

0077DEL_P10a4

TIP PROJECT: P-5208D

CONTRACT: C203146

Justin
1/24/2013 9:52:33 AM
Filename: Y:\Projects\NCDOT\P-5208D\DISCIPLINE\Structures\Drawings\Final\P5208D_L_rdy_tsh.dgn

STATE OF NORTH CAROLINA
NCDOT RAIL DIVISION

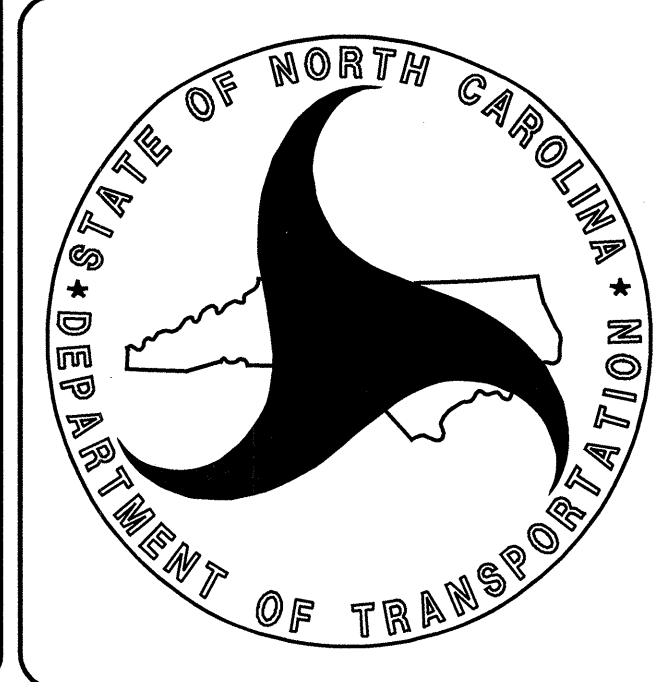
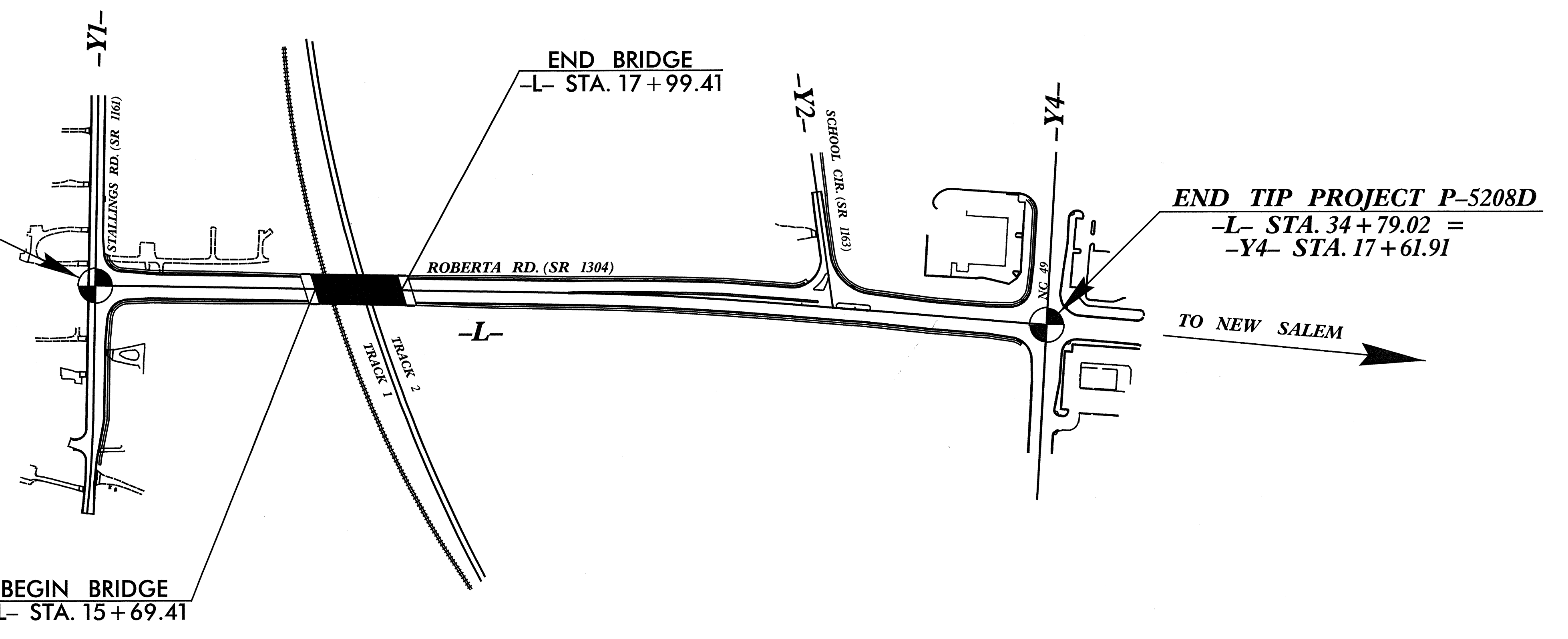
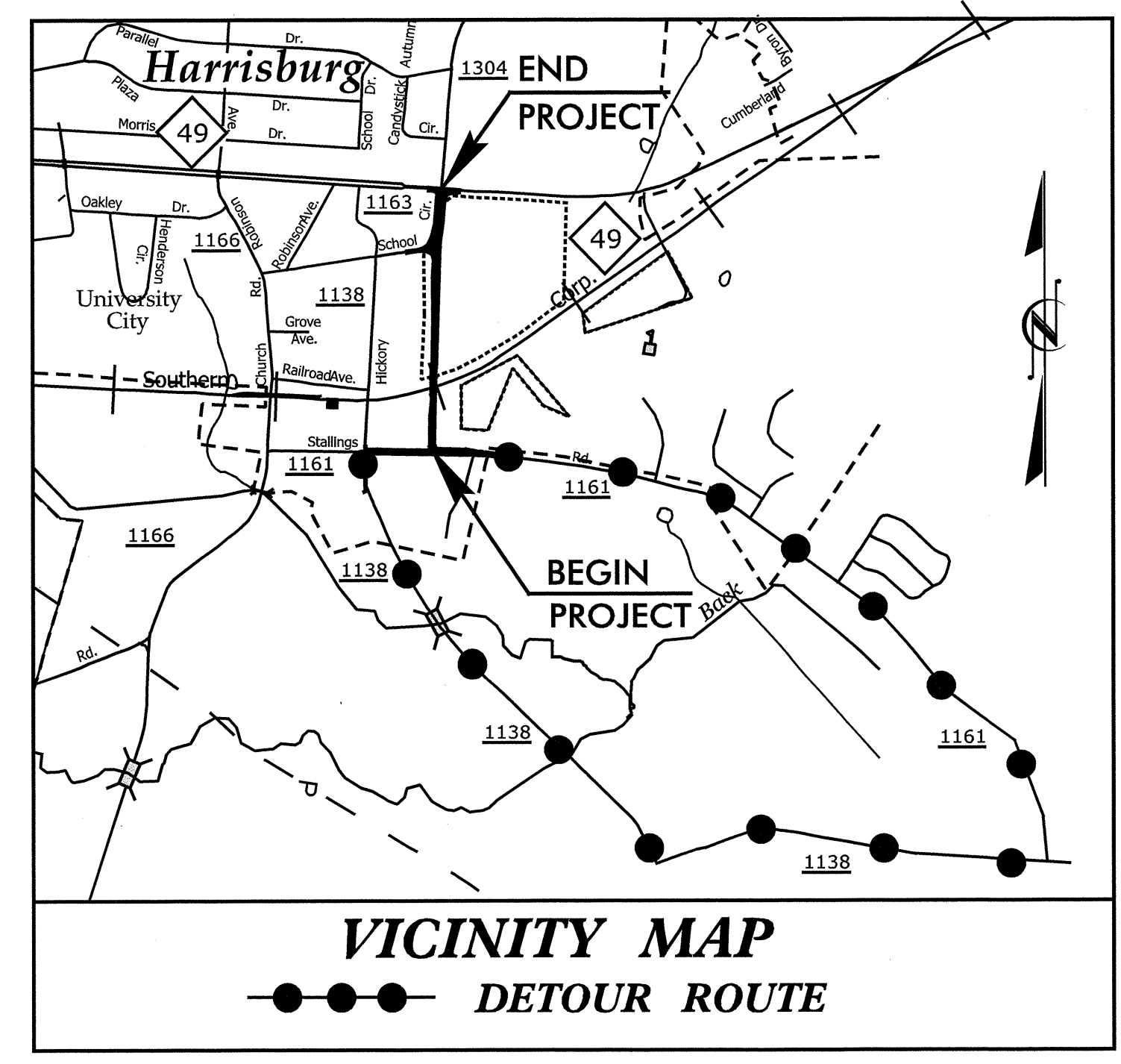


STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	P-5208D	A	39
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
50000.1STR09T1B		P.E. UTILITIES P.E.	
50000.1STR10T3		P.E. UTILITIES P.E.	
43219.2STR09P6208		RIGHT OF WAY	
50000.3STR04T4E		UTIL. CONST.	
50000.3STR04T4E	FRA-FR-HSR-0006-10-01-00	CONSTRUCTION	

CABARRUS COUNTY

LOCATION: ROBERTA RD. EXTENSION OVER NS/NCRR FROM STALLINGS RD. (SR 1161) TO NC 49.

TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNING, SIGNALS AND STRUCTURES.



ADT 2010	=	0
ADT 2035	=	34,800
DHV	=	15 %
D	=	65 %
T	=	3 % *
V	=	40 MPH
*TTST 1% + DUAL 2%		

PROJECT LENGTH	
LENGTH ROADWAY TIP PROJECT P-5208D	= 0.426 MI
LENGTH STRUCTURE TIP PROJECT P-5208D	= 0.044 MI
TOTAL LENGTH OF TIP PROJECT P-5208D	= 0.470 MI

Prepared In the Office of:

Baker
Michael Baker Engineering, Inc.
8000 Regency Parkway,
Suite 600
Cary, NC 27518
NC License No. F-1084

2012 STANDARD SPECIFICATIONS

LETTING DATE:
APRIL 16, 2013

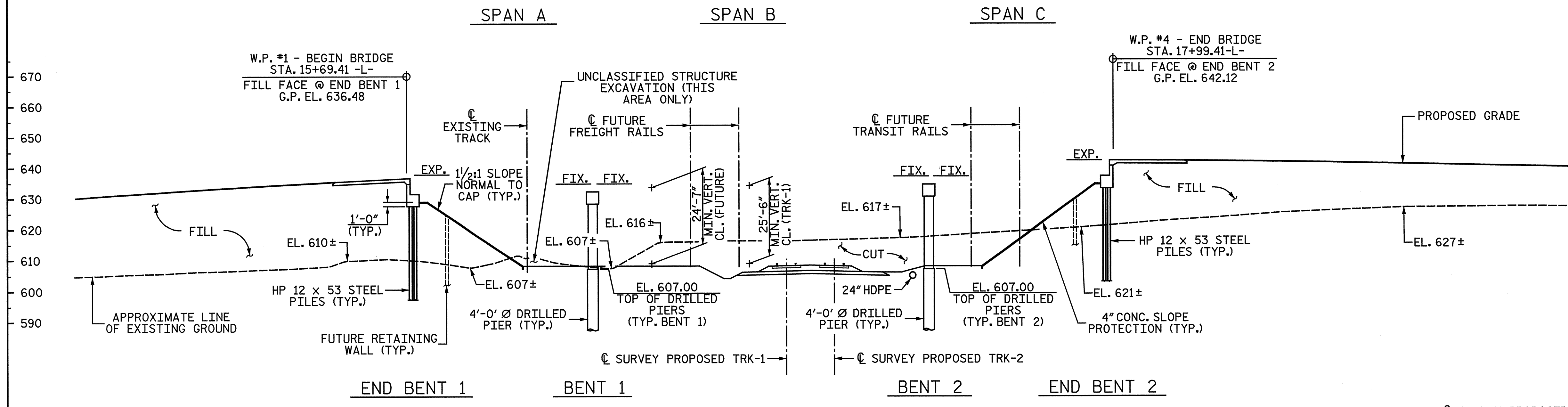
SEAL
033752
ENGINEER
SETH A. DENNIS
01/24/13

NC DEPARTMENT OF
TRANSPORTATION
RAIL DIVISION

ENGINEERING AND SAFETY BRANCH
CAPITAL YARD
106 MAIL SERVICE CENTER
RALEIGH, NC 27699-3146

+8.0000% Δ -3.3442%
PI STA. = 16+90.00
VC 507.000
ELEV. 648.11
-L- GRADE DATA

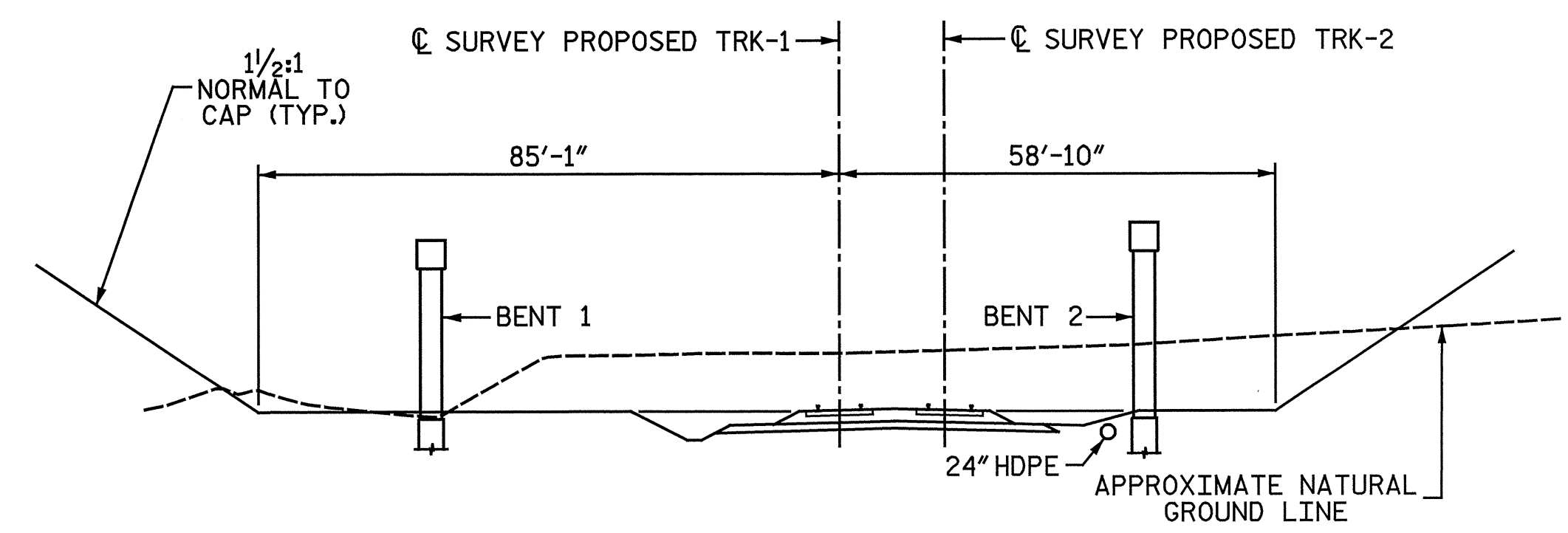
NOTE:
FOR GENERAL DRAWINGS NOTES, SEE "GENERAL DRAWING"
SHEET 3 OF 3.



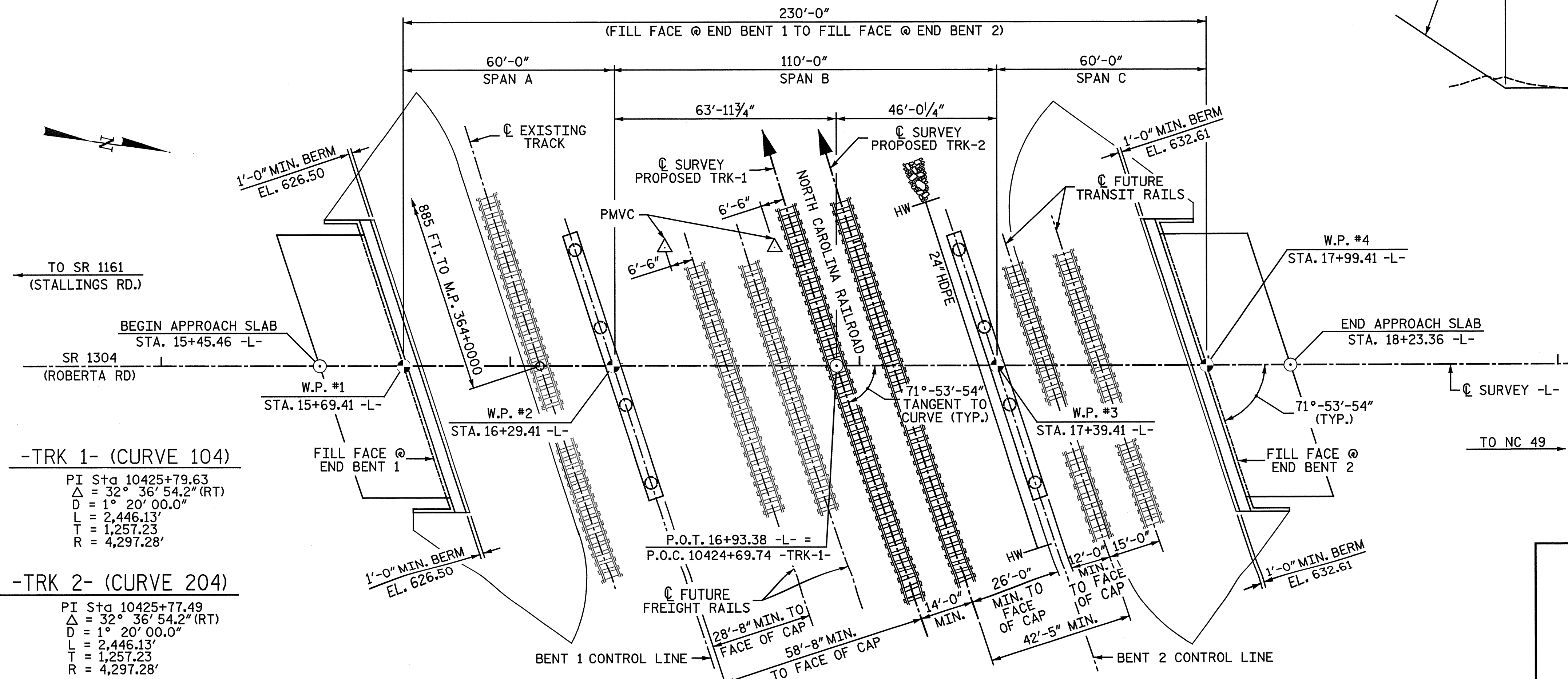
TOP OF RAIL ELEVATIONS - TRK-1

STATION ON TRK-1	ELEVATION
10423+80	608.63
10424+00	608.65
10424+20	608.69
10424+40	608.72
10424+60	608.77
10424+80	608.81
10425+00	608.87
10425+20	608.92
10425+40	608.99

SECTION ALONG SURVEY -L-
BENTS ON SECTION AT RIGHT ANGLES TO BENTS



SECTION THRU RAILROAD
LOOKING STATION AHEAD ALONG RAILROAD
SPAN LENGTHS BASED ON FUTURE RAILS ON THIS SECTION



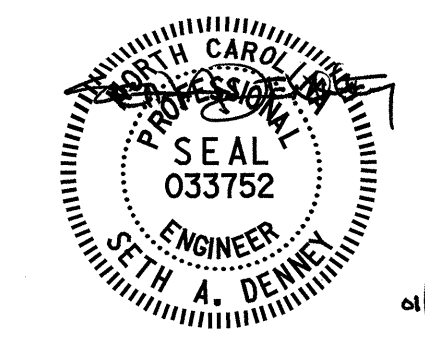
PLAN

-TRK 1- (CURVE 104)
PI Sta 10425+79.63
Δ = 32° 36' 54.2" (RT)
D = 1° 20' 00.0"
L = 2,446.13'
T = 1,257.23'
R = 4,297.28'

-TRK 2- (CURVE 204)
PI Sta 10425+77.49
Δ = 32° 36' 54.2" (RT)
D = 1° 20' 00.0"
L = 2,446.13'
T = 1,257.23'
R = 4,297.28'

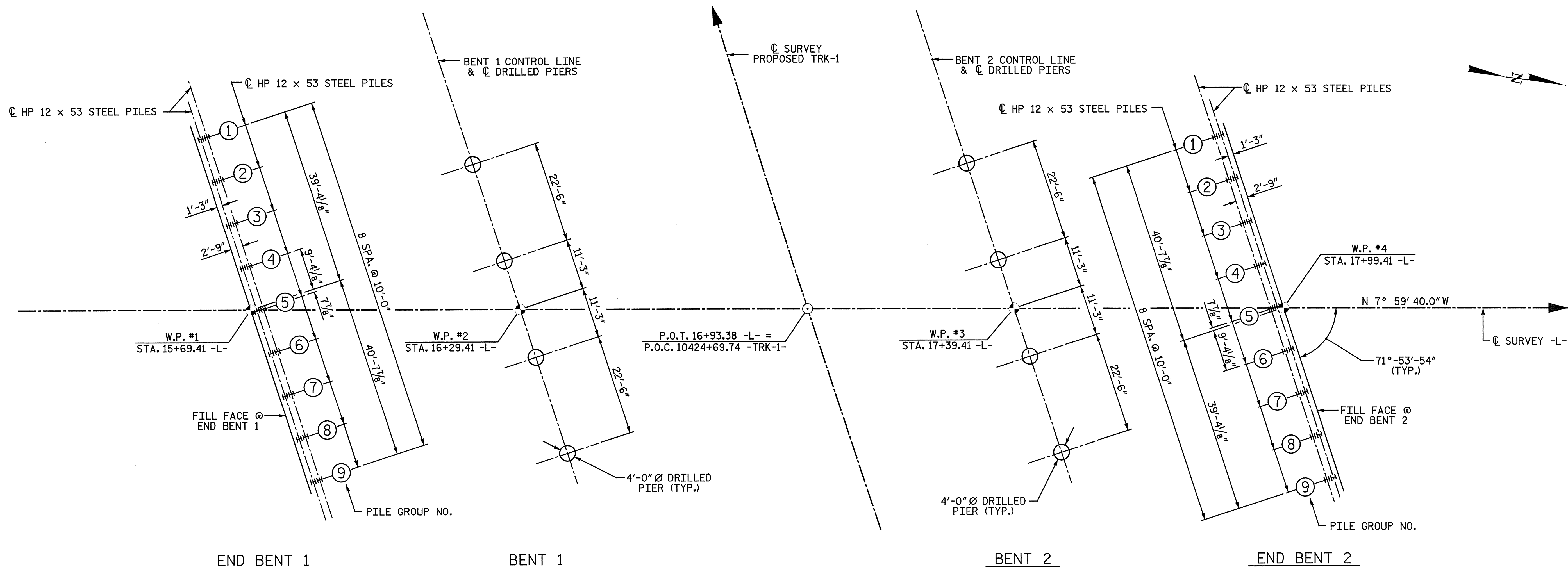
PROJECT NO. P-5208D
CABARRUS COUNTY
STATION: 16+93.38 -L-
10424+69.74 TRK-1
SHEET 1 OF 3 MILE POST 363+4395 BRIDGE NO. 398

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
FOR BRIDGE ON SR 1304
OVER NC/NS RAILROAD BETWEEN
SR 1161 AND NC 49



Baker
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 276518
NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS 39
2			4			



FOUNDATION LAYOUT
ALL BENTS ARE PARALLEL

NOTES:

PILES AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 65 TONS PER PILE. DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 108 TONS PER PILE. INSTALL PILES AT END BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN 593 FEET.

PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 65 TONS PER PILE. DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 108 TONS PER PILE. INSTALL PILES AT END BENT NO.2 TO A TIP ELEVATION NO HIGHER THAN 597 FEET.

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATION.

OBSERVE A ONE MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO THE BOTTOM OF CAP ELEVATION BEFORE BEGINNING END BENT 1 CONSTRUCTION AT END BENT 1.

OBSERVE A ONE MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO THE BOTTOM OF CAP ELEVATION BEFORE BEGINNING END BENT 2 CONSTRUCTION AT END BENT 2.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO.1. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO.2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

DRILLED PIERS AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 671 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30 TSF.

INSTALL DRILLED PIERS AT BENT NO.1 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 557.0 FT. AND SATISFY THE REQUIRED TIP RESISTANCE.

DRILLED PIERS AT BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 671 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 50 TSF.

INSTALL TWO DRILLED PIERS LEFT OF CENTER LINE (-L-) AT BENT NO.2 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 563.0 FT. AND SATISFY THE REQUIRED TIP RESISTANCE.

INSTALL TWO DRILLED PIERS RIGHT OF CENTER LINE (-L-) AT BENT NO.2 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 555.0 FT. AND SATISFY THE REQUIRED TIP RESISTANCE.

SID INSPECTIONS MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SID INSPECTIONS. FOR SID INSPECTION, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING.

FOR CROSSHOLE SONIC LOGGING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

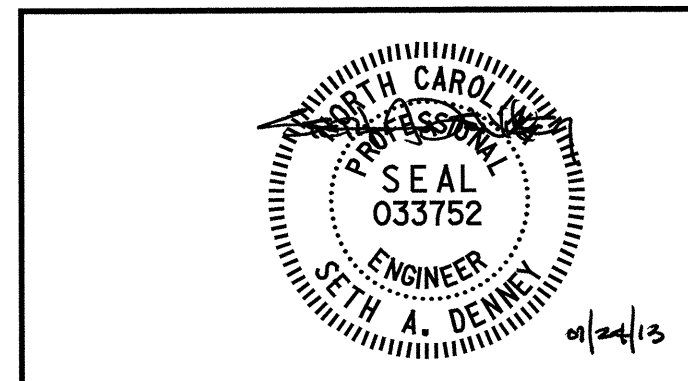
PROJECT NO. P-5208D
CABARRUS COUNTY
STATION: 16+93.38 -L-
10424+69.74 TRK-1

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1304
OVER NC/NS RAILROAD BETWEEN
SR 1161 AND NC 49



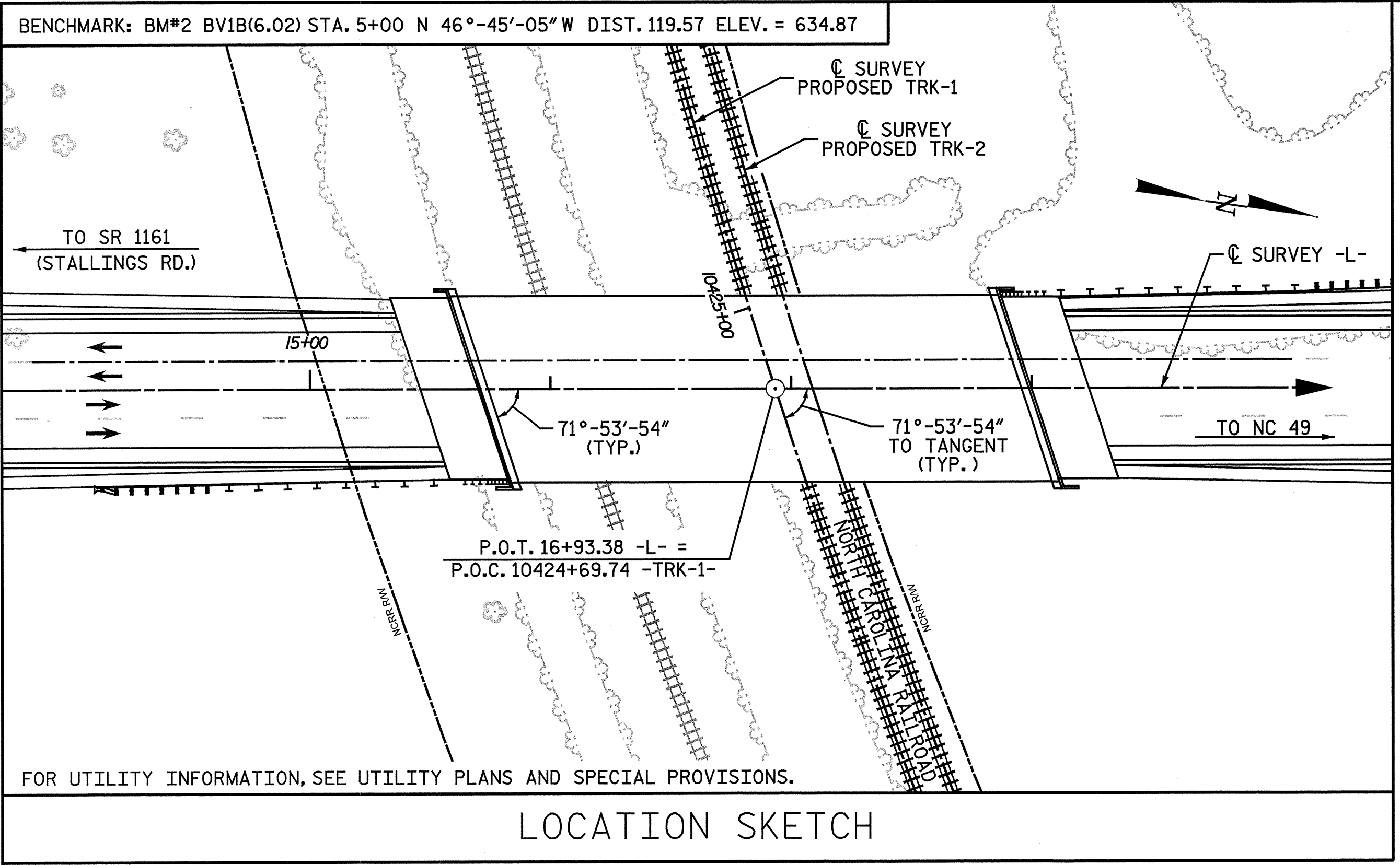
Baker
Michael Baker Engineering
8000 Regency Parkway, Suite 800
Cary, North Carolina 27518
NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			39

DRAWN BY : J. N. AUSTIN DATE : 10-29-12
CHECKED BY : A. L. PHILLIPS DATE : 10-30-12

DWG. 2 OF 39

I:\projects\1224\2013\1/24/2013 9:27:31 AM
 File name: Y:\Projects\NC001\VP-5208D\DISCIPLINE\Structures\DWGs\Final\VP-5208D_002_SD_FL.dgn



NOTES:

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- THE RAILROAD TRACK TOP OF RAIL ELEVATIONS 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 CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.
- THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.
- THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

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

TOTAL BILL OF MATERIAL

	4'-0" DIA. DRILLED PIERS	SID INSPECTIONS	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION @ STA. 16+93.38 -L-	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLAB	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS	HP 12 X 53 STEEL PILES		STEEL PILE POINTS	THREE BAR METAL RAIL	104" CHAIN LINK FENCE	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	FOAM JOINT SEALS	ELECTRICAL CONDUIT SYSTEM FOR SIGNALS	
	LIN. FT.	EA.	EA.	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	EA.	LIN. FT.	SQ. YDS.	LUMP SUM	LUMP SUM	LUMP SUM	
SUPERSTRUCTURE				LUMP SUM	17,667	16,835		LUMP SUM			27	2,023.5				439.60	434.26		LUMP SUM	LUMP SUM	LUMP SUM
END BENT 1							90.5		14,219			18	990	18			595				
BENT 1	200						94.7		30,901	7,155											
BENT 2	192						96.0		32,250	7,279											
END BENT 2							83.0		14,165			18	810	18			745				
TOTAL	392	1	1	LUMP SUM	17,667	16,835	364.2	LUMP SUM	91,535	14,434	27	2,023.5	36	1,800	36	439.60	434.26	1,340	LUMP SUM	LUMP SUM	LUMP SUM

PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-
10424+69.74 TRK-1
 SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING

FOR BRIDGE ON SR 1304
 OVER NC/NS RAILROAD BETWEEN
 SR 1161 AND NC 49

Baker

Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 276518
 NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS 39
2			4			

DRAWN BY: M.D.M. / J.N.A. DATE: 10-30-12
 CHECKED BY: A.L. PHILLIPS DATE: 11-5-12

DWG. 3 OF 39

Justin 1/24/2013 9:40:48 AM
 Filename: Y:\Projects\NCDDOT\Projects\5208D\DISCIPLINE\Structure\Drawings\Final\5208D_003_SD.L.S.dgn

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.02	--	1.75	0.82	1.19	B	EL	53.90	0.93	1.57	B	I	10.20	0.80	0.82	1.02	B	EL	53.90	1	
	HL-93 (OPERATING)	N/A		1.54	--	1.35	0.82	1.54	B	EL	53.90	0.93	2.21	B	I	10.20	N/A	--	--	--	--	--	1,2	
	HS-20 (INVENTORY)	36.000	②	1.45	52.20	1.75	0.82	1.70	B	EL	53.90	0.93	2.38	B	I	10.20	0.80	0.82	1.45	B	EL	53.90	1	
	HS-20 (OPERATING)	36.000		2.20	79.20	1.35	0.82	2.20	B	EL	53.90	0.93	3.15	B	I	10.20	N/A	--	--	--	--	--	1,2	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH		3.49	47.12	1.40	0.82	5.09	B	EL	53.90	0.93	8.24	B	I	10.20	0.80	0.82	3.49	B	EL	53.90	1	
		SNGARBS2	20.000		2.51	50.20	1.40	0.82	3.66	B	EL	53.90	0.93	5.70	B	I	10.20	0.80	0.82	2.51	B	EL	53.90	1
		SNAGRIS2	22.000		2.34	51.48	1.40	0.82	3.41	B	EL	53.90	0.93	5.24	B	I	10.20	0.80	0.82	2.34	B	EL	53.90	1
		SNCOTTS3	27.250		1.73	47.14	1.40	0.82	2.53	B	EL	53.90	0.93	3.95	B	I	10.20	0.80	0.82	1.73	B	EL	53.90	1
		SNAGGRS4	34.925		1.41	49.24	1.40	0.82	2.06	B	EL	53.90	0.93	3.02	B	I	10.20	0.80	0.82	1.41	B	EL	53.90	1
		SNS5A	35.550		1.38	49.06	1.40	0.82	2.02	B	EL	53.90	0.93	2.96	B	I	10.20	0.80	0.82	1.38	B	EL	53.90	1
		SNS6A	39.950		1.25	49.94	1.40	0.82	1.83	B	EL	53.90	0.93	2.72	B	I	10.20	0.80	0.82	1.25	B	EL	53.90	1
	SNSTB	42.000		1.19	49.98	1.40	0.82	1.74	B	EL	53.90	0.93	2.60	B	I	10.20	0.80	0.82	1.19	B	EL	53.90	1	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.53	50.49	1.40	0.82	2.23	B	EL	53.90	0.93	3.26	B	I	10.20	0.80	0.82	1.53	B	EL	53.90	1
		TNT4A	33.075		1.53	50.60	1.40	0.82	2.23	B	EL	53.90	0.93	3.40	B	I	10.20	0.80	0.82	1.53	B	EL	53.90	1
		TNT6A	41.600		1.24	51.58	1.40	0.82	1.81	B	EL	53.90	0.93	2.69	B	I	10.20	0.80	0.82	1.24	B	EL	53.90	1
		TNT7A	42.000		1.24	52.08	1.40	0.82	1.80	B	EL	53.90	0.93	2.64	B	I	10.20	0.80	0.82	1.24	B	EL	53.90	1
		TNT7B	42.000		1.26	52.92	1.40	0.82	1.84	B	EL	53.90	0.93	2.53	B	I	10.20	0.80	0.82	1.26	B	EL	53.90	1
		TNAGRIT4	43.000		1.21	52.03	1.40	0.82	1.77	B	EL	53.90	0.93	2.55	B	I	10.20	0.80	0.82	1.21	B	EL	53.90	1
TNAGT5A		45.000		1.15	51.75	1.40	0.82	1.68	B	EL	53.90	0.93	2.42	B	I	10.20	0.80	0.82	1.15	B	EL	53.90	1	
TNAGT5B	45.000		③	1.14	51.30	1.40	0.82	1.67	B	EL	53.90	0.93	2.44	B	I	10.20	0.80	0.82	1.14	B	EL	53.90	1	

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:

- ALL DISTANCES ARE MEASURED FROM THE CENTERLINE BEARING AT THE LEFT END OF SPAN.
- SERVICE III LIMIT STATE NOT APPLICABLE AT THE OPERATING LEVEL.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

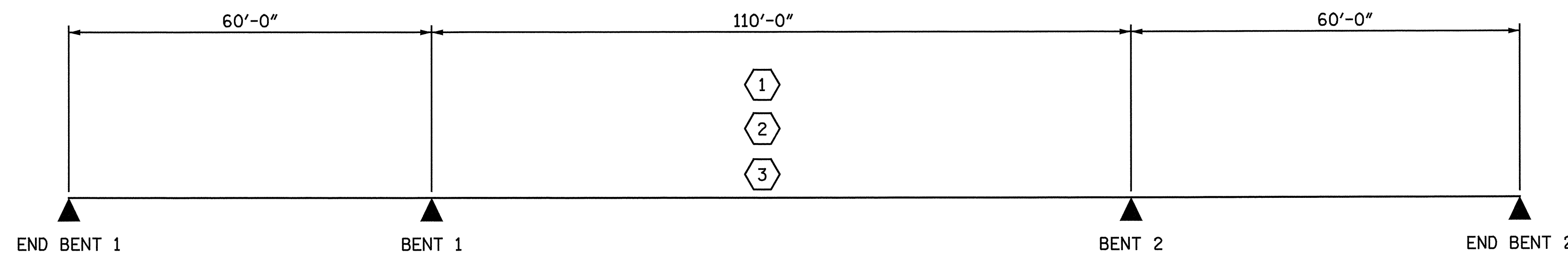
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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

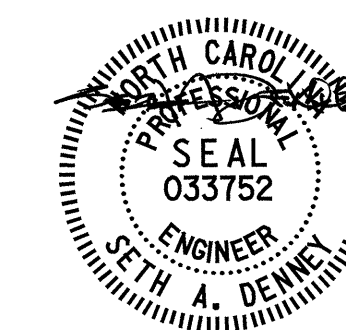


LRFR SUMMARY

PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-
10424+69.74 TRK-I

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

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



Baker

Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27615
 NC License No.: F-1084

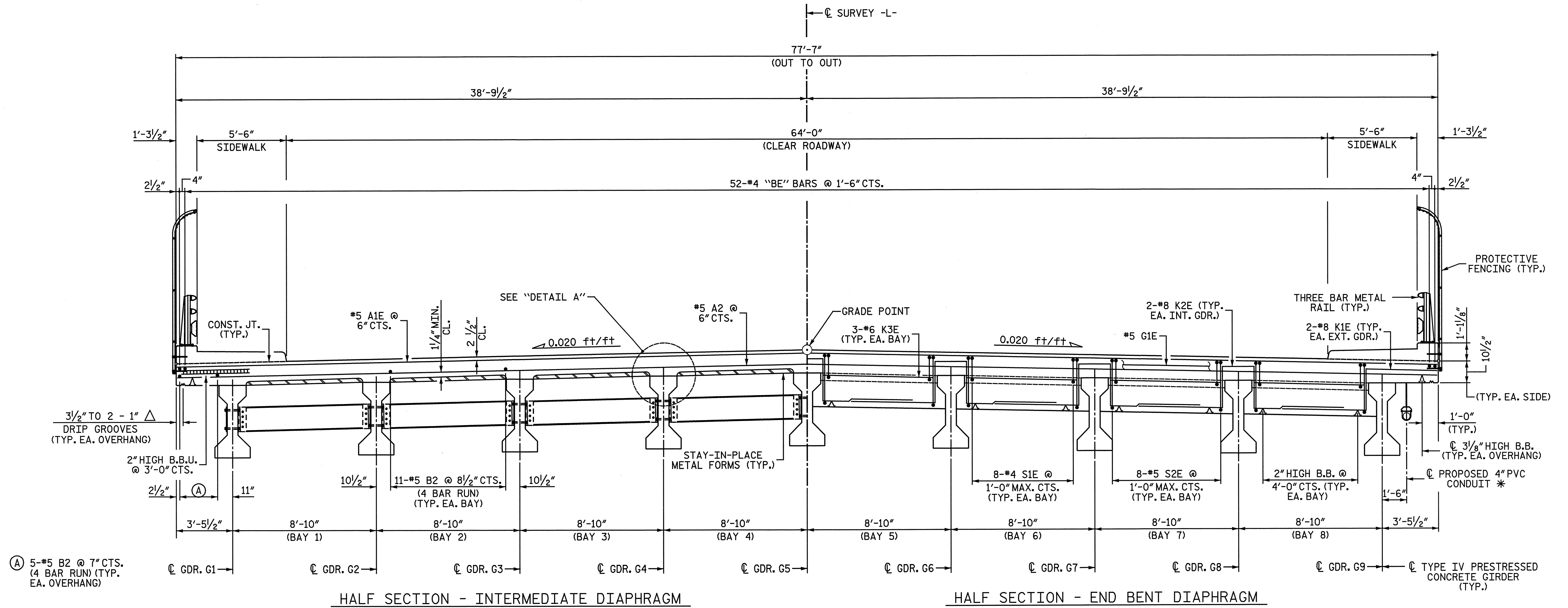
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			39

DWG. 4 OF 39

DRAWN BY: J. N. AUSTIN DATE: 7-9-12
 CHECKED BY: A. L. PHILLIPS DATE: 7-10-12

NOTES:

FOR SUPERSTRUCTURE NOTES, SEE "TYPICAL SECTION DETAILS" SHEET 1 OF 2.



HALF SECTION - INTERMEDIATE DIAPHRAGM

HALF SECTION - END BENT DIAPHRAGM

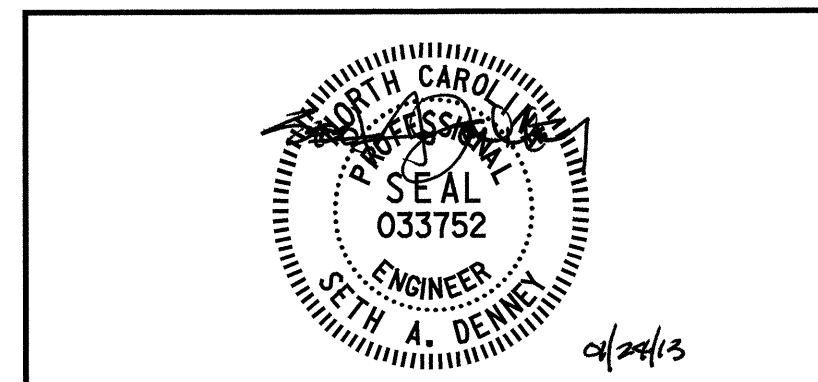
TYPICAL SECTION

* SEE "ELECTRICAL CONDUIT SYSTEM FOR SIGNALS" SHEET FOR ADDITIONAL INFORMATION.

PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-

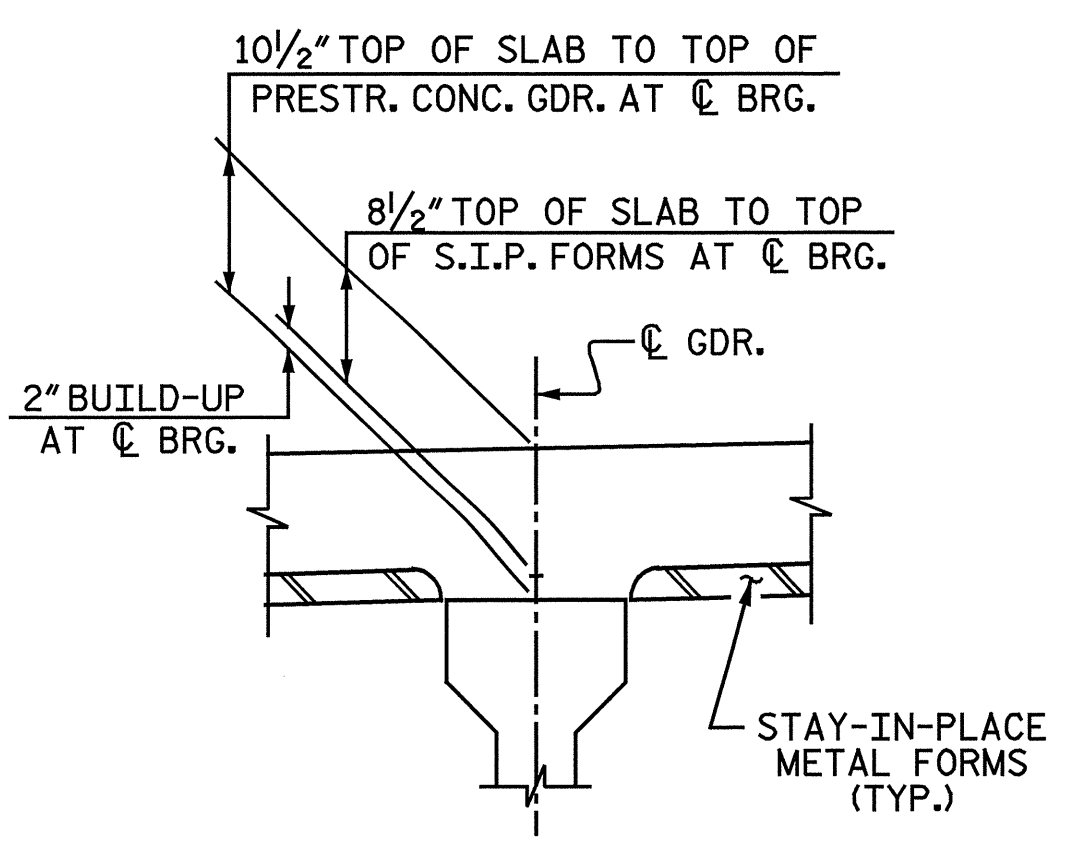
SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION



Baker
 Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 276518
 NC License No.: F-1084

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5	
1			3			TOTAL SHEETS 39	
2			4				



DETAIL A
 (TYP. EA. GDR. @ EA. BENT)

DRAWN BY: M. D. MAYHEW DATE: 8-27-12
 CHECKED BY: R. F. DeCOLA DATE: 9-4-12

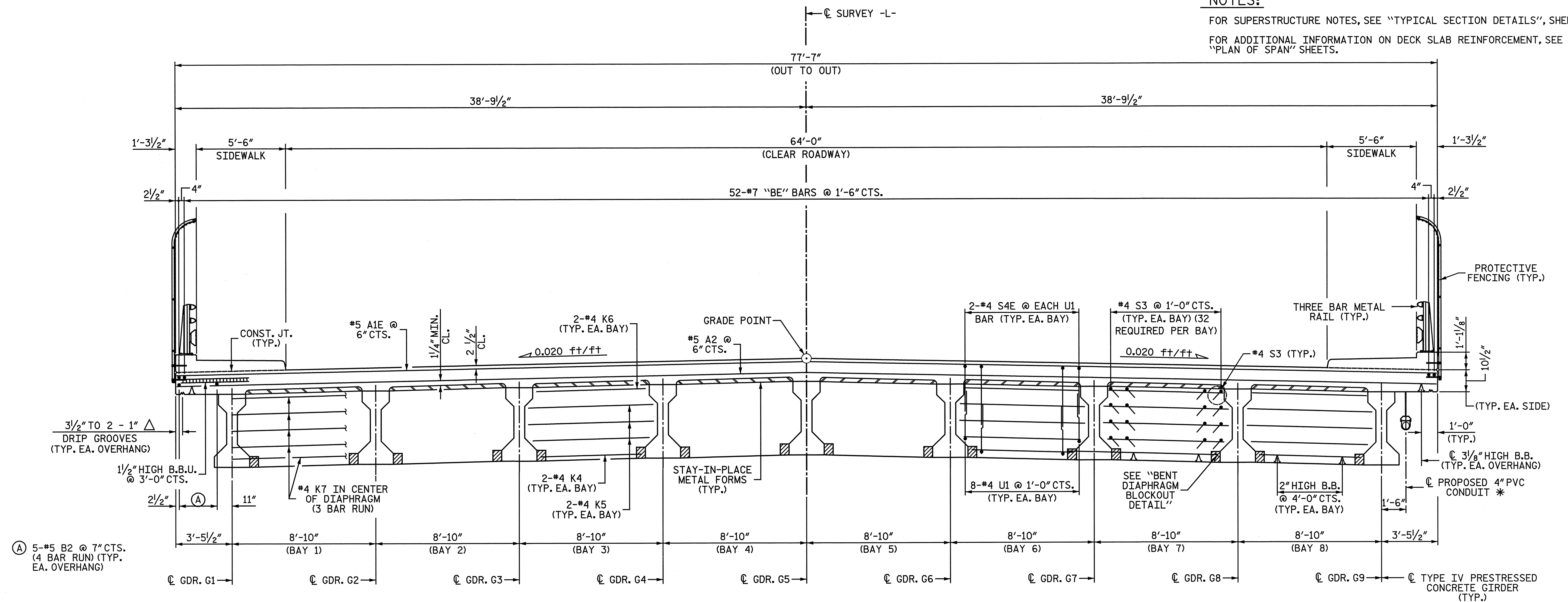
DWG. 5 OF 39

Justin 1/24/2013 9:27:34 AM
 File name: Y:\Projects\NCDOT\TP-5208D\DISCIPLINE\Structure\DWG\Final\TP-5208D_005_SD_TSI.dgn

NOTES:

FOR SUPERSTRUCTURE NOTES, SEE "TYPICAL SECTION DETAILS", SHEET 1 OF 2.

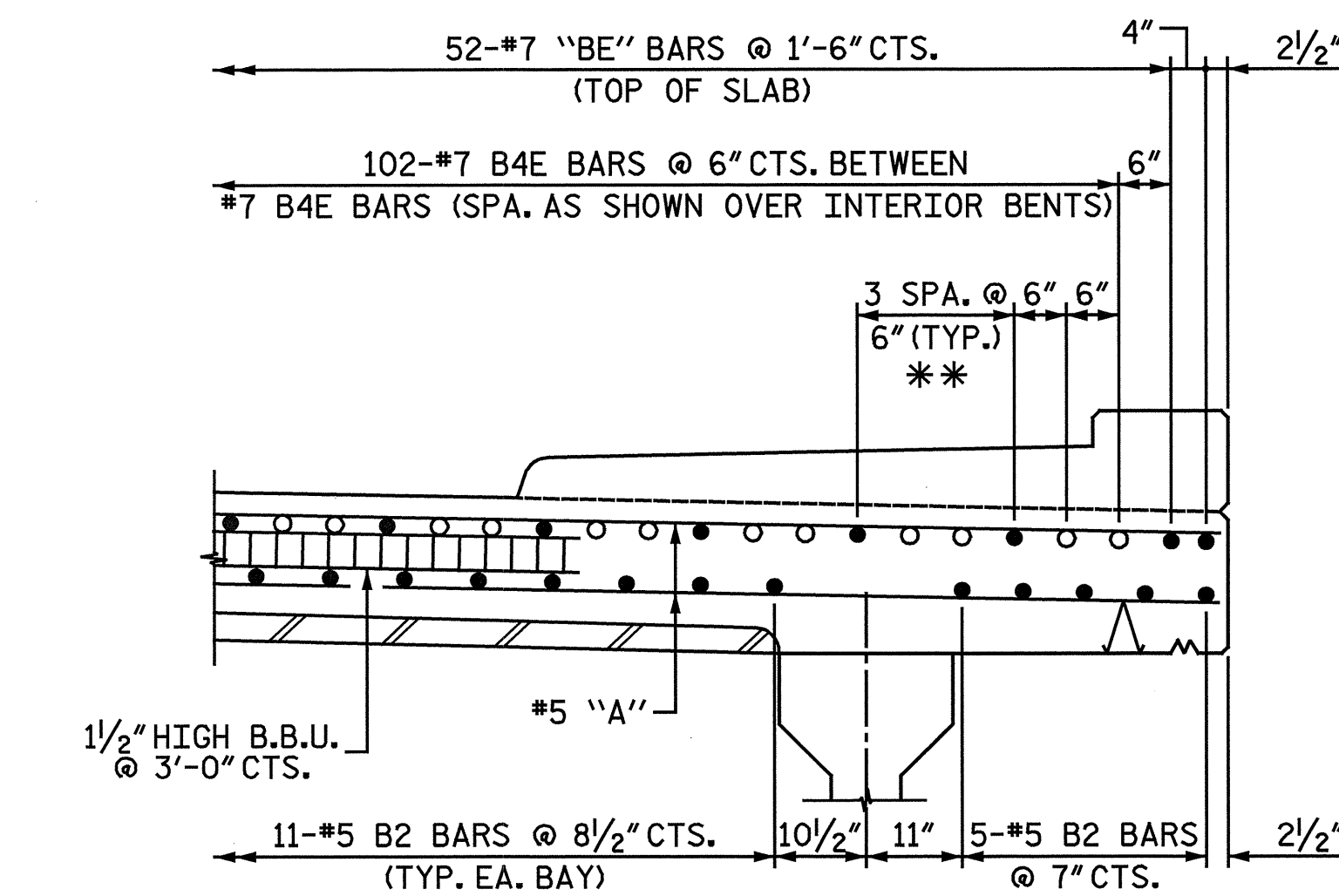
FOR ADDITIONAL INFORMATION ON DECK SLAB REINFORCEMENT, SEE "PLAN OF SPAN" SHEETS.



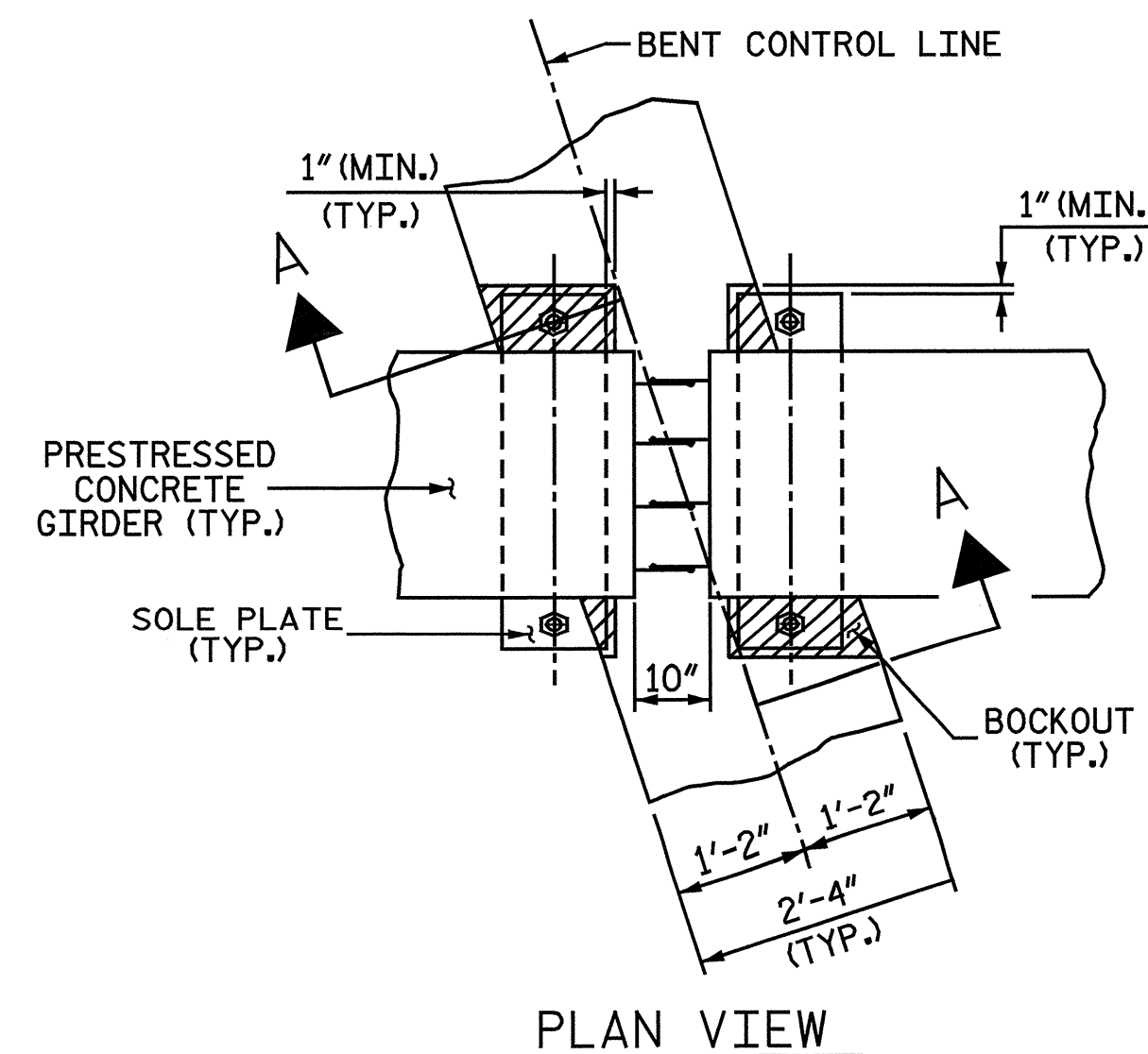
SECTION - BENT DIAPHRAGM

TYPICAL SECTION

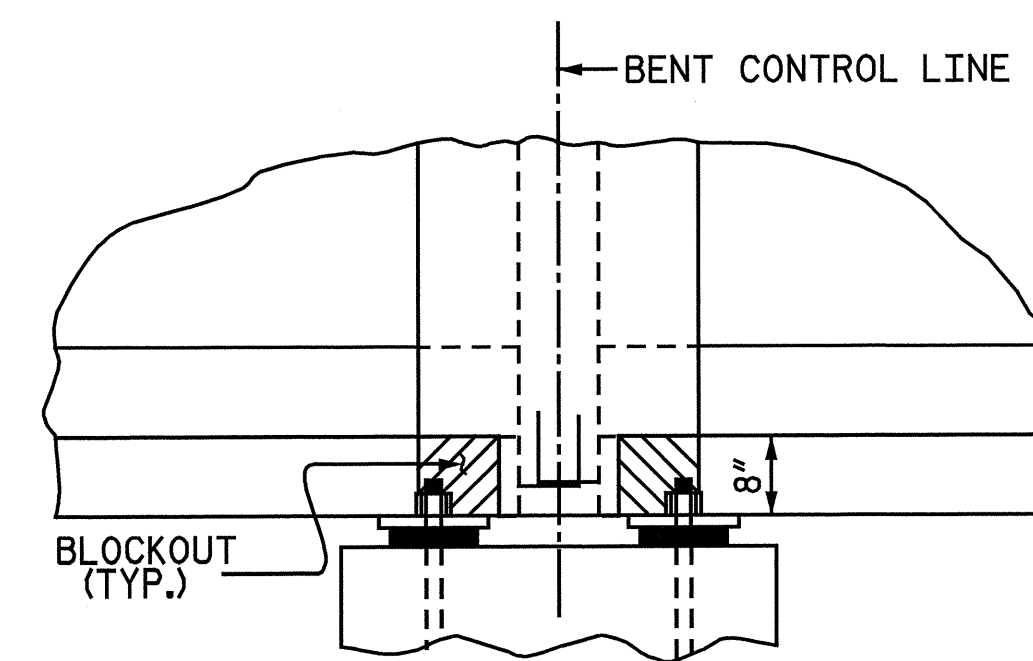
* SEE "ELECTRICAL CONDUIT SYSTEM FOR SIGNALS" SHEET FOR ADDITIONAL INFORMATION.



REINFORCING DETAIL



PLAN VIEW



SECTION A-A

BENT DIAPHRAGM BLOCKOUT DETAIL

(PRESTRESSED GIRDERS WITH CONTINUOUS DECK SLAB)

- ** TYP. SPACING OF NON-CONTINUOUS "BE" BARS BETWEEN CONTINUOUS "BE" BARS. (U.O.N.)
- INDICATES NON-CONTINUOUS REINFORCING STEEL OVER INTERIOR BENTS.
- INDICATES CONTINUOUS REINFORCING STEEL FROM END BENT 1 TO END BENT 2.
- U.O.N. - DENOTES "UNLESS OTHERWISE NOTED"

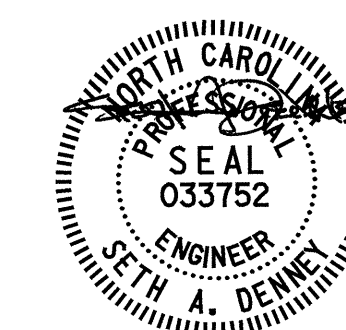
PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION



Baker

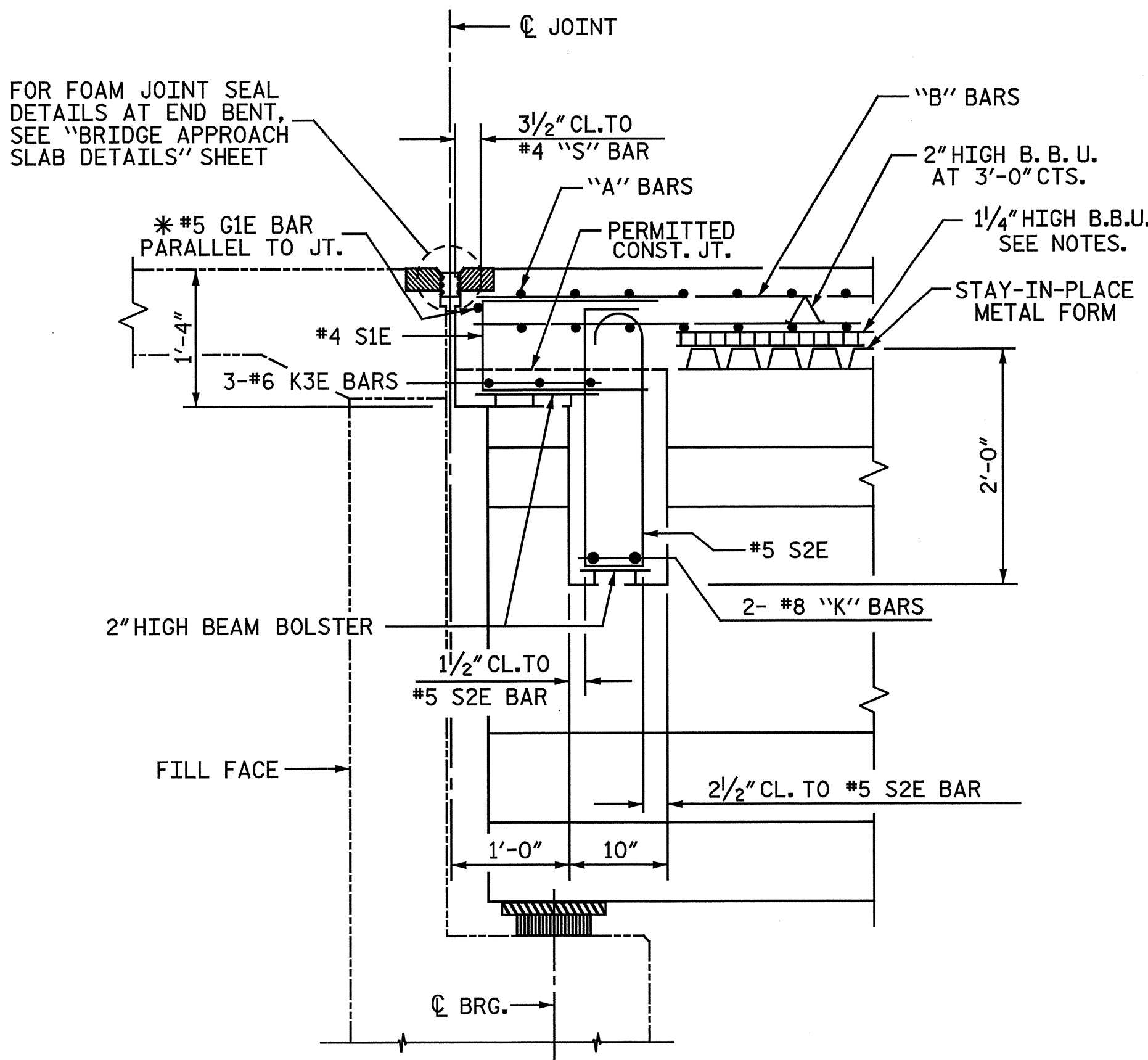
Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27513
 NC License No.: F-1084

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

DRAWN BY : M. D. MAYHEW DATE : 8-28-12
 CHECKED BY : R. F. DeCOLA DATE : 9-4-12

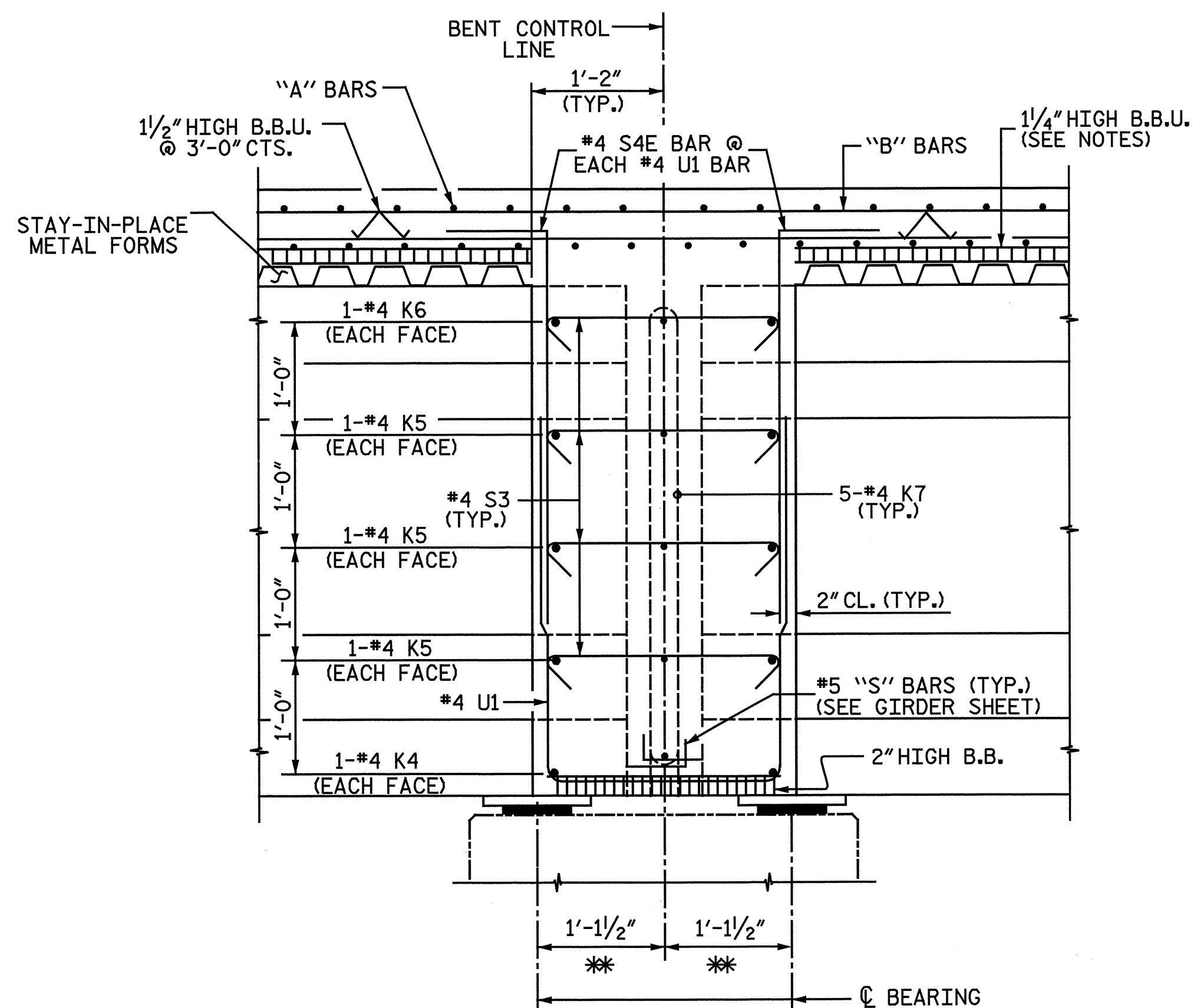
DWG. 6 OF 39

1/24/2013 9:27:34 AM
 Filename: \\projects\ncdot\p-5208D\DISCIPLINE\Structures\Drawings\Final\P-5208D_006_SD_TSS.dgn



SECTION THRU END BENT DIAPHRAGM

*#5 G1E BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.

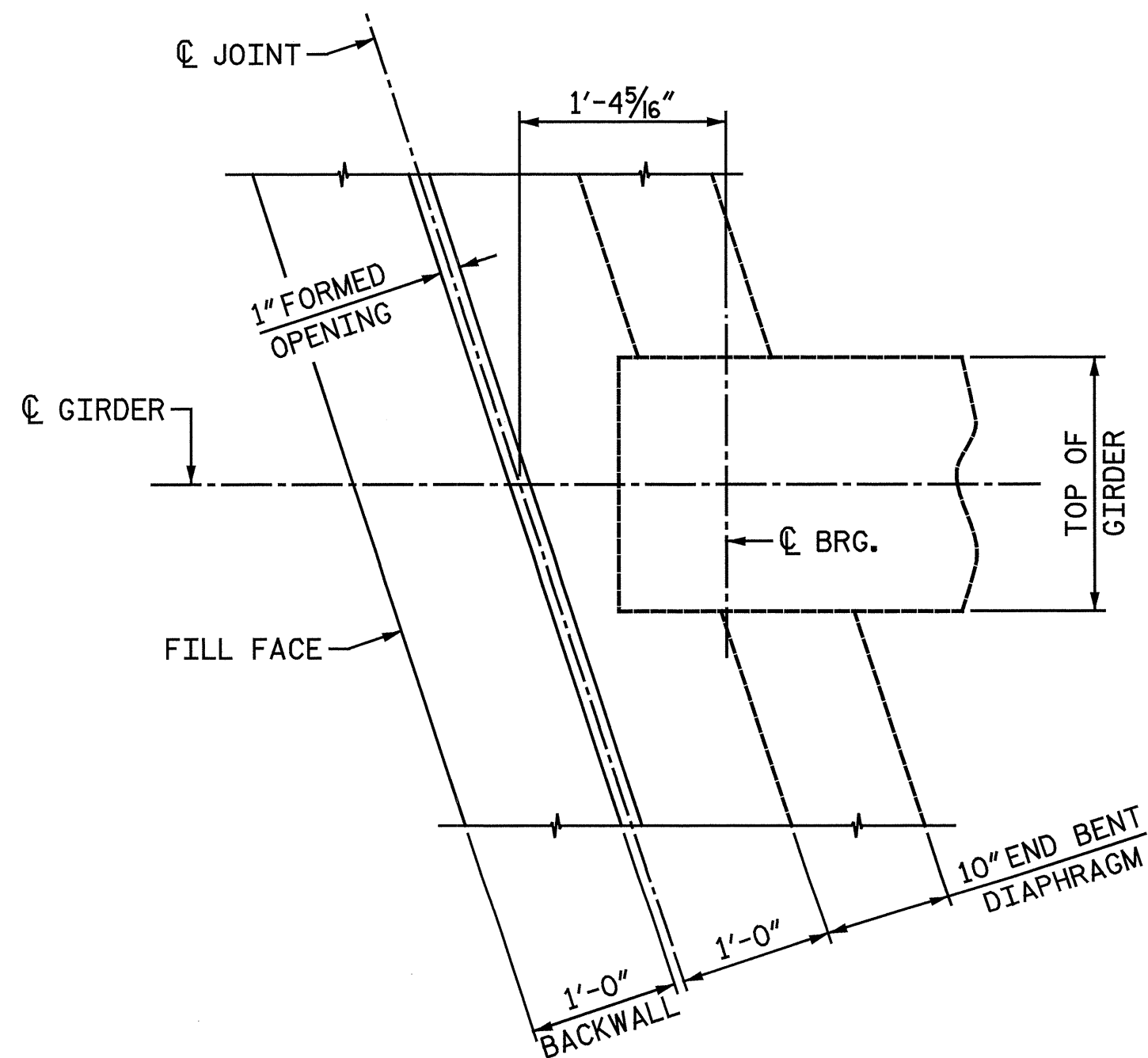


SECTION THRU BENT DIAPHRAGM

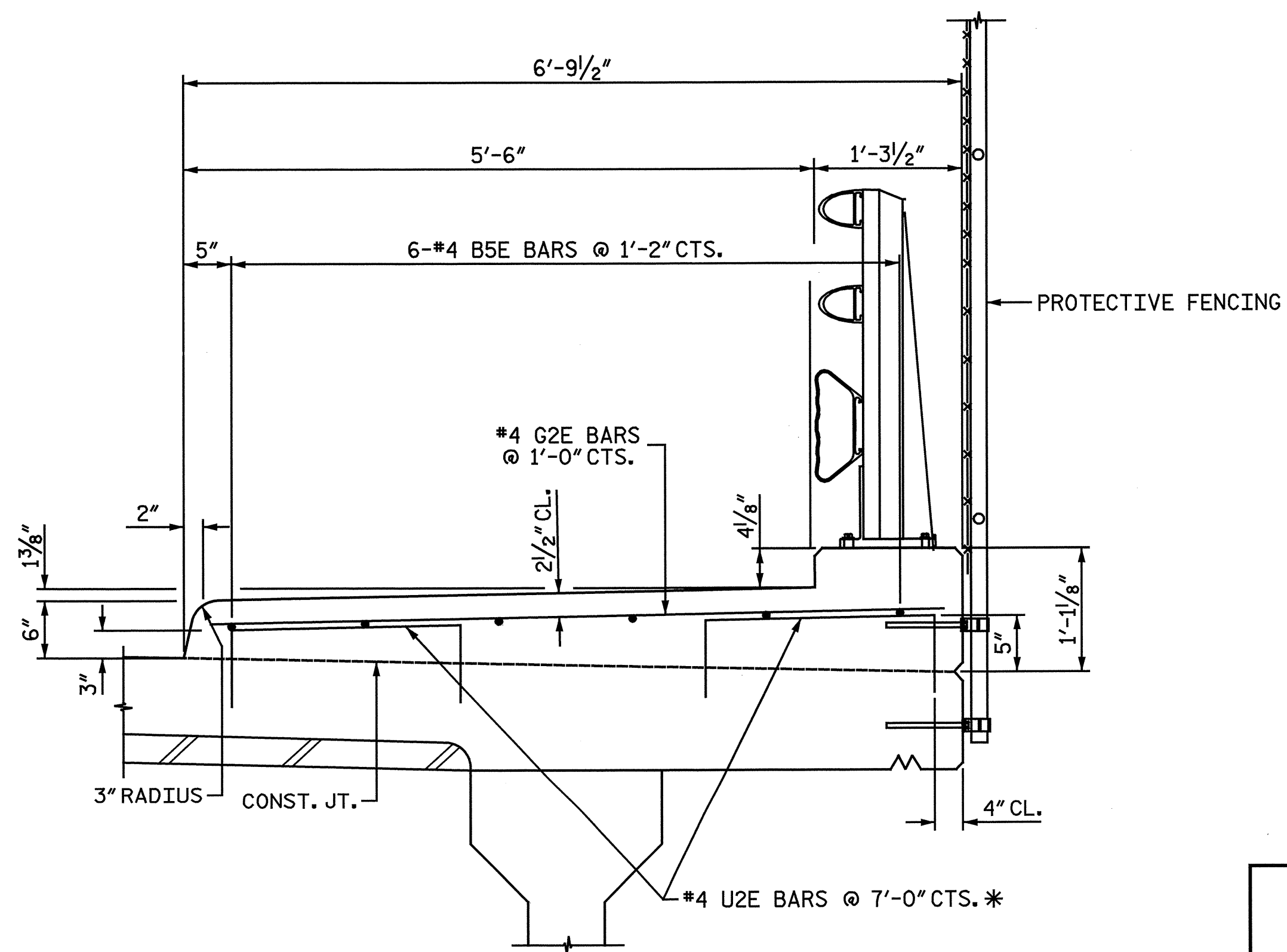
**DIMENSION MEASURED ALONG C GIRDER

NOTES:

- FENCE NOT SHOWN FOR CLARITY ON "SECTION THRU SIDEWALK".
- SHIFT "U" BARS IN SIDEWALK AS NEEDED TO AVOID FENCE ANCHOR BOLTS.
- GROOVED CONTRACTION JOINT, 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 JOINT SHALL BE LOCATED AT A SPACING OF 8 FEET TO 10 FEET BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.
- PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.
- LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.
- CONCRETE IN END BENT DIAPHRAGMS MAY BE CLASS A IN LIEU OF CLASS AA.
- PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.
- FOR DETAILS OF INTERMEDIATE DIAPHRAGMS, SEE "TYPICAL SECTION DETAILS" SHEET 2 OF 2.



PLAN OF END BENT DIAPHRAGM



SECTION THRU SIDEWALK

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

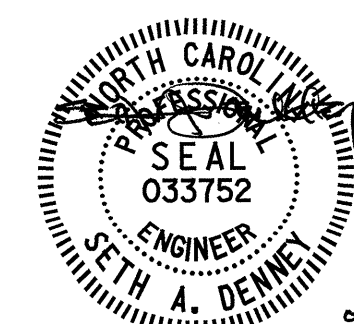
PROPOSED 4" PVC CONDUIT NOT SHOWN.

