

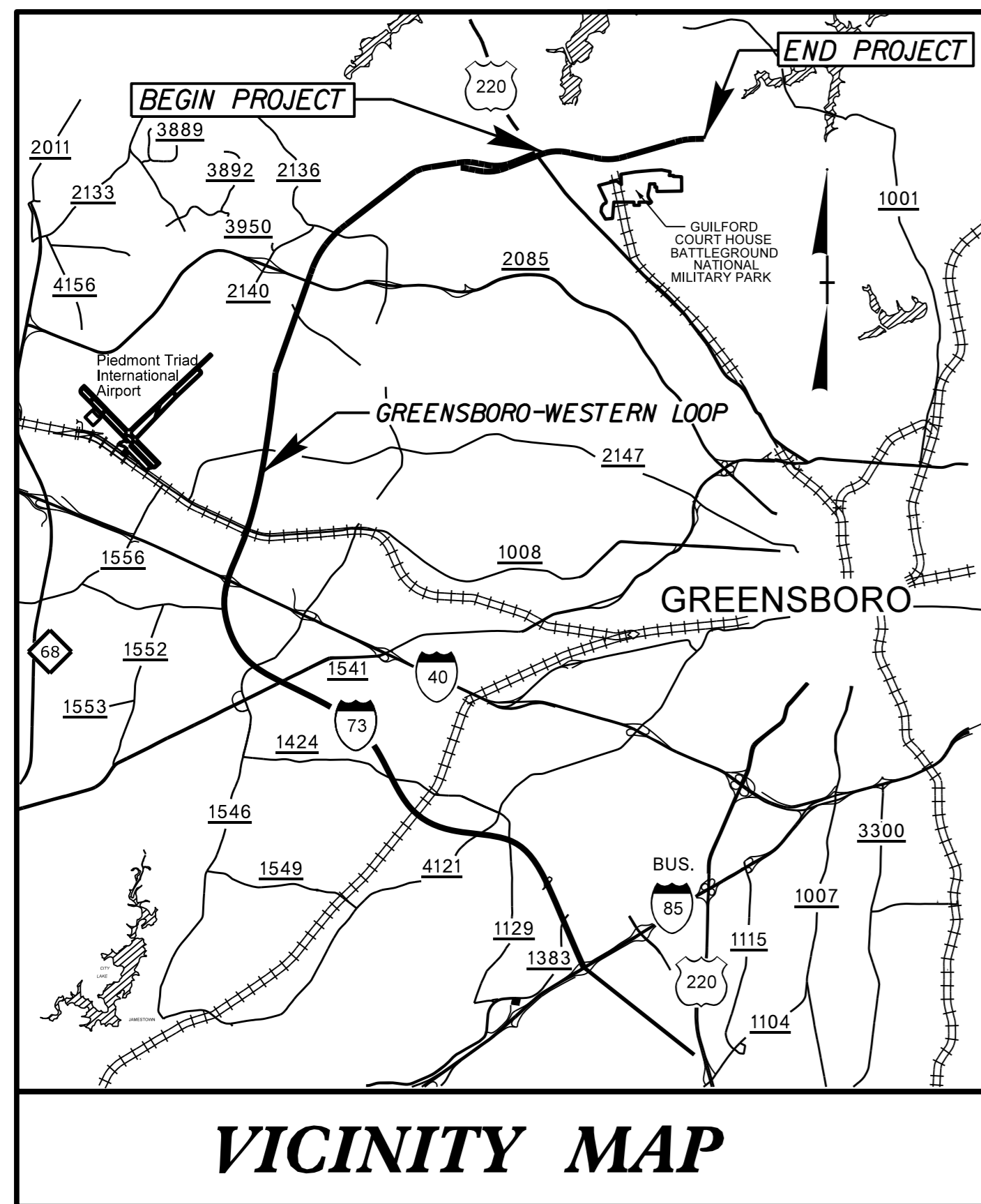
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with their signature on that page.**

**This file or an individual page
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CONTRACT: C203792 TIP PROJECT: U-2524D

STRUCTURES



VICINITY MAP

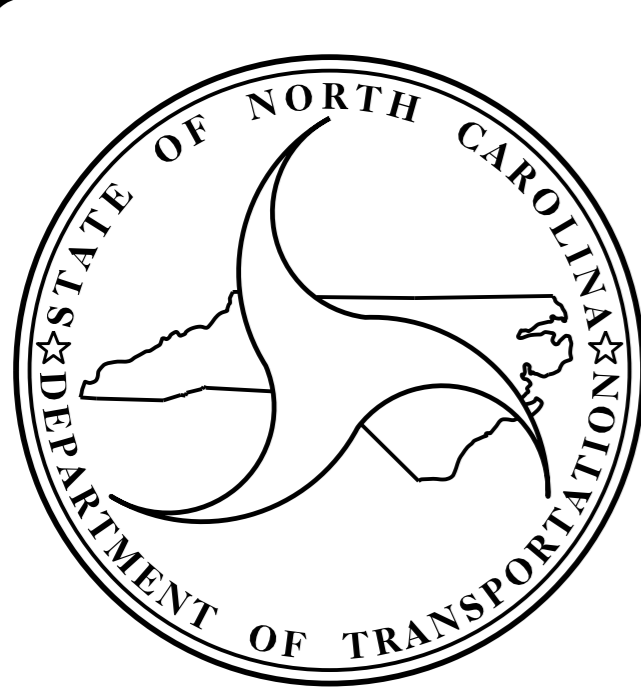
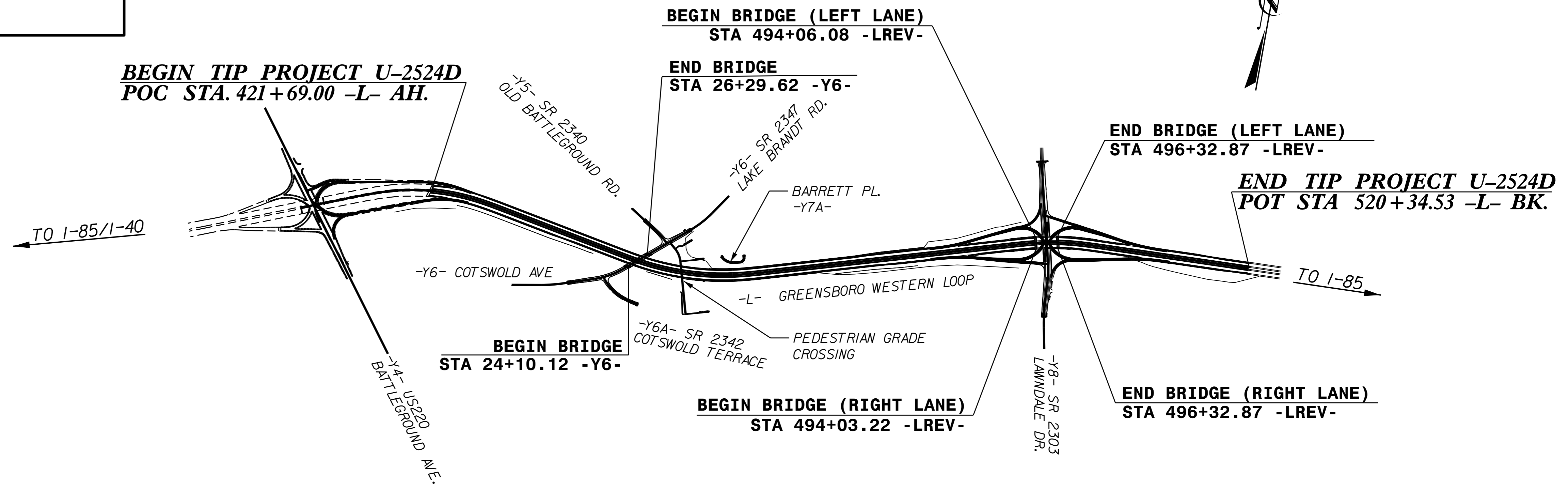
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

LOCATION: GREENSBORO-WESTERN LOOP FROM NORTH OF US 220 (BATTLEGROUND AVENUE) TO NORTH OF SR 2303 (LAWDALE DRIVE).

TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNING, TRAFFIC SIGNALS, ITS, STRUCTURES, CULVERTS, RETAINING WALLS AND SOUND BARRIER WALLS.

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2524D		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34820.2.19	NHF-0708(53)	P.E.	
34820.2.19	NHF-0708(53)	R/W & UTILITIES	
34820.3.30	NHF-0708(53)	CONST.	



DESIGN DATA

ADT 2014 =	41,958
ADT 2040 =	71,908
DHV =	10 %
D =	60 %
T =	15 % *
V =	70 MPH
* TTST 5% DUAL 10%	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-2524D	= 1.799 MILES
LENGTH STRUCTURES TIP PROJECT U-2524D	= 0.044 MILES
TOTAL LENGTH OF TIP PROJECT U-2524D	= 1.843 MILES

Prepared in the Office of:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

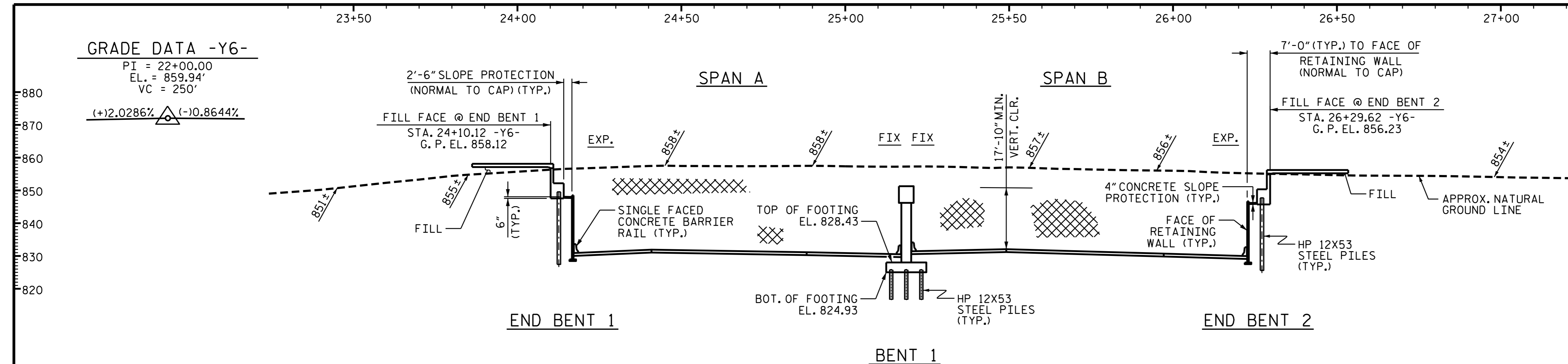
2012 STANDARD SPECIFICATIONS

LETTING DATE : SEP. 20, 2016

M. J. BAILEY, P.E. PROJECT ENGINEER	 8000 Regency Parkway, Suite 600 Cary, North Carolina 27518 NC License No. : F-1084
T. H. FANG, P.E. PROJECT DESIGN ENGINEER	

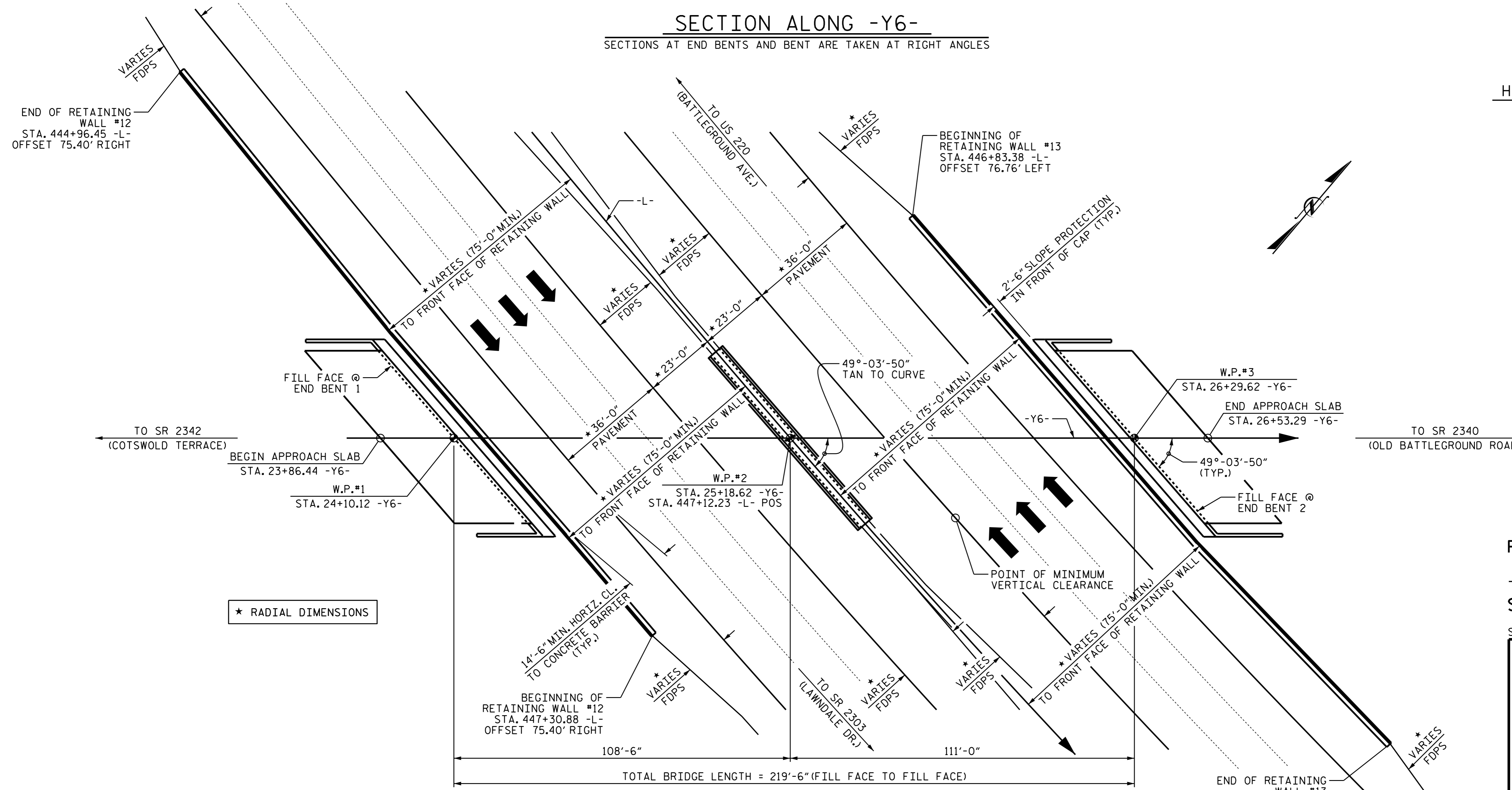
GRADE DATA -Y6-

PI = 22+00.00
 EL. = 859.94'
 VC = 250'
 (+)2.0286% (-)0.8644%



HORIZONTAL CURVE DATA -L-

PI = 446+94.21 -L-
 OS = 4°-00'-38.5"
 Ls = 420.'
 LT = 280.07'
 ST = 140.07'



PROJECT NO. U-2524D
 GUILFORD COUNTY
 STATION: 25+18.62 -Y6- = 447+12.23 -L- POS
 SHEET 1 OF 2 BRIDGE #1219

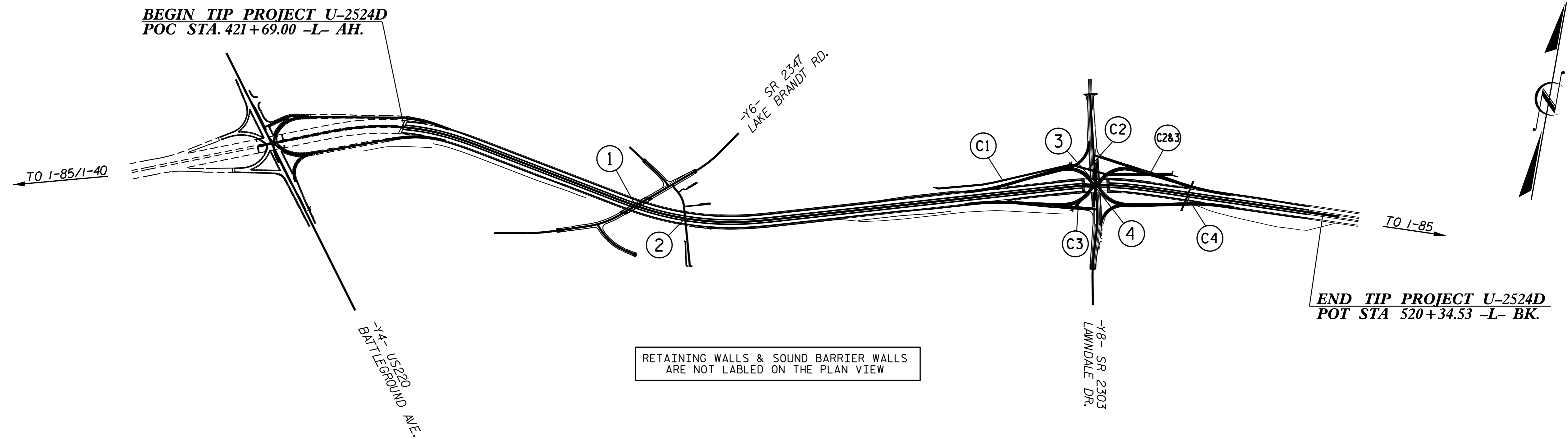
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON SR 2347 OVER GREENSBORO WESTERN LOOP BETWEEN SR 2342 & SR 2340

DRAWN BY: P. K. NEWTON DATE: 4/6/16
 CHECKED BY: T. H. FANG DATE: 5/3/16
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 5/12/16

PILES NOT SHOWN IN PLAN VIEW. FOR RETAINING WALL DETAILS, SEE "SOIL NAIL WALL" SHEETS W-4 THRU W-8.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-1
1			3			TOTAL SHEETS
2			4			33



BRIDGE				
INDEX NO.	BRG. NO	STATION	DESCRIPTION	SHEET NO.
①	*1219	447+12.23 -L- POS = 25+18.62 -Y6- POT	2-SPAN 54" PCG	S1-1 THRU S1-33
②	*1182	452+42.11 -L- POC = 13+62.84 -PED- POT	PEDESTRIAN BRIDGE	S2-1 THRU S2-33
③	*1180	495+22.05 -LREV- POC = 18+78.75 -Y8- POT	LEFT LANE	S3-1 THRU S3-35
④	*1181	495+22.05 -LREV- POC = 18+78.75 -Y8- POT	RIGHT LANE	S4-1 THRU S4-35

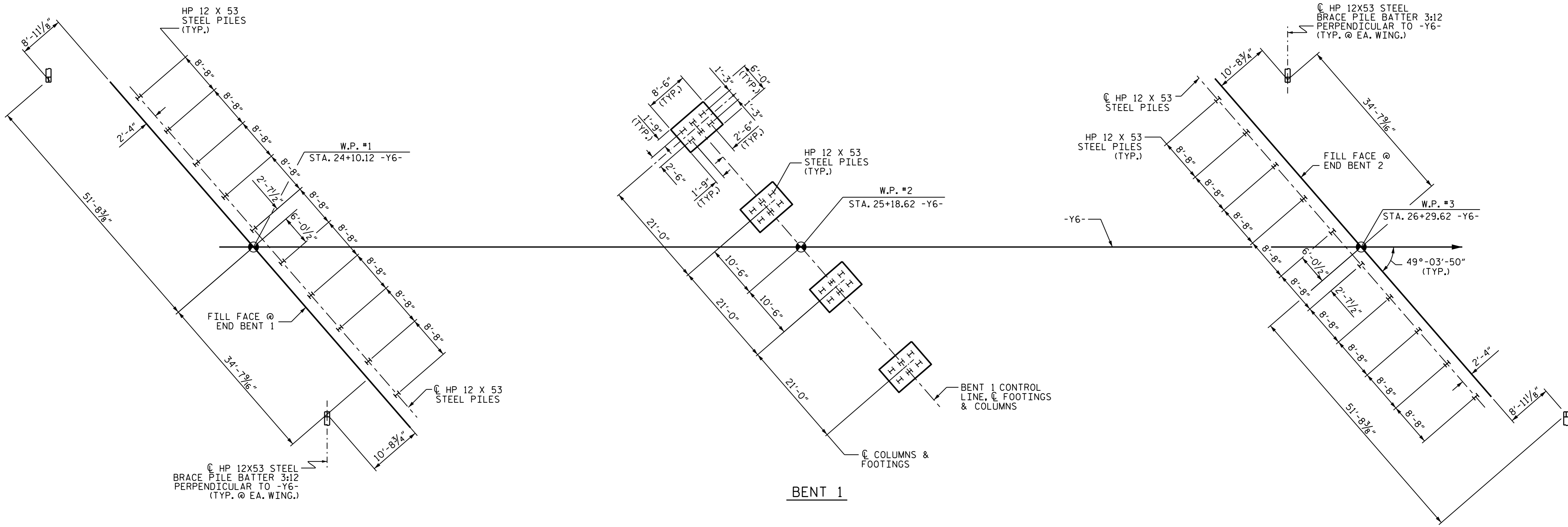
CULVERT				
INDEX NO.	STR. NO	STATION	DESCRIPTION	SHEET NO.
①	--	478+64.40 -L- 106.48' LT.	SINGLE 8' X 7' RCBC	C-1 THRU C-6
②	--	1+26.46 -SPBY8-	SINGLE 10' X 7' RCBC	C-7 THRU C-13
②&3	1223	9+04.29 -RPAY8-	DOUBLE 10' X 7' RCBC COMBINATION OF CULVERTS #2 & #3	C-14 THRU C-22
③	--	2+22.93 -SPCY8-	SINGLE 10' X 7' RCBC	C-23 THRU C-27
④	--	505+19.00 -L-	SINGLE 7' X 8' RCBC	C-28 THRU C-34

RETAINING WALL INDEX			
WALL NO.	STATION to STATION	WALL TYPE	SHEET NO.
④	425+00 TO 442+00 -L-	SOIL NAIL WALL	W-9, W-10 & W-13
⑤	448+50 TO 451+50 -L-	SOIL NAIL WALL	W-10 & W-13
⑥	471+00 TO 480+00 -L-	SOIL NAIL WALL	W-11 & W-13
⑦	491+00 -LREV-, (72.29, RT) TO 491+00 -LREV-, (72.29, LT)	MSE WALL	W-14, W-16, W-17 & W-18
⑧	491+00 -LREV-, (72.29, LT)	MSE WALL	W-14, W-16, W-17 & W-18
⑨	498+00 -LREV-, (72.29', RT) TO 501+00 -LREV-, (72.29', LT)	MSE WALL	W-15, W-16, W-17 & W-18
⑩	501+00 -LREV-, (72.29', LT)	MSE WALL	W-15, W-16, W-17 & W-18
⑪	453+00 TO 455+20 -L-	SOIL NAIL WALL	W-12 & W-13
⑫	444+96.45 TO 447+30.88 -L-	SOIL NAIL WALL MSE (ALTERNATIVE)	W-4 TO W-8
⑬	446+83.38 TO 449+18.38 -L-	SOIL NAIL WALL MSE (ALTERNATIVE)	W-4 TO W-8
⑭	12+71.21 TO 12+97.75 -PED-	SOIL NAIL WALL	W-1 & W-3
⑮	14+27.65 TO 14+50.00 -PED-	SOIL NAIL WALL	W-2 & W-3
⑯	23+25.00 TO 24+00.00 -Y8-	SEGMENTAL GRAVITY WALL	W-19 & W-20
⑰	25+00.00 TO 25+50.00 -Y8-	SEGMENTAL GRAVITY WALL	W-19 & W-20
⑱	6+35.81 TO 5+73.18 -RPAY8-	SHEET PILE RETAINING WALL	W-21 & W-22

SOUND BARRIER WALL INDEX			
WALL NO.	STATION to STATION	WALL TYPE	SHEET NO.
①	422+43.04 TO 428+34.81 -L-	CONC. PILE	SW-1
②	8+84.33 -RPDY4- TO 434+06.08 -L-	CONC. PILE	SW-2
③	434+58.03 TO 445+70.17 -L-	CONC. PILE	SW-3
⑥	452+79.17 -L- TO 0+48.51 -SPBY8-	CONC. PILE	SW-4
⑦	456+19.17 -L- TO 1+17.80 -SPCY8-	CONC. PILE	SW-5
⑧	9+83.78 -RPAY8- TO 514+14.10 -L-	CONC. PILE	SW-6
⑨	3+90.14 -SPDY8- TO 525+21.66 -L-	CONC. PILE	SW-7
STANDARD SHEETS			SW-8 AND SW-9

PROJECT NO. U-2524D
GUILFORD COUNTY

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



FOUNDATION LAYOUT
 DIMENSIONS LOCATING PILES ARE SHOWN TO THE PILE CENTERLINE.

NOTES

- FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
- PILES AT END BENT 1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 125 TONS PER PILE.
- DRIVE PILES AT END BENT 1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 210 TONS PER PILE.
- PILES AT BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 125 TONS PER PILE.
- DRIVE PILES AT BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 210 TONS PER PILE.
- DRIVE PILES AT END BENT 1 AND 2 BEFORE BEGINNING CONSTRUCTION OF EITHER THE SOIL NAIL OR MSE (ALTERNATE) ABUTMENT WALLS.
- REINFORCED BRIDGE APPROACH FILL IS REQUIRED AT END BENT 1 AND 2 FOR SOIL NAIL WALL. FOR BRIDGE APPROACH FILL FOR MSE WALL (ALTERNATIVE), SEE MSE WALL SPECIAL PROVISIONS.

PROJECT NO. U-2524D
GUILFORD COUNTY
 STATION: 25+18.62 -Y6-
 SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON SR 2347 OVER
 GREENSBORO WESTERN LOOP
 BETWEEN SR 2342 & SR 2340



DocuSigned by:
 Ting Fang
 E720840087435... 7/1/2016
 DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-2
1			3			TOTAL SHEETS
2			4			33

DRAWN BY : P.N.HOLDER DATE : 1/12/16
 CHECKED BY : T. H. FANG DATE : 5/3/16
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE : 5/12/16

— TOTAL BILL OF MATERIAL —

	FOUNDATION EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS		HP 12 X 53 STEEL PILES		TWO BAR METAL RAIL	1'-2" X 3'-2 3/4" CONCRETE PARAPET	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	FOAM JOINT SEALS
	LUMP SUM	SO. FT.	SO. FT.	CU. YDS.	LUMP SUM	LBS.	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	LIN. FT.	LIN. FT.	SO. YDS.	LUMP SUM	LUMP SUM
SUPERSTRUCTURE		12,481	12,342					16	1,705.95			416.24	433.24			
END BENT 1				86.1		10,102				12	510			23		
BENT 1	LUMP SUM			116.8		16,215	1,588			24	720					
END BENT 2				85.2		10,100				12	480			23		
TOTAL	LUMP SUM	12,481	12,342	288.1	LUMP SUM	36,417	1,588	16	1,705.95	48	1,710	416.24	433.24	46	LUMP SUM	LUMP SUM

NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
 FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
 THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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 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 SPICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

ALL PAVEMENT MARKING WILL BE IN ACCORDANCE WITH THE PAVEMENT MARKING PLANS AND SHALL PROVIDE FOR BICYCLES.

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 ELEVATIONS AND CLEARANCES SHOWN ON THE PLANS AT THE POINTS OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATION(S) ON THE PROPOSED PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

WORK SHALL NOT BE STARTED ON THIS BRIDGE UNTIL ROADWAY SECTION HAS BEEN EXCAVATED.

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

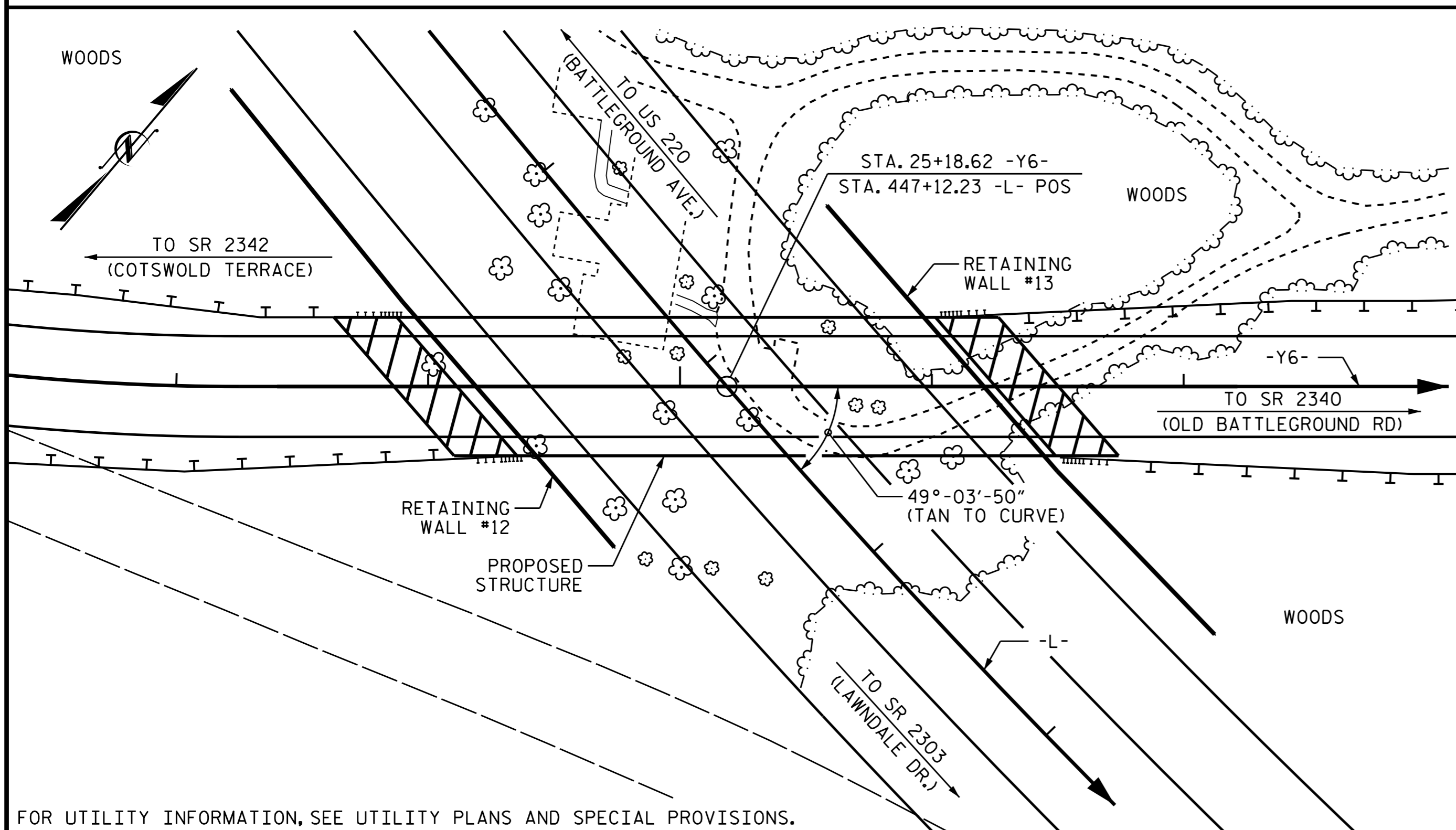
FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

BM #14: RR SPIKE IN 10" POPLAR, 89.26' N 29°-20'-41.8" W, STA. 10+00.00 -Y5-, EL. 838.41'.

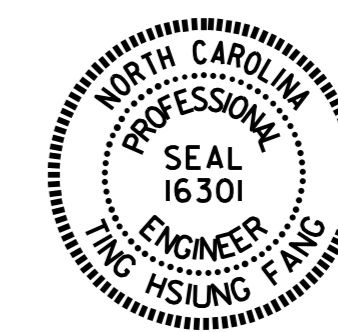


FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

PROJECT NO. U-2524D
GUILFORD COUNTY
 STATION: 25+18.62 -Y6-

SHEET 3 OF 3



DocuSigned by:
 Ting Fang 7/8/2016
 E72088405977435

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON SR 2347 OVER
 GREENSBORO WESTERN LOOP
 BETWEEN SR 2342 & SR 2340

DRAWN BY: P. K. NEWTON DATE: 11/19/15
 CHECKED BY: T. H. FANG DATE: 5/3/16
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 5/12/16

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-3
1			3			TOTAL SHEETS
2			4			33

LOAD FACTORS:

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

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ_{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 (γ_{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	1.00	--	1.75	0.574	1.74	A	EL	51.978	0.881	2.62	B	I	31.937	0.80	0.595	1.00	B	I	53.228		
	HL-93 (OPERATING)	N/A	--	2.26	--	1.35	0.574	2.26	A	EL	51.978	0.881	3.39	B	I	31.937	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.41	50.853	1.75	0.574	2.46	A	EL	51.978	0.881	3.37	B	I	74.519	0.80	0.595	1.41	A	I	51.978		
	HS-20 (OPERATING)	36.000	--	3.19	114.671	1.35	0.574	3.19	A	EL	51.978	0.881	4.37	B	I	74.519	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500	--	3.37	45.514	1.40	0.574	7.33	A	EL	51.978	0.881	10.19	B	I	74.519	0.80	0.595	3.37	A	I	51.978	
		SNGARBS2	20.000	--	2.43	48.649	1.40	0.574	5.29	A	EL	51.978	0.881	7.20	B	I	74.519	0.80	0.595	2.43	A	I	51.978	
		SNAGRIS2	22.000	--	2.27	49.974	1.40	0.574	4.94	A	EL	51.978	0.881	6.66	B	I	74.519	0.80	0.595	2.27	A	I	51.978	
		SNCOTTS3	27.250	--	1.68	45.653	1.40	0.574	3.64	A	EL	51.978	0.881	5.08	B	I	74.519	0.80	0.595	1.68	A	I	51.978	
		SNAGGRS4	34.925	--	1.37	47.819	1.40	0.574	2.98	A	EL	51.978	0.881	4.18	B	I	74.519	0.80	0.595	1.37	A	I	51.978	
		SNS5A	35.550	--	1.34	47.672	1.40	0.574	2.92	A	EL	51.978	0.881	4.22	B	I	74.519	0.80	0.595	1.34	A	I	51.978	
		SNS6A	39.950	--	1.22	48.653	1.40	0.574	2.65	A	EL	51.978	0.881	3.84	B	I	74.519	0.80	0.595	1.22	A	I	51.978	
		SNS7B	42.000	--	1.16	48.690	1.40	0.574	2.52	A	EL	51.978	0.881	3.75	B	I	74.519	0.80	0.595	1.16	A	I	51.978	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000	--	1.48	48.887	1.40	0.574	3.22	A	EL	51.978	0.881	4.58	B	I	74.519	0.80	0.595	1.48	A	I	51.978	
		TNT4A	33.075	--	1.48	49.102	1.40	0.574	3.23	A	EL	51.978	0.881	4.47	B	I	74.519	0.80	0.595	1.48	A	I	51.978	
		TNT6A	41.600	--	1.20	50.011	1.40	0.574	2.61	A	EL	51.978	0.881	3.96	B	I	74.519	0.80	0.595	1.20	A	I	51.978	
		TNT7A	42.000	--	1.20	50.487	1.40	0.574	2.61	A	EL	51.978	0.881	3.89	B	I	74.519	0.80	0.595	1.20	A	I	51.978	
		TNT7B	42.000	--	1.23	51.605	1.40	0.574	2.67	A	EL	51.978	0.881	3.67	B	I	74.519	0.80	0.595	1.23	A	I	51.978	
		TNAGRIT4	43.000	--	1.18	50.735	1.40	0.574	2.57	A	EL	51.978	0.881	3.56	B	I	74.519	0.80	0.595	1.18	A	I	51.978	
TNAGT5A	45.000	--	1.12	50.297	1.40	0.574	2.43	A	EL	51.978	0.881	3.52	B	I	74.519	0.80	0.595	1.12	A	I	51.978			
TNAGT5B	45.000	③	1.11	49.900	1.40	0.574	2.41	A	EL	51.978	0.881	3.39	B	I	74.519	0.80	0.595	1.11	A	I	51.978			

NOTES:

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

COMMENTS:

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

③ CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

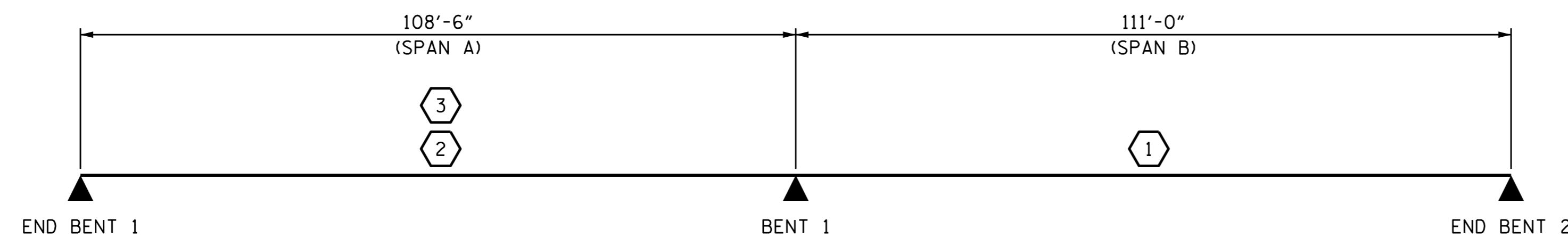
② DESIGN LOAD RATING (HS-20)

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. U-2524D
GUILFORD COUNTY
STATION: 25+18.62 -Y6-



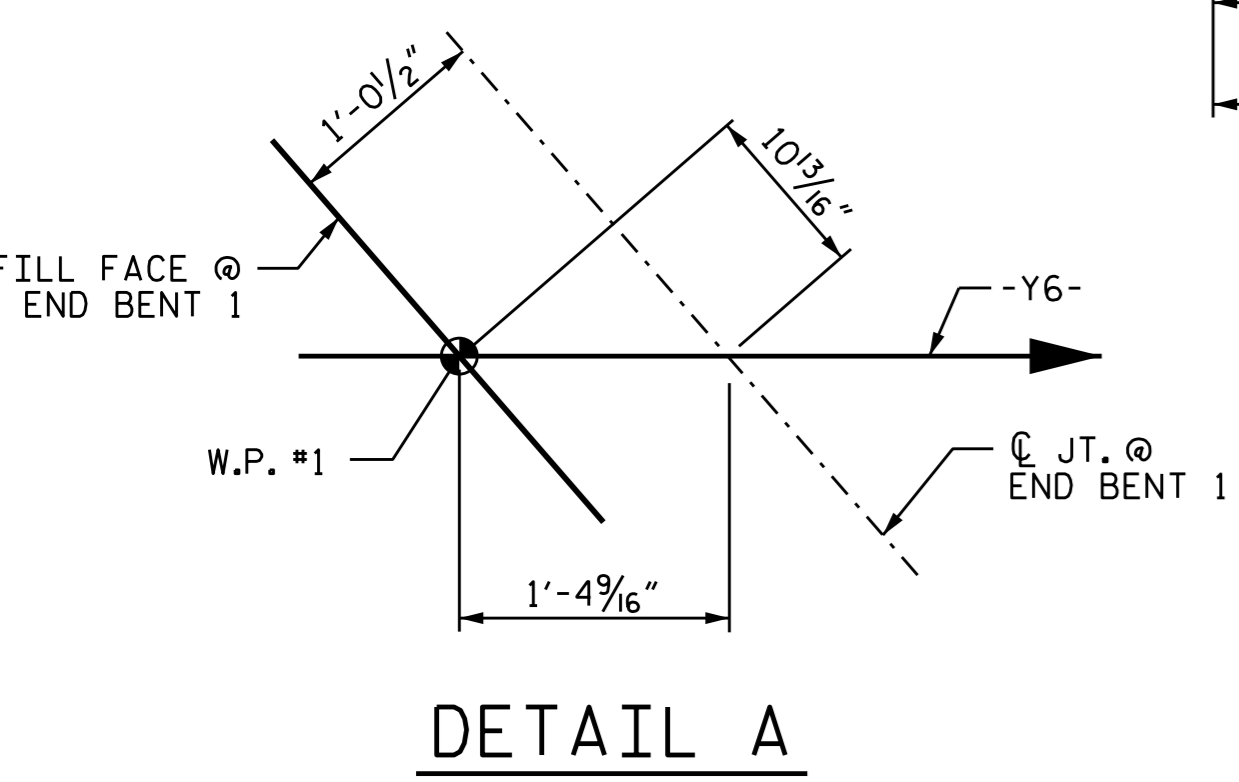
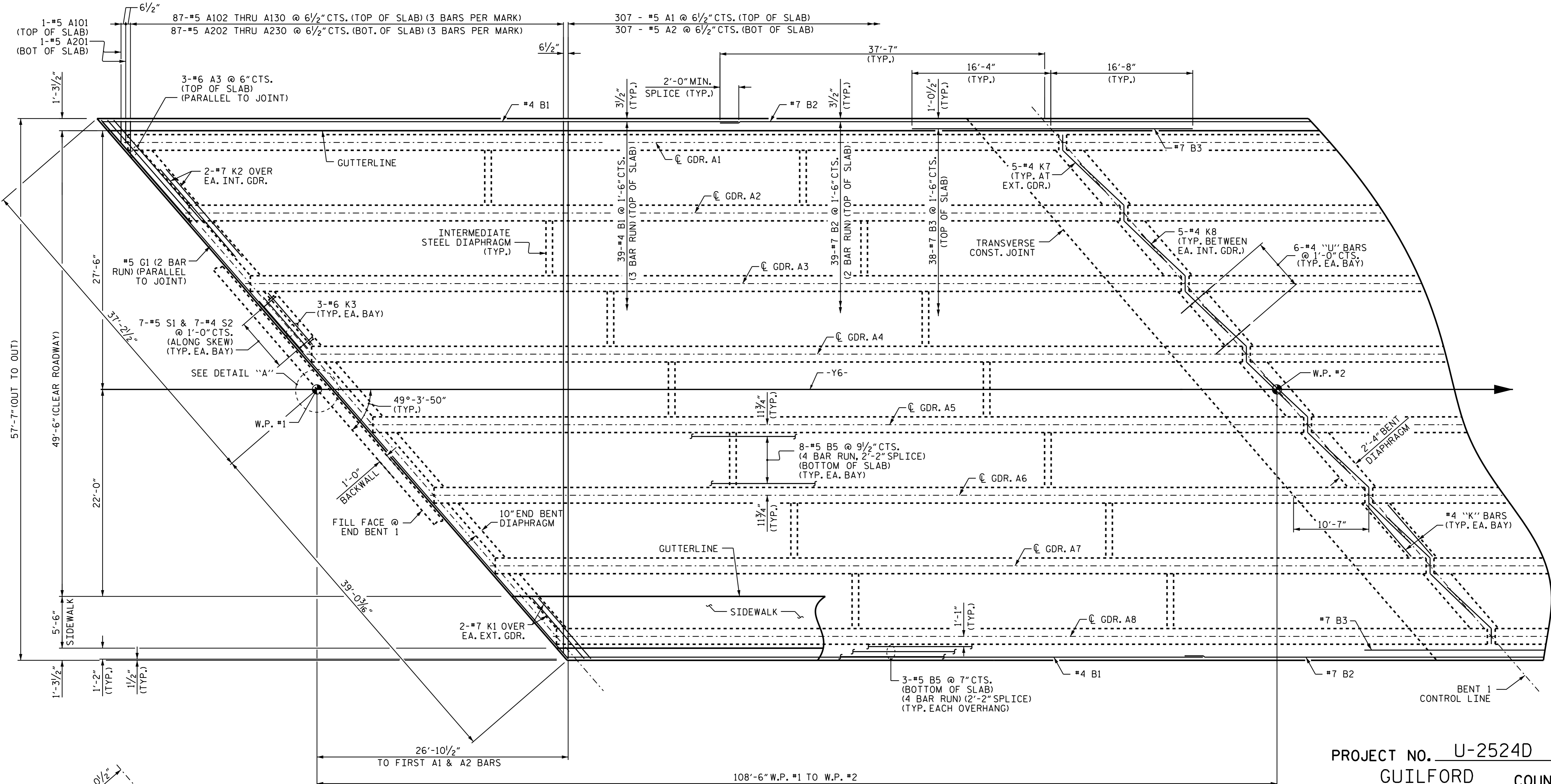
DocuSigned by:
Ting Fang 7/1/2016

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

DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 5/13/16
ASSEMBLED BY: P. K. NEWTON DATE: 2/4/16 CHECKED BY: P. N. HOLDER DATE: 4/20/16
DRAWN BY: MAA 1/08 CHECKED BY: GM/DI 2/08
REV. 11/12/08RR MAA/GM REV. 10/1/11 MAA/GM

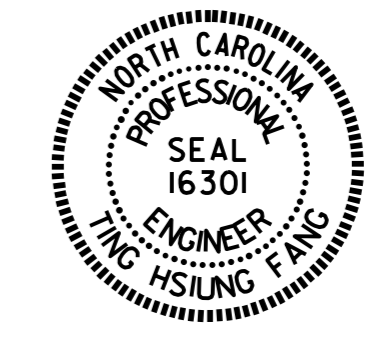
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO. S1-4
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 33
2			4			



PLAN OF SPAN A
 FOR POUR SEQUENCE AND TRANSVERSE CONSTRUCTION JOINT
 DETAIL, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.

PROJECT NO. U-2524D
GUILFORD COUNTY
 STATION: 25+18.62 -Y6-
 SHEET 1 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPAN A

DRAWN BY: P.N.HOLDER DATE: 3/16
 CHECKED BY: T.H.FANG DATE: 5/3/16
 DESIGN ENGINEER OF RECORD: P.K.NEWTON DATE: 5/12/16

DocuSigned by:
 Ting Fang
 ET2088400977435
 7/1/2016

REVISIONS						SHEET NO. S1-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 33
2			4			

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

NOTES:

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

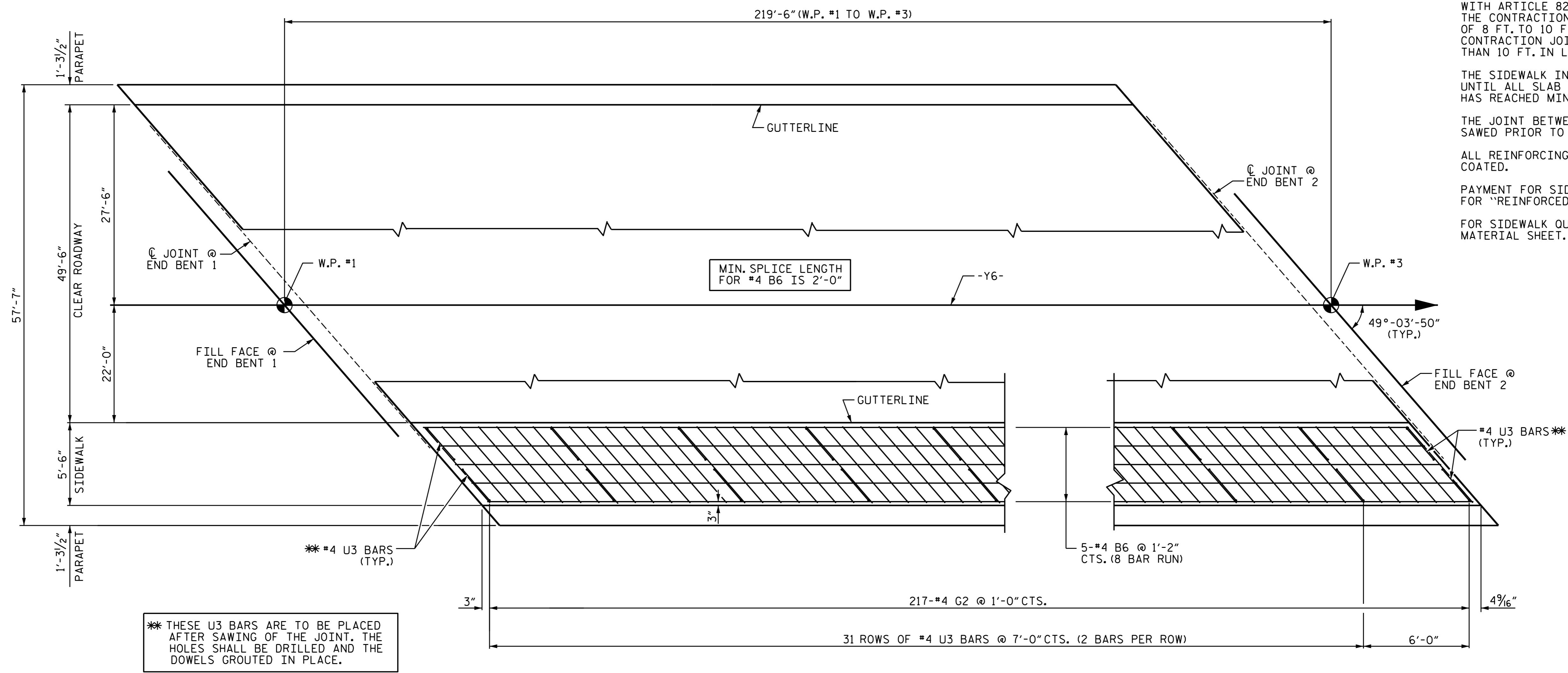
THE SIDEWALK IN THE CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.

