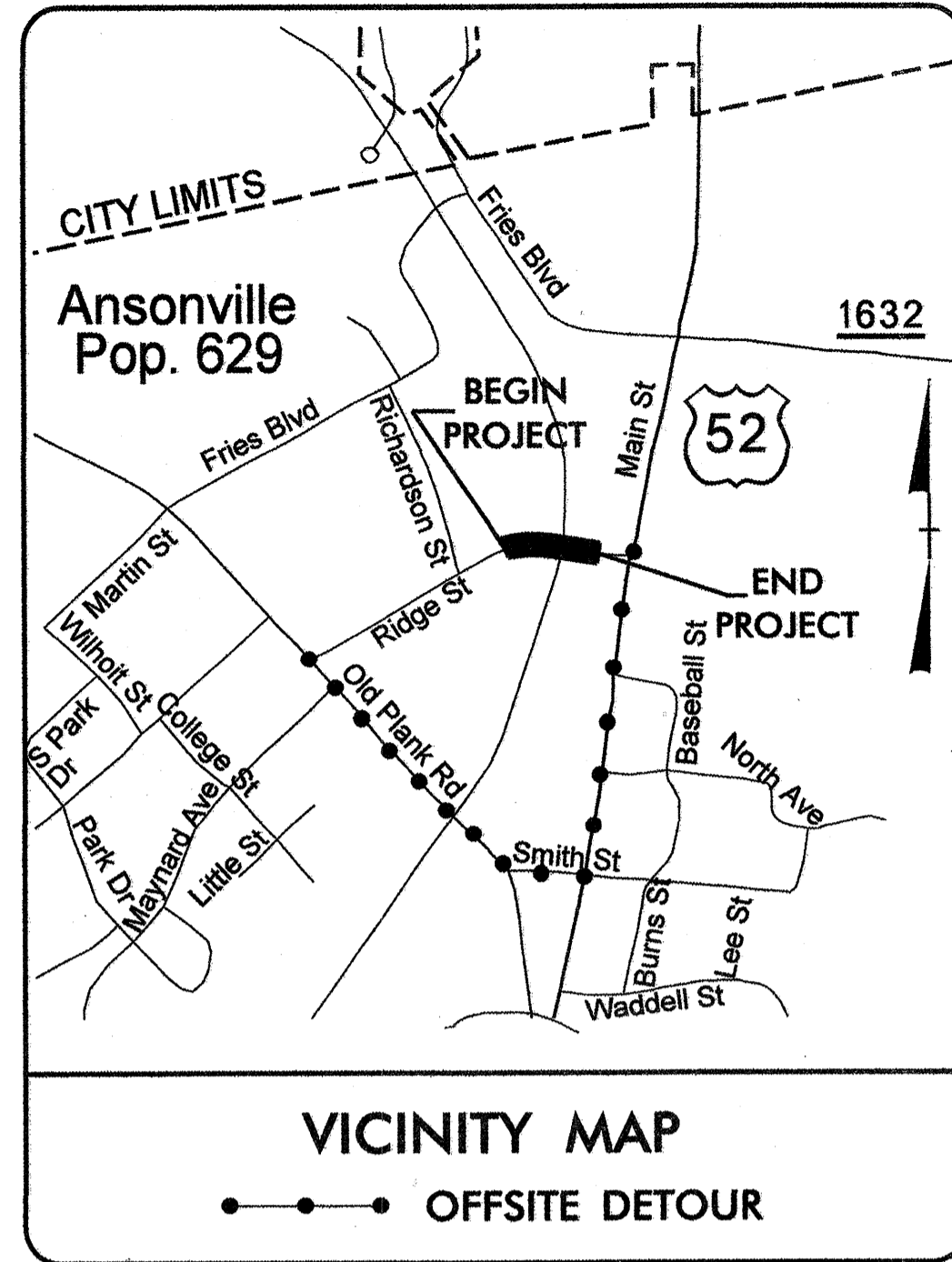


09/08/99

TIP: B-4861

CONTRACT: C203003

STRUCTURES

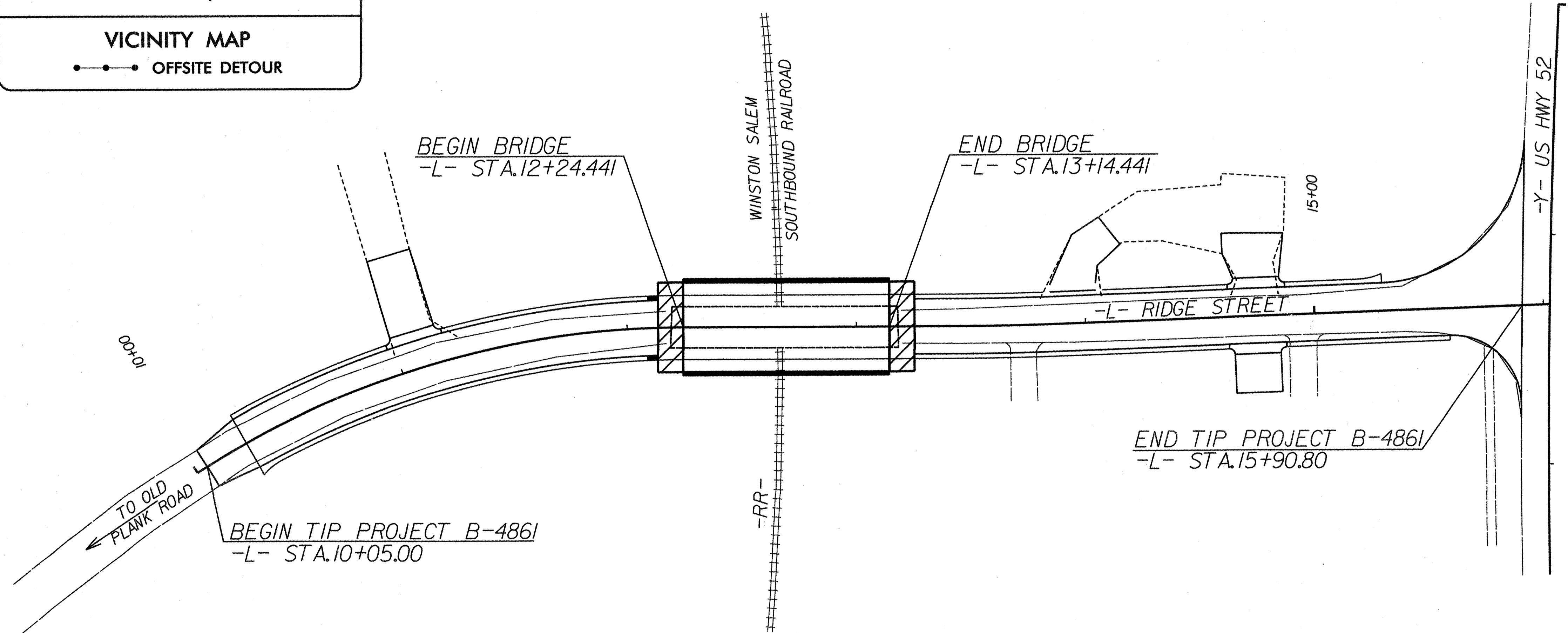


CITY OF ANSONVILLE ANSON COUNTY NORTH CAROLINA

LOCATION: BRIDGE NO. 88 ON RIDGE STREET OVER
WINSTON SALEM SOUTHBOUND RAILROAD

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE, & UTILITIES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4861		
WBS. NO.	F.A. PROJ. NO.	DESCRIPTION	
38194.1.1	BRZ-1002(21)	PE	
38194.2.1	BRZ-1002(21)	RW, UTILITY	
38194.3.1	BRZ-1002(21)	CONST.	



THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF ANSONVILLE.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

DESIGN DATA

ADT 2010 = 100
ADT 2030 = 150
TTST = 3% (2% Dual & 1% TTST)
V = 40 MPH

DESIGN EXCEPTION
REQUIRED FOR
HORIZONTAL SSD

PROJECT LENGTH

LENGTH ROADWAY PROJECT B-4861 = 0.094 MI
LENGTH STRUCTURE PROJECT B-4861 = 0.017 MI
TOTAL LENGTH PROJECT B-4861 = 0.111 MI

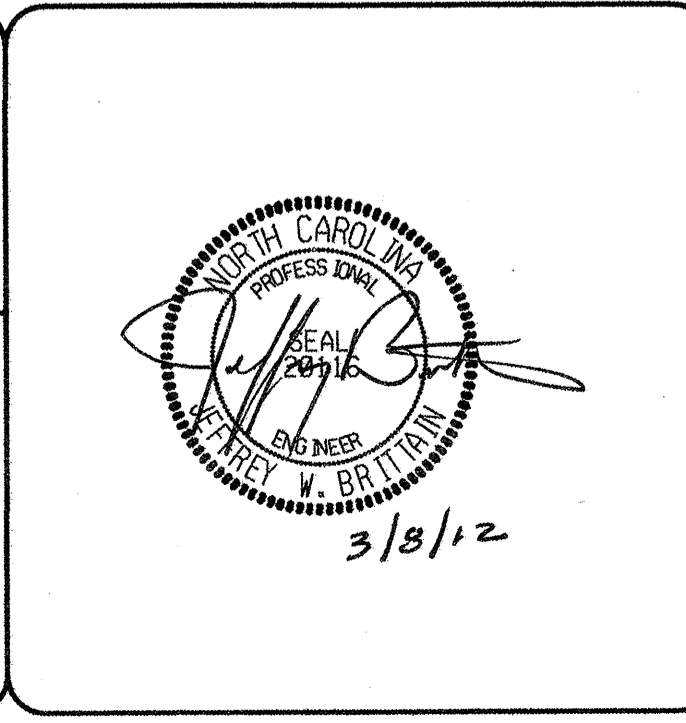
Plans Prepared By:
TGS ENGINEERS
107-A MICA AVENUE
MORGANTON, NC 28655
PH (919) 319-8850
CORP. LICENSE NO.: C-0275
2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
APRIL 24, 2009

LETTING DATE:
MAY 15, 2012

Plans Prepared for:
TOWN OF ANSONVILLE
P.O. BOX 437
ANSONVILLE, NC 28007

JIMMY L. TERRY, PE
PROJECT ENGINEER



DIANNA McLAUGHLIN
P.O. BOX 437
ANSONVILLE, NC 28007
TEL. (704) 826-8404

SYTIME

BENCH MARK 1

DESCRIPTION : RR SPIKE SET IN 14" PINE TREE
 STATION : -L- STA. 15+62.08, OFFSET 153.79' RT.
 ELEVATION : 357.48

VERTICAL CURVE DATA -L-

PI = 11+12.00-L-
 EL. = 351.45
 VC = 150'
 (-)2.1609% (+)0.8426%

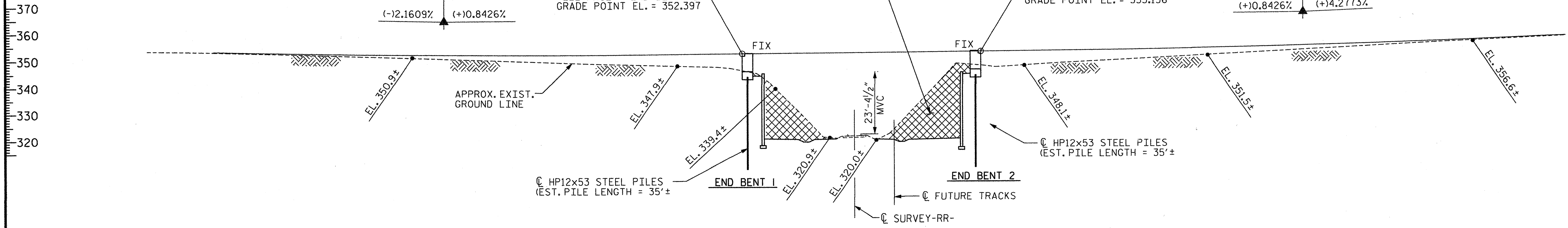
POT 12+24.441-L-
 FILL FACE @ END BENT #1
 GRADE POINT EL. = 352.397

UNCLASSIFIED
 STRUCTURE
 EXCAVATION

POT 13+14.441-L-
 FILL FACE @ END BENT #2
 GRADE POINT EL. = 353.156

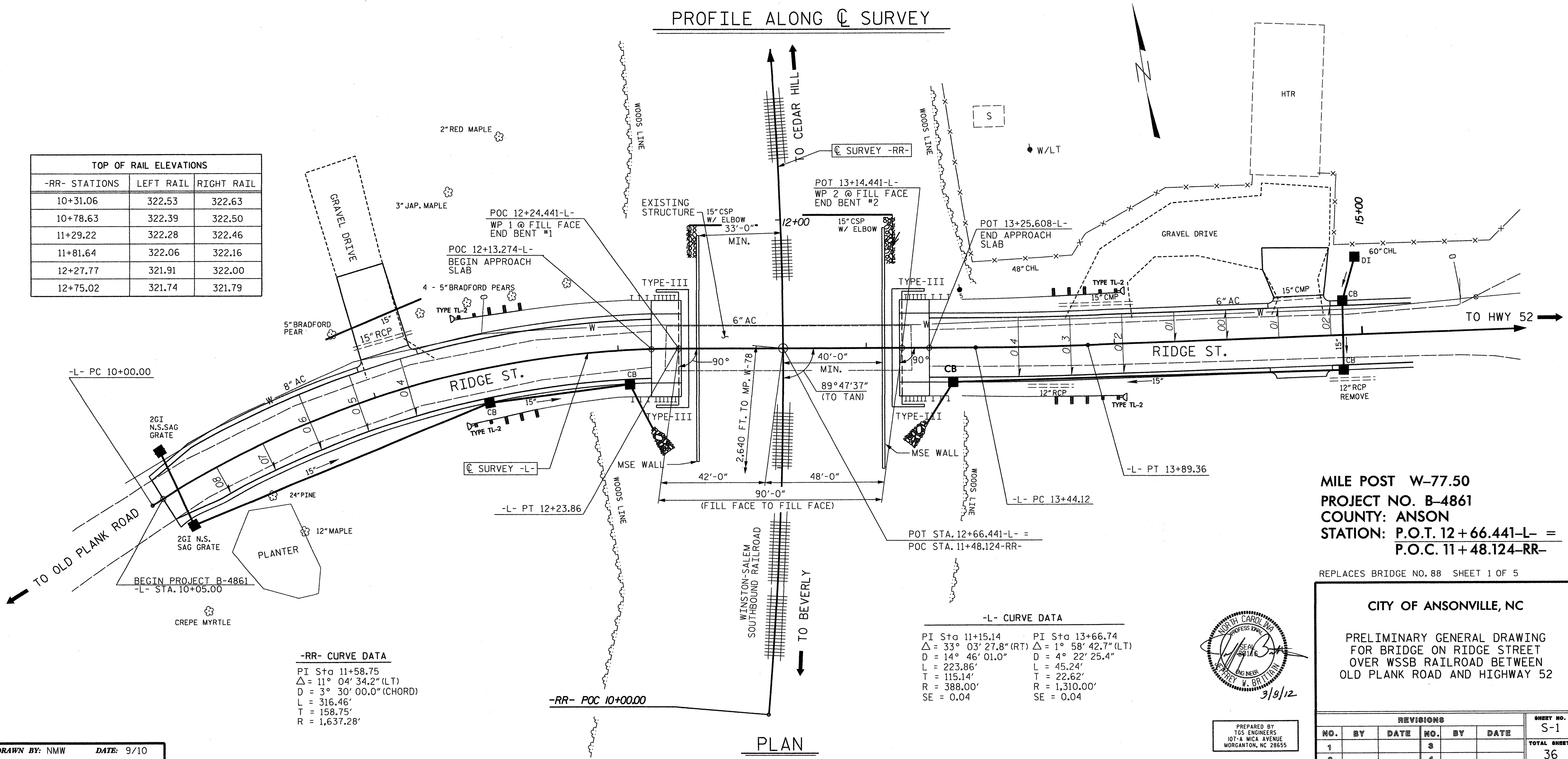
VERTICAL CURVE DATA -L-

PI = 14+36.00-L-
 EL. = 354.18
 VC = 170'
 (+)0.8426% (+)4.2773%



PROFILE ALONG C SURVEY

TOP OF RAIL ELEVATIONS		
-RR- STATIONS	LEFT RAIL	RIGHT RAIL
10+31.06	322.53	322.63
10+78.63	322.39	322.50
11+29.22	322.28	322.46
11+81.64	322.06	322.16
12+27.77	321.91	322.00
12+75.02	321.74	321.79



-RR- CURVE DATA
 PI Sta 11+58.75
 $\Delta = 11^\circ 04' 34.2''$ (LT)
 $D = 3^\circ 30' 00.0''$ (CHORD)
 $L = 316.46'$
 $T = 158.75'$
 $R = 1,637.28'$

-L- CURVE DATA

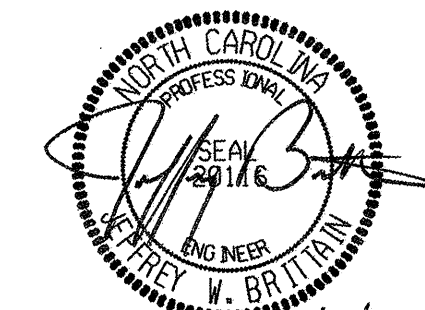
PI Sta 11+15.14 $\Delta = 33^\circ 03' 27.8''$ (RT) $L = 223.86'$ $T = 115.14'$ $R = 388.00'$ $SE = 0.04$
 PI Sta 13+66.74 $\Delta = 1^\circ 58' 42.7''$ (LT) $L = 45.24'$ $T = 22.62'$ $R = 1,310.00'$ $SE = 0.04$

MILE POST W-77.50
 PROJECT NO. B-4861
 COUNTY: ANSON
 STATION: P.O.T. 12+66.441-L- =
 P.O.C. 11+48.124-RR-

REPLACES BRIDGE NO. 88 SHEET 1 OF 5

CITY OF ANSONVILLE, NC

PRELIMINARY GENERAL DRAWING
 FOR BRIDGE ON RIDGE STREET
 OVER WSSB RAILROAD BETWEEN
 OLD PLANK ROAD AND HIGHWAY 52

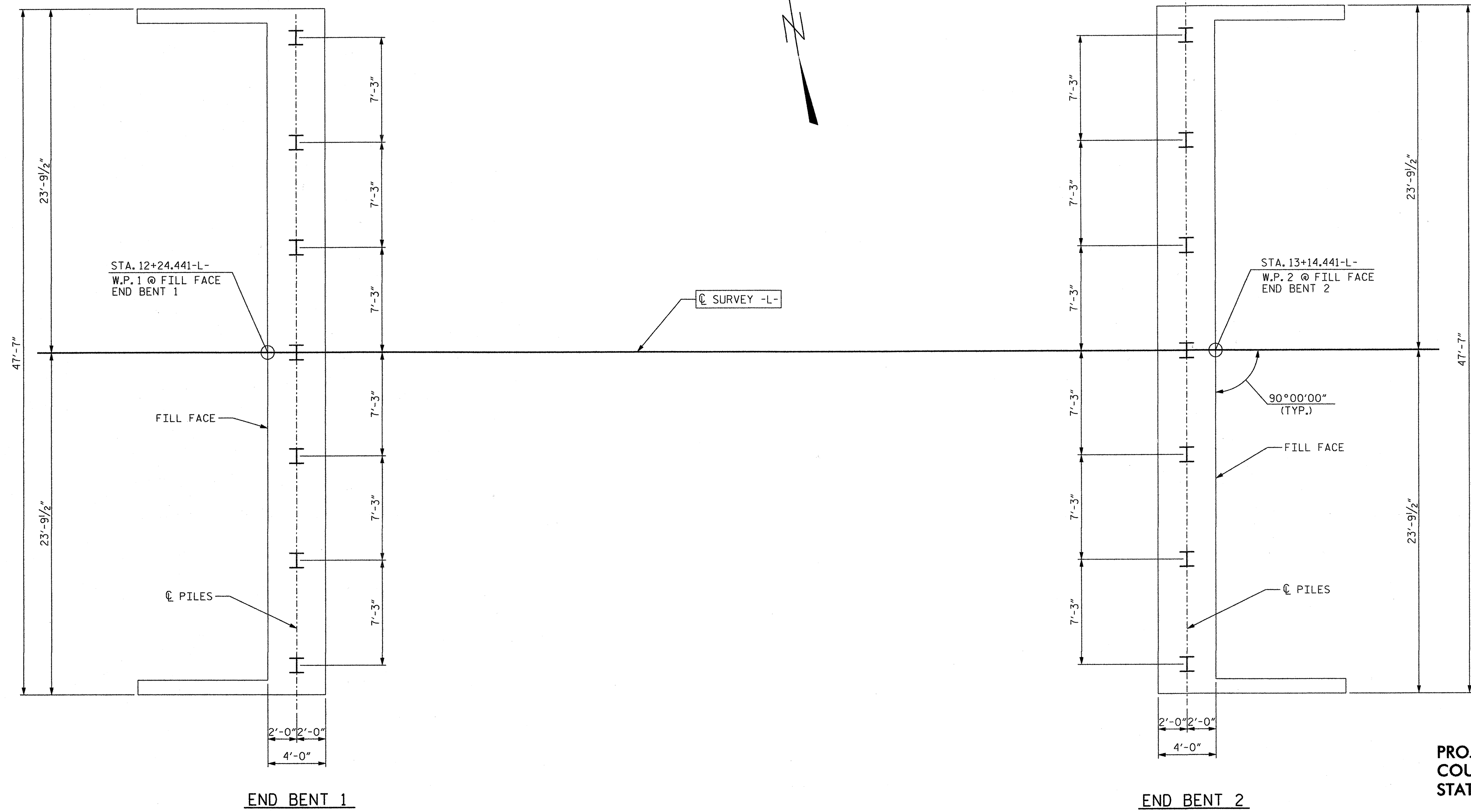


PREPARED BY
 TGS ENGINEERS
 107-A MICA AVENUE
 MORGANTON, NC 28655

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

DRAWN BY: NMW DATE: 9/10
 CHECKED BY: RTJ DATE: 9/10

PLAN



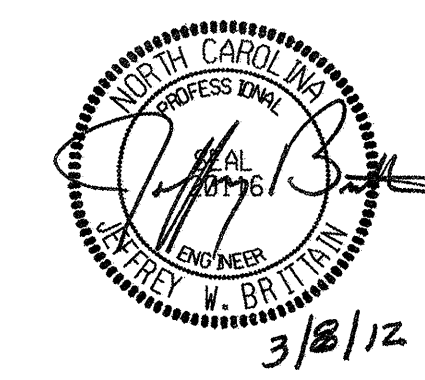
PROJECT NO. B-4861
 COUNTY: ANSON
 STATION: P.O.T. 12 + 66.441-L- =
 P.O.C. 11 + 48.124-RR-

REPLACES BRIDGE NO. 88 SHEET 2 OF 5

FOUNDATION LAYOUT PLAN

ALL PILES ARE HP12X53 STEEL PILES

NOTES:
 DIMENSIONS LOCATION PILES ARE SHOWN TO THE PILE CENTERLINE.



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 TOS ENGINEERS
 107-A MICA AVENUE
 MORGANTON, NC 28655

CITY OF ANSONVILLE, NC					
FOUNDATION LAYOUT					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		
					SHEET NO. S-2 TOTAL SHEETS 36

DRAWN BY: NMW DATE: 12/07
 CHECKED BY: RTJ DATE: 10/10

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

UNLESS OTHERWISE NOTED, ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, JULY 2006.

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

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND THE 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.

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

THE RAILROAD TRACK TOP OF RAIL ELEVATIONS SHOWN ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE TOP OF RAIL ELEVATIONS AND REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 12+66.441-L-".

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 49 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.

FOR PILES, SEE SPECIAL PROVISIONS.

DRIVE PILES AT END BENT 1 AND END BENT 2 TO A REQUIRED BEARING CAPACITY OF 100 TONS PER PILE. THE REQUIRED BEARING CAPACITY IS EQUAL TO THE ALLOWABLE BEARING CAPACITY WITH A MINIMUM FACTOR OF SAFETY OF TWO.

STEEL H-PILE POINTS ARE REQUIRED FOR H PILES AT END BENT 1 AND END BENT 2. FOR STEEL PILE POINTS, SEE THE "PILES" SPECIAL PROVISIONS.

TESTING THE FIRST PRODUCTION PILE WITH THE PILE DRIVING ANALYZER (PDA) DURING DRIVING, RE STRIKING, OR RE DRIVING IS REQUIRED. FOR PILE DRIVING ANALYZER, SEE SPECIAL PROVISIONS.

PILE EXCAVATION IS REQUIRED TO INSTALL PILES AT END BENT 1 AND END BENT 2. EXCAVATE HOLES TO AN ELEVATION THAT PROVIDES 10 FEET OF PILE PENETRATION BELOW THE BOTTOM OF THE MSE WALLS. AFTER PLACING PILES IN HOLES, DRIVE PILES TO THE REQUIRED DRIVING RESISTANCE. FOR PILE EXCAVATION, SEE THE "PILES" SPECIAL PROVISIONS.

FOR BLASTING ADJACENT TO HIGHWAY STRUCTURES, SEE SECTION 410-11 OF THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES. IN ADDITION, THE AREMA MANUAL (AMERICAN RAILWAY ENGINEERING AND MAINTENANCE OF WAY ASSOCIATION) HAS REQUIREMENTS FOR THE CONTROLLED BLASTING OF ROCK. SEE "ROADBED" SECTIONS 1.3.5.8 AND 1.3.5.9.

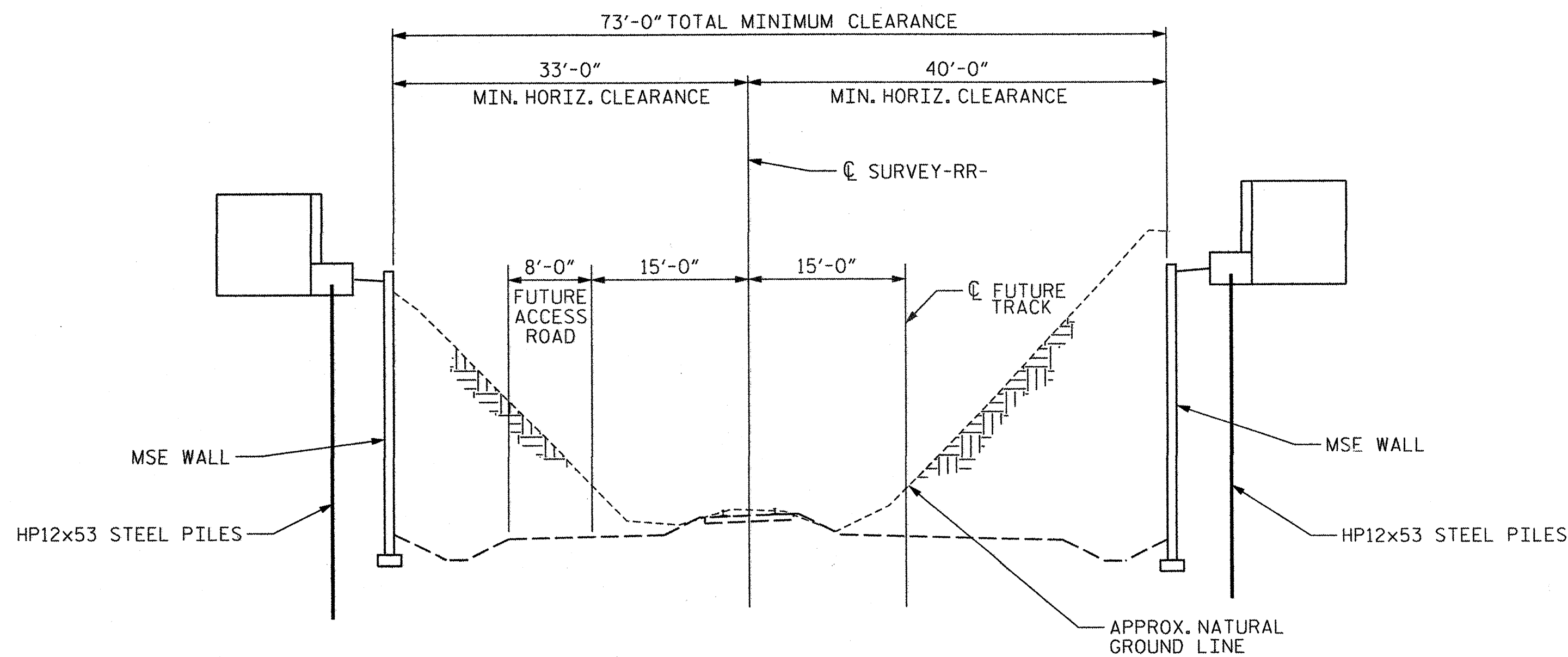
FOR CRANE SAFETY, SEE PROJECT SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURE, SEE SPECIAL PROVISIONS.

FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.

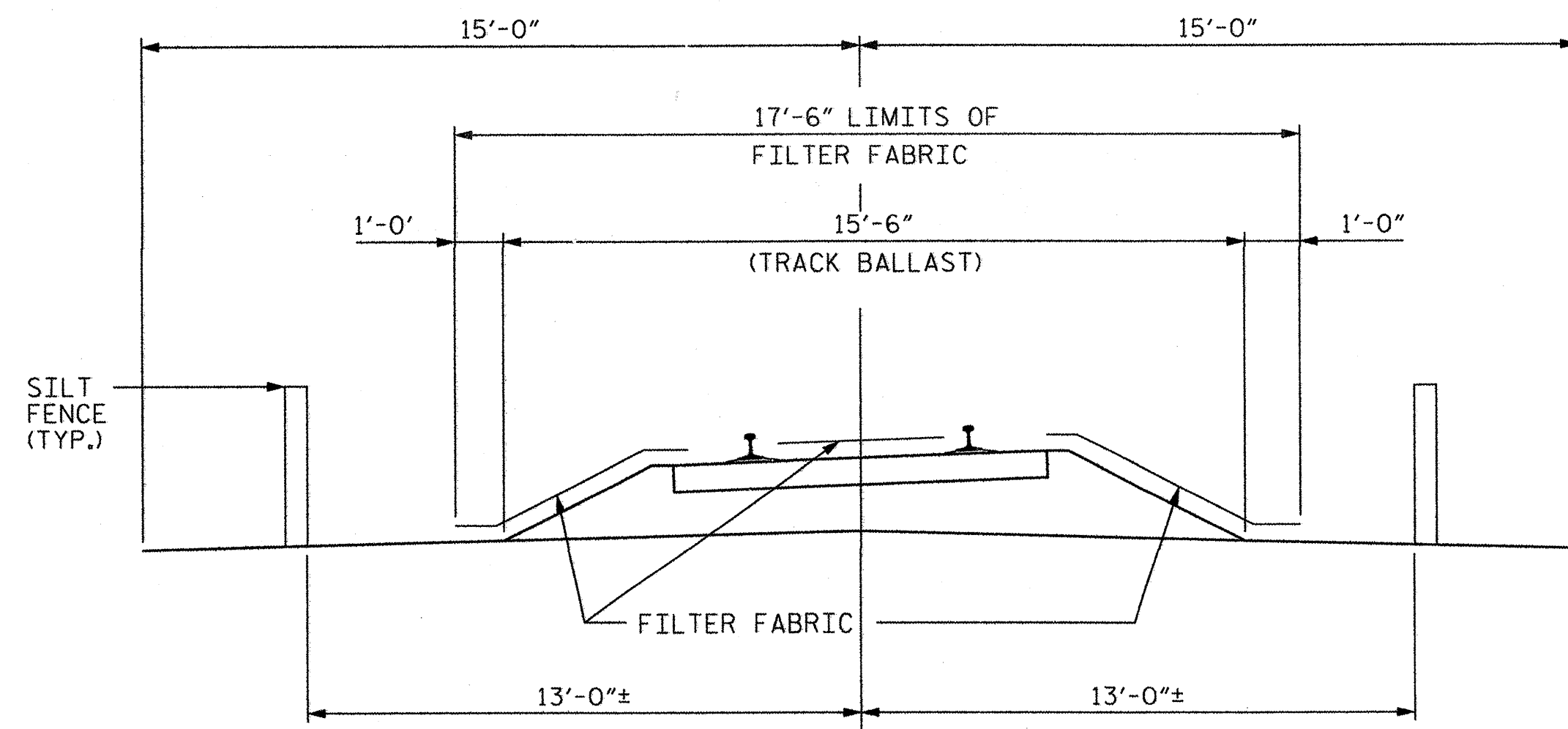
FOR FORMS FOR CONCRETE BRIDGE DECKS, SEE SPECIAL PROVISIONS.

FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.



MINIMUM CLEARANCE - RAILROAD

(LOOKING STATION AHEAD ALONG RAILROAD)
SPAN LENGTH BASED ON THIS THEORETICAL SECTION



RAILROAD EROSION CONTROL DETAIL

NOTES

RAILROAD EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO PERFORMING ANY WORK IN THE RAILROAD RIGHT-OF-WAY.

ADDITIONAL EROSION CONTROL MEASURES FOR PROTECTION OF RAILROAD DITCHES MAY BE REQUIRED AS DIRECTED BY THE ENGINEER.

NO SEPARATE PAYMENT WILL BE MADE FOR RAILROAD EROSION CONTROL MEASURES.

LIMITS OF SILT FENCE AND FILTER FABRIC PARALLEL TO RAILROAD SHALL EXTEND A MINIMUM OF 10'-0" OUTSIDE EDGE OF SUPERSTRUCTURE OR TOE OF SLOPE ON CONSTRUCTION. A GREATER LENGTH OR SILT FENCE OR FILTER FABRIC MAY BE REQUIRED IF SO DIRECTED BY THE ENGINEER.

FILTER FABRIC TO BE NAILED TO TIMBER RAIL TIES WITH PRIME SOURCE "GRIP CAP" OR EQUIVALENT. FILTER FABRIC ON SHOULDER TO BE SECURED AS DIRECTED BY THE ENGINEER AND RAILROAD.

DRAWN BY: NMW DATE: 9/10
CHECKED BY: RTJ DATE: 10/10



PREPARED BY
TOS ENGINEERS
107-A MICA AVENUE
MORGANTON, NC 28655

MILE POST W-77.50
PROJECT NO. B-4861
COUNTY: ANSON
STATION: P.O.T. 12+66.441-L- =
P.O.C. 11+48.124-RR-

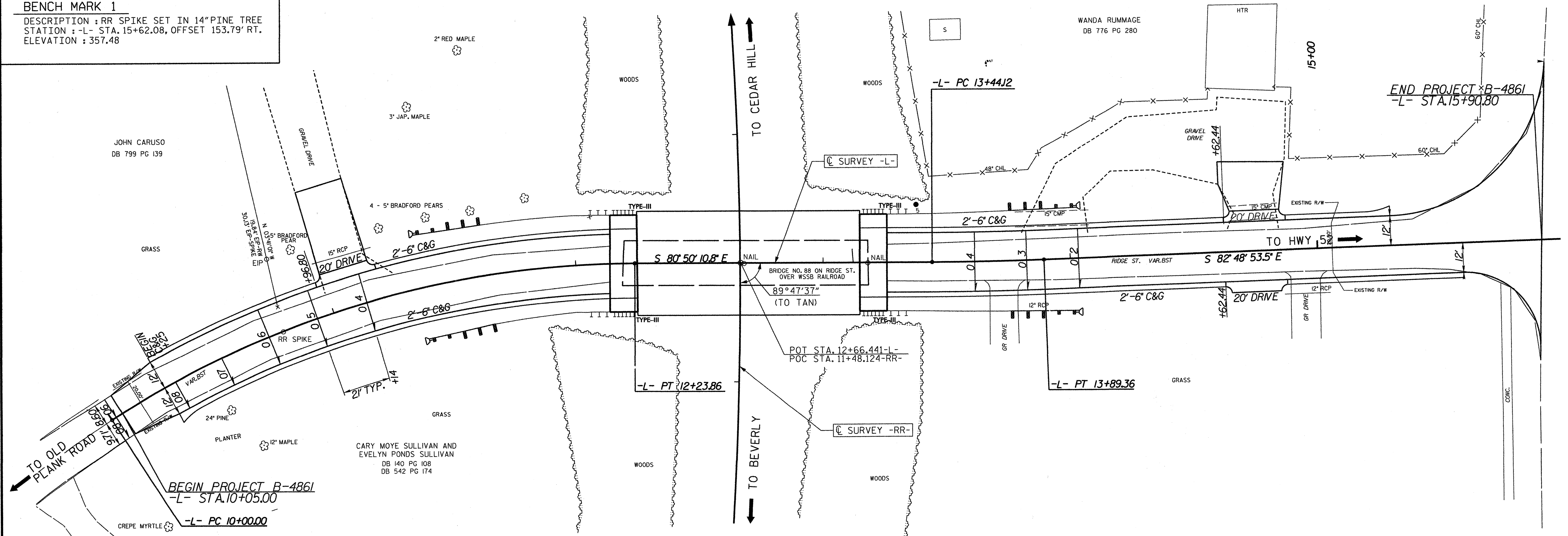
REPLACES BRIDGE NO. 88 SHEET 3 OF 5

CITY OF ANSONVILLE, NC
PRELIMINARY GENERAL DRAWING
FOR BRIDGE ON RIDGE STREET
OVER WSSB RAILROAD BETWEEN
OLD PLANK ROAD AND HIGHWAY 52

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

BENCH MARK 1

DESCRIPTION : RR SPIKE SET IN 14" PINE TREE
 STATION : -L- STA. 15+62.08, OFFSET 153.79' RT.
 ELEVATION : 357.48



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

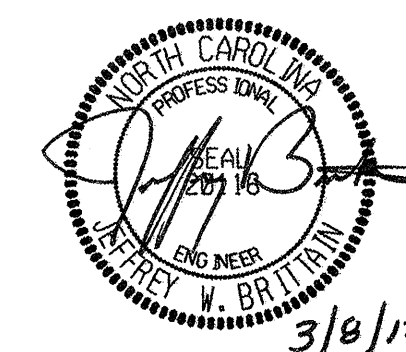
ITEM	REMOVAL OF EXISTING STRUCTURE AT STATION 12+66.441-L-		PILE EXCAVATION NOT IN SOIL	PDA TESTING	UNCLASSIFIED STRUCTURE EXCAVATION AT STATION 12+66.441-L-	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE (BRIDGE)	BRIDGE APPROACH SLABS	
	LUMP SUM		LIN. FT.	EA.	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	
SUPERSTRUCTURE						3,743	2,673			
END BENT 1			70					26.0		
END BENT 2			70					26.0		
TOTALS	LUMP SUM		140	1	LUMP SUM	3,743	2,673	52.0	LUMP SUM	
ITEM	REINFORCING STEEL (BRIDGE)	MODIFIED 63" PRESTRESSED CONC. GIRDERS		HP12x53 STEEL PILES	STEEL PILE POINTS	THREE BAR METAL RAIL	ELASTOMERIC BEARINGS	MSE RETAINING WALL	PROTECTIVE FENCING	
	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	EA.	LF	LUMP SUM	SQ. FT.	LF
SUPERSTRUCTURE		5	437.1				161.7			160
END BENT 1	4,931			7	245	7			2,603	
END BENT 2	4,931			7	245	7			3,008	
TOTALS	9,862	5	437.1	14	490	14	161.7	LUMP SUM	5,611	160

MILE POST W-77.50
PROJECT NO. B-4861
COUNTY: ANSON
STATION: P.O.T. 12+66.441-L- =
P.O.C. 11+48.124-RR-

REPLACES BRIDGE NO. 88 SHEET 4 OF 5

CITY OF ANSONVILLE, NC

PRELIMINARY GENERAL DRAWING
 FOR BRIDGE ON RIDGE STREET
 OVER WSSB RAILROAD BETWEEN
 OLD PLANK ROAD AND HIGHWAY 52



PREPARED BY
 TGS ENGINEERS
 107-A MICA AVENUE
 MORGANTON, NC 28655

DRAWN BY: NMW **DATE:** 9/10
CHECKED BY: RTJ **DATE:** 10/10

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

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

LEVI	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								
						LIVLOAD 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)	LIVLOAD 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	1.24	---	1.75	0.739	1.83	86.0	I	43.0	0.861	2.05	86.0	I	8.03	0.80	0.739	1.24	86.0	I	43.0	1, 2	
	HL-93(0pr)	N/A	--	2.37	---	1.35	0.739	2.37	86.0	I	43.0	0.861	2.70	86.0	I	8.03	N/A	---	---	---	---	---	1, 2	
	HS-20(Inv)	36.000	2	1.68	60.4	1.75	0.739	2.47	86.0	I	43.0	0.861	2.70	86.0	I	8.03	0.80	0.739	1.68	86.0	I	43.0	1, 2	
	HS-20(0pr)	36.000	--	3.20	115.2	1.35	0.739	3.20	86.0	I	43.0	0.861	3.53	86.0	I	8.03	N/A	---	---	---	---	---	1, 2	
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.91	52.7	1.4	0.739	7.18	86.0	I	43.0	0.861	8.40	86.0	I	8.03	0.80	0.739	3.91	86.0	I	43.0	1, 2
		SNGARBS2	20.000	--	2.86	57.2	1.4	0.739	5.26	86.0	I	43.0	0.861	5.89	86.0	I	8.03	0.80	0.739	2.86	86.0	I	43.0	1, 2
		SNAGRIS2	22.000	--	2.69	59.1	1.4	0.739	4.94	86.0	I	43.0	0.861	5.44	86.0	I	8.03	0.80	0.739	2.69	86.0	I	43.0	1, 2
		SNCOTTS3	27.250	--	1.94	52.8	1.4	0.739	3.57	86.0	I	43.0	0.861	4.14	86.0	I	8.03	0.80	0.739	1.94	86.0	I	43.0	1, 2
		SNAGRS4	34.925	--	1.60	55.8	1.4	0.739	2.95	86.0	I	43.0	0.861	3.38	86.0	I	8.03	0.80	0.739	1.60	86.0	I	43.0	1, 2
		SNS5A	35.550	--	1.57	55.8	1.4	0.739	2.88	86.0	I	43.0	0.861	3.40	86.0	I	8.03	0.80	0.739	1.57	86.0	I	43.0	1, 2
		SNS6A	39.950	--	1.43	57.1	1.4	0.739	2.63	86.0	I	43.0	0.861	3.08	86.0	I	8.03	0.80	0.739	1.43	86.0	I	43.0	1, 2
	SNS7B	42.000	--	1.36	57.1	1.4	0.739	2.51	86.0	I	43.0	0.861	3.01	86.0	I	8.03	0.80	0.739	1.36	86.0	I	43.0	1, 2	
	TTST	TNAGRIT3	33.000	--	1.74	57.4	1.4	0.739	3.21	86.0	I	43.0	0.861	3.68	86.0	I	8.03	0.80	0.739	1.74	86.0	I	43.0	1, 2
		TNT4A	33.075	--	1.75	57.8	1.4	0.739	3.22	86.0	I	43.0	0.861	3.62	86.0	I	8.03	0.80	0.739	1.75	86.0	I	43.0	1, 2
		TNT6A	41.600	--	1.42	59.0	1.4	0.739	2.62	86.0	I	43.0	0.861	3.18	86.0	I	8.03	0.80	0.739	1.42	86.0	I	43.0	1, 2
		TNT7A	42.000	--	1.43	60.0	1.4	0.739	2.62	86.0	I	43.0	0.861	3.12	86.0	I	8.03	0.80	0.739	1.43	86.0	I	43.0	1, 2
		TNT7B	42.000	--	1.47	61.7	1.4	0.739	2.70	86.0	I	43.0	0.861	2.95	86.0	I	8.03	0.80	0.739	1.47	86.0	I	43.0	1, 2
		TNAGRIT4	43.000	--	1.40	60.2	1.4	0.739	2.58	86.0	I	43.0	0.861	2.85	86.0	I	8.03	0.80	0.739	1.40	86.0	I	43.0	1, 2
TNAGT5A		45.000	--	1.33	59.8	1.4	0.739	2.44	86.0	I	43.0	0.861	2.80	86.0	I	8.03	0.80	0.739	1.33	86.0	I	43.0	1, 2	
TNAGT5B	45.000	3	1.31	58.9	1.4	0.739	2.41	86.0	I	43.0	0.861	2.70	86.0	I	8.03	0.80	0.739	1.31	86.0	I	43.0	1, 2		

LOAD FACTORS:

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

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 DISTANCES ARE TAKEN FROM LEFT BEARING.
- CONCRETE TENSION RATING BASED ON ZERO TENSION ALONG BOTTOM FACE.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

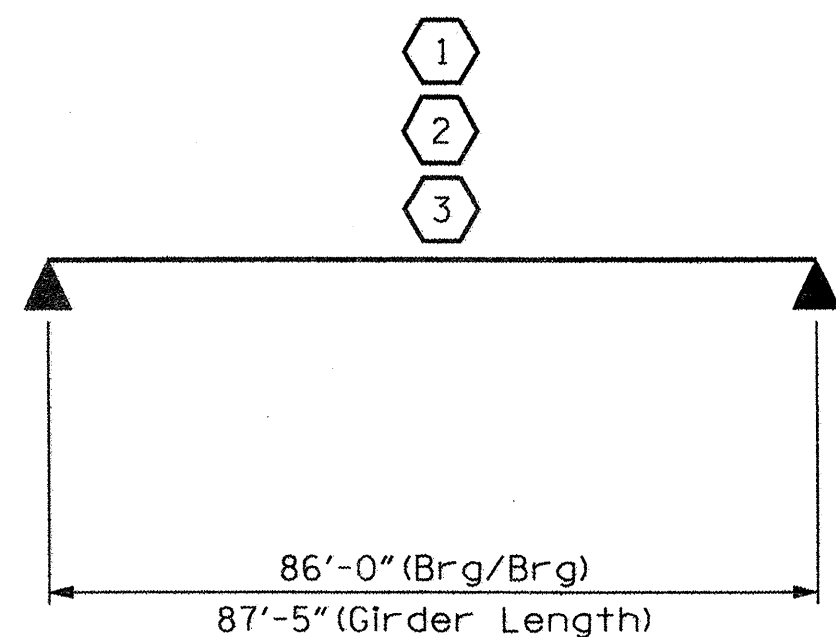
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY
FOR SPAN 1

MILE POST W-77.50
PROJECT NO. B-4861
COUNTY: ANSON
STATION: P.O.T. 12 + 66.441-L- =
P.O.C. 11 + 48.124-RR-

REPLACES BRIDGE NO. 88 SHEET 5 OF 5



PREPARED BY
TGS ENGINEERS
107-A MICA AVENUE
MORGANTON, NC 28655

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR
63" MODIFIED BULB-TEE
90° SKEW
(NON-INTERSTATE TRAFFIC)

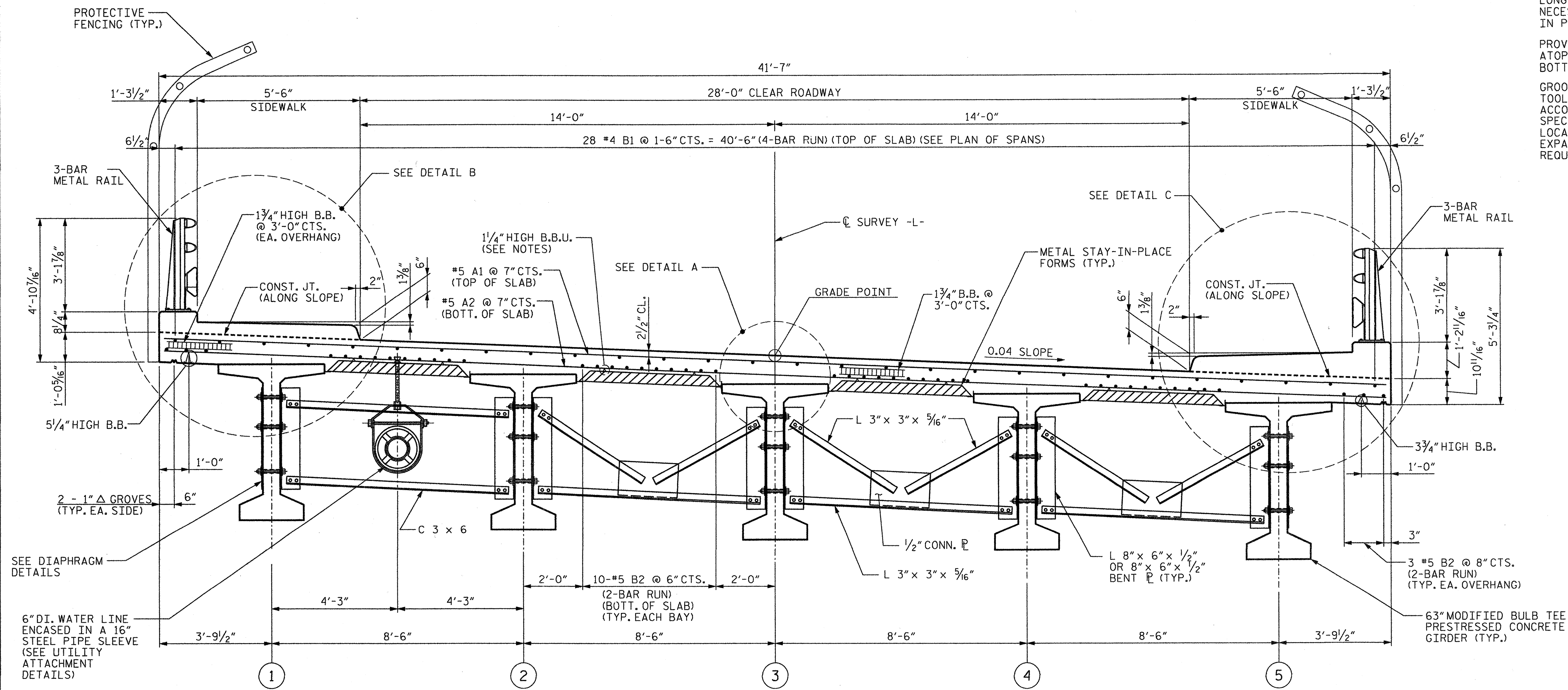
ASSEMBLED BY : RTJ	DATE : 11/11
CHECKED BY : RDE	DATE : 11/11
DRAWN BY : CVC 6/10	
CHECKED BY : DNS 6/10	

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S-5
2			4			TOTAL SHEETS 36

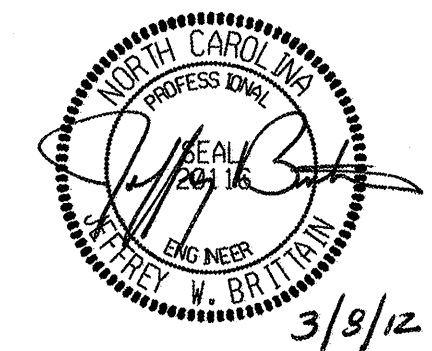
LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY AS NECESSARY TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

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.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8'-0" TO 10'-0" BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10'-0" IN LENGTH.



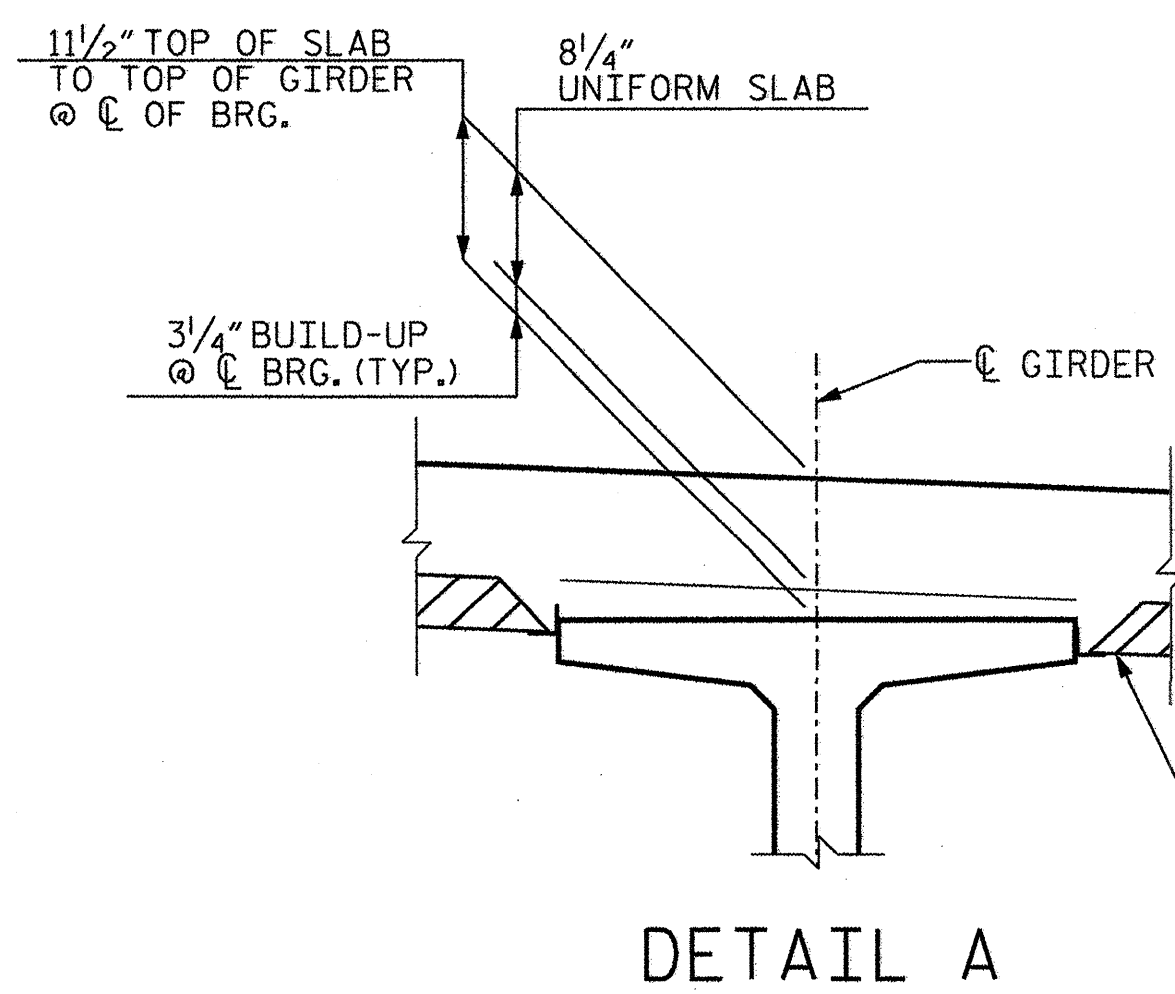
TYPICAL SECTION AT INTERMEDIATE DIAPHRAGMS



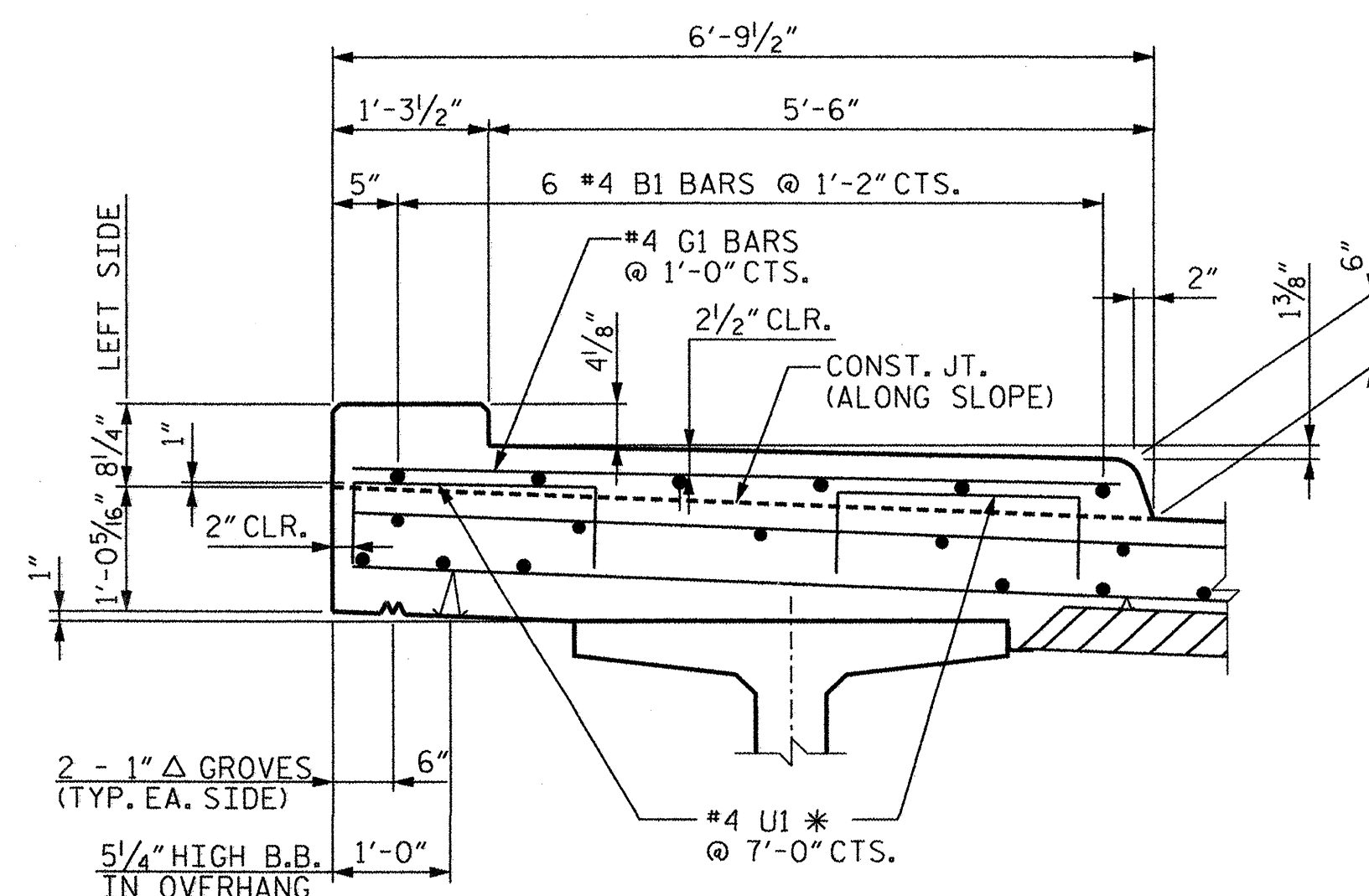
PROJECT NO. B-4861
 COUNTY: ANSON
 STATION: P.O.T. 12 + 66.441-L- =
 P.O.C. 11 + 48.124-RR-

SHEET 1 OF 2

CITY OF ANSONVILLE, NC
 SUPERSTRUCTURE
 TYPICAL SECTIONS

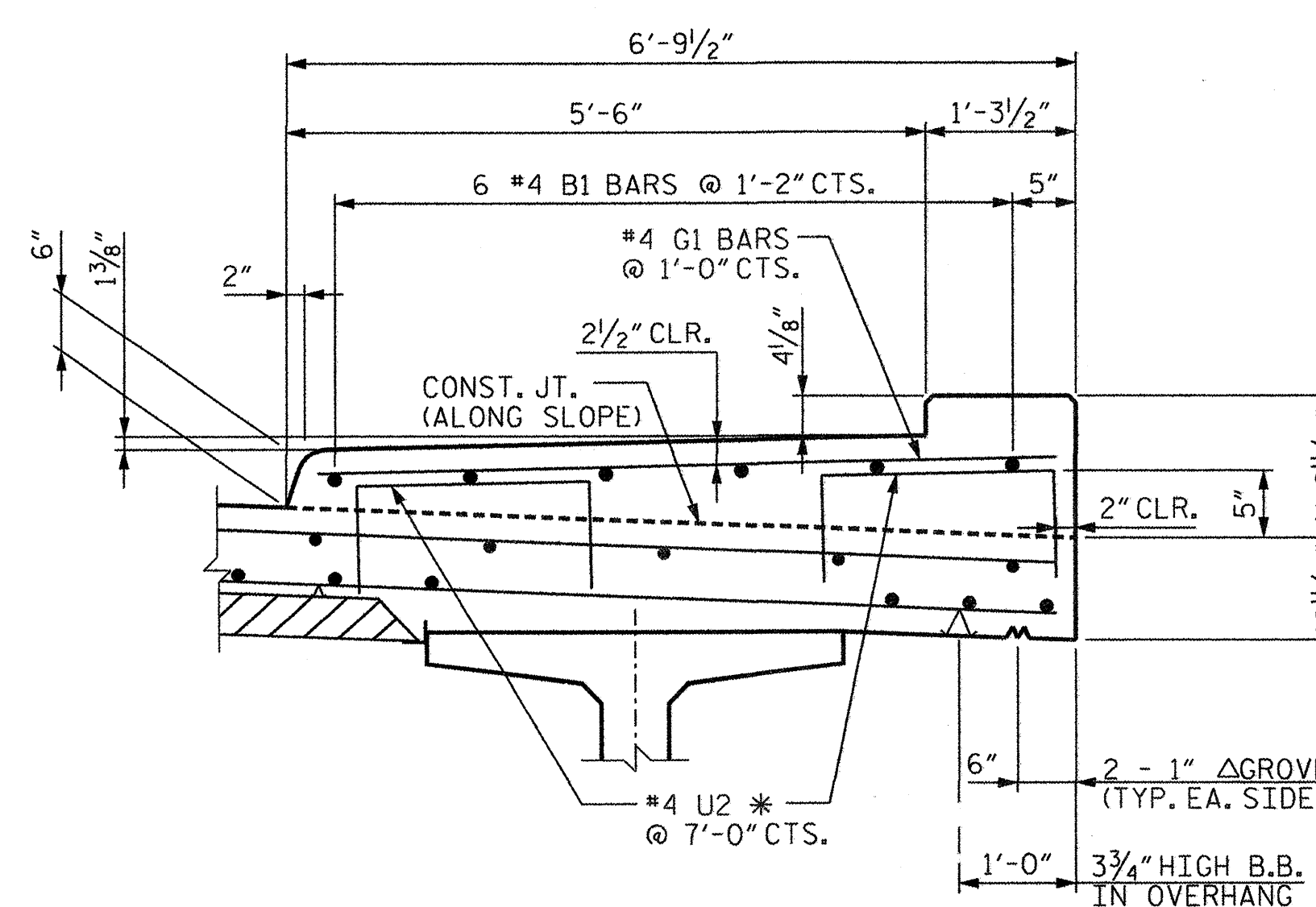


DETAIL A



DETAIL B

*U" BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER SPAN HAS BEEN SCREEDED OFF.



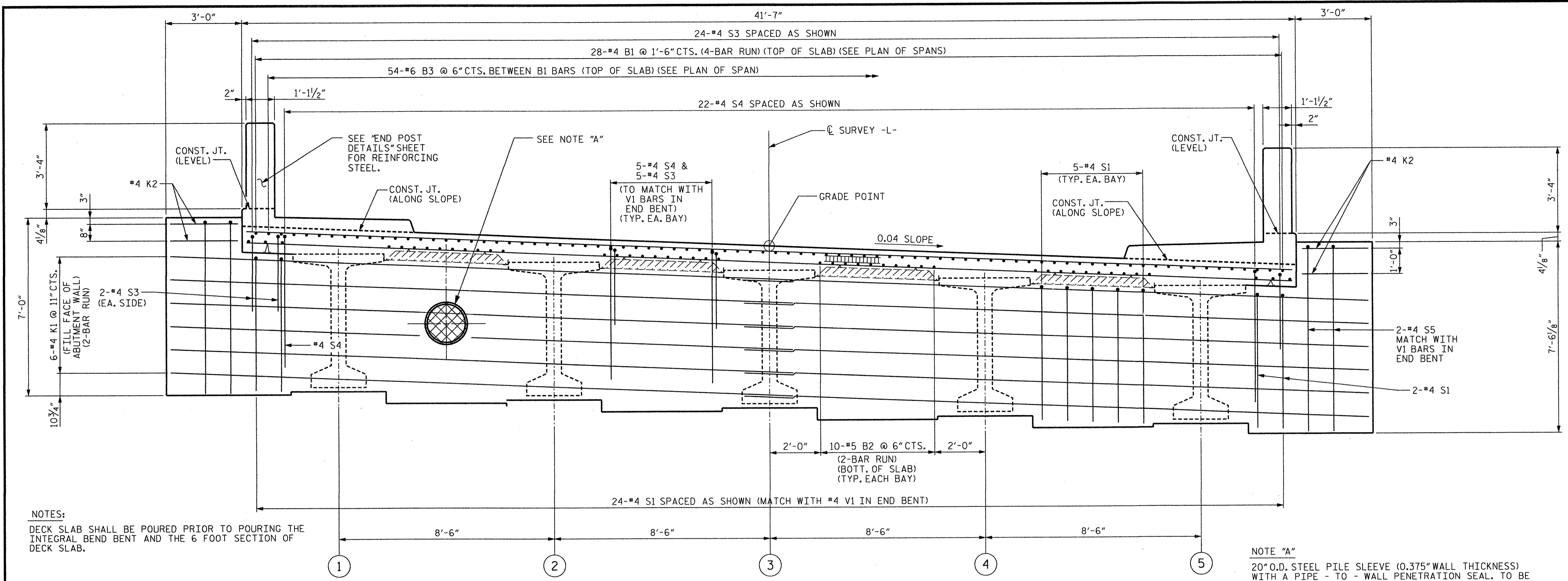
DETAIL C

*U" BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER SPAN HAS BEEN SCREEDED OFF.