PROJECT NO. P-5208D
 CABARRUS COUNTY
 STATION: 16+93.38 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTION
 DETAILS



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7	
1			3			TOTAL SHEETS	39
2			4				

Baker

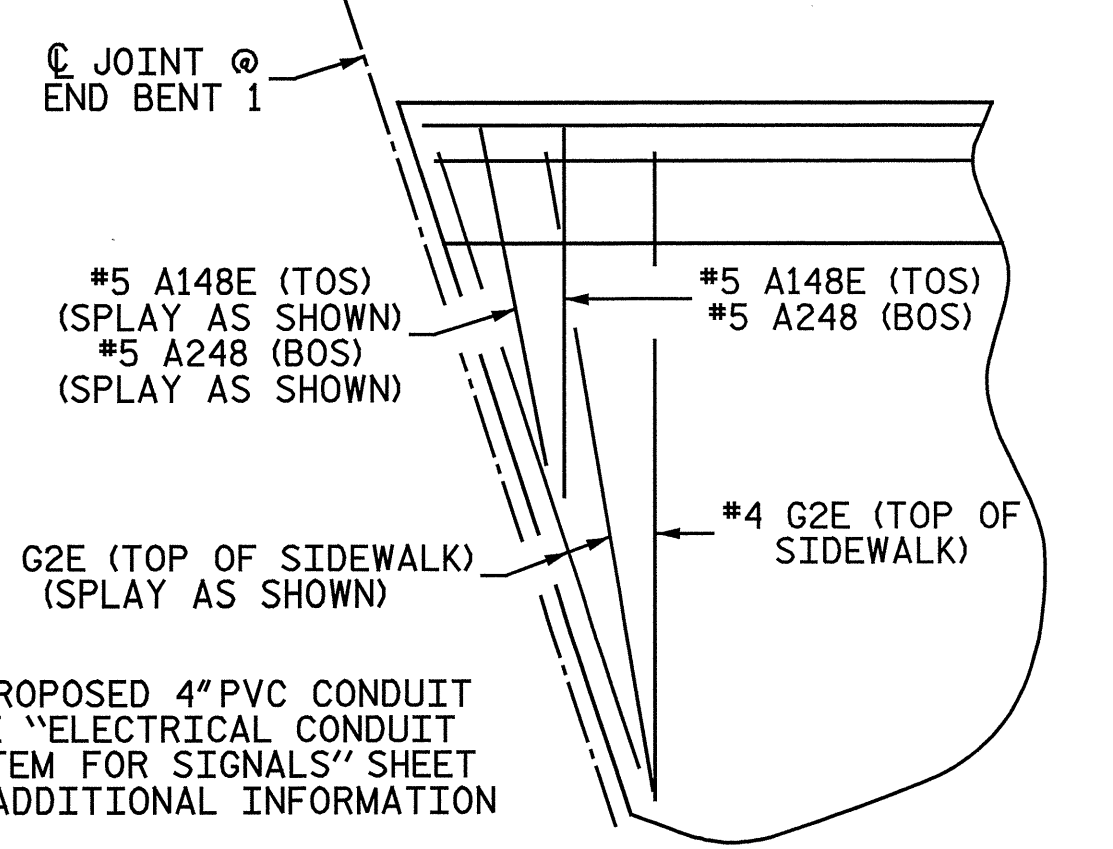
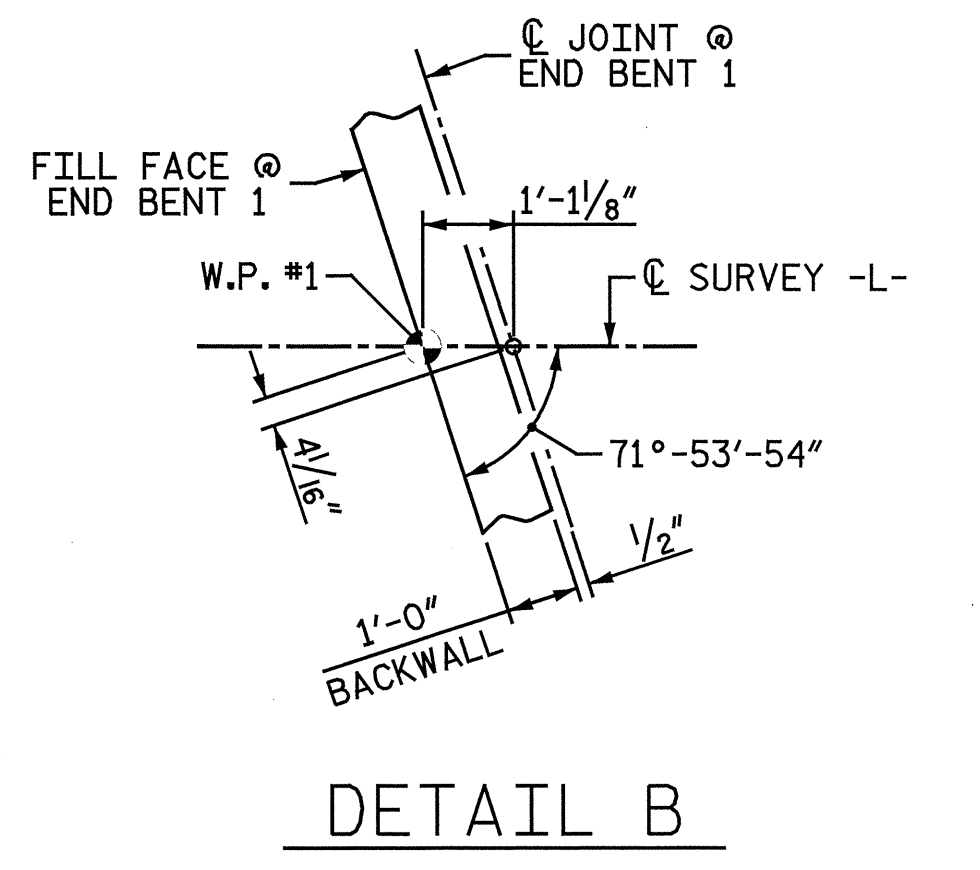
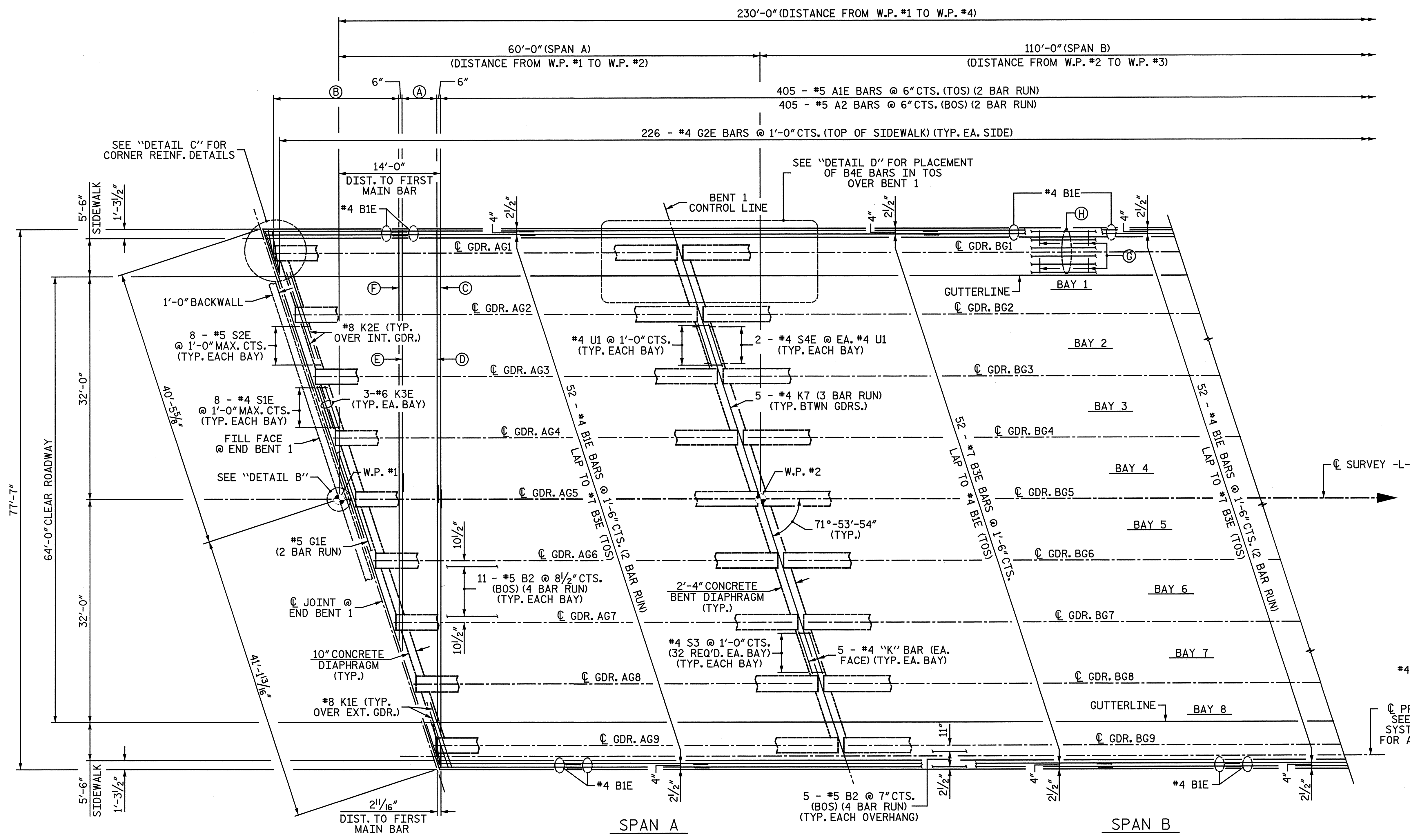
Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 276518
 NC License No. : F-1084

DWG. 7 OF 39

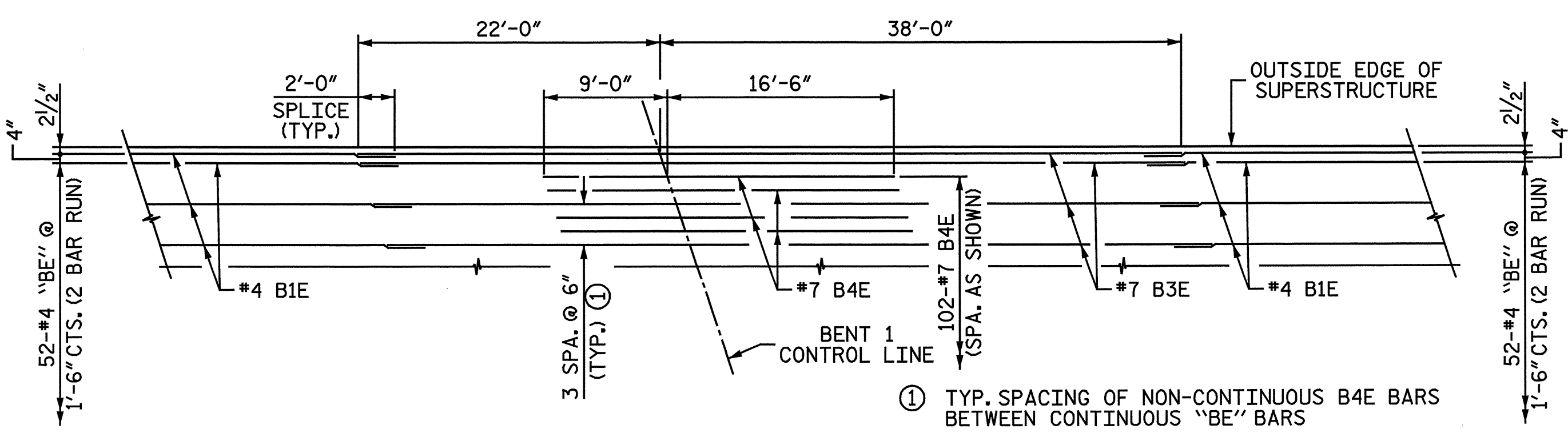
DRAWN BY : M. D. MAYHEW DATE : 8-17-12
 CHECKED BY : R. F. DeCOLA DATE : 8-23-12

I:\est\13 927135 AM
 1/24/2013
 Filename: Y:\P\objects\NDDOT\P-5208D\DISCIPLINE\Structure\es\Drawings\Final\P-5208D_007_SD_T53.dgn

NOTE:
 FOR POUR SEQUENCE AND LOCATION OF CONSTRUCTION JOINT, SEE SUPERSTRUCTURE "BILL OF MATERIAL" SHEET.
 TOS = TOP OF SLAB
 BOS = BOTTOM OF SLAB



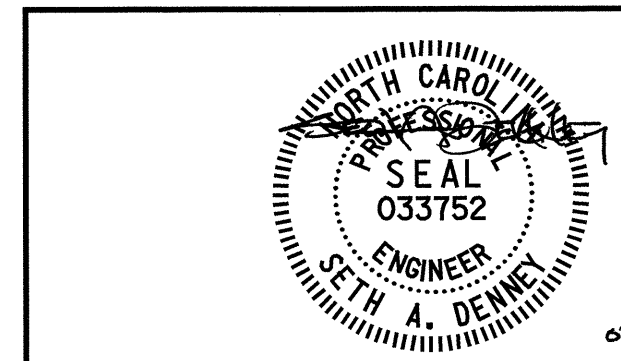
PART PLAN OF SPANS



DETAIL D
 LONGITUDINAL REINFORCING TOP OF SLAB

- (A) #5 A101E THRU #5 A111E @ 6" CTS. (TOS) (2 BAR RUN)
 #5 A201 THRU #5 A211 @ 6" CTS. (BOS) (2 BAR RUN)
- (B) #5 A112E THRU #5 A148E @ 6" CTS. (TOS)
 #5 A212 THRU #5 A248 @ 6" CTS. (BOS)
- (C) #5 A1E (TOS) (2 BAR RUN)
 #5 A2 (BOS) (2 BAR RUN)
- (D) #5 A101E (TOS) (2 BAR RUN)
 #5 A201 (BOS) (2 BAR RUN)
- (E) #5 A111E (TOS) (2 BAR RUN)
 #5 A211 (BOS) (2 BAR RUN)
- (F) #5 A112E (TOS)
 #5 A212 (BOS)
- (G) #4 U2E @ 7'-0" CTS. (TOP OF SIDEWALK)
 (TYP. EA. SIDE)
- (H) 6 - #4 B5E @ 1'-2" CTS. (TOP OF SIDEWALK)
 (9 BAR RUN) (TYP. EACH SIDE)

PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-
 SHEET 1 OF 2



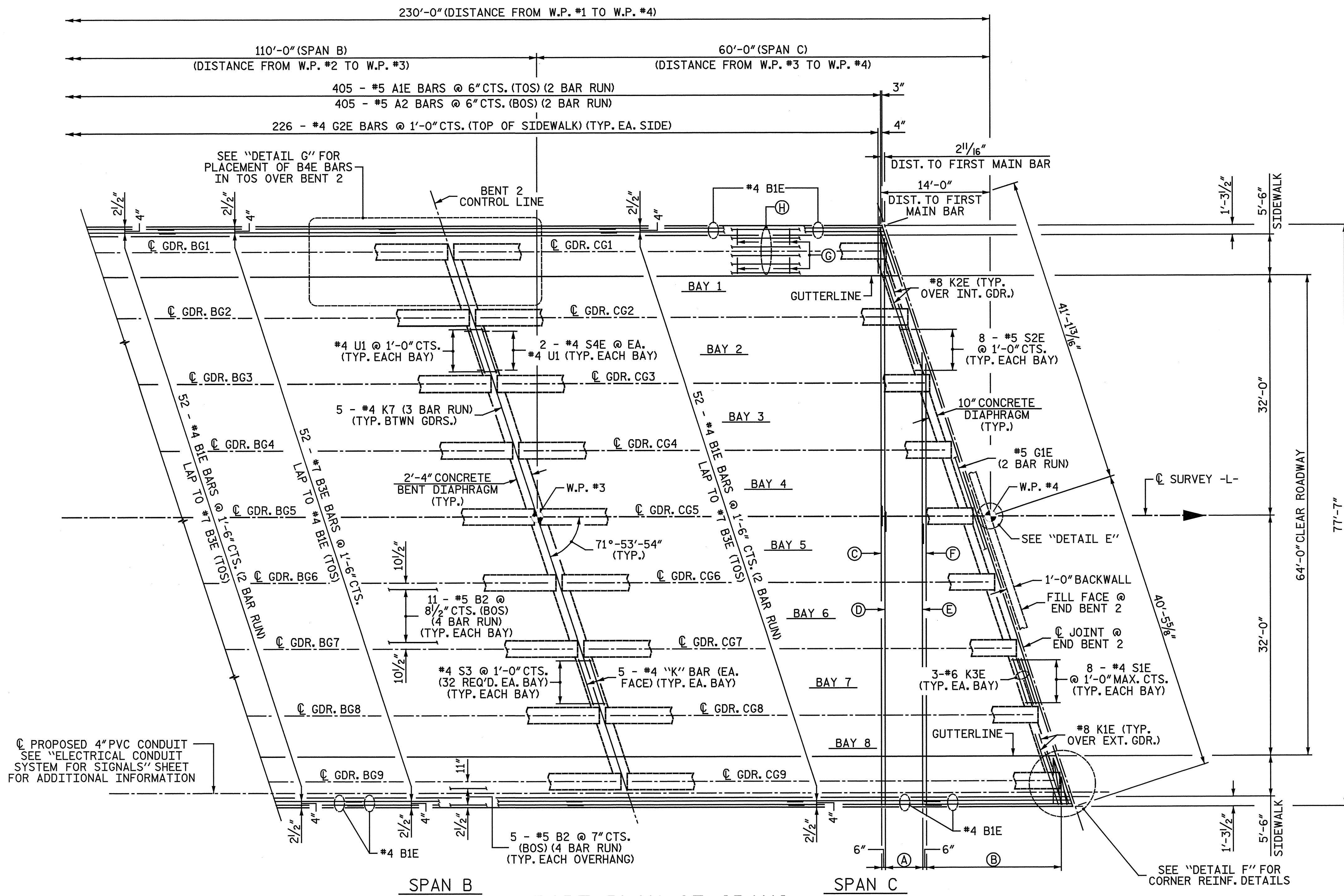
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
SUPERSTRUCTURE
PLAN OF SPAN
 SPANS A & B

REVISIONS						SHEET NO. S-8
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			

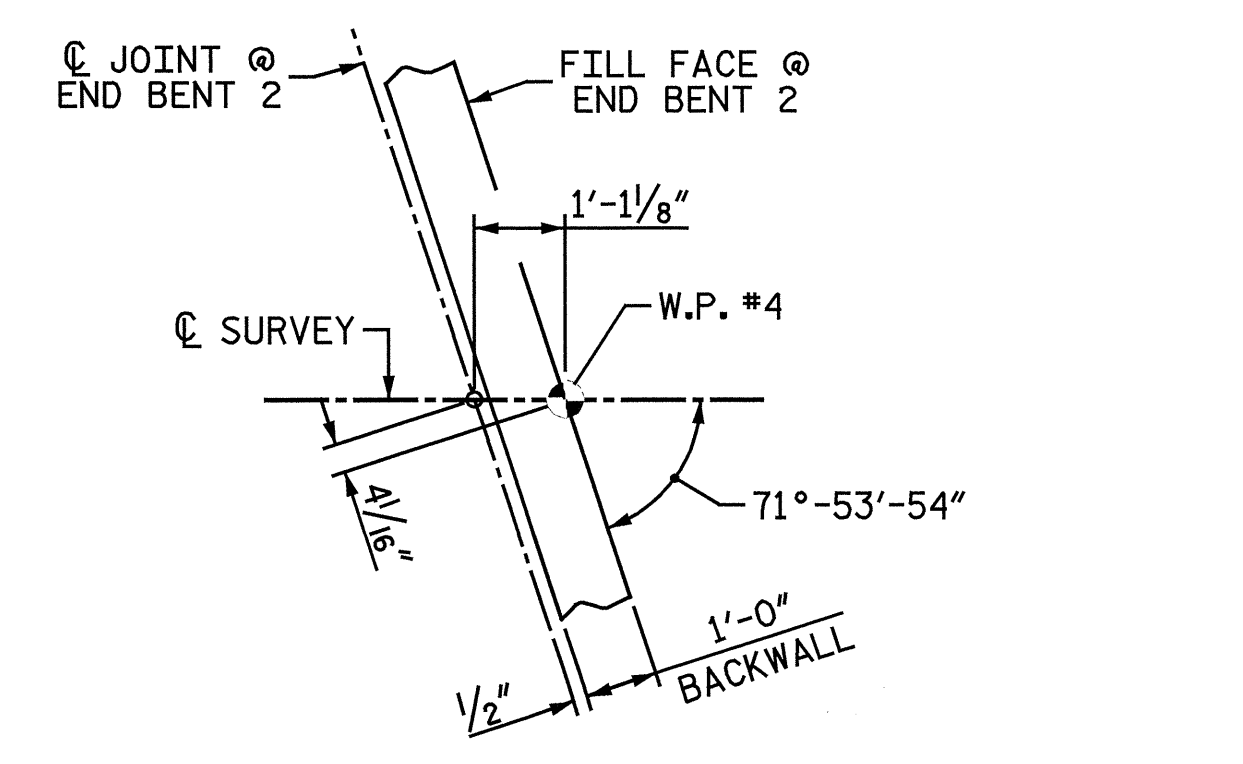
Baker
 Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27618
 NC License No.: F-1084

Justin
 1/24/2013 9:27:56 AM
 File Name: Y:\Projects\NC DOT\VP-5208D\DISCIPLINE\Structure\Drawings\Final\VP-5208D_008_SD_S1.dgn

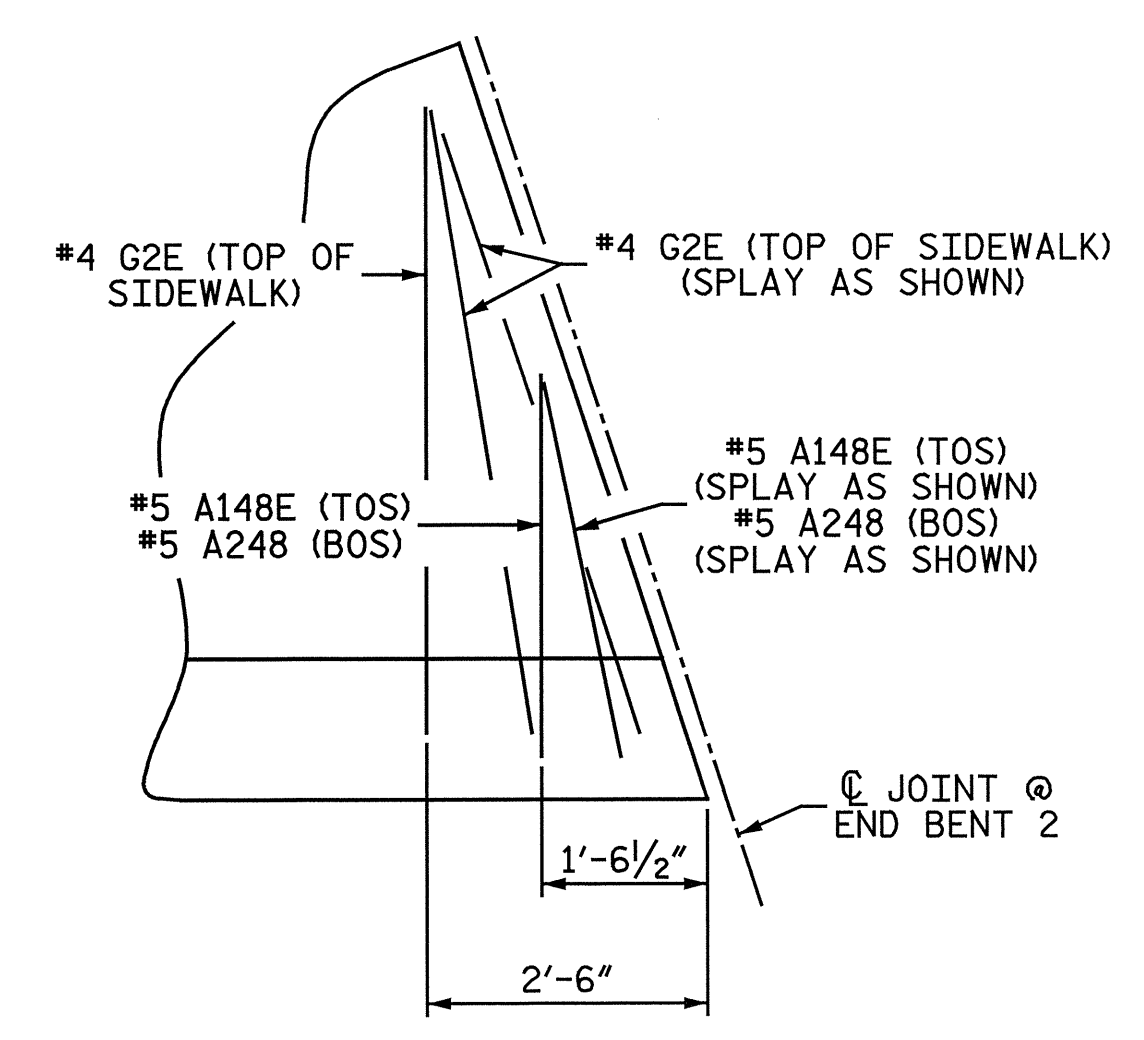
DRAWN BY: M. D. MAYHEW DATE: 9-18-12
 CHECKED BY: A. L. PHILLIPS DATE: 9-20-12



NOTE:
 FOR FOUR SEQUENCE AND LOCATION OF CONSTRUCTION JOINT, SEE SUPERSTRUCTURE "BILL OF MATERIAL" SHEET.
 TOS = TOP OF SLAB
 BOS = BOTTOM OF SLAB



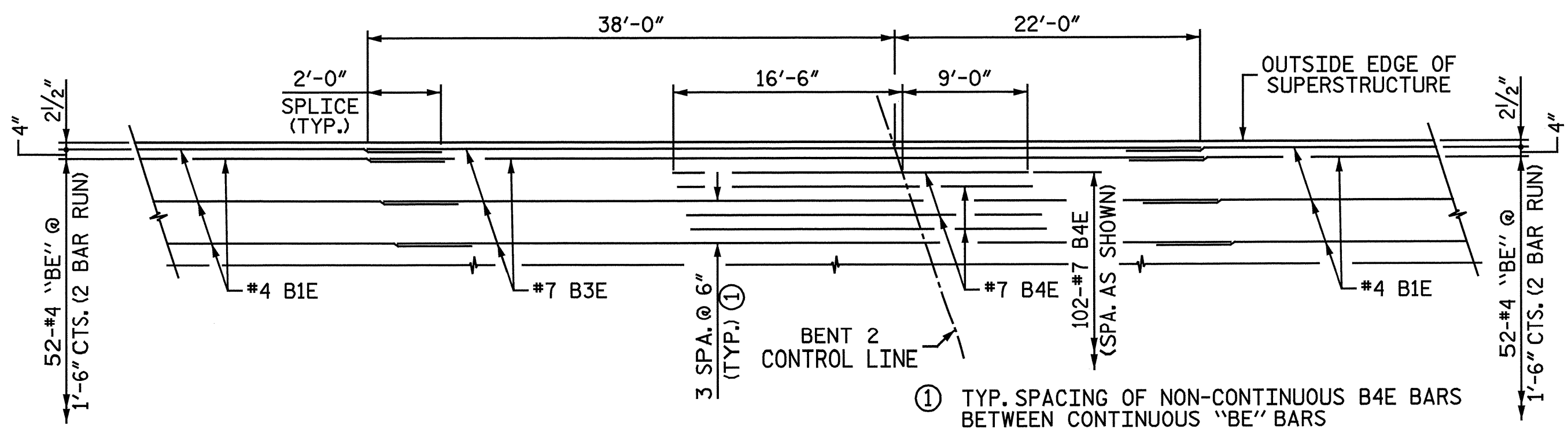
DETAIL E



DETAIL F

GIRDER AND END BENT DIAPHRAGM NOT SHOWN FOR CLARITY

PART PLAN OF SPANS



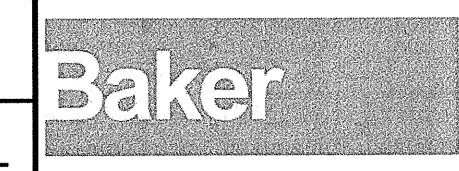
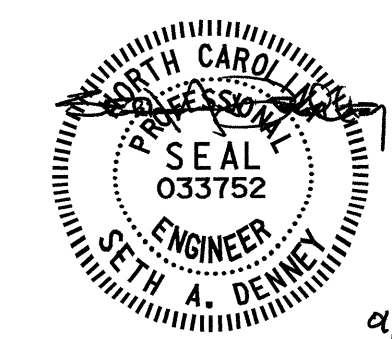
DETAIL G

LONGITUDINAL REINFORCING TOP OF SLAB

- (A) #5 A101E THRU #5 A111E @ 6" CTS. (TOS) (2 BAR RUN)
#5 A201 THRU #5 A211 @ 6" CTS. (BOS) (2 BAR RUN)
- (B) #5 A112E THRU #5 A148E @ 6" CTS. (TOS)]
#5 A212 THRU #5 A248 @ 6" CTS. (BOS)
- (C) #5 A1E (TOS) (2 BAR RUN)
#5 A2 (BOS) (2 BAR RUN)
- (D) #5 A101E (TOS) (2 BAR RUN)
#5 A201 (BOS) (2 BAR RUN)
- (E) #5 A111E (TOS) (2 BAR RUN)
#5 A211 (BOS) (2 BAR RUN)
- (F) #5 A112E (TOS)
#5 A212 (BOS)
- (G) #4 U2E @ 7'-0" CTS. (TOP OF SIDEWALK)
(TYP. EA. SIDE)
- (H) 6 - #4 B5E @ 1'-2" CTS. (TOP OF SIDEWALK)
(9 BAR RUN) (TYP. EACH SIDE)

PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN
 SPANS B & C



Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 276518
 NC License No.: F-1084

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9	
1			3			TOTAL SHEETS 39	
2			4				

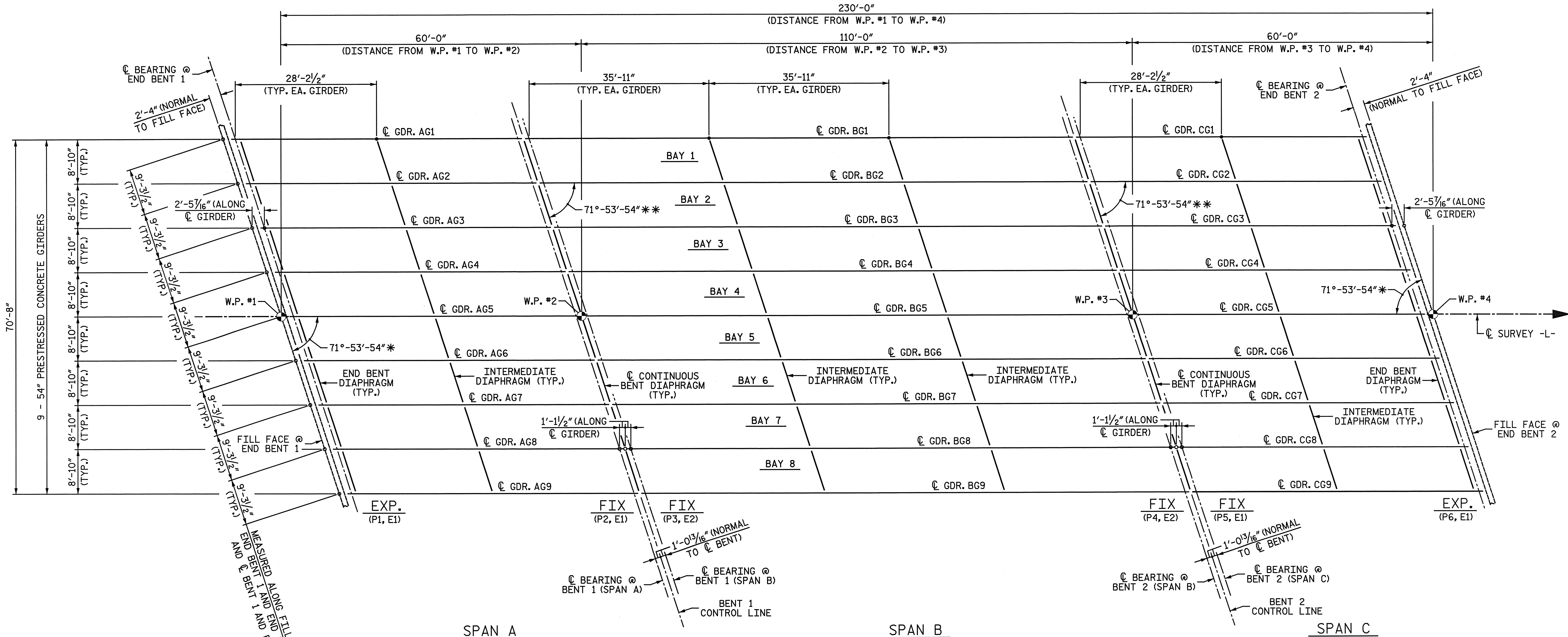
Jauethin 1/24/2013 9:27:37 AM
 Filename: Y:\Projects\NCDOT\Y-5208D\DISCIPLINE\Structures\Drawings\Final\SP-5208D_005_SD_S2.dgn

NOTES:

FOR STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS DETAILS" SHEET 5 OF 5.

* ANGLE SHOWN IS FROM ϕ GIRDER TO FILL FACE @ END BENT. (TYP. EA. GIRDER)

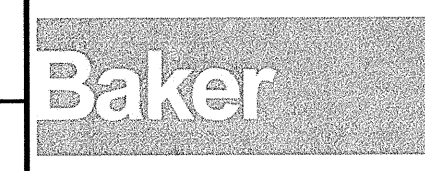
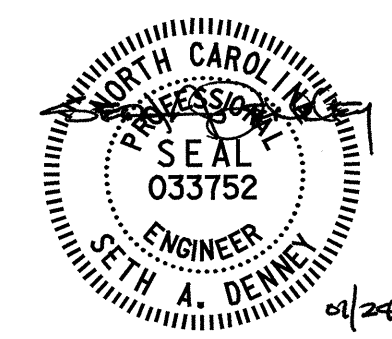
** ANGLE SHOWN IS FROM ϕ GIRDER TO ϕ BENT. (TYP. EA. GIRDER)



FRAMING PLAN
END BENTS AND BENTS ARE PARALLEL

PROJECT NO. P-5208D
CABARRUS COUNTY
STATION: 16+93.38 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
FRAMING PLAN



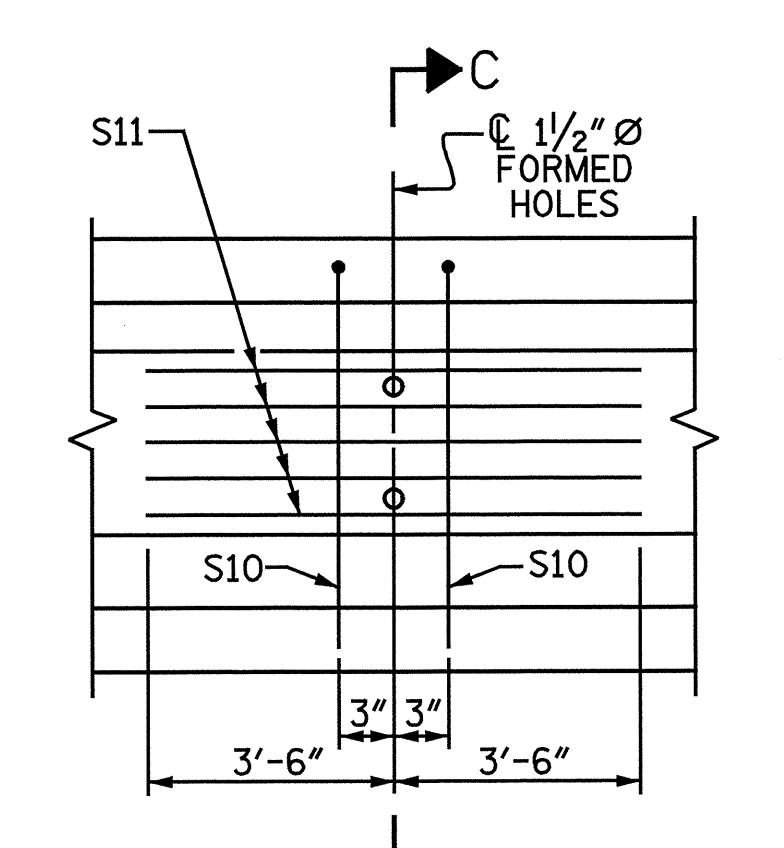
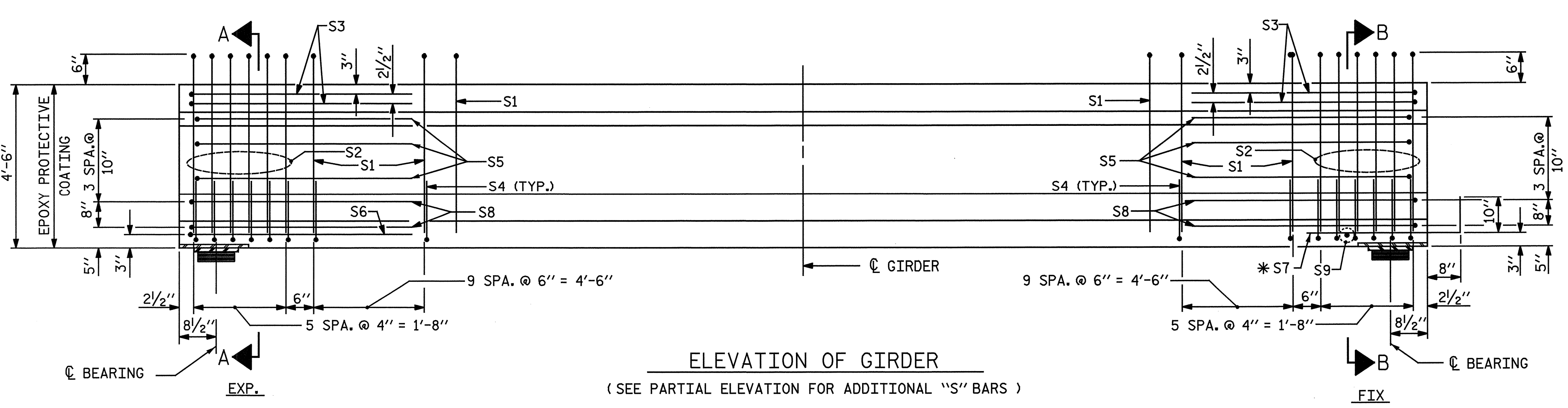
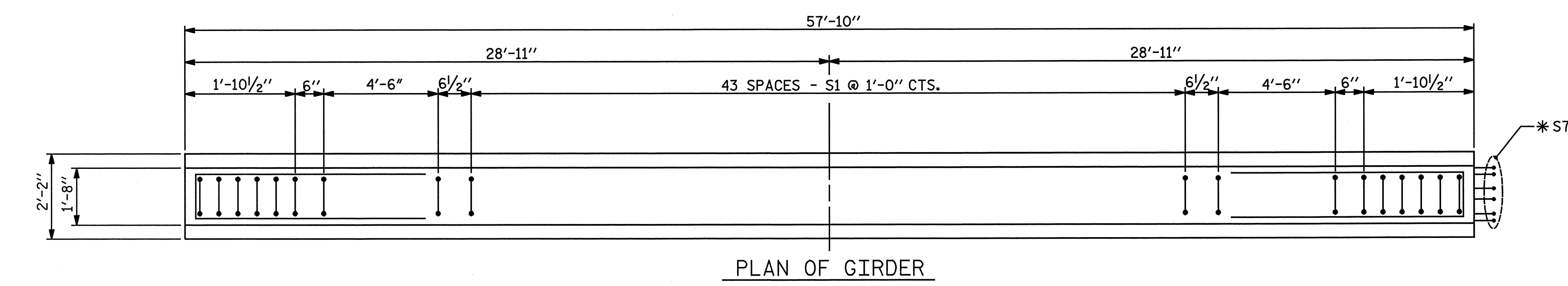
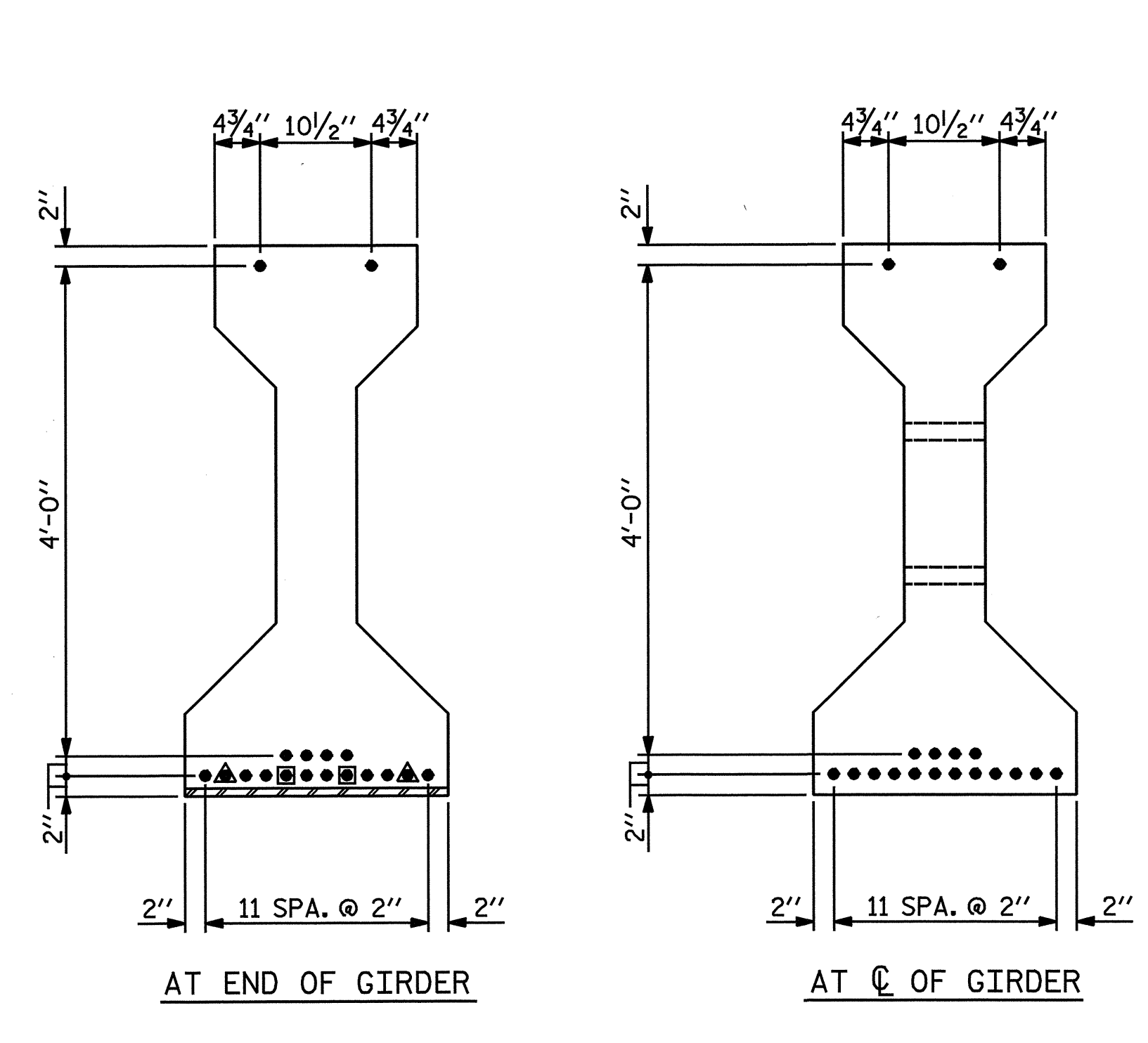
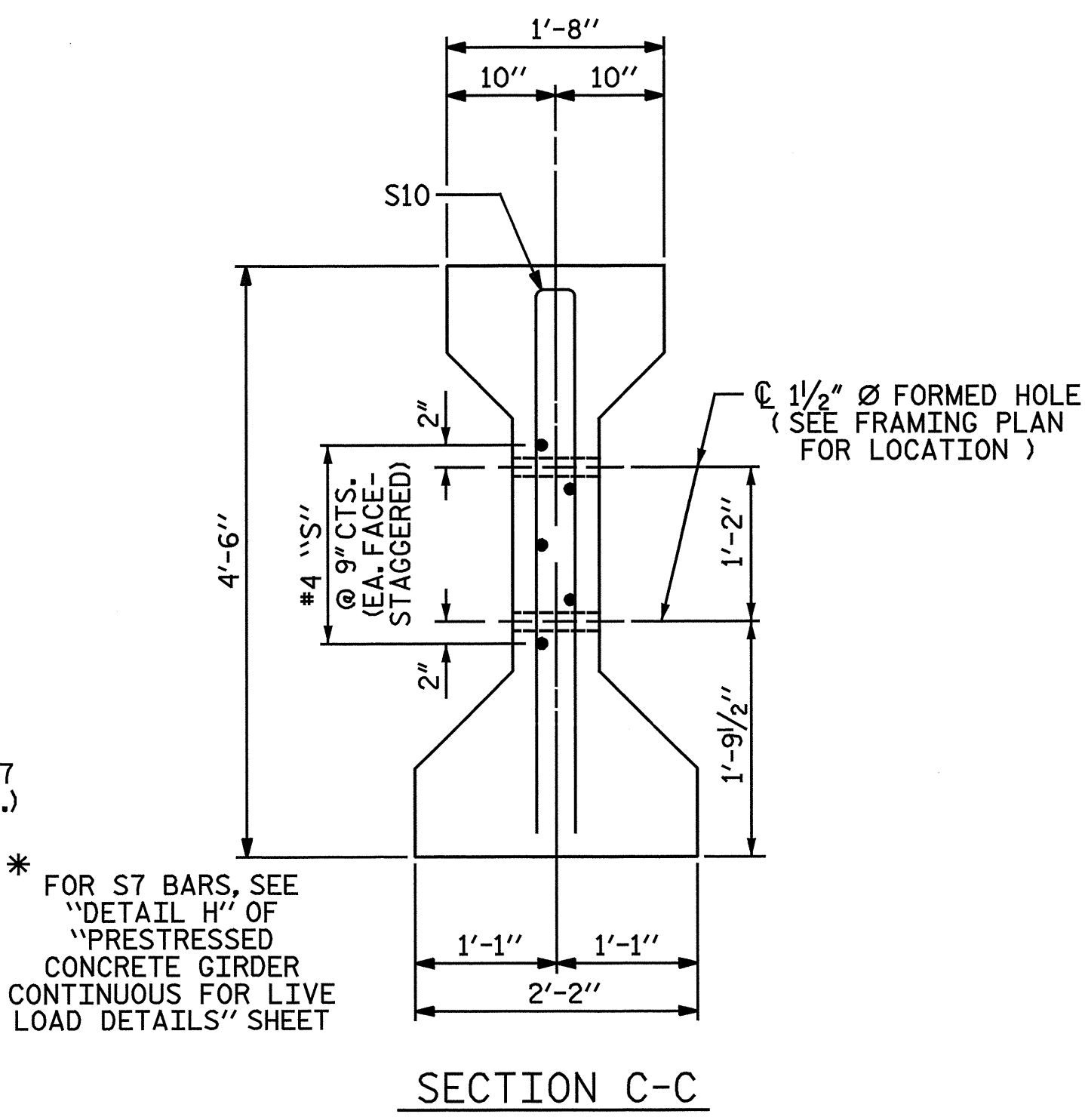
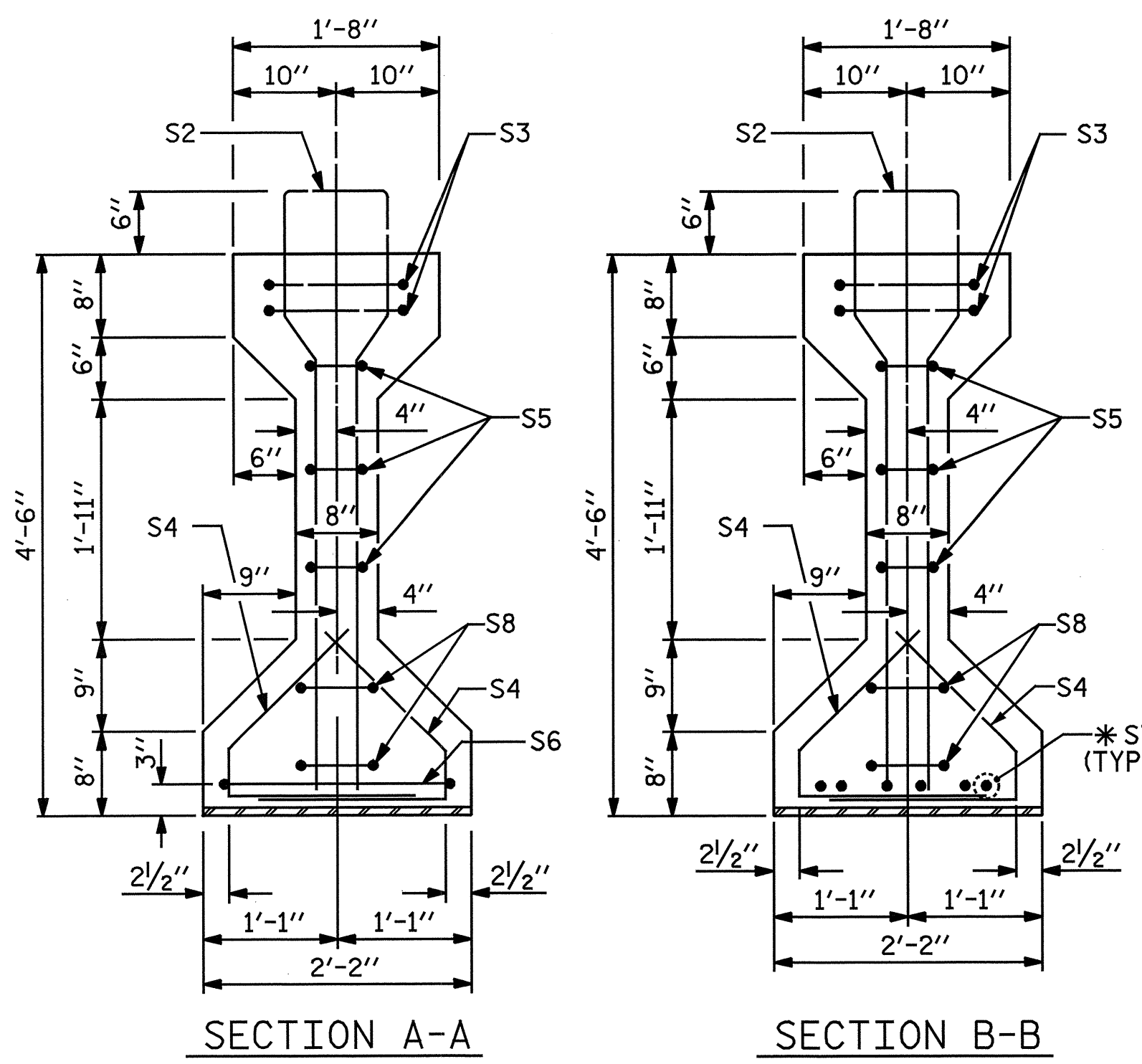
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27618
NC License No.: F-1084

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10	
1			3			TOTAL SHEETS	
2			4			39	

DWG. 10 OF 39

DRAWN BY: M. D. MAYHEW DATE: 8-22-12
CHECKED BY: R. F. DeCOLA DATE: 8-24-12

1/24/2013 9:27:38 AM
 File: Y:\Projects\WDDOT\VP-5208D\DISCIPLINE\Structure\Drawings\Framing\5208D_010_SD_FPL.dgn

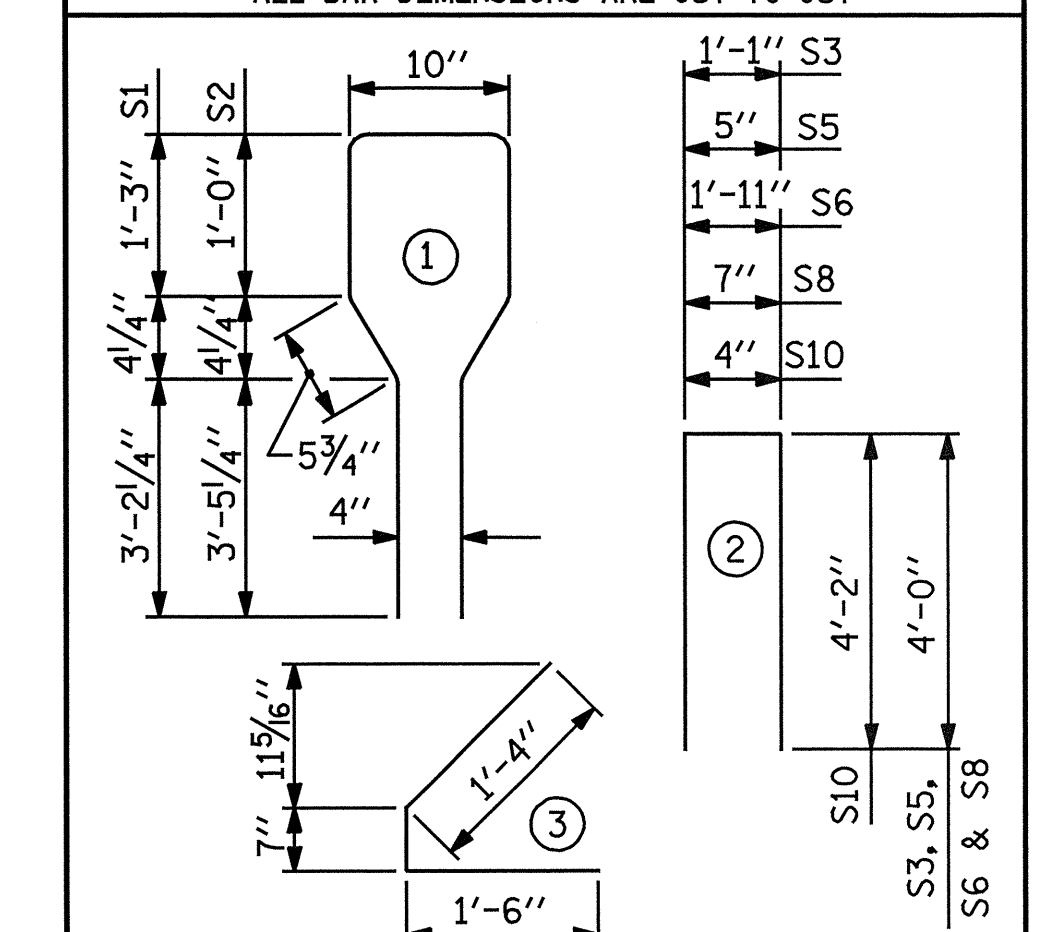


0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	64	#4	1	10'-8"	456
S2	12	#6	1	10'-8"	192
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
S6	1	#4	2	9'-11"	7
*S7	6	#5	STR	3'-8"	23
S8	4	#4	2	8'-7"	23
S9	1	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23

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

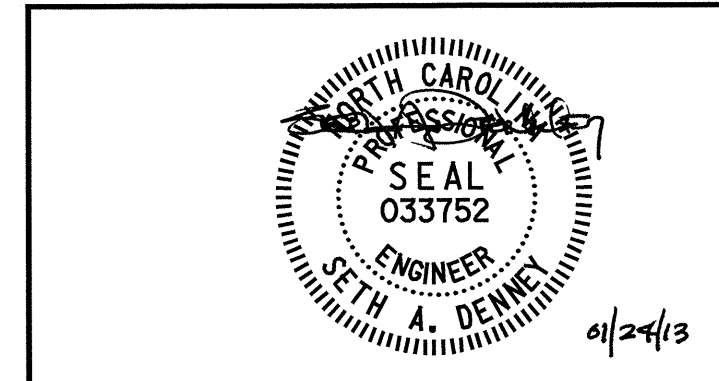
BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
EACH GIRDER	947	11.7	18
GIRDERS REQUIRED			
NUMBER	LENGTH	TOTAL LENGTH	
9	57'-10"	520'-6"	

PROJECT NO. P-5208D
CABARRUS COUNTY
STATION: 16+93.38 -L-

SHEET 1 OF 5
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPAN A



Baker
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27618
NC License No.: F-1084

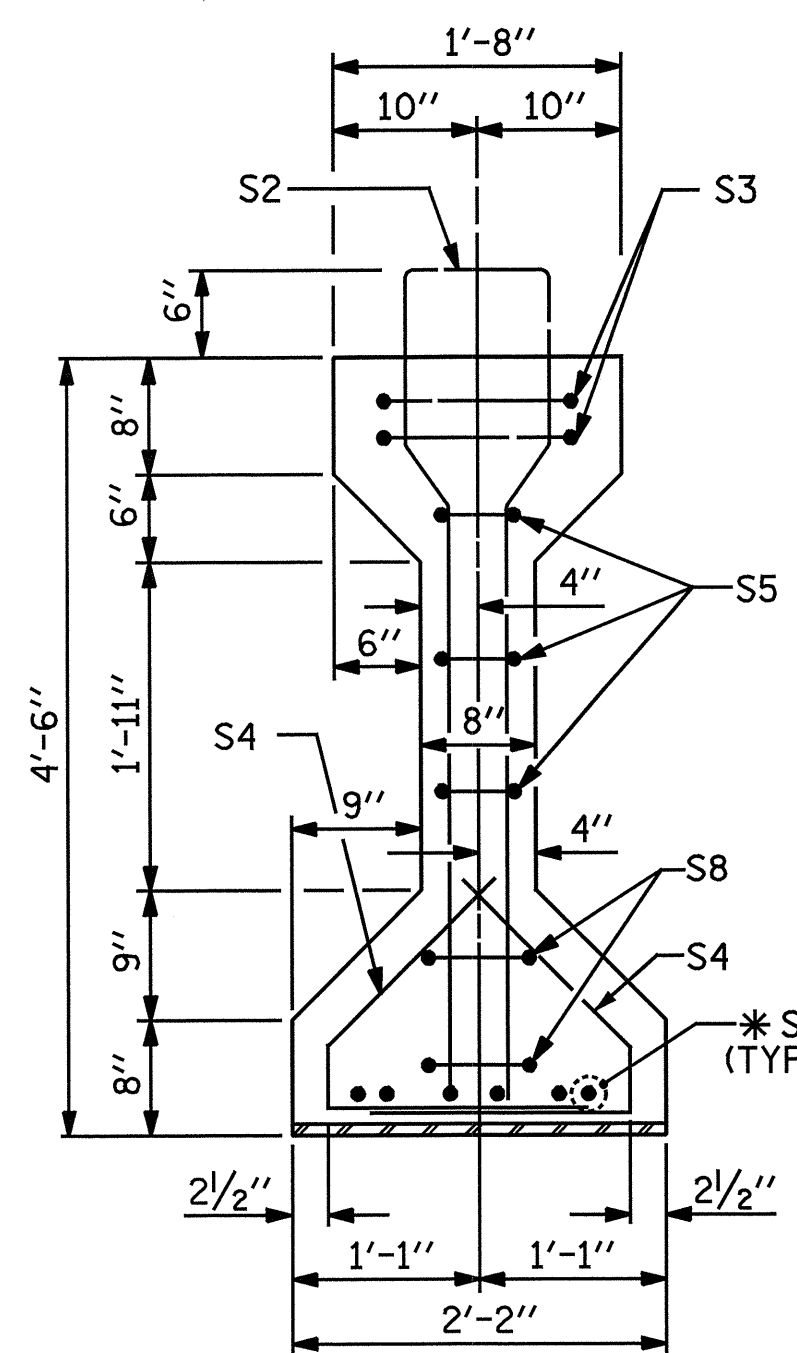
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			39

1/24/2013 9:27:38 AM
 File Name: Y:\Projects\NCDOT\VP-5208D\DISCIPLINE\Structures\Drawings\Final\VP-5208D_011.SD.Grdgn

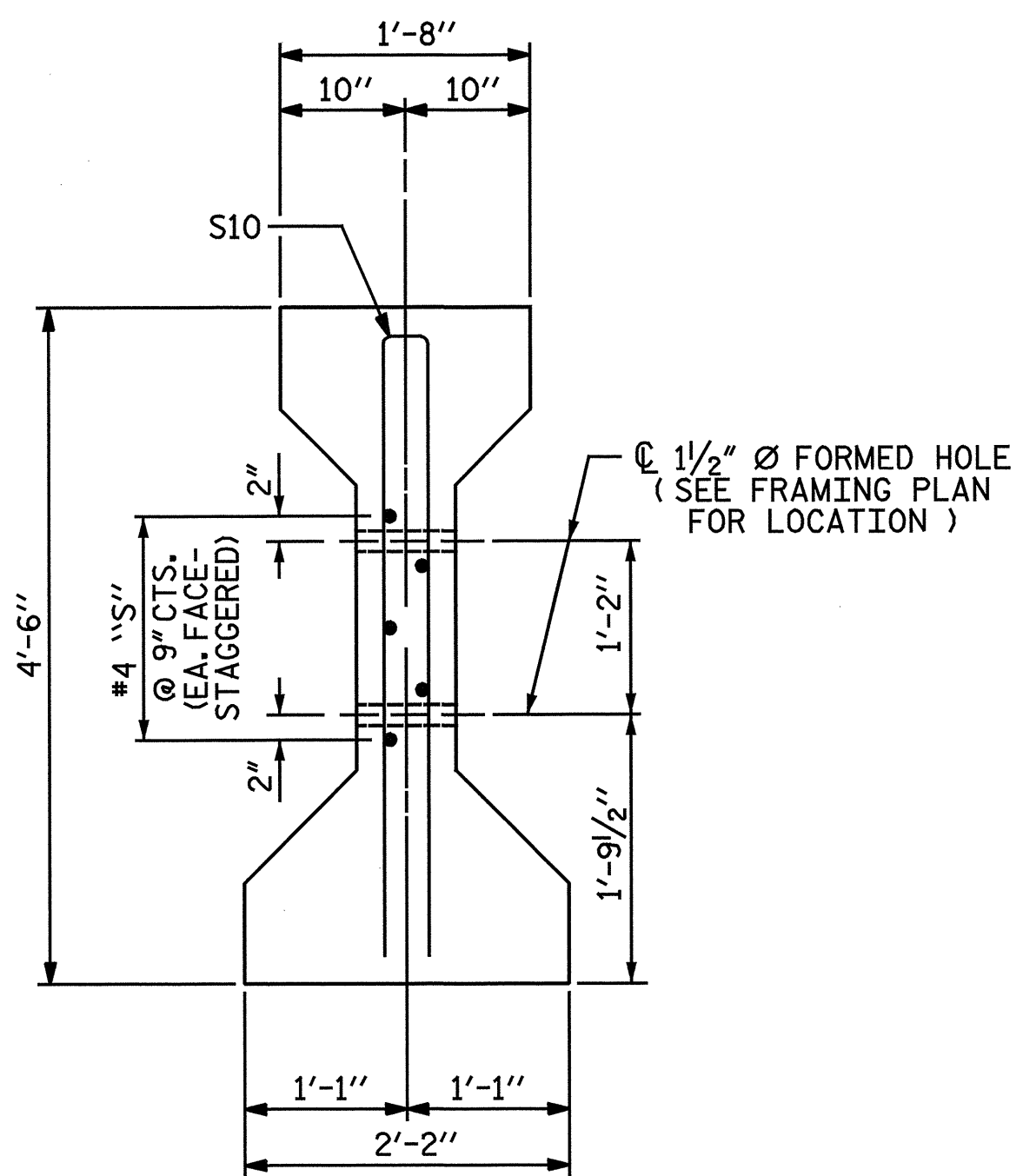
DRAWN BY: M. D. MAYHEW DATE: 8-23-12
CHECKED BY: R. F. DeCOLA DATE: 8-24-12

DWG. II OF 39

ELEVATION OF GIRDER
(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

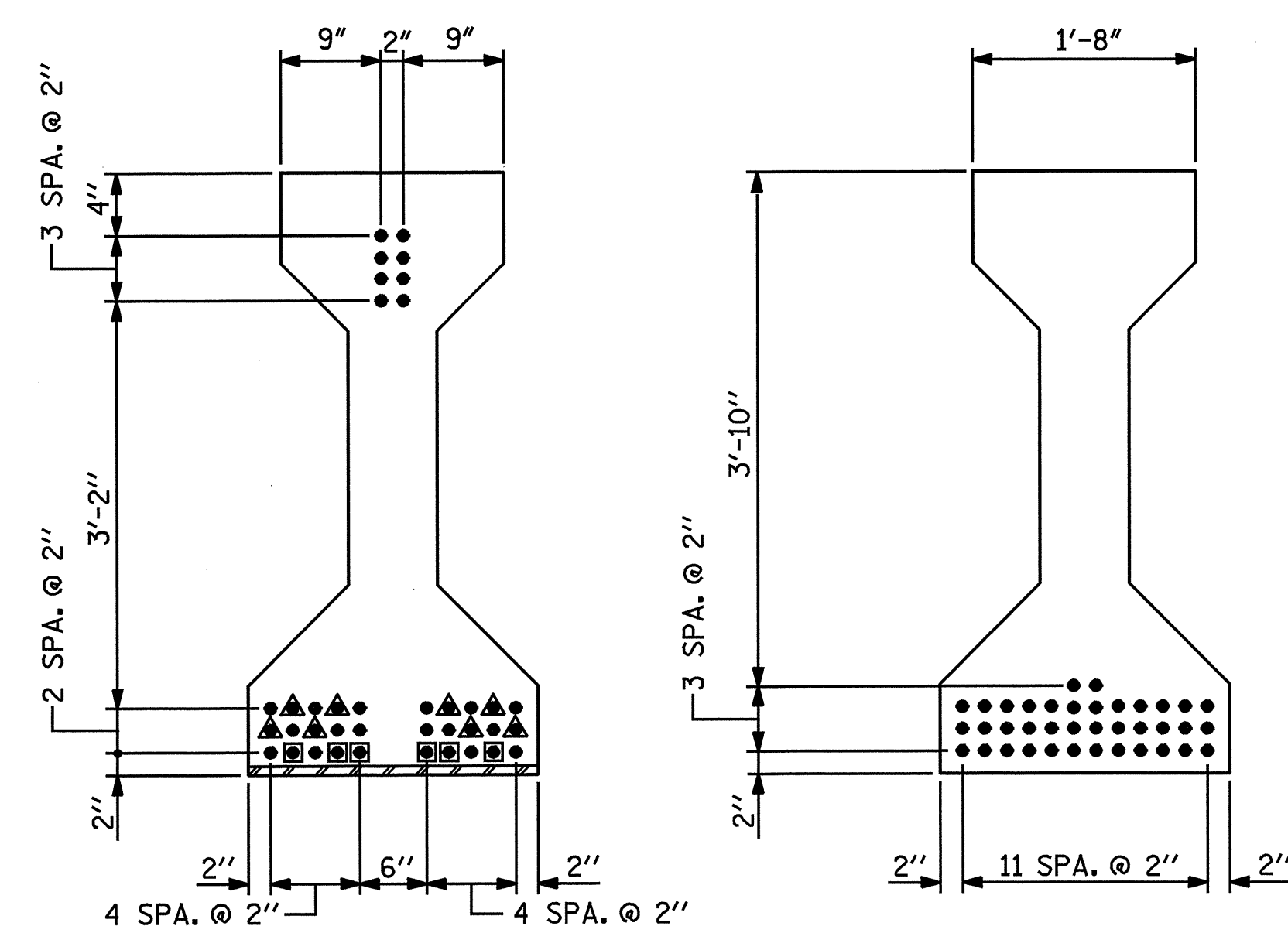


SECTION A-A



SECTION B-B
(S1 BARS NOT SHOWN)

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



AT END OF GIRDER AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

- STRANDS DEBONDED FOR 2'-0" FROM END OF GIRDER
- ▲ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER

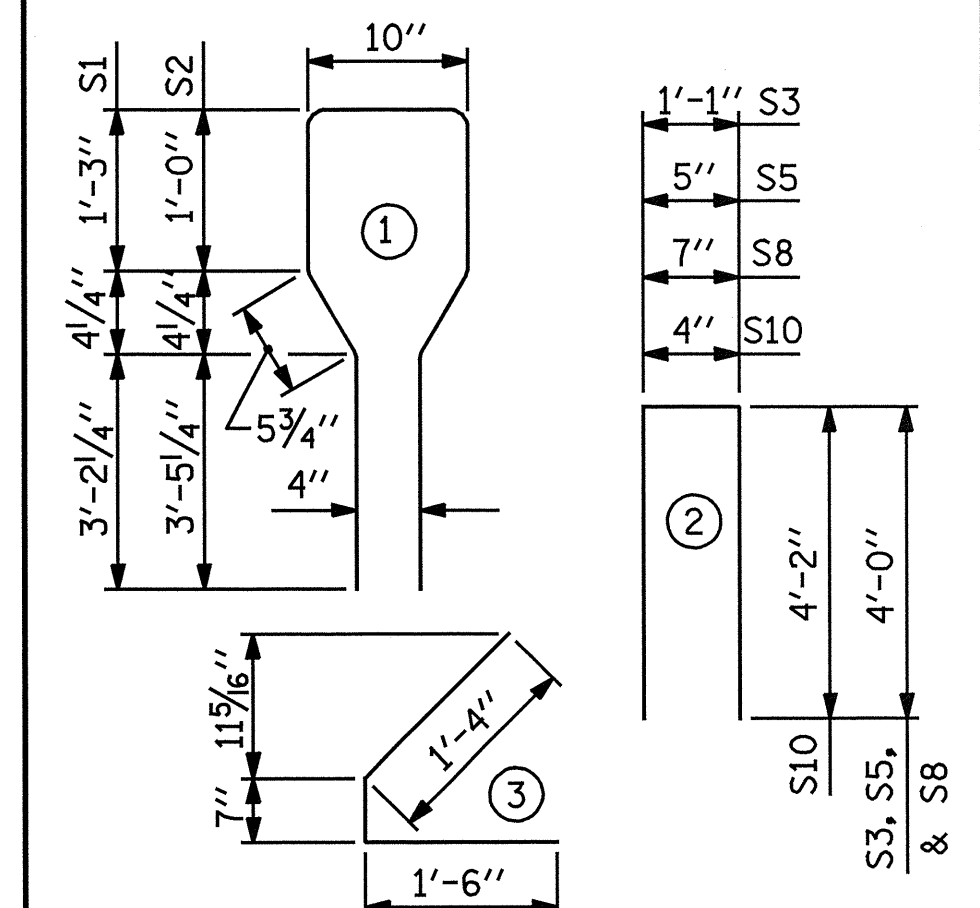
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	115	#4	1	10'-8"	819
S2	14	#6	1	10'-8"	224
S3	4	#4	2	9'-1"	24
S4	68	#4	3	3'-5"	155
S5	6	#4	2	8'-5"	34
*S7	12	#5	STR	3'-8"	46
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	4	#5	2	8'-8"	36
S11	10	#4	STR	7'-0"	47

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

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



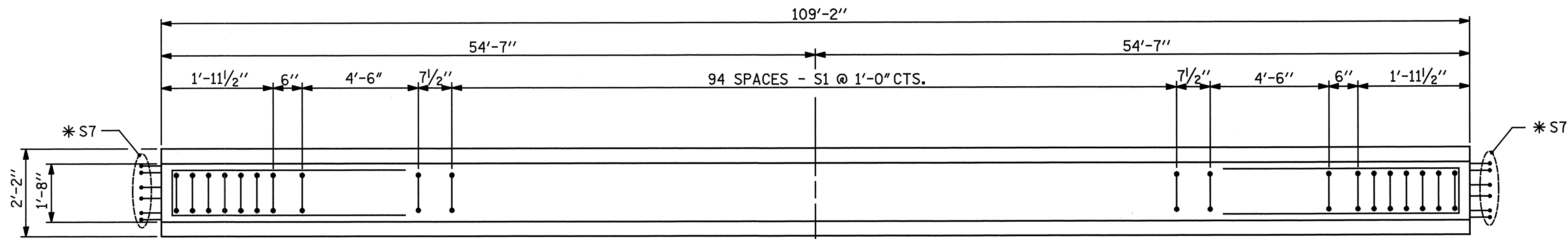
QUANTITIES FOR ONE GIRDER

	REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
EACH GIRDER	1409	22.2	38

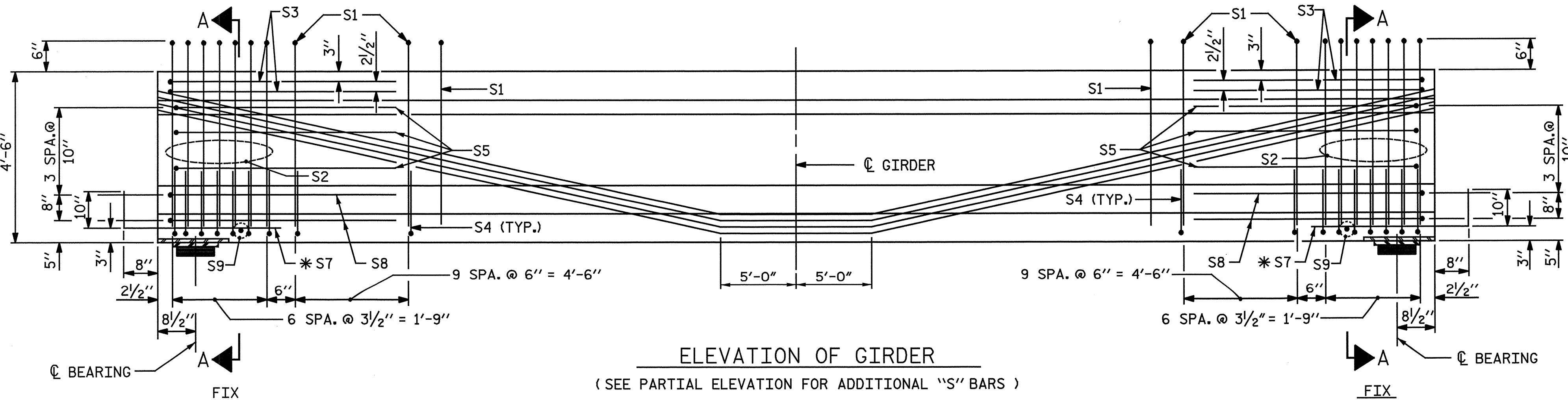
GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
9	109'-2"	982'-6"

THE UPLIFT FORCE DUE TO DRAPED STRANDS IS 24.8 KIPS.

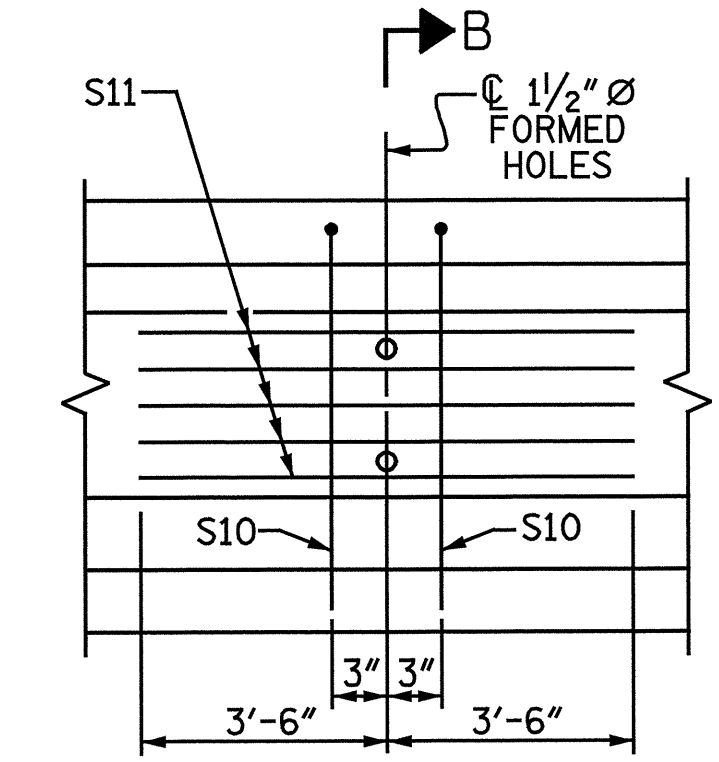


PLAN OF GIRDER



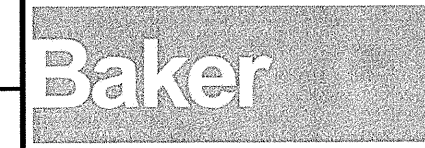
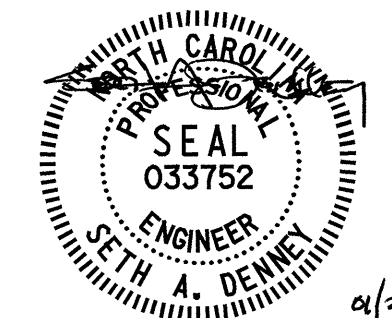
ELEVATION OF GIRDER

(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1-9



Michael Baker Engineering
8000 Regency Parkway, Suite 900
Cary, North Carolina 27518
NC License No.: F-1084

PROJECT NO. P-5208D
CABARRUS COUNTY
STATION: 16+93.38 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD

SPAN B

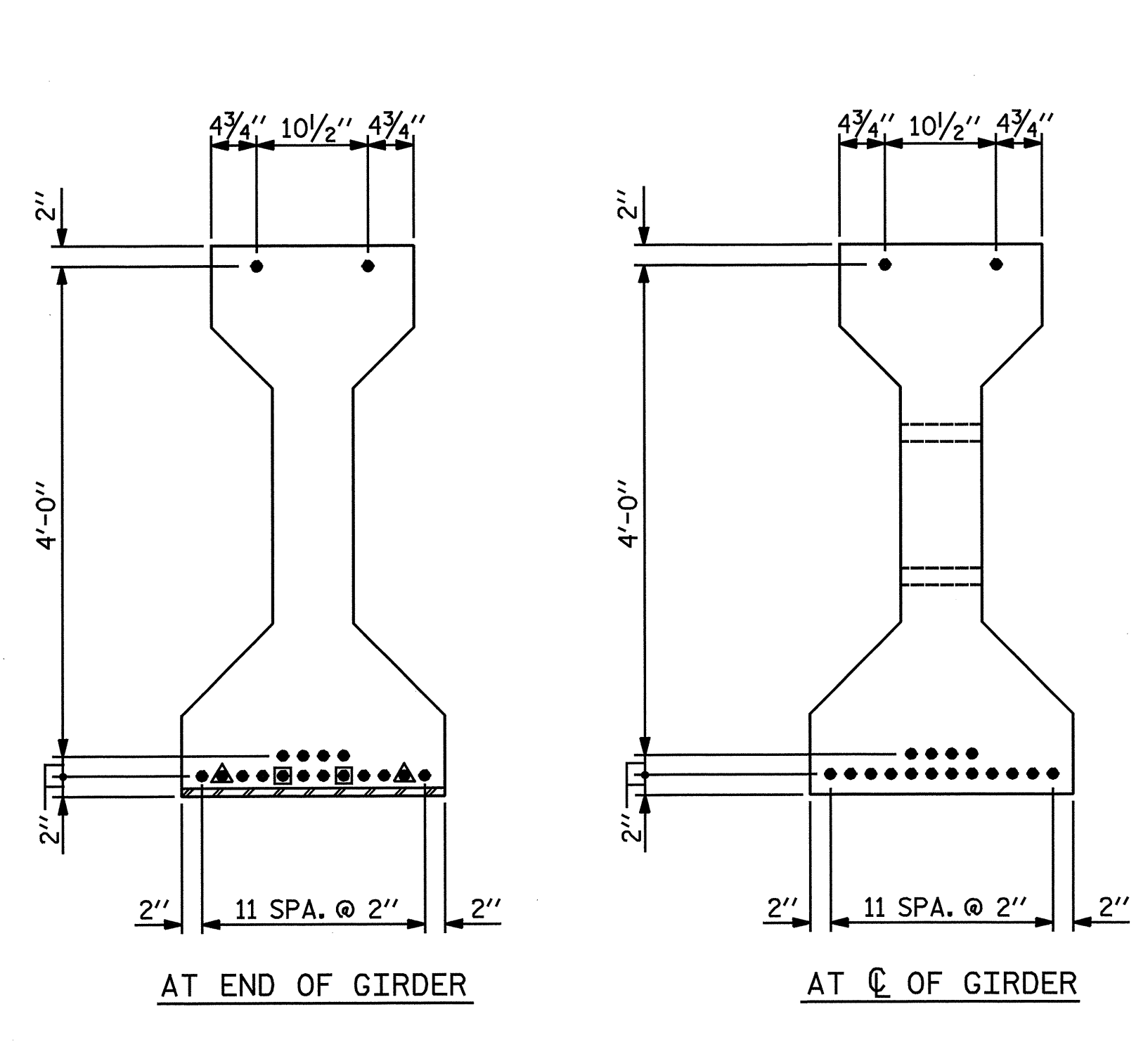
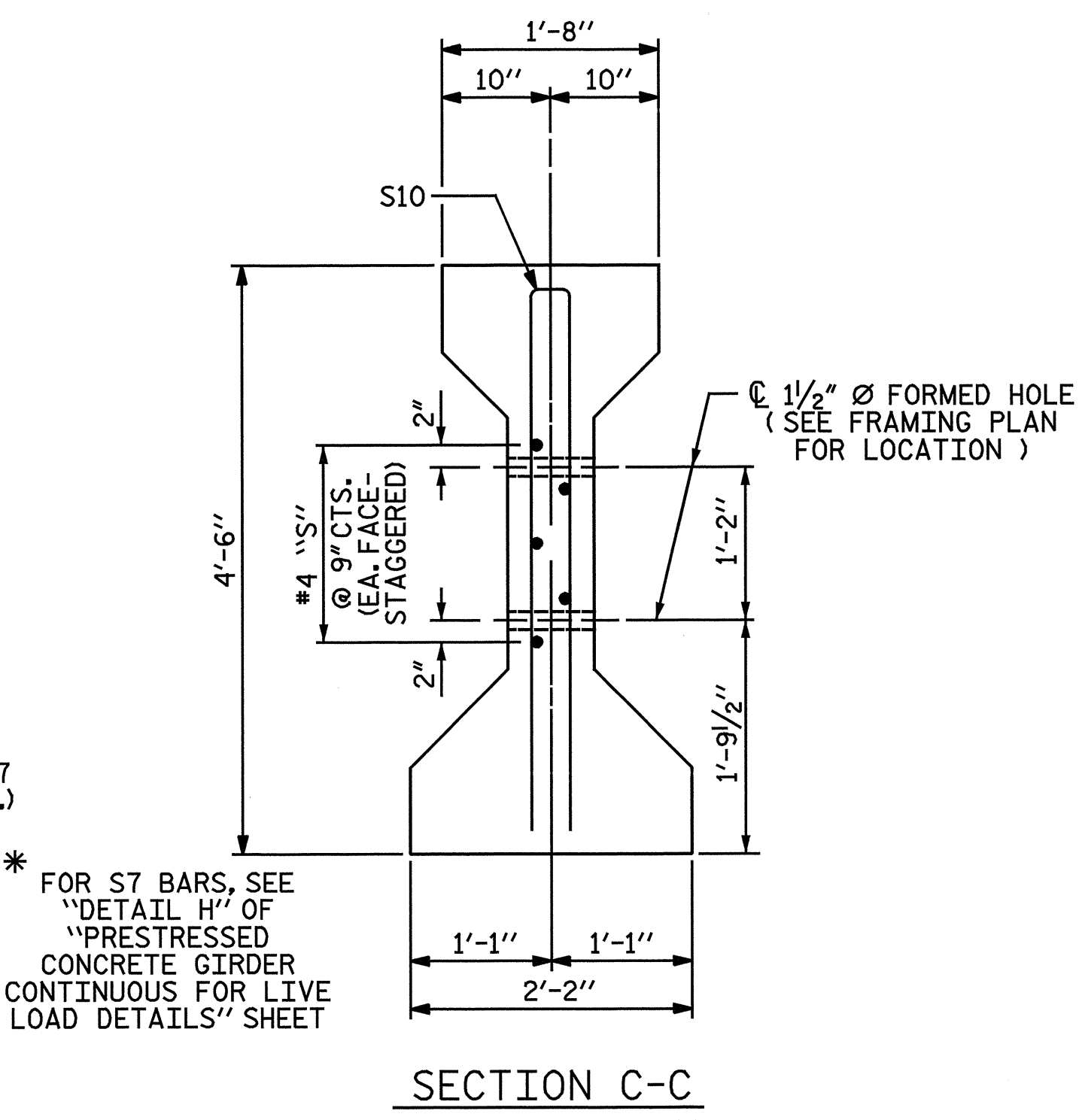
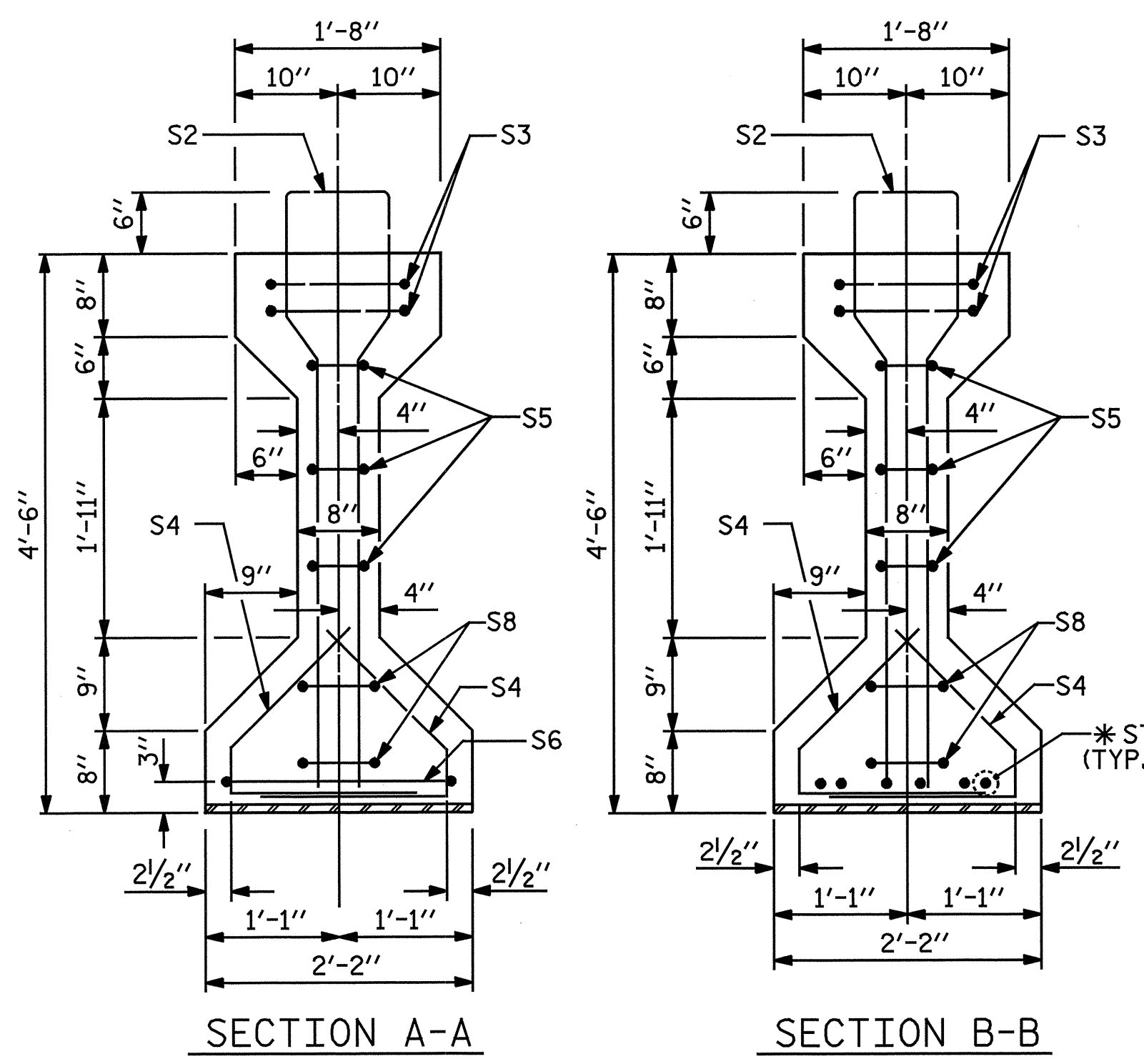
REVISIONS				SHEET NO.
NO.	BY:	DATE:	NO.	DATE:
1			3	
2			4	

S-12
TOTAL SHEETS 39

DRAWN BY: M. D. MAYHEW DATE: 8-23-12
CHECKED BY: R. F. DeCOLA DATE: 8-24-12

DWG. 12 OF 39

1/24/2013 9:27:39 AM
 Filename: Y:\Projects\5208D\1\Structures\Drawings\Final\N-5208D_012_S0_C2.dgn

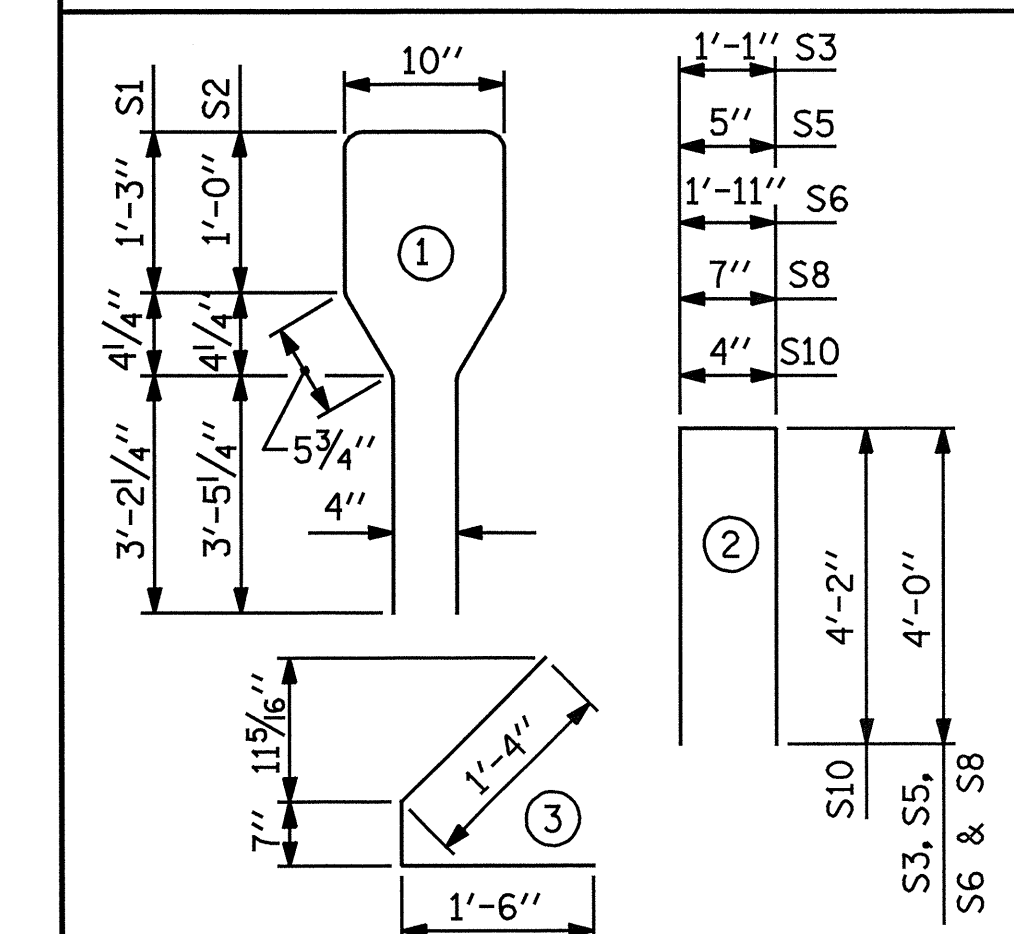


0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	64	#4	1	10'-8"	456
S2	12	#6	1	10'-8"	192
S3	4	#4	2	9'-1"	24
S4	64	#4	3	3'-5"	146
S5	6	#4	2	8'-5"	34
S6	1	#4	2	9'-11"	7
*S7	6	#5	STR	3'-8"	23
S8	4	#4	2	8'-7"	23
S9	1	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23

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

ALL BAR DIMENSIONS ARE OUT-TO-OUT

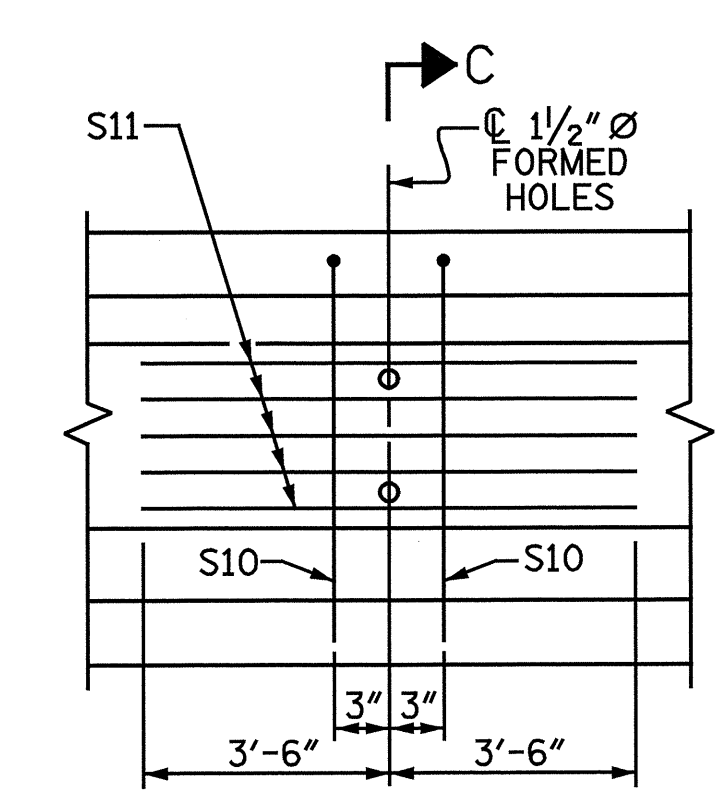
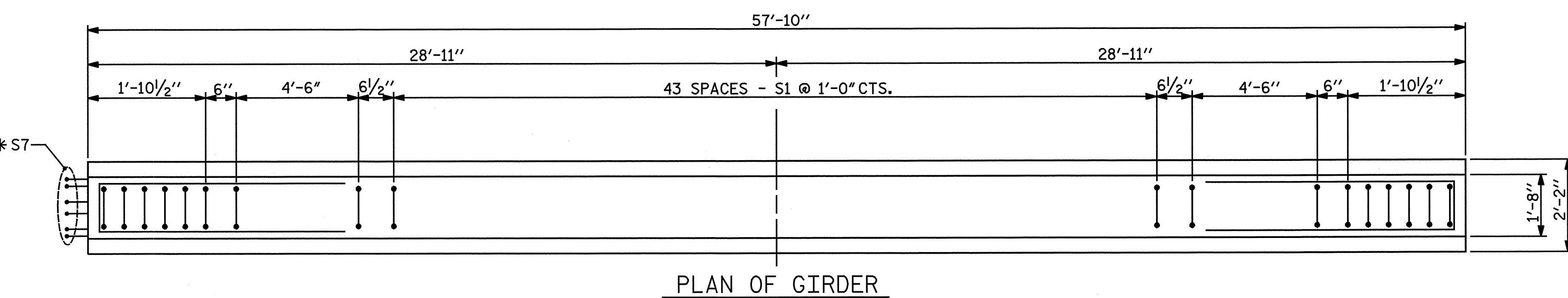


QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL LB.	8,000 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
EACH GIRDER	947	11.7	18
GIRDERS REQUIRED			
NUMBER	LENGTH	TOTAL LENGTH	
9	57'-10"	520'-6"	

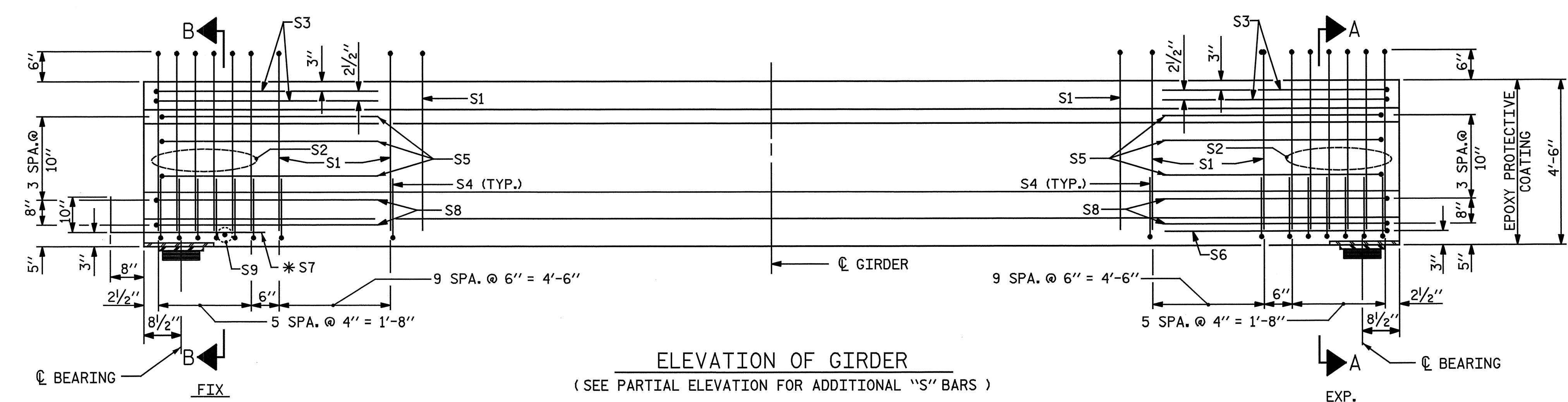
PROJECT NO. P-5208D
 CABARRUS COUNTY
 STATION: 16+93.38 -L-

SHEET 3 OF 5
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 AASHTO TYPE IV
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 SPAN C

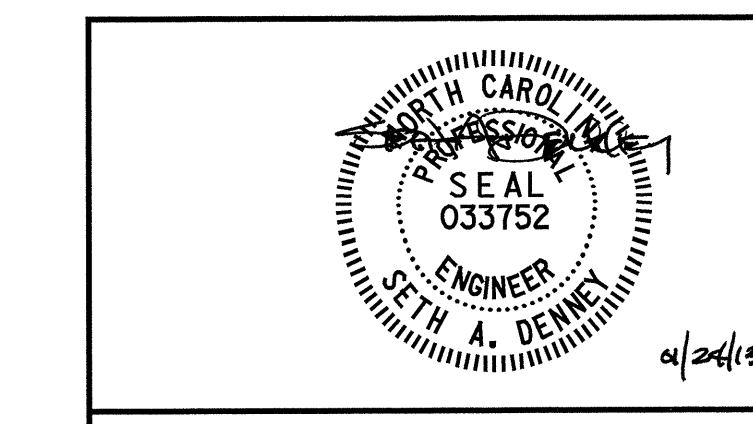
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		



PARTIAL ELEVATION
 SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. 1-9



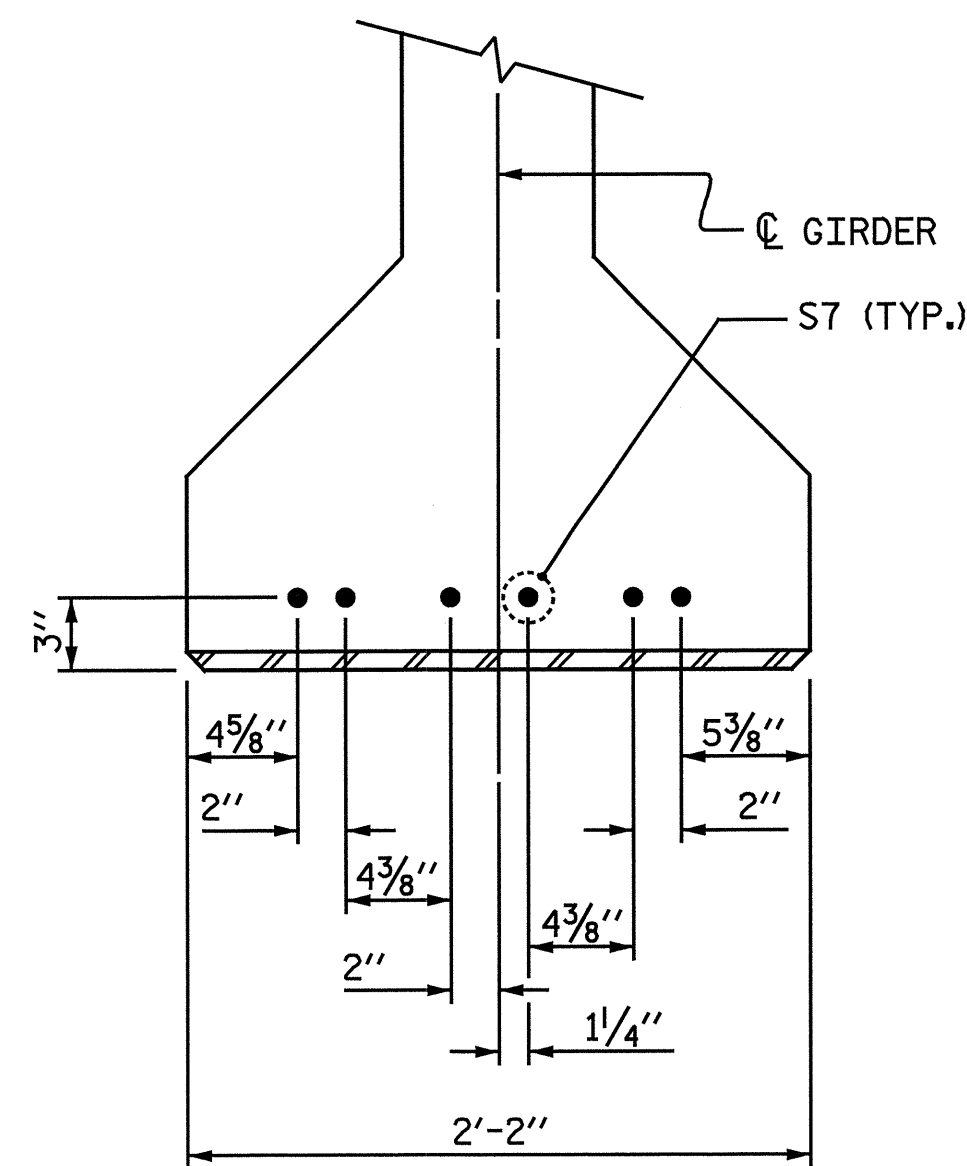
ELEVATION OF GIRDER
 (SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)



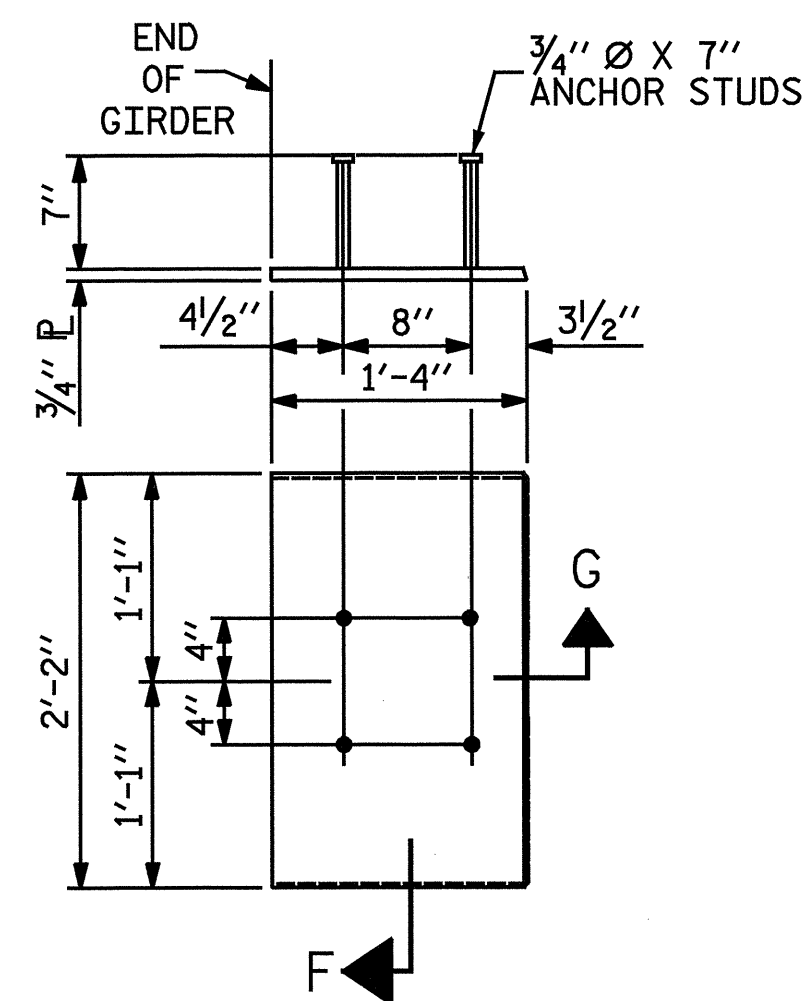
Baker
 Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27518
 NC License No.: F-1084

Justin 1/24/2013 9:27:40 AM
 File name: Y:\Projects\NDDOT\1-P-5208D\DISCIPLINE\Structures\Drawings\Final\1-P-5208D_013_SD_03.dgn

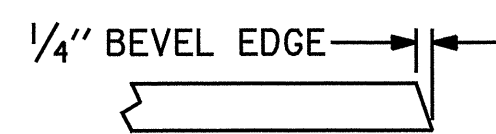
DRAWN BY: M. D. MAYHEW DATE: 8-23-12
 CHECKED BY: R. F. DeCOLA DATE: 8-24-12



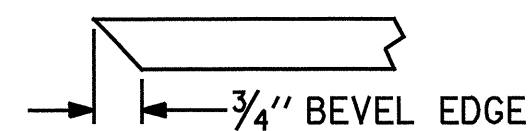
DETAIL H
(FOR AASHTO TYPE IV GIRDERS)



EMBEDDED PLATE "B-1" DETAILS
(2 REQ'D PER GIRDER)



SECTION G



SECTION F
(SEE NOTES)

NOTES:

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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 6400 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.