THE JOINT BETWEEN THE DECK AND APPROACH SLAB SHALL BE SAWED PRIOR TO THE CASTING OF THE SIDEWALK.

ALL REINFORCING STEEL IN SIDEWALK SHALL BE EPOXY COATED.

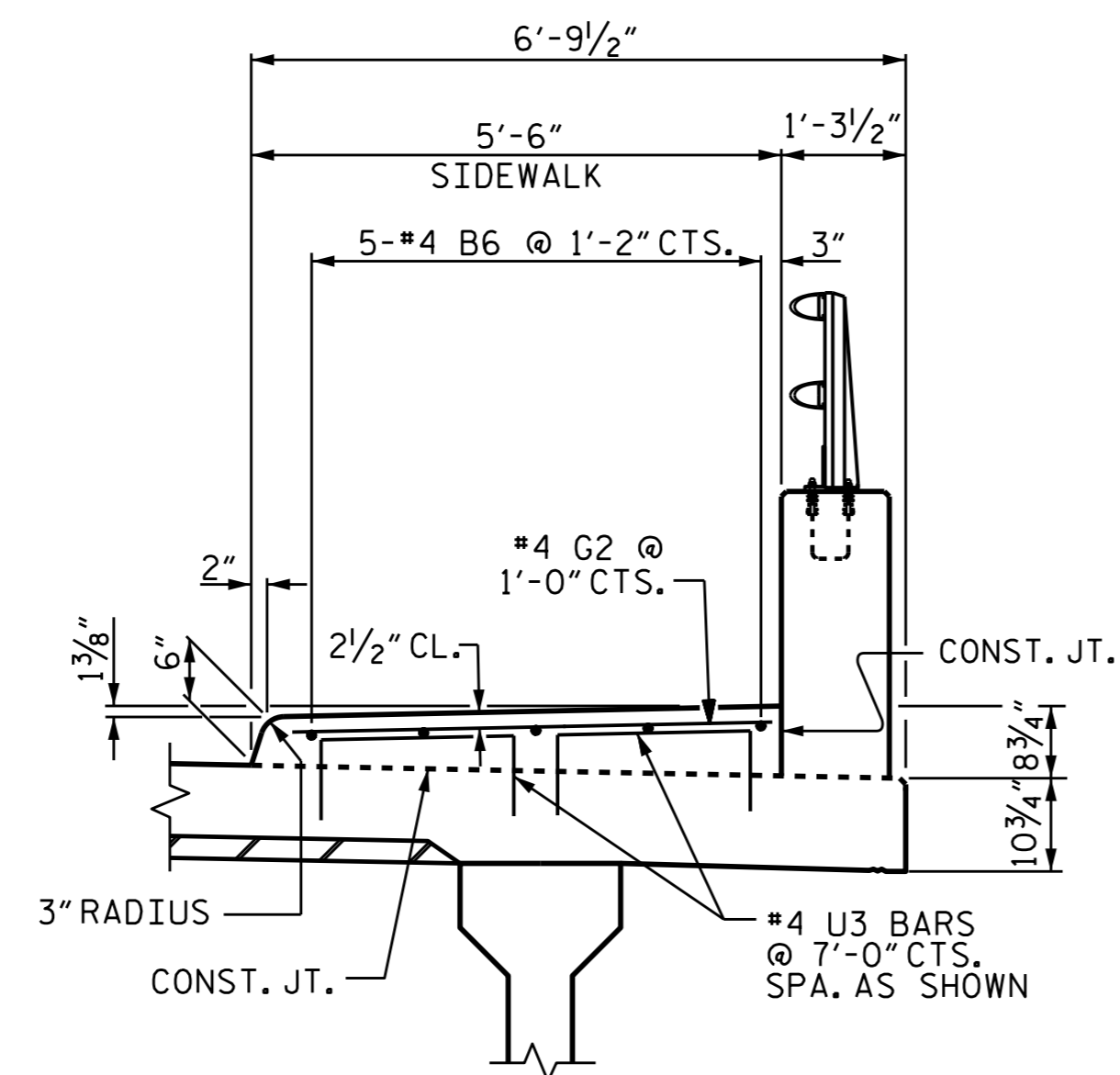
PAYMENT FOR SIDEWALK SHALL BE INCLUDED IN PAY ITEM FOR "REINFORCED CONCRETE DECK SLAB".

FOR SIDEWALK QUANTITIES, SEE SUPERSTRUCTURE BILL OF MATERIAL SHEET.



** THESE U3 BARS ARE TO BE PLACED AFTER SAWING OF THE JOINT. THE HOLES SHALL BE DRILLED AND THE DOWELS GROUTED IN PLACE.

PLAN OF SIDEWALK



SECTION THRU SIDEWALK

THE #4 U3 BARS MAY BE PUSHED INTO GREEN CONCRETE, EXCEPT AS NOTED ** ABOVE, AFTER DECK SLAB HAS BEEN SCREEDED OFF.

PROJECT NO. U-2524D
GUILFORD COUNTY
 STATION: 25+18.62 -Y6-

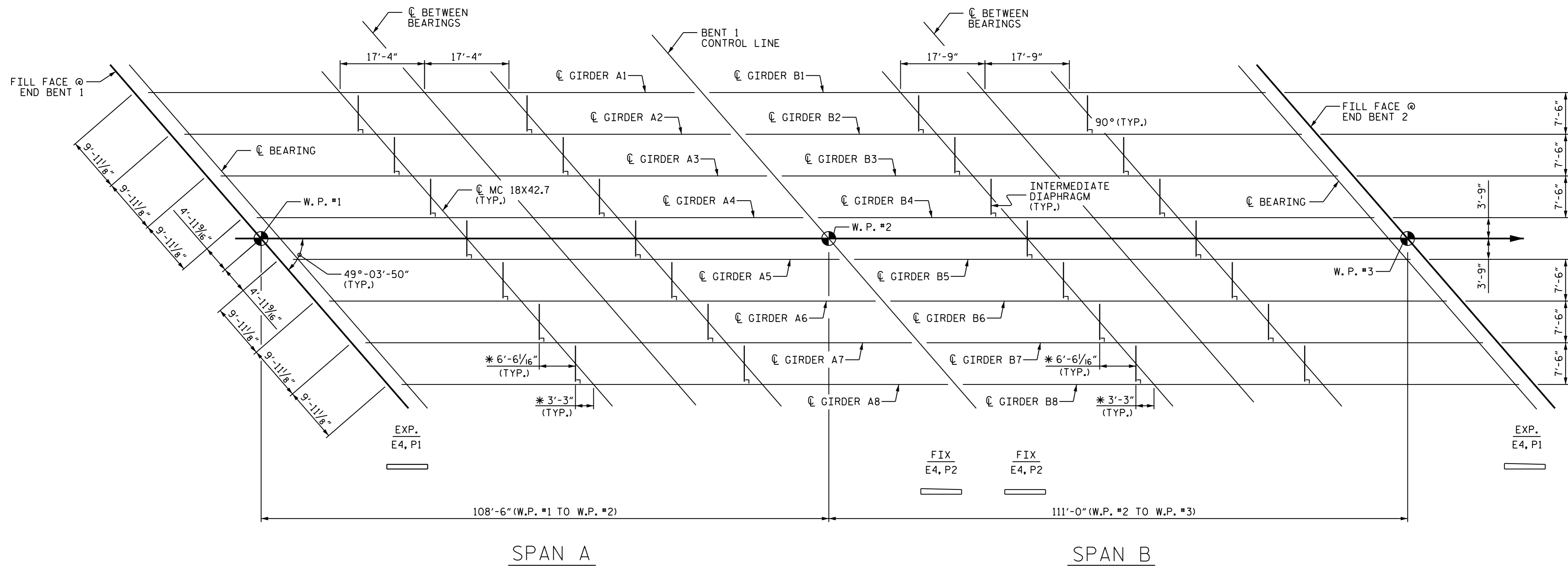
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 SIDEWALK DETAILS



DocuSigned by:
 Ting Fang 7/8/2016
 E720840097435
 DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO. S1-9
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 33
2			4			

DRAWN BY : P.N.HOLDER DATE : 1/13/16
 CHECKED BY : T. H. FANG DATE : 5/3/16
 DESIGN ENGINEER OF RECORD : P. K. NEWTON DATE : 5/12/16



FRAMING PLAN

* DIMENSIONS MEASURING INTERMEDIATE DIAPHRAGMS ARE SHOWN TO THE CL $1\frac{1}{2}$ " O FORMED HOLE IN GIRDER WEB.
 CONCRETE END AND BENT DIAPHRAGMS NOT SHOWN FOR CLARITY.

PROJECT NO. U-2524D
GUILFORD COUNTY
 STATION: 25+18.62 -Y6-



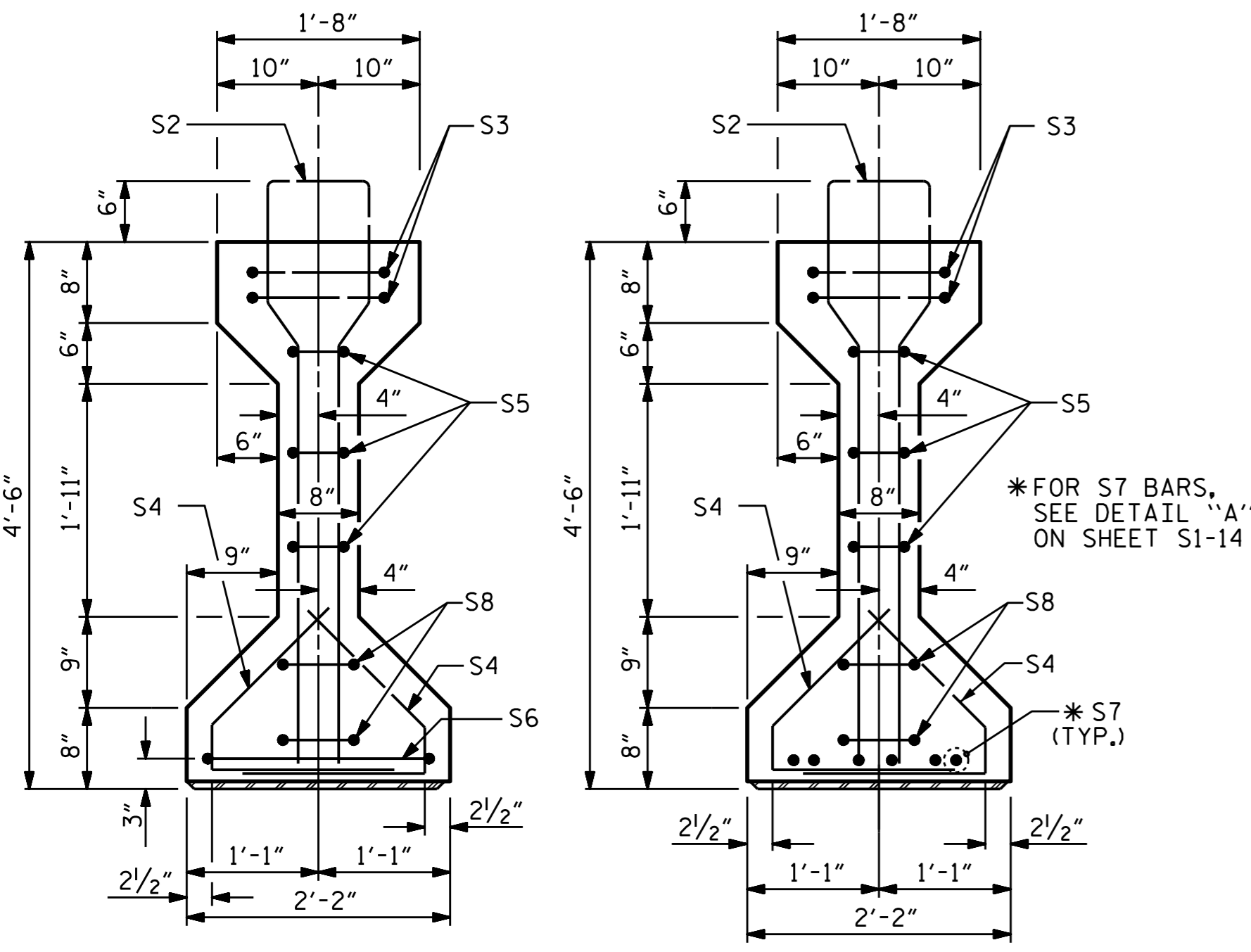
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 FRAMING PLAN

DRAWN BY : P.N.HOLDER DATE : 1/19/16
 CHECKED BY : T. H. FANG DATE : 5/3/16
 DESIGN ENGINEER OF RECORD : P. K. NEWTON DATE : 5/12/16

DocuSigned by:
 Ting Fang
 E7208400977455
 7/1/2016

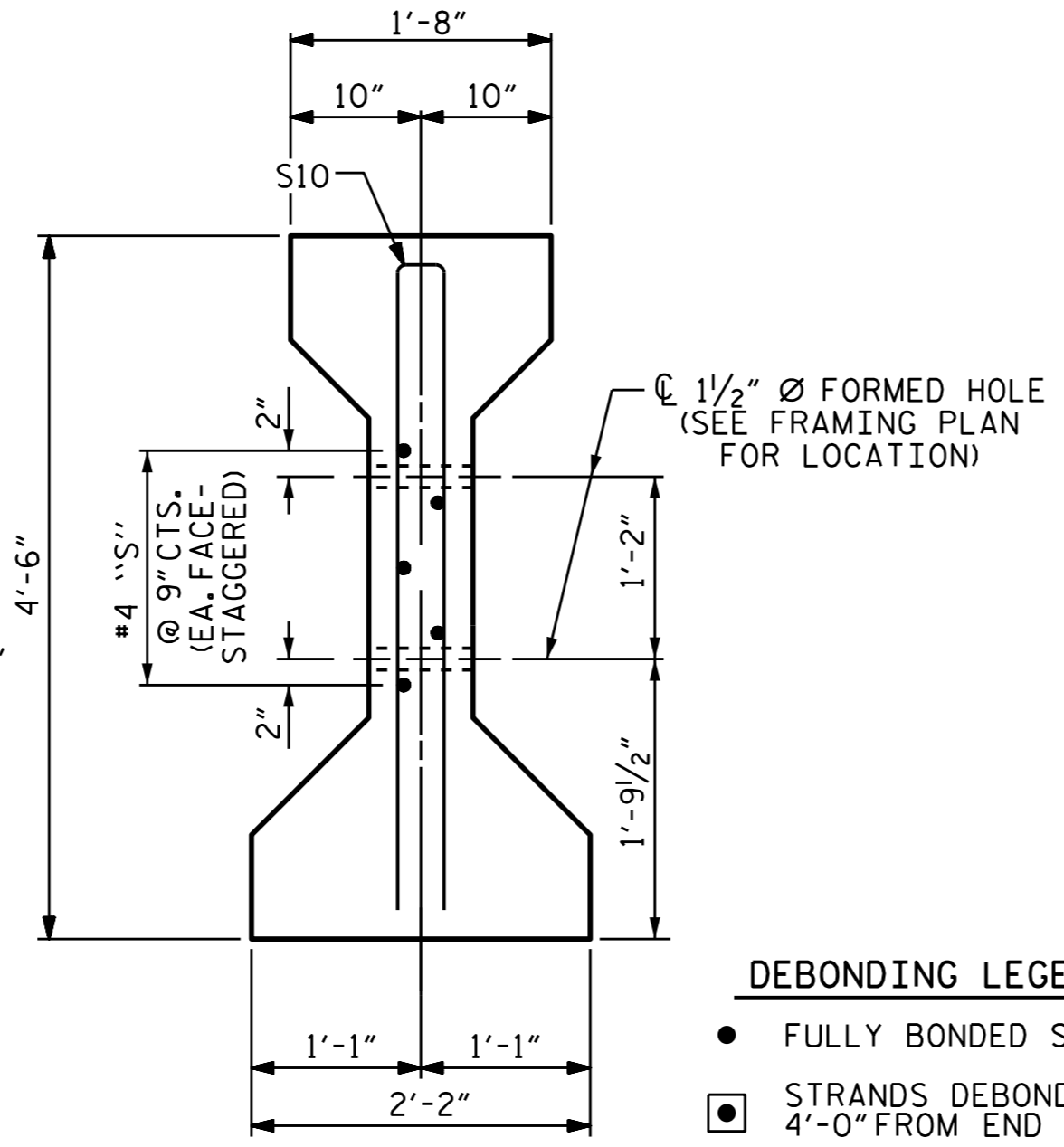
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-10	
1			3			TOTAL SHEETS	33
2			4				



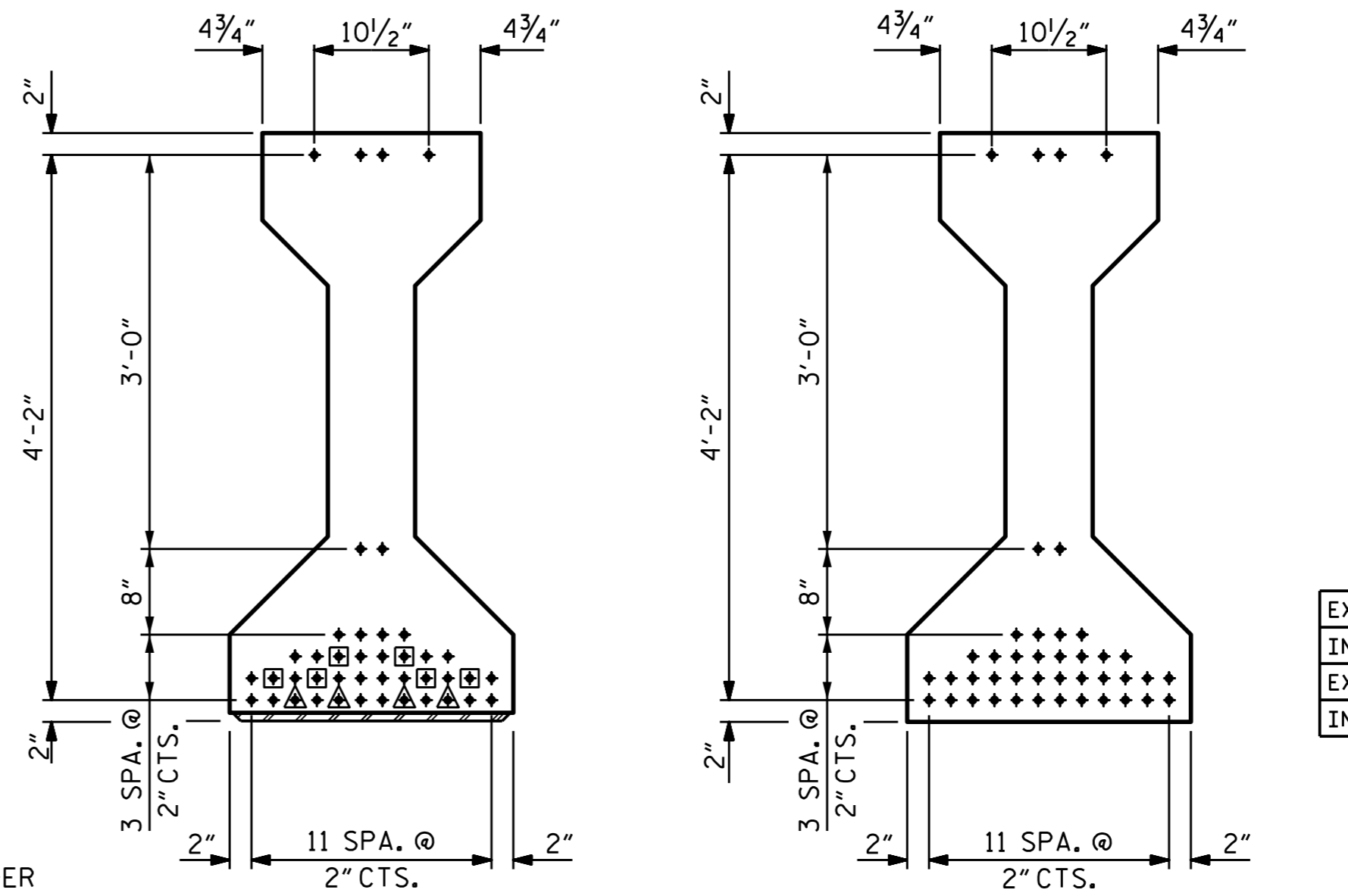
SECTION A-A

SECTION B-B

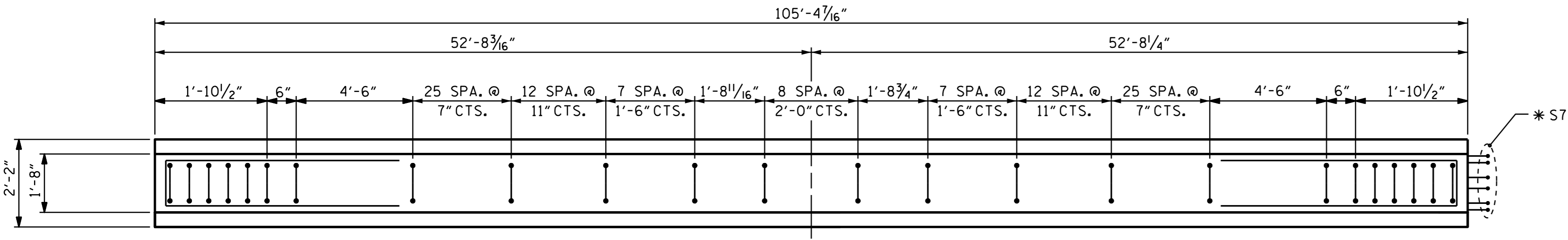


SECTION C-C
(S1 BARS NOT SHOWN)

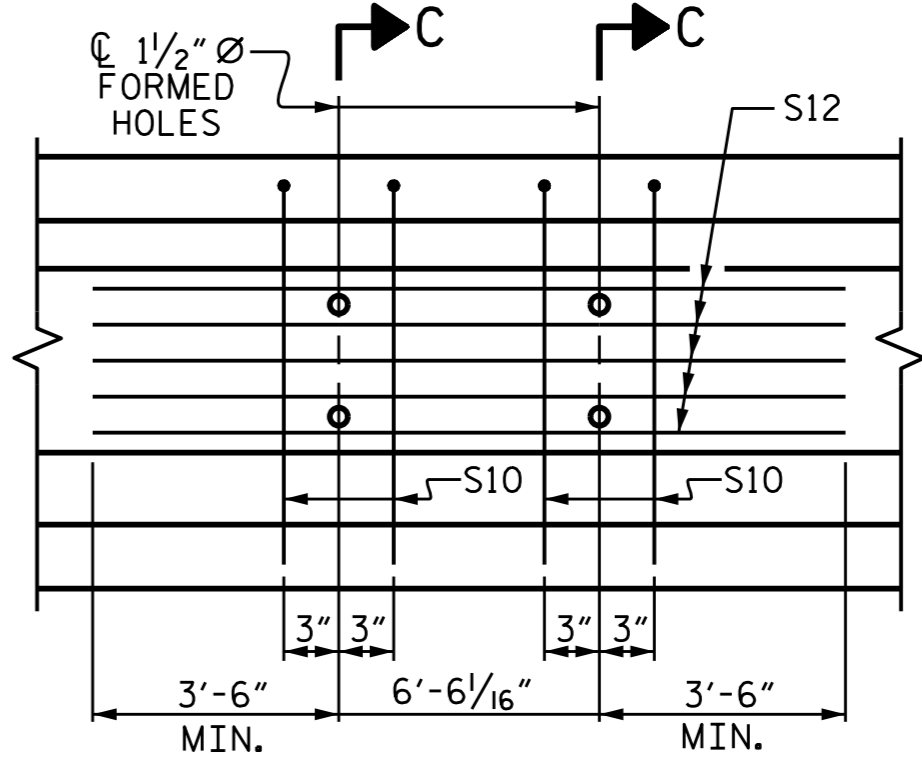
- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - ◻ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
 - ▲ STRANDS DEBONDED FOR 16'-0" FROM END OF GIRDER



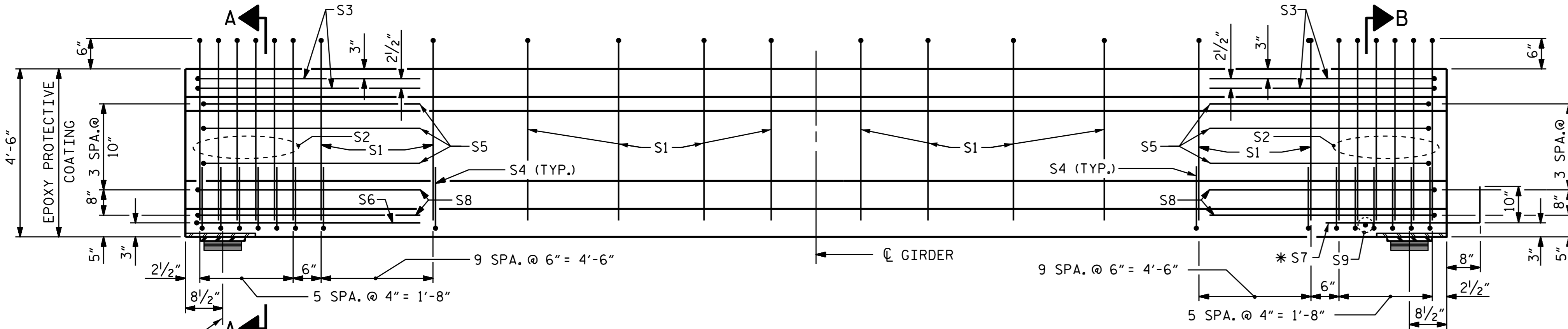
AT END OF GIRDER
AT C OF GIRDER
0.6" Ø LOW RELAXATION STRAND LAYOUT
42 STRANDS, ALL STRAIGHT, 10 DEBONDED



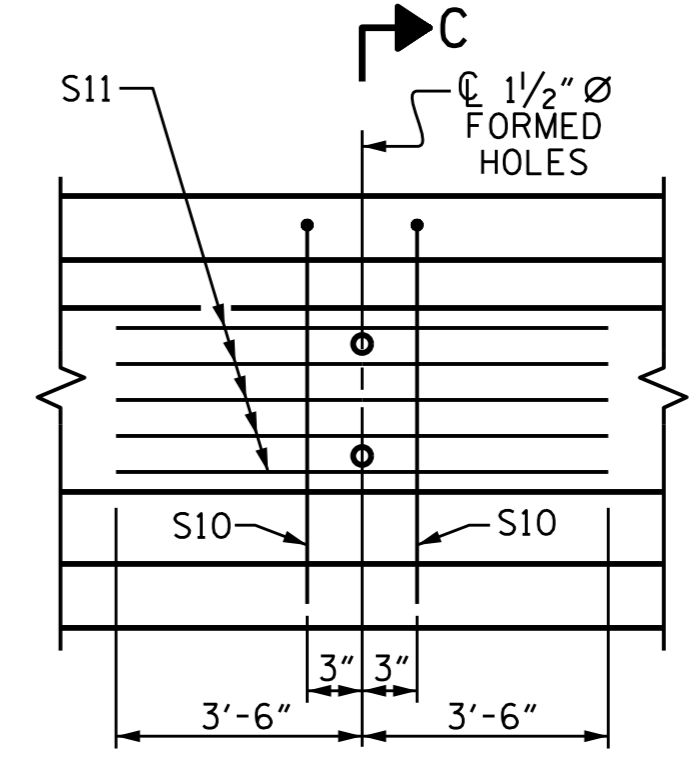
PLAN OF GIRDER



INTERIOR GIRDER



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



EXTERIOR GIRDER

PARTIAL ELEVATION
SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR 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

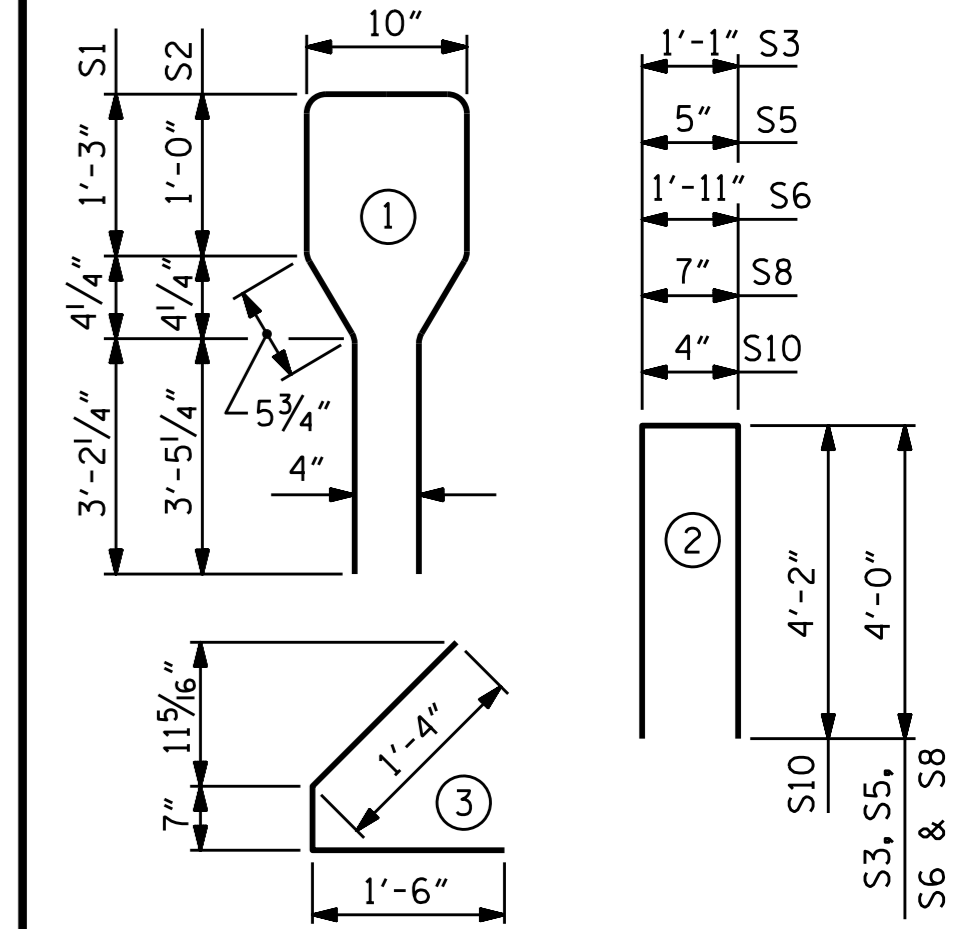
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	117	#5	1	10'-8"	1302
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	4	#5	2	8'-8"	36
S10	8	#5	2	8'-8"	72
S11	10	#4	STR	7'-0"	47
S12	10	#4	STR	13'-6"	90

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

EXTERIOR GDR.	S10	4	#5	2	8'-8"	36
INTERIOR GDR.	S10	8	#5	2	8'-8"	72
EXTERIOR GDR.	S11	10	#4	STR	7'-0"	47
INTERIOR GDR.	S12	10	#4	STR	13'-6"	90

BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

REINFORCING STEEL	8000 PSI CONCRETE	0.6" Ø L. R. STRANDS
LB.	C.Y.	No.
1,997	21.4	42

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
8	105'-4 7/16"	842.98

PROJECT NO. U-2524D
GUILFORD COUNTY
STATION: 25+18.62 -Y6-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPAN A

DESIGN ENGINEER OF RECORD: P. K. NEWTON	DATE: 5/9/2016
ASSEMBLED BY: P. K. NEWTON	DATE: 11/4/15
CHECKED BY: P. N. HOLDER	DATE: 1/7/16
DRAWN BY: ELR 8/91	REV. 5/1/06R TLA/GM
CHECKED BY: GRP 8/91	REV. 10/1/11 MAA/GM
	REV. 1/15 MAA/TMG



DocuSigned by:
Ting Fang
7/1/2016

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S1-11
2			4			TOTAL SHEETS 33

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

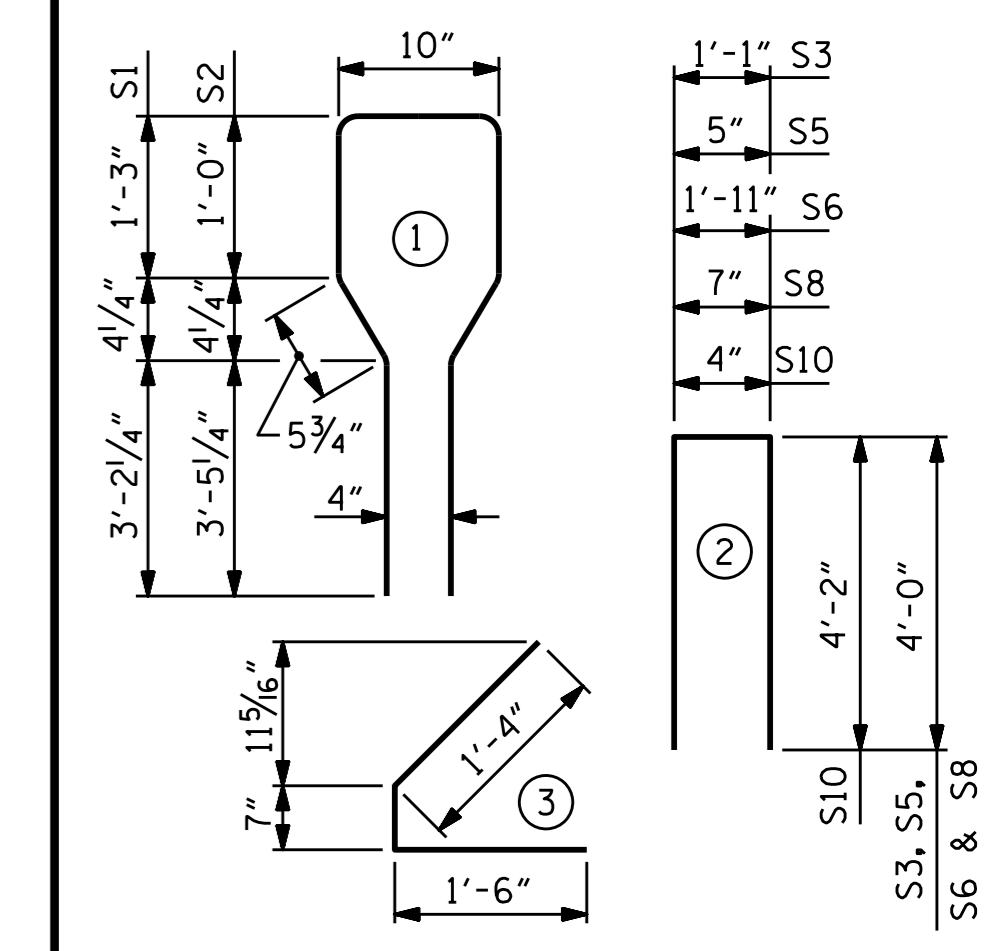
REINFORCING STEEL FOR ONE GIRDER

BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	
S1	133	#5	1	10'-8"	1480	
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	
EXTERIOR GDR.	S10	4	#5	2	8'-8"	36
INTERIOR GDR.	S10	8	#5	2	8'-8"	72
EXTERIOR GDR.	S11	10	#4	STR	7'-0"	47
INTERIOR GDR.	S12	10	#4	STR	13'-6"	90

*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	8000 PSI CONCRETE	0.6" Ø L. R. STRANDS
LB.	C.Y.	No.
2,175	21.9	46

GIRDERS REQUIRED

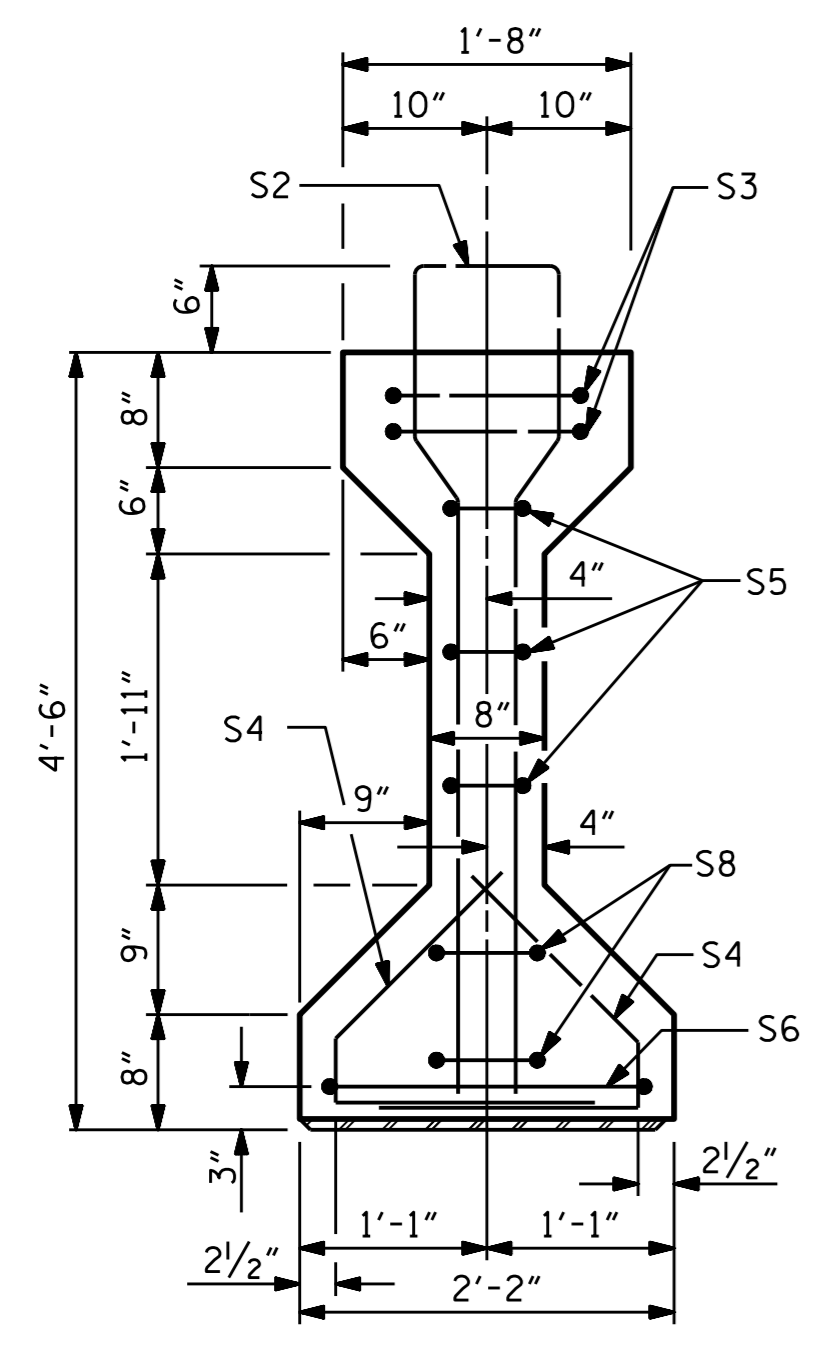
NUMBER	LENGTH	TOTAL LENGTH
8	107'-10 ⁷ / ₁₆ "	862.98

PROJECT NO. U-2524D
 GUILFORD COUNTY
 STATION: 25+18.62 -Y6-

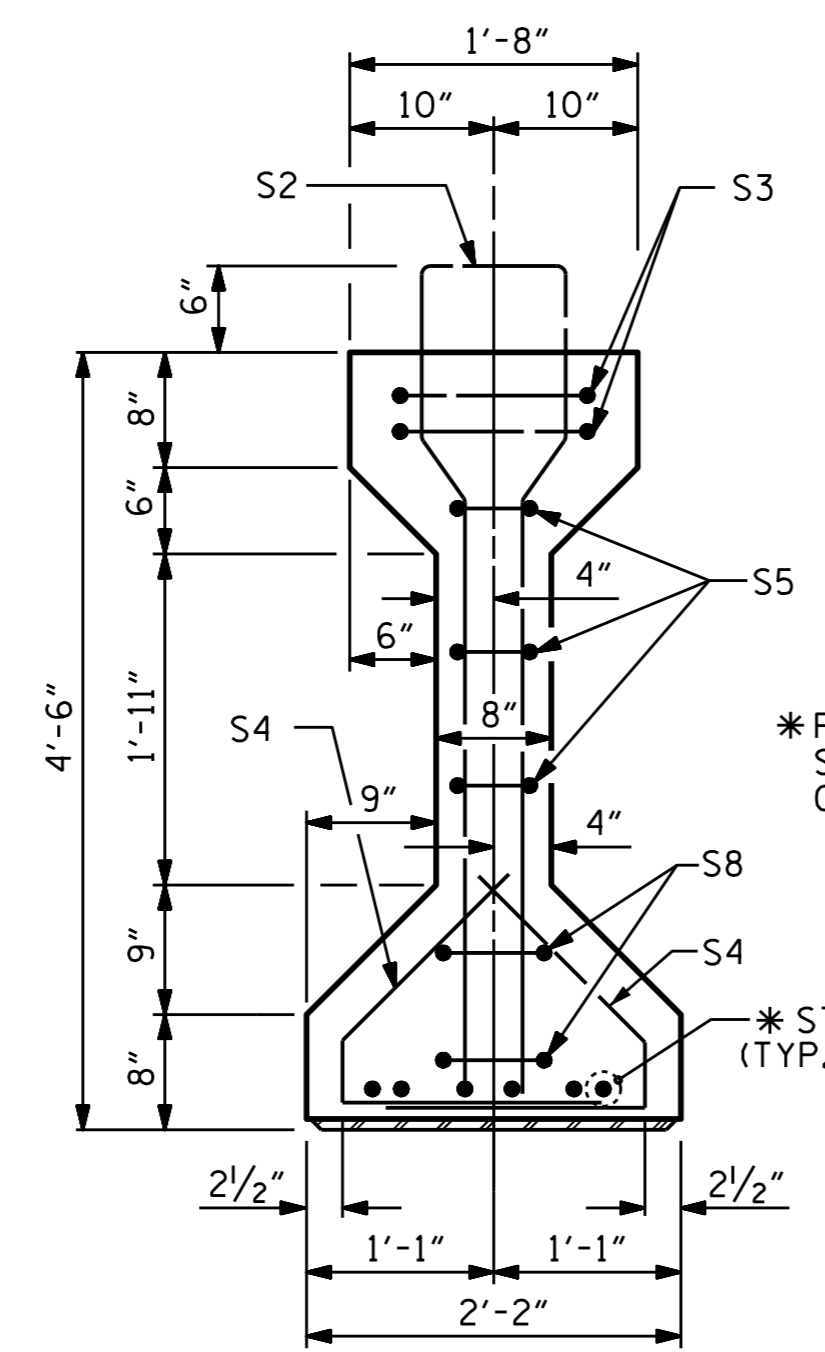
SHEET 2 OF 4

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

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S1-12
2			4			TOTAL SHEETS 33



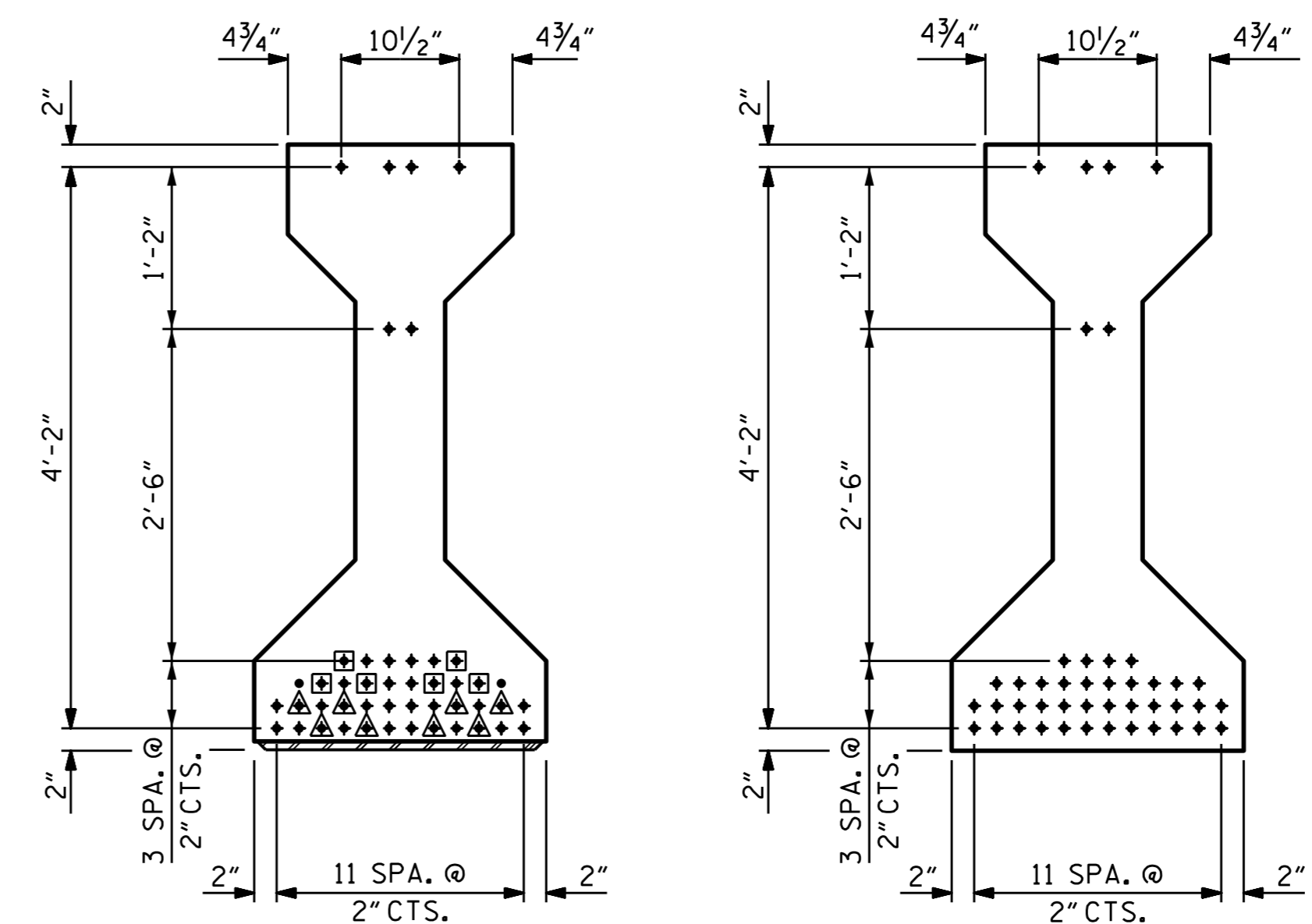
SECTION A-A



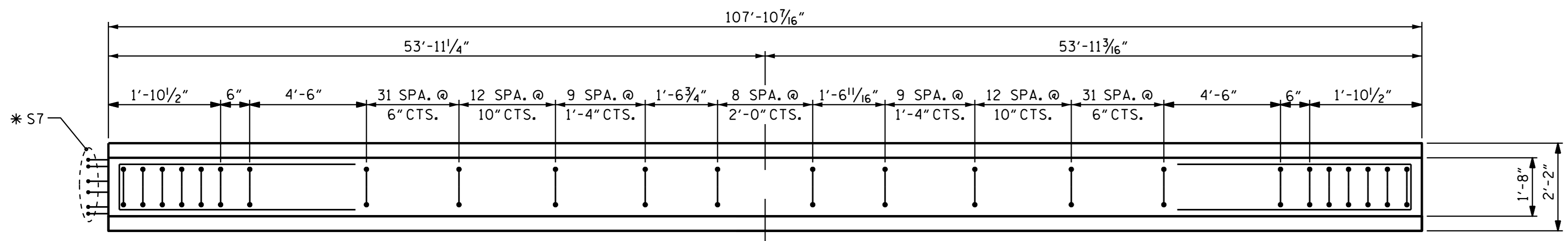
SECTION B-B

*FOR S7 BARS, SEE DETAIL "A" ON SHEET S1-14

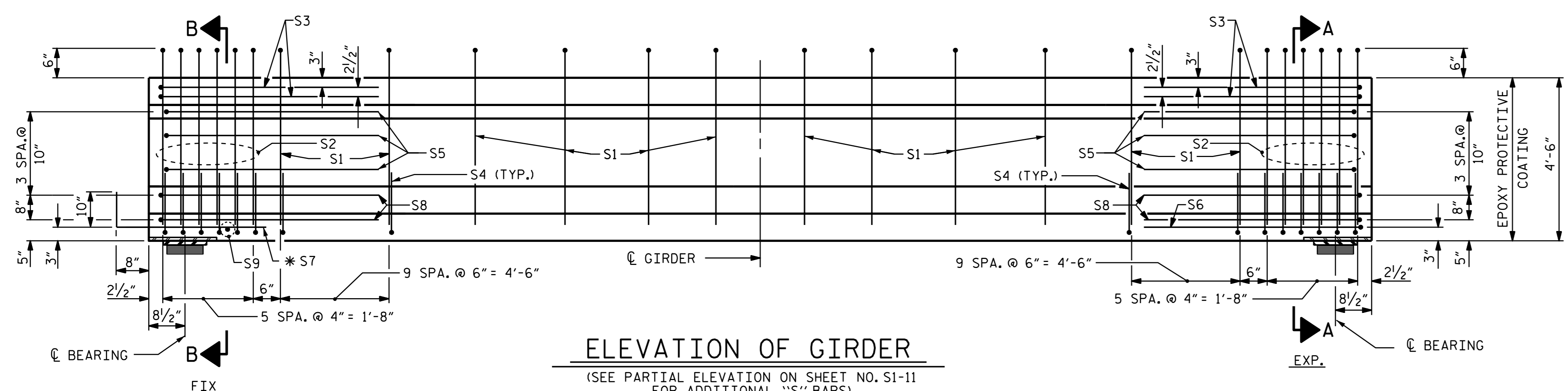
- DEBONDING LEGEND**
- FULLY BONDED STRANDS
 - ◻ STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
 - ▲ STRANDS DEBONDED FOR 16'-0" FROM END OF GIRDER



AT END OF GIRDER AT C OF GIRDER
0.6" Ø LOW RELAXATION STRAND LAYOUT
 46 STRANDS, ALL STRAIGHT, 14 DEBONDED



PLAN OF GIRDER



ELEVATION OF GIRDER
 (SEE PARTIAL ELEVATION ON SHEET NO. S1-11 FOR ADDITIONAL "S" BARS)

DESIGN ENGINEER OF RECORD: P. K. NEWTON	DATE: 5/9/2016
ASSEMBLED BY: P. K. NEWTON	DATE: 11/4/15
CHECKED BY: P. N. HOLDER	DATE: 1/8/16
DRAWN BY: ELR 8/91	REV. 5/1/06R TLA/GM
CHECKED BY: GRP 8/91	REV. 10/1/11 MAA/GM
	REV. 1/15 MAA/TMG



Designed by:
 Ting Fang 7/8/2016
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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.