DRAWN BY: JLA DATE: 1007
 CHECKED BY: RTJ DATE: 809

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 MORGANTON, NC 28655

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-6
1			3			TOTAL SHEETS
2			4			36



NOTES:
 DECK SLAB SHALL BE POURED PRIOR TO POURING THE INTEGRAL BENT BENT AND THE 6 FOOT SECTION OF DECK SLAB.

TYPICAL SECTION

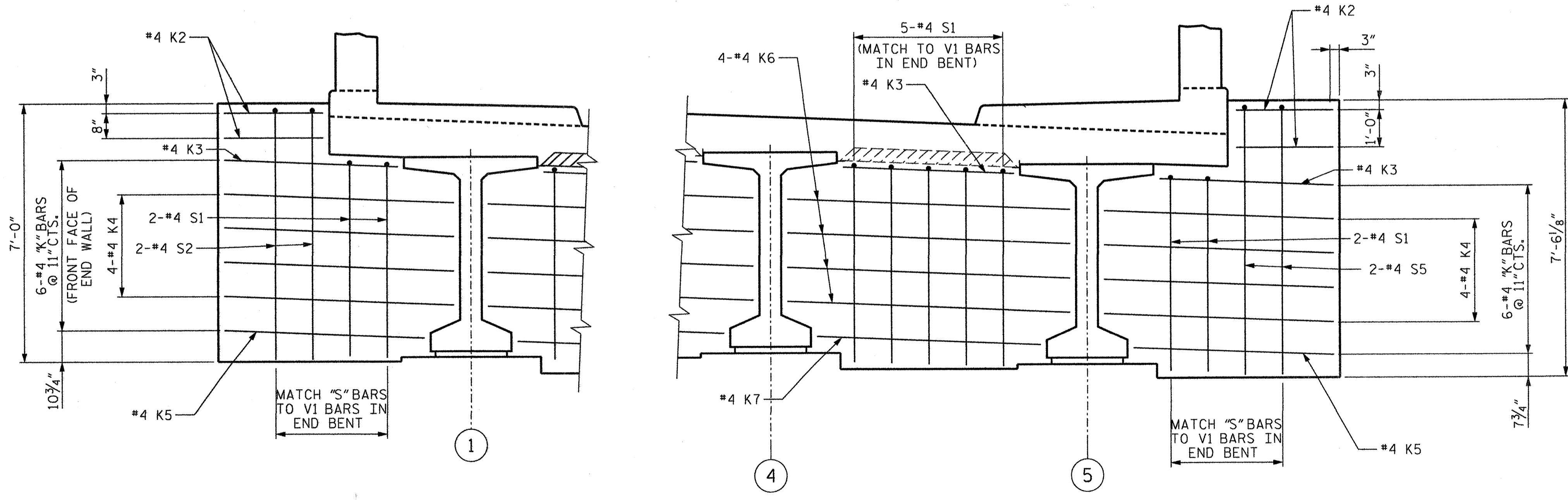
(SHOWING FILL FACE ABUTMENT WALL AT END BENT)

NOTE "A"
 20" O.D. STEEL PILE SLEEVE (0.375" WALL THICKNESS) WITH A PIPE - TO - WALL PENETRATION SEAL, TO BE FLUSH WITH BOTH FACES OF BACKWALL. FIELD BEND REINFORCING STEEL AS NECESSARY TO PROVIDE FOR SLEEVE. PIPE SLEEVE CENTERLINE ELEVATION = 349.172 AT END BENT 1. ELEVATION = 350.014 AT END BENT 2.

A LINK SEAL, LOCK SEAL OR ANY SIMILAR MODULAR WALL CASING SEAL OF RUBBER OR SIMILAR MATERIAL IS TO BE PLACED AROUND THE MAIN AND TIGHTENED BY BOLTS TO FURNISH STRAY CURRENT PROTECTION FOR THE BRIDGE AND TO WATERPROOF THE OPENING BETWEEN THE STEEL PIPE SLEEVE AND THE MAIN. THE SEAL IS TO BE PLACED SO AS TO PROVIDE A 2" MINIMUM RECESS AT THE FILL FACE OF THE END BENT BACKWALL. THE ANNULAR SPACE BETWEEN THE SEAL AND THE OPPOSITE FACE OF THE ABUTMENT BACKWALL IS TO BE FILLED WITH JUTE OR SIMILAR MATERIAL UP TO WITHIN 2" OF THE FACE OF THE END BENT BACKWALL. THE 2" RECESSES ARE TO BE FILLED WITH A MASTIC OR PLASTIC CAULKING COMPOUND TO CONFIRM IN COLOR WITH THAT OF THE EXISTING CONCRETE AND FINISHED SMOOTH AND FLUSH.

PROJECT NO. B-4861
 COUNTY: ANSON
 STATION: P.O.T. 12+66.441-L- =
 P.O.C. 11+48.124-RR-

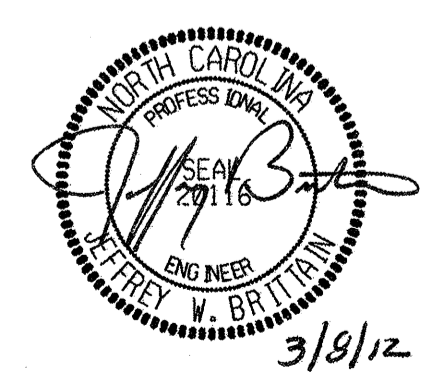
SHEET 2 OF 2



PART-TYPICAL SECTION

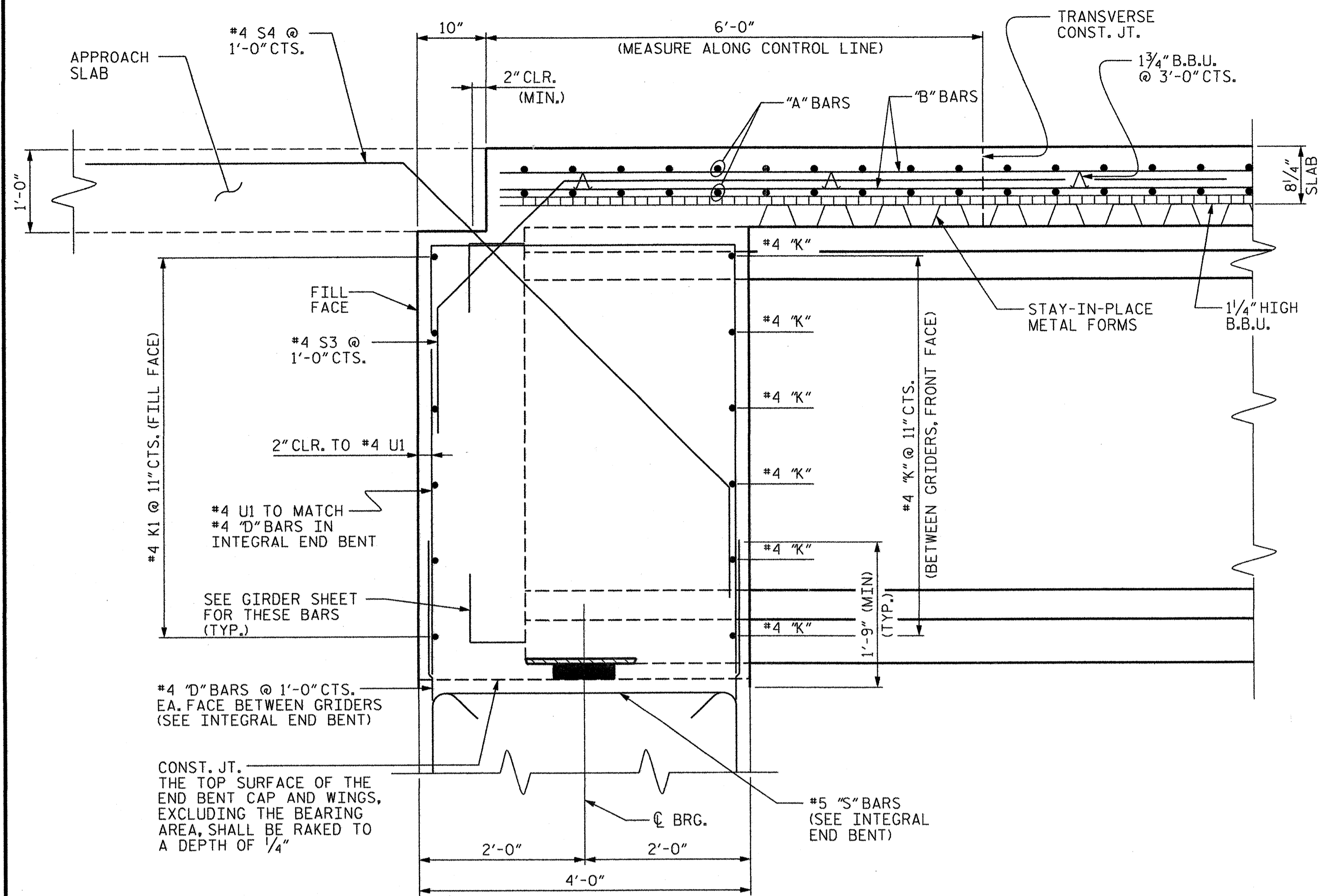
(SHOWING FRONT FACE ABUTMENT WALL AT END BENT)

DRAWN BY: RTJ DATE: 3/11
 CHECKED BY: NMW DATE: 6/11

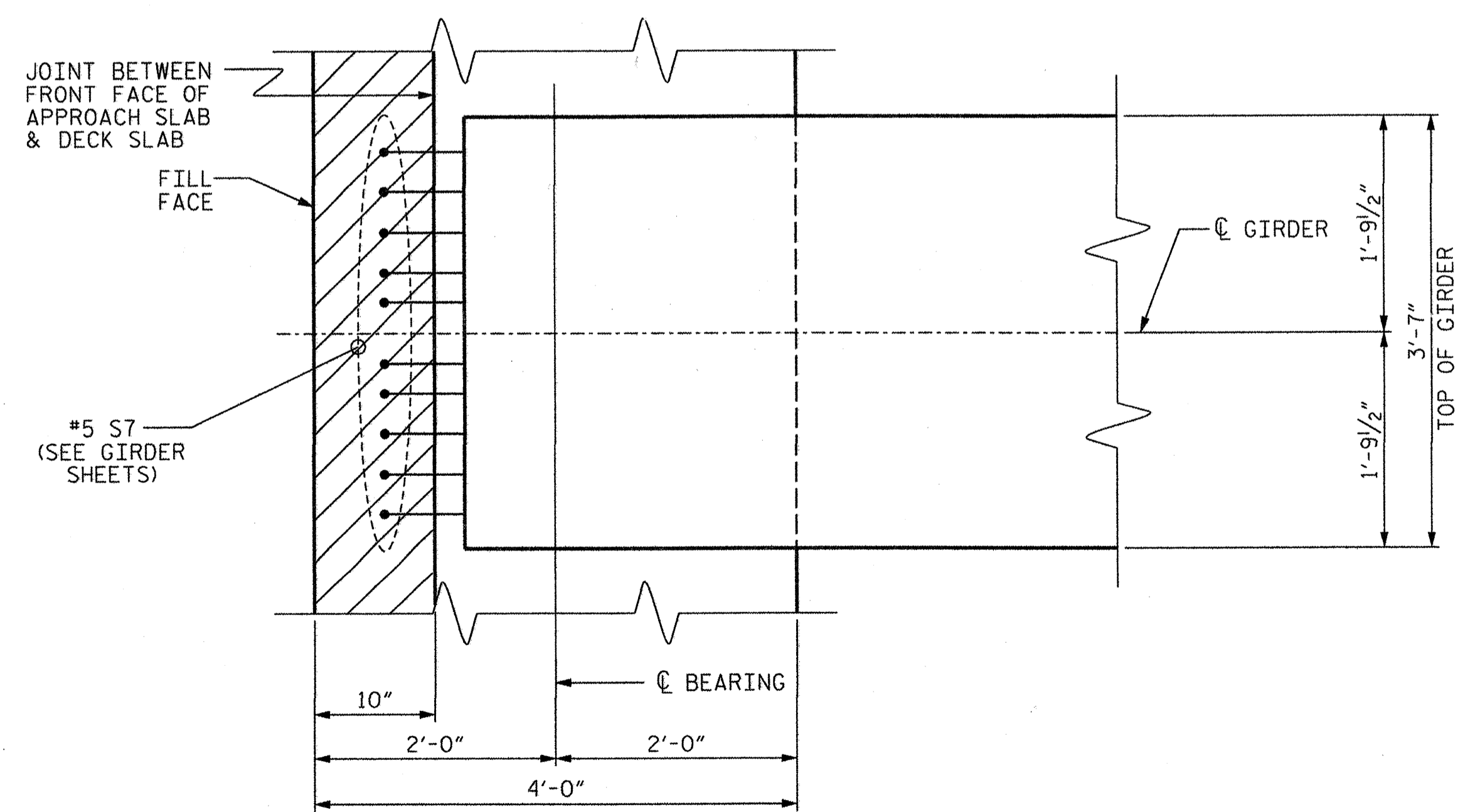


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 MORGANTON, NC 28655

CITY OF ANSONVILLE, NC						SHEET NO.
SUPERSTRUCTURE						S-7
TYPICAL SECTIONS						TOTAL SHEETS
						36
REVISIONS						
NO.	BY	DATE	NO.	BY	DATE	
1			3			
2			4			



SECTION THROUGH INTEGRAL END BENT

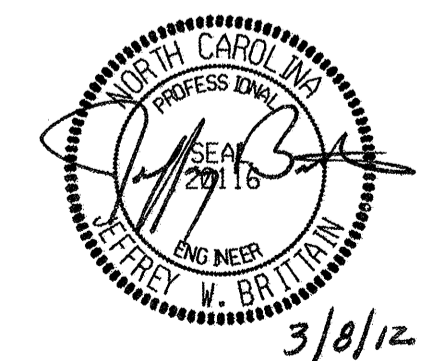


PLAN OF GIRDER AT INTEGRAL END BENT

PROJECT NO. B-4861
 COUNTY: ANSON
 STATION: P.O.T. 12+66.441-L- =
 P.O.C. 11+48.124-RR-

CITY OF ANSONVILLE, NC

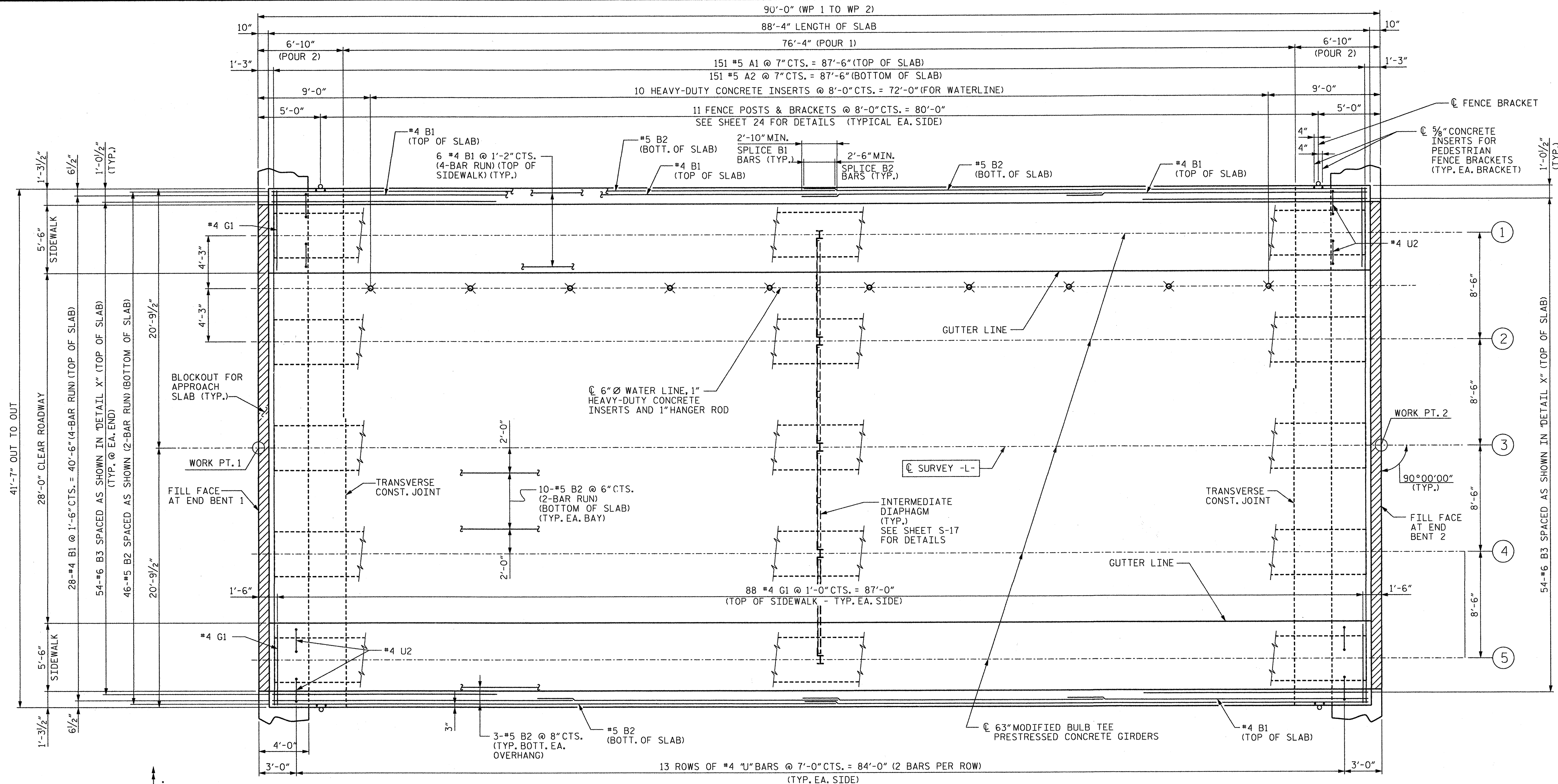
SUPERSTRUCTURE
 DETAILS



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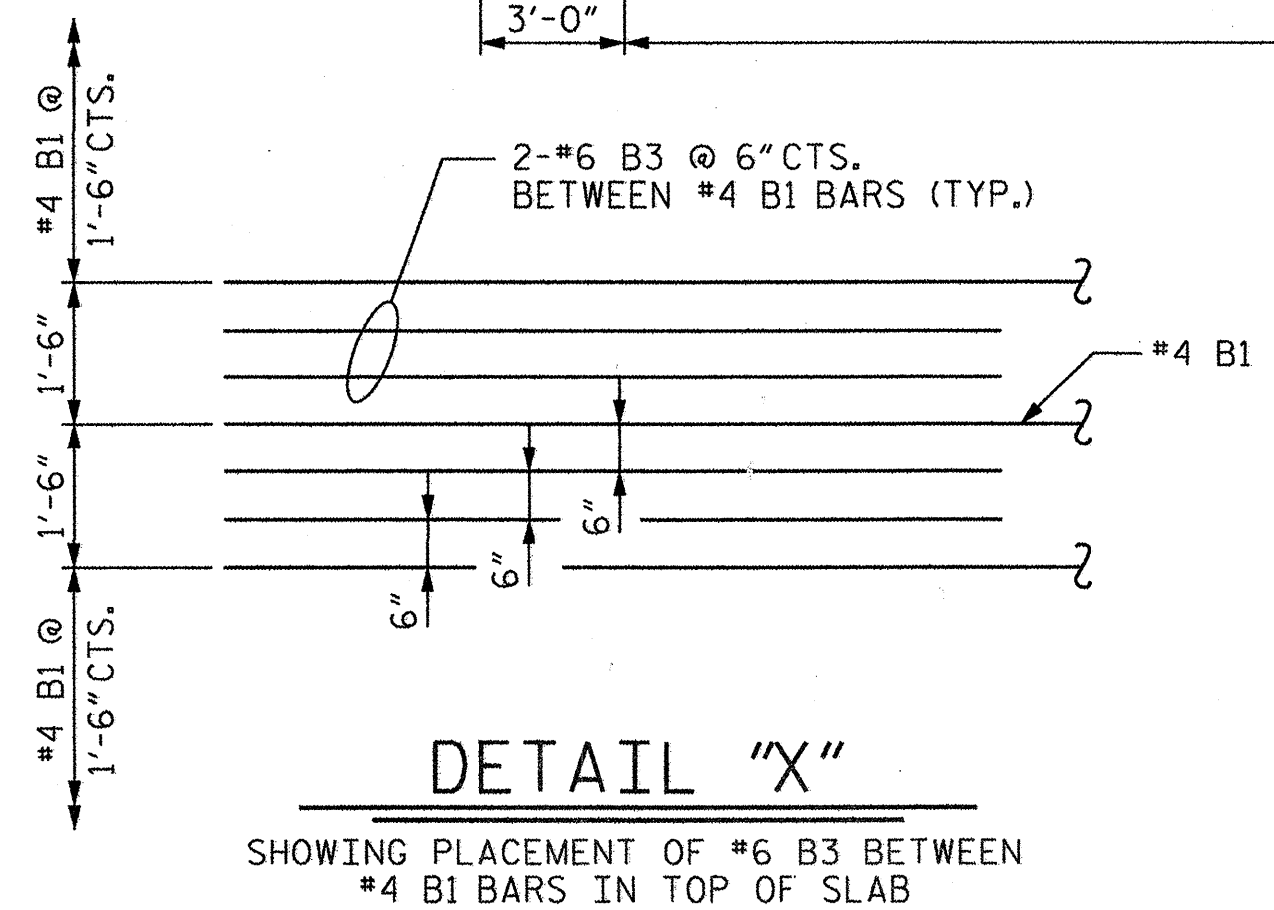
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-8
1			3			TOTAL SHEETS
2			4			36

DRAWN BY: RTJ DATE: 5/11
 CHECKED BY: NMW DATE: 6/11



PLAN OF SPAN

FOR TRANSVERSE CONSTRUCTION JOINT DETAIL, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.

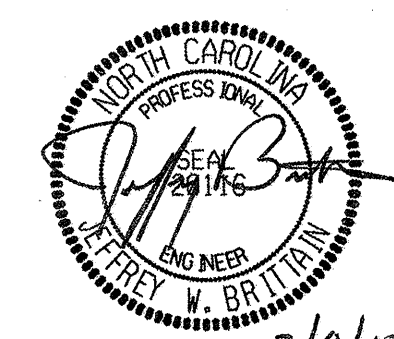


SHOWING PLACEMENT OF #6 B3 BETWEEN #4 B1 BARS IN TOP OF SLAB

COUNTY: ANSON
 STATION: P.O.T. 12 + 66.441-L- =
 P.O.C. 11 + 48.124-RR-

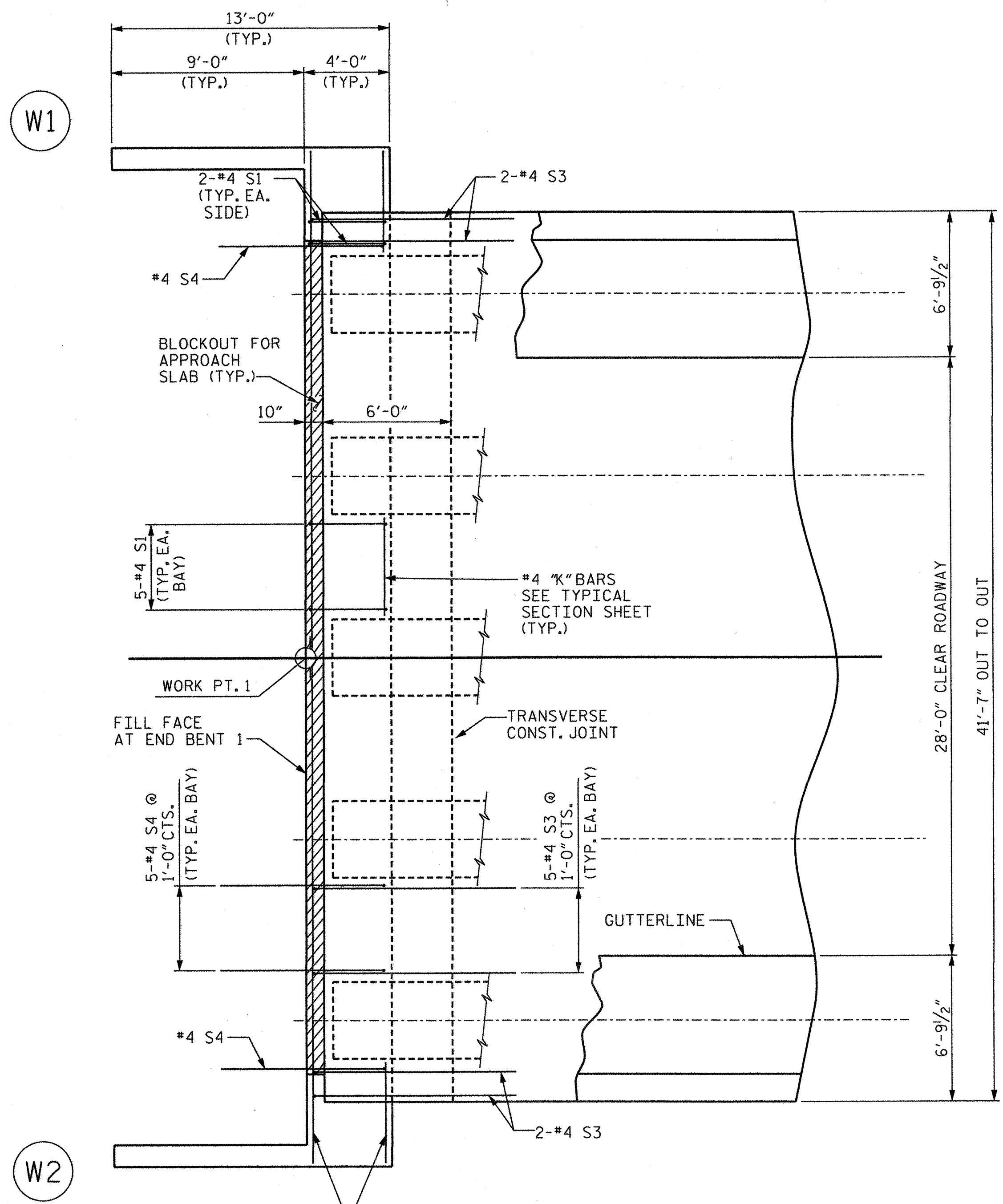
SHEET 1 OF 4

REVISIONS						SHEET NO. S-9
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 36
2			4			

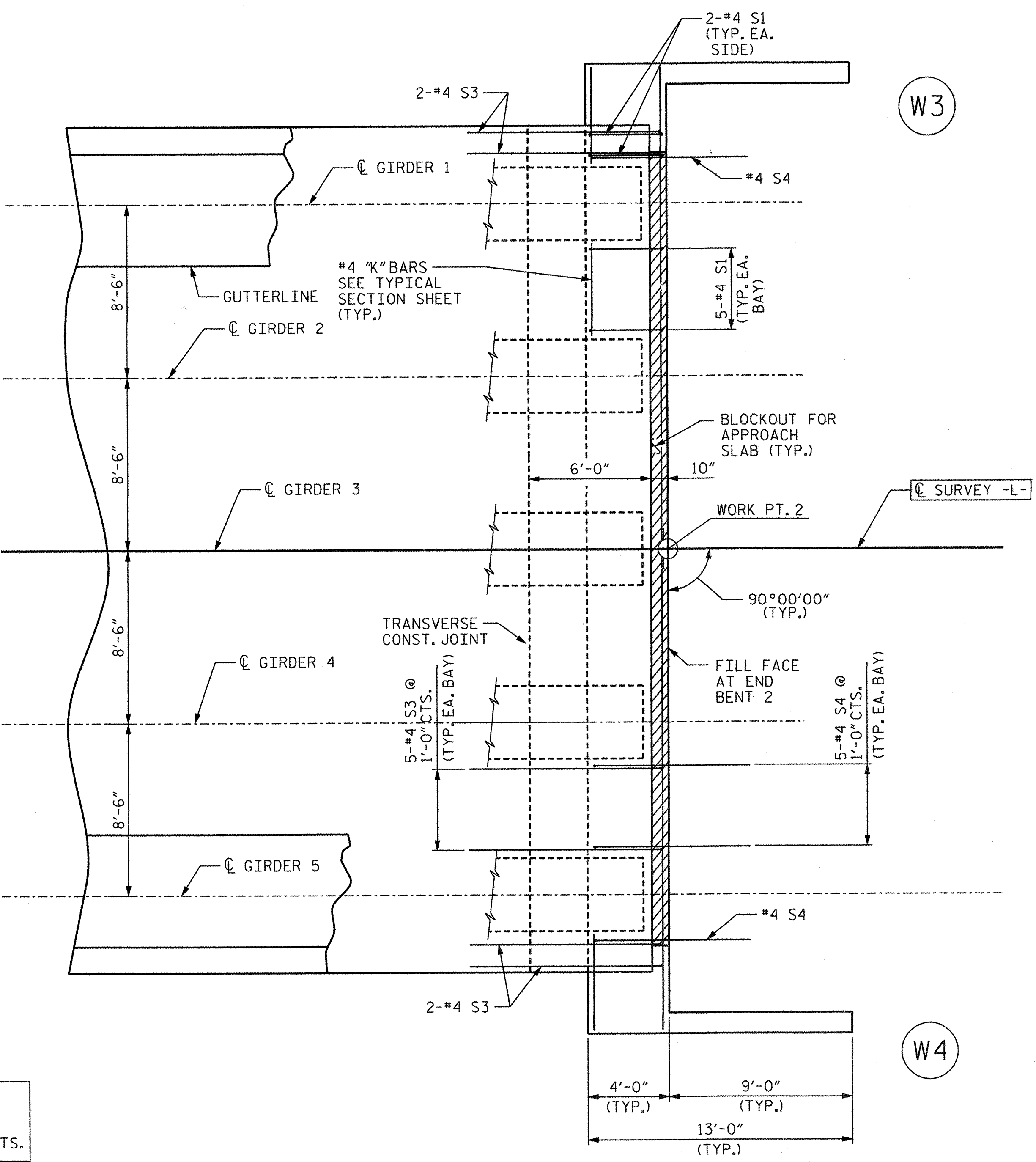


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 MORGANTON, NC 28655

DRAWN BY: JLA DATE: 10/11
 CHECKED BY: RTJ DATE: 10/11



PLAN OF ABUTMENT AT END BENT 1



PLAN OF ABUTMENT AT END BENT 2

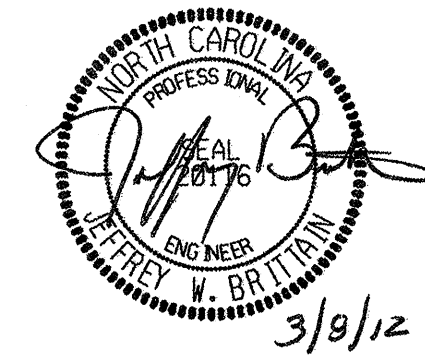
NOTE:
ALL "S" BARS IN ABUTMENT SHALL MATCH WITH #4 V1 IN THE END BENTS.

PROJECT NO. B-4861
COUNTY: ANSON
STATION: P.O.T. 12+66.441-L- =
P.O.C. 11+48.124-RR-

SHEET 2 OF 4

CITY OF ANSONVILLE, NC

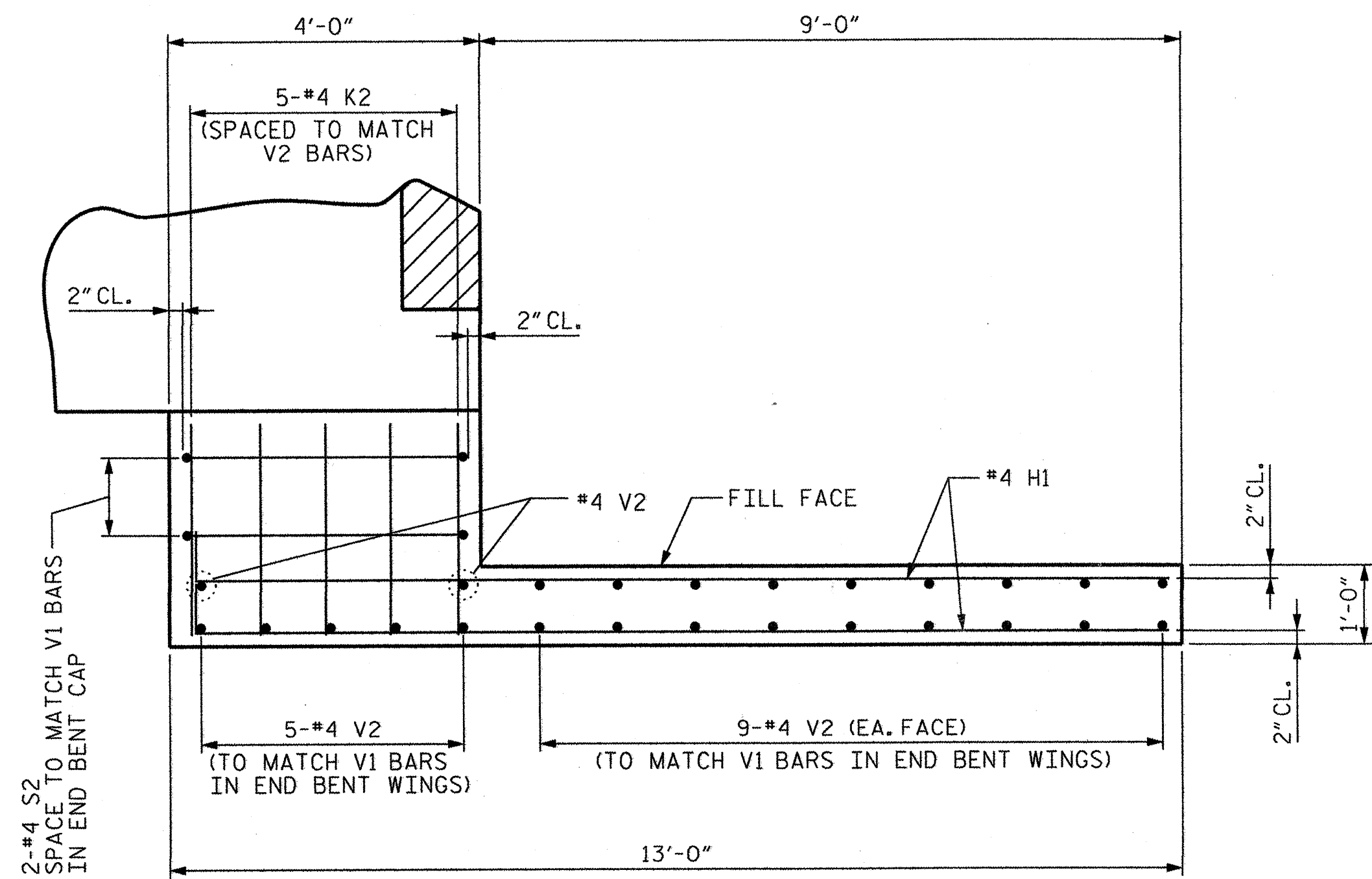
SUPERSTRUCTURE
PLAN OF SPAN
DETAILS



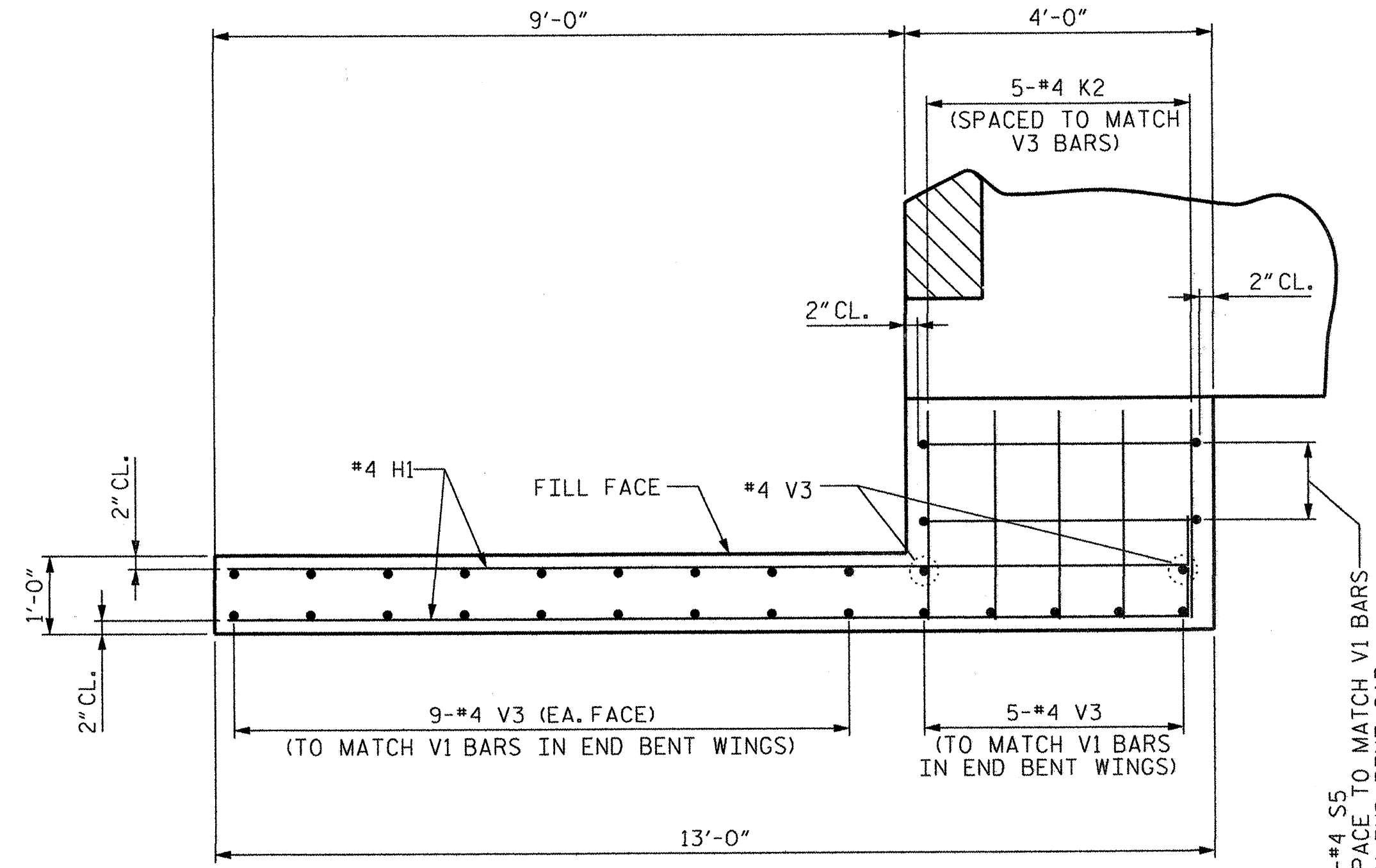
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DRAWN BY: RTJ DATE: 10/1
CHECKED BY: JLA DATE: 10/1

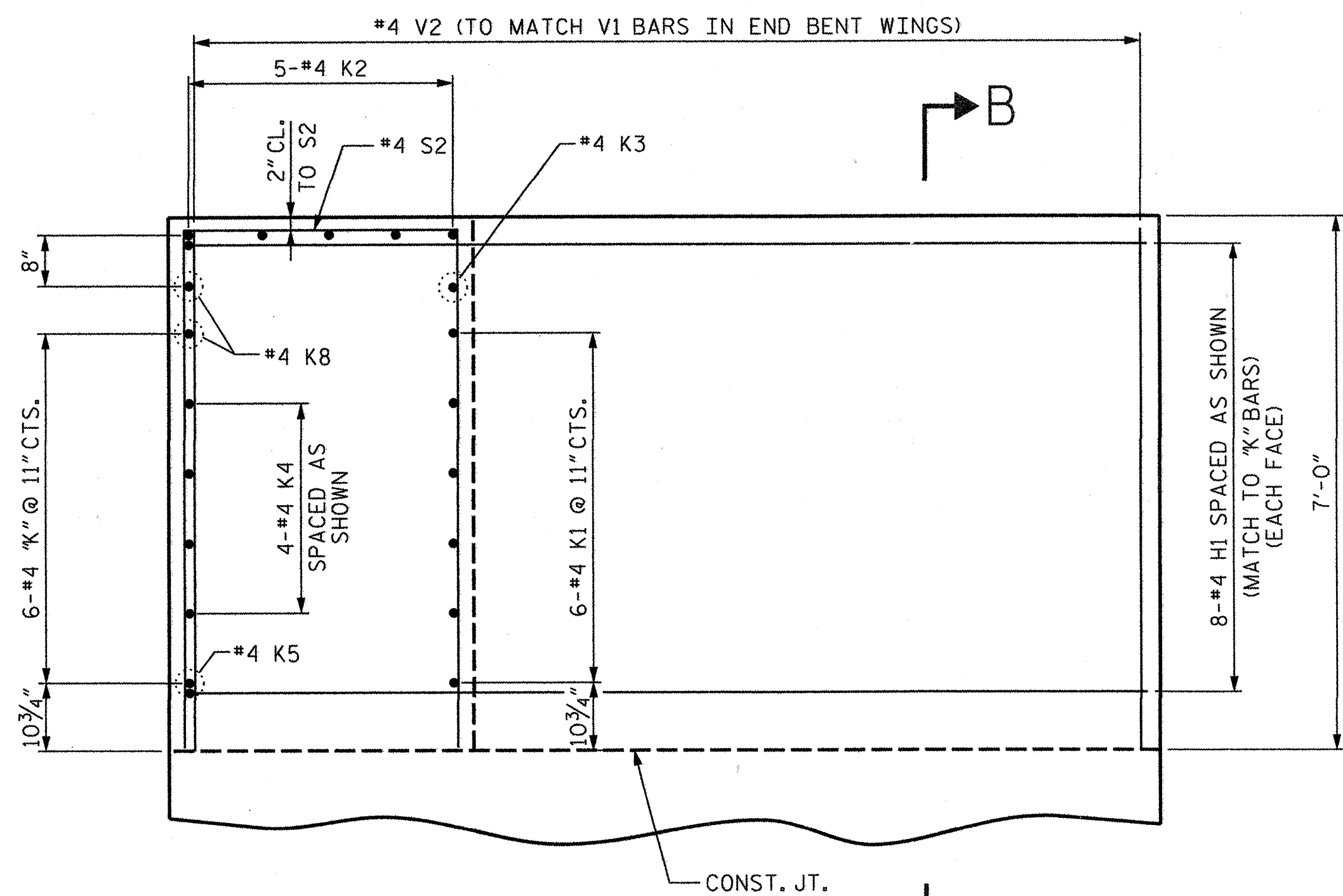
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-10
1			3			TOTAL SHEETS
2			4			36



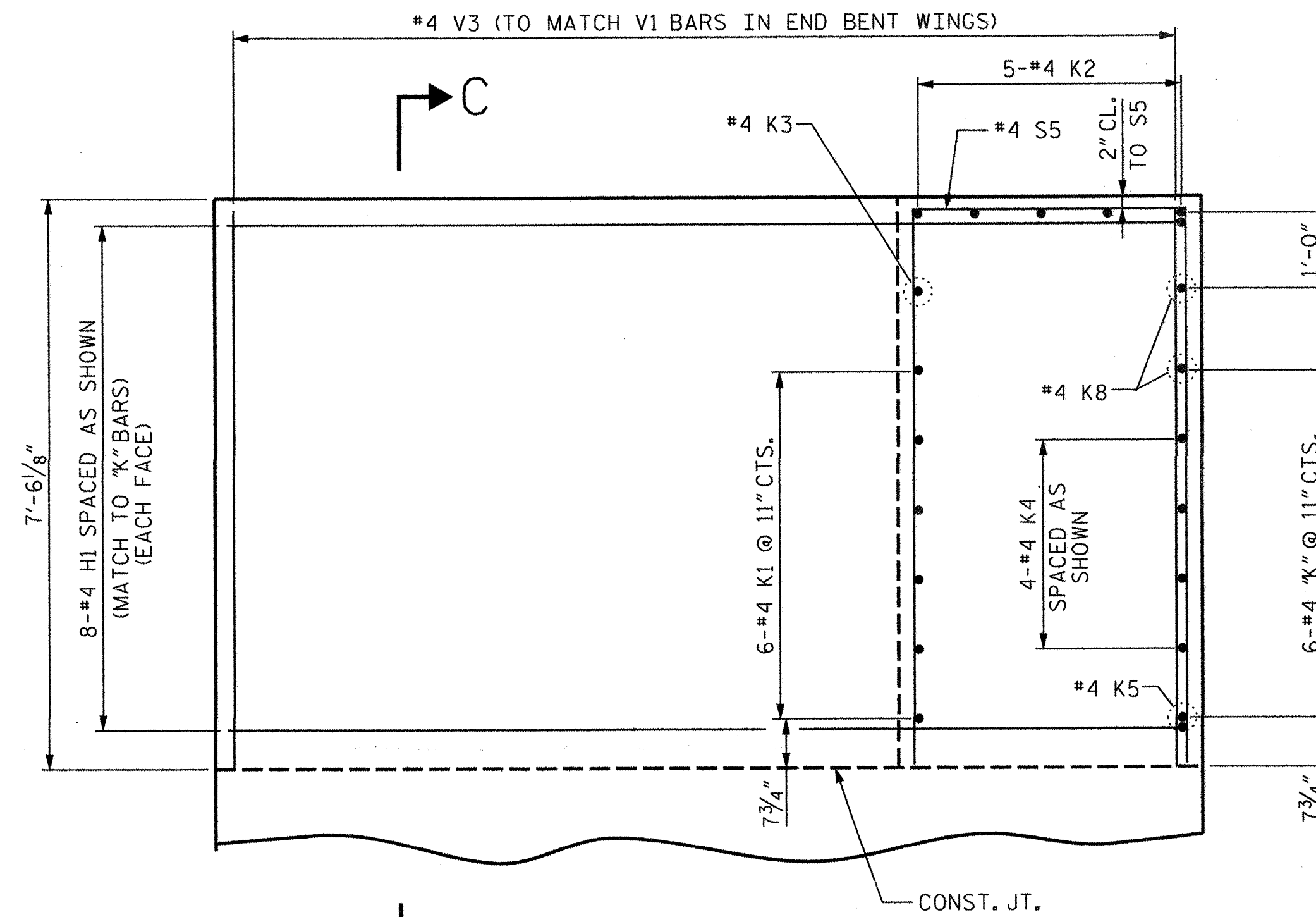
PLAN - WING W1



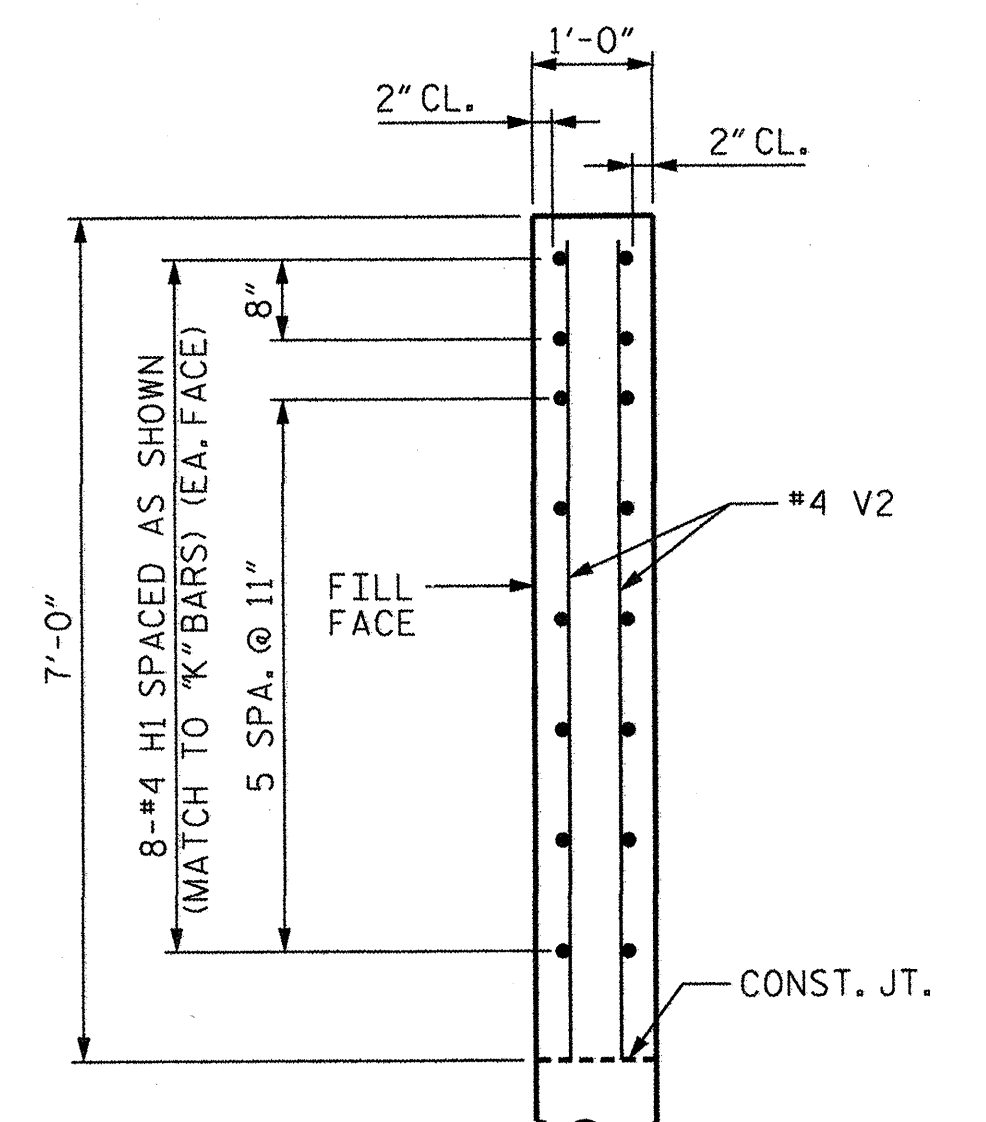
PLAN - WING W2



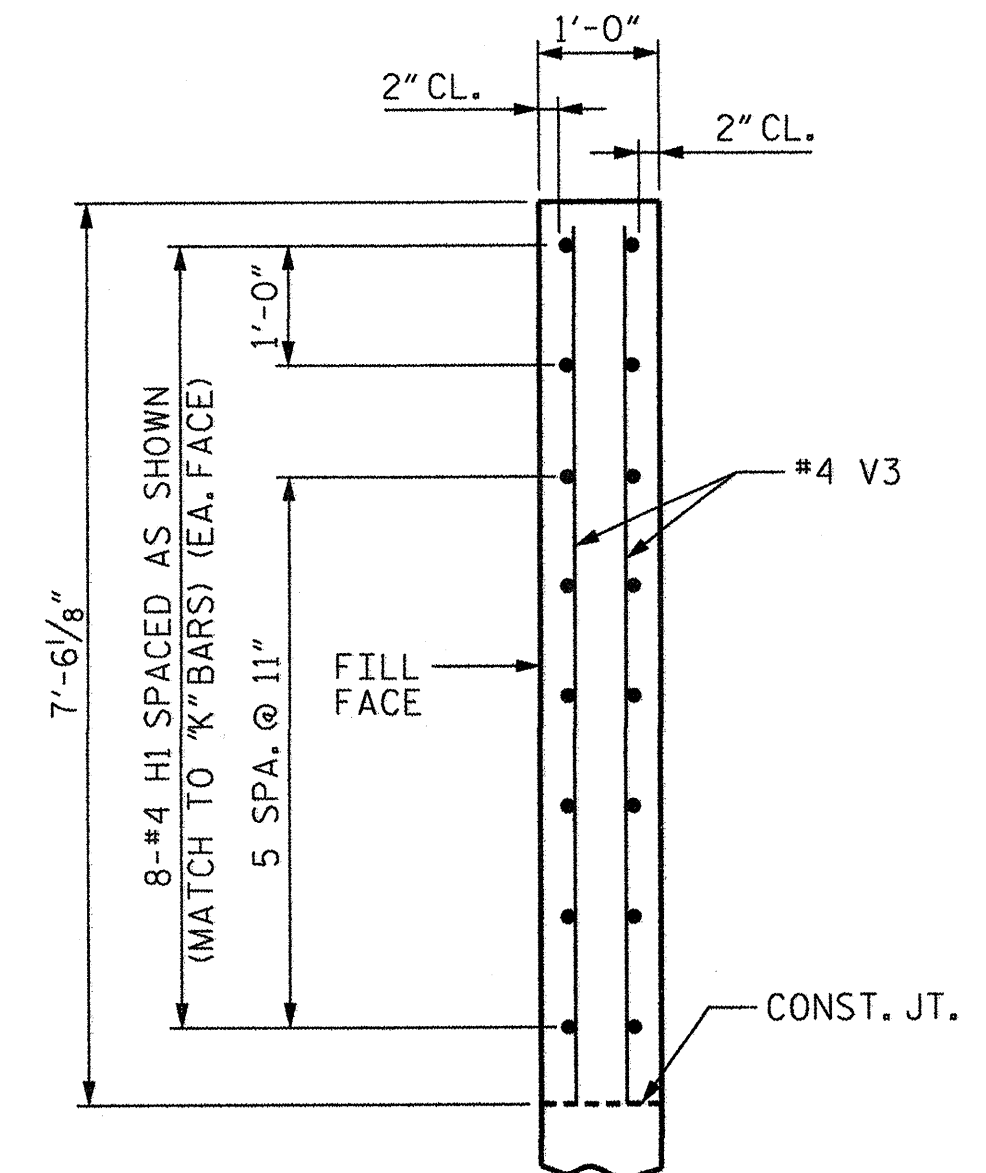
ELEVATION - W1



ELEVATION - W2



SECTION B-B



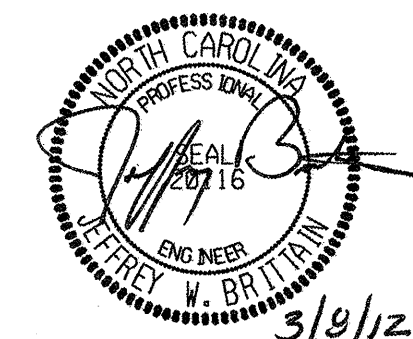
SECTION C-C

PROJECT NO. B-4861
 COUNTY: ANSON
 STATION: P.O.T. 12 + 66.441-L- =

SHEET 3 OF 4

CITY OF ANSONVILLE, NC

SUPERSTRUCTURE
 PLAN OF SPAN
 DETAILS

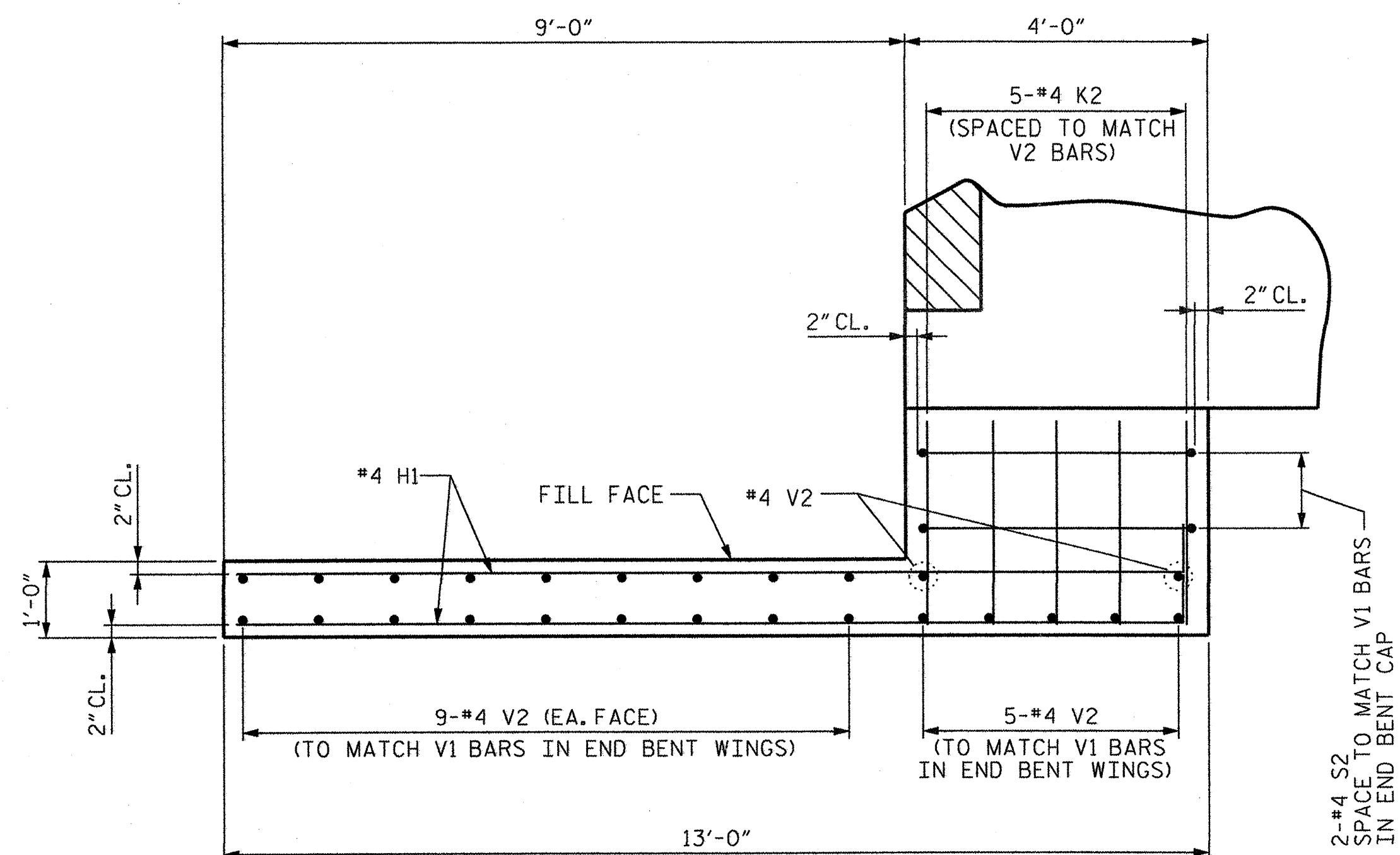


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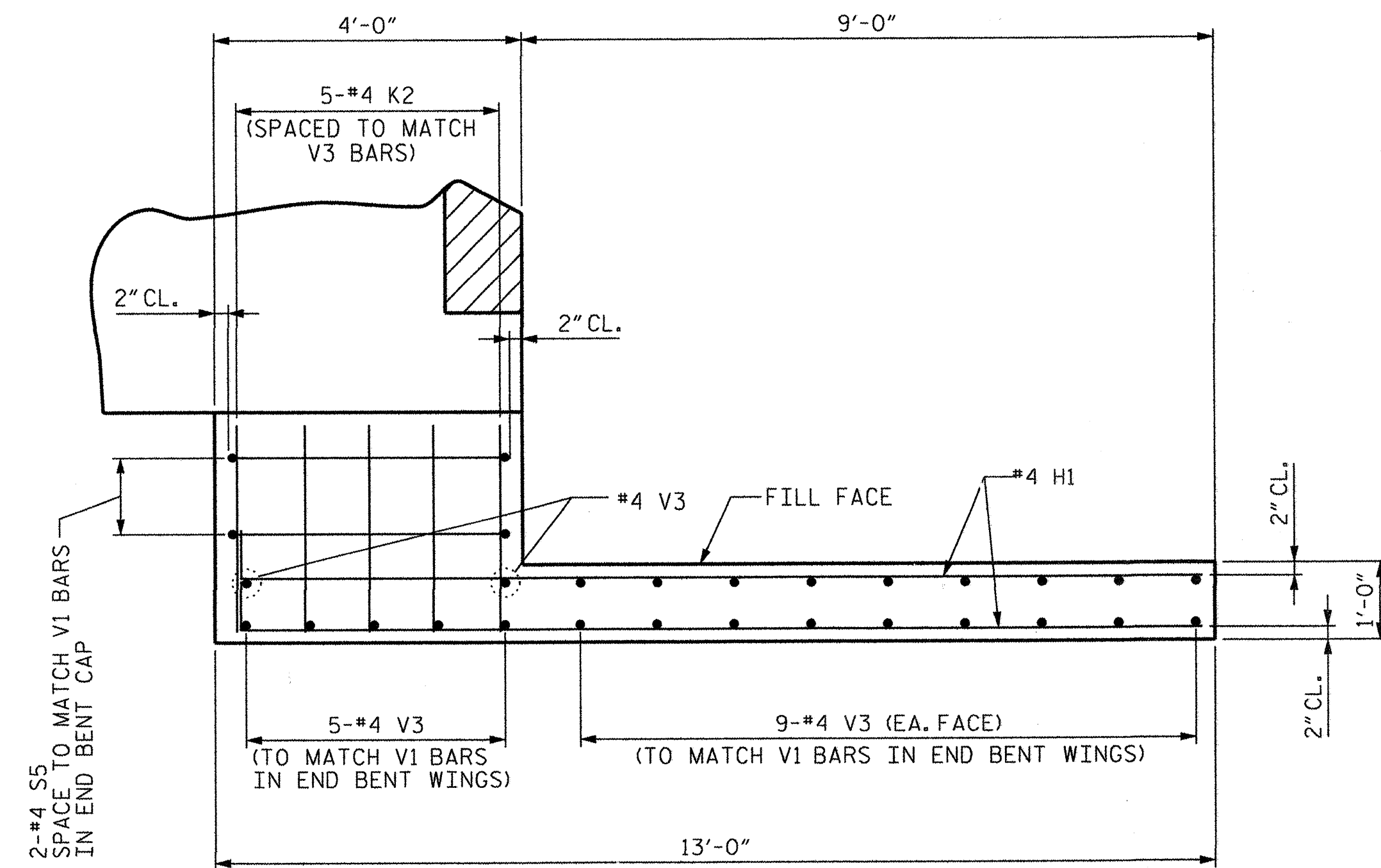
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