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

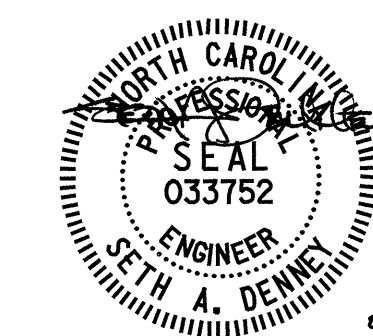
PROJECT NO. P-5208D
CABARRUS COUNTY
STATION: 16+93.38 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PRESTRESSED CONCRETE
GIRDER CONTINUOUS FOR
LIVE LOAD DETAILS



Baker

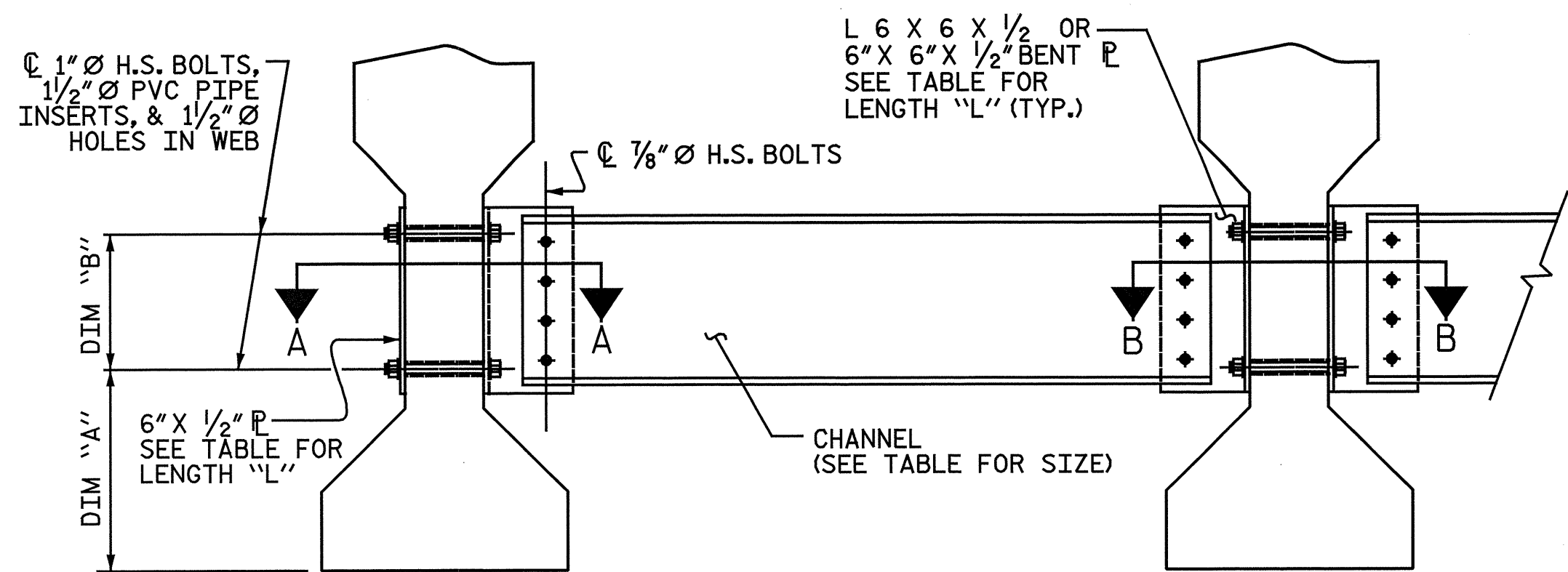
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			39

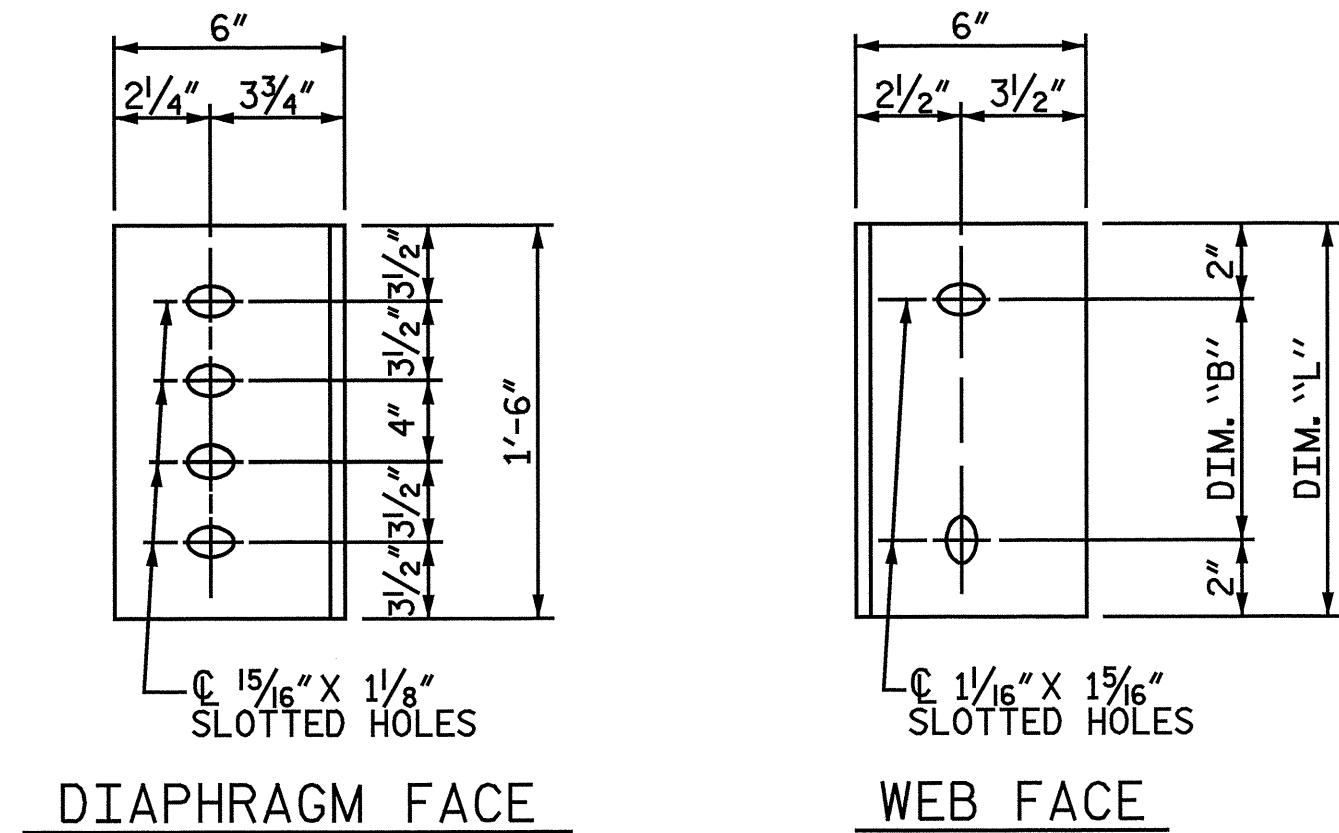
DWG. 14 OF 39

DRAWN BY : M. D. MAYHEW DATE : 8-23-12
CHECKED BY : R. F. DeCOLA DATE : 8-24-12

Justin 9:27:40 AM 1/24/2013
 File name: Y:\Projects\NC DOT\P-5208D\DISCIPLINE\Structures\Dwg\Final\P-5208D_04_SD_04.dgn



EXTERIOR GIRDER INTERIOR GIRDER
PART SECTION AT INTERMEDIATE DIAPHRAGM



CONNECTOR PLATE DETAILS

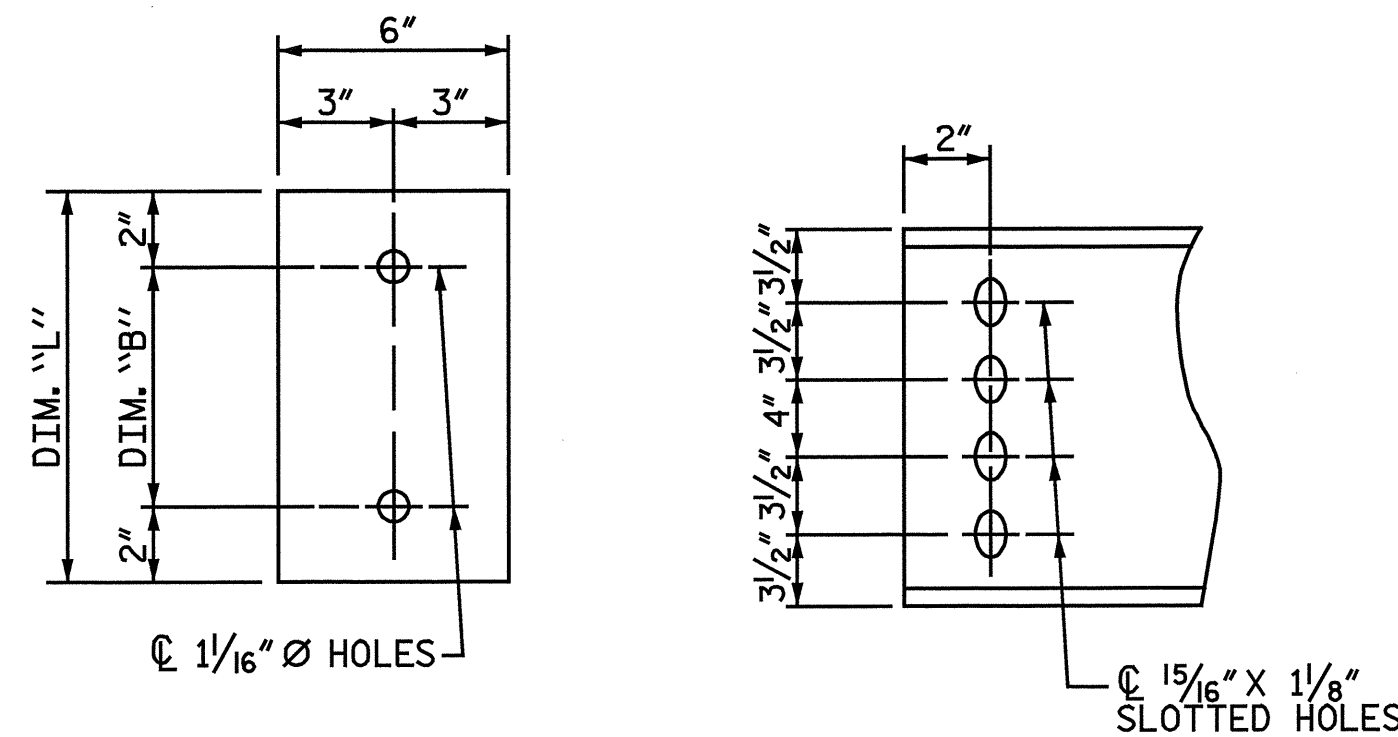
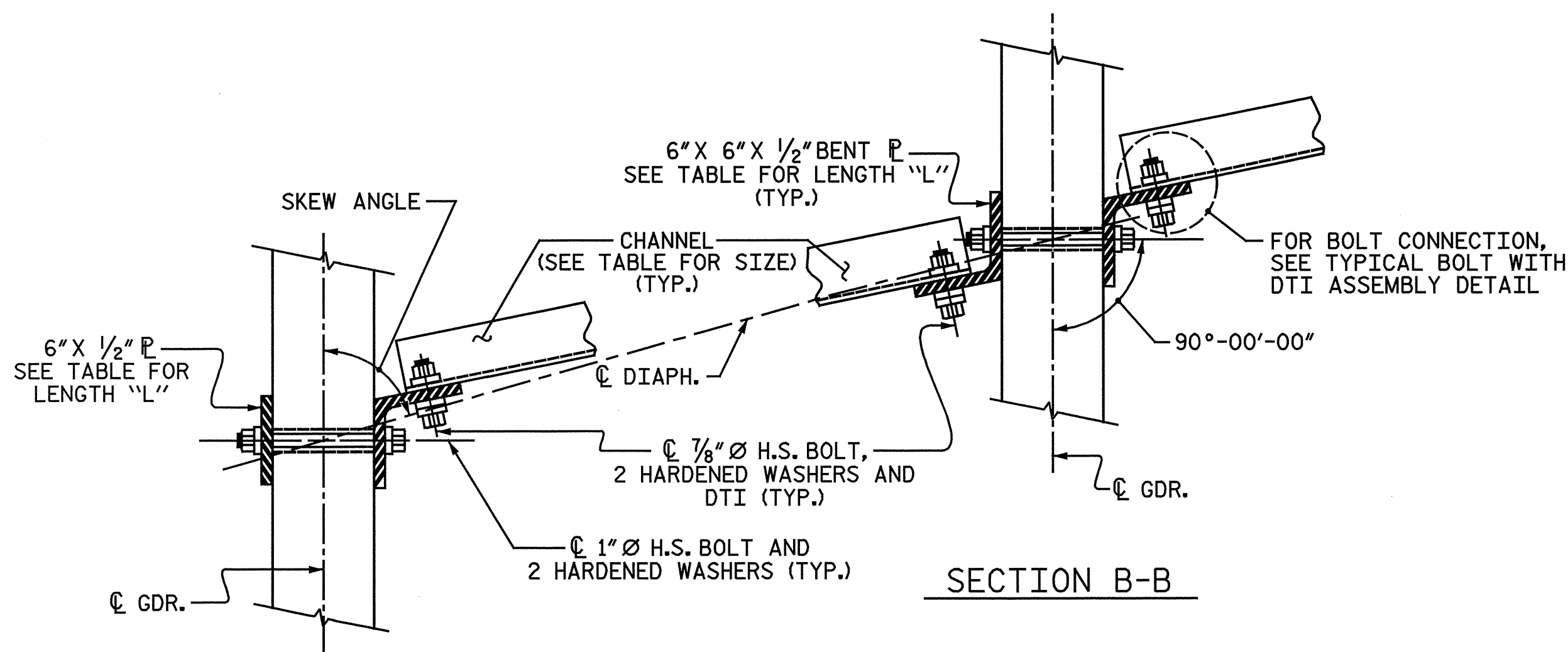
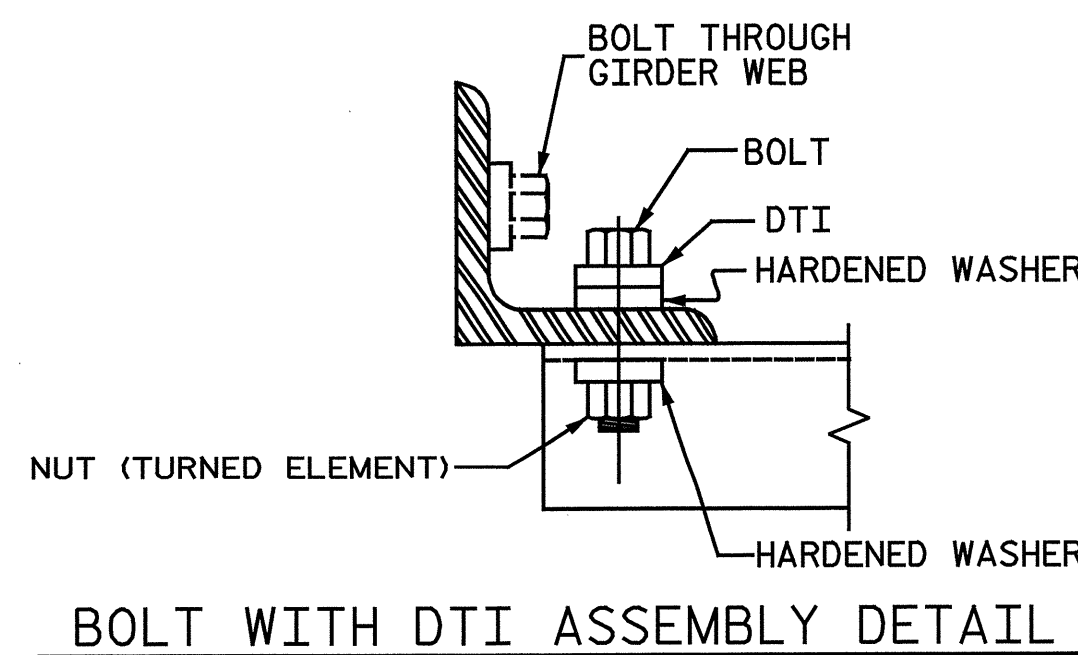


PLATE DETAILS CHANNEL END



CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

STRUCTURAL STEEL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

TABLE

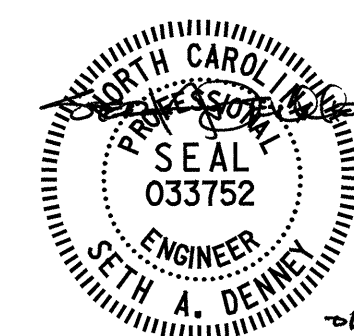
GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
IV	MC 18 x 42.7	1'-9 1/2"	1'-2"	1'-6"

PROJECT NO. P-5208D
CABARRUS COUNTY
STATION: 16+93.38 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
INTERMEDIATE STEEL
DIAPHRAGMS FOR TYPE IV
PRESTRESSED CONCRETE
GIRDERS



Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

Baker

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			39
2			4			

DWG. 15 OF 39

DRAWN BY: M. D. MAYHEW DATE: 8-24-12
CHECKED BY: R. F. DeCOLA DATE: 8-27-12

Justin 9:27:41 AM 1/24/2013 Filename: Y:\Projects\NCDOT\15-5208D\DISCIPLINE\Structures\Drawings\Final\15-5208D_015_SD_05.dgn

+

+

I:\austin\12/24/2013 9:27:42 AM\Projects\NC001\VP-52080\DISCIPLINE\Structures\Drawings\Incl\VP-52080_016_SD_DL.dgn

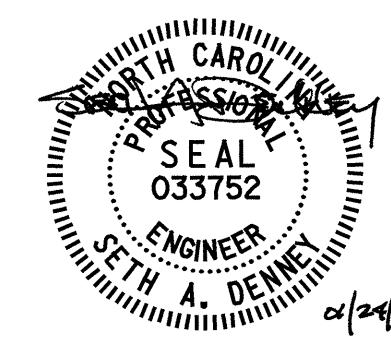
DEAD LOAD DEFLECTION TABLE FOR GIRDERS											
SPAN A											
0.6" Ø LOW RELAXATION STRANDS	GIRDERS G1 & G9										
TENTH POINTS BETWEEN BRGS.	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑	0.000	0.023	0.041	0.054	0.061	0.064	0.061	0.054	0.041	0.023	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓	0.000	0.005	0.010	0.013	0.016	0.017	0.016	0.013	0.010	0.005	0.000
FINAL CAMBER (IN.) ↑	0	1/4"	3/8"	1/2"	9/16"	9/16"	9/16"	1/2"	3/8"	1/4"	0
0.6" Ø LOW RELAXATION STRANDS	GIRDERS G2 THRU G8										
TENTH POINTS BETWEEN BRGS.	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑	0.000	0.023	0.041	0.054	0.061	0.064	0.061	0.054	0.041	0.023	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓	0.000	0.005	0.010	0.014	0.017	0.018	0.017	0.014	0.010	0.005	0.000
FINAL CAMBER (IN.) ↑	0	3/16"	3/8"	1/2"	1/2"	9/16"	1/2"	1/2"	3/8"	3/16"	0
SPAN B											
0.6" Ø LOW RELAXATION STRANDS	GIRDERS G1 & G9										
TENTH POINTS BETWEEN BRGS.	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑	0.000	0.134	0.237	0.312	0.359	0.375	0.359	0.312	0.237	0.134	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓	0.000	0.068	0.132	0.181	0.213	0.224	0.213	0.181	0.132	0.068	0.000
FINAL CAMBER (IN.) ↑	0	13/16"	1 1/4"	1 9/16"	1 3/4"	1 13/16"	1 3/4"	1 9/16"	1 1/4"	13/16"	0
0.6" Ø LOW RELAXATION STRANDS	GIRDERS G2 THRU G8										
TENTH POINTS BETWEEN BRGS.	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑	0.000	0.134	0.237	0.312	0.359	0.375	0.359	0.312	0.237	0.134	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓	0.000	0.073	0.141	0.195	0.229	0.241	0.229	0.195	0.141	0.073	0.000
FINAL CAMBER (IN.) ↑	0	3/4"	1 1/8"	1 3/8"	1 9/16"	1 5/8"	1 9/16"	1 3/8"	1 1/8"	3/4"	0
SPAN C											
0.6" Ø LOW RELAXATION STRANDS	GIRDERS G1 & G9										
TENTH POINTS BETWEEN BRGS.	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑	0.000	0.023	0.041	0.054	0.061	0.064	0.061	0.054	0.041	0.023	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓	0.000	0.005	0.010	0.013	0.016	0.017	0.016	0.013	0.010	0.005	0.000
FINAL CAMBER (IN.) ↑	0	1/4"	3/8"	1/2"	9/16"	9/16"	9/16"	1/2"	3/8"	1/4"	0
0.6" Ø LOW RELAXATION STRANDS	GIRDERS G2 THRU G8										
TENTH POINTS BETWEEN BRGS.	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CAMBER (GIRDER ALONE IN PLACE) (FT.) ↑	0.000	0.023	0.041	0.054	0.061	0.064	0.061	0.054	0.041	0.023	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. (FT.) ↓	0.000	0.005	0.010	0.014	0.017	0.018	0.017	0.014	0.010	0.005	0.000
FINAL CAMBER (IN.) ↑	0	3/16"	3/8"	1/2"	1/2"	9/16"	1/2"	1/2"	3/8"	3/16"	0

* INCLUDES WEIGHT OF DECK SLAB, BUILD-UPS, DIAPHRAGMS, BARRIERS, AND FUTURE WEARING SURFACE.

PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 GIRDER DEFLECTIONS
 AND CAMBER

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			39

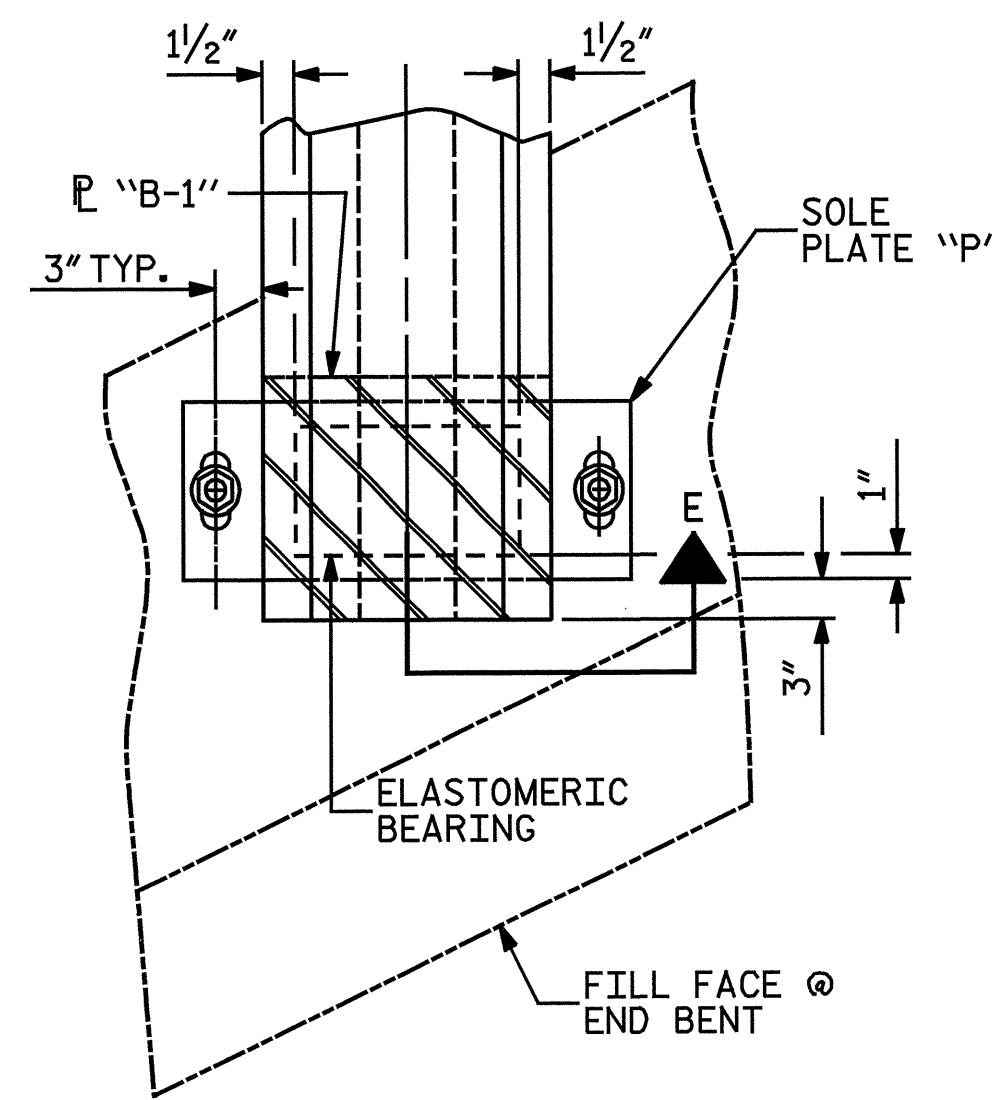
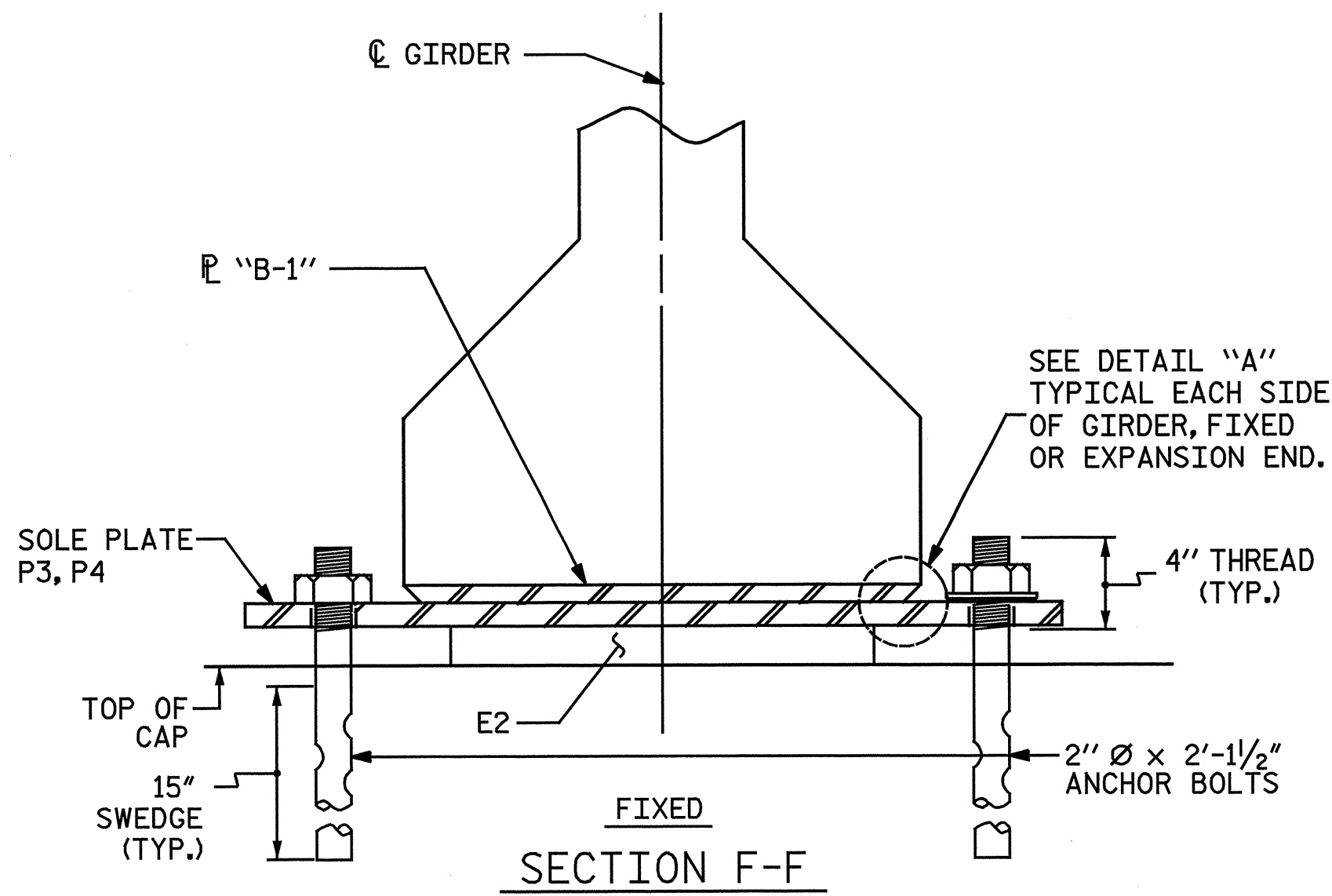
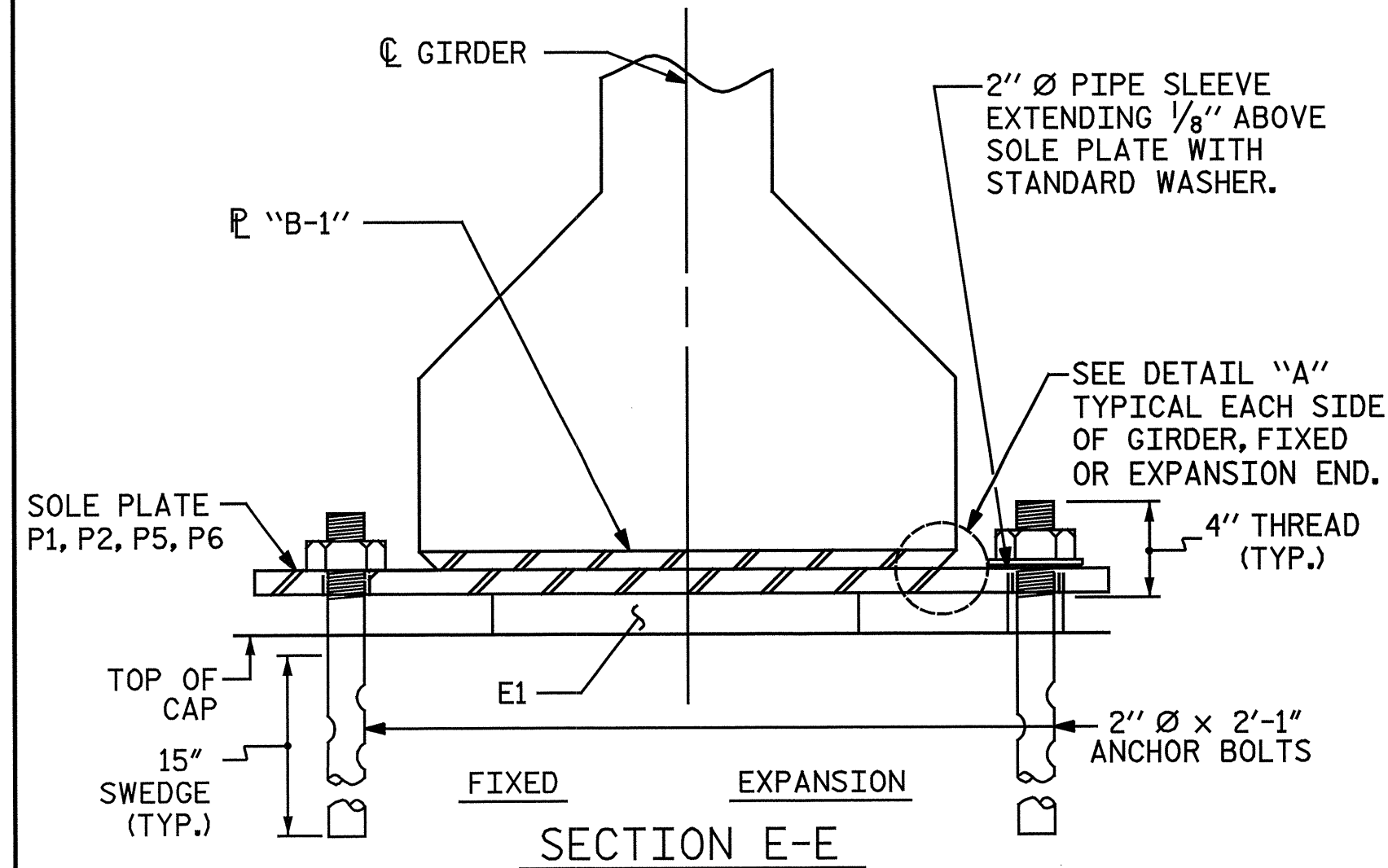


Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27618
 NC License No. : F-1084

DRAWN BY : J. N. AUSTIN DATE : 11-7-12
 CHECKED BY : A. L. PHILLIPS DATE : 11-8-12

DWG. 16 OF 39





NOTES:

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

THE 2" Ø PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

STEEL SOLE PLATES, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

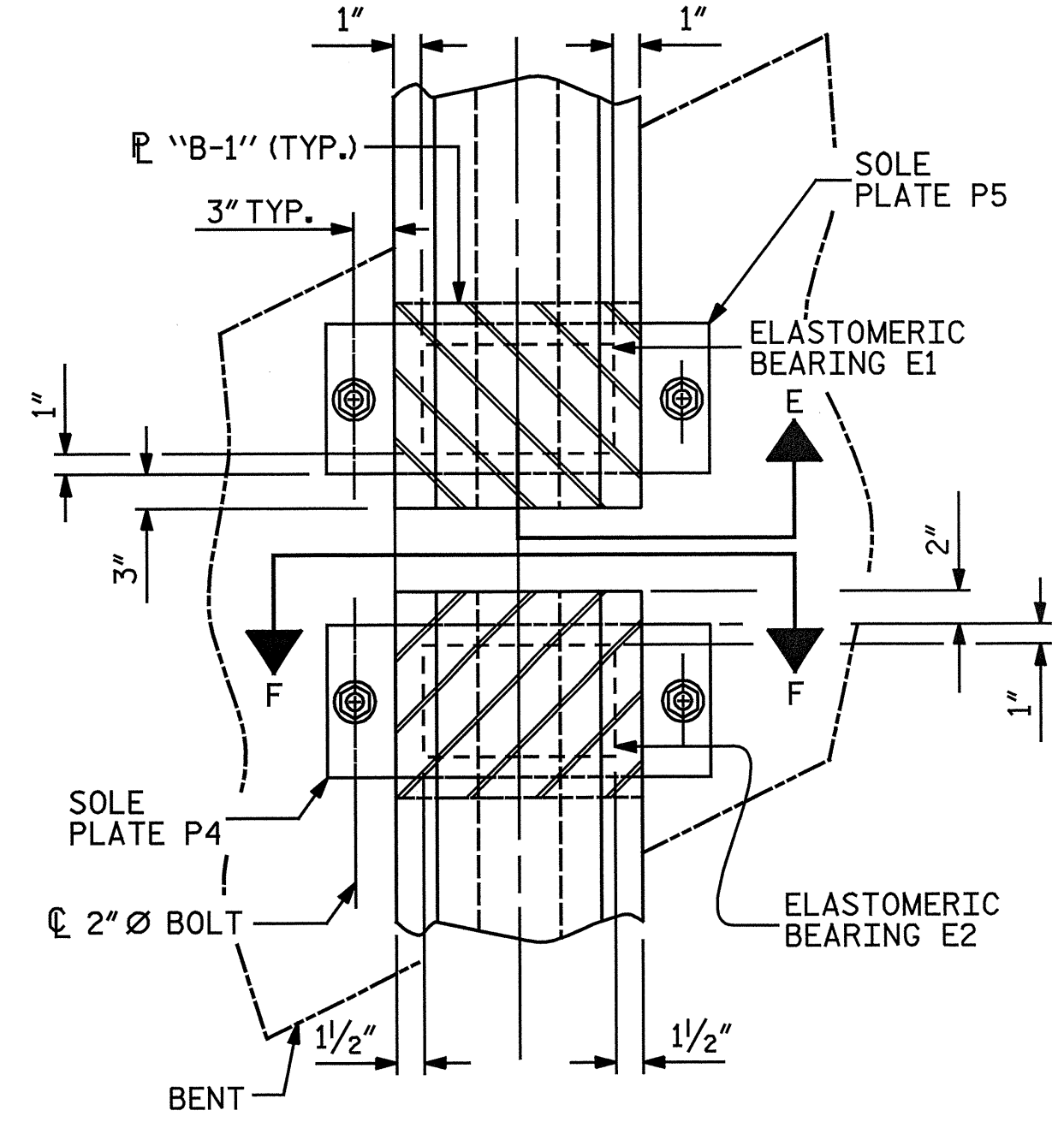
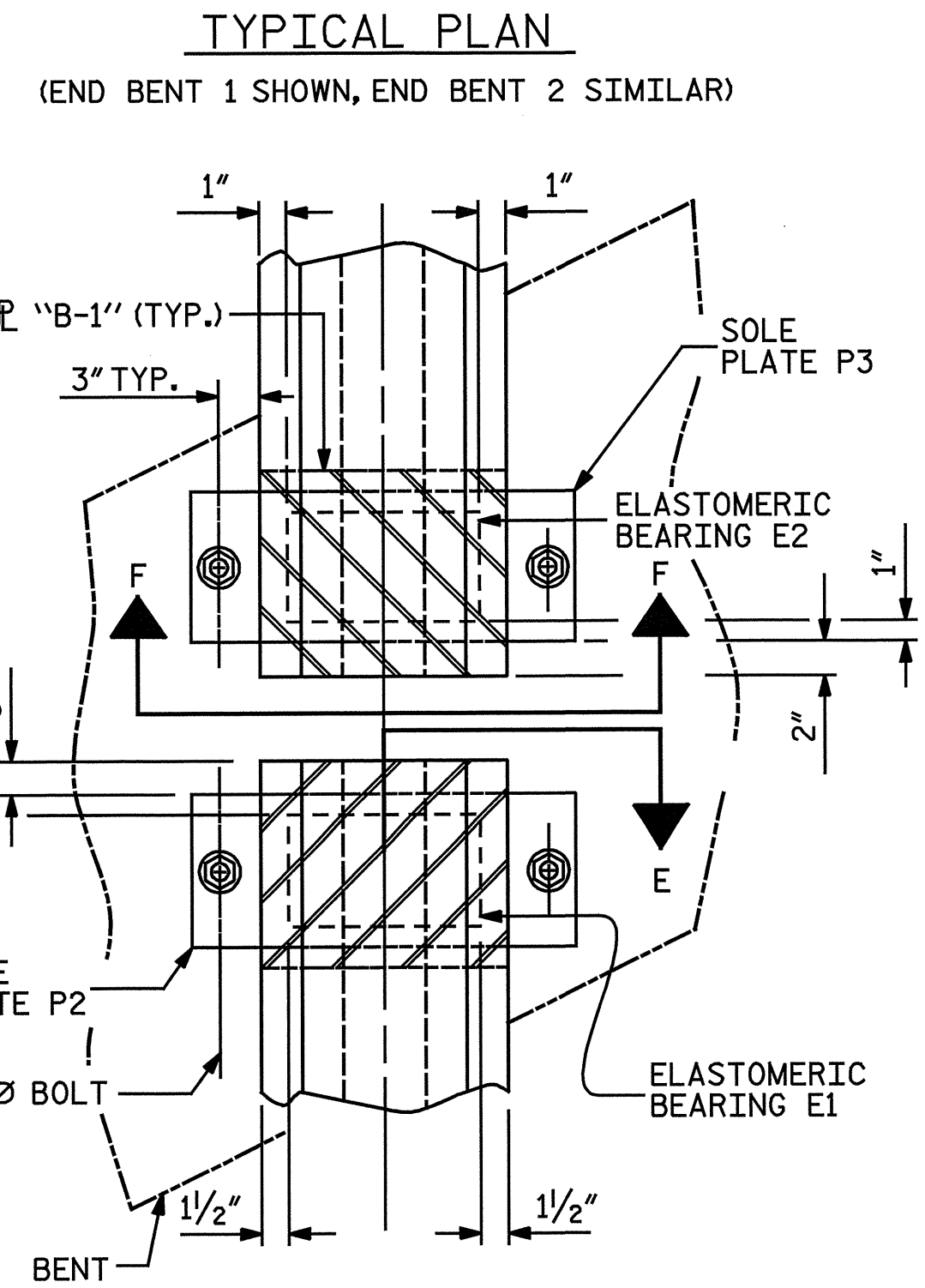
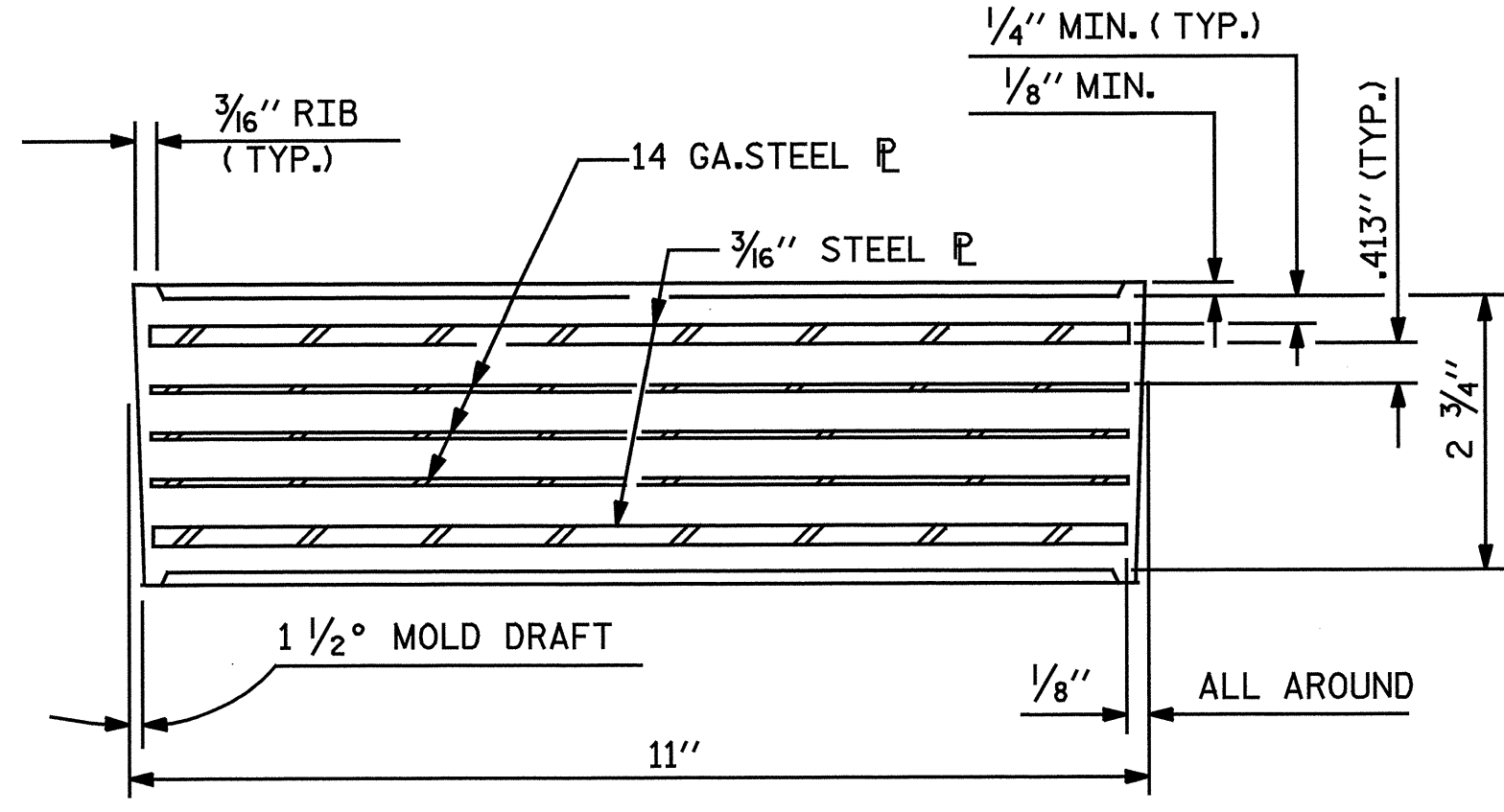
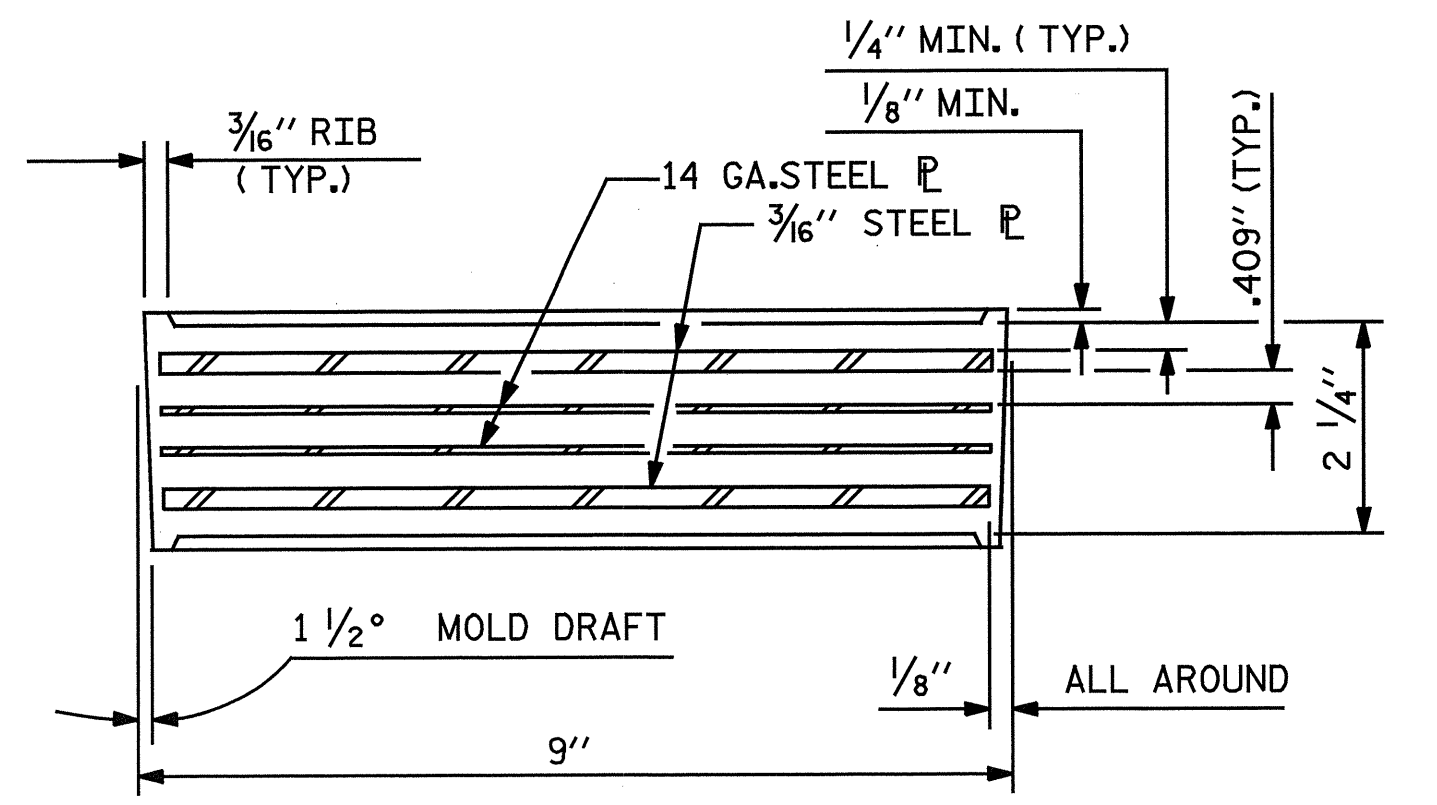
PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

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

ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

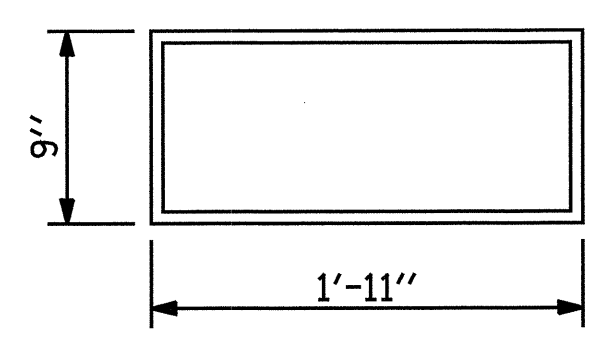


TYPICAL SECTION OF ELASTOMERIC BEARINGS

TYPICAL SECTION OF ELASTOMERIC BEARINGS

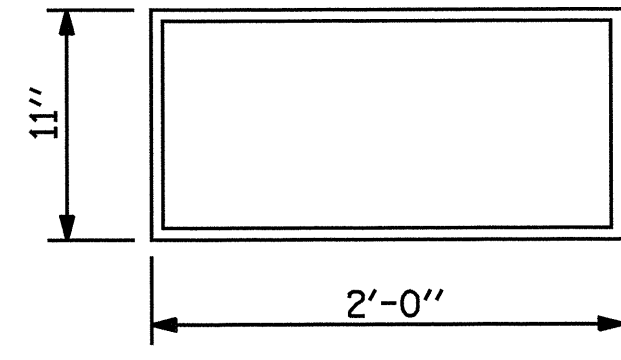
TYPICAL PLAN (BENT 1 SHOWN)

TYPICAL PLAN (BENT 2 SHOWN)



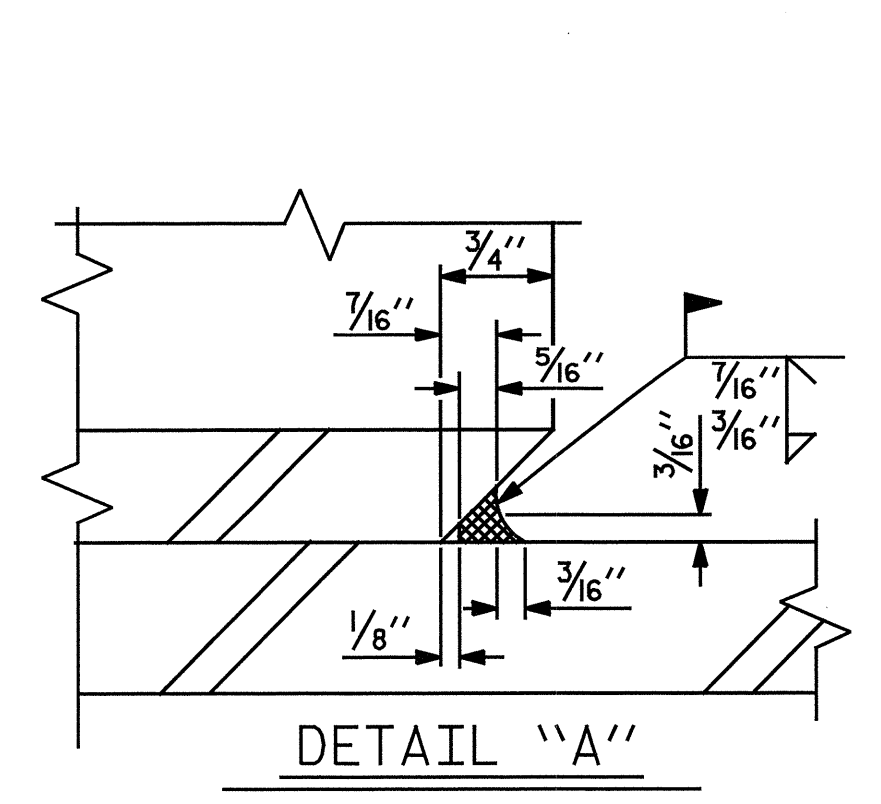
E1 (36 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING TYPE V

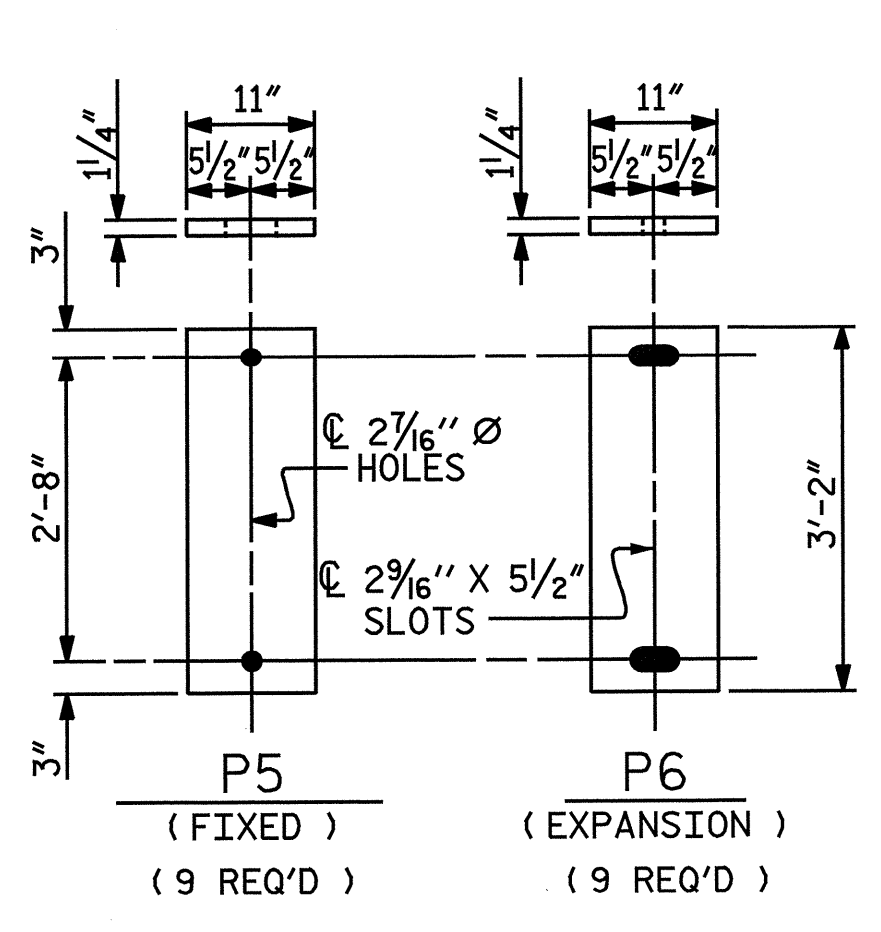
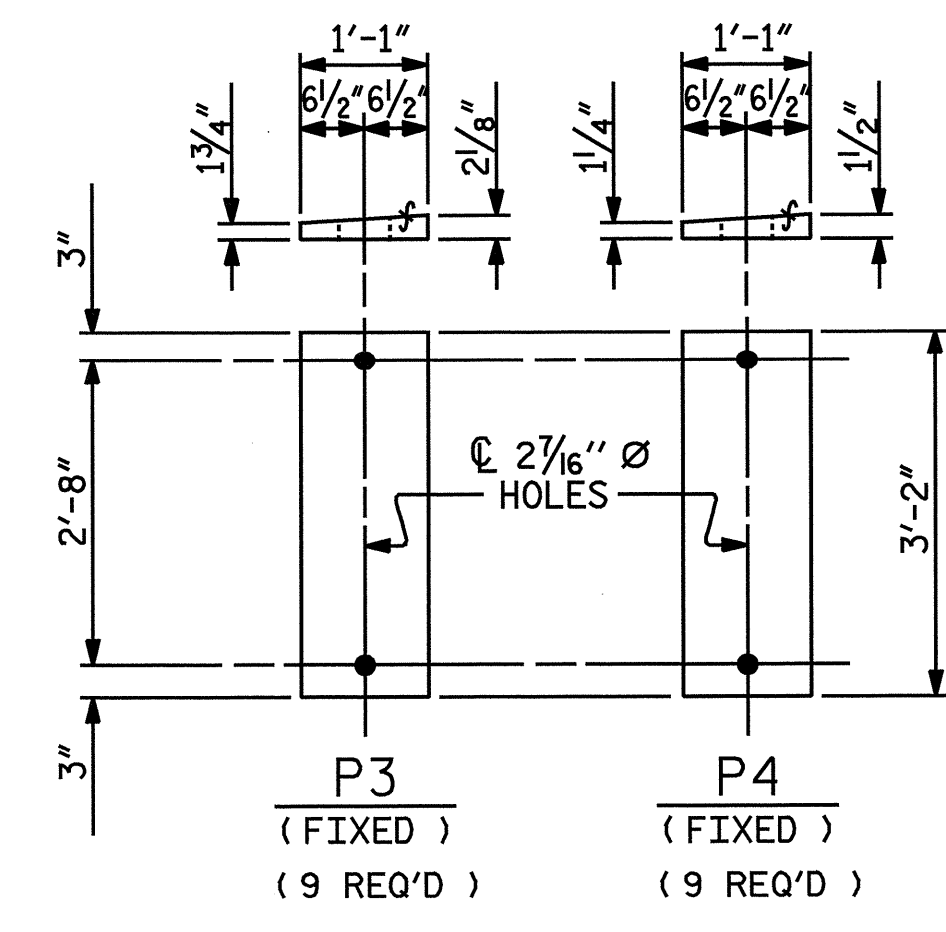
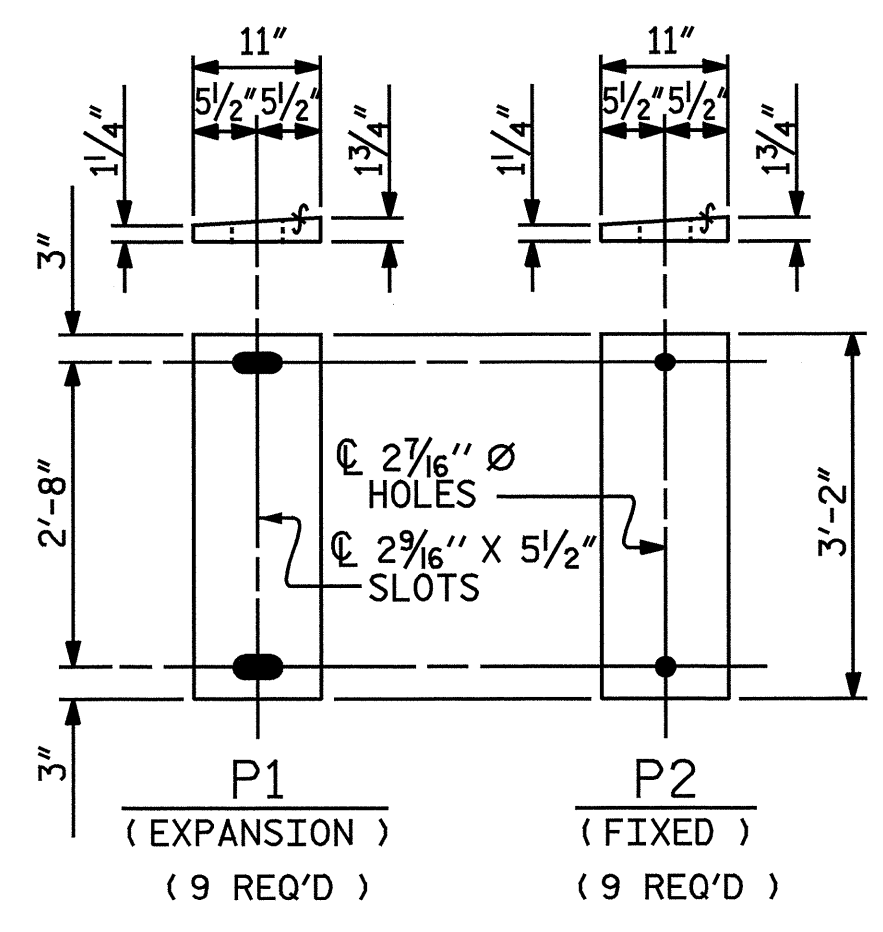


E2 (18 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING TYPE VII



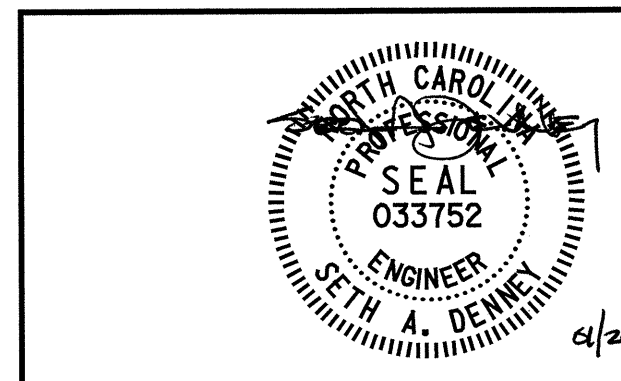
DETAIL "A"



SOLE PLATE DETAILS ("P")

MAXIMUM ALLOWABLE SERVICE LOADS	
	D.L.+L.L. (NO IMPACT)
TYPE V	365 K
TYPE VII	470 K

PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 ELASTOMERIC BEARING
 DETAILS

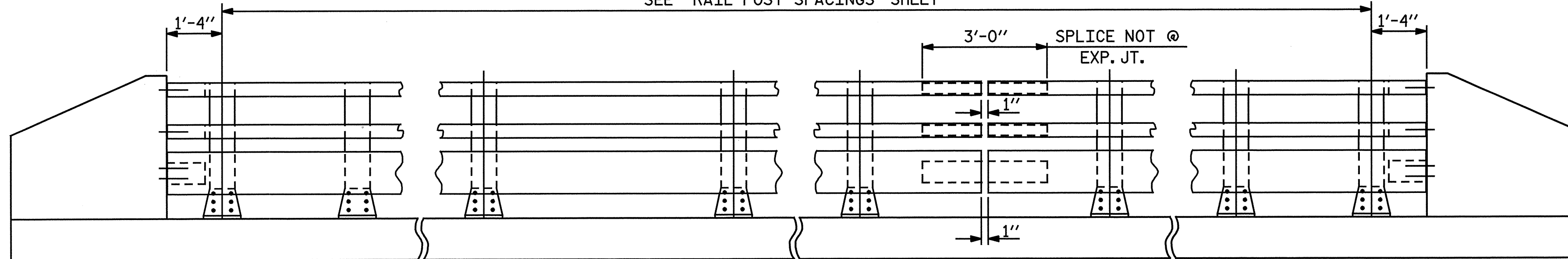
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			39

Baker

Michael Baker Engineering
 8000 Regency Parkway, Suite 800
 Cary, North Carolina 27518
 NC License No.: F-1084

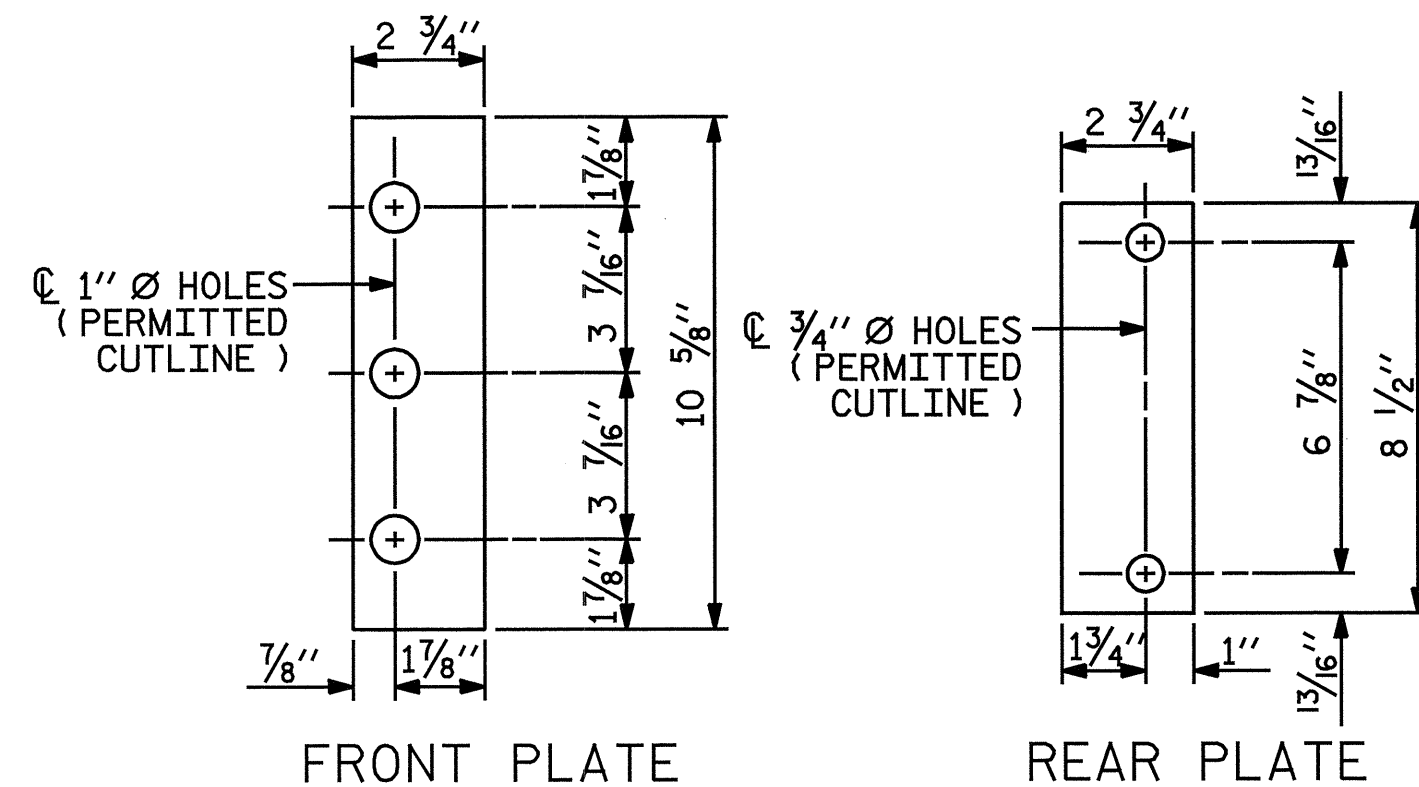
1/24/2013 9:27:42 AM
 File name: I:\Projects\5208D\DISCIPLINE\Structures\Drawings\Final\P-5208D_017_S0_BG.dgn

SEE "RAIL POST SPACINGS" SHEET



NOTE:
FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET 3 OF 4.

ELEVATION

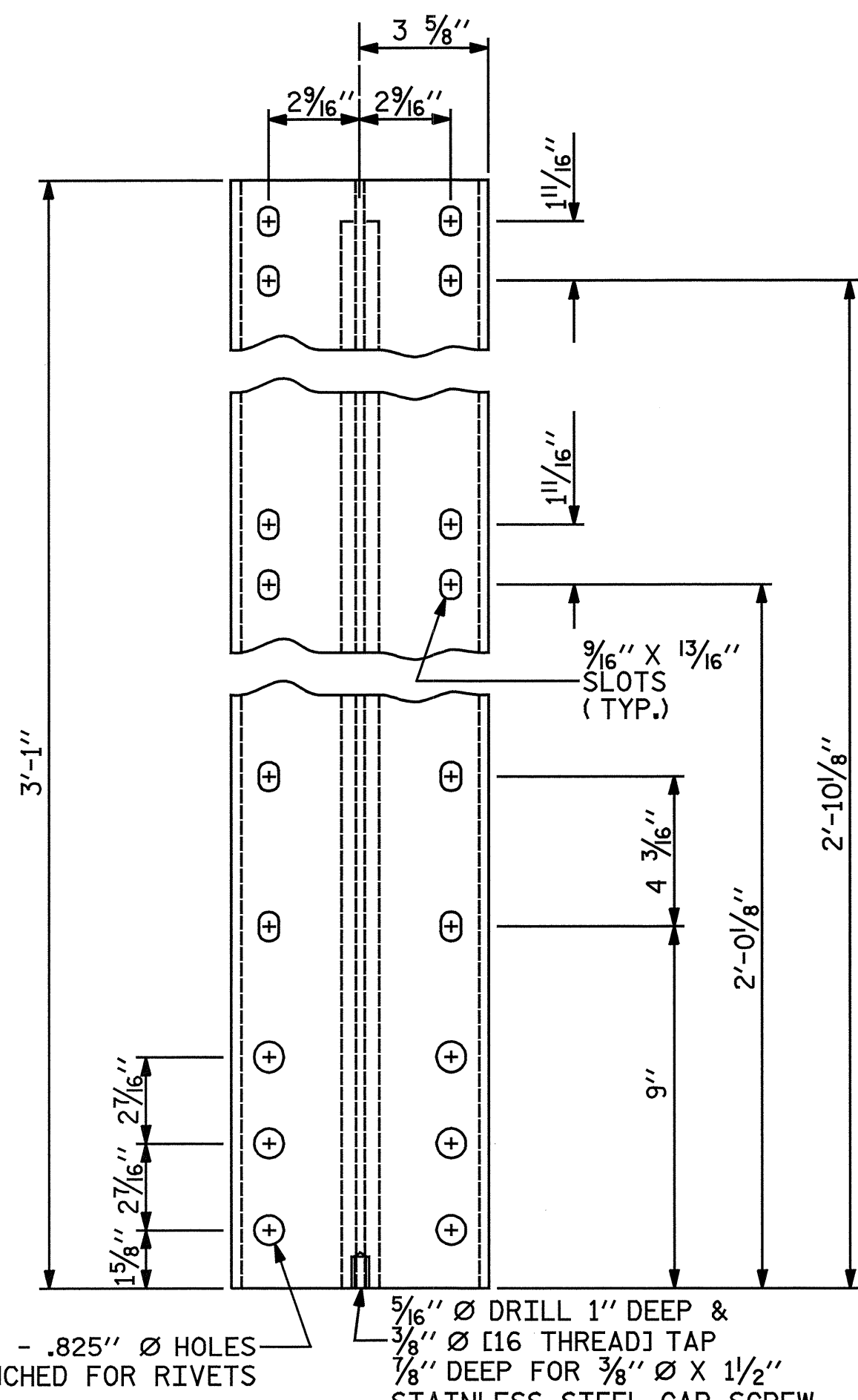


FRONT PLATE

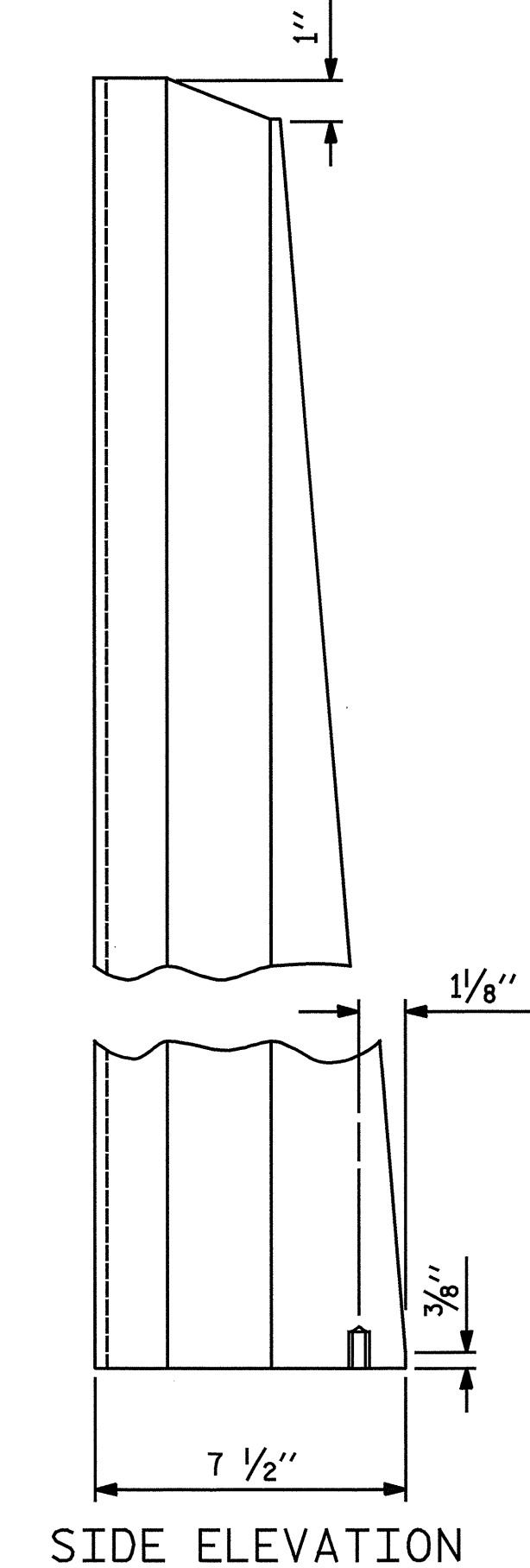
REAR PLATE

SHIM DETAILS

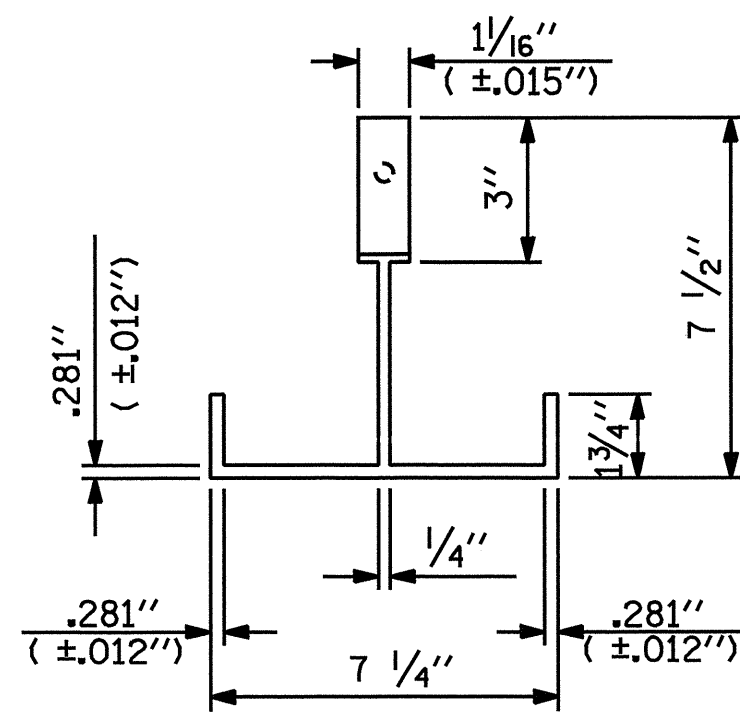
NOTE: SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



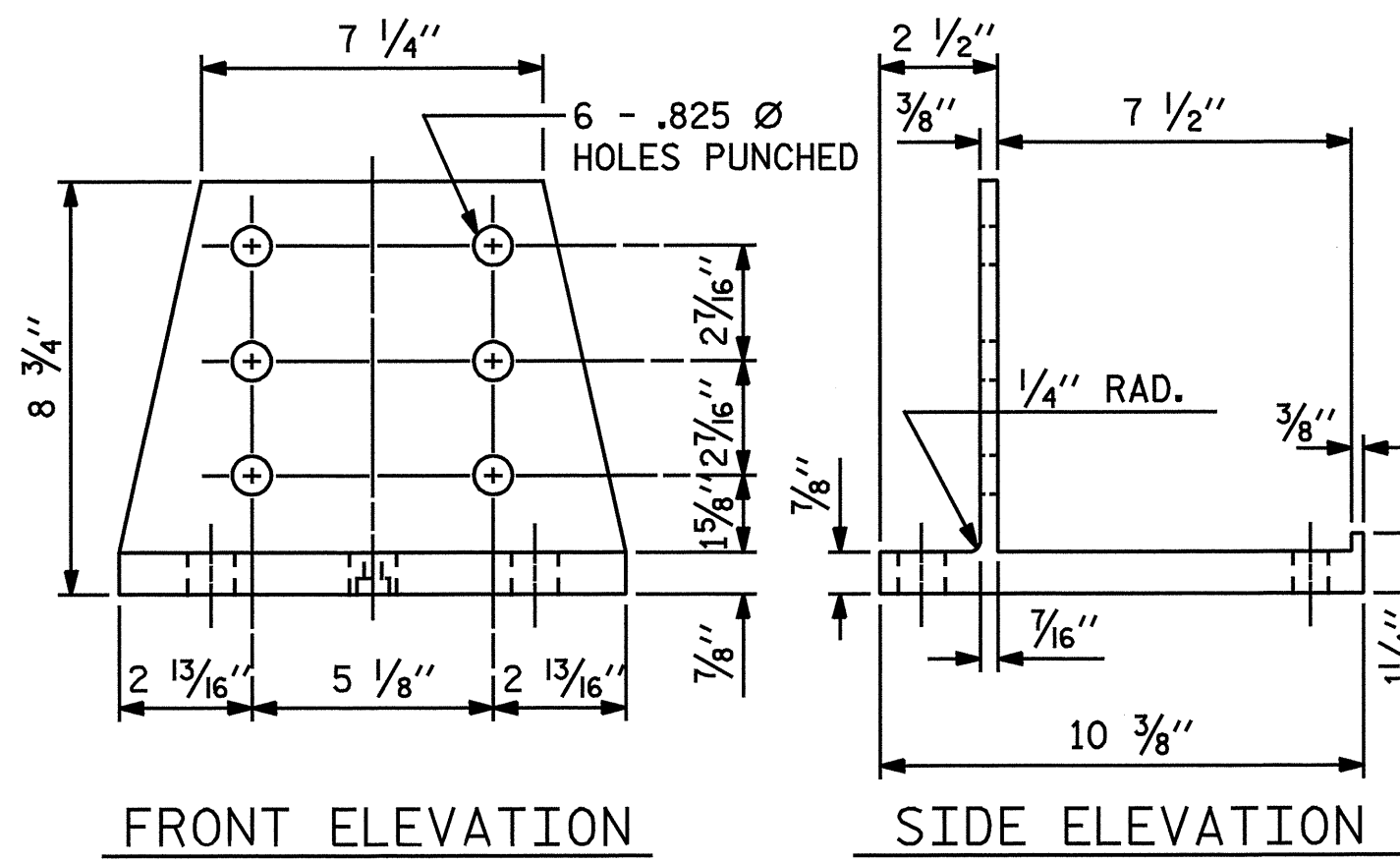
FRONT ELEVATION



SIDE ELEVATION



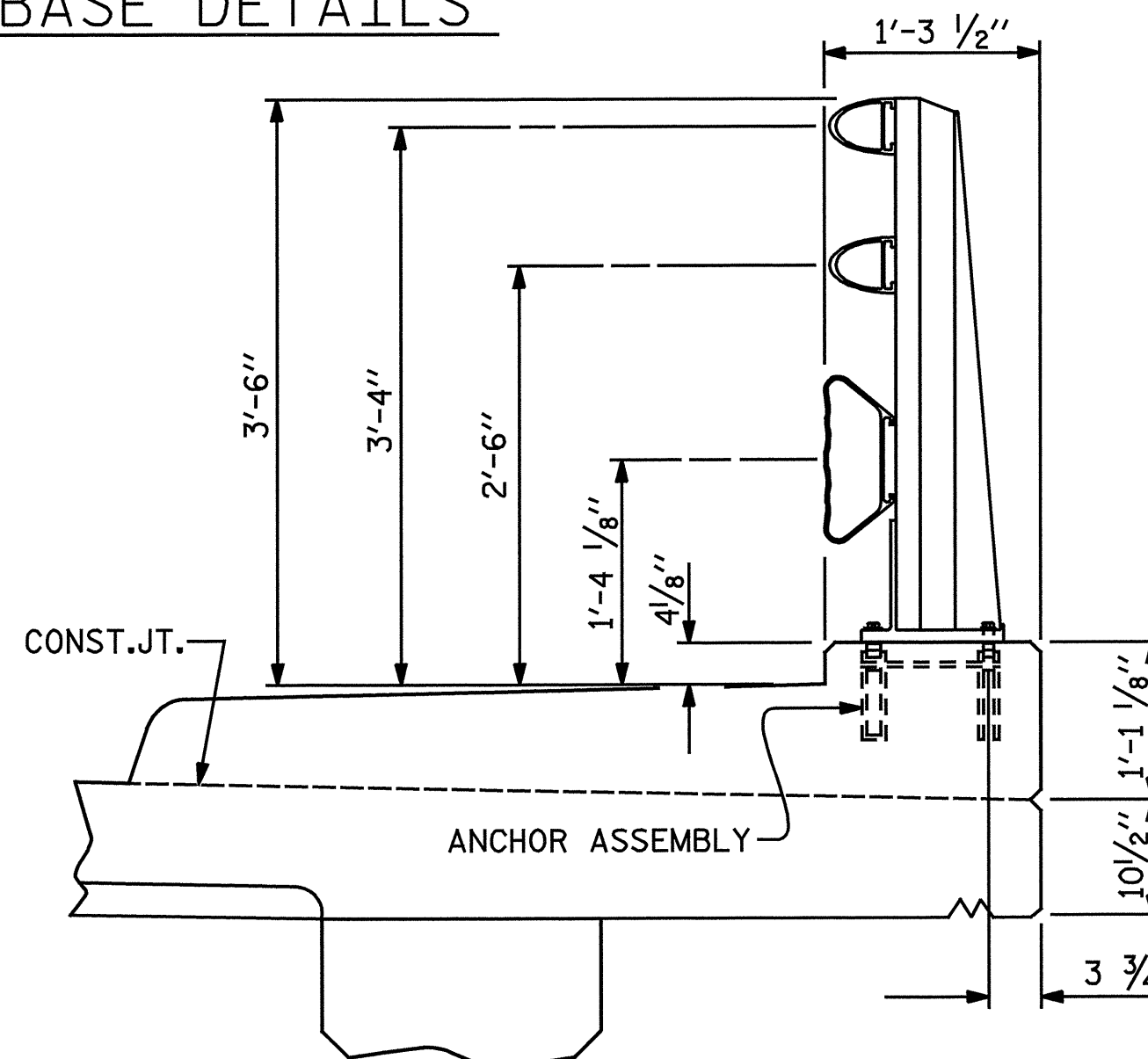
PLAN



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



SECTION THRU RAIL

FOR ANCHOR ASSEMBLY, SEE "3 BAR METAL RAIL" SHEET 2 OF 4.