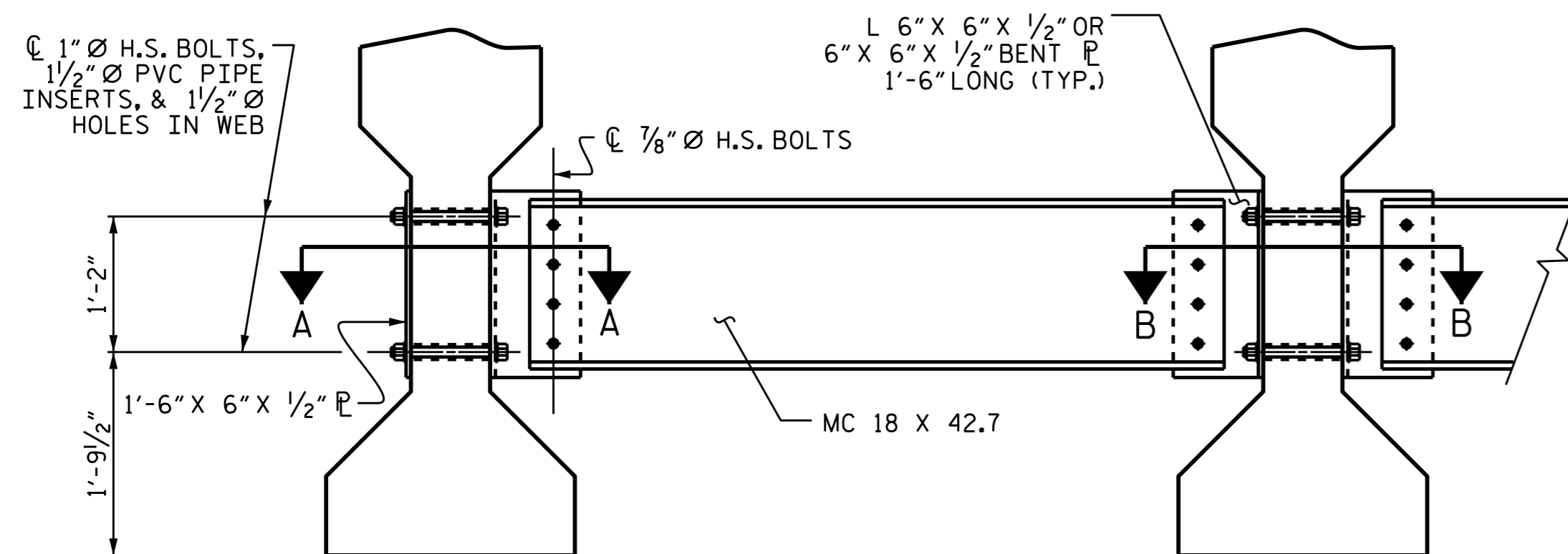
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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.

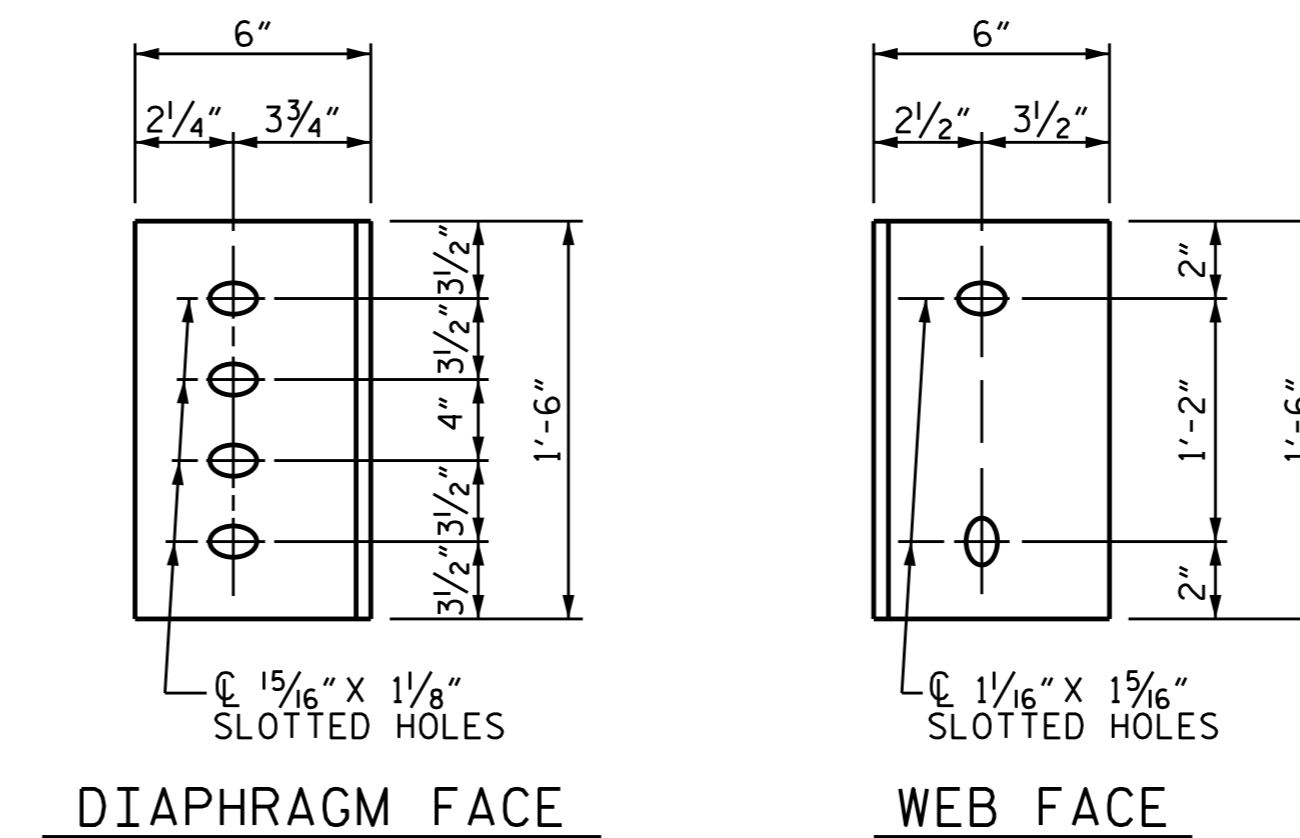
IN THE EXTERIOR BAYS, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

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



EXTERIOR GIRDER INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM



DIAPHRAGM FACE WEB FACE
CONNECTOR ANGLE DETAILS

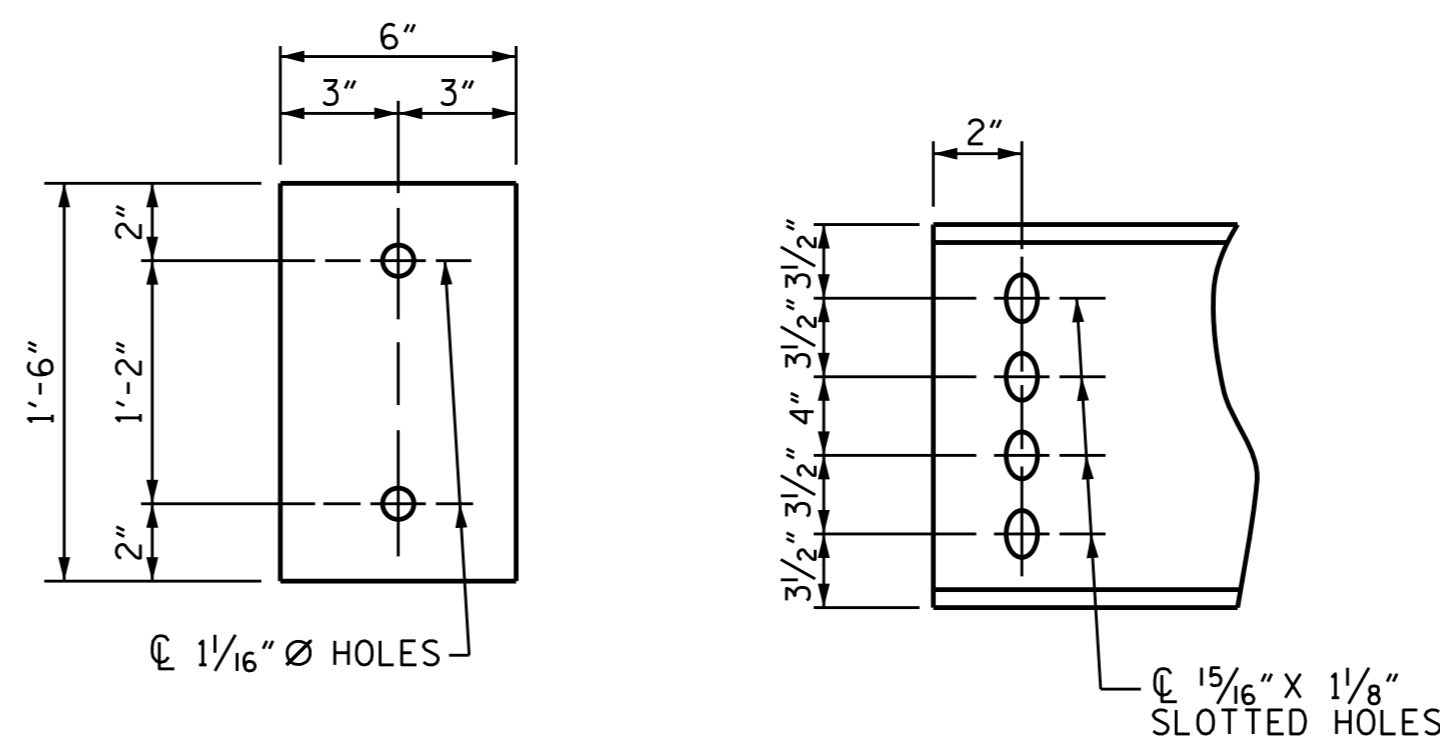
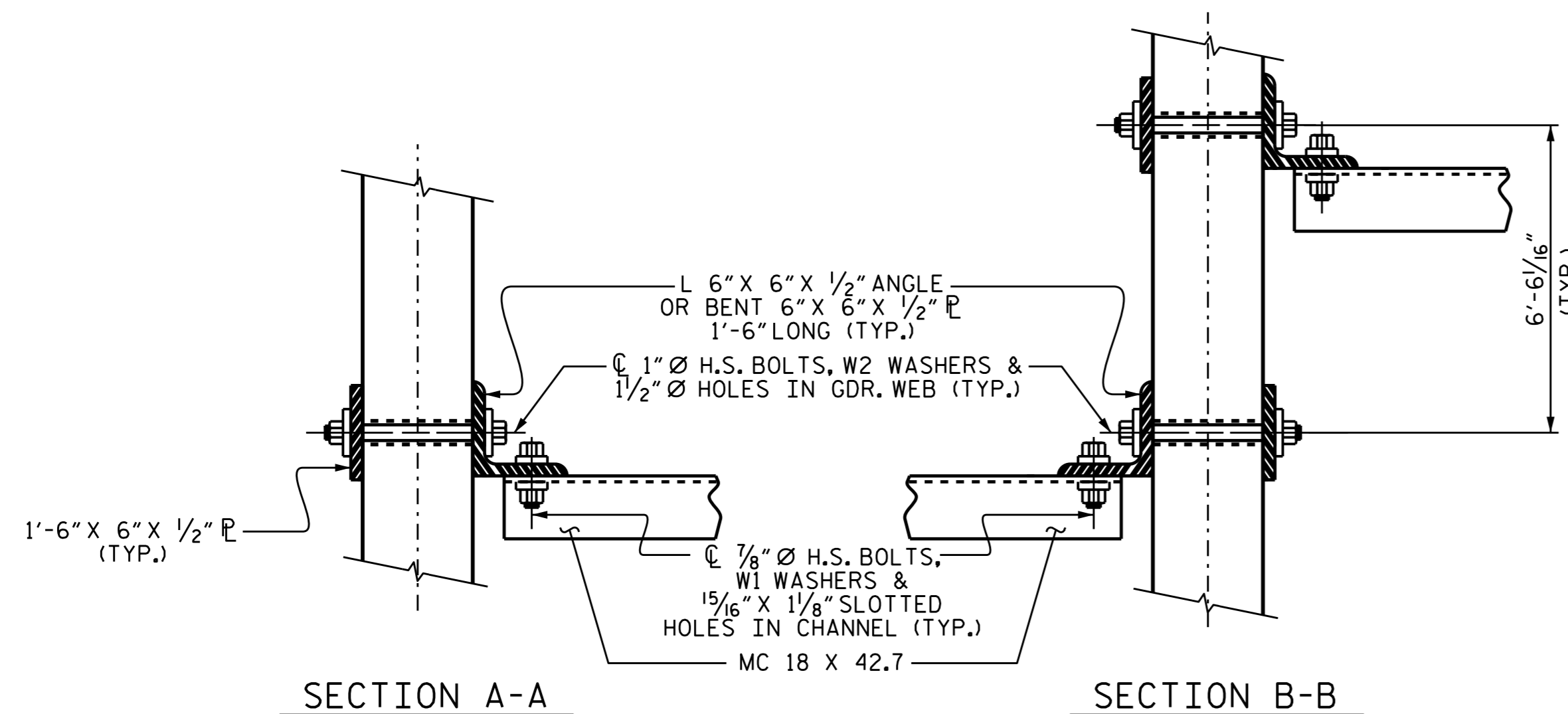


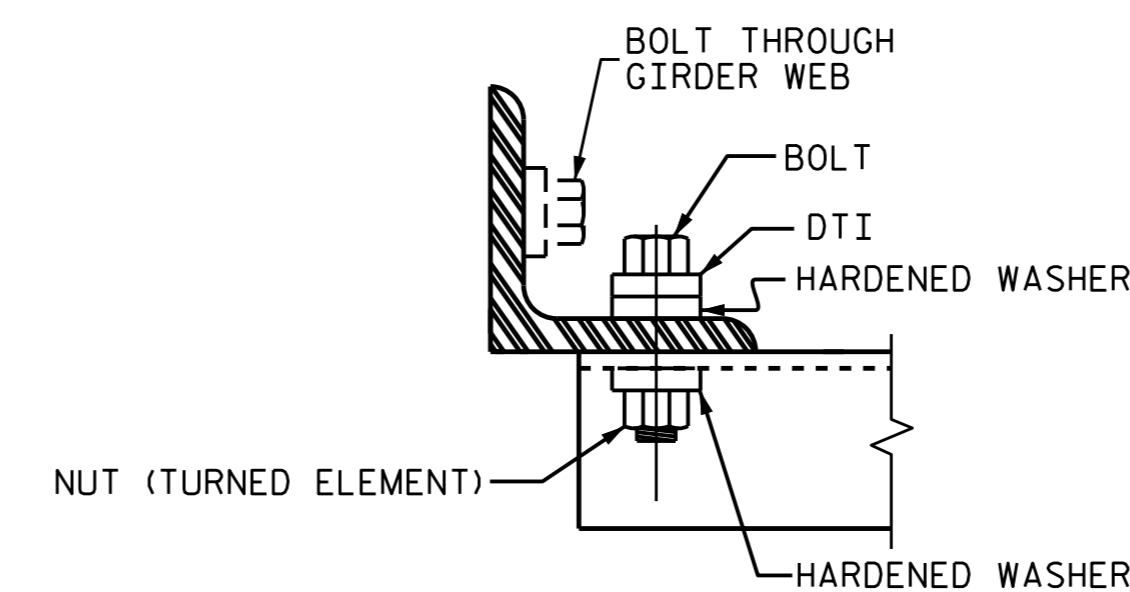
PLATE DETAILS CHANNEL END



SECTION A-A SECTION B-B

CONNECTION DETAILS

FOR LOCATION OF INTERMEDIATE DIAPHRAGMS, SEE "FRAMING PLAN" SHEET.



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. U-2524D
GUILFORD COUNTY
STATION: 25+18.62 -Y6-

SHEET 3 OF 4



DocuSigned by:
Ting Fang 7/1/2016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA						SHEET NO. S1-13
DEPARTMENT OF TRANSPORTATION						
RALEIGH						TOTAL SHEETS 33
STANDARD						
INTERMEDIATE						
STEEL DIAPHRAGMS						
FOR TYPE IV						
PRESTRESSED CONCRETE						
GIRDERS						
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

ASSEMBLED BY : P.N.HOLDER	DATE : 1/21/16
CHECKED BY : T. H. FANG	DATE : 4/21/16
DRAWN BY : TLA 6/05	ADDED 10/21/05
CHECKED BY : VC 6/05	REV. 5/1/06RRR KMM/GM
	REV. 10/1/11 MAA/GM

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.

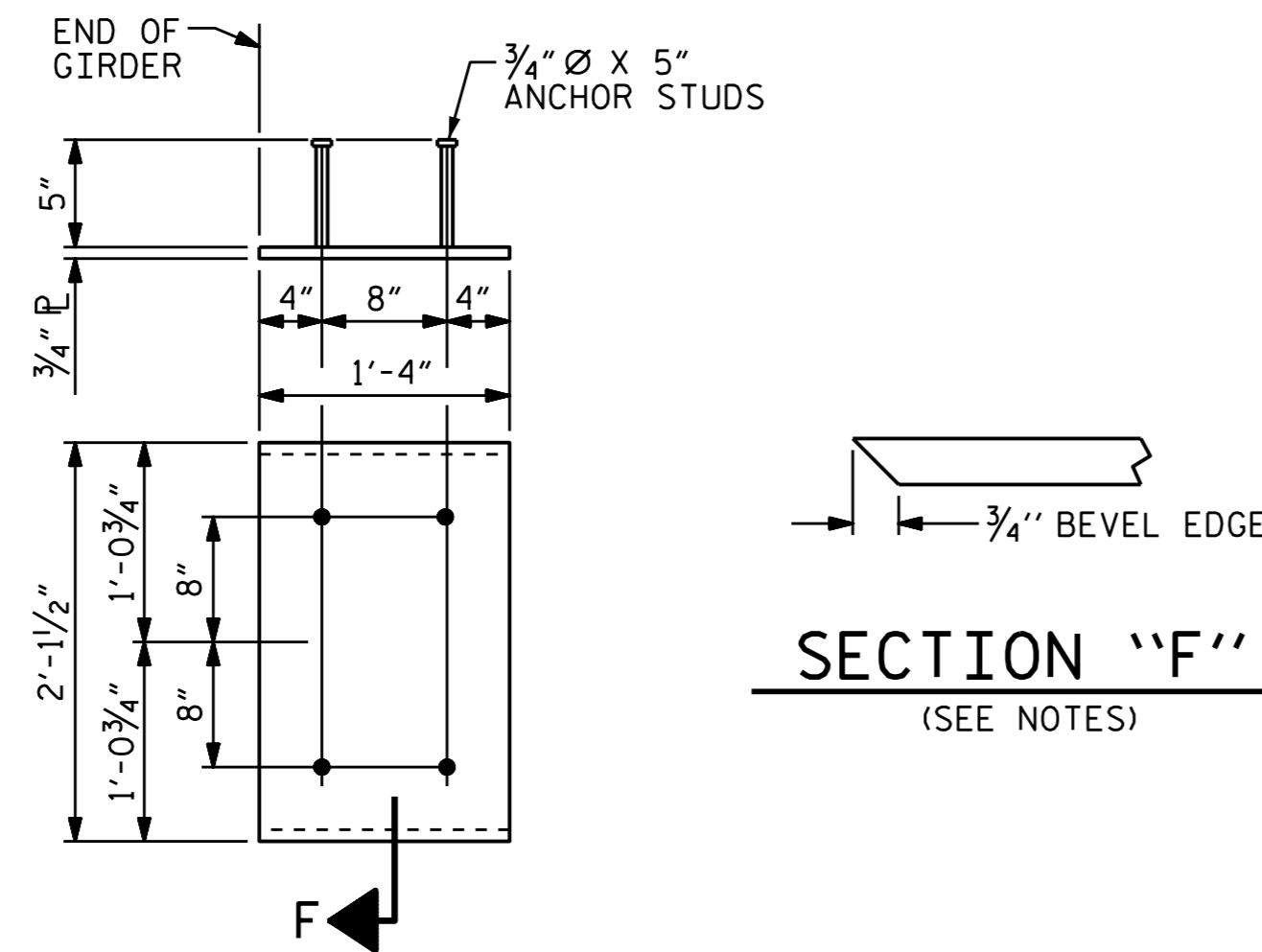
ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

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.

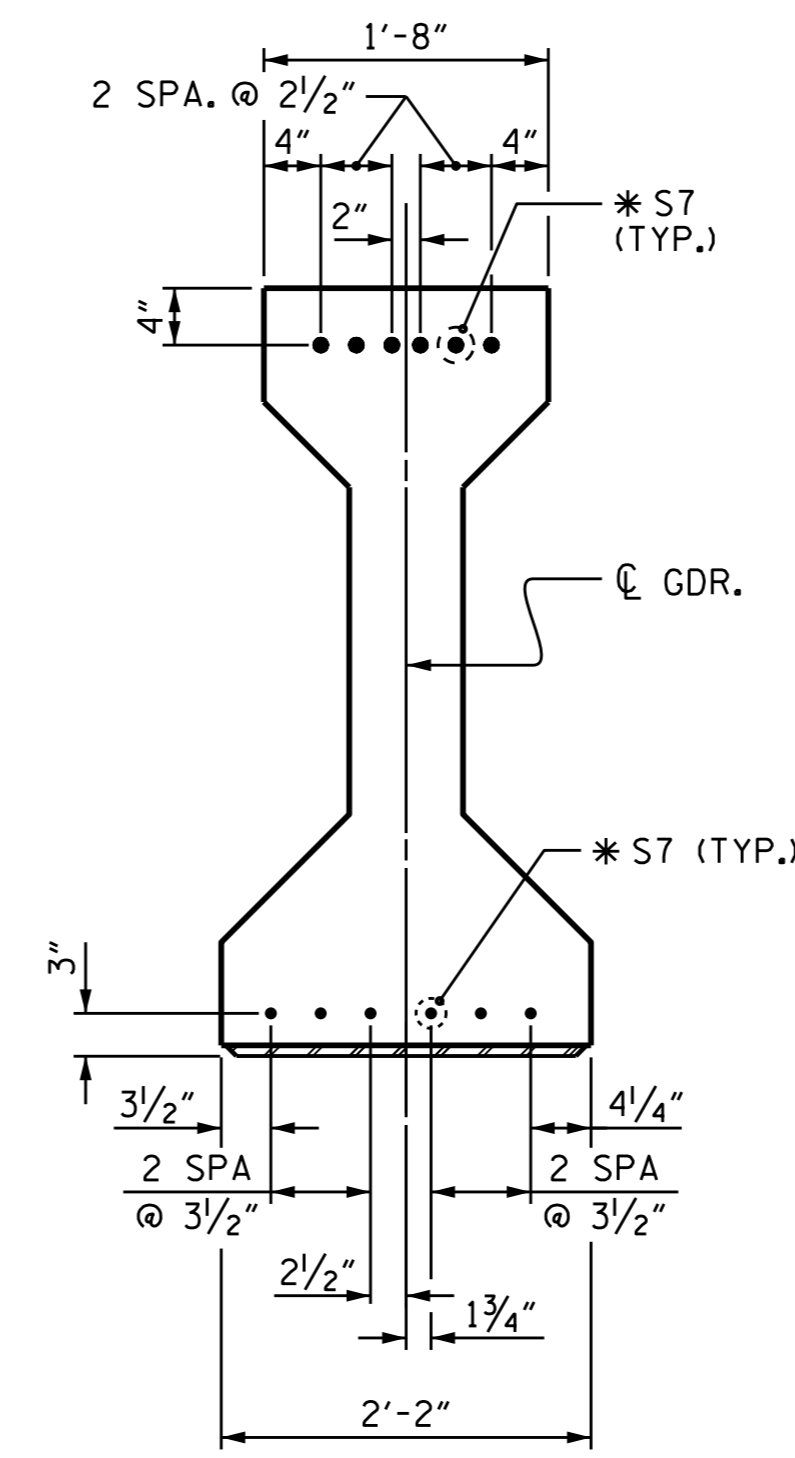
TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6400 PSI FOR SPAN A AND 6800 PSI FOR SPAN B.

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

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



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



DETAIL "A"

DEAD LOAD DEFLECTION TABLE																					
SPAN A																					
0.6" LOW RELAXATION GIRDERS #1, #3, #6, & #8																					
	BRG.	.05	.1	.15	.2	.25	.3	.35	.4	.45	.5	.55	.6	.65	.7	.75	.8	.85	.9	.95	BRG.
TWENTIETH POINTS																					
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.038	0.075	0.109	0.141	0.169	0.193	0.212	0.226	0.234	0.237	0.234	0.226	0.212	0.193	0.169	0.141	0.109	0.075	0.038	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.028	0.055	0.080	0.103	0.124	0.141	0.155	0.165	0.172	0.174	0.172	0.165	0.155	0.141	0.124	0.103	0.080	0.055	0.028	0
FINAL CAMBER ↑	0	1/8"	1/4"	3/8"	7/16"	9/16"	5/8"	11/16"	3/4"	3/4"	3/4"	3/4"	3/4"	11/16"	5/8"	9/16"	7/16"	3/8"	1/4"	1/8"	0
INTERIOR GIRDERS #2 & #7																					
TWENTIETH POINTS																					
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.038	0.075	0.109	0.141	0.169	0.193	0.212	0.226	0.234	0.237	0.234	0.226	0.212	0.193	0.169	0.141	0.109	0.075	0.038	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.029	0.057	0.084	0.108	0.130	0.148	0.163	0.174	0.180	0.182	0.180	0.174	0.163	0.148	0.103	0.108	0.084	0.057	0.029	0
FINAL CAMBER ↑	0	1/8"	3/16"	5/16"	3/8"	7/16"	9/16"	9/16"	5/8"	5/8"	5/8"	5/8"	5/8"	9/16"	9/16"	7/16"	3/8"	5/16"	3/16"	1/8"	0
INTERIOR GIRDERS #4 & #5																					
TWENTIETH POINTS																					
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.038	0.075	0.109	0.141	0.169	0.193	0.212	0.226	0.234	0.237	0.234	0.226	0.212	0.193	0.169	0.141	0.109	0.075	0.038	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.025	0.050	0.073	0.094	0.113	0.129	0.142	0.151	0.157	0.159	0.157	0.151	0.142	0.129	0.113	0.094	0.073	0.050	0.025	0
FINAL CAMBER ↑	0	1/8"	5/16"	7/16"	9/16"	11/16"	3/4"	13/16"	7/8"	15/16"	15/16"	15/16"	7/8"	13/16"	3/4"	11/16"	9/16"	7/16"	5/16"	1/8"	0
SPAN B																					
0.6" LOW RELAXATION GIRDERS #1, #3, #6 & #8																					
TWENTIETH POINTS																					
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.037	0.073	0.107	0.138	0.166	0.189	0.208	0.222	0.230	0.233	0.230	0.222	0.208	0.189	0.166	0.138	0.107	0.073	0.037	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.030	0.060	0.088	0.113	0.136	0.155	0.171	0.182	0.189	0.191	0.189	0.182	0.171	0.155	0.136	0.113	0.088	0.060	0.030	0
FINAL CAMBER ↑	0	1/16"	1/8"	1/4"	5/16"	3/8"	3/8"	7/16"	1/2"	1/2"	1/2"	1/2"	1/2"	7/16"	3/8"	3/8"	5/16"	1/4"	1/8"	1/16"	0
INTERIOR GIRDERS #2 & #7																					
TWENTIETH POINTS																					
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.037	0.073	0.107	0.138	0.166	0.189	0.208	0.222	0.230	0.233	0.230	0.222	0.208	0.189	0.166	0.138	0.107	0.073	0.037	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.032	0.063	0.092	0.119	0.143	0.163	0.179	0.191	0.198	0.201	0.198	0.191	0.179	0.163	0.143	0.119	0.092	0.063	0.032	0
FINAL CAMBER ↑	0	1/16"	1/8"	3/16"	1/4"	1/4"	5/16"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	3/8"	1/4"	1/4"	3/16"	1/8"	1/16"	0
INTERIOR GIRDERS #4 & #5																					
TWENTIETH POINTS																					
CAMBER (GIRDER ALONE IN PLACE) ↑	0	0.037	0.073	0.107	0.138	0.166	0.189	0.208	0.222	0.230	0.233	0.230	0.222	0.208	0.189	0.166	0.138	0.107	0.073	0.037	0
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0	0.028	0.055	0.080	0.104	0.124	0.142	0.156	0.166	0.172	0.175	0.172	0.166	0.156	0.142	0.124	0.104	0.080	0.055	0.028	0
FINAL CAMBER ↑	0	1/8"	3/16"	5/16"	7/16"	1/2"	9/16"	5/8"	11/16"	11/16"	11/16"	11/16"	11/16"	5/8"	9/16"	1/2"	7/16"	5/16"	3/16"	1/8"	0

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



DocuSigned by:
Ting Fang
E7208840097435 7/1/2016

PROJECT NO. U-2524D
GUILFORD COUNTY
STATION: 25+18.62 -Y6-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
DEAD LOAD DEFLECTIONS

DESIGN ENGINEER OF RECORD:
P. K. NEWTON DATE: 5/9/2016
ASSEMBLED BY: M. SHAHIDI DATE: 4/20/16
CHECKED BY: T. H. FANG DATE: 5/2/16
DRAWN BY: ELR 11/91
CHECKED BY: GRP 11/91
REV. 7/10/01RR LES/RDR
REV. 5/1/06 TLA/GM
REV. 10/1/11 MAA/GM

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			51-14
2			4			33

NOTES

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

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.

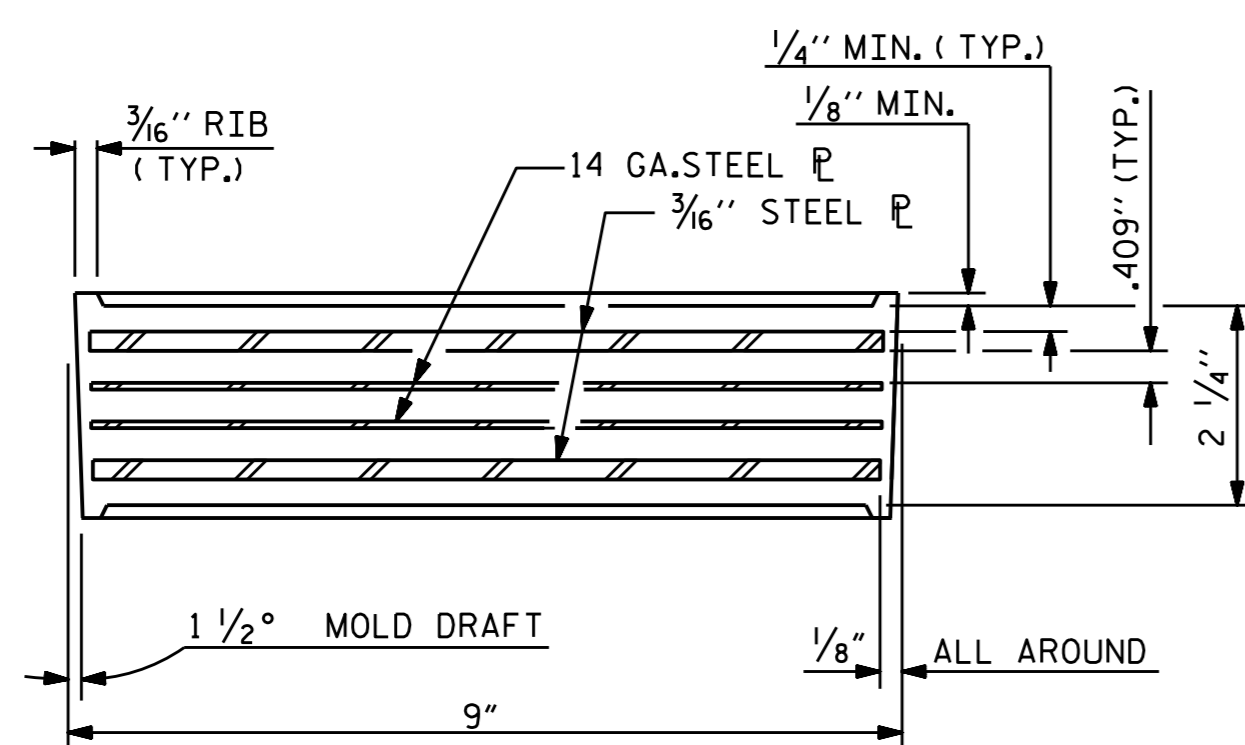
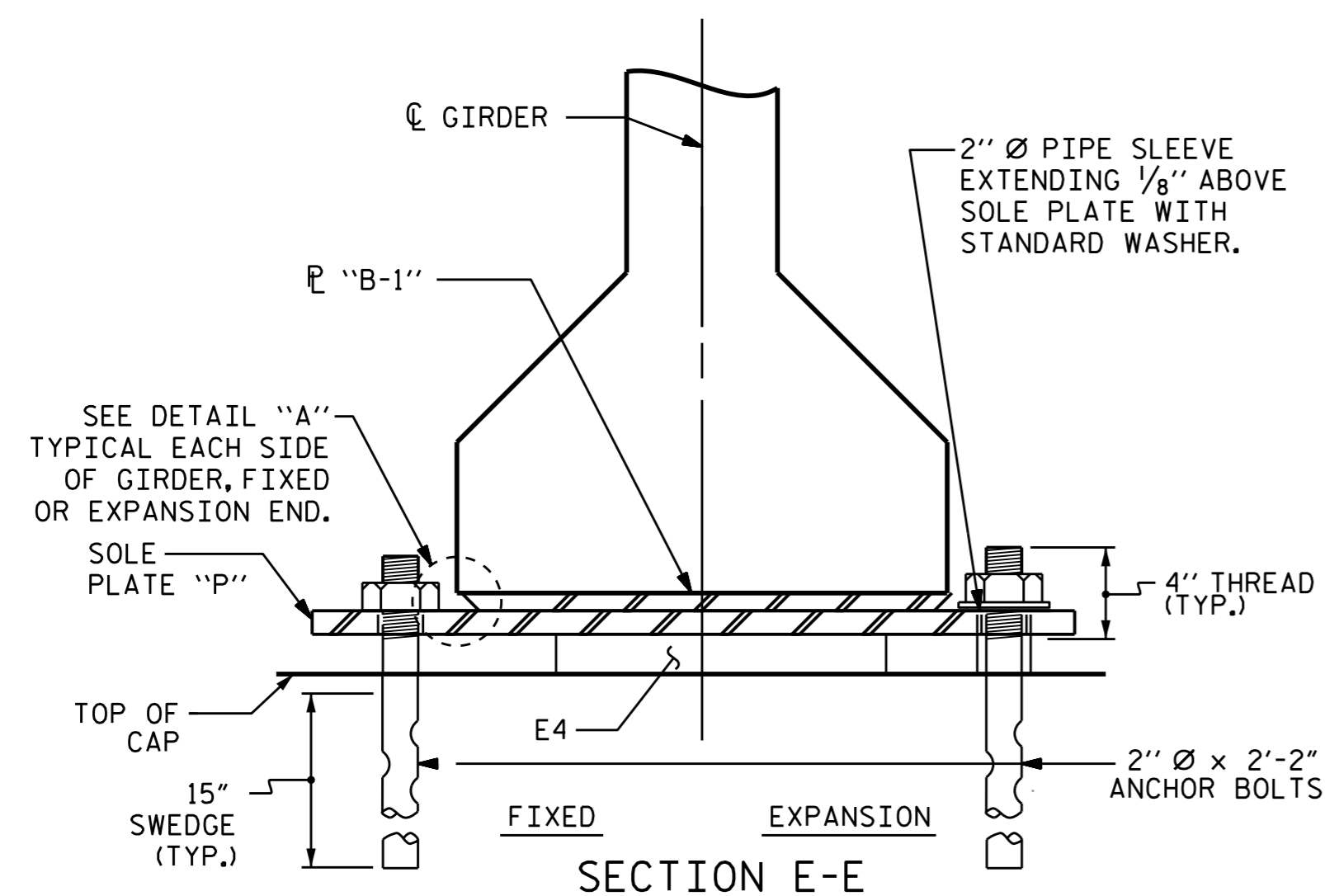
SOLE PLATE "P", BOLTS, NUTS, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

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.

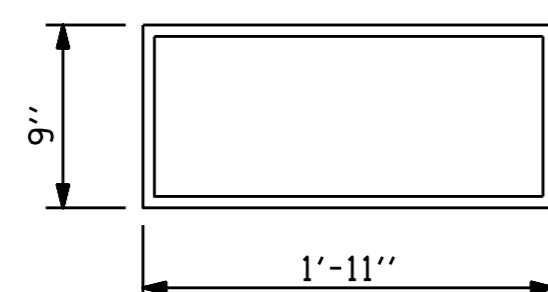
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

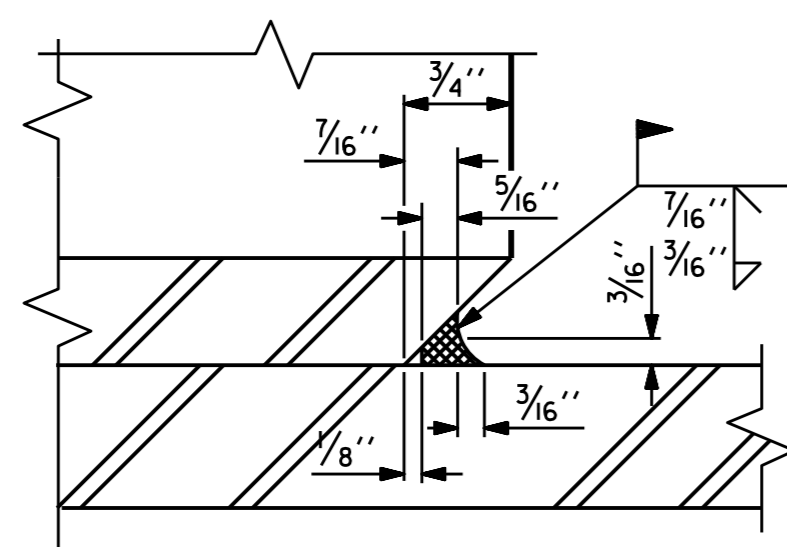
FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.