SHEET NO.
S-11
TOTAL SHEETS
36

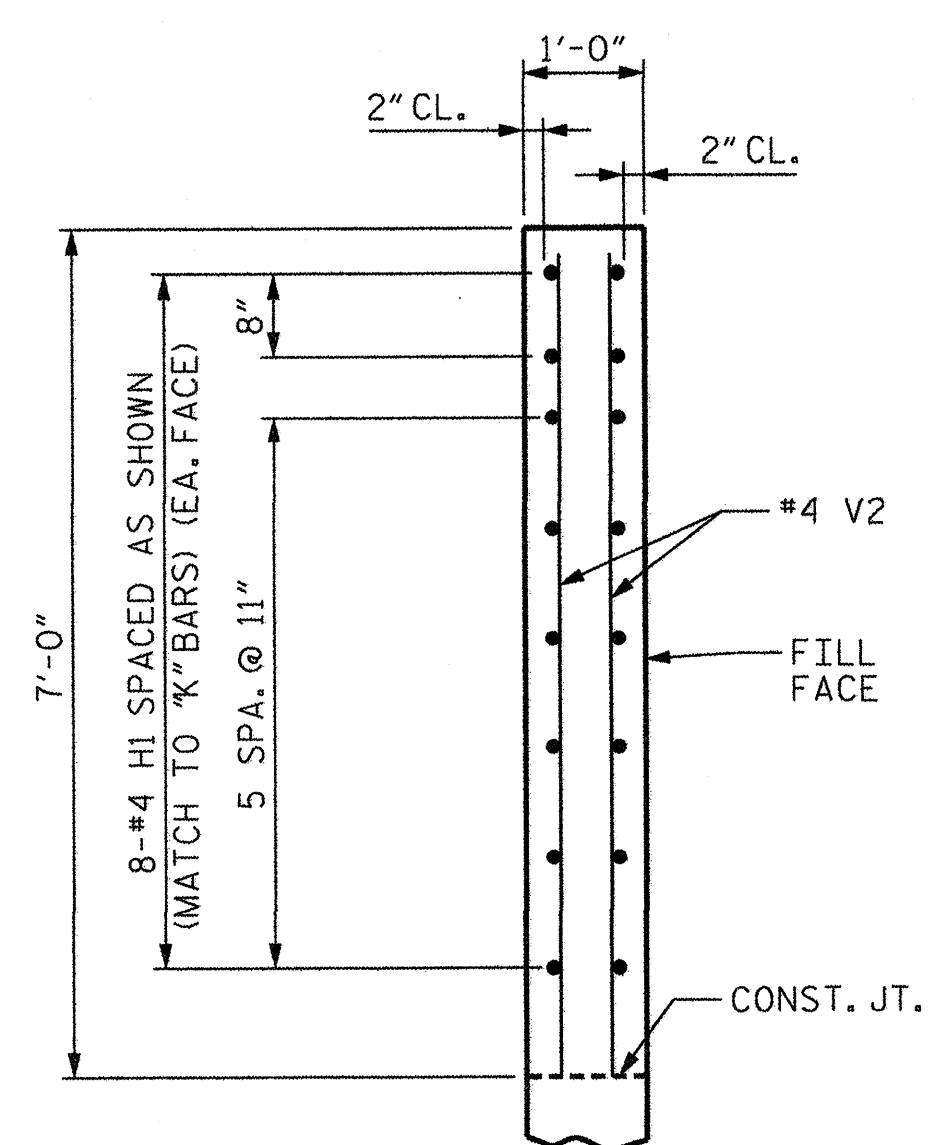
DRAWN BY: RTJ DATE: 5/11
 CHECKED BY: NMW DATE: 6/11



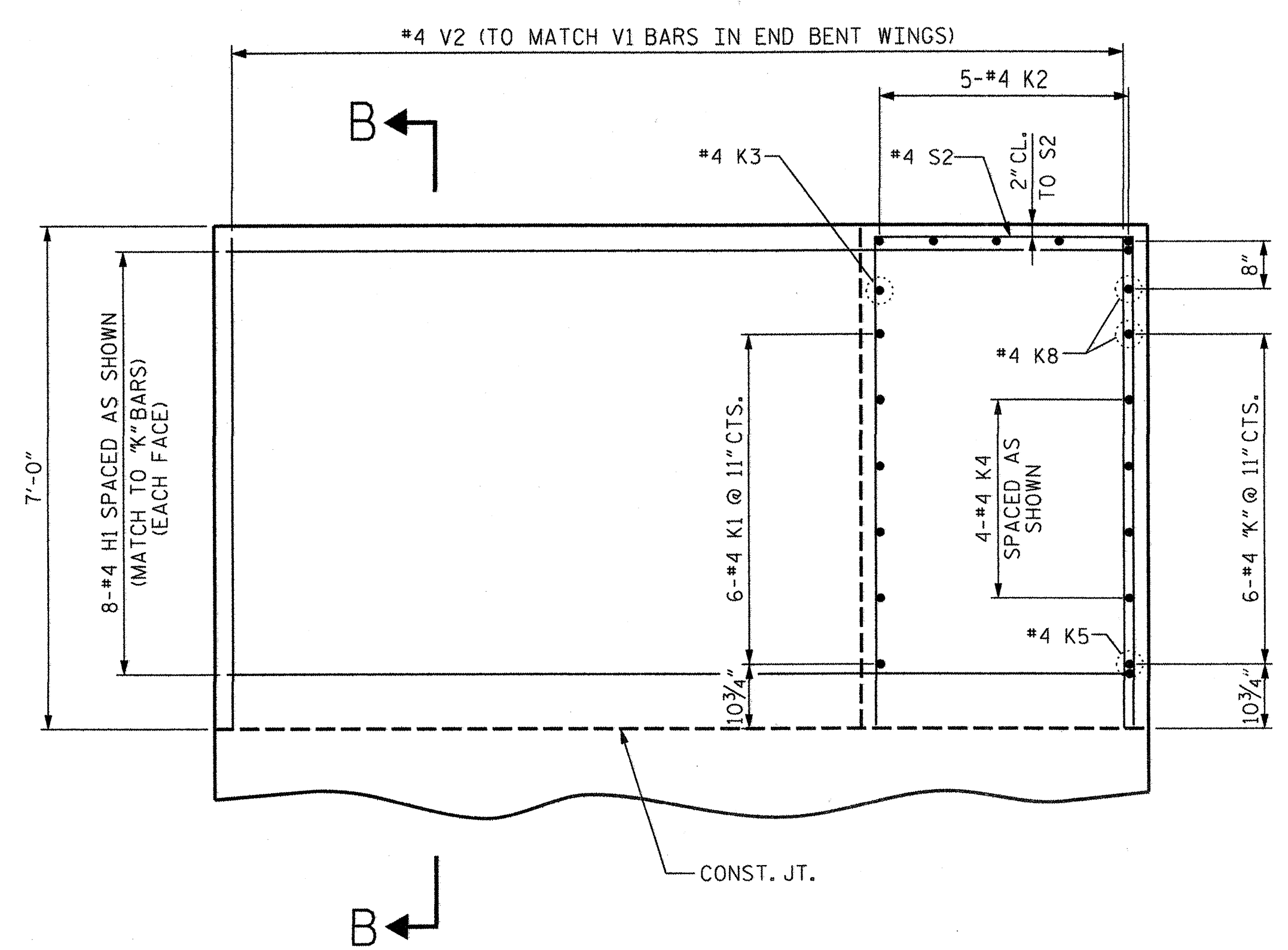
PLAN - WING W3



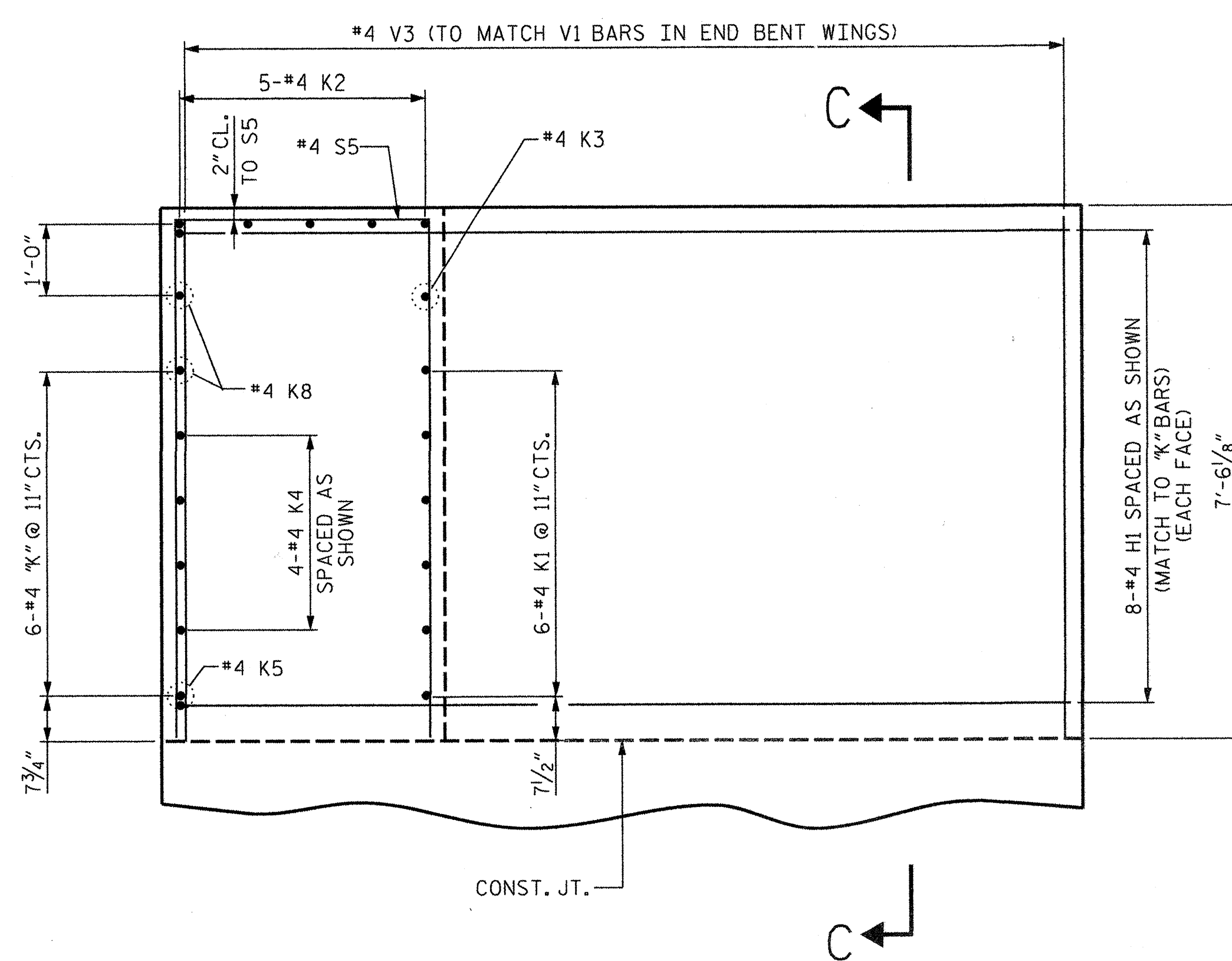
PLAN - WING W4



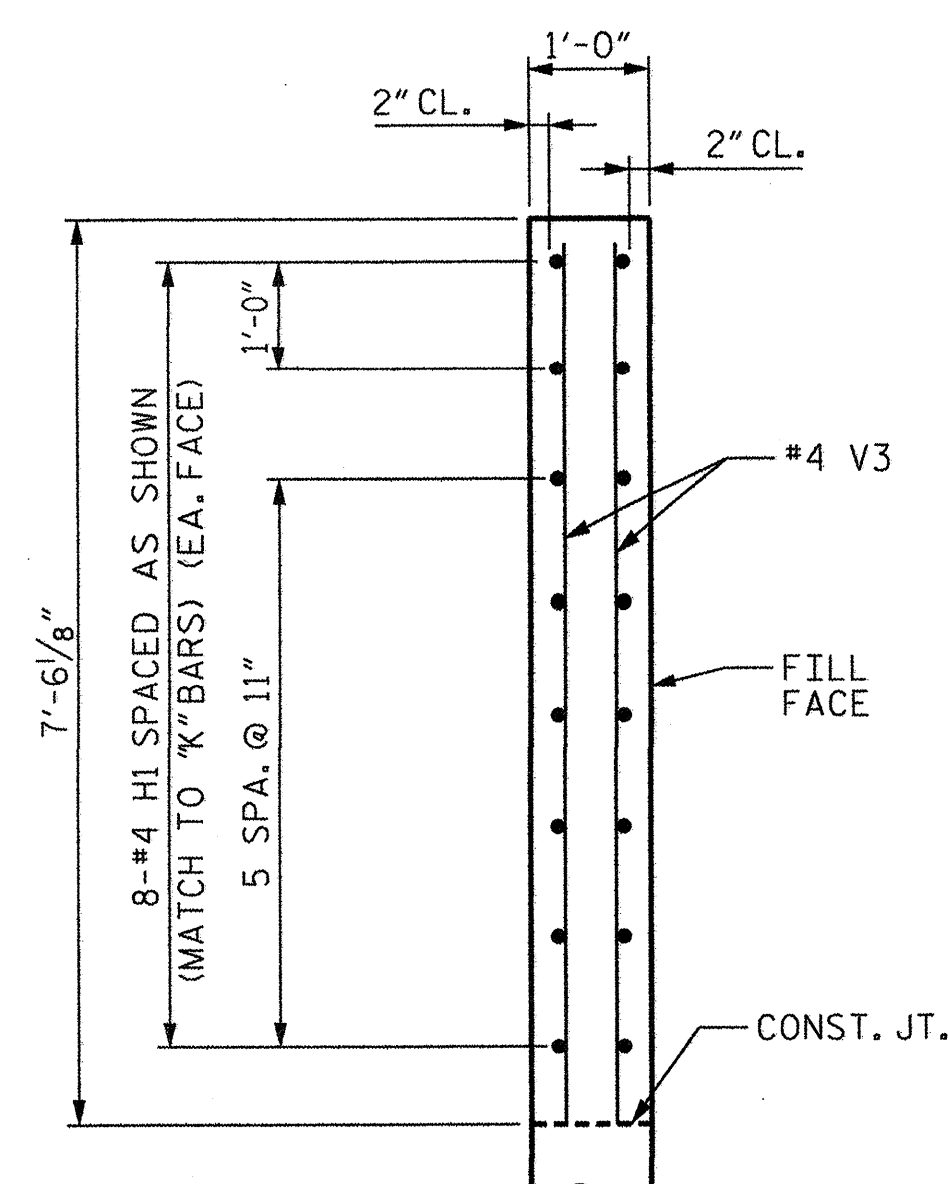
SECTION B-B



ELEVATION - W3



ELEVATION - W4



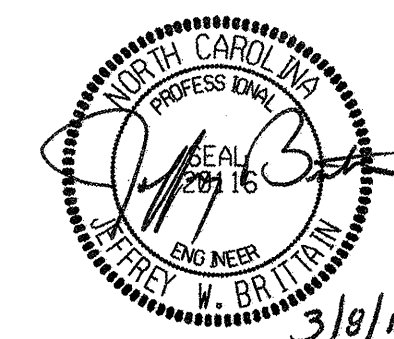
SECTION C-C

PROJECT NO. B-4861
 COUNTY: ANSON
 STATION: P.O.T. 12 + 66.441-L- =

SHEET 4 OF 4

CITY OF ANSONVILLE, NC

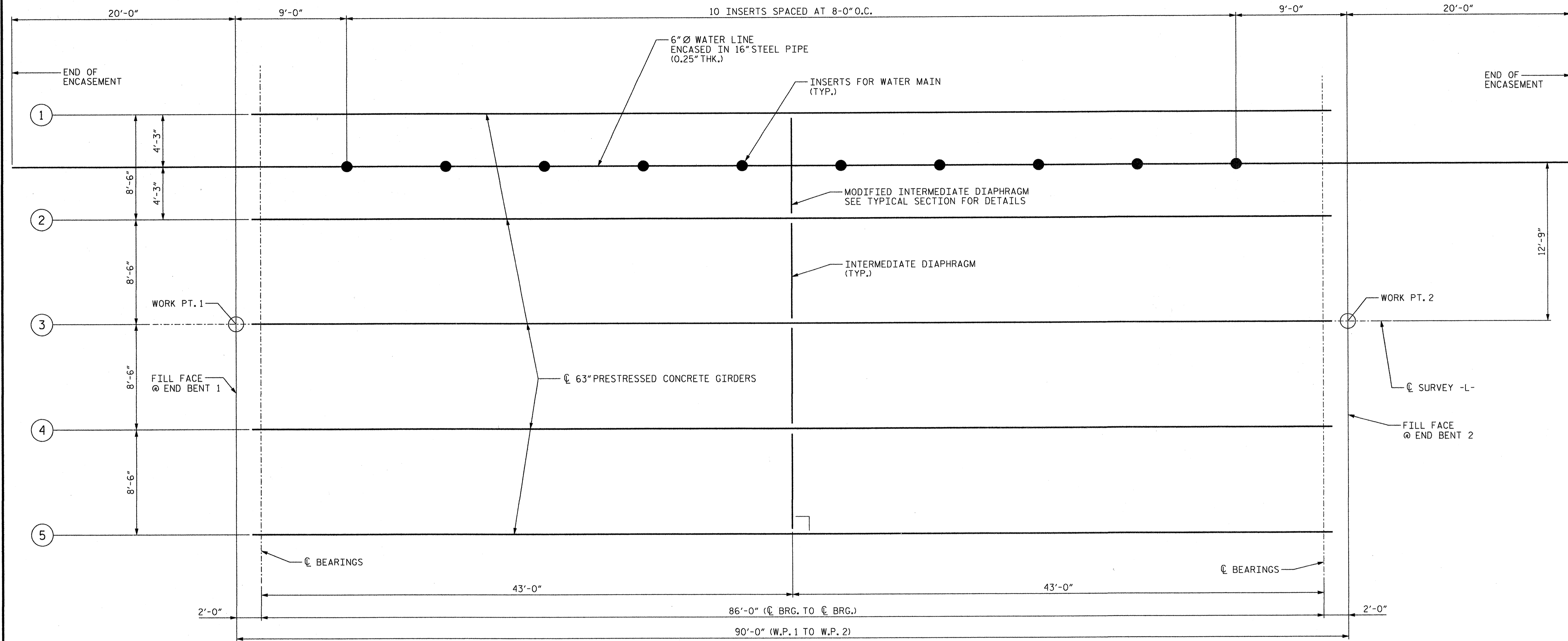
SUPERSTRUCTURE
 PLAN OF SPAN
 DETAILS



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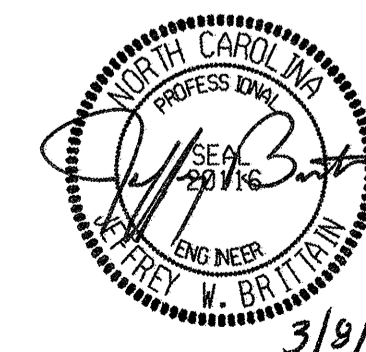
DRAWN BY: RTJ DATE: 5/11
 CHECKED BY: NMW DATE: 6/11

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-12
1			3			TOTAL SHEETS
2			4			36



FRAMING PLAN

PROJECT NO. B-4861
 COUNTY: ANSON
 STATION: P.O.T. 12+66.441-L- =
 P.O.C. 11+48.124-RR-



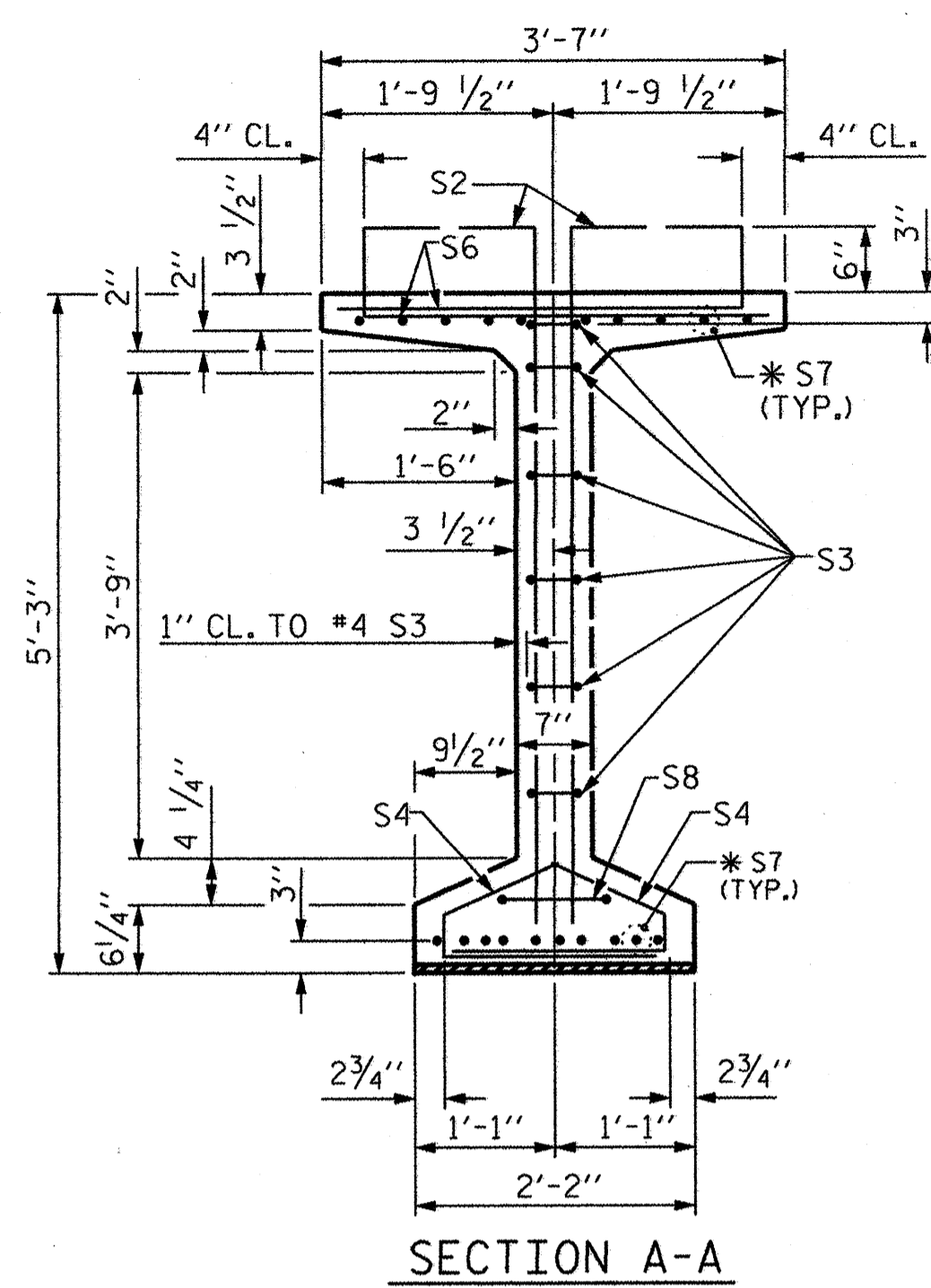
PREPARED BY
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CITY OF ANSONVILLE, NC

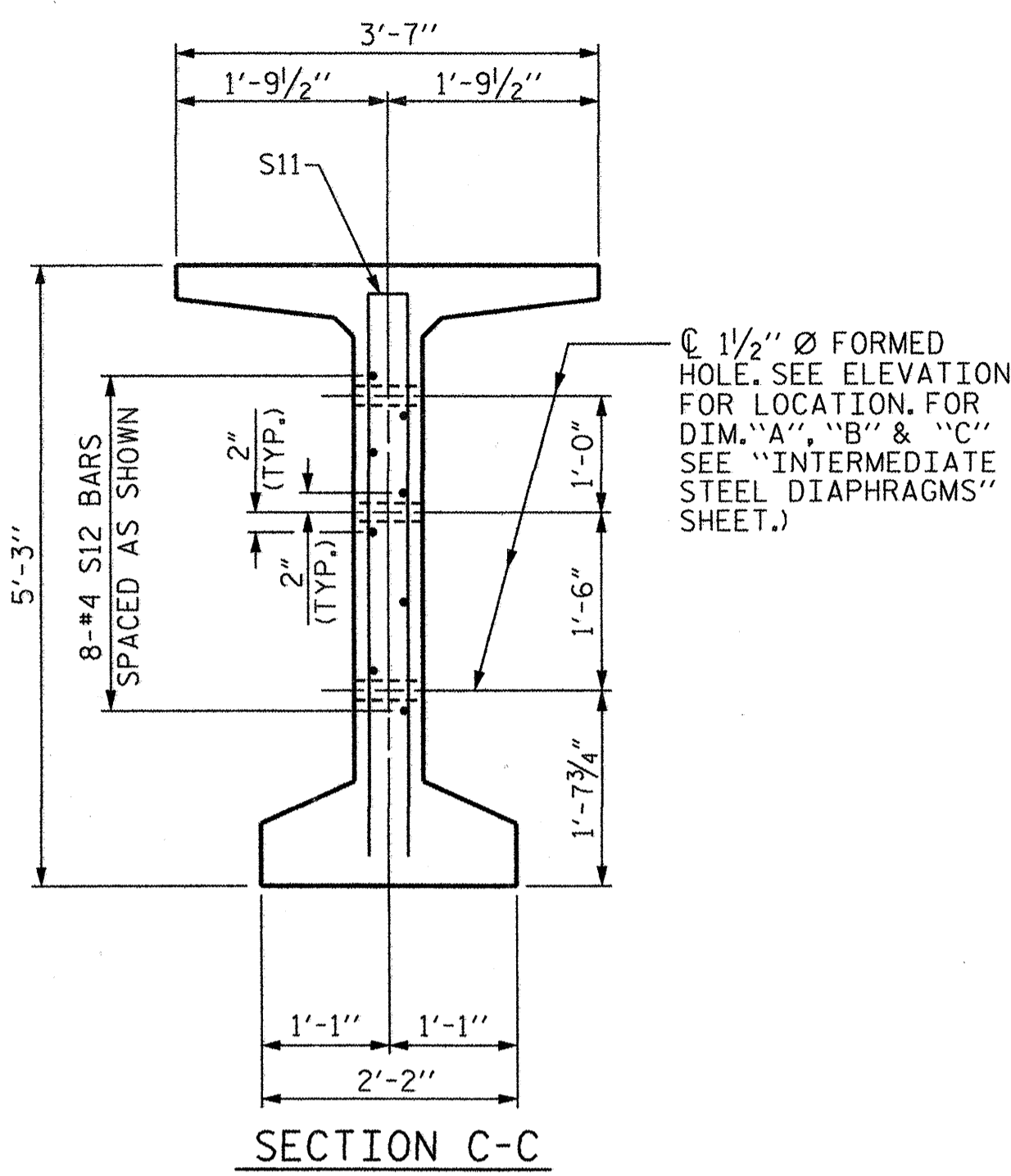
FRAMING PLAN

DRAWN BY: RTJ DATE: 6/09
 CHECKED BY: JLA DATE: 10/10

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-13
1			3			TOTAL SHEETS
2			4			36

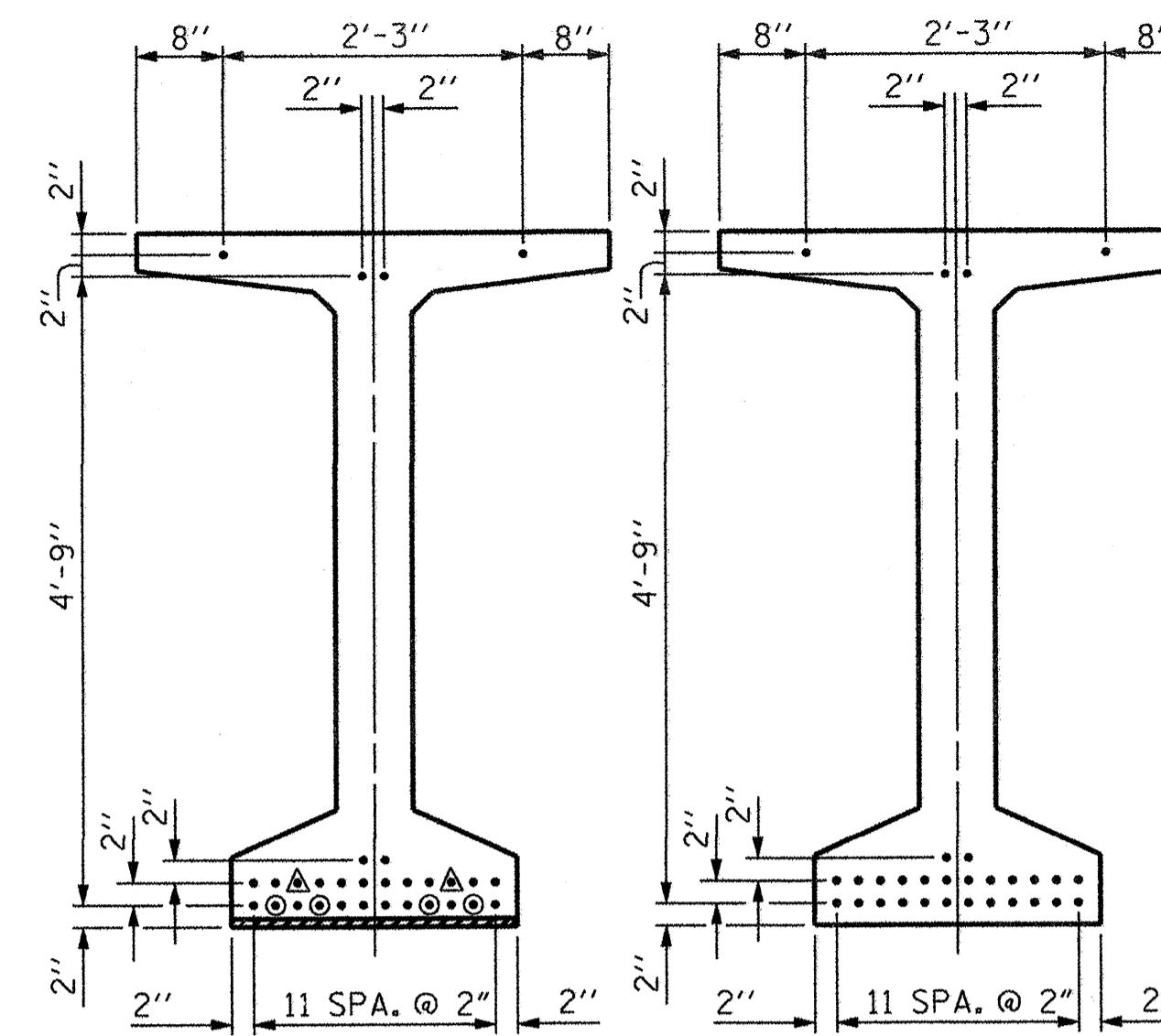


SECTION A-A



SECTION C-C

(S1, S6 AND S9 BARS NOT SHOWN)



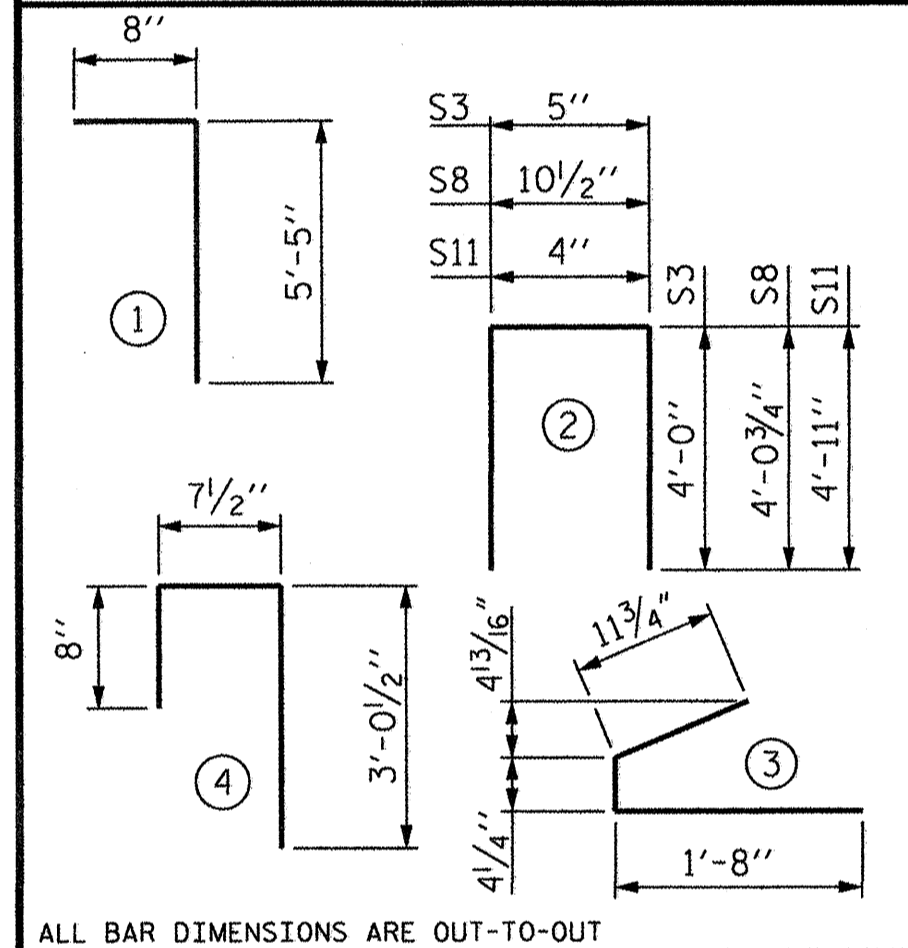
AT END OF GIRDER AT C OF GIRDER
0.6" Ø LOW RELAXATION STRAND LAYOUT

- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - ▲ STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER

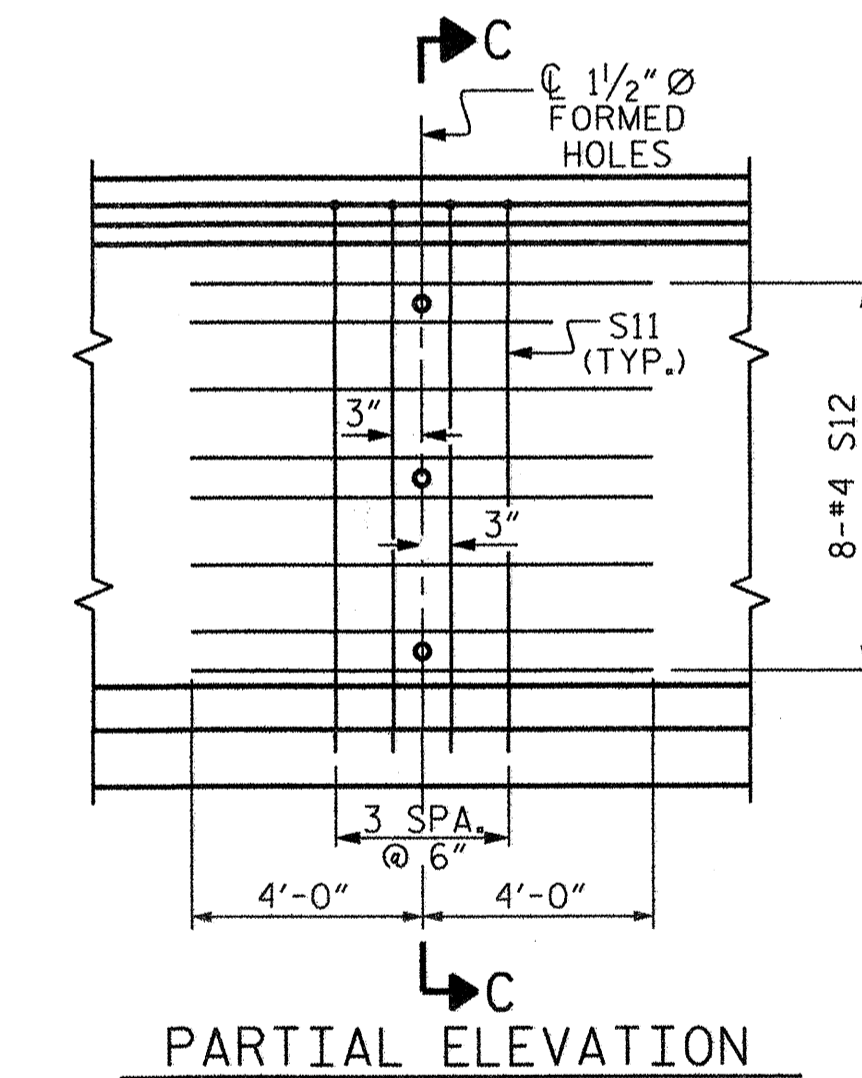
0.6" Ø L. R. GRADE 270 STRANDS						
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)				
0.217	58,600	43,950				
REINFORCING STEEL FOR ONE GDR						
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
EXTERIOR GDR.	S1	190	#4	1	6'-1"	772
INTERIOR GDR.	S1	190	#4	1	6'-1"	772
	S2	24	#5	1	6'-1"	152
	S3	12	#4	2	8'-5"	67
	S4	72	#4	3	3'-0"	144
EXTERIOR GDR.	S6	218	#5	4	4'-4"	985
INTERIOR GDR.	S6	218	#5	4	4'-4"	985
	*S7	40	#5	STR	3'-8"	153
	S8	2	#5	2	9'-0"	19
	S9	35	#5	STR	3'-3"	119
	S10	2	#3	STR	1'-10"	1
EXTERIOR GDR.	S11	4	#5	2	10'-2"	42
INTERIOR GDR.	S11	4	#5	2	10'-2"	42
EXTERIOR GDR.	S12	8	#4	STR	8'-0"	43
INTERIOR GDR.	S12	8	#4	STR	8'-0"	43

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

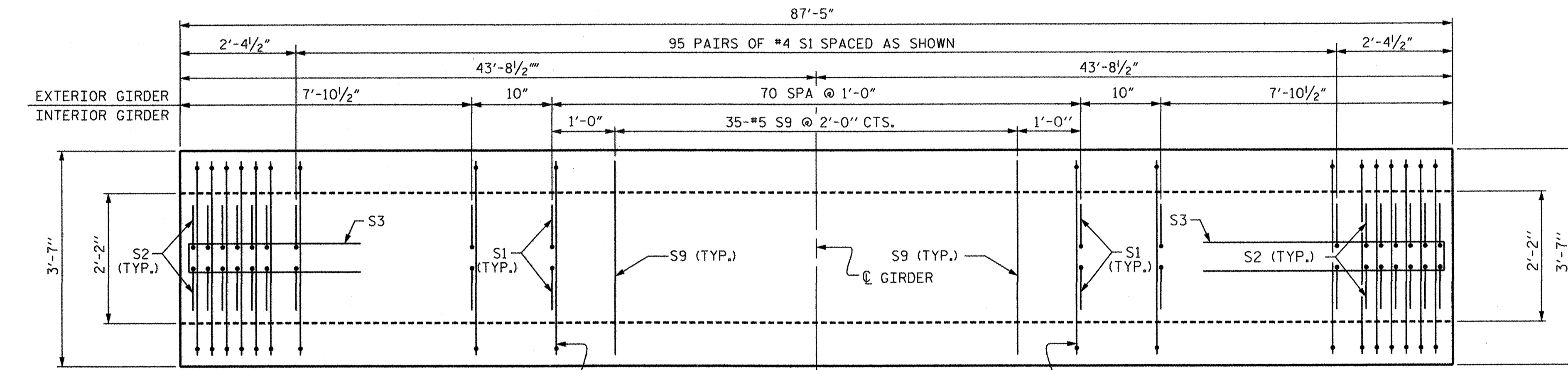
BAR TYPES



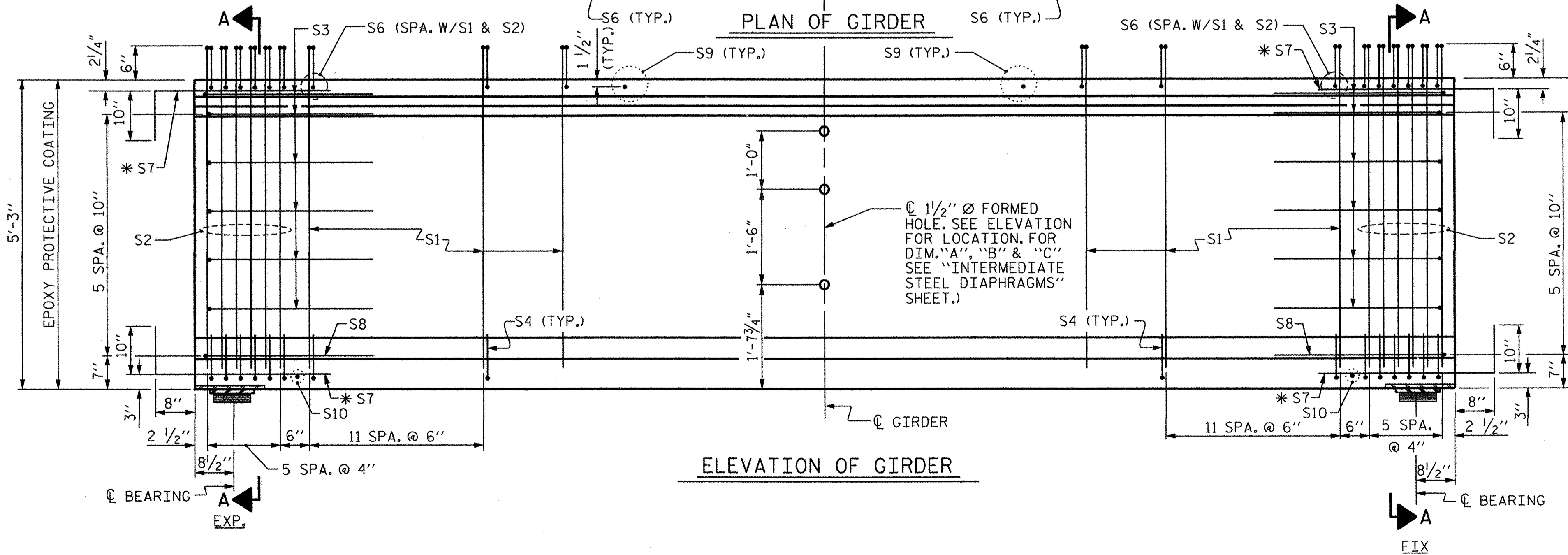
ALL BAR DIMENSIONS ARE OUT-TO-OUT



PARTIAL ELEVATION
SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1-5 (FOR ALL EXTERIOR GIRDERS AND INTERIOR GIRDERS WITH 70° ≤ SKEW ≤ 110°)



PLAN OF GIRDER



ELEVATION OF GIRDER

QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
EXTERIOR GIRDER	2,497	17.3	30
INTERIOR GIRDER	2,497	17.3	30
GIRDERS REQUIRED			
NUMBER	LENGTH	TOTAL LENGTH	
5	87'-5"	437'-1"	

PROJECT NO. B-4861
COUNTY: ANSON
STATION: P.O.T. 12 + 66.441-L- =
P.O.C. 11 + 48.124-RR-

CITY OF ANSONVILLE
ANSONVILLE, NORTH CAROLINA
63" PRESTRESSED CONCRETE
MODIFIED BULB TEE
CONTINUOUS FOR LIVE LOAD
SPAN A



PREPARED BY
TGS ENGINEERS
107-A WICA AVENUE
MORGANTON, NC 28655

DRAWN BY: RTJ DATE: 10/10
CHECKED BY: JLA DATE: 10/10

REVISIONS						SHEET NO. S-14
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 36
2			4			

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, 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 8,000 PSI.

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

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

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

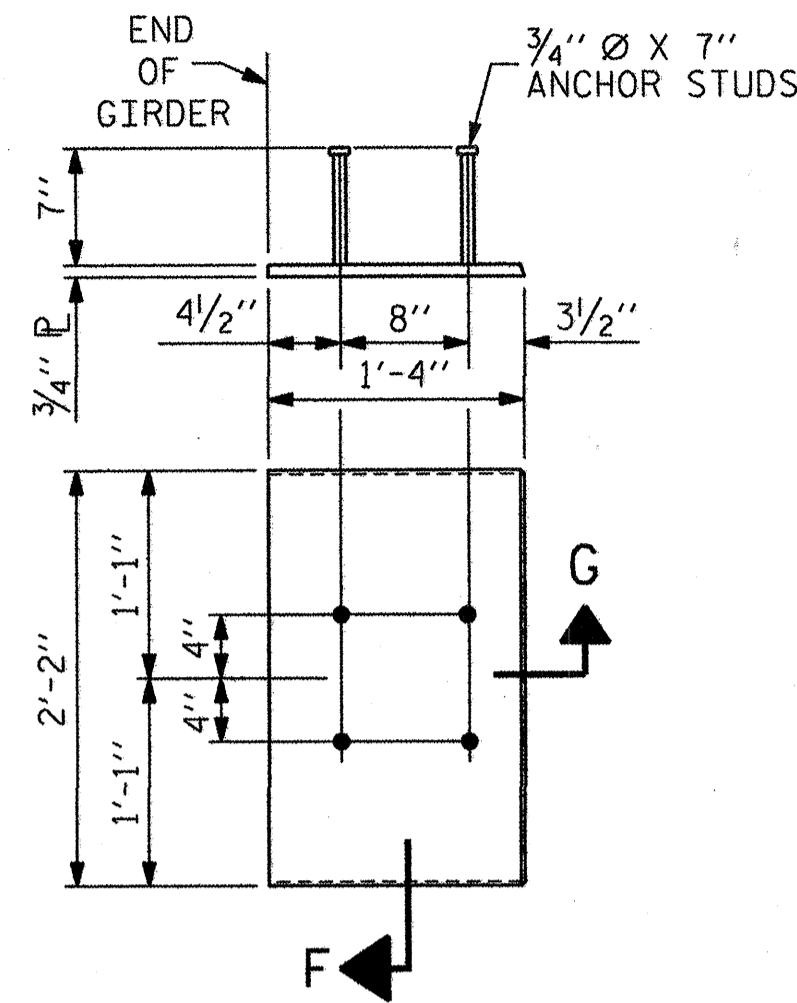
A 2" x 2" CHAMFER IS ALLOWED AT THE INTERSECTION OF THE WEB AND THE BOTTOM FLANGE OF THE 63" AND 72" MODIFIED BULB TEES ONLY.

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

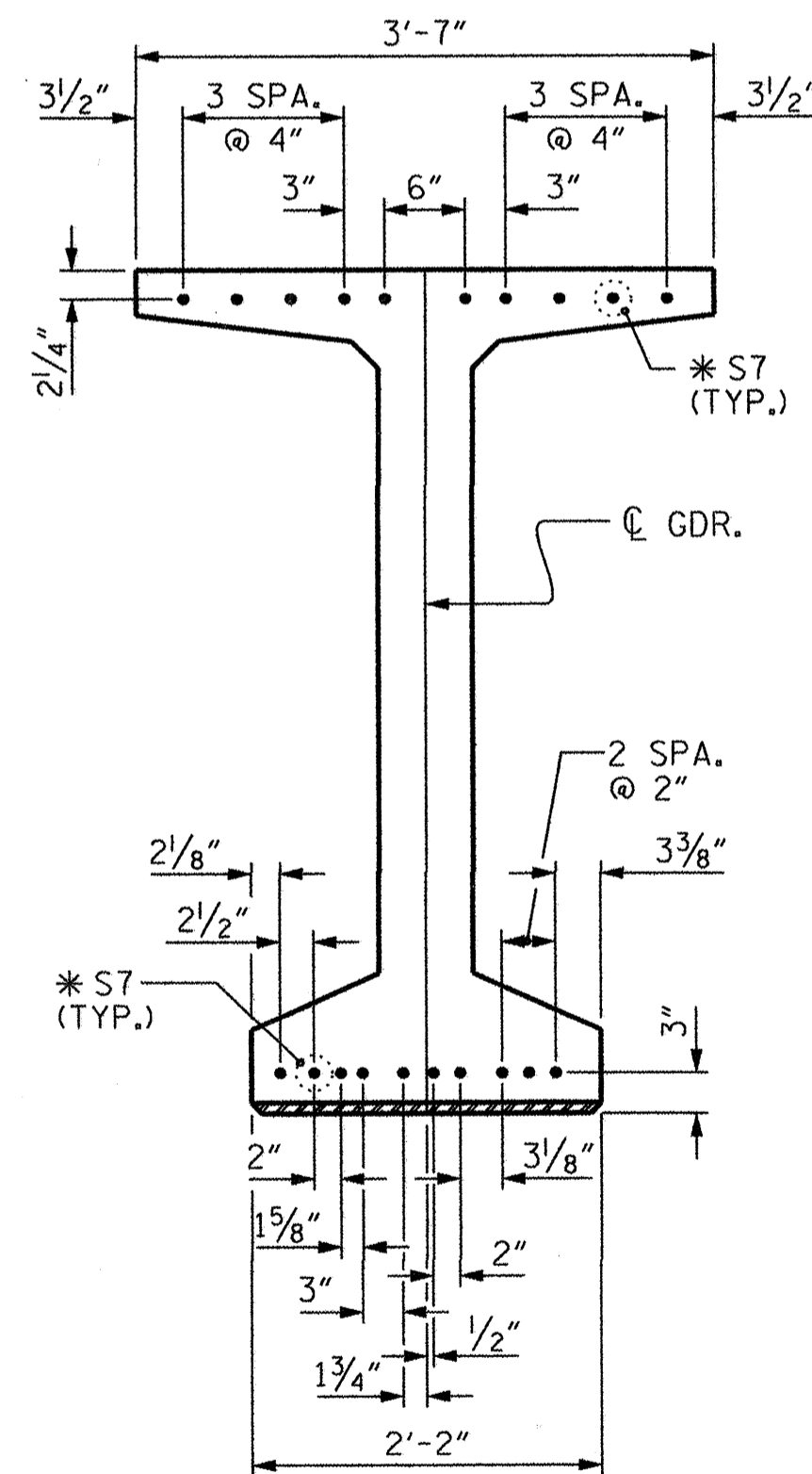
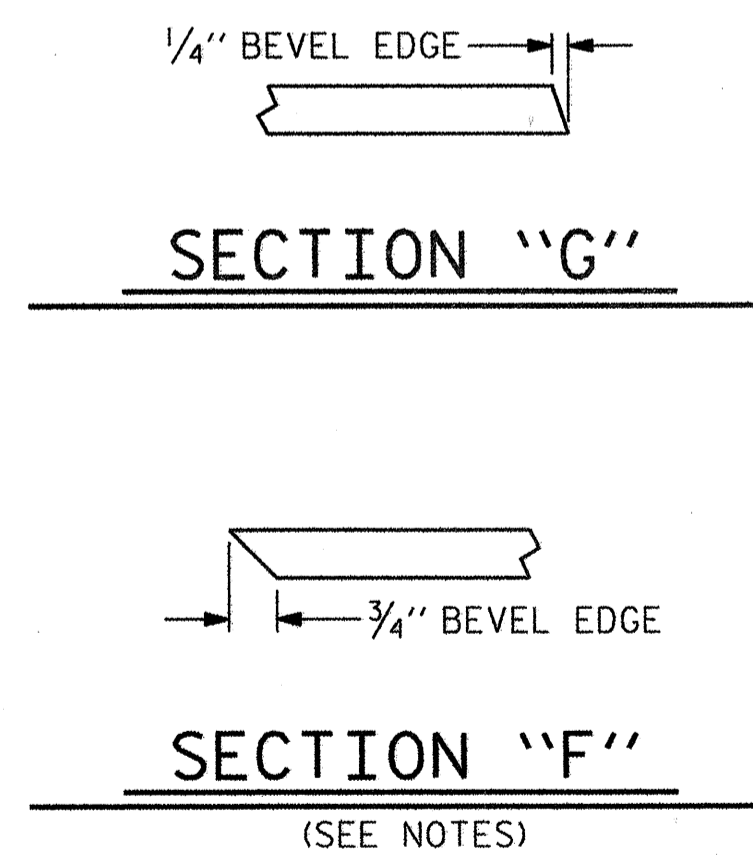
FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

DEAD LOAD DEFLECTION TABLE FOR GIRDERS										
0.6" Ø LOW RELAXATION	SPAN A GIRDERS 1 & 5									
TENTH POINTS	.1	.2	.3	.4	.5	.6	.7	.8	.9	
CAMBER (GIRDER ALONE IN PLACE)	↑	.095	.159	.207	.234	.243	.234	.207	.159	.095
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	.019	.038	.052	.061	.065	.061	.052	.038	.019
FINAL CAMBER	↑	15/16"	17/16"	17/8"	21/16"	21/8"	21/16"	17/8"	17/16"	15/16"
0.6" Ø LOW RELAXATION	SPAN A GIRDERS 2, 3 & 4									
TENTH POINTS	.1	.2	.3	.4	.5	.6	.7	.8	.9	
CAMBER (GIRDER ALONE IN PLACE)	↑	.095	.159	.207	.234	.243	.234	.207	.159	.095
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	.019	.038	.052	.061	.065	.061	.052	.038	.019
FINAL CAMBER	↑	15/16"	17/16"	17/8"	21/16"	21/8"	21/16"	17/8"	17/16"	15/16"

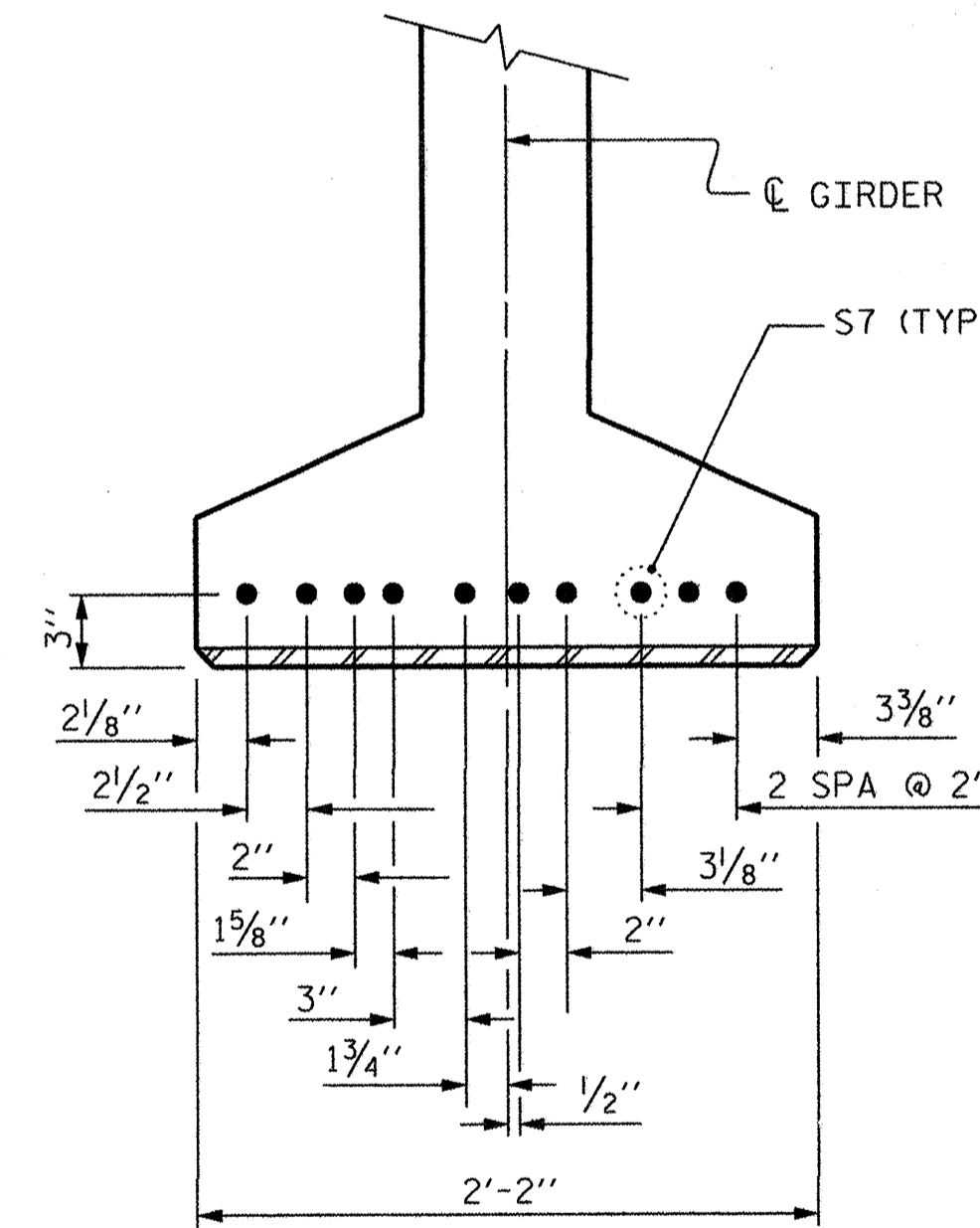
* INCLUDES FUTURE WEARING SURFACE
ALL VALUES ARE SHOWN IN FEET, EXCEPT "FINAL CAMBER" WHICH IS SHOWN IN INCHES.



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

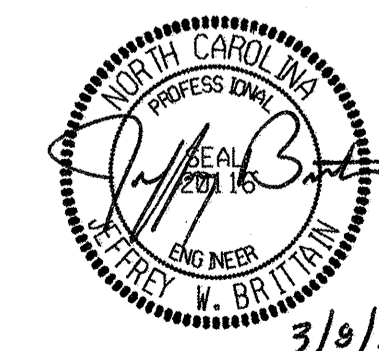


DETAIL "C"
(FOR 63" & 72" MODIFIED BULB TEES)



DETAIL "C"
(FOR 63" & 72" MODIFIED BULB TEES)

PROJECT NO. B-4861
COUNTY: ANSON
STATION: P.O.T. 12 + 66.441-L- =
P.O.C. 11 + 48.124-RR-



PREPARED BY
TOS ENGINEERS
107-A MICA AVENUE
MORGANTON, NC 28655

CITY OF ANSONVILLE
ANSONVILLE, NORTH CAROLINA
63" PRESTRESSED CONCRETE
MODIFIED BULB TEE
CONTINUOUS FOR LIVE LOAD
SPAN A

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-15
1			3			TOTAL SHEETS
2			4			36

STRUCTURAL STEEL NOTES

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

TENSION ON THE AASHTO M164 BOLTS THROUGH THE ANGLE MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR DIRECT TENSION INDICATORS, SEE SPECIAL PROVISION.

TENSION ON THE AASHTO M164 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.

THE PLATES, BENT PLATES, ANGLES, AND PLATE WASHERS 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 PROVISIONS AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

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

USE A MINIMUM 7/16" THICK PLATE WASHER WITH STANDARD HOLES UNDER EACH BOLT HEAD AND NUT. THE PLATE WASHERS SHALL HAVE SUFFICIENT SIZE TO COVER THE HOLES AFTER INSTALLATION. HARDENED WASHERS AND DIRECT TENSION INDICATORS ARE TO BE USED IN CONJUNCTION WITH THE PLATE WASHERS IN THE L 3 X 3 X 5/16 ANGLE MEMBER CONNECTION.

FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF 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.

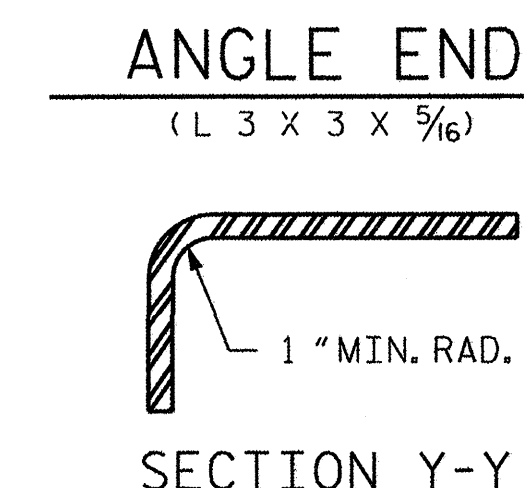
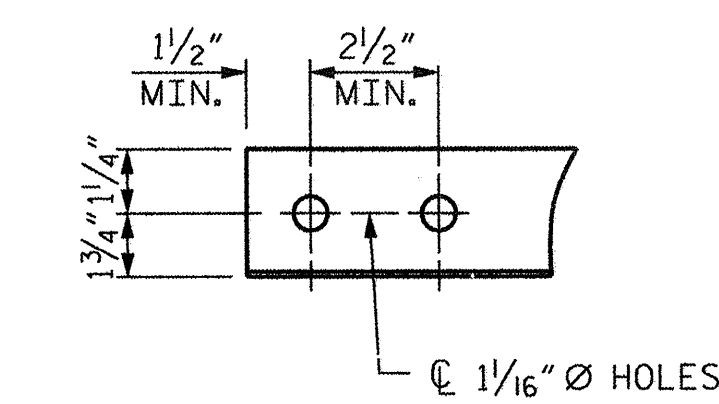
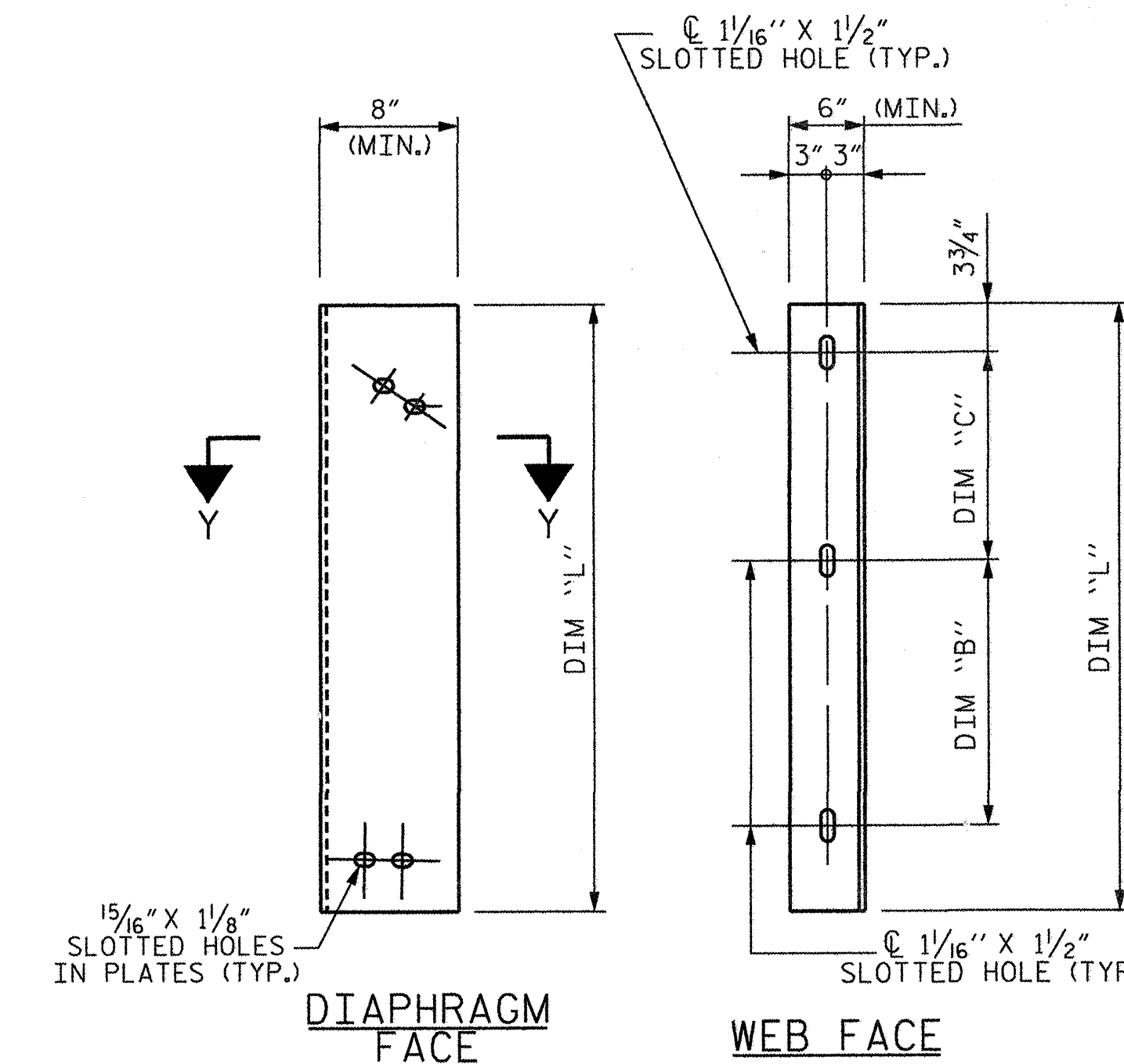
CONTRACTOR SHALL SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

IN THE EXTERIOR BAYS, TEMPORARY STRUTS SHALL BE PLACED BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED. ALL AASHTO M164 H.S. BOLTS SHALL BE FULLY TIGHTENED AFTER THE STRUTS HAVE BEEN REMOVED.

