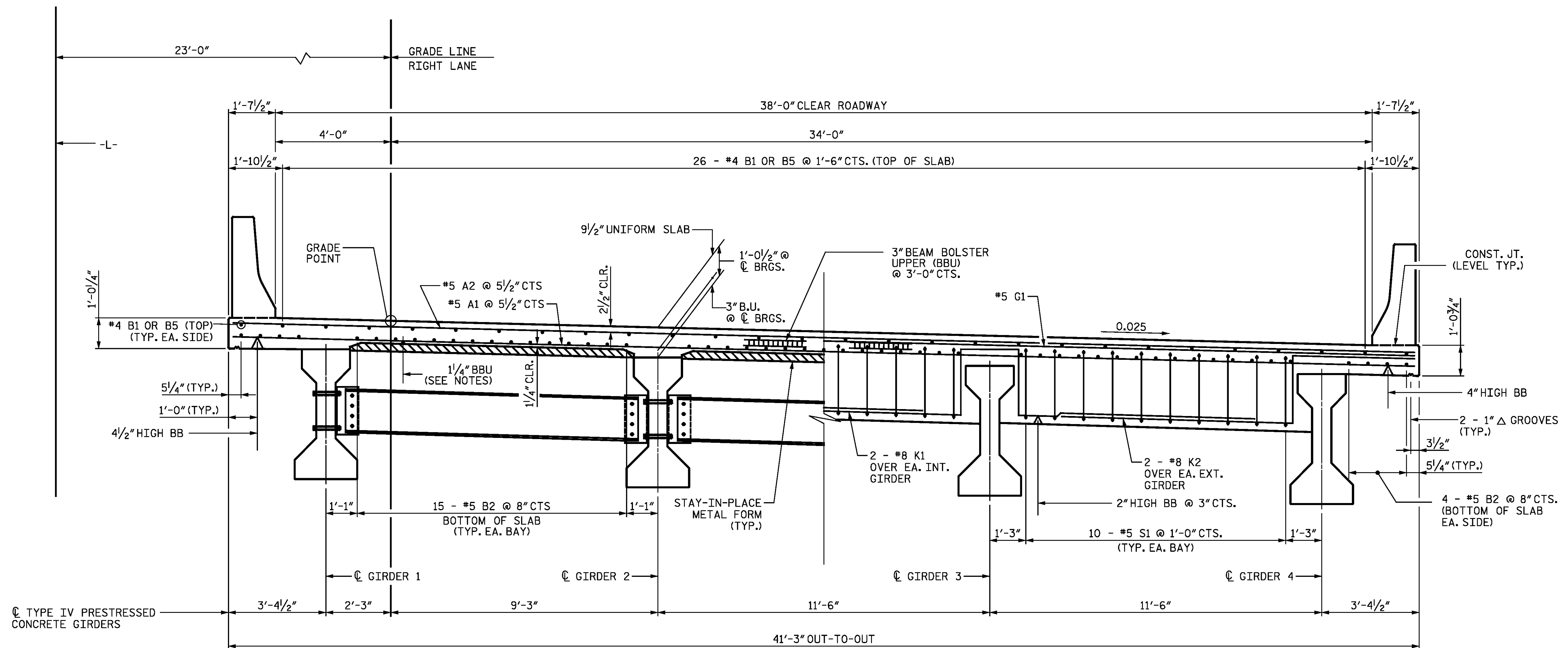
KCI Associates
 of North Carolina, P.A.
 ENGINEERS • PLANNERS • ECOLOGISTS LICENSE NUMBER: C-0764
 SUITE 220, LANDMARK CENTER # 400 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244
 DWG. REF. NO. 4 OF 34

REVISIONS						SHEET NO. S06-4
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS S06-34
2			4			

DESIGN ENGINEER OF RECORD: DATE: 4/21/2015

DRAWN BY: E. C. DECOLA DATE: 01/21/14
 CHECKED BY: R. C. LARSON DATE: 04/10/14

DRAWN BY: MAA 1/08 REV. 11/12/08RR MAA/GM
 CHECKED BY: GM/DI 2/08 REV. 10/11/11 MAA/GM



TYPICAL HALF SECTION AT INTERMEDIATE DIAPHRAGM

TYPICAL HALF SECTION AT END BENT DIAPHRAGM

TYPICAL SECTION

NOTES

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

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

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

FOR ADDITIONAL REINFORCING EMBEDDED IN SLAB SEE STD NO. CBR1.

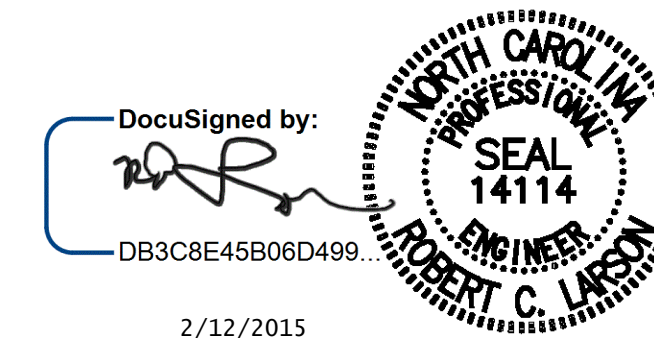
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTION

RIGHT LANE STR-#6



DocuSigned by:
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2/12/2015

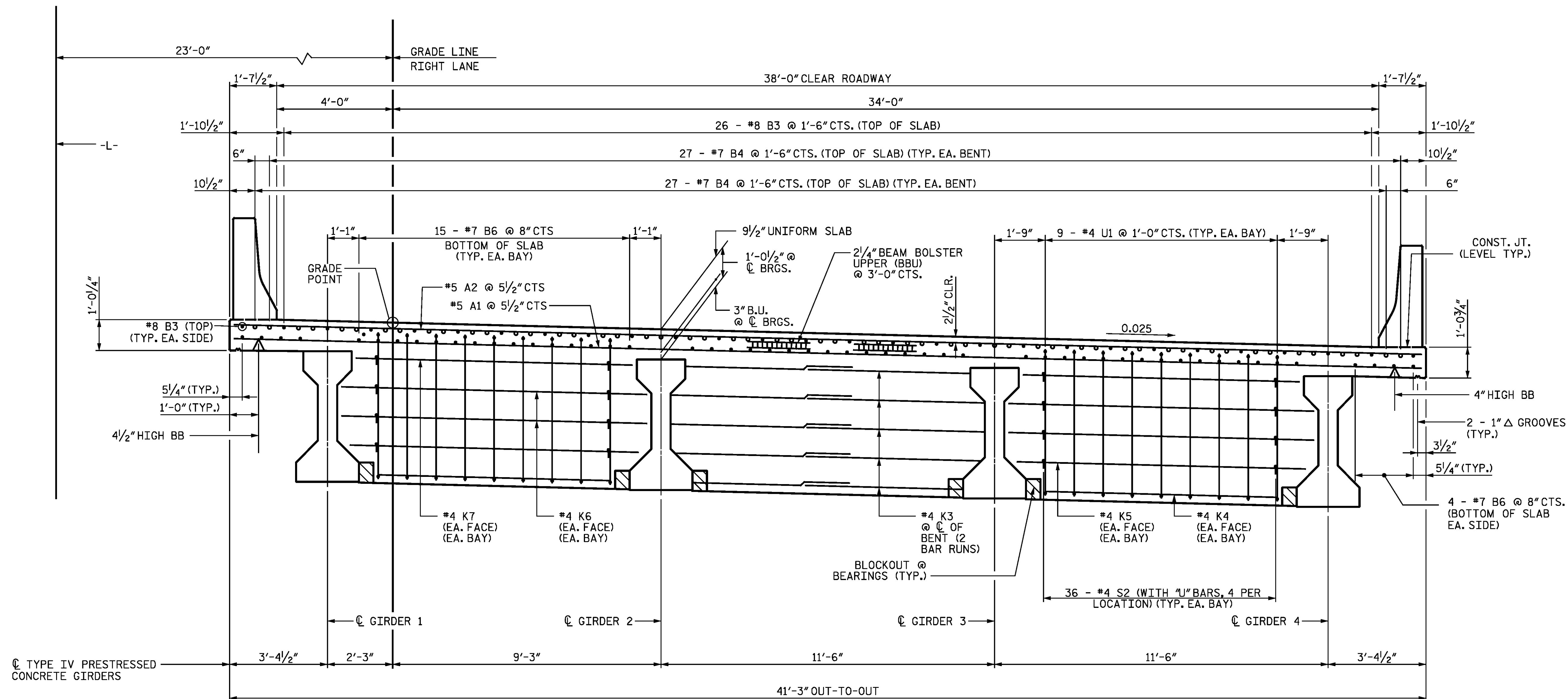
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DESIGN ENGINEER OF RECORD: DATE : 2/12/2015

DRAWN BY : Z. SU DATE : 02/13/14
 CHECKED BY : R. C. LARSON DATE : 03/14/14

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 5 OF 34

REVISIONS						SHEET NO. S06-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS S06-34
2			4			



TYPICAL SECTION AT BENT DIAPHRAGM

- INDICATES CONTINUOUS REINFORCING
- INDICATES ADDITIONAL REINFORCING AT BENT

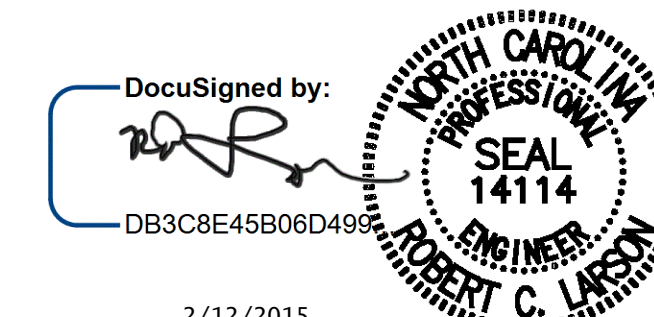
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 TYPICAL SECTION**

RIGHT LANE STR-#6



DocuSigned by:

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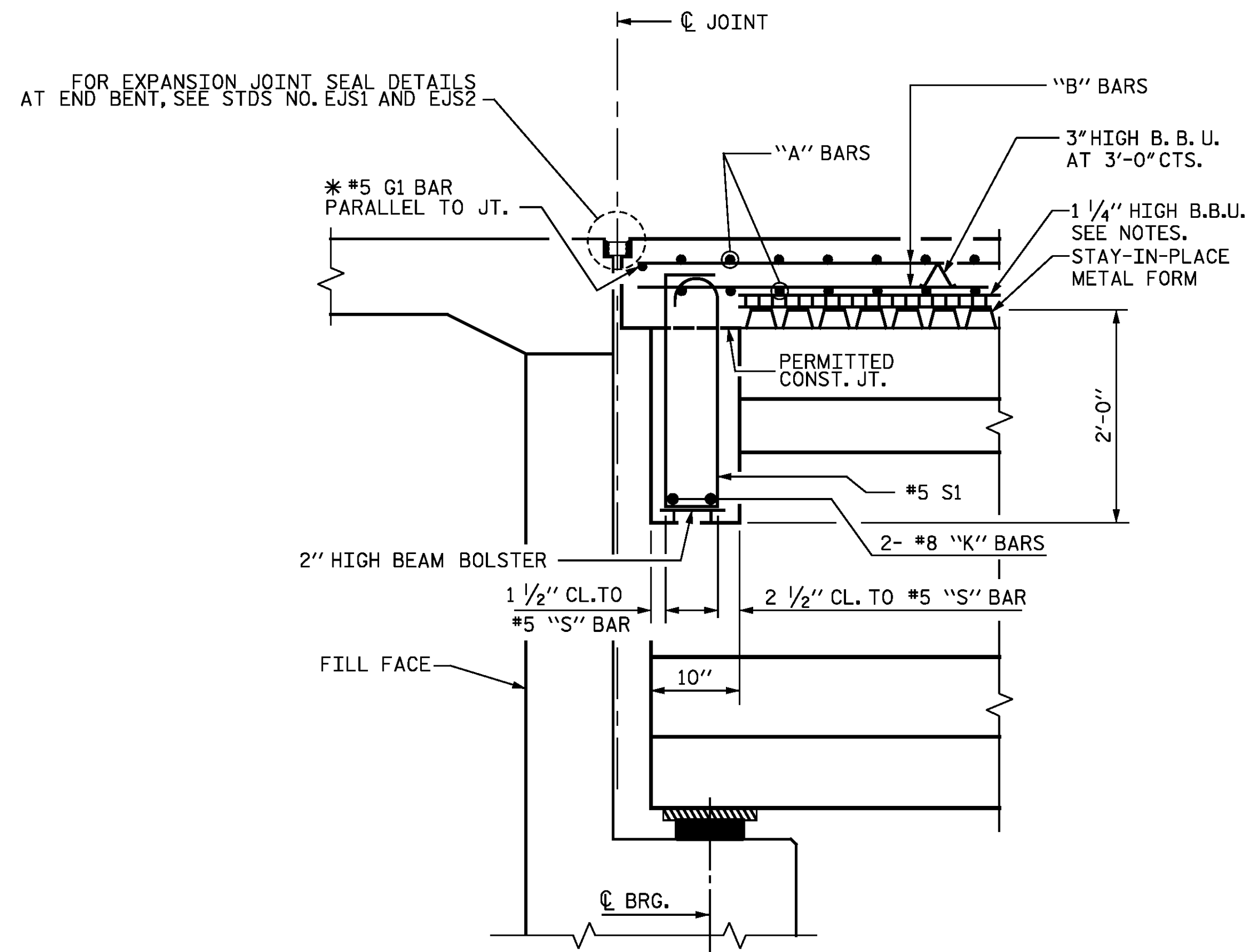
2/12/2015

DocuSigned by:
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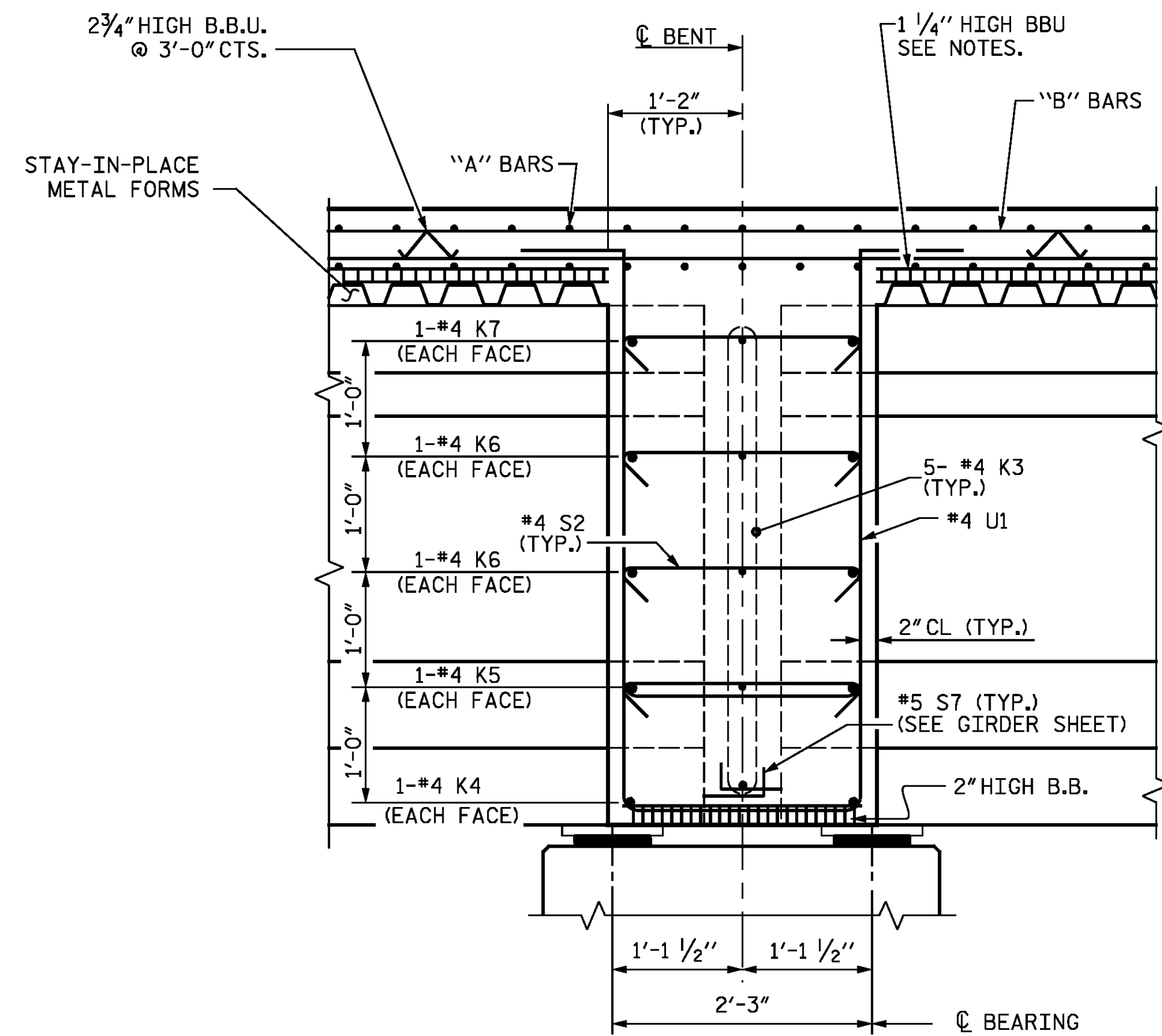
DESIGN ENGINEER OF RECORD: DATE: 2/12/2015

DRAWN BY: Z. SU DATE: 11/19/13
 CHECKED BY: R. C. LARSON DATE: 03/14/14

KCI Associates of North Carolina, P.A.		REVISIONS		SHEET NO.	
NO.	DATE	NO.	DATE	NO.	DATE
1		3		506-6	
2		4		TOTAL SHEETS	
DWG. REF. NO. 6 OF 34				506-34	

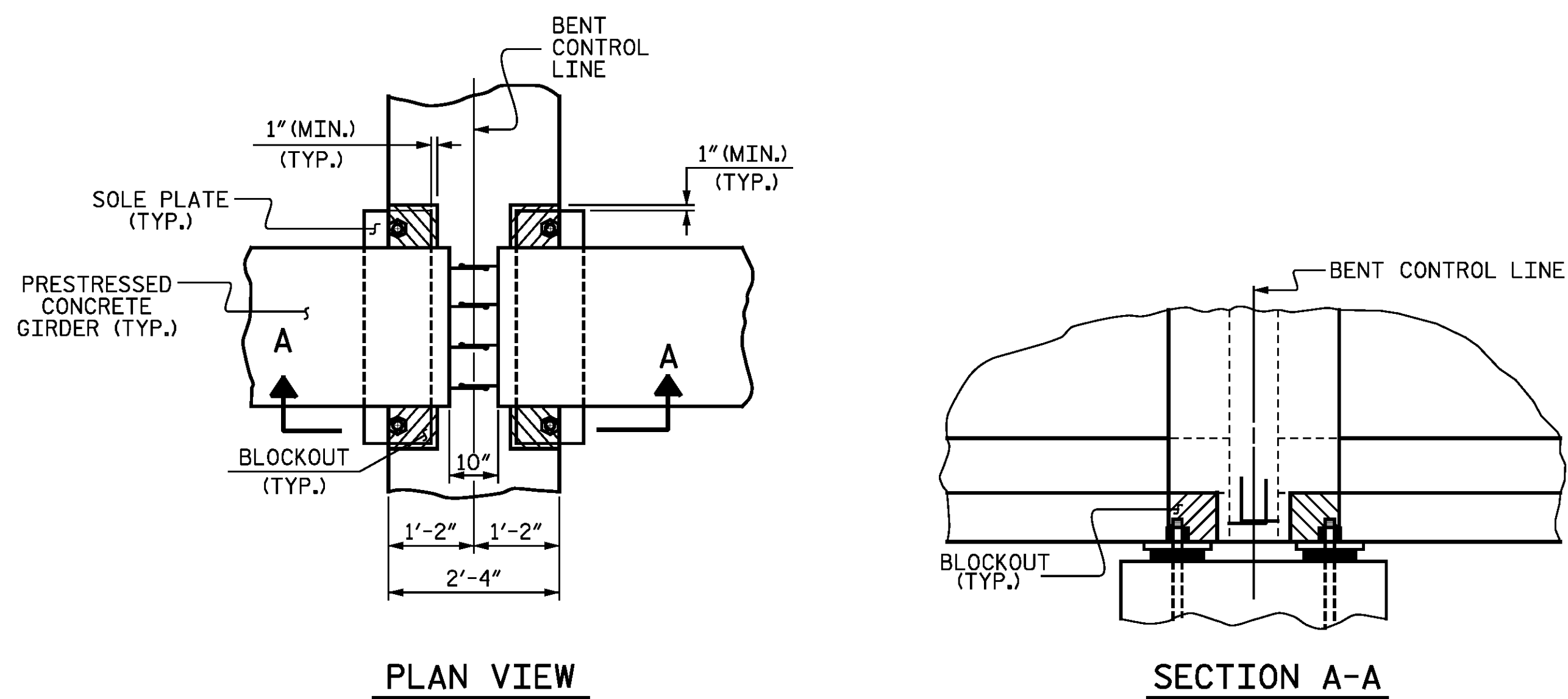


SECTION A-A THRU END BENT DIAPHRAGM



SECTION B-B THRU BENT DIAPHRAGM

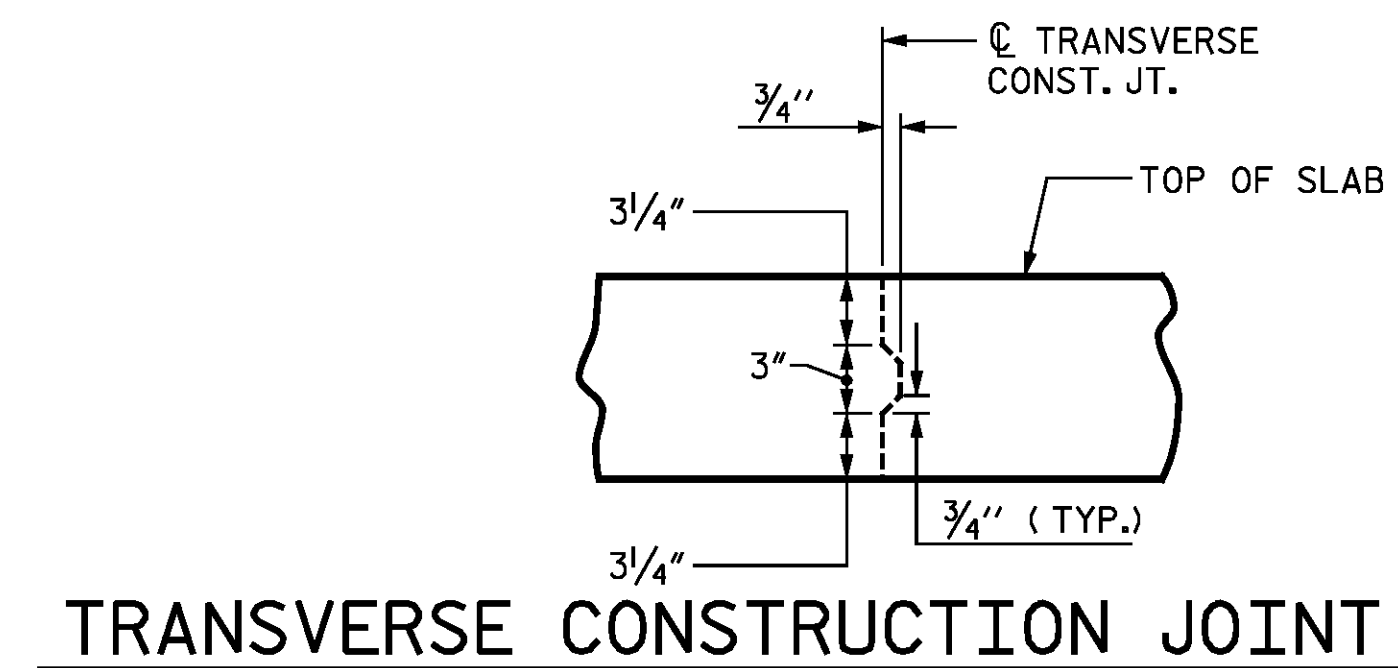
* #5 G1 MAY BE SHIFTED SLIGHTLY AS NECESSARY TO CLEAR REINFORCING STEEL AND STIRRUPS



PLAN VIEW

SECTION A-A

BENT DIAPHRAGM BLOCKOUT DETAIL
(PRESTRESSED GIRDERS WITH CONTINUOUS DECK SLAB)



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

PROJECT NO. R-2514D
JONES COUNTY
STATION: 373+02.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUPERSTRUCTURE
TYPICAL SECTION**

RIGHT LANE STR-#6

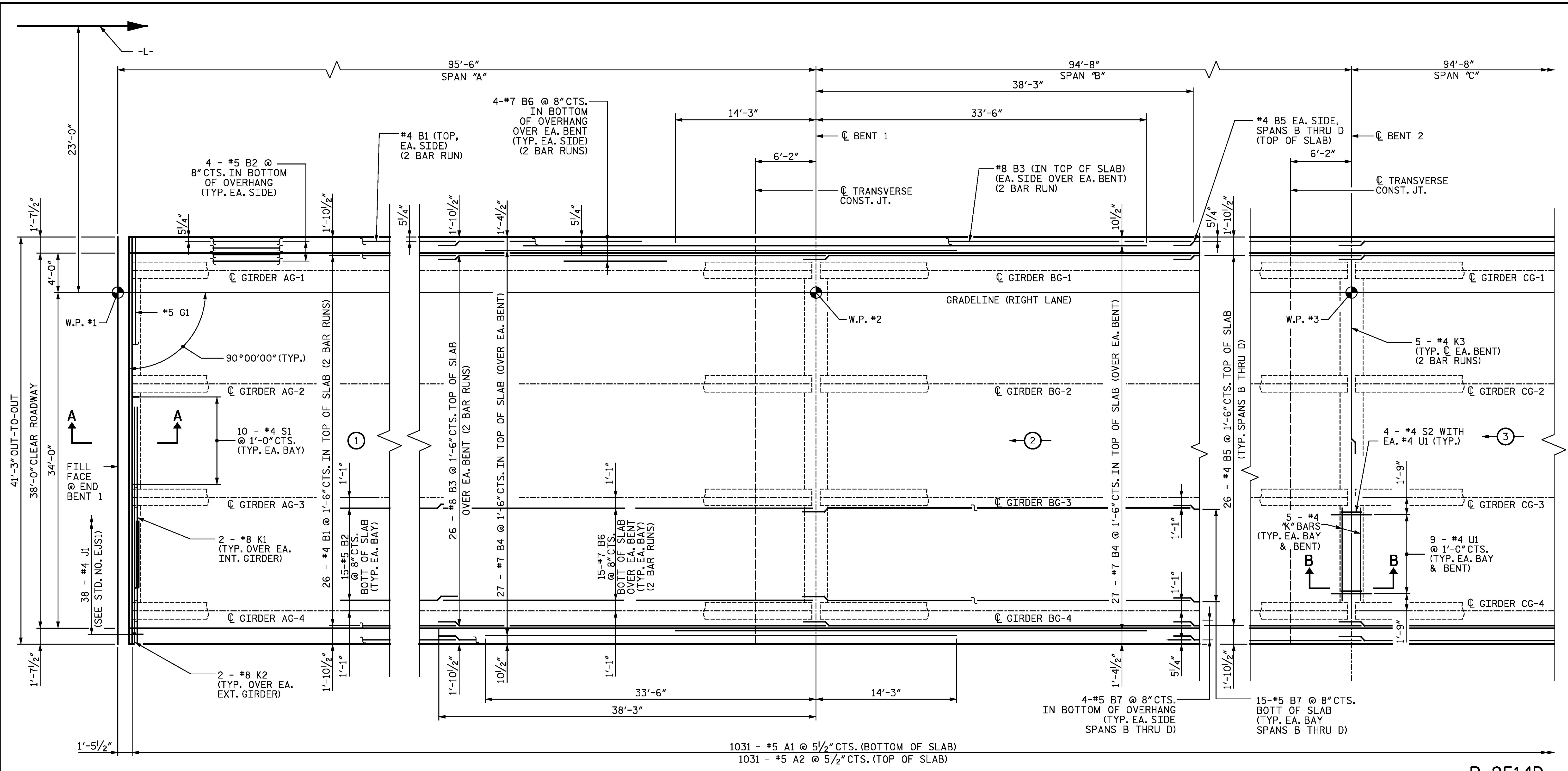
DocuSigned by:
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DESIGN ENGINEER OF RECORD: DATE: 2/12/2015
DRAWN BY: Z. SU DATE: 11/19/13
CHECKED BY: R. C. LARSON DATE: 03/14/14

DocuSigned by:
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2/12/2015
NORTH CAROLINA
PROFESSIONAL
SEAL
14114
ENGINEER
ROBERT C. LARSON

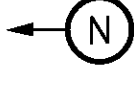
ADDRESS: #1, AMERS @ ECOL, ORTIS LESLIE NUMBER: 0-0764
KCI Associates
of North Carolina, P.A.
SUITE 200, LANDMARK CENTER 1400 SIX FORKS RD, RALEIGH, N.C. 27609-3300 (919) 783-2044
DWG. REF. NO. 7 OF 34

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

TOTAL SHEETS: S06-34



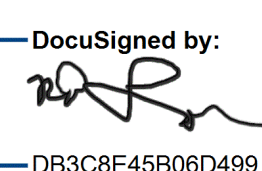

PLAN - SPANS A-C

 INDICATES POUR SEQUENCE AND DIRECTION
 SEE STD EJS1 FOR CLOSURE POURS AT EXPANSION JOINT IN SPANS A AND E
 SEE SUPERSTRUCTURE BILL OF MATERIALS FOR REINFORCING SPLICE LENGTHS.

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
SUPERSTRUCTURE PLAN OF SPANS
 RIGHT LANE STR-#6

DocuSigned by:

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 2/12/2015


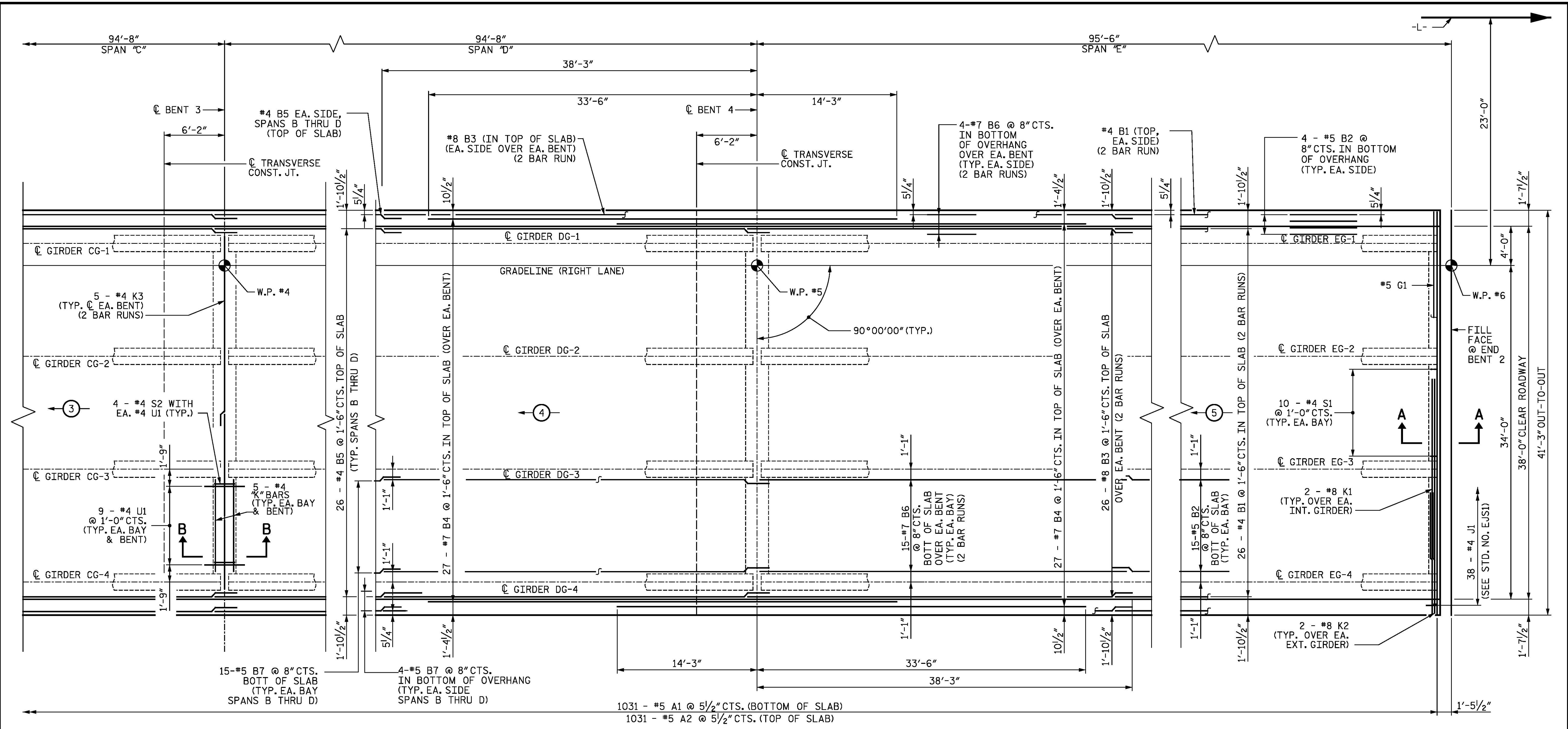
DESIGN ENGINEER OF RECORD: DATE: 2/12/2015

DRAWN BY: Z. SU DATE: 11/19/13

CHECKED BY: R. C. LARSON DATE: 03/14/14

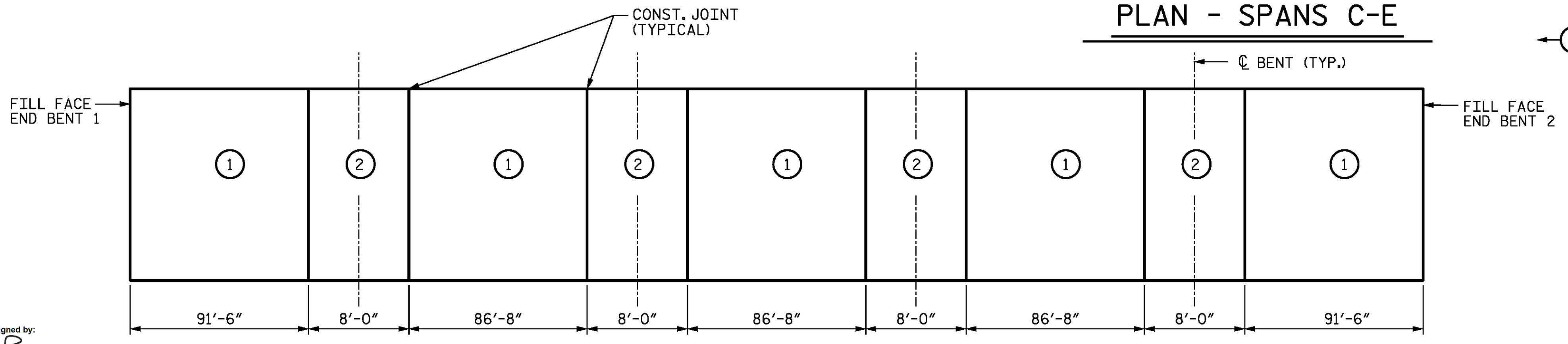
REVISIONS						SHEET NO. S06-8
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS S06-34
2			4			

DWG. REF. NO. 8 OF 34



PLAN - SPANS C-E

INDICATES POUR SEQUENCE AND DIRECTION
 SEE STD EJS1 FOR CLOSURE POURS AT EXPANSION JOINT IN SPANS A AND E
 SEE SUPERSTRUCTURE BILL OF MATERIAL FOR REINFORCING SPLICE LENGTHS.



OPTIONAL POUR SEQUENCE

SEE STD EJS1 FOR CLOSURE POURS AT EXPANSION JOINT IN SPANS A AND E.
 POUR ② CANNOT BE STARTED UNTIL BOTH ADJACENT POURS ① HAVE REACHED A MINIMUM STRENGTH OF 3000 PSI.

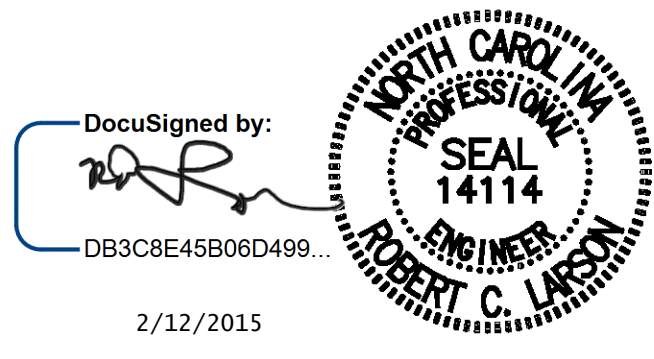
PROJECT NO. **R-2514D**
JONES COUNTY
 STATION: **373+02.50 -L-**

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPANS**

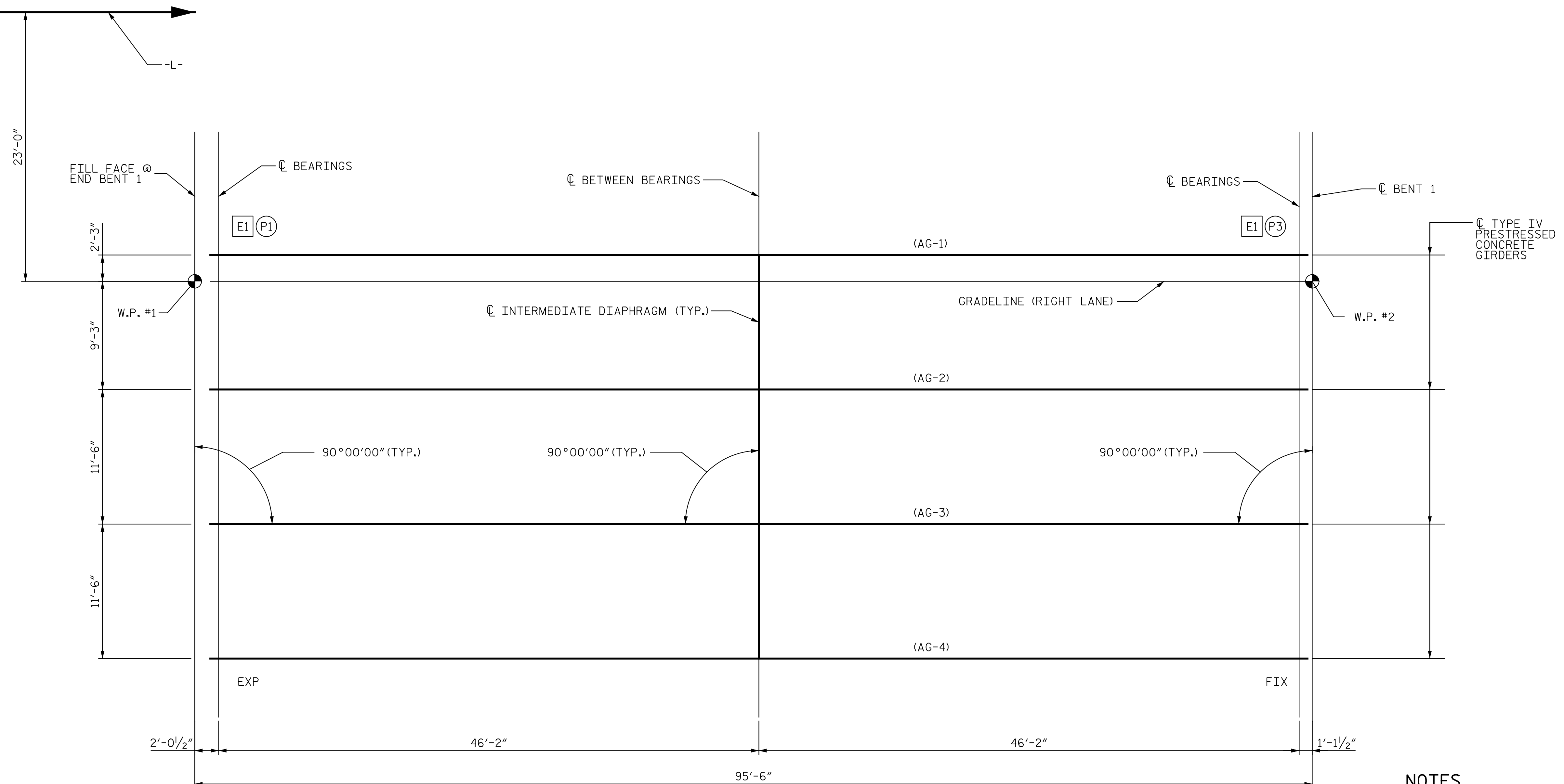
RIGHT LANE STR-#6



DESIGN ENGINEER OF RECORD:	DATE :	2/12/2015
DRAWN BY :	DATE :	11/19/13
CHECKED BY :	DATE :	03/16/14

NO.		BY:		DATE:		NO.		BY:		DATE:		SHEET NO.	
1						3						S06-9	
2						4						TOTAL SHEETS S06-34	

DWG. REF. NO. 9 OF 34



GIRDER LAYOUT AND INTERMEDIATE DIAPHRAGM LOCATIONS (SPANS A AND E)

(SPAN A SHOWN, SPAN E SIMILAR EXCEPT USE (P2) @ END BENT 2 AND (P4) @ BENT 4)

NOTES

- ELASTIC BEARINGS INDICATED THUS:
EN (N = NUMBER)
- SOLE PLATES INDICATED THUS:
PN (N = NUMBER)
- FOR INTERMEDIATE DIAPHRAGMS SEE STD PCG10.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS											
0.6" Ø LOW RELAXATION STRANDS	SPANS A THRU E										
	GIRDERS 1 THRU 4										
LOCATION	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90	1.00
CAMBER (GIRDER ALONE IN PLACE) ↑	0.00	0.09	0.16	0.21	0.23	0.24	0.23	0.21	0.16	0.09	0.00
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.00	0.05	0.09	0.13	0.15	0.16	0.15	0.13	0.09	0.05	0.00
FINAL CAMBER ↑	0"	9/16"	13/16"	15/16"	15/16"	15/16"	15/16"	15/16"	13/16"	9/16"	0"

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

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE GIRDER LAYOUT

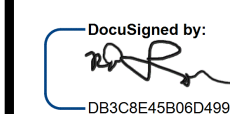
RIGHT LANE STR-#6



DocuSigned by:

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4/13/2015



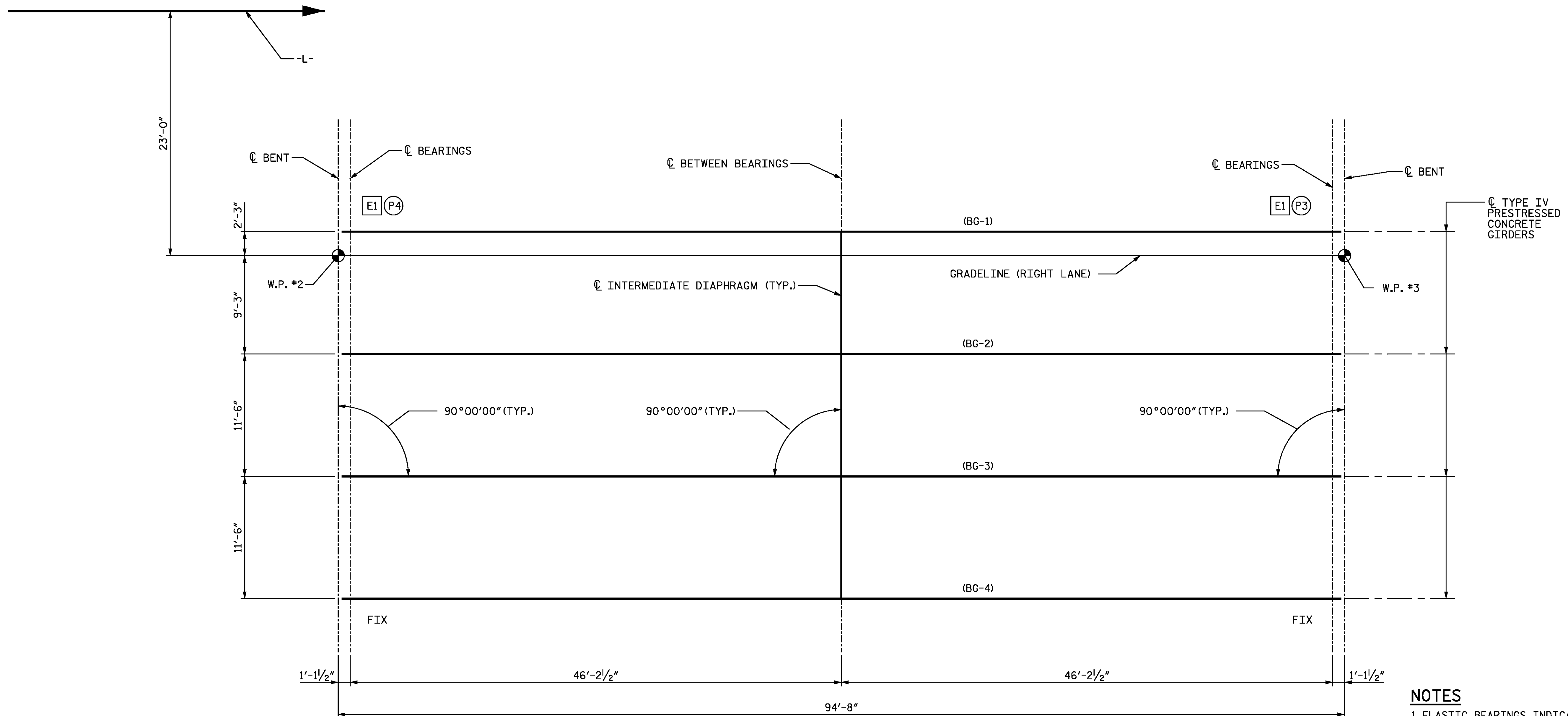
DESIGN ENGINEER OF RECORD: DATE: 4/13/2015

DRAWN BY: Z. SU DATE: 02/14/14
 CHECKED BY: R. C. LARSON DATE: 03/16/14

KCI Associates of North Carolina, P.A.
 SUITE 220, LANDMARK CENTER # 460 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244
 DWG. REF. NO. 10 OF 34

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

TOTAL SHEETS: 506-34



GIRDER LAYOUT AND INTERMEDIATE DIAPHRAGM LOCATIONS (SPANS B, C, AND D)

(SPAN B SHOWN, SPANS C AND D SIMILAR)

NOTES

1. ELASTIC BEARINGS INDICATED THUS:
EN (N = NUMBER)
2. SOLE PLATES INDICATED THUS:
PN (N = NUMBER)
3. FOR INTERMEDIATE DIAPHRAGMS SEE STD PCG10.

