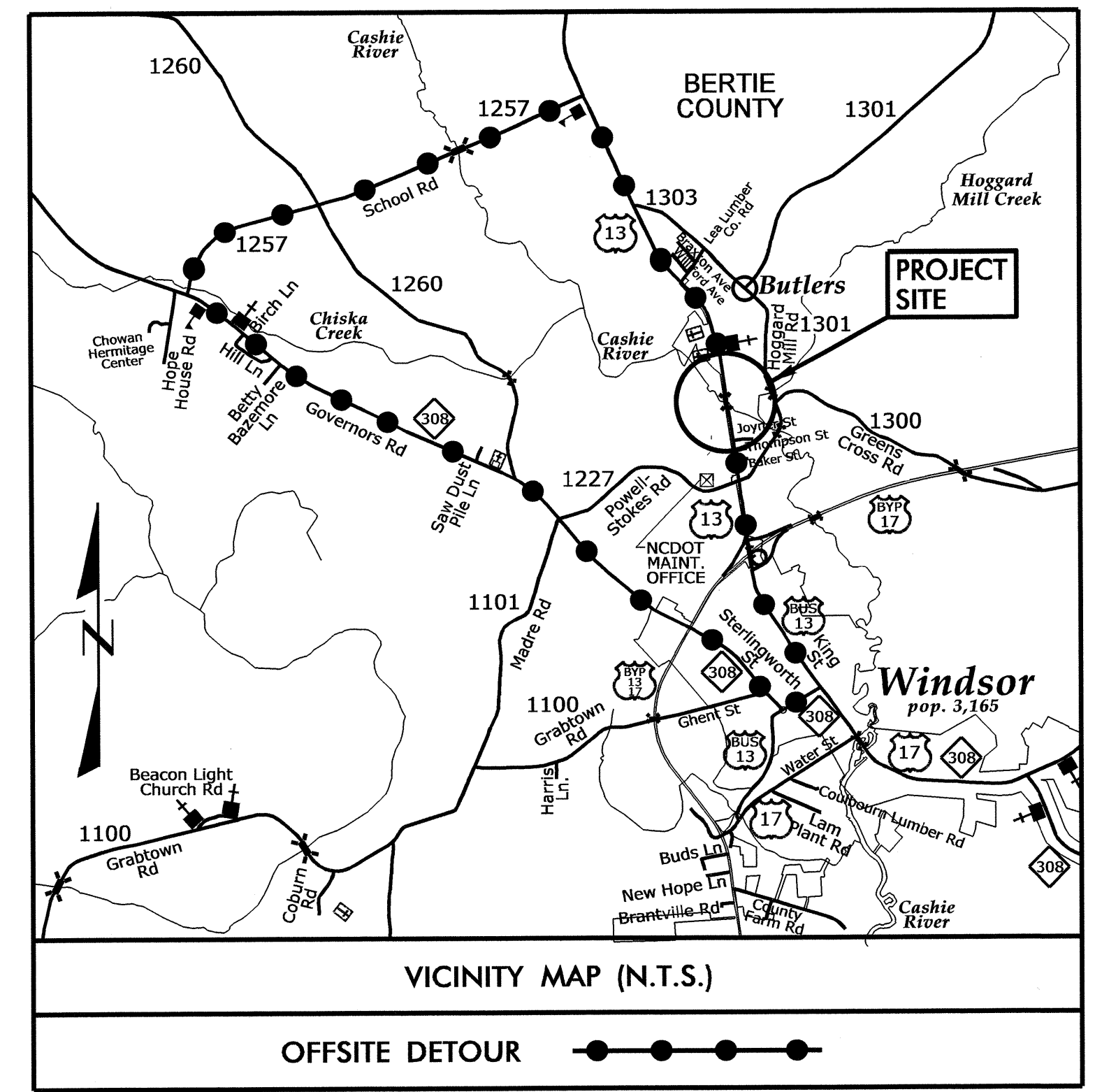


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5122		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
42264.1.1	BRNHS-0013(24)	PE	
42264.2.1	BRNHS-0013(24)	RW & UTIL	
42264.3.1	BRNHS-0013(24)	CONST.	

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

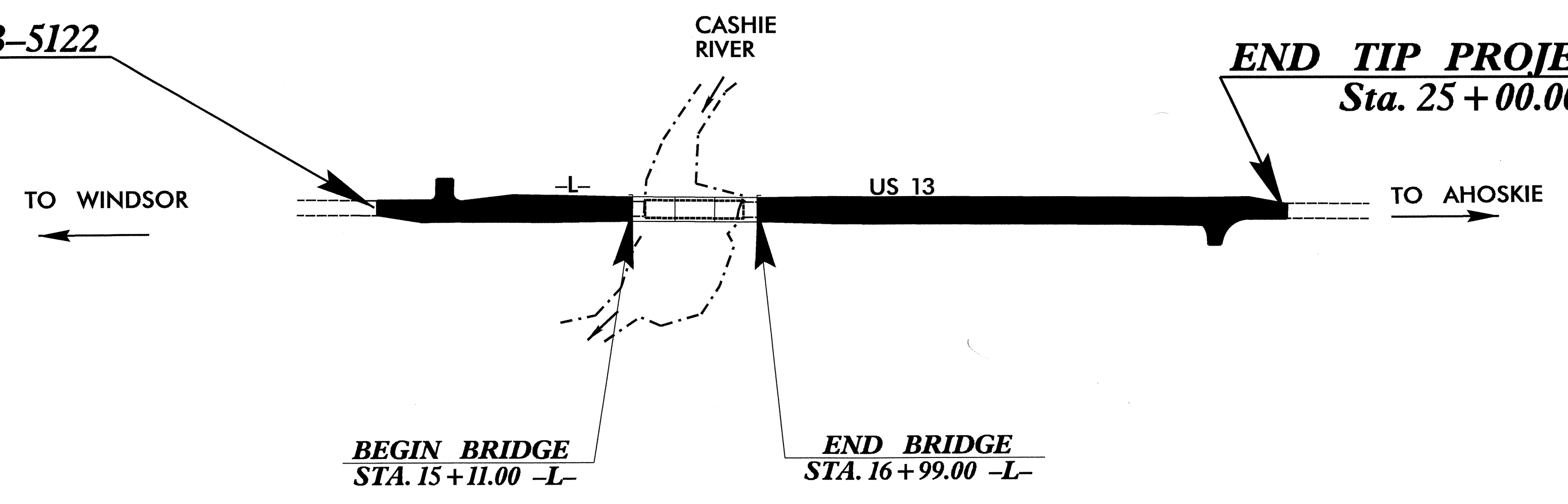
**BERTIE COUNTY**

LOCATION: BRIDGE NO. 51, OVER THE CASHIE RIVER, ON US 13  
TYPE OF WORK: GRADING, DRAINAGE, PAVING, & STRUCTURE

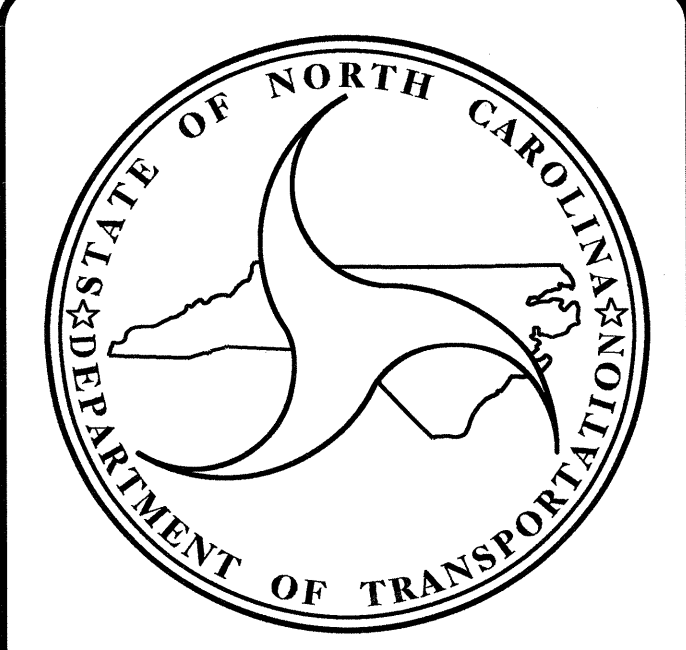


**BEGIN TIP PROJECT B-5122**  
Sta. 11+25.00 -L-

**END TIP PROJECT B-5122**  
Sta. 25+00.00 -L-



**STRUCTURE**



**DESIGN DATA**

ADT 2013	=	8,150
ADT 2033	=	13,380
DHV	=	11 %
D	=	55 %
T	=	12 % *
V	=	60 MPH
* (TTST 5% + DUALS 7%)		
FUNC. CLASS.	=	MINOR ART.
TIER CLASS.	=	STATEWIDE

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-5122	=	0.224 mile
LENGTH STRUCTURE TIP PROJECT B-5122	=	0.036 mile
<b>TOTAL LENGTH TIP PROJECT B-5122</b>	=	<b>0.260 mile</b>

Prepared in the Office of:  
**DIVISION OF HIGHWAYS**  
1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

LETTING DATE:  
JUNE 18, 2013

OMAR R. AZIZI, PE  
PROJECT ENGINEER

A. KEITH PASCHAL, PE  
PROJECT DESIGN ENGINEER

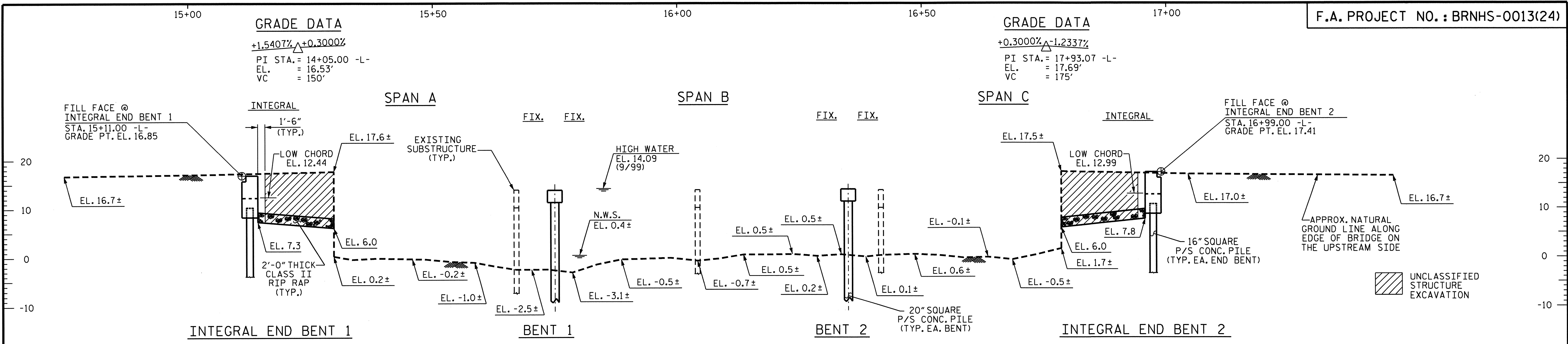
STRUCTURES MANAGEMENT  
UNIT

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

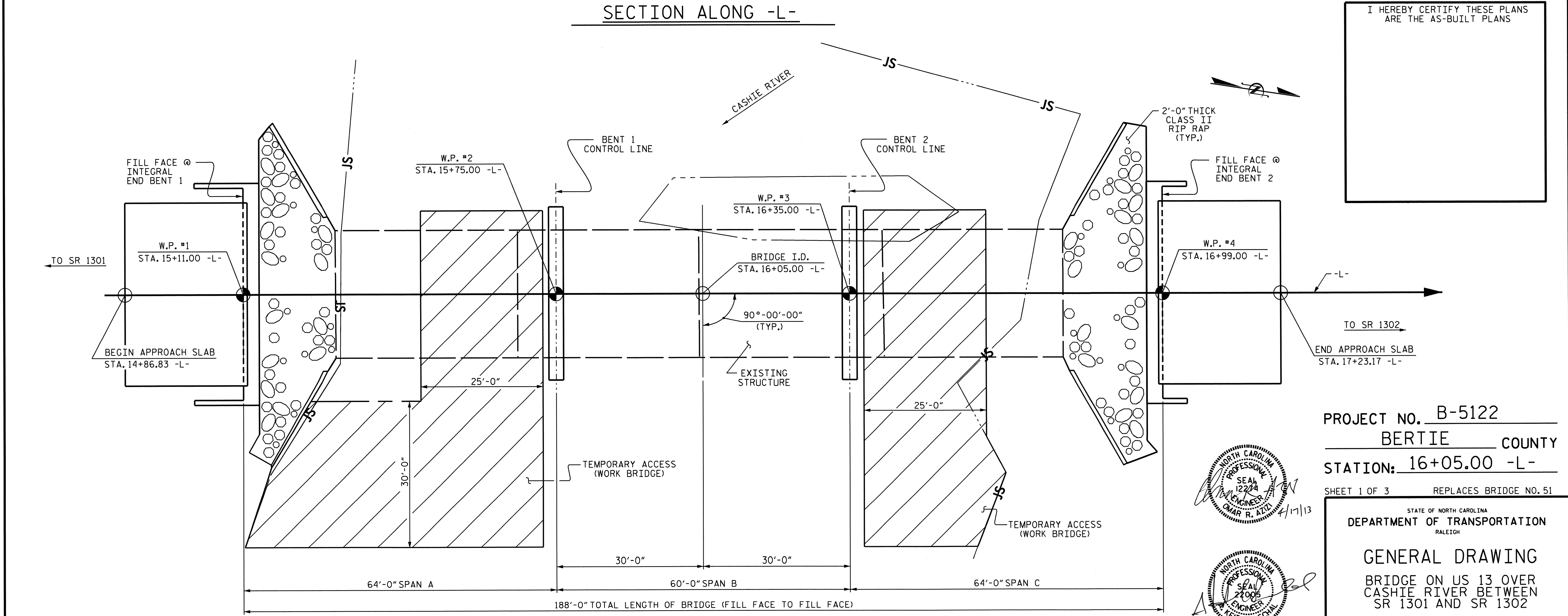
TIP PROJECT: B-5122

CONTRACT: C203025

07-MAR-2013 12:13  
\$\$\$\$\$DGN\$\$\$\$\$  
kbeat



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



**Professional Engineer Seal:**  
 NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 12274  
 OMAR R. ALZIL  
 4/17/13

**Professional Engineer Seal:**  
 NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22005  
 KEITH PASCHAL  
 4-17-13

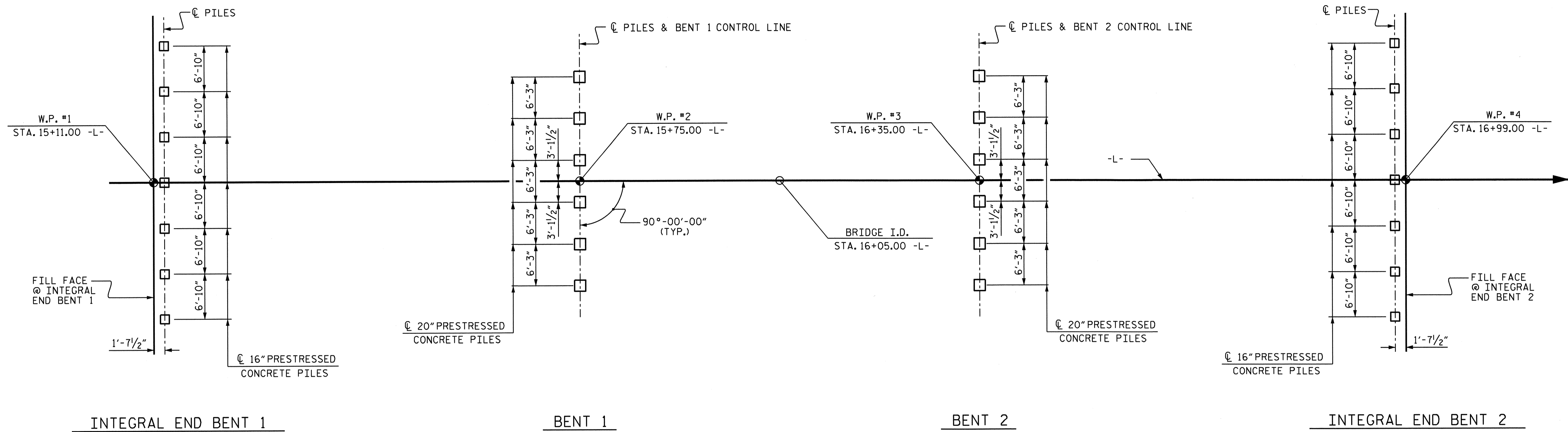
PROJECT NO. B-5122  
 BERTIE COUNTY  
 STATION: 16+05.00 -L-  
 SHEET 1 OF 3 REPLACES BRIDGE NO. 51

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 BRIDGE ON US 13 OVER  
 CASHIE RIVER BETWEEN  
 SR 1301 AND SR 1302

DRAWN BY : PEGGY ADKINS DATE : 8-29-12  
 CHECKED BY : O. PUIGCERVER DATE : 9-7-12  
 DESIGN ENGINEER OF RECORD: A. KEITH PASCHAL DATE : 10-7-13

**PLAN**  
 (PILES NOT SHOWN FOR CLARITY)

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



**FOUNDATION LAYOUT**

DIMENSIONS LOCATING PILES ARE SHOWN TO PILE CENTERLINE

**FOUNDATION NOTES:**

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

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

DRIVE PILES AT END BENT NO.1 AND END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 225 TONS PER PILE.

PILES AT BENT NO.1 AND BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 170 TONS PER PILE.

DRIVE PILES AT BENT NO.1 AND BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 330 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG OR SCOUR.

INSTALL PILES AT END BENT NO.1, BENT NO.1, BENT NO.2 AND END BENT NO.2 TO A TIP ELEVATION NO HIGHER THAN -55 FEET.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 AND BENT NO.2 IS ELEVATION -22 FEET. 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 75,000 FT-LBS TO 165,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT NO.1 AND BENT NO.2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

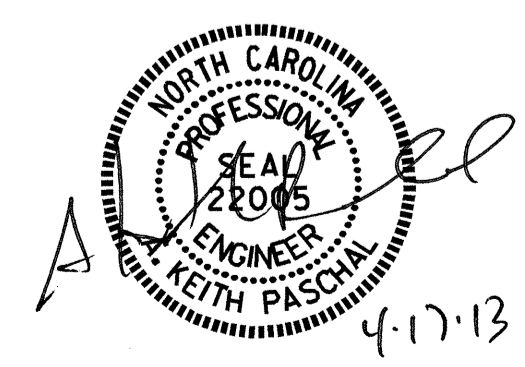
TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS AND FOR PILE DRIVING CRITERIA, SEE GEOTECH PROVISIONS.

PROJECT NO. B-5122  
BERTIE COUNTY  
 STATION: 16+05.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**

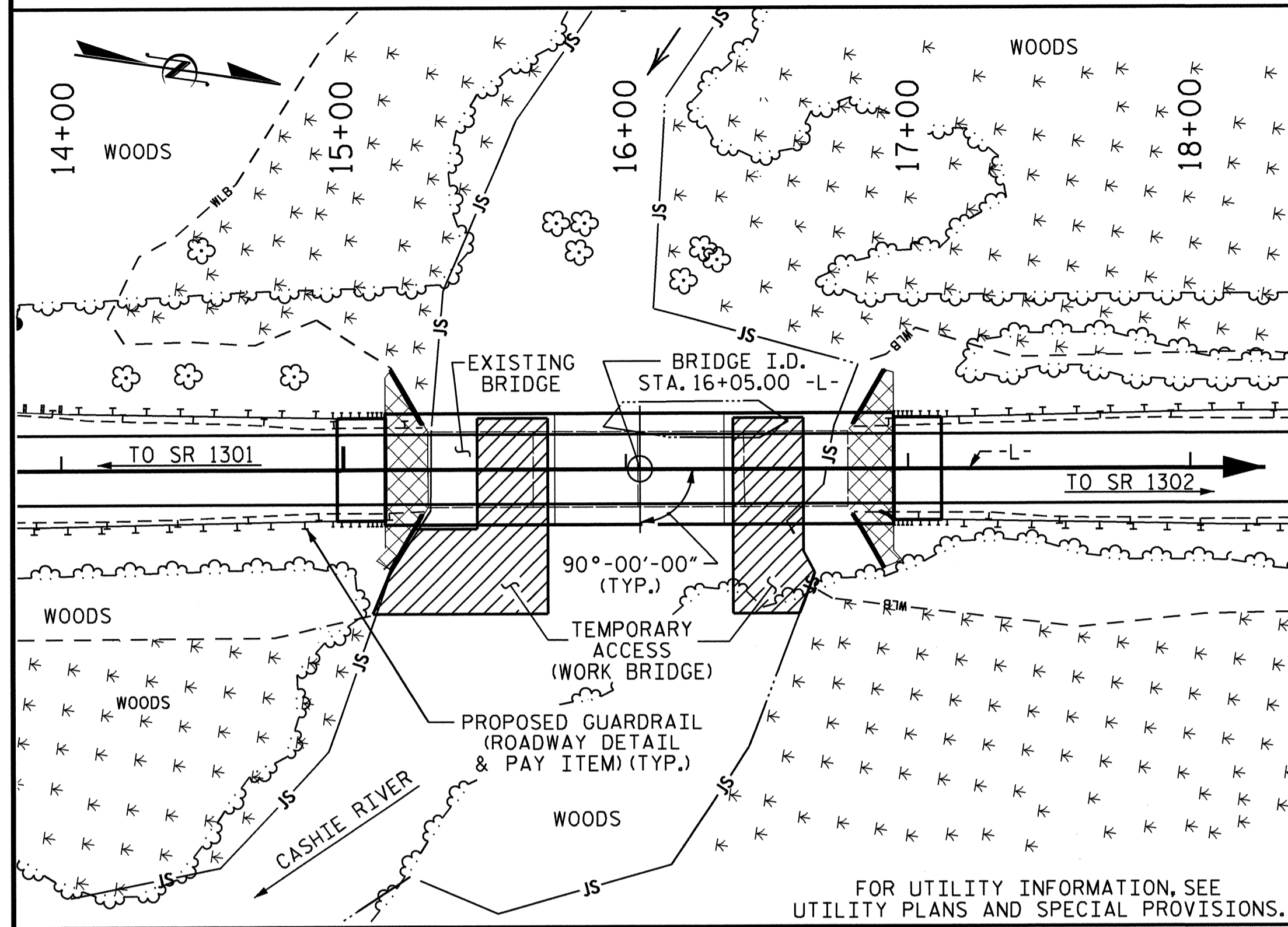
BRIDGE ON US 13 OVER  
 CASHIE RIVER BETWEEN  
 SR 1301 AND SR 1302



DRAWN BY : <u>J.L. AVERETTE</u>	DATE : <u>01-16-13</u>
CHECKED BY : <u>G. KOUCHEKI</u>	DATE : <u>01-31-13</u>
DESIGN ENGINEER OF RECORD: <u>A. KEITH PASCHAL</u>	DATE : <u>01-31-13</u>

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

B.M. #1: 48.83' RT. OF STA. 12+01.21 -L-, EL. 11.62.



LOCATION SKETCH

HYDRAULIC DATA	
DESIGN DISCHARGE	= 8555 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 50 YRS.
DESIGN HIGH WATER ELEVATION	= 12.2'
DRAINAGE AREA	= 118.1 SQ. MI.
BASE DISCHARGE (Q100)	= 10422 C.F.S.
BASE HIGH WATER ELEVATION	= 13.29'

OVERTOPPING DATA	
OVERTOPPING DISCHARGE	= 13900 C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= 100+ YRS.
OVERTOPPING FLOOD ELEVATION	= 14.5'

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

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.

THE CONTRACTOR SHALL REMOVE THE UPPER PORTION OF THE EXISTING CONCRETE ABUTMENT WALLS TO EL. 6.0.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 35 FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF 4 SPANS (1 @ 36'-9", 2 @ 37'-6" & 1 @ 36'-9") WITH A CLEAR ROADWAY WIDTH OF 26.3 FT., A REINFORCED CONCRETE DECK AND REINFORCED CONCRETE DECK GIRDERS SUPPORTED BY REINFORCED CONCRETE ABUTMENTS AT THE END BENTS AND REINFORCED CONCRETE PIERS WITH TIMBER PILE FOOTINGS AT THE INTERIOR BENTS AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE EXISTING ABUTMENTS ARE TO REMAIN IN PLACE.

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

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

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

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 TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	36" PRESTRESSED CONCRETE GIRDERS	16" PRESTRESSED CONCRETE PILES	20" PRESTRESSED CONCRETE PILES	PILE REDRIVES	CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS			
	LUMP SUM	LUMP SUM	EACH	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	NO. LIN. FT.	NO. LIN. FT.	NO. LIN. FT.	EACH	LIN. FT.	TONS	SQ. YDS.	LUMP SUM			
SUPERSTRUCTURE					7379	7766		LUMP SUM		15	922.08			372.67			LUMP SUM			
END BENT 1							24.4		3816		7	525	4		78	87				
BENT 1							15.0		2460			6	420	3						
BENT 2							15.0		2460			6	420	3						
END BENT 2							24.4		3816		7	490	4		90	100				
TOTAL	LUMP SUM	LUMP SUM	1	LUMP SUM	7379	7766	78.8	LUMP SUM	12552	15	922.08	14	1015	12	840	14	372.67	168	187	LUMP SUM

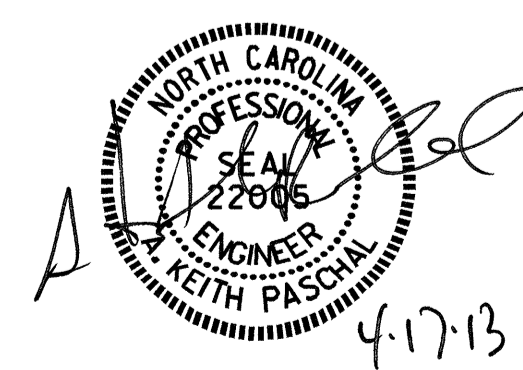
PROJECT NO. B-5122  
 BERTIE COUNTY  
 STATION: 16+05.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GENERAL DRAWING  
 BRIDGE ON US 13 OVER  
 CASHIE RIVER BETWEEN  
 SR 1301 AND SR 1302

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



DRAWN BY : I.L. AVERETTE DATE : 01-16-13  
 CHECKED BY : G. KOUCHEKI DATE : 01-31-13  
 DESIGN ENGINEER OF RECORD: A. KEITH PASCHAL DATE : 01-31-13

16-APR-2013 13:54  
 Y:\B5122\Structures\Final Plans\B5122-SD.GD.01.dgn  
 bbarodwala

LOAD FACTORS:

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

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT						
							DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.04	--	1.75	0.739	1.59	A	EL	30.646	0.832	2.13	A	I	24.517	0.80	0.739	1.04	A	EL	30.646		
	HL-93(0pr)	N/A	--	2.06	--	1.35	0.739	2.06	A	EL	30.646	0.832	2.77	A	I	24.517	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.33	47.758	1.75	0.739	2.03	A	EL	30.646	0.832	2.47	A	I	24.517	0.80	0.739	1.33	A	EL	30.646		
	HS-20(0pr)	36.000	--	2.63	94.693	1.35	0.739	2.63	A	EL	30.646	0.832	3.20	A	I	24.517	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.88	38.931	1.40	0.739	5.51	A	EL	30.646	0.832	6.60	A	I	24.517	0.80	0.739	2.88	A	EL	30.646	
		SNGARBS2	20.000	--	2.2	43.913	1.40	0.739	4.20	A	EL	30.646	0.832	4.91	A	I	24.517	0.80	0.739	2.20	A	EL	30.646	
		SNAGRIS2	22.000	--	2.10	46.188	1.40	0.739	4.01	A	EL	30.646	0.832	4.65	A	I	24.517	0.80	0.739	2.10	A	EL	30.646	
		SNCOTTS3	27.250	--	1.44	39.141	1.40	0.739	2.75	A	EL	30.646	0.832	3.32	A	I	24.517	0.80	0.739	1.44	A	EL	30.646	
		SNAGGRS4	34.925	--	1.22	42.542	1.40	0.739	2.33	A	EL	30.646	0.832	2.91	A	I	24.517	0.80	0.739	1.22	A	EL	30.646	
		SNS5A	35.550	--	1.19	42.303	1.40	0.739	2.28	A	EL	30.646	0.832	3.04	A	I	24.517	0.80	0.739	1.19	A	EL	30.646	
		SNS6A	39.950	--	1.10	43.919	1.40	0.739	2.10	A	EL	30.646	0.832	2.84	A	I	24.517	0.80	0.739	1.10	A	EL	30.646	
		SNS7B	42.000	--	1.05	43.982	1.40	0.739	2.00	A	EL	30.646	0.832	2.89	A	I	24.517	0.80	0.739	1.05	A	EL	30.646	
	TTST	TNAGRIT3	33.000	--	1.34	44.313	1.40	0.739	2.57	A	EL	30.646	0.832	3.32	A	I	24.517	0.80	0.739	1.34	A	EL	30.646	
		TNT4A	33.075	--	1.35	44.679	1.40	0.739	2.58	A	EL	30.646	0.832	3.16	A	I	24.517	0.80	0.739	1.35	A	EL	30.646	
		TNT6A	41.600	--	1.11	46.253	1.40	0.739	2.13	A	EL	30.646	0.832	3.29	A	I	24.517	0.80	0.739	1.11	A	EL	30.646	
		TNT7A	42.000	--	1.12	47.098	1.40	0.739	2.14	A	EL	30.646	0.832	3.04	A	I	24.517	0.80	0.739	1.12	A	EL	30.646	
		TNT7B	42.000	--	1.17	49.142	1.40	0.739	2.24	A	EL	30.646	0.832	2.75	A	I	24.517	0.80	0.739	1.17	A	EL	30.646	
		TNAGRIT4	43.000	--	1.11	47.544	1.40	0.739	2.11	A	EL	30.646	0.832	2.64	A	I	24.517	0.80	0.739	1.11	A	EL	30.646	
		TNAGT5A	45.000	--	1.04	46.759	1.40	0.739	1.99	A	EL	30.646	0.832	2.74	A	I	24.517	0.80	0.739	1.04	A	EL	30.646	
		TNAGT5B	45.000	3	1.02	46.058	1.40	0.739	1.96	A	EL	30.646	0.832	2.50	A	I	24.517	0.80	0.739	1.02	A	EL	30.646	

NOTES:

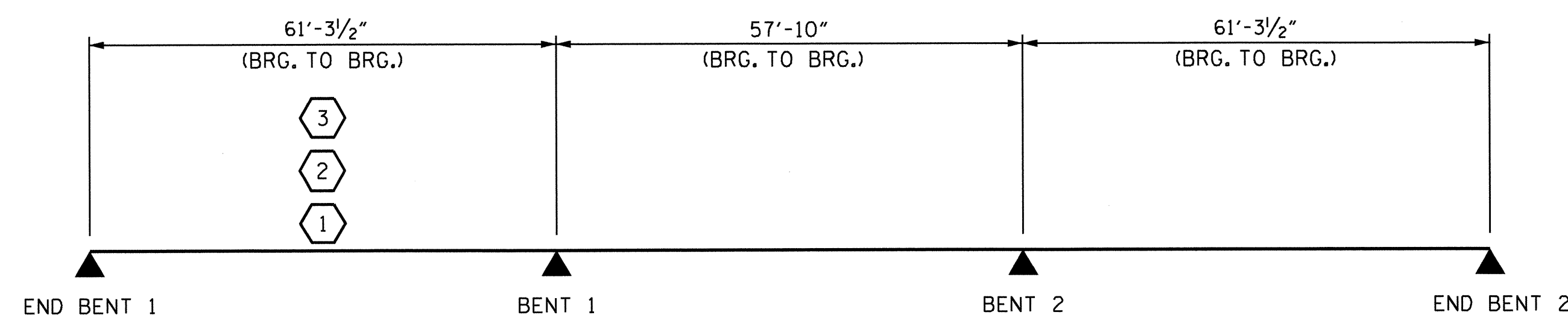
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

COMMENTS:

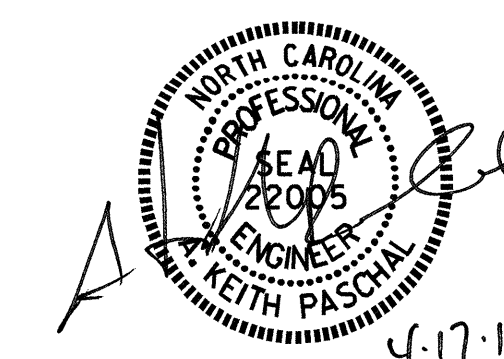
- 1.
- 2.
- 3.
- 4.

#	CONTROLLING LOAD RATING
1	DESIGN LOAD RATING (HL-93)
2	DESIGN LOAD RATING (HS-20)
3	LEGAL LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	
GIRDER LOCATION	
I - INTERIOR GIRDER	
EL - EXTERIOR LEFT GIRDER	
ER - EXTERIOR RIGHT GIRDER	



LRFR SUMMARY

PROJECT NO. B-5122  
 BERTIE COUNTY  
 STATION: 16+05.00 -L-



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

ASSEMBLED BY : T.L. AVERETTE	DATE : 1-17-12
CHECKED BY : E.K. POPE	DATE : 1-17-12
DESIGN ENGINEER OF RECORD: O. PUIGSERVER	DATE : 1-18-12
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/11/11 MAA/GM

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

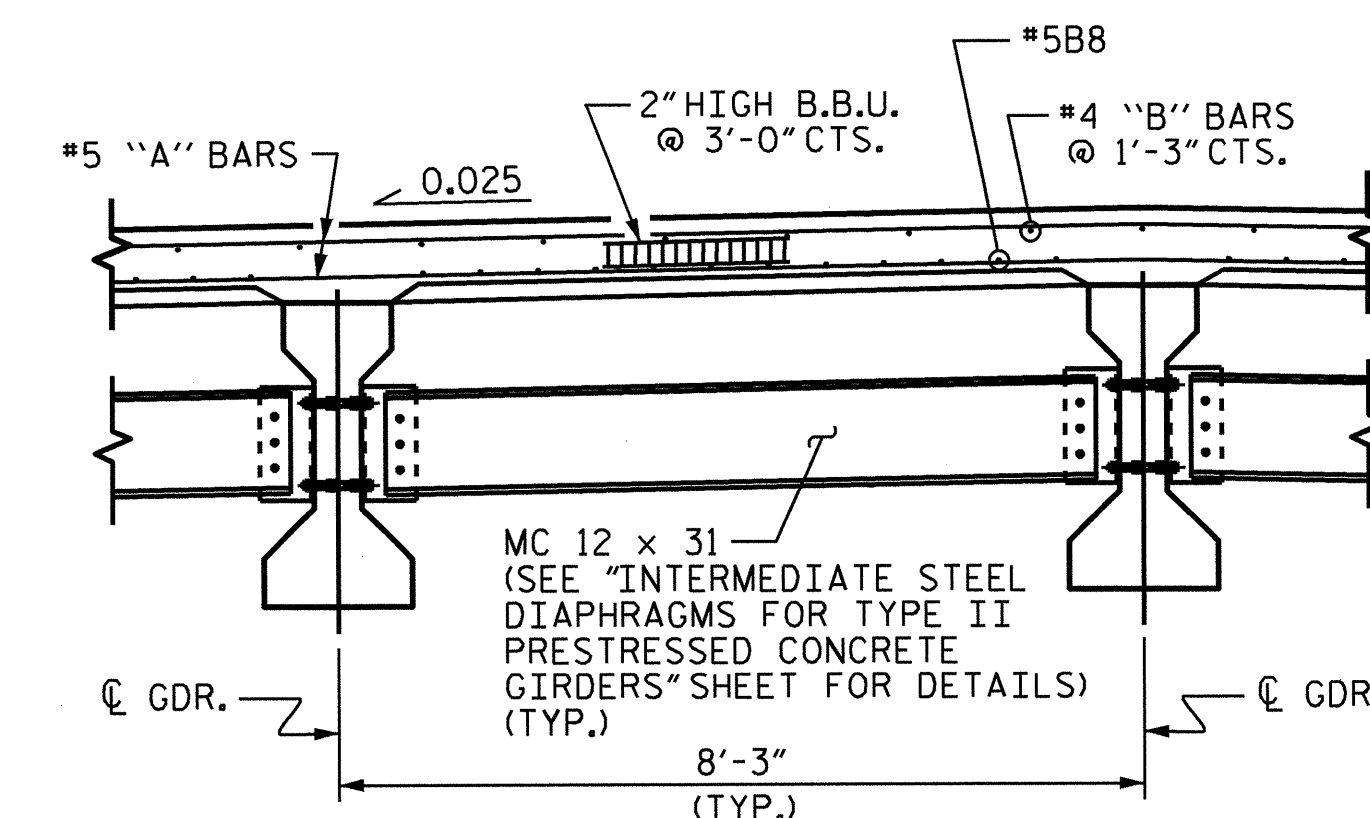
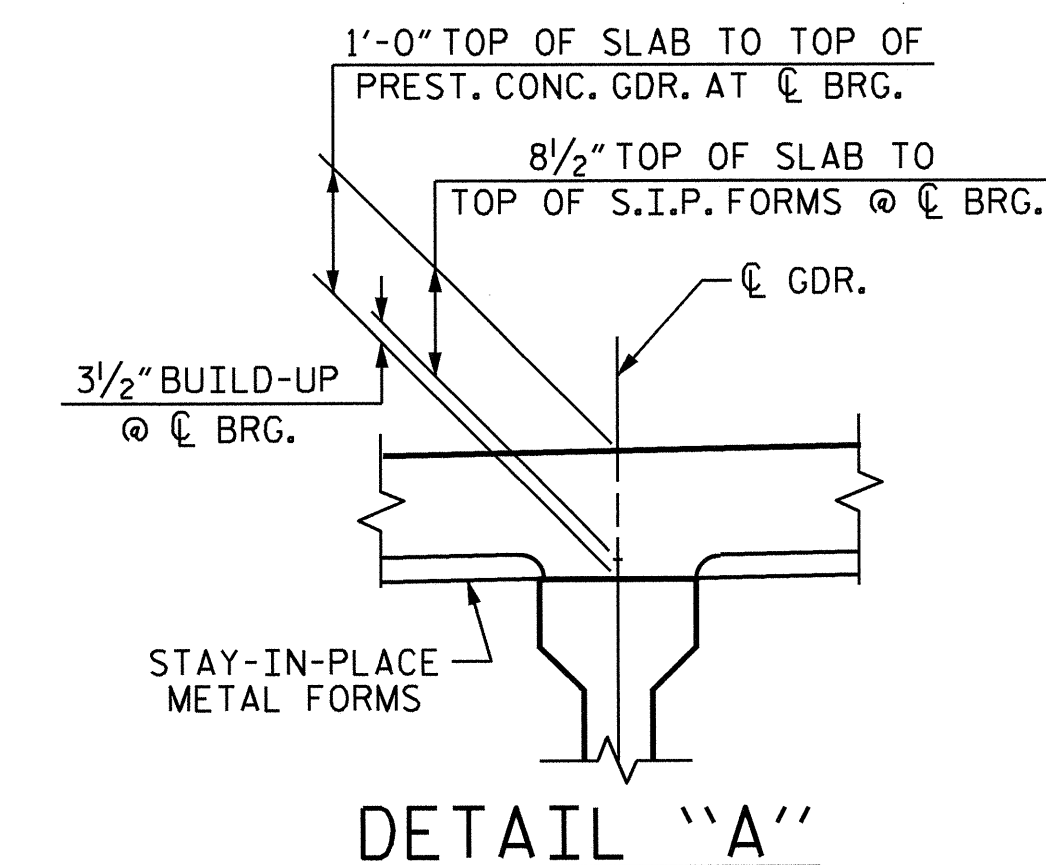
**NOTES**

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

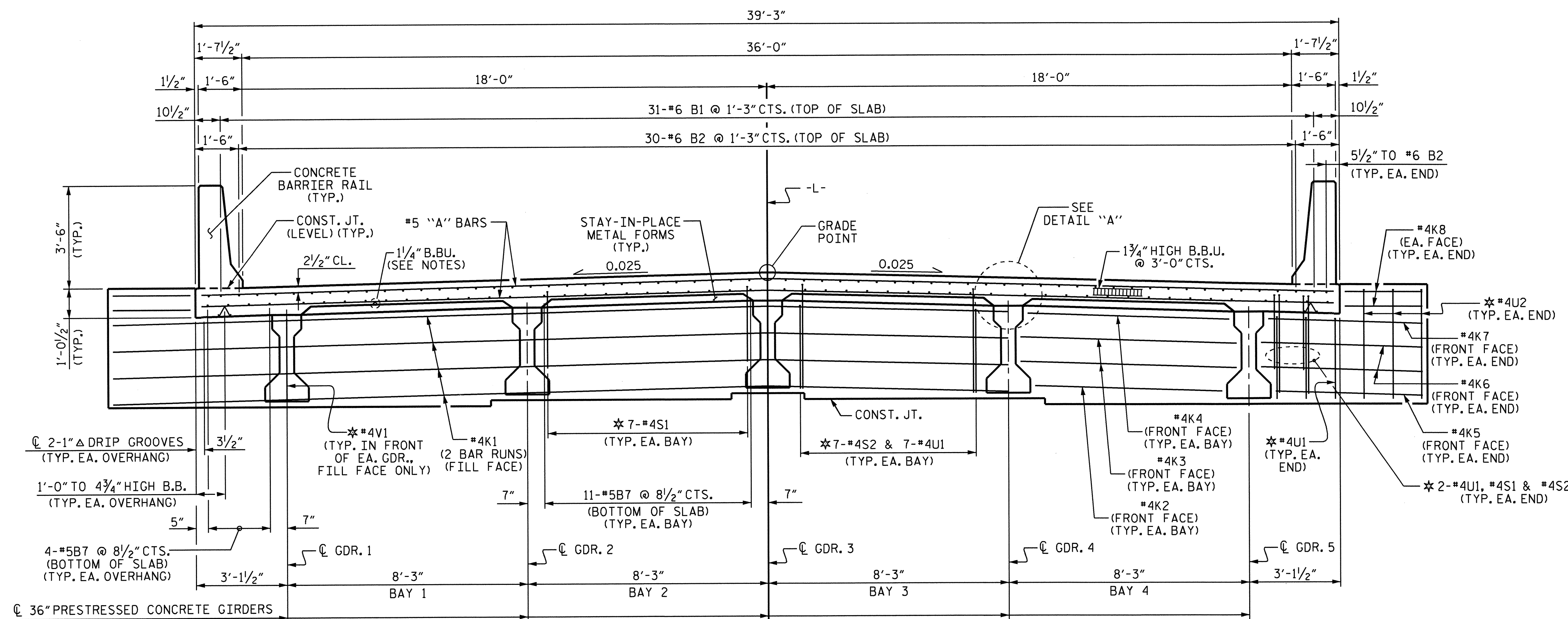
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

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

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.

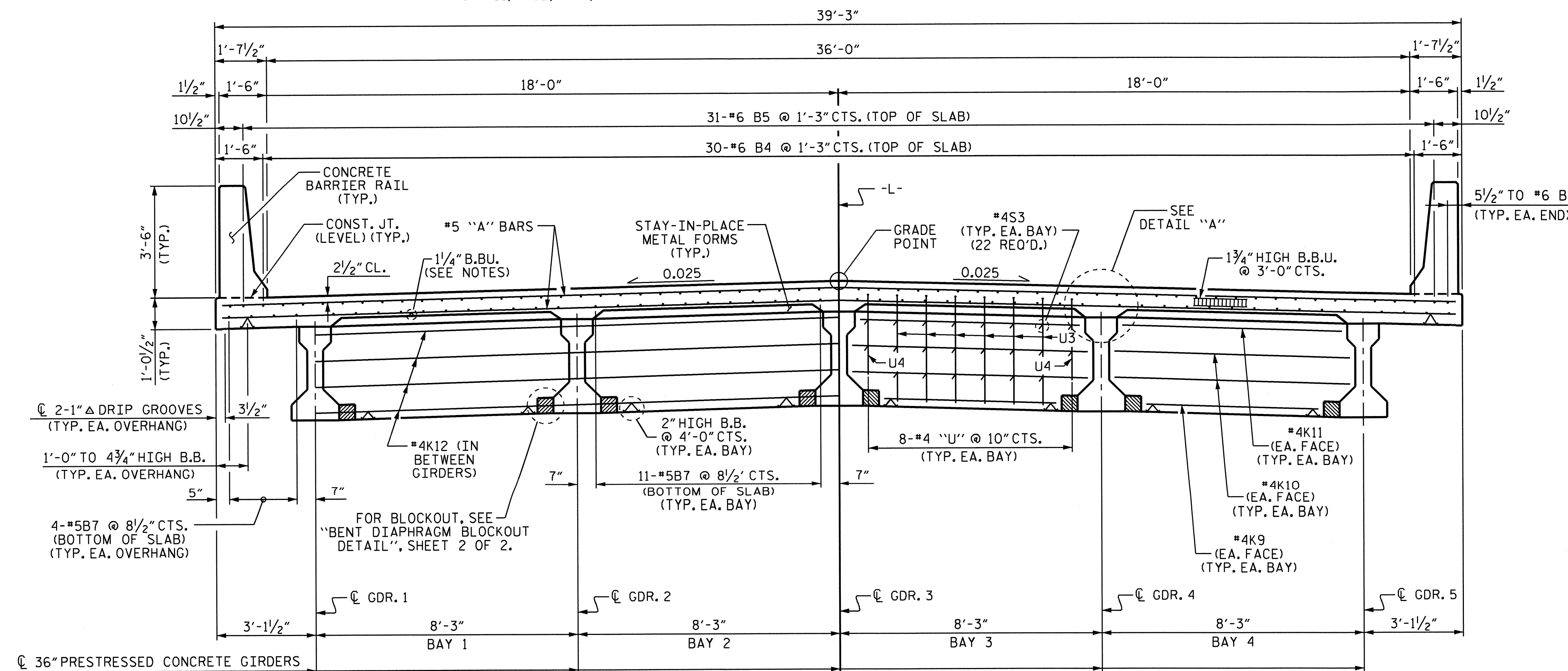


**PARTIAL TYPICAL SECTION @ INTERMEDIATE DIAPHRAGM**



**TYPICAL SECTION @ INTEGRAL END BENT**

\* #4U1, #4U2, #4V1, #4S1 & #4S2 BARS TO MATCH WITH #4 "V" BARS IN INTEGRAL END BENT CAP



**TYPICAL SECTION @ BENT DIAPHRAGM**

DRAWN BY : M.K. BEARD DATE : 11-7-12  
 CHECKED BY : M.D. PISO DATE : 12-11-12  
 DESIGN ENGINEER OF RECORD : O. PUIGCERVER DATE : 12-13-12

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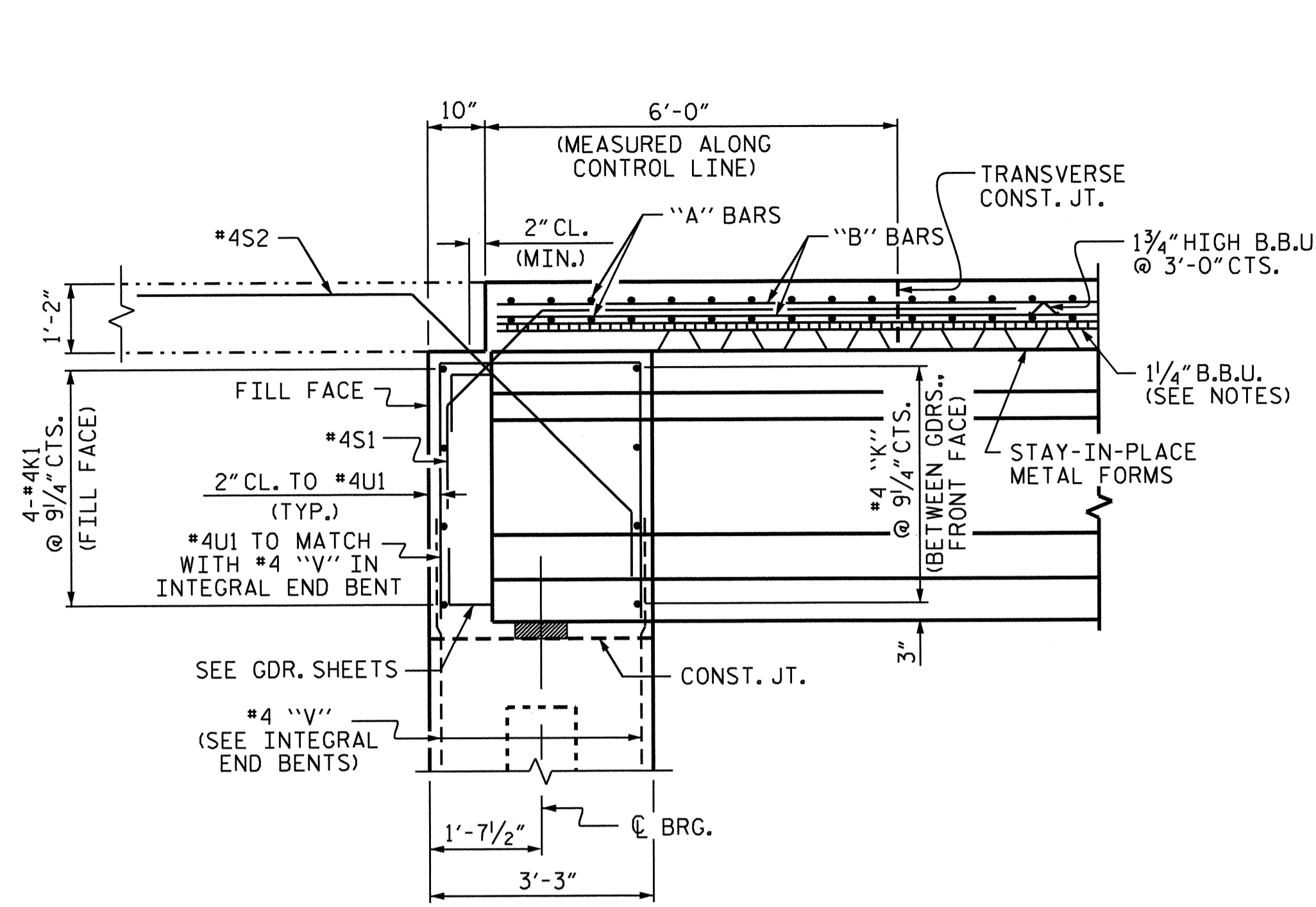
PROJECT NO. B-5122  
 BERTIE COUNTY  
 STATION: 16+05.00 -L-

SHEET 1 OF 2

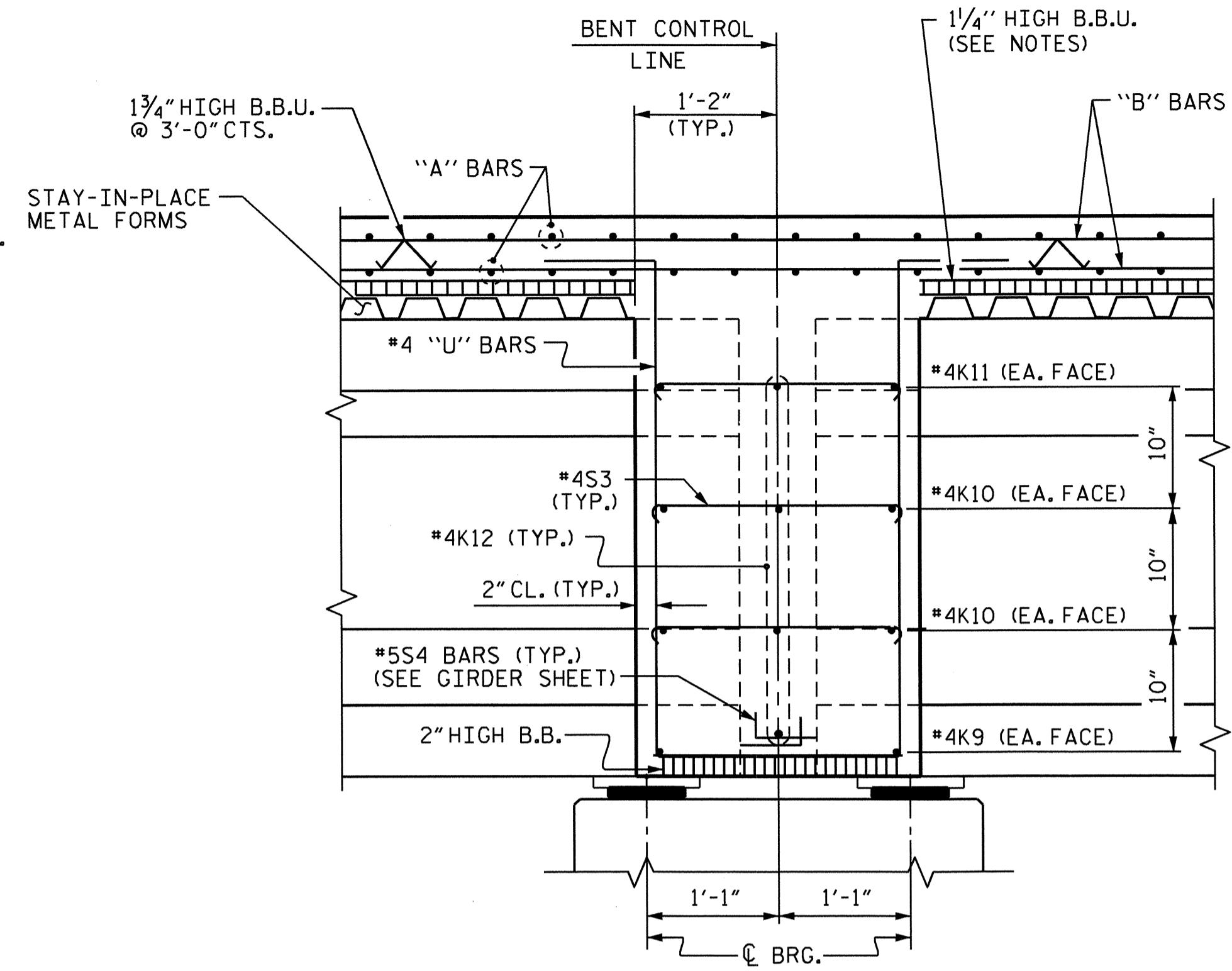
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 TYPICAL SECTION