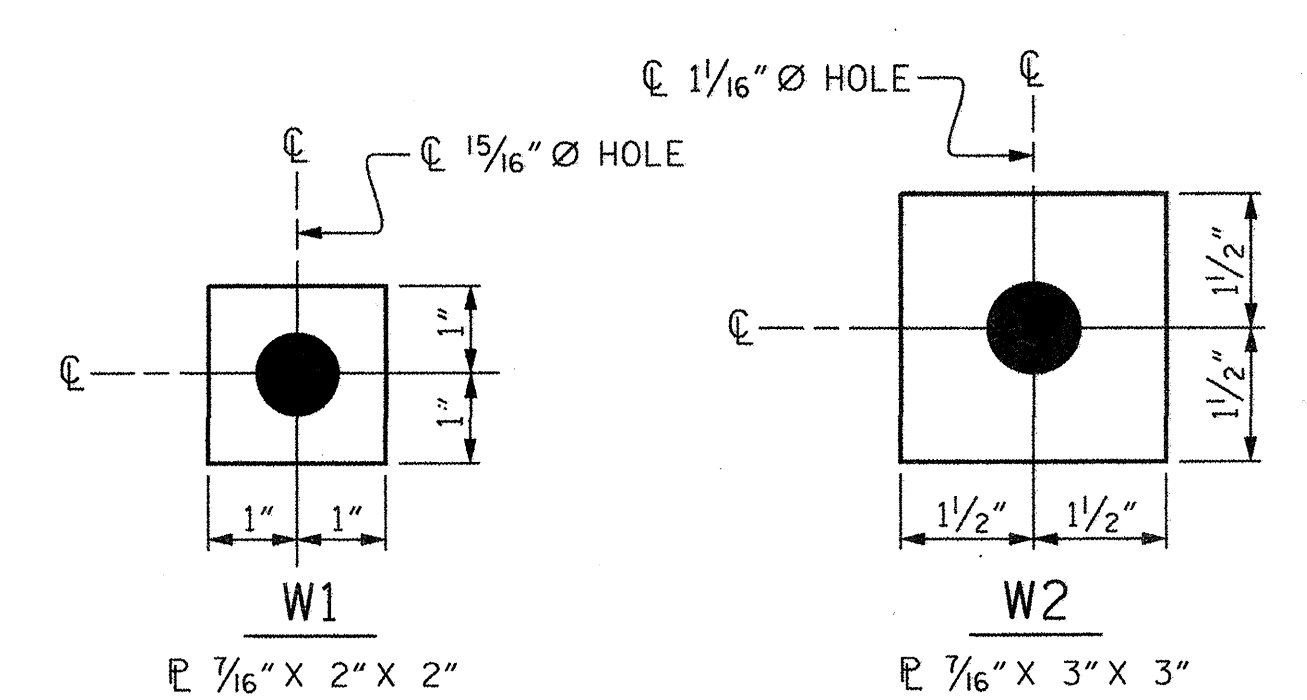
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

TABLE

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
63" BULB TEE	1'-7 3/4"	1'-6"	1'-0"	3'-5"



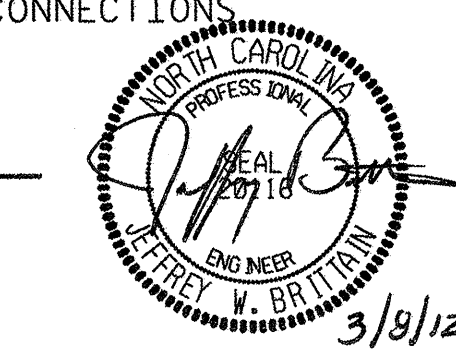
CONNECTOR PLATE DETAILS



USE WITH 7/8" HVY. HEX NUTS & DIRECT TENSION INDICATOR WASHERS AT DIAPHRAGM ANGLE TO CONNECTOR PLATE CONNECTIONS

USE WITH 1" HVY. HEX NUTS AT CONNECTOR PLATE TO GIRDER CONNECTIONS

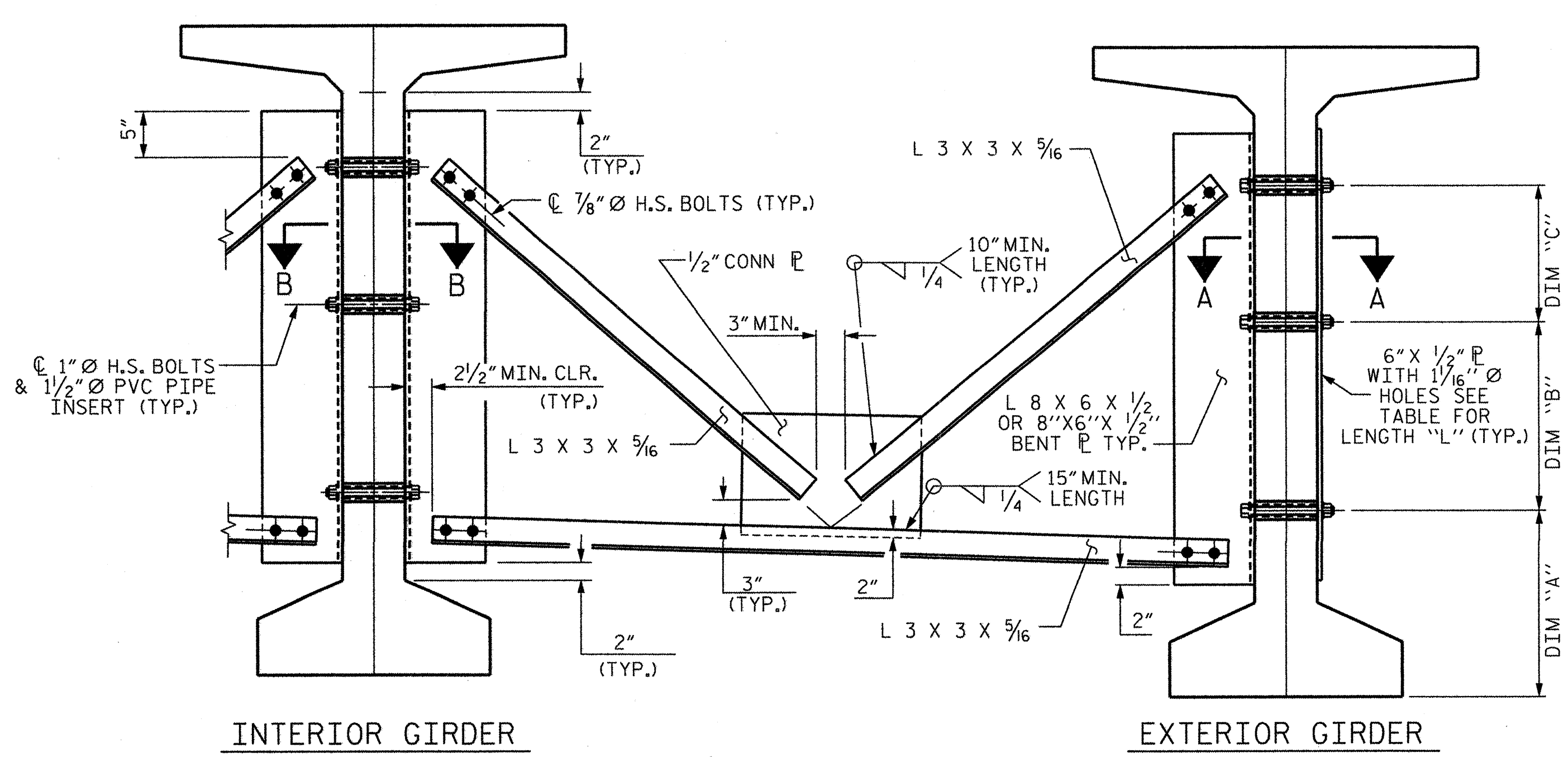
WASHER DETAILS



PROJECT NO. B-4861
 COUNTY: ANSON
 STATION: P.O.T. 12 + 66.441-L- =
 P.O.C. 11 + 48.124-RR-

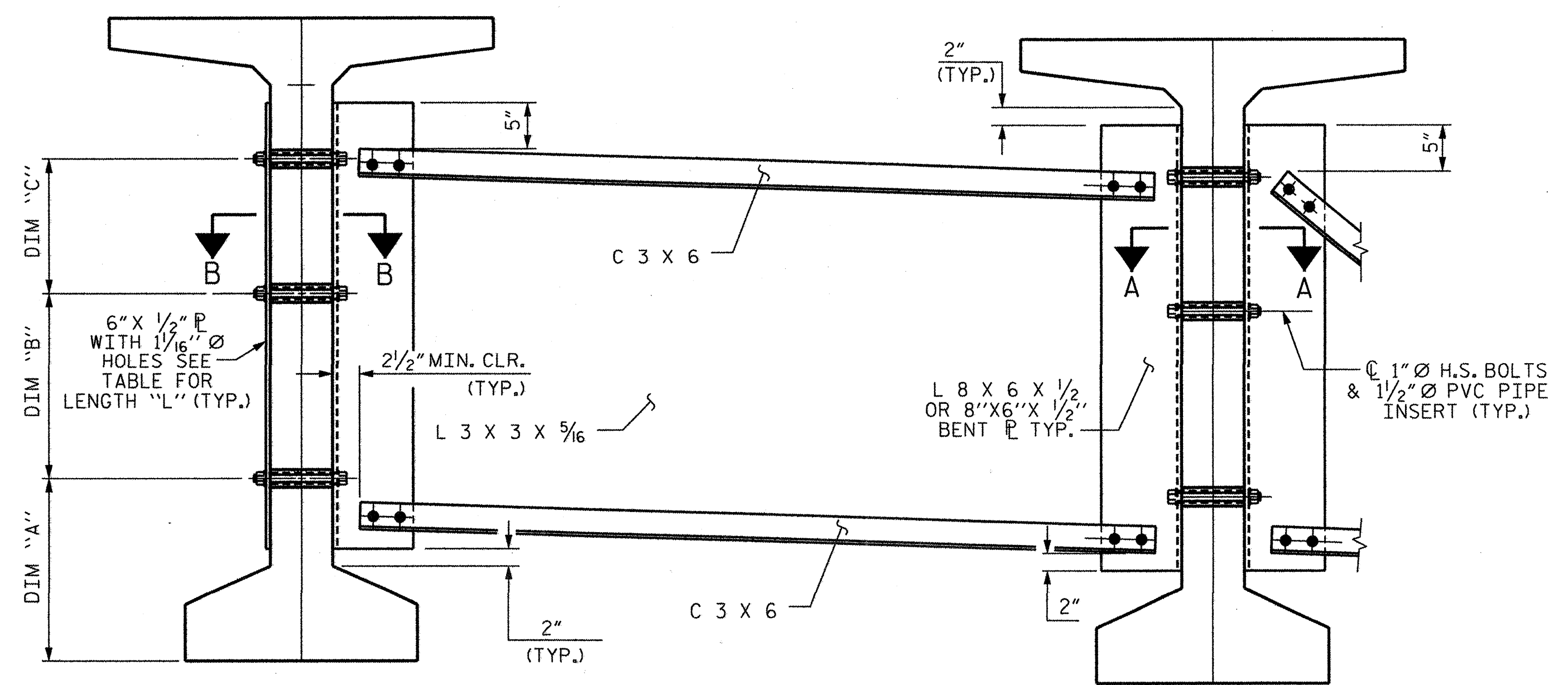
CITY OF ANSONVILLE, NC
 INTERMEDIATE
 STEEL DIAPHRAGMS
 FOR 63" & 72"
 MODIFIED BULB TEE
 PRESTRESSED CONCRETE
 GIRDERS

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-16
1			3			TOTAL SHEETS
2			4			36



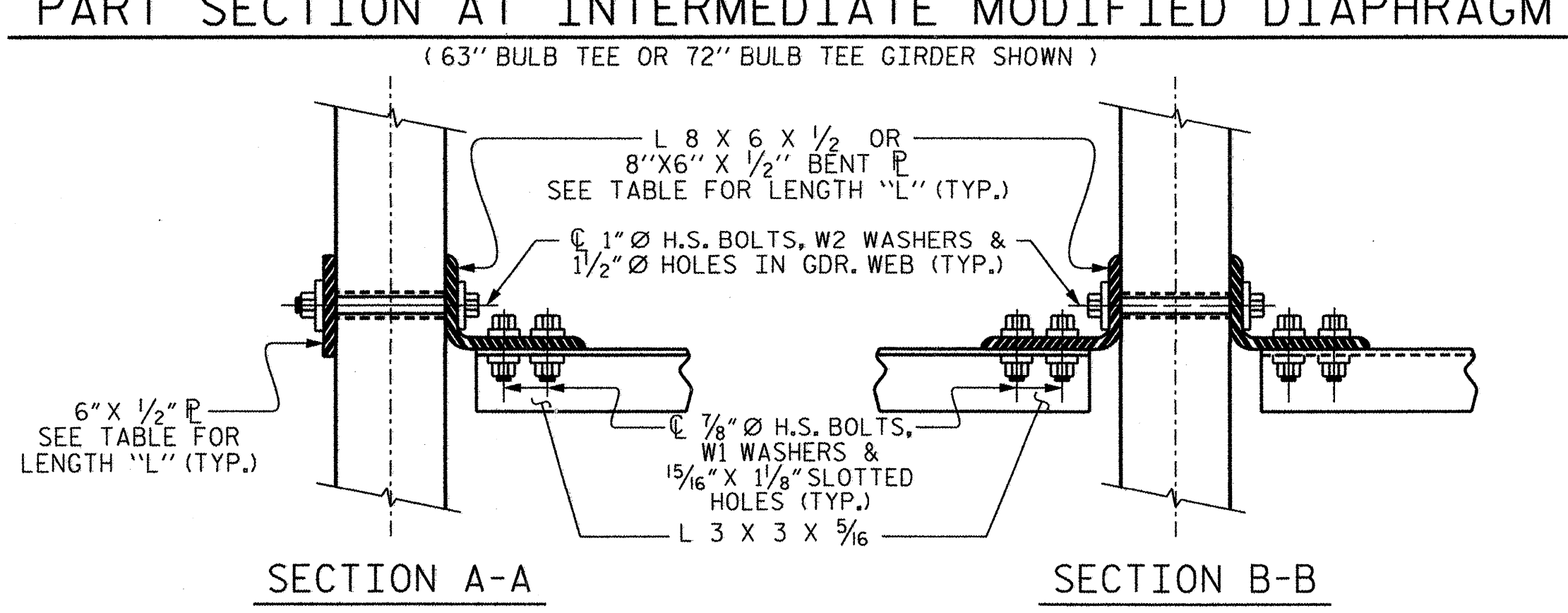
PART SECTION AT INTERMEDIATE DIAPHRAGM

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



PART SECTION AT INTERMEDIATE MODIFIED DIAPHRAGM

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



CONNECTION DETAILS

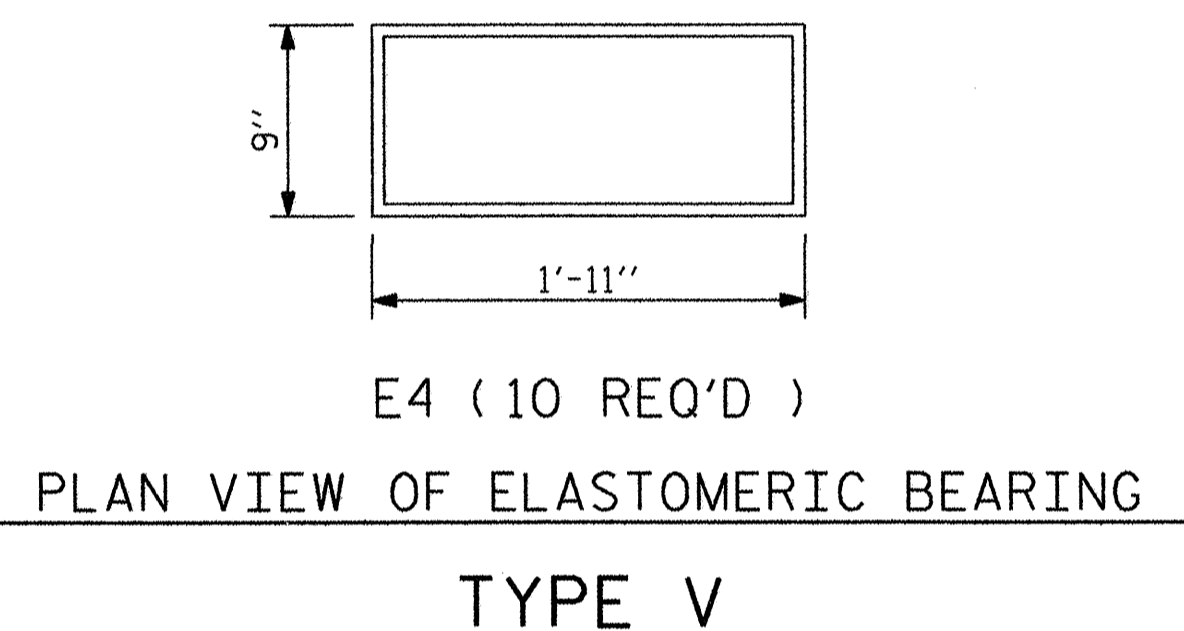
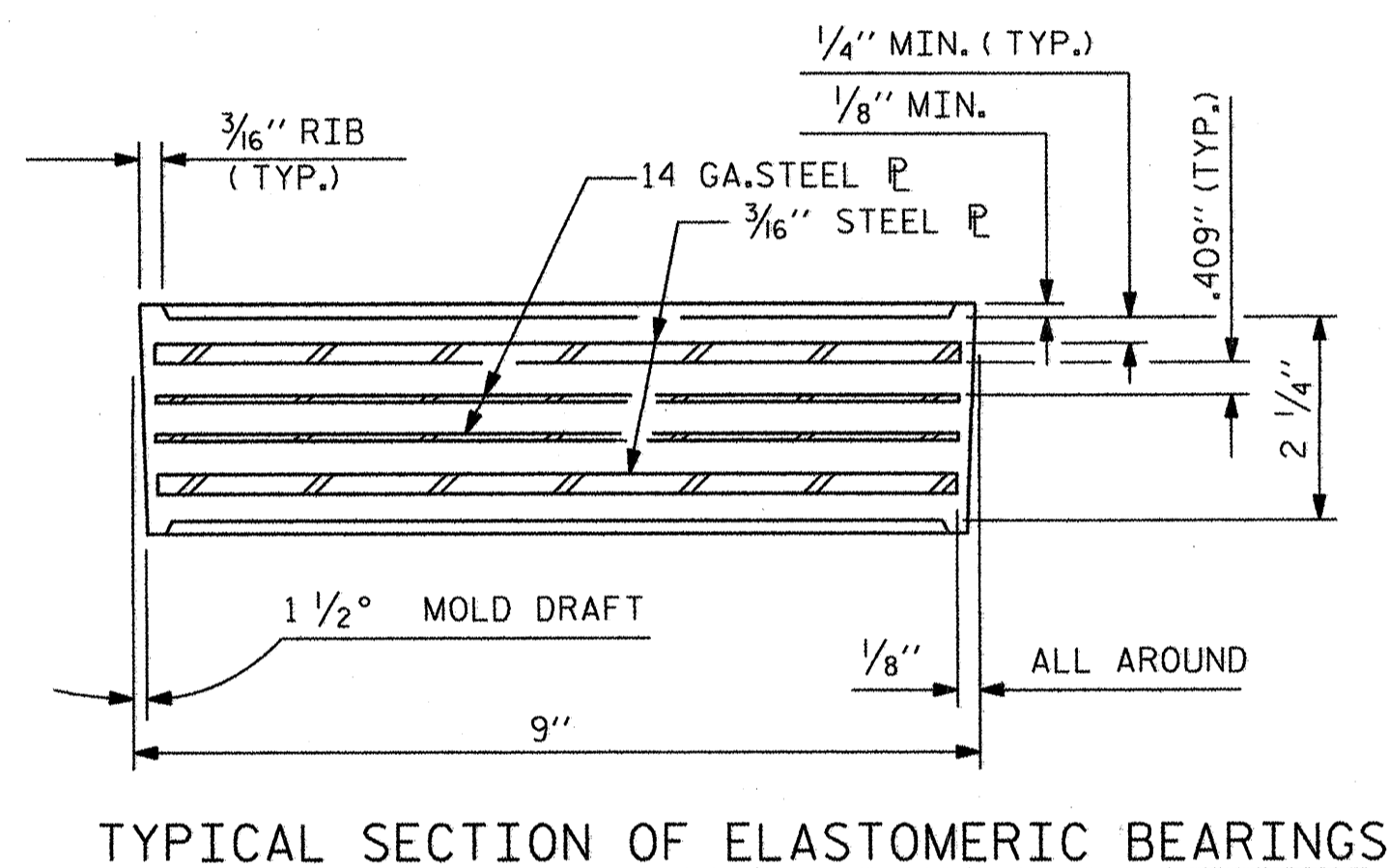
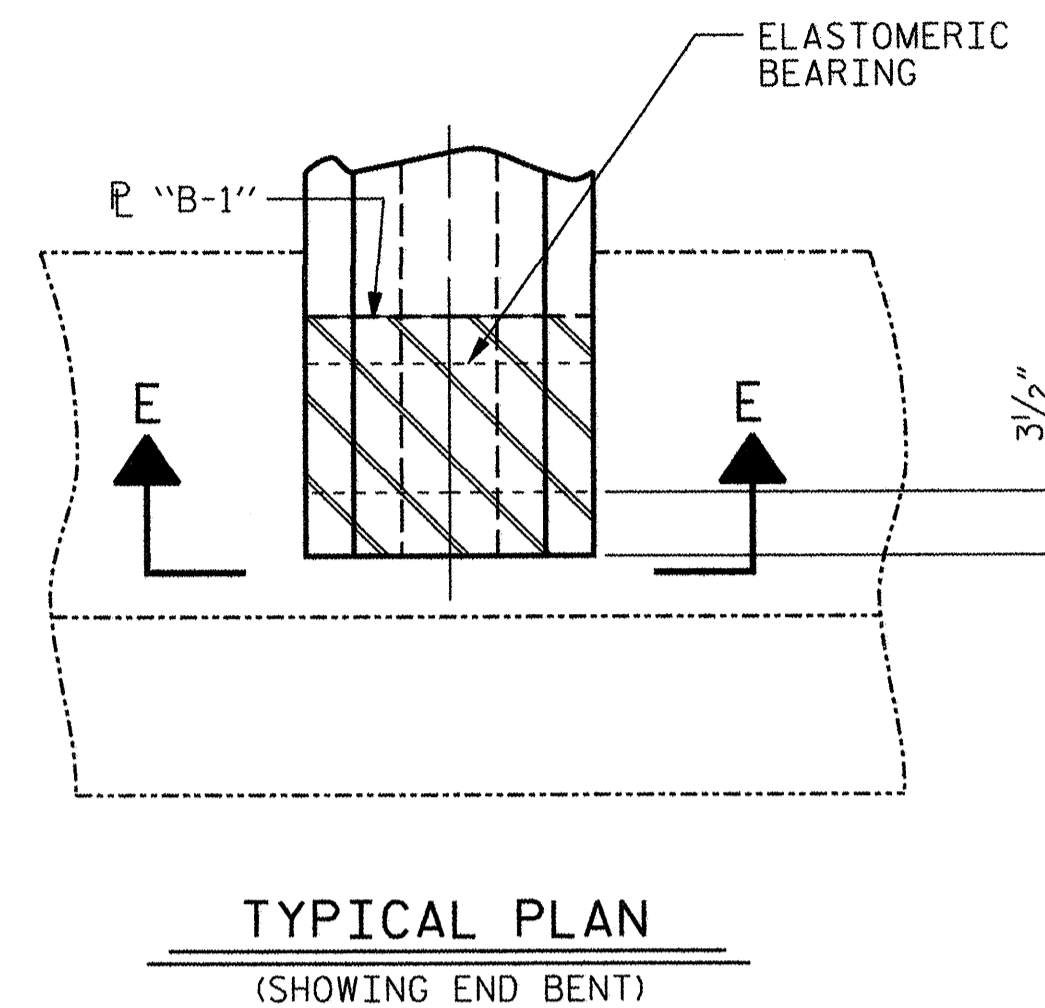
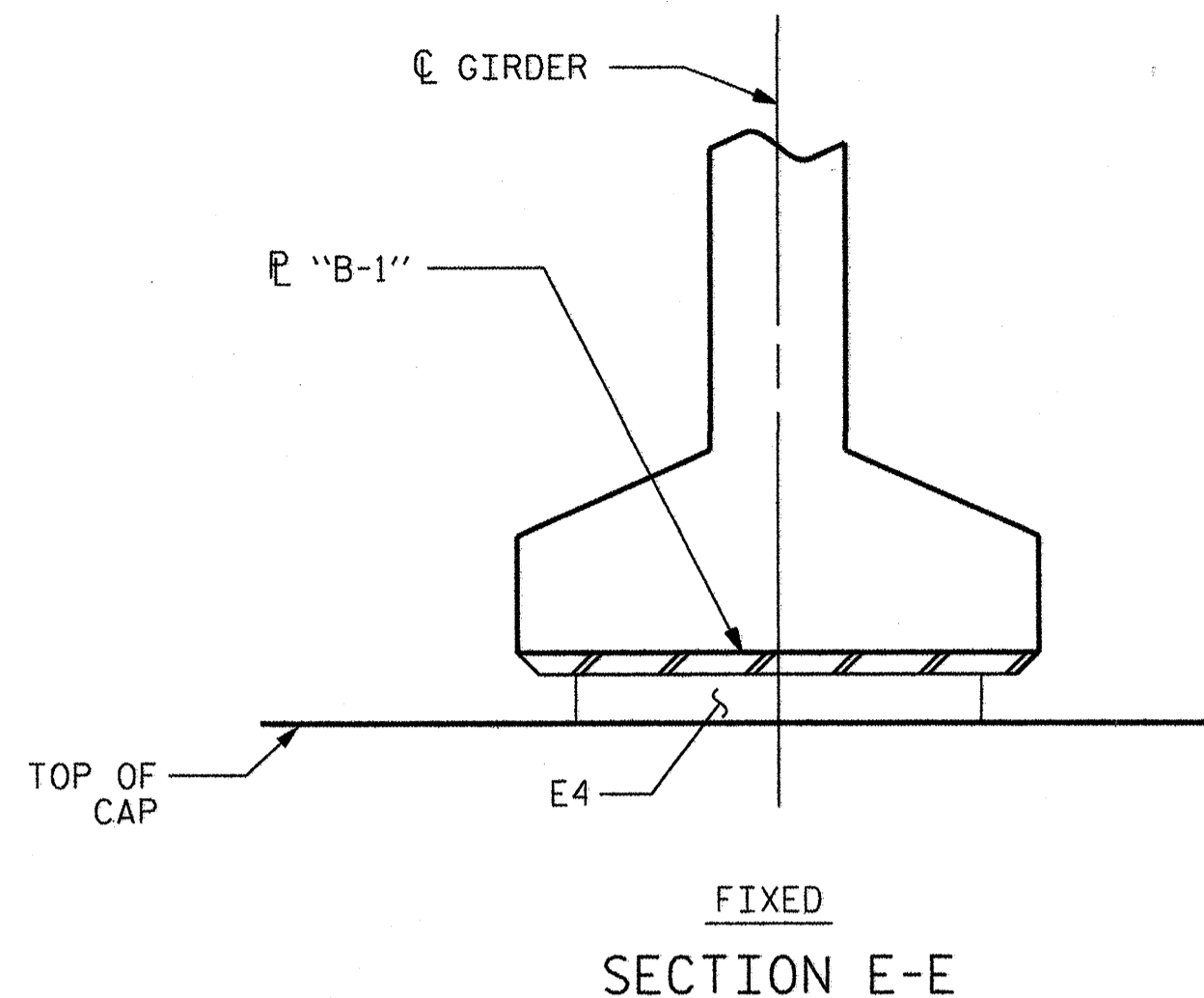
(FOR SKEW = 90°)

DRAWN BY: JLA DATE: 9/10
 CHECKED BY: RTJ DATE: 10/10

PREPARED BY
 TGS ENGINEERS
 107-A WICA AVENUE
 MORGANTON, NC 28655

NOTES

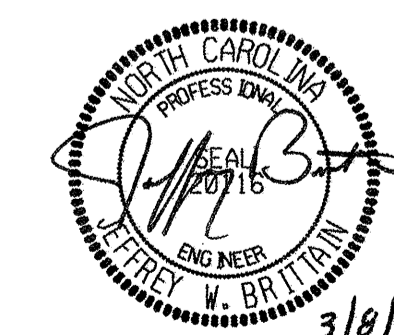
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.



— LOAD RATINGS —

	MAX.D.L.+ L.L.
TYPE V	180 K

PROJECT NO. B-4861
 COUNTY: ANSON
 STATION: P.O.T. 12+66.441-L- =
 P.O.C. 11+48.124 -RR-



PREPARED BY
 TOS ENGINEERS
 107-A MICA AVENUE
 MORGANTON, NC 28655

CITY OF ANSONVILLE, NC

ELASTOMERIC BEARING DETAILS
 PRESTRESSED CONCRETE GIRDER
 SUPERSTRUCTURE

DRAWN BY: NMW DATE: 11/07
 CHECKED BY: RTJ DATE: 10/10

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-17
1			3			TOTAL SHEETS
2			4			36

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 B221 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. PLACE ONE JOINT SPLICE JUST BEYOND THE 3RD RAIL POST FROM EACH END, TYPICALLY 14' FROM THE END. PLACE OTHER JOINTS AS NEEDED.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR7.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS FOR RAIL ATTACHMENT 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.

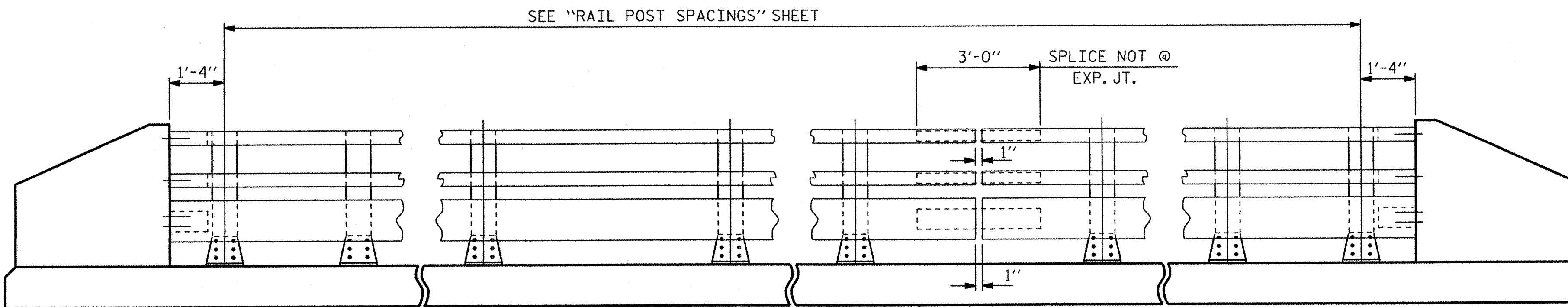
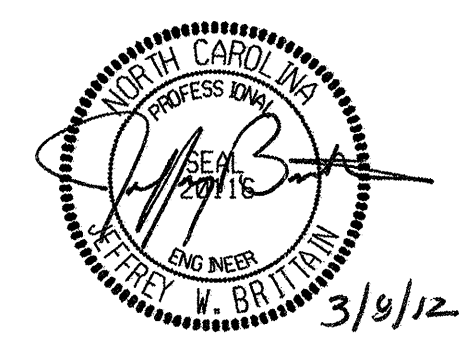
TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAIN VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

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

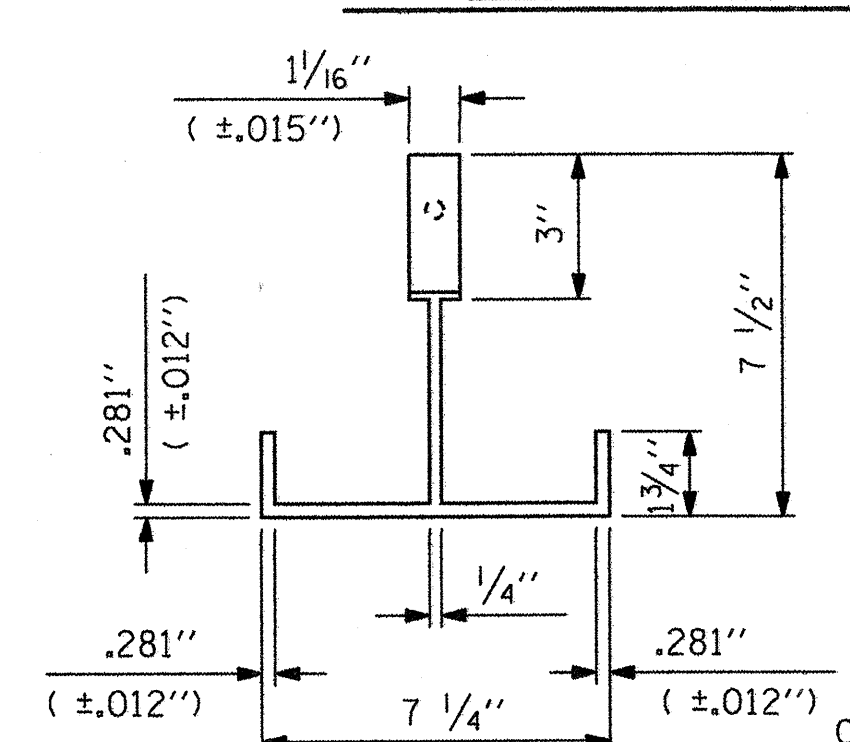
MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

PAY LENGTH = 161.7 LIN.FT.

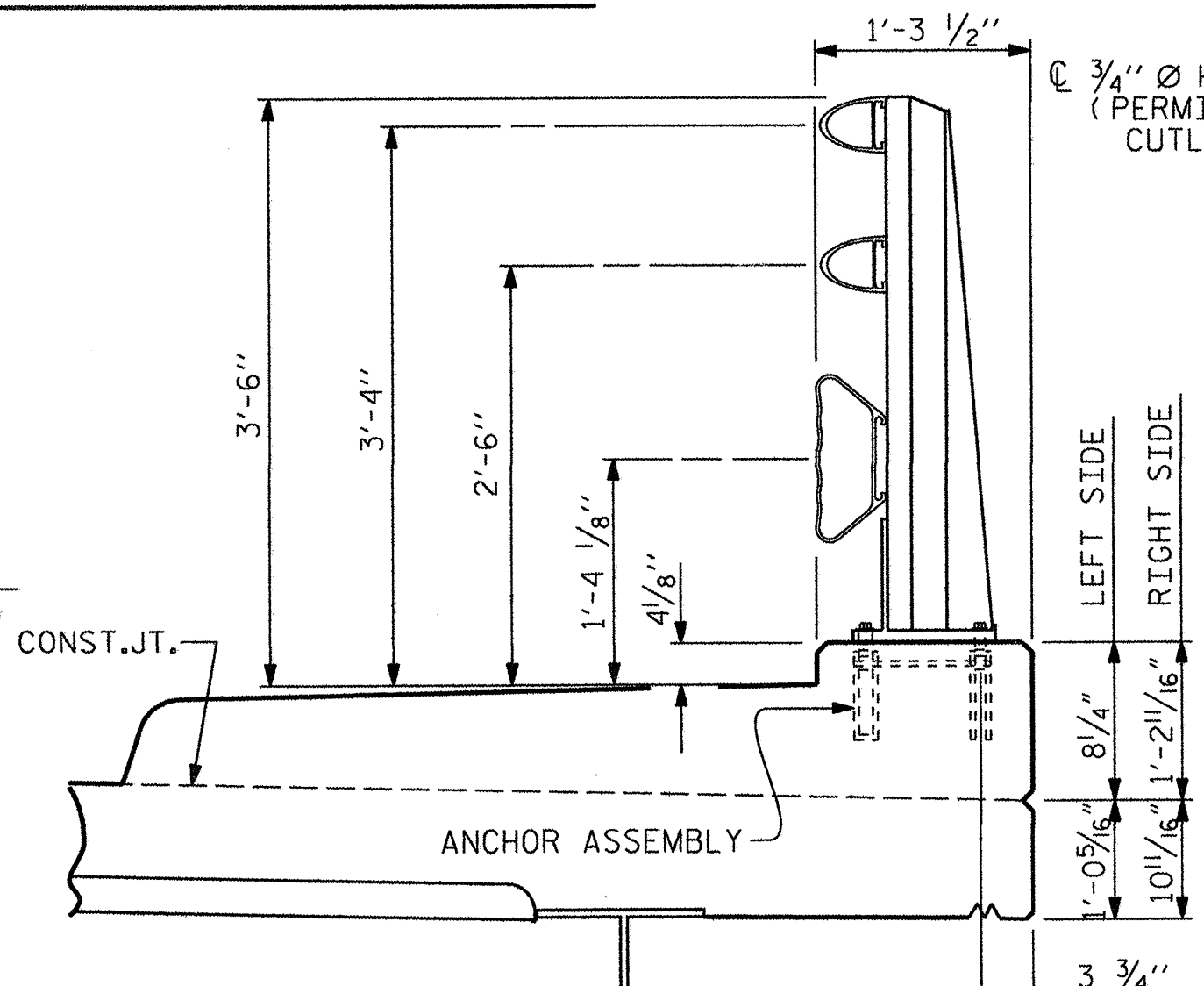


ELEVATION

NOTE:
FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR7.



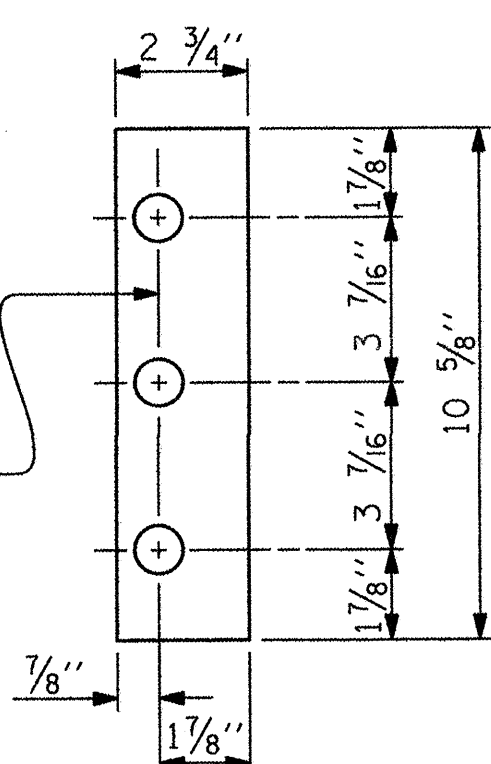
PLAN



SECTION THRU RAIL

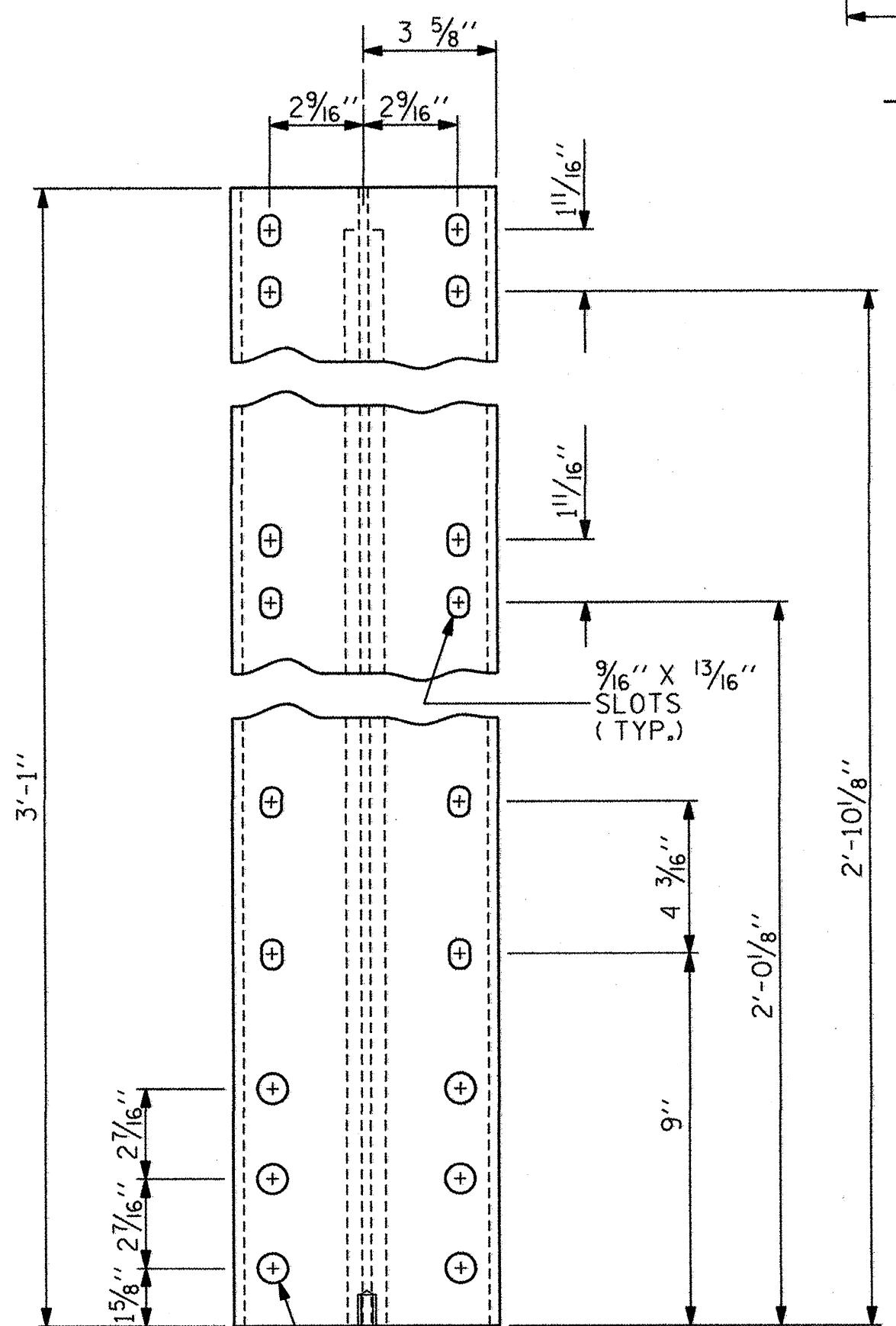
FOR ANCHOR ASSEMBLY, SEE "3 BAR METAL RAIL" STD. NO. BMR6

REAR PLATE

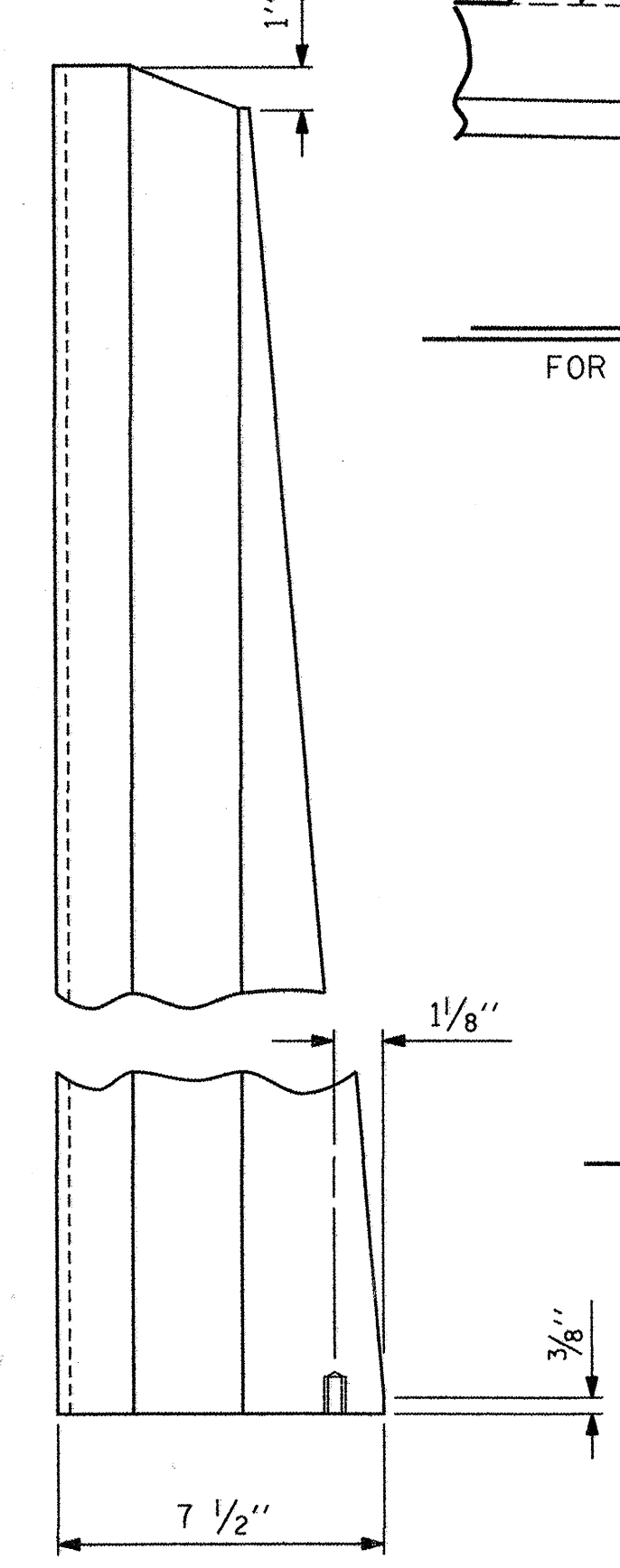


FRONT PLATE SHIM DETAILS

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

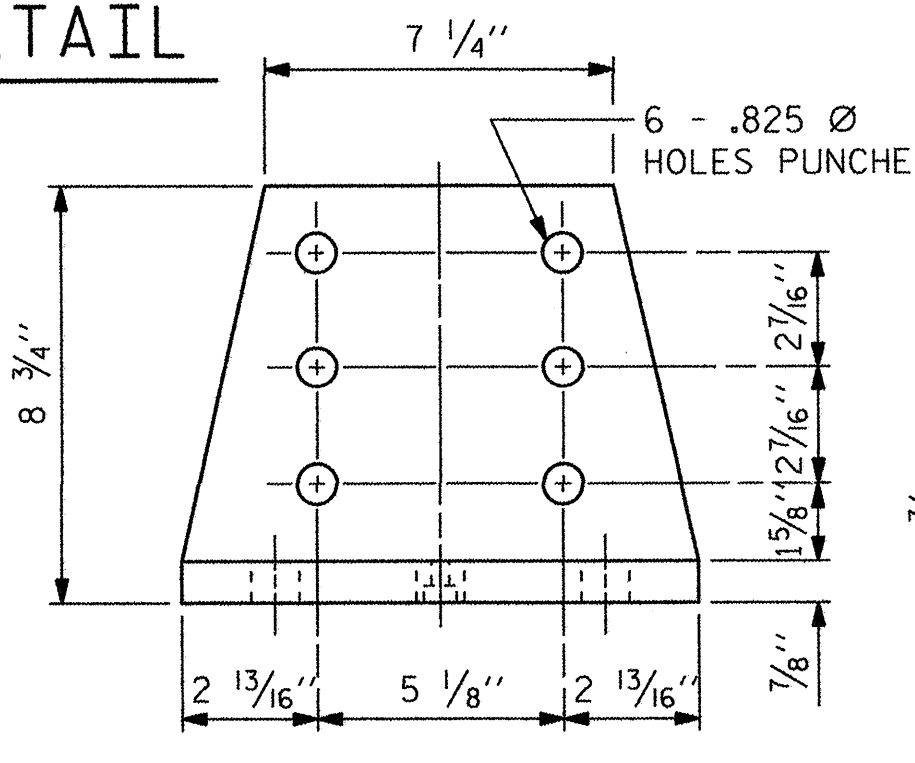
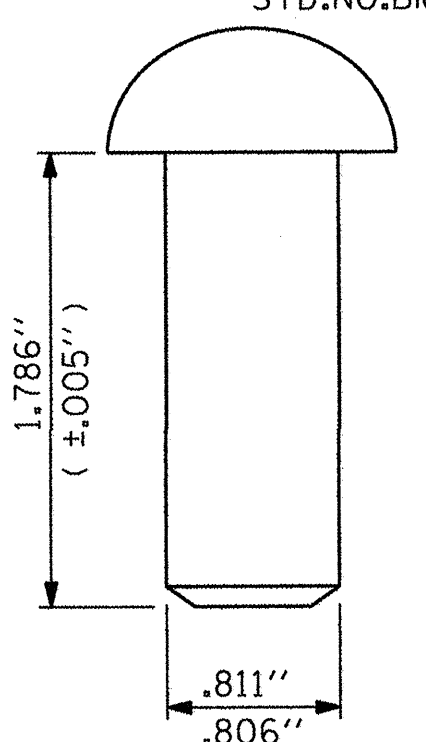


FRONT ELEVATION

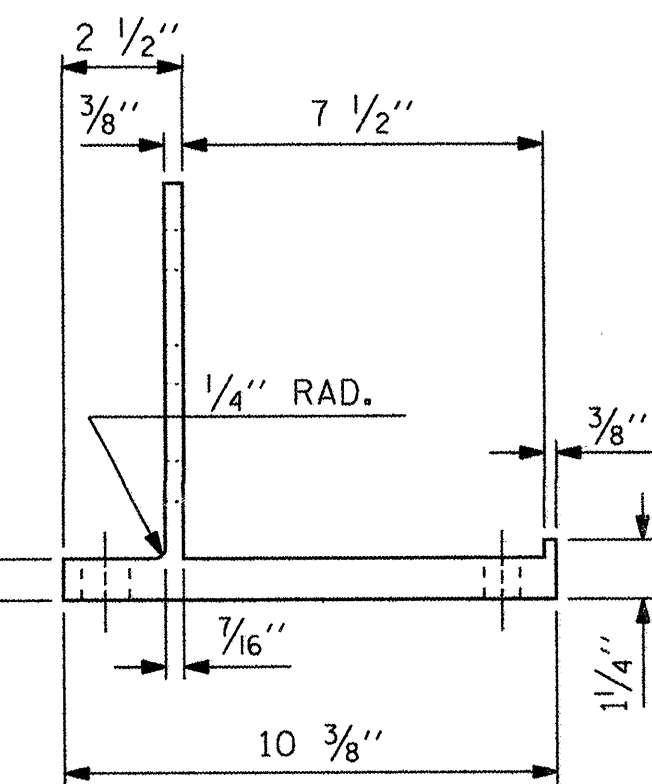


SIDE ELEVATION

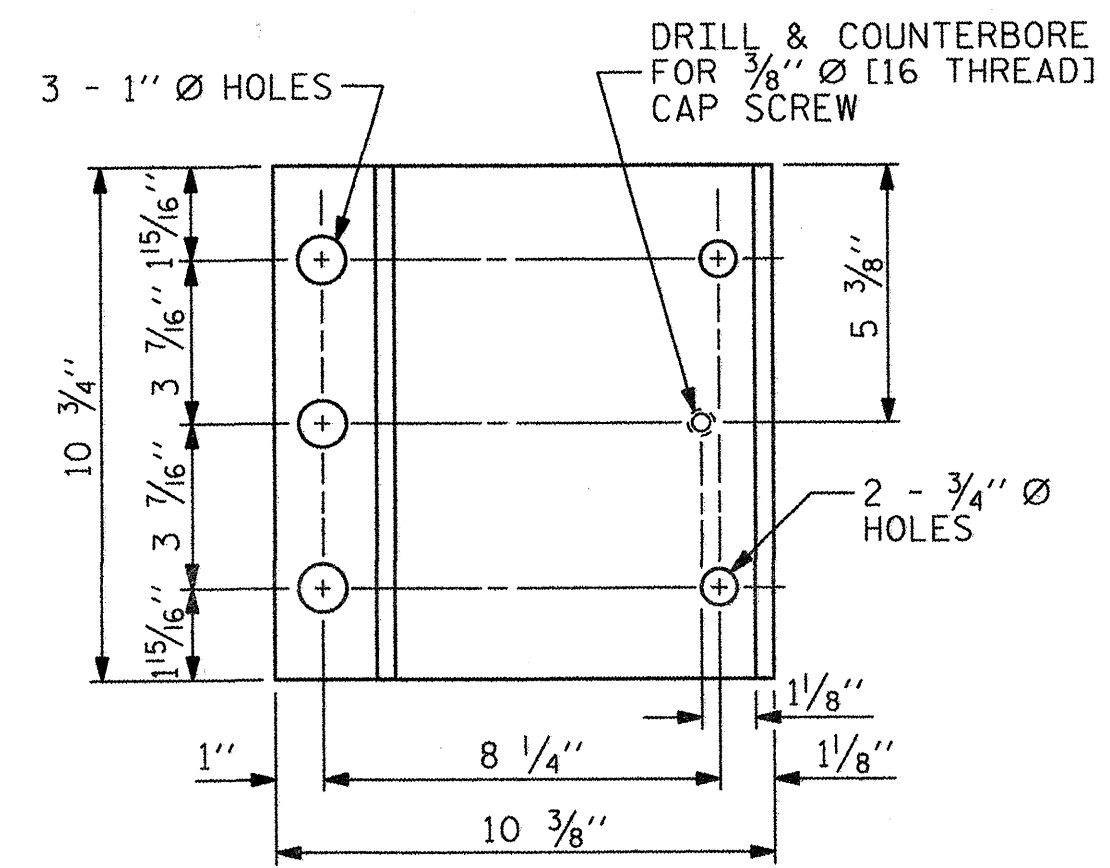
RIVET DETAIL



FRONT ELEVATION



SIDE ELEVATION



PLAN

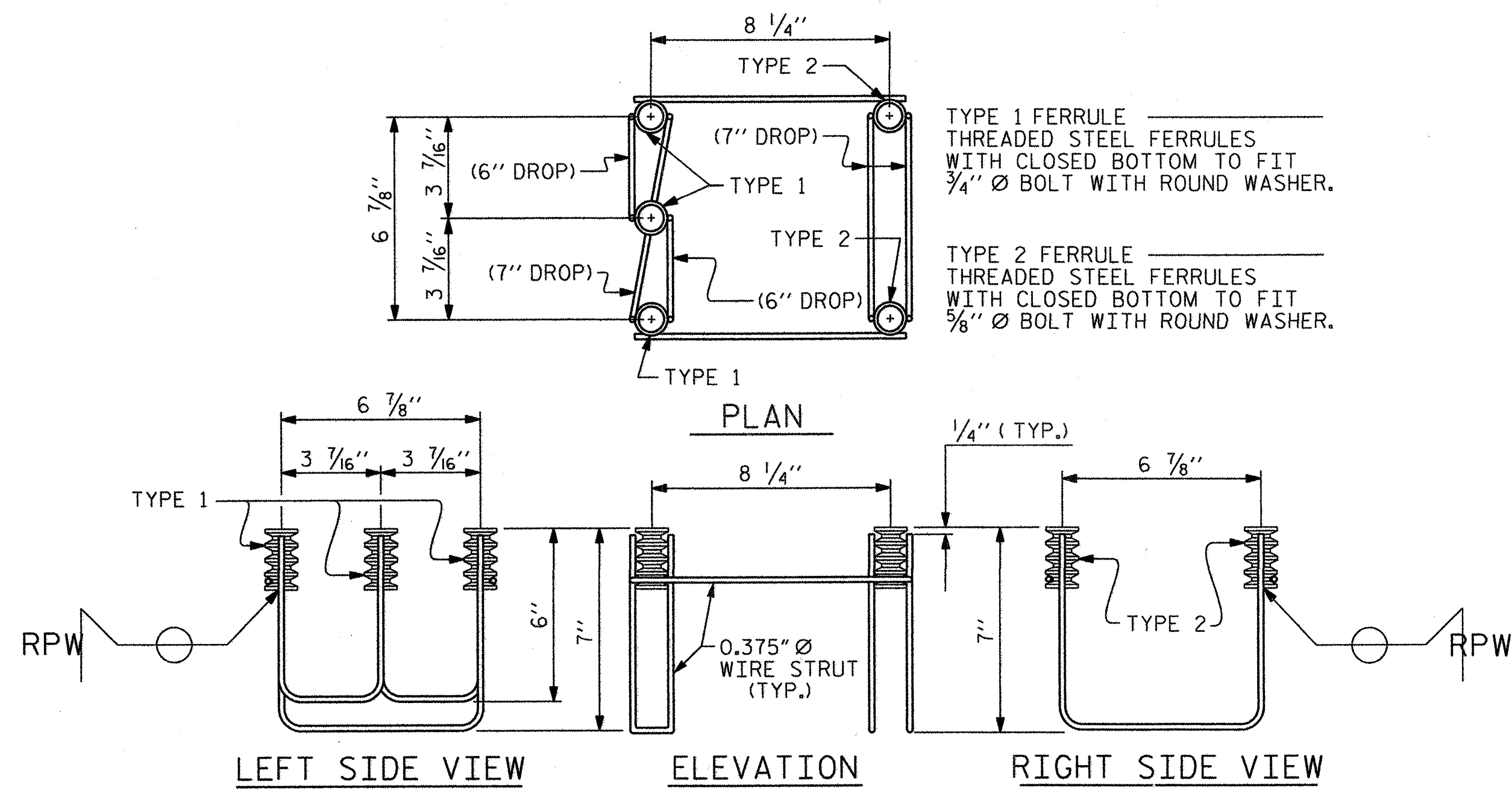
POST BASE DETAILS

ASSEMBLED BY: JLA	DATE: 11/07
CHECKED BY: RTJ	DATE: 10/10
DRAWN BY: JMB 1/88	REV. 10/17/00 RWW/LES
CHECKED BY: GGH 1/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

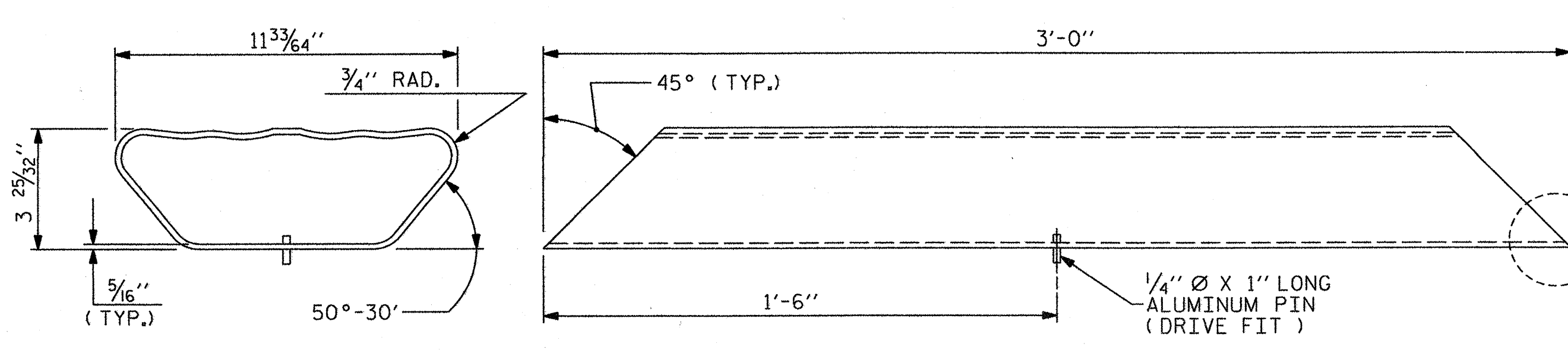
PREPARED BY
TOS ENGINEERS
107-A MICA AVENUE
MORGANTON, NC 28655

PROJECT NO. B-4861
ANSON COUNTY
STATION: P.O.T. 12+66.441-L- =
P.O.C. 11+48.124-RR-

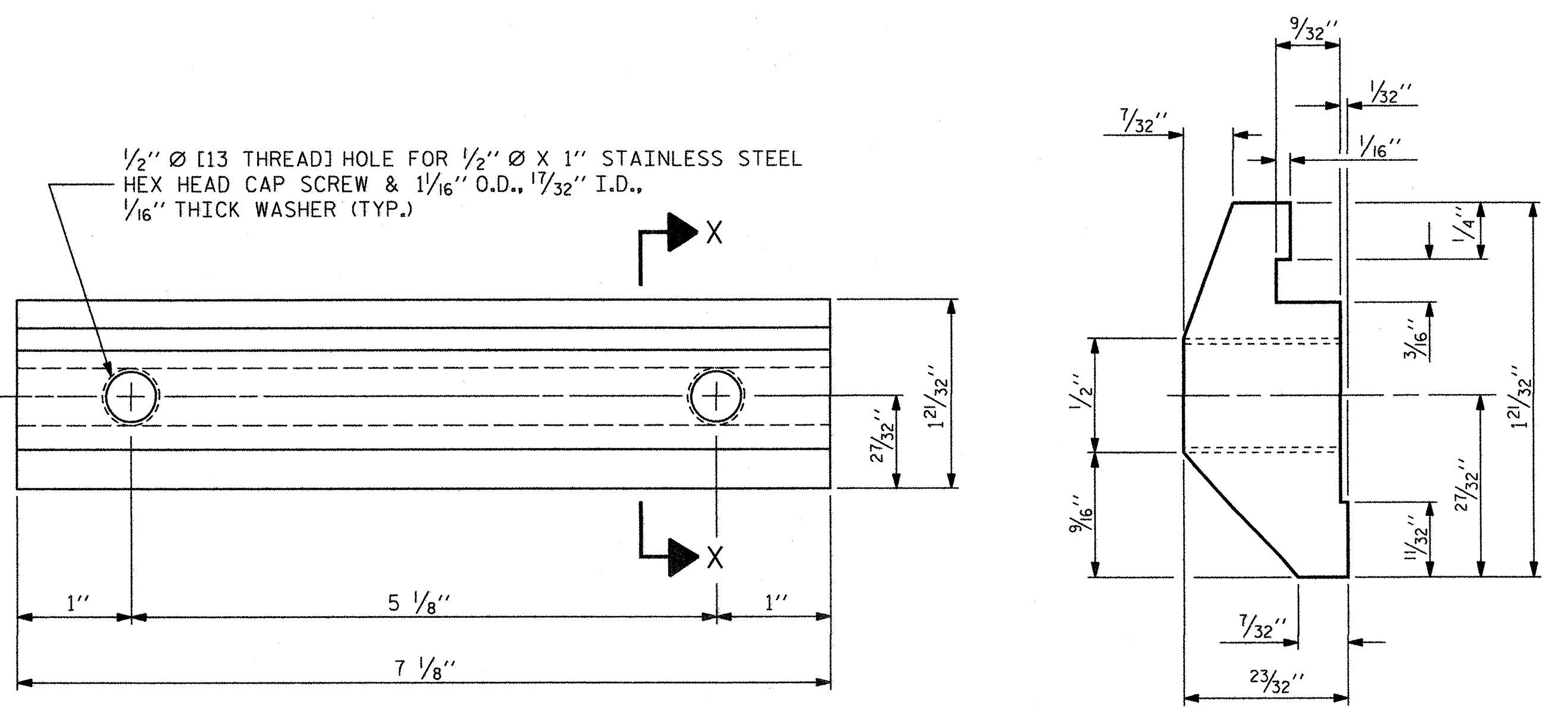
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD 3 BAR METAL RAIL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-18 TOTAL SHEETS 36



5-BOLT METAL RAIL ANCHOR ASSEMBLY
(34 ASSEMBLIES REQUIRED)



BOTTOM RAIL EXPANSION BAR

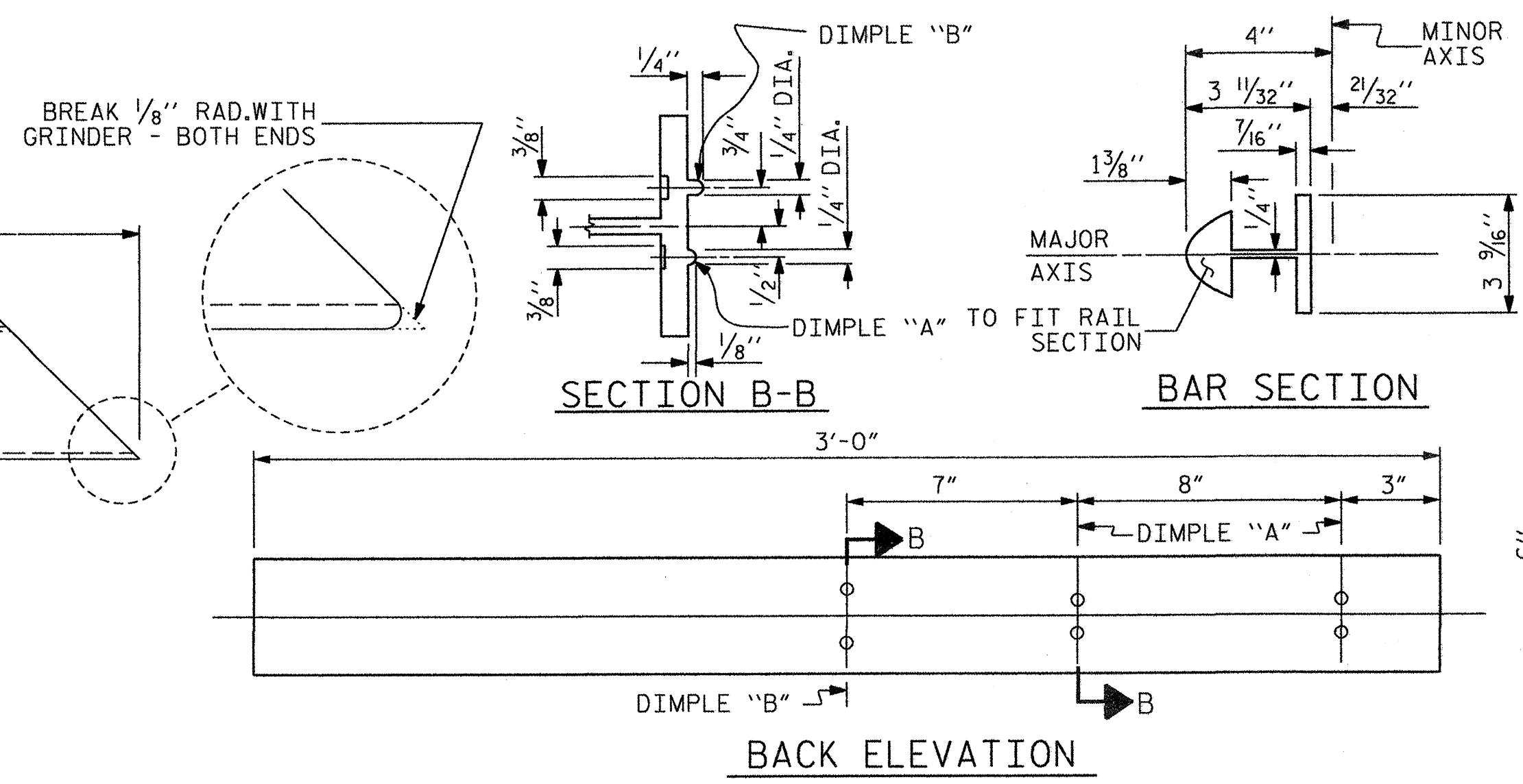


CLAMP BAR DETAIL
(6 REQUIRED PER POST)

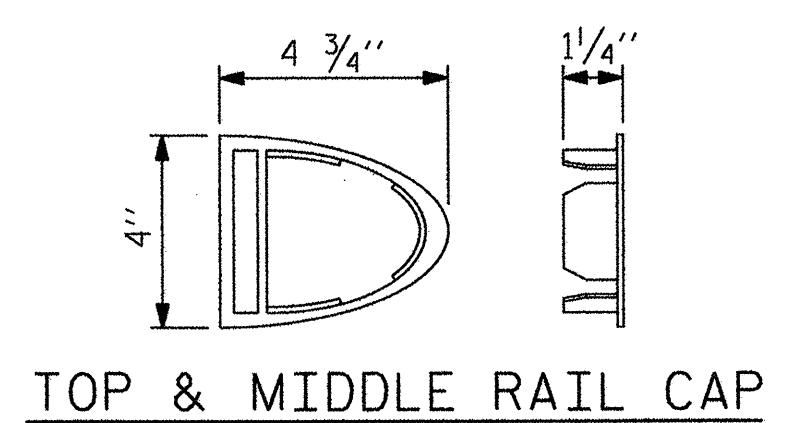
NOTES
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

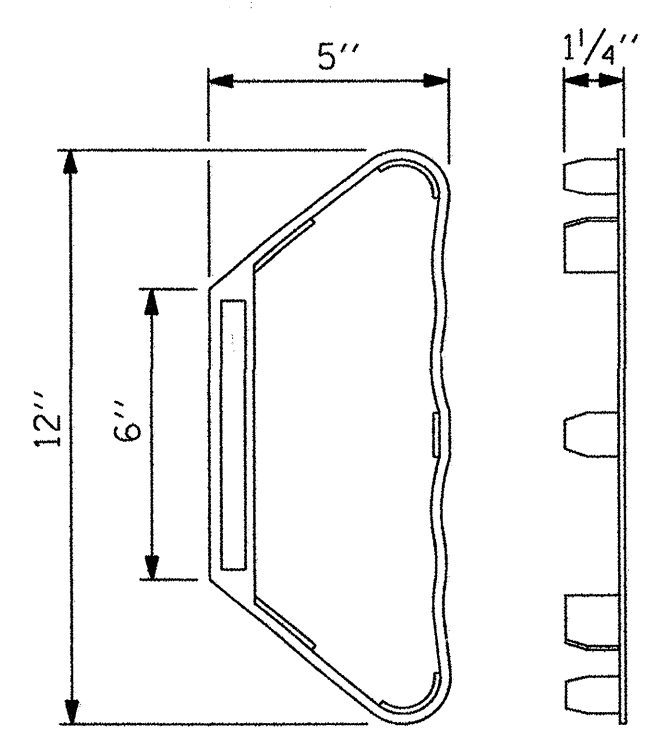
- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES AND 1 1/4" FOR 5/8" FERRULES.
- 3 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL 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.
- 2 - 5/8" Ø X 2 1/4" 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 5/8" Ø X 2 1/4" 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.
- 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.
- THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- 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.
- BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.