DWG. 18 OF 39

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.

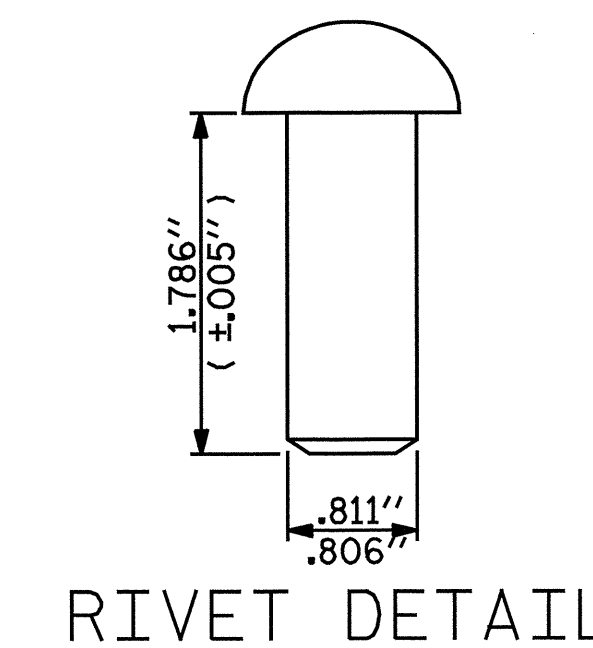
TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAIN VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

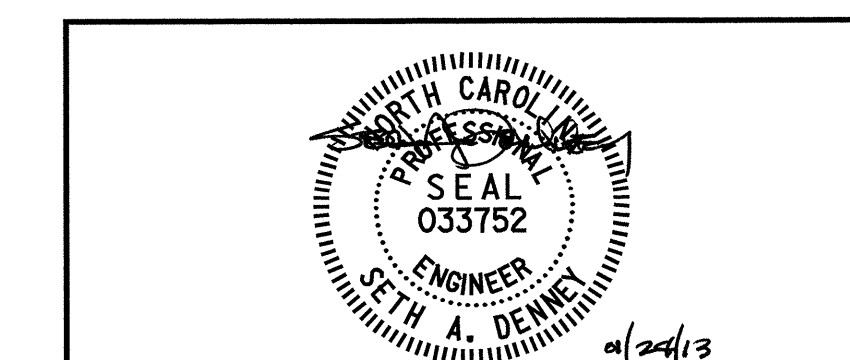
ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

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

PAY LENGTH = 439.60 LIN. FT.



RIVET DETAIL



PROJECT NO. P-5208D
CABARRUS COUNTY
STATION: 16+93.38 -L-

SHEET 1 OF 4

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			39

Baker
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27618
NC License No.: F-1084

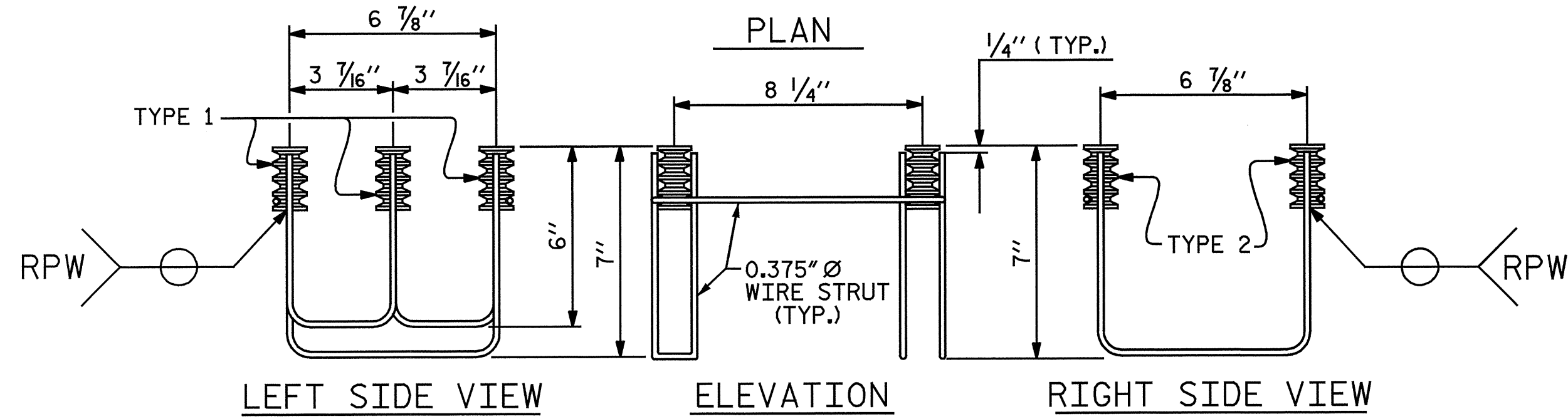
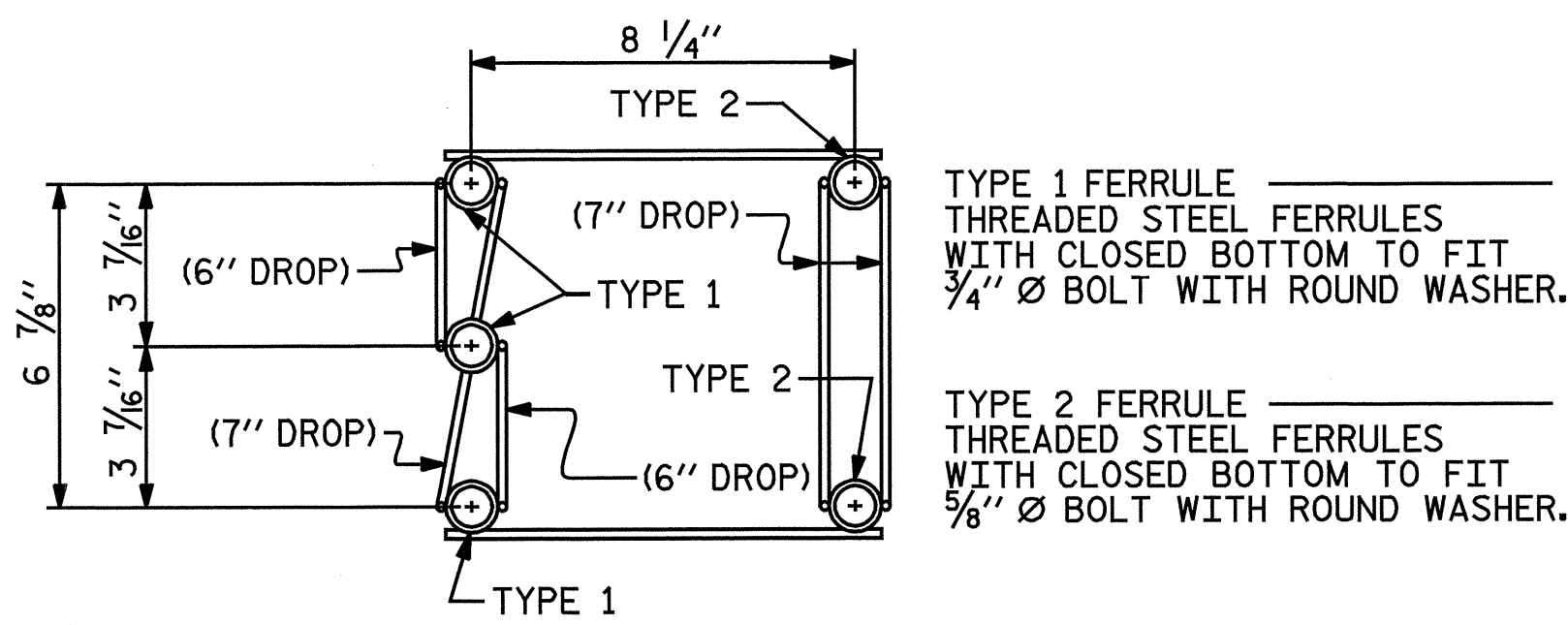
9/27/14S AM
 1/24/2013
 File Name: Y:\Projects\NC DOT\Y-5208D\DISCIPLINE\Structures\Drawings\Final\N-P-5208D-018-SD-3MRL.dgn

DRAWN BY: N. B. SPEAKS DATE: 8-13-12
CHECKED BY: R. F. DeCOLA DATE: 8-22-12

NOTES

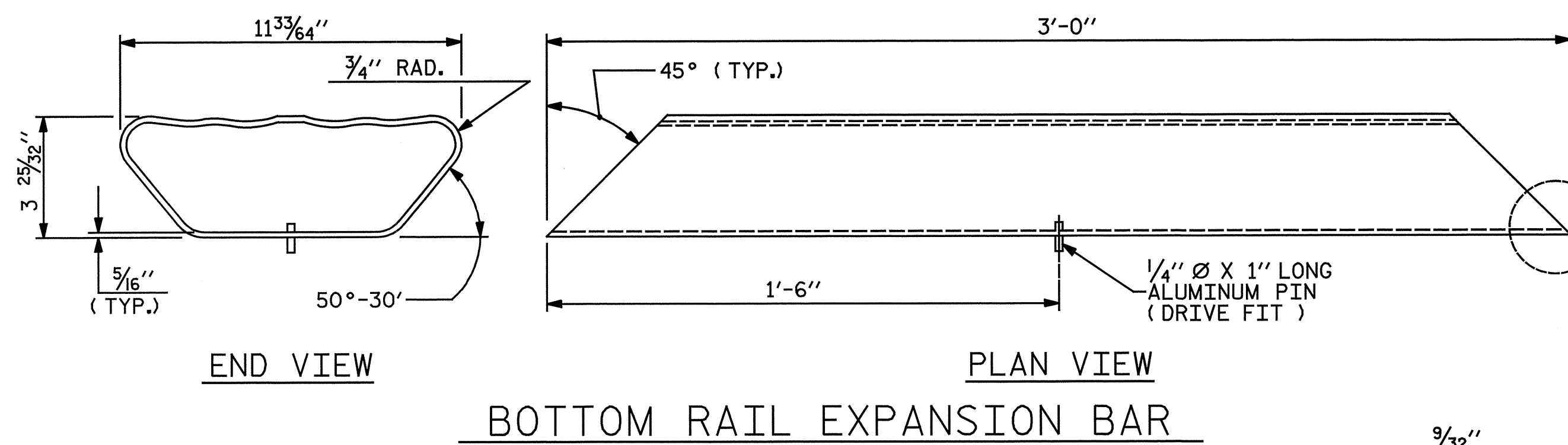
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

- 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 3/4" 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 7/16" 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.

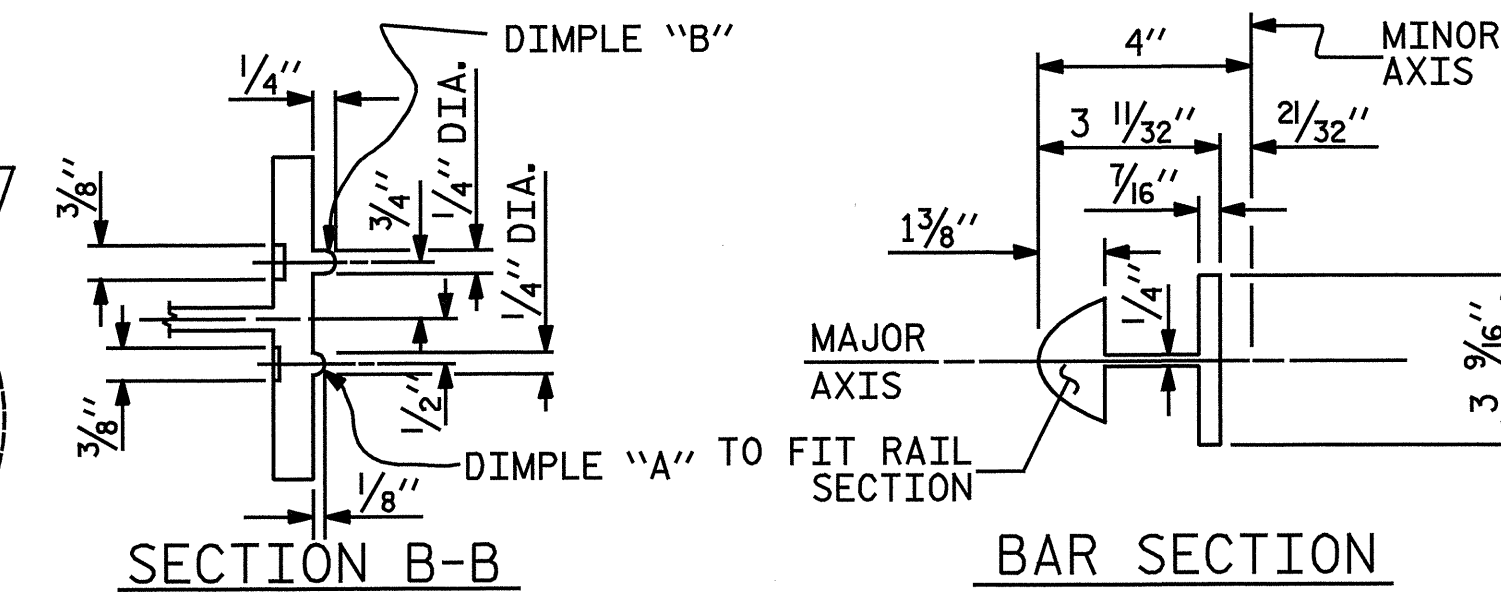
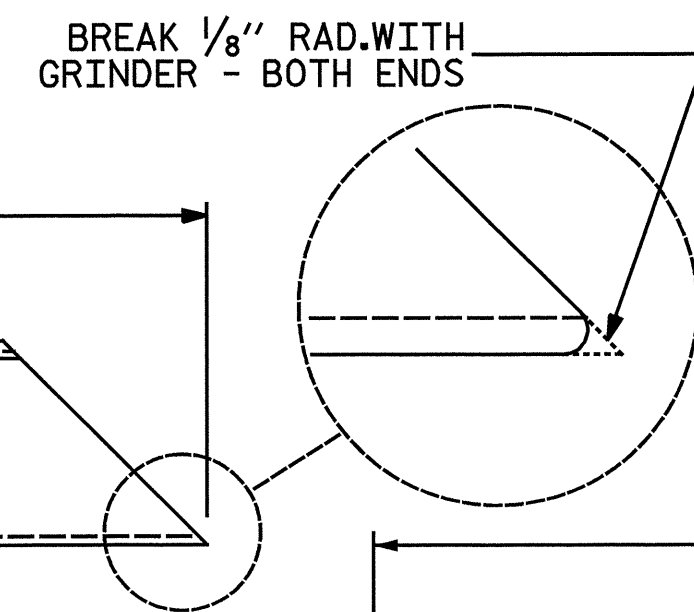


5-BOLT METAL RAIL ANCHOR ASSEMBLY

(74 ASSEMBLIES REQUIRED)

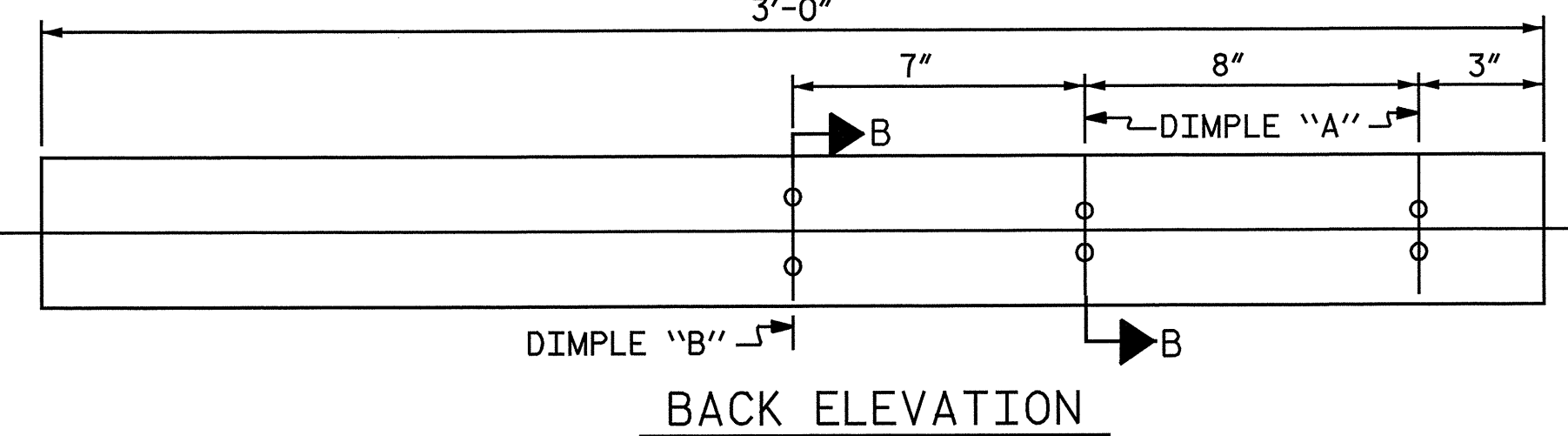


BOTTOM RAIL EXPANSION BAR



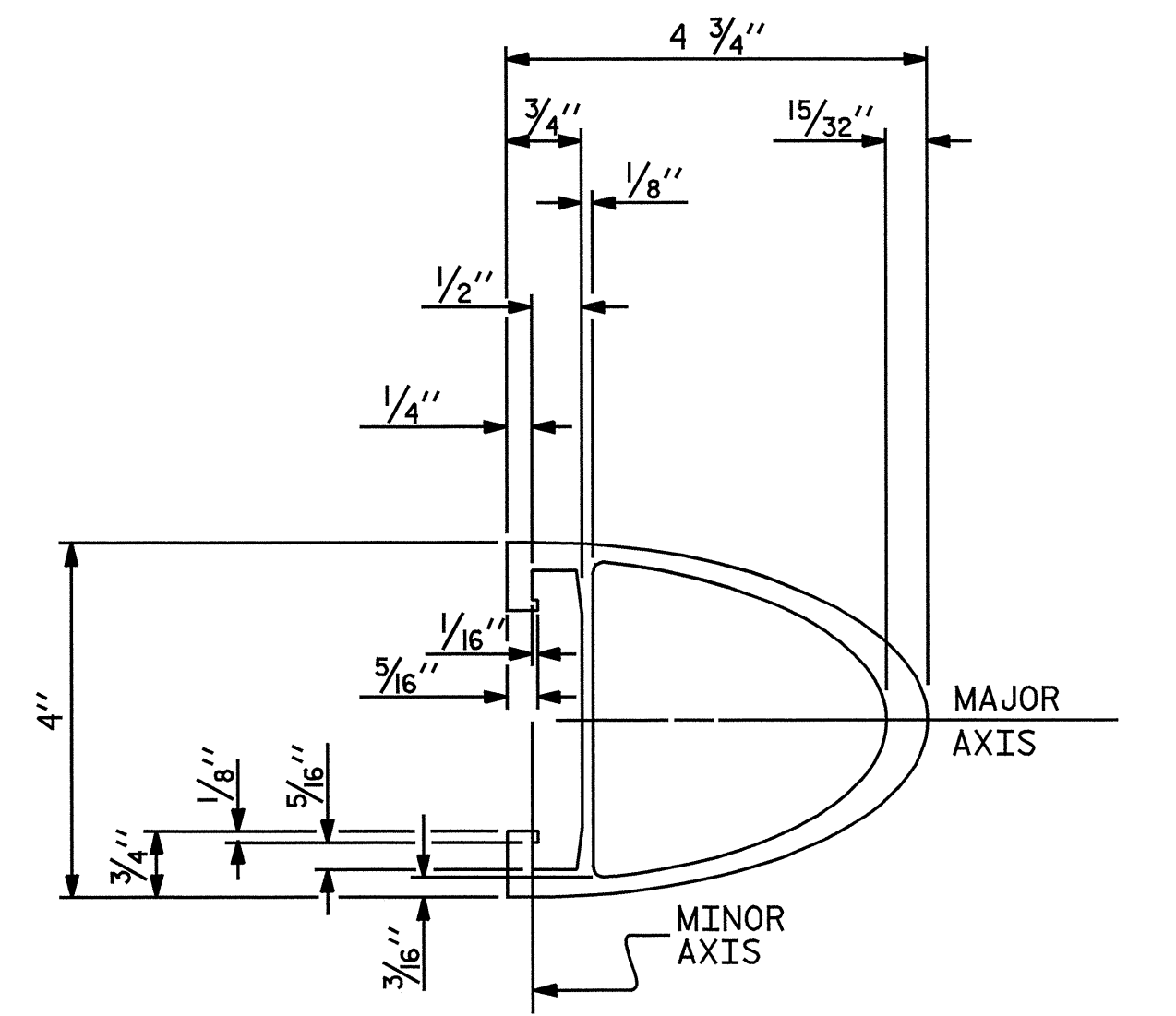
SECTION B-B

BAR SECTION

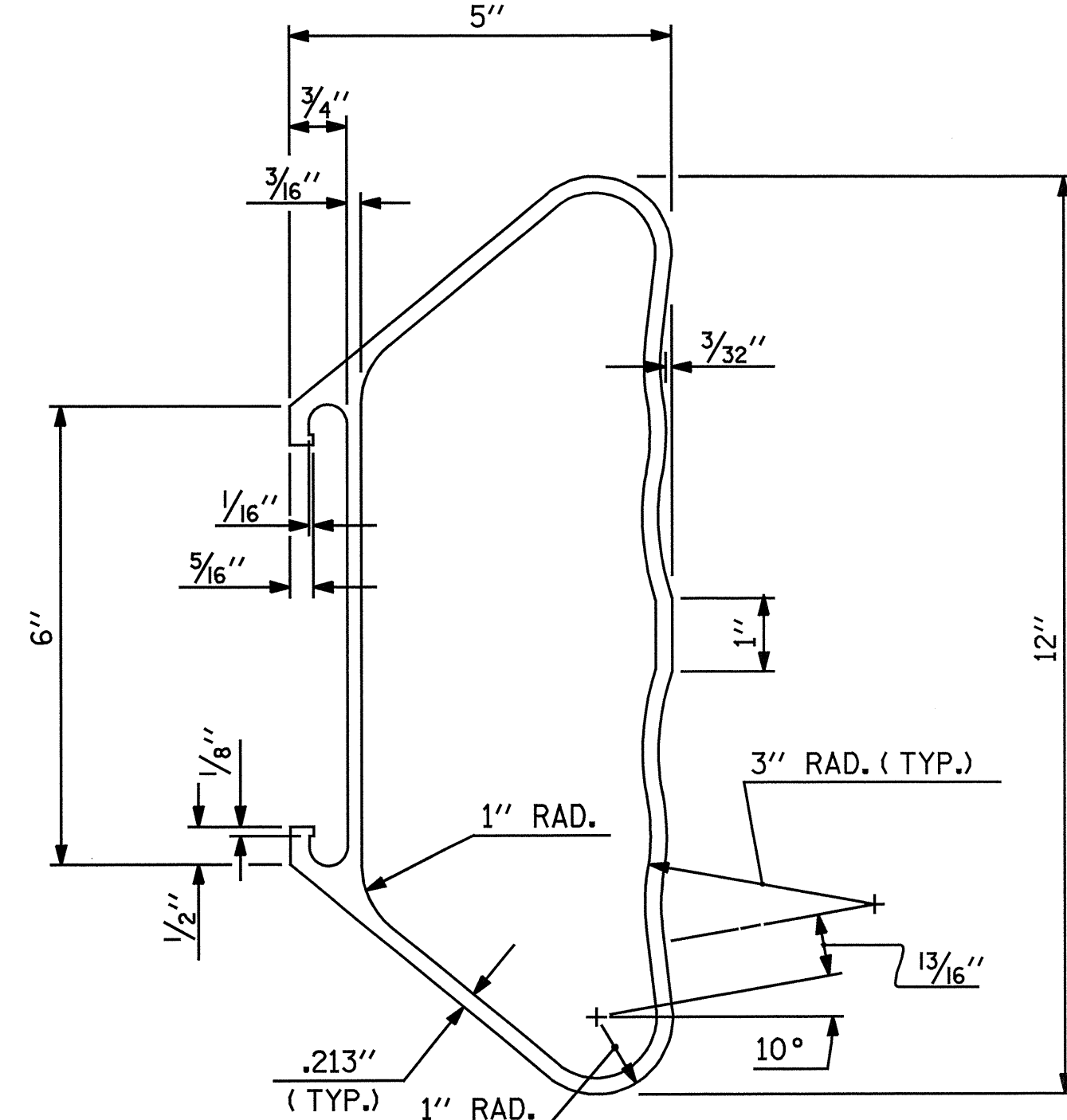


BACK ELEVATION

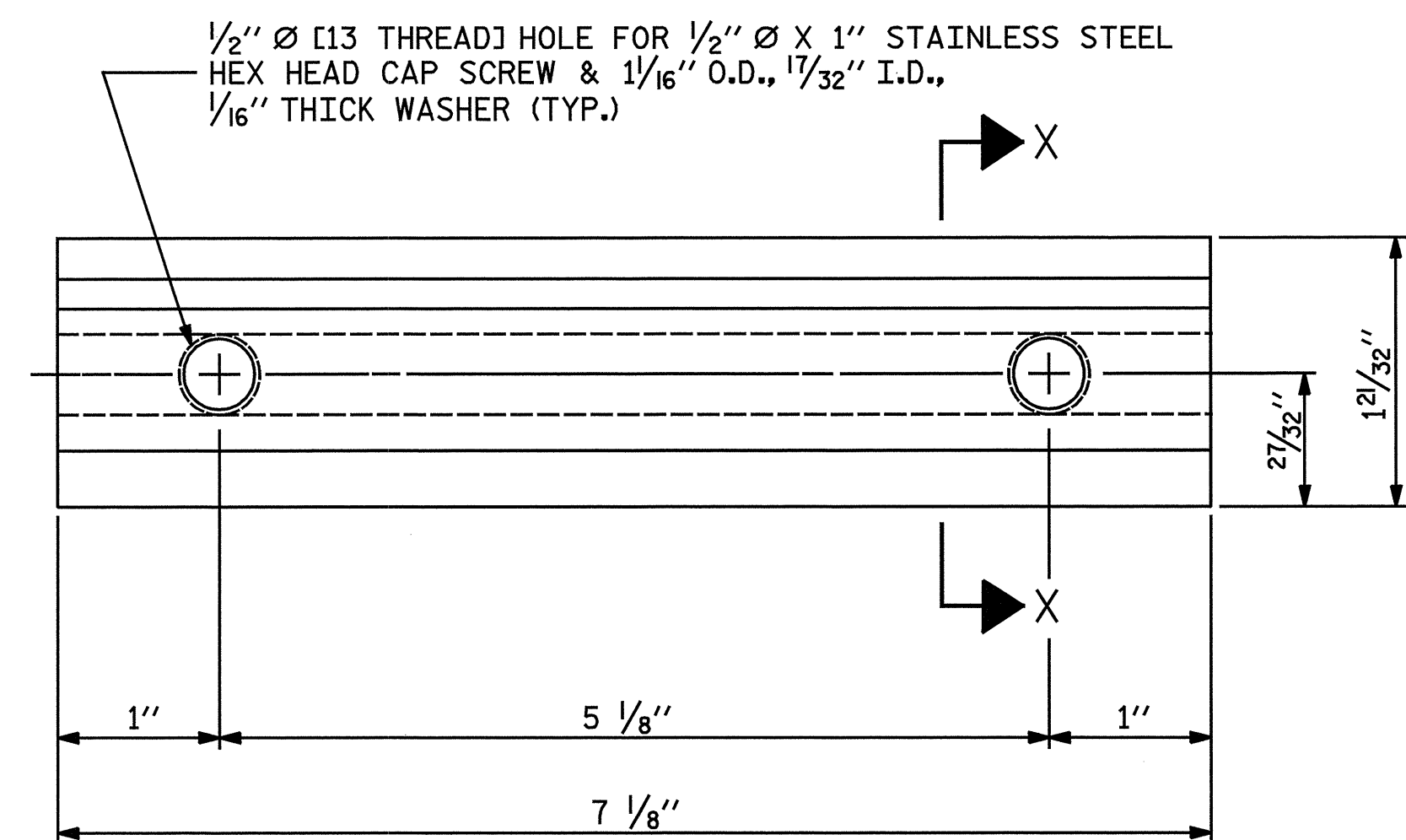
TOP & MIDDLE RAIL EXPANSION BAR



TOP & MIDDLE RAIL SECTION

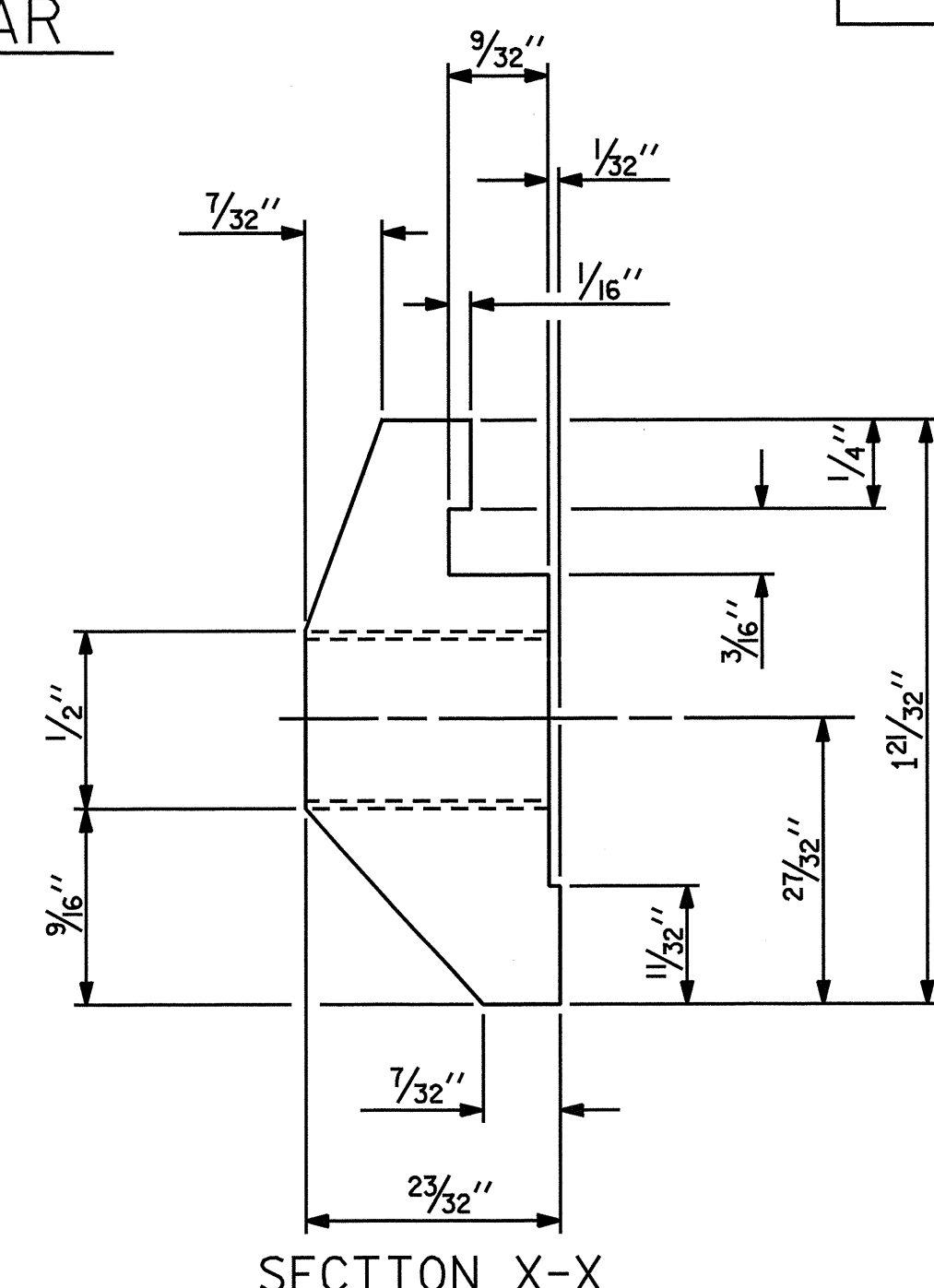


BOTTOM RAIL SECTION

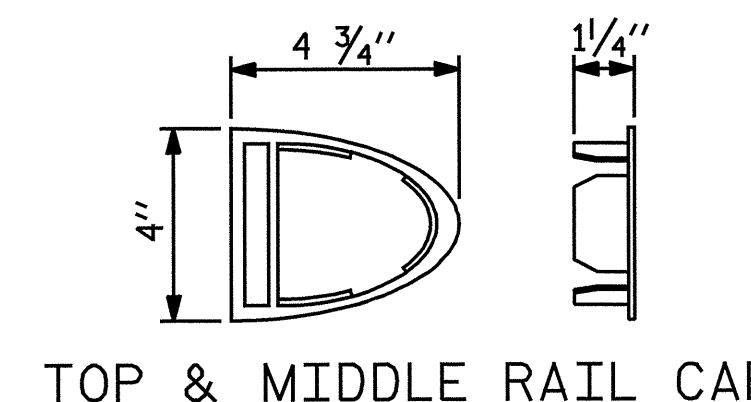


CLAMP BAR DETAIL

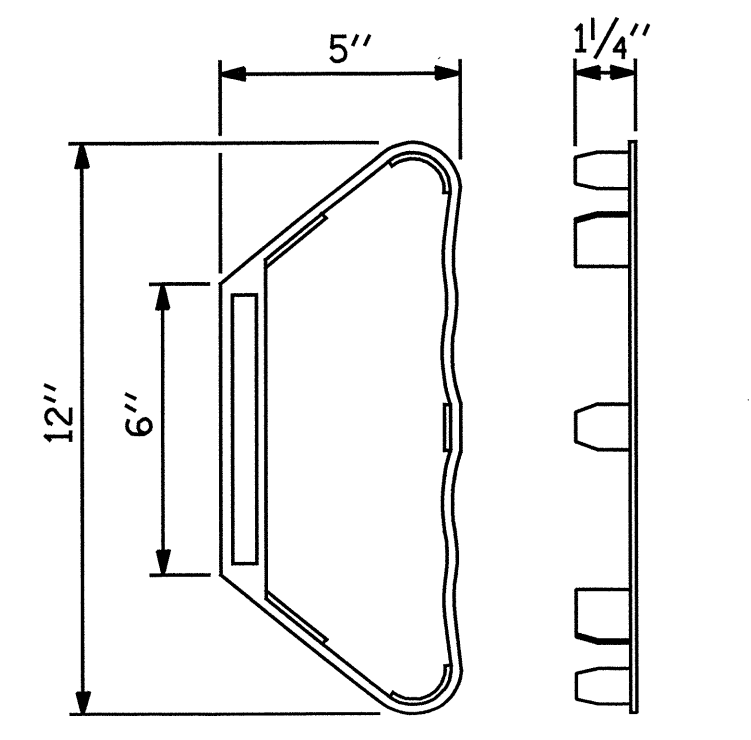
(6 REQUIRED PER POST)



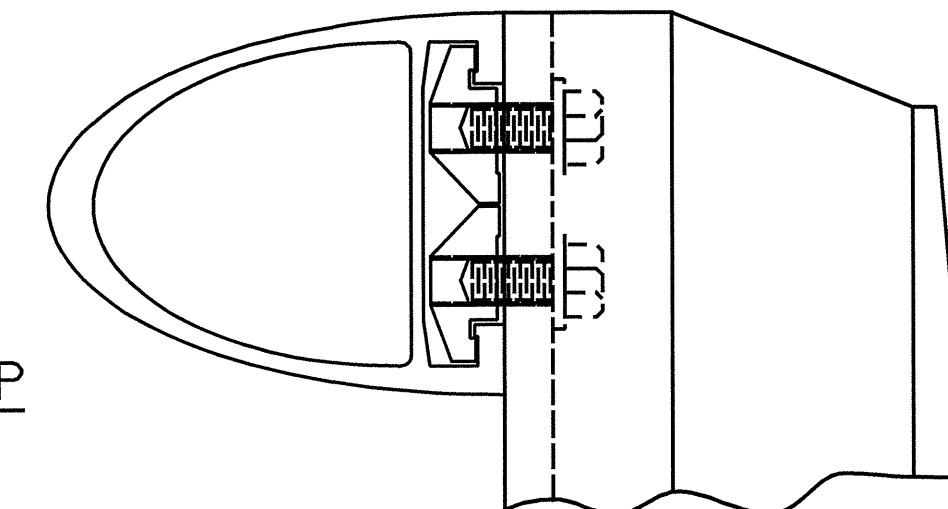
SECTION X-X



TOP & MIDDLE RAIL CAP



BOTTOM RAIL CAP

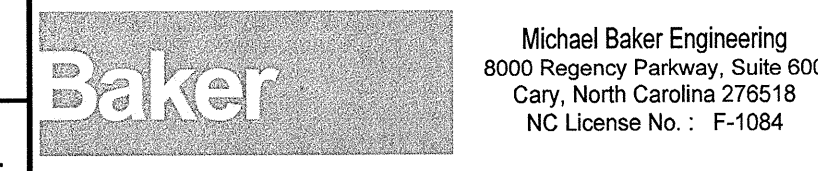
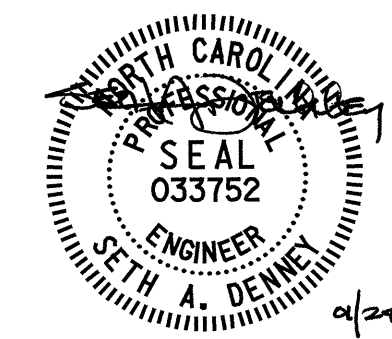


CLAMP ASSEMBLY

TOP RAIL SHOWN (MIDDLE & BOTTOM RAIL ARE SIMILAR)

PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-
 SHEET 2 OF 4

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



REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS 39
2			4			

1/24/2013 9:27:44 AM
 File Name: Y:\Projects\NCDOT\VP-5208D\DISCIPLINE\Structures\Drawings\Final\VP-5208D_019_SD_3MR2.dgn

NOTES

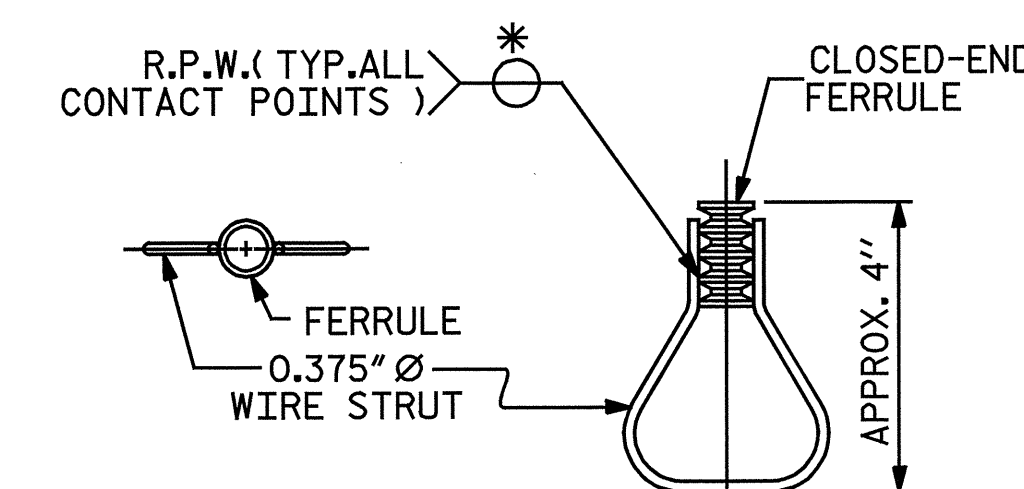
METAL RAIL TO END POST CONNECTION

- 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 1/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 1/8" 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°/4°. 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 (SEE SHEET 2 OF 4).
- 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 1/8" 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 1/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

NOTES

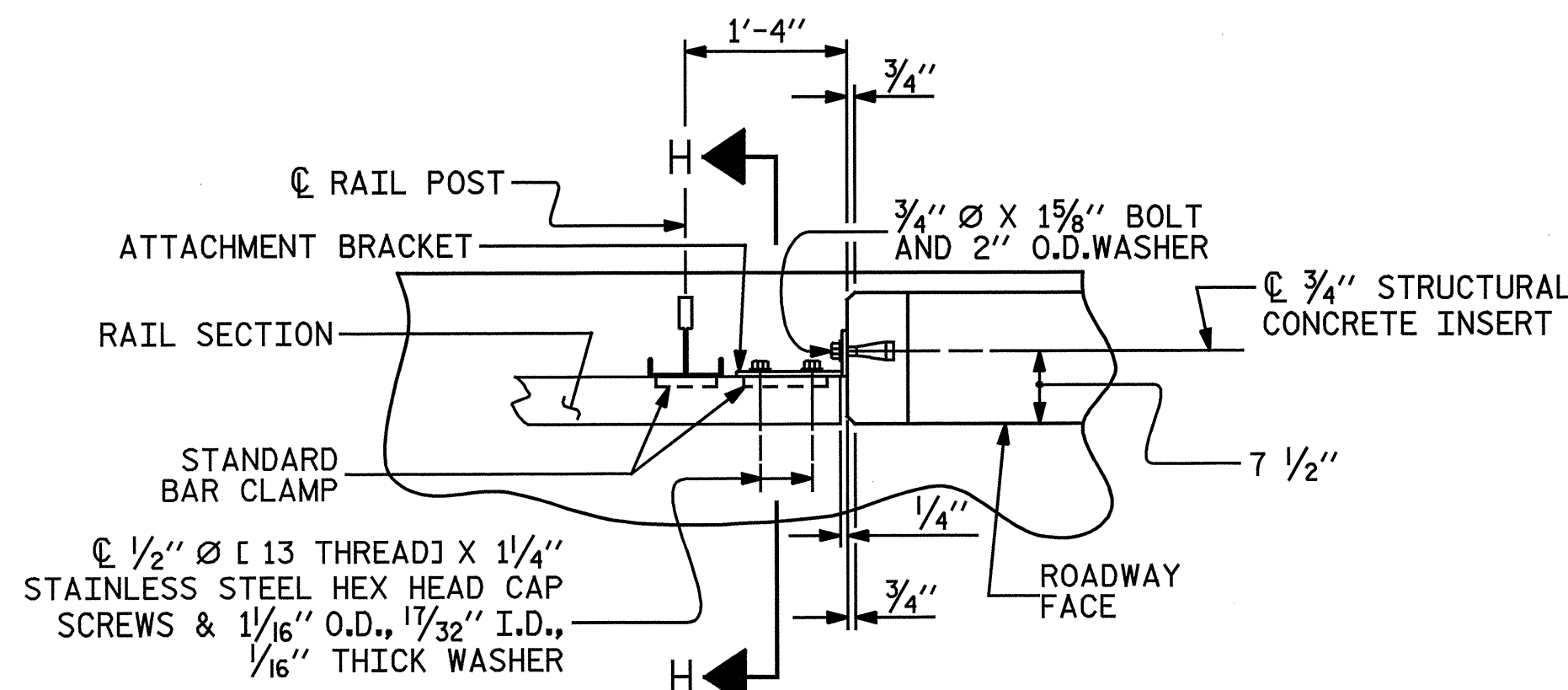
STRUCTURAL CONCRETE INSERT

- 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 1/2".
 - B. 1 - 3/4" Ø X 1 1/8" 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 1/8" 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.



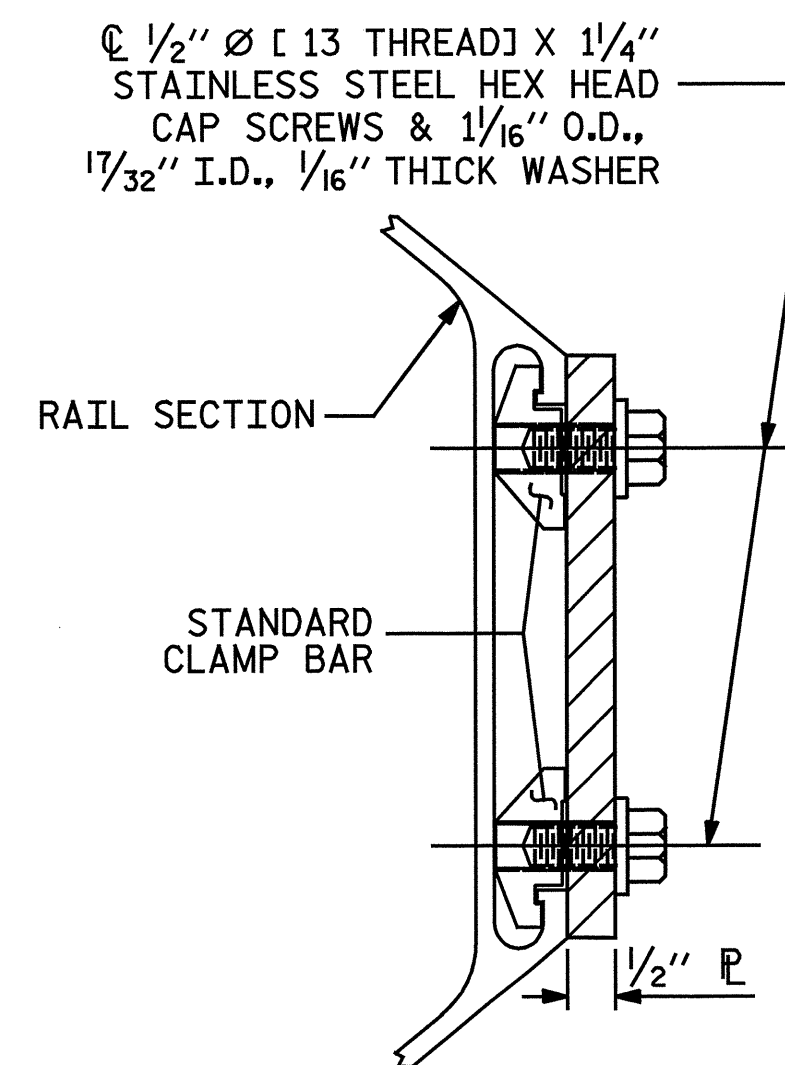
PLAN ELEVATION
STRUCTURAL CONCRETE INSERT

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

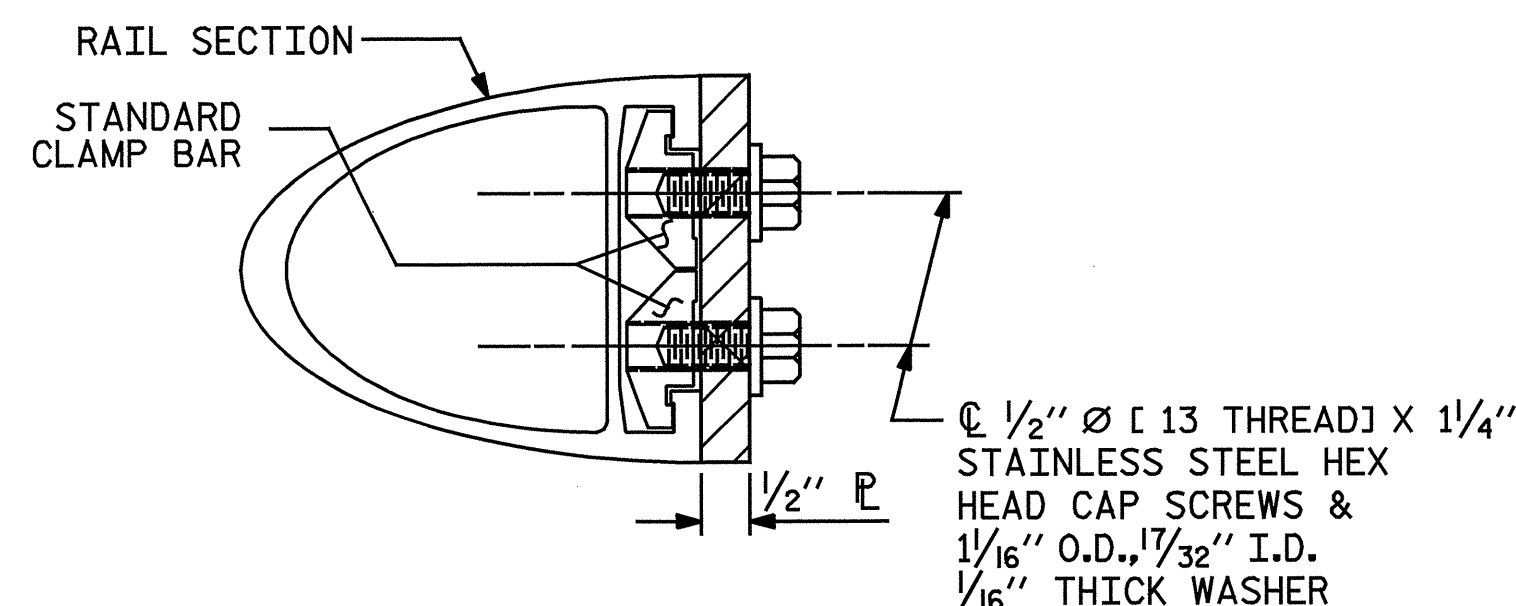


PLAN OF RAIL AND END POST

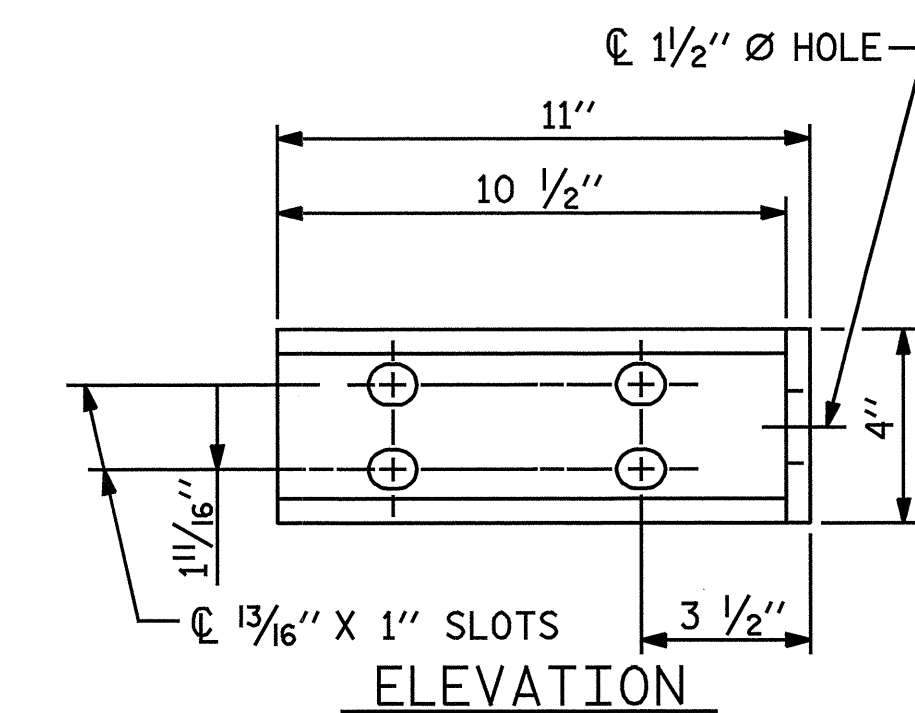
(STIFFENER ON 1/2" P NOT SHOWN FOR CLARITY)



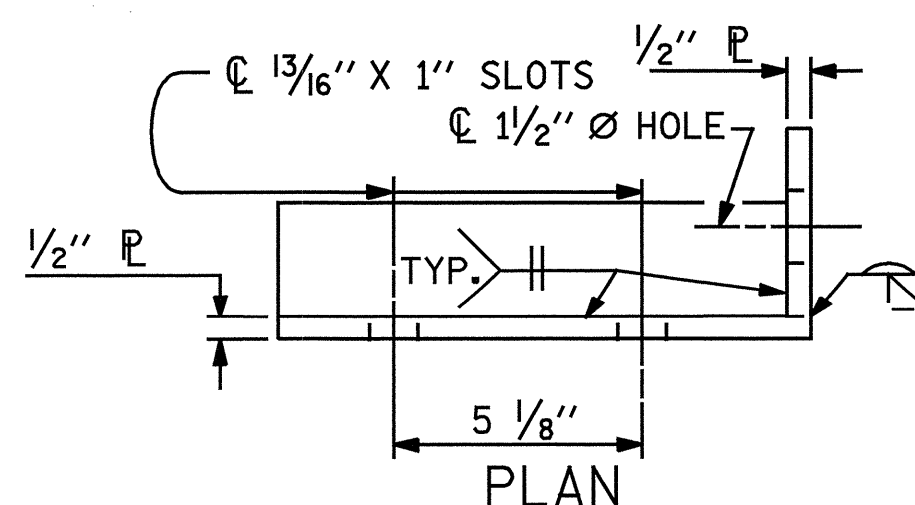
SECTION H-H
(FOR BOTTOM RAIL)



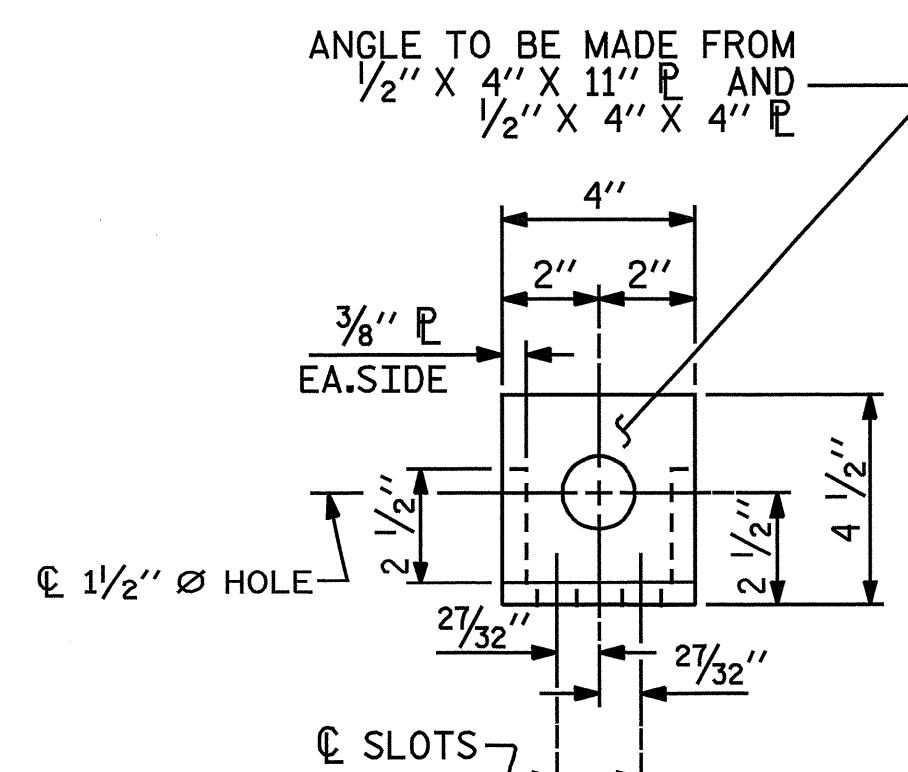
SECTION H-H
(FOR TOP & MIDDLE RAIL)



ELEVATION

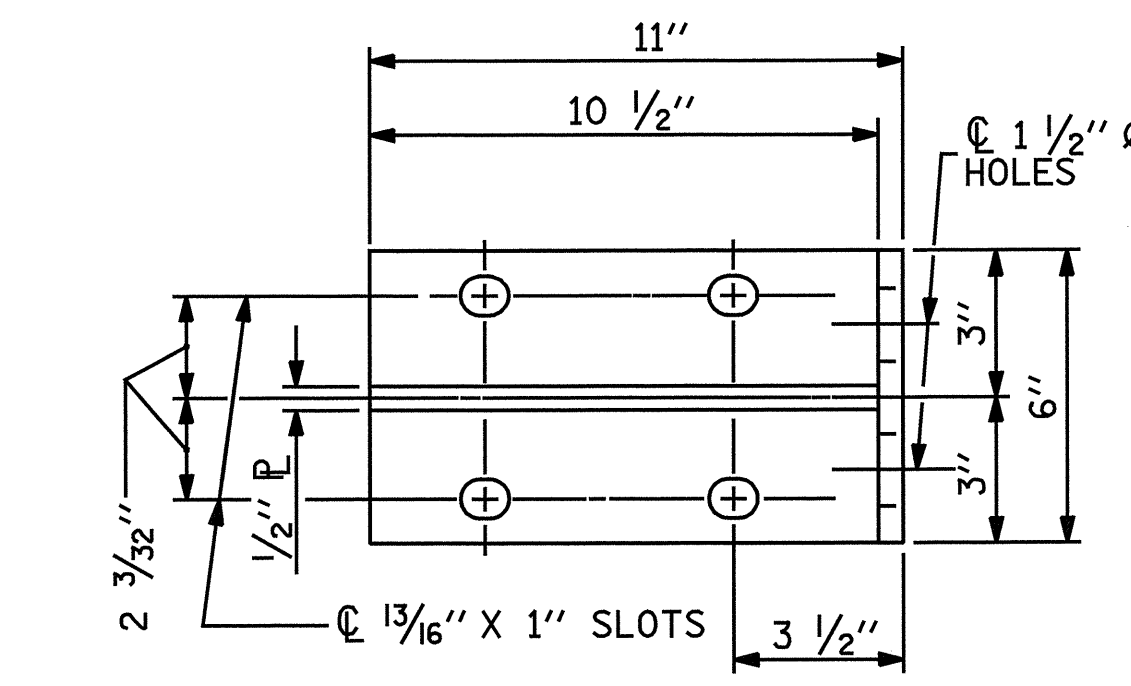


PLAN

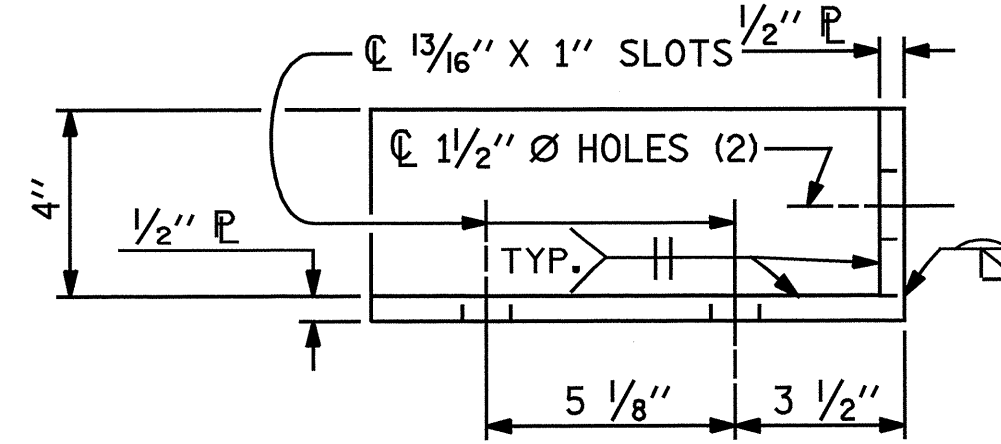


END VIEW
(FIX. AND EXP.)

DETAILS FOR ATTACHMENT BRACKET
(TOP & MIDDLE RAIL ONLY)

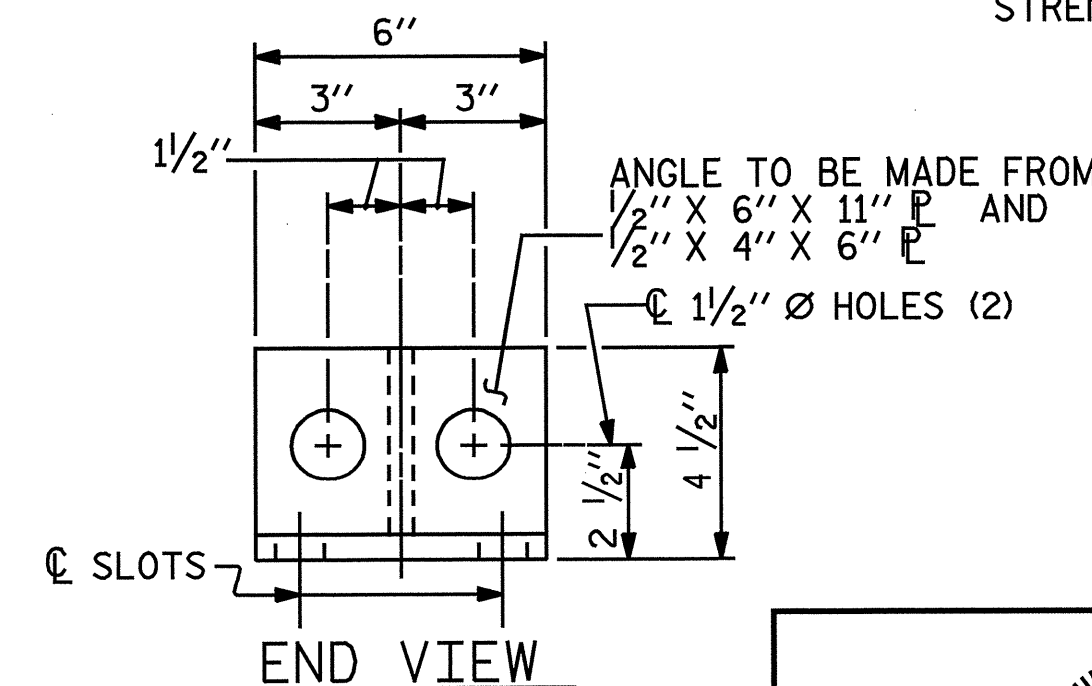


ELEVATION



PLAN

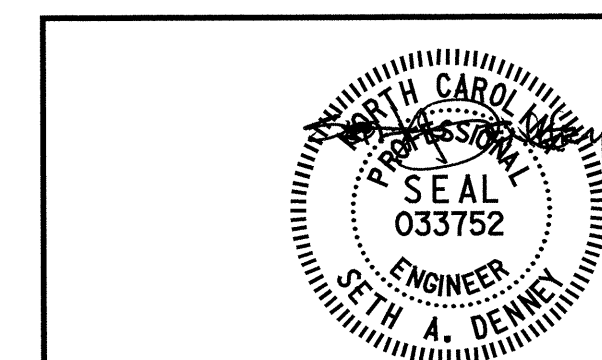
DETAILS FOR ATTACHMENT BRACKET
(BOTTOM RAIL ONLY)



END VIEW

DRAWN BY : N. B. SPEAKS DATE : 8-13-12
CHECKED BY : R. F. DeCOLA DATE : 8-22-12

DWG. 20 OF 39



Baker
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 276518
NC License No. : F-1084

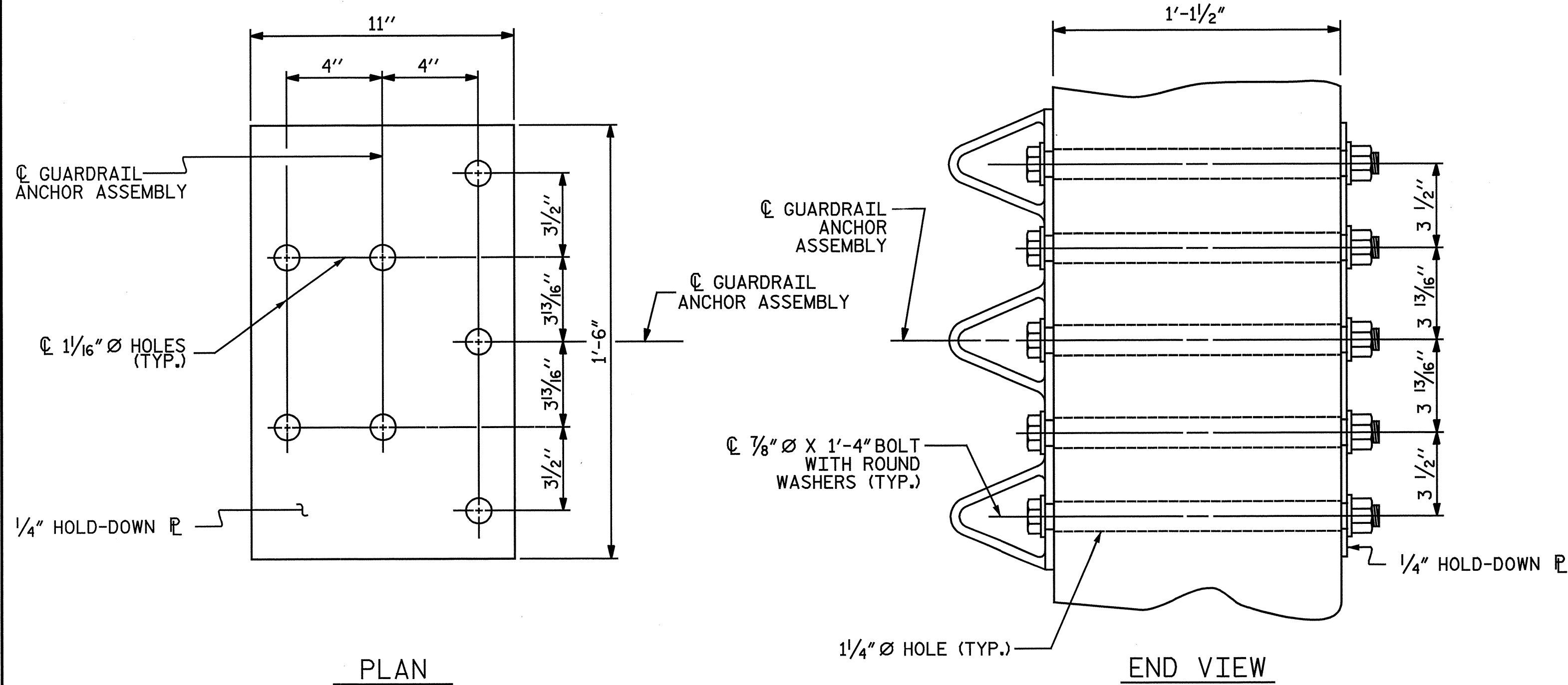
PROJECT NO. P-5208D
CABARRUS COUNTY
STATION: 16+93.38 -L-

SHEET 3 OF 4

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

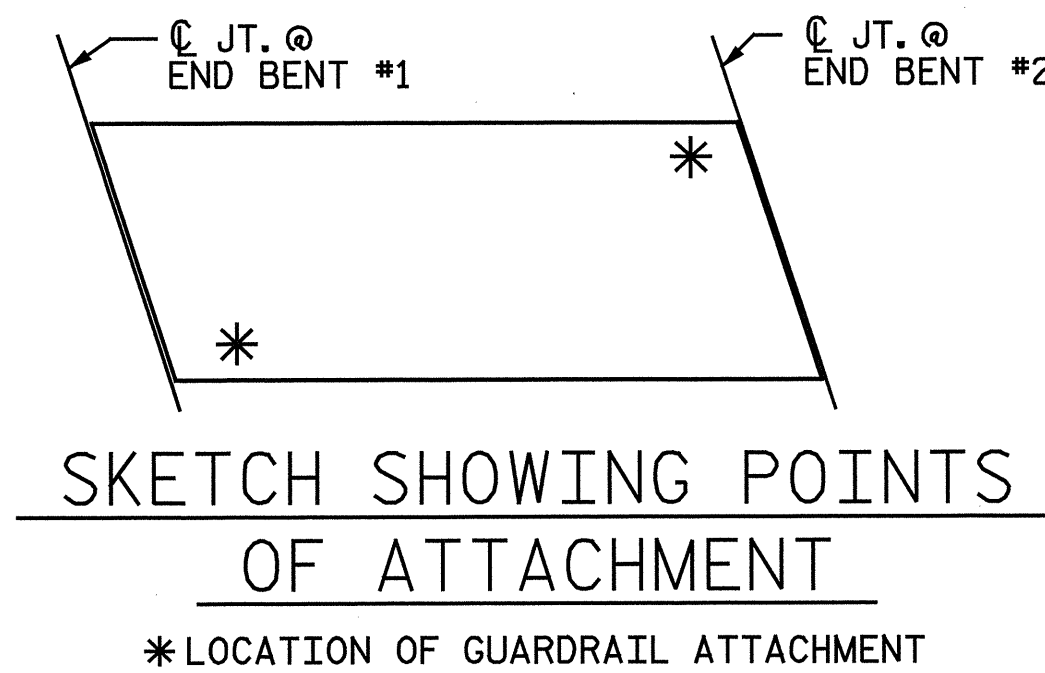
REVISIONS						SHEET NO. S-20
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			

Justin 9:27:45 AM 1/24/2013 File Name: Y:\Projects\NCDOT\VP-5208D\DISCIPLINE\Structures\Dwg\Final\VP-5208D_020_SD_3MRL.dgn



PLAN
END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT

NOTES:

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 1/8" 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 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

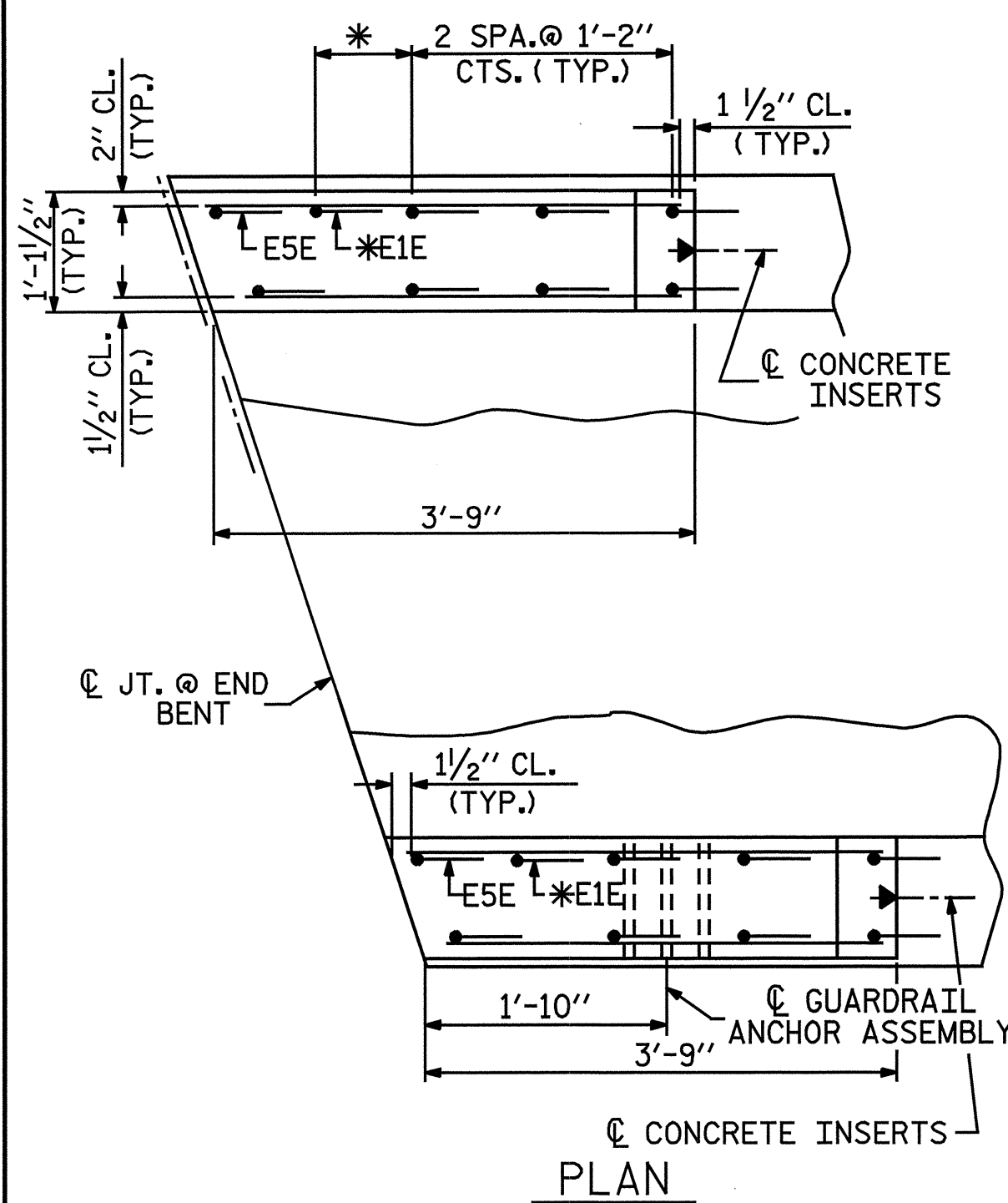
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

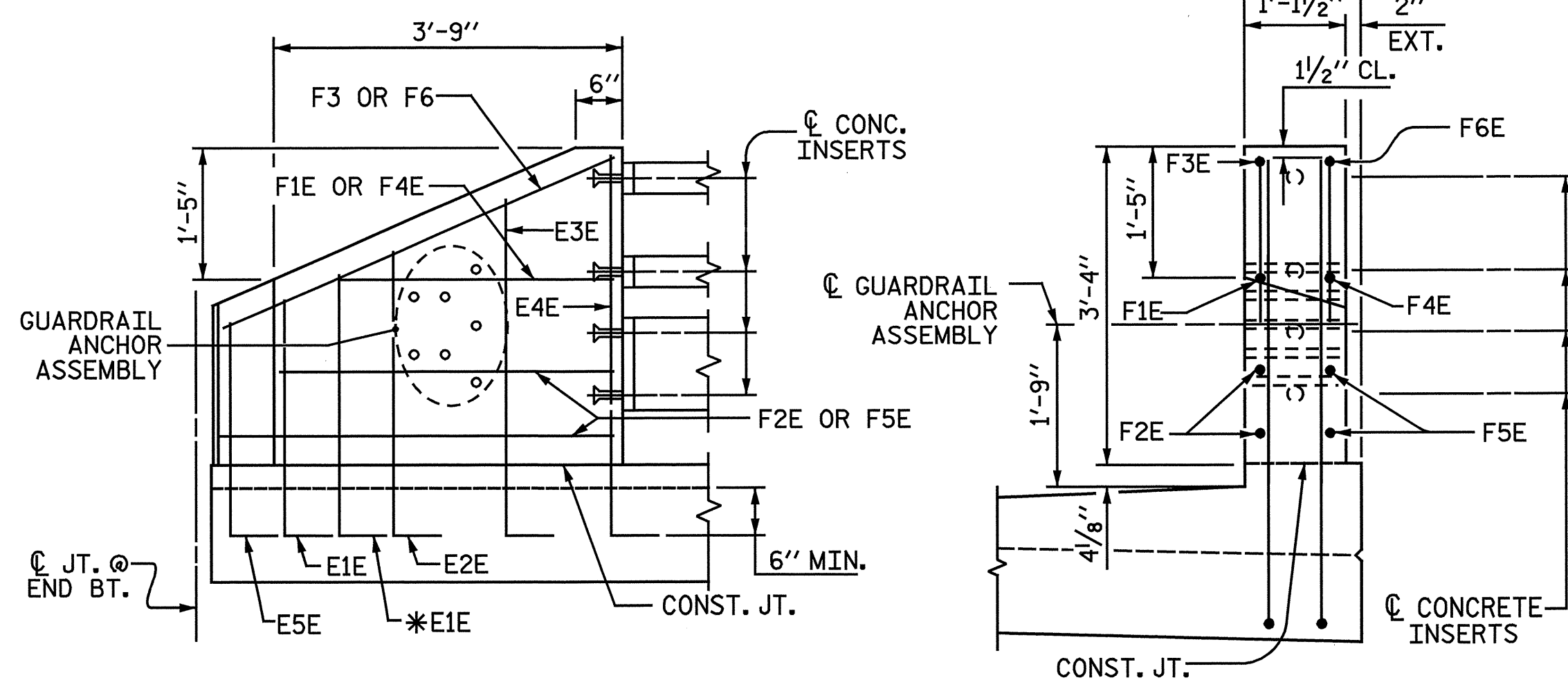
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

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



PLAN

* CENTER E1 BETWEEN E5E AND E2E IF E5E BAR IS NEEDED TO REINFORCE LONG CORNER.