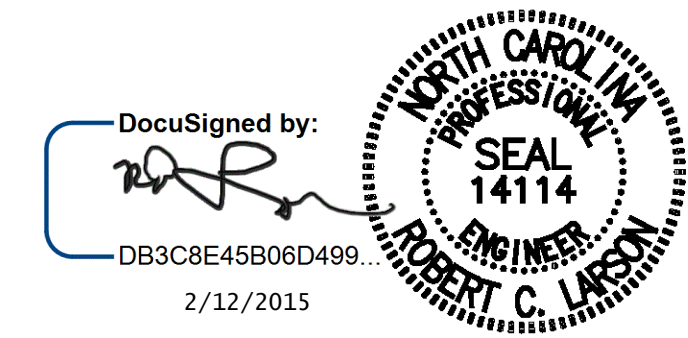
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 2 OF 2

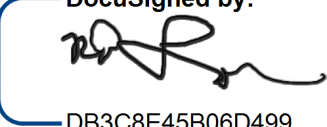
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 GIRDER LAYOUT**

RIGHT LANE STR-#6



DocuSigned by:
 DB3C8E45B06D499...
 2/12/2015

DocuSigned by:

 DB3C8E45B06D499

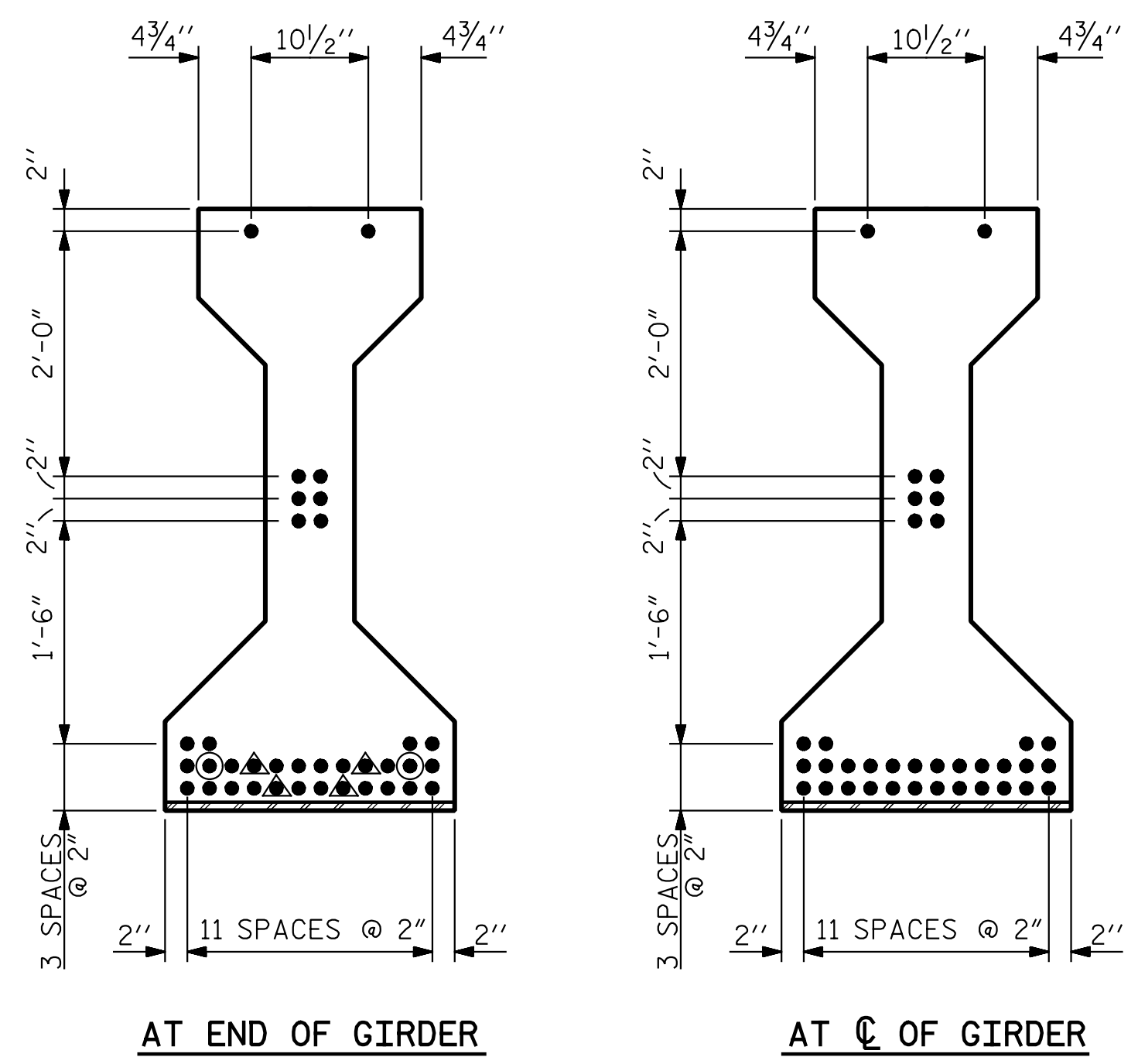
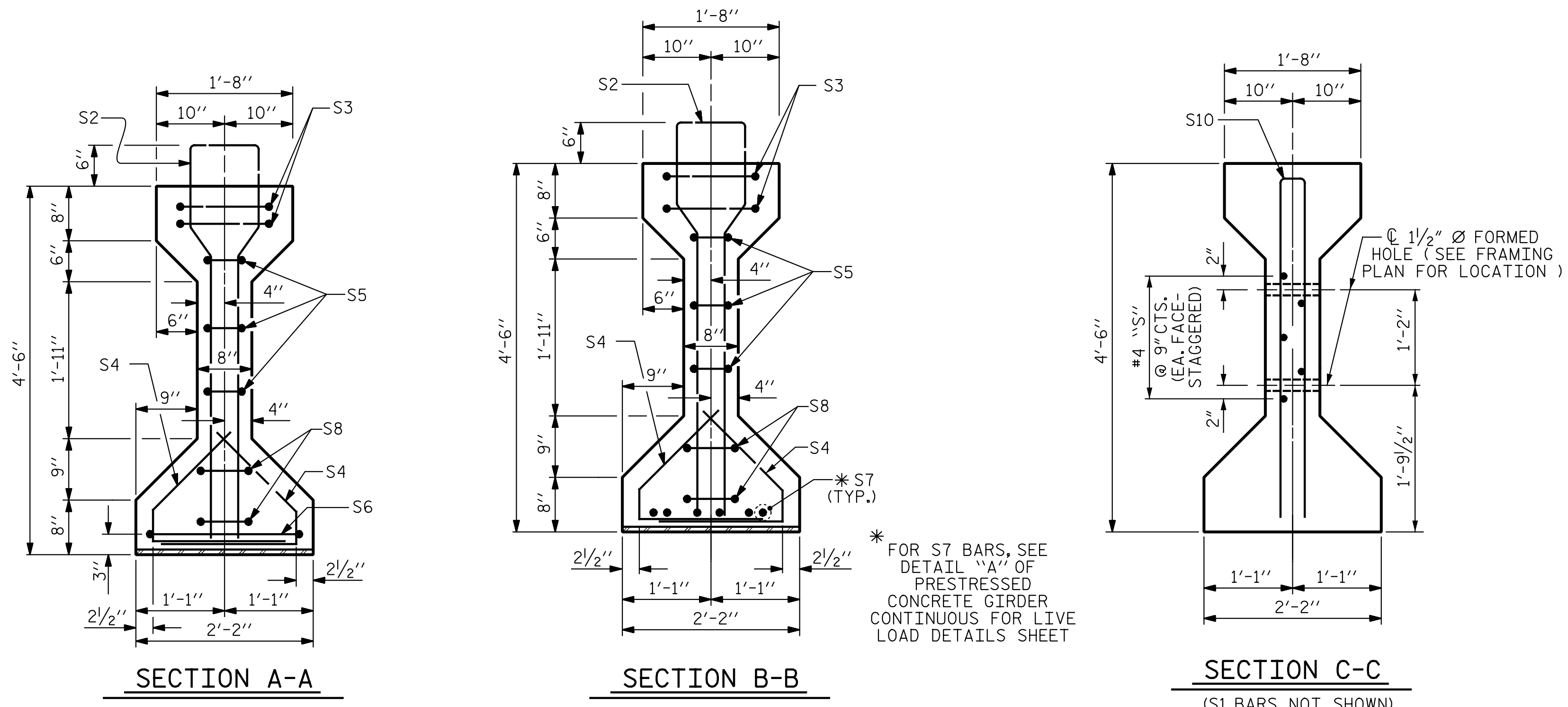
DESIGN ENGINEER OF RECORD: _____ DATE: 2/12/2015

DRAWN BY: Z. SU DATE: 02/14/14
 CHECKED BY: R. C. LARSON DATE: 03/16/14

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

TOTAL SHEETS	S06-34
--------------	--------

KCI Associates
 of North Carolina, P.A.
 DWG. REF. NO. 11 OF 34



0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- FULLY BONDED STRAND
- ▲ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ⊙ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER

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

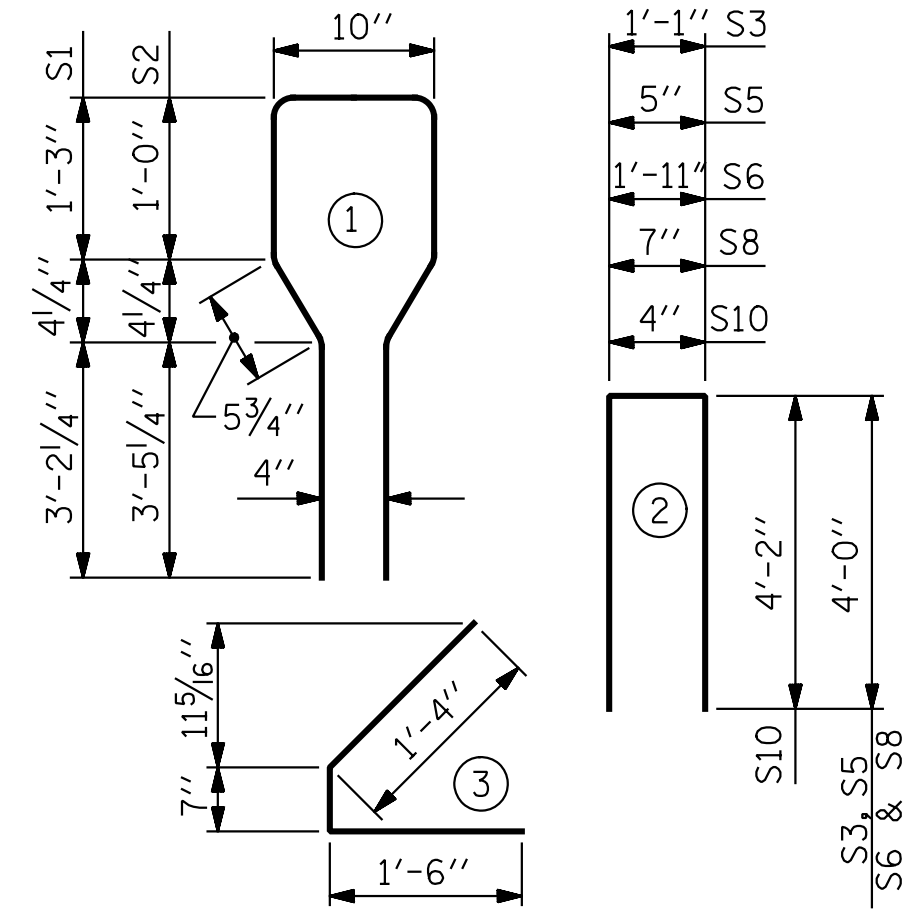
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	108	#4	1	10'-8"	770
S2	12	#6	1	10'-8"	192
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 LB.	8000 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
1316	19.0	36

GIRDERS REQUIRED

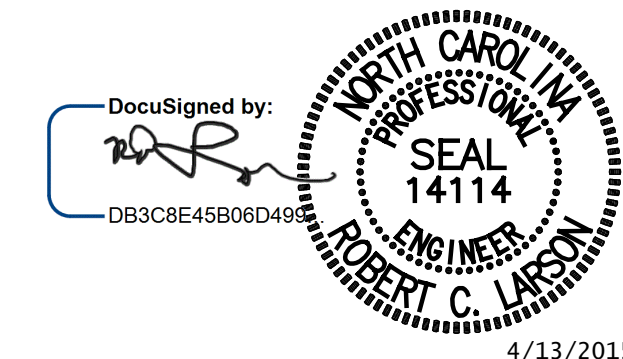
SPAN	NUMBER	LENGTH	TOTAL LENGTH
SPAN A	4	93'-9"	375'-0"
SPAN E	4	93'-9"	375'-0"

PROJECT NO. R-2514D
 JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 1 OF 4

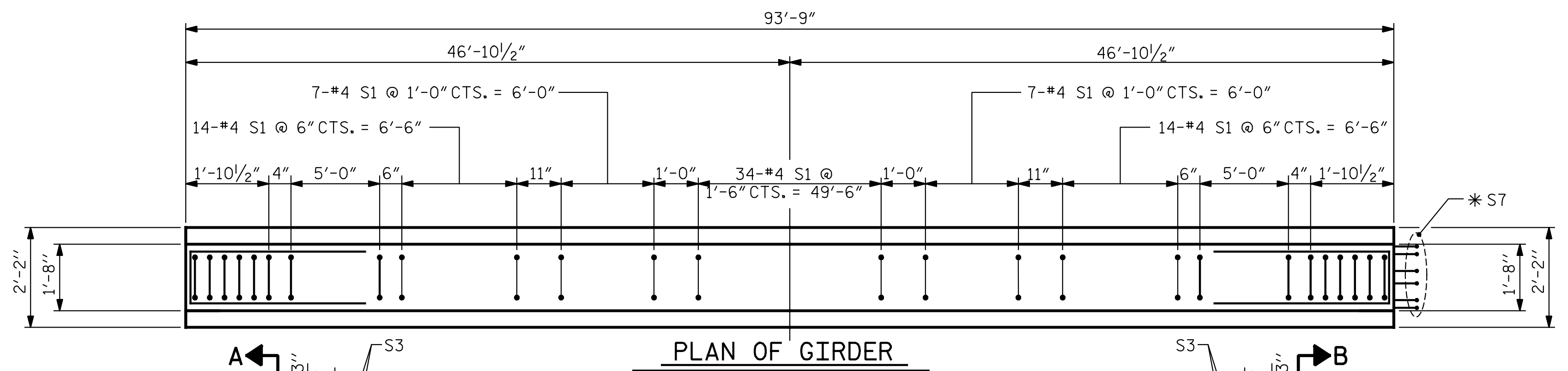
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 AASHTO TYPE IV
 PRESTRESSED CONCRETE GIRDER
 SPAN A OR E

RIGHT LANE STR-#6

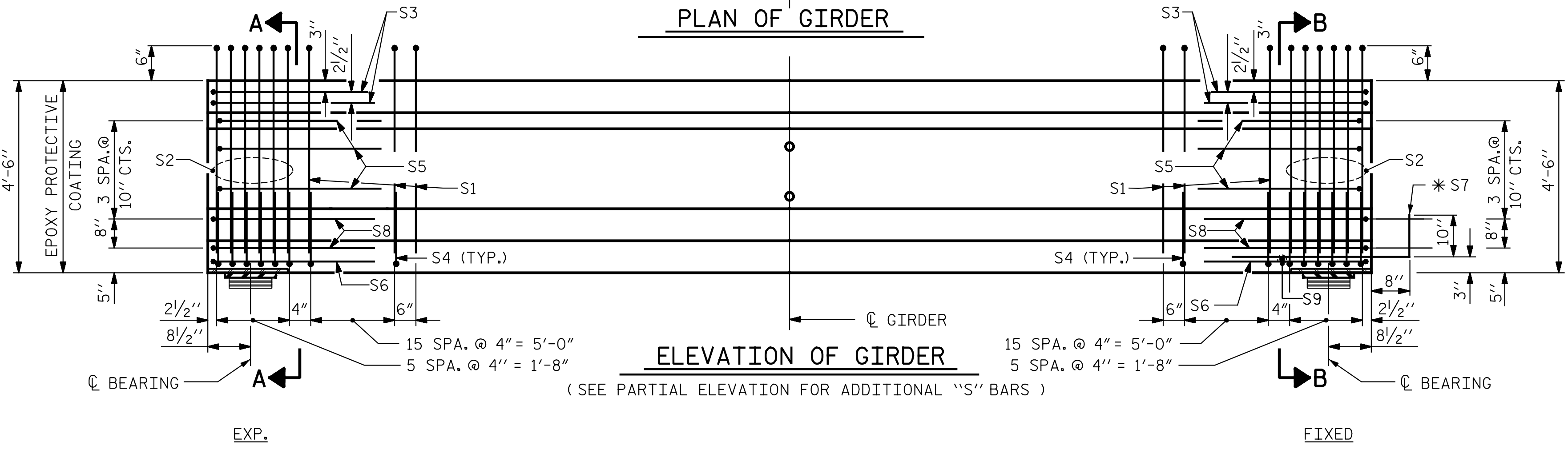


DocuSigned by:
 DB3C8E45B06D499
 4/13/2015
 KCI Associates of North Carolina, P.A.
 DWG. REF. NO. 12 OF 34

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S06-12
1			3			TOTAL SHEETS
2			4			S06-34

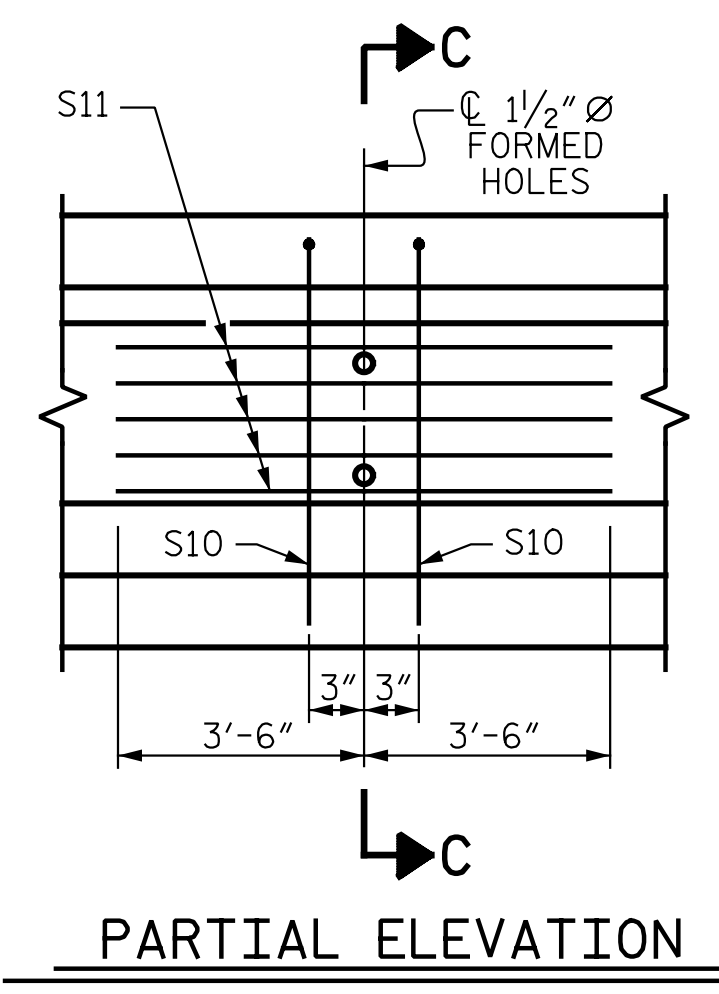


PLAN OF GIRDER



ELEVATION OF GIRDER

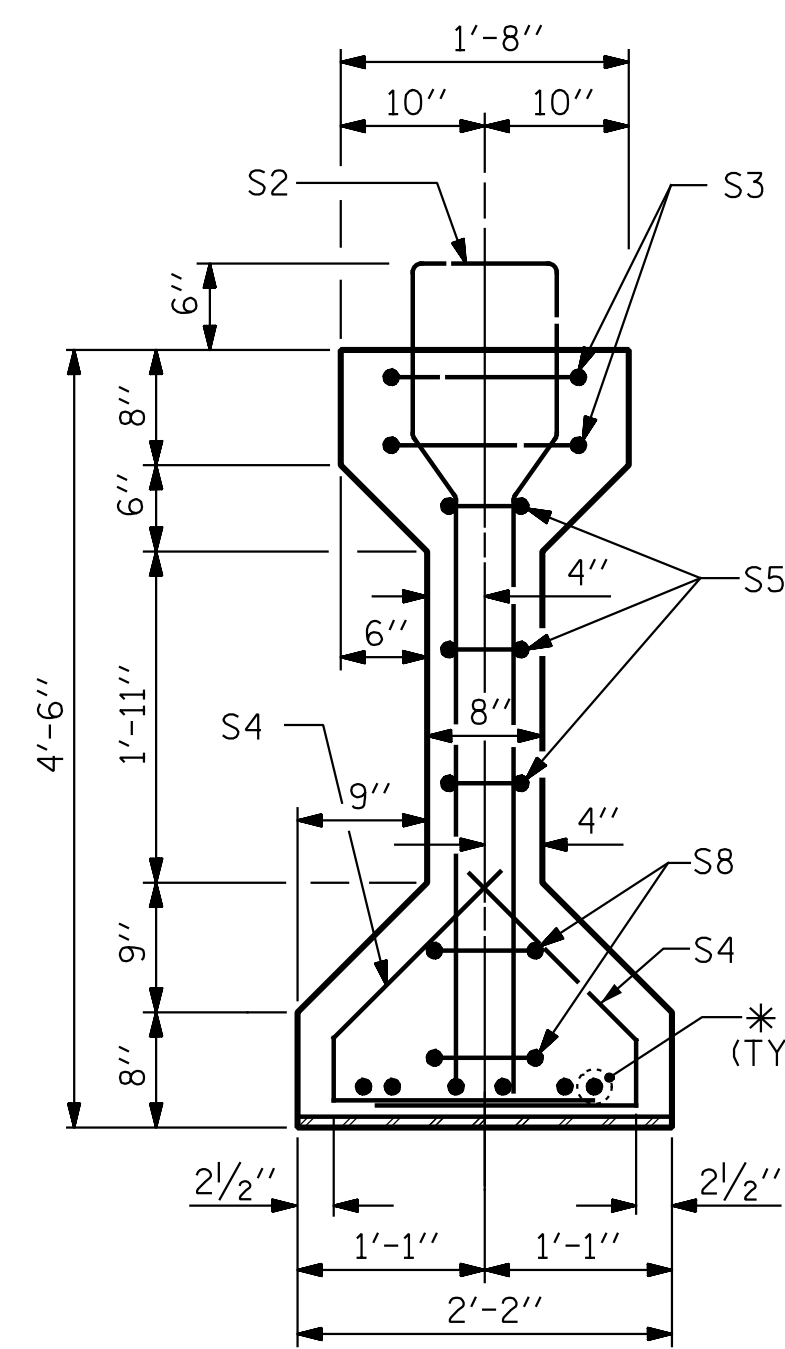
(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

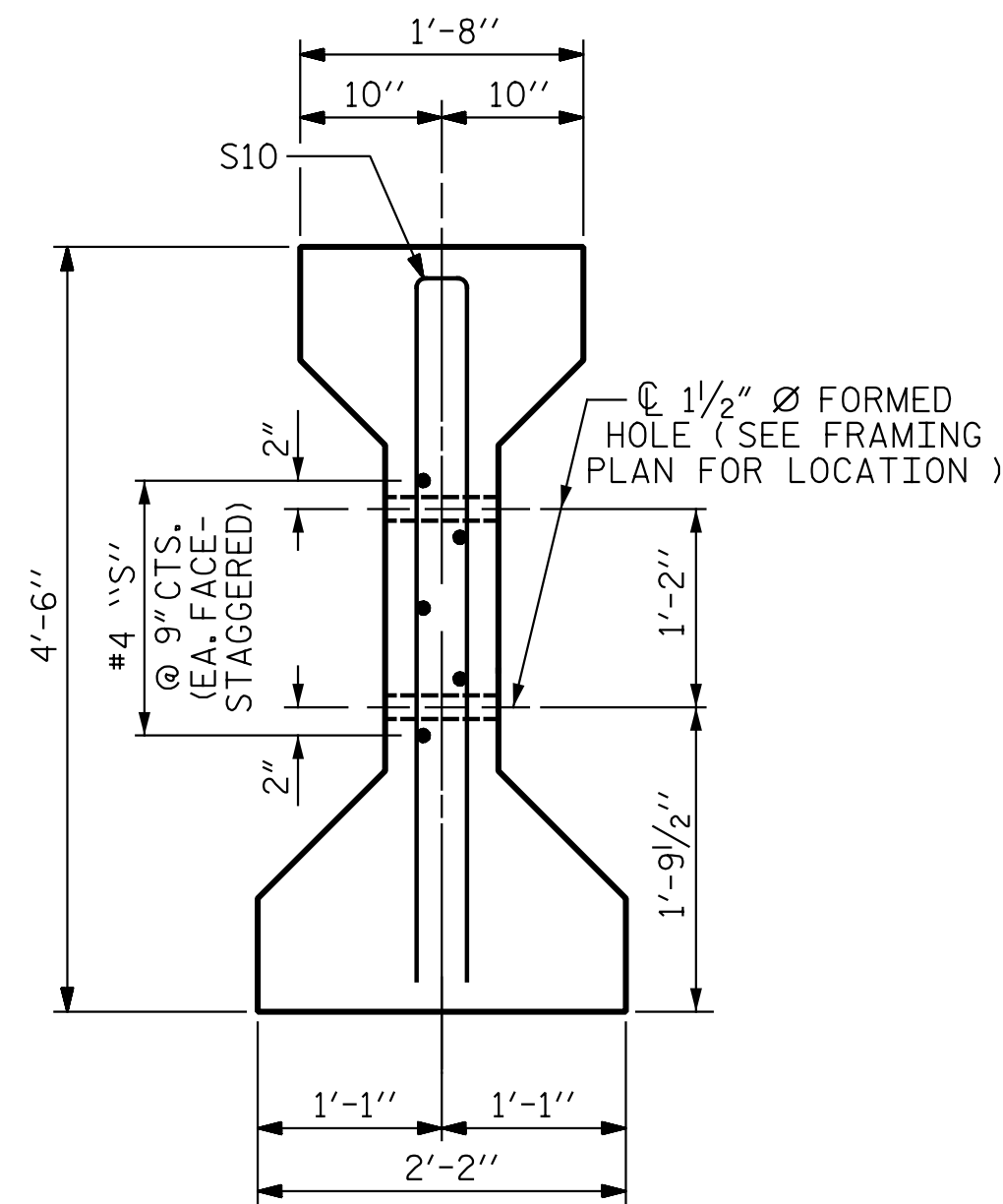
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL

DRAWN BY : JMB 12/87	REV. 8/16/99RR RWW/LES
CHECKED BY : ARB 12/87	REV. 5/1/06R TLA/GM
	REV. 10/1/11 MAA/GM
DESIGN ENGINEER OF RECORD	DATE : 4/13/2015
DRAWN BY : Z. SU	DATE : 02/14/14
CHECKED BY : R. C. LARSON	DATE : 03/16/14



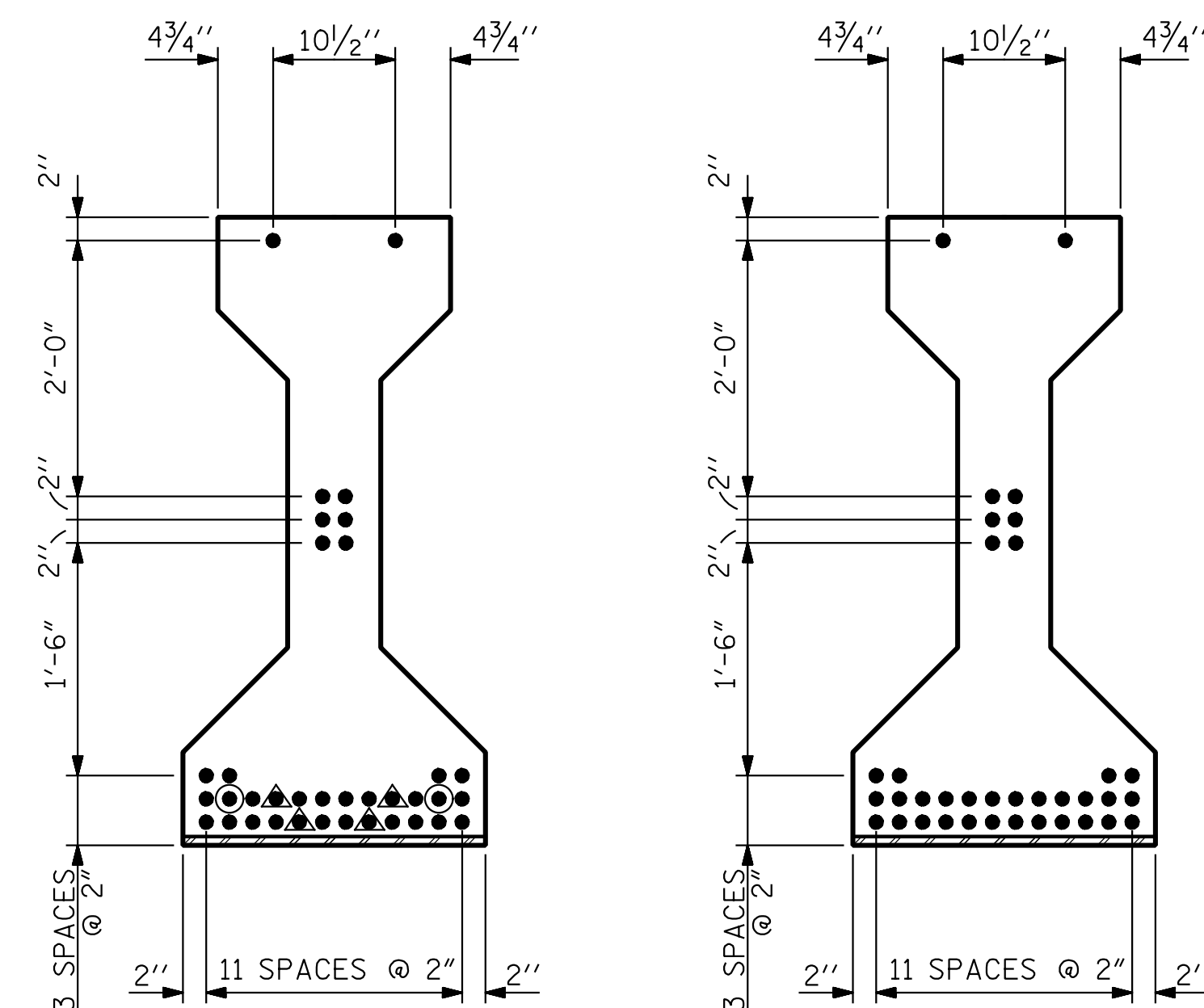
SECTION A-A

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



SECTION B-B

(S1 BARS NOT SHOWN)



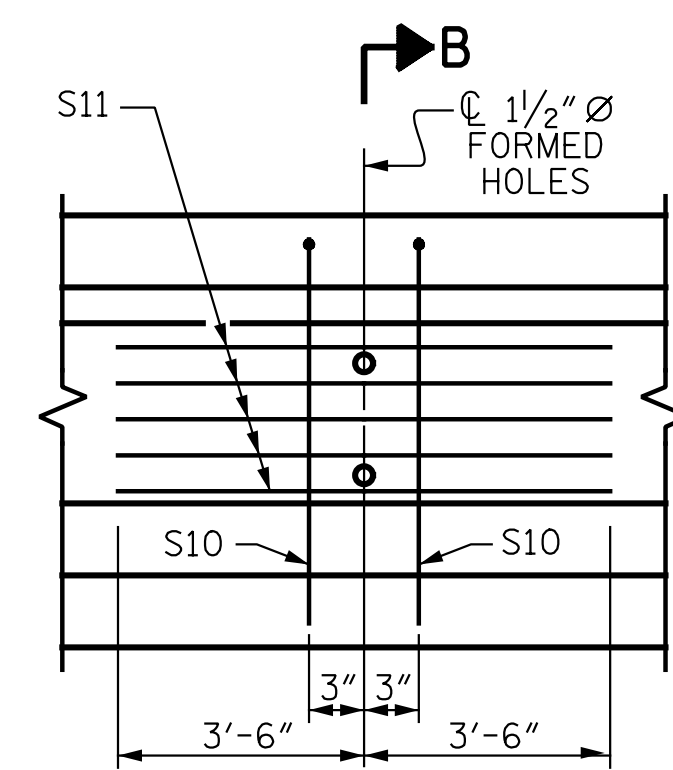
AT END OF GIRDER

AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- FULLY BONDED STRAND
- ▲ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ⊙ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL

0.6" Ø L. R. GRADE 270 STRANDS

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

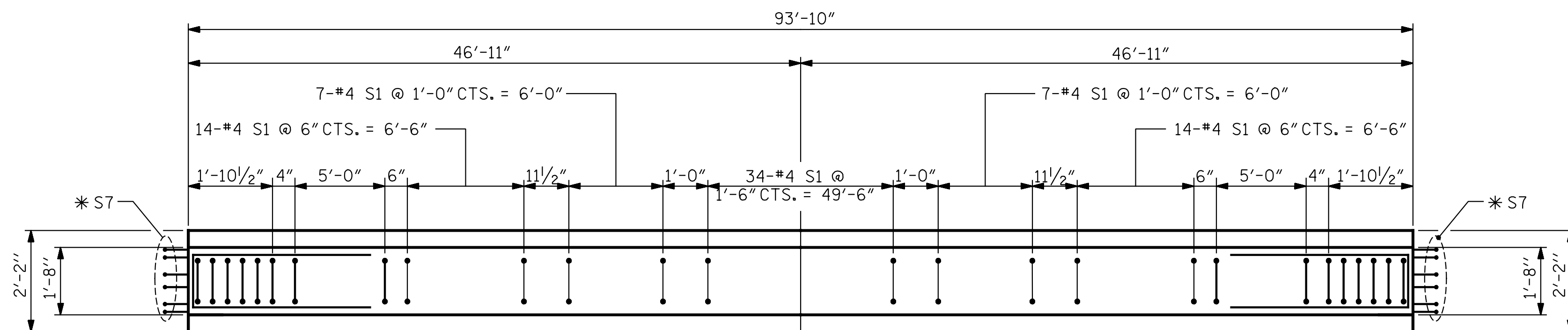
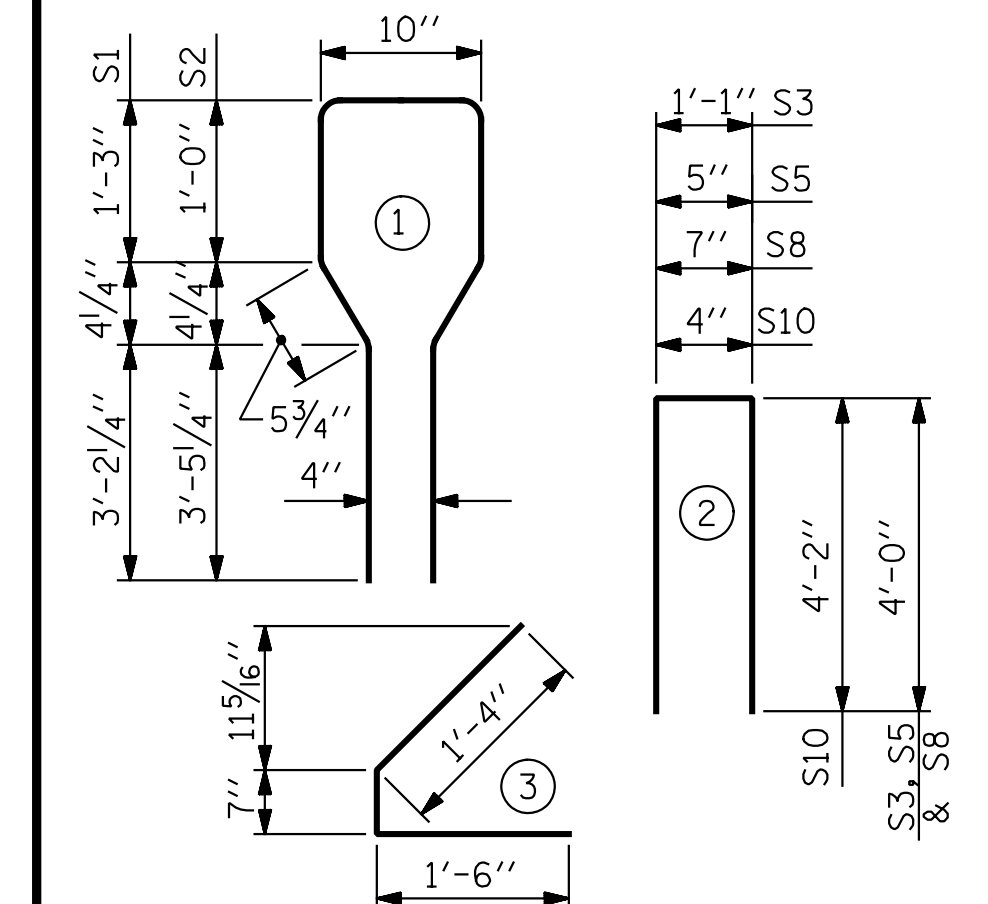
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	108	#4	1	10'-8"	770
S2	12	#6	1	10'-8"	192
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	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

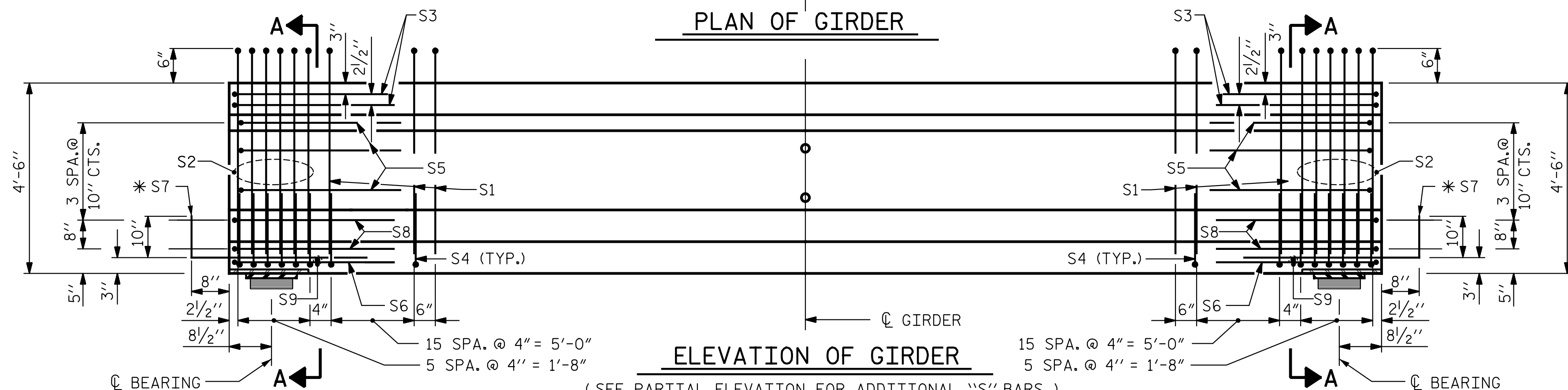
* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

QUANTITIES FOR ONE GIRDER

REINFORCING STEEL LB.	8000 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
1332	19.0	36

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
4	93'-10"	375'-4"
4	93'-10"	375'-4"
4	93'-10"	375'-4"

PROJECT NO. R-2514D

JONES COUNTY

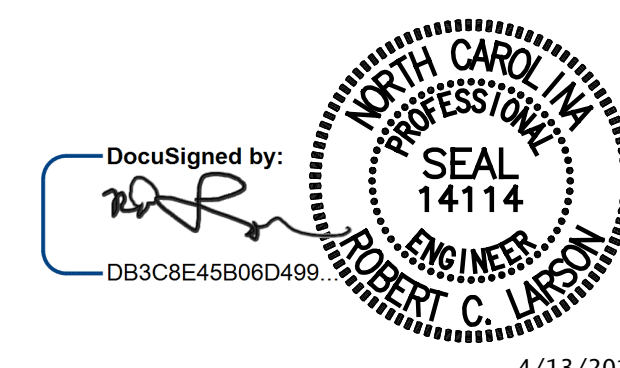
STATION: 373+02.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
SPAN B, C, OR D

RIGHT LANE

STD. NO. PCG6 STR-#6



DocuSigned by:
DB3CBE45B06D499

4/13/2015

KCI Associates
of North Carolina, P.A.
SUITES 220, LANDMARK CENTER # 400 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244
DWG. REF. NO. 13 OF 34

DRAWN BY : JMB I2/87	REV. 8/16/99RR RWW/LES
CHECKED BY : ARB I2/87	REV. 5/1/06R TLA/GM
	REV. 10/1/11 MAA/GM
DESIGN ENGINEER OF RECORD	DATE : 4/13/2015
DRAWN BY : Z. SU	DATE : 02/14/14
CHECKED BY : R. C. LARSON	DATE : 03/16/14

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

TOTAL SHEETS: S06-34

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.

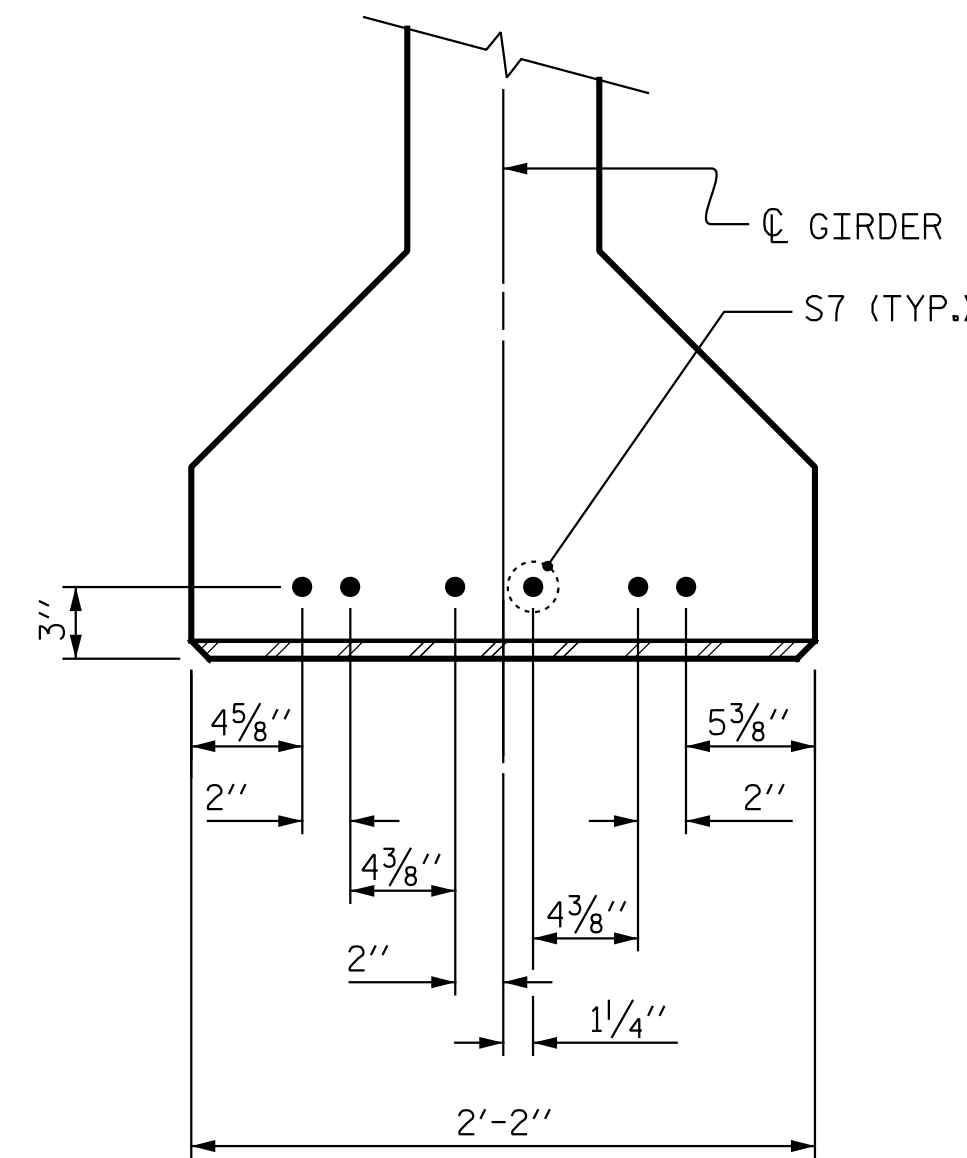
AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI.

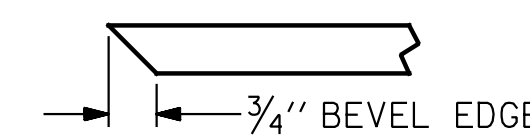
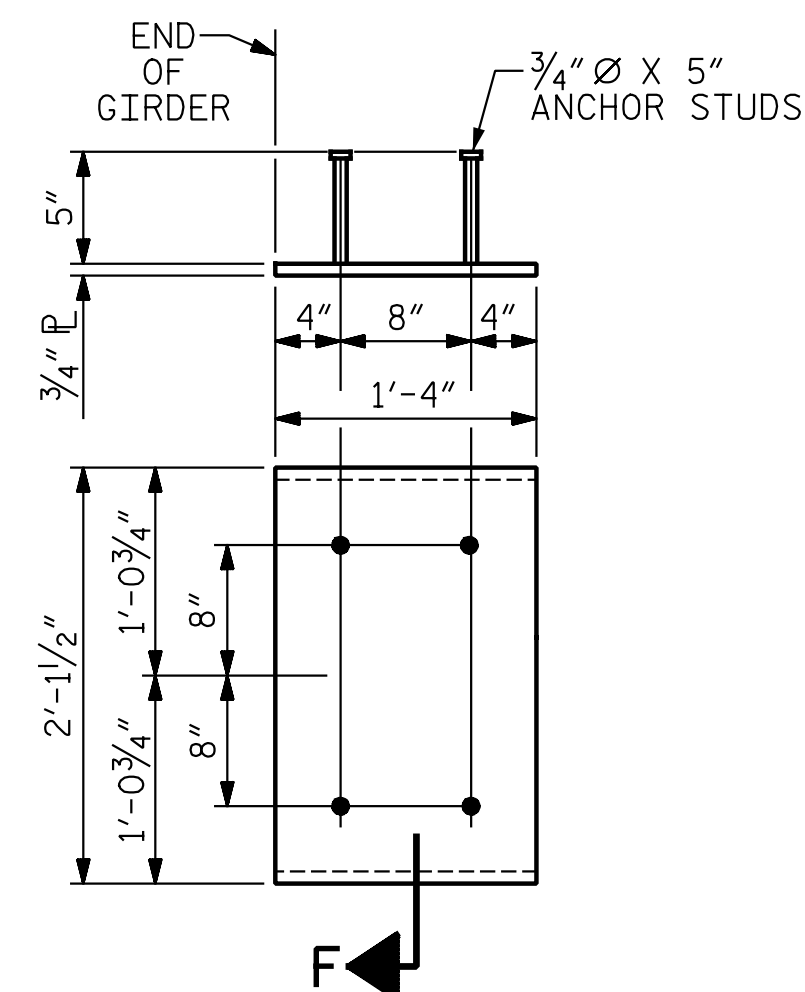
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

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

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.



DETAIL "A"



SECTION "F"

(SEE NOTES)

EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER AND 63" & 72" MODIFIED BULB TEES

(2 REQ'D PER GIRDER)

PROJECT NO. R-2514D

JONES COUNTY

STATION: 373+02.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
DETAILS

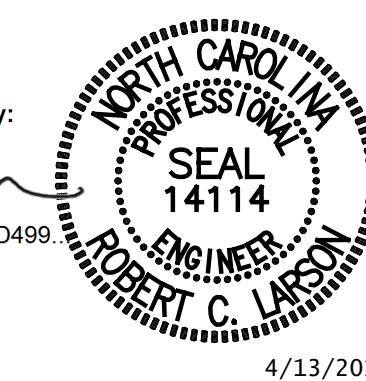
RIGHT LANE STR-#6

STD. NO. PCG9

DocuSigned by:

[Signature]

DB3C8E45B06D499



4/13/2015

DRAWN BY : ELR 11/91
CHECKED BY : GRP 11/91

REV. 7/10/01RR LES/RDR
REV. 5/1/06 TLA/GM
REV. 10/1/11 MAA/GM

DESIGN ENGINEER OF RECORD: *[Signature]* DATE: _____

DRAWN BY : Z. SU DATE : 02/14/14
CHECKED BY : R. C. LARSON DATE : 03/16/14

KCI Associates
of North Carolina, P.A.
SUNITE 220, LANDMARK CENTER # 4601 SIX FORKS RD, RALEIGH, N.C. 27609-5200 (919) 783-9244
DWG. REF. NO. 14 OF 34

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

TOTAL SHEETS: 34
S06-14
S06-34

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.