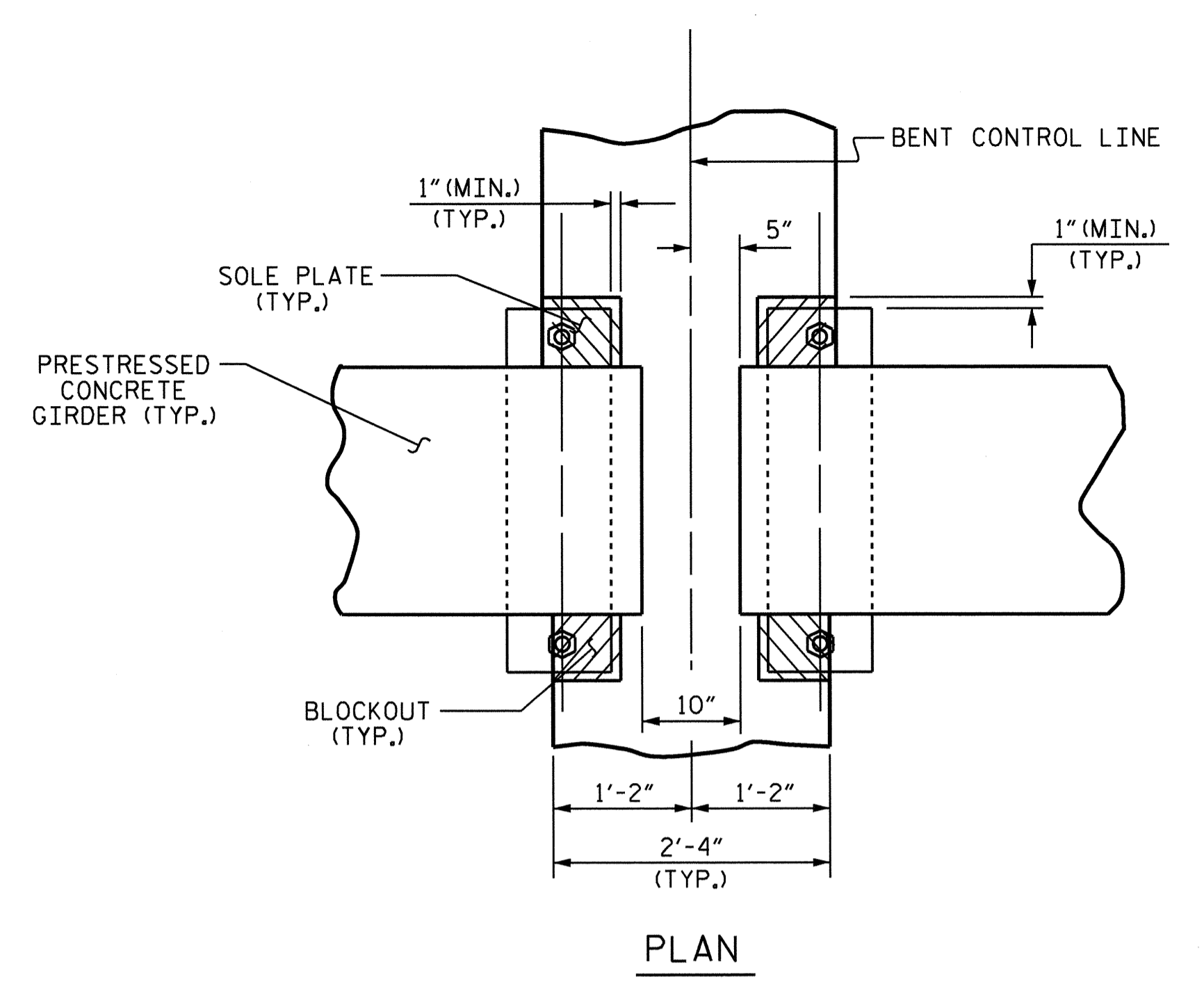
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-5	TOTAL SHEETS
1			3				33
2			4				



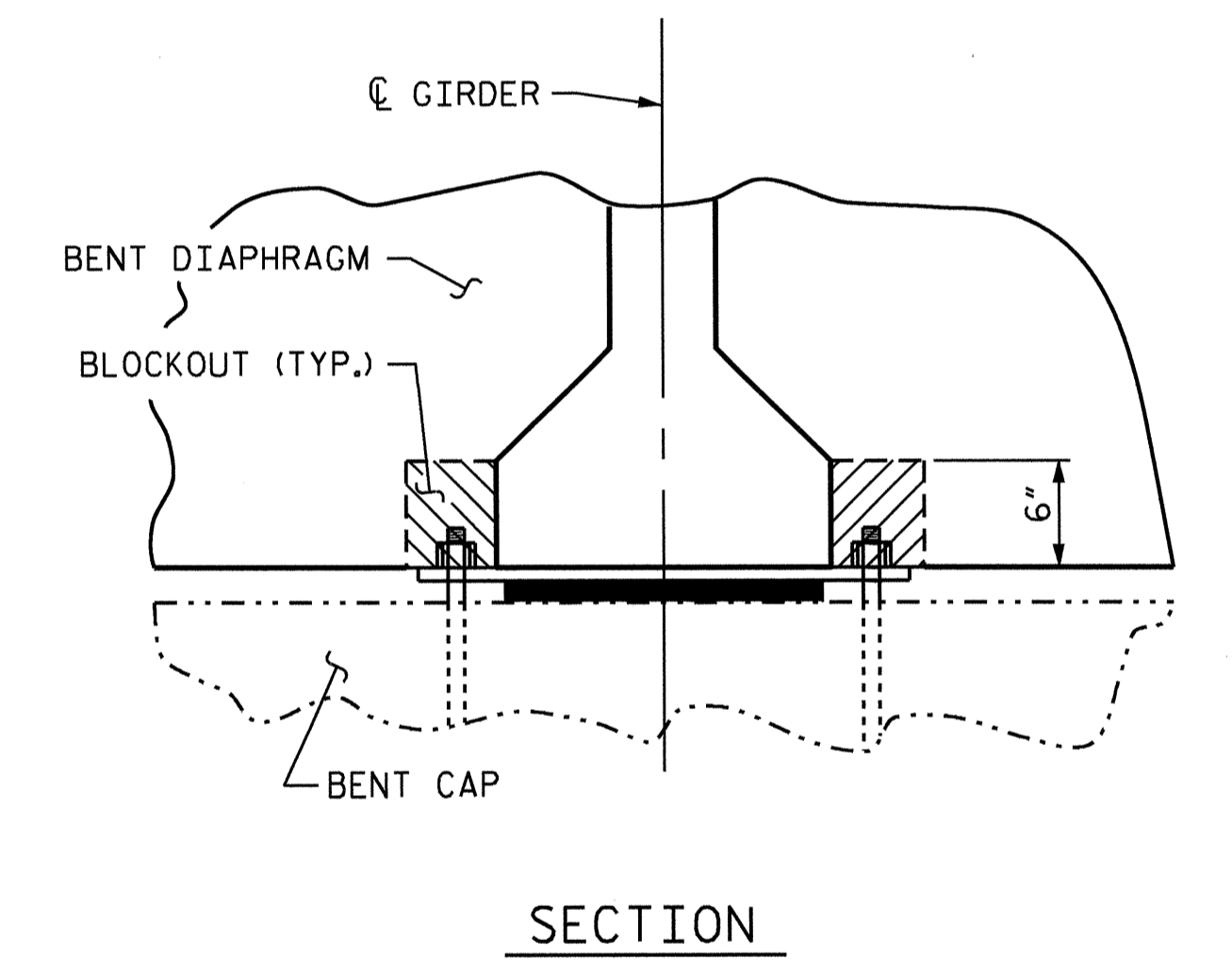
END OF GIRDER DETAIL AT INTEGRAL END BENT



SECTION THRU BENT DIAPHRAGM

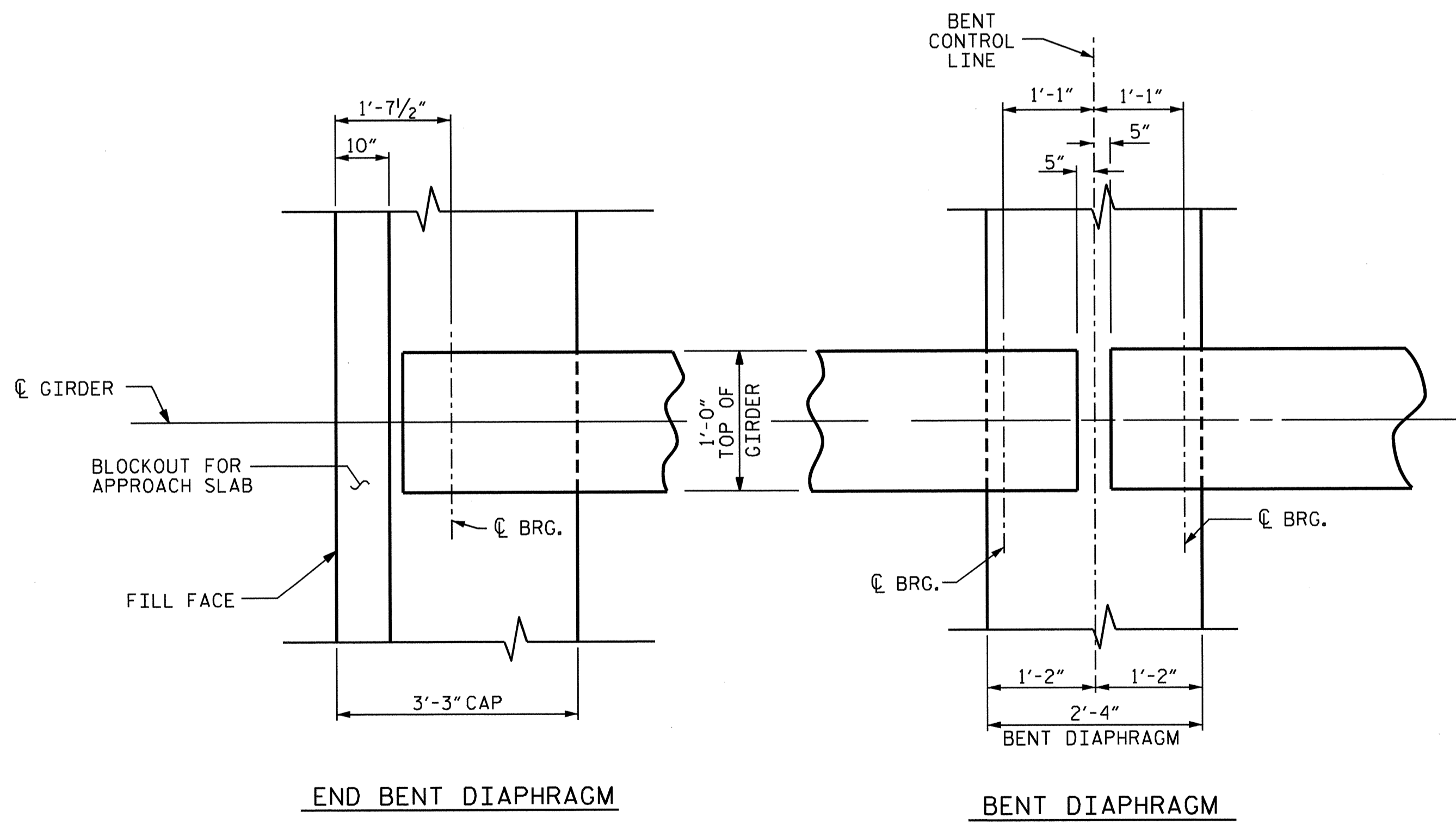


PLAN



SECTION

BENT DIAPHRAGM BLOCK-OUT DETAIL



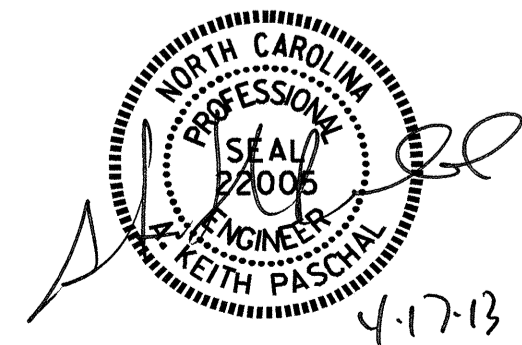
END BENT DIAPHRAGM

BENT DIAPHRAGM

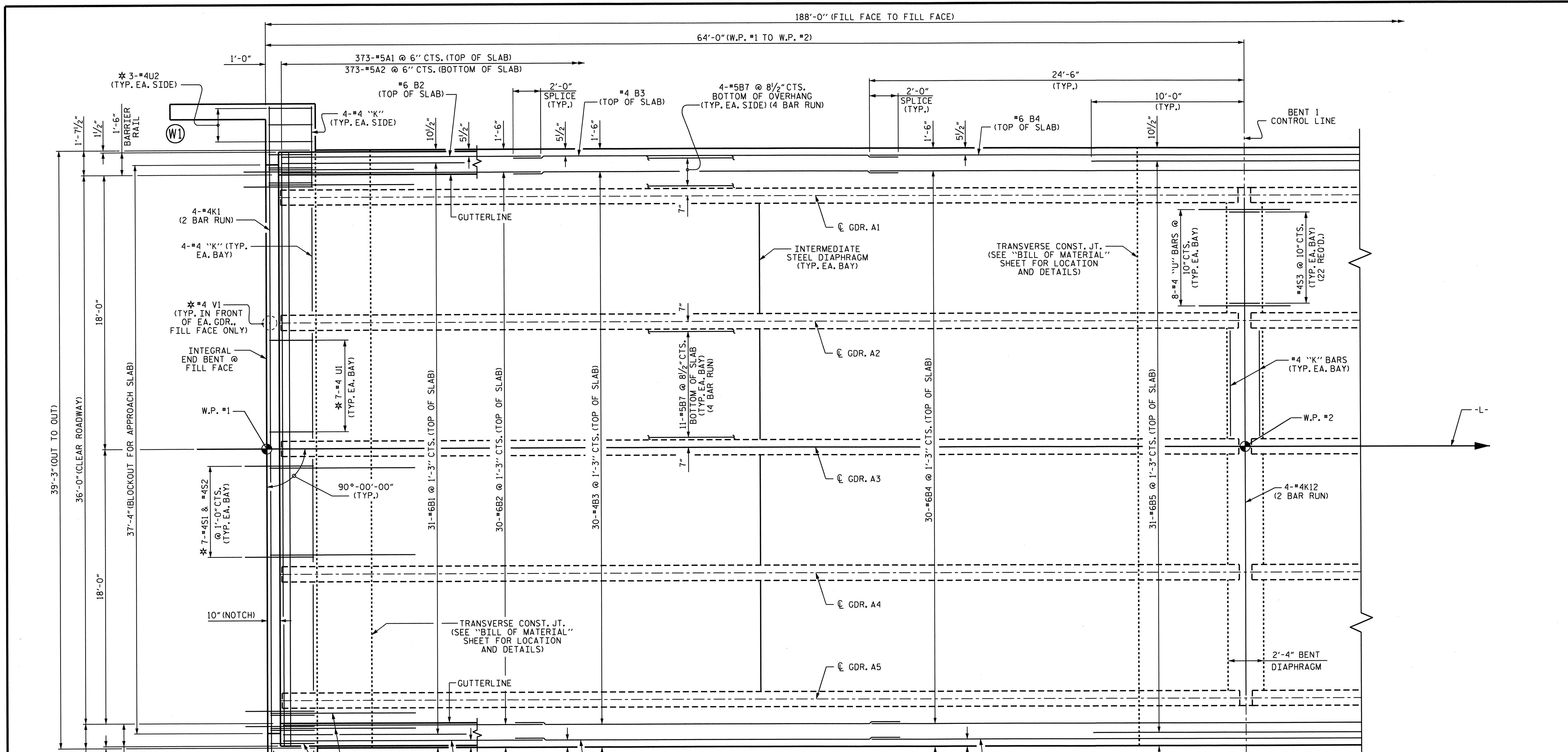
PLAN

PROJECT NO. B-5122  
 BERTIE COUNTY  
 STATION: 16+05.00 -L-  
 SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE TYPICAL SECTION DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-6
TOTAL SHEETS					33



DRAWN BY: M.K. BEARD DATE: 11-7-12  
 CHECKED BY: M.D. PISO DATE: 12-11-12  
 DESIGN ENGINEER OF RECORD: O. PUIGCERVER DATE: 12-13-12



**PLAN OF SPAN A**

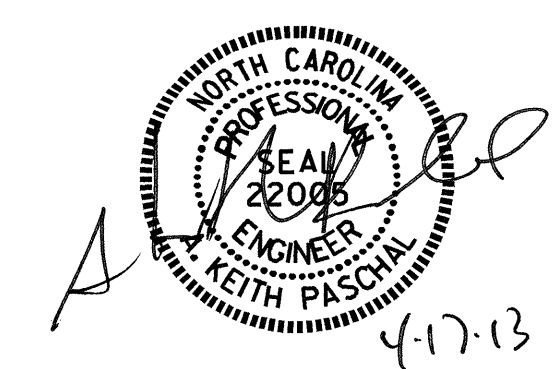
\*#4U1, #4U2, #4V1, #4S1 & #4S2 BARS TO MATCH WITH #4 'V' BARS IN INTEGRAL END BENT CAP.  
 FOR LOCATION OF INTERMEDIATE DIAPHRAGMS, SEE "GIRDER LAYOUT."

PROJECT NO. B-5122  
 BERTIE COUNTY  
 STATION: 16+05.00 -L-  
 SHEET 1 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

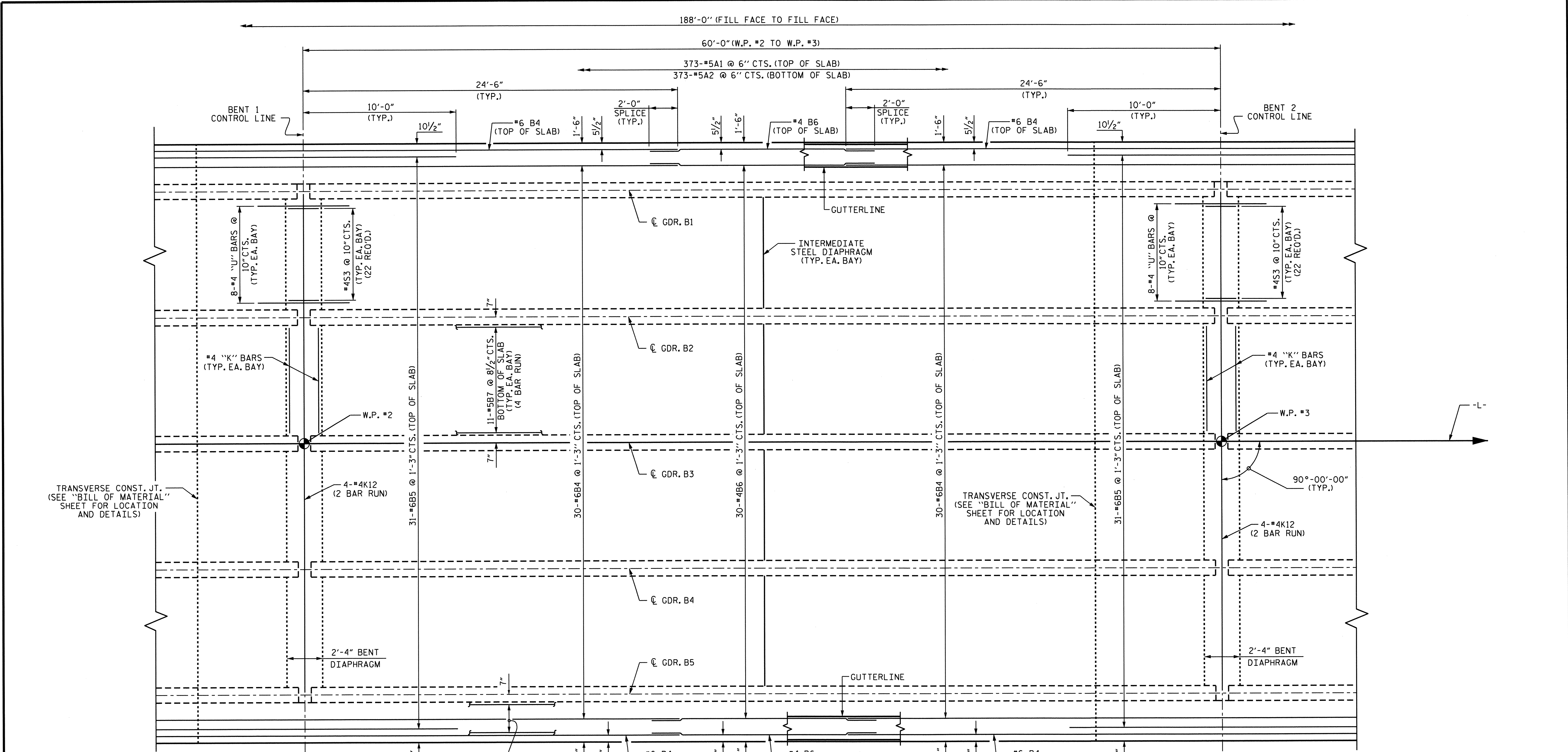
SUPERSTRUCTURE  
 PLAN OF SPAN A

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			33



DRAWN BY: M.K. BEARD DATE: 11-12-12  
 CHECKED BY: M.D. PISO DATE: 12-18-12  
 DESIGN ENGINEER OF RECORD: O. PUIGCERVER DATE: 12-20-12





**PLAN OF SPAN B**

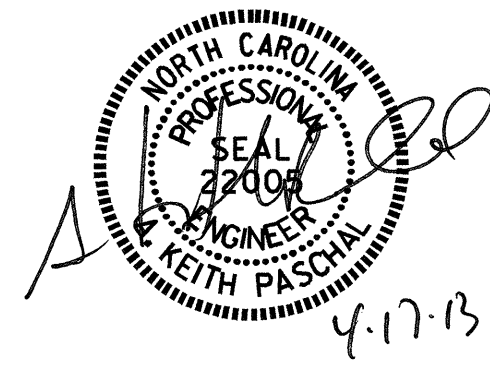
FOR LOCATION OF INTERMEDIATE DIAPHRAGMS, SEE "GIRDER LAYOUT."

PROJECT NO. B-5122  
BERTIE COUNTY  
 STATION: 16+05.00 -L-  
 SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

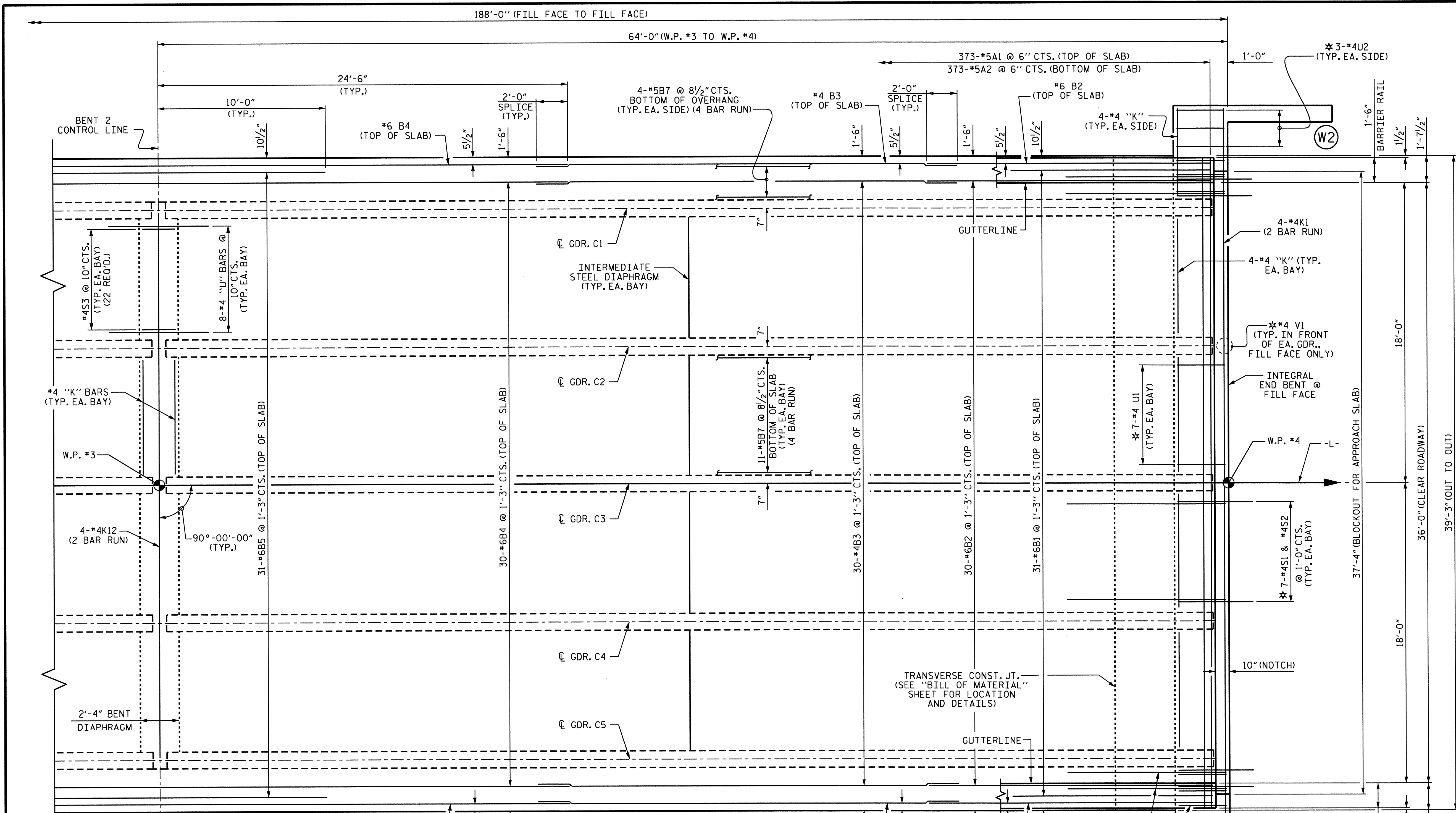
**SUPERSTRUCTURE  
 PLAN OF SPAN B**

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8	
1			3			TOTAL SHEETS	
2			4			33	



DRAWN BY : M.K. BEARD DATE : 11-12-12  
 CHECKED BY : M.D. PISO DATE : 12-18-12  
 DESIGN ENGINEER OF RECORD: O. PUIGSERVER DATE : 12-20-12

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 bbarodowla



**PLAN OF SPAN C**

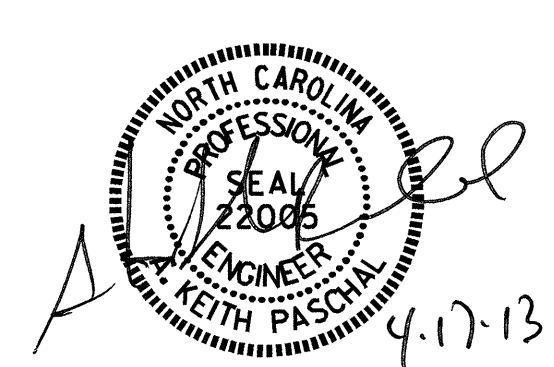
\* #4U1, #4U2, #4V1, #4S1 & #4S2 BARS TO MATCH WITH #4 "V" BARS IN INTEGRAL END BENT CAP.  
FOR LOCATION OF INTERMEDIATE DIAPHRAGMS, SEE "GIRDER LAYOUT."

PROJECT NO. B-5122  
BERTIE COUNTY  
 STATION: 16+05.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

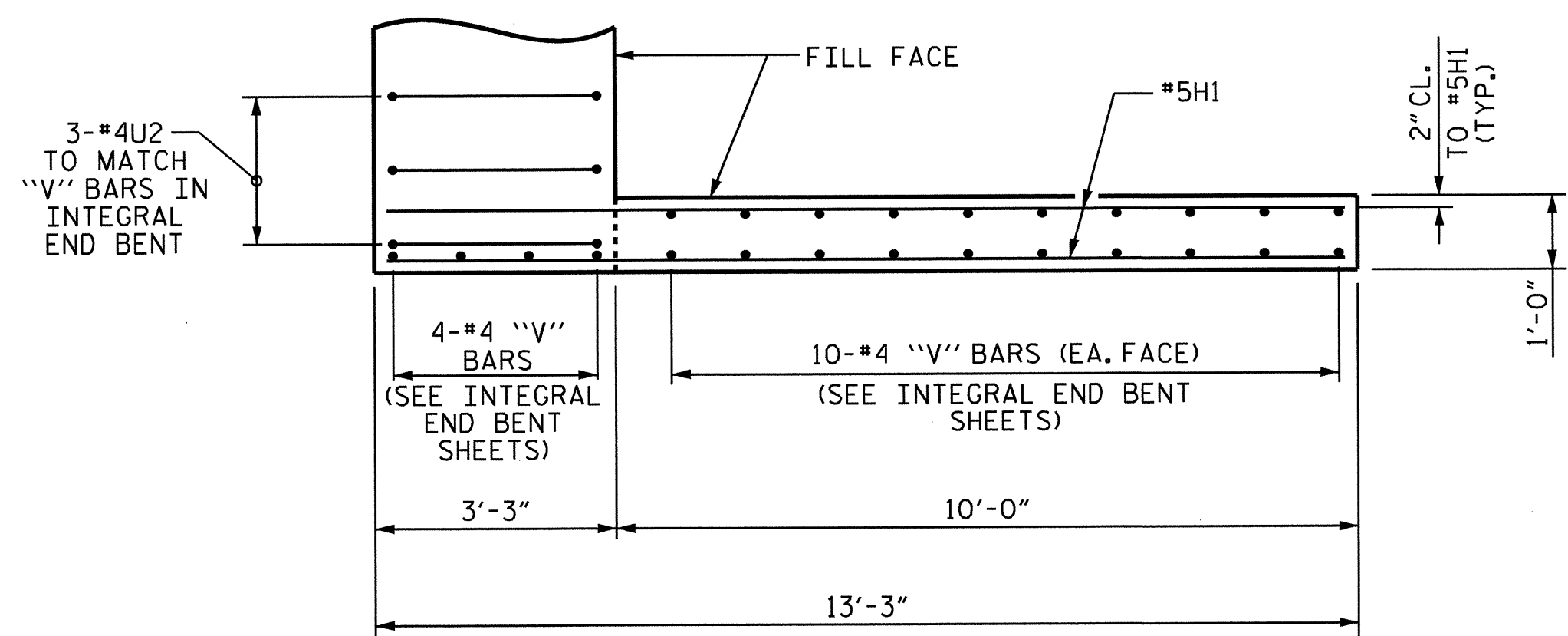
SUPERSTRUCTURE  
 PLAN OF SPAN C



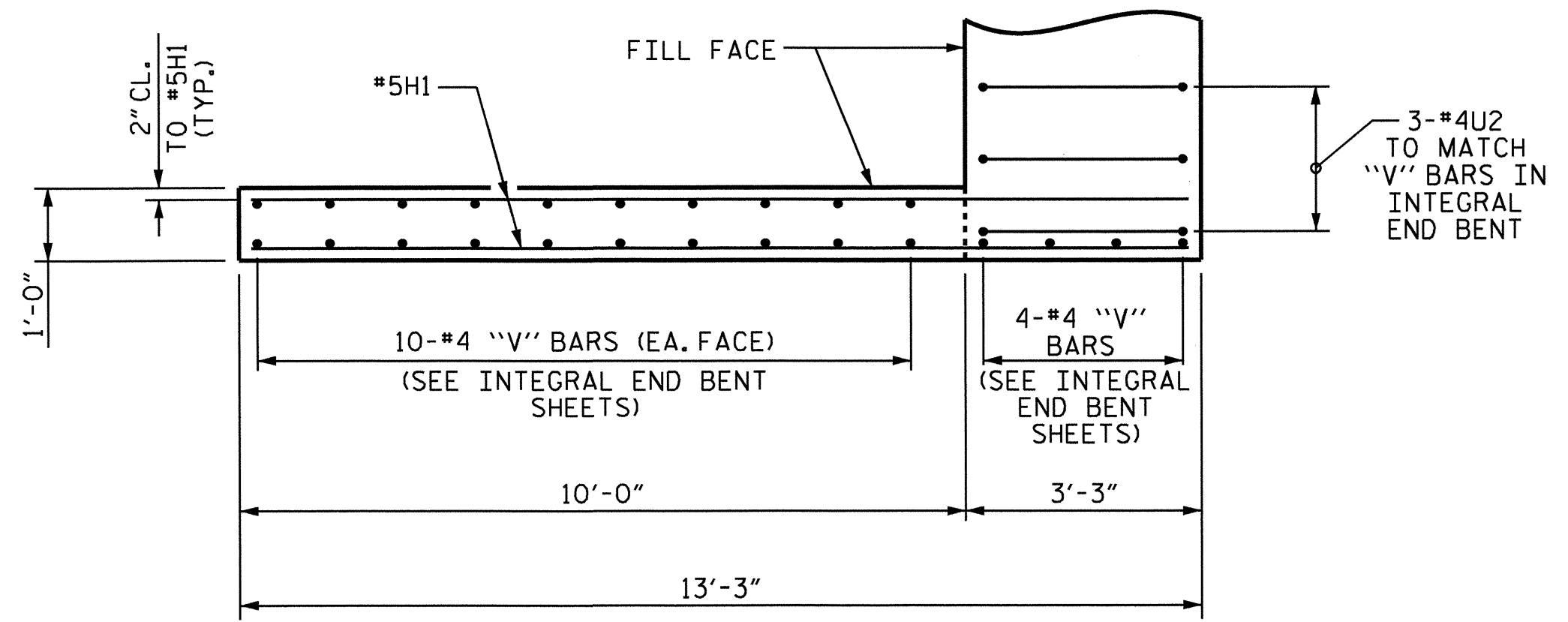
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 CHECKED BY : M.D. PISO      DATE : 12-18-12  
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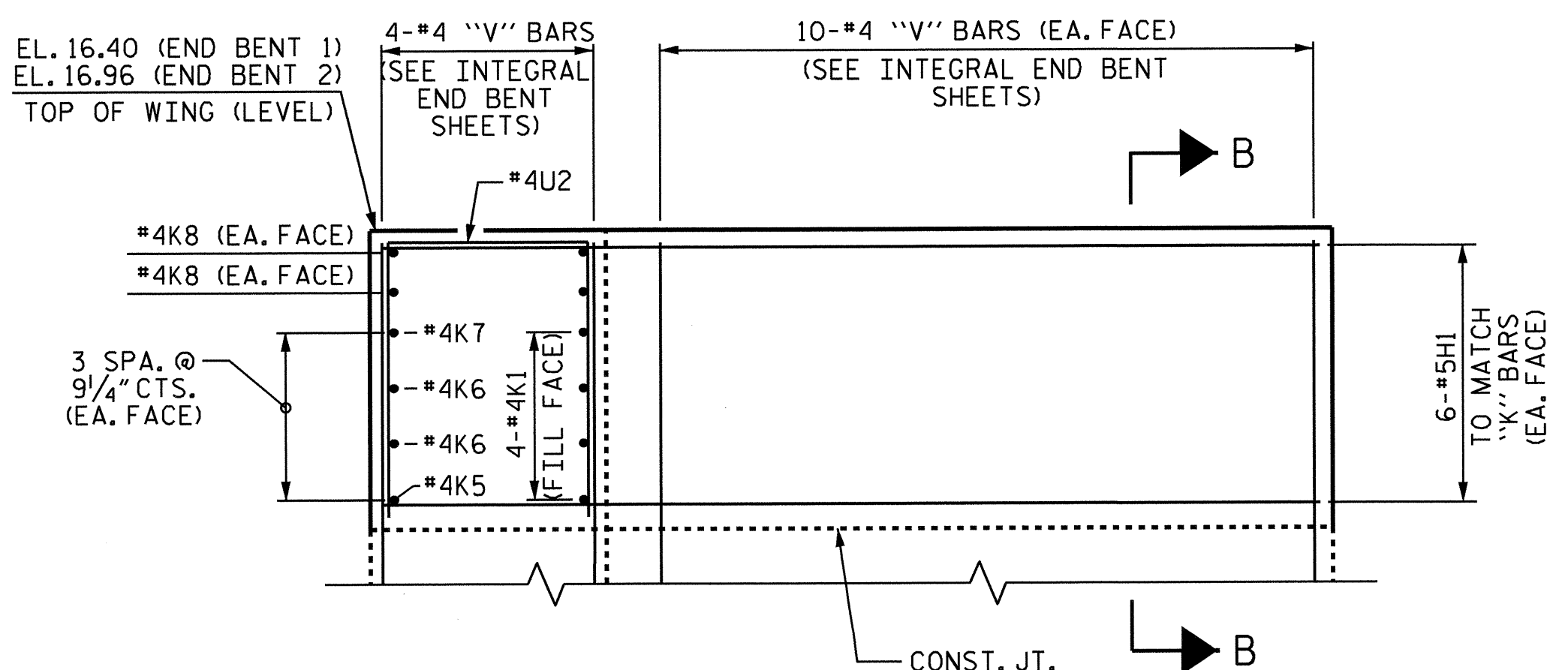
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			33



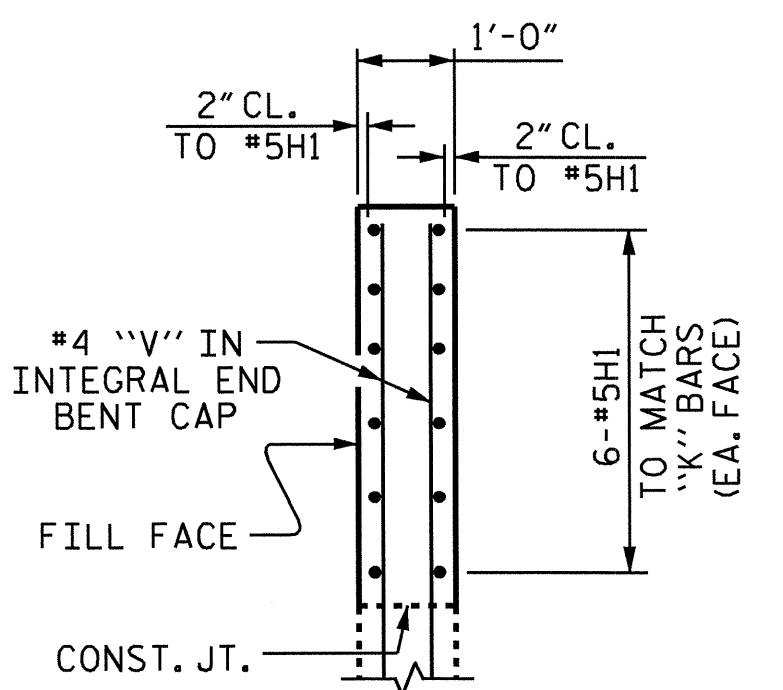
PLAN W1



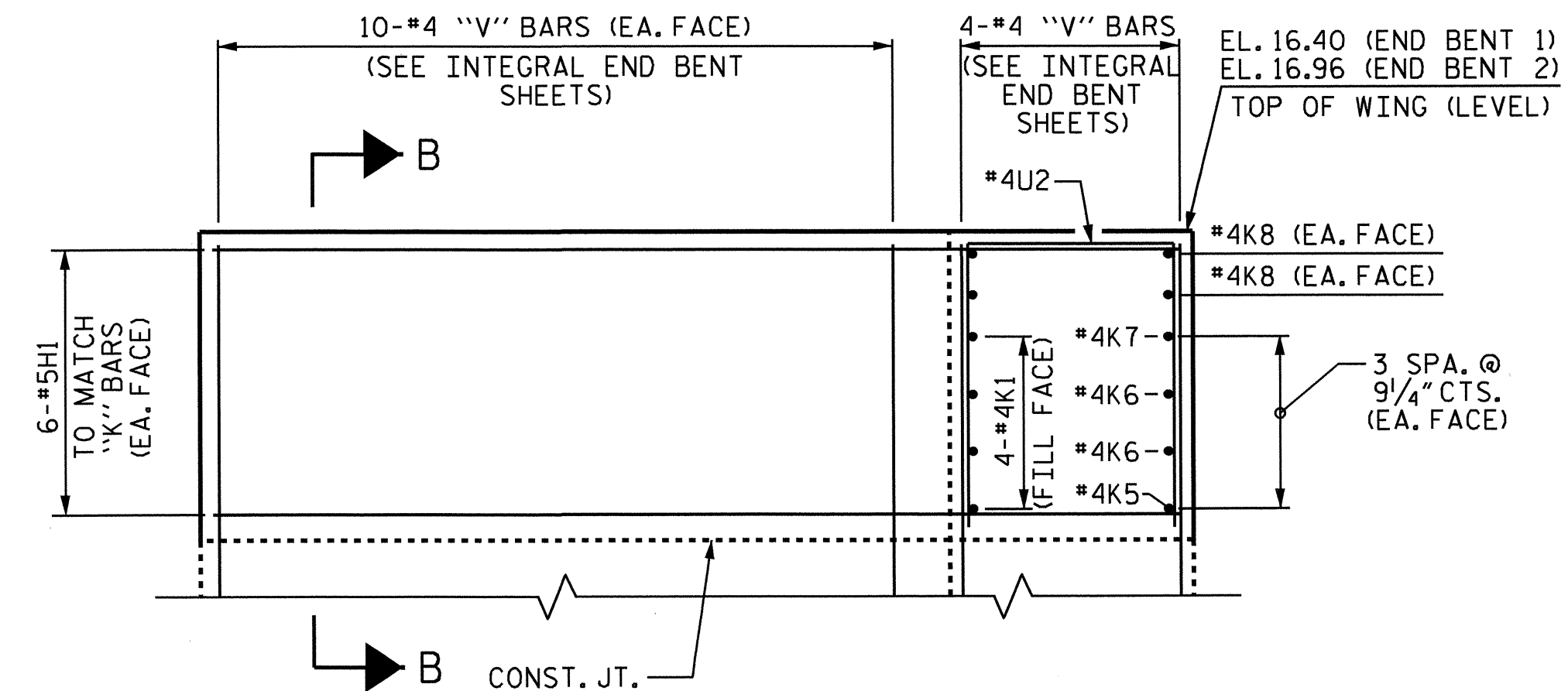
PLAN W2



ELEVATION W1



SECTION B-B



ELEVATION W2

UPPER WINGS @ INTEGRAL END BENTS  
 (FOR LOWER WING REINFORCING STEEL AND DETAILS, SEE INTEGRAL END BENT SHEETS)

PROJECT NO. B-5122  
 BERTIE COUNTY  
 STATION: 16+05.00 -L-

SHEET 4 OF 4

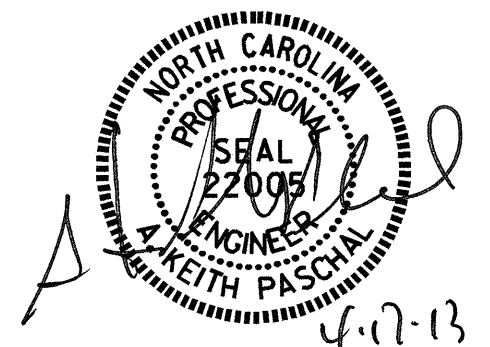
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

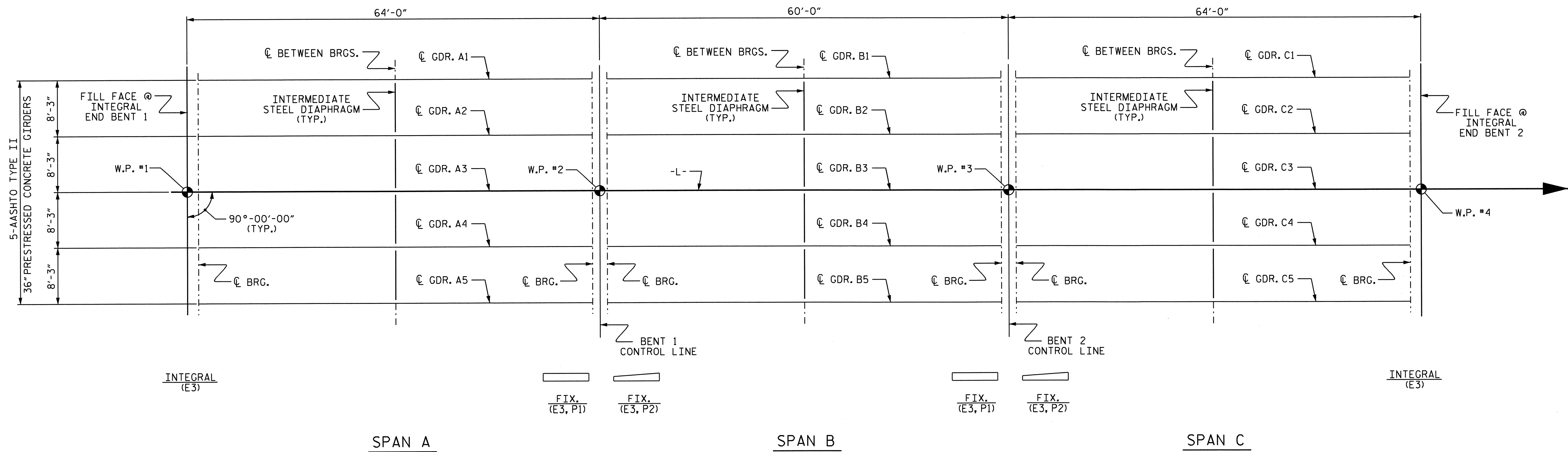
SUPERSTRUCTURE  
 PLAN OF SPAN  
 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			33

DRAWN BY: M.K. BEARD DATE: 11-12-12  
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 DESIGN ENGINEER OF RECORD: O. PUIGCERVER DATE: 12-20-12

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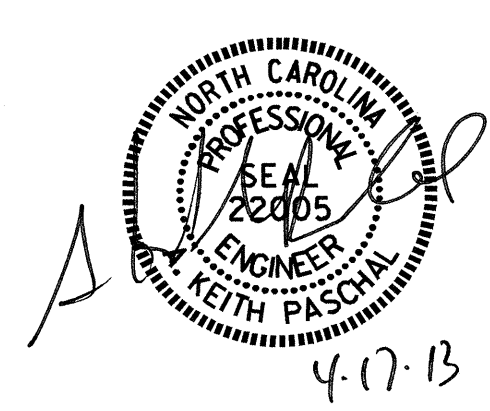




**GIRDER LAYOUT**

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

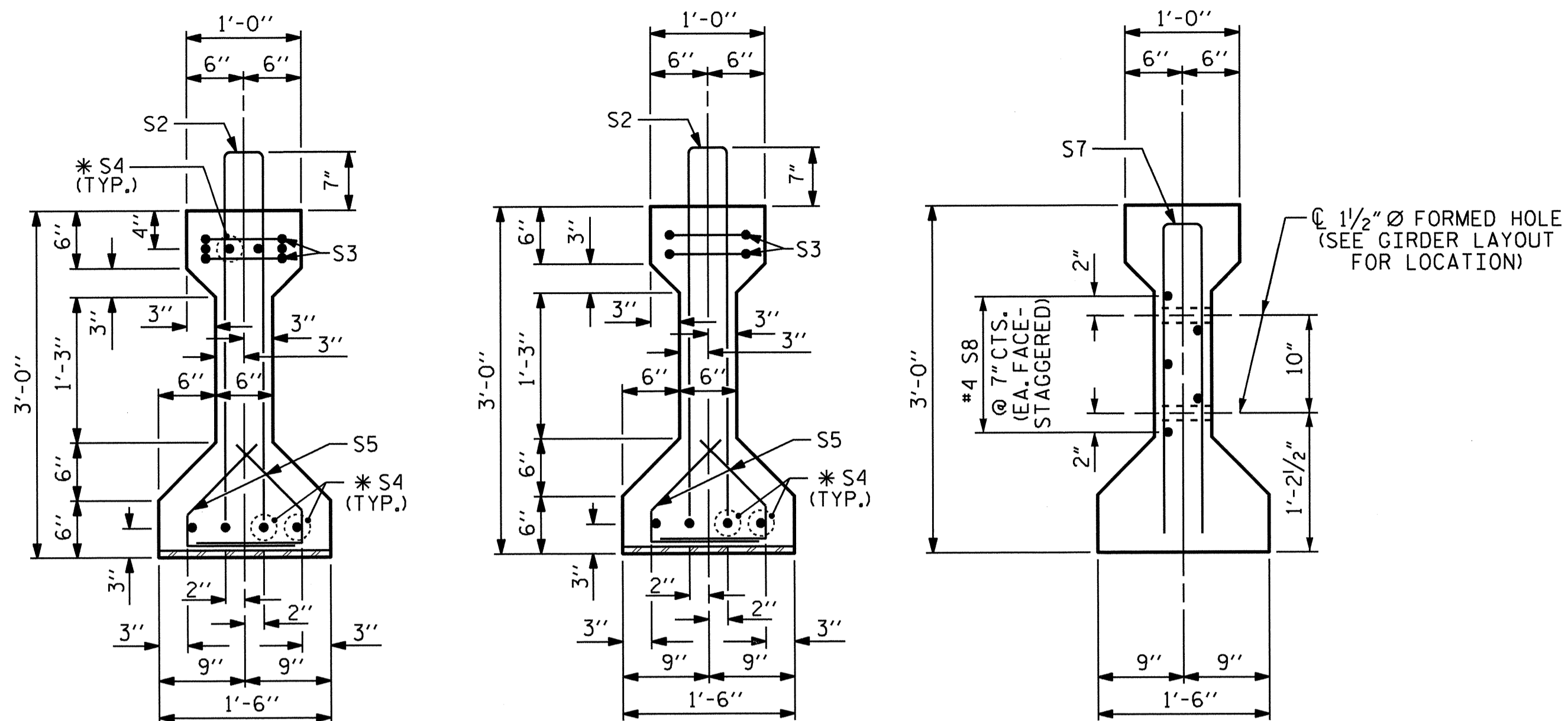
PROJECT NO. B-5122  
BERTIE COUNTY  
 STATION: 16+05.00 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 GIRDER LAYOUT

DRAWN BY: M.K. BEARD DATE: 11-9-12  
 CHECKED BY: M.D. PISO DATE: 12-11-12  
 DESIGN ENGINEER OF RECORD: O. PUIGSERVER DATE: 12-13-12

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11	
1			3			TOTAL SHEETS	
2			4			33	

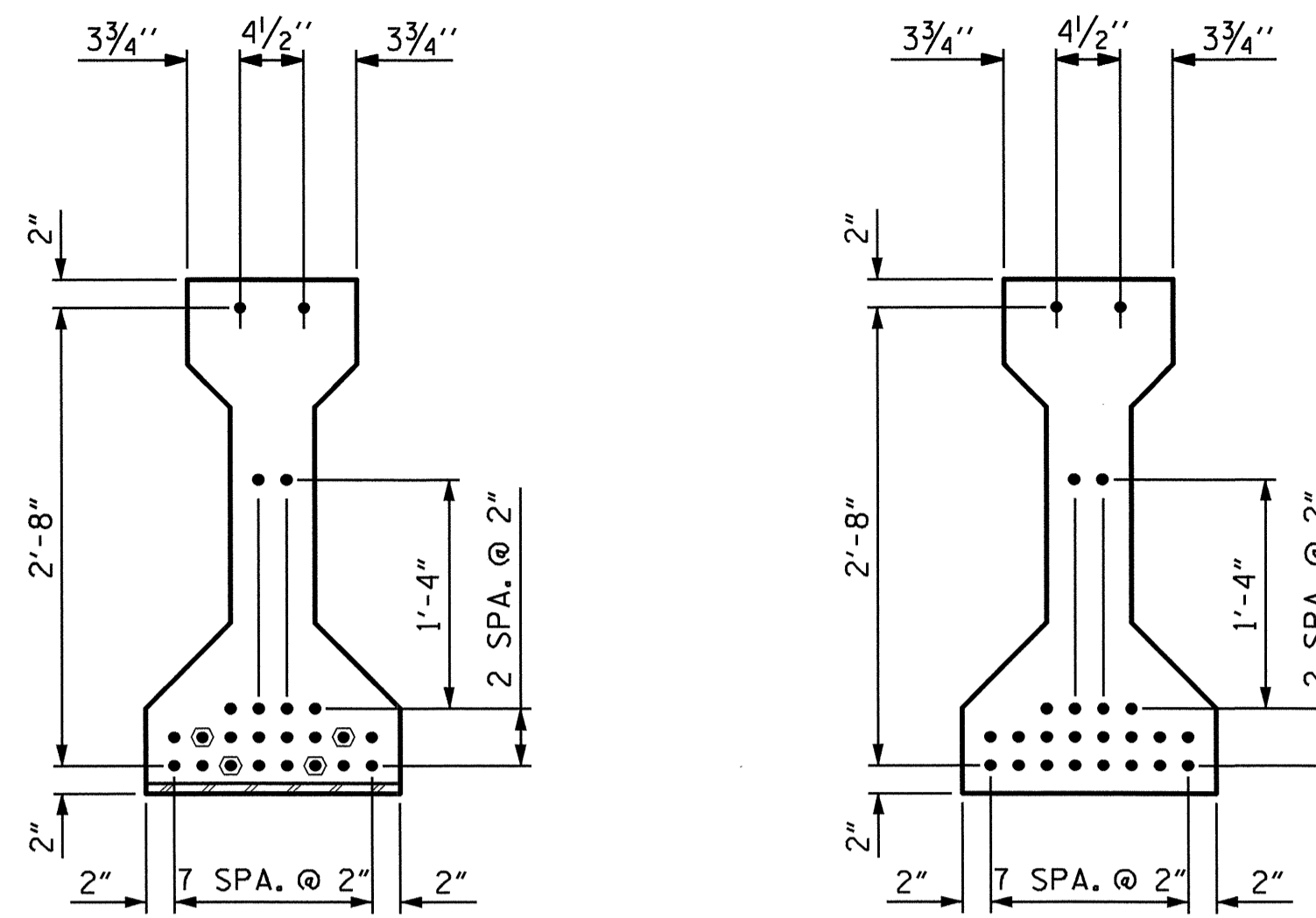


SECTION A-A

SECTION B-B

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 STRANDS
  - STRANDS DEBONDED FOR 12'-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

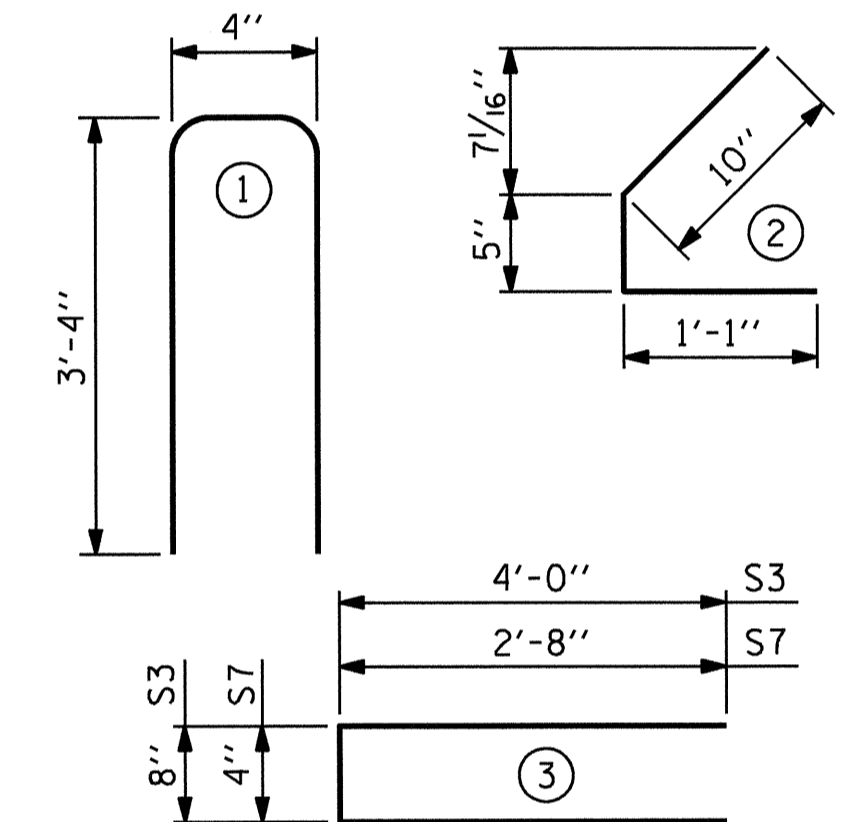
REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	84	#4	1	7'-0"	393
S2	14	#5	1	7'-0"	102
S3	4	#4	3	8'-8"	23
*S4	12	#5	STR	3'-8"	46
S5	76	#4	2	2'-4"	118
S7	2	#5	3	5'-8"	12
S8	5	#4	STR	7'-0"	23

TOTAL REINFORCING STEEL 717 LBS.

