

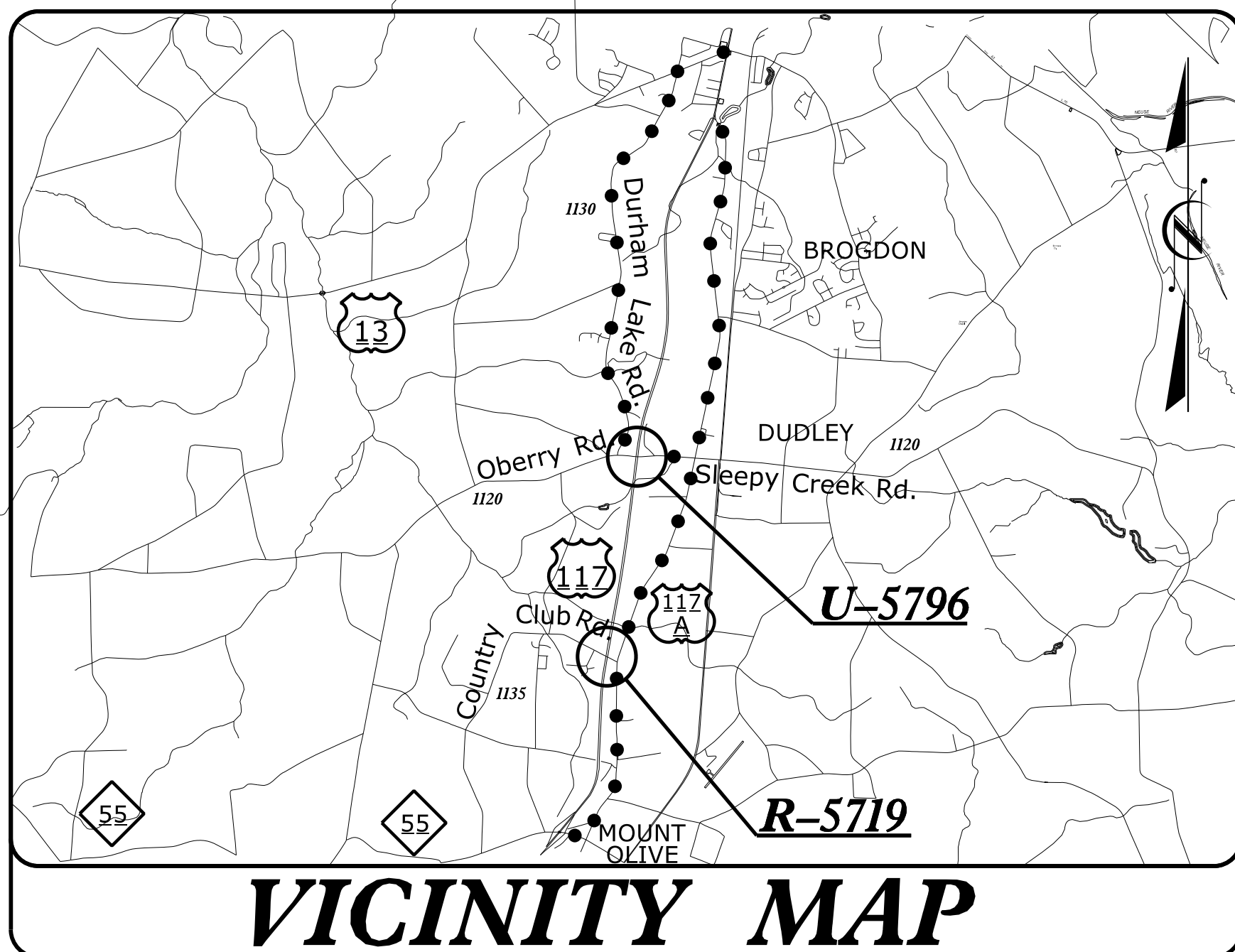
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TIP PROJECT: R-5719/U-5796

CONTRACT: C203959



VICINITY MAP

—••••• DETOUR ROUTE

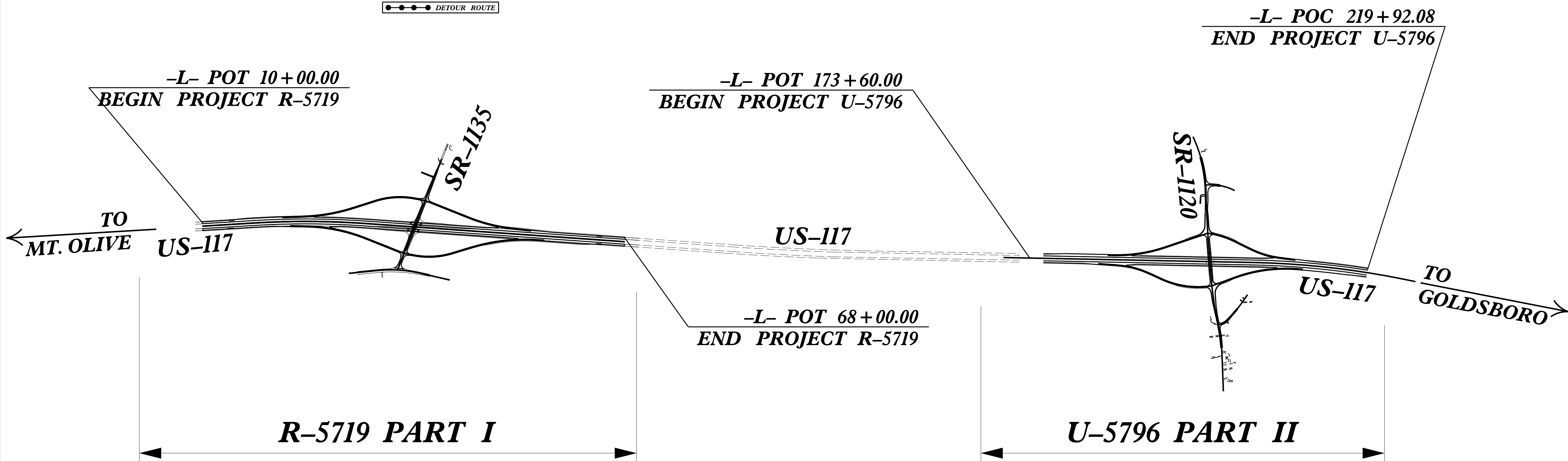
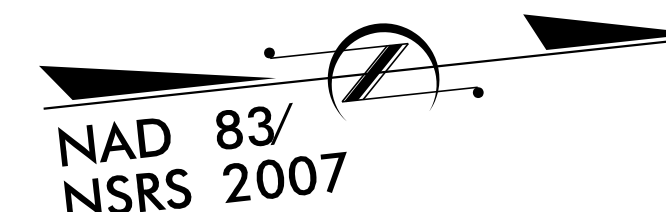
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAYNE COUNTY

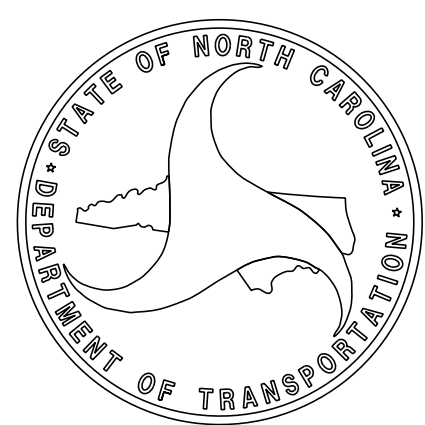
**LOCATION: R-5719 US 117 AND SR 1135 (COUNTRY CLUB RD.)
U-5796 US 117 AND SR 1120 (O'BERRY RD.)**

**TYPE OF WORK: R-5719 GRADING, DRAINAGE, PAVING, AND STRUCTURES
U-5796 GRADING, DRAINAGE, PAVING, AND STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-5719 /U-5796		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
50473.1.FD1	NHP-0117(31)	R-5719 (PE)	
50473.2.1		R-5719 (RW&UTIL.)	
50473.3.1		R-5719 CONST	
54039.1.FD1	NHP-0117(32)	U-5796 (PE)	
54039.2.1		U-5796 (RW&UTIL.)	
50473.3.1		U-5796 (CONST.)	



STRUCTURES



PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-5719 = 1.076 MI
LENGTH STRUCTURE TIP PROJECT R-5719 = 0.022 MI
TOTAL LENGTH TIP PROJECT R-5719 = 1.098 MI

LENGTH ROADWAY TIP PROJECT U-5796 = 0.877 MI
TOTAL LENGTH TIP PROJECT U-5796 = 0.877 MI

Prepared in the Office of:



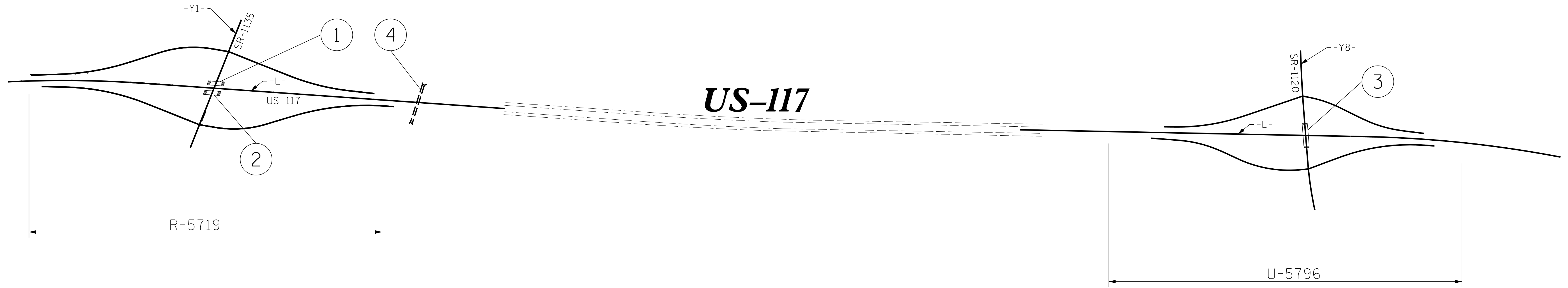
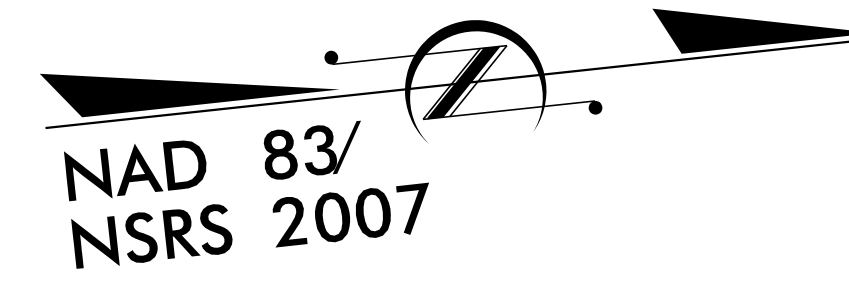
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
ENVIRONMENTAL DESIGN - GIS/GIS - CONSTRUCTION OBSERVATION

2012 STANDARD SPECIFICATIONS

LETTING DATE:
JUNE 20, 2017

EDWARD G. WETHERILL, P.E.
PROJECT ENGINEER

B.C. HUNT, P.E.
PROJECT DESIGN ENGINEER



INDEX			
STR. NO.	STATION	DESCRIPTION	SHEETS
1	39+11.12 -L-	BRIDGE ON US 117 (LEFT LANE) OVER SR-1135	S01-1 THRU S01-26
2	39+11.12 -L-	BRIDGE ON US 117 (RIGHT LANE) OVER SR-1135	S02-1 THRU S02-26
3	27+41.30 -Y8-	BRIDGE ON SR-1120 OVER US 117	S01-1 THRU S01-34
4	57+31.75 -L-	TRIPLE 8' X 7' RCBC HEADWALL AND WINGWALL EXTENSION	C01-1 THRU C01-2

PROJECT NO. R-5719/ U-5796
WAYNE COUNTY

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

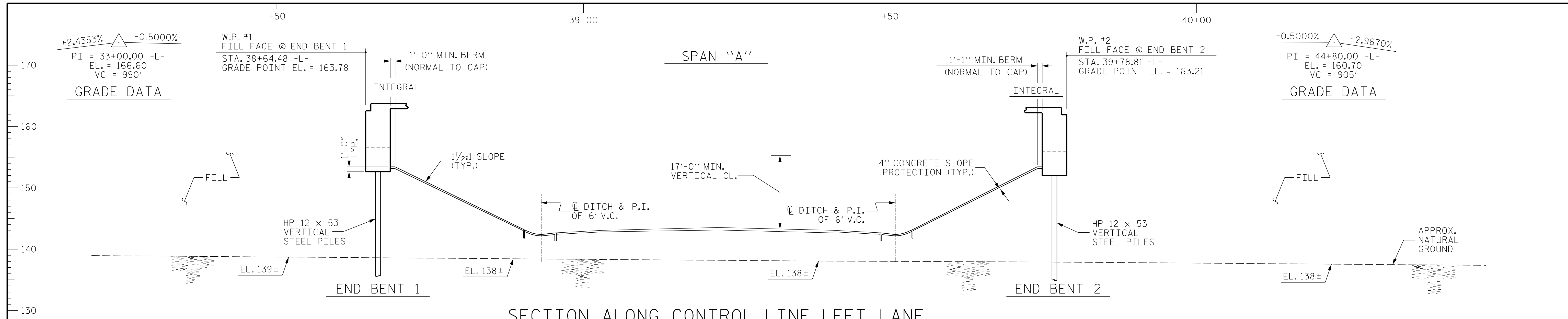
INDEX
SHEET

1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			

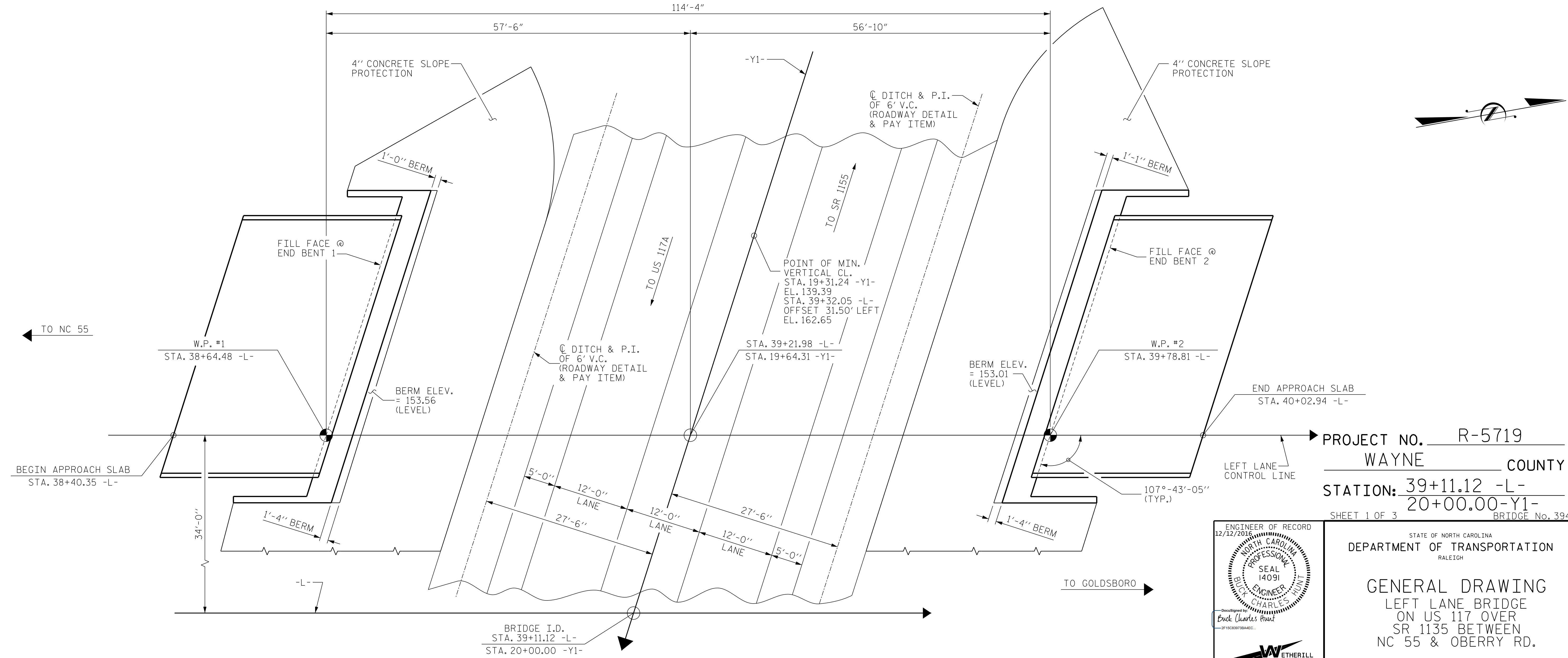
DRAWN BY : B.C. HUNT DATE : 4-17
 CHECKED BY : J. DILWORTH DATE : 4-17

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SECTION ALONG CONTROL LINE LEFT LANE

SECTIONS AT END BENTS TAKEN AT RIGHT ANGLES



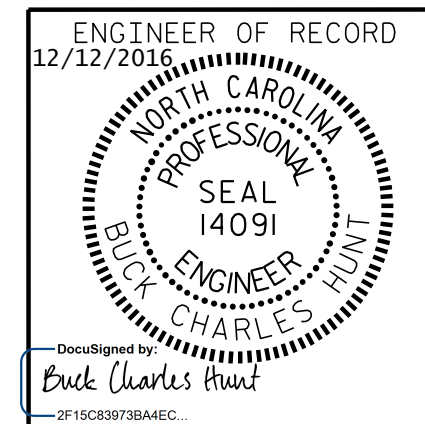
PLAN

(PILES NOT SHOWN IN PLAN VIEW)

GRADE DATA
 +2.4353% Δ -0.5000%
 PI = 33+00.00 -L-
 EL. = 166.60
 VC = 990'

GRADE DATA
 -0.5000% Δ -2.9670%
 PI = 44+80.00 -L-
 EL. = 160.70
 VC = 905'

PROJECT NO. R-5719
 WAYNE COUNTY
 STATION: 39+11.12 -L-
 20+00.00-Y1-
 SHEET 1 OF 3 BRIDGE No. 394



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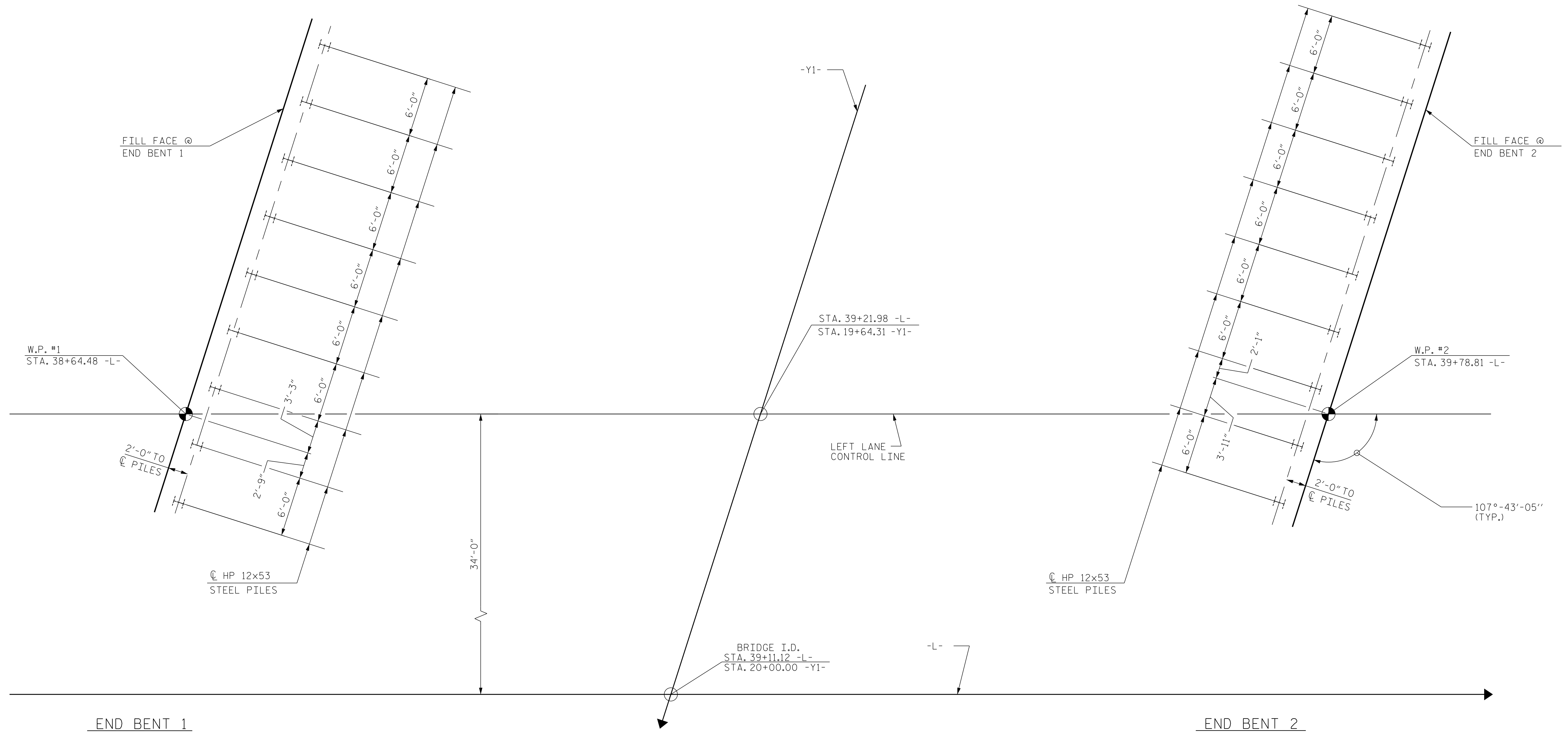
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 LEFT LANE BRIDGE
 ON US 117 OVER
 SR 1135 BETWEEN
 NC 55 & OBERRY RD.

REVISIONS				SHEET NO.			
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-1	
1			3			TOTAL SHEETS	
2			4			26	

DRAWN BY: GMG/DAH DATE: 5/16
 CHECKED BY: BCH DATE: 5/16

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FOUNDATION LAYOUT

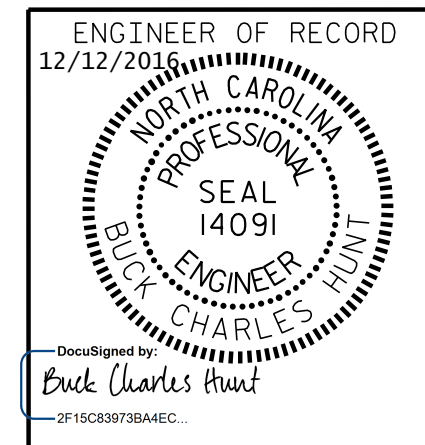
DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES

NOTES:

- SEE ROADWAY PLANS AND SPECIAL PROVISIONS FOR THE SETTLEMENT GAUGES REQUIRED AT END BENTS 1 AND 2.
- OBSERVE A 2 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FEET OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENTS 1 AND 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SPECIAL PROVISIONS.
- FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
- PILES AT END BENTS 1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILE.
- DRIVE PILES AT END BENTS 1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 195 TONS PER PILE.
- TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING, OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. R-5719
WAYNE COUNTY
 STATION: 39+11.12 -L-

SHEET 2 OF 3



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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 LEFT LANE BRIDGE
 ON US 117 OVER
 SR 1135 BETWEEN
 NC 55 & OBERRY RD.

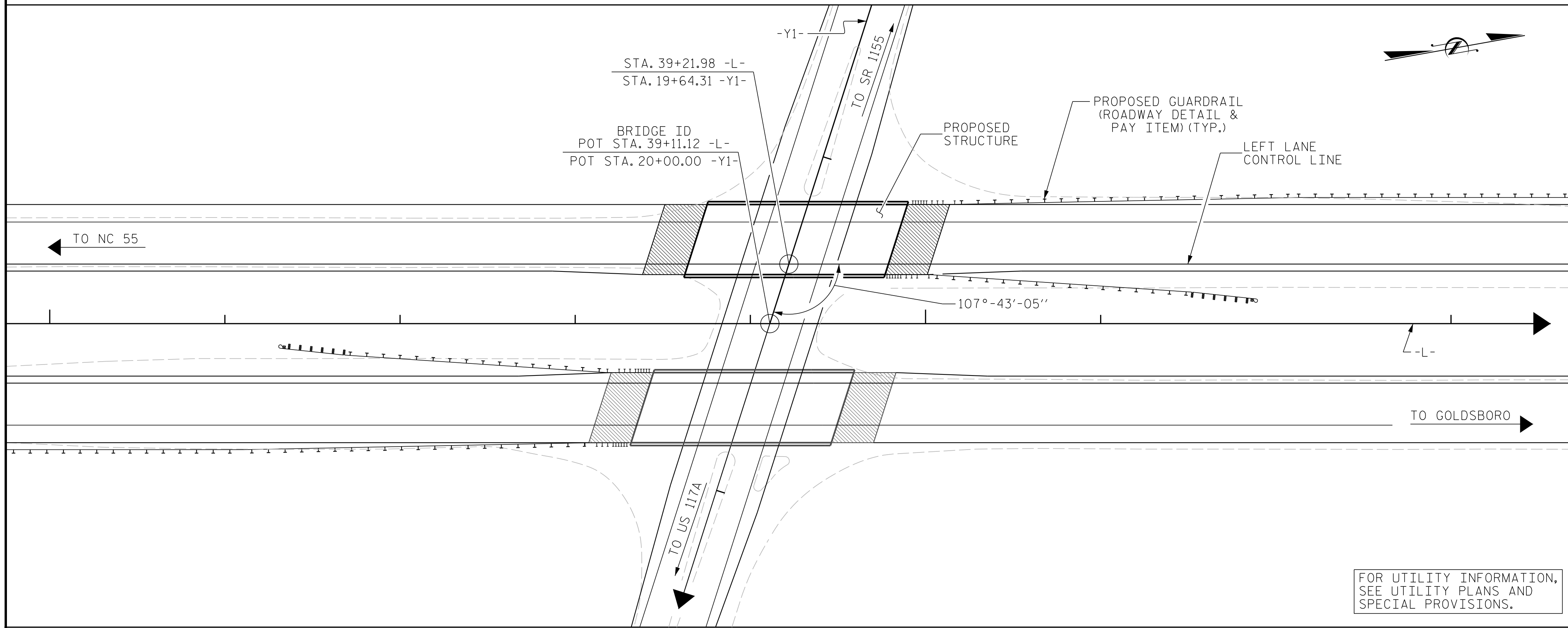
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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			

DRAWN BY : J. PENDERGRAFT DATE : 12-15
 CHECKED BY : J. DILWORTH DATE : 12-15

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BM #2: 455' RT. OF STA. 38+69.00 -L-, ELEV. = 144.93



LOCATION SKETCH

GENERAL NOTES

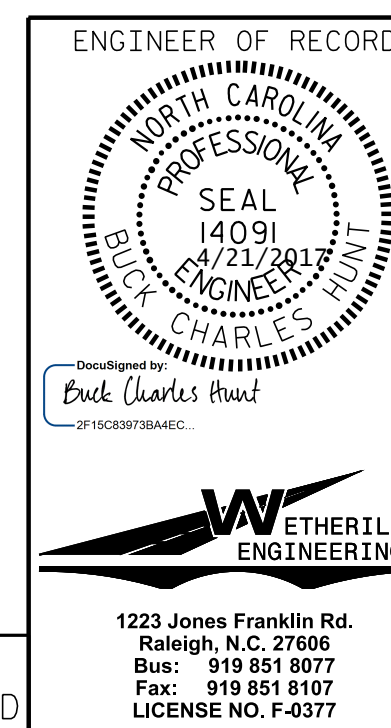
- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- 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 MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

TOTAL BILL OF MATERIAL

	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	MODIFIED 63" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES		HP 12 x 53 STEEL PILES	PILE REDRIVES	4" SLOPE PROTECTION	CONCRETE BARRIER RAIL	ELASTOMERIC BEARINGS
	EACH	SO. FT.	SO. FT.	CU. YDS.	LUMP SUM	LBS.	No.	LIN. FT.	EACH	No.	LIN. FT.	EACH	SO. YDS.	LIN. FT.	LUMP SUM
SUPERSTRUCTURE		4,869	5,964		LUMP SUM		5	557.76						225.17	LUMP SUM
END BENT No. 1				46.2		5365			9	9	900	9	345		
END BENT No. 2				46.2		5359			9	9	900	9	345		
TOTAL	1	4,869	5,964	92.4	LUMP SUM	10,724	5	557.76	18	18	1800	18	690	225.17	LUMP SUM

PROJECT NO. R-5719
WAYNE COUNTY
 STATION: 39+11.12 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 LEFT LANE BRIDGE
 ON US 117 OVER
 SR 1135 BETWEEN
 NC 55 & OBERRY RD.