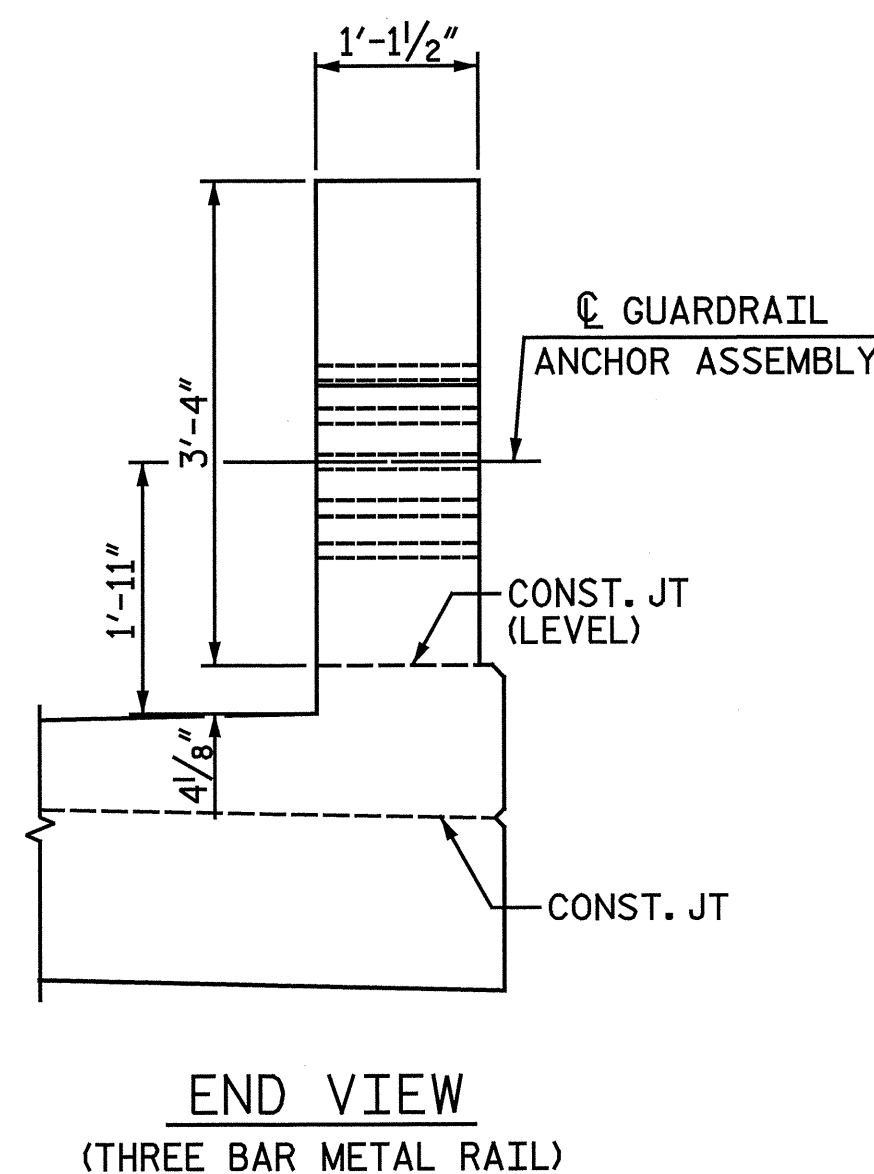


ELEVATION

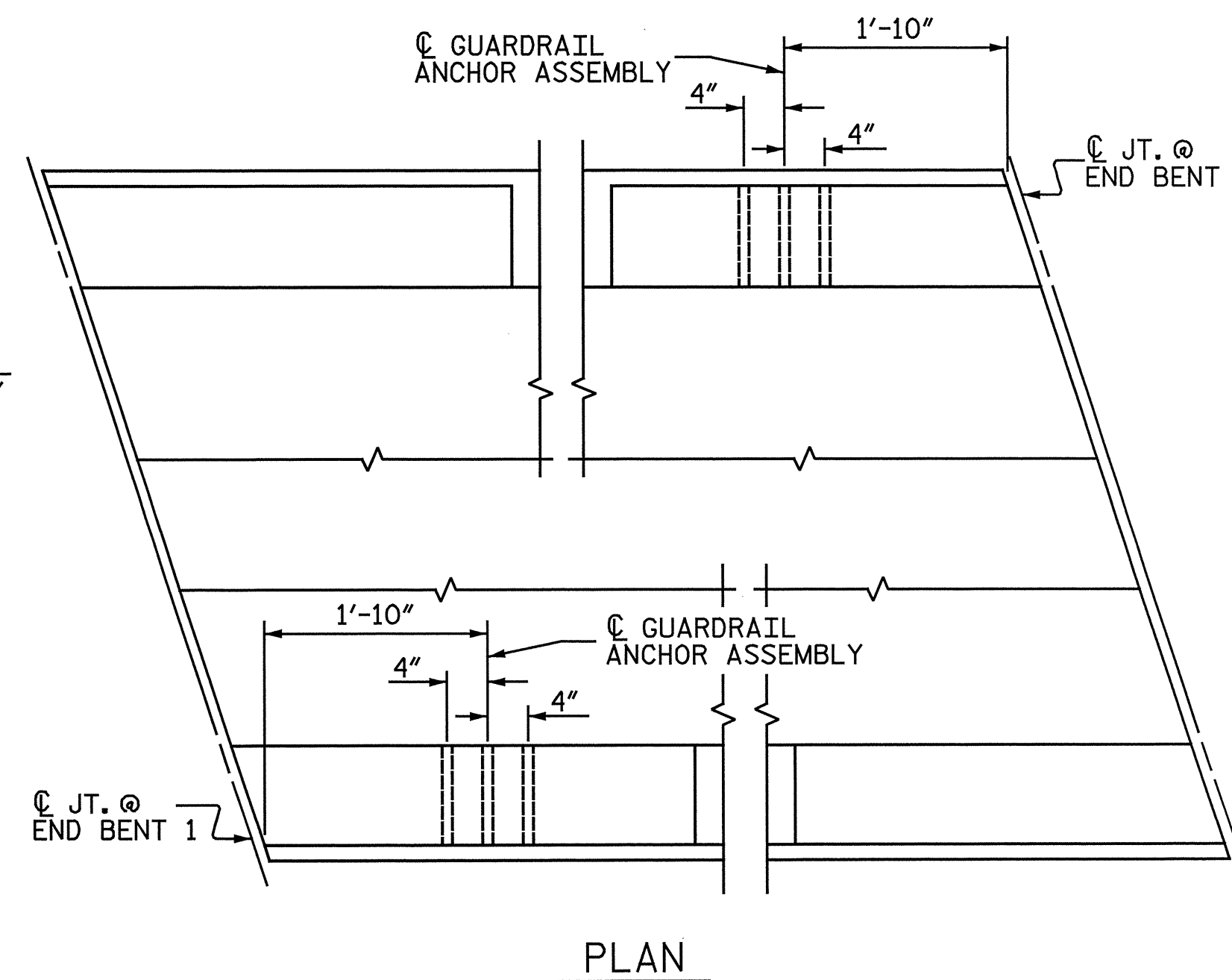
END VIEW

END POST DETAILS **

** FOR END POST REINFORCING STEEL QUANTITIES, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.

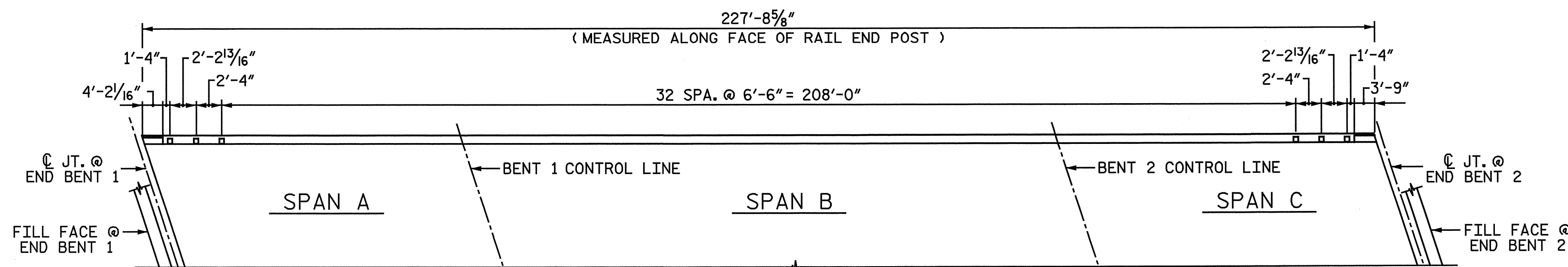


END VIEW
(THREE BAR METAL RAIL)



PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST

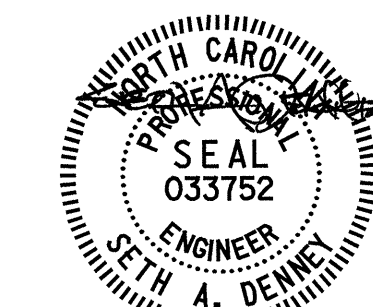


PLAN OF RAIL POST SPACING
(TYP. EA. SIDE)

PROJECT NO. P-5208D
CABARRUS COUNTY
STATION: 16+93.38 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
GUARDRAIL ANCHORAGE
AND END POST DETAILS
FOR METAL RAILS



a/24/13

Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 276518
NC License No.: F-1084

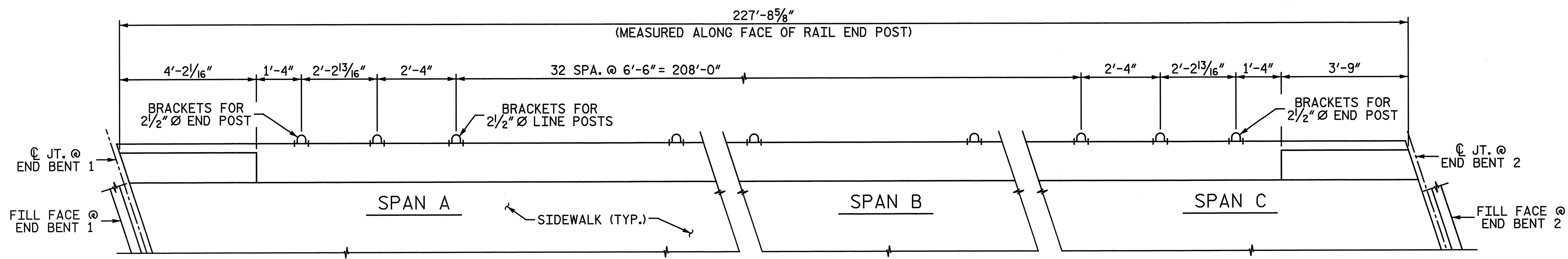


REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21	
1			3			TOTAL	39
2			4				

DWG. 21 OF 39

DRAWN BY: N. B. SPEAKS DATE: 8-13-12
CHECKED BY: R. F. DeCOLA DATE: 8-22-12

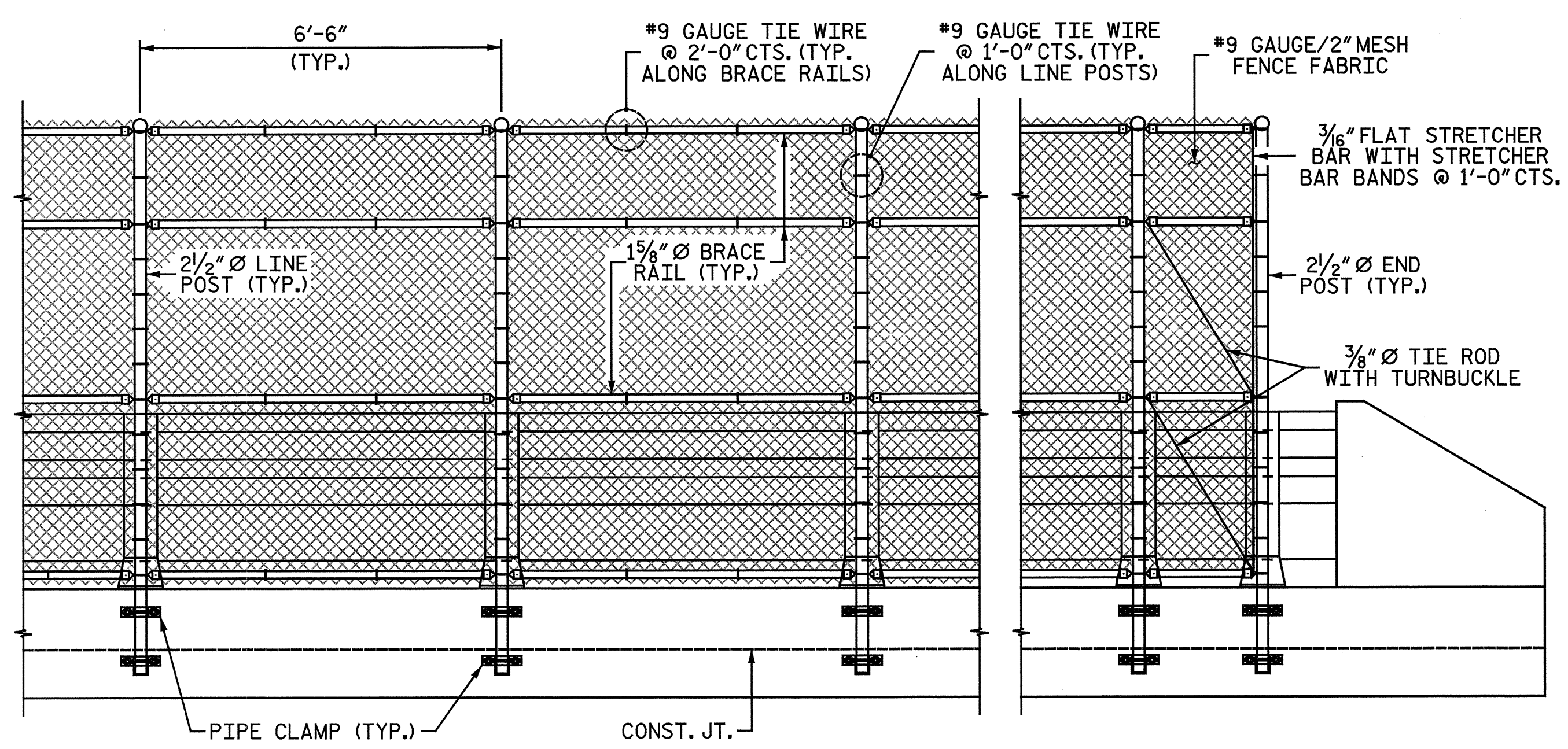
I:\ustfn 9/27/15 AM 1/24/2013
 Filename: Y:\Projects\NCDOT\TP-5208D\DISCIPLINE\Structure\Drawings\Final\P-5208D_021_SD_3MRA.dgn



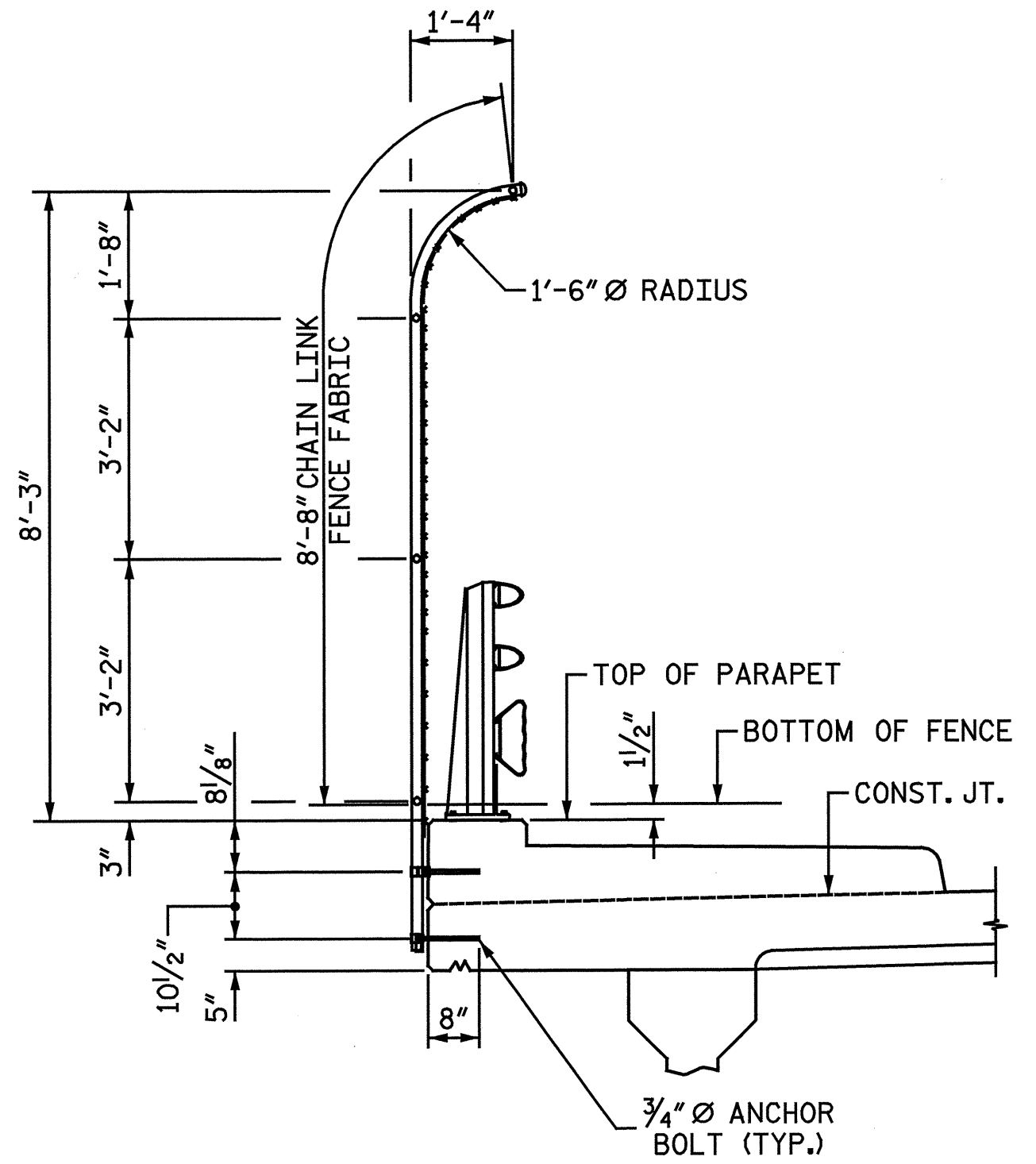
PLAN OF FENCE POST SPACING
 LEFT SIDE SHOWN, RIGHT SIDE SIMILAR BY ROTATION.
 PAY LENGTH = 434.26 LIN. FT.

NOTES:

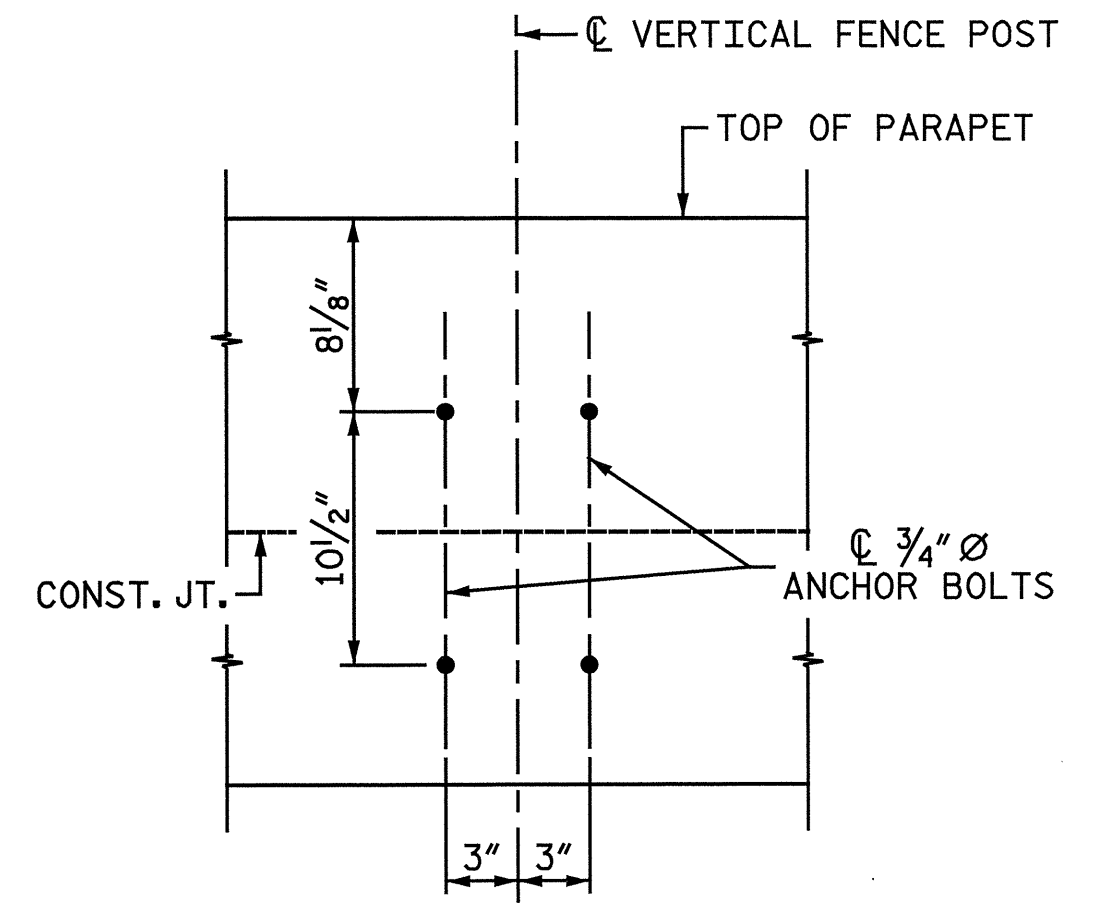
FOR BRIDGE MOUNTED CHAIN LINK, SEE SPECIAL PROVISIONS.
 MATERIAL FOR ANCHOR BOLTS SHALL BE TYPE 304 STAINLESS STEEL WITH A MINIMUM 9000 PSI ULTIMATE STRENGTH. NUTS AND WASHERS SHALL BE TYPE 304 STAINLESS STEEL. ANCHOR BOLTS SHALL BE EMBEDDED AS PER ADHESIVE BONDING SYSTEM MANUFACTURER'S SPECIFICATIONS. NUTS SHALL BE AMERICAN STANDARD FINISHED HEXAGON THICK NUTS, CLASS 2B THREADS.
 FOR SETTING ANCHOR BOLTS, THE CONTRACTOR SHALL USE AN ADHESIVE BONDING SYSTEM. LEVEL ONE TESTING OF BONDING SYSTEM IS REQUIRED AND THE YIELD LOAD OF 3/4" Ø BOLTS IS 12 KIPS.
 ALL FENCE MATERIAL SHALL MEET THE REQUIREMENTS OF SECTION 1050 OF THE STANDARD SPECIFICATIONS. GALVANIZE ALL STEEL PARTS AND HARDWARE IN ACCORDANCE WITH ARTICLE 1076 OF THE STANDARD SPECIFICATIONS.



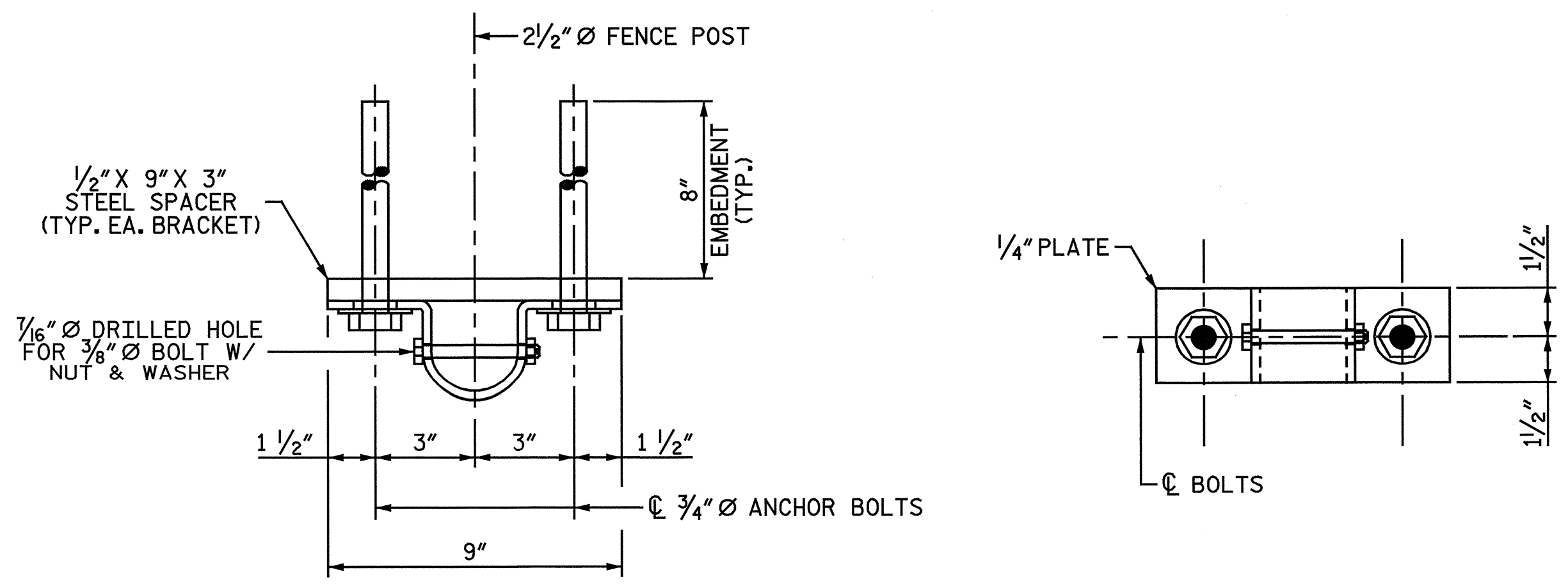
PARTIAL ELEVATION



SECTION THRU FENCE

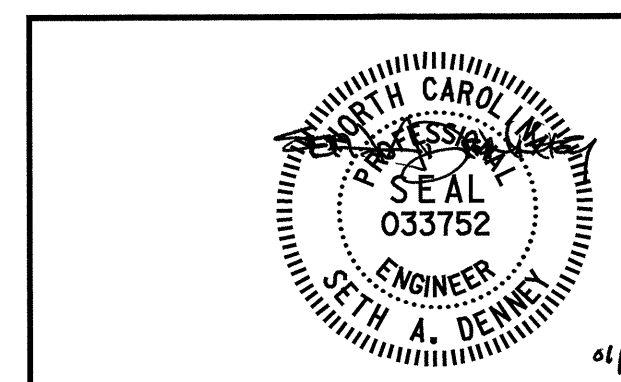


BOLT SETTING PLAN



PIPE CLAMP DETAILS

PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 BRIDGE MOUNTED CHAIN
 LINK DETAILS



Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27615
 NC License No.: F-1084

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22	
1			3			TOTAL SHEETS 39	
2			4				

DRAWN BY : M. D. MAYHEW DATE : 9-26-12
 CHECKED BY : A. L. PHILLIPS DATE : 9-26-12

9/27/12 AM 9:27:46 AM
 I:\Projects\5208D\Drawings\Structures\Drawings\Final\P-5208D_022_SD_FL.dgn
 Filename: Y:\Projects\5208D\Drawings\Structures\Drawings\Final\P-5208D_022_SD_FL.dgn

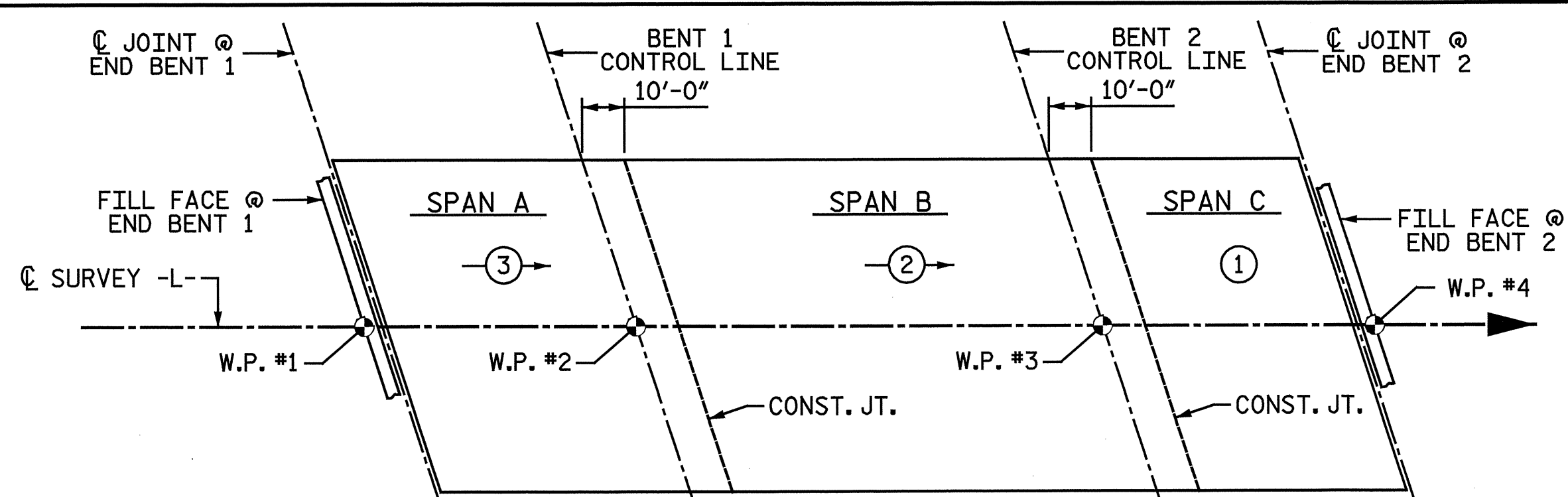
REINFORCING STEEL SCHEDULE

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
A1E	810	5	STR	39' - 11"	33,723				
A2	810	5	STR	39' - 9"	33,582				
A101E	4	5	STR	39' - 3"	164				
A102E	4	5	STR	38' - 6"	161				
A103E	4	5	STR	37' - 9"	157				
A104E	4	5	STR	36' - 11"	154				
A105E	4	5	STR	36' - 2"	151				
A106E	4	5	STR	35' - 5"	148				
A107E	4	5	STR	34' - 8"	145				
A108E	4	5	STR	33' - 11"	142				
A109E	4	5	STR	33' - 1"	138				
A110E	4	5	STR	32' - 4"	135				
A111E	4	5	STR	31' - 7"	132				
A112E	2	5	STR	59' - 0"	123				
A113E	2	5	STR	57' - 6"	120				
A114E	2	5	STR	56' - 0"	117				
A115E	2	5	STR	54' - 5"	114				
A116E	2	5	STR	52' - 11"	110				
A117E	2	5	STR	51' - 5"	107				
A118E	2	5	STR	49' - 10"	104				
A119E	2	5	STR	48' - 4"	101				
A120E	2	5	STR	46' - 10"	98				
A121E	2	5	STR	45' - 3"	94				
A122E	2	5	STR	43' - 9"	91				
A123E	2	5	STR	42' - 3"	88				
A124E	2	5	STR	40' - 8"	85				
A125E	2	5	STR	39' - 2"	82				
A126E	2	5	STR	37' - 7"	78				
A127E	2	5	STR	36' - 1"	75				
A128E	2	5	STR	34' - 7"	72				
A129E	2	5	STR	33' - 0"	69				
A130E	2	5	STR	31' - 6"	66				
A131E	2	5	STR	30' - 0"	63				
A132E	2	5	STR	28' - 5"	59				
A133E	2	5	STR	26' - 11"	56				
A134E	2	5	STR	25' - 5"	53				
A135E	2	5	STR	23' - 10"	50				
A136E	2	5	STR	22' - 4"	47				
A137E	2	5	STR	20' - 10"	43				
A138E	2	5	STR	19' - 3"	40				
A139E	2	5	STR	17' - 9"	37				
A140E	2	5	STR	16' - 2"	34				
A141E	2	5	STR	14' - 8"	31				
A142E	2	5	STR	13' - 2"	27				
A143E	2	5	STR	11' - 7"	24				
A144E	2	5	STR	10' - 1"	21				
A145E	2	5	STR	8' - 7"	18				
A146E	2	5	STR	7' - 0"	15				
A147E	2	5	STR	5' - 6"	11				
A148E	4	5	STR	4' - 0"	17				
A201	4	5	STR	39' - 1"	163				
A202	4	5	STR	38' - 4"	160				
A203	4	5	STR	37' - 7"	157				
A204	4	5	STR	36' - 9"	153				
A205	4	5	STR	36' - 0"	150				
A206	4	5	STR	35' - 3"	147				
A207	4	5	STR	34' - 6"	144				
A208	4	5	STR	33' - 9"	141				
A209	4	5	STR	32' - 11"	137				
A210	4	5	STR	32' - 2"	134				
A211	4	5	STR	31' - 5"	131				
A212	2	5	STR	59' - 0"	123				
A213	2	5	STR	57' - 6"	120				
A214	2	5	STR	56' - 0"	117				
A215	2	5	STR	54' - 5"	114				
A216	2	5	STR	52' - 11"	110				
A217	2	5	STR	51' - 5"	107				
A218	2	5	STR	49' - 10"	104				
A219	2	5	STR	48' - 4"	101				
A220	2	5	STR	46' - 10"	98				
A221	2	5	STR	45' - 3"	94				
A222	2	5	STR	43' - 9"	91				
A223	2	5	STR	42' - 3"	88				
A224	2	5	STR	40' - 8"	85				
A225	2	5	STR	39' - 2"	82				
A226	2	5	STR	37' - 7"	78				
A227	2	5	STR	36' - 1"	75				
A228	2	5	STR	34' - 7"	72				
A229	2	5	STR	33' - 0"	69				
A230	2	5	STR	31' - 6"	66				
A231	2	5	STR	30' - 0"	63				
A232	2	5	STR	28' - 5"	59				
A233	2	5	STR	26' - 11"	56				
A234	2	5	STR	25' - 5"	53				
A235	2	5	STR	23' - 10"	50				
A236	2	5	STR	22' - 4"	47				
A237	2	5	STR	20' - 10"	43				
A238	2	5	STR	19' - 3"	40				
A239	2	5	STR	17' - 9"	37				
A240	2	5	STR	16' - 2"	34				
A241	2	5	STR	14' - 8"	31				
A242	2	5	STR	13' - 2"	27				
A243	2	5	STR	11' - 7"	24				
A244	2	5	STR	10' - 1"	21				
A245	2	5	STR	8' - 7"	18				
A246	2	5	STR	7' - 0"	15				
A247	2	5	STR	5' - 6"	11				
A248	4	5	STR	4' - 0"	17				
B1E	324	4	STR	20' - 5"	4,419				
B2	392	5	STR	58' - 6"	23,918				
B3E	108	7	STR	60' - 0"	13,245				
B4E	204	7	STR	25' - 6"	10,633				
B5E	108	4	STR	27' - 1"	1,954				
E1E	8	7	5	3' - 5"	56				
E2E	8	7	5	4' - 0"	65				
E3E	8	7	5	4' - 7"	75				
E4E	8	7	5	5' - 1"	83				
E5E	4	7	5	2' - 10"	23				
F1E	4	6	STR	2' - 6"	15				
F2E	8	6	STR	3' - 10"	46				
F3E	4	6	STR	4' - 0"	24				
F4E	4	6	STR	2' - 11"	18				
F5E	8	6	STR	3' - 6"	42				
F6E	4	6	STR	4' - 6"	27				
G1E	4	5	STR	41' - 11"	175				
G2E	460	4	STR	6' - 4"	1,946				
K1E	8	8	1	13' - 8"	292				
K2E	28	8	2	20' - 7"	1,539				
K3E	48	6	STR	7' - 2"	517				
K4	32	4	STR	6' - 7"	141				
K5	96	4	STR	8' - 0"	513				
K6	32	4	STR	7' - 2"	153				
K7	30	4	STR	26' - 0"	521				
S1E	128	4	6	3' - 6"	299				
S2E	128	5	3	5' - 11"	790				
S3	512	4	4	2' - 9"	941				
S4E	256	4	5	5' - 7"	955				
U1	128	4	7	9' - 2"	784				
U2E	136	4	7	3' - 4"	303				
EPOXY REINFORCING STEEL			LBS.	75,331					
REINFORCING STEEL			LBS.	64,610					
CLASS AA CONCRETE			C.Y.	650.0					

"E" SUFFIX DENOTES EPOXY COATED REINFORCING STEEL

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

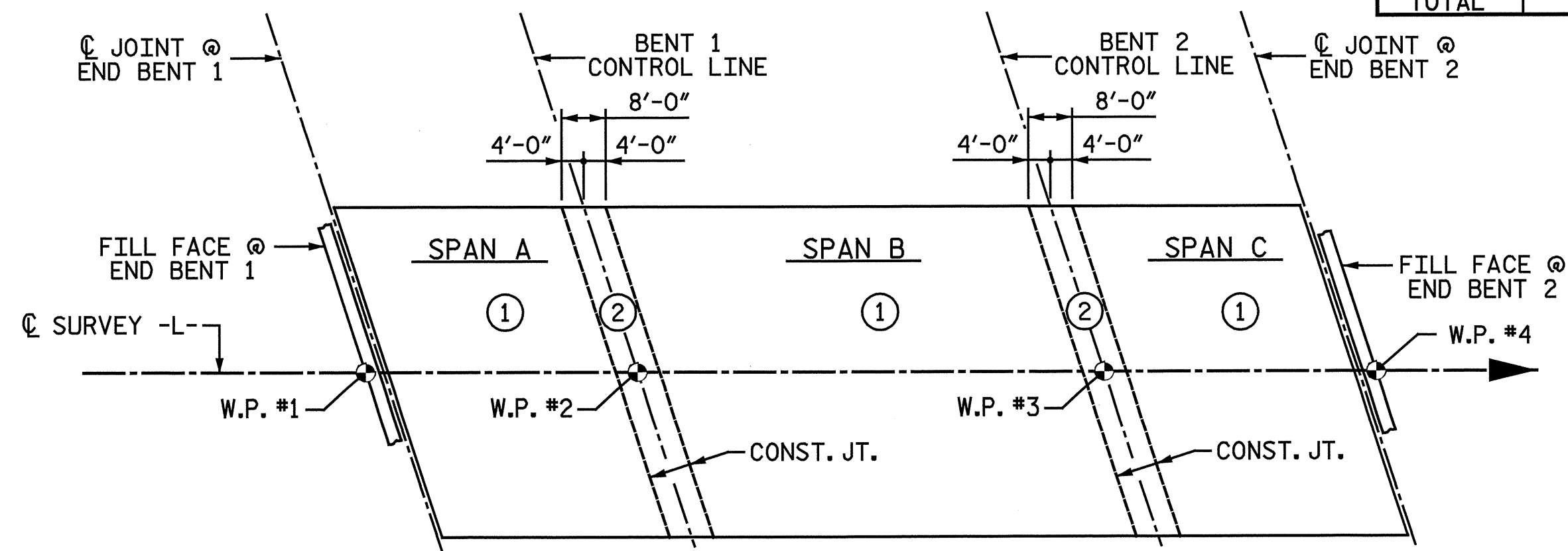
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	2'-0"	1'-9"	2'-0"	1'-9"	2'-9"
#5	2'-6"	2'-2"	2'-6"	2'-2"	3'-5"
#6	3'-0"	2'-7"	3'-10"	2'-7"	4'-4"
#7	5'-3"	3'-6"			
#8	6'-10"	4'-7"			



POUR TOTALS	
CLASS AA CONCRETE (CU. YDS.)	
POUR #1	112.1
POUR #2	271.6
POUR #3	187.0
TOTAL	570.7

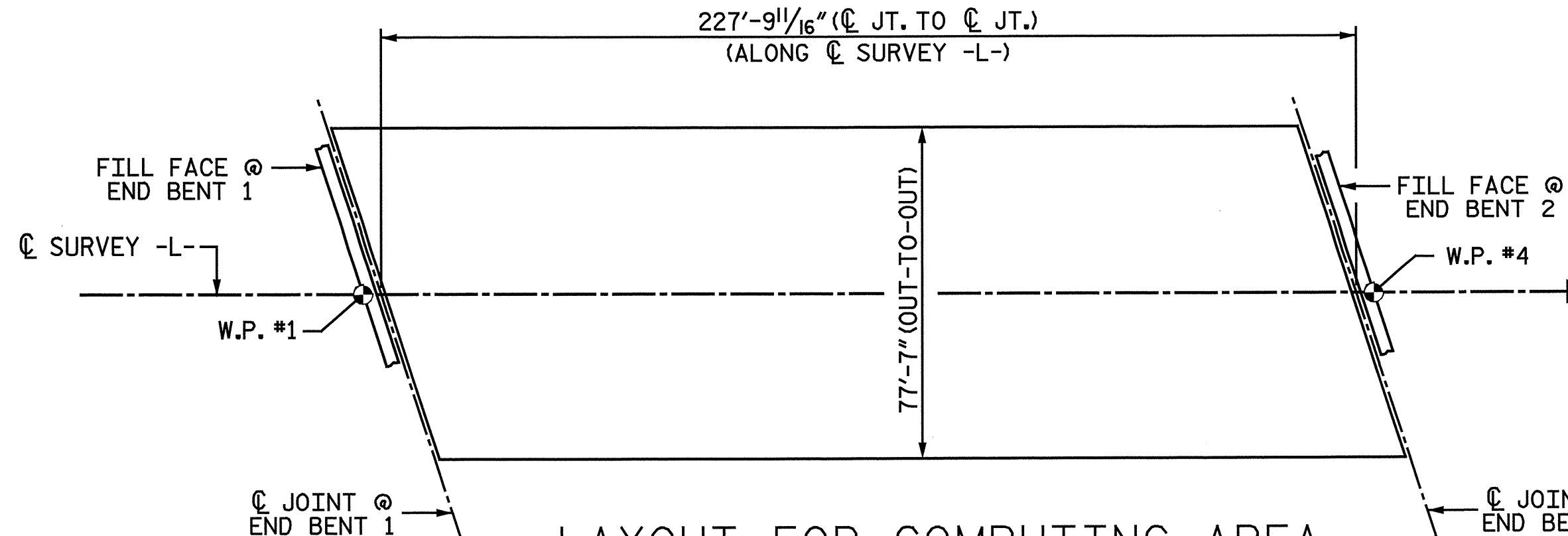
POUR SEQUENCE

DENOTES POUR NUMBER AND DIRECTION

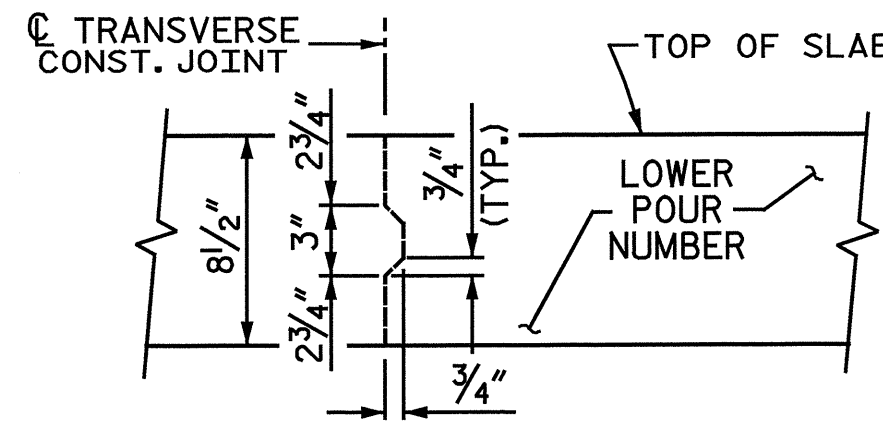


OPTIONAL POURING SEQUENCE

POUR (2) CANNOT BE STARTED UNTIL BOTH ADJACENT (1) POURS REACH A MINIMUM OF 3,000 PSI.

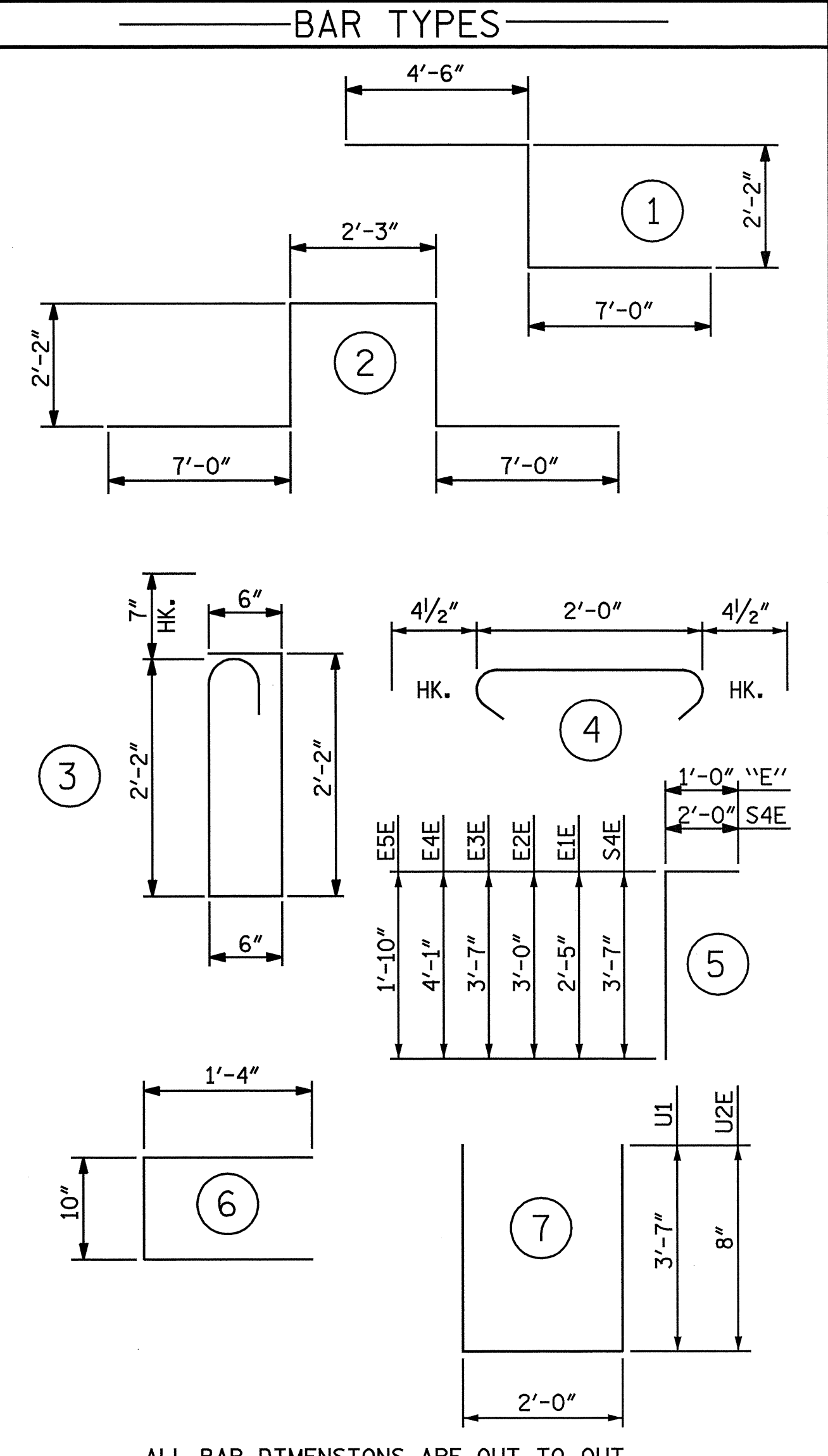


LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 17,667)



TRANSVERSE CONSTRUCTION JOINT IN DECK SLAB

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



ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

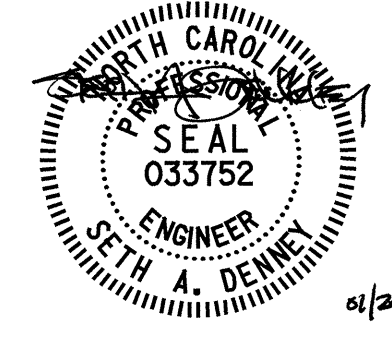
	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
SPAN "A-C"	570.7	64,610	75,331
SIDEWALK	79.3		**
TOTALS **	650.0	64,610	75,331

** QUANTITIES INCLUDED WITH SPAN TOTALS.

PROJECT NO. P-5208D
CABARRUS COUNTY
STATION: 16+93.38 -L-

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

GROOVING BRIDGE FLOORS	
APPROACH SLABS	2,965 SQ.FT.
BRIDGE DECK	13,870 SQ.FT.
TOTAL	16,835 SQ.FT.



Baker

Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27518
NC License No.: F-1084

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

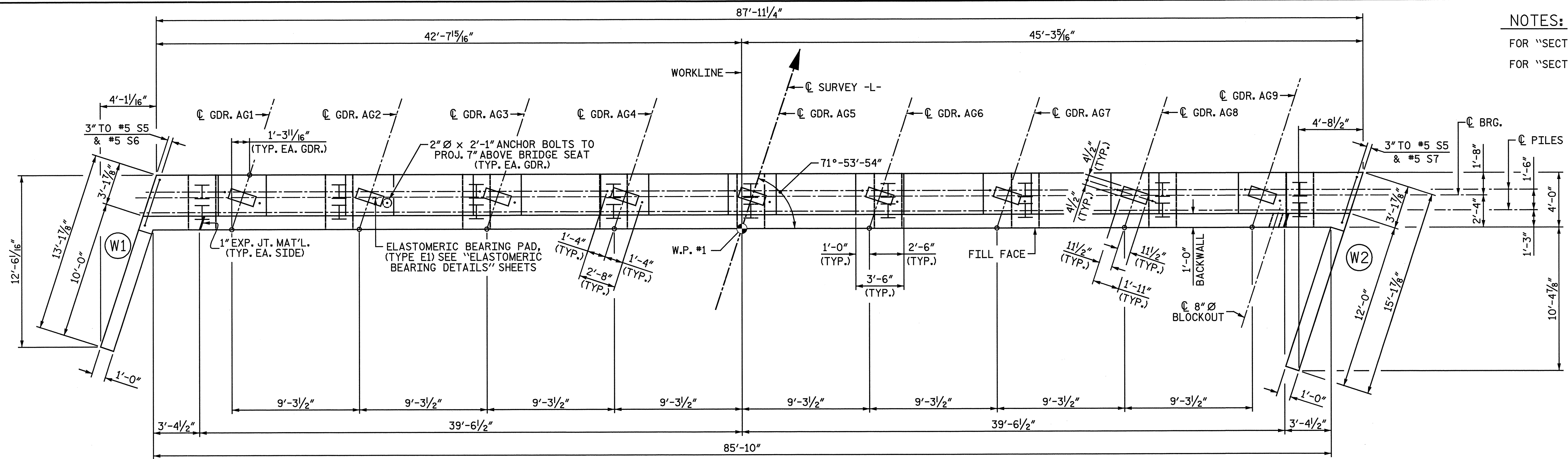
SHEET NO. S-23
TOTAL SHEETS 39

DRAWN BY: M. D. MAYHEW DATE: 9-24-12
CHECKED BY: A. L. PHILLIPS DATE: 9-28-12

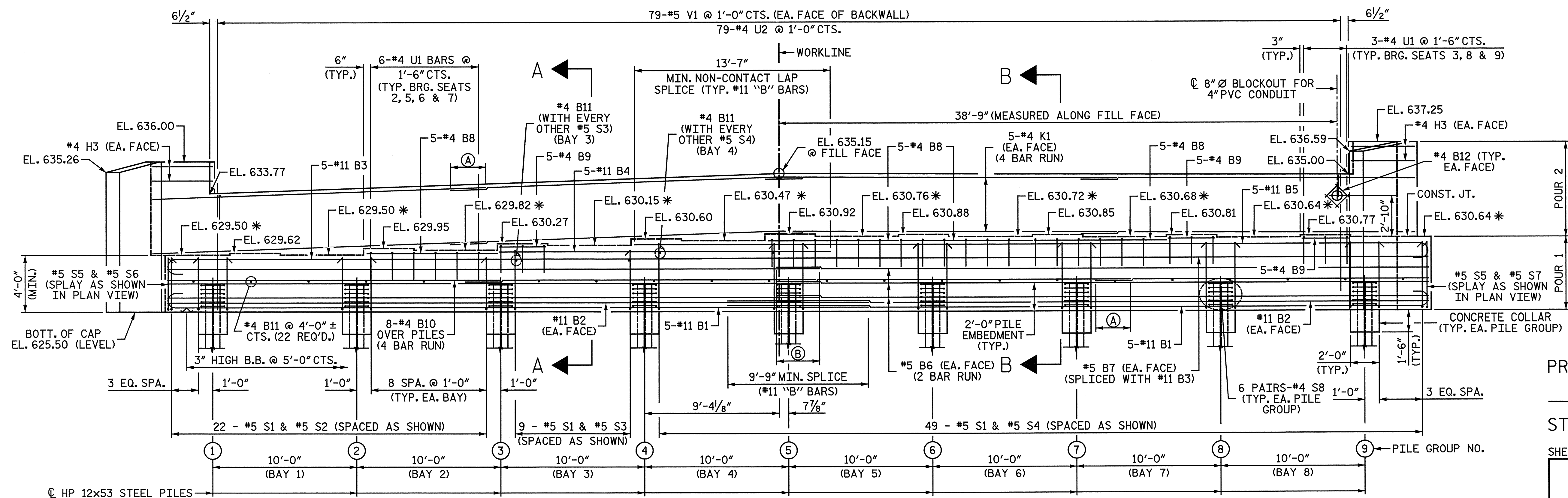
DWG. 23 OF 39

Justin 1/24/2013 9:27:47 AM
 File Name: Y:\Projects\NCDOT\TP-5208D\DISCIPLINE\Structure\Drawings\Final\TP-5208D.023.SD_BM.dgn

NOTES:
 FOR "SECTION A-A", SEE SHEET 3 OF 3.
 FOR "SECTION B-B", SEE SHEET 3 OF 3.



PLAN



ELEVATION

*FOR LOCATION OF ELEVATION BETWEEN BRIDGE SEATS, SEE "SECTION A-A", SHEET 3 OF 3

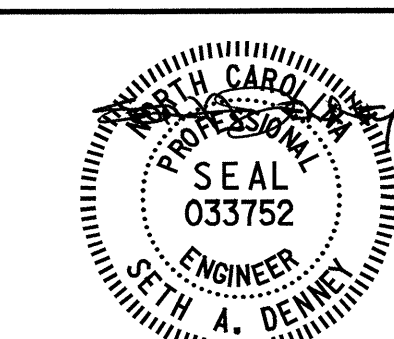
- (A) 2'-5" MIN. SPLICE (#4 "K" & #4 "B" BARS)
- (B) 3'-0" MIN. SPLICE (#5 "B" BARS)

PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE

END BENT 1



Baker

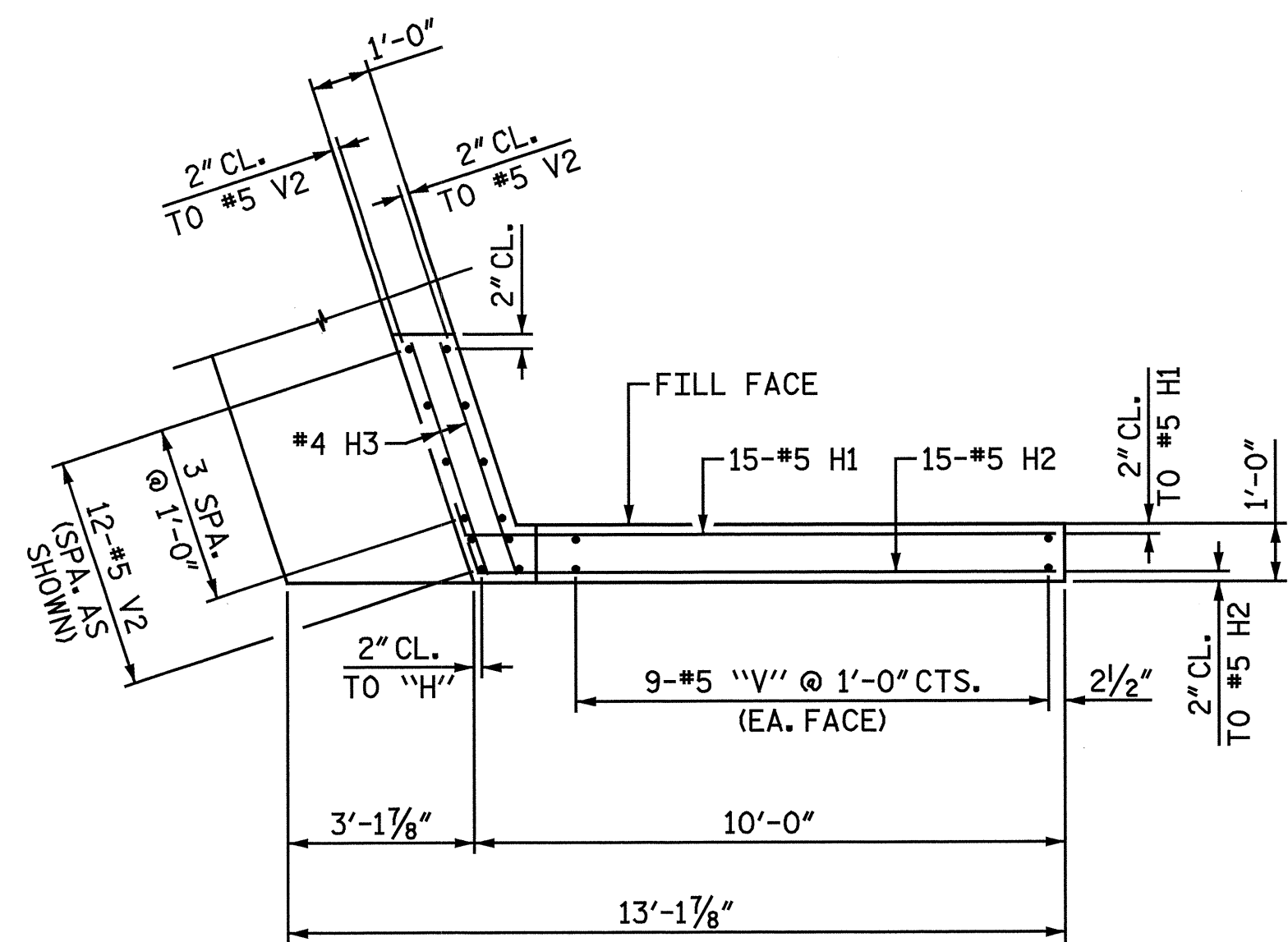
Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27518
 NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			39

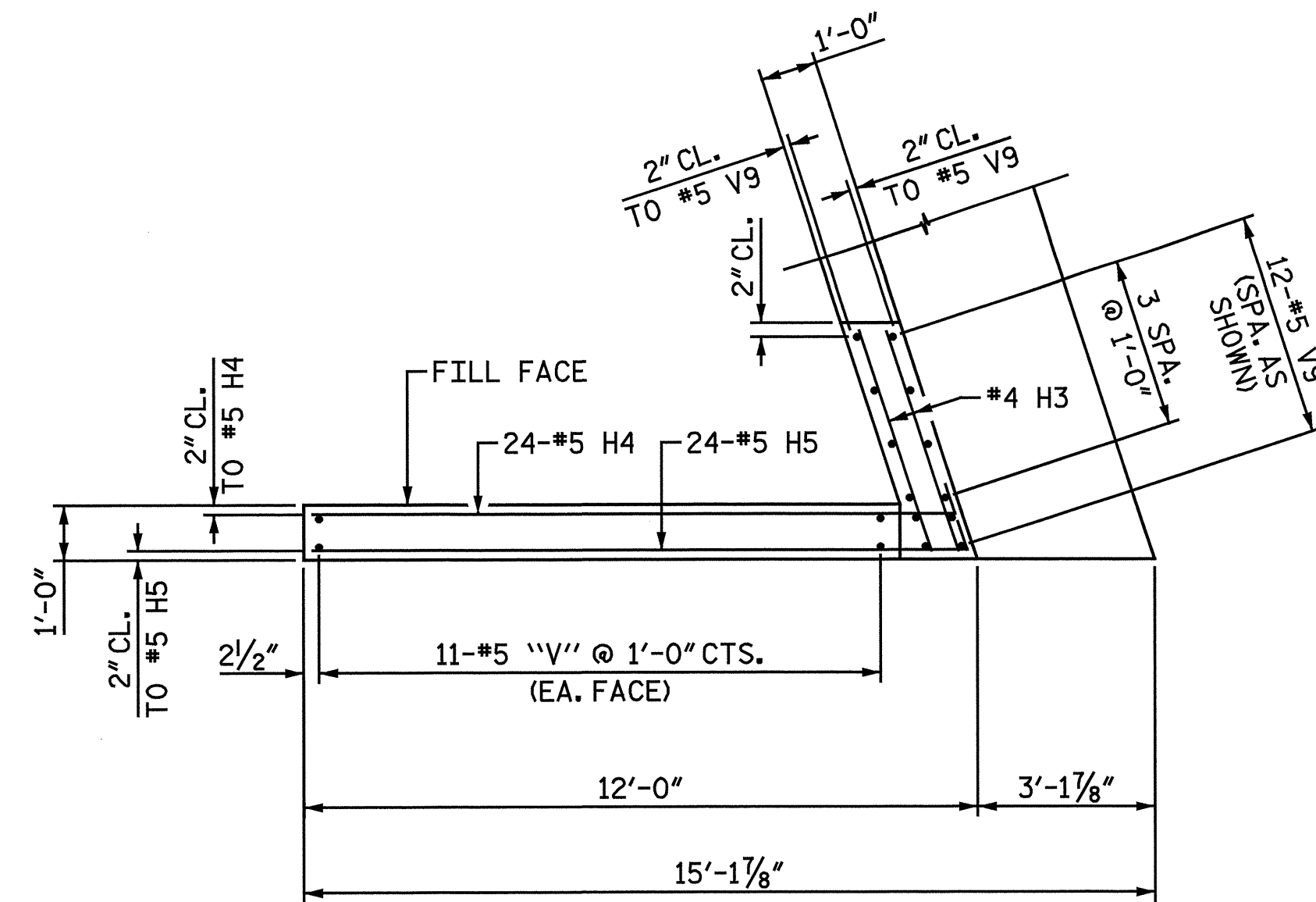
DWG. 24 OF 39

Justin 9/27/18 AM 1/24/2013
 File Name: Y:\Projects\5208D\Structure\Drawings\5208D_024.LSD.EBL.dgn

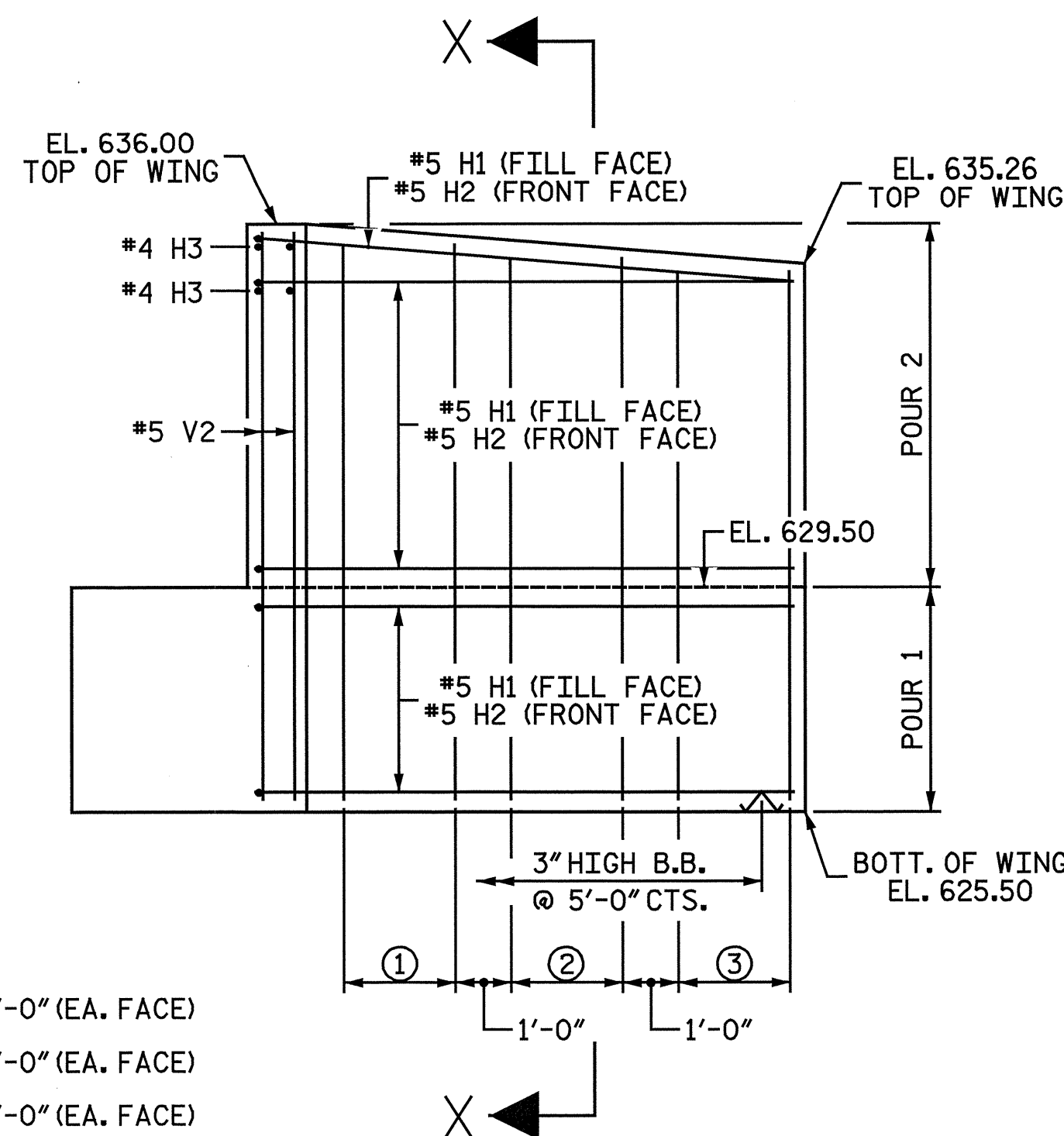
DRAWN BY: M. D. MAYHEW DATE: 10-17-12
 CHECKED BY: A. L. PHILLIPS DATE: 10-17-12



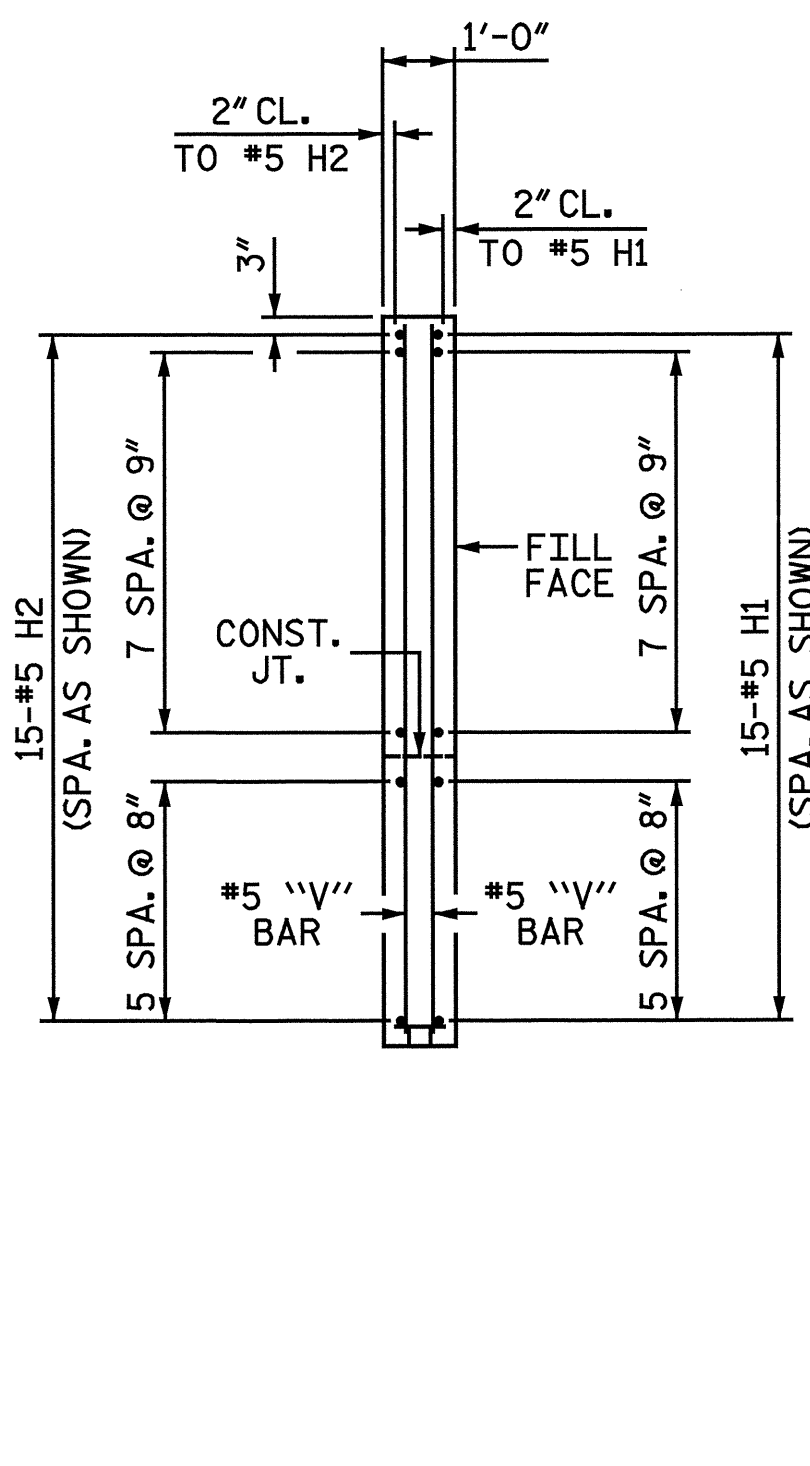
PLAN OF LEFT WING (W1)



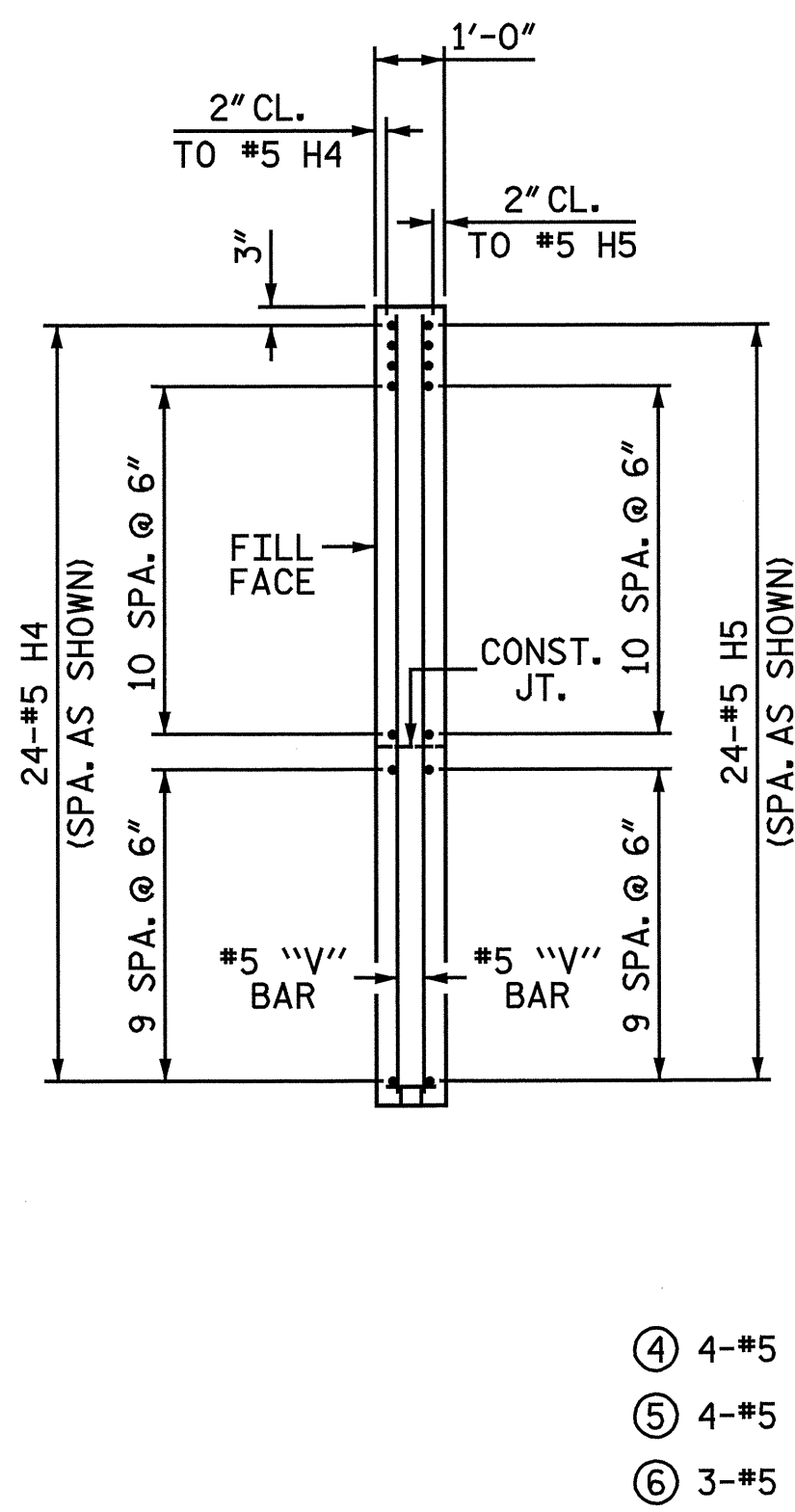
PLAN OF RIGHT WING (W2)



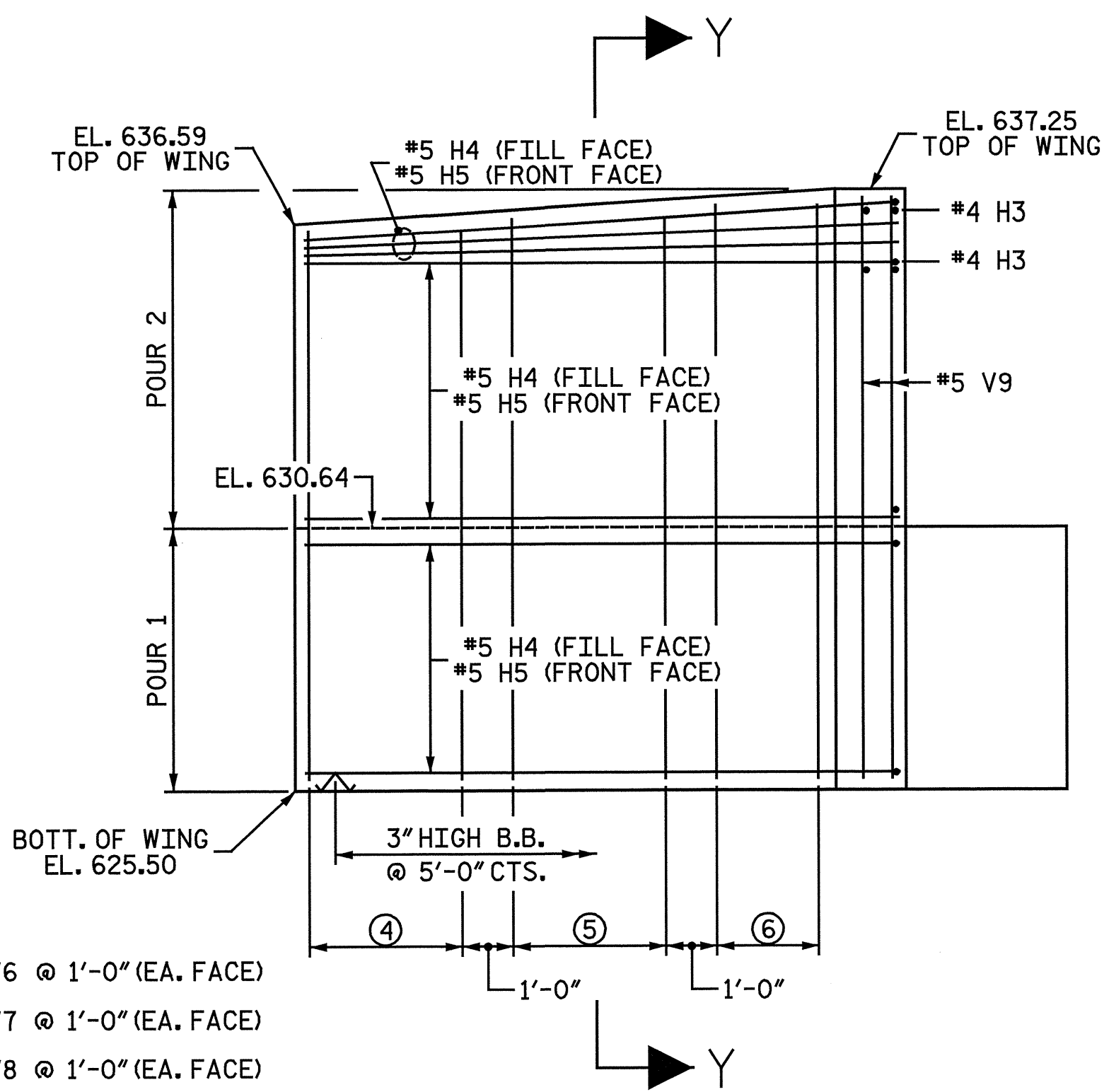
ELEVATION OF LEFT WING (W1)



SECTION X-X



SECTION Y-Y



ELEVATION OF RIGHT WING (W2)

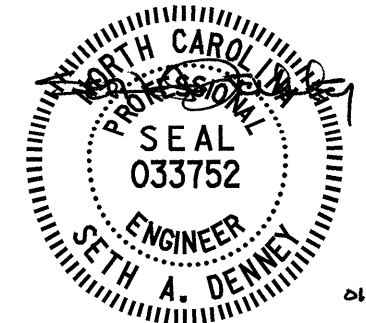
- ① 3-#5 V3 @ 1'-0" (EA. FACE)
- ② 3-#5 V4 @ 1'-0" (EA. FACE)
- ③ 3-#5 V5 @ 1'-0" (EA. FACE)

- ④ 4-#5 V6 @ 1'-0" (EA. FACE)
- ⑤ 4-#5 V7 @ 1'-0" (EA. FACE)
- ⑥ 3-#5 V8 @ 1'-0" (EA. FACE)

PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-

SHEET 2 OF 3

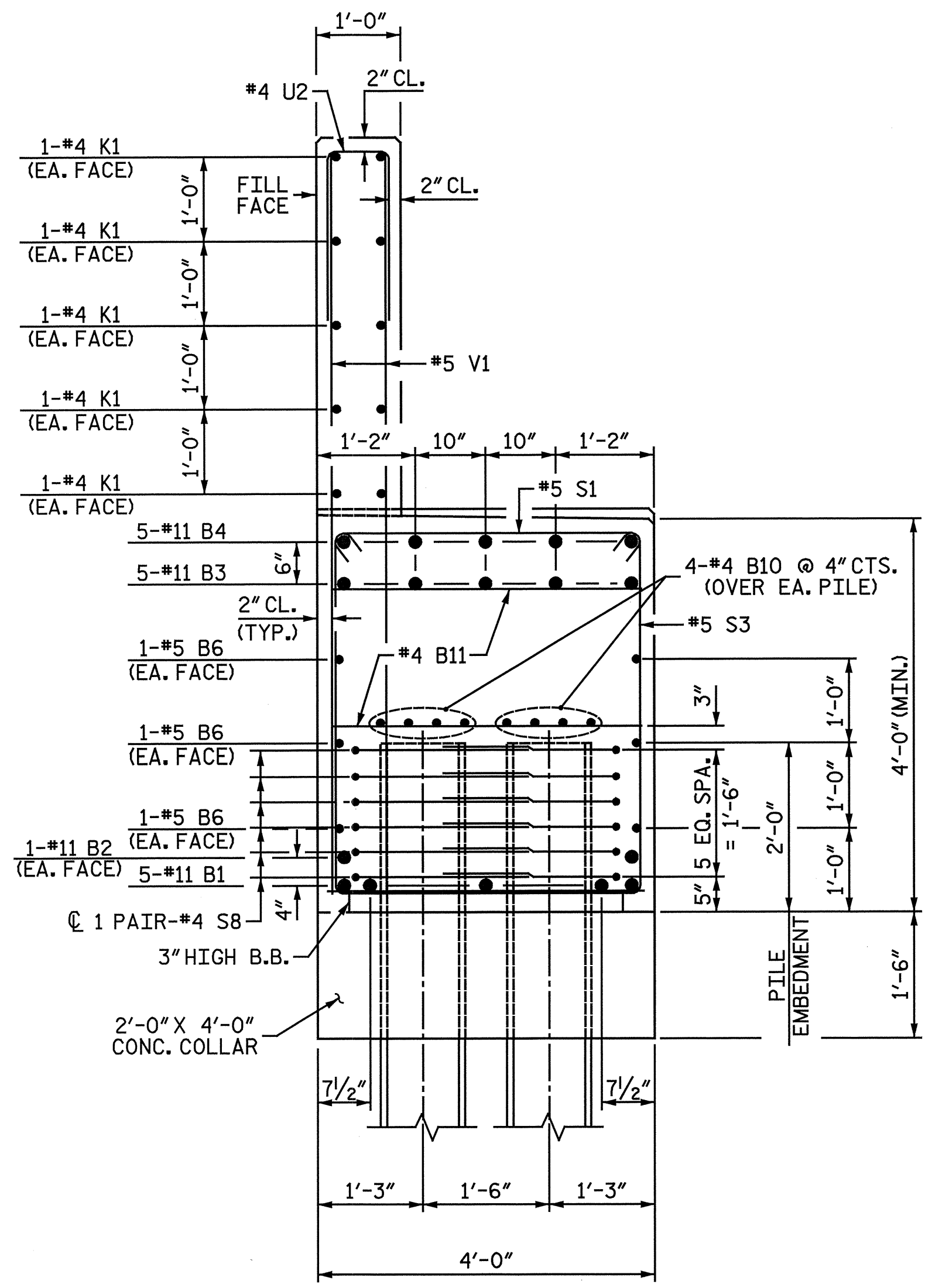
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1
 WING WALL DETAILS



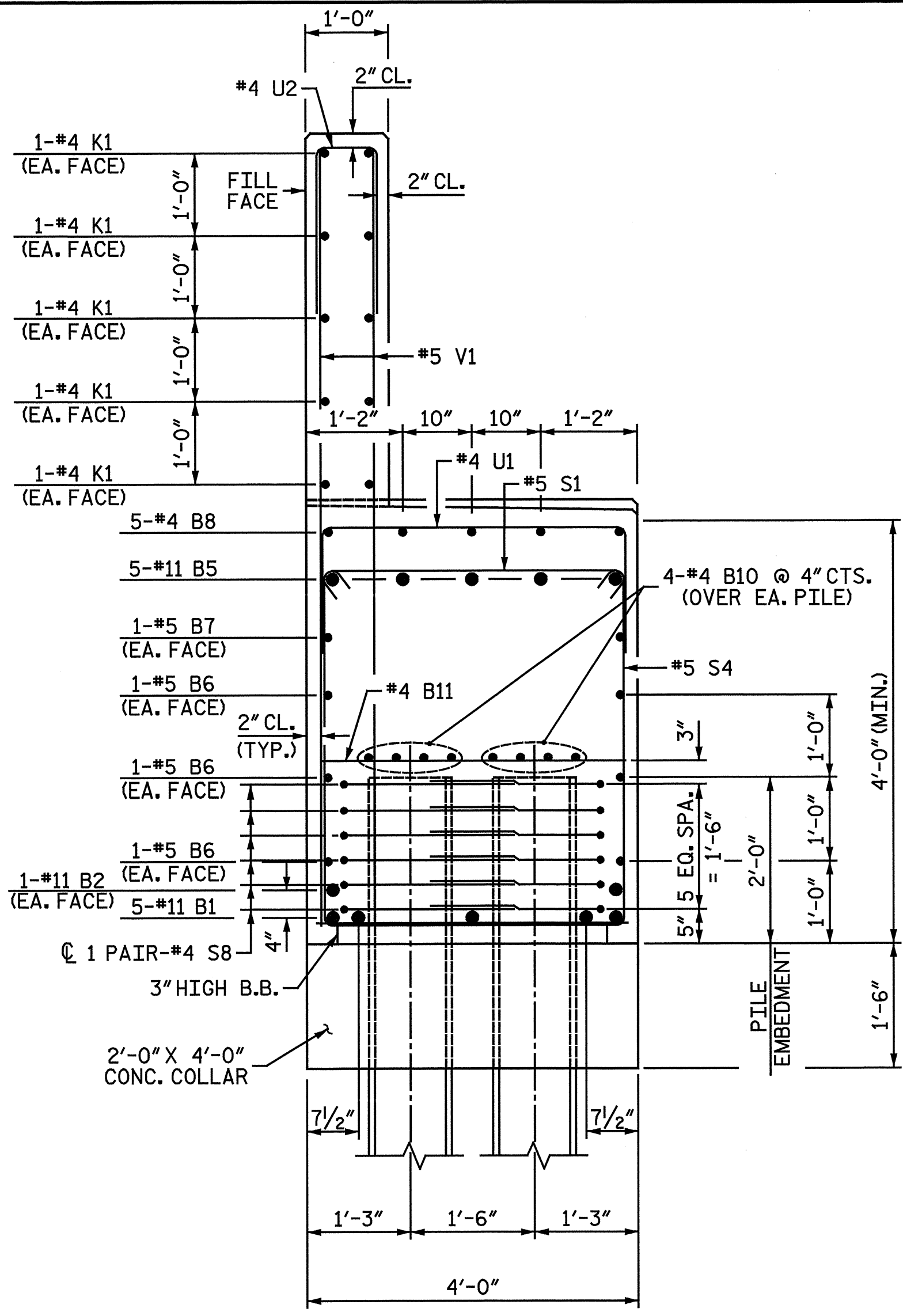
Baker
 Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27618
 NC License No.: F-1084

REVISIONS						SHEET NO. S-25
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			

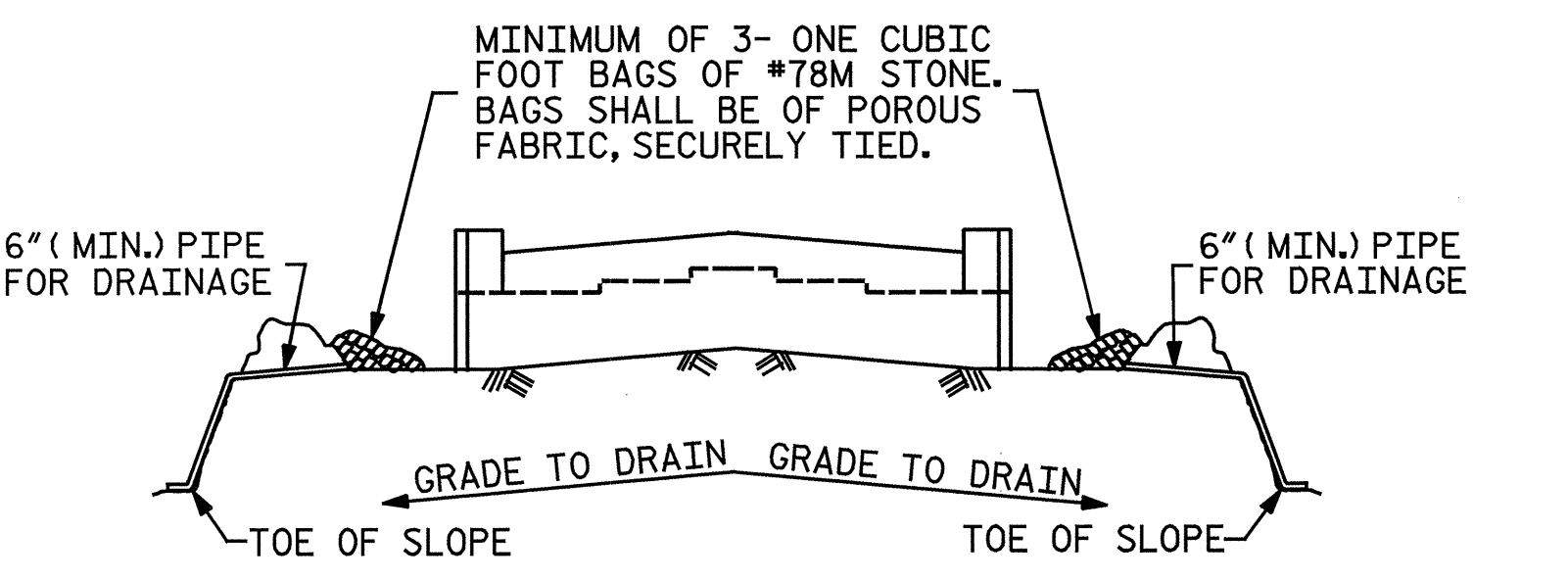
1/24/2013 9:27:48 AM
 I:\Projects\5208D\VD\SC\PL\INE\Structure\DWG\Wing\W1-P-5208D_025_SD_EBL.dgn



SECTION A-A



SECTION B-B

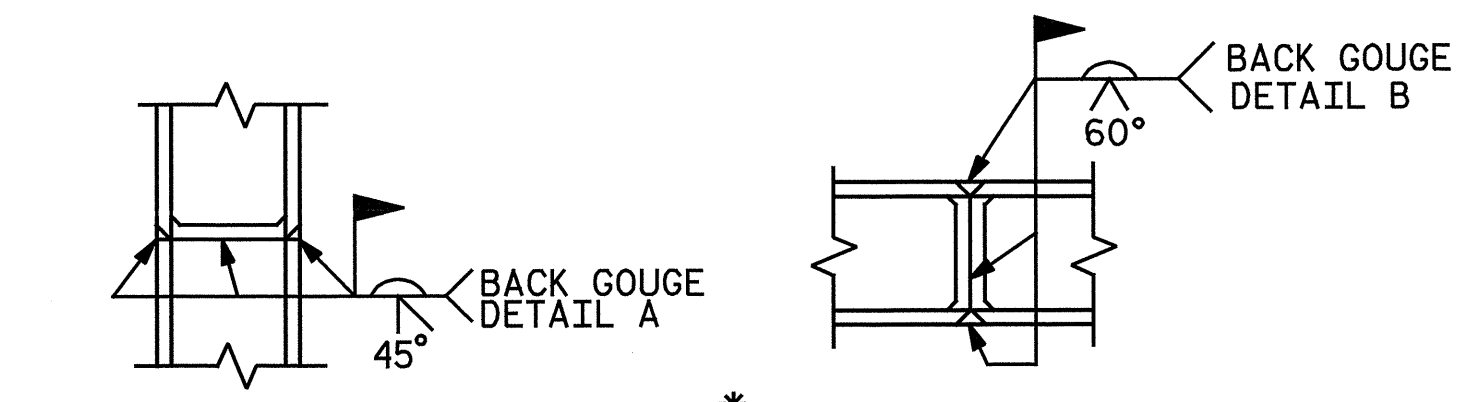


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

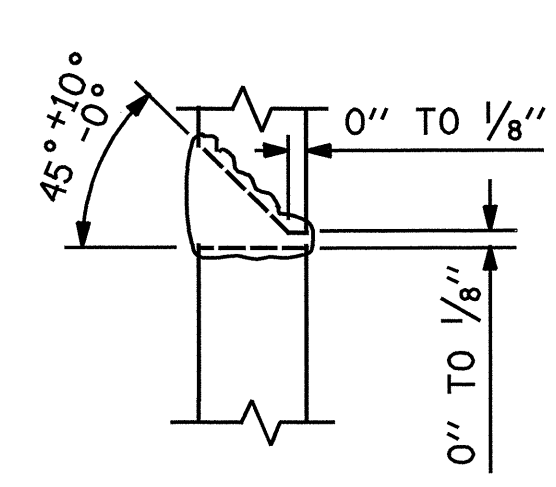
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

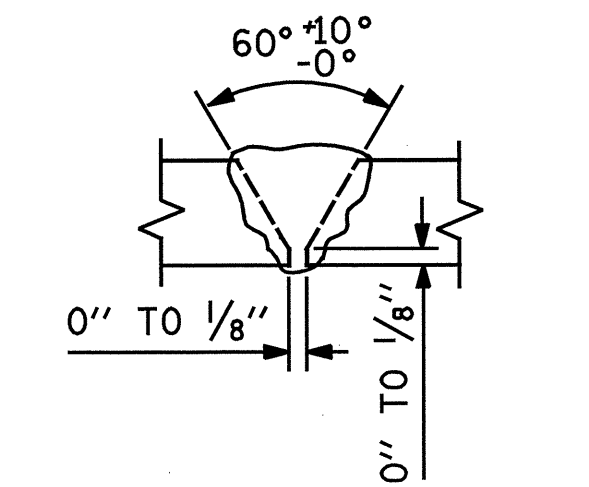


* PILE VERTICAL

* PILE HORIZONTAL OR VERTICAL



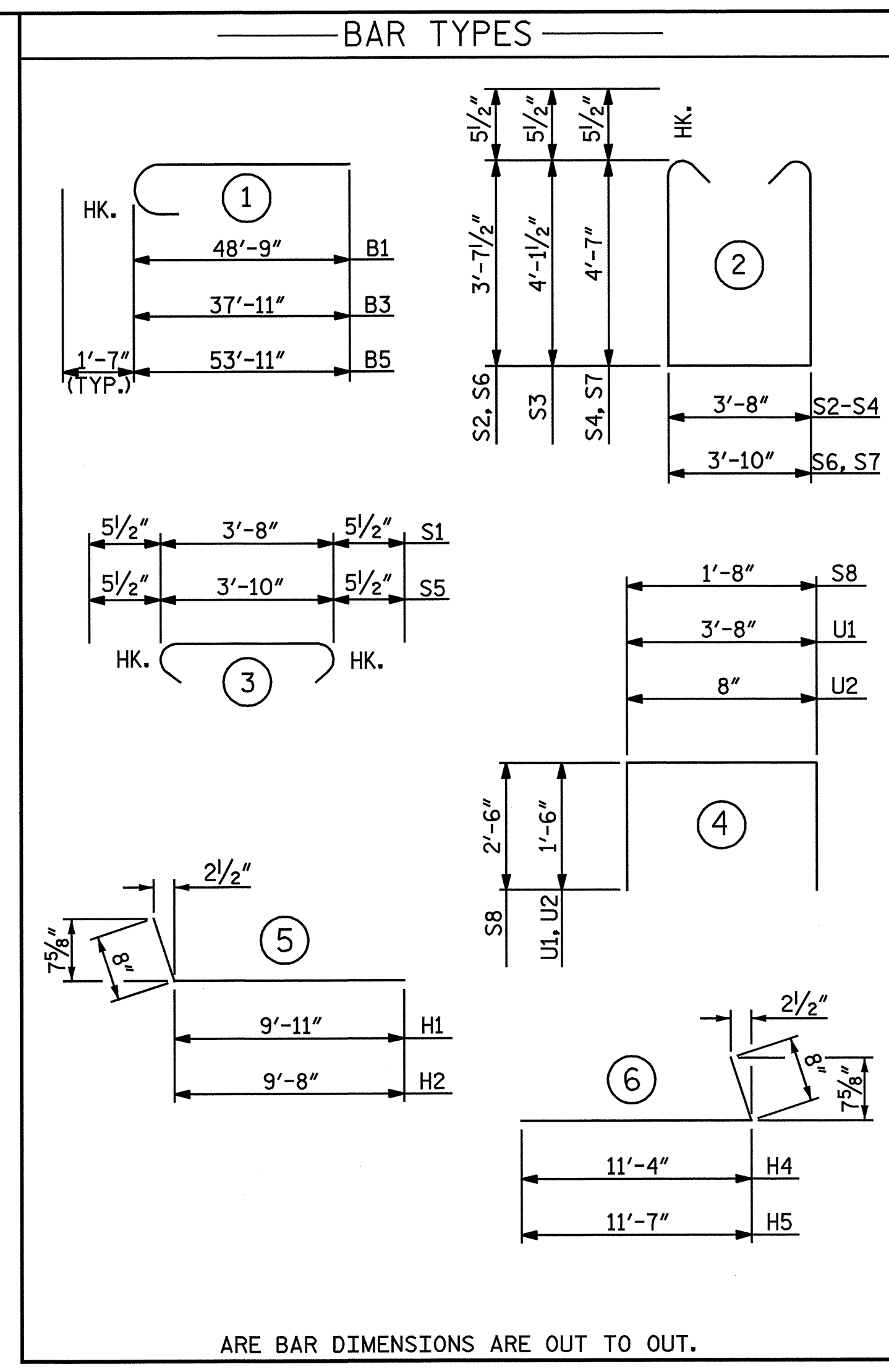
DETAIL A



DETAIL B

PILE SPLICE DETAILS

* POSITION OF PILE DURING WELDING.