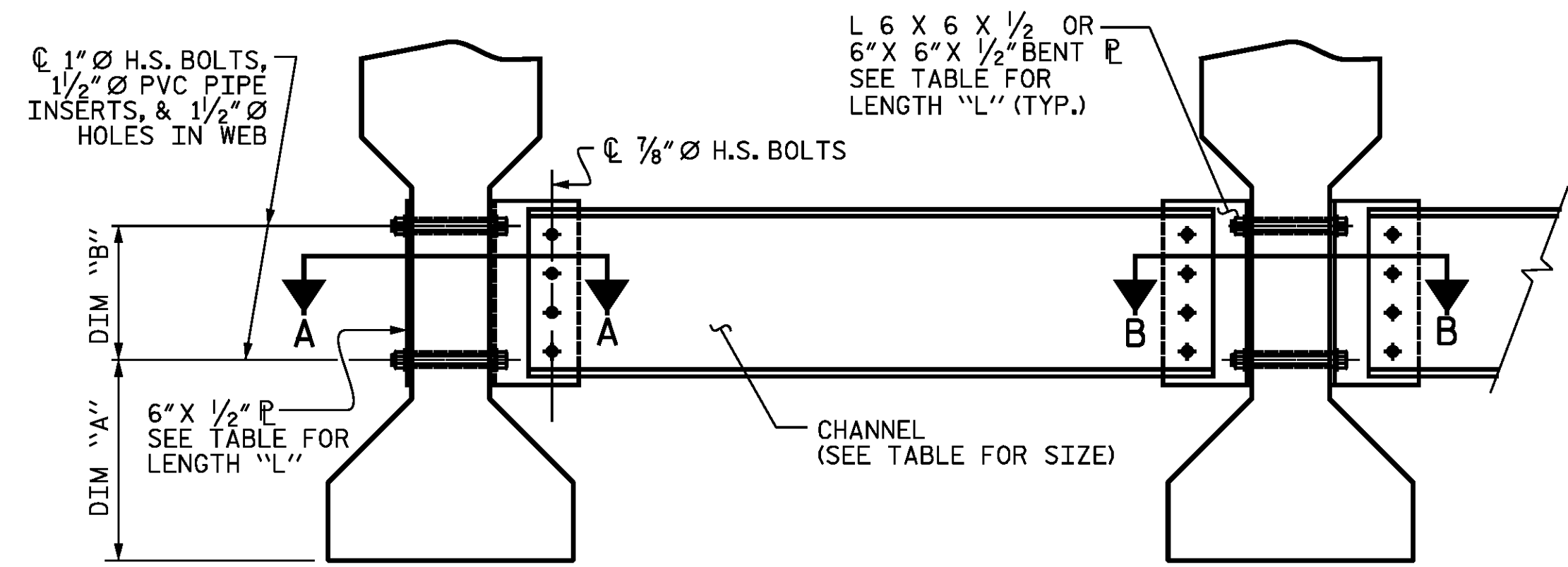
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

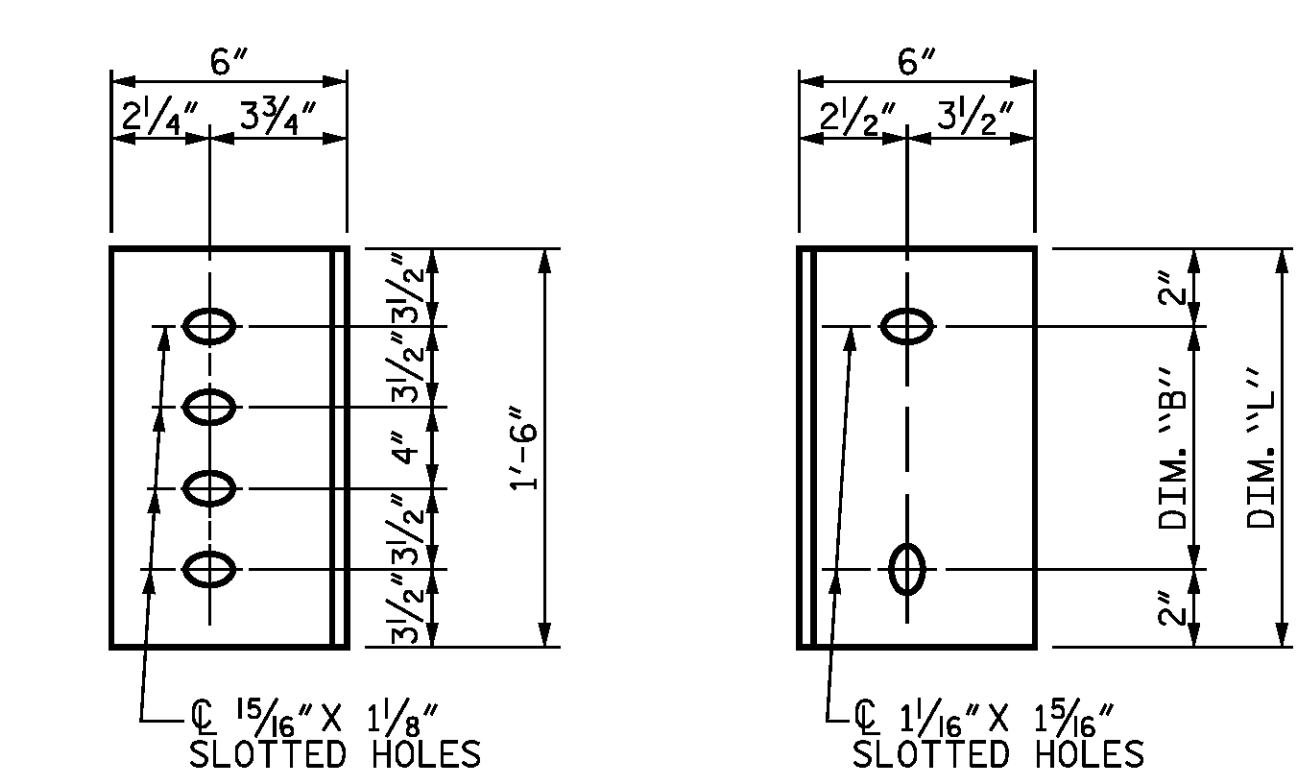
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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.



EXTERIOR GIRDER
INTERIOR GIRDER
PART SECTION AT INTERMEDIATE DIAPHRAGM



DIAPHRAGM FACE
(TYPE III OR TYPE IV GDR.)
WEB FACE
CONNECTOR PLATE DETAILS

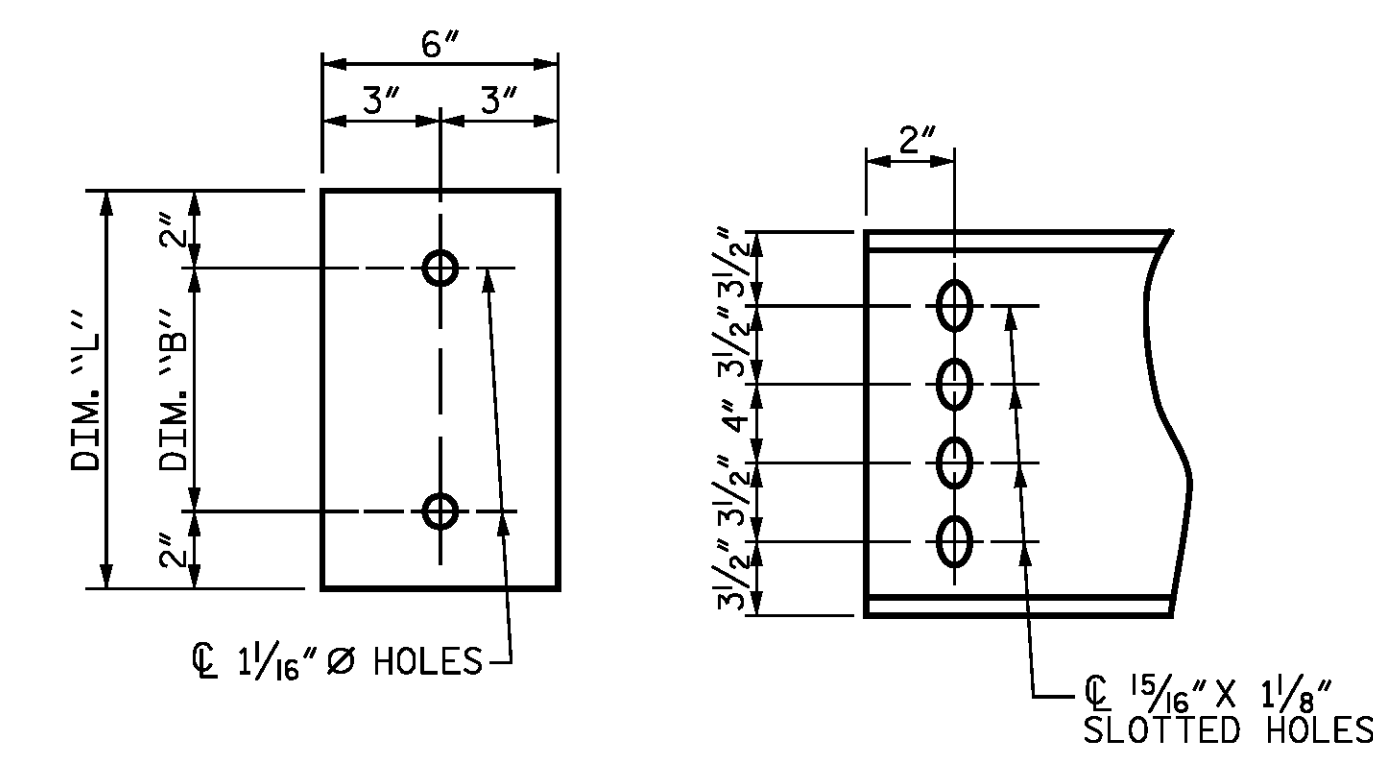
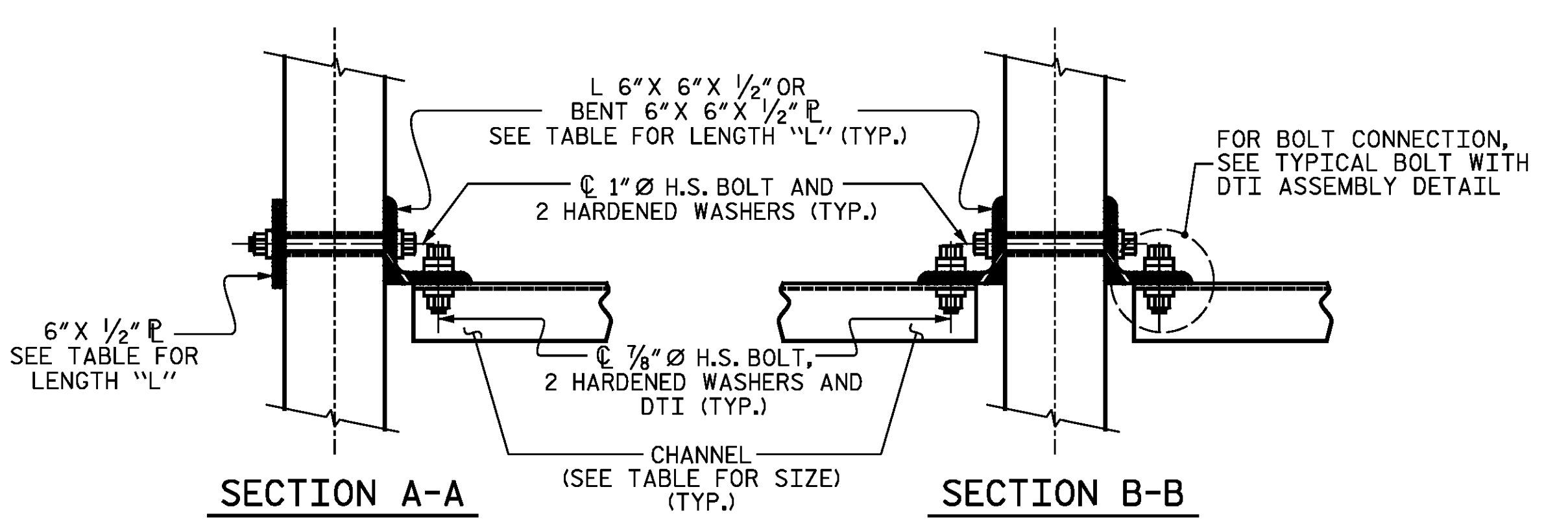
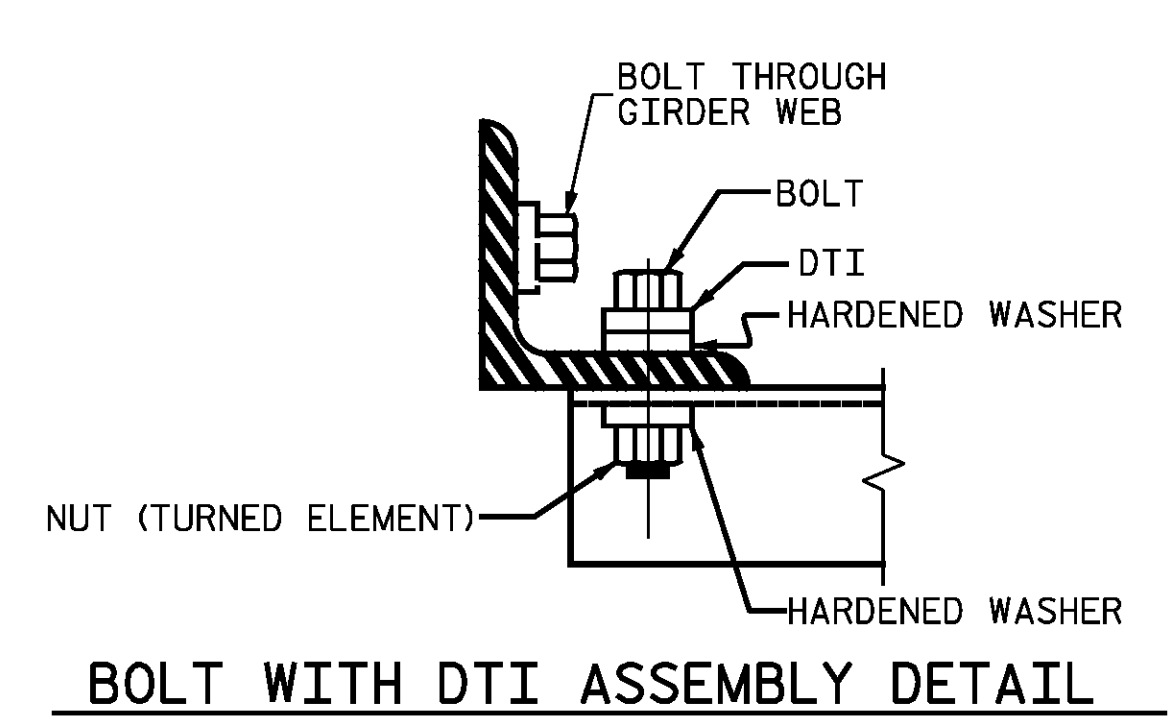


PLATE DETAILS
CHANNEL END



SECTION A-A
SECTION B-B
CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

TABLE

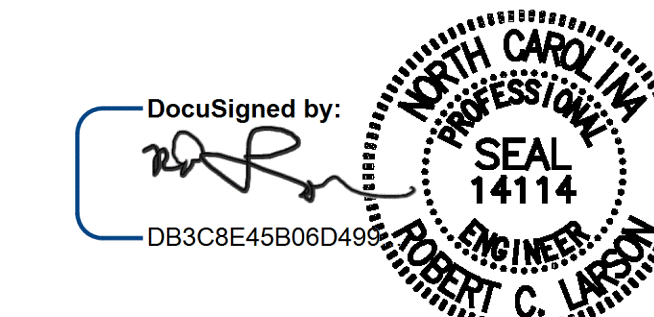
GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
IV	MC 18 x 42.7	1'-9 1/2"	1'-2"	1'-6"

PROJECT NO. R-2514D
JONES COUNTY
STATION: 373+02.50 -L-

SHEET 4 OF 4

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

STD. NO. PCG10 RIGHT LANE STR-#6



2/12/2015

DRAWN BY : TLA 6/05 ADDED 10/21/05
CHECKED BY : VC 6/05 REV. 5/1/06RRR KMM/GM
REV. 10/1/11 MAA/GM
DESIGN ENGINEER OF RECORD DATE : 2/12/2015
DRAWN BY : Z. SU DATE : 02/14/14
CHECKED BY : R. C. LARSON DATE : 03/16/14

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

TOTAL SHEETS 506-34

KCI Associates
of North Carolina, P.A.
DWG. REF. NO. 15 OF 34

NOTES

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

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

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

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

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

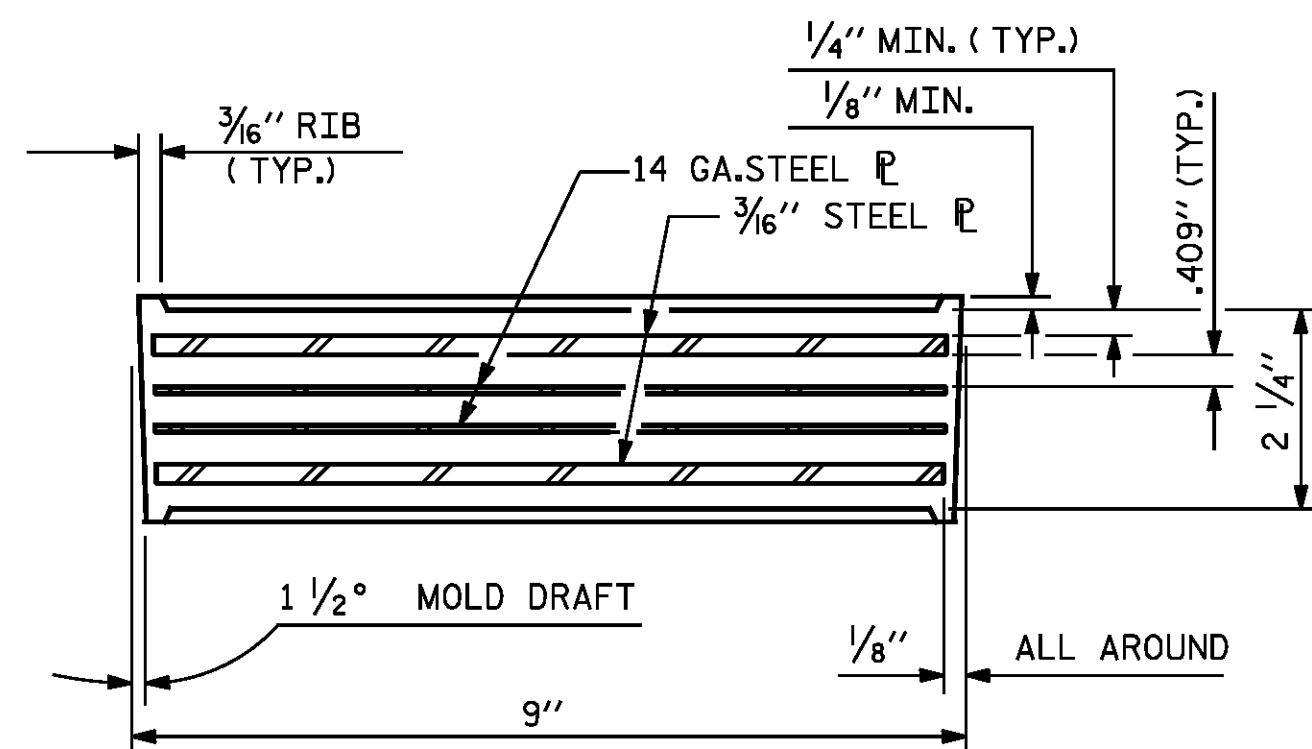
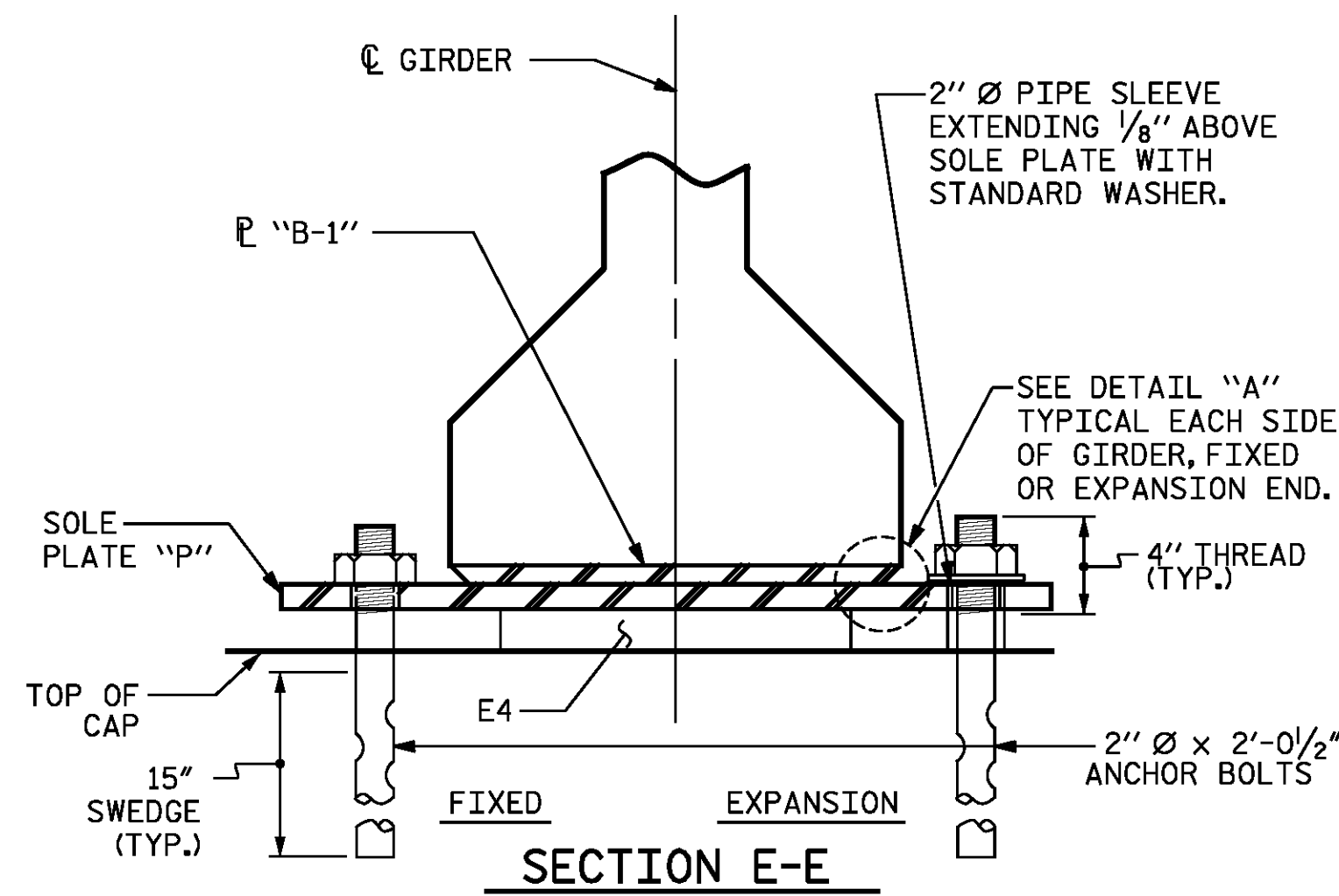
SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

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

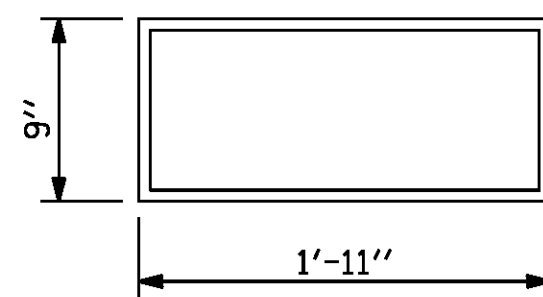
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.



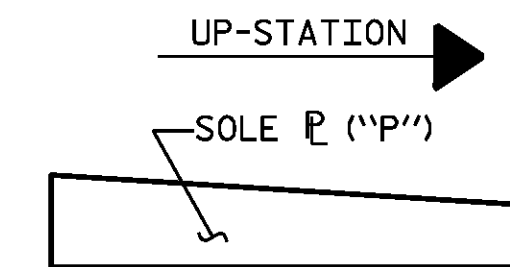
TYPICAL SECTION OF ELASTOMERIC BEARINGS



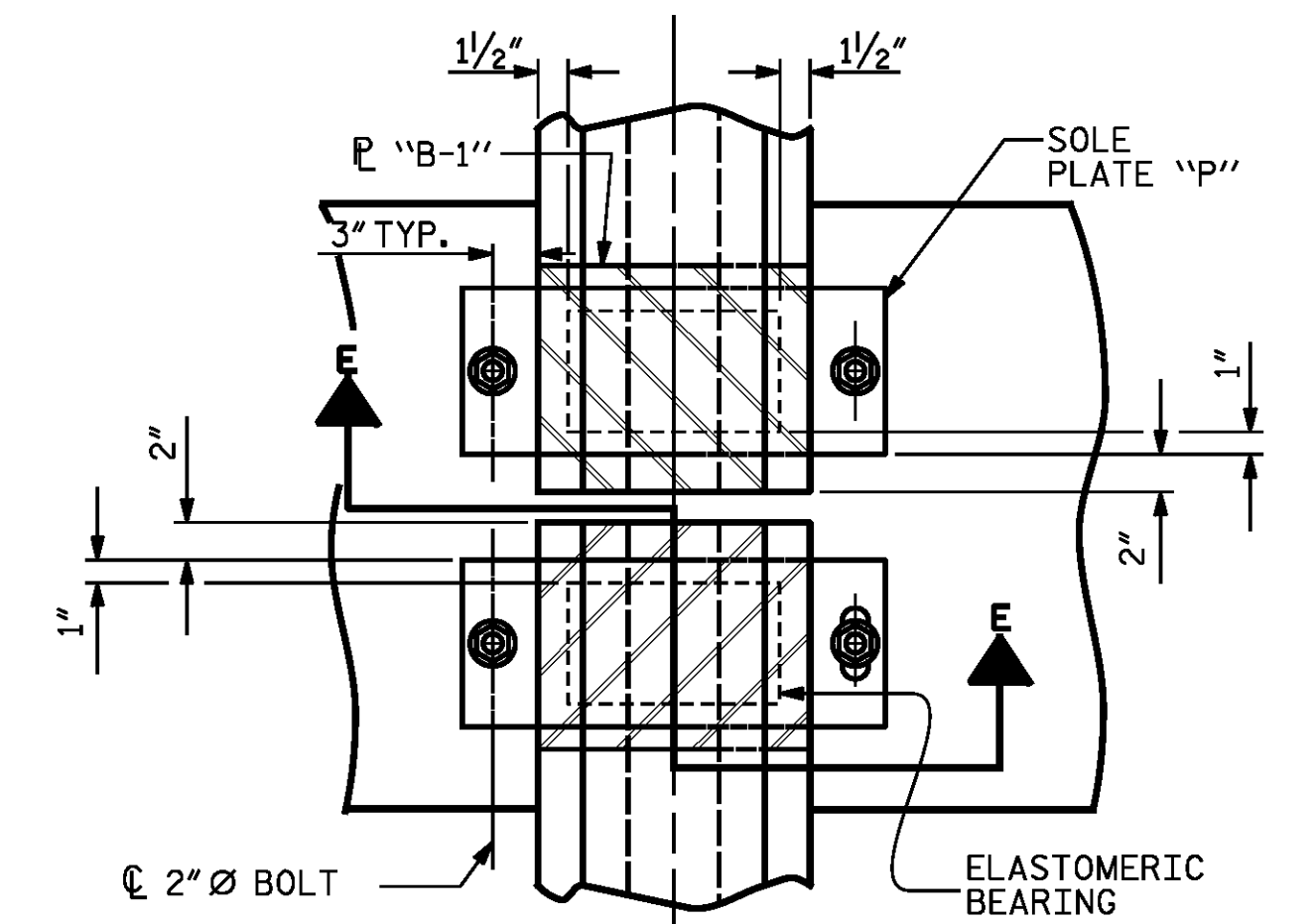
E1 (40 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE V

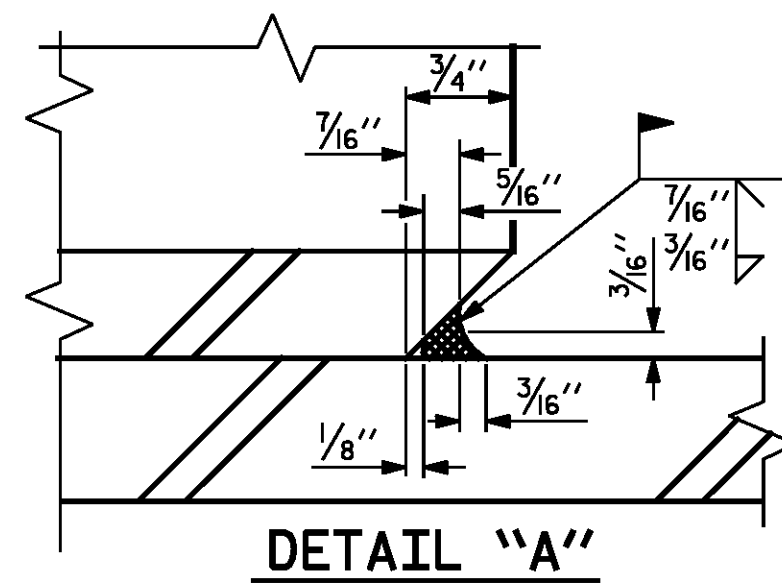


SOLE P PLACEMENT DETAIL

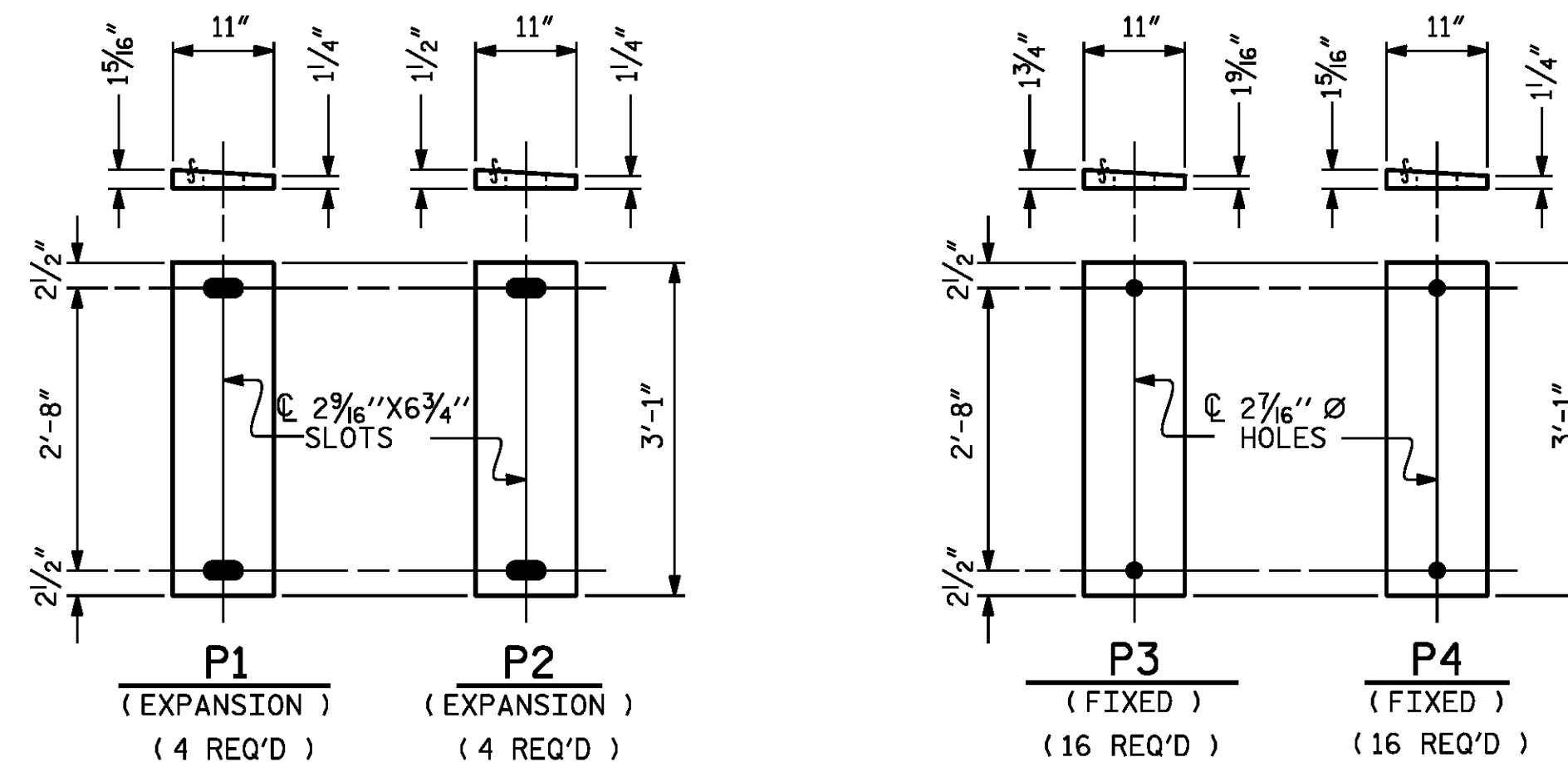


TYPICAL HALF-PLAN (SHOWING CONTINUOUS BENT)

TYPICAL HALF-PLAN (SHOWING SIMPLE SPAN BENT)



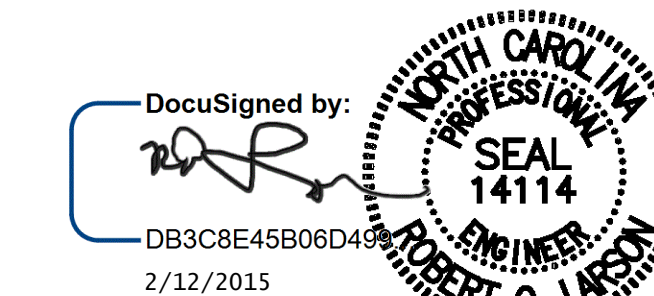
DETAIL "A"



SOLE PLATE DETAILS ("P")

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

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
ELASTOMERIC BEARING DETAILS
 RIGHT LANE STR-#6

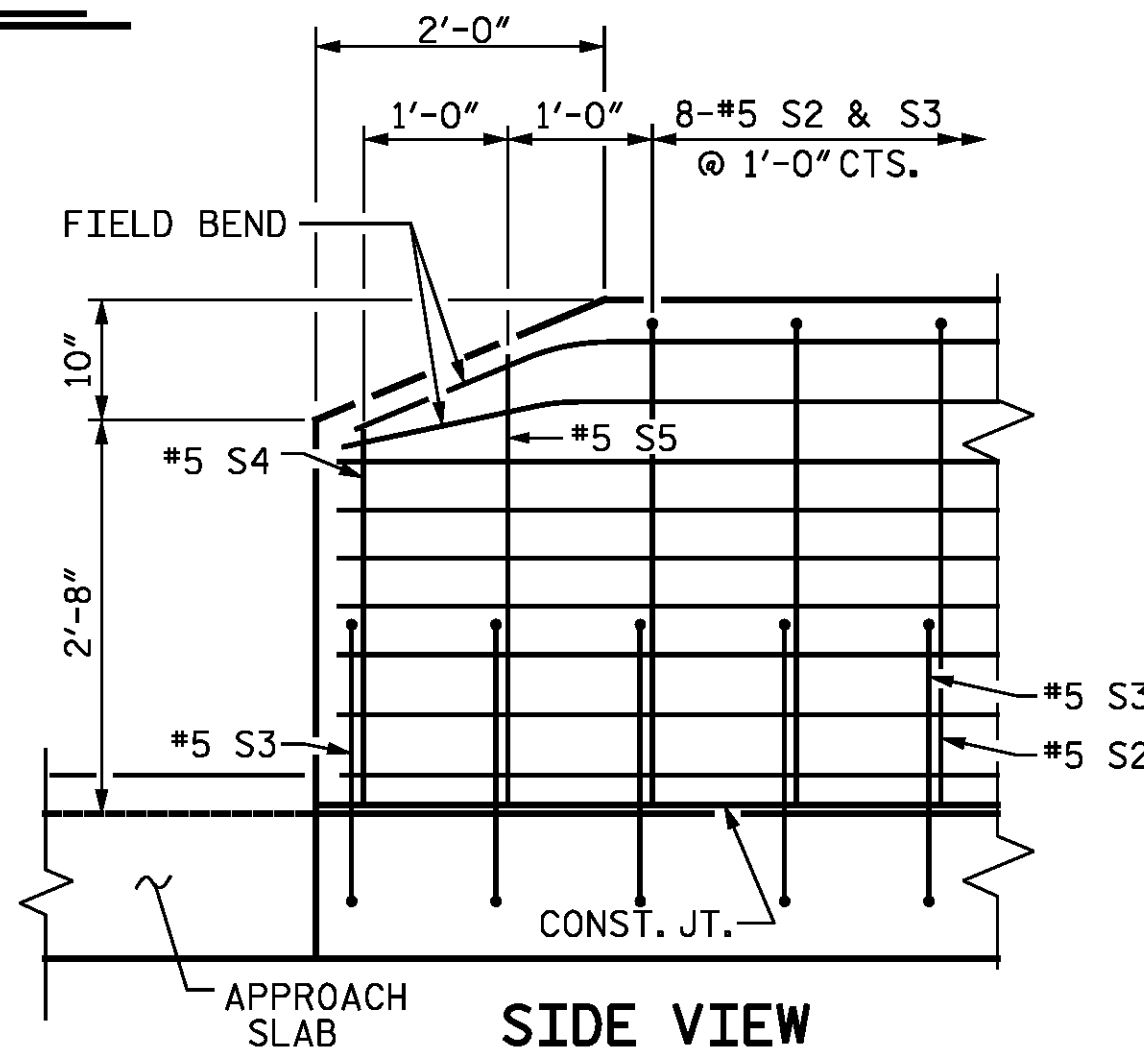
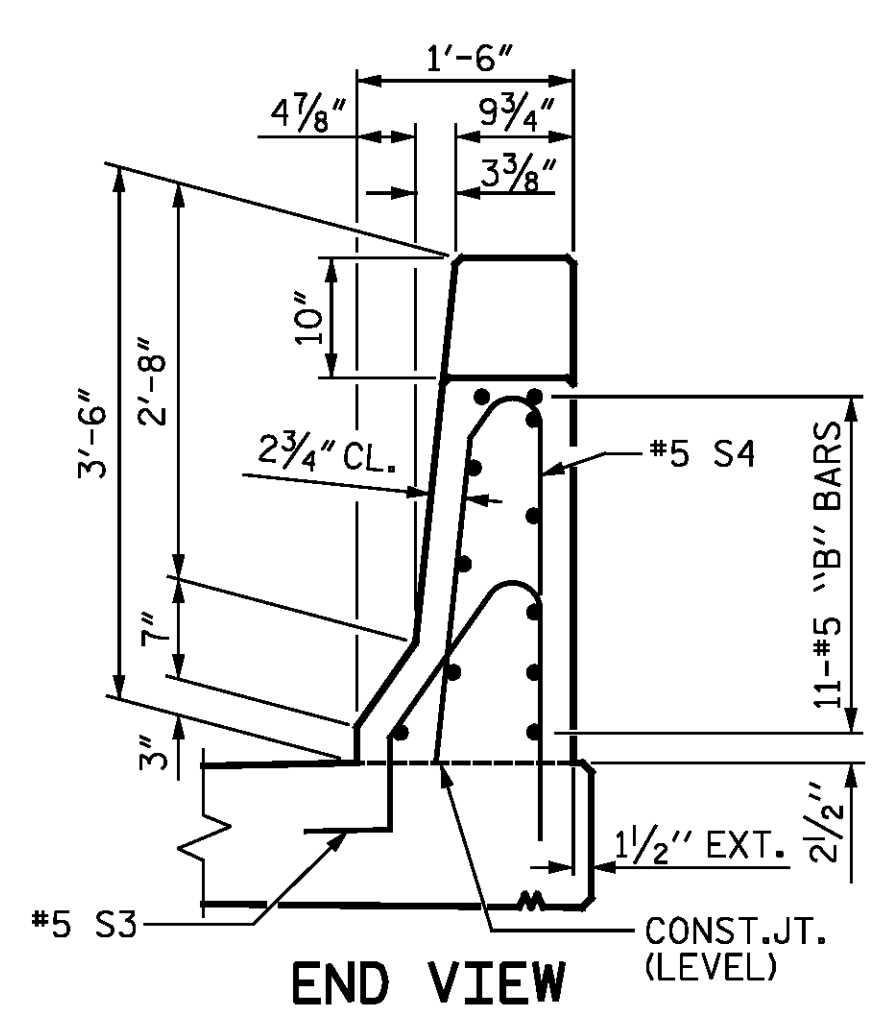
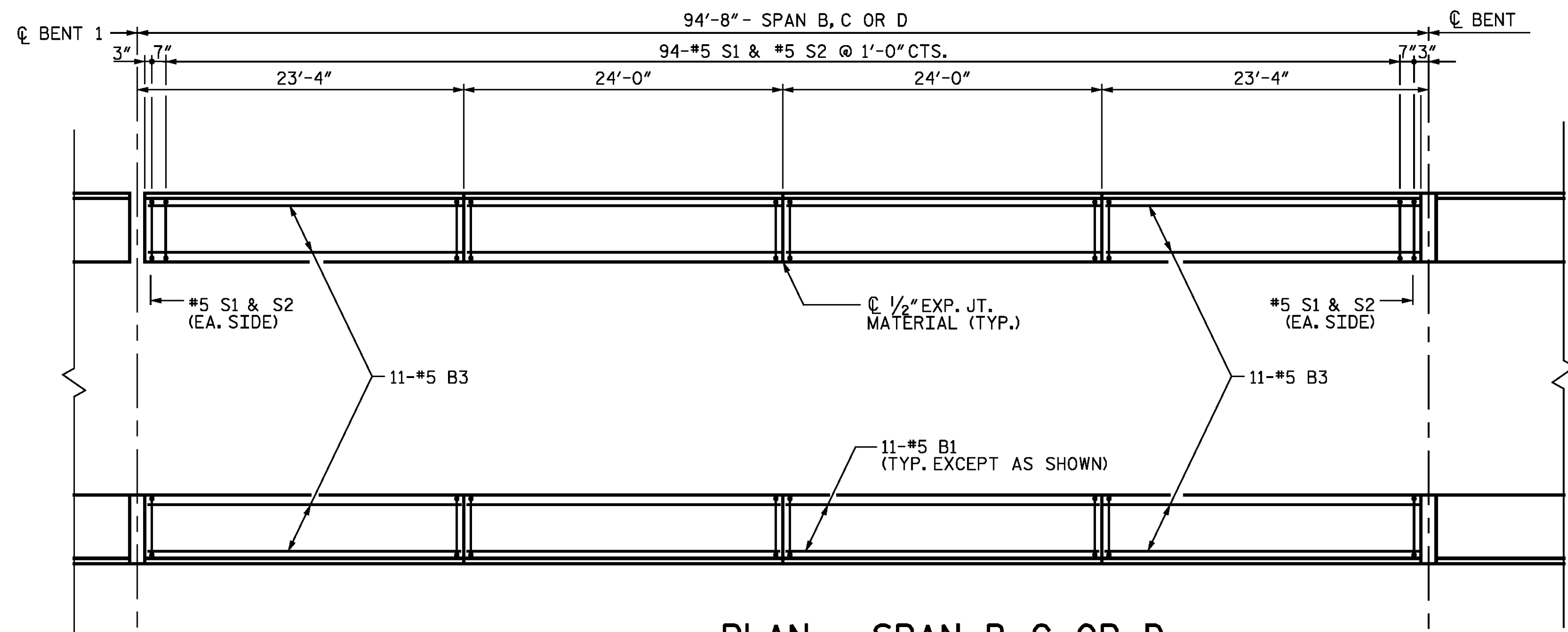
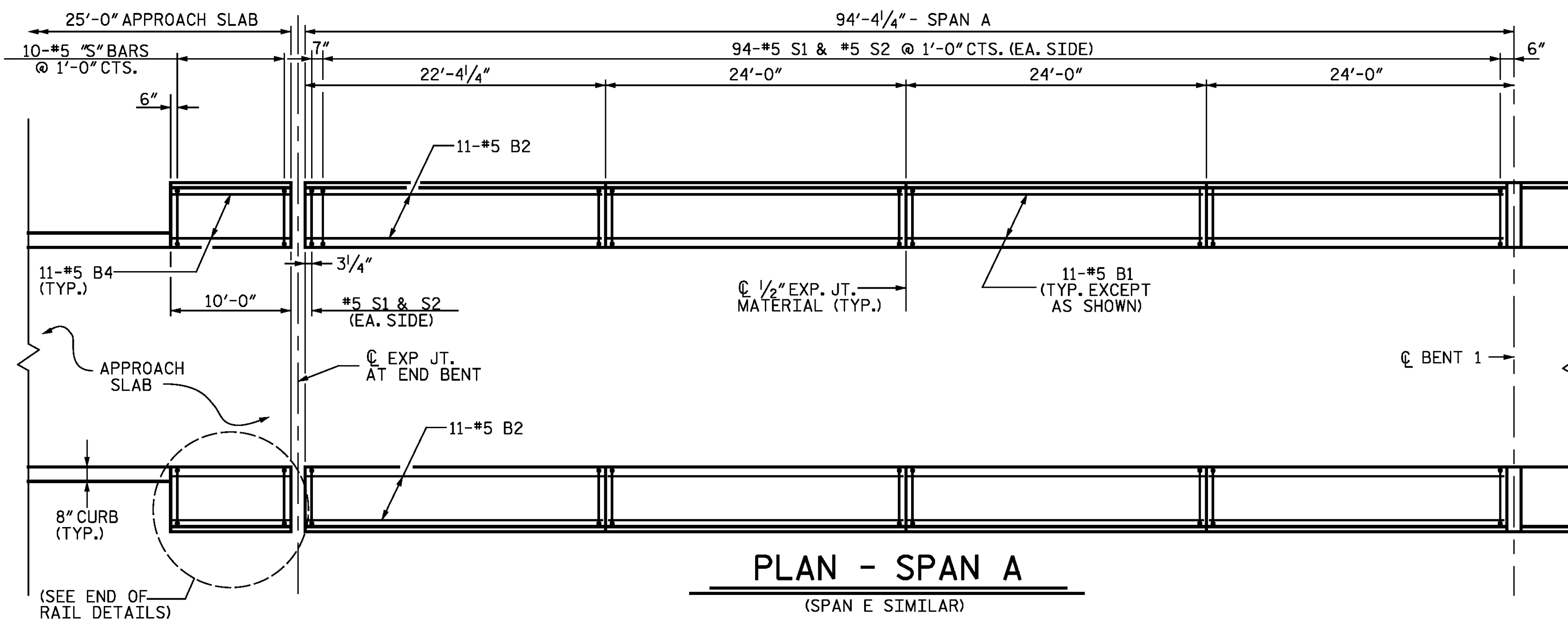
DocuSigned by:
 DB3C8E45B08D499

DESIGN ENGINEER OF RECORD:	DATE: 2/12/2015
DRAWN BY: Z. SU	DATE: 02/14/14
CHECKED BY: R. C. LARSON	DATE: 03/14/14

DRAWN BY: EEM	2/97	REV. 5/1/06	TLA/GM
CHECKED BY: VAP	2/97	REV. 10/1/11	MAA/GM
		REV. 6/13	AAC/MAA

KCI Associates of North Carolina, P.A.		REVISIONS		SHEET NO. S06-16		
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS S06-34
1			3			
2			4			