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S01-3
2			4			TOTAL SHEETS 26

DRAWN BY : GMG/DAH DATE : 5/16
 CHECKED BY : BCH DATE : 5/16

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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 _L)	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 _L)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.08	--	1.75	0.86	1.27	A	ER	55.07	0.90	1.13	A	ER	77.38	0.80	0.90	1.08	A	ER	55.07		
	HL-93 (OPERATING)	N/A		1.57	--	1.35	0.86	1.65	A	ER	55.07	0.90	1.57	A	I	99.69	N/A	--	--	--	ER	--		
	HS-20 (INVENTORY)	36.000	②	1.54	55.43	1.75	0.86	1.82	A	ER	55.07	0.92	1.67	A	I	99.69	0.80	0.86	1.54	A	ER	55.07		
	HS-20 (OPERATING)	36.000		2.20	79.12	1.35	0.86	2.36	A	ER	55.07	0.92	2.20	A	I	99.69	N/A	--	--	--	ER	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SH		4.01	50.15	1.40	0.86	5.92	A	ER	55.07	0.92	5.89	A	I	99.69	0.80	0.86	4.01	A	ER	55.07		
		S3C		2.34	50.39	1.40	0.86	3.46	A	ER	55.07	0.92	3.40	A	I	99.69	0.80	0.86	2.34	A	ER	55.07		
		S3A		2.22	50.49	1.40	0.86	3.27	A	ER	55.07	0.92	3.21	A	I	99.69	0.80	0.86	2.22	A	ER	55.07		
		S4A		1.94	51.85	1.40	0.86	2.86	A	ER	55.07	0.92	2.77	A	I	99.69	0.80	0.86	1.94	A	ER	55.07		
		S5A		1.71	52.11	1.40	0.86	2.52	A	ER	55.07	0.92	2.50	A	I	99.69	0.80	0.86	1.71	A	ER	55.07		
		S6A		1.54	53.14	1.40	0.86	2.27	A	ER	55.07	0.92	2.23	A	I	99.69	0.80	0.86	1.54	A	ER	55.07		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	S7B		1.40	53.77	1.40	0.86	2.06	A	ER	55.07	0.92	2.05	A	I	99.69	0.80	0.86	1.40	A	ER	55.07		
		S7A		③	1.37	54.86	1.40	0.86	2.02	A	ER	55.07	0.92	2.06	A	I	99.69	0.80	0.86	1.37	A	ER	55.07	
		T4A			1.89	53.47	1.40	0.86	2.79	A	ER	55.07	0.92	2.67	A	I	99.69	0.80	0.86	1.89	A	ER	55.07	
		T5B			1.66	53.27	1.40	0.86	2.46	A	ER	55.07	0.92	2.48	A	I	99.69	0.80	0.86	1.66	A	ER	55.07	
		T6A			1.51	54.53	1.40	0.86	2.23	A	ER	55.07	0.92	2.24	A	I	99.69	0.80	0.86	1.51	A	ER	55.07	
		T7A			1.39	55.78	1.40	0.86	2.06	A	ER	55.07	0.92	2.06	A	I	99.69	0.80	0.86	1.39	A	ER	55.07	
T7B			1.46	58.53	1.40	0.86	2.16	A	ER	55.07	0.92	1.97	A	I	99.69	0.80	0.86	1.46	A	ER	55.07			

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:

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

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

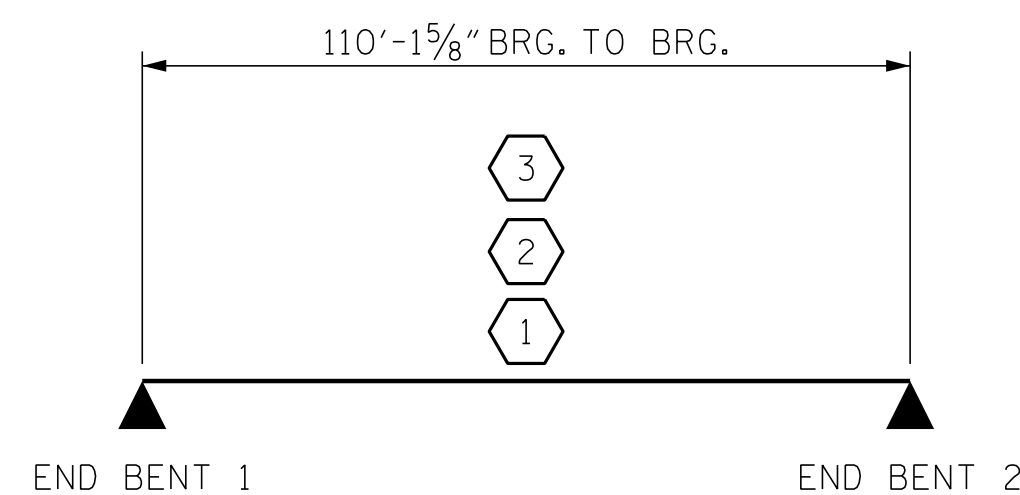
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



LRFR SUMMARY

PROJECT NO. R-5719
WAYNE COUNTY
 STATION: 39+11.12 -L-

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DRAWN BY : R. ASENCIO DATE : 12/5/15
 CHECKED BY : J. DILWORTH DATE : 12/8/15

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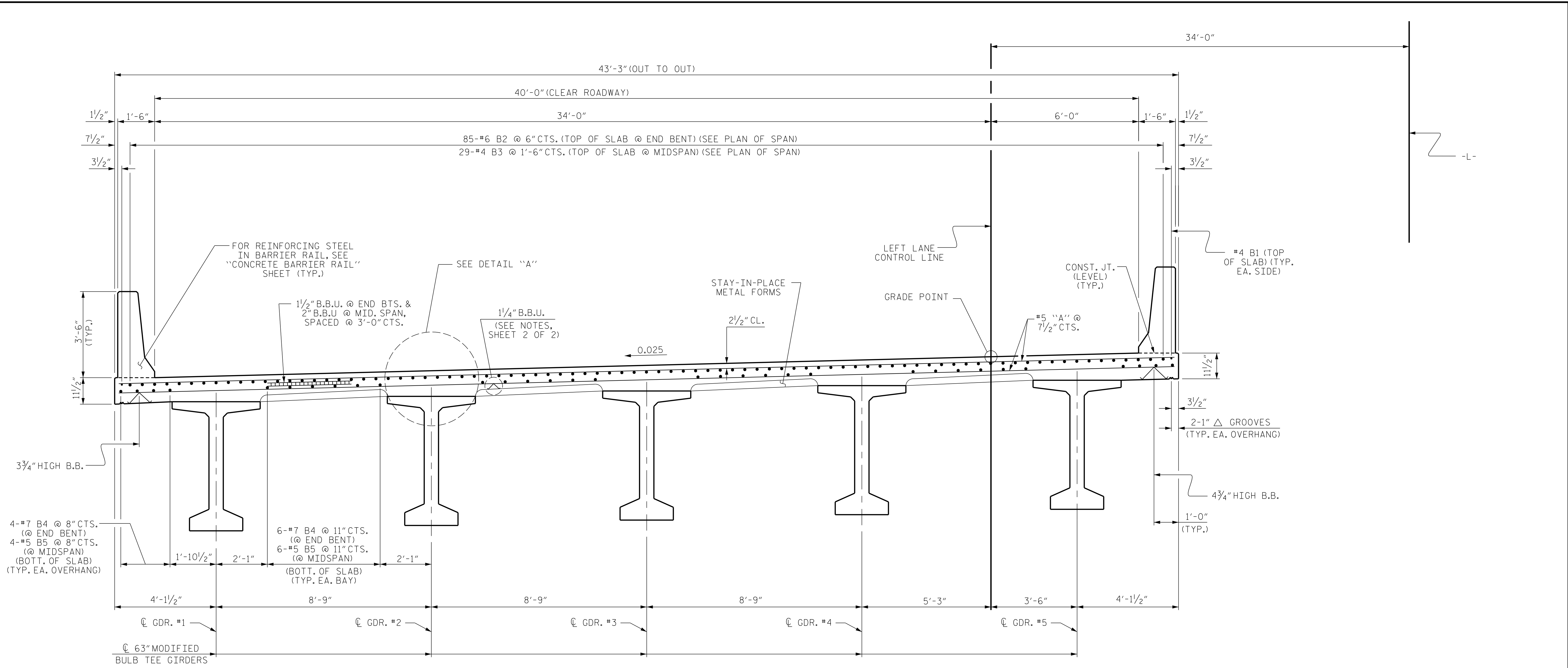
ENGINEER OF RECORD
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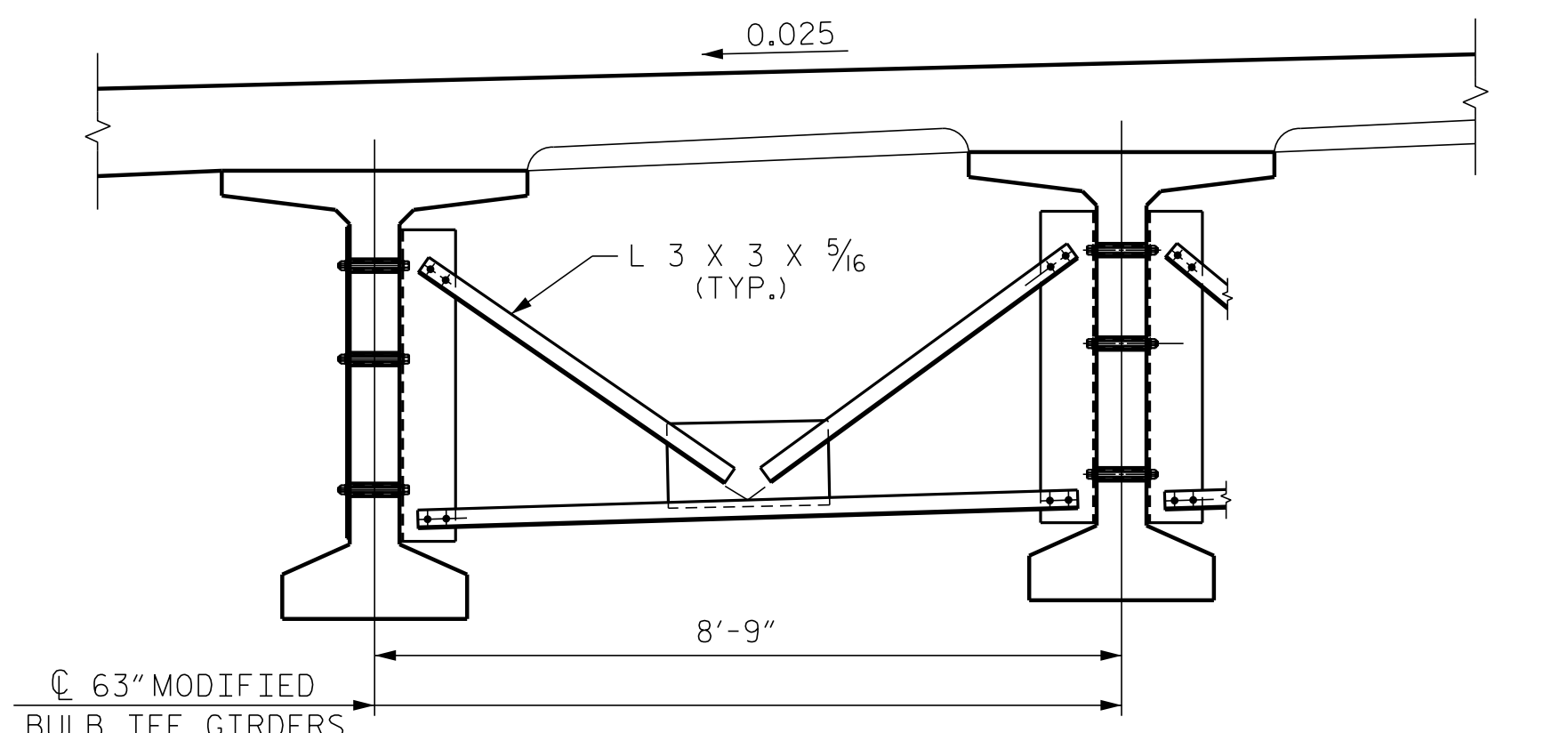
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 LRFR SUMMARY FOR
 PRESTRESSED
 CONCRETE GIRDERS
 (INTERSTATE TRAFFIC)
 LEFT LANE

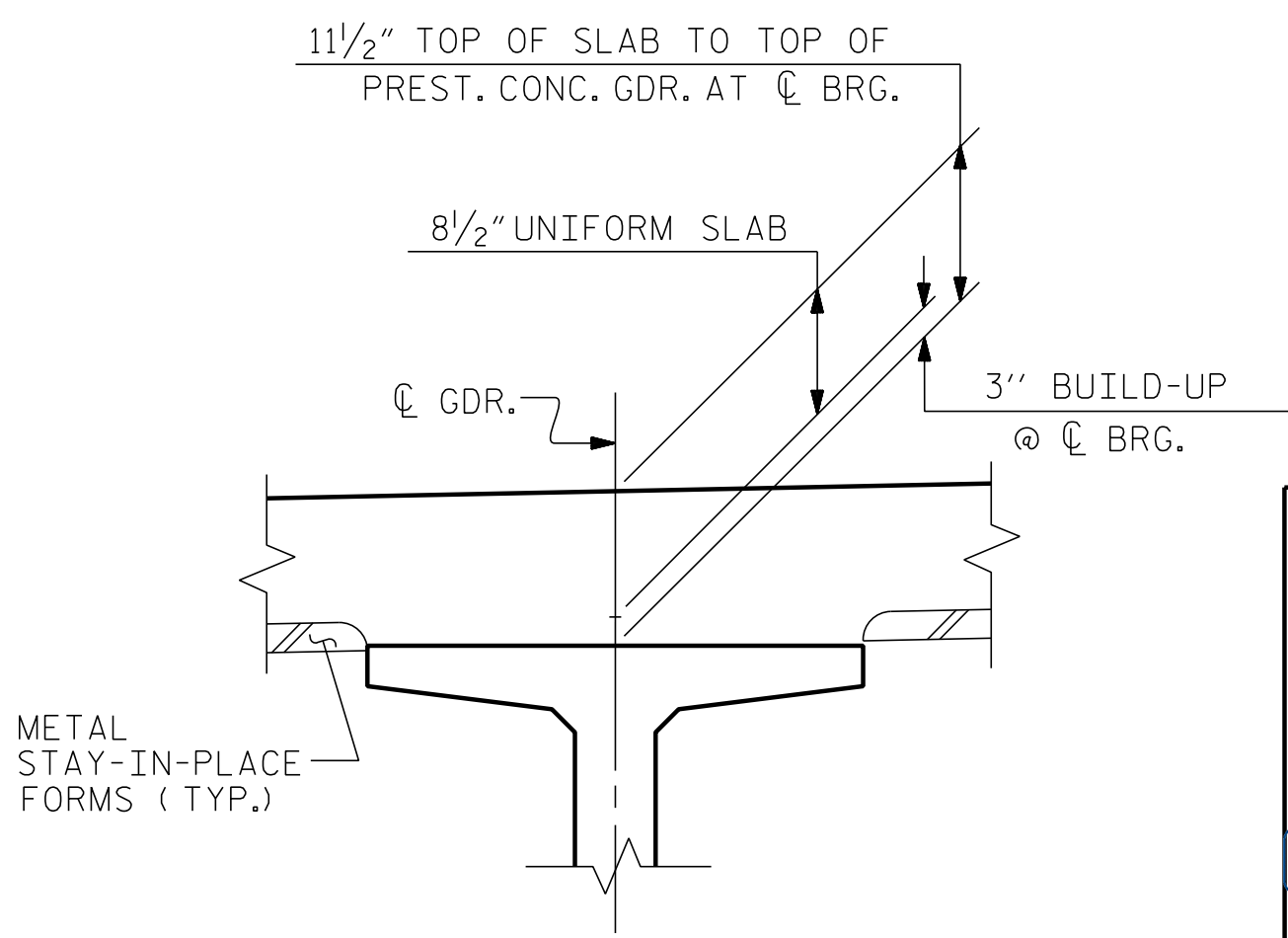
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NO.	BY:	DATE:	NO.	BY:	DATE:	S01-4 TOTAL SHEETS 26
1			3			
2			4			



TYPICAL SECTION

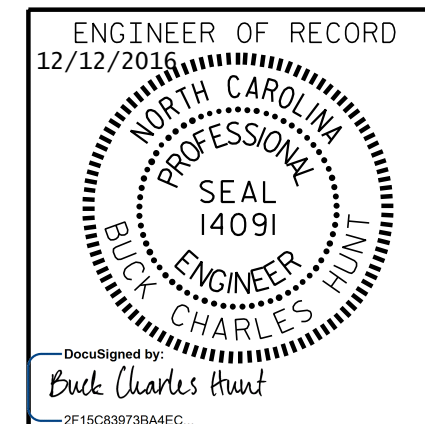


EXTERIOR GIRDER INTERIOR GIRDER
PART SECTION AT INTERMEDIATE DIAPHRAGM



DETAIL "A"

PROJECT NO. R-5719
WAYNE COUNTY
 STATION: 39+11.12 -L-
 SHEET 1 OF 2



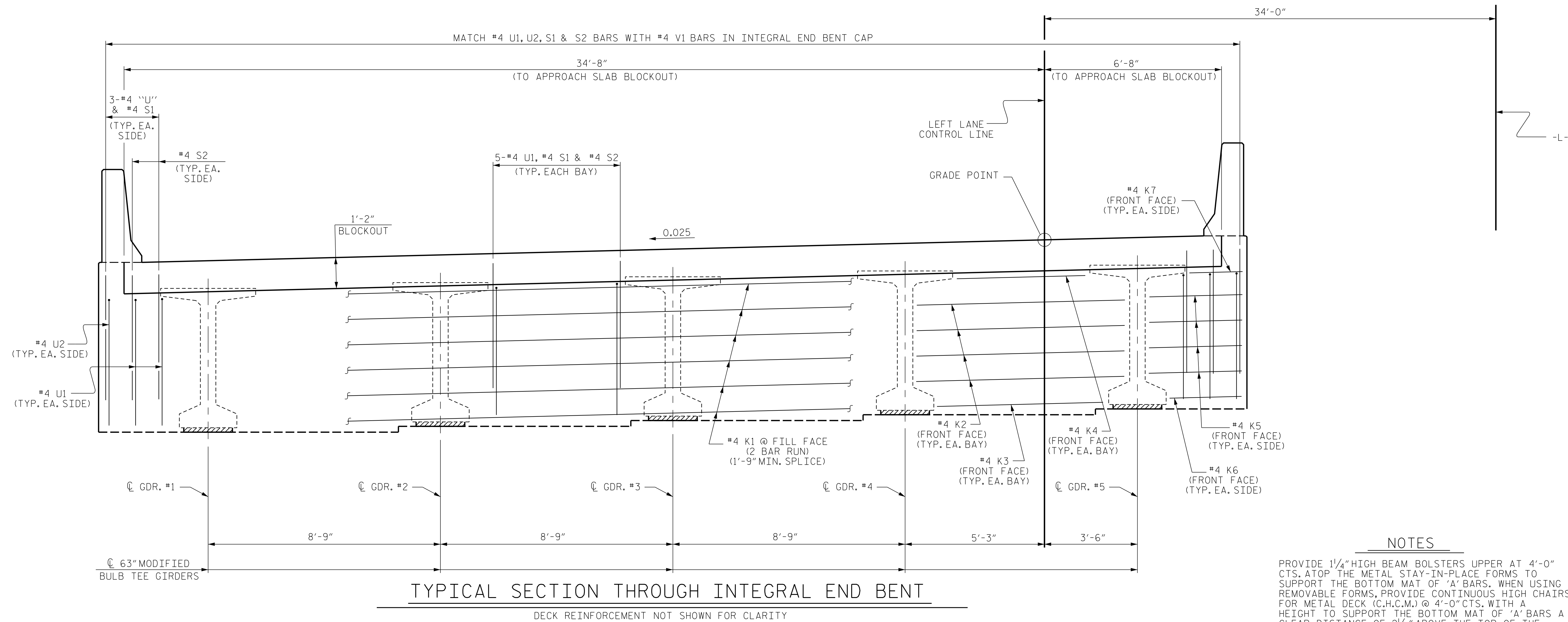
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 Raleigh, N.C. 27606
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 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE TYPICAL SECTION (LEFT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S01-5
TOTAL SHEETS					26

DRAWN BY: D. HODGE DATE: 1/16
 CHECKED BY: G.M. GILLAND DATE: 2/16

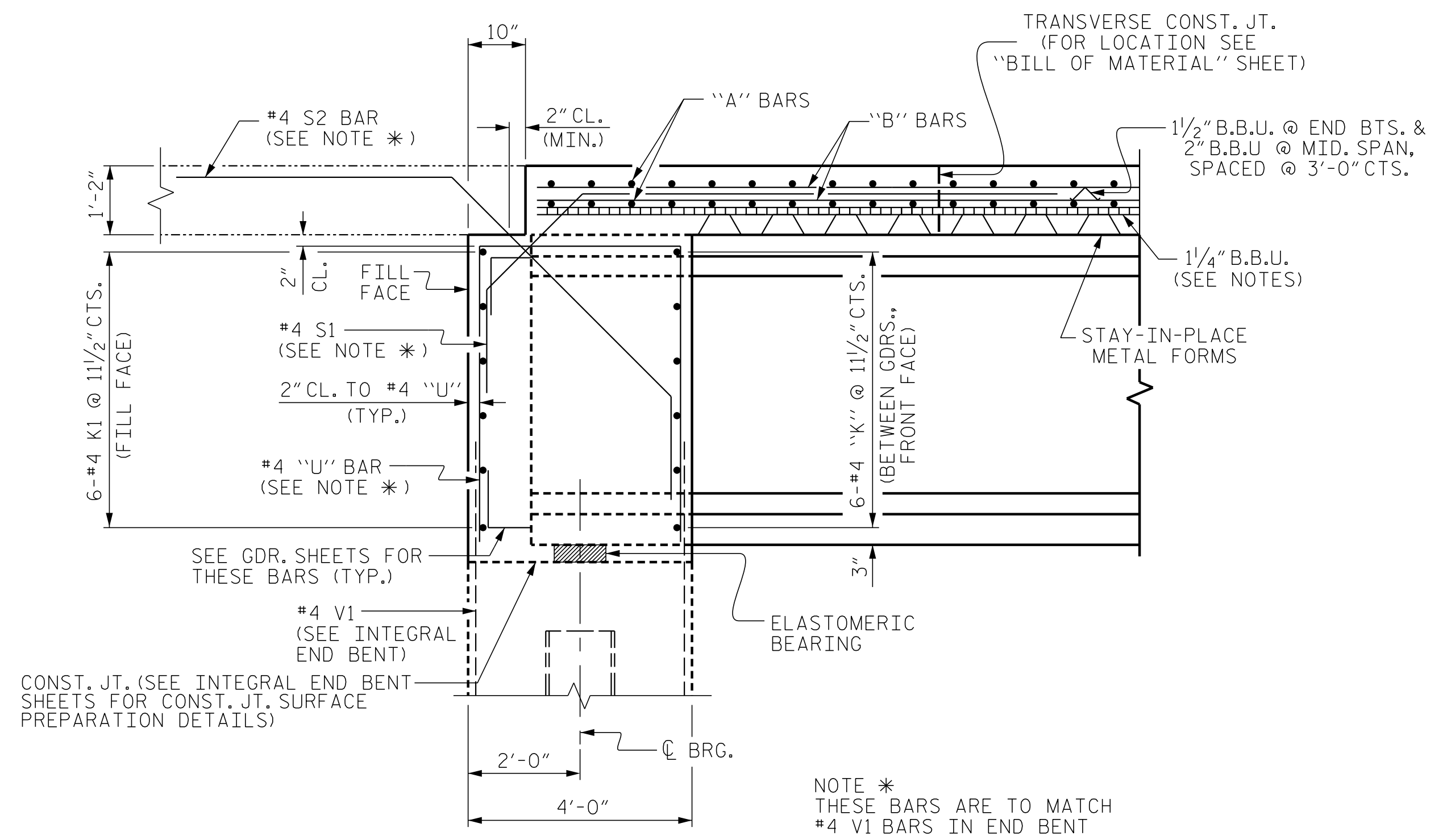
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NOTES

- 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.
- BARRIER RAIL SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.
- PREVIOUSLY CAST CONCRETE SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.



PROJECT NO. R-5719
 WAYNE COUNTY
 STATION: 39+11.12 -L-

SHEET 2 OF 2

ENGINEER OF RECORD
 12/12/2016

 DECK ENGINEER
 CHARLES HUNT
 Drawn by: *Ende Charles Hunt*
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

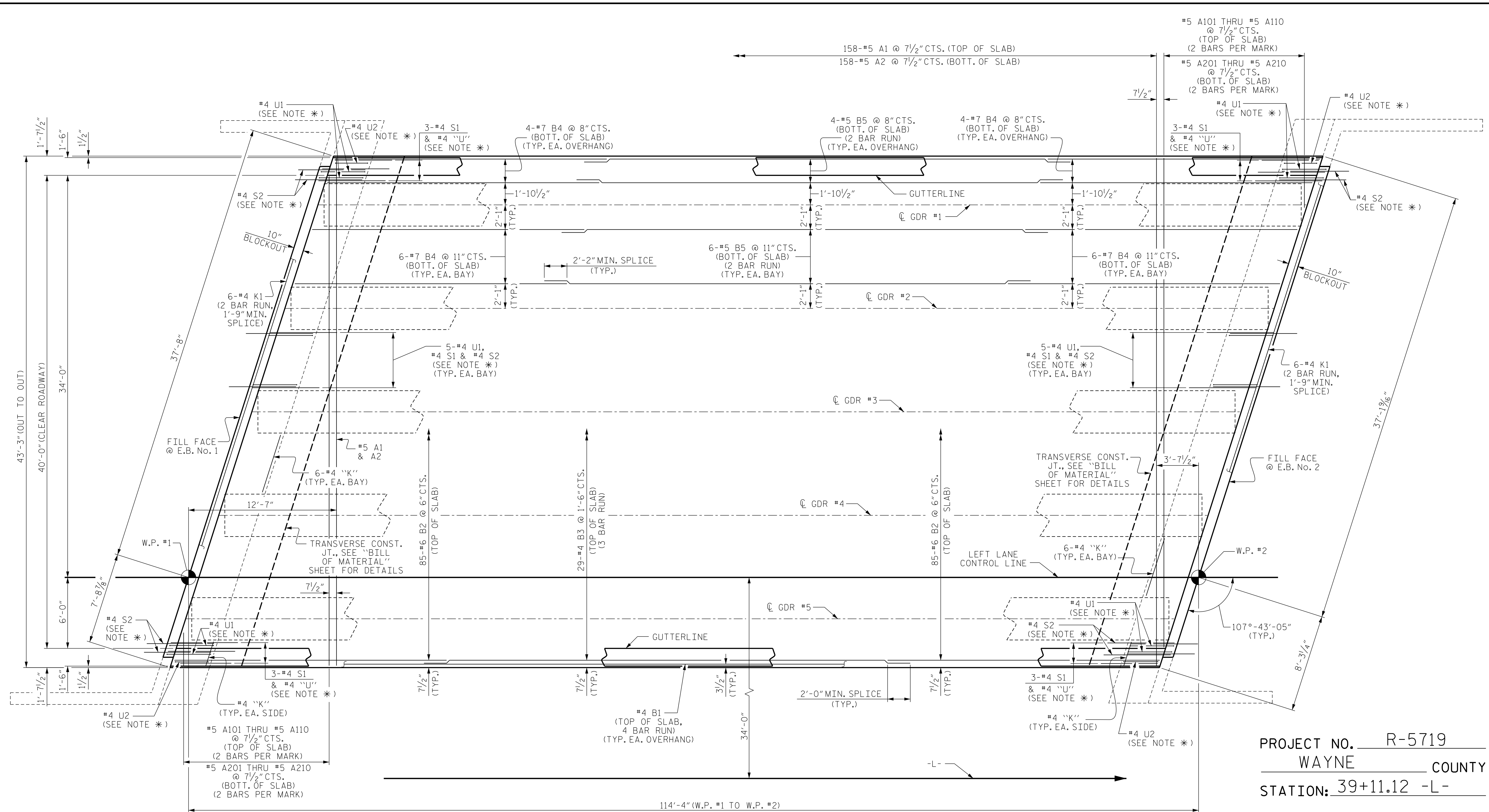
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SUPERSTRUCTURE TYPICAL SECTION (LEFT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S01-6					TOTAL SHEETS 26

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DRAWN BY: D. HODGE DATE: 1/16
 CHECKED BY: G.M. GILLAND DATE: 2/16

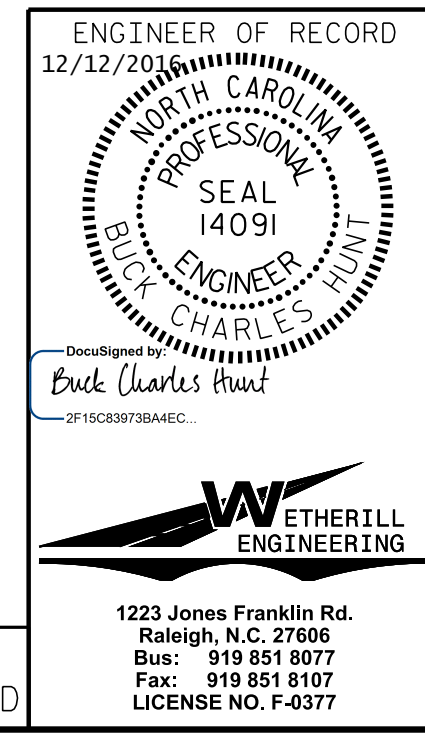
PA\2015\A-57 19\Structures\DWG\Left Lane\A-57 19_L1_P5.WE I.dgn
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PROJECT NO. R-5719
 WAYNE COUNTY
 STATION: 39+11.12 -L-

PLAN OF SPAN A

FOR DETAILS OF INTERMEDIATE DIAPHRAGMS, SEE "PRESTRESSED CONCRETE GIRDER" SHEET.
 FOR CONCRETE BARRIER RAIL DETAILS AND REINFORCING STEEL, SEE "CONCRETE BARRIER RAIL" SHEETS.
 * THESE BARS ARE TO MATCH SPACING OF THE #4 V1 BARS IN END BENT.