ARE BAR DIMENSIONS ARE OUT TO OUT.

NOTES:

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.
- CENTER UTILITY IN BLOCKOUT AND FILL ANNULAR SPACE AROUND UTILITY PIPE WITH JOINT FILLER IN ACCORDANCE WITH STANDARD SPECIFICATION ARTICLE 1028-1.
- INSTALL THE 4" DIA. DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

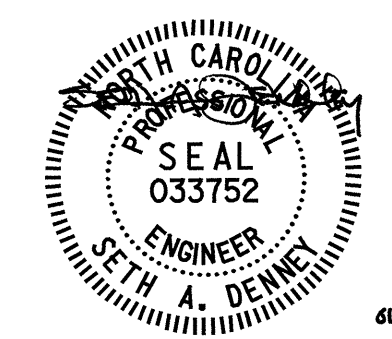
BILL OF MATERIAL

END BENT I					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	10	11	1	50' - 4"	2,674
B2	4	11	STR	48' - 9"	1,036
B3	5	11	1	39' - 6"	1,049
B4	5	11	STR	24' - 3"	644
B5	5	11	1	55' - 6"	1,474
B6	12	5	STR	45' - 4"	567
B7	2	5	STR	53' - 6"	112
B8	20	4	STR	9' - 1"	121
B9	15	4	STR	3' - 2"	32
B10	32	4	STR	23' - 9"	508
B11	32	4	STR	3' - 8"	78
B12	8	4	STR	1' - 3"	7
H1	15	5	5	10' - 7"	166
H2	15	5	5	10' - 4"	162
H3	8	4	STR	4' - 1"	22
H4	24	5	6	12' - 0"	300
H5	24	5	6	12' - 3"	307
K1	40	4	STR	23' - 9"	635
S1	80	5	3	4' - 7"	382
S2	22	5	2	11' - 10"	272
S3	9	5	2	12' - 10"	120
S4	49	5	2	13' - 9"	703
S5	2	5	3	4' - 9"	10
S6	1	5	2	12' - 0"	13
S7	1	5	2	13' - 11"	15
S8	108	4	4	6' - 8"	481
U1	33	4	4	6' - 8"	147
U2	79	4	4	3' - 8"	193
V1	158	5	STR	7' - 10"	1,291
V2	12	5	STR	10' - 1"	126
V3	6	5	STR	9' - 10"	62
V4	6	5	STR	9' - 7"	60
V5	6	5	STR	9' - 4"	58
V6	8	5	STR	10' - 8"	89
V7	8	5	STR	10' - 11"	91
V8	6	5	STR	11' - 2"	70
V9	12	5	STR	11' - 4"	142
REINFORCING STEEL					LBS. 14,219
CLASS "A" CONCRETE BREAKDOWN					
POUR #1 - CAP, LOWER WING WALLS & CONC. COLLARS				C.Y.	70.7
POUR #2 - BACKWALL & UPPER WING WALLS				C.Y.	19.8
TOTAL CLASS "A" CONCRETE				C.Y.	90.5
HP 12x53 STEEL PILES				NO. 18	LIN. FT. 990
PILE POINTS				EA.	18

PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT I
 DETAILS



Baker

Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 276518
 NC License No.: F-1084

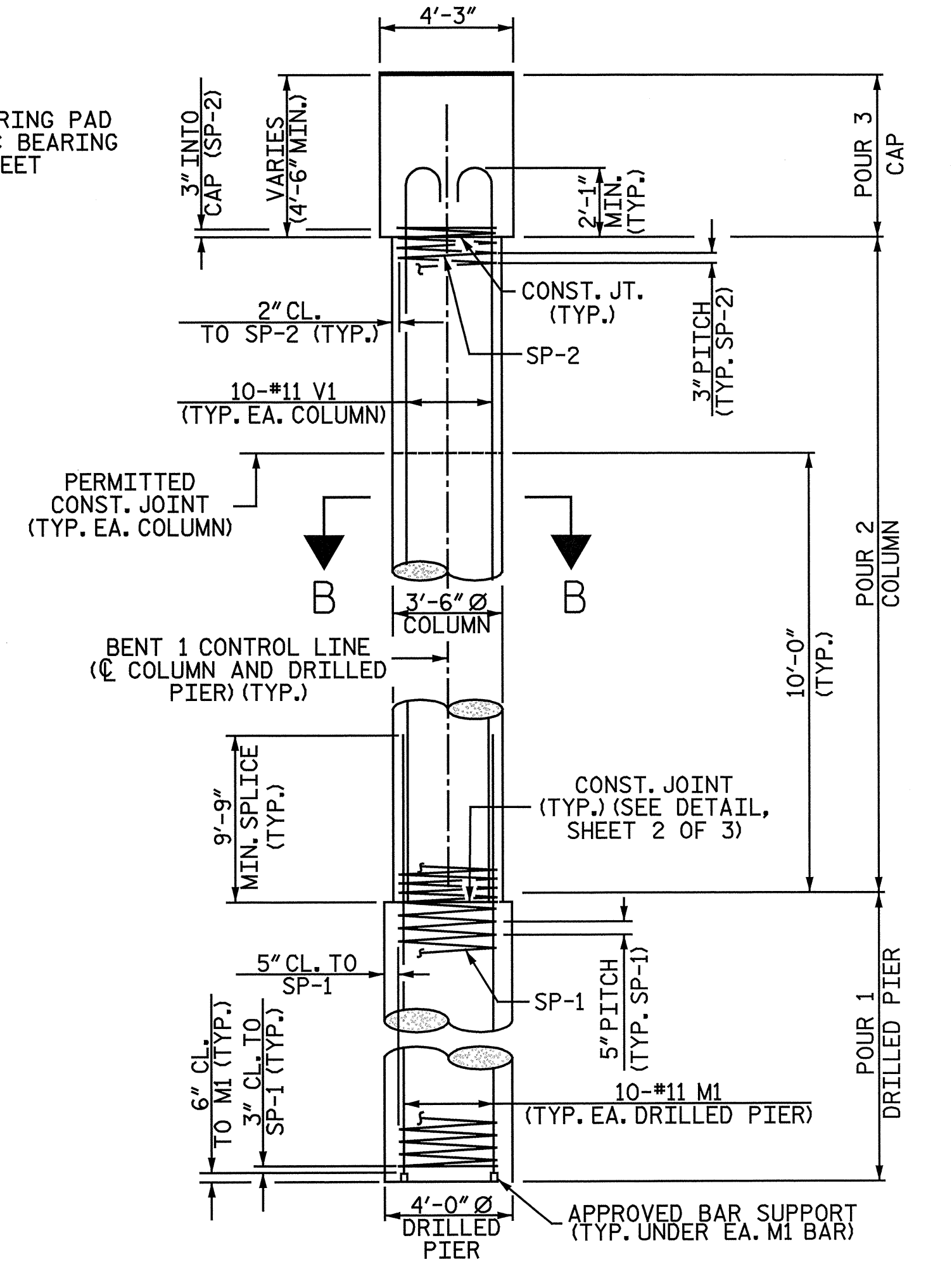
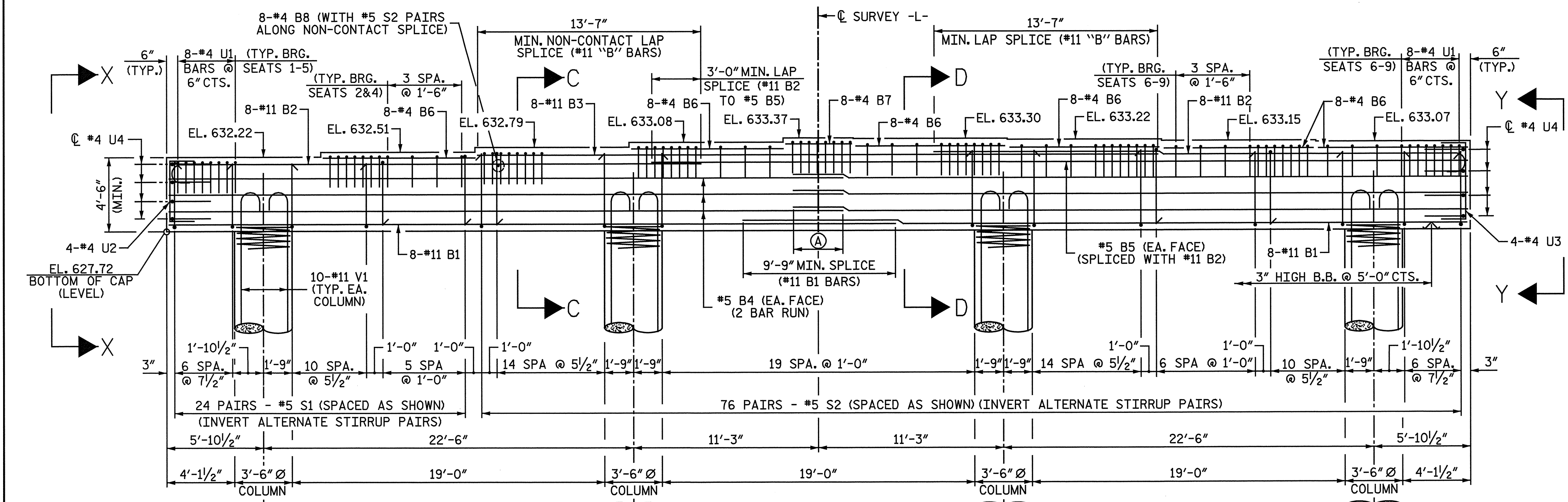
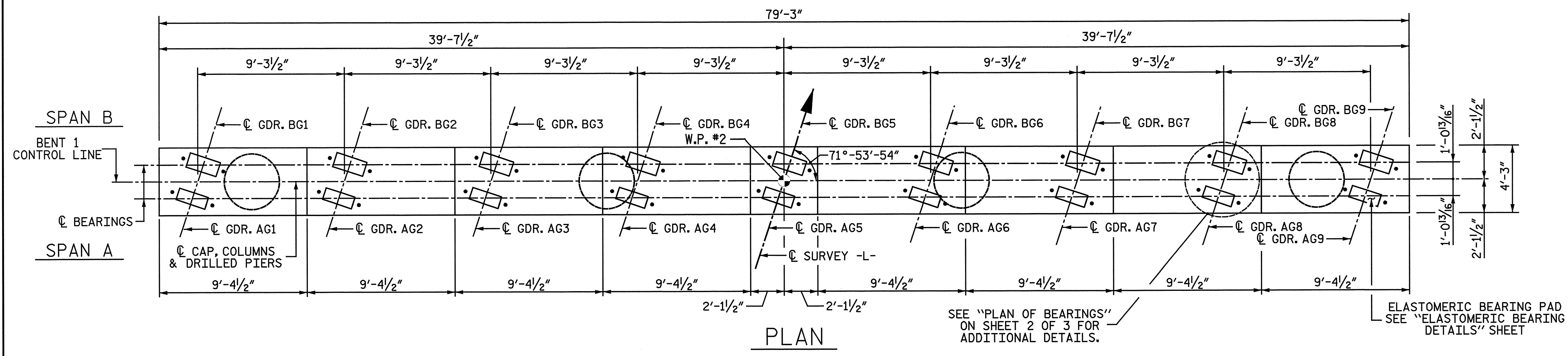
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS 39
2			4			

DWG. 26 OF 39

DRAWN BY: M. D. MAYHEW DATE: 11-14-12
 CHECKED BY: A. L. PHILLIPS DATE: 11-15-12

1/24/2013 9:27:49 AM
 Filename: Y:\Projects\5208D\Structure\Drawings\Final\5208D_026_SD_EB1_3.dgn

NOTES:
 FOR "SECTION A-A", SEE SHEET 2 OF 3.
 FOR "SECTION B-B", SEE SHEET 2 OF 3.
 FOR "SECTION C-C", SEE SHEET 3 OF 3.
 FOR "SECTION D-D", SEE SHEET 3 OF 3.
 FOR "VIEW X-X", SEE SHEET 3 OF 3.
 FOR "VIEW Y-Y", SEE SHEET 3 OF 3.
 SEE SHEET 3 OF 3 FOR ADDITIONAL NOTES.
 SEE SHEET 3 OF 3 FOR REINFORCING BILL OF MATERIAL.



PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-
 SHEET 1 OF 3

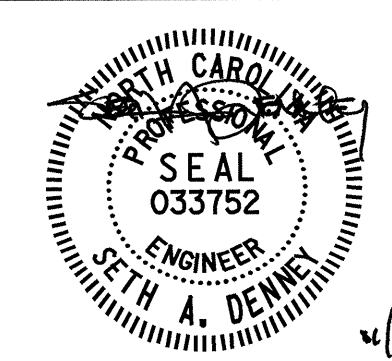
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE

BENT 1

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

SHEET NO. S-27
 TOTAL SHEETS 39



Baker
 Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27615
 NC License No.: F-1084

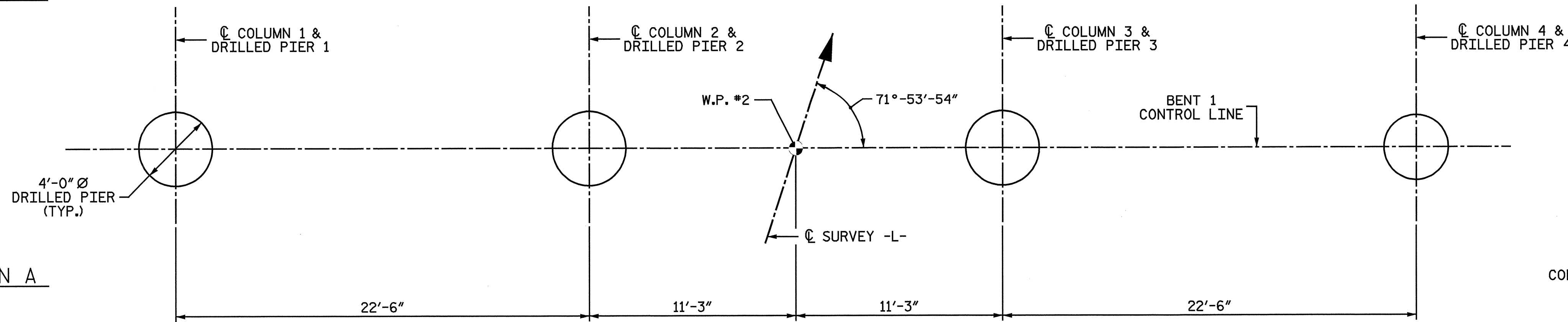
DWG. 27 OF 39

1/24/2013 9:27:50 AM
 Filename: Y:\Projects\NDDOT\5208D\DISCIPLINE\Structures\Drawings\Final\5208D_027_SD_B1.dwg
 User: NBS

DRAWN BY: N. B. SPEAKS DATE: 8-21-12
 CHECKED BY: A. L. PHILLIPS DATE: 10-5-12

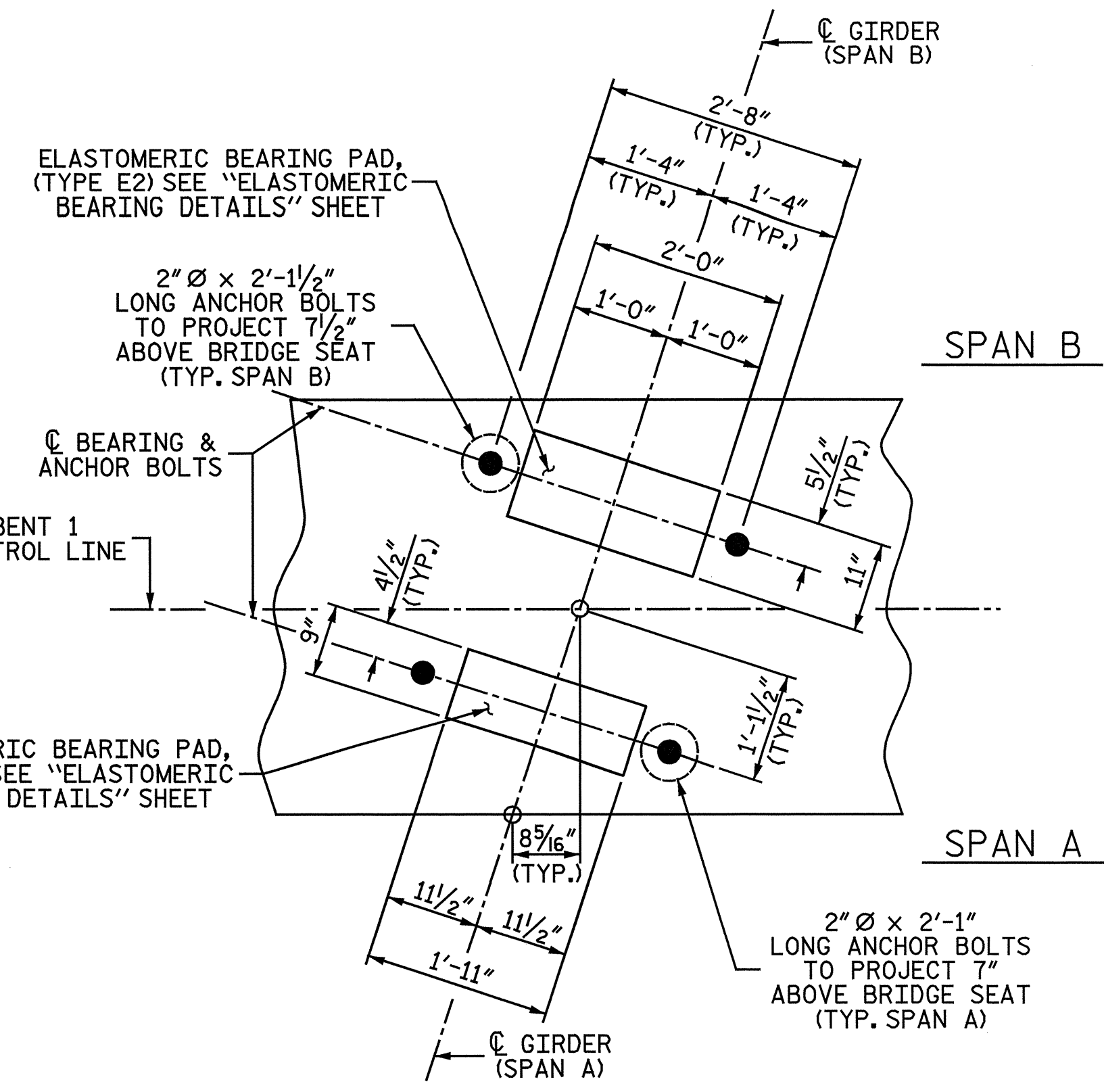
SPAN B

SPAN A



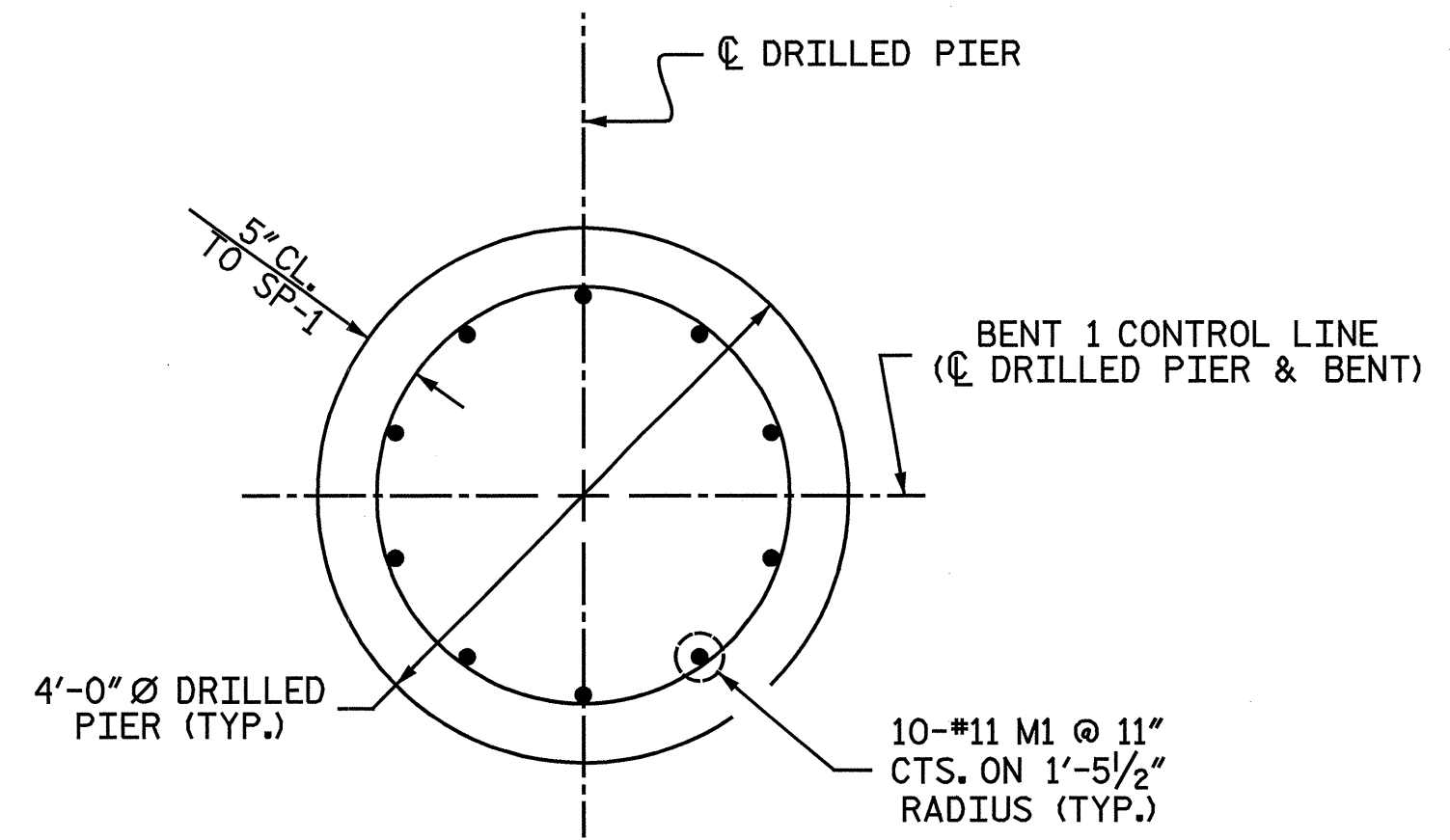
PLAN OF DRILLED PIERS

ALL DIMENSIONS AND DETAILS SHOWN FOR DRILLED PIERS ARE TYPICAL FOR EACH PIER UNLESS OTHERWISE NOTED.

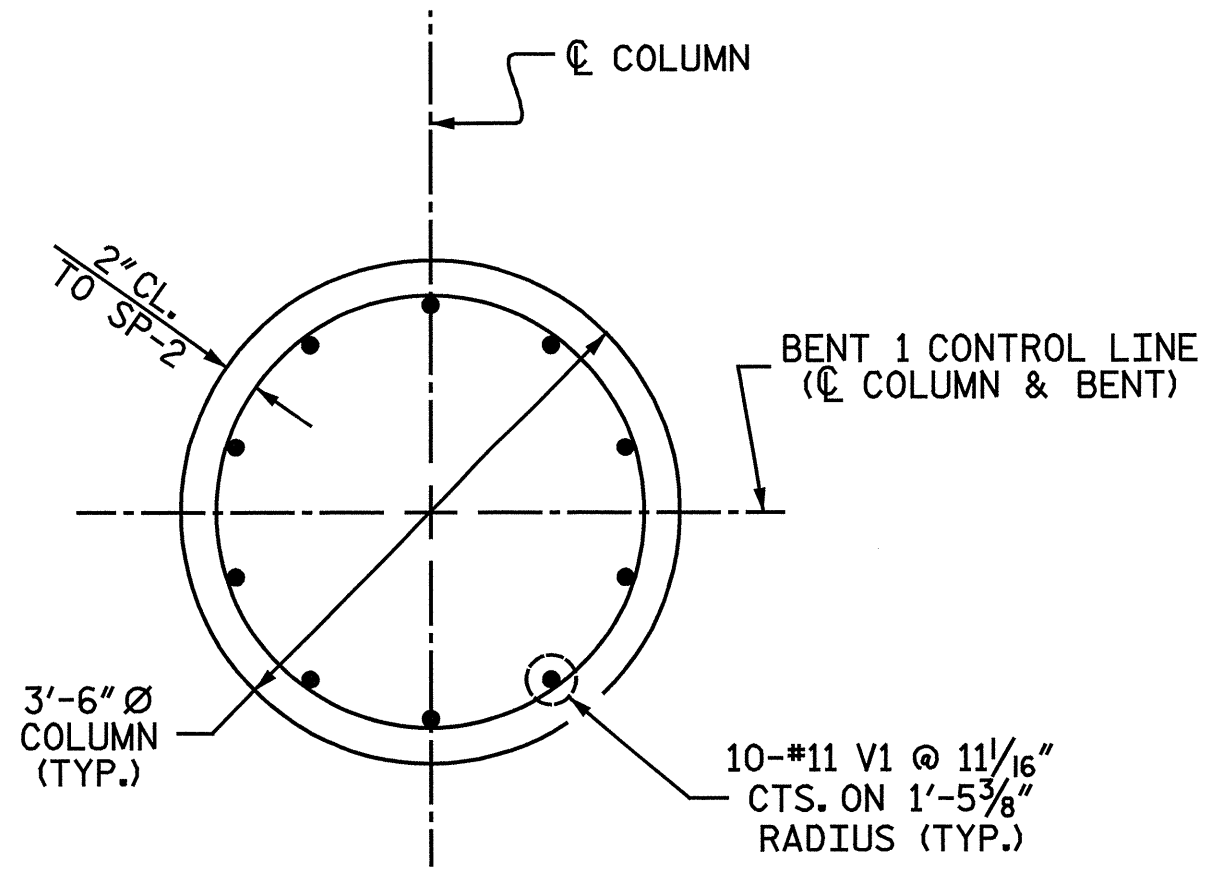


PLAN OF BEARINGS

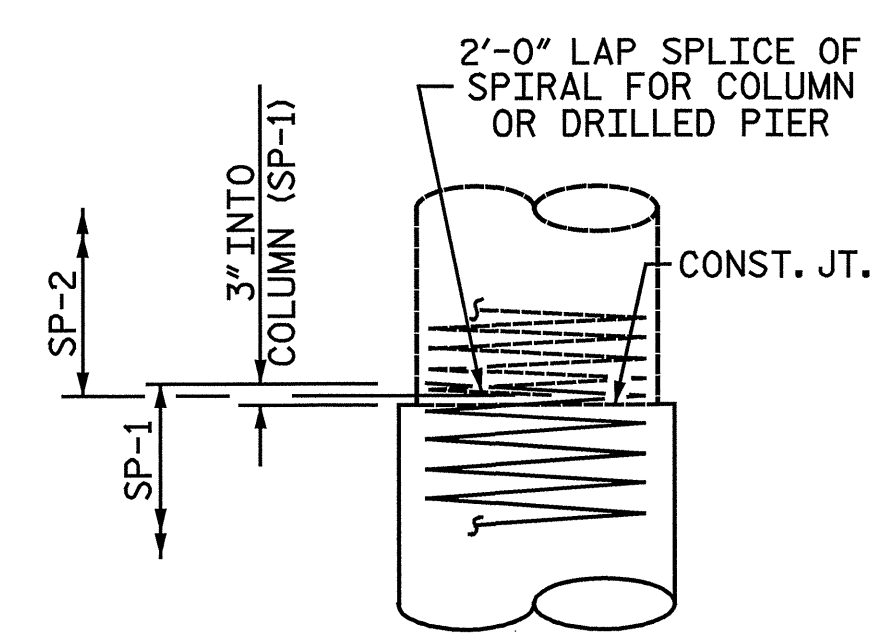
ALL DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS @ EACH BRIDGE SEAT LOCATION.



SECTION A-A



SECTION B-B

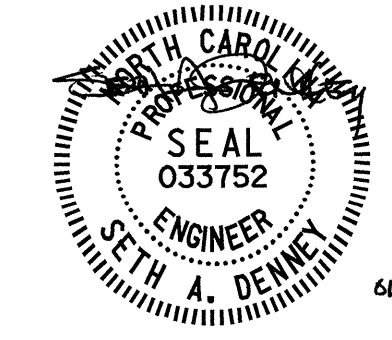


CONSTRUCTION JOINT DETAIL

PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 1 DETAILS



Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 276518
 NC License No.: F-1084

REVISIONS						SHEET NO. S-28
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			

DRAWN BY : N. B. SPEAKS DATE : 8-27-12
 CHECKED BY : A. L. PHILLIPS DATE : 10-9-12

DWG. 28 OF 39

Justin 1/24/2013 9:27:51 AM File: Y:\Projects\NCDOT\5208D\DISCIPLINE\Structures\Final\5208D_028_SD_B1_2.dgn

NOTES:

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

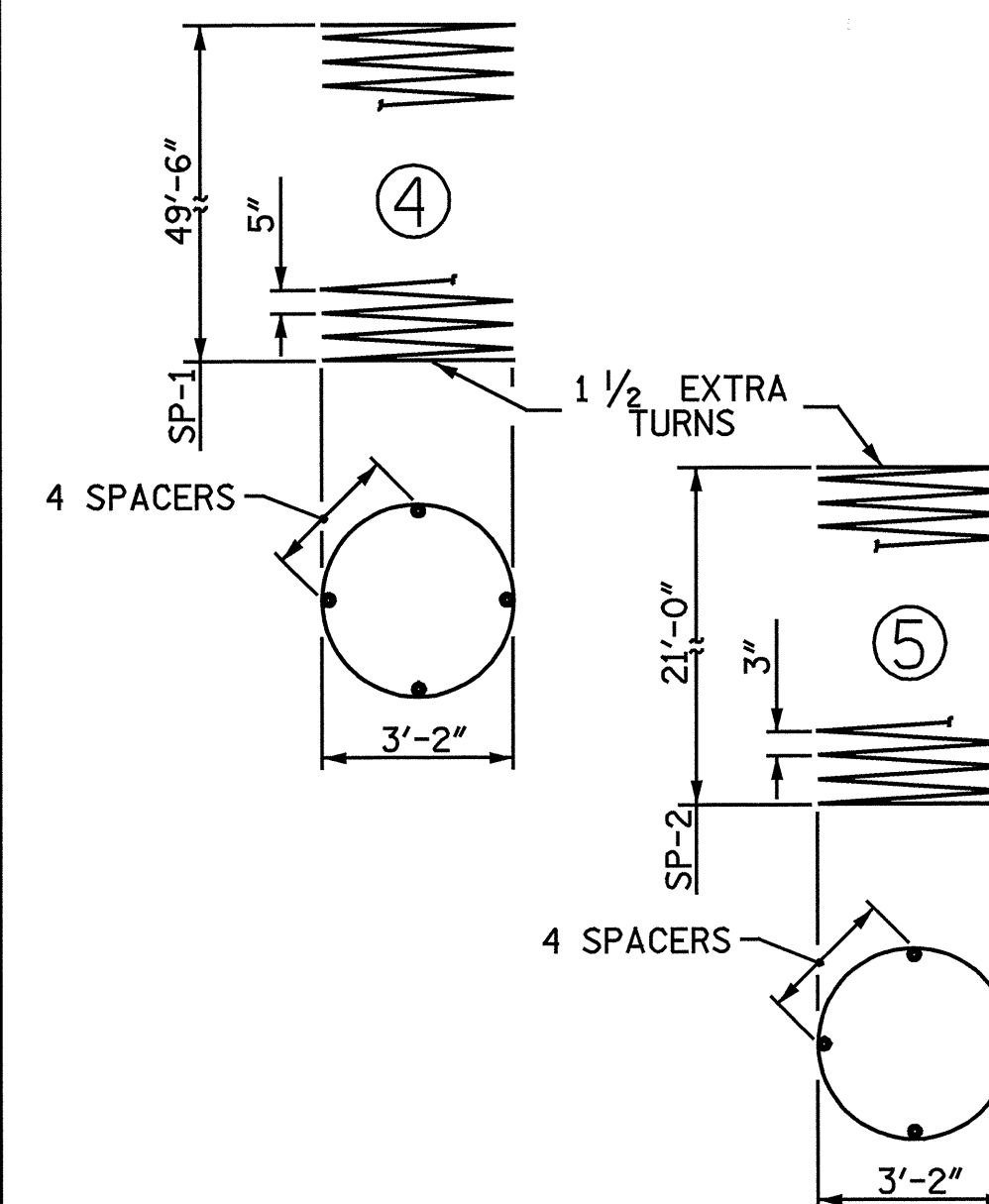
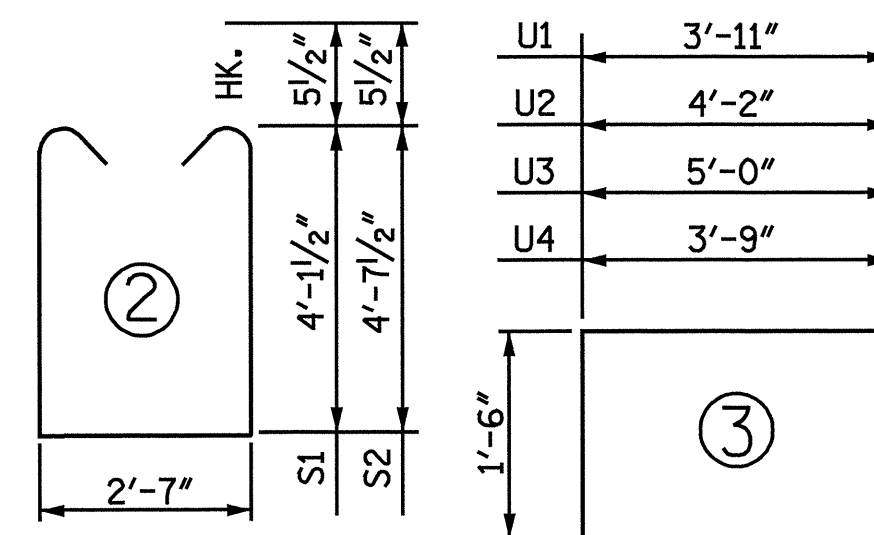
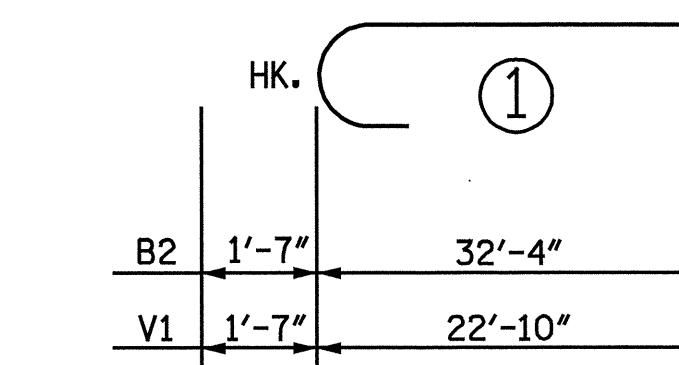
THE CONTRACTORS ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

FOR ADDITIONAL NOTES, SEE "FOUNDATION LAYOUT" SHEET.

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FOOT BELOW THE GROUND LINE.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.

* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

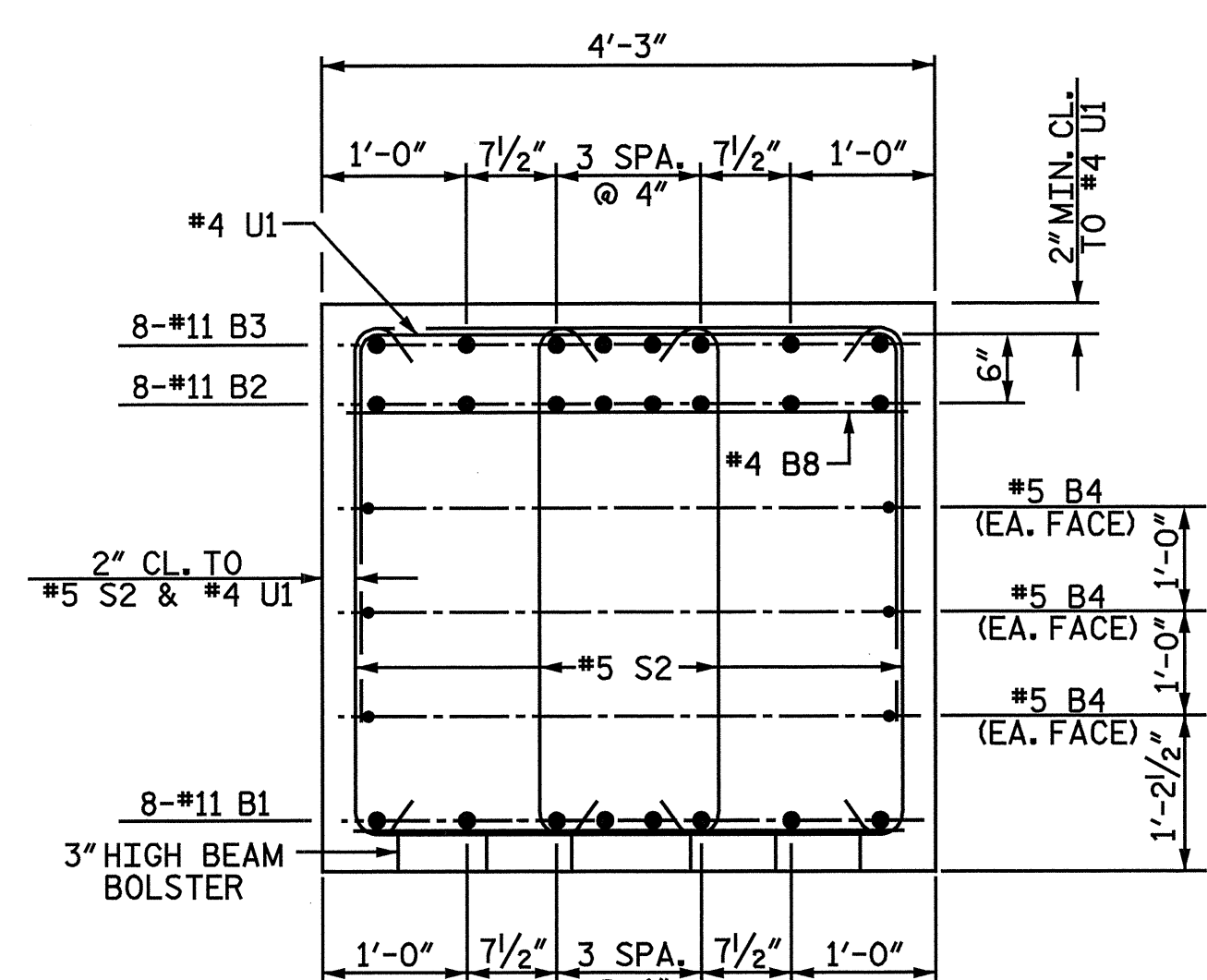
BILL OF MATERIAL

BENT 1

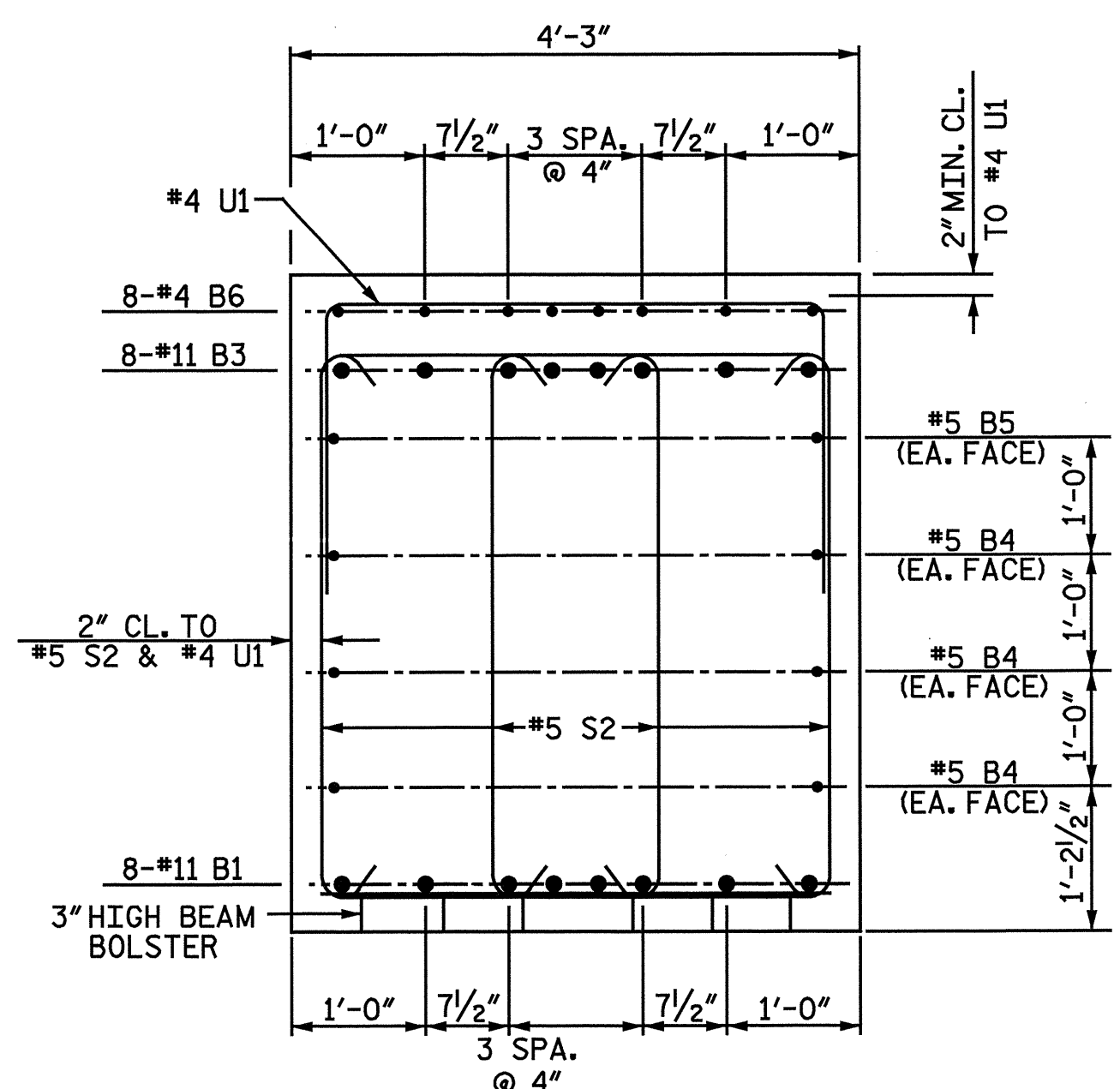
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	16	11	STR	44' - 4"	3,769
B2	16	11	1	33' - 11"	2,883
B3	8	11	STR	41' - 5"	1,760
B4	12	5	STR	41' - 0"	513
B5	2	5	STR	49' - 7"	103
B6	48	4	STR	9' - 2"	294
B7	8	4	STR	3' - 11"	21
B8	8	4	STR	3' - 11"	21
REINFORCING STEEL LBS. 30,901					
M1	80	11	STR	31' - 2"	13,247
S1	48	5	2	11' - 9"	588
S2	152	5	2	12' - 9"	2,021
U1	90	4	3	6' - 11"	416
U2	4	4	3	7' - 2"	19
U3	4	4	3	8' - 0"	21
U4	8	4	3	6' - 9"	36
V1	40	11	1	24' - 5"	5,189
SP-1	4	*	4	1178' - 2"	4,915
SP-2	4	**	5	838' - 6"	2,240
REINFORCING STEEL LBS. 30,901					
SPIRAL COLUMN REINFORCING STEEL LBS. 7,155					
CLASS "A" CONCRETE BREAKDOWN					
				POUR #2 - COLUMNS	C.Y. 29.5
				POUR #3 - CAP	C.Y. 65.2
				TOTAL CLASS "A" CONCRETE	C.Y. 94.7

DRILLED PIERS

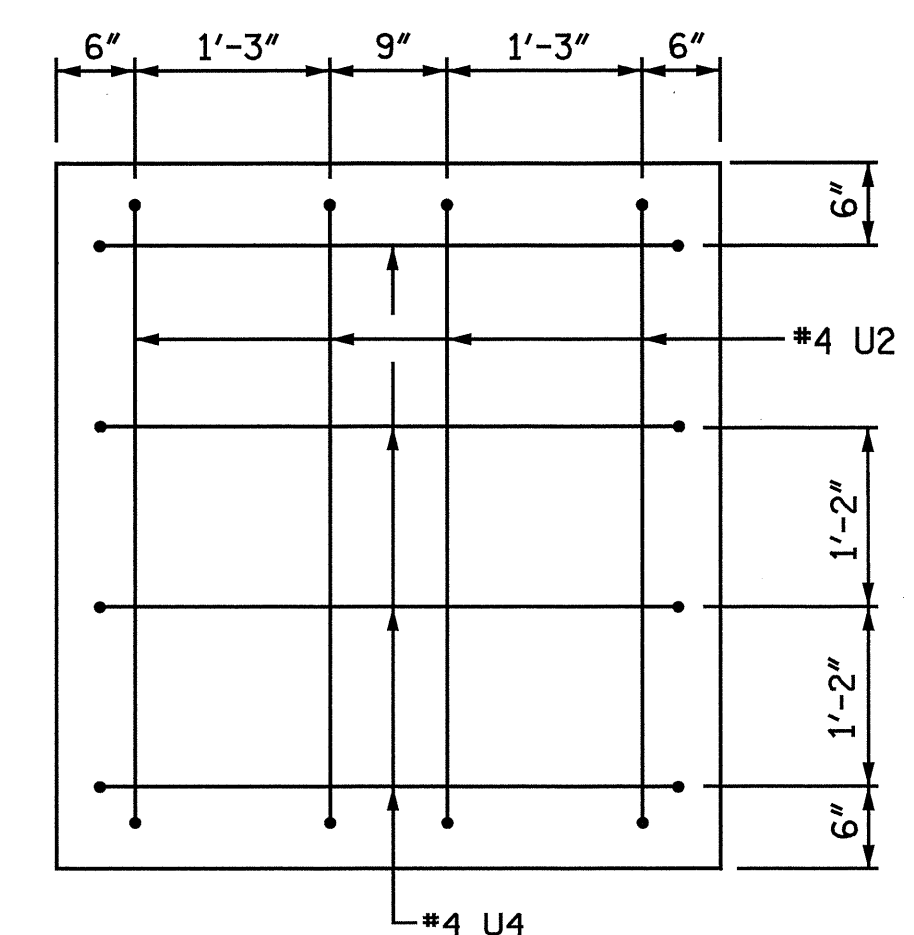
4'-0" DIA. DRILLED PIERS			
DRILLED PIERS:	L.F.	200	
DRILLED PIER CONCRETE BREAKDOWN			
		POUR #1 - DRILLED PIERS	C.Y. 93.1
		TOTAL DRILLED PIER CONC.	C.Y. 93.1
		CSL TUBES	L.F. 824.0



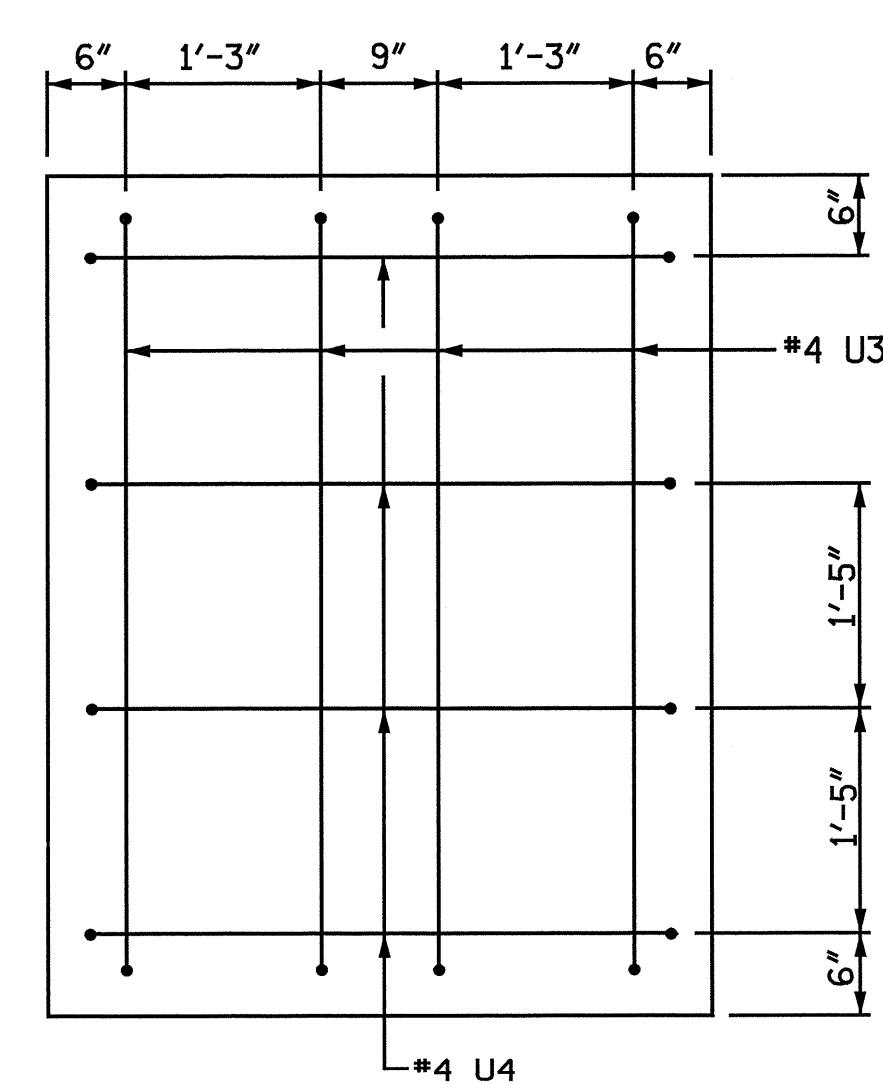
SECTION C-C



SECTION D-D



VIEW X-X

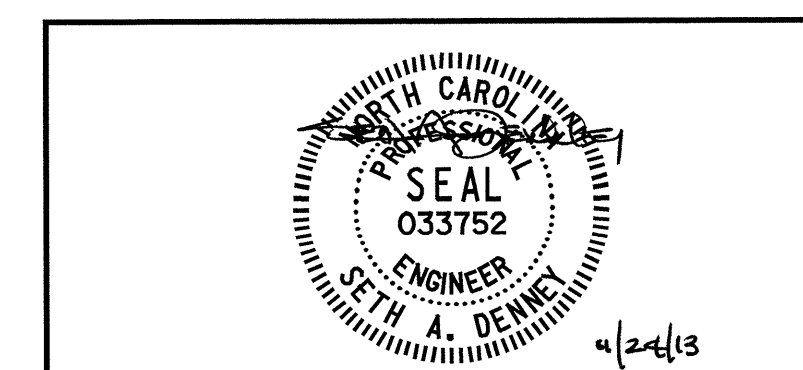


VIEW Y-Y

Questin 9:27:51 AM 1/24/2013 I:\Projects\105208D\105208D\Drawings\Structure\Drawings\Final\105208D_029_SD_B1_3.dwg

DRAWN BY : N. B. SPEAKS DATE : 8-27-12
CHECKED BY : A. L. PHILLIPS DATE : 10-9-12

DWG. 29 OF 39

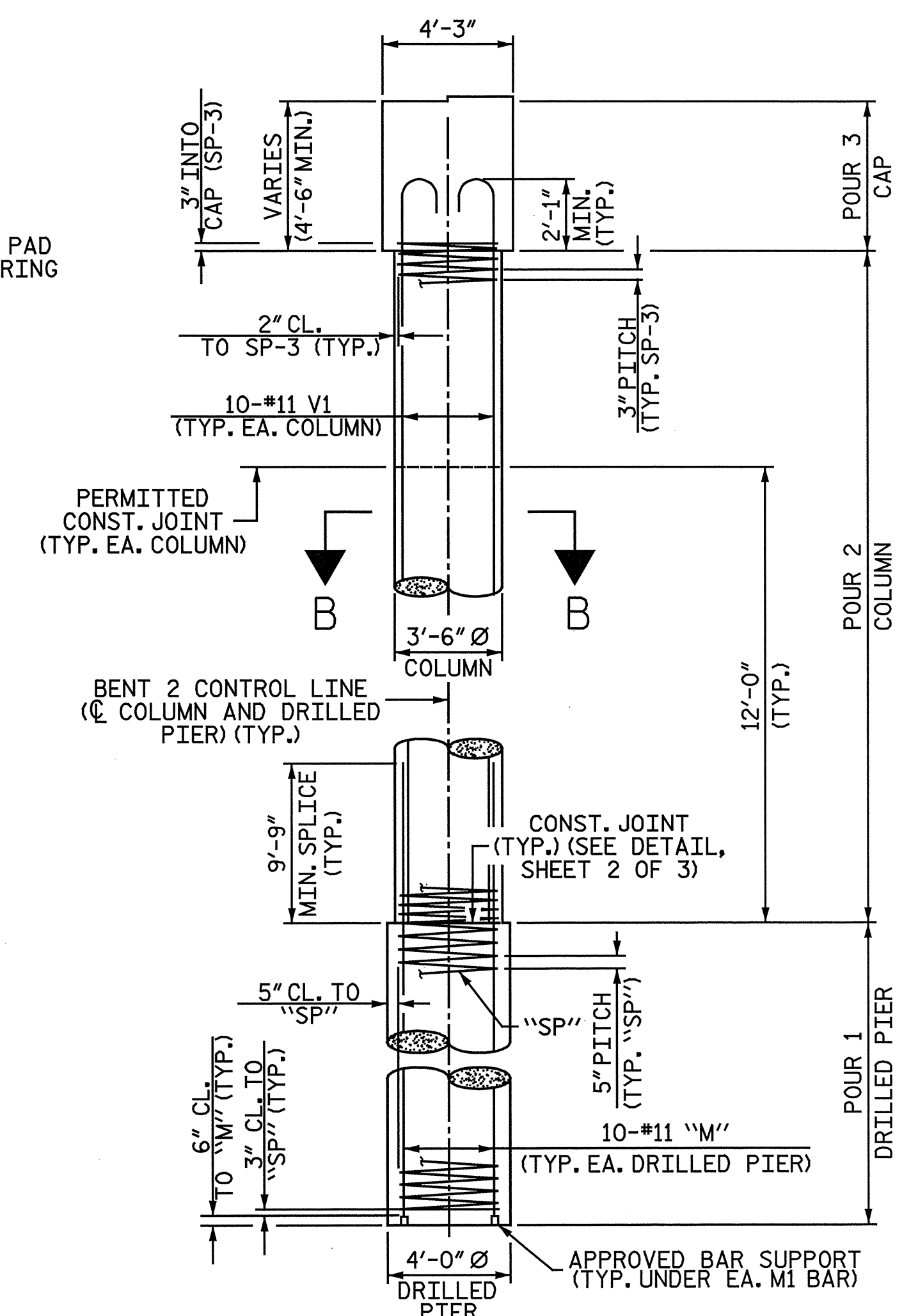
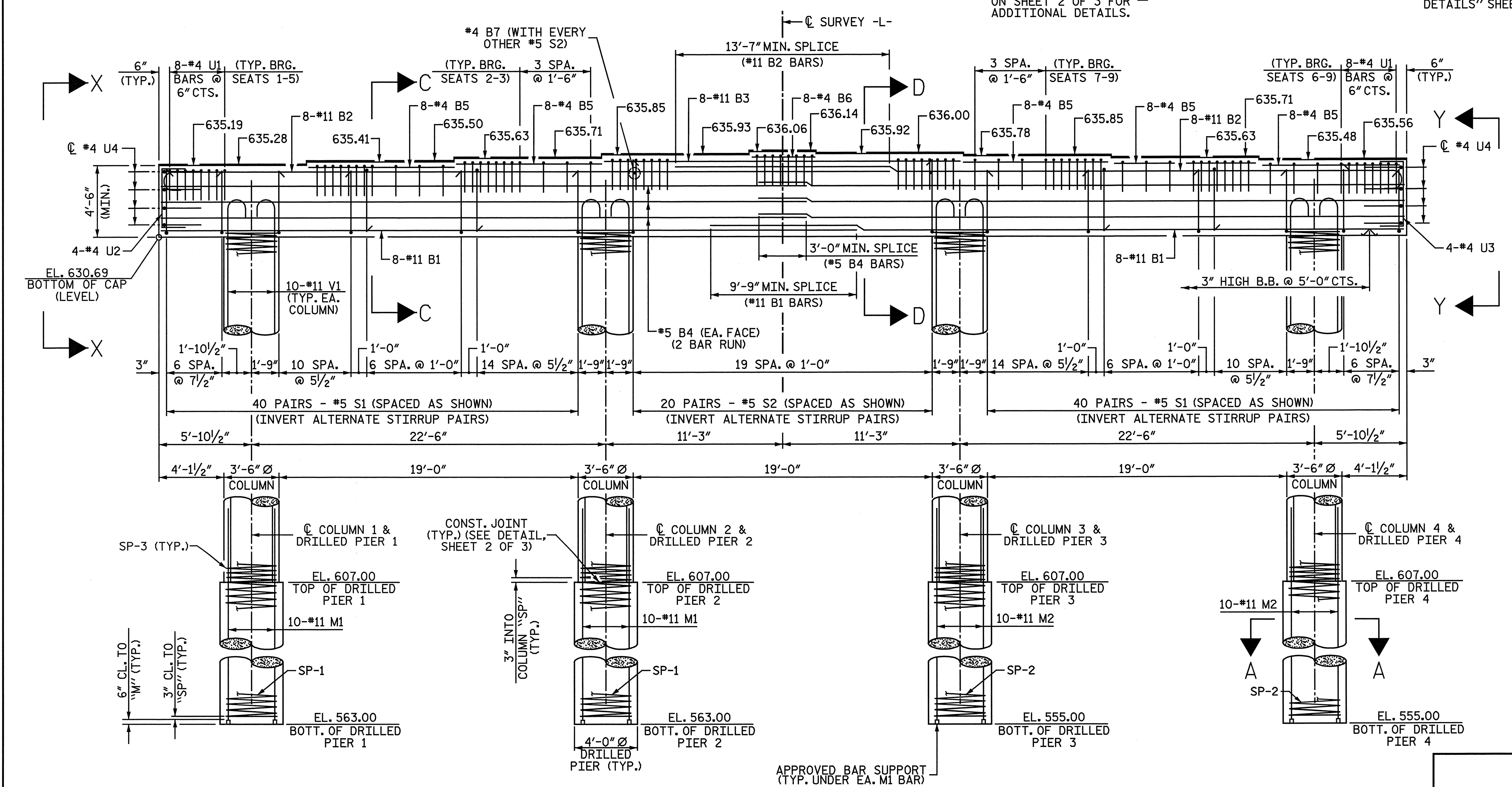
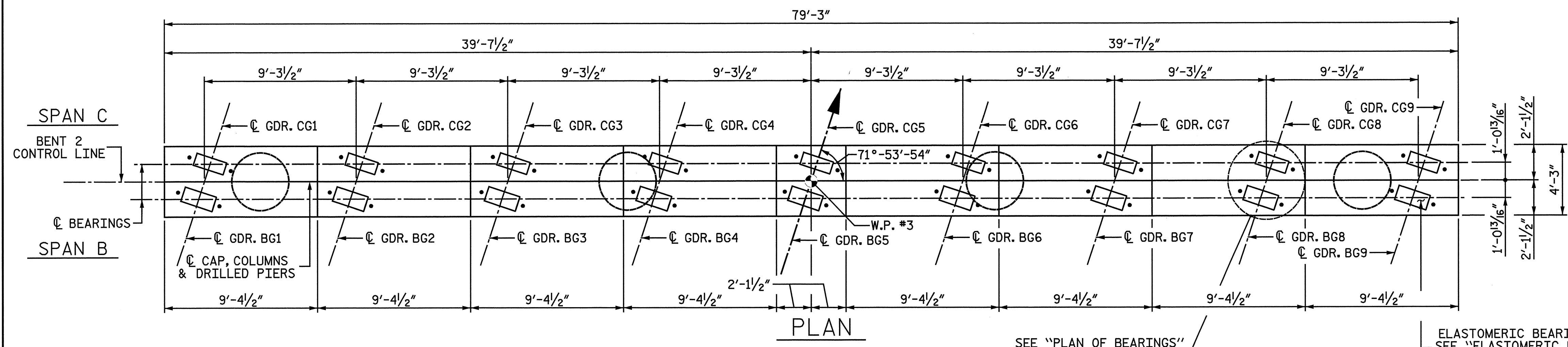


Baker
Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27618
NC License No. : F-1084

PROJECT NO. P-5208D
CABARRUS COUNTY
STATION: 16+93.38 -L-
SHEET 3 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
BENT 1 DETAILS					
REVISIONS			SHEET NO.		
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 39

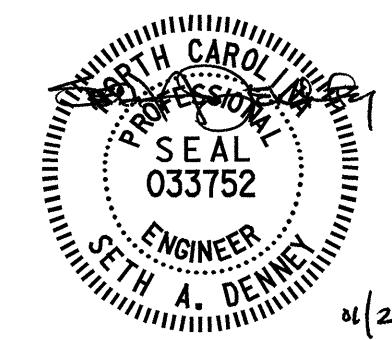
NOTES:
 FOR "SECTION A-A", SEE SHEET 2 OF 3.
 FOR "SECTION B-B", SEE SHEET 2 OF 3.
 FOR "SECTION C-C", SEE SHEET 3 OF 3.
 FOR "SECTION D-D", SEE SHEET 3 OF 3.
 FOR "VIEW X-X", SEE SHEET 3 OF 3.
 FOR "VIEW Y-Y", SEE SHEET 3 OF 3.
 SEE SHEET 3 OF 3 FOR ADDITIONAL NOTES.
 SEE SHEET 3 OF 3 FOR REINFORCING BILL OF MATERIAL.



END ELEVATION

PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-
 SHEET 1 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 BENT 2

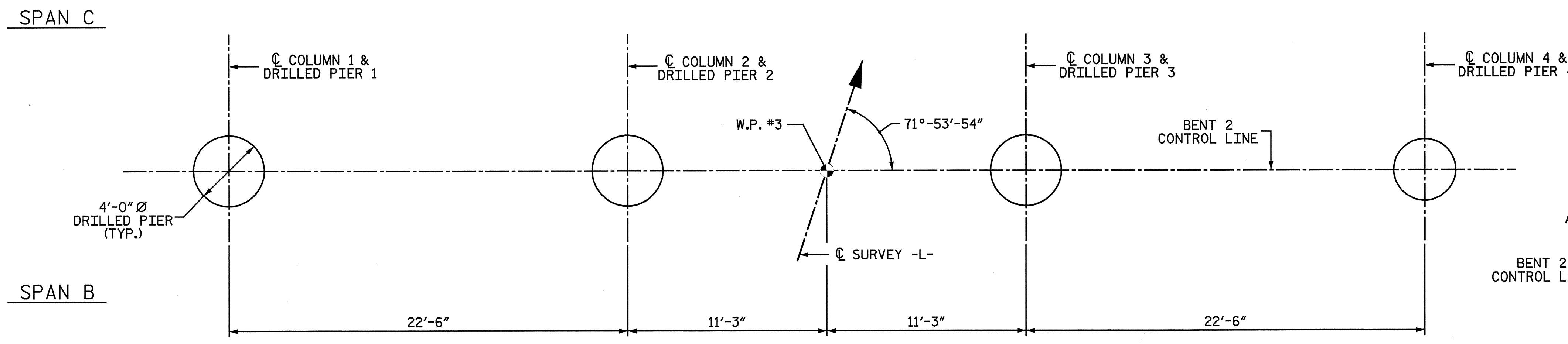


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-30
1			3			TOTAL SHEETS 39
2			4			

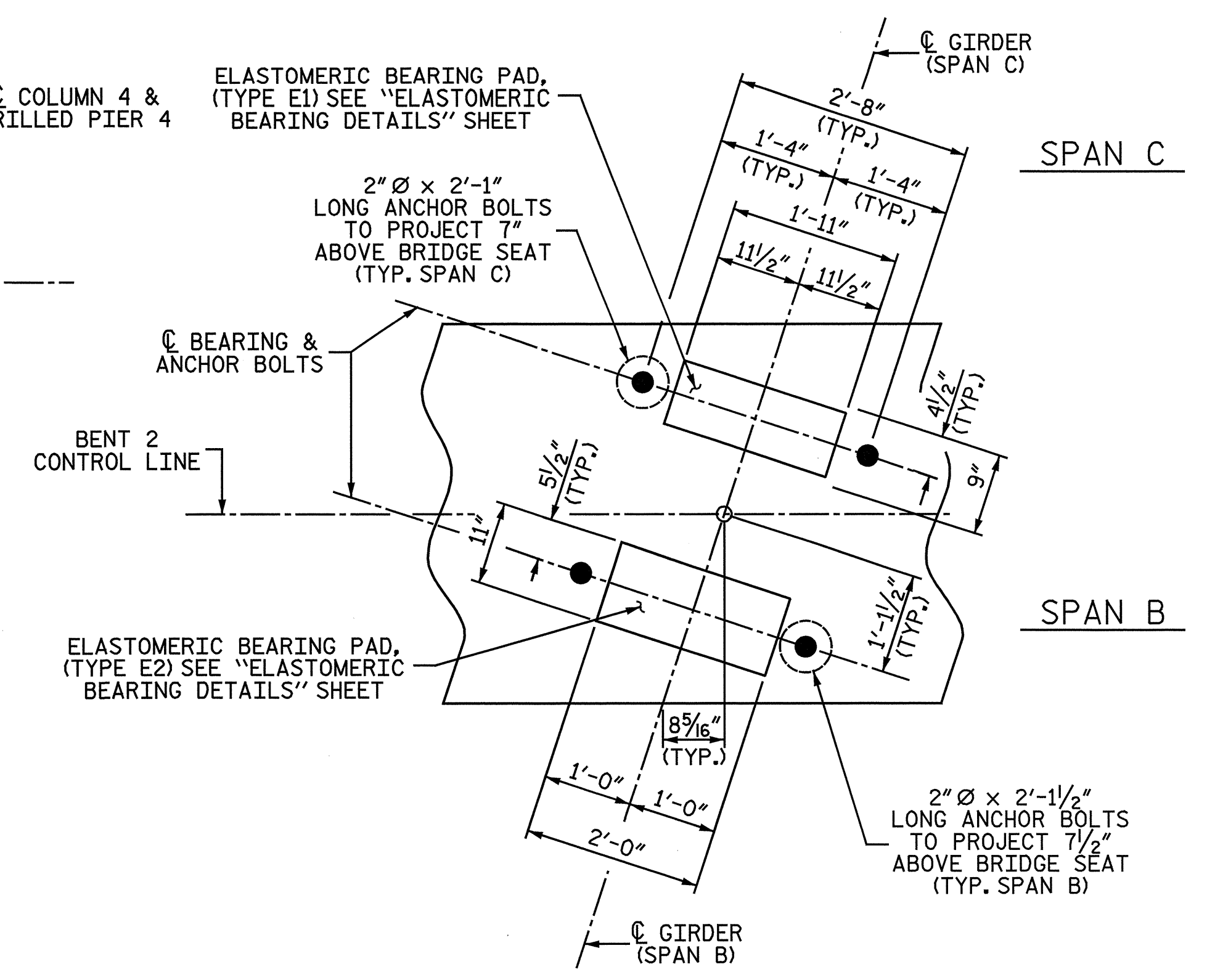
Justin 9/27/12 AM 1/24/2013
 File Name: Y:\Projects\NCDOT\Projects\5208D\Substructure\Drawings\5208D_030_SD_BR_1.dwg

DRAWN BY: M. D. MAYHEW DATE: 10-12-12
 CHECKED BY: A. L. PHILLIPS DATE: 10-13-12

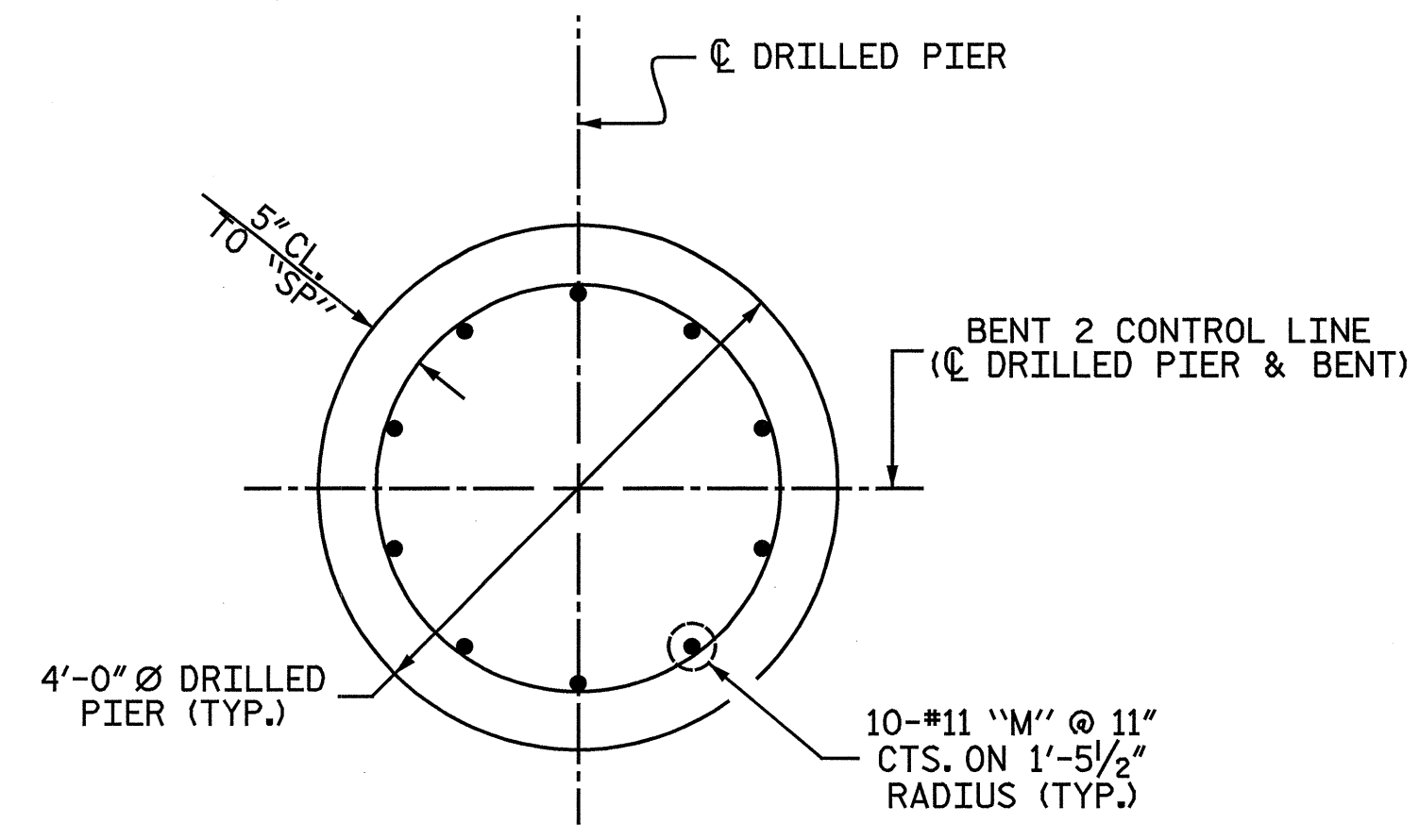
ALL DIMENSIONS AND DETAILS SHOWN FOR DRILLED PIERS ARE TYPICAL FOR EACH PIER UNLESS OTHERWISE NOTED.



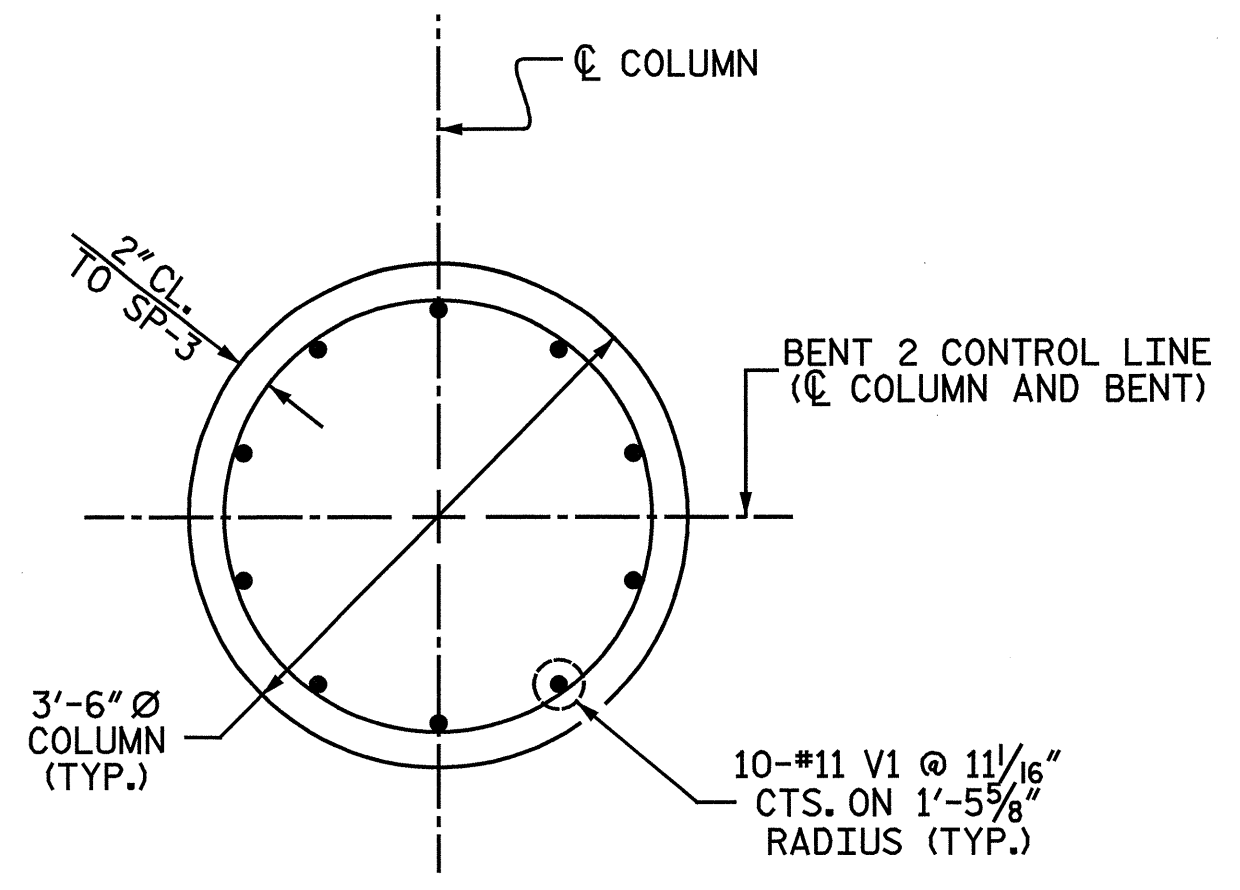
PLAN OF DRILLED PIERS
 ALL DIMENSIONS AND DETAILS SHOWN FOR DRILLED PIERS ARE TYPICAL FOR EACH PIER UNLESS OTHERWISE NOTED.



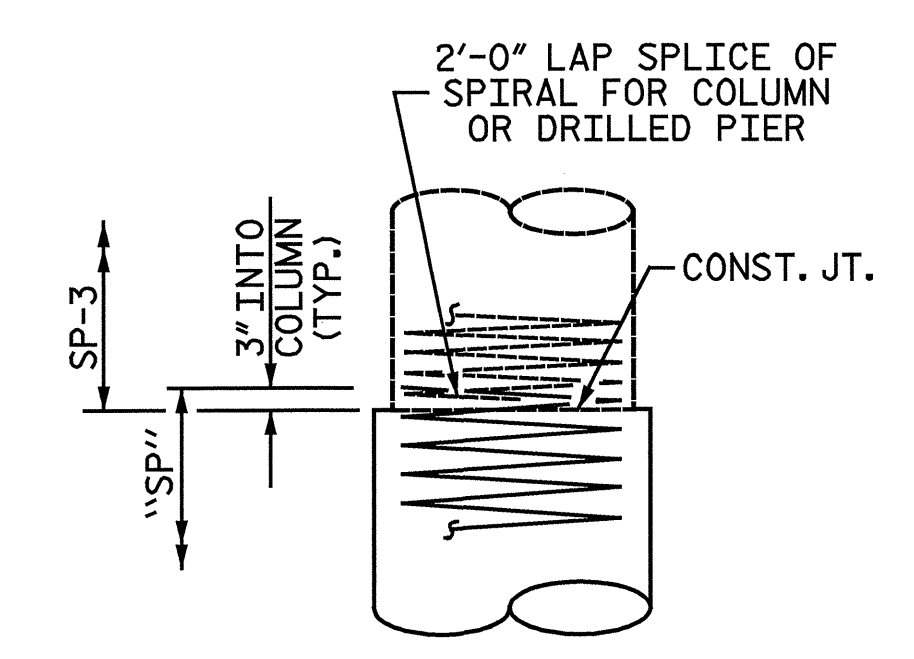
PLAN OF BEARINGS
 ALL DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS @ EACH BRIDGE SEAT LOCATION.