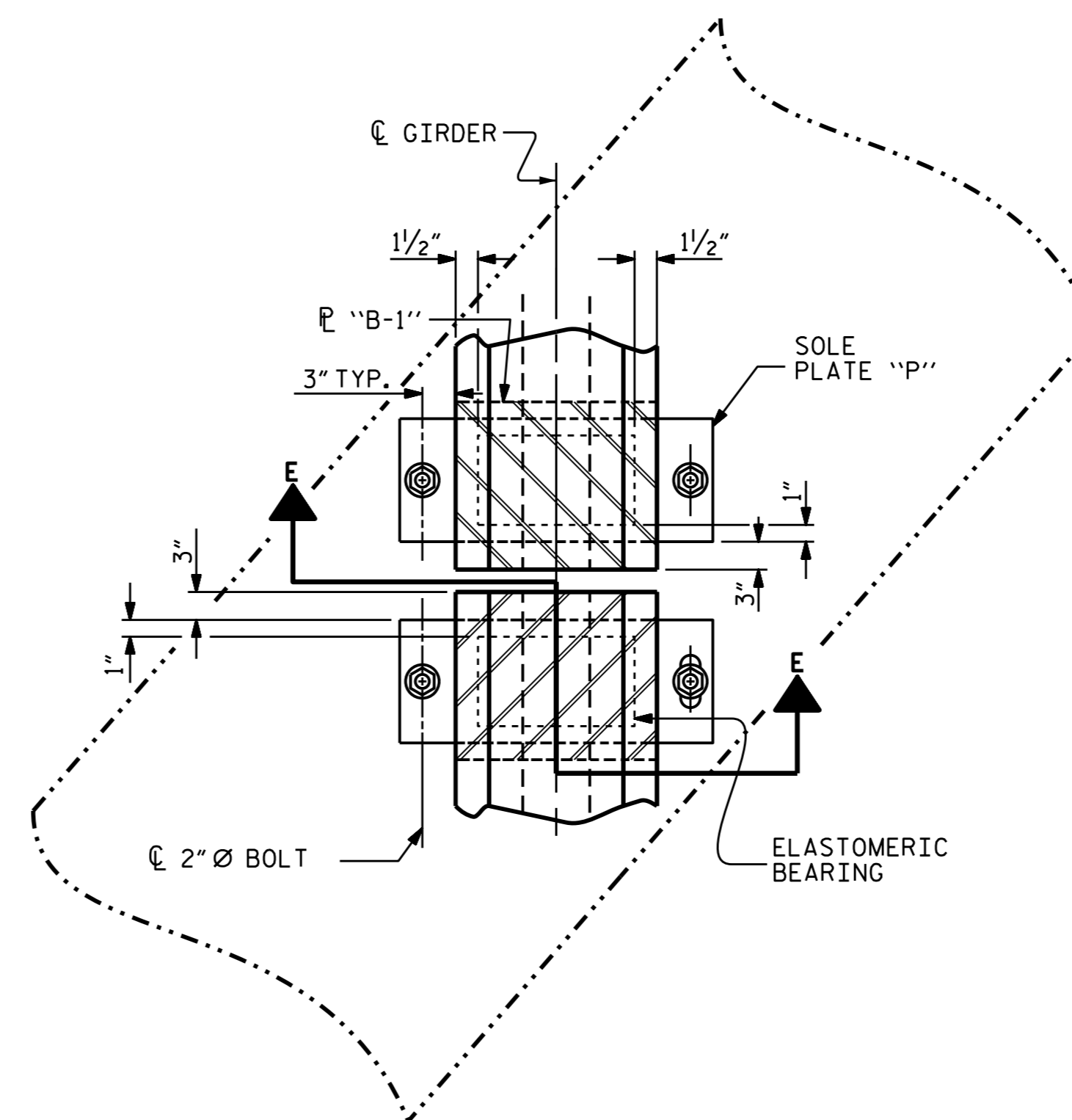
TYPICAL SECTION OF ELASTOMERIC BEARINGS



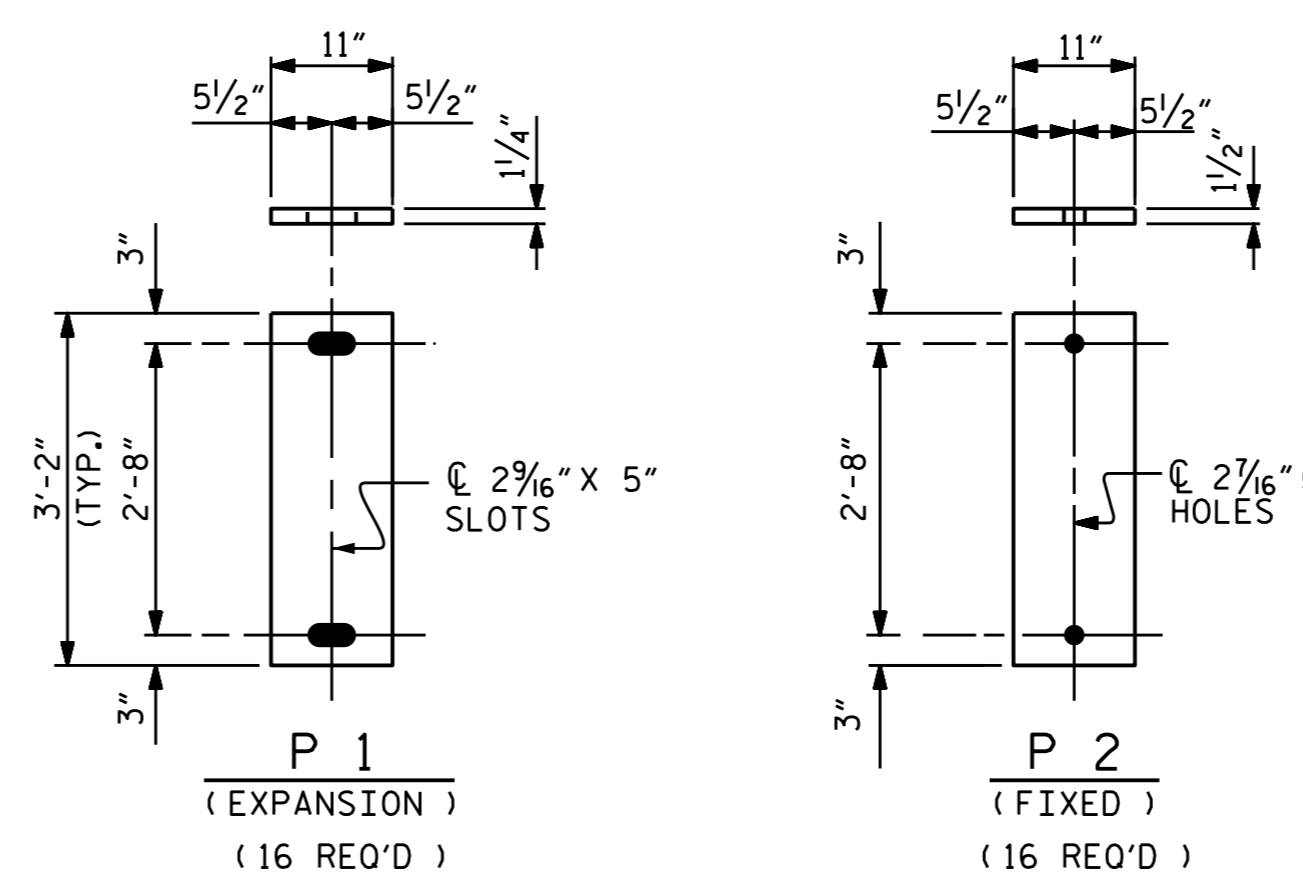
E4 (32 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE V



DETAIL "A"



TYPICAL PLAN AT BENT



SOLE PLATE DETAILS ("P")

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

PROJECT NO. U-2524D
GUILFORD COUNTY
 STATION: 25+18.62 -Y6-



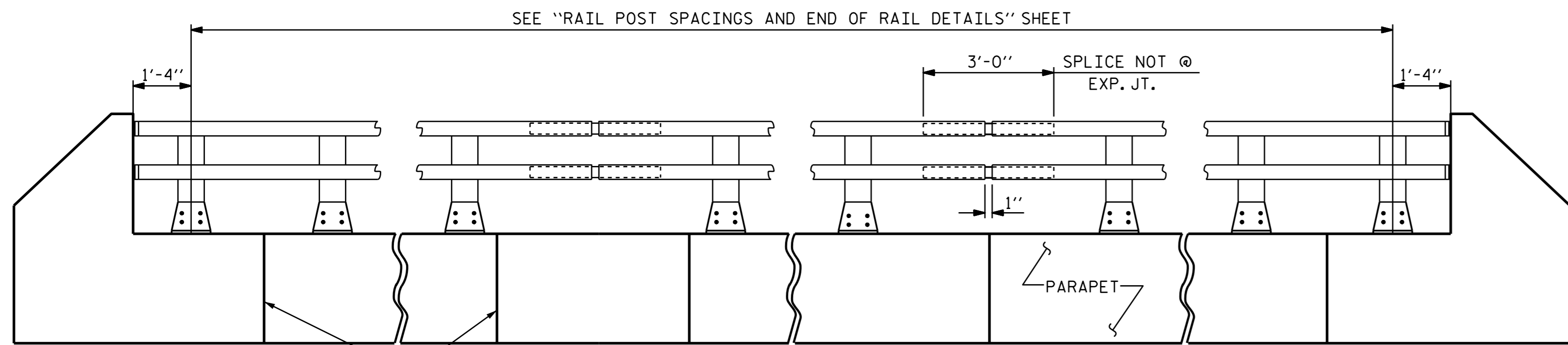
DocuSigned by: *Ting Fang* 7/1/2016

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

REVISIONS						SHEET NO. S1-15
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : C. YOKELEY	DATE : 8/20/14
CHECKED BY : P.N.HOLDER	DATE : 1/22/16
DRAWN BY : EEM 2/97	REV. 5/1/06 TLA/GM
CHECKED BY : VAP 2/97	REV. 10/1/11 MAA/GM
	REV. 6/13 AAC/MAA



SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET

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.

UNLESS OTHERWISE REQUIRED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR HAS THE OPTION TO USE AN ALTERNATE TO THE 2 BAR METAL RAIL. THE ALTERNATE RAIL SHALL MEET THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) UNDER "2 BAR METAL RAIL ALTERNATE". ADJUSTMENTS TO THE CONCRETE PARAPET WILL NOT BE ALLOWED.

ALUMINUM RAILS

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

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

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

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

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

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

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

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

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

GENERAL NOTES

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

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE SHEET S1-18.

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

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

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

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

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

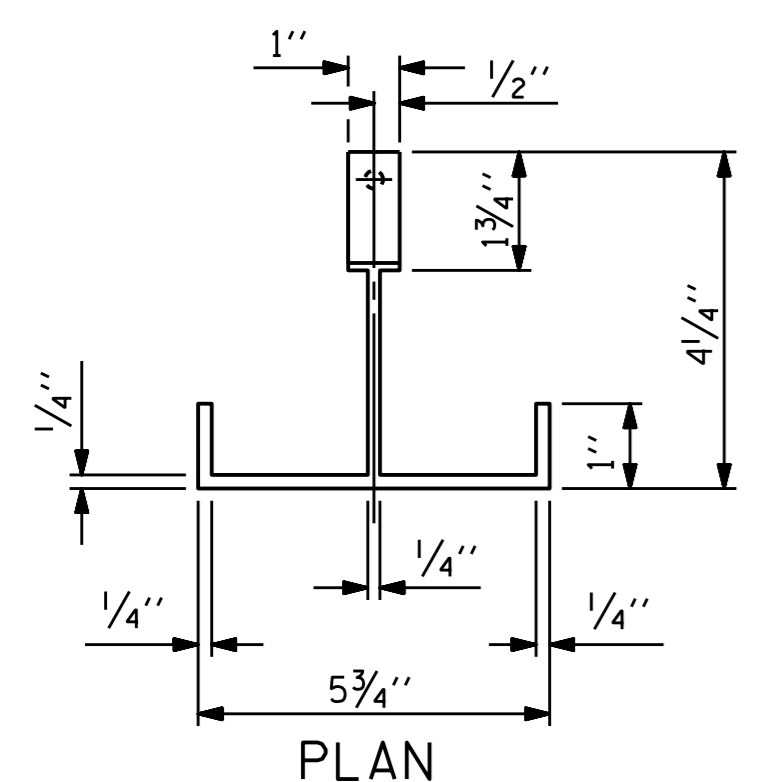
ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

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

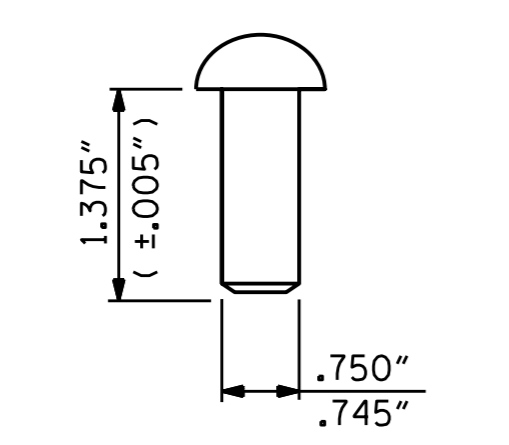
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT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

ELEVATION

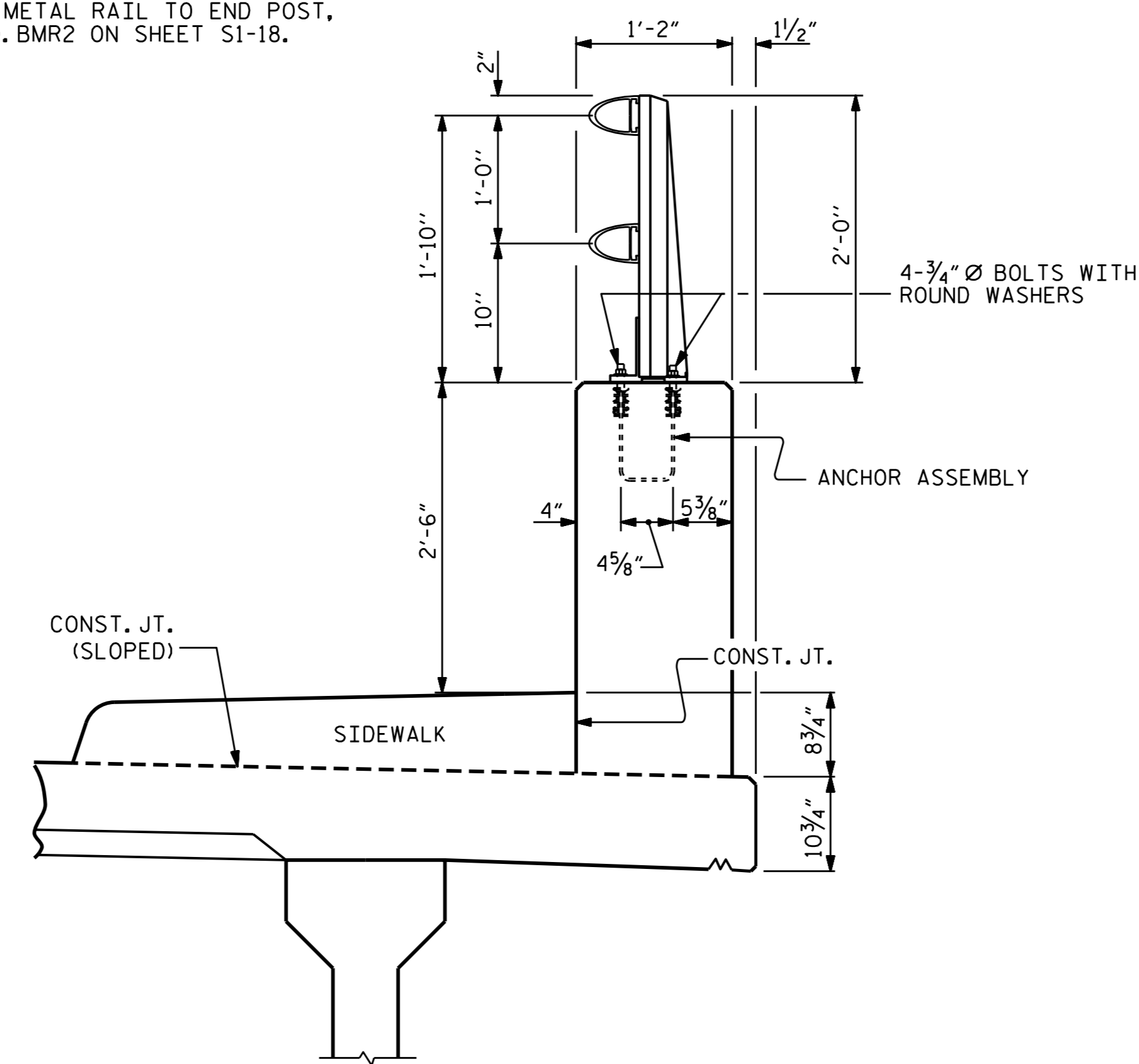
FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2 ON SHEET S1-18.



PLAN

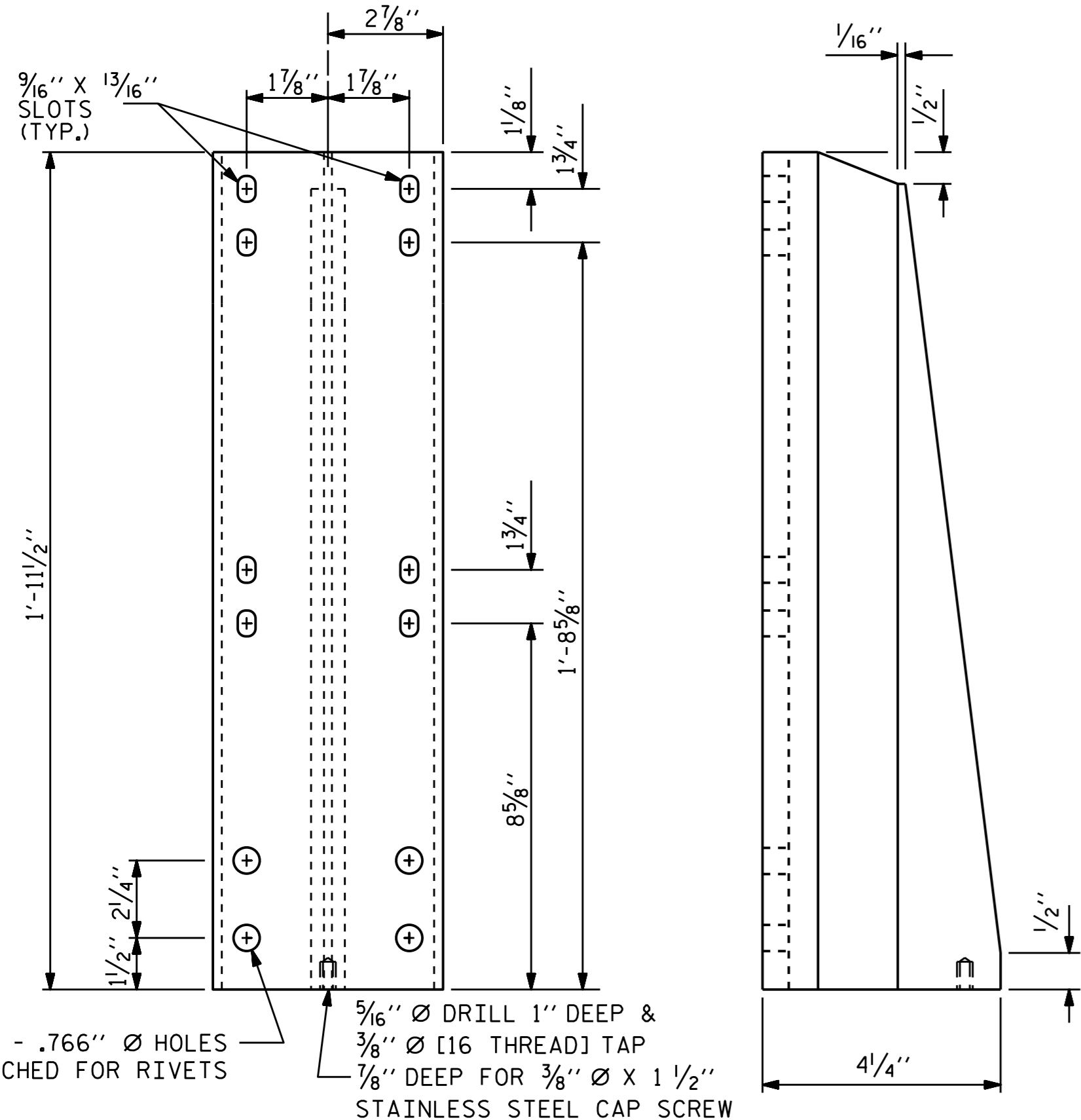


RIVET DETAIL



SECTION THRU PARAPET

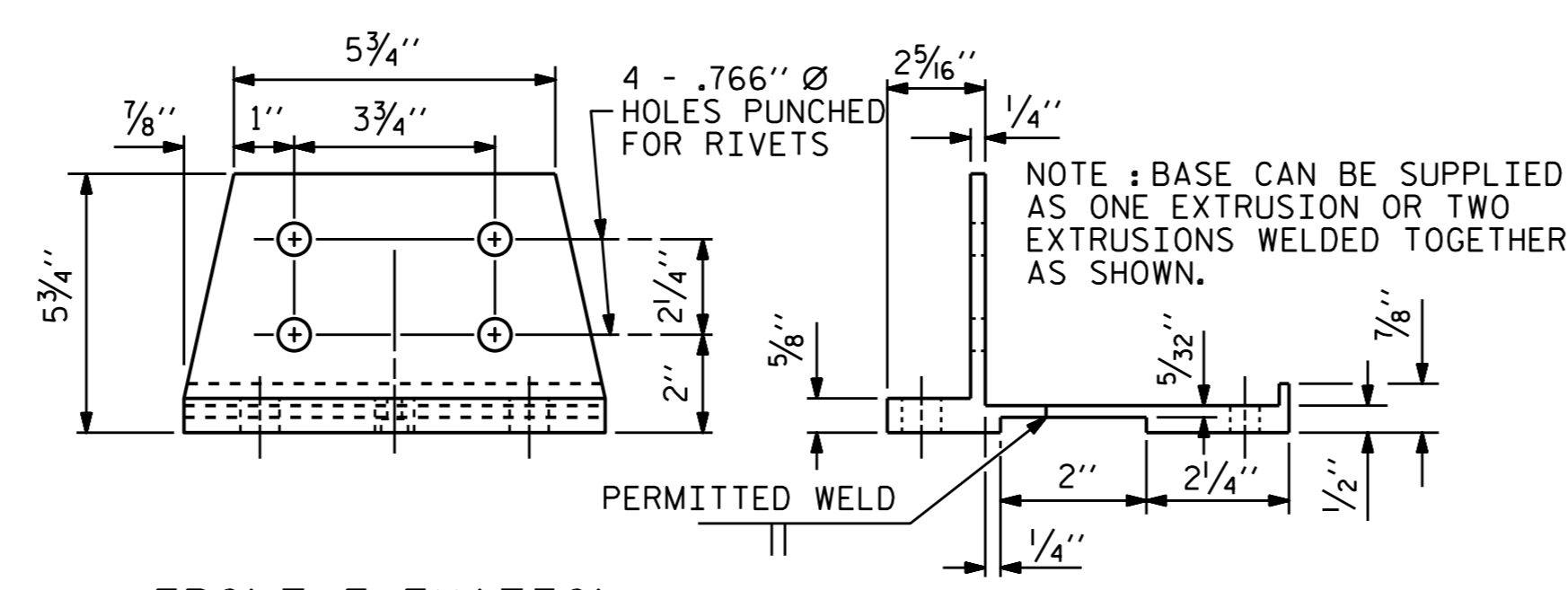
RIGHT SIDE SHOWN, LEFT SIDE SIMILAR BY ROTATION WITHOUT SIDEWALK



FRONT ELEVATION

SIDE ELEVATION

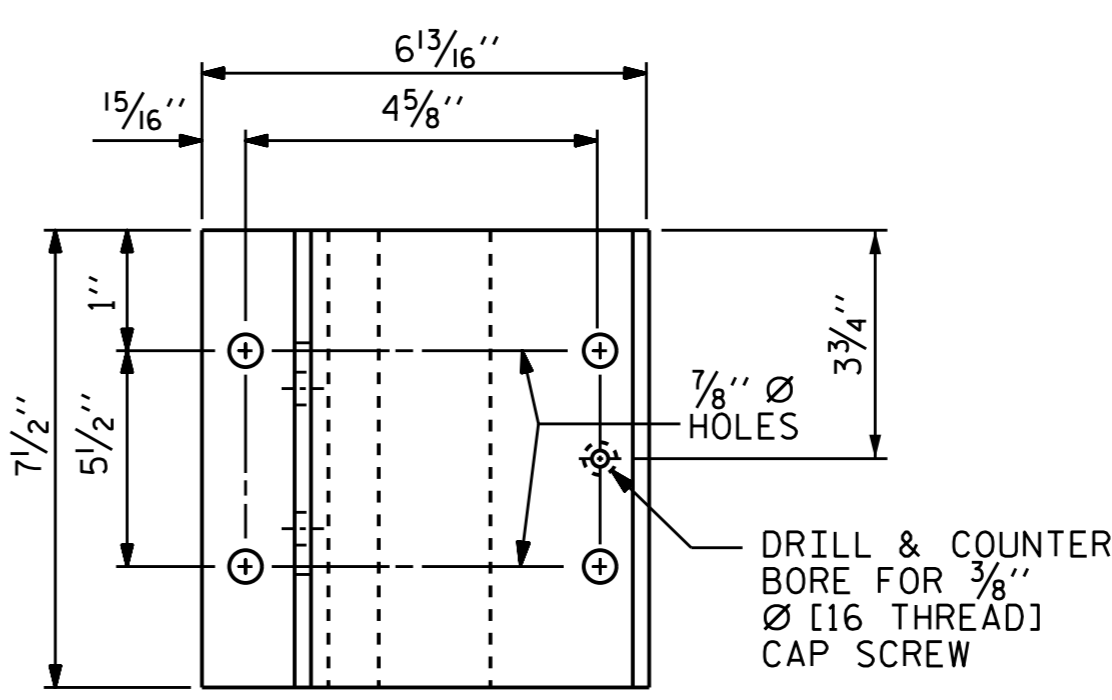
DETAILS OF POST



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



PLAN

PAY LENGTH = 416.24 LIN. FT.



DocuSigned by: Ting Fang 7/1/2016

PROJECT NO. U-2524D
GUILFORD COUNTY
 STATION: 25+18.62 -Y6-

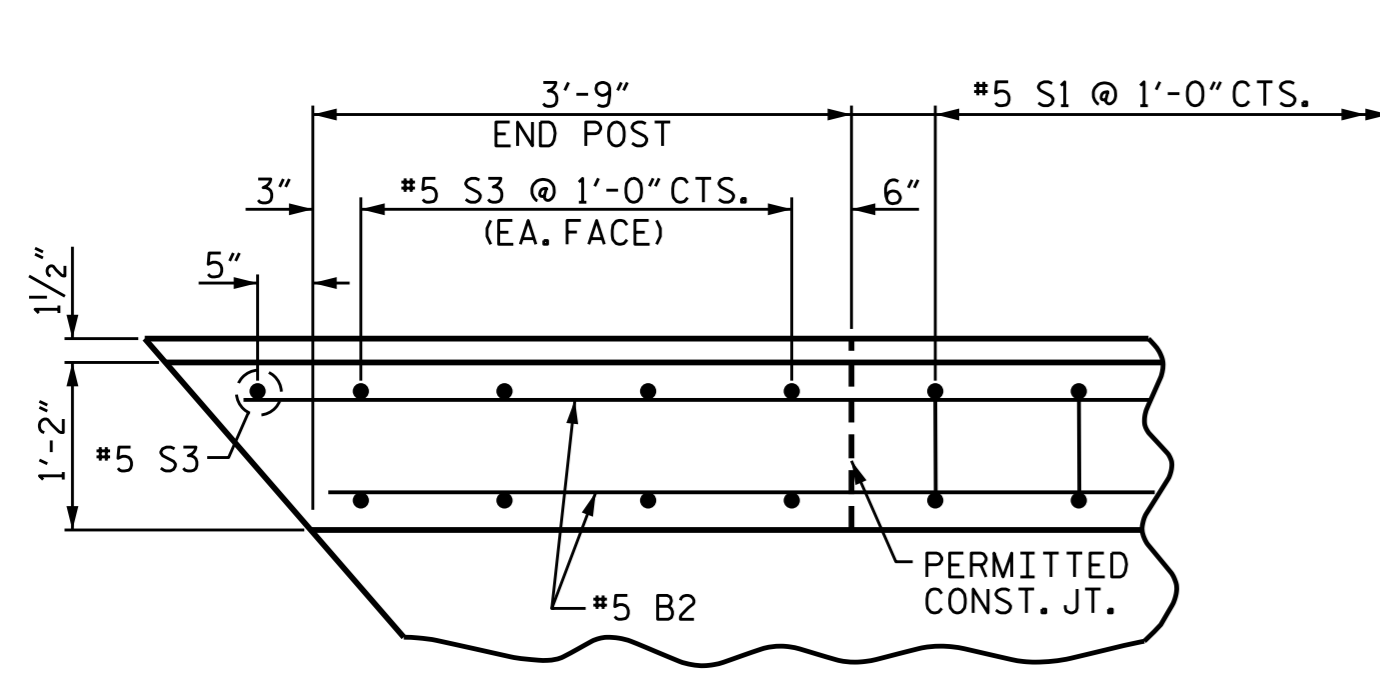
SHEET 1 OF 3

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

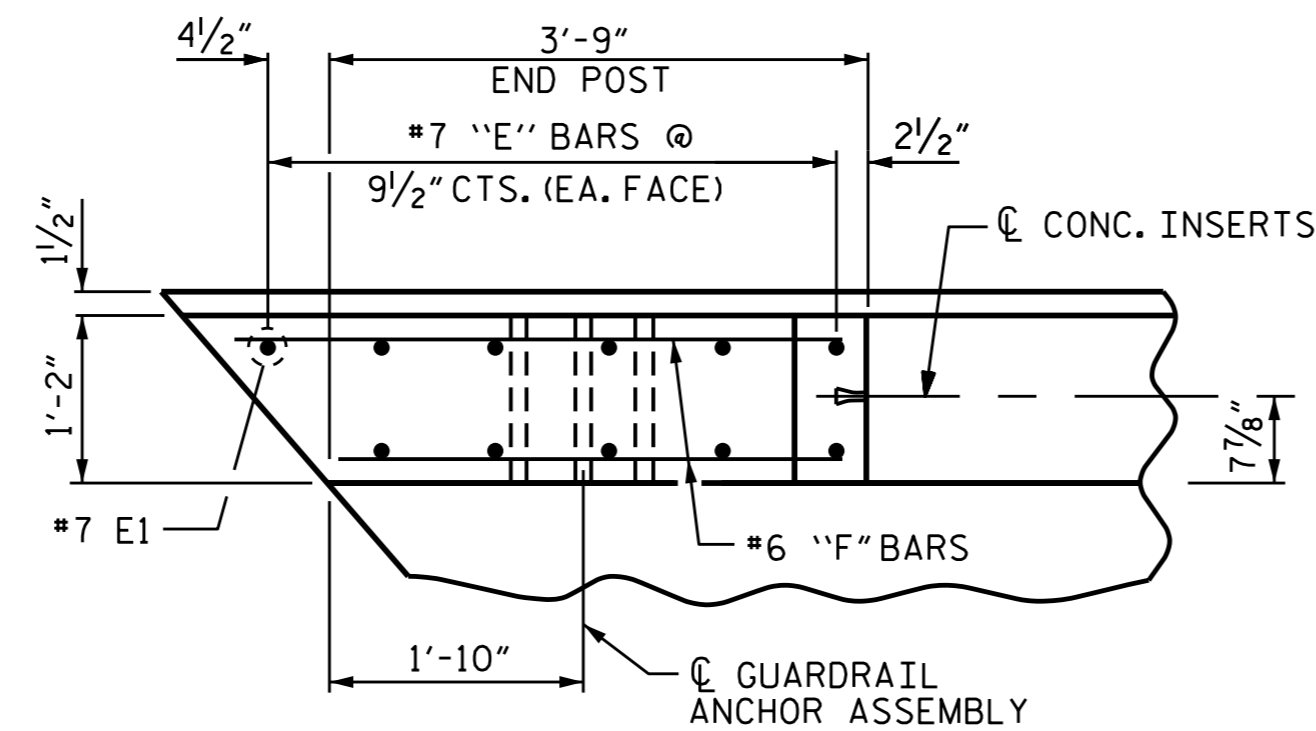
ASSEMBLED BY : P.N.HOLDER	DATE : 1/25/16
CHECKED BY : T. H. FANG	DATE : 5/3/16
DRAWN BY : EEM 6/94	REV. 5/1/06 TLA/GM
CHECKED BY : RCW 6/94	REV. 10/1/11 MAA/GM
	REV. 6/13 MAA/GM

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S1-16
2			4			TOTAL SHEETS 33

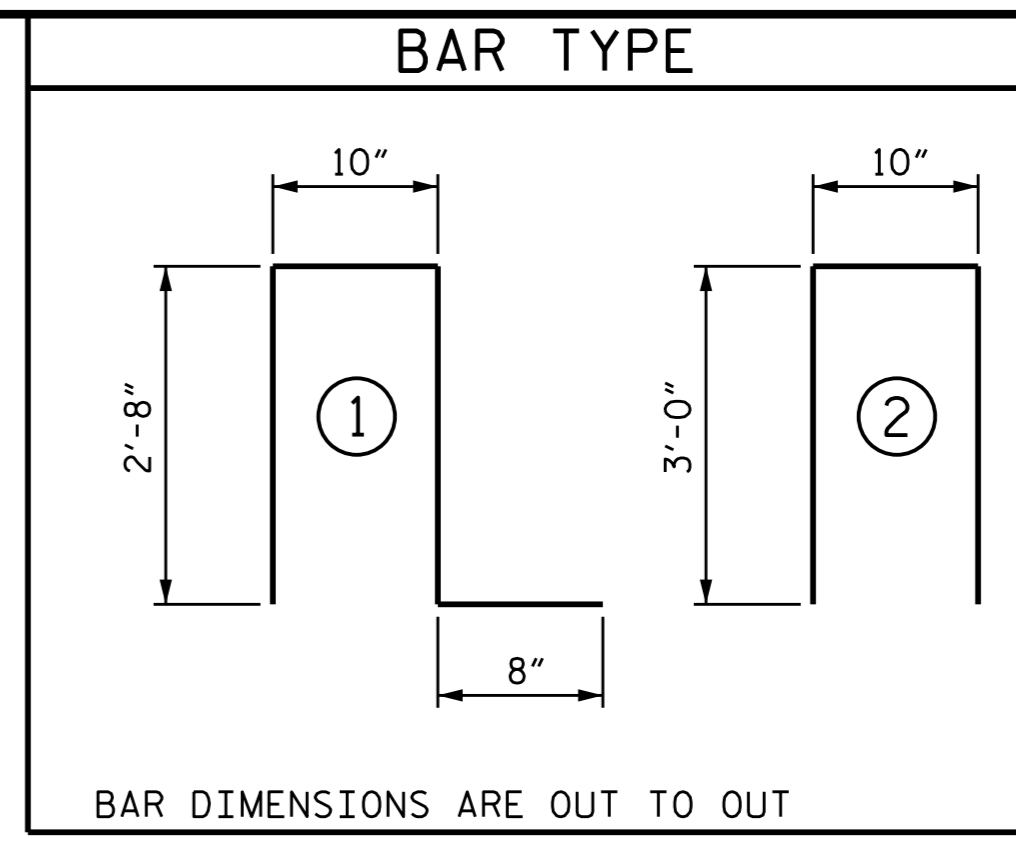
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



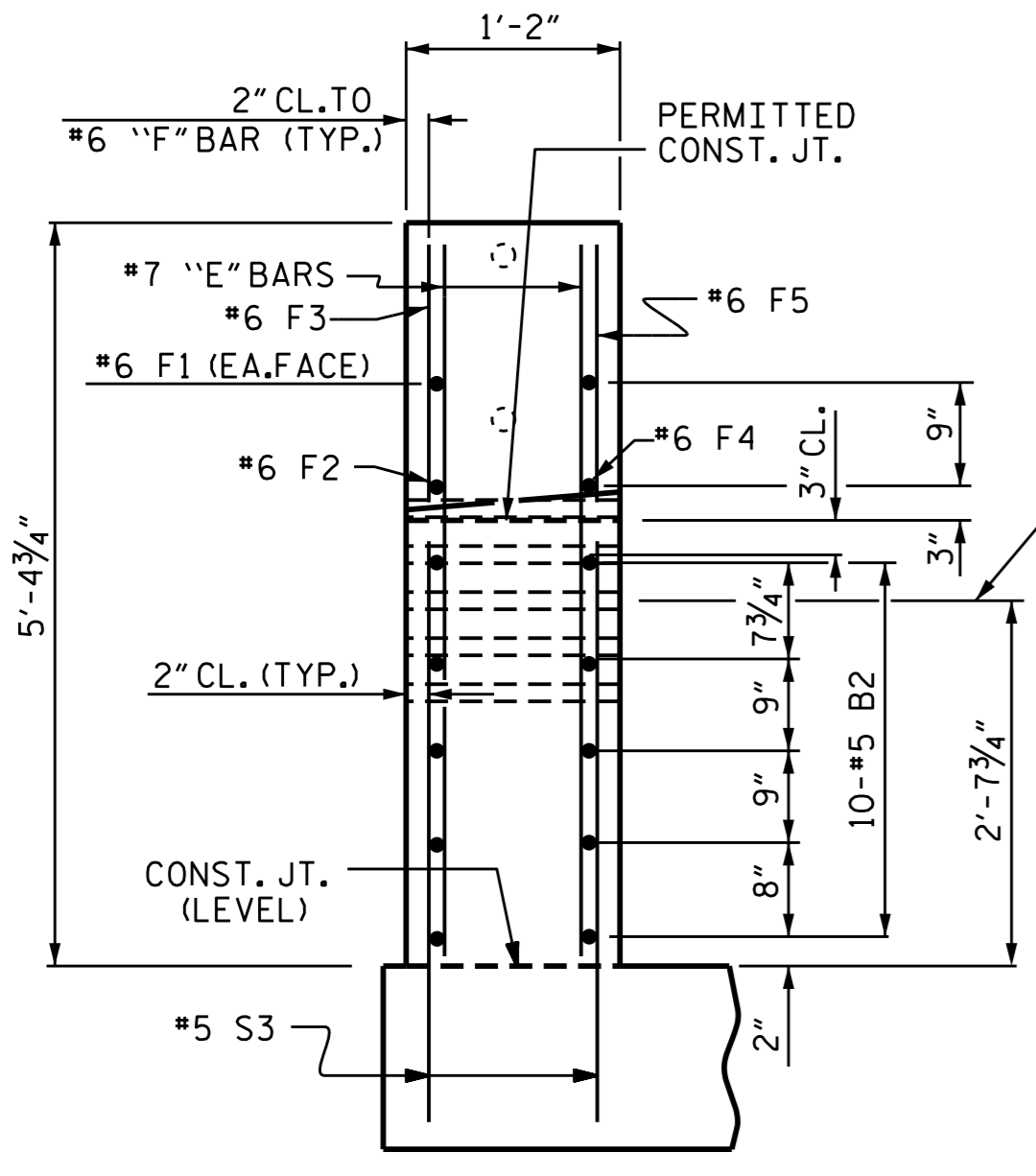
PLAN OF PARAPET



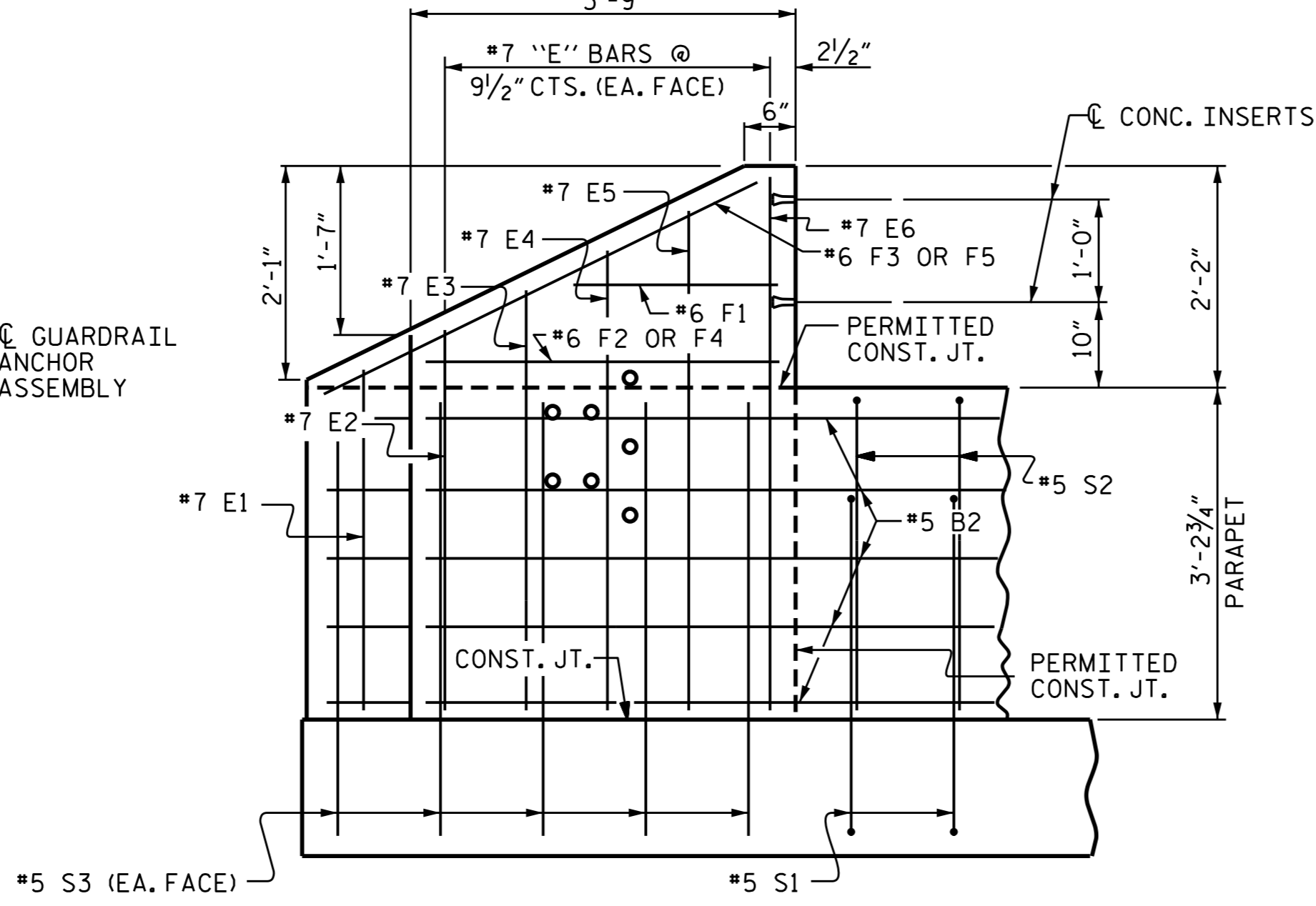
PLAN OF PARAPET



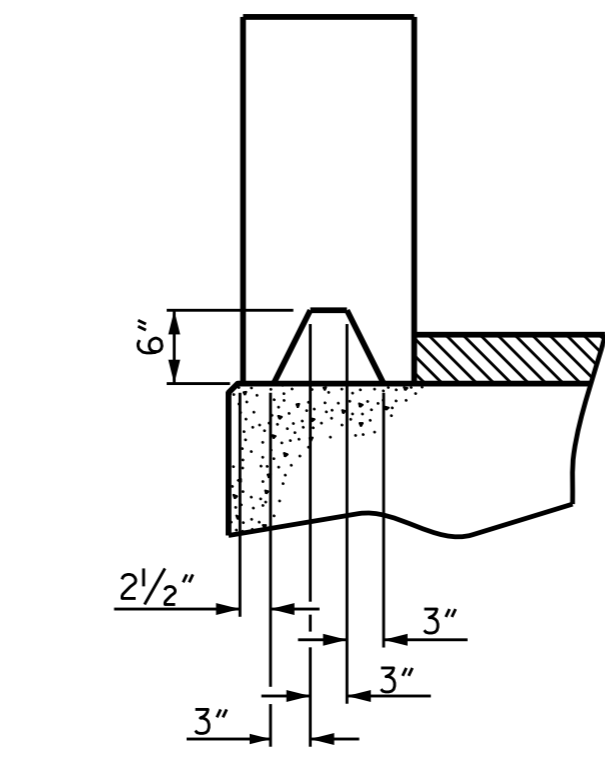
BILL OF MATERIAL						
FOR 2 PARAPETS AND 4 END POSTS						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*B1	120	#5	STR	26'-7"	3327	
*B2	80	#5	STR	16'-3"	1356	
*E1	4	#7	STR	2'-8"	22	
*E2	8	#7	STR	3'-3"	53	
*E3	8	#7	STR	3'-9"	61	
*E4	8	#7	STR	4'-3"	69	
*E5	8	#7	STR	4'-9"	78	
*E6	8	#7	STR	5'-2"	84	
*F1	8	#6	STR	1'-11"	23	
*F2	4	#6	STR	3'-11"	24	
*F3	4	#6	STR	5'-1"	31	
*F4	4	#6	STR	3'-5"	21	
*F5	4	#6	STR	4'-7"	28	
*S1	416	#5	1	6'-10"	2965	
*S2	416	#5	2	6'-10"	2965	
*S3	36	#5	STR	3'-8"	138	
* EPOXY COATED REINFORCING STEEL					11,243 LBS.	
CLASS AA CONCRETE				60.9	CU. YDS.	
1'-2" X 3'-2 3/4" CONCRETE PARAPET				433.24	LINEAL FT.	



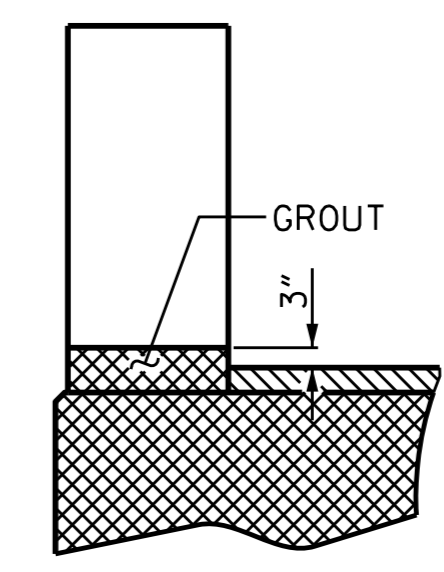
END VIEW



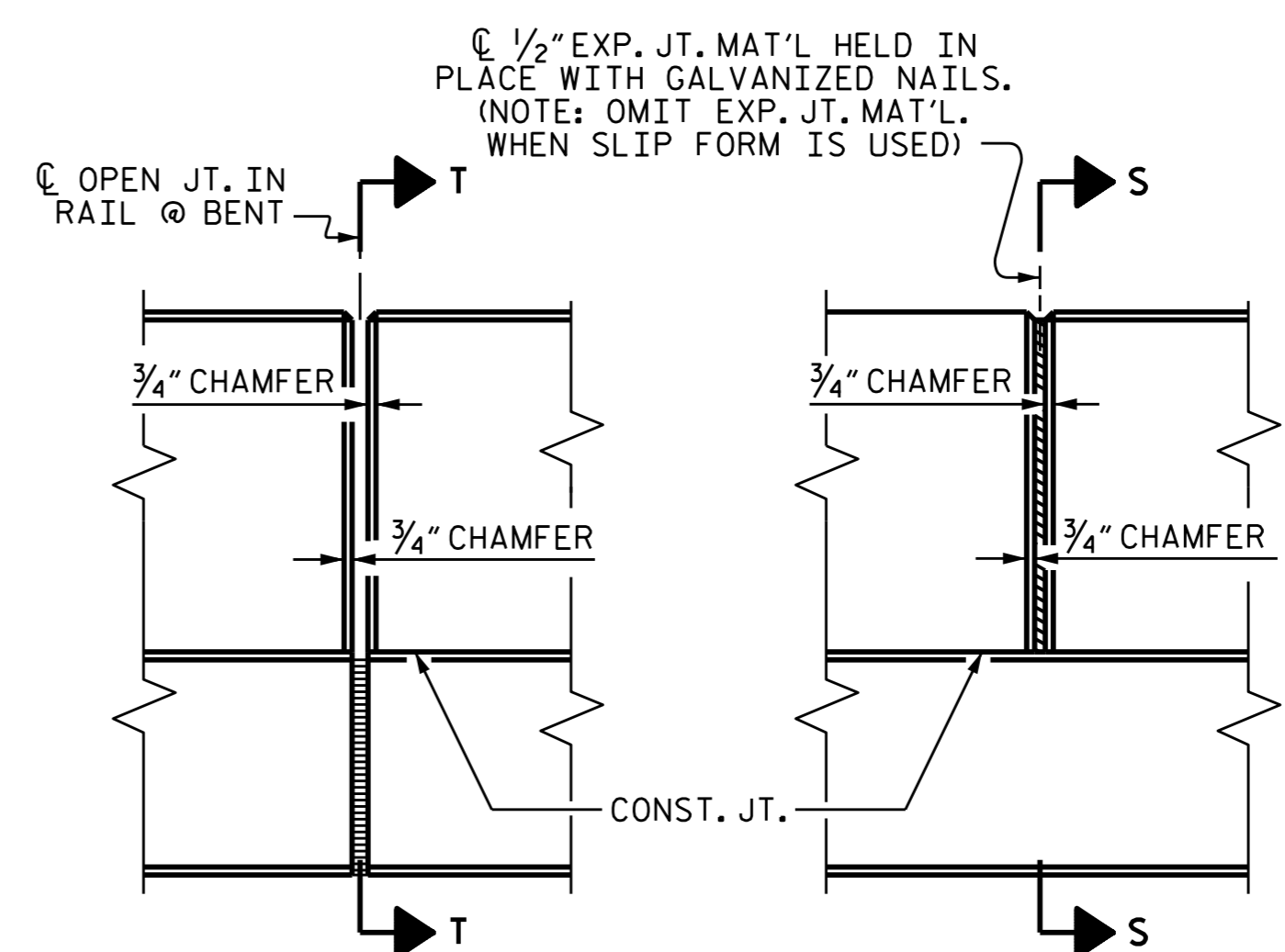
ELEVATION



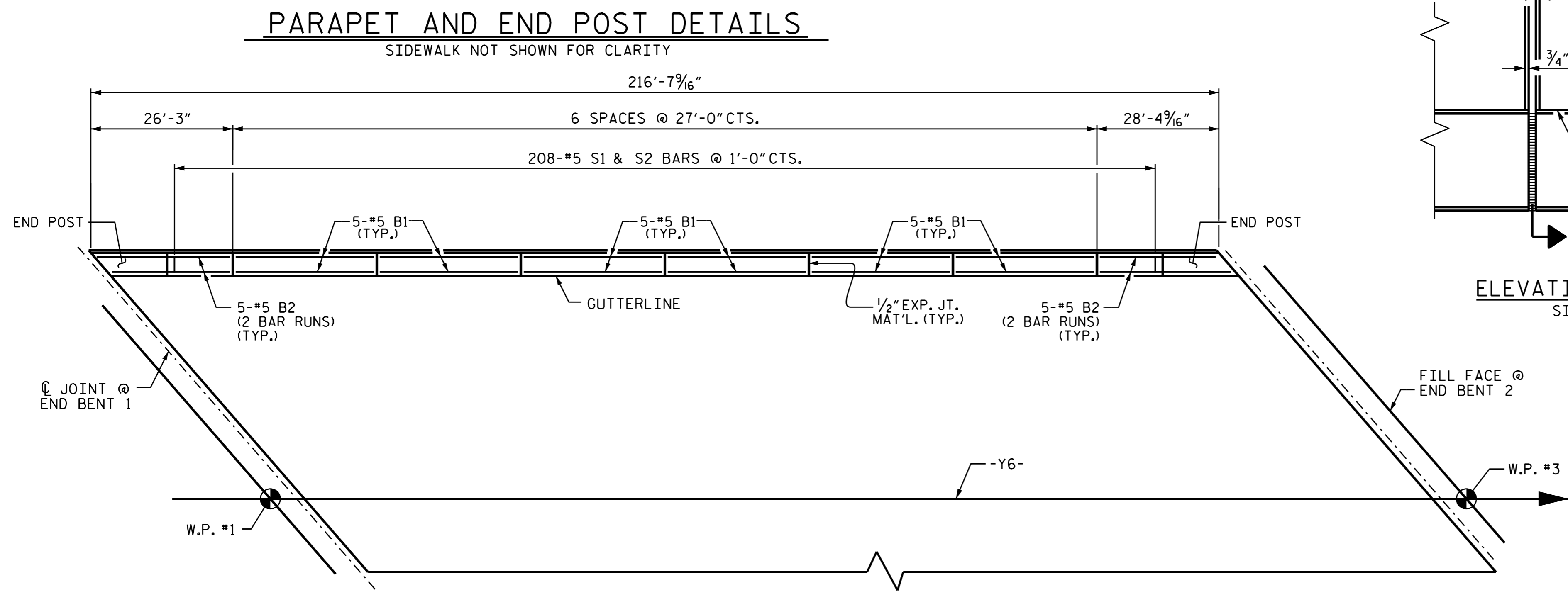
SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY
WHEN SLIP FORM IS USED)



SECTION T-T
AT OPEN JOINT AT BENT
(THIS IS TO BE USED WHERE
FOAM JOINT IS NOT USED)



ELEVATION AT EXPANSION JOINTS
SIDEWALK NOT SHOWN FOR CLARITY



PLAN OF PARAPET

LEFT SIDE SHOWN, RIGHT SIDE SIMILAR BY ROTATION AND WITH PROPOSED SIDEWALK.