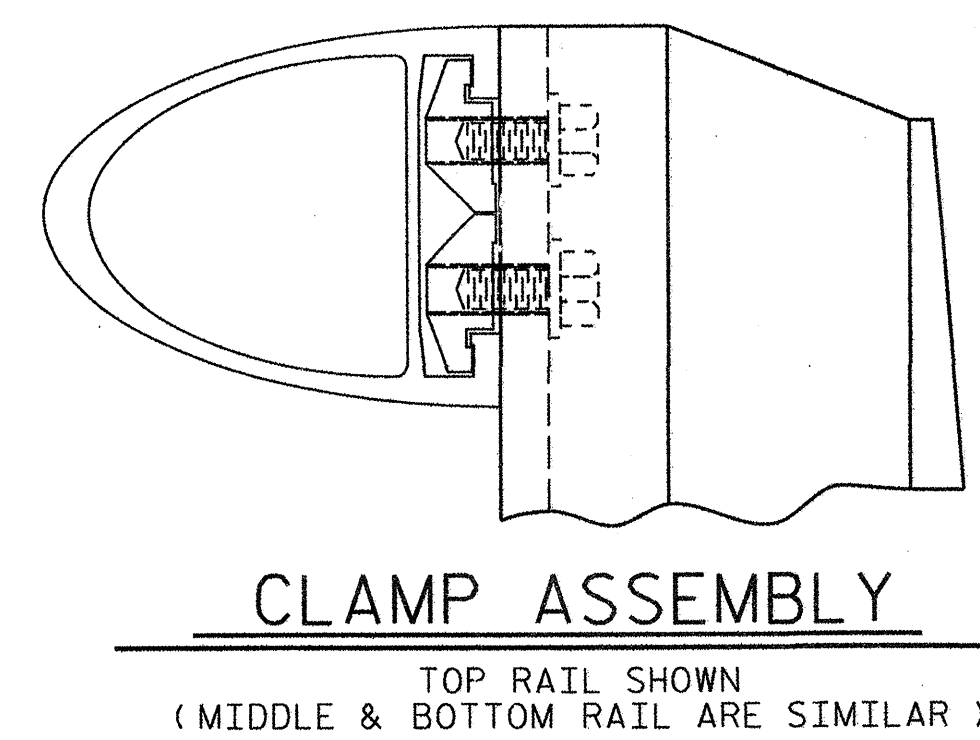
TOP & MIDDLE RAIL EXPANSION BAR



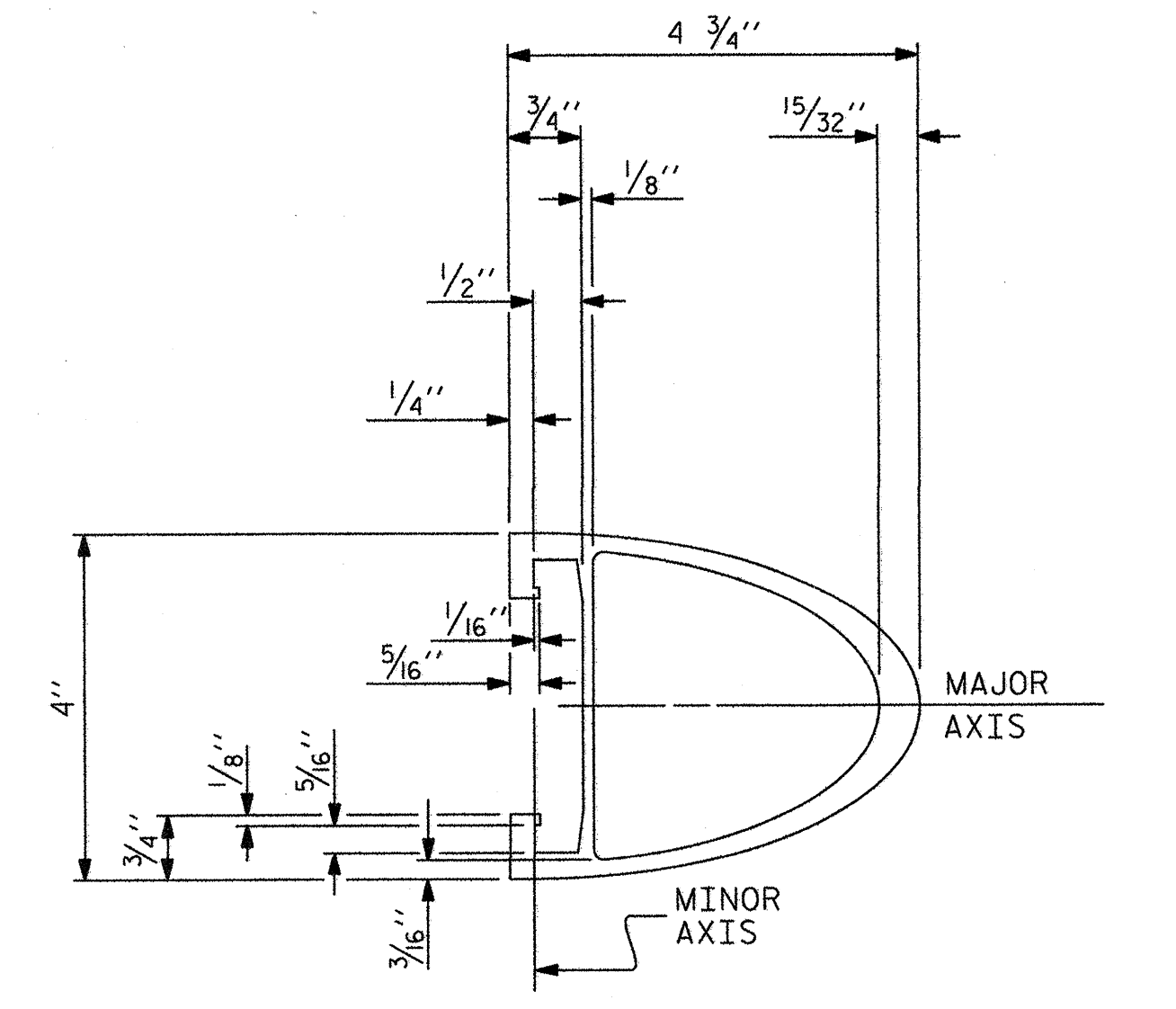
TOP & MIDDLE RAIL CAP



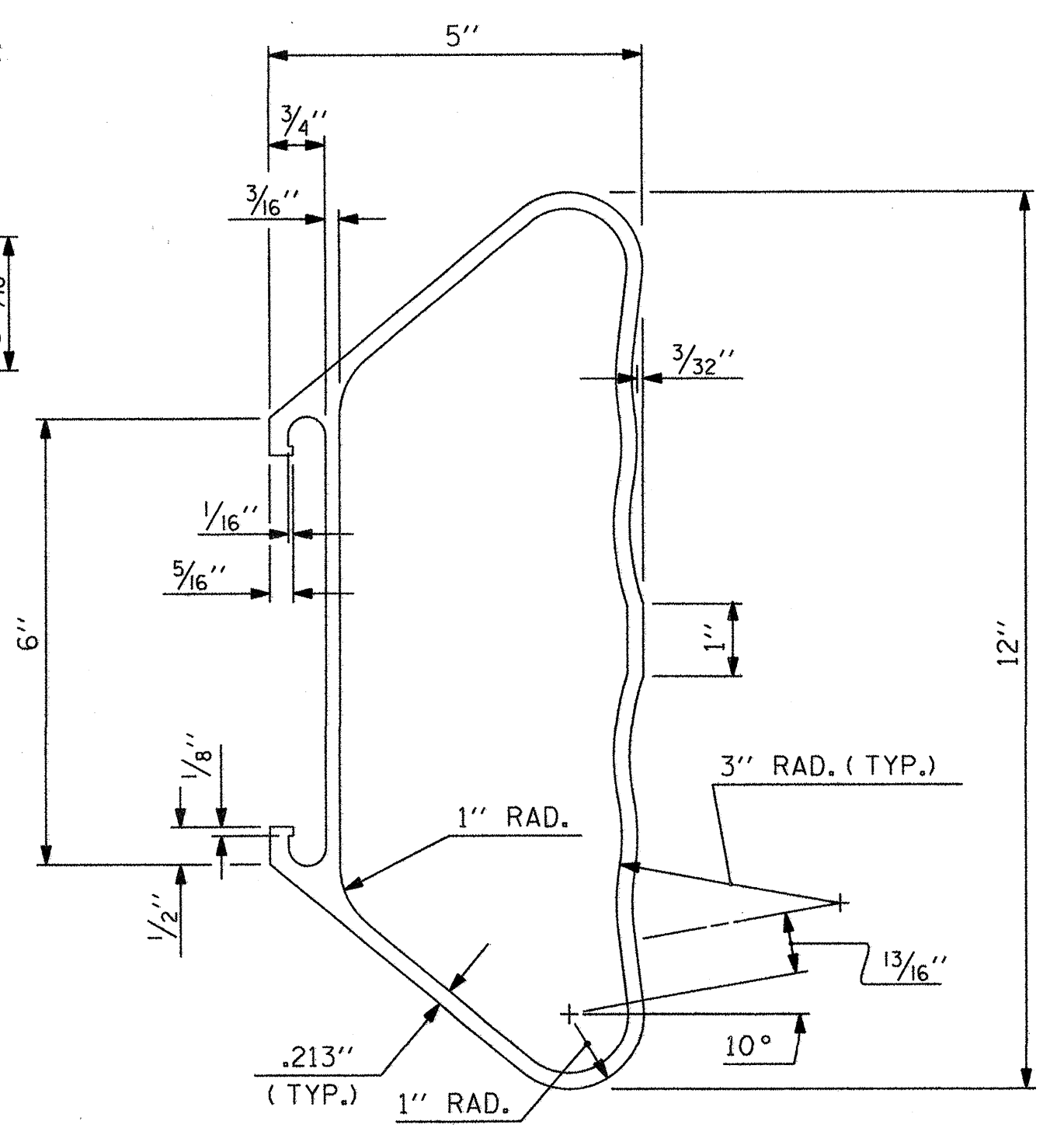
BOTTOM RAIL CAP



CLAMP ASSEMBLY
TOP RAIL SHOWN
(MIDDLE & BOTTOM RAIL ARE SIMILAR)

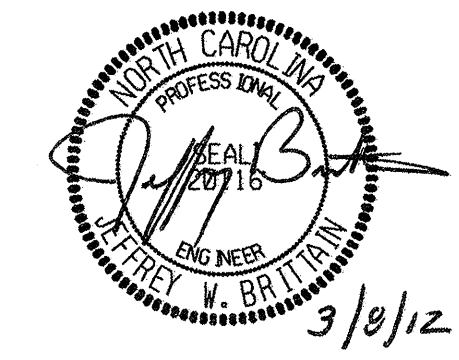


TOP & MIDDLE RAIL SECTION



BOTTOM RAIL SECTION

PROJECT NO. B-4861
ANSON COUNTY
STATION: P.O.T. 12+66.441-L- =
P.O.C. 11+48.124-RR-
SHEET 2 OF 3



REVISIONS						SHEET NO. S-19
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 36
2			4			

ASSEMBLED BY : JLA	DATE : 11/07
CHECKED BY : RTJ	DATE : 10/10
DRAWN BY : JMB 1/88	REV. 7/10/01 RWW/LES
CHECKED BY : GCH 1/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM

PREPARED BY
TOS ENGINEERS
107-A MICA AVENUE
MORGANTON, NC 28655

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. WASHERS FOR RAIL ATTACHMENT SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.
- D. STANDARD CLAMP BARS (STD. No. BMR6).

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 3 BAR METAL RAIL.

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.

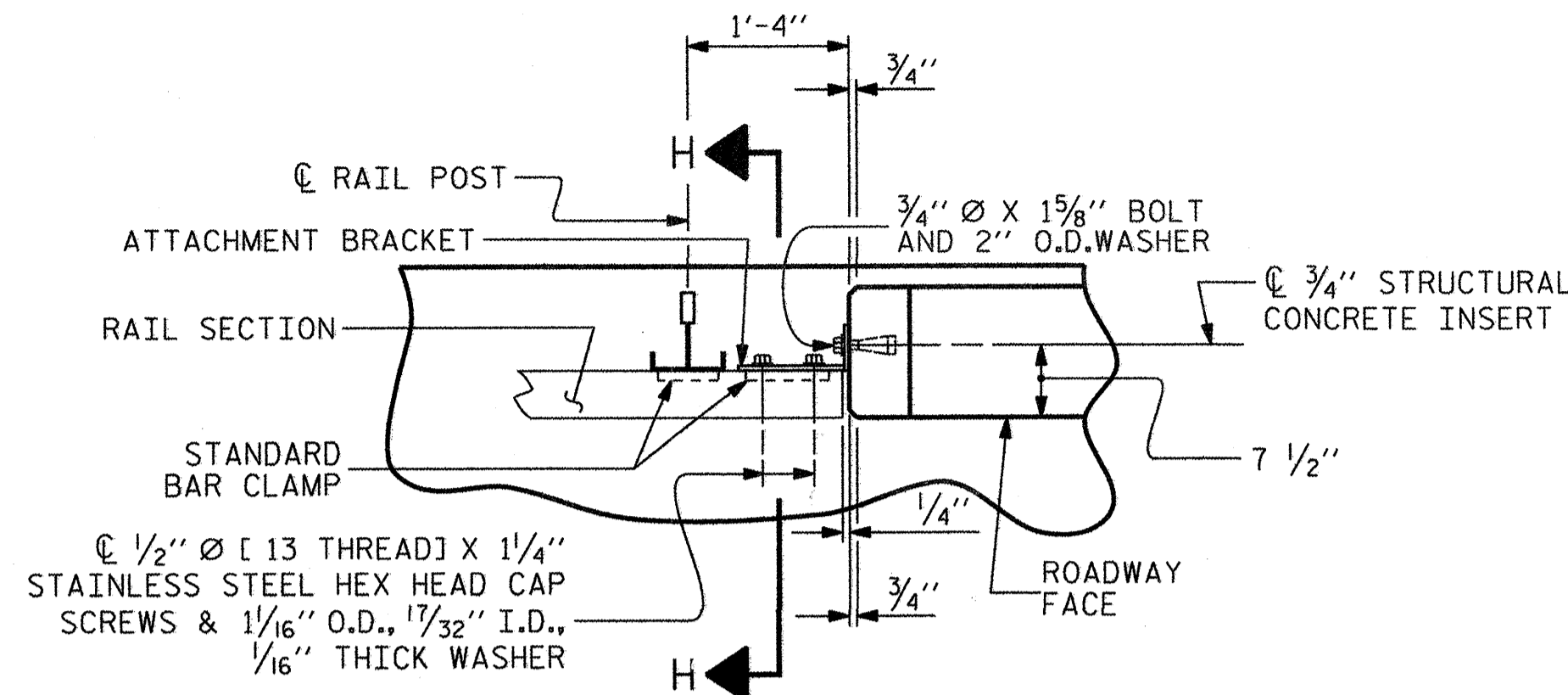
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT 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.

NOTES

STRUCTURAL CONCRETE INSERT

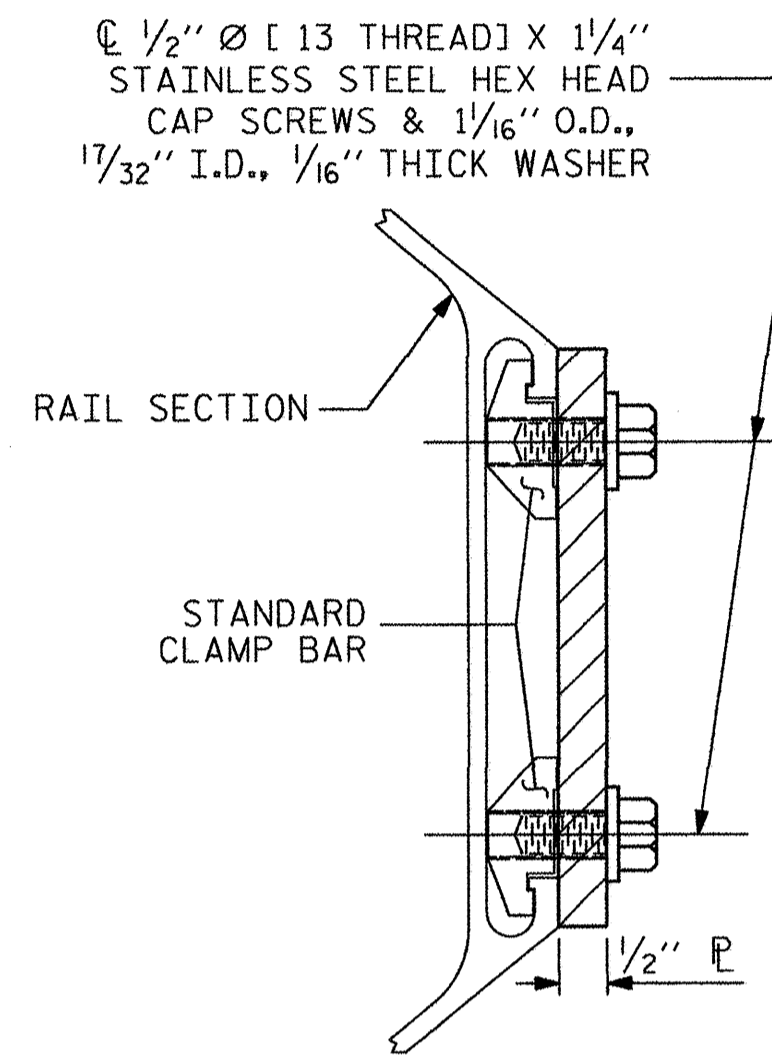
THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- 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 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.



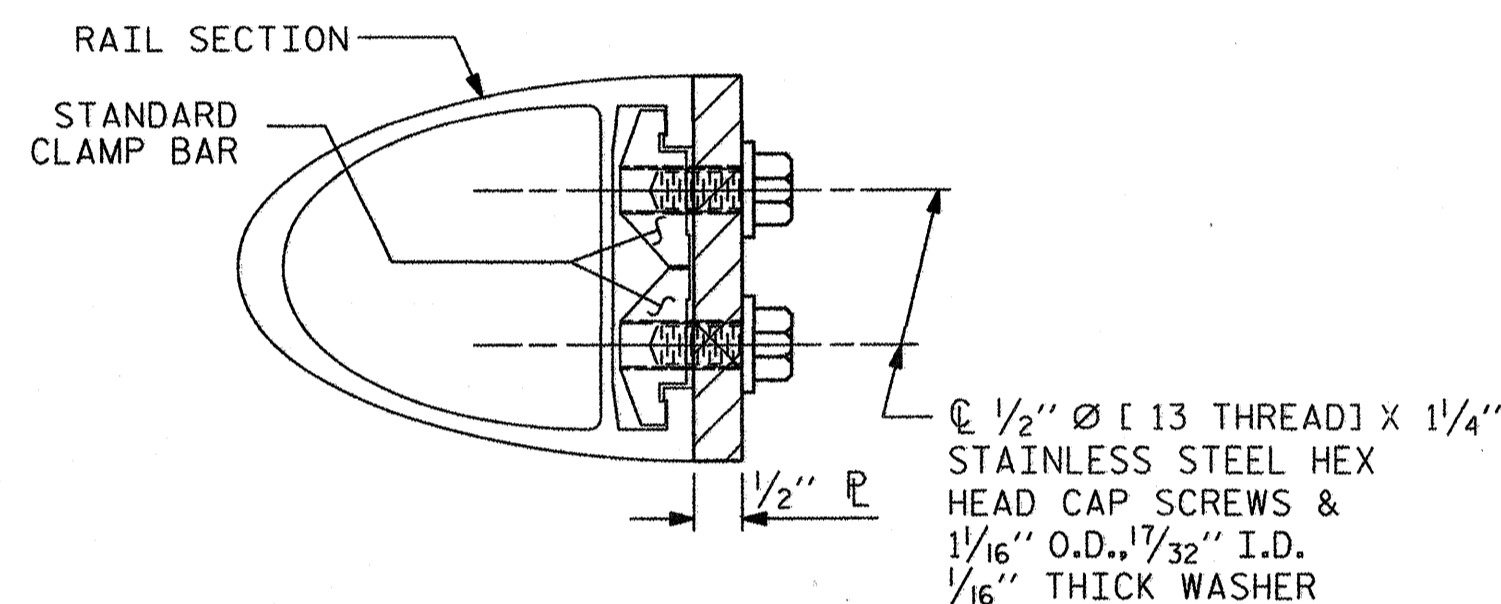
PLAN OF RAIL AND END POST

(STIFFENER ON 1/2" P NOT SHOWN FOR CLARITY)



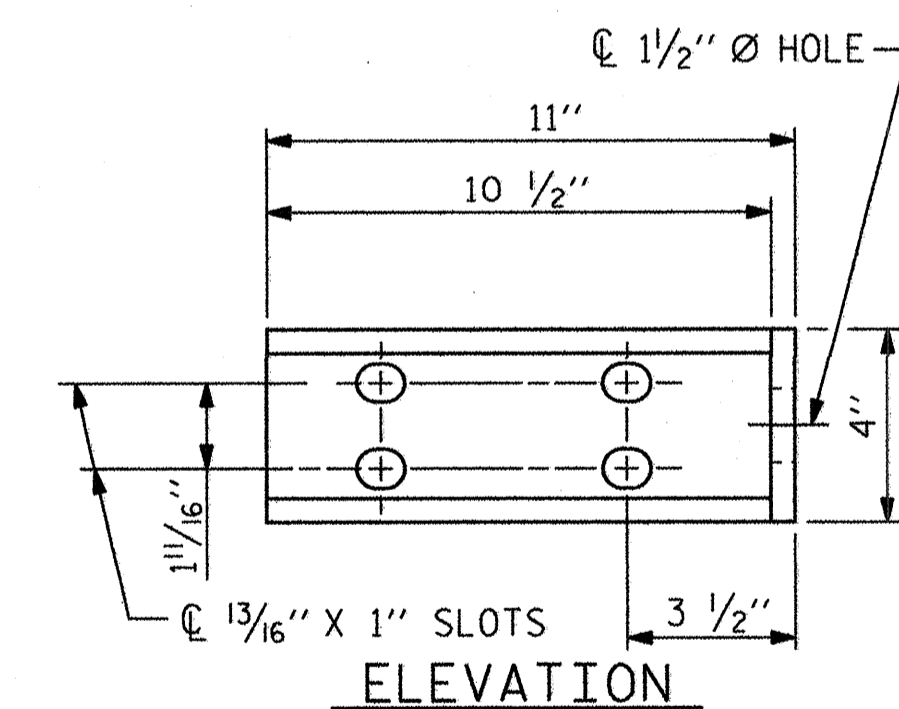
SECTION H-H

(FOR BOTTOM RAIL)

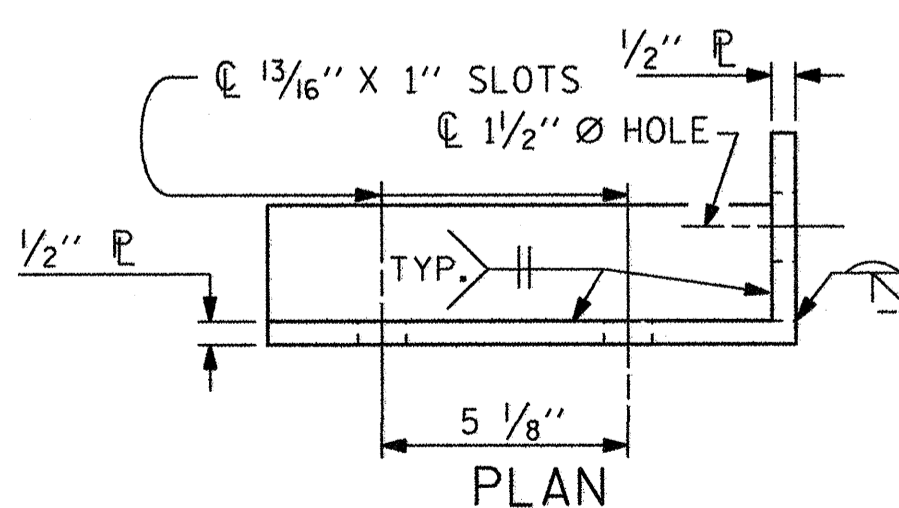


SECTION H-H

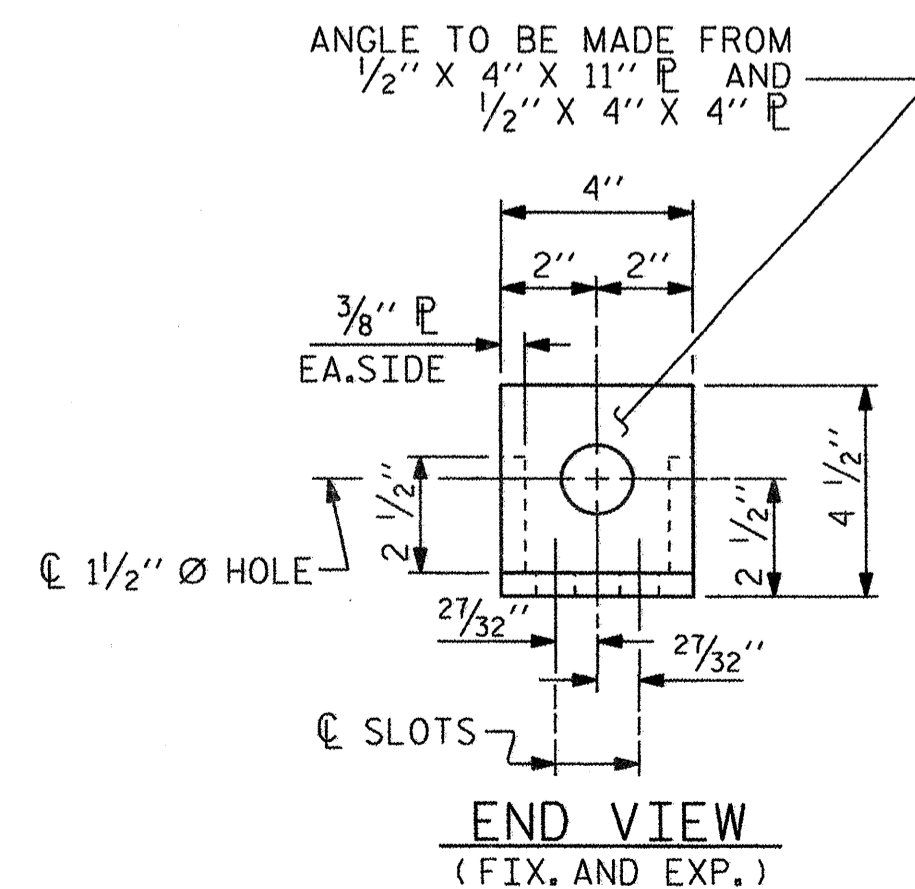
(FOR TOP & MIDDLE RAIL)



ELEVATION

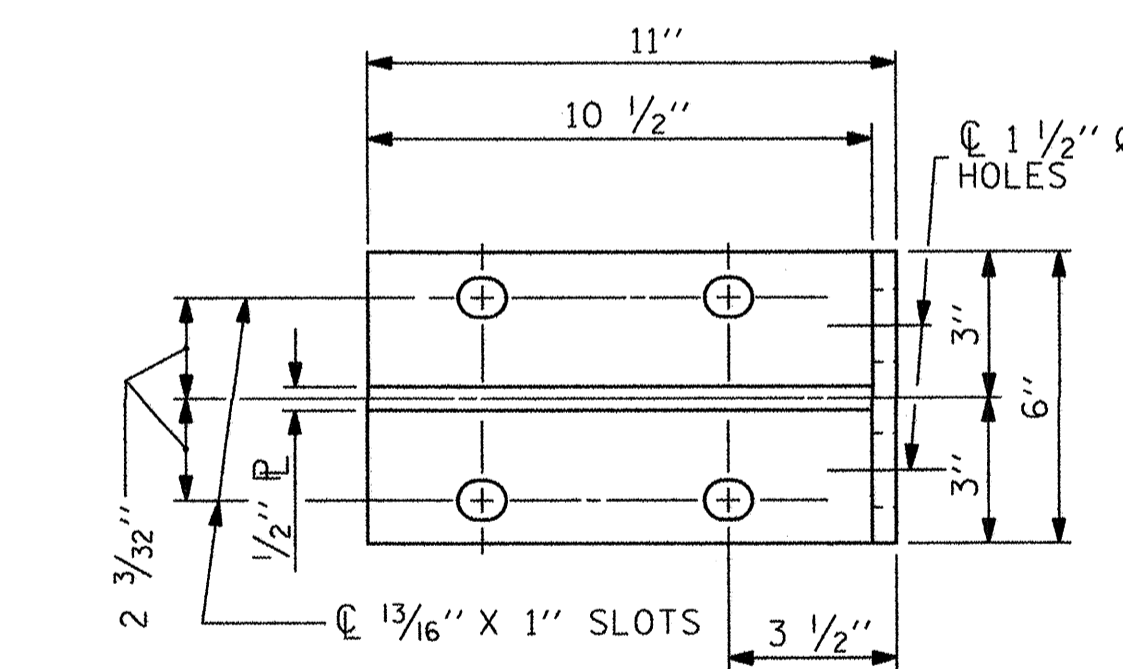


PLAN

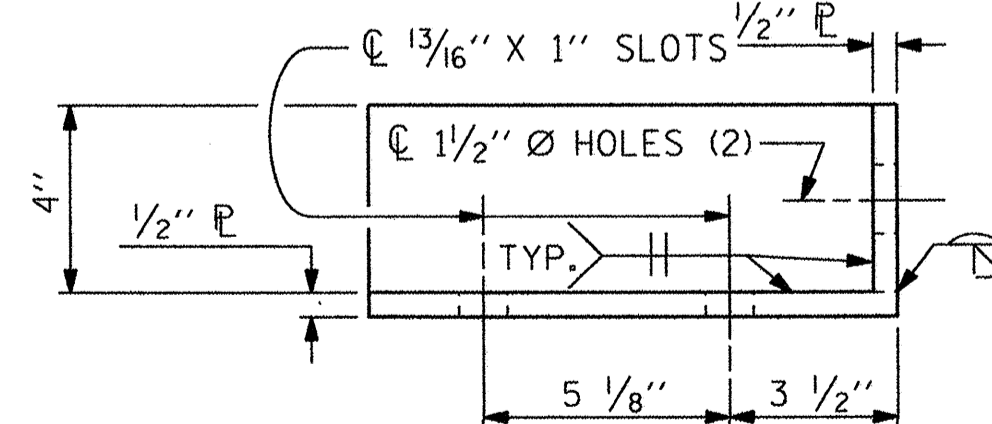


END VIEW

(FIX. AND EXP.)



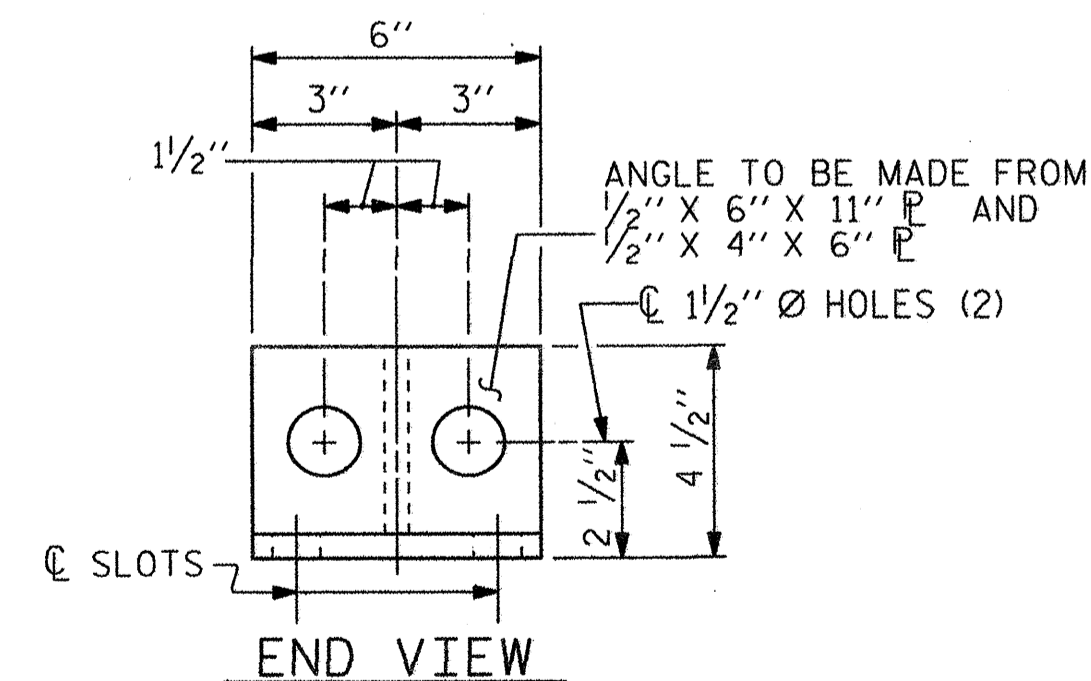
ELEVATION



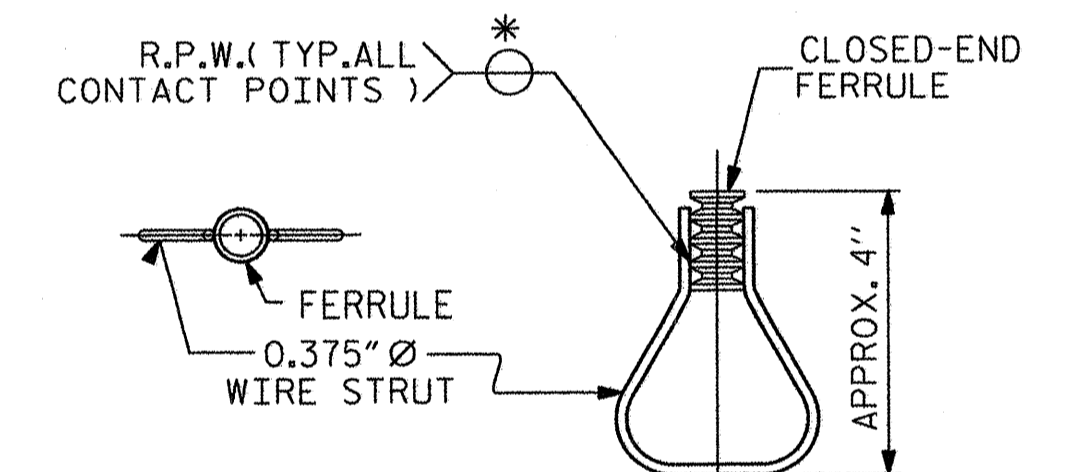
PLAN

DETAILS FOR ATTACHMENT BRACKET

(BOTTOM RAIL ONLY)



END VIEW



PLAN ELEVATION

STRUCTURAL CONCRETE INSERT

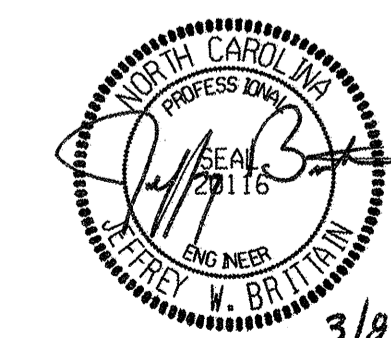
* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. B-4861

ANSON COUNTY

STATION: P.O.T. 12+66.441-L- = P.O.C. 11+48.124-RR-

SHEET 3 OF 3



PREPARED BY
TGS ENGINEERS
107-A WICK AVE
MORGANTON, NC 28655

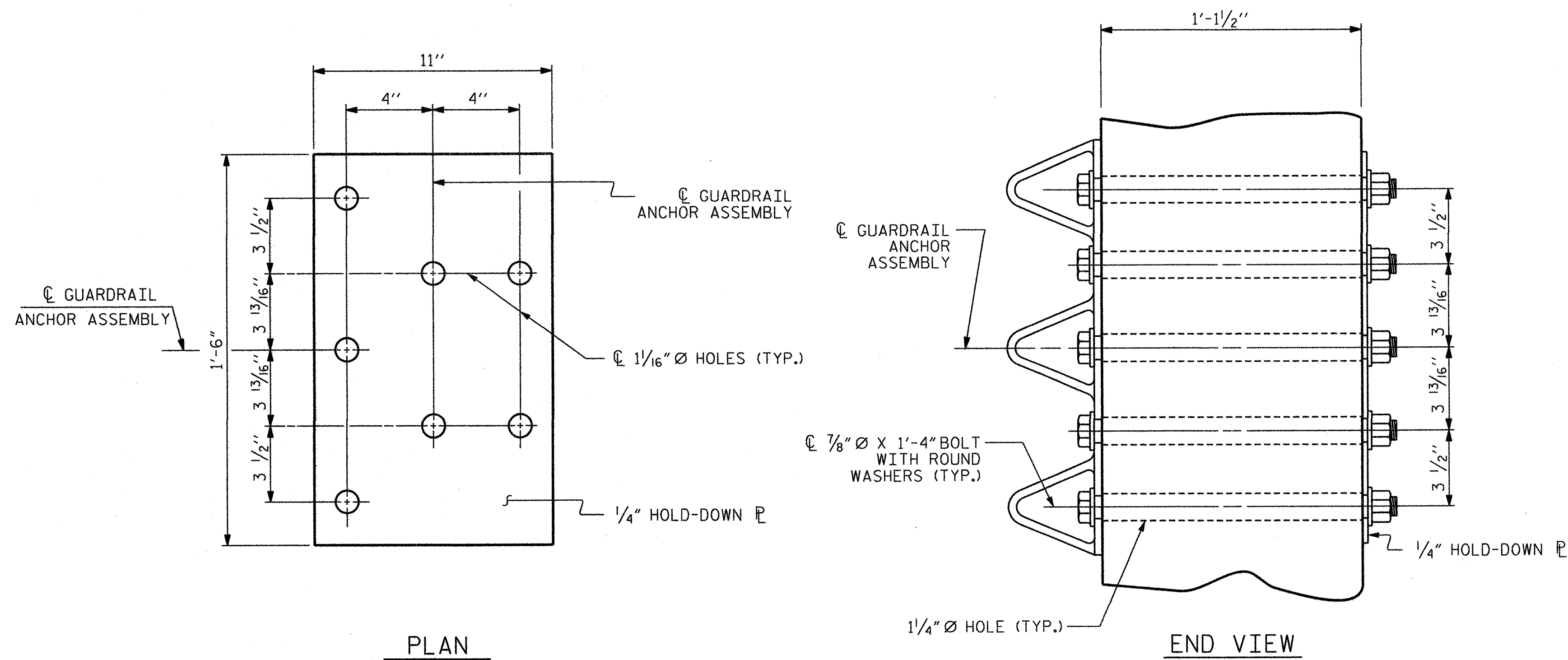
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
3 BAR METAL RAIL

REVISIONS

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

SHEET NO.
S-20
TOTAL SHEETS
36

ASSEMBLED BY : JLA	DATE : 11/07
CHECKED BY : RTJ	DATE : 10/10
DRAWN BY : JMB 1/88	REV. 7/10/01 RWW/LES
CHECKED BY : GGH 1/88	REV. 5/7/03 RWW/JTE
	REV. 5/1/06 TLA/GM



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 M111.

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

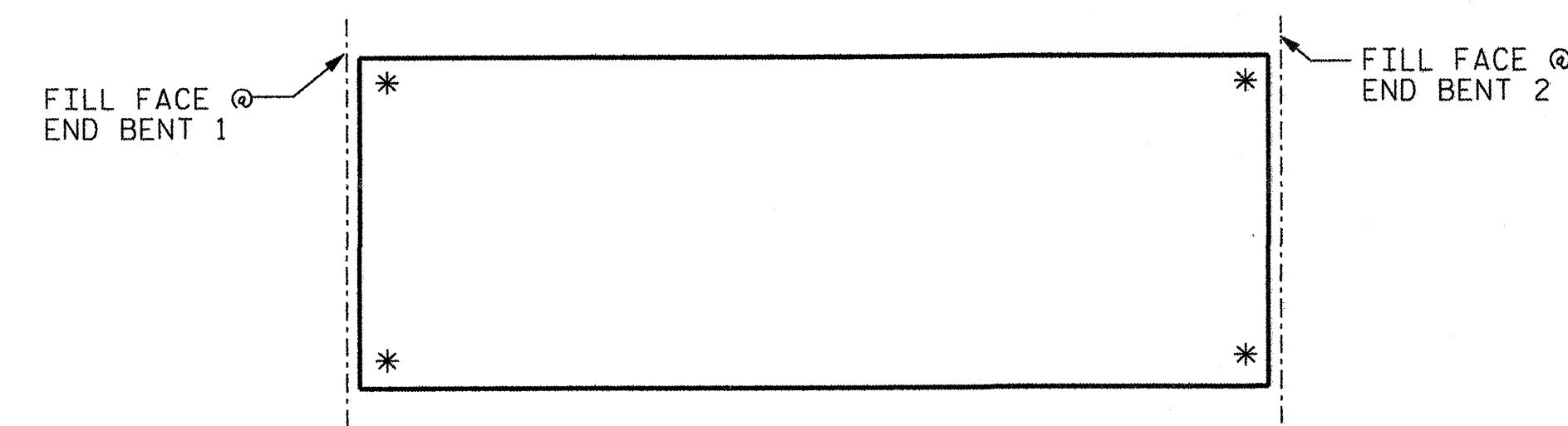
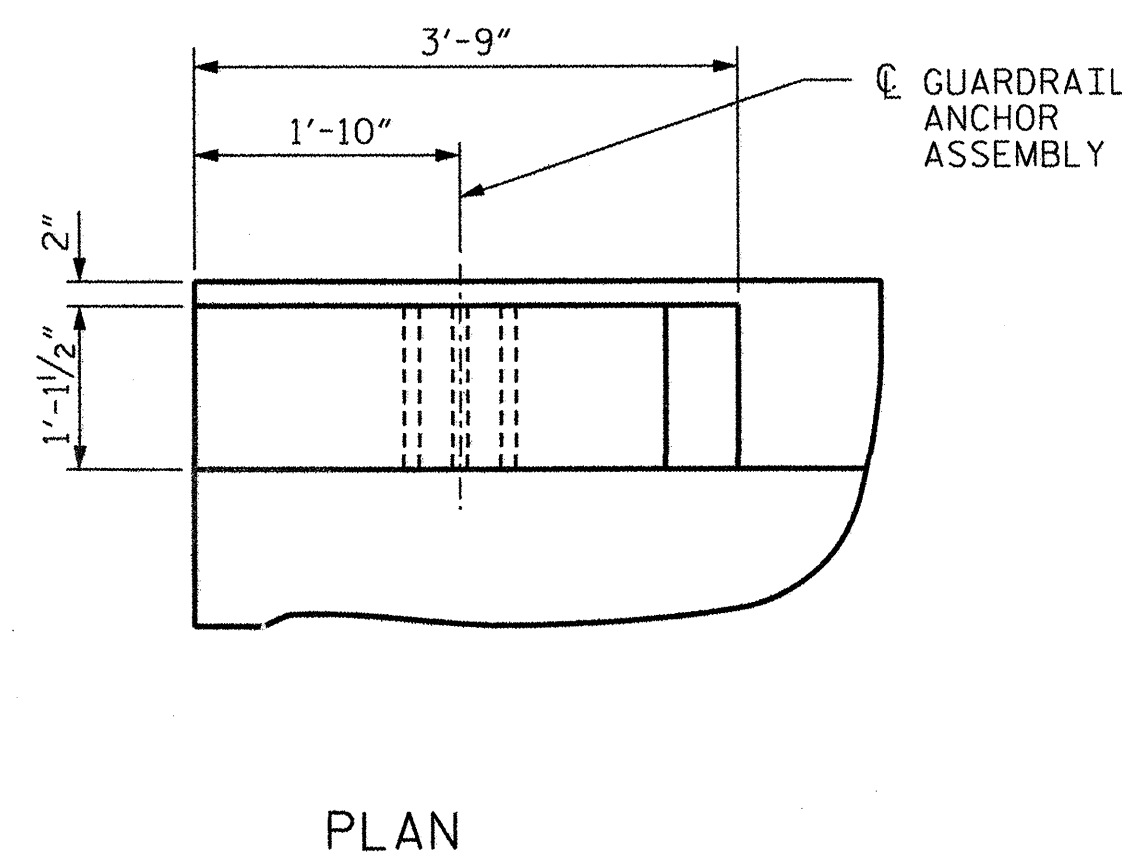
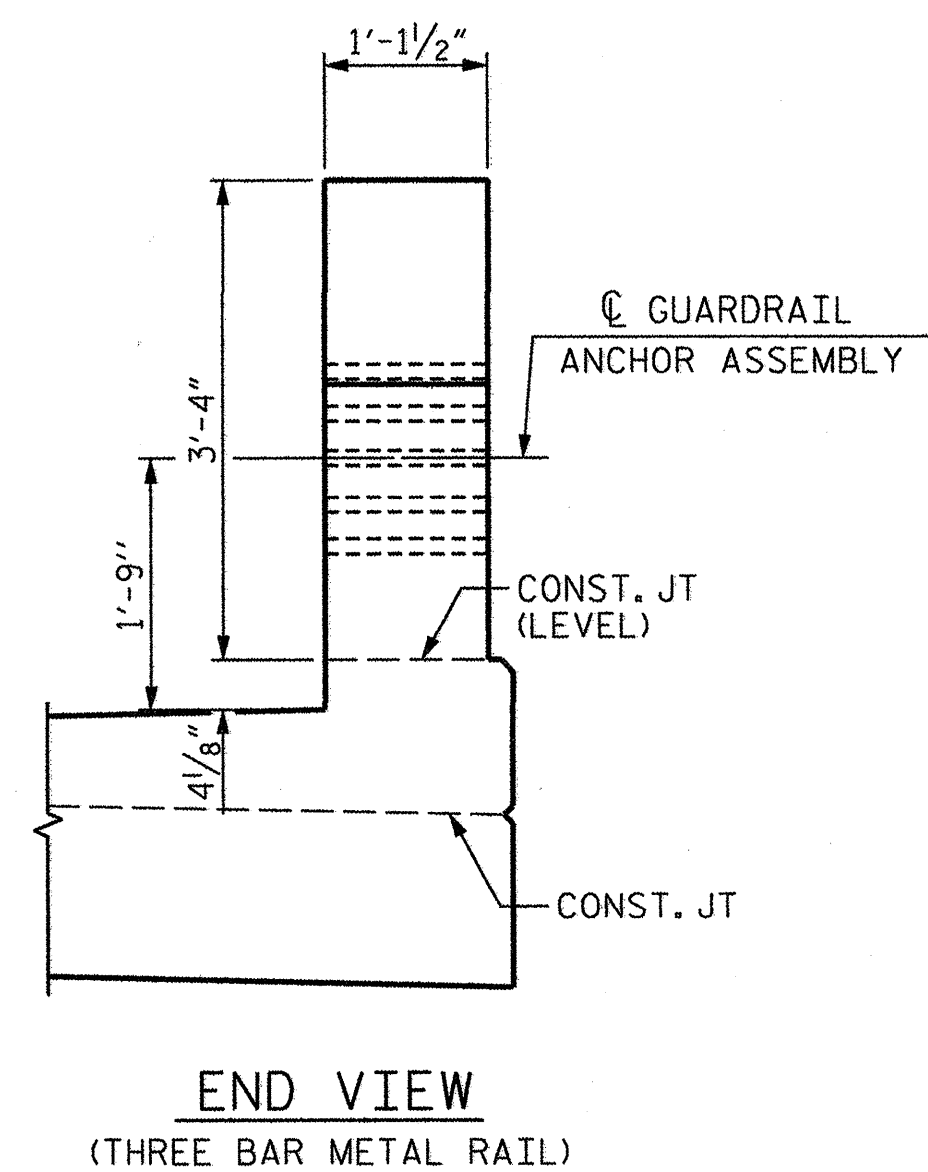
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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 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

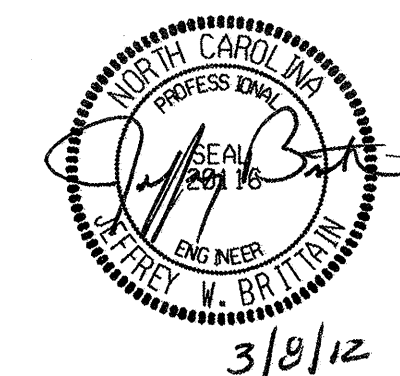
* LOCATION OF GUARDRAIL ATTACHMENT

PROJECT NO. B-4861
 ANSON COUNTY
 STATION: P.O.T. 12+66.441-L- =
 P.O.C. 11+48.124-RR-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 DETAILS FOR METAL
 RAILS & VERTICAL
 CONCRETE BARRIER RAIL

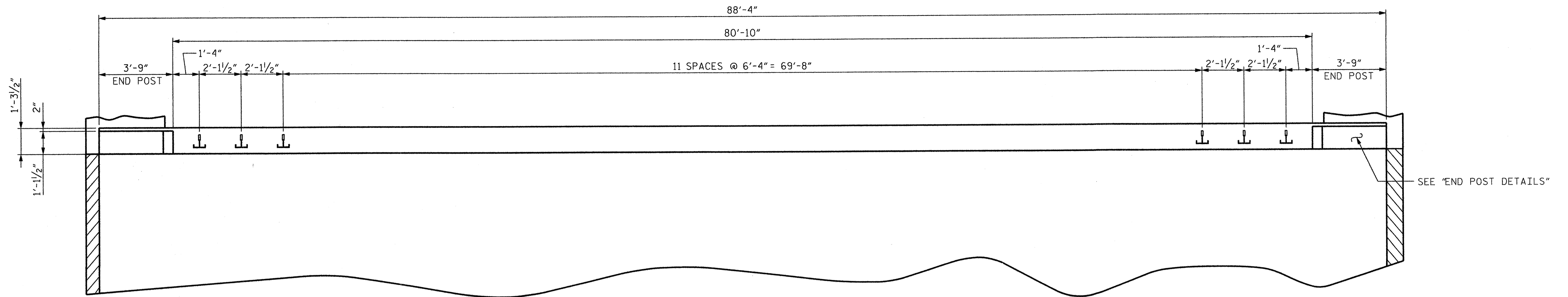
ASSEMBLED BY : JLA	DATE : 10/10
CHECKED BY : RTJ	DATE : 10/10
DRAWN BY : MAA 5/10	ADDED 5/6/10
CHECKED BY : GM 5/10	

LOCATION OF GUARDRAIL ANCHOR AT END POST



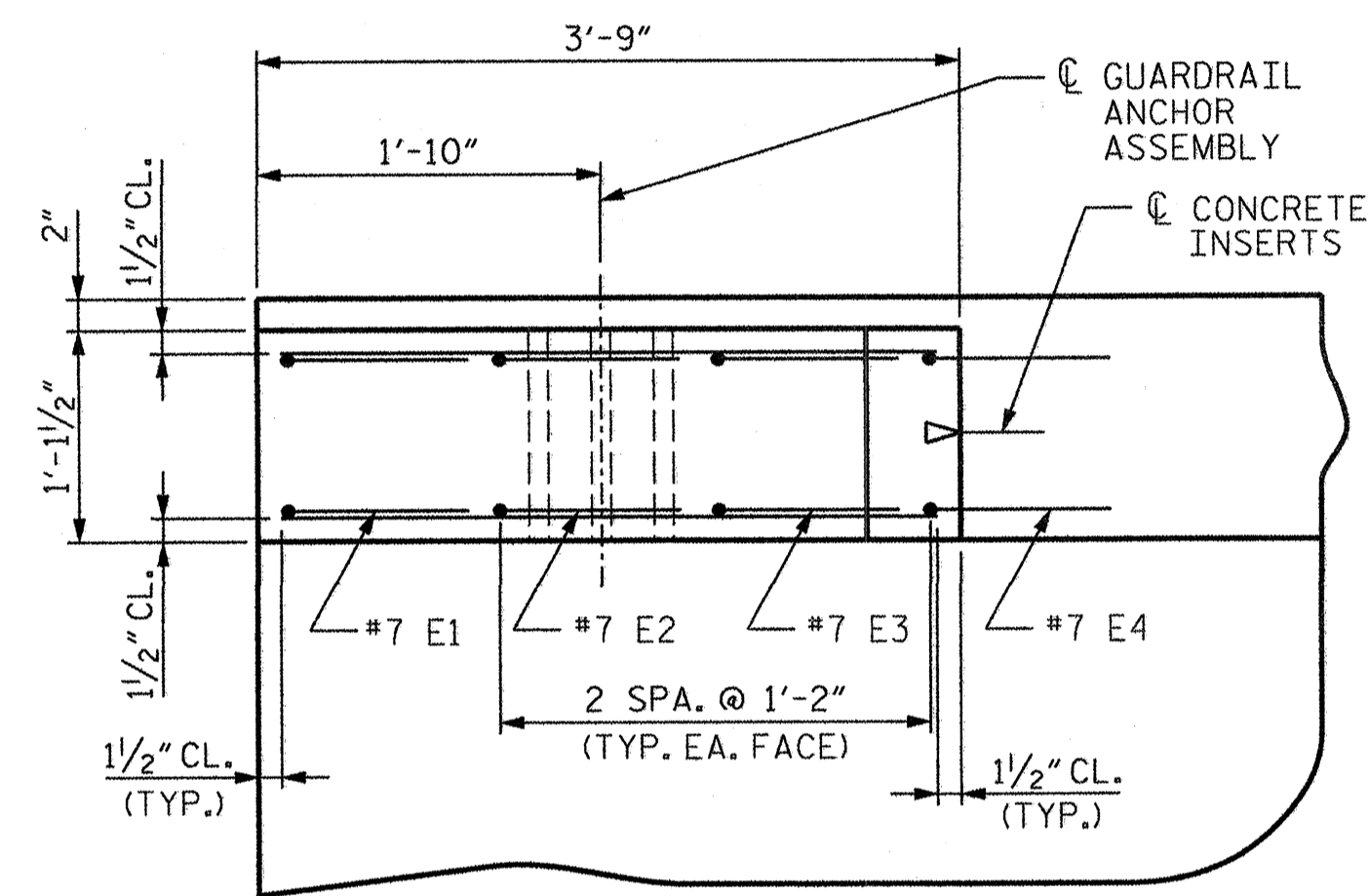
PREPARED BY
 TGS ENGINEERS
 107-A WICKA AVENUE
 MORGANTON, NC 28655

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			36



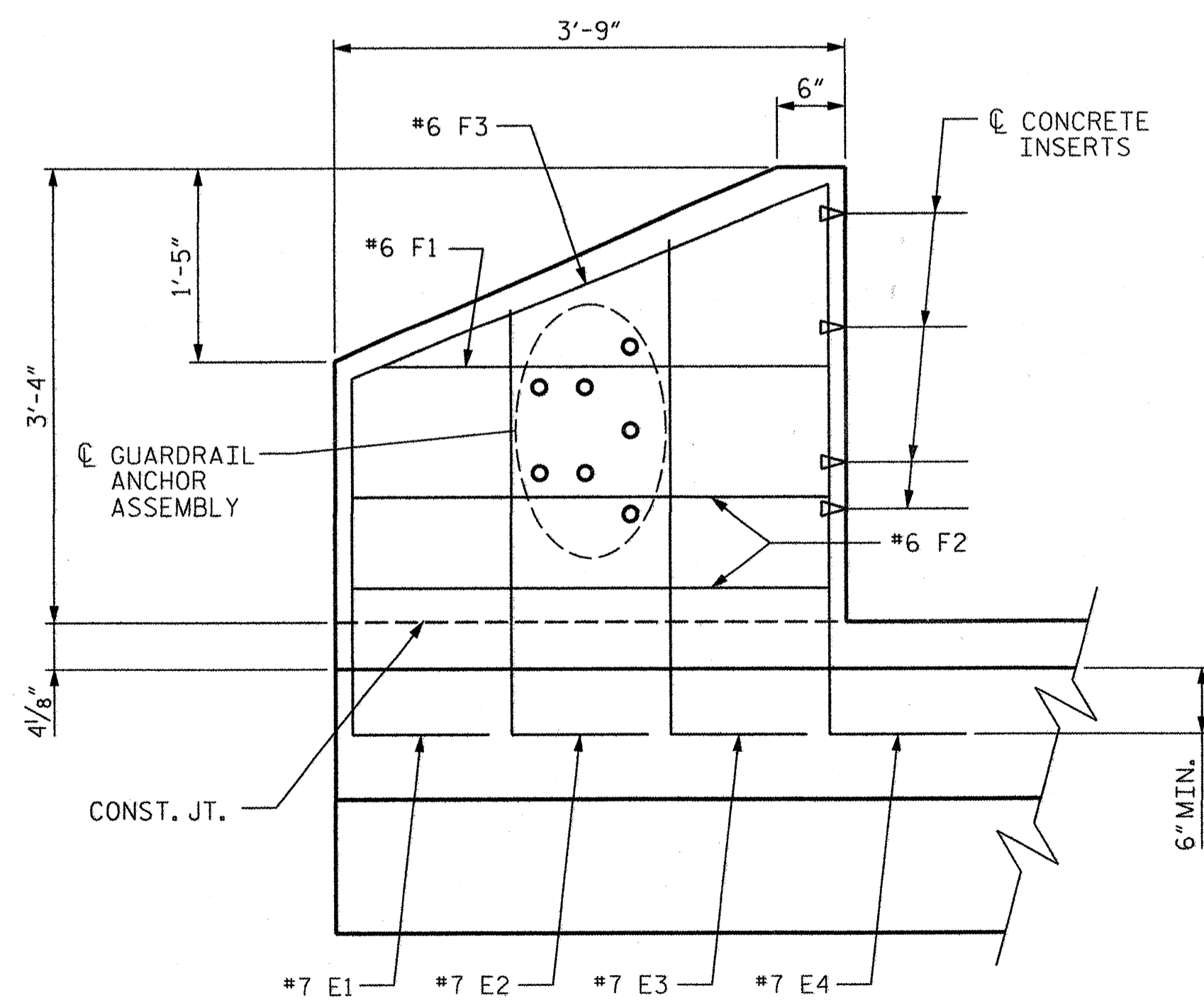
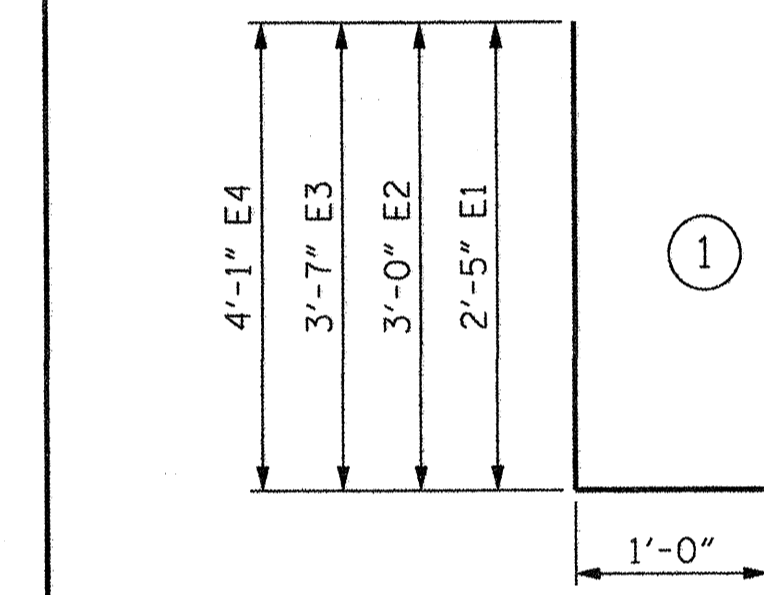
PLAN OF RAIL POST SPACING

LEFT SIDE SHOWN; RIGHT SIDE SIMILAR.
(N.T.S.)

