

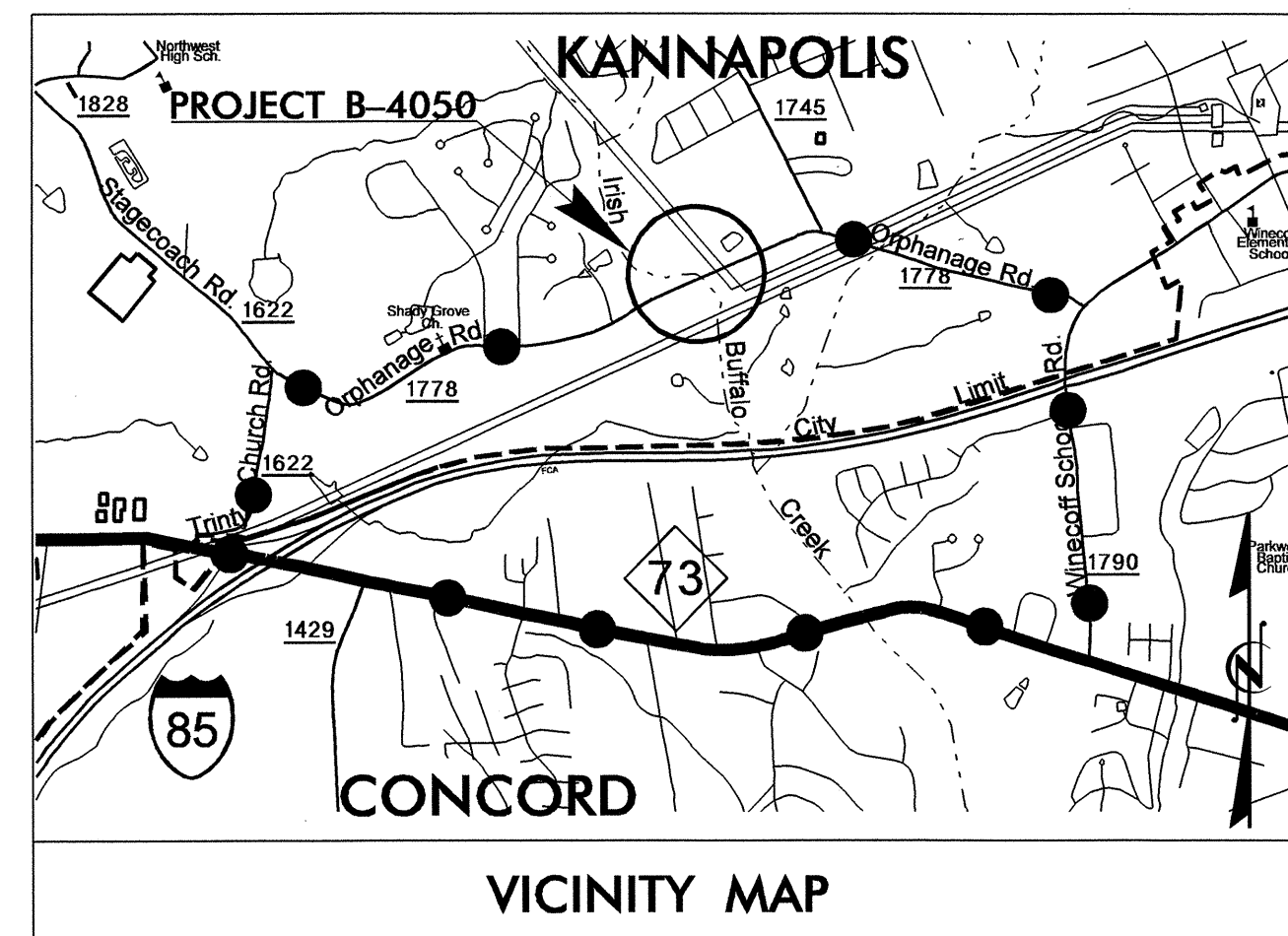
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CABARRUS COUNTY

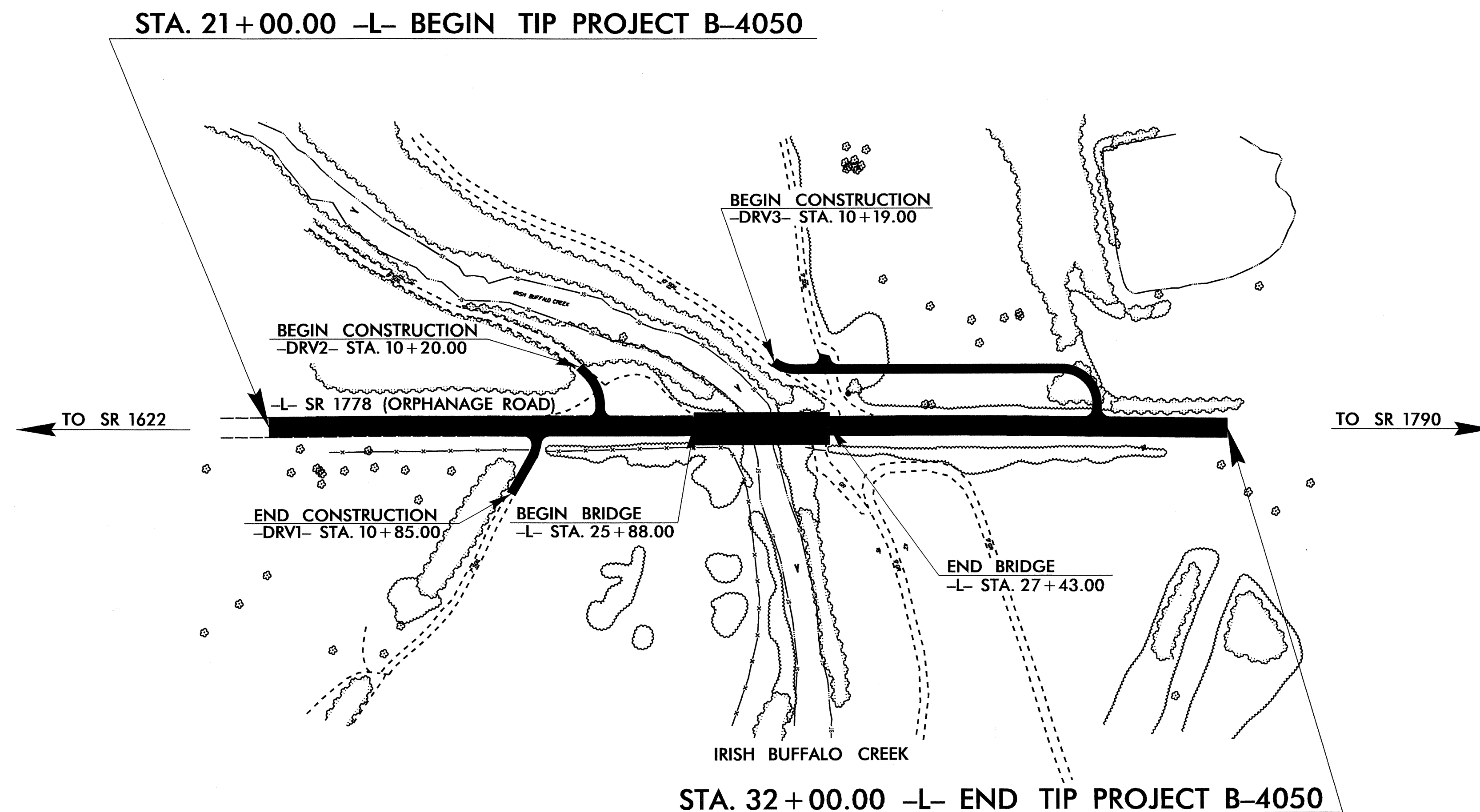
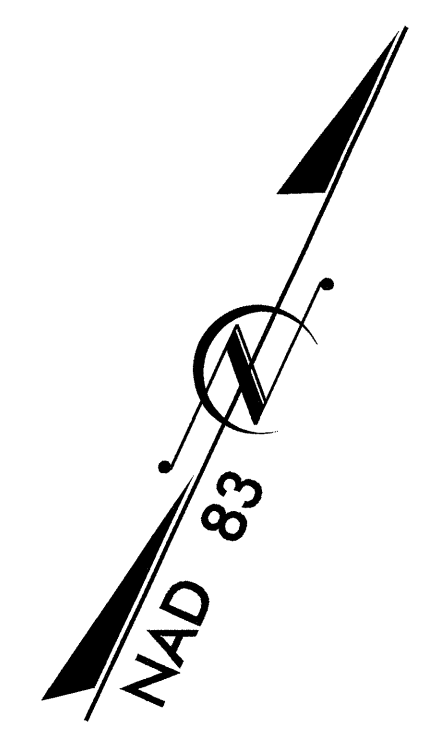
**LOCATION: BRIDGE NO. 30 OVER IRISH BUFFALO CREEK ON
SR 1778 (ORPHANAGE ROAD)**

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4050		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33416.1.1	BRSTP-1778(1)	P.E.	
33416.2.1	BRSTP-1778(1)	R/W & UTILITIES	
33416.3.1	BRSTP-1778(1)	CONST.	

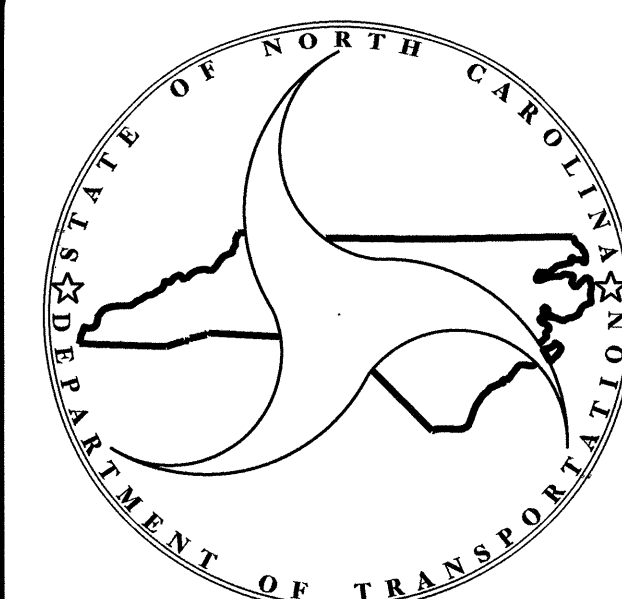


—●—●—●— DETOUR ROUTE



STRUCTURE

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF KANNAPOLIS.



DESIGN DATA

ADT 2012	=	9735
ADT 2025	=	12900
DHV	=	10 %
D	=	55 %
T	=	4 % *
V	=	50 MPH
* TTST	=	1%
DUAL	=	3%
FUNC. CLASS = URBAN COLLECTOR		
"SUB-REGIONAL TIER"		

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4050	=	0.179 MILES
LENGTH STRUCTURE TIP PROJECT B-4050	=	0.029 MILES
TOTAL LENGTH OF TIP PROJECT B-4050	=	0.208 MILES

Prepared In the Office of:

DIVISION OF HIGHWAYS

1000 BIRCH RIDGE DR., RALEIGH, NC 27610

2012 STANDARD SPECIFICATIONS	
LETTING DATE: FEBRUARY 21, 2012	B. C. Hunt, PE <small>PROJECT ENGINEER</small>
	W. K. Fischer, PE <small>PROJECT DESIGN ENGINEER</small>

STRUCTURE MANAGEMENT UNIT

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

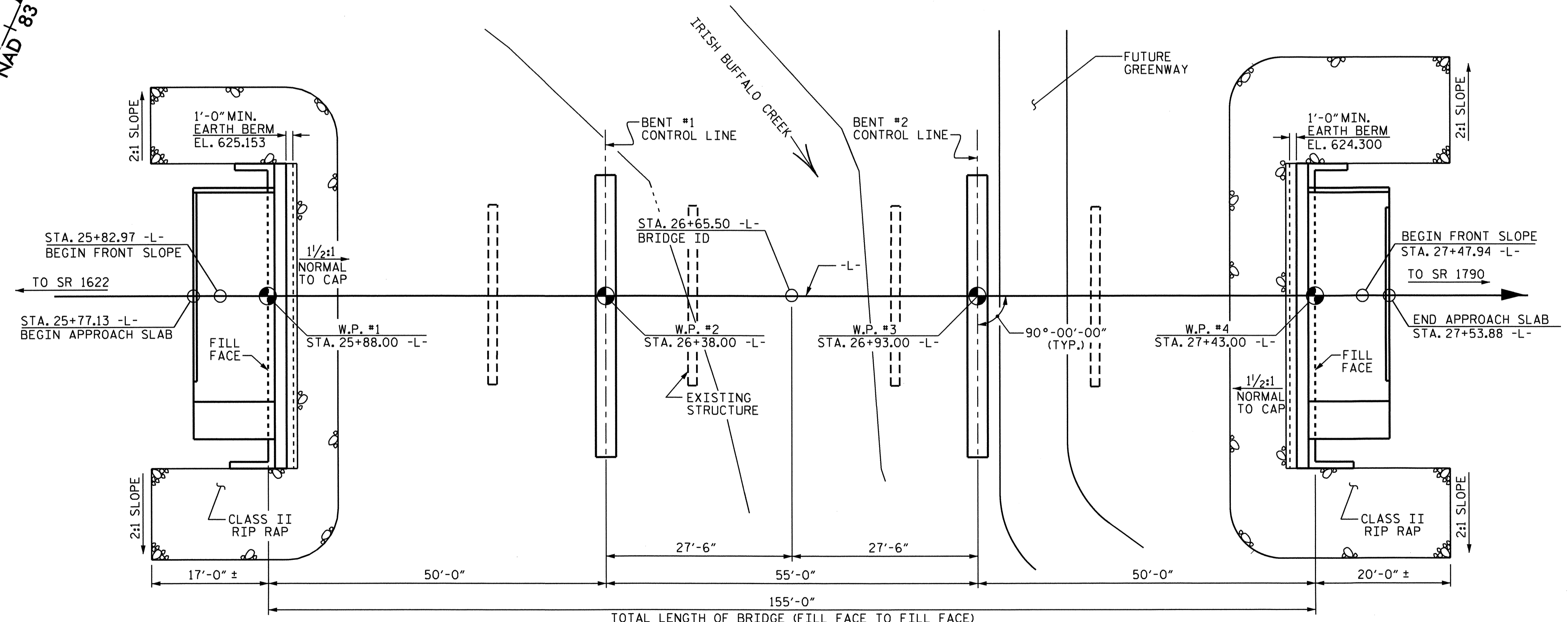
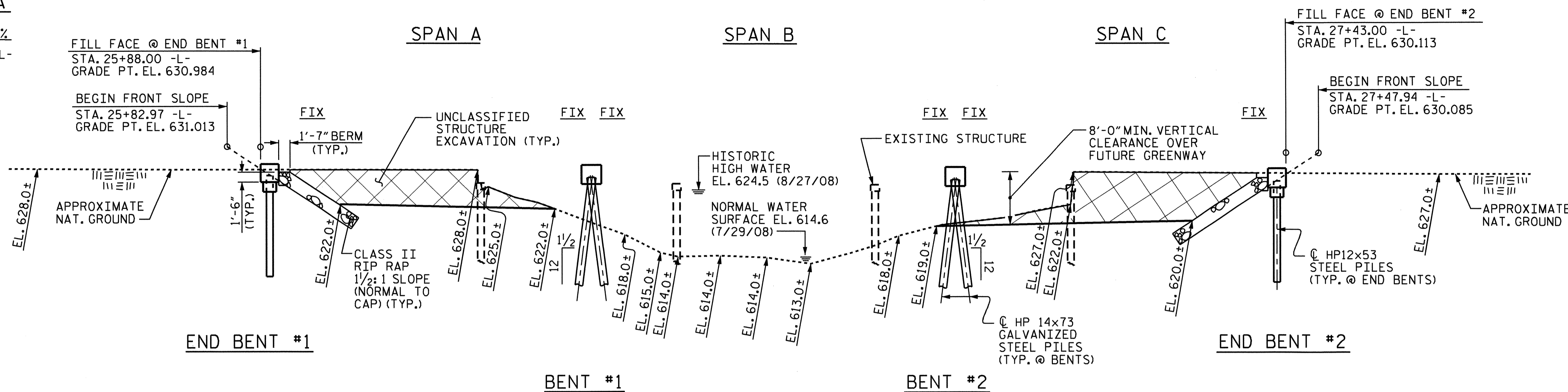
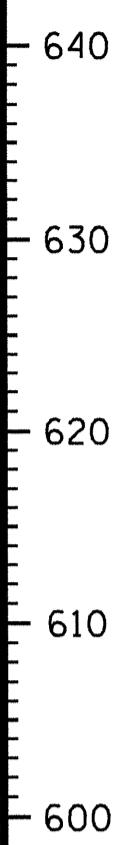
TIP PROJECT: B-4050

CONTRACT: C202774

GRADE DATA

-6.8579% Δ -0.5623%

PI = 22+90.00 -L-
EL = 632.66
VC = 380'

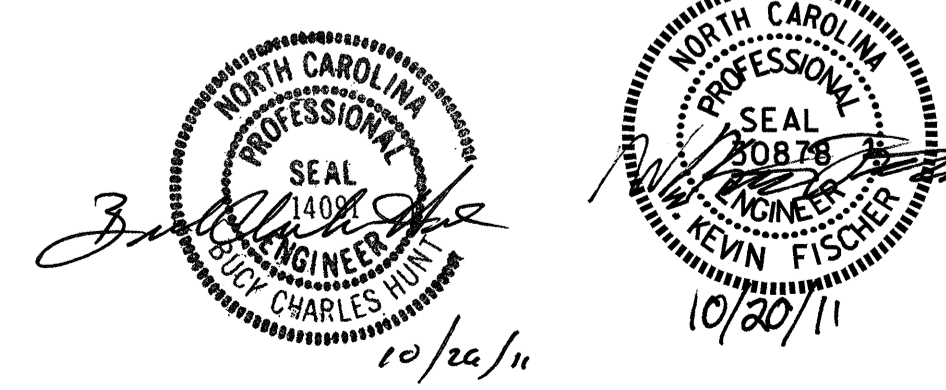


I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. B-4050
CABARRUS COUNTY
STATION: 26+65.50 -L-

SHEET 1 OF 3 REPLACES BRIDGE No. 30

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
FOR BRIDGE OVER
IRISH BUFFALO CREEK
ON SR 1778 (ORPHANAGE RD.)
BETWEEN SR 1622 & SR 1790



DRAWN BY : Keith D. Layne DATE : 3/09/11
CHECKED BY : M. K. BEARD DATE : 7-26-11

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

FOUNDATION NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT #1 AND END BENT #2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 95 TONS PER PILE.

DRIVE PILES AT END BENT #1 AND END BENT #2 TO A REQUIRED DRIVING RESISTANCE OF 158 TONS PER PILE.

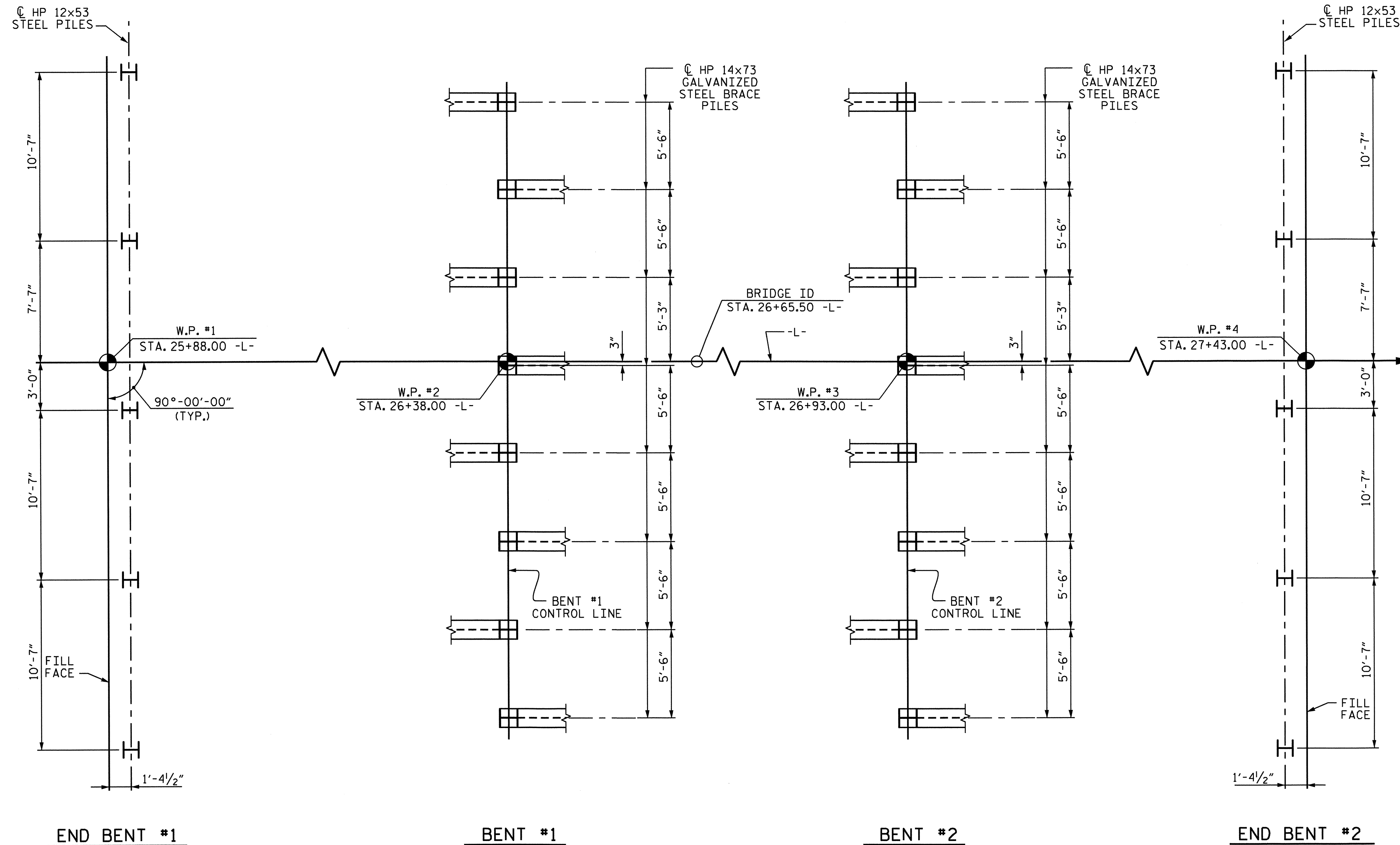
PILES AT BENT #1 AND BENT #2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 120 TONS PER PILE.

DRIVE PILES AT BENT #1 AND BENT #2 TO A REQUIRED DRIVING RESISTANCE OF 200 TONS PER PILE.

GALVANIZE THE FULL LENGTH OF EACH INTERIOR PILE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT #1 IS ELEVATION 597.00 AND ELEVATION 598.00 FOR BENT #2. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

STEEL PILE POINTS ARE REQUIRED FOR STEEL PILES AT BENT #1 AND BENT #2.

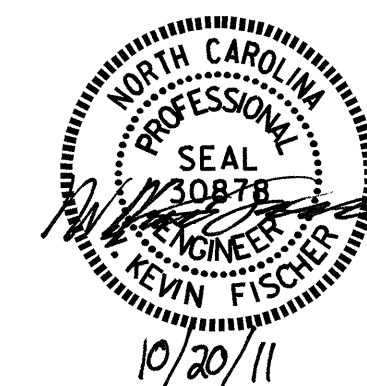


FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE.
BRACE PILES AT INTERIOR BENTS ARE BATTERED 1/2:12

PROJECT NO. B-4050
CABARRUS COUNTY
STATION: 26+65.50 -L-

SHEET 2 OF 3



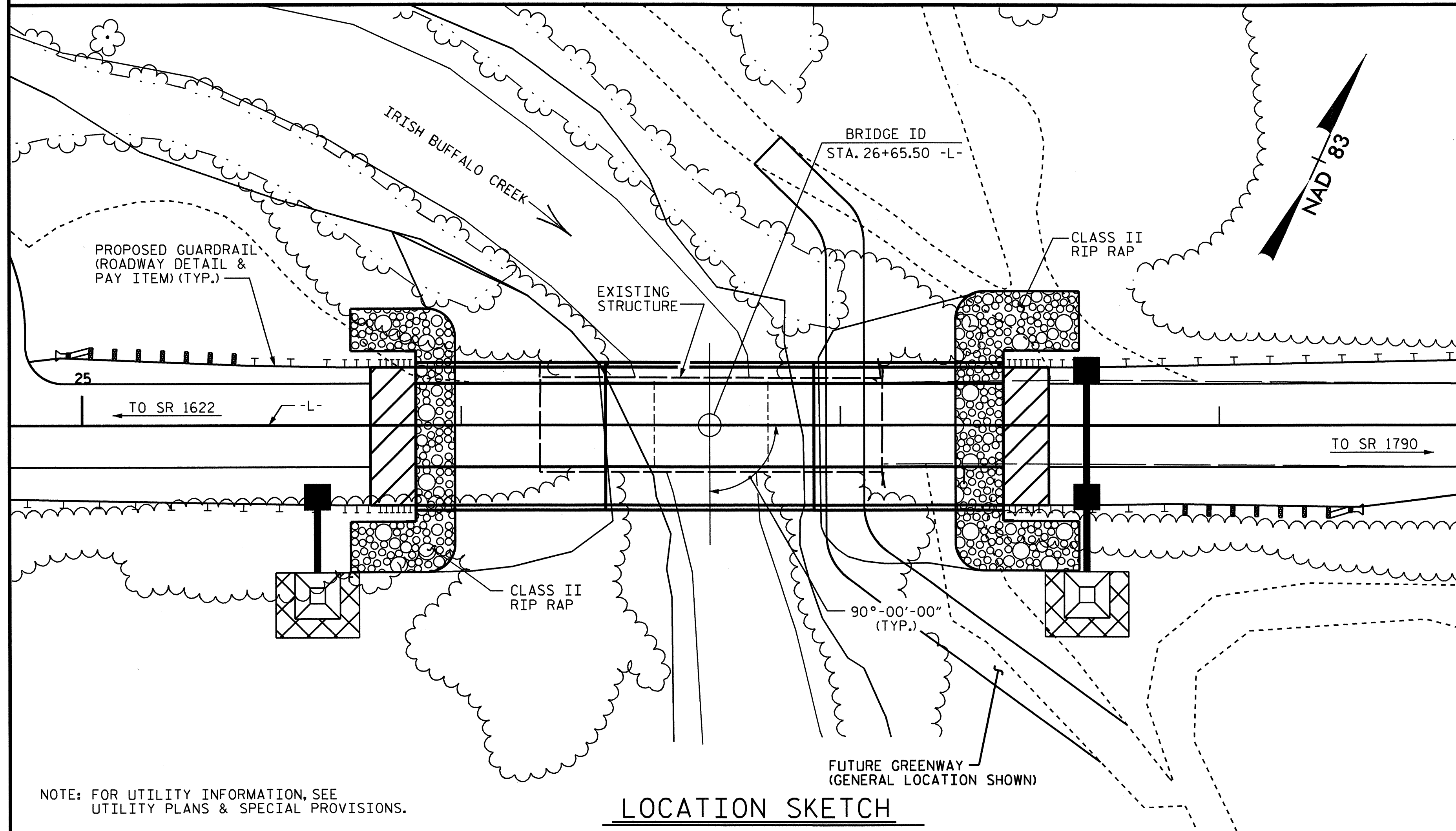
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
FOR BRIDGE OVER
IRISH BUFFALO CREEK
ON SR 1778 (ORPHANAGE RD.)
BETWEEN SR 1622 & SR 1790

DRAWN BY: KEITH D. LAYNE DATE: 3-9-11
CHECKED BY: M. K. BEARD DATE: 7-26-11

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

BM #2 : R.R. SPIKE SET IN 18" SWEETGUM TREE 203.35' LT. OF STA. 26+52.93 -L-, EL. 625.94



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

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 THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS (1 @ 30'-3", 1 @ 30'-0" AND 1 @ 30'-3") WITH AN ASPHALT WEARING SURFACE ON 10 SECTIONS OF PRECAST PRESTRESSED CONCRETE CHANNELS AND A CLEAR ROADWAY WIDTH OF 24.1 FT. ON PRECAST PRESTRESSED CONCRETE CAPS SUPPORTED BY TIMBER PILES AT THE END BENTS AND BENTS AND LOCATED AT PROPOSED SITE 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 AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 30 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE 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.

COST OF THE SIDEWALK SHALL BE PAID FOR AS CLASS AA CONCRETE AND EPOXY COATED REINFORCING STEEL.

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.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

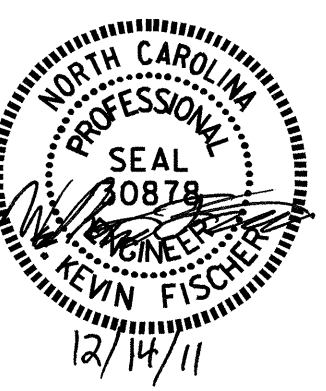
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE = 8300 C.F.S.
 FREQUENCY OF DESIGN FLOOD = 50 YR.
 DESIGN HIGH WATER ELEVATION = 629.400
 DRAINAGE AREA = 24.4 SQ.MI.
 BASE DISCHARGE (Q100) = 8900 C.F.S.
 BASE HIGH WATER ELEVATION = 629.500

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 8260 C.F.S.
 FREQUENCY OF OVERTOPPING FLOOD = 10+ YR.
 OVERTOPPING FLOOD ELEVATION = 629.000



TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	UNCLASSIFIED STRUCTURE EXCAVATION	CONCRETE WEARING SURFACE	GROOVING BRIDGE FLOORS	CLASS AA CONCRETE	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL	HP12x53 STEEL PILES	HP14x73 GALVANIZED STEEL PILES	STEEL PILE POINTS	TWO BAR METAL RAIL	1'-2" x 2'-9 1/2" CONCRETE PARAPET	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS			
	LUMP SUM	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	NO.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO.	LIN. FT.	
SUPERSTRUCTURE			4,735	4,894	10.7		LUMP SUM		1037				290.50	305.50				LUMP SUM	39	1982.50	
END BENT #1						16.9		2,456		5	175				110	120					
BENT #1						12.8		2,049			8	300	8								
BENT #2						12.8		2,049			8	280	8								
END BENT #2						16.9		2,456		5	175				150	165					
TOTAL	LUMP SUM	LUMP SUM	4,735	4,894	10.7	59.4	LUMP SUM	9,010	1037	10	350	16	580	16	290.50	305.50	260	285	LUMP SUM	39	1982.50

PROJECT NO. B-4050
 CABARRUS COUNTY
 STATION: 26+65.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE OVER
 IRISH BUFFALO CREEK
 ON SR 1778 (ORPHANAGE RD.)
 BETWEEN SR 1622 & SR 1790

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

DRAWN BY: Keith D. Layne DATE: 3/09/11
 CHECKED BY: M. K. BEARD DATE: 7-26-11

12-DEC-2011 09:16
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LOAD FACTORS:

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	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)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	①	1.006	--	1.75	0.275	1.17	B	EL	26.938	0.529	1.01	A	EL	2.391	0.80	0.277	1.03	A	EL	23.906	1	
	HL-93(0pr)	N/A	--	1.304	--	1.35	0.275	1.51	B	EL	26.938	0.529	1.30	A	EL	2.391	N/A	--	--	--	--	--	1	
	HS-20(Inv)	36.000	②	1.215	43.723	1.75	0.275	1.52	B	EL	26.938	0.529	1.21	A	EL	2.391	0.80	0.277	1.32	A	EL	23.906	1	
	HS-20(0pr)	36.000	--	1.574	56.678	1.35	0.275	1.97	B	EL	26.938	0.529	1.57	A	EL	2.391	N/A	--	--	--	--	--	1	
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.659	35.892	1.4	0.275	3.98	B	EL	26.938	0.529	3.41	A	EL	2.391	0.80	0.277	2.66	A	EL	23.906	1
		SNGARBS2	20.000	--	2.110	42.191	1.4	0.275	3.09	B	EL	26.938	0.529	2.49	A	EL	2.391	0.80	0.277	2.11	A	EL	23.906	1
		SNAGRIS2	22.000	--	2.057	45.248	1.4	0.275	2.98	B	EL	26.938	0.529	2.33	A	EL	2.391	0.80	0.277	2.06	A	EL	23.906	1
		SNCOTTS3	27.250	--	1.327	36.147	1.4	0.275	1.98	B	EL	26.938	0.529	1.71	A	EL	2.391	0.80	0.277	1.33	A	EL	23.906	1
		SNAGGRS4	34.925	--	1.157	40.405	1.4	0.275	1.70	B	EL	26.938	0.529	1.46	A	EL	2.391	0.80	0.277	1.16	A	EL	23.906	1
		SNS5A	35.550	--	1.128	40.098	1.4	0.275	1.66	B	EL	26.938	0.529	1.50	A	EL	2.391	0.80	0.277	1.13	A	EL	23.906	1
		SNS6A	39.950	--	1.056	42.200	1.4	0.275	1.55	B	EL	26.938	0.529	1.39	A	EL	2.391	0.80	0.277	1.06	A	EL	23.906	1
	SNS7B	42.000	--	1.007	42.283	1.4	0.275	1.47	B	EL	26.938	0.529	1.39	A	EL	2.391	0.80	0.277	1.01	A	EL	23.906	1	
	TTST	TNAGRIT3	33.000	--	1.295	42.722	1.4	0.275	1.89	B	EL	26.938	0.529	1.64	A	EL	2.391	0.80	0.277	1.29	A	EL	23.906	1
		TNT4A	33.075	--	1.306	43.209	1.4	0.275	1.91	B	EL	26.938	0.529	1.58	A	EL	2.391	0.80	0.277	1.31	A	EL	23.906	1
		TNT6A	41.600	--	1.090	45.339	1.4	0.275	1.58	B	EL	26.938	0.529	1.52	A	EL	2.391	0.80	0.277	1.09	A	EL	23.906	1
		TNT7A	42.000	--	1.107	46.506	1.4	0.275	1.60	B	EL	26.938	0.529	1.42	A	EL	2.391	0.80	0.277	1.11	A	EL	23.906	1
		TNT7B	42.000	--	1.154	48.471	1.4	0.275	1.67	B	EL	26.938	0.529	1.34	A	EL	2.391	0.80	0.277	1.15	A	EL	23.906	1
		TNAGRIT4	43.000	--	1.096	47.129	1.4	0.275	1.58	B	EL	26.938	0.529	1.29	A	EL	2.391	0.80	0.277	1.10	A	EL	23.906	1
TNAGT5A		45.000	--	1.023	46.035	1.4	0.275	1.48	B	EL	26.938	0.529	1.31	A	EL	2.391	0.80	0.277	1.02	A	EL	23.906	1	
TNAGT5B	45.000	③	1.002	45.071	1.4	0.275	1.45	B	EL	26.938	0.529	1.23	A	EL	2.391	0.80	0.277	1.00	A	EL	23.906	1		

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:

- SPAN LENGTH FOR SPANS A & C ARE EQUAL.
-
-
-

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

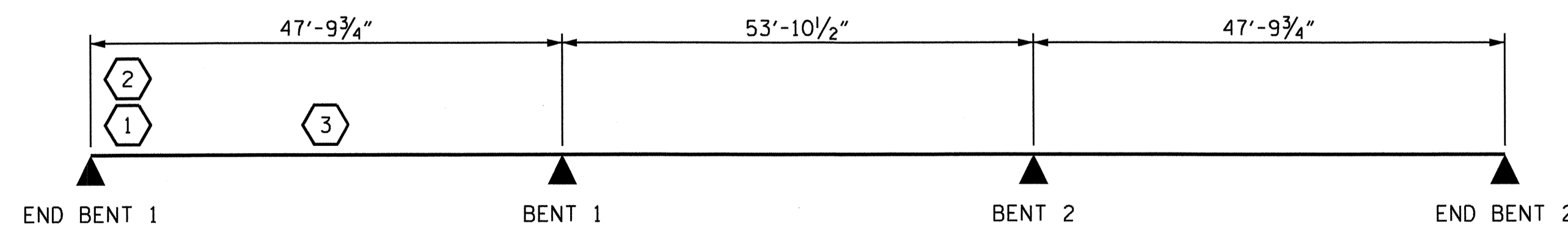
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

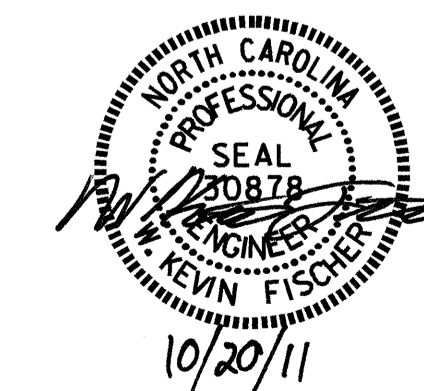
GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. B-4050
CABARRUS COUNTY
 STATION: 26+65.50 -L-

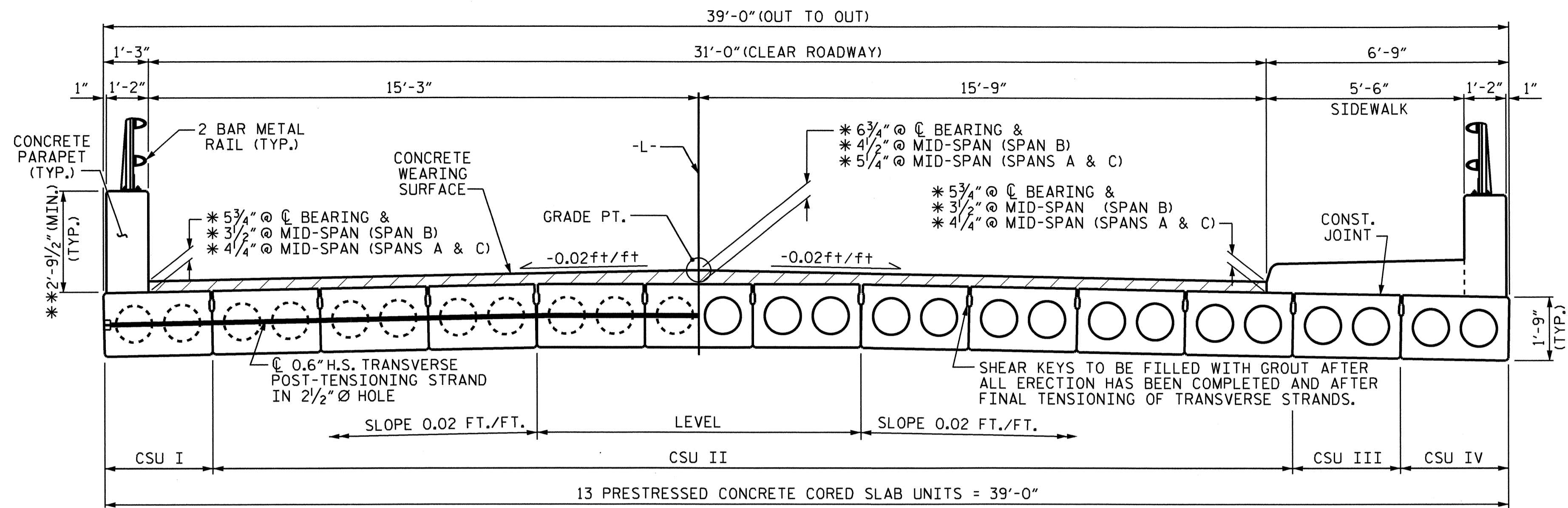


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

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

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

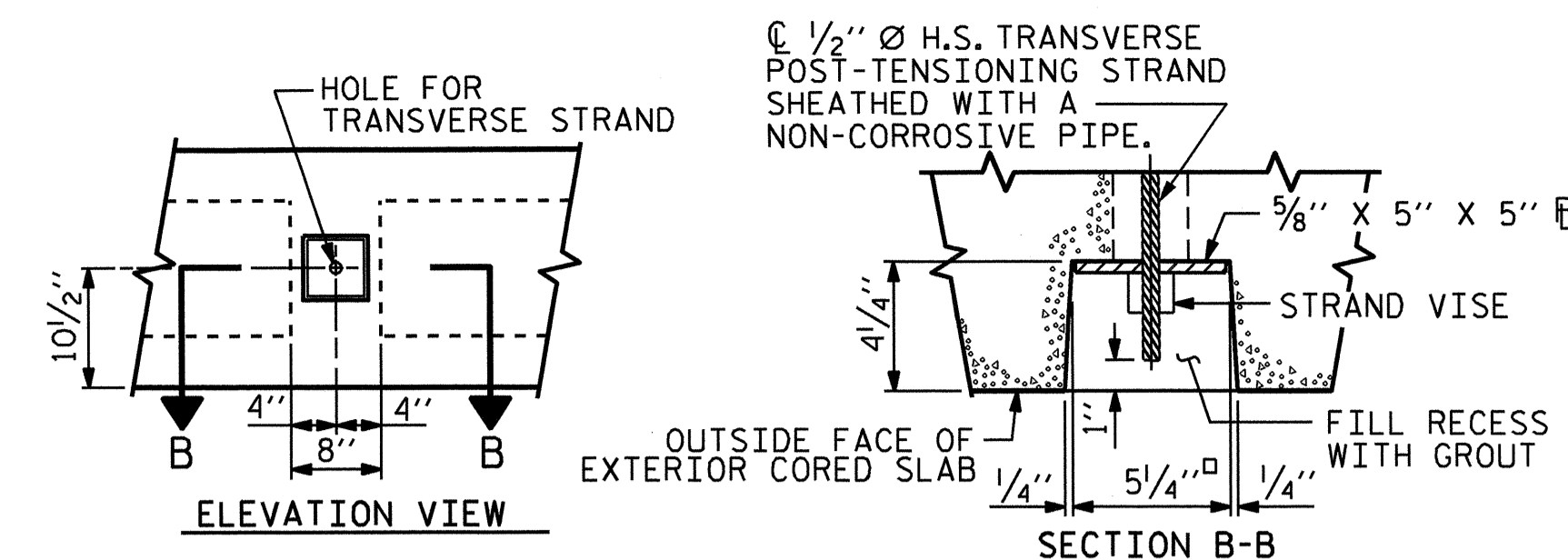
ASSEMBLED BY: Keith D. Ioyne	DATE: 4/21/10
CHECKED BY: T.R. Petterson	DATE: 4/27/10
DRAWN BY: MAA 1/08	REV. 11/12/08R MAA/GM
CHECKED BY: GM/DI 2/08	



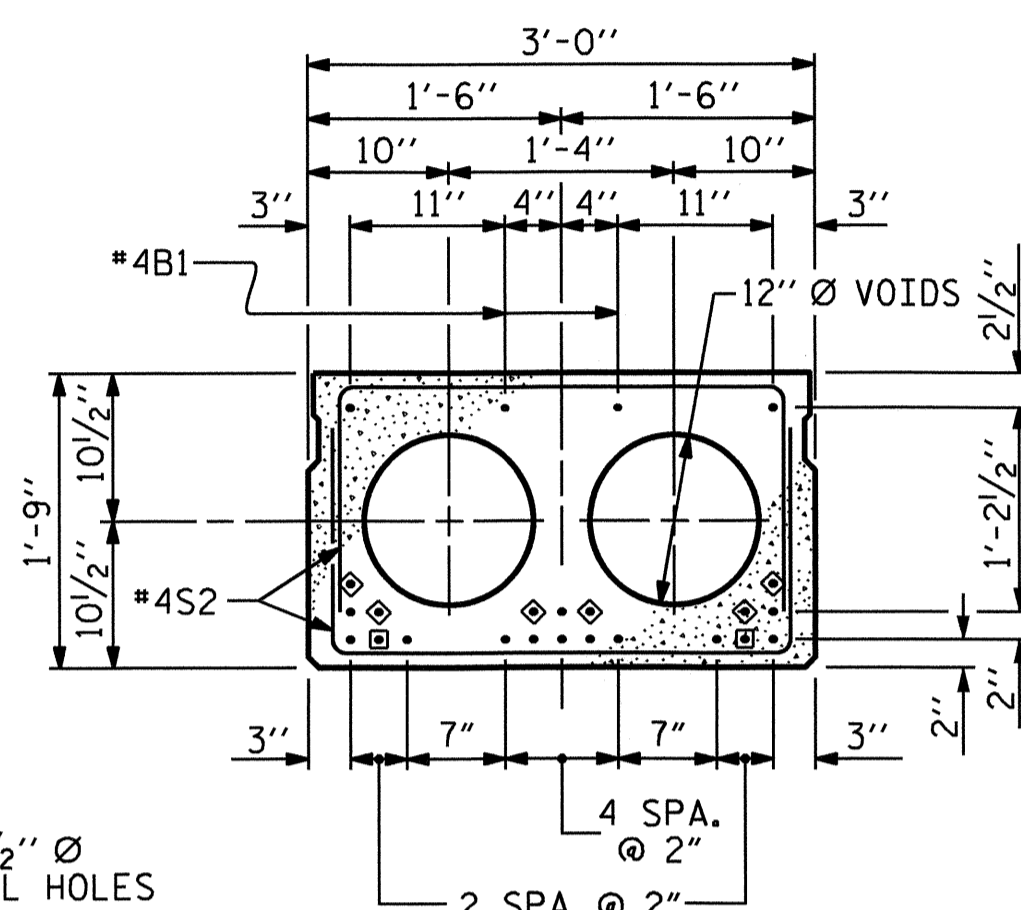
TYPICAL SECTION

* BASED ON PREDICTED CAMBER & THEORETICAL GRADE LINE ELEVATIONS

** THE MINIMUM HEIGHT OF THE RAIL IS SHOWN. THE HEIGHT OF THE RAIL VARIES WHILE THE TOP OF THE RAIL FOLLOWS THE PROFILE OF THE GUTTER LINE.



GRADED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS

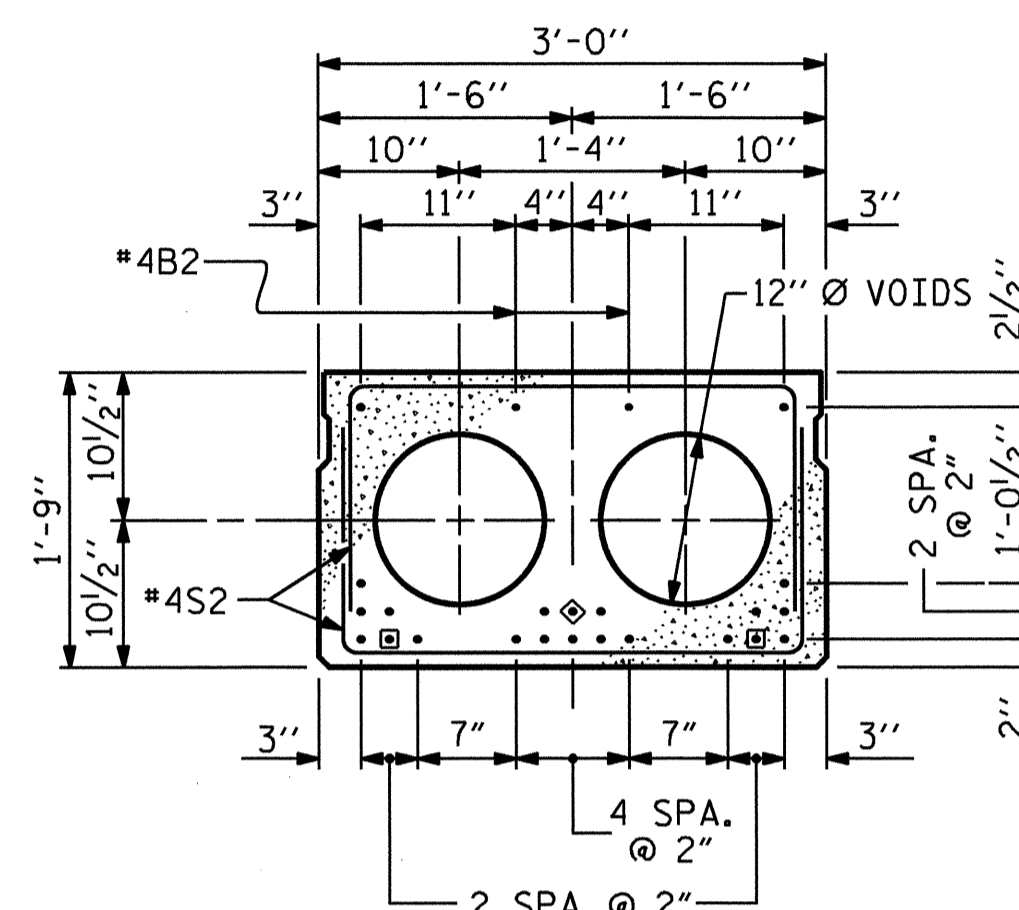


0.6" Ø LOW RELAXATION STRAND LAYOUT

TYP. ALL CSU TYPES SPANS A & C (16 STRANDS PER CSU)

■ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF GIRDER. SEE STANDARD SPECIFICATIONS.

◆ OPTIONAL FULLY DEBONDED STRAND.

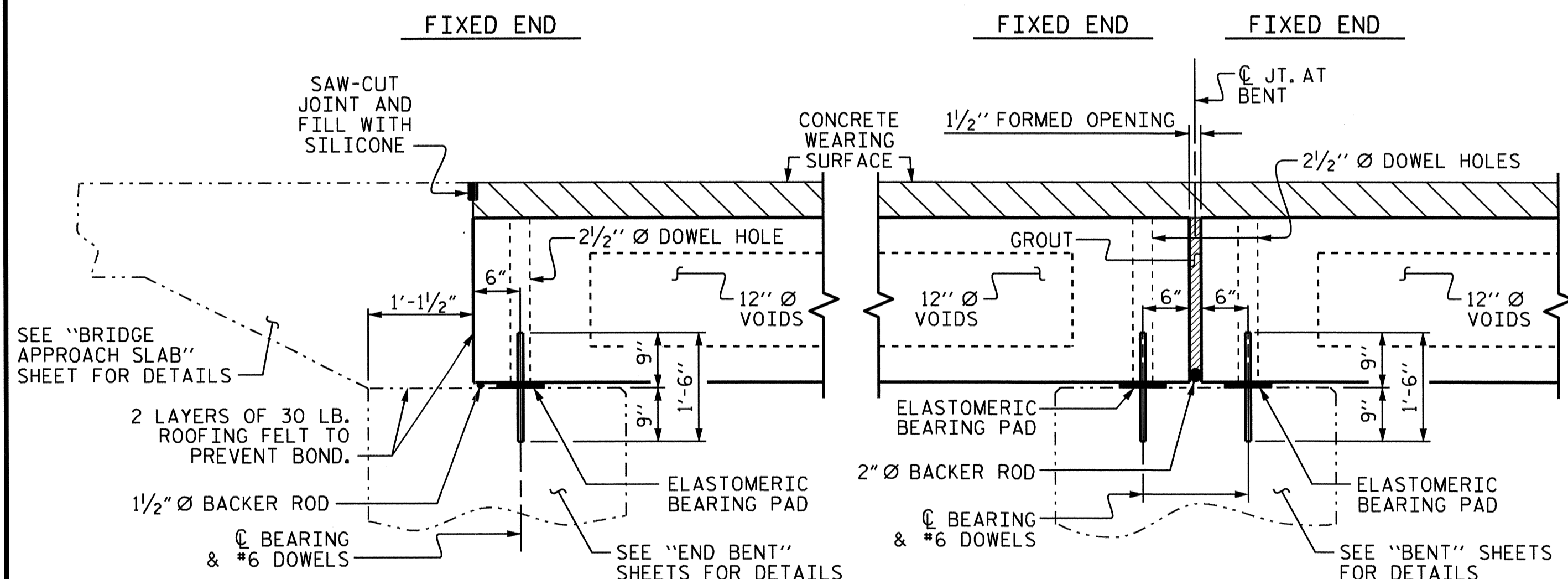


0.6" Ø LOW RELAXATION STRAND LAYOUT

TYP. ALL CSU TYPES SPAN B (21 STRANDS PER CSU)

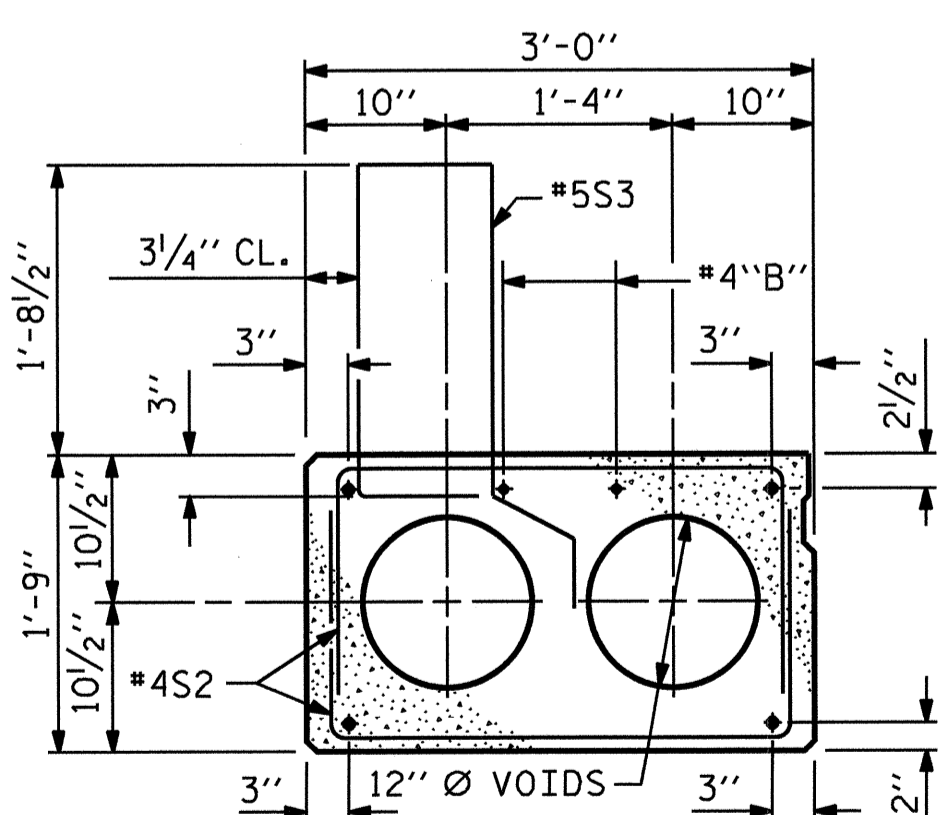
■ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-0" FROM END OF GIRDER. SEE STANDARD SPECIFICATIONS.

◆ OPTIONAL FULLY DEBONDED STRAND.



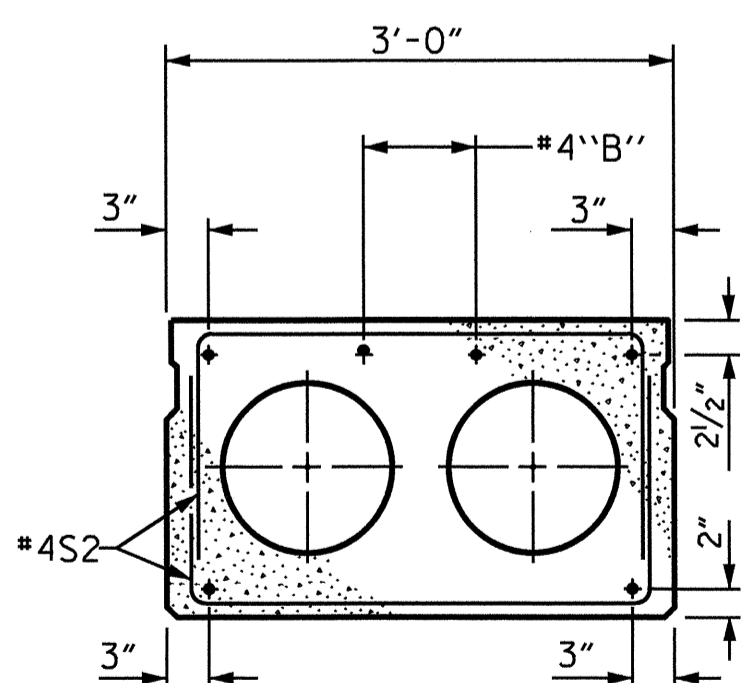
SECTION AT END BENT

SECTION AT BENT



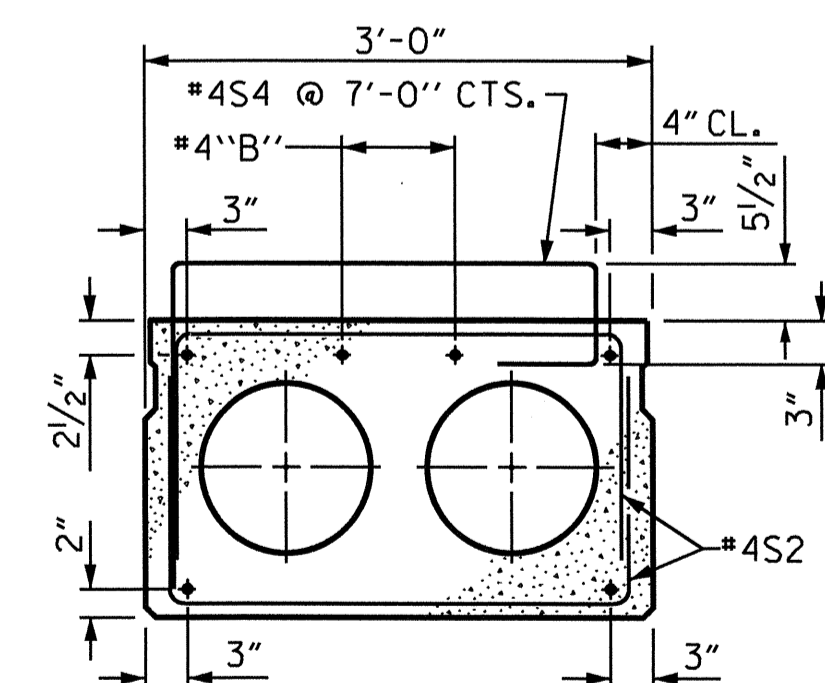
SECTION CSU I

(FOR PRESTRESSED STRAND LAYOUT, SEE 0.6" Ø LOW RELAXATION STRAND LAYOUT)



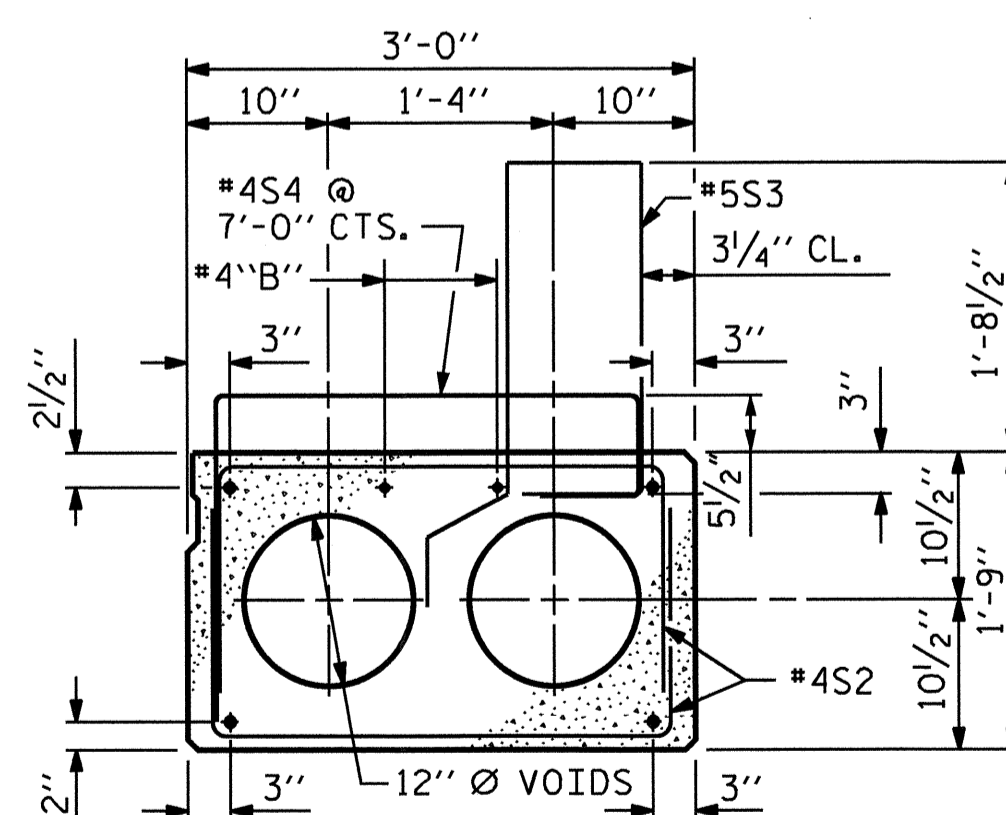
SECTION CSU II

(FOR PRESTRESSED STRAND LAYOUT, SEE 0.6" Ø LOW RELAXATION STRAND LAYOUT)



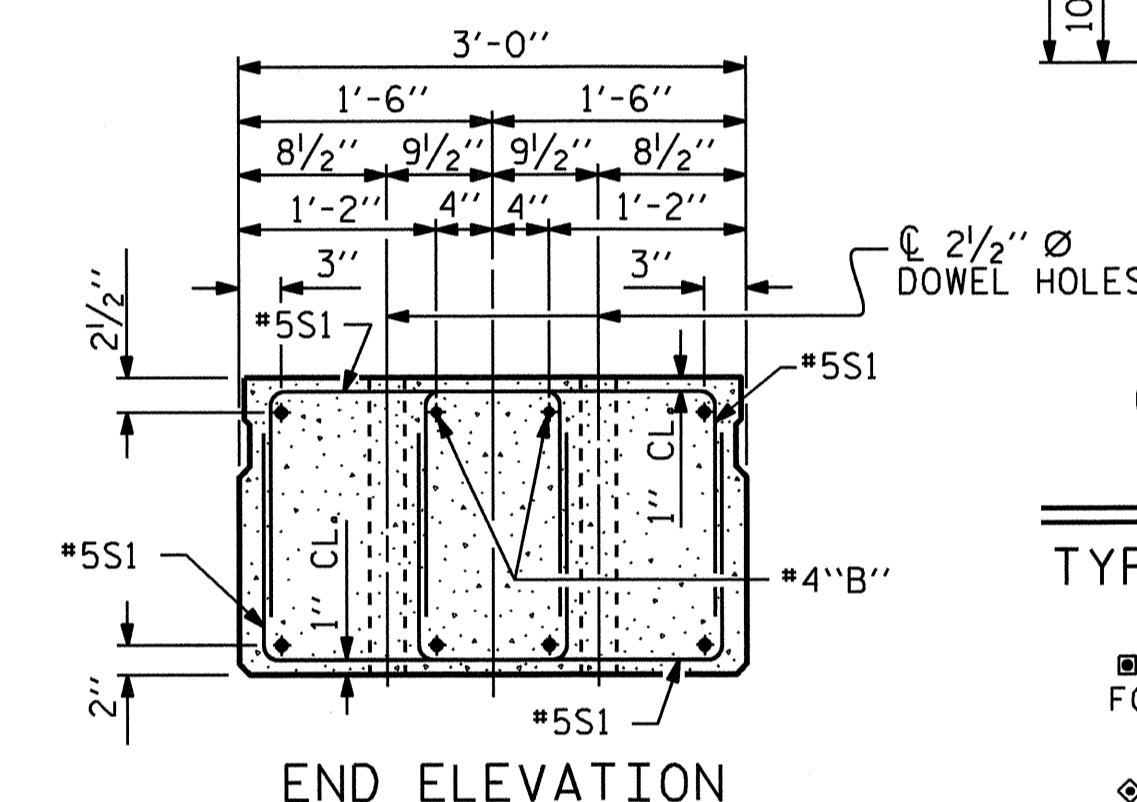
SECTION CSU III

(FOR PRESTRESSED STRAND LAYOUT, SEE 0.6" Ø LOW RELAXATION STRAND LAYOUT)



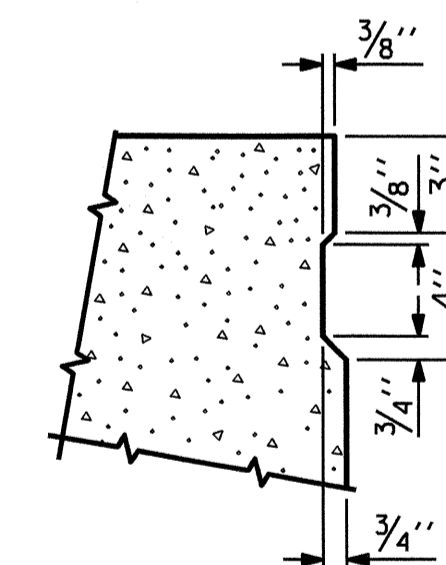
SECTION CSU IV

(FOR PRESTRESSED STRAND LAYOUT, SEE 0.6" Ø LOW RELAXATION STRAND LAYOUT)



END ELEVATION

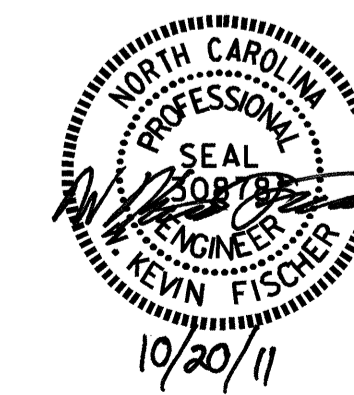
SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LOCATION NOT SHOWN) INTERIOR SLAB SECTION SHOWN- EXTERIOR SLAB SECTION SIMILAR EXCEPT SHEAR KEY LOCATION



SHEAR KEY DETAIL

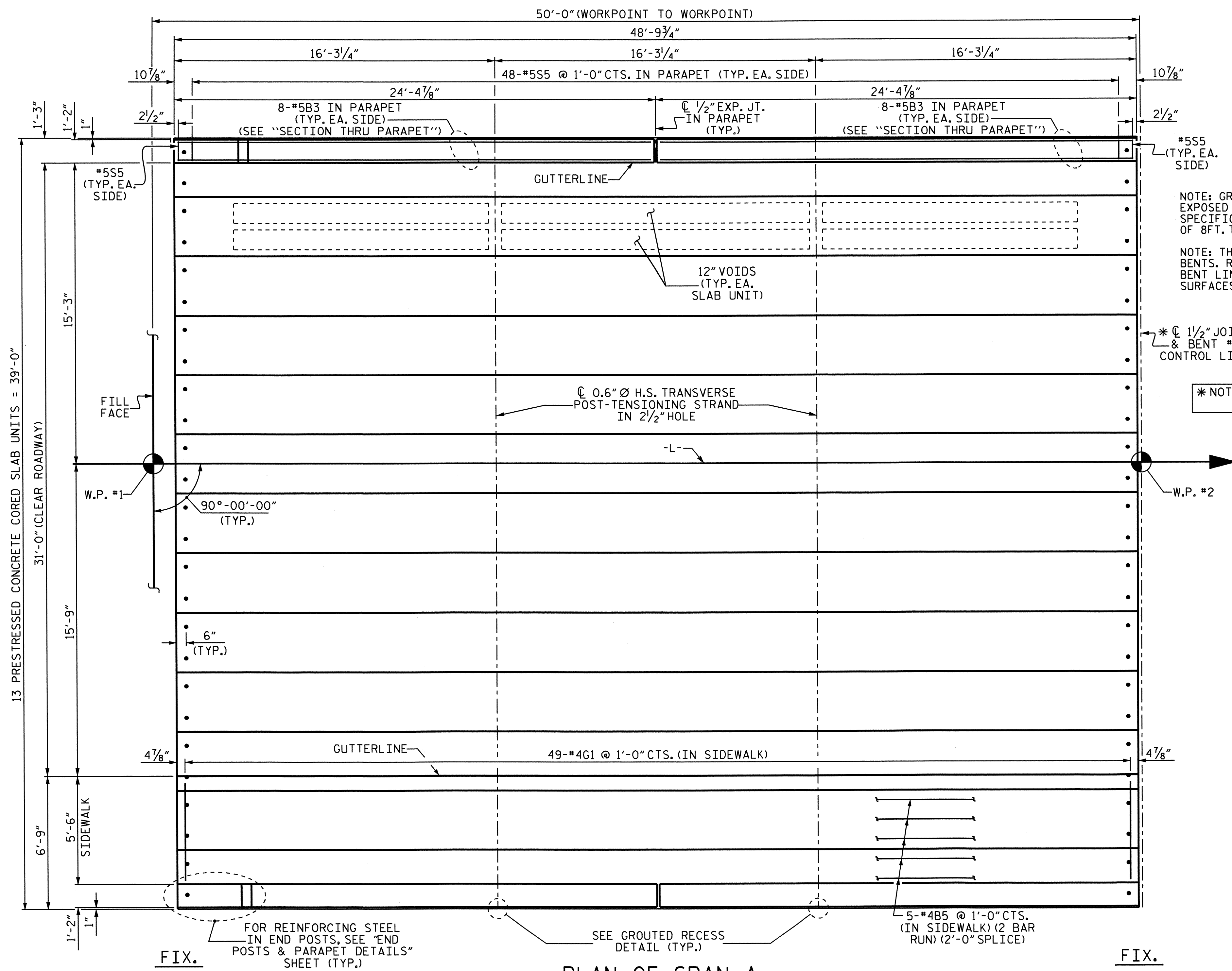
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS

ASSEMBLED BY: Keith D. Loyne	DATE: 01/27/10
CHECKED BY: M. K. BEARD	DATE: 3/26/10
DRAWN BY: WJH 4/89	REV. 10/17/00 RWW/LES
CHECKED BY: FCJ 5/89	REV. 7/10/01RR RWW/LES
	REV. 5/1/06 TLA/GM



PROJECT NO. B-4050
CABARRUS COUNTY
 STATION: 26+65.50 -L-

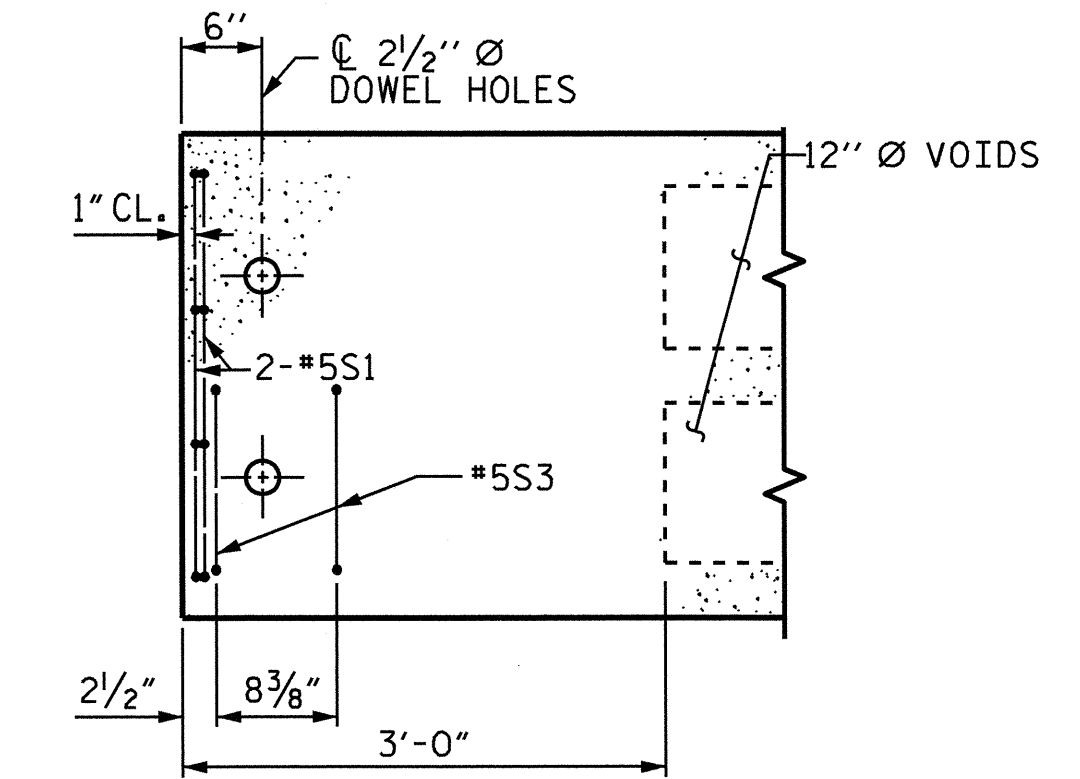
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S-5
STANDARD						TOTAL SHEETS 27
3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT						
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



NOTE: GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8FT. TO 10FT. BETWEEN END BENT AND BENT CONTROL LINES.

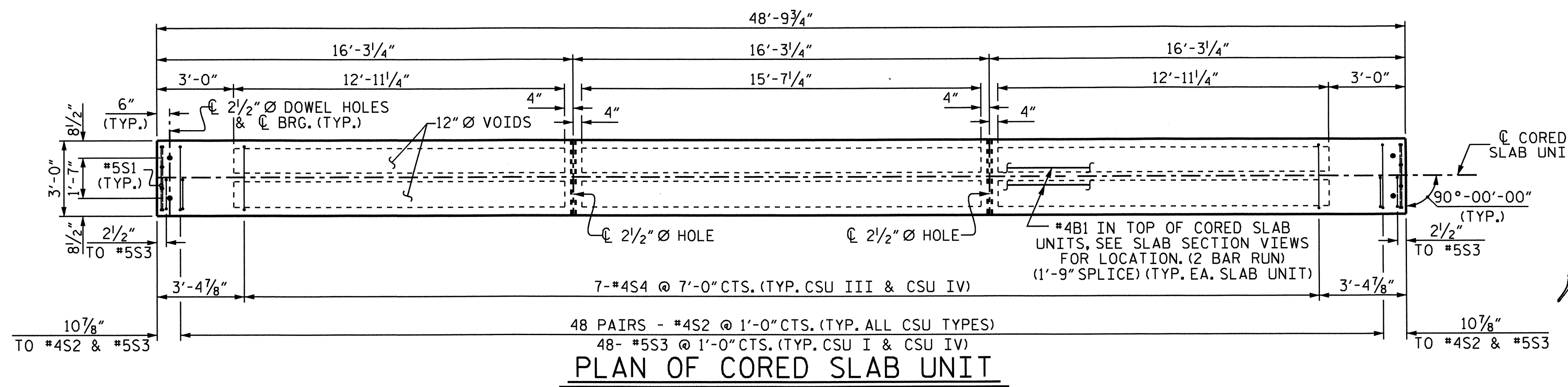
NOTE: THE SIDEWALK SHALL BE POURED CONTINUOUS ACROSS THE END BENT AND BENTS. REINFORCING STEEL SHALL NOT BE CONTINUOUS OVER END BENT OR OR BENT LINES. A GROOVED CONTRACTION JOINT SHALL BE PLACED IN THE EXPOSED SURFACES OF THE SIDEWALK ALONG EACH END BENT OR BENT LINE.

* NOTE: CONCRETE WEARING SURFACE IS CONTINUOUS OVER JOINT



PART PLAN-EXTERIOR SECTION
EXTERIOR SECTION SHOWN, INTERIOR SECTION SIMILAR EXCEPT OMIT #5S3 BARS

PLAN OF SPAN A

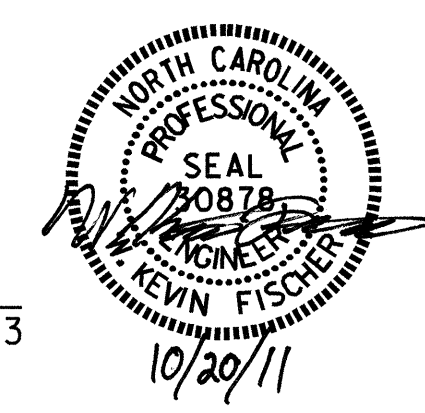


PLAN OF CORED SLAB UNIT

PROJECT NO. B-4050
CABARRUS COUNTY
 STATION: 26+65.50 -L-
 SHEET 1 OF 3

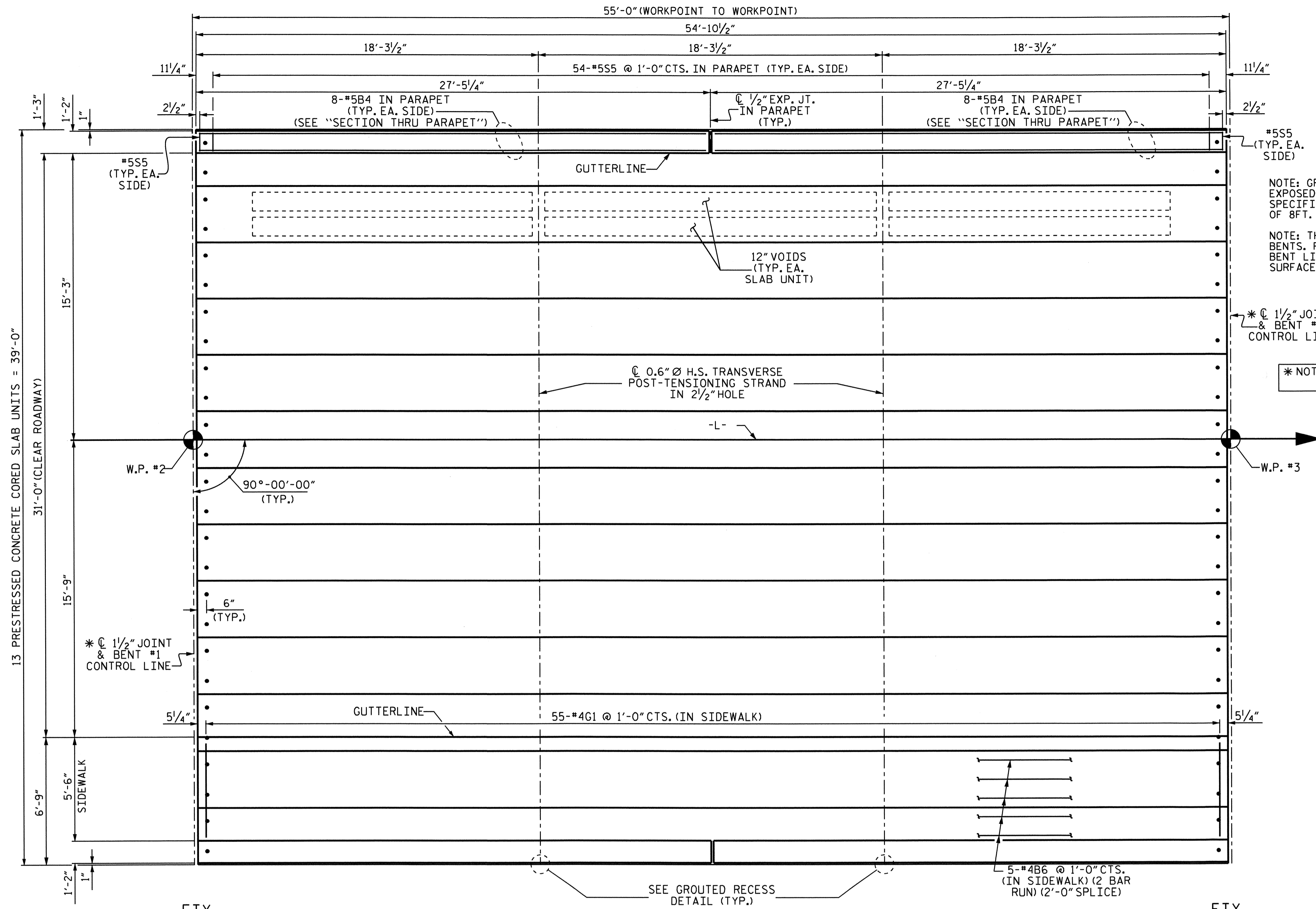
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPAN A**



REVISIONS						SHEET NO. S-6
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 27
2			4			

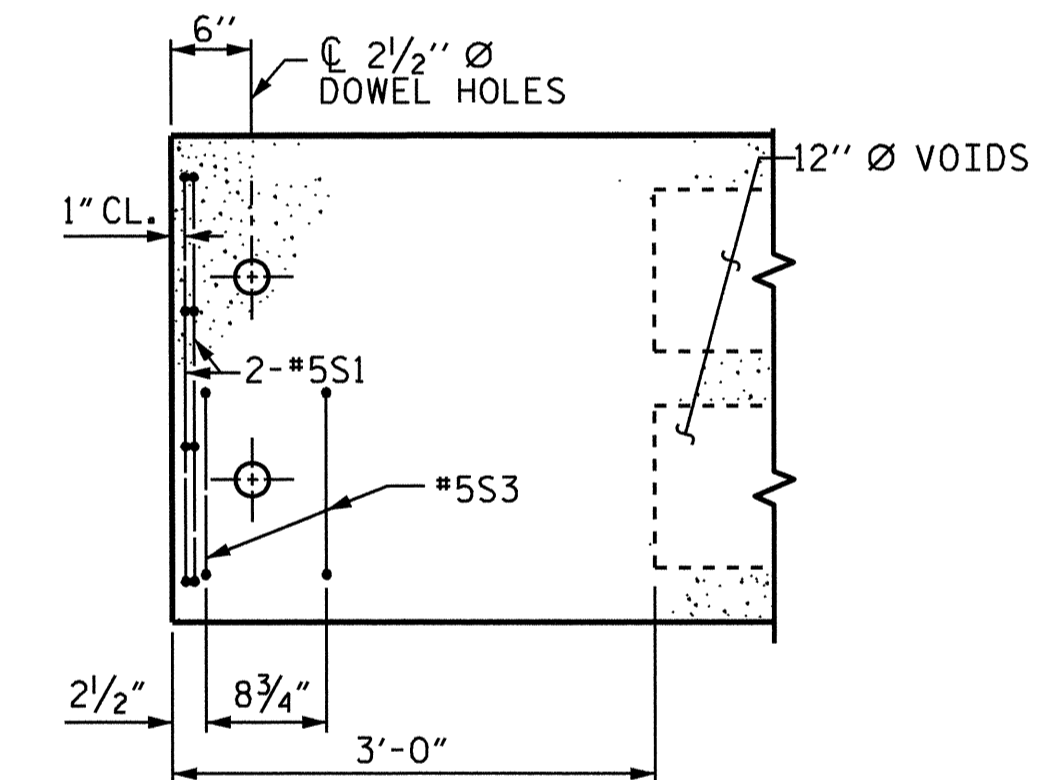
DRAWN BY: Keith D. Layne DATE: 1/27/10
 CHECKED BY: M. K. BEARD DATE: 3/26/10



NOTE: GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FT. TO 10 FT. BETWEEN END BENT AND BENT CONTROL LINES.

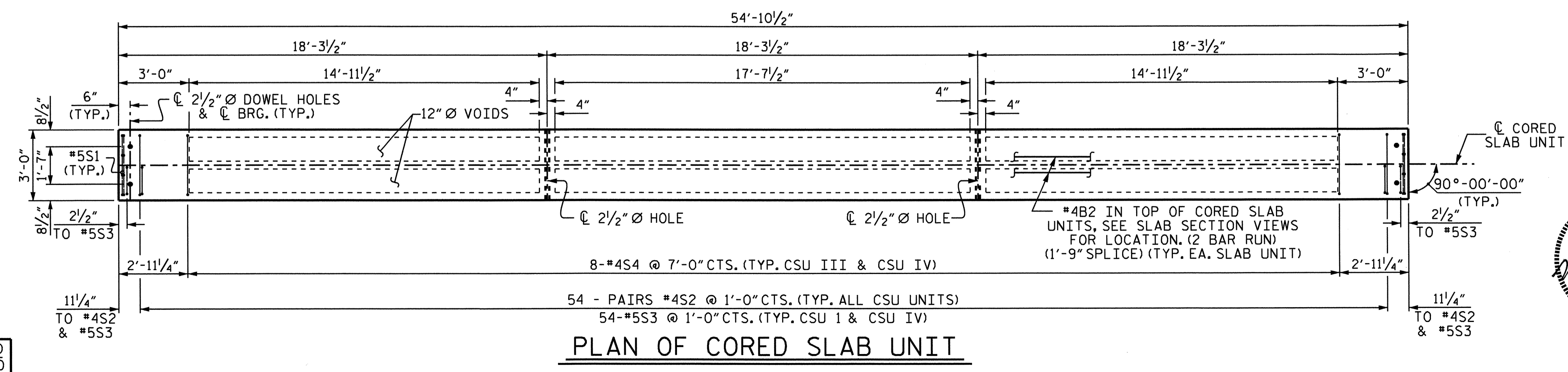
NOTE: THE SIDEWALK SHALL BE POURED CONTINUOUS ACROSS THE END BENT AND BENTS. REINFORCING STEEL SHALL NOT BE CONTINUOUS OVER END BENT OR OR BENT LINES. A GROOVED CONTRACTION JOINT SHALL BE PLACED IN THE EXPOSED SURFACES OF THE SIDEWALK ALONG EACH END BENT OR BENT LINE.

* NOTE: CONCRETE WEARING SURFACE IS CONTINUOUS OVER JOINT



PART PLAN-EXTERIOR SECTION
EXTERIOR SECTION SHOWN, INTERIOR SECTION SIMILAR EXCEPT OMIT #5S3 BARS

PLAN OF SPAN B



PLAN OF CORED SLAB UNIT

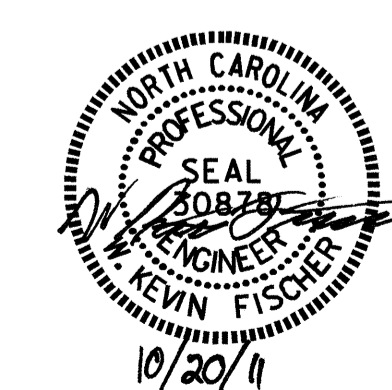
PROJECT NO. B-4050
CABARRUS COUNTY
 STATION: 26+65.50 -L-

SHEET 2 OF 3

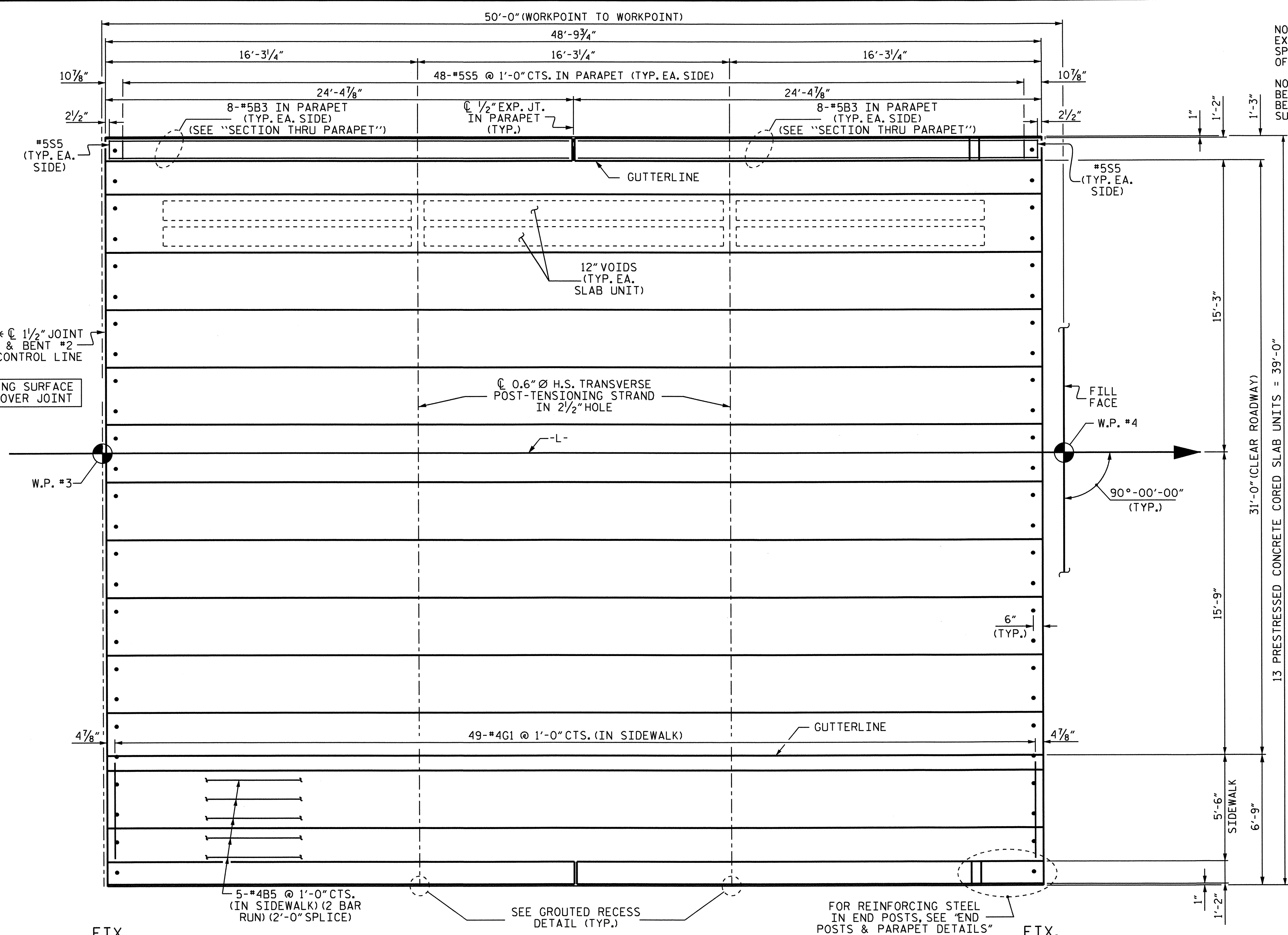
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUPERSTRUCTURE
 PLAN OF SPAN B**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			27



DRAWN BY: Keith D. Loyne DATE: 1/27/10
 CHECKED BY: M. K. BEARD DATE: 3/26/10



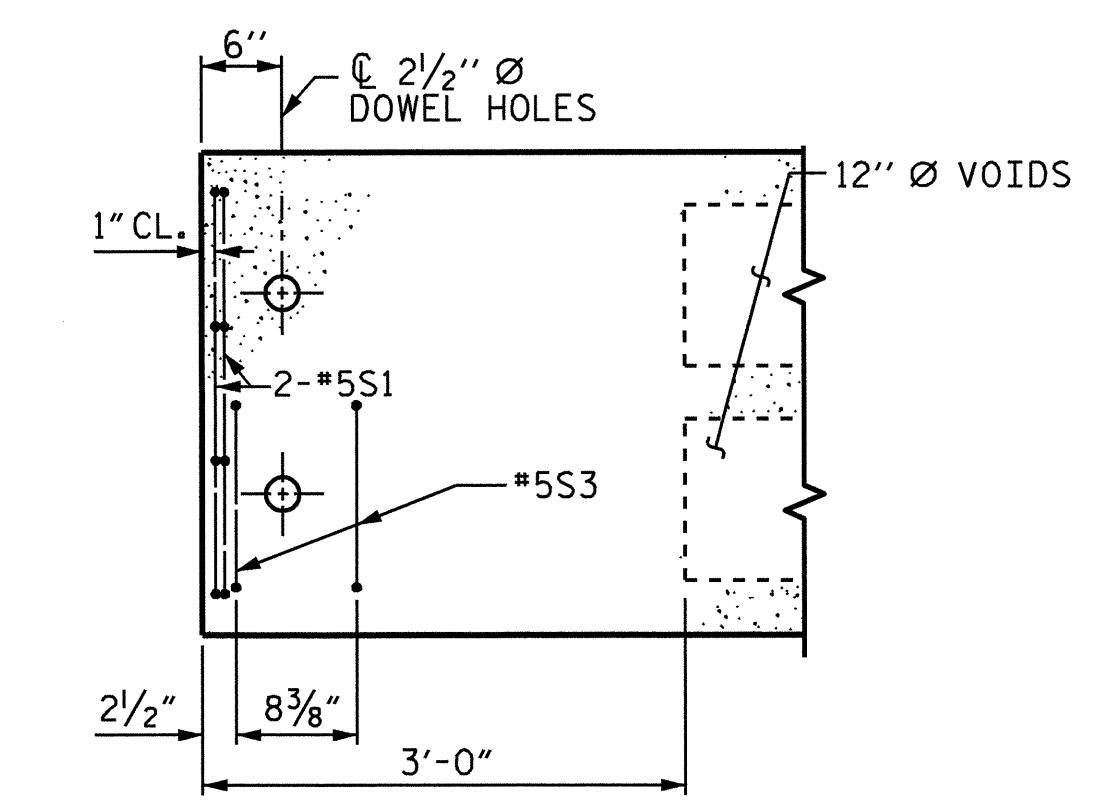
NOTE: GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8FT. TO 10FT. BETWEEN END BENT AND BENT CONTROL LINES.

NOTE: THE SIDEWALK SHALL BE POURED CONTINUOUS ACROSS THE END BENT AND BENTS. REINFORCING STEEL SHALL NOT BE CONTINUOUS OVER END BENT OR BENT LINES. A GROOVED CONTRACTION JOINT SHALL BE PLACED IN THE EXPOSED SURFACES OF THE SIDEWALK ALONG EACH END BENT OR BENT LINE.

* NOTE: CONCRETE WEARING SURFACE IS CONTINUOUS OVER JOINT

PART PLAN-EXTERIOR SECTION

EXTERIOR SECTION SHOWN, INTERIOR SECTION SIMILAR EXCEPT OMIT #5S3 BARS



FIX.

PLAN OF SPAN C

FOR REINFORCING STEEL IN END POSTS, SEE 'END POSTS & PARAPET DETAILS' SHEET (TYP.)

FIX.

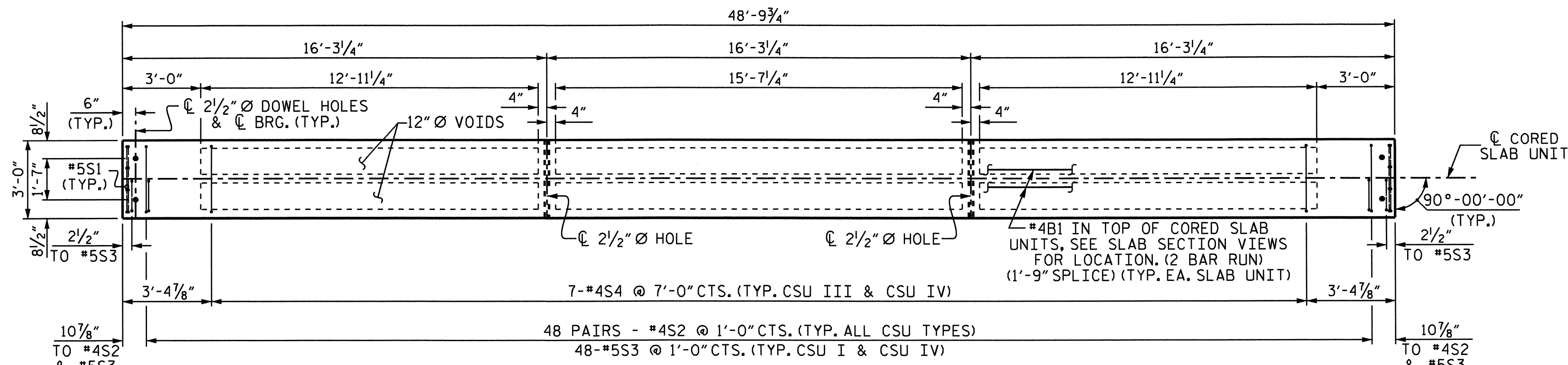
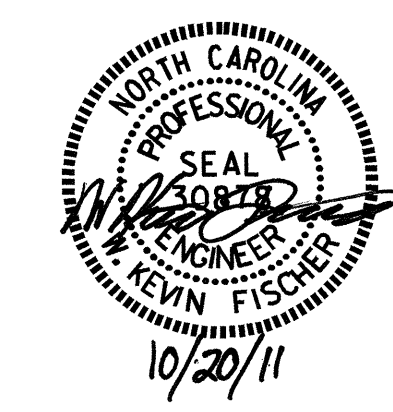
PROJECT NO. B-4050
CABARRUS COUNTY
 STATION: 26+65.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

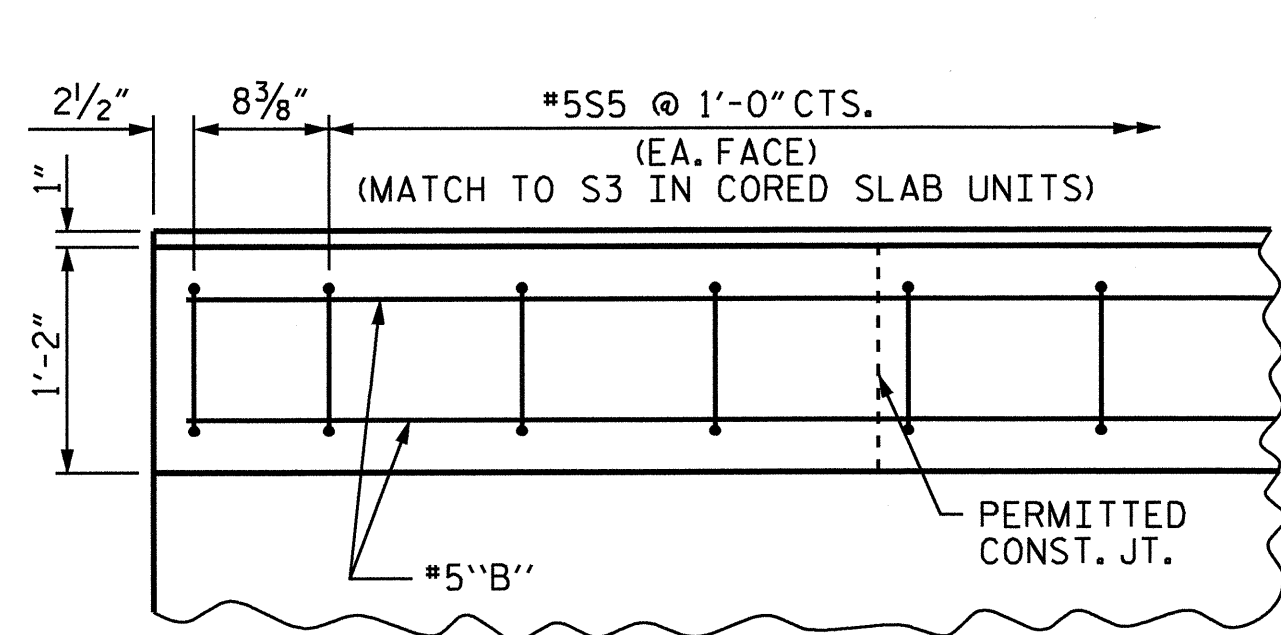
**SUPERSTRUCTURE
 PLAN OF SPAN C**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS 27
2			4			

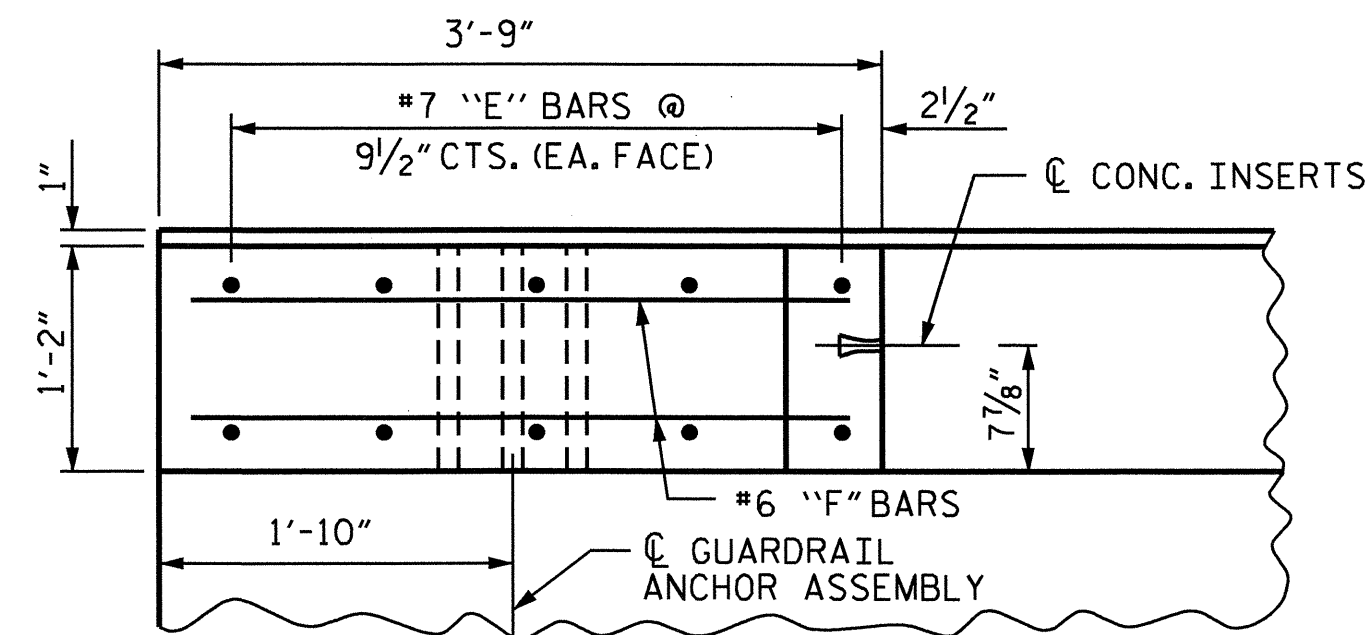


PLAN OF CORED SLAB UNIT

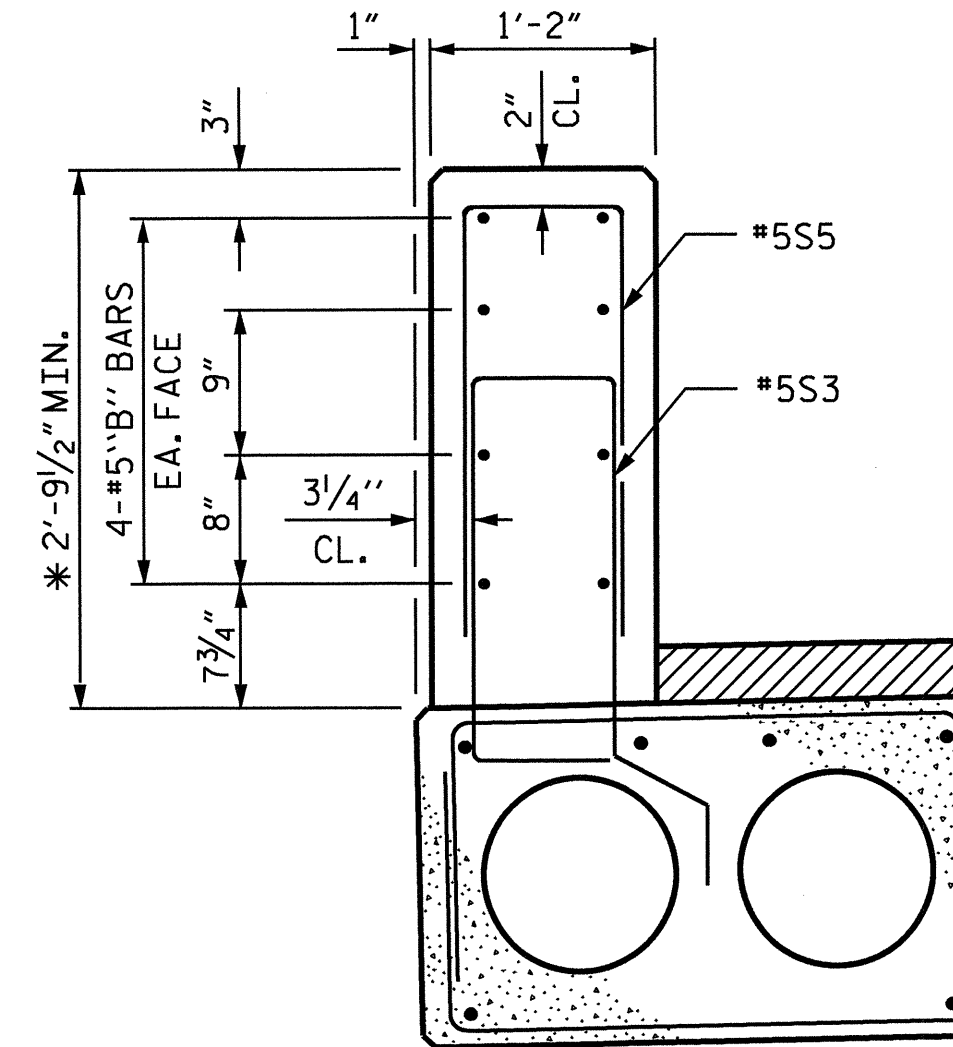
DRAWN BY: Keith D. Layne DATE: 1/27/10
 CHECKED BY: M. K. BEARD DATE: 3/26/10



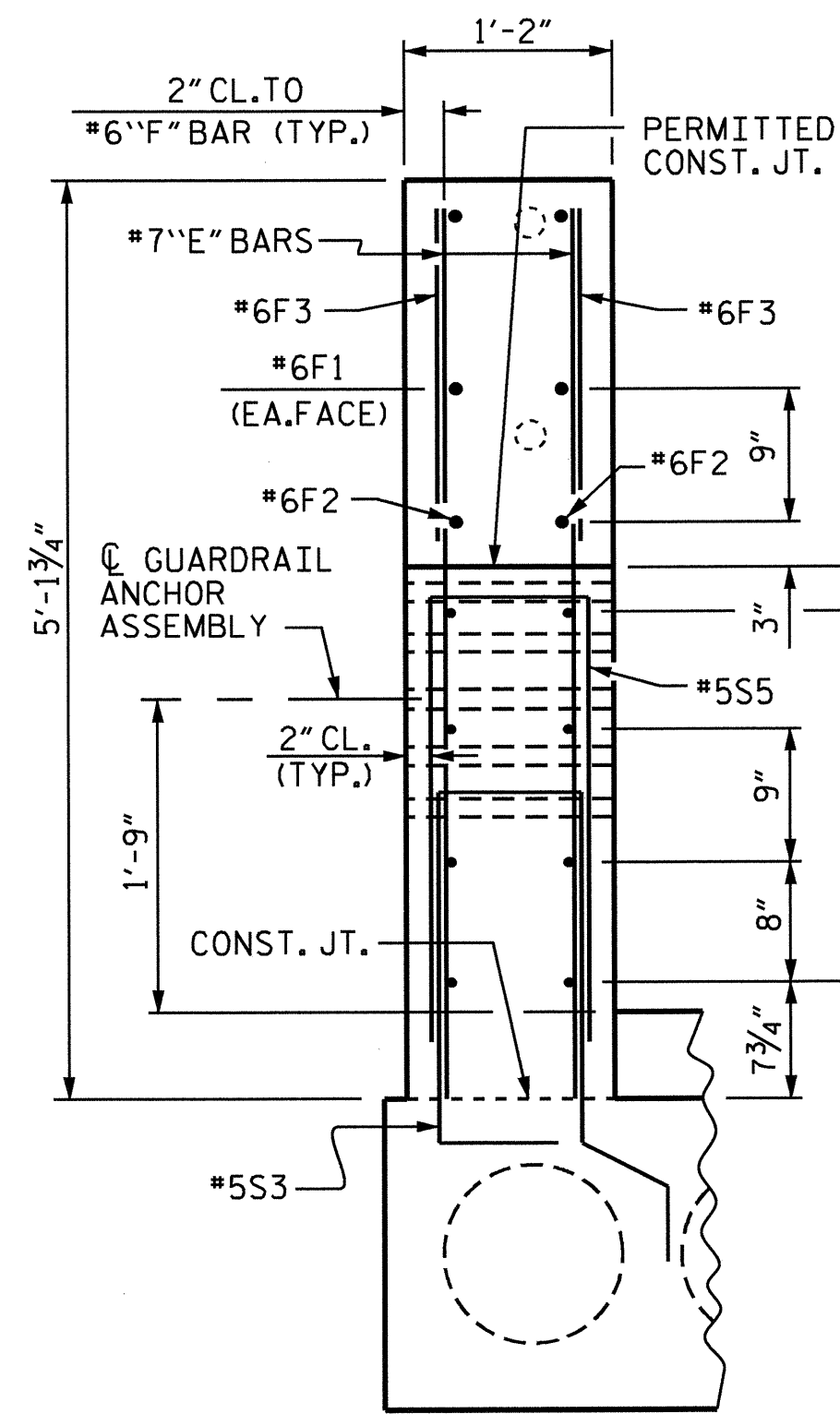
PLAN OF PARAPET



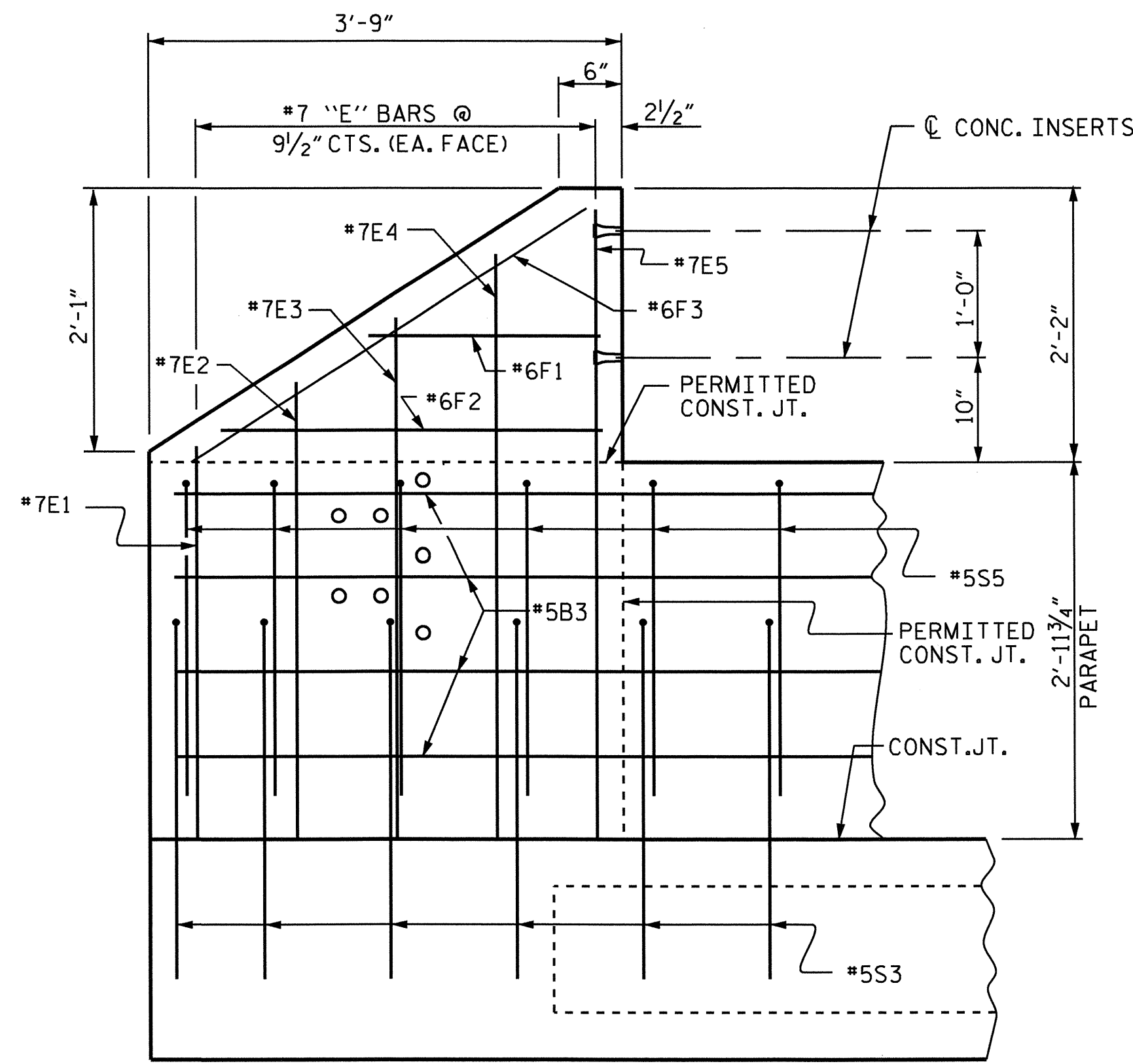
PLAN OF END POST



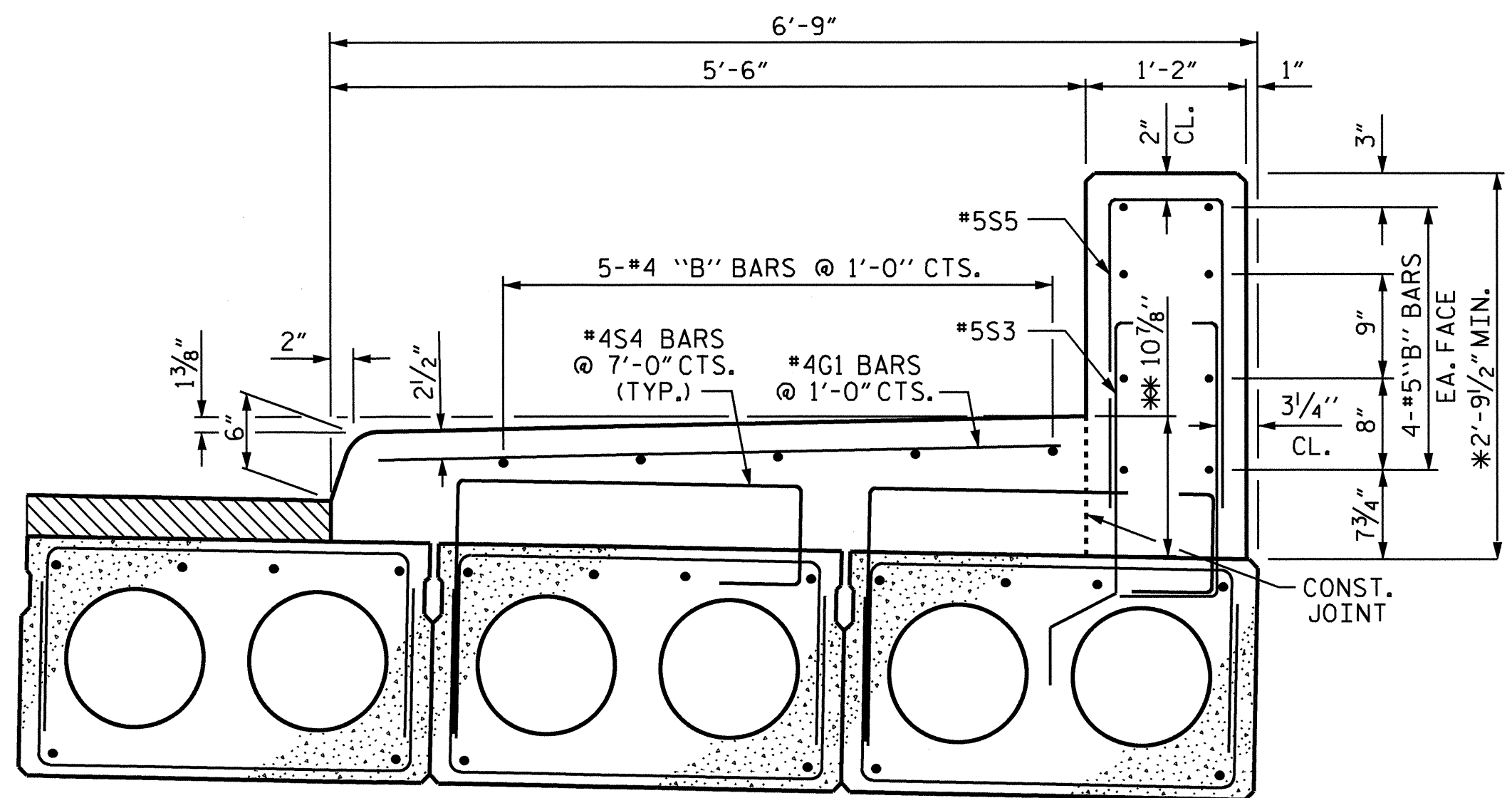
SECTION THROUGH PARAPET



END VIEW



ELEVATION



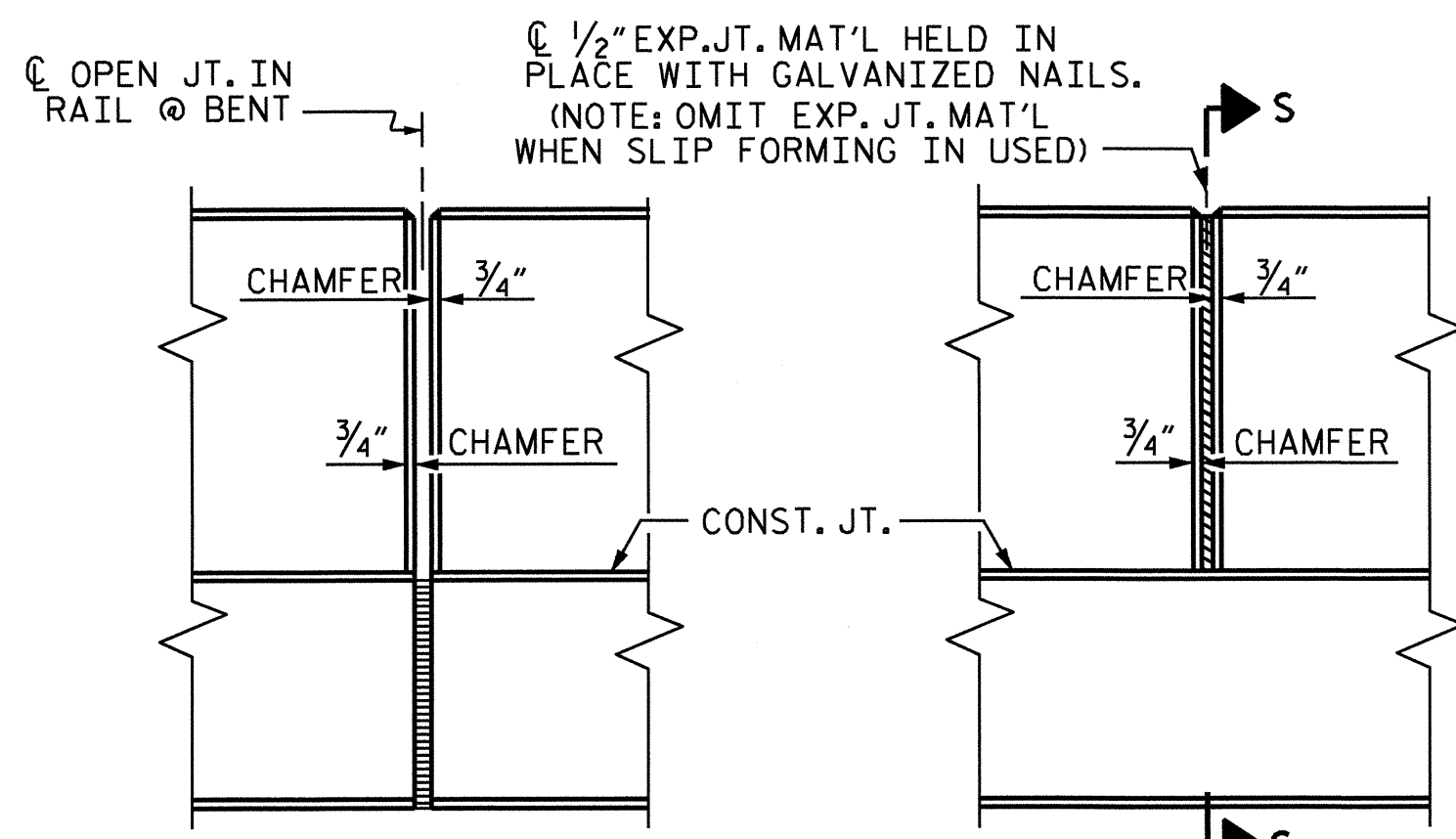
SECTION THROUGH SIDEWALK AND PARAPET

NOTE
 ALL REINFORCING STEEL IN THE PARAPET AND END POSTS SHALL BE EPOXY COATED.
 FOR DETAIL OF CONCRETE INSERT AND GUARDRAIL ANCHOR ASSEMBLY, SEE "RAIL POST SPACING AND END OF RAIL DETAILS".
 * THE MINIMUM HEIGHT OF THE RAIL IS SHOWN. THE HEIGHT OF THE RAIL VARIES WHILE THE TOP OF THE RAIL FOLLOWS THE PROFILE OF THE GUTTER LINE.
 COST OF THE SIDEWALK SHALL BE PAID FOR AS CLASS AA CONCRETE AND EPOXY COATED REINFORCING STEEL.

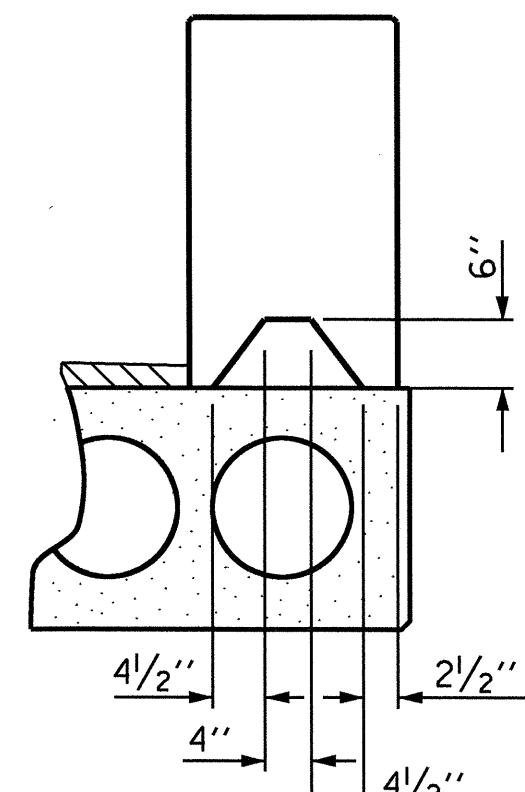
PARAPET AND END POST FOR TWO BAR RAIL

** THE MINIMUM HEIGHT OF THE SIDEWALK IS SHOWN. THE HEIGHT OF THE SIDEWALK VARIES WHILE THE TOP OF THE SIDEWALK FOLLOWS THE PROFILE OF THE GUTTER LINE.

PROJECT NO. B-4050
 CABARRUS COUNTY
 STATION: 26+65.50 -L-

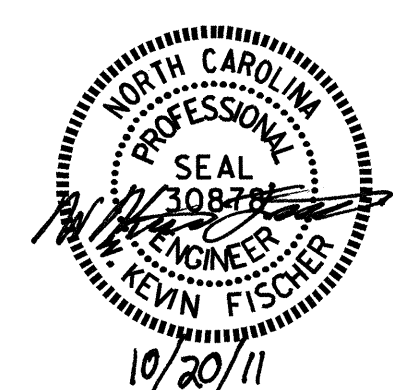


ELEVATION AT EXPANSION JOINTS



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

NOTE: GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8FT. TO 10FT. BETWEEN END BENT AND BENT CONTROL LINES.
 NOTE: THE SIDEWALK SHALL BE POURED CONTINUOUS ACROSS THE END BENT AND BENTS. REINFORCING STEEL SHALL NOT BE CONTINUOUS OVER END BENT OR BENT LINES. A GROOVED CONTRACTION JOINT SHALL BE PLACED IN THE EXPOSED SURFACES OF THE SIDEWALK ALONG EACH END BENT OR BENT LINE.

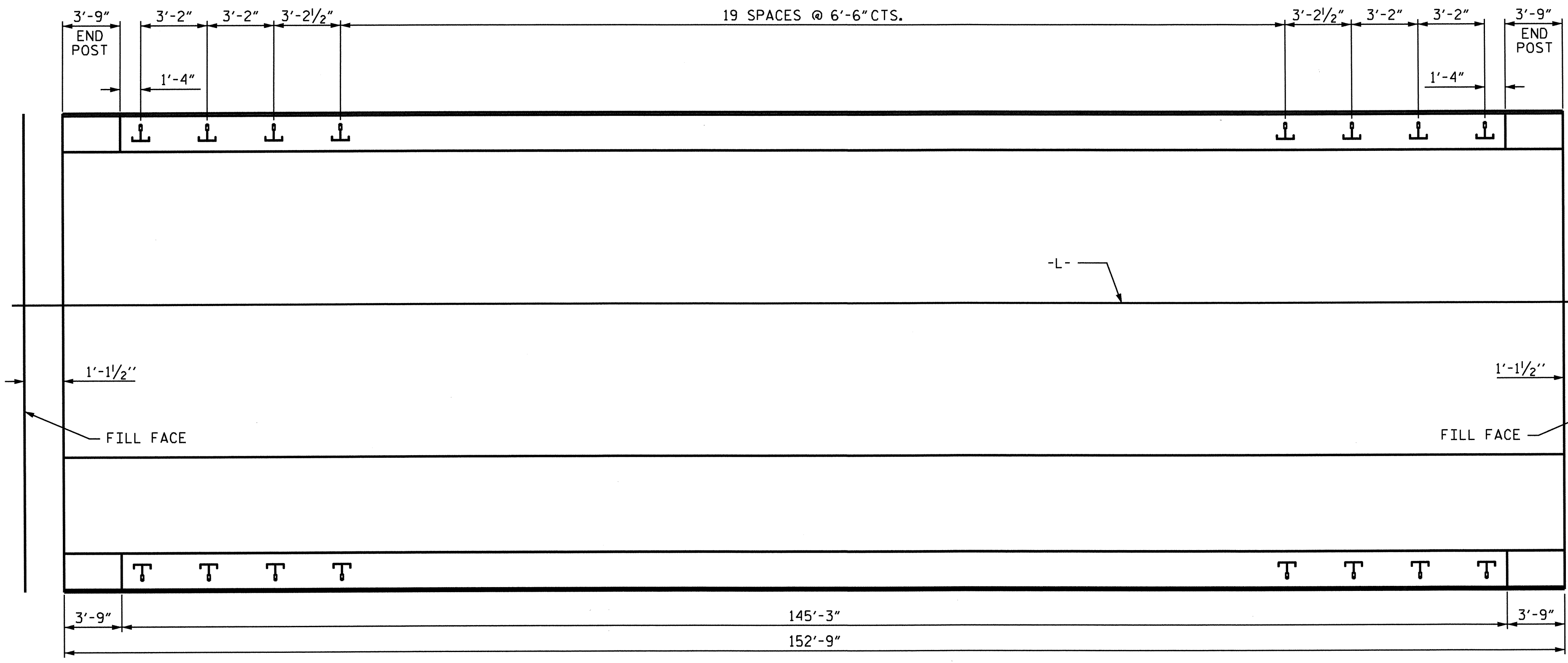


SHEET 1 OF 5

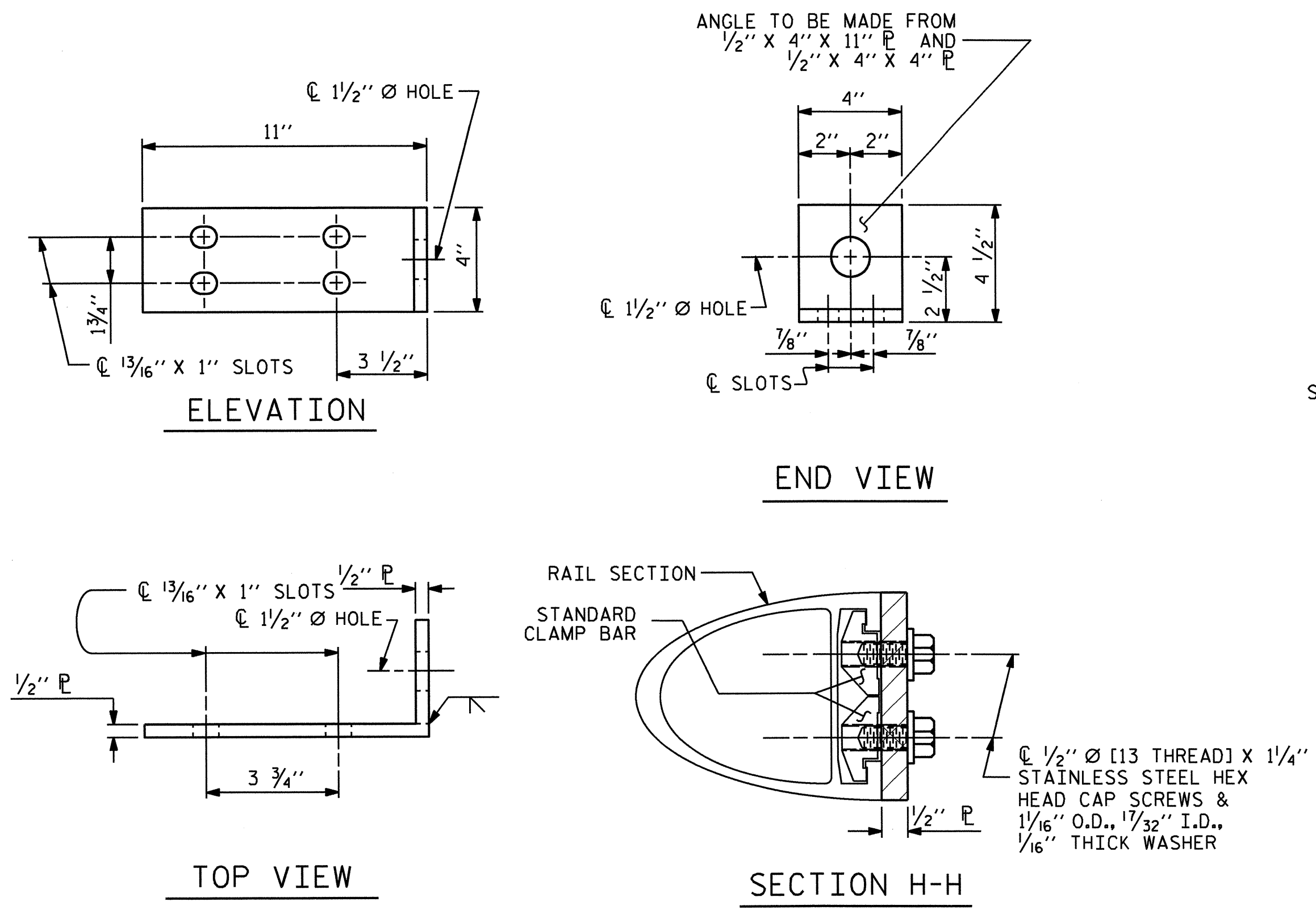
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE END POSTS & PARAPET DETAILS FOR TWO BAR METAL RAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. **S-9**
 TOTAL SHEETS **27**

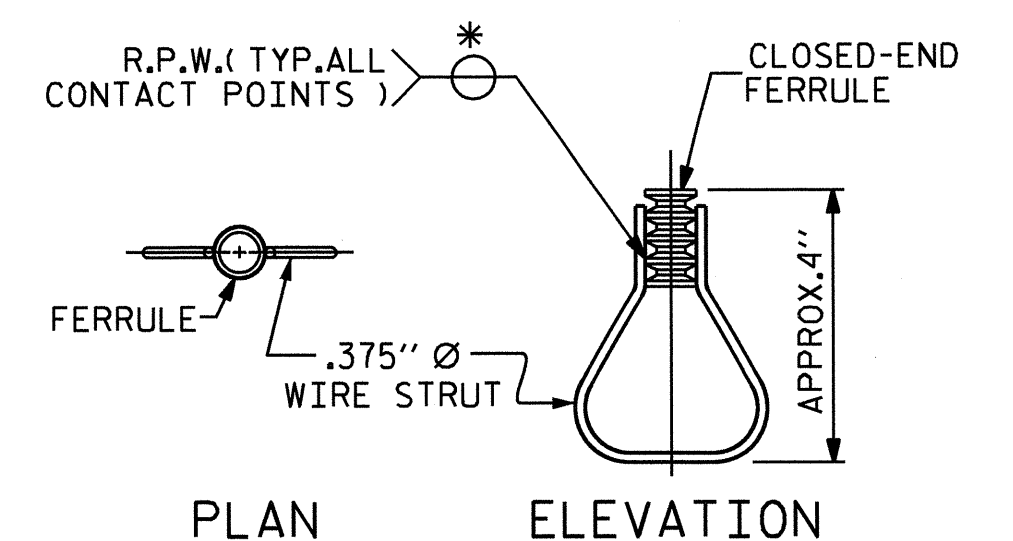
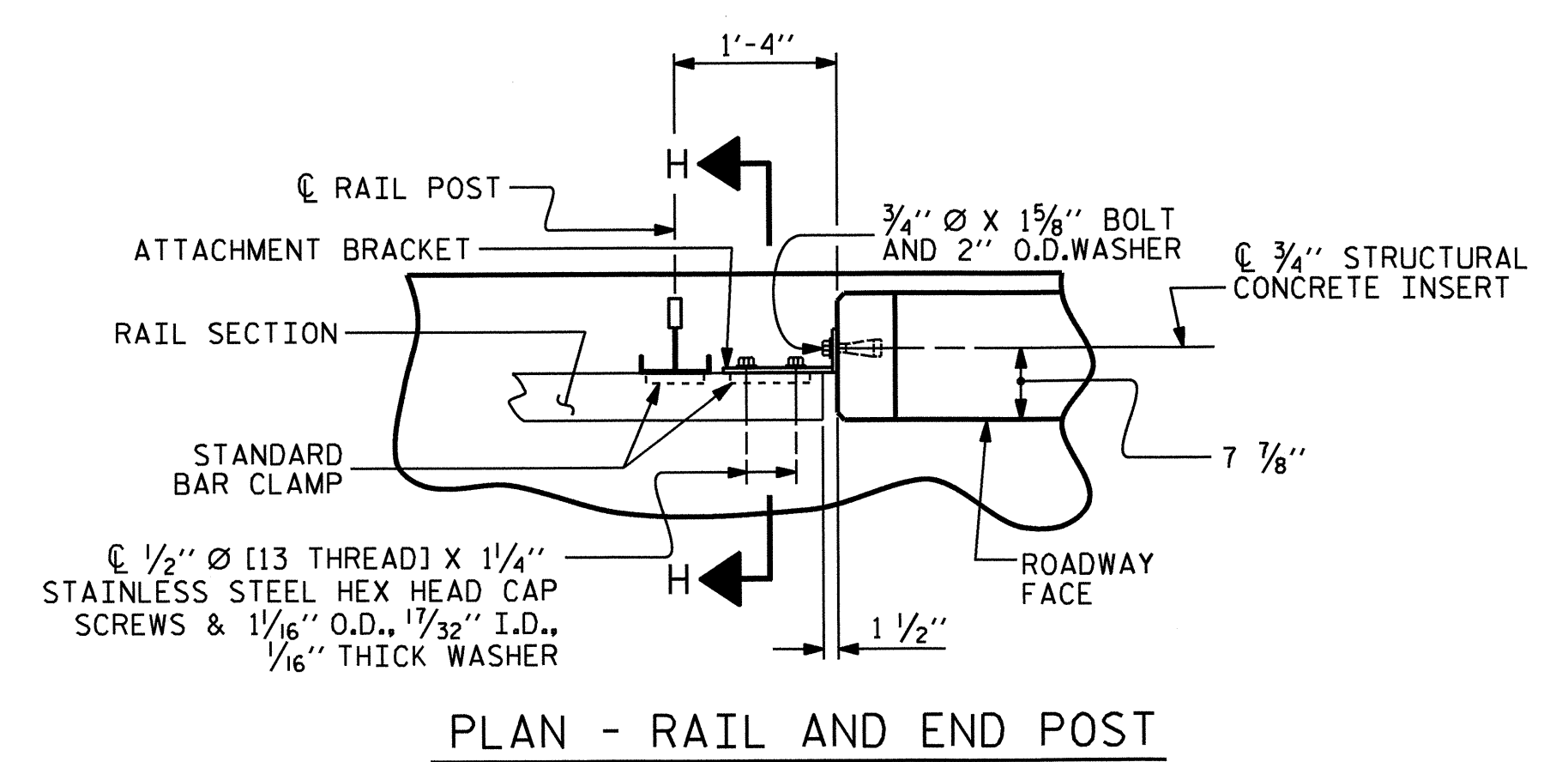
DRAWN BY: Keith D. Layne DATE: 1/27/10
 CHECKED BY: M. K. BEARD DATE: 3/26/10



PLAN OF RAIL POST SPACINGS
ALL DIMENSIONS SHOWN ARE TYPICAL FOR EACH SIDE



DETAILS FOR ATTACHING METAL RAIL TO END POST

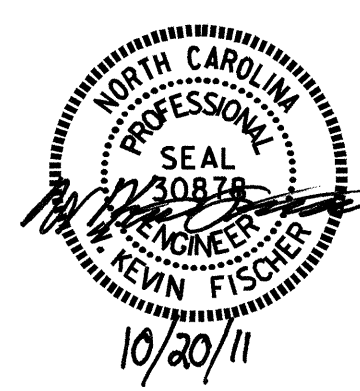


STRUCTURAL CONCRETE INSERT

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

PROJECT NO. B-4050
CABARRUS COUNTY
STATION: 26+65.50 -L-

SHEET 2 OF 5



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

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10	
1			3			TOTAL SHEETS 27	
2			4				

ASSEMBLED BY : Keith D. Loyne	DATE : 01/27/10
CHECKED BY : M. K. BEARD	DATE : 3/26/10
DRAWN BY : FCJ 1/88	REV. 10/17/00 LES/RDR
CHECKED BY : CRK 3/89	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

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 SPLICED 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 AND SIDEWALK 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.

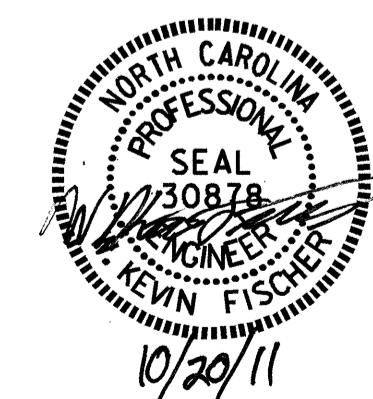
PAY LENGTH = 290.50 LIN. FT.

PROJECT NO. B-4050
CABARRUS COUNTY
 STATION: 26+65.50 -L-

SHEET 3 OF 5

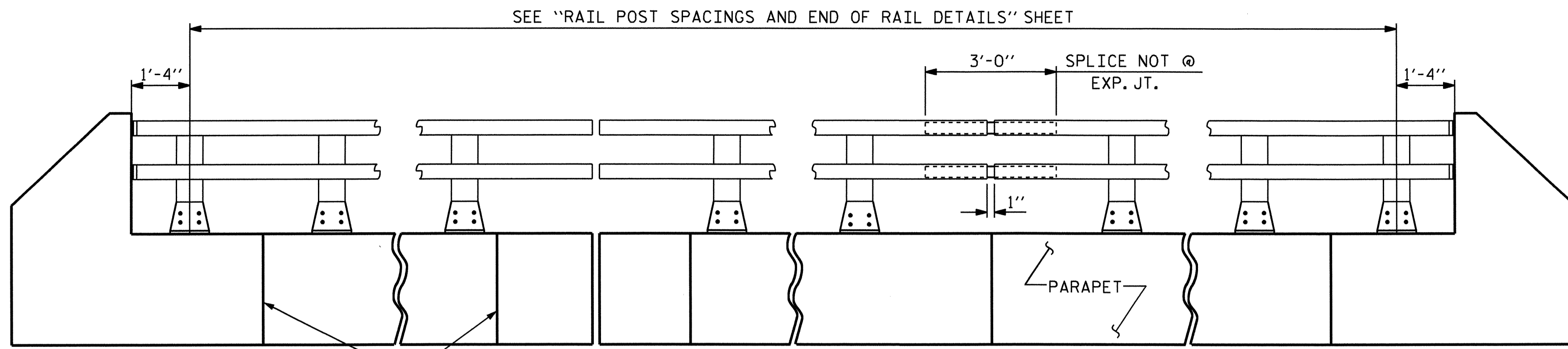
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

2 BAR METAL RAIL



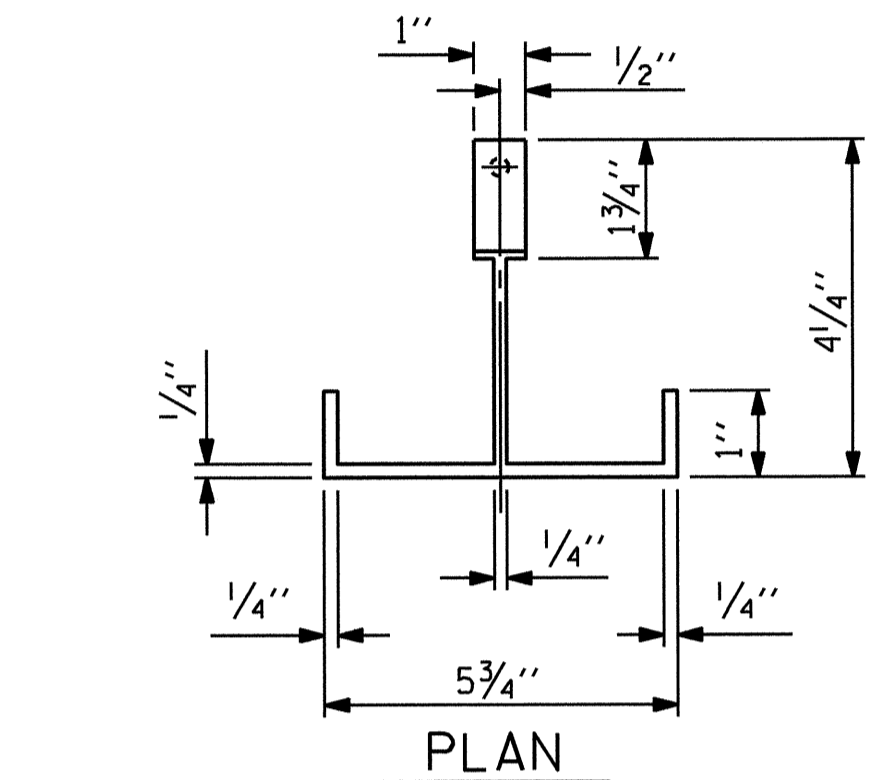
REVISIONS						SHEET NO. S-11
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 27
2			4			

STD. NO. BMR3

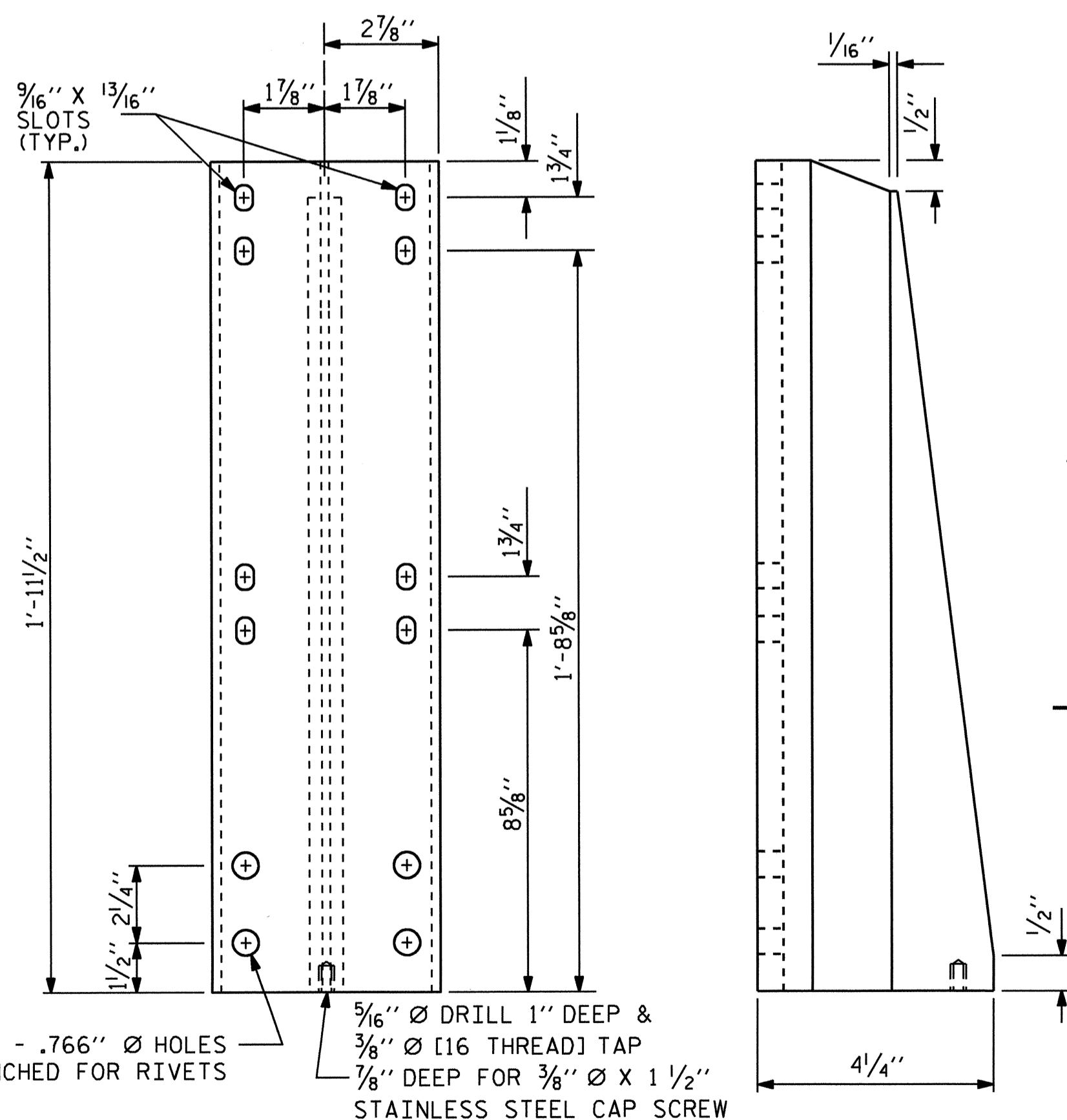


ELEVATION

NOTE: FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET TITLED "RAIL POST SPACINGS AND END OF RAIL DETAILS".



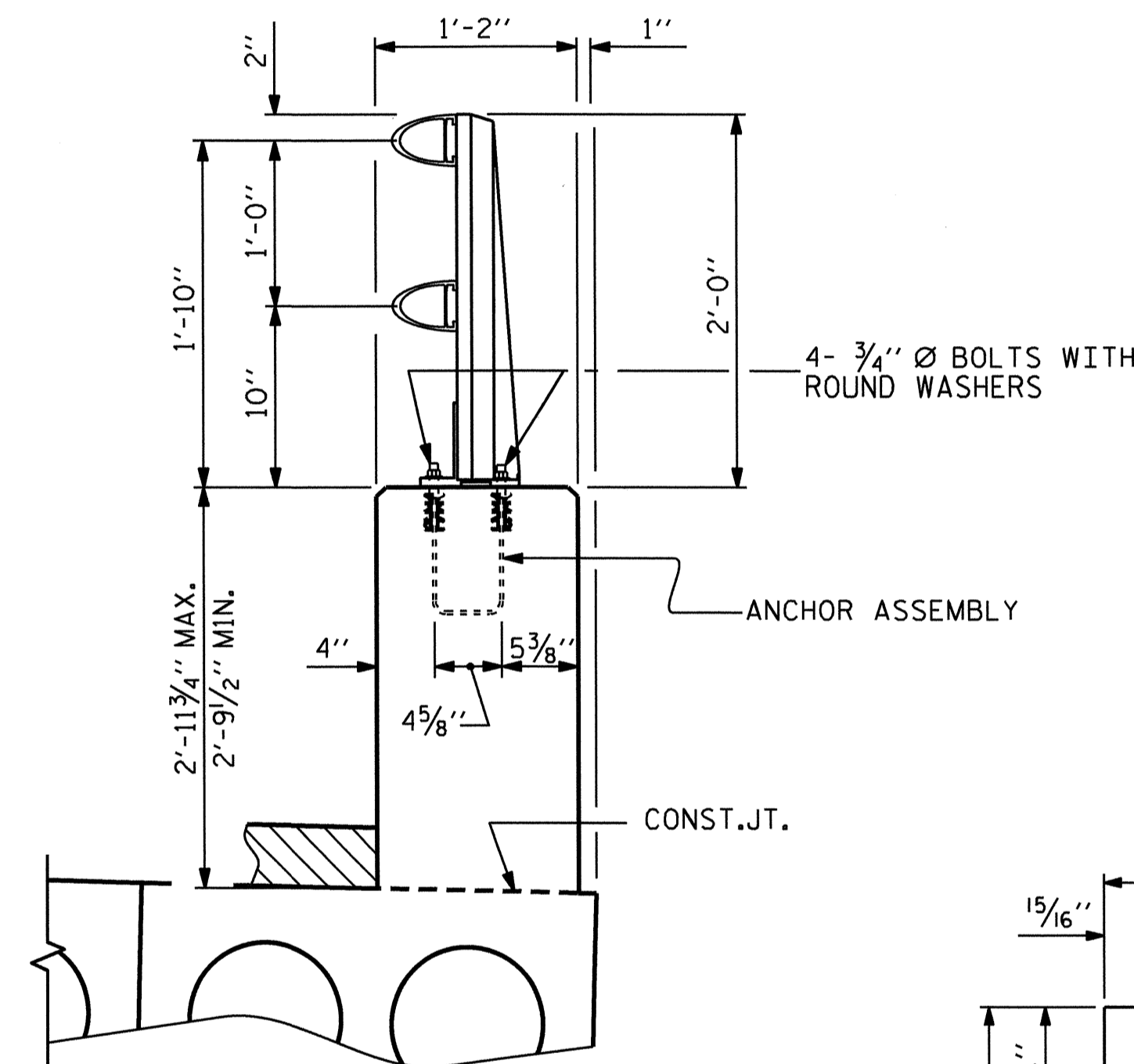
PLAN



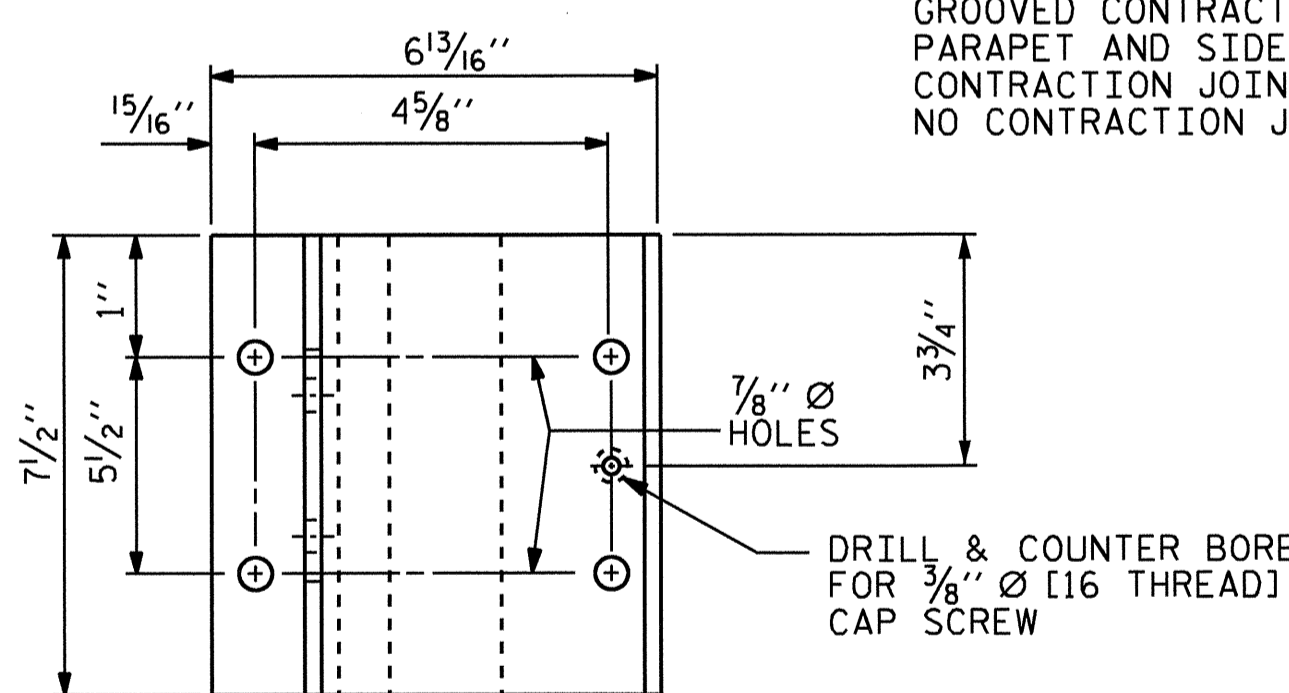
FRONT ELEVATION

SIDE ELEVATION

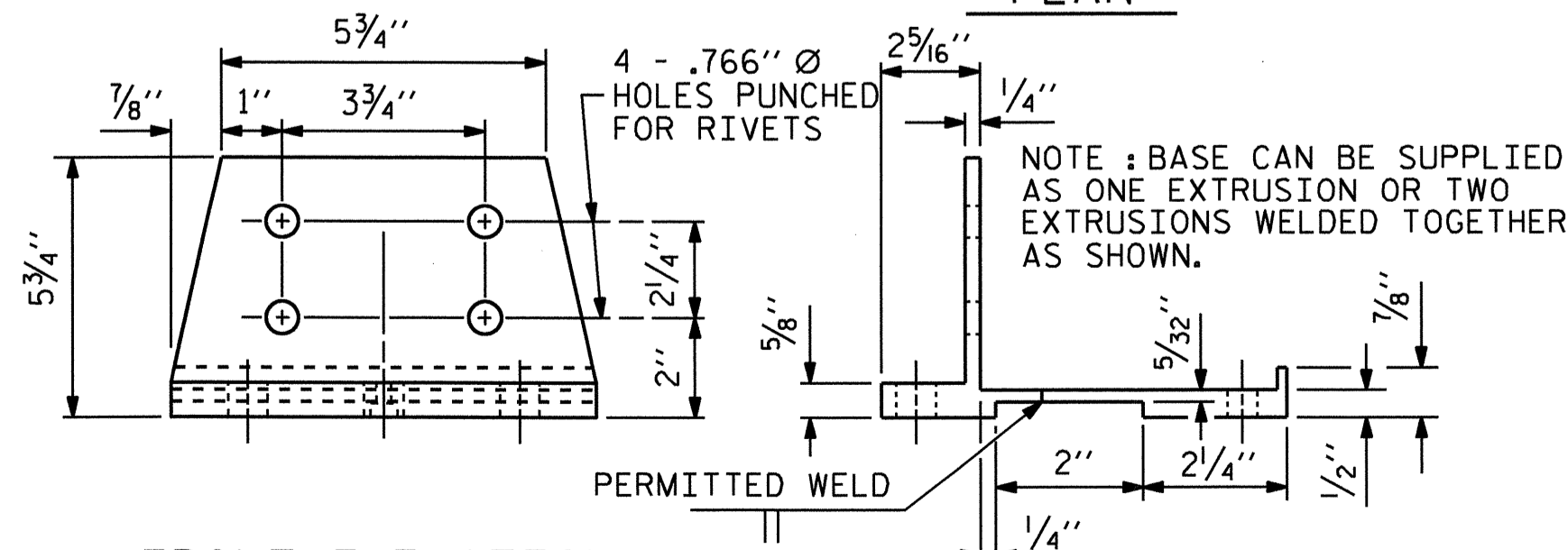
DETAILS OF POST



SECTION THRU PARAPET AND RAIL



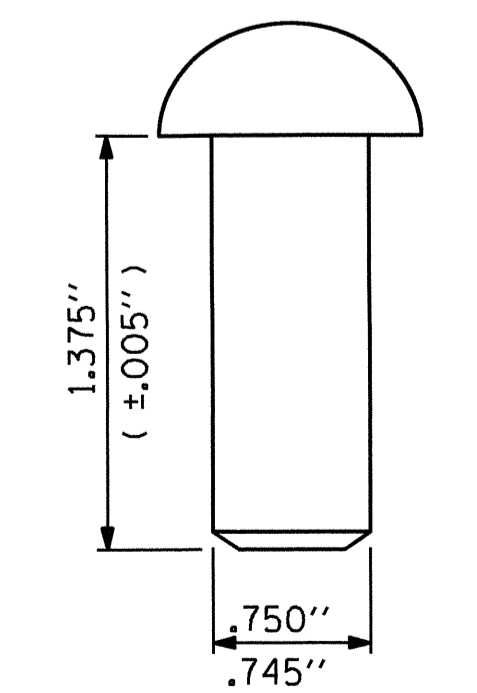
PLAN



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



RIVET DETAIL

ASSEMBLED BY : Keith D. Loyne	DATE : 01/27/10
CHECKED BY : M. K. BEARD	DATE : 3/26/10
DRAWN BY : EEM 6/94	REV. 10/17/00 LES/RDR
CHECKED BY : RGW 6/94	REV. 5/7/03R RWW/JTE
	REV. 5/1/06 TLA/GM

NOTES

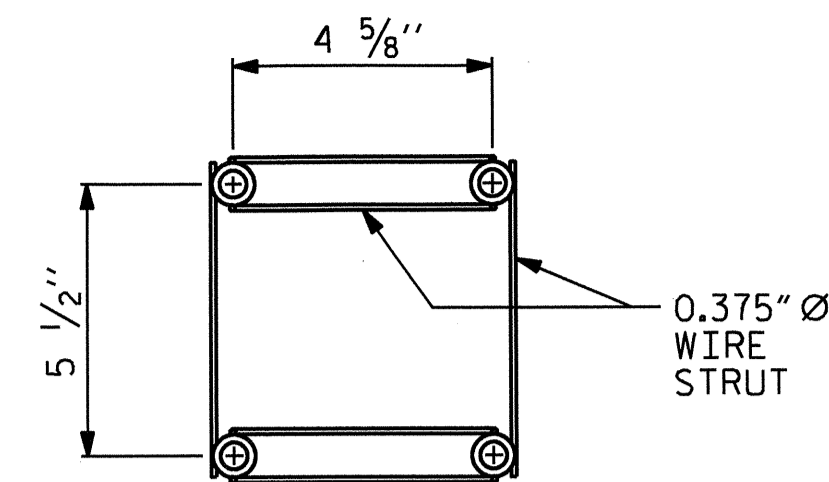
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

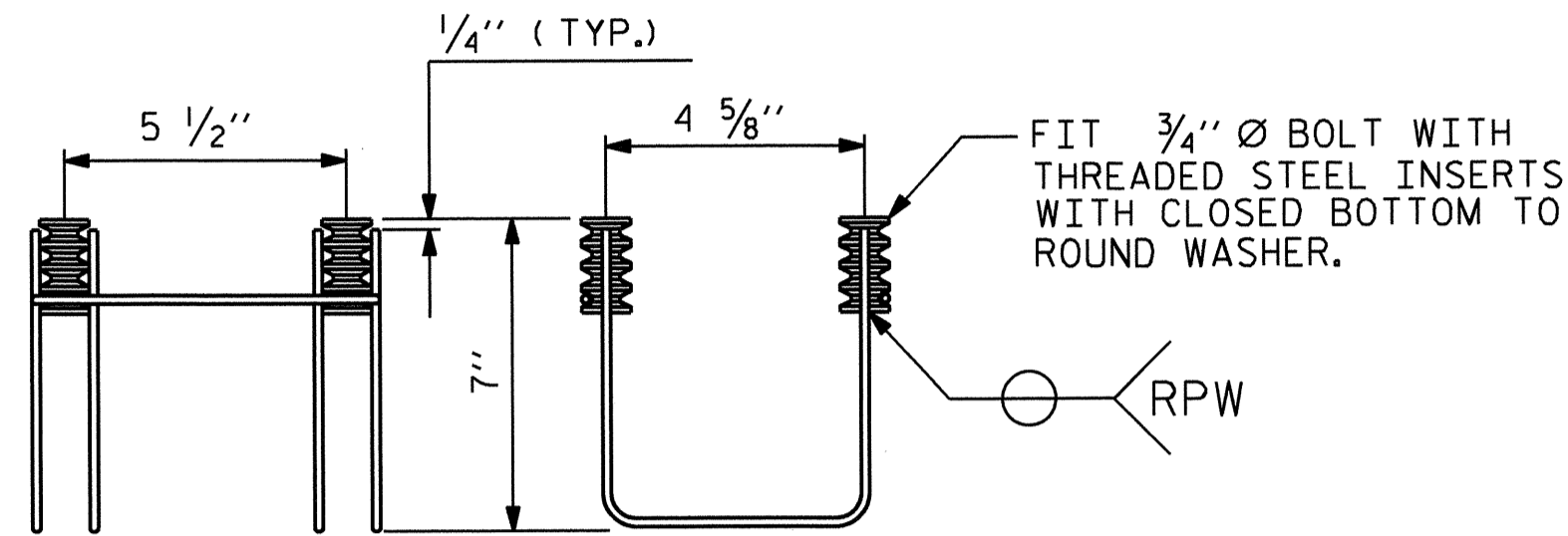
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT 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 1/16" 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 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



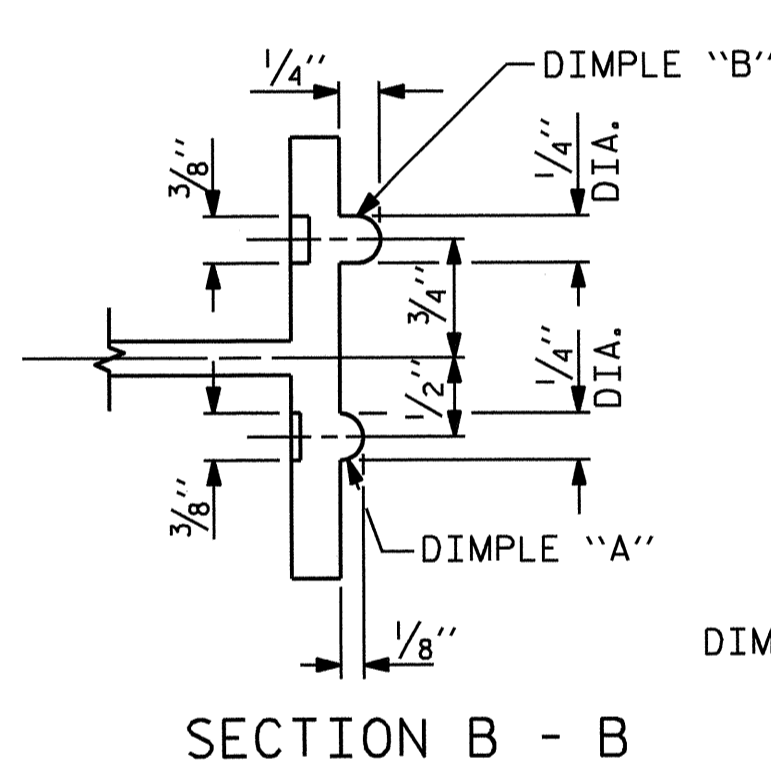
SIDE VIEW

ELEVATION

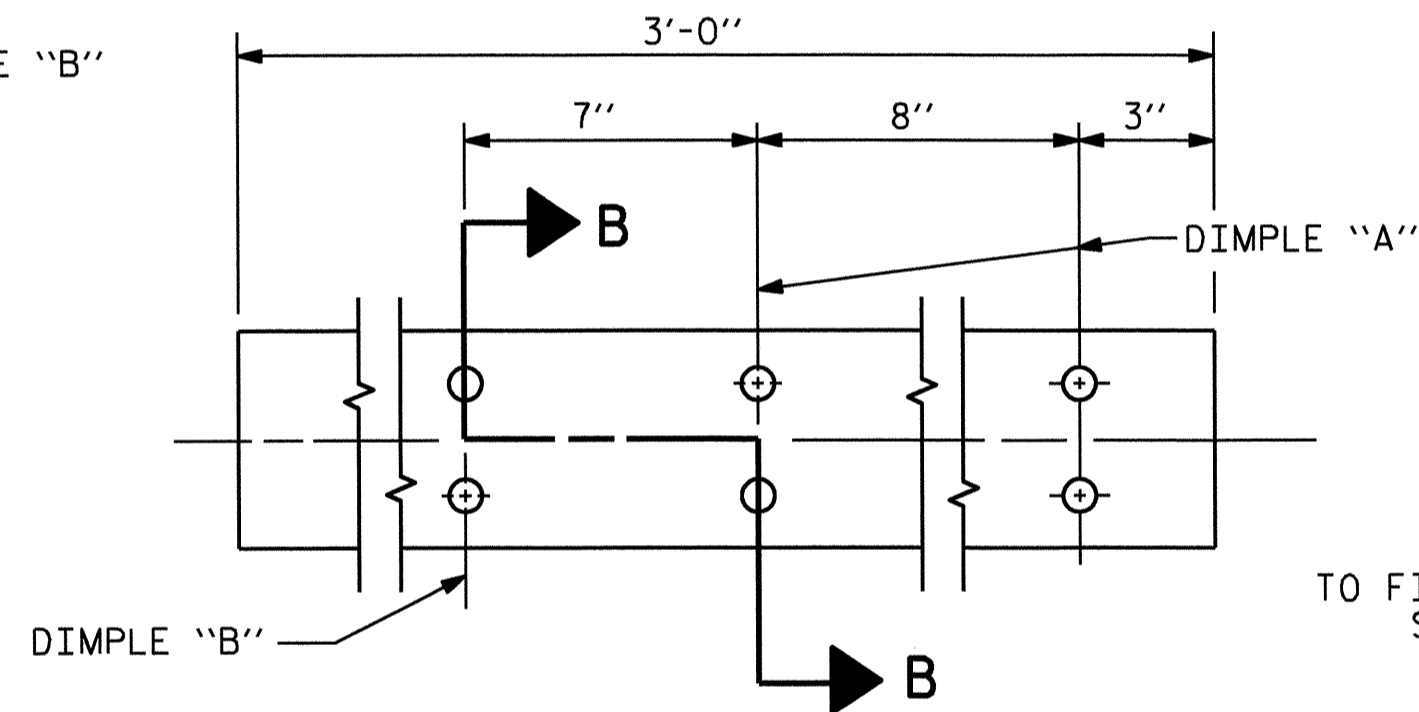
MINIMUM LENGTH OF THREADS IN INSERT (FERRULE) : 1 3/4"

4-BOLT METAL RAIL ANCHOR ASSEMBLY

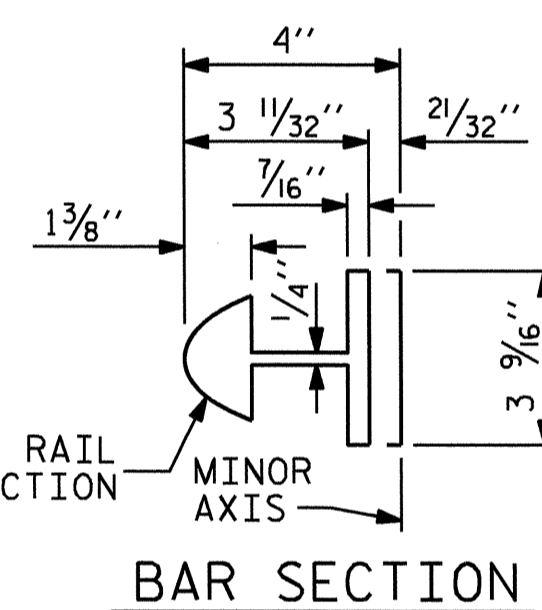
(52 ASSEMBLIES REQUIRED)



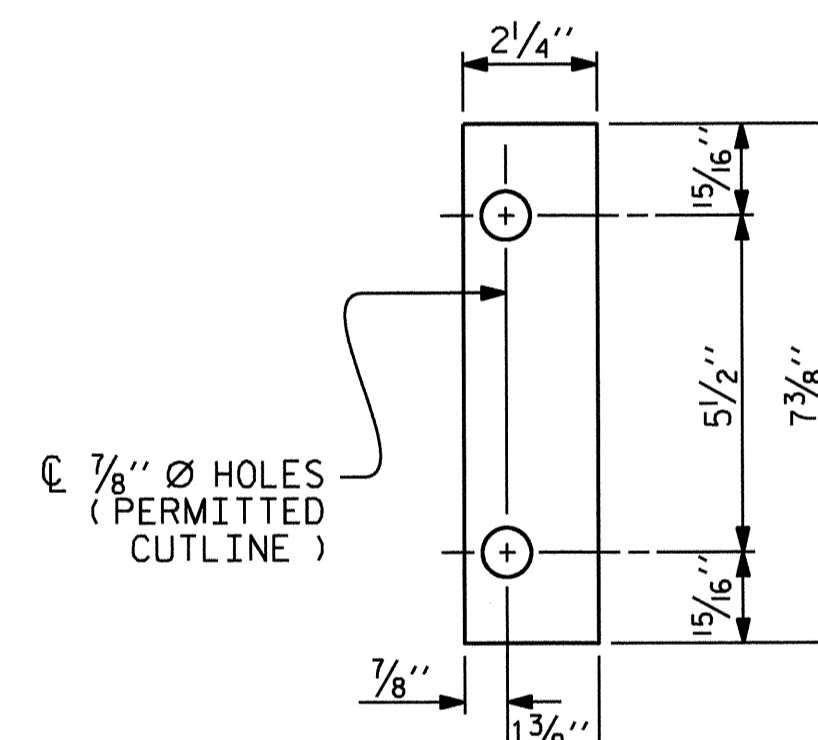
SECTION B - B



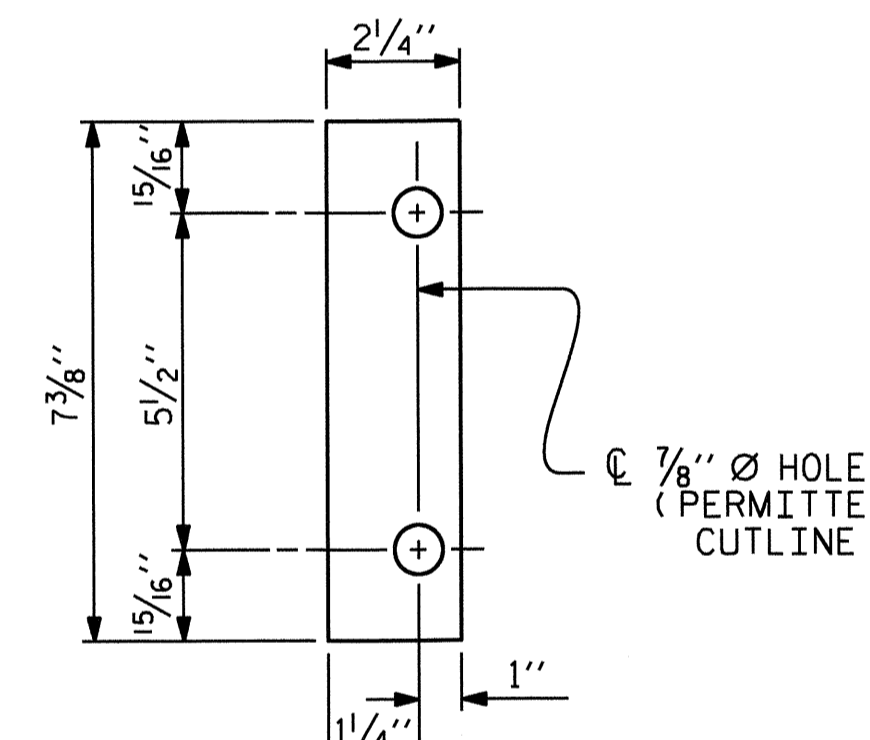
EXPANSION BAR DETAILS



BAR SECTION



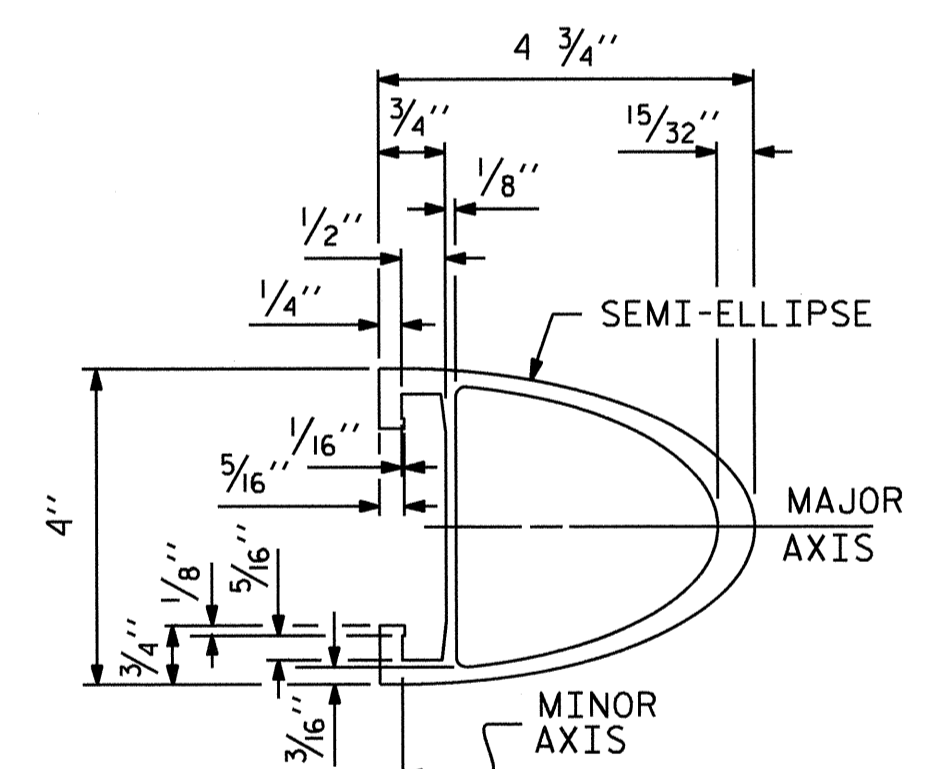
FRONT PLATE



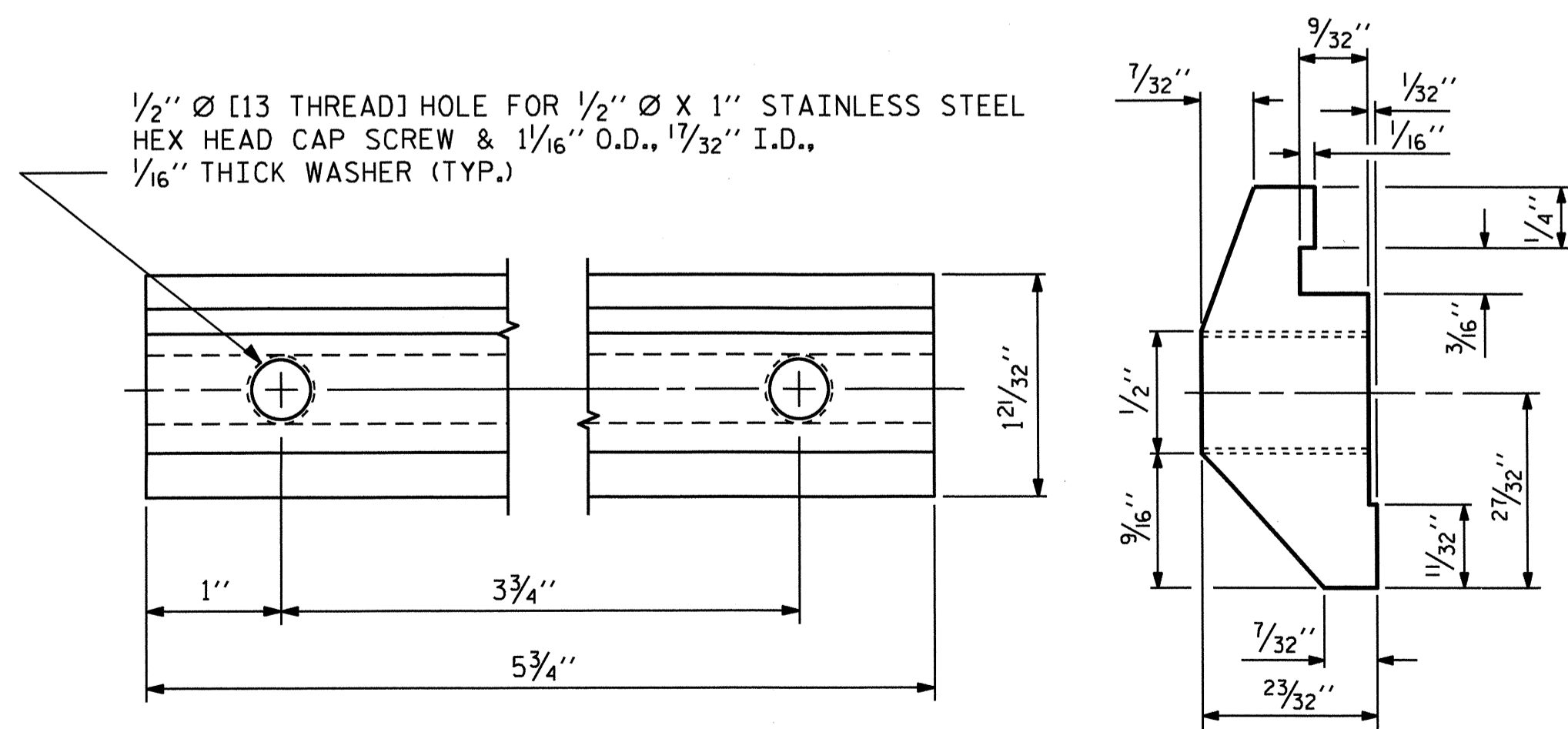
REAR PLATE

SHIM DETAILS

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

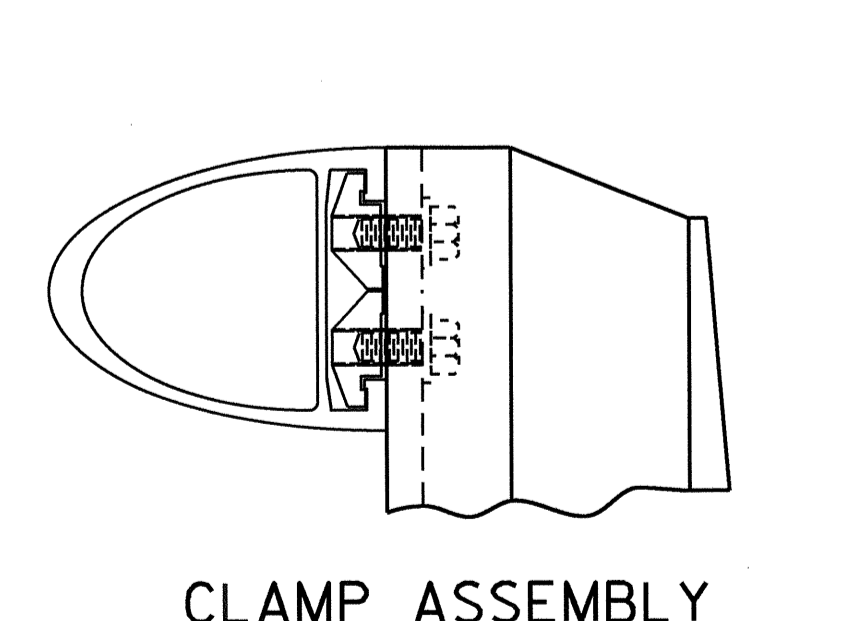


RAIL SECTION

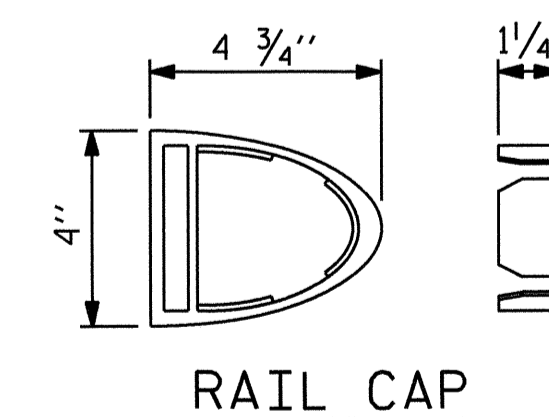


CLAMP BAR DETAIL

(4 REQUIRED PER POST)



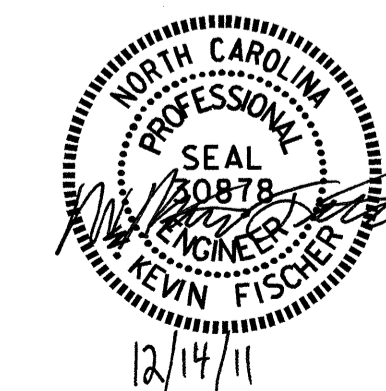
CLAMP ASSEMBLY



RAIL CAP

PROJECT NO. B-4050
CABARRUS COUNTY
 STATION: 26+65.50 -L-

SHEET 4 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 2 BAR METAL RAIL

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

STD. NO. BMR4

ASSEMBLED BY : Keith D. Layne	DATE : 01/27/10
CHECKED BY : M. K. BEARD	DATE : 3/26/10
DRAWN BY : EEM 6/94	REV. 2/6/97 EEM/RGW
CHECKED BY : RGW 6/94	REV. 8/16/99 MAB/LES
	REV. 5/1/06R KMM/GM

NOTES

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 M111.

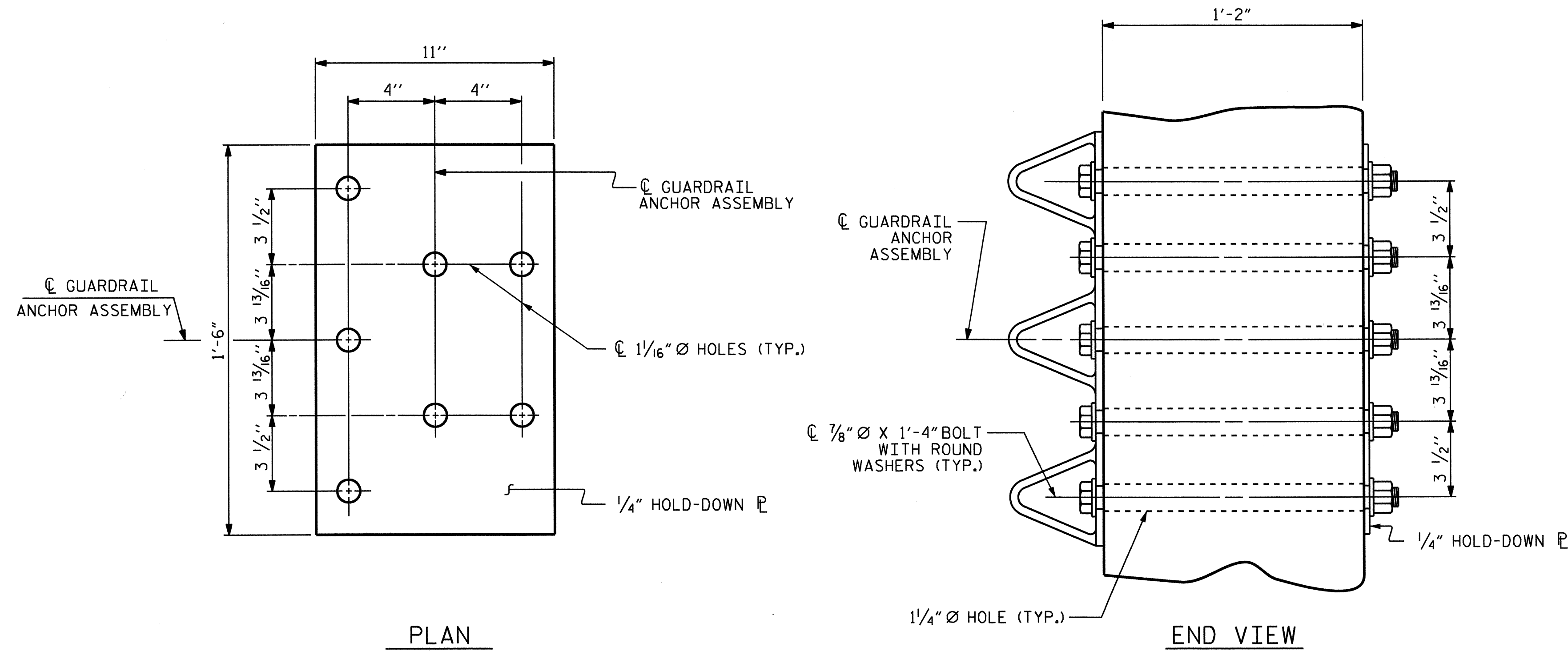
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS.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

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.

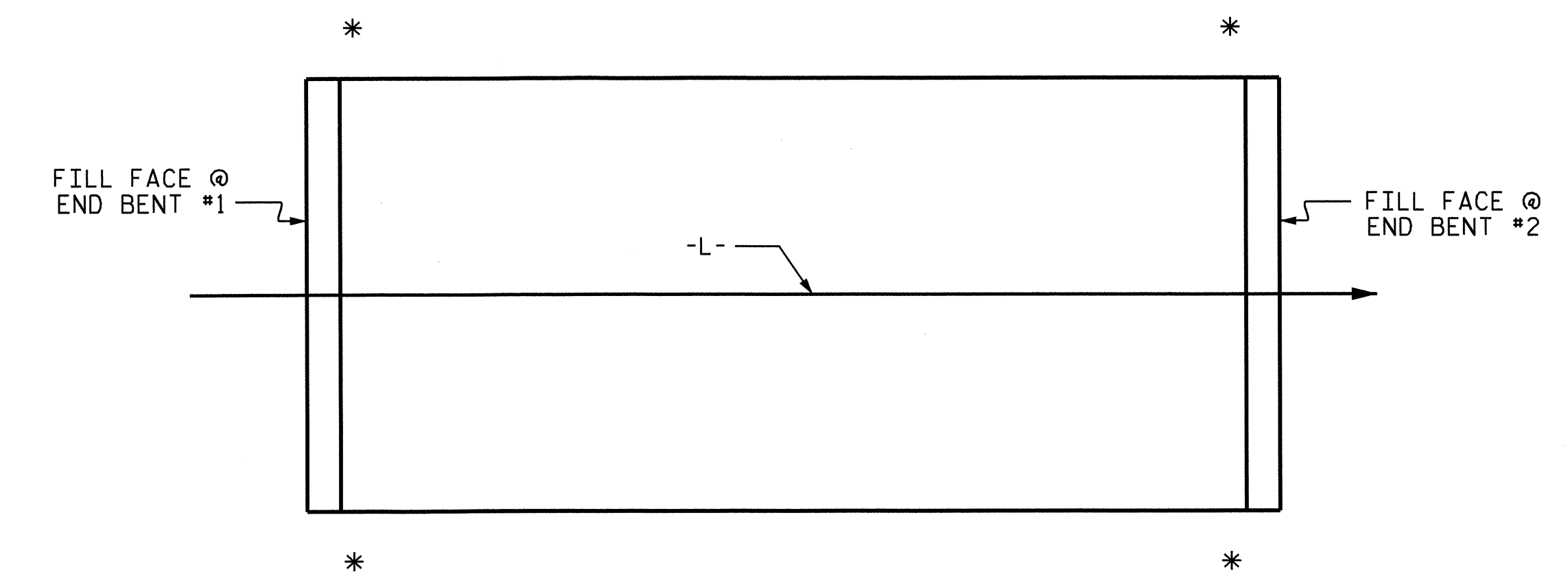
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



PLAN

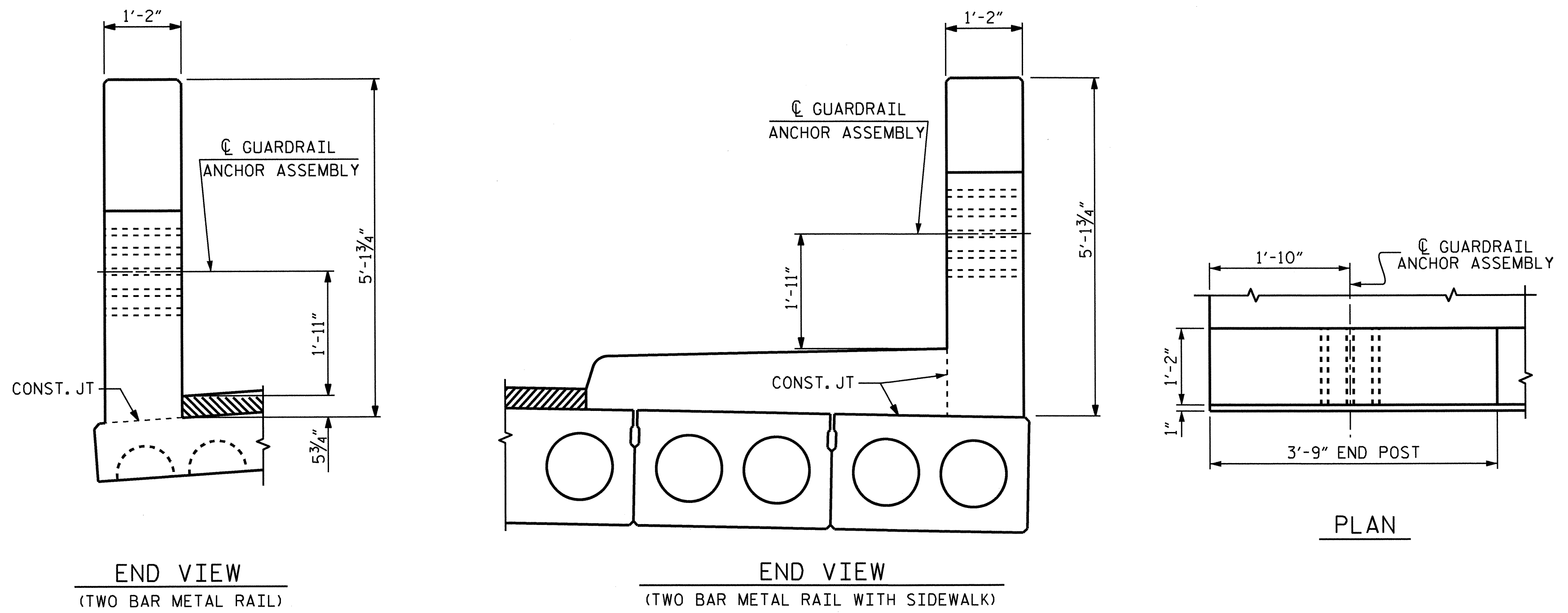
END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



END VIEW
(TWO BAR METAL RAIL)

END VIEW
(TWO BAR METAL RAIL WITH SIDEWALK)

PLAN

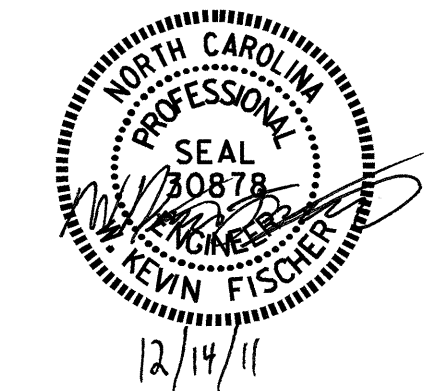
LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. B-4050
CABARRUS COUNTY
 STATION: 26+65.50 -L-

SHEET 5 OF 5

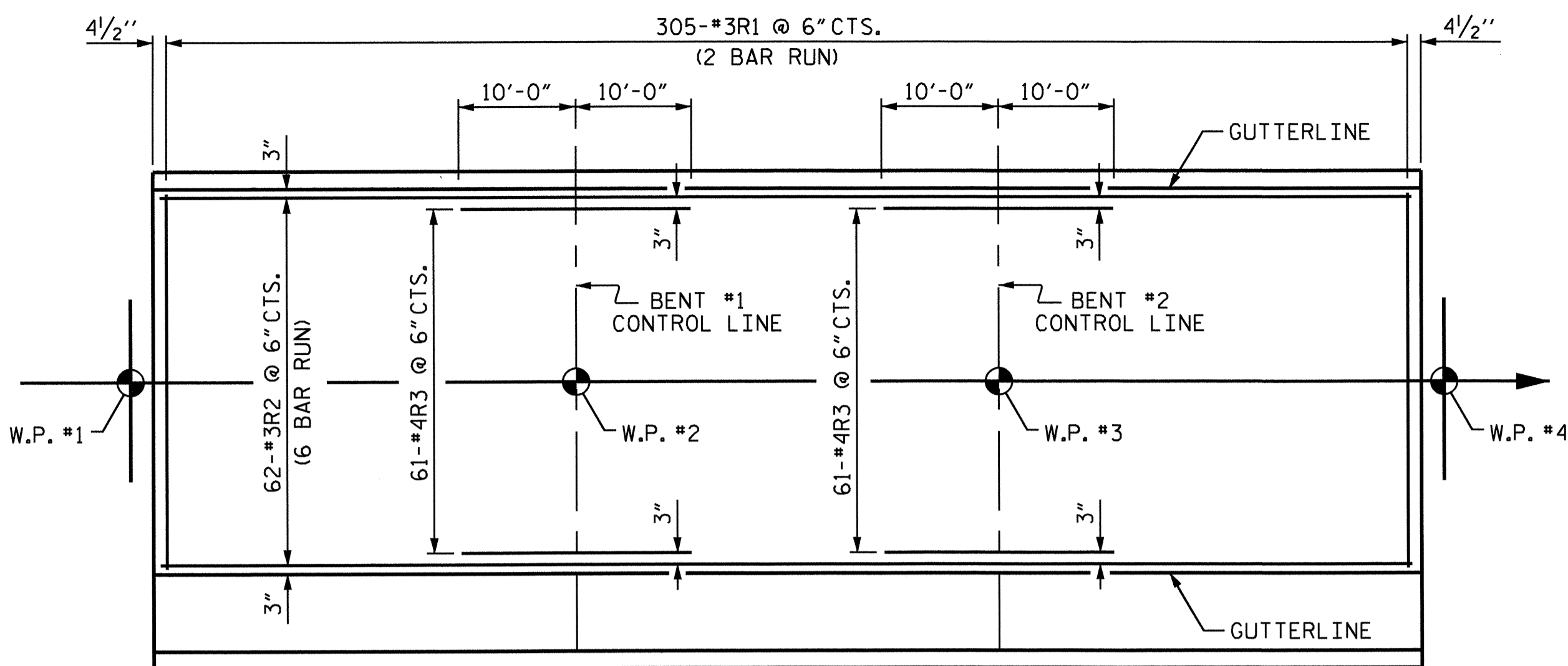
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GUARDRAIL ANCHORAGE
 DETAILS
 FOR METAL RAILS

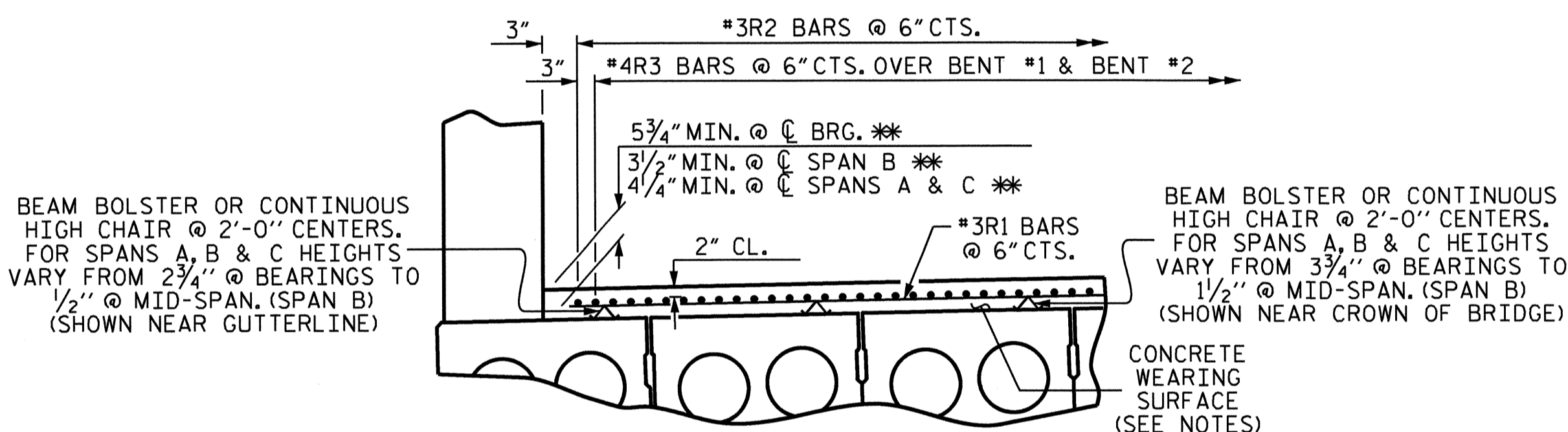


ASSEMBLED BY : Keith D. Layne	DATE : 01/27/10
CHECKED BY : M. K. BEARD	DATE : 3/26/10
DRAWN BY : EEM 6/94	REV. 10/17/00 RWW/LES
CHECKED BY : RGW 6/94	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			27

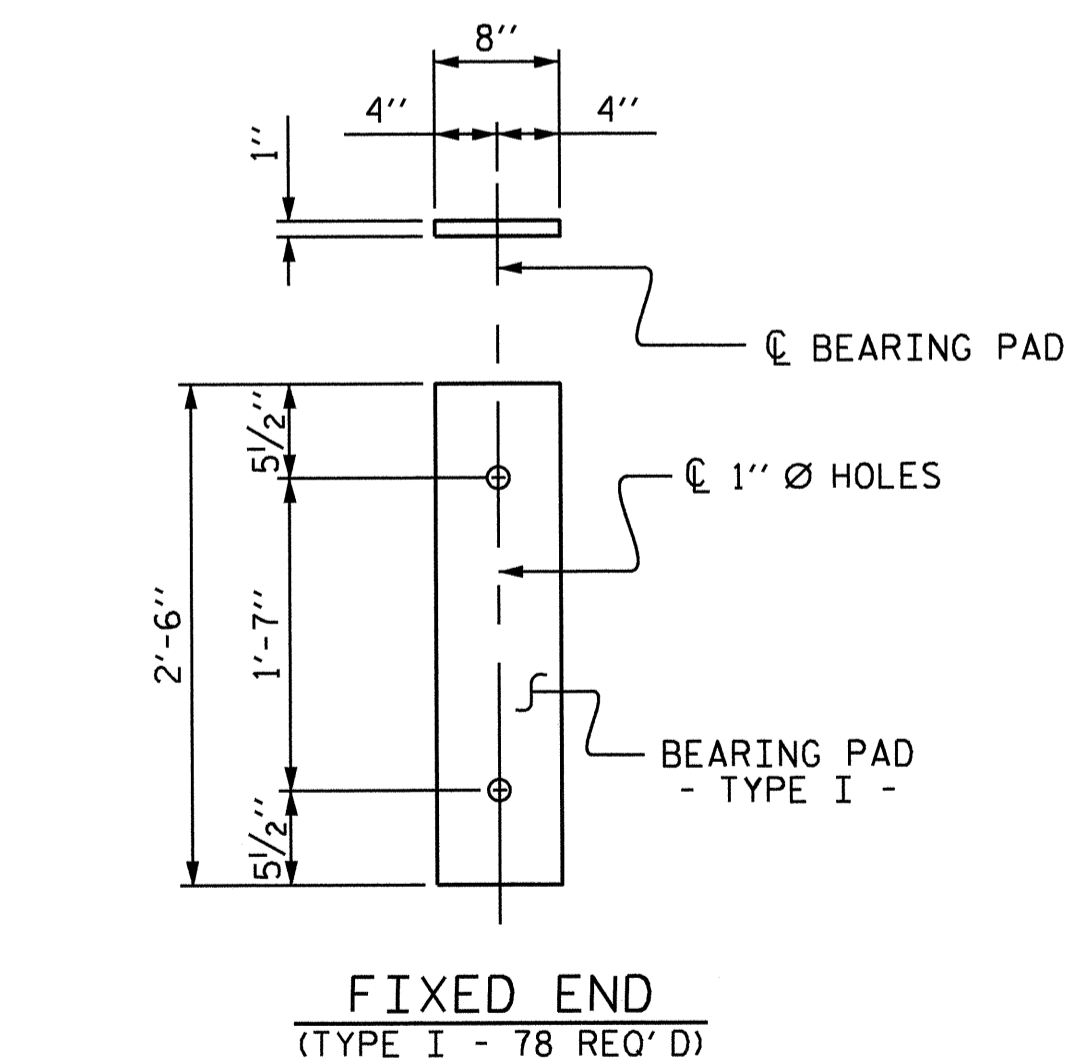


PLAN SHOWING CONCRETE WEARING SURFACE REINFORCING STEEL



REINFORCING FOR CONCRETE WEARING SURFACE

* BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS



ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

DEAD LOAD DEFLECTION AND CAMBER			
	SPAN A	SPAN B	SPAN C
	0.6" Ø L.R. STRAND	0.6" Ø L.R. STRAND	0.6" Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	1 7/8" ↑	2 13/16" ↑	1 7/8" ↑
DEFLECTION DUE TO DEAD LOAD	7/16" ↓	9/16" ↓	7/16" ↓
FINAL CAMBER	1 7/16" ↑	2 1/4" ↑	1 7/16" ↑

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

SPLICE LENGTH CHART	
BAR SIZE	EPOXY COATED
#3	1'-3"

BILL OF MATERIAL FOR SIDEWALK					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B5	20	#4	STR	25'-3"	337
*B6	10	#4	STR	28'-4"	189
*G1	153	#4	STR	5'-0"	511
* EPOXY COATED REINFORCING STEEL					LBS. 1,037
CLASS AA CONCRETE					CU. YDS. 10.7

BILL OF MATERIAL FOR CONCRETE WEARING SURFACE					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*R1	610	#3	STR	16'-1"	3,689
*R2	372	#3	STR	26'-6"	3,707
*R3	122	#4	STR	20'-0"	1,630
* EPOXY COATED REINFORCING STEEL					LBS. 9,026
CONCRETE WEARING SURFACE					SO. FT. 4,735

BILL OF MATERIAL FOR PARAPET AND END POSTS					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B3	64	#5	STR	24'-0"	1,602
*B4	32	#5	STR	27'-0"	901
*E1	8	#7	STR	3'-1"	50
*E2	8	#7	STR	3'-7"	59
*E3	8	#7	STR	4'-1"	67
*E4	8	#7	STR	4'-7"	75
*E5	8	#7	STR	4'-11"	80
*F1	8	#6	STR	1'-10"	22
*F2	8	#6	STR	3'-0"	36
*F3	8	#6	STR	3'-8"	44
*S5	312	#5	1	5'-9"	1,871
* EPOXY COATED REINFORCING STEEL					4,807 LBS.
CLASS AA CONCRETE					37.7 CU. YDS.
1'-2" X 2'-9 1/2" CONCRETE PARAPET					305.50 LIN. FT.

GROOVING BRIDGE FLOORS	
BRIDGE DECK	4,268 SO. FT.
APPROACH SLABS	626 SO. FT.
TOTAL	4,894 SO. FT.

CORED SLABS REQUIRED			
SPAN A	NUMBER	LENGTH	TOTAL LENGTH
CSU I UNIT	1	48'-9 3/4"	48.81
CSU II UNIT	10	48'-9 3/4"	488.13
CSU III UNIT	1	48'-9 3/4"	48.81
CSU IV UNIT	1	48'-9 3/4"	48.81
TOTAL	13	48'-9 3/4"	634.56
SPAN B	NUMBER	LENGTH	TOTAL LENGTH
CSU I UNIT	1	54'-10 1/2"	109.75
CSU II UNIT	10	54'-10 1/2"	109.75
CSU III UNIT	1	54'-10 1/2"	109.75
CSU IV UNIT	1	54'-10 1/2"	603.63
TOTAL	13	54'-10 1/2"	713.38
SPAN C	NUMBER	LENGTH	TOTAL LENGTH
CSU I UNIT	1	48'-9 3/4"	48.81
CSU II UNIT	10	48'-9 3/4"	488.13
CSU III UNIT	1	48'-9 3/4"	48.81
CSU IV UNIT	1	48'-9 3/4"	48.81
TOTAL	13	48'-9 3/4"	634.56
TOTAL LENGTH (SPAN A, B & C)	39		1982.50

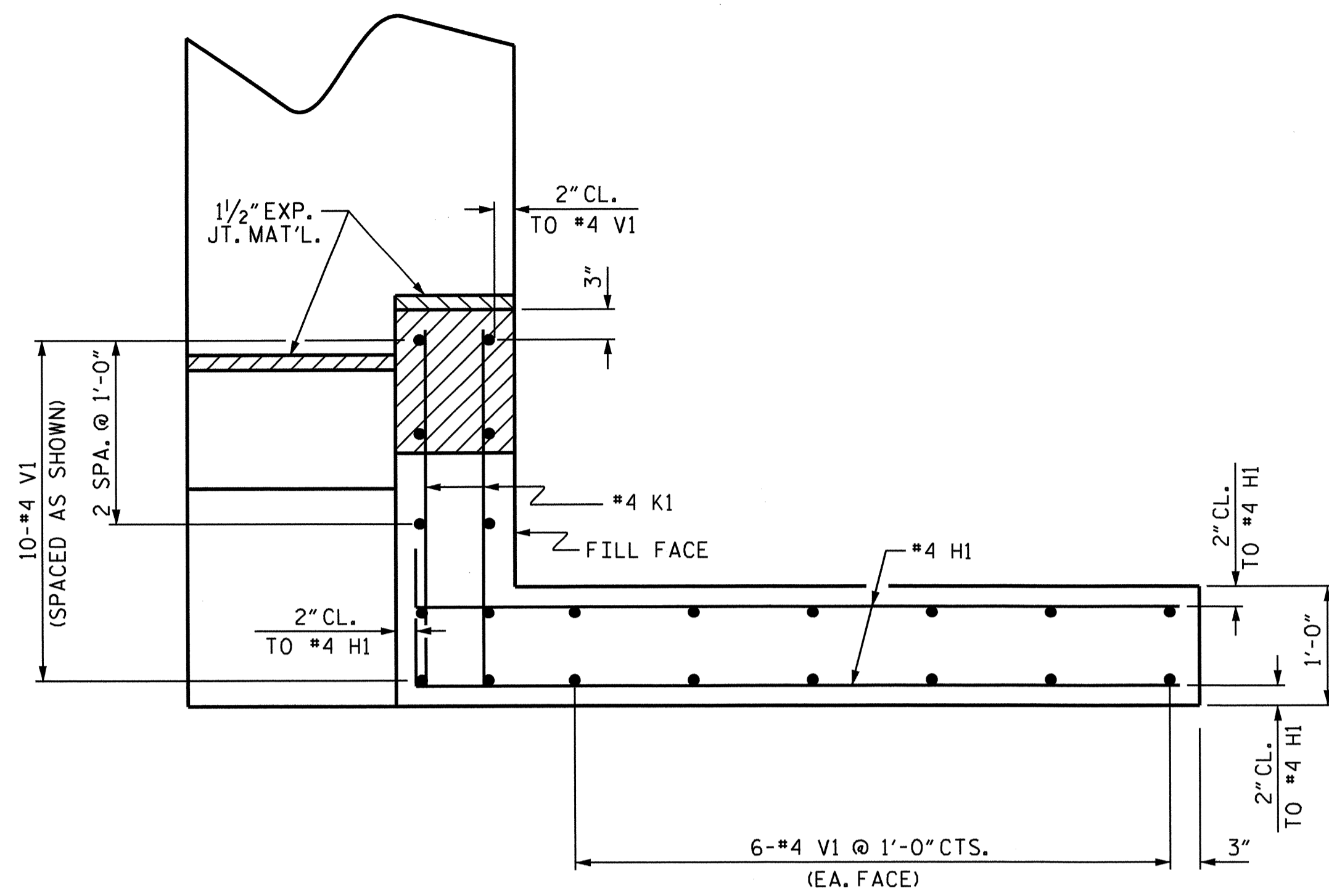
PROJECT NO. B-4050
CABARRUS COUNTY
 STATION: 26+65.50 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

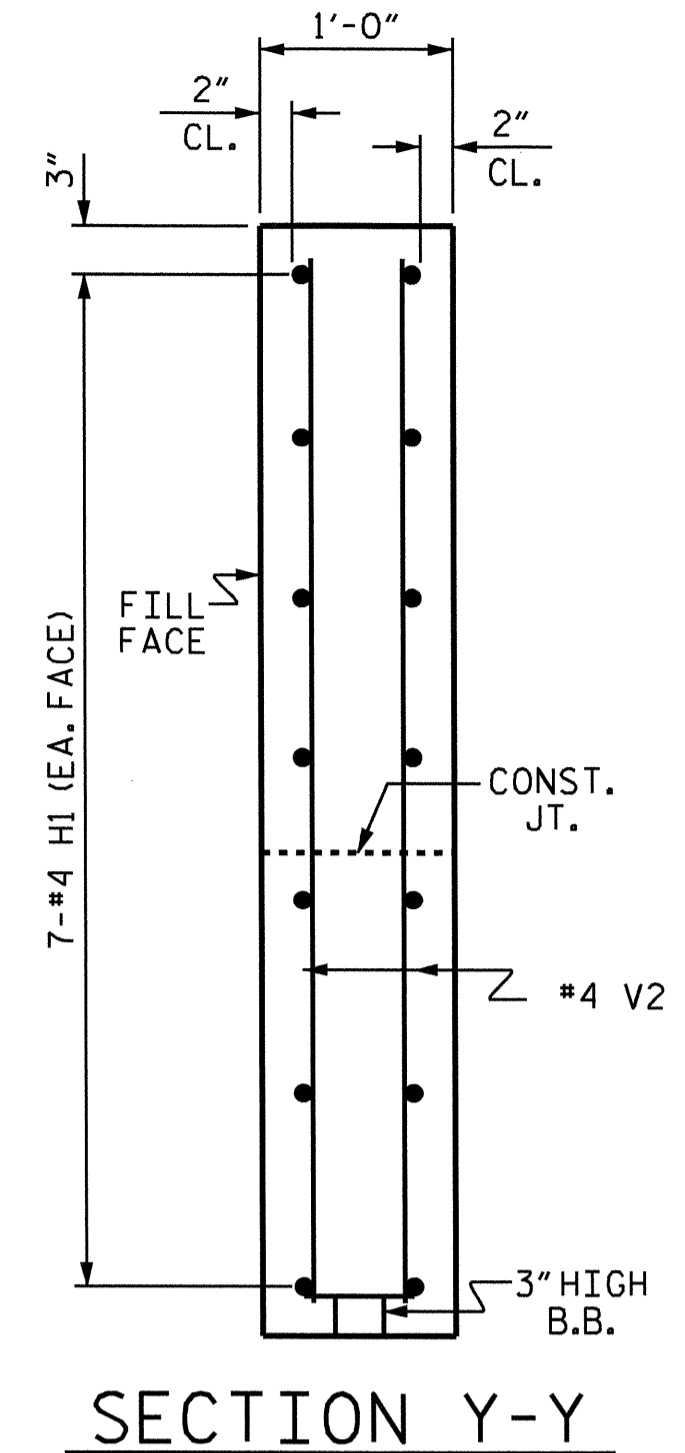
3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-14
1			3			TOTAL SHEETS 27
2			4			

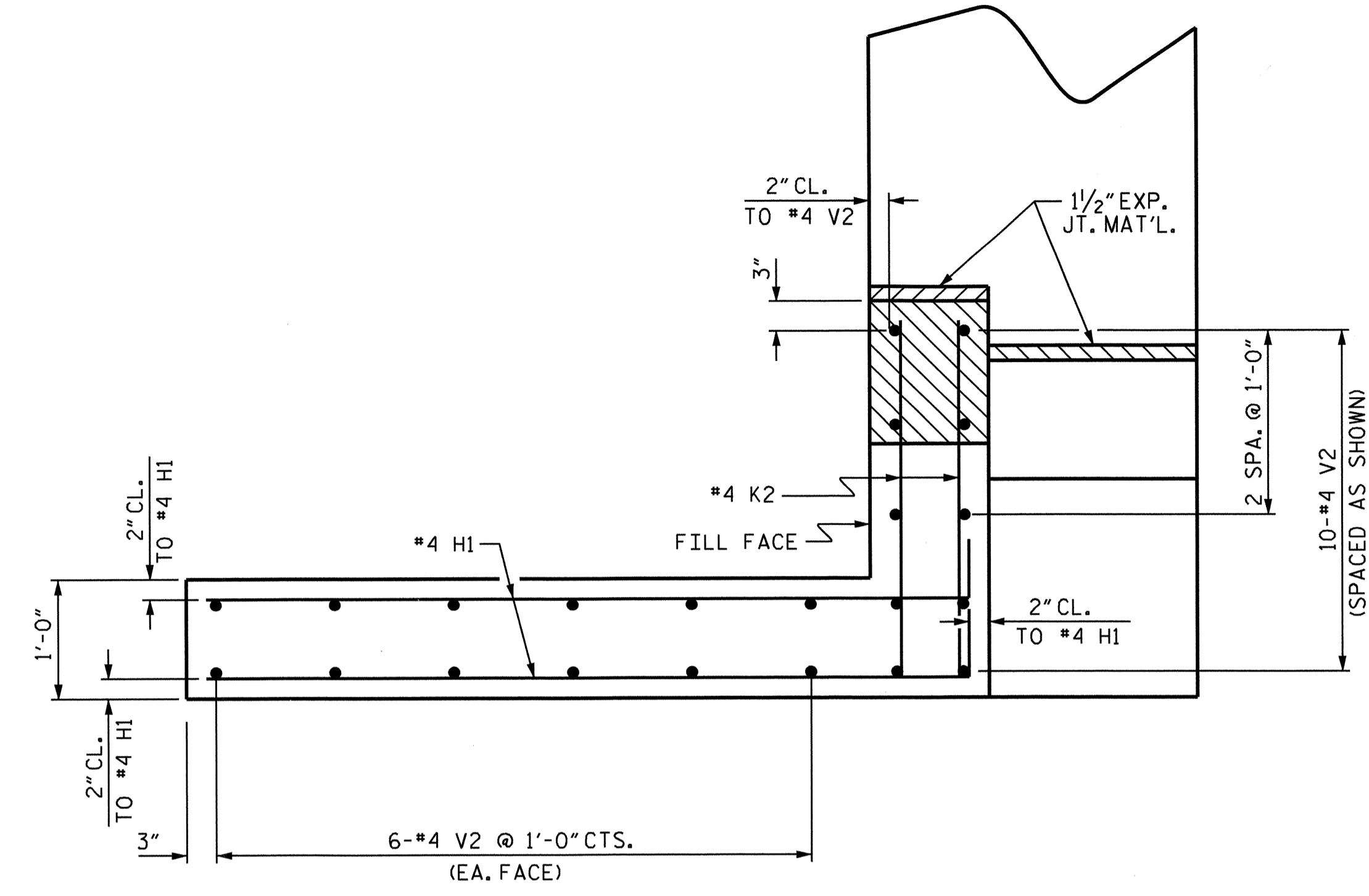
ASSEMBLED BY : Keith D. Loyne DATE : 01/27/10
 CHECKED BY : M. K. BEARD DATE : 3/26/10
 DRAWN BY : WJH 4/89 REV. 7/10/01 RWW/LES
 CHECKED BY : FCJ 5/89 REV. 5/7/03RRR RWW/JTE
 REV. 5/1/06 TLA/GM



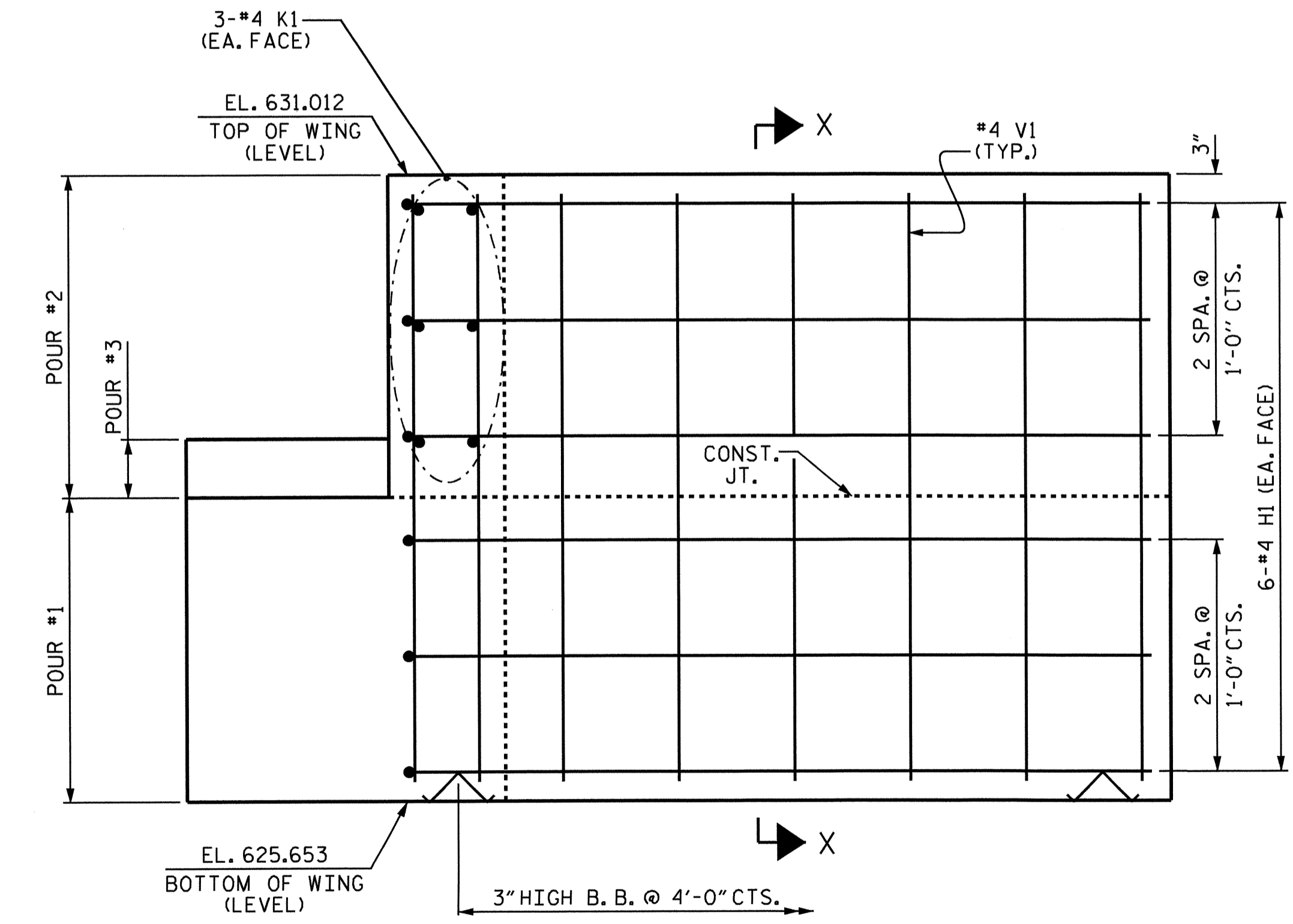
PLAN OF WING-W1



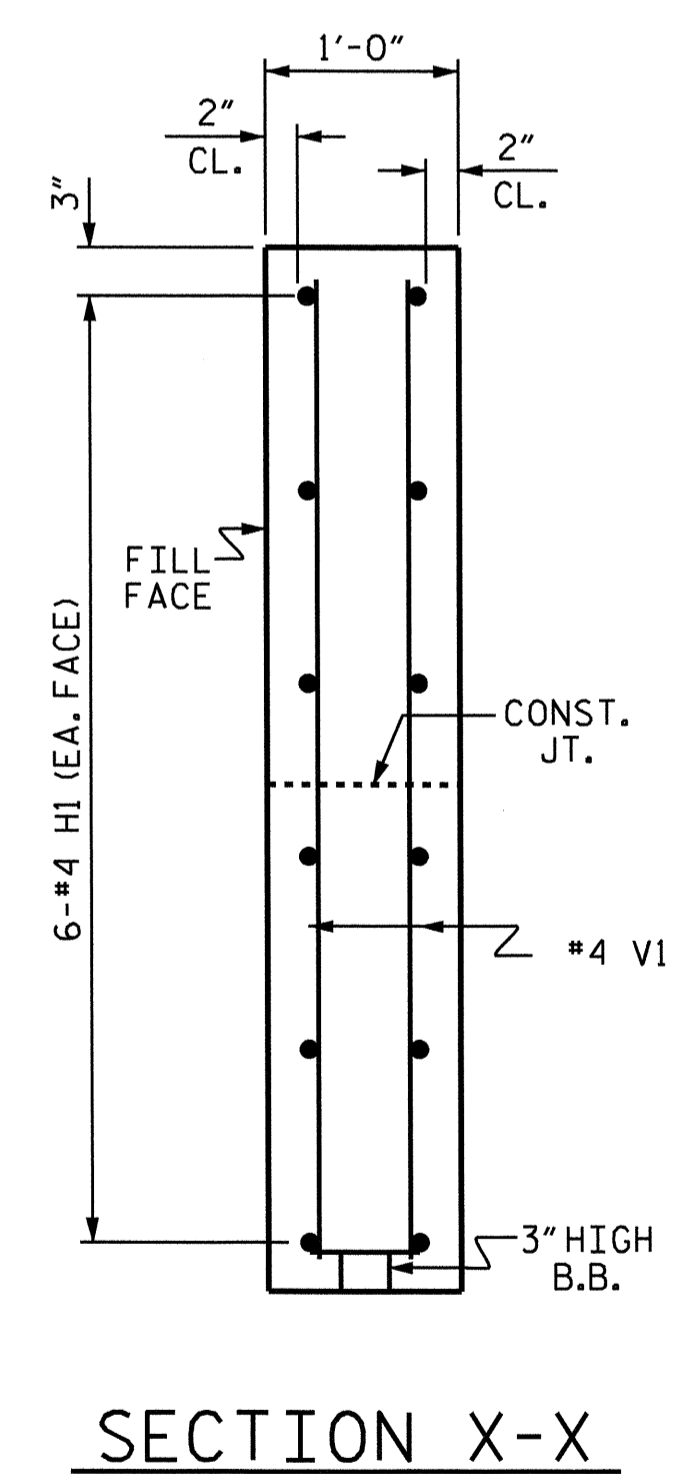
SECTION Y-Y



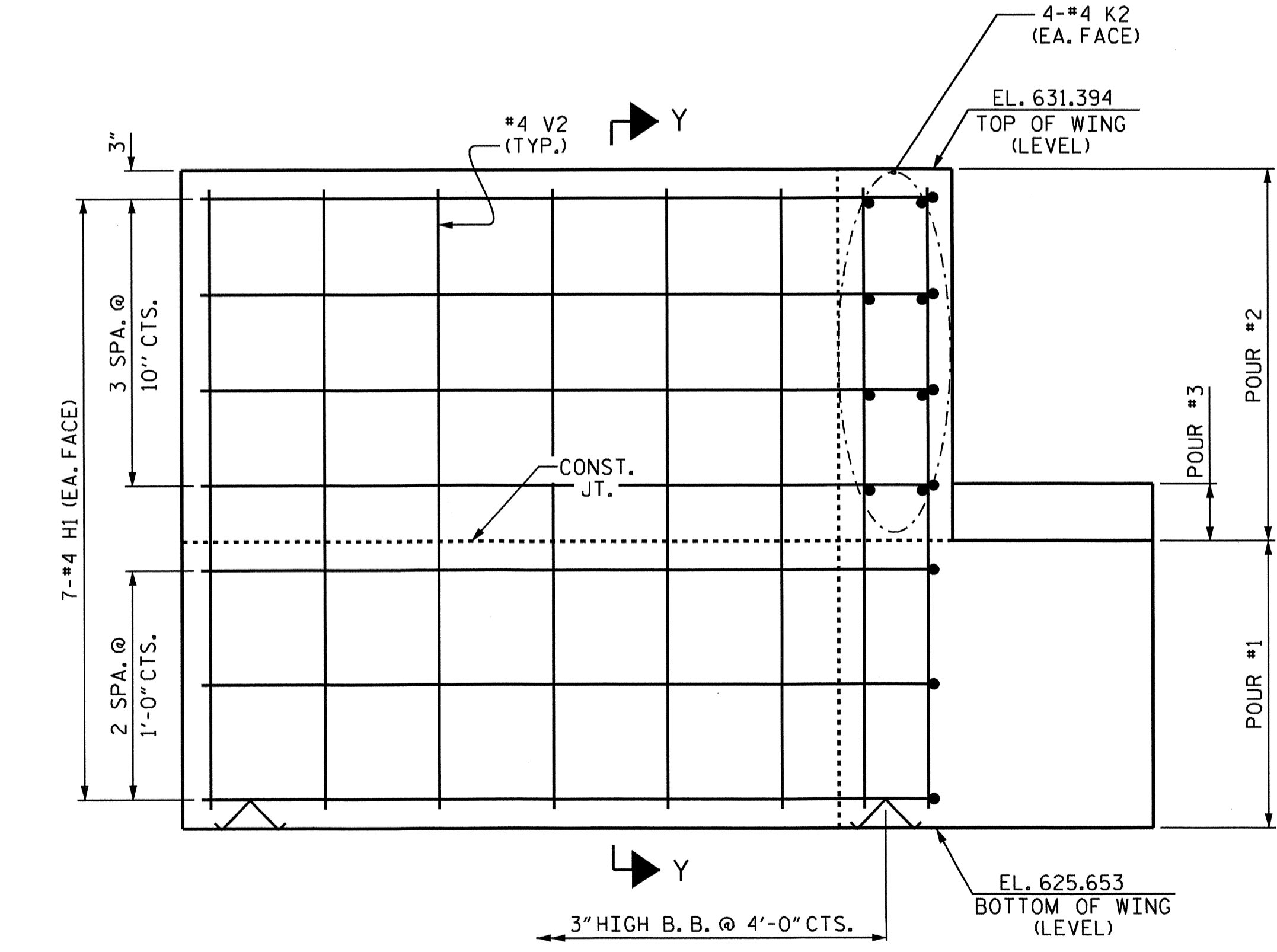
PLAN OF WING-W2



ELEVATION OF WING-W1



SECTION X-X



ELEVATION OF WING-W2

PROJECT NO. B-4050
 CABARRUS COUNTY
 STATION: 26+65.50 -L-

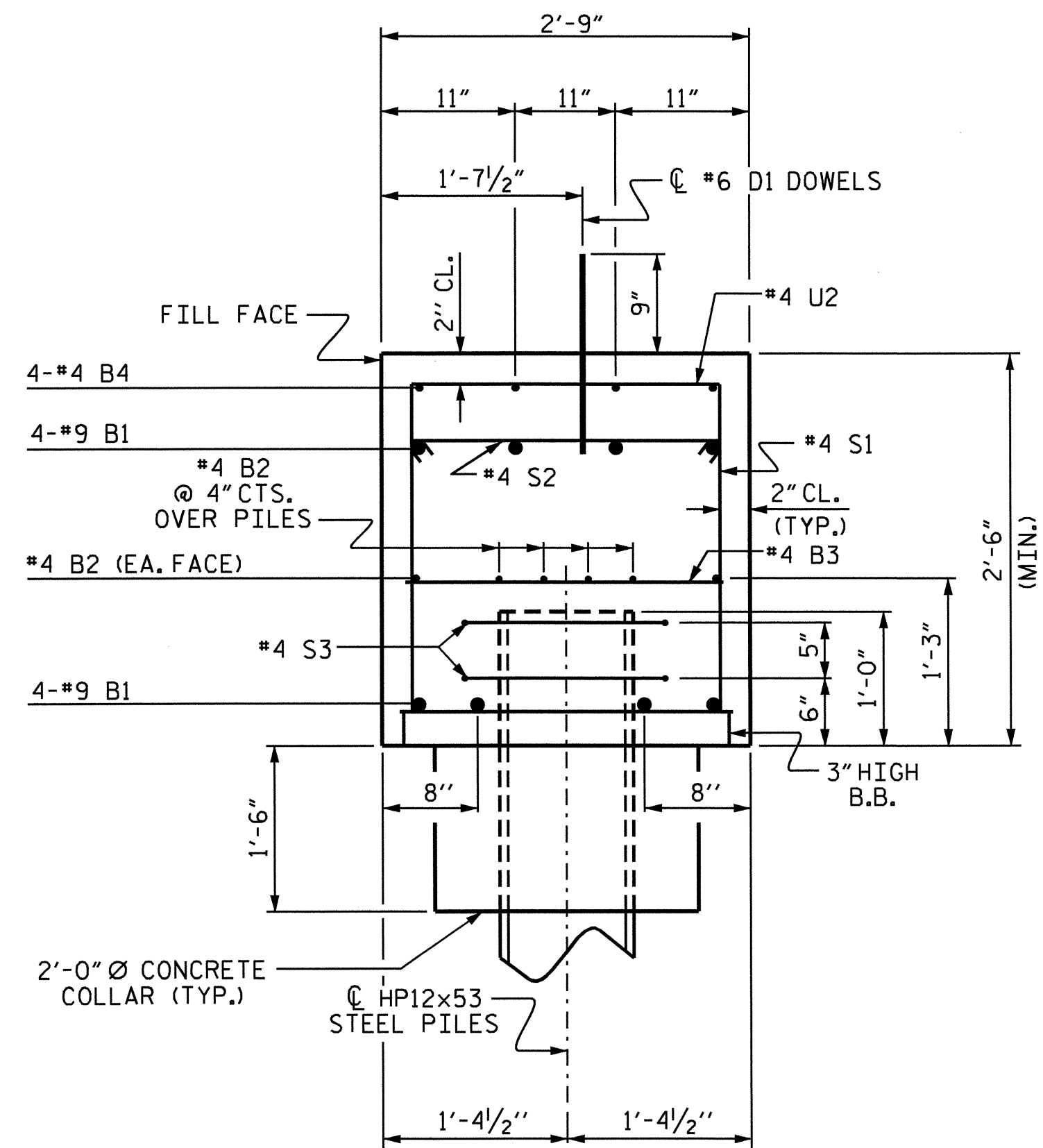
SHEET 2 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT #1



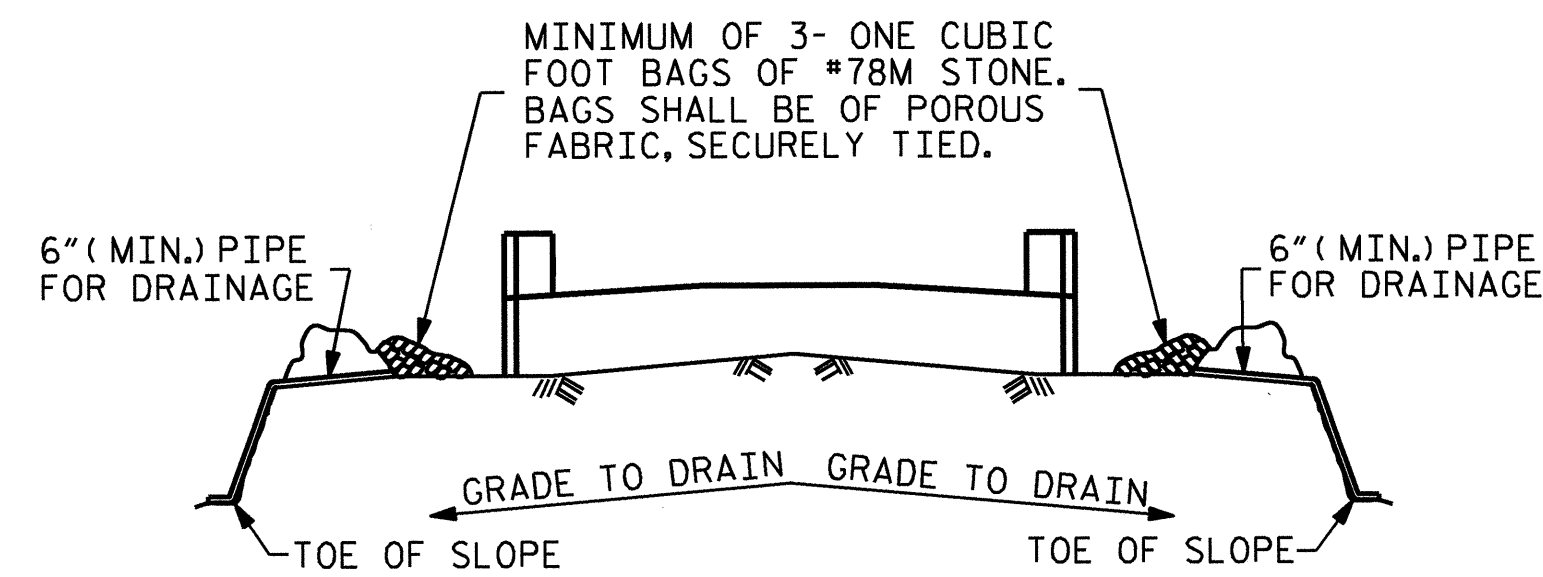
DRAWN BY: B. L. GREEN DATE: 4/10
 CHECKED BY: K. D. LAYNE DATE: 4/10

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			27

06-OCT-2011 11:42
 D:\Structures\Plans\B-4050.sd.EB.dgn
 klayne



SECTION THRU CAP



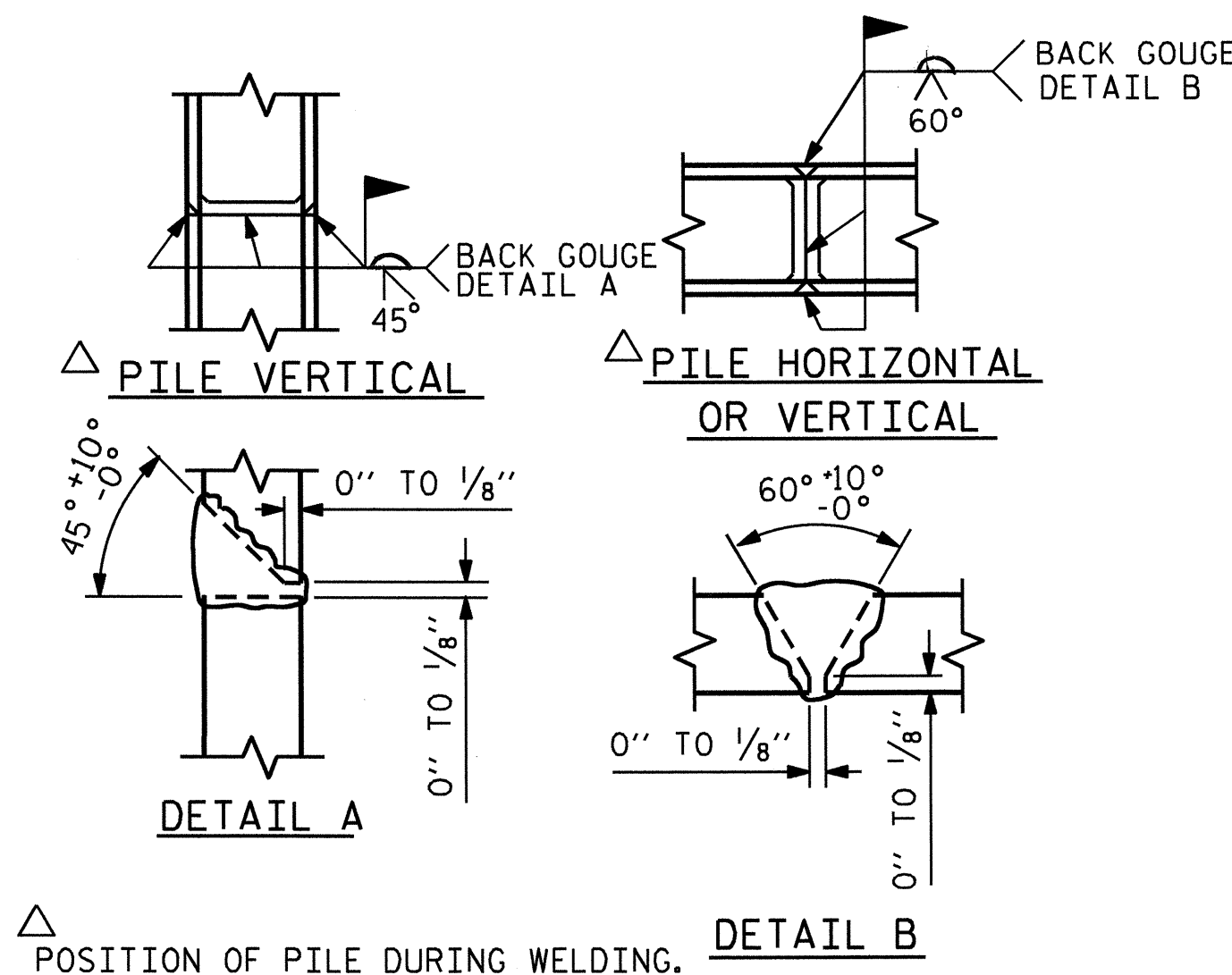
MINIMUM OF 3- ONE CUBIC FOOT BAGS OF #78M STONE. BAGS SHALL BE OF POROUS FABRIC, SECURELY TIED.

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.

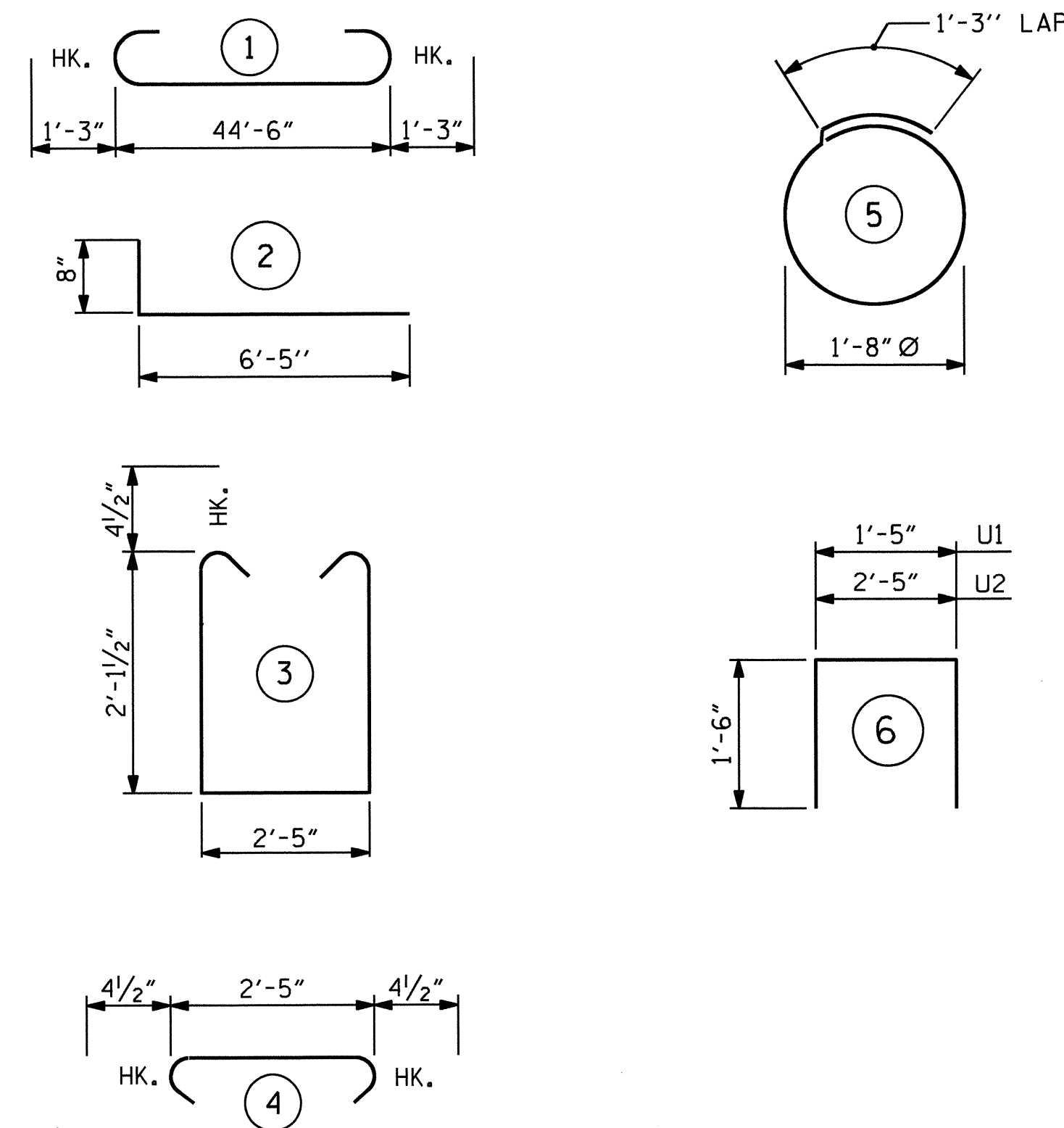
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		47'-0"	1278
B2	12	#4	STR.	23'-7"	189
B3	12	#4	STR.	2'-5"	19
B4	4	#4	STR.	21'-10"	58
D1	26	#6	STR.	1'-6"	59
H1	26	#4		7'-1"	123
K1	6	#4	STR.	3'-1"	12
K2	8	#4	STR.	3'-9"	20
S1	62	#4		7'-5"	307
S2	62	#4		3'-2"	131
S3	10	#4		6'-6"	43
U1	4	#4		4'-5"	12
U2	15	#4		5'-5"	54
V1	22	#4	STR.	5'-0"	73
V2	22	#4	STR.	5'-4"	78
REINFORCING STEEL				LBS.	2456
CLASS "A" CONCRETE BREAKDOWN					
POUR #1 CAP, LOWER WINGS & COLLARS					14.7
POUR #2 UPPER WINGS					2.1
POUR #3 LATERAL GUIDES					0.1
CLASS "A" CONCRETE TOTAL					16.9
HP 12X53 STEEL PILES					
				No. 5	175 LIN. FT.

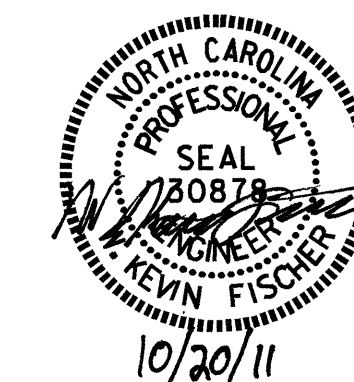
PROJECT NO. B-4050
CABARRUS COUNTY
 STATION: 26+65.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE

END BENT #1



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			27

DRAWN BY : B. L. GREEN DATE : 4/10
 CHECKED BY : K. D. LAYNE DATE : 4/10

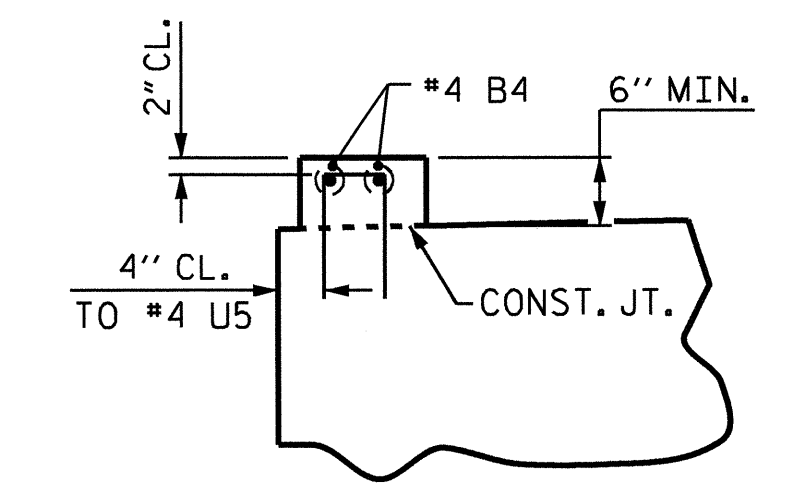
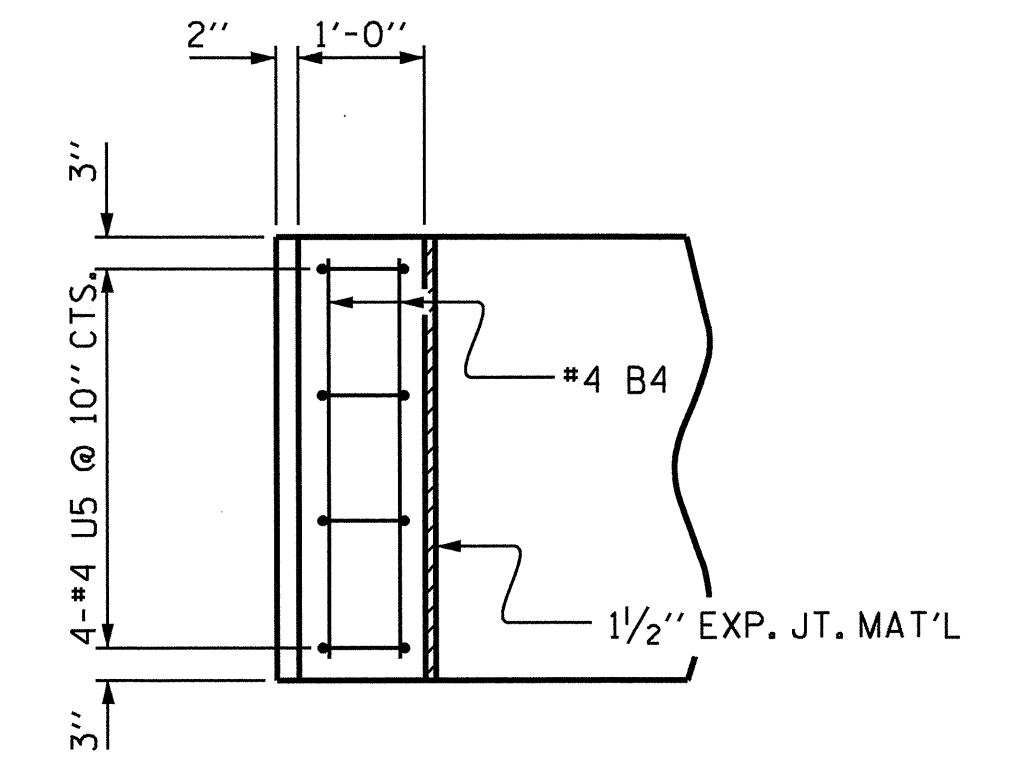
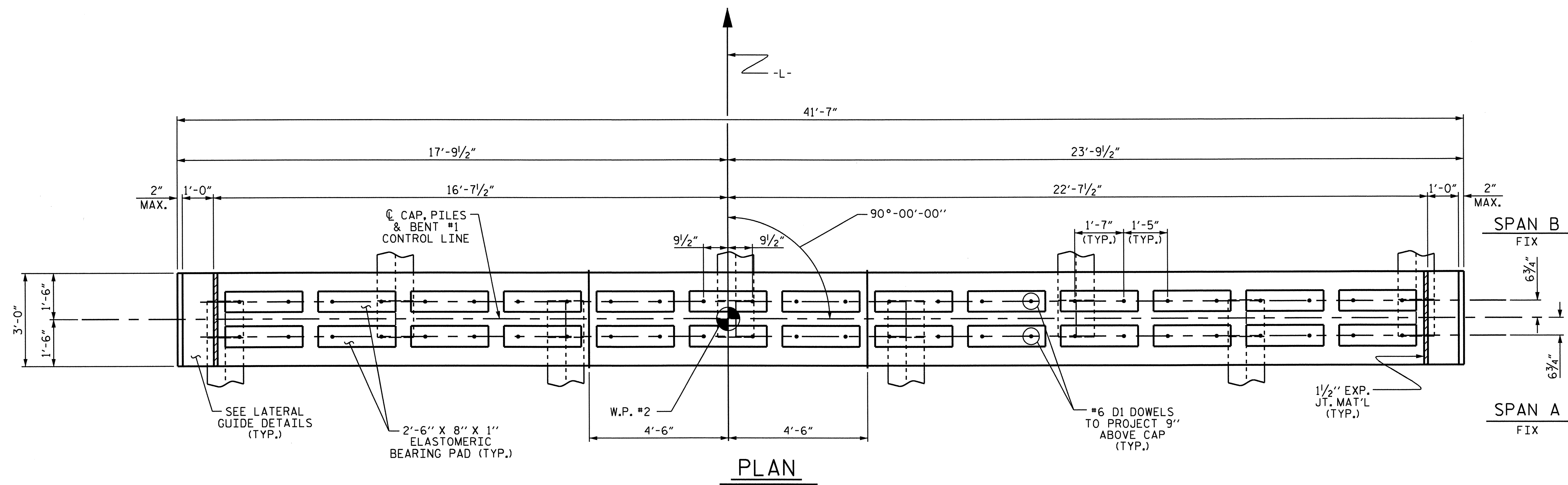
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

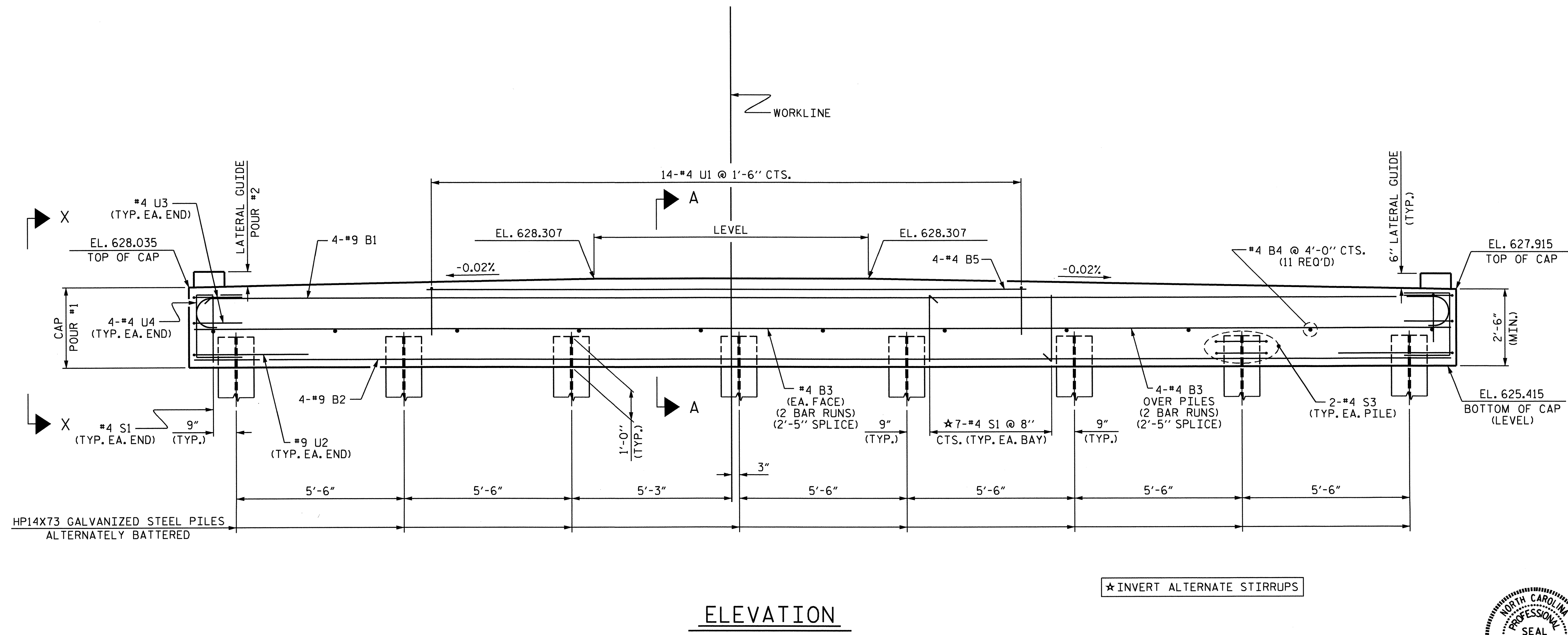
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.

GALVANIZE THE FULL LENGTH OF EACH INTERIOR BENT PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.



LATERAL GUIDE DETAILS
(EACH END SIMILAR)



PROJECT NO. B-4050
CABARRUS COUNTY
 STATION: 26+65.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

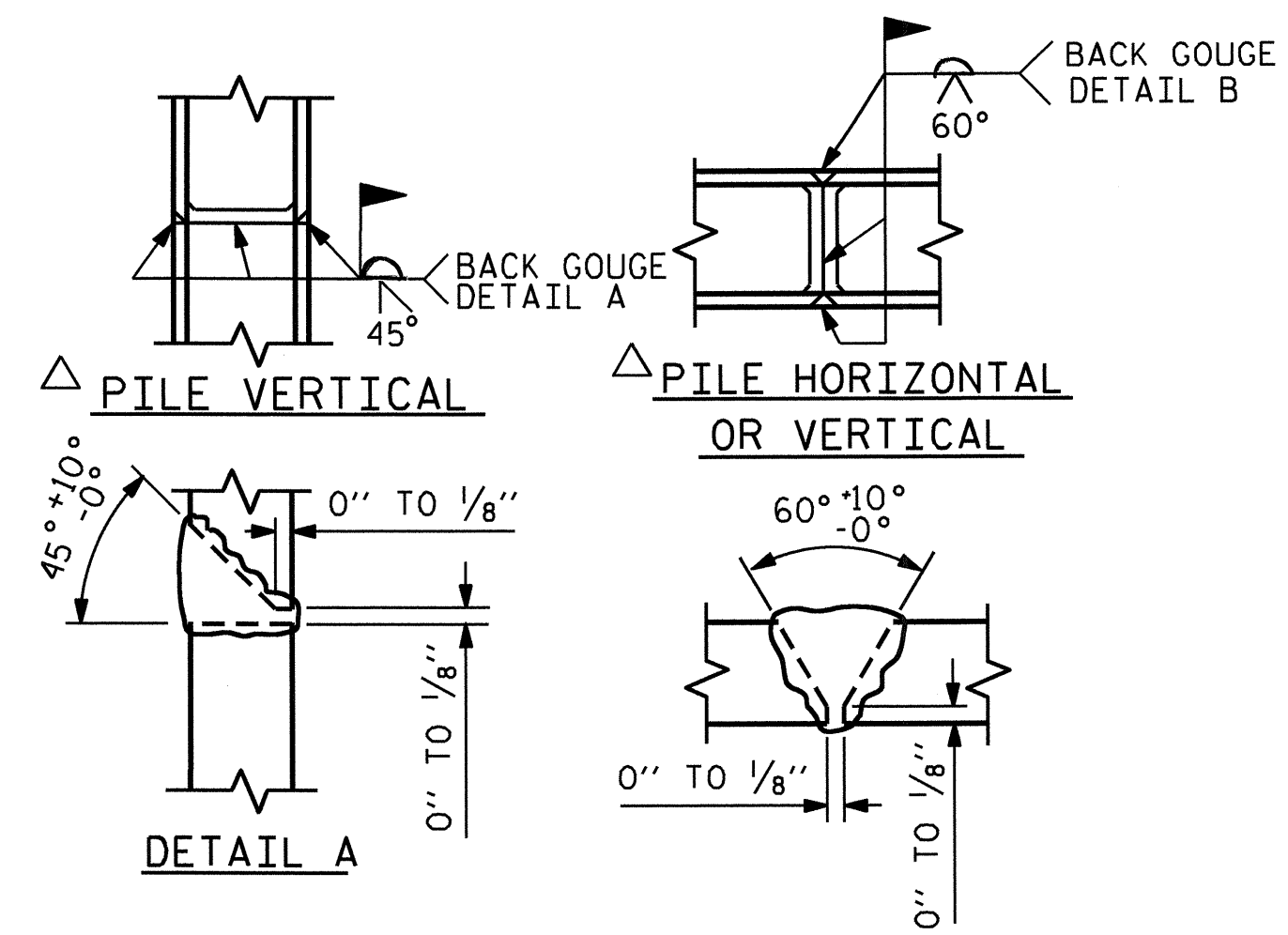
SUBSTRUCTURE

BENT #1

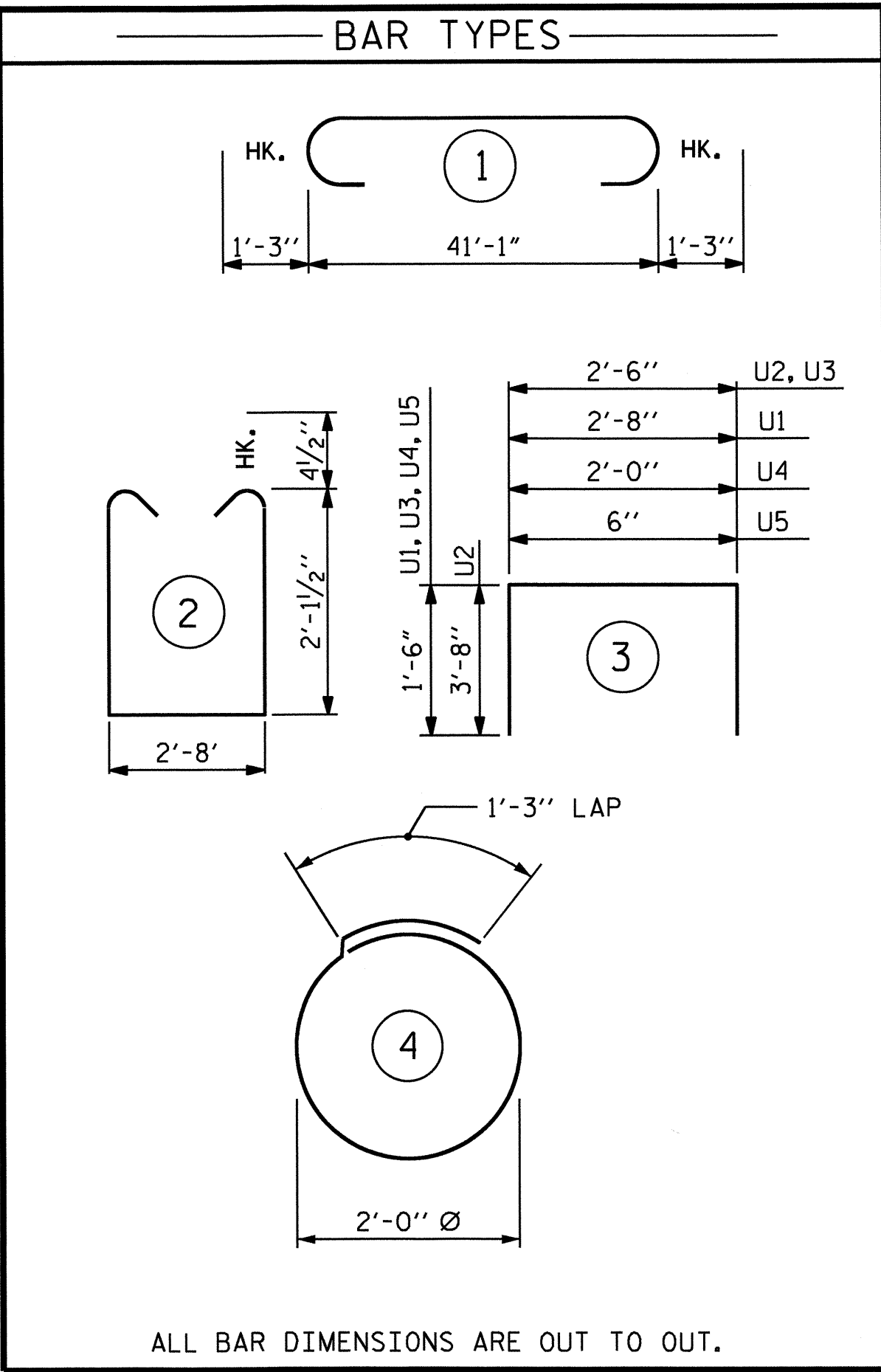
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			27

DRAWN BY: B. L. GREEN DATE: 5/10
 CHECKED BY: K. D. LAYNE DATE: 8/11



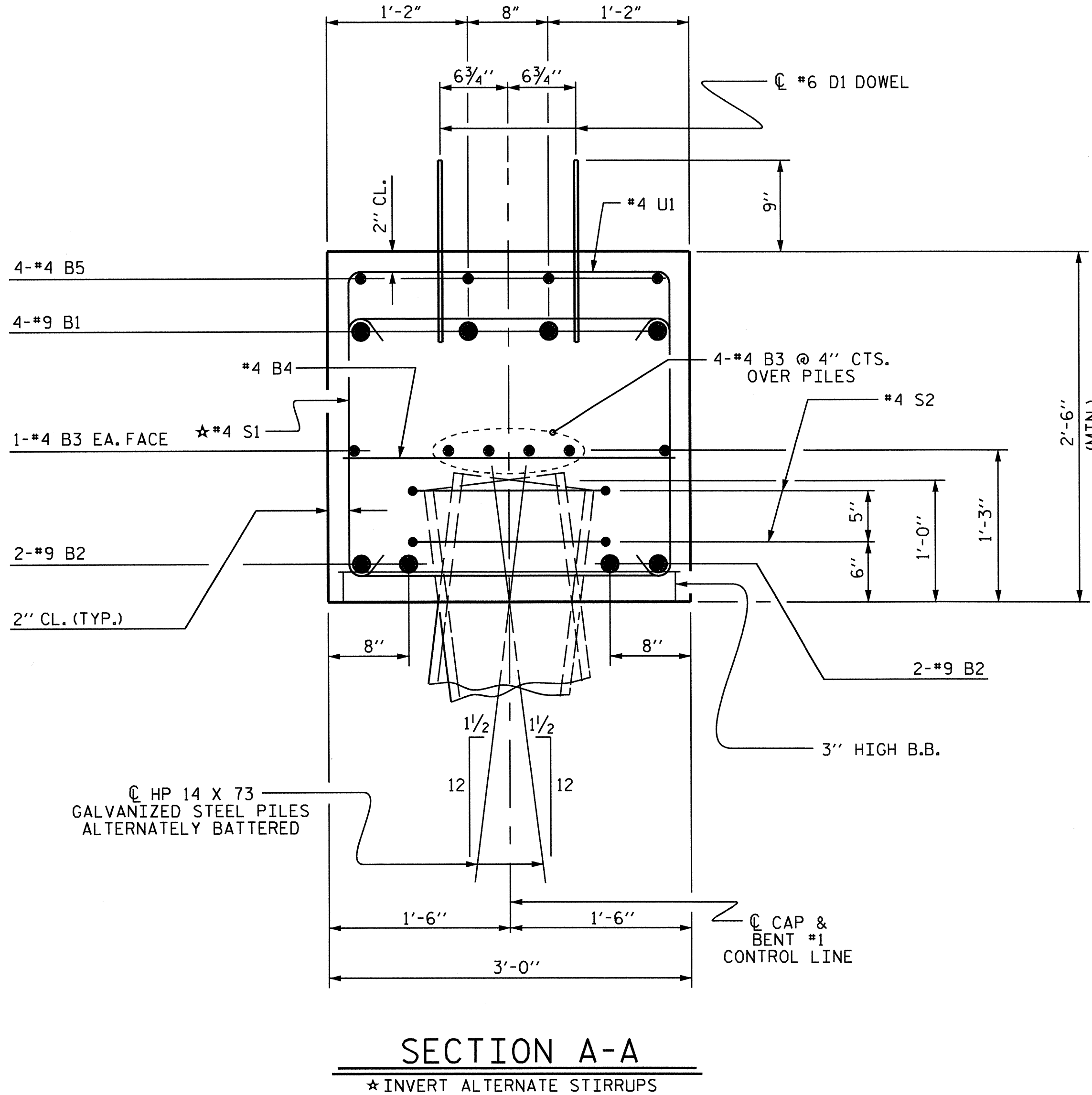


POSITION OF PILE DURING WELDING. **DETAIL B**
PILE SPLICE DETAILS

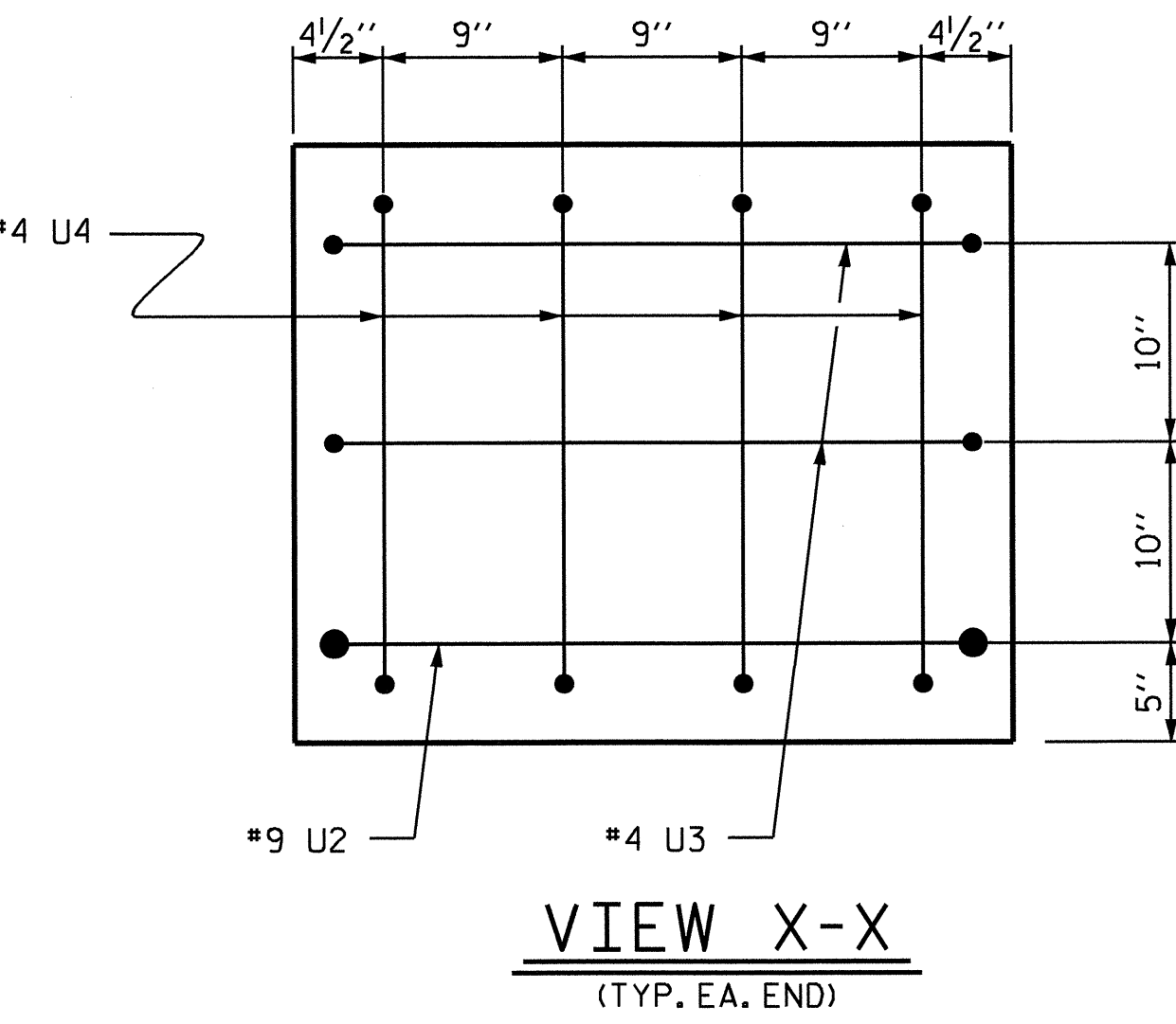


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
BENT #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9	1	43'-7"	593
B2	4	#9	STR	41'-3"	561
B3	12	#4	STR	21'-10"	175
B4	15	#4	STR	2'-8"	27
B5	4	#4	STR	19'-10"	53
D1	52	#6	STR	1'-6"	117
S1	51	#4	2	7'-8"	261
S2	16	#4	4	7'-7"	81
U1	14	#4	3	5'-8"	53
U2	2	#9	3	9'-10"	67
U3	4	#4	3	5'-6"	15
U4	8	#4	3	5'-0"	27
U5	8	#4	3	3'-6"	19
TOTAL REINFORCING STEEL				LBS.	2049
CLASS A CONCRETE (Cu. Yds.)					
POUR #1 (CAP)					12.7
POUR #2 (LATERAL GUIDES)					0.1
TOTAL (Cu. Yds.)					12.8
HP 14X73 GALVANIZED STEEL PILES					
NO. 8					300 LIN. FT.
STEEL PILE POINTS					NO. 8



SECTION A-A
 * INVERT ALTERNATE STIRRUPS



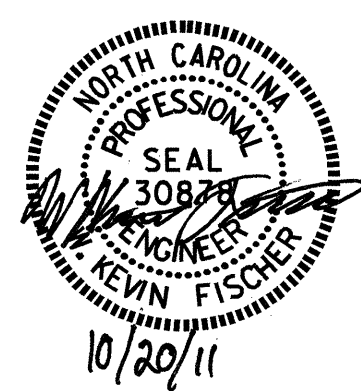
VIEW X-X
 (TYP. EA. END)

PROJECT NO. B-4050
CABARRUS COUNTY
 STATION: 26+65.50 -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-19
1			3			TOTAL SHEETS
2			4			27

DRAWN BY : B. L. GREEN DATE : 5/10
 CHECKED BY : K. D. LAYNE DATE : 8/11

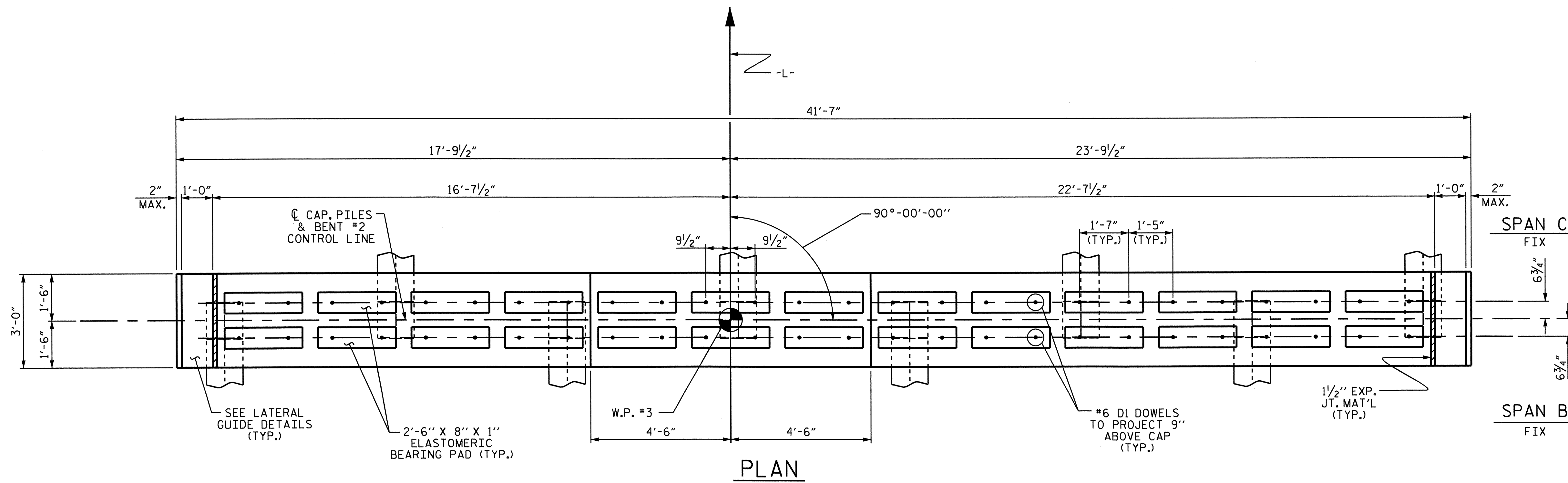
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

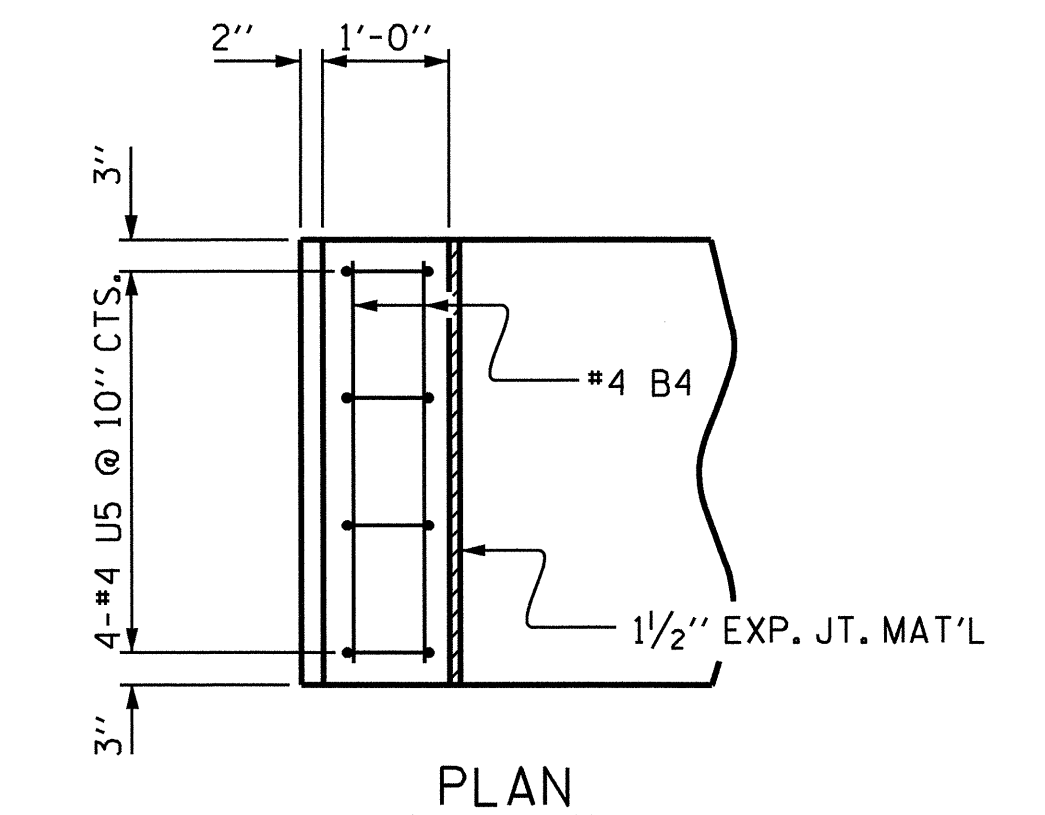
THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.

GALVANIZE THE FULL LENGTH OF EACH INTERIOR BENT PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

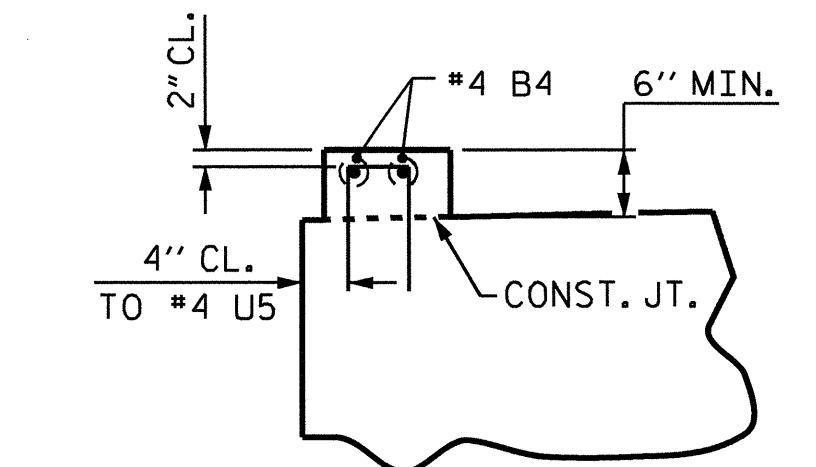
THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.



PLAN



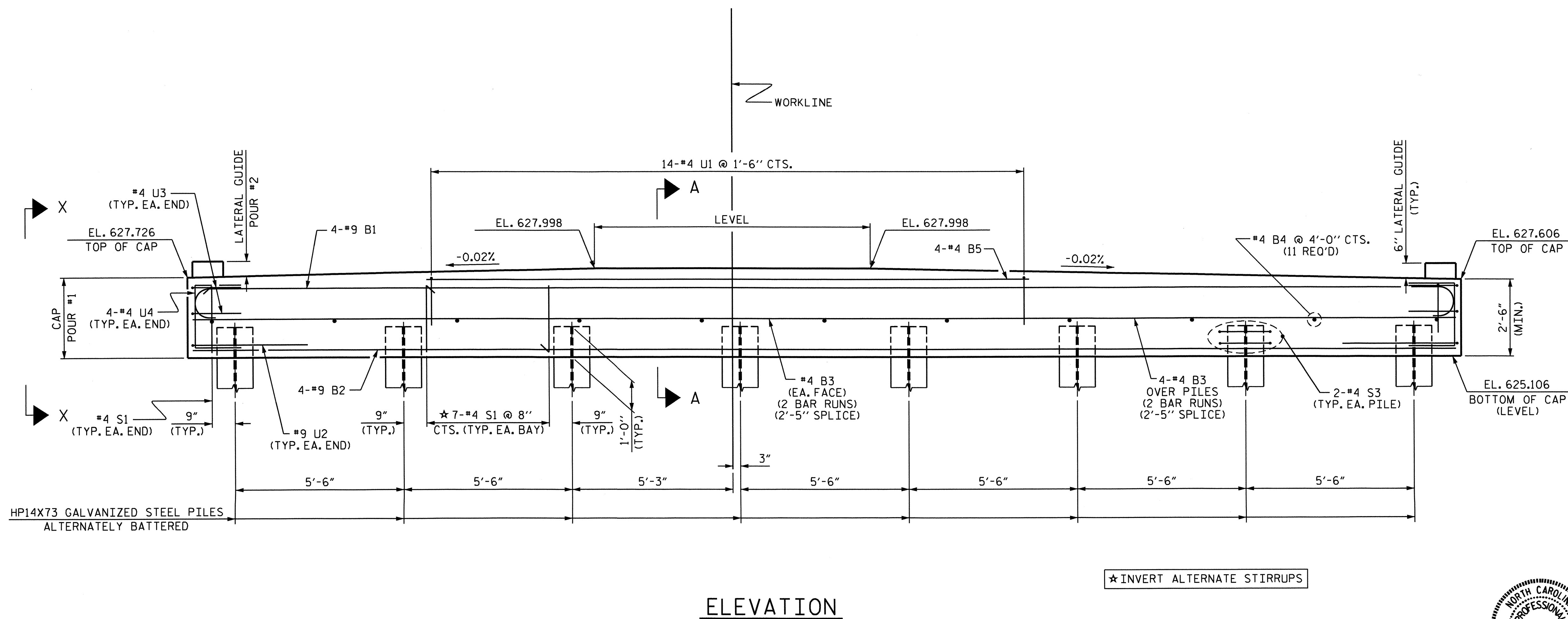
PLAN



ELEVATION

LATERAL GUIDE DETAILS

(EACH END SIMILAR)



ELEVATION

★ INVERT ALTERNATE STIRRUPS

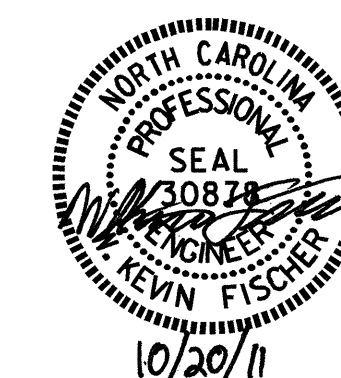
PROJECT NO. B-4050
CABARRUS COUNTY
 STATION: 26+65.50 -L-

SHEET 1 OF 2

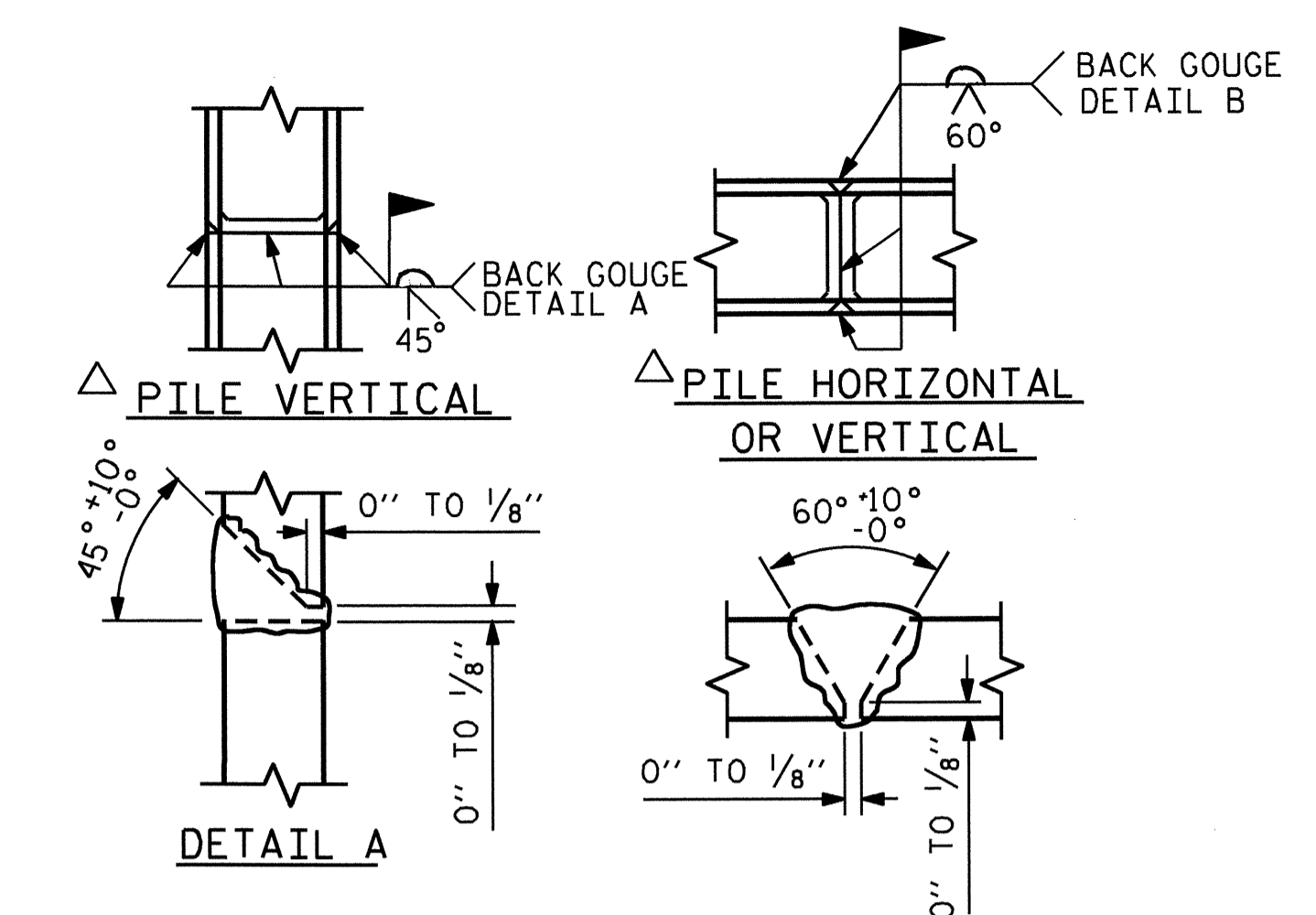
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 BENT #2

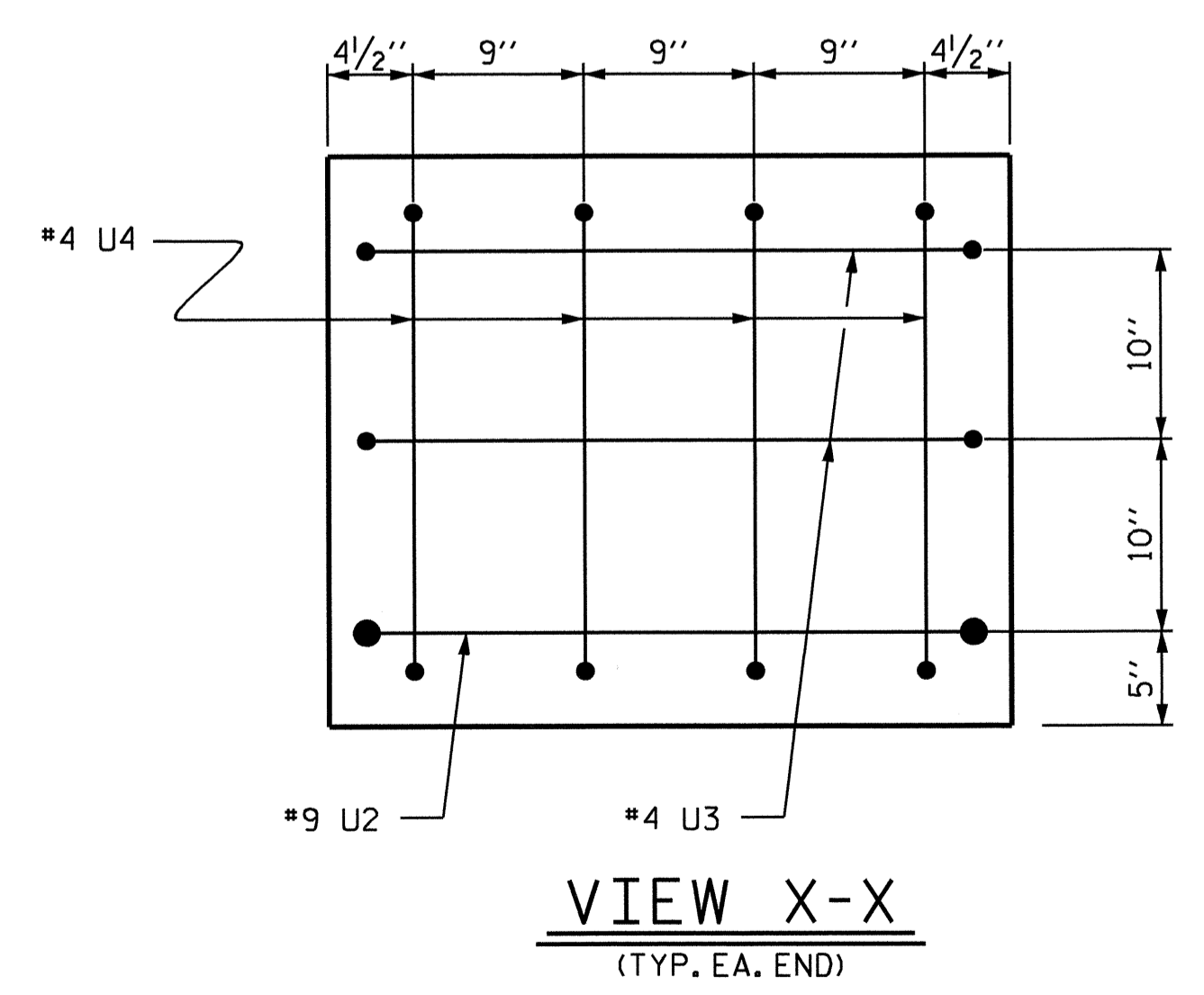
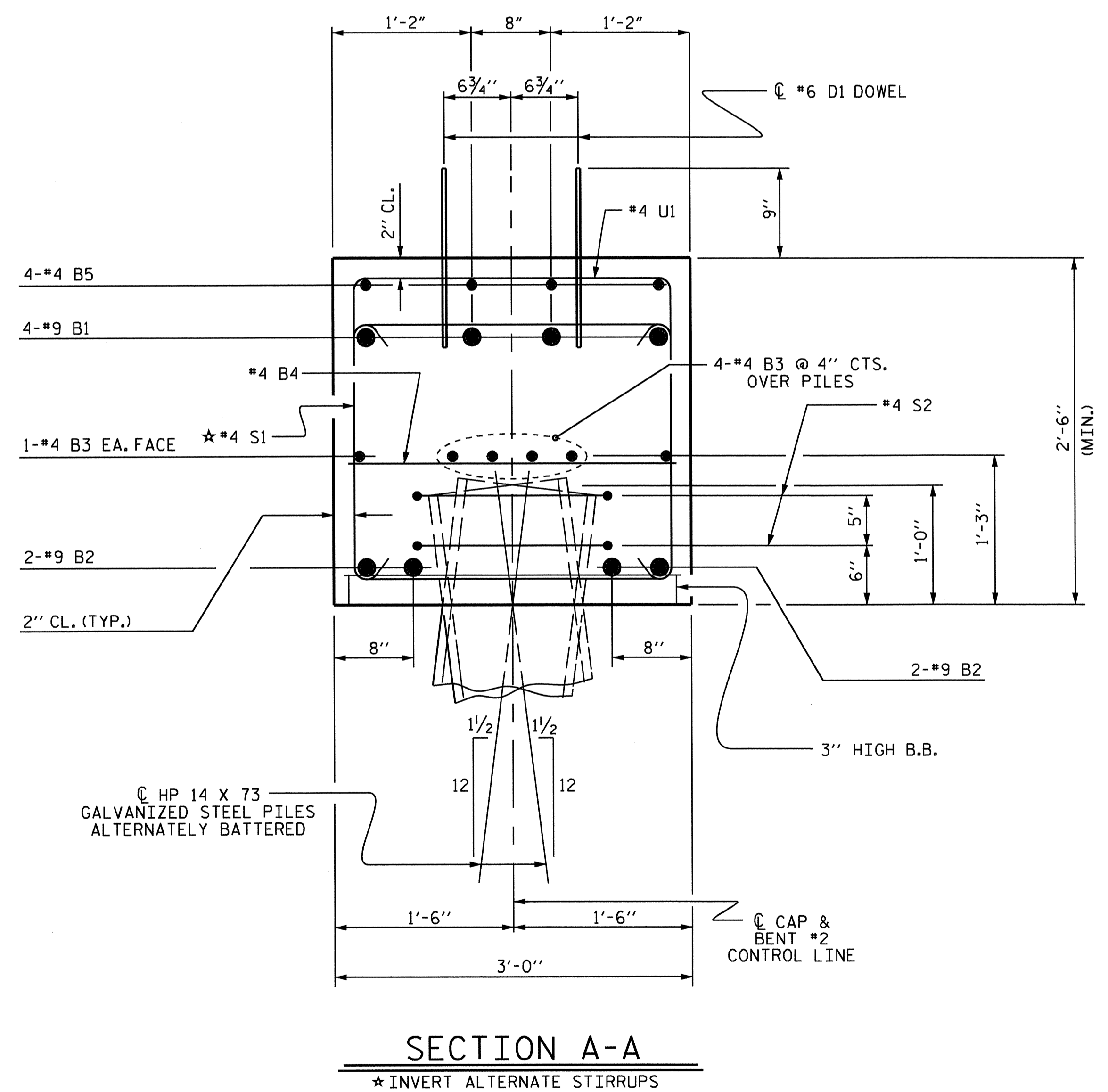
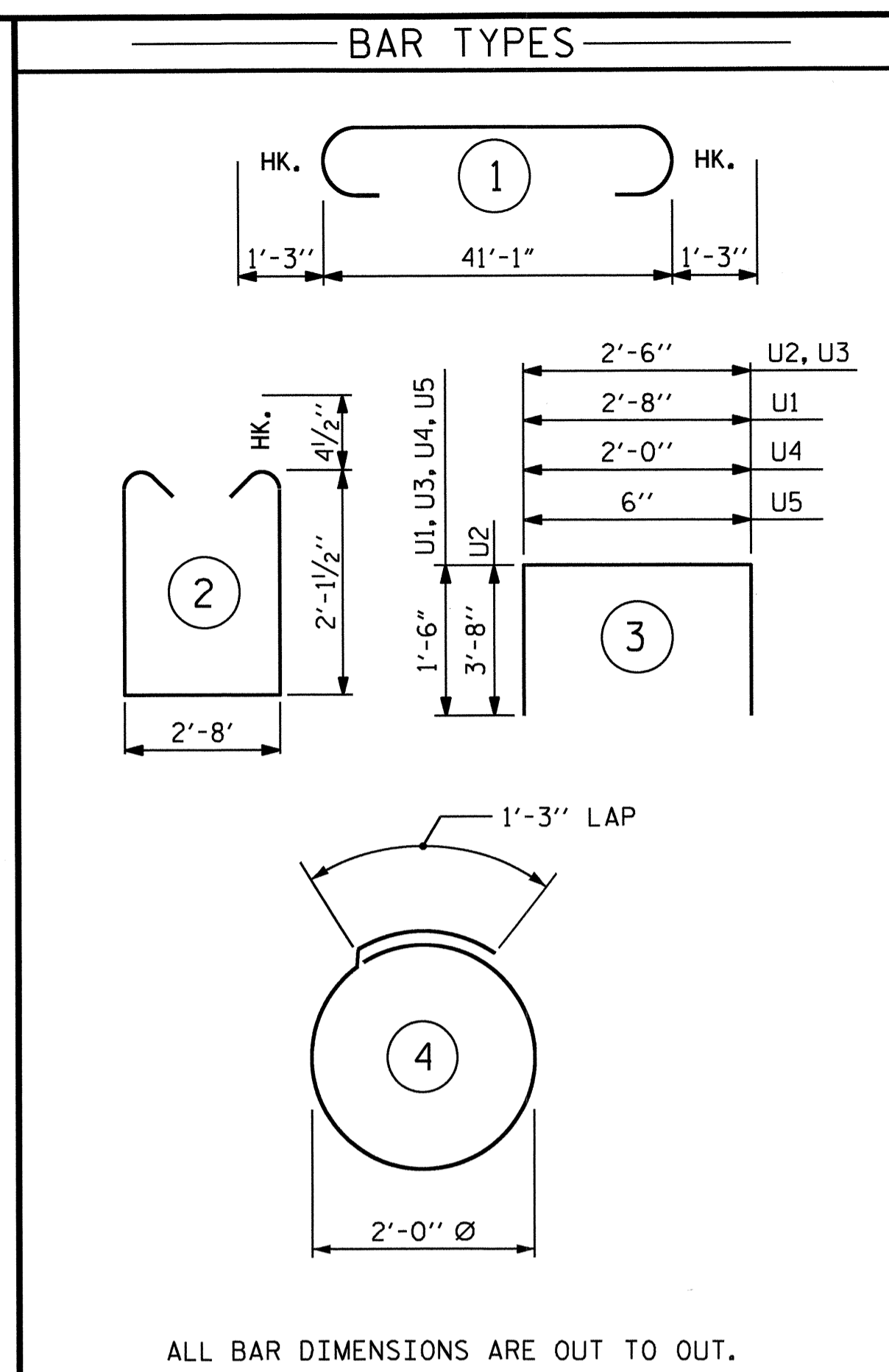
DRAWN BY : B. L. GREEN DATE : 5/10
 CHECKED BY : K. D. LAYNE DATE : 8/11



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-20	
1			3			TOTAL SHEETS	
2			4			27	



POSITION OF PILE DURING WELDING.
PILE SPLICE DETAILS

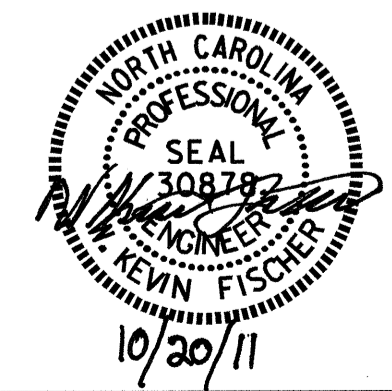


PROJECT NO. B-4050
CABARRUS COUNTY
STATION: 26+65.50 -L-

SHEET 2 OF 2

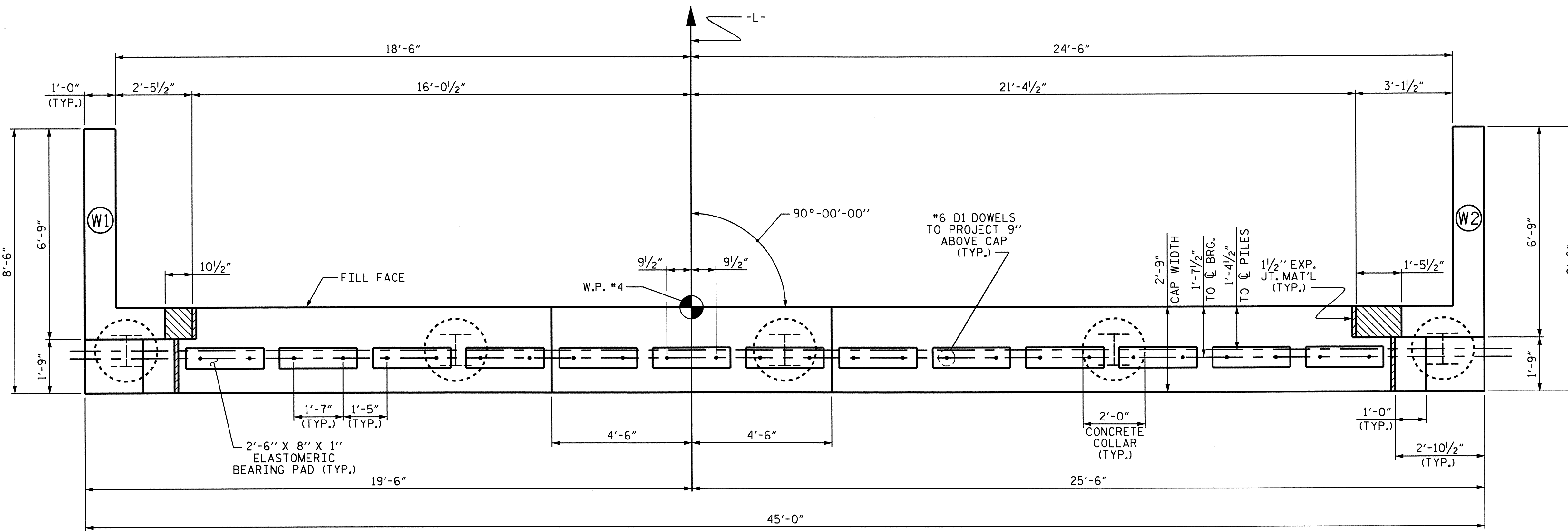
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT #2



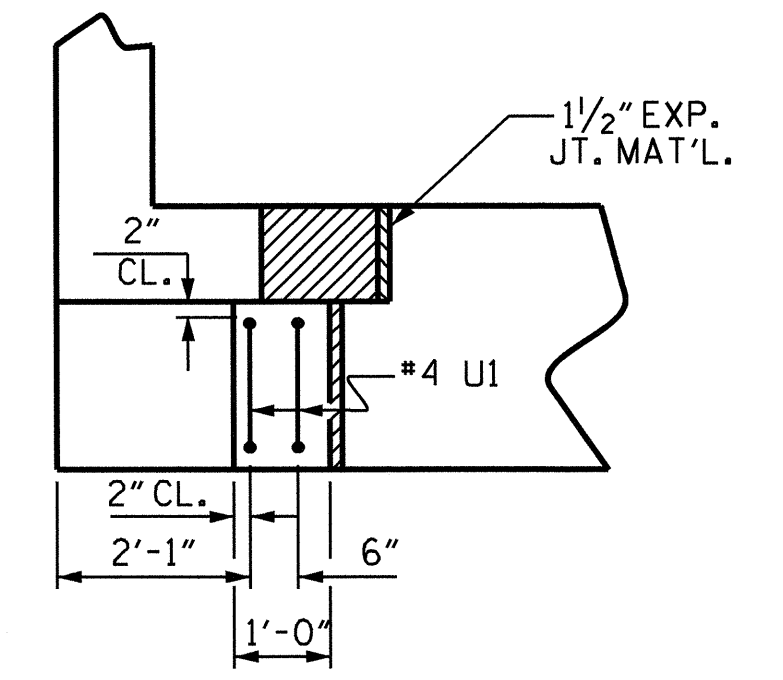
DRAWN BY: B. L. GREEN DATE: 5/10
CHECKED BY: K. D. LAYNE DATE: 8/11

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-21
1			3			TOTAL SHEETS
2			4		10/20/11	27

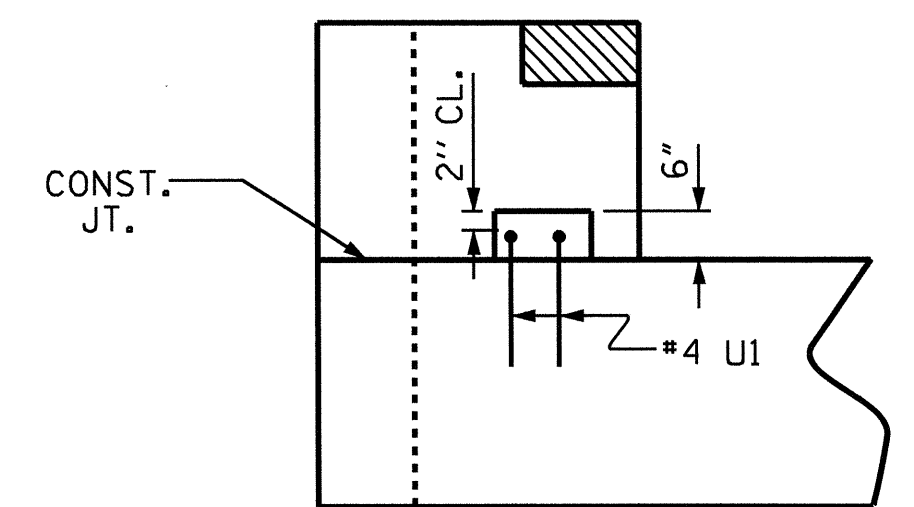


PLAN

NOTES:
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
 THE LATERAL GUIDE AT EACH END OF THE CAP IS NOT TO BE POURED UNTIL AFTER CORED SLAB UNITS ARE IN PLACE.
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE PARAPET IS CAST IF SLIP FORMING IS USED.
 THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDE IF APPROVED BY THE ENGINEER.

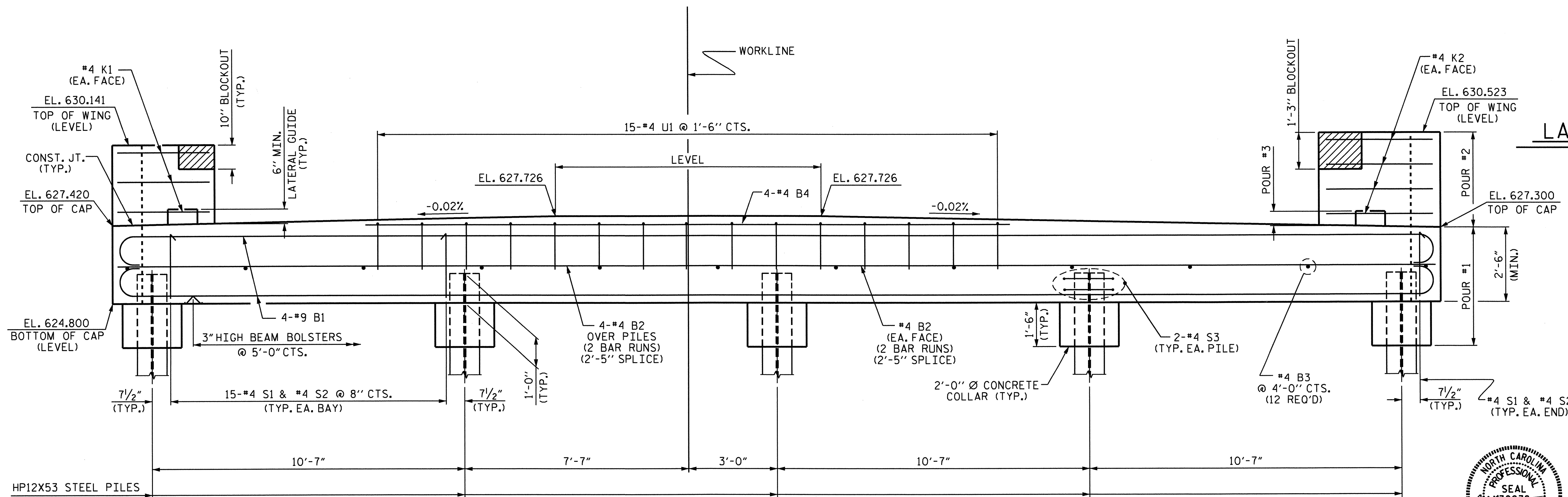


PLAN



ELEVATION

LATERAL GUIDE DETAILS



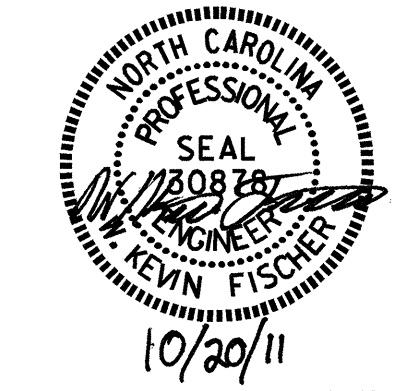
ELEVATION

PROJECT NO. B-4050
CABARRUS COUNTY
 STATION: 26+65.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

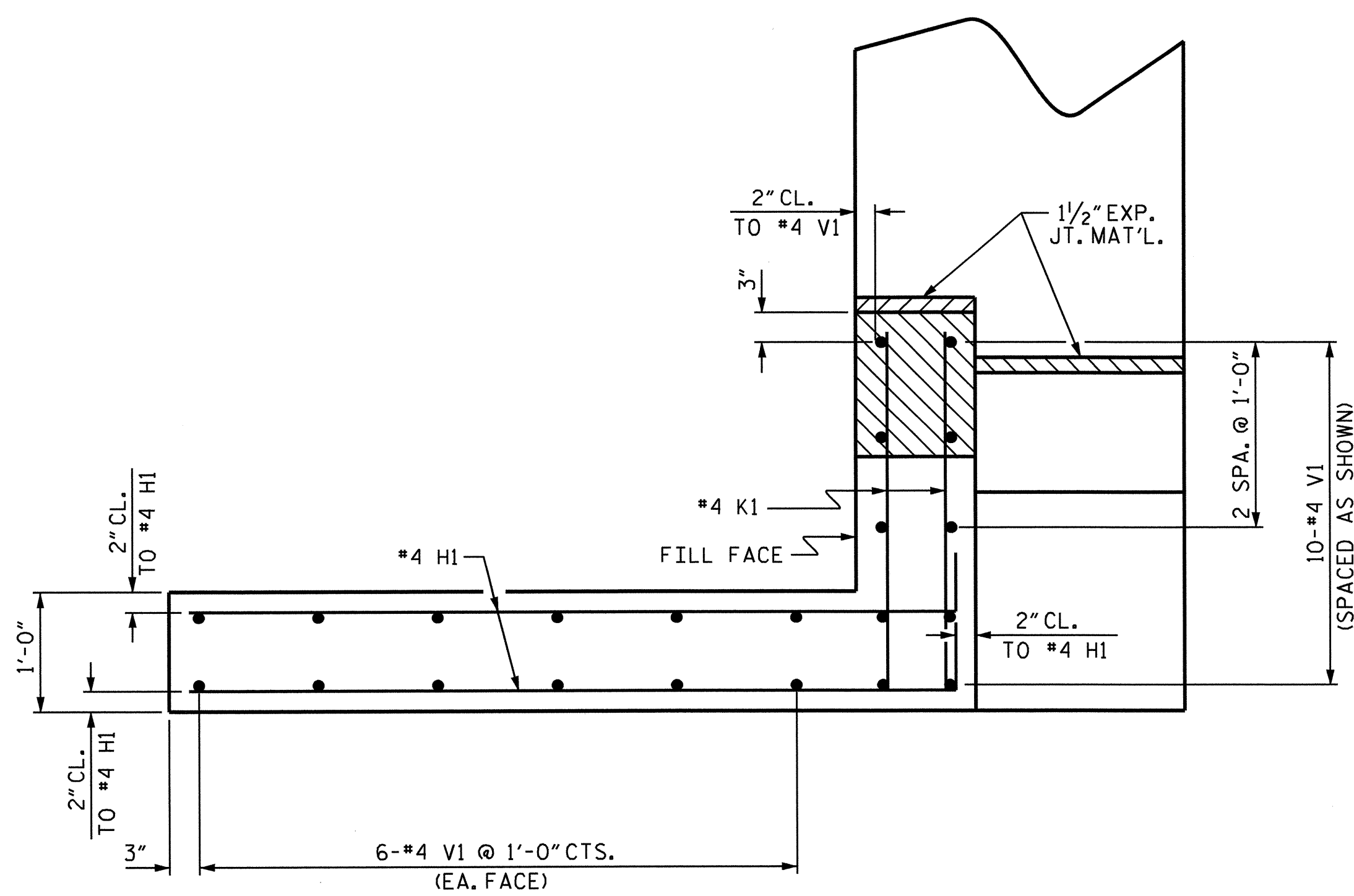
END BENT #2



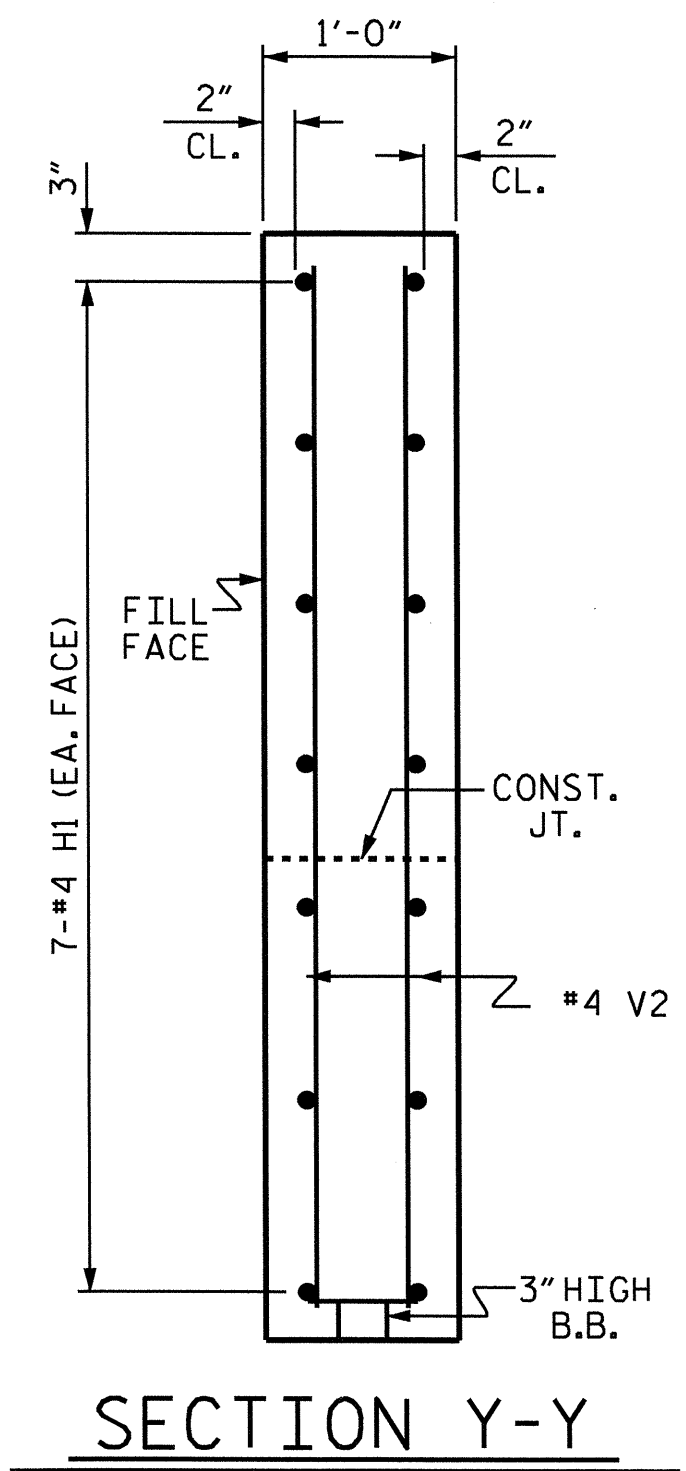
DRAWN BY: B. L. GREEN DATE: 4/10
 CHECKED BY: K. D. LAYNE DATE: 4/10

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			27

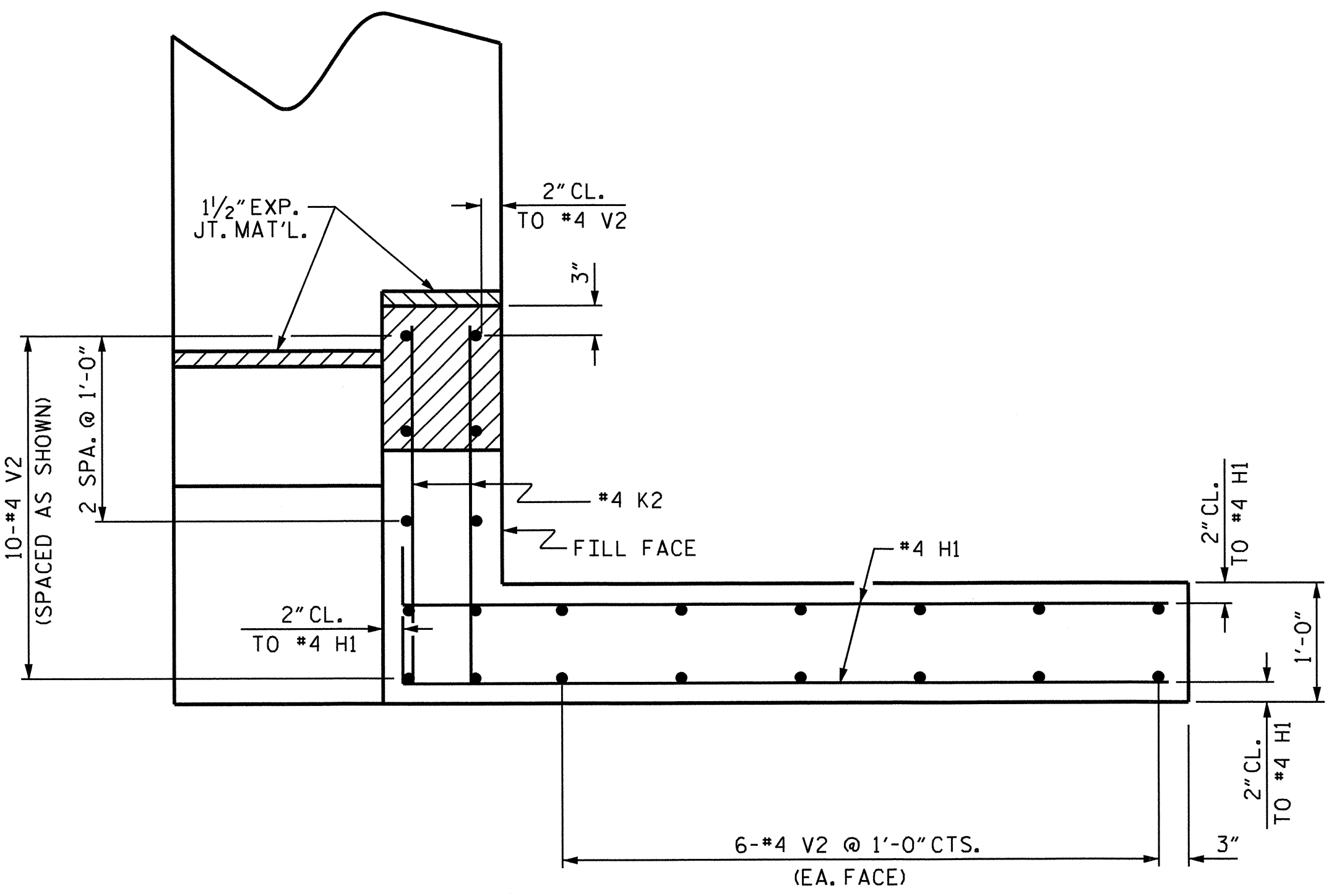
06-OCT-2011 11:42
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 klayne



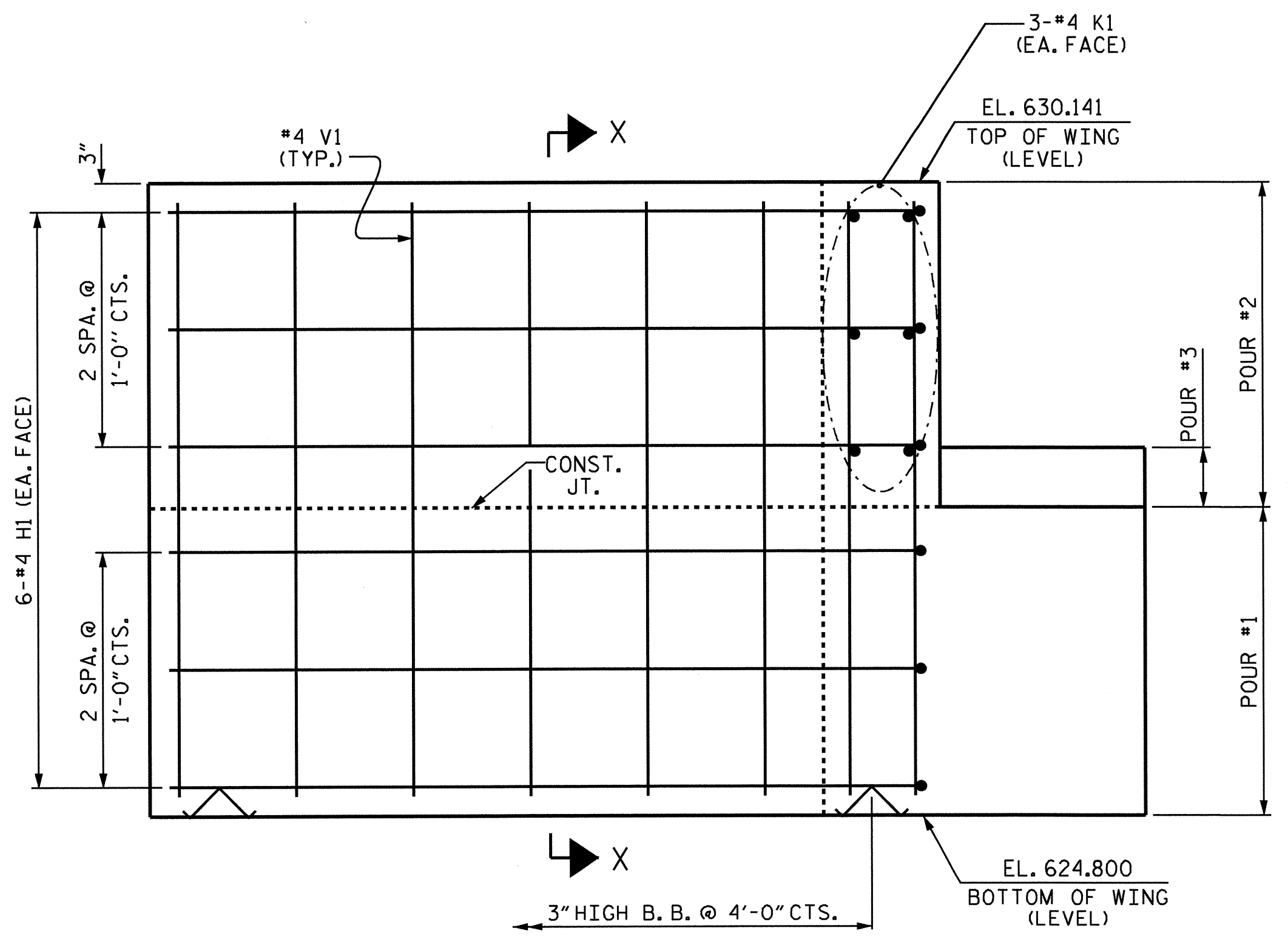
PLAN OF WING-W1



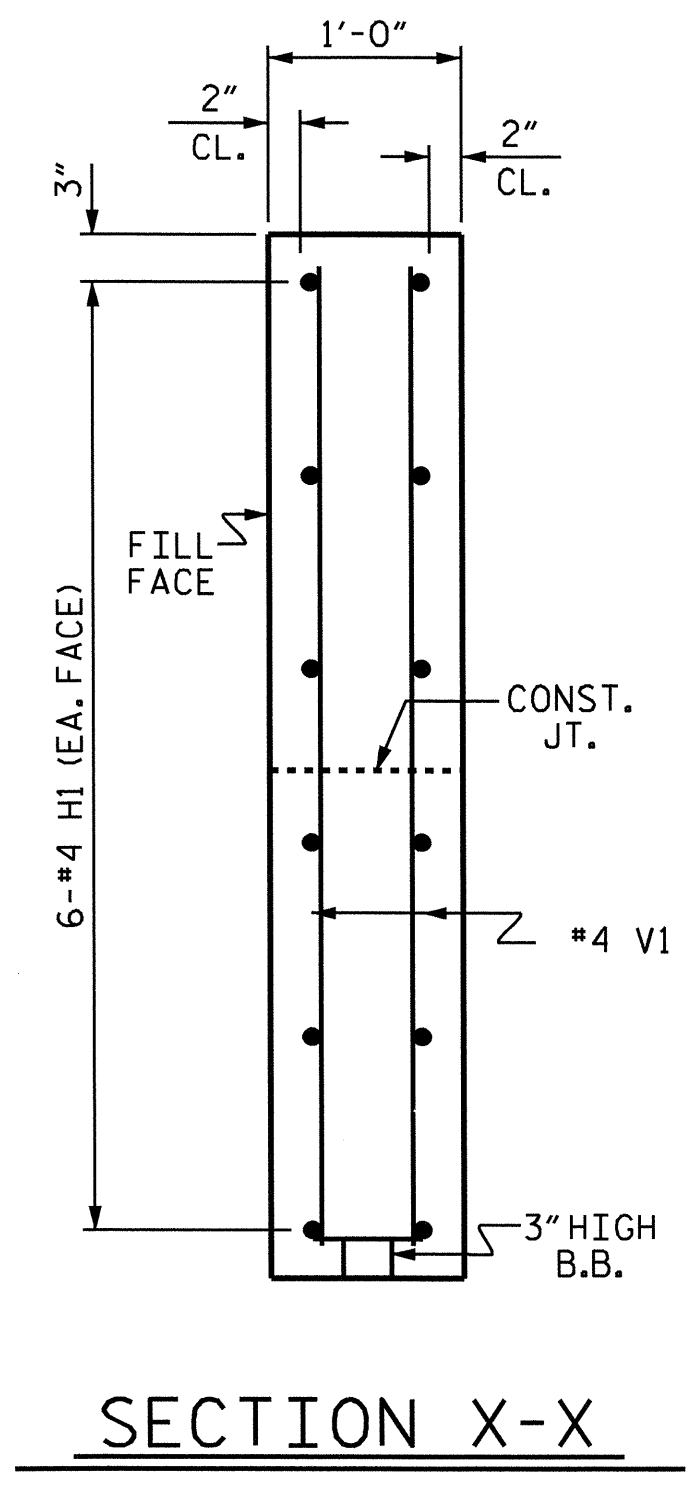
SECTION Y-Y



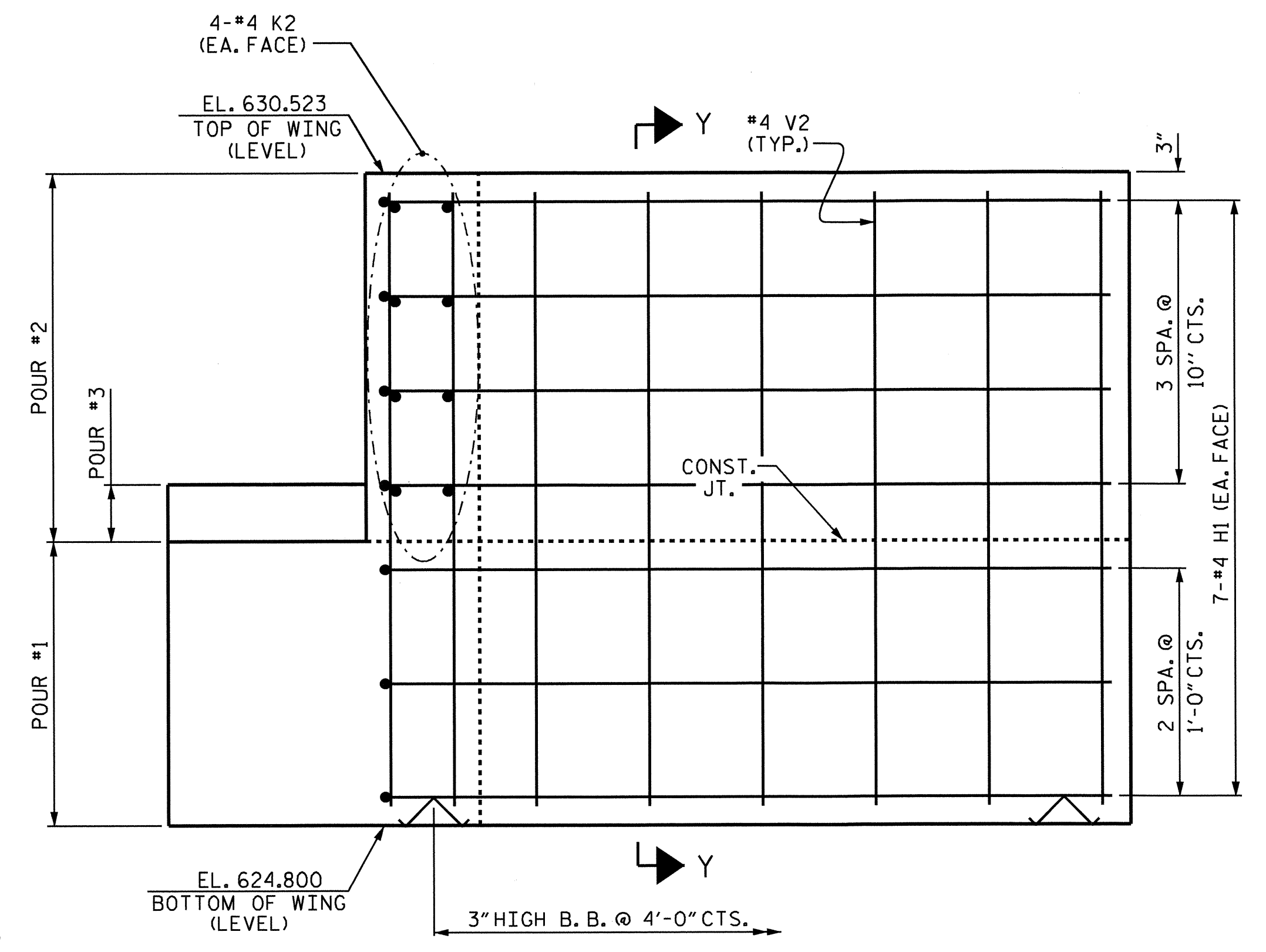
PLAN OF WING-W2



ELEVATION OF WING-W1



SECTION X-X

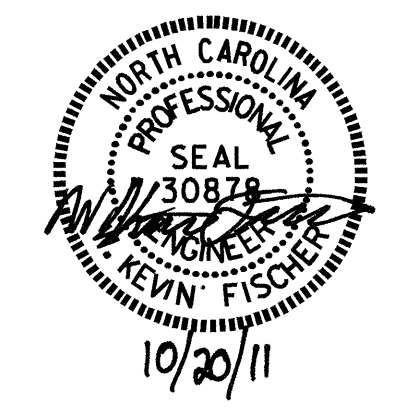


ELEVATION OF WING-W2

PROJECT NO. B-4050
 CABARRUS COUNTY
 STATION: 26+65.50 -L-

SHEET 2 OF 3

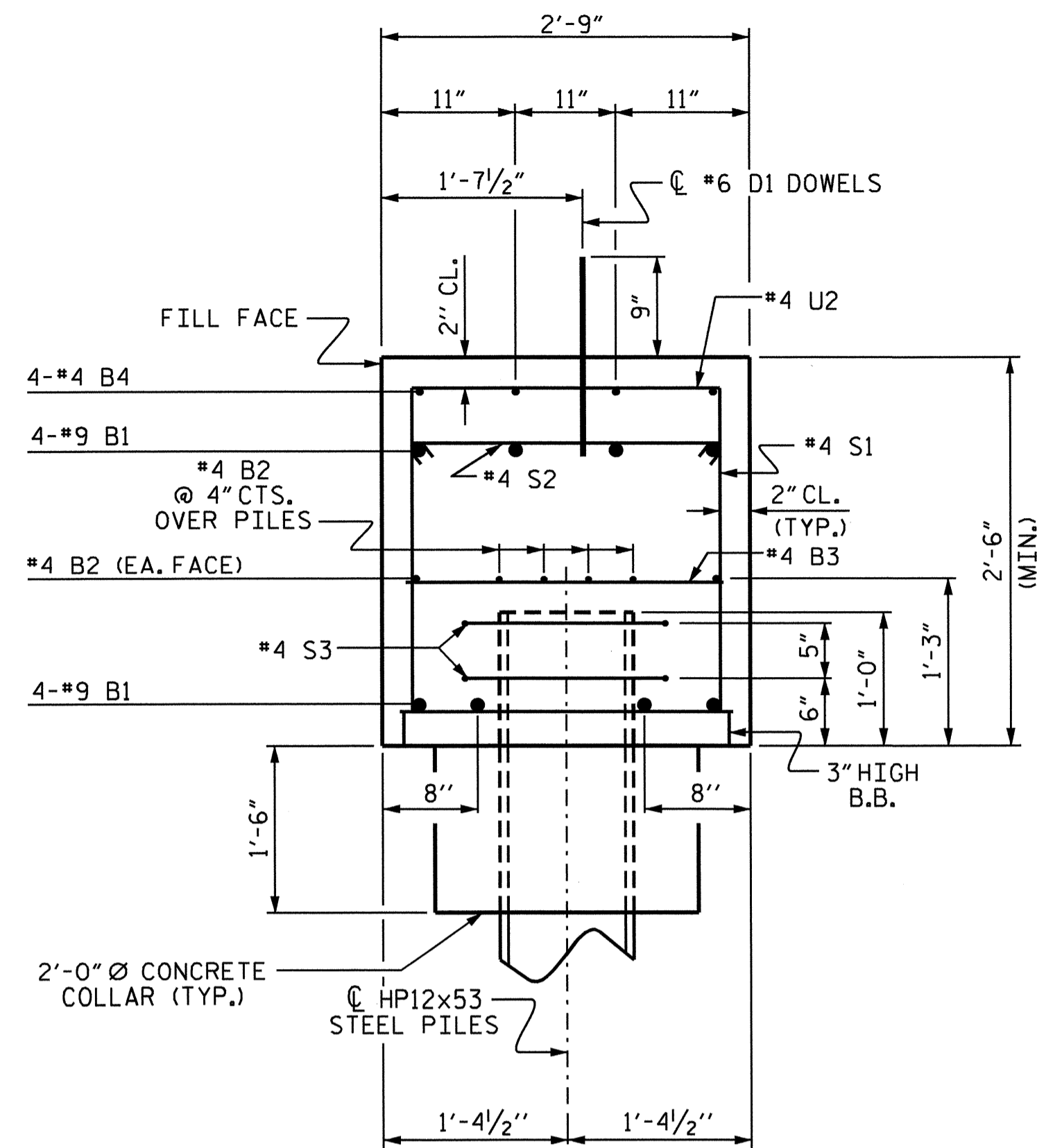
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT #2



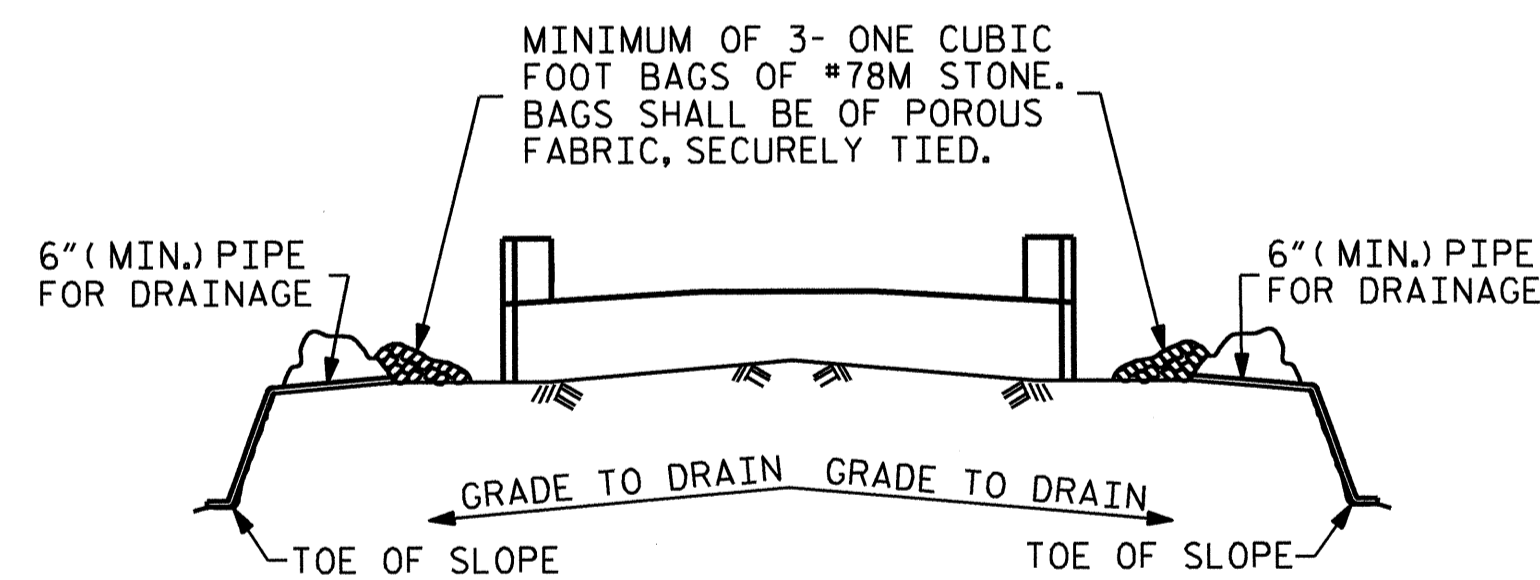
DRAWN BY: B. L. GREEN DATE: 4/10
 CHECKED BY: K. D. LAYNE DATE: 4/10

06-OCT-2011 11:42
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 Klayne

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			27



SECTION THRU CAP

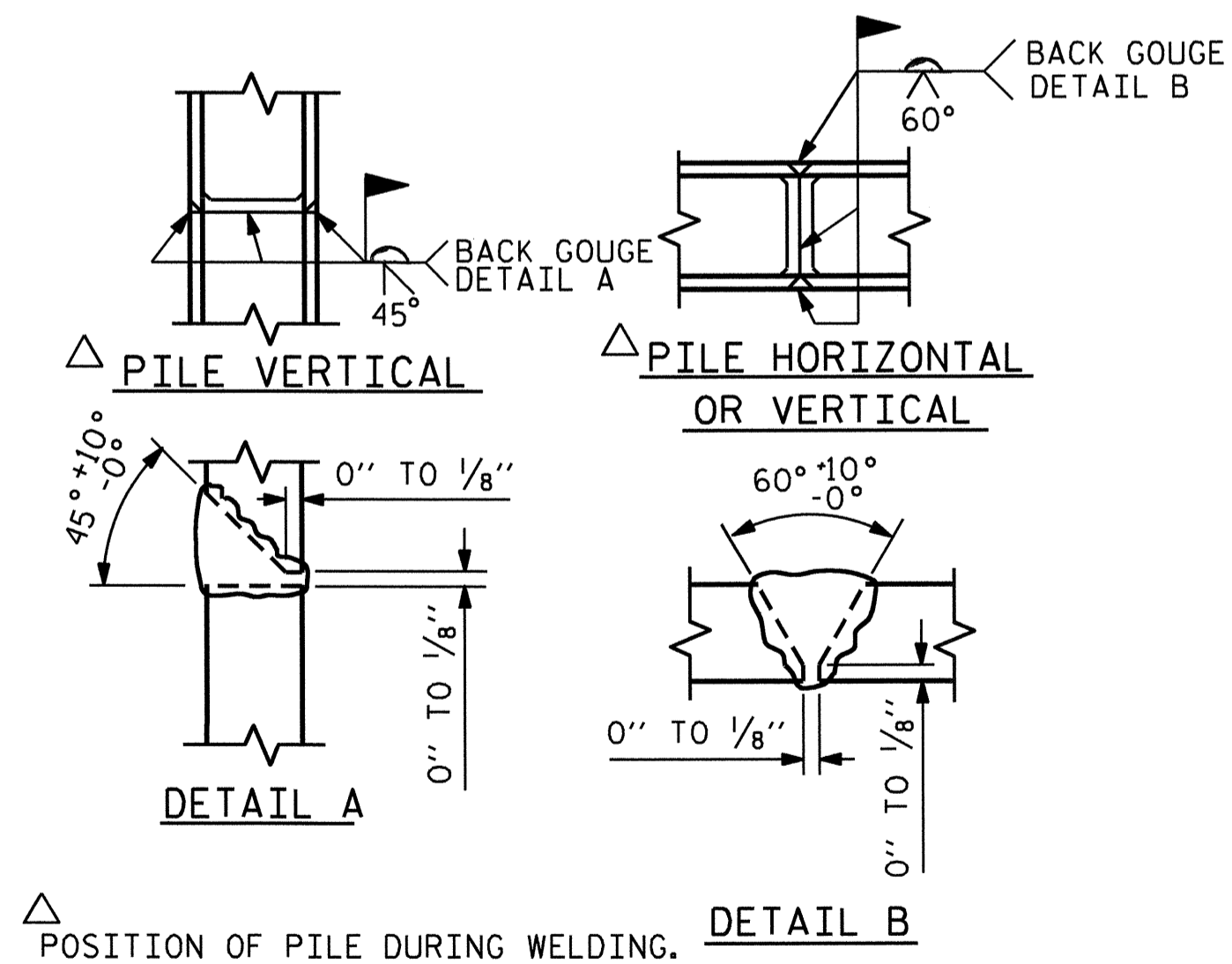


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

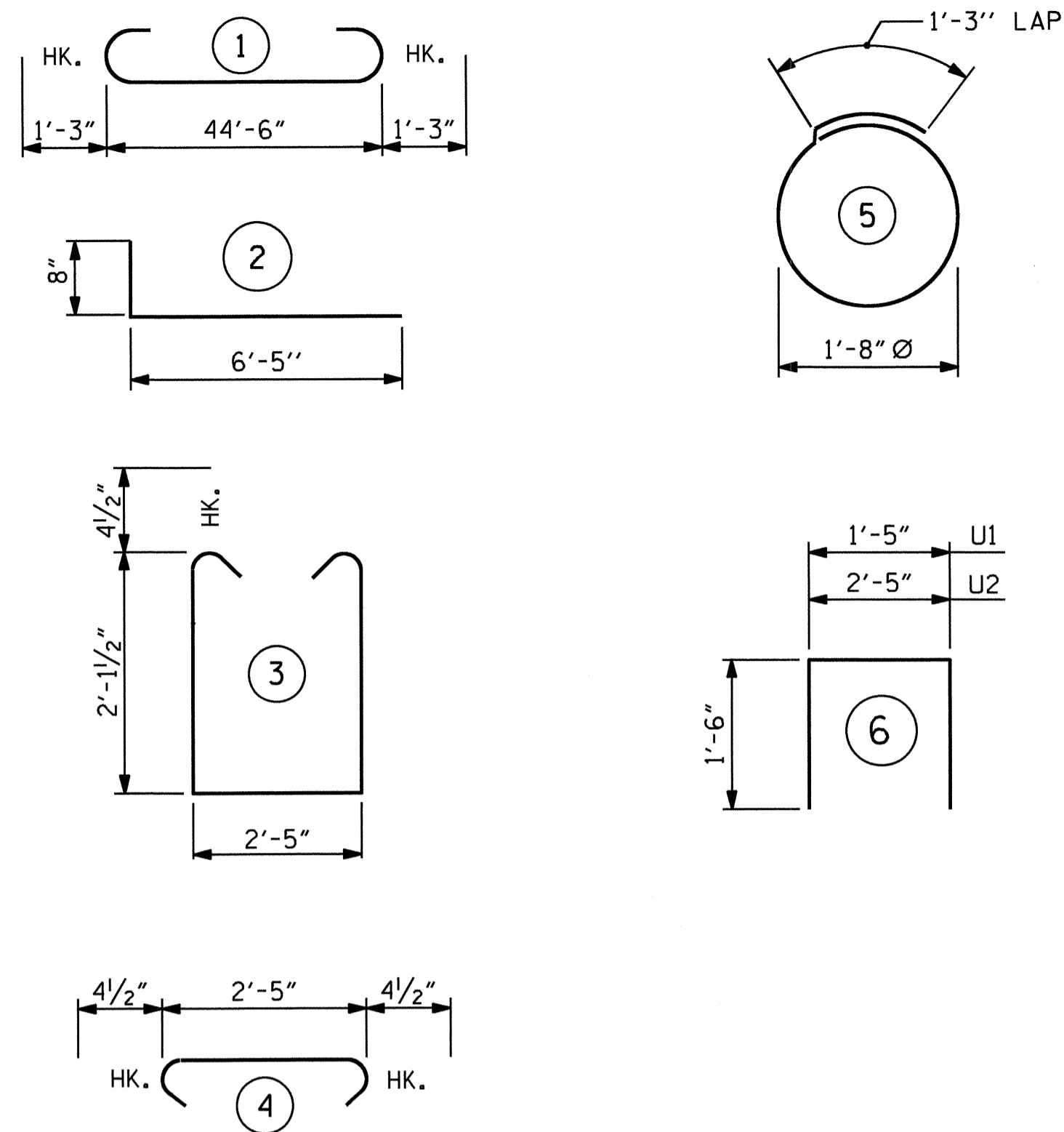
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9		47'-0"	1278
B2	12	#4	STR.	23'-7"	189
B3	12	#4	STR.	2'-5"	19
B4	4	#4	STR.	21'-10"	58
D1	26	#6	STR.	1'-6"	59
H1	26	#4	2	7'-1"	123
K1	6	#4	STR.	3'-1"	12
K2	8	#4	STR.	3'-9"	20
S1	62	#4	3	7'-5"	307
S2	62	#4	4	3'-2"	131
S3	10	#4	5	6'-6"	43
U1	4	#4	6	4'-5"	12
U2	15	#4	6	5'-5"	54
V1	22	#4	STR.	5'-0"	73
V2	22	#4	STR.	5'-4"	78
REINFORCING STEEL				LBS.	2456

CLASS "A" CONCRETE BREAKDOWN

POUR #1	CAP, LOWER WINGS & COLLARS	14.7
POUR #2	UPPER WINGS	2.1
POUR #3	LATERAL GUIDES	0.1
CLASS "A" CONCRETE TOTAL		16.9
HP 12X53 STEEL PILES		No. 5 175 LIN. FT.

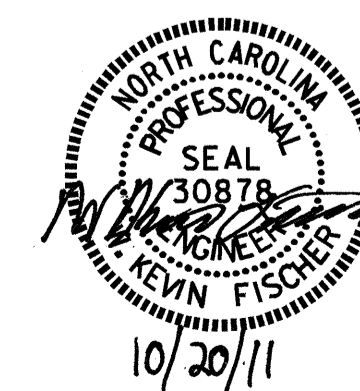
PROJECT NO. B-4050
CABARRUS COUNTY
 STATION: 26+65.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE

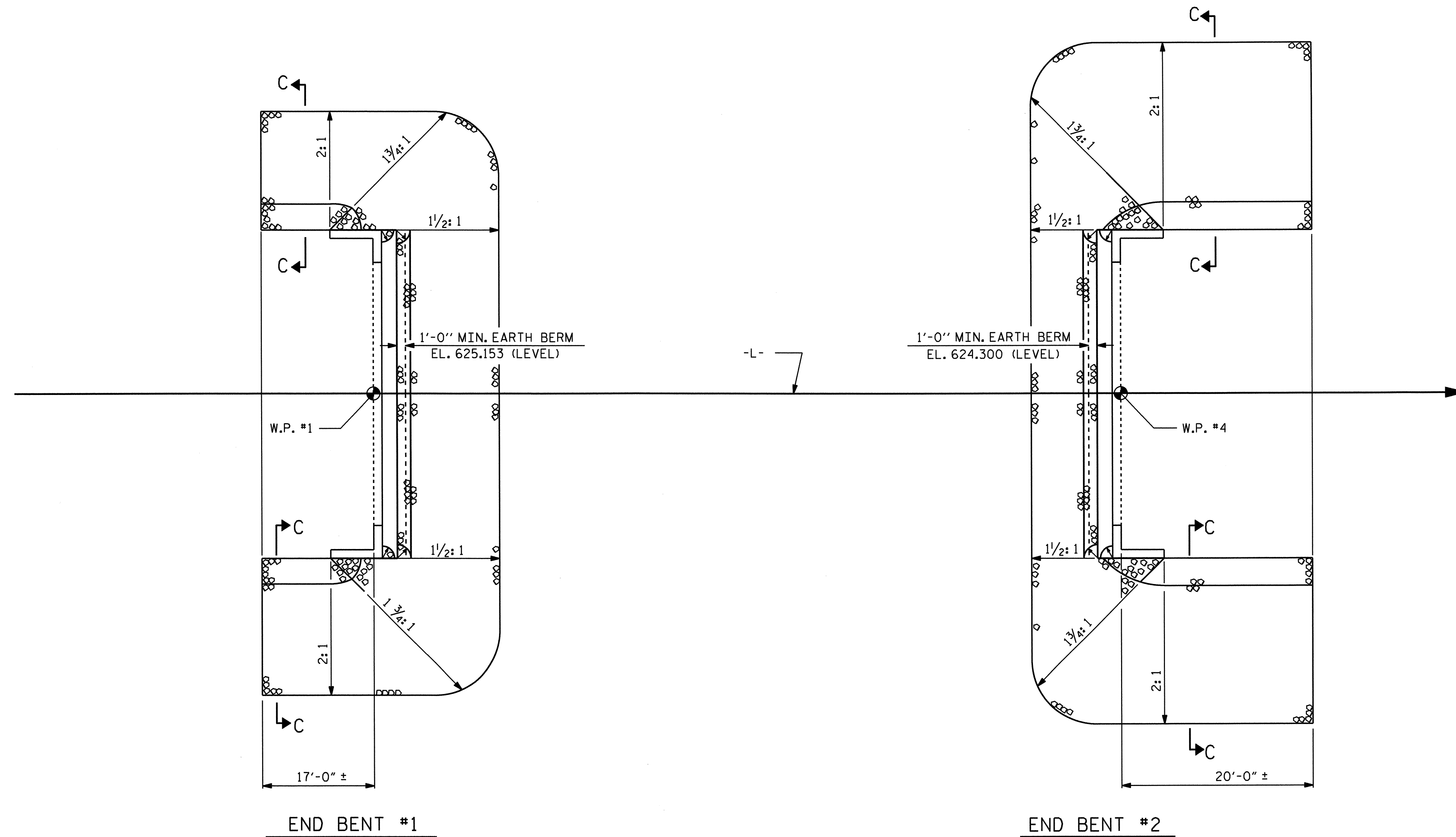
END BENT #2



DRAWN BY : B. L. GREEN DATE : 4/10
 CHECKED BY : K. D. LAYNE DATE : 4/10

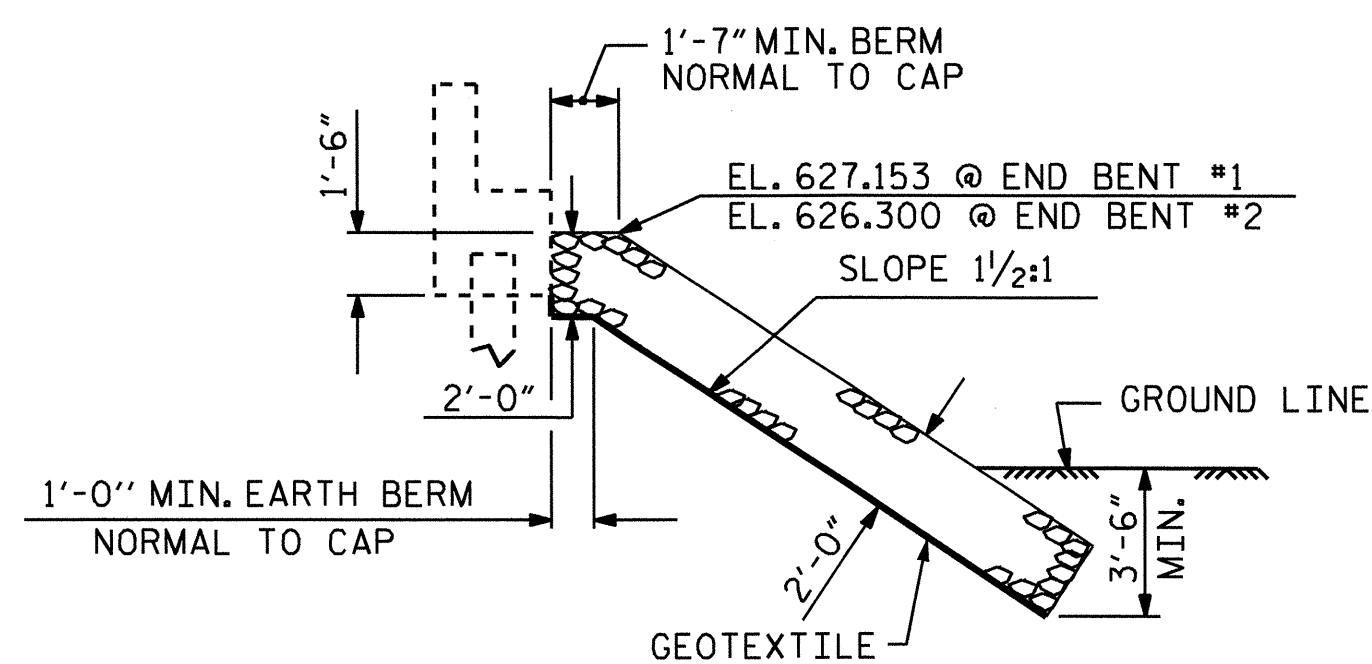
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 klayne

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			27



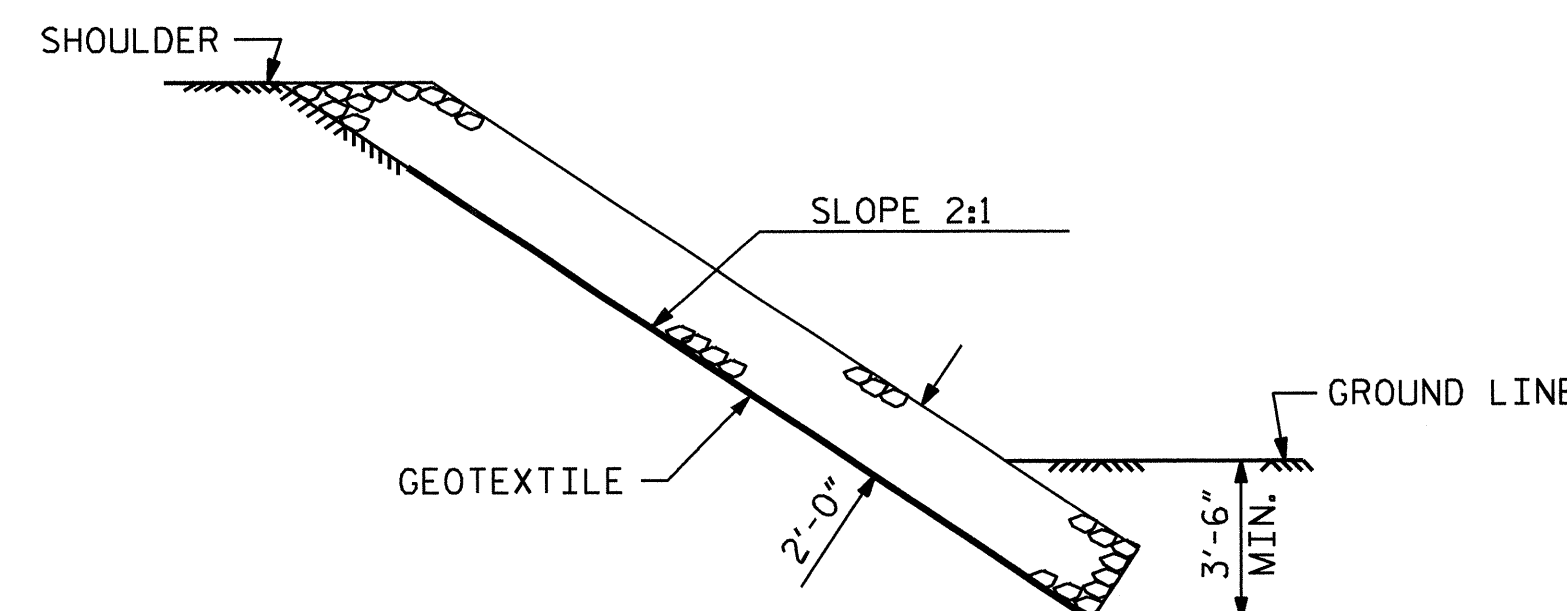
PLAN OF RIP RAP

ESTIMATED QUANTITIES		
BRIDGE @ STA. 26+65.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT #1	110	120
END BENT #2	150	165



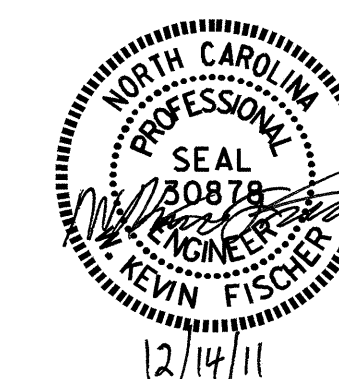
Q SECTION

BERM RIP RAPPED



SECTION C-C

PROJECT NO. B-4050
CABARRUS COUNTY
 STATION: 26+65.50 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

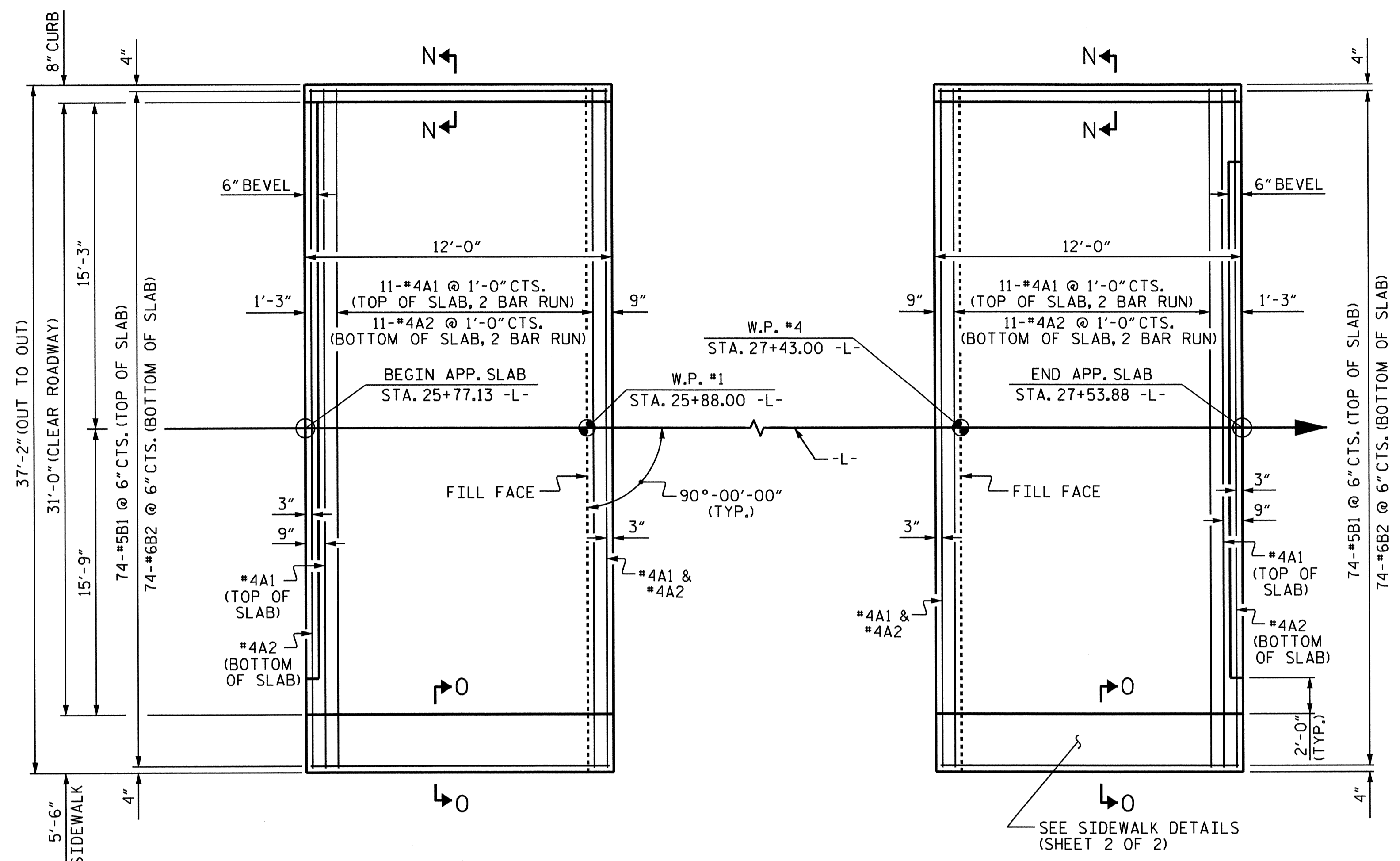
STANDARD
 = RIP RAP DETAILS =

ASSEMBLED BY: R. G. EMERSON	DATE: 12/10
CHECKED BY: M. K. BEARD	DATE: 01/11
DRAWN BY: FCJ 2/88	REV. 8/16/99 RWW/LES
CHECKED BY: ARB 8/88	REV. 10/17/00 RWW/LES
	REV. 5/1/06R TLA/GM

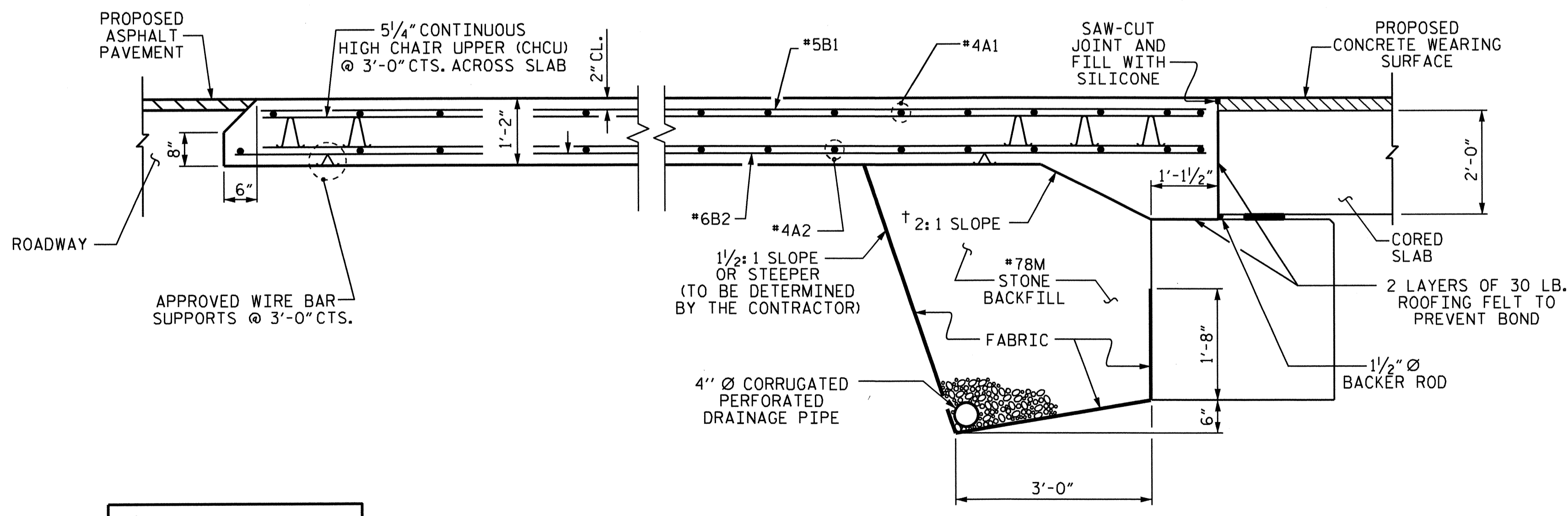
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			27

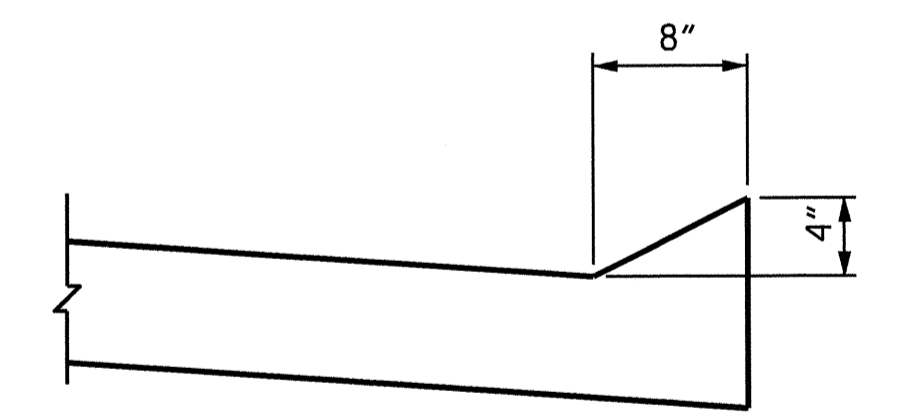
SKEW 90° STD. NO. RR2



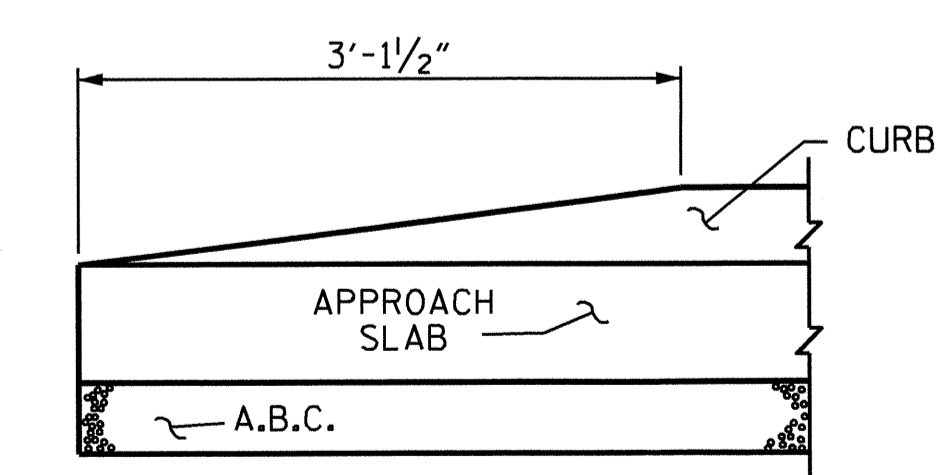
PLAN @ END BENT #1
 PLAN @ END BENT #2
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

NOTES

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

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

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

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

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

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.

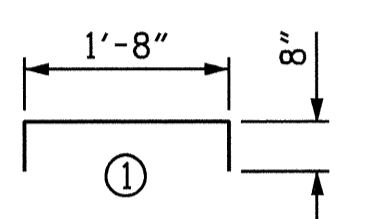
APPROACH SLAB GROOVING IS NOT REQUIRED.

BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D.)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	26	#4	STR	19'-6"	339
A2	26	#4	STR	19'-4"	336
*B1	74	#5	STR	11'-2"	862
B2	74	#6	STR	11'-8"	1297
*B3	4	#4	STR	11'-8"	31
*G1	12	#4	STR	5'-0"	40
*U1	6	#4	1	3'-0"	12

REINFORCING STEEL	LBS.	1633
*EPOXY COATED REINFORCING STEEL	LBS.	1284
CLASS AA CONCRETE	C. Y.	23.5

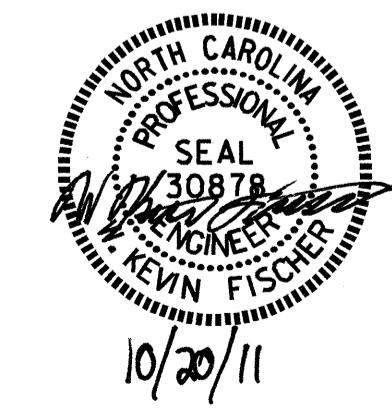


PROJECT NO. B-4050
 CABARRUS COUNTY
 STATION: 26+65.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

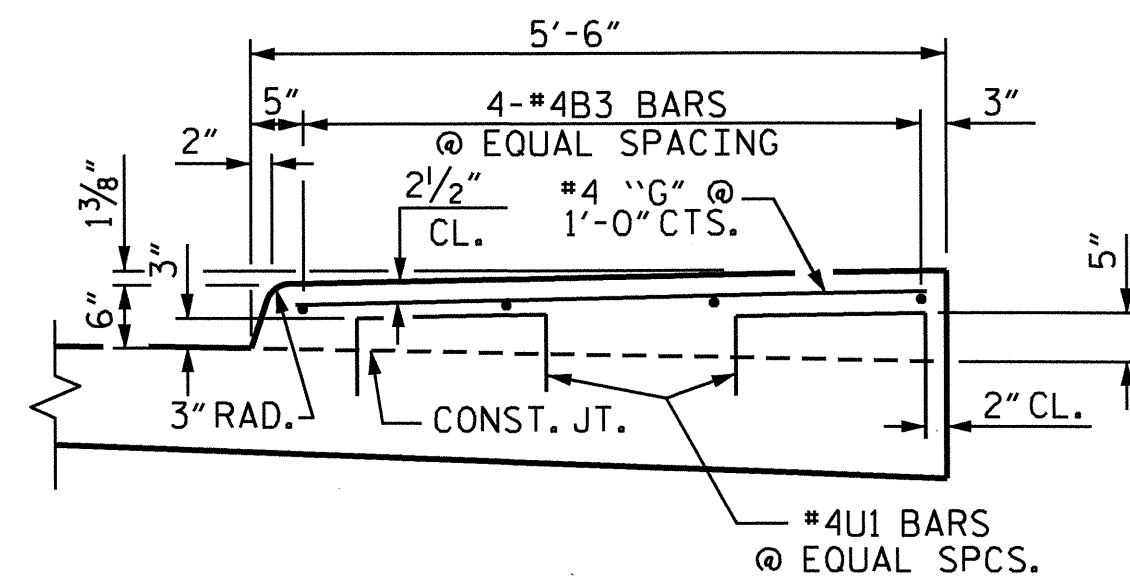
STANDARD
 BRIDGE APPROACH SLAB
 FOR PRESTRESSED CONCRETE
 CORED SLAB UNIT
 (SUB-REGIONAL TIER)



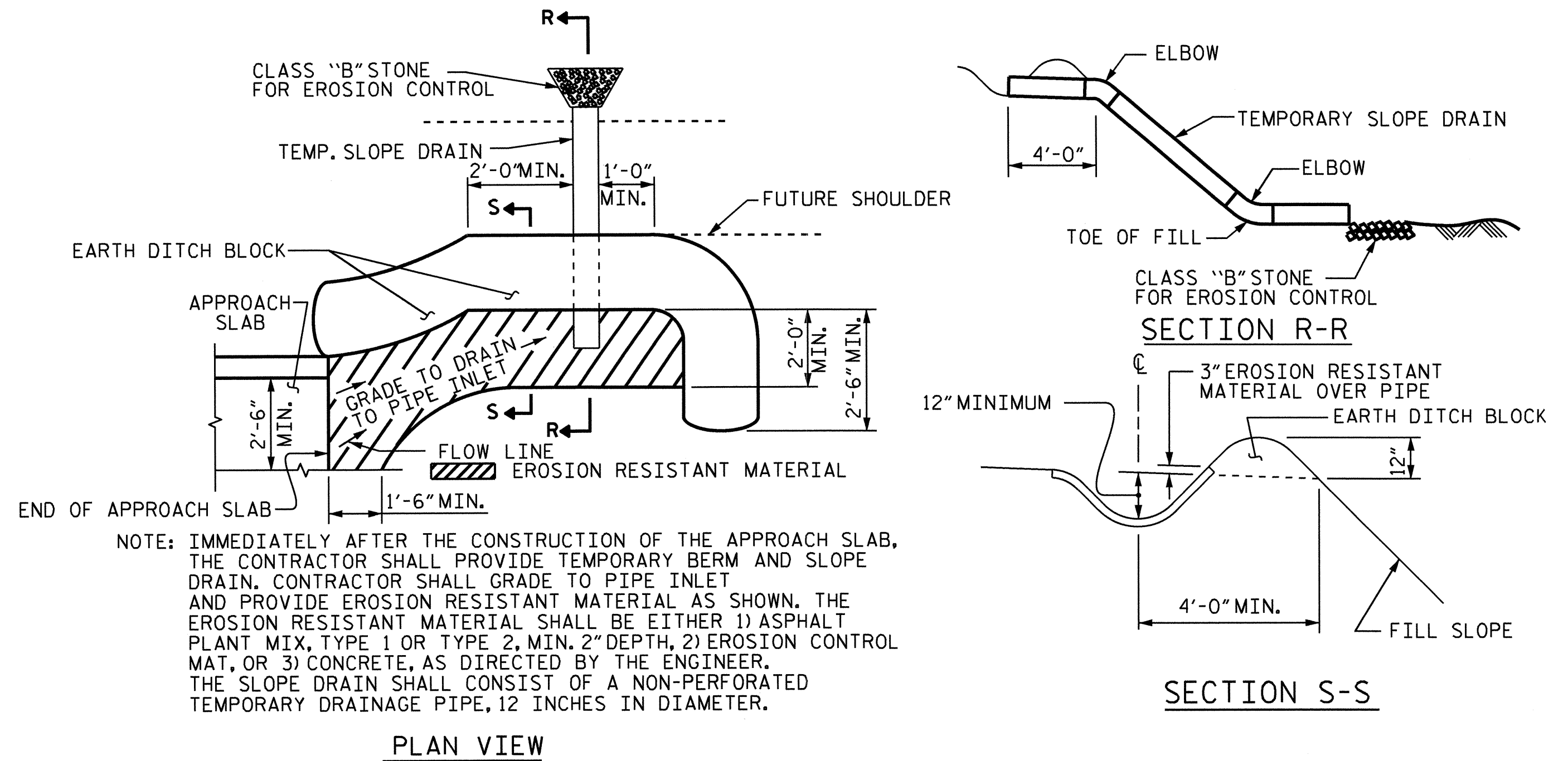
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			S-26
2			4			27

ASSEMBLED BY: R. G. EMERSON DATE: 10/10
 CHECKED BY: M. K. BEARD DATE: 01/11

DRAWN BY: KMM 3-08
 CHECKED BY: GM 3-08



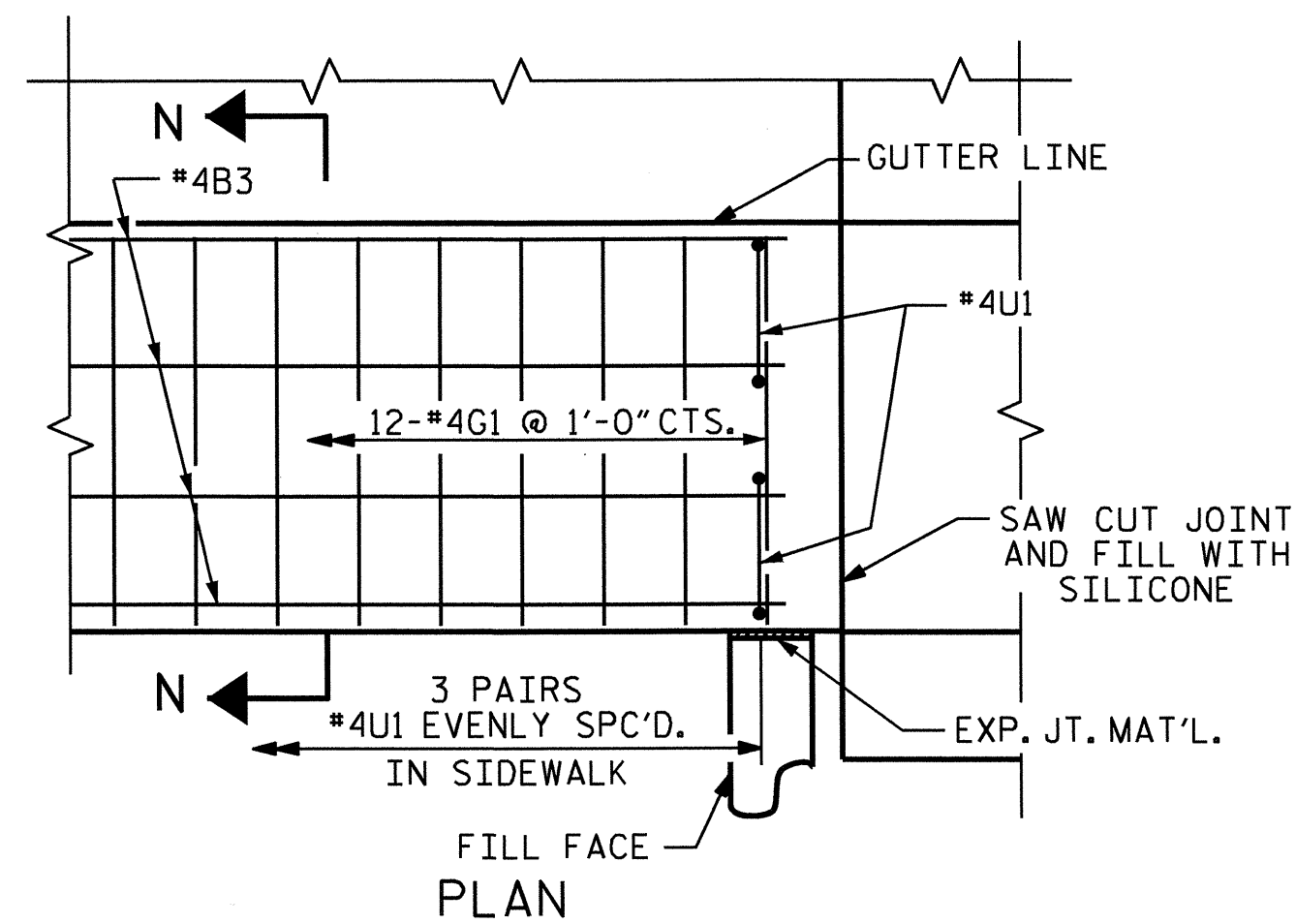
SECTION 0-0
SIDEWALK DETAILS



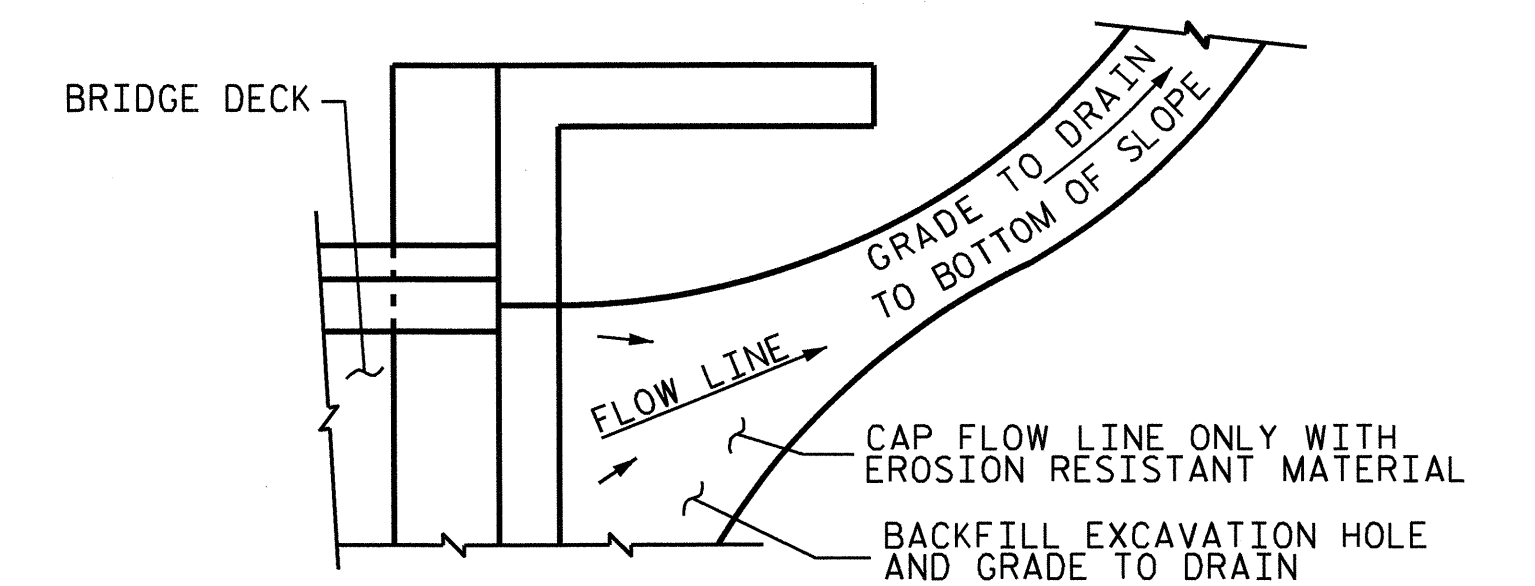
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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



DETAILS OF SIDEWALK
ON APPROACH SLAB

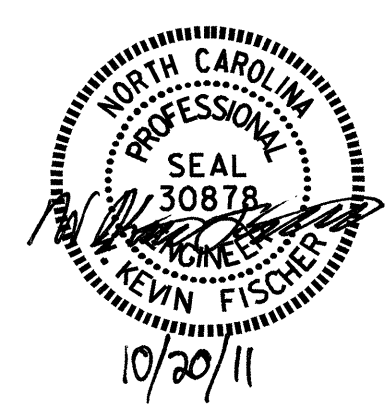


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. B-4050
CABARRUS COUNTY
STATION: 26+65.50 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.
STANDARD						S-27
BRIDGE APPROACH SLAB DETAILS						TOTAL SHEETS
REVISIONS						27
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

ASSEMBLED BY: R. G. EMERSON	DATE: 10/10
CHECKED BY: M. K. BEARD	DATE: 01/11
DRAWN BY: FCJ 11/88	REV. 10/17/00 RWW/LES
CHECKED BY: ARB 11/88	REV. 5/1/03 RWW/JTE
	REV. 5/1/06RR MAA/KMM

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 2006 "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. FINISH 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

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