\* NOTE: S4 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.	9500 PSI CONCRETE C.Y.	0.6" Ø L.R. STRANDS No.
SPAN A	717	5.9	24
SPAN C	717	5.9	24

GIRDERS REQUIRED

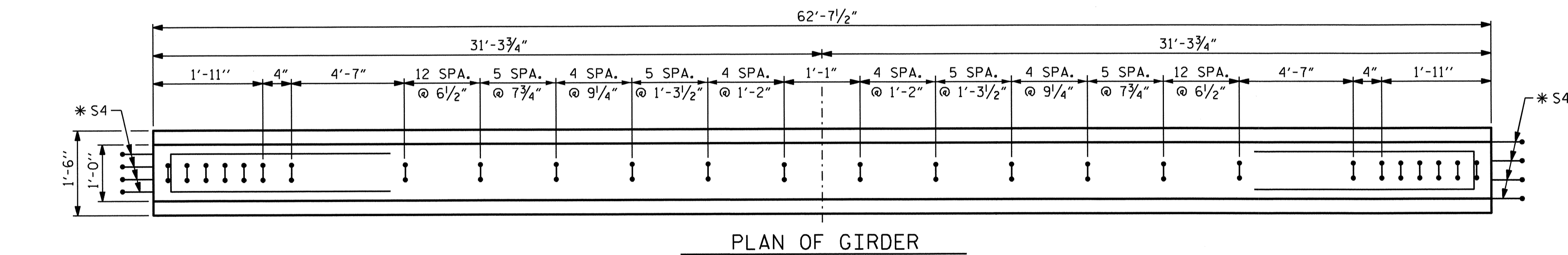
NUMBER	LENGTH	TOTAL LENGTH
(SPAN A) 5	62'-7 1/2"	313'-1 1/2"
(SPAN C) 5	62'-7 1/2"	313'-1 1/2"

PROJECT NO. B-5122  
 BERTIE COUNTY  
 STATION: 16+05.00 -L-

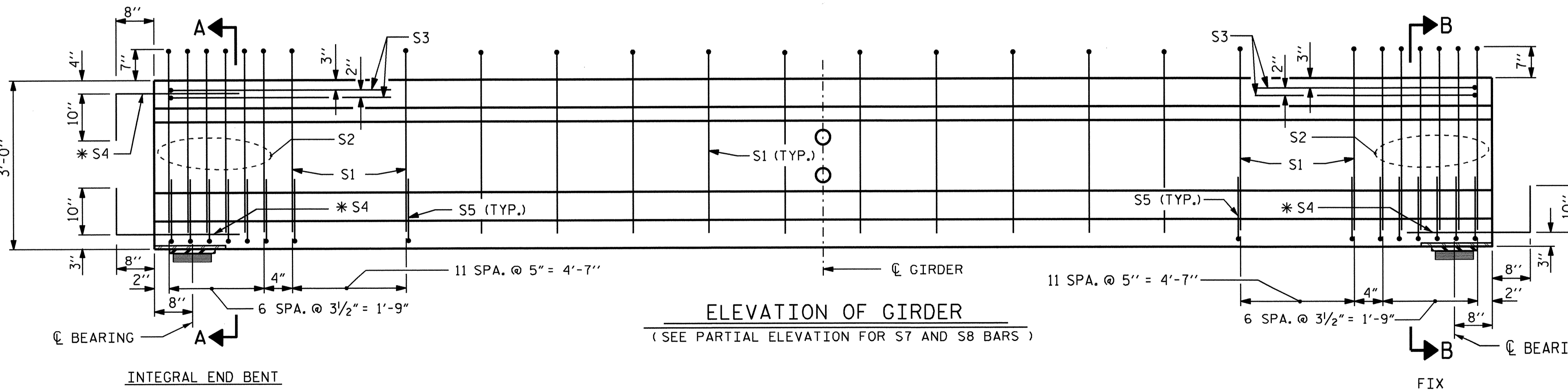
SHEET 1 OF 4

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			33

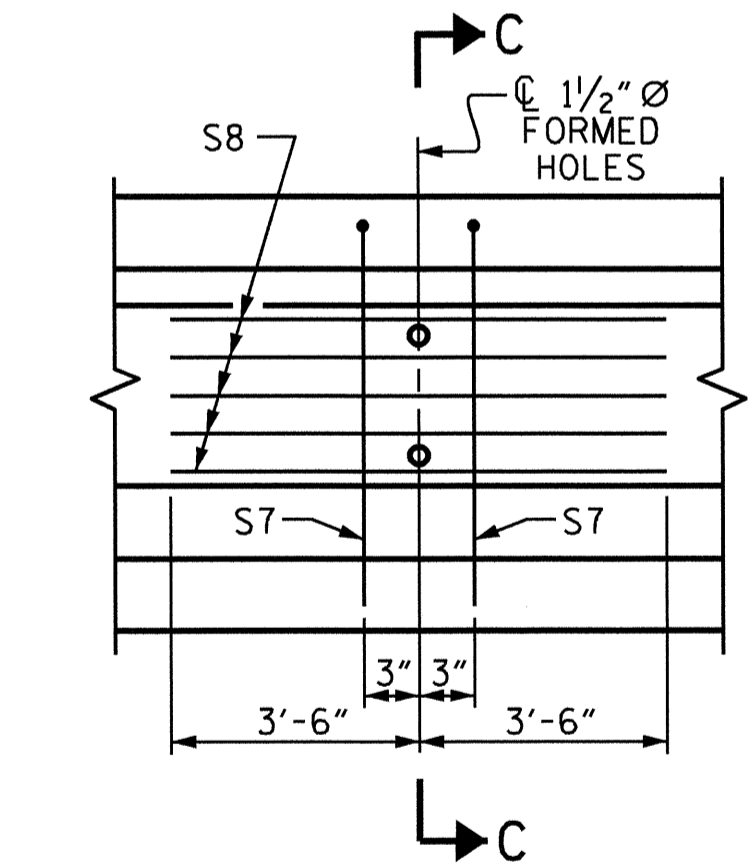


PLAN OF GIRDER



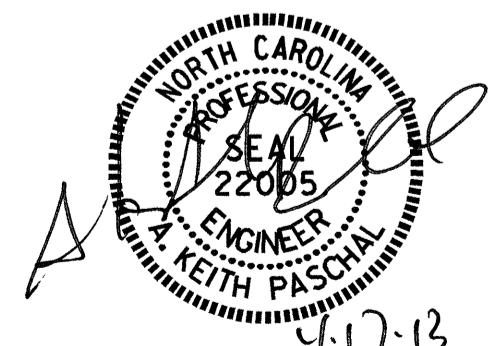
ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR S7 AND S8 BARS)

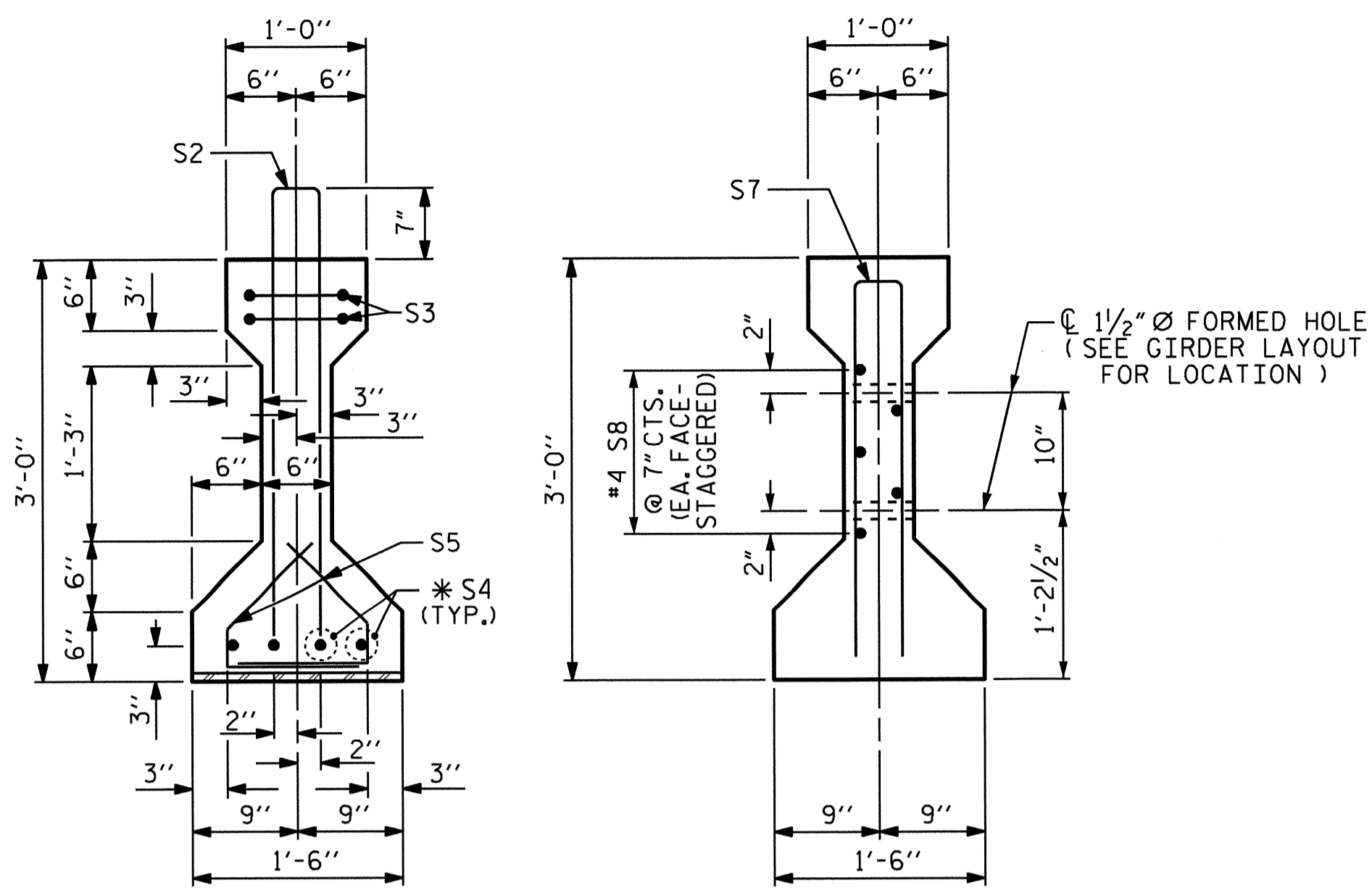


PARTIAL ELEVATION

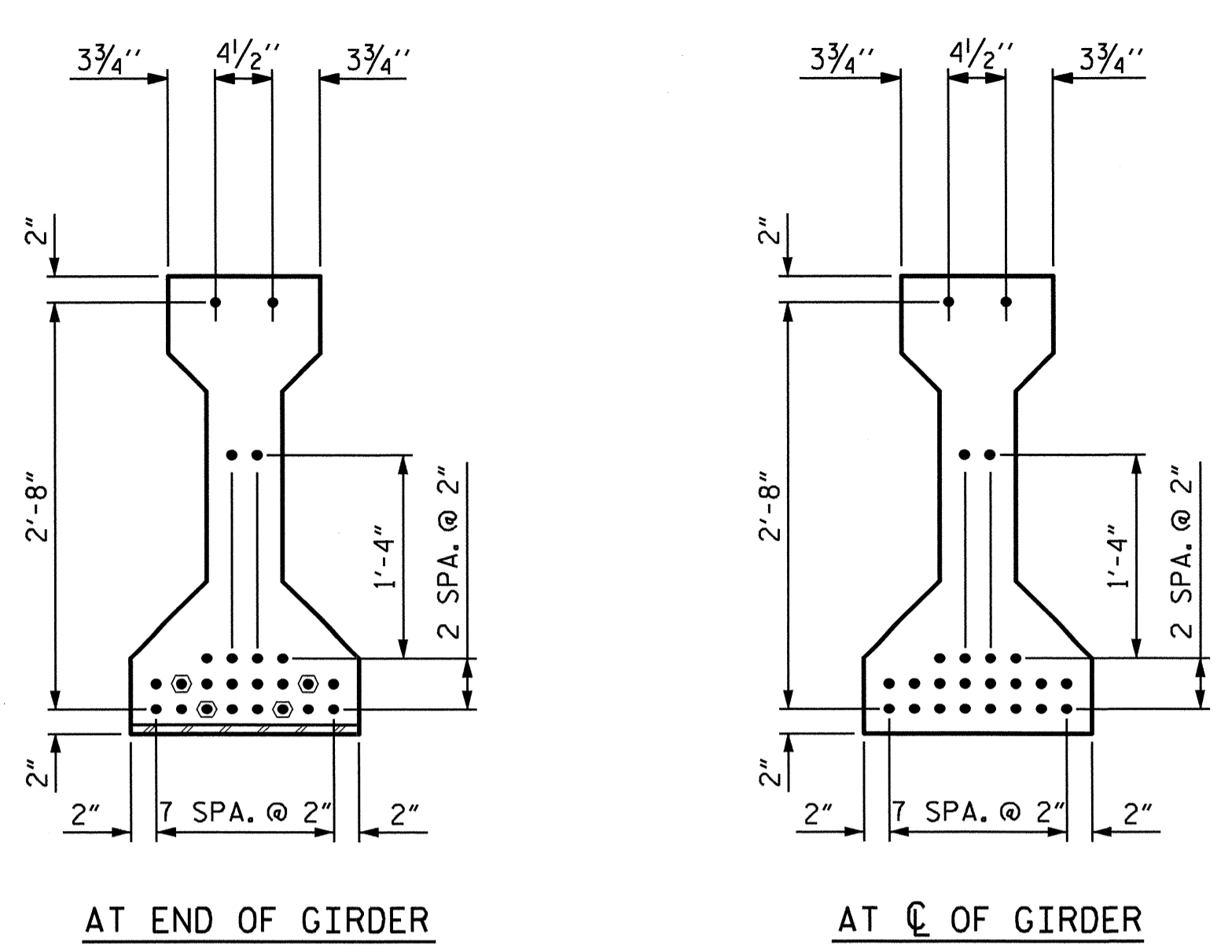
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS.



ASSEMBLED BY : M.K. BEARD	DATE : 11-7-12
CHECKED BY : M.D. PISO	DATE : 12-11-12
DESIGN ENGINEER OF RECORD: O. PUIGSERVER	DATE : 12-13-12
DRAWN BY : ELR 8/91	REV. 10/17/00R RWW/LES
CHECKED BY : GRP 8/91	REV. 5/1/06R TLA/GM
	REV. 10/1/11 MAA/GM

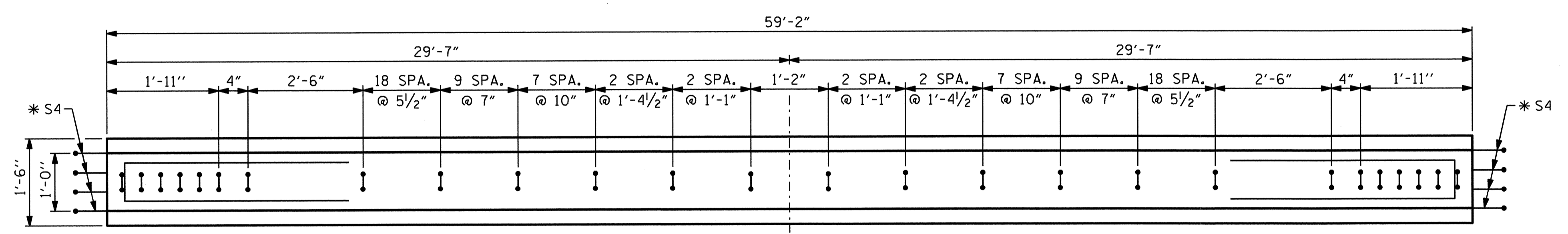


SECTION B-B  
SECTION C-C  
(S1 BARS NOT SHOWN)

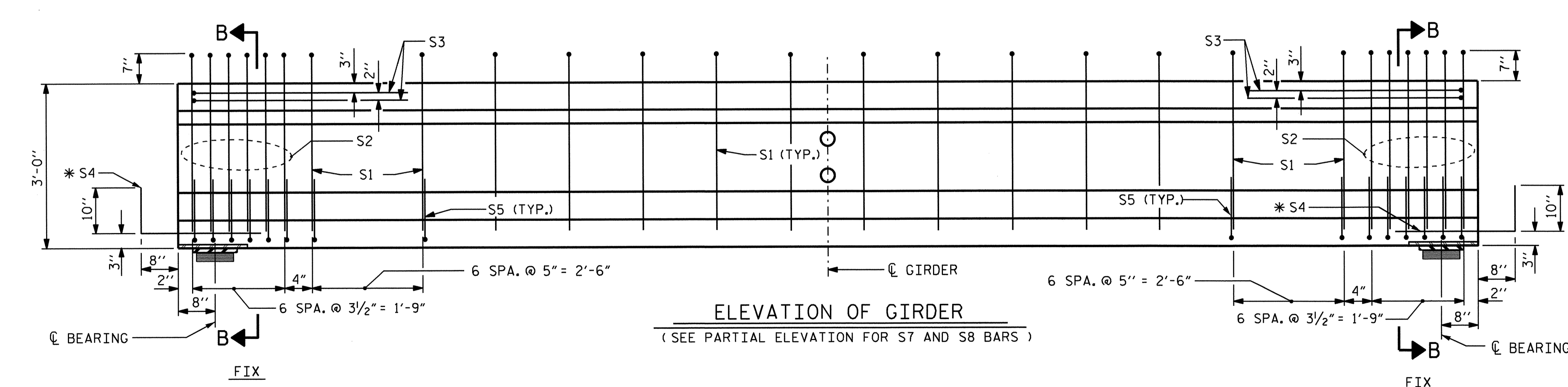


0.6" Ø LOW RELAXATION STRAND LAYOUT

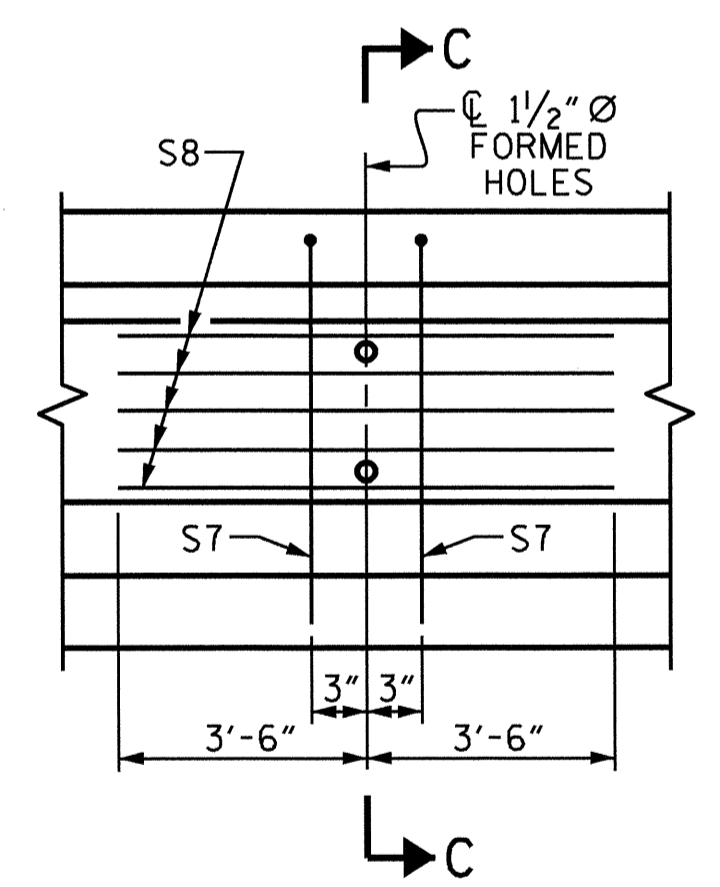
- DEBONDING LEGEND
- FULLY BONDED STRANDS
  - STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER



PLAN OF GIRDER



ELEVATION OF GIRDER  
(SEE PARTIAL ELEVATION FOR S7 AND S8 BARS)



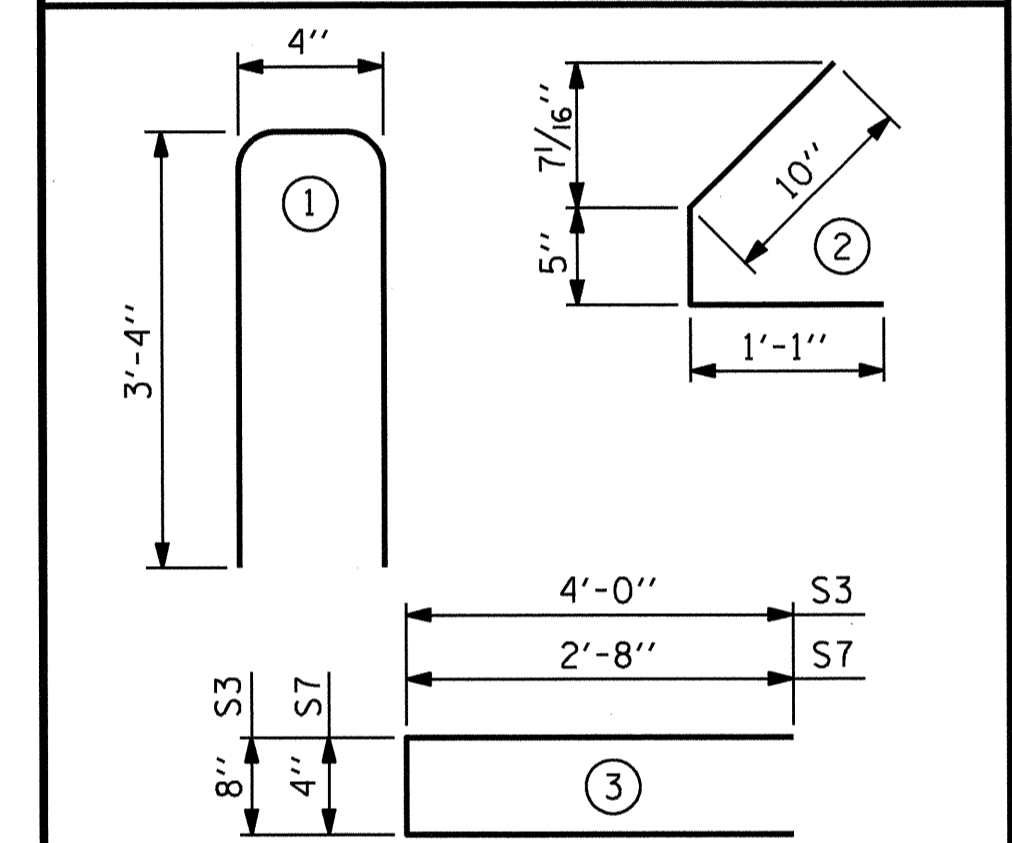
PARTIAL ELEVATION  
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS.

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

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	90	#4	1	7'-0"	421
S2	14	#5	1	7'-0"	102
S3	4	#4	3	8'-8"	23
*S4	8	#5	STR	3'-8"	31
S5	56	#4	2	2'-4"	87
S7	2	#5	3	5'-8"	12
S8	5	#4	STR	7'-0"	23

TOTAL REINFORCING STEEL 699 LBS.  
\* NOTE: S4 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES  
ALL BAR DIMENSIONS ARE OUT-TO-OUT

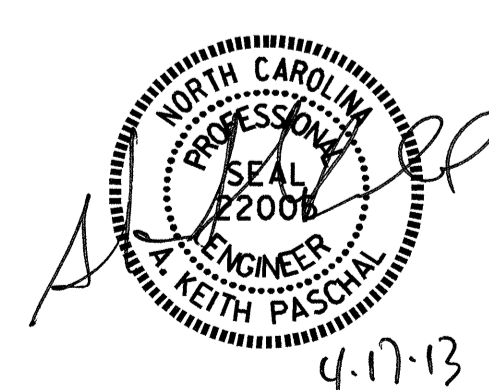


	REINFORCING STEEL	9500 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
SPAN B	699	5.6	24

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
5	59'-2"	295'-10"

PROJECT NO. B-5122  
BERTIE COUNTY  
STATION: 16+05.00 -L-

SHEET 2 OF 4  
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
AASHTO TYPE II  
PRESTRESSED CONCRETE GIRDER  
CONTINUOUS FOR LIVE LOAD  
(SPAN B)



ASSEMBLED BY : M.K. BEARD	DATE : 11-7-12
CHECKED BY : M.D. PISO	DATE : 12-11-12
DESIGN ENGINEER OF RECORD: O. PUIGCERVER	DATE : 12-13-12
DRAWN BY : ELR 8/91	REV. 10/17/00R RWW/LES
CHECKED BY : GRP 8/91	REV. 5/1/06R TLA/GM
	REV. 10/1/11 MAA/GM

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. BEVEL EDGES OF PLATE "B-1" TO GIVE CLOSE FIT BUT NOT TIGHT FIT TO STEEL CASTING FORM.

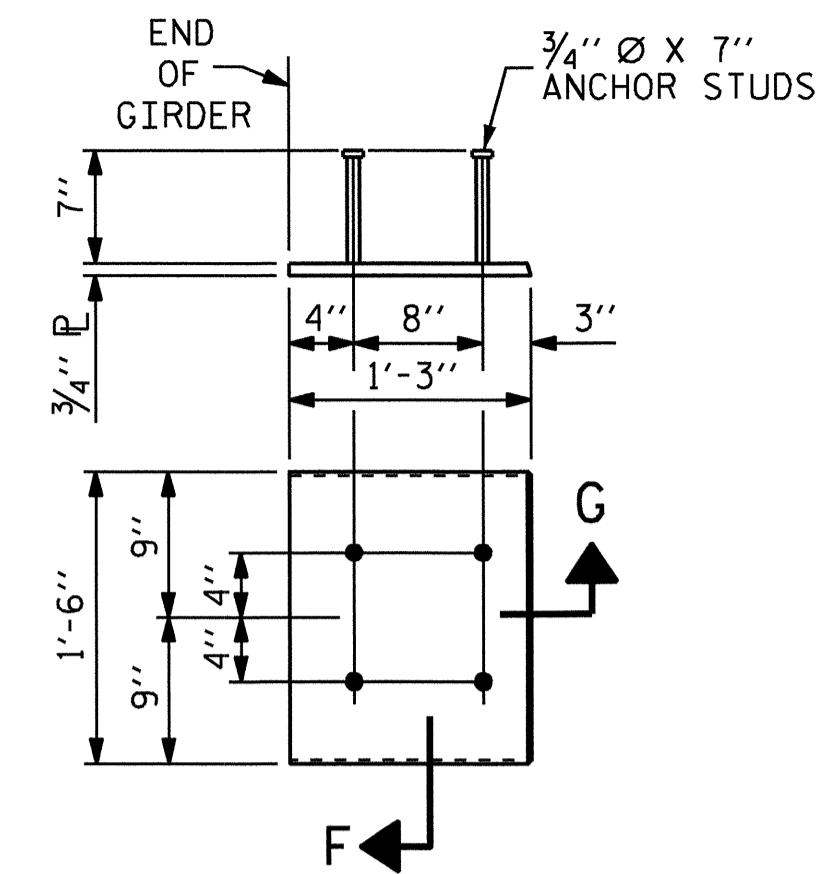
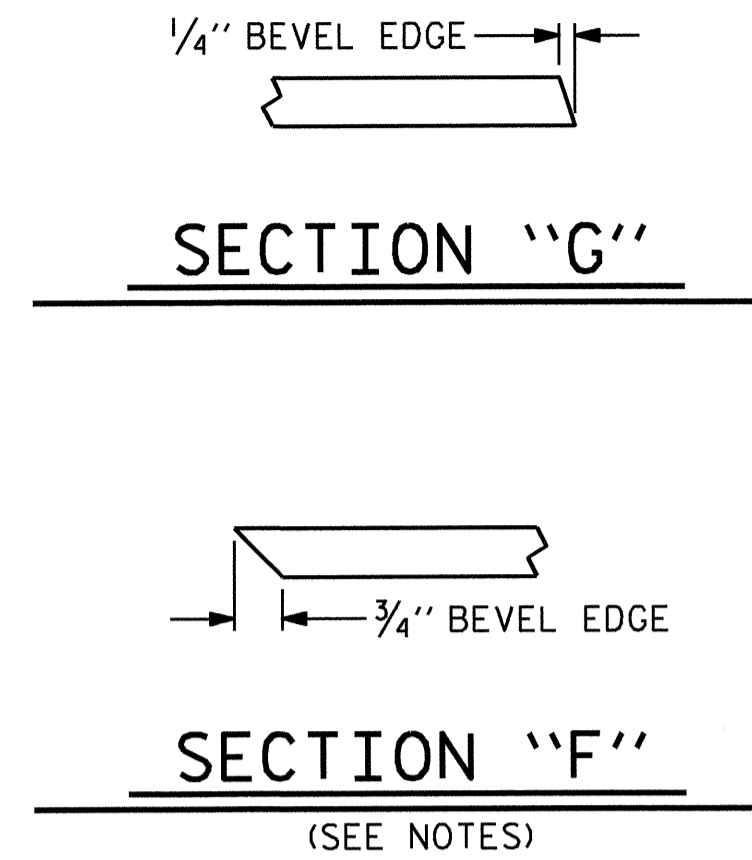
ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

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 7500 PSI FOR SPANS A, B AND C.

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".



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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS												
0.6" Ø LOW RELAXATION	SPAN A & C											
	GIRDERS 1 & 5											
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	
CAMBER ( GIRDER ALONE IN PLACE )	↑	0.0	0.081	0.153	0.209	0.245	0.257	0.245	0.209	0.153	0.081	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.0	0.031	0.059	0.081	0.094	0.099	0.094	0.081	0.059	0.031	0.0
FINAL CAMBER	↑	0	5/8"	1/8"	19/16"	1 13/16"	1 7/8"	1 13/16"	1 9/16"	1 1/8"	5/8"	0

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS												
0.6" Ø LOW RELAXATION	SPAN B											
	GIRDERS 1 & 5											
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	
CAMBER ( GIRDER ALONE IN PLACE )	↑	0.0	0.074	0.140	0.192	0.225	0.236	0.225	0.192	0.140	0.074	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.0	0.025	0.047	0.064	0.075	0.079	0.075	0.064	0.047	0.025	0.0
FINAL CAMBER	↑	0	9/16"	1 1/8"	1 3/16"	1 3/8"	1 13/16"	1 7/8"	1 13/16"	1 9/16"	1 1/8"	9/16"

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS												
0.6" Ø LOW RELAXATION	SPAN A & C											
	GIRDERS 2, 3 & 4											
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	
CAMBER ( GIRDER ALONE IN PLACE )	↑	0.0	0.081	0.153	0.209	0.245	0.257	0.245	0.209	0.153	0.081	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.0	0.033	0.062	0.085	0.099	0.104	0.099	0.085	0.062	0.033	0.0
FINAL CAMBER	↑	0	9/16"	1 1/16"	1 1/2"	1 3/4"	1 13/16"	1 3/4"	1 1/2"	1 1/16"	9/16"	0

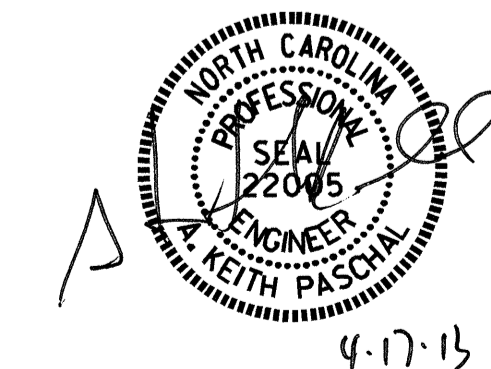
\* INCLUDES FUTURE WEARING SURFACE  
ALL VALUES ARE SHOWN IN FEET ( DECIMAL FORM ), EXCEPT " FINAL CAMBER ", WHICH IS GIVEN IN INCHES ( FRACTION FORM ).

DEAD LOAD DEFLECTION TABLE FOR GIRDERS												
0.6" Ø LOW RELAXATION	SPAN B											
	GIRDERS 2, 3 & 4											
TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	
CAMBER ( GIRDER ALONE IN PLACE )	↑	0.0	0.074	0.140	0.192	0.225	0.236	0.225	0.192	0.140	0.074	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.0	0.026	0.049	0.067	0.079	0.083	0.079	0.067	0.049	0.026	0.0
FINAL CAMBER	↑	0	9/16"	1 1/16"	1 1/2"	1 3/4"	1 13/16"	1 3/4"	1 1/2"	1 1/16"	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. B-5122  
BERTIE COUNTY  
STATION: 16+05.00 -L-

SHEET 3 OF 4



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

DRAWN BY : M.K. BEARD	DATE : 11-7-12
CHECKED BY : M.D. PISO	DATE : 12-11-12
DESIGN ENGINEER OF RECORD : O. PUIGCERVER	DATE : 12-13-12
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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			33

**STRUCTURAL STEEL NOTES**

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

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

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

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

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

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

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

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

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

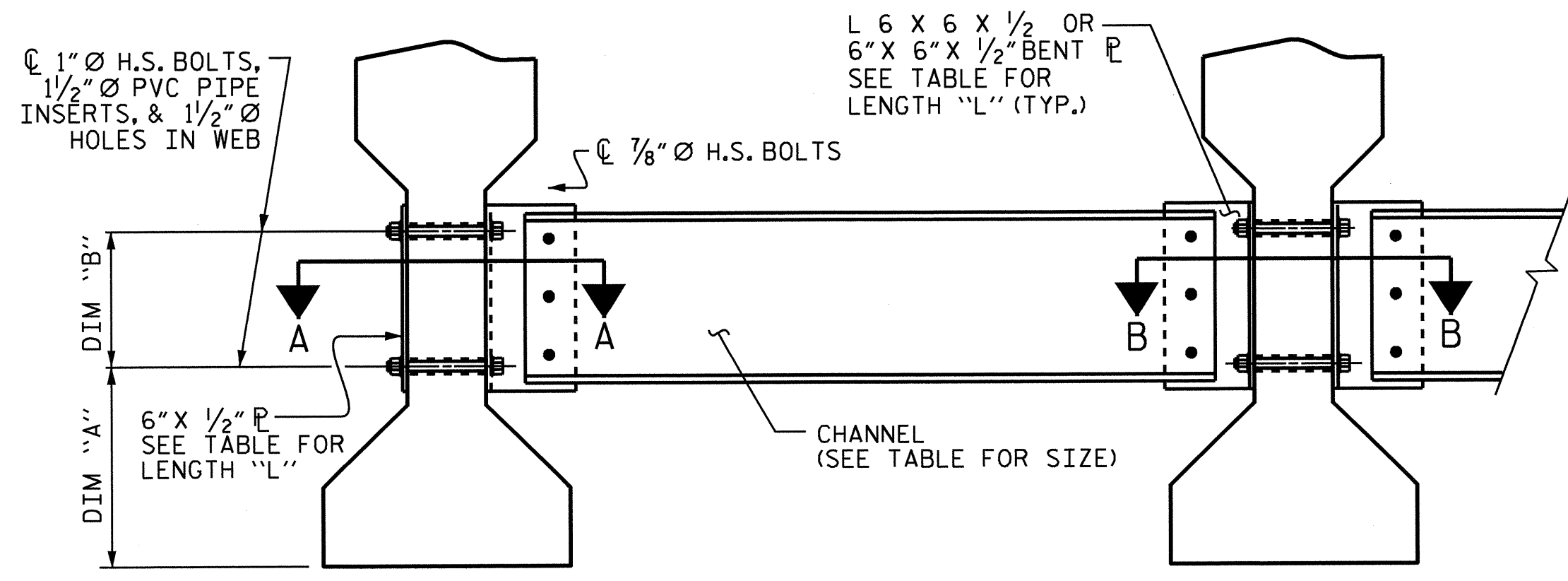
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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

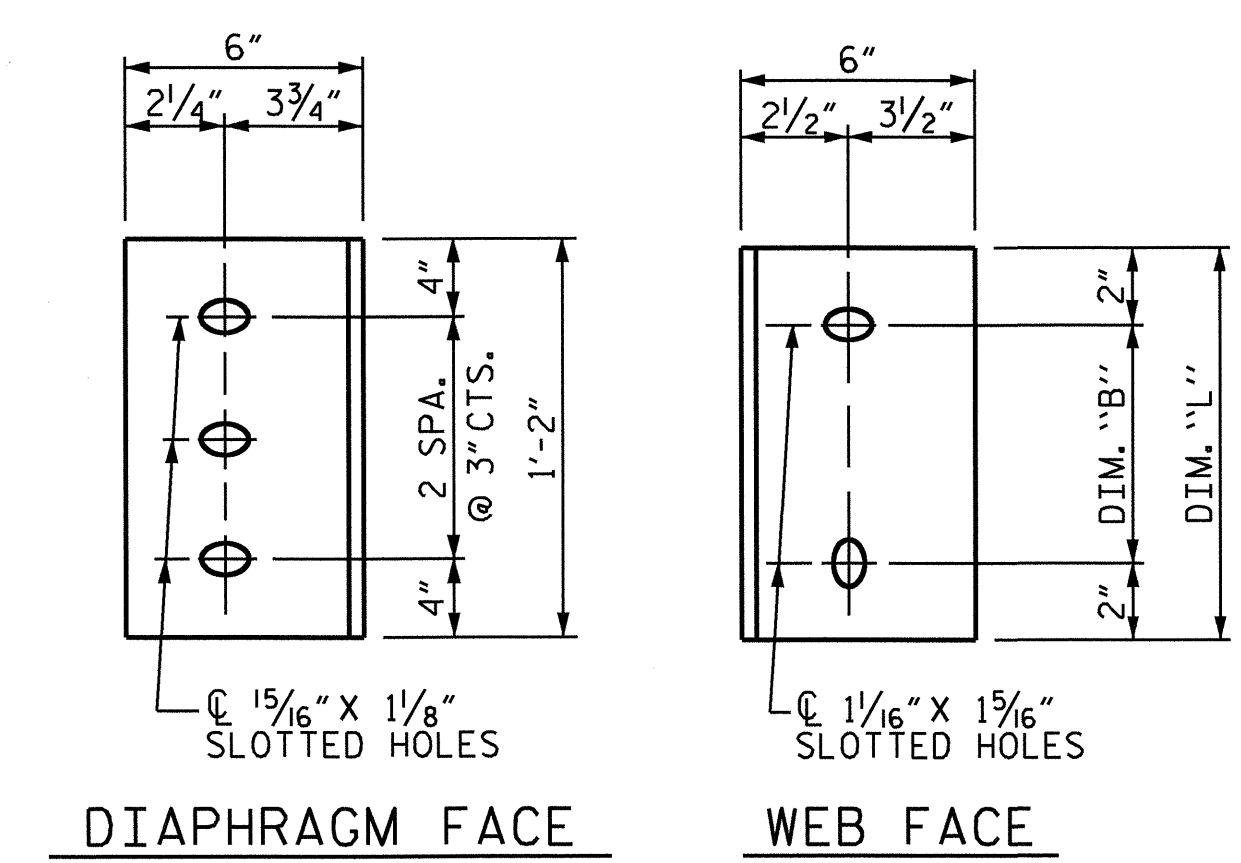
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

**TABLE**

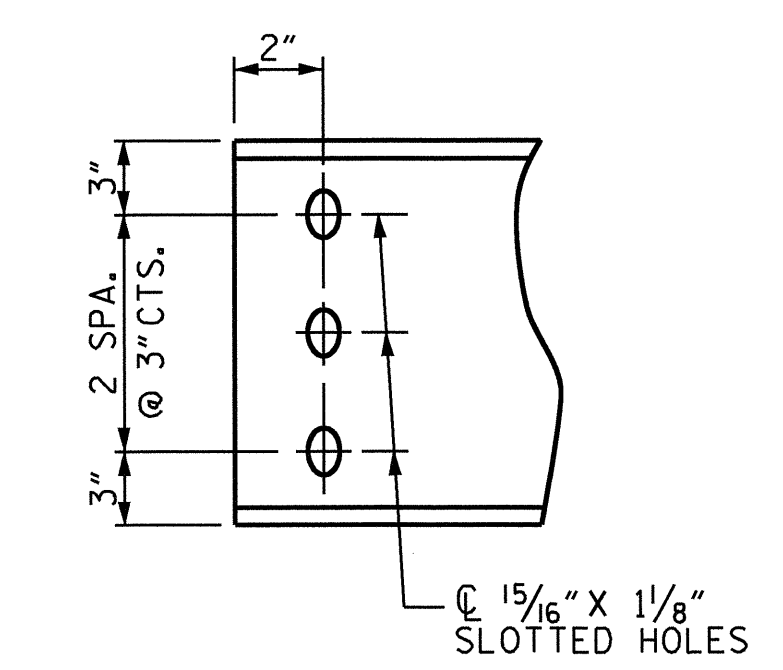
GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
II	MC 12 x 31	1'-2 1/2"	10"	1'-2"



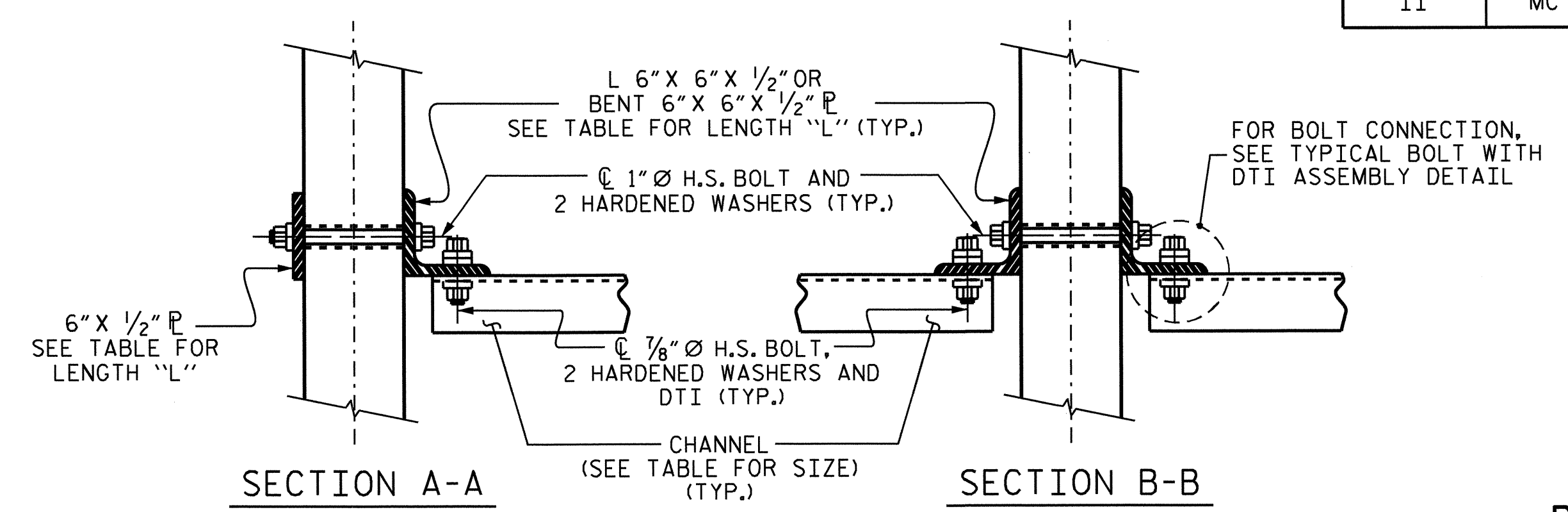
**EXTERIOR GIRDER**  
**INTERIOR GIRDER**  
**PART SECTION AT INTERMEDIATE DIAPHRAGM**



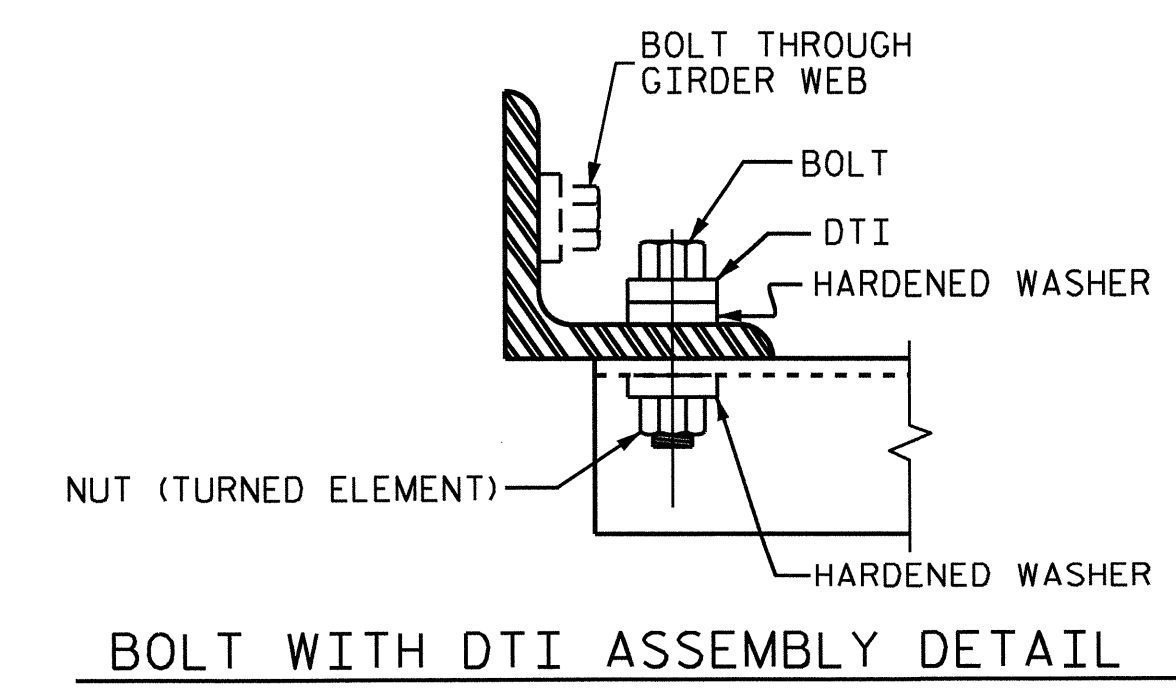
**DIAPHRAGM FACE**  
**WEB FACE**  
**CONNECTOR PLATE DETAILS**



**CHANNEL END**



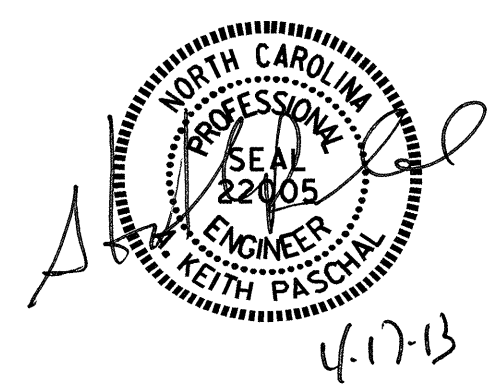
**SECTION A-A**  
**SECTION B-B**  
**CONNECTION DETAILS**



**BOLT WITH DTI ASSEMBLY DETAIL**

PROJECT NO. B-5122  
BERTIE COUNTY  
STATION: 16+05.00 -L-

SHEET 4 OF 4



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

ASSEMBLED BY : M.K. BEARD	DATE : 11-7-12
CHECKED BY : M.D. PISO	DATE : 12-11-12
DESIGN ENGINEER OF RECORD: O. PUIGCERVER	DATE : 12-13-12
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:	S-15
1			3			TOTAL SHEETS
2			4			33



**NOTES**

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

STEEL SOLE PLATES, ANCHOR BOLTS, 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.

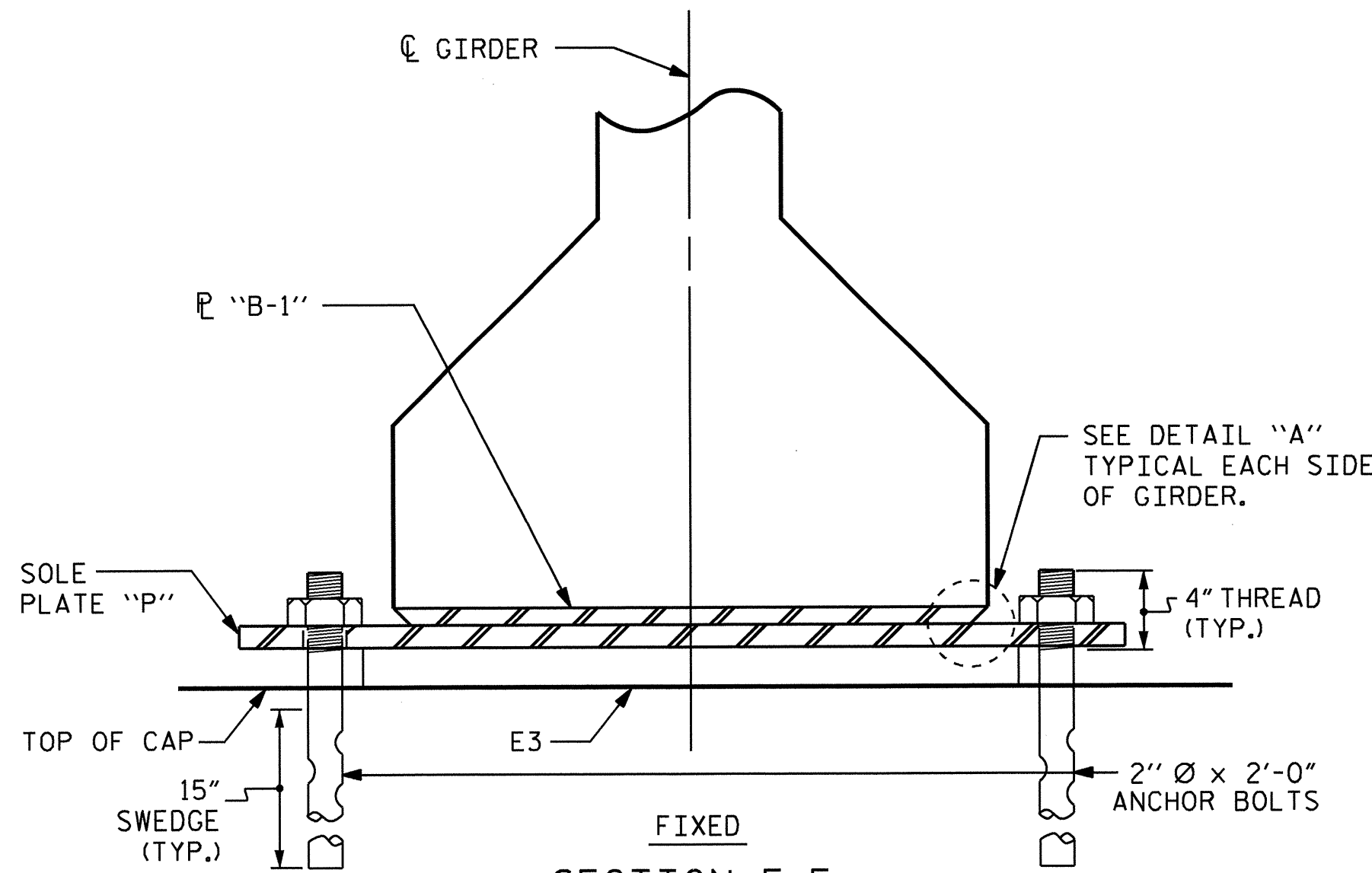
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

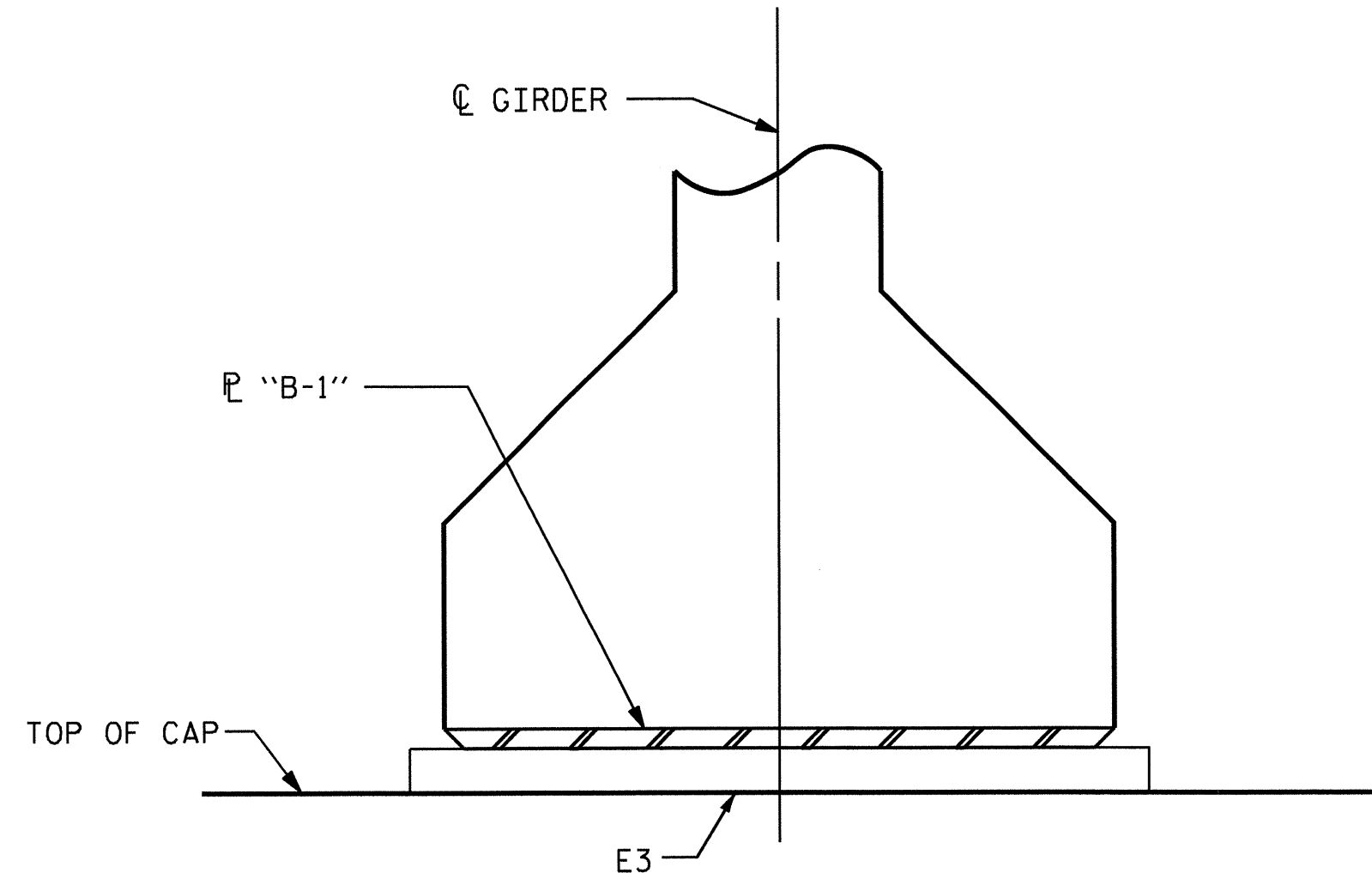
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

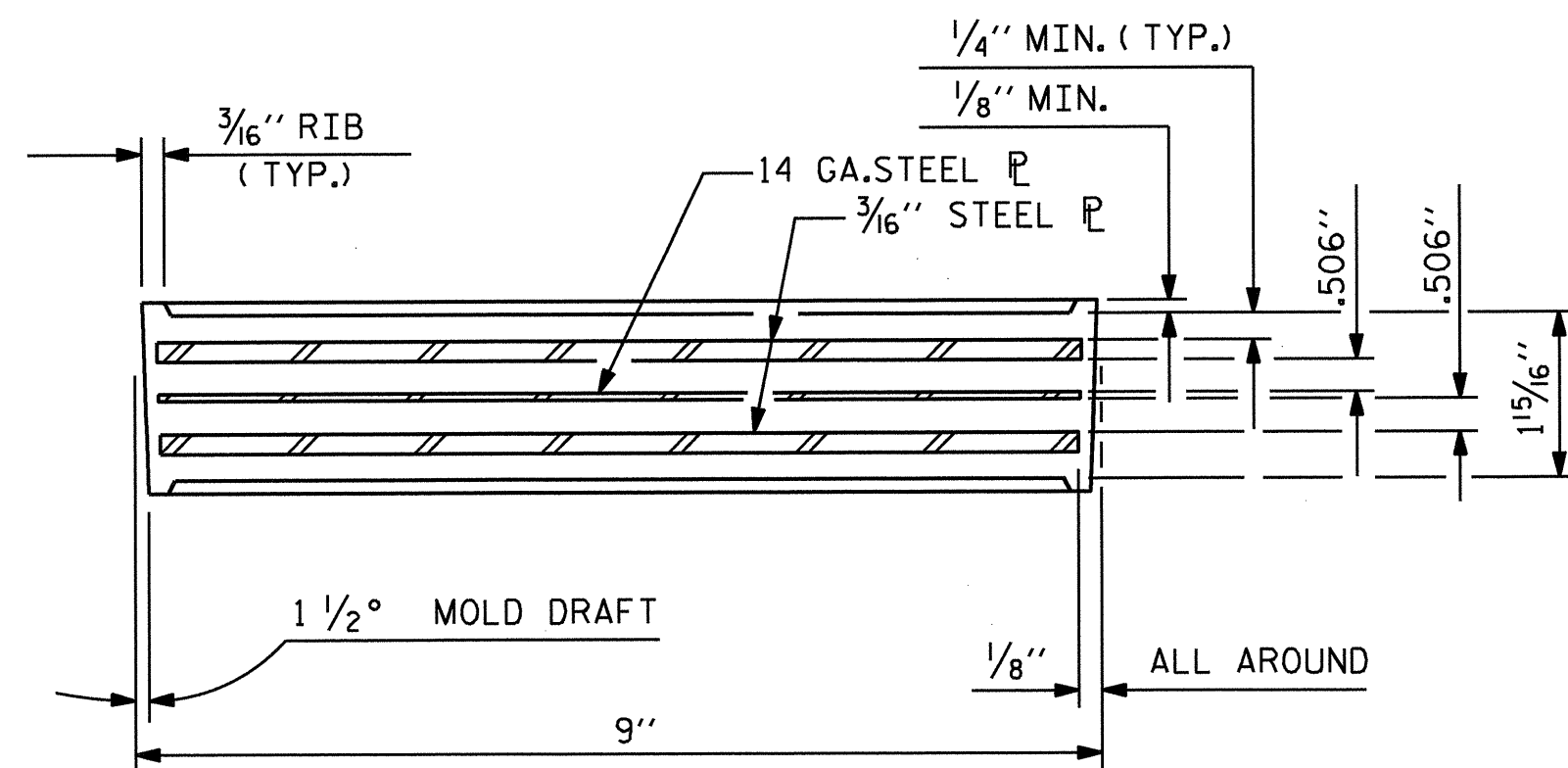
ALL BEARING PLATES SHALL BE AASHTO M270 GRADE 36.