NOTES:

FOR DETAIL OF GUARDRAIL ANCHOR ASSEMBLY, SEE "GUARDRAIL ANCHORAGE DETAILS FOR METALS RAILS" SHEET.
FOR DETAILS OF CONCRETE INSERT, SEE SHEET S1-18.
NO ADDITIONAL PAYMENT SHALL BE MADE FOR THE CONCRETE END POSTS AS THIS IS CONSIDERED INCIDENTAL TO THE CONSTRUCTION OF THE 2 BAR METAL RAIL.
THE #5 S3 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM, AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #5 S3 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

PROJECT NO. U-2524D
GUILFORD COUNTY
STATION: 25+18.62 -Y6-



DocuSigned by: Ting Fang
ET20840097435
7/1/2016

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
PARAPET AND
END POST DETAILS

DRAWN BY: C. YOKELEY
CHECKED BY: T. H. FANG
DESIGN ENGINEER OF RECORD: P. K. NEWTON
DATE: 4/14
DATE: 5/3/16
DATE: 5/12/16

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO. S1-19 TOTAL SHEETS 33
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

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.

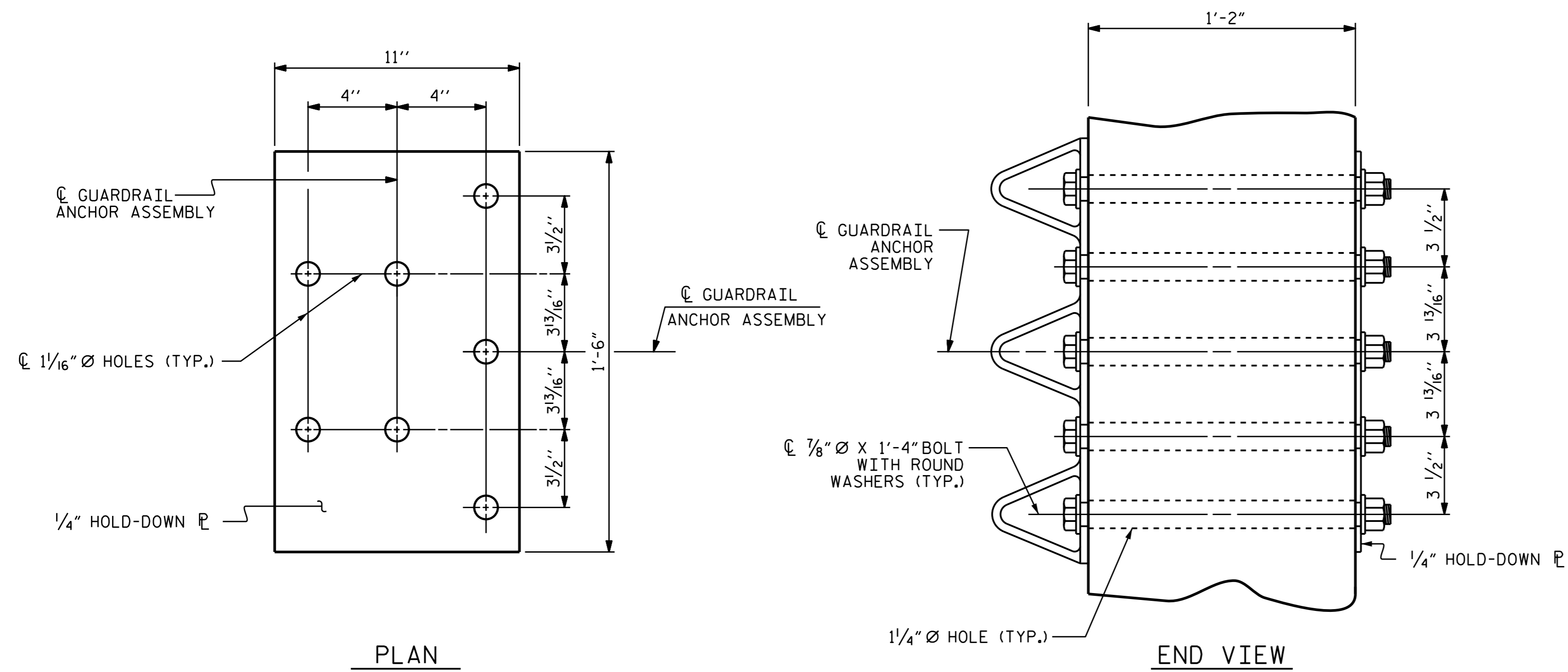
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

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

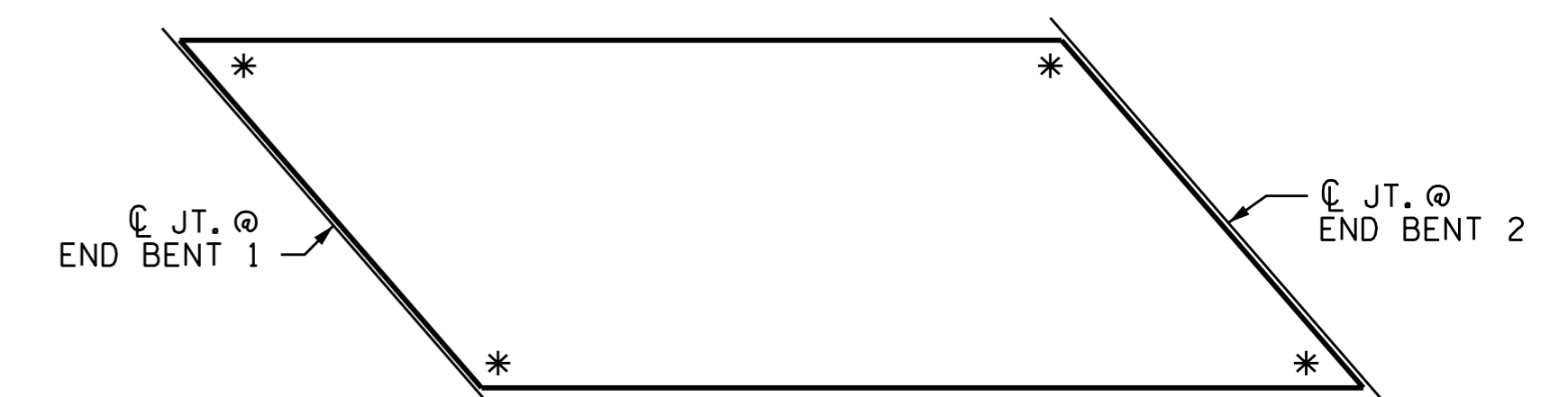
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET, FOR POINTS OF ATTACHMENT, SEE SKETCH.



PLAN

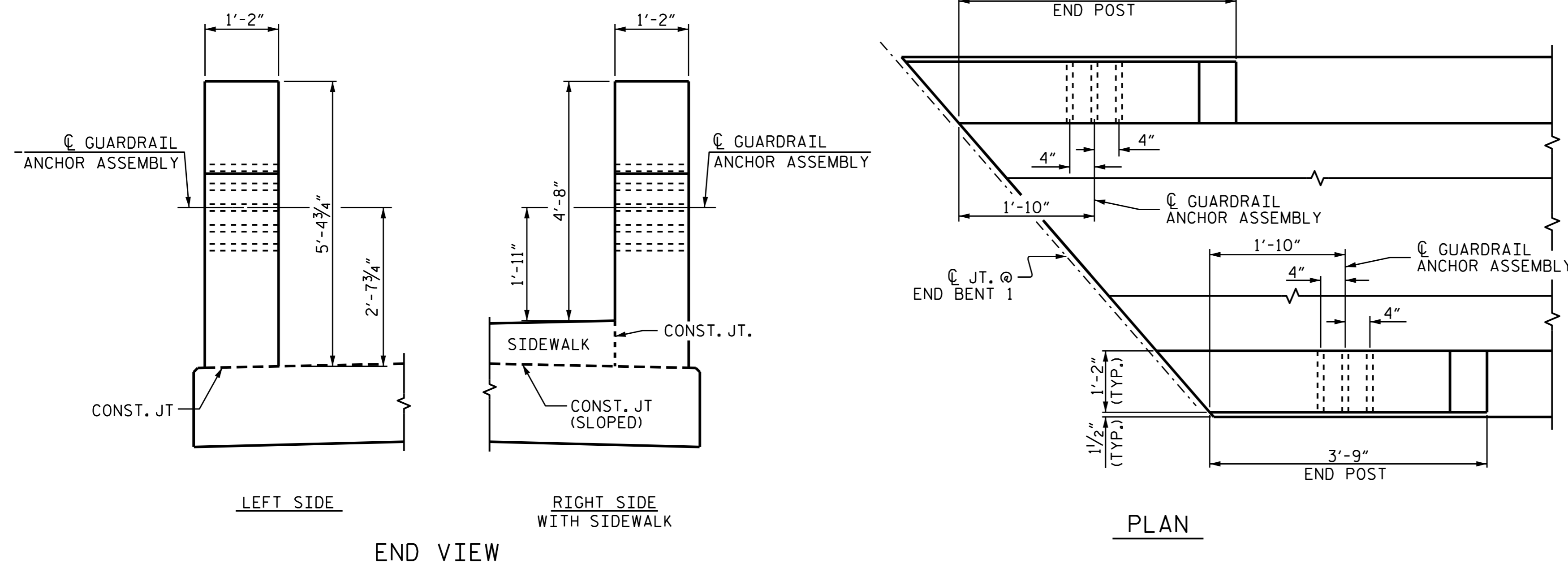
END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



LEFT SIDE

RIGHT SIDE WITH SIDEWALK

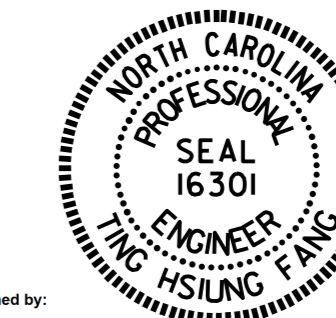
PLAN

END VIEW

LOCATION OF GUARDRAIL ANCHOR AT END POST

END BENT 1 SHOWN, END BENT 2 SIMILAR

PROJECT NO. U-2524D
GUILFORD COUNTY
 STATION: 25+18.62 -Y6-



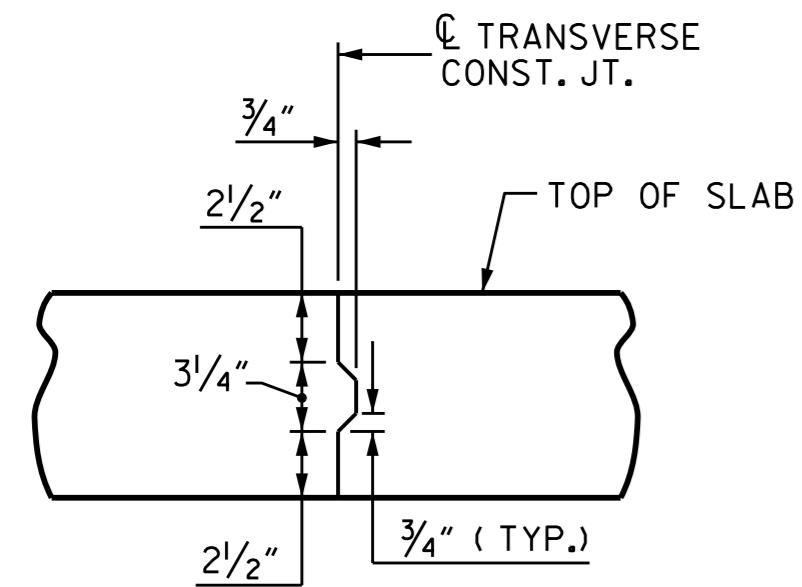
Documented by: Ting Fang
 7/1/2016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 DETAILS

REVISIONS						SHEET NO. S1-20
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 33
2			4			

ASSEMBLED BY :	C. YOKELEY	DATE :	05/14
CHECKED BY :	P.N.HOLDER	DATE :	02/16
DRAWN BY :	MAA 5/10	ADDED :	5/6/10
CHECKED BY :	GM 5/10	REV. :	10/1/11
		REV. :	12/5/11

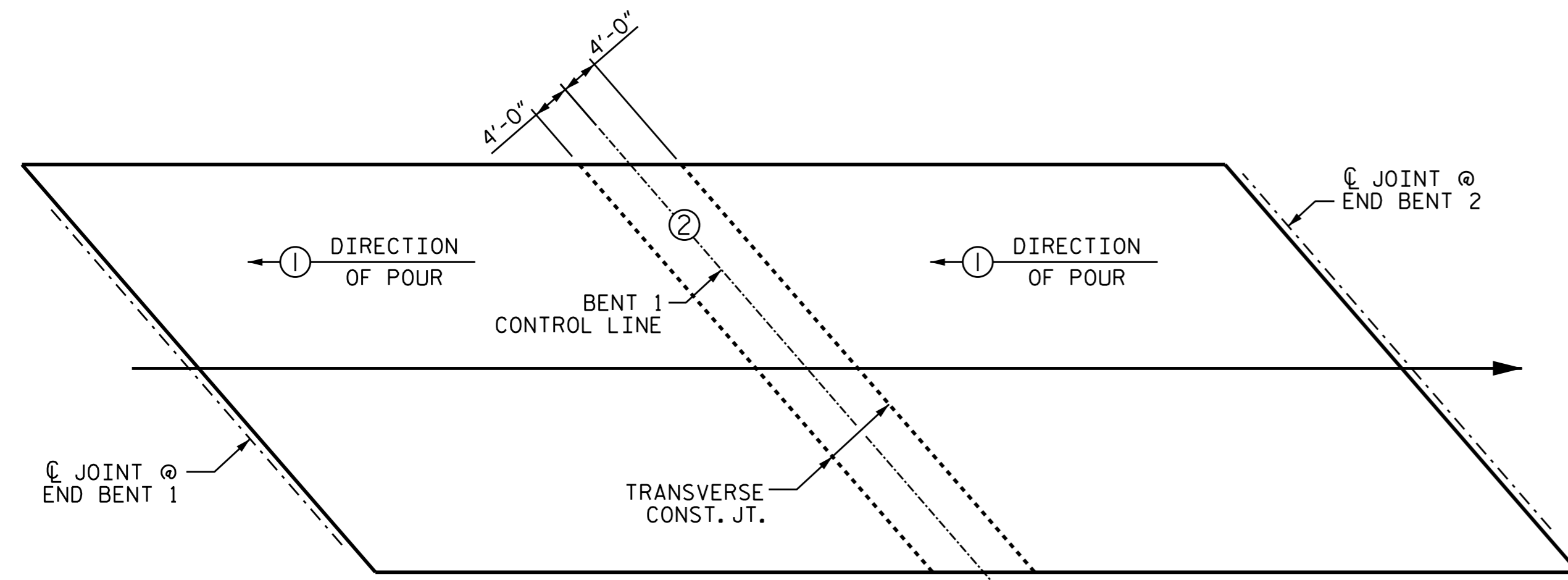


TRANSVERSE CONSTRUCTION JOINT DETAIL

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

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

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

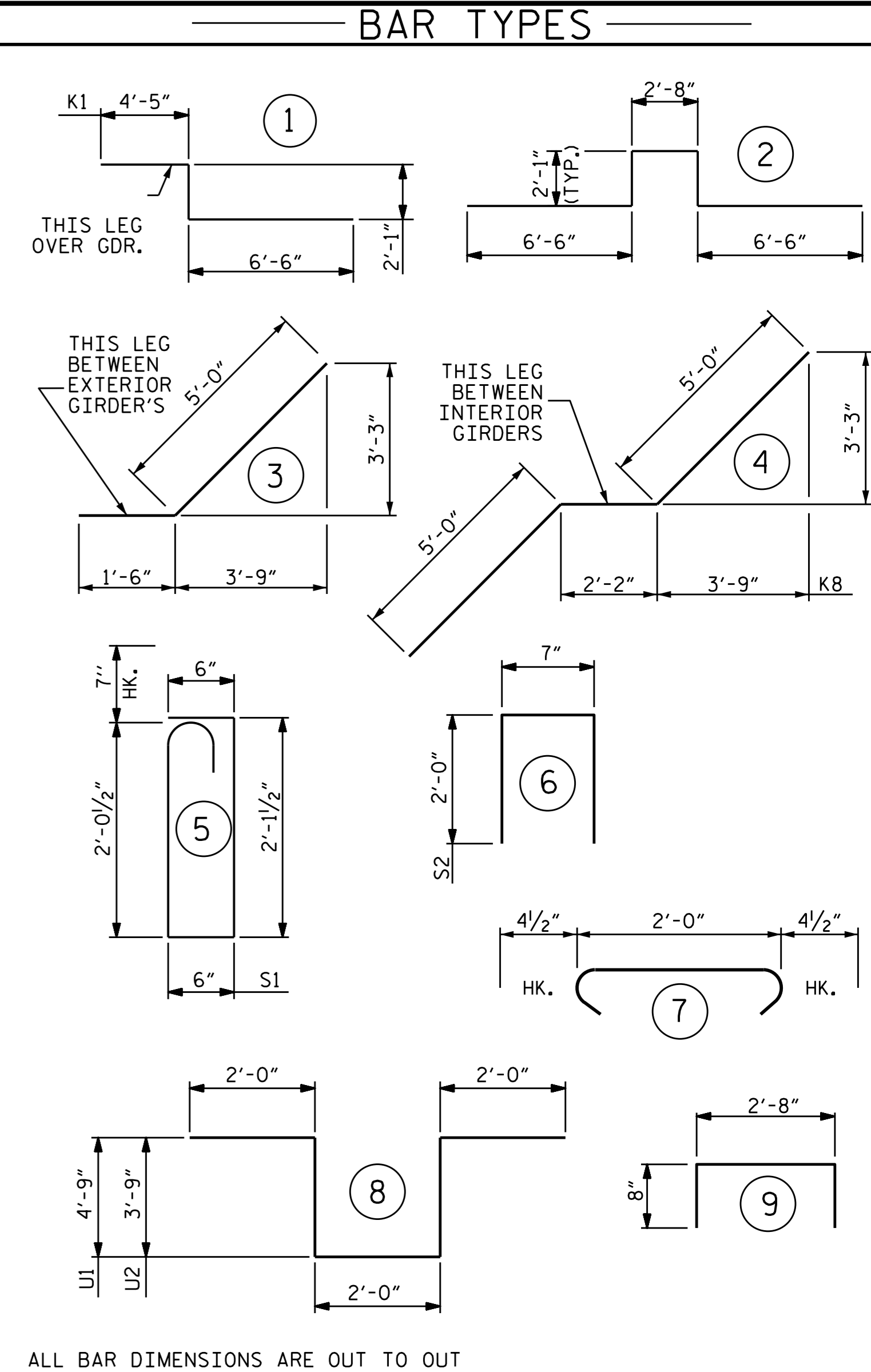


OPTIONAL POURING SEQUENCE

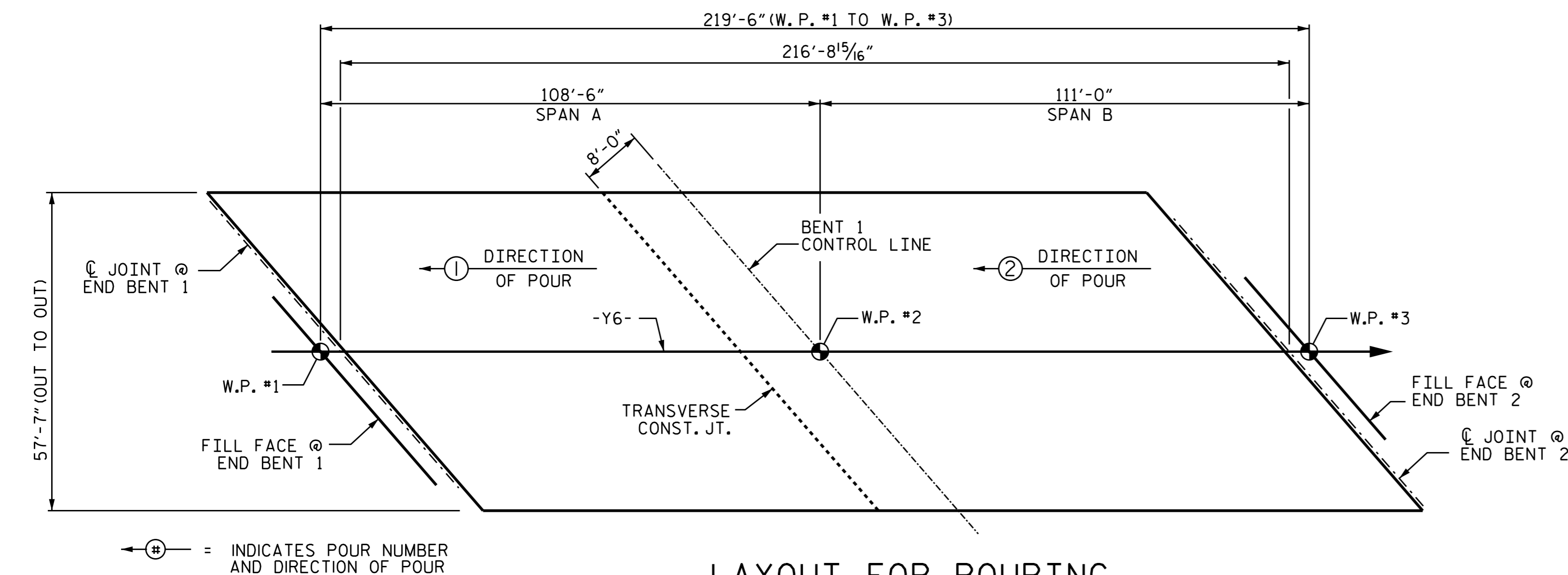
POUR 2 CANNOT BE STARTED UNTIL BOTH ADJACENT POURS LABELED POUR #1 REACH A MINIMUM OF 3000 PSI.

BILL OF MATERIAL											
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	307	#5	STR	57'-3"	18332	A213	6	#5	STR	23'-11"	150
A2	307	#5	STR	57'-3"	18332	A214	6	#5	STR	25'-10"	162
* A3	6	#6	STR	14'-6"	131	A215	6	#5	STR	27'-8"	173
						A216	6	#5	STR	29'-7"	185
* A101	4	#5	STR	2'-2"	9	A217	6	#5	STR	31'-5"	197
* A102	6	#5	STR	3'-4"	21	A218	6	#5	STR	33'-4"	209
* A103	6	#5	STR	5'-3"	33	A219	6	#5	STR	35'-2"	220
* A104	6	#5	STR	7'-1"	44	A220	6	#5	STR	37'-1"	232
* A105	6	#5	STR	8'-11"	56	A221	6	#5	STR	38'-11"	244
* A106	6	#5	STR	10'-10"	68	A222	6	#5	STR	40'-10"	256
* A107	6	#5	STR	12'-9"	80	A223	6	#5	STR	42'-8"	267
* A108	6	#5	STR	14'-7"	91	A224	6	#5	STR	44'-7"	279
* A109	6	#5	STR	15'-5"	96	A225	6	#5	STR	46'-5"	290
* A110	6	#5	STR	18'-4"	115	A226	6	#5	STR	48'-4"	302
* A111	6	#5	STR	20'-3"	127	A227	6	#5	STR	50'-2"	314
* A112	6	#5	STR	22'-1"	138	A228	6	#5	STR	52'-0"	325
* A113	6	#5	STR	23'-11"	150	A229	6	#5	STR	53'-11"	337
* A114	6	#5	STR	25'-10"	162	A230	6	#5	STR	55'-10"	349
* A115	6	#5	STR	27'-8"	173						
* A116	6	#5	STR	29'-7"	185	* B1	117	#4	STR	25'-1"	1960
* A117	6	#5	STR	31'-5"	197	* B2	78	#7	STR	40'-7"	6470
* A118	6	#5	STR	33'-4"	209	* B3	38	#7	STR	33'-0"	2563
* A119	6	#5	STR	35'-2"	220	* B4	117	#4	STR	25'-8"	2006
* A120	6	#5	STR	37'-1"	232	B5	248	#5	STR	55'-7"	14377
* A121	6	#5	STR	38'-11"	244						
* A122	6	#5	STR	40'-10"	256	* G1	4	#5	STR	39'-2"	163
* A123	6	#5	STR	42'-8"	267						
* A124	6	#5	STR	44'-7"	279	* K1	8	#7	1	13'-0"	213
* A125	6	#5	STR	46'-5"	290	* K2	24	#7	2	19'-10"	973
* A126	6	#5	STR	48'-4"	302	* K3	42	#6	STR	7'-3"	457
* A127	6	#5	STR	50'-2"	314	K4	28	#4	STR	7'-3"	136
* A128	6	#5	STR	52'-0"	325	K5	28	#4	STR	8'-7"	161
* A129	6	#5	STR	53'-11"	337	K6	14	#4	STR	5'-1"	48
* A130	6	#5	STR	55'-10"	349	K7	10	#4	3	7'-2"	48
						K8	30	#4	4	12'-2"	244
A201	4	#5	STR	2'-2"	9						
A202	6	#5	STR	3'-4"	21	* S1	98	#5	5	5'-9"	588
A203	6	#5	STR	5'-3"	33	* S2	98	#4	6	4'-7"	300
A204	6	#5	STR	7'-1"	44	S3	154	#4	7	2'-9"	283
A205	6	#5	STR	8'-11"	56						
A206	6	#5	STR	10'-10"	68	U1	28	#4	8	15'-6"	290
A207	6	#5	STR	12'-9"	80	U2	14	#4	8	13'-6"	126
A208	6	#5	STR	14'-7"	91						
A209	6	#5	STR	15'-5"	96						
A210	6	#5	STR	18'-4"	115						
A211	6	#5	STR	20'-3"	127						
A212	6	#5	STR	22'-1"	138						
REINFORCING STEEL = 39,413 LBS											
* EPOXY COATED REINF. STEEL = 39,524 LBS											
SIDEWALK QUANTITY (FOR RIGHT SIDE ONLY)											
* B6	40	#4	STR.	28'-10"	770						
* G2	217	#4	STR.	6'-7"	954						
* U3	64	#4	9	4'-0"	171						
* EPOXY COATED REINF. STEEL = 1,895 LBS											

* DENOTES EPOXY COATED REINF. STEEL



ALL BAR DIMENSIONS ARE OUT TO OUT



LAYOUT FOR POURING SEQUENCE & COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 12,481)

SUPERSTRUCTURE BILL OF MATERIAL			
	CLASS AA CONCRETE (CU. YD.)	REINFORCING STEEL (LBS)	EPOXY COATED REINFORCING STEEL (LBS)
SPANS A & B		39,413	39,524
POUR NO. 1	173.1		
POUR NO. 2	211.1		
SIDEWALK	26.7		1,895
TOTALS **	410.9	39,413	41,419

** QUANTITIES INCLUDED WITH SPAN TOTALS

GROOVING BRIDGE FLOORS	
APPROACH SLABS	2,284 SQ.FT.
BRIDGE DECK	10,058 SQ.FT.
TOTAL	12,342 SQ.FT.



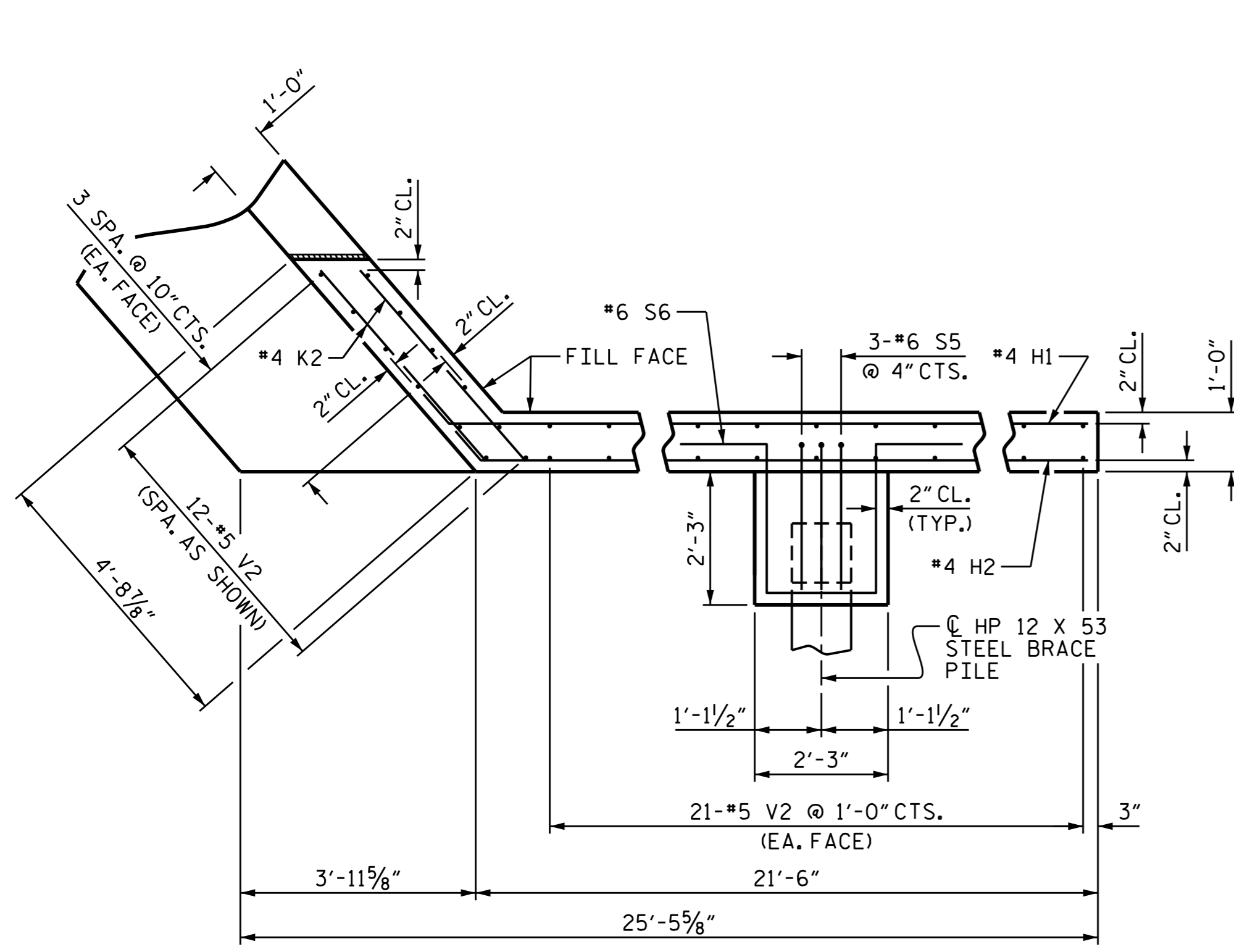
DocuSigned by: Ting Fang 7/1/2016

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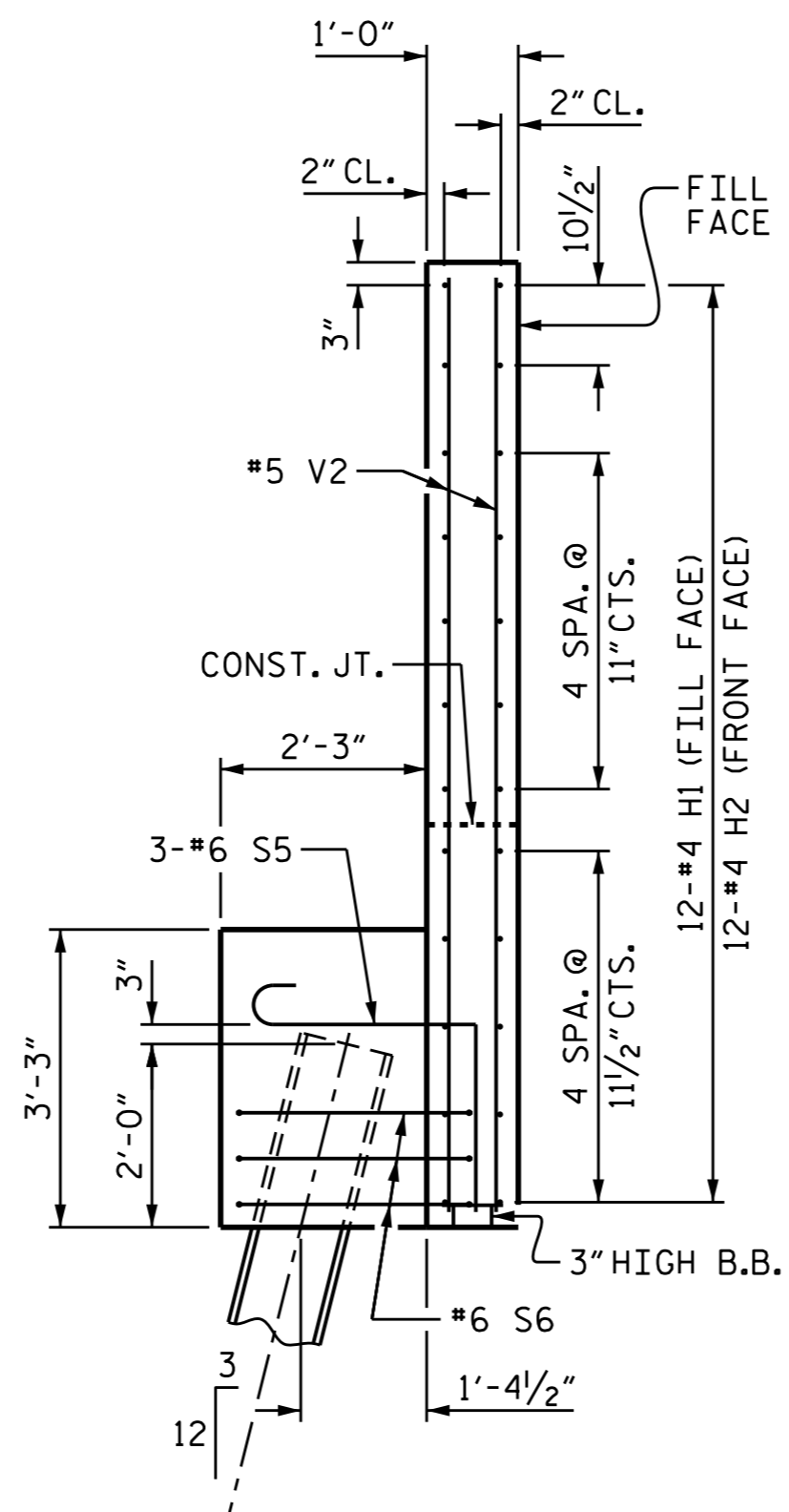
PROJECT NO. U-2524D
 GUILFORD COUNTY
 STATION: 25+18.62 -Y6-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE					
BILL OF MATERIAL					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					33

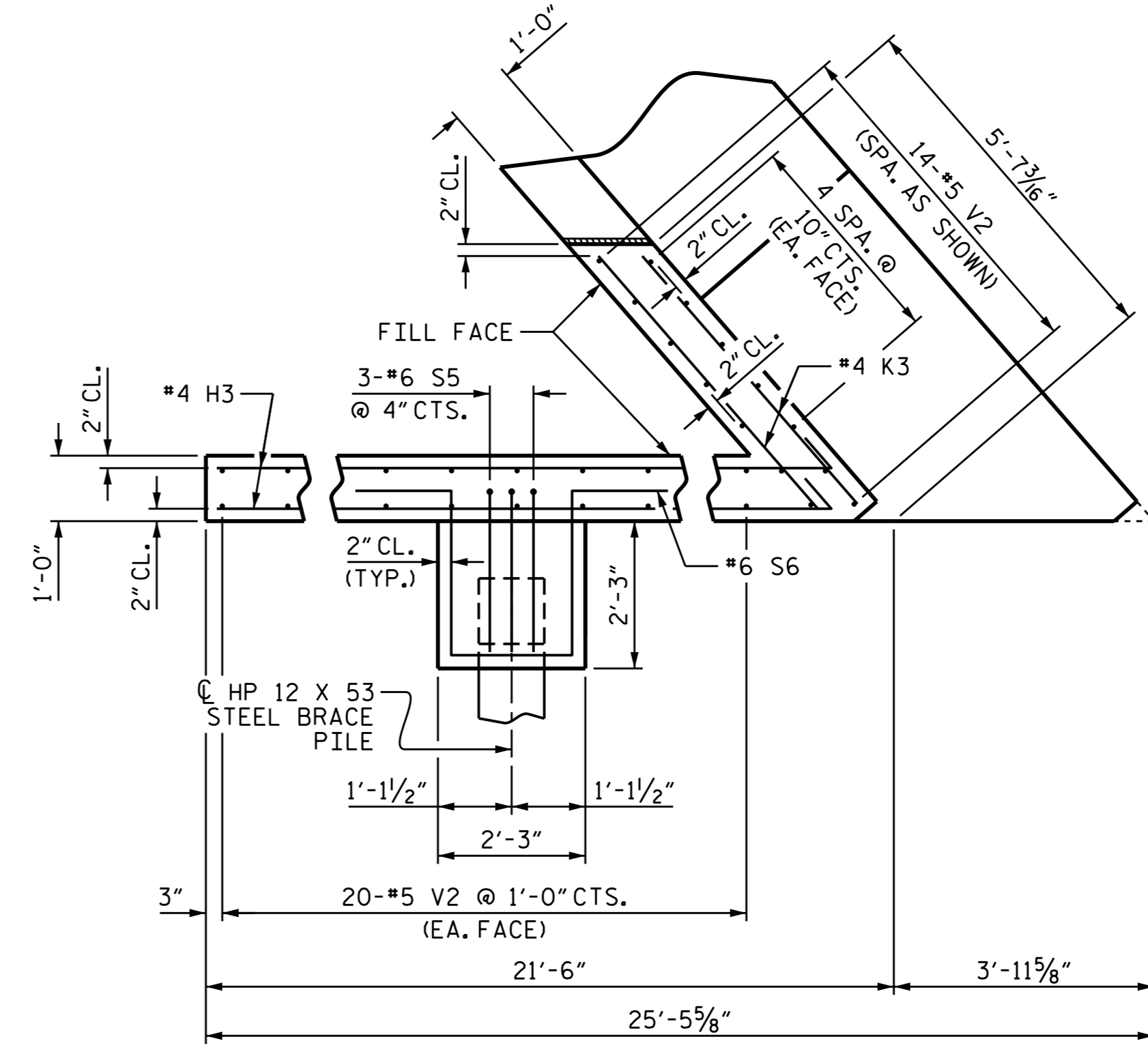
ASSEMBLED BY: P.N.HOLDER	DATE: 03/16
CHECKED BY: T.H.FANG	DATE: 4/21/16
DESIGN ENGINEER OF RECORD: P.K. NEWTON	DATE: 5/12/16
DRAWN BY: JMB 5/87	REV. 6/1/94 EEM/GRP
CHECKED BY: SJD 9/87	REV. 8/16/99 RWW/LES
	REV. 5/1/06 TLA/GM