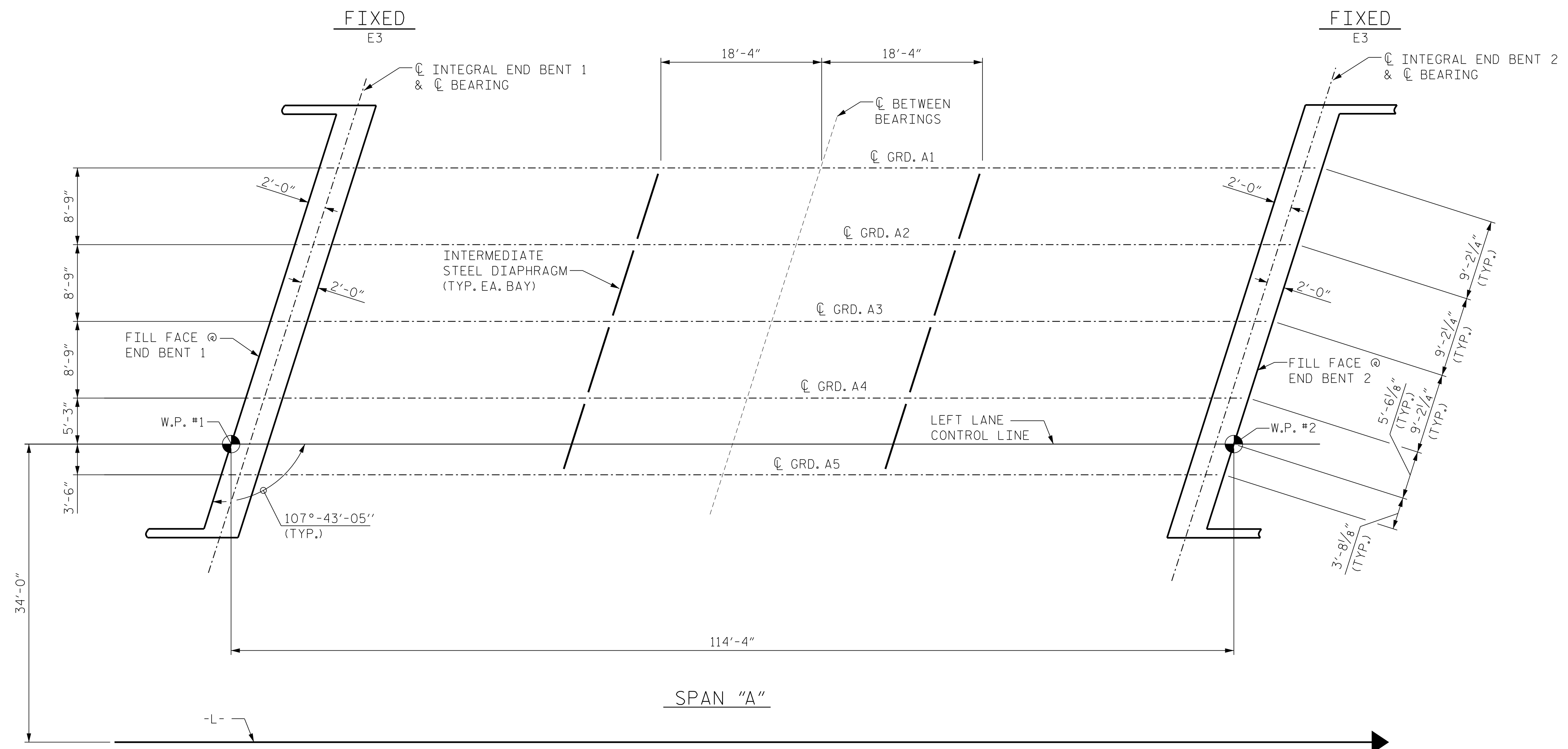


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPAN (LEFT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S01-7					TOTAL SHEETS 26

DRAWN BY: D. HODGE DATE: 1/16
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GIRDER LAYOUT

PROJECT NO. R-5719
WAYNE COUNTY
 STATION: 39+11.12 -L-

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DRAWN BY : J. PENDERGRAFT DATE : 11-15
 CHECKED BY : J. DILWORTH DATE : 11-15

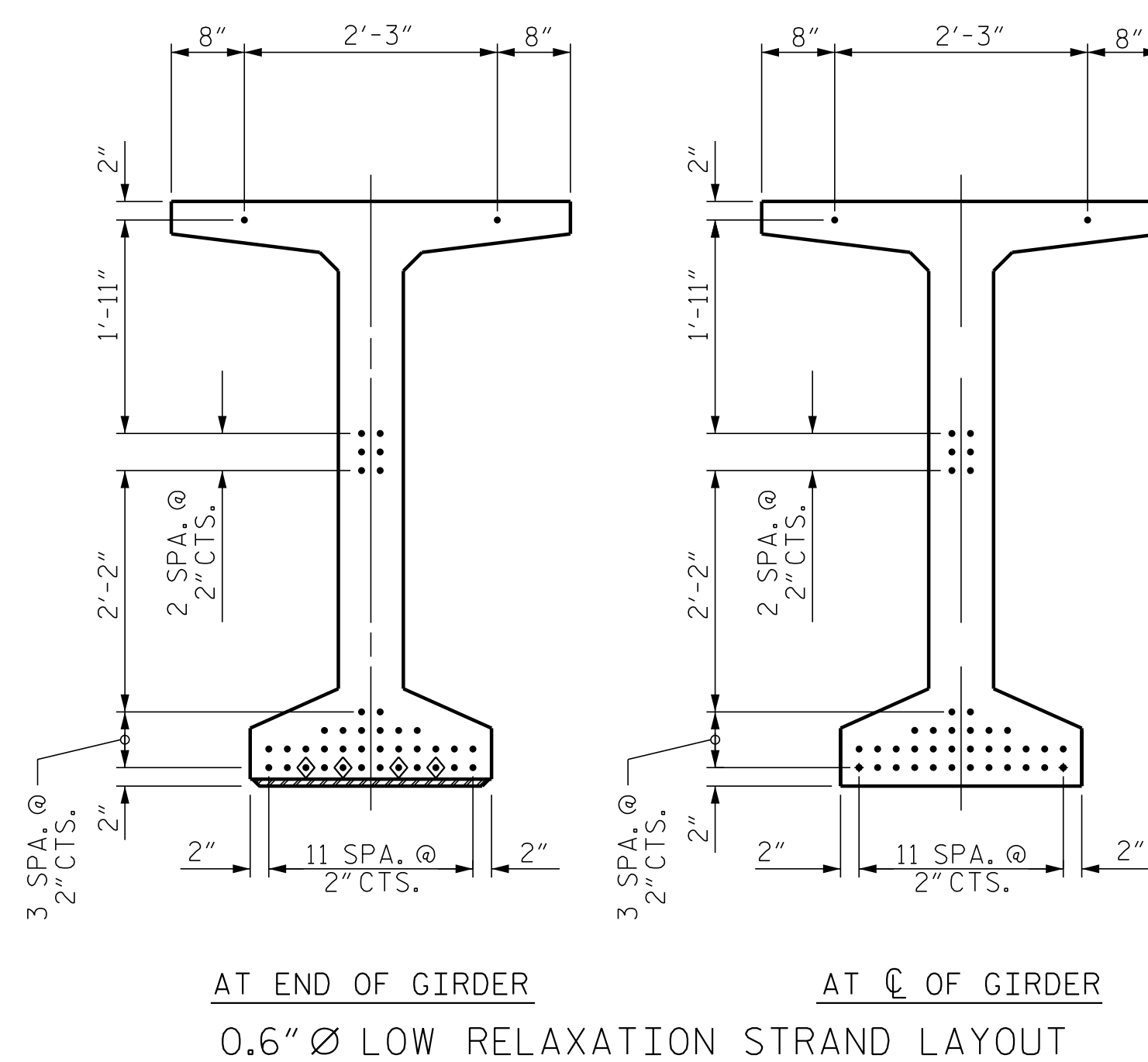
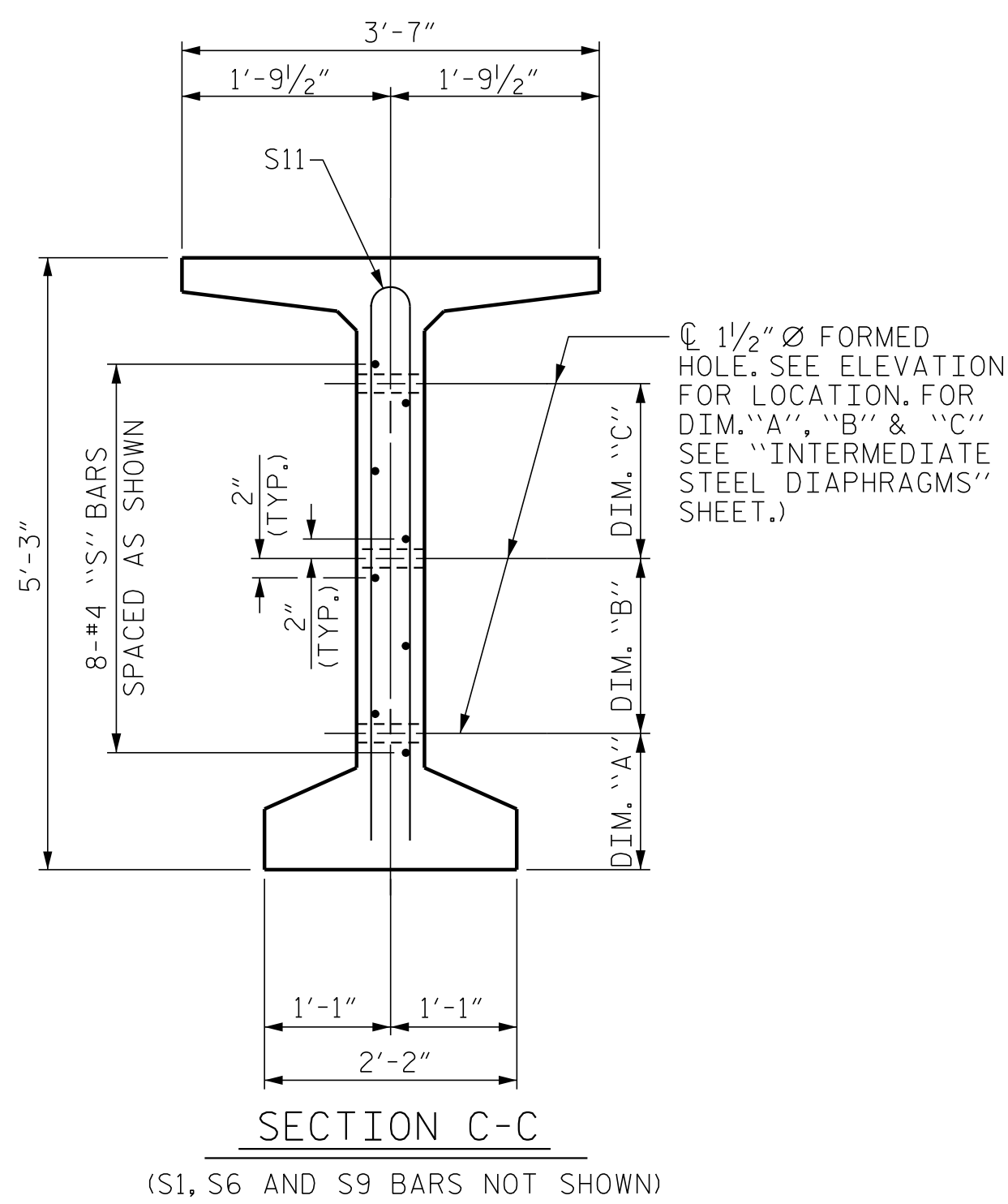
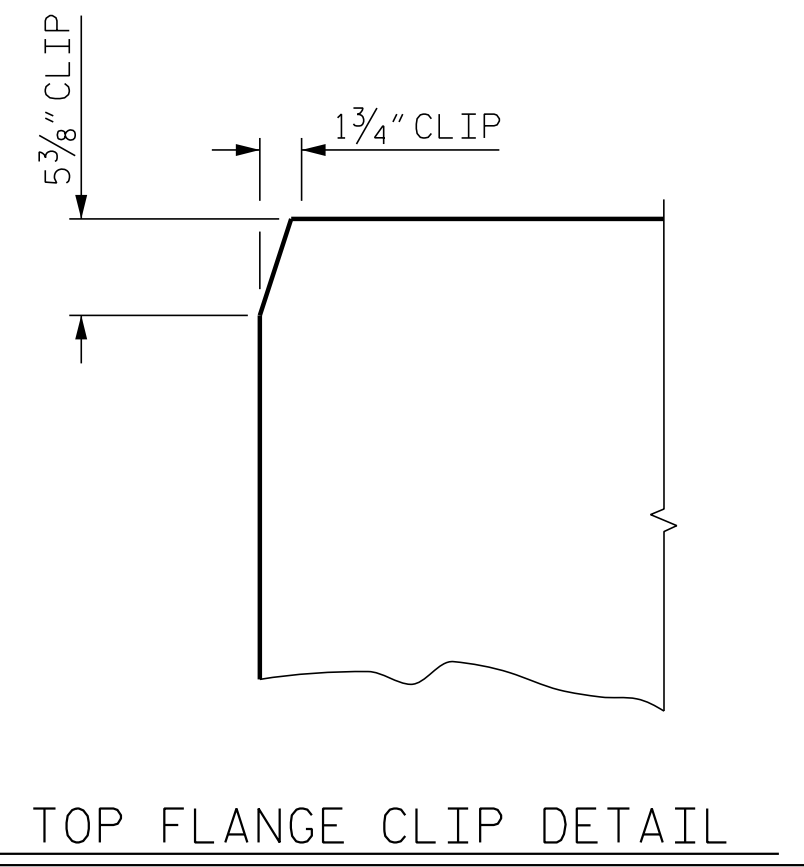
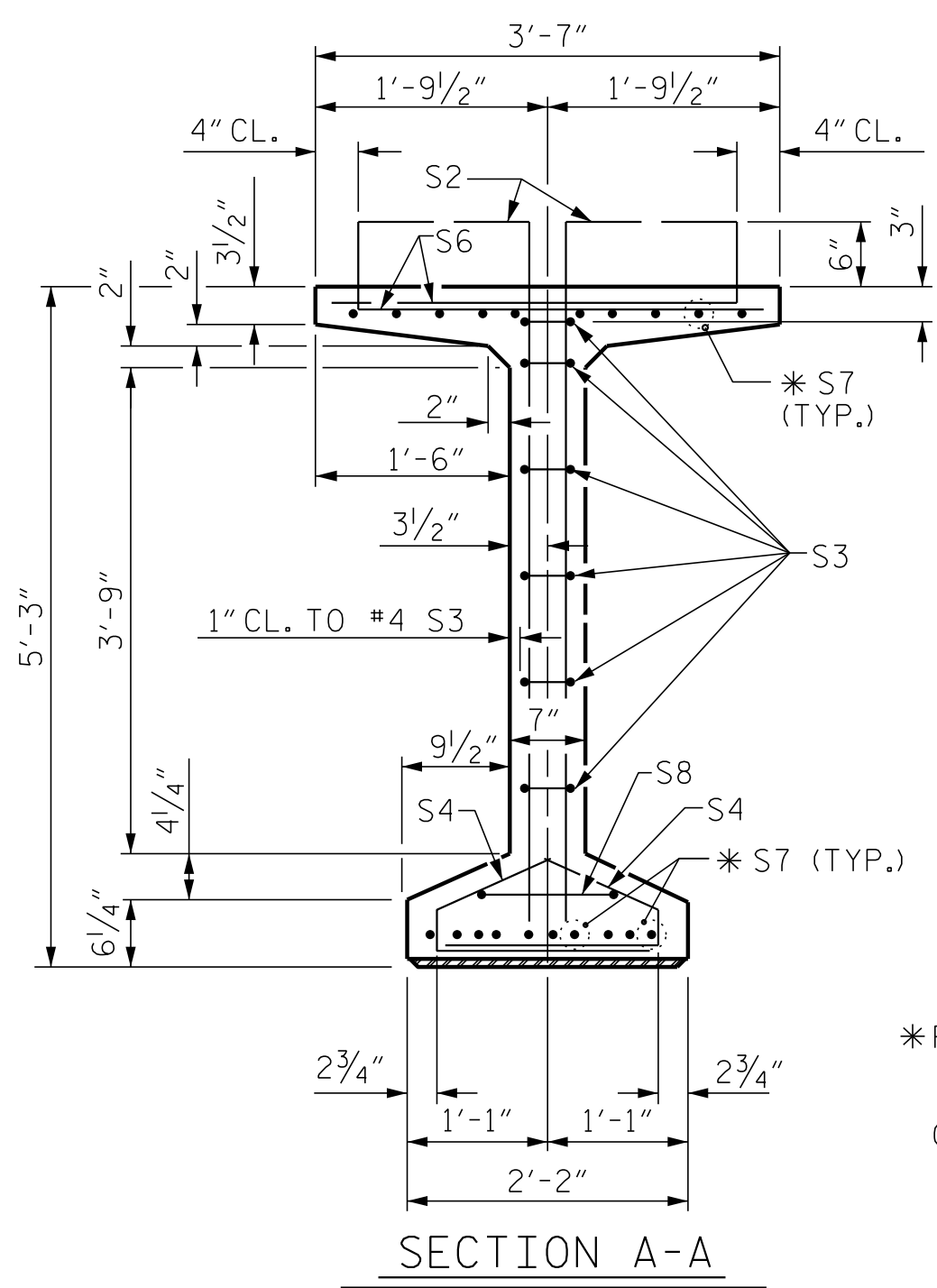
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ENGINEER OF RECORD
12/12/2016

DocuSigned by:
Eric Charles Hunt
915C3D78A6C

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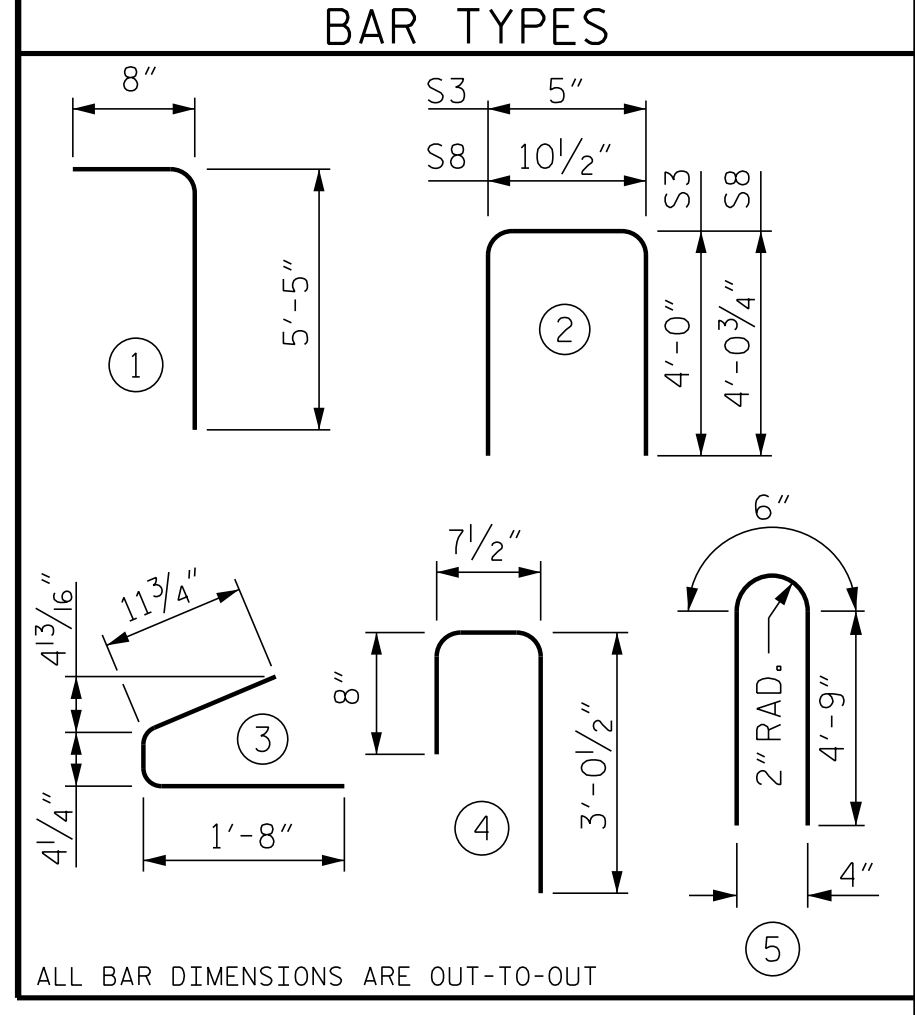
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE GIRDER LAYOUT LEFT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S01-8
TOTAL SHEETS					26



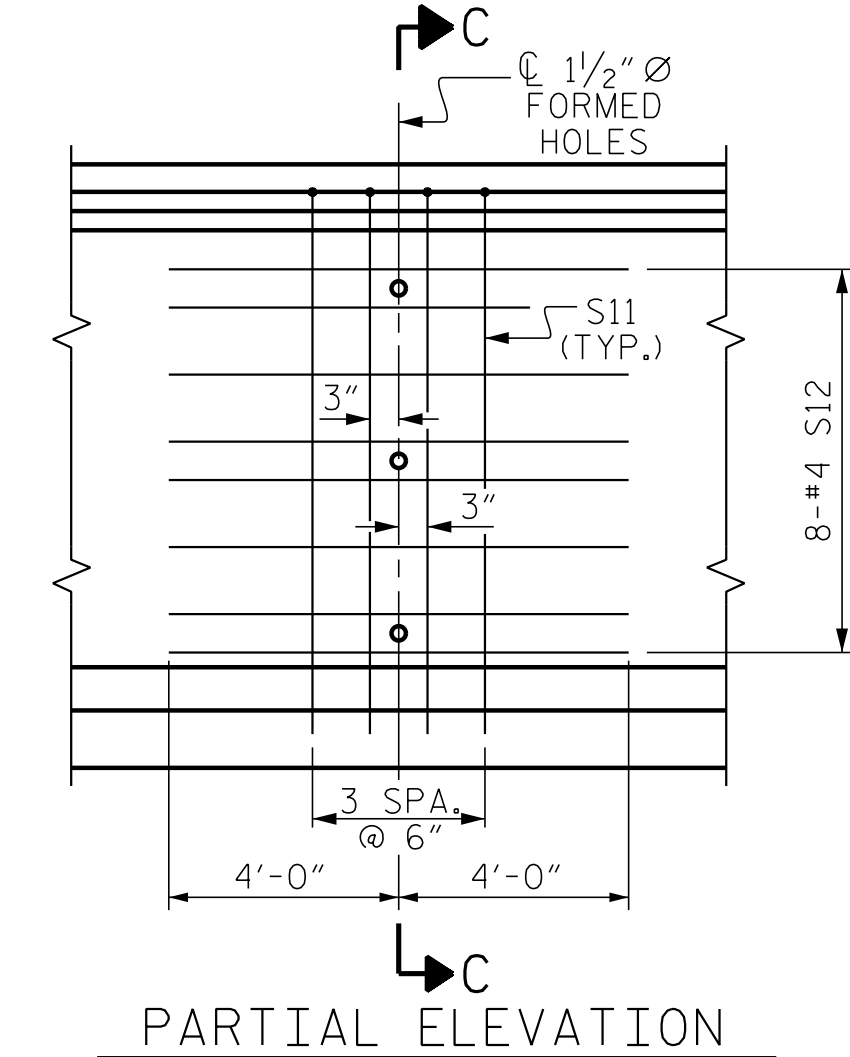
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GDR					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	174	#4	1	6'-1"	707
S2	32	#6	1	6'-1"	292
S3	12	#4	2	8'-5"	67
S4	80	#4	3	3'-0"	160
S6	206	#5	4	4'-4"	931
*S7	40	#5	STR	3'-8"	153
S8	2	#5	2	9'-0"	19
S9	62	#5	STR	3'-3"	210
S10	2	#3	STR	1'-10"	1
S11	8	#5	5	10'-0"	83
S12	16	#4	STR	8'-0"	86

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



DEBONDING LEGEND
 ● FULLY BONDED STRANDS
 ◆ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER



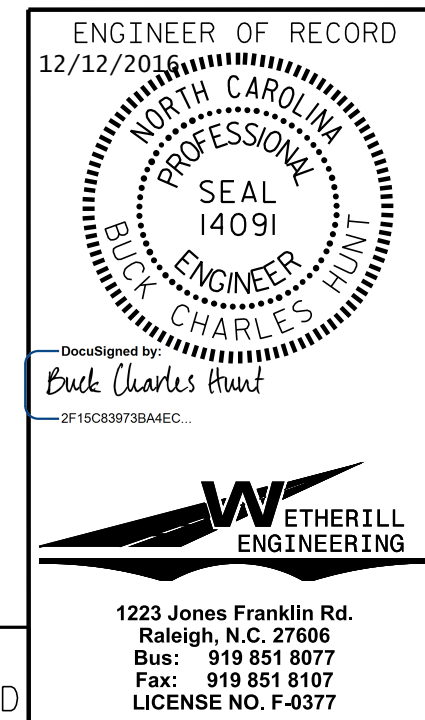
SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS

*FOR S7 BARS, SEE DETAIL "C" OF PRESTRESSED CONCRETE GIRDER DETAILS SHEET

QUANTITIES FOR ONE GIRDER			
REINFORCING STEEL	9600 PSI CONCRETE	0.6" Ø L.R. STRANDS	
LB.	C.Y.	No.	
2709	22.1	40	

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
5	111'-6 5/8"	557.76'

PROJECT NO. R-5719
 WAYNE COUNTY
 STATION: 39+11.12 -L-
 SHEET 1 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

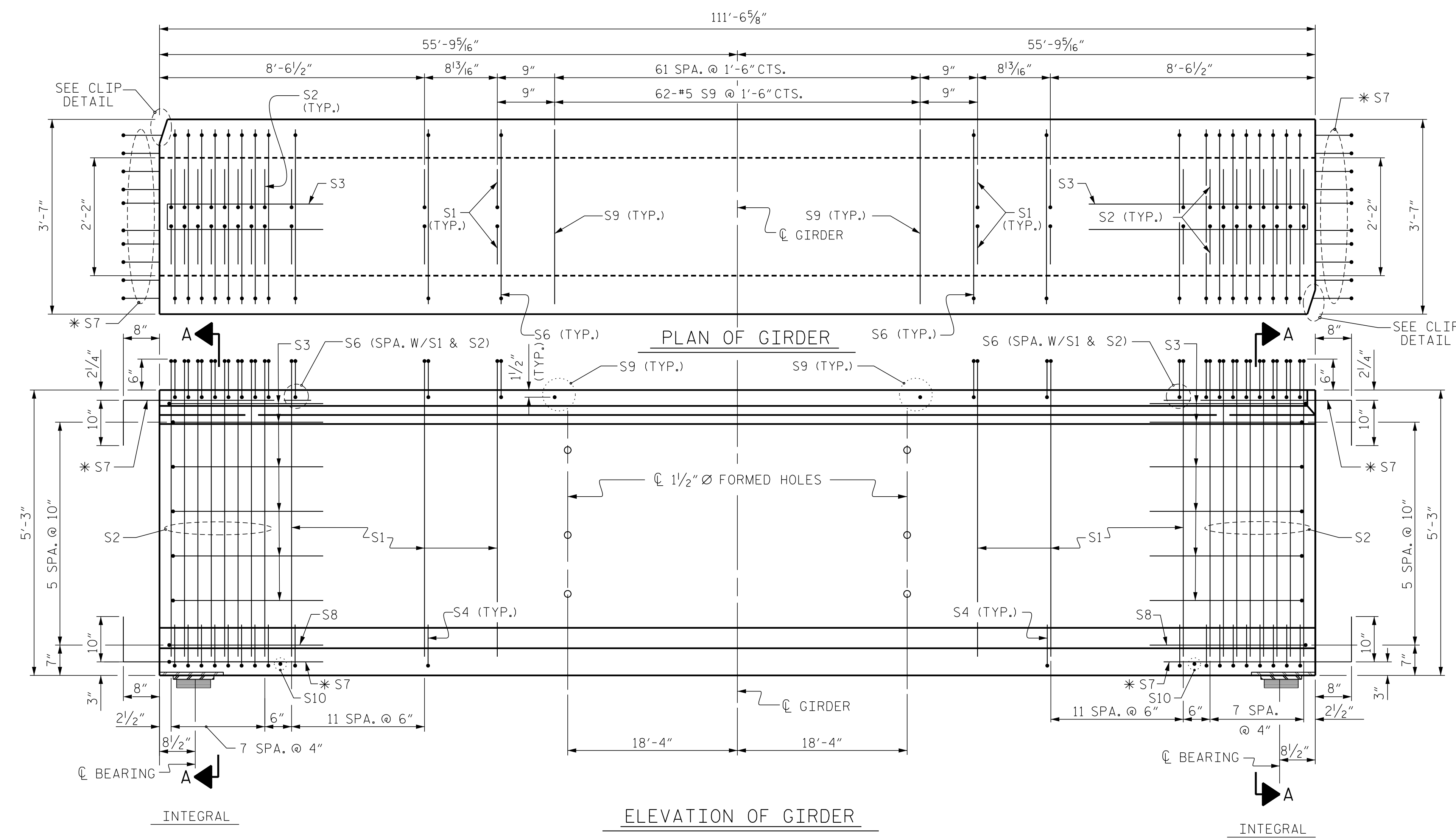
63" PRESTRESSED CONCRETE MODIFIED BULB TEE LEFT LANE

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

SHEET NO. S01-9
 TOTAL SHEETS 26

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DRAWN BY: R. ASENCIO DATE: 12/5/15
 CHECKED BY: J. DILWORTH DATE: 12/8/15

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NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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 7200 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".