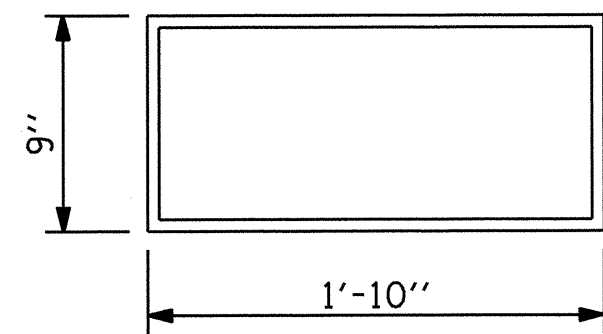
**SECTION E-E  
AT INTERIOR BENTS**



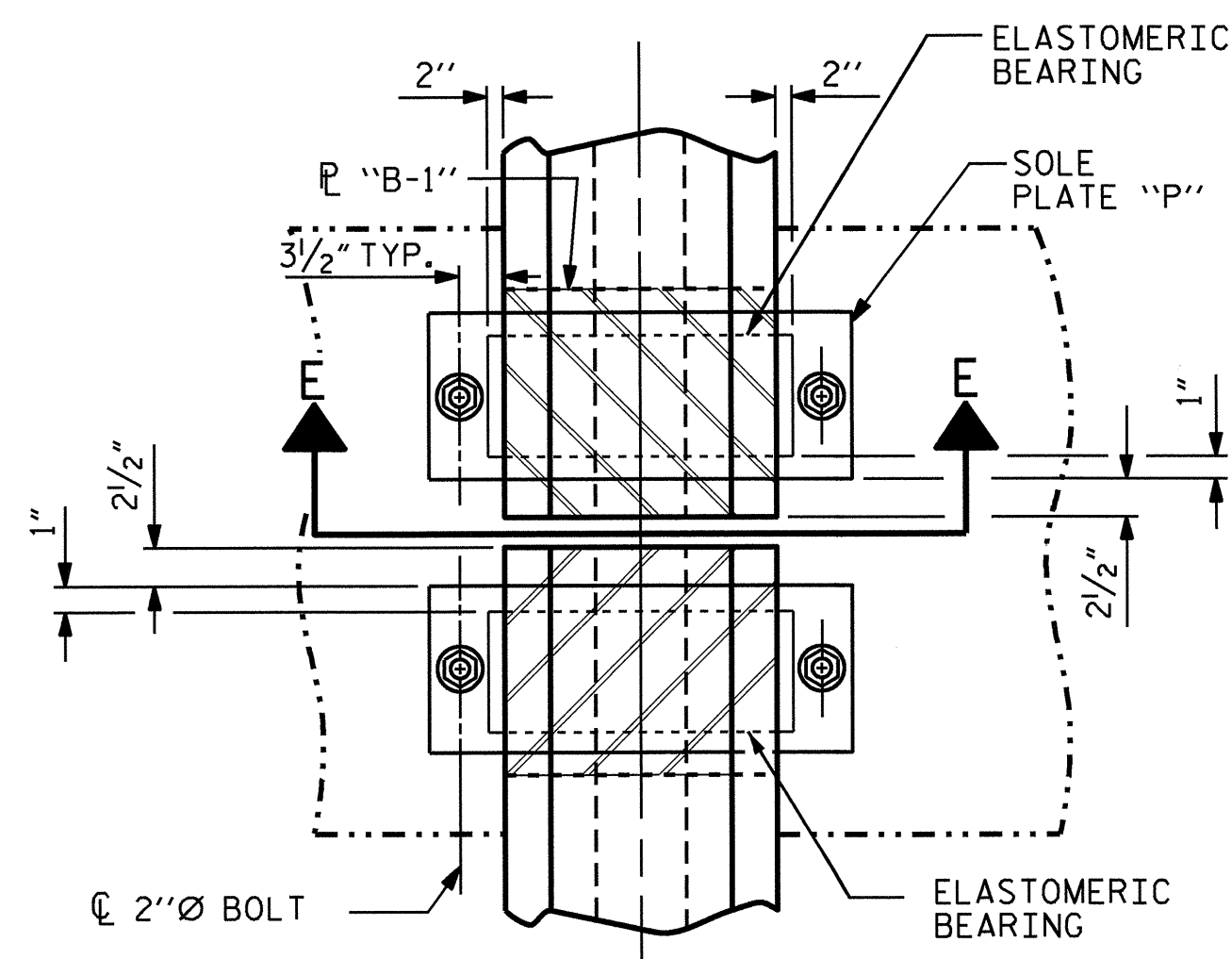
**INTEGRAL  
SECTION F-F  
AT INTEGRAL END BENTS**



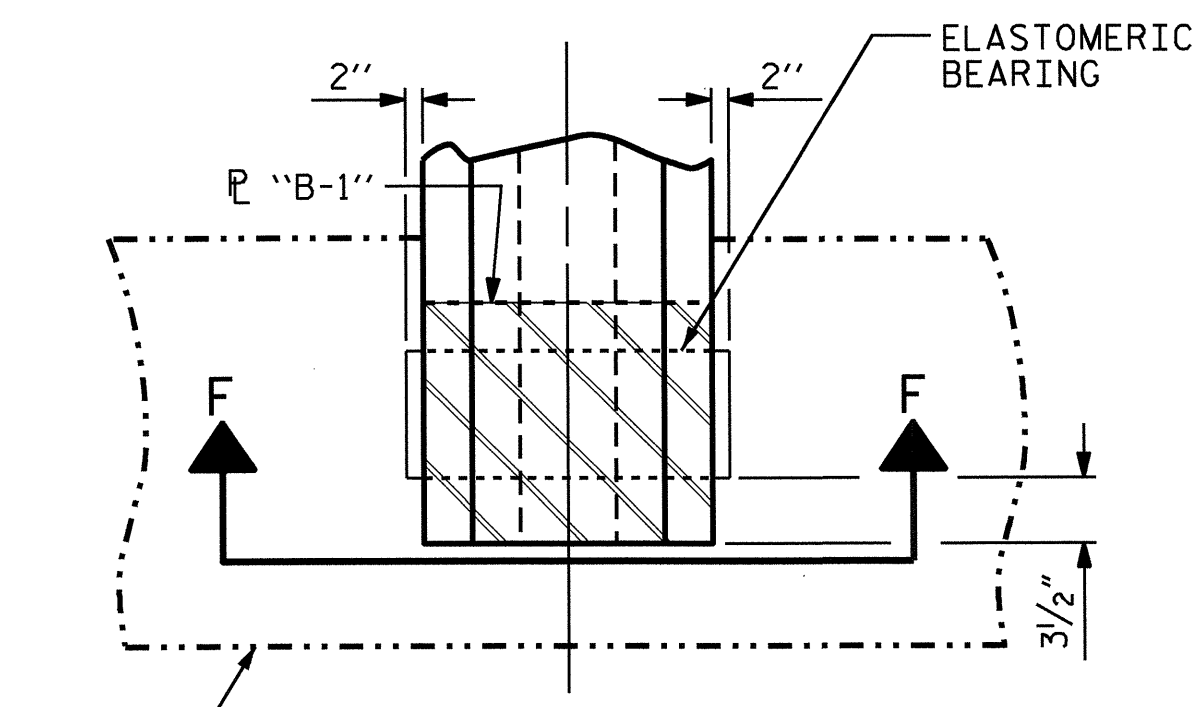
**TYPICAL SECTION OF ELASTOMERIC BEARINGS**



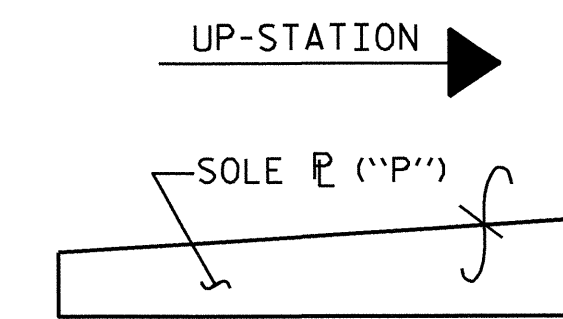
**E3 (30 REQ'D.)  
PLAN VIEW OF ELASTOMERIC BEARING  
TYPE IV**



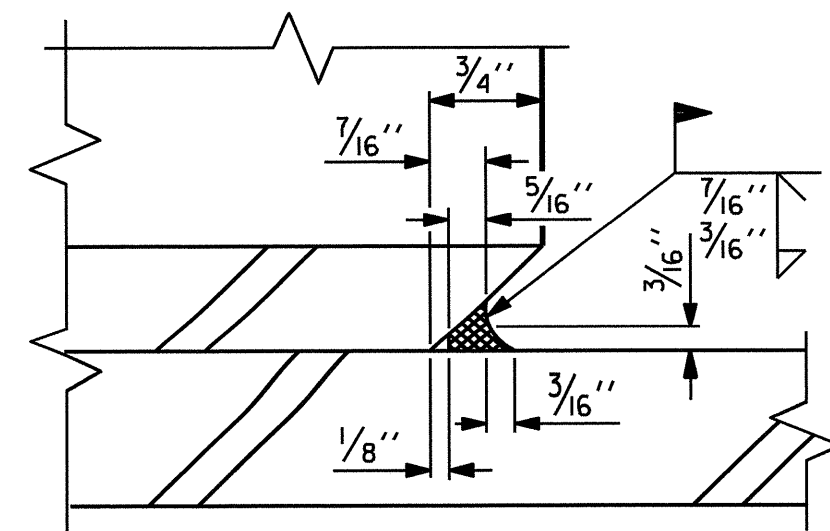
**TYPICAL PLAN  
(SHOWING CONTINUOUS BENT)**



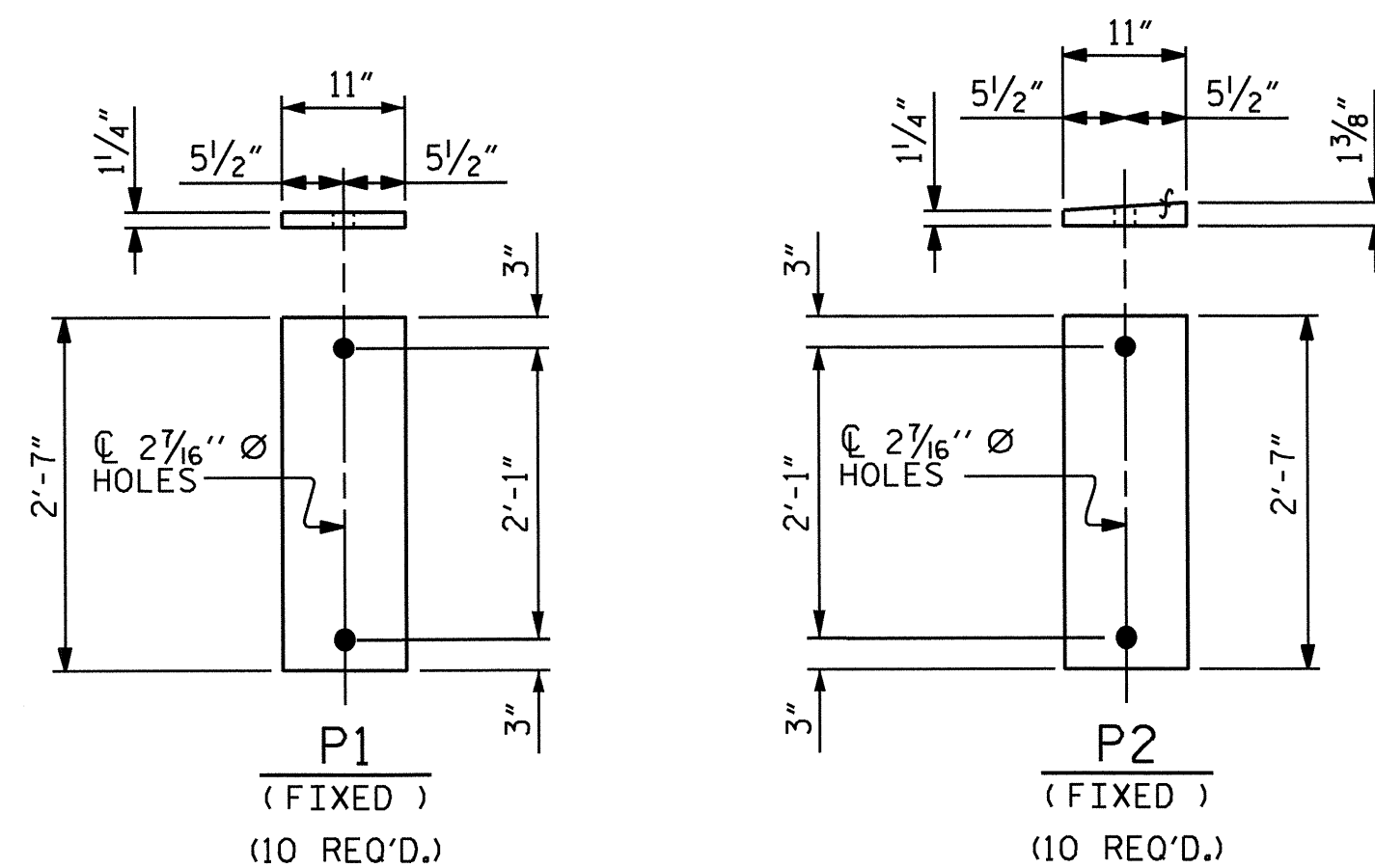
**TYPICAL PLAN  
(SHOWING INTEGRAL END BENT)**



**SOLE PLATE PLACEMENT DETAIL**



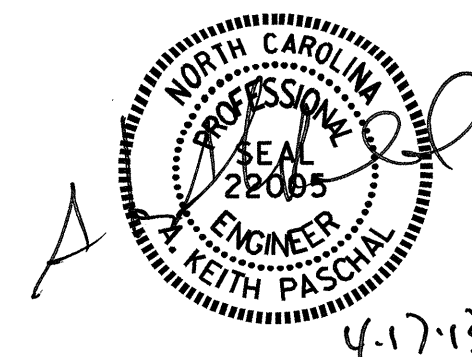
**DETAIL "A"**



**SOLE PLATE DETAILS ("P")**

<b>MAXIMUM ALLOWABLE SERVICE LOADS</b>	
<b>D.L.+L.L. (NO IMPACT)</b>	
<b>TYPE IV</b>	<b>190 k</b>

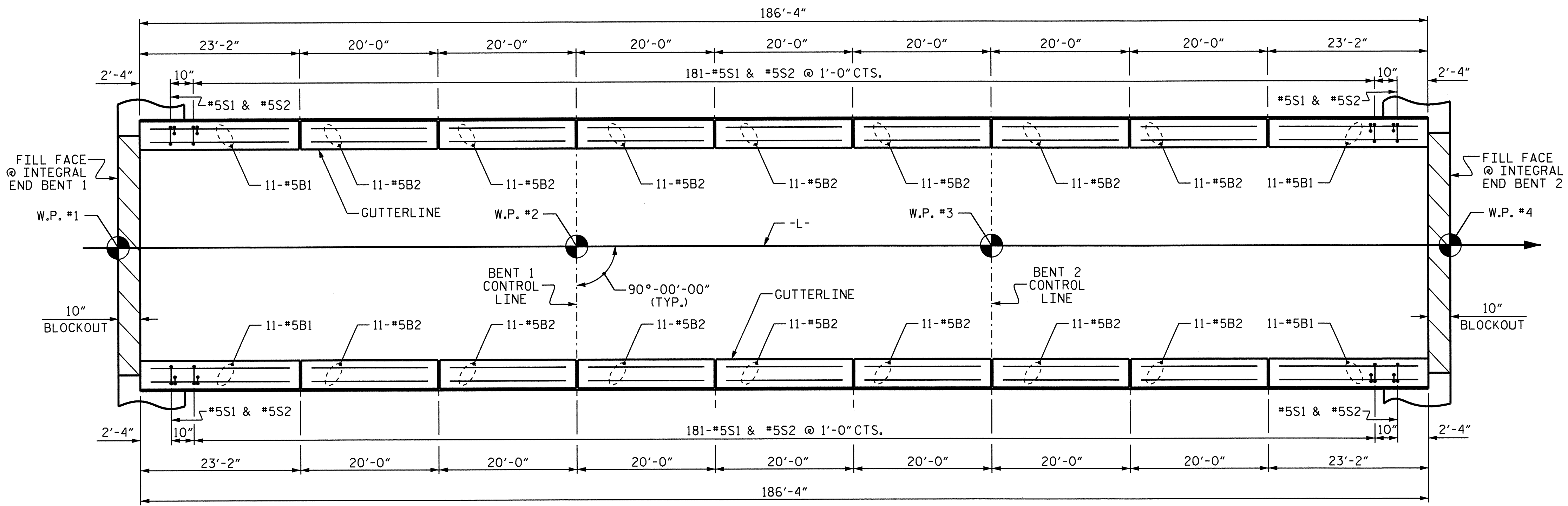
PROJECT NO. B-5122  
BERTIE COUNTY  
 STATION: 16+05.00 -L-



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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			33

DRAWN BY : M.K. BEARD	DATE : 11-9-12
CHECKED BY : M.D. PISO	DATE : 12-11-12
DESIGN ENGINEER OF RECORD: O. PUIGCERVER	DATE : 12-13-12
DRAWN BY : WJH 8/89	REV. 5/1/06 TLA/GM
CHECKED BY : CRK 8/89	REV. 10/1/11 MAA/GM
	REV. 10/24/12 AAC/MAA



PLAN

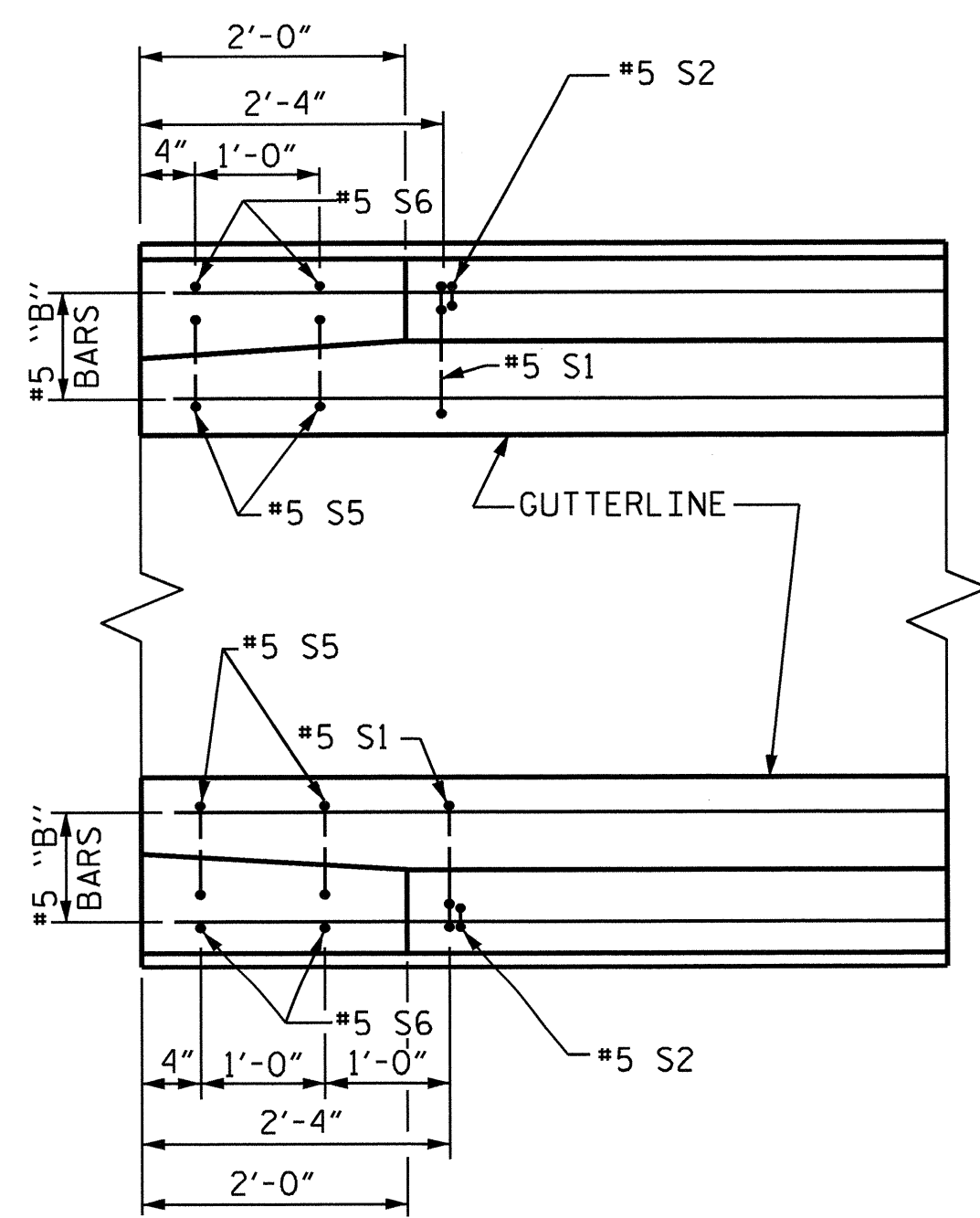
NOTES

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

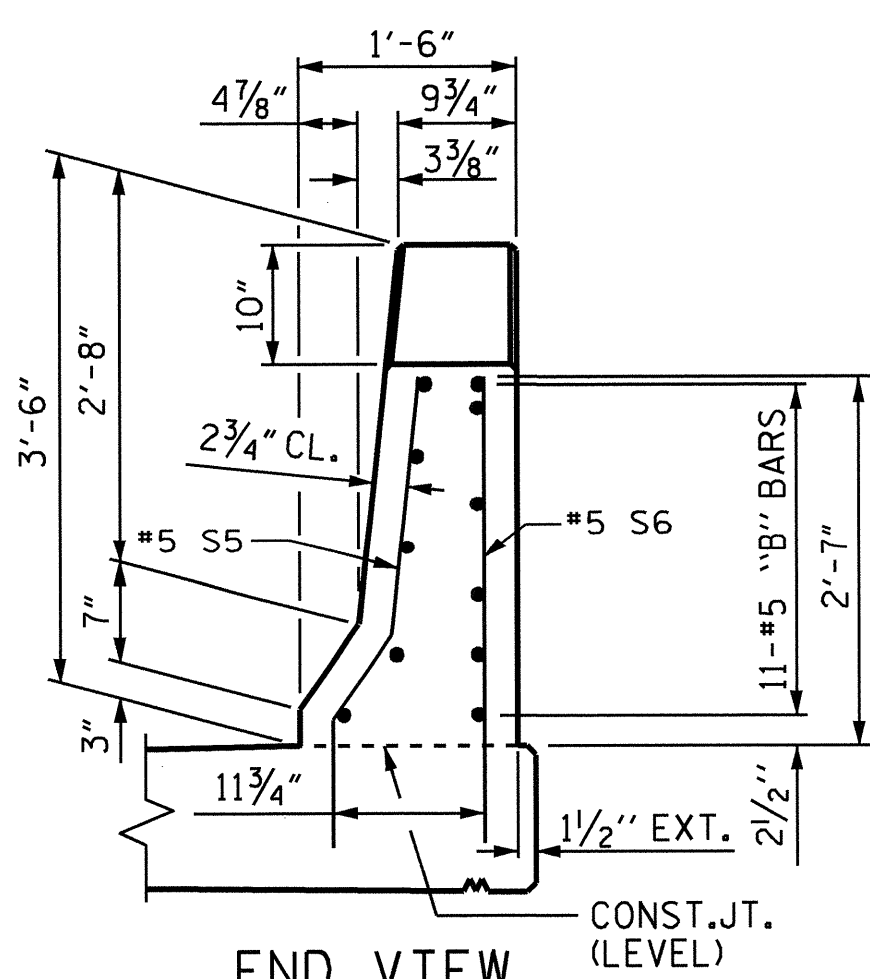
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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.

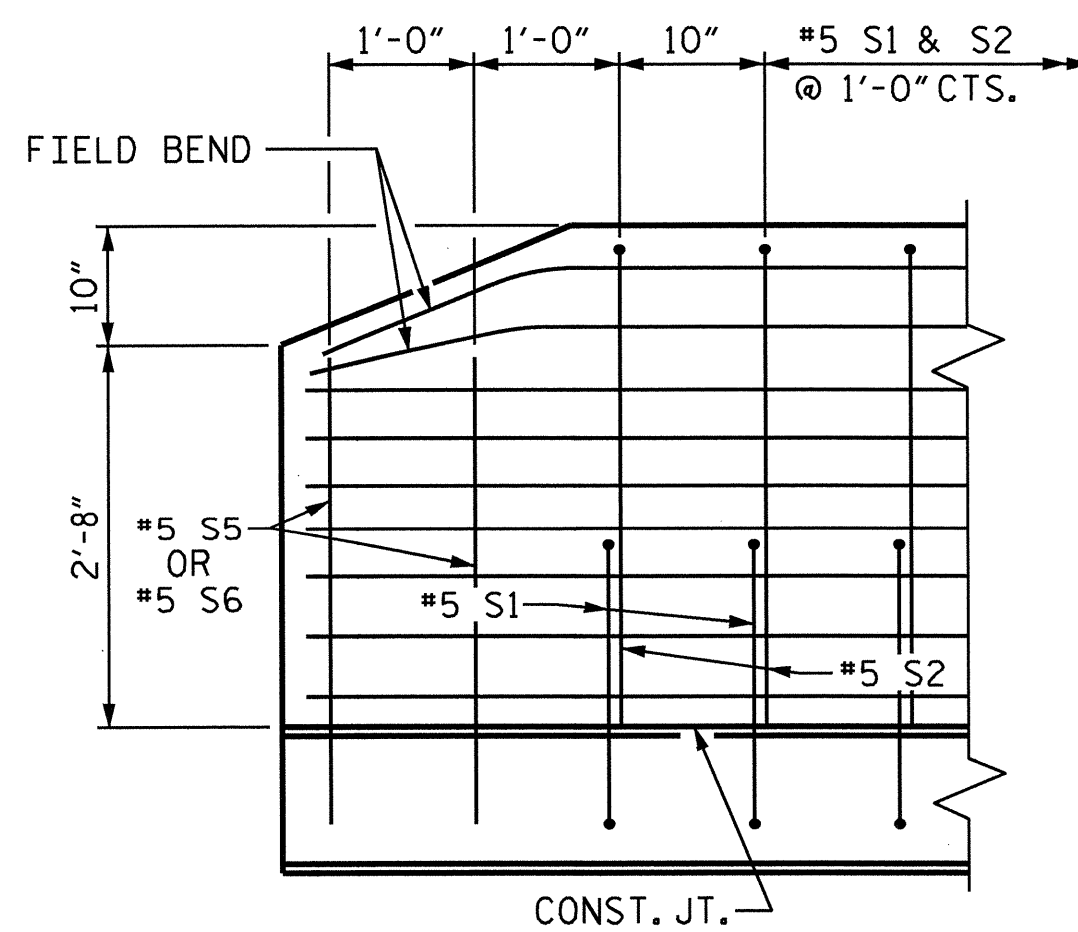
\*5S1 AND \*5S2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN RAIL.



PLAN

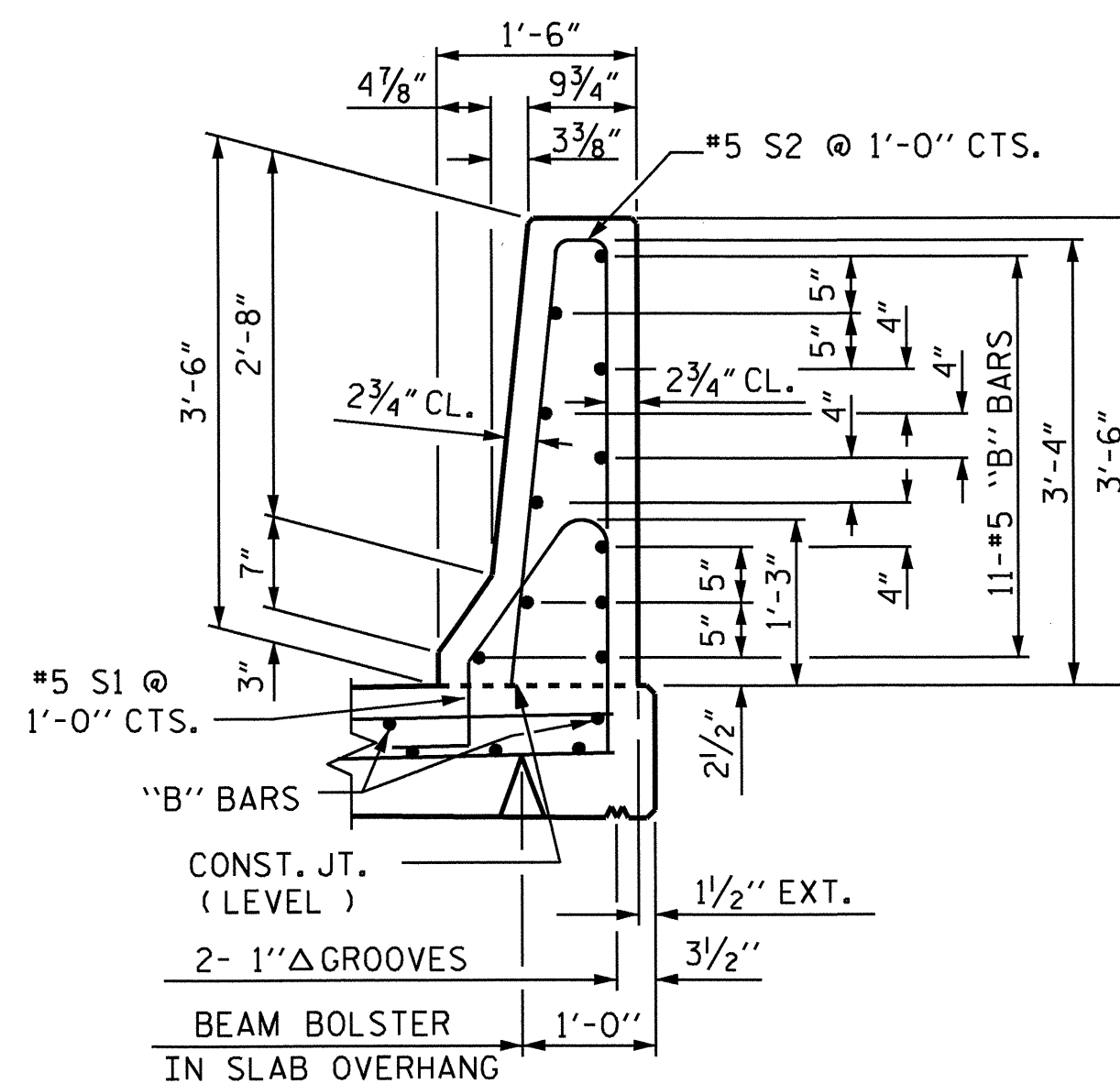


END VIEW

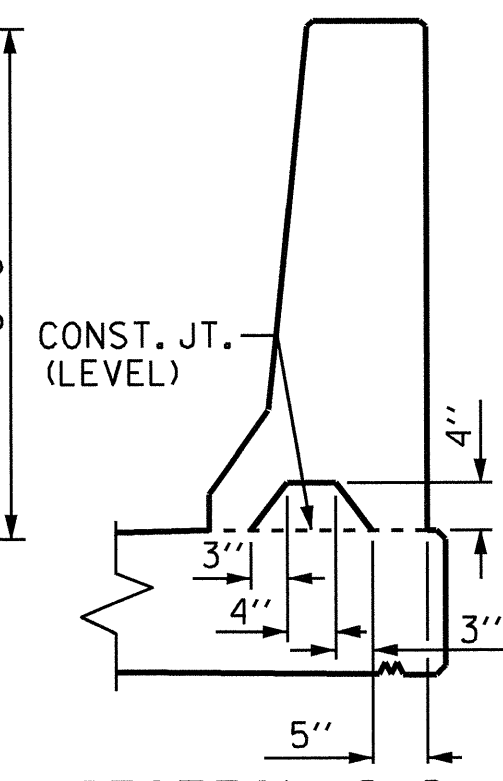


SIDE VIEW

END OF RAIL DETAILS

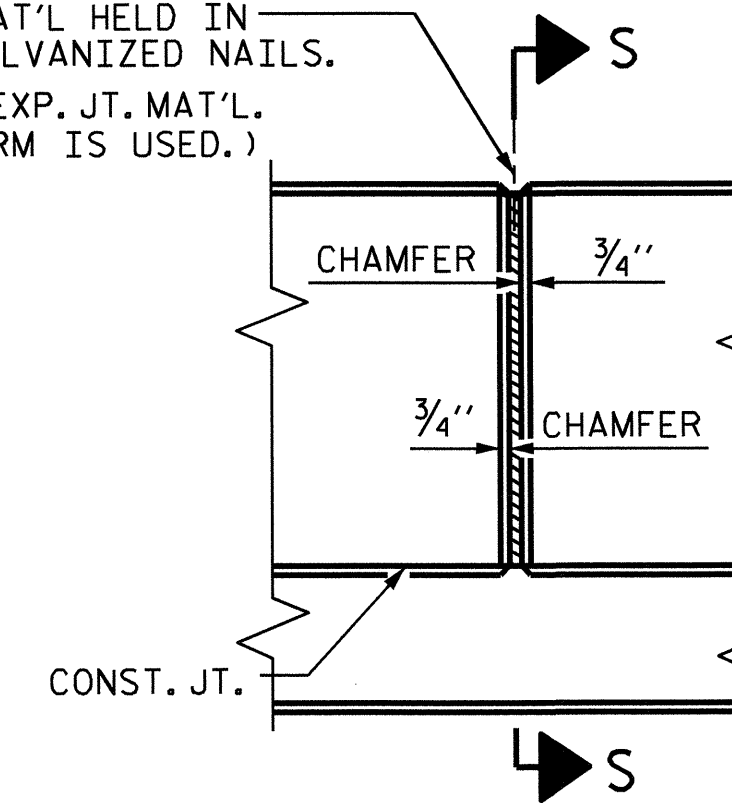


SECTION THRU RAIL



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

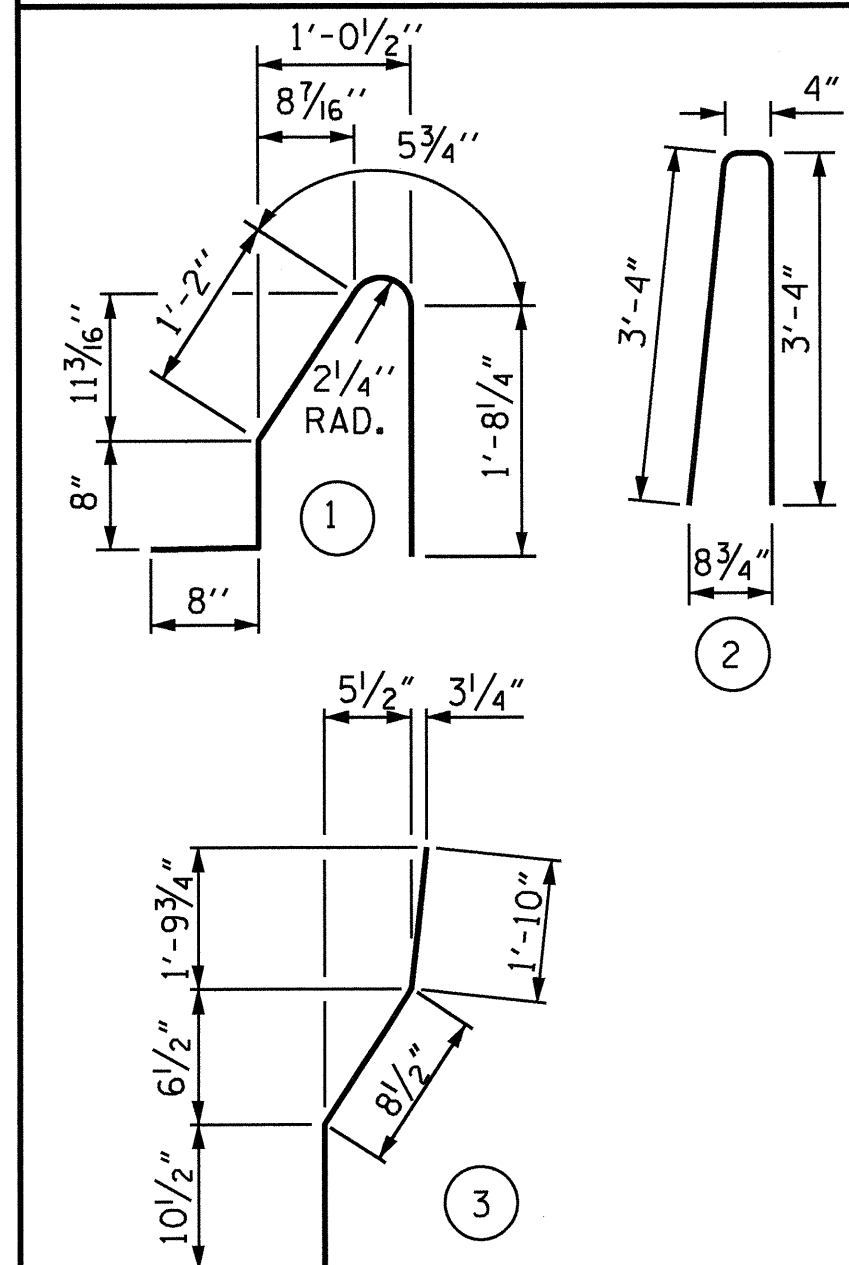
@ 1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS.  
(NOTE: OMIT EXP. JT. MAT'L, WHEN SLIP FORM IS USED.)



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	44	#5	STR	22'-9"	1044
* B2	154	#5	STR	19'-7"	3146
* S1	366	#5	1	4'-8"	1781
* S2	366	#5	2	7'-0"	2672
* S5	8	#5	3	3'-5"	29
* S6	8	#5	STR	3'-3"	27

* EPOXY COATED REINFORCING STEEL	8699 LBS.
CLASS AA CONCRETE	50.6 CU. YDS.
CONCRETE BARRIER RAIL	372.67 LTN. FT.

DRAWN BY : M.K. BEARD	DATE : 12-11-12
CHECKED BY : M.D. PISO	DATE : 12-14-12
DESIGN ENGINEER OF RECORD: O. PUIGSERVER	DATE : 12-17-12
DRAWN BY : ARB 5/87	REV. 10/1/11 MAA/GM
CHECKED BY : SJD 9/87	REV. 7/12 MAA/GM
	REV. 10/12 MAA/GM

PROJECT NO. B-5122  
BERTIE COUNTY  
STATION: 16+05.00 -L-

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

REVISIONS						SHEET NO. S-17
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			304
2			4			33

NOTES

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

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

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

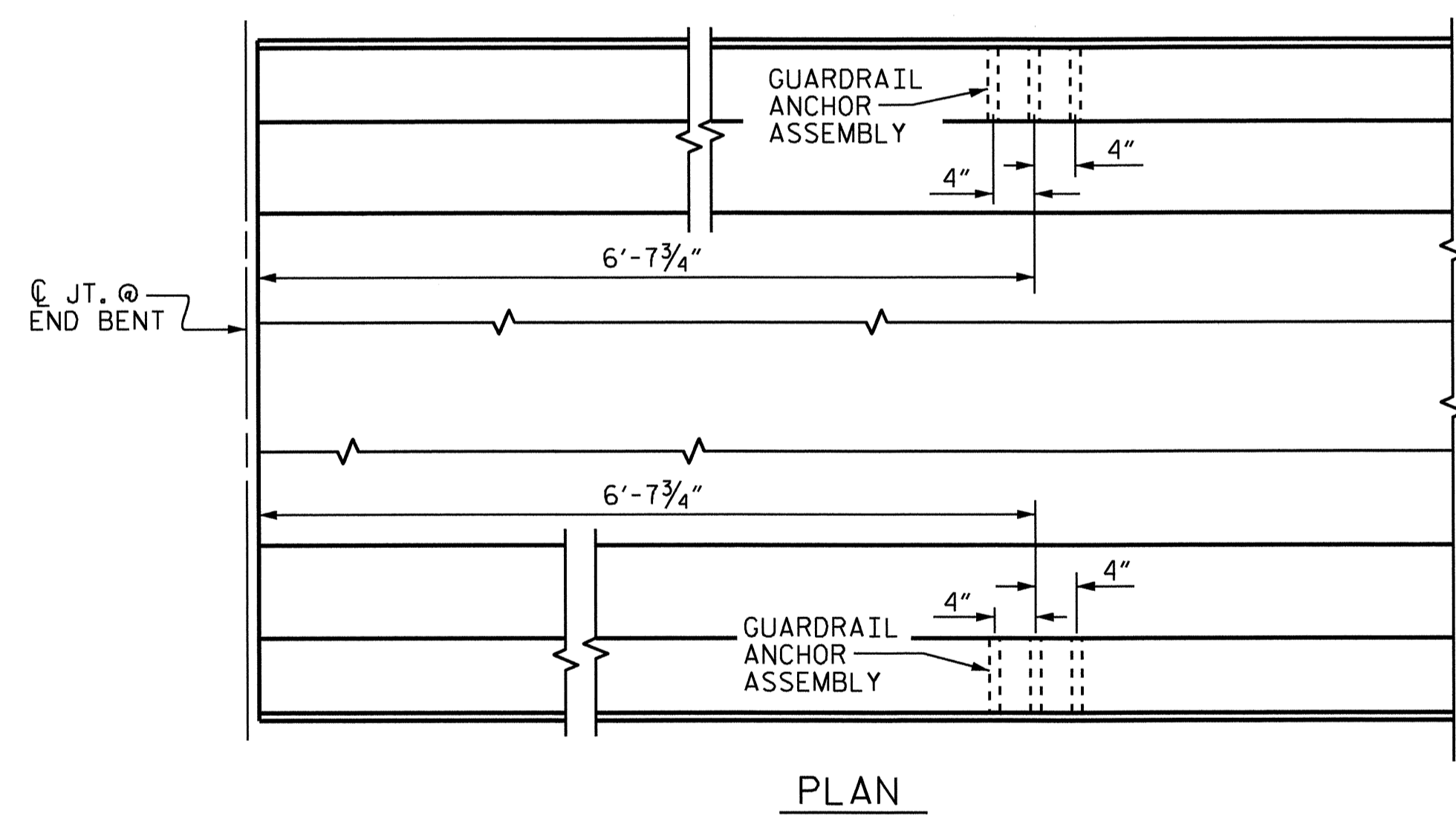
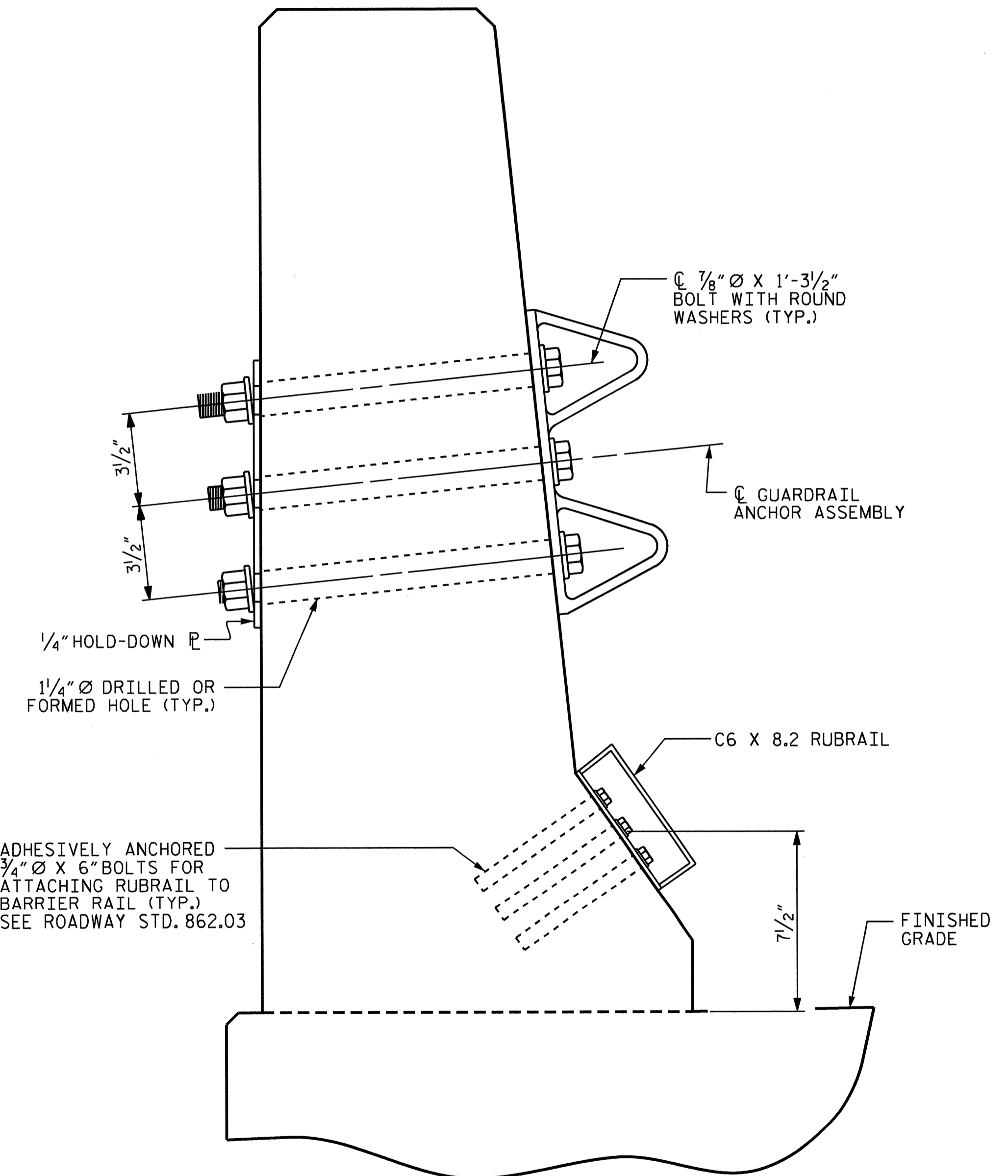
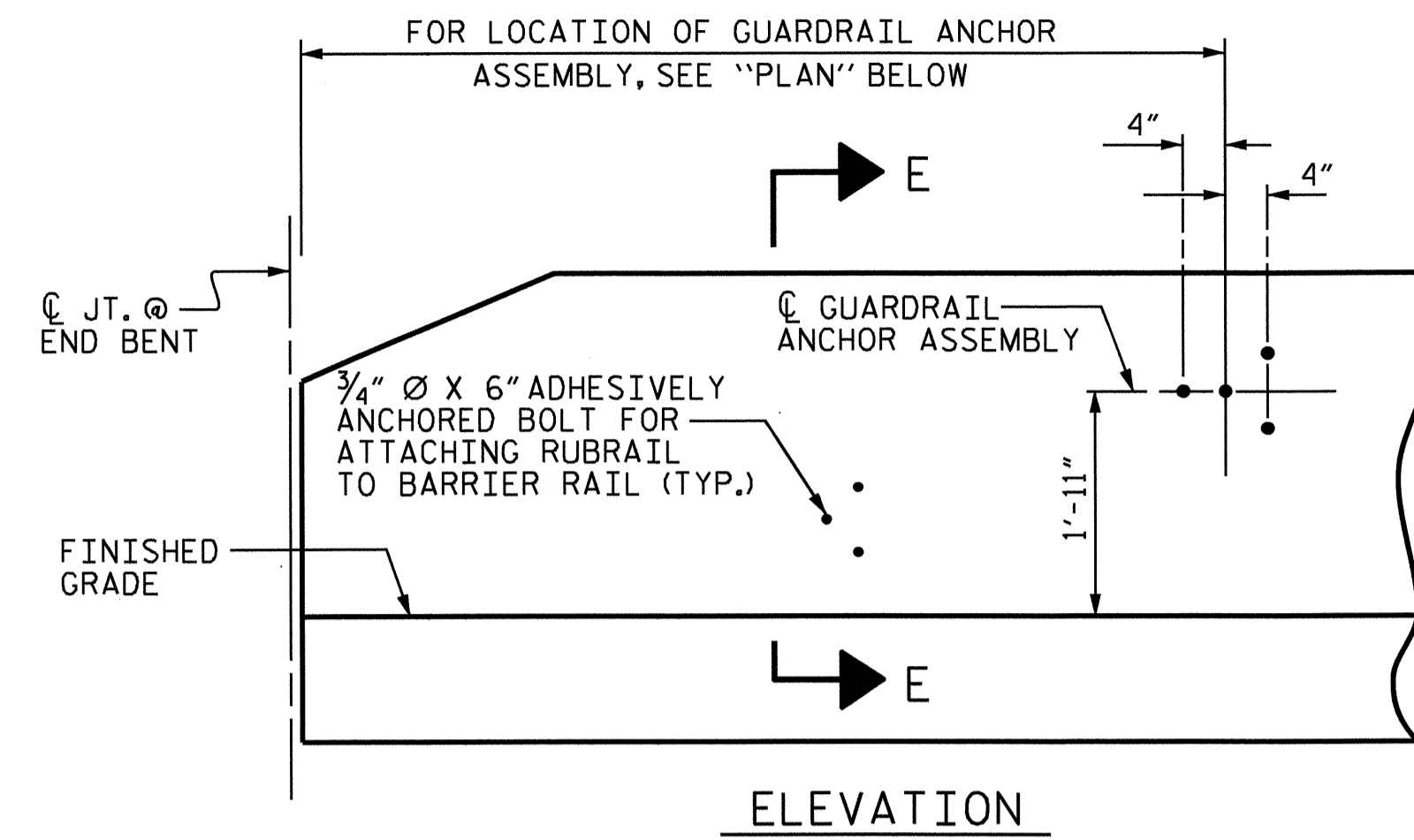
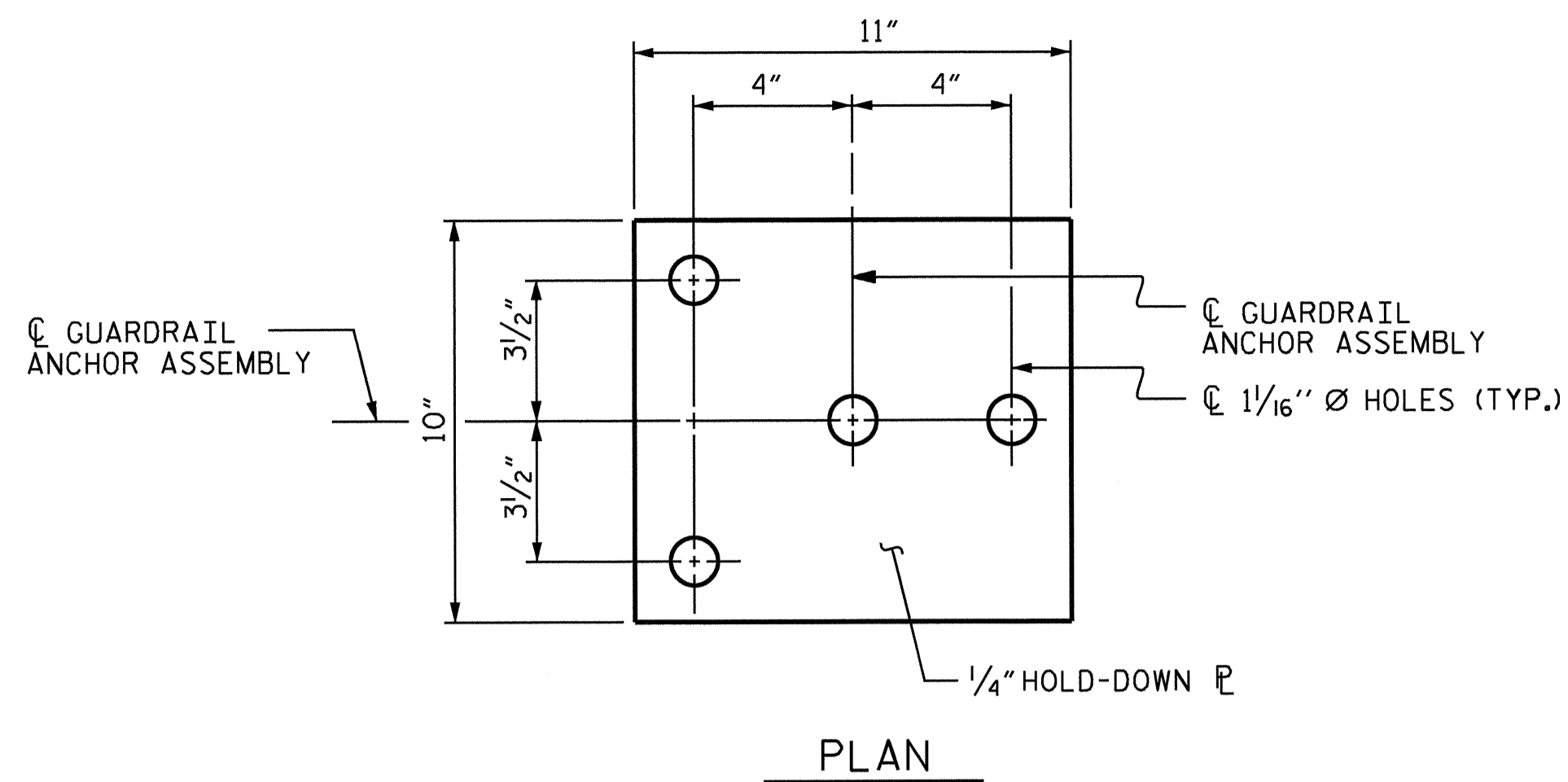
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