DWG. REF. NO. 16 OF 34



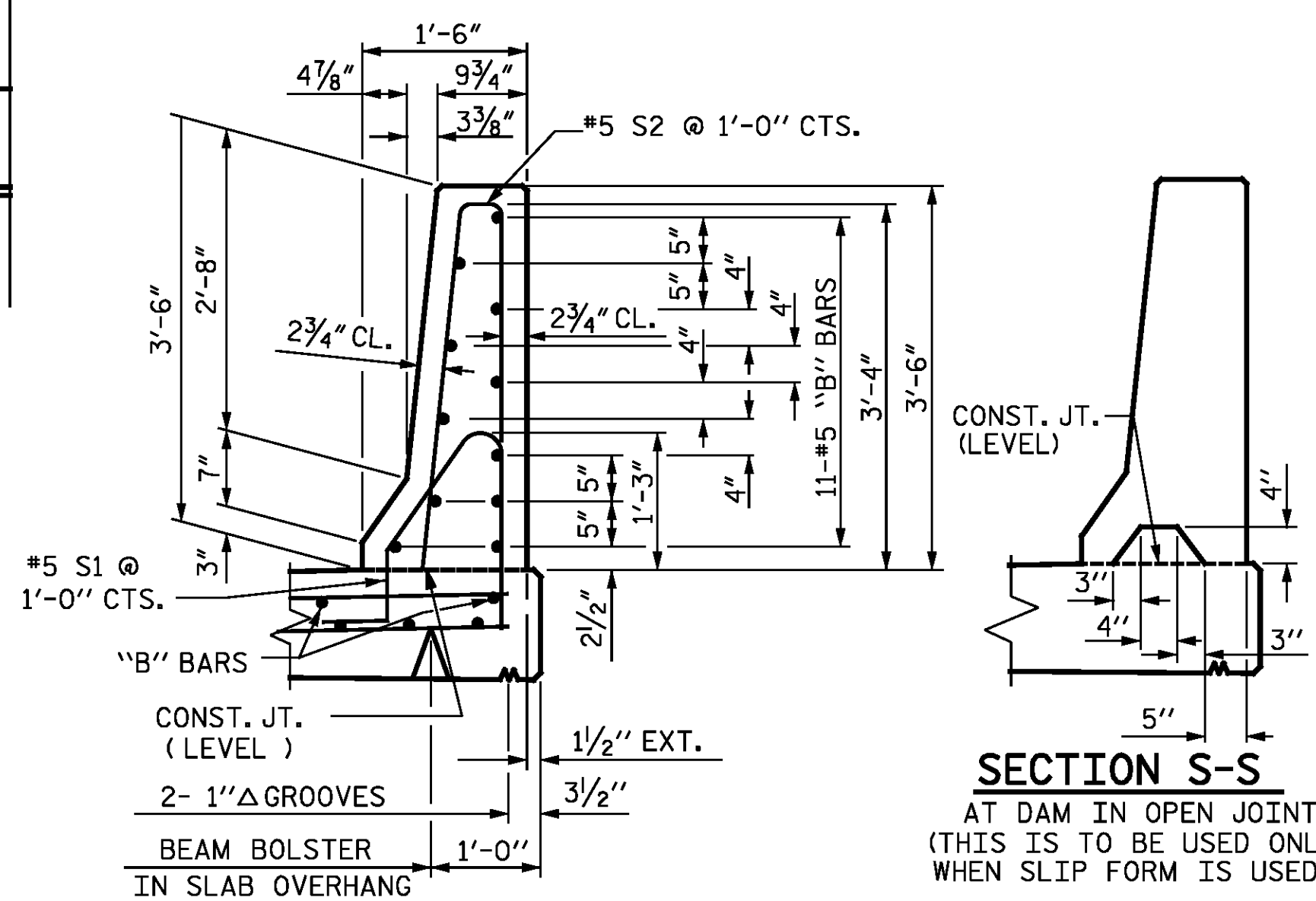
END OF RAIL DETAILS

NOTES

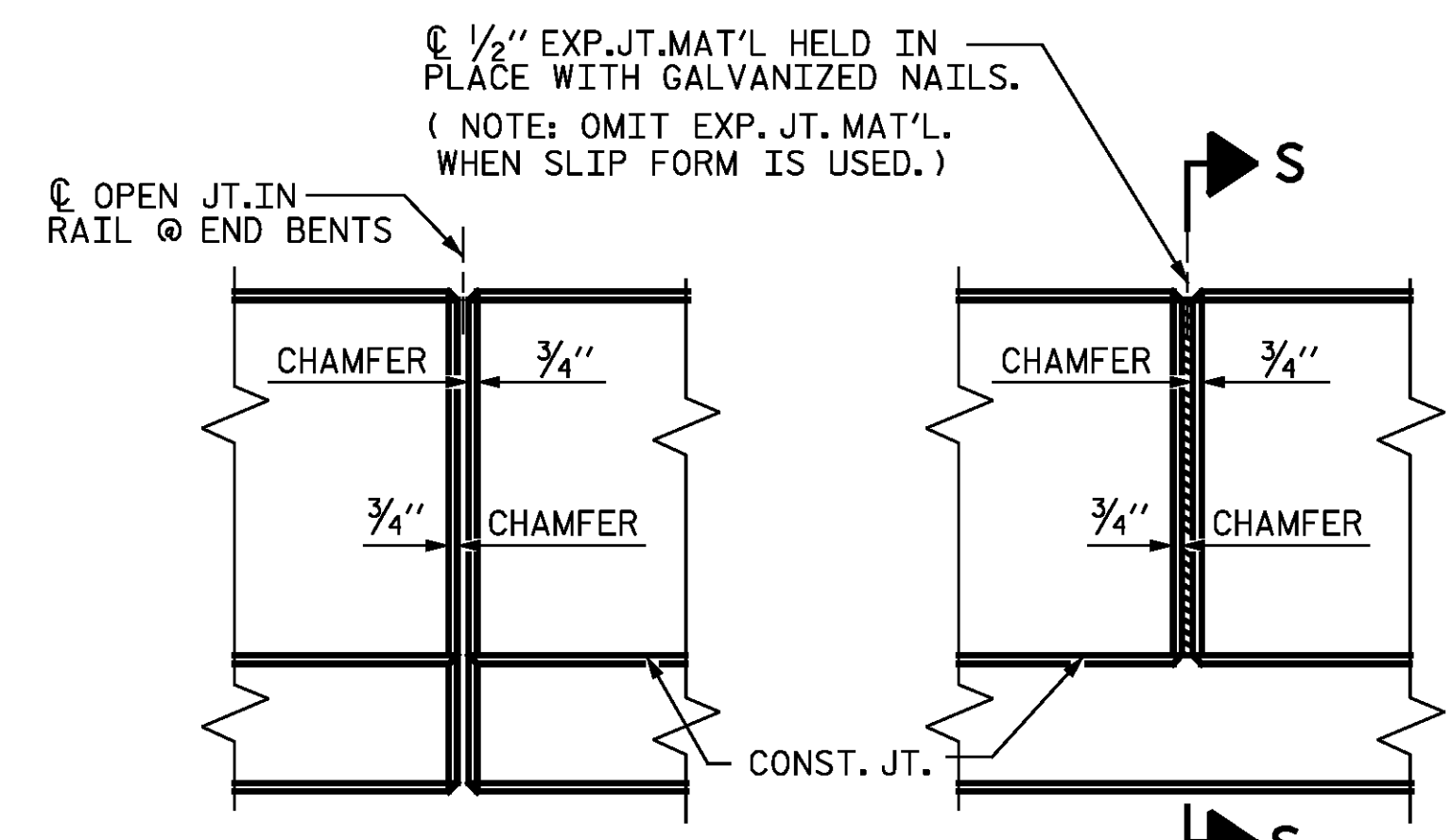
THE BARRIER RAIL SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS, THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

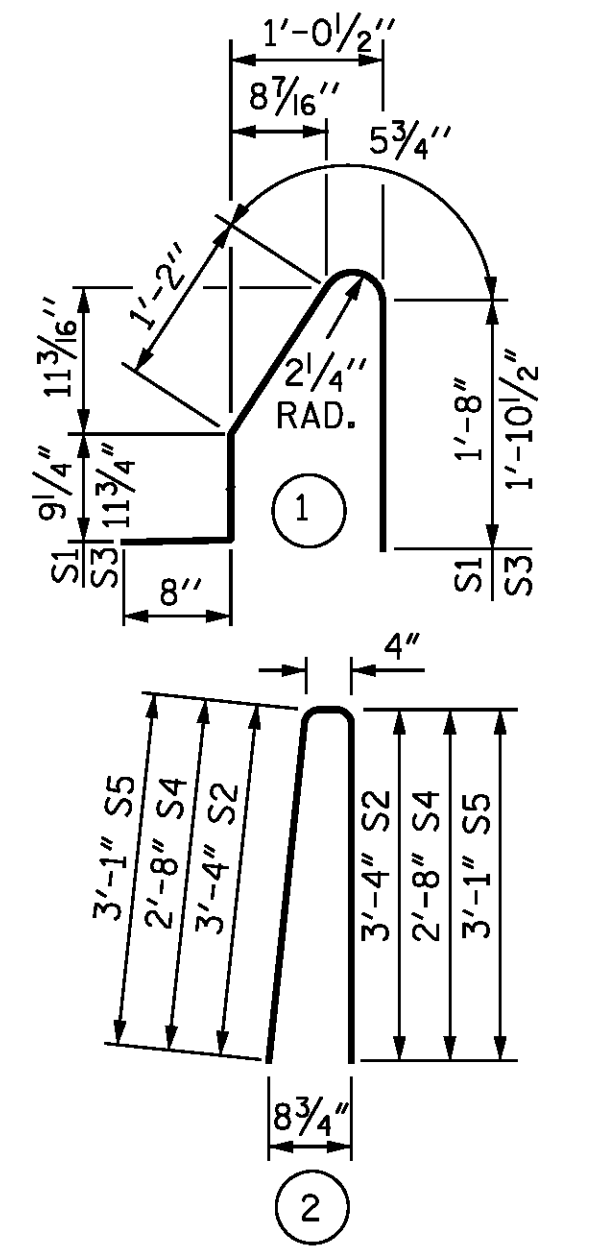


SECTION THRU RAIL



ELEVATION AT EXPANSION JOINTS
BARRIER RAIL DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	264	#5	STR.	23'-7"	6494
*B2	44	#5	STR.	22'-0"	1010
*B3	132	#5	STR.	23'-0"	3167
*B4	44	#5	STR.	9'-8"	444
*S1	956	#5	1	4'-9"	4736
*S2	988	#5	2	7'-0"	7213
*S3	40	#5	1	5'-2"	216
*S4	4	#5	2	5'-8"	24
*S5	4	#5	2	6'-6"	27

* EPOXY COATED REINFORCING STEEL 23331

CLASS AA CONCRETE 133.4 CU. YDS.

CONCRETE BARRIER RAIL 986.00 LTN. FT.

REV. 10/1/11 MAA/GM
 REV. 7/12 MAA/GM
 REV. 10/12 MAA/GM

DESIGN ENGINEER OF RECORD DATE: 2/12/2015

DRAWN BY: Z. SU DATE: 02/13/14
 CHECKED BY: R.C. LARSON DATE: 03/14/14

DocuSigned by:
 DB3C8E45B06D499...
 2/12/2015

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14114
 ROBERT C. LARSON

KCI Associates of North Carolina, P.A.
 DWG. REF. NO. 17 OF 34

PROJECT NO. R-2514D
 JONES COUNTY
 STATION: 373+02.50 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CONCRETE BARRIER RAIL

RIGHT LANE STR-#6

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

TOTAL SHEETS 506-34

NOTES

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

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

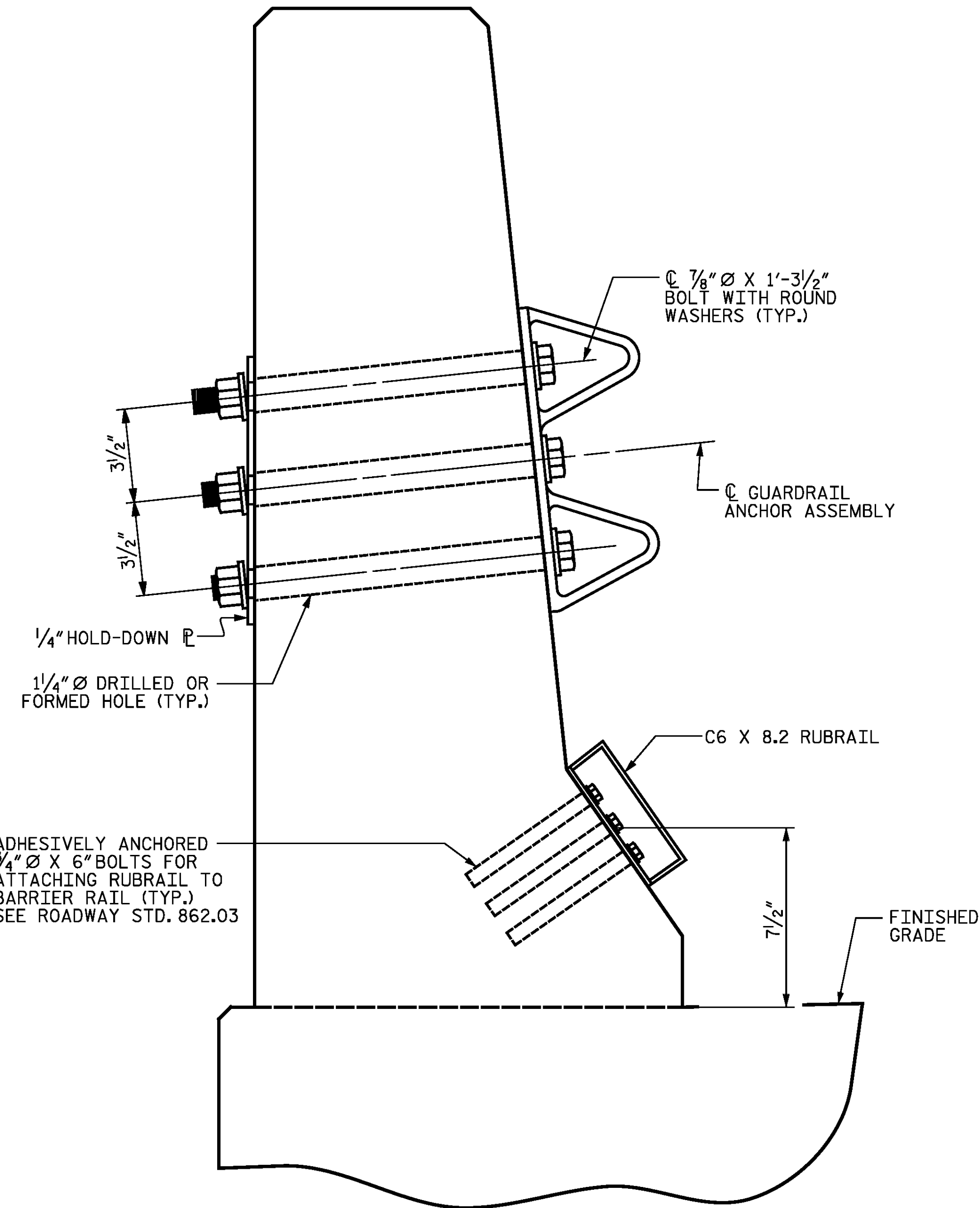
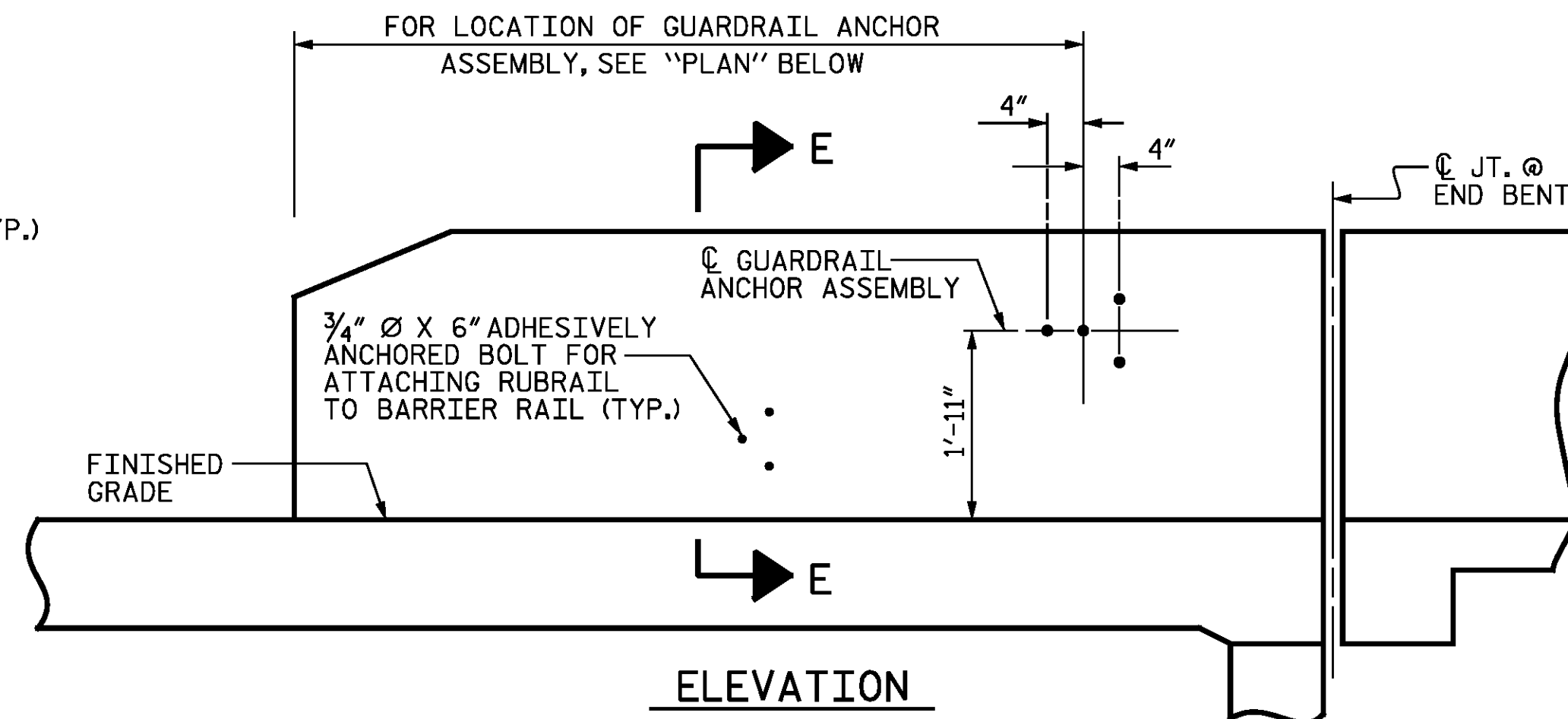
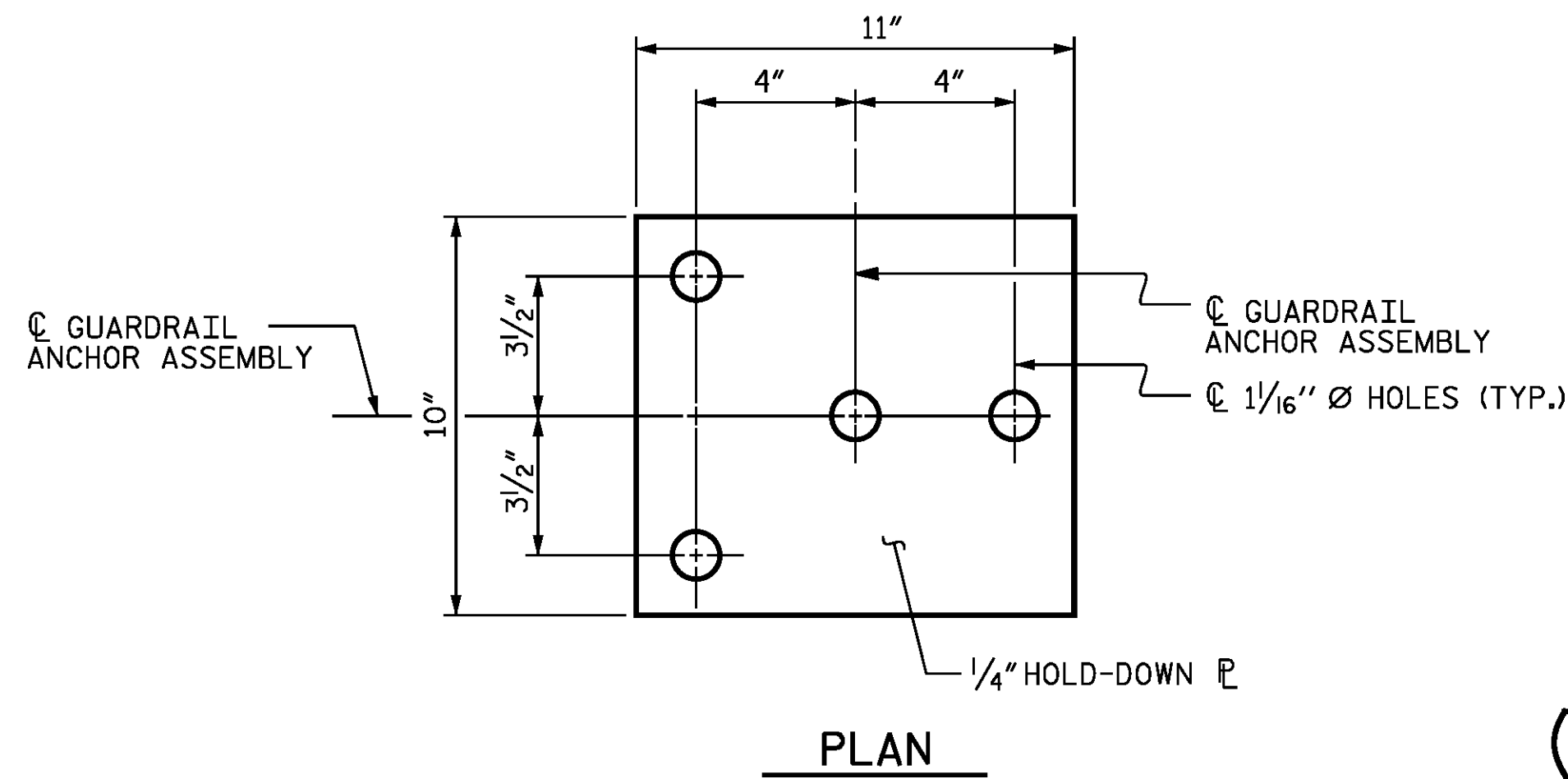
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

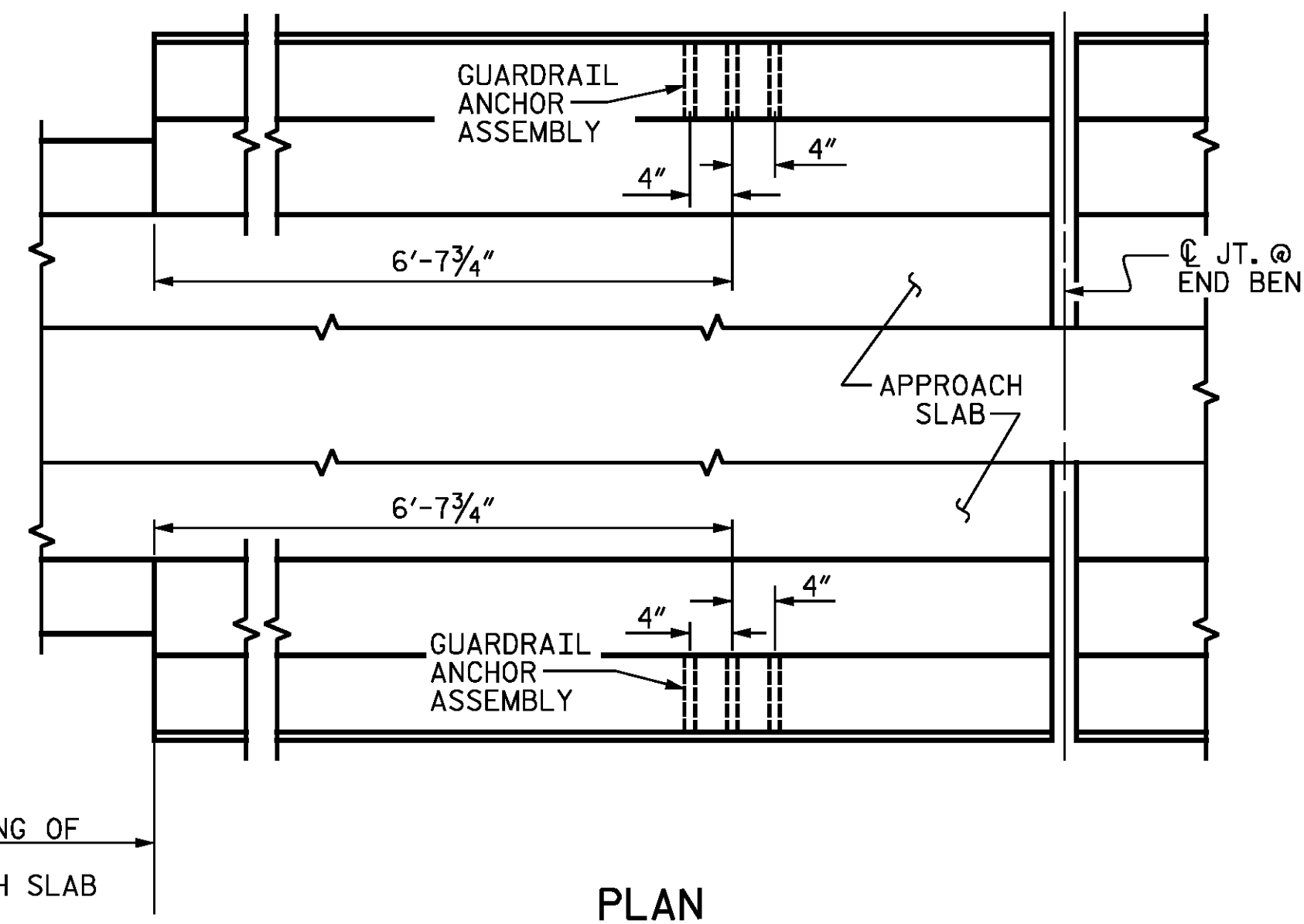
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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

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

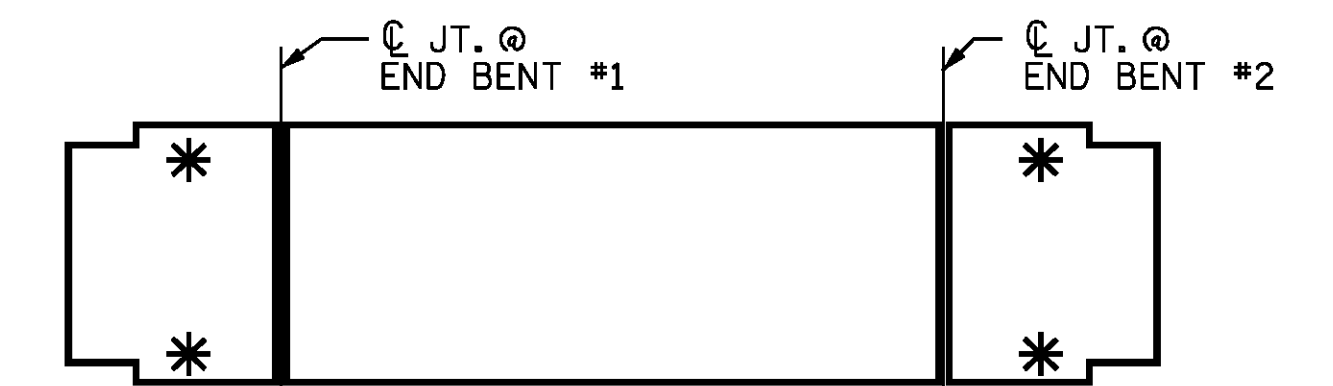


**SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS**



LOCATION OF ANCHORS FOR GUARDRAIL

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



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-2514D

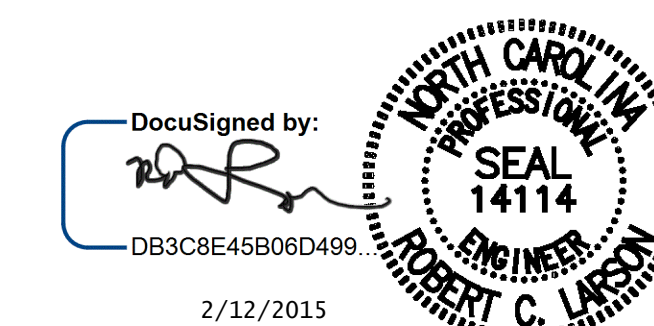
JONES COUNTY

STATION: 373+02.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**GUARDRAIL ANCHORAGE
FOR BARRIER RAIL**

STD. NO. GRA2 RIGHT LANE STR-#6



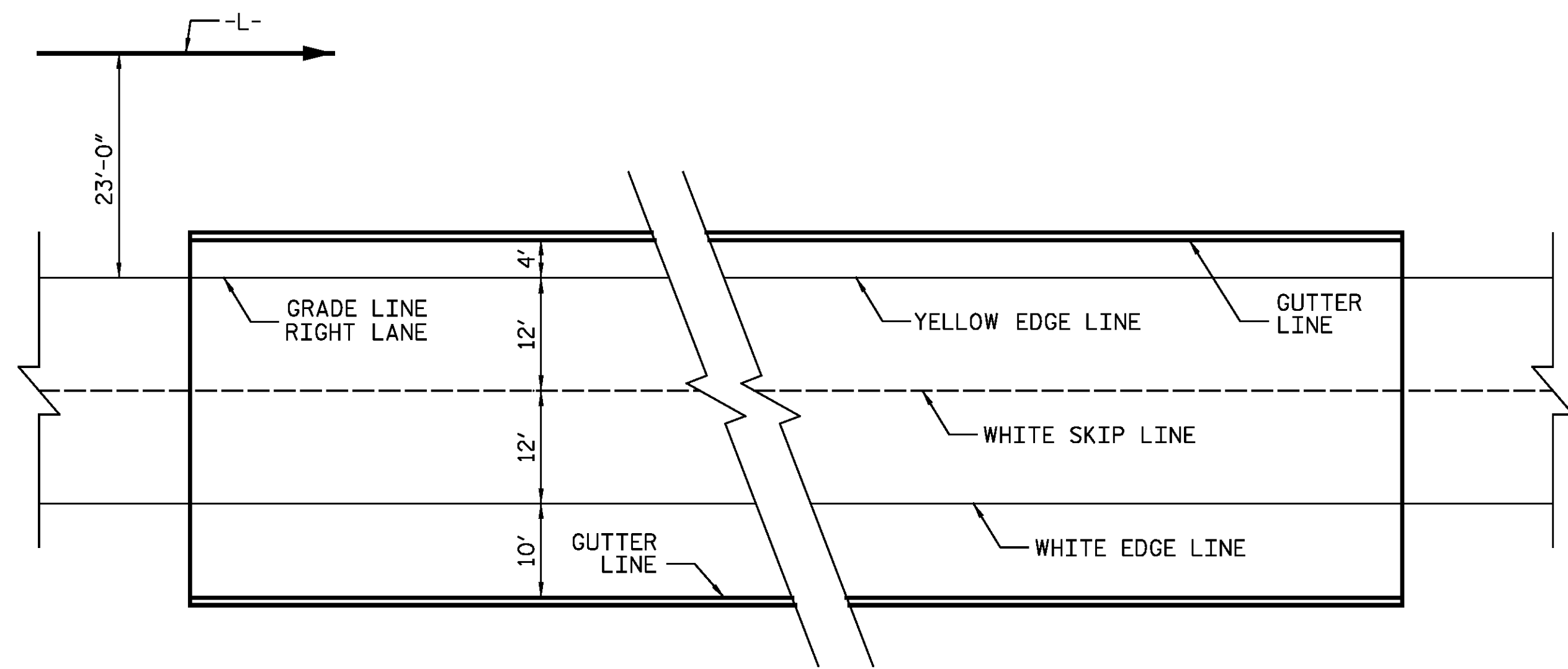
2/12/2015

DESIGN ENGINEER OF RECORD:	DATE :	2/12/2015
DRAWN BY :	Z. SU	DATE : 02/14/14
CHECKED BY :	R. C. LARSON	DATE : 03/14/14

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

TOTAL SHEETS: S06-34

ADDRESS: #1 PLANNERS @ ECOLOGETS LESLIE NUMBER: C-0714
KCI Associates
of North Carolina, P.A.
STATE: 500 LANDMARK CENTER 1400 SIX FORKS RD. RALEIGH, N.C. 27609-5300 (919) 783-2044
DWG. REF. NO. 18 OF 34



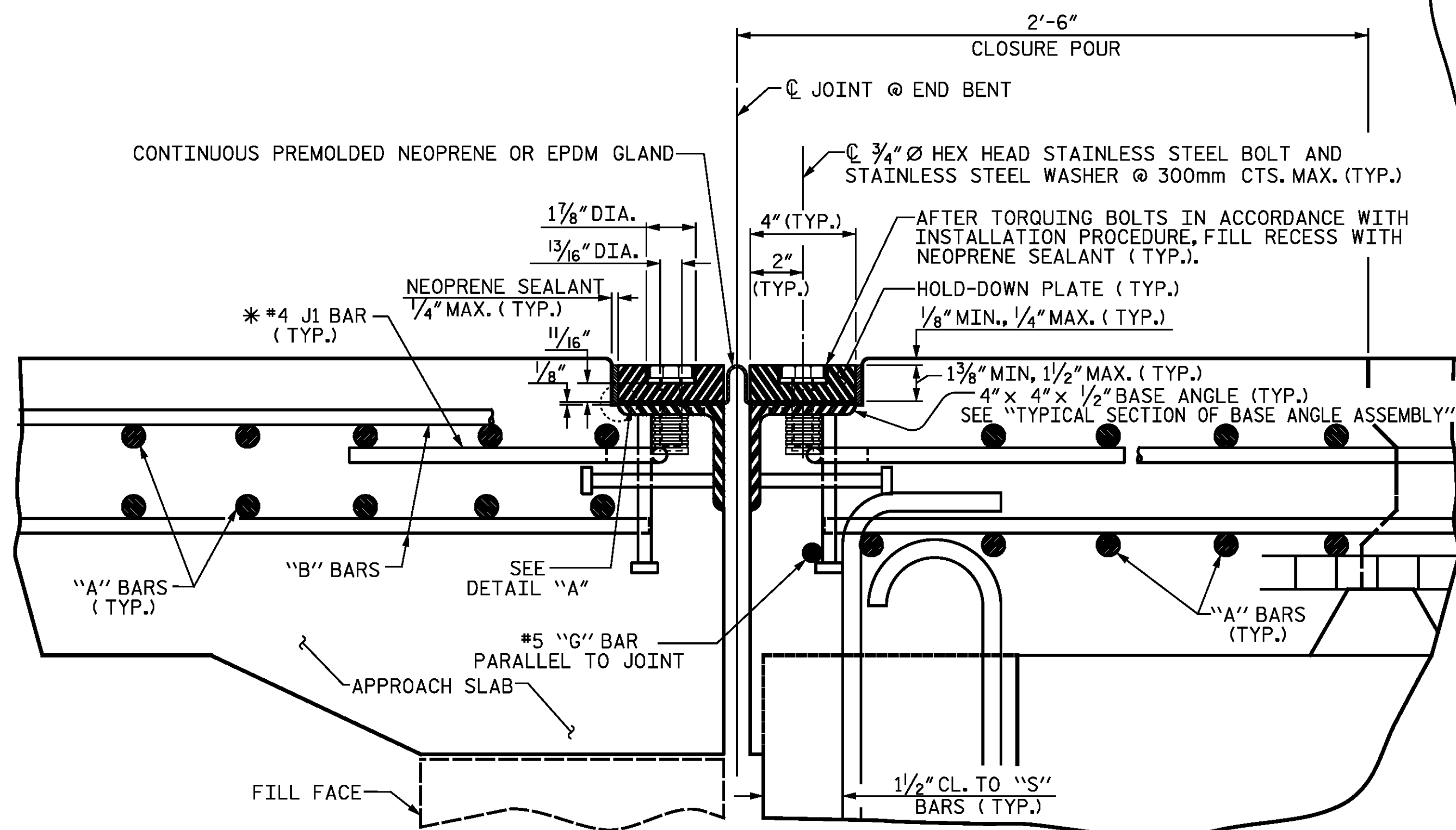
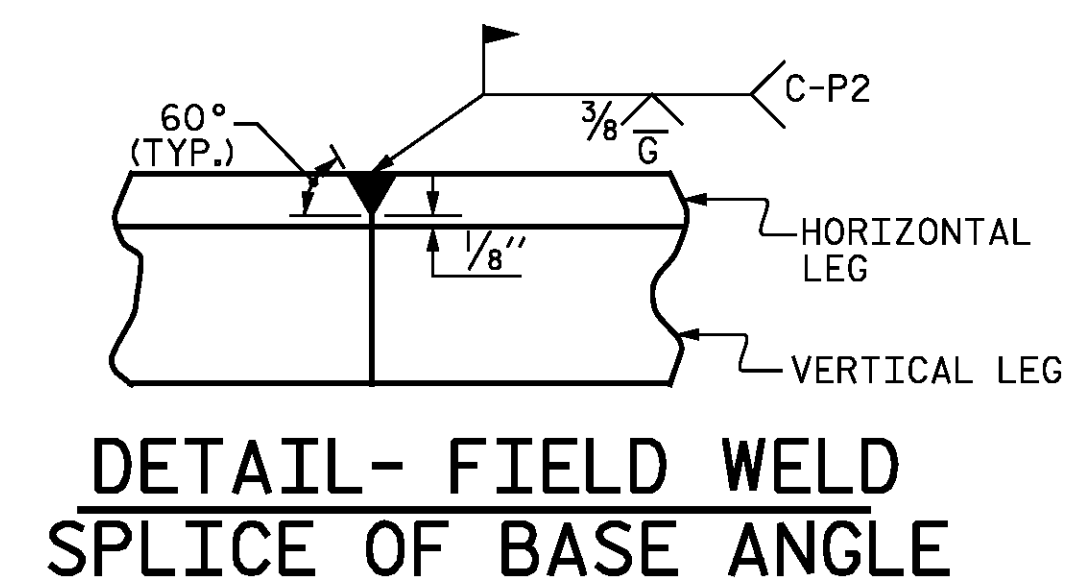
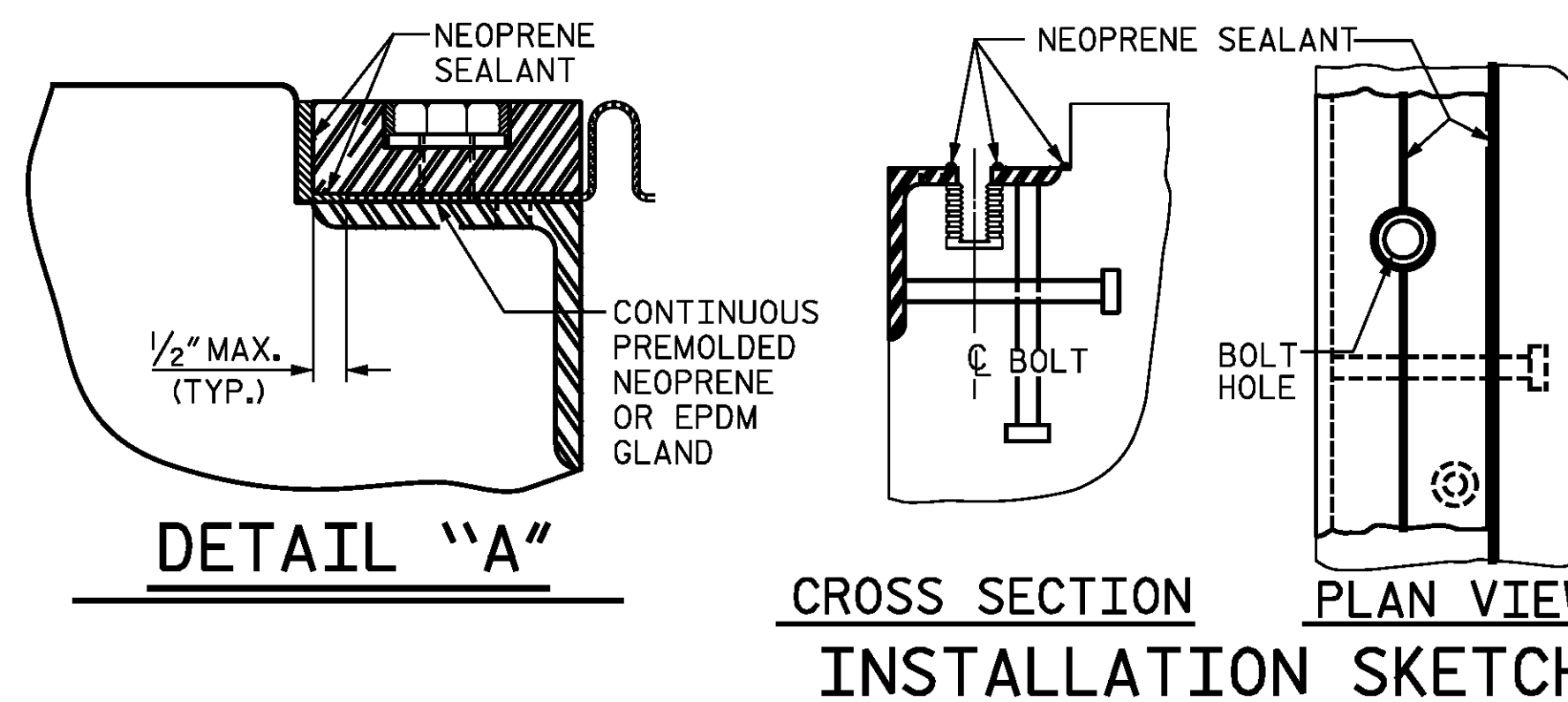
PAVEMENT MARKING ALIGNMENT

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 4/8" TO 4/4" 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.

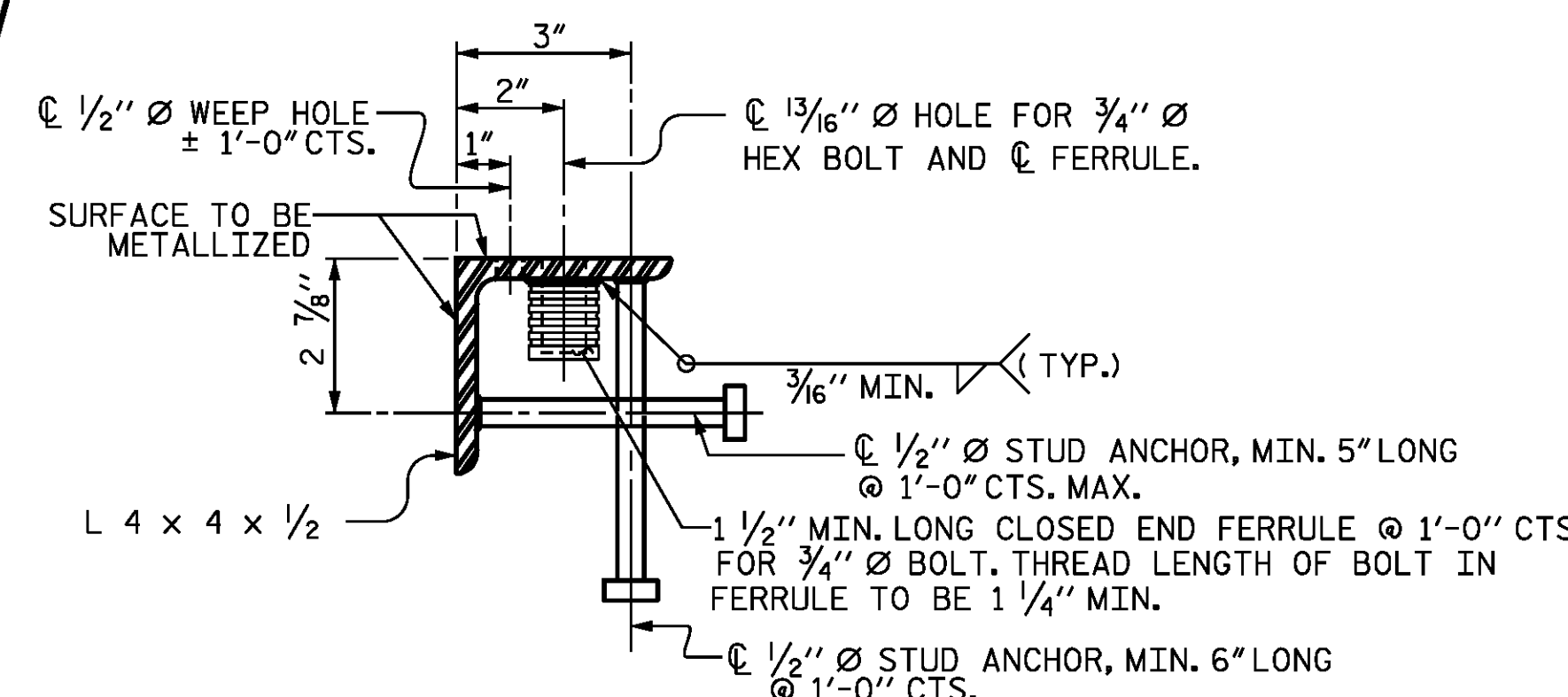


EXPANSION JOINT DETAILS

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 BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF J1 BARS SPECIFIED, ADDITIONAL J1 BARS WILL NOT BE REQUIRED.