SECTION A-A



SECTION B-B

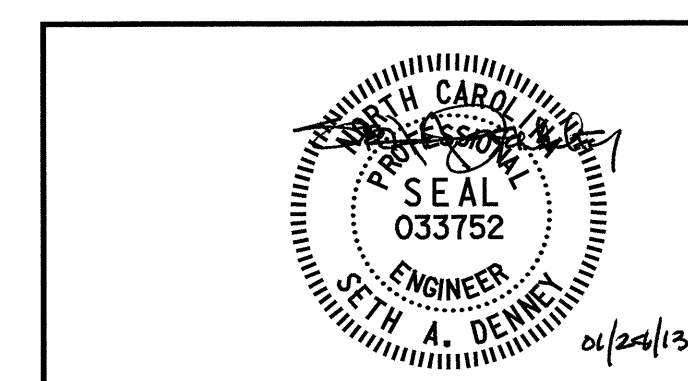


CONSTRUCTION JOINT DETAIL

PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
BENT 2 DETAILS



Baker
 Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 276518
 NC License No.: F-1084

REVISIONS						SHEET NO. S-31
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			

DWG. 31 OF 39

Justin 1/24/2013 9:27:53 AM
 Filename: Y:\Projects\NC001\5208D\DISCIPLINE\Structures\Drawings\Final\5208D_031_SD_B2_2.dgn

DRAWN BY : M. D. MAYHEW DATE : 10-12-12
 CHECKED BY : A. L. PHILLIPS DATE : 10-17-12

NOTES:

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

HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

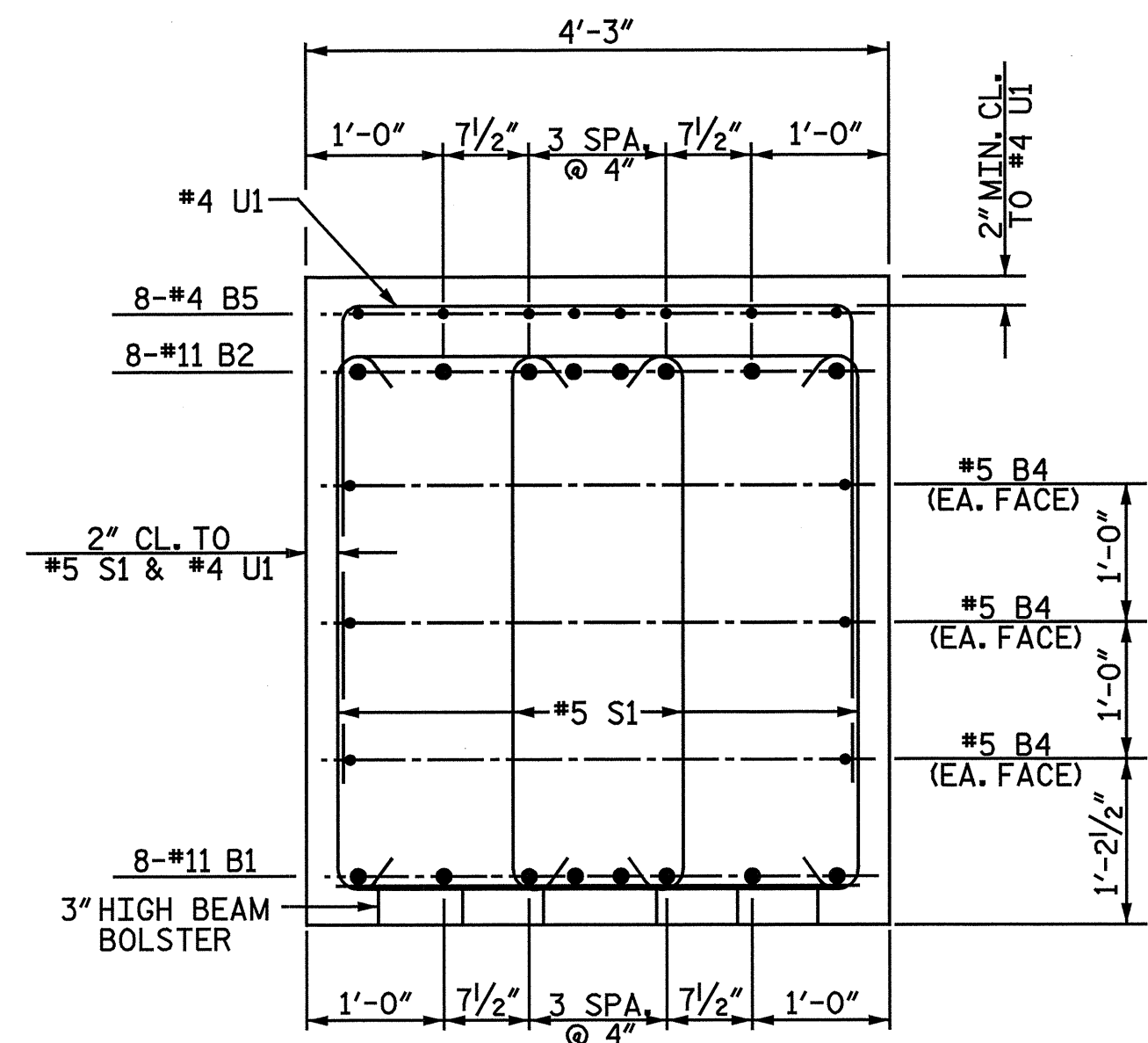
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

THE CONTRACTORS ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

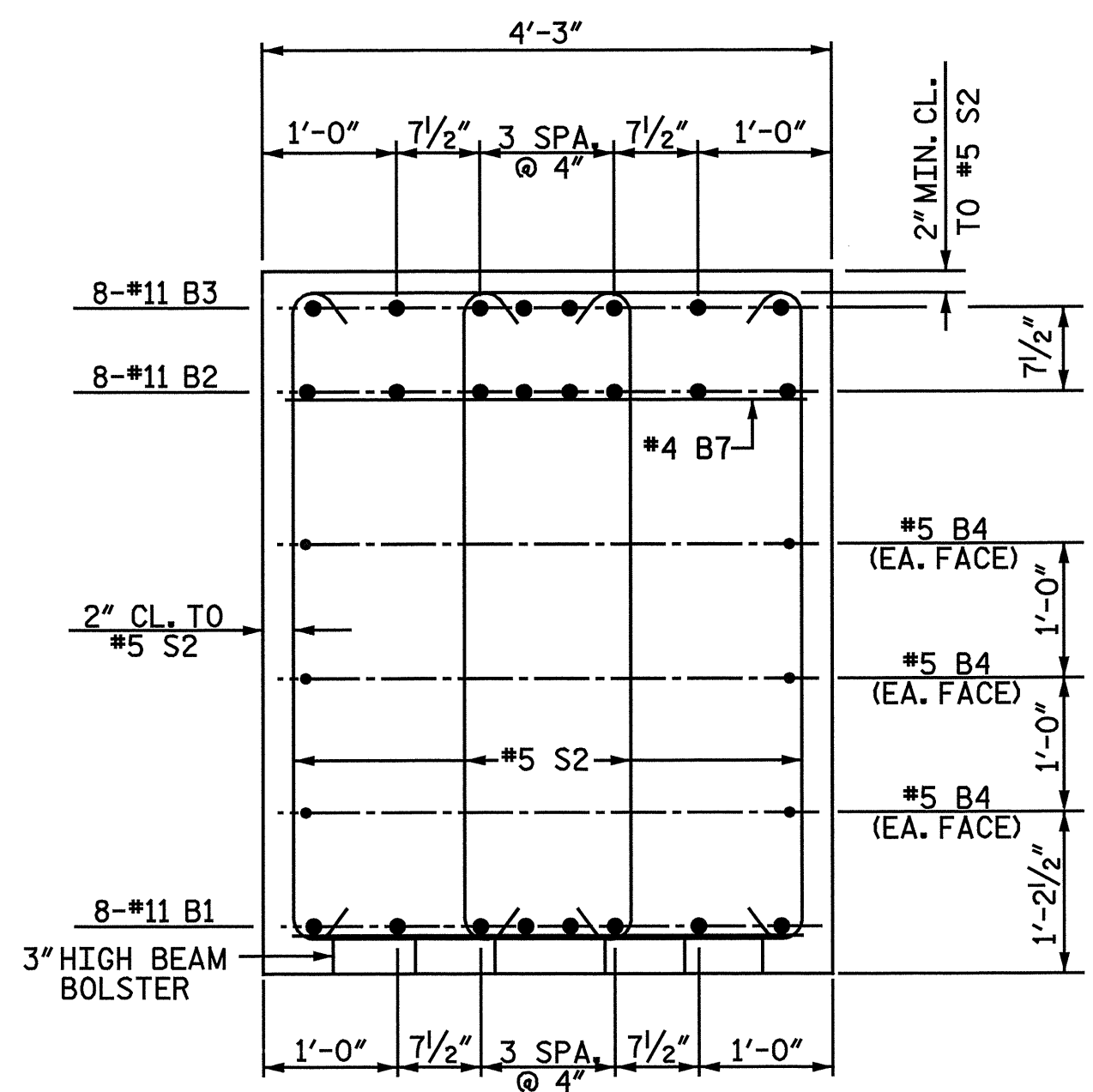
FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

FOR ADDITIONAL NOTES, SEE "FOUNDATION LAYOUT" SHEET.

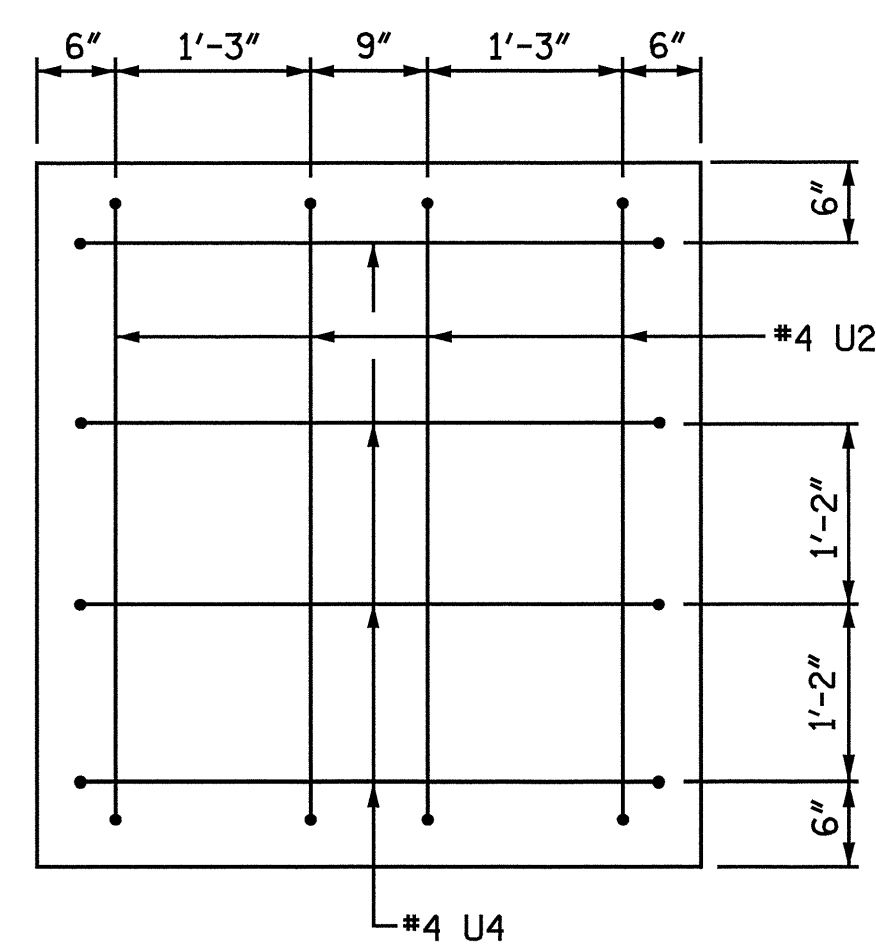
THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FOOT BELOW THE GROUND LINE.



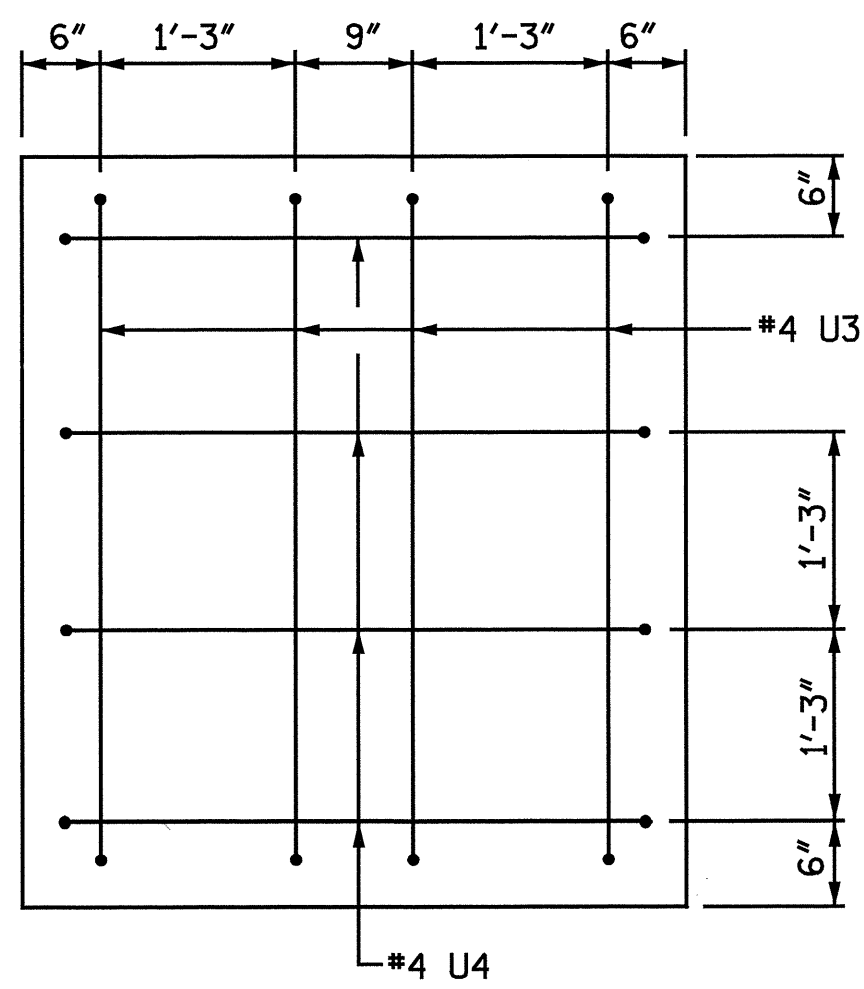
SECTION C-C



SECTION D-D



VIEW X-X

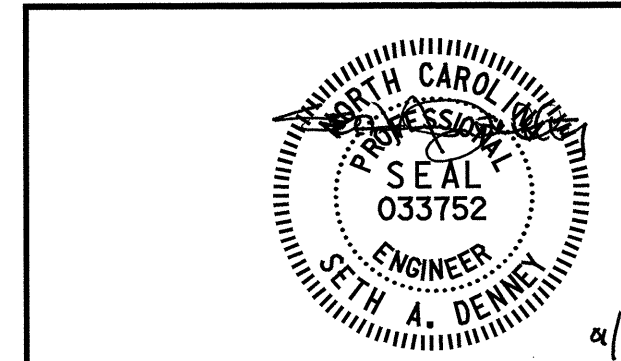


VIEW Y-Y

BAR TYPES					BILL OF MATERIAL						
					BENT 2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	16	11	STR	44' - 4"	3,769	B1	16	11	STR	44' - 4"	3,769
B2	16	11	1	47' - 10"	4,066	B2	16	11	1	47' - 10"	4,066
B3	8	11	STR	22' - 8"	963	B3	8	11	STR	22' - 8"	963
B4	12	5	STR	41' - 0"	513	B4	12	5	STR	41' - 0"	513
B5	40	4	STR	9' - 2"	245	B5	40	4	STR	9' - 2"	245
B6	8	4	STR	3' - 11"	21	B6	8	4	STR	3' - 11"	21
B7	11	4	STR	3' - 11"	29	B7	11	4	STR	3' - 11"	29
M1	20	11	STR	56' - 3"	5,977	M1	20	11	STR	56' - 3"	5,977
M2	40	11	STR	37' - 0"	7,863	M2	40	11	STR	37' - 0"	7,863
S1	160	5	2	11' - 9"	1,961	S1	160	5	2	11' - 9"	1,961
S2	40	5	2	12' - 11"	539	S2	40	5	2	12' - 11"	539
U1	87	4	3	6' - 11"	402	U1	87	4	3	6' - 11"	402
U2	4	4	3	7' - 2"	19	U2	4	4	3	7' - 2"	19
U3	4	4	3	7' - 5"	20	U3	4	4	3	7' - 5"	20
U4	8	4	3	6' - 9"	36	U4	8	4	3	6' - 9"	36
V1	40	11	1	27' - 5"	5,827	V1	40	11	1	27' - 5"	5,827
SP-1	4	*	4	1037' - 2"	2,164	SP-1	4	*	4	1037' - 2"	2,164
SP-2	4	*	4	1225' - 3"	2,556	SP-2	4	*	4	1225' - 3"	2,556
SP-3	4	**	5	957' - 7"	2,559	SP-3	4	**	5	957' - 7"	2,559
REINFORCING STEEL										LBS.	32,250
SPIRAL COLUMN REINFORCING STEEL										LBS.	7,279
CLASS "A" CONCRETE BREAKDOWN											
POUR #2 - COLUMNS										C.Y.	33.8
POUR #3 - CAP										C.Y.	62.2
TOTAL CLASS "A" CONCRETE										C.Y.	96.0
DRILLED PIERS											
4'-0" DIA. DRILLED PIERS											
DRILLED PIERS:										L.F.	192
DRILLED PIER CONCRETE BREAKDOWN											
POUR #1 - DRILLED PIERS										C.Y.	89.4
TOTAL DRILLED PIER CONC.										C.Y.	89.4
CSL TUBES										L.F.	792

ALL BAR DIMENSIONS ARE OUT TO OUT.
 * THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.
 ** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-
 SHEET 3 OF 3



Baker
 Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27618
 NC License No.: F-1084

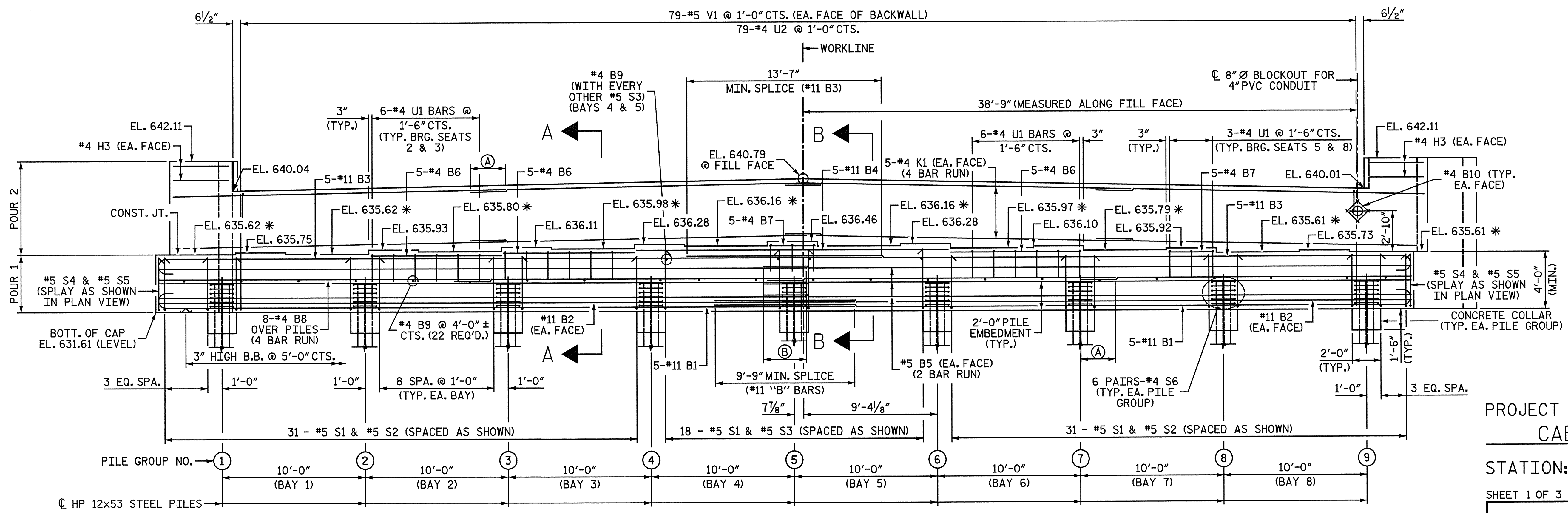
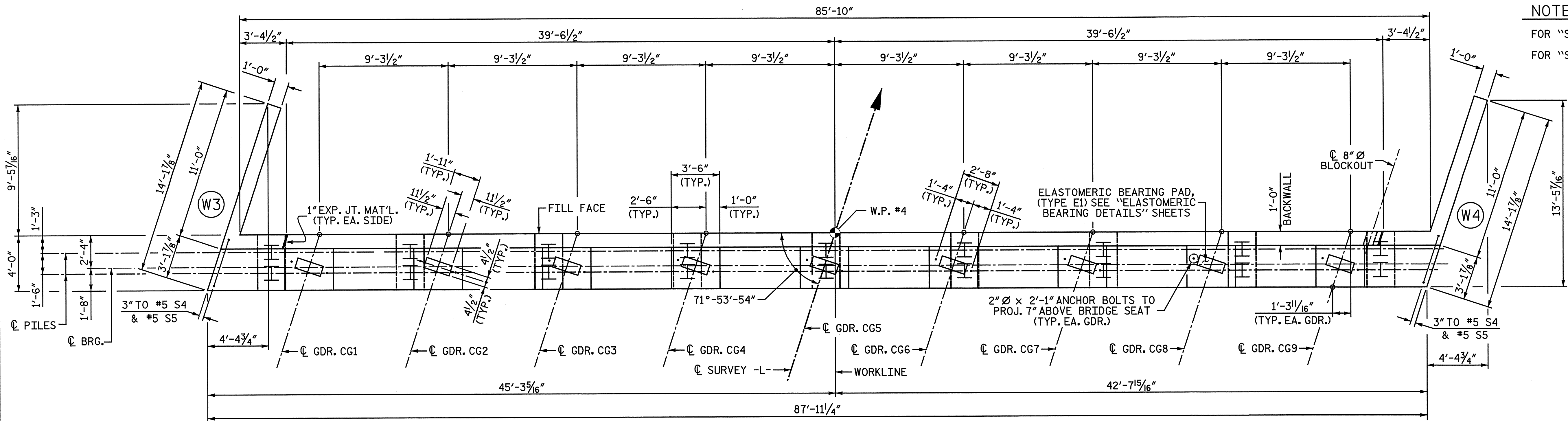
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
BENT 2 DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.	S-32
TOTAL SHEETS	39

DRAWN BY: M. D. MAYHEW DATE: 10-12-12
 CHECKED BY: A. L. PHILLIPS DATE: 10-22-12

1/24/2013 9:27:54 AM
 I:\Projects\NC001\VP-5208D\DISCIPLINE\Structures\Drawings\Final\VP-5208D_032_SD_BP_3.dgn

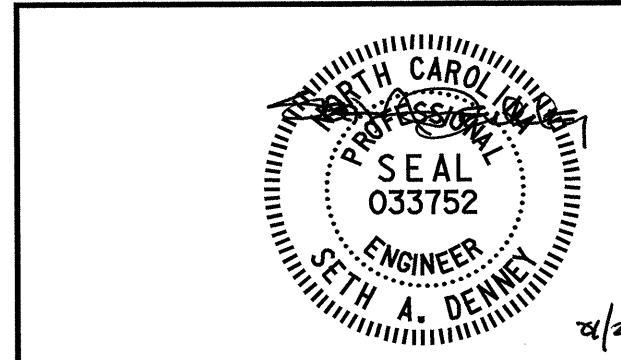
NOTES:
 FOR "SECTION A-A", SEE SHEET 3 OF 3.
 FOR "SECTION B-B", SEE SHEET 3 OF 3.



*FOR LOCATION OF ELEVATION BETWEEN BRIDGE SEATS, SEE "SECTION A-A", SHEET 3 OF 3
 (A) 2'-5" MIN. SPLICE (#4 "K" & #4 "B" BARS)
 (B) 3'-0" MIN. SPLICE (#5 "B" BARS)

PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-
 SHEET 1 OF 3

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



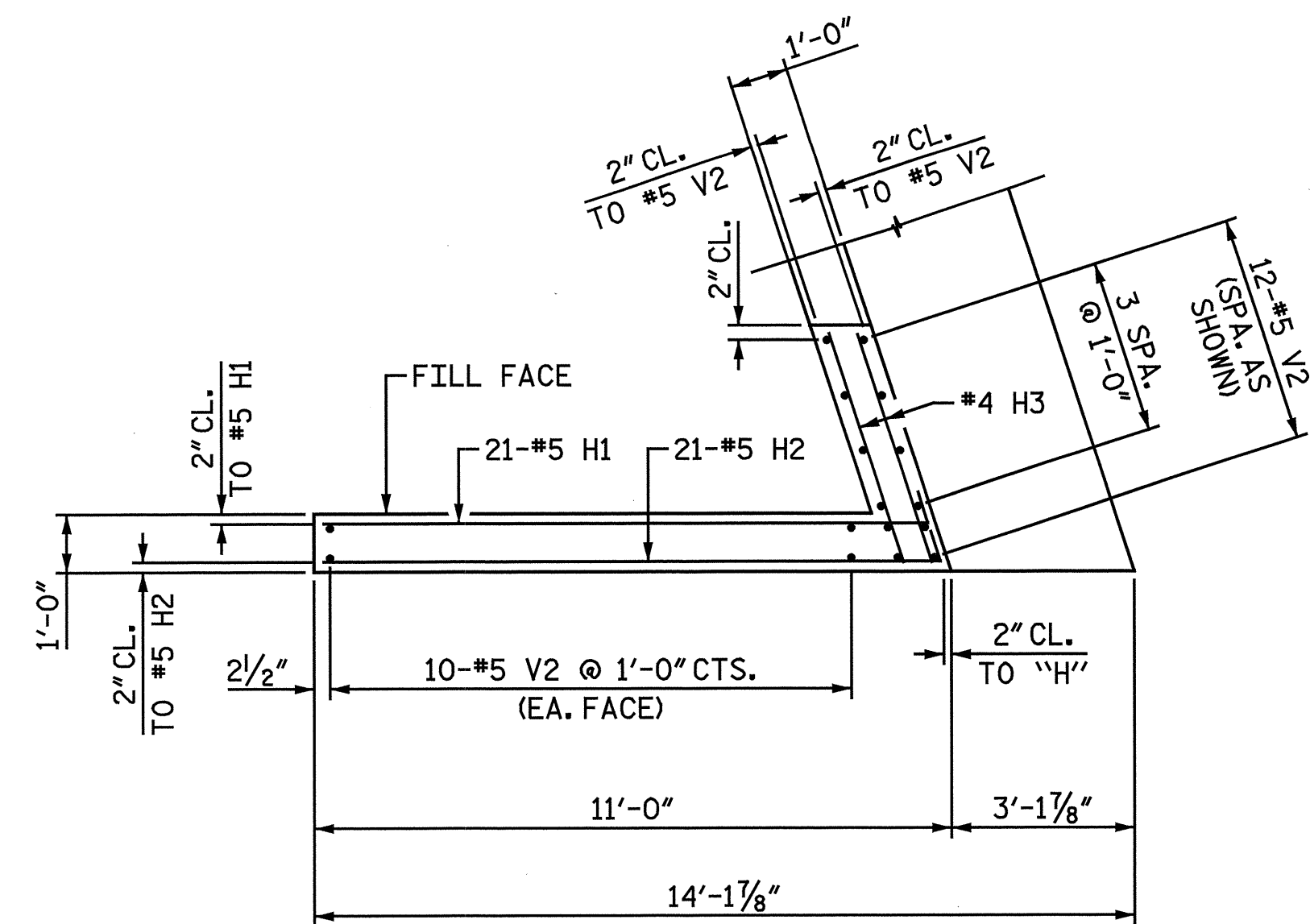
Baker
 Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27518
 NC License No.: F-1084

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-33	
1			3			TOTAL SHEETS 39	
2			4				

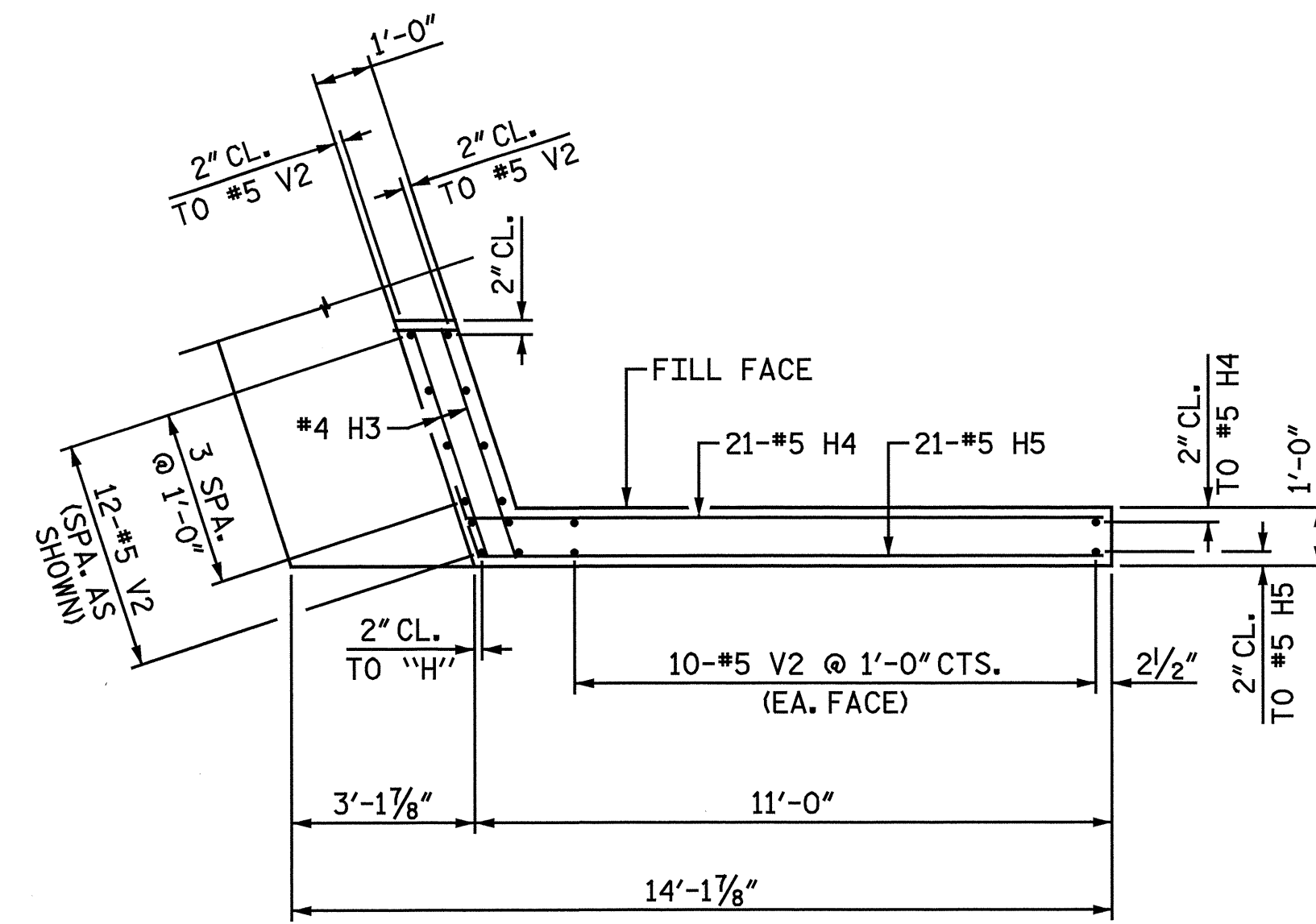
DRAWN BY: M. D. MAYHEW DATE: 11-16-12
 CHECKED BY: A. L. PHILLIPS DATE: 11-16-12

DWG. 33 OF 39

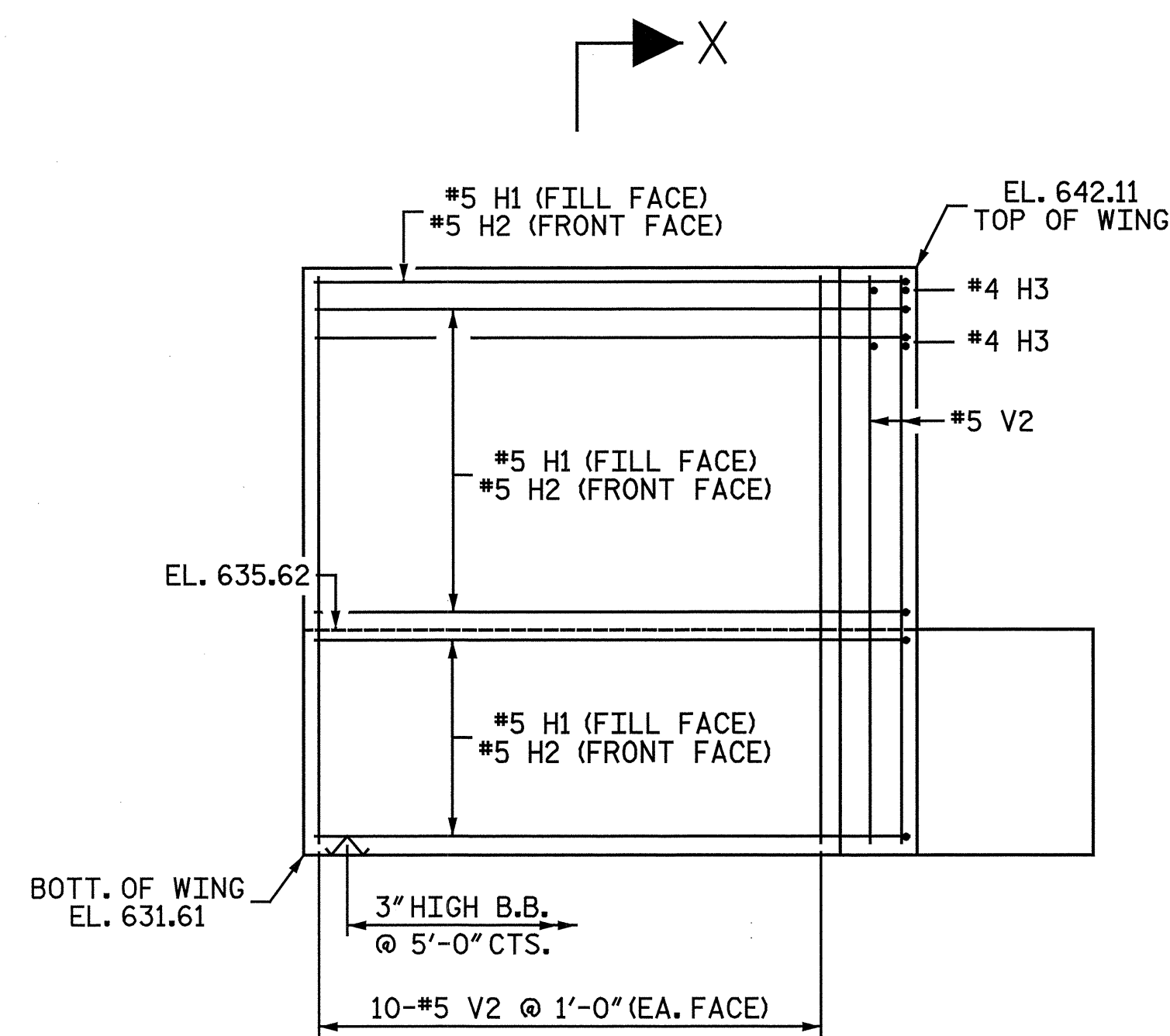
Justin 1/24/2013 9:27:54 AM
 File Name: Y:\Projects\NCDOT\TP-5208D\VD\SCIP\LINE\Structure\Drawings\Final\TP-5208D_033_SD_EB2.dgn



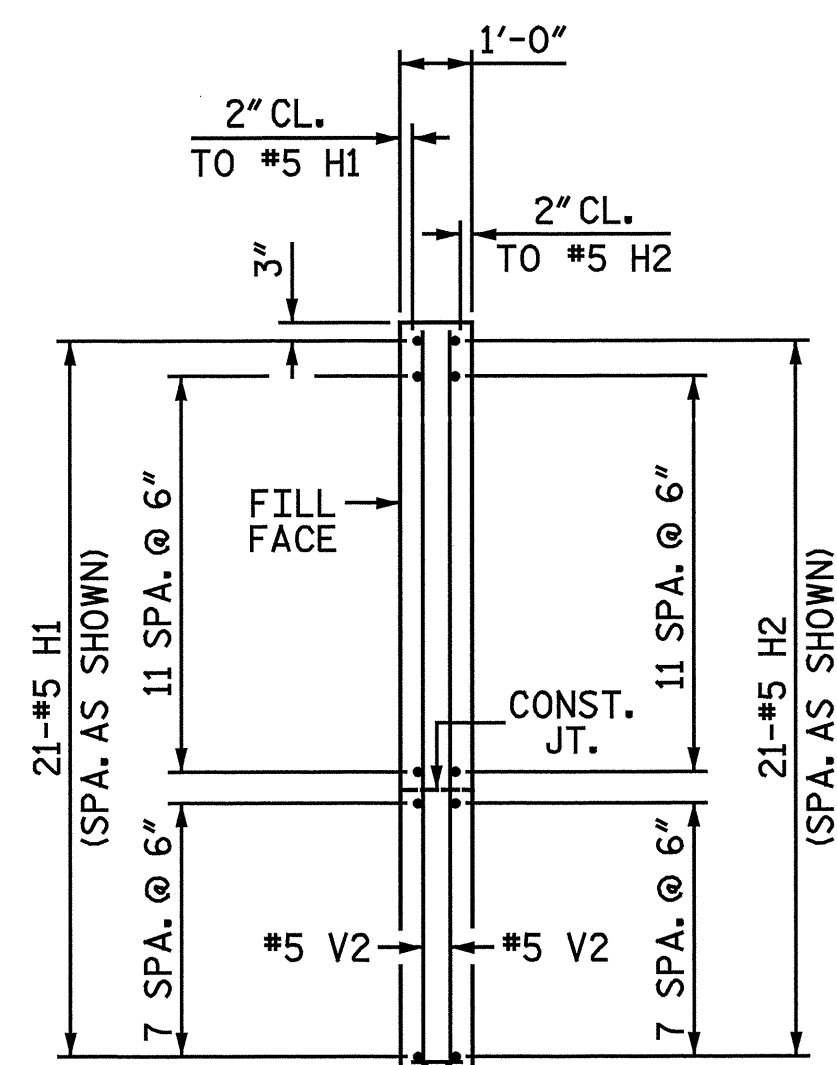
PLAN OF LEFT WING (W3)



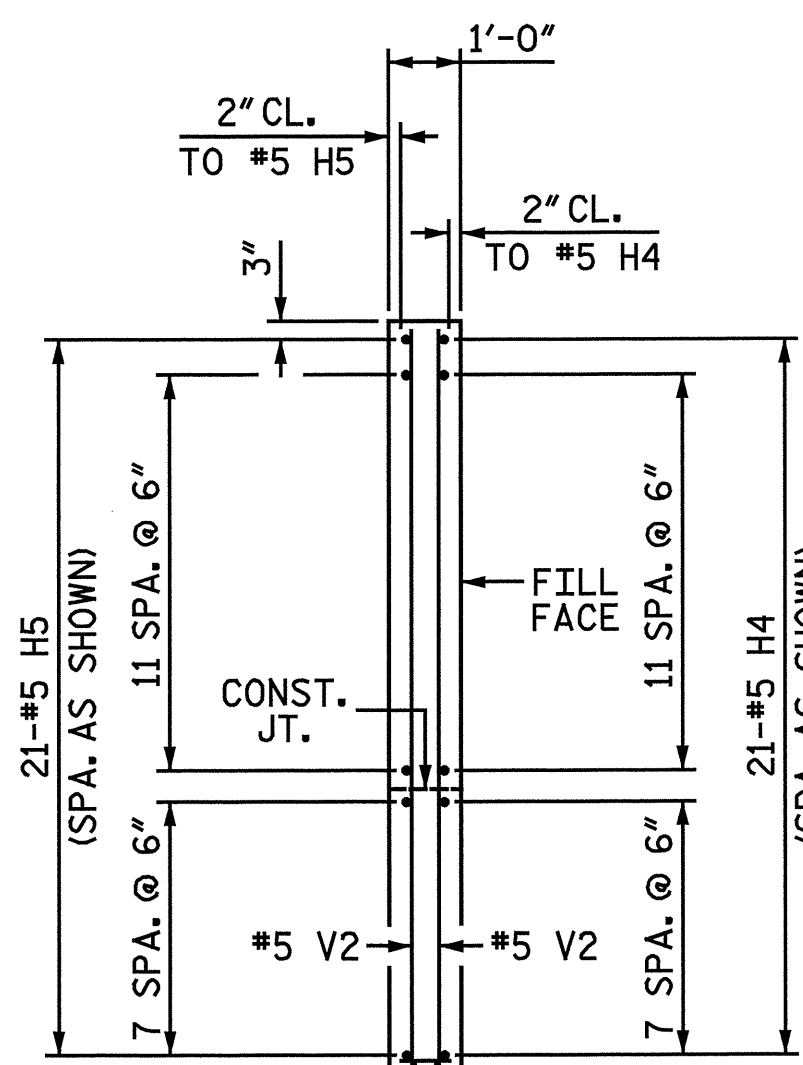
PLAN OF RIGHT WING (W4)



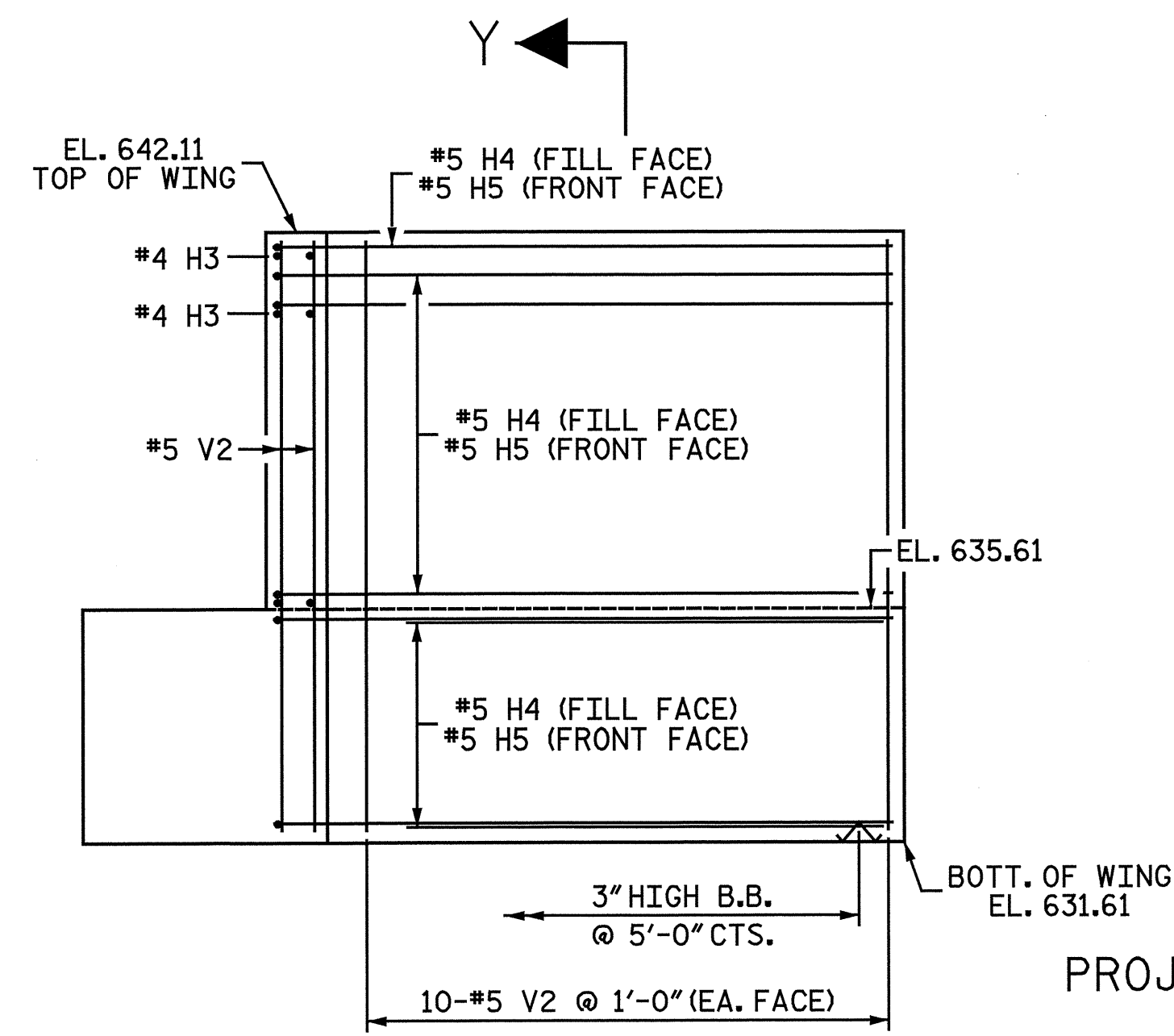
ELEVATION OF LEFT WING (W3)



SECTION X-X



SECTION Y-Y



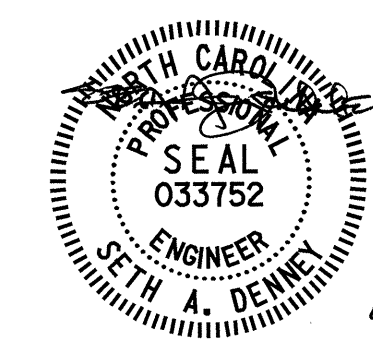
ELEVATION OF RIGHT WING (W4)

PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2
 WING WALL DETAILS



Baker

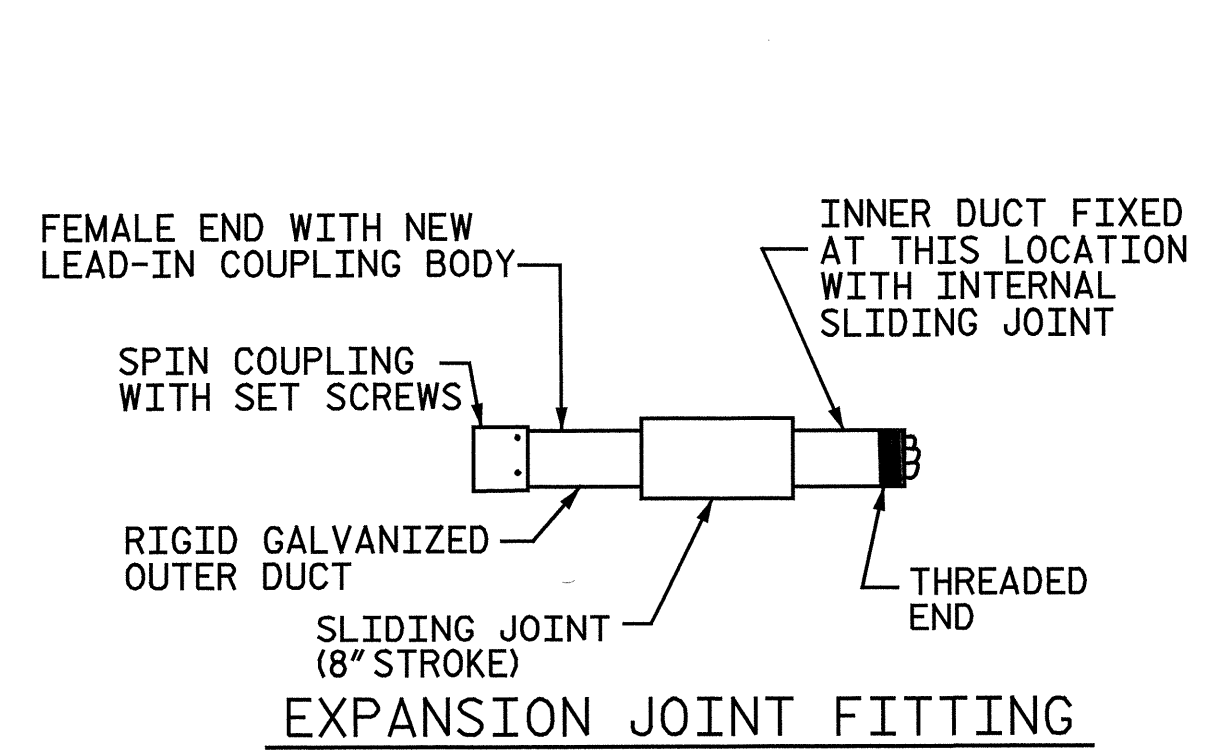
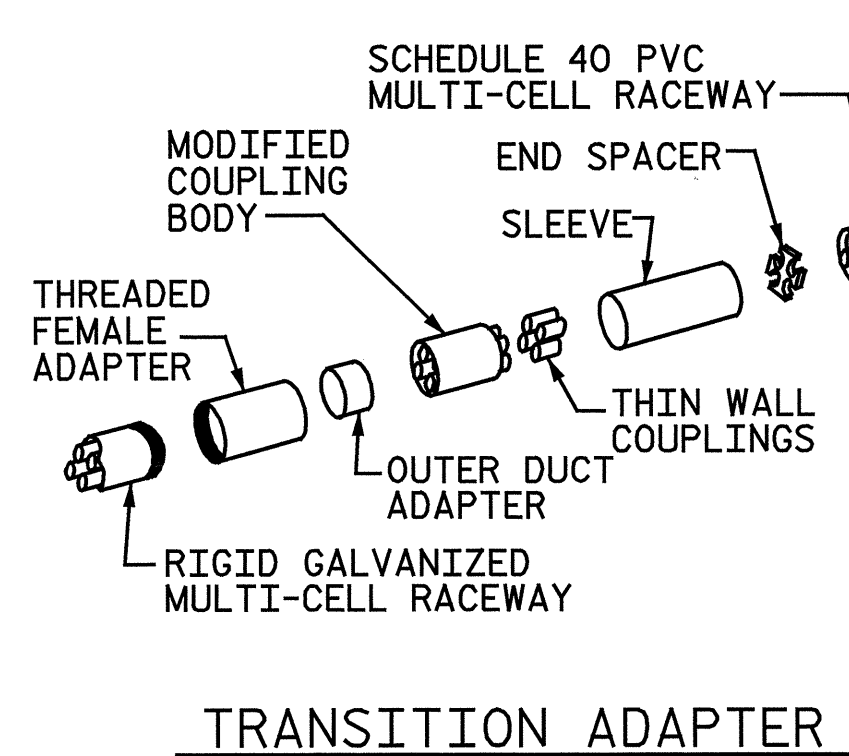
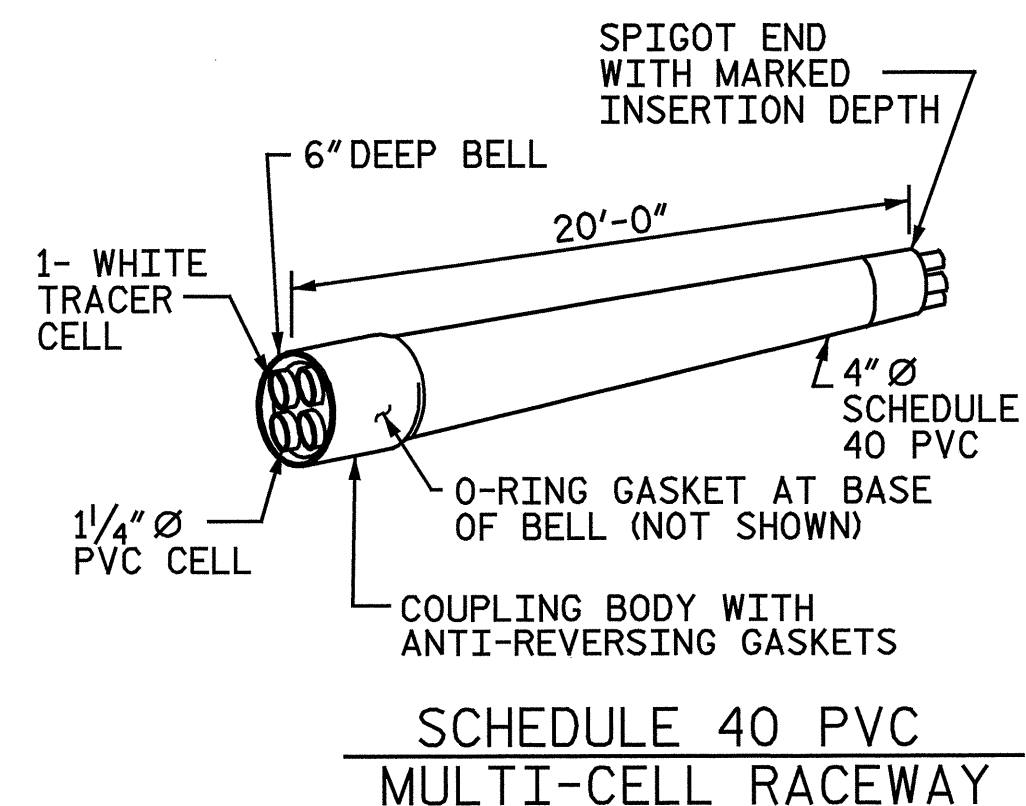
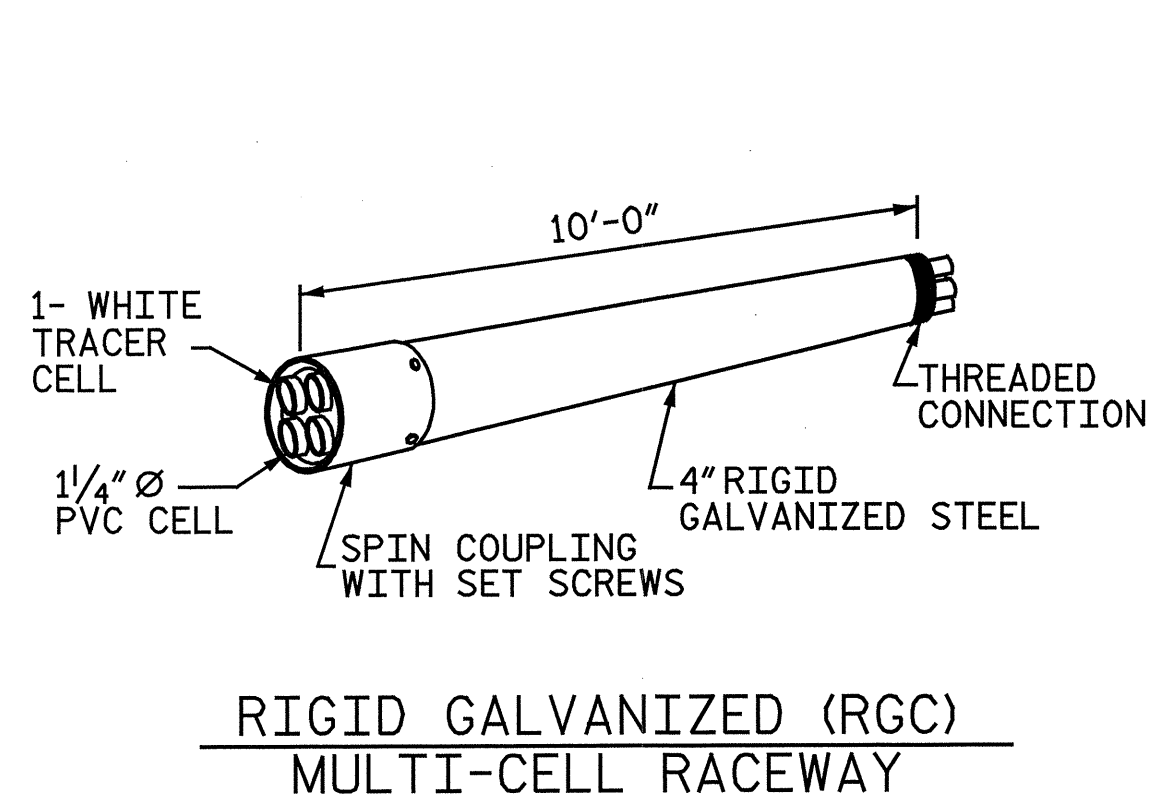
Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 27518
 NC License No.: F-1084

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-34	
1			3			TOTAL SHEETS	
2			4			39	

DRAWN BY: M. D. MAYHEW DATE: 11-16-12
 CHECKED BY: A. L. PHILLIPS DATE: 11-16-12

DWG. 34 OF 39

Justin 1/24/2013 9:27:55 AM
 File name: Y:\Projects\NGDOT\Projects\5208D\DISCIPLINE\Structures\Drawings\Final\5208D_034_SD_EB2_2.dgn



NOTES:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE TOTAL QUANTITY OF CONDUIT NEEDED TO COMPLETE THE WORK AND THAT THE CONDUIT(S) ARE PLACED AT THE NOTED DIMENSION AND ABOVE THE BOTTOM OF THE GIRDER.

THE INSTALLATION OF THE CONDUIT SYSTEM SHALL BE PAID FOR AS LUMP SUM. THE PRICE SHALL INCLUDE ALL CONDUIT, HANGERS, STABILIZERS, EXPANSION JOINTS, CONCRETE INSERTS, PVC SLEEVES AND ALL NECESSARY HARDWARE TO COMPLETE THE WORK.

THE CONTRACTOR SHALL FIELD VERIFY THAT THE CONDUIT SYSTEM IS NOT IN CONFLICT WITH THE GUARDRAIL POSTS.

SEE "DETAIL C" FOR HANGER ASSEMBLY INSTALLATION.

INSTALL SLEEVES PARALLEL TO GIRDERS. SEE "DETAIL B" FOR SLEEVE INSTALLATION.

PROVIDE TRANSITION ADAPTOR AND EXPANSION JOINT FOR CONDUIT AT END BENT 1 AND END BENT 2.

INSTALL STABILIZER'S MIDWAY BETWEEN EACH SPAN. STABILIZER CAN NOT BE USED INSTEAD OF A HANGER ASSEMBLY.

THE CONCRETE SCREW INSERT SHALL HAVE A ROD SIZE OF 5/8" AND A PULL FORCE OF 1260 lbs.

FOR ELECTRICAL CONDUIT SYSTEM FOR SIGNALS, SEE SPECIAL PROVISIONS.

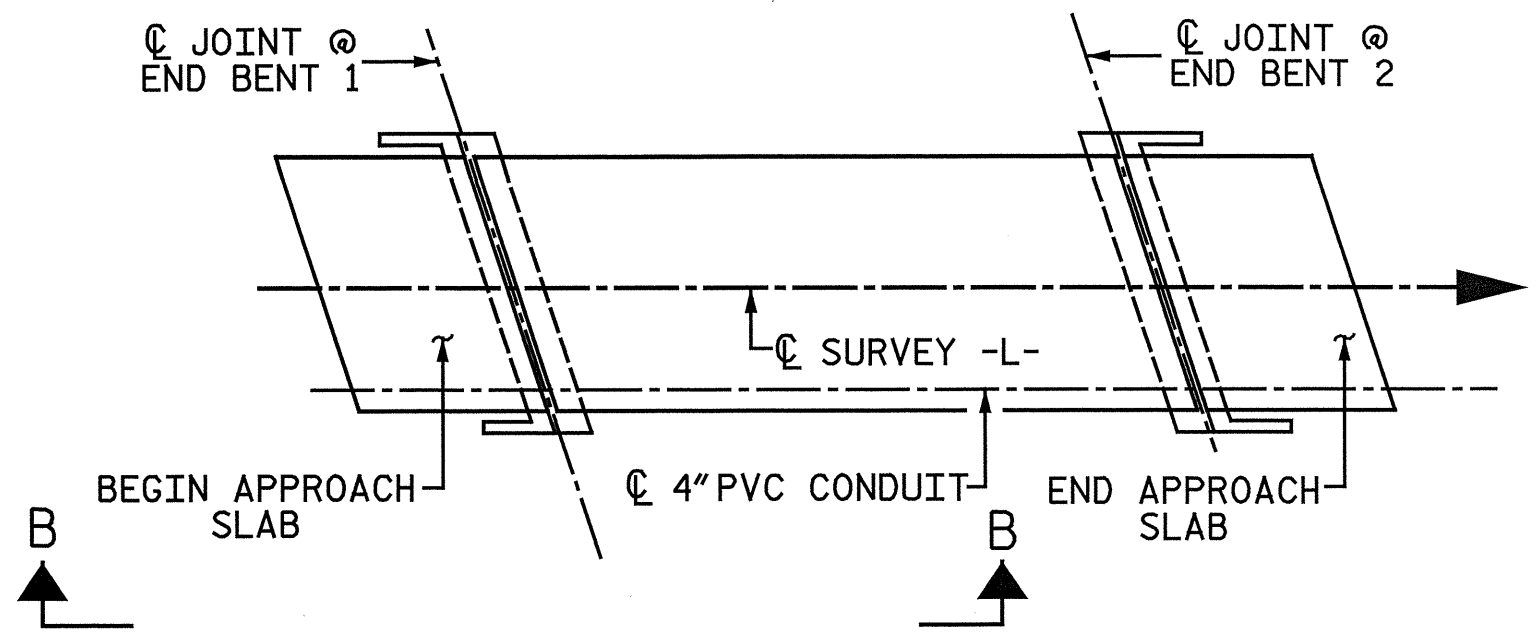
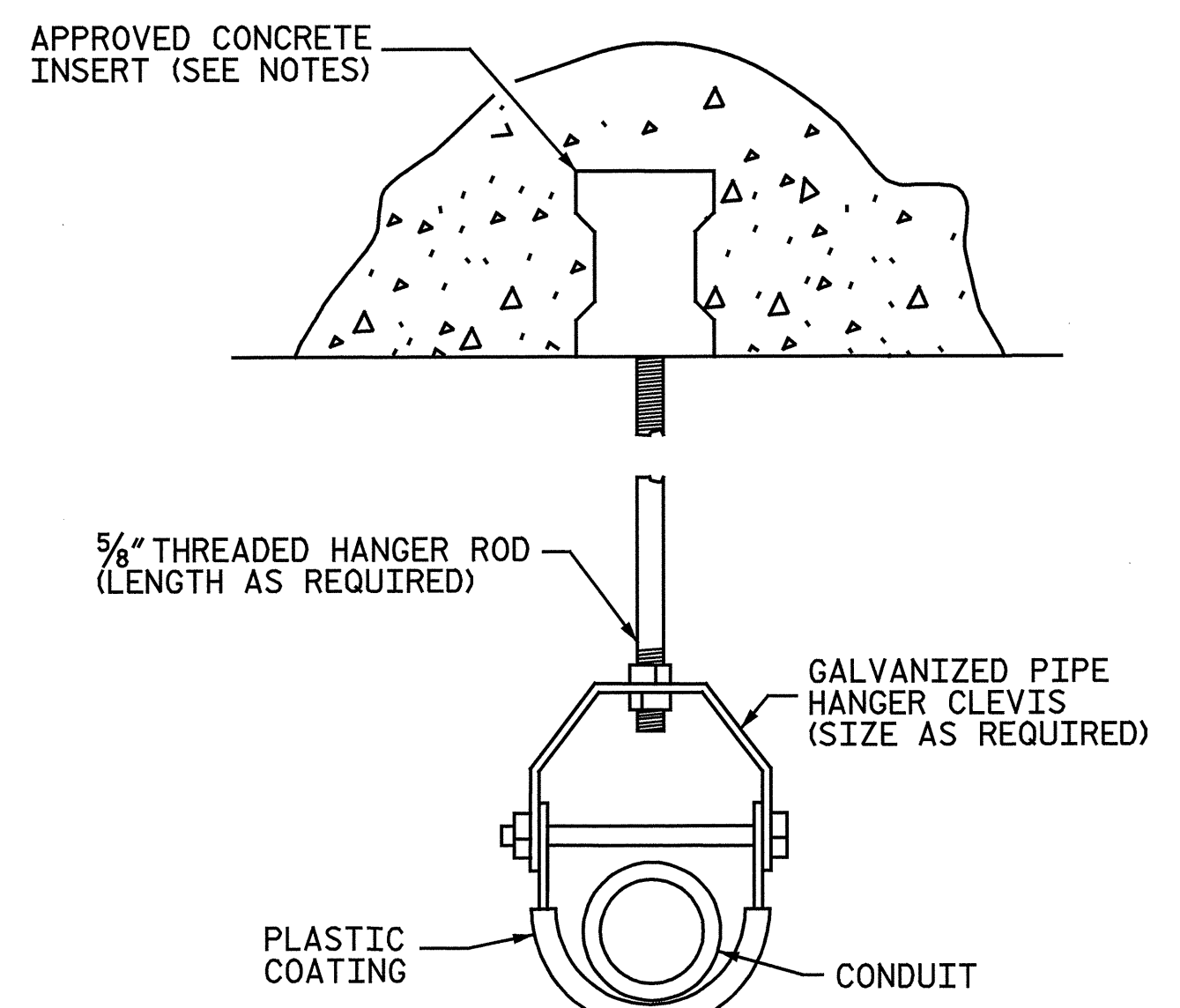
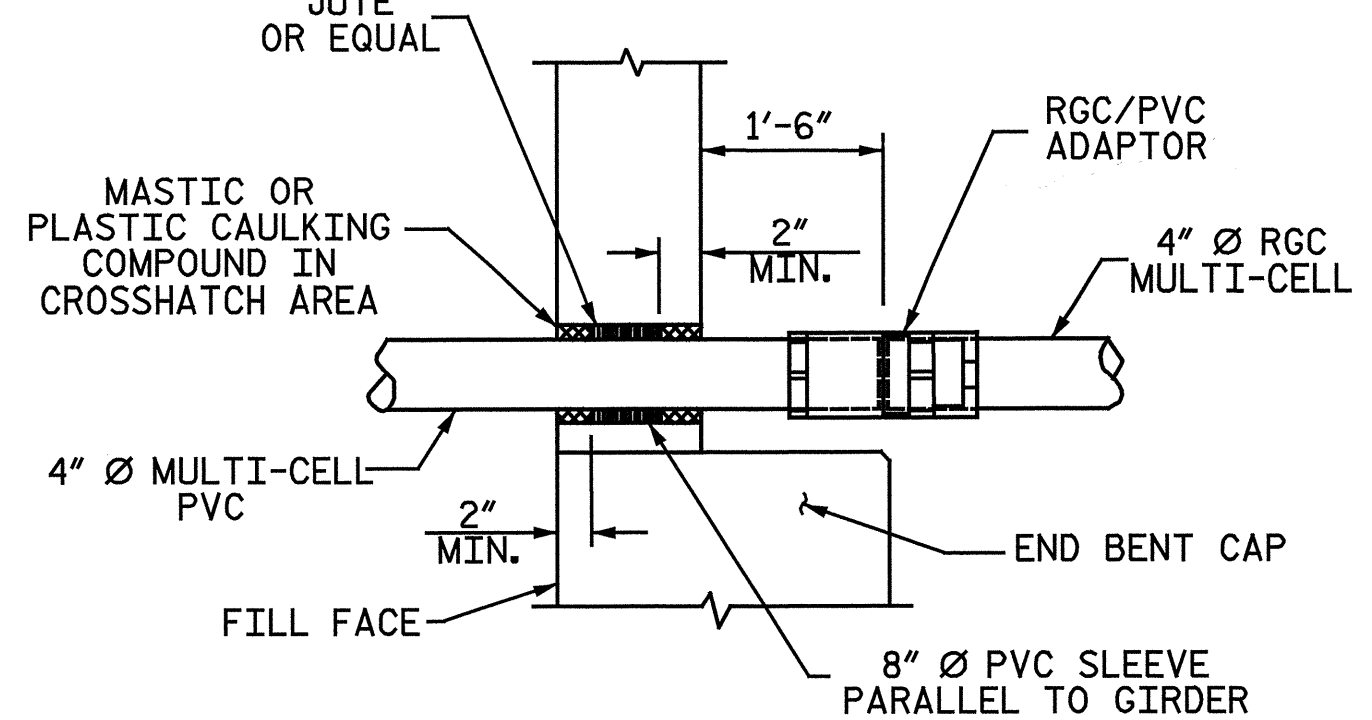
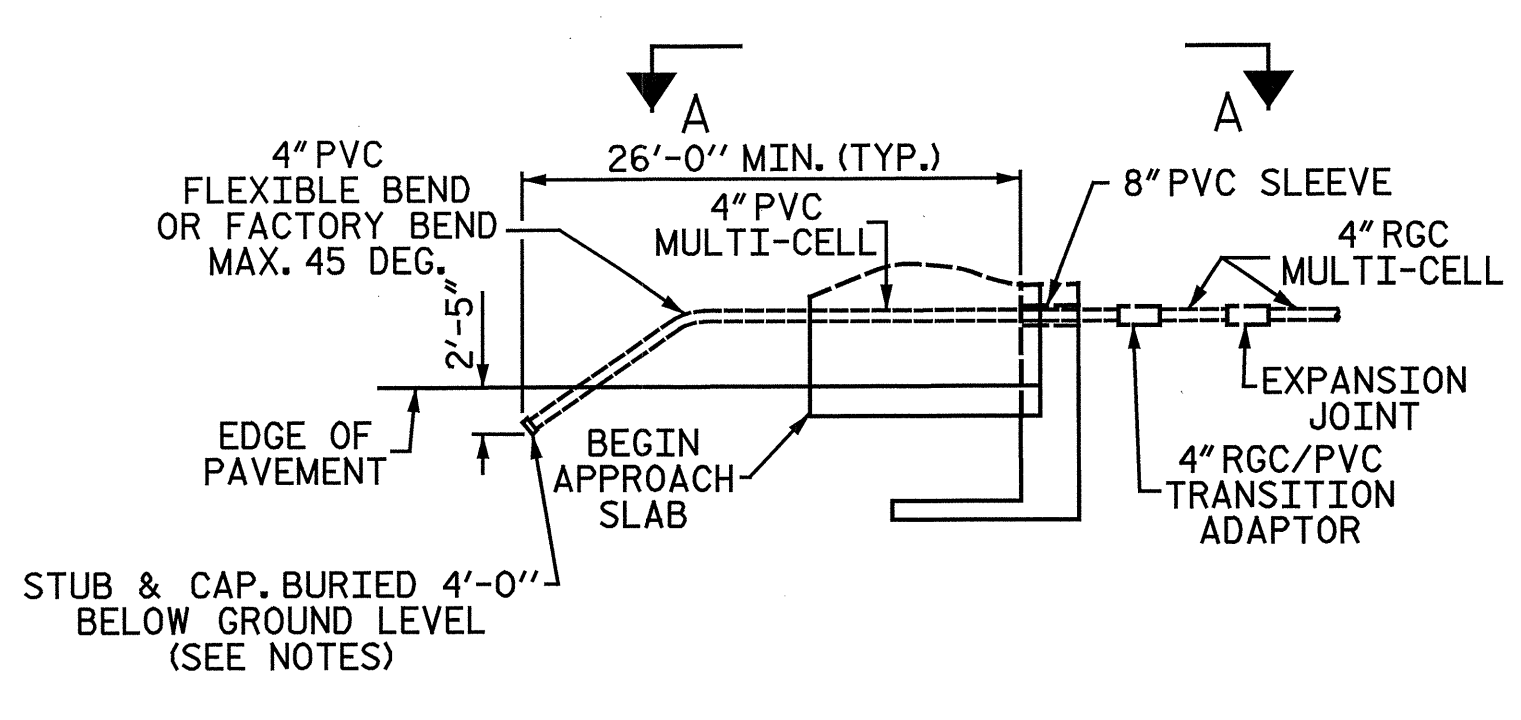
RIGID GALVANIZED (RGC) MULTI-CELL RACEWAY

SCHEDULE 40 PVC MULTI-CELL RACEWAY

TRANSITION ADAPTER

EXPANSION JOINT FITTING

DETAIL D
4" MULTI-CELL COMPONENTS

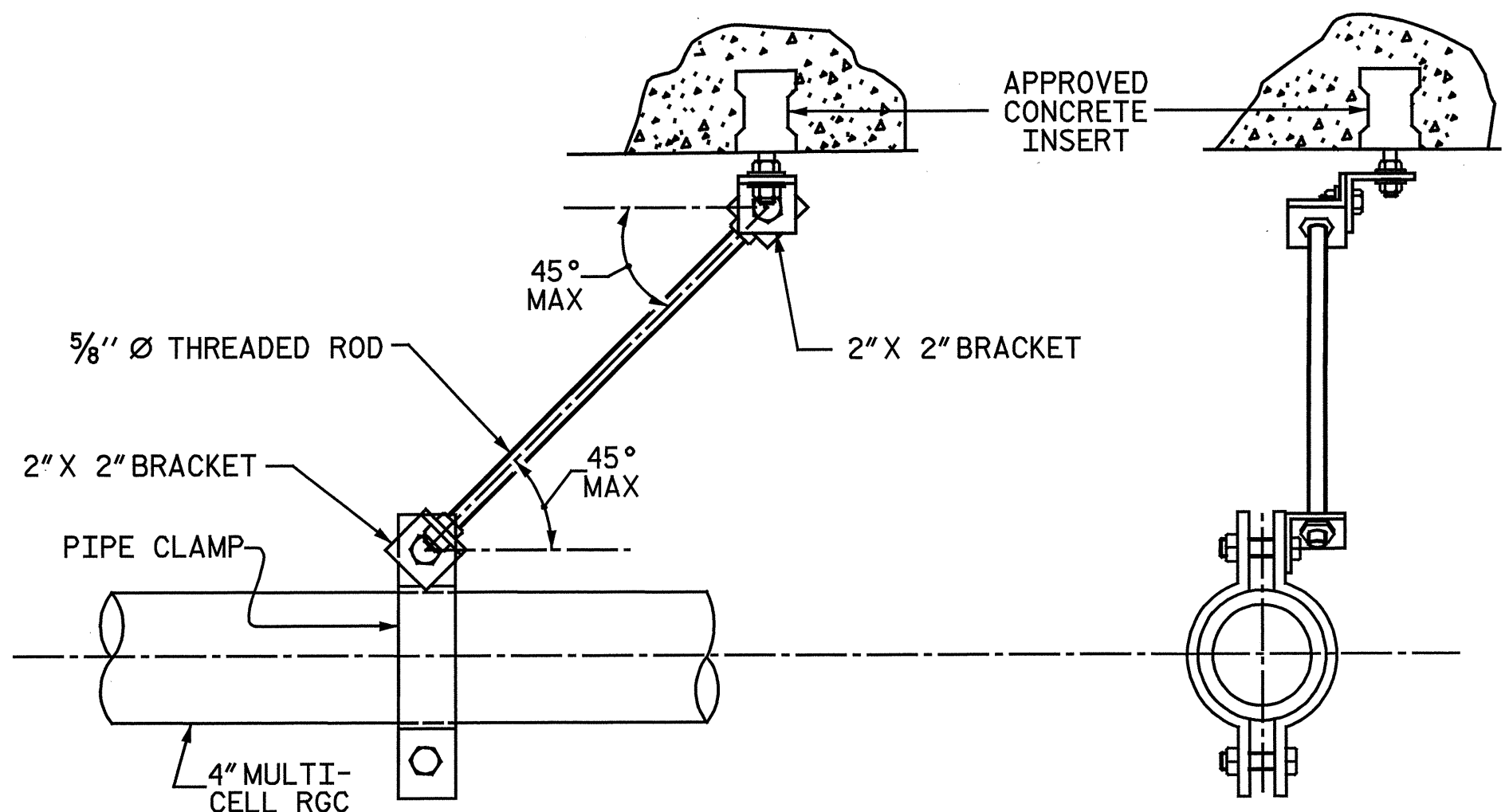
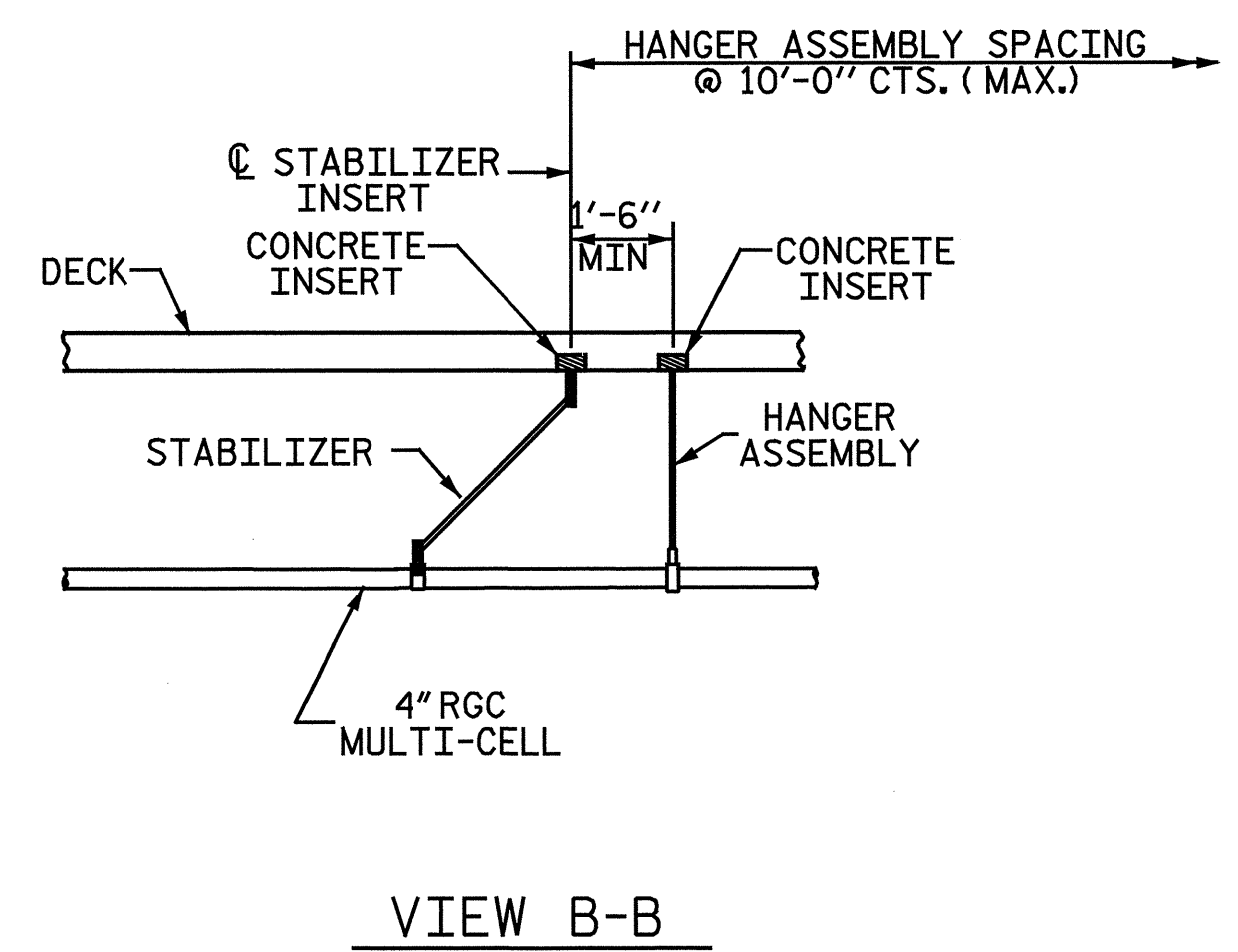
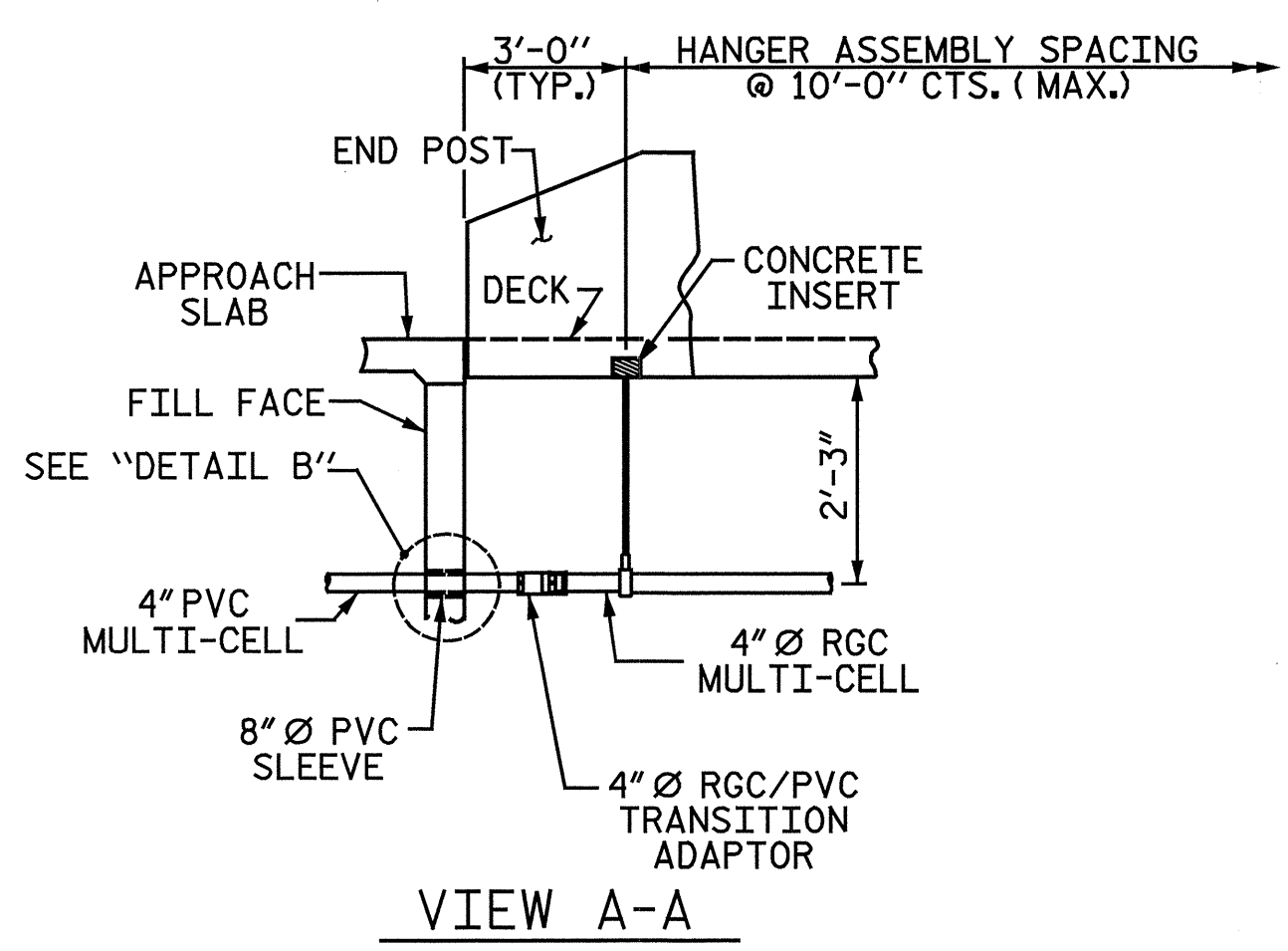


DETAIL A
TERMINATION OF CONDUIT AT WING WALL

DETAIL B
PVC SLEEVE INSTALLATION & RGC/PVC ADAPTOR AT BACKWALL

DETAIL C
HANGER ASSEMBLY

CONDUIT LAYOUT
SEE TYPICAL SECTION SHEETS FOR ADDITIONAL DETAILS



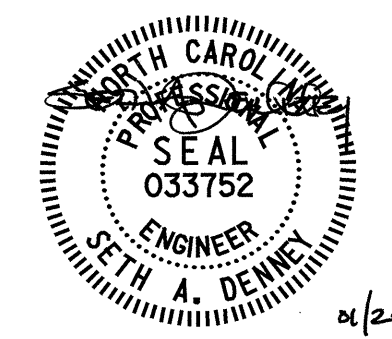
VIEW A-A

VIEW B-B

DETAIL E
STABILIZER

ELECTRICAL CONDUIT DETAILS

PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-



Baker

Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 276518
 NC License No.: F-1084

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 ELECTRICAL CONDUIT SYSTEM FOR SIGNALS

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-36	
1			3			TOTAL SHEETS 39	
2			4				

DRAWN BY: J. N. AUSTIN DATE: 11-5-12
 CHECKED BY: A. L. PHILLIPS DATE: 11-7-12

DWG. 36 OF 39

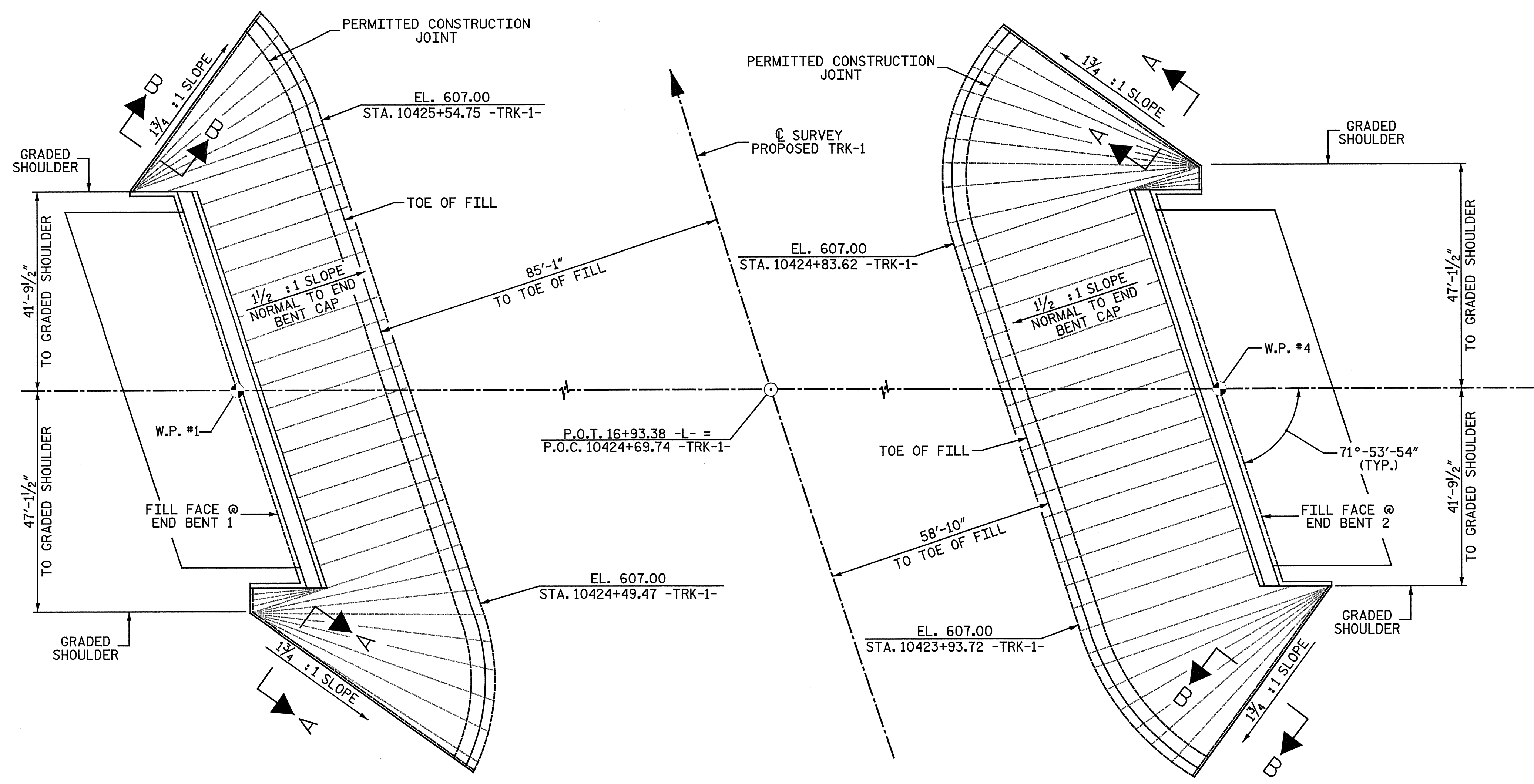
Justin 1/24/2013 9:27:57 AM
 Filename: Y:\Projects\NCDOT\VP-5208D\DISCIPLINE\Structure\es\Final\VP-5208D_036_SD_Ec.dgn

GENERAL NOTES

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

ALTERNATE "A"

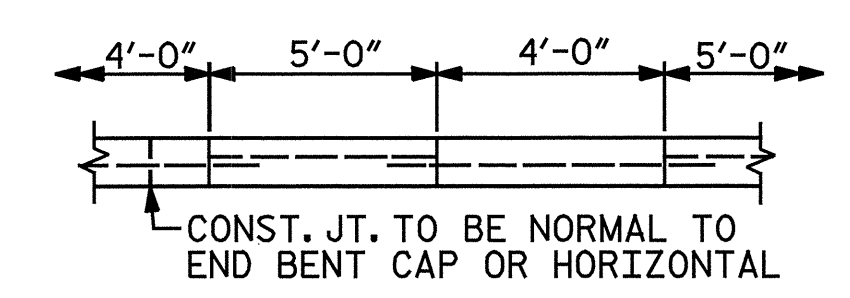
ALTERNATE "A" SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE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



PLAN OF SLOPE PROTECTION

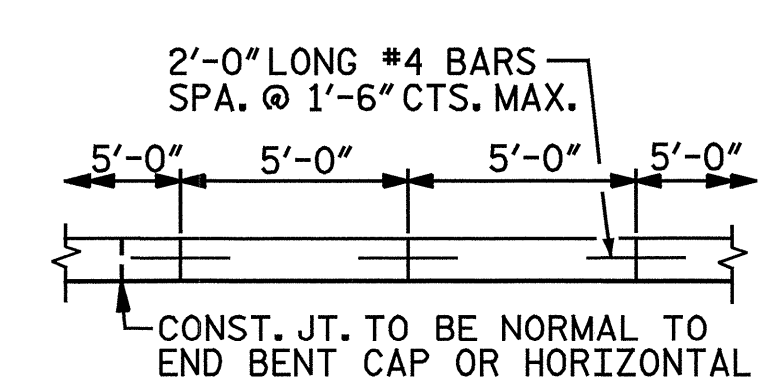
BRIDGE @ STA. 16+93.38 -L-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	595	1190
END BENT 2	745	1490

* QUANTITY SHOWN IS BASED ON 5' POURS.