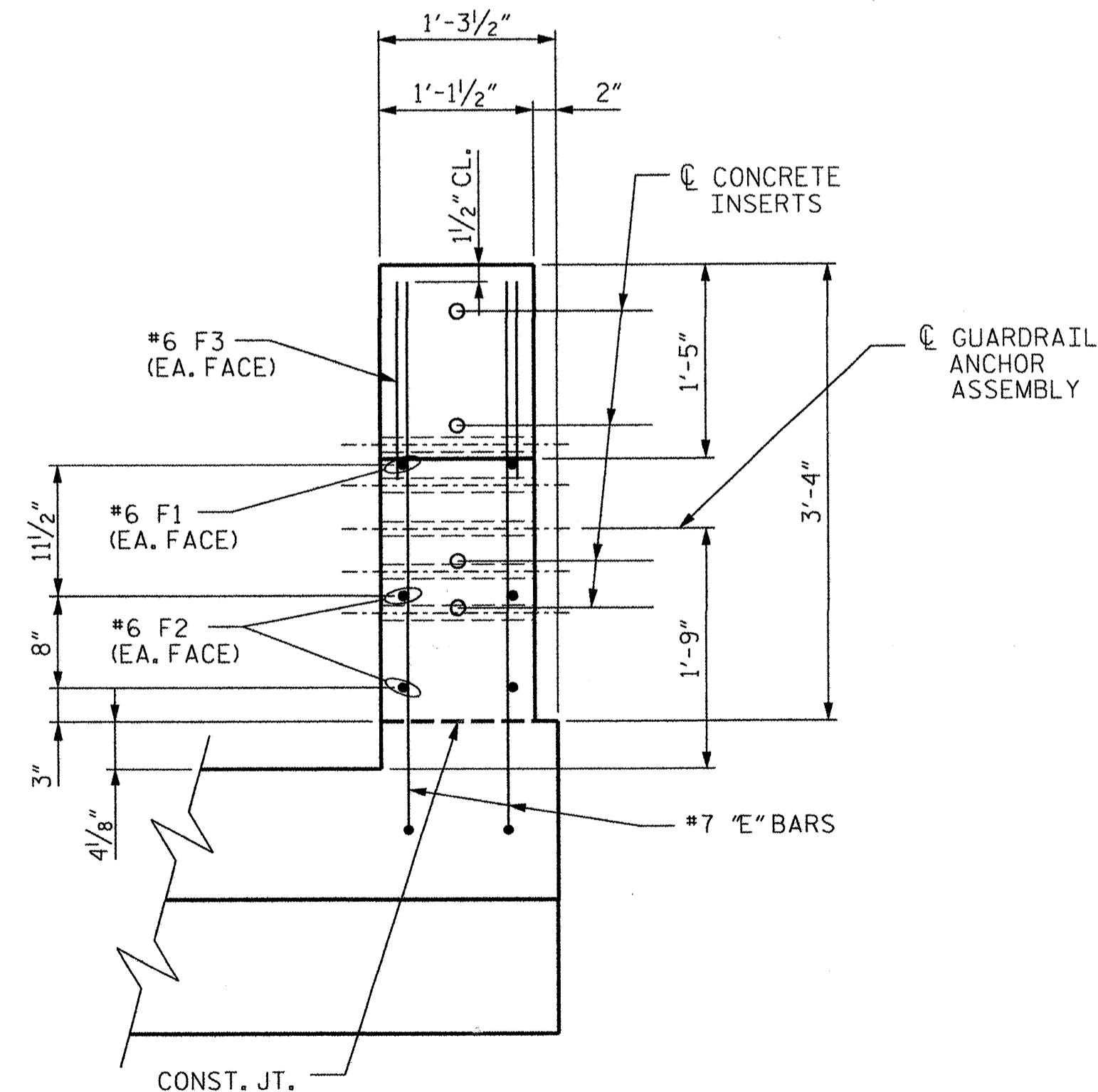


PLAN

REINFORCING BAR TYPES				BILL OF MATERIAL FOR ONE END POST		
BAR DIMENSIONS ARE OUT TO OUT.						
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT		
*E1	#7	1	3'-5"	14		
*E2	#7	1	4'-0"	16		
*E3	#7	1	4'-7"	19		
*E4	#7	1	5'-1"	21		
*F1	#6	STR.	3'-3"	10		
*F2	#6	STR.	3'-6"	21		
*F3	#6	STR.	3'-9"	11		
				*EPOXY-COATED REINF. STEEL - LBS. 112		
				CLASS AA CONCRETE 0.43 C.Y.		



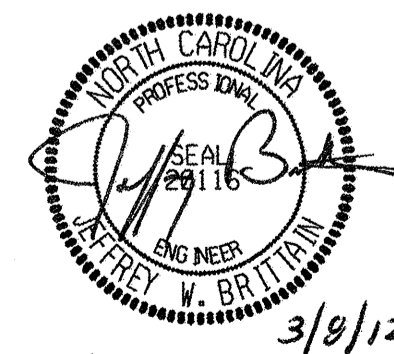
ELEVATION



END VIEW

END POST DETAILS

PROJECT NO. B-4861
ANSON COUNTY
 STATION: P.O.T. 12+66.441-L- =
P.O.C. 11+48.124-RR-



CITY OF ANSONVILLE
 ANSONVILLE NORTH CAROLINA
 RAIL POST SPACING

DRAWN BY: JLA DATE: 11/07
 CHECKED BY: RTJ DATE: 10/10

PREPARED BY
 TGS ENGINEERS
 107-A MICA AVENUE
 MORGANTON, NC 28655

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-22
1			3			TOTAL SHEETS
2			4			36

NOTES:

FOR BRACKET SPACING, SEE PLAN OF SPAN SHEET.

PROVIDE STEEL PIPE FOR THE FENCE POSTS CONFORMING TO ASTM SPECIFICATION A53 GRADE B. PROVIDE ALL OTHER MATERIAL FOR CHAIN FENCE (FABRIC, PIPES, AND HARDWARE) CONFORMING TO AASHTO SPECIFICATION M181, UNLESS OTHERWISE NOTED.

POSTS SHALL BE SET VERTICAL.

CHAIN LINK FABRIC, POSTS, RAILS AND OTHER ASSOCIATED HARDWARE SHALL BE GALVANIZED.

THREADED INSERTS AND BOLT THREADS SHALL NOT BE GALVANIZED.

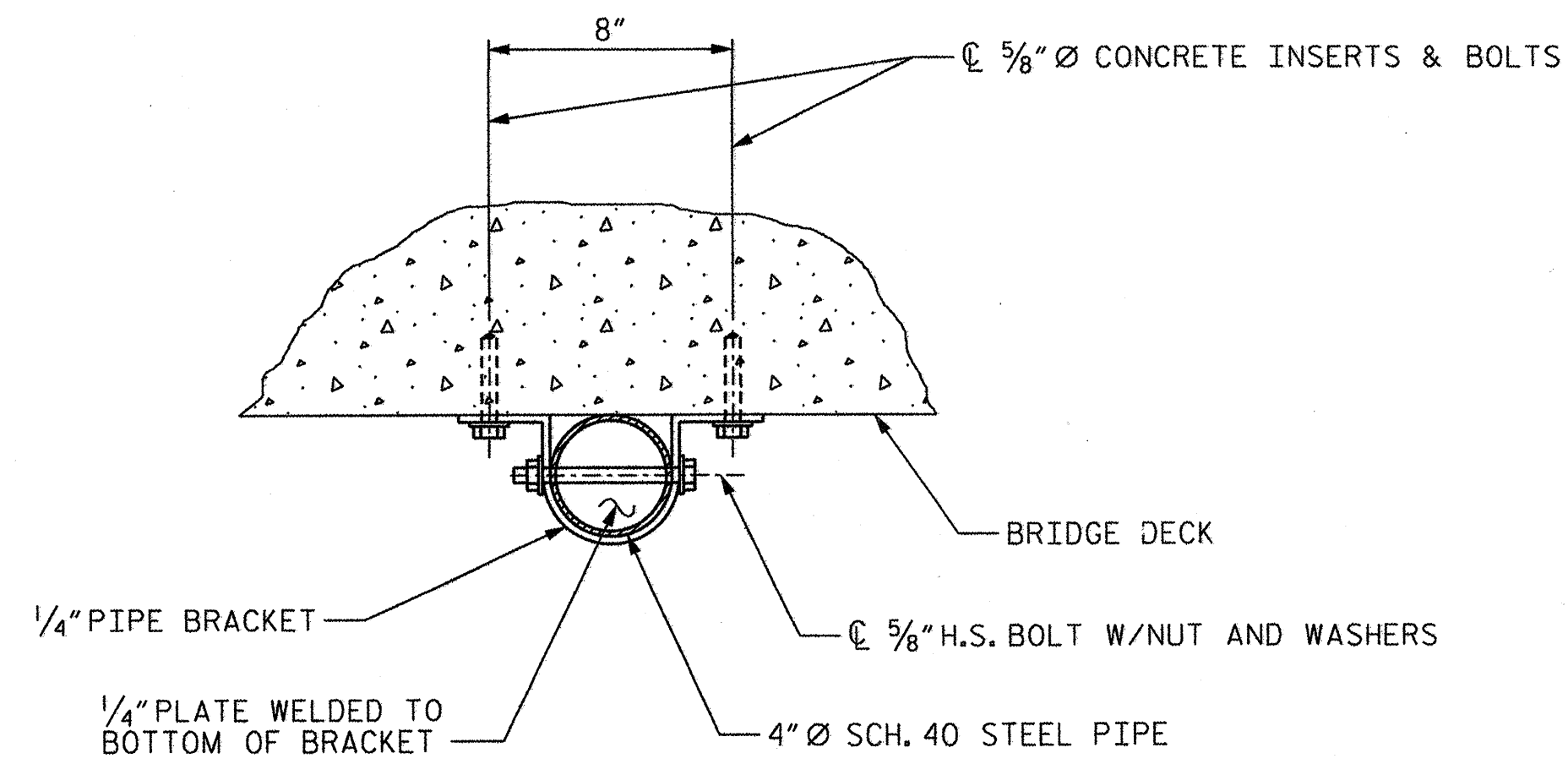
ENDS OF WIRE TIES SHALL BE TURNED TO OUTSIDE OF FENCE TO PREVENT INJURY TO PEDESTRIANS.

THREADED INSERTS, WHEN EMBEDDED AS SHOWN, SHALL DEVELOP FULL STRENGTH OF THREADED BOLTS.

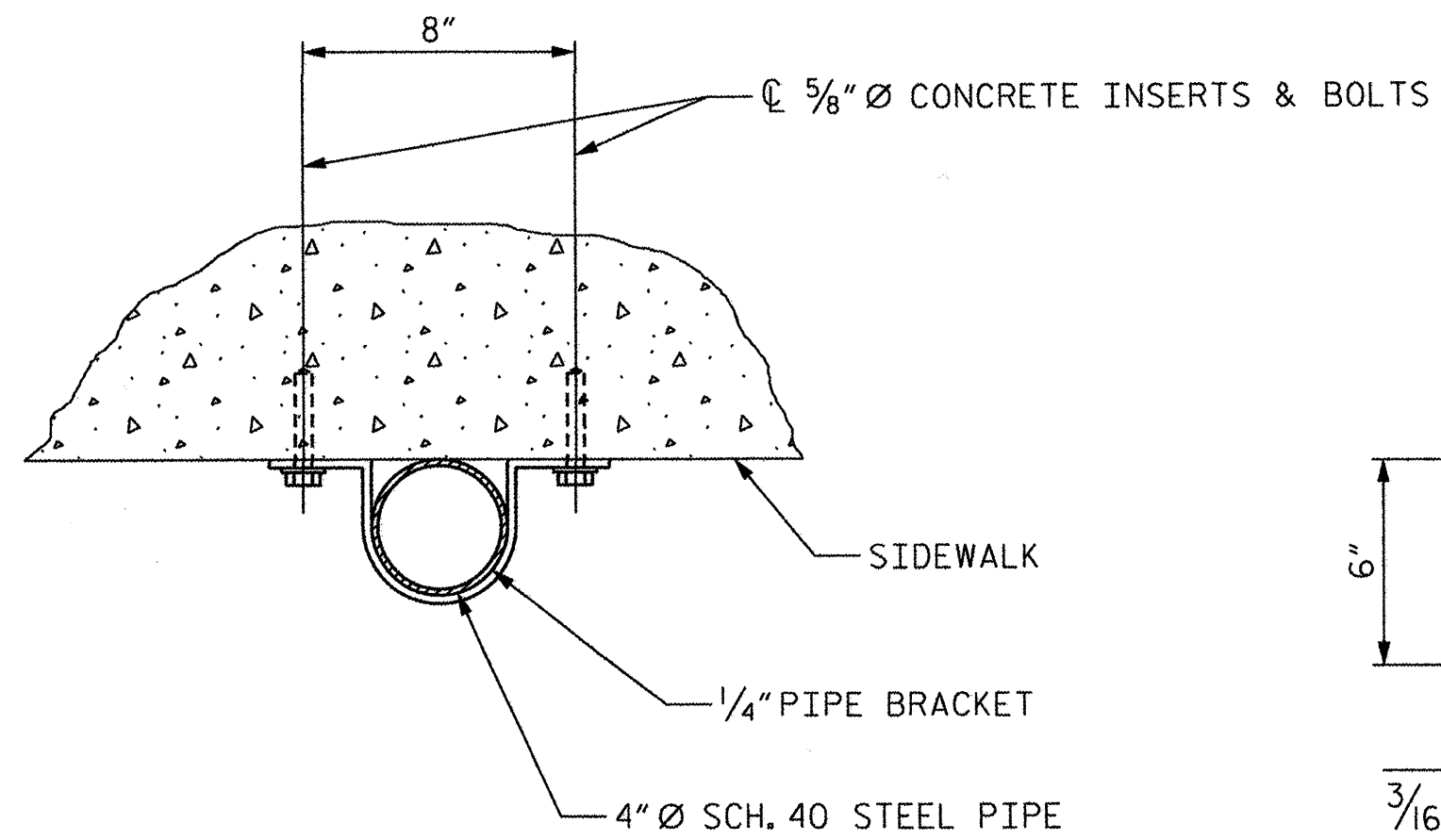
THREADED INSERTS SHALL HAVE A YIELD STRENGTH OF A MINIMUM OF 3000 LBS.

THREADED INSERTS SHALL BE CAST IN PLACE.

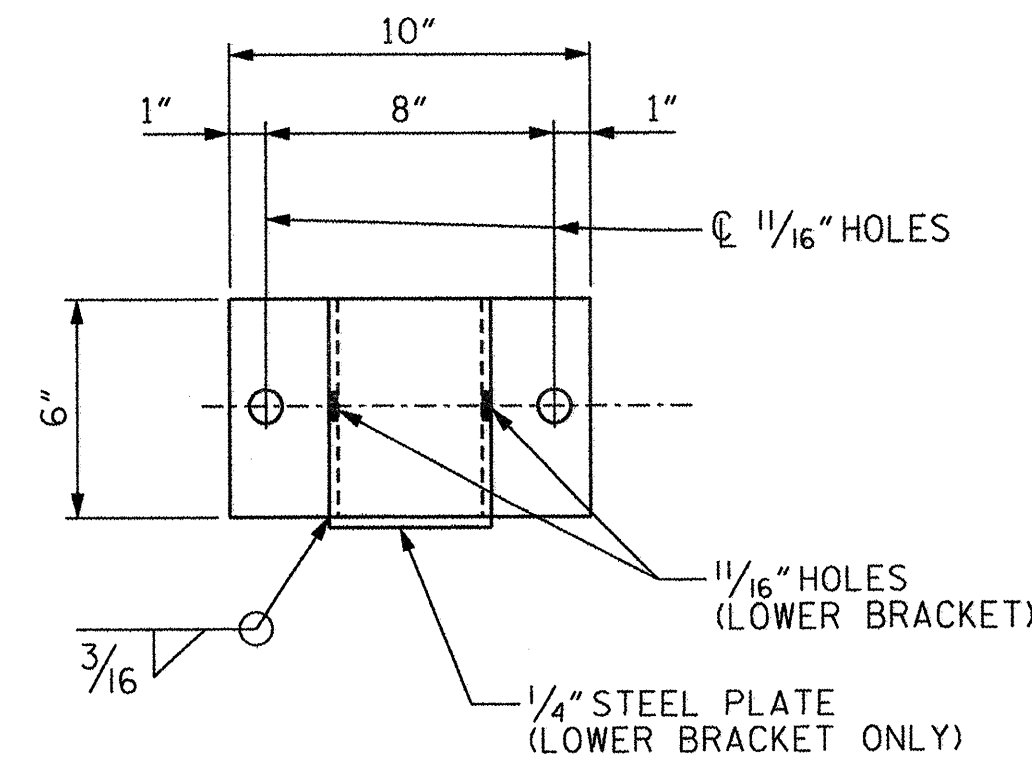
ALL BOLTS SHALL BE HIGH STRENGTH (ASTM A325).



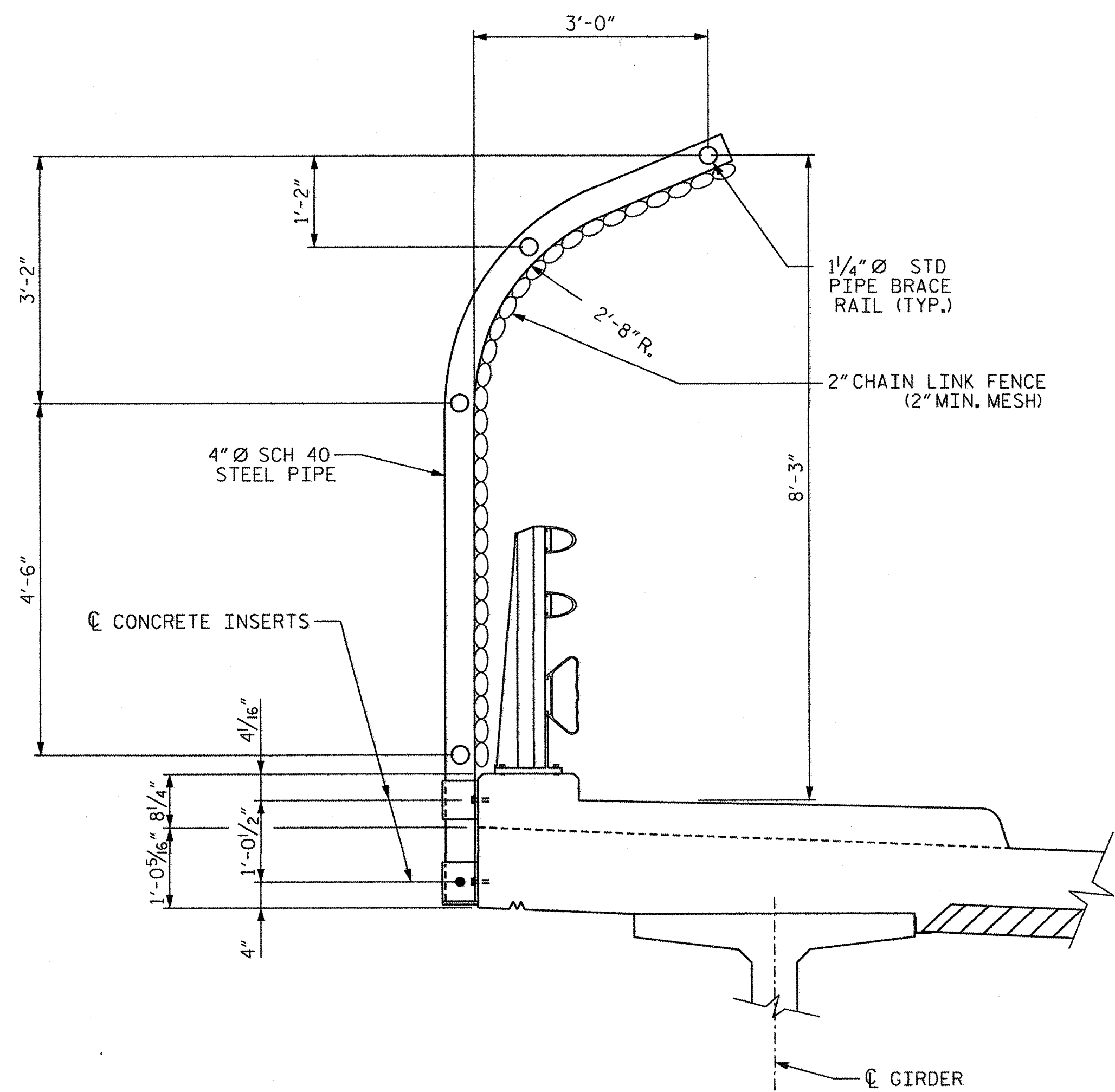
LOWER FENCE BRACKET DETAIL



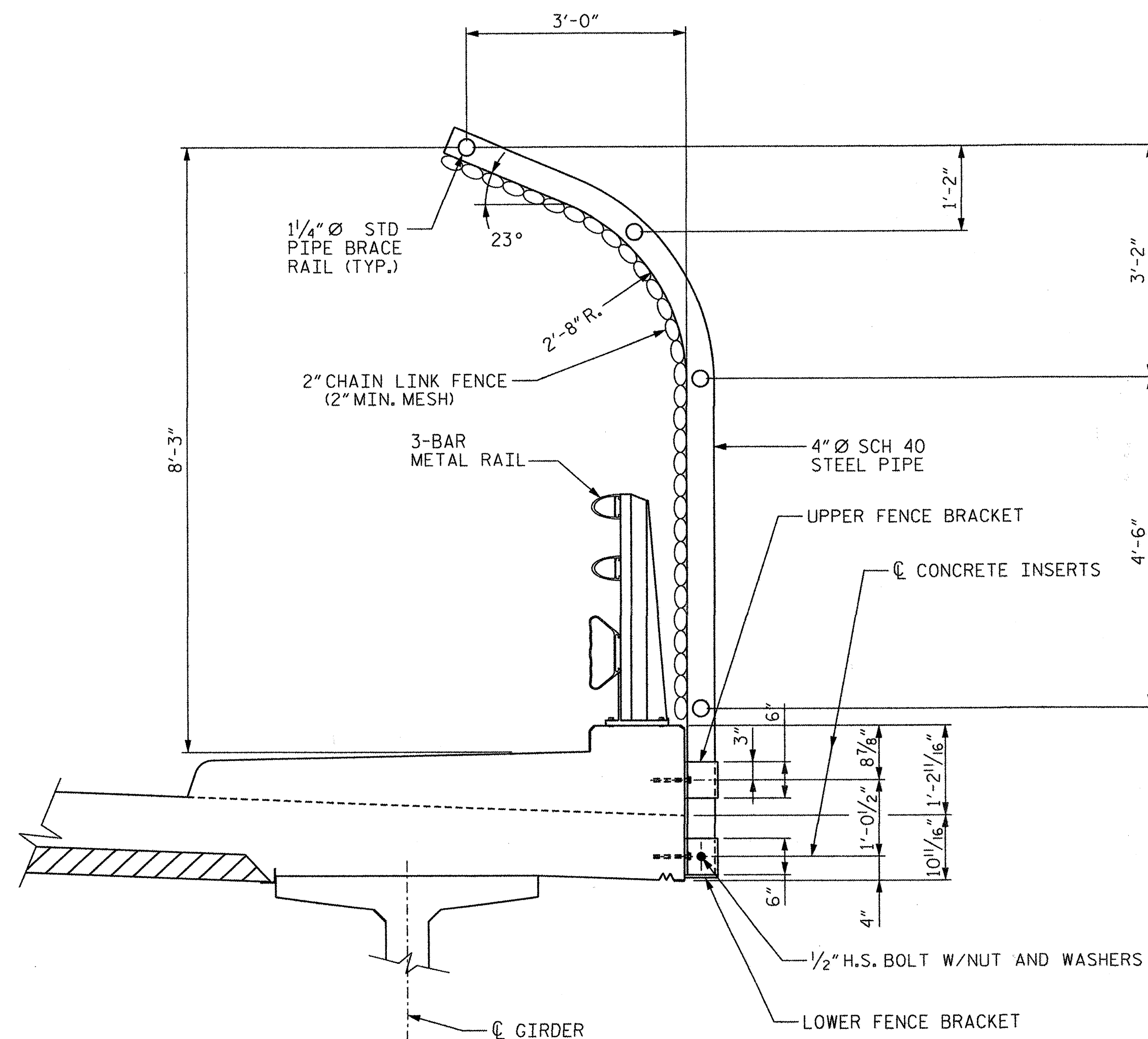
UPPER FENCE BRACKET DETAIL



BRACKET DETAIL



TYPICAL SECTION THRU FENCING RIGHT SIDE

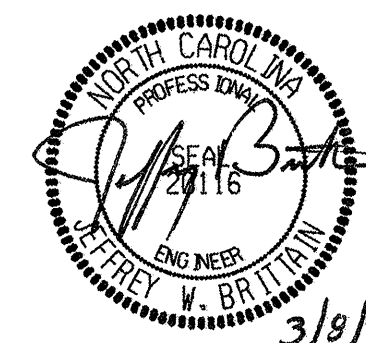


TYPICAL SECTION THRU FENCING RIGHT SIDE

PROJECT NO. B-4861
 COUNTY: ANSON
 STATION: P.O.T. 12+66.441-L- =
 P.O.C. 11+48.124 -RR-

CITY OF ANSONVILLE, NC

PROTECTIVE FENCING DETAILS



PREPARED BY
 TGS ENGINEERS
 107-A NICK AVENUE
 MORGANTON, NC 28655

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-23
1			3			TOTAL SHEETS
2			4			36

DRAWN BY: RTJ DATE: 10/10
 CHECKED BY: JLA DATE: 10/10

UTILITY NOTES :

ALL PIPE DIAMETERS ARE NOMINAL DIAMETERS.

ALL PIPE, FITTINGS, INSERTS, HANGERS AND HARDWARE SHALL CONFORM TO NCDOT SPECIFICATIONS.

THE PIPE LINE AND CROSSING SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH LAST APPROVED AMERICAN RAILWAY ENGINEERING AND MAINTENANCE OF WAY ASSOCIATION SPECIFICATIONS FOR PIPELINES CONVEYING FLAMMABLE AND NON-FLAMMABLE SUBSTANCES.

THE STEEL PIPE SLEEVE SHALL BE GRADE "B" STEEL AND MEET THE REQUIREMENTS OF ASTM A139.

THE CONTRACTOR SHALL USE BUTT-WELDED JOINTS FOR THE STEEL PIPE SLEEVE.

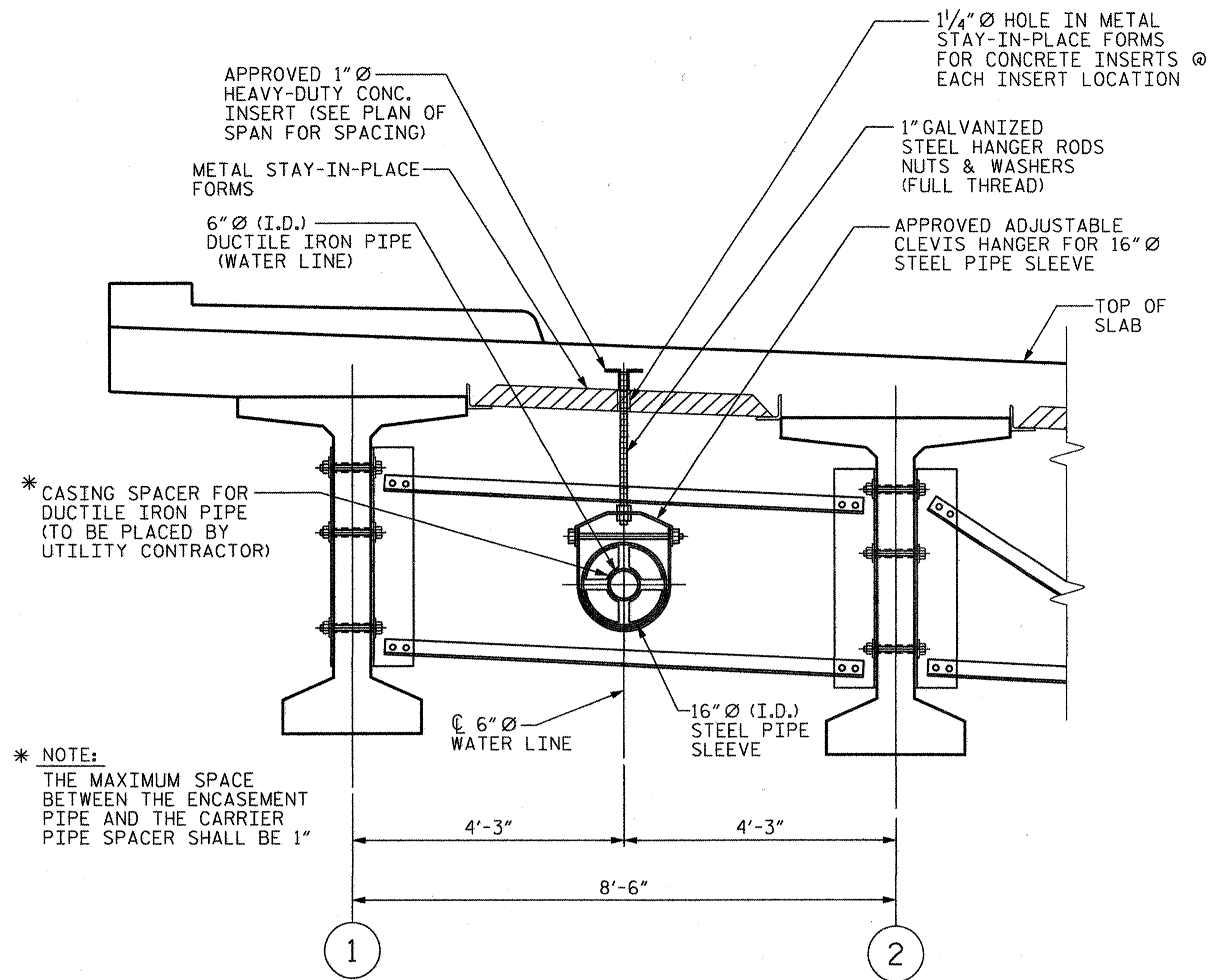
THE CONTRACTOR SHALL PROVIDE EXPANSION COUPLERS FOR THE STEEL PIPE SLEEVE AS NEEDED. THE EXPANSION COUPLERS SHALL PROVIDE VERTICAL ALIGNMENT TOLERANCES SUCH THAT THE PIPES AND COUPLERS CAN CLOSELY FOLLOW THE VERTICAL CURVATURE OF THE STRUCTURE.

PIPE HANGERS SHALL NOT BE LOCATED MORE THAN 2'-0" FROM ANY COUPLING, FITTING, SLOTTED OPENING, EXPANSION COUPLING, OR END OF PIPE.

ALL HARDWARE SHALL BE GALVANIZED.

SHOP DRAWINGS FOR THE PIPE SLEEVE AND ALL ASSOCIATED HARDWARE SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PRIOR TO ORDERING MATERIALS.

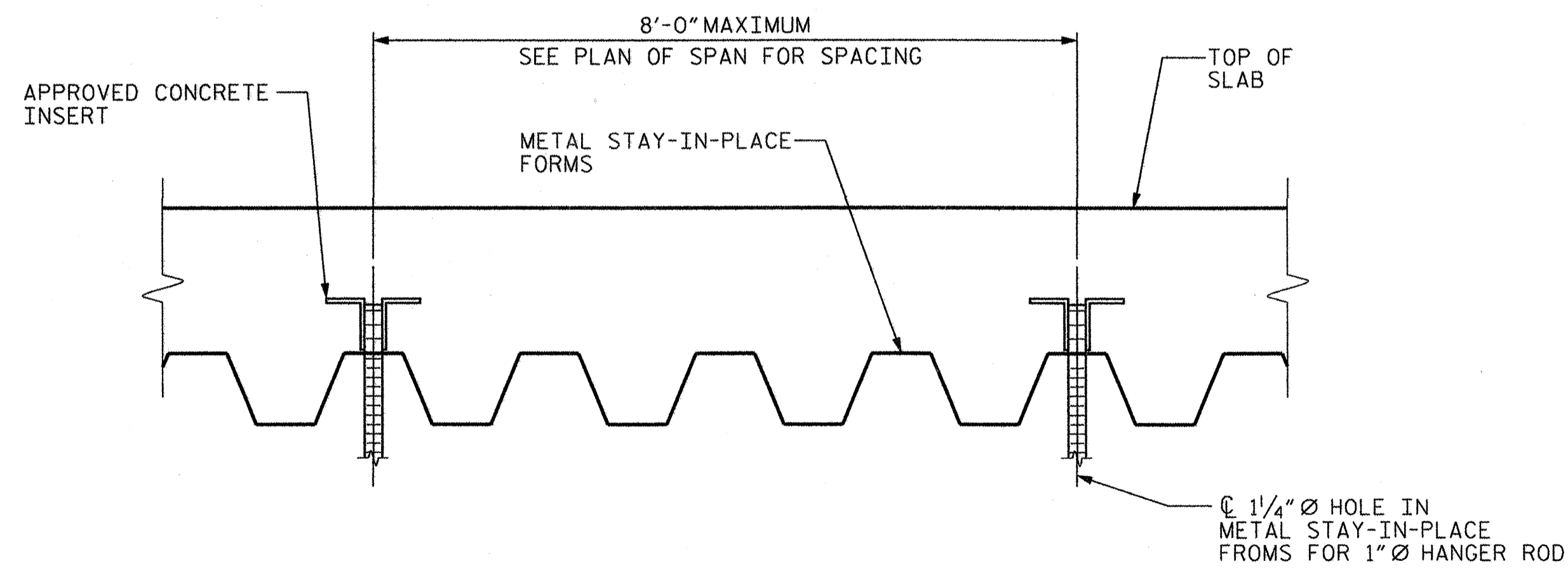
STEEL PIPE SLEEVES SHALL BE PROVIDED THRU EACH INTEGRAL END BENT, SEE TYPICAL SECTION SHEETS FOR DETAILS.



NOTE "A":

PROVIDE PVC OR NEOPRENE-COATED STRIPS, EPOXY-CEMENTED TO CLEVIS HANGER OR PIPE TO FURNISH STRAY CURRENT PROTECTION.

UTILITY DETAILS AT INTERMEDIATE DIAPHRAGMS



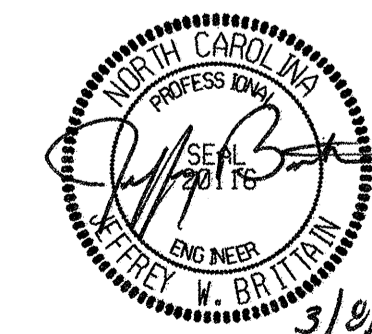
LOCATION OF INSERTS IN METAL STAY-IN-PLACE FORMS

ESTIMATED QUANTITIES FOR 6" Ø D.I. WATER LINE INSTALLATION	QUANTITY	UNIT
20" DIA. STEEL PIPE SLEEVES (0.375" WALL THICKNESS) 4'-0" LENGTH (END BENTS)	2	EACH
16" STEEL ENCASEMENT PIPE (0.250" THICK)	130	FEET
6" Ø D.I. RESTRAINED JOINT WATER PIPE, PC 350	*	FEET
APPROVED GALVANIZED ADJUSTABLE CLEVIS TYPE HANGERS FOR 16" STEEL ENCASEMENT W/ 1" GALVANIZED HANGER RODS	10	EACH
1" Ø APPROVED HEAVY DUTY GALVANIZED CONCRETE INSERTS	10	EACH

* SEE UTILITY CONSTRUCTION PLANS FOR WATER LINE QUANTITY.

ALL QUANTITIES ARE TO BE PAID UNDER THE UTILITY PLANS.

PROJECT NO. B-4861
 COUNTY: ANSON
 STATION: P.O.T. 12 + 66.441-L- =
 P.O.C. 11 + 48.124-RR-



PREPARED BY
 TGS ENGINEERS
 107-A WICK AVE
 MORGANTON, NC 28655

CITY OF ANSONVILLE, NC

UTILITY DETAILS
 (6" WATER LINE)

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-24
1			3			TOTAL SHEETS
2			4			36

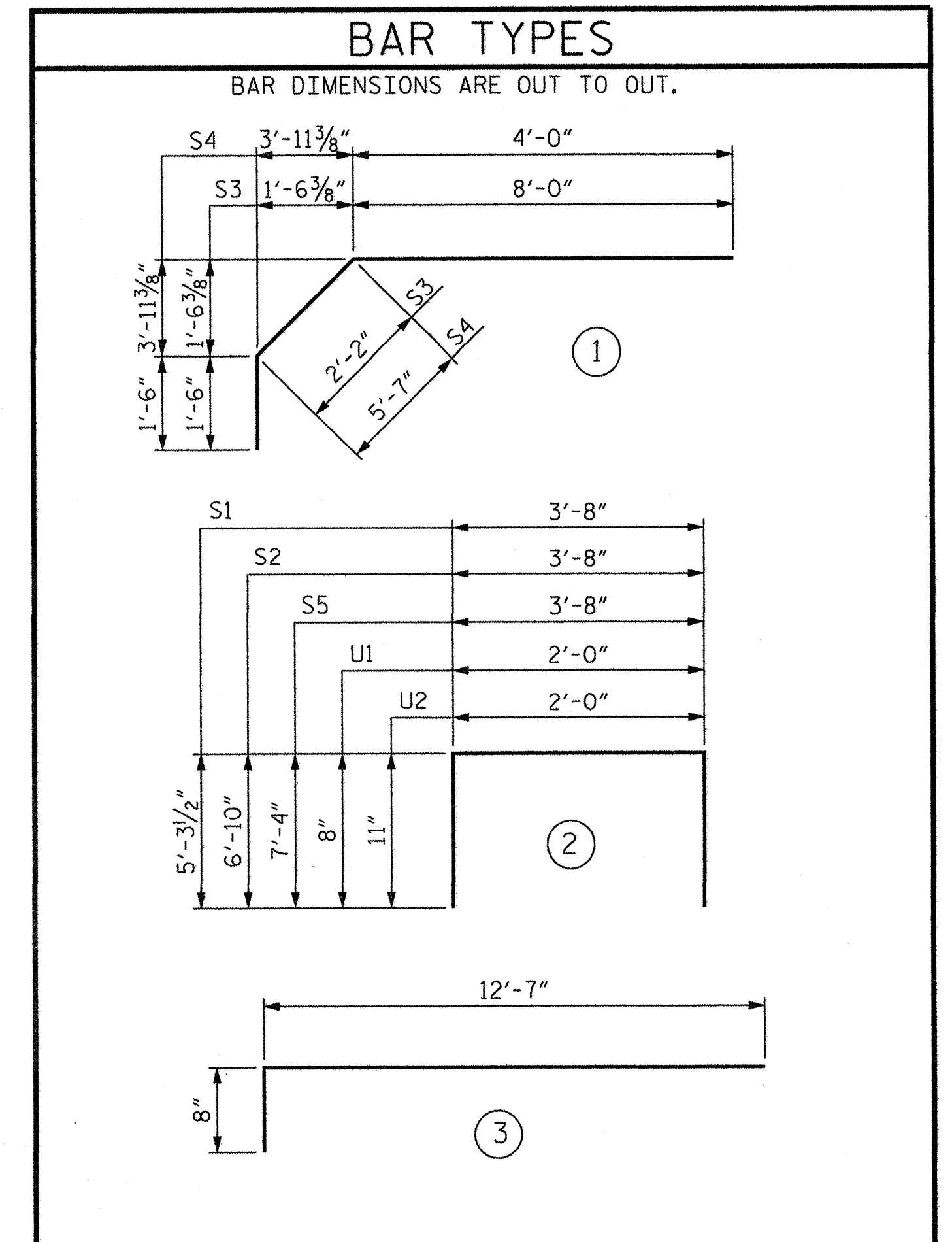
DRAWN BY: NMW DATE: 4/09
 CHECKED BY: RTJ DATE: 5/09

REINFORCING BAR SCHEDULE					
DECK SLAB & ABUTMENT WALL (POUR 2)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	151	#5	STR.	41'-3"	6,497
A2	151	#5	STR.	41'-3"	6,497
*B1	112	#4	STR.	23'-6"	1,758
B2	68	#5	STR.	45'-1"	3,209
*B3	108	#6	STR.	18'-0"	2,920
H1	64	#4	3	13'-3"	566
K1	24	#4	STR.	24'-10"	398
K2	28	#4	STR.	2'-8"	50
K3	12	#4	STR.	4'-7"	37
K4	24	#4	STR.	6'-0"	96
K5	4	#4	STR.	5'-4"	14
K6	32	#4	STR.	7'-7"	162
*S1	48	#4	2	14'-3"	457
*S2	4	#4	2	17'-4"	46
*S3	48	#4	1	11'-8"	374
*S4	44	#4	1	11'-1"	326
*S5	4	#4	2	18'-4"	49
U1	26	#4	2	3'-4"	58
U2	26	#4	2	3'-10"	67
V2	50	#4	STR.	6'-10"	228
V3	50	#4	STR.	7'-4"	245
*TOTAL EPOXY-COATED REINFORCING STEEL					12,427 LBS.
TOTAL REINFORCING STEEL					11,627 LBS.

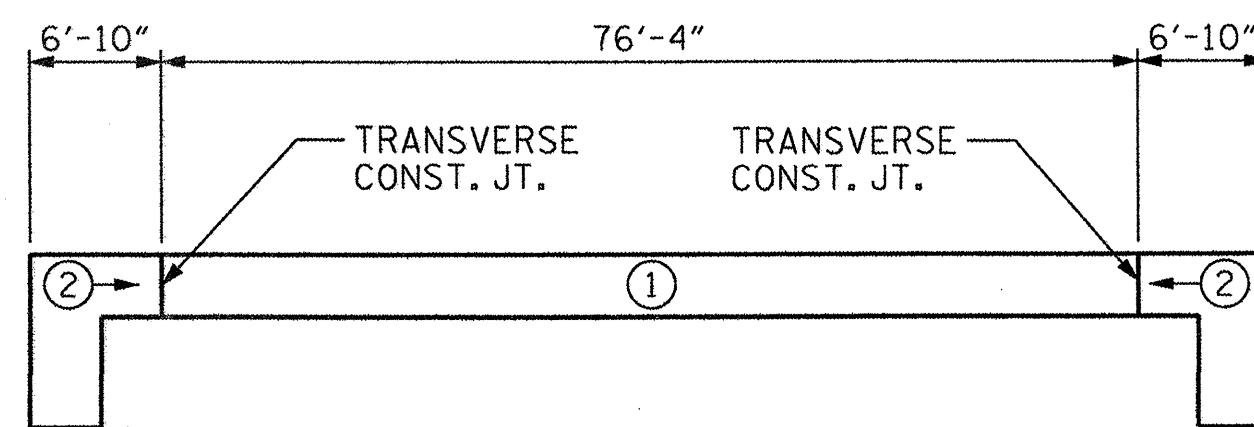
REINFORCING BAR SCHEDULE					
SIDEWALK					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	48	#4	STR.	24'-1"	772
*G1	176	#4	STR.	6'-3"	735
*TOTAL EPOXY-COATED REINFORCING STEEL					1,507 LBS.

REINFORCING BAR SUMMARY		
	EPOXY-COATED REINFORCING STEEL (LBS.)	REINFORCING STEEL (LBS.)
DECK SLAB	12,427	11,627
SIDEWALK	1,507	
END POSTS	448	
TOTAL	14,382	11,627

CLASS AA CONCRETE SUMMARY	
	CUBIC YDS.
DECK SLAB (POUR 1)	98.9
DECK SLAB (POUR 2)	103.0
SIDEWALK	28.3
END POSTS	1.7
TOTAL	231.9

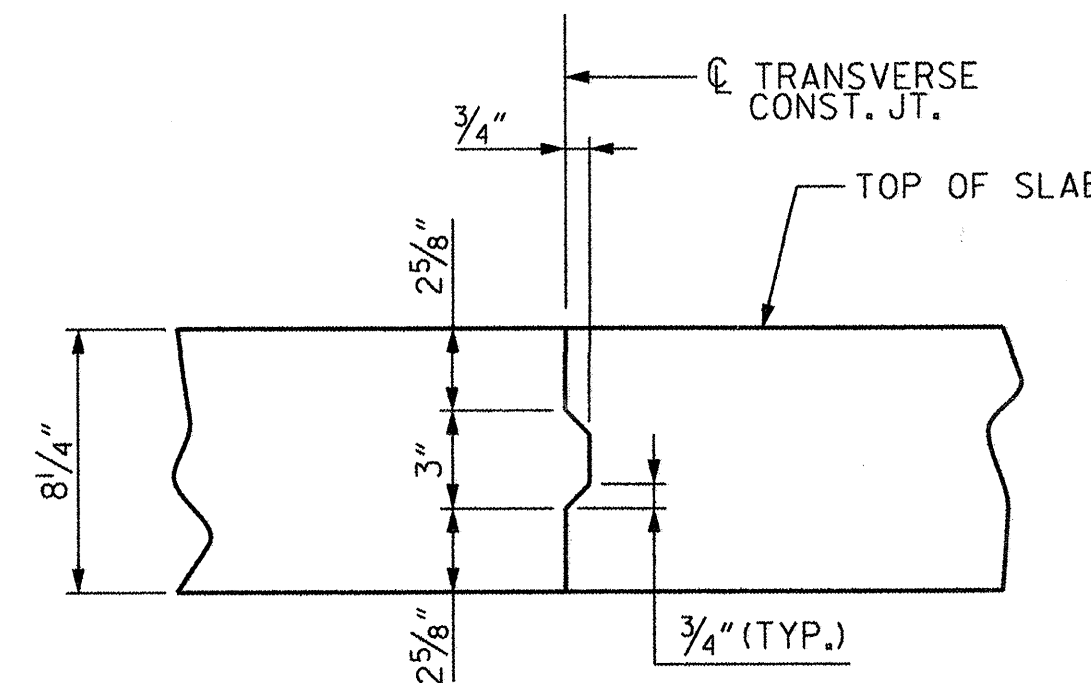


GROOVING BRIDGE FLOORS	
	SO.FT.
APPROACH SLABS	472.9
BRIDGE DECK	2,200.0
TOTAL	2,672.9



POURING SEQUENCE

SEE TRANSVERSE CONSTRUCTION JOINT DETAIL.
 POUR ② CANNOT BE STARTED UNTIL POUR ① REACH A MINIMUM OF 3000 PSI.
 THE UPPER PORTIONS OF THE WINGS SHALL BE POURED WITH POUR 2 OF THE SUPERSTRUCTURE.
 ① → = INDICATES POUR NUMBER AND DIRECTION

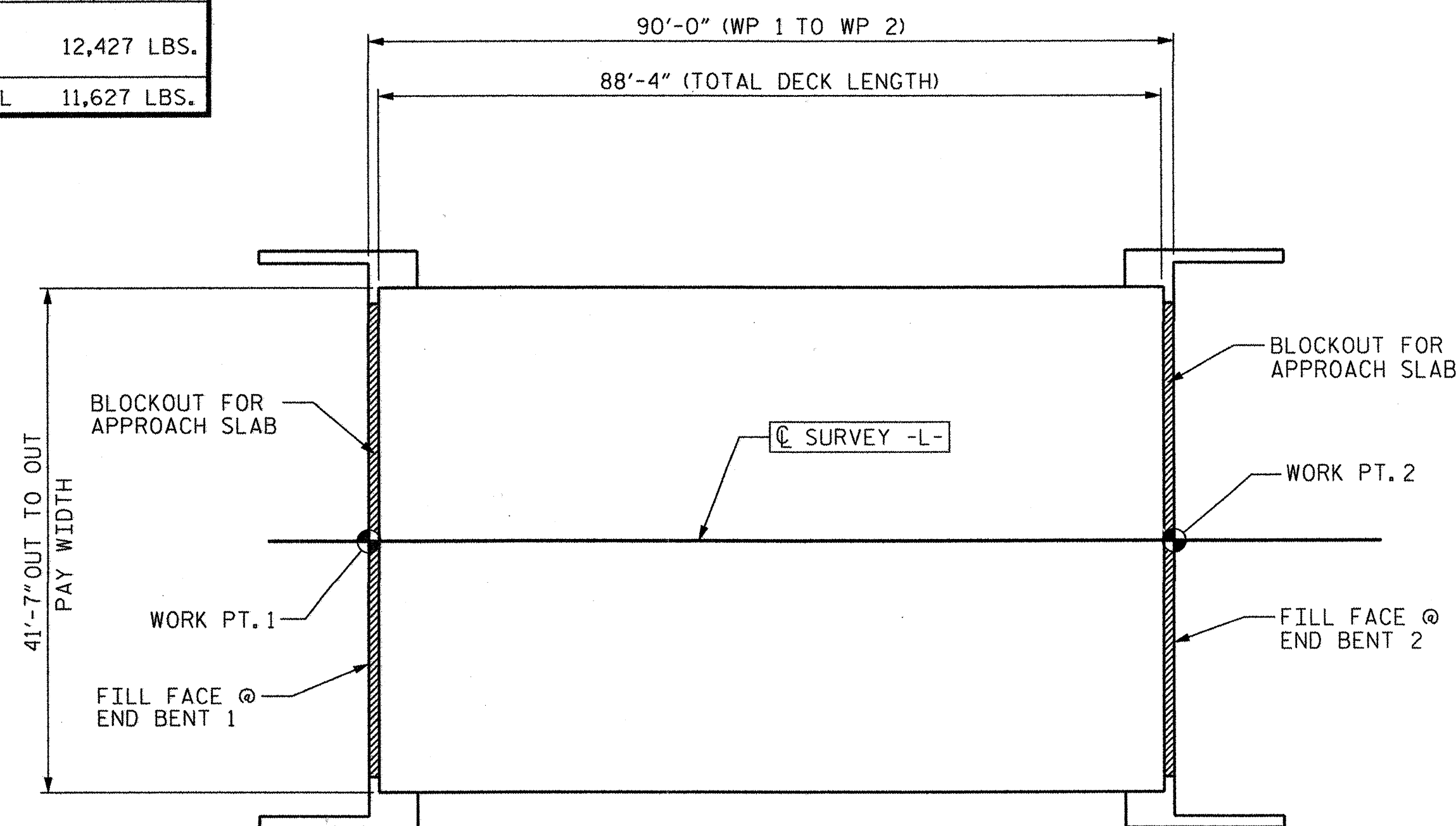


TRANSVERSE CONSTRUCTION JOINT DETAIL

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

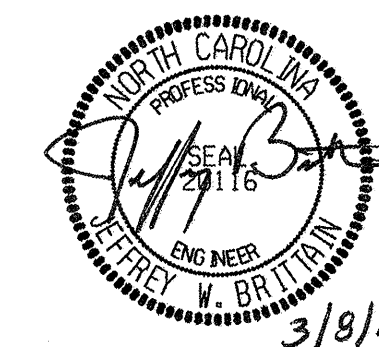
SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

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



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 3,743)

PROJECT NO. B-4861
 COUNTY: ANSON
 STATION: P.O.T. 12 + 66.441-L- =
 P.O.C. 11 + 48.124-RR-

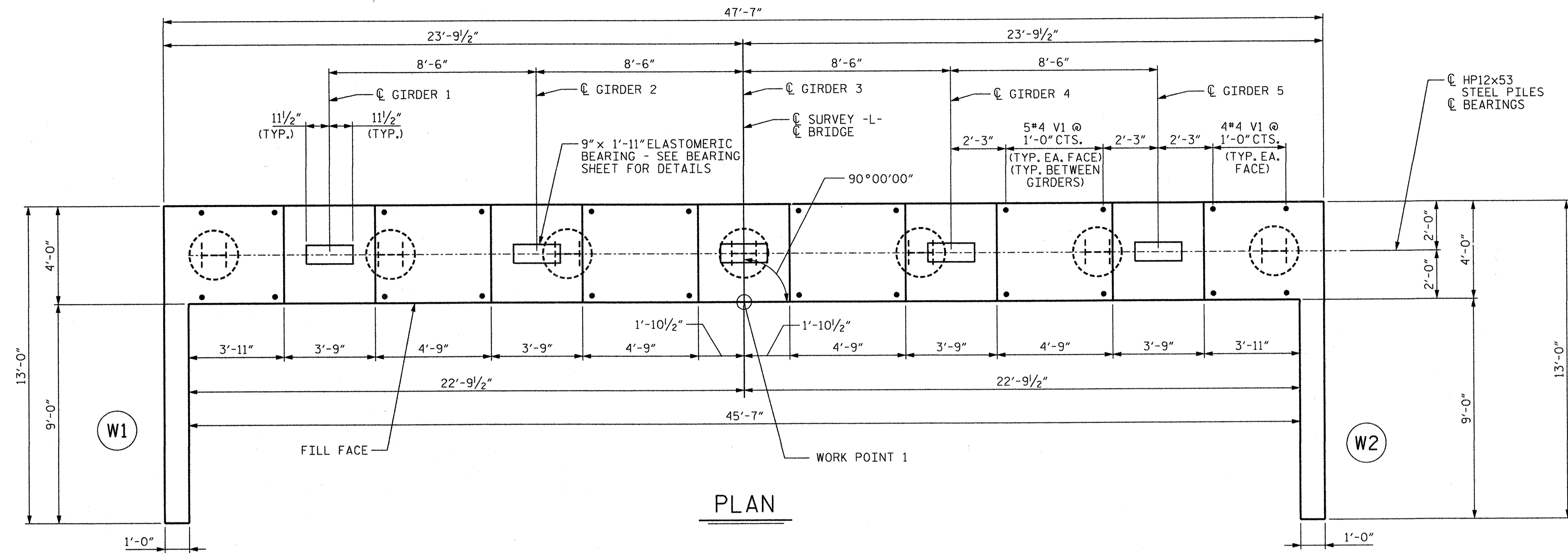


PREPARED BY
 TOS ENGINEERS
 107-A MICA AVENUE
 MORGANTON, NC 28655

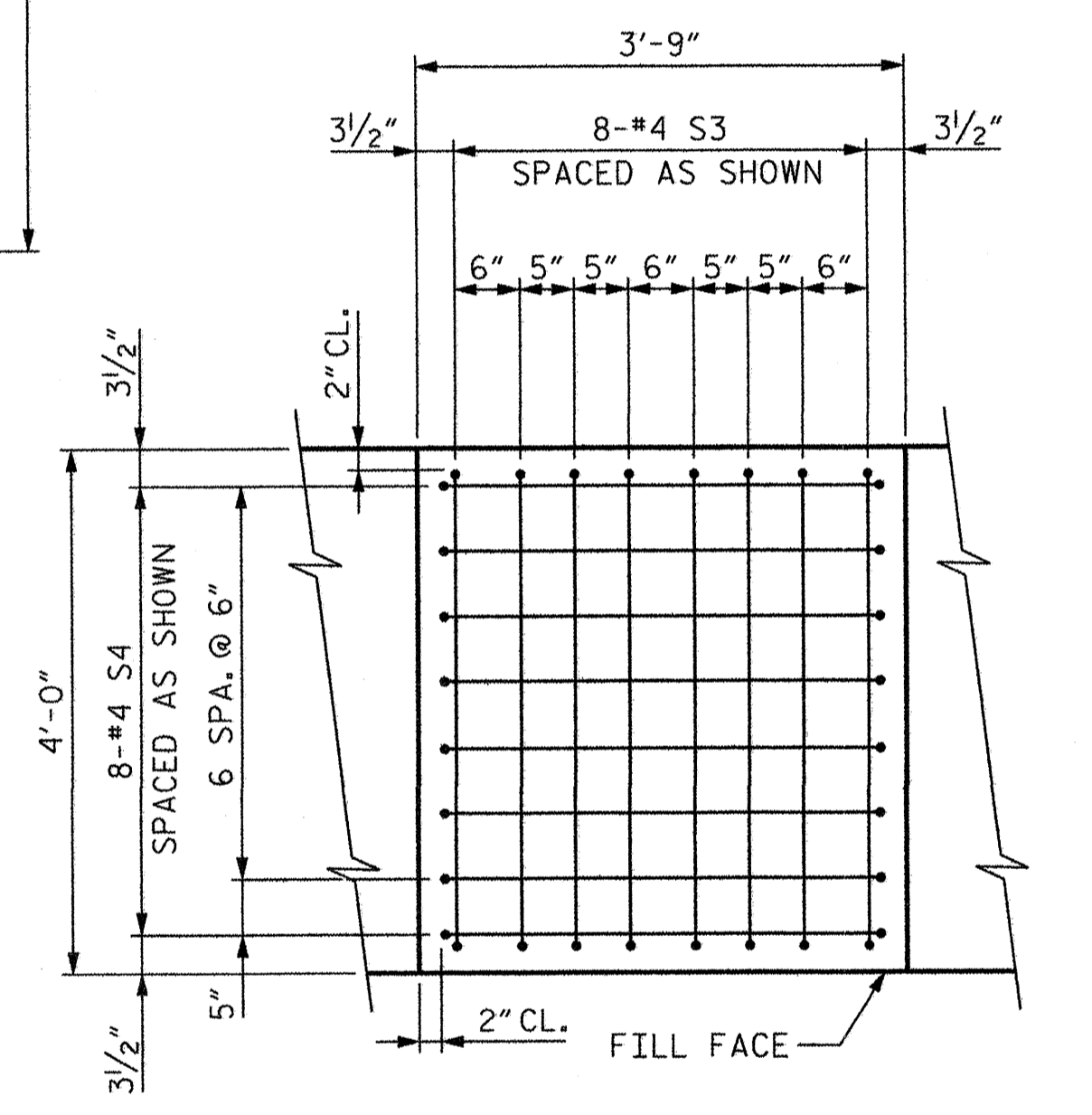
REVISIONS						SHEET NO. S-25
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 36
2			4			

DRAWN BY: JLA DATE: 5/11
 CHECKED BY: NMW DATE: 6/11

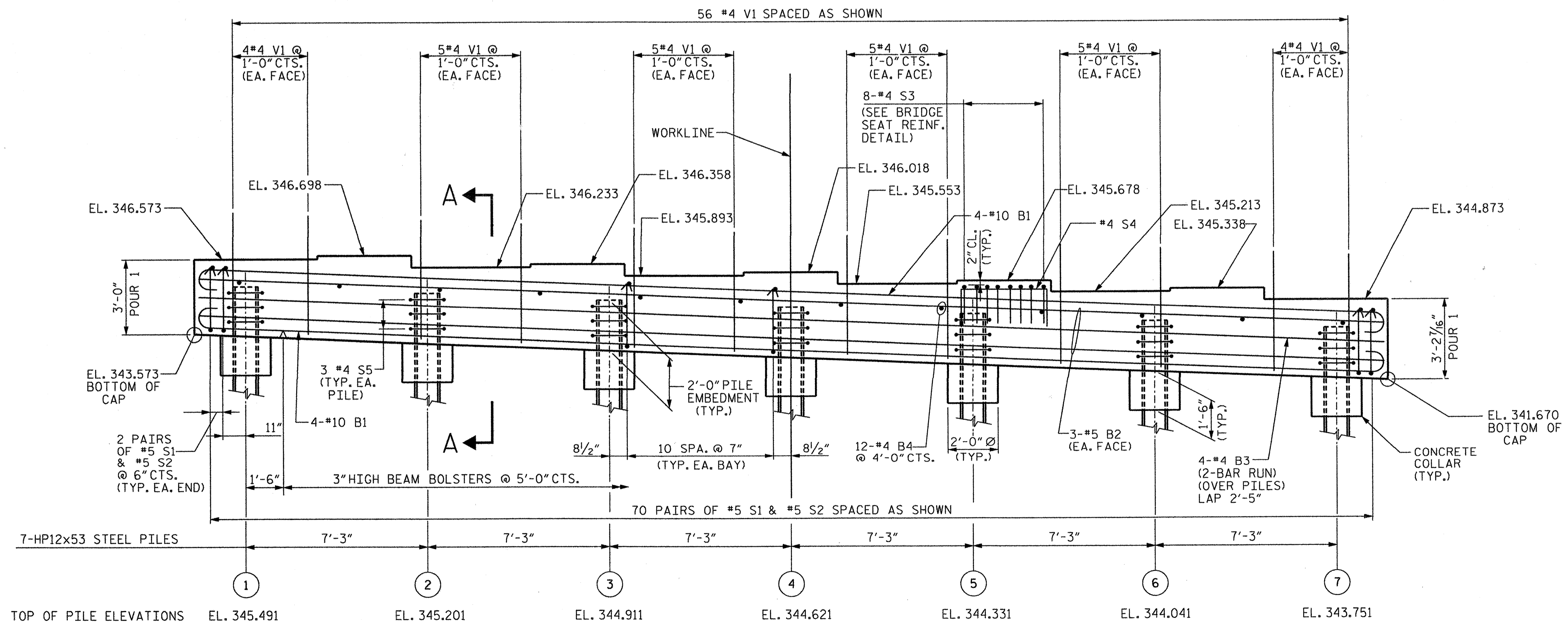
NOTES:
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 THE TOP SURFACE OF THE POUR 1 CONSTRUCTION JOINT OF THE END BENT CAP AND WINGS EXCLUDING THE BEARING AREA SHALL BE RAKED TO A DEPTH OF 1/4".
 FOR REINFORCING IN POUR 2, SEE SUPERSTRUCTURE DETAIL SHEETS.



PLAN



BRIDGE SEAT REINFORCING STEEL DETAIL
 (TYPICAL ALL BRIDGE SEATS)



ELEVATION

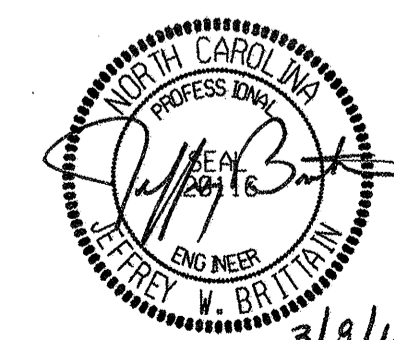
WINGS NOT SHOWN FOR CLARITY.