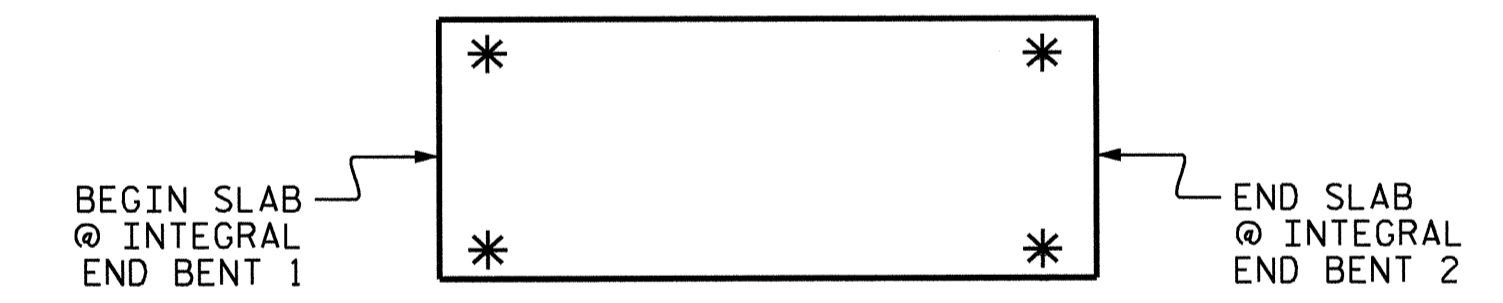
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

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



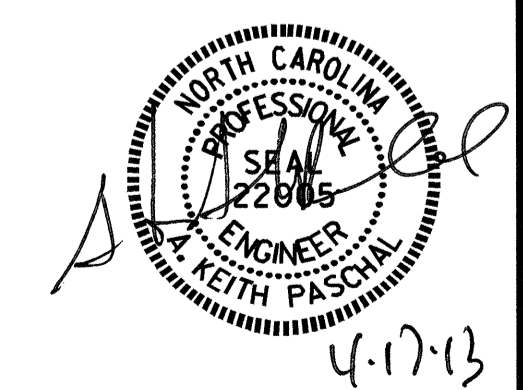
LOCATION OF ANCHORS FOR GUARDRAIL

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



\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

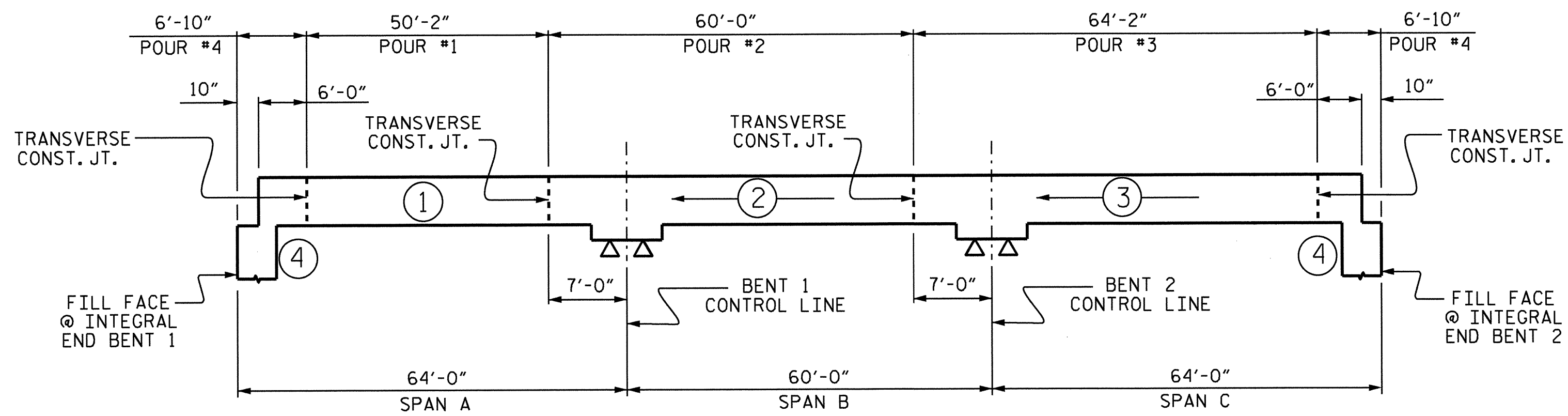
PROJECT NO. B-5122  
BERTIE COUNTY  
 STATION: 16+05.00 -L-



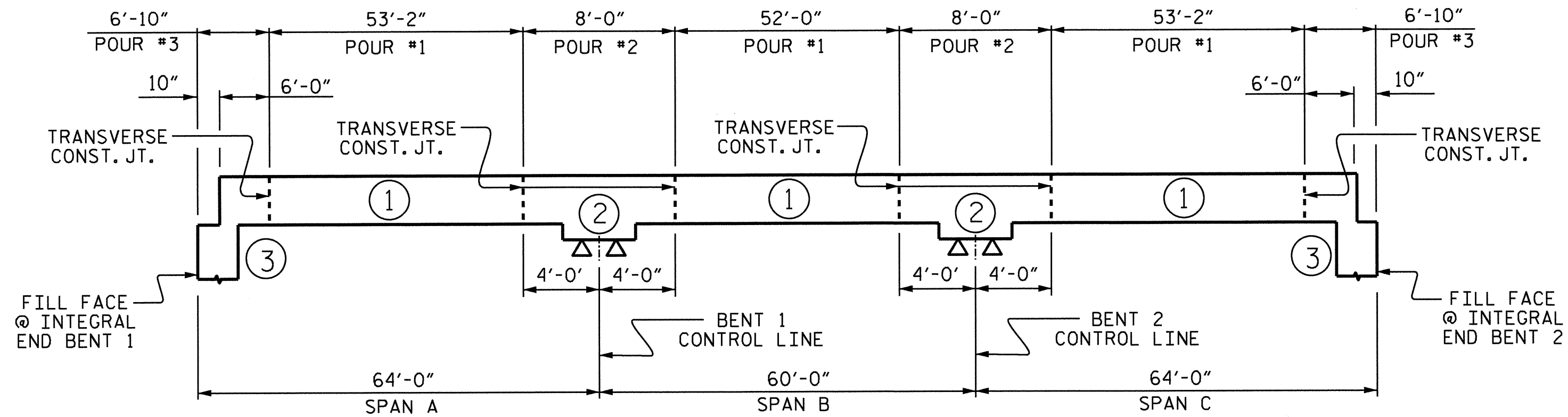
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 GUARDRAIL ANCHORAGE  
 FOR BARRIER RAIL

DRAWN BY : M.K. BEARD	DATE : 12-11-12
CHECKED BY : M.D. PISO	DATE : 12-14-12
DESIGN ENGINEER OF RECORD: O. PUIGSERVER	DATE : 12-17-12
DRAWN BY : TLA 5/06	REV. 10/11 MAA/GM
CHECKED BY : GM 5/06	REV. 7/12 MAA/GM
	REV. 10/12 MAA/GM

REVISIONS						SHEET NO. S-18
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 33
2			4			

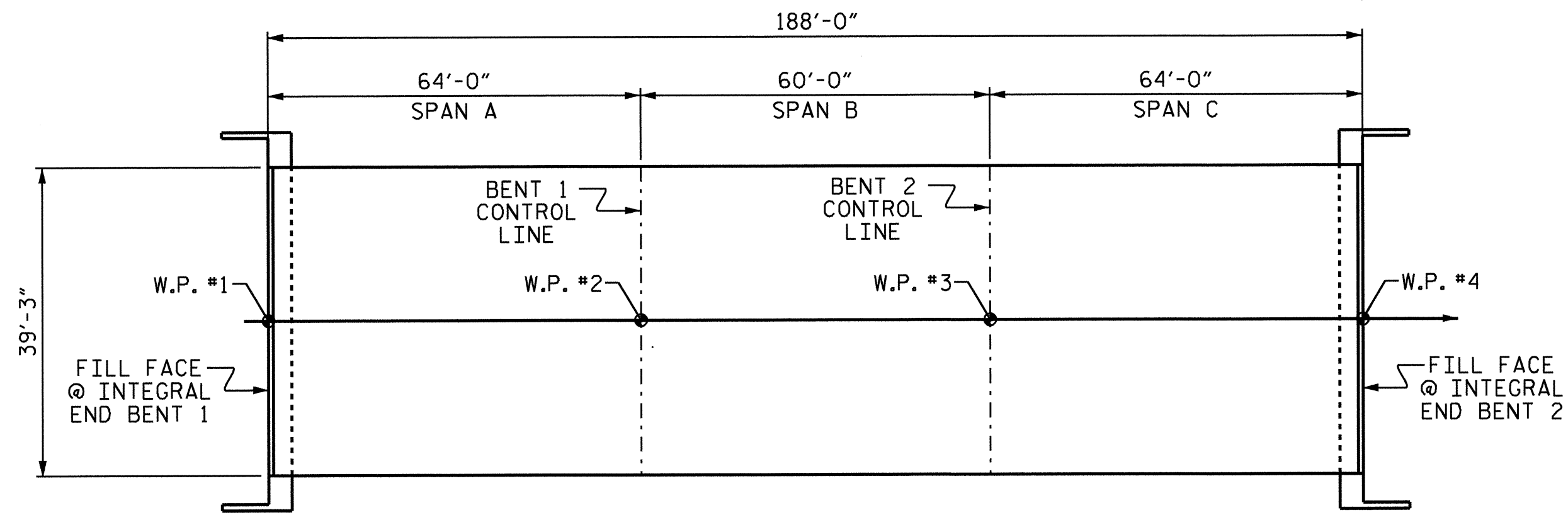


**POURING SEQUENCE**

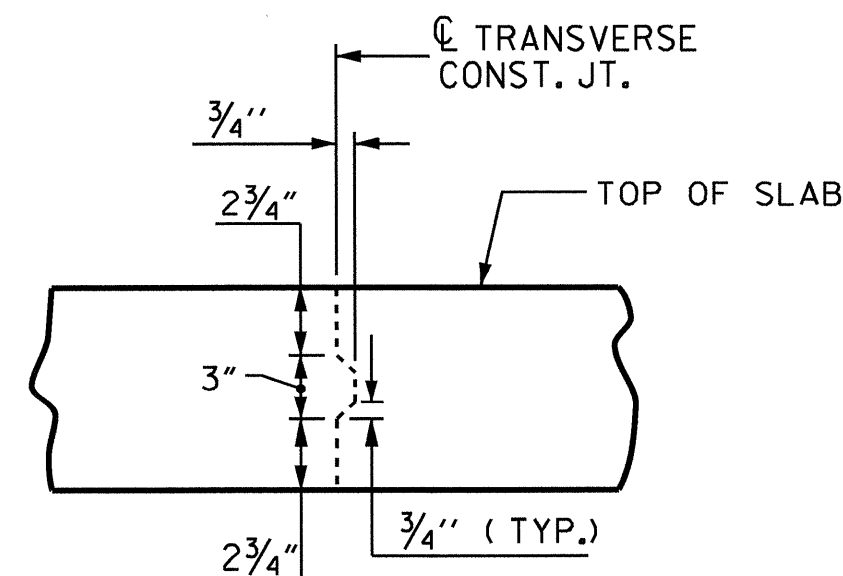


**OPTIONAL POURING SEQUENCE**

POUR ② CAN NOT BE STARTED UNTIL BOTH ADJACENT ① POURS REACH A MINIMUM OF 3000 PSI.



LAYOUT FOR COMPUTING AREA  
OF REINFORCED CONCRETE DECK SLAB  
(SQ. FT. = 7379)



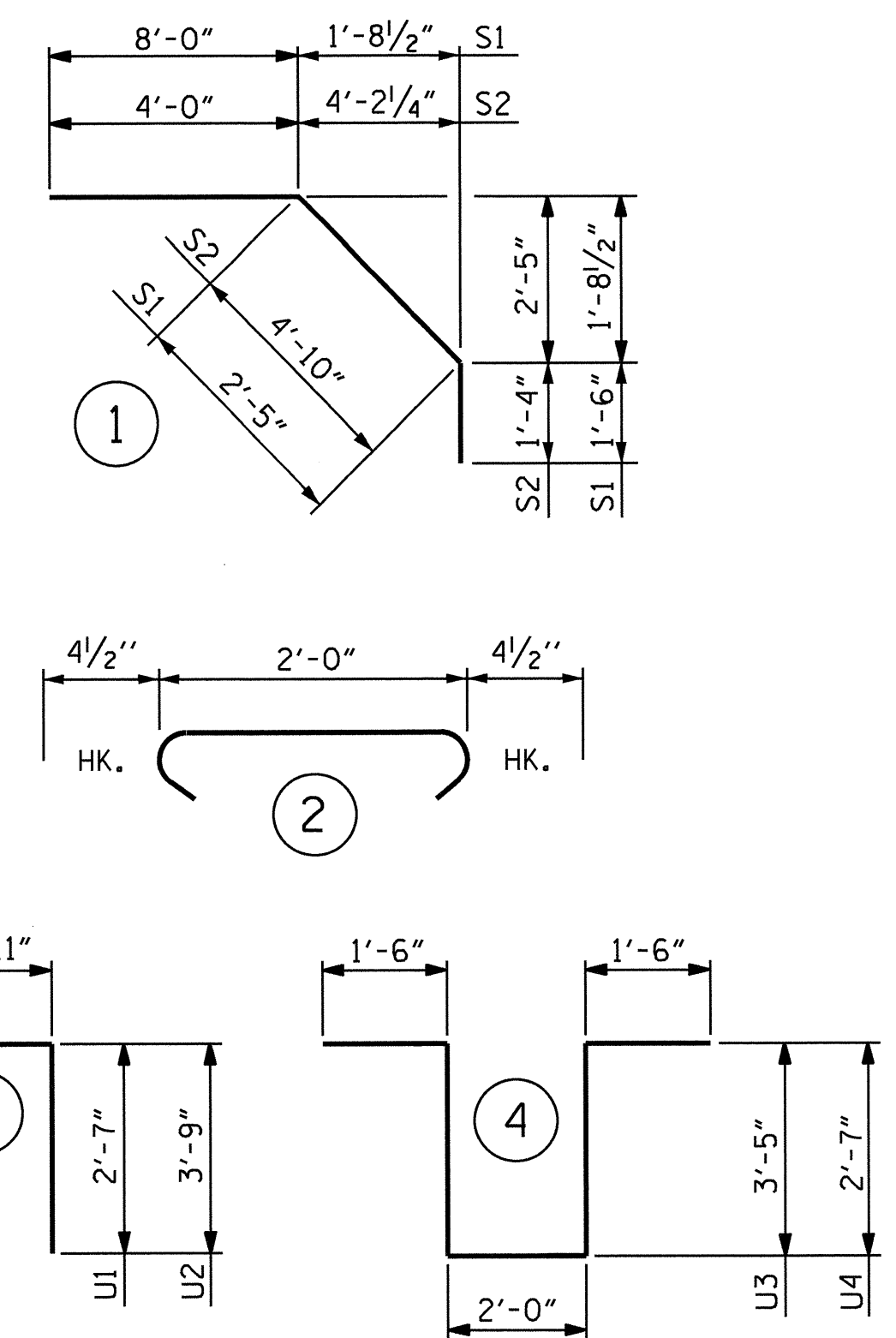
**TRANSVERSE CONSTRUCTION JOINT DETAIL**

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

**REINFORCING BAR SCHEDULE**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	373	#5	STR	38'-11"	15140
A2	373	#5	STR	38'-11"	15140
* B1	62	#6	STR	13'-0"	1211
* B2	64	#6	STR	18'-0"	1730
* B3	64	#4	STR	24'-6"	1047
* B4	64	#6	STR	49'-0"	4710
* B5	62	#6	STR	20'-0"	1862
* B6	32	#4	STR	15'-0"	321
B7	208	#5	STR	48'-2"	10449
H1	48	#5	STR	12'-11"	647
K1	16	#4	STR	23'-4"	249
K2	8	#4	STR	6'-5"	34
K3	16	#4	STR	7'-5"	79
K4	8	#4	STR	6'-11"	37
K5	4	#4	STR	5'-0"	13
K6	8	#4	STR	5'-6"	29
K7	4	#4	STR	5'-3"	14
K8	16	#4	STR	2'-8"	29
K9	16	#4	STR	5'-2"	55
K10	32	#4	STR	7'-5"	156
K11	16	#4	STR	6'-11"	74
K12	16	#4	STR	17'-5"	186
* S1	64	#4	1	11'-11"	509
* S2	64	#4	1	10'-2"	435
S3	176	#4	2	2'-9"	323
U1	68	#4	3	8'-1"	367
U2	12	#4	3	10'-5"	84
U3	48	#4	4	11'-10"	379
U4	16	#4	4	10'-2"	109
V1	10	#4	STR	2'-7"	17
REINFORCING STEEL				LBS.	28470
* EPOXY COATED REINFORCING STEEL				LBS.	26965

**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.)
POUR 1	61.8		
POUR 2	82.5		
POUR 3	87.6		
POUR 4*	55.8		
TOTALS**	287.7	28470	26965

\*\*QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED  
\* POUR 4 QUANTITY INCLUDES UPPER POUR OF WINGS & INTEGRAL END BENT

**GROOVING BRIDGE FLOORS**

APPROACH SLABS	1617	SO.FT.
BRIDGE DECK	6149	SO.FT.
TOTAL	7766	SO.FT.

PROJECT NO. B-5122  
BERTIE COUNTY  
STATION: 16+05.00 -L-

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



ASSEMBLED BY : M.K. BEARD	DATE : 12-10-12
CHECKED BY : M.D. PISO	DATE : 12-11-12
DESIGN ENGINEER OF RECORD: O. PUIGSERVER	DATE : 12-13-12
DRAWN BY : JMB 5/87	REV. 8/16/99 RWW/LES
CHECKED BY : SJD 9/87	REV. 5/11/06 TLA/GM
	REV. 10/11/11 MAA/GM

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

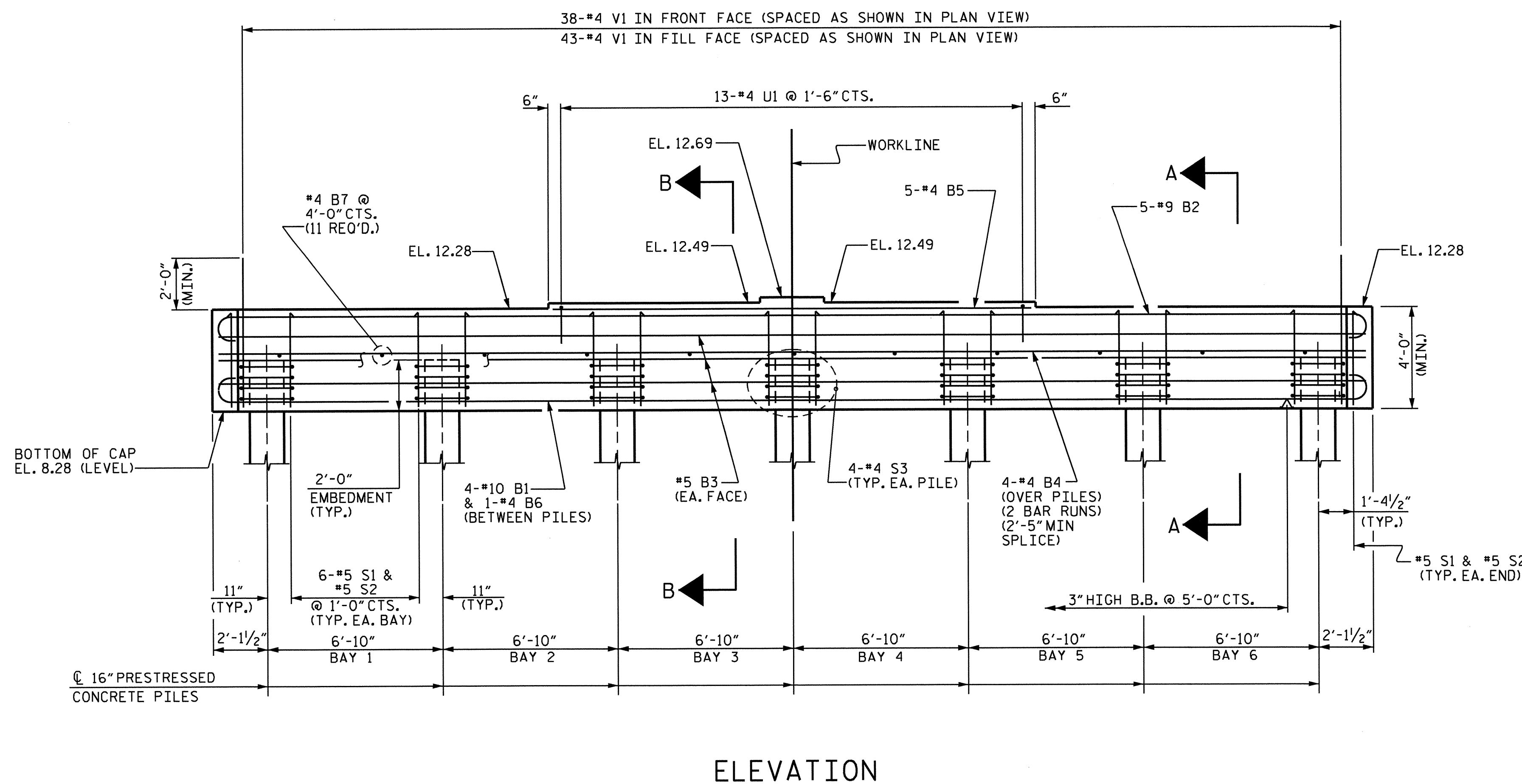
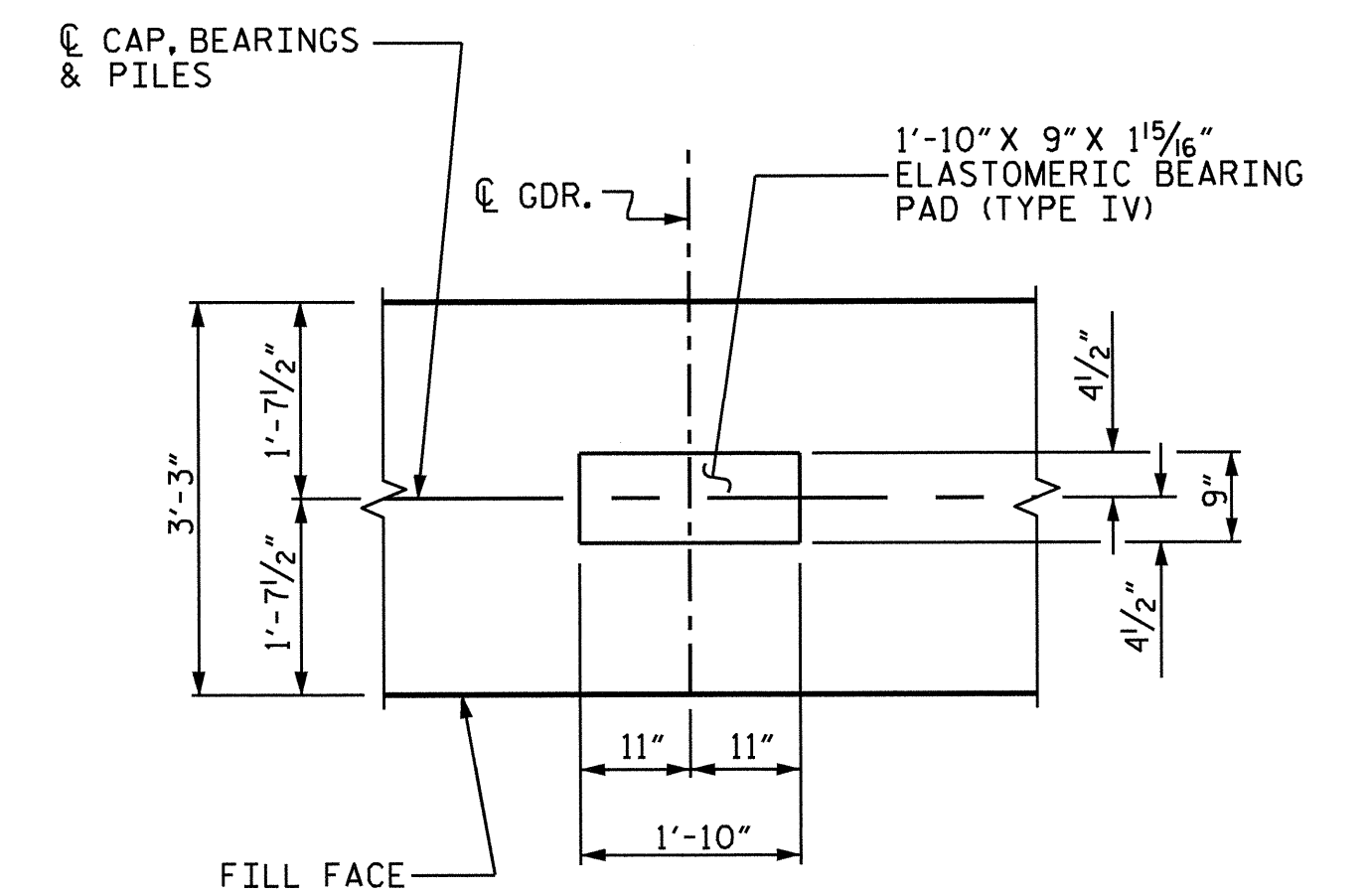
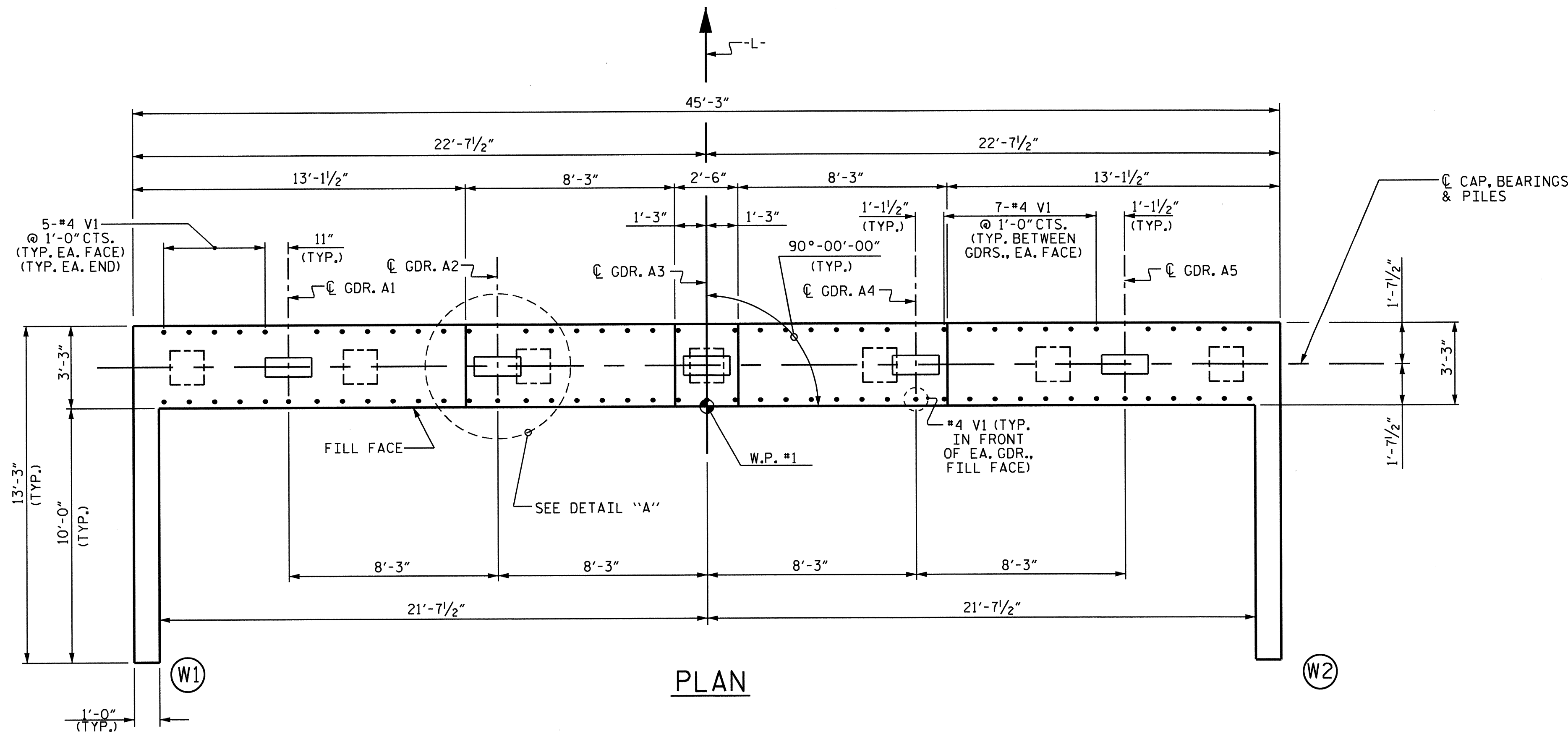
**NOTES:**

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

INSTALL THE 4" DIA. 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 TOP SURFACE OF THE END BENT CAP AND WINGS, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

THE UPPER PORTION OF THE INTEGRAL END BENT CAP AND THE UPPER PORTION OF THE WINGS SHALL BE POURED WITH THE SUPERSTRUCTURE. SEE SUPERSTRUCTURE PLANS.



PROJECT NO. B-5122  
BERTIE COUNTY  
 STATION: 16+05.00 -L-

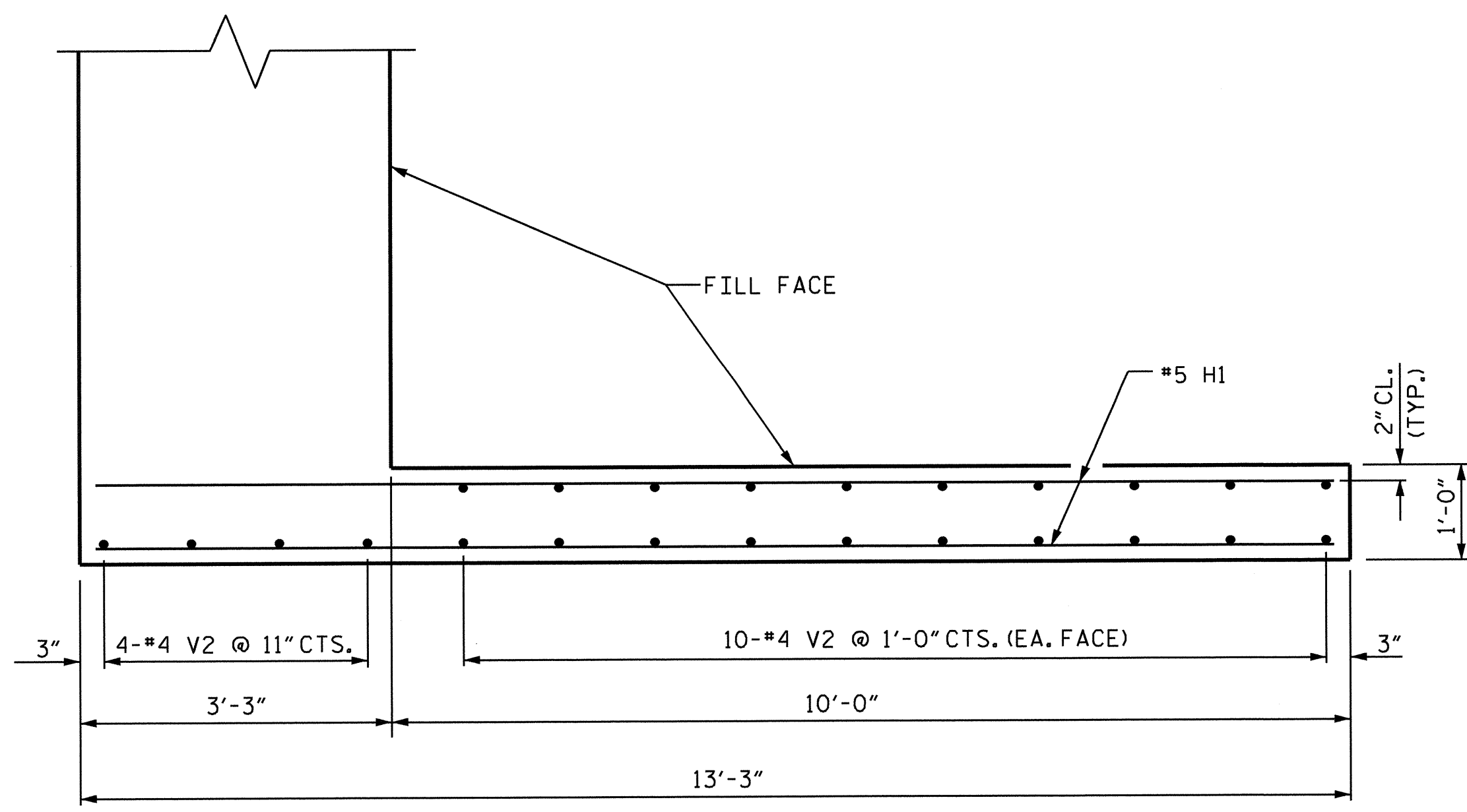
SHEET 1 OF 3

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

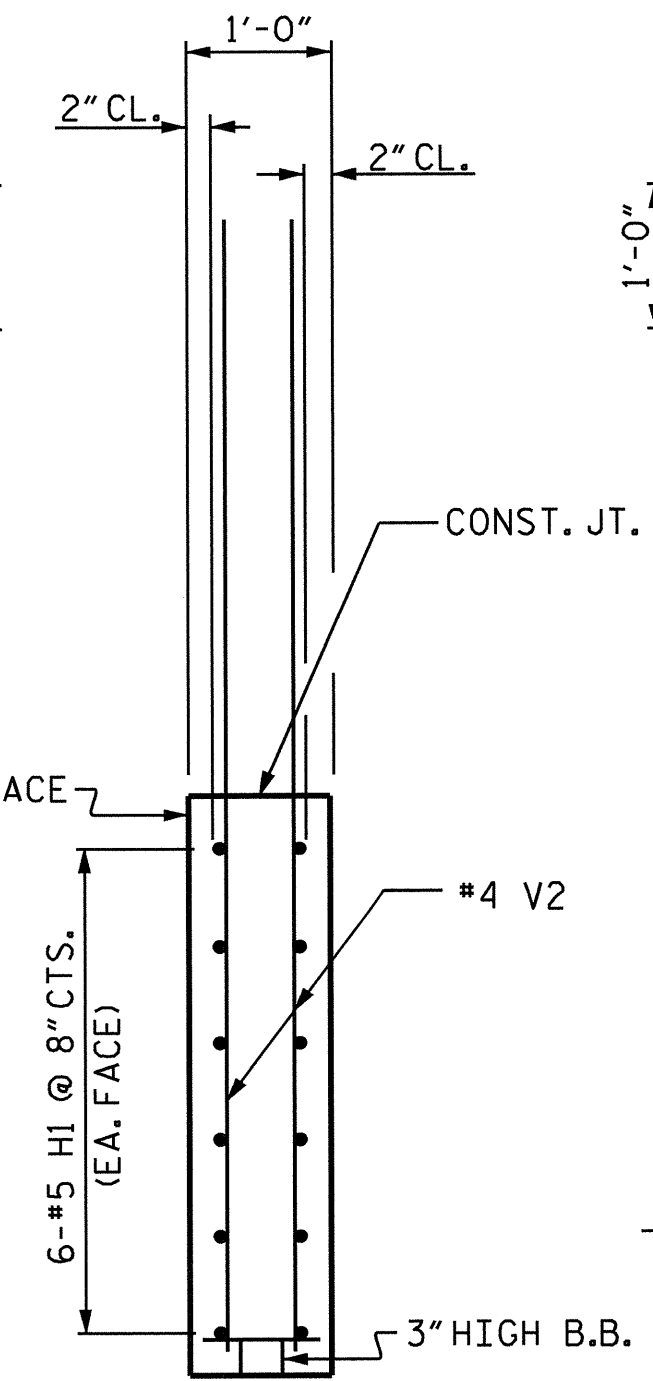


DRAWN BY: M.D.PISO DATE: 11-09-12  
 CHECKED BY: M.K.BEARD DATE: 12-11-12  
 DESIGN ENGINEER OF RECORD: O. PUIGCERVER DATE: 12-13-12

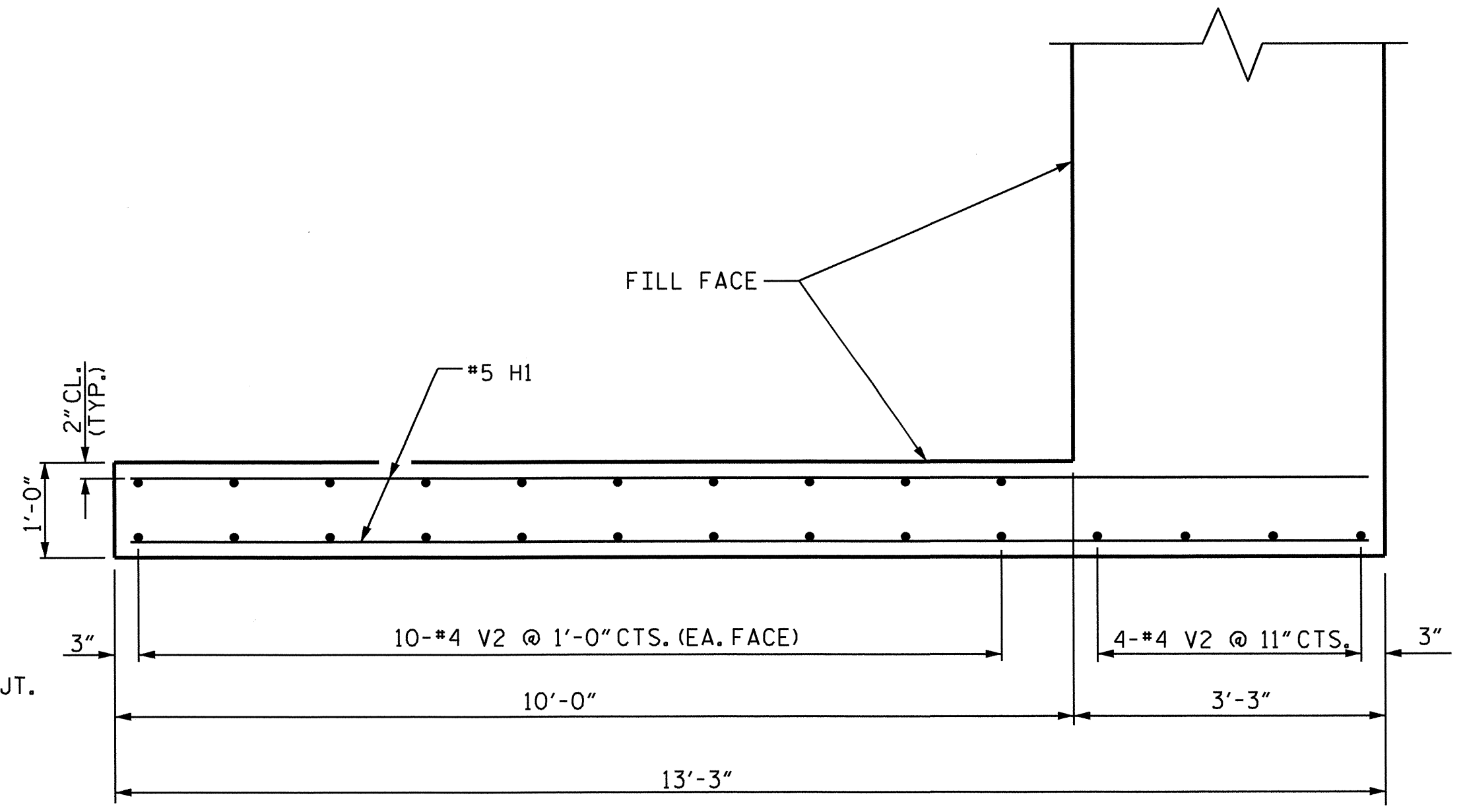
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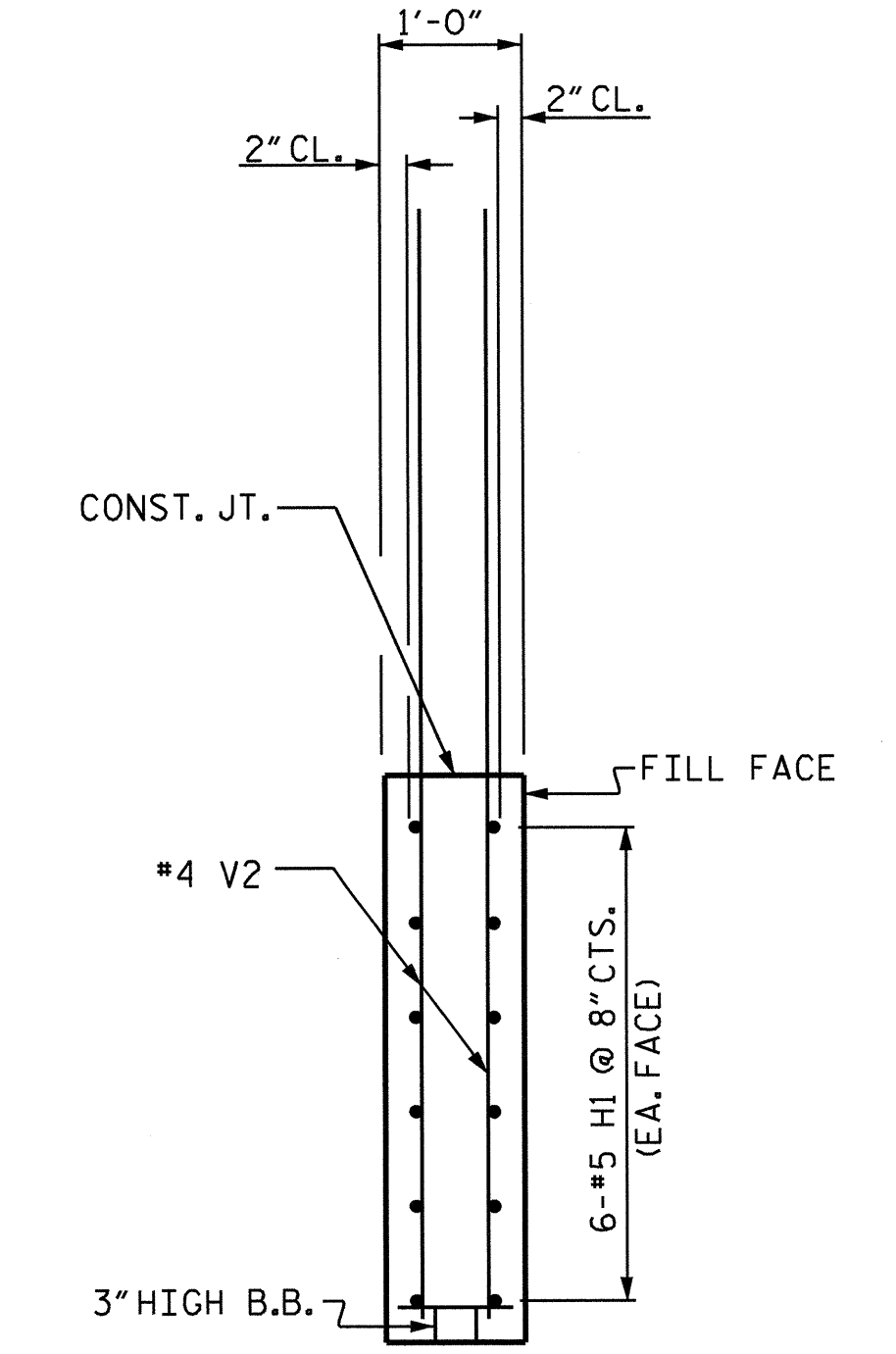
PLAN (W1)



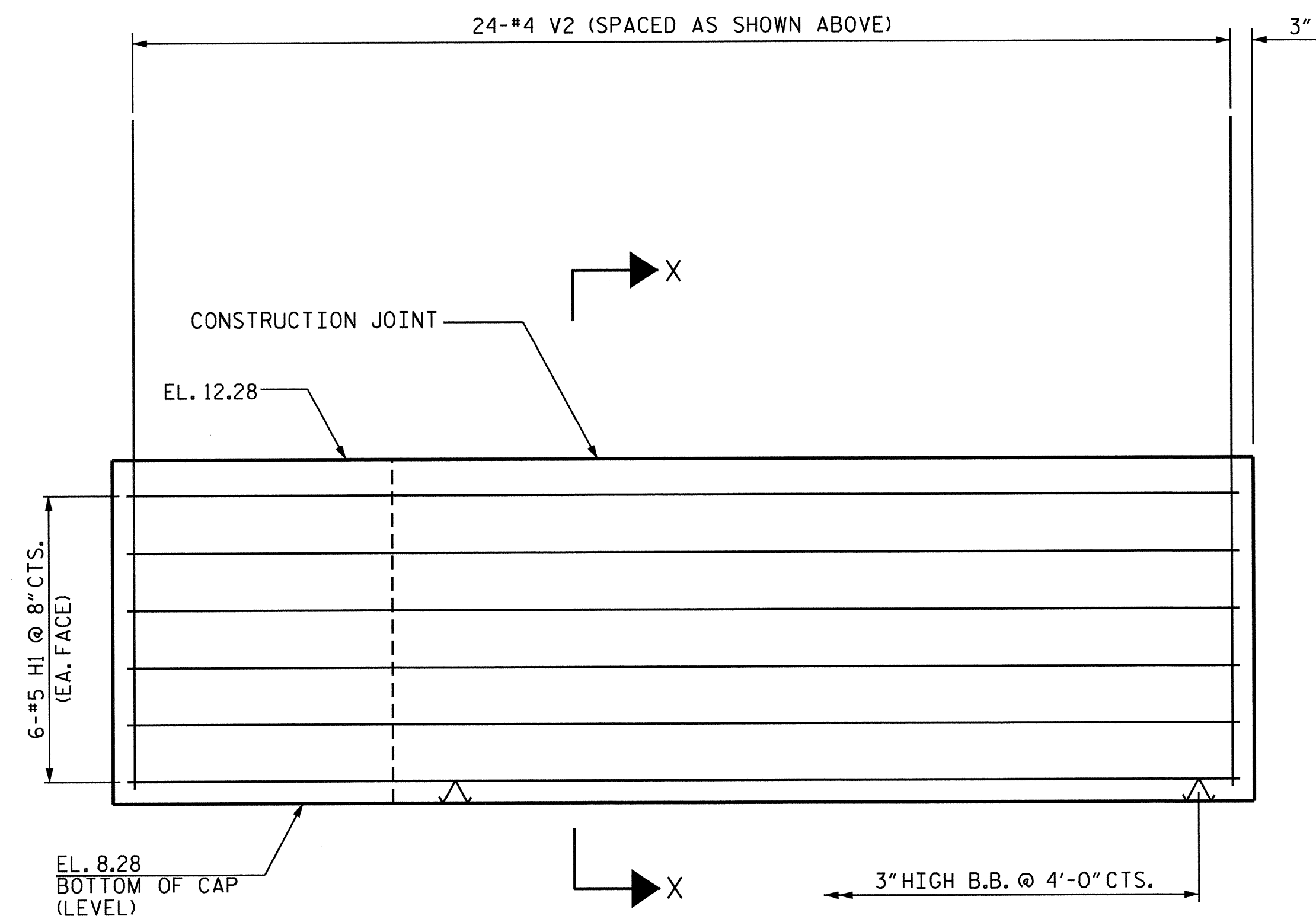
SECTION X-X



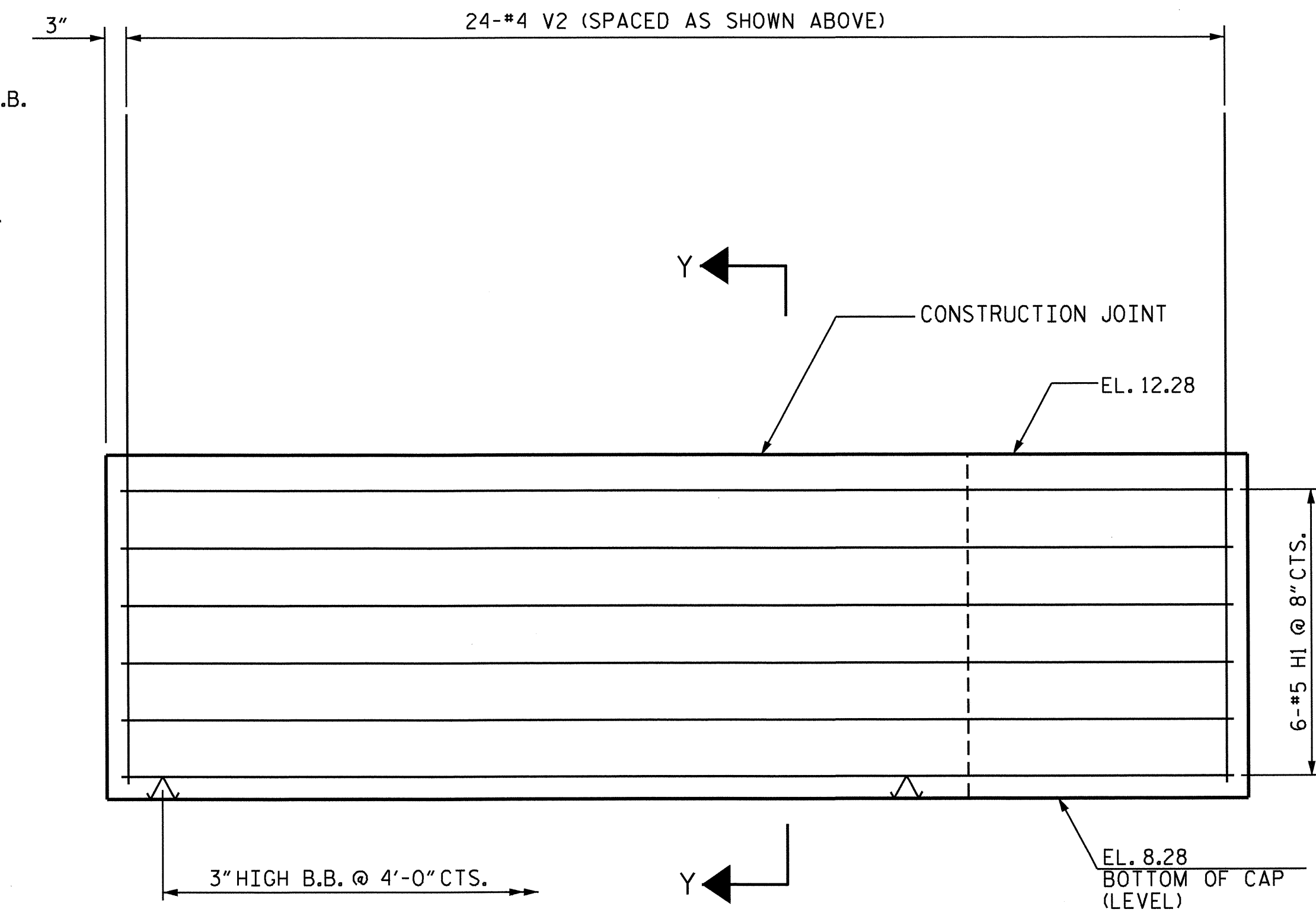
PLAN (W2)



SECTION Y-Y



ELEVATION (W1)



ELEVATION (W2)