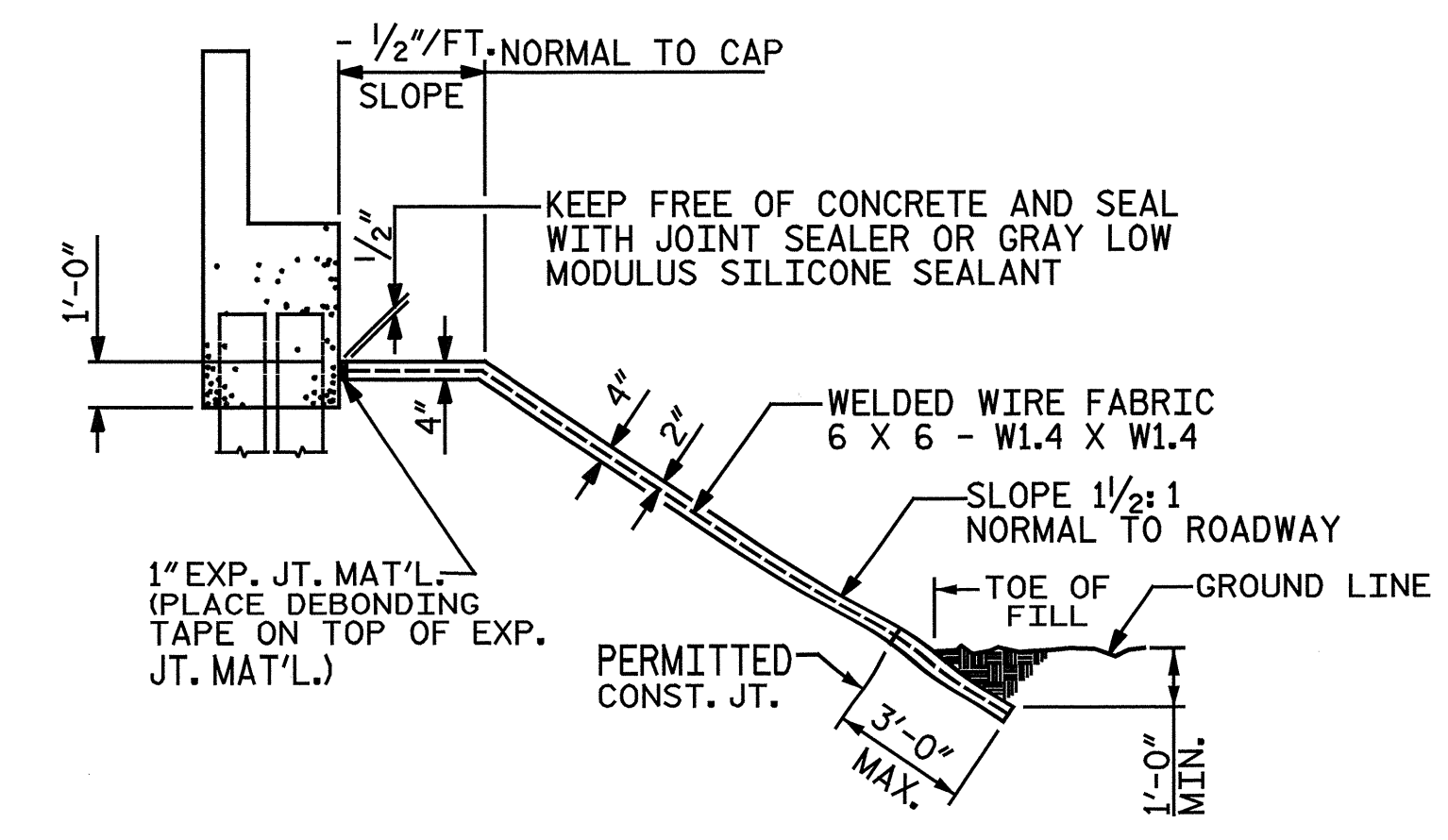
POUR A 4'-0" STRIP FIRST. STRIP WIDTHS MAY VARY IN CURVED PORTION.

OPTIONAL POURING DETAIL



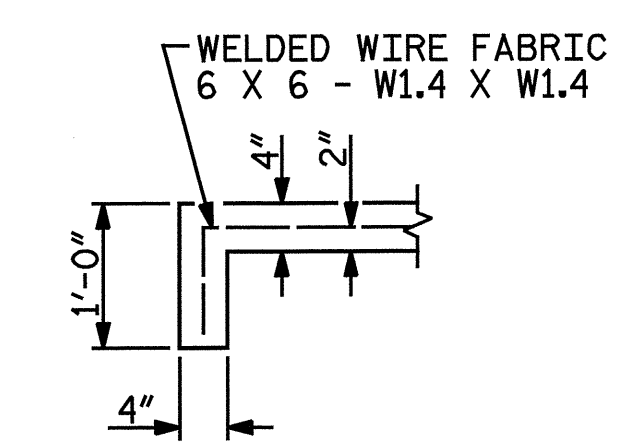
STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL

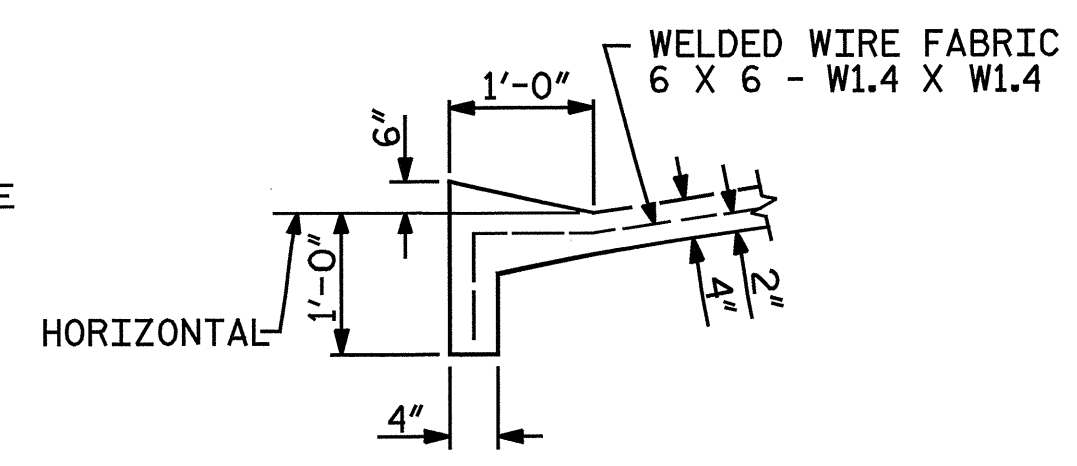


SECTION ALONG ROADWAY WHEN DITCH IS NOT PROVIDED

DETAILS FOR ALTERNATE "A"



SECTION A-A

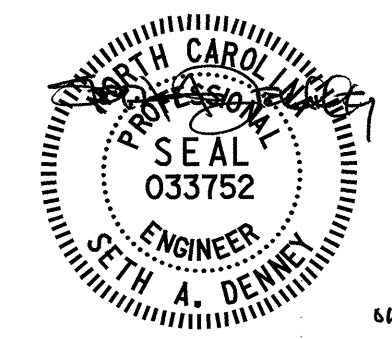


SECTION B-B

PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SLOPE PROTECTION
 DETAILS**

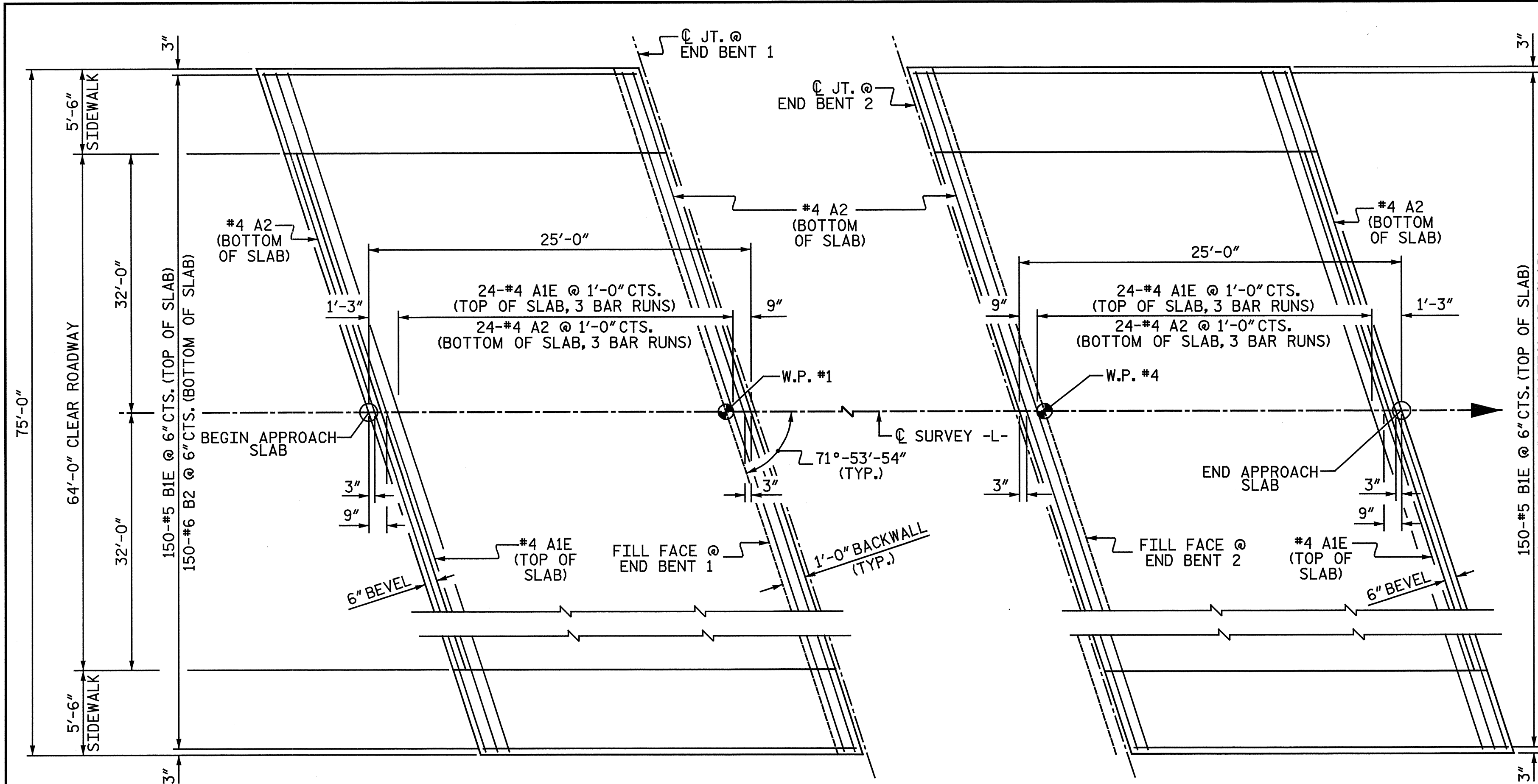


Michael Baker Engineering
 8000 Regency Parkway, Suite 600
 Cary, North Carolina 276518
 NC License No.: F-1084

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-37
1			3			TOTAL SHEETS
2			4			39

DRAWN BY: J. N. AUSTIN DATE: 11-7-12
 CHECKED BY: A. L. PHILLIPS DATE: 11-8-12

Justin 1/24/2013 9:27:57 AM
 Filename: Y:\Projects\NC DOT\Y-5208D\DISCIPLINE\Structures\Drawings\Final\P-5208D_037_SD.SP.dgn



PLAN OF APPROACH SLAB AT END BENT 1

PLAN OF APPROACH SLAB AT END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

NOTES

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

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

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

THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE BARRIER RAIL OR PARAPET AND END POST.

WITH FOAM JOINT SEAL

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

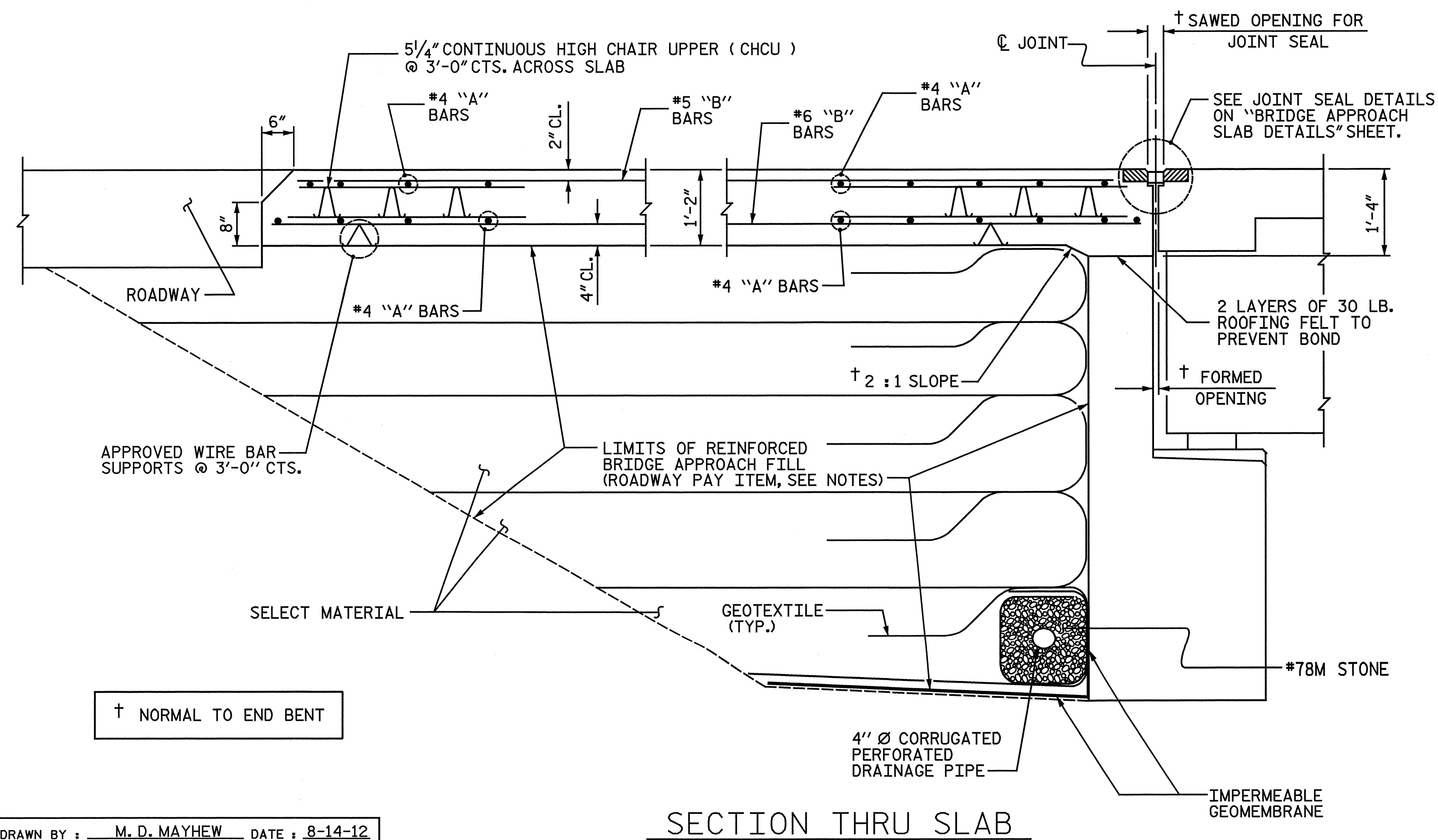
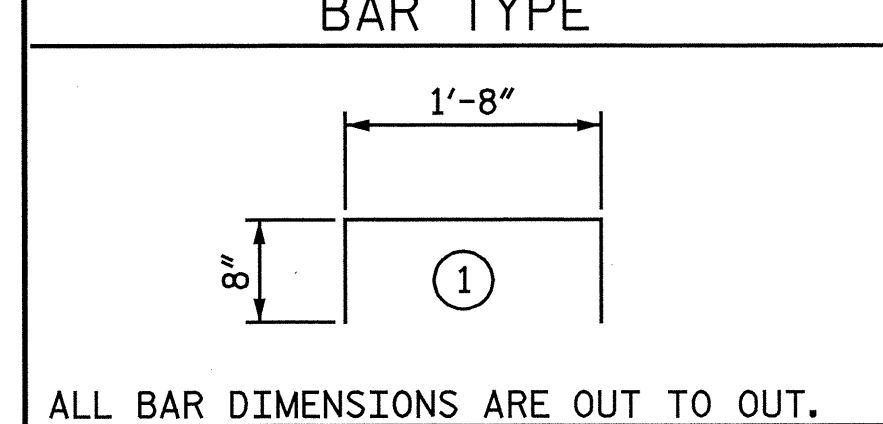
THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2 1/2".

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

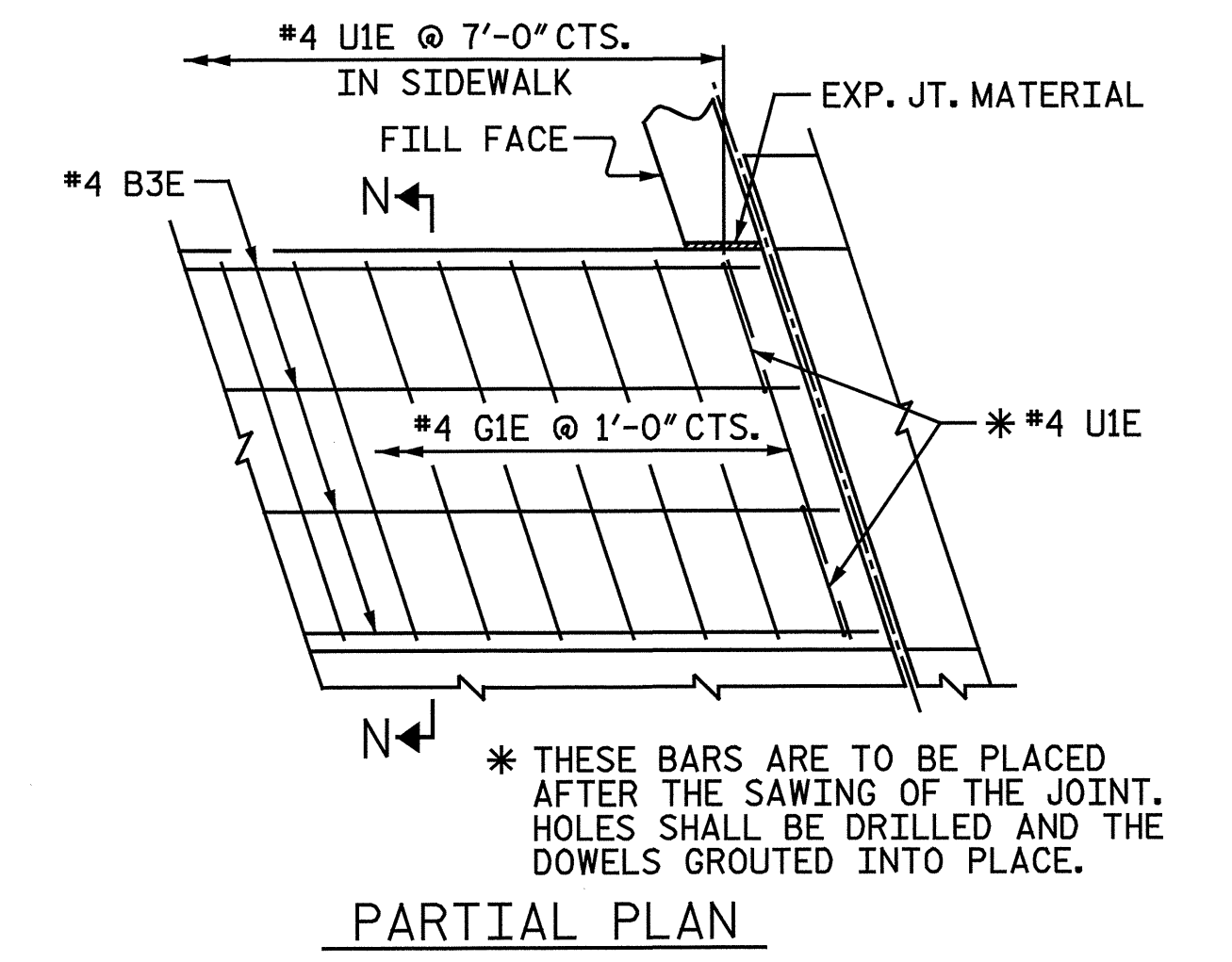
BILL OF MATERIAL

APPROACH SLAB AT EB #1					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
A1E	75	4	STR	27' - 7"	1,382
A2	78	4	STR	27' - 5"	1,429
B1E	150	5	STR	23' - 11"	3,742
B2	150	6	STR	24' - 7"	5,539
B3E	8	4	STR	24' - 7"	131
G1E	50	4	STR	5' - 3"	175
U1E	20	4	1	3' - 0"	40
REINFORCING STEEL				LBS.	6,968
EPOXY COATED REINFORCING STEEL				LBS.	5,470
CLASS AA CONCRETE				C. Y.	81.0

APPROACH SLAB AT EB #2					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
A1E	75	4	STR	27' - 7"	1,382
A2	78	4	STR	27' - 5"	1,429
B1E	150	5	STR	23' - 11"	3,742
B2	150	6	STR	24' - 7"	5,539
B3E	8	4	STR	24' - 7"	131
G1E	50	4	STR	5' - 3"	175
U1E	20	4	1	3' - 0"	40
REINFORCING STEEL				LBS.	6,968
EPOXY COATED REINFORCING STEEL				LBS.	5,470
CLASS AA CONCRETE				C. Y.	81.0

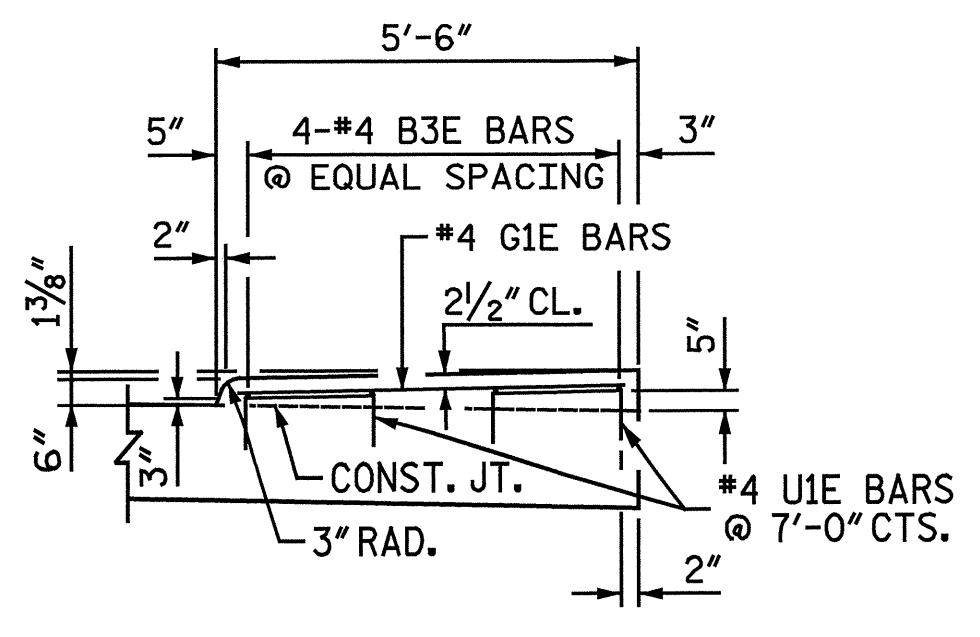


SECTION THRU SLAB



PARTIAL PLAN

DETAILS OF SIDEWALK ON APPROACH SLAB

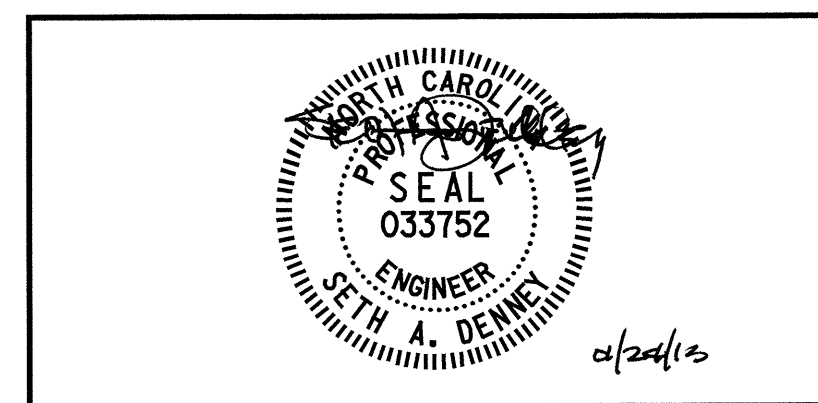


SECTION N-N
SIDEWALK DETAILS

PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 16+93.38 -L-
 SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT



Baker
 Michael Baker Engineering
 8000 Regency Parkway, Suite 800
 Cary, North Carolina 27615
 NC License No.: F-1084

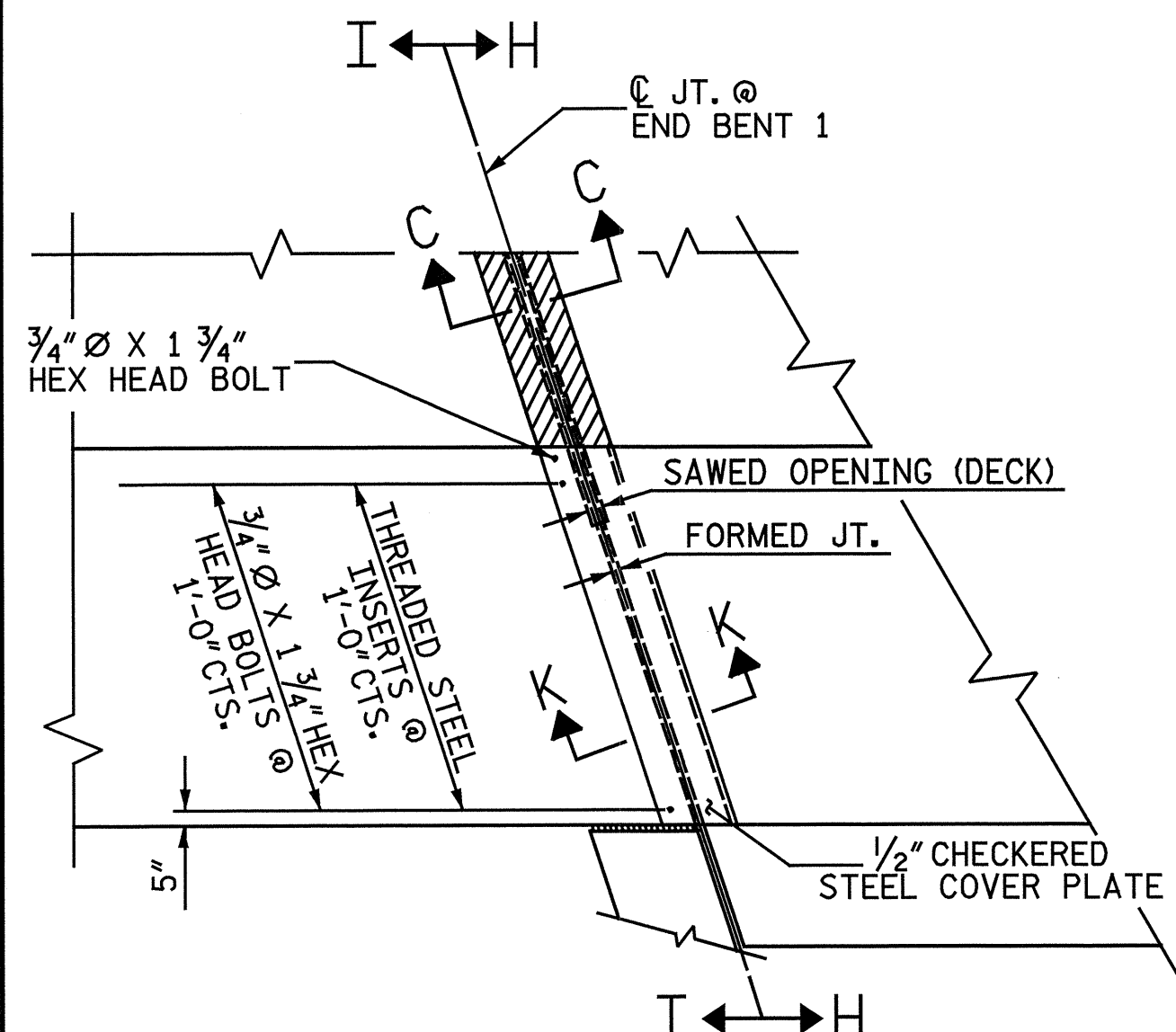
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-38
 TOTAL SHEETS 39

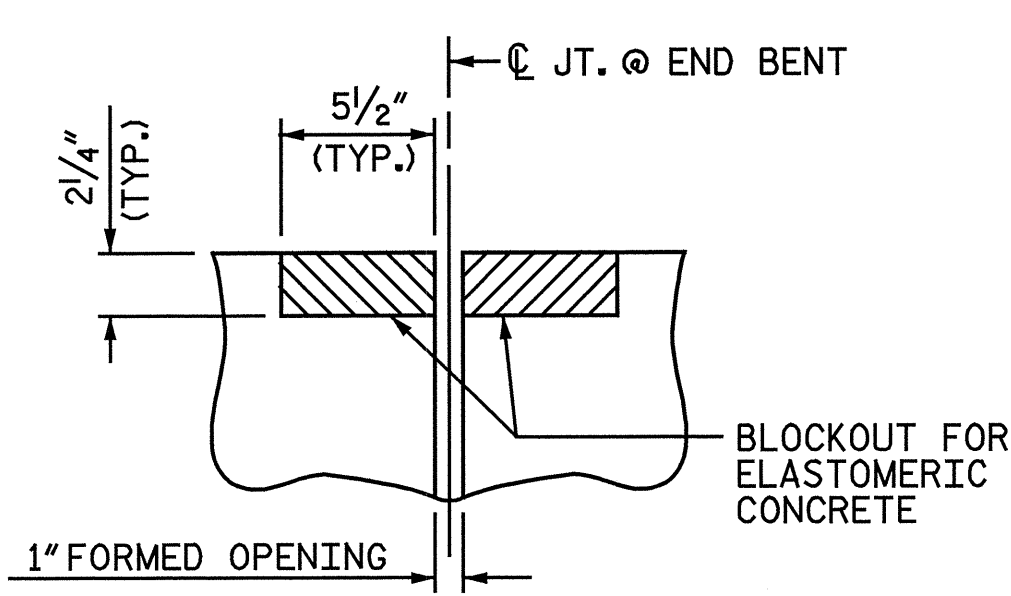
DRAWN BY: M. D. MAYHEW DATE: 8-14-12
 CHECKED BY: R. F. DeCOLA DATE: 8-23-12

DWG. 38 OF 39

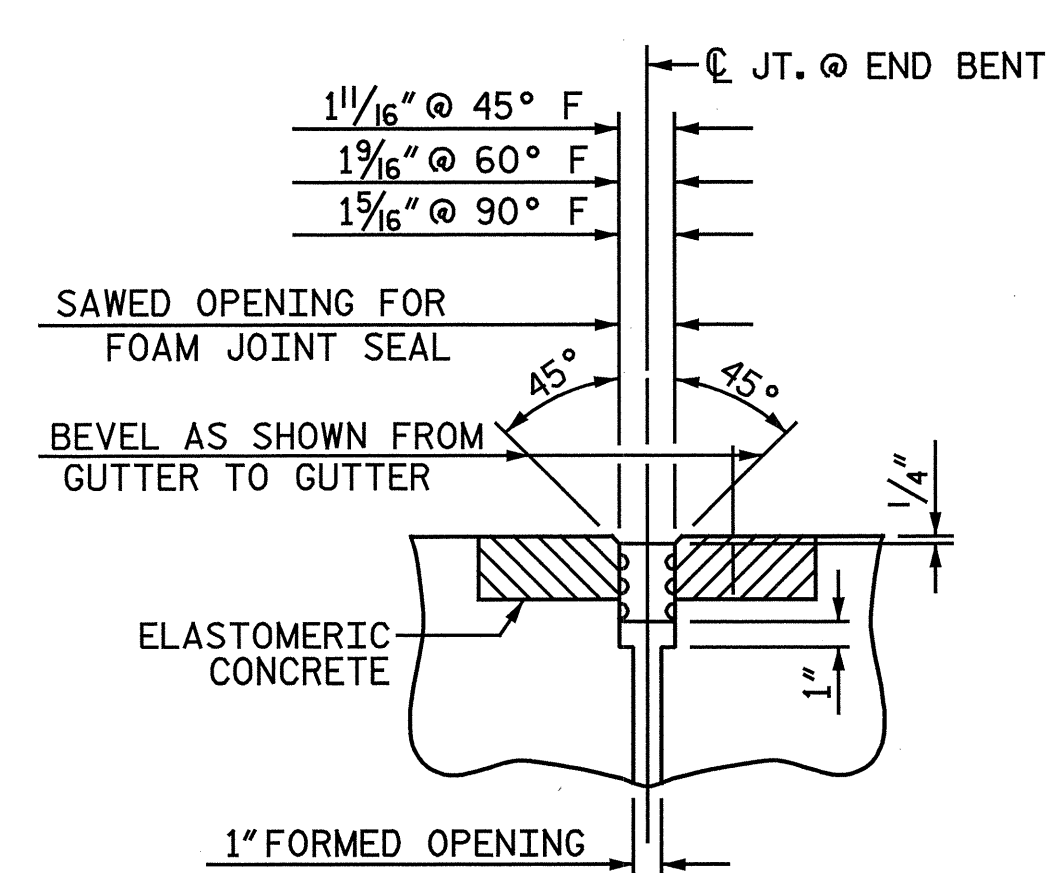
9/27/15B AM 1/24/2013
 File name: Y:\Projects\NCDOT\5208D\DISCIPLINE\Structures\Drawings\Final\5208D_038_SD_ASI.dgn



PLAN VIEW OF FOAM JOINT SEAL
(AT END BENT FOR SIDEWALK)



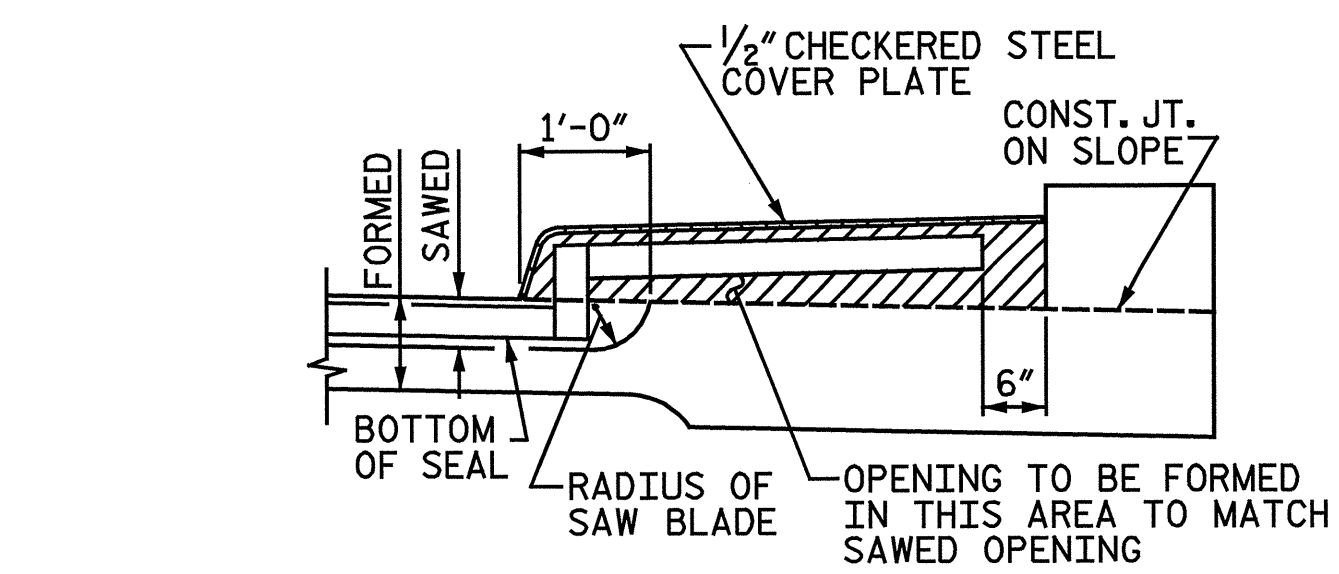
SECTION C-C
FOAM JOINT SEAL
(PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS)



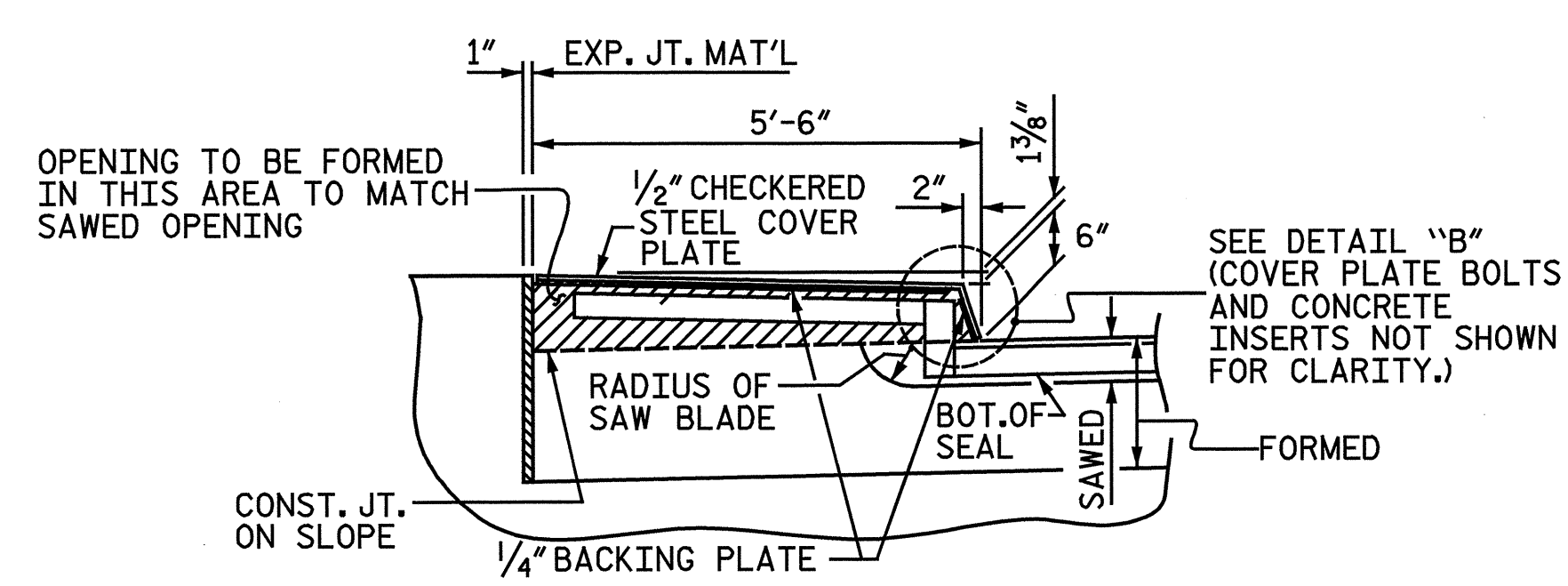
SECTION C-C
FOAM JOINT SEAL
(EXPANSION)

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	11.6
2	11.6
TOTAL	23.2

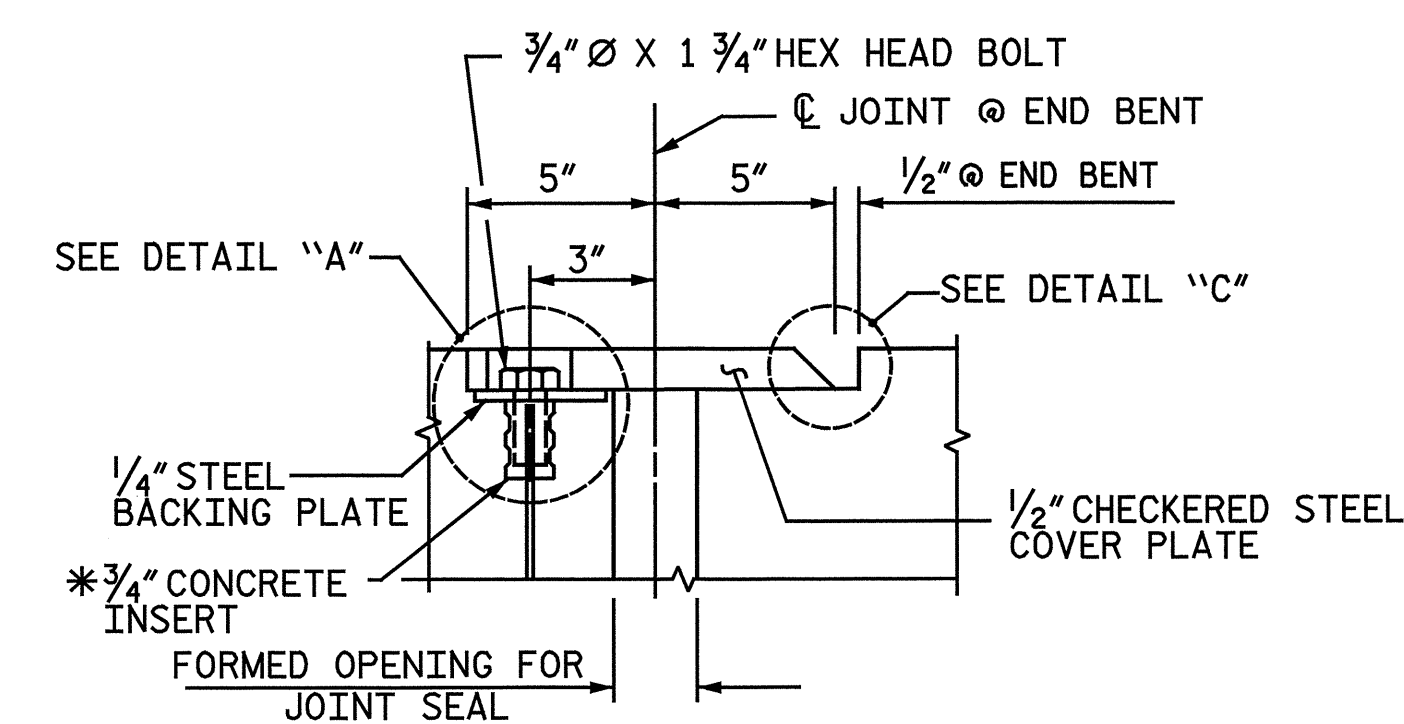
* BASED ON THE MINIMUM BLOCKOUT SHOWN.



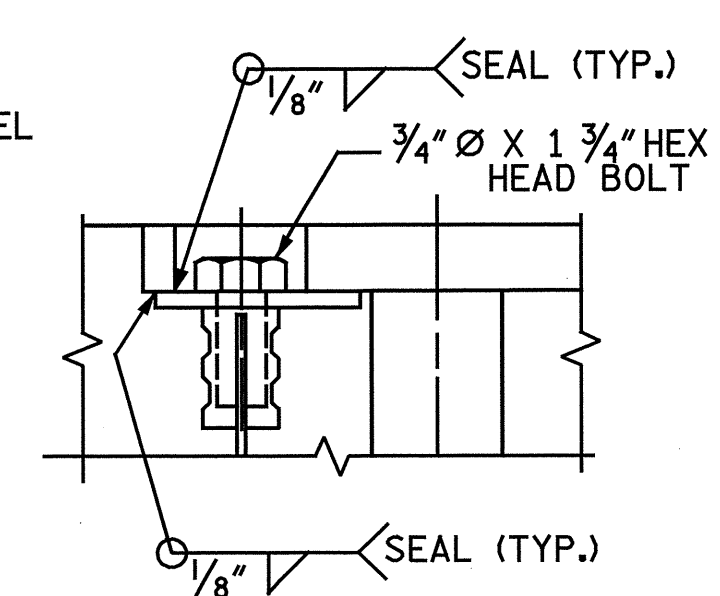
SECTION H-H



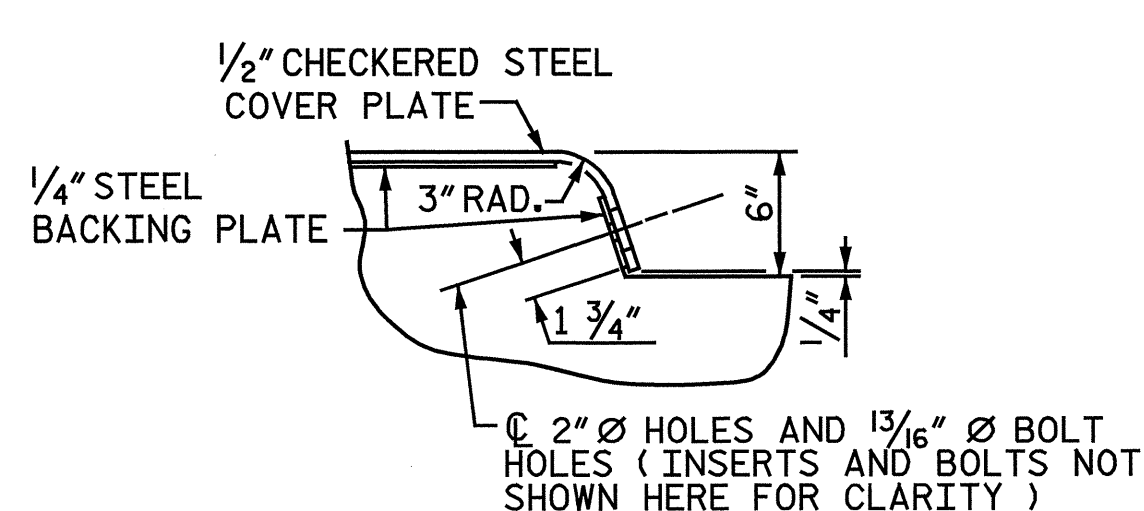
SECTION I-I



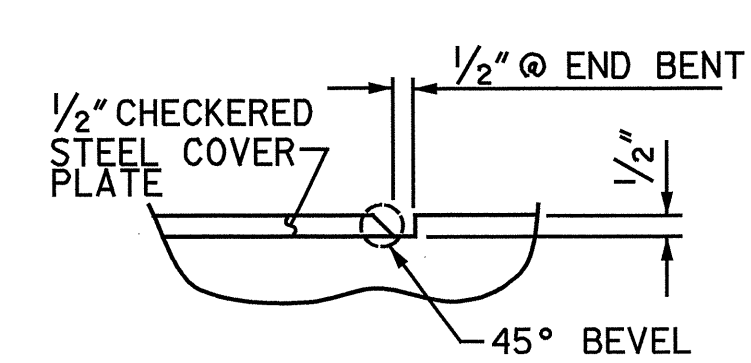
SECTION K-K



DETAIL A

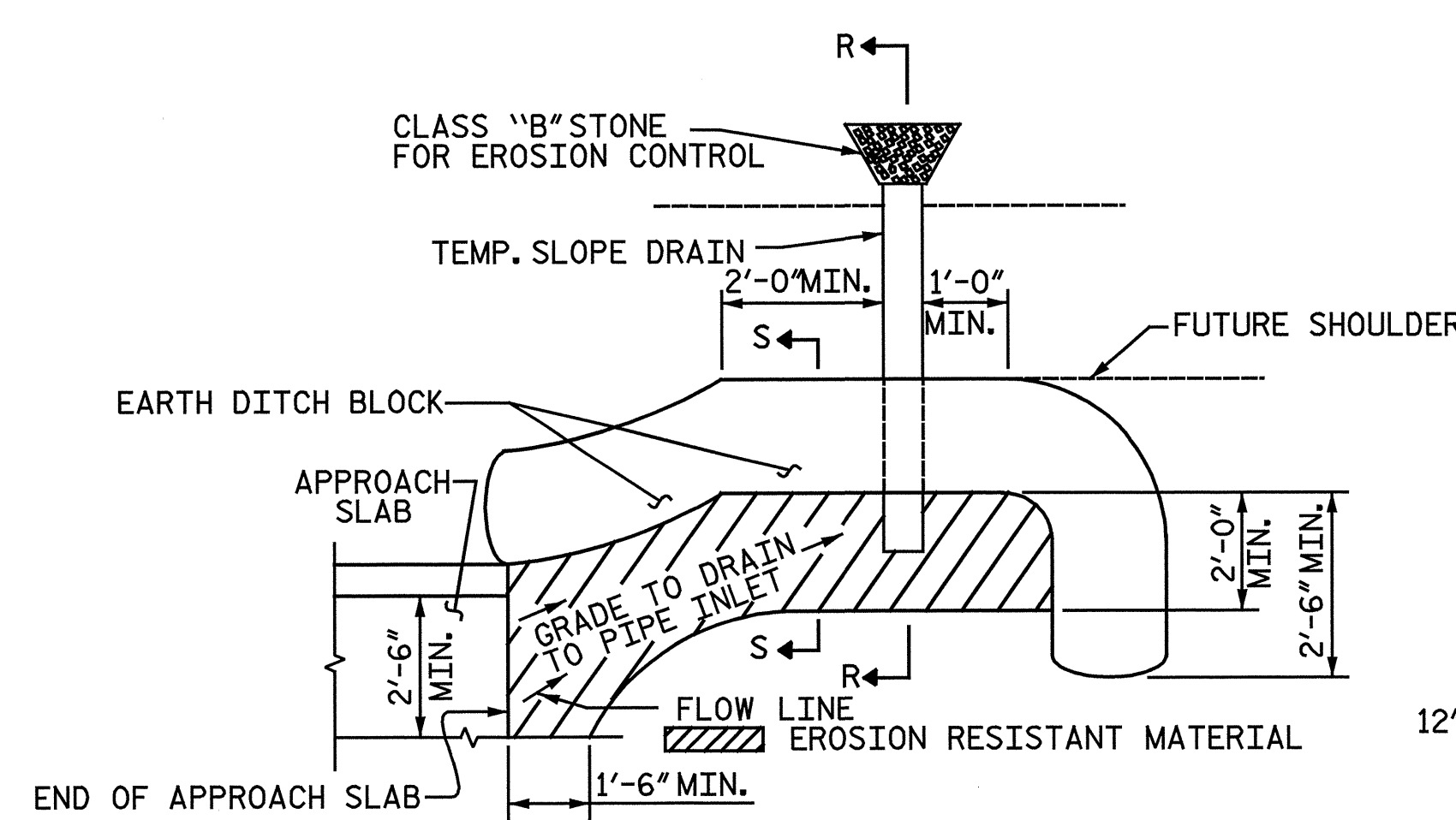


DETAIL B



DETAIL C

JOINT SEAL DETAILS @ END BENT

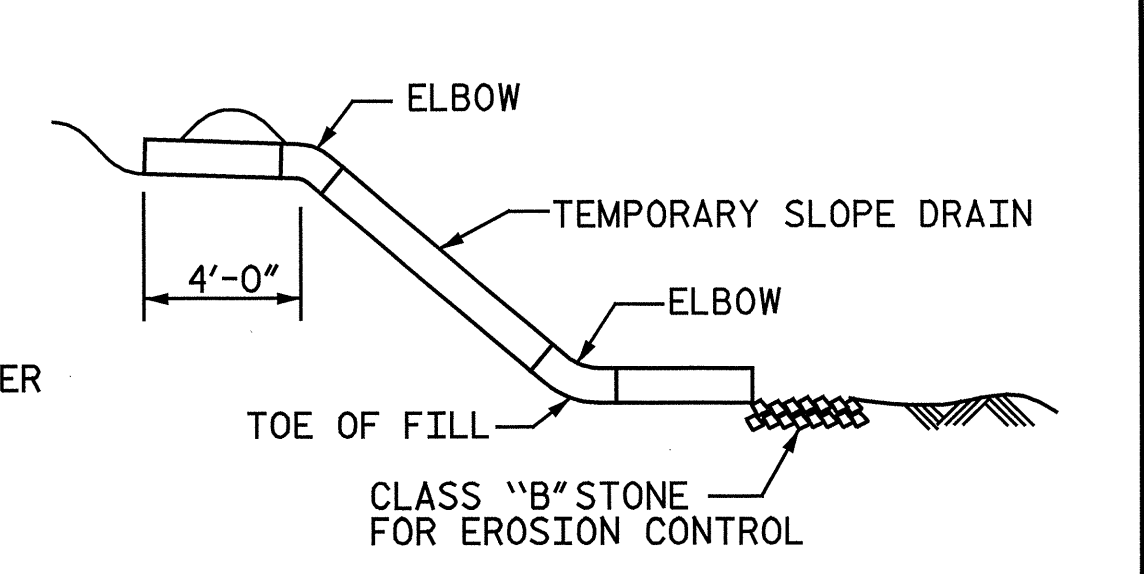


PLAN VIEW

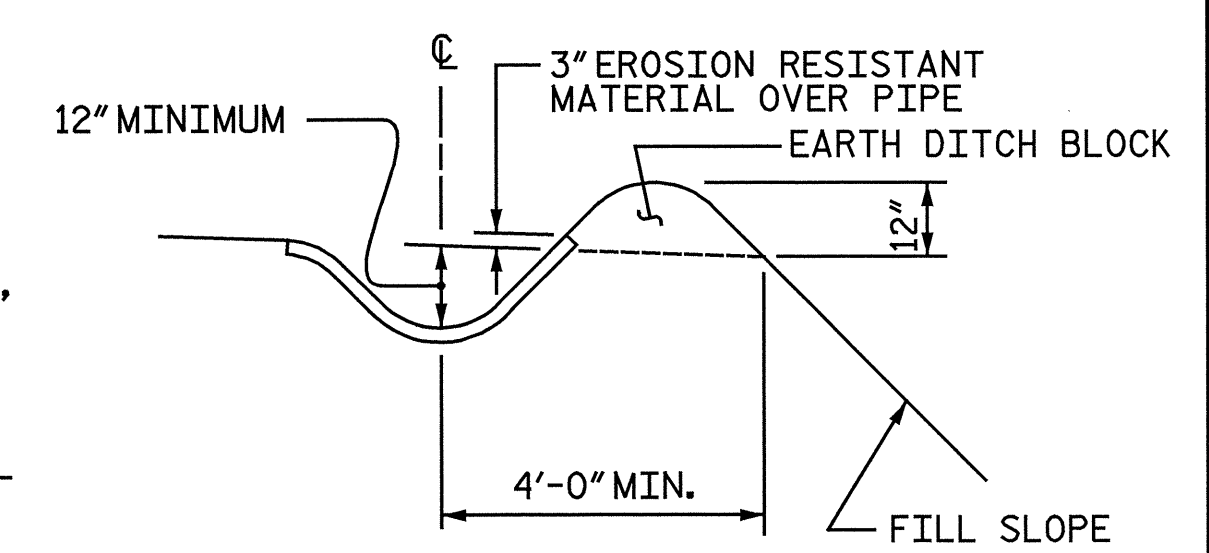
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

TEMPORARY BERM AND SLOPE DRAIN DETAILS

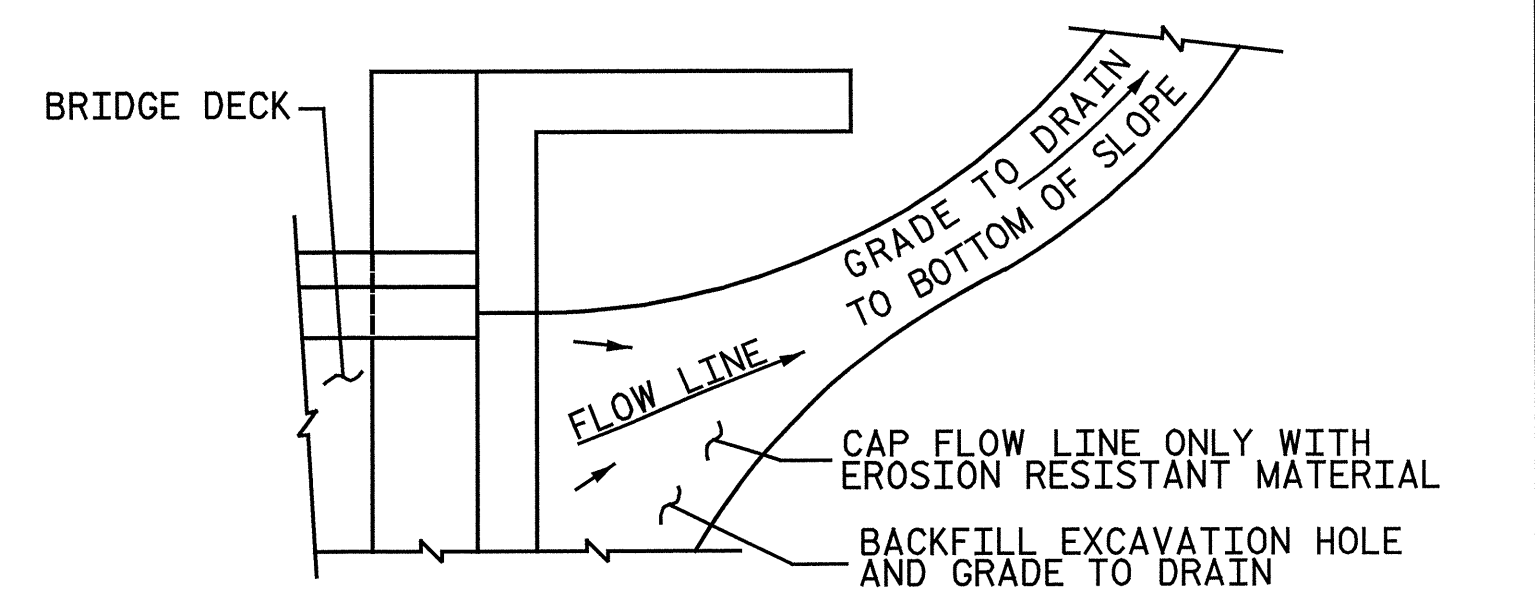
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION R-R



SECTION S-S



TEMPORARY DRAINAGE DETAIL

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.

NOTES: THE STEEL PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR APPROVED EQUAL. AFTER FABRICATION, THE PLATES SHALL BE COMMERCIALY BLAST CLEANED AND EITHER COATED WITH A MINIMUM THICKNESS OF 4 MILS (DRY) OF ZINC-RICH PAINT, GALVANIZED OR METALLIZED TO A MINIMUM THICKNESS OF 6 MILS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

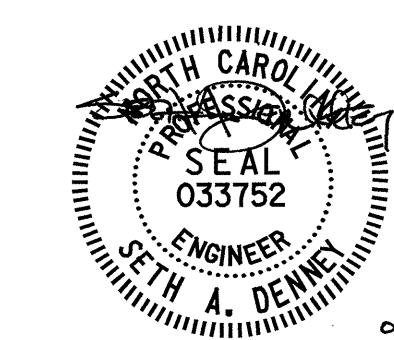
THE 3/4\"/>

NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE COVER PLATE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR \"FOAM JOINT SEALS\".

PROJECT NO. P-5208D
CABARRUS COUNTY
STATION: 16+93.38 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH
SLAB DETAILS



01/24/13

Baker

Michael Baker Engineering
8000 Regency Parkway, Suite 600
Cary, North Carolina 27615
NC License No. F-1084

REVISIONS						SHEET NO. S-39
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 39
2			4			

DWG. 39 OF 39

DRAWN BY: M. D. MAYHEW DATE: 8-14-12
CHECKED BY: R. F. DECOLA DATE: 8-23-12

1/24/2013 9:27:59 AM
 File Name: Y:\Projects\NCDOT\VP-5208D\DISCIPLINE\STRUCTURES\Drawings\Final\VP-5208D_039_SD_AS2.dgn

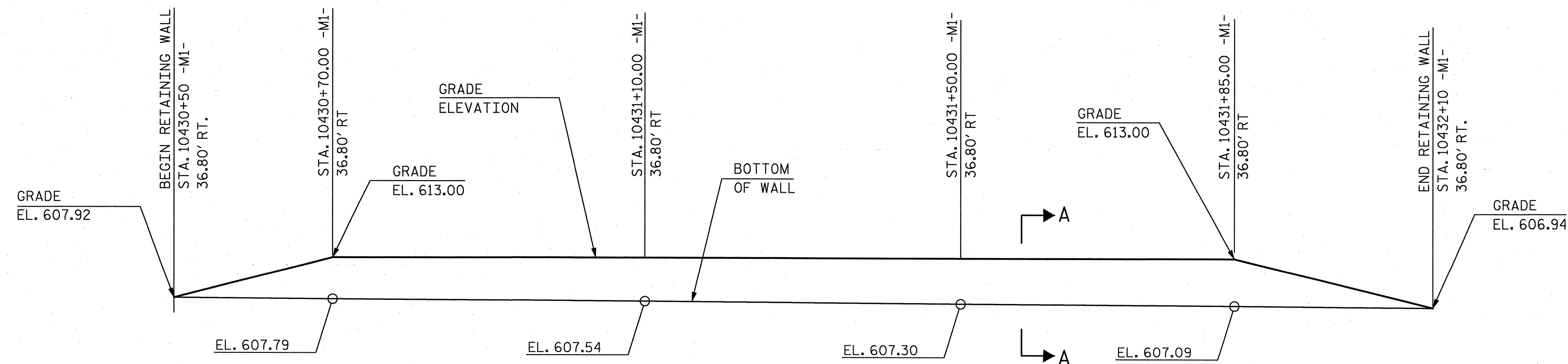
NOTES:

FOR PLAN VIEW OF WALL, SEE TRACK PLANS.

FOR WALL DETAILS, SEE "CAST-IN-PLACE (CIP) GRAVITY RETAINING WALL DETAILS" SHEET.

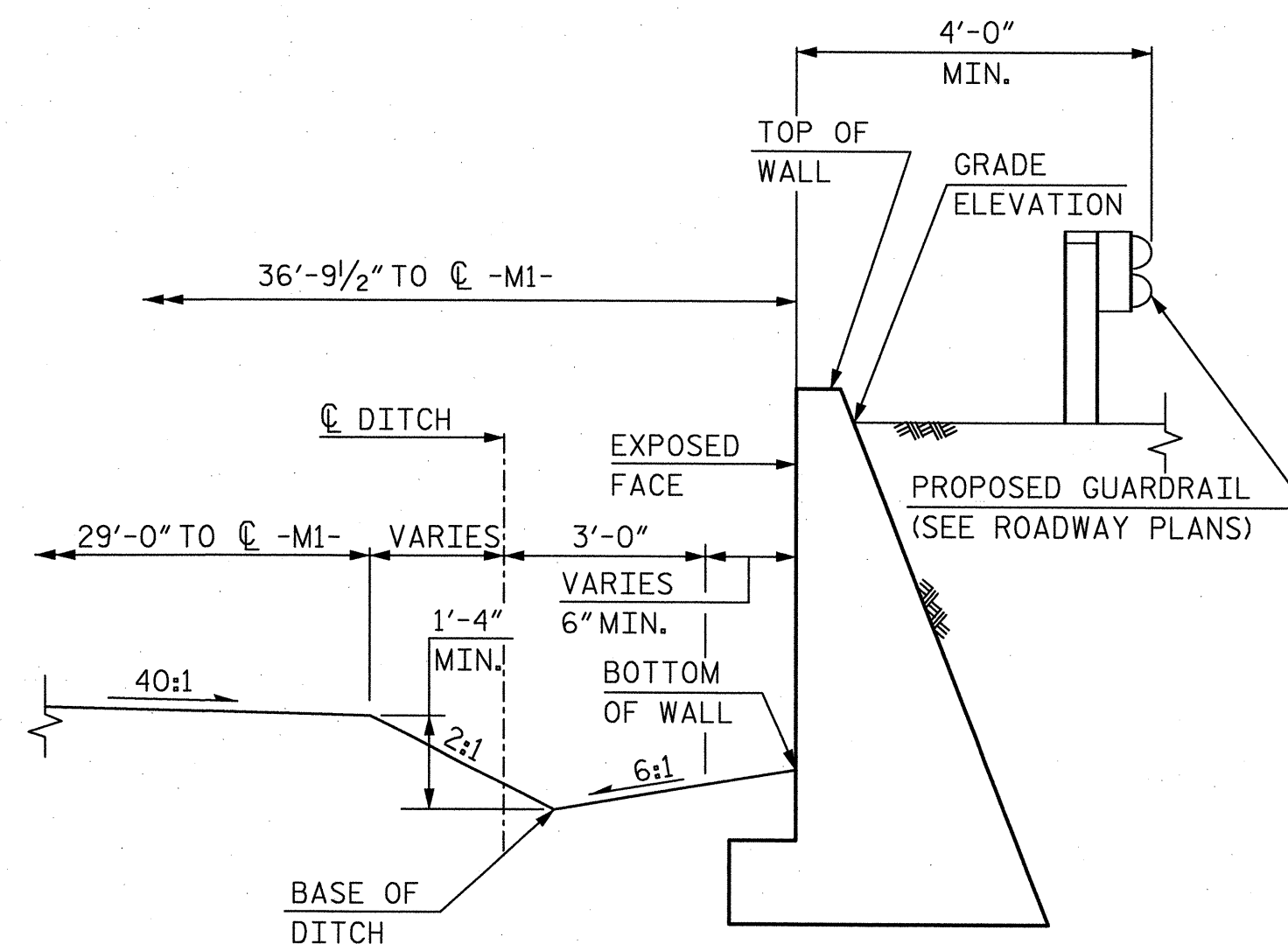
0077DEL_P10a4
0001ADD_P10a

REVISIONS
REVISION #1 (03-25-2013): SECTION A-A REVISED TO SHOW DEEPER DITCH (1'-4" MIN.) WITH SLOPES OF 2:1 AND 6:1.



WALL NO. 1 ELEVATION

NOTE: UTILITIES EXTEND UNDER WALL NO. 1.
SEE UTILITY PLANS FOR LOCATION AND ELEVATION.



SECTION A-A

BILL OF MATERIAL	
CIP GRAVITY RETAINING WALLS	
WALL NO. 1	834.5 SF

PROJECT NO. P-5208D

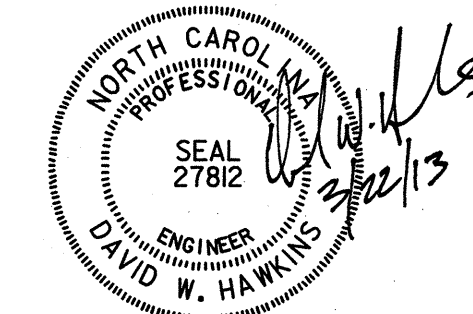
CABARRUS COUNTY

STATION: 10431+30.00 -M1-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CAST-IN-PLACE (CIP)
GRAVITY RETAINING
WALL NO. 1 ENVELOPE



HNTB HNTB NORTH CAROLINA, P.C.
License No. C-1554
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

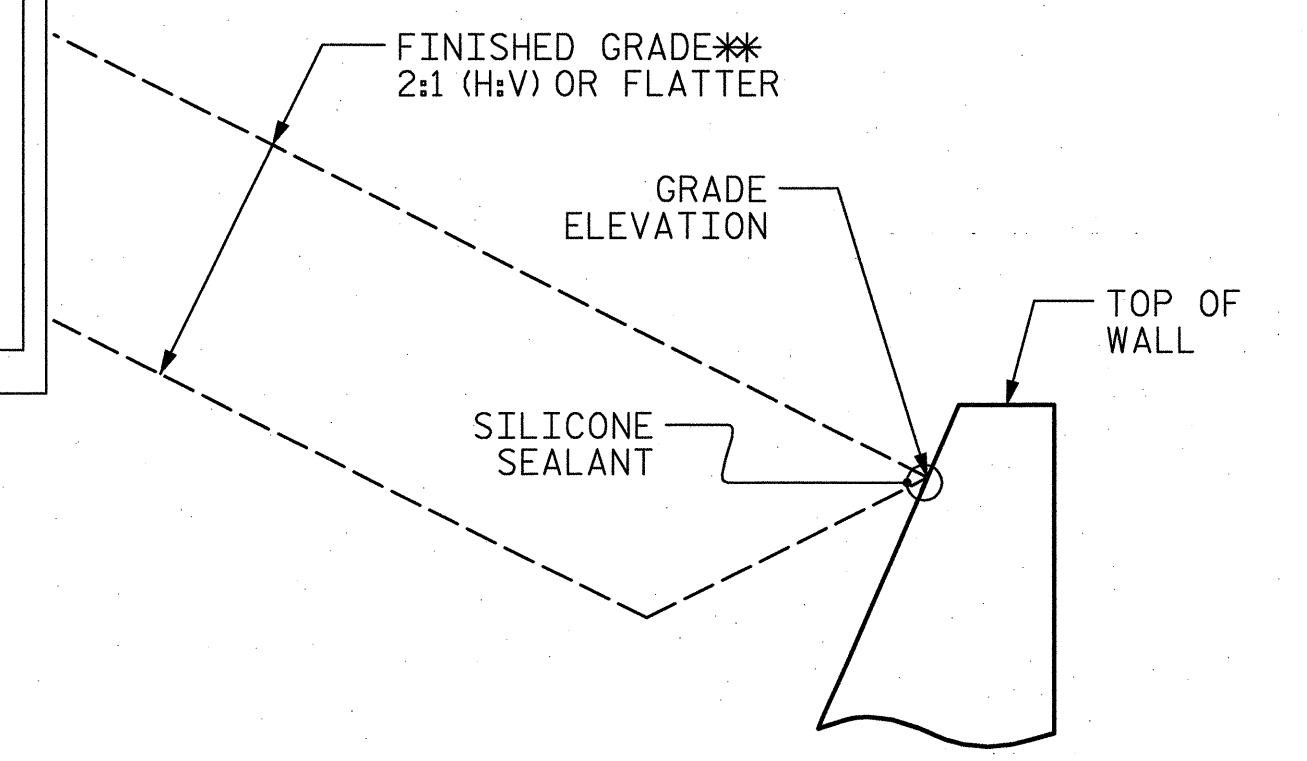
DRAWN BY: J. BAYNE DATE: 12/12
CHECKED BY: D. HAWKINS DATE: 12/12

DWG. NO. WI

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

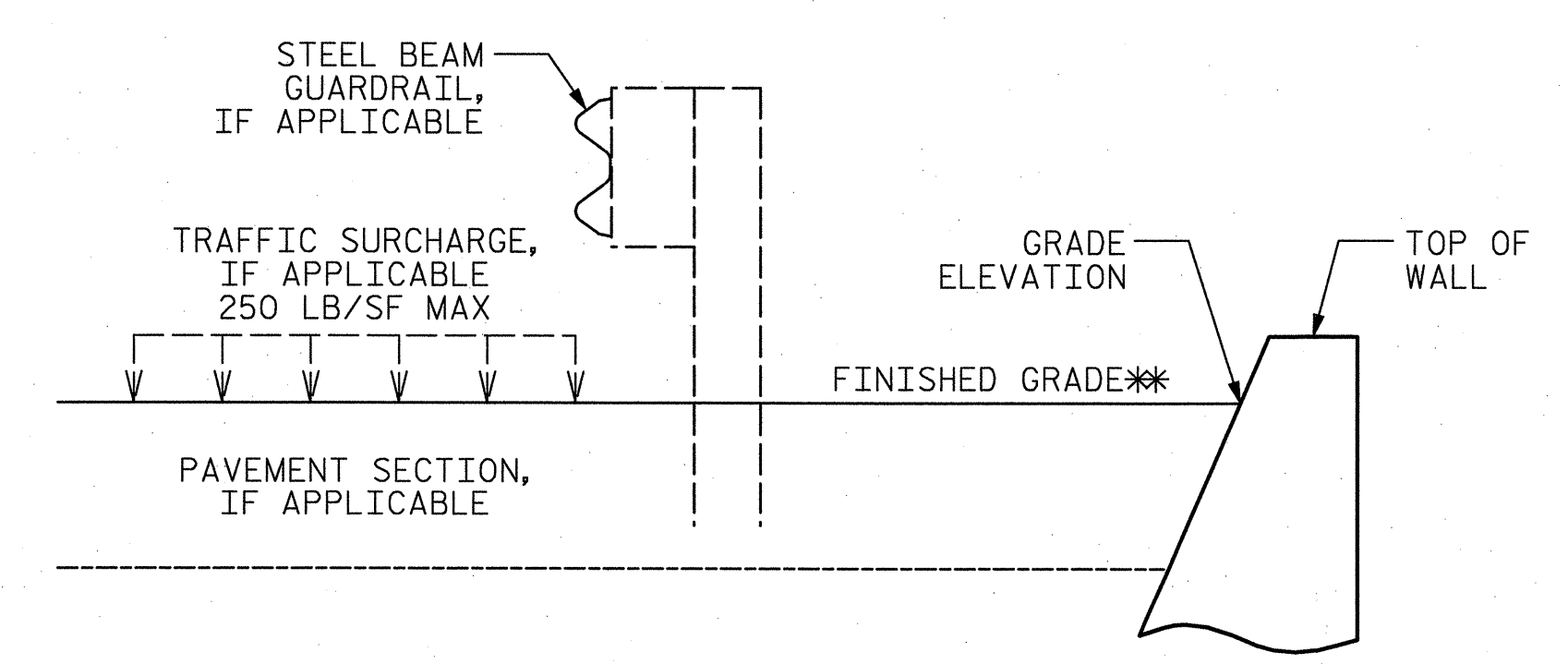
SHEET NO. W-1
TOTAL SHEETS 2

0077DEL_P10a4



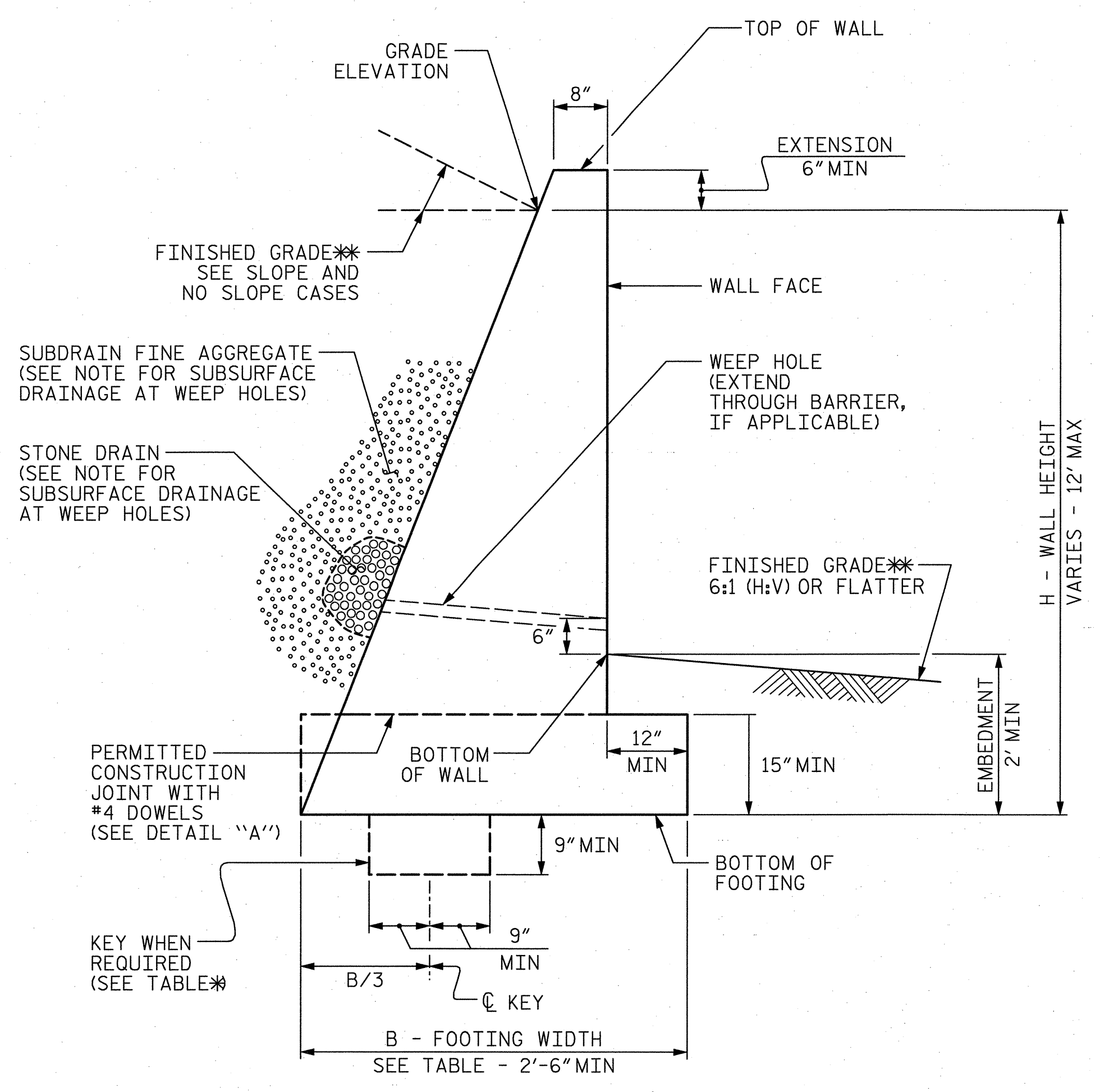
SLOPE CASE

**SEE ROADWAY PLANS FOR FINISHED GRADE AND DITCH DETAILS.



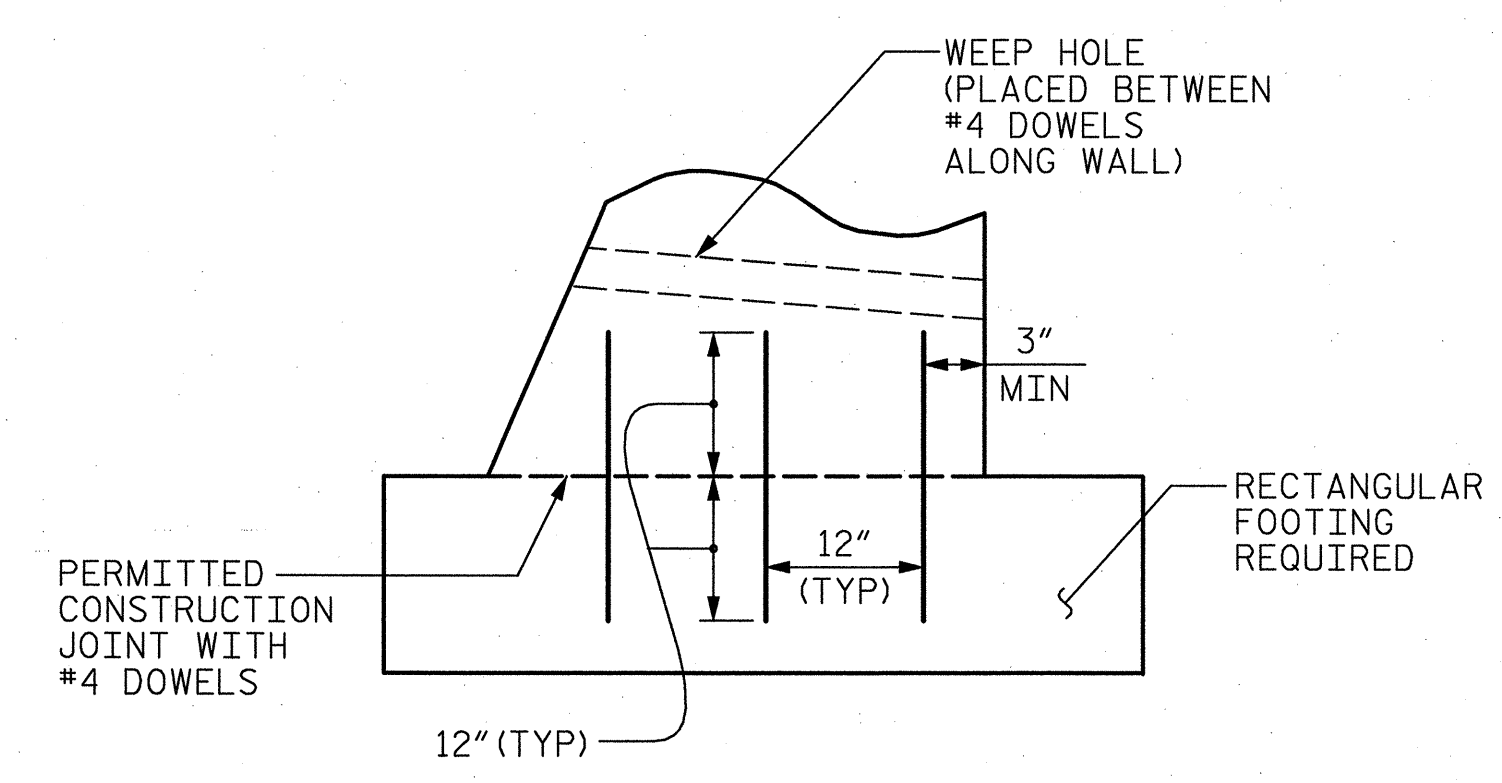
NO SLOPE CASE

**SEE ROADWAY PLANS FOR FINISHED GRADE DETAILS.



STANDARD CIP GRAVITY WALL

**SEE ROADWAY PLANS FOR FINISHED GRADE AND DITCH DETAILS.



DETAIL "A"

H (FT)	3 - < 6	6 - 9	> 9 - 12
SLOPE CASE	.66	.70*	.75*
NO SLOPE CASE WITH TRAFFIC SURCHARGE	.80	.75*	.70*
NO SLOPE CASE WITHOUT TRAFFIC SURCHARGE	.60	.60	.60

B/H RATIO (B = 2'-6" MIN)

*KEY IS REQUIRED FOR "SLOPE CASE" OR "NO SLOPE CASE WITH TRAFFIC SURCHARGE" WHEN H IS 6' OR GREATER.

NOTES:

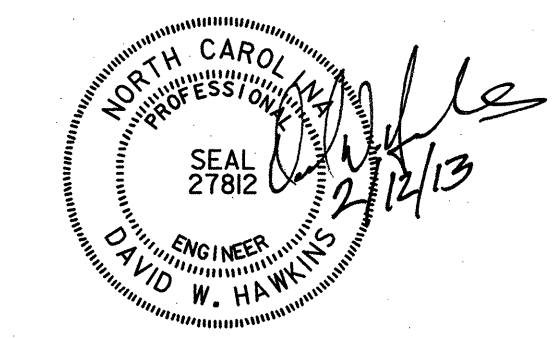
- FOR STANDARD CAST-IN-PLACE (CIP) GRAVITY RETAINING WALLS, SEE CAST-IN-PLACE GRAVITY RETAINING WALLS PROVISION.
- FOR STEEL BEAM GUARDRAIL, SEE ROADWAY PLANS AND SECTION 862 OF THE STANDARD SPECIFICATIONS.
- FOR SUBSURFACE DRAINAGE AT WEEP HOLES, SEE ARTICLE 414-8 OF THE STANDARD SPECIFICATIONS.
- STANDARD CIP GRAVITY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
 UNIT WEIGHT, $\gamma = 120$ LB/CF
 FRICTION ANGLE, $\phi = 35$ DEGREES (GROUNDWATER WITHIN 7' OF BOTTOM OF FOOTING)
 FRICTION ANGLE, $\phi = 30$ DEGREES (GROUNDWATER MORE THAN 7' BELOW BOTTOM OF FOOTING)
 COHESION, $c = 0$ LB/SF
- DO NOT USE STANDARD CIP GRAVITY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR GROUNDWATER IS ABOVE BOTTOM OF FOOTING.
- DO NOT USE STANDARD CIP GRAVITY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW WALLS.
- BEFORE BEGINNING STANDARD CIP GRAVITY WALL CONSTRUCTION, SURVEY WALL LOCATIONS AND SUBMIT WALL PROFILE VIEWS (WALL ENVELOPES) FOR REVIEW. FOR WALL ENVELOPES, INCLUDE BOTTOM OF WALL, EXISTING GROUND AND GRADE ELEVATIONS AND OTHER ELEVATIONS AS NEEDED AT INTERVALS OF 25' OR LESS ALONG WALLS. DO NOT START WALL CONSTRUCTION UNTIL WALL ENVELOPES ARE ACCEPTED.
- DO NOT PLACE CONCRETE FOR FOOTINGS UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
- WHEN CONSTRUCTING STANDARD CIP GRAVITY WALLS WITH A CONSTRUCTION JOINT AS SHOWN IN DETAIL "A", PROVIDE A MINIMUM OF 3 EQUALLY SPACED #4 DOWELS AT INTERVALS OF 1'-6" ALONG WALLS.

PROJECT NO. P-5208D
CABARRUS COUNTY
 STATION: 10431+30.00 -M1-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CAST-IN-PLACE (CIP)
 GRAVITY RETAINING
 WALL DETAILS



HNTB HNTB NORTH CAROLINA, P.C. License No. C-1554 343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609	REVISIONS				SHEET NO. W-2 TOTAL SHEETS 2
	DRAWN BY: J. BAINE CHECKED BY: D. HAWKINS	DATE: 2/13 DATE: 2/13	NO.: 1 NO.: 2	BY: 3 BY: 4	

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