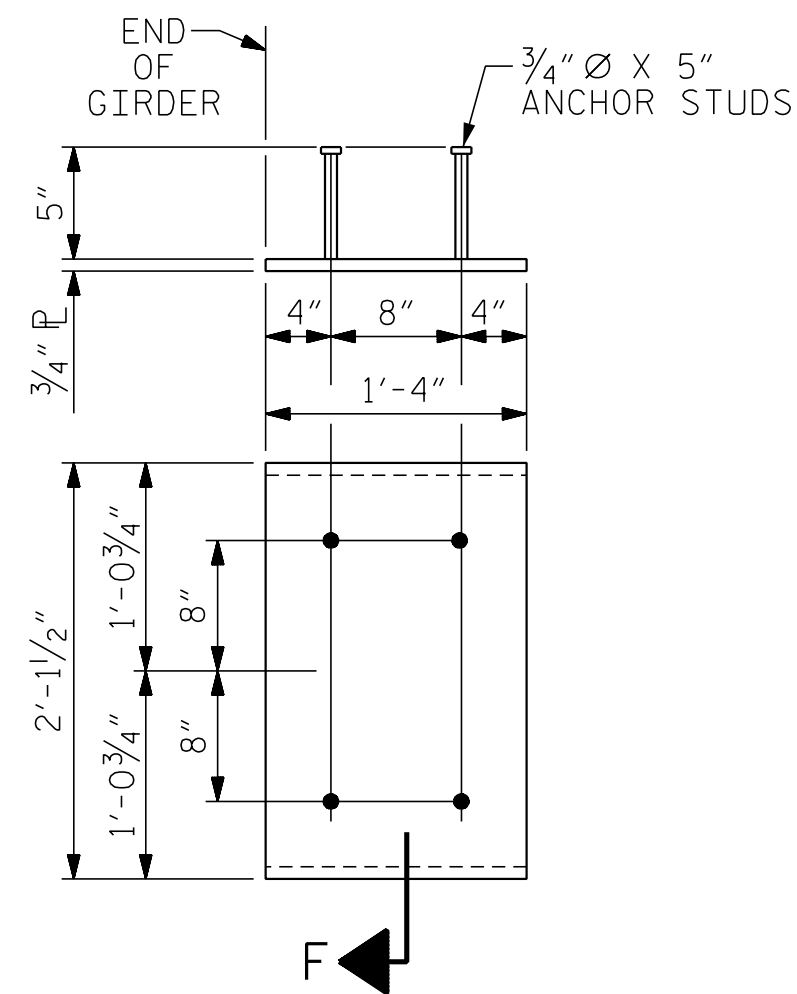
A 2" x 2" CHAMFER IS ALLOWED AT THE INTERSECTION OF THE WEB AND THE BOTTOM FLANGE OF THE 63" AND 72" MODIFIED BULB TEES ONLY.

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

FOR EMBEDDED CLIPS FOR PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

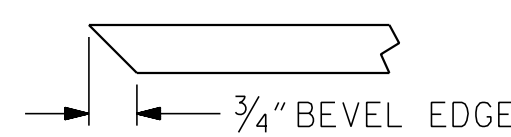
0.6" Ø LOW RELAXATION	DEAD LOAD DEFLECTION TABLE FOR GIRDERS 1 THRU 5																				
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.040	0.080	0.116	0.151	0.179	0.207	0.225	0.242	0.249	0.255	0.249	0.242	0.225	0.207	0.179	0.151	0.116	0.080	0.040	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.024	0.048	0.072	0.095	0.113	0.131	0.143	0.155	0.159	.163	0.159	0.155	0.143	0.131	0.113	0.095	0.048	0.048	0.024	0.000
FINAL CAMBER ↑	0	3/16"	3/8"	1/2"	11/16"	13/16"	7/8"	1"	1 1/16"	1 1/16"	1 1/8"	1 1/16"	1 1/16"	1"	7/8"	13/16"	1 1/16"	1/2"	3/8"	3/16"	0"

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



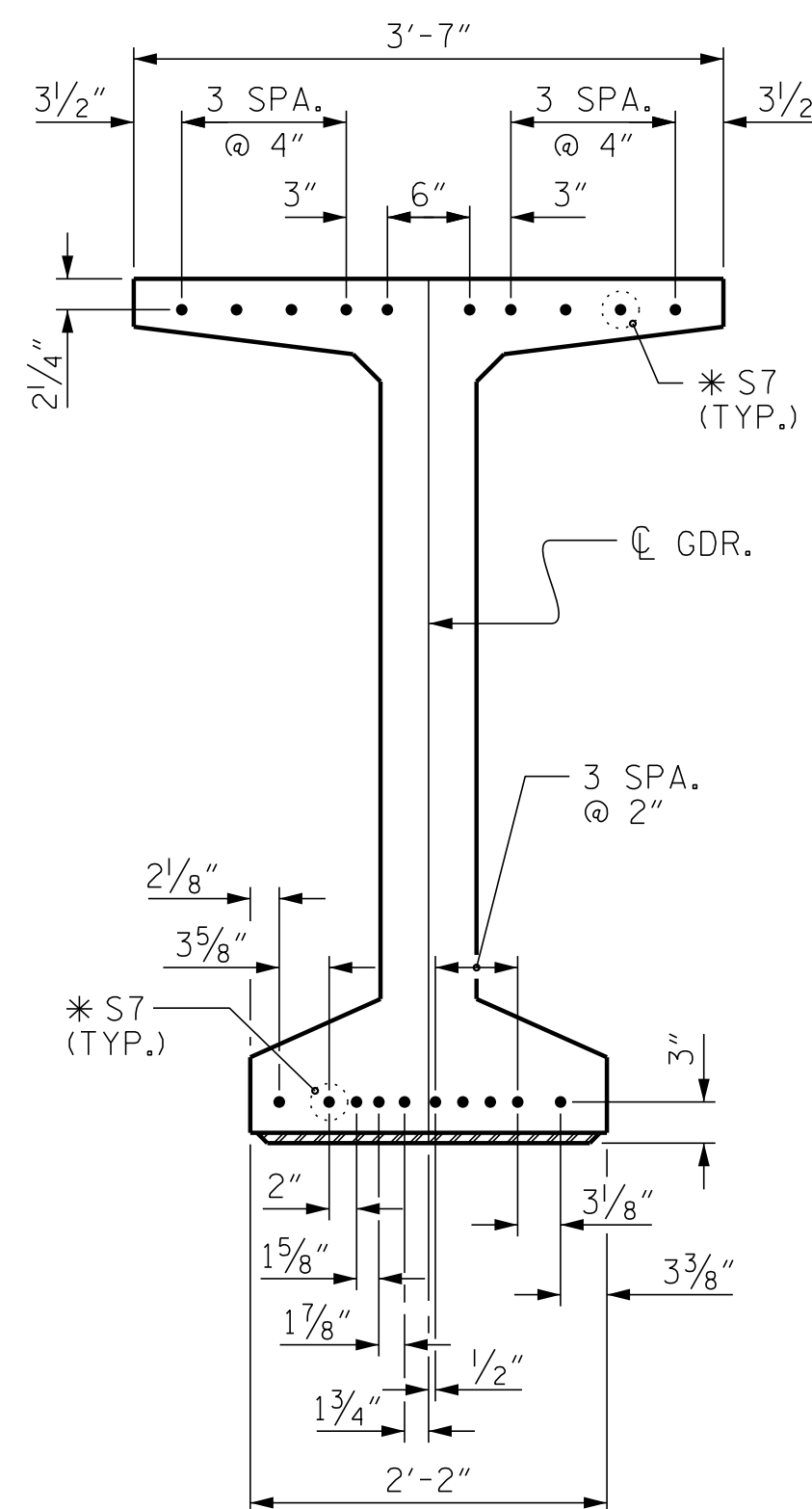
EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER AND 63" MODIFIED BULB TEES

(2 REQ'D PER GIRDER)



SECTION "F"

(SEE NOTES)



DETAIL "C"

PROJECT NO. R-5719
WAYNE COUNTY
STATION: 39+11.12 -L-

ENGINEER OF RECORD
12/12/2016
NORTH CAROLINA PROFESSIONAL SEAL 14091
REGISTERED PROFESSIONAL ENGINEER
CHARLES HUNTER
Erick Charles Hunt
2F5C387BBAE6
ETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

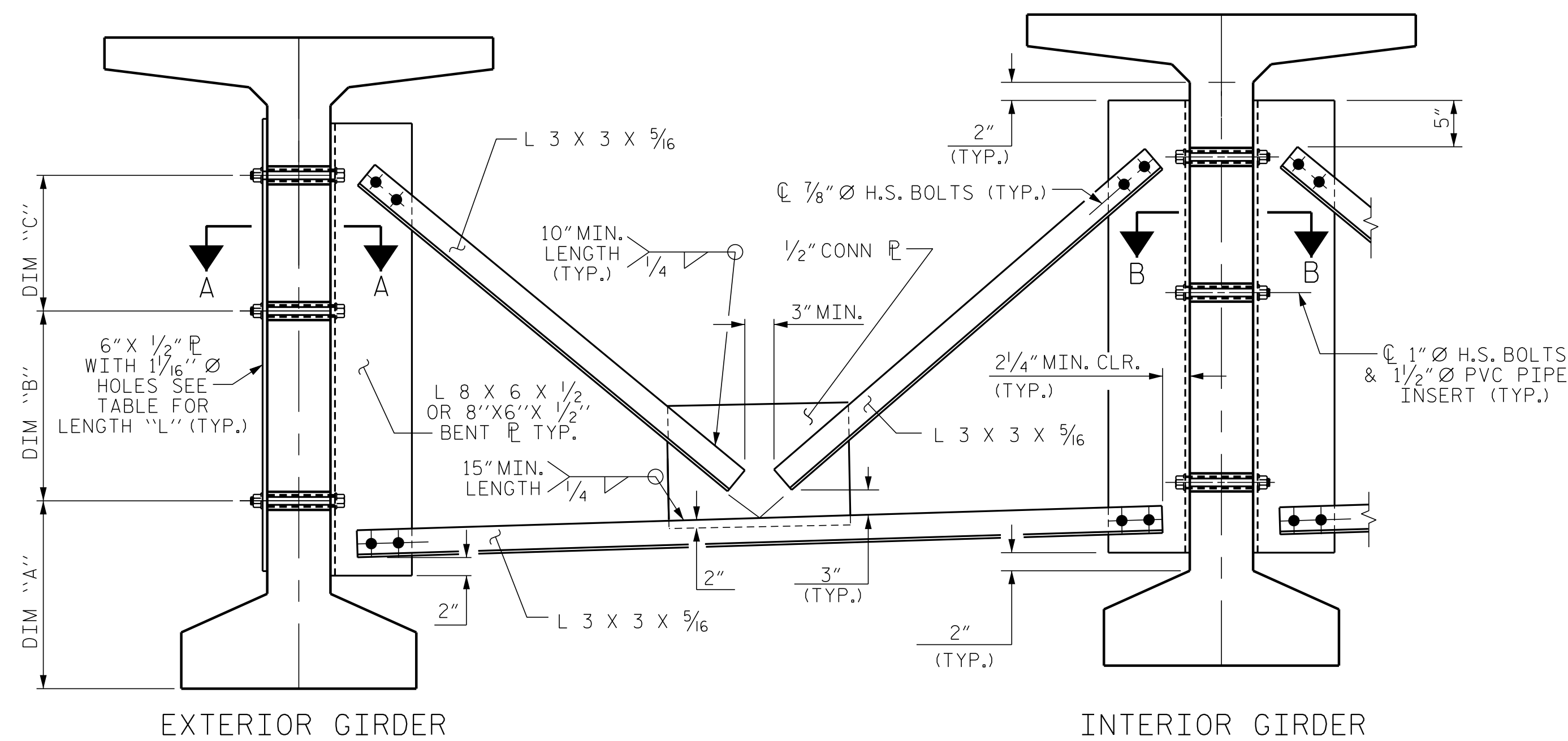
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
PRESTRESSED CONCRETE
GIRDER
DETAILS
LEFT LANE

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

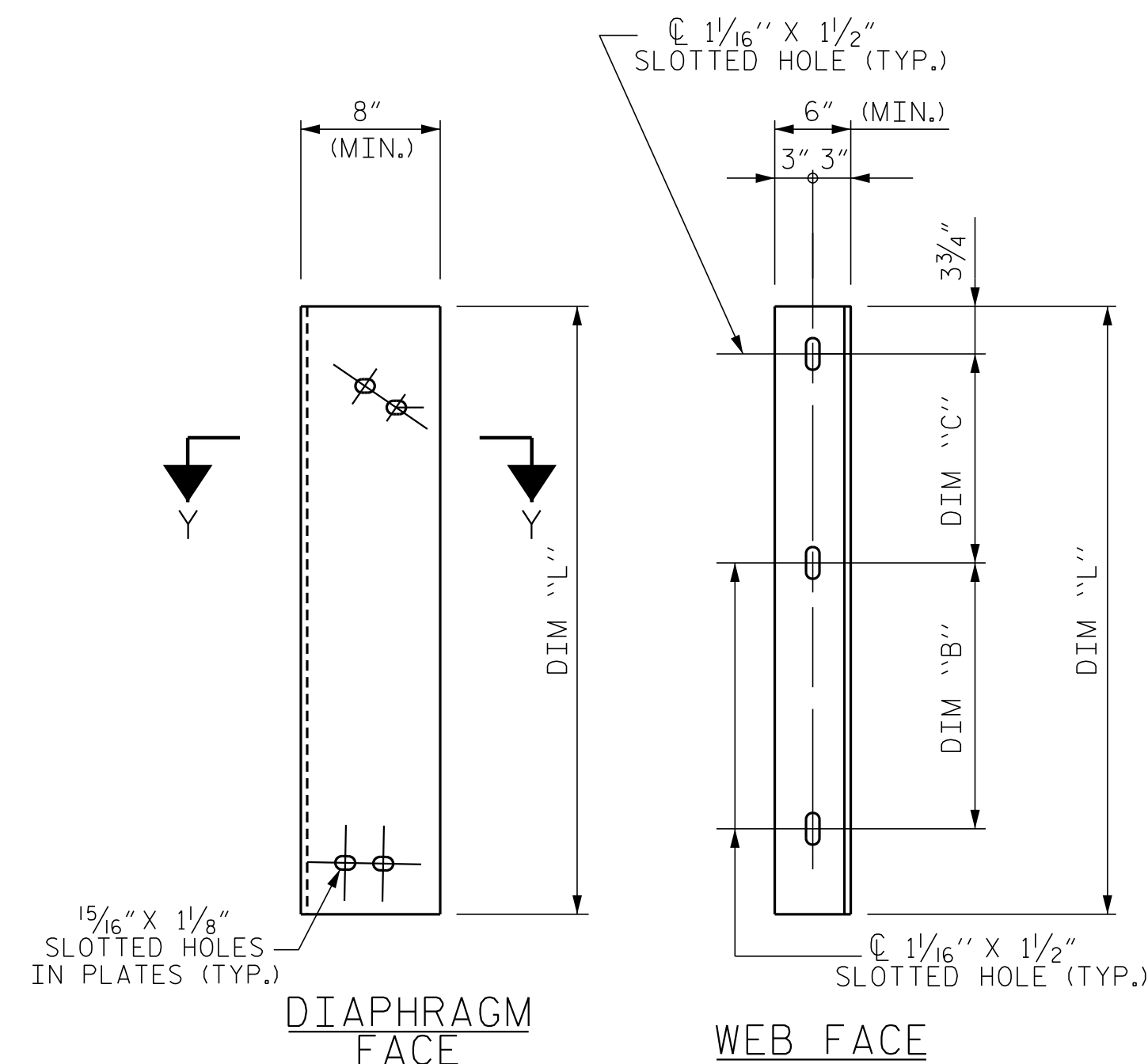
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PART SECTION AT INTERMEDIATE DIAPHRAGM



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 ANGLE 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, 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.

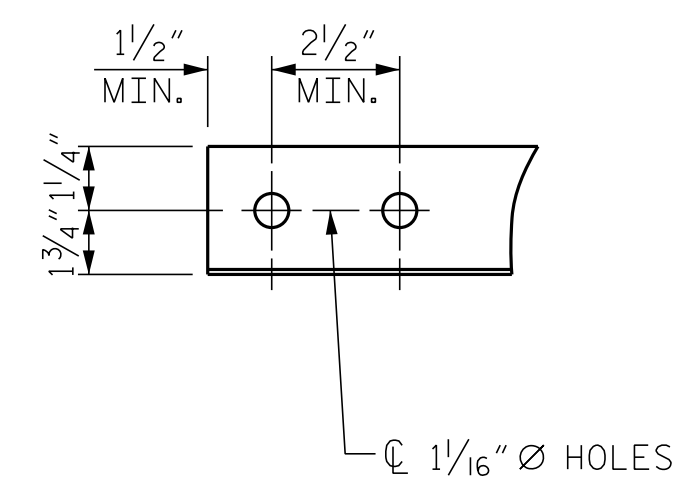
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

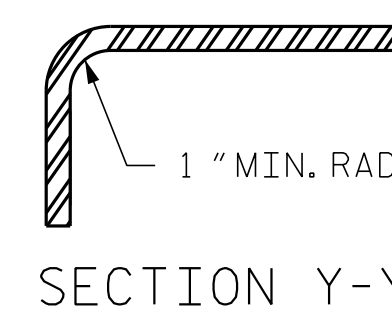
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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.

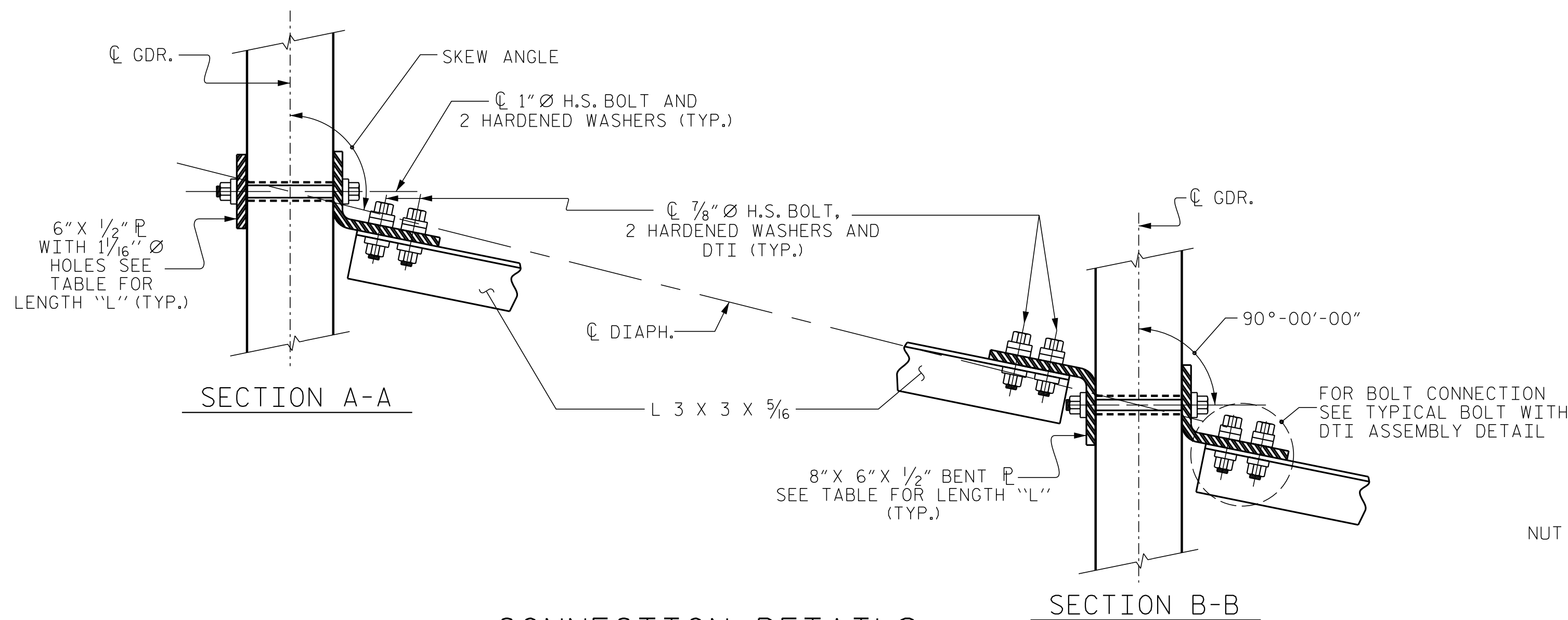
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



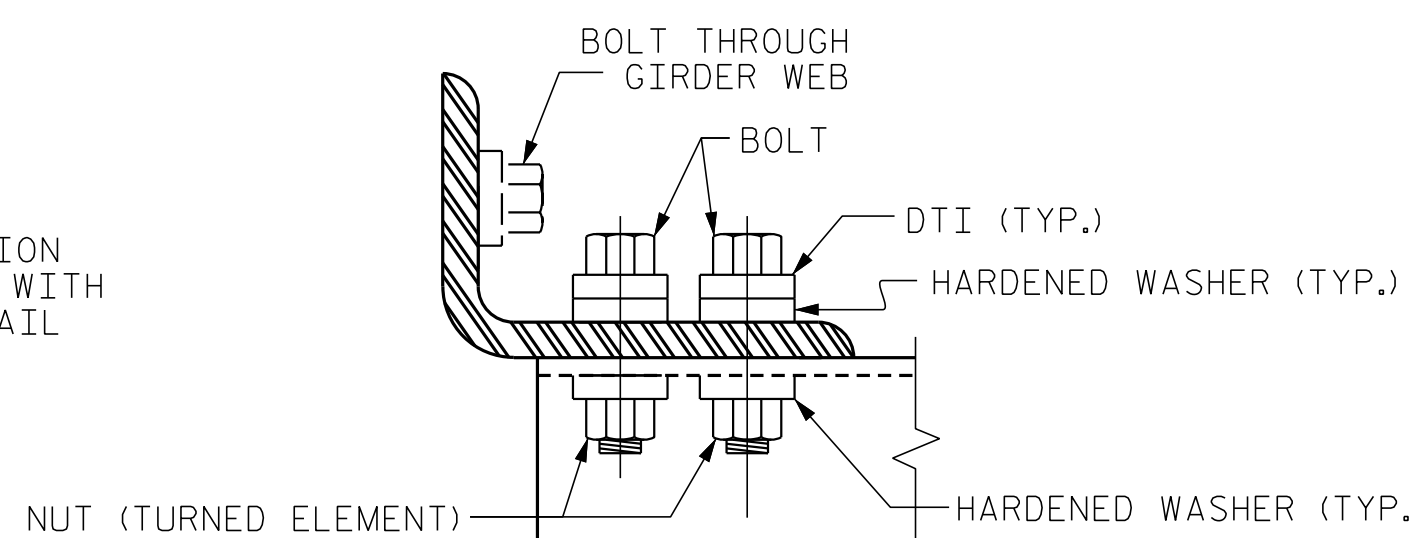
ANGLE END
(L 3 X 3 X 5/16)



CONNECTOR PLATE DETAIL



CONNECTION DETAILS

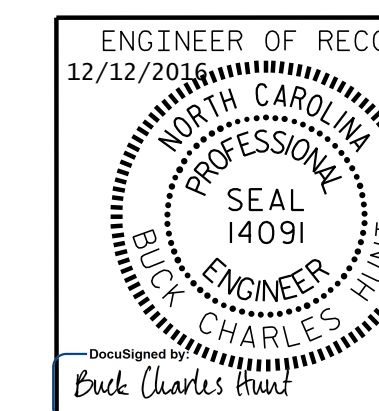


BOLT WITH DTI ASSEMBLY DETAIL

TABLE

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
63" BULB TEE	1'-4 1/2"	1'-2"	1'-7 1/4"	3'-5"

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WAYNE COUNTY
STATION: 39+11.12 -L-



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DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
INTERMEDIATE STEEL
DIAPHRAGMS FOR 63"
MODIFIED BULB TEE
PRESTRESSED
CONCRETE GIRDERS
LEFT LANE