PROJECT NO. B-5122  
BERTIE COUNTY  
 STATION: 16+05.00 -L-

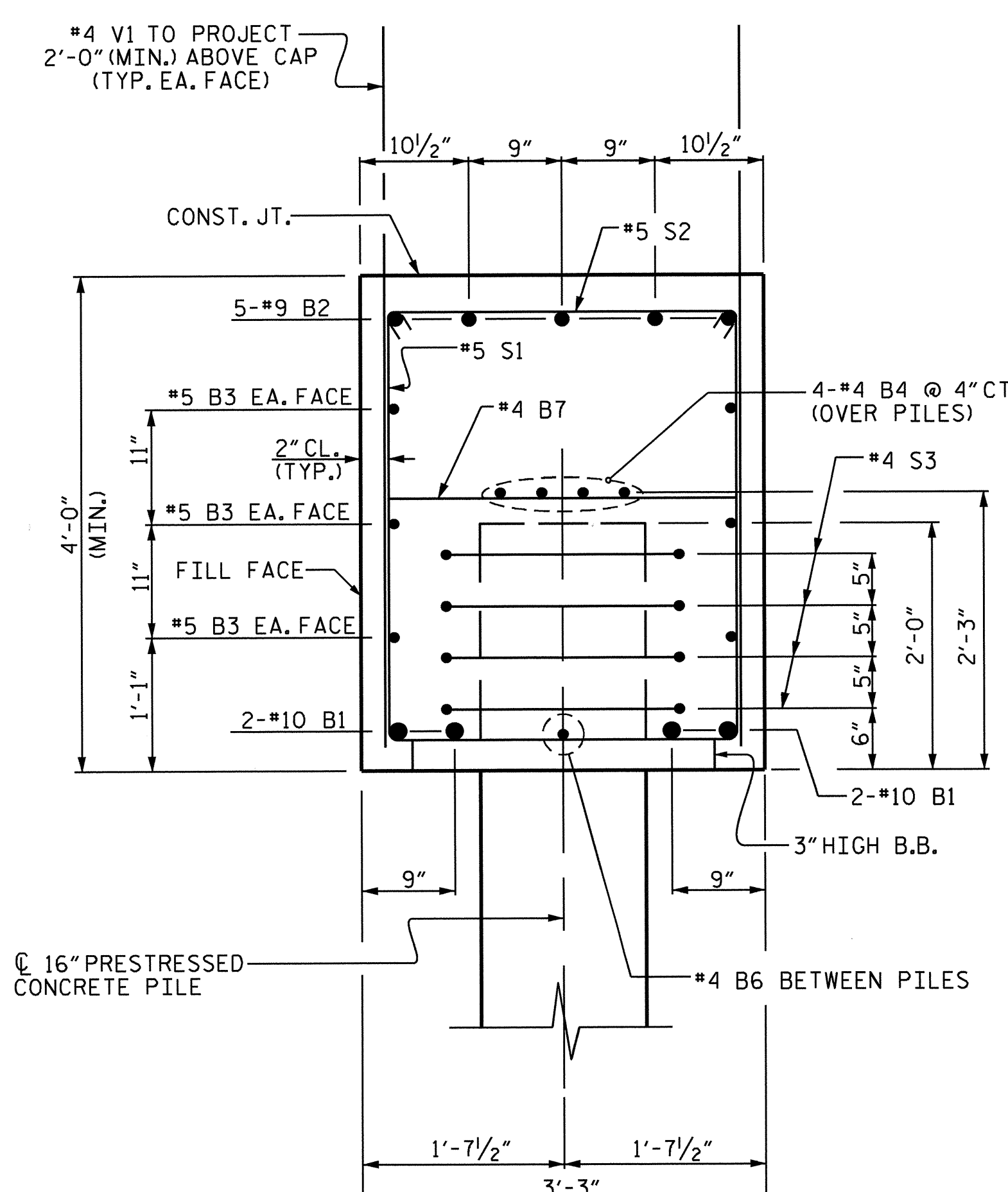
SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-21
SUBSTRUCTURE						TOTAL SHEETS 33
INTEGRAL END BENT 1						
REVISIONS						
NO.	BY	DATE	NO.	BY	DATE	
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2			4			

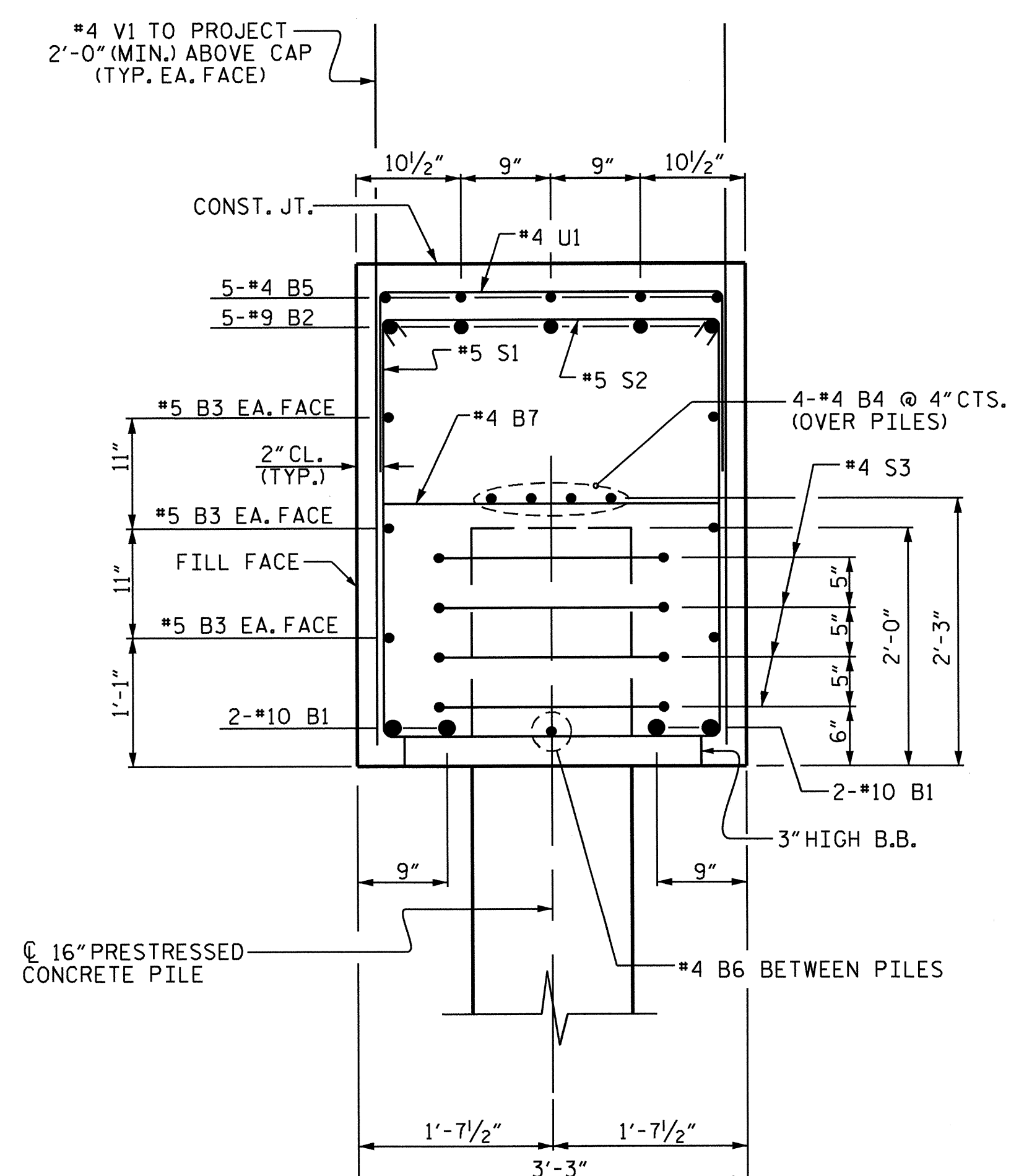


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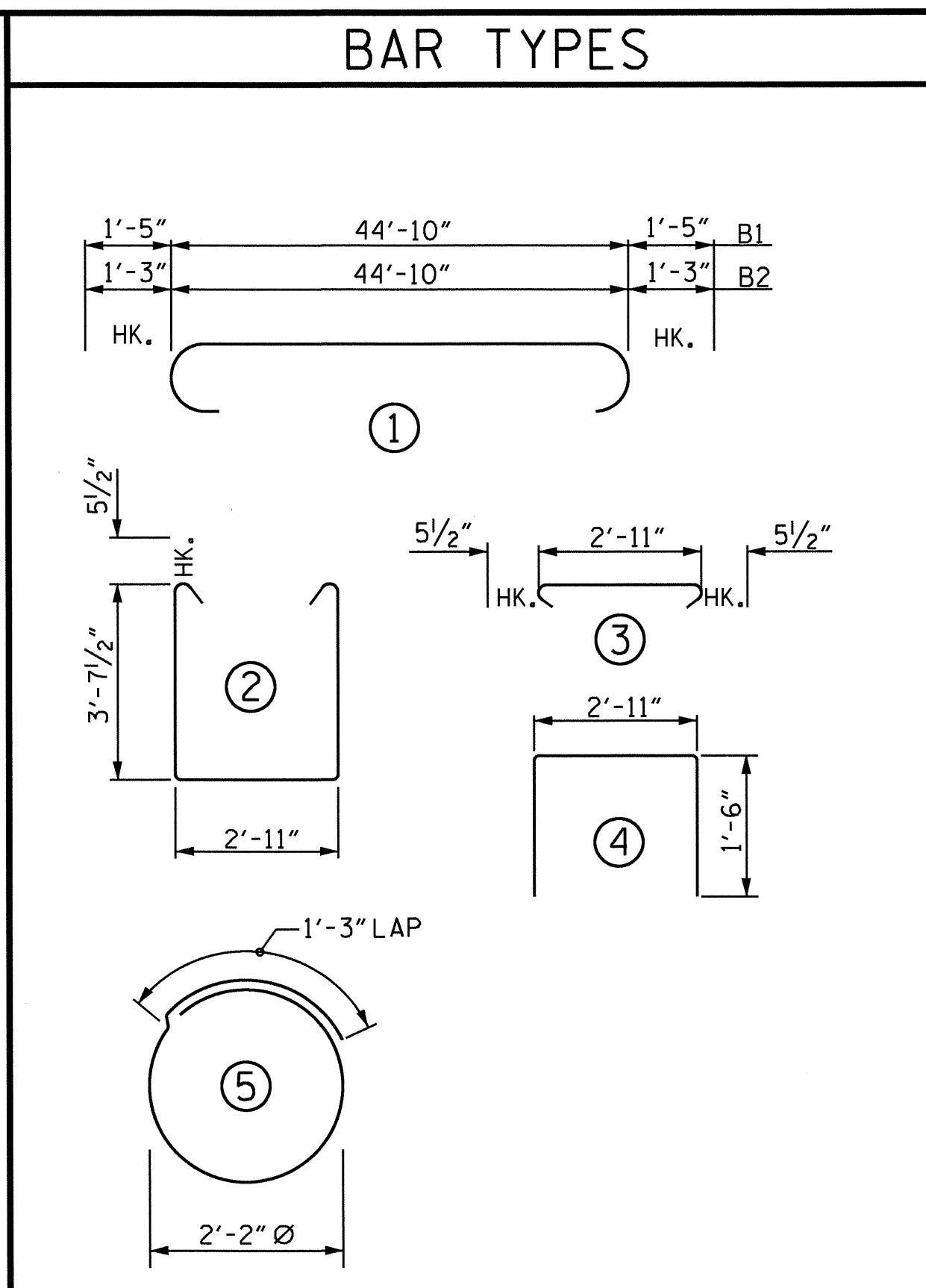
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 bbaro@dwg



SECTION A-A

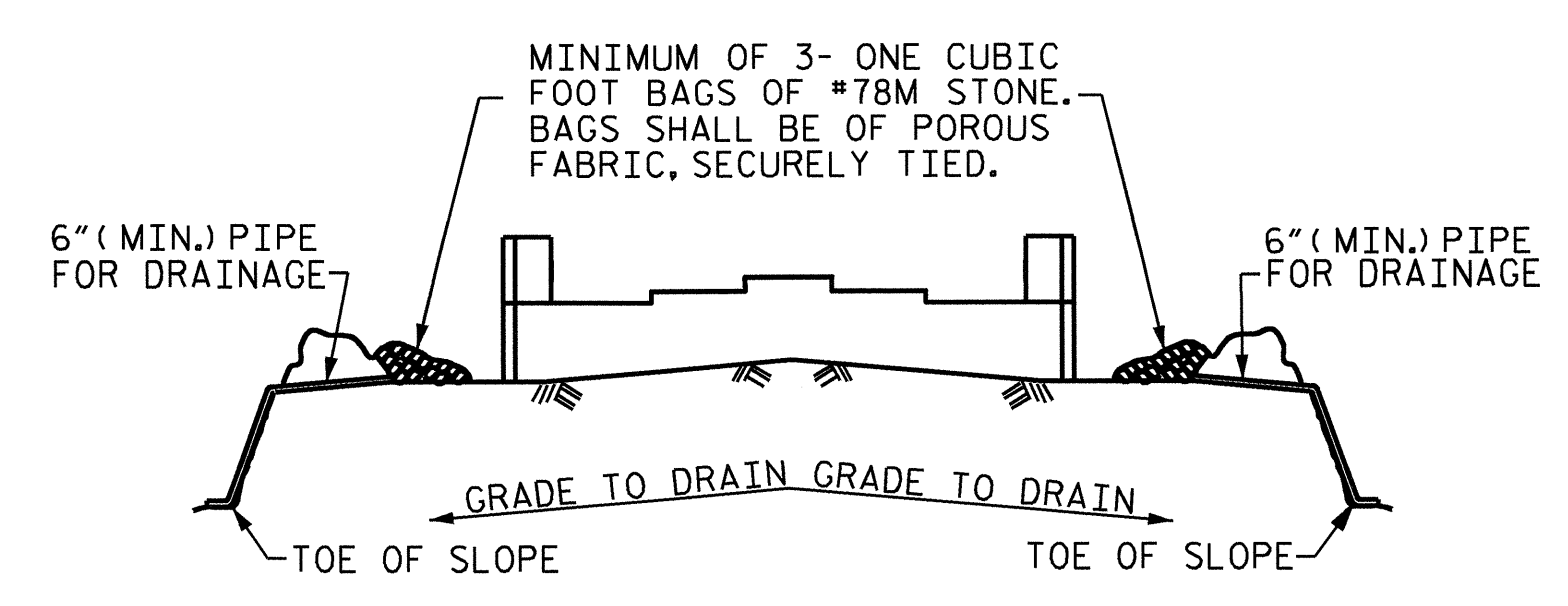


SECTION B-B



BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	47'-8"	820
B2	5	#9	1	47'-4"	805
B3	6	#5	STR.	44'-11"	281
B4	8	#4	STR.	23'-8"	126
B5	5	#4	STR.	18'-8"	62
B6	6	#4	STR.	5'-2"	21
B7	11	#4	STR.	2'-11"	21
H1	24	#5	STR.	12'-11"	323
S1	38	#5	2	11'-1"	439
S2	38	#5	3	3'-10"	152
S3	28	#4	5	8'-1"	151
U1	13	#4	4	5'-11"	51
V1	81	#4	STR.	5'-10"	316
V2	48	#4	STR.	7'-9"	248
REINFORCING STEEL					3,816 LBS.
CLASS A CONCRETE BREAKDOWN					
CAP & LOWER WINGS ▲ 24.4 CU. YDS.					
16" PRESTRESSED CONCRETE PILES					
NO. 7				525 LIN. FT.	
PILE REDRIVES				4 EACH	

▲ CONCRETE DISPLACED BY THE 16" PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.

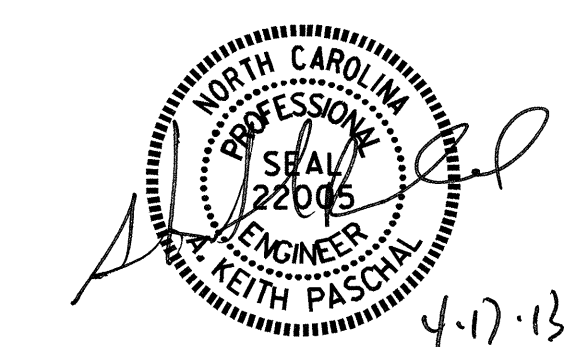


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

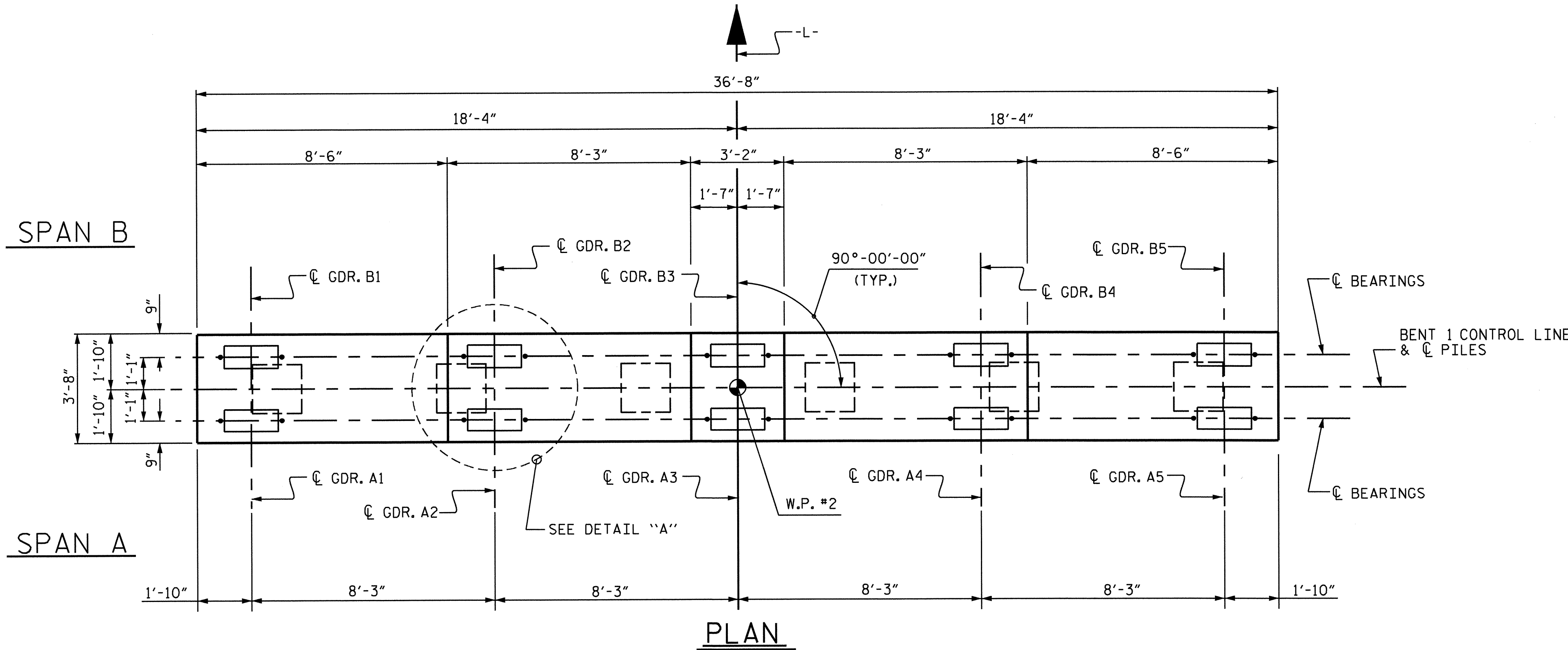


PROJECT NO. B-5122  
 BERTIE COUNTY  
 STATION: 16+05.00 -L-

SHEET 3 OF 3

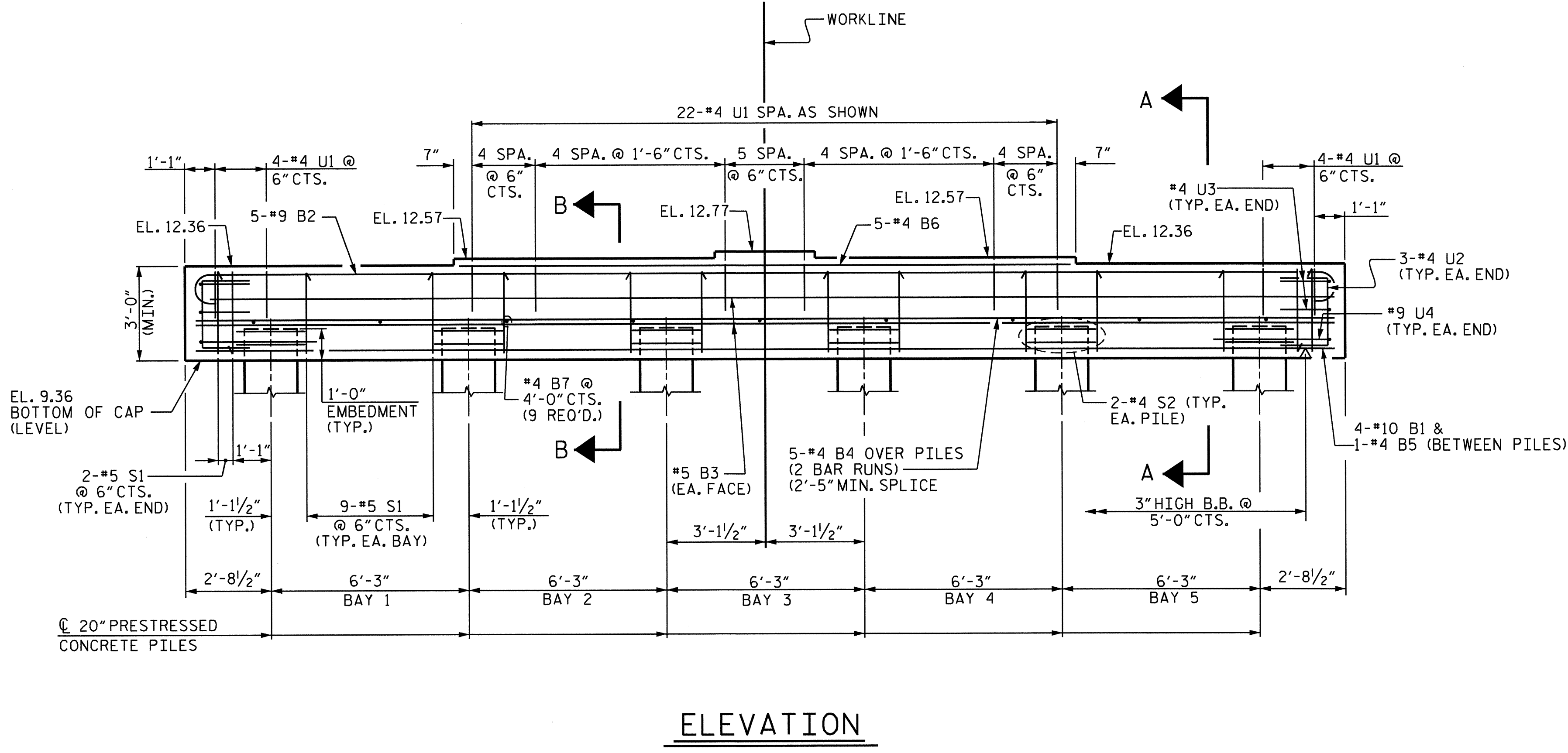
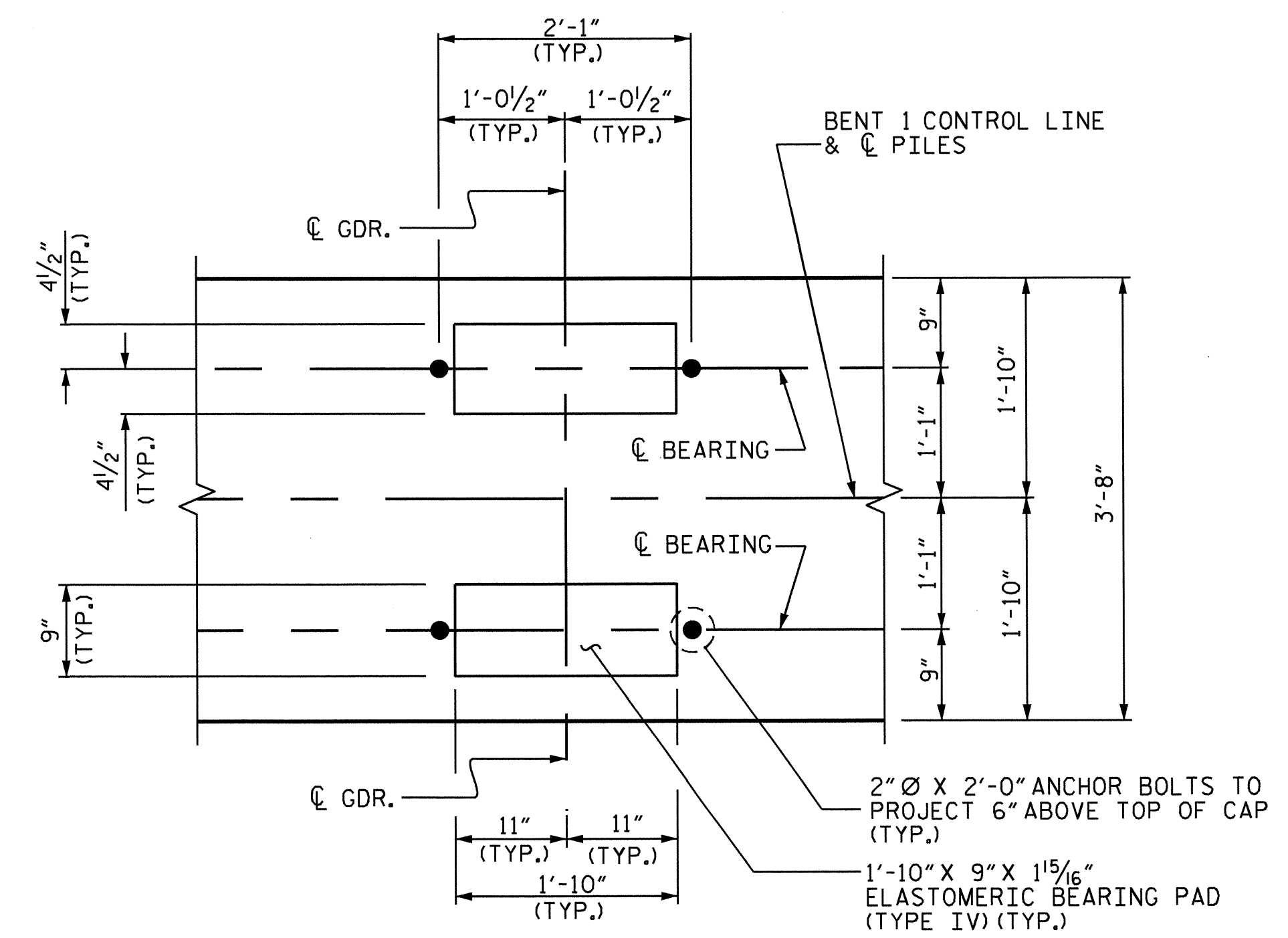
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			33

DRAWN BY: M.D.PISO DATE: 11-16-12  
 CHECKED BY: M.K.BEARD DATE: 12-11-12  
 DESIGN ENGINEER OF RECORD: O.PUIGCERVER DATE: 12-13-12

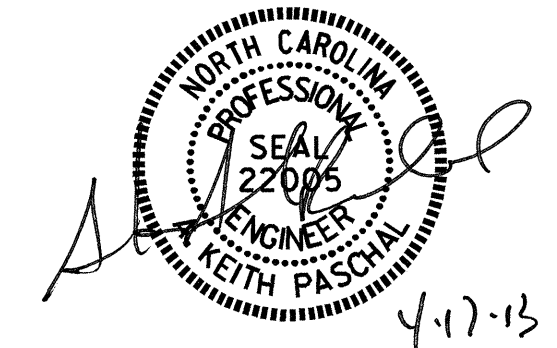


**NOTES:**

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.  
 INVERT ALTERNATE STIRRUPS.



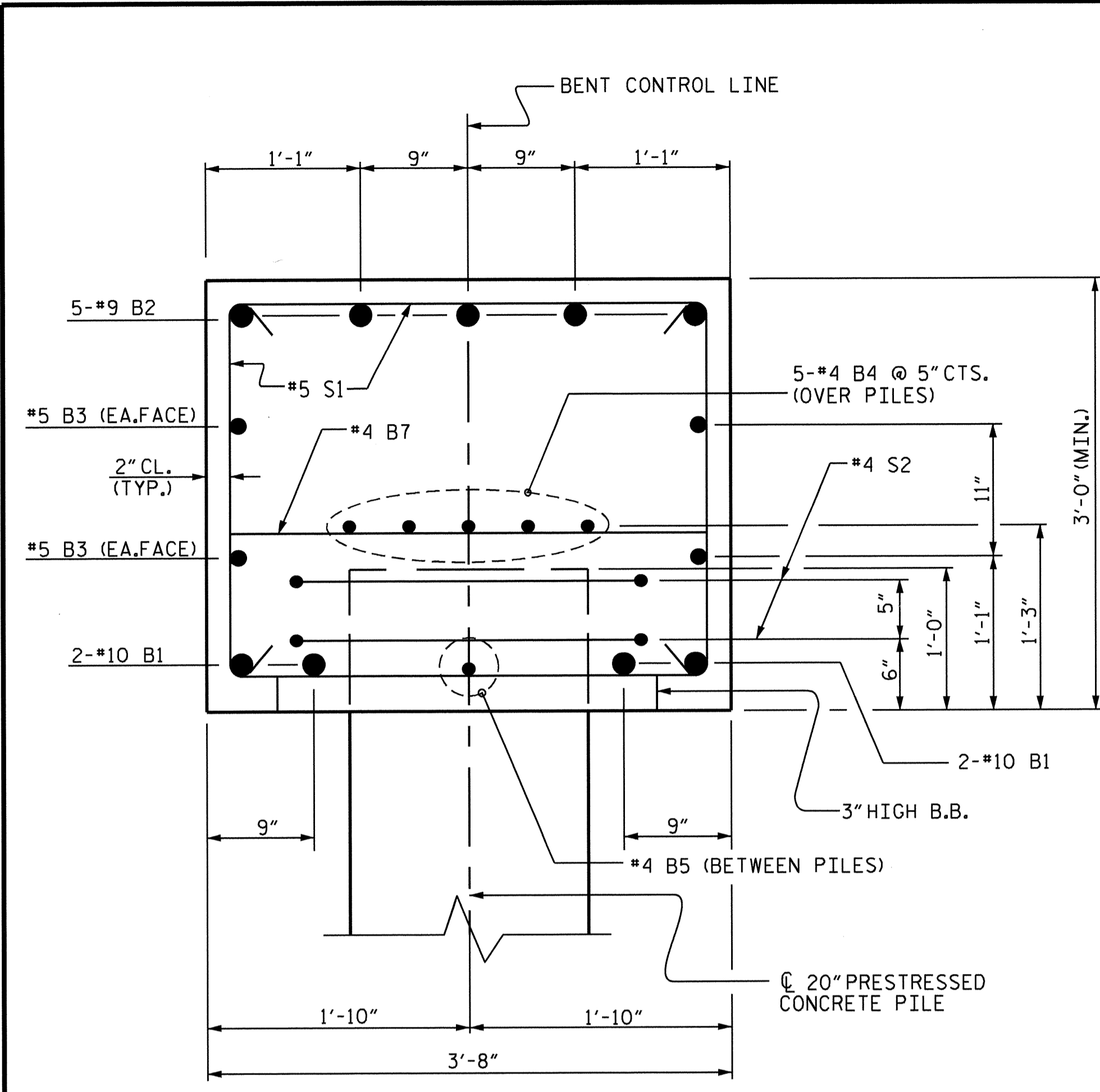
PROJECT NO. B-5122  
BERTIE COUNTY  
 STATION: 16+05.00 -L  
 SHEET 1 OF 2



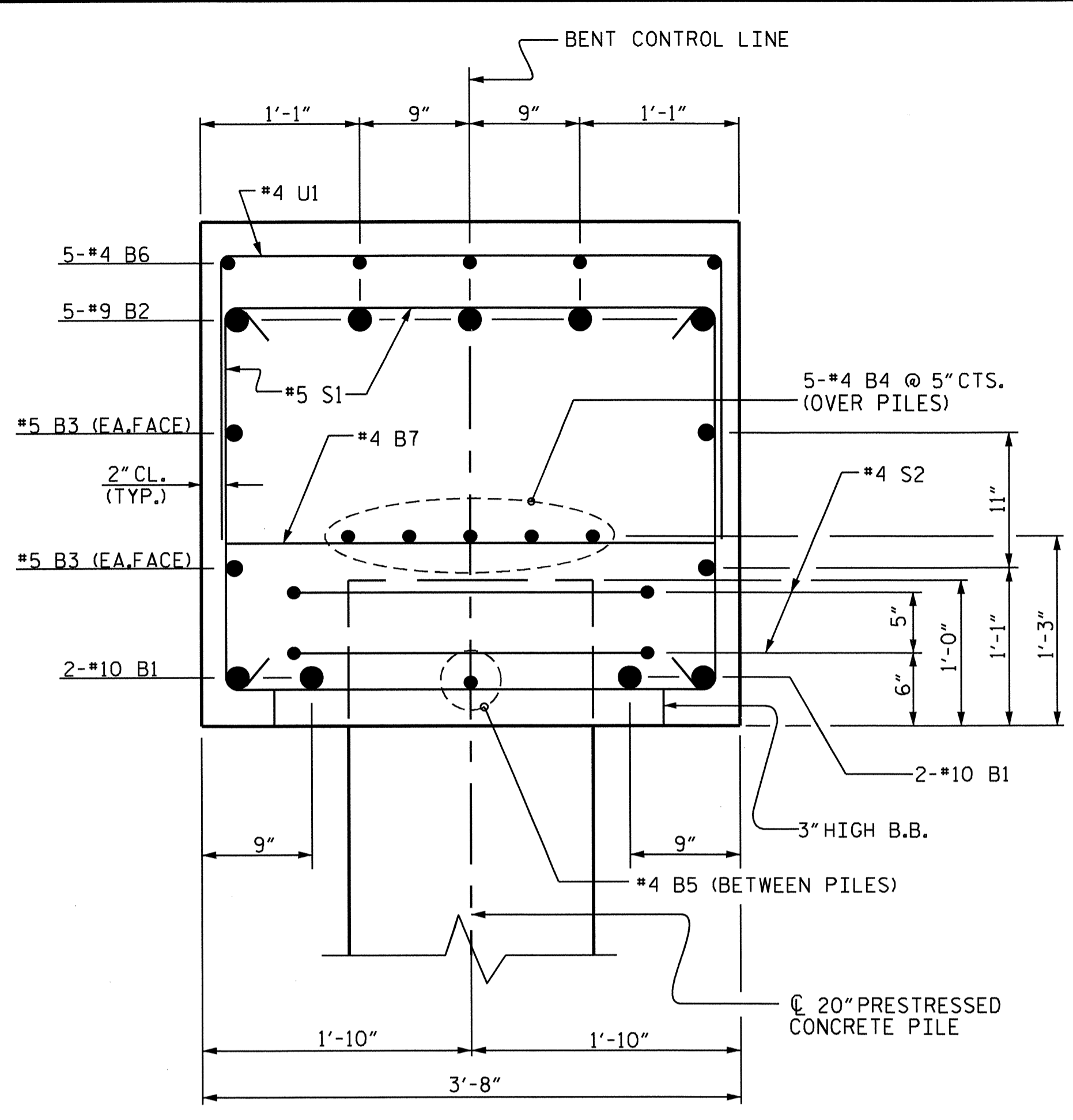
DRAWN BY : M.D.PISO DATE : 11-09-12  
 CHECKED BY : M.K.BEARD DATE : 12-11-12  
 DESIGN ENGINEER OF RECORD : O. PUIGSERVER DATE : 12-13-12

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-23	
SUBSTRUCTURE						TOTAL SHEETS 33	
BENT 1							
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23	
1			3			TOTAL SHEETS	
2			4			33	

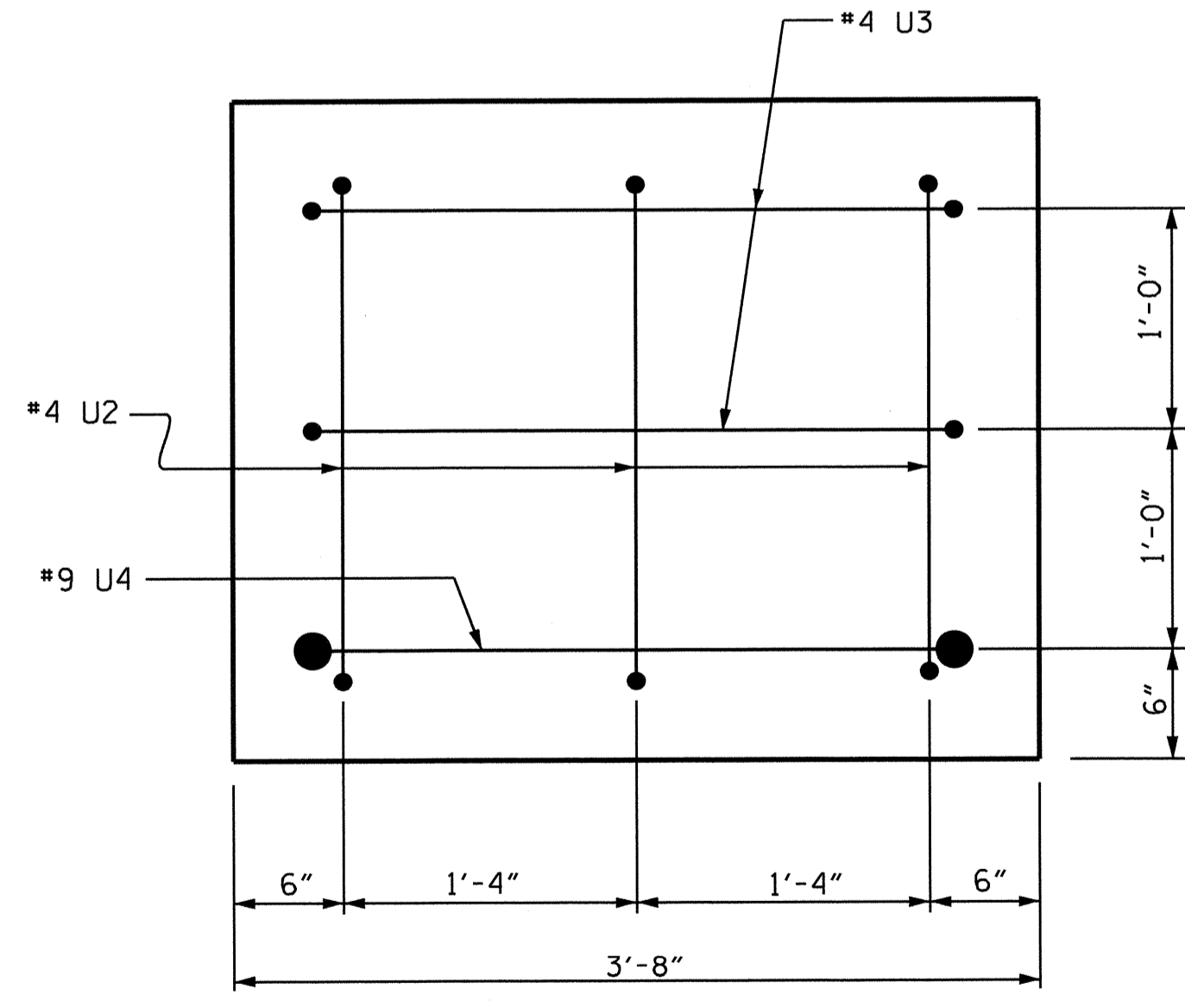




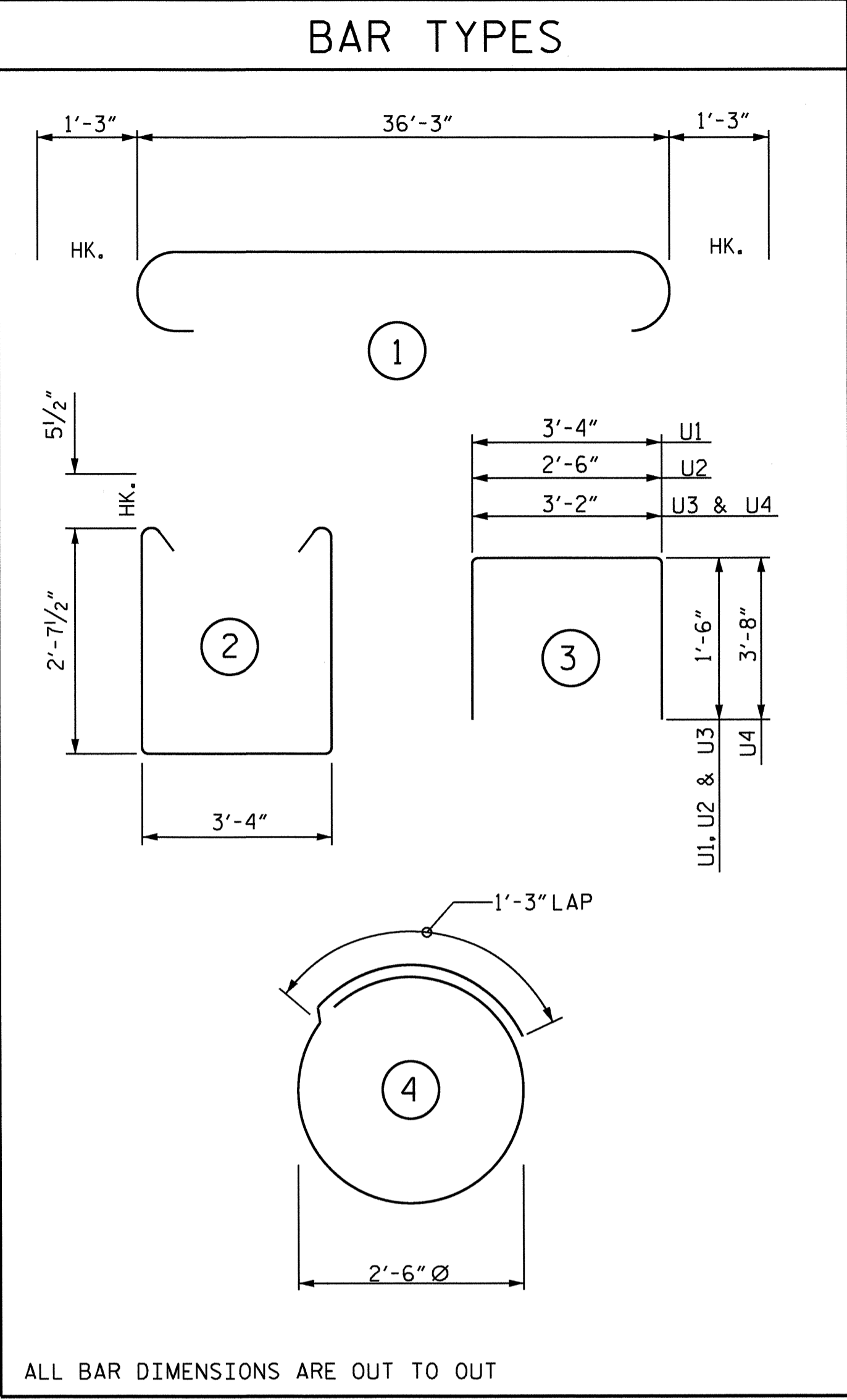
SECTION A-A



SECTION B-B



END VIEW  
(TYP. EA. END)



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL					
BENT 1					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	STR.	36'-4"	625
B2	5	#9	1	38'-9"	659
B3	4	#5	STR.	36'-4"	152
B4	10	#4	STR.	19'-5"	130
B5	5	#4	STR.	4'-3"	14
B6	5	#4	STR.	19'-4"	65
B7	9	#4	STR.	3'-4"	20
S1	49	#5	2	9'-6"	486
S2	12	#4	4	9'-2"	73
U1	30	#4	3	6'-4"	127
U2	6	#4	3	5'-6"	22
U3	4	#4	3	6'-2"	16
U4	2	#9	3	10'-6"	71
REINFORCING STEEL					2,460 LBS.
CLASS A CONCRETE					▲ 15.0 CU. YDS.
20" PRESTRESSED CONC. PILES					
NO. 6					420 LIN. FT.
PILE REDRIVES					3 EA.

▲ CONCRETE DISPLACED BY THE 20" PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.

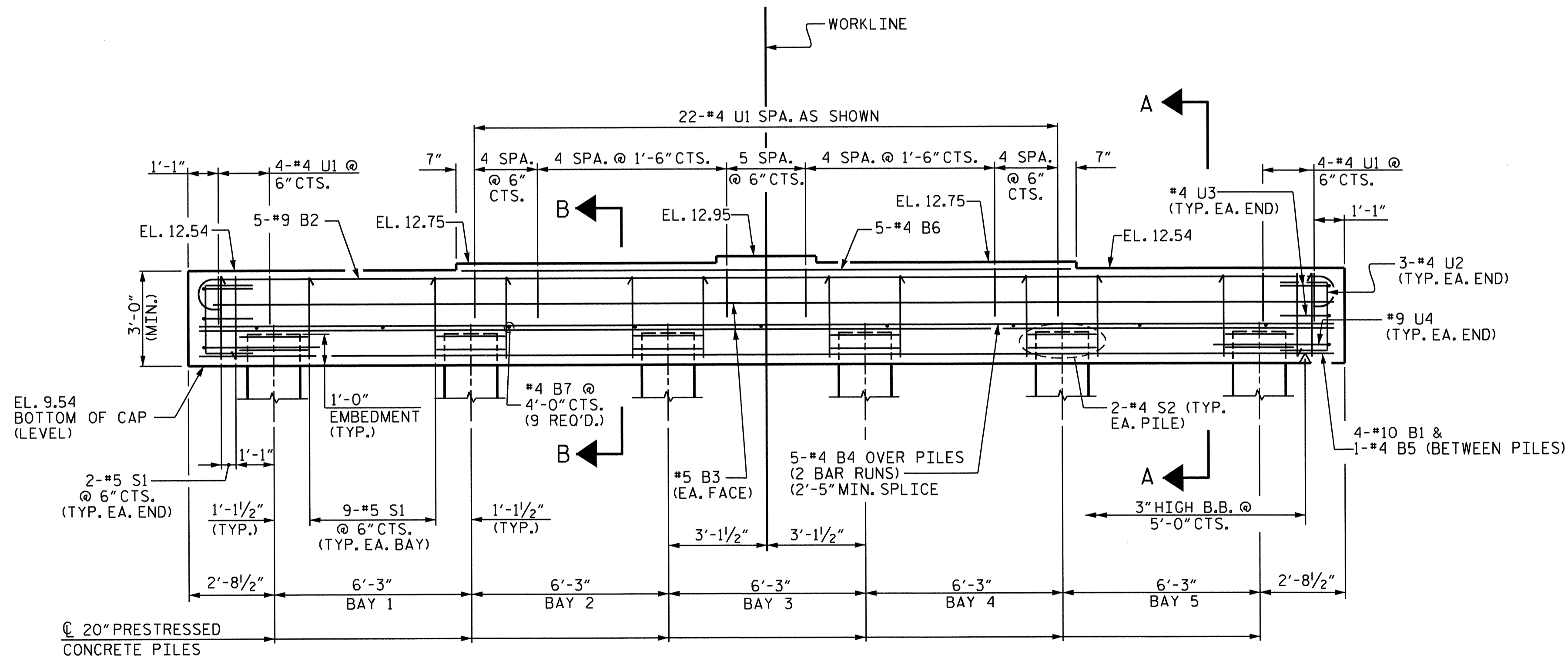
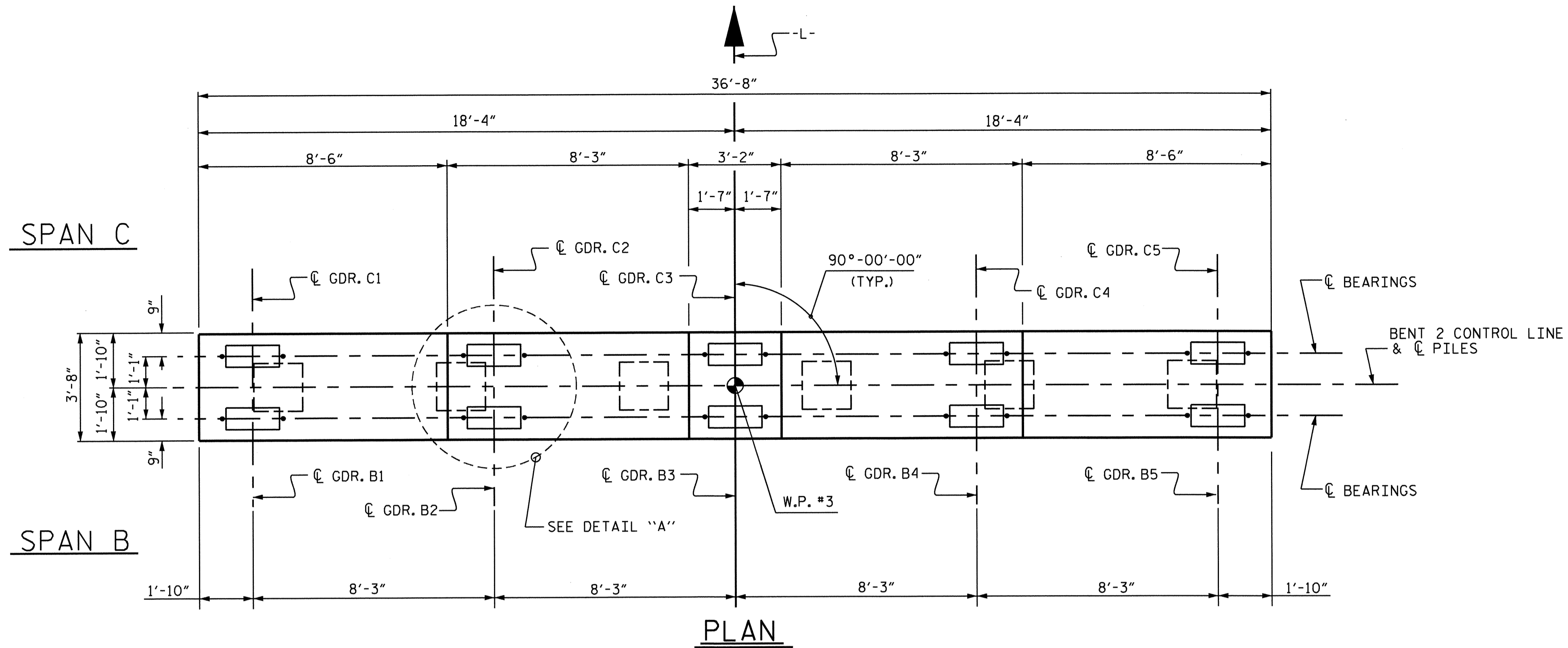
PROJECT NO. B-5122  
BERTIE COUNTY  
 STATION: 16+05.00 -L-  
 SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 BENT 1



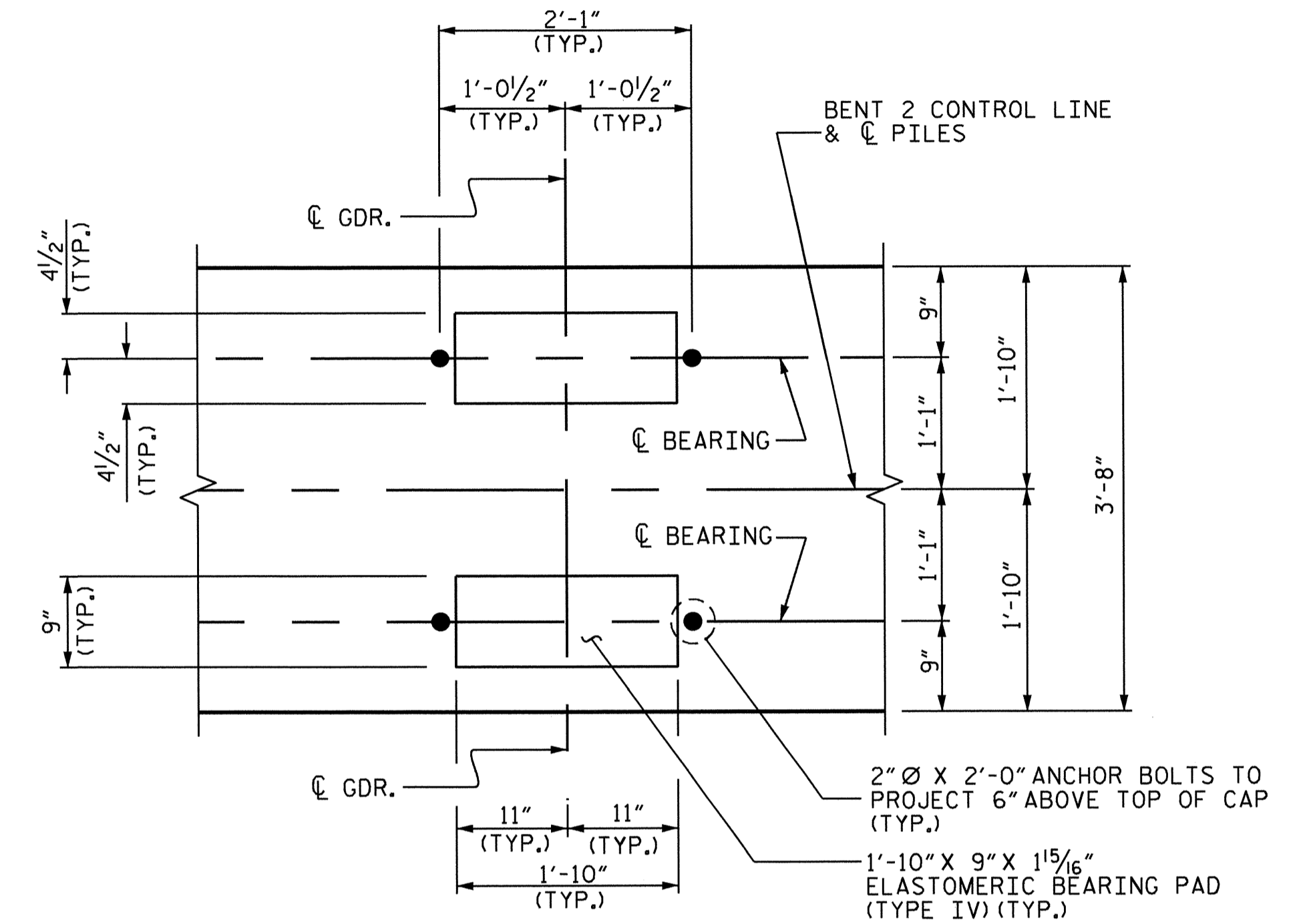
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 CHECKED BY : M.K.BEARD DATE : 12-11-12  
 DESIGN ENGINEER OF RECORD: O.PUIGCERVER DATE : 12-13-12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			33



**NOTES:**

STIRRUPS AND U1 BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.  
 INVERT ALTERNATE STIRRUPS.