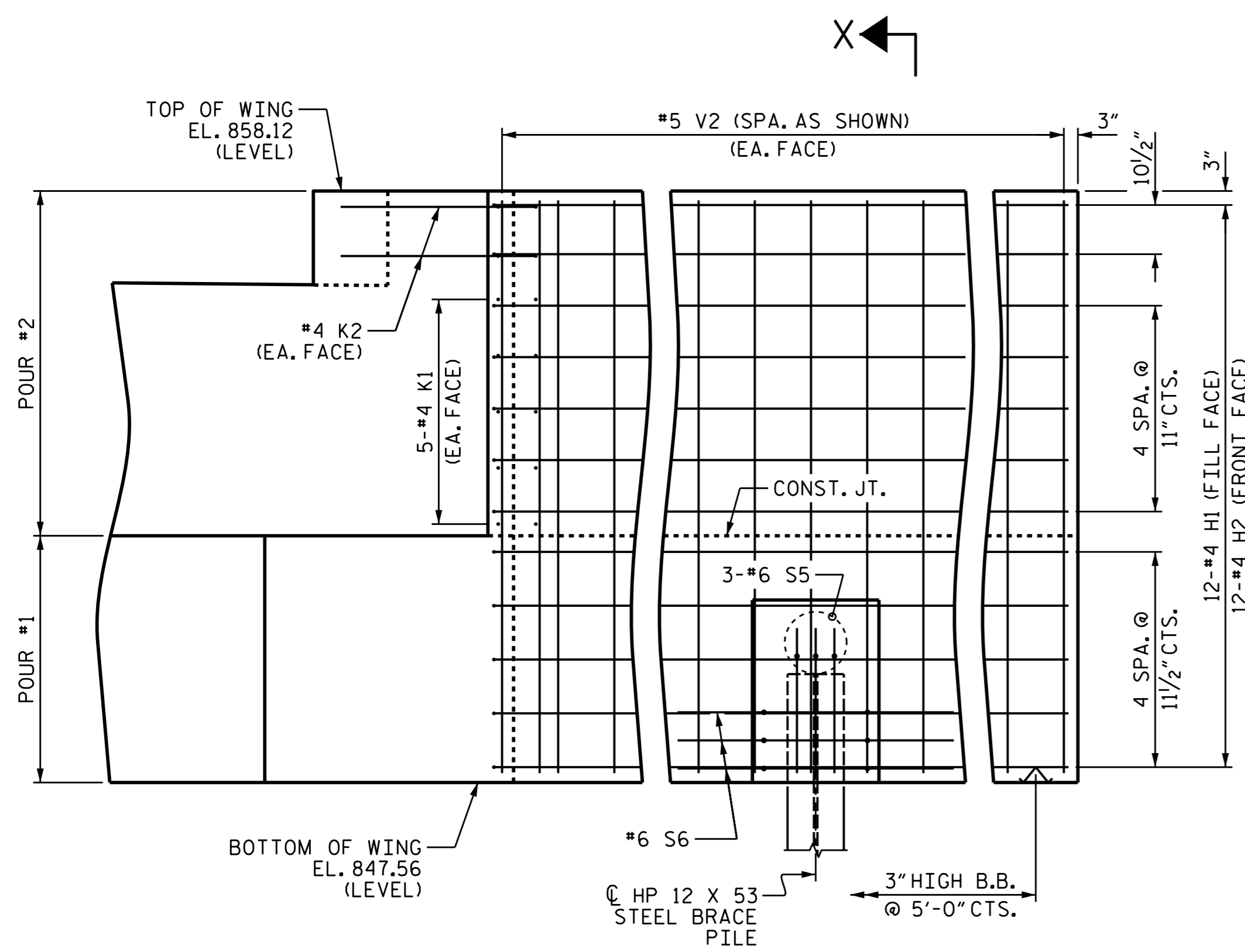
PLAN OF WING W1



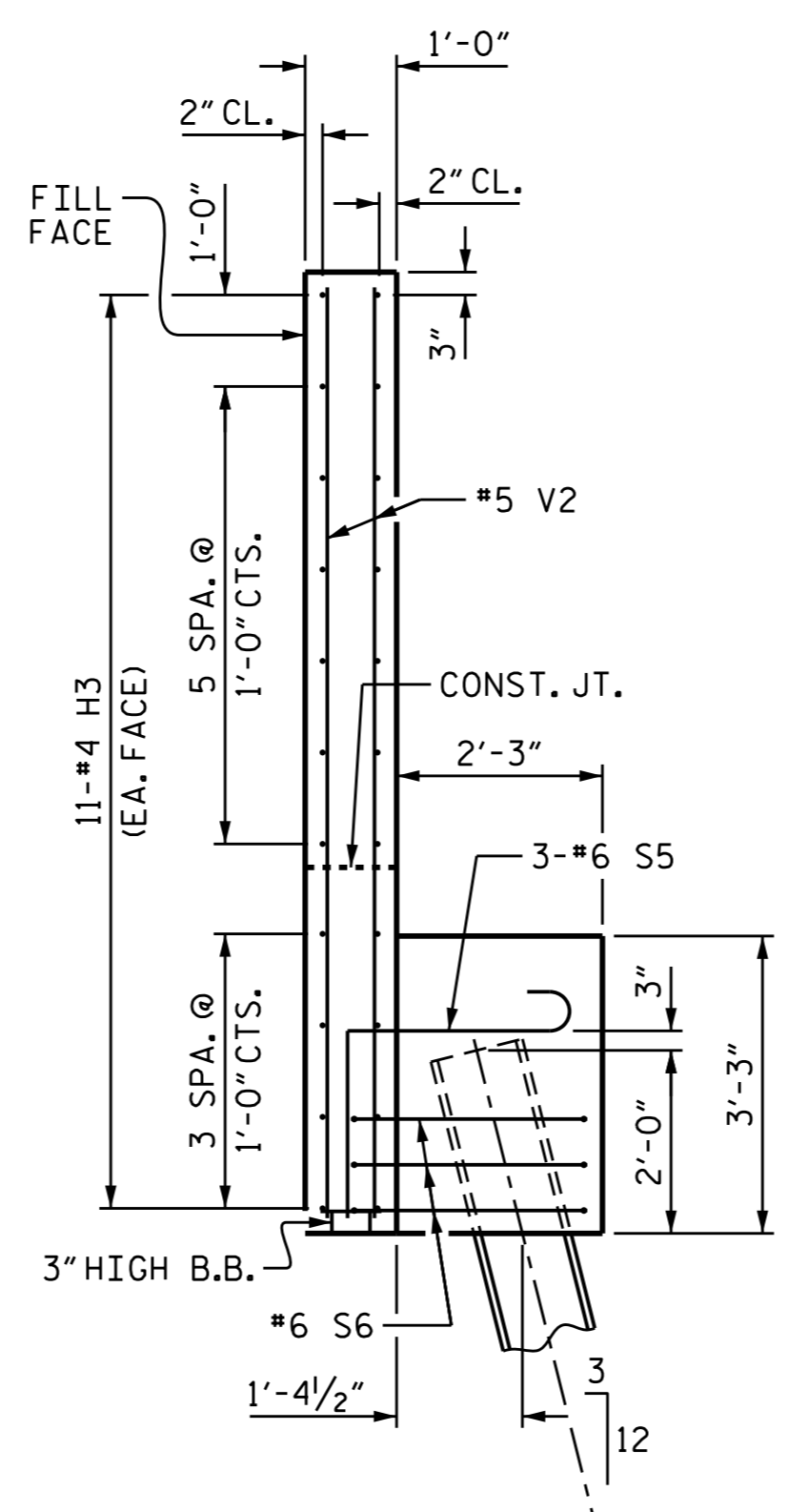
SECTION X-X



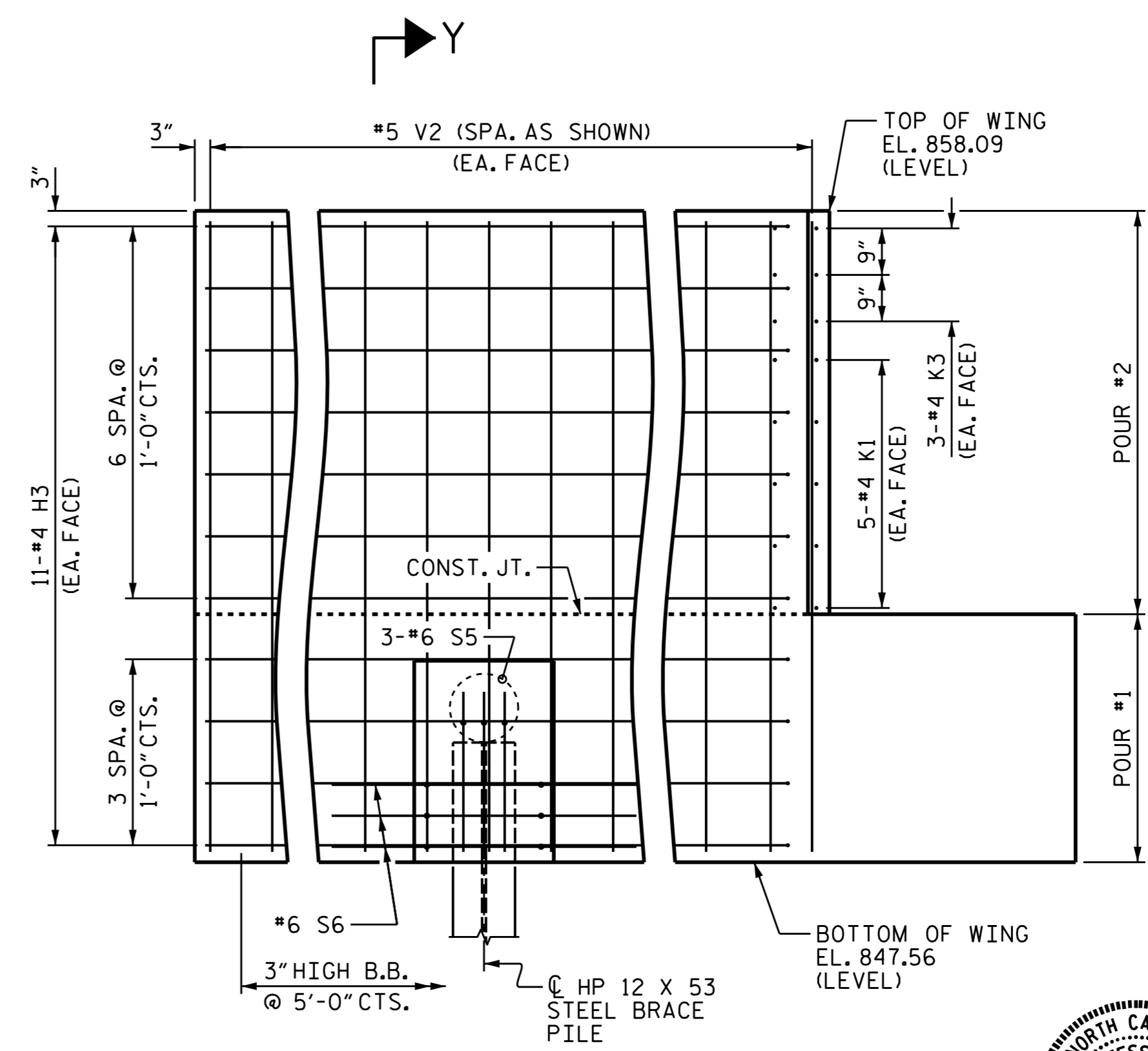
PLAN OF WING W2



ELEVATION OF WING W1



SECTION Y-Y



ELEVATION OF WING W2

PROJECT NO. U-2524D
GUILFORD COUNTY
 STATION: 25+18.62 -Y6-

SHEET 2 OF 3

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



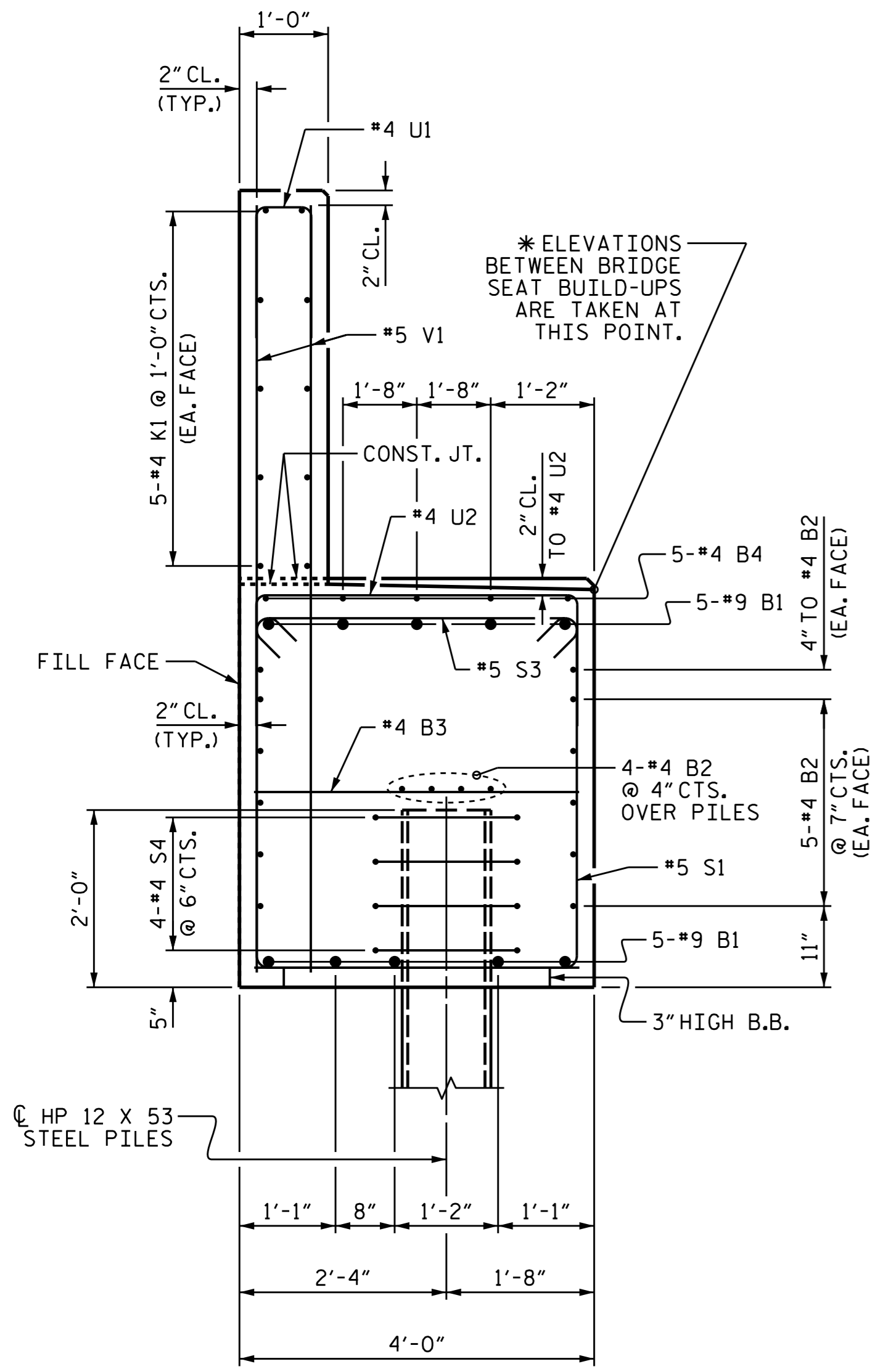
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 Ting Fang
 E7208840097435... 7/1/2016

DRAWN BY: P. K. NEWTON DATE: 4/13/16
 CHECKED BY: T. H. FANG DATE: 5/3/16
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 5/12/16

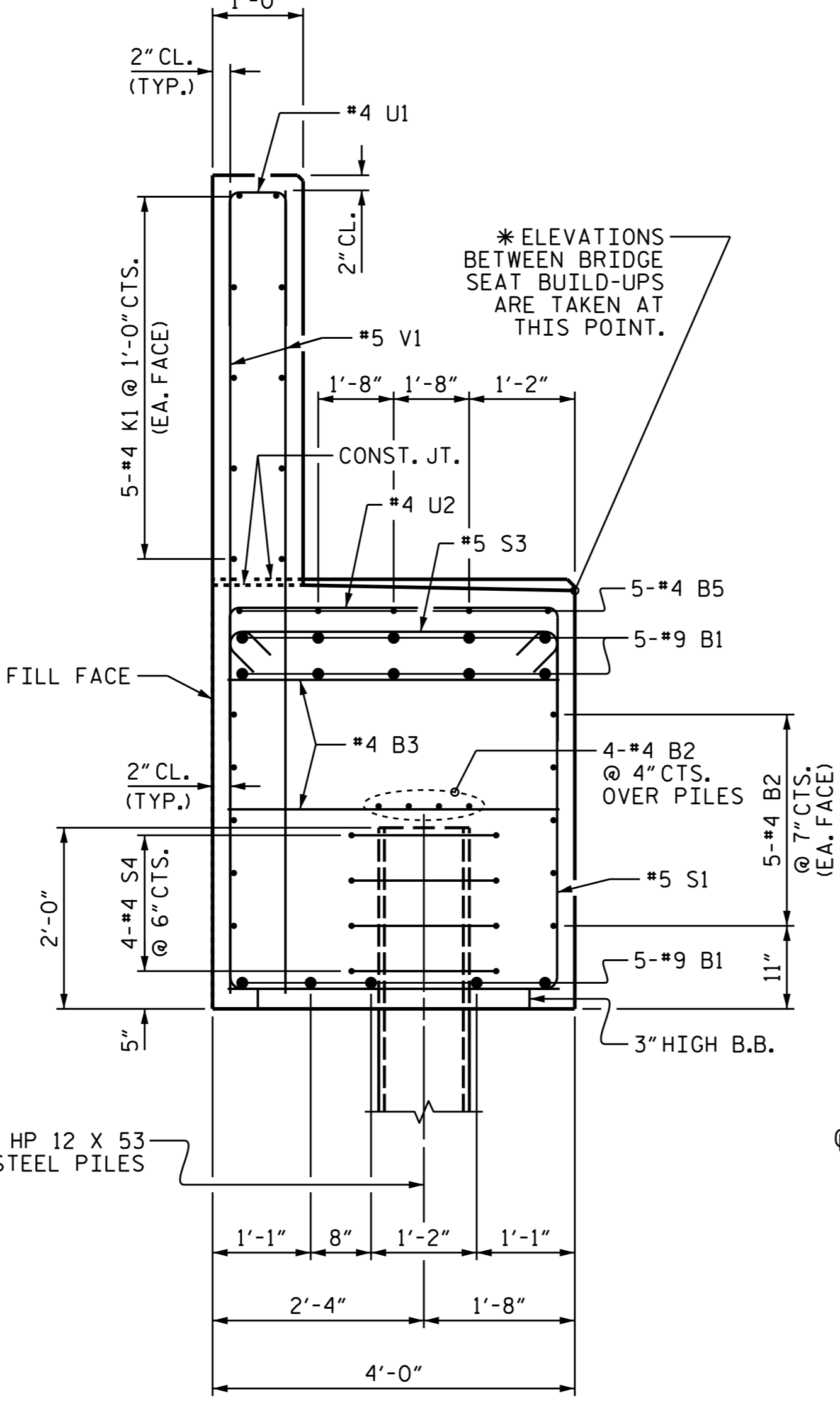
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 SIGNATURES COMPLETED

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-23	
1			3			TOTAL SHEETS	
2			4			33	

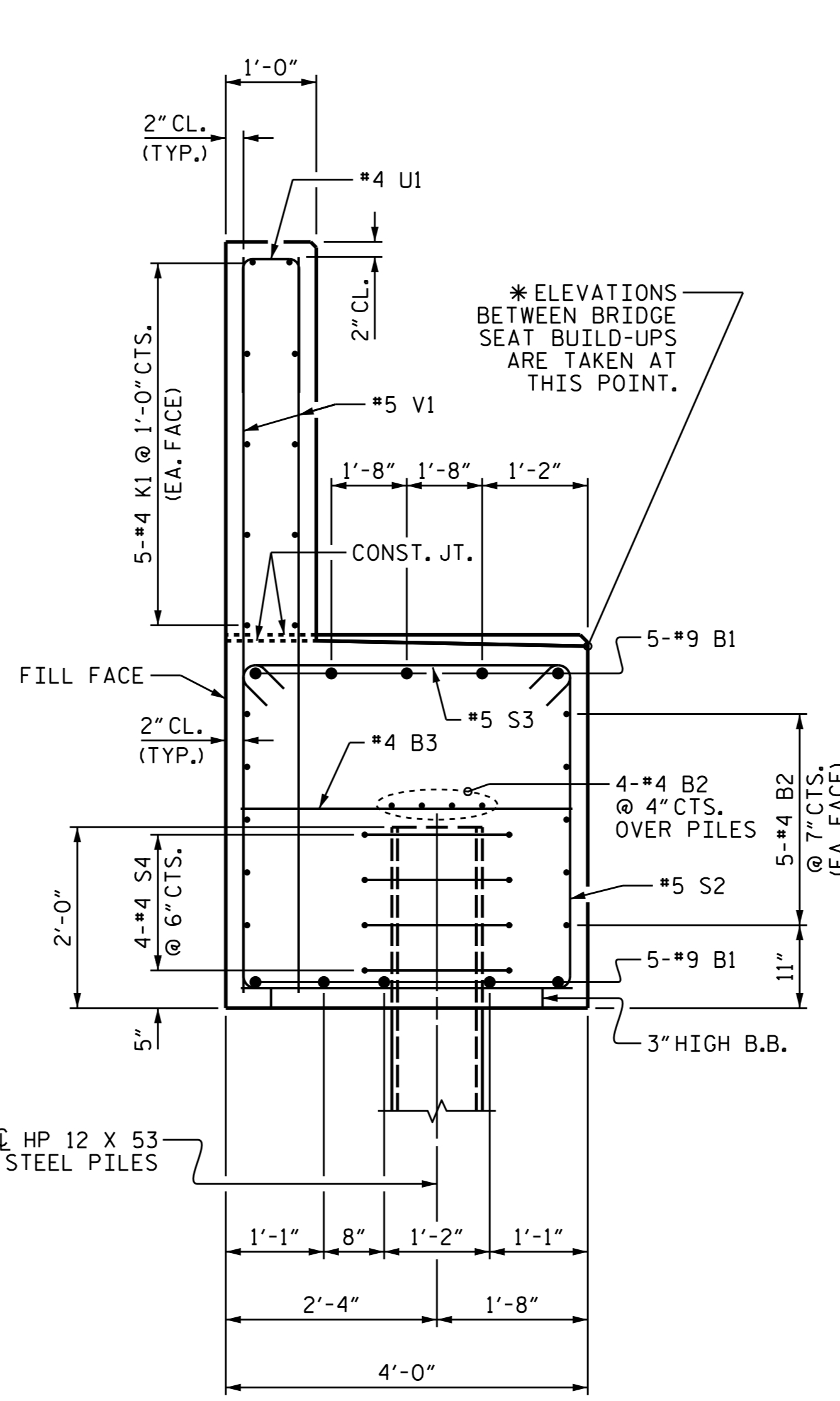
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 ffang



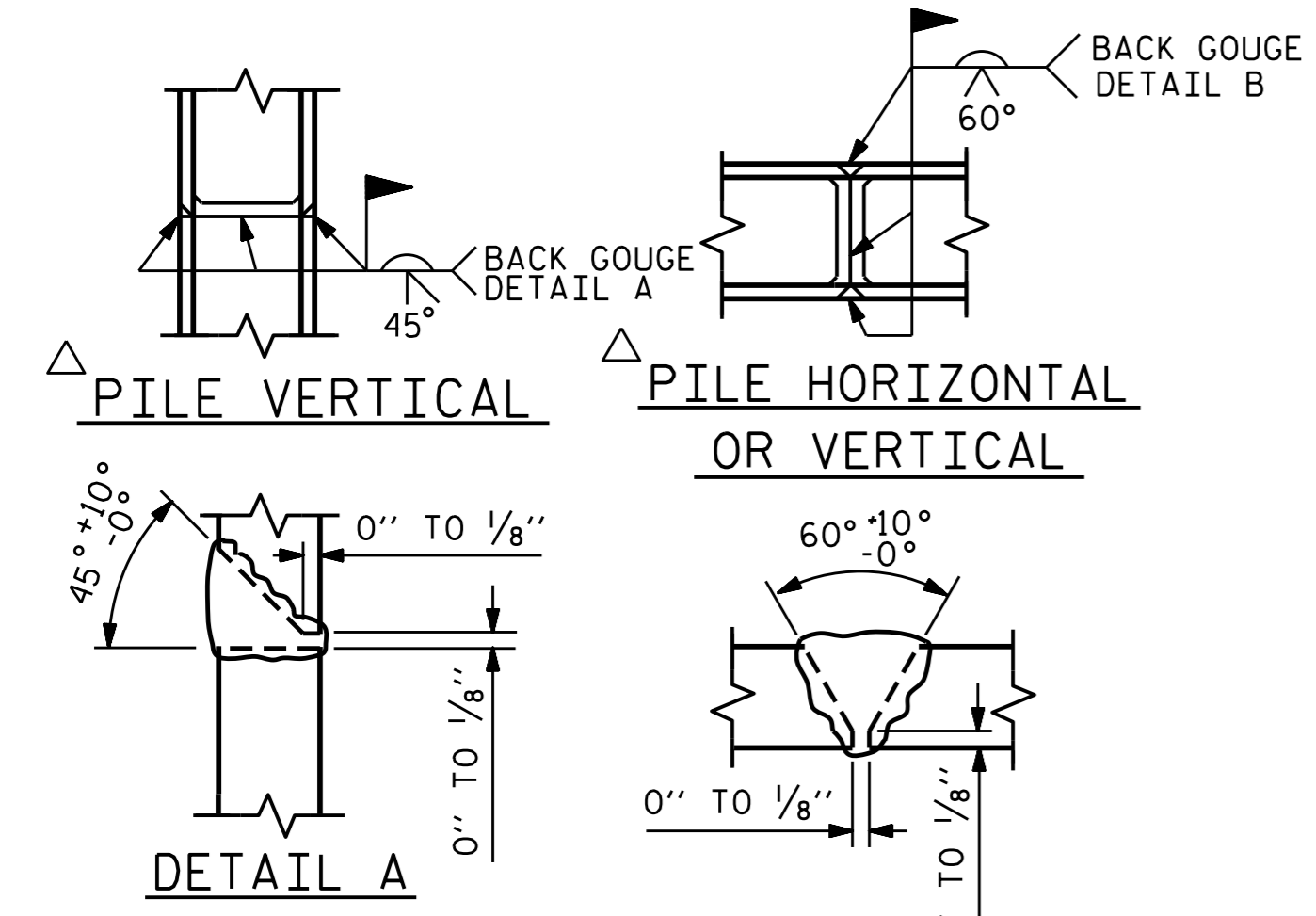
SECTION A-A



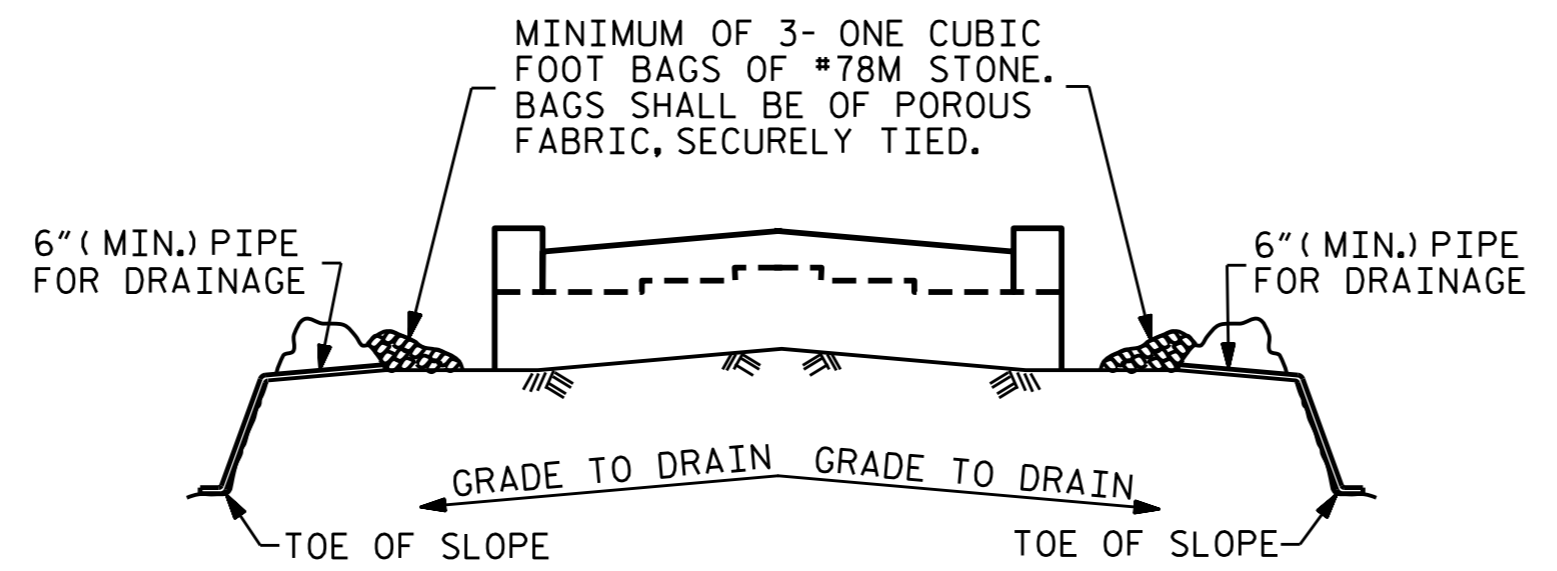
SECTION B-B



SECTION C-C



PILE SPLICE DETAILS

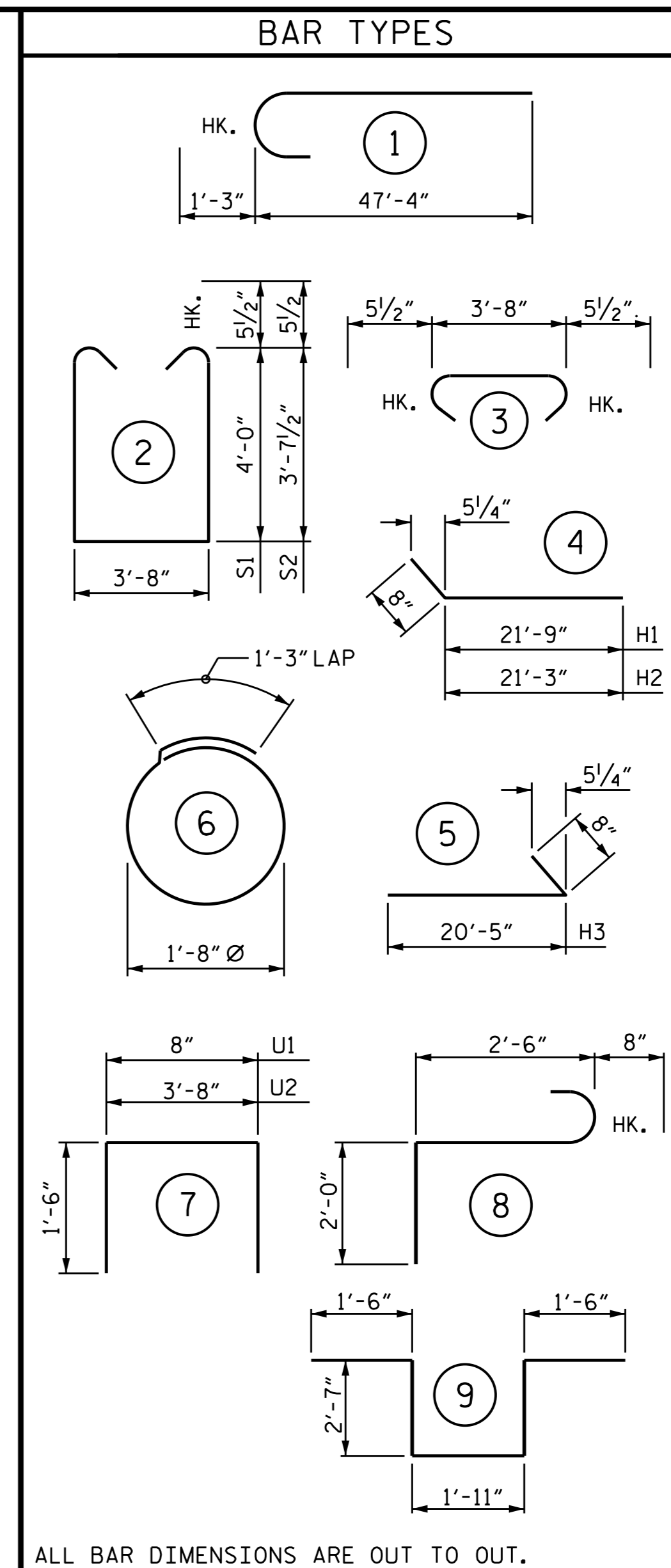


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	20	#9		48'-7"	3304
B2	42	#4	STR	29'-7"	830
B3	25	#4	STR	3'-8"	61
B4	5	#4	STR	2'-8"	9
B5	9	#4	STR	22'-6"	135
B6	10	#4	STR	10'-0"	67
H1	12	#4	4	22'-5"	180
H2	12	#4	4	21'-11"	176
H3	22	#4	5	21'-1"	310
K1	30	#4	STR	29'-7"	593
K2	4	#4	STR	4'-3"	11
K3	6	#4	STR	5'-0"	20
S1	43	#5	2	12'-7"	564
S2	35	#5	2	11'-10"	432
S3	78	#5	3	4'-7"	373
S4	40	#4	6	6'-6"	174
S5	6	#6	8	5'-2"	47
S6	6	#6	9	10'-1"	91
U1	74	#4	7	3'-8"	181
U2	34	#4	7	6'-8"	151
V1	148	#5	STR	8'-1"	1248
V2	108	#5	STR	10'-2"	1145

REINFORCING STEEL	LBS.	
CLASS A CONCRETE		
POUR 1 (CAP. & LOWER WINGS)		61.7 C.Y.
POUR 2 (BACKWALL & UPPER WINGS)		24.4 C.Y.
TOTAL		86.1 C.Y.

HP 12 X 53 STEEL PILES
NUMBER = 12
LIN. FT. = 510

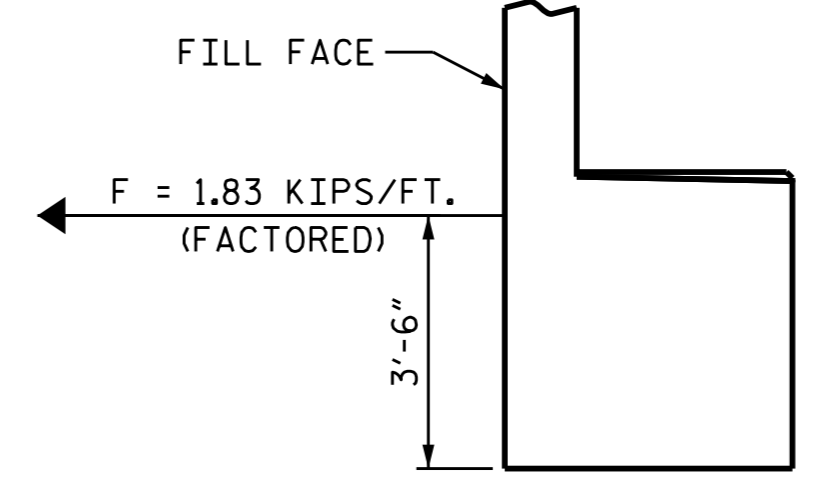
PROJECT NO. U-2524D
GUILFORD COUNTY
STATION: 25+18.62 -Y6-

SHEET 3 OF 3

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



DocuSigned by:
Ting Fang
7/1/2016



GALVANIZED REINF. STRAP LOAD DETAIL
GALVANIZED REINFORCING STRAPS SHALL BE ATTACHED TO THE END BENT. FOR DESIGN CRITERIA AND DETAILS, SEE SPECIAL PROVISIONS FOR "MECHANICALLY STABILIZED EARTH RETAINING WALLS".

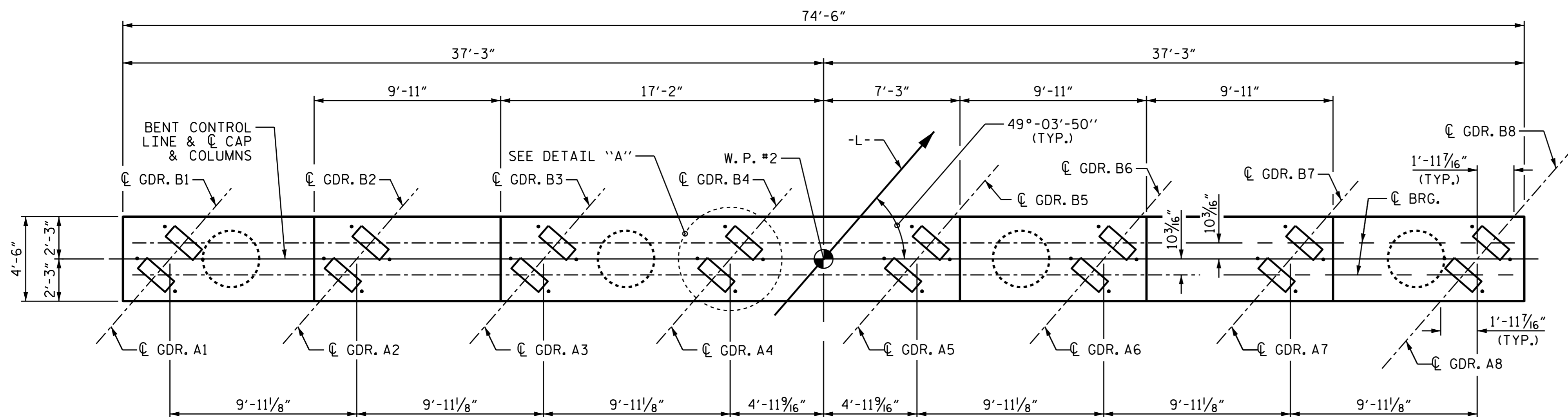
DRAWN BY: P. K. NEWTON DATE: 4/18/16
CHECKED BY: T. H. FANG DATE: 5/3/16
DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 5/12/16

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-24
1			3			TOTAL SHEETS
2			4			33

NOTES

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

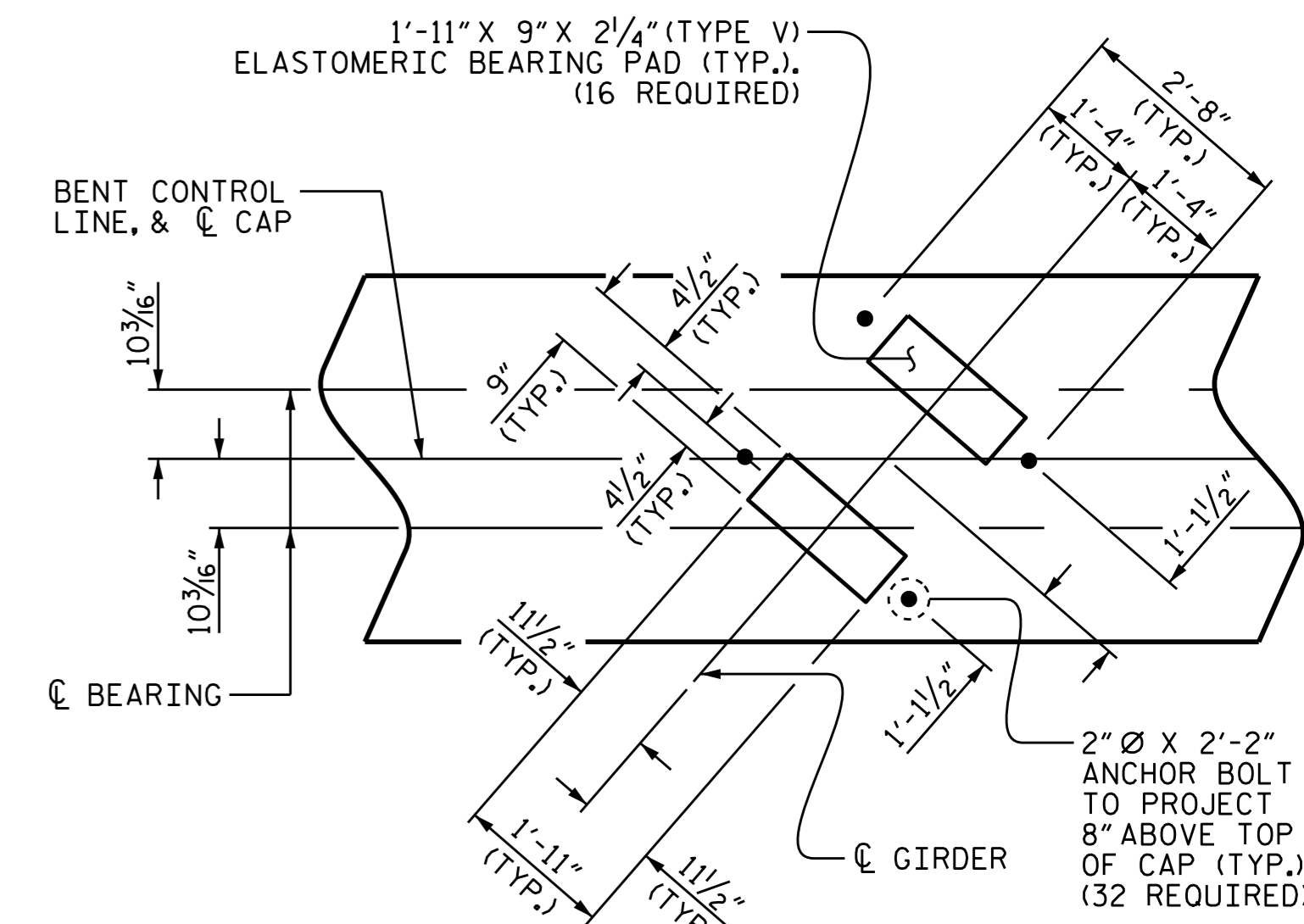
HOOKS IN "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.



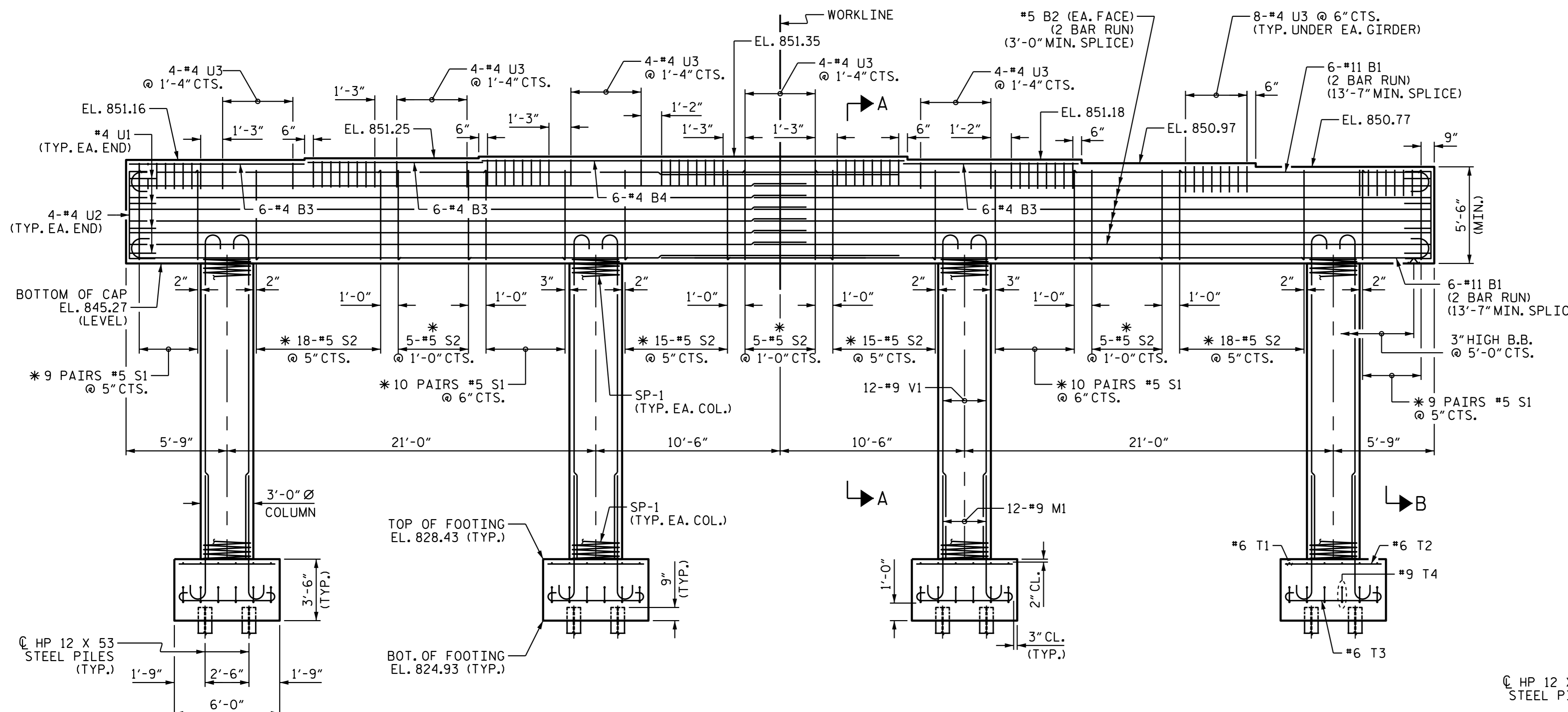
PLAN

SPAN B

SPAN A

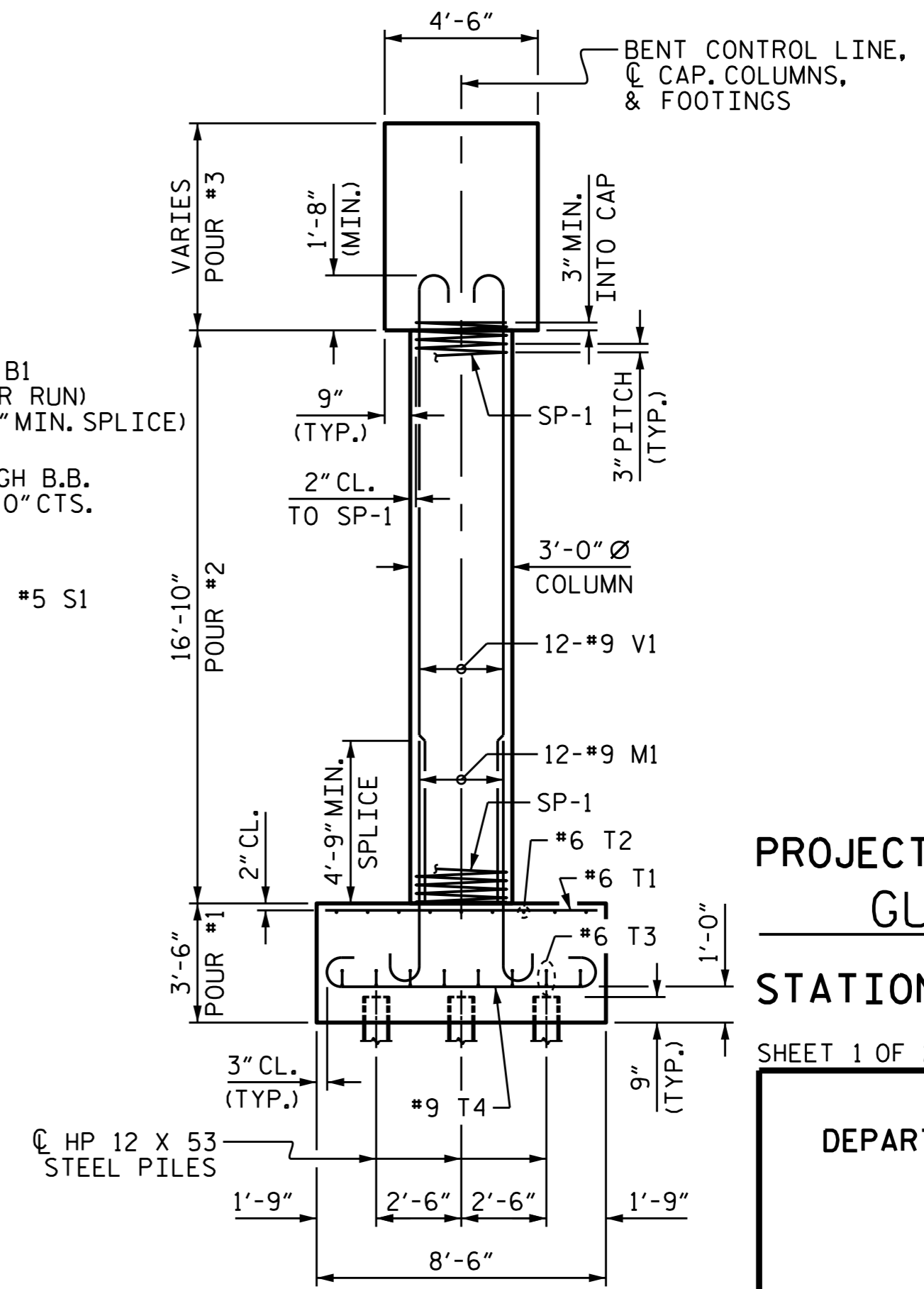


DETAIL "A"



ELEVATION

REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN AND FOOTING UNLESS OTHERWISE NOTED.