REVISIONS

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

SHEET NO.
S01-11
TOTAL SHEETS
26

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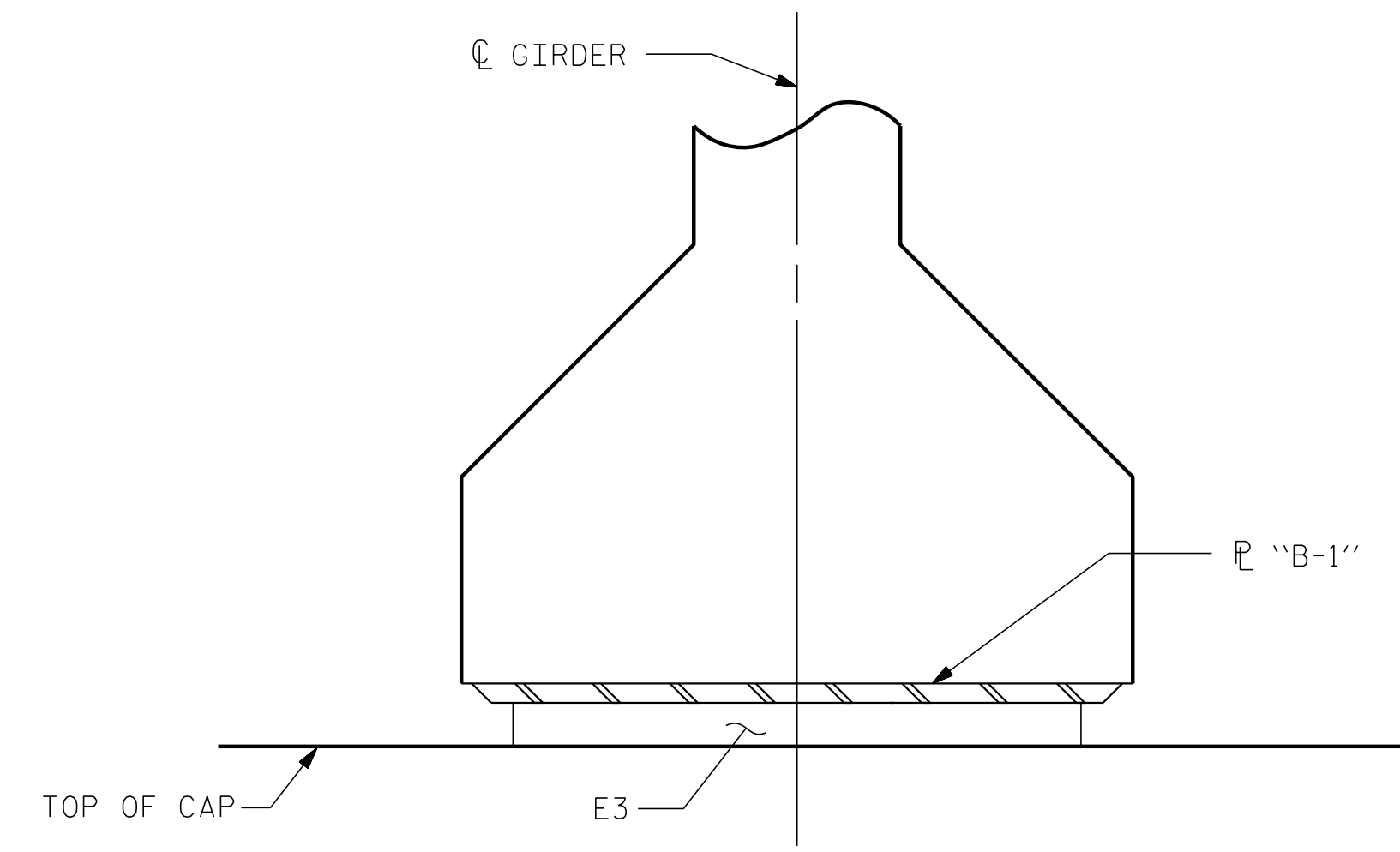
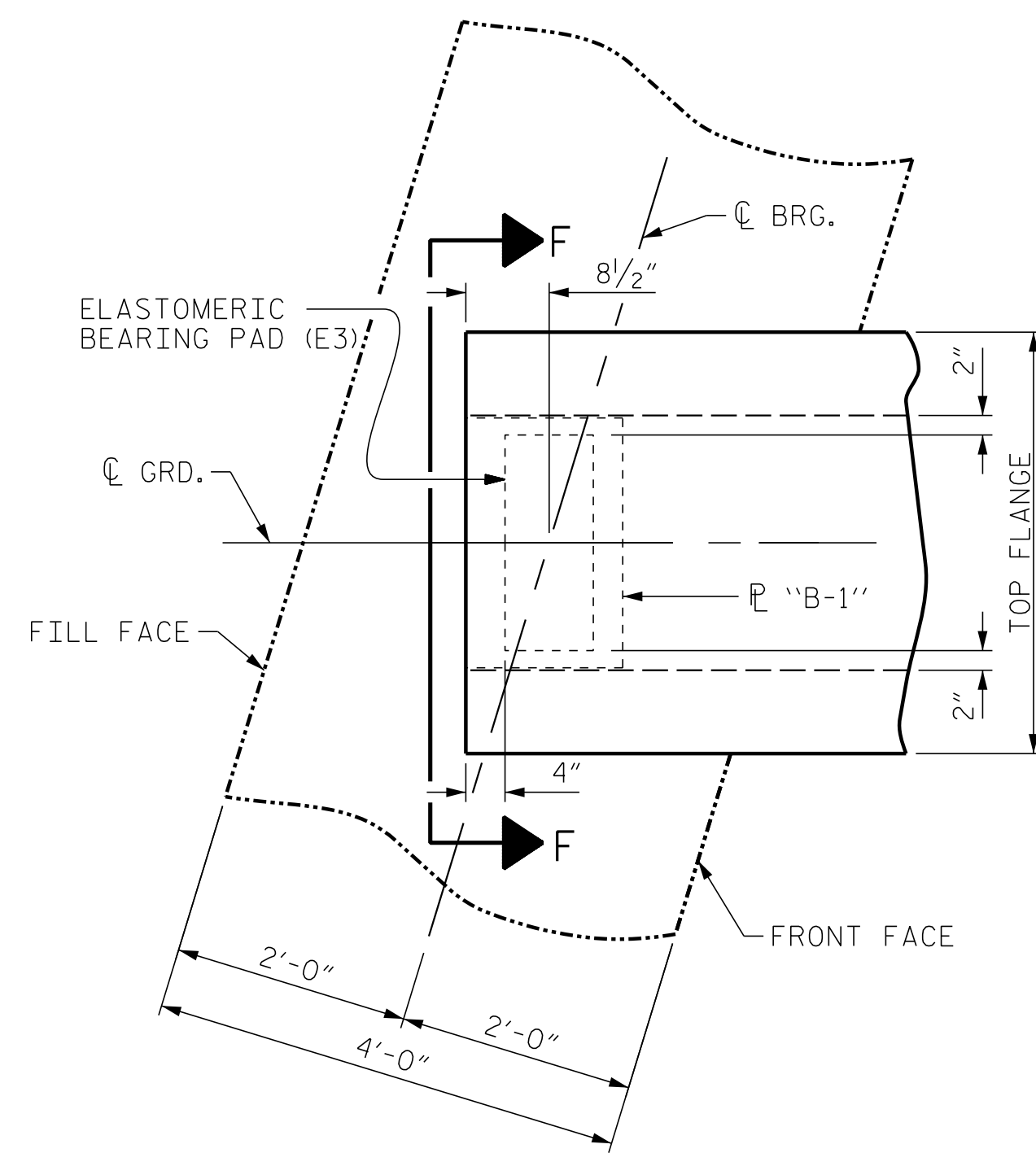
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NOTES

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

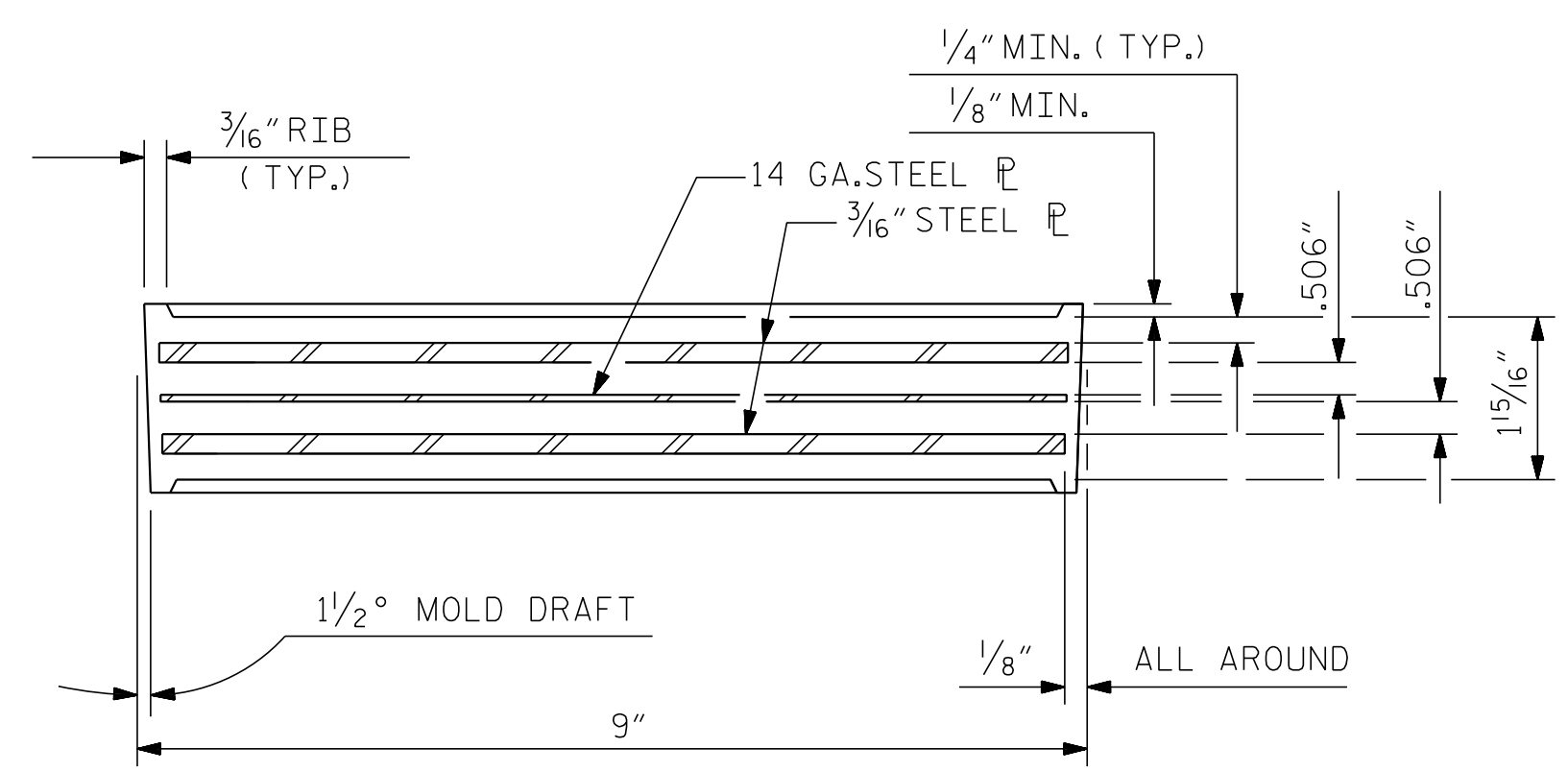
FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE IV	225 k

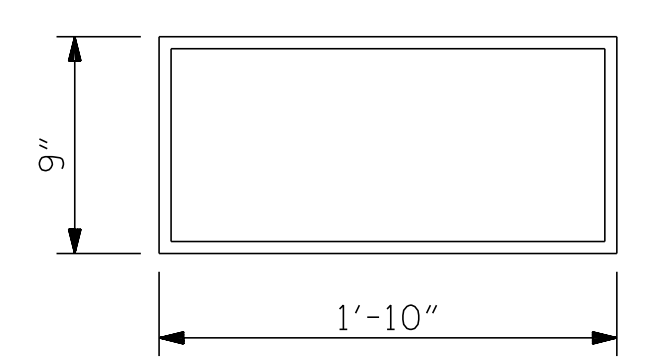


SECTION F-F

TYPICAL PLAN GIRDER @ INTEGRAL END BENT



TYPICAL SECTION OF ELASTOMERIC BEARINGS



E3 (10 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE IV

PROJECT NO. R-5719
WAYNE COUNTY
STATION: 39+11.12 -L-

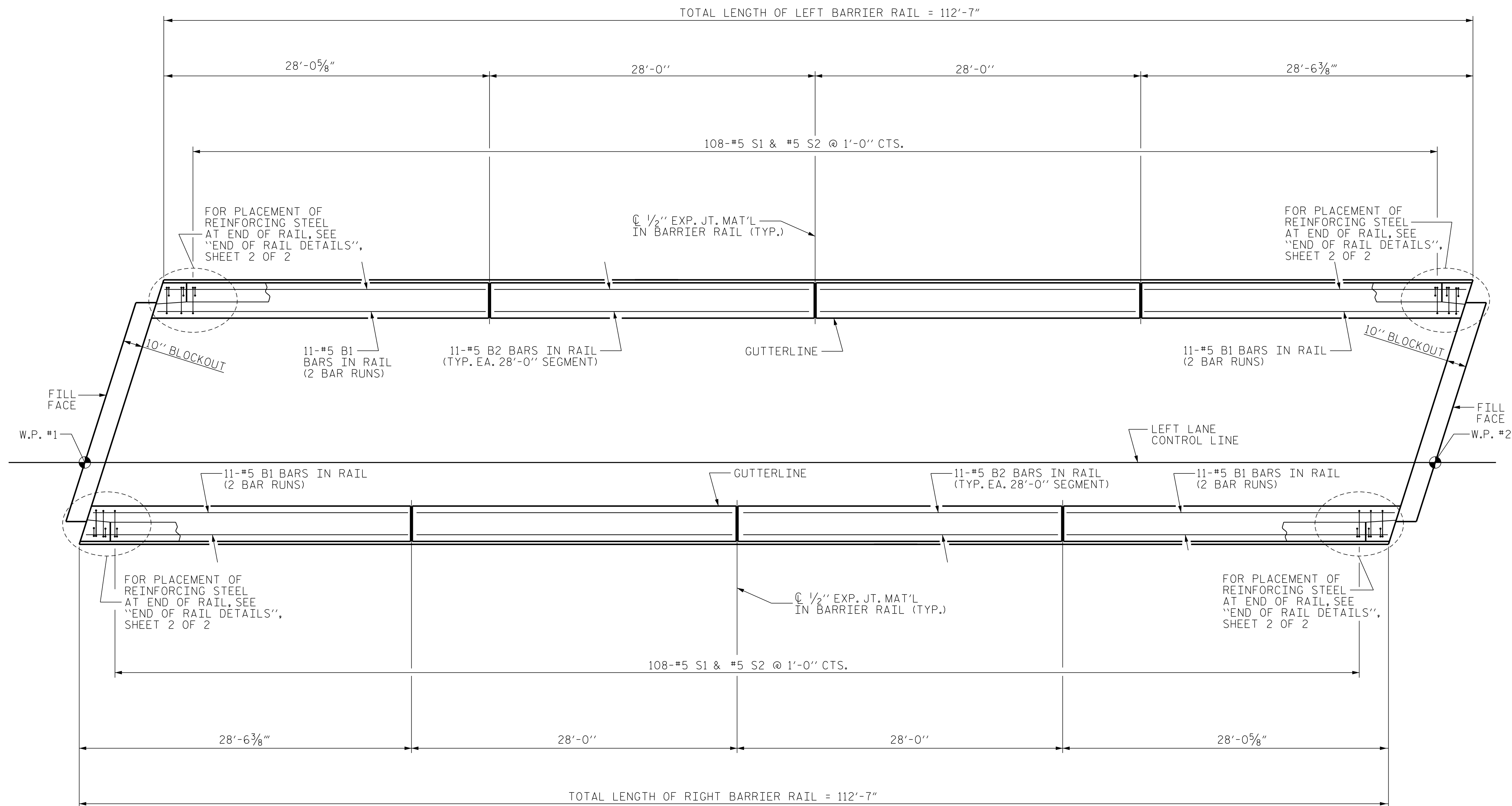
ENGINEER OF RECORD
12/12/2015
NORTH CAROLINA PROFESSIONAL SEAL 14091
CHARLES HUNTER
DocuSigned by:
Erick Charles Hunt
2F15C98728A8E2C
ETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD ELASTOMERIC BEARING DETAILS PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE LEFT LANE					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 26

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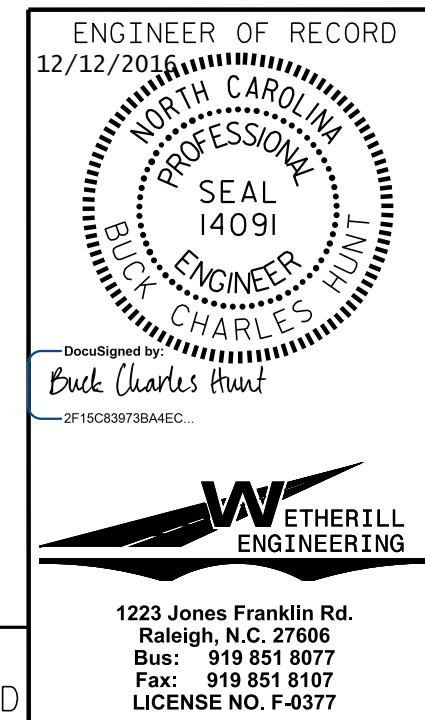
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PLAN OF CONCRETE BARRIER RAIL
 ALL DIMENSIONS ARE MEASURED ALONG OUTSIDE FACE OF BARRIER RAIL

PROJECT NO. R-5719
WAYNE COUNTY
 STATION: 39+11.12 -L-
 SHEET 1 OF 2



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE CONCRETE BARRIER RAIL LEFT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S01-13					TOTAL SHEETS 26

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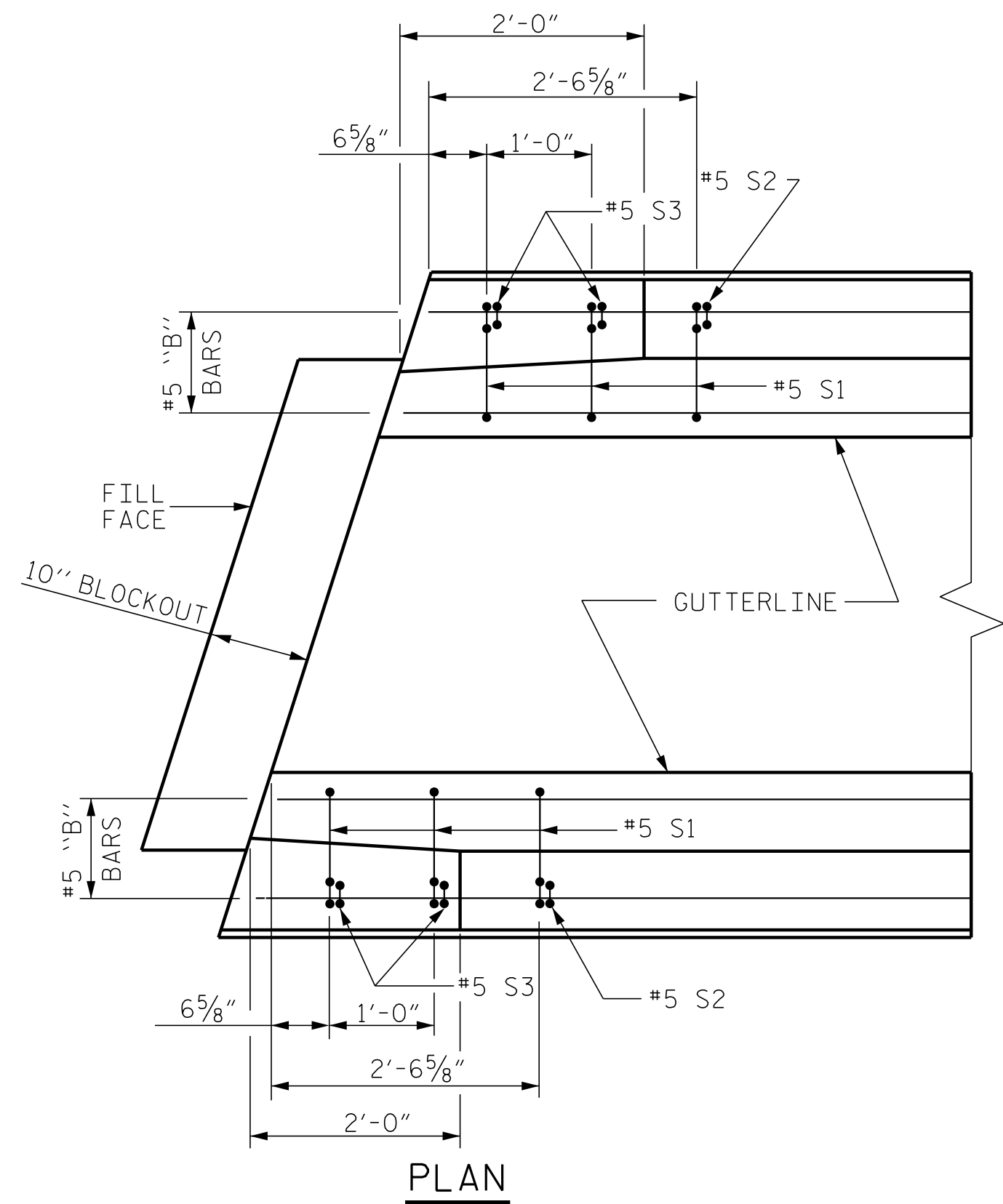
NOTES

THE BARRIER RAIL SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

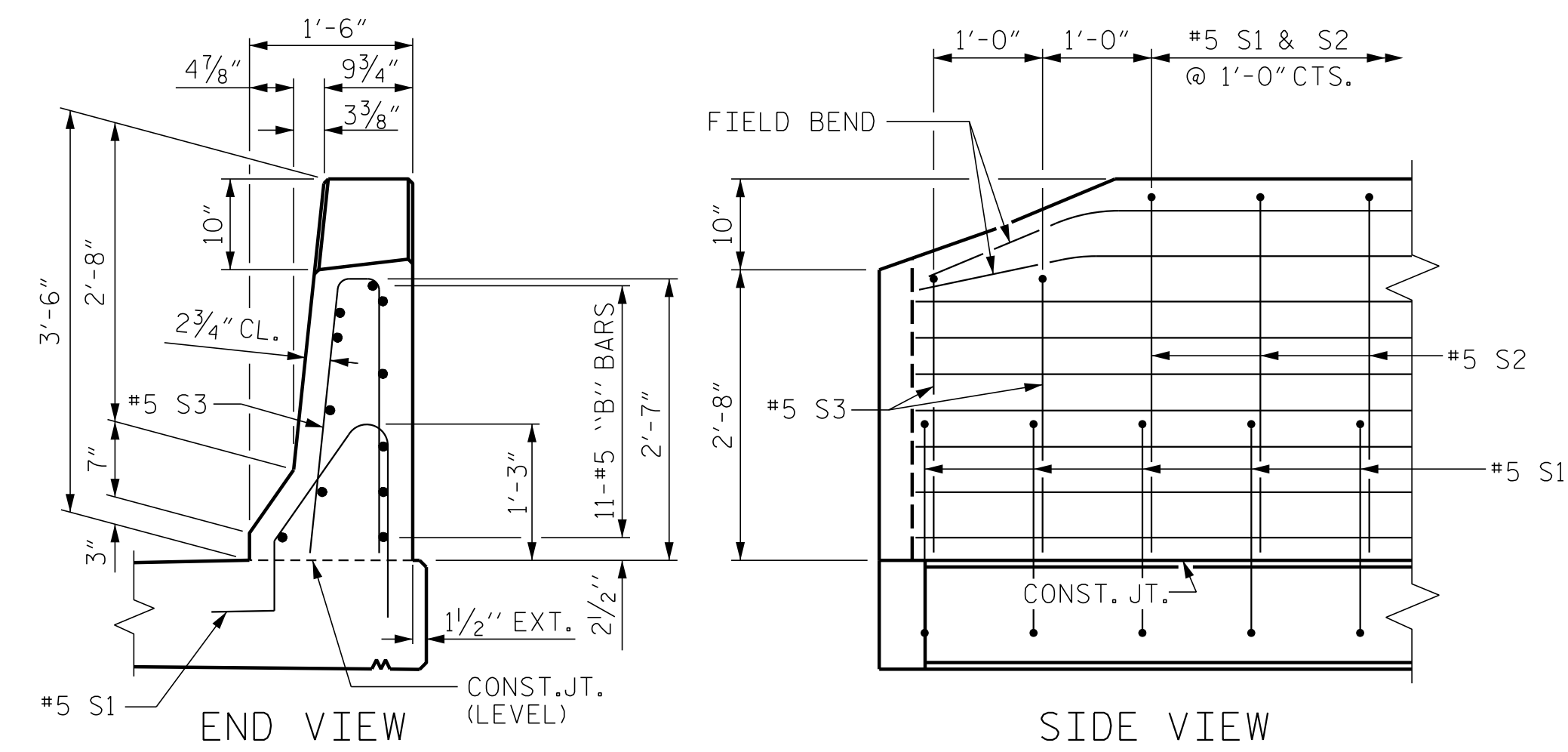
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

THE #5 S1 & S2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN THE BARRIER RAIL.

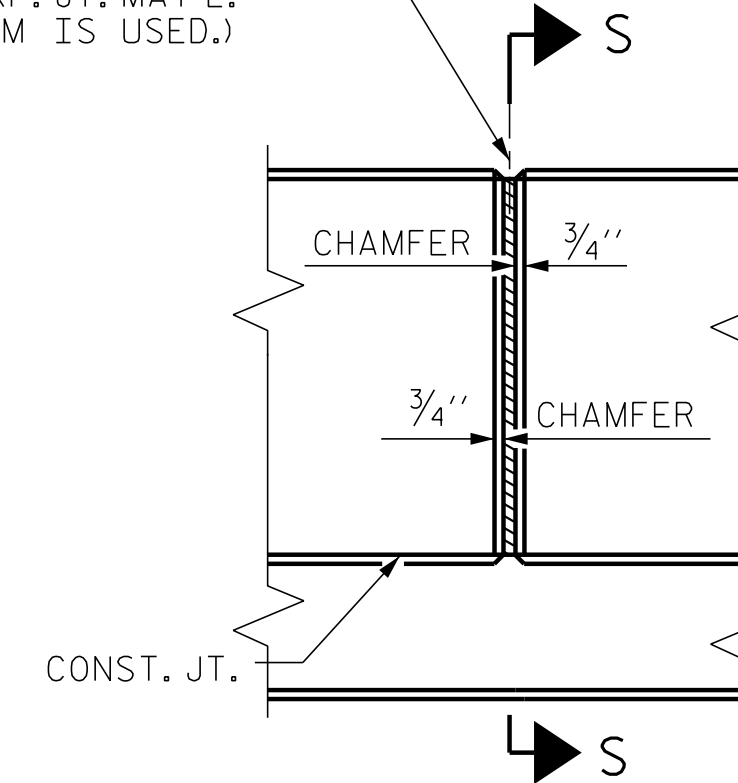


PLAN

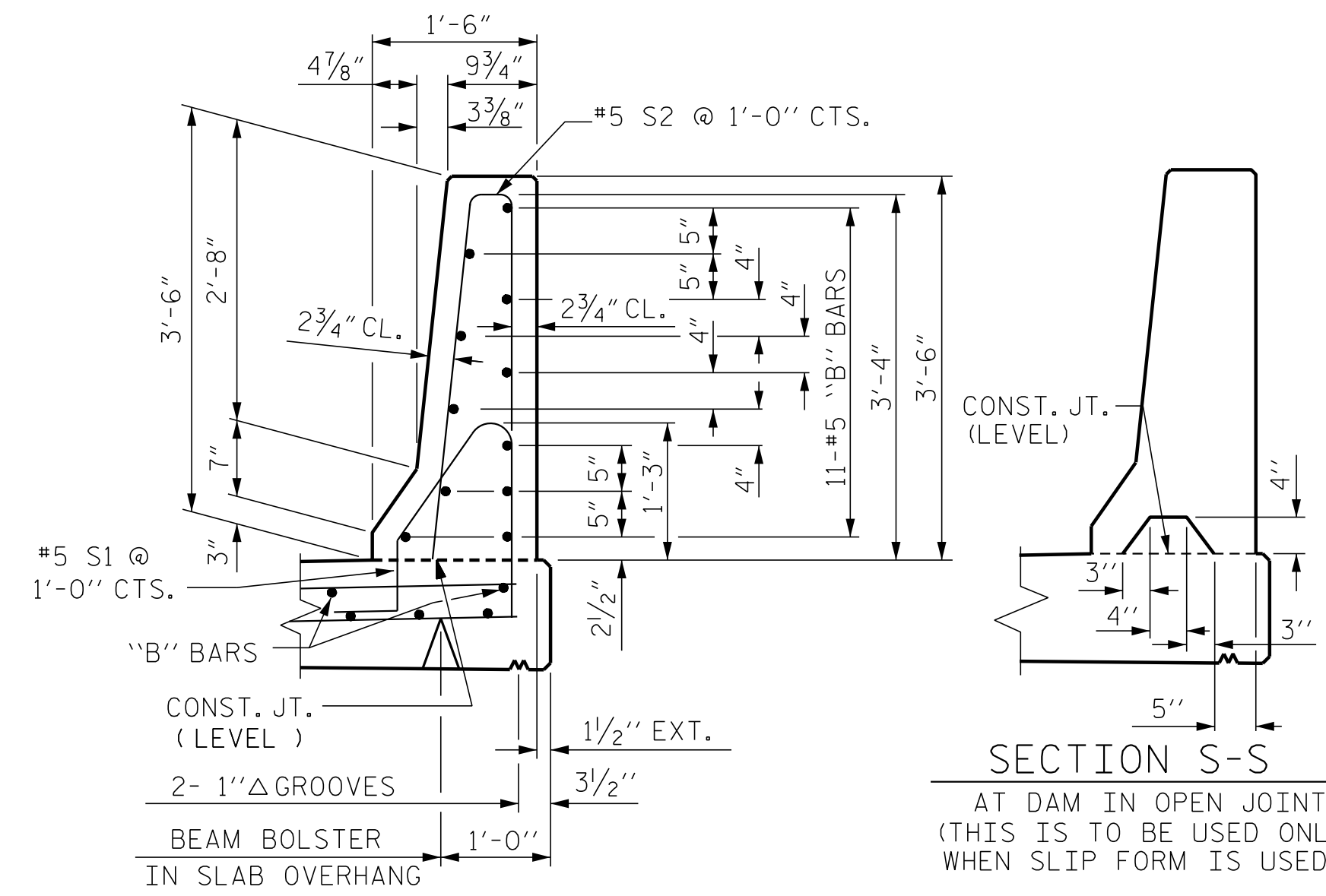


END OF RAIL DETAILS

1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS.
(NOTE: OMIT EXP. JT. MAT'L WHEN SLIP FORM IS USED.)