PROJECT NO. B-5122  
BERTIE COUNTY  
 STATION: 16+05.00 -L

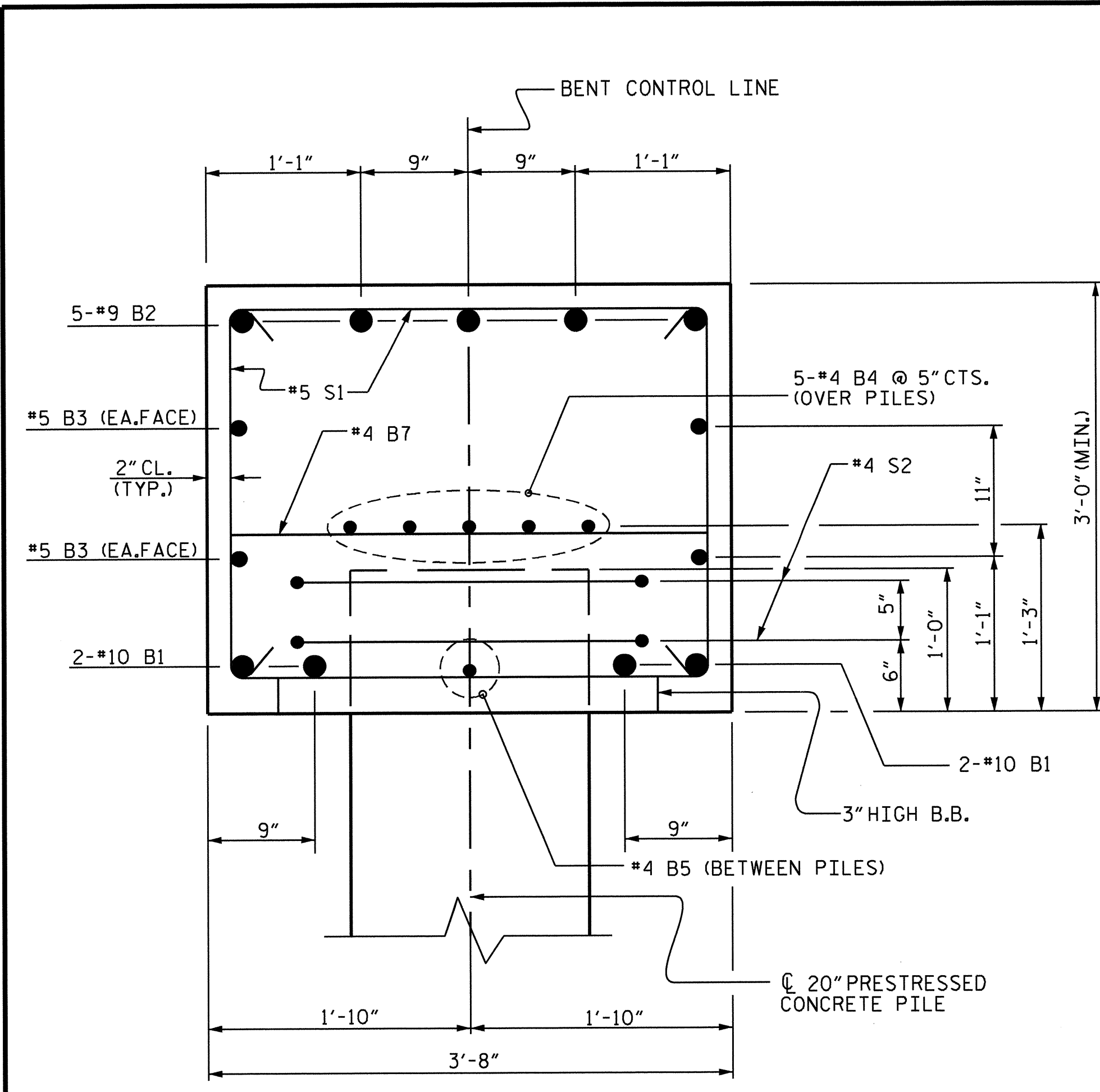
SHEET 1 OF 2

STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
SUBSTRUCTURE					
BENT 2					
REVISIONS					
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2			4		
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TOTAL SHEETS					33

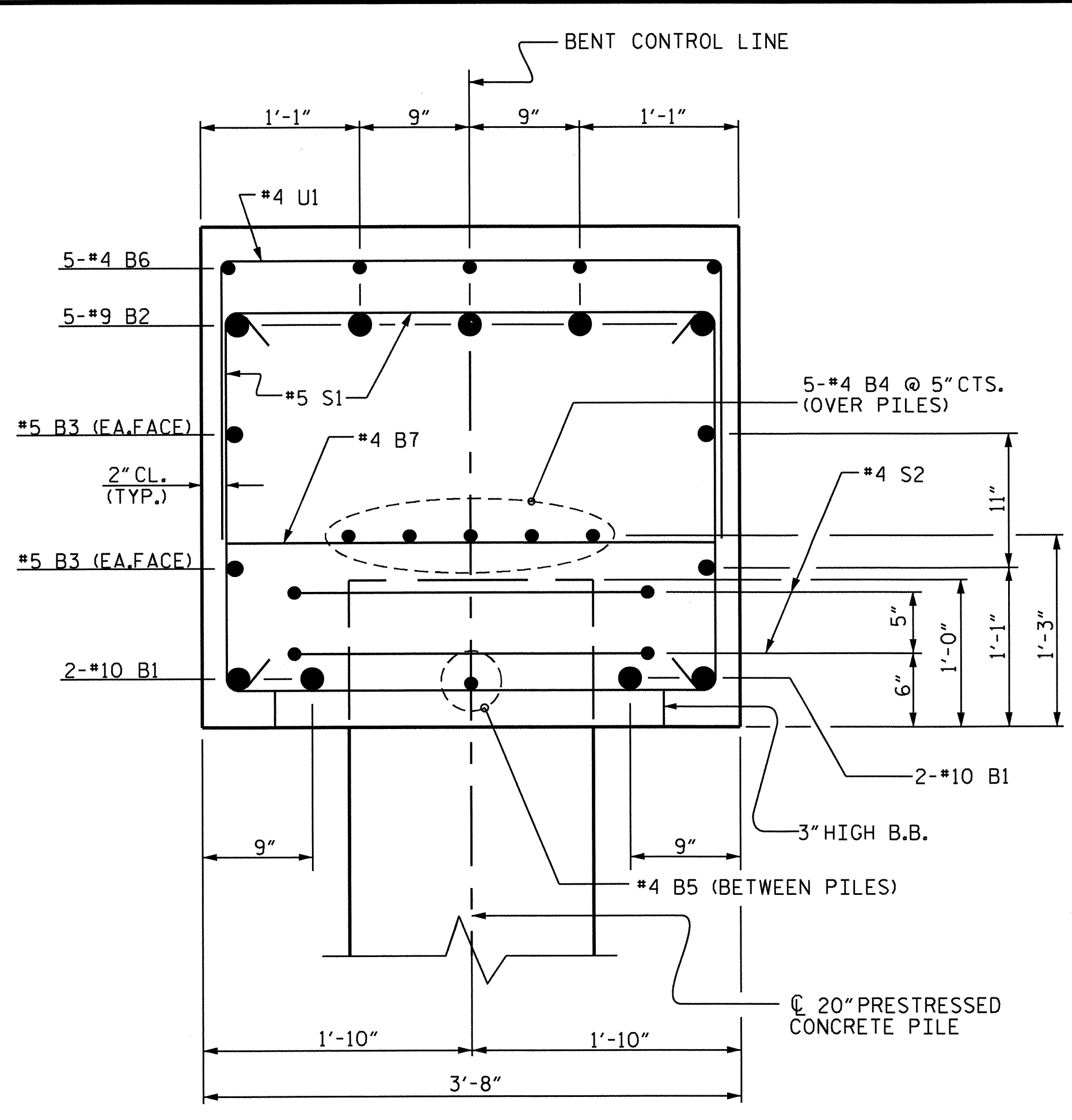
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 CHECKED BY : M.K.BEARD DATE : 12-11-12  
 DESIGN ENGINEER OF RECORD: O.PUIGSERVER DATE : 12-13-12

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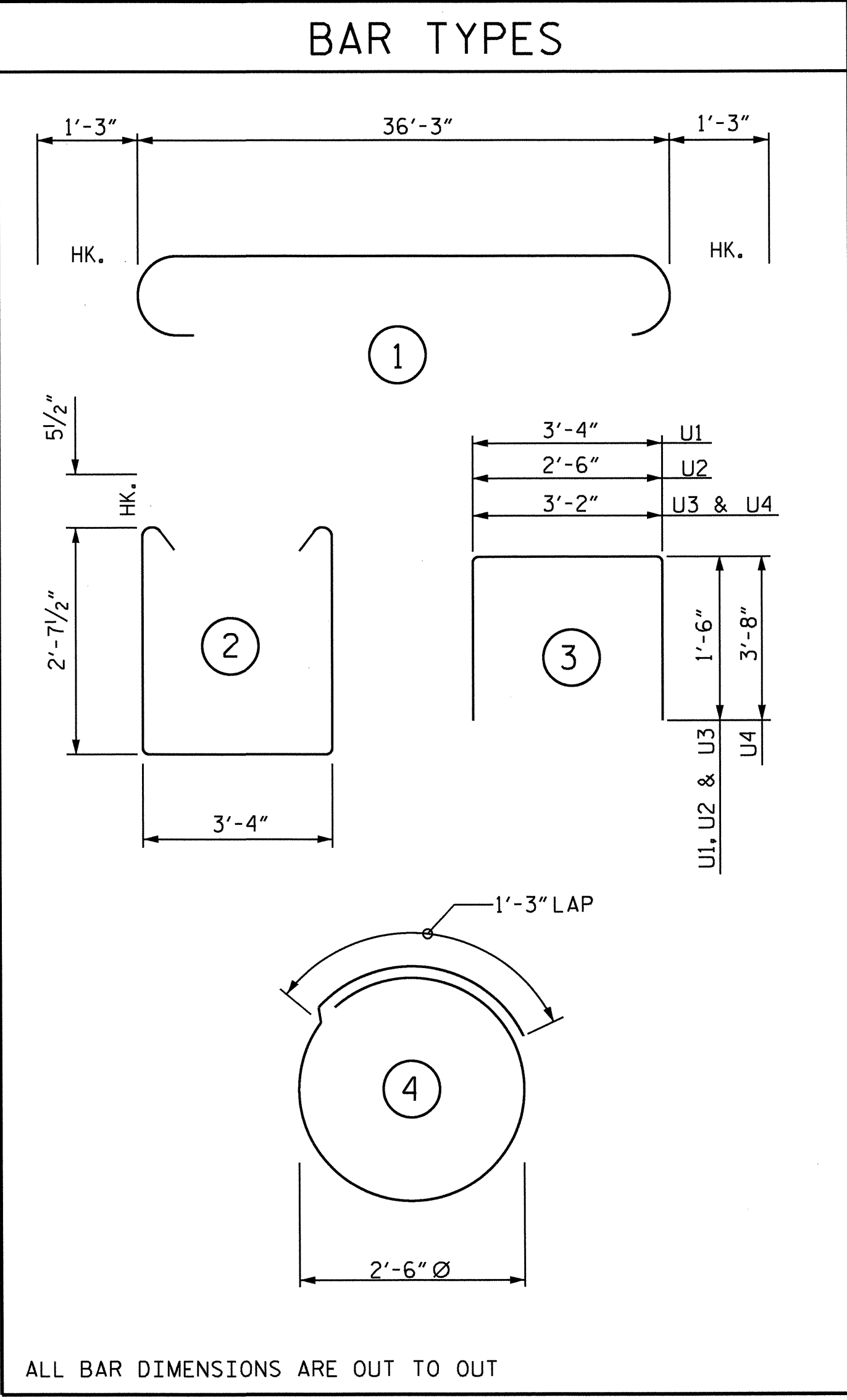




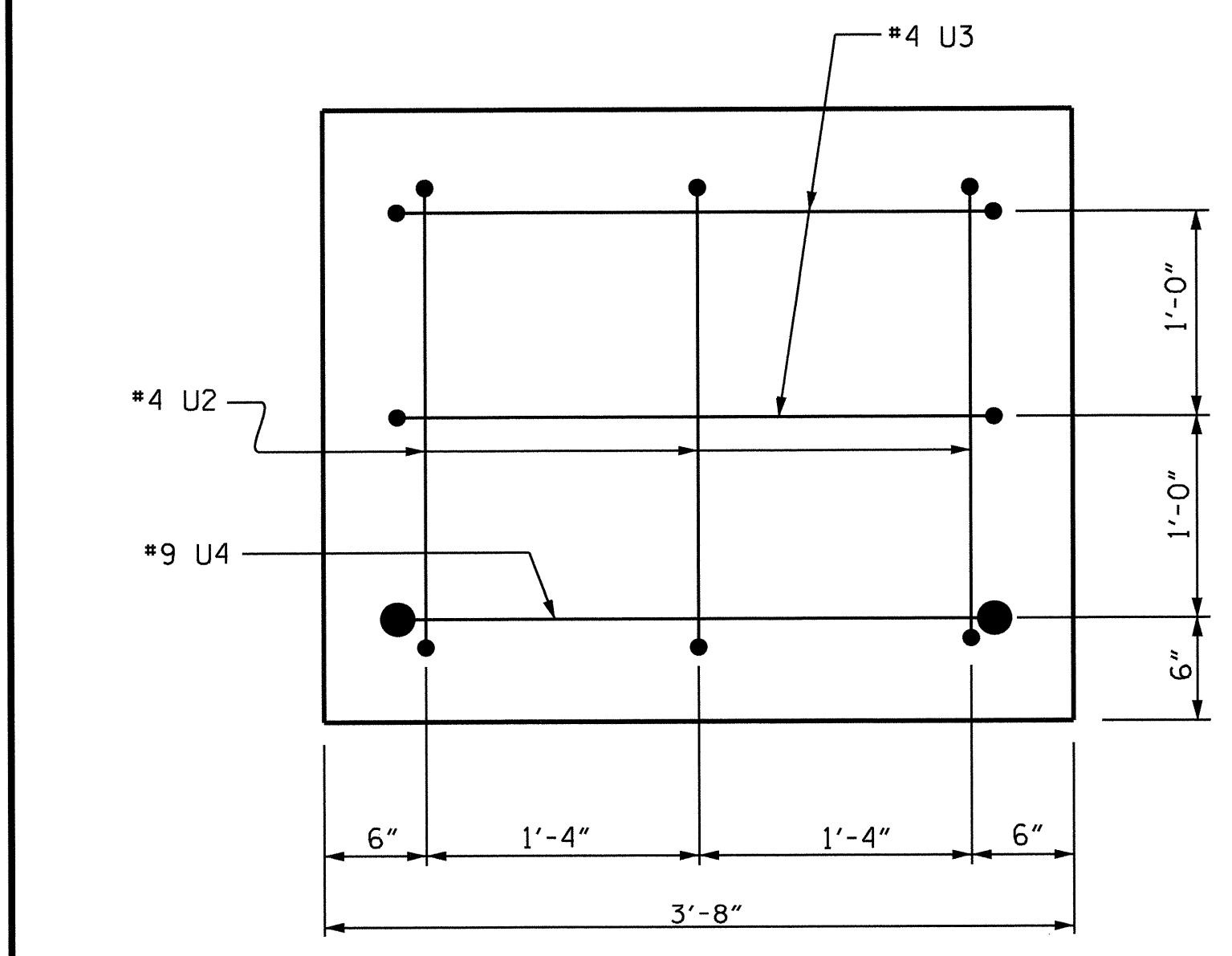
SECTION A-A



SECTION B-B



ALL BAR DIMENSIONS ARE OUT TO OUT



END VIEW  
(TYP. EA. END)

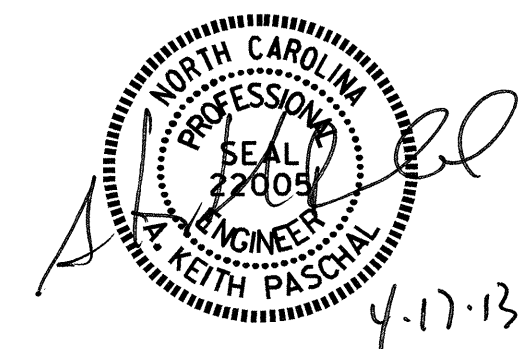
BILL OF MATERIAL					
BENT 2					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	STR.	36'-4"	625
B2	5	#9	1	38'-9"	659
B3	4	#5	STR.	36'-4"	152
B4	10	#4	STR.	19'-5"	130
B5	5	#4	STR.	4'-3"	14
B6	5	#4	STR.	19'-4"	65
B7	9	#4	STR.	3'-4"	20
S1	49	#5	2	9'-6"	486
S2	12	#4	4	9'-2"	73
U1	30	#4	3	6'-4"	127
U2	6	#4	3	5'-6"	22
U3	4	#4	3	6'-2"	16
U4	2	#9	3	10'-6"	71
REINFORCING STEEL					2,460 LBS.
CLASS A CONCRETE					▲ 15.0 CU. YDS.
20" PRESTRESSED CONC. PILES NO. 6					420 LIN. FT.
PILE REDRIVES					3 EA.

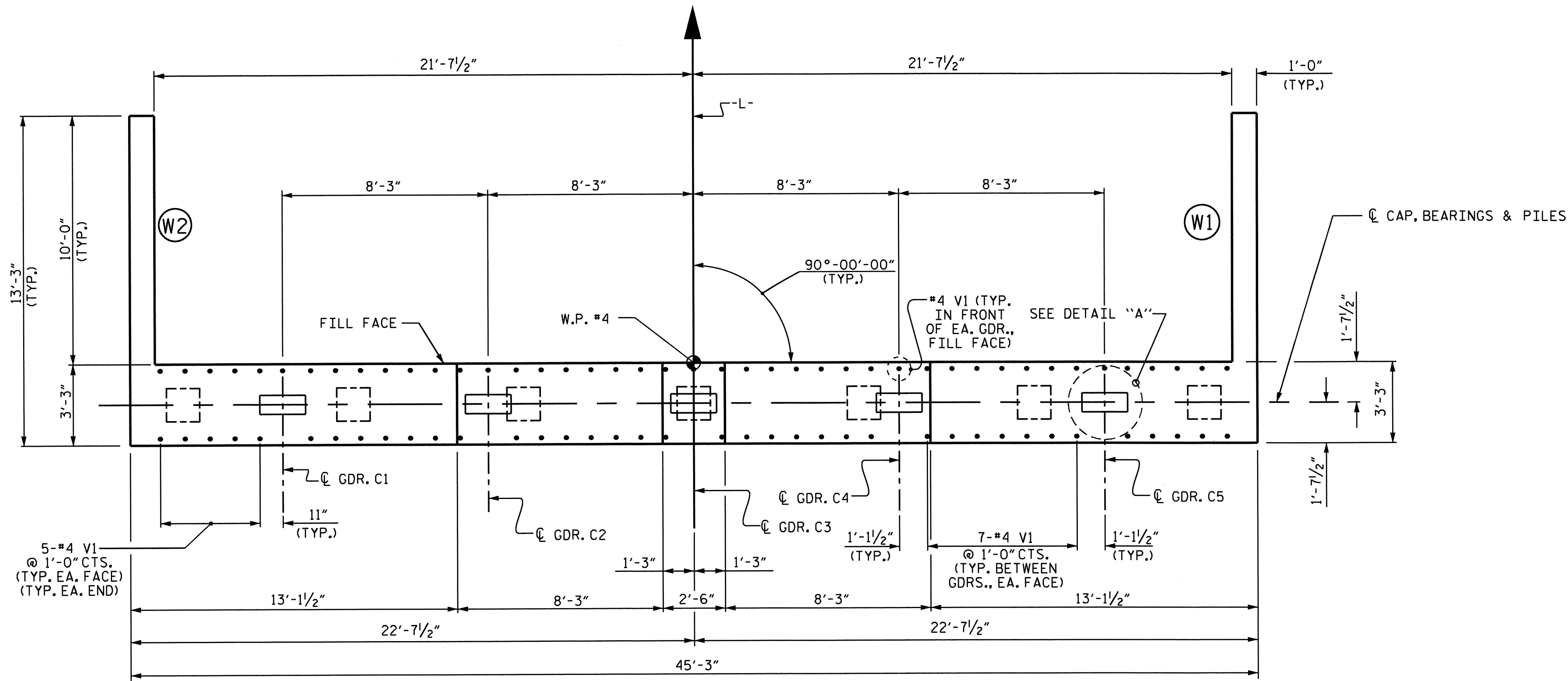
▲ CONCRETE DISPLACED BY THE 20" PRESTRESSED CONCRETE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.

PROJECT NO. B-5122  
BERTIE COUNTY  
 STATION: 16+05.00 -L-  
 SHEET 2 OF 2

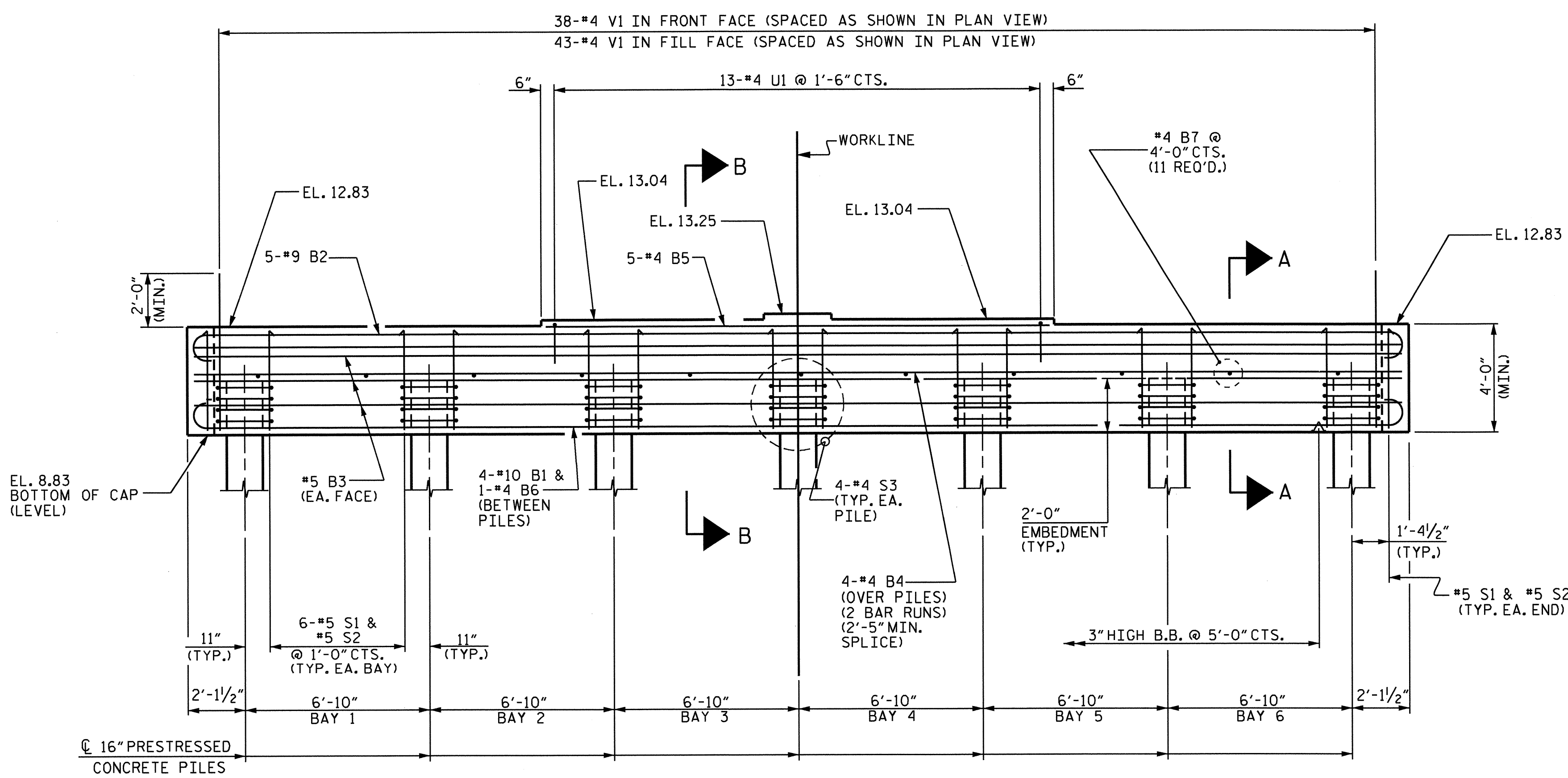
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
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DRAWN BY : M.D.PISO DATE : 11-19-12  
 CHECKED BY : M.K.BEARD DATE : 12-11-12  
 DESIGN ENGINEER OF RECORD: O. PUIGSERVER DATE : 12-13-12





PLAN



ELEVATION

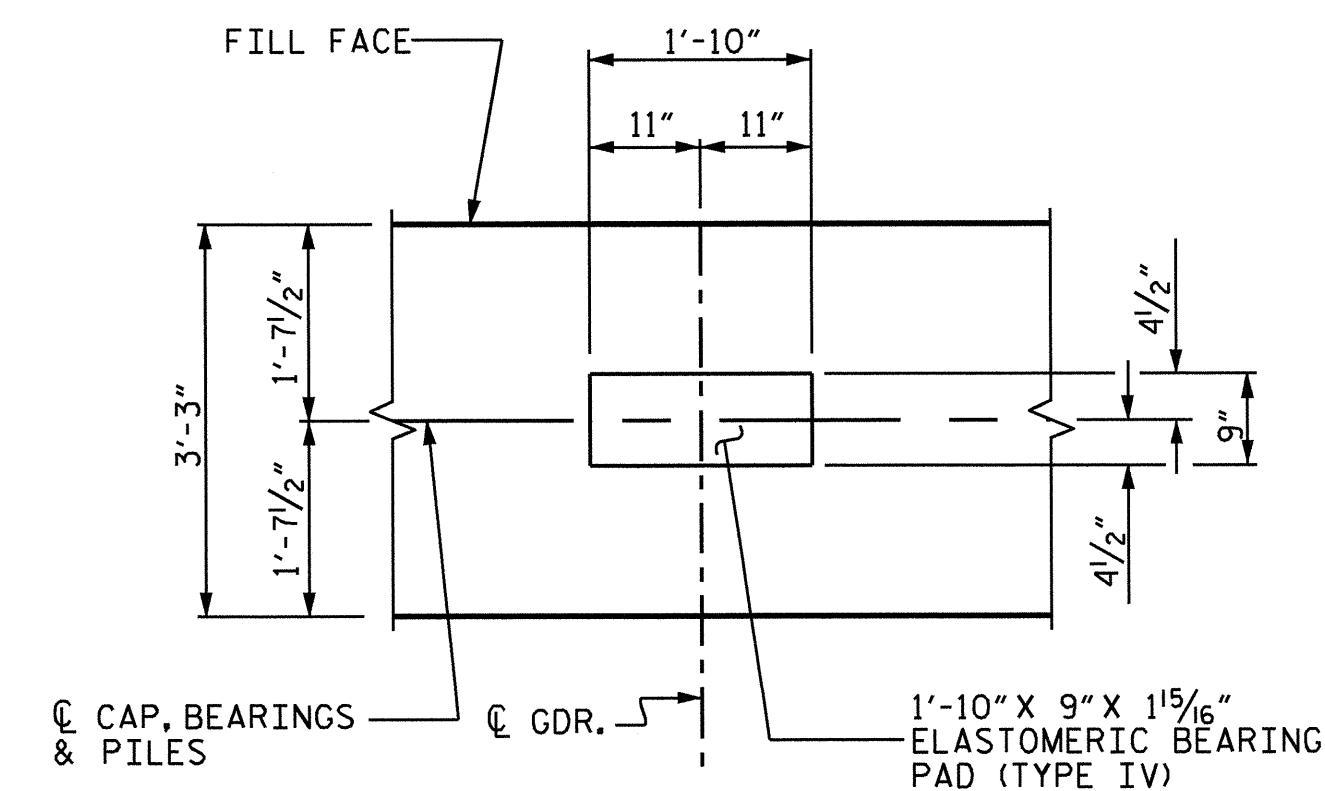
NOTES:

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

INSTALL THE 4" DIA. 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 TOP SURFACE OF THE END BENT CAP AND WINGS, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

THE UPPER PORTION OF THE INTEGRAL END BENT CAP AND THE UPPER PORTION OF THE WINGS SHALL BE POURED WITH THE SUPERSTRUCTURE. SEE SUPERSTRUCTURE PLANS.



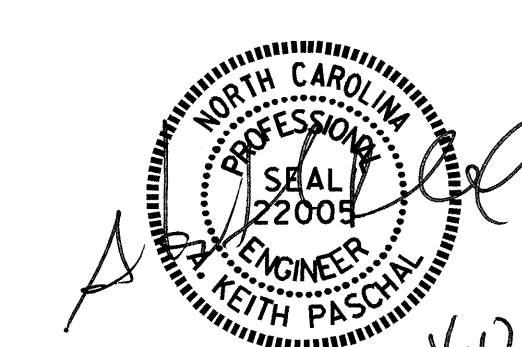
DETAIL "A"

(DETAILS AND DIMENSIONS ARE TYPICAL FOR EACH BEARING)

PROJECT NO. B-5122  
 BERTIE COUNTY  
 STATION: 16+05.00 -L-

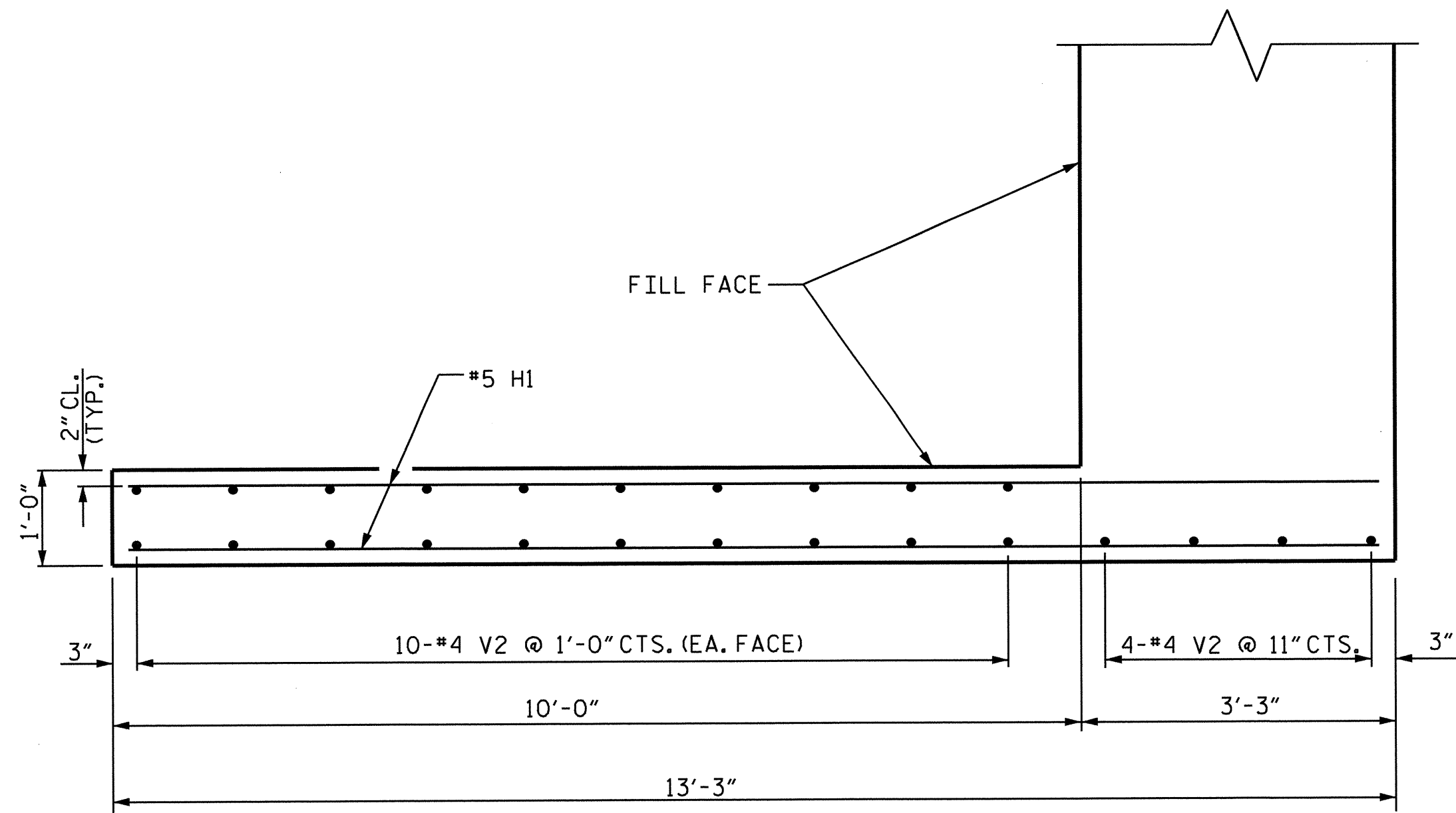
SHEET 1 OF 3

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

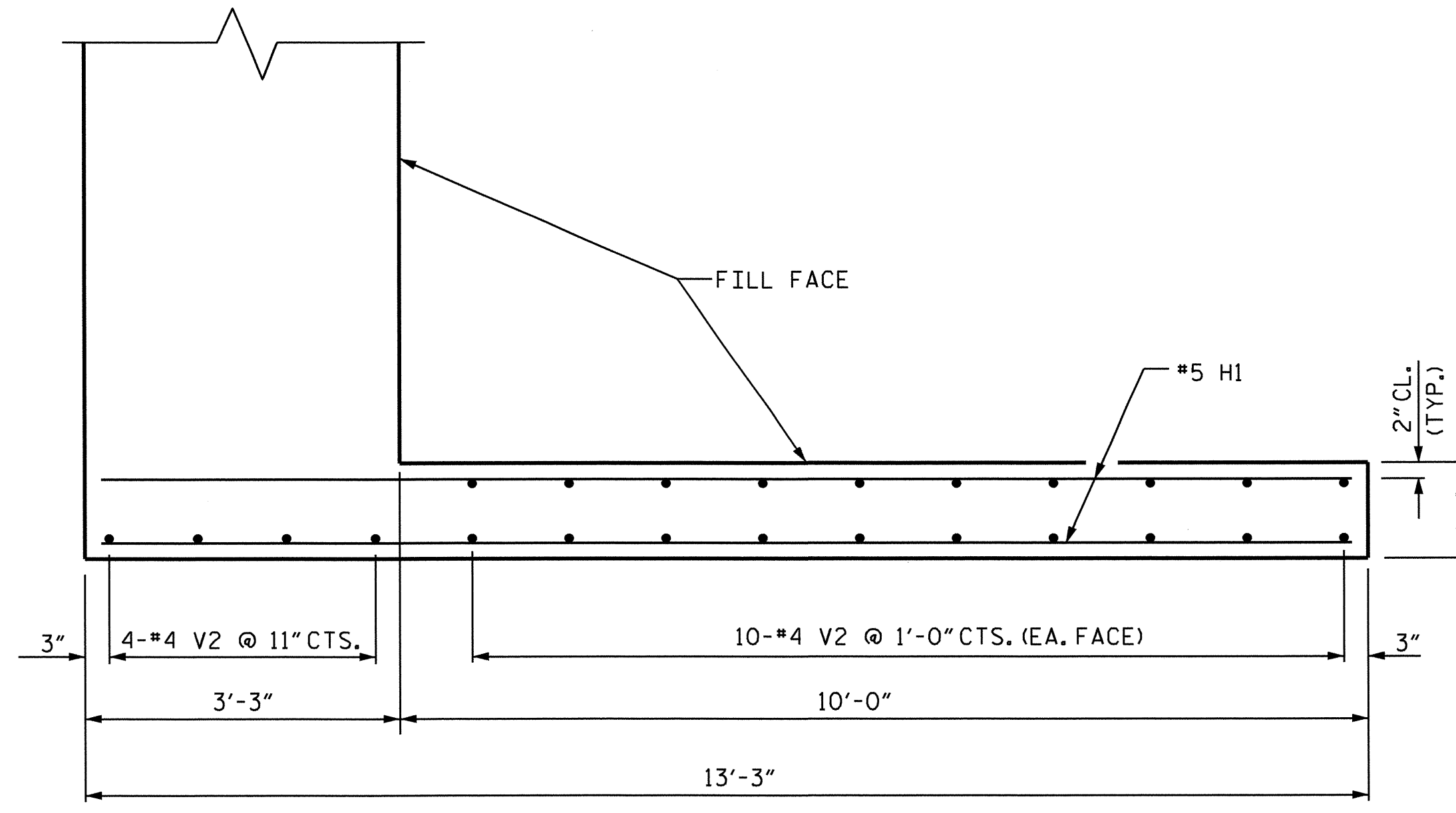


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 CHECKED BY: M.K.BEARD DATE: 12-11-12  
 DESIGN ENGINEER OF RECORD: O. PUIGCERVER DATE: 12-13-12

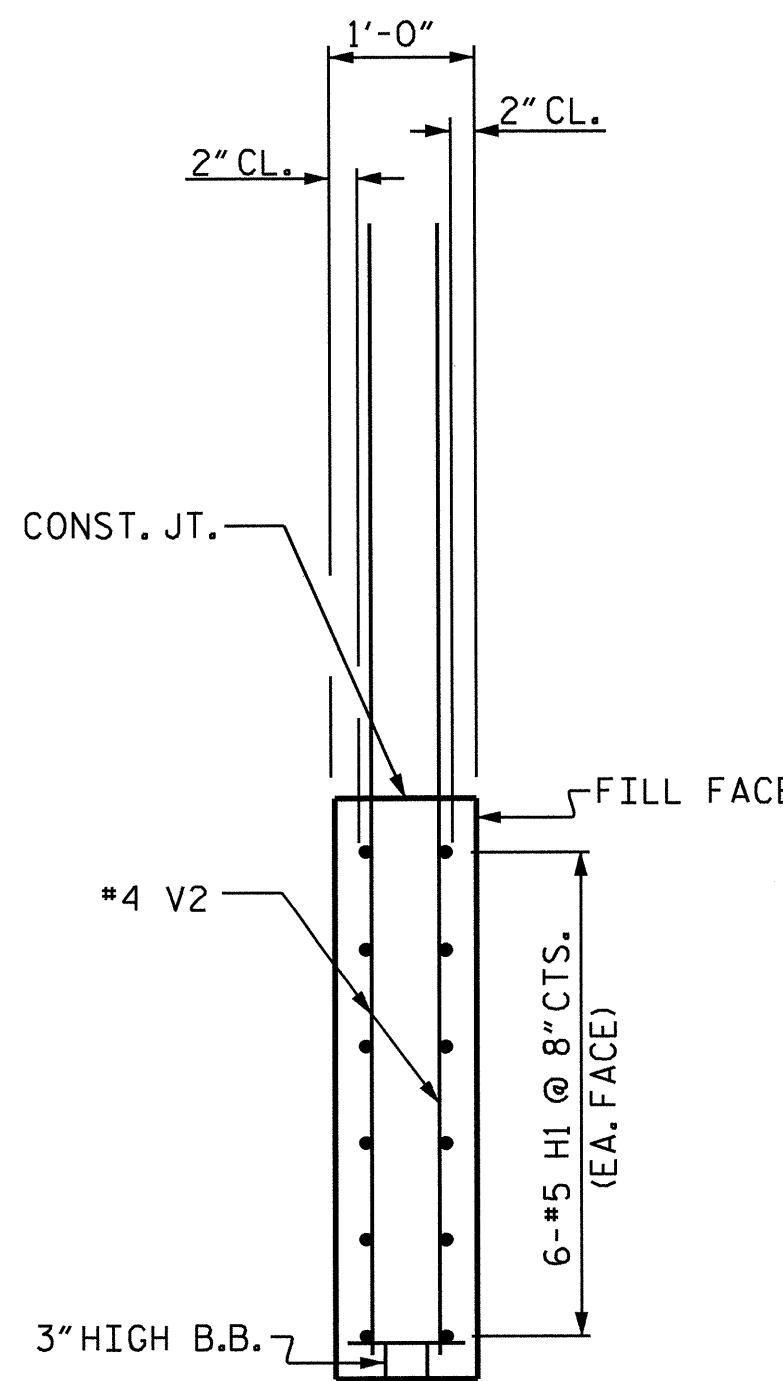
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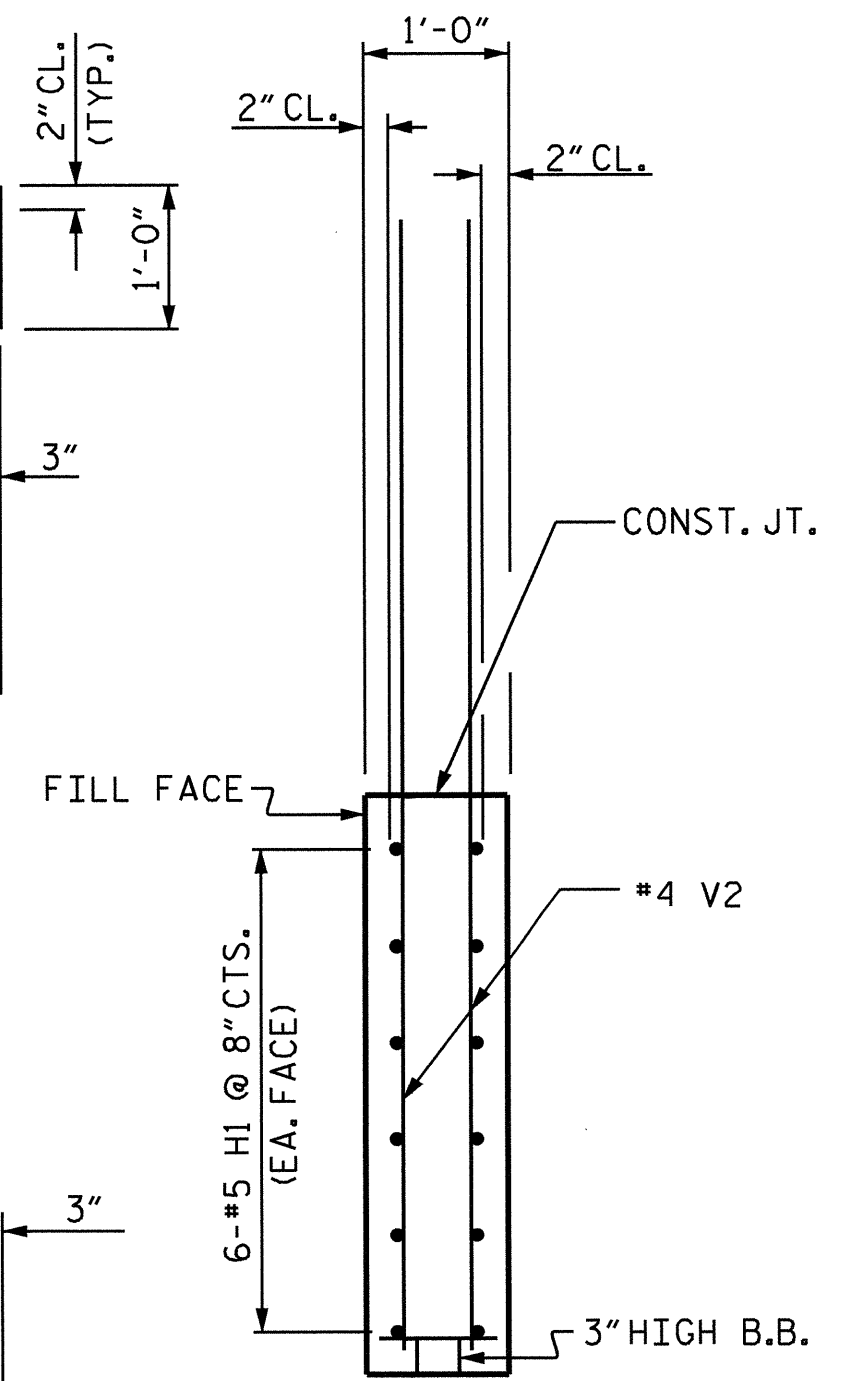
PLAN (W2)



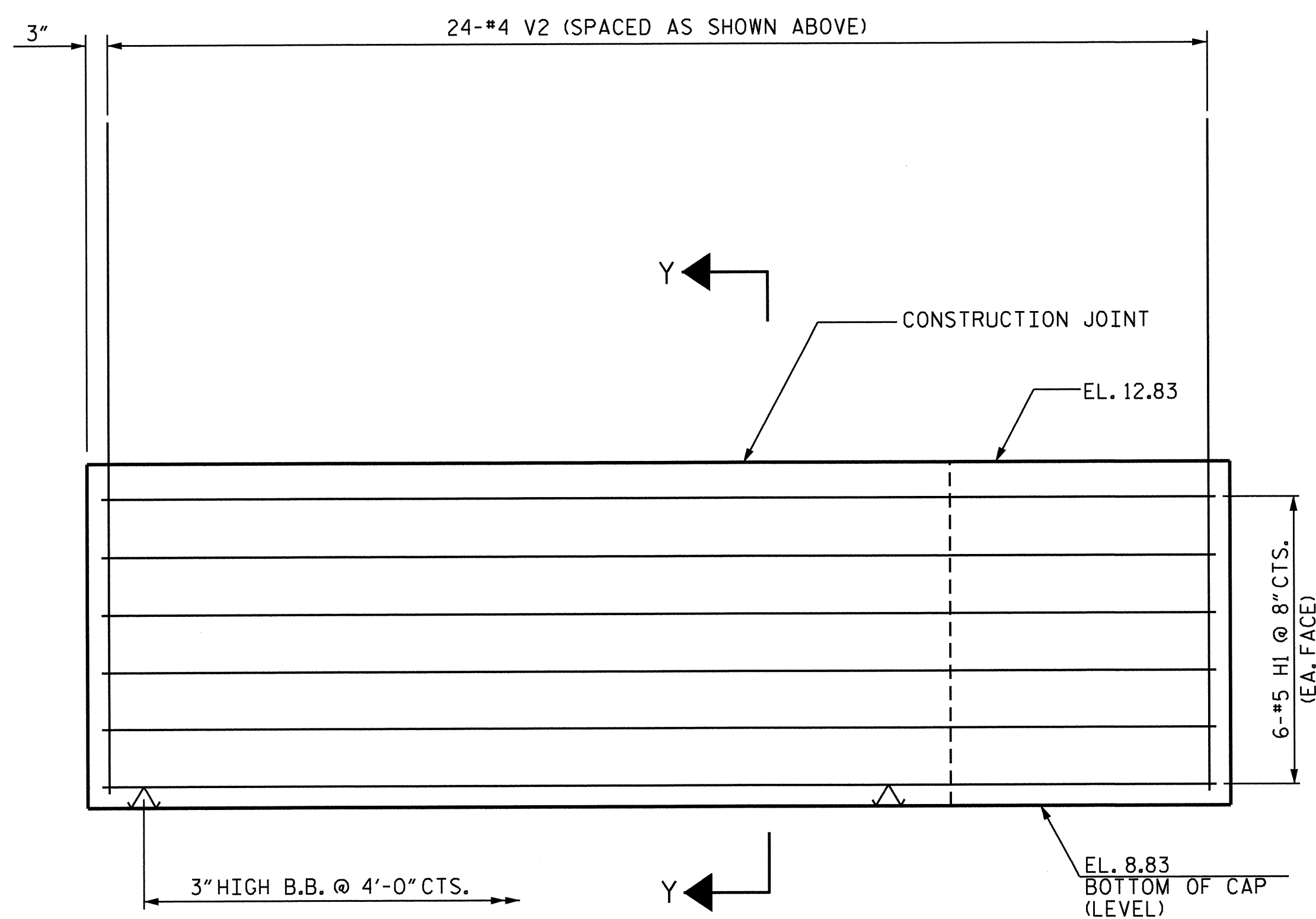
PLAN (W1)



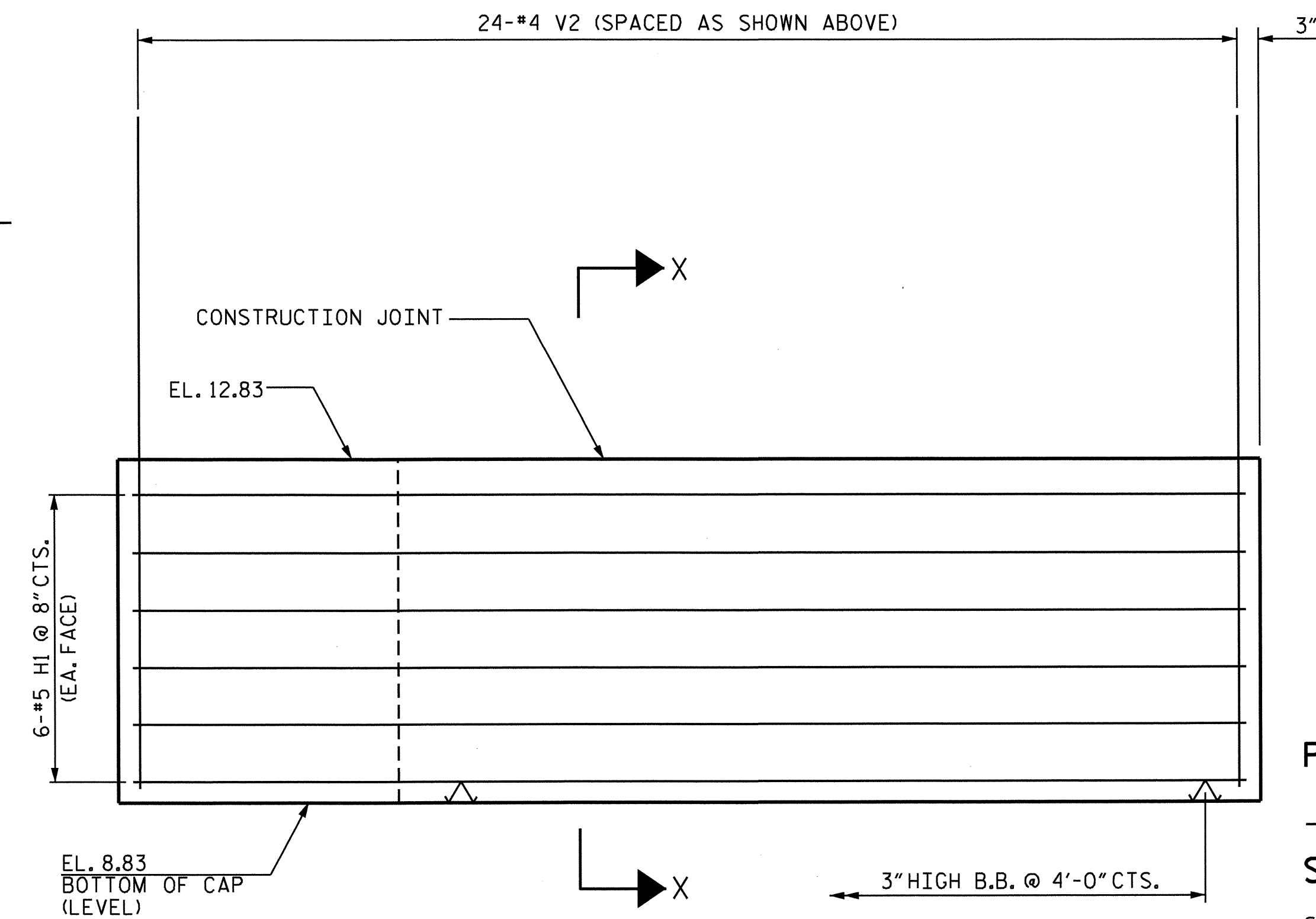
SECTION Y-Y



SECTION X-X



ELEVATION (W2)



ELEVATION (W1)

PROJECT NO. B-5122  
 BERTIE COUNTY  
 STATION: 16+05.00 -L-

SHEET 2 OF 3

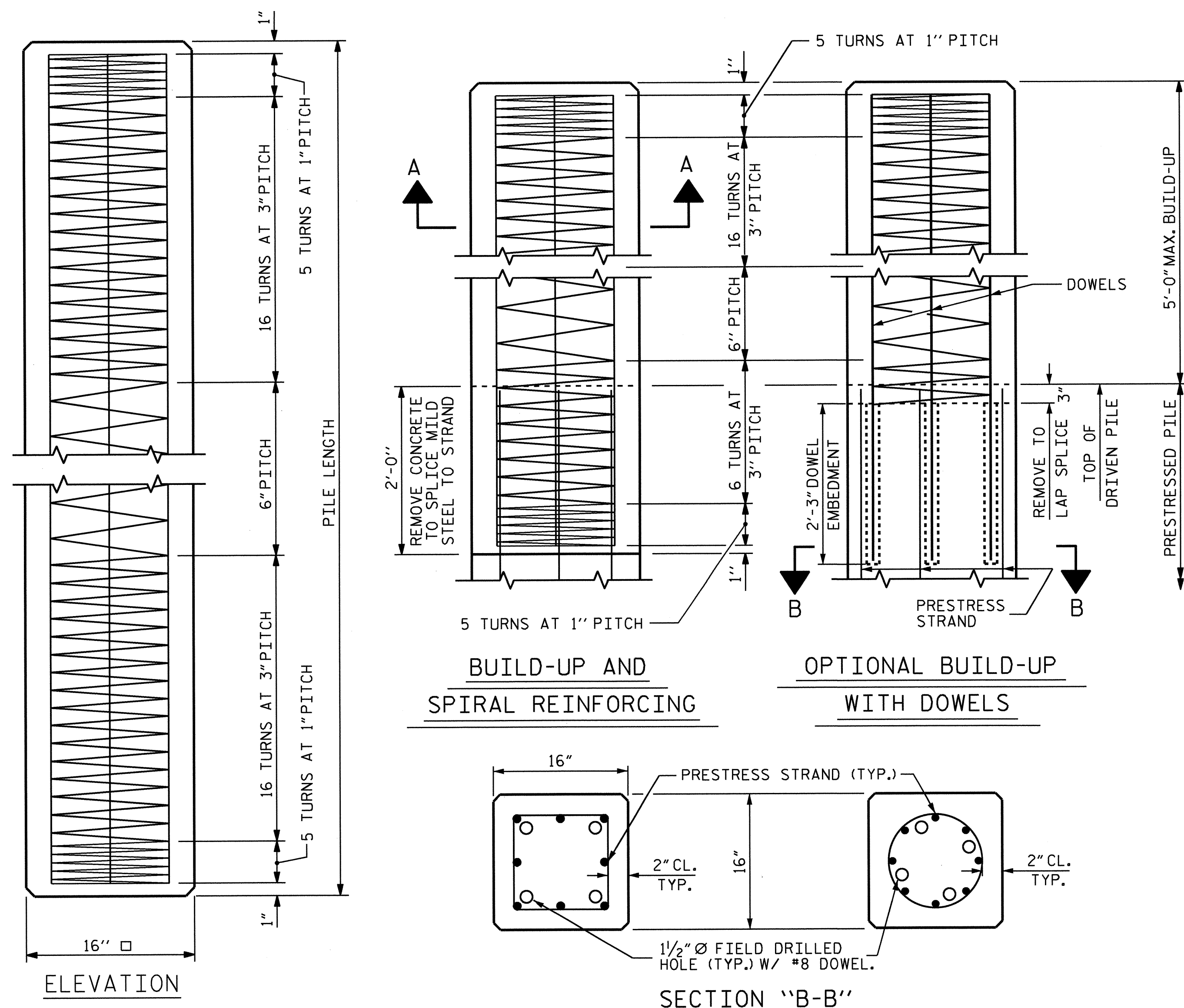
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 INTEGRAL END BENT 2



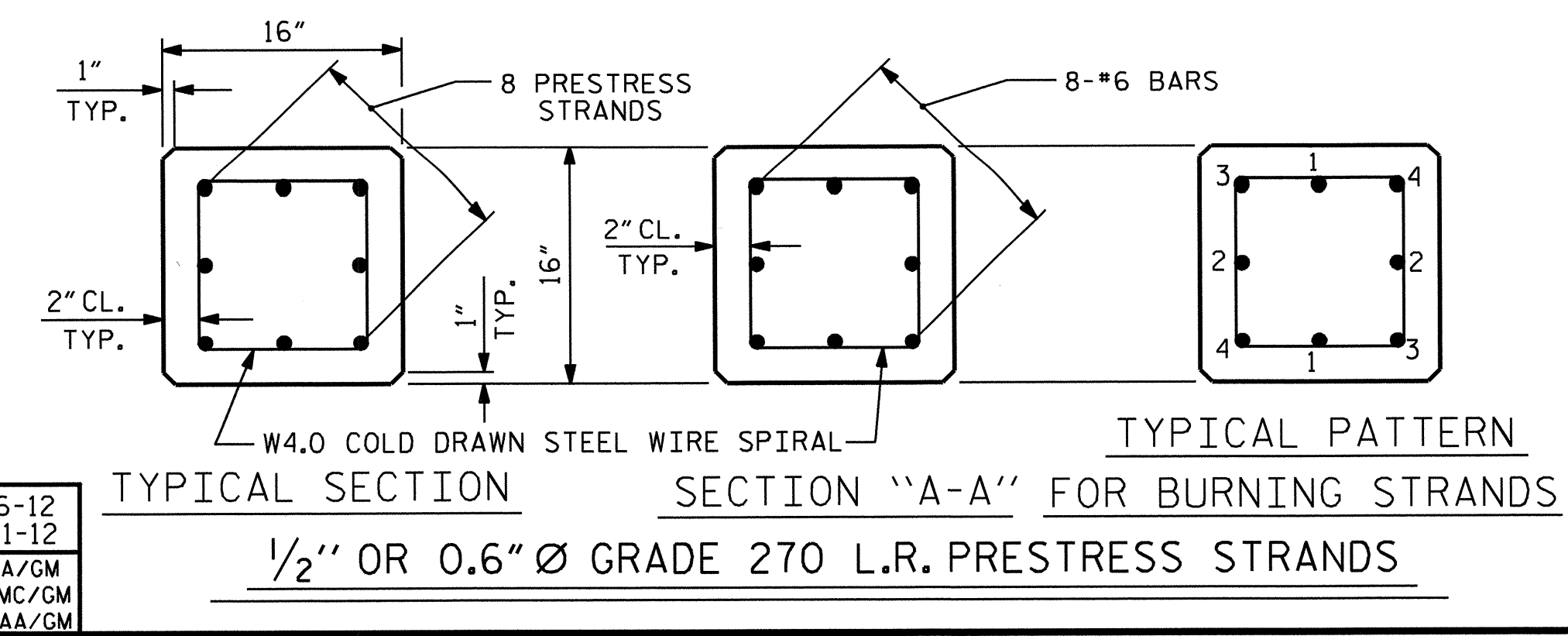
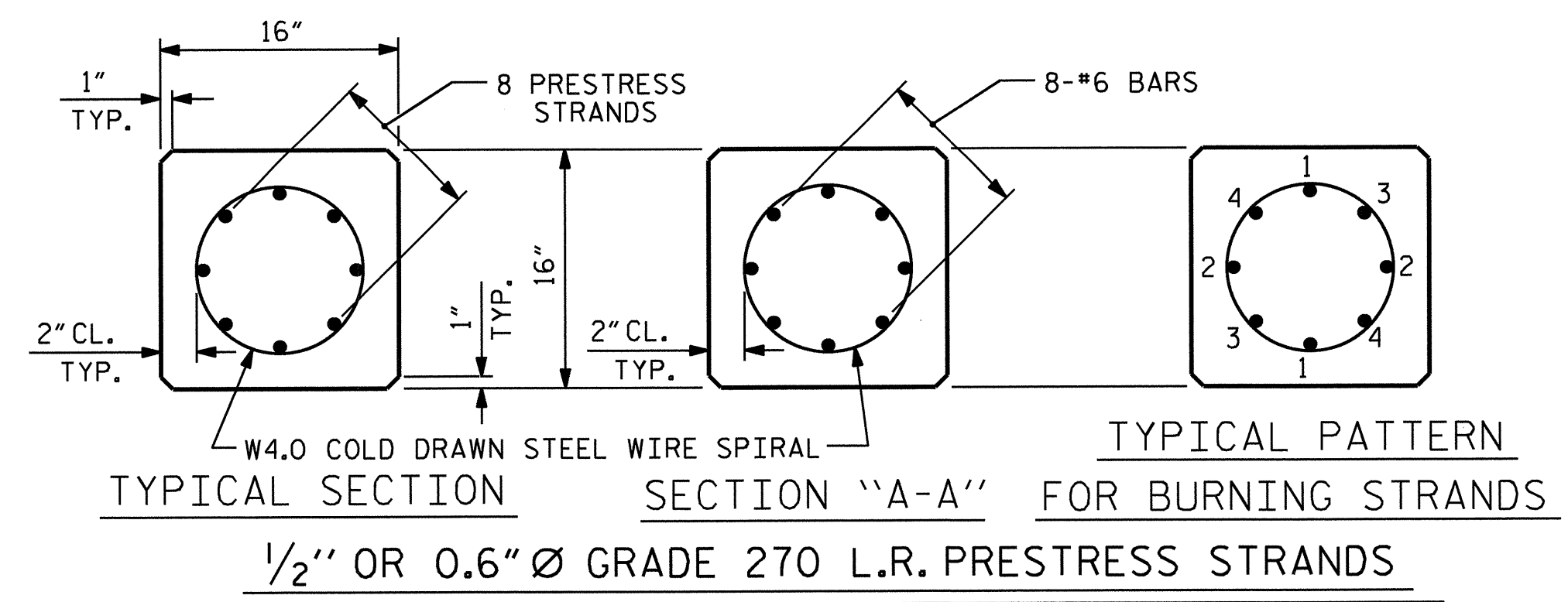
DRAWN BY: M.D.PISO DATE: 11-09-12  
 CHECKED BY: M.K.BEARD DATE: 12-11-12  
 DESIGN ENGINEER OF RECORD: O.PUIGSERVER DATE: 12-13-12

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-28	
1			3			TOTAL SHEETS 33	
2			4				



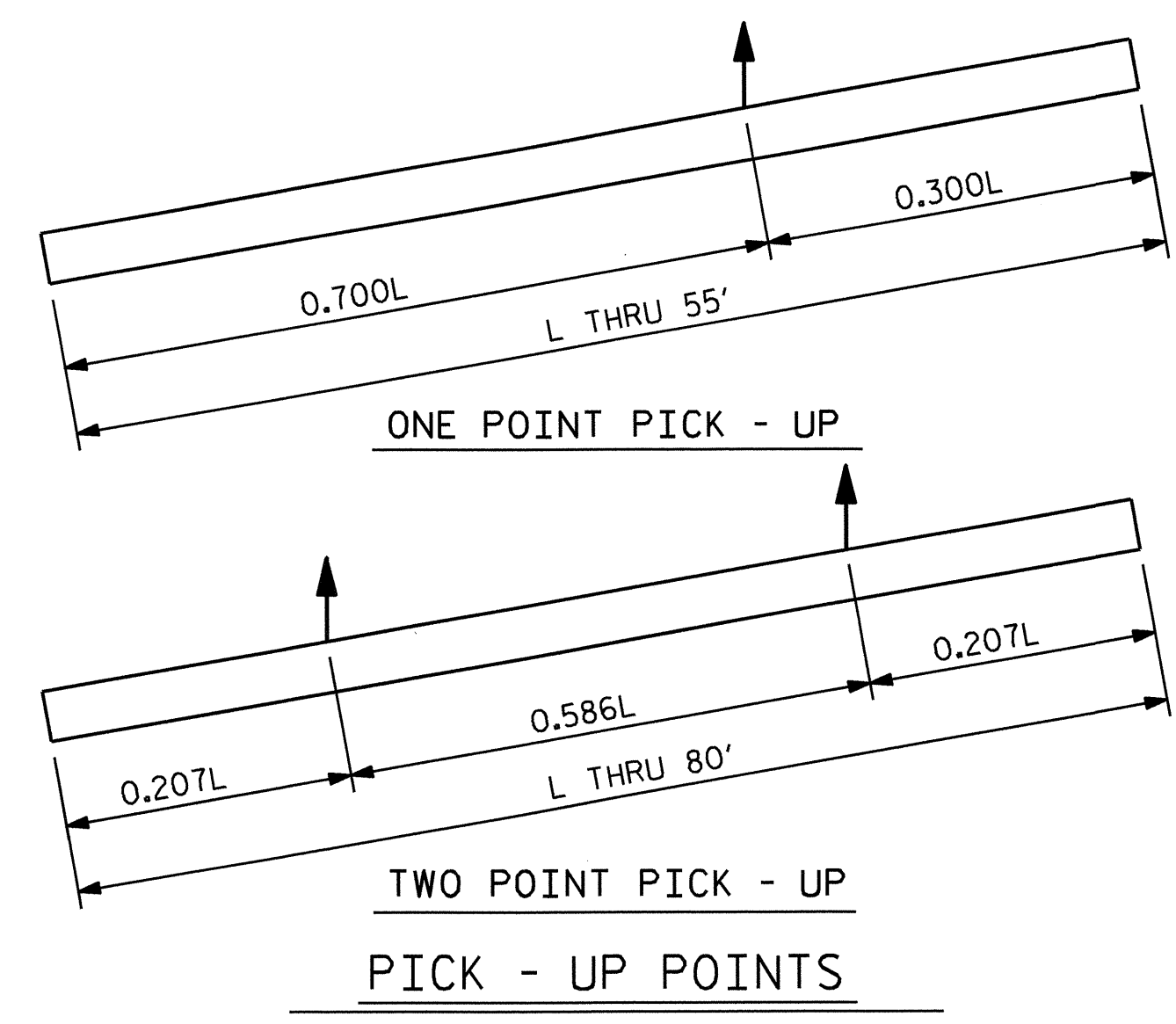


(AT THE CONTRACTOR'S OPTION, PILE BUILD-UP MAY BE CONSTRUCTED WITH DOWELS.)



**QUANTITIES FOR ONE 16" 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"	1.63	3.31	7'-6"	17'-6"	5'-2"	14'-8"
30'-0"	1.96	3.97	9'-0"	21'-0"	6'-2 1/2"	17'-7"
35'-0"	2.29	4.63	10'-6"	24'-6"	7'-3"	20'-6"
40'-0"	2.61	5.29	12'-0"	28'-0"	8'-3 1/2"	23'-5"
45'-0"	2.94	5.95	13'-6"	31'-6"	9'-4"	26'-4"
50'-0"	3.27	6.61	15'-0"	35'-0"	10'-4"	29'-4"
55'-0"	3.59	7.28	16'-6"	38'-6"	11'-4 1/2"	32'-3"
60'-0"	3.92	7.94			12'-5"	35'-2"
65'-0"	4.25	8.60			13'-5 1/2"	38'-1"
70'-0"	4.57	9.26			14'-6"	41'-0"
75'-0"	4.90	9.92			15'-6 1/2"	43'-11"
80'-0"	5.23	10.58			16'-7"	46'-10"



**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 STRAND CONFIGURATION SHOWN IN THE TYPICAL SECTION DETAIL. MIXING OF STRAND SIZE IS NOT ALLOWED.

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

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

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN OPPOSITE PAIRS AS INDICATED IN THE TYPICAL PATTERN SHOWN. FOR ANY NUMBER OF STRANDS, BURN IN OPPOSITE PAIRS AND SYMMETRICALLY ABOUT BOTH THE VERTICAL AND HORIZONTAL AXES. STRANDS 1-1 SHALL BE BURNED BEFORE 2-2, ETC. NOT MORE THAN 4 STRANDS, SAY 3-3 AND 4-4, MAY BE BURNED AT ANY ONE SECTION BEFORE THESE SAME PAIRS OF STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

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

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

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

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

**DOWEL INSTALLATION FOR OPTIONAL BUILD-UP**

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

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

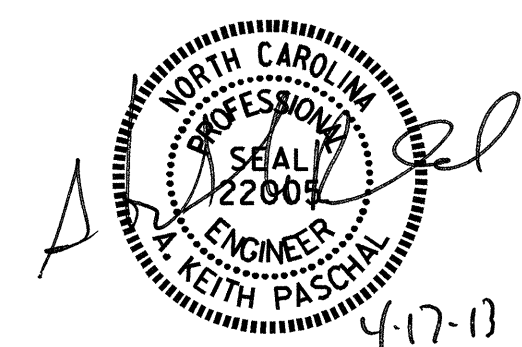
DOWEL HOLES SHALL BE POSITIONED TO MAINTAIN 1/2" CLEAR TO ALL EXISTING PRESTRESSING STRANDS IN THE CONCRETE PILE.

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

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

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

PROJECT NO. B-5122  
BERTIE COUNTY  
 STATION: 16+05.00 -L-



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD  
 16" PRESTRESSED  
 CONCRETE PILE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS
2			4			33

ASSEMBLED BY : M.D.PISO DATE : 11-16-12  
 CHECKED BY : M.K.BEARD DATE : 12-11-12  
 DRAWN BY : RH 9/98 REV. 5/1/06R TLA/GM  
 CHECKED BY : LES 10/98 REV. 11/30/10 WMC/GM  
 REV. 10/1/11 MAA/GM

NOTES

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

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

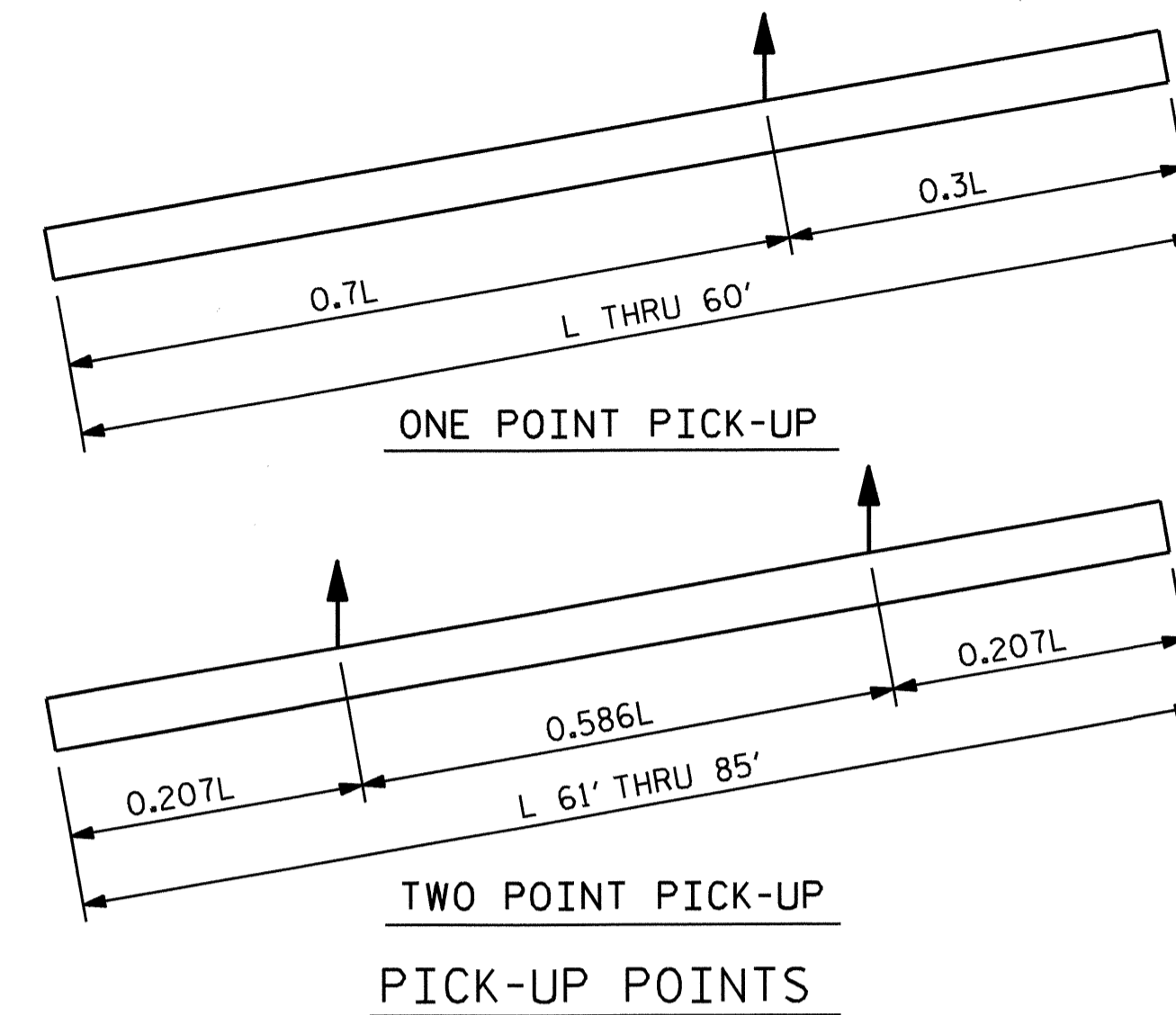
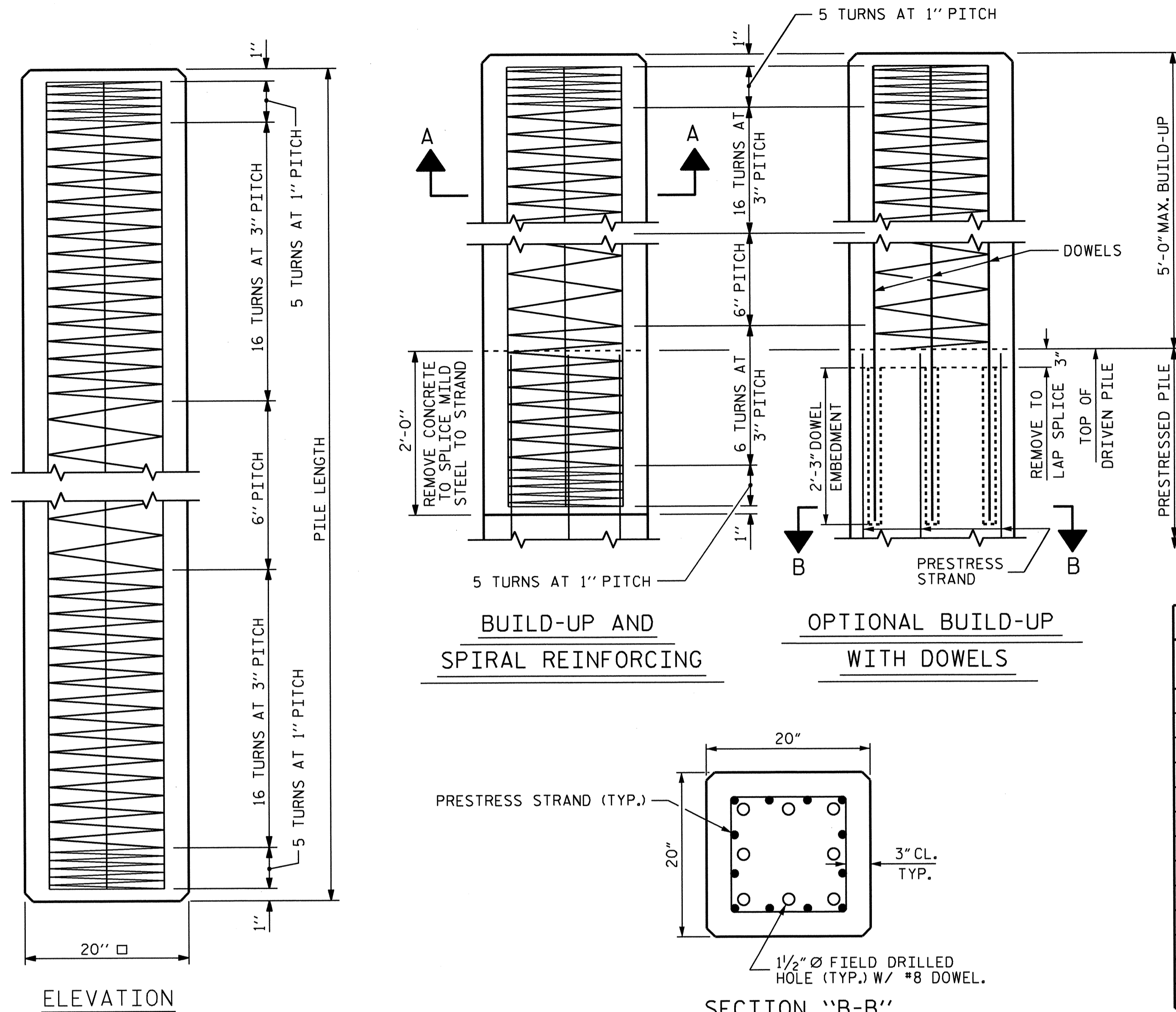
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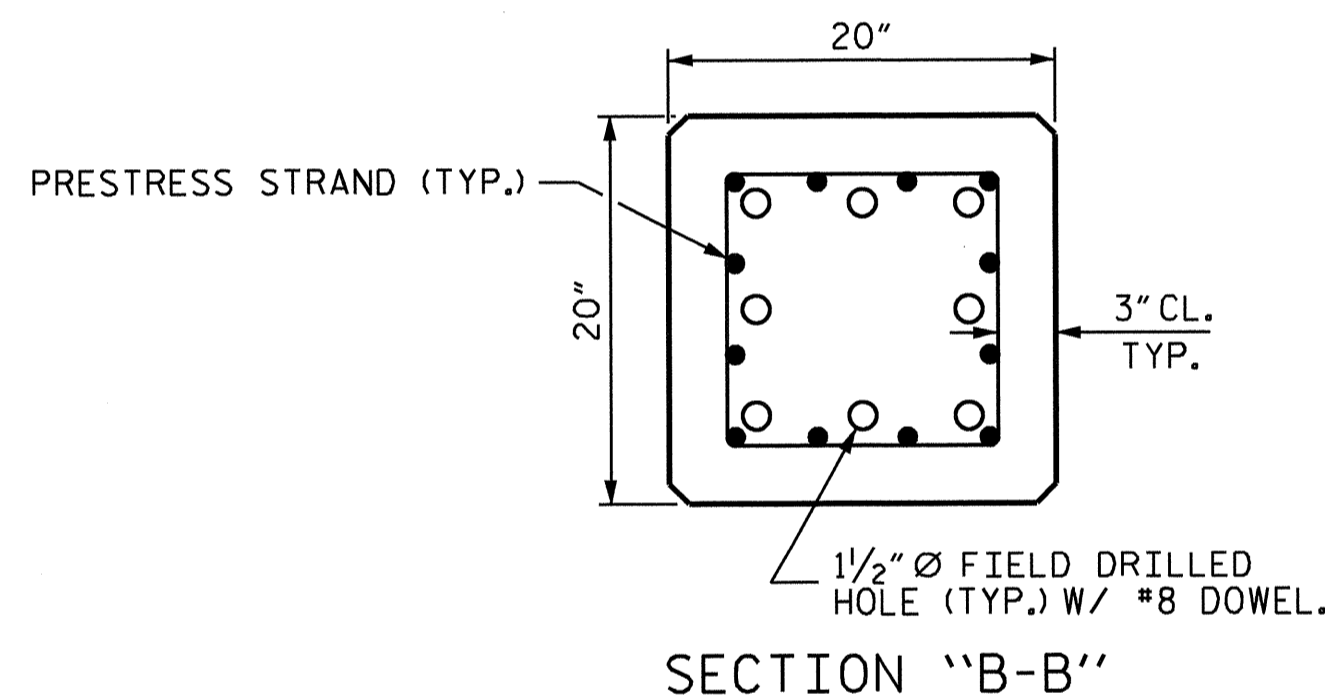
FIELD DRILLED HOLES SHALL BE CLEAN AND FREE OF ANY OBSTRUCTIONS BEFORE GROUTING OF DOWELS. DOWEL BARS SHALL BE INSTALLED AND GROUTED WITH AN APPROVED NON-SHRINK GROUT.

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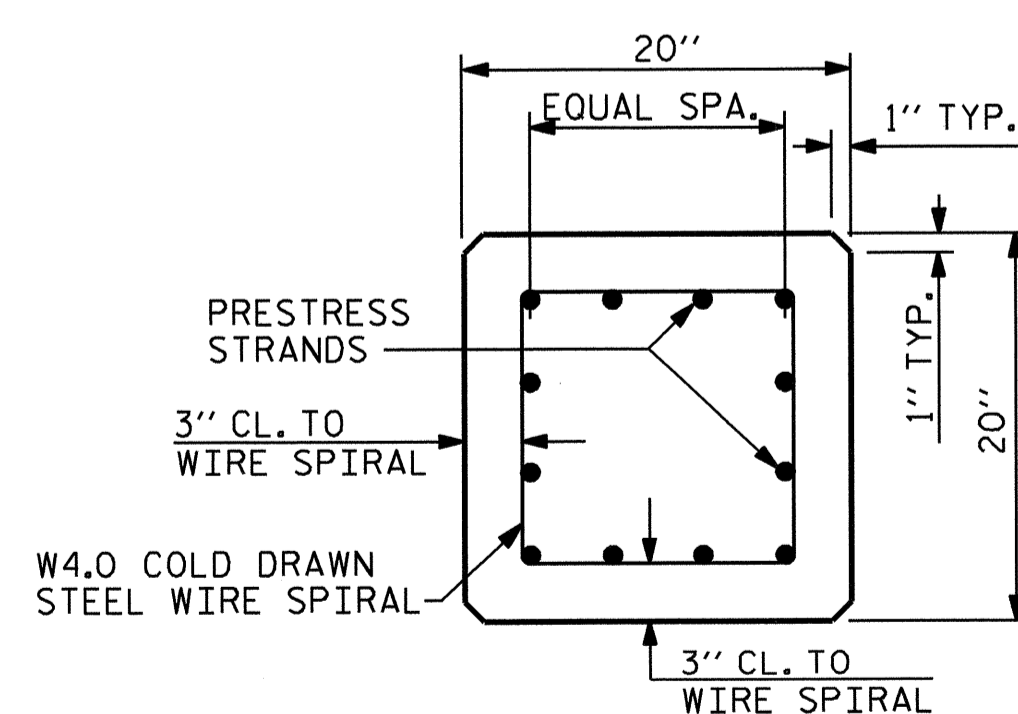
THE SPIRAL REINFORCING IN THE BUILD-UP AND THE PRESTRESSED CONCRETE PILE SHALL BE SPLICED BY OVERLAPPING A MIN. OF ONE TURN.



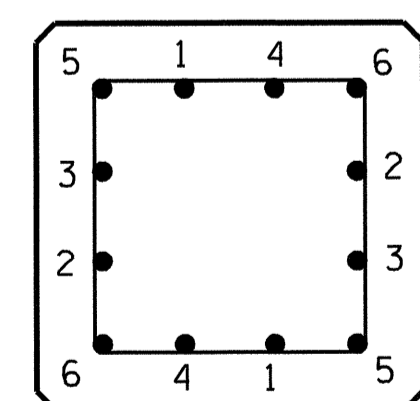
LENGTH	CONCRETE CU. YDS.	PILE WT. TONS	QUANTITIES FOR ONE 20" SQUARE PILE			
			ONE POINT PICK-UP 0.3L	ONE POINT PICK-UP 0.7L	TWO POINT PICK-UP 0.207L	TWO POINT PICK-UP 0.586L
25'-0"	2.56	5.18	7'-6"	17'-6"		
30'-0"	3.07	6.22	9'-0"	21'-0"		
35'-0"	3.58	7.26	10'-6"	24'-6"		
40'-0"	4.09	8.29	12'-0"	28'-0"		
45'-0"	4.61	9.33	13'-6"	31'-6"		
50'-0"	5.12	10.36	15'-0"	35'-0"		
55'-0"	5.63	11.40	16'-6"	38'-6"		
60'-0"	6.14	12.44	18'-0"	42'-0"		
65'-0"	6.65	13.47			13'-5 1/2"	38'-1"
70'-0"	7.17	14.51			14'-6"	41'-0"
75'-0"	7.68	15.55			15'-6 1/2"	43'-11"
80'-0"	8.19	16.58			16'-6 1/2"	46'-11"
85'-0"	8.70	17.62			17'-7"	49'-10"



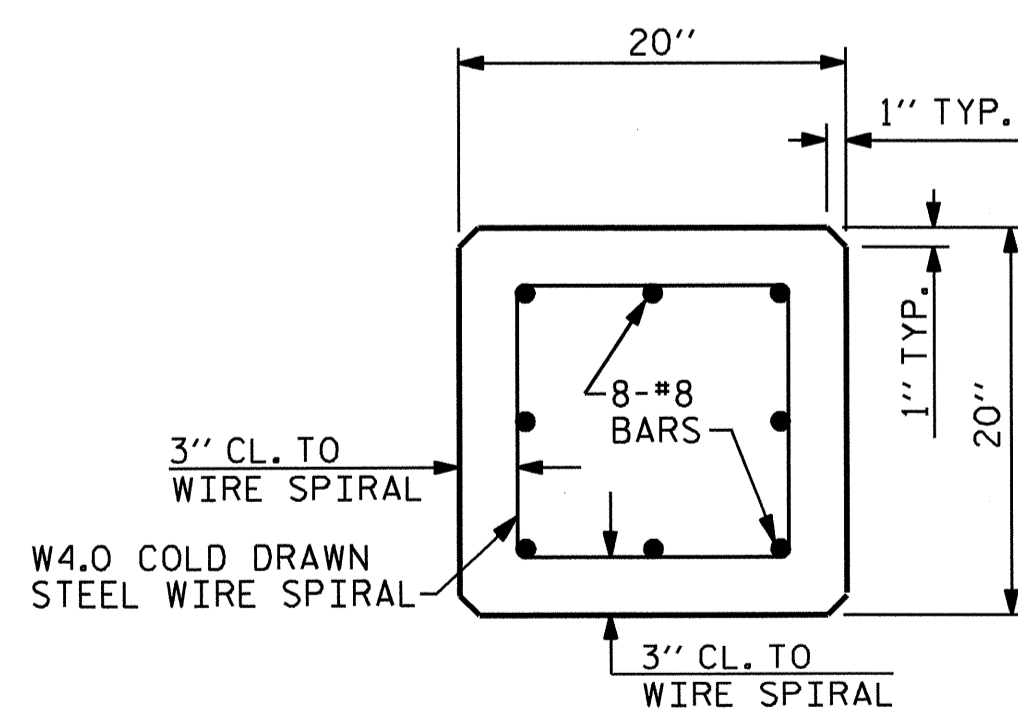
(AT THE CONTRACTOR'S OPTION, PILE BUILD-UP MAY BE CONSTRUCTED WITH DOWELS.)



TYPICAL SECTION



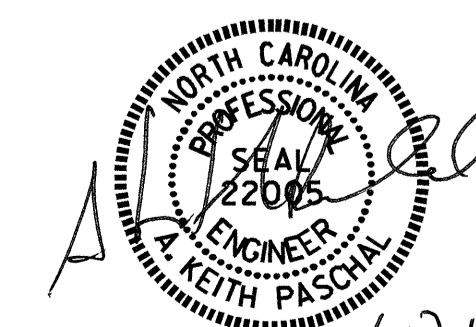
TYPICAL PATTERN FOR BURNING STRANDS



SECTION A-A

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

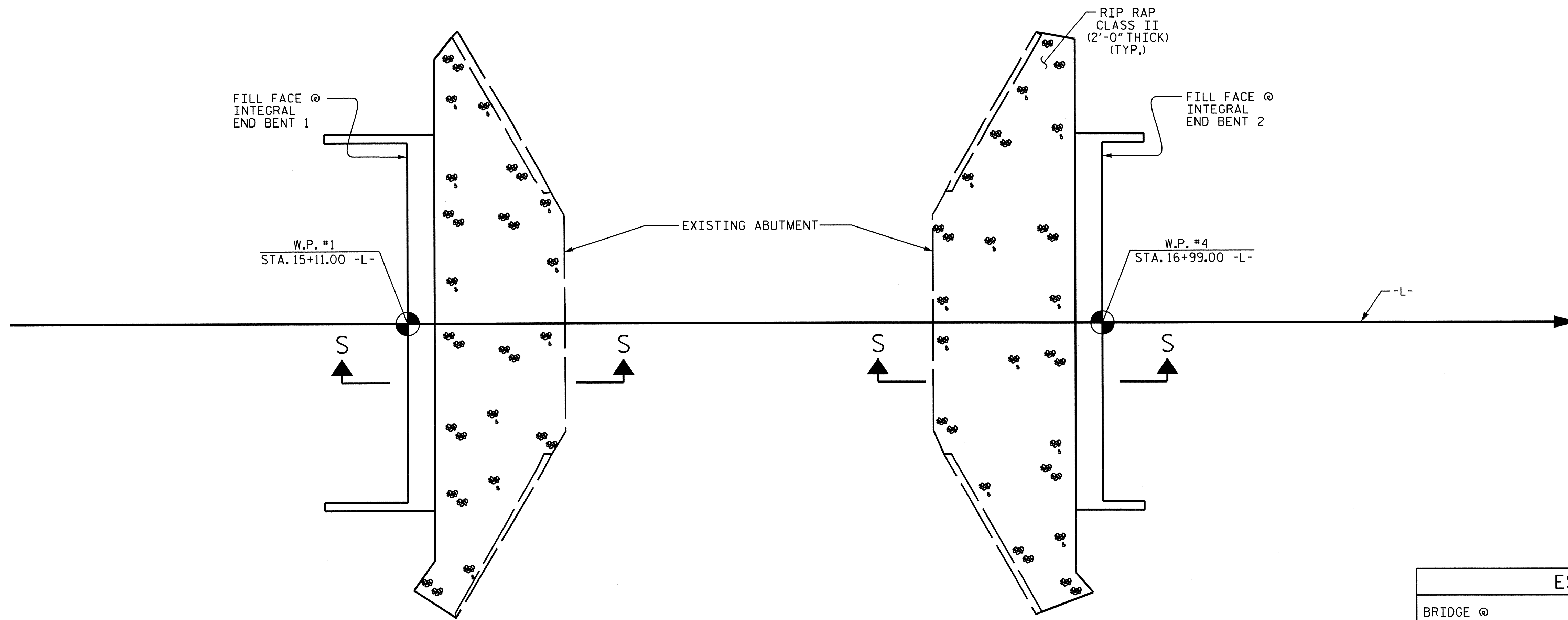
PROJECT NO. B-5122  
BERTIE COUNTY  
 STATION: 16+05.00 -L-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
20" PRESTRESSED CONCRETE PILE					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-31
					TOTAL SHEETS 33

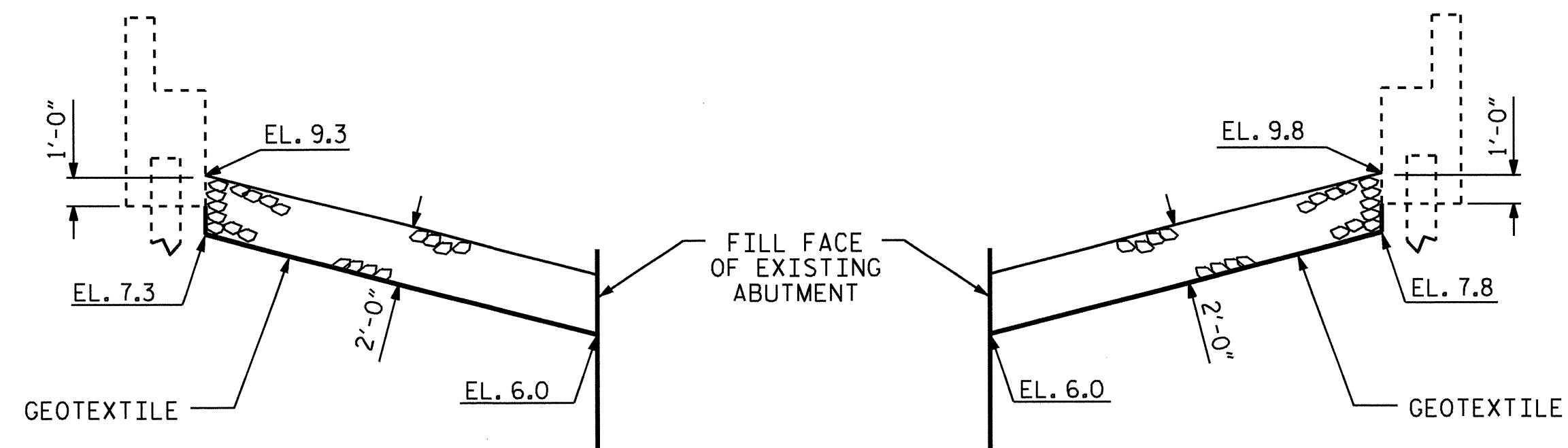
ASSEMBLED BY : M.D.PISO	DATE : 11-19-12
CHECKED BY : M.K.BEARD	DATE : 12-11-12
DRAWN BY : WJH 1/89	REV. 5/1/06R TLA/GM
CHECKED BY : CRK 3/89	REV. 11/30/10 WMC/GM
	REV. 10/1/11 MAA/GM





PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 16+05.00 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	78	87
END BENT 2	90	100



@ INTEGRAL END BENT #1

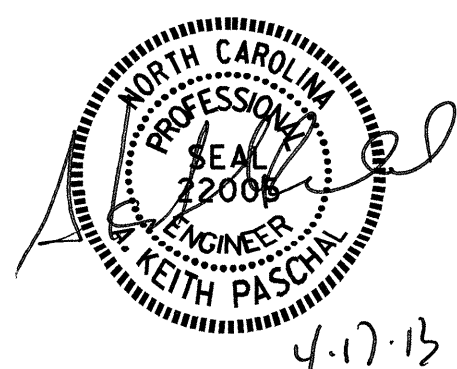
@ INTEGRAL END BENT #2

SECTION S-S

PROJECT NO. B-5122  
BERTIE COUNTY  
 STATION: 16+05.00 -L-

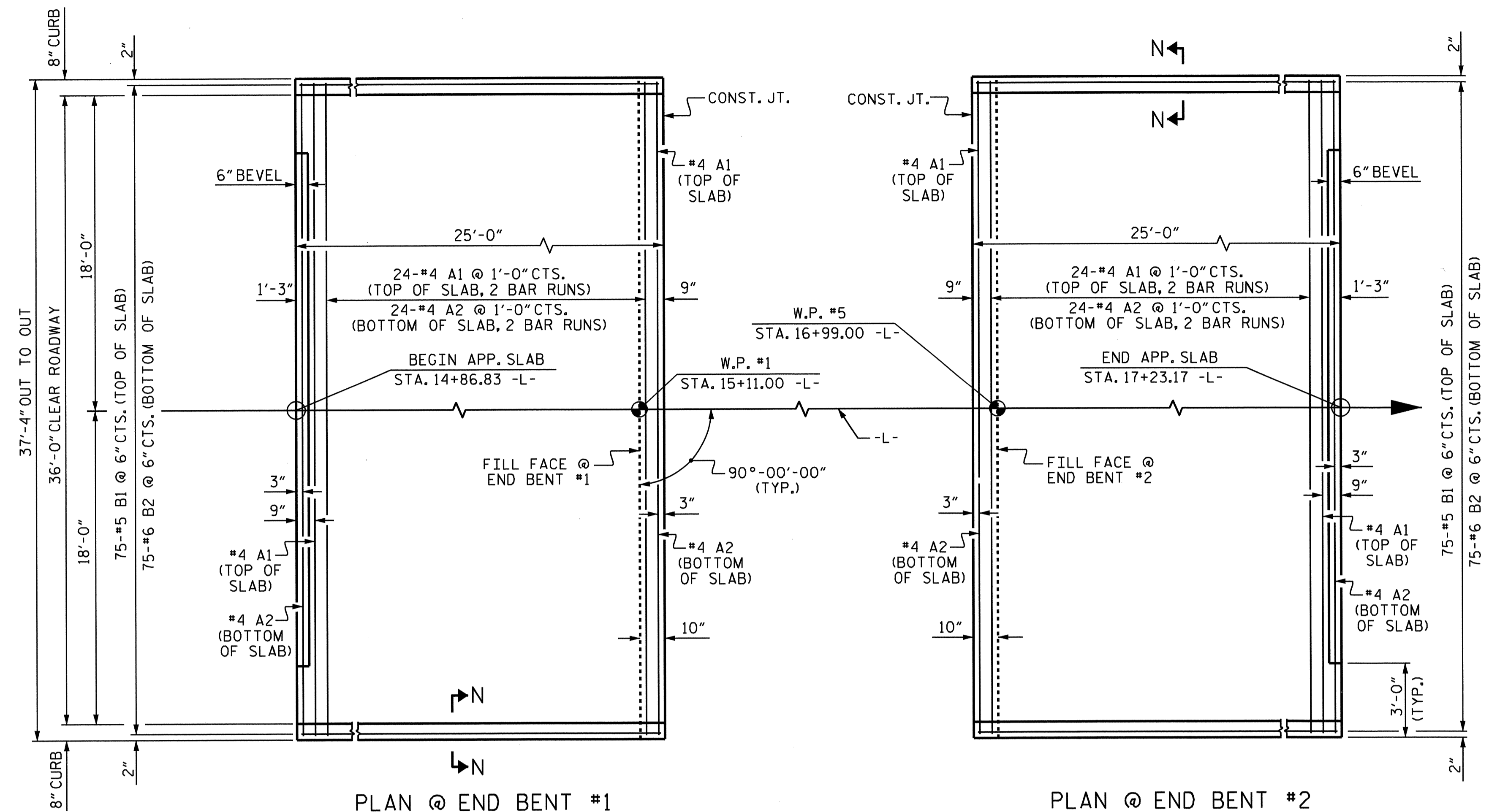
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

— RIP RAP DETAILS —



ASSEMBLED BY : PEGGY ADKINS DATE :1-17-2013  
 CHECKED BY : T.L. AVERETTE DATE :1-28-2013  
 DRAWN BY : REK 1/84 REV. 5/1/06R TLA/GM  
 CHECKED BY : RDU 1/84 REV. 10/1/11 MAA/GM  
 REV. 12/21/11 MAA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			33



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 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.

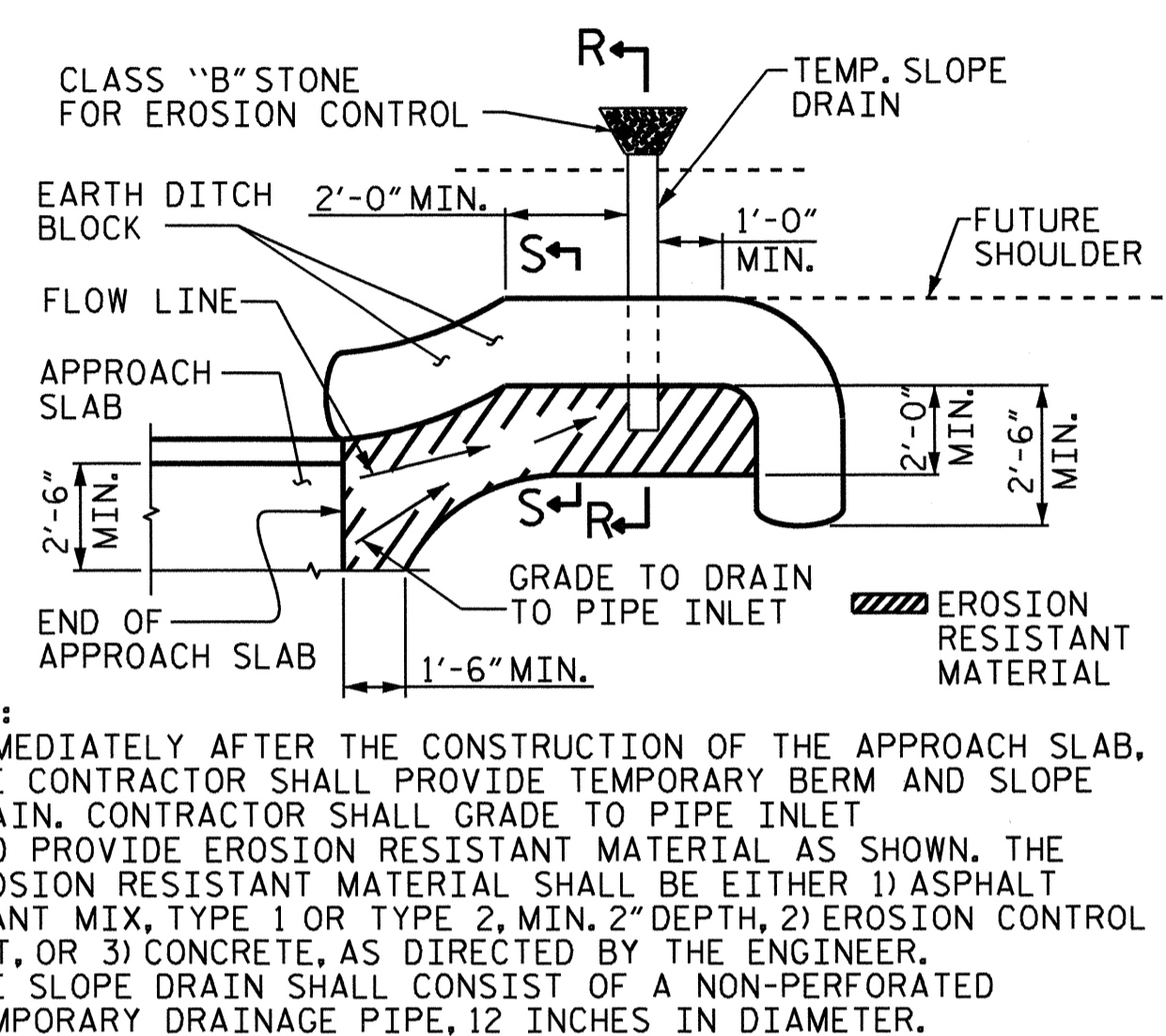
**BILL OF MATERIAL**

FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	52	#4	STR	19'-6"	677
A2	52	#4	STR	19'-5"	674
* B1	75	#5	STR	24'-2"	1890
B2	75	#6	STR	24'-8"	2779

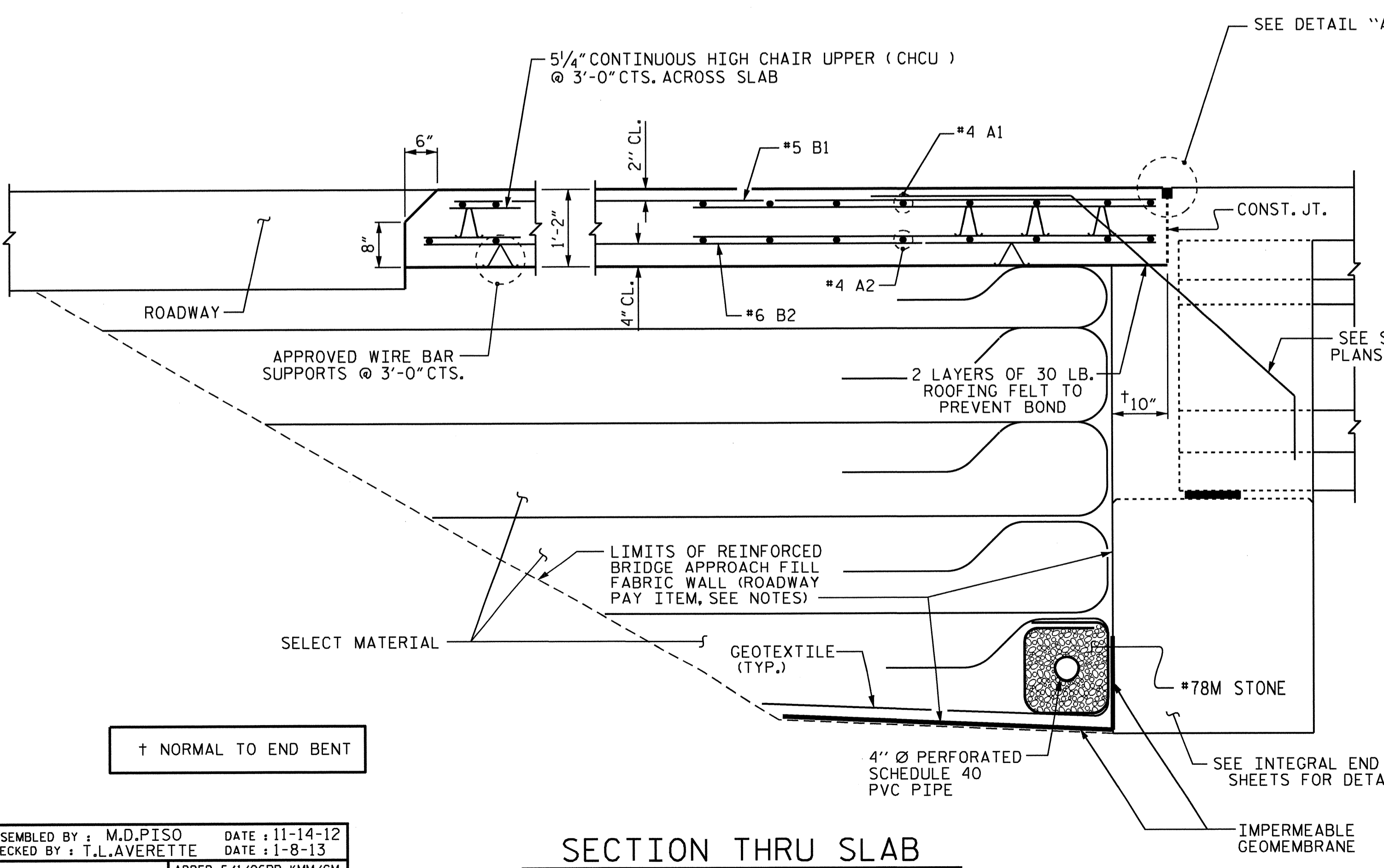
REINFORCING STEEL	3453 LBS.
* EPOXY COATED REINFORCING STEEL	2567 LBS.
CLASS AA CONCRETE	40.4 C.Y.



**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.

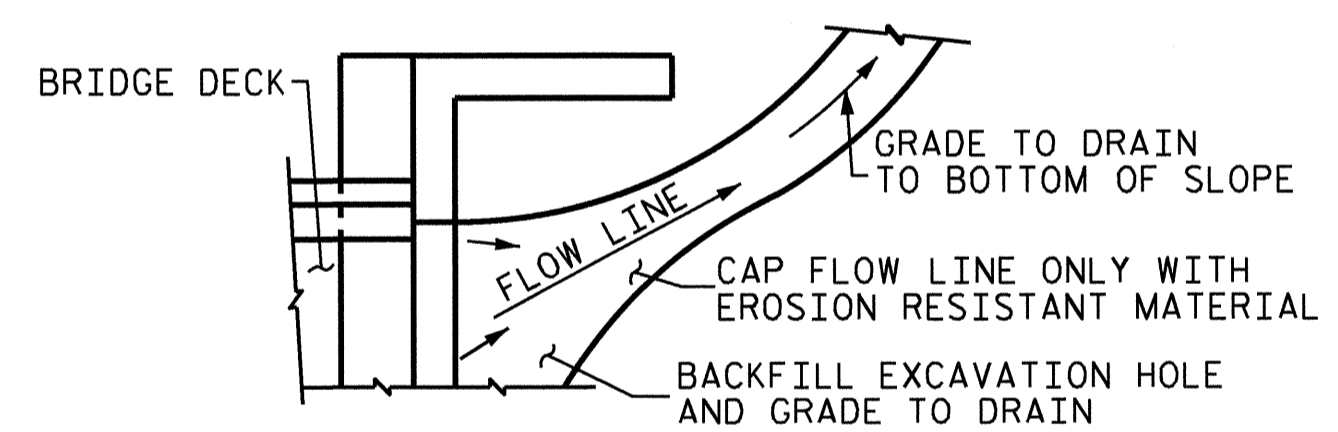
**TEMPORARY BERM AND SLOPE DRAIN DETAILS**

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



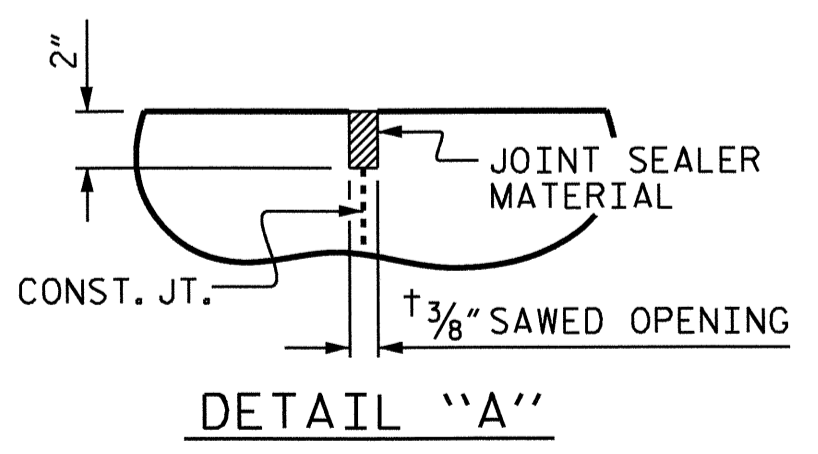
**SPLICE LENGTH CHART**

BAR	SPLICE LENGTH
#4 A1	2'-0"
#4 A2	1'-9"

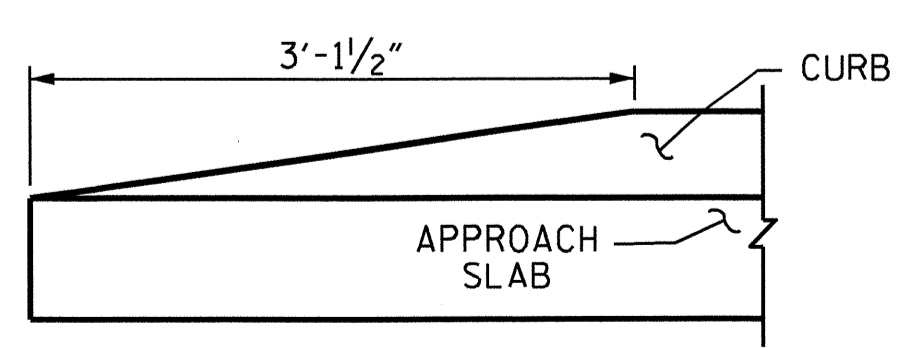


**NOTE:**  
 IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA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

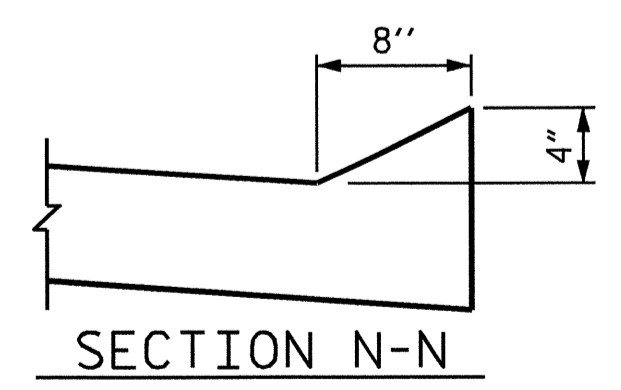
**TEMPORARY DRAINAGE DETAIL**



DETAIL "A"



END OF CURB WITHOUT SHOULDER BERM GUTTER



SECTION N-N

PROJECT NO. B-5122  
BERTIE COUNTY  
 STATION: 16+05.00 -L-

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

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

ASSEMBLED BY : M.D.PISO DATE : 11-14-12  
 CHECKED BY : T.L.AVERETTE DATE : 1-8-13  
 DRAWN BY : TLA 10/05  
 CHECKED BY : GM 5/06  
 ADDED 5/1/06RR KMM/GM  
 REV. 10/1/11 MAA/GM  
 REV. 12/21/11 MAA/GM

**SECTION THRU SLAB**

## STANDARD NOTES

### DESIGN DATA:

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

### MATERIAL AND WORKMANSHIP:

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

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

### CONCRETE:

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

### CONCRETE CHAMFERS:

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

### DOWELS:

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

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

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

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

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

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

### REINFORCING STEEL:

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

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

### STRUCTURAL STEEL:

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

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

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

### HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

### SPECIAL NOTES:

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

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