END ELEVATION



Disseminated by: *Ting Fang* 7/1/2016
E72088400977435

PROJECT NO. U-2524D
GUILFORD COUNTY
STATION: 25+18.62 -Y6-

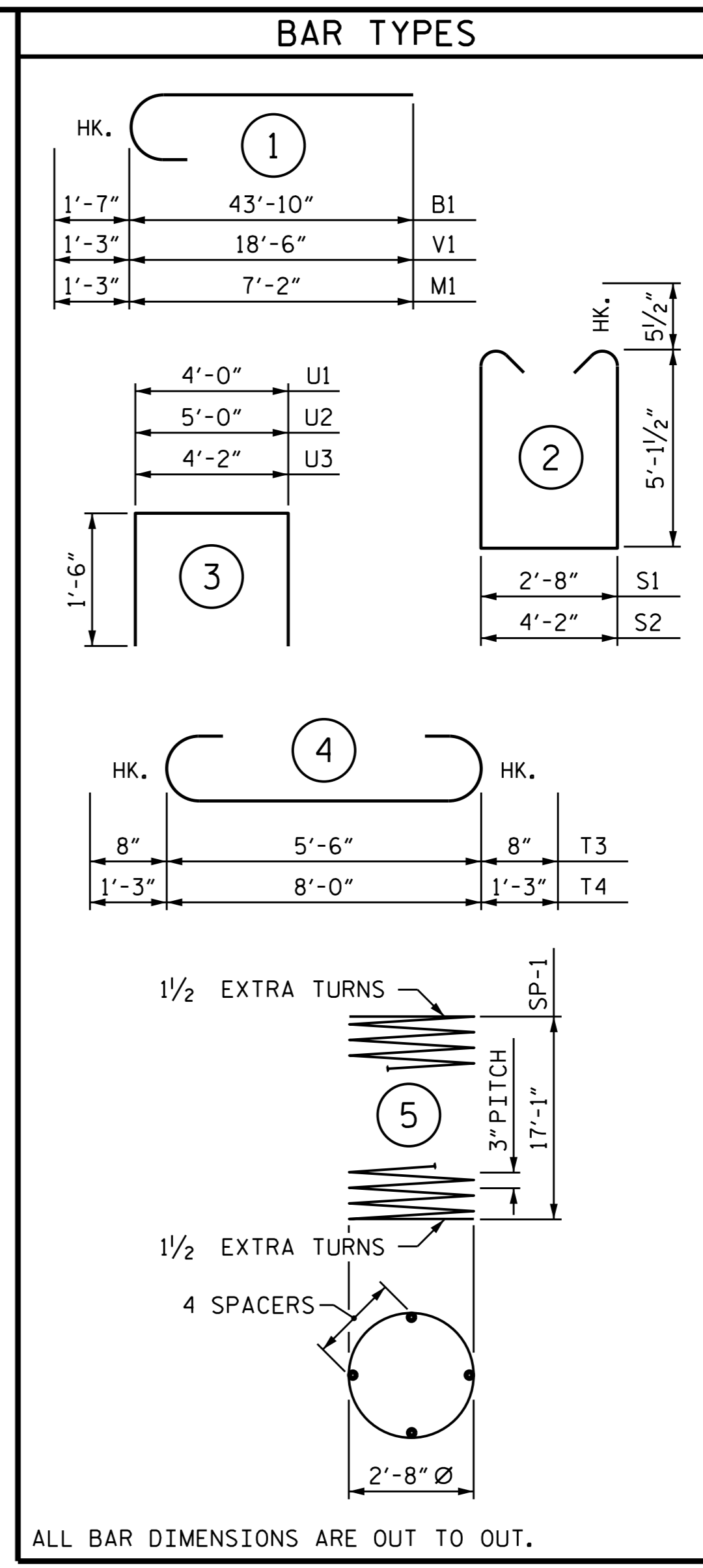
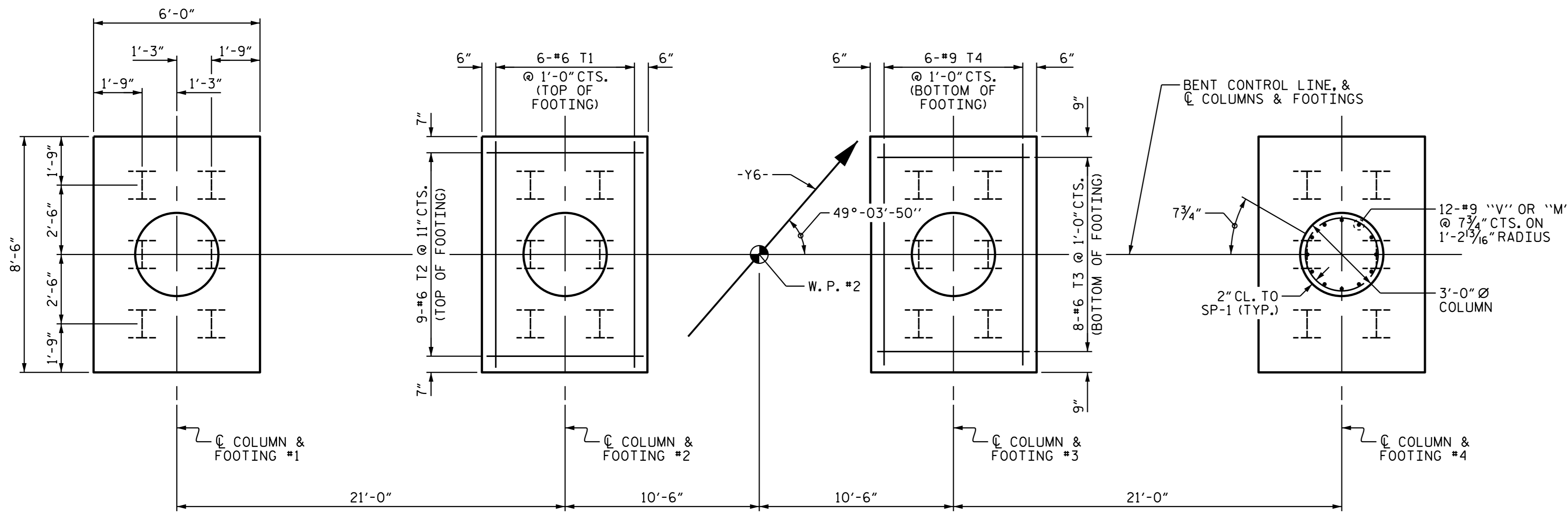
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 1

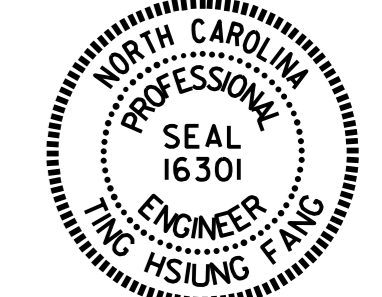
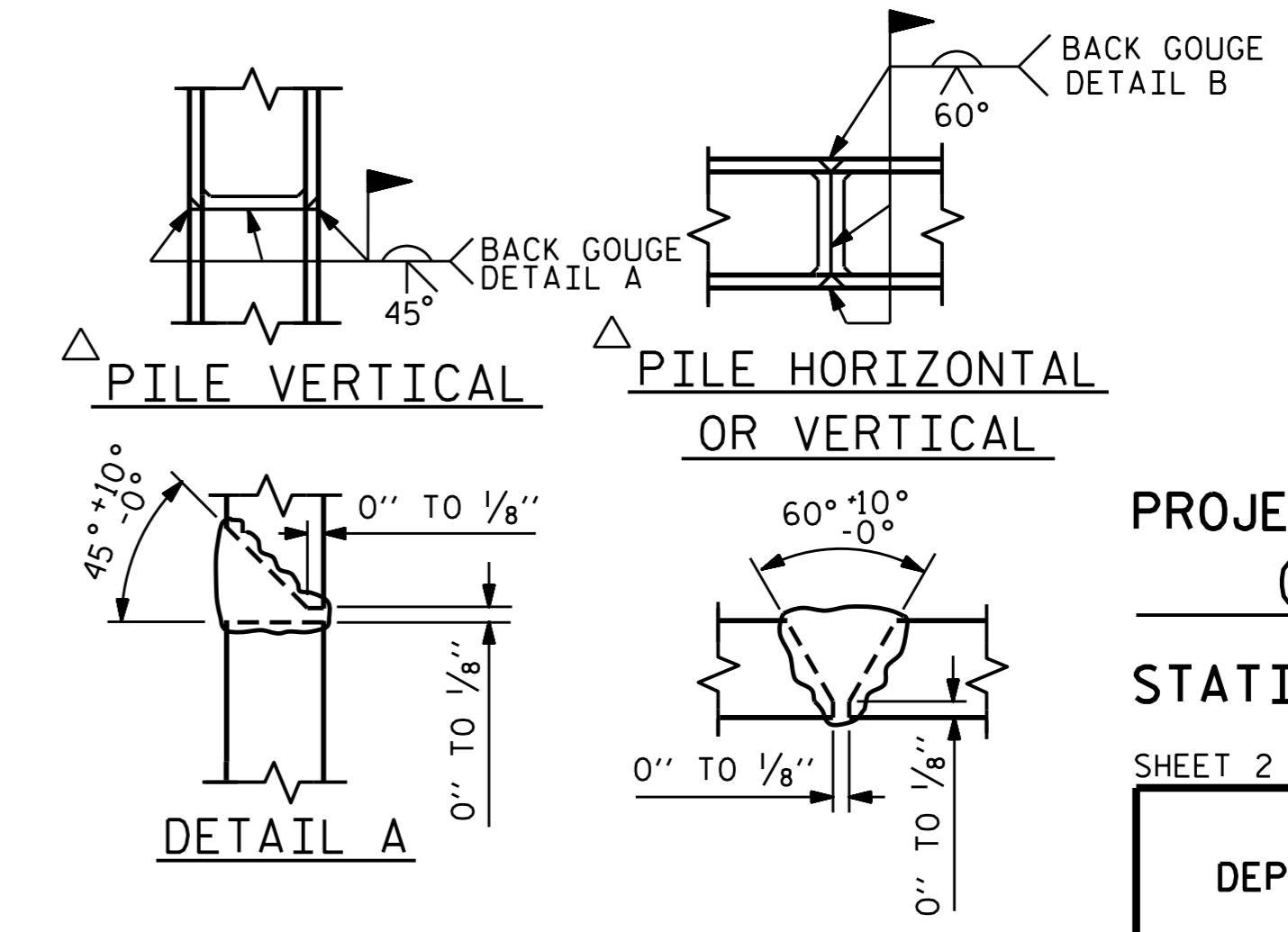
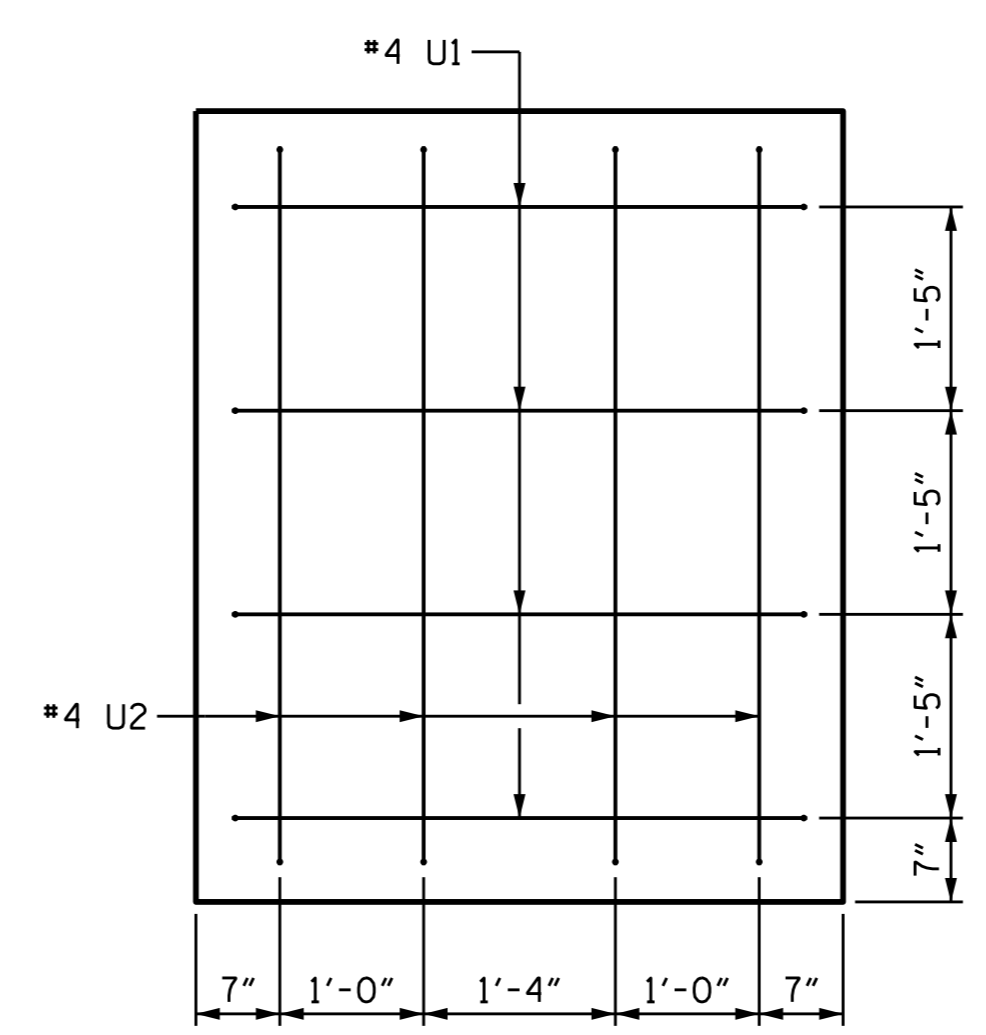
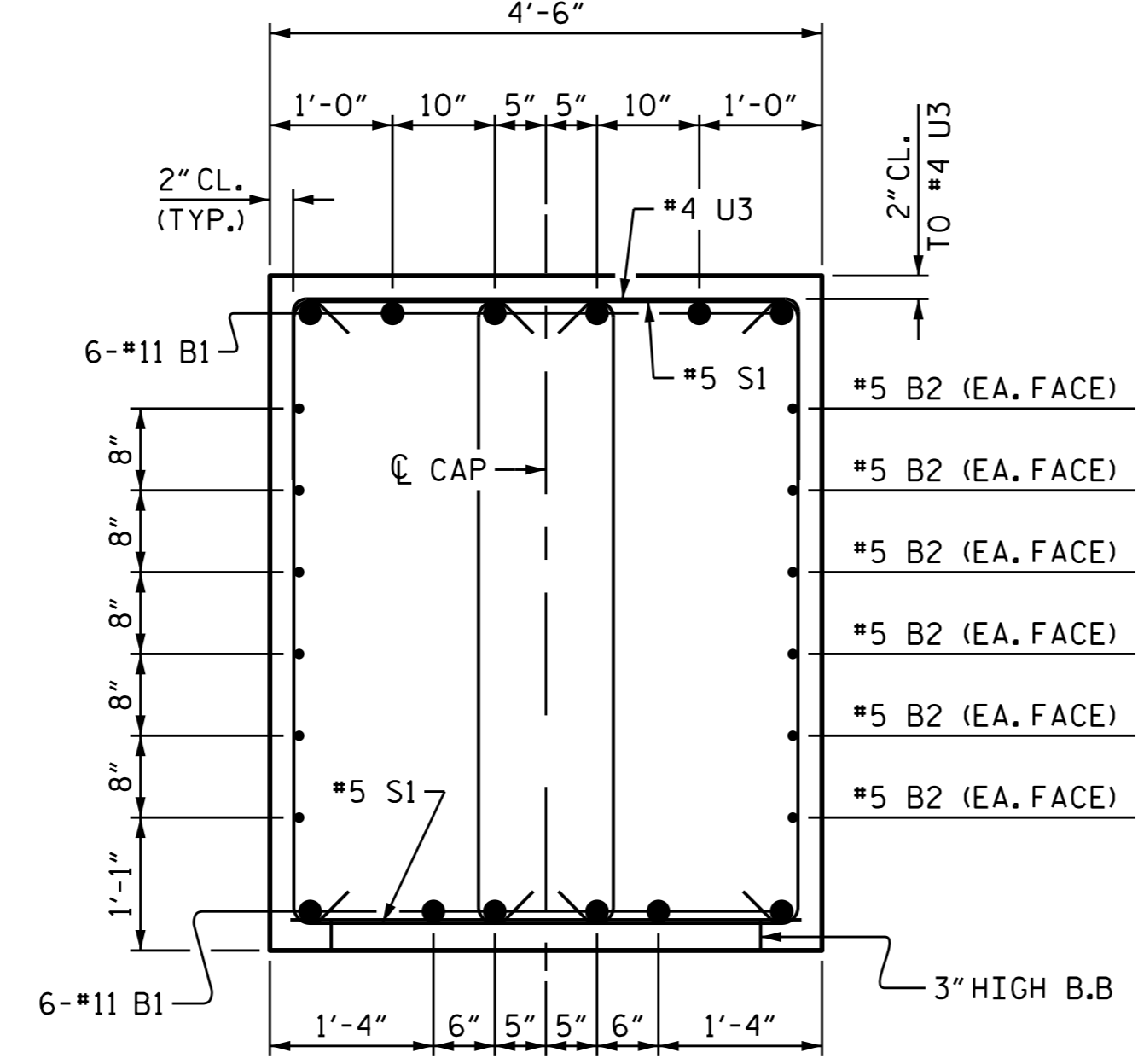
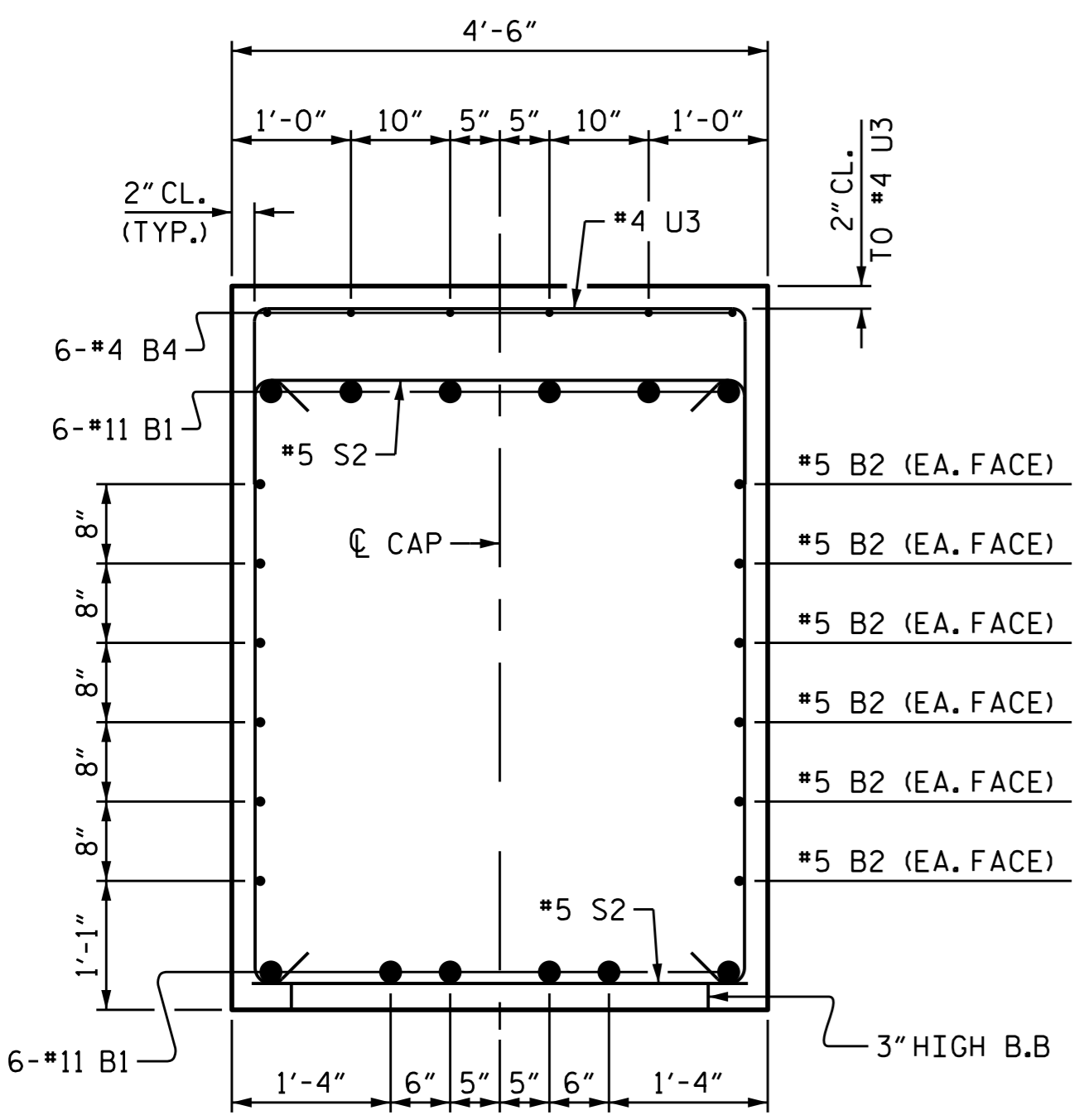
DRAWN BY: P. K. NEWTON DATE: 4/12/16
CHECKED BY: T. H. FANG DATE: 5/3/16
DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 5/12/16

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-25
1			3			TOTAL SHEETS
2			4			33



BILL OF MATERIAL						
BENT 1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	24	#11	1	45'-5"	5791	
B2	24	#5	STR	38'-7"	966	
B3	18	#4	STR	10'-0"	120	
B4	6	#4	STR	24'-1"	97	
M1	48	#9	1	8'-5"	1374	
S1	76	#5	2	13'-10"	1097	
S2	81	#5	2	15'-4"	1295	
T1	24	#6	STR	8'-0"	288	
T2	36	#6	STR	5'-6"	297	
T3	32	#6	4	6'-10"	328	
T4	24	#9	4	10'-6"	857	
U1	8	#4	3	7'-0"	37	
U2	8	#4	3	8'-0"	43	
U3	84	#4	3	7'-2"	402	
V1	48	#9	1	19'-9"	3223	
REINFORCING STEEL				16215		
SP-1	4	**	5	594'-1"	1588	
TOTAL SPIRAL COLUMN REINFORCING STEEL				1588		
CLASS A CONCRETE BREAKDOWN:						
POUR 1 (FOOTINGS)				26.4 C.Y.		
POUR 2 (COLUMNS)				17.6 C.Y.		
POUR 3 (CAP)				72.8 C.Y.		
TOTAL CLASS A CONCRETE				116.8 C.Y.		
**THE "SP" SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.						
FOUNDATION EXCAVATION				LUMP SUM		
HP 12 X 53 STEEL PILES						
NUMBER = 24				LIN. FT. = 720		



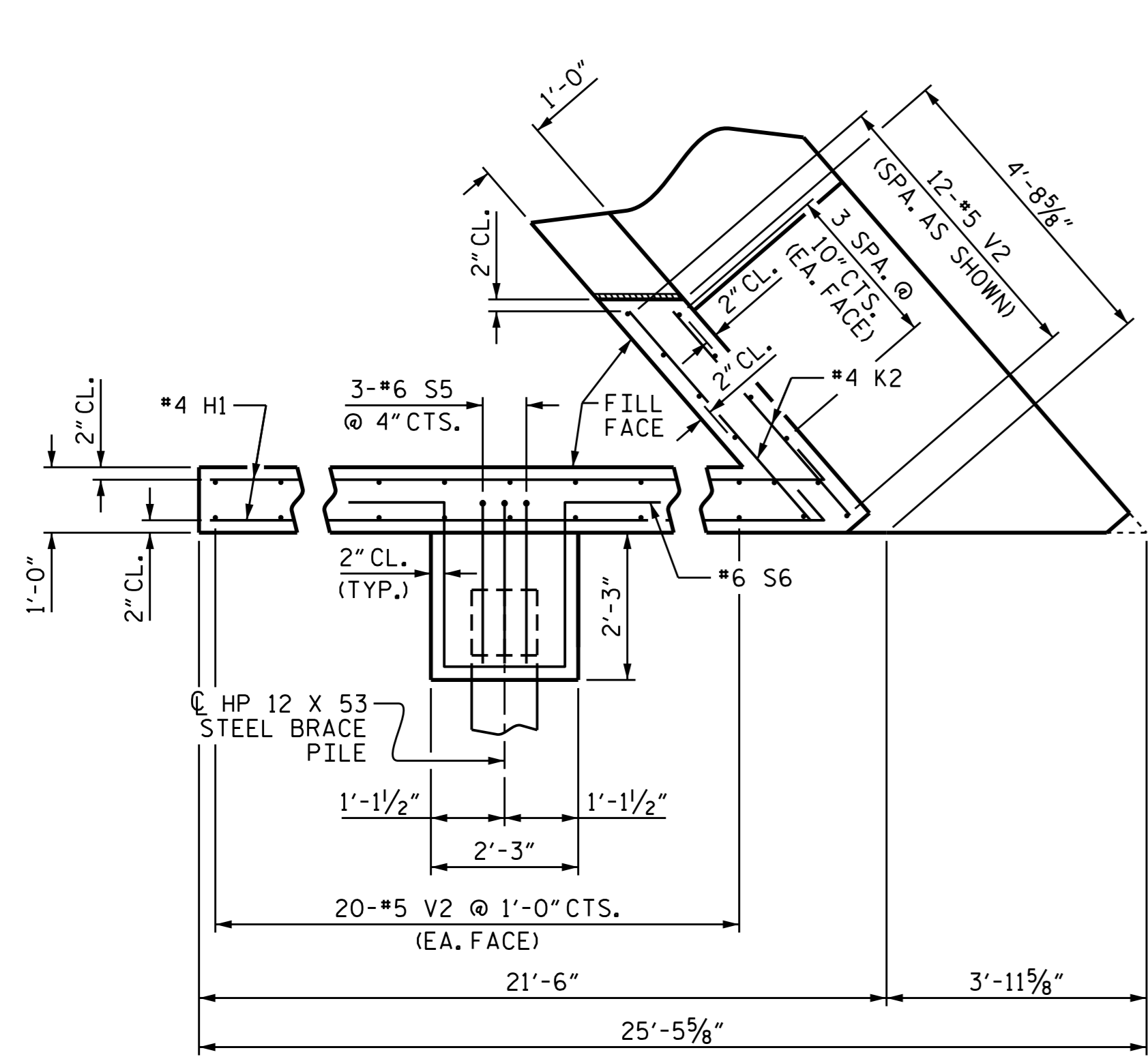
PROJECT NO. U-2524D
GUILFORD COUNTY
STATION: 25+18.62 -Y6-
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 1

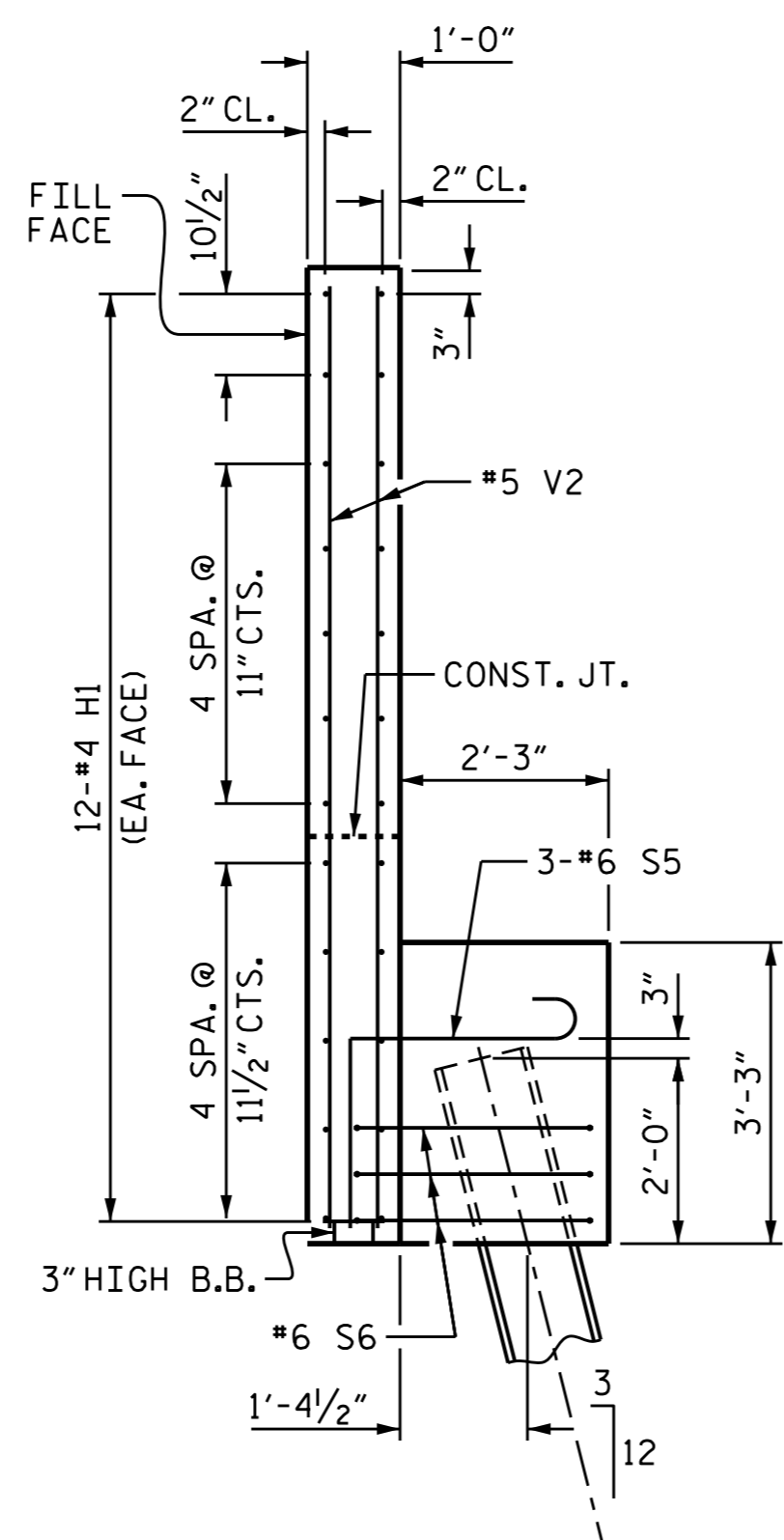
DRAWN BY: P. K. NEWTON DATE: 4/12/16
CHECKED BY: T. H. FANG DATE: 5/3/16
DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 5/12/16

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

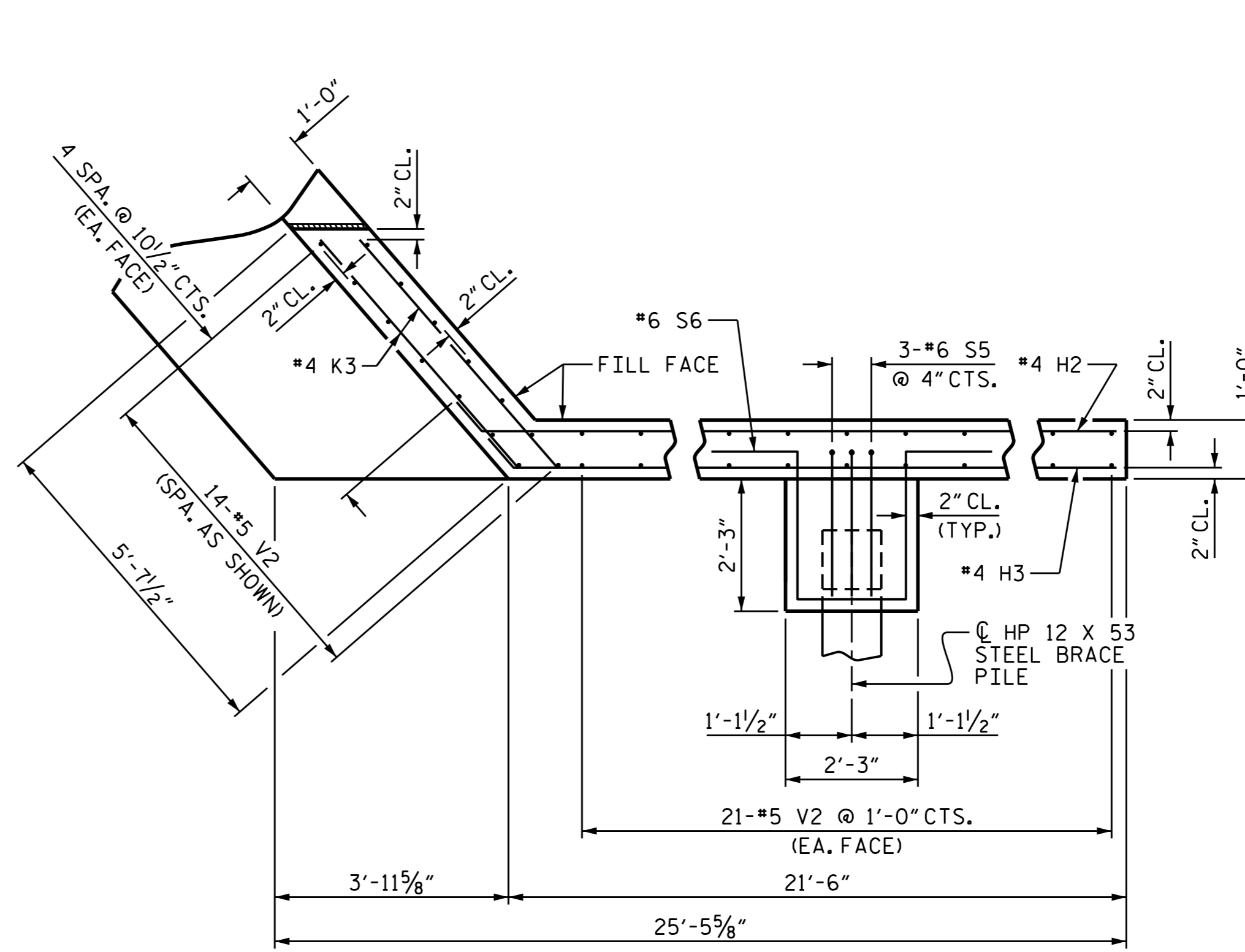
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NO.	BY:	DATE:	NO.	BY:	DATE:	S1-26
1			3			TOTAL SHEETS
2			4			33



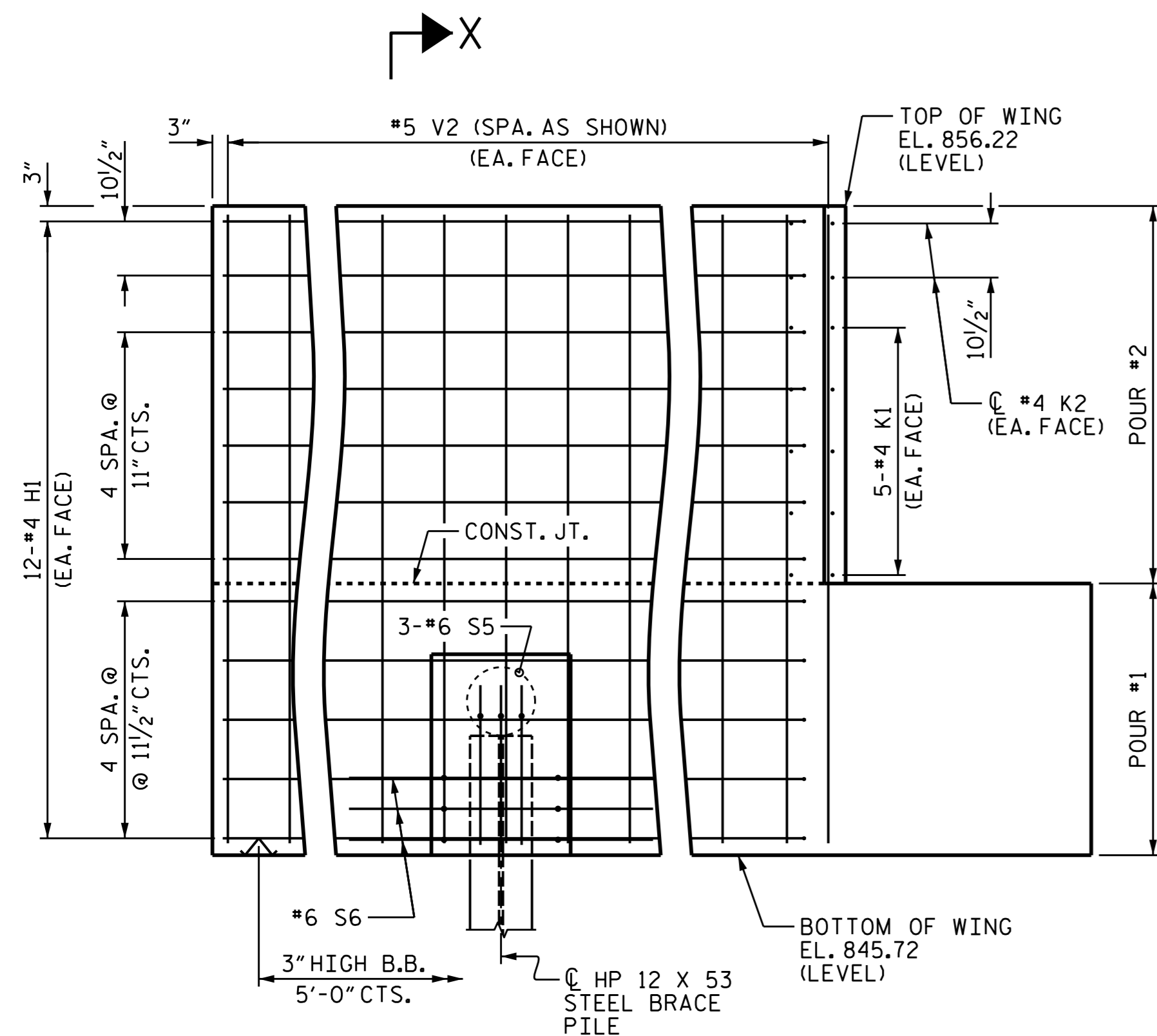
PLAN OF WING W1



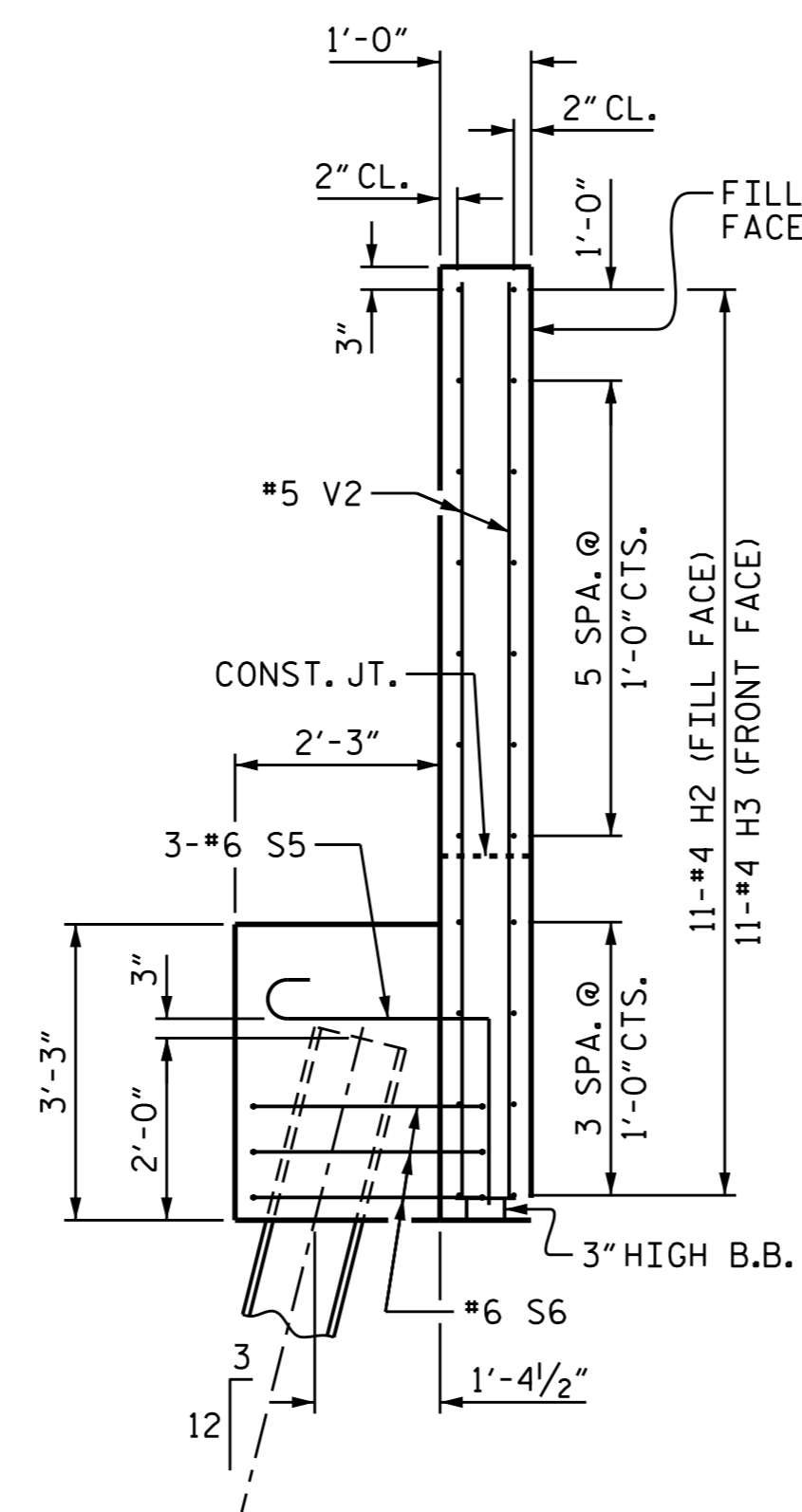
SECTION X-X



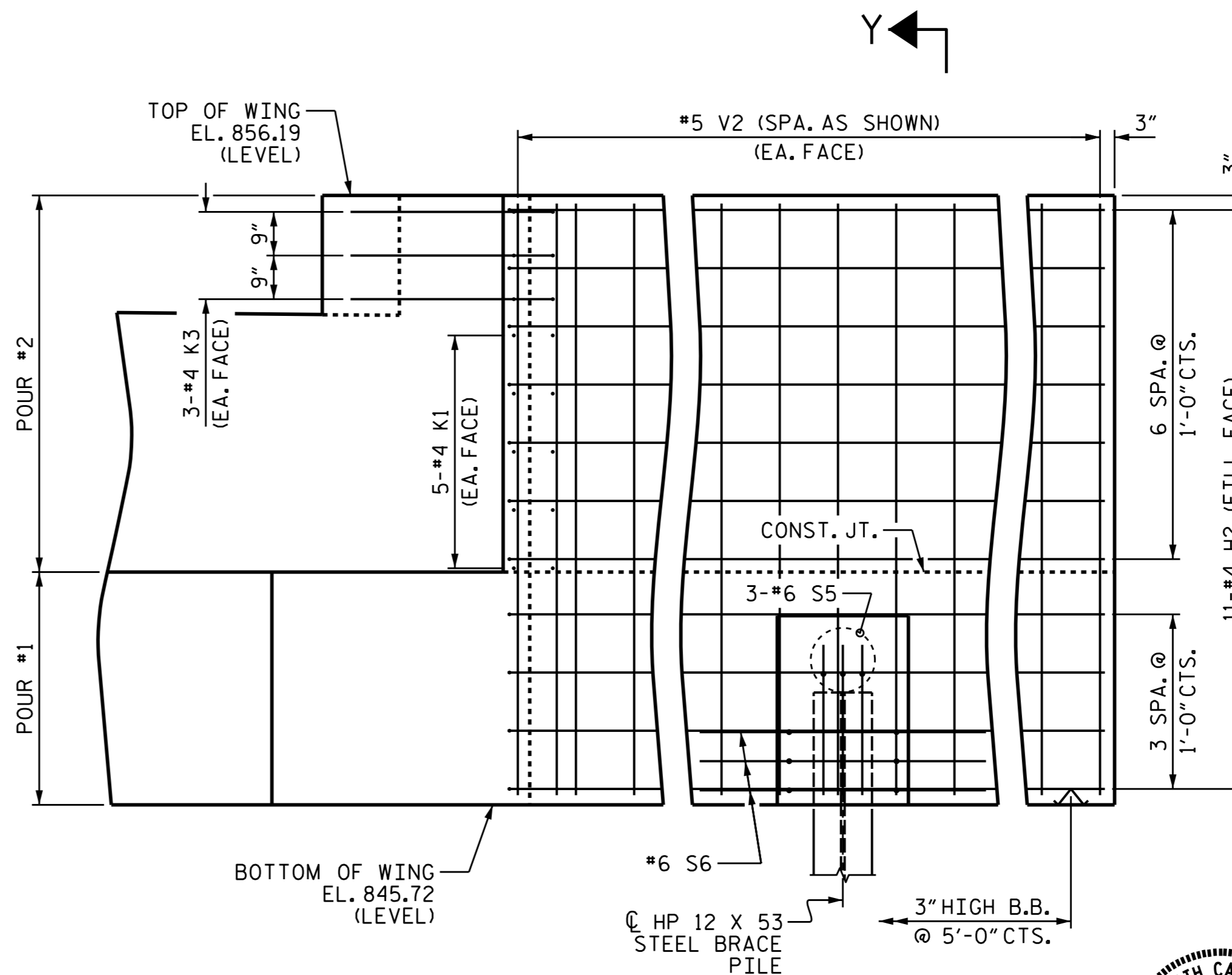
PLAN OF WING W2



ELEVATION OF WING W1



SECTION Y-Y



ELEVATION OF WING W2

PROJECT NO. U-2524D
 GUILFORD COUNTY
 STATION: 25+18.62 -Y6-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2



DocuSigned by:
 Ting Fang

7/1/2016

DRAWN BY: P. K. NEWTON DATE: 4/18/16
 CHECKED BY: T. H. FANG DATE: 5/3/16
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE: 5/12/16

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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S1-28	
1			3			TOTAL SHEETS	
2			4			33	

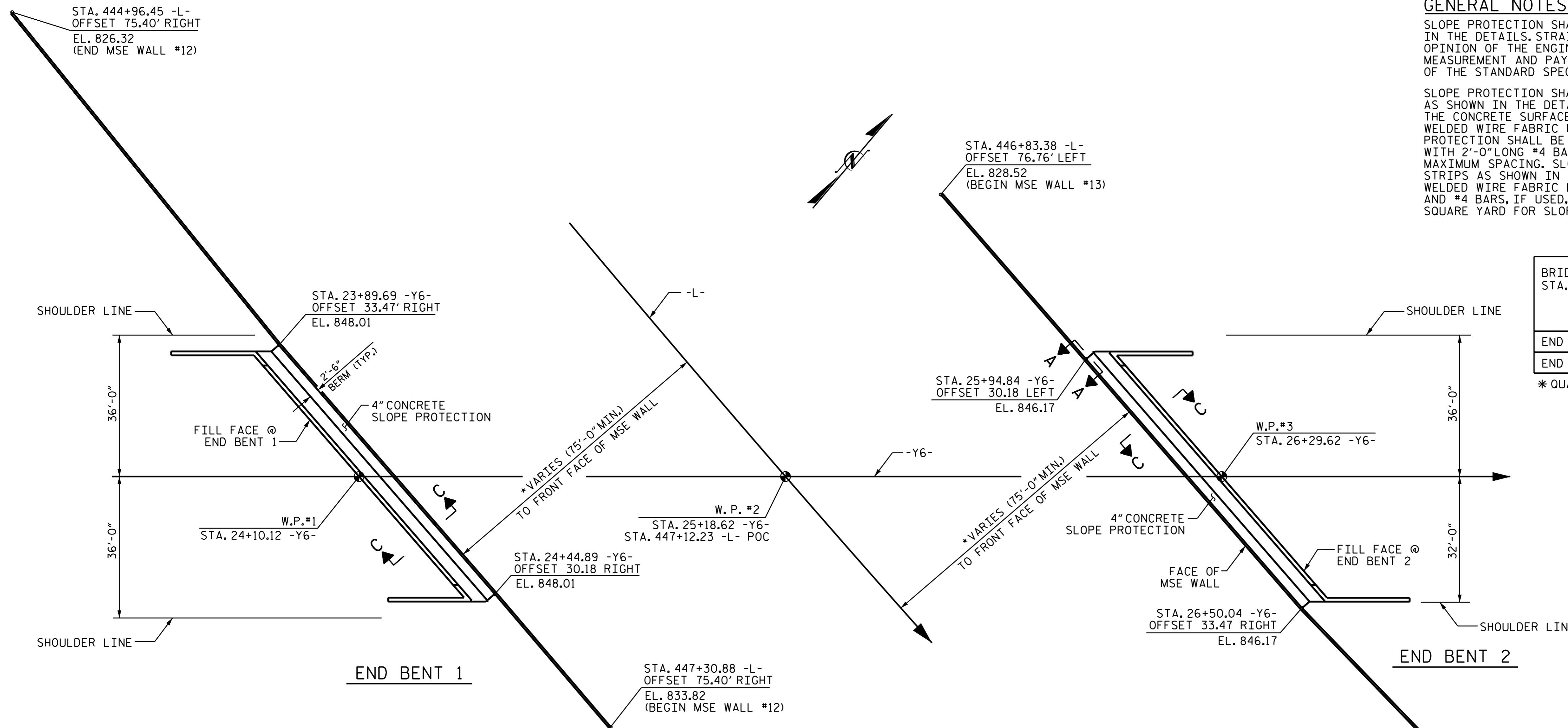
GENERAL NOTES

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. 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.

SLOPE PROTECTION 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.

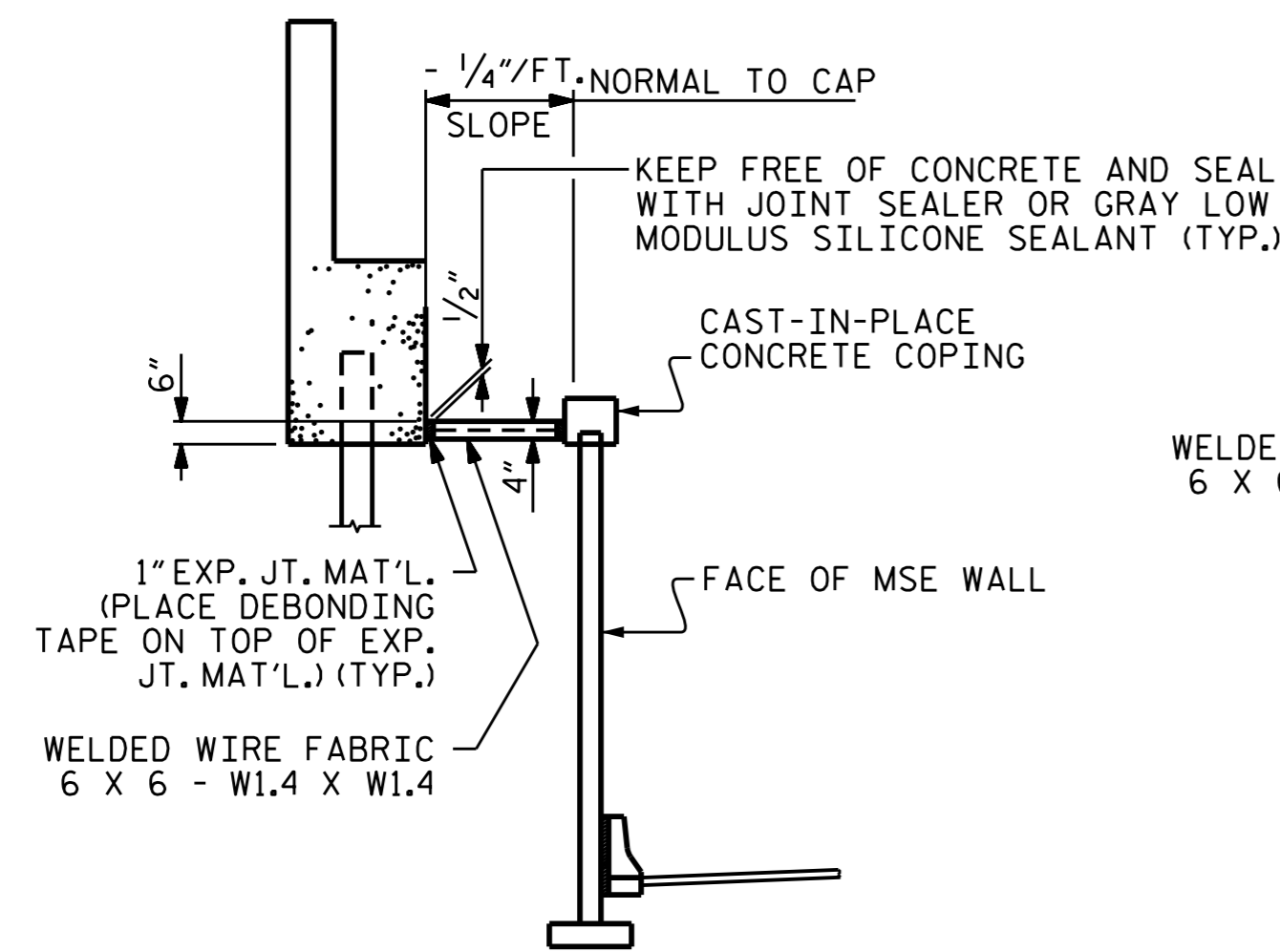
BRIDGE @ STA. 25+18.62 -Y6-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	23	47
END BENT 2	23	47

* QUANTITY SHOWN IS BASED ON 5' POURS.