MOVEMENT AND SETTING AT JOINT					
END BENT NO.	SKEW ANGLE	TOTAL MOVEMENT (ALONG C ROWY)	PERPENDICULAR JOINT OPENING AT 30° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
1	90°	1/16"	2/4"	1/4"	1/4"
2	90°	1/16"	2/4"	1/4"	1/4"



TYPICAL SECTION OF BASE ANGLE ASSEMBLY

DESIGN ENGINEER OF RECORD: DATE: 2/12/2015
 DRAWN BY: Z. SU DATE: 02/14/14
 CHECKED BY: R. C. LARSON DATE: 03/14/14

DocuSigned by:
 DB3CB8E45B06D499
 2/12/2015
 NORTH CAROLINA PROFESSIONAL SEAL 14114
 ENGINEER ROBERT C. LARSON

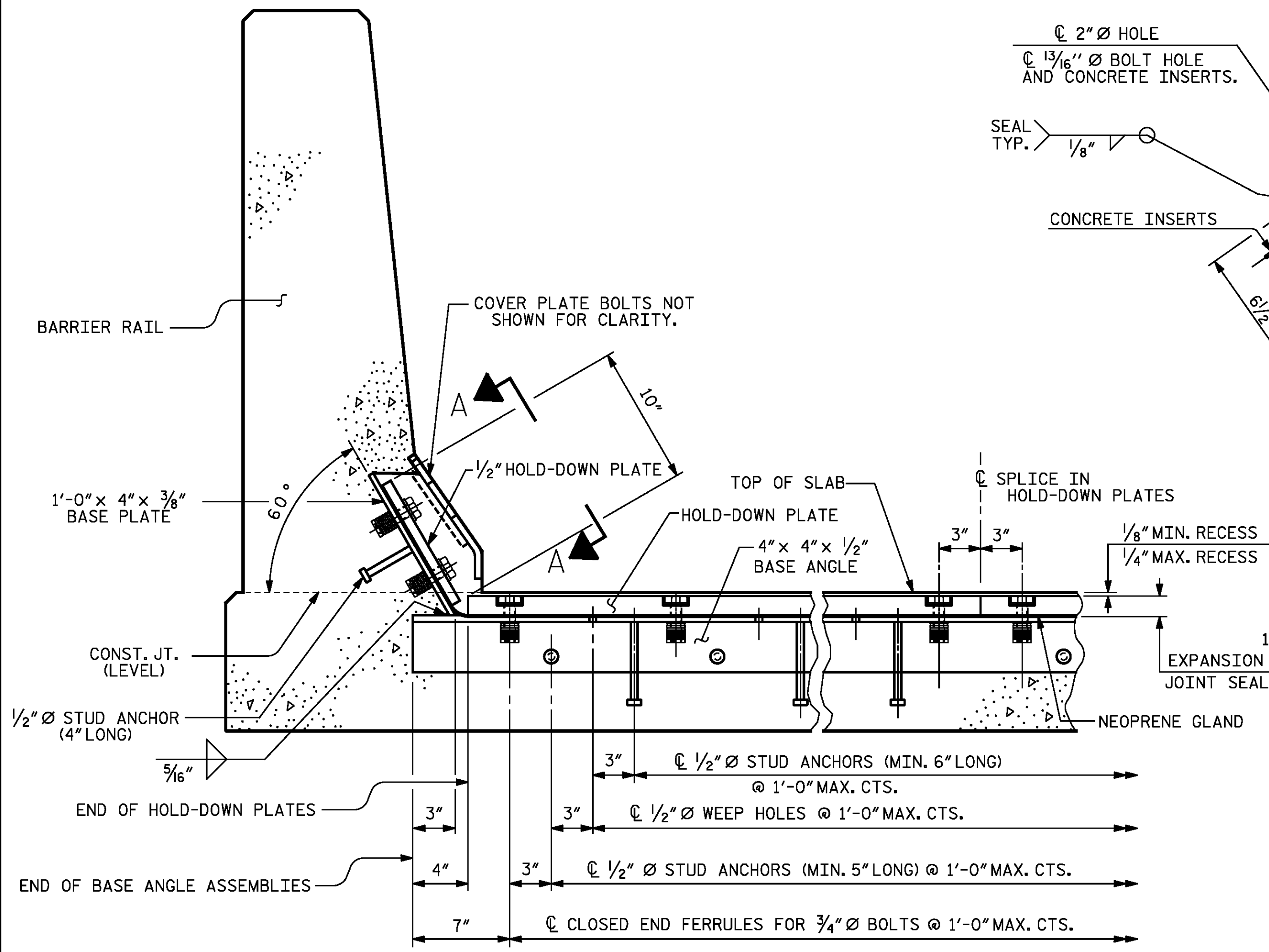
PROJECT NO. R-2514D
 JONES COUNTY
 STATION: 373+02.50 -L-
 SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 EXPANSION JOINT SEAL DETAILS
 STD. NO. EJS1 RIGHT LANE STR-#6

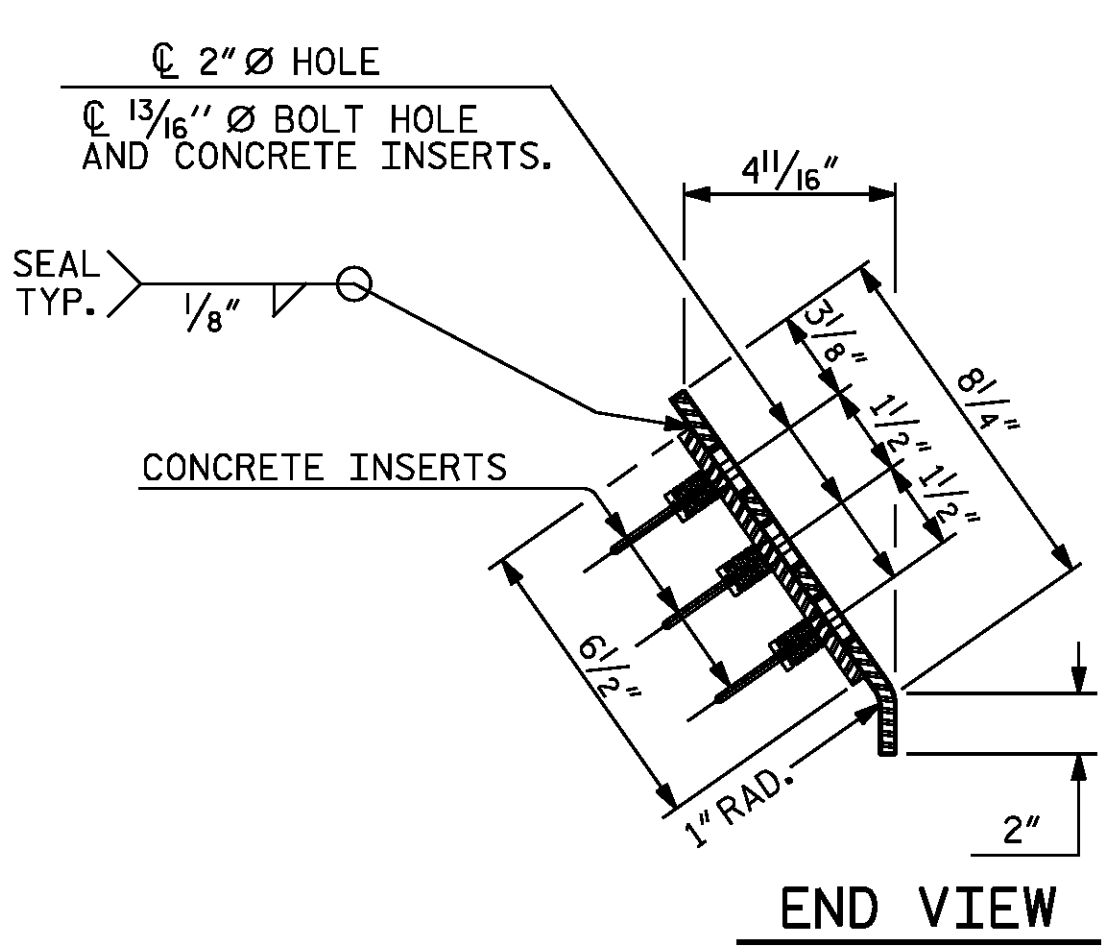
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S06-19
 TOTAL SHEETS S06-34

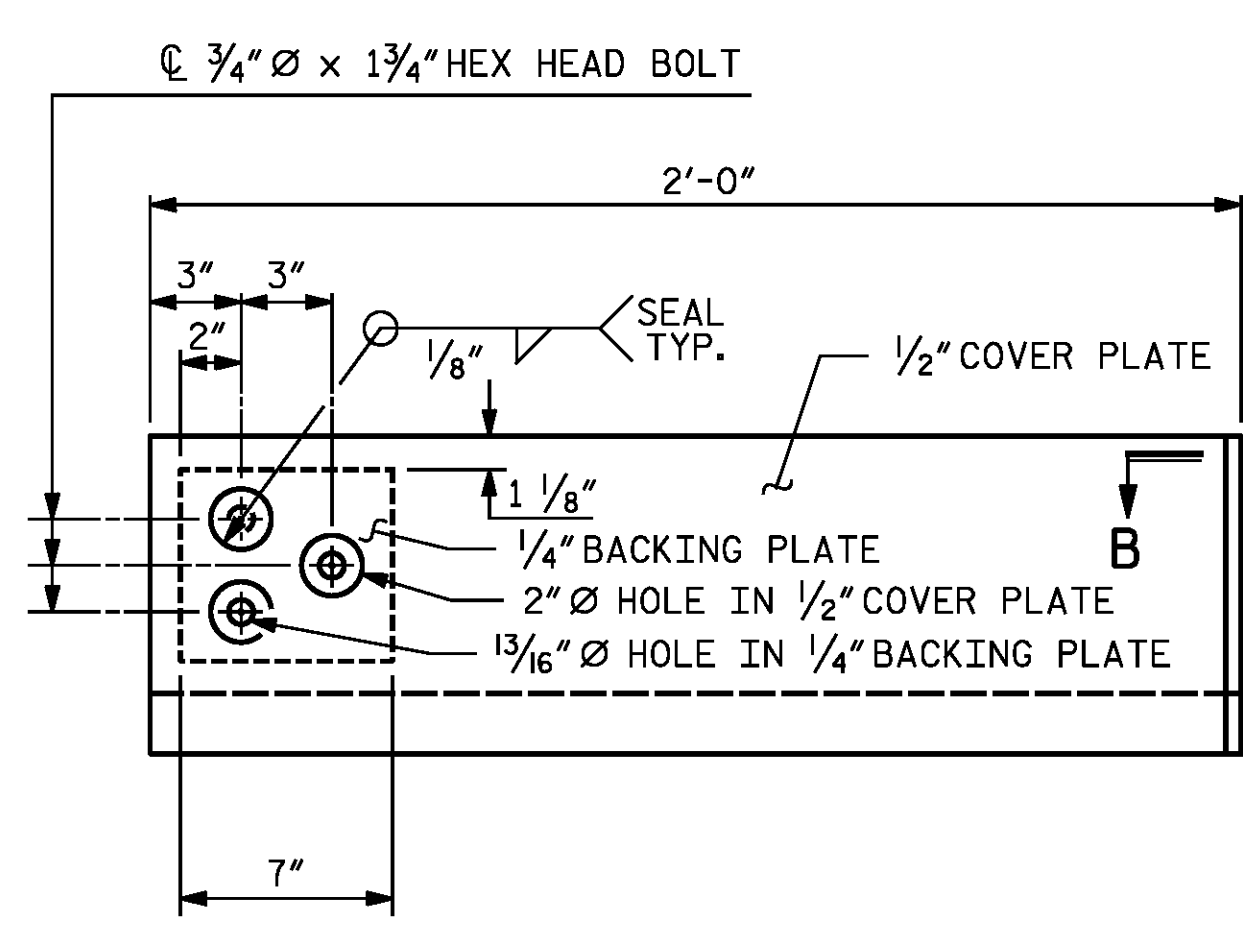
KCI Associates of North Carolina, P.A.
 DWG. REF. NO. 19 OF 34



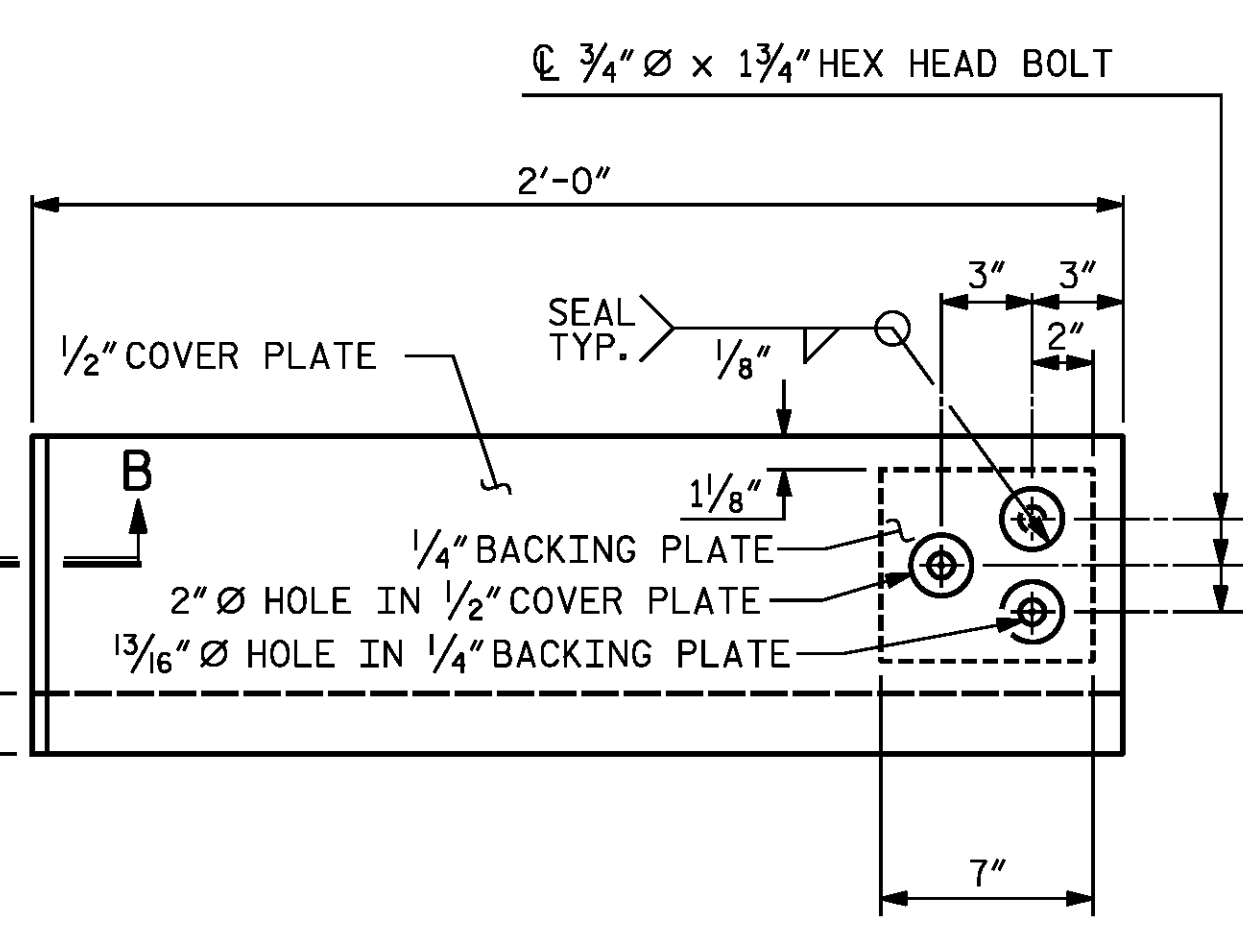
SECTION THRU RAIL NORMAL TO JOINT



END VIEW

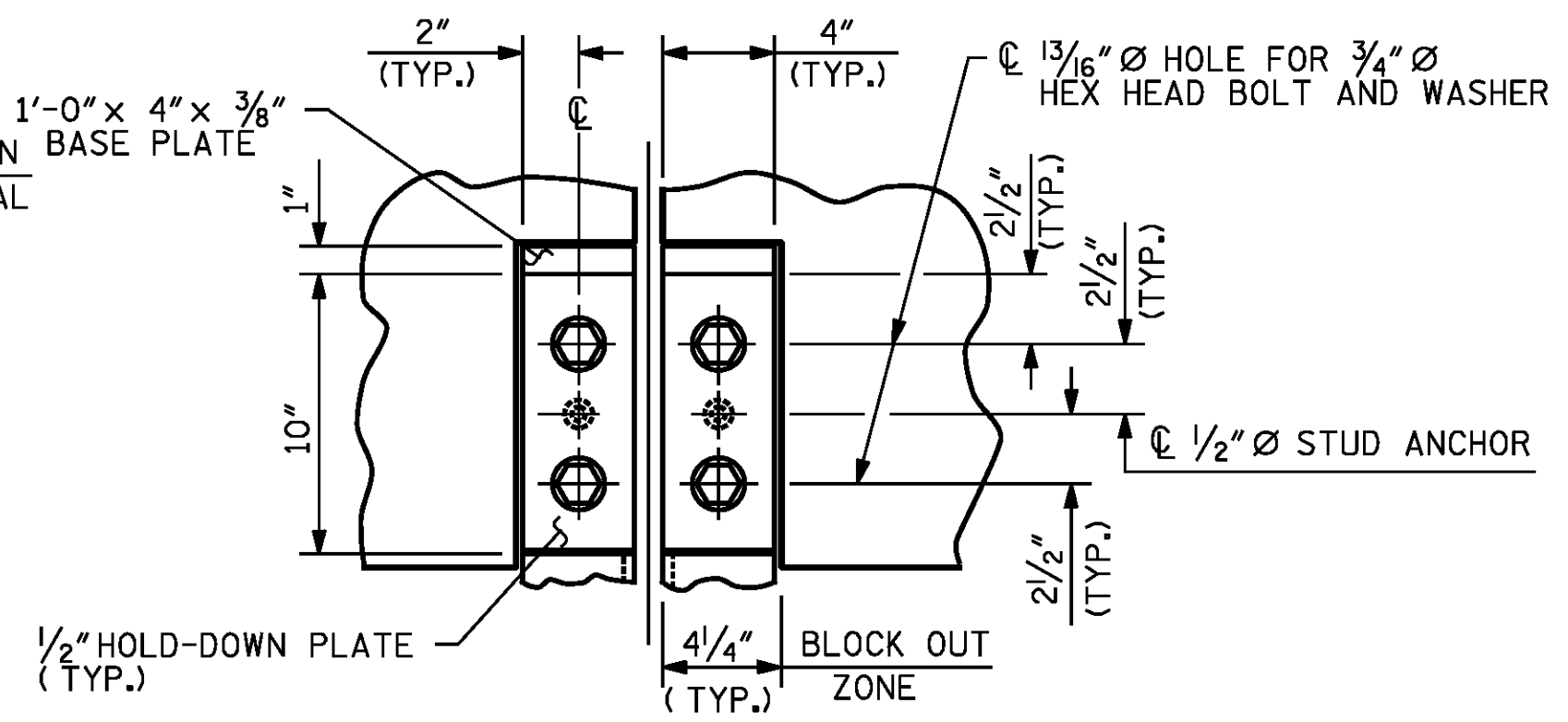


TYPE I - ELEVATION VIEW

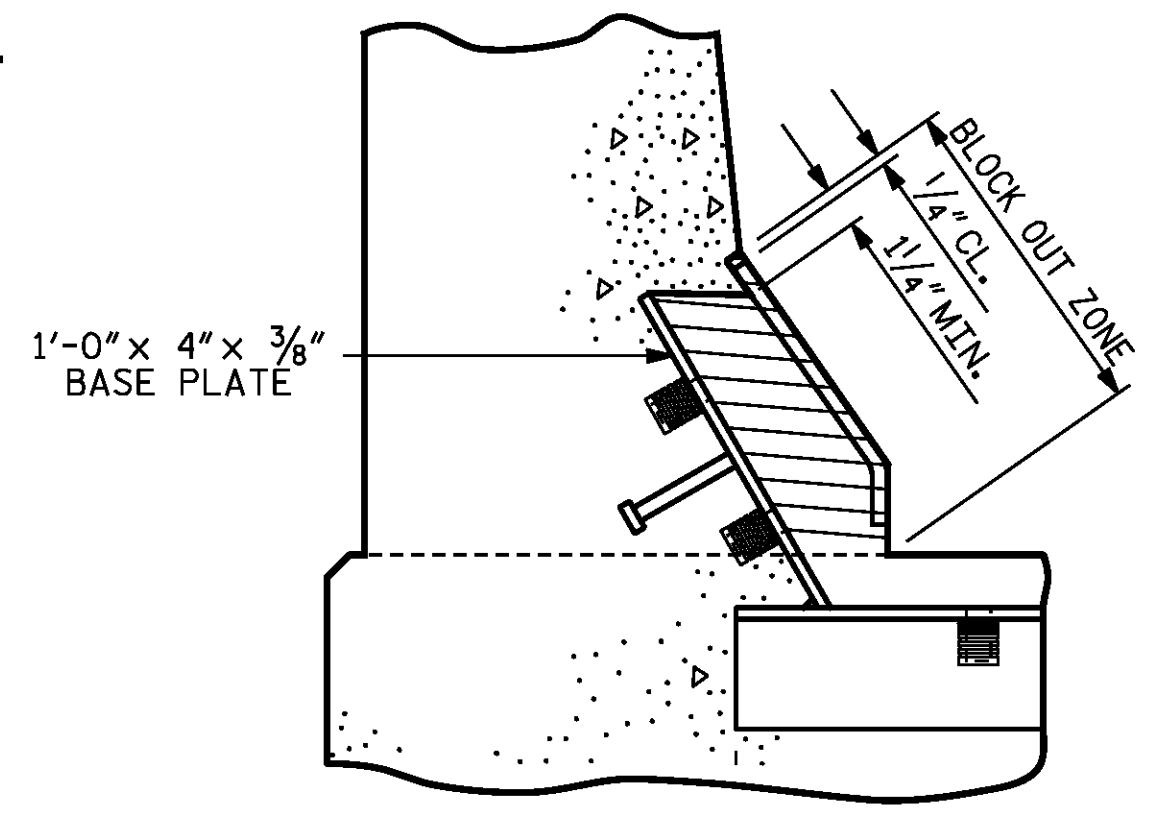


TYPE II - ELEVATION VIEW

COVER PLATE DETAILS

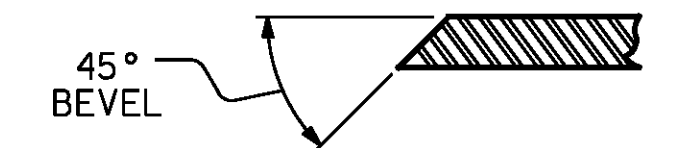


SECTION A - A

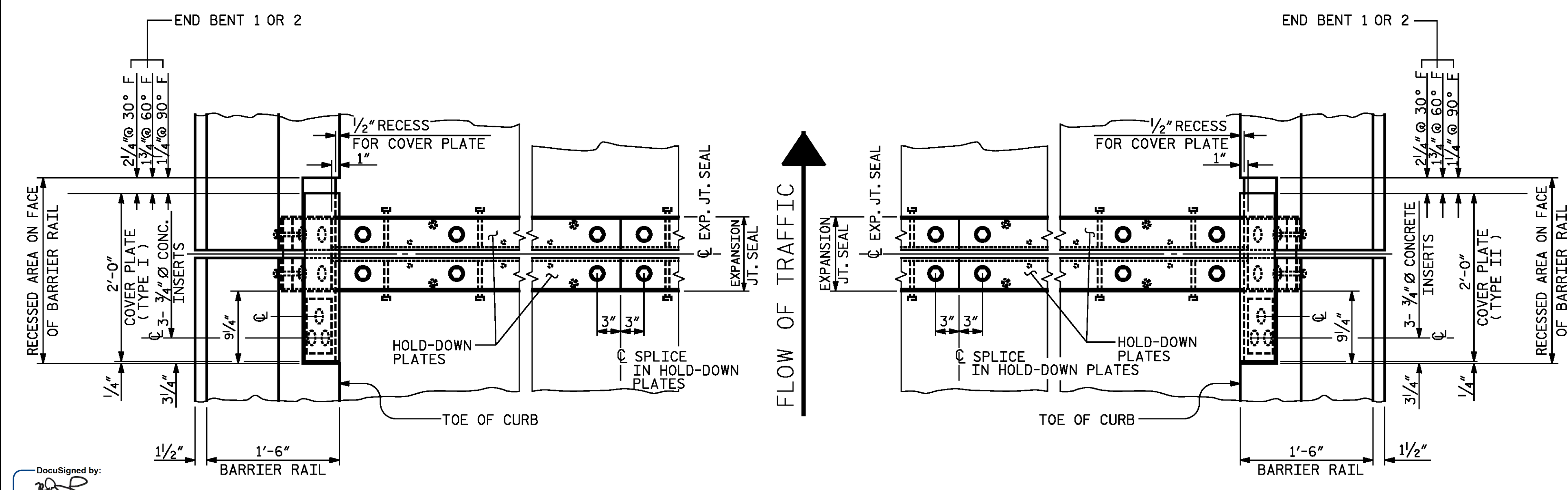


BLOCK OUT DETAIL

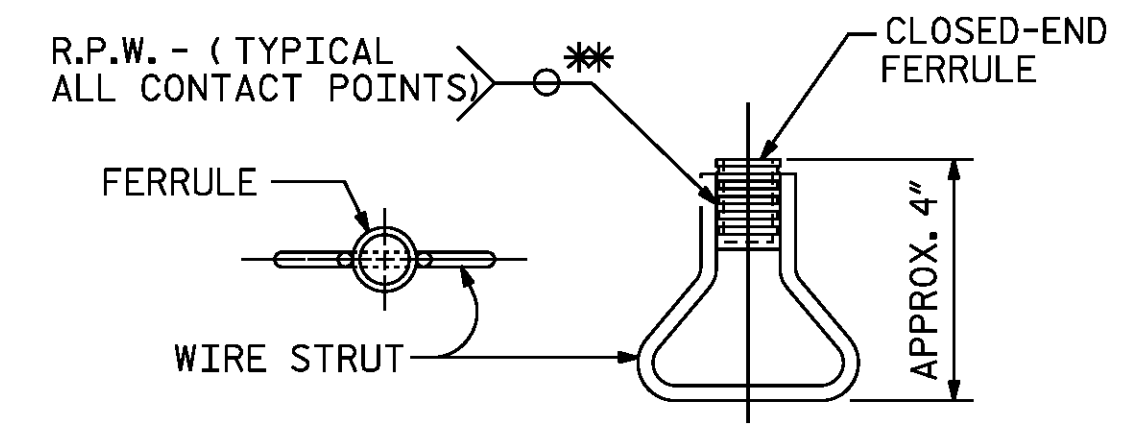
SEE "SECTION A - A" FOR OTHER DETAILS.



SECTION B - B



PLAN OF EXPANSION JOINT SEAL



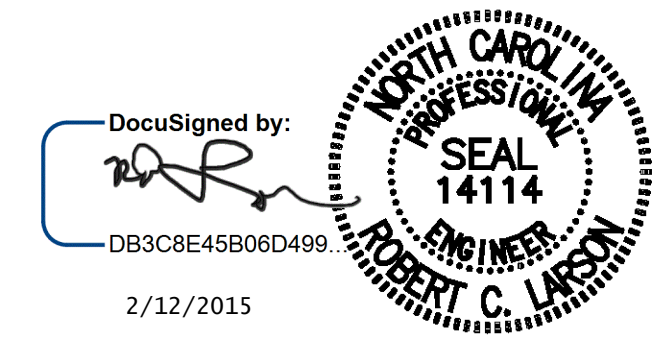
PLAN ELEVATION

CONCRETE INSERT

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

DocuSigned by:
DB3C8E45B08D499...

DESIGN ENGINEER OF RECORD:	DATE: 2/12/2015
ASSEMBLED BY: Z. SU	DATE: 02/14/14
CHECKED BY: R. C. LARSON	DATE: 03/14/14
DRAWN BY: REK 9/87	REV. 10/1/11 MAA/GM
CHECKED BY: CRK 10/87	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM

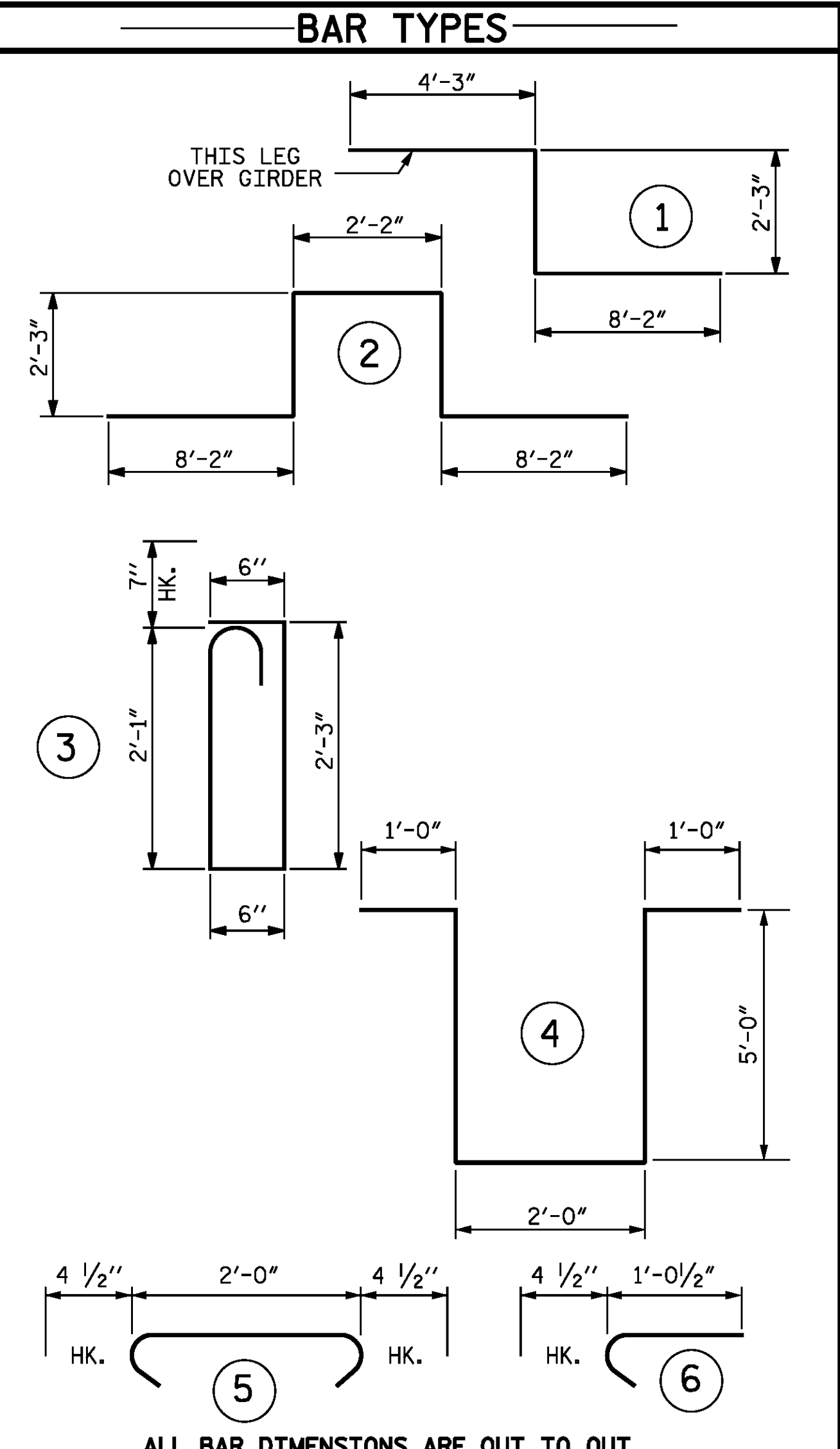


PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		EXPANSION JOINT SEAL DETAILS FOR BARRIER RAIL		STD. NO. EJS2	RIGHT LANE	STR-#6
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S06-20
2			4			TOTAL SHEETS S06-34

KCI Associates of North Carolina, P.A.
 DWG. REF. NO. 20 OF 34

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
A1	1030	5	STR.	40'-11"	43956
* A2	1030	5	STR.	40'-11"	43956
* B1	112	4	STR.	30'-0"	2244
B2	106	5	STR.	58'-2"	6431
* B3	224	8	STR.	41'-8"	24920
* B4	216	7	STR.	47'-9"	21082
* B5	84	4	STR.	22'-2"	1244
B6	424	7	STR.	40'-0"	34666
B7	159	5	STR.	22'-6"	3731
* G1	2	5	STR.	40'-11"	85
* J1	76	4	6	1'-5"	72
* K1	8	8	2	23'-0"	491
* K2	8	8	1	14'-8"	313
K3	40	4	STR.	18'-4"	490
K4	24	4	STR.	8'-0"	128
K5	24	4	STR.	9'-11"	159
K6	48	4	STR.	10'-6"	337
K7	24	4	STR.	9'-6"	152
* S1	60	5	3	5'-11"	370
S2	432	4	5	2'-9"	794
* U1	108	4	4	14'-0"	1010
REINFORCING STEEL				90844	
* EPOXY COATED REINFORCING STEEL				95787	



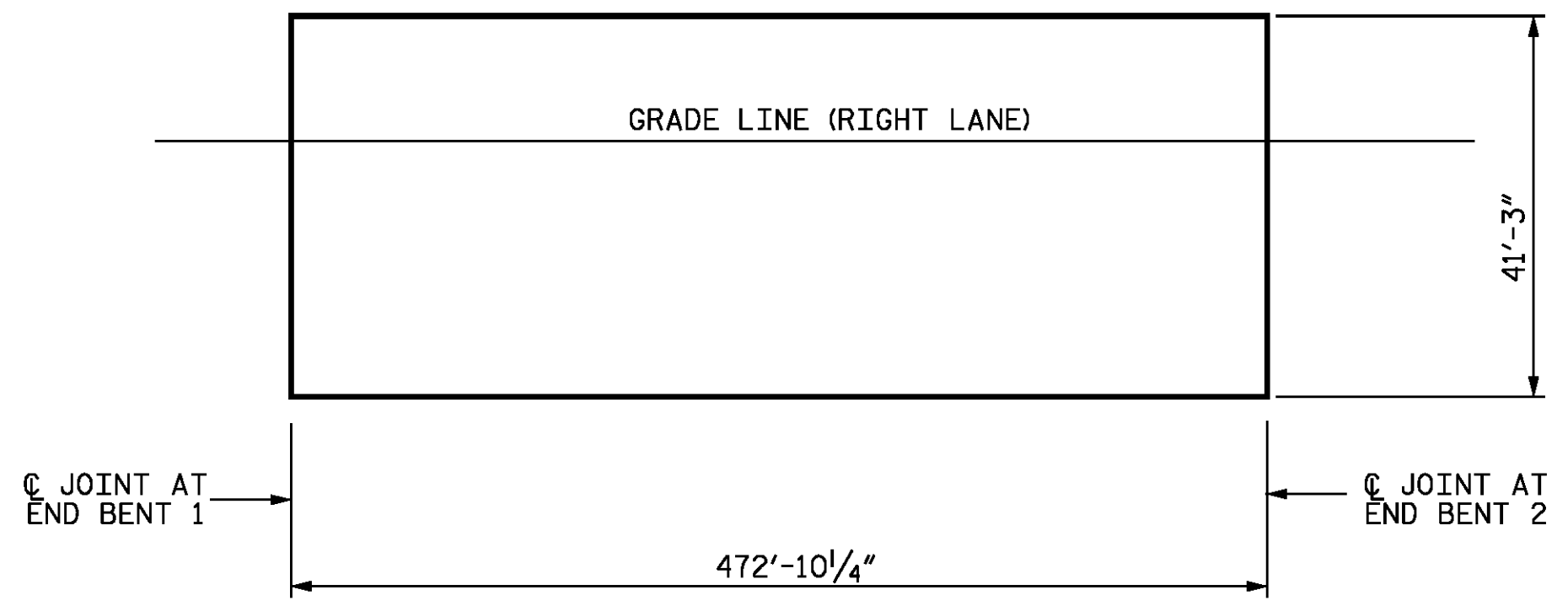
SUPERSTRUCTURE BILL OF MATERIAL			
	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
POUR 1	126.3†		
POUR 2	146.8		
POUR 3	146.8		
POUR 4	146.8		
POUR 5	156.9†		
TOTALS**	723.6	90844	95787

**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED
† INCLUDES CLOSURE POUR AT EXPANSION JOINT

PROJECT NO. R-2514D
JONES COUNTY
STATION: 373+02.50 -L-

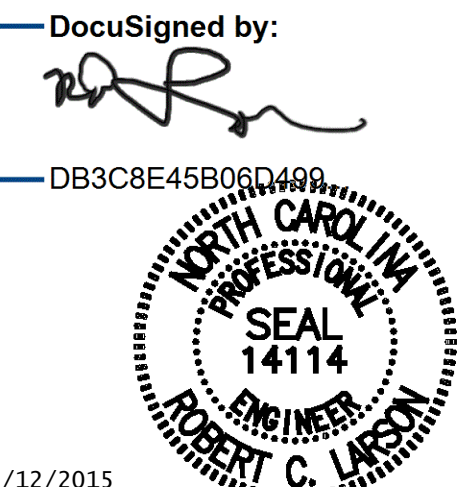
SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 19,505)

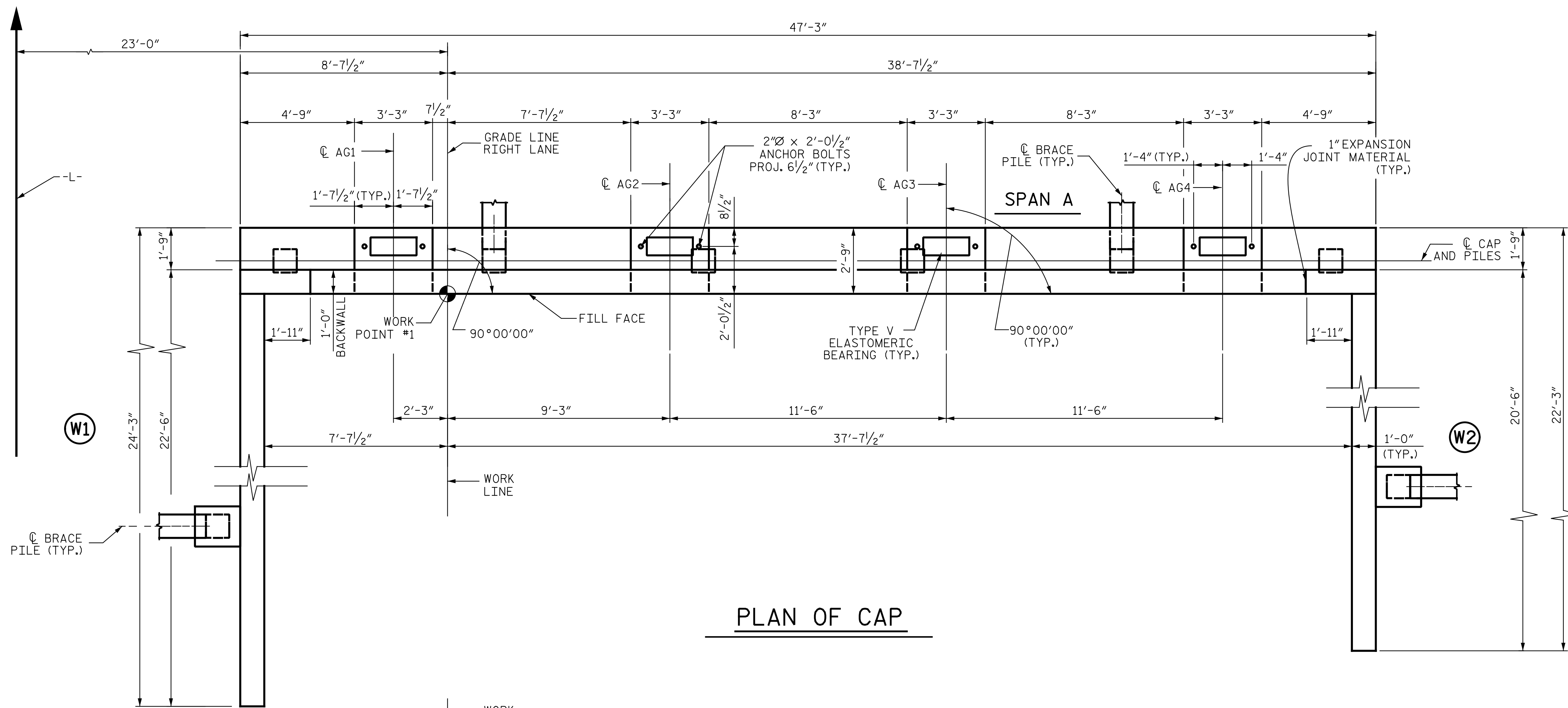
GROOVING BRIDGE FLOORS	
APPROACH SLABS	1,668 SQ.FT.
BRIDGE DECK	16,510 SQ.FT.
TOTAL	18,178 SQ.FT.



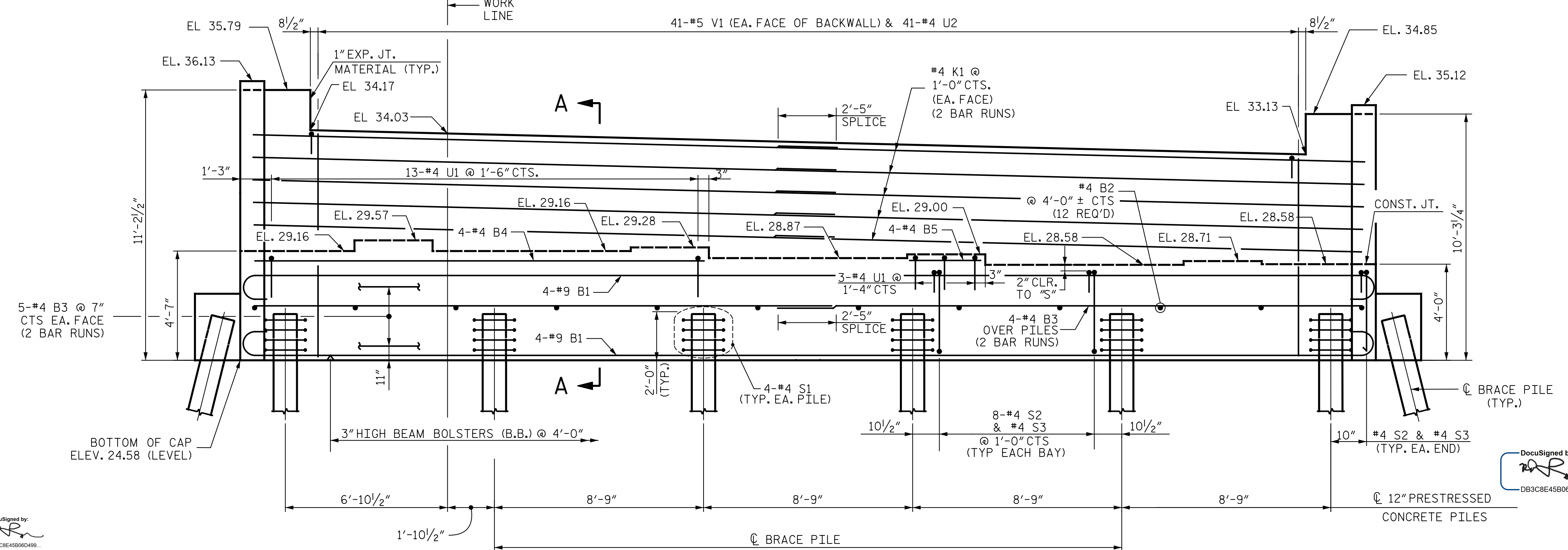
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE BILL OF MATERIAL
STD NO. B0M2 RIGHT LANE STR-#6

DESIGN ENGINEER OF RECORD:	DATE: 2/12/2015
ASSEMBLED BY: Z. SU	DATE: 02/13/14
CHECKED BY: R. C. LARSON	DATE: 03/14/14
DRAWN BY: JMB 5/87	REV. 8/16/99 RWW/LES
CHECKED BY: SJD 9/87	REV. 5/1/06 TLA/GM
	REV. 10/1/11 MAA/GM

KCI Associates of North Carolina, P.A.		REVISIONS		SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S06-21
2			4			TOTAL SHEETS S06-34



PLAN OF CAP



ELEVATION

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE TOP SURFACE AREAS OF THE 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%.
- FOR 'BLOCKOUT IN WINGWALL', SEE END BENT 2.

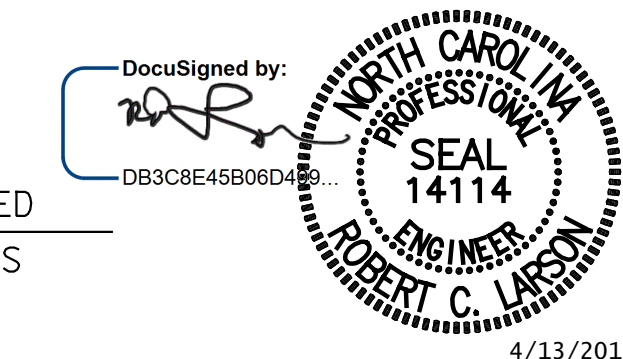
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 1**

RIGHT LANE STR-#6

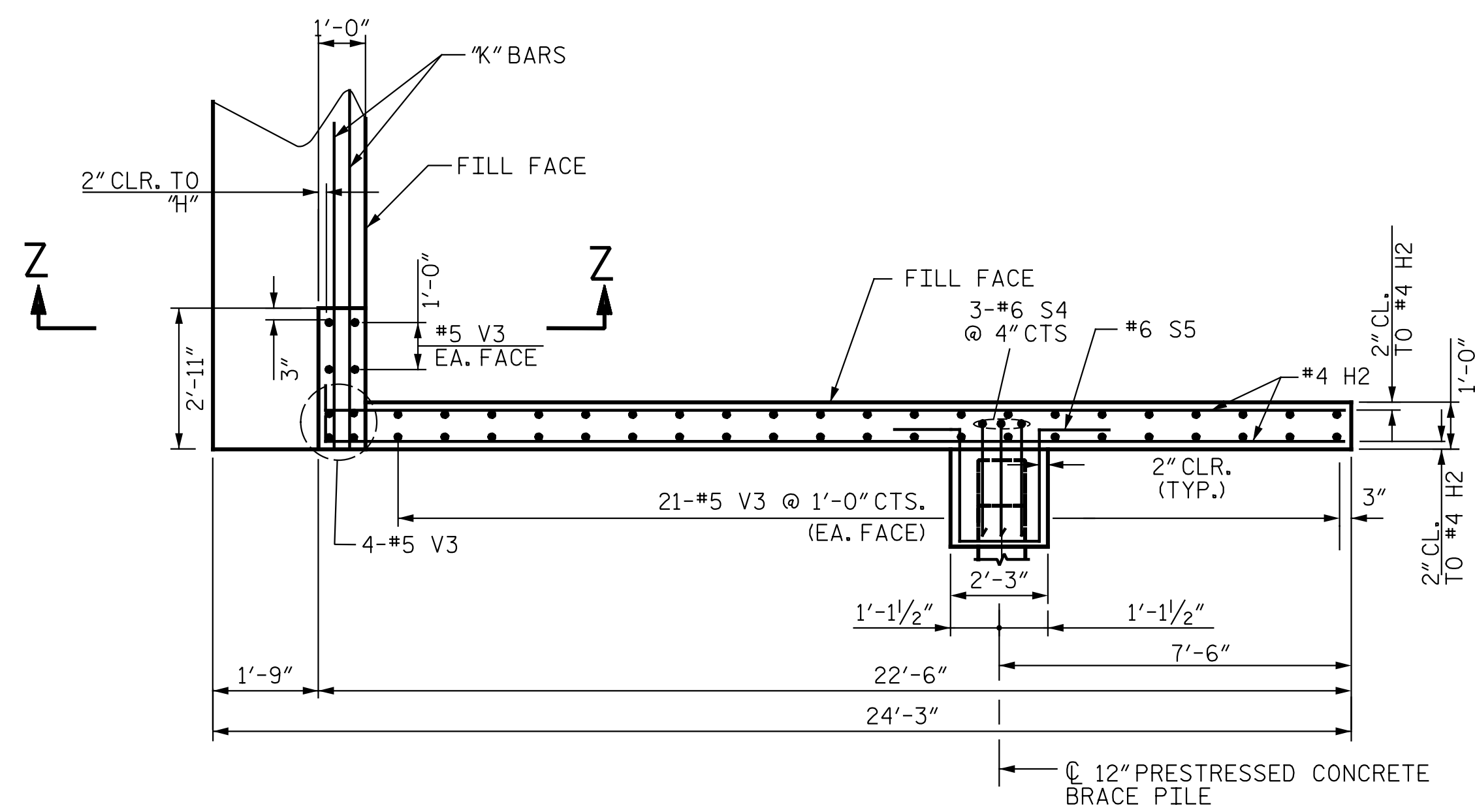


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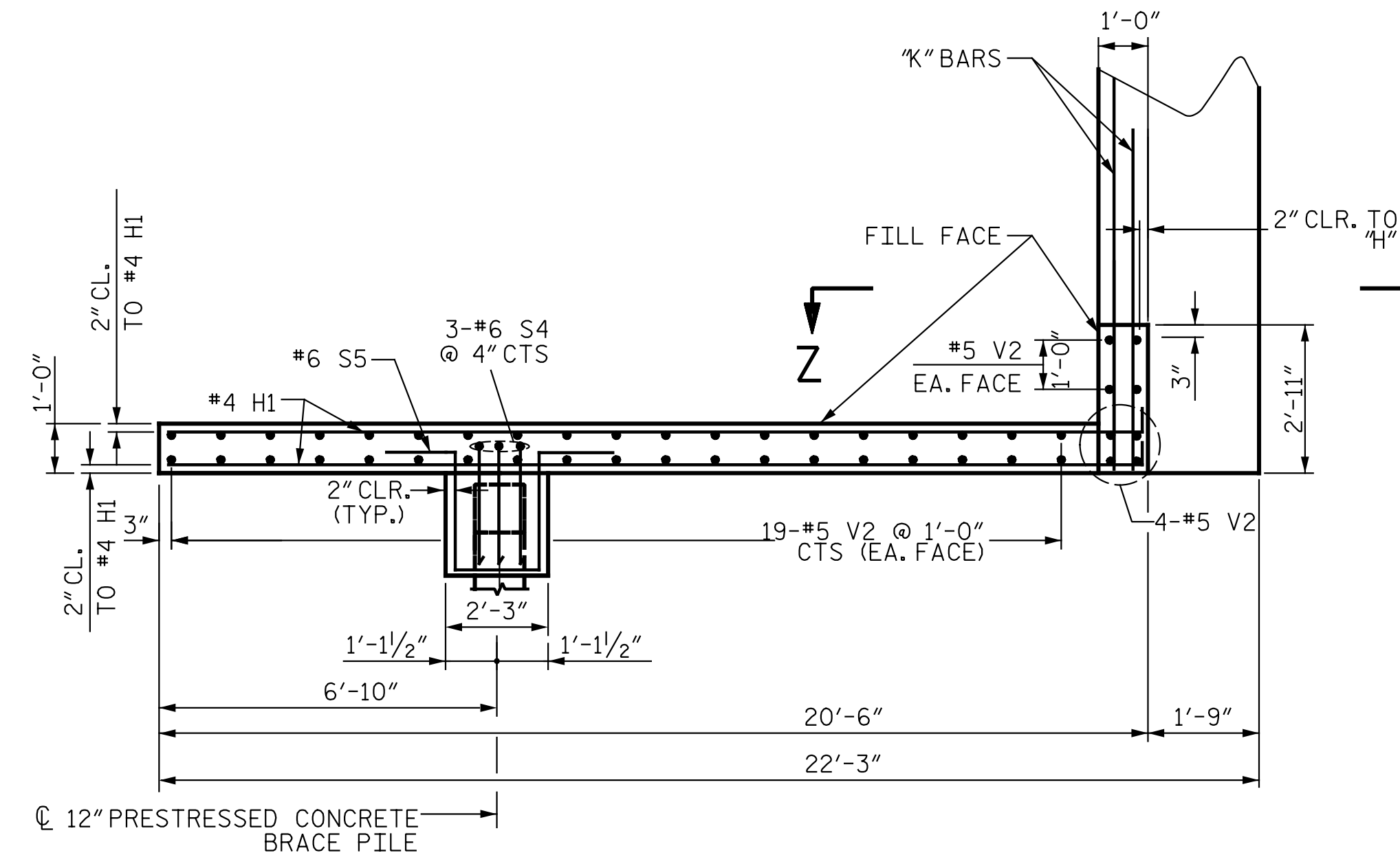
DRAWN BY: E. C. DECOLA DATE: 03/19/14
 CHECKED BY: R. C. LARSON DATE: 04/02/14

