

09/08/19

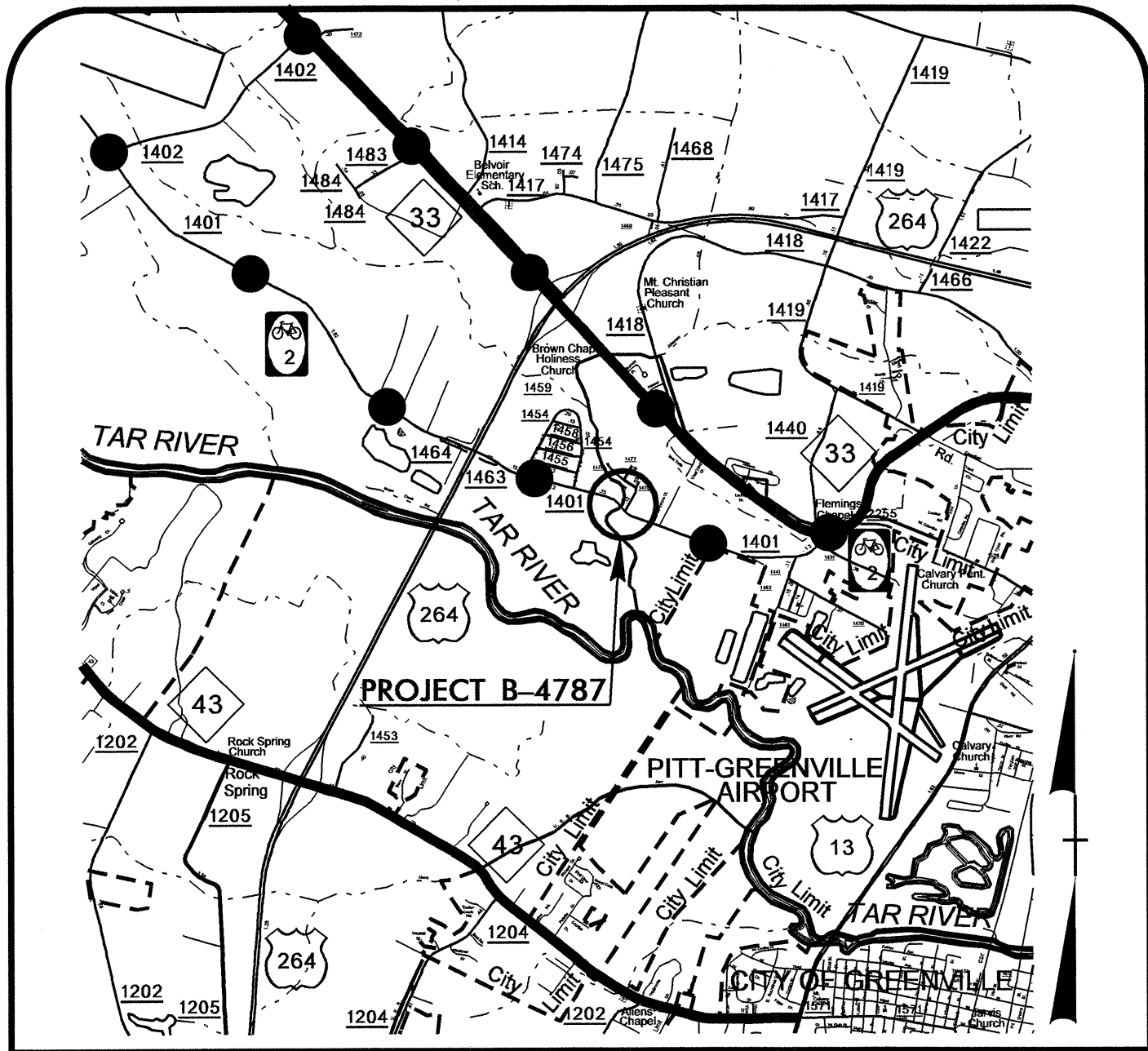
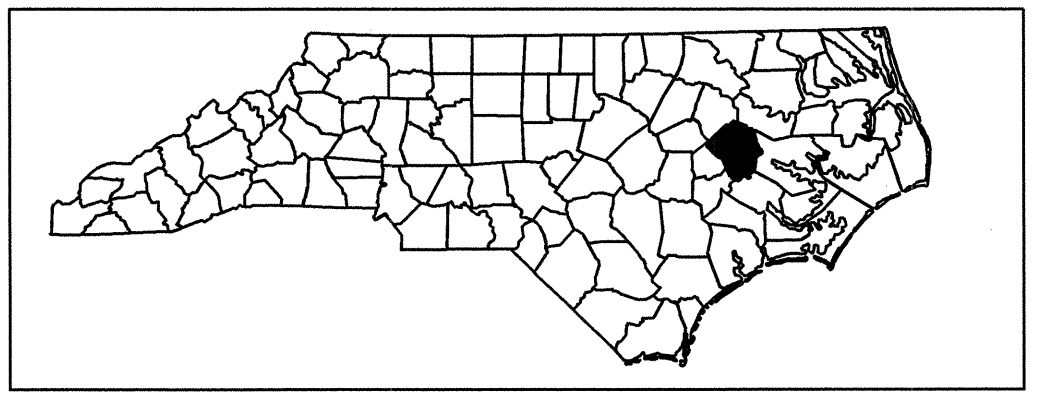
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**PITT COUNTY**

LOCATION: BRIDGE NO. 95 ON SR 1401 (OLD RIVER ROAD)  
OVER JOHNSON'S MILL RUN

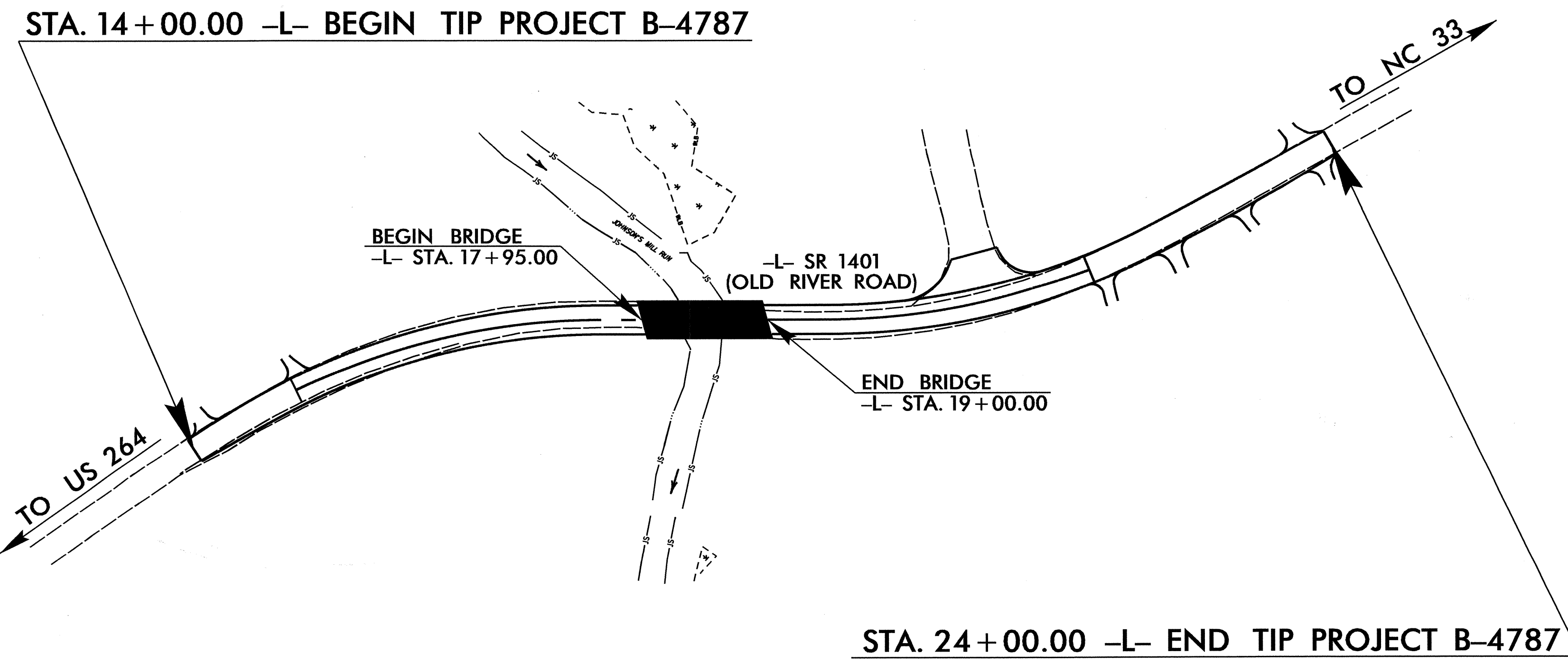
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4787		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
38557.1.1	BRZ-1401(4)	PE	
38557.2.1	BRZ-1401(4)	RW & UTILITIES	
38557.3.1	BRZ-1401(4)	CONST.	



**VICINITY MAP**  
●—● OFFSITE DETOUR ROUTE

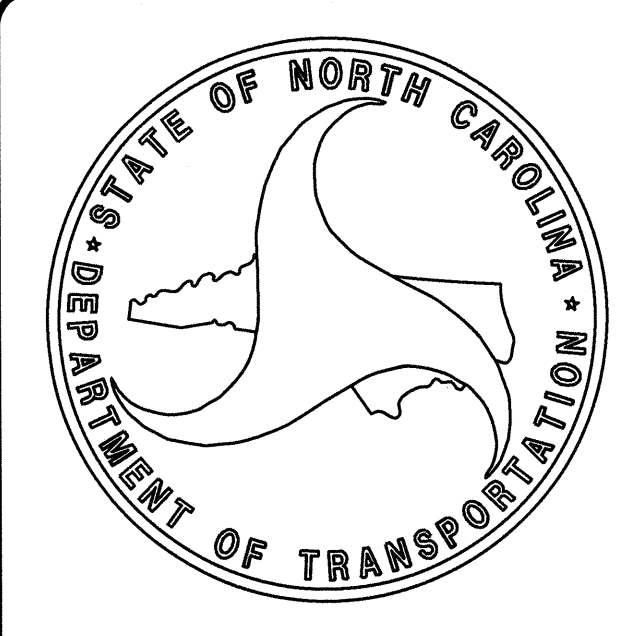
**STRUCTURE**



TIP PROJECT: B-4787

CONTRACT: C202957

08-AUG-2012 13:47  
\$\$\$\$\$DCN\$\$\$\$\$  
Kbaoschni



**DESIGN DATA**

ADT 2012 = 7900  
ADT 2035 = 13400  
DHV = 10 %  
D = 60 %  
T = 15 % \*  
V = 50 MPH  
\* TTST=5% DUAL=10%  
FUNC CLASS=MINOR COLLECTOR  
"SUB-REGIONAL TIER"

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-4787 = 0.169 MILES  
LENGTH STRUCTURE TIP PROJECT B-4787 = 0.020 MILES  
TOTAL LENGTH OF TIP PROJECT B-4787 = 0.189 MILES

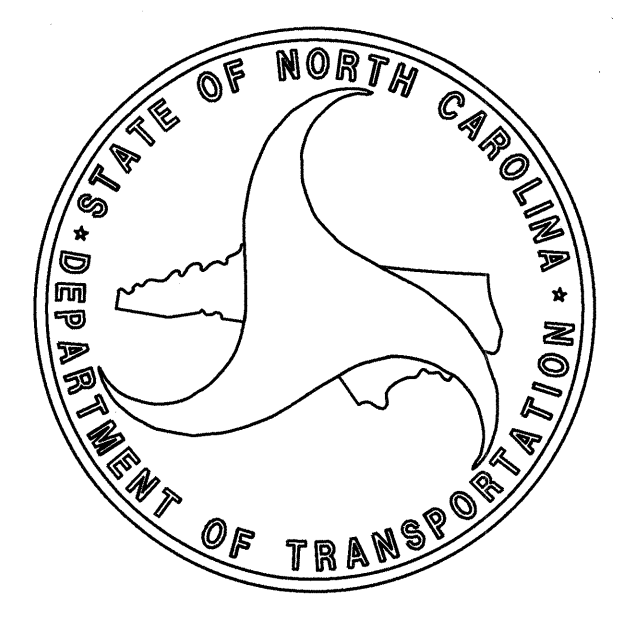
Prepared in the Office of:  
**DIVISION OF HIGHWAYS**  
1000 Birch Ridge Dr., Raleigh, NC, 27610

**LETTING DATE:**  
NOVEMBER 20, 2012

**O. R. AZIZI, PE**  
PROJECT ENGINEER

**A. K. PASCHAL, PE**  
PROJECT DESIGN ENGINEER

STRUCTURES MANAGEMENT



**GRADE DATA**

-2.2000 %    +0.9031 %

PI= 16+40.00-L-  
EL= 20.43  
VC= 230 FT.

FILL FACE @  
INTEGRAL END BENT 1  
STA. 17+95.00 -L-  
G. P. EL. = 21.83

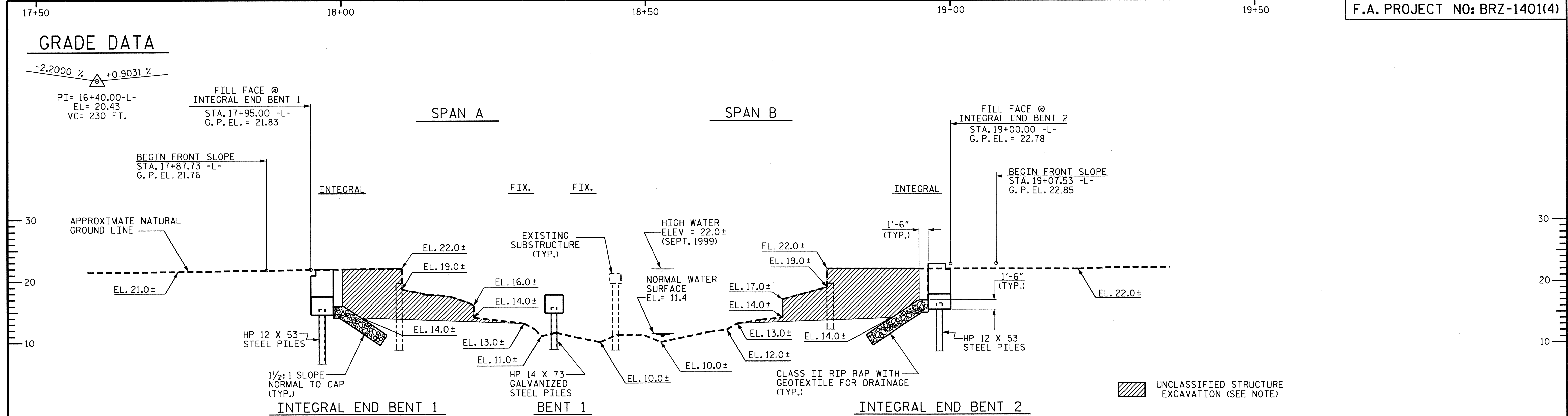
BEGIN FRONT SLOPE  
STA. 17+87.73 -L-  
G. P. EL. 21.76

SPAN A

SPAN B

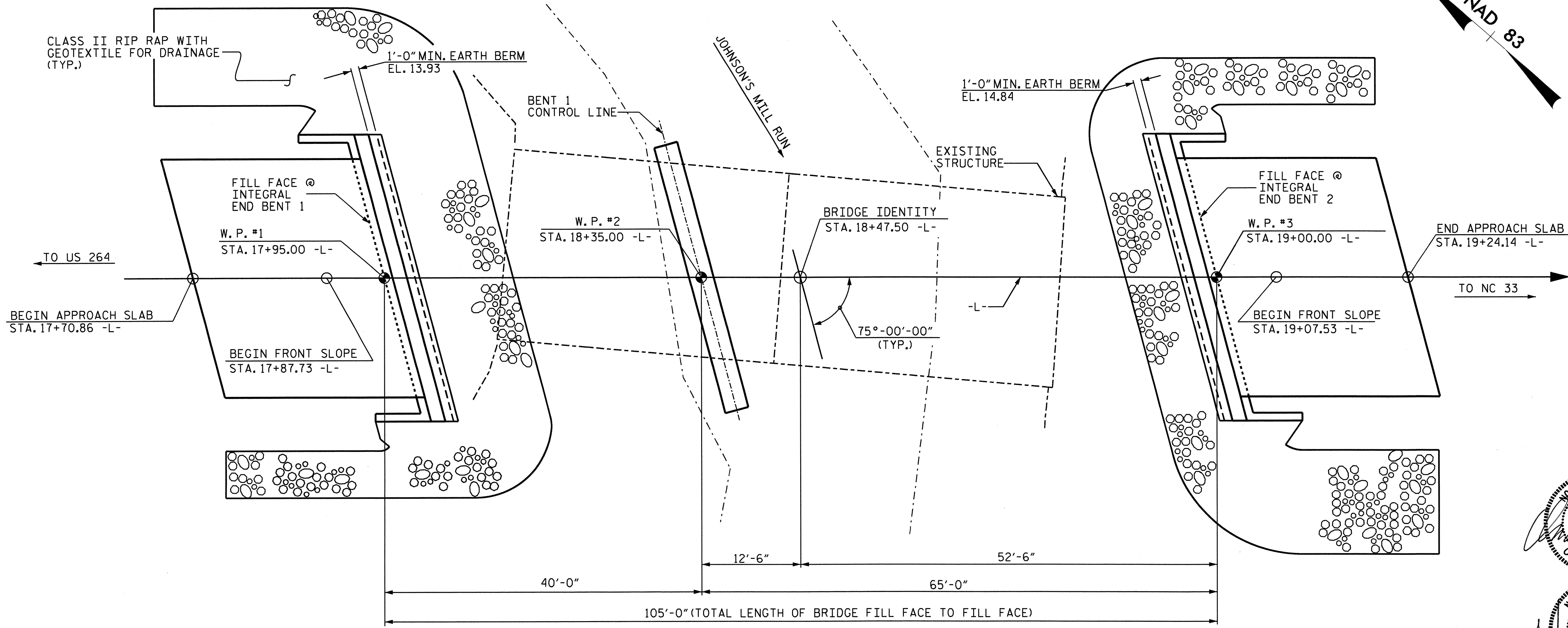
FILL FACE @  
INTEGRAL END BENT 2  
STA. 19+00.00 -L-  
G. P. EL. = 22.78

BEGIN FRONT SLOPE  
STA. 19+07.53 -L-  
G. P. EL. 22.85



**SECTION ALONG -L-**

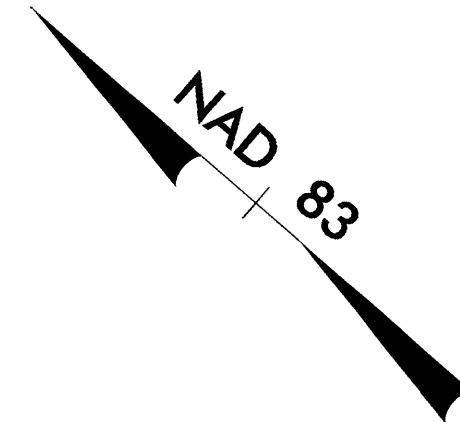
(SECTIONS @ INTEGRAL END BENTS & BENT ARE TAKEN AT RIGHT ANGLES)



**PLAN**

(PILES NOT SHOWN IN PLAN VIEW FOR CLARITY)

I HEREBY CERTIFY THESE  
PLANS ARE THE AS-BUILT  
PLANS

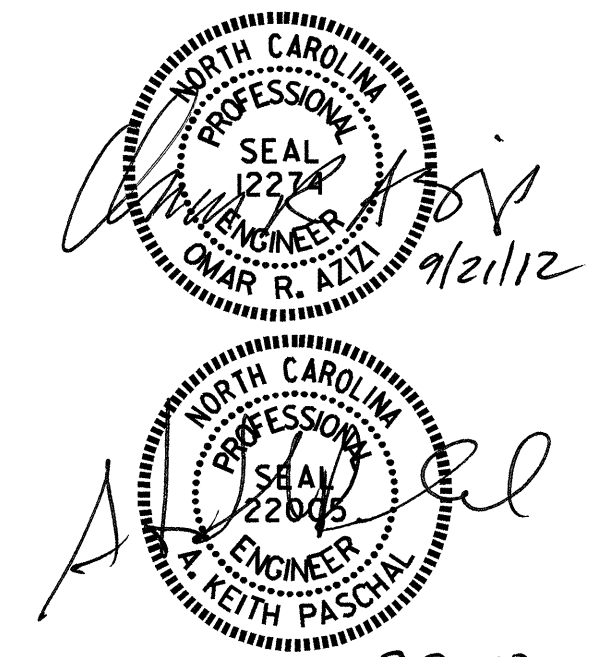


PROJECT NO. B-4787  
PITT COUNTY  
STATION: 18+47.50 -L-

SHEET 1 OF 3    REPLACES BRIDGE NO. 95

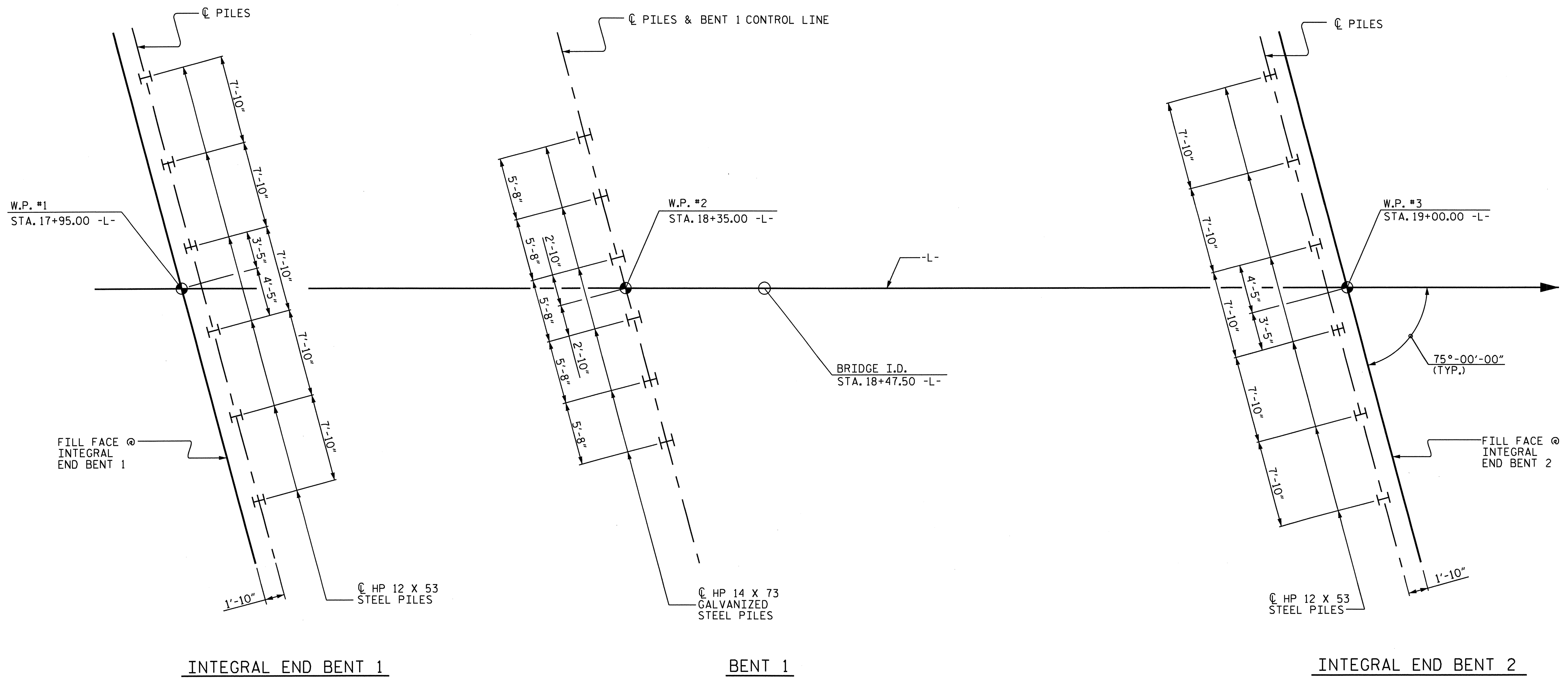
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

GENERAL DRAWING  
FOR BRIDGE OVER  
JOHNSON'S MILL RUN  
ON SR 1401 BETWEEN  
US 264 AND NC 33



DRAWN BY : M.D.PISO    DATE : 05-02-12  
CHECKED BY : E.K. POPE    DATE : 06-15-12

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



FOUNDATION LAYOUT

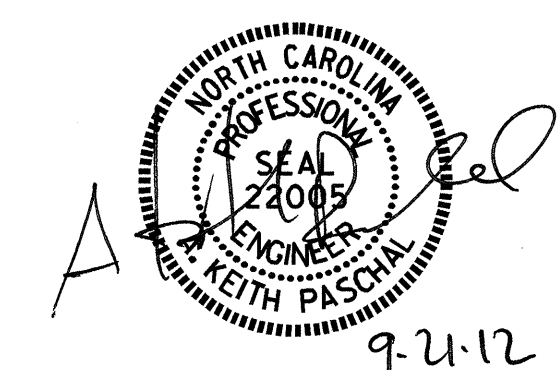
**FOUNDATION NOTES:**

- FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- PILES AT INTEGRAL END BENT 1 AND INTEGRAL END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 85 TONS AND 100 TONS PER PILE, RESPECTIVELY.
- DRIVE PILES AT INTEGRAL END BENT 1 AND INTEGRAL END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 145 TONS AND 170 TONS PER PILE, RESPECTIVELY.
- PILES AT BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 130 TONS PER PILE.
- DRIVE PILES AT BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 225 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR DOWNDRAG OR SCOUR.
- INSTALL PILES AT BENT 1 TO A TIP ELEVATION NO HIGHER THAN -15 FEET.
- THE SCOUR CRITICAL ELEVATION FOR BENT 1 IS ELEVATION 3 FEET. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.
- 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 PILE DRIVING CRITERIA PROVISION.

PROJECT NO. B-4787  
PITT COUNTY  
 STATION: 18+47.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE OVER  
 JOHNSON'S MILL RUN  
 ON SR 1401 BETWEEN  
 US 264 AND NC 33

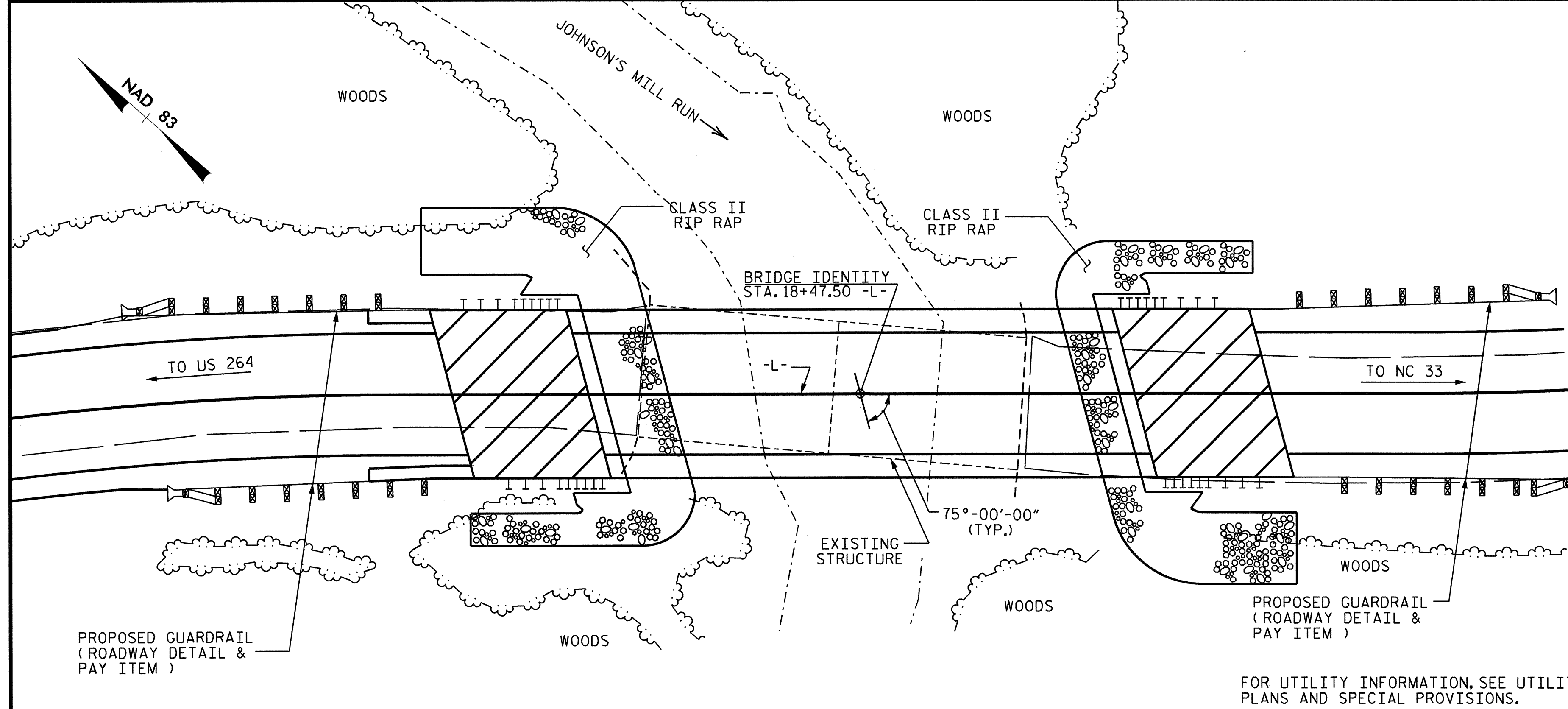


DRAWN BY : M.D.PISO DATE : 05-02-12  
 CHECKED BY : E.K.POPE DATE : 08-08-12

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



B.M. #1 : RR SPIKE IN 12" GUM TREE 143.30' LT. OF STA. 17+39.67 -L- EL. 15.69'



LOCATION SKETCH

NOTES:

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- 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.
- THE EXISTING STRUCTURE CONSISTING OF TWO SPANS (1 SPAN @ 35'-2" & 1 SPAN @ 35'-1"), A CLEAR ROADWAY WIDTH OF 24'-0", A STEEL PLANK FLOOR ON I-BEAMS AND TIMBER CAPS ON TIMBER PILES AT THE END BENTS AND INTERIOR BENT AND LOCATED AT THE PROPOSED STRUCTURE, SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
- REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO 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.
- THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 55 FEET 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 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.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", MAY 2001.
- 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.
- INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO THE HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 18+47.50 -L-".
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR INTERIOR BENT 1, ONLY PARTIAL GALVANIZING OF THE PILES IS REQUIRED. SEE INTERIOR BENT SHEET FOR REQUIRED GALVANIZED LENGTHS. PAYMENT FOR PARTIALLY GALVANIZED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR GALVANIZED STEEL PILES.
- FOR FAA REQUIREMENTS, SEE GENERAL SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE = 2000 C.F.S.  
 FREQUENCY OF DESIGN FLOOD = 25 YRS.  
 DESIGN HIGH WATER ELEVATION = 20.7'  
 DRAINAGE AREA = 27.2 SQ. MI.  
 BASE DISCHARGE (Q100) = 3050 C.F.S.  
 BASE HIGH WATER ELEVATION = 22.1'

OVERTOPPING DATA

OVERTOPPING DISCHARGE = 3100 C.F.S.  
 FREQUENCY OF OVERTOPPING FLOOD = 100 YRS.  
 OVERTOPPING FLOOD ELEVATION = 21.3'

TOTAL BILL OF MATERIAL

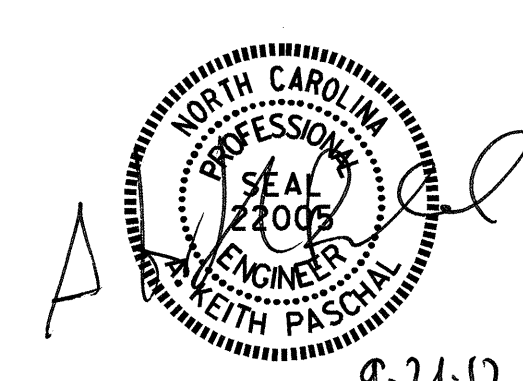
	REMOVAL OF EXISTING STRUCTURE	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	36" PRESTRESSED CONCRETE GIRDERS	HP 12 X 53 STEEL PILES	HP 14 X 73 GALVANIZED STEEL PILES	PILE REDRIVES	TWO BAR METAL RAIL	1'-2" X 2'-6" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS
	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.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE				3,631	4,393		LUMP SUM		10 508.54				190.92	206.55			LUMP SUM
INTEGRAL END BENT 1								2,876		6 420		3			140	155	
BENT 1								2,096			6 450	3					
INTEGRAL END BENT 2								2,876		6 450		3			160	177	
TOTAL	LUMP SUM	1	LUMP SUM	3,631	4,393	54.8	LUMP SUM	7,848	10 508.54	12 870	6 450	9	190.92	206.55	300	332	LUMP SUM

PROJECT NO. B-4787  
PITT COUNTY  
 STATION: 18+47.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GENERAL DRAWING  
 FOR BRIDGE OVER  
 JOHNSON'S MILL RUN  
 ON SR 1401 BETWEEN  
 US 264 AND NC 33



DRAWN BY : M.D.PISO DATE : 05-02-12  
 CHECKED BY : E.K.POPE DATE : 06-15-12

REVISIONS						TOTAL SHEETS
NO.	BY:	DATE:	NO.	BY:	DATE:	30
1			3			30
2			4			30



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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ <sub>LL</sub> )	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ <sub>LL</sub> )	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.09	---	1.75	0.682	1.64	B	EL	31.009	0.786	2.20	A	I	7.404	0.80	0.682	1.09	B	EL	31.009		
	HL-93 (OPERATING)	N/A		2.13	---	1.35	0.682	2.13	B	EL	31.009	0.786	2.86	A	I	7.404	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.39	50.049	1.75	0.682	2.09	B	EL	31.009	0.786	2.52	A	I	7.404	0.80	0.682	1.39	B	EL	31.009		
	HS-20 (OPERATING)	36.000		2.72	97.749	1.35	0.682	2.72	B	EL	31.009	0.786	3.26	A	I	7.404	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.03	40.917	1.40	0.682	5.71	B	EL	31.009	0.786	5.89	A	I	14.807	0.80	0.682	3.03	B	EL	31.009	
		SNGARBS2	20.000		2.30	46.077	1.40	0.682	4.34	B	EL	31.009	0.786	4.75	A	I	14.807	0.80	0.682	2.30	B	EL	31.009	
		SNAGRIS2	22.000		2.20	48.428	1.40	0.682	4.15	B	EL	31.009	0.786	4.61	A	I	7.404	0.80	0.682	2.20	B	EL	31.009	
		SNCOTTS3	27.250		1.51	41.135	1.40	0.682	2.84	B	EL	31.009	0.786	2.99	A	I	14.807	0.80	0.682	1.51	B	EL	31.009	
		SNAGRS4	34.925		1.28	44.659	1.40	0.682	2.41	B	EL	31.009	0.786	2.88	A	I	7.404	0.80	0.682	1.28	B	EL	31.009	
		SNS5A	35.550		1.25	44.411	1.40	0.682	2.35	B	EL	31.009	0.786	3.07	A	I	7.404	0.80	0.682	1.25	B	EL	31.009	
		SNS6A	39.950		1.15	46.083	1.40	0.682	2.17	B	EL	31.009	0.786	2.92	A	I	7.404	0.80	0.682	1.15	B	EL	31.009	
		SNS7B	42.000		1.10	46.149	1.40	0.682	2.07	B	EL	31.009	0.786	2.99	A	I	7.404	0.80	0.682	1.10	B	EL	31.009	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.41	46.492	1.40	0.682	2.65	B	EL	31.009	0.786	3.37	A	I	7.404	0.80	0.682	1.41	B	EL	31.009	
		TNT4A	33.075		1.42	46.870	1.40	0.682	2.67	B	EL	31.009	0.786	3.16	A	I	7.404	0.80	0.682	1.42	B	EL	31.009	
		TNT6A	41.600		1.17	48.496	1.40	0.682	2.20	B	EL	31.009	0.786	3.08	A	I	7.404	0.80	0.682	1.17	B	EL	31.009	
		TNT7A	42.000		1.18	49.368	1.40	0.682	2.21	B	EL	31.009	0.786	2.92	A	I	7.404	0.80	0.682	1.18	B	EL	31.009	
		TNT7B	42.000		1.23	51.475	1.40	0.682	2.31	B	EL	31.009	0.786	2.82	A	I	7.404	0.80	0.682	1.23	B	EL	31.009	
		TNAGRIT4	43.000		1.16	49.828	1.40	0.682	2.18	B	EL	31.009	0.786	2.71	A	I	7.404	0.80	0.682	1.16	B	EL	31.009	
TNAGT5A	45.000		1.09	49.018	1.40	0.682	2.05	B	EL	31.009	0.786	2.91	A	I	7.404	0.80	0.682	1.09	B	EL	31.009			
TNAGT5B	45.000		③	1.07	48.294	1.40	0.682	2.02	B	EL	31.009	0.786	2.56	A	I	7.404	0.80	0.682	1.07	B	EL	31.009		

### LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ <sub>DC</sub>	γ <sub>DW</sub>
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

### NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.  
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

### COMMENTS:

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

⊛ CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

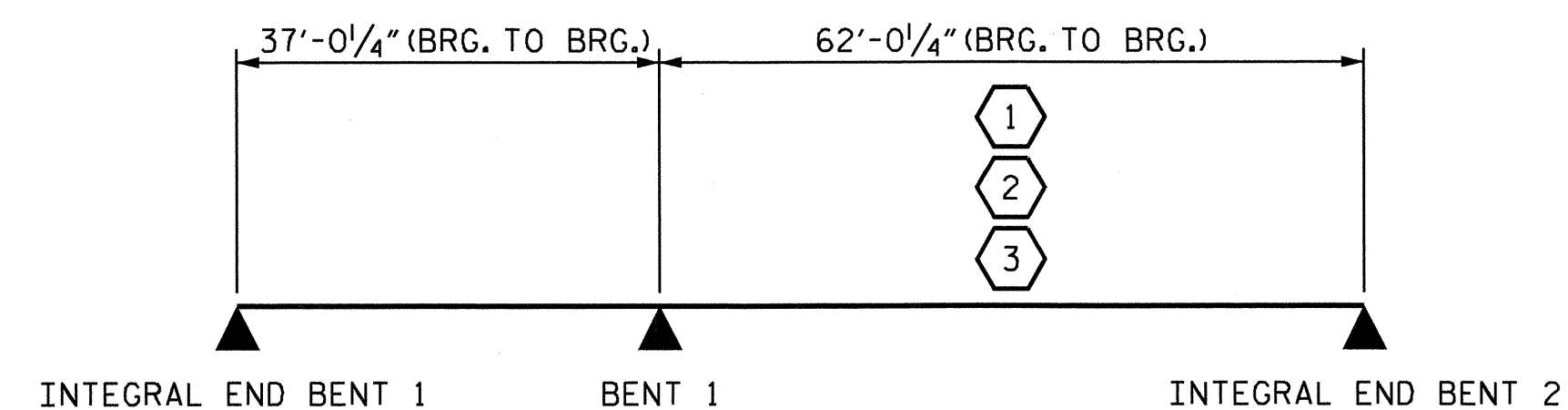
③ LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

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GIRDER LOCATION

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



## LRFR SUMMARY

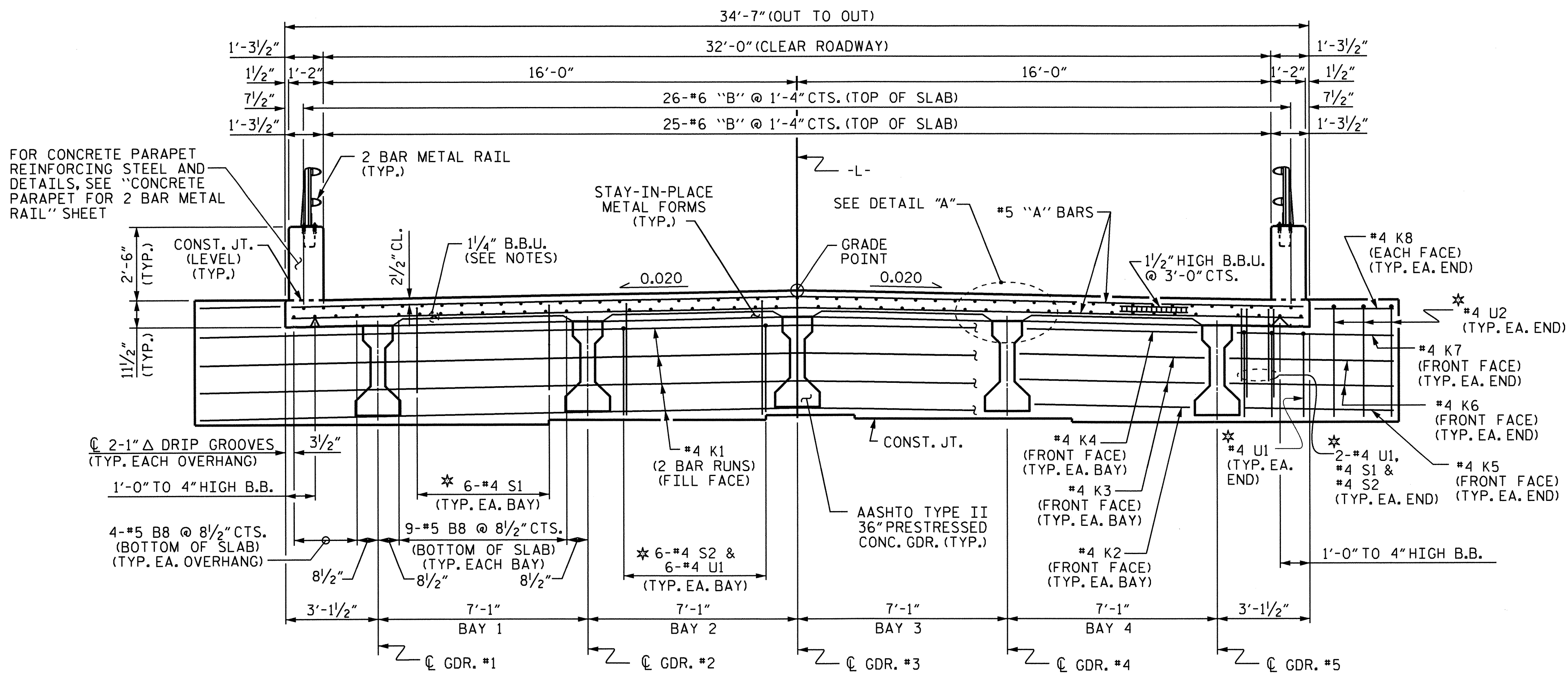
PROJECT NO. B-4787  
PITT COUNTY  
 STATION: 18+47.50 -L-



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

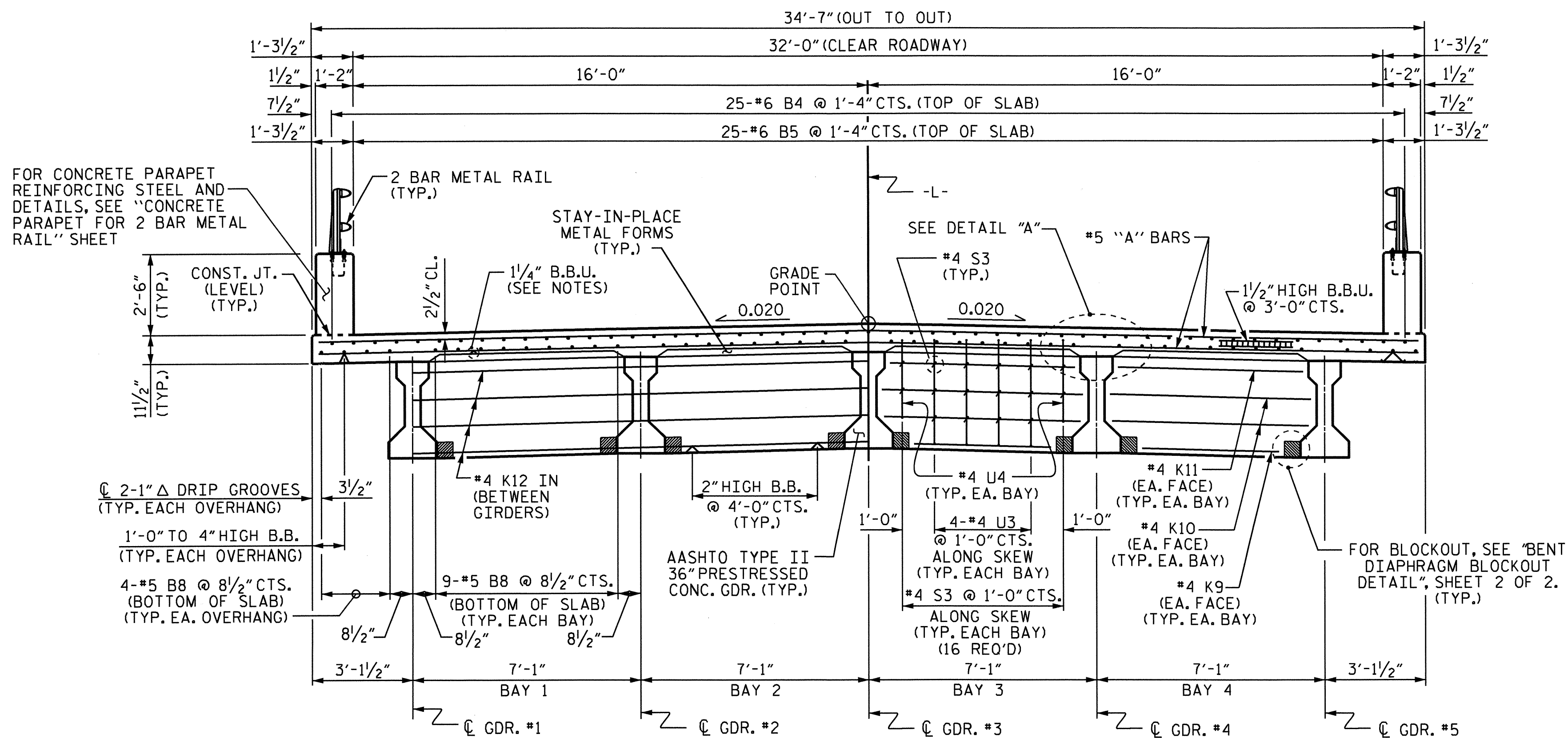
ASSEMBLED BY: B.N. BARODAWAL DATE: 7-12-12  
 CHECKED BY: PEGGY ADKINS DATE: 8-3-12  
 DRAWN BY: MAA 1/08 REV. 11/12/08RR MAA/GM  
 CHECKED BY: GM/DI 2/08 REV. 10/1/11 MAA/GM

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



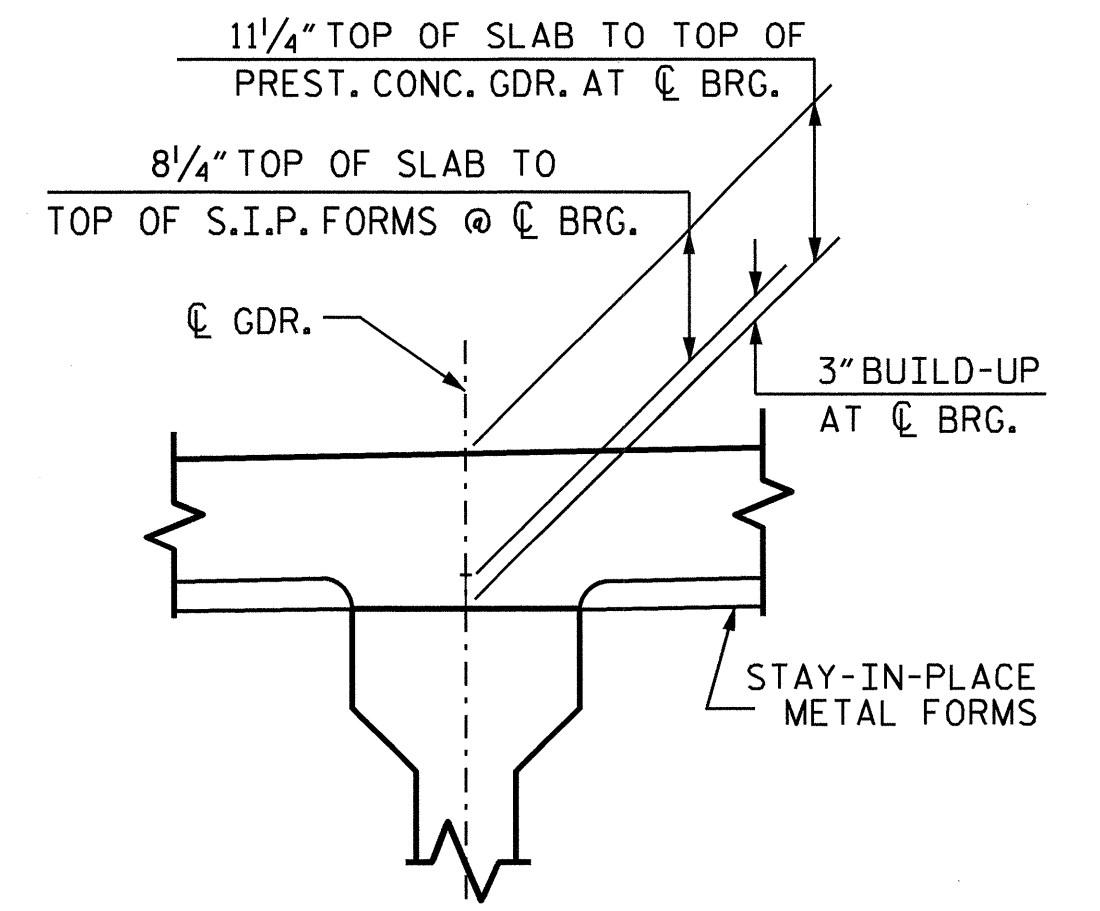
TYPICAL SECTION @ INTEGRAL END BENT

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

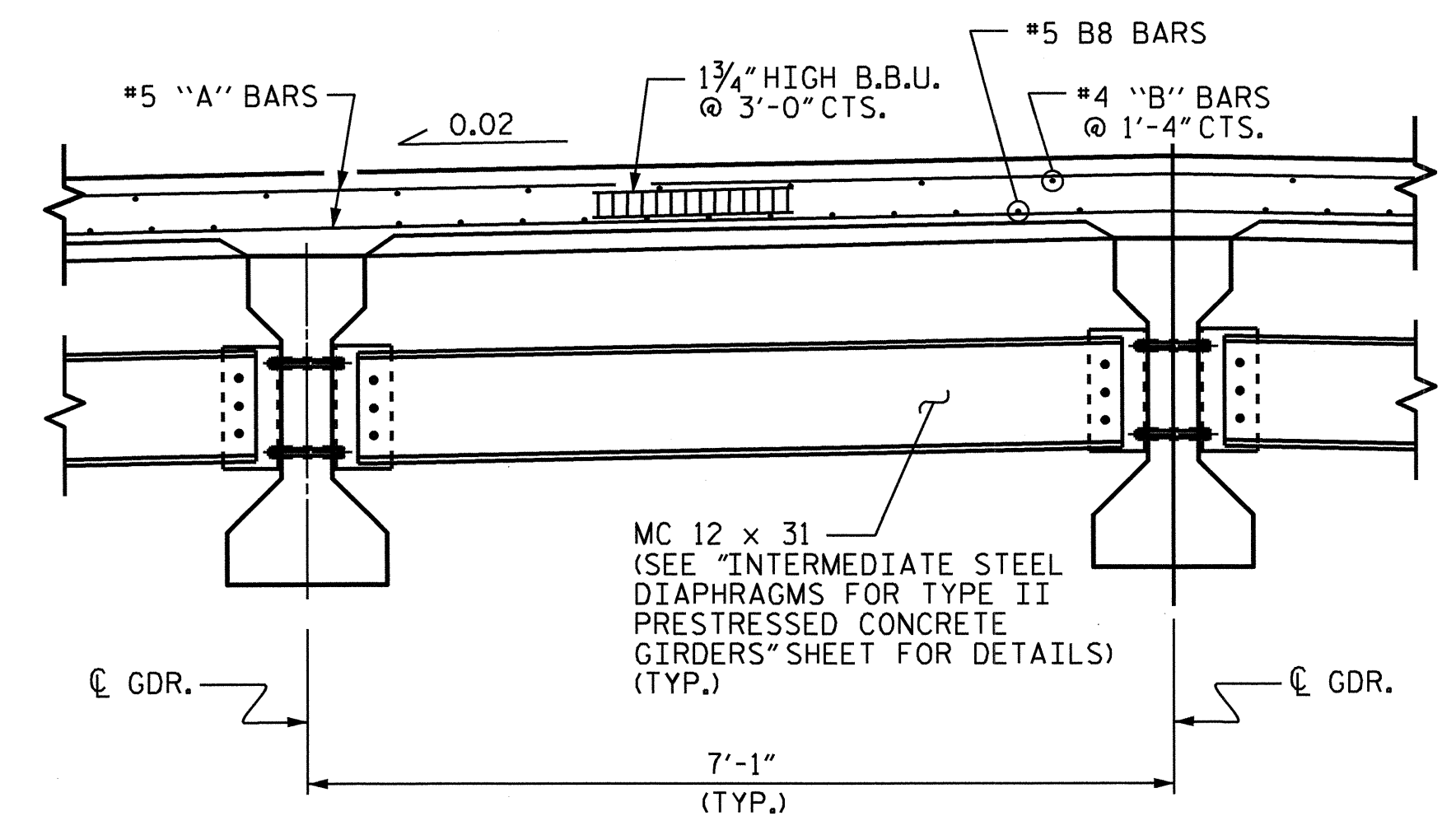


TYPICAL SECTION @ CONTINUOUS BENT DIAPHRAGM

**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.  
 CONCRETE PARAPET 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.



DETAIL "A"



PARTIAL TYPICAL SECTION AT INTERMEDIATE DIAPHRAGM

PROJECT NO. B-4787  
PITT COUNTY  
 STATION: 18+47.50 -L-

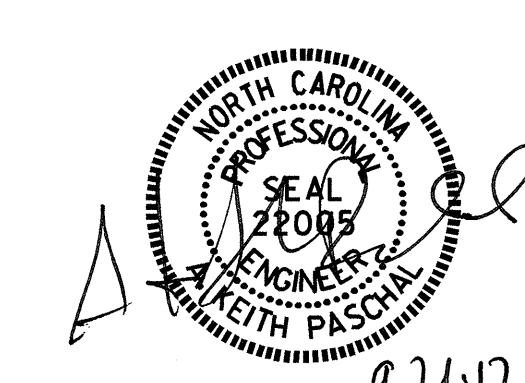
SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

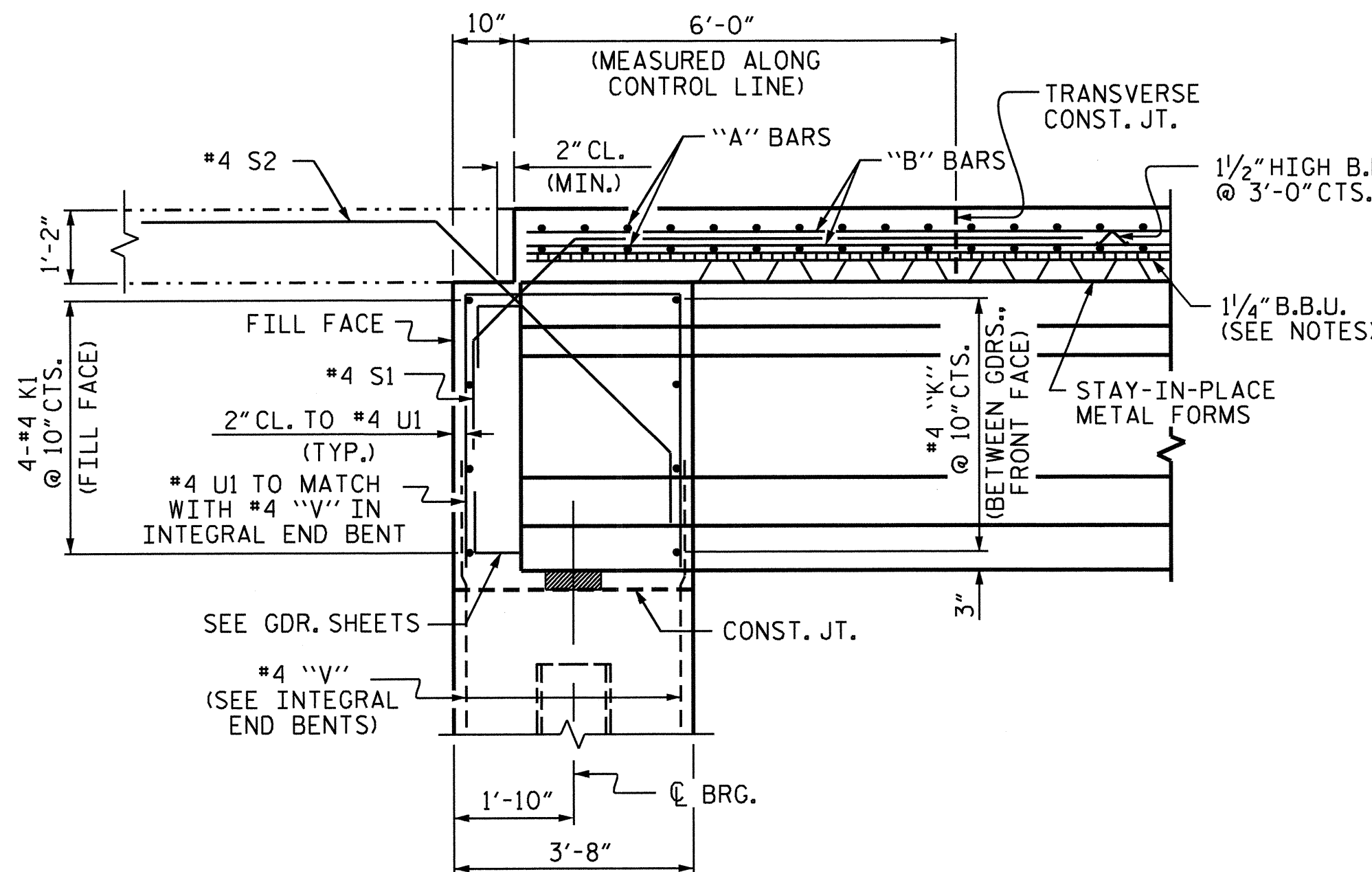
SUPERSTRUCTURE  
 TYPICAL SECTION

REVISIONS						SHEET NO. S-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 30
2			4			

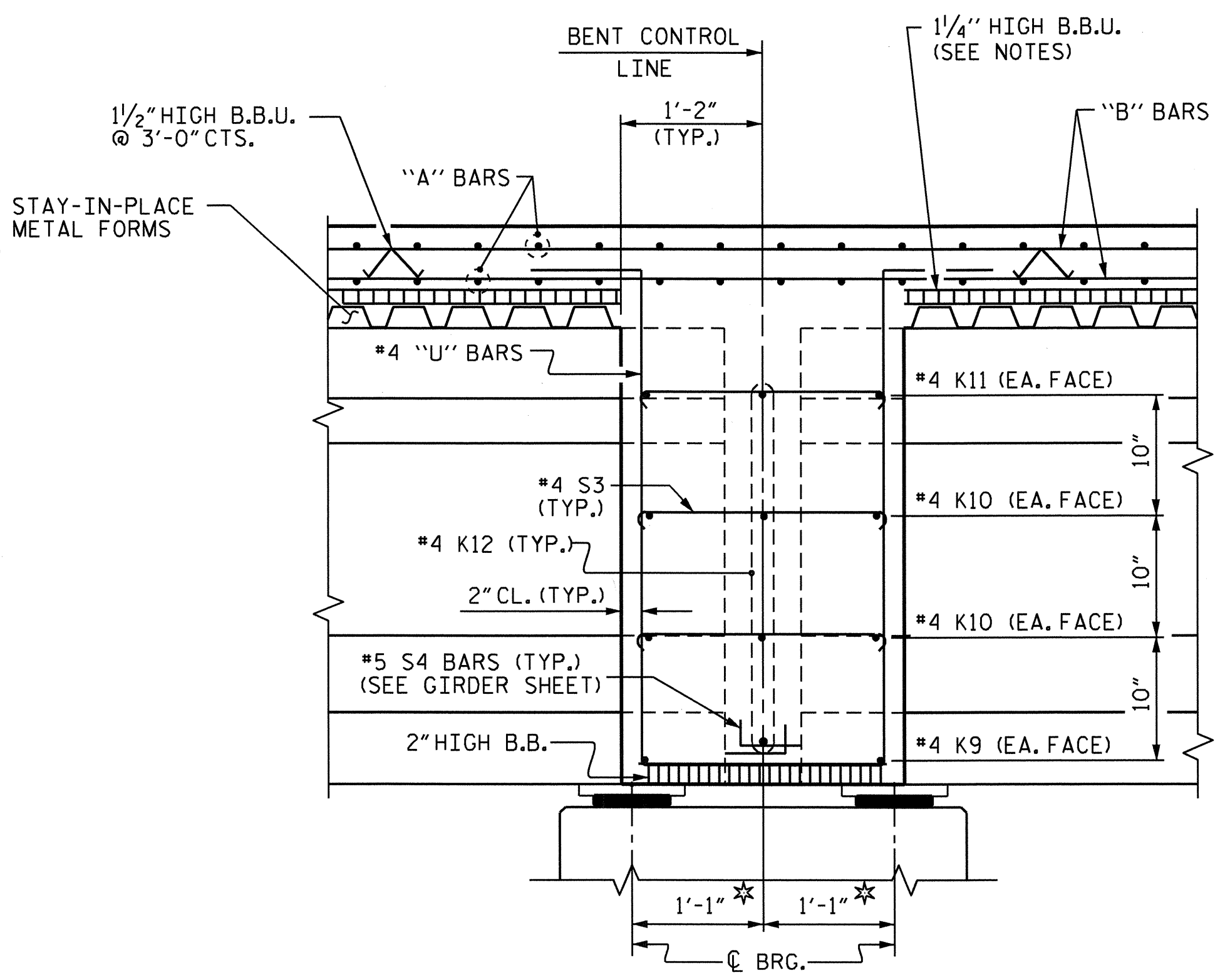
DRAWN BY: B.N.BARODAWALA DATE: 4-1-12  
 CHECKED BY: AMBER LEE DATE: 5-7-12





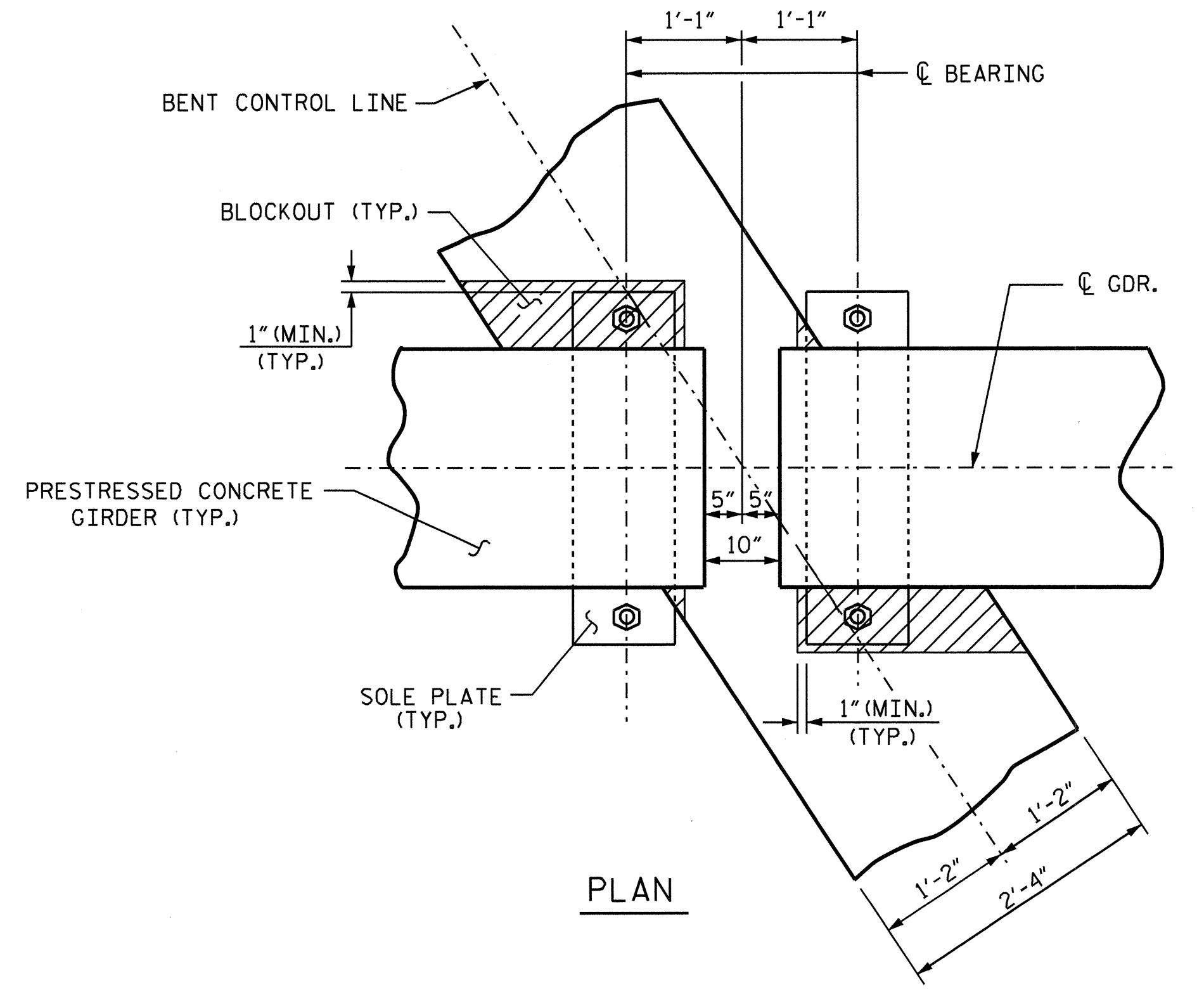


END OF GIRDER DETAIL AT INTEGRAL END BENT

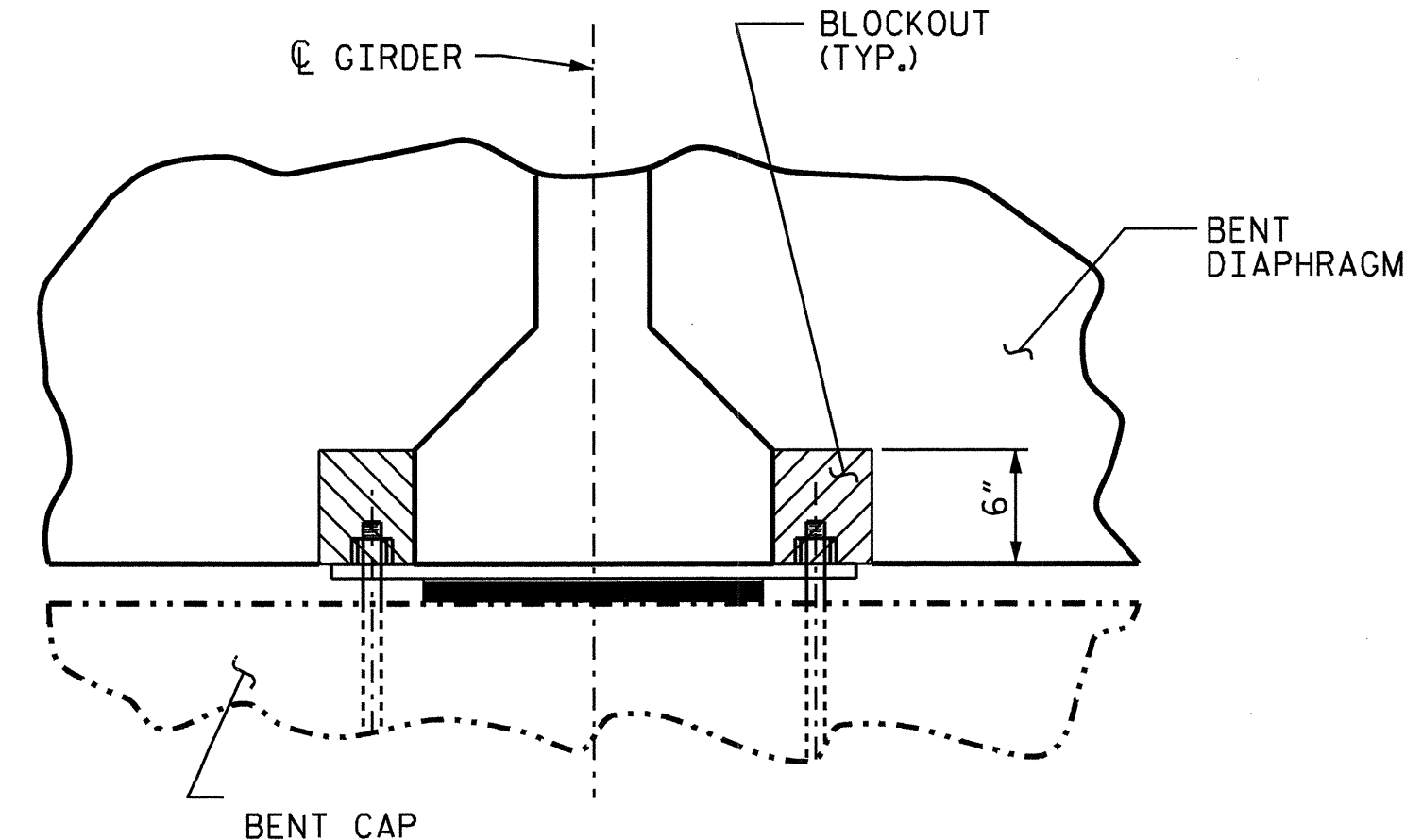


SECTION THRU BENT DIAPHRAGM

\* MEASURED ALONG CL GIRDER

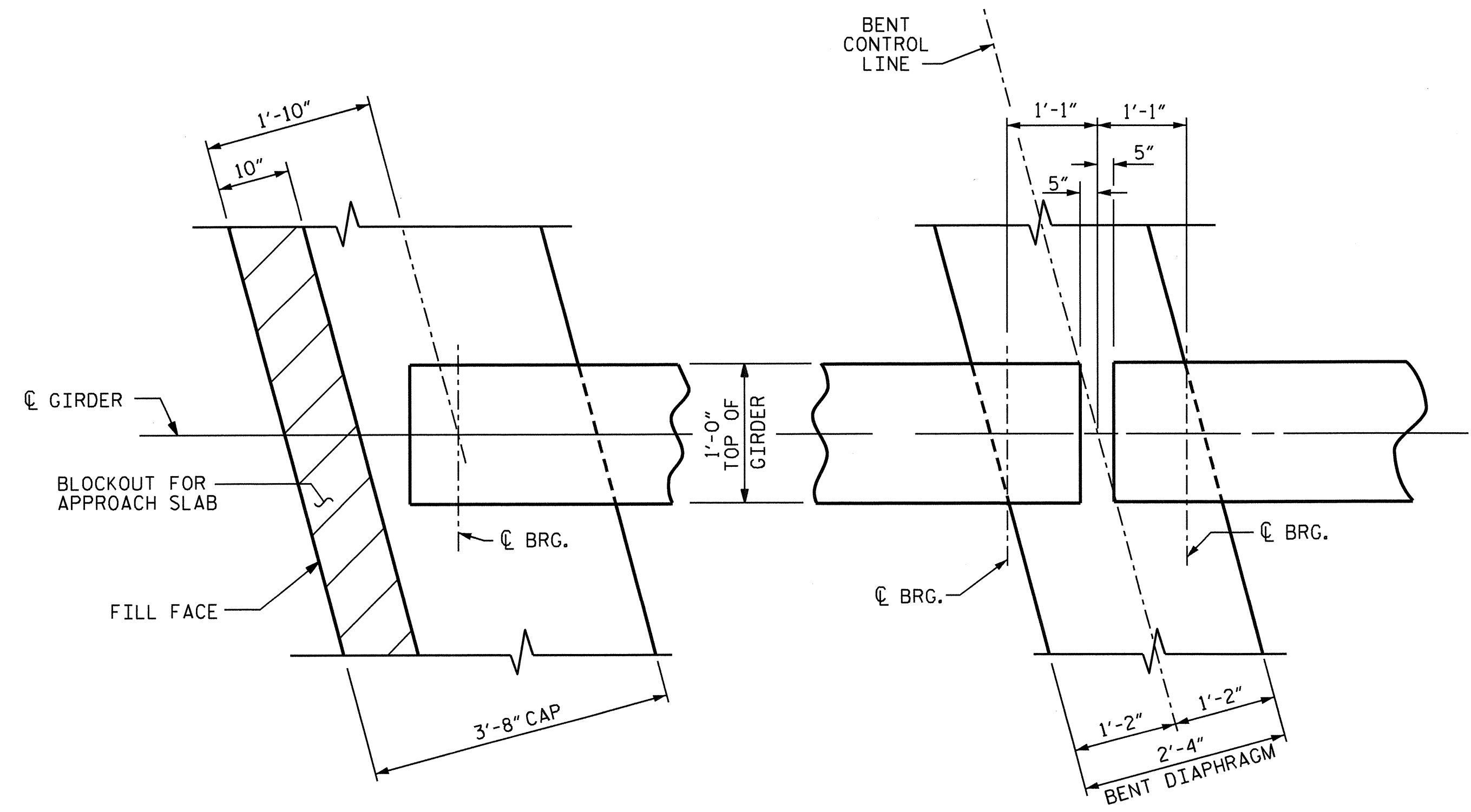


PLAN



SECTION

BENT DIAPHRAGM BLOCK-OUT DETAIL



END BENT DIAPHRAGM

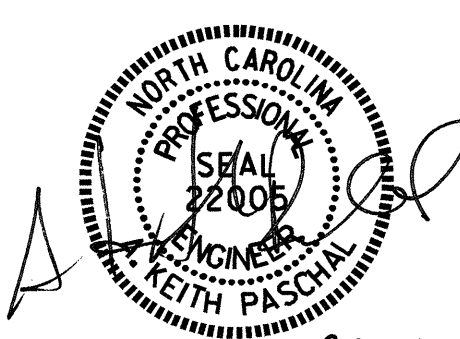
BENT DIAPHRAGM

PLAN

PROJECT NO. B-4787  
PITT COUNTY  
 STATION: 18+47.50 -L-

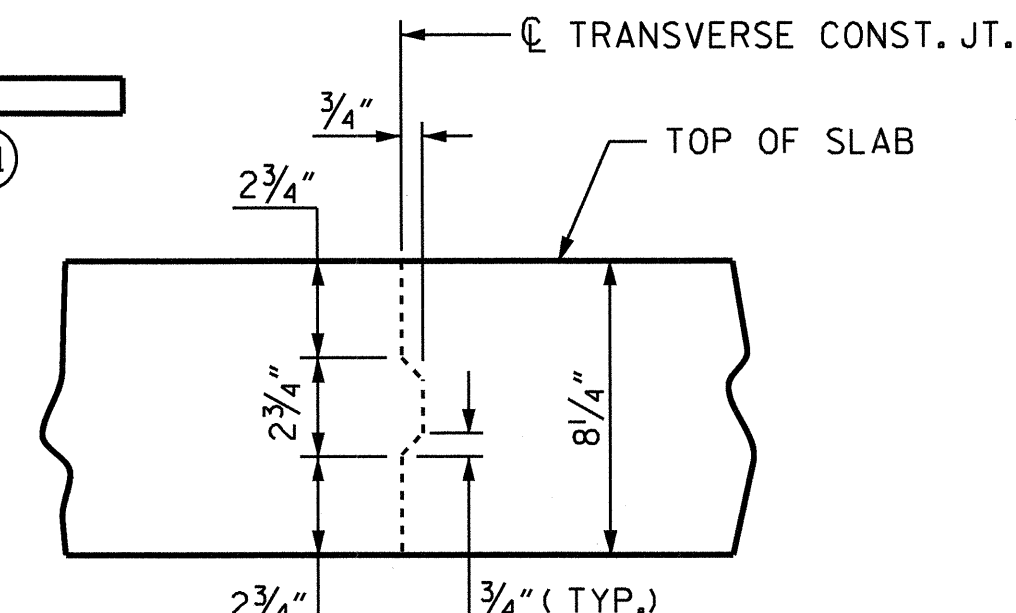
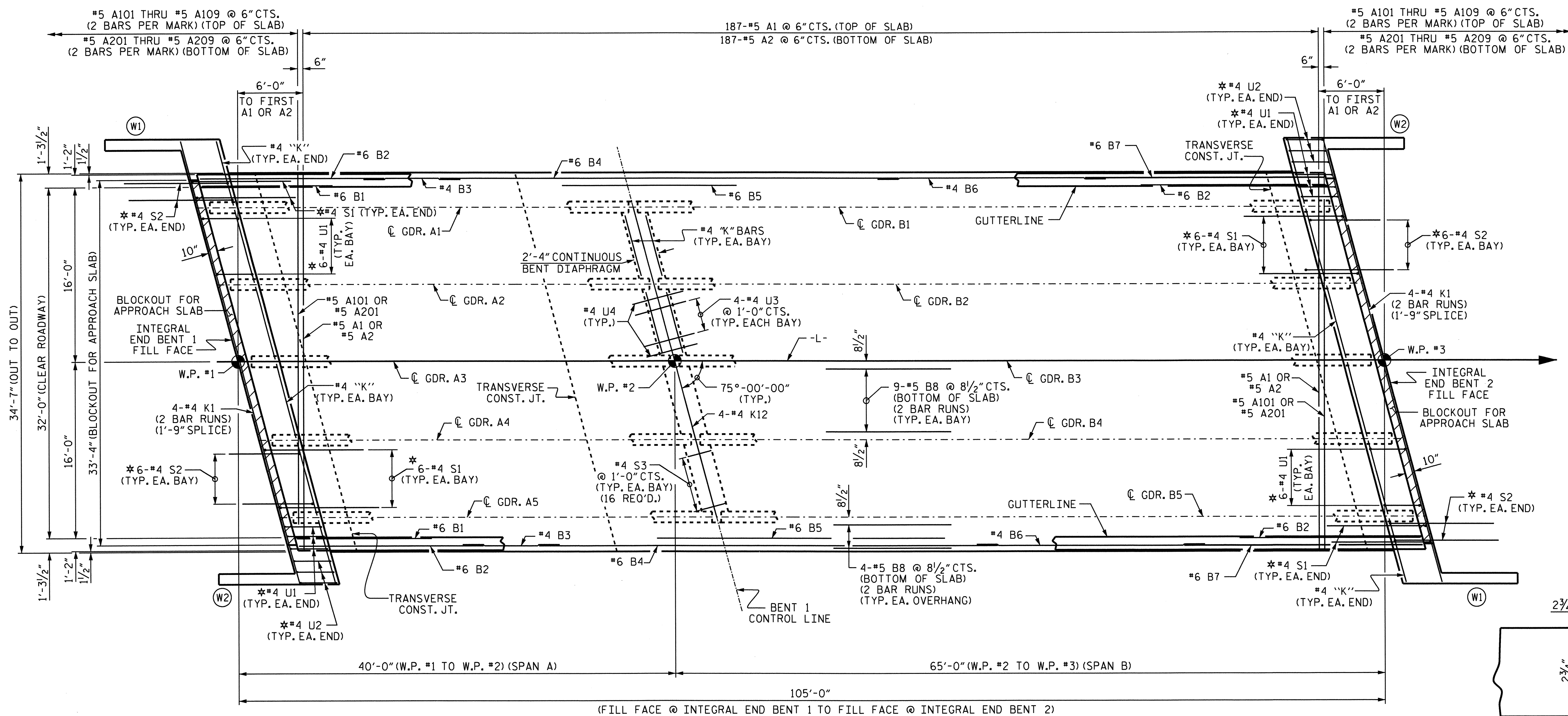
SHEET 2 OF 2

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



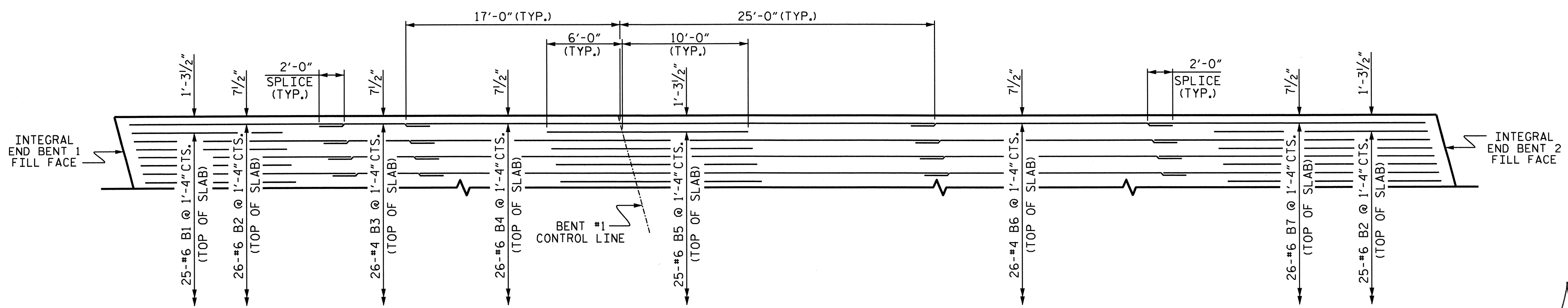
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6	
1			3			TOTAL	6
2			4			SHEETS	30

DRAWN BY : B.N.BARODAWALA DATE : 4-1-12  
 CHECKED BY : AMBER LEE DATE : 5-7-12



PLAN OF SPANS

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



PROJECT NO. B-4787  
 PITT COUNTY  
 STATION: 18+47.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

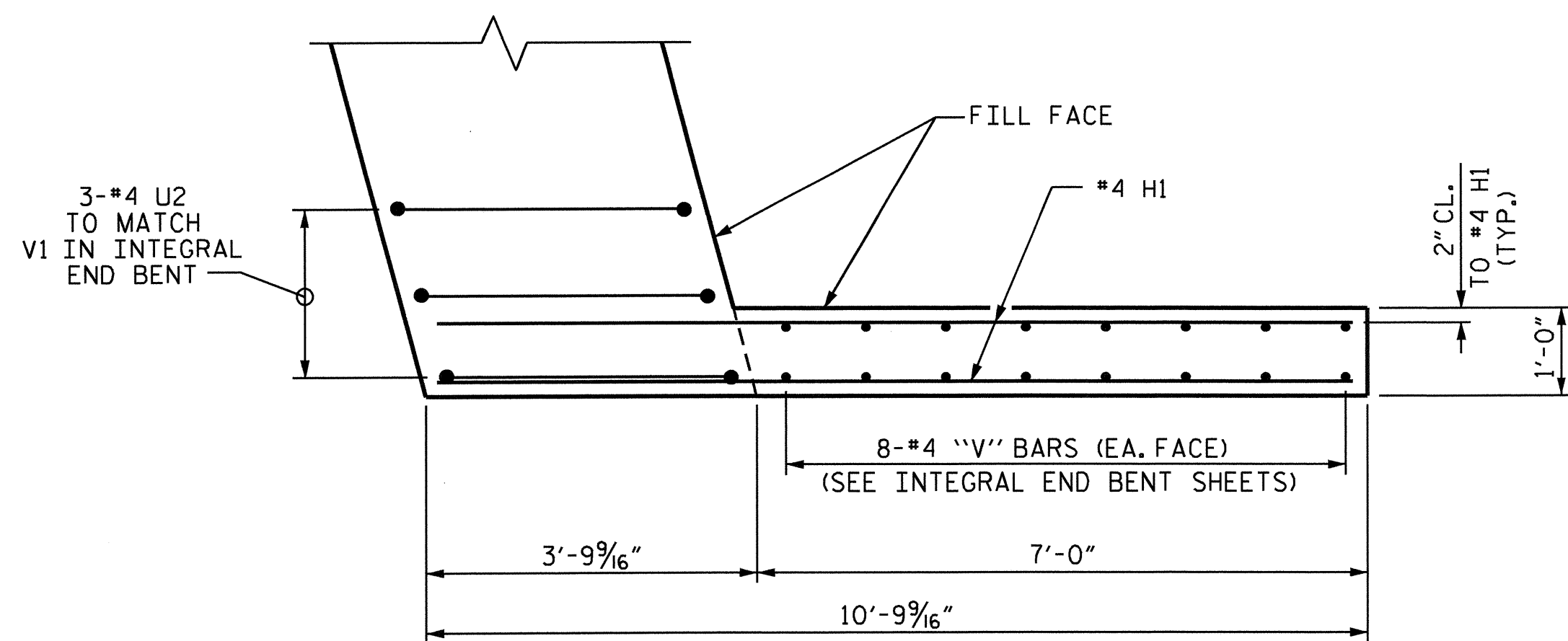
SUPERSTRUCTURE  
 PLAN OF SPANS



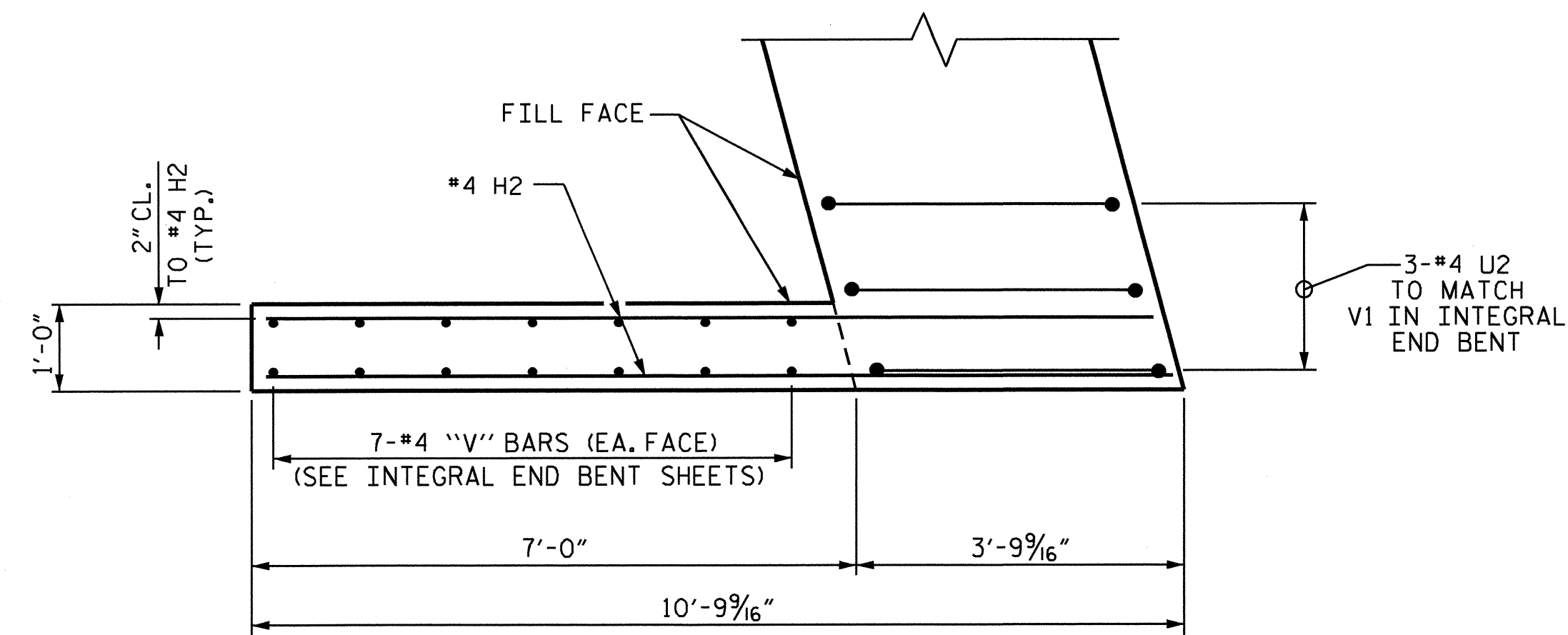
DRAWN BY: B.N. BARODAWALA DATE: 4-1-12  
 CHECKED BY: AMBER LEE DATE: 5-7-12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			30

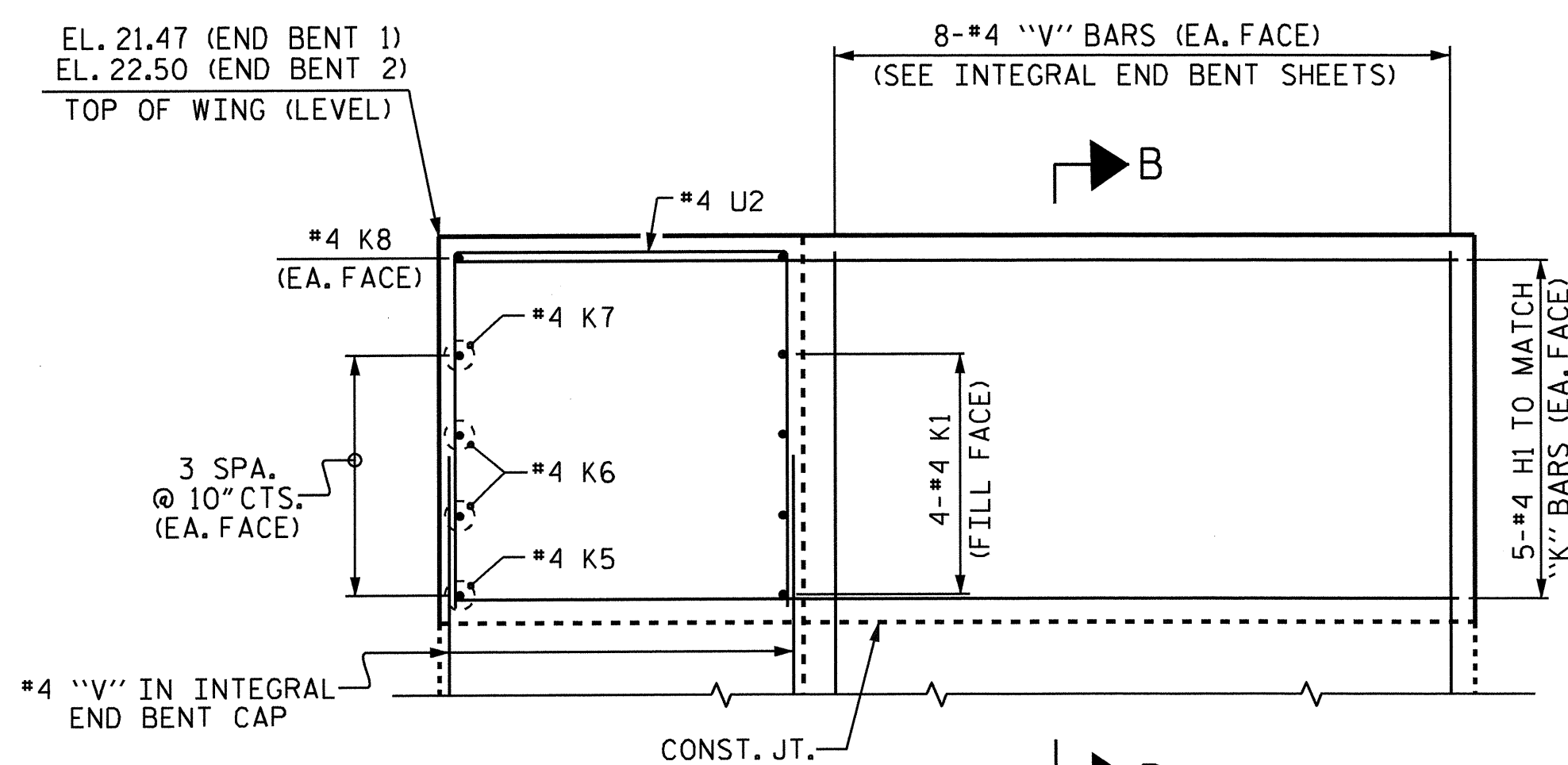




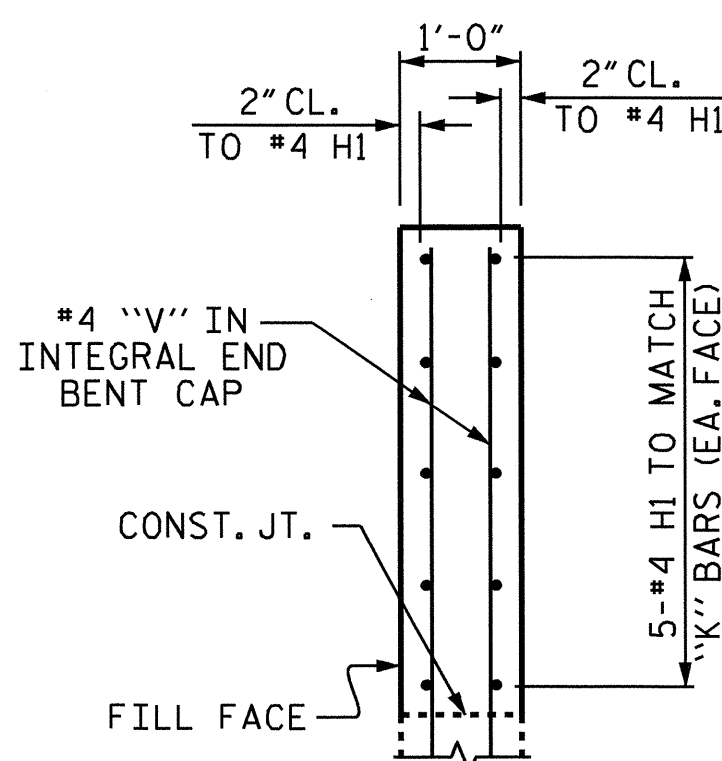
PLAN (W1)



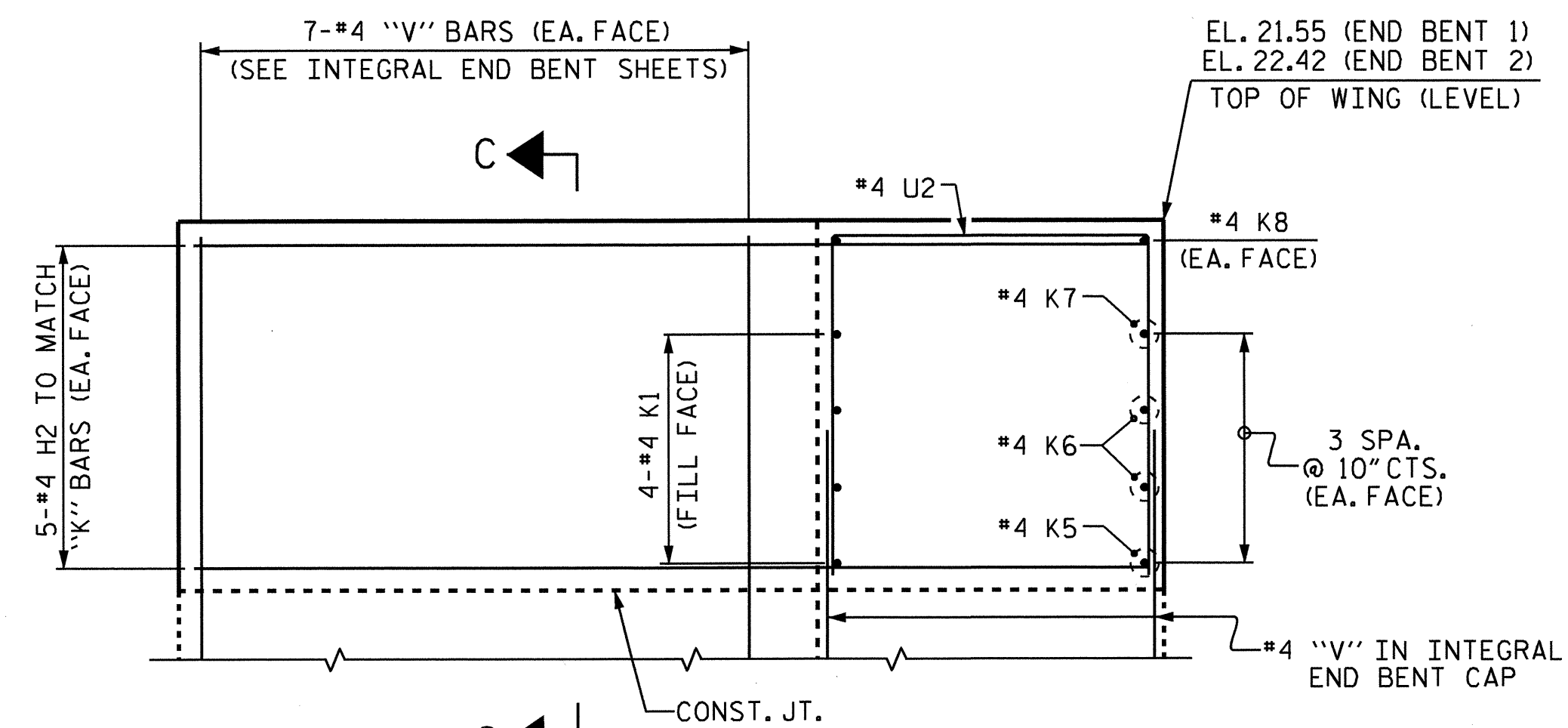
PLAN (W2)



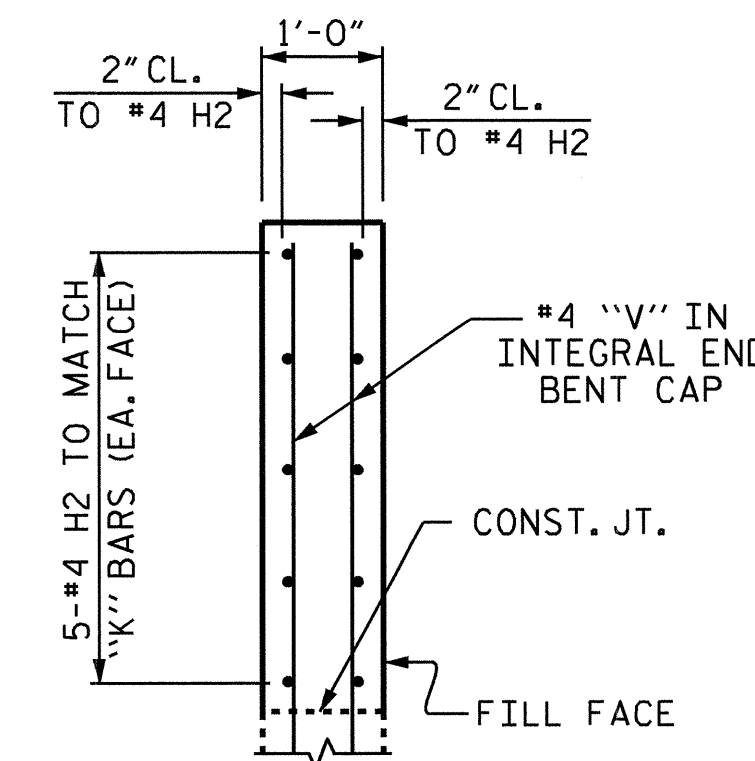
ELEVATION (W1)



SECTION B-B



ELEVATION (W2)



SECTION C-C

UPPER WINGS AT INTEGRAL END BENTS

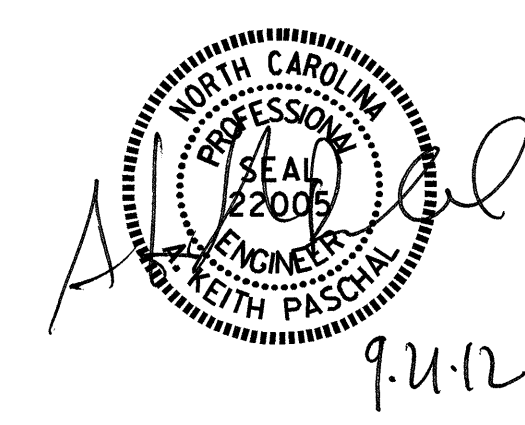
(FOR LOWER WING REINFORCING STEEL AND DETAILS, SEE INTEGRAL END BENT SHEETS)

PROJECT NO. B-4787  
PITT COUNTY  
 STATION: 18+47.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

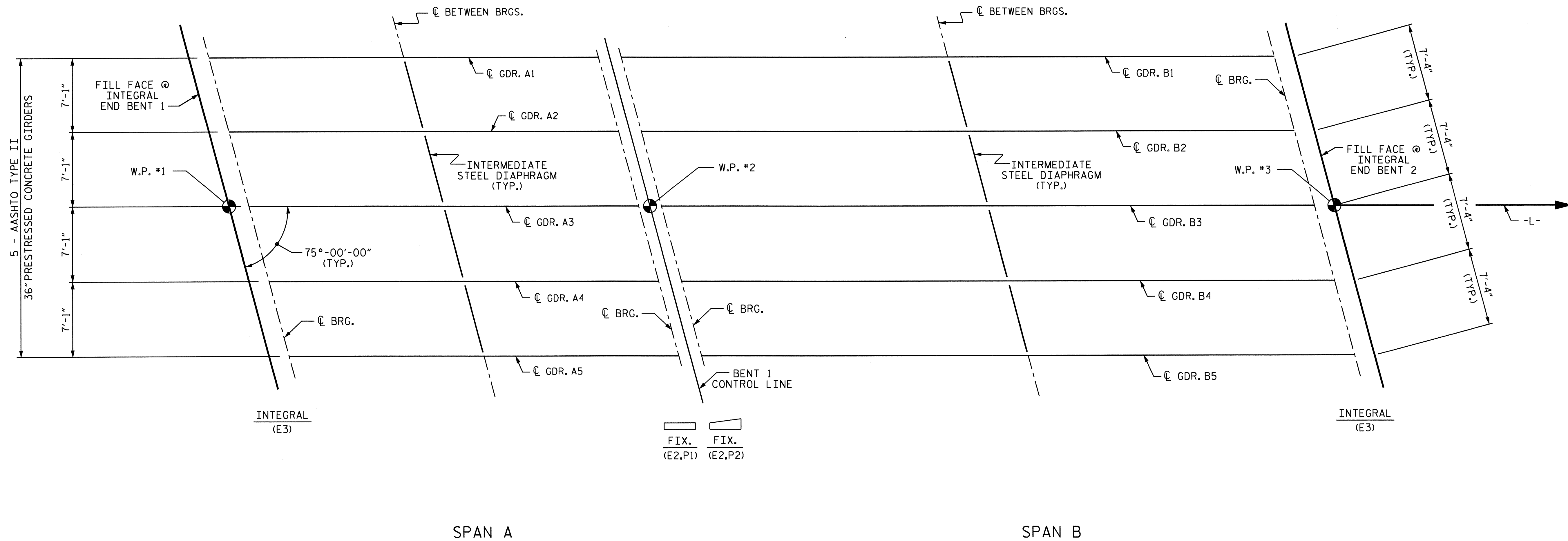
SUPERSTRUCTURE  
 PLAN OF SPAN  
 DETAILS



DRAWN BY: B.N. BARODAWALA DATE: 7-12-12  
 CHECKED BY: E. K. POPE DATE: 7-24-12

08-AUG-2012 11:18  
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			30

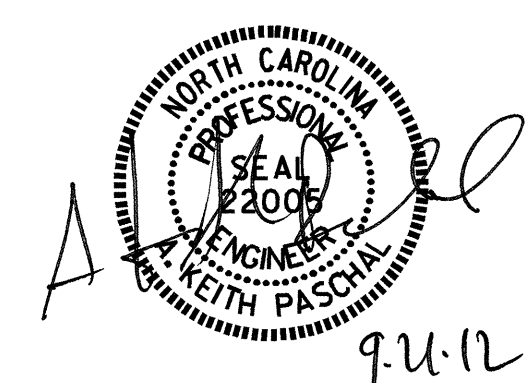


**GIRDER LAYOUT**

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

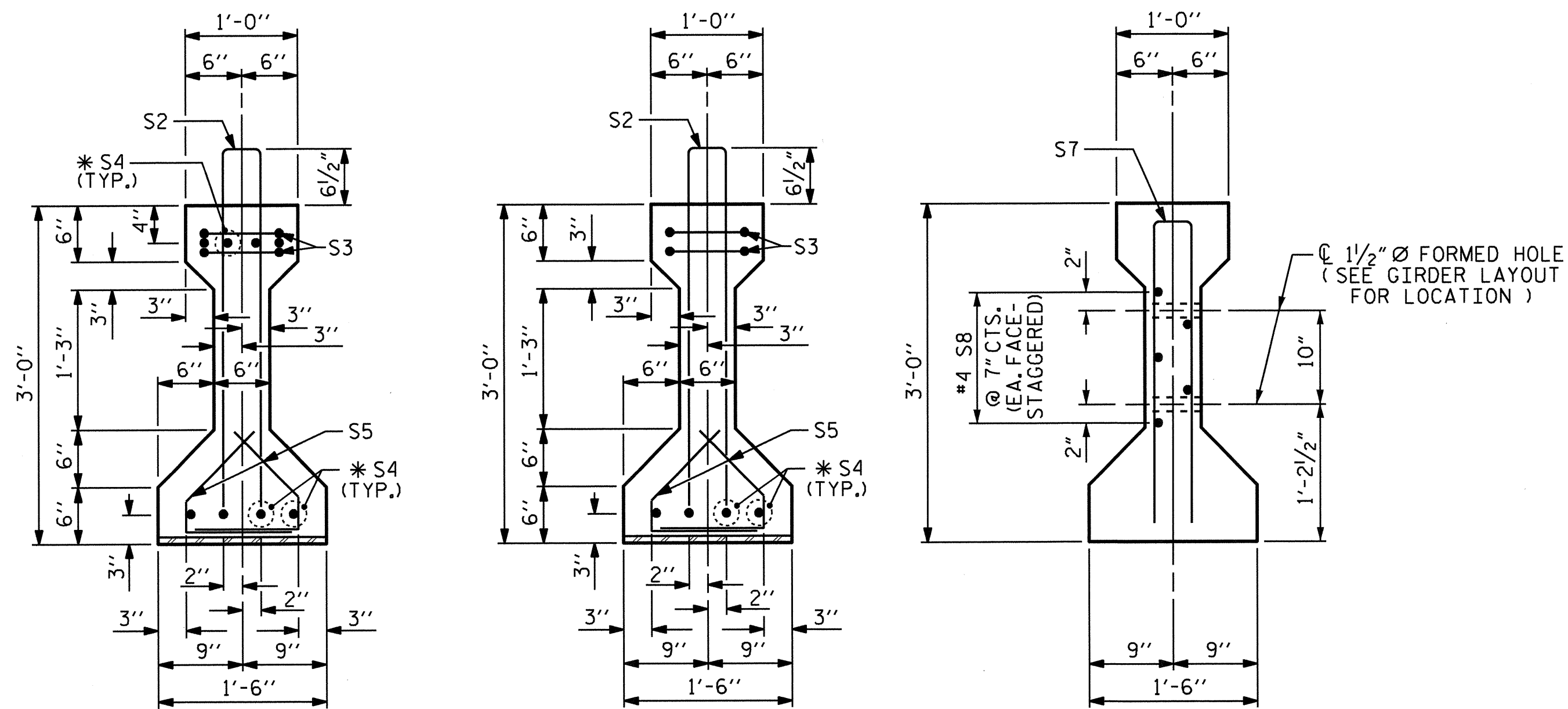
PROJECT NO. B-4787  
PITT COUNTY  
 STATION: 18+47.50 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE GIRDER LAYOUT					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS					30
					S-9



DRAWN BY: B.N. BARODAWALA DATE: 4-1-12  
 CHECKED BY: AMBER LEE DATE: 7-5-12



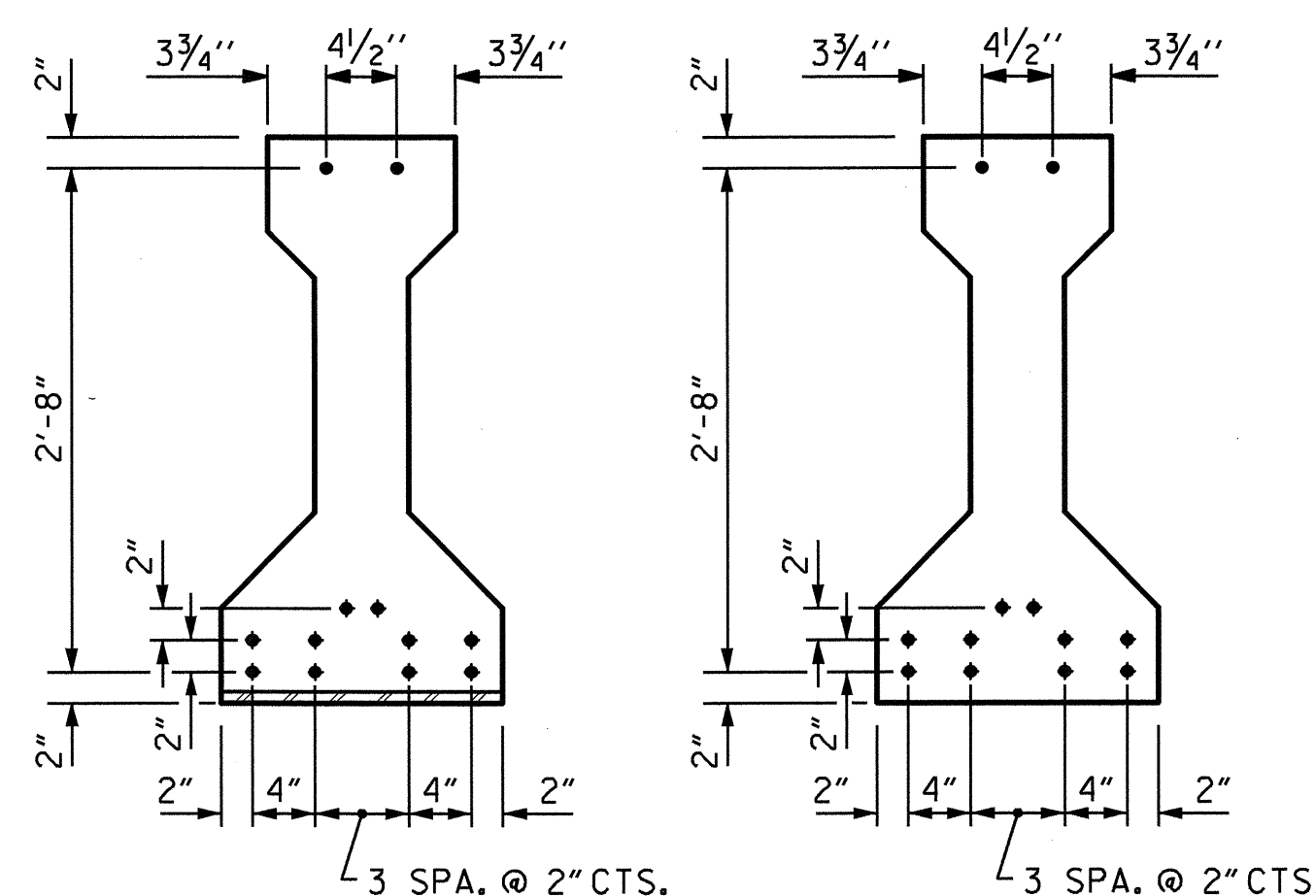


SECTION A-A

SECTION B-B

SECTION C-C

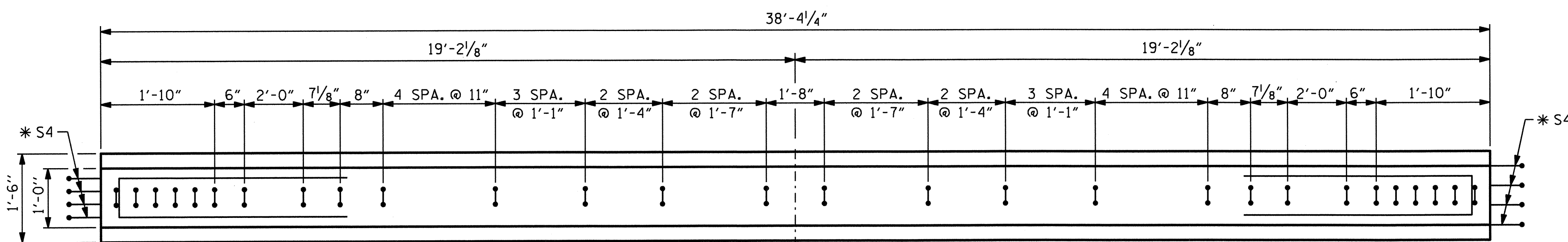
(S1 BARS NOT SHOWN)



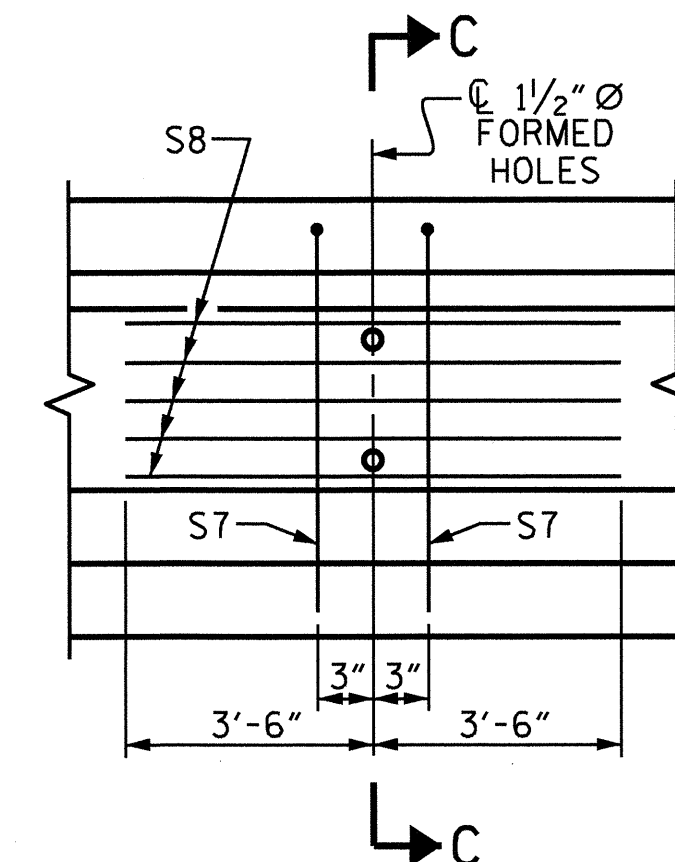
AT END OF GIRDER

AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

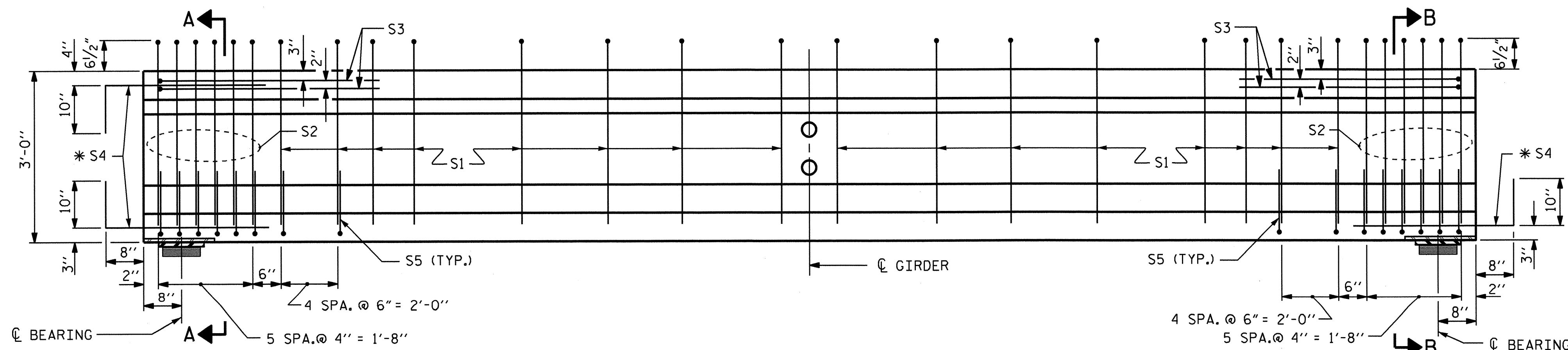


PLAN OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR S7 AND S8 BARS)

0.6" Ø L. R. GRADE 270 STRANDS

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

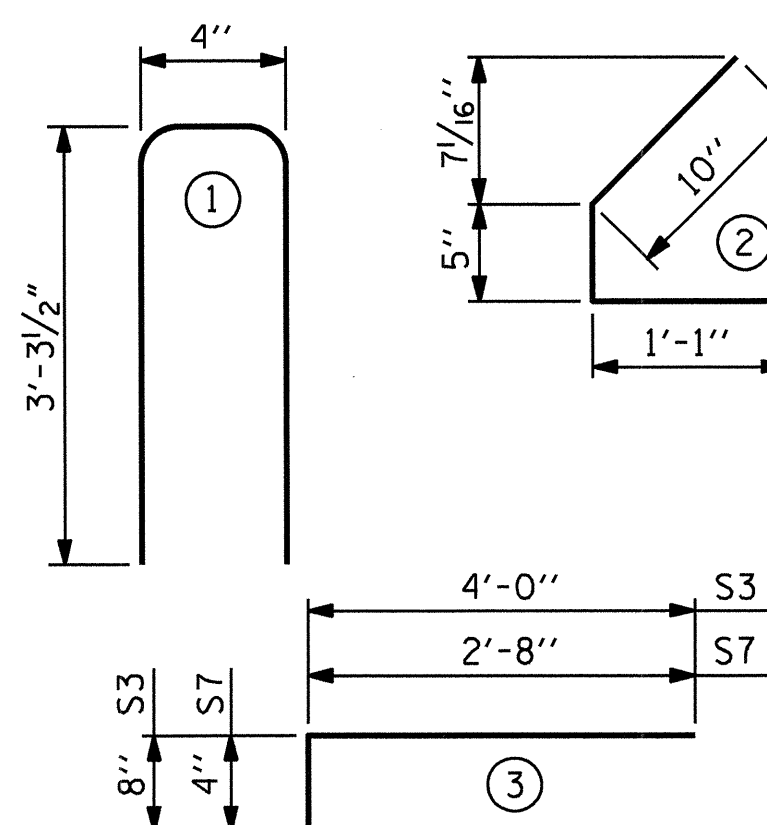
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	36	#4	1	6'-11"	166
S2	12	#5	1	6'-11"	87
S3	4	#4	3	8'-8"	23
* S4	12	#5	STR	3'-8"	46
S5	44	#4	2	2'-4"	69
S7	2	#5	3	5'-8"	12
S8	5	#4	STR	7'-0"	23

\* 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	5000 PSI CONCRETE	0.6" Ø L. R. STRANDS	
		LB.	No.
426	3.6	12	

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5	38'-4 1/4"	191'-9 1/4"

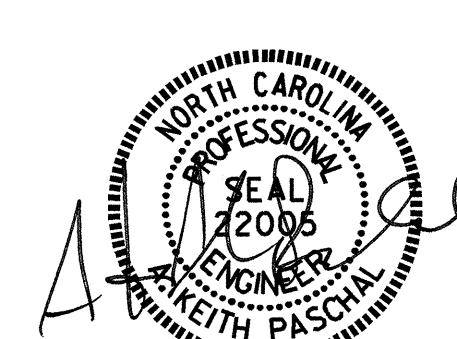
PROJECT NO. B-4787  
PITT COUNTY  
STATION: 18+47.50 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

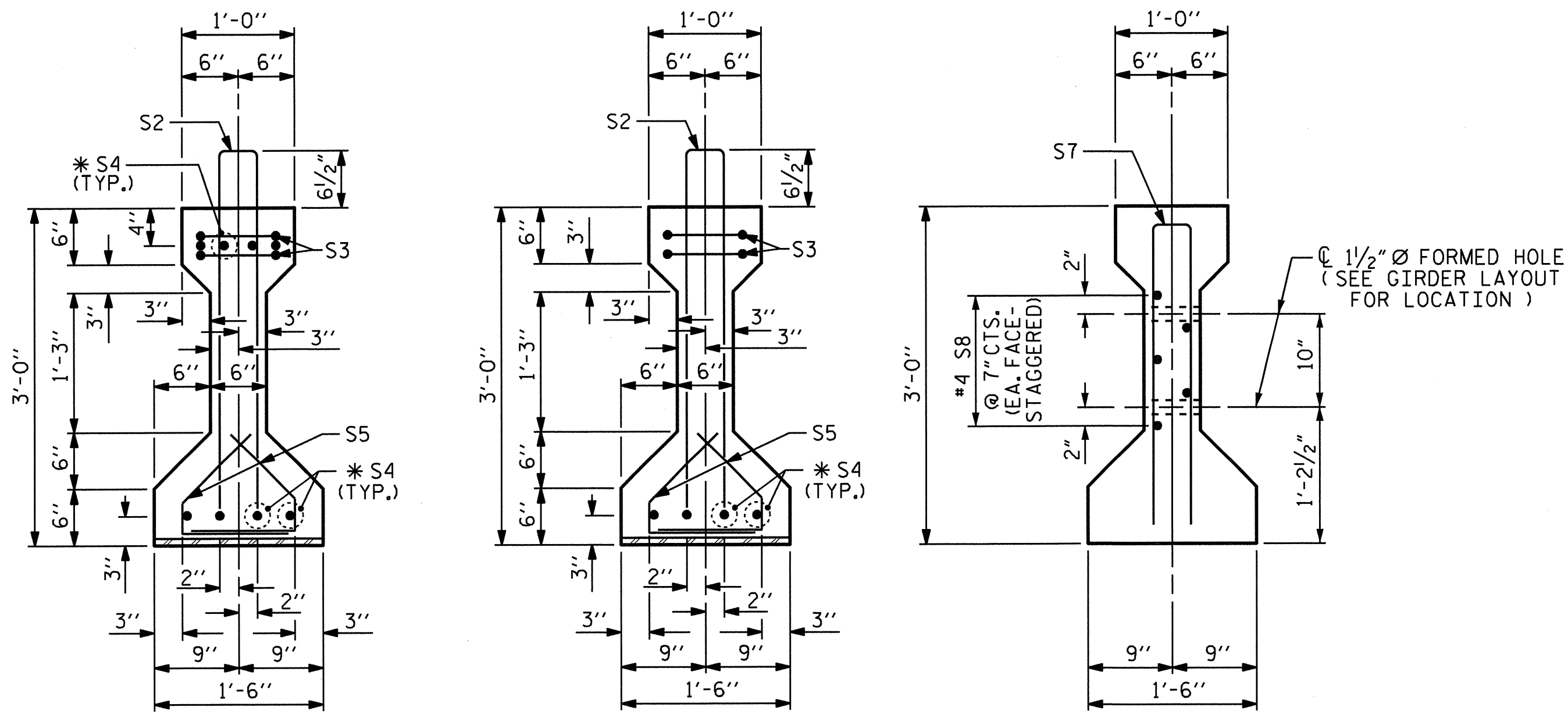
AASHTO TYPE II  
PRESTRESSED CONCRETE GIRDER  
CONTINUOUS FOR LIVE LOAD

SPAN A



ASSEMBLED BY: B.N. BARODAWALA DATE: 4-1-12  
CHECKED BY: AMBER LEE DATE: 7-5-12  
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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			30

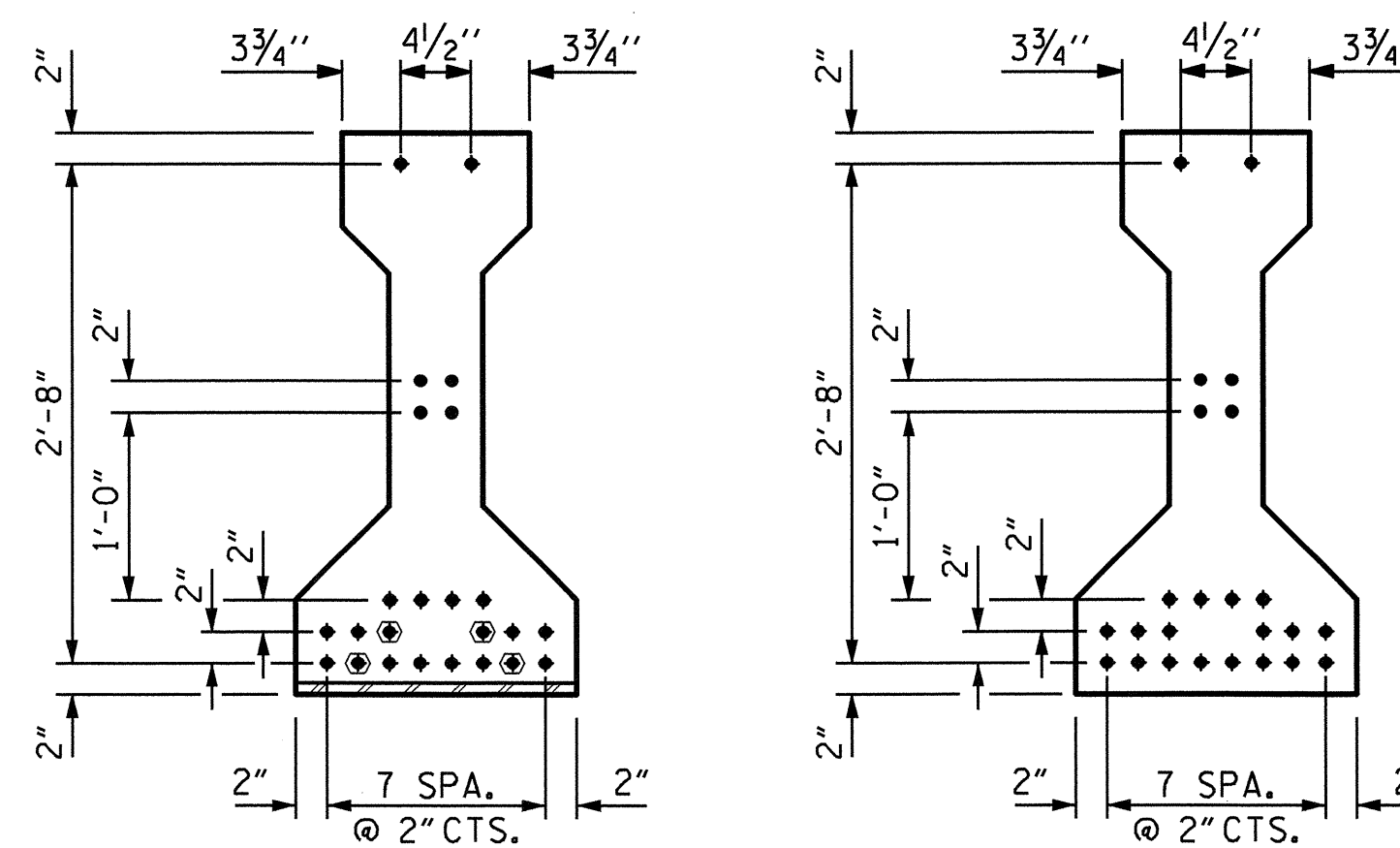


SECTION A-A

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

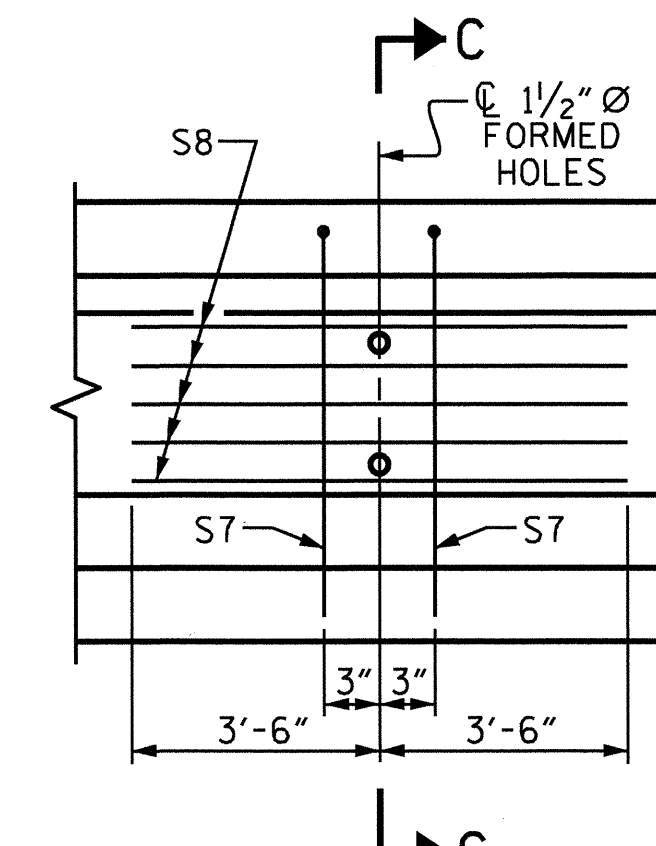
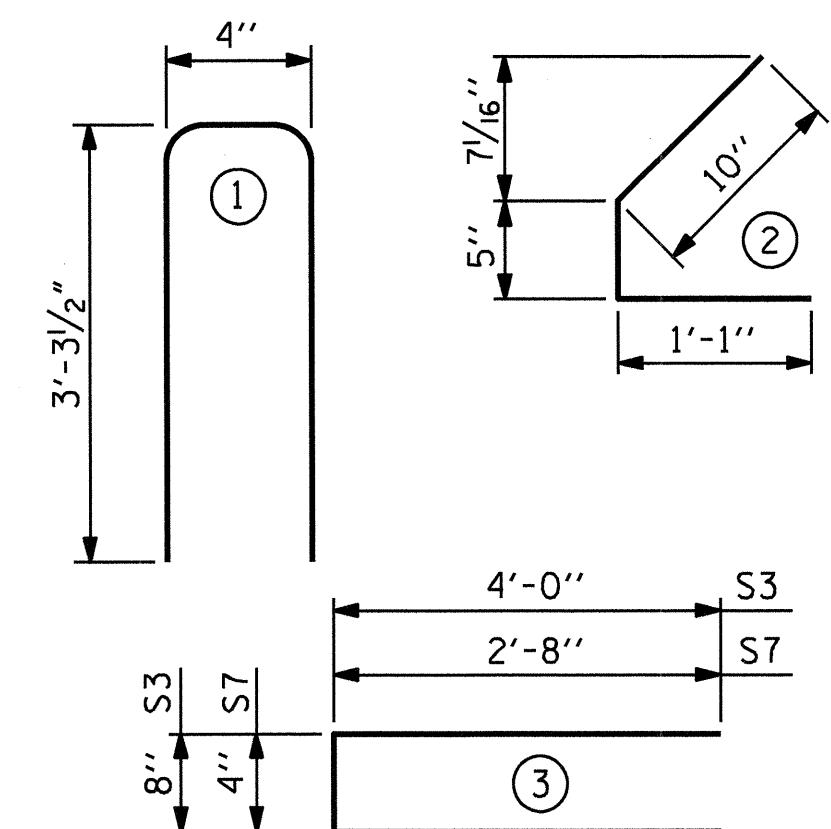
**REINFORCING STEEL FOR ONE GIRDER**

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	88	#4	1	6'-11"	407
S2	14	#5	1	6'-11"	101
S3	4	#4	3	8'-8"	23
*S4	12	#5	STR	3'-8"	46
S5	52	#4	2	2'-4"	81
S7	2	#5	3	5'-8"	12
S8	5	#4	STR	7'-0"	23

\* NOTE: S4 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

**BAR TYPES**

ALL BAR DIMENSIONS ARE OUT-TO-OUT



PARTIAL ELEVATION

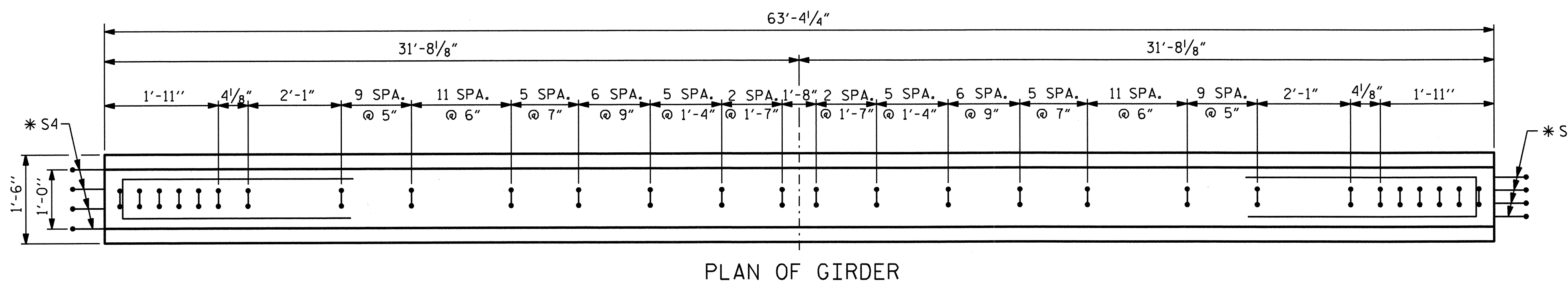
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER

**QUANTITIES FOR ONE GIRDER**

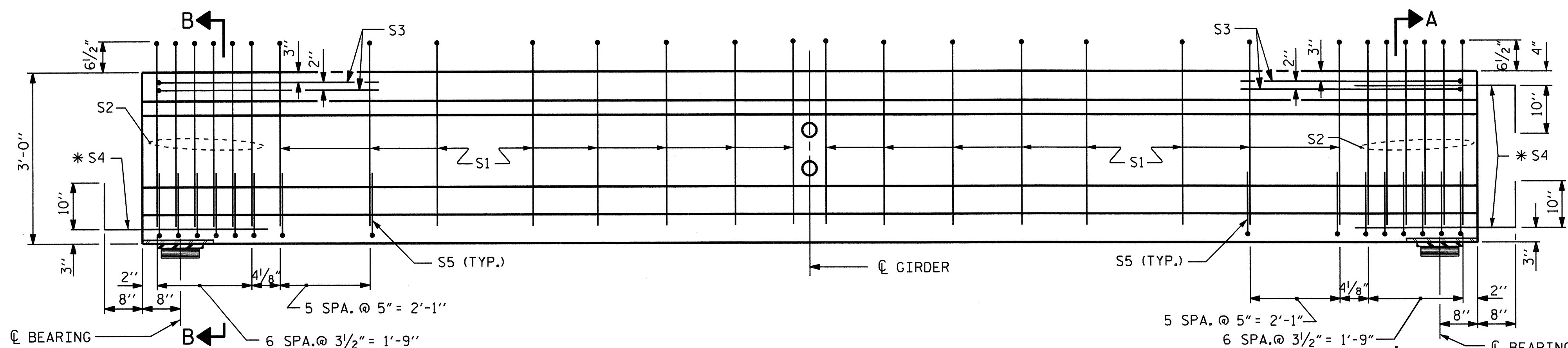
	REINFORCING STEEL	8800 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
	693	6.0	24

**GIRDERS REQUIRED**

NUMBER	LENGTH	TOTAL LENGTH
5	63'-4 1/4"	316'-9 1/4"

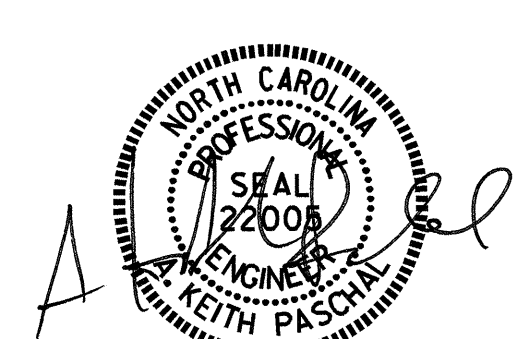


PLAN OF GIRDER



ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR S7 AND S8 BARS)



PROJECT NO. B-4787  
 PITT COUNTY  
 STATION: 18+47.50 -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

REVISIONS					SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS 30
2			4			

ASSEMBLED BY: B.N. BARODAWALA DATE: 4-1-12  
 CHECKED BY: AMBER LEE DATE: 7-5-12  
 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.

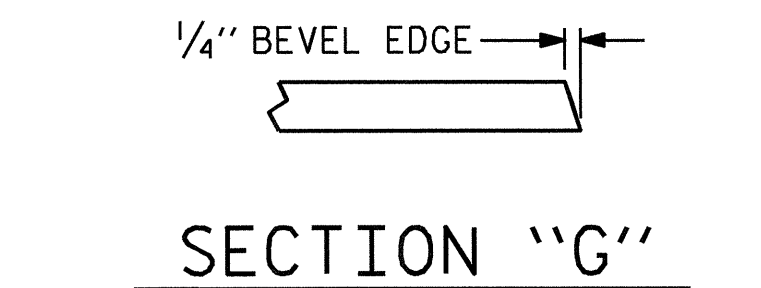
AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI FOR SPAN A AND 7000 PSI FOR SPAN B.

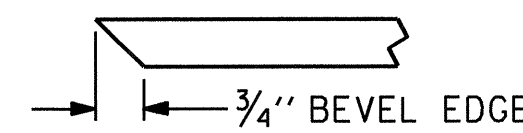
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

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

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

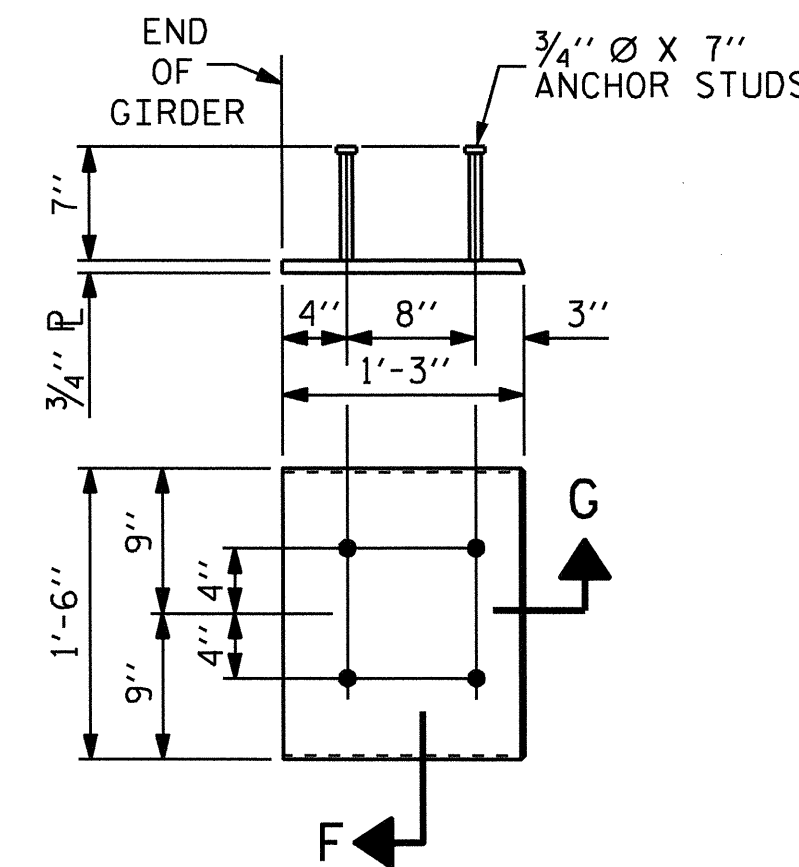


SECTION "G"



SECTION "F"

(SEE NOTES)



EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE II GIRDER

(2 REQ'D PER GIRDER)

DEAD LOAD DEFLECTION TABLE FOR SPAN A

0.6" Ø LOW RELAXATION	GIRDERS A1 AND A5											GIRDERS A2, A3 AND A4											
	TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.019	0.037	0.050	0.059	0.062	0.059	0.050	0.037	0.019	0	0	0.019	0.037	0.050	0.059	0.062	0.059	0.050	0.037	0.019	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.005	0.009	0.013	0.015	0.016	0.015	0.013	0.009	0.005	0	0	0.005	0.010	0.013	0.015	0.016	0.015	0.013	0.010	0.005	0
FINAL CAMBER	↑	0	3/16"	5/16"	7/16"	1/2"	9/16"	1/2"	7/16"	5/16"	3/16"	0	0	3/16"	5/16"	7/16"	1/2"	9/16"	1/2"	7/16"	5/16"	3/16"	0

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

DEAD LOAD DEFLECTION TABLE FOR SPAN B

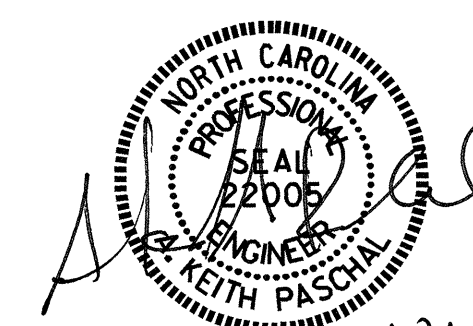
0.6" Ø LOW RELAXATION	GIRDERS B1 AND B5											GIRDERS B2, B3 AND B4											
	TENTH POINTS	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0	0	.1	.2	.3	.4	.5	.6	.7	.8	.9	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0	0.072	0.136	0.186	0.218	0.229	0.218	0.186	0.136	0.072	0	0	0.072	0.136	0.186	0.218	0.229	0.218	0.186	0.136	0.072	0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0	0.030	0.056	0.077	0.090	0.095	0.090	0.077	0.056	0.030	0	0	0.030	0.057	0.078	0.091	0.095	0.091	0.078	0.057	0.030	0
FINAL CAMBER	↑	0	1/2"	5/16"	15/16"	19/16"	15/16"	19/16"	15/16"	5/16"	1/2"	0	0	1/2"	5/16"	15/16"	19/16"	15/16"	19/16"	15/16"	5/16"	1/2"	0

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

PROJECT NO. B-4787  
PITT COUNTY  
 STATION: 18+47.50 -L-

SHEET 3 OF 4

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



ASSEMBLED BY : B.N.BARODAWALA	DATE : 4-1-12
CHECKED BY : AMBER LEE	DATE : 7-5-12
DRAWN BY : ELR 11/91	REV. 10/17/00R RWW/LES
CHECKED BY : GRP 11/91	REV. 5/1/06R TLA/GM
	REV. 10/1/11 MAA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			30

STRUCTURAL STEEL NOTES

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

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

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

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

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

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

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

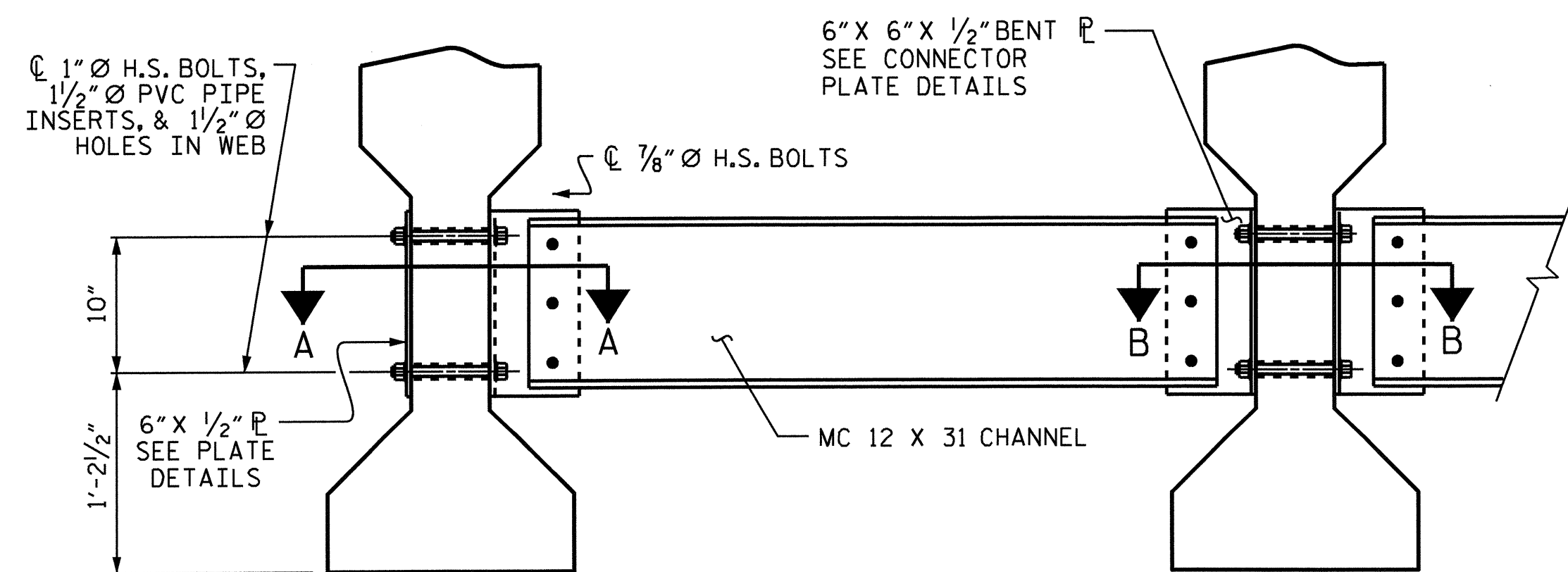
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

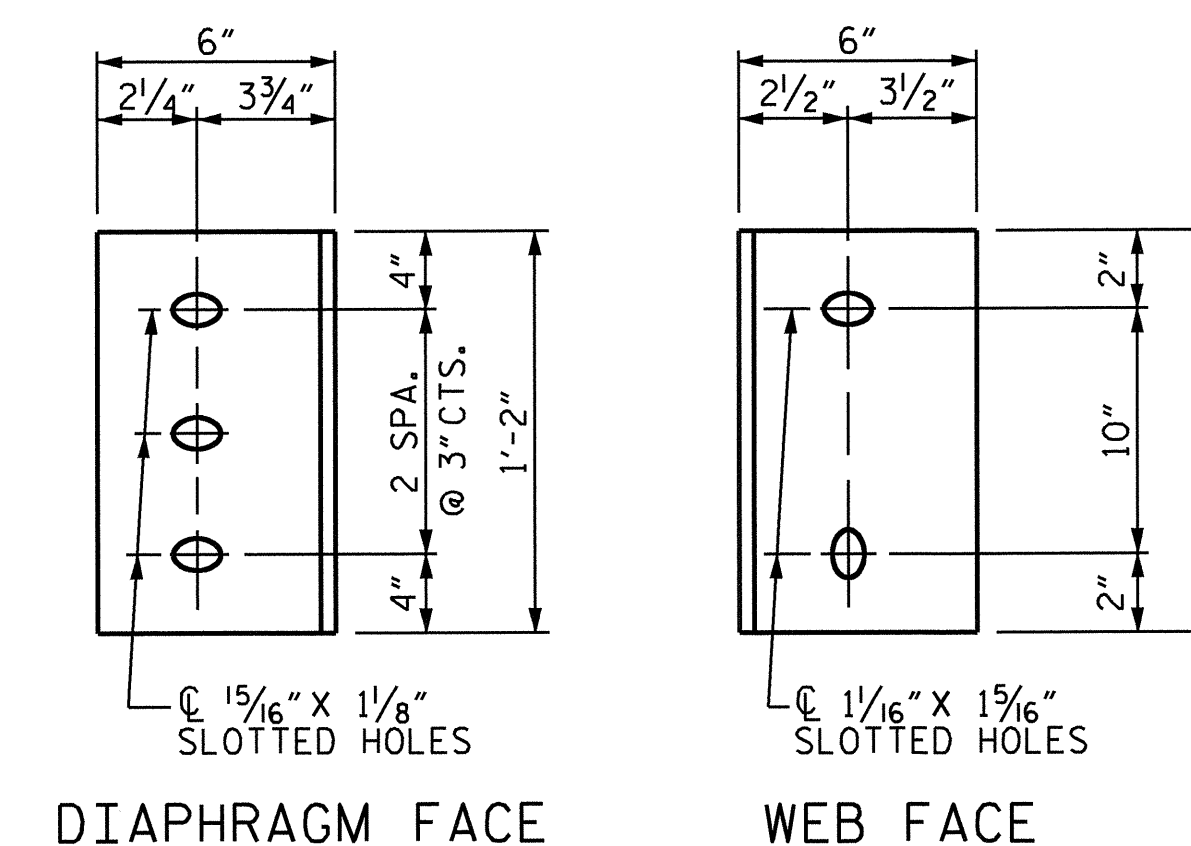
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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

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



PART SECTION AT INTERMEDIATE DIAPHRAGM



CONNECTOR PLATE DETAILS

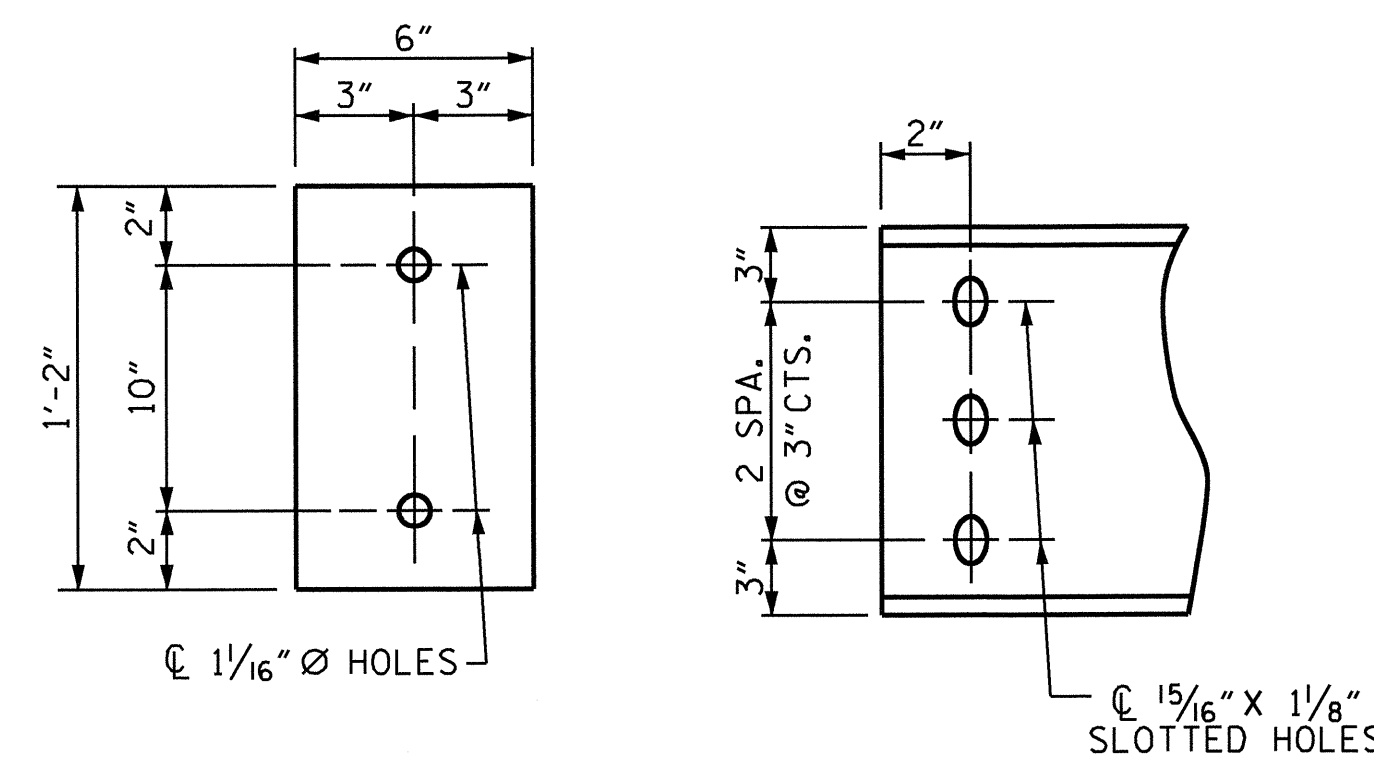
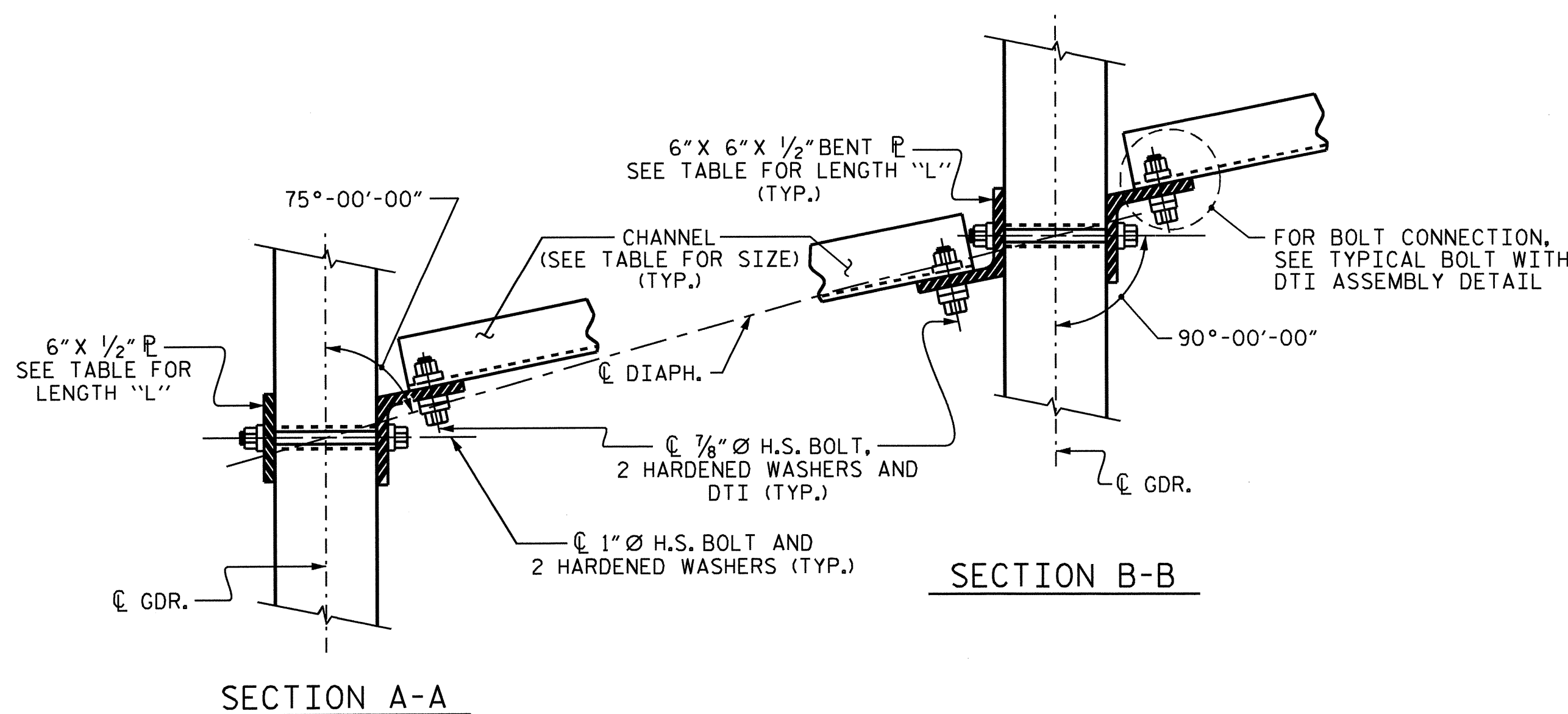
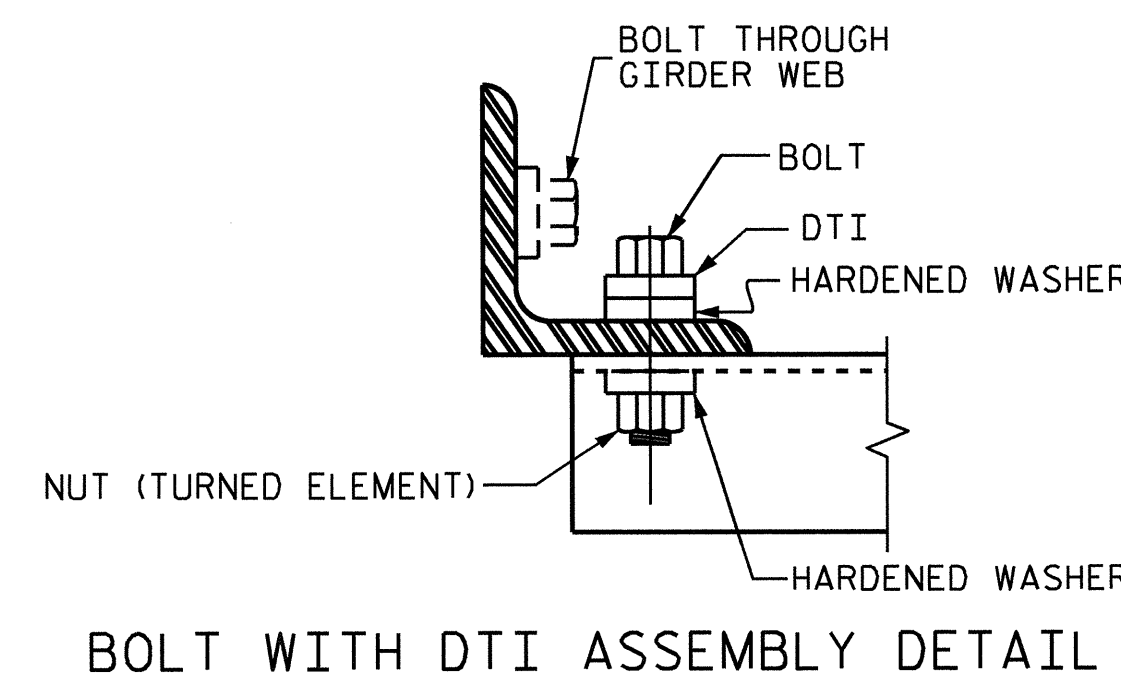


PLATE DETAILS CHANNEL END



CONNECTION DETAILS



PROJECT NO. B-4787  
PITT COUNTY  
STATION: 18+47.50 -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 : B.N.BARODAWALA	DATE : 4-1-12
CHECKED BY : AMBER LEE	DATE : 7-5-12
DRAWN BY : TLA	6/05
CHECKED BY : VC	6/05
ADDED	10/21/05
REV.	5/1/06RRR
REV.	10/1/11
KMM/GM	
MAA/GM	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			30

**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.

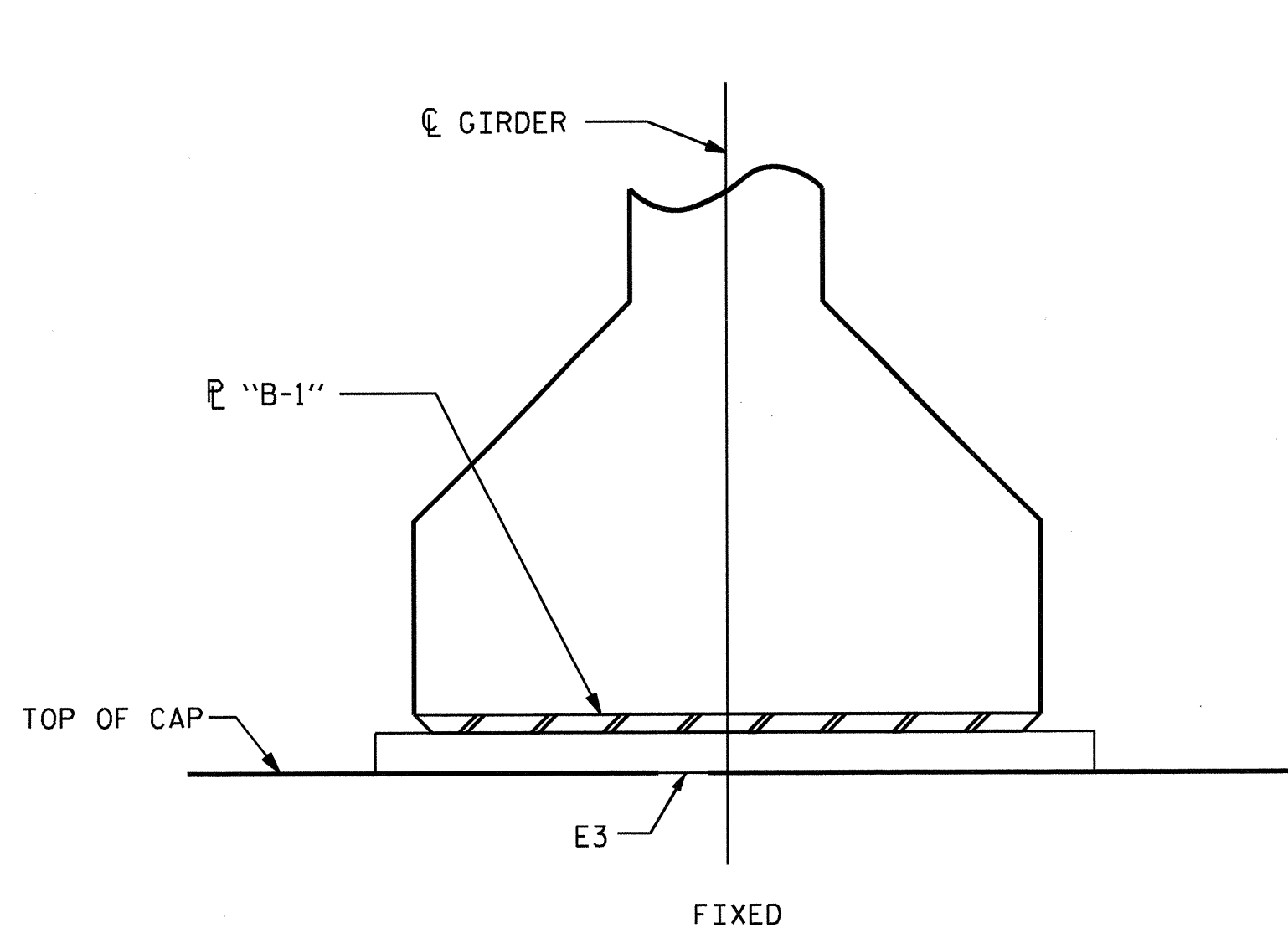
SOLE PLATE "P", BOLTS, NUTS, AND WASHERS SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

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.

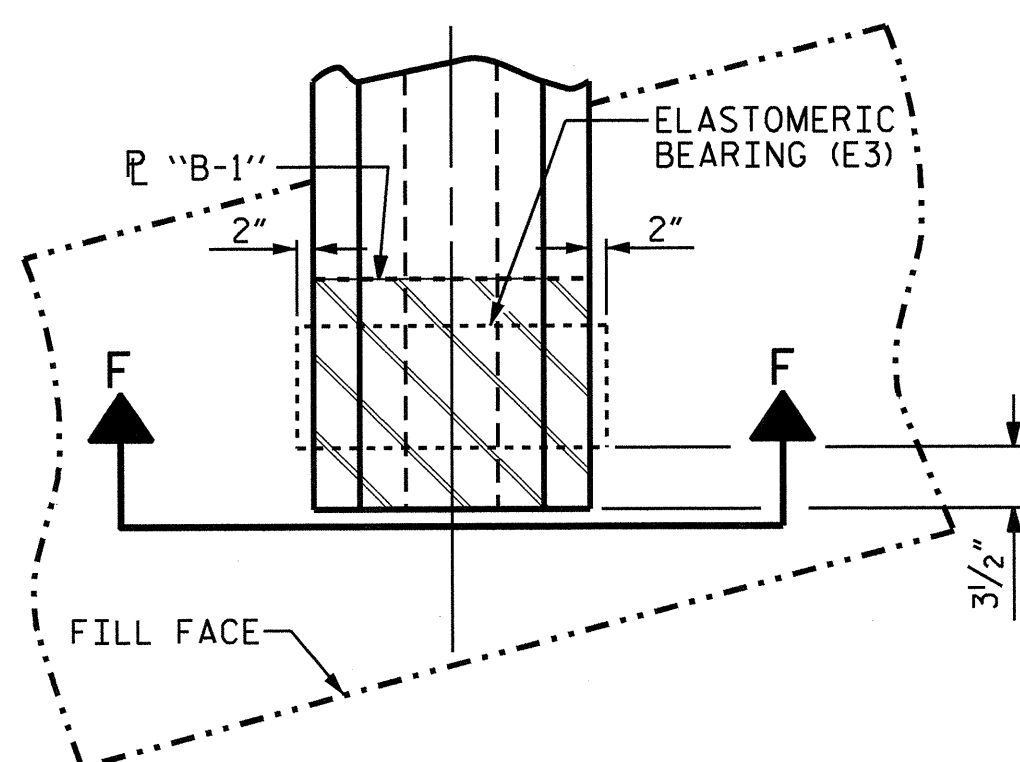
ALL BEARING PLATES SHALL BE AASHTO M270 GRADE 36.

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

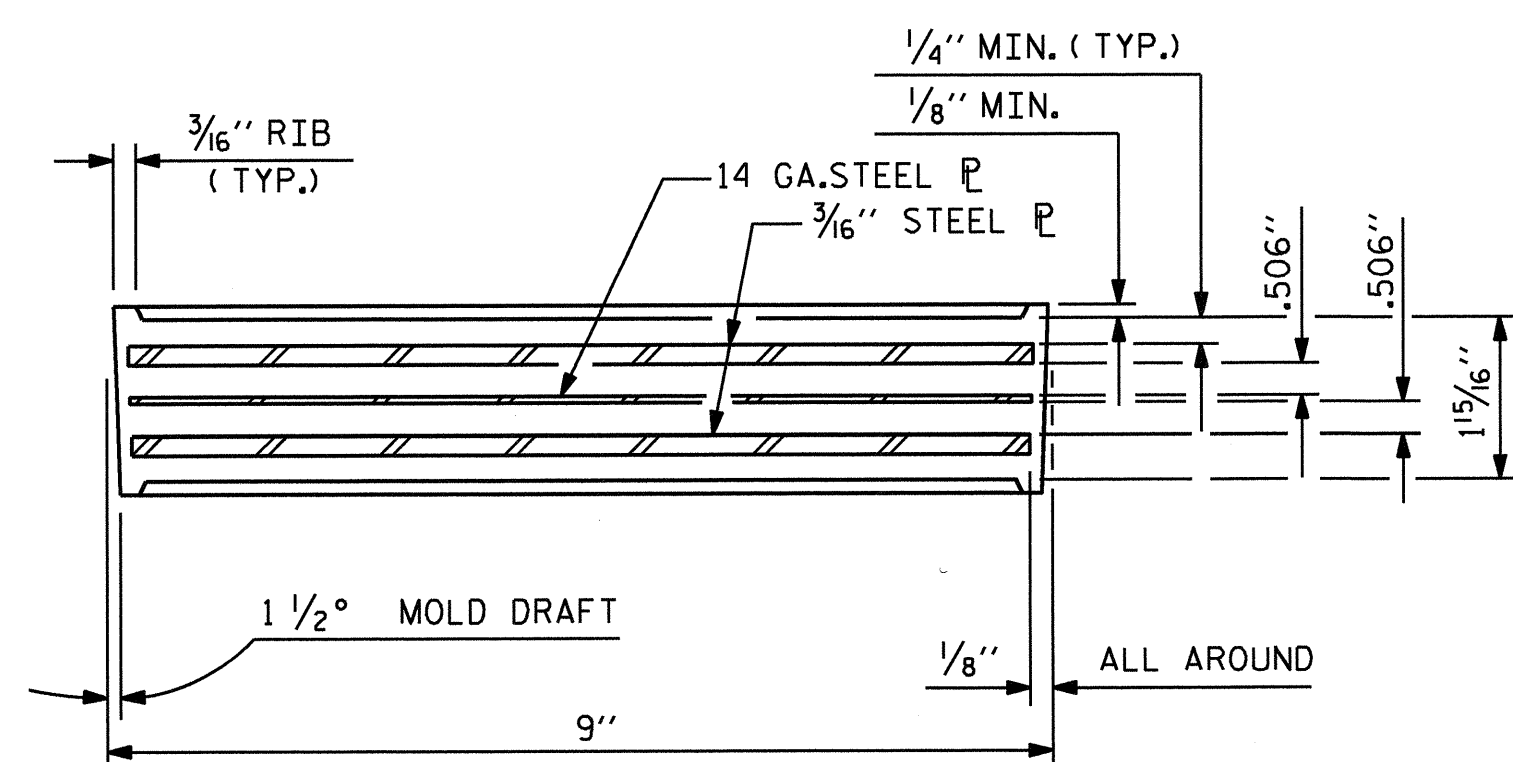


**SECTION F-F**

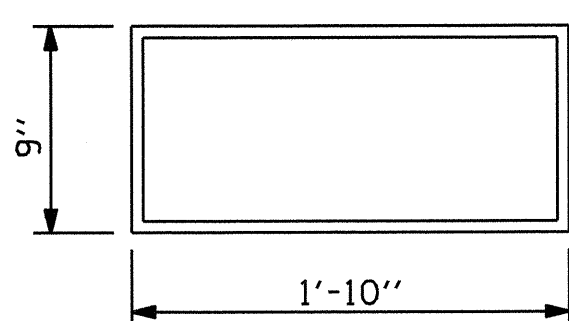
@ INTEGRAL END BENTS



**PLAN VIEW @ INTEGRAL END BENTS**



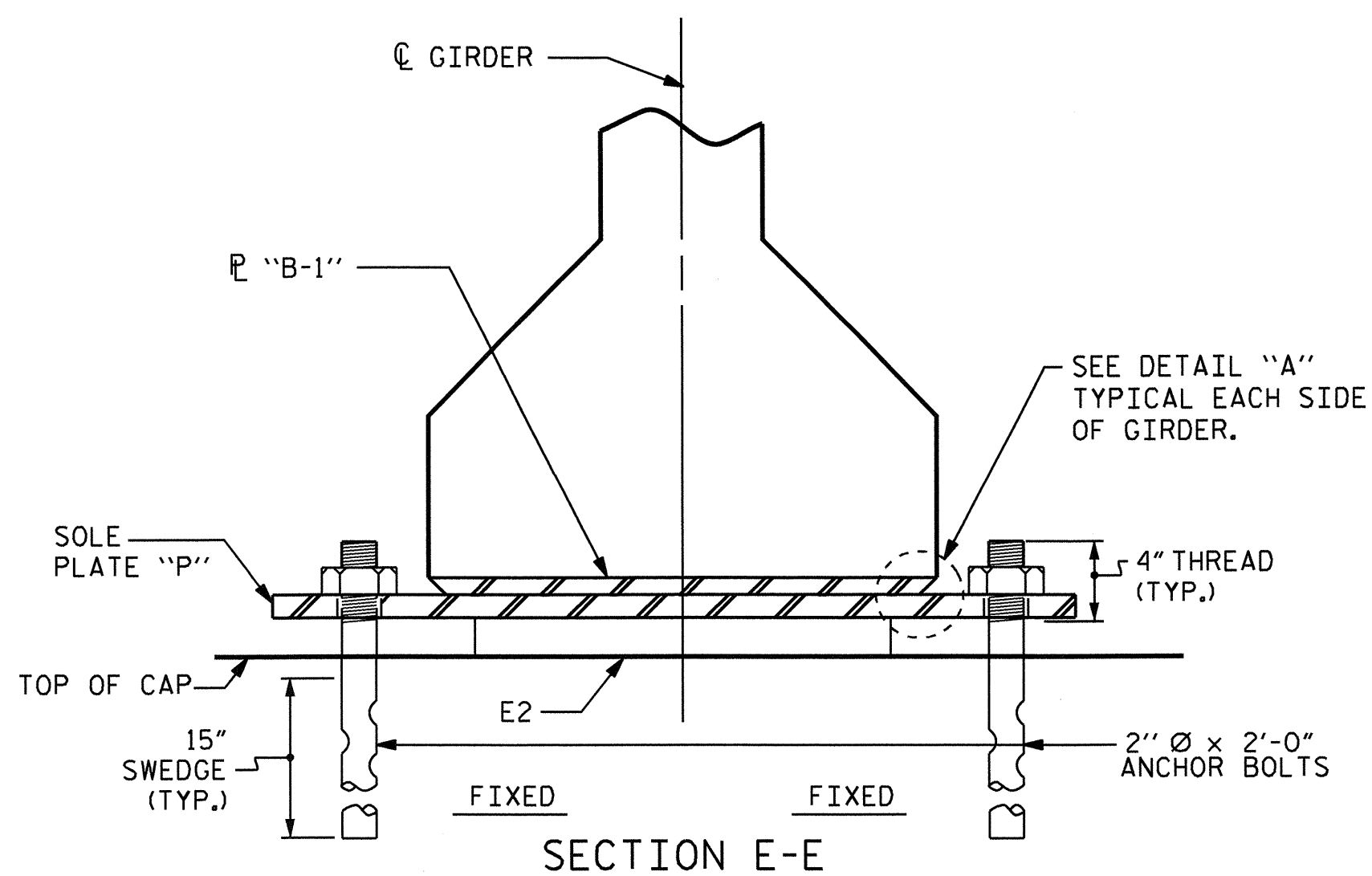
**TYPICAL SECTION OF ELASTOMERIC BEARINGS**



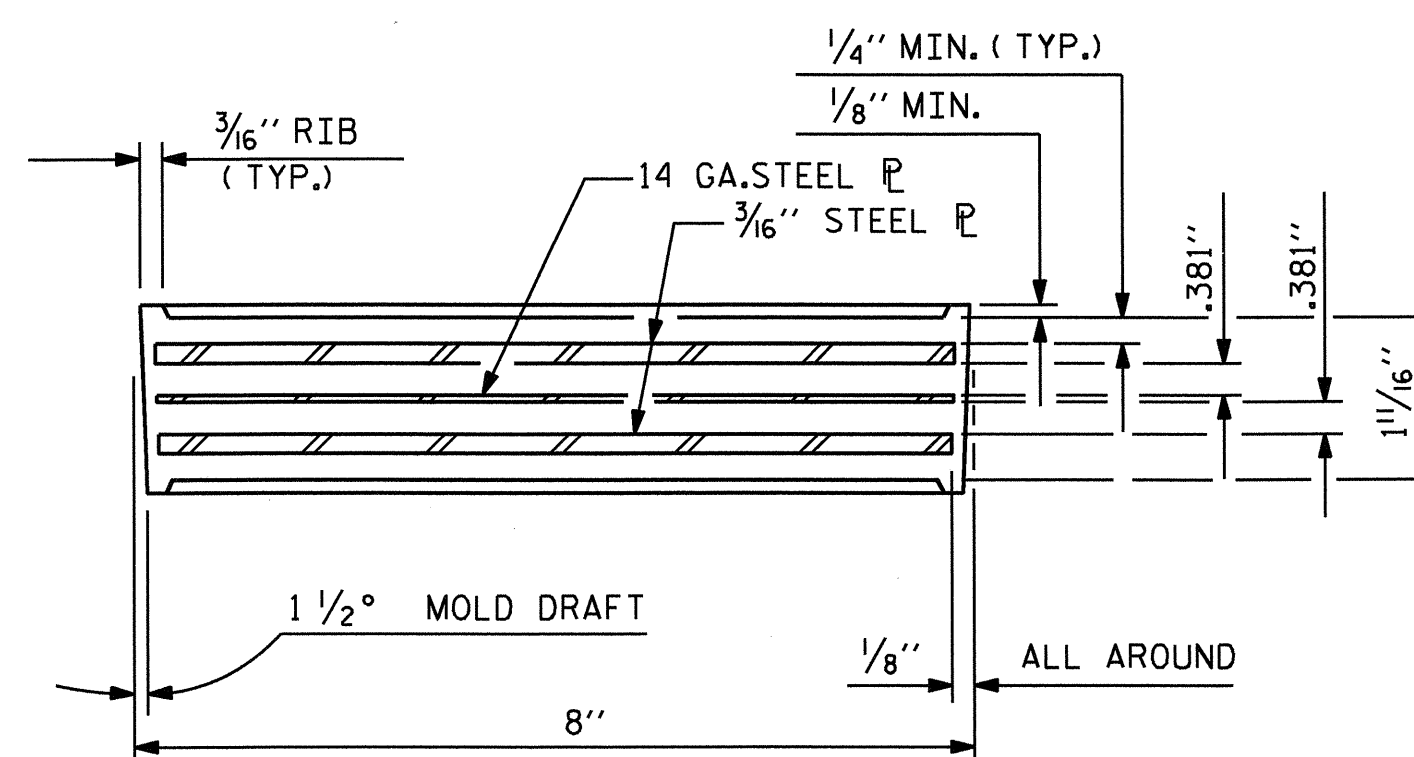
**E3 (10 REQ'D)**

**PLAN VIEW OF ELASTOMERIC BEARING**

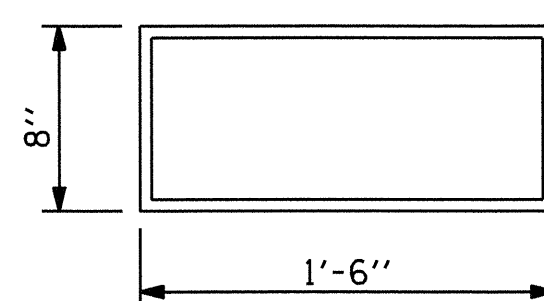
**TYPE IV**



**SECTION E-E**



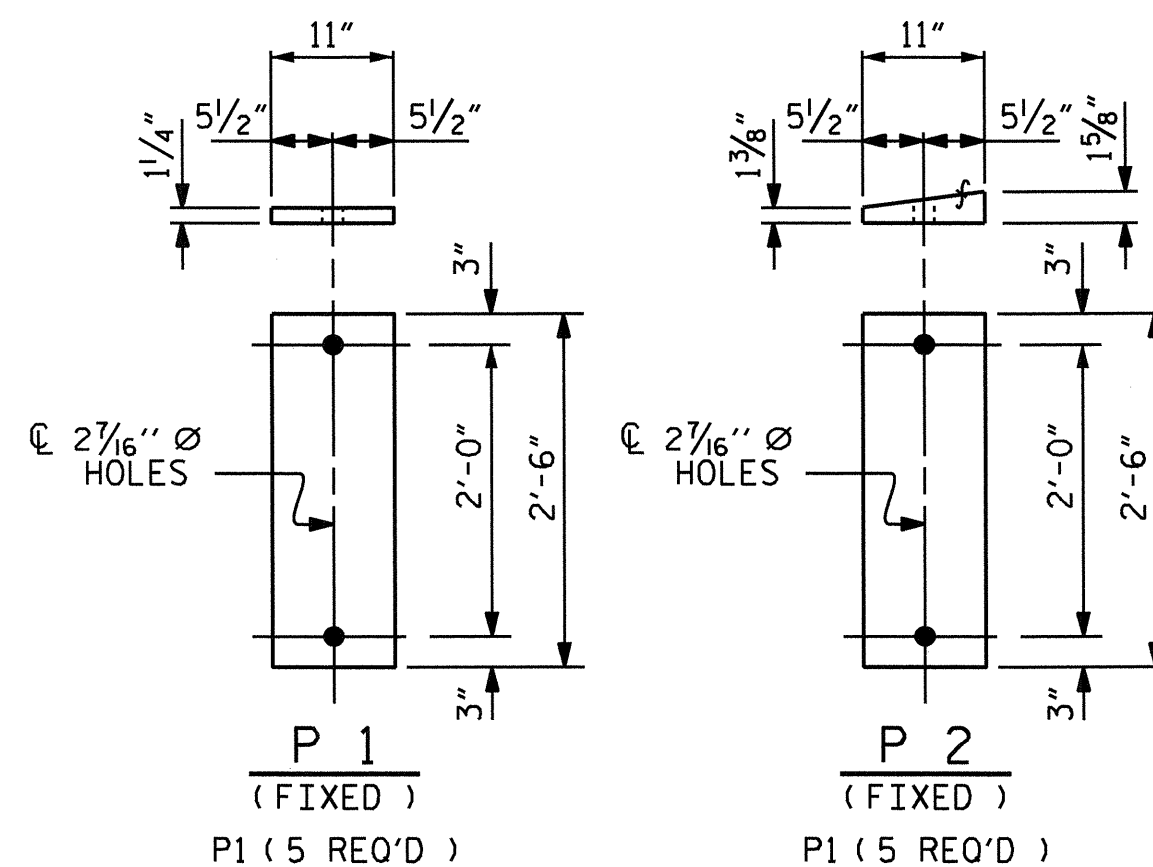
**TYPICAL SECTION OF ELASTOMERIC BEARINGS**



**E2 (10 REQ'D)**

**PLAN VIEW OF ELASTOMERIC BEARING**

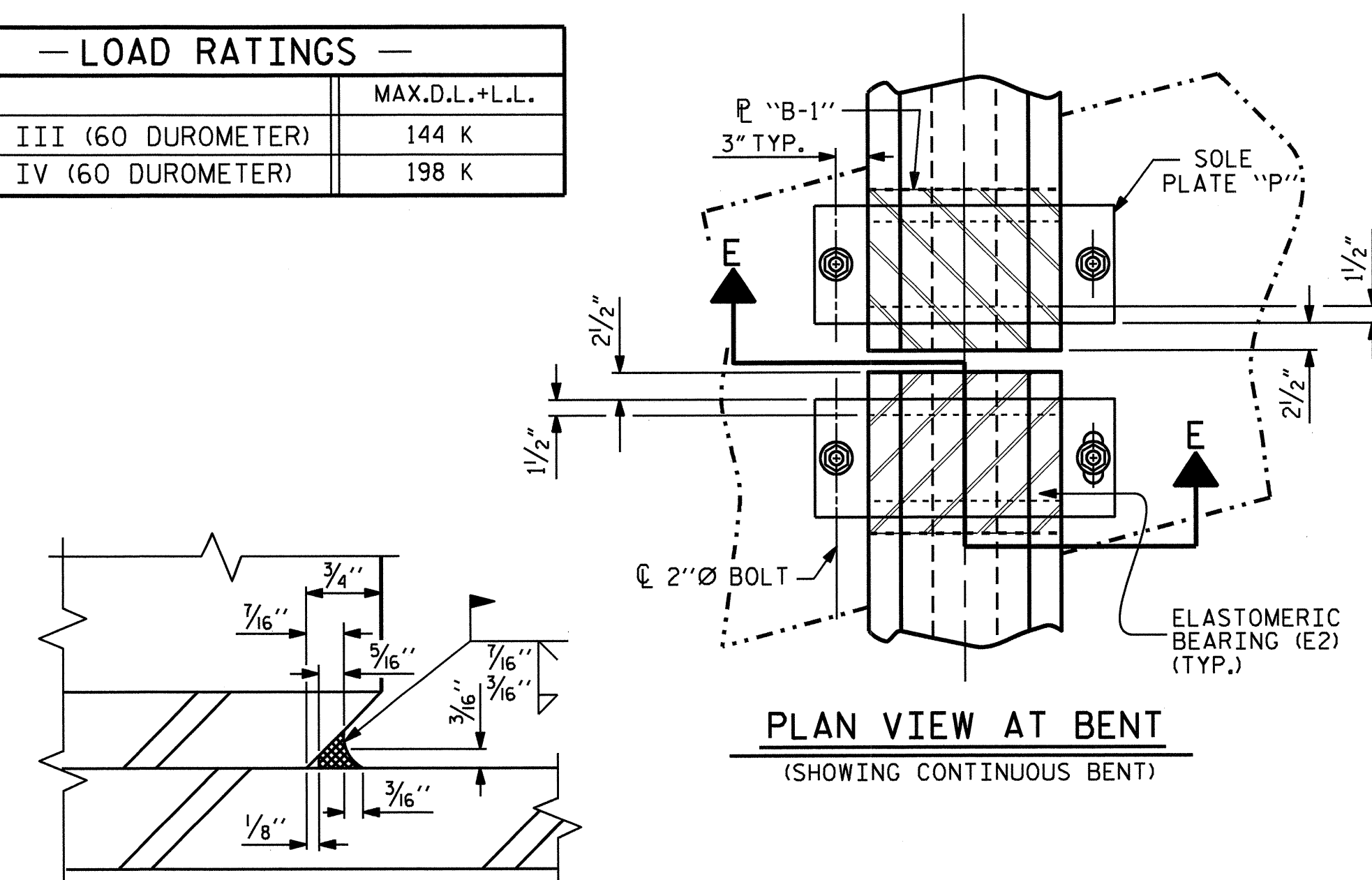
**TYPE III**



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

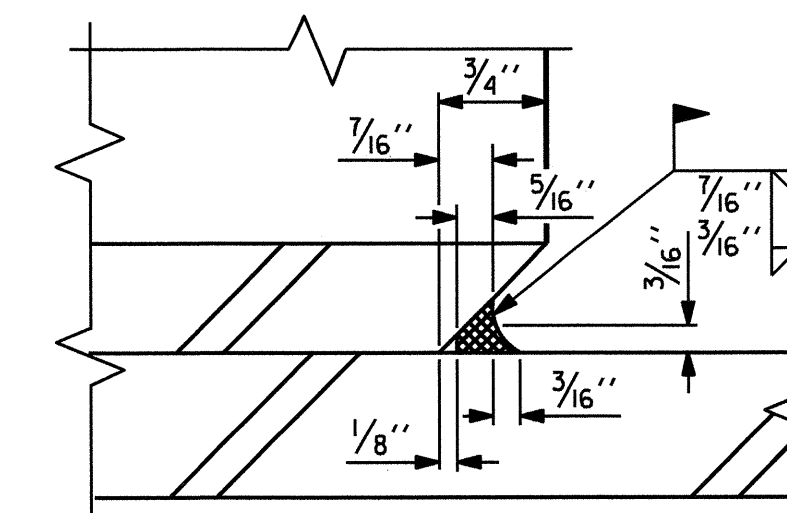
(AT BENT ONLY)

— LOAD RATINGS —	
	MAX. D.L. + L.L.
TYPE III (60 DUROMETER)	144 K
TYPE IV (60 DUROMETER)	198 K



**PLAN VIEW AT BENT**

(SHOWING CONTINUOUS BENT)



**DETAIL "A"**

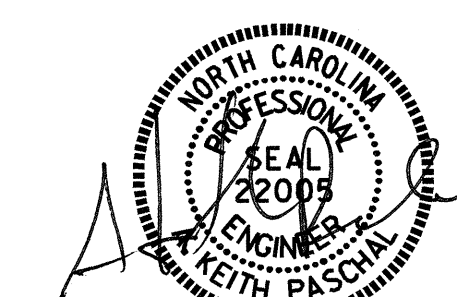
UP-STATION →

← SOLE PLATE ("P")

**SOLE PLATE PLACEMENT DETAIL**

PROJECT NO. B-4787  
PITT COUNTY  
 STATION: 18+47.50 -L-

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



ASSEMBLED BY: B.N. BARODAWALA DATE: 4-1-12  
 CHECKED BY: AMBER LEE DATE: 7-5-12  
 DRAWN BY: WJH 8/89 REV. 10/17/00 RWW/LES  
 CHECKED BY: CRK 8/89 REV. 7/10/01 RWW/LES  
 REV. 5/1/06 TLG/GM

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

TOTAL SHEETS: 30



**NOTES**

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

**ALUMINUM RAILS**

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

**GALVANIZED STEEL RAILS**

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

**GENERAL NOTES**

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT A SPACING OF 8FT. TO 10FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

PAY LENGTH = 190.92 LIN. FT.

PROJECT NO. B-4787  
PITT COUNTY  
 STATION: 18+47.50 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

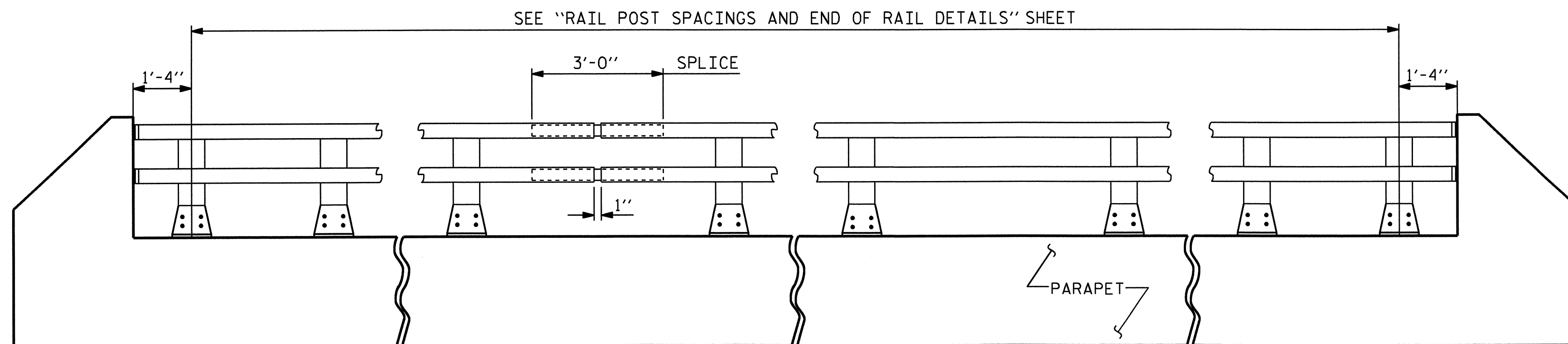
STANDARD

2 BAR METAL RAIL



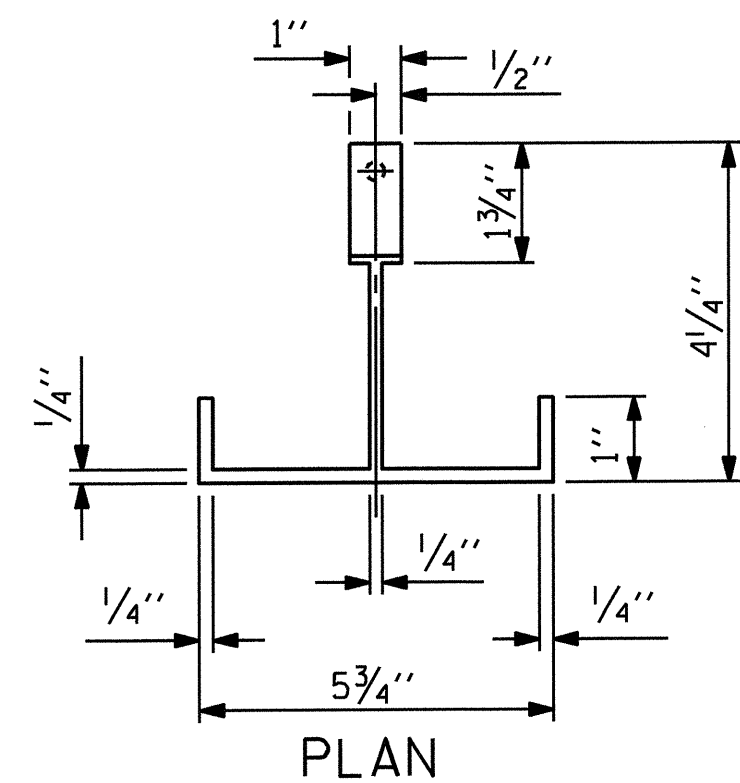
9-21-12

REVISIONS						SHEET NO. S-15
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 30
2			4			

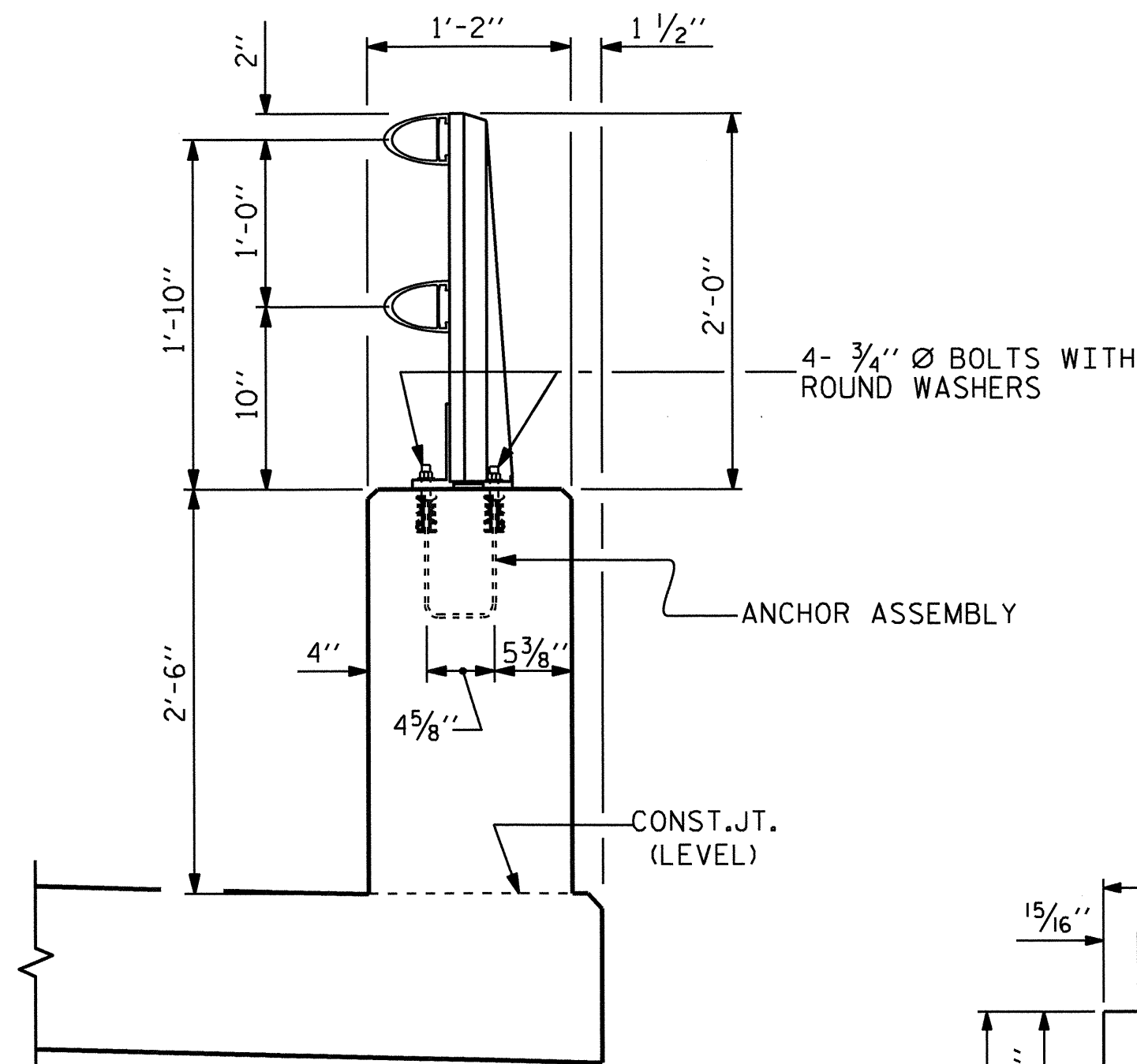


**ELEVATION**

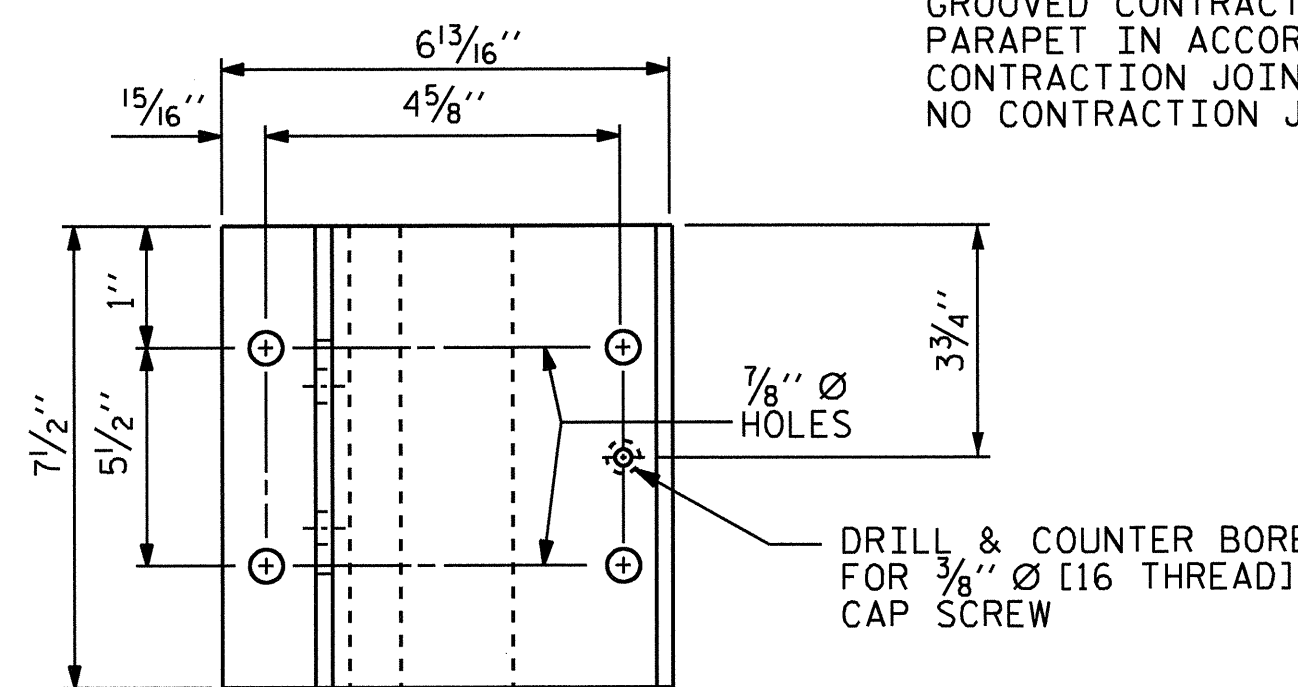
NOTE: FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.



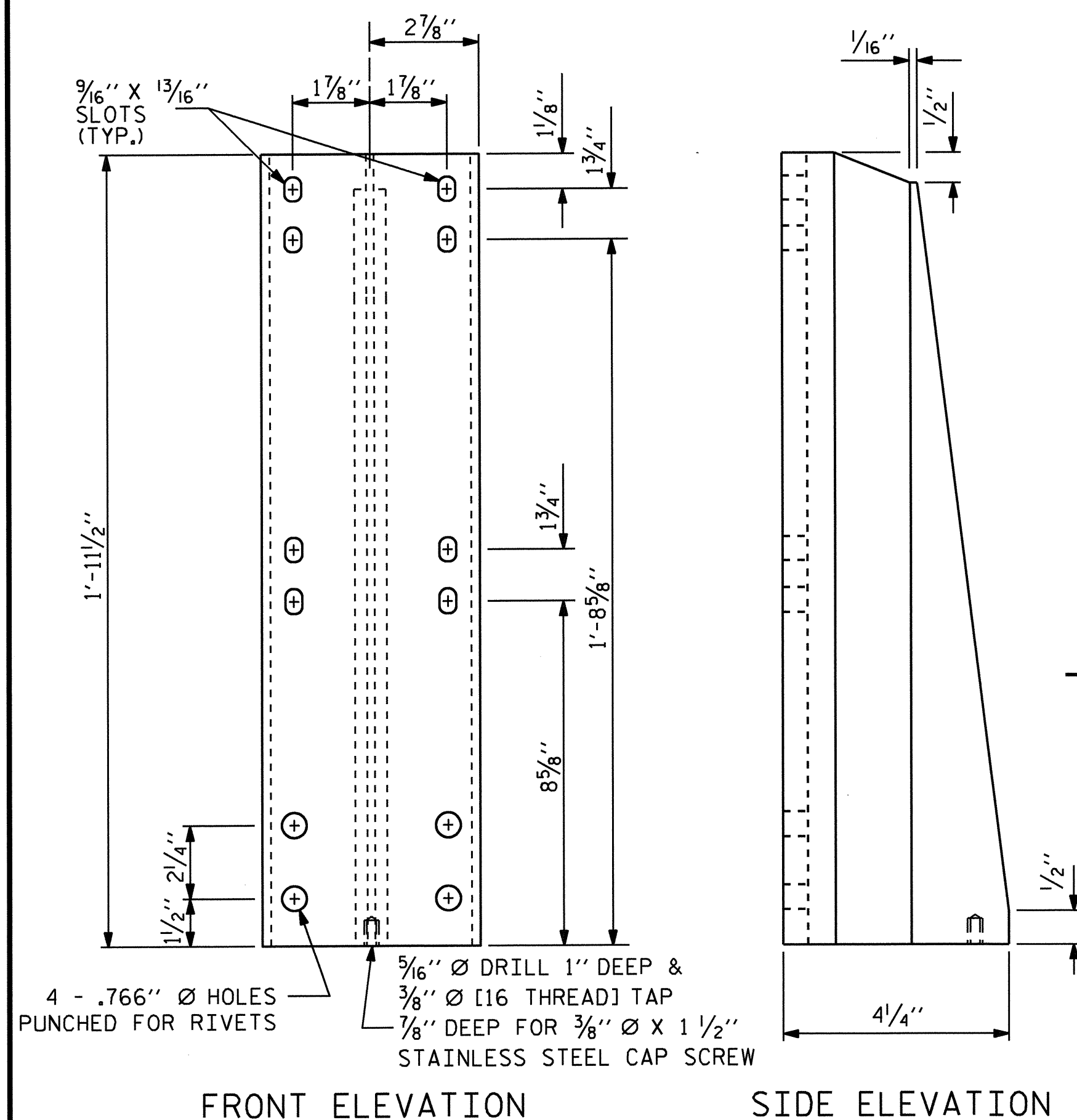
**PLAN**



**SECTION THRU PARAPET AND RAIL**



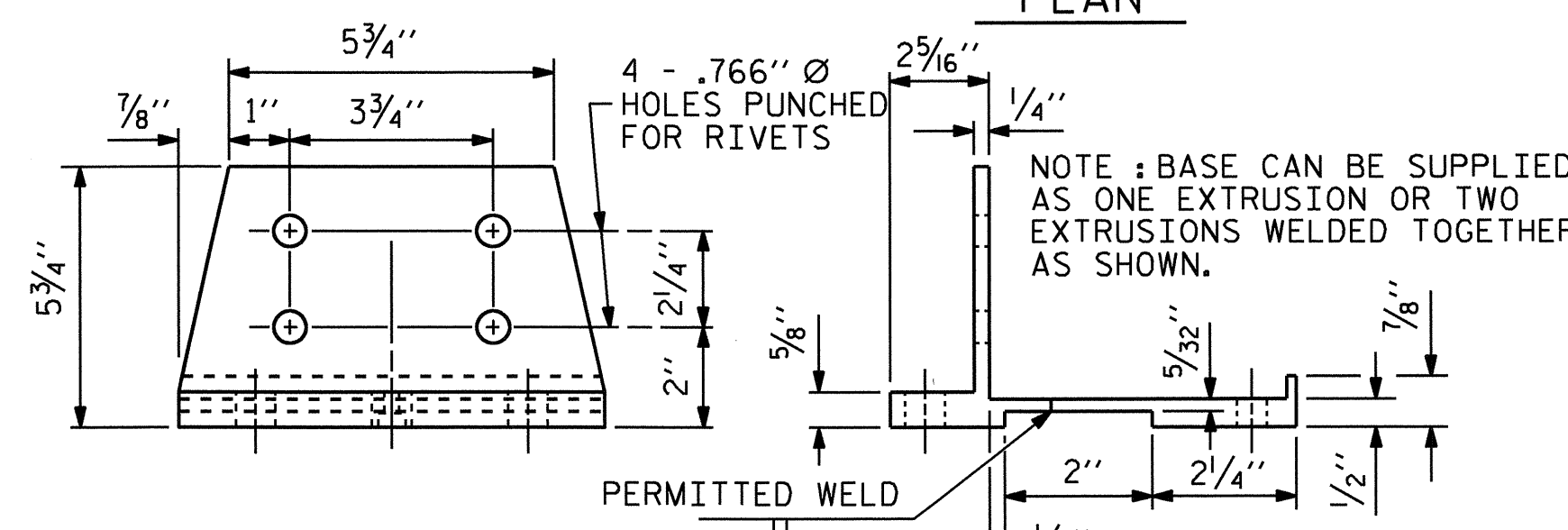
**PLAN**



**FRONT ELEVATION**

**SIDE ELEVATION**

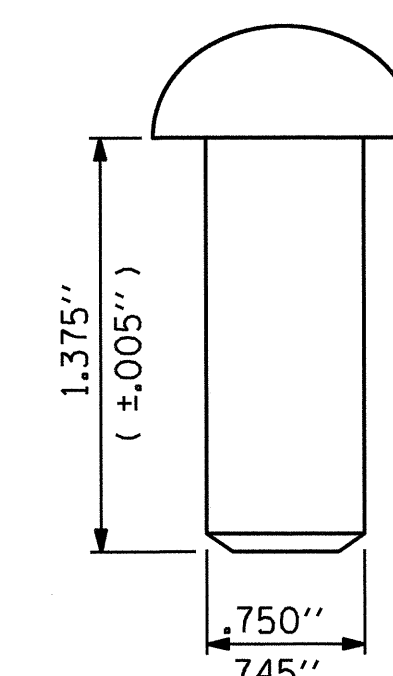
**DETAILS OF POST**



**FRONT ELEVATION**

**SIDE ELEVATION**

**POST BASE DETAILS**



**RIVET DETAIL**

ASSEMBLED BY: B. N. BARODAWALA	DATE: 4-1-12
CHECKED BY: AMBER LEE	DATE: 5-7-12
DRAWN BY: EEM 6/94	REV. 5/7/03R RWW/JTE
CHECKED BY: RGW 6/94	REV. 5/1/06 TLA/GM
	REV. 10/1/11 MAA/GM

NOTES

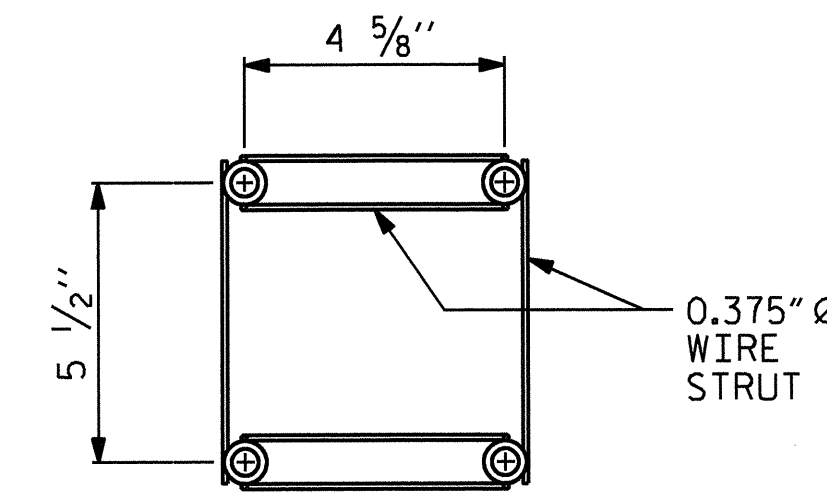
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :

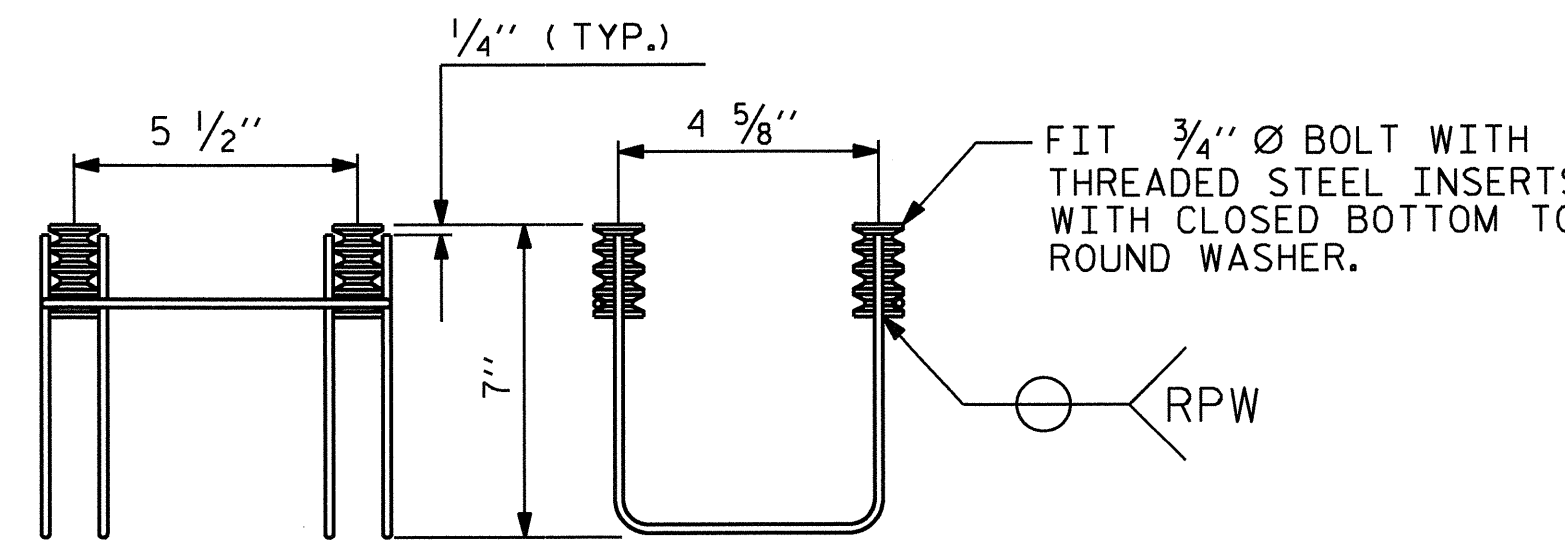
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS 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.
- C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/6" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.



PLAN

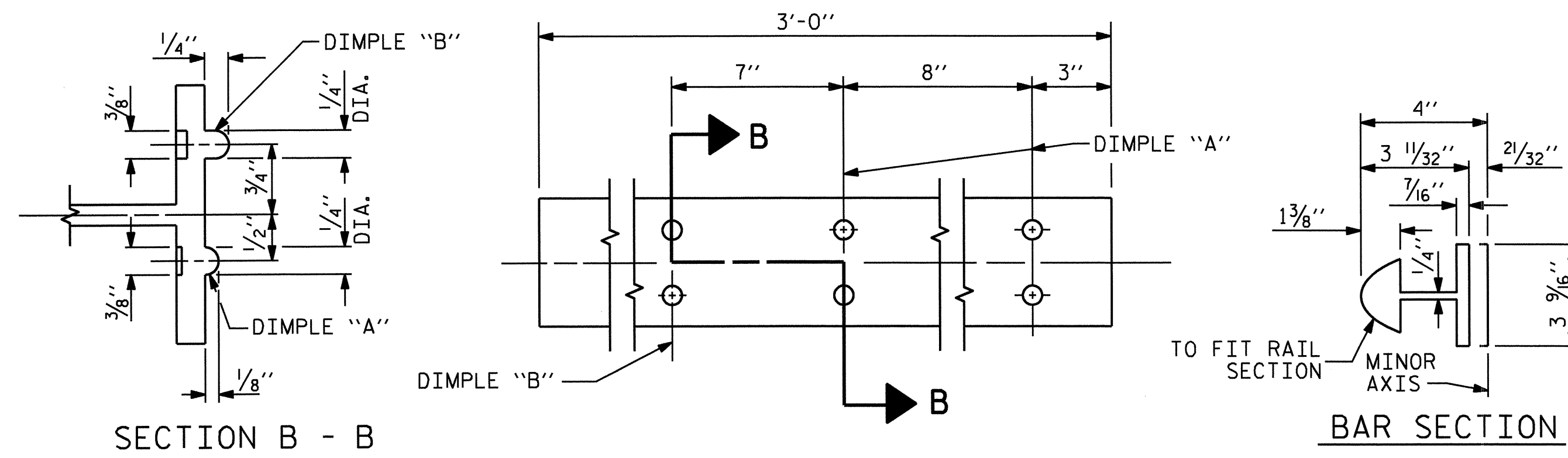


SIDE VIEW

ELEVATION

4-BOLT METAL RAIL ANCHOR ASSEMBLY

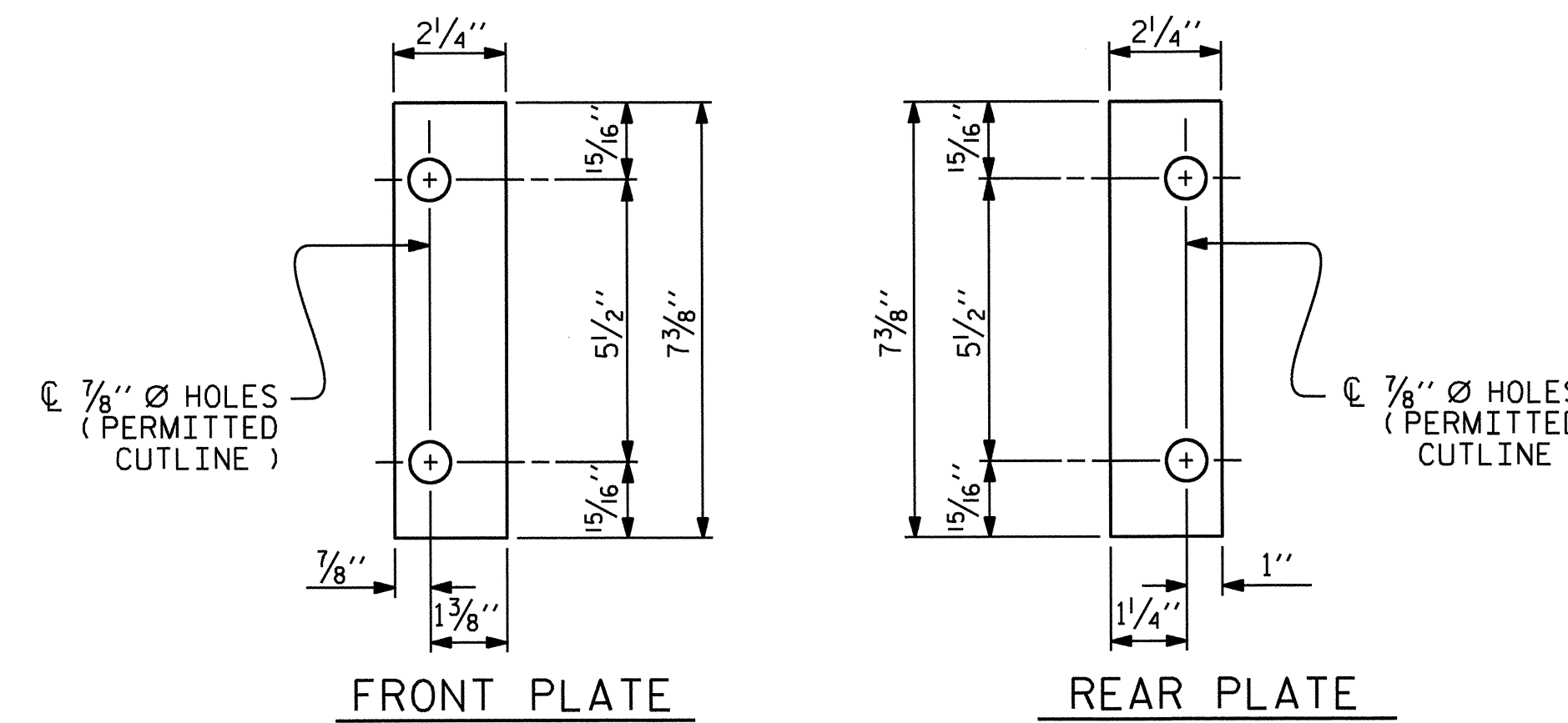
( 36 ASSEMBLIES REQUIRED )



SECTION B - B

EXPANSION BAR DETAILS

BAR SECTION

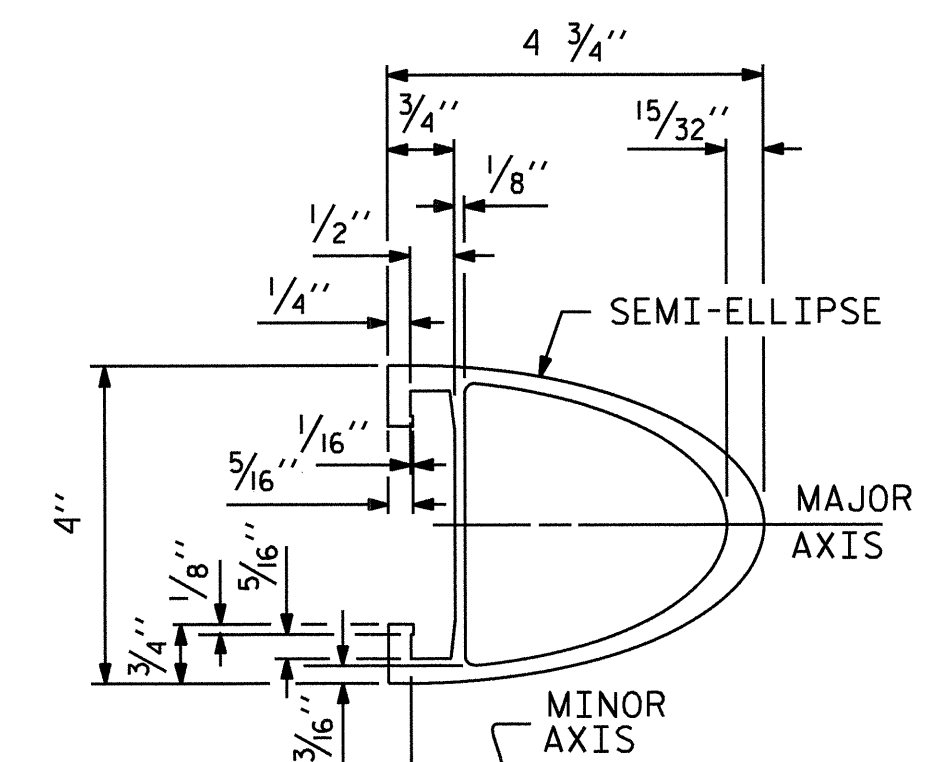


FRONT PLATE

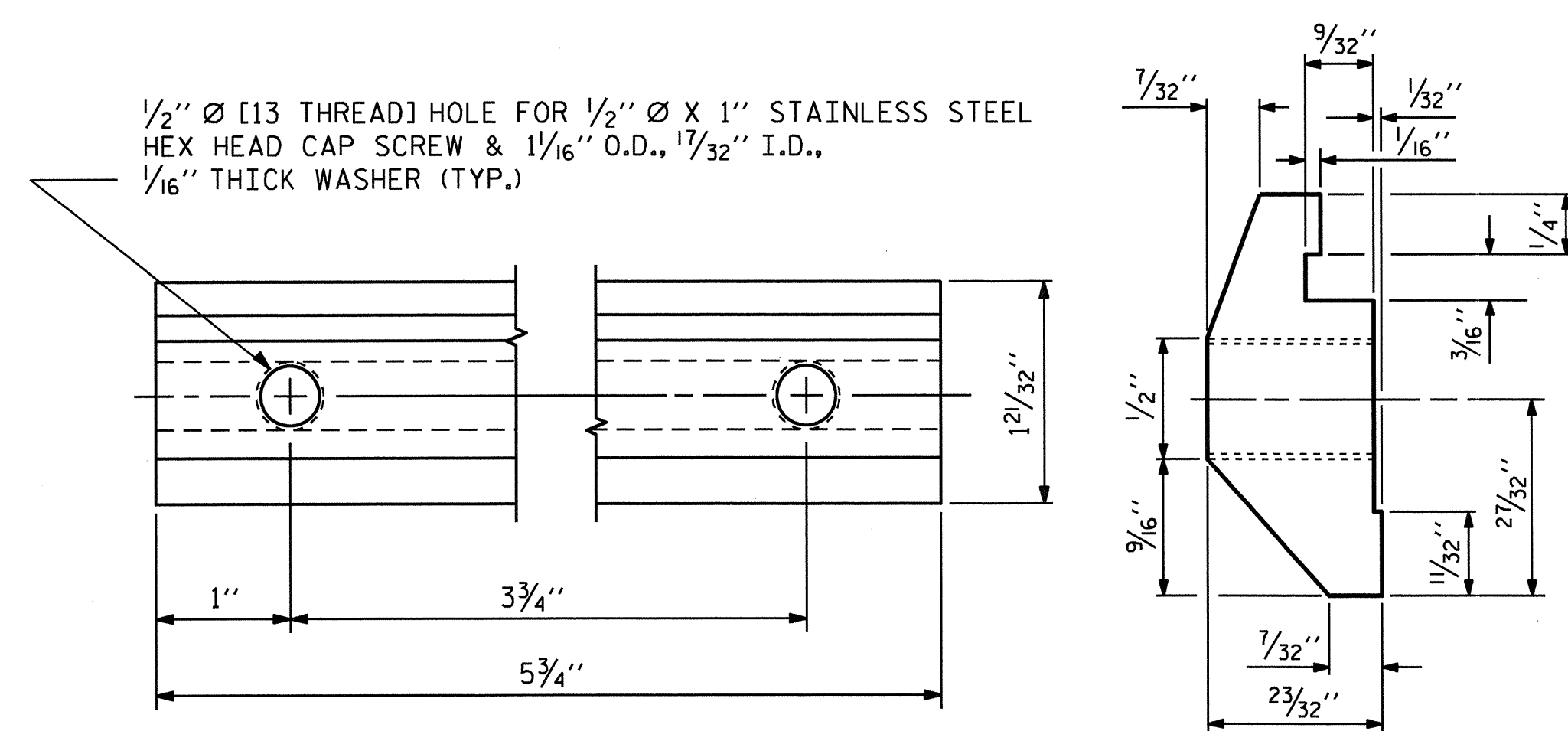
REAR PLATE

SHIM DETAILS

NOTE : SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.

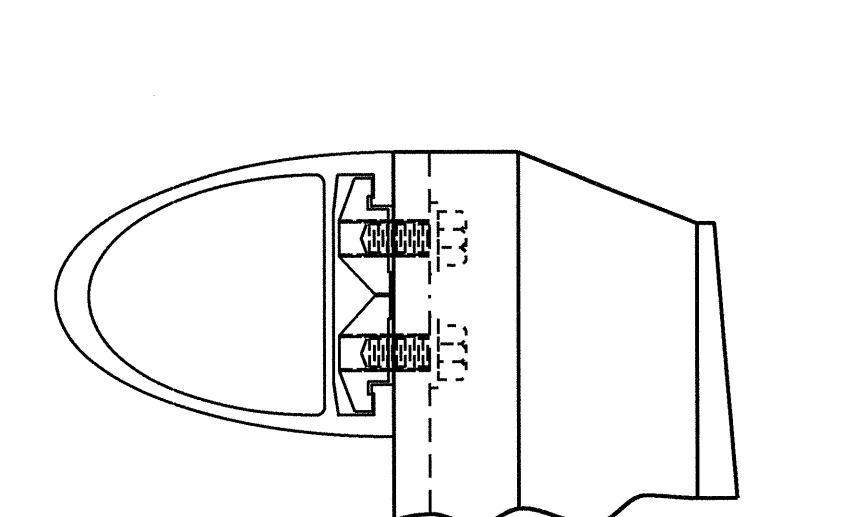


RAIL SECTION

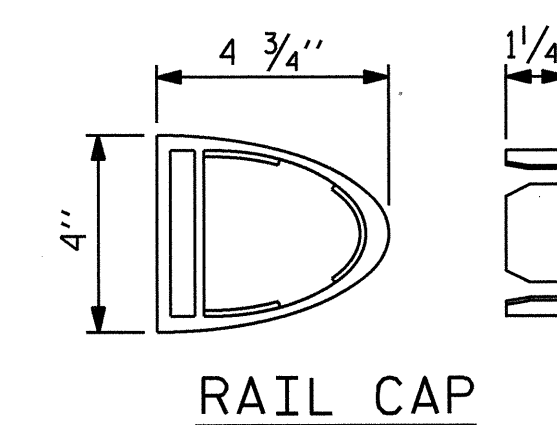


CLAMP BAR DETAIL

( 4 REQUIRED PER POST )



CLAMP ASSEMBLY



RAIL CAP



PROJECT NO. B-4787  
 PITT COUNTY  
 STATION: 18+47.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD 2 BAR METAL RAIL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

ASSEMBLED BY : B. N. BARODAWALA	DATE : 4-1-12
CHECKED BY : AMBER LEE	DATE : 5-7-12
DRAWN BY : EEM	6/94
CHECKED BY : RGW	6/94
REV. 8/16/99	MAB/LES
REV. 5/1/06R	KMM/GM
REV. 10/1/11	MAA/GM



**NOTES**

**STRUCTURAL CONCRETE INSERT**

THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
- B. 1 - 3/4" Ø X 1 5/8" BOLT WITH WASHER, BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- C. WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

**NOTES**

**METAL RAIL TO END POST CONNECTION**

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

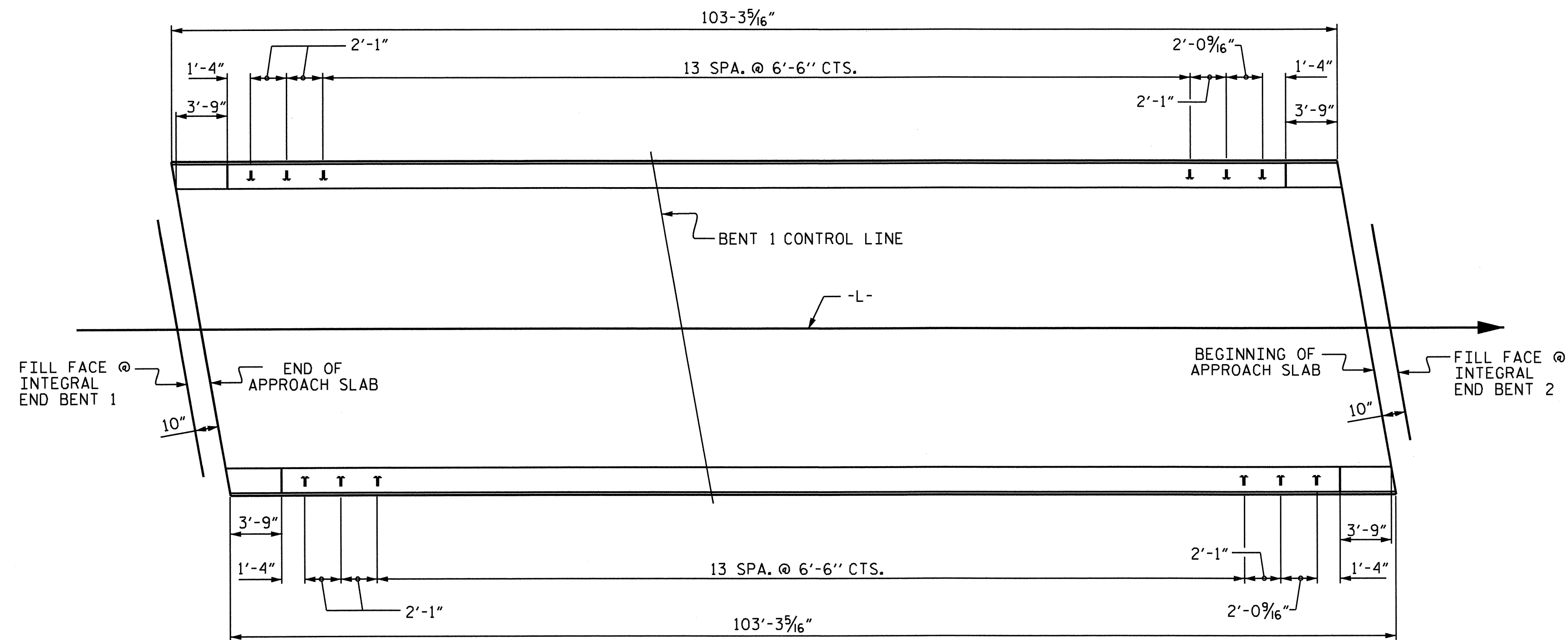
- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N. C. THREADS.
- C. CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.
- D. STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
- E. 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

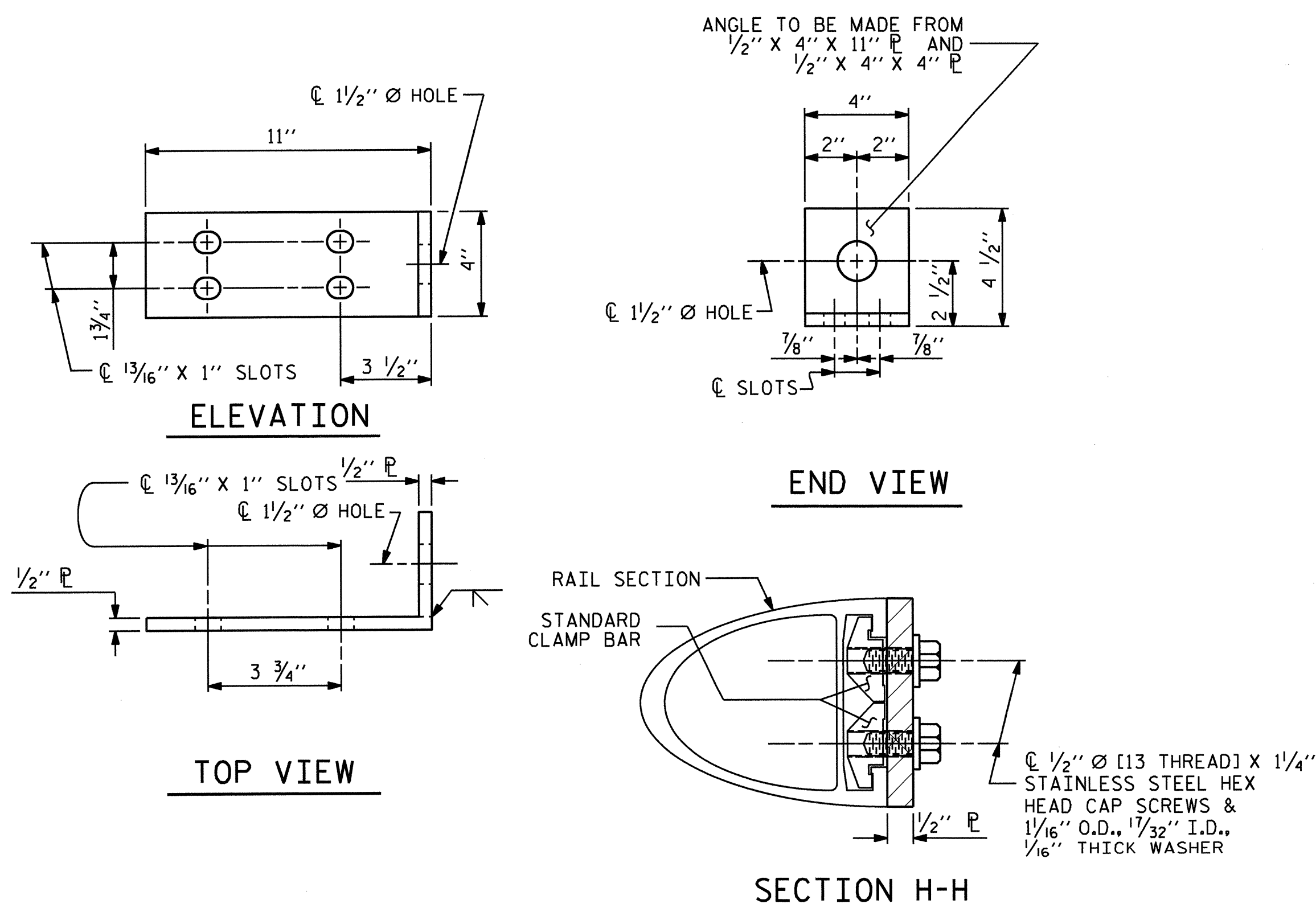
THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

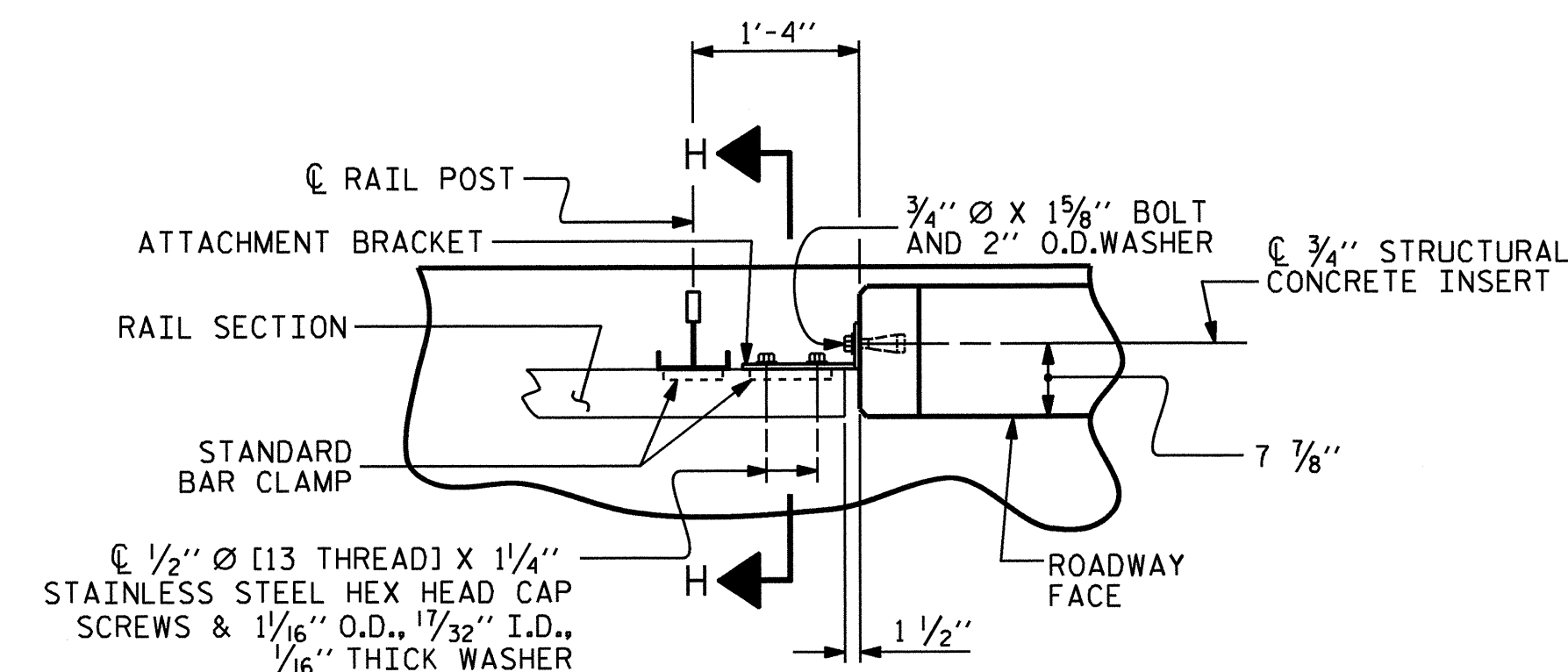


**PLAN OF RAIL POST SPACINGS**

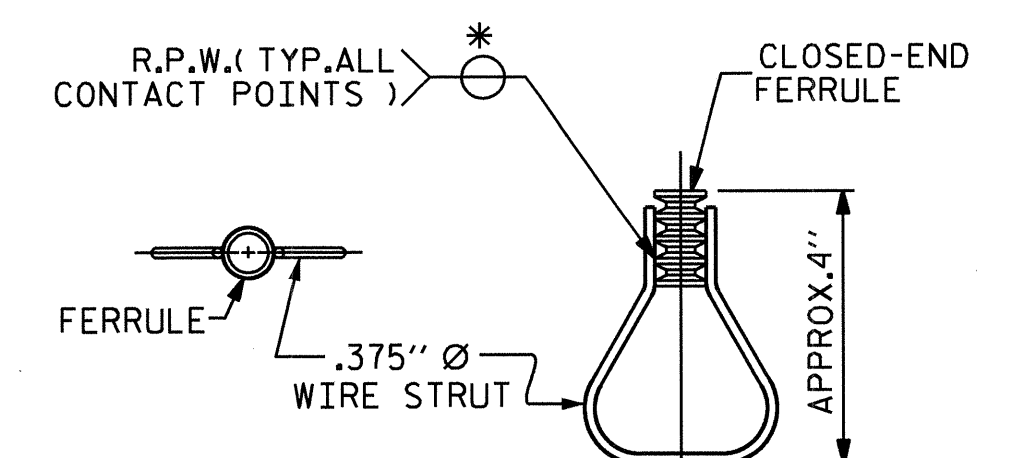


**FIXED**

**DETAILS FOR ATTACHING METAL RAIL TO END POST**



**PLAN - RAIL AND END POST**



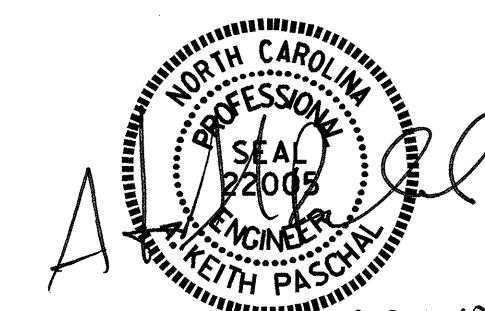
**STRUCTURAL CONCRETE INSERT**

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

PROJECT NO. B-4787  
PITT COUNTY  
 STATION: 18+47.50 -L-

SHEET 3 OF 4

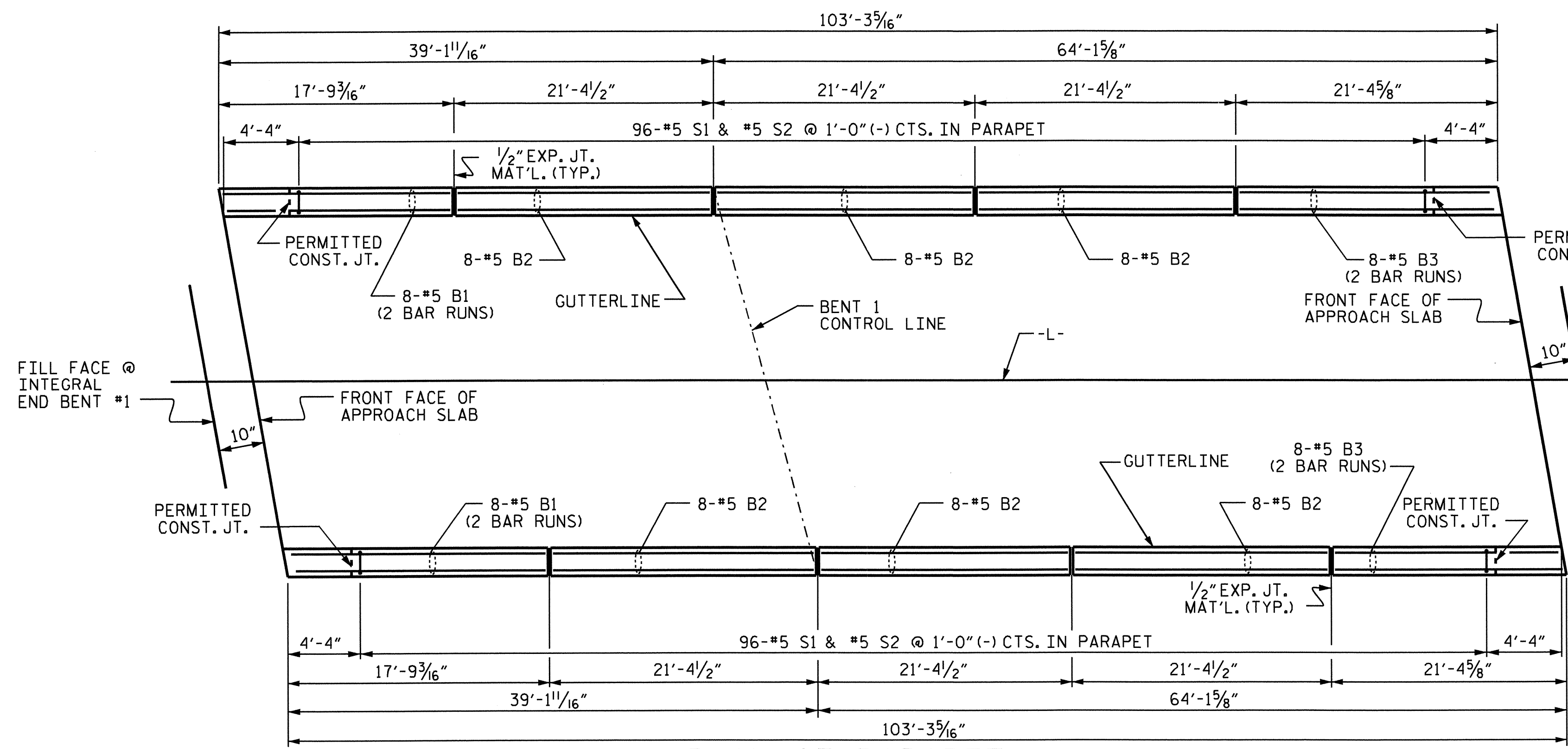
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
**RAIL POST SPACINGS  
 AND  
 END OF RAIL DETAILS**  
 FOR TWO BAR METAL RAILS



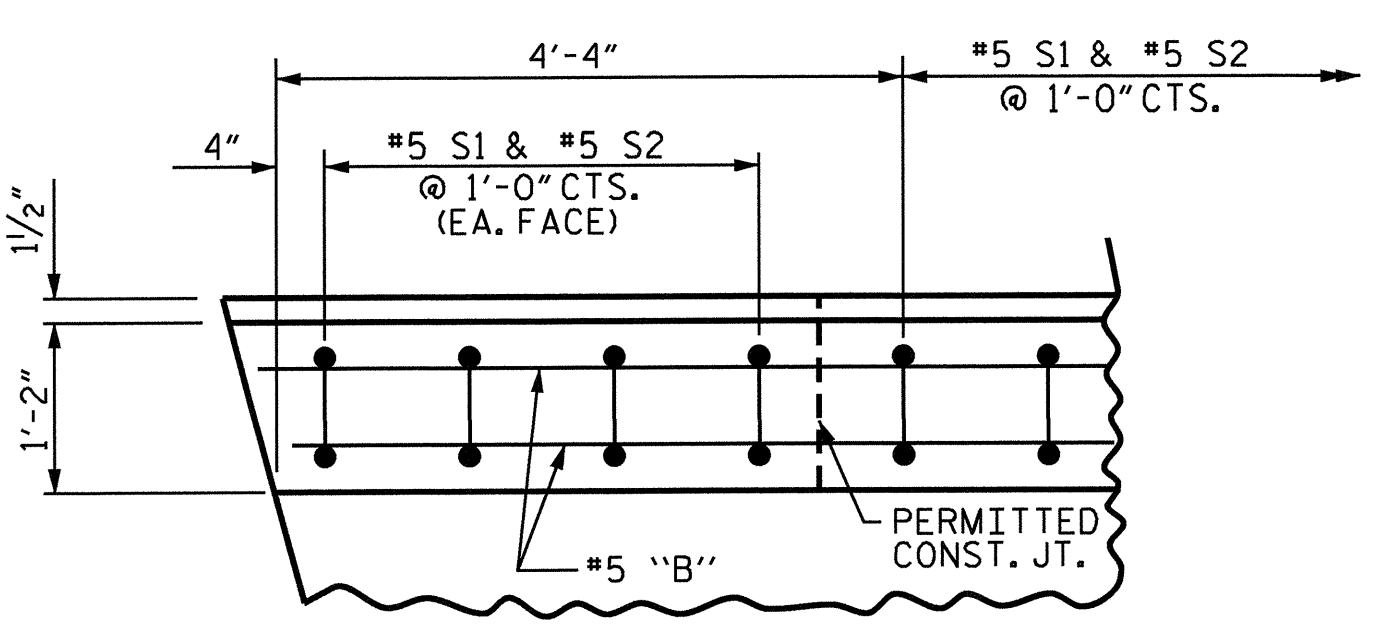
ASSEMBLED BY : B. N. BARODAWALA	DATE : 4-1-12
CHECKED BY : AMBER LEE	DATE : 5-7-12
DRAWN BY : FCJ 1/88	REV. 5/7/03 RWW/JTE
CHECKED BY : CRK 3/89	REV. 5/1/06 TLA/GM
	REV. 10/1/11 MAA/GM

REVISIONS						SHEET NO. S-17
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 30
2			4			

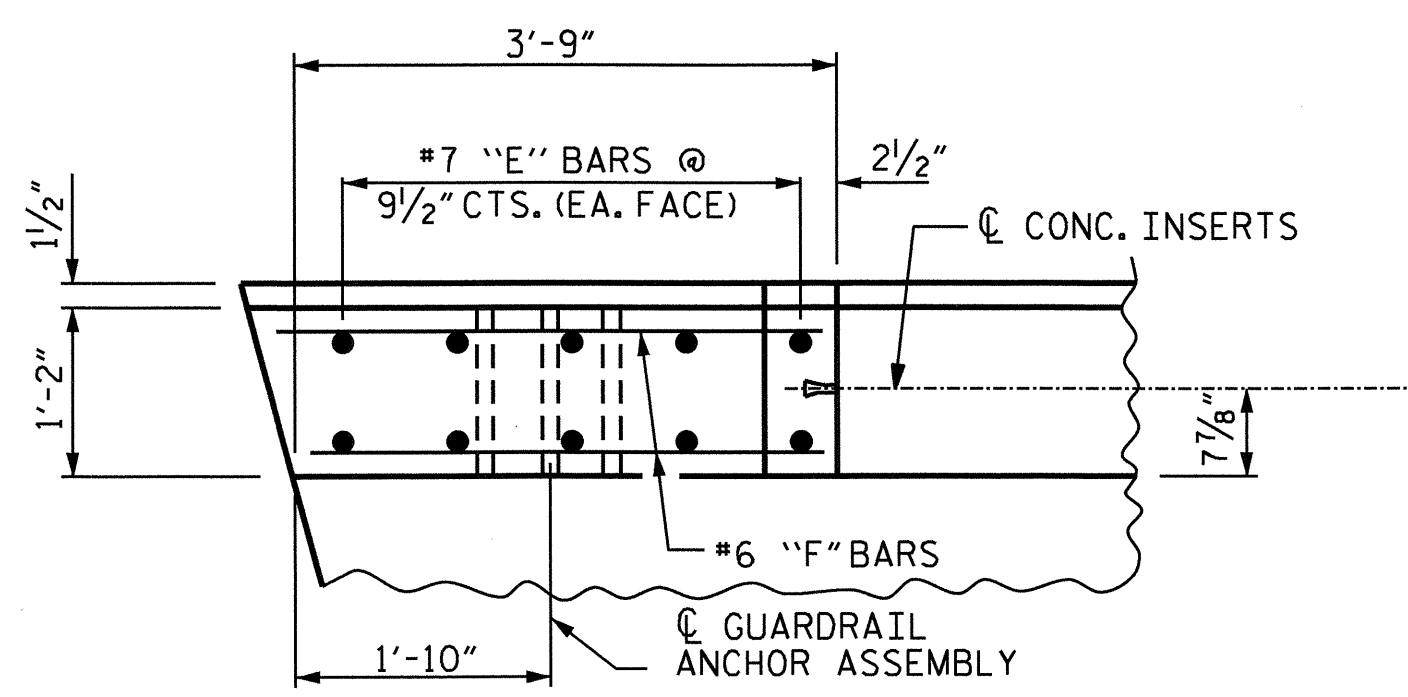




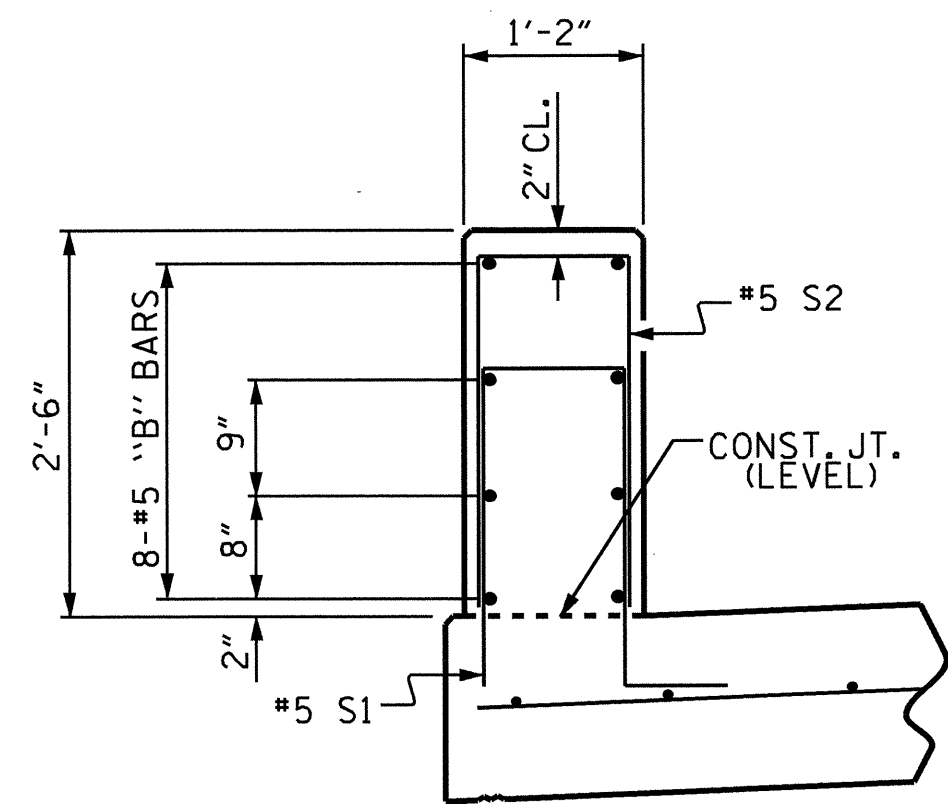
PLAN OF PARAPET



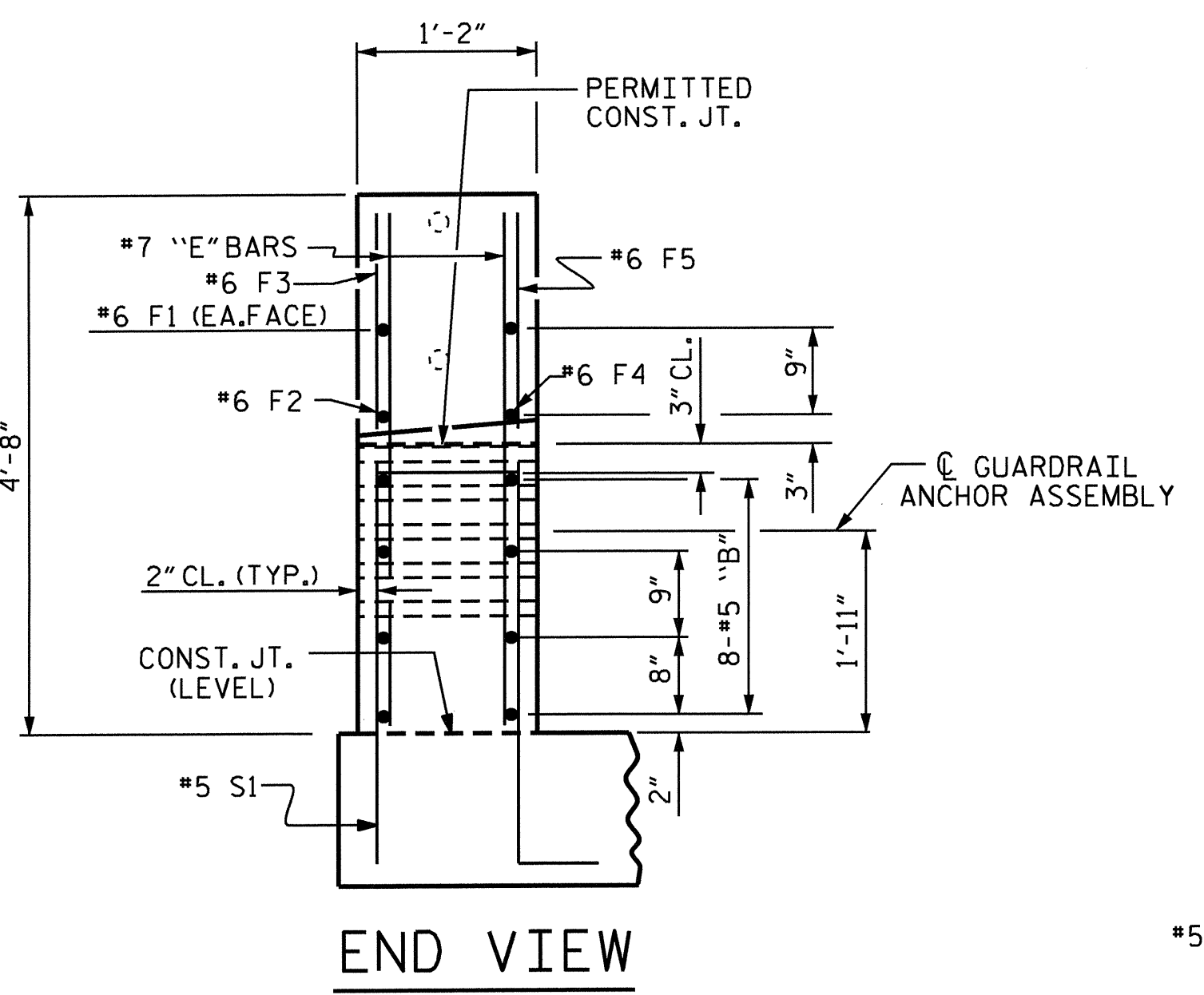
PLAN OF PARAPET



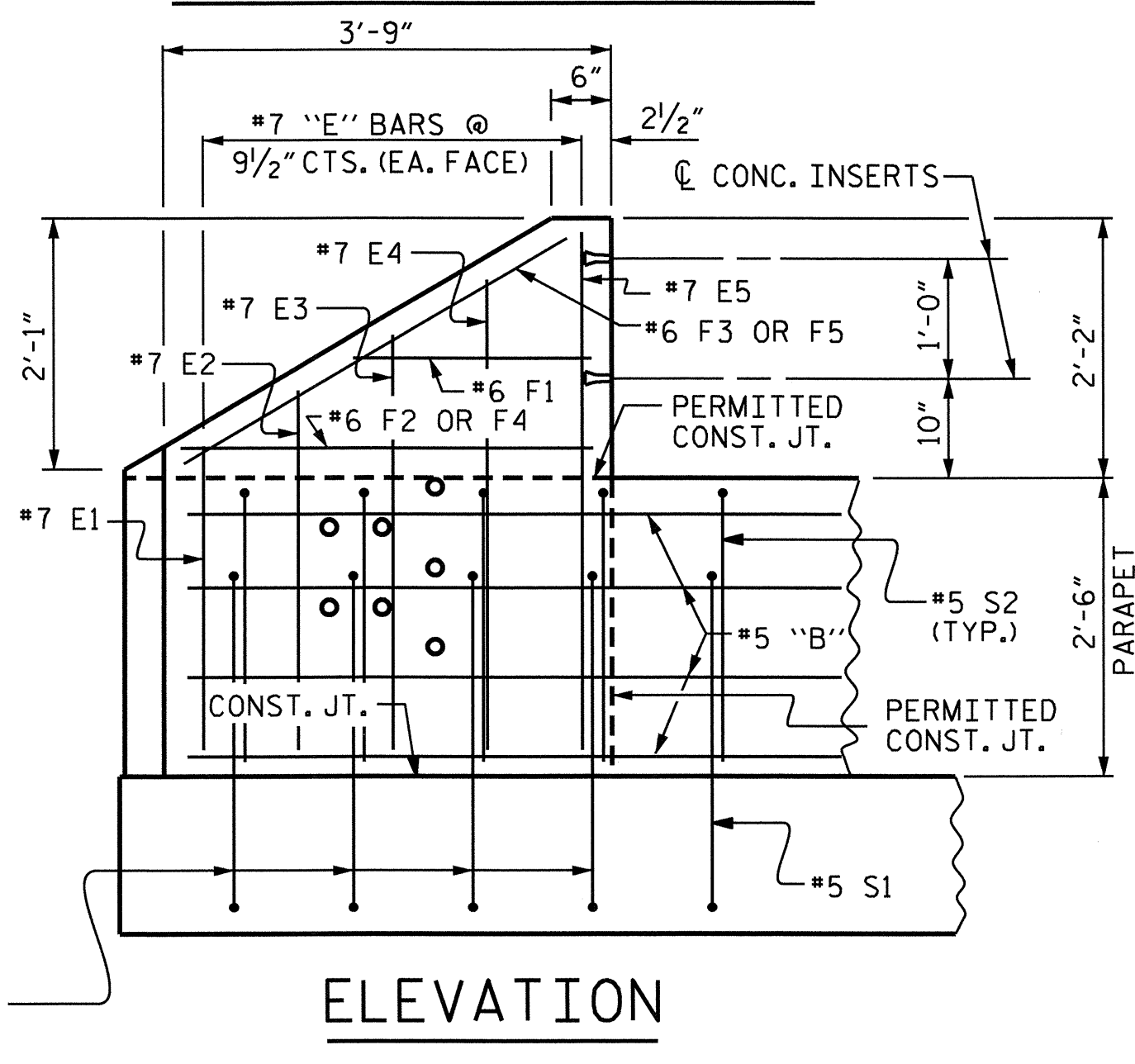
PLAN OF END POST



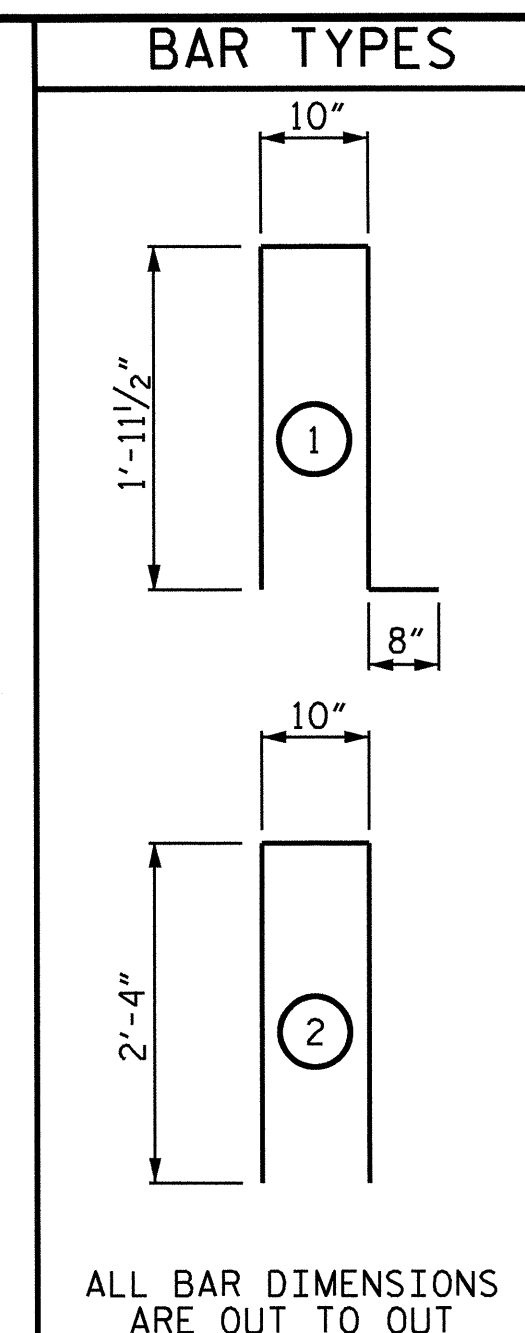
SECTION THRU PARAPET



END VIEW



ELEVATION



BILL OF MATERIAL FOR PARAPET AND FOUR END POSTS					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	32	#5	STR	10'-7"	353
*B2	48	#5	STR	21'-0"	1051
*B3	32	#5	STR	12'-5"	414
*E1	8	#7	STR	2'-7"	42
*E2	8	#7	STR	3'-1"	50
*E3	8	#7	STR	3'-6"	57
*E4	8	#7	STR	4'-0"	65
*E5	8	#7	STR	4'-4"	71
*F1	8	#6	STR	2'-0"	24
*F2	4	#6	STR	3'-5"	21
*F3	4	#6	STR	4'-4"	26
*F4	4	#6	STR	4'-1"	25
*F5	4	#6	STR	3'-8"	22
*S1	208	#5	1	5'-5"	1175
*S2	208	#5	2	5'-6"	1193
* EPOXY COATED REINFORCING STEEL				4589 LBS.	
CLASS AA CONCRETE				23.2 CU. YDS.	
1'-2" x 2'-6" CONCRETE PARAPET				206.55 LIN. FT.	

NOTES:

ALL REINFORCING STEEL IN THE PARAPETS AND END POSTS SHALL BE EPOXY COATED.

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

THE CONCRETE PARAPET 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.

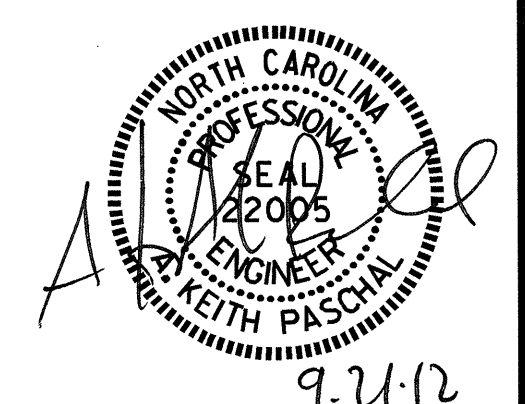
SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET FOR CONCRETE INSERT DETAILS.

SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS" SHEET FOR GUARDRAIL ANCHOR ASSEMBLY.

DRAWN BY: B. N. BARODAWALA DATE: 4-1-12  
 CHECKED BY: AMBER LEE DATE: 5-7-12

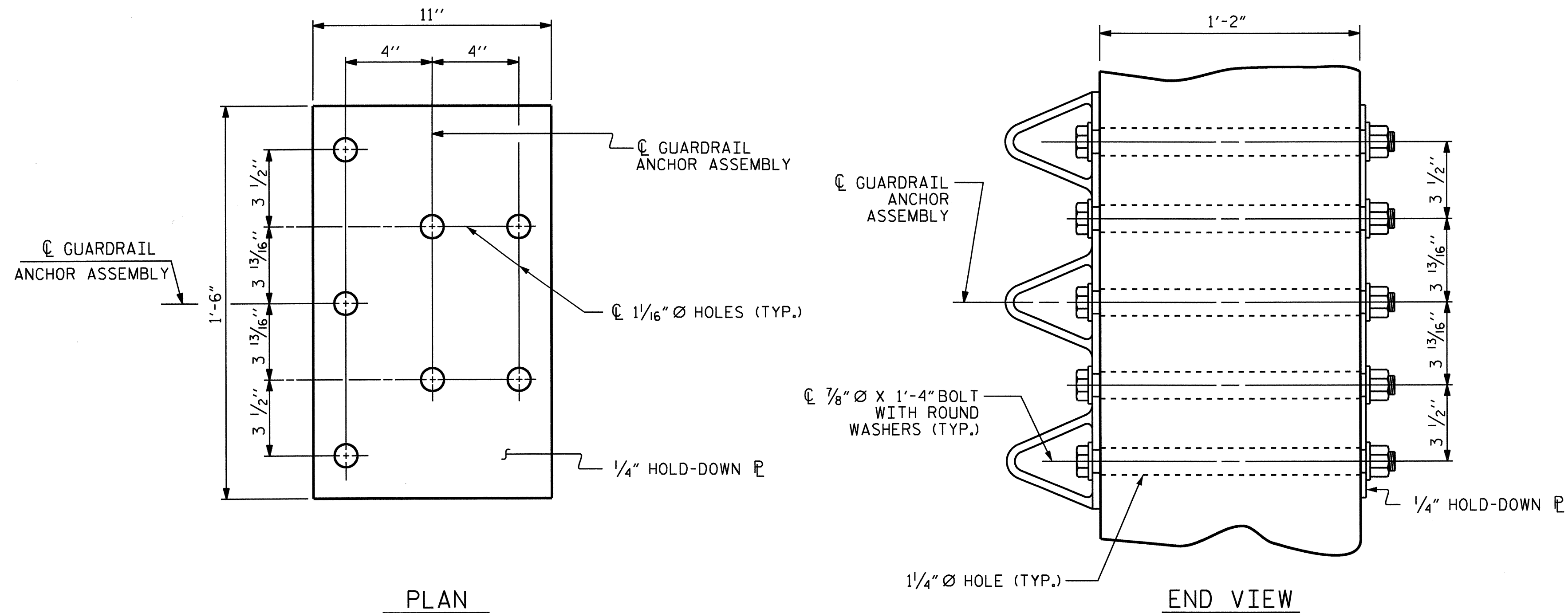
PARAPET AND END POST FOR TWO BAR METAL RAIL

08-AUG-2012 11:15  
 Re:\structures\Plans\Final Plans\B-4787.sd.MR..dgn  
 kpaschal



PROJECT NO. B-4787  
 PITT COUNTY  
 STATION: 18+47.50 -L-  
 SHEET 4 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE CONCRETE PARAPET FOR 2 BAR METAL RAIL					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 30



PLAN

END VIEW

**GUARDRAIL ANCHOR ASSEMBLY DETAILS**

**NOTES (FOR METAL RAILS)**

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

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M11.

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

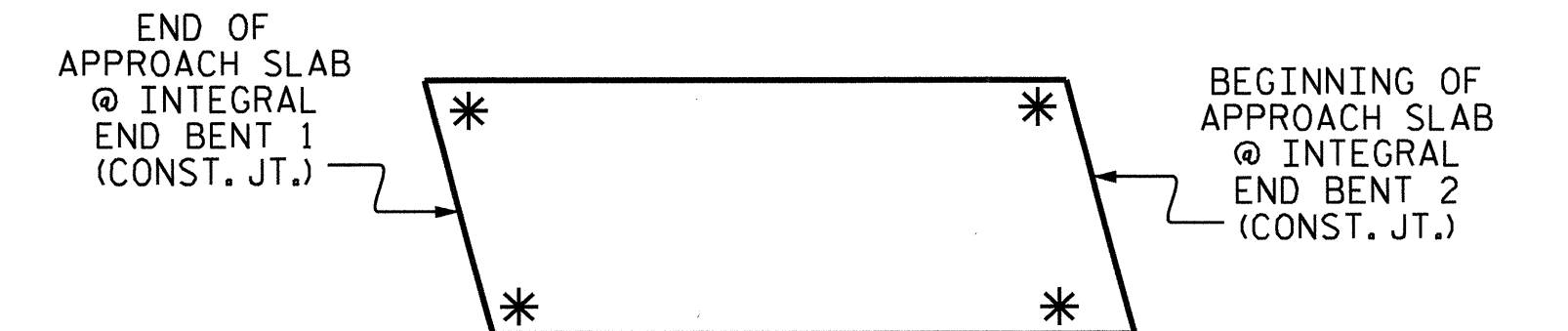
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

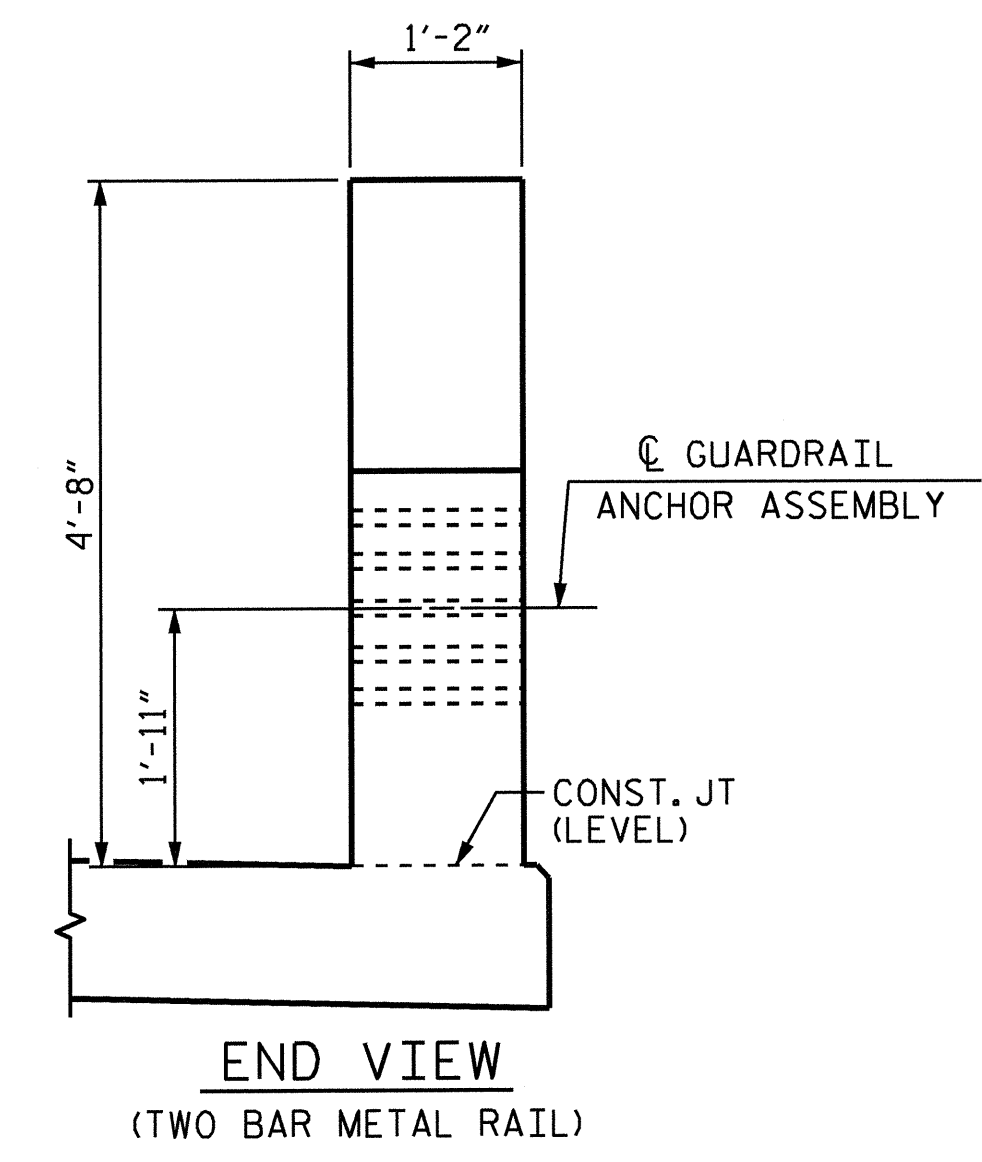
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

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



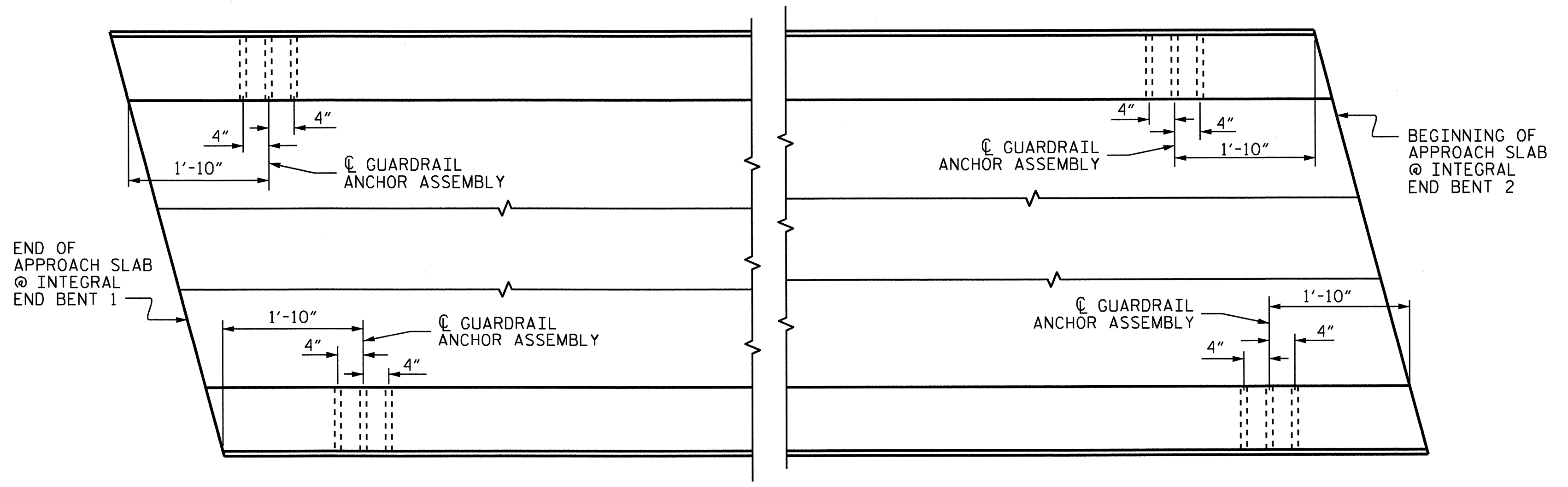
**SKETCH SHOWING POINTS OF ATTACHMENT**

\* LOCATION OF GUARDRAIL ATTACHMENT



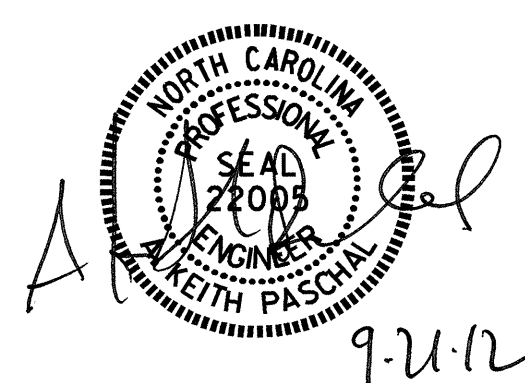
END VIEW  
(TWO BAR METAL RAIL)

**LOCATION OF GUARDRAIL ANCHOR AT END POST**



PLAN

PROJECT NO. B-4787  
PITT COUNTY  
 STATION: 18+47.50 -L-

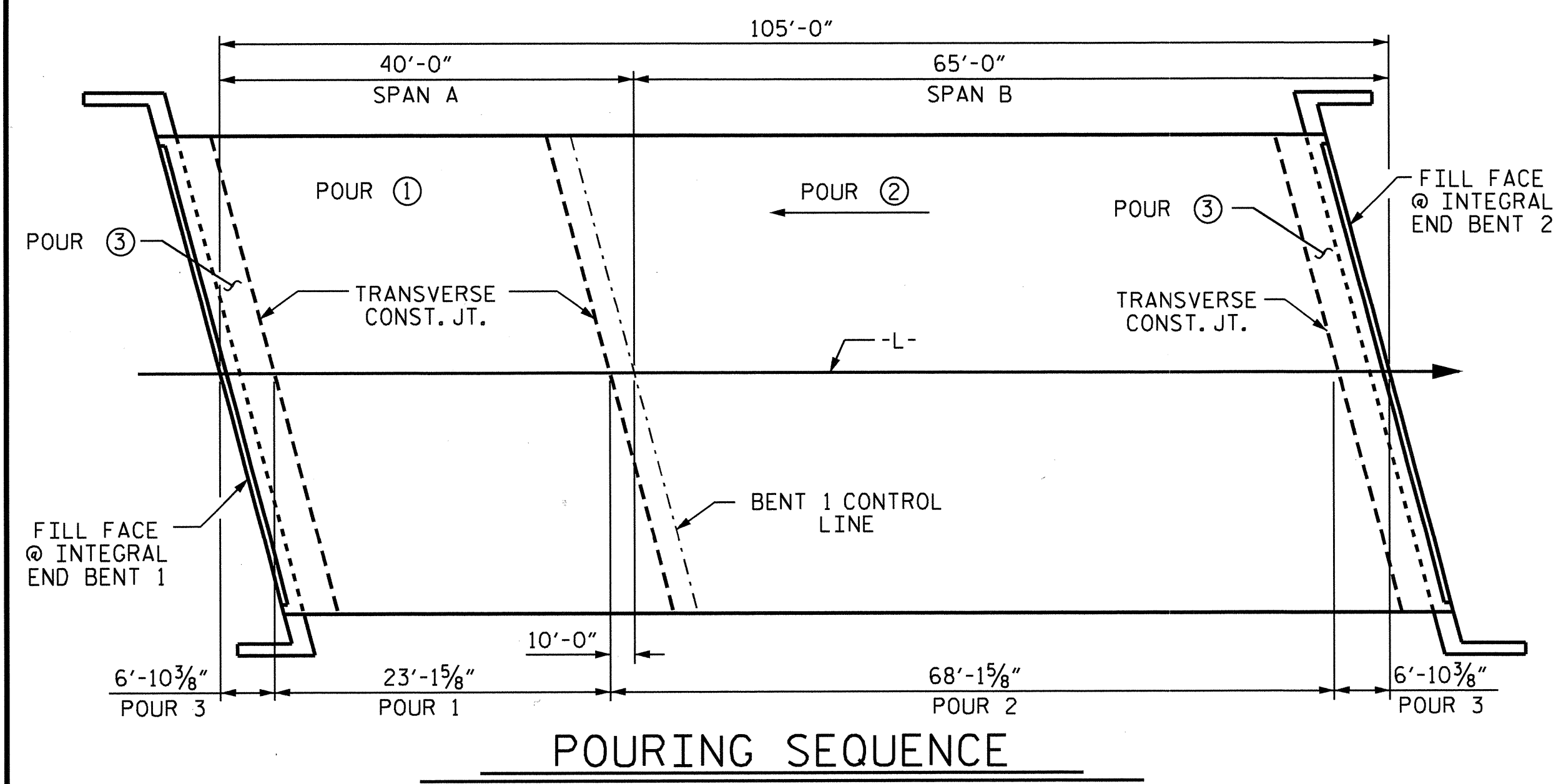


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 GUARDRAIL ANCHORAGE  
 DETAILS  
 FOR METAL RAILS

ASSEMBLED BY : B. N. BARODAWAL	DATE : 4-1-12
CHECKED BY : AMBER LEE	DATE : 5-7-12
DRAWN BY : MAA	5/10
CHECKED BY : GM	5/10
ADDED 5/6/10	
REV. 10/1/11	MAA/GM
REV. 12/5/11	MAA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			30





**POURING SEQUENCE**

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

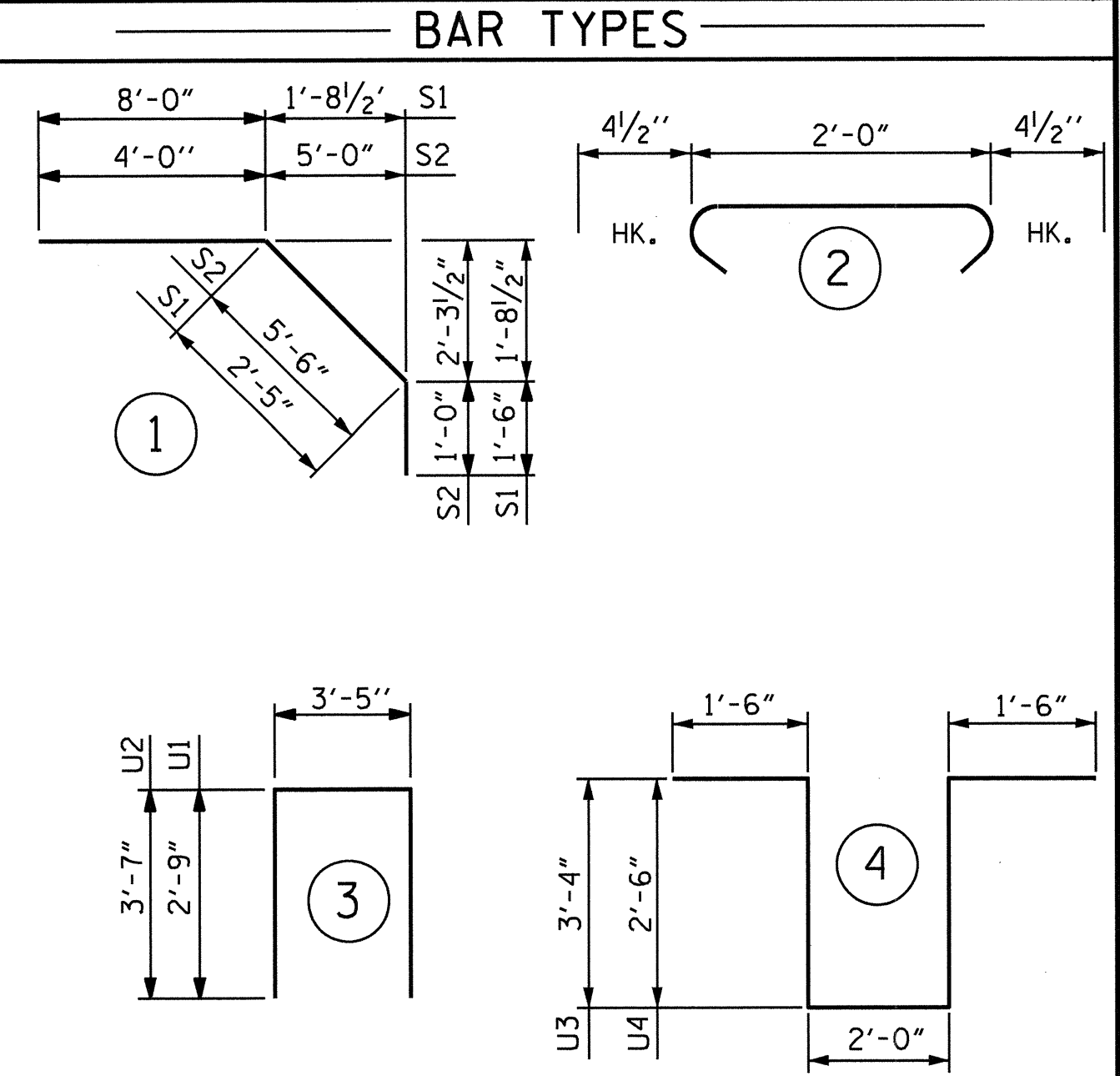
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			

**GROOVING BRIDGE FLOORS**

BRIDGE DECK	2984	SQ.FT.
APPROACH SLABS	1409	SQ.FT.
TOTAL	4393	SQ.FT.

**REINFORCING STEEL BAR SCHEDULE**

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	187	#5	STR	34'-3"	6680
A2	187	#5	STR	34'-3"	6680
*A101	4	#5	STR	31'-11"	133
*A102	4	#5	STR	28'-2"	118
*A103	4	#5	STR	24'-5"	102
*A104	4	#5	STR	20'-8"	86
*A105	4	#5	STR	17'-0"	71
*A106	4	#5	STR	13'-3"	55
*A107	4	#5	STR	9'-6"	40
*A108	4	#5	STR	5'-9"	24
*A109	4	#5	STR	2'-0"	8
A201	4	#5	STR	31'-11"	133
A202	4	#5	STR	28'-2"	118
A203	4	#5	STR	24'-5"	102
A204	4	#5	STR	20'-8"	86
A205	4	#5	STR	17'-0"	71
A206	4	#5	STR	13'-3"	55
A207	4	#5	STR	9'-6"	40
A208	4	#5	STR	5'-9"	24
A209	4	#5	STR	2'-0"	8
*B1	25	#6	STR	12'-0"	451
*B2	51	#6	STR	17'-0"	1302
*B3	26	#4	STR	9'-0"	156
*B4	26	#6	STR	42'-0"	1640
*B5	25	#6	STR	16'-0"	601
*B6	26	#4	STR	21'-0"	365
*B7	26	#6	STR	22'-0"	859
B8	88	#5	STR	52'-7"	4826
H1	20	#4	STR	10'-5"	139
H2	20	#4	STR	10'-2"	136
K1	16	#4	STR	21'-9"	232
K2	8	#4	STR	5'-5"	29
K3	16	#4	STR	6'-5"	69
K4	8	#4	STR	5'-11"	32
K5	4	#4	STR	5'-2"	14
K6	8	#4	STR	5'-8"	30
K7	4	#4	STR	5'-5"	14
K8	8	#4	STR	2'-9"	15
K9	8	#4	STR	4'-2"	22
K10	16	#4	STR	6'-5"	69
K11	8	#4	STR	5'-11"	32
K12	4	#4	STR	29'-4"	78
*S1	56	#4	1	11'-11"	446
*S2	56	#4	1	10'-6"	393
S3	64	#4	2	2'-9"	118
U1	60	#4	3	8'-11"	357
U2	12	#4	3	10'-7"	85
U3	16	#4	4	11'-8"	125
U4	8	#4	4	10'-0"	53
REINFORCING STEEL				LBS.	13792
*EPOXY COATED REINFORCING STEEL				LBS.	13530



ALL BAR DIMENSIONS ARE OUT TO OUT

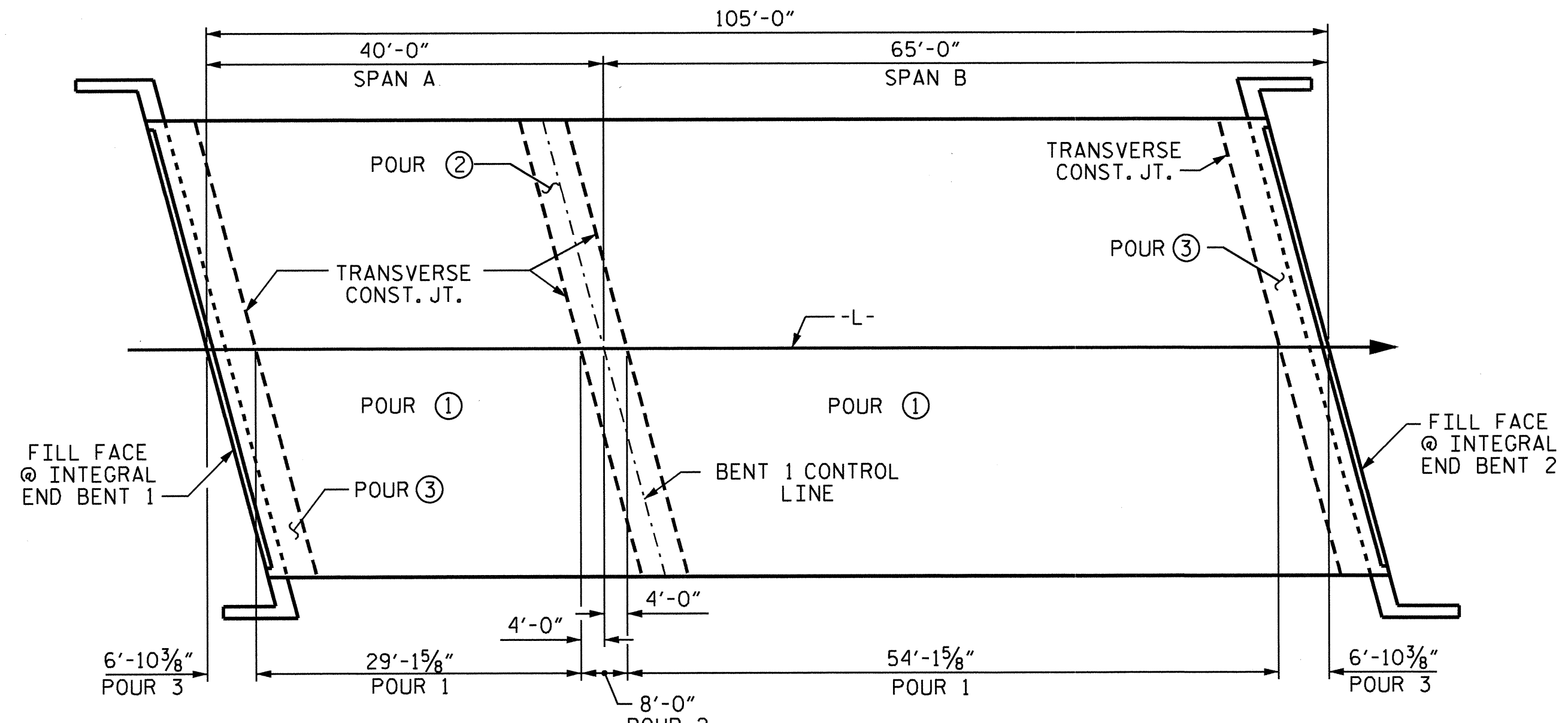
**— SUPERSTRUCTURE BILL OF MATERIAL —**

* QUANTITIES FOR PARAPET ARE NOT INCLUDED.	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(LBS.)	(LBS.)
	13792	13530
TOTALS**	13792	13530

**CLASS AA CONCRETE**

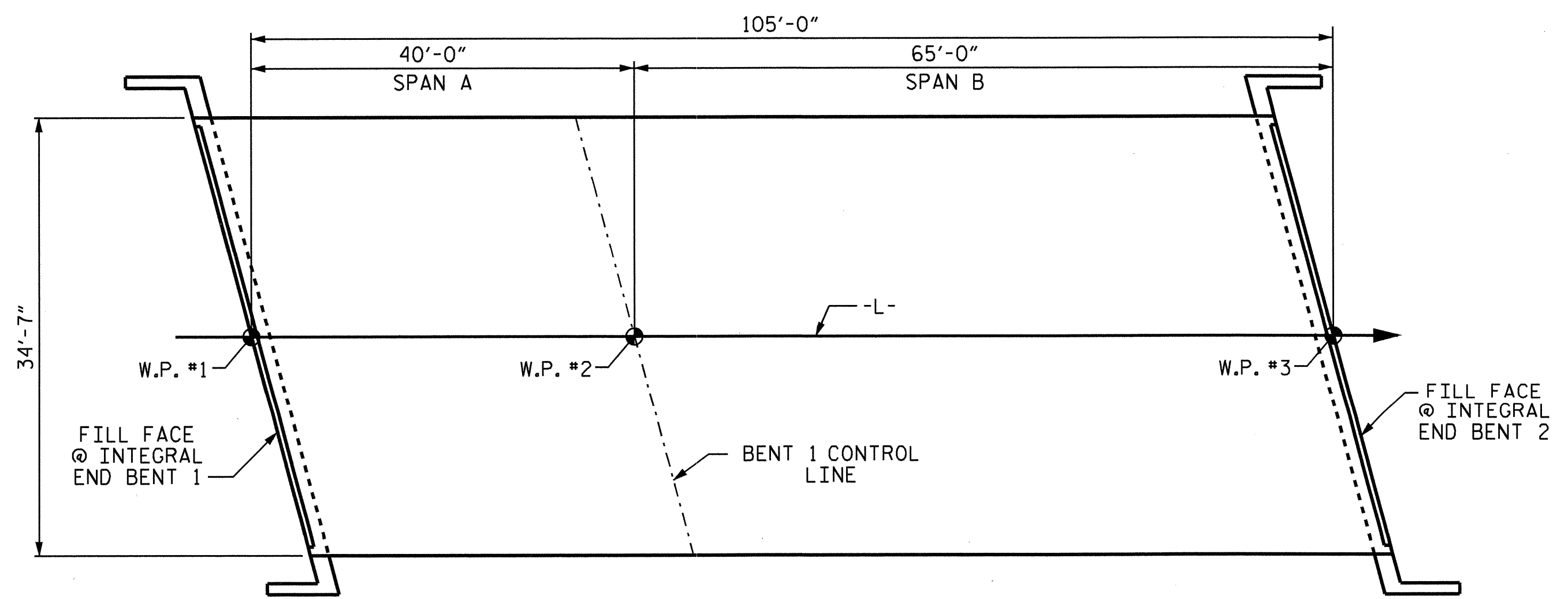
	TOTAL **	
	(CU. YDS.)	(CU. YDS.)
POUR 1	24.5	155.5
POUR 2	79.0	
★ POUR 3	52.0	

★ POUR 3 QUANTITY INCLUDES UPPER POUR OF WINGS AND INTEGRAL END BENT.

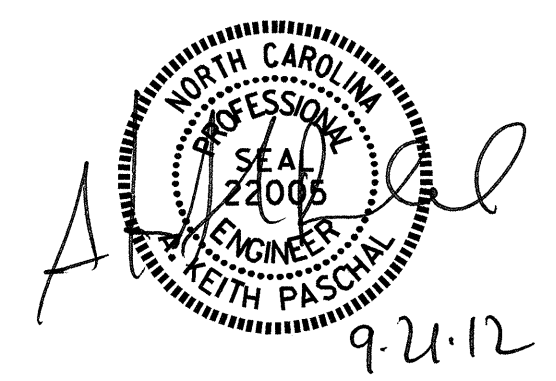


**OPTIONAL POURING SEQUENCE**

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



**LAYOUT FOR COMPUTING AREA**  
**— REINFORCED CONCRETE DECK SLAB —**  
 (SQ. FT. = 3631)



PROJECT NO. B-4787  
 PITT COUNTY  
 STATION: 18+47.50 -L-

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

DRAWN BY: B. N. BARODAWALA DATE: 4-1-12  
 CHECKED BY: AMBER LEE DATE: 5-7-12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
1			3			TOTAL SHEETS 30
2			4			



**NOTES**

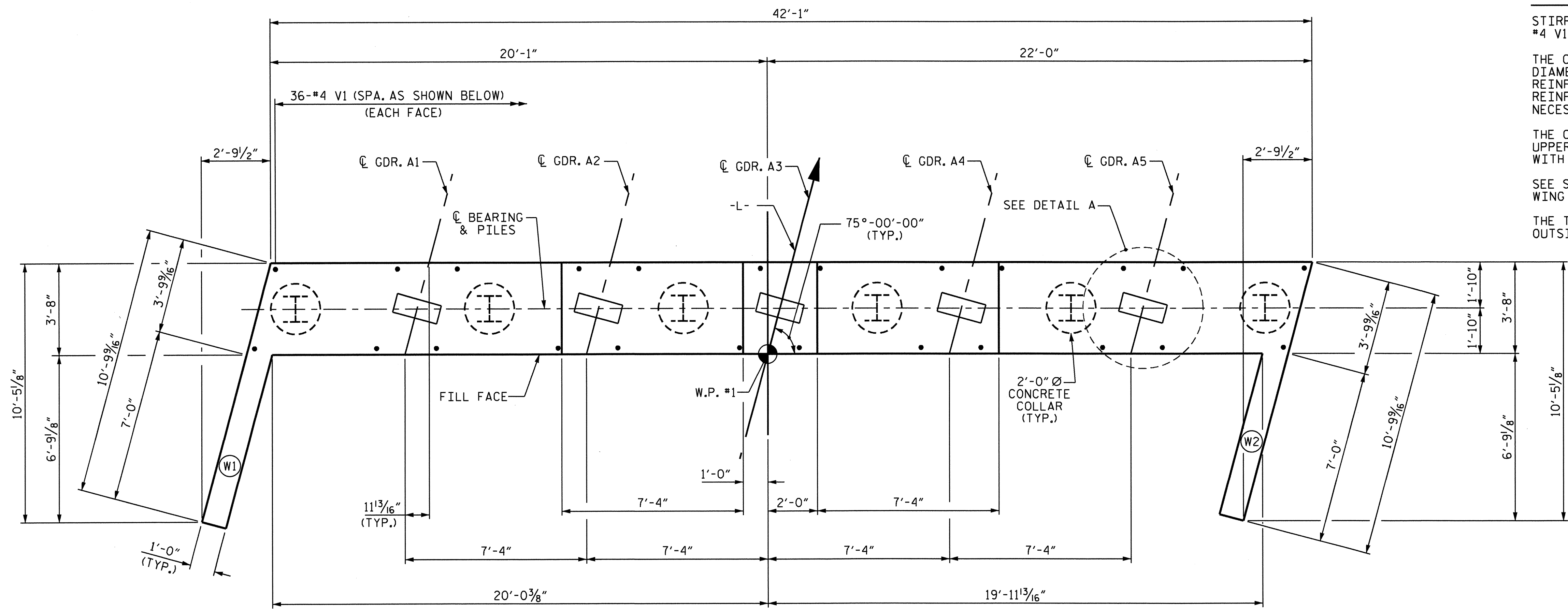
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #4 V1 BARS.

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

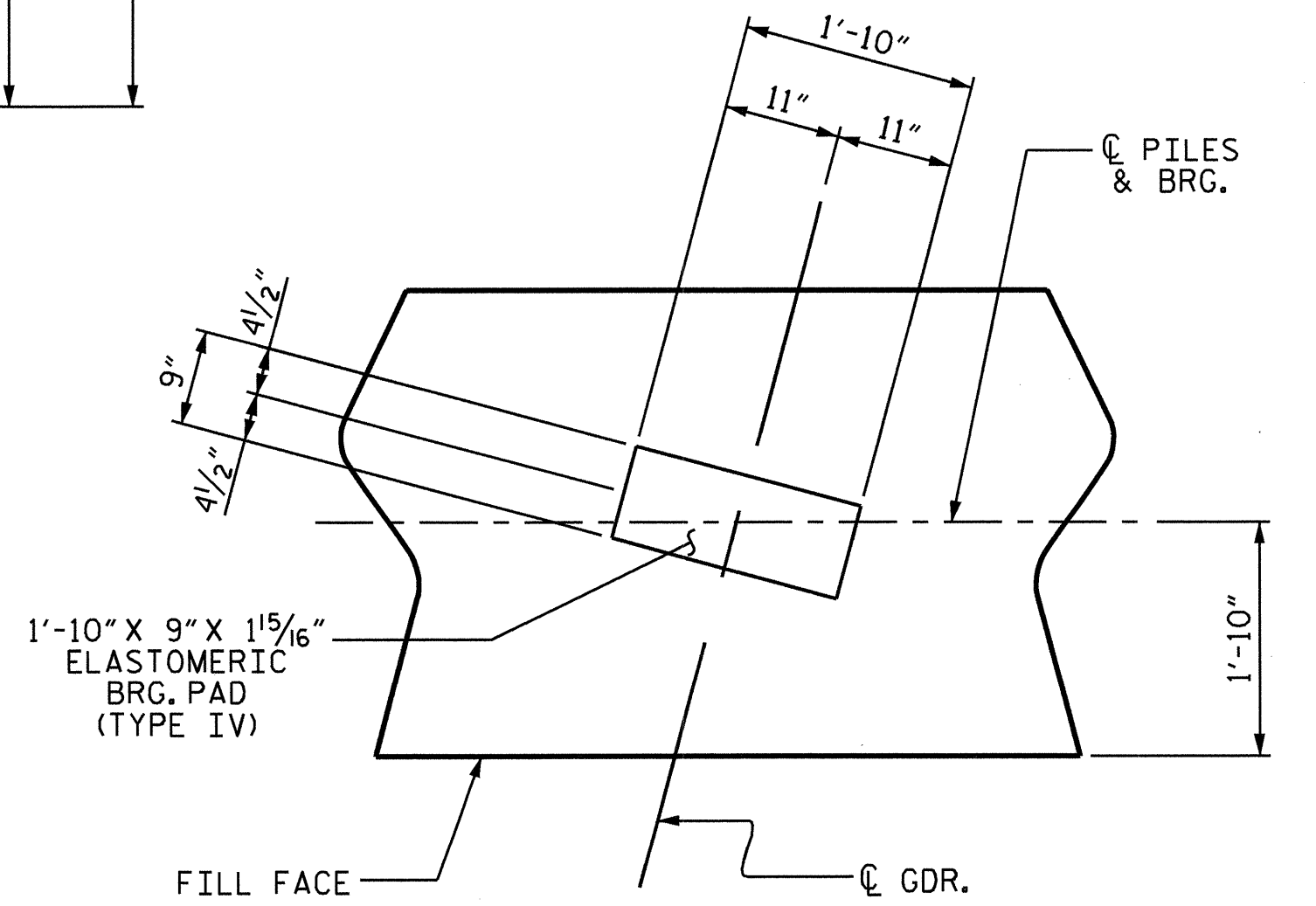
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE UPPER PART OF INTEGRAL END BENT AND WINGS ARE TO BE POURED WITH THE SUPERSTRUCTURE.

SEE SUPERSTRUCTURE SHEETS FOR UPPER PART OF INTEGRAL END BENT WING DETAILS.

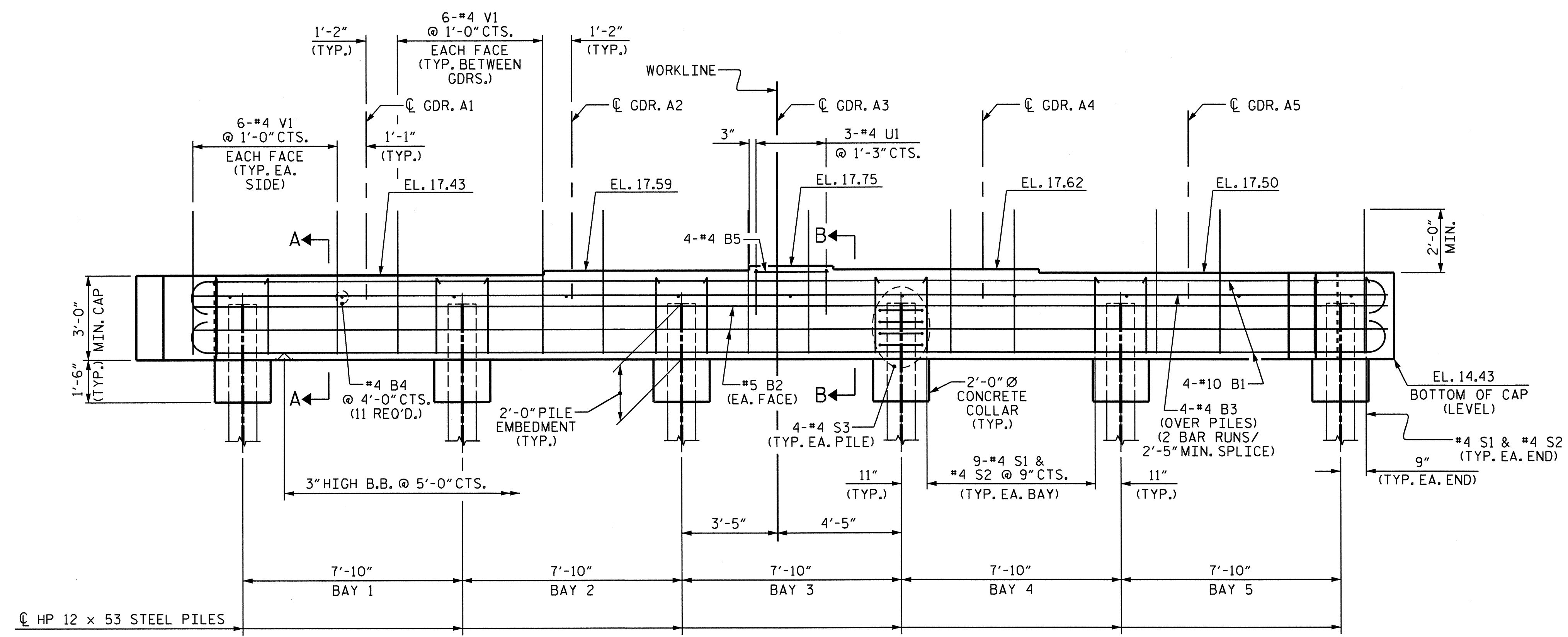
THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE OUTSIDE 4" AND THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".



**PLAN**



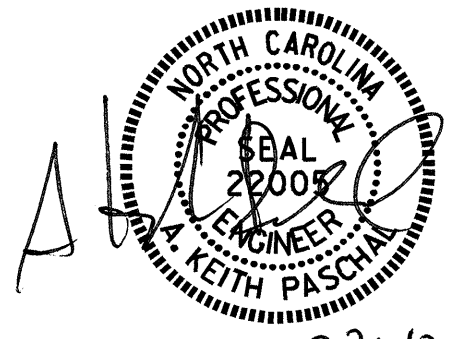
**DETAIL A**  
(TYP. EA. GIRDER)



**ELEVATION**

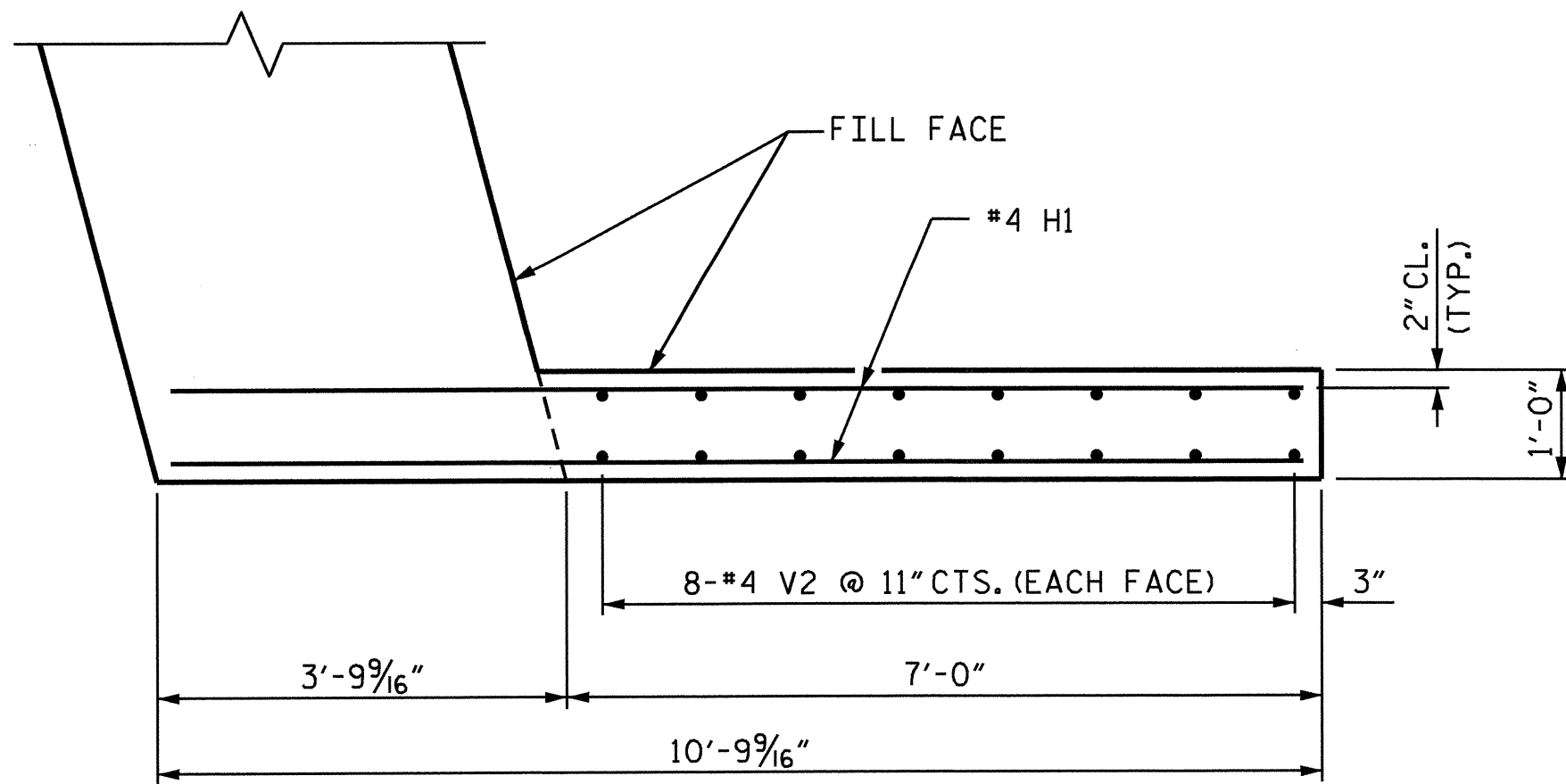
PROJECT NO. B-4787  
PITT COUNTY  
 STATION: 18+47.50 -L-  
 SHEET 1 OF 3

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

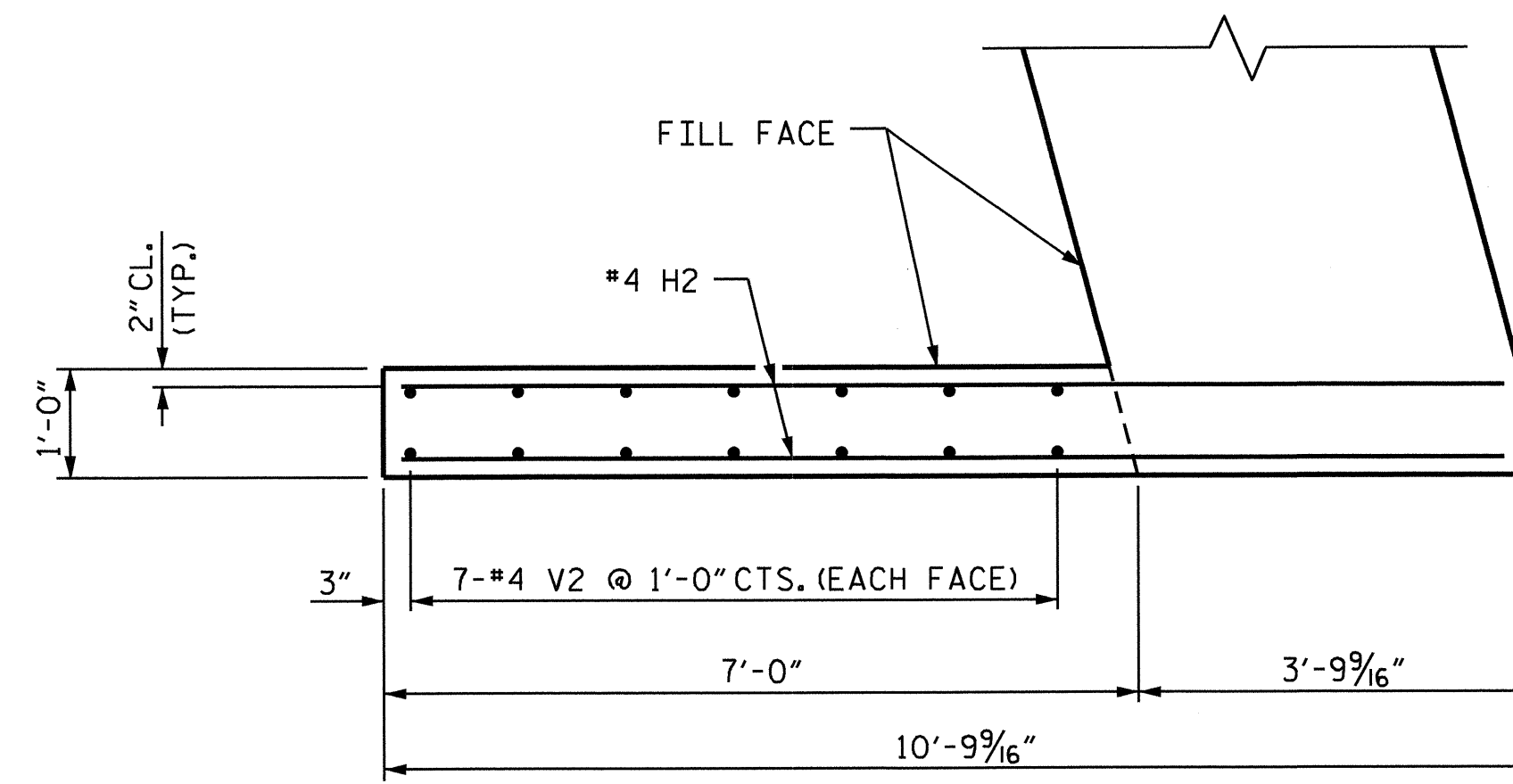


DRAWN BY: K. P. SEDAI DATE: 4/24/12  
 CHECKED BY: E. K. POPE DATE: 7/18/12

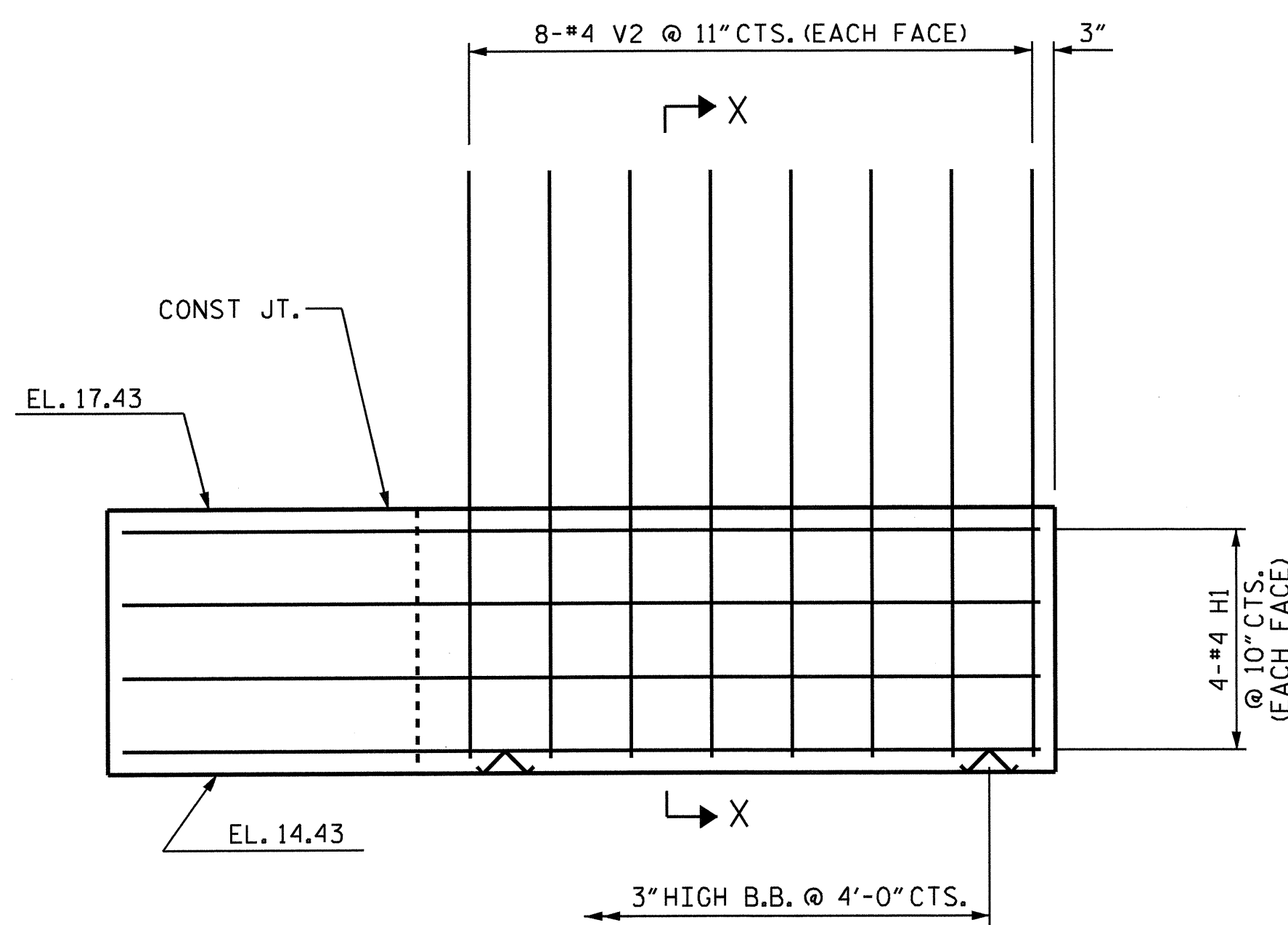
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS 30
2			4			



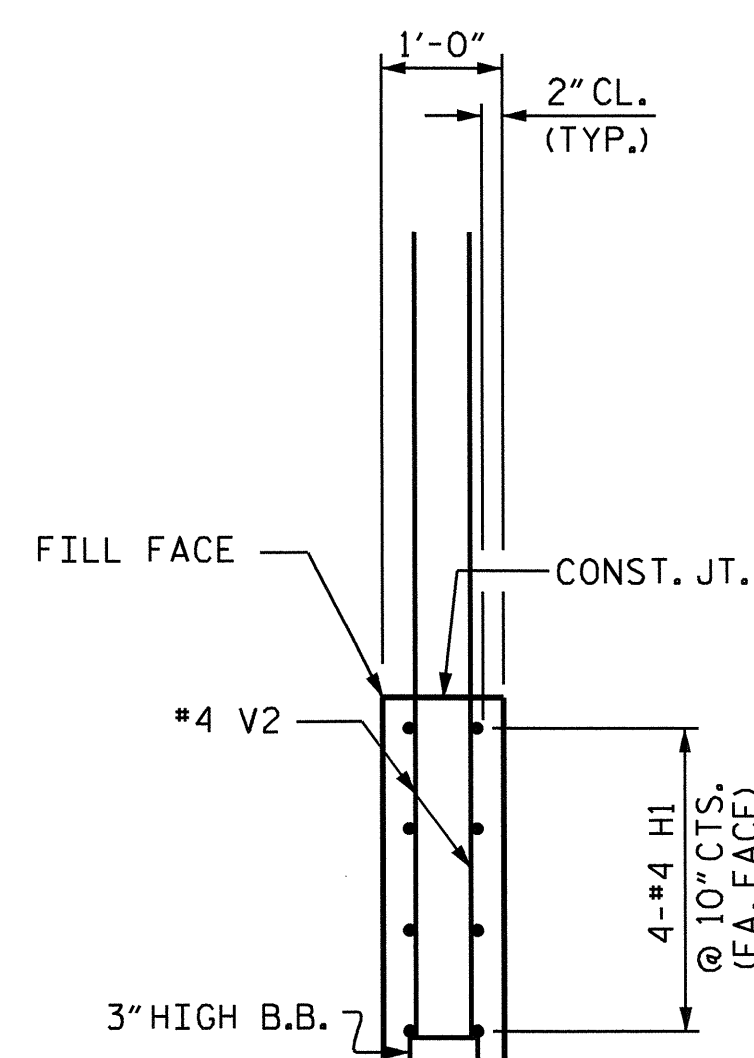
PLAN W1



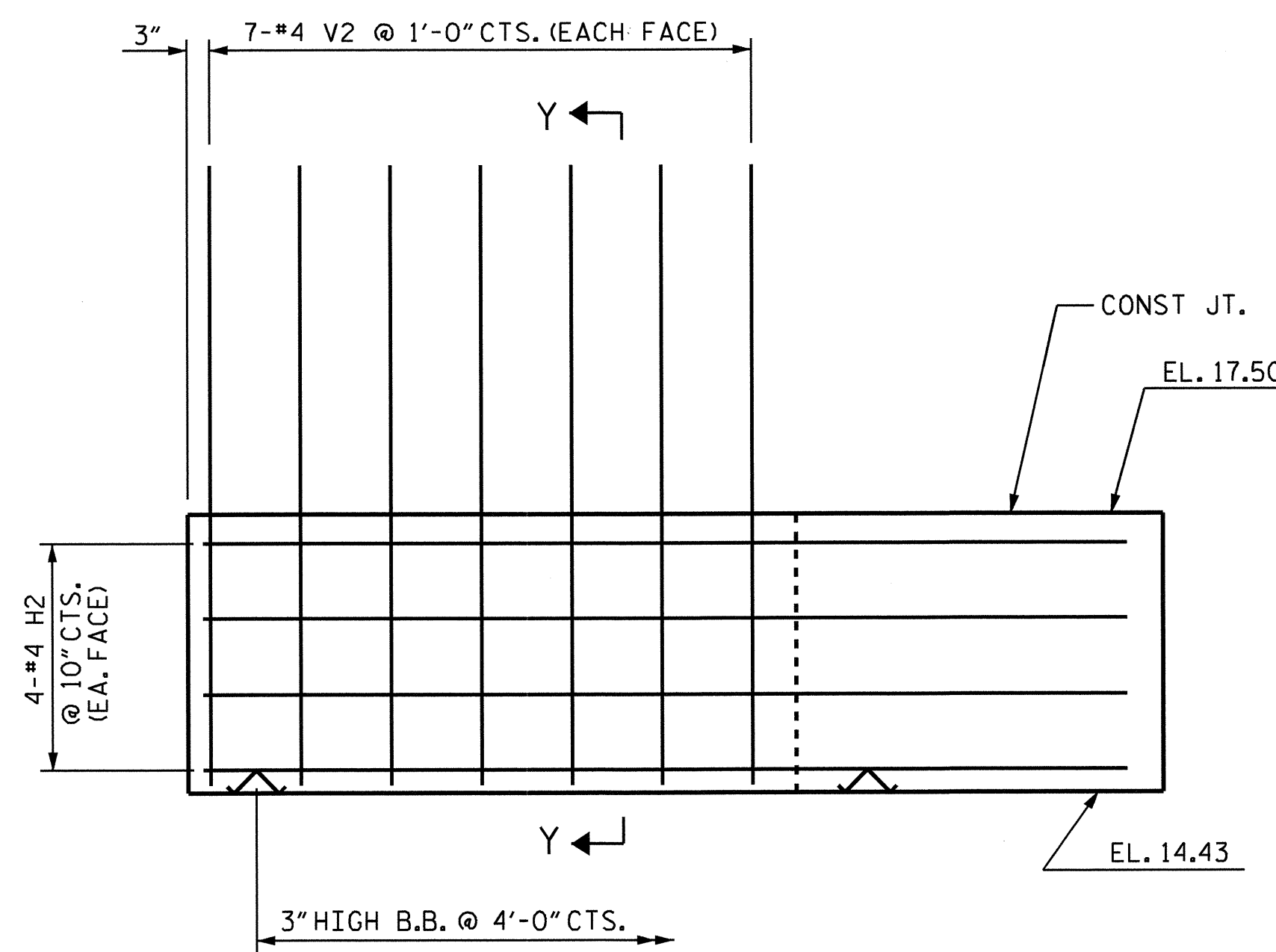
PLAN W2



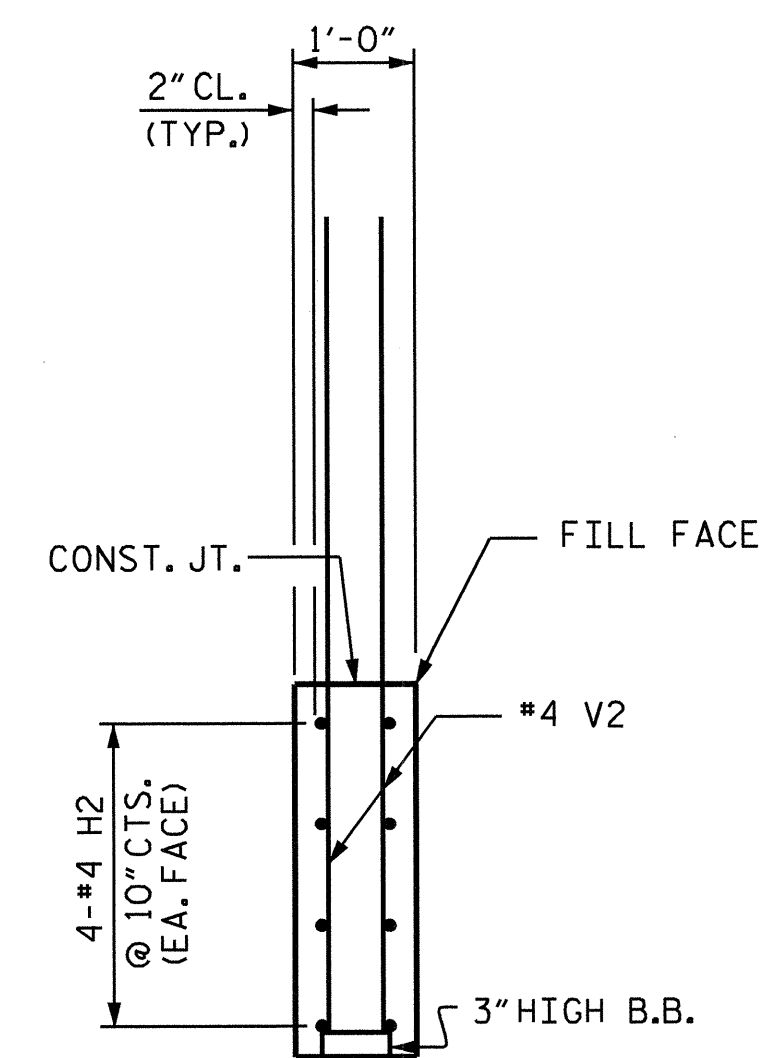
ELEVATION W1



SECTION X-X



ELEVATION W2

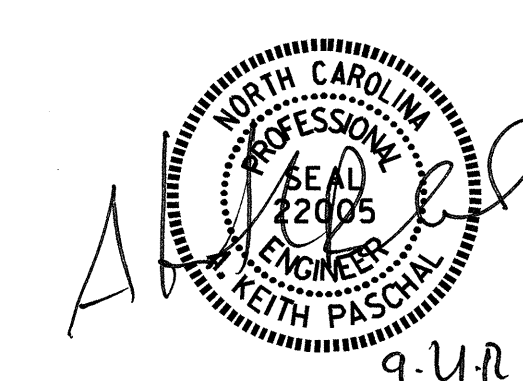


SECTION Y-Y

PROJECT NO. B-4787  
PITT COUNTY  
 STATION: 18+47.50 -L-

SHEET 2 OF 3

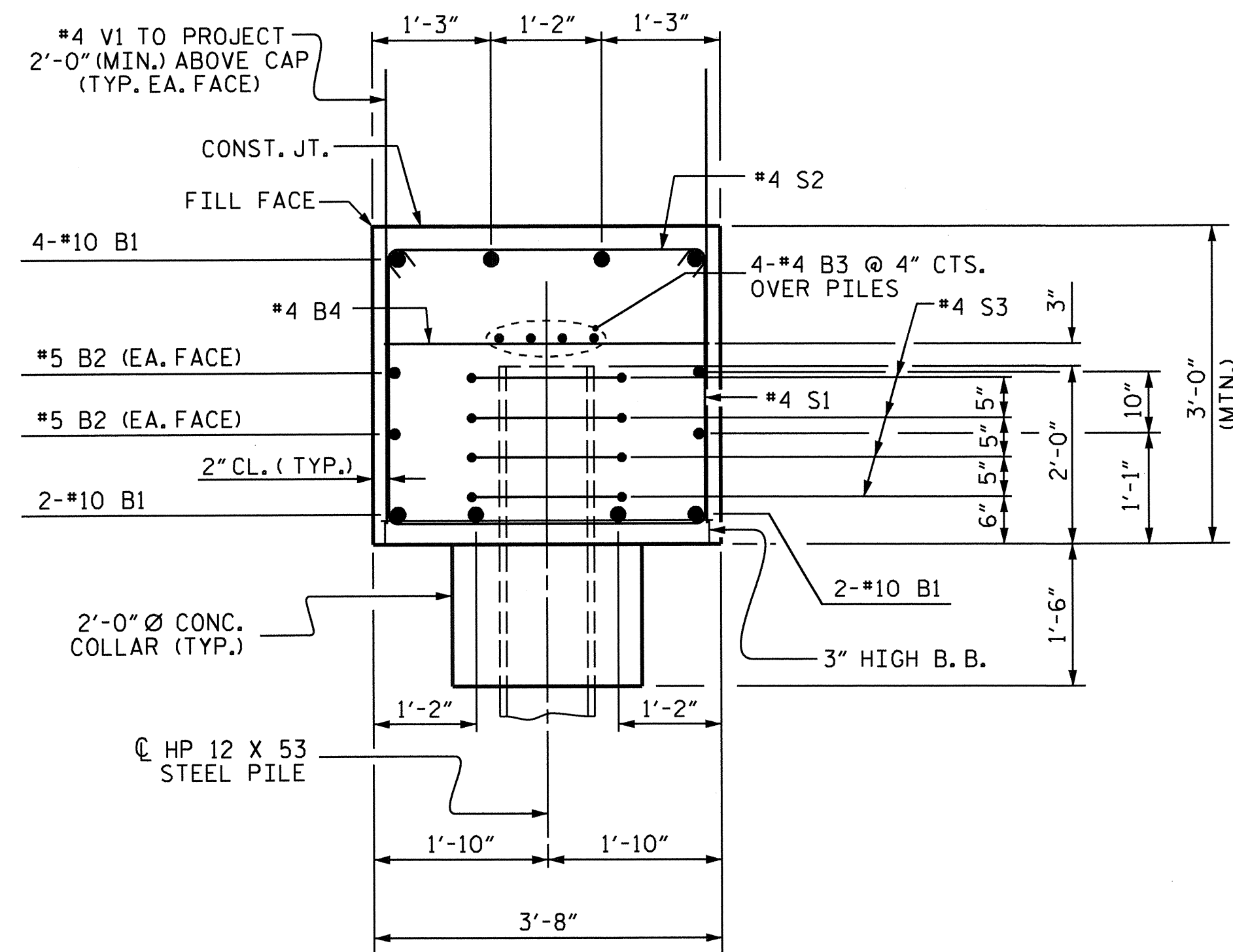
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 INTEGRAL END BENT 1



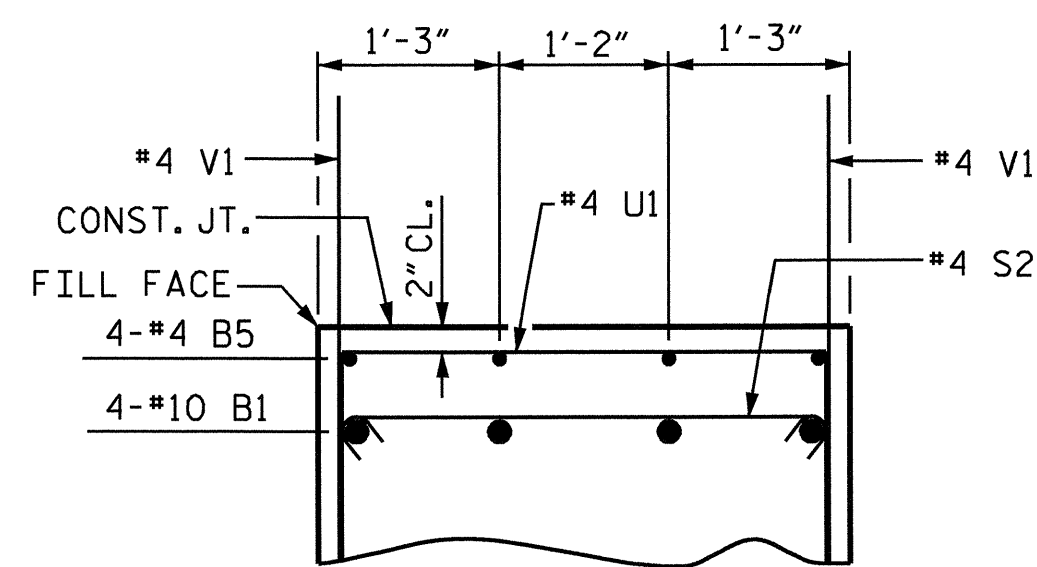
DRAWN BY : K. P. SEDA I DATE : 4/24/12  
 CHECKED BY : E. K. POPE DATE : 7/18/12

08-AUG-2012 11:12  
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 kpaschal

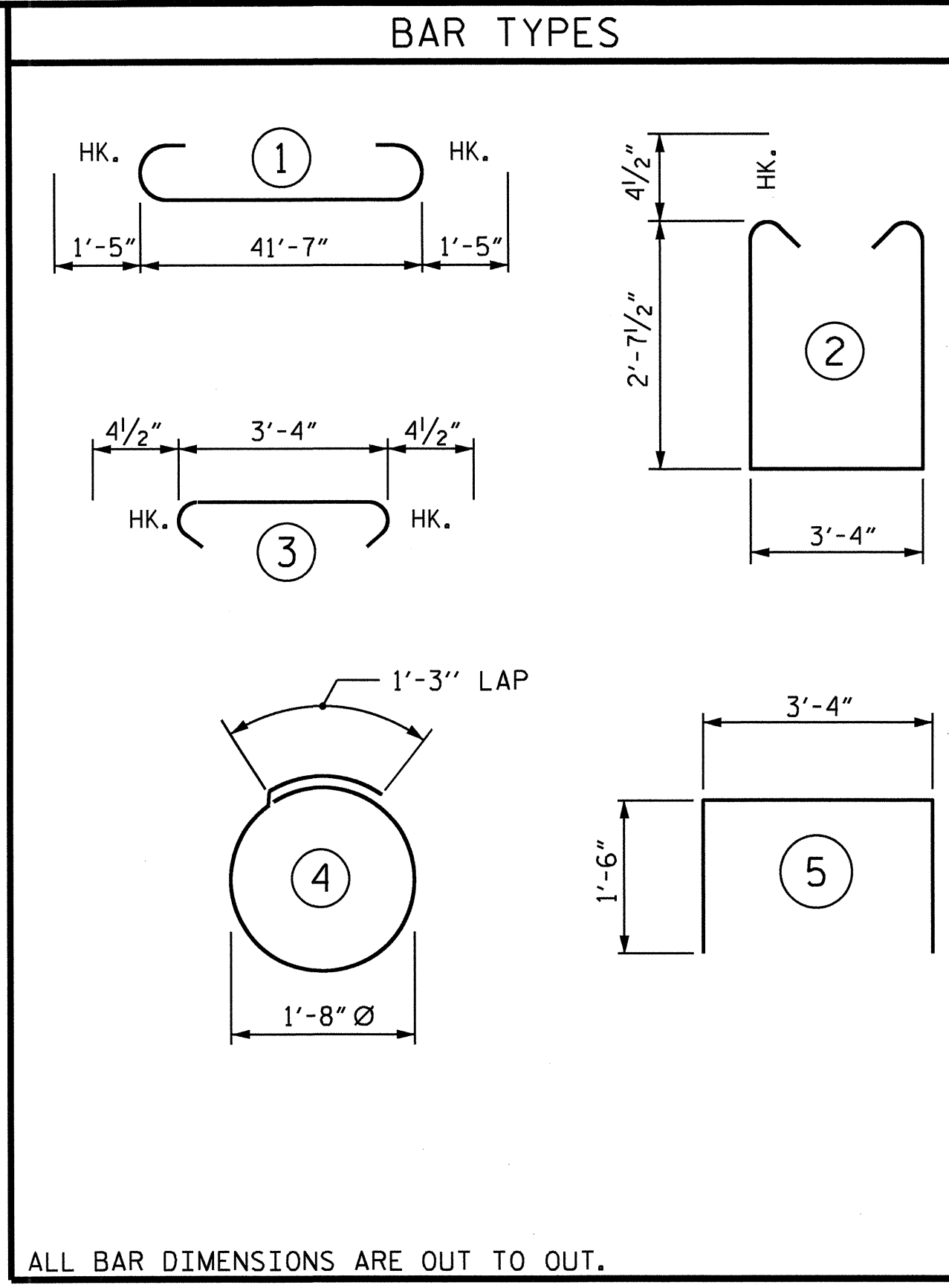
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			30



SECTION A-A

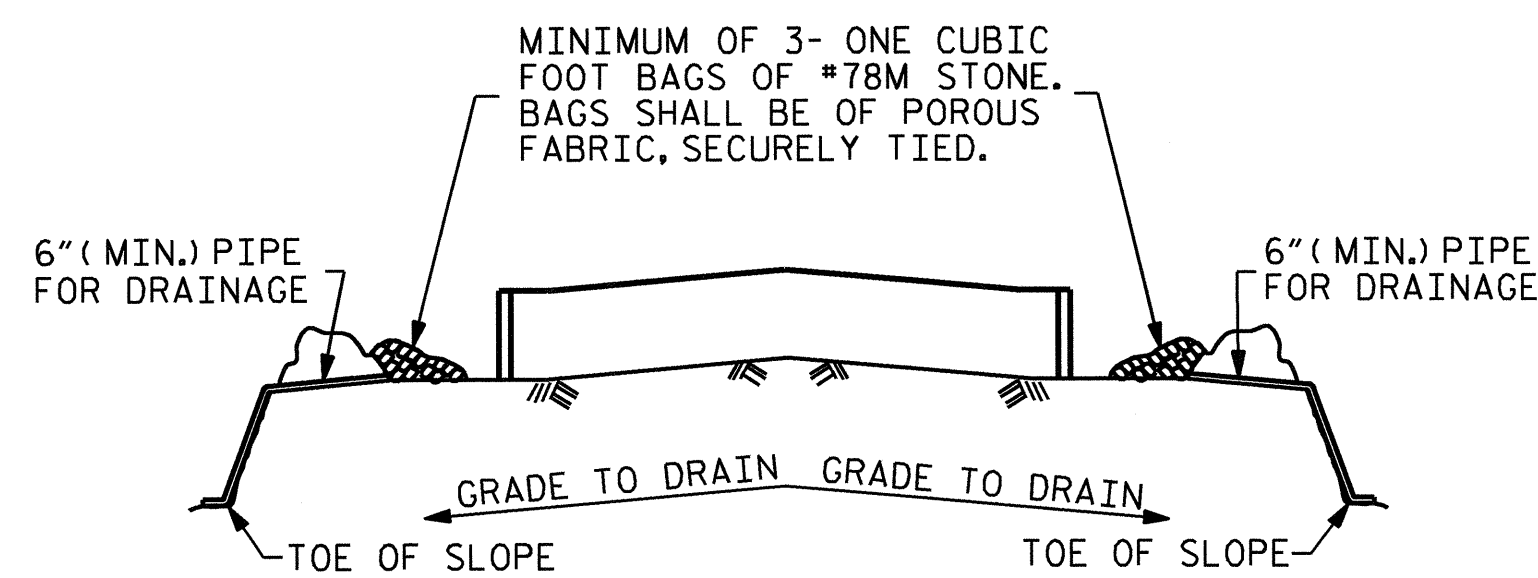


PARTIAL SECTION B-B



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10		44'-5"	1529
B2	4	#5	STR	41'-8"	174
B3	8	#4	STR	22'-1"	118
B4	11	#4	STR	3'-4"	24
B5	4	#4	STR	2'-8"	7
H1	8	#4	STR	10'-5"	56
H2	8	#4	STR	10'-2"	54
S1	47	#4	2	9'-4"	293
S2	47	#4	3	4'-1"	128
S3	24	#4	4	6'-6"	104
U1	3	#4	5	6'-4"	13
V1	72	#4	STR	5'-1"	244
V2	30	#4	STR	6'-7"	132
REINFORCING STEEL					= 2876 LBS
CLASS A CONCRETE BREAKDOWN :					
CAP, LOWER WINGS & COLLARS = 20.3 C.Y.					
HP 12 X 53 STEEL PILES :					
NO. 6					LIN. FT. 420
PILE REDRIVES:					
EACH 3					

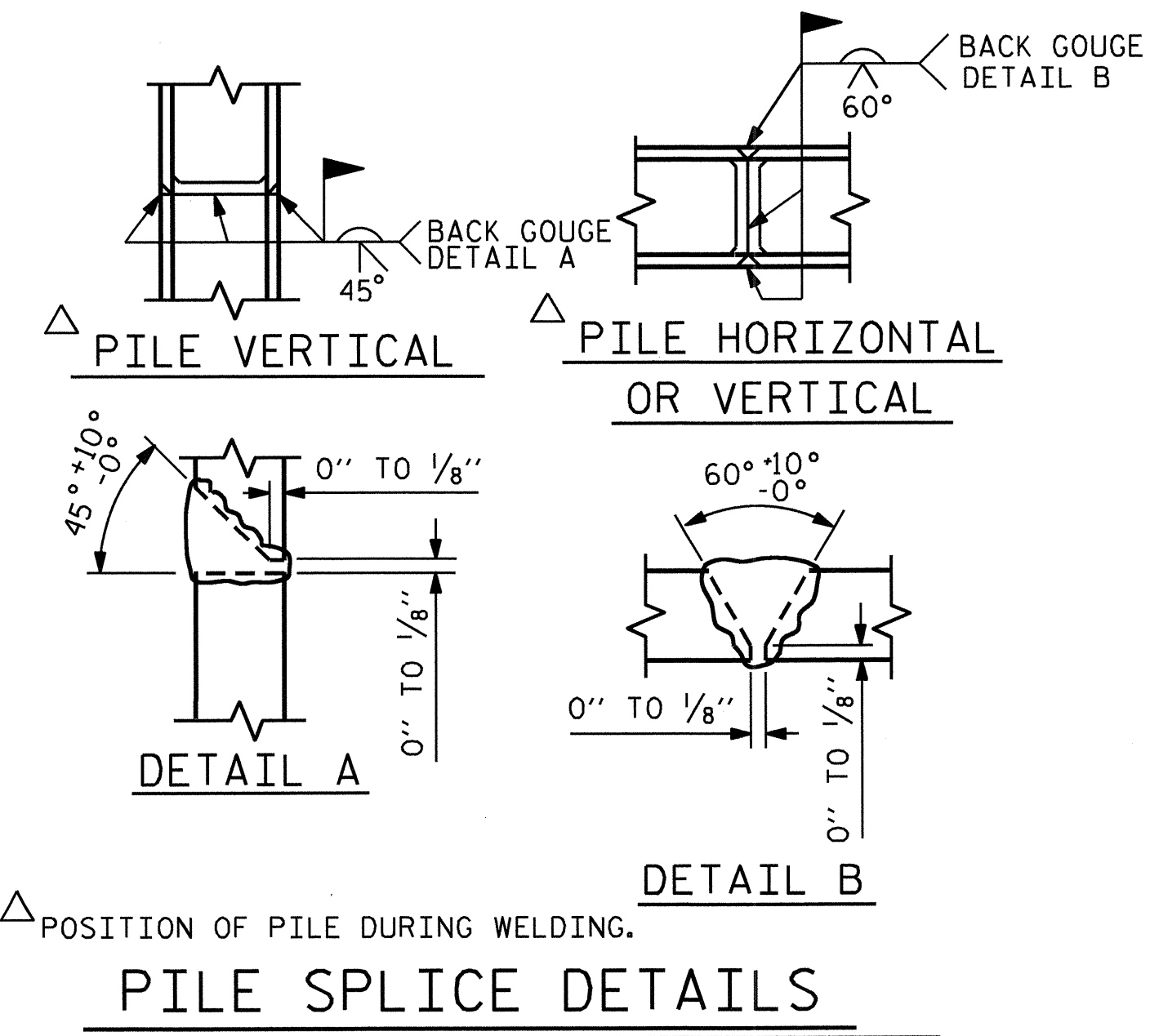


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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



POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

PROJECT NO. B-4787  
PITT COUNTY  
 STATION: 18+47.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 INTEGRAL END BENT 1



DRAWN BY : K. P. SEDA DATE : 4/24/12  
 CHECKED BY : E. K. POPE DATE : 7/18/12

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			30

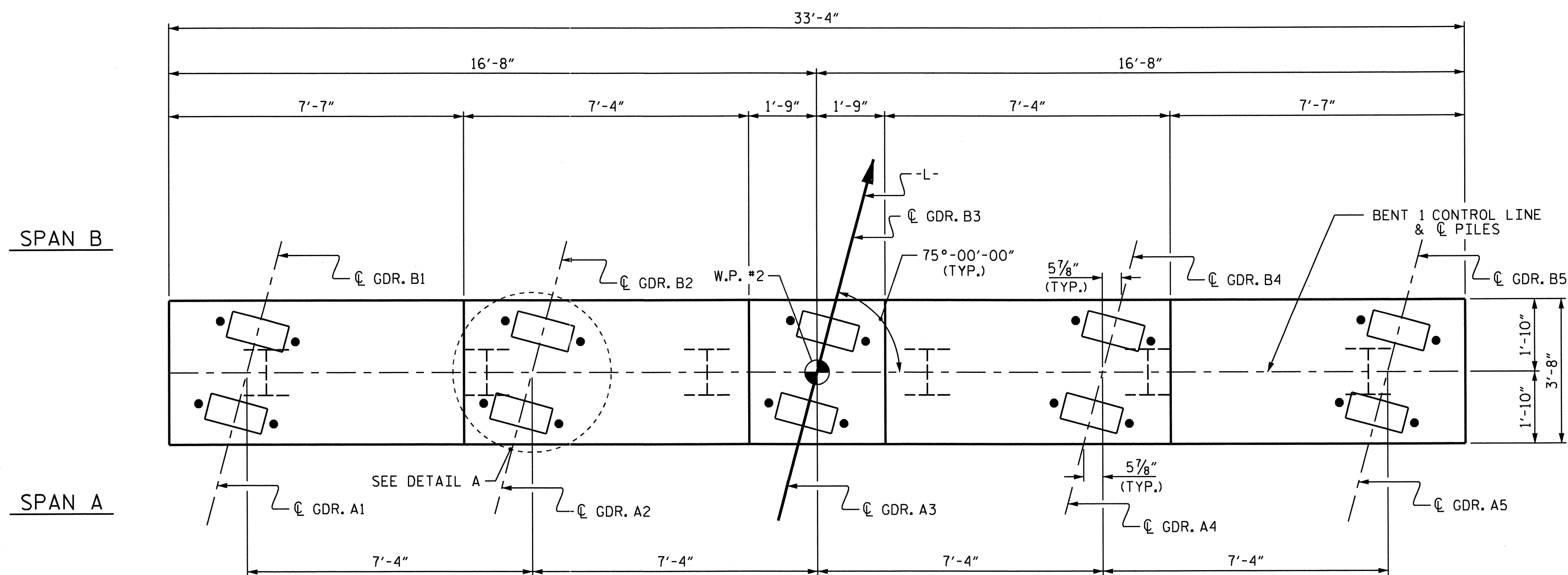


**NOTES**

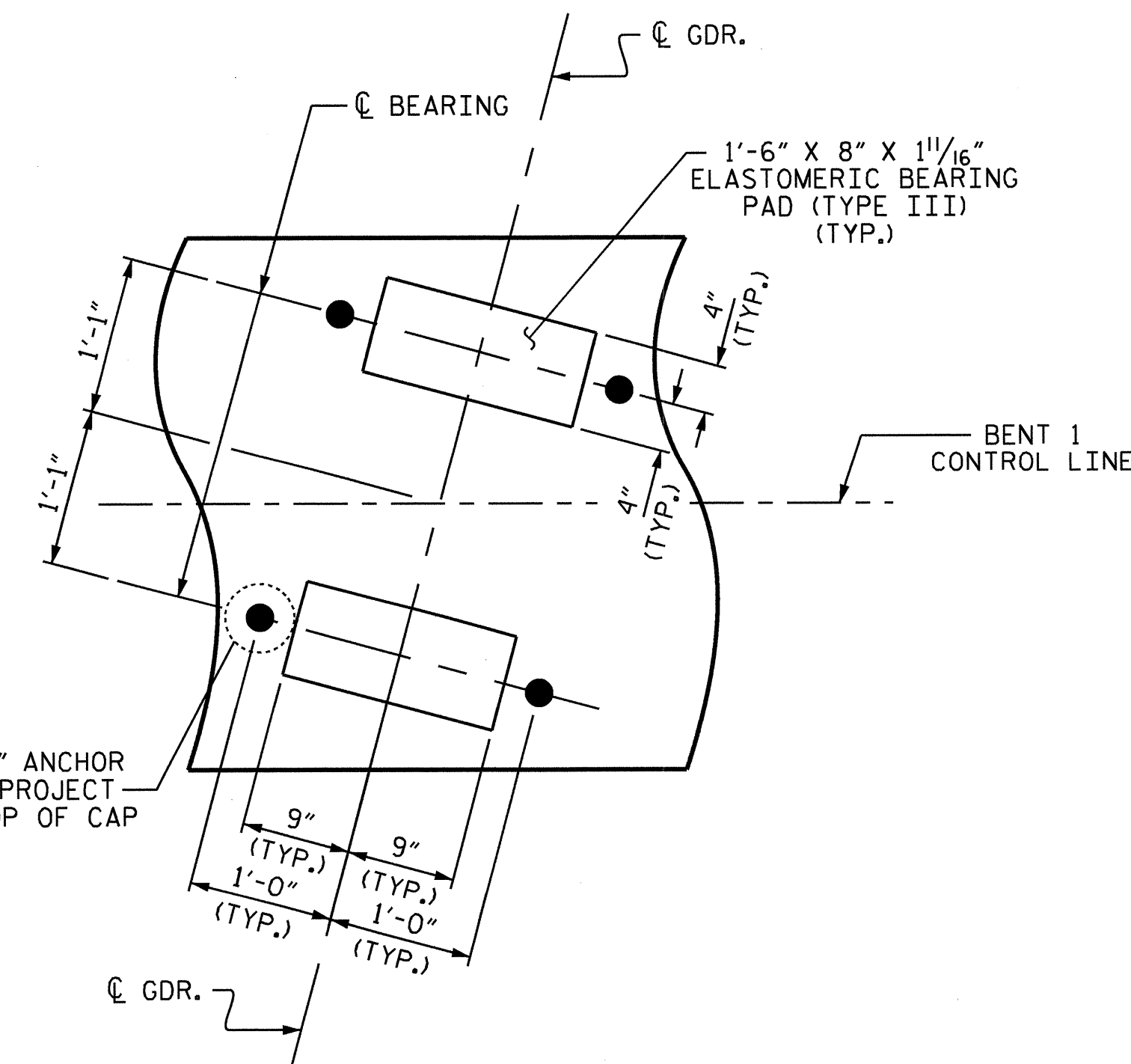
STIRRUPS AND UI BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

GALVANIZE THE TOP 25 FEET OF EACH INTERIOR BENT PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

INVERT ALTERNATE STIRRUPS.

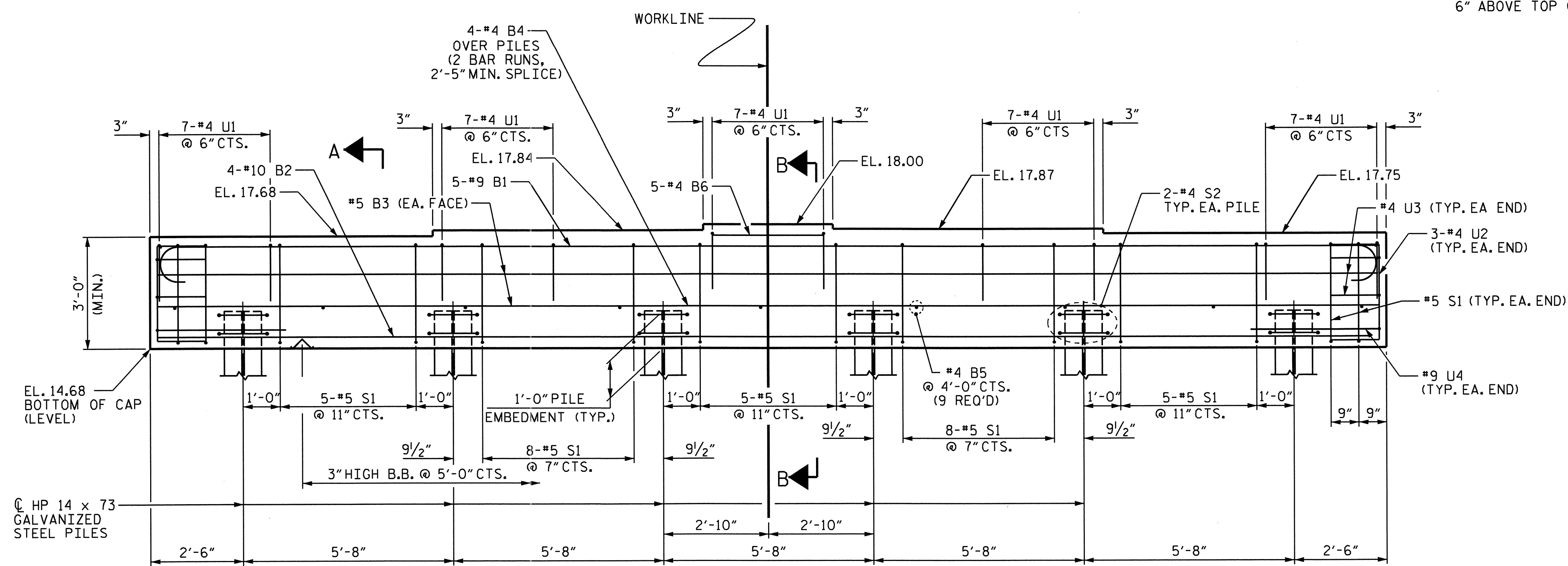


**PLAN**



**DETAIL A**

(DETAILS AND DIMENSIONS ARE TYPICAL FOR EACH BEARING)



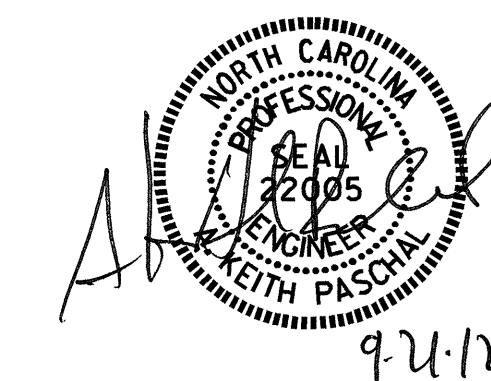
**ELEVATION**

PROJECT NO. B-4787  
PITT COUNTY  
 STATION: 18+47.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

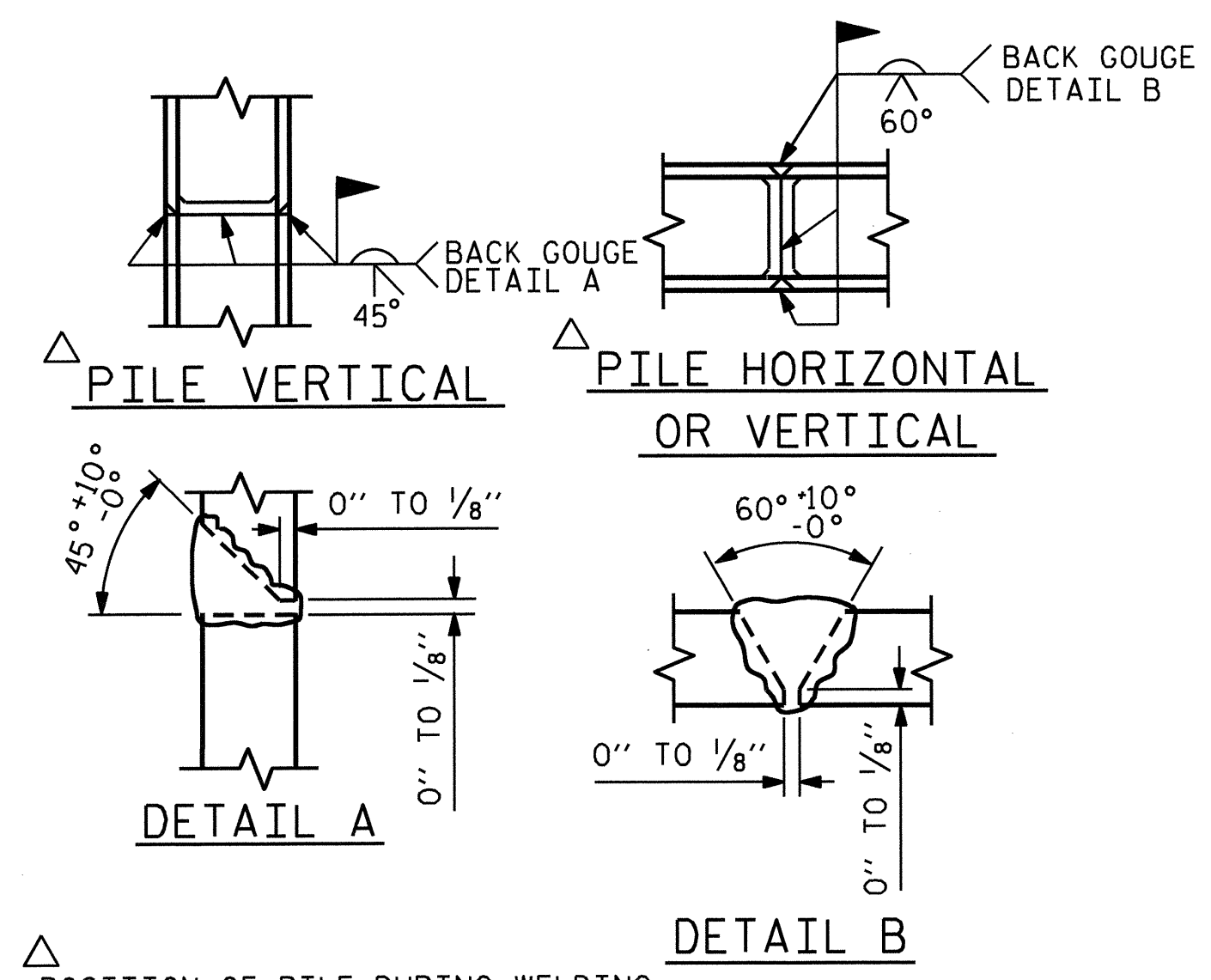
SUBSTRUCTURE  
 BENT 1



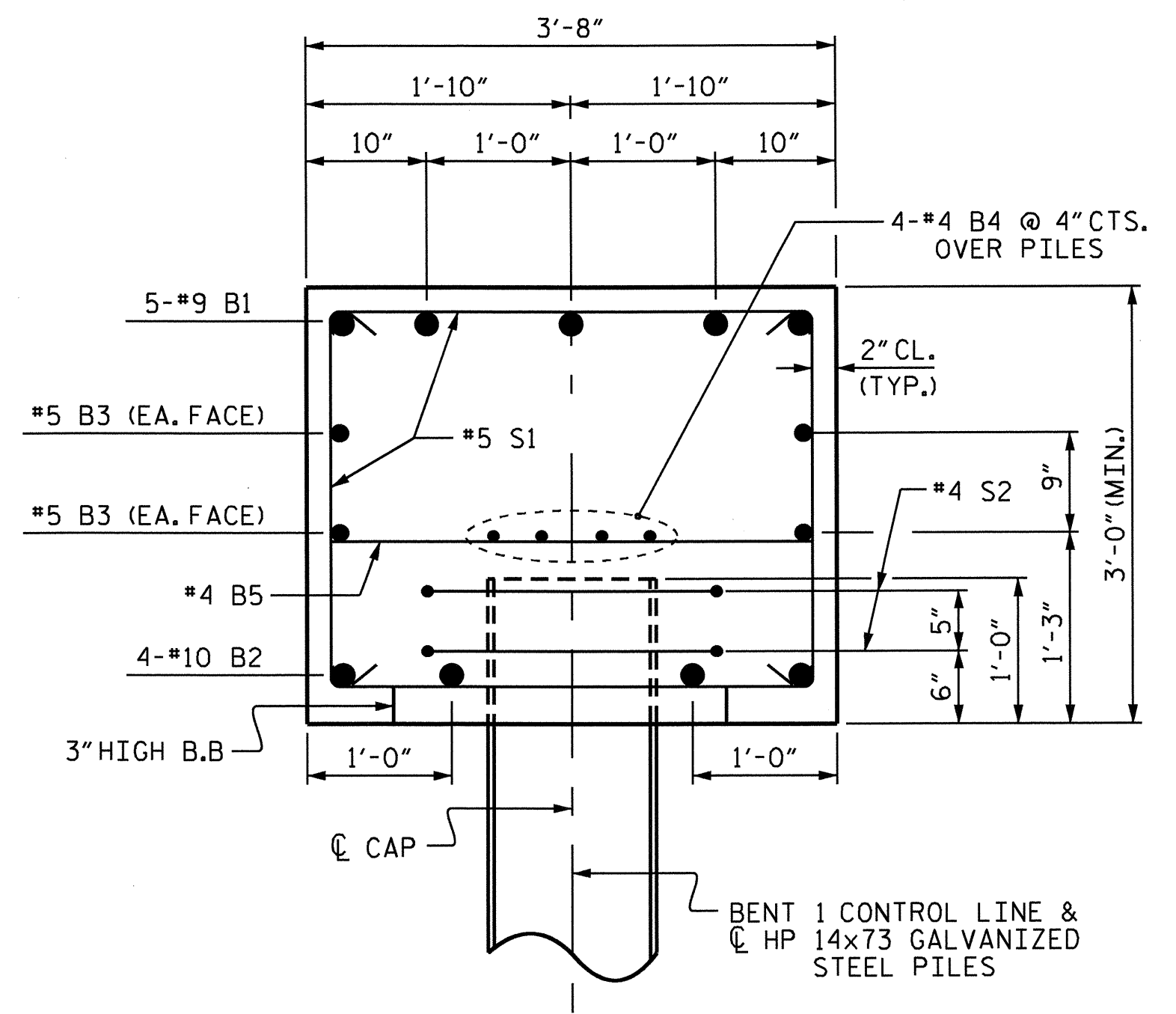
DRAWN BY: E. K. POPE DATE: 8-8-12  
 CHECKED BY: PEGGY PARISI DATE: 7-10-12

08-AUG-2012 11:42  
 R:\structures\Plans\Final Plans\B4787.SD.B\*.dgn  
 kposchal

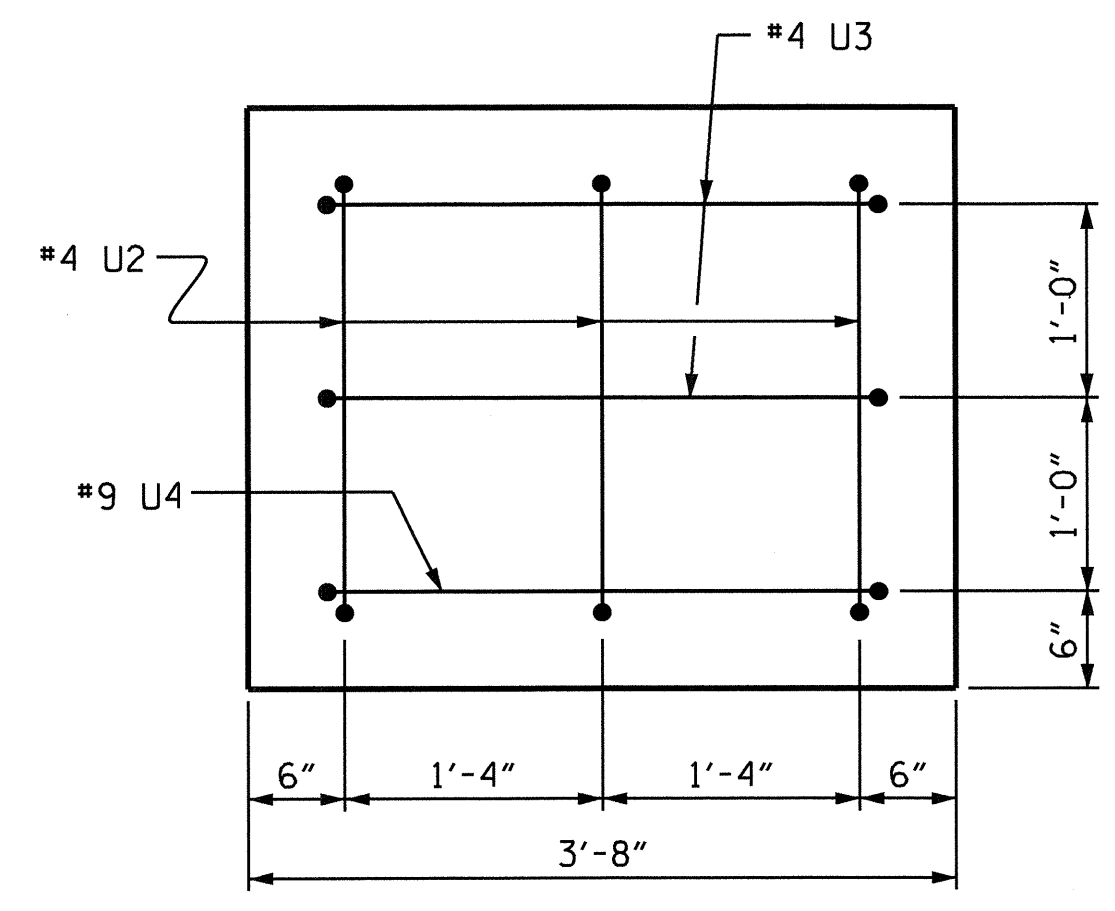
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-24	
1			3			TOTAL SHEETS 30	
2			4				



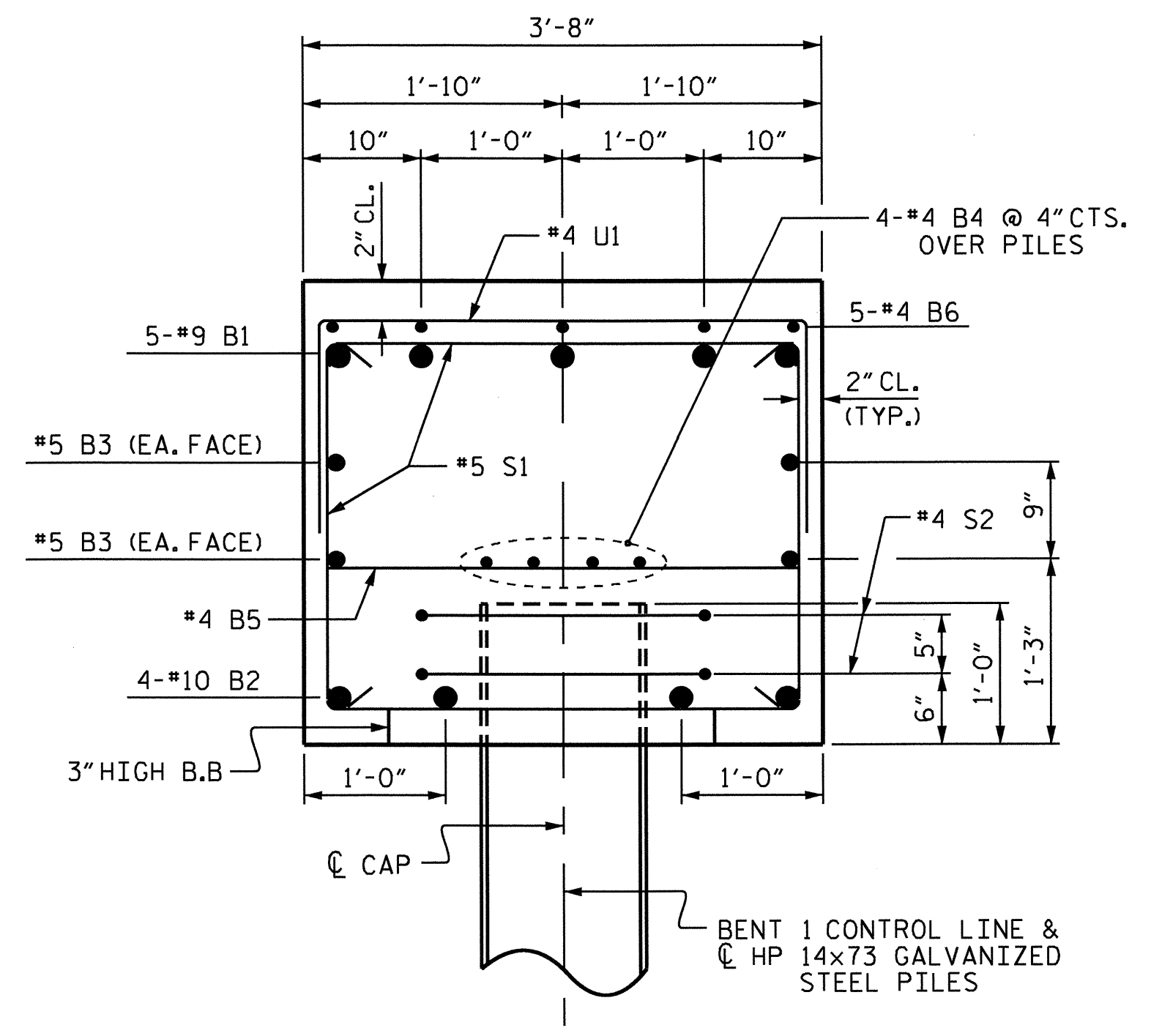
POSITION OF PILE DURING WELDING.  
**PILE SPLICE DETAILS**



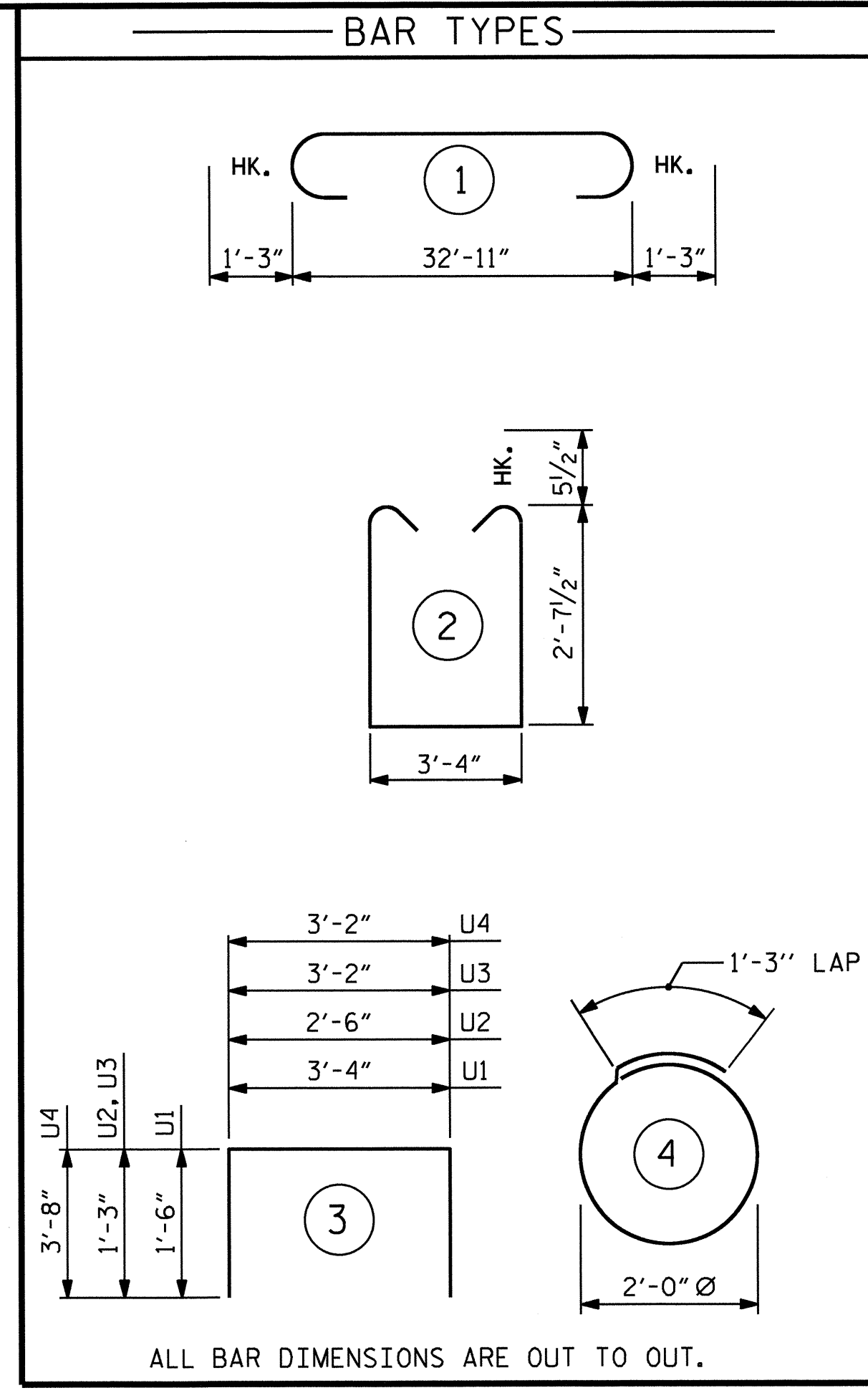
**SECTION A-A**



**END VIEW**  
(TYP. EA. END)



**SECTION B-B**



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	5	#9	1	35'-5"	602
B2	4	#10	STR	33'-0"	568
B3	4	#5	STR	33'-0"	138
B4	8	#4	STR	17'-9"	95
B5	9	#4	STR	3'-4"	20
B6	5	#4	STR	3'-2"	11
S1	35	#5	2	9'-6"	347
S2	12	#4	4	7'-7"	61
U1	35	#4	3	6'-4"	148
U2	6	#4	3	5'-0"	20
U3	4	#4	3	5'-8"	15
U4	2	#9	3	10'-6"	71
REINFORCING STEEL					2096 LBS.
CLASS A CONCRETE					14.2 CU.YDS.
HP 14x73 GALVANIZED STEEL PILES					
NO. : 6			LIN. FT. : 450		
PILE REDRIVES			EA. : 3		

PROJECT NO. B-4787  
PITT COUNTY  
STATION: 18+47.50 -L-

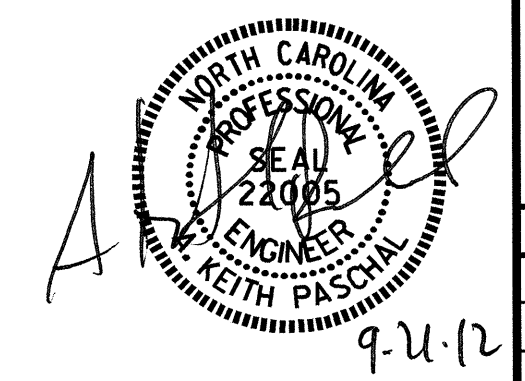
SHEET 2 OF 2

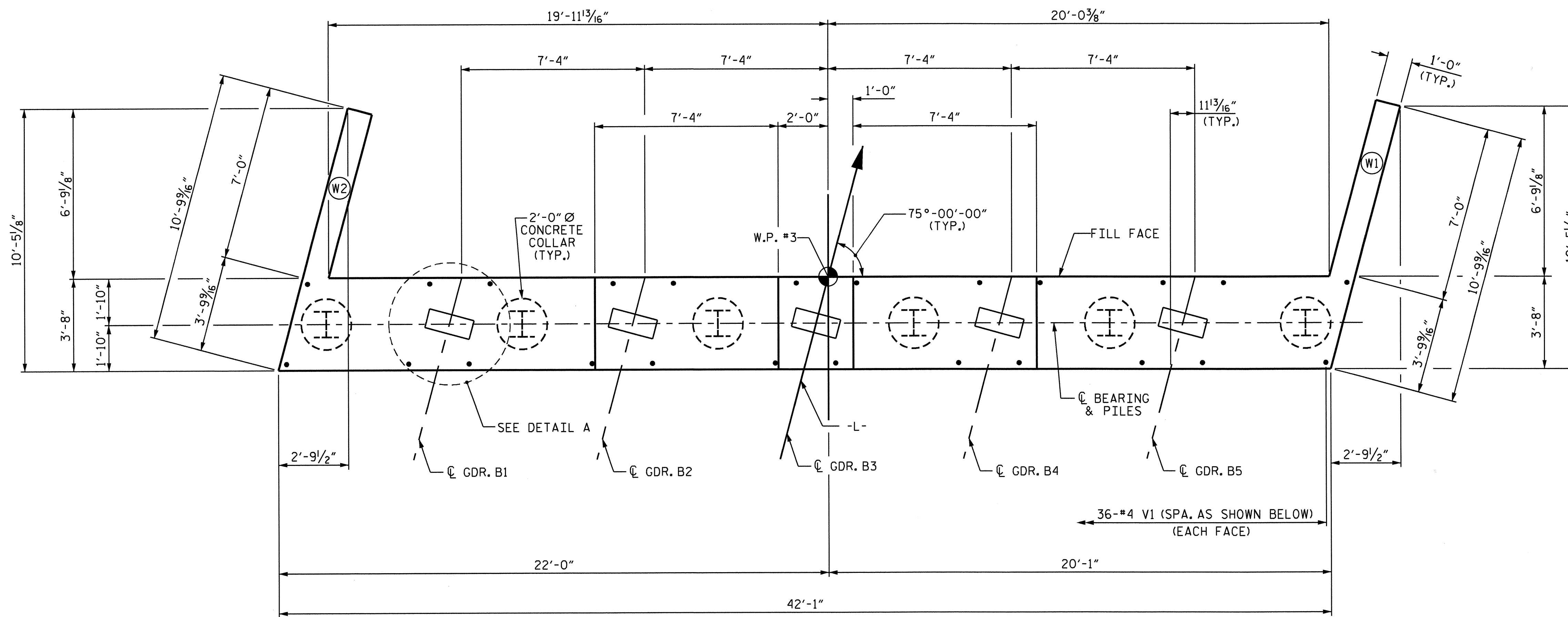
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
BENT 1

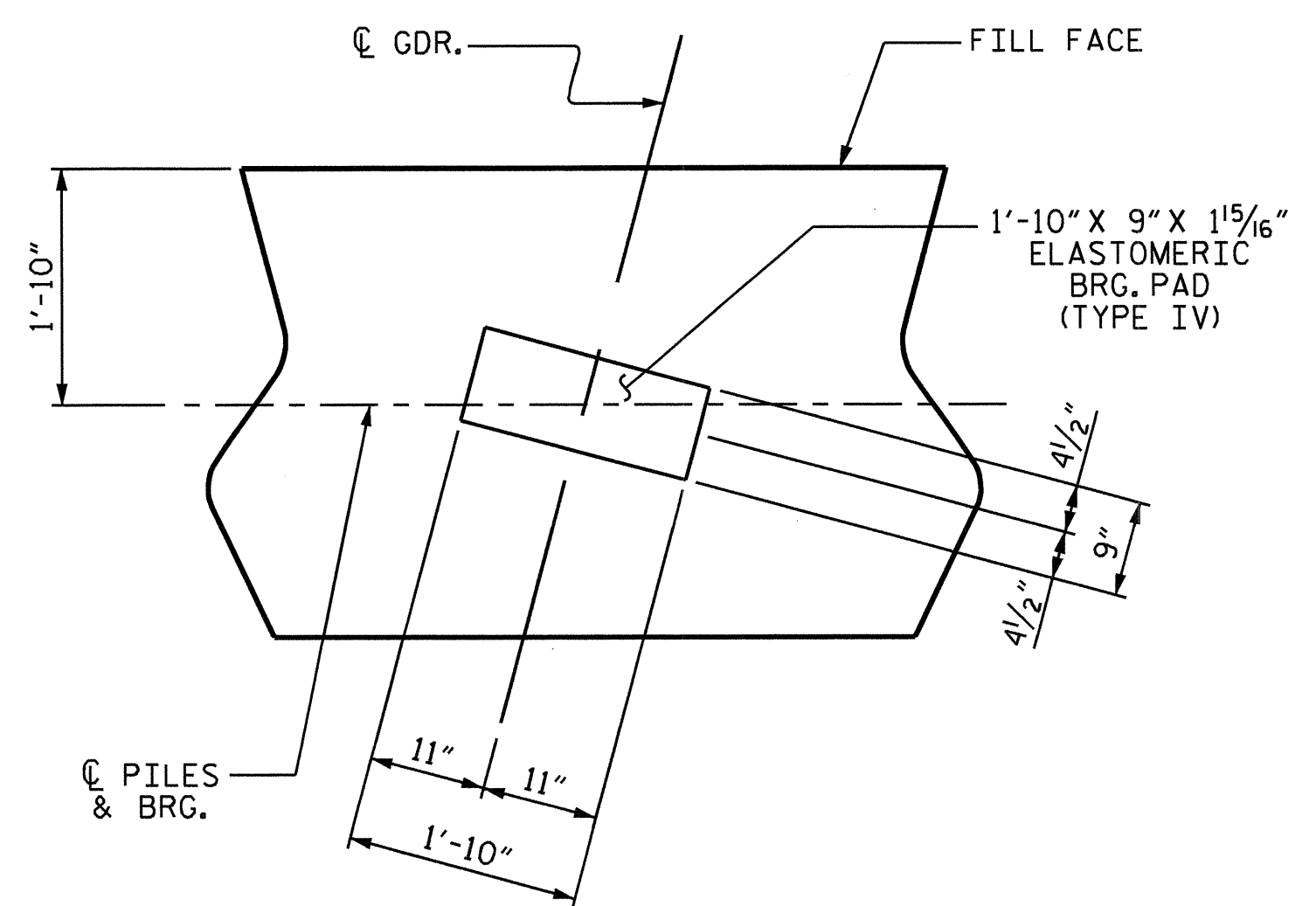
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			30

DRAWN BY : E. K. POPE DATE : 4-25-12  
CHECKED BY : PEGGY PARISI DATE : 7-10-12

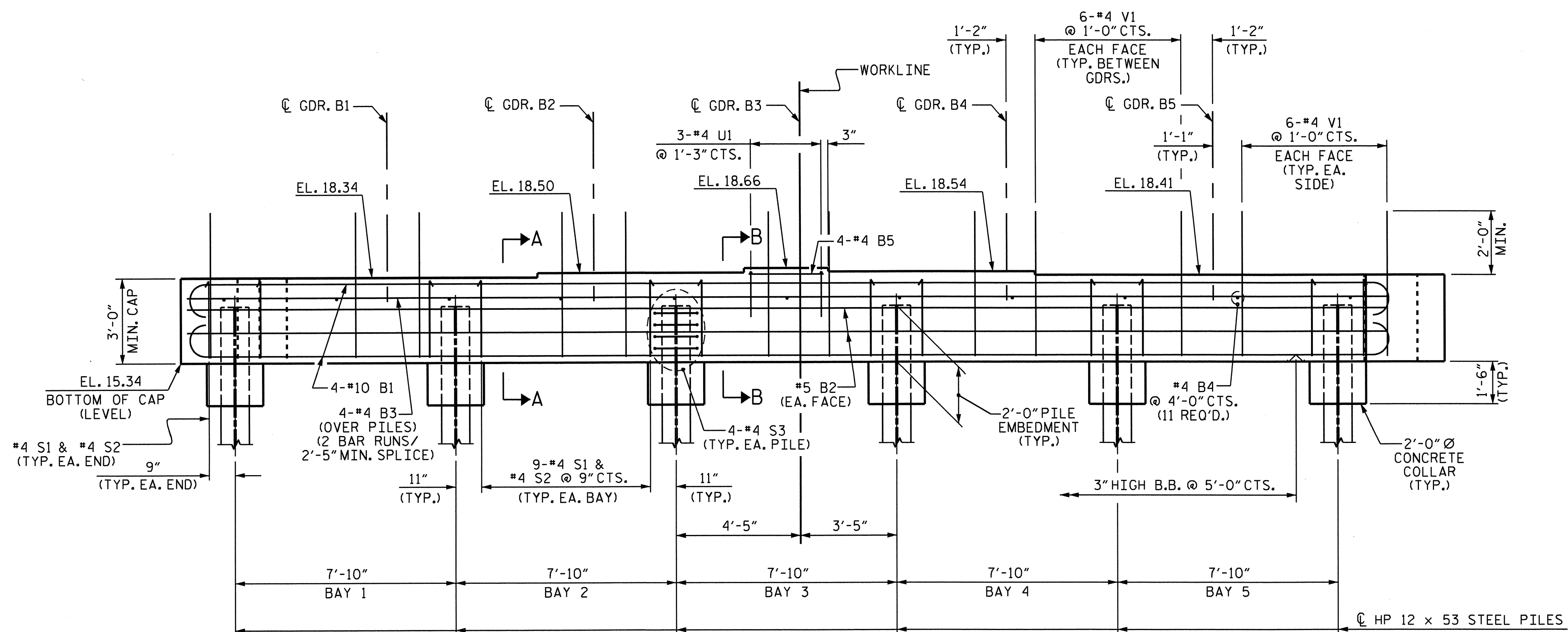




PLAN



DETAIL A  
(TYP. EA. GIRDER)



ELEVATION

NOTES

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

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

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE UPPER PART OF INTEGRAL END BENT AND WINGS ARE TO BE POURED WITH THE SUPERSTRUCTURE.

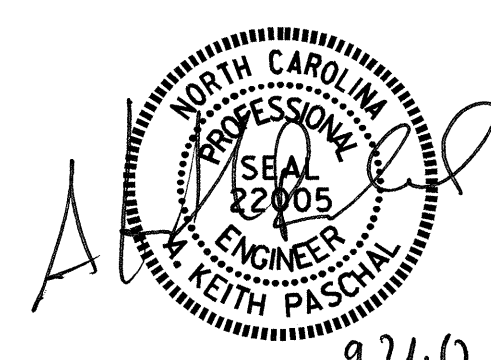
SEE SUPERSTRUCTURE SHEETS FOR UPPER PART OF INTEGRAL END BENT WING DETAILS.

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

PROJECT NO. B-4787  
PITT COUNTY  
STATION: 18+47.50 -L-

SHEET 1 OF 3

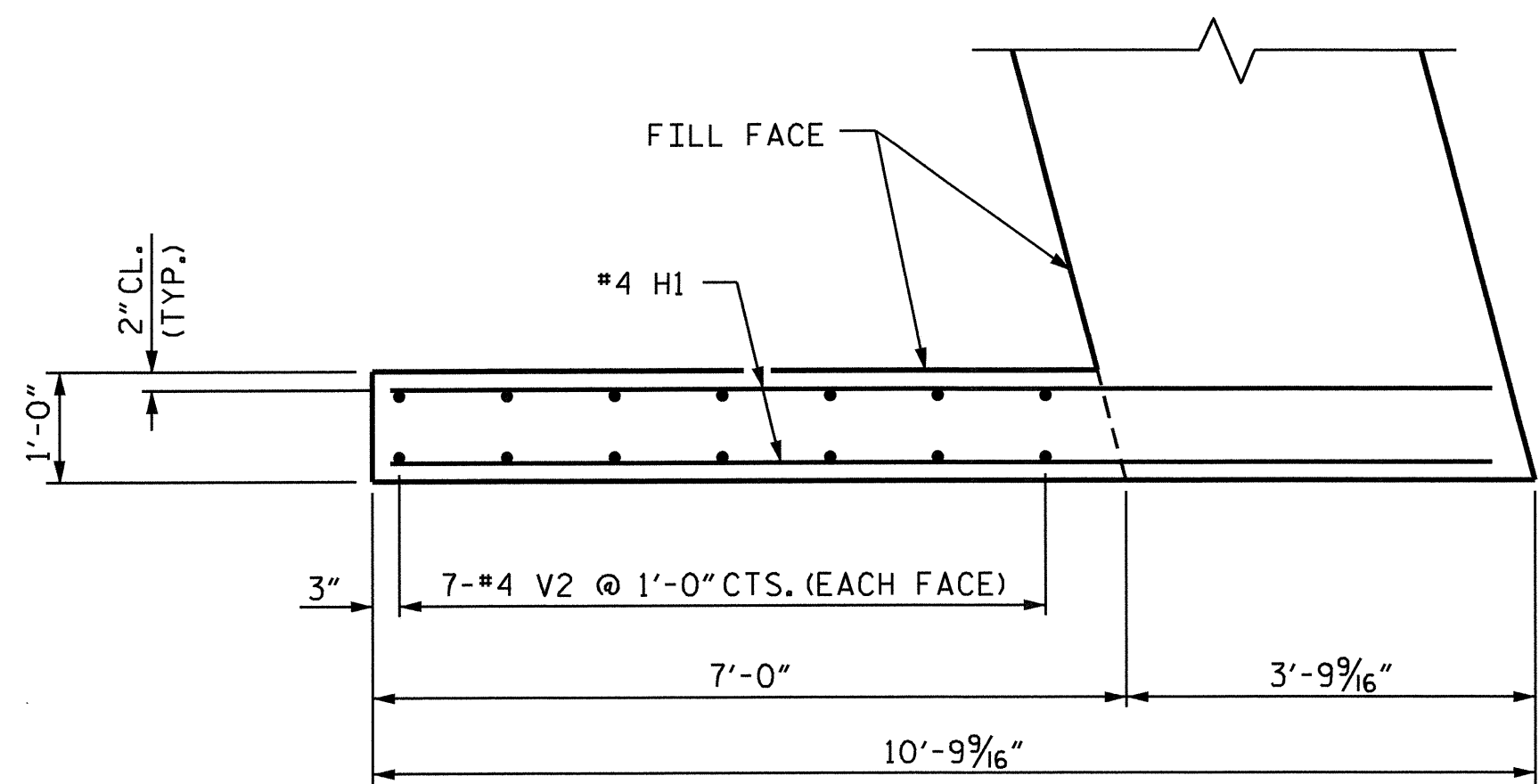
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE  
INTEGRAL END BENT 2



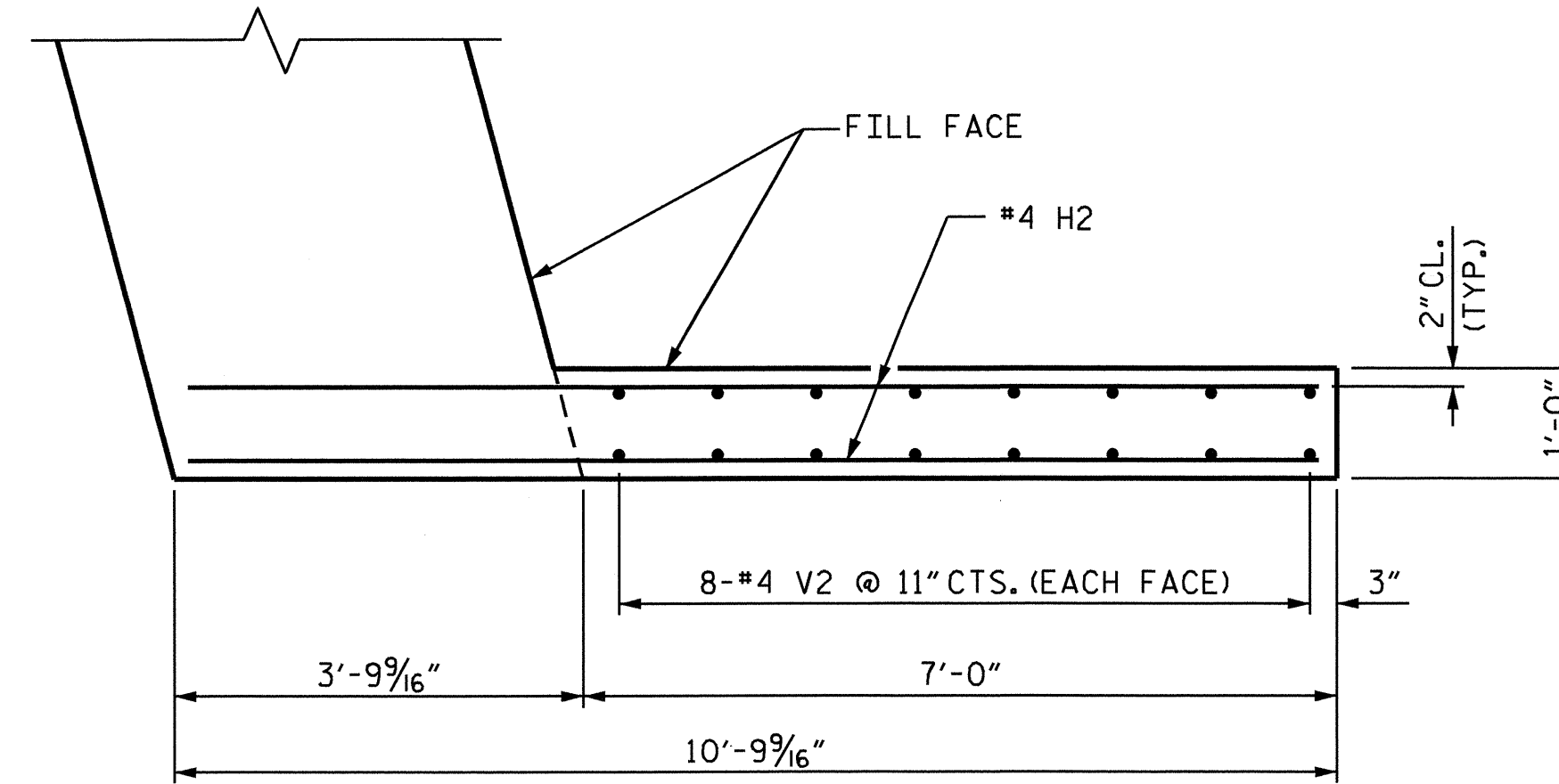
DRAWN BY: K. P. SEDAI DATE: 4/24/12  
CHECKED BY: E. K. POPE DATE: 7/18/12

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26	
1			3			TOTAL SHEETS	
2			4			30	

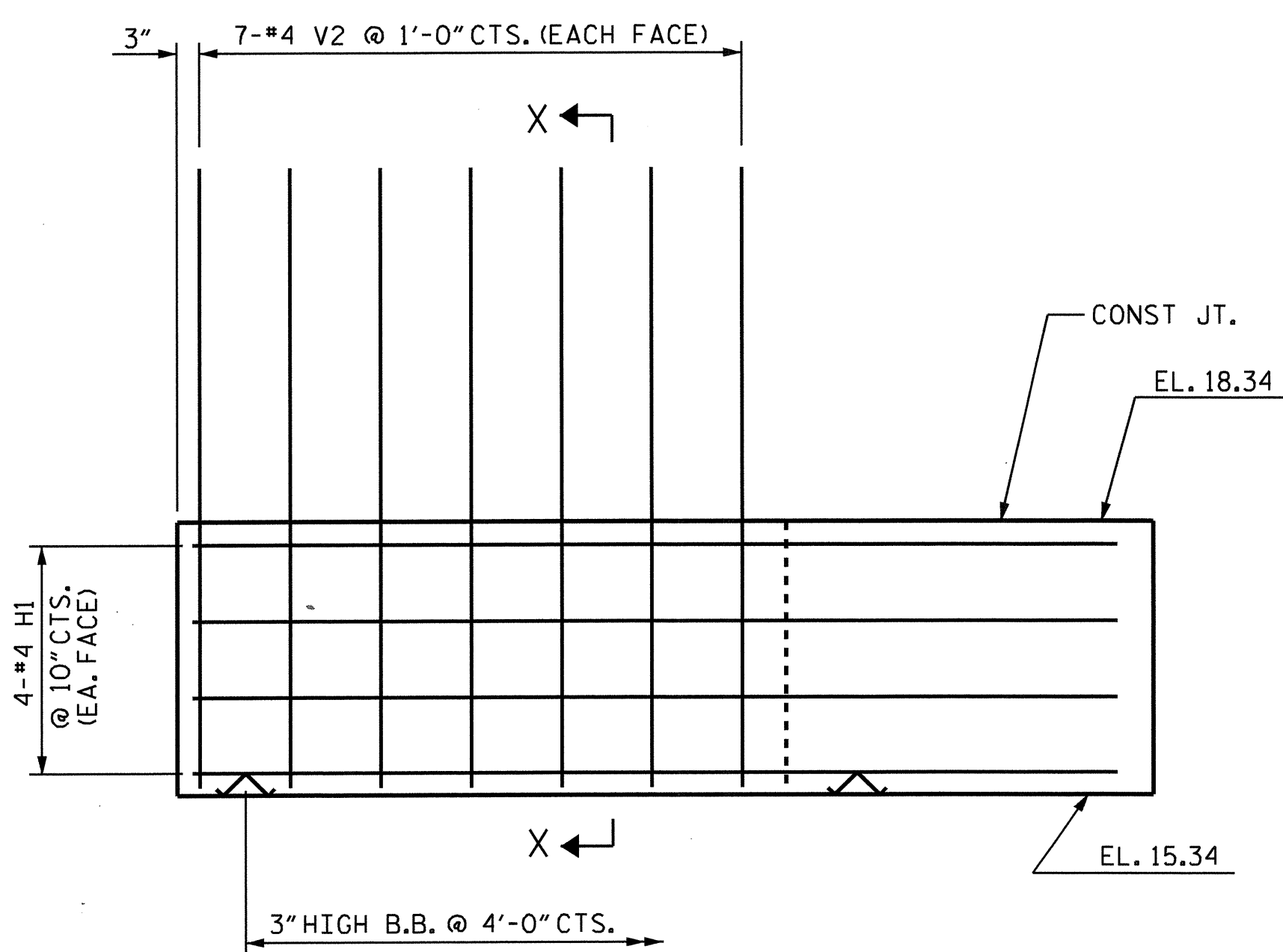




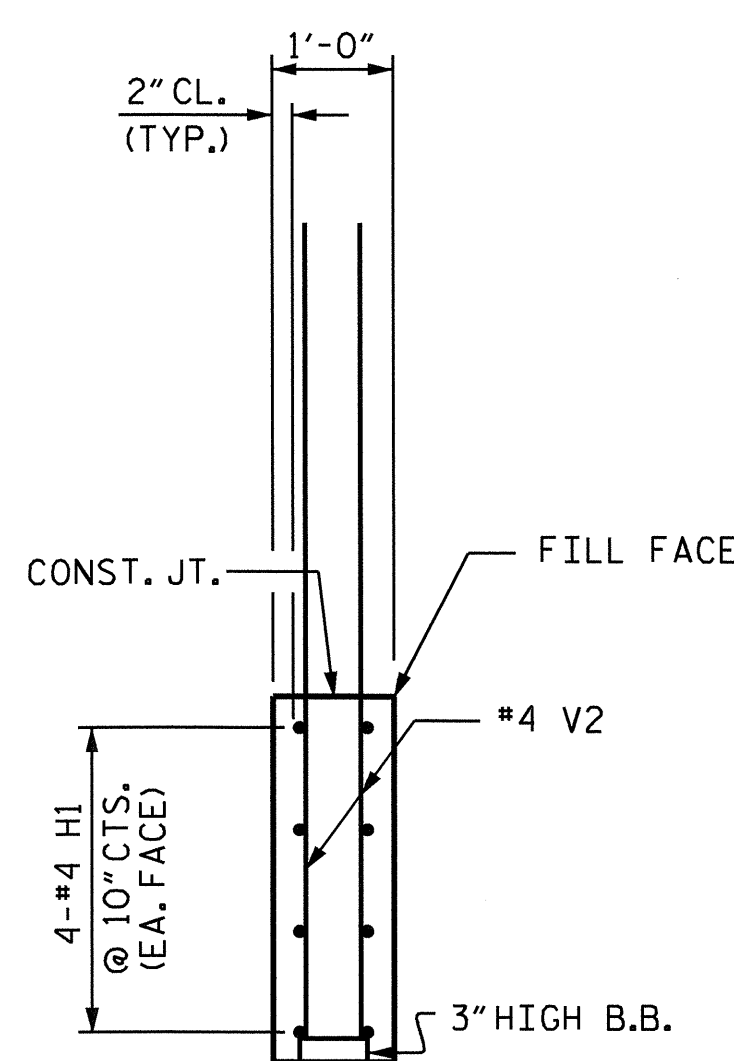
PLAN W2



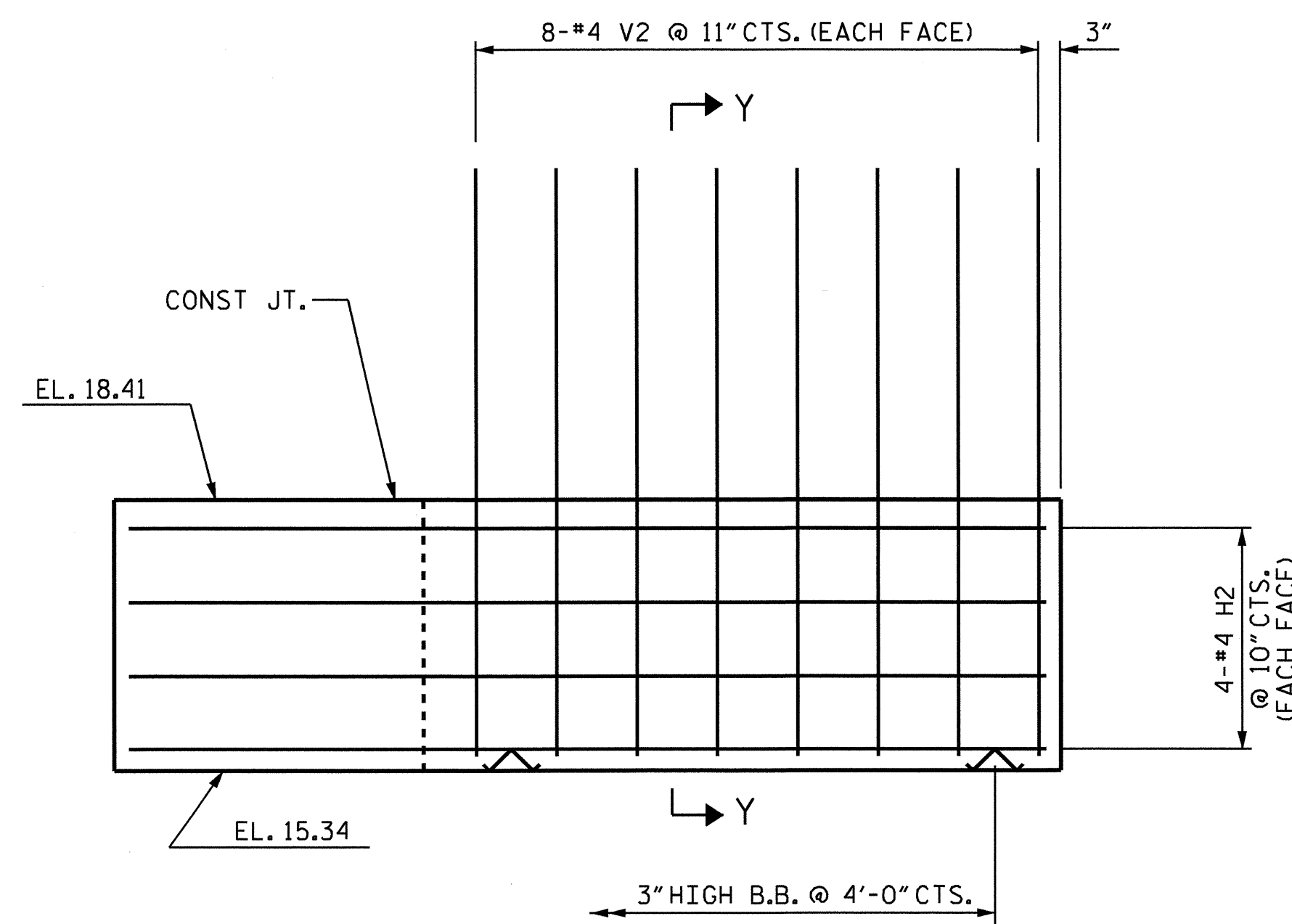
PLAN W1



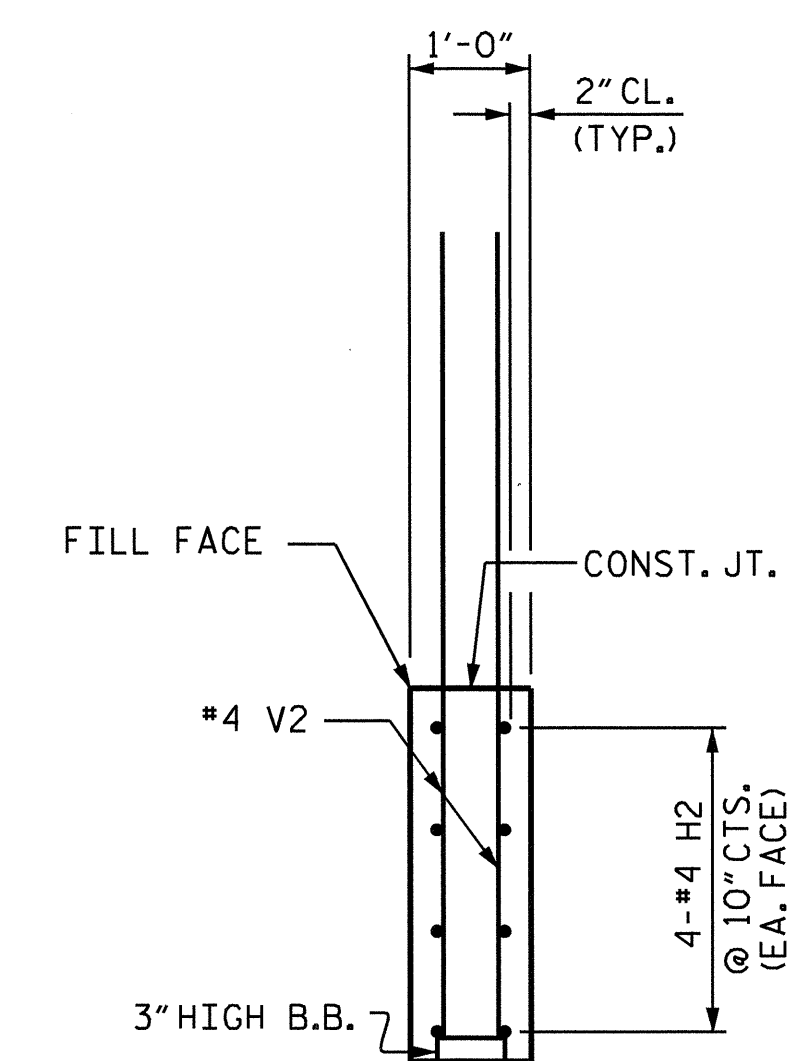
ELEVATION W2



SECTION X-X



ELEVATION W1

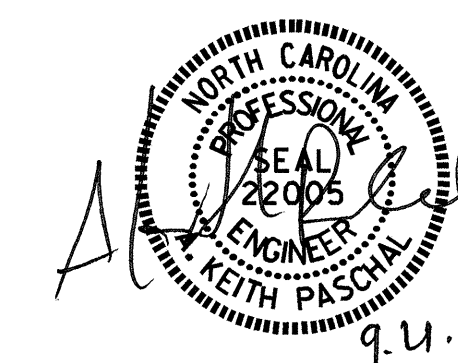


SECTION Y-Y

PROJECT NO. B-4787  
PITT COUNTY  
 STATION: 18+47.50 -L-

SHEET 2 OF 3

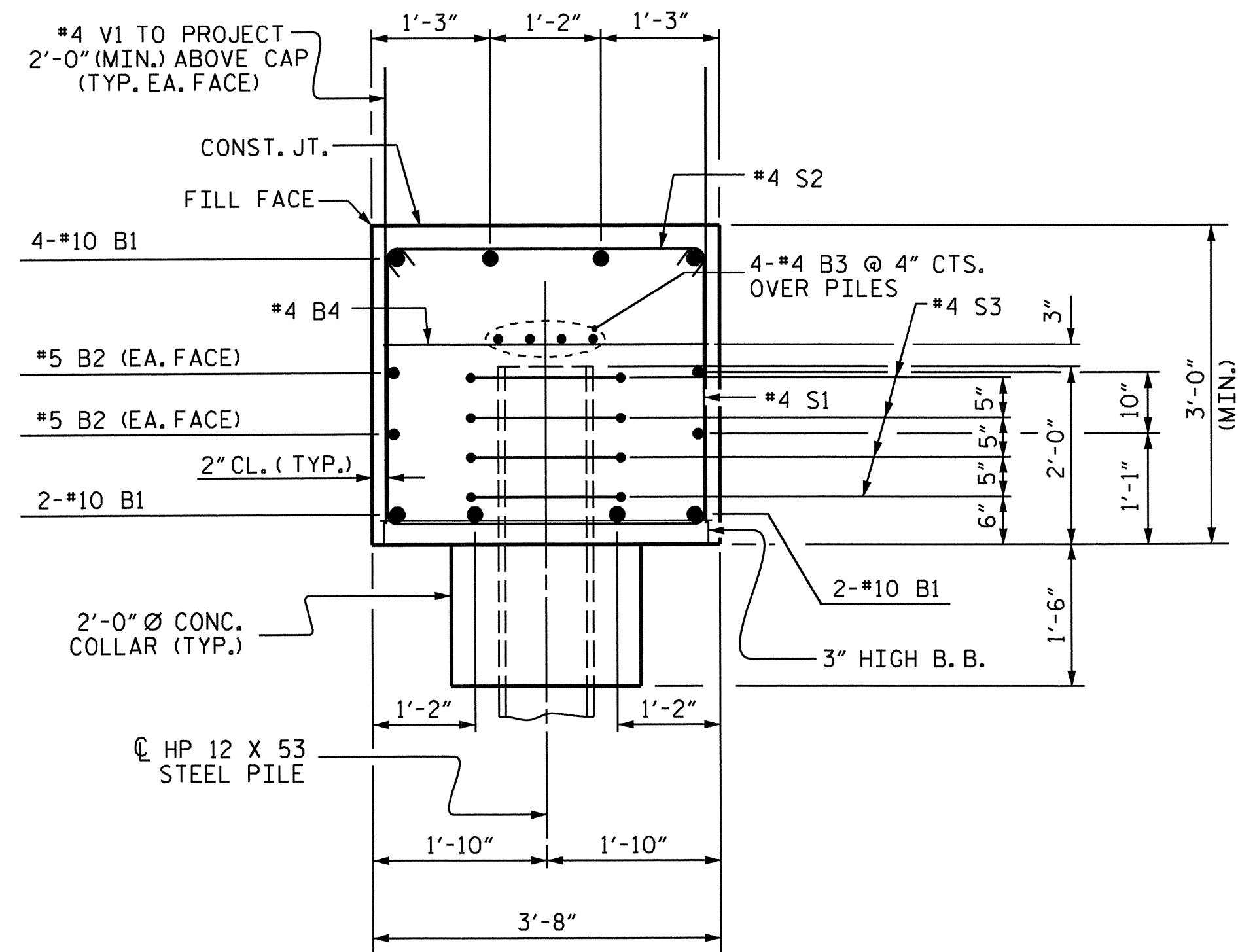
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 INTEGRAL END BENT 2



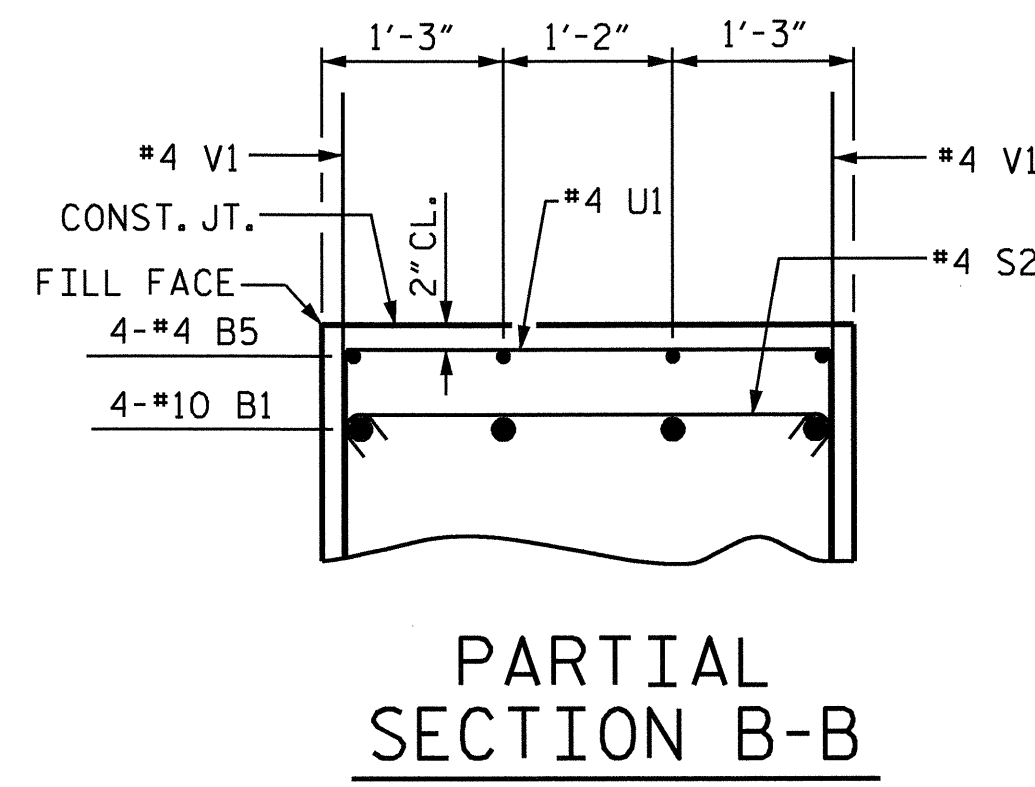
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 CHECKED BY: E. K. POPE DATE: 7/18/12

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			30



SECTION A-A

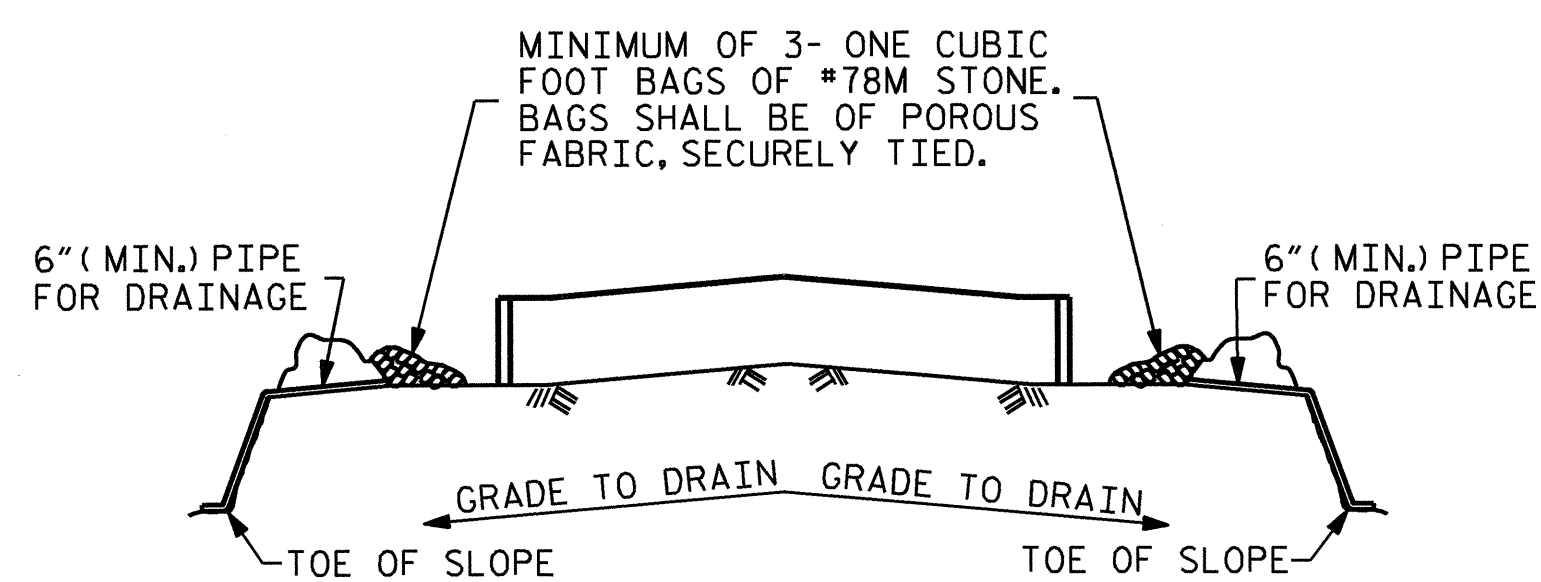


PARTIAL SECTION B-B

BAR TYPES					
ALL BAR DIMENSIONS ARE OUT TO OUT.					

BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	1	44'-5"	1529
B2	4	#5	STR	41'-8"	174
B3	8	#4	STR	22'-1"	118
B4	11	#4	STR	3'-4"	24
B5	4	#4	STR	2'-8"	7
H1	8	#4	STR	10'-2"	54
H2	8	#4	STR	10'-5"	56
S1	47	#4	2	9'-4"	293
S2	47	#4	3	4'-1"	128
S3	24	#4	4	6'-6"	104
U1	3	#4	5	6'-4"	13
V1	72	#4	STR	5'-1"	244
V2	30	#4	STR	6'-7"	132
REINFORCING STEEL					= 2876 LBS
CLASS A CONCRETE BREAKDOWN :					
CAP, LOWER WINGS & COLLARS = 20.3 C.Y.					
HP 12 X 53 STEEL PILES :					
NO. 6					LIN. FT. 450
PILE REDRIVES:					
EACH 3					



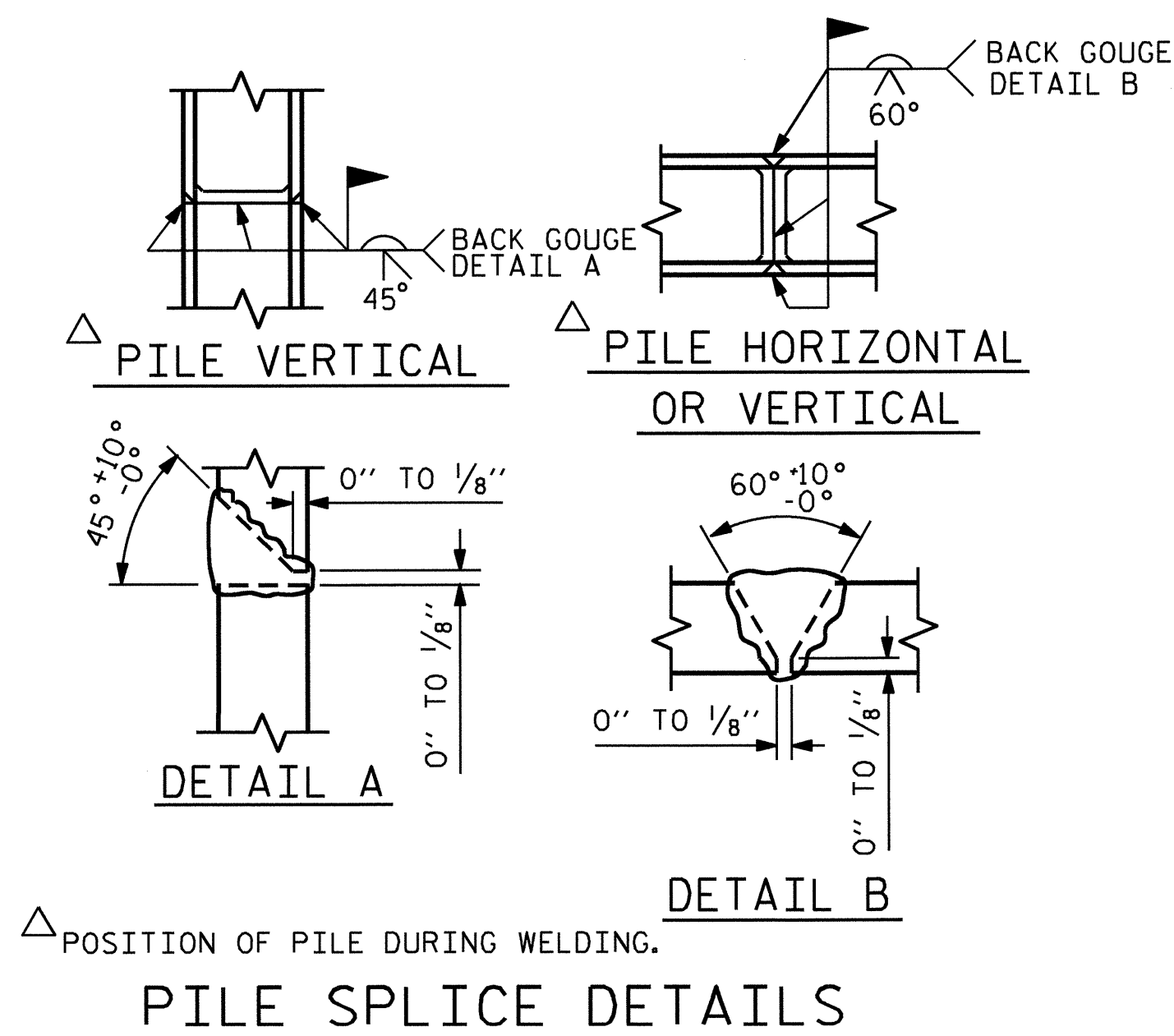
MINIMUM OF 3- ONE CUBIC FOOT BAGS OF #78M STONE. BAGS SHALL BE OF POROUS FABRIC, SECURELY TIED.

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

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

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

TEMPORARY DRAINAGE AT END BENT



POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS

PROJECT NO. B-4787

PITT COUNTY

STATION: 18+47.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
INTEGRAL END BENT 2



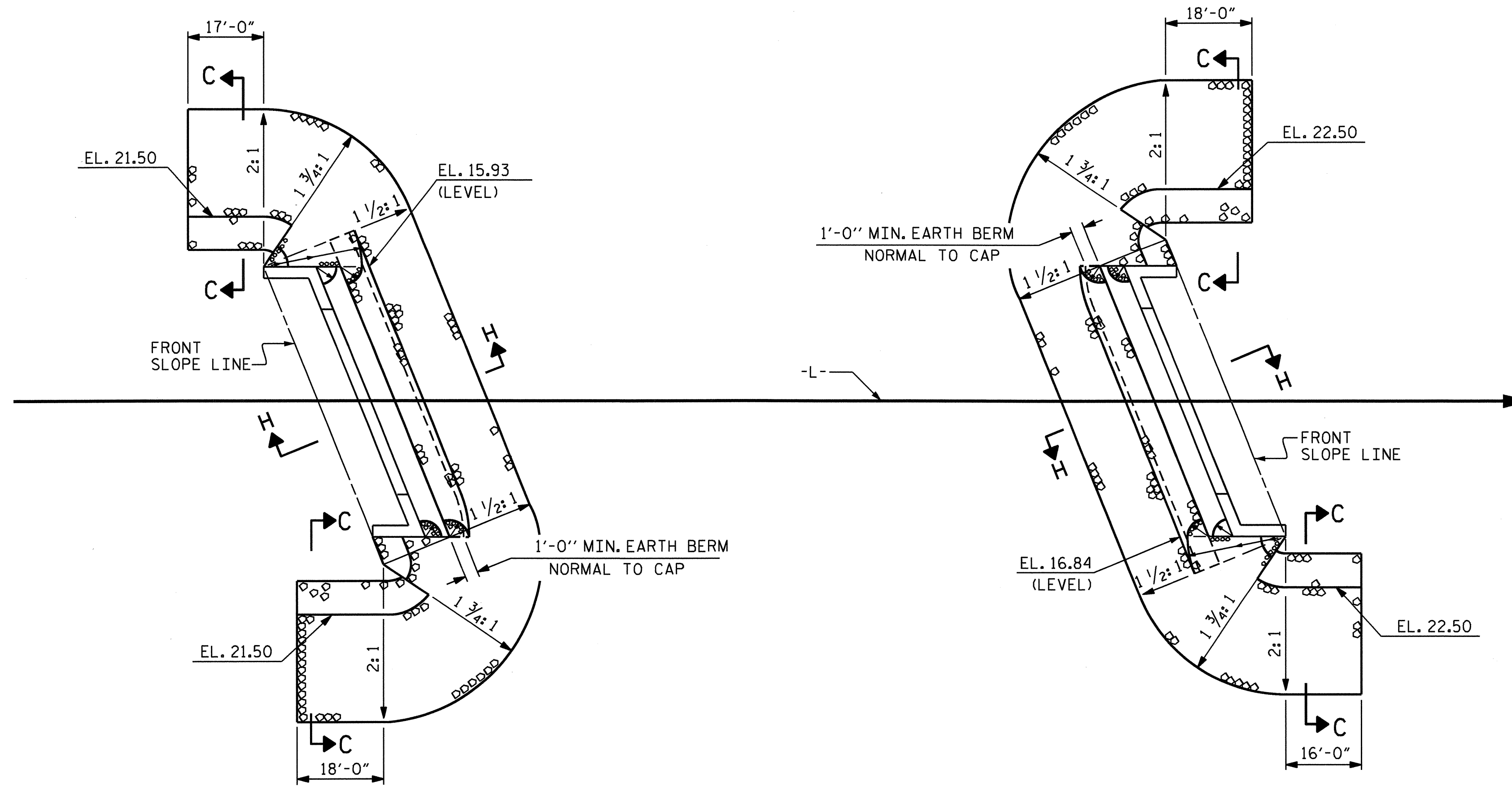
DRAWN BY: K. P. SEDAI DATE: 4/24/12  
CHECKED BY: E. K. POPE DATE: 7/18/12

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

9.2.12

S-28  
TOTAL SHEETS  
30

NOTES :  
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

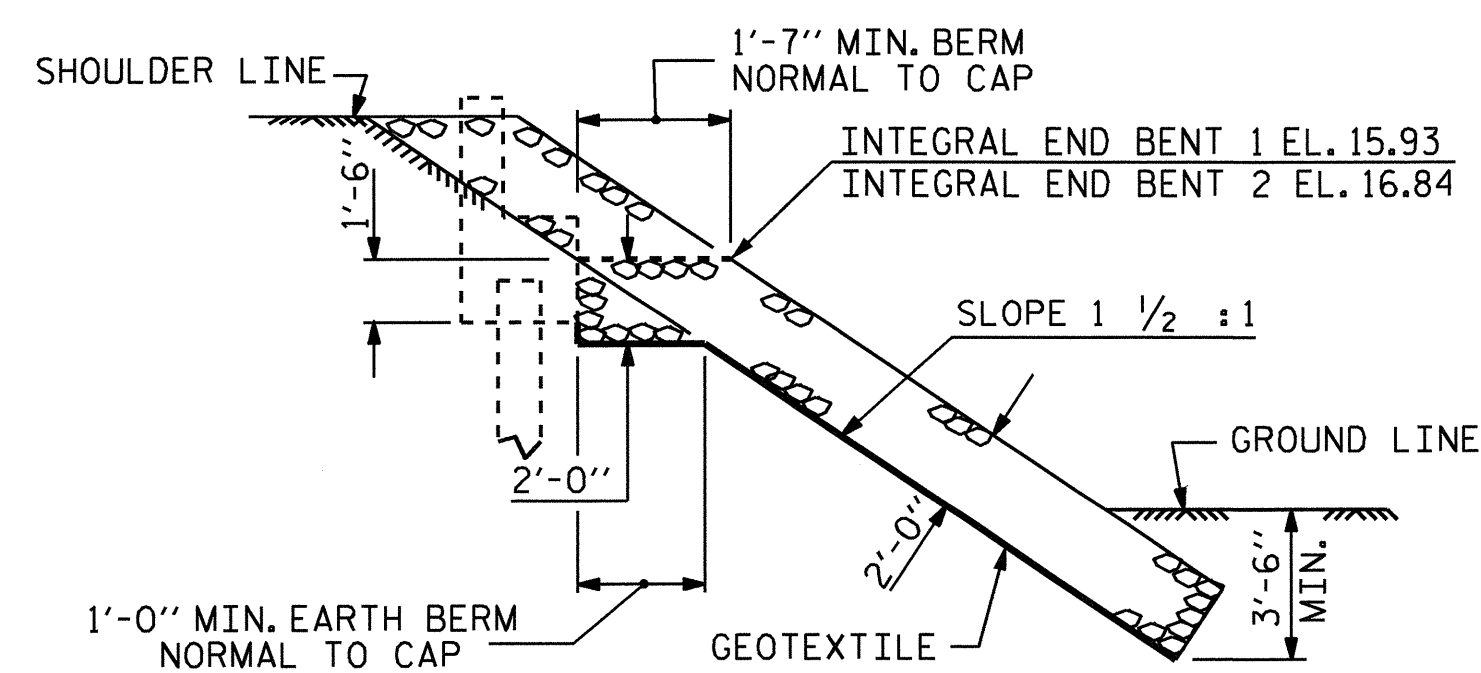


INTEGRAL END BENT 1

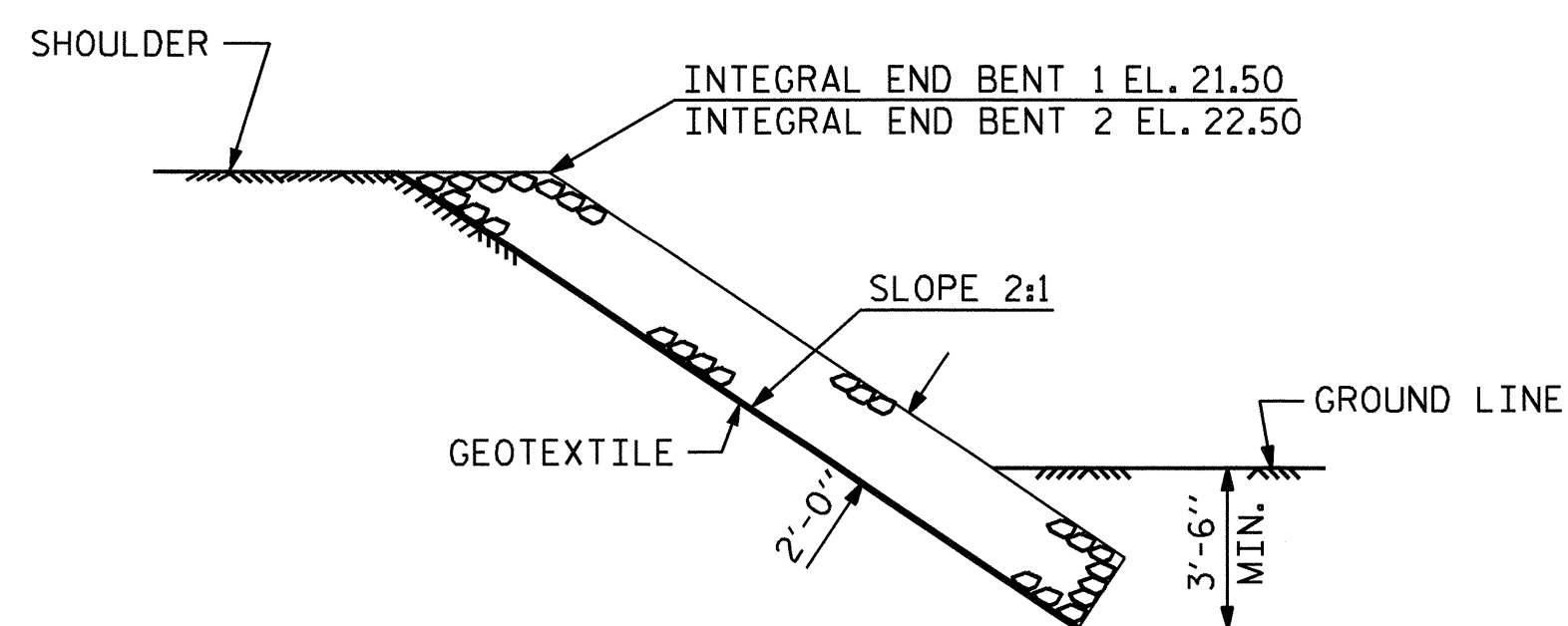
PLAN OF RIP RAP

INTEGRAL END BENT 2

ESTIMATED QUANTITIES		
BRIDGE @ STA. 18+47.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
INTEGRAL END BENT 1	140	155
INTEGRAL END BENT 2	160	177



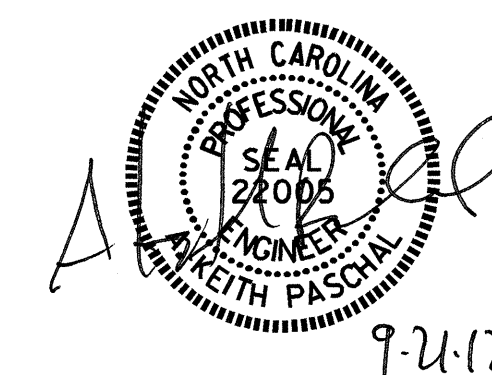
SECTION H-H



SECTION C-C

PROJECT NO. B-4787  
PITT COUNTY  
STATION: 18+47.50 -L-

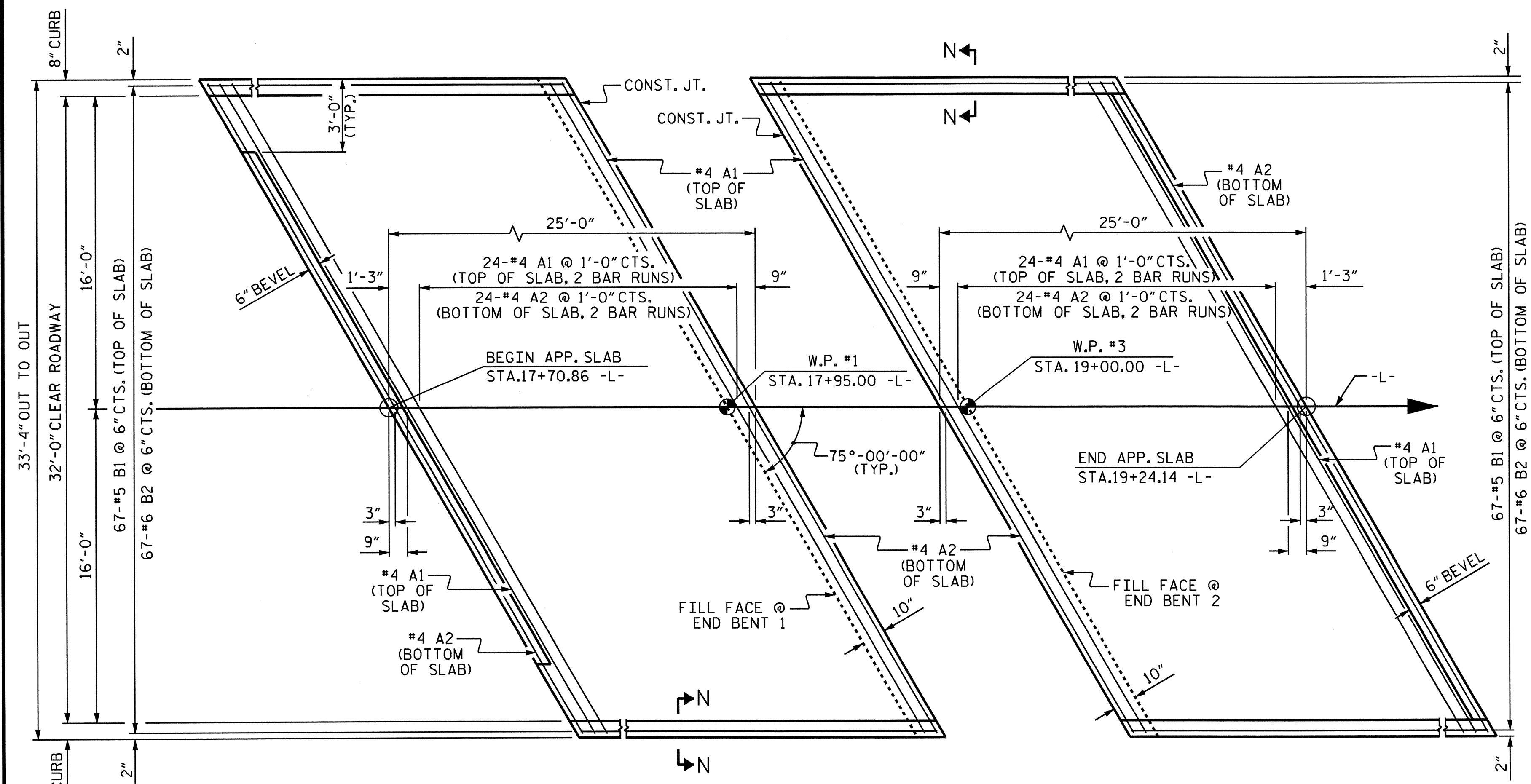
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
= RIP RAP DETAILS =					
REVISIONS					SHEET NO. S-29
NO.	BY:	DATE:	NO.	DATE:	
1			3		TOTAL SHEETS 30
2			4		



ASSEMBLED BY : M.D.PISO DATE : 06-06-12  
CHECKED BY : E.K. POPE DATE : 07-18-12  
DRAWN BY : REK 1/84  
CHECKED BY : RDU 1/84

REV. 5/1/06R TLA/GM  
REV. 10/1/11 MAA/GM  
REV. 12/2/11 MAA/GM





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

**NOTES**

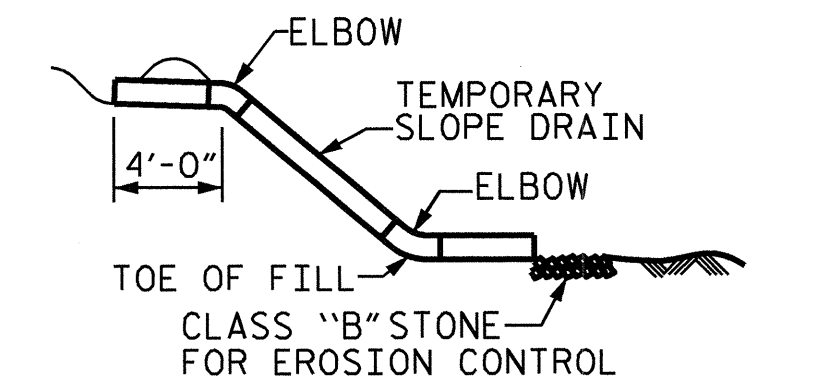
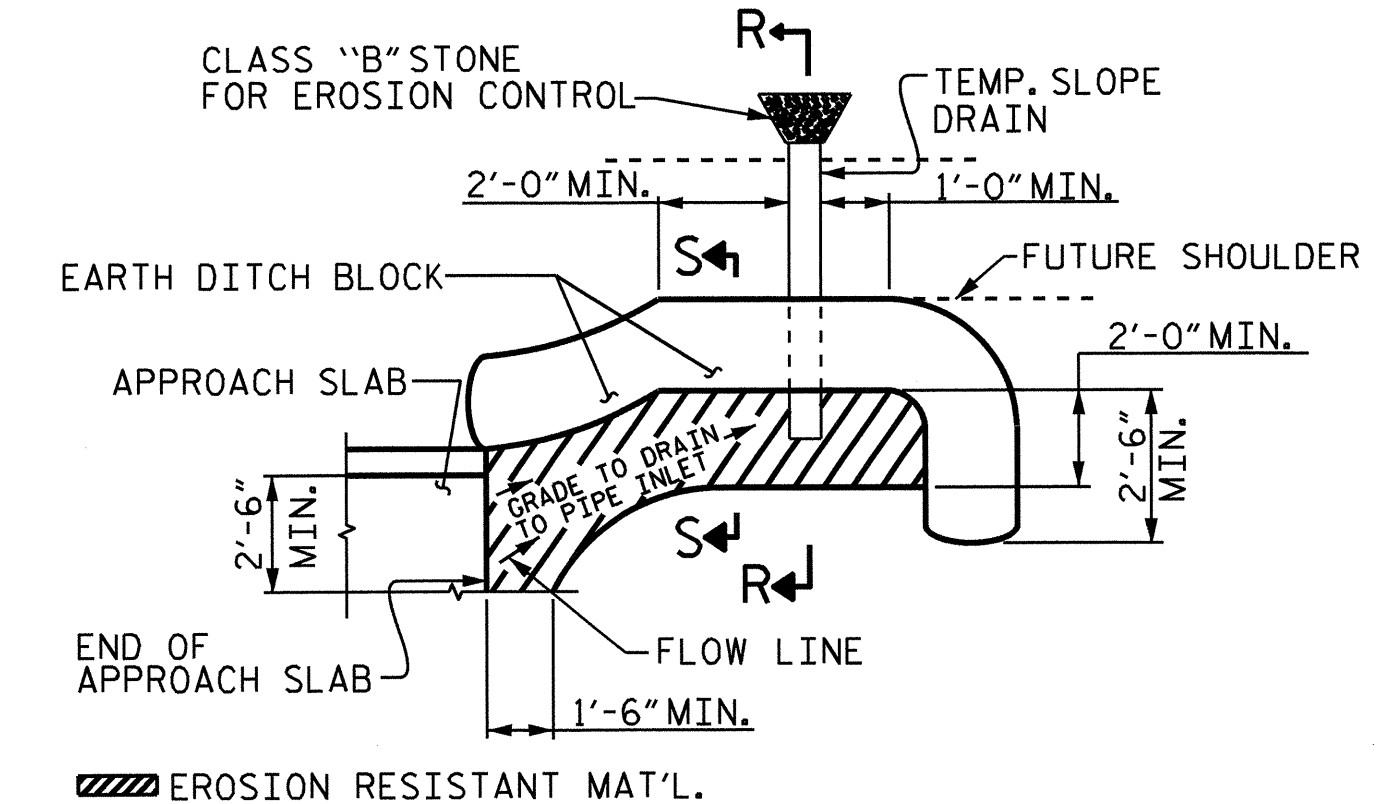
APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

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

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

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

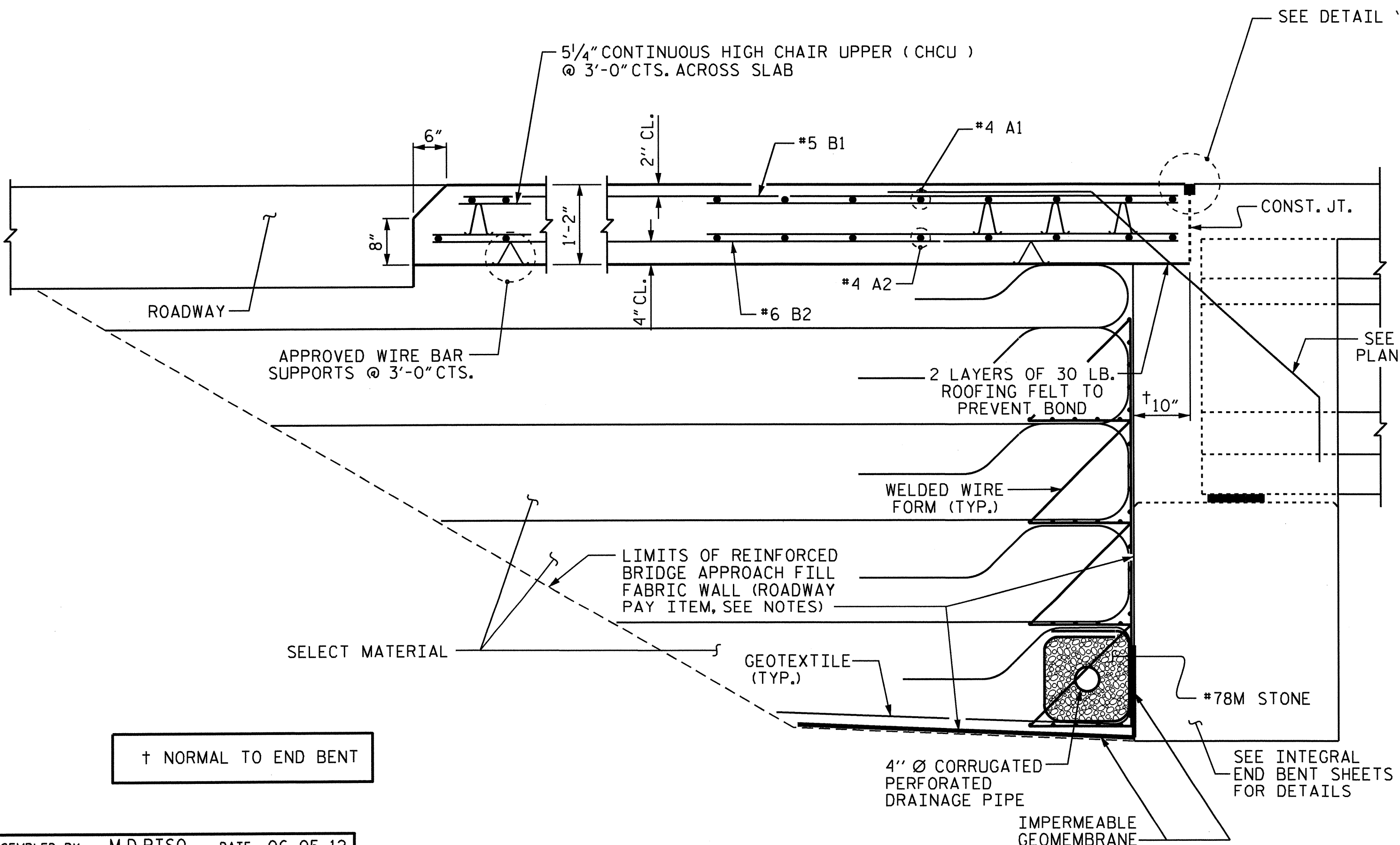
BILL OF MATERIAL					
FOR ONE APPROACH SLAB (2 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	52	#4	STR	18'-1"	628
A2	52	#4	STR	18'-0"	625
* B1	67	#5	STR	24'-2"	1,689
B2	67	#6	STR	24'-7"	2,474
REINFORCING STEEL				3,099 LBS.	
* EPOXY COATED REINFORCING STEEL				2,317 LBS.	
CLASS AA CONCRETE				36.2 CU.YDS.	



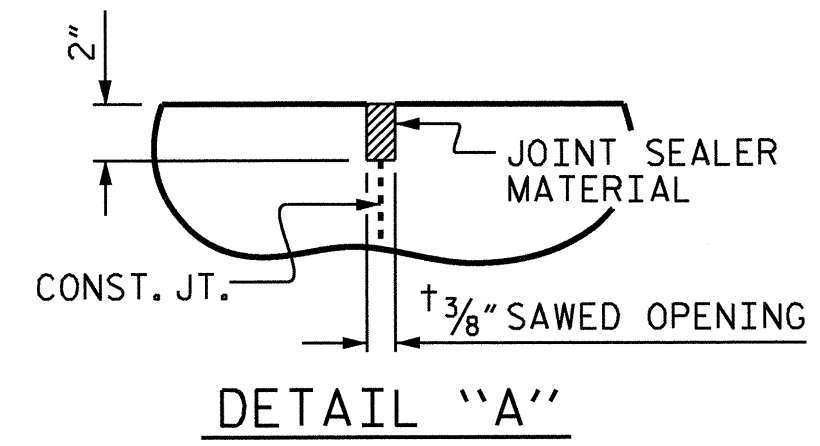
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

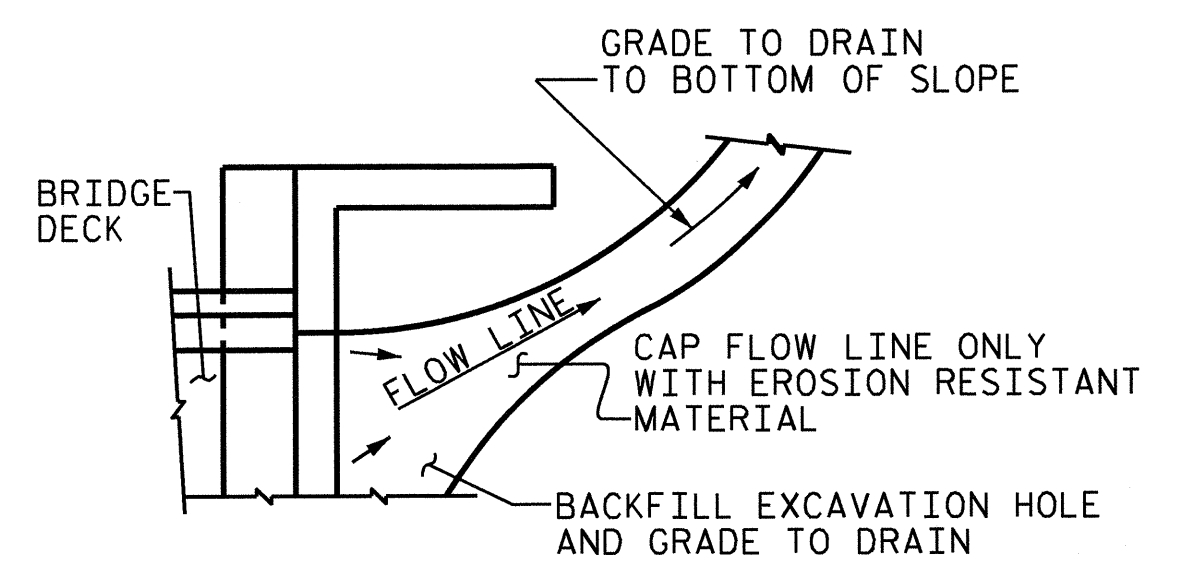
SPlice LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"



SECTION THRU SLAB

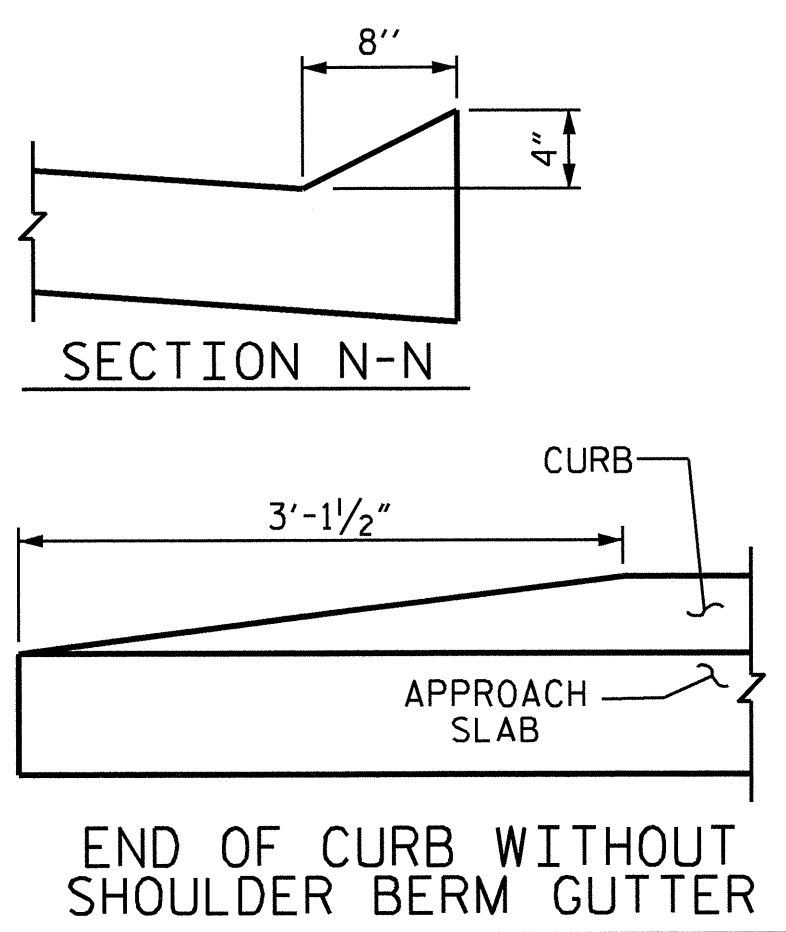


DETAIL "A"



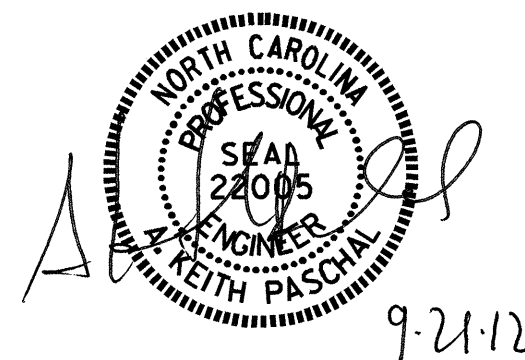
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

**TEMPORARY DRAINAGE DETAIL**



SECTION N-N  
END OF CURB WITHOUT SHOULDER BERM GUTTER

ASSEMBLED BY : M.D.PISO      DATE : 06-05-12  
CHECKED BY : E.K.POPE      DATE : 07-18-12  
DRAWN BY : TLA      10/05      ADDED 5/1/06RR KMM/GM  
CHECKED BY : GM      5/06      REV. 10/1/11      MAA/GM  
REV. 12/21/11      MAA/GM



PROJECT NO. B-4787  
PIIT COUNTY  
STATION: 18+47.50 -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:
1			3		
2			4		

TOTAL SHEETS: 30

## 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.

ENGLISH

JANUARY, 1990