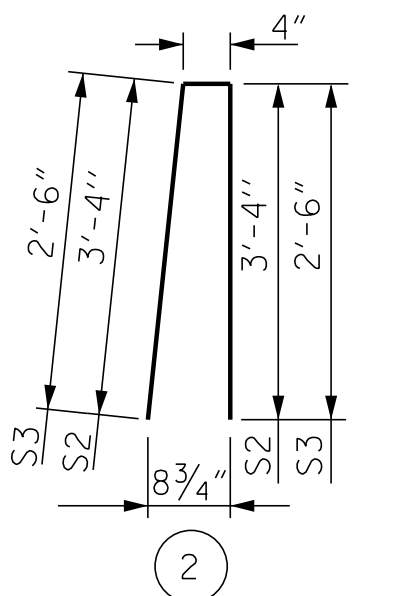
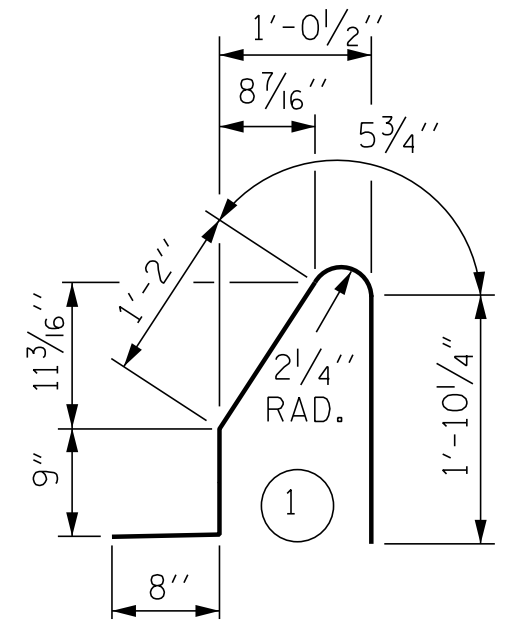
ELEVATION AT EXPANSION JOINTS



SECTION THRU RAIL

BARRIER RAIL DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

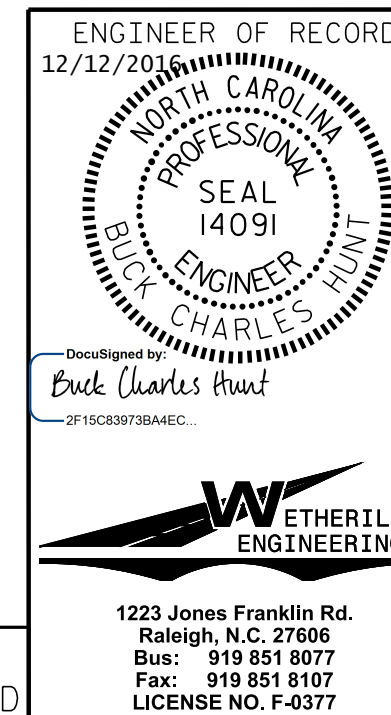
BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* S1	224	#5	1	4'-11"	1149
* S2	216	#5	2	7'-0"	1577
* S3	8	#5	2	5'-4"	45
* B1	88	#5	STR.	15'-10"	1453
* B2	44	#5	STR.	27'-8"	1270

* EPOXY COATED REINFORCING STEEL 5494 LBS.
CLASS AA CONCRETE 30.6 CU. YDS.
CONCRETE BARRIER RAIL 225.17 LIN. FT.

PROJECT NO. R-5719
WAYNE COUNTY
STATION: 39+11.12 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
CONCRETE
BARRIER RAIL
LEFT LANE

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

ASSEMBLED BY : J. PENDERGRAFT	DATE : 10:15
CHECKED BY : J. DILWORTH	DATE : 10:15
DRAWN BY : ARB 5/87	REV. 10/1/11 MAA/GM
CHECKED BY : SJD 9/87	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM

NOTES

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

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.)

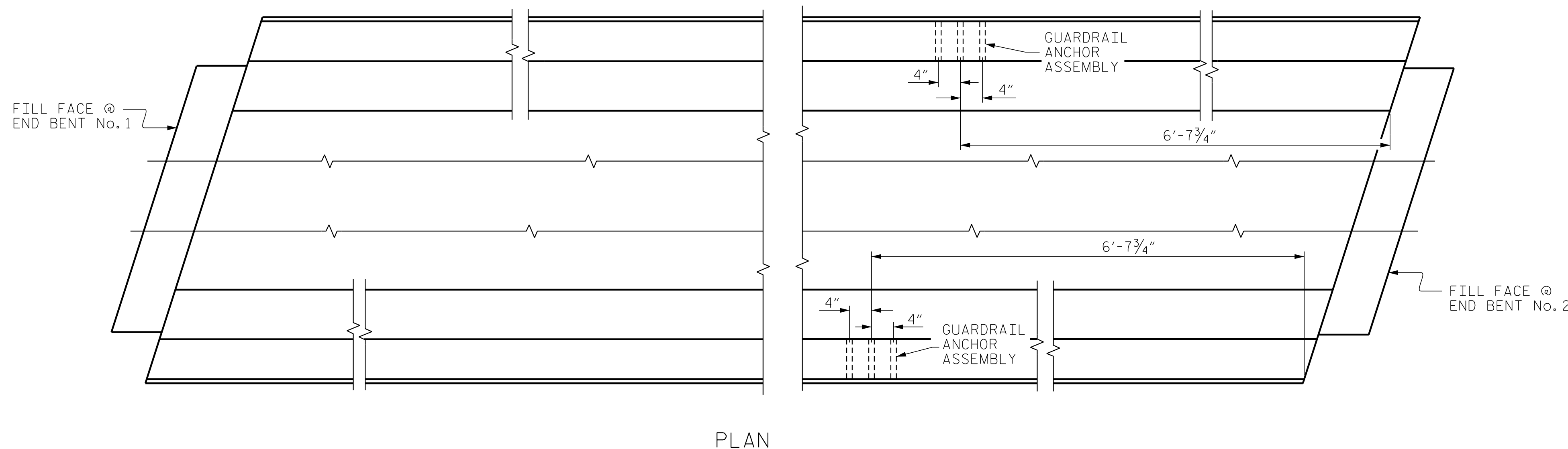
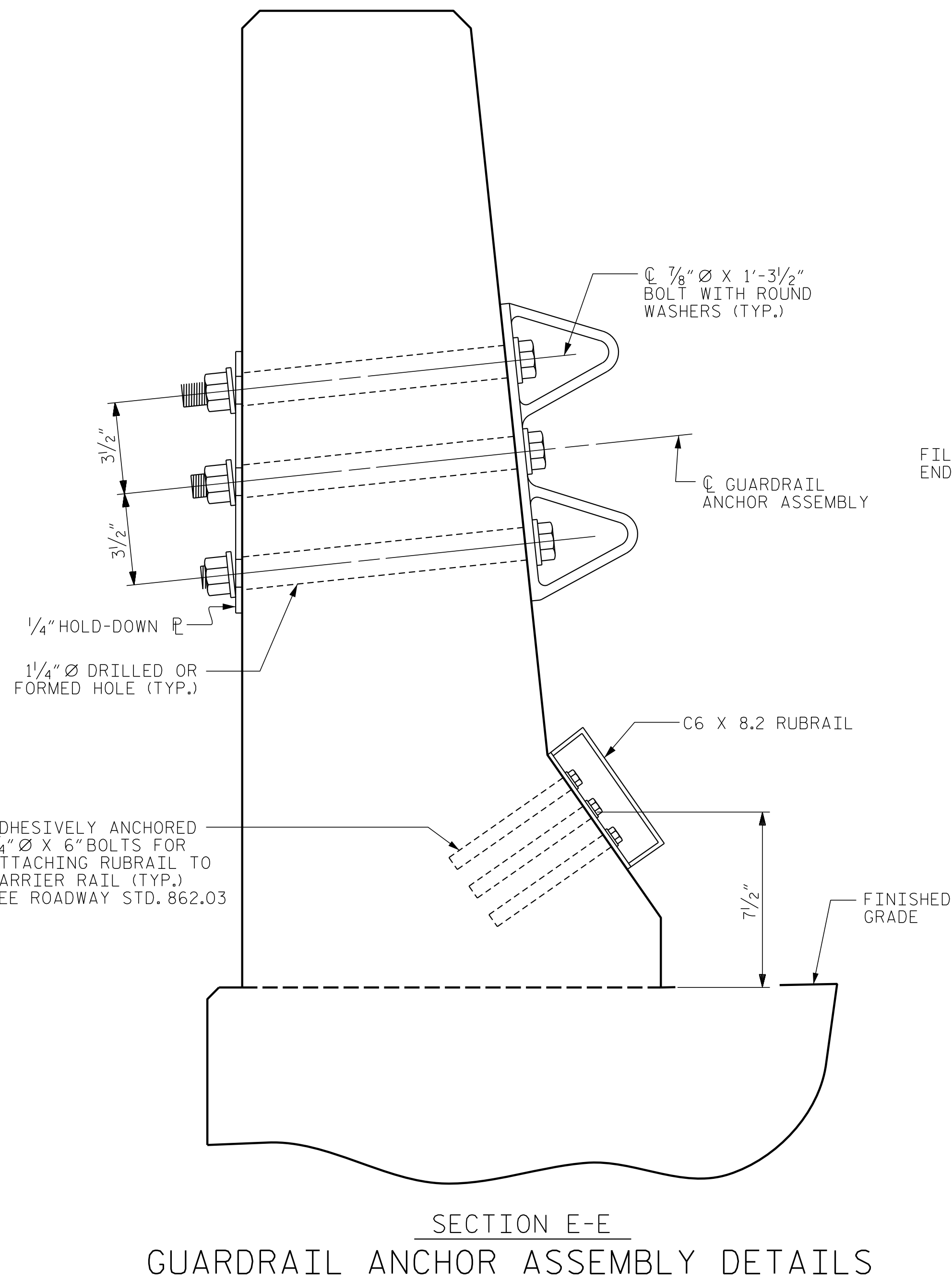
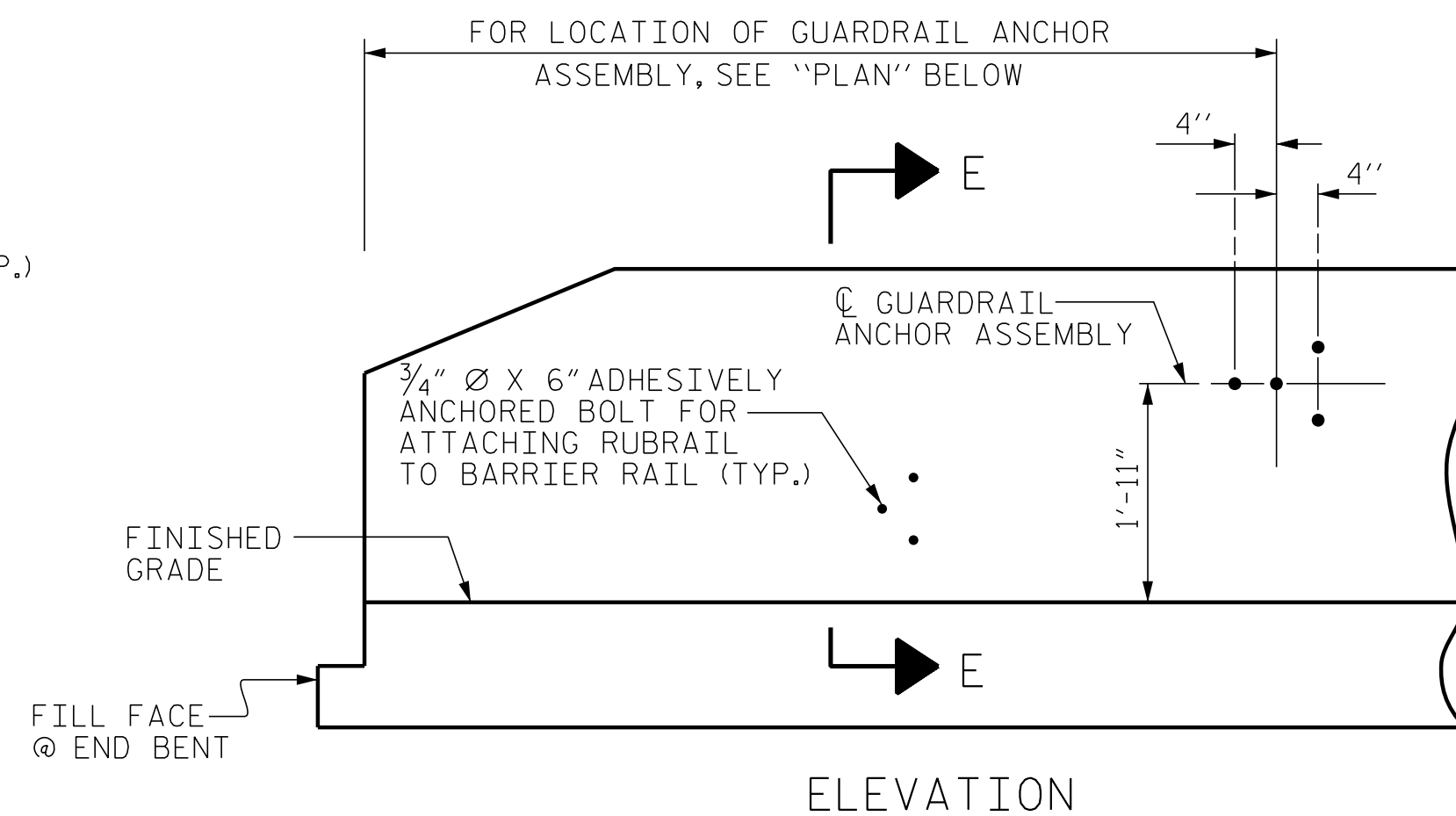
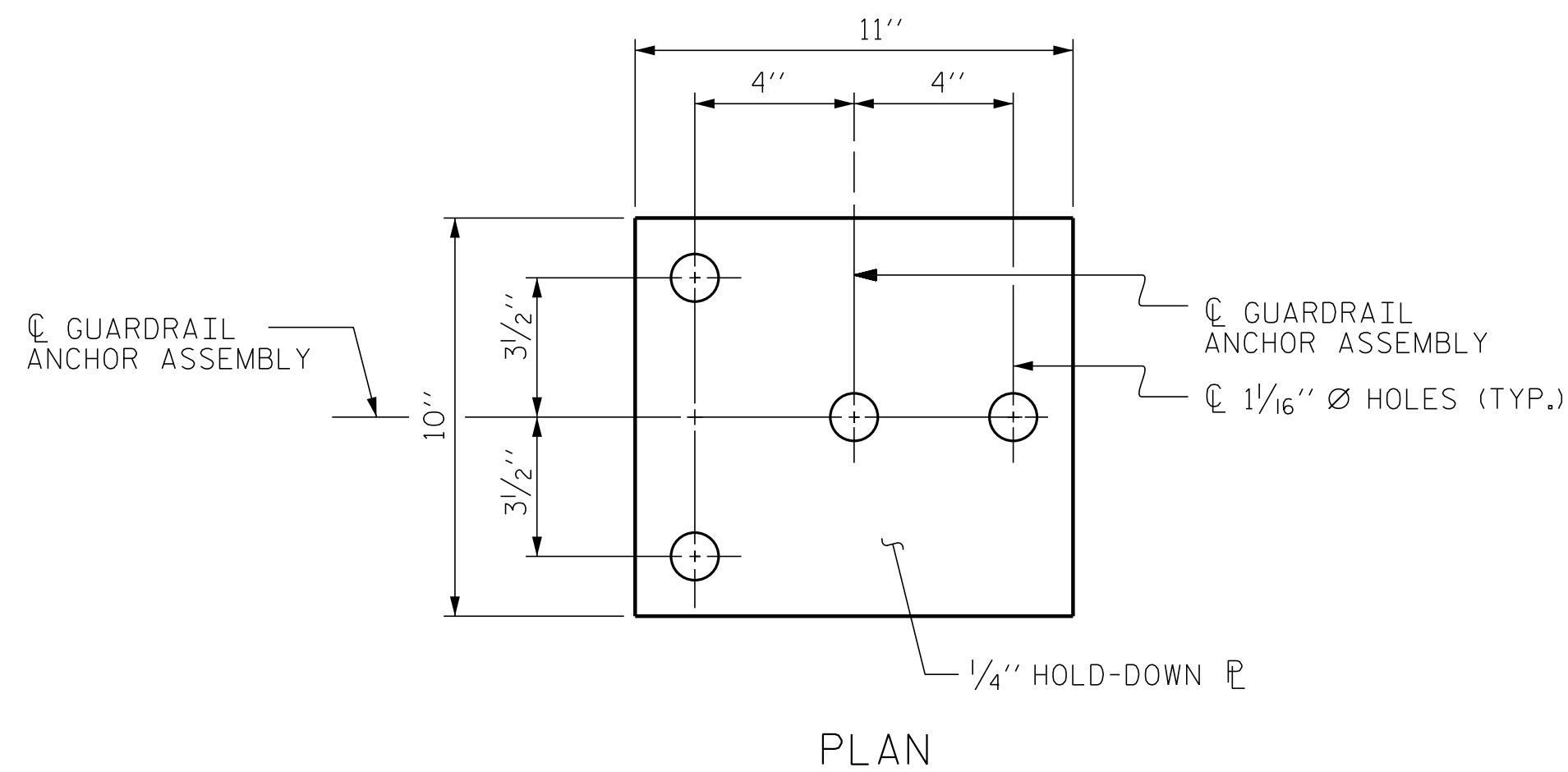
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

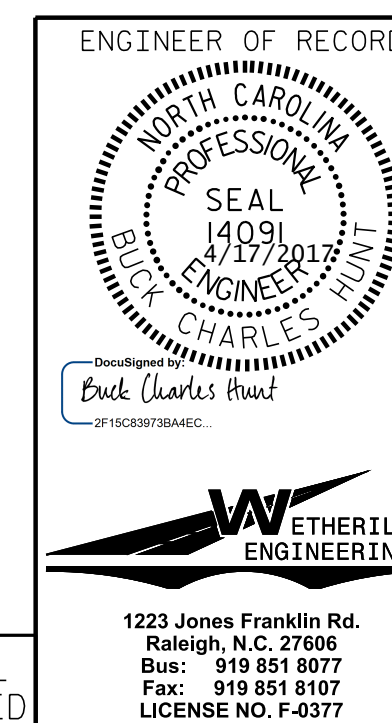
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-5719
 WAYNE COUNTY
 STATION: 39+11.12 -L-



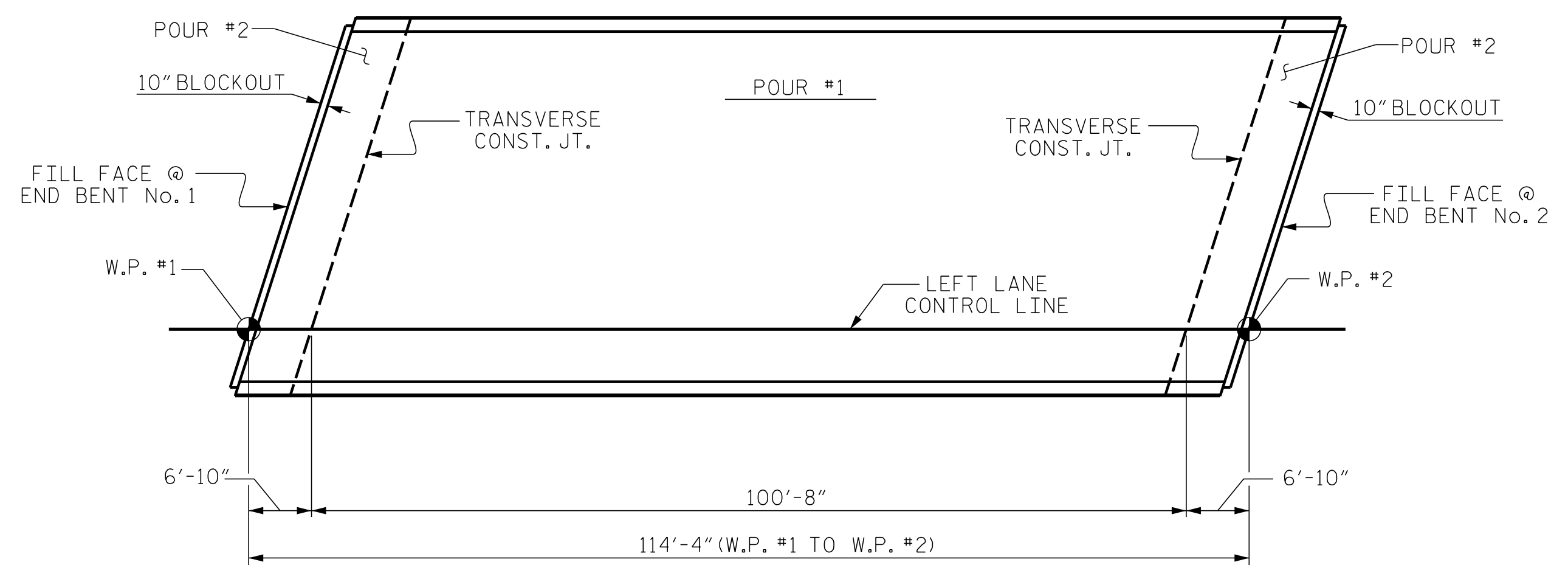
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 FOR BARRIER RAIL
 LEFT LANE

REVISIONS				SHEET NO.			
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-15	
1			3			TOTAL SHEETS	
2			4			26	

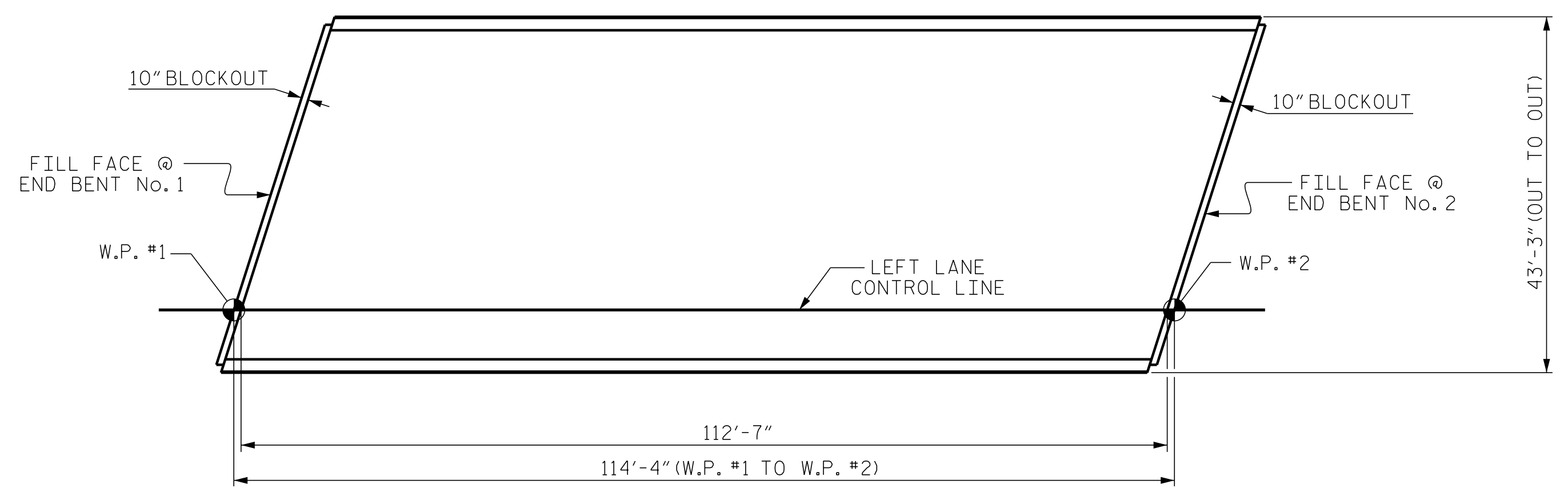
DOCUMENT NOT CONSIDERED FINAL
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(SHT 1b) STD. NO. GRA2

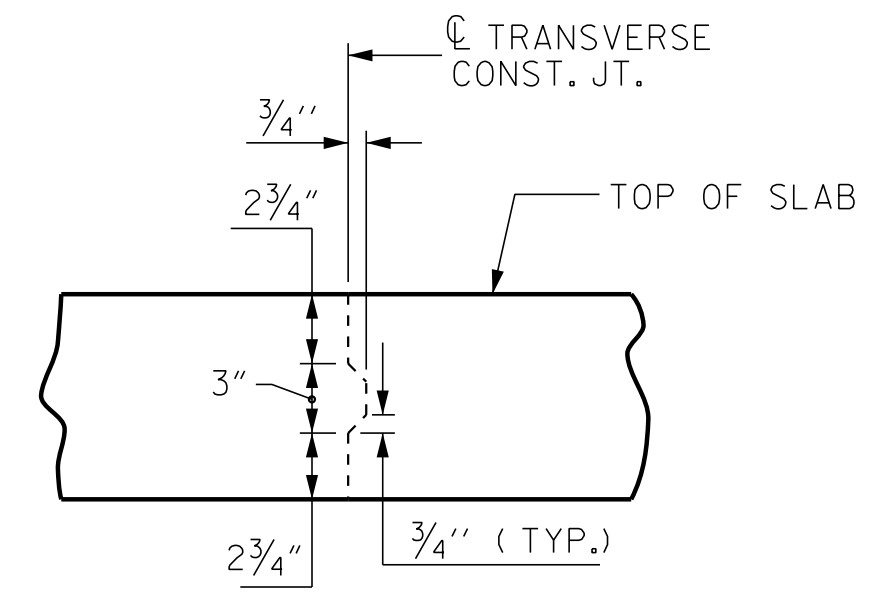


POURING SEQUENCE



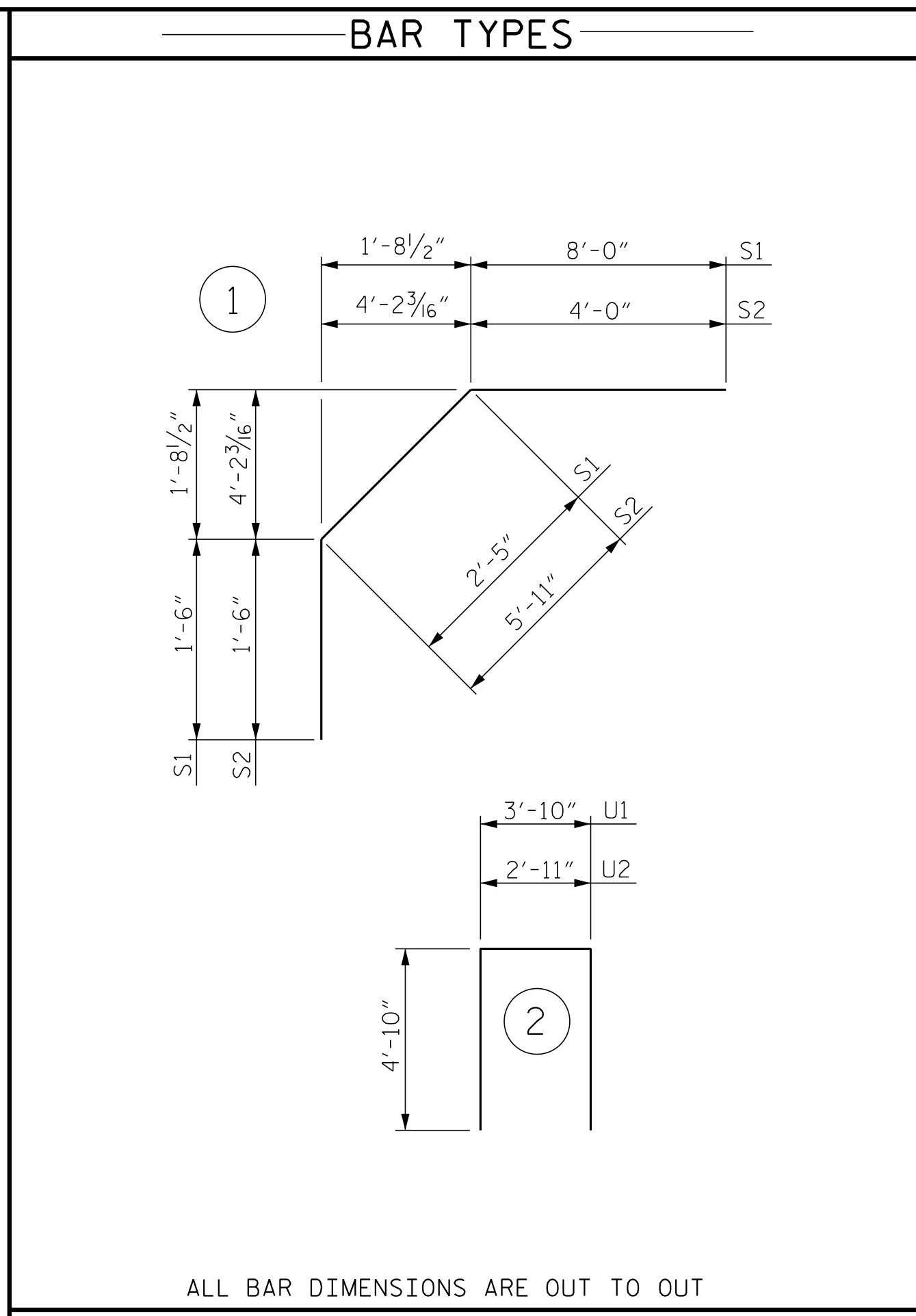
LAYOUT FOR COMPUTING AREA
REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 4,869)

BAR SIZE	SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS		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"			



TRANSVERSE CONSTRUCTION JOINT DETAIL

NOTE: 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	REINFORCING STEEL	* EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
POUR #1	138.8		
POUR #2	83.8		
TOTALS**	222.6	14,543	16,236

**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	158	#5	STR	42'-11"	7072
A2	158	#5	STR	42'-11"	7072
* A101	4	#5	STR	39'-7"	165
* A102	4	#5	STR	35'-8"	149
* A103	4	#5	STR	31'-9"	132
* A104	4	#5	STR	27'-10"	116
* A105	4	#5	STR	23'-11"	100
* A106	4	#5	STR	20'-0"	83
* A107	4	#5	STR	16'-1"	67
* A108	4	#5	STR	12'-2"	51
* A109	4	#5	STR	8'-3"	34
* A110	4	#5	STR	4'-4"	18
A201	4	#5	STR	39'-7"	165
A202	4	#5	STR	35'-8"	149
A203	4	#5	STR	31'-9"	132
A204	4	#5	STR	27'-10"	116
A205	4	#5	STR	23'-11"	100
A206	4	#5	STR	20'-0"	83
A207	4	#5	STR	16'-1"	67
A208	4	#5	STR	12'-2"	51
A209	4	#5	STR	8'-3"	34
A210	4	#5	STR	4'-4"	18
* B1	8	#4	STR	29'-7"	158
* B2	170	#6	STR	23'-0"	5873
* B3	87	#4	STR	24'-9"	1438
B4	64	#7	STR	23'-0"	3009
B5	64	#5	STR	36'-5"	2431
K1	24	#4	STR	22'-5"	359
K2	32	#4	STR	8'-2"	175
K3	8	#4	STR	6'-6"	35
K4	8	#4	STR	5'-0"	27
K5	16	#4	STR	3'-8"	39
K6	4	#4	STR	2'-10"	8
K7	4	#4	STR	2'-1"	6
* S1	52	#4	1	11'-11"	414
* S2	48	#4	1	11'-5"	366
U1	48	#4	2	13'-6"	433
U2	4	#4	2	12'-7"	34
				REINFORCING STEEL	LBS. 14,543
				* EPOXY COATED REINFORCING STEEL	LBS. 16,236

* THESE BARS ARE EPOXY COATED.

GROOVING BRIDGE FLOORS	
APPROACH SLABS	1,798 SQ.FT.
BRIDGE DECK	4,166 SQ.FT.
TOTAL	5,964 SQ.FT.

PROJECT NO. R-5719
WAYNE COUNTY
STATION: 39+11.12 -L-

ENGINEER OF RECORD
12/12/2016
NORTH CAROLINA PROFESSIONAL SEAL 14091
ENGINEER
CHARLES HUNT
DocuSigned by:
Erick Charles Hunt
-916C8D7846AC

ETHERILL ENGINEERING
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE BILL OF MATERIAL (LEFT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S01-16				
TOTAL SHEETS 26				

P:\2015\A-5719\Structures\DWG\Left Lane\A-5719_L1T_BM_WE.dgn
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DRAWN BY: D. HODGE DATE: 1/16
CHECKED BY: G.M. GILLAND DATE: 2/16

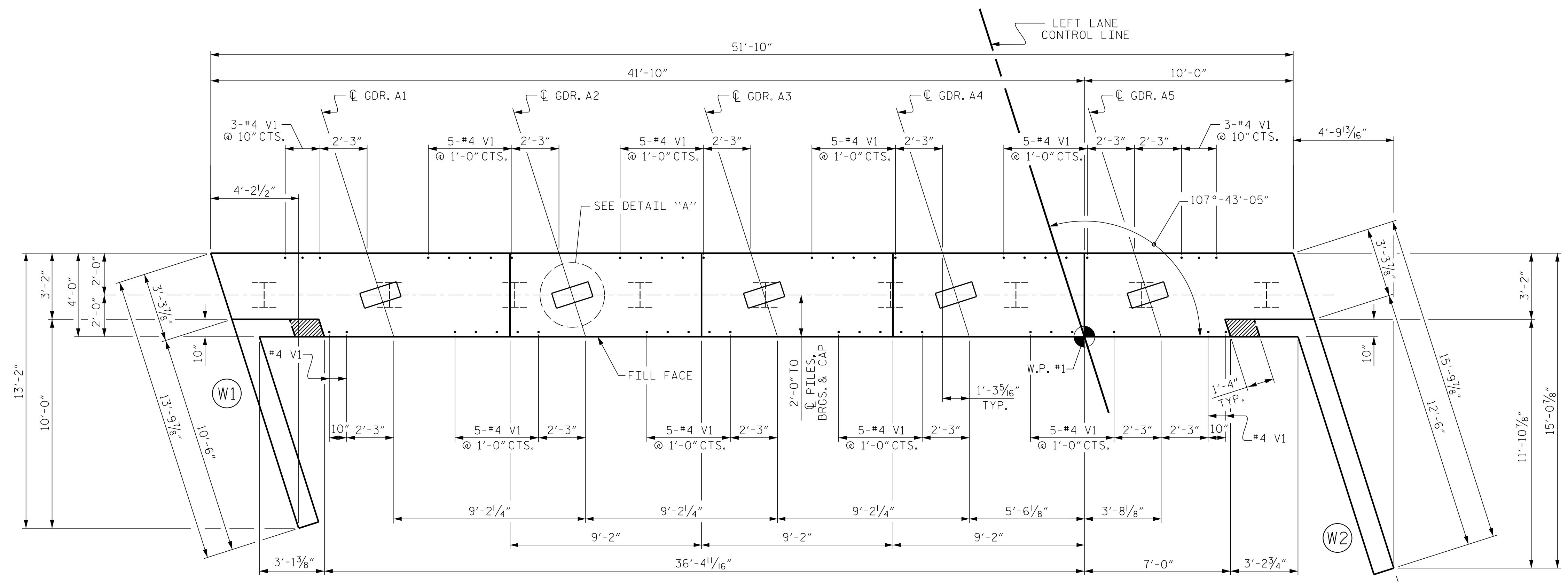
DOCUMENT NOT CONSIDERED FINAL
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NOTES

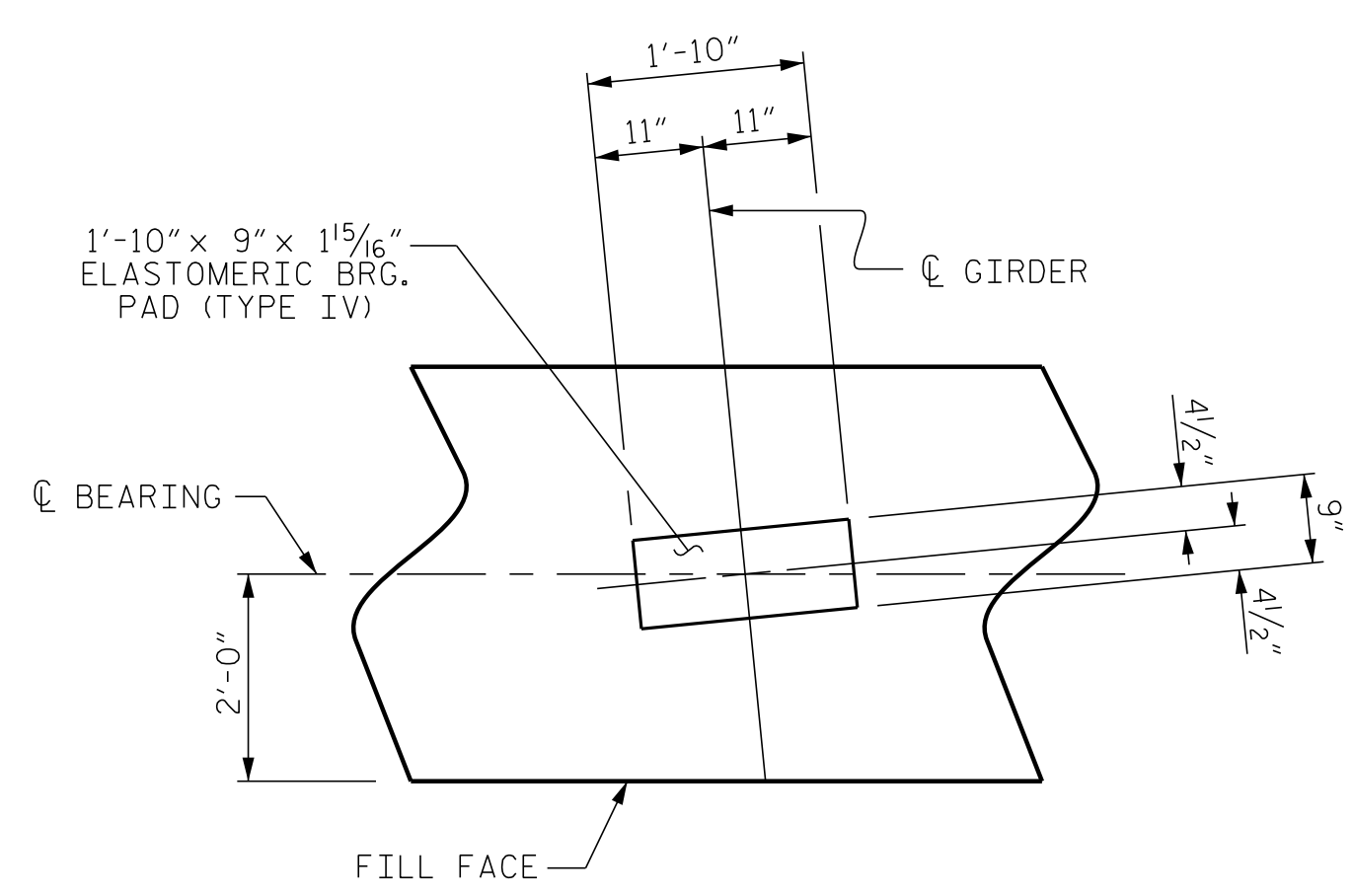
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAILS ARE CAST IF SLIP FORMING IS USED.

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.

THE TOP SURFACE OF THE END BENT CAP WITHIN THE LIMITS OF THE INTEGRAL ABUTMENT, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".



PLAN

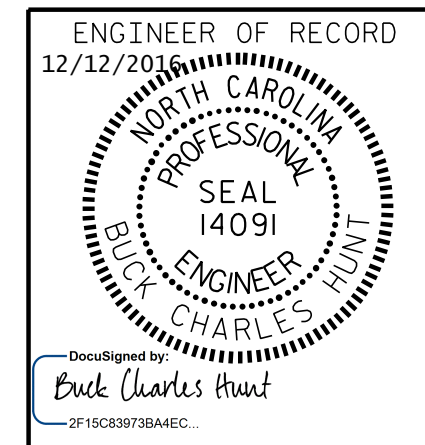


DETAIL A

(TYP. EACH GIRDER)

PROJECT NO. R-5719
 WAYNE COUNTY
 STATION: 39+11.12 -L-

SHEET 1 OF 3



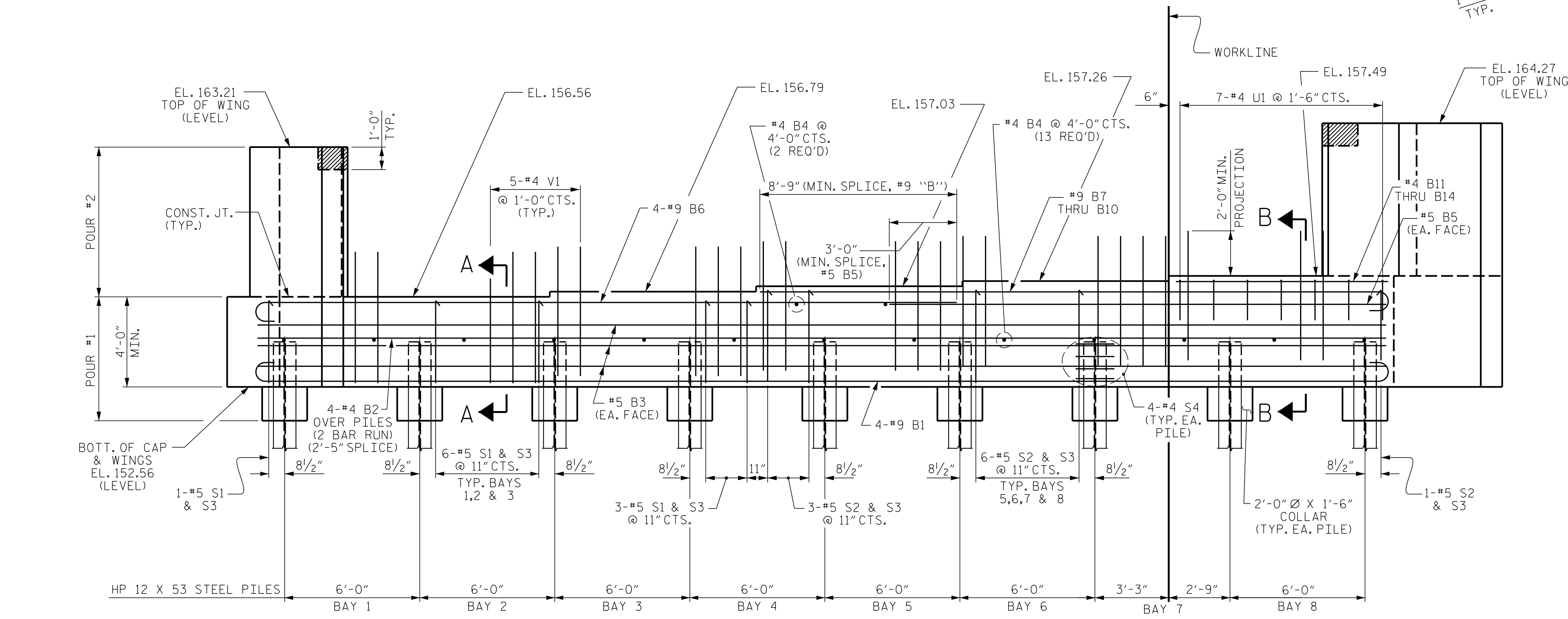
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 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1
 (LEFT LANE)

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

DOCUMENT NOT CONSIDERED FINAL
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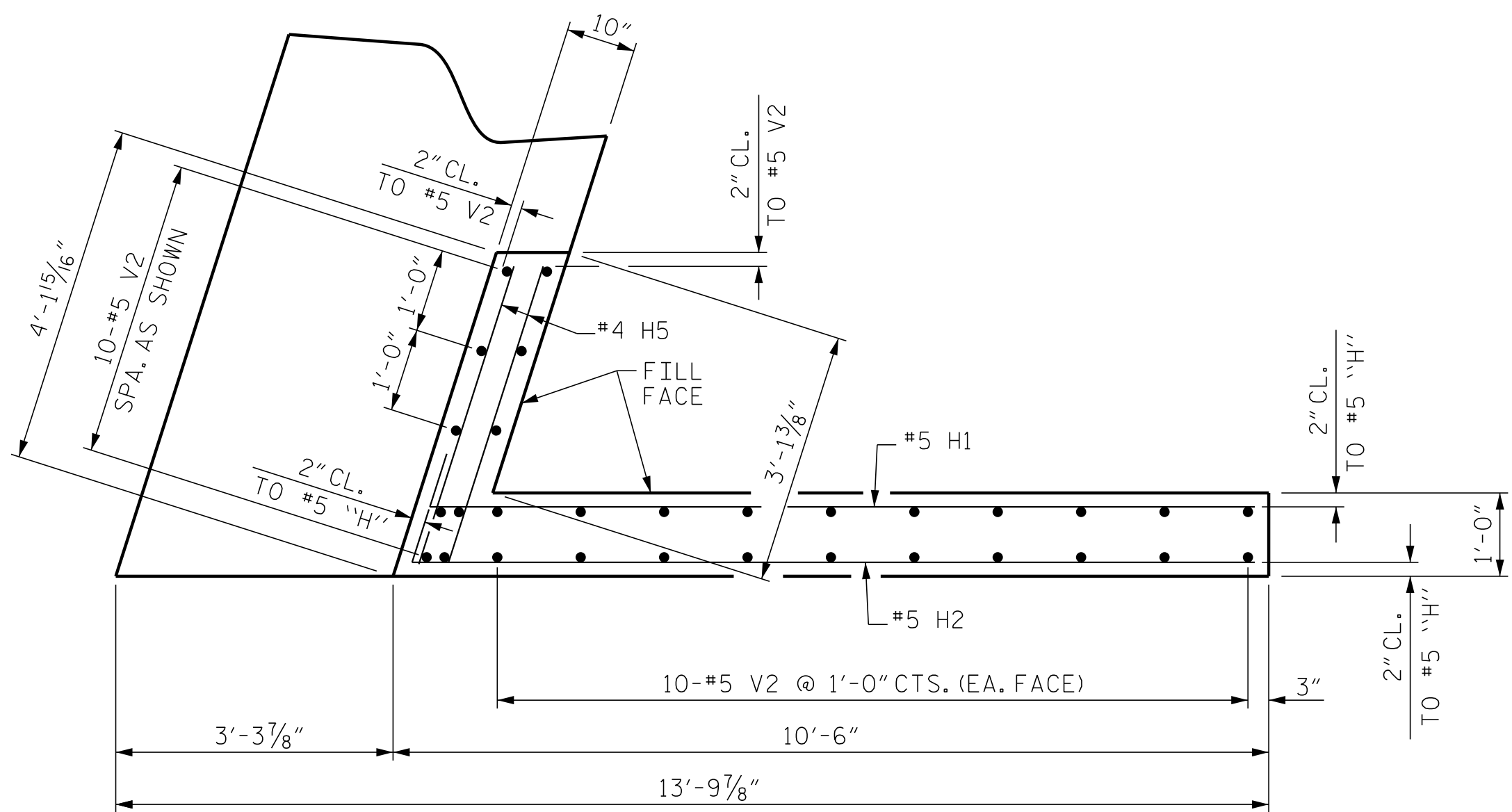


ELEVATION

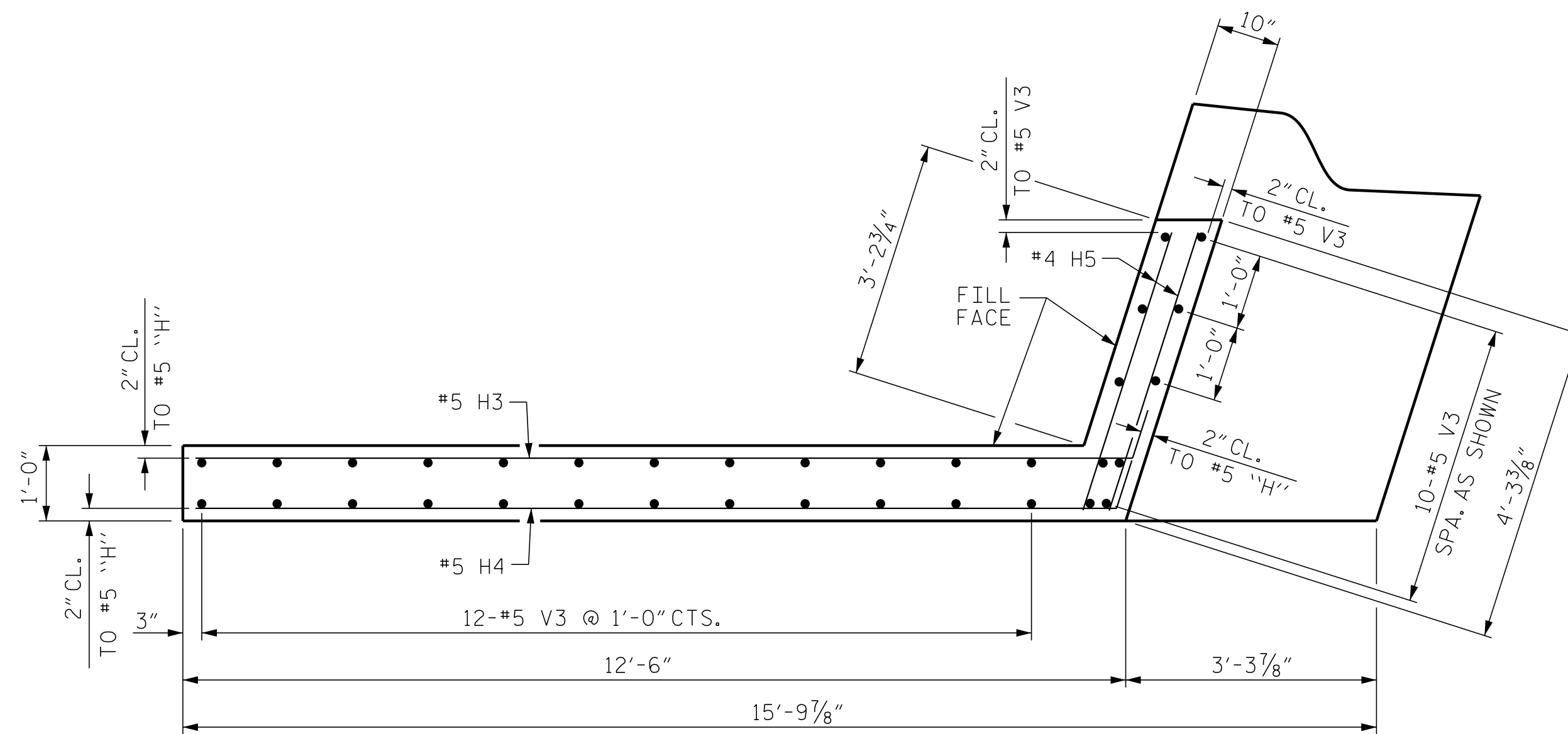
FOR SECTIONS A-A & B-B, SEE SHEET 3 OF 3.

DRAWN BY: D. HODGE DATE: 2/16
 CHECKED BY: J. DILWORTH DATE: 2/16

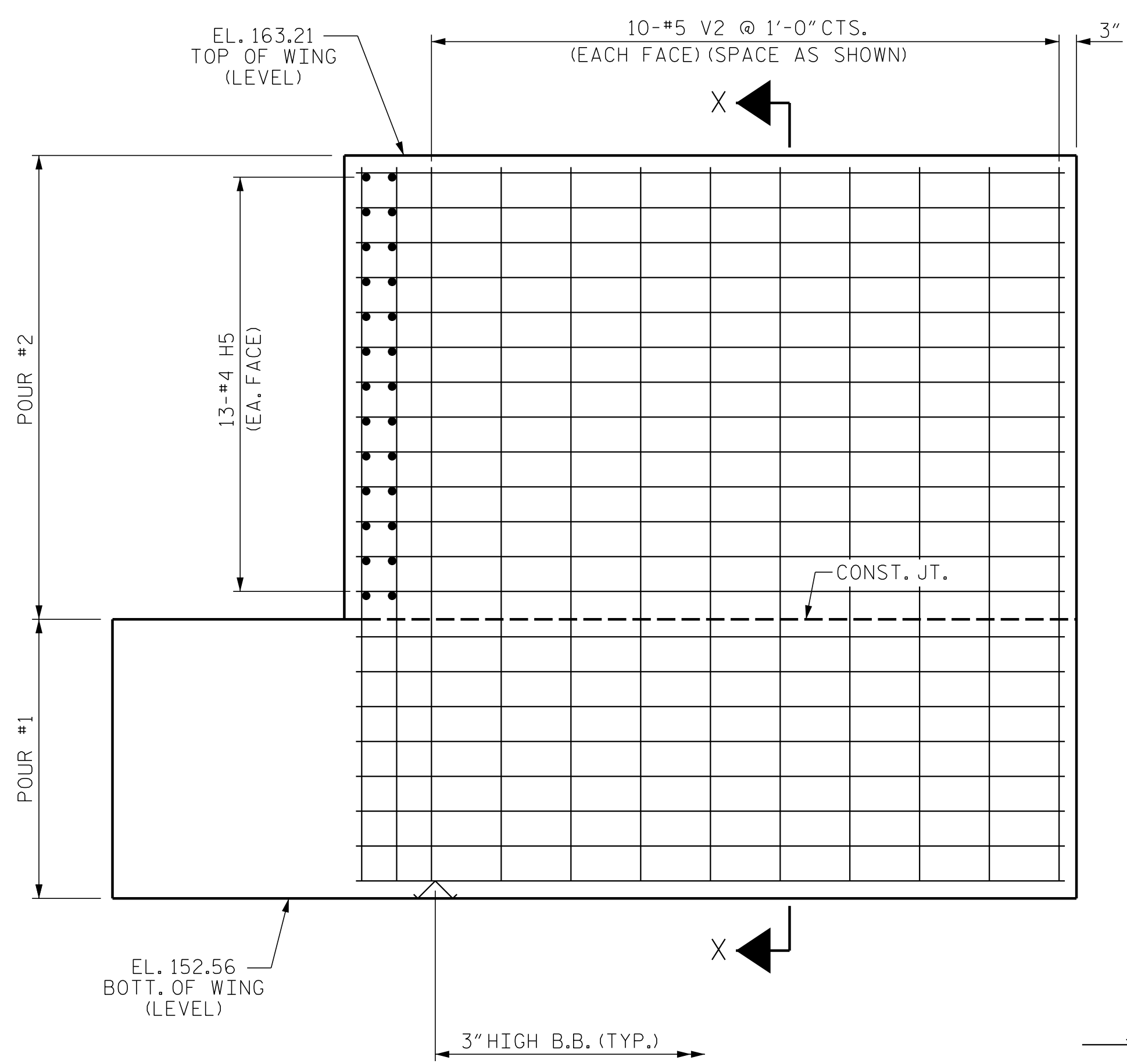
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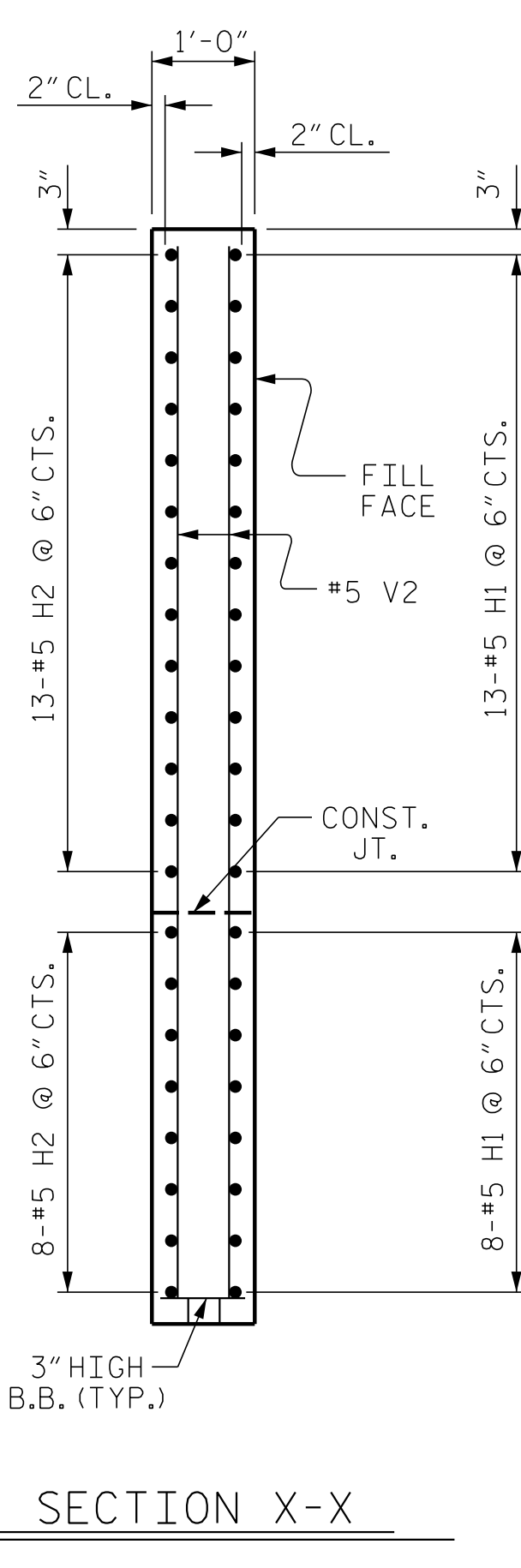
PLAN OF WING - W1



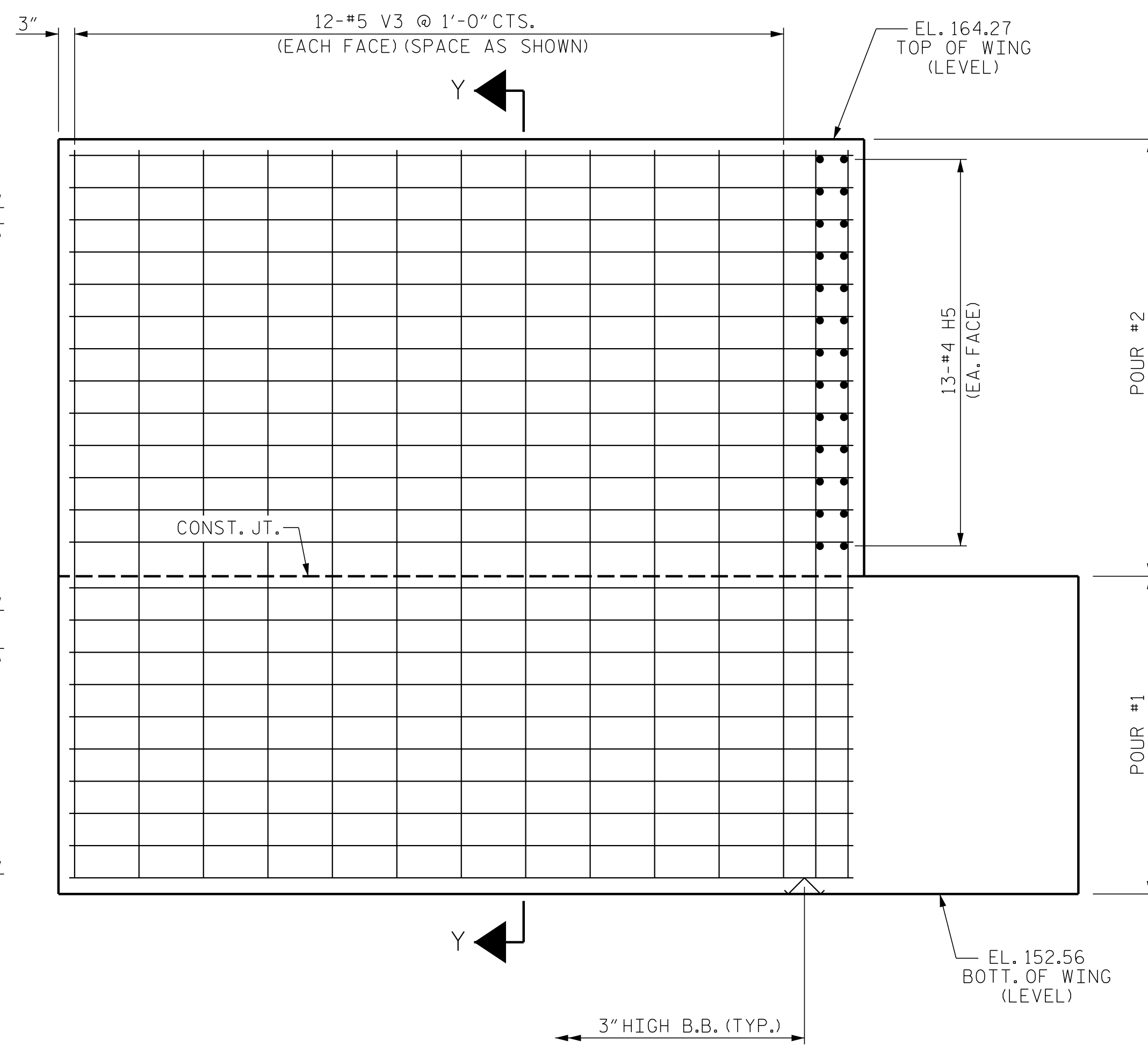
PLAN OF WING - W2



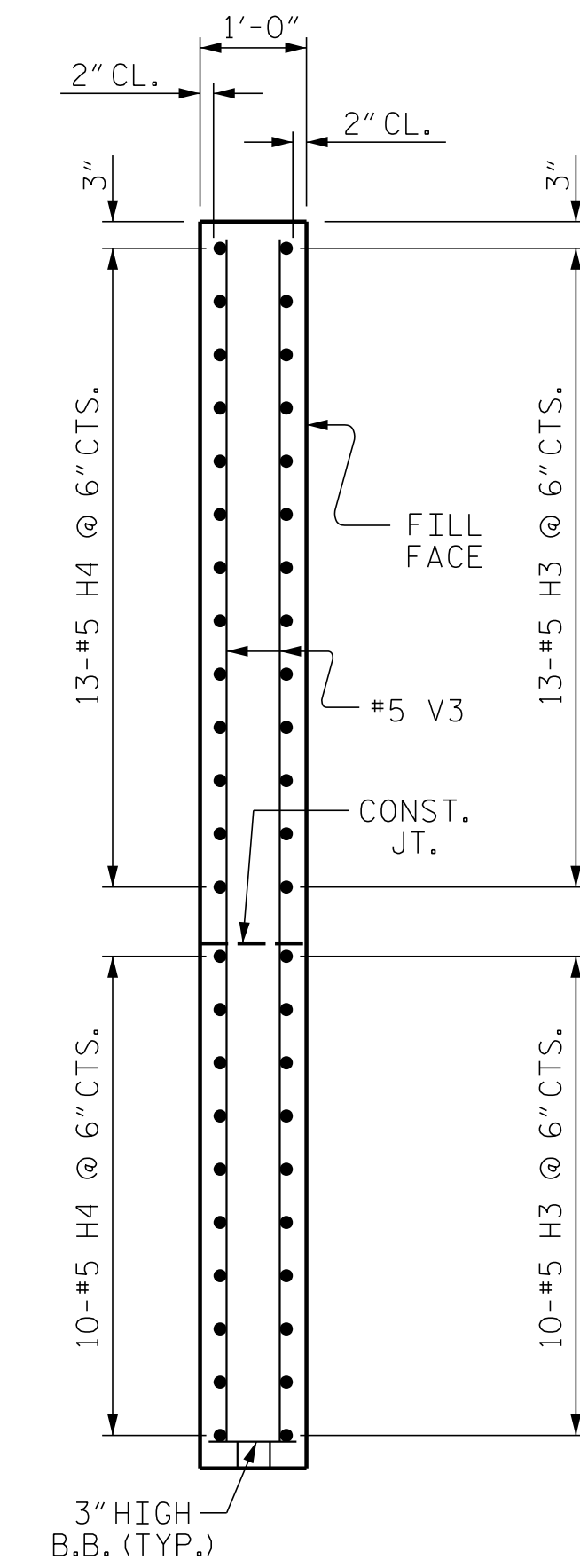
ELEVATION OF WING - W1



SECTION X-X



ELEVATION OF WING - W2



SECTION Y-Y

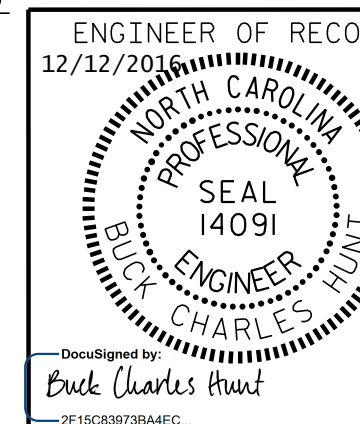
PROJECT NO. R-5719
 WAYNE COUNTY
 STATION: 39+11.12 -L-

SHEET 2 OF 3

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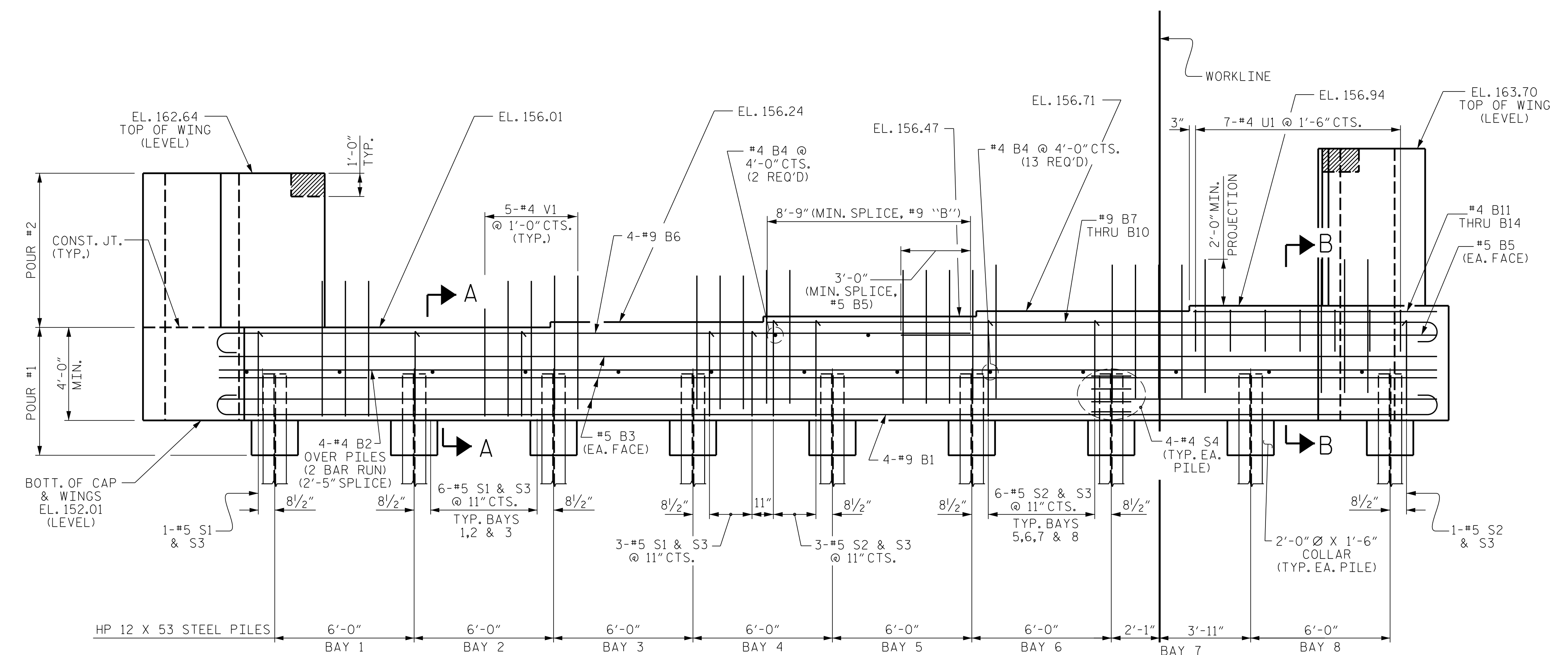
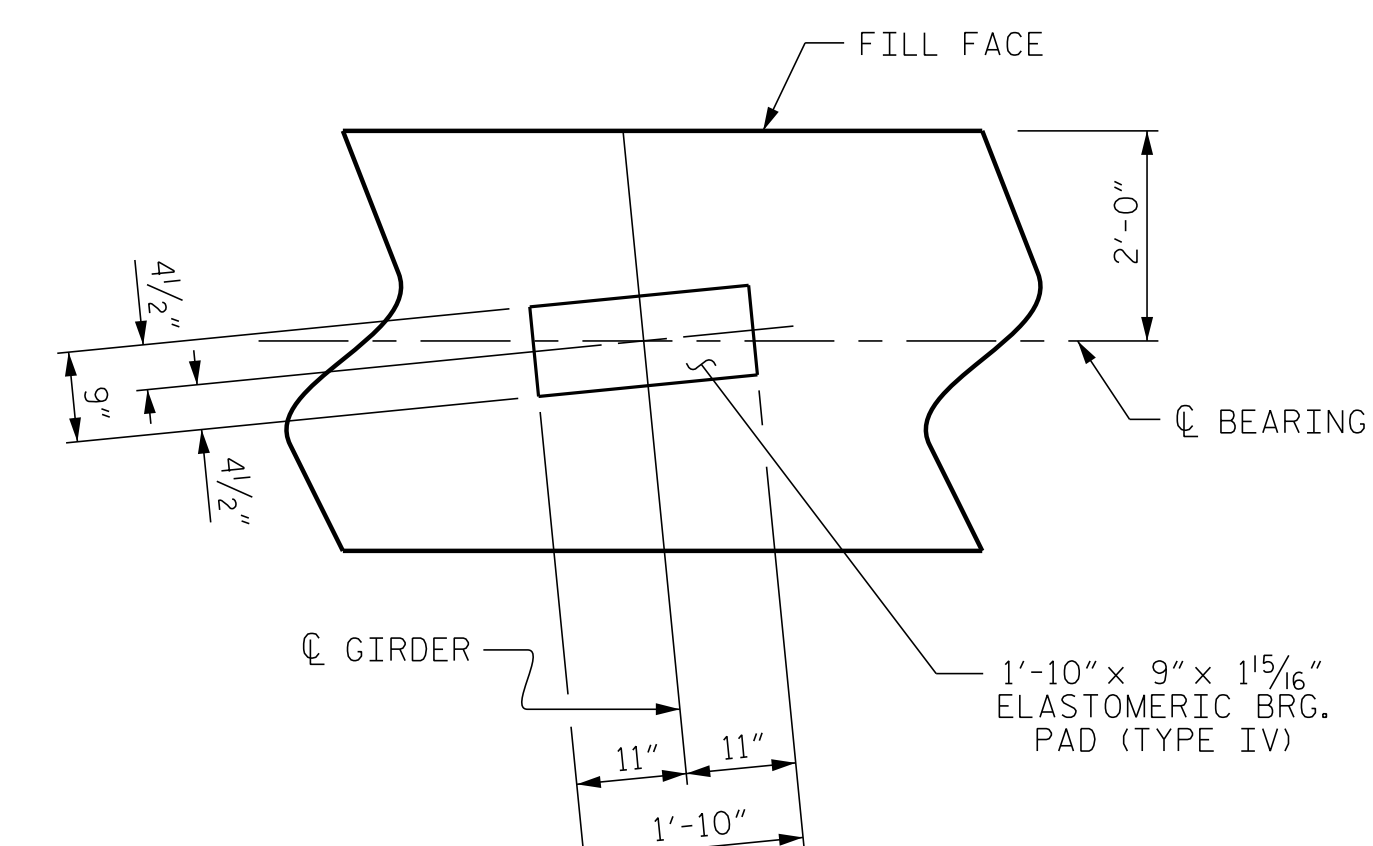
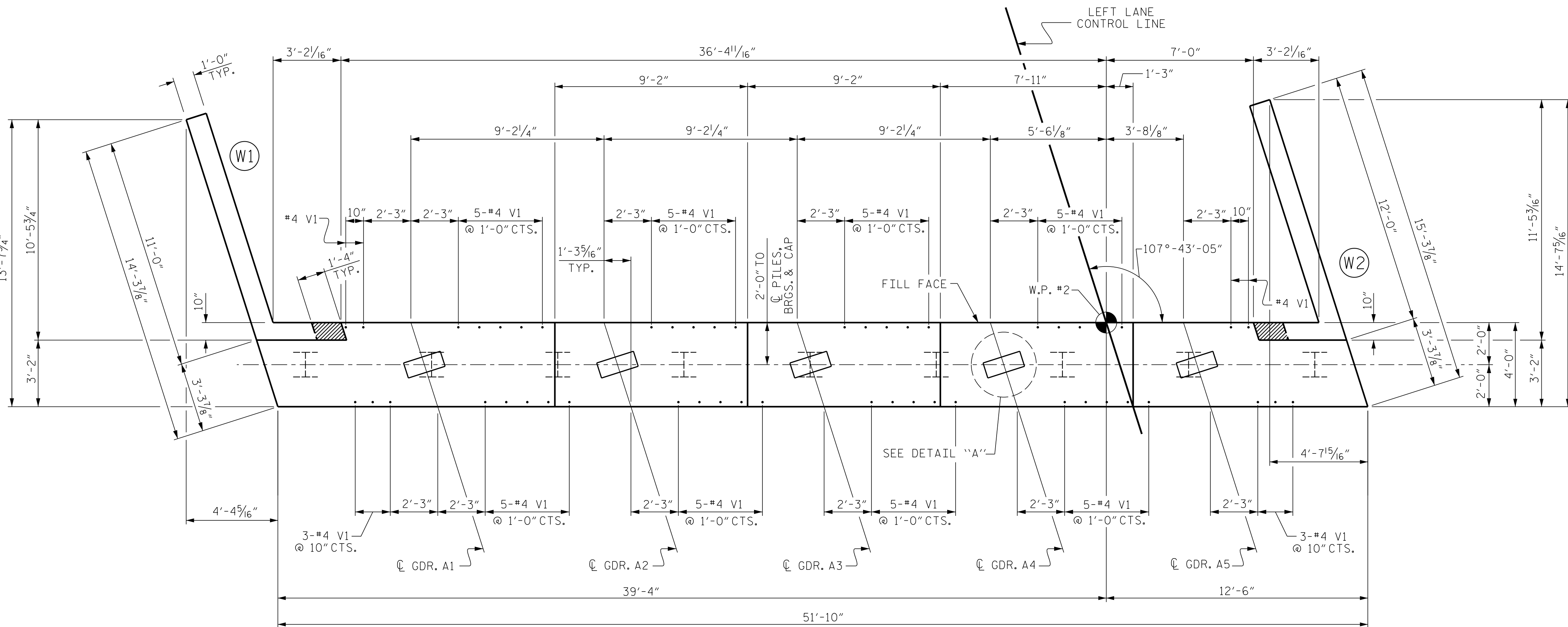
DRAWN BY : D. HODGE DATE : 2/16
 CHECKED BY : J. DILWORTH DATE : 2/16

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ENGINEER OF RECORD 12/12/2016 NORTH CAROLINA PROFESSIONAL SEAL 14091 CHARLES HUNT CIVIL ENGINEER F-0377					
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 1 (LEFT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S01-18
TOTAL SHEETS					26



NOTES

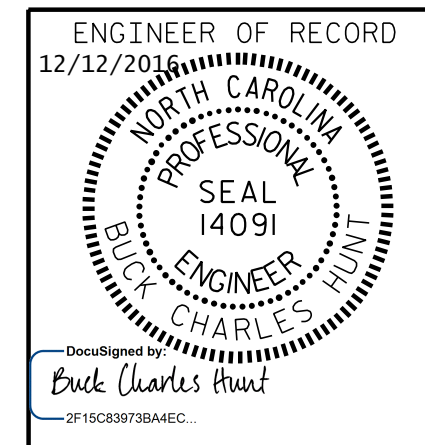
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAILS ARE CAST IF SLIP FORMING IS USED.

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.

THE TOP SURFACE OF THE END BENT CAP WITHIN THE LIMITS OF THE INTEGRAL ABUTMENT, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

PROJECT NO. R-5719
WAYNE COUNTY
STATION: 39+11.12 -L-

SHEET 1 OF 3



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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 2
(LEFT LANE)

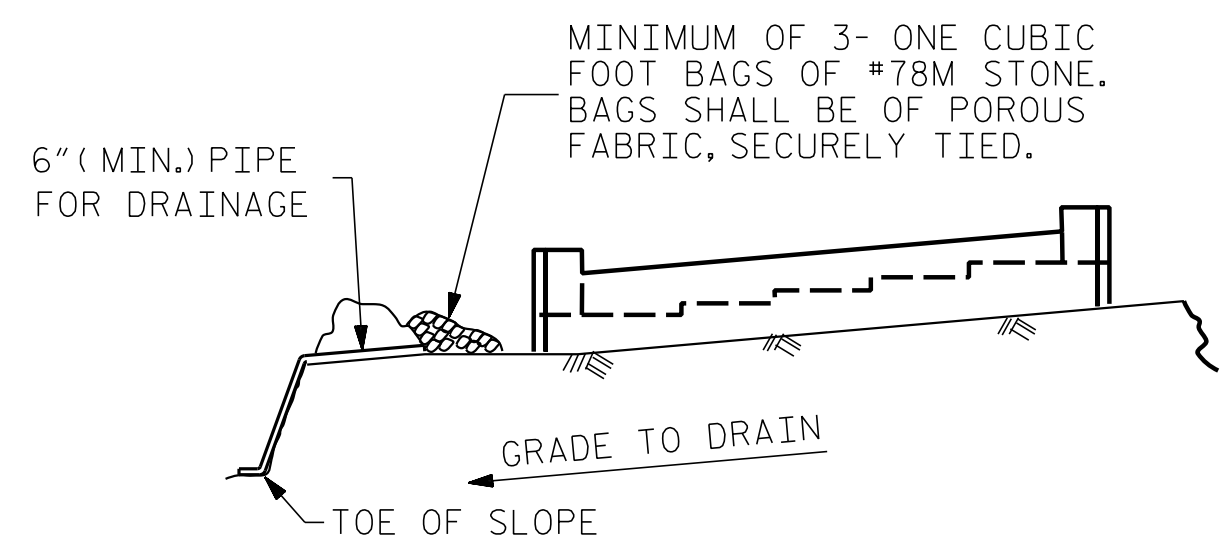
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			TOTAL SHEETS
2			4			26

DRAWN BY: D. HODGE DATE: 2/16
CHECKED BY: J. DILWORTH DATE: 2/16

FOR SECTIONS A-A & B-B, SEE SHEET 3 OF 3.

DOCUMENT NOT CONSIDERED FINAL
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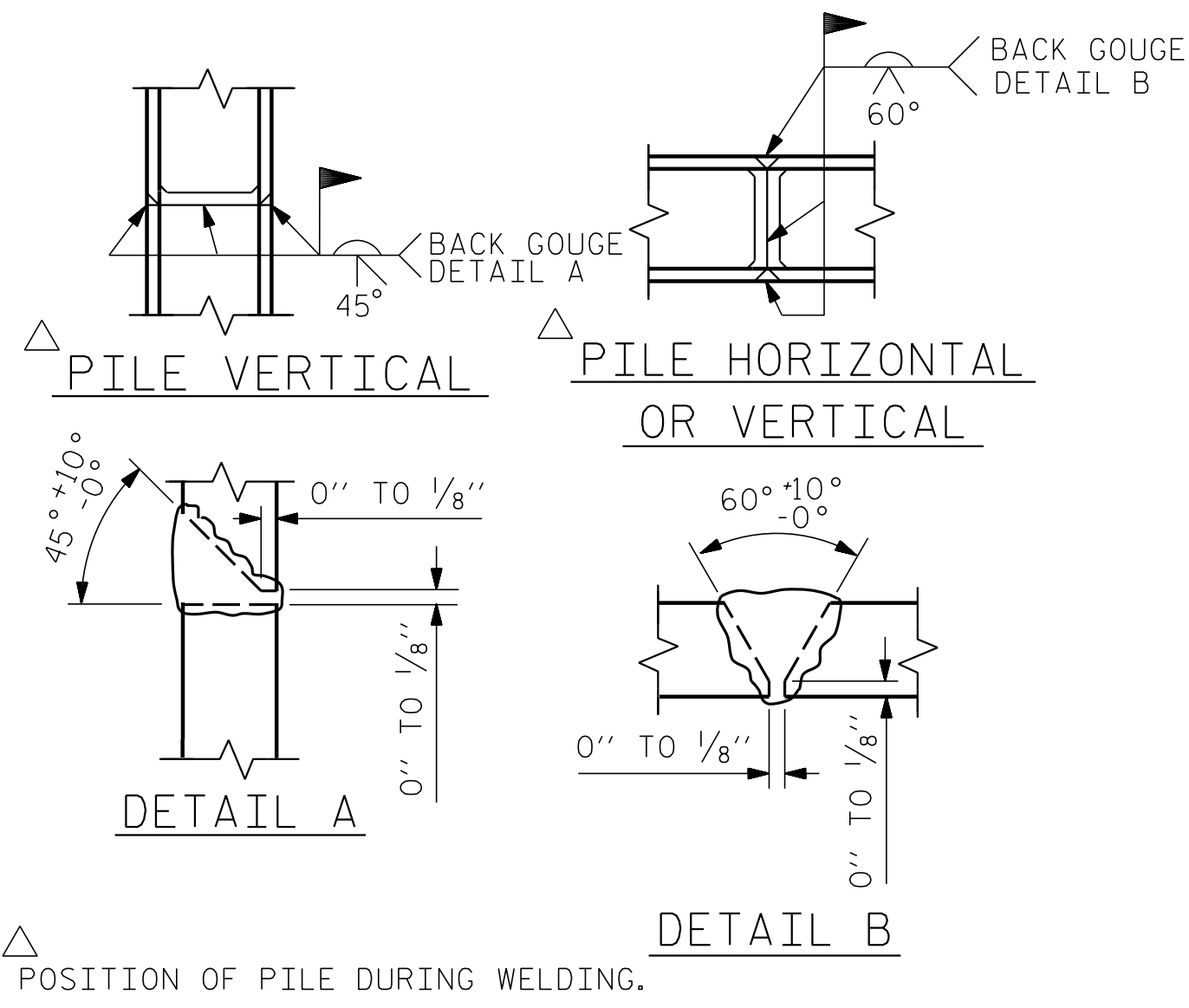


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