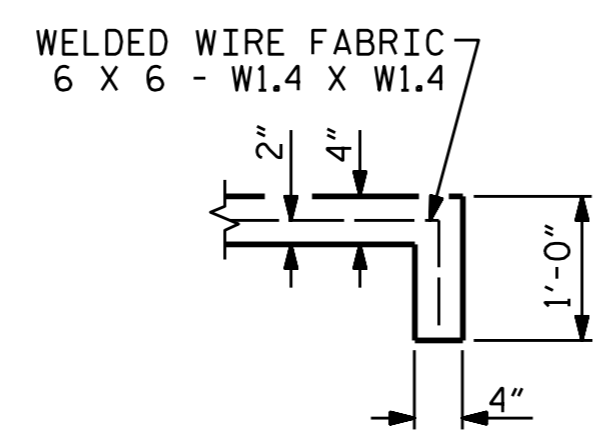


PLAN

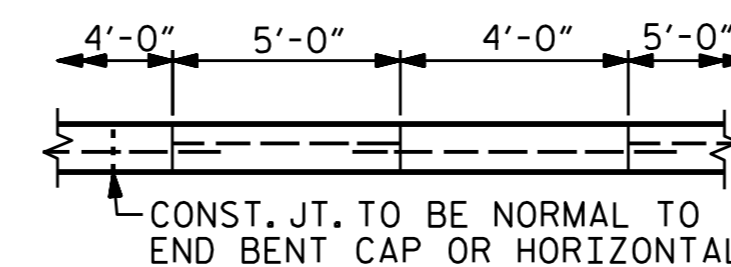
FOR DETAILS & QUANTITIES OF MSE WALL, SEE "MSE RETAINING WALL" ON SHEETS W-4 THRU W-8.



SECTION C-C

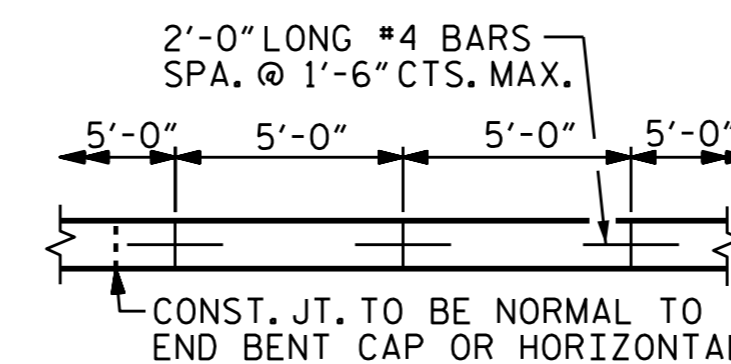


SECTION A-A



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

DETAILS FOR SLOPE PROTECTION

DRAWN BY : M. SHAHIDI DATE : 4/22/16
 CHECKED BY : T. H. FANG DATE : 4/29/16
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE : 5/10/16

01-JUL-2016 13:11
 K:\TIP\Projects-U\U2524D\Structures\Plans\bridge\str1\Final\plans\U2524d.sd.sp.dgn
 t.fang

DocuSigned by:
 Ting Fang
 17208840097435 7/1/2016



PROJECT NO. U-2524D
GUILFORD COUNTY
 STATION: 25+18.62 -Y6-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SLOPE PROTECTION
 DETAILS**

NO.	BY:	DATE:	REVISIONS			SHEET NO. S1-30
			NO.	BY:	DATE:	
1			3			
2			4			

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SEE PLAN OF APPROACH
SLABS, SHEET 2 OF 3.

BILL OF MATERIAL

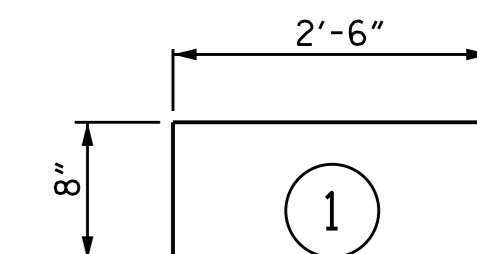
FOR ONE APPROACH SLAB
(2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	100	#4	STR	19'-10"	1325
A2	104	#4	STR	19'-8"	1366
* B1	111	#5	STR	23'-8"	2740
B2	111	#6	STR	24'-6"	4085
* B3	5	#4	STR	24'-6"	82
* G1	25	#4	STR	6'-7"	110
* U1	8	#4	1	4'-0"	21

REINFORCING STEEL	LBS.	5451
* EPOXY COATED REINFORCING STEEL	LBS.	4278

CLASS AA CONCRETE		
POUR #1 - SLAB	C. Y.	60.3
POUR #2 - SIDEWALKS	C. Y.	3.1
TOTAL	C. Y.	63.4

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

SPLICE LENGTHS

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

* THESE BARS ARE TO BE PLACED AFTER THE SAWING OF THE JOINT. THE HOLES SHALL BE DRILLED AND THE DOWELS GROUTED INTO PLACE.

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.

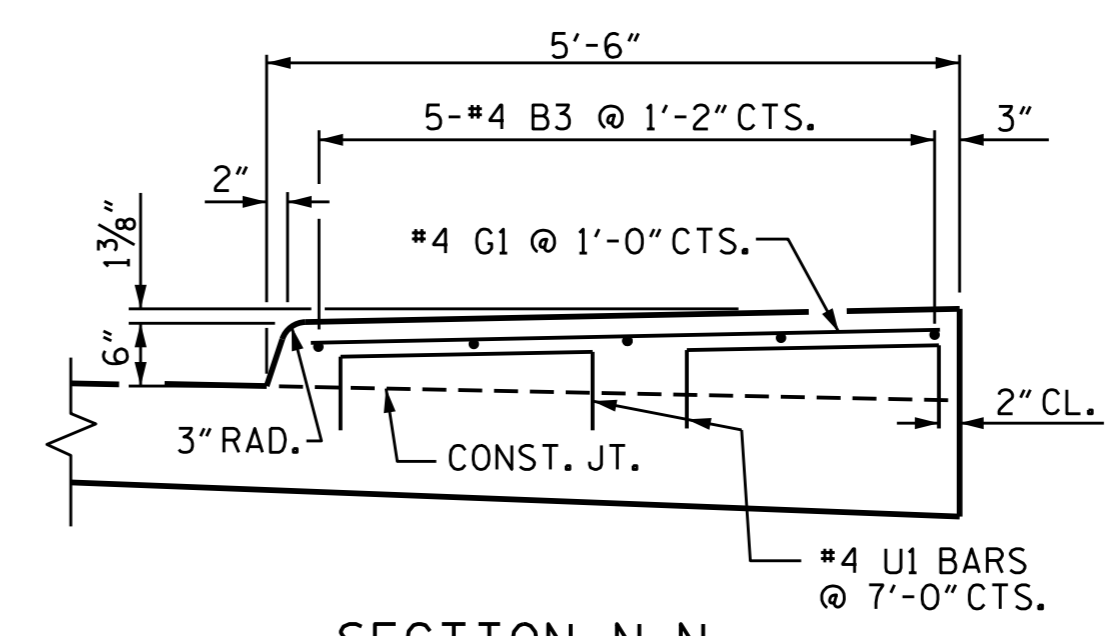
THE JOINT SHALL BE SAWED PRIOR TO THE CASTING OF THE SIDEWALK.

WITH FOAM JOINT SEAL

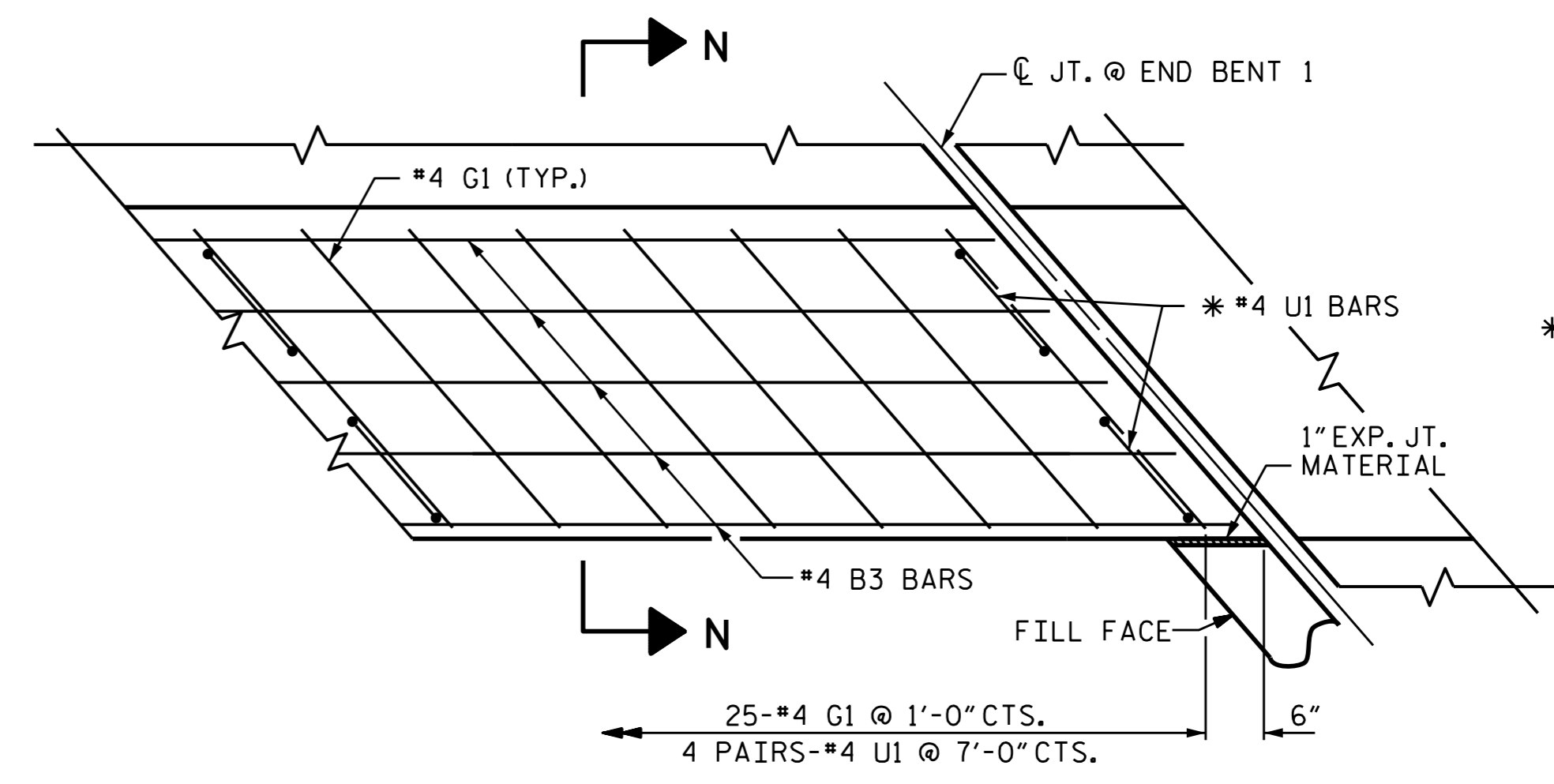
FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 3 7/16" AT END BENT 2.

FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.



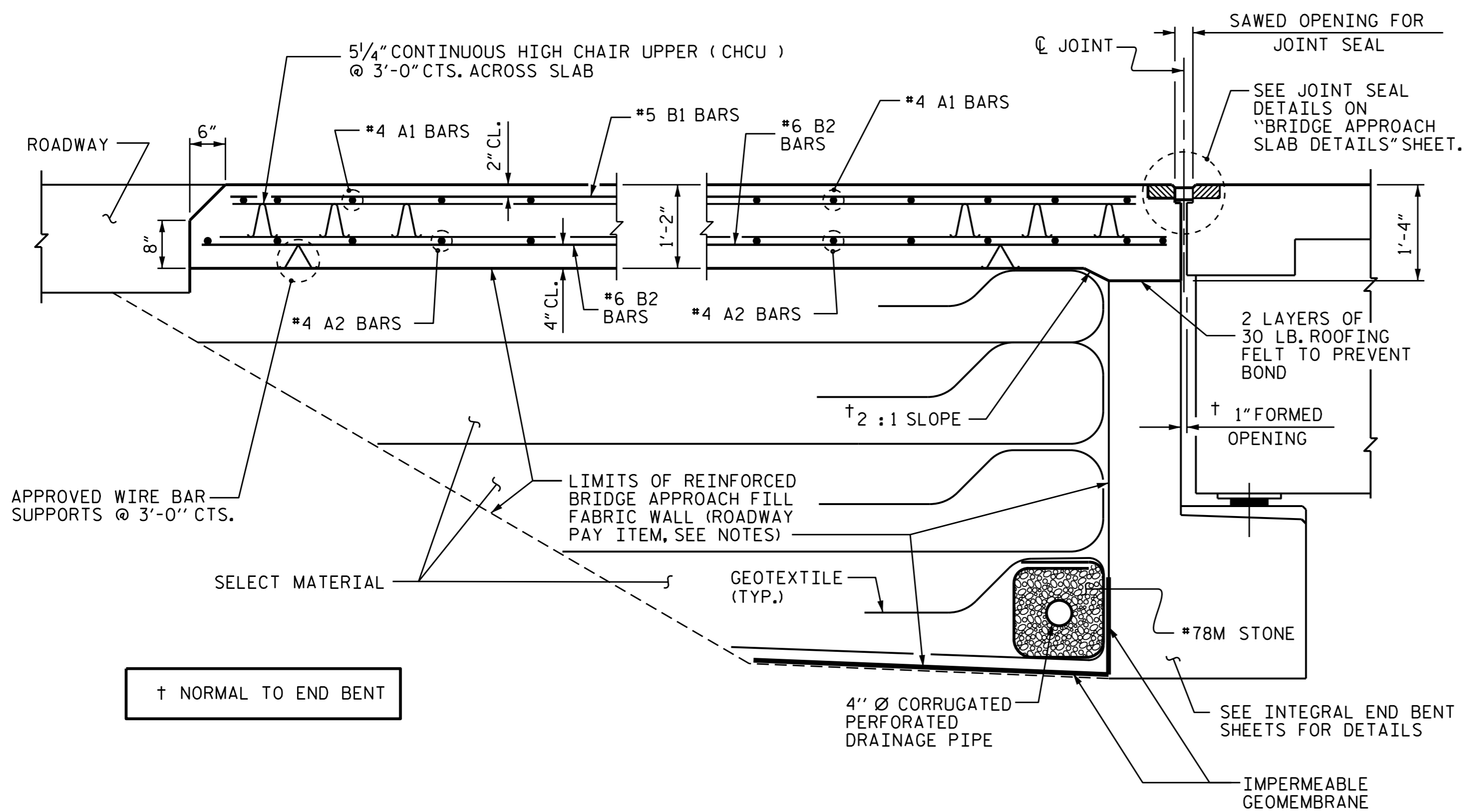
SECTION N-N



PLAN

SIDEWALK DETAILS

END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION.



SECTION THRU SLAB

REINFORCED BRIDGE APPROACH FILL IS REQUIRED AT END BENT 1 AND 2 FOR SOIL NAIL WALL. FOR BRIDGE APPROACH FILL FOR MSE WALL (ALTERNATIVE), SEE MSE WALL SPECIAL PROVISIONS.

† NORMAL TO END BENT

ASSEMBLED BY :	C. YOKELEY	DATE :	5/21/14
CHECKED BY :	T. H. FANG	DATE :	5/3/16
DESIGN ENGINEER OF RECORD:	P. K. NEWTON	DATE :	5/12/16
DRAWN BY :	EEM 3/95	REV. 5/1/06RR	KMM/GM
CHECKED BY :	VAP 3/95	REV. 10/1/11	MAA/GM
		REV. 12/21/11	MAA/GM



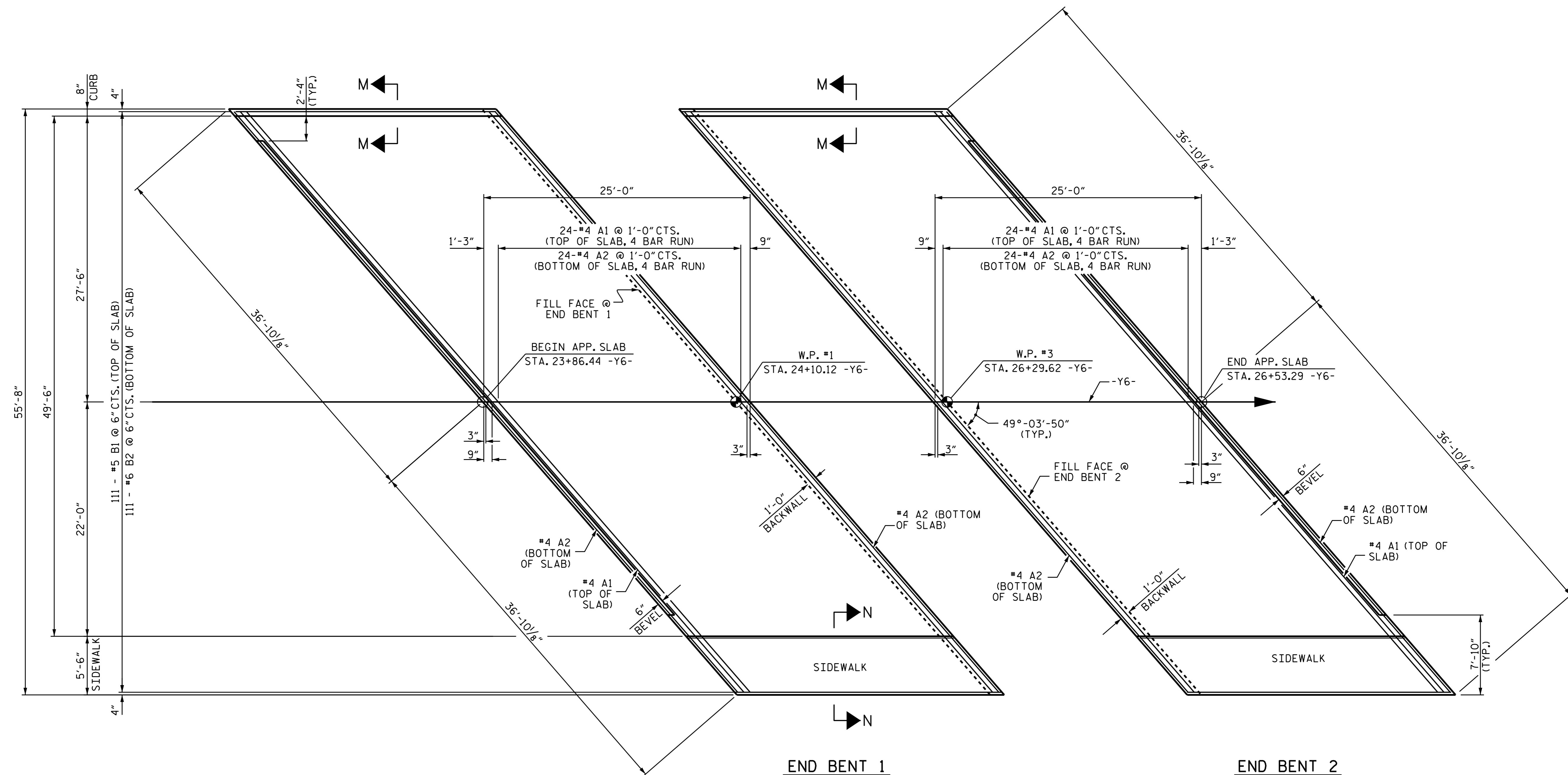
DocuSigned by: Ting Fang 7/1/2016

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PROJECT NO. U-2524D
GUILFORD COUNTY
STATION: 25+18.62 -Y6-

SHEET 1 OF 3

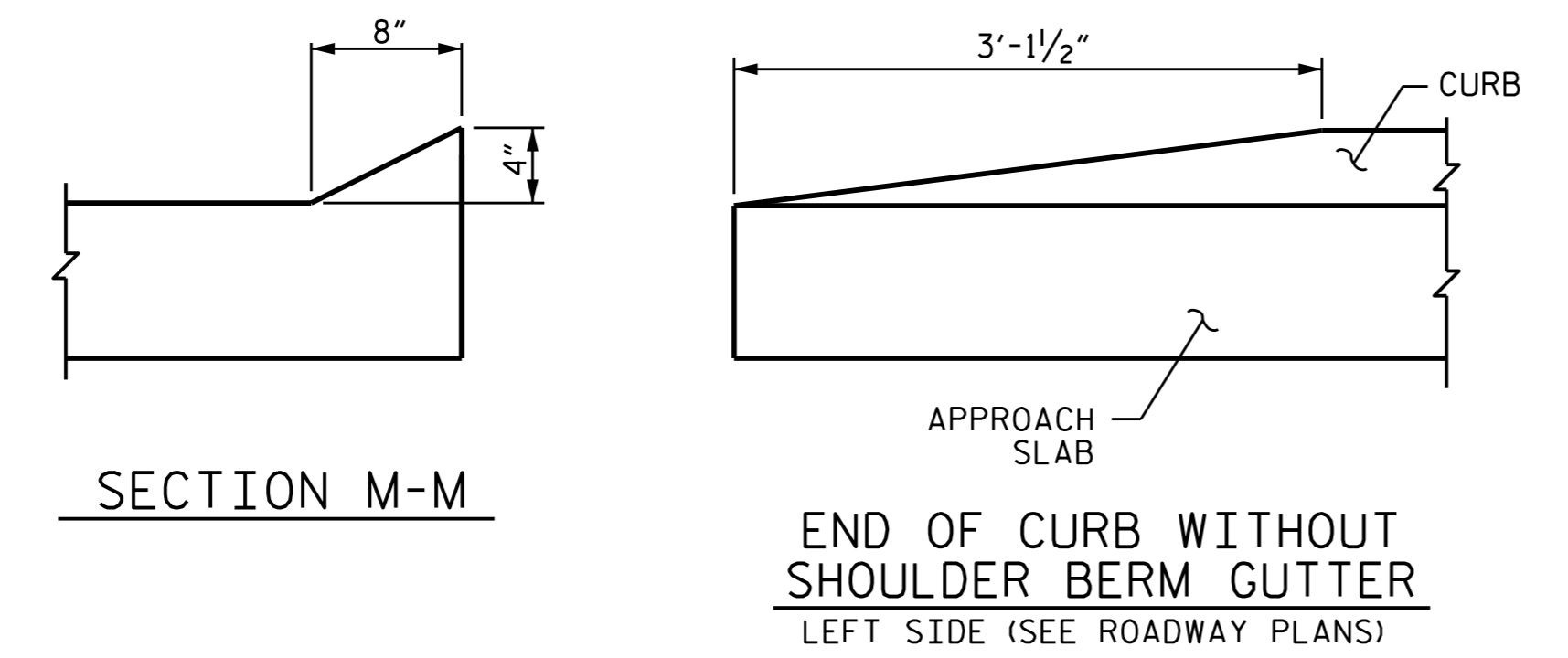
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD					
BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 33



END BENT 1 END BENT 2

PLAN

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS.



CURB DETAILS

PROJECT NO. U-2524D
GUILFORD COUNTY
 STATION: 25+18.62 -Y6-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**BRIDGE
 APPROACH SLABS**

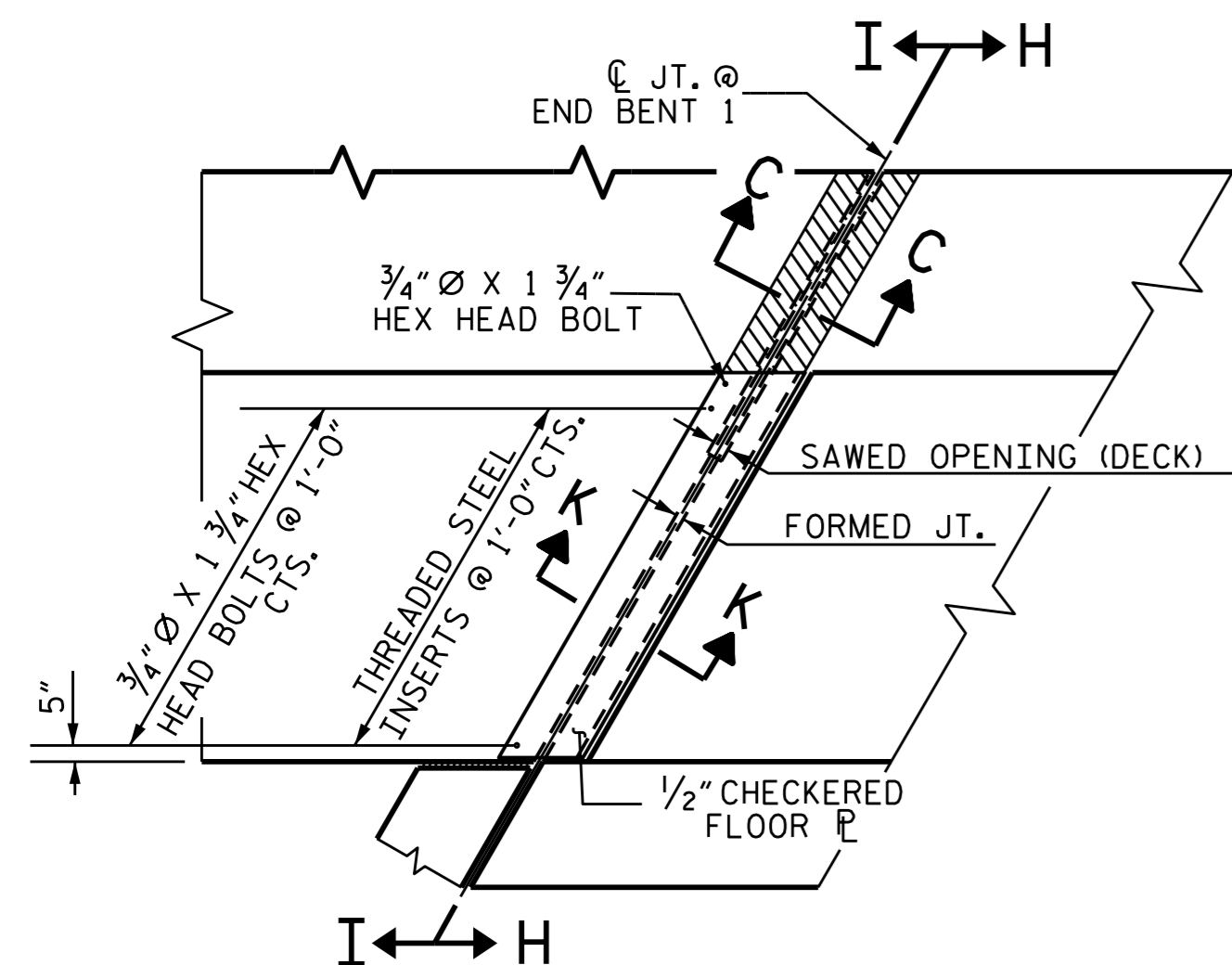


DocuSigned by:
 Ting Fang
 E720840097405... 7/1/2016

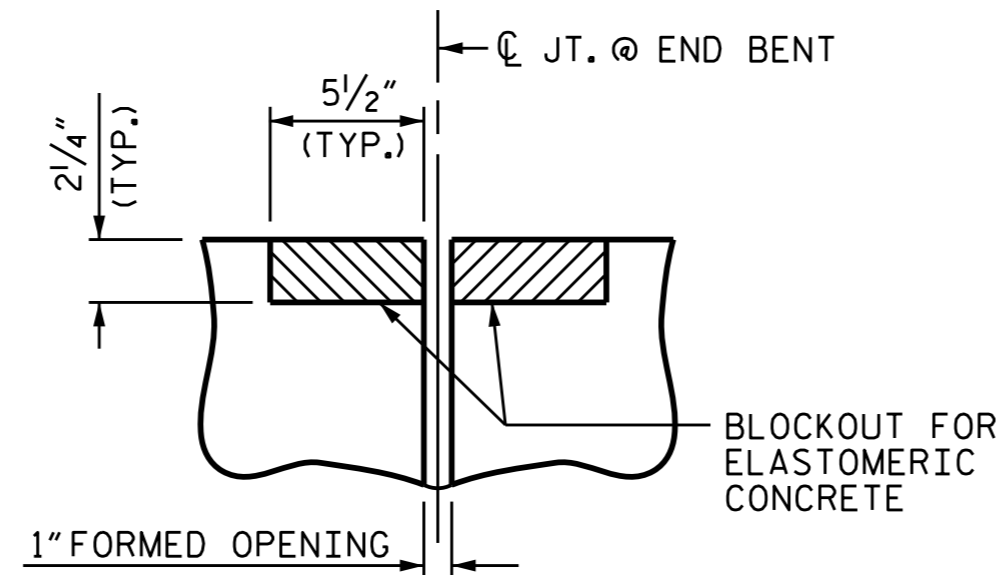
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NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

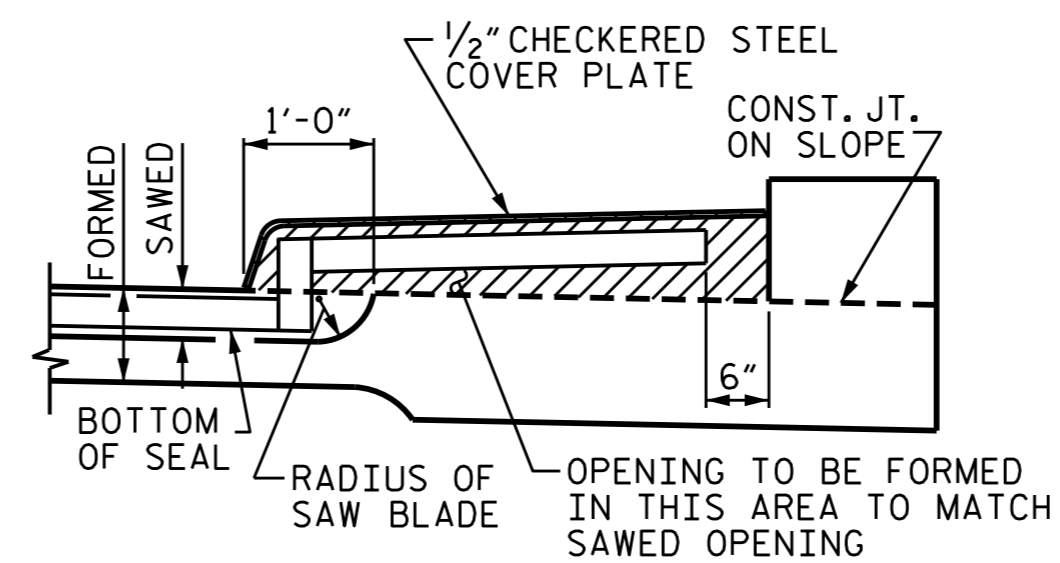
DRAWN BY : C. YOKELEY DATE : 8/20/14
 CHECKED BY : T. H. FANG DATE : 5/3/16
 DESIGN ENGINEER OF RECORD: P. K. NEWTON DATE : 5/12/16



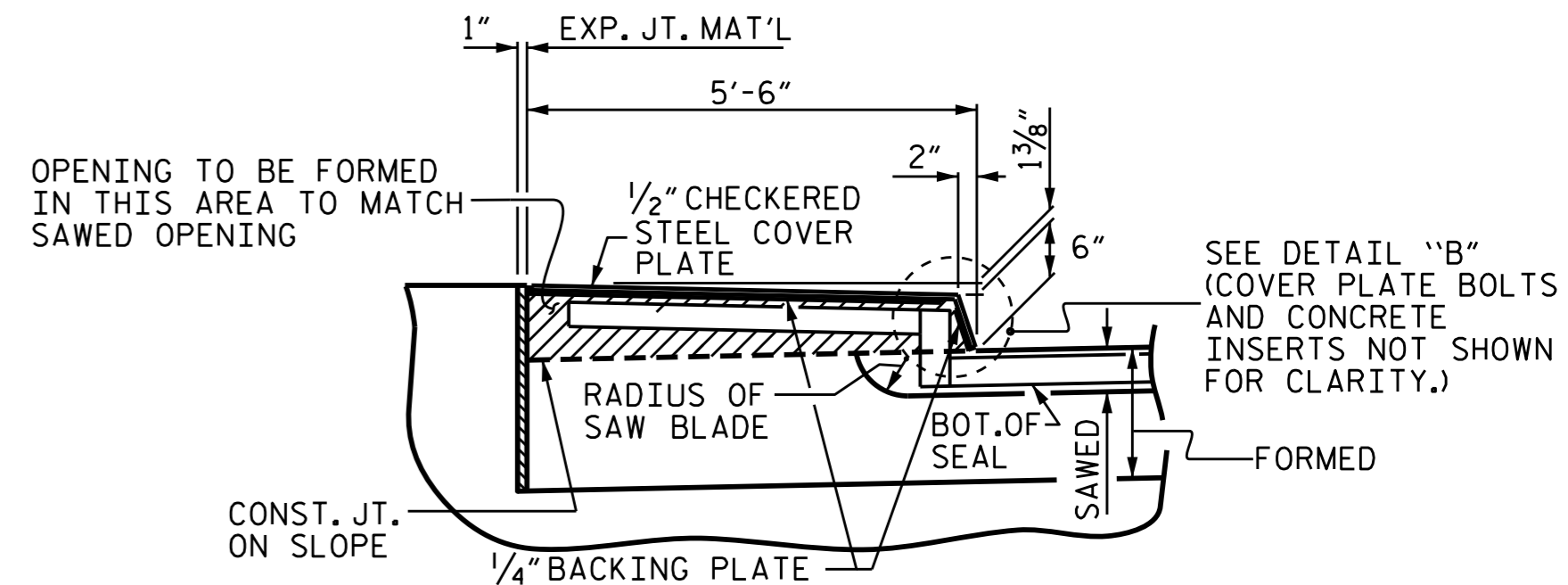
PLAN VIEW OF FOAM JOINT SEAL @ END BENT FOR SIDEWALK



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



SECTION H-H

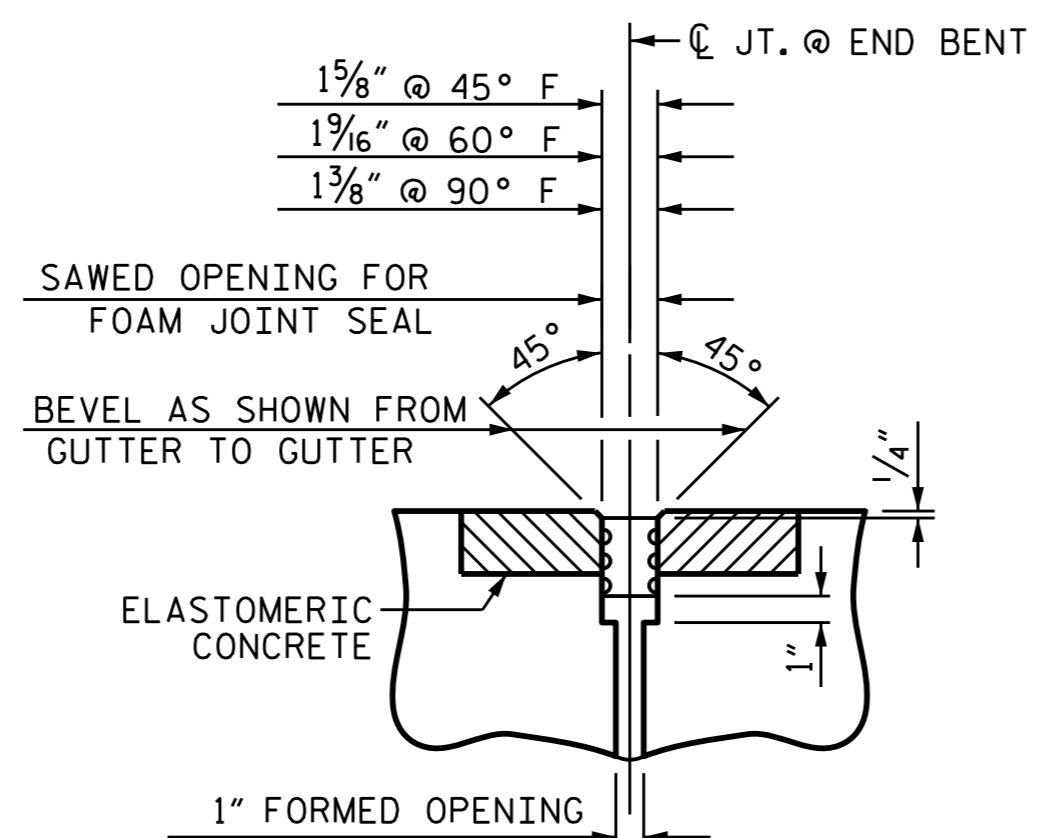


SECTION I-I

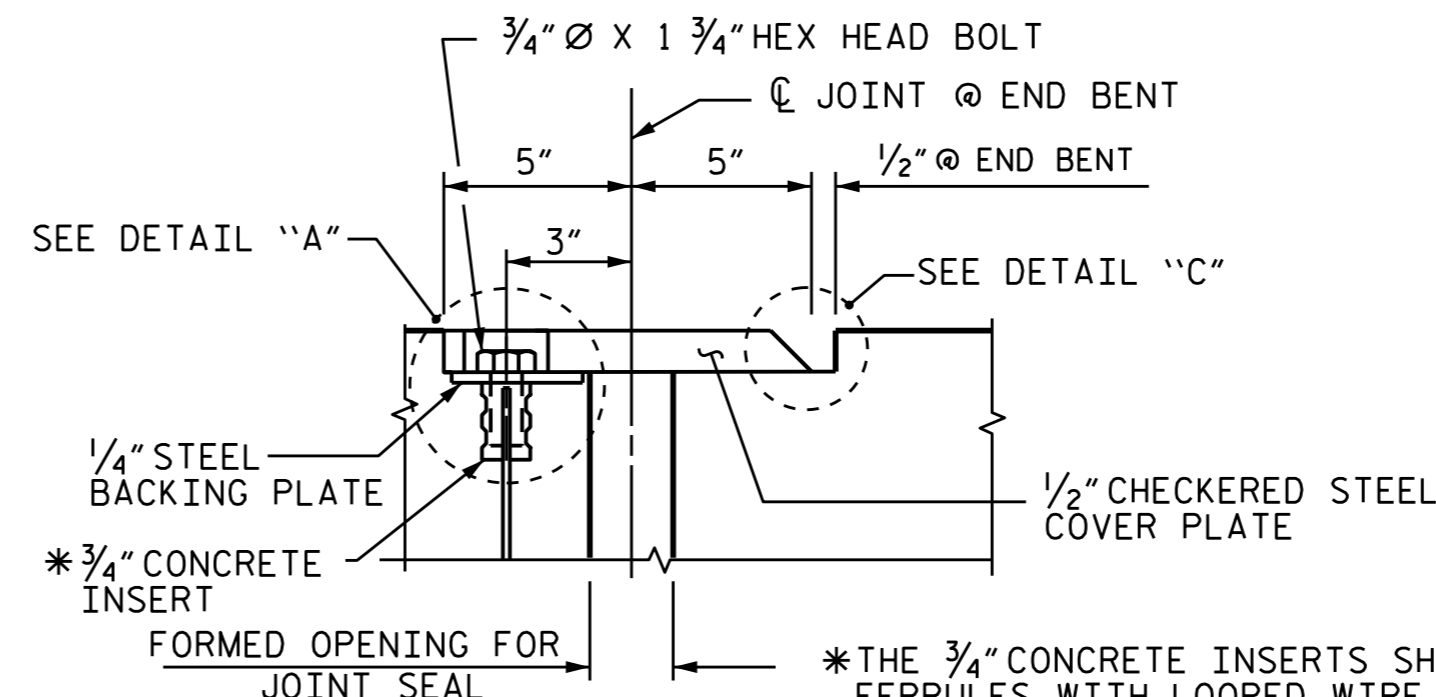
THE STEEL PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR APPROVED EQUAL. AFTER FABRICATION, THE PLATES SHALL BE COMMERCIALY BLAST CLEANED AND EITHER COATED WITH A MINIMUM THICKNESS OF 4 MILS (DRY) OF ZINC-RICH PAINT, GALVANIZED OR METALLIZED TO A MINIMUM THICKNESS OF 6 MILS IN ACCORDANCE WITH THE STANDARD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

THE 3/4" DIAMETER HEX HEAD BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL.

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".



SECTION C-C
FOAM JOINT SEAL
(EXPANSION)

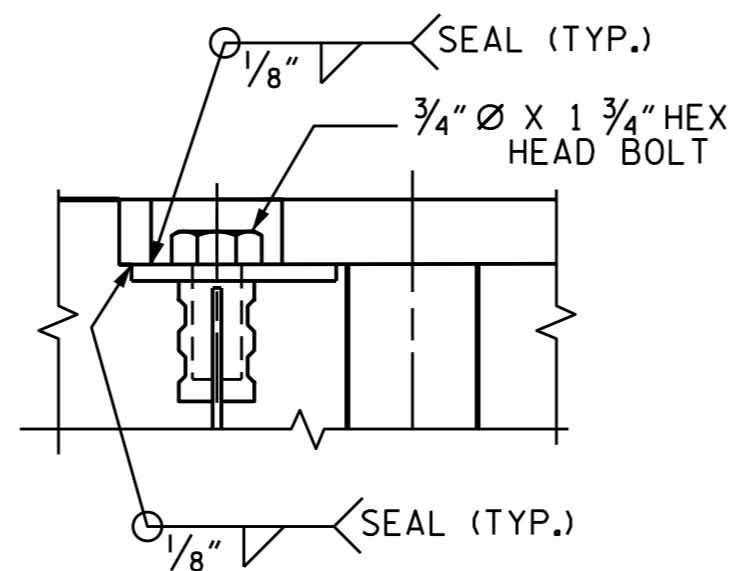


SECTION K-K

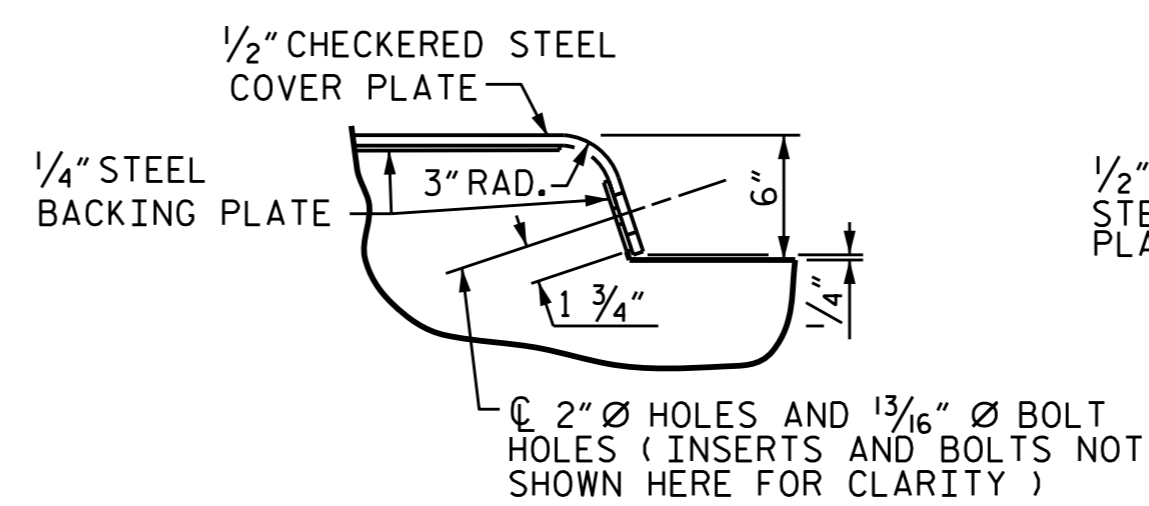
*THE 3/4" CONCRETE INSERTS SHALL BE CLOSED-END FERRULES WITH LOOPED WIRE STRUTS ATTACHED TO THEM. THE INSERTS SHALL CONFORM TO AASHTO M169, GRADE 12L14 AND SHALL HAVE A TENSILE WORKING LOAD CAPACITY OF 3000 LBS.

ELASTOMERIC CONCRETE	
END BENT	ELASTOMERIC CONCRETE * (CU. FT.)
1	11.3
2	11.3
TOTAL	22.6

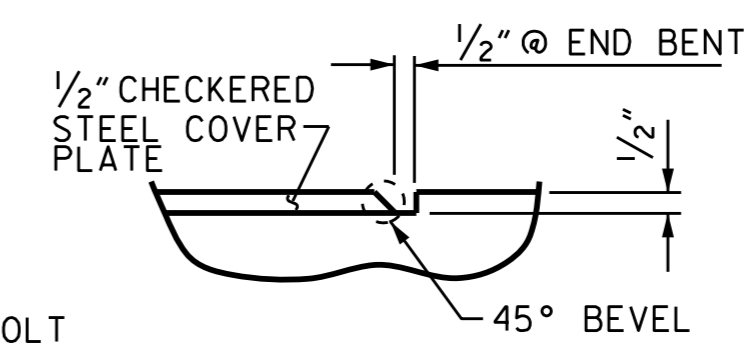
* BASED ON THE MINIMUM BLOCKOUT SHOWN.



DETAIL "A"



DETAIL "B"



DETAIL "C"

JOINT SEAL DETAILS @ END BENT

PROJECT NO. U-2524D
GUILFORD COUNTY
STATION: 25+18.62 -Y6-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH
SLAB DETAILS



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Ting Fang
7/1/2016

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1			3			TOTAL SHEETS 33
2			4			

ASSEMBLED BY :	C. YOKELEY	DATE :	8/20/14
CHECKED BY :	T. H. FANG	DATE :	5/2/16
DRAWN BY :	FCJ 11/88	REV. 5/7/03	RWW/JTE
CHECKED BY :	ARB 11/88	REV. 5/1/06RRR	MAA/KMM
		REV. 10/1/11	MAA/GM