PROJECT NO. B-4861
COUNTY: ANSON
STATION: P.O.T. 12 + 66.441-L- =
P.O.C. 11 + 48.124 -RR-

SHEET 1 OF 3

CITY OF ANSONVILLE, NC

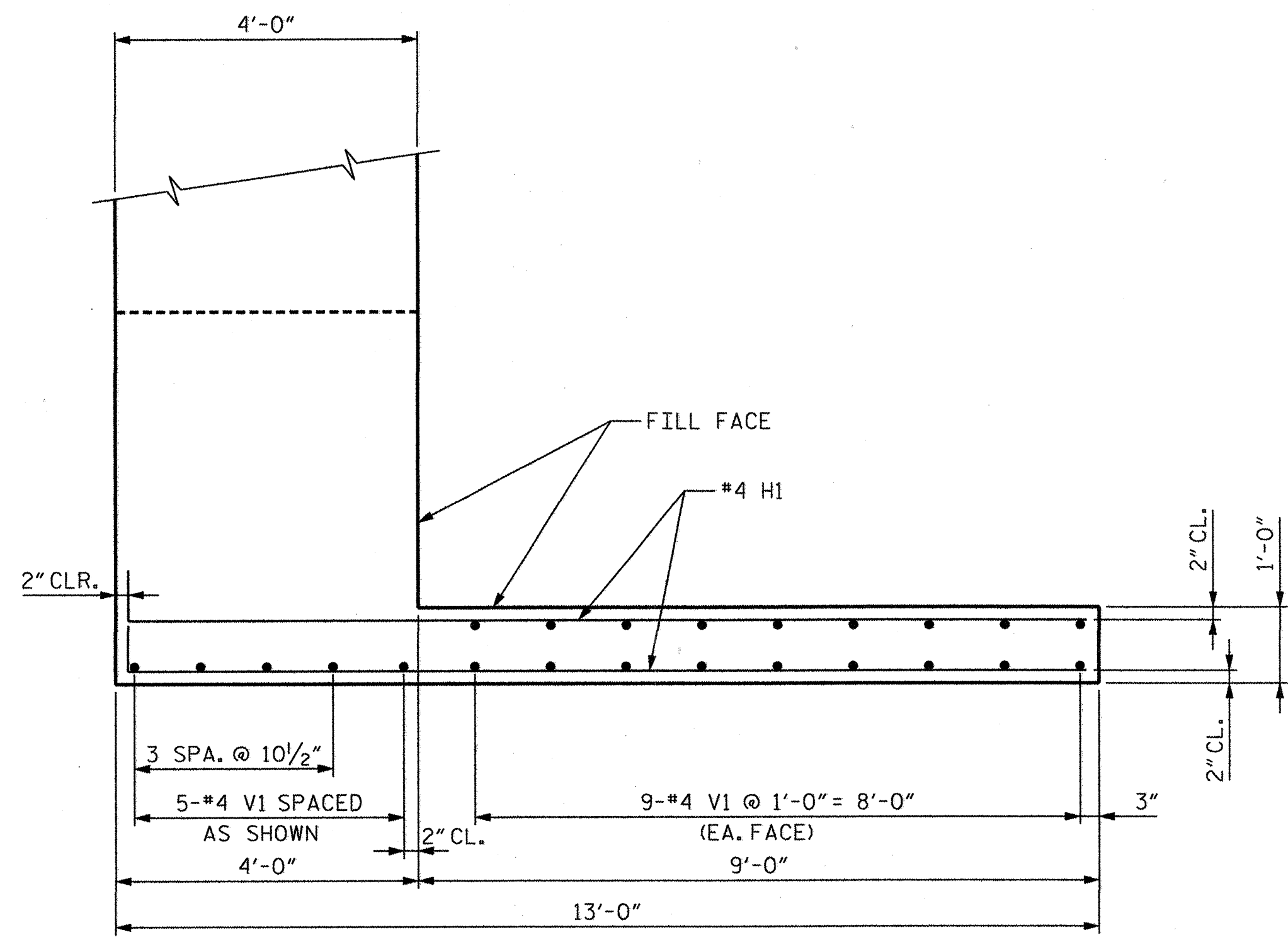
INTEGRAL END BENT 1



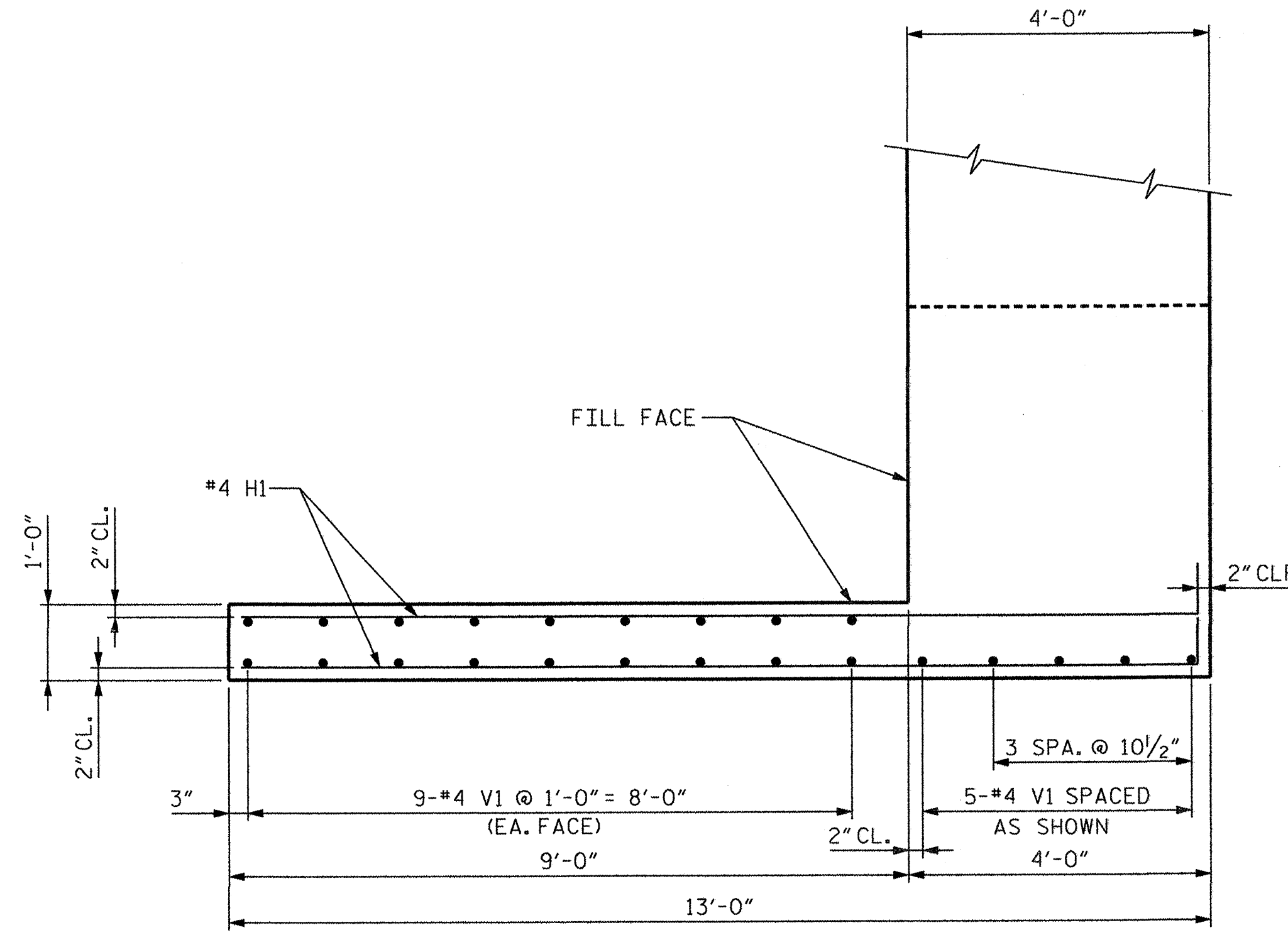
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REVISIONS						SHEET NO.	
NO.	BY	DATE	NO.	BY	DATE	S-26	
1			3			TOTAL SHEETS	
2			4			36	

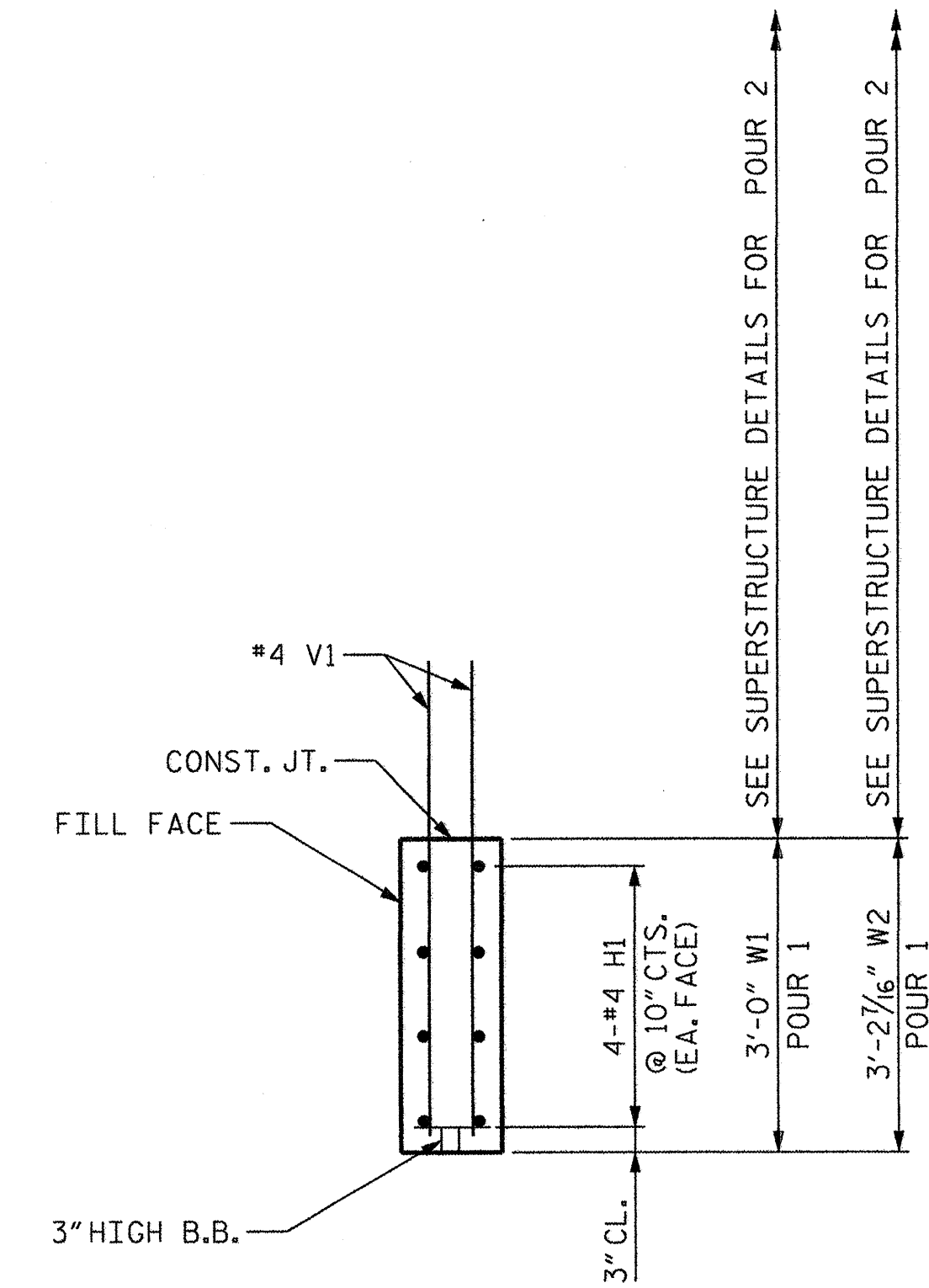
DRAWN BY: NMW **DATE: 5/11**
CHECKED BY: JLA **DATE: 5/11**



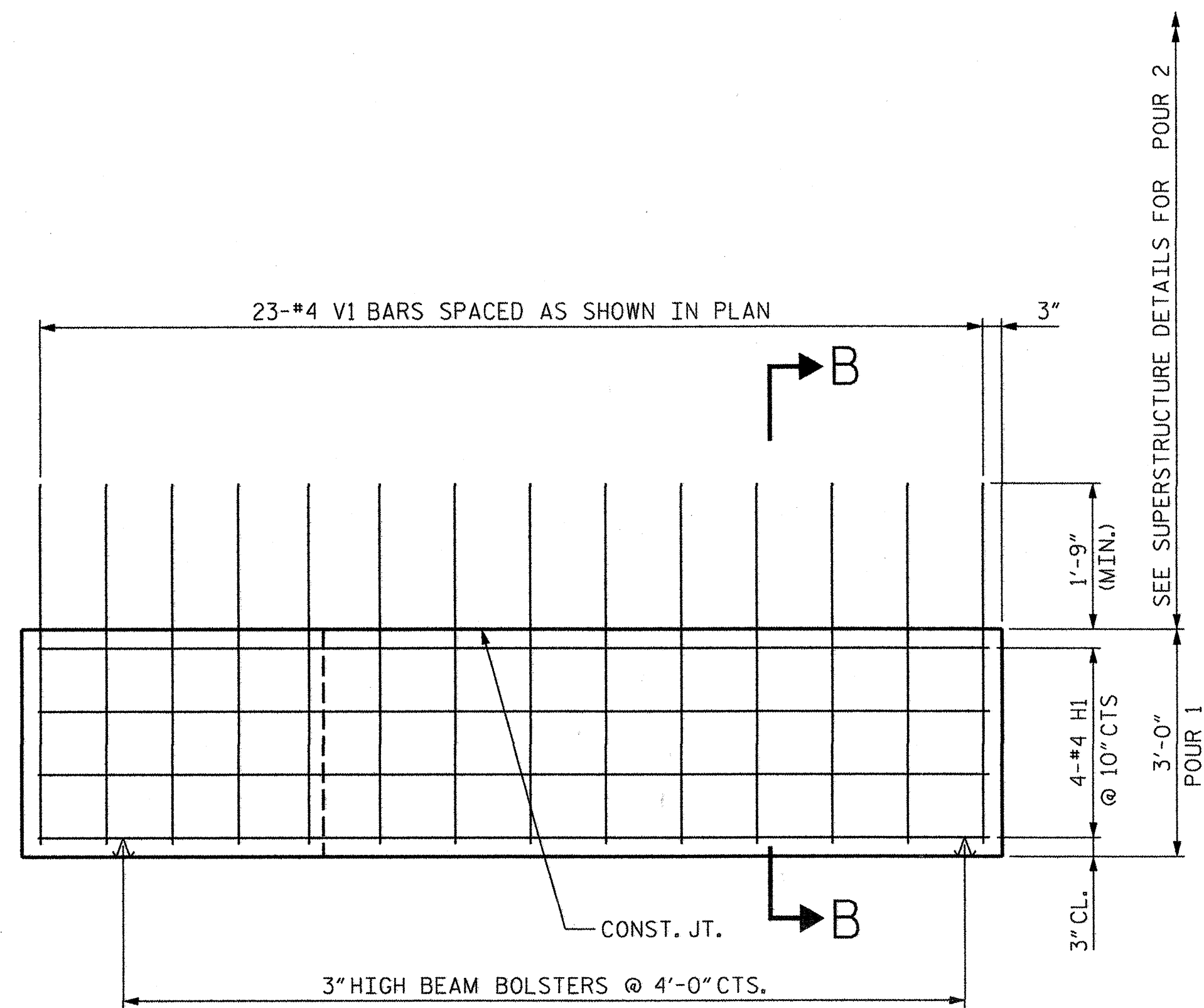
PLAN - WING W1



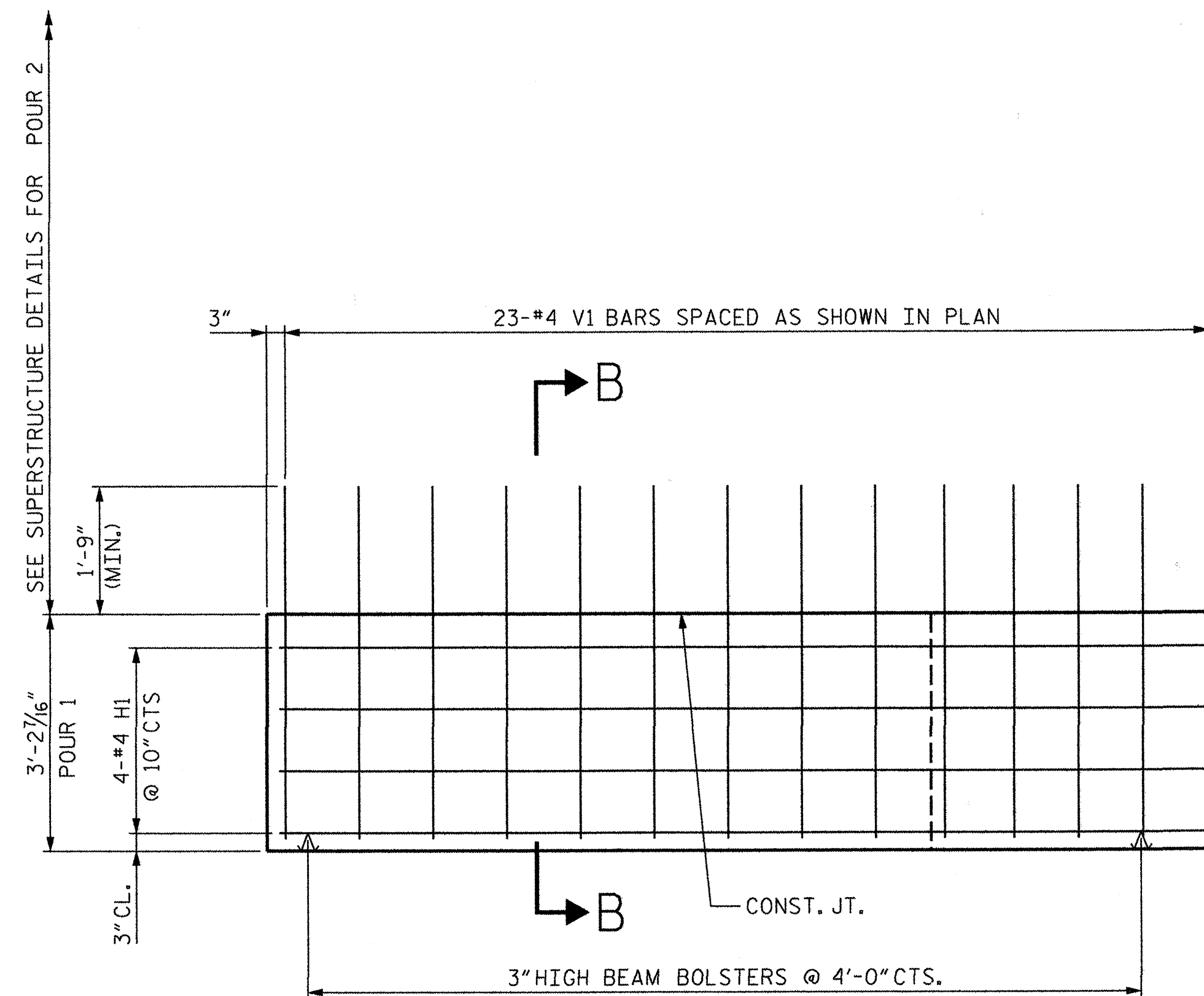
PLAN - WING W2



SECTION B-B



ELEVATION - W1



ELEVATION - W2

PROJECT NO. B-4861
 COUNTY: ANSON
 STATION: P.O.T. 12 + 66.441-L- =
 P.O.C. 11 + 48.124 -RR-

SHEET 2 OF 3

CITY OF ANSONVILLE, NC

INTERGAL
 END BENT 1

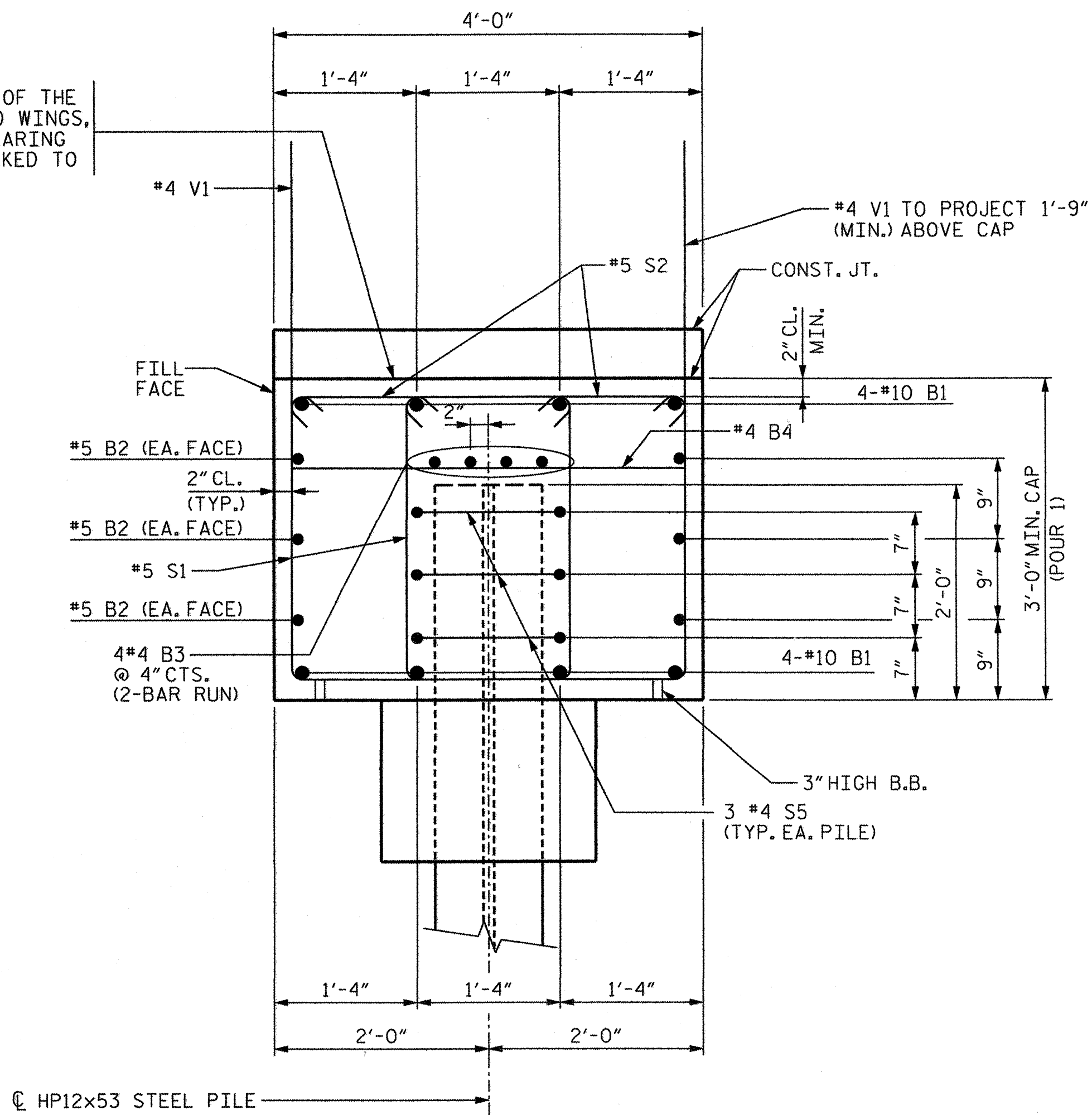


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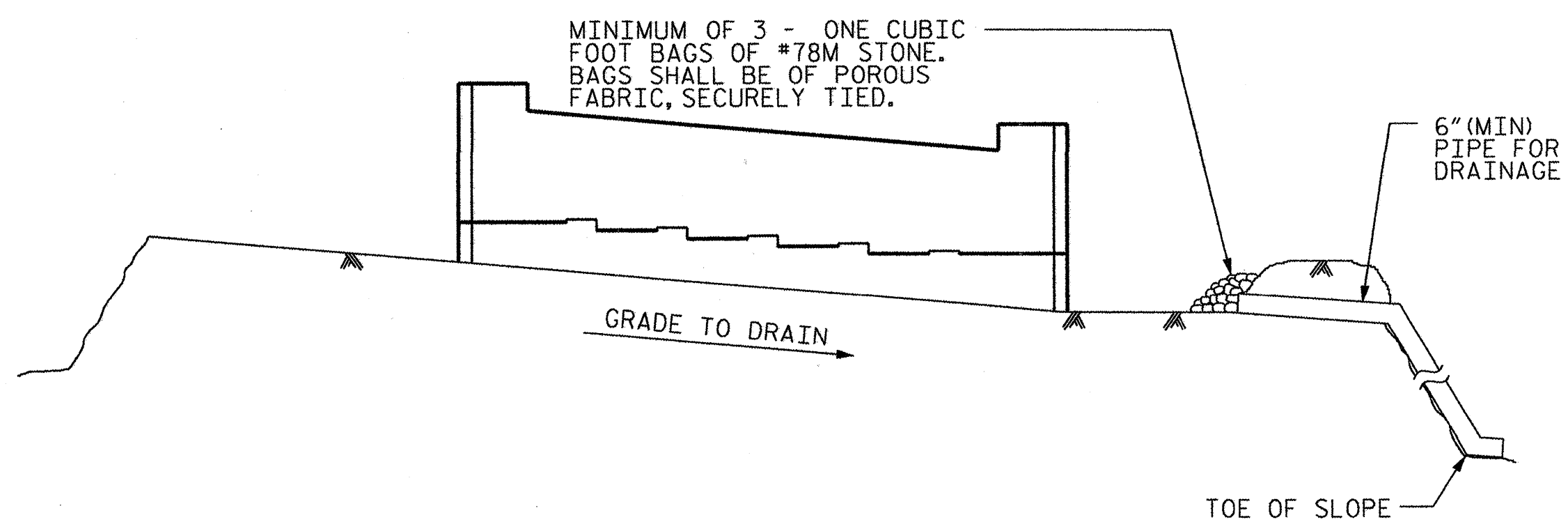
DRAWN BY: NMW DATE: 5/11
 CHECKED BY: JLA DATE: 5/11

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-27
1			3			TOTAL SHEETS
2			4			36

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



SECTION A-A



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 REMOVE AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

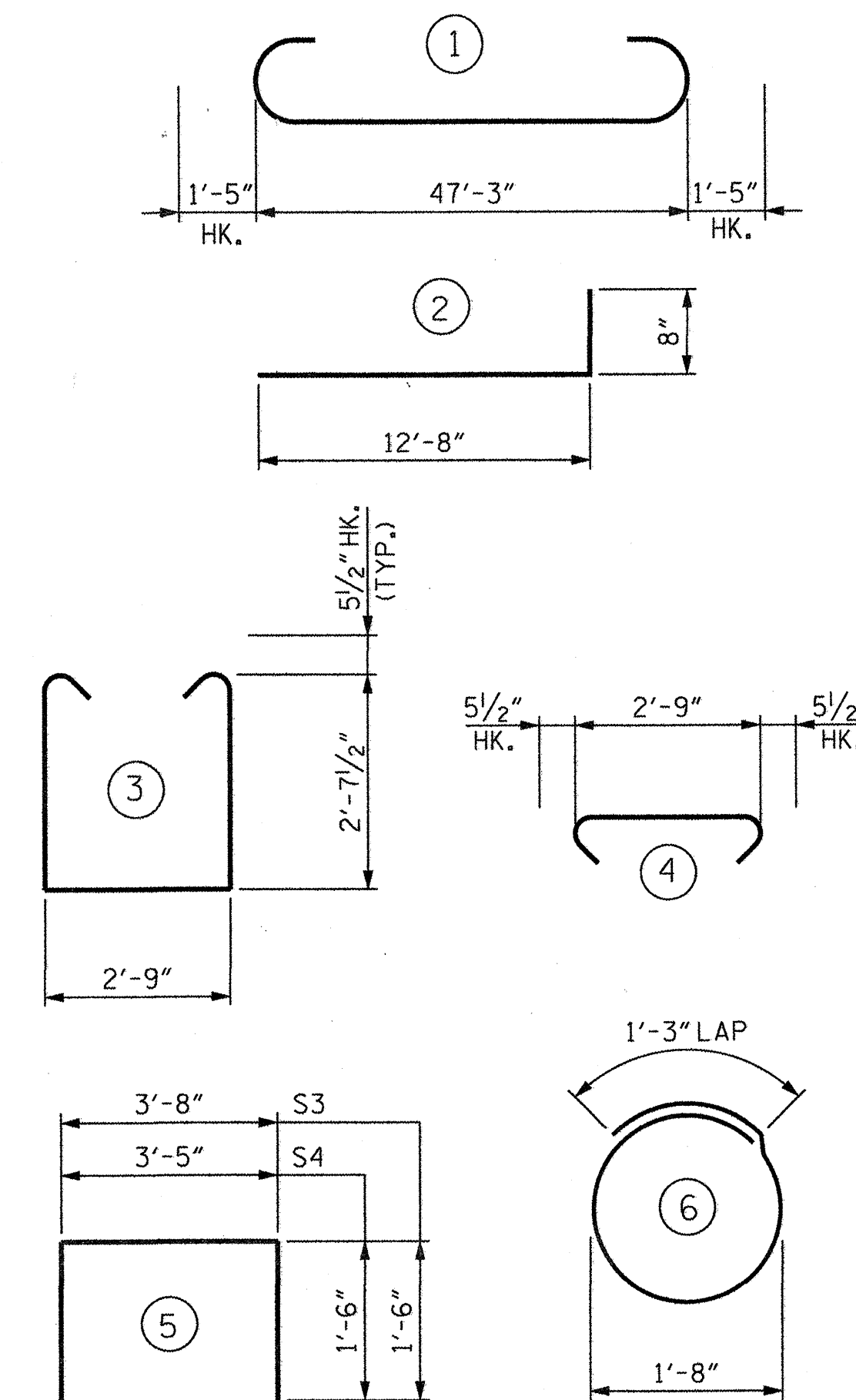
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

DRAWN BY: NMW DATE: 5/11
CHECKED BY: JLA DATE: 5/11

BAR TYPES

BAR DIMENSIONS ARE OUT TO OUT.



BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#10	1	50'-1"	1,724
B2	6	#5	STR.	47'-3"	296
B3	8	#4	STR.	24'-10"	133
B4	12	#4	STR.	3'-8"	29
H1	16	#4	2	13'-4"	143
S1	140	#5	3	8'-11"	1,302
S2	140	#5	4	3'-8"	535
S3	40	#4	5	6'-8"	178
S4	40	#4	5	6'-5"	171
S5	21	#4	6	6'-6"	91
V1	102	#4	STR.	4'-10"	329

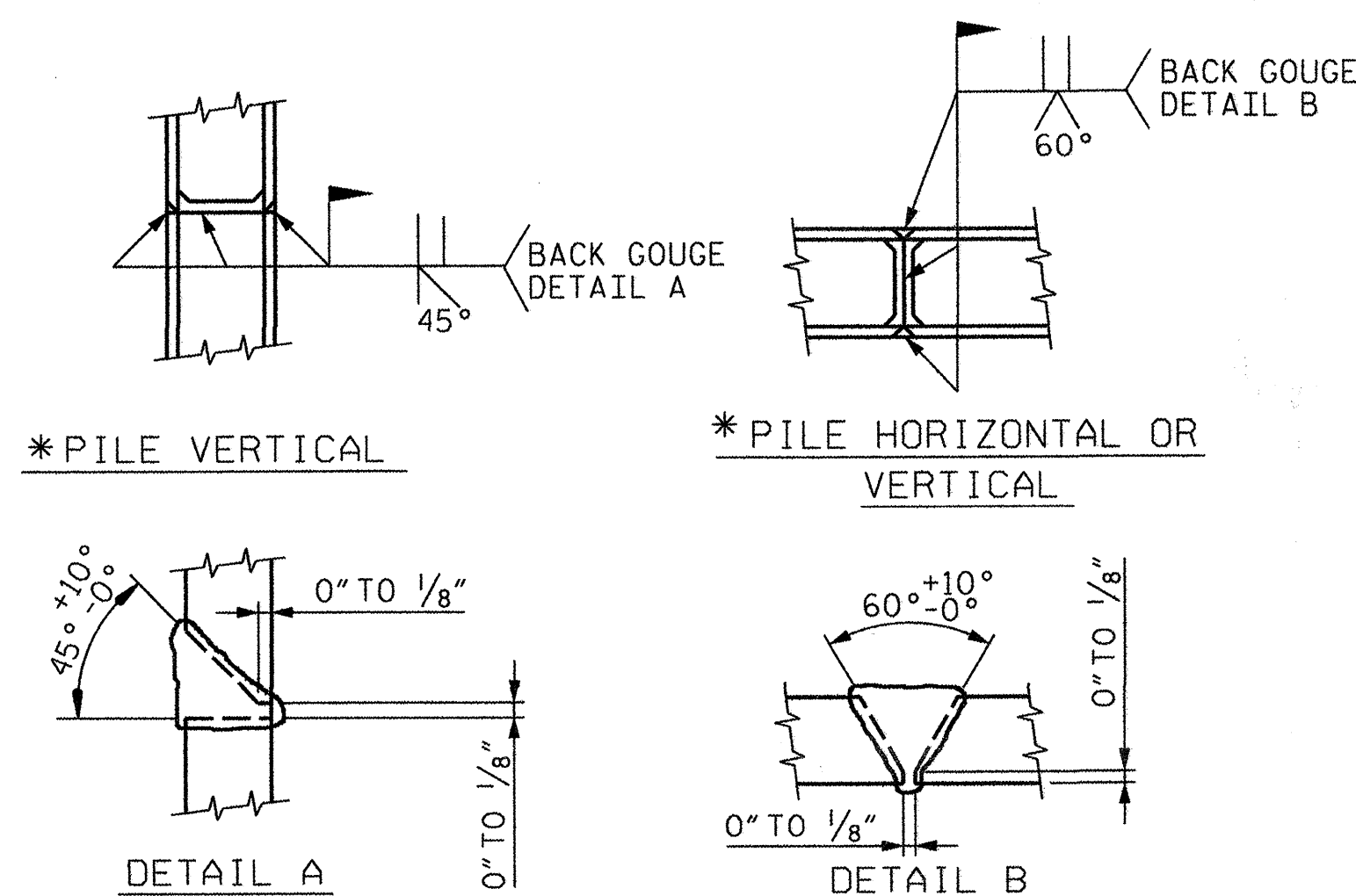
REINFORCING STEEL - LBS. 4,931

CLASS A CONCRETE

POUR 1 (CAP, WINGS, & CONC. COLLARS) 26.0 C.Y.

HP12x53 STEEL PILES

NO. = 7 LIN. FT. = 245



* POSITION OF PILE DURING WELDING

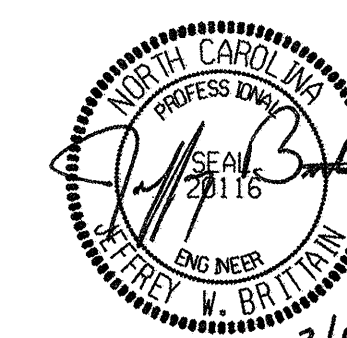
PILE SPLICE DETAILS

PROJECT NO. B-4861
COUNTY: ANSON
STATION: P.O.T. 12 + 66.441-L- =
P.O.C. 11 + 48.124 -RR-

SHEET 3 OF 3

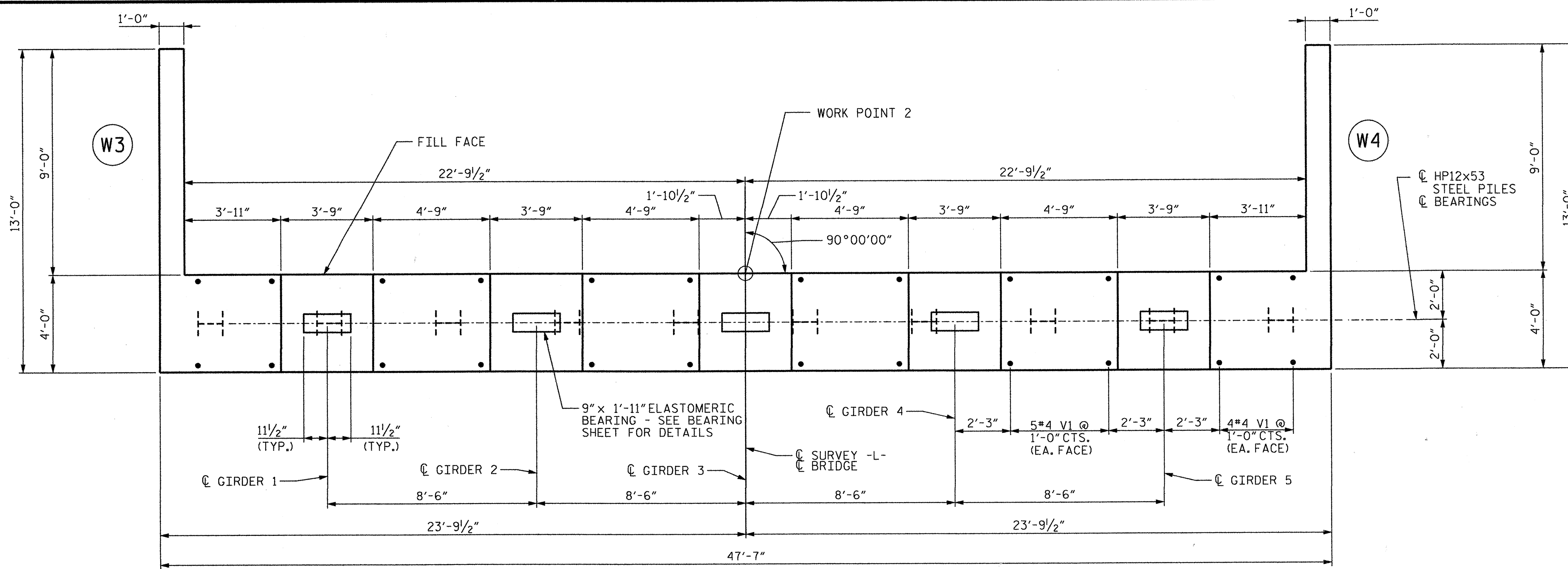
CITY OF ANSONVILLE, NC

INTEGRAL
END BENT 1



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TGS ENGINEERS
107-A MICA AVENUE
MORGANTON, NC 28655

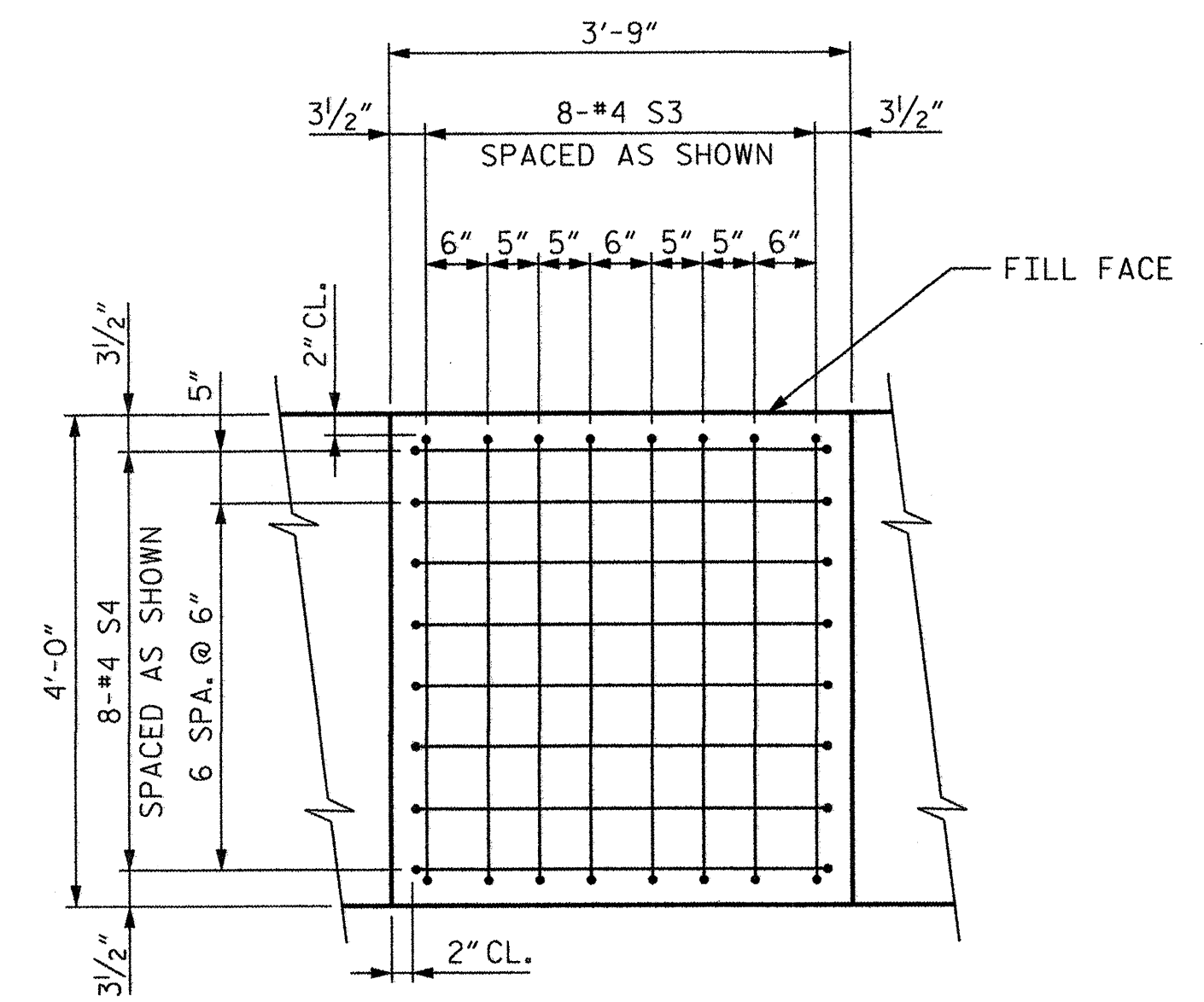
REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-28
1			3			TOTAL SHEETS
2			4			36



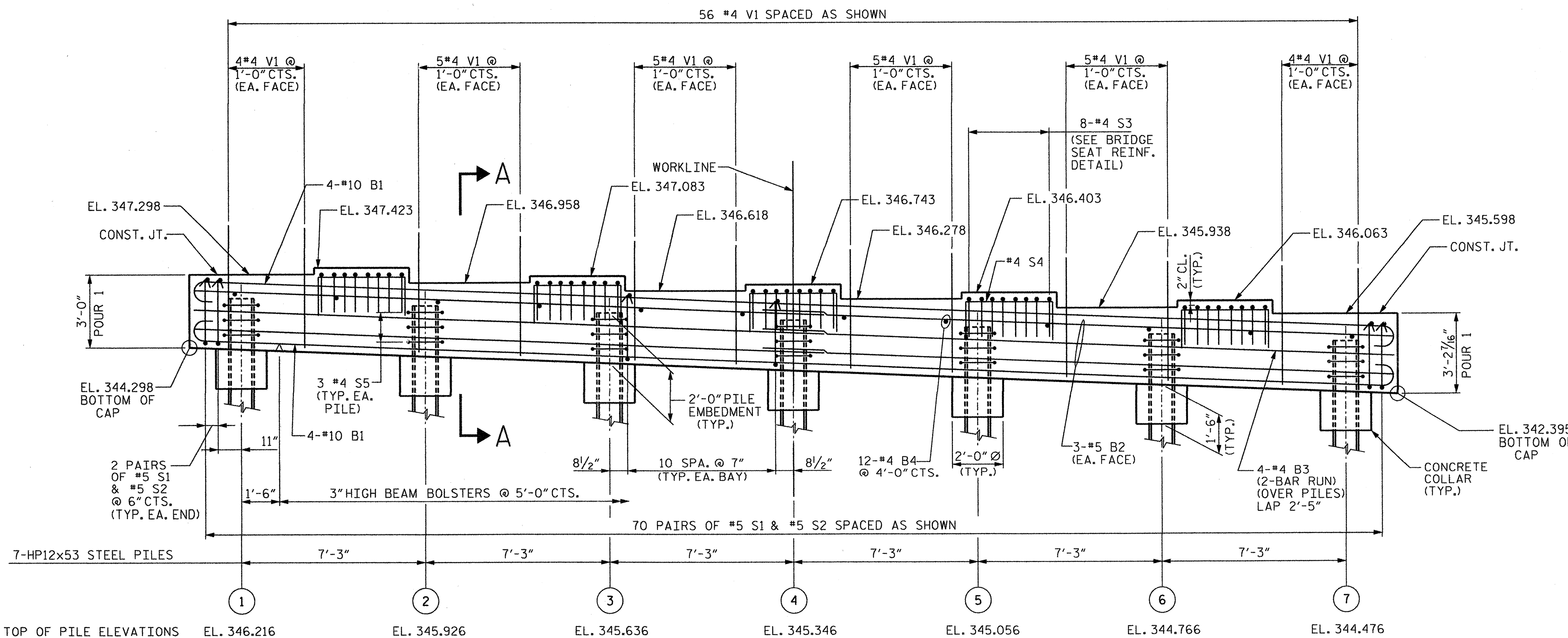
PLAN

NOTES:

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- THE TOP SURFACE OF THE POUR 1 CONSTRUCTION JOINT OF THE END BENT CAP AND WINGS EXCLUDING THE BEARING AREA SHALL BE RAKED TO A DEPTH OF 1/4".
- FOR REINFORCING IN POUR 2, SEE SUPERSTRUCTURE DETAIL SHEETS.
- THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" Ø 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.



BRIDGE SEAT REINFORCING STEEL DETAIL
(TYPICAL ALL BRIDGE SEATS)



ELEVATION

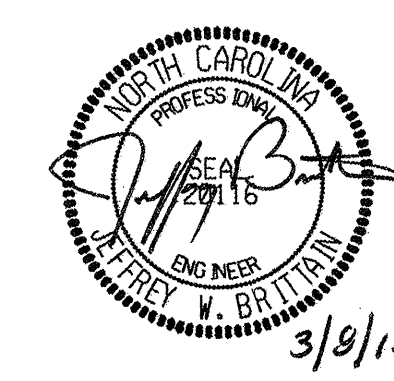
WINGS NOT SHOWN FOR CLARITY.

PROJECT NO. B-4861
 COUNTY: ANSON
 STATION: P.O.T. 12 + 66.441-L- =
 P.O.C. 11 + 48.124 -RR-

SHEET 1 OF 3

CITY OF ANSONVILLE, NC

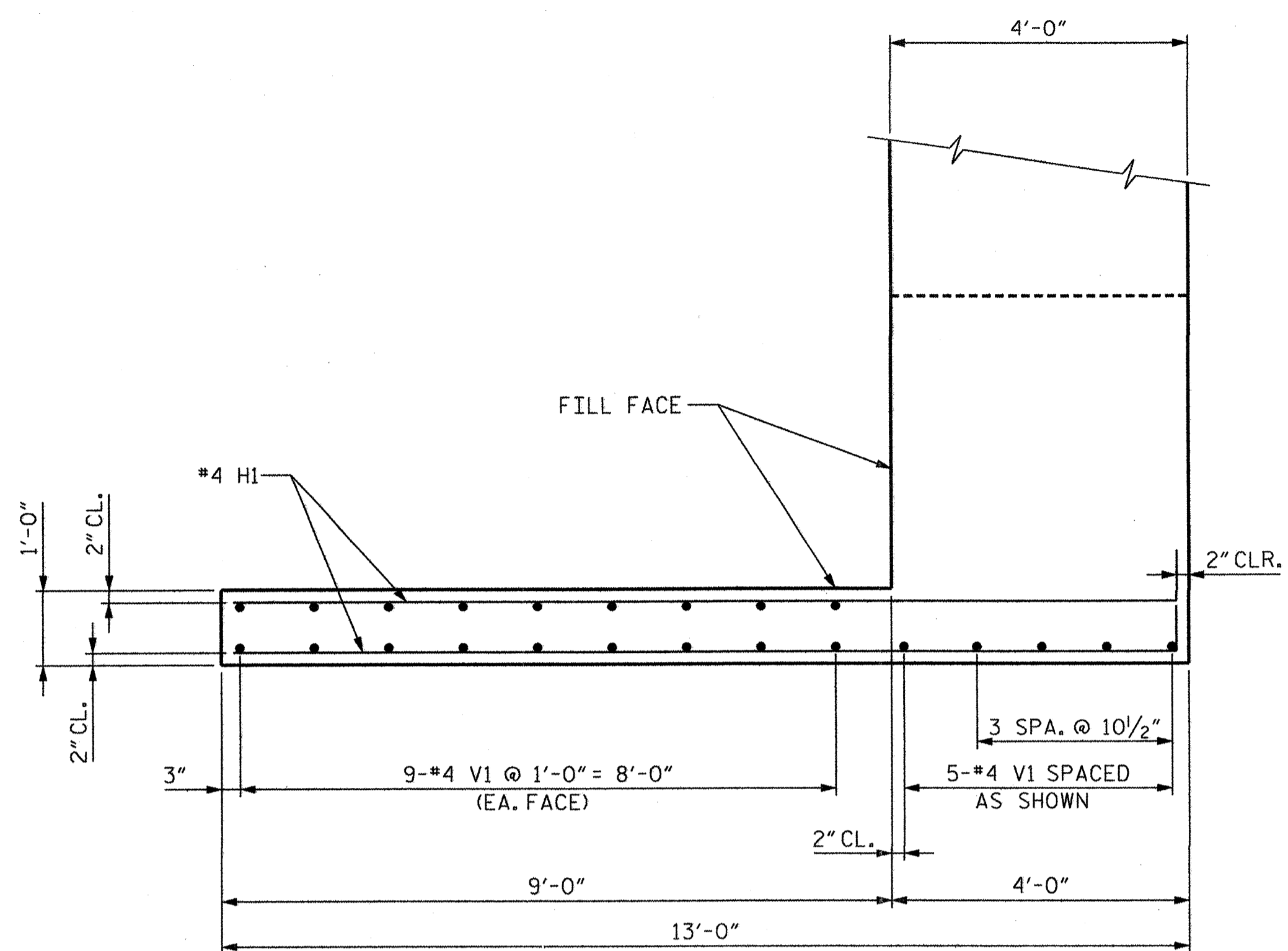
INTEGRAL
 END BENT 2



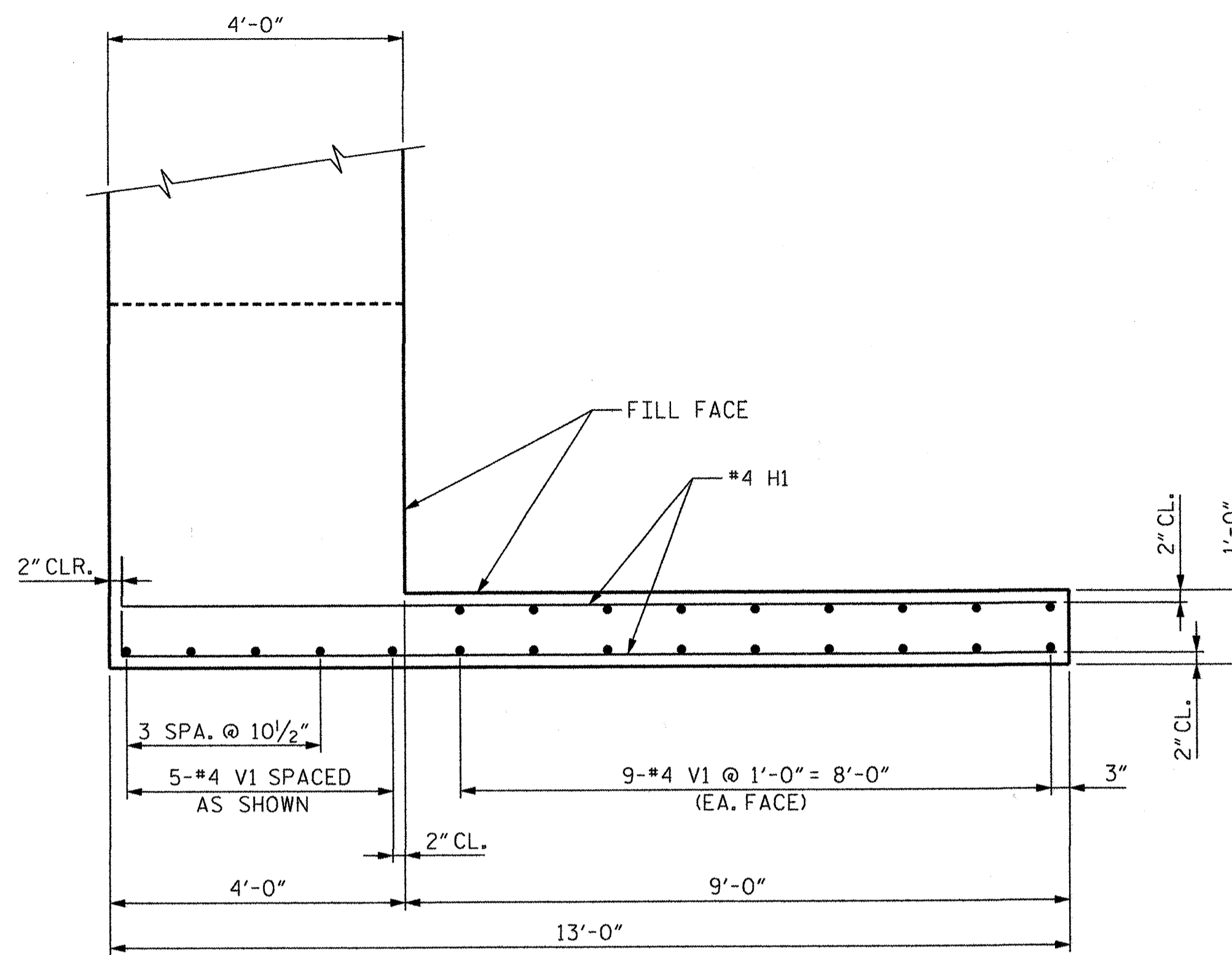
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 107-A MICA AVENUE
 MORGANTON, NC 28655

REVISIONS						SHEET NO. S-29
NO.	BY	DATE	NO.	BY	DATE	
1			3			TOTAL SHEETS 36
2			4			

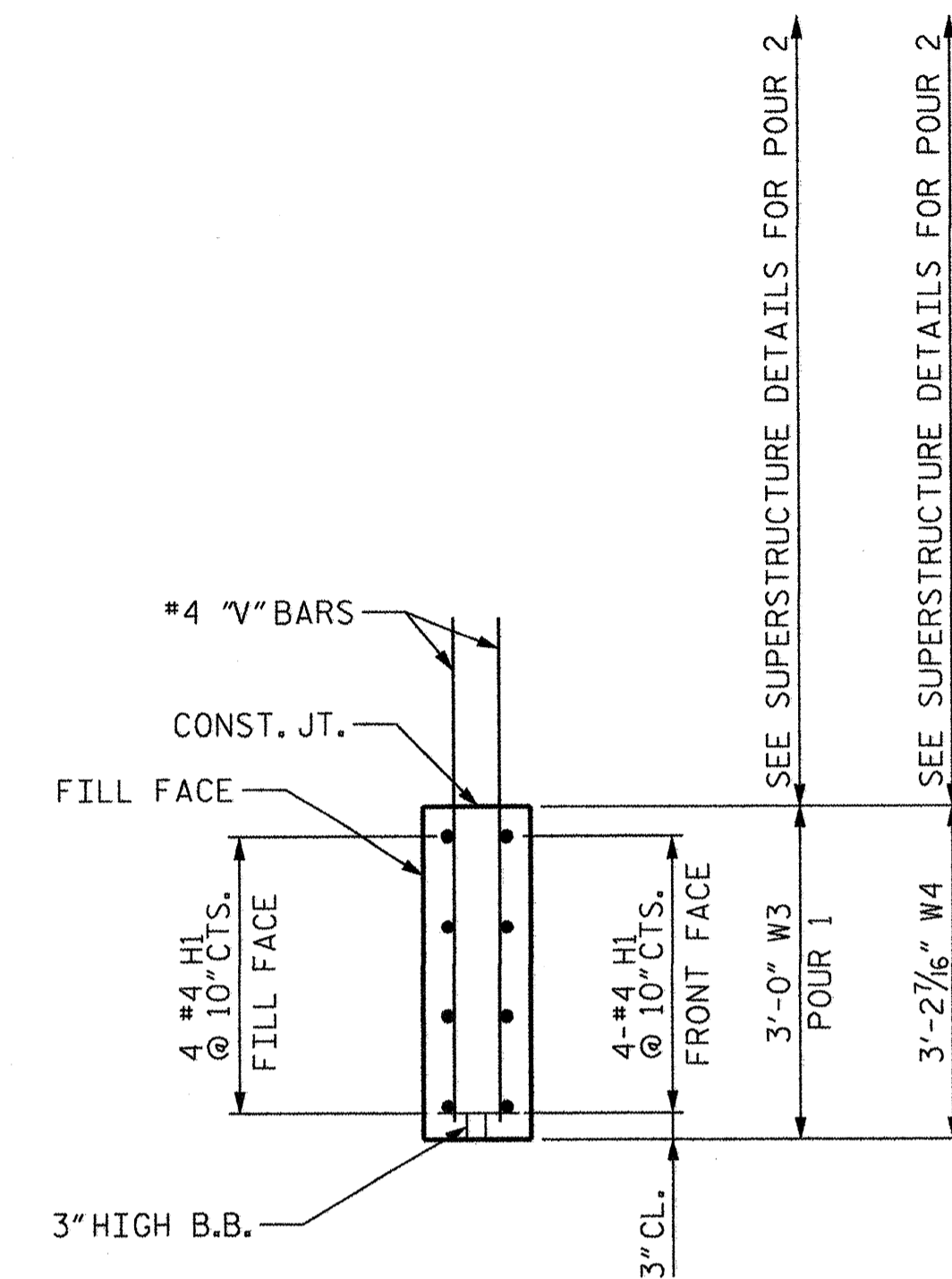
DRAWN BY: NMW DATE: 5/11
 CHECKED BY: JLA DATE: 5/11



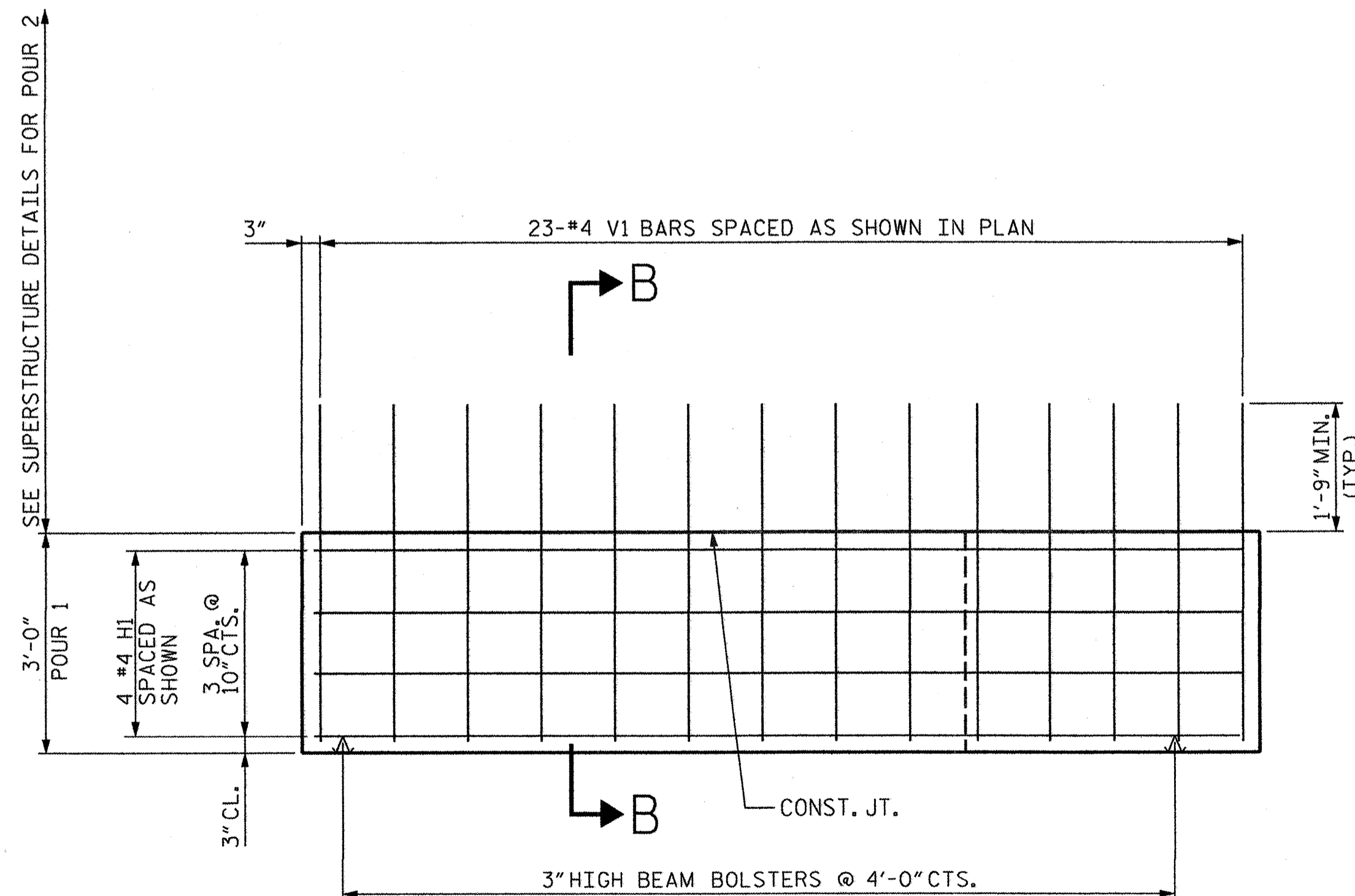
PLAN - WING W3



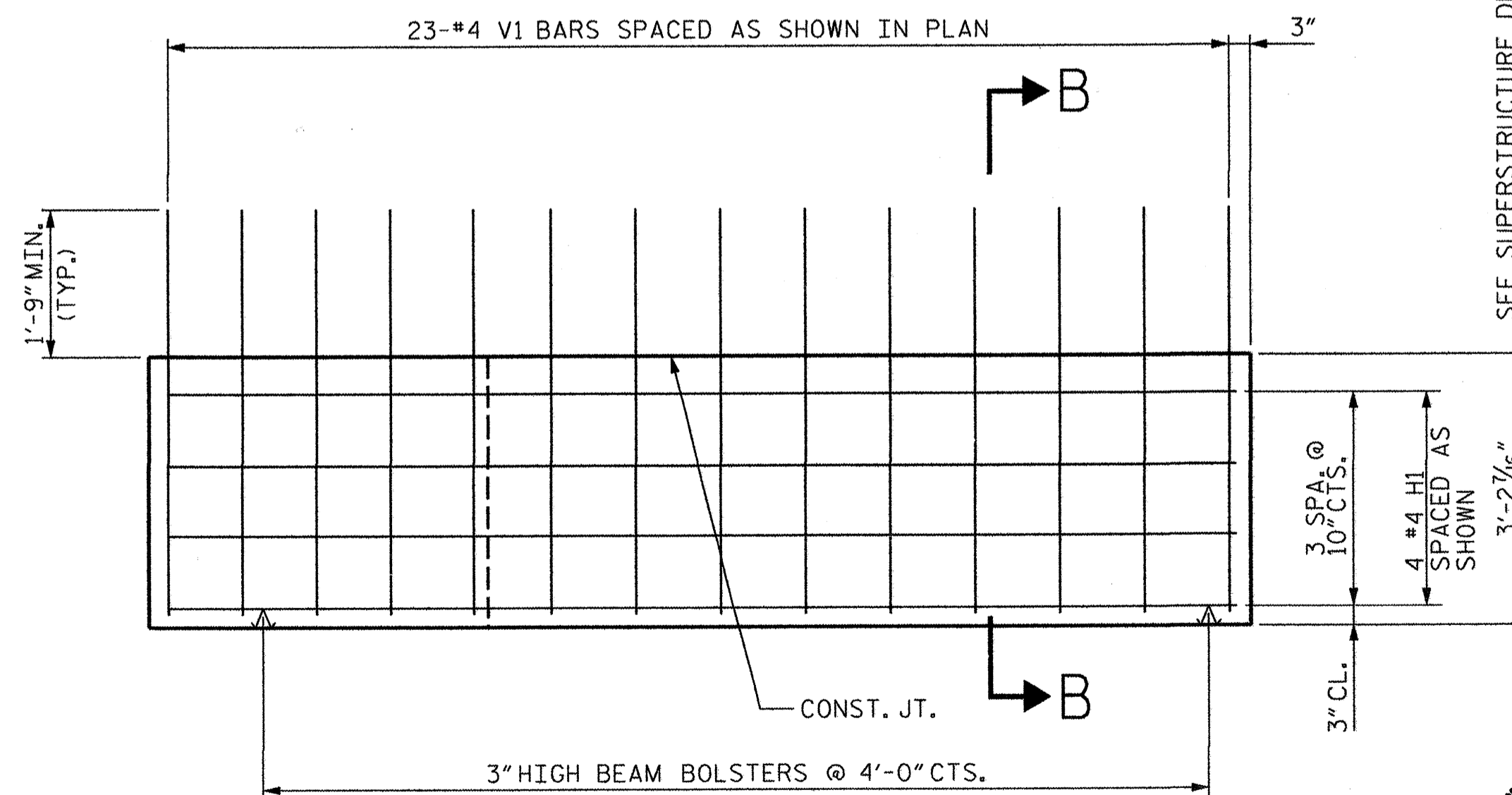
PLAN - WING W4



SECTION B-B



ELEVATION - W3



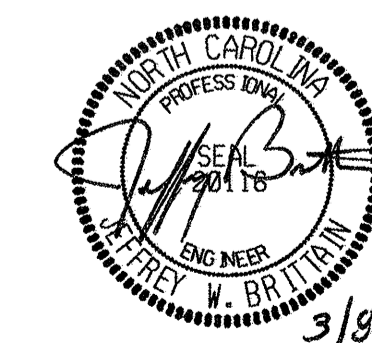
ELEVATION - W4

PROJECT NO. B-4861
 COUNTY: ANSON
 STATION: P.O.T. 12 + 66.441-L- =
 P.O.C. 11 + 48.124 -RR-

SHEET 2 OF 3

CITY OF ANSONVILLE, NC

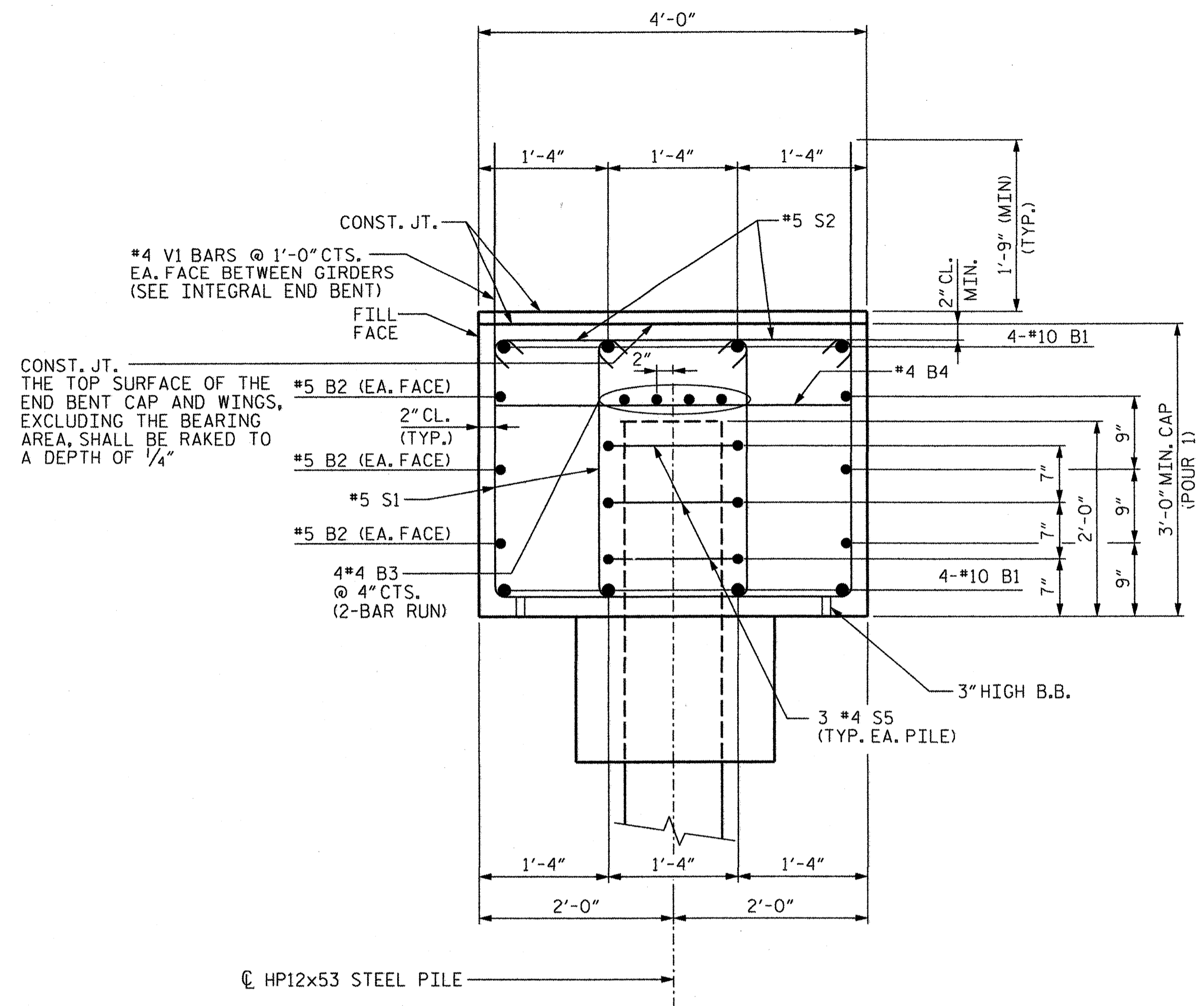
INTERGAL
 END BENT 2



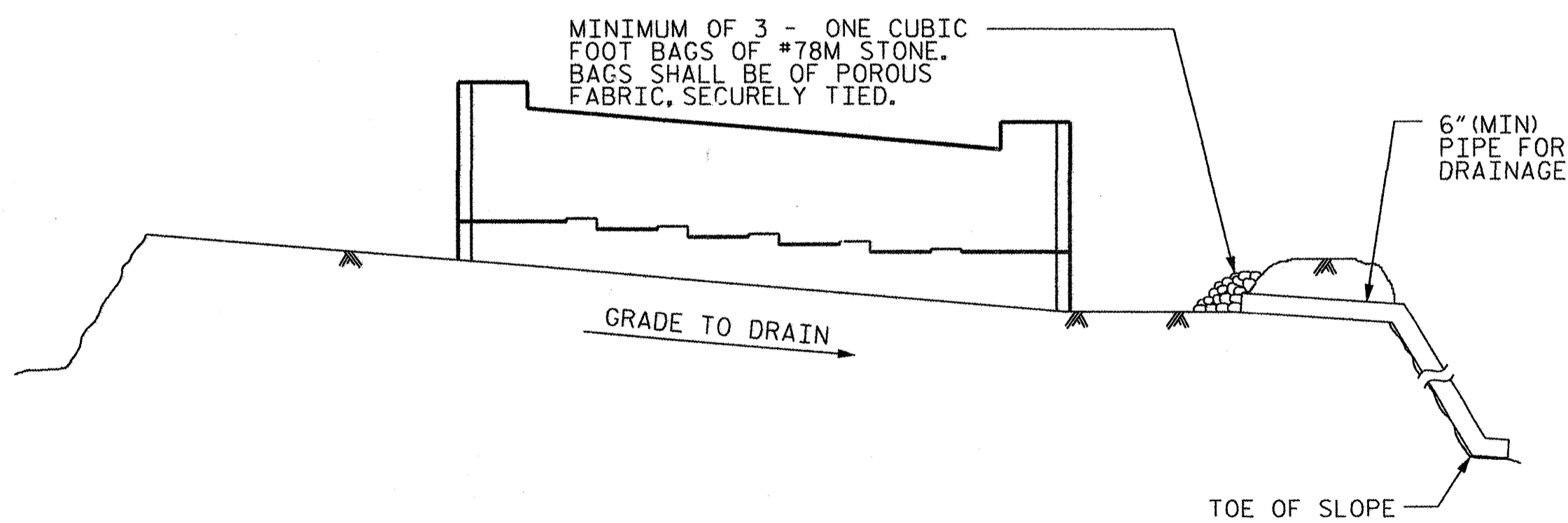
PREPARED BY
 TCS ENGINEERS
 107-A MICA AVENUE
 MORGANTON, NC 28655

DRAWN BY: NMW DATE: 5/11
 CHECKED BY: JLA DATE: 5/11

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-30
1			3			TOTAL SHEETS
2			4			36



SECTION A-A



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.