NO.		BY:		DATE:		REVISIONS		SHEET NO.	
1						3		506-22	
2						4		TOTAL SHEETS	506-34

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 DWG. REF. NO. 22 OF 34

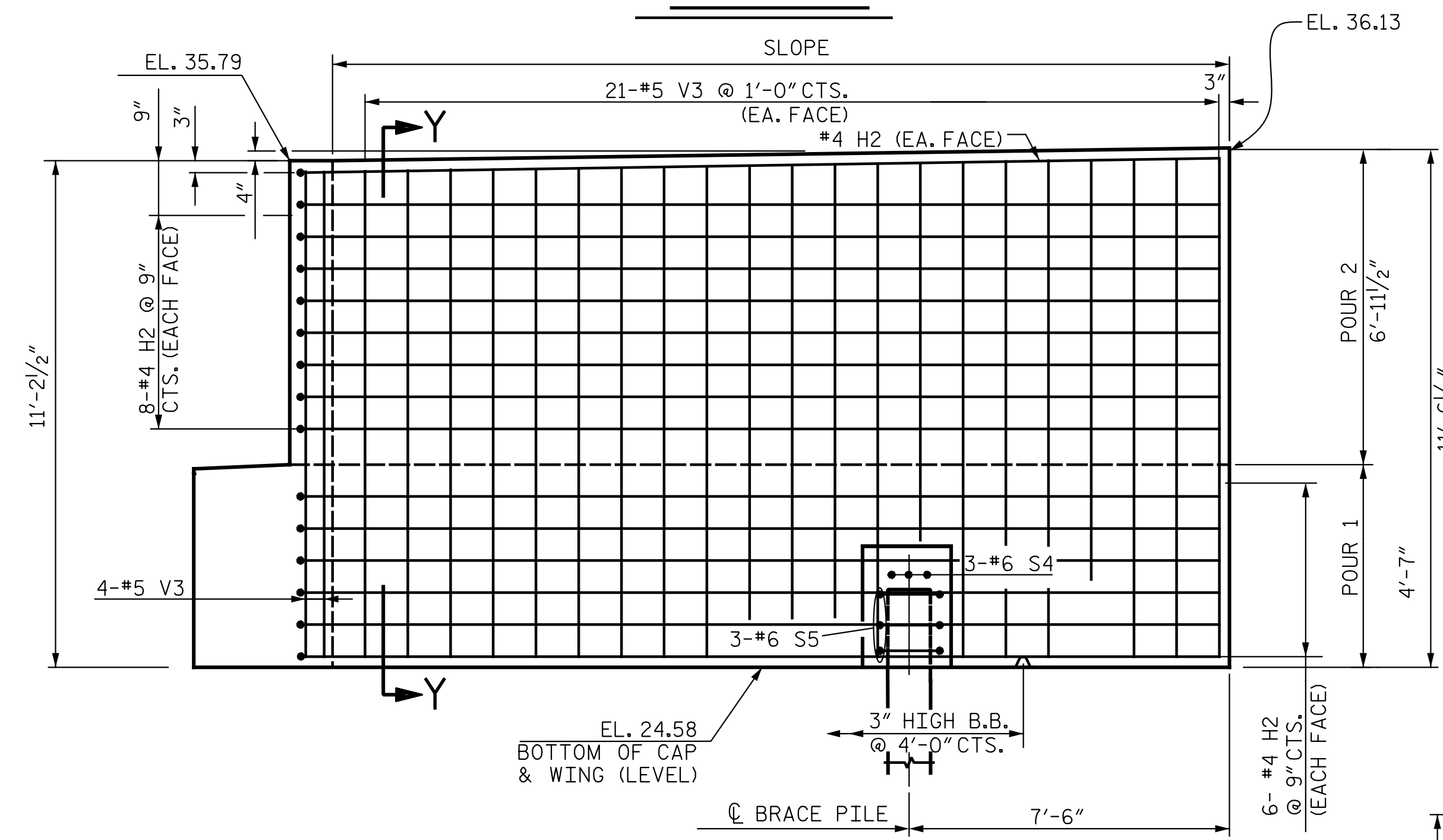


PLAN W1

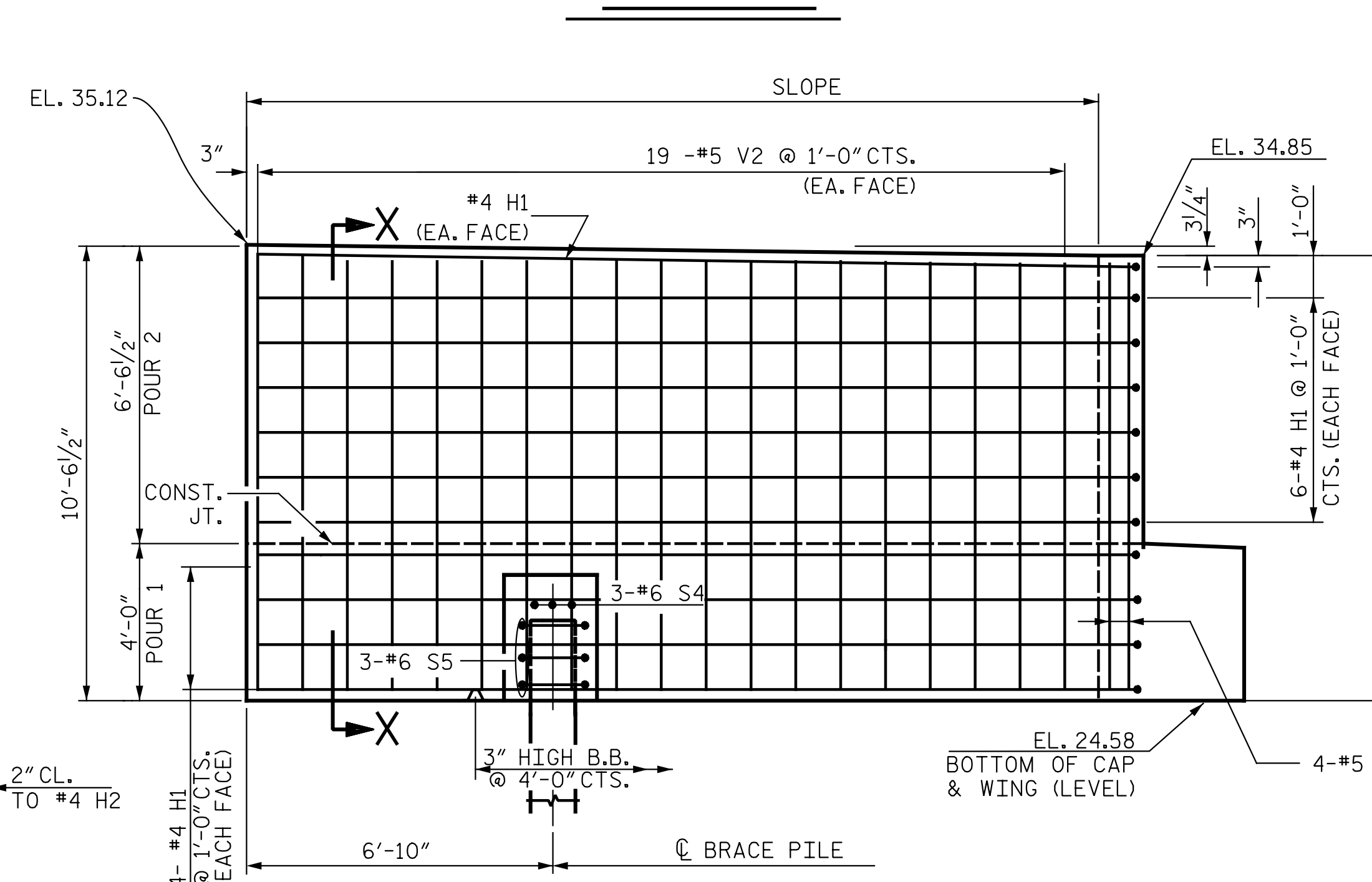


PLAN W2

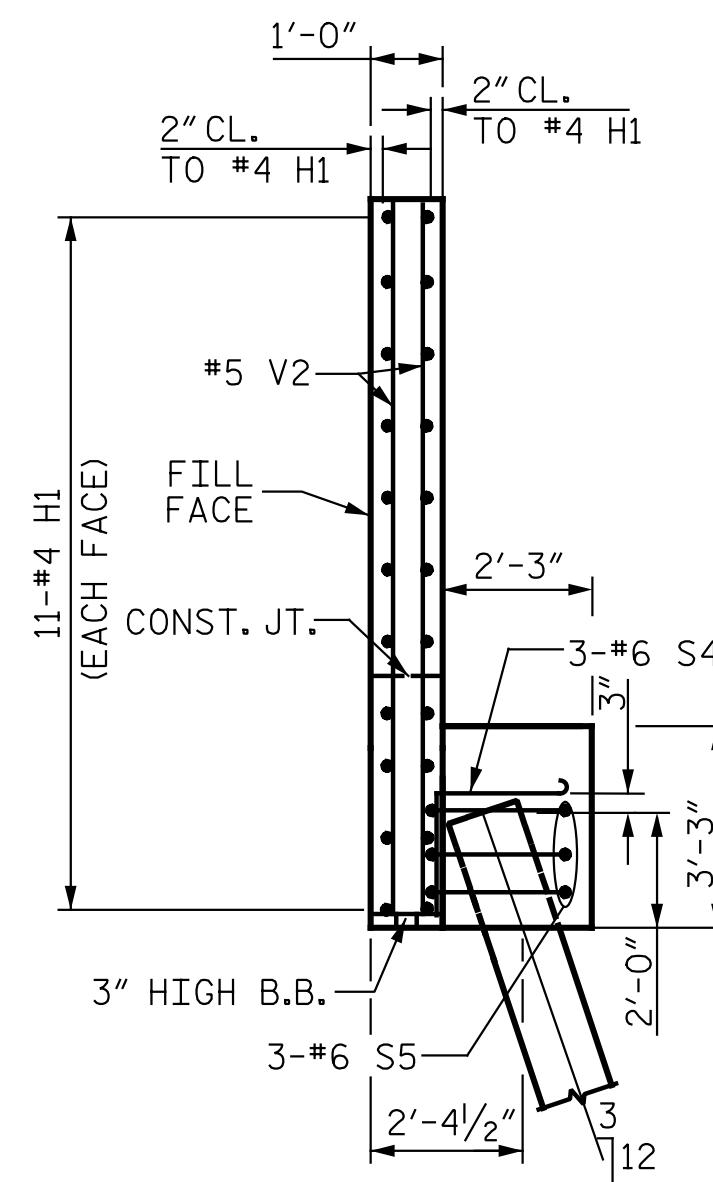
SECTION Z-Z



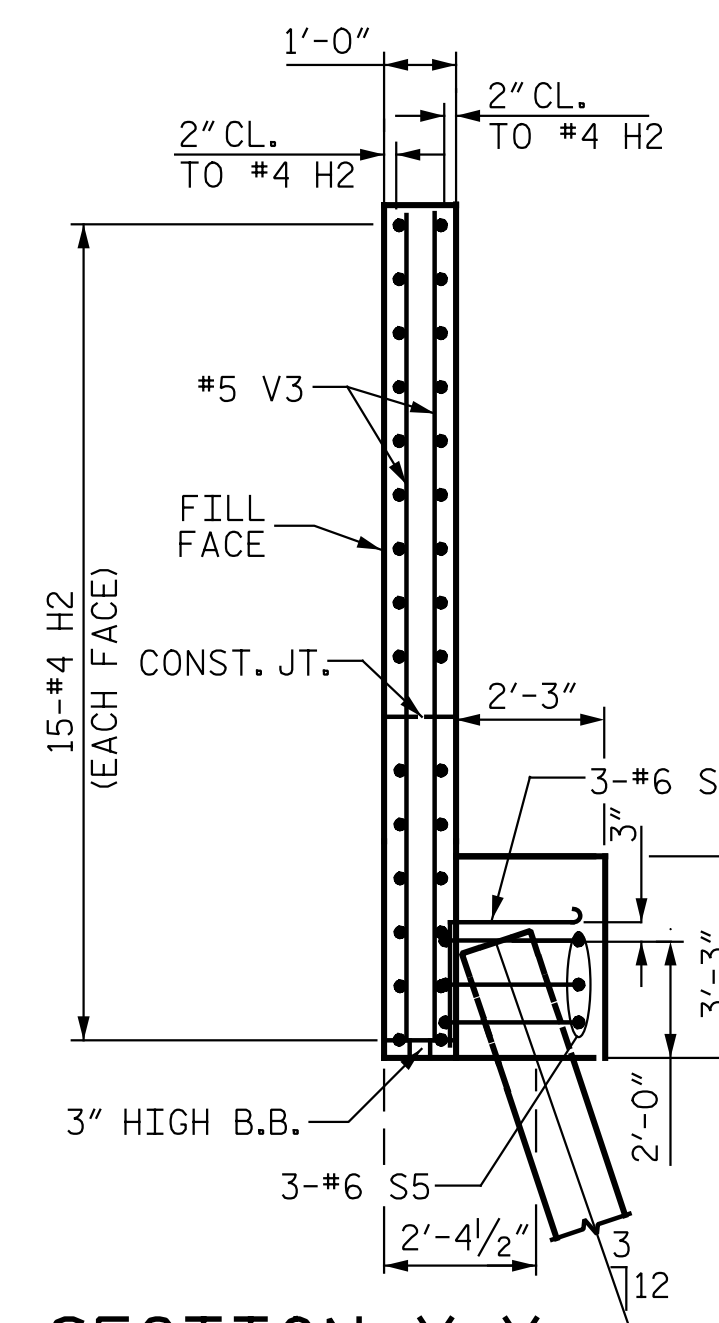
ELEVATION W1



ELEVATION W2



SECTION X-X



SECTION Y-Y

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 2 OF 3

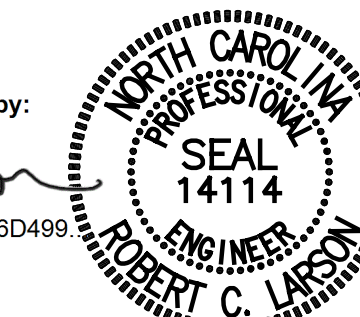
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1

RIGHT LANE

STR-#6

DocuSigned by:
 DB3C8E45B06D499

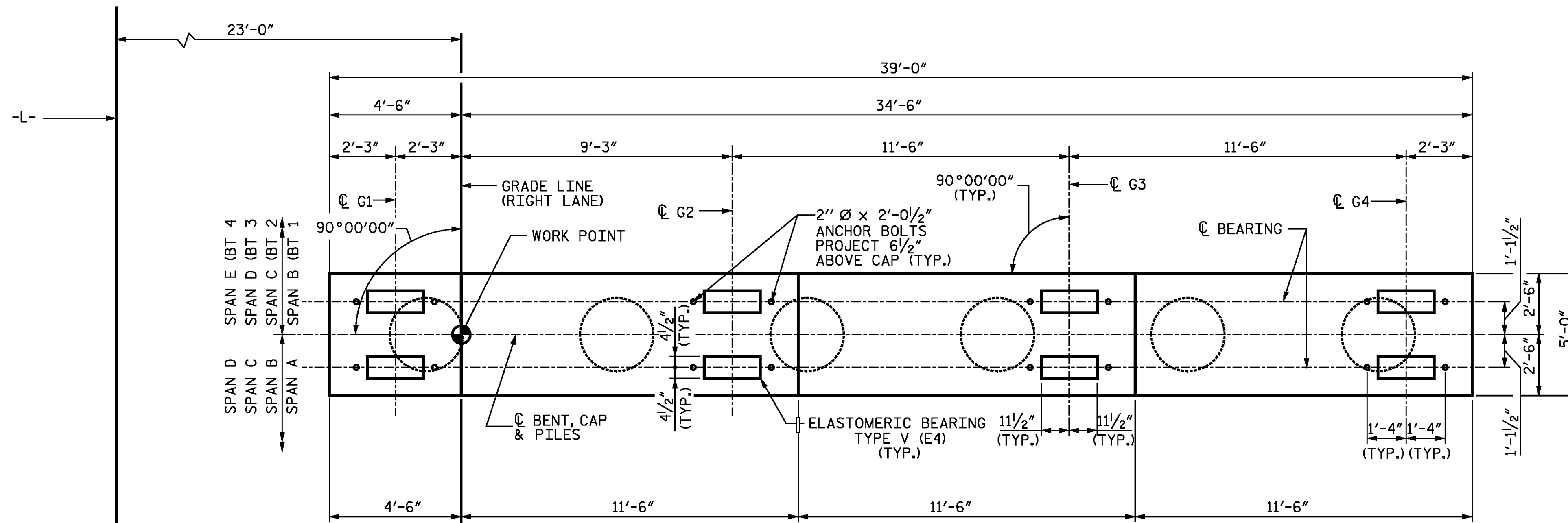


4/13/2015

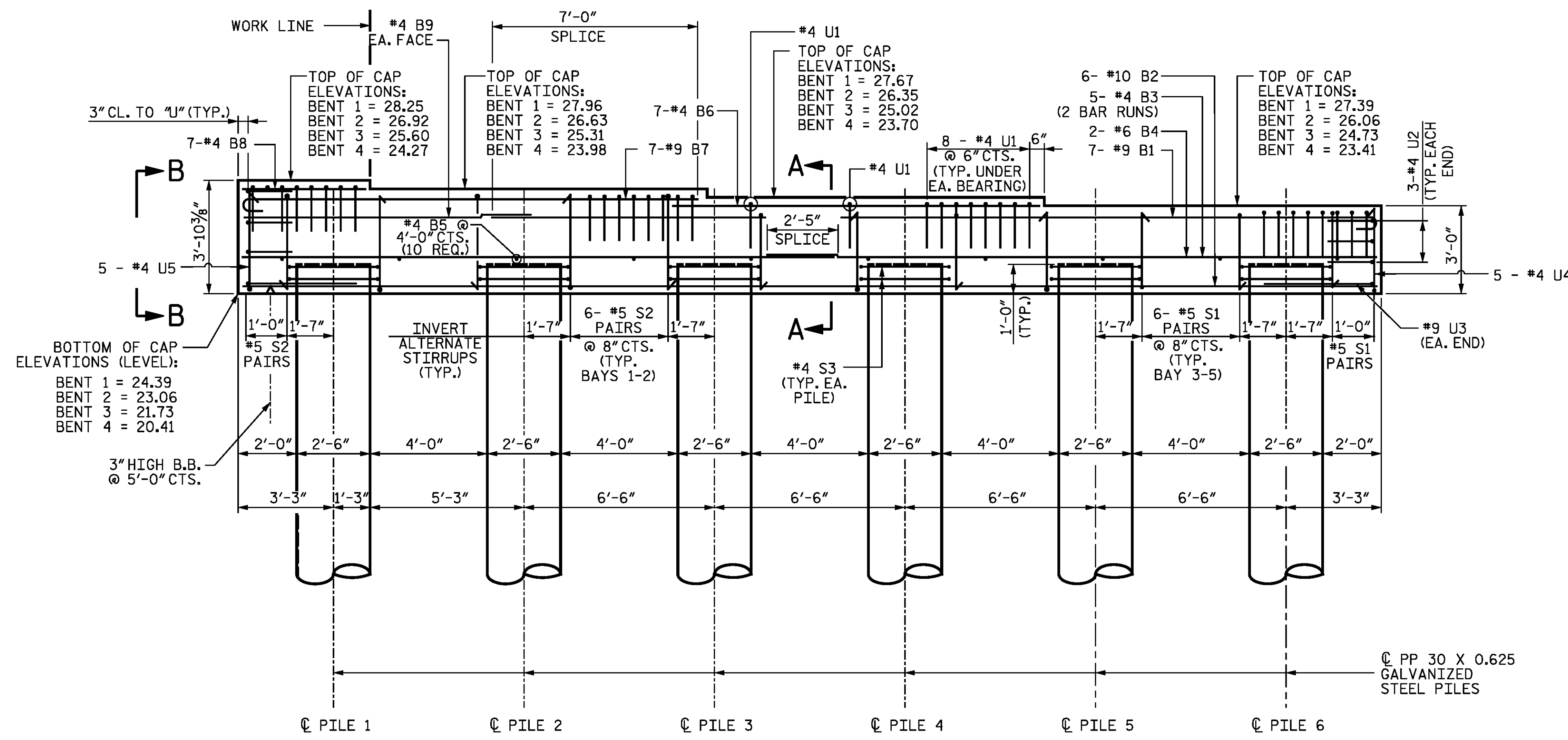
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 DWG. REF. NO. 23 OF 34

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

DESIGN ENGINEER OF RECORD: DATE: 4/13/2015
 DRAWN BY: E. C. DECOLA DATE: 03/19/14
 CHECKED BY: R. C. LARSON DATE: 04/02/14



PLAN



ELEVATION

NOTES

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

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 45'. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

FOR CONCRETE PLUG AND REINFORCING IN PILES SEE STD DWG NO. SPP4.

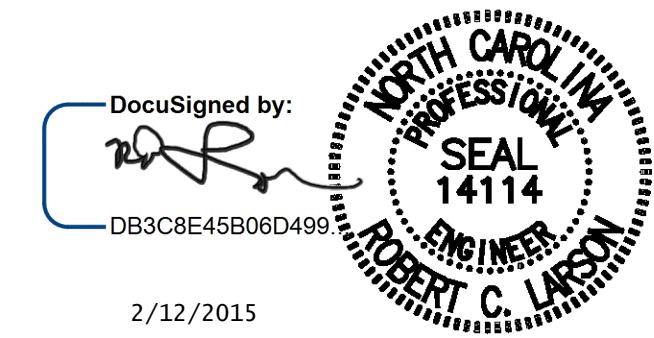
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 BENT 1-4**

RIGHT LANE STR-#6



DocuSigned by:

 DB3C8E45B06D499

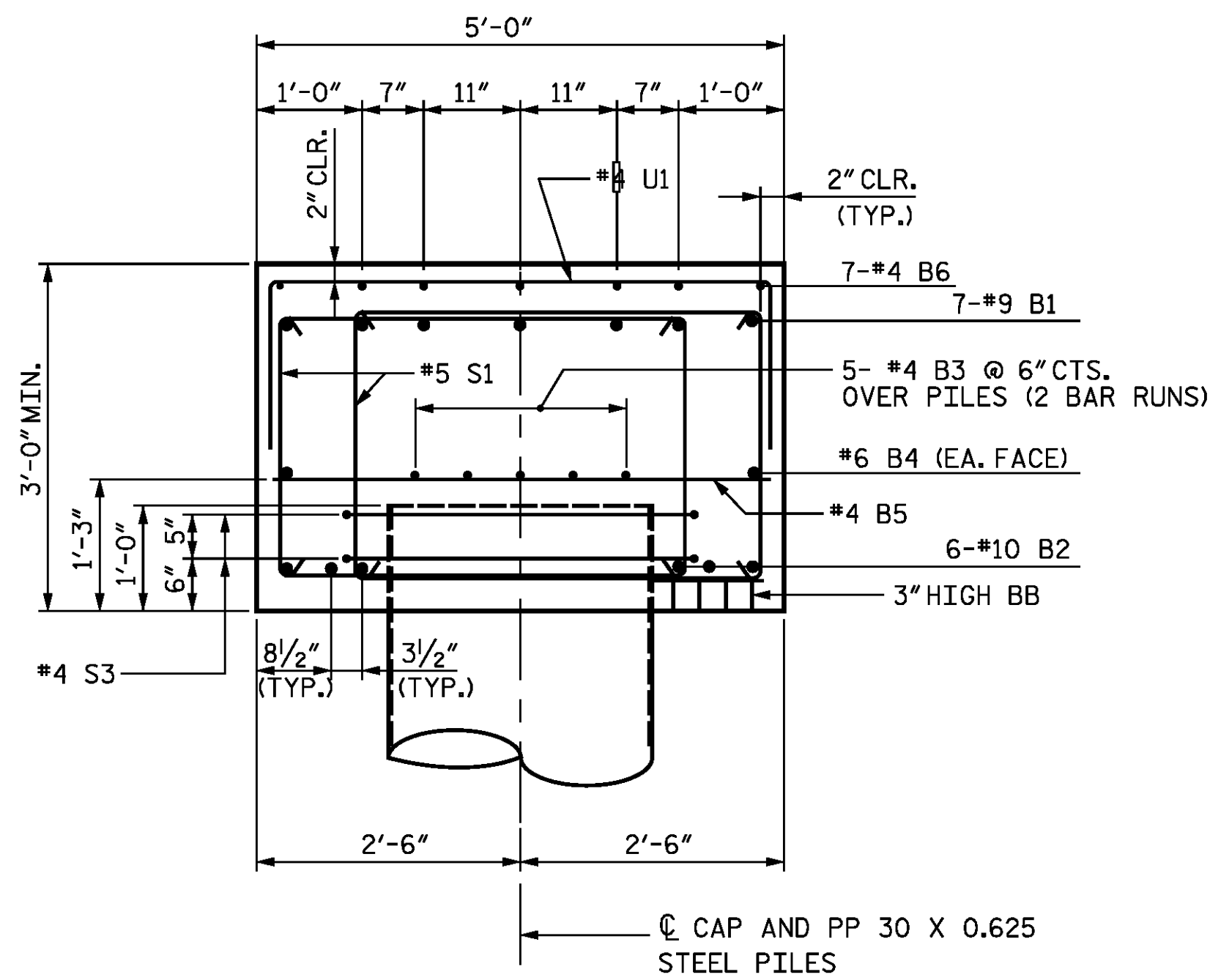
DESIGN ENGINEER OF RECORD: DATE: 2/12/2015

DRAWN BY: R. A. PRUETT DATE: 03/15/14
 CHECKED BY: R. C. LARSON DATE: 03/25/14

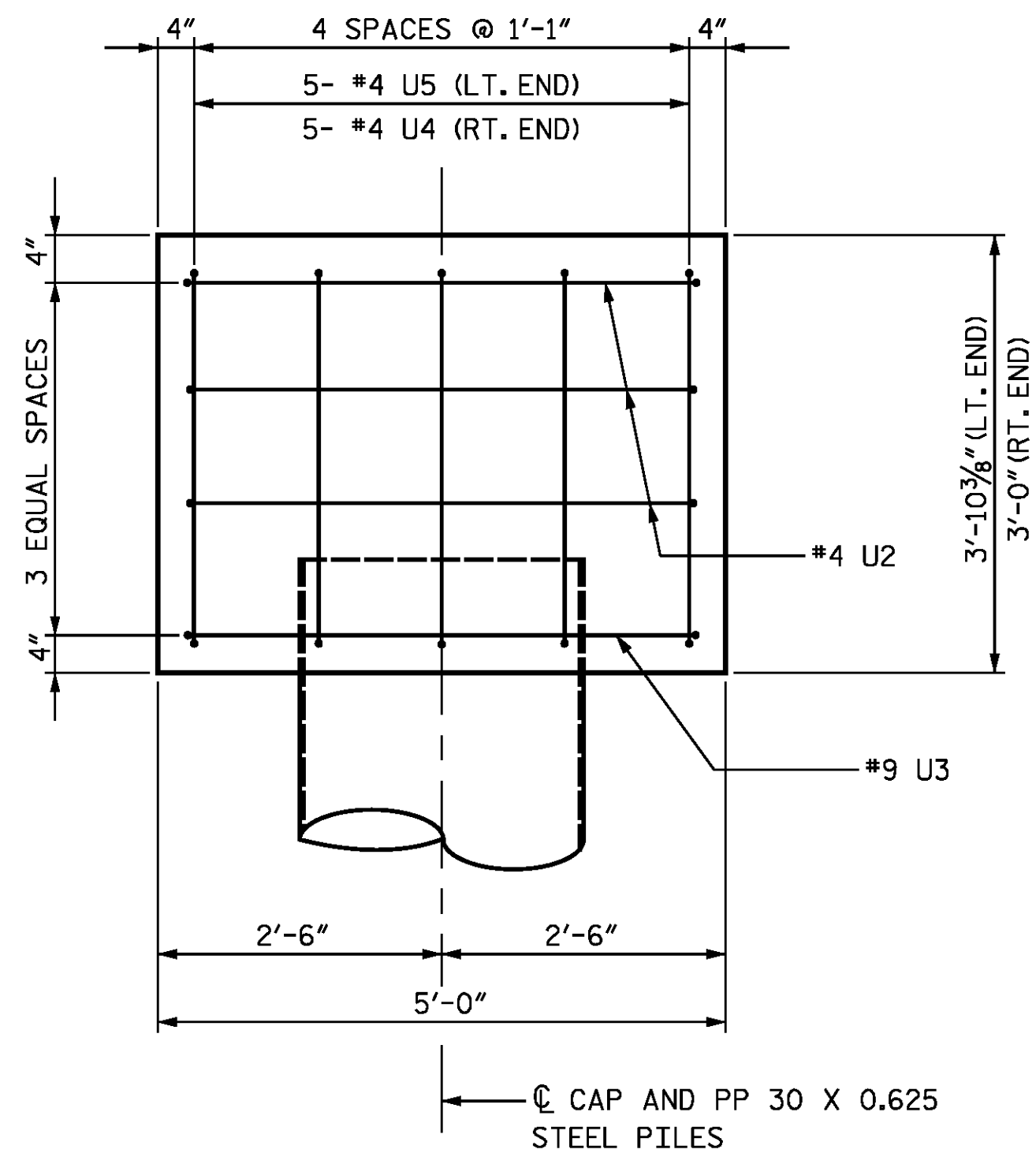
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

TOTAL SHEETS: 506-25
 S06-34

DWG. REF. NO. 25 OF 34



SECTION A-A



END OF CAP VIEW B-B
(TYP. EA. END)

BAR TYPES

BILL OF MATERIAL FOR ONE BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	7	9		31'-3"	744
B2	6	10	STR.	38'-8"	998
B3	10	4	STR.	20'-7"	137
B4	2	6	STR.	38'-8"	116
B5	10	4	STR.	4'-8"	31
B6	7	4	STR.	12'-6"	58
B7	7	9	1	16'-11"	403
B8	7	4	STR.	4'-2"	19
B9	2	4	STR.	11'-1"	15
S1	40	5	2	10'-2"	424
S2	28	5	2	11'-4"	331
S3	12	4	3	12'-3"	98
U1	34	4	4	7'-8"	174
U2	6	4	4	7'-6"	30
U3	2	9	4	11'-10"	80
U4	5	4	4	5'-6"	18
U5	5	4	4	6'-0"	20
REINFORCING STEEL, LBS.					3696
CLASS A CONCRETE, CU. YD.					23.1
PP 30 X 0.625 GALVANIZED STEEL PILES					
NO.					6
LIN. FT.					510
STEEL PILE POINTS, EA.					6
PILE REDRIVES, EA.					3
(NOTE: PILE HEADS HAVE BEEN DEDUCTED FROM CLASS A CONCRETE)					

ALL BAR DIMENSIONS ARE OUT TO OUT.

DocuSigned by:

 DB3C8E45B06D499

DESIGN ENGINEER OF RECORD: DATE : 2/12/2015

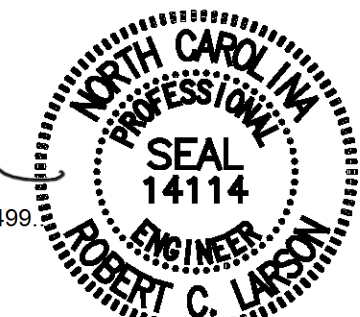
DRAWN BY : Z. SU DATE : 03/01/14

CHECKED BY : R.C. LARSON DATE : 03/25/14

DocuSigned by:

 DB3C8E45B06D499

2/12/2015



PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 BENT 1-4**

RIGHT LANE STR-#6

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

SHEET NO.
S06-26

TOTAL SHEETS
S06-34

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DWG. REF. NO. 26 OF 34

NOTES

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

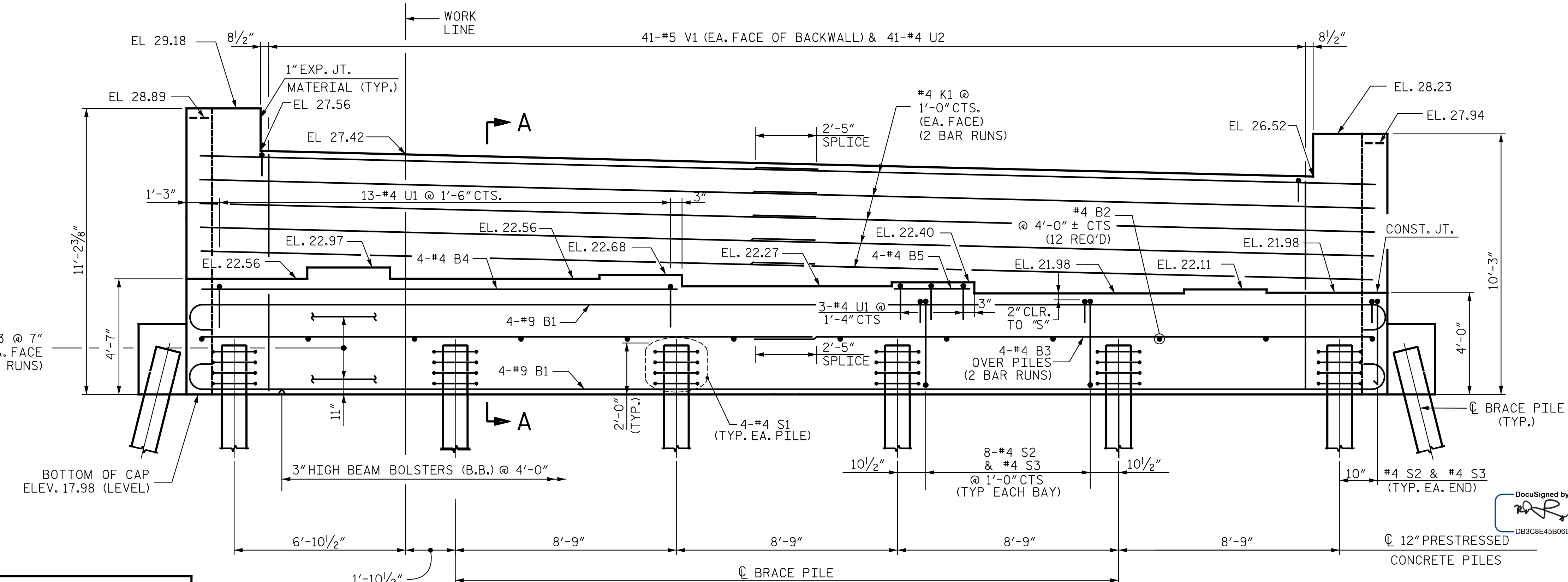
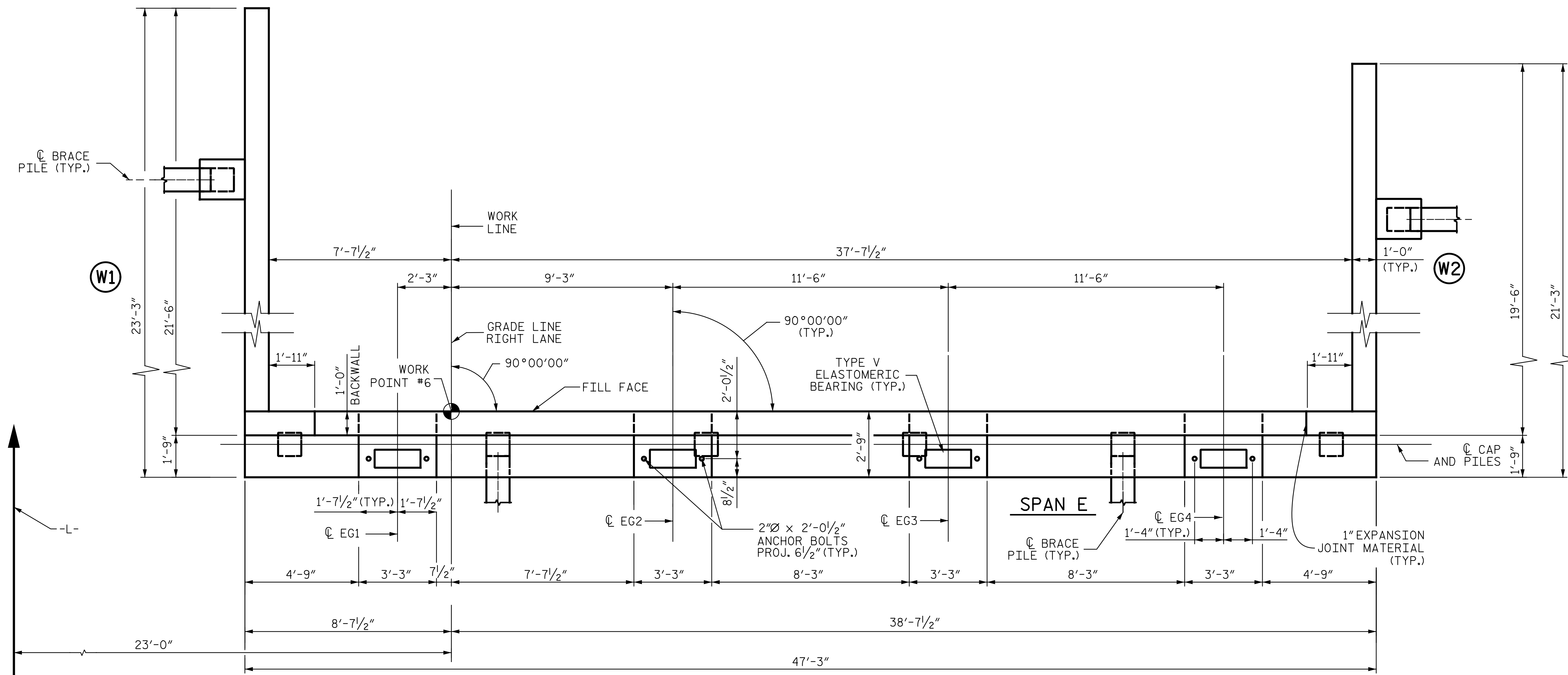
INSTALL THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS; SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE AREAS OF THE 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%.

FOR "TEMPORARY DRAINAGE AT END BENT", SEE END BENT 1.



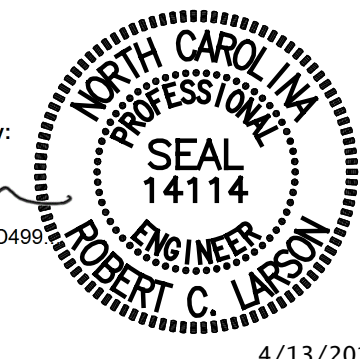
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 2**

RIGHT LANE STR-#6

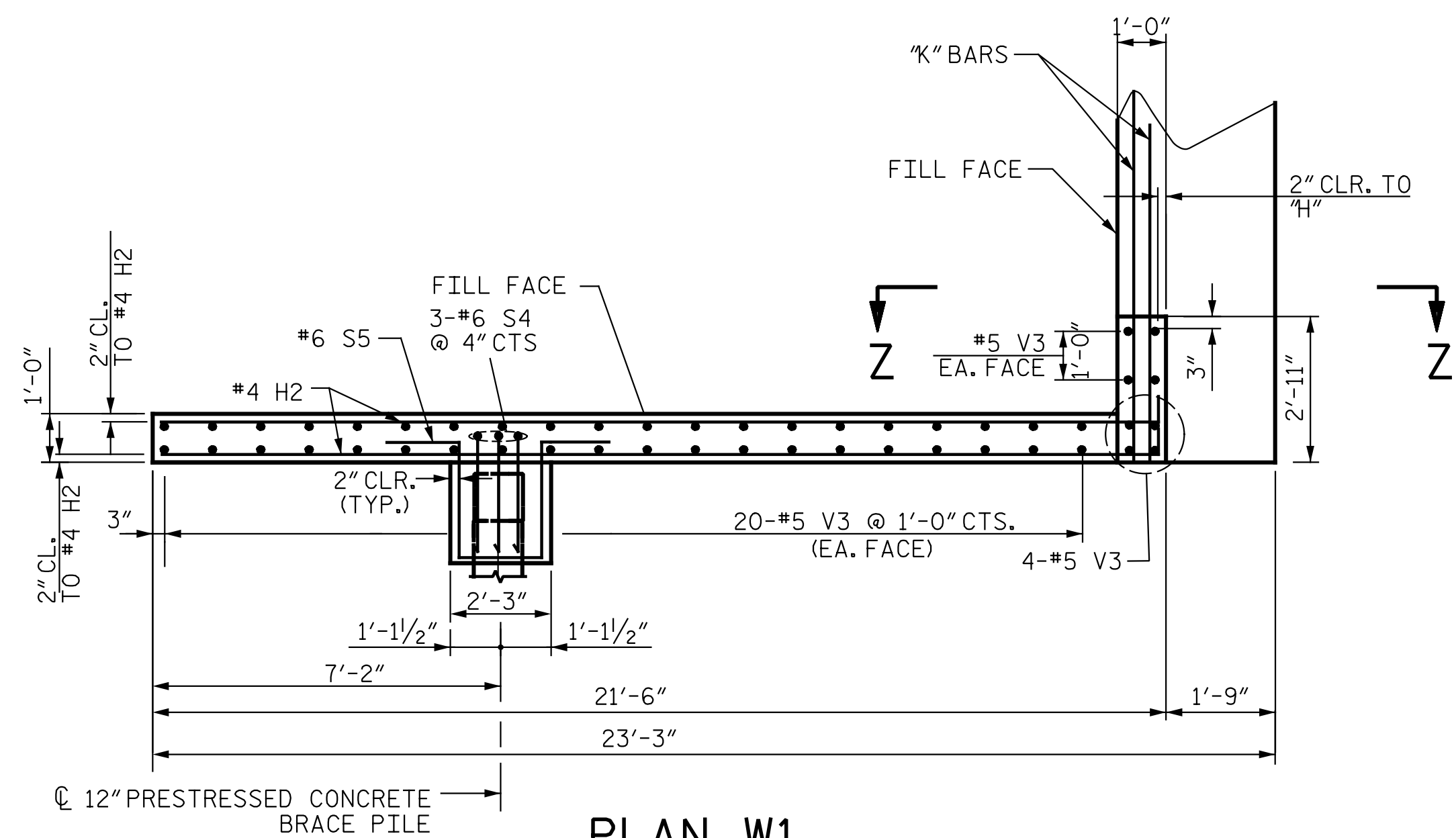


DESIGN ENGINEER OF RECORD:	DATE:
<i>[Signature]</i>	4/13/2015
DRAWN BY:	DATE:
E. C. DECOLA	03/20/14
CHECKED BY:	DATE:
R. C. LARSON	04/02/14

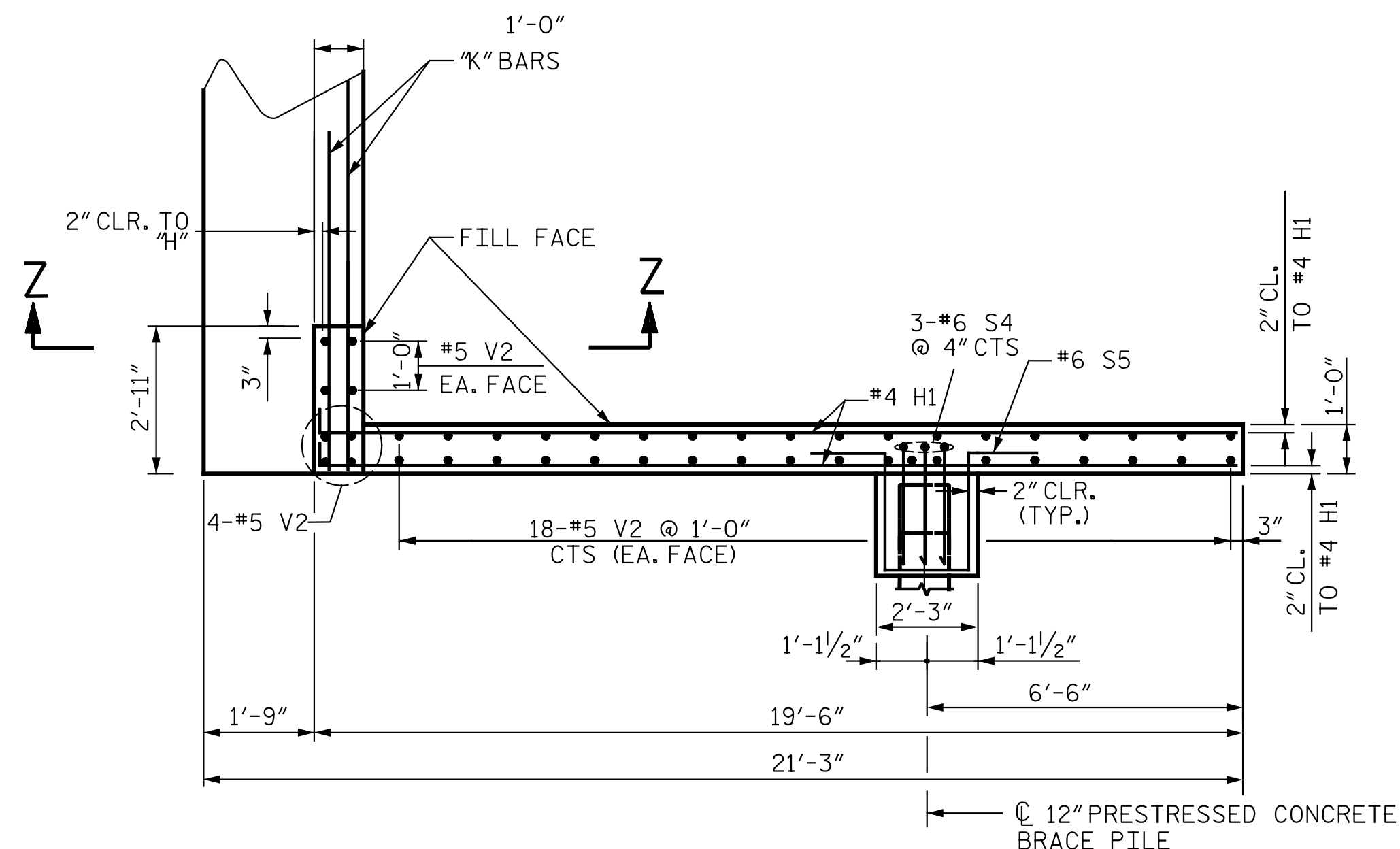
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 DWG. REF. NO. 27 OF 34

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

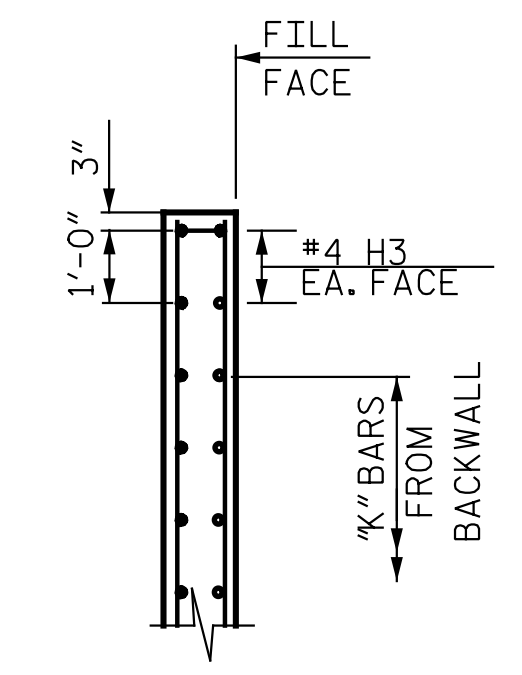
TOTAL SHEETS: 34
 SHEET NO.: S06-27
 SHEETS: S06-34



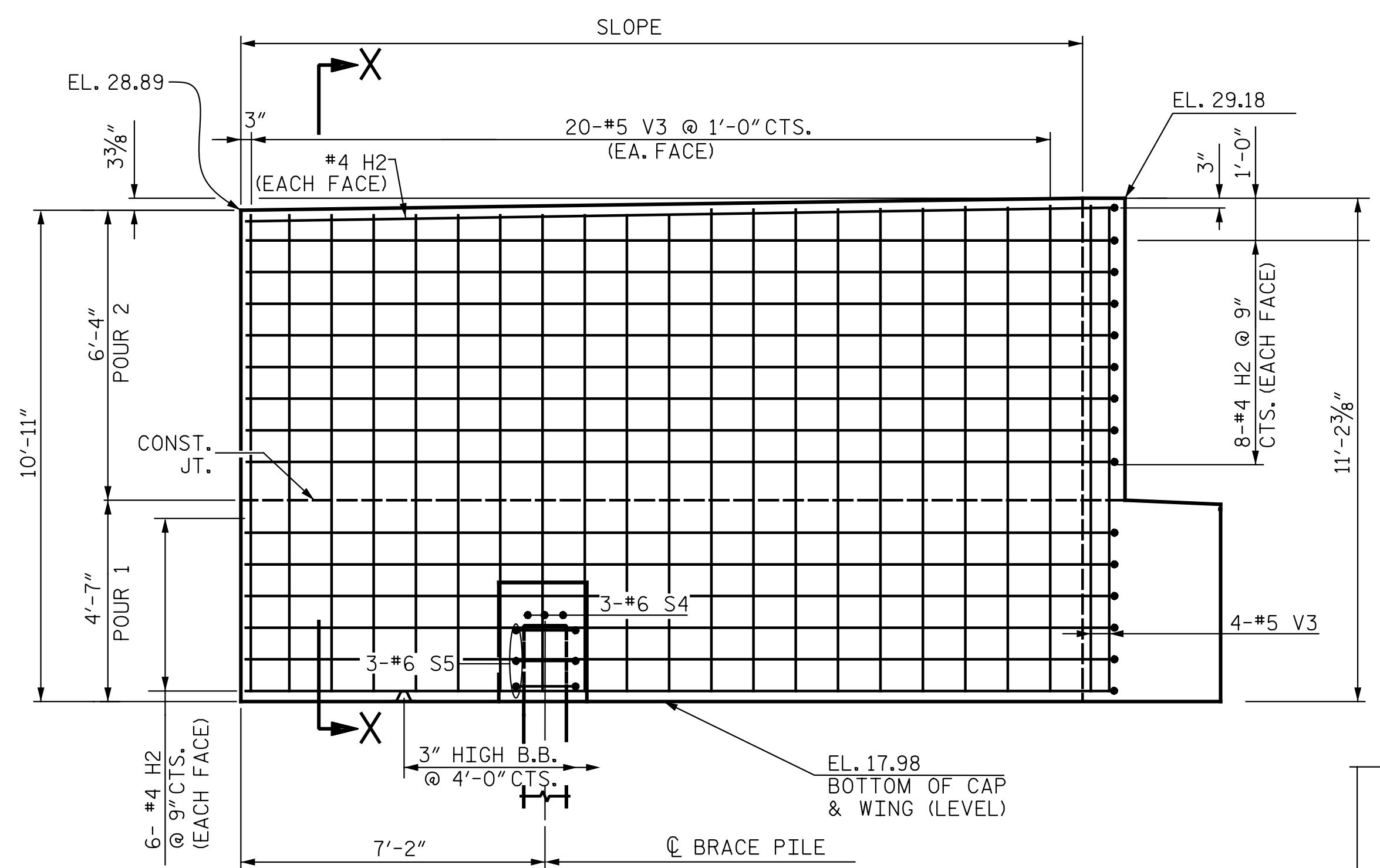
PLAN W1



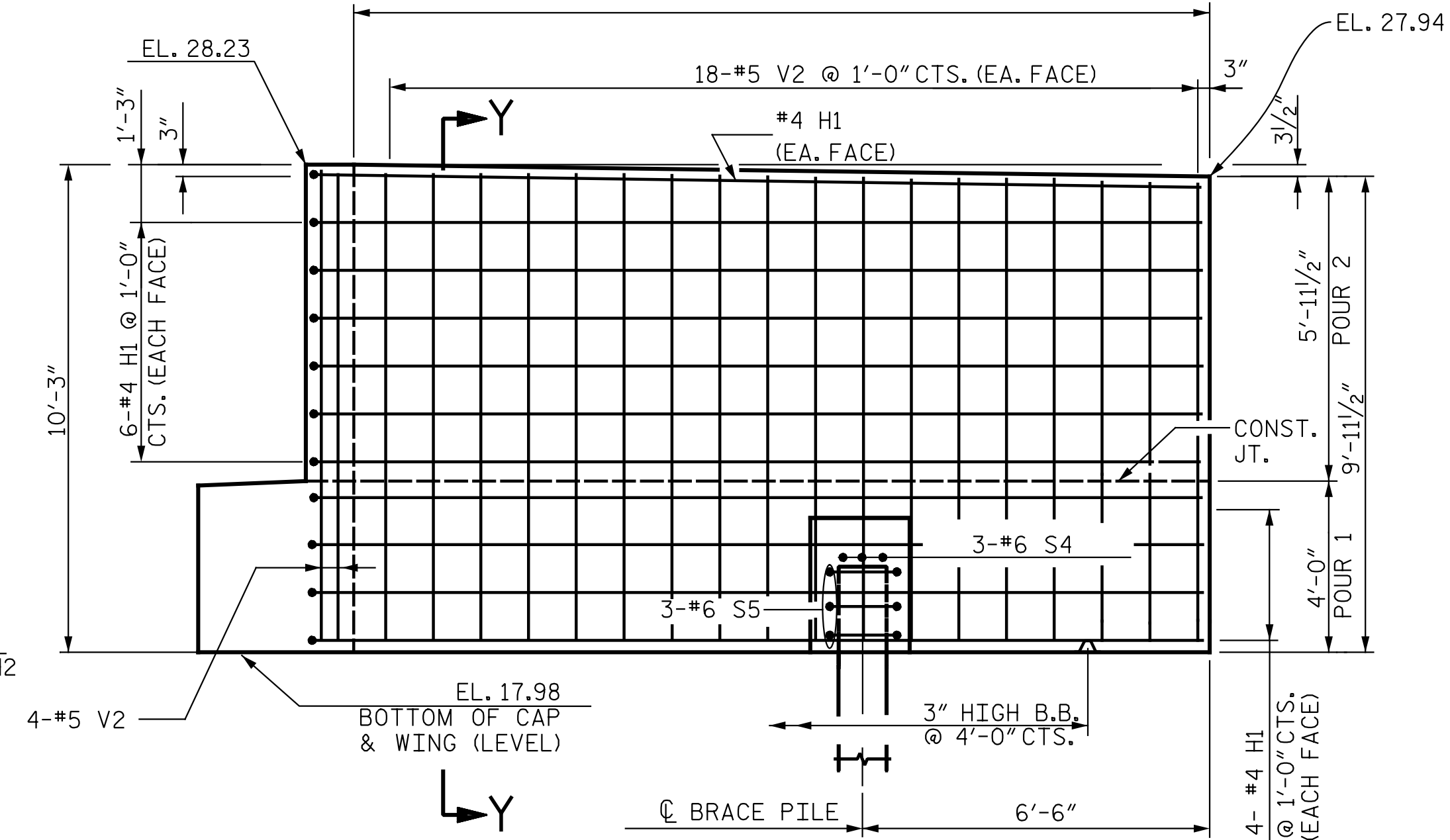
PLAN W2



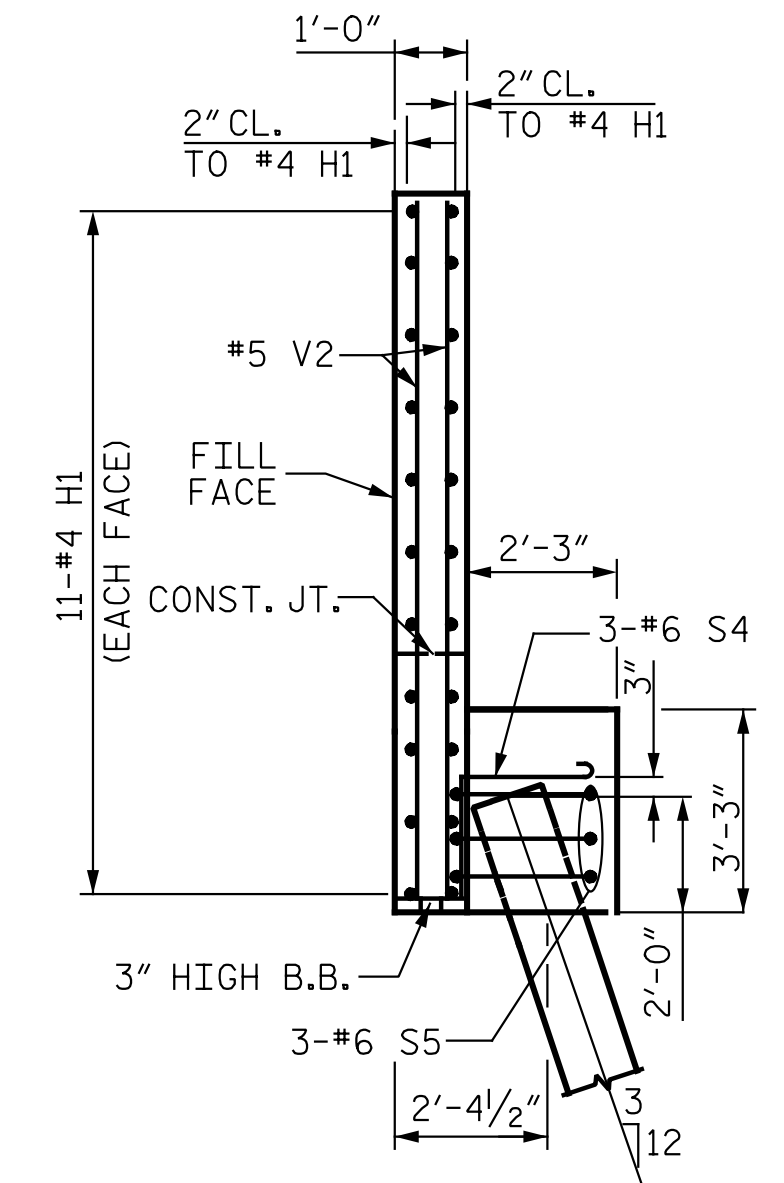
SECTION Z-Z



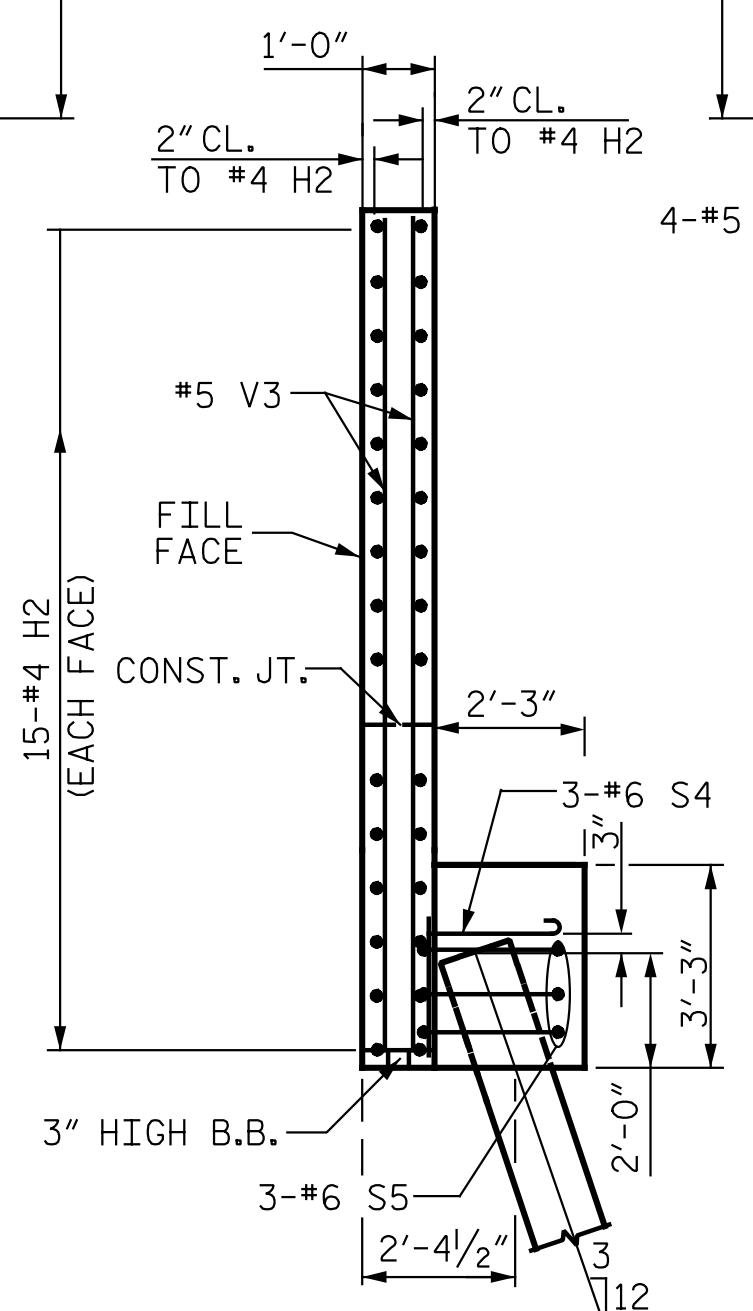
ELEVATION W1



ELEVATION W2



SECTION Y-Y



SECTION X-X

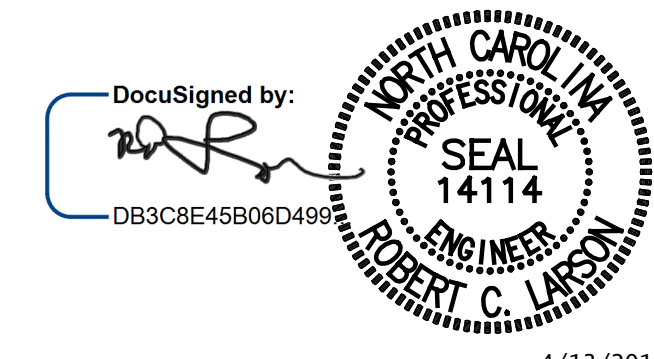
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2

RIGHT LANE STR-#6



DocuSigned by:
 DB3C8E45B06D498
 4/13/2015
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 DWG. REF. NO. 28 OF 34

DESIGN ENGINEER OF RECORD:	DATE :	4/13/2015
DRAWN BY :	DATE :	03/06/14
CHECKED BY :	DATE :	04/02/14

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

SHEET NO.	S06-28
TOTAL SHEETS	S06-34

NOTES

PRESTRESSED CONCRETE STRENGTH : $f'_c = 7,500$ PSI
 BUILD-UP CONCRETE STRENGTH : $f'_c = 7,500$ PSI

STRAND DATA:

SIZE	GRADE	AREA	ULTIMATE STRENGTH	APPLIED PRESTRESS FORCE
1/2"	270 L.R.	0.153	41,300* PER STRAND	30,980* PER STRAND
0.6"	270 L.R.	0.217	58,600* PER STRAND	43,940* PER STRAND

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

AT THE CONTRACTOR'S OPTION, 1/2" OR 0.6" STRANDS MAY BE USED IN EITHER THE 4 OR 5 STRAND CONFIGURATION SHOWN IN THE TYPICAL SECTION DETAIL. MIXING OF STRAND SIZE IS NOT ALLOWED.

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

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

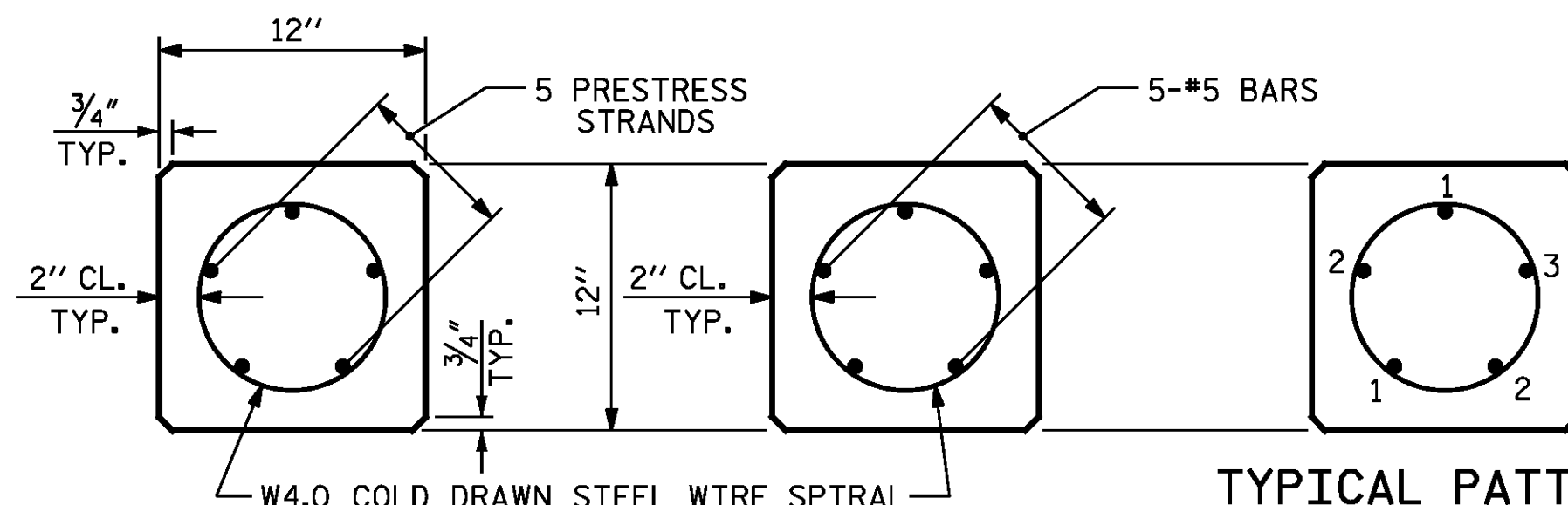
IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN PAIRS, EXCEPT WHERE 5 STRANDS ARE USED, THE LAST STRAND MAY BE BURNED SINGLY ACCORDING TO BURNING PATTERNS SHOWN. NOT MORE THAN 4 STRANDS MAY BE BURNED AT ANY ONE SECTION BEFORE THE SAME STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

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

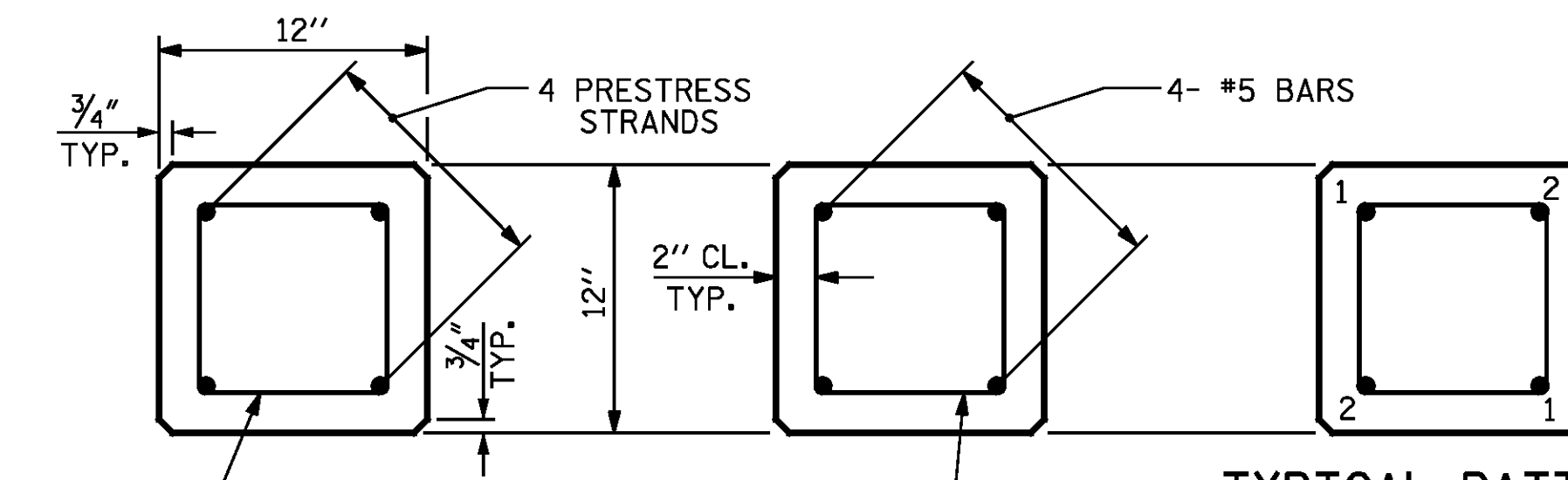
WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS ARE TO BE INDICATED WITH A 2" WIDE BLACK MARK.

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

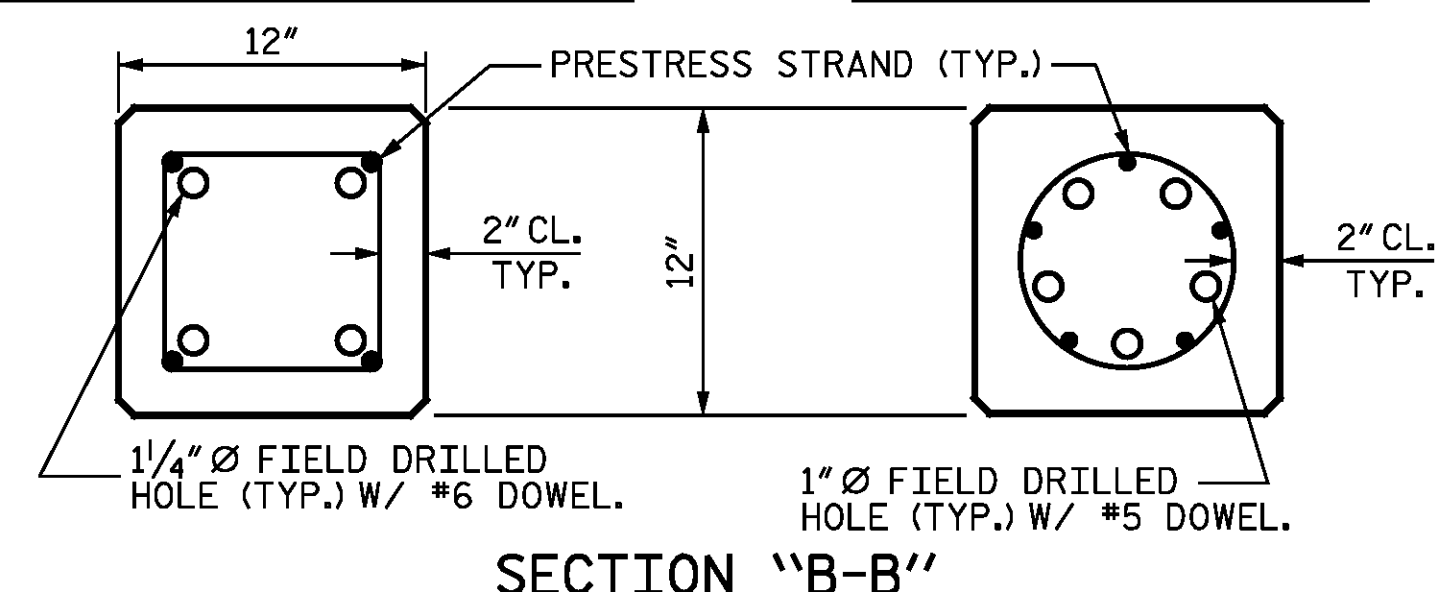
DRIVING OF THE BUILT-UP PILE WILL NOT BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 5,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.



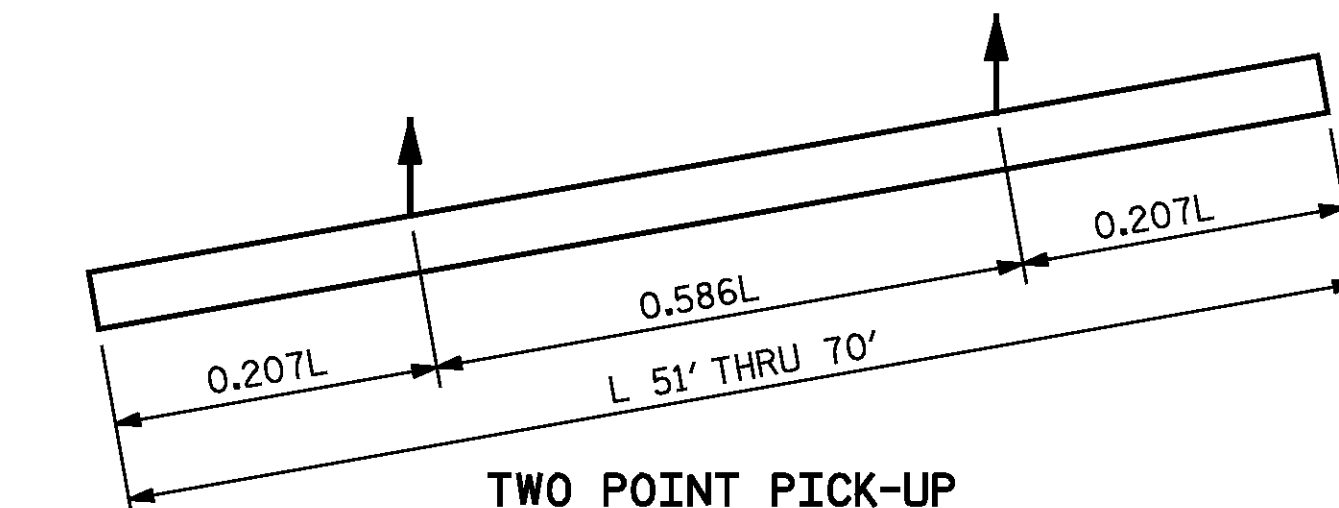
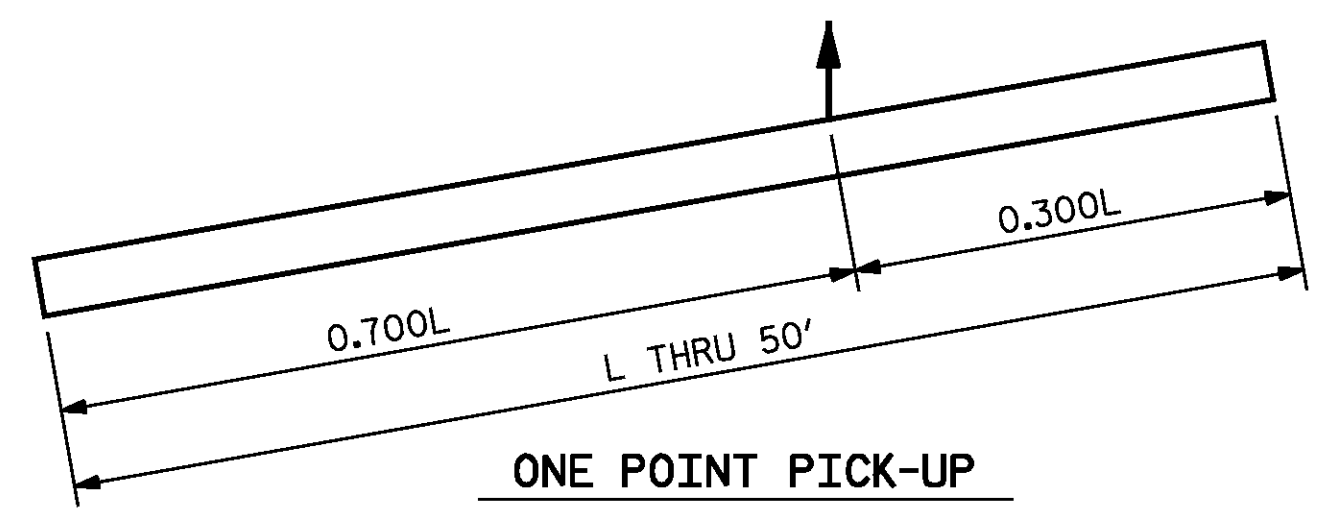
TYPICAL SECTION SECTION "A-A" FOR BURNING STRANDS
 1/2" OR 0.6" Ø GRADE 270 L.R. PRESTRESS STRANDS



TYPICAL SECTION SECTION "A-A" FOR BURNING STRANDS
 1/2" OR 0.6" Ø GRADE 270 L.R. PRESTRESS STRANDS



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



PICK-UP POINTS

DOWEL INSTALLATION FOR OPTIONAL BUILD-UP

GROUT COMPRESSIVE STRENGTH: $f'_c = 5,000$ PSI

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

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

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

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

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

QUANTITIES FOR ONE 12" PRESTRESSED PILE

LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	ONE POINT PICK-UP		TWO POINT PICK-UP	
			0.300L	0.700L	0.207L	0.586L
25'-0"	0.91	1.85	7'-6"	17'-6"		
30'-0"	1.10	2.22	9'-0"	21'-0"		
35'-0"	1.28	2.59	10'-6"	24'-6"		
40'-0"	1.46	2.96	12'-0"	28'-0"		
45'-0"	1.64	3.33	13'-6"	31'-6"		
50'-0"	1.83	3.72	15'-0"	35'-0"		
55'-0"	2.01	4.09			11'-4 1/2"	32'-3"
60'-0"	2.19	4.46			12'-5"	35'-2"
65'-0"	2.38	4.81			13'-5 1/2"	38'-1"
70'-0"	2.57	5.18			14'-6"	41'-0"

STEEL PILE TIP DETAILS

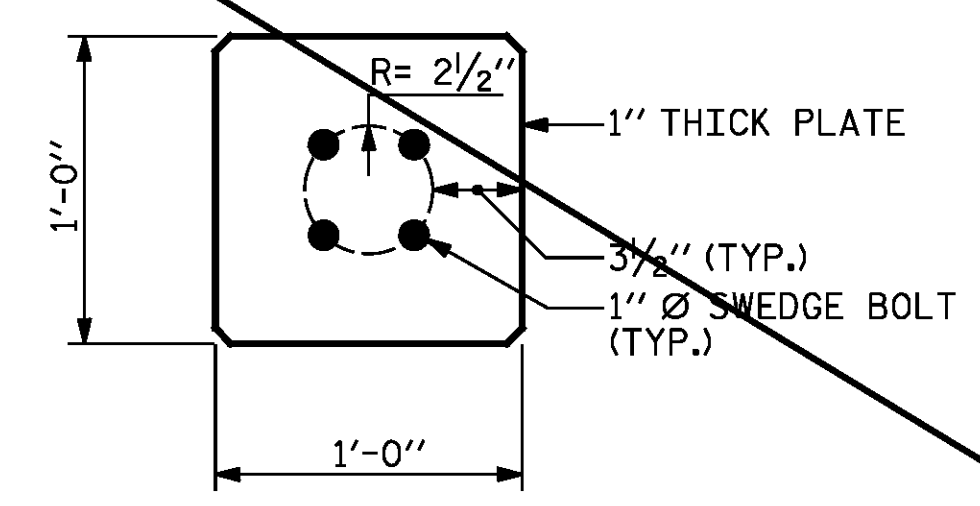
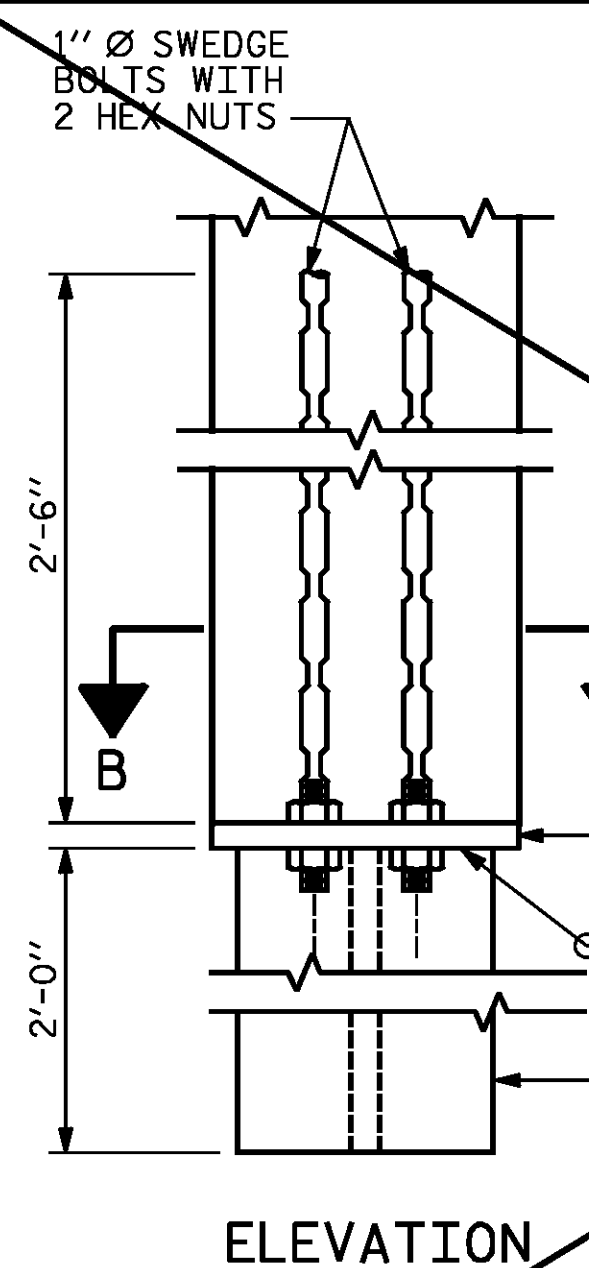
NOTES

PLATE AND SWEDGE BOLTS SHALL MEET THE REQUIREMENTS OF AASHTO M270 GRADE 36. THREADS OF THE SWEDGE BOLTS SHALL BE BURRED AT THE FACE OF THE NUT.

PILE SHALL BE CAST WITH SWEDGE BOLTS AND PLATE IN PLACE.

FOR SPIRAL REINFORCING AND PRESTRESSING STRAND DETAILS, SEE STANDARD 12" PRESTRESSED CONCRETE PILE ELEVATION AND TYPICAL SECTION.

* EXCEPT AS NOTED BELOW, THE HP 10 X 57 SECTION SHALL BE WELDED TO THE STEEL PLATE AFTER STRAND STRESS IS RELIEVED. THE HP 10 X 57 SECTION MAY BE WELDED IN THE PRESTRESSER'S YARD OR IN THE FIELD. WHEN A CIRCULAR STRAND PATTERN AS SHOWN ON THE PLANS IS USED, THE CONTRACTOR, AT HIS OPTION, MAY WELD THE HP 10 X 57 SECTION TO THE STEEL PLATE AT THE FABRICATION PLANT PRIOR TO PLACING THE CONCRETE. THE FLANGES OF THE HP SECTION SHALL BE PARALLEL TO THE EDGES OF THE STEEL PLATE AND CONCRETE PILE.

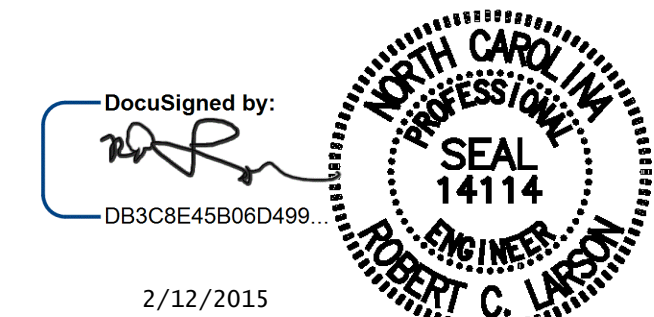


(HOLES FOR STRANDS NOT SHOWN)

DESIGN ENGINEER OF RECORD: DATE: 2/12/2015

DRAWN BY: E. C. DECOLA DATE: 03/06/14
 CHECKED BY: R. C. LARSON DATE: 03/24/14

DRAWN BY: FCJ 7/88 REV. 5/1/06R TLA/GM
 CHECKED BY: CRK 3/89 REV. 11/30/10 WMC/GM
 REV. 10/1/11 MAA/GM



PROJECT NO. R-2514D
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 STATION: 373+02.50 -L-

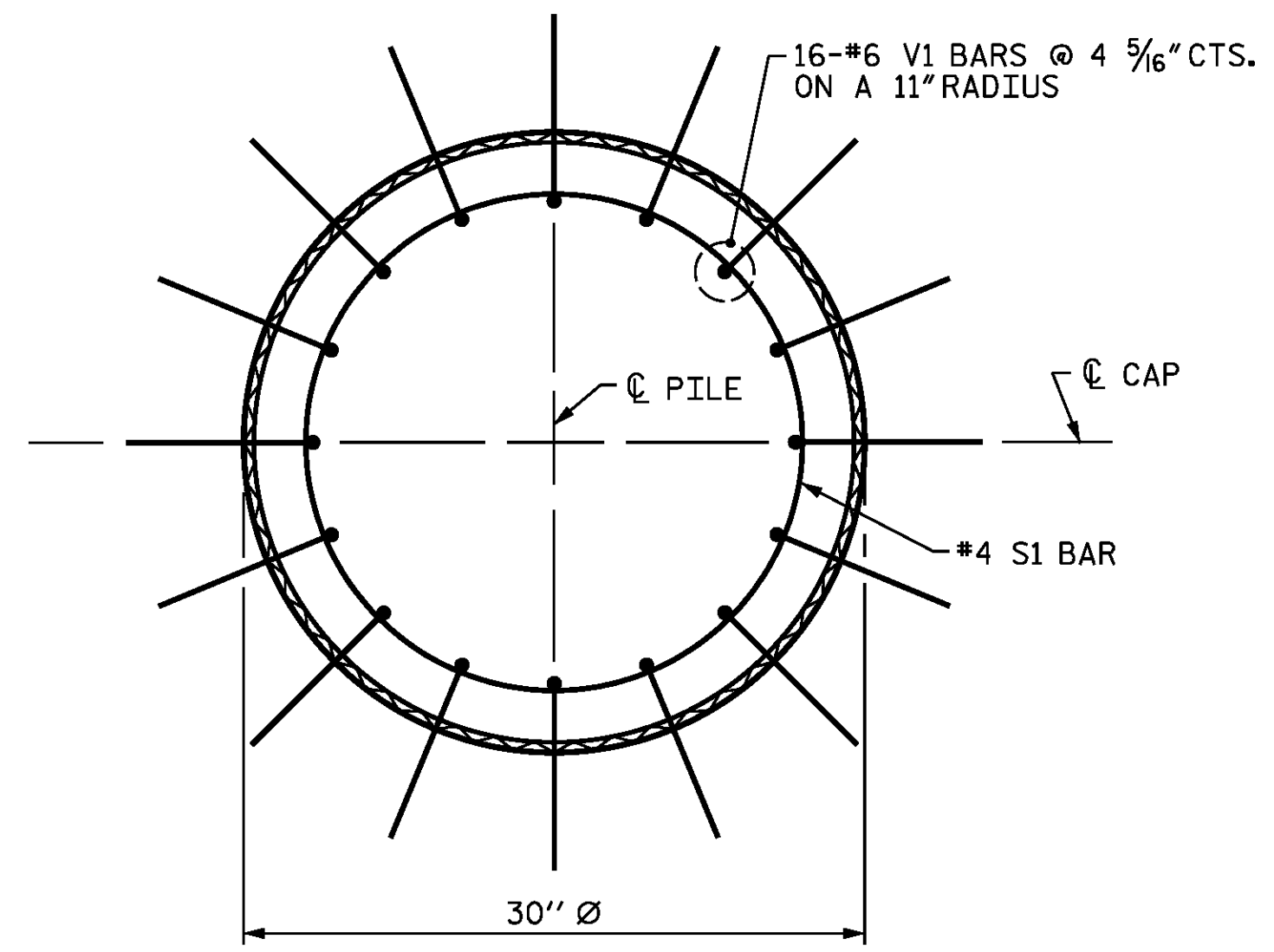
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

12" PRESTRESSED CONCRETE PILES

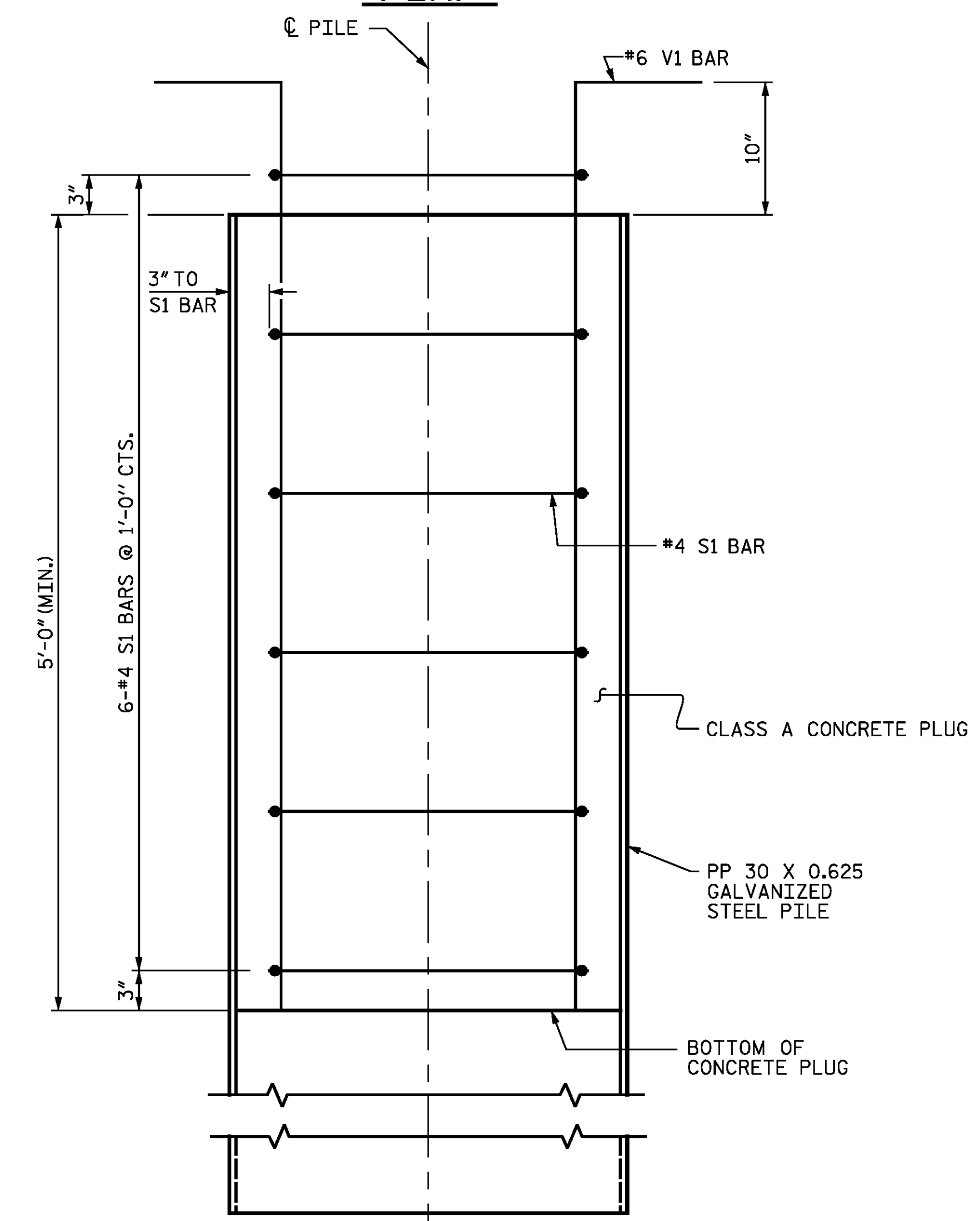
STD. NO. PCP1 RIGHT LANE STR-#6

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S06-30	
1			3			TOTAL SHEETS S06-34	
2			4				

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 DWG. REF. NO. 30 OF 34



PLAN



ELEVATION

PP 30 X 0.625 GALVANIZED STEEL PILE
(OPEN END)

NOTES

PIPE PILES SHALL BE IN ACCORDANCE WITH SECTION 1084 OF THE STANDARD SPECIFICATIONS.

GALVANIZE STEEL PIPE PILES IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS UNLESS METALLIZING IS REQUIRED. GALVANIZING OR METALLIZING PIPE PILE PLATES IS NOT REQUIRED.

PIPE PILE PLATES, IF REQUIRED, SHALL BE IN ACCORDANCE WITH SECTION 450 OF THE STANDARD SPECIFICATIONS.

REMOVE AND REPLACE OR REPAIR TO THE SATISFACTION OF THE ENGINEER PILES THAT ARE DAMAGED, DEFORMED OR COLLAPSED DURING INSTALLATION OR DRIVING.

PILE SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND AWS D1.1.

FOR CLOSED END PIPE PILES, REMOVE ALL SOIL AND WATER FROM INSIDE THE PILES JUST PRIOR TO PLACING REINFORCING STEEL AND CONCRETE FOR THE CONCRETE PLUG.

FOR OPEN END PIPE PILES, REMOVE ENOUGH SOIL AND WATER FROM INSIDE THE PILES TO CONSTRUCT THE CONCRETE PLUG WITHOUT FOULING THE CONCRETE.

FORM THE CONCRETE PLUG SUCH THAT THE REINFORCING STEEL OR CONCRETE DOES NOT MOVE AND THE CLEARANCE FROM THE REINFORCING STEEL TO THE INSIDE OF THE PILE IS MAINTAINED AFTER CONCRETE PLACEMENT. DO NOT PLACE CONCRETE IN THE BENT CAP UNTIL THE CONCRETE PLUG HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

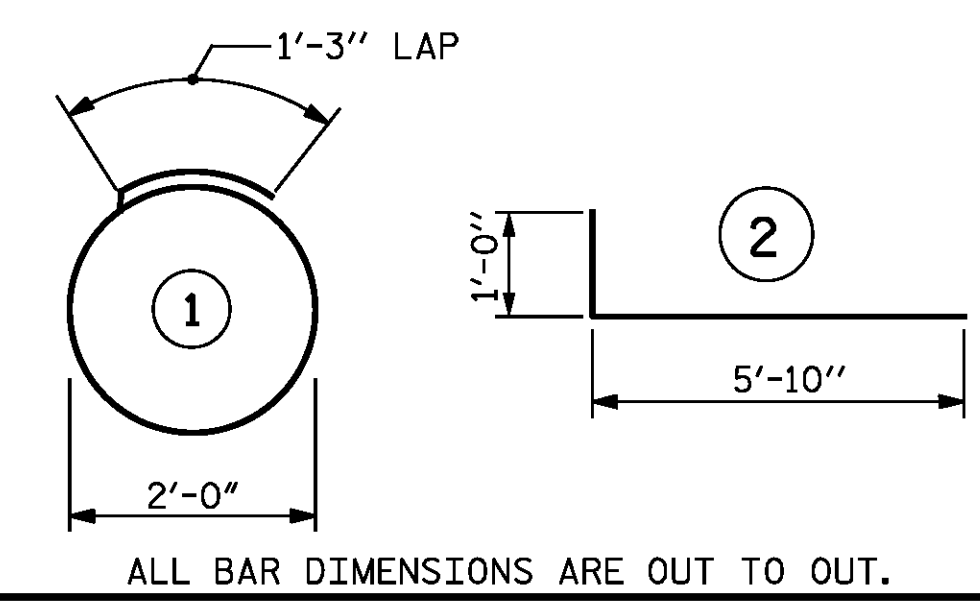
THE REINFORCING STEEL, CLASS A CONCRETE, AND GALVANIZING ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR PP 30 X 0.625 GALVANIZED STEEL PILES.

BILL OF MATERIAL FOR ONE PP 30 X 0.625 GALVANIZED STEEL PILE

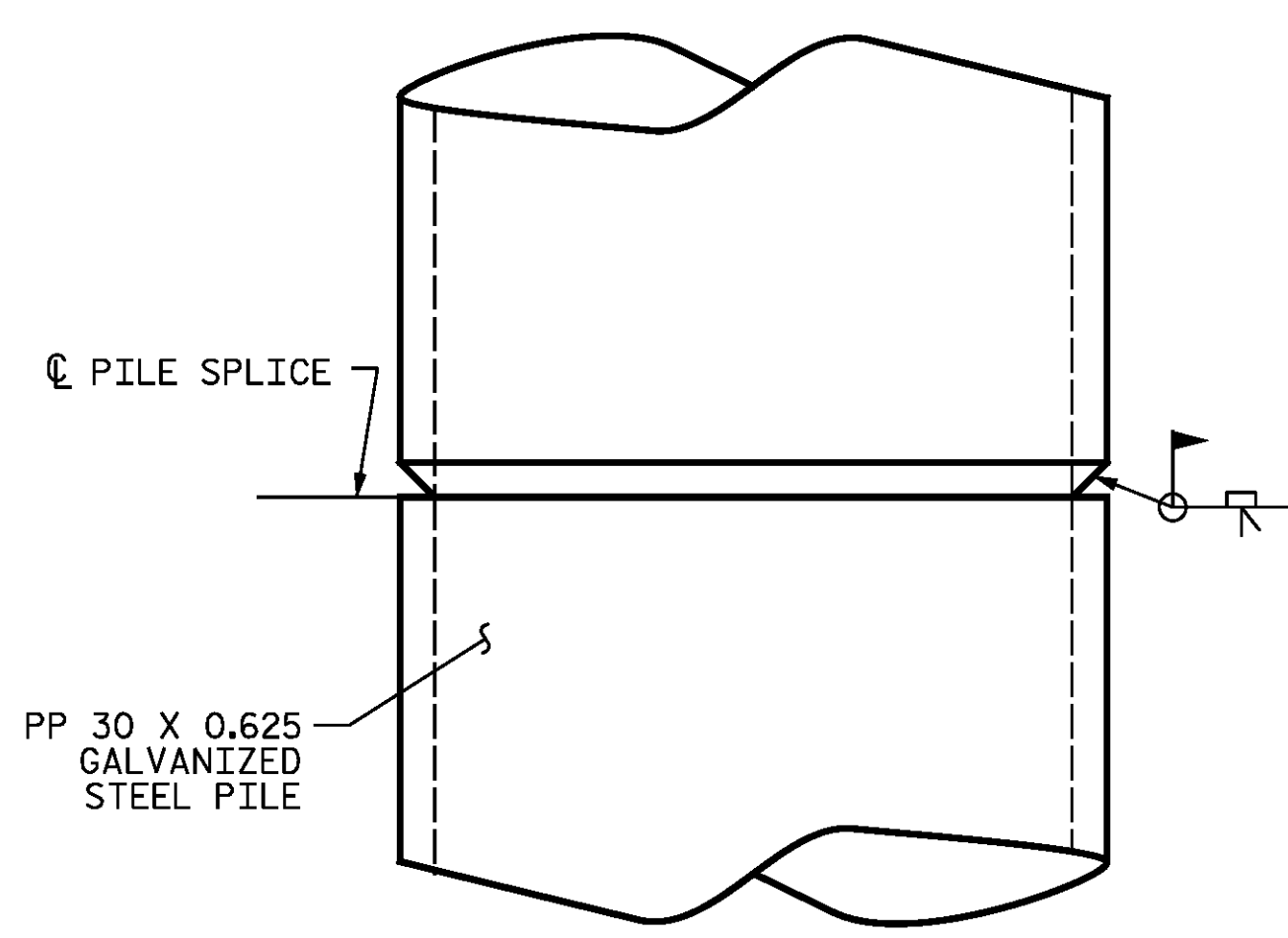
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	6	#4	1	7'-7"	30
V1	16	#6	2	6'-10"	164
REINFORCING STEEL =				194	lbs

CLASS A CONCRETE
5'-0" MINIMUM PLUG 0.8 CY

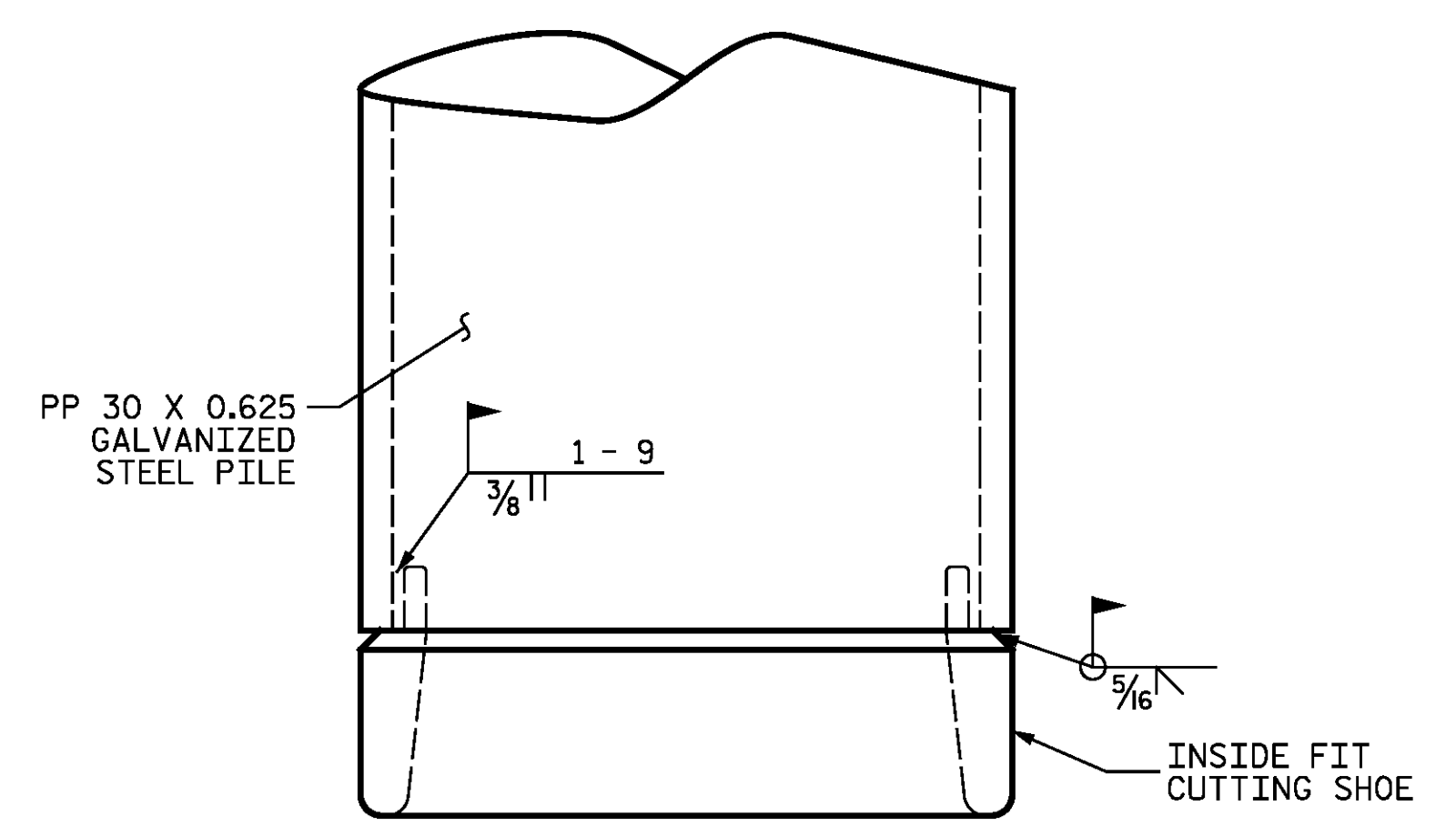
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

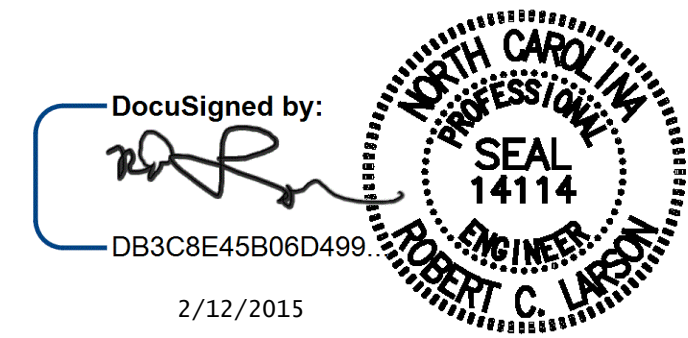


PIPE PILE SPLICE DETAIL



OPEN END CUTTING SHOE DETAIL

PROJECT NO. R-2514D
JONES COUNTY
STATION: 373+02.50 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
30" STEEL PIPE PILE
STD. NO. SPP5 RIGHT LANE STR-#6

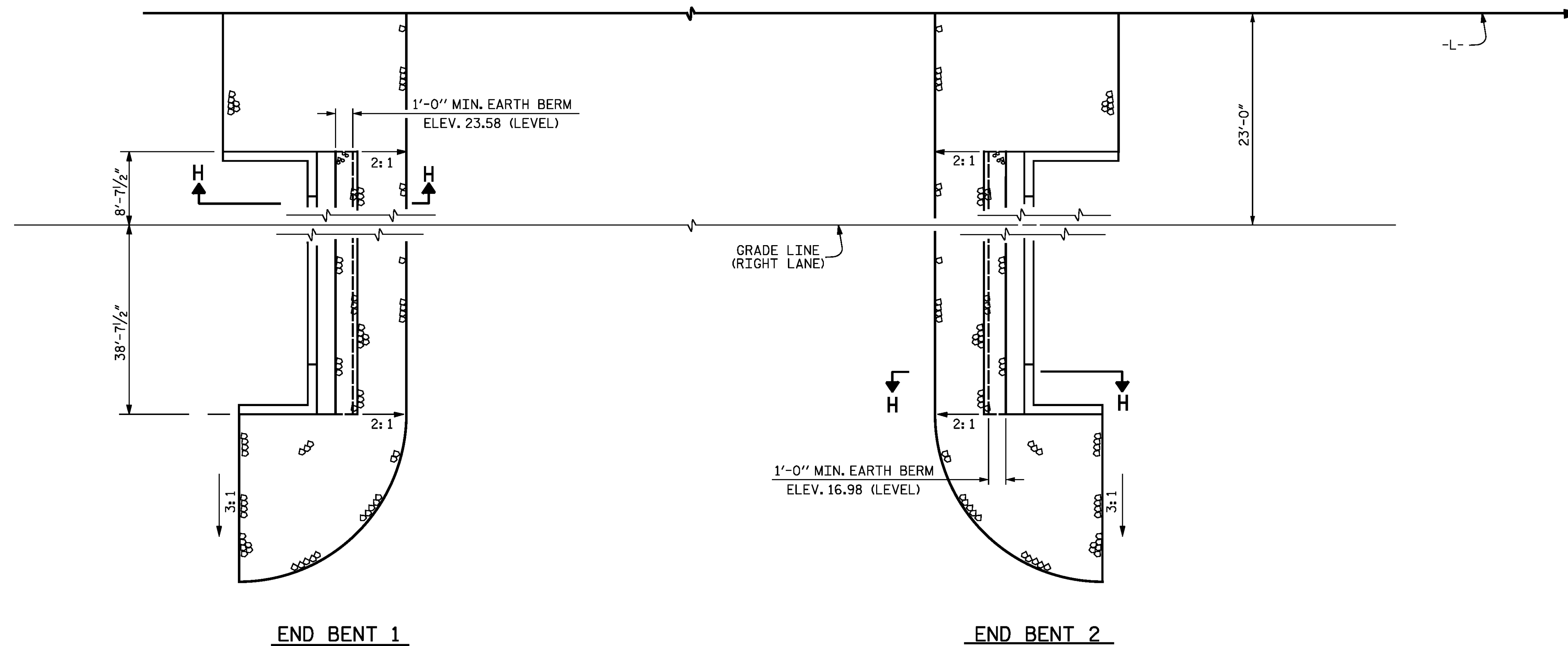
DocuSigned by:
DB3C8E45B06D499

DESIGN ENGINEER OF RECORD:	DATE : 2/12/2015
ASSEMBLED BY : R. C. LARSON	DATE : 03/17/14
CHECKED BY : Z. SU	DATE : 04/21/14
DRAWN BY : TLA 8/05	ADDED 10/1/05
CHECKED BY : GM 9/05	REV. 5/1/06R MAA/KMM
	REV. 10/1/11 MAA/GM

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

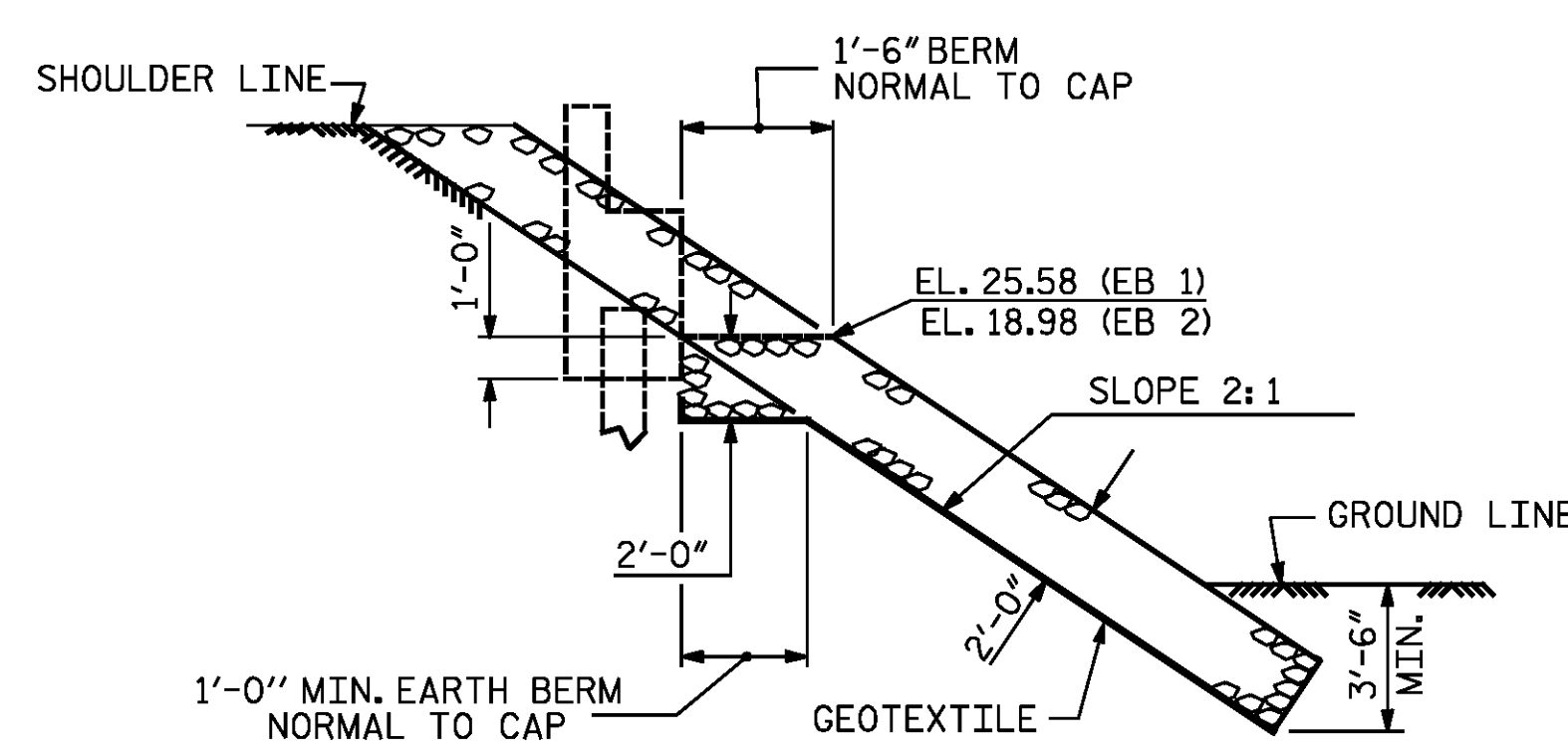
KCI Associates of North Carolina, P.A.
DWG. REF. NO. 31 OF 34

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

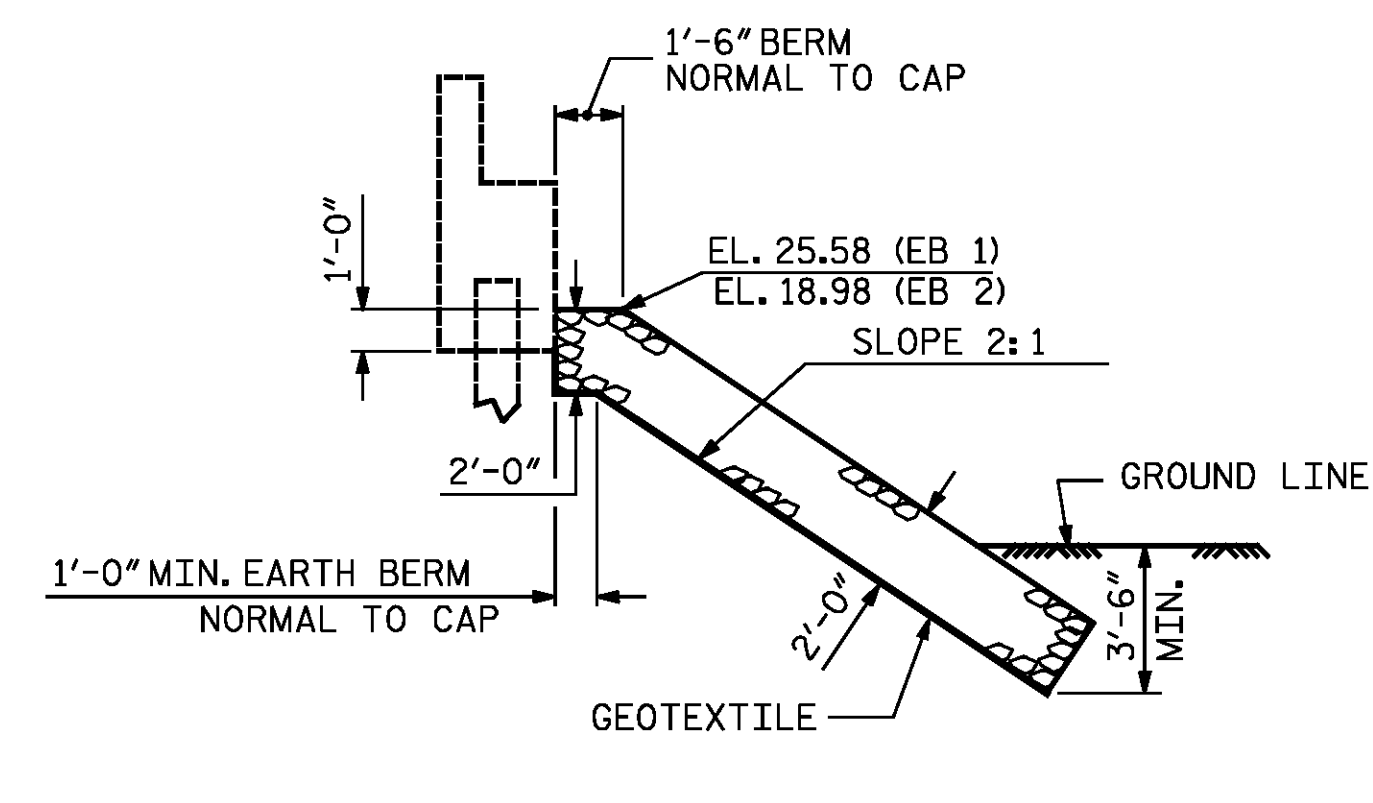


PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 373+02.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	630	700
END BENT 2	540	600



SECTION H-H



SECTION
BERM RIP RAPPED

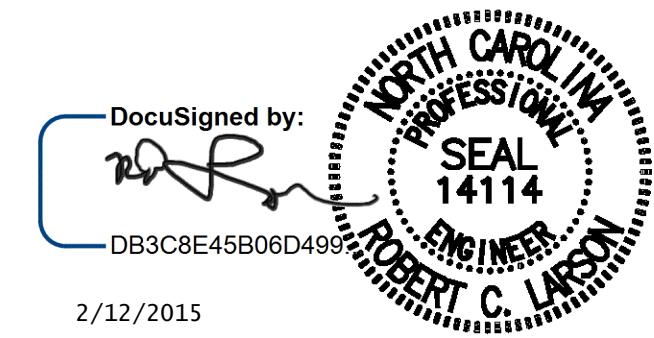
PROJECT NO. R-2514D
JONES COUNTY
STATION: 373+02.50 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**RIP RAP
DETAILS**

RIGHT LANE

STD. NO. RR1 STR-#6



NO.		DATE		BY		DATE		REVISIONS		SHEET NO.	
1				3							S06-32
2				4							TOTAL SHEETS S06-34

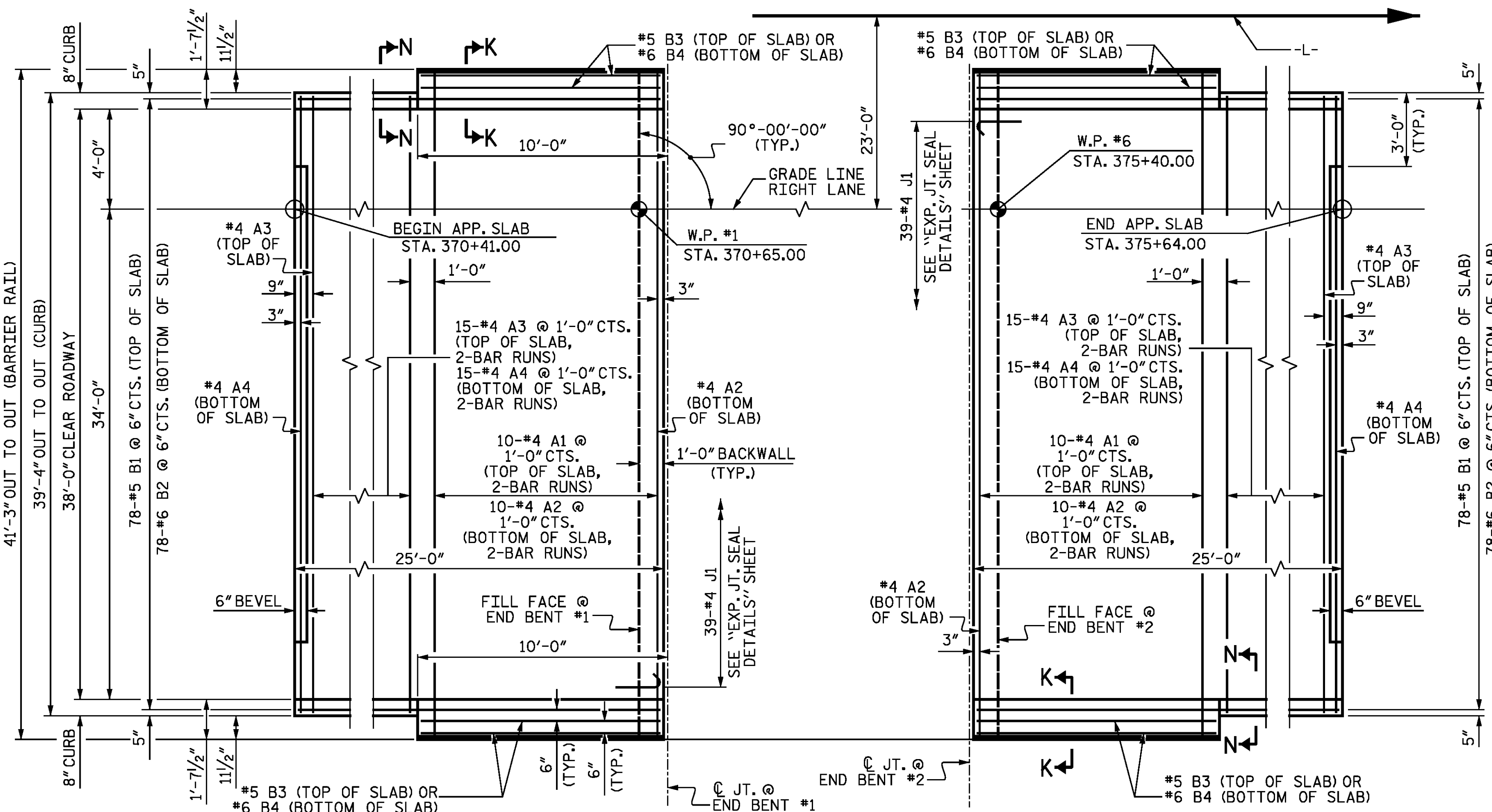
DocuSigned by:
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DESIGN ENGINEER OF RECORD: DATE : 2/12/2015

DRAWN BY : E. C. DECOLA DATE : 04/01/14

CHECKED BY : R. C. LARSON DATE : 04/03/14

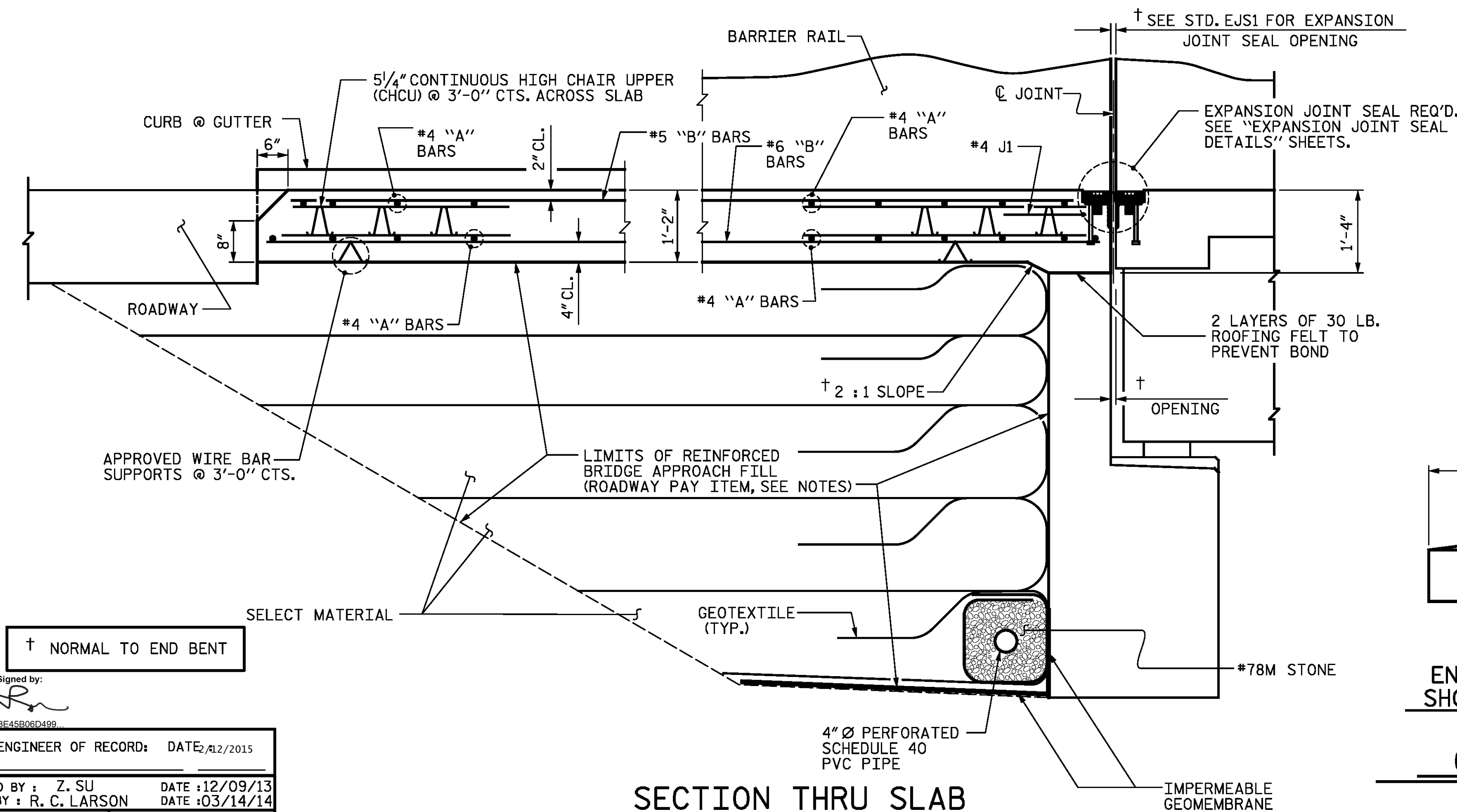
KCI Associates
of North Carolina, P.A.
DWG. REF. NO. 32 OF 34



PLAN @ END BENT #1

PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB

NOTES

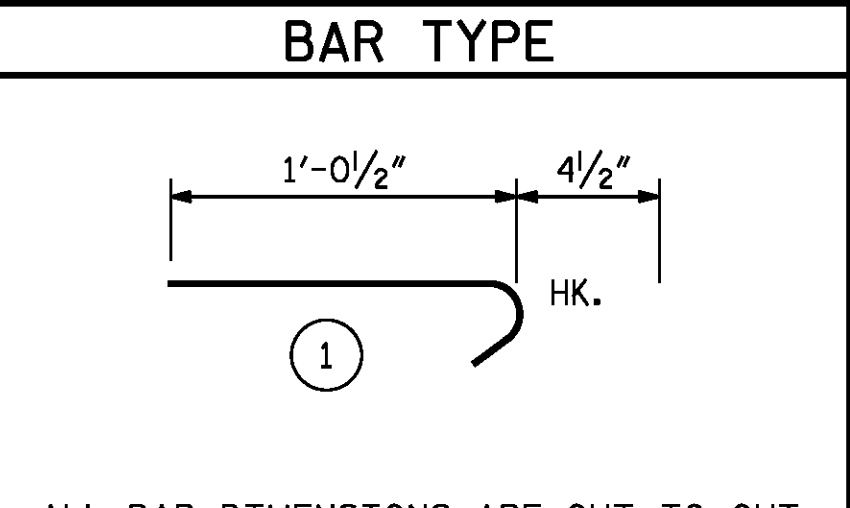
APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
 FOR REINFORCED BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, AND SELECT MATERIAL, SEE ROADWAY PLANS.
 AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
 FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	20	#4	STR	21'-6"	287
A2	20	#4	STR	21'-4"	285
*A3	30	#4	STR	20'-6"	411
A4	32	#4	STR	20'-5"	436
*B1	78	#5	STR	23'-10"	1939
B2	78	#6	STR	24'-8"	2890
*B3	4	#5	STR	9'-8"	40
B4	4	#6	STR	9'-8"	58
*J1	39	#4	1	1'-5"	37

REINFORCING STEEL **	LBS.	3669
*EPOXY COATED REINFORCING STEEL **	LBS.	2714
CLASS AA CONCRETE **	C. Y.	43.4

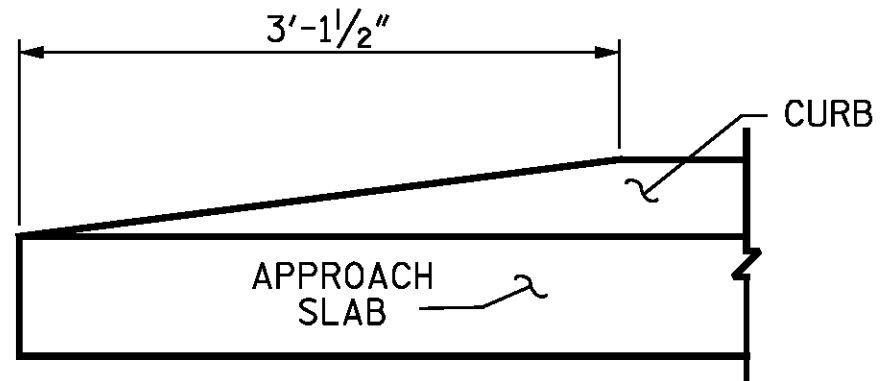
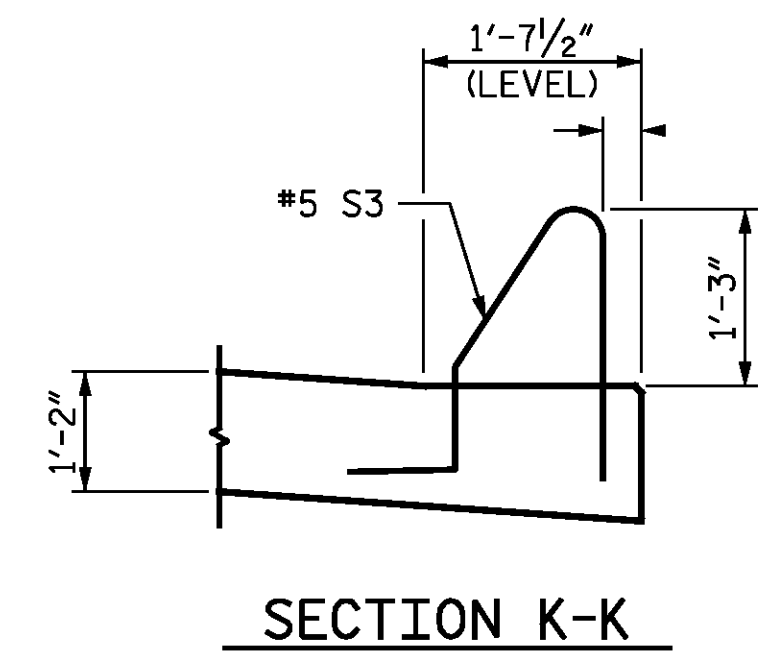
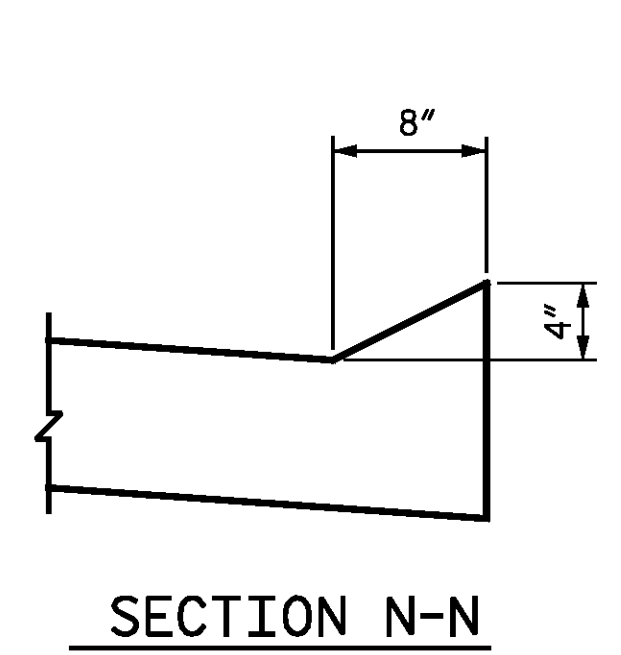


ALL BAR DIMENSIONS ARE OUT TO OUT
 ** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED. SEE STD. NO. CBRI.

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 BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF J1 BARS SPECIFIED, ADDITIONAL J1 BARS WILL NOT BE REQUIRED.

SPLICE LENGTHS

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

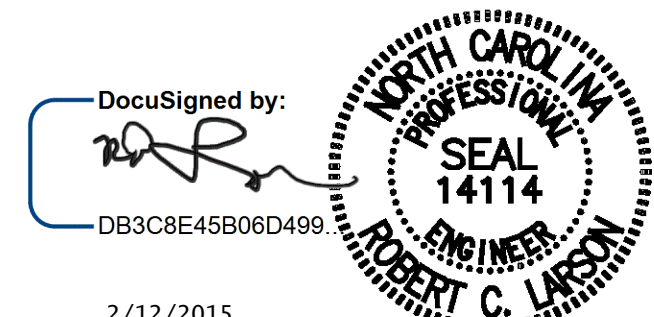


CURB DETAILS

PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 1 OF 2
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR FLEXIBLE PAVEMENT

STD. NO. BAS2 RIGHT LANE STR-#6



12/12/2015

DESIGN ENGINEER OF RECORD: DATE: 12/2/2015

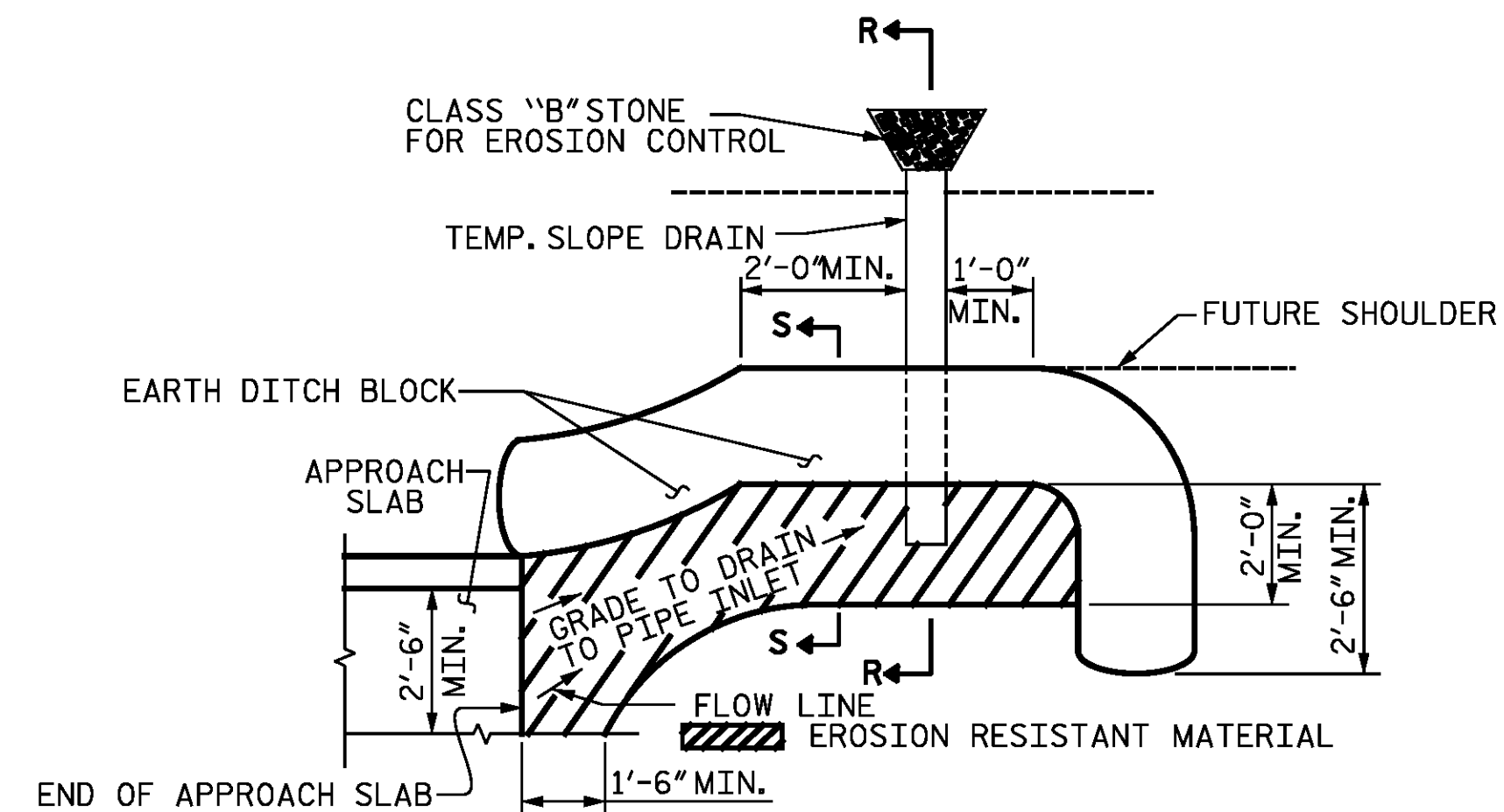
ASSEMBLED BY: Z. SU	DATE: 12/09/13
CHECKED BY: R. C. LARSON	DATE: 03/14/14
DRAWN BY: EEM 3/95	REV. 10/1/11 MAA/GM
CHECKED BY: VAP 3/95	REV. 12/21/11 MAA/GM
	REV. 6/13 MAA/GM

REVISIONS

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

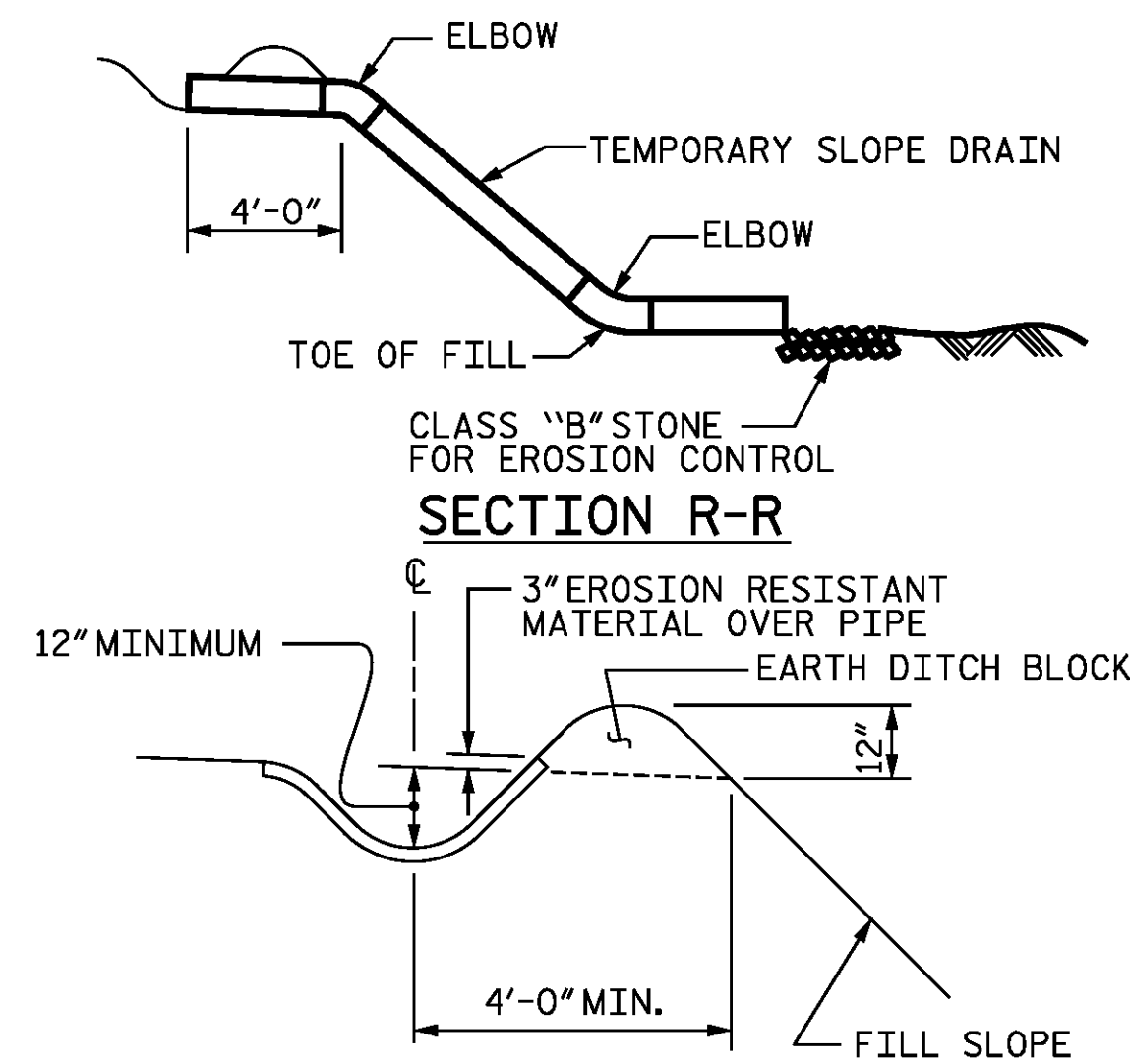
SHEET NO. S06-33

TOTAL SHEETS	S06-34
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NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

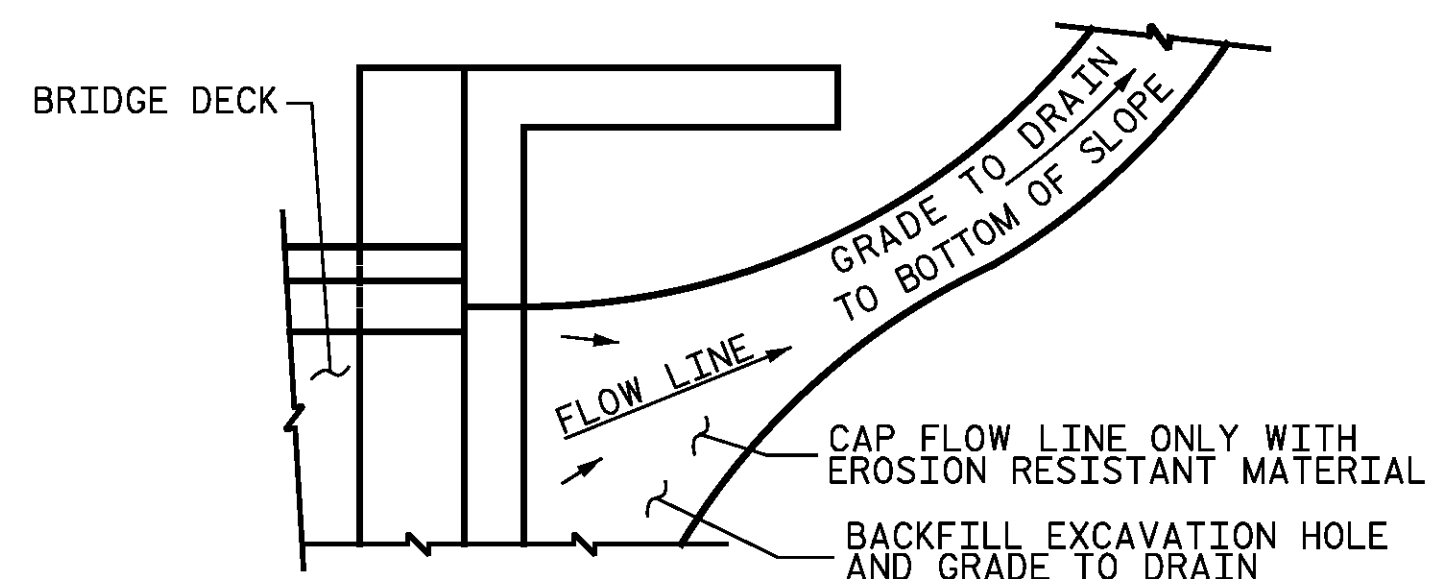
PLAN VIEW



SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

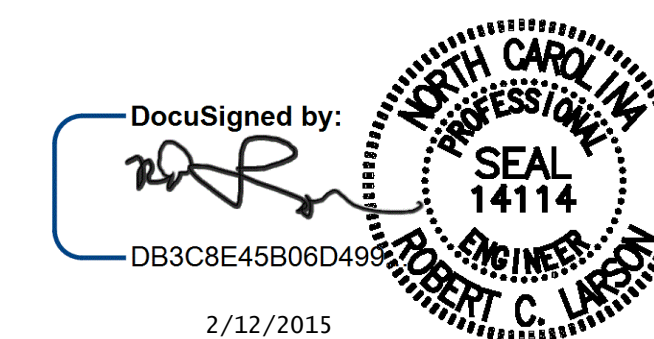
PROJECT NO. R-2514D
JONES COUNTY
 STATION: 373+02.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 BRIDGE APPROACH
 SLAB DETAILS

RIGHT LANE STR-#6
 STD. NO. BAS4



DocuSigned by:
 [Signature]
 DB3C8E45B06D499

DESIGN ENGINEER OF RECORD:	DATE :	2/12/2015
DRAWN BY :	DATE :	12/09/13
CHECKED BY :	DATE :	03/14/14

KCI Associates of North Carolina, P.A. Slate, Soil, Landmark Center 1400 Six Forks Rd. Raleigh, N.C. 27609-5300 (919) 783-2044		DWG. REF. NO. 34 OF 34			
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S06-34			TOTAL SHEETS S06-34		