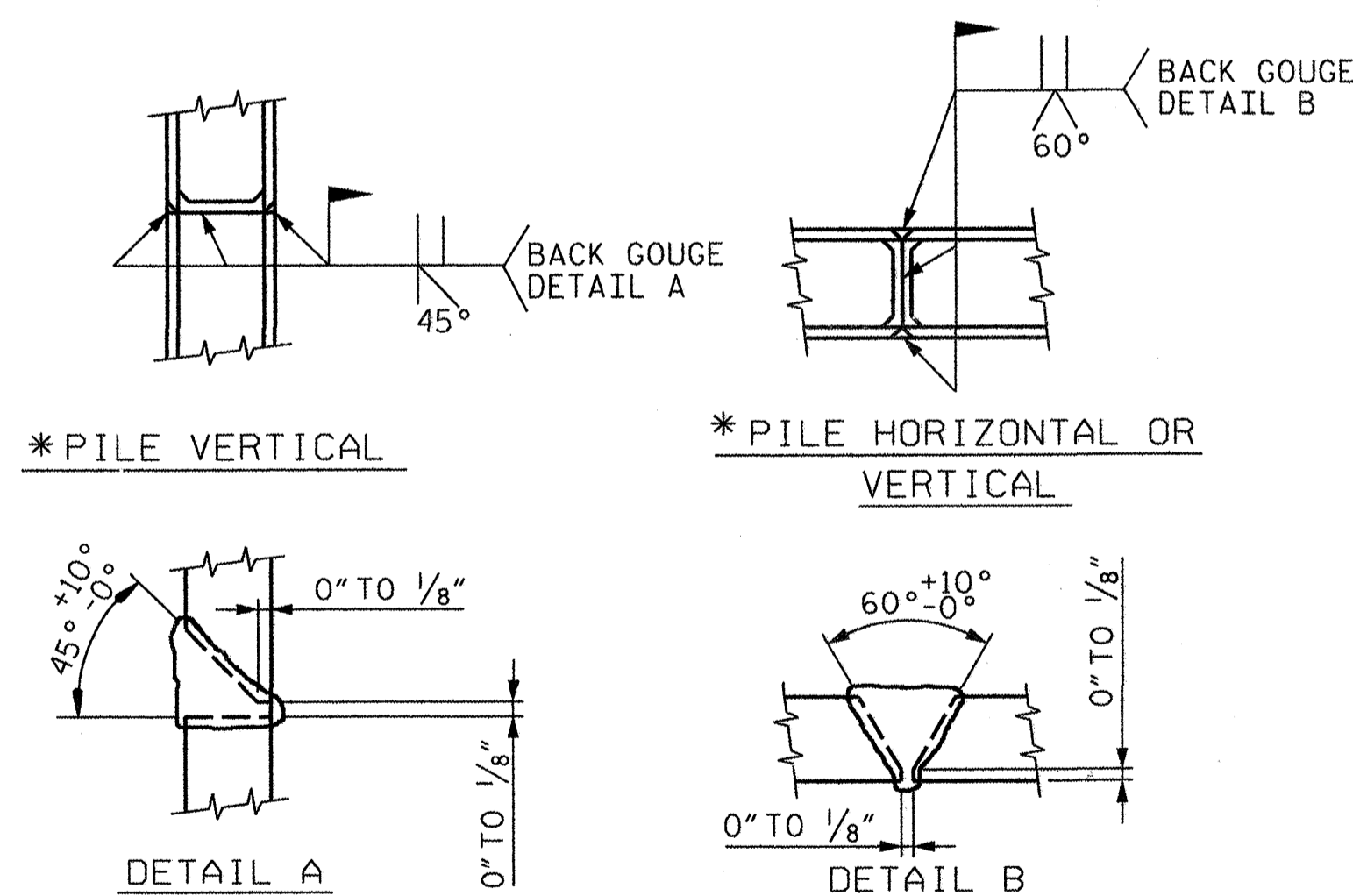
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVE AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

TEMPORARY DRAINAGE AT END BENT

DRAWN BY: NMW DATE: 5/11
 CHECKED BY: JLA DATE: 5/11

BAR TYPES						BILL OF MATERIAL					
BAR DIMENSIONS ARE OUT TO OUT.						END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
						B1	8	#10	1	50'-1"	1,724
						B2	6	#5	STR.	47'-3"	296
						B3	8	#4	STR.	24'-10"	133
						B4	12	#4	STR.	3'-8"	29
						H1	16	#4	2	13'-4"	143
						S1	140	#5	3	8'-11"	1,302
						S2	140	#5	4	3'-8"	535
						S3	40	#4	5	6'-8"	178
						S4	40	#4	5	6'-5"	171
						S5	21	#4	6	6'-6"	91
						V1	102	#4	STR.	4'-10"	329
										REINFORCING STEEL - LBS.	4,931
										CLASS A CONCRETE	
										POUR 1 (CAP & WINGS)	26.0 C.Y.
										TOTAL	26.0 C.Y.



* POSITION OF PILE DURING WELDING

PILE SPLICE DETAILS

PROJECT NO. B-4861
 COUNTY: ANSON
 STATION: P.O.T. 12 + 66.441-L- =
 P.O.C. 11 + 48.124 -RR-

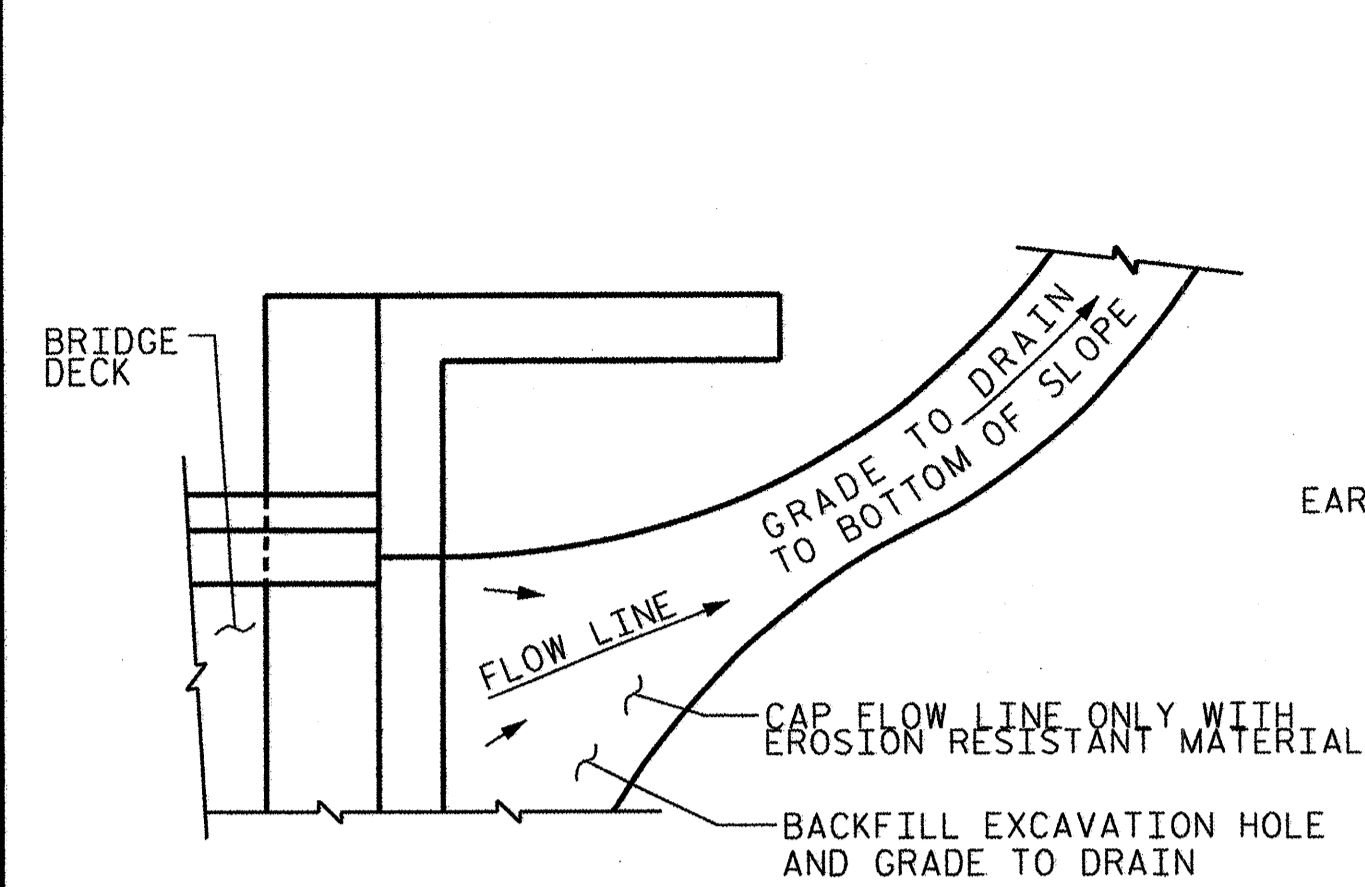
SHEET 3 OF 3



CITY OF ANSONVILLE, NC

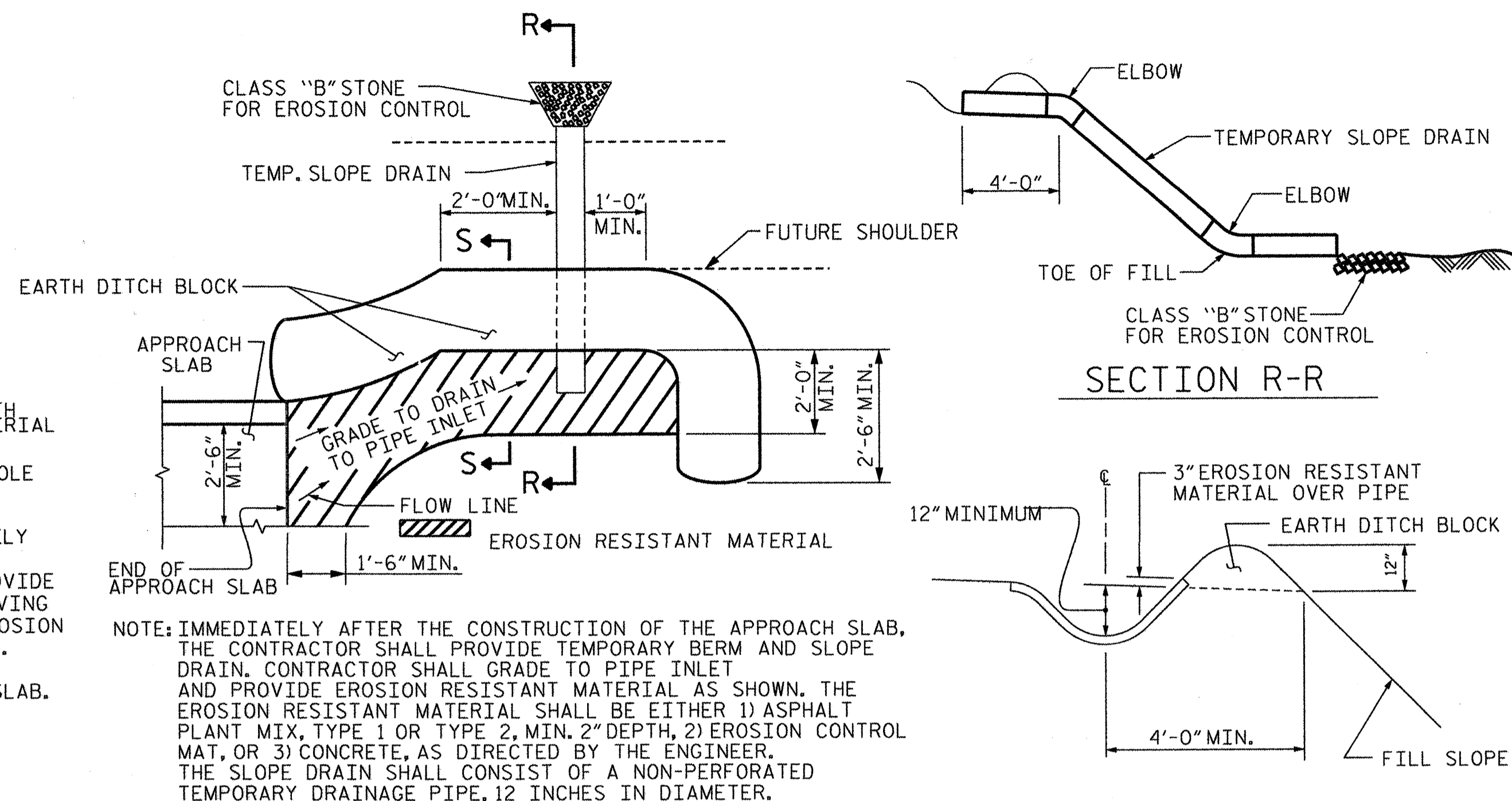
INTEGRAL END BENT 2

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-31
1			3			TOTAL SHEETS
2			4			36



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



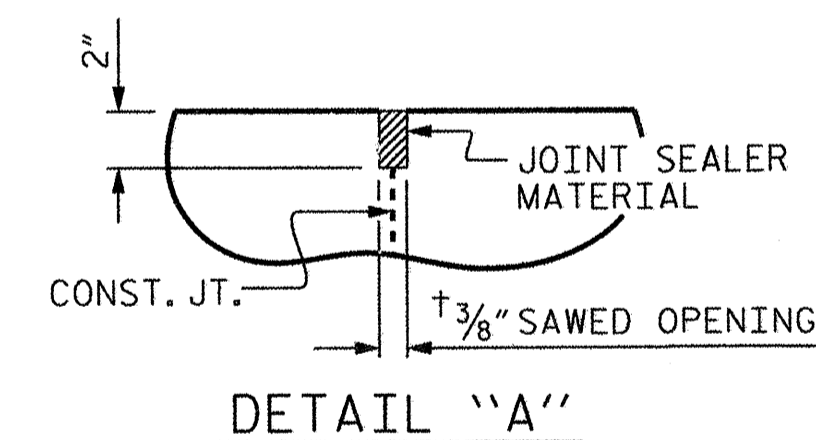
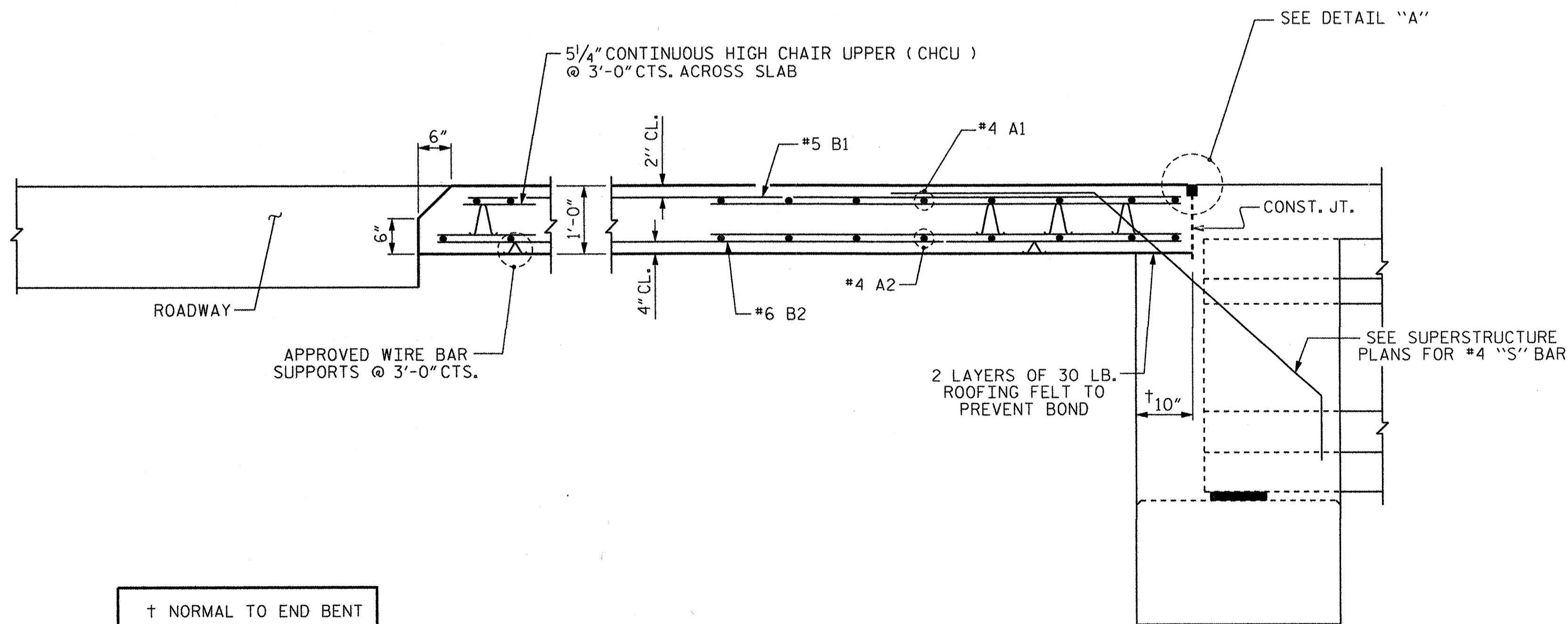
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW

SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



DETAIL "A"

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

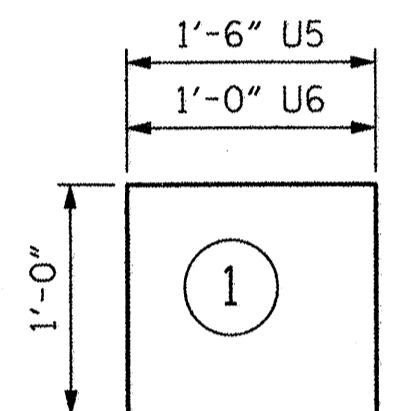
FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	26	#4	STR	20'-4"	353
A2	26	#4	STR	20'-3"	352
* B1	78	#5	STR	11'-3"	915
B2	78	#6	STR	11'-8"	1,367
* B3	8	#4	STR	11'-8"	53
* G1	24	#4	STR	5'-0"	80
* U5	8	#4	3	3'-6"	19

REINFORCING STEEL	1,719 LBS.
* EPOXY COATED REINFORCING STEEL	1,429 LBS.

CLASS AA CONCRETE	
POUR #1 - SLAB	17.2 C. Y.
POUR #2 - SIDEWALK	2.7 C. Y.
TOTAL	19.9 C. Y.

BAR TYPES

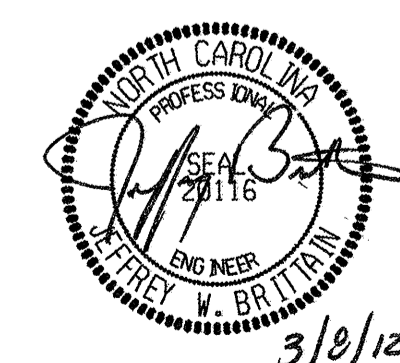


ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. B-4861
ANSON COUNTY
 STATION: P.O.T. I2+66.441-L - =
P.O.C. II+48.I24-RR-

SHEET 1 OF 2

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



3/8/12

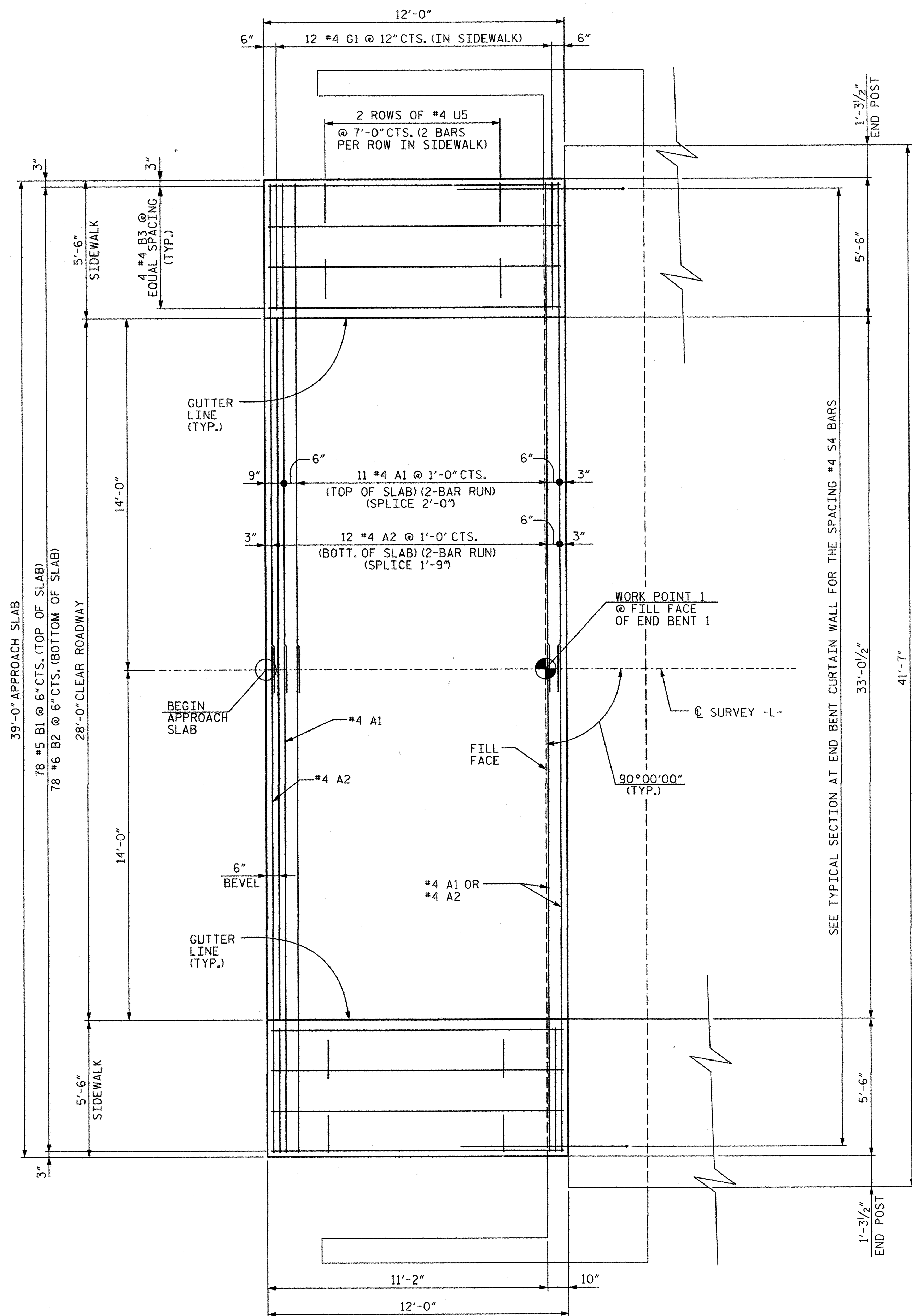
ASSEMBLED BY : JLA	DATE : 4/11
CHECKED BY : NMW	DATE : 6/11
DRAWN BY : TLA 10/05	ADDED 5/1/06R KMM/GM
CHECKED BY : GM 5/06	

SECTION THRU SLAB

PREPARED BY
 TGS ENGINEERS
 107-A MICA AVENUE
 MORGANTON, NC 28655

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-32
1			3			TOTAL SHEETS
2			4			36

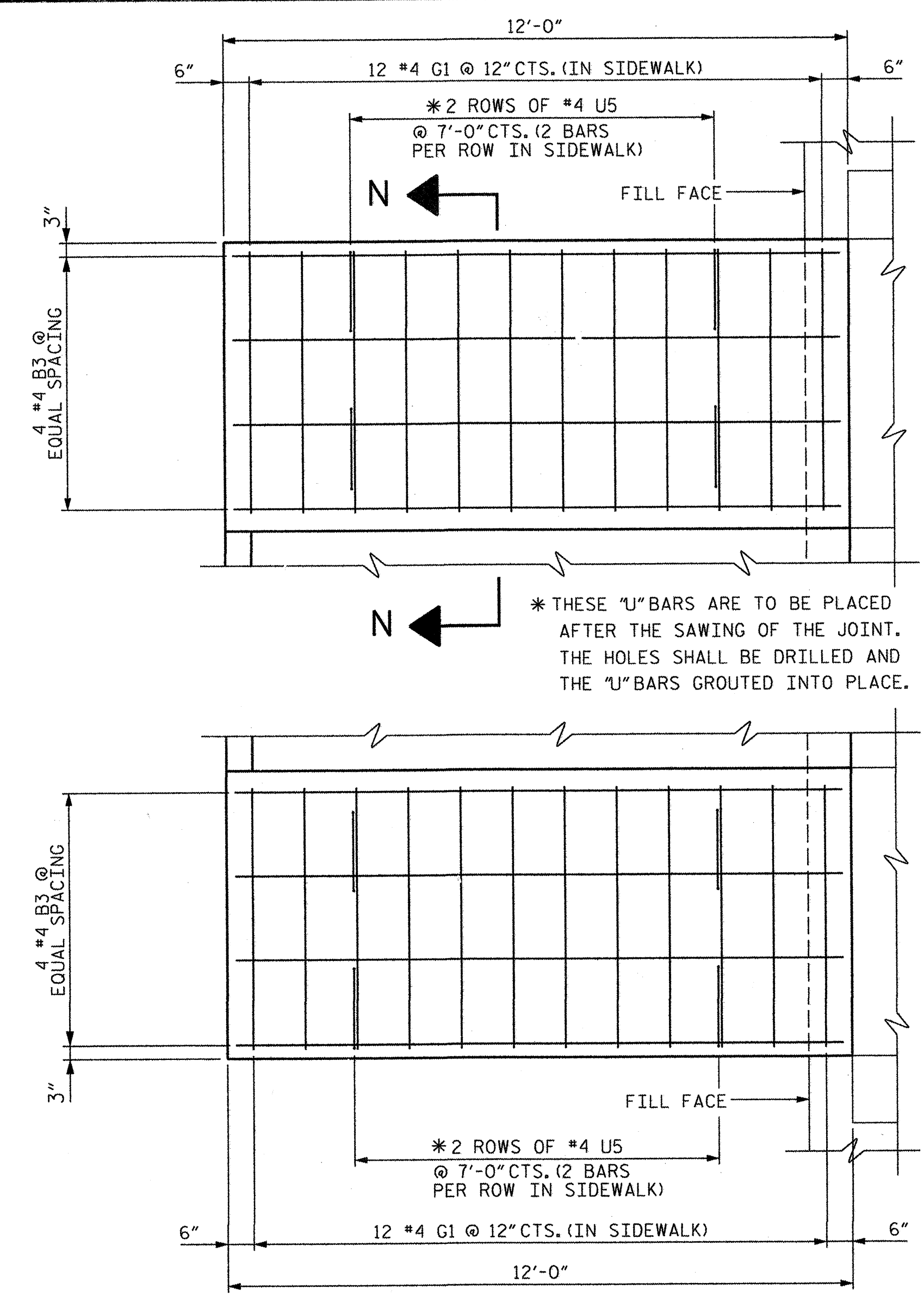
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 *****SYTIME*****



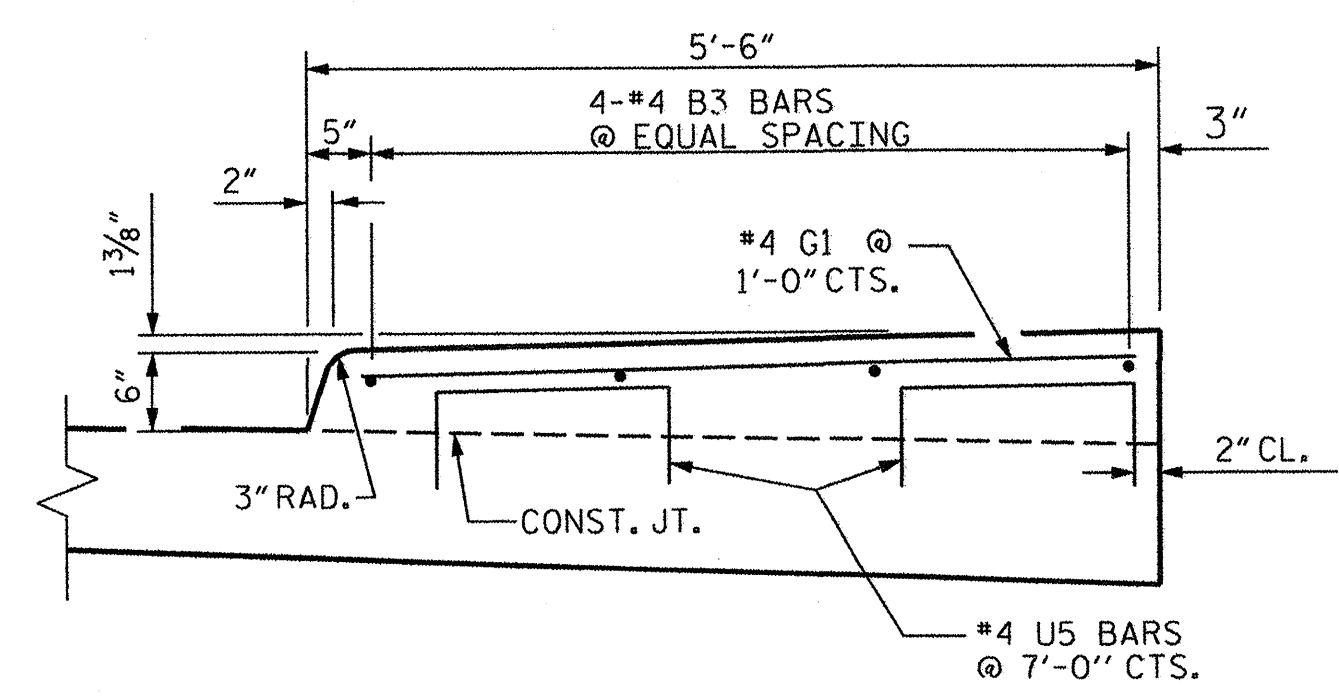
PLAN OF APPROACH SLAB

BEGIN APPROACH SLAB SHOWN, END APPROACH SLAB SIMILAR

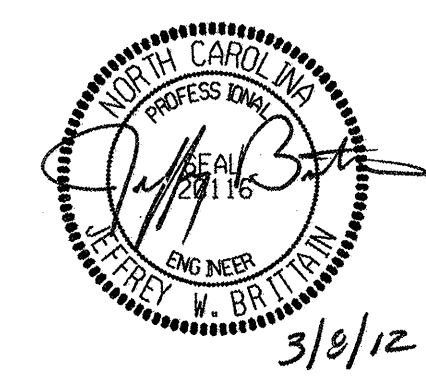
DRAWN BY : JLA DATE : 4/11
 CHECKED BY : NMW DATE : 6/11



PLAN
 DETAILS OF SIDEWALK ON APPROACH SLAB



SECTION N-N
 SIDEWALK DETAILS



PROJECT NO. B-4861
 ANSON COUNTY
 STATION: P.O.T. 12+66.441-L- =
 P.O.C. 11+48.124-RR-
 SHEET 2 OF 2

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

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33	
1			3			TOTAL SHEETS	
2			4			36	

PREPARED BY
 TGS ENGINEERS
 107-A MICA AVENUE
 MORGANTON, NC 28655

NOTES:

SUBMIT COMPLETE WORKING DRAWINGS/SHOP PLANS, ERECTION PLANS AND DESIGN CALCULATIONS FOR REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO BEGINNING THE MSE WALL. INCLUDE THE FOLLOWING IN THE PLANS SUBMITTED FOR REVIEW: PLAN VIEW, ELEVATION VIEWS, TYPICAL SECTIONS, LEVELING PAD STEP DETAIL, PANEL DETAILS AND OBSTRUCTION AVOIDANCE DETAILS (IF APPLICABLE). SEE THE SPECIAL PROVISIONS.

DESIGN THE MSE WALL TO MEET ALL THE CRITERIA OF THE LATEST VERSION OF AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.

ANALYZE THE STABILITY OF THE WALL TO ENSURE THAT THE WALL FUNCTIONS AS INTENDED. THE WALL MUST BE STABLE FOR THE CONDITIONS AS NOTED AT THE FOUNDATION ELEVATION AND ANY ELEVATION ABOVE THE FOOTING.

USE A SERVICE LIFE OF 100 YEARS FOR THE MSE WALL DESIGN.

THE TOP OF THE WALL ELEVATION IS WHERE THE FINISHED GRADE BEHIND THE MSE WALL INTERSECTS THE BACK OF THE WALL.

USE PRE-CAST MSE WALL COPING. USE A MINIMUM OF 6" ABOVE FINISHED GRADE TO THE TOP OF THE COPING ELEVATION TO AVOID SPILL OVER.

A MINIMUM 2'-0" OF BERM IS REQUIRED IN FRONT OF THE WALL.

SHOW ELEVATION OF LEVELING PAD AND MAKE CONTINUOUS AT STEPS.

A MINIMUM PANEL EMBEDMENT OF 3'-9" BELOW THE GRADE LINE REQUIRED.

PROVIDE DRAINAGE AWAY FROM THE WALL AT THE TOP AND BOTTOM.

SHOW DETAILS IN THE PLANS FOR SKEWING REINFORCING STRIPS OR MATS AROUND THE PILES AT THE END BENTS. SHOW LAYOUT OF PILES AND END BENT CAP. SOIL REINFORCING MUST NOT BE IN CONTACT WITH THE PILES.

FINAL PLANS MUST BE ON REPRODUCIBLE SHEETS SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN NORTH CAROLINA.

PLANS, WORKING DRAWINGS AND CALCULATIONS MUST BE SUBMITTED BY THE MSE WALL FABRICATOR FOR REVIEW AND APPROVAL INCLUDING AN APPROPRIATE TURN AROUND TIME.

LIMITS OF SOIL REINFORCEMENT AND THE MANUFACTURED SAND TO BE DETERMINED BY THE WALL MANUFACTURER.

FOR MECHANICALLY STABILIZED EARTH (MSE) RETAINING WALLS, SEE MECHANICALLY STABILIZED EARTH RETAINING WALLS SPECIAL PROVISION.

DO NOT USE AN MSE WALL SYSTEM WITH SEGMENTAL RETAINING WALL UNITS FOR RETAINING WALLS 1 AND 2.

DO NOT USE STANDARD SIZE NO. 2S OR 2MS UNITS FOR RETAINING WALLS 1 AND 2.

BEFORE BEGINNING MSE WALL DESIGN FOR RETAINING WALL NO. 1 & 2, SURVEY ALL EXISTING GROUND ELEVATIONS SHOWN ON THE PLANS AND SUBMIT A REVISED WALL ENVELOPE FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THIS ENVELOPE IS ACCEPTED.

DESIGN RETAINING WALL NO. 1 & 2 FOR A WALL HEIGHT EQUAL TO THE DESIGN HEIGHT (DIFFERENCE BETWEEN GRADE ELEVATION AND BOTTOM OF WALL ELEVATION) PLUS EMBEDMENT (DIFFERENCE BETWEEN BOTTOM OF WALL ELEVATION AND TOP OF LEVELING PAD ELEVATION).

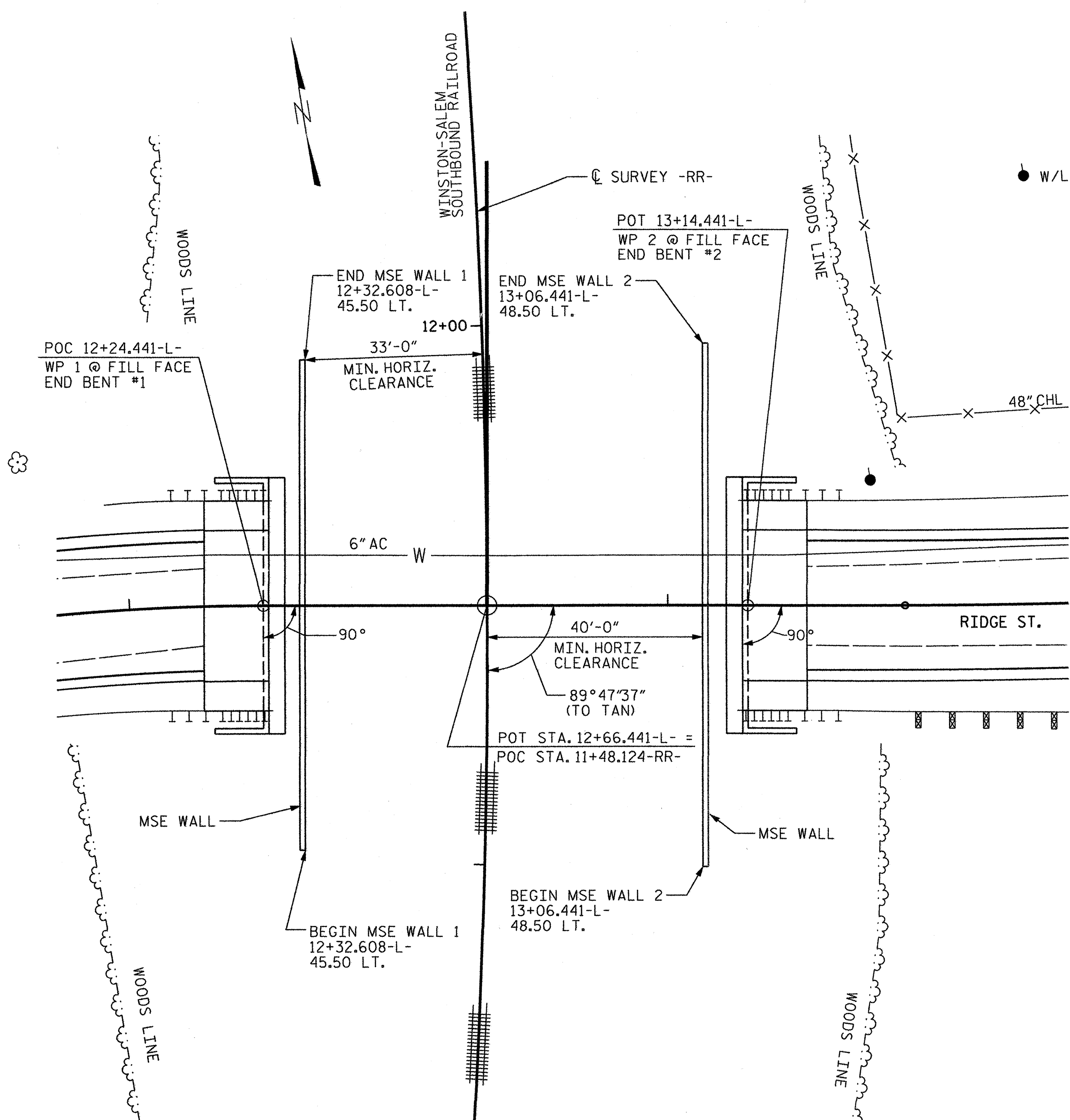
PAYMENT FOR THE SLOPE PROTECTION BETWEEN THE INTEGRAL END BENT CAP AND THE MSE WALL COPING SHALL BE INCLUDED IN THE PRICE OF THE MSE WALL.

THE MINIMUM EMBEDMENT ELEVATION FOR RETAINING WALL NO. 1 AND 2 INCLUDES EMBEDMENT FOR SCOUR.

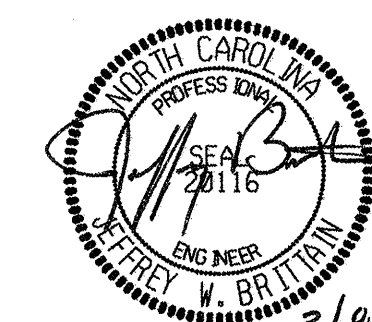
EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, GUARDRAIL POSTS, PAVEMENTS, PIPES, INLETS OR UTILITIES MAY INTERFERE WITH REINFORCEMENT FOR RETAINING WALL 1 AND 2

DO NOT PLACE LEVELING PAD CONCRETE, WALL BACKFILL OR FIRST REINFORCEMENT LAYER FOR RETAINING WALL NO. 1 AND 2 UNTIL OBTAINING APPROVAL FOR THE EXCAVATION DEPTH AND FOUNDATION MATERIAL.

THE MSE WALL DESIGNER'S ATTENTION IS CALLED TO THE FACT THAT, DUE TO THE INTEGRAL ABUTMENT, THE MSE WALL WILL NEED TO BE DESIGNED FOR 1/2" MOVEMENT OF THE PILES AT THE TOP OF THE DUE TO THERMAL FORCES.



DRAWN BY: RTJ DATE: 10/10
 CHECKED BY: JLA DATE: 10/10



PREPARED BY
 TDS ENGINEERS
 107-A MICA AVENUE
 MORGANTON, NC 28655

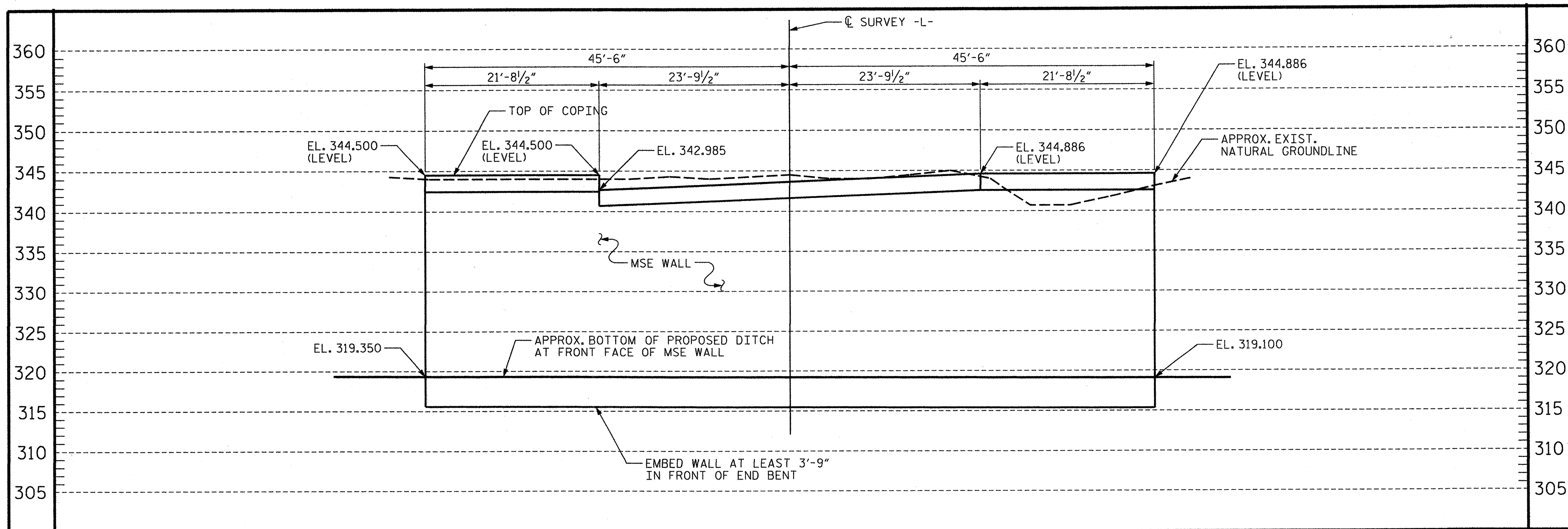
PROJECT NO. B-4861
 COUNTY: ANSON
 STATION: P.O.T. 12+66.441-L- =
 P.O.C. 11+48.124-RR-

SHEET 1 OF 3

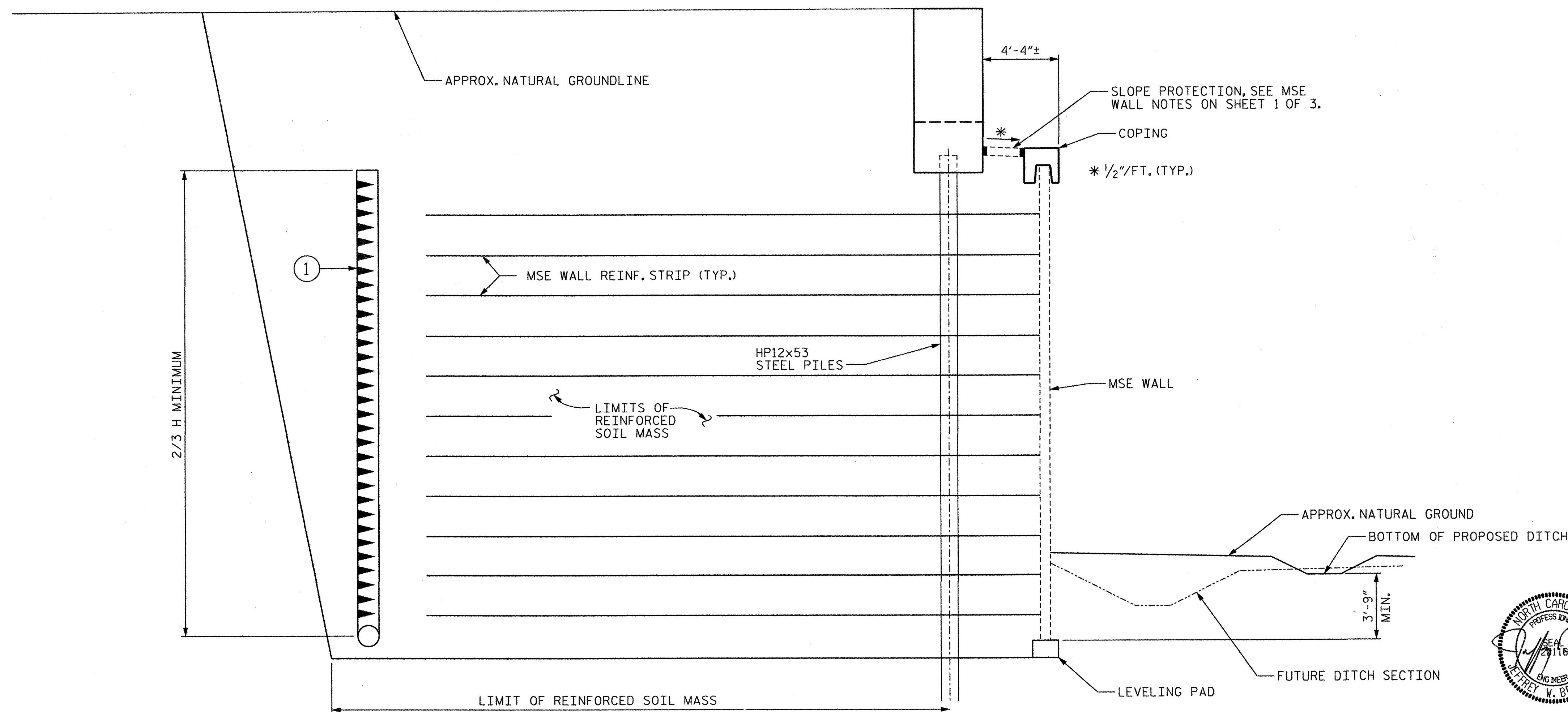
CITY OF ANSONVILLE, NC

MSE WALL
 PLAN

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-34
1			3			TOTAL SHEETS
2			4			36



LOOKING DOWNSTATION (-L-) @ FRONT FACE OF MSE WALL @ END BENT 1



SECTION THRU MSE WALL @ END BENT 1

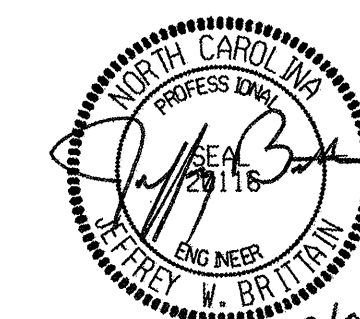
① AMERICAN WICK DRAIN - INTERCEPTOR DRAIN OR APPROVED EQUIVALENT

PROJECT NO. B-4861
 COUNTY: ANSON
 STATION: P.O.T. 12 + 66.441-L- =
 P.O.C. 11 + 48.124-RR-

SHEET 2 OF 3

CITY OF ANSONVILLE, NC

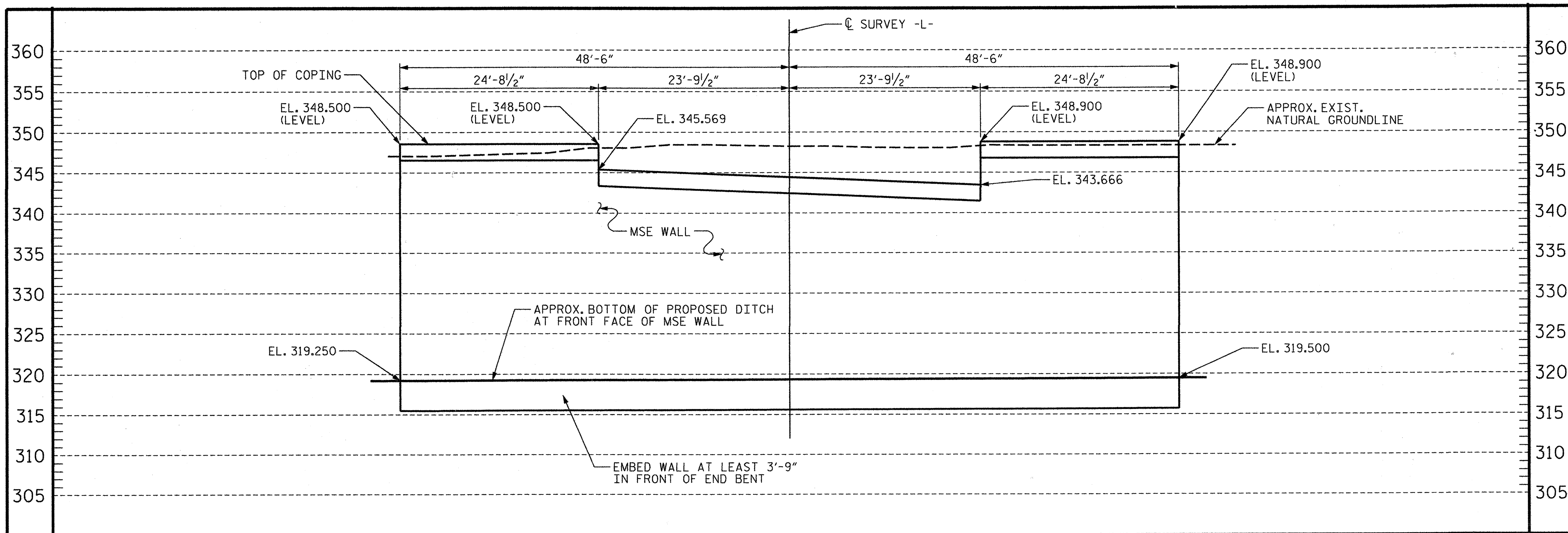
MSE WALL
 DETAILS AT
 END BENT 1



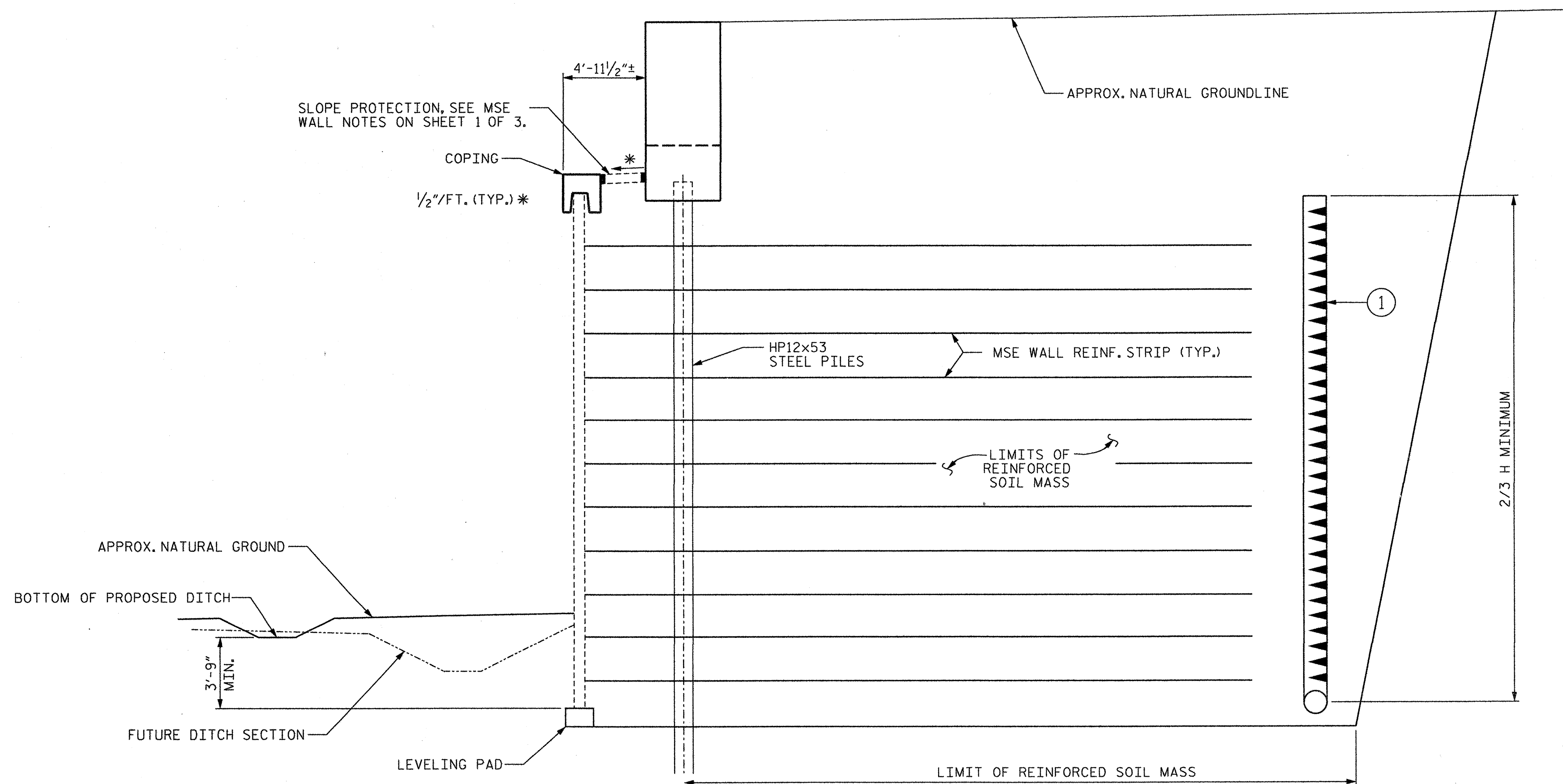
PREPARED BY
 TGS ENGINEERS
 107-A WICA AVENUE
 MORGANTON, NC 28655

DRAWN BY: RTJ DATE: 10/10
 CHECKED BY: JLA DATE: 10/10

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-35
1			3			TOTAL SHEETS 36
2			4			



LOOKING UPSTATION (-L-) @ FRONT FACE OF MSE WALL @ END BENT 2



SECTION THRU MSE WALL @ END BENT 2

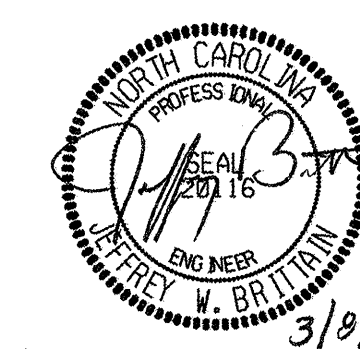
① AMERICAN WICK DRAIN - INTERCEPTOR DRAIN OR APPROVED EQUIVALENT

PROJECT NO. B-4861
 COUNTY: ANSON
 STATION: P.O.T. 12+66.441-L- =
 P.O.C. 11+48.124-RR-

SHEET 3 OF 3

CITY OF ANSONVILLE, NC

MSE WALL
 DETAILS AT
 END BENT 2



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 MORGANTON, NC 28655

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

DRAWN BY: RTJ DATE: 10/10
 CHECKED BY: JLA DATE: 10/10

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. 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

STD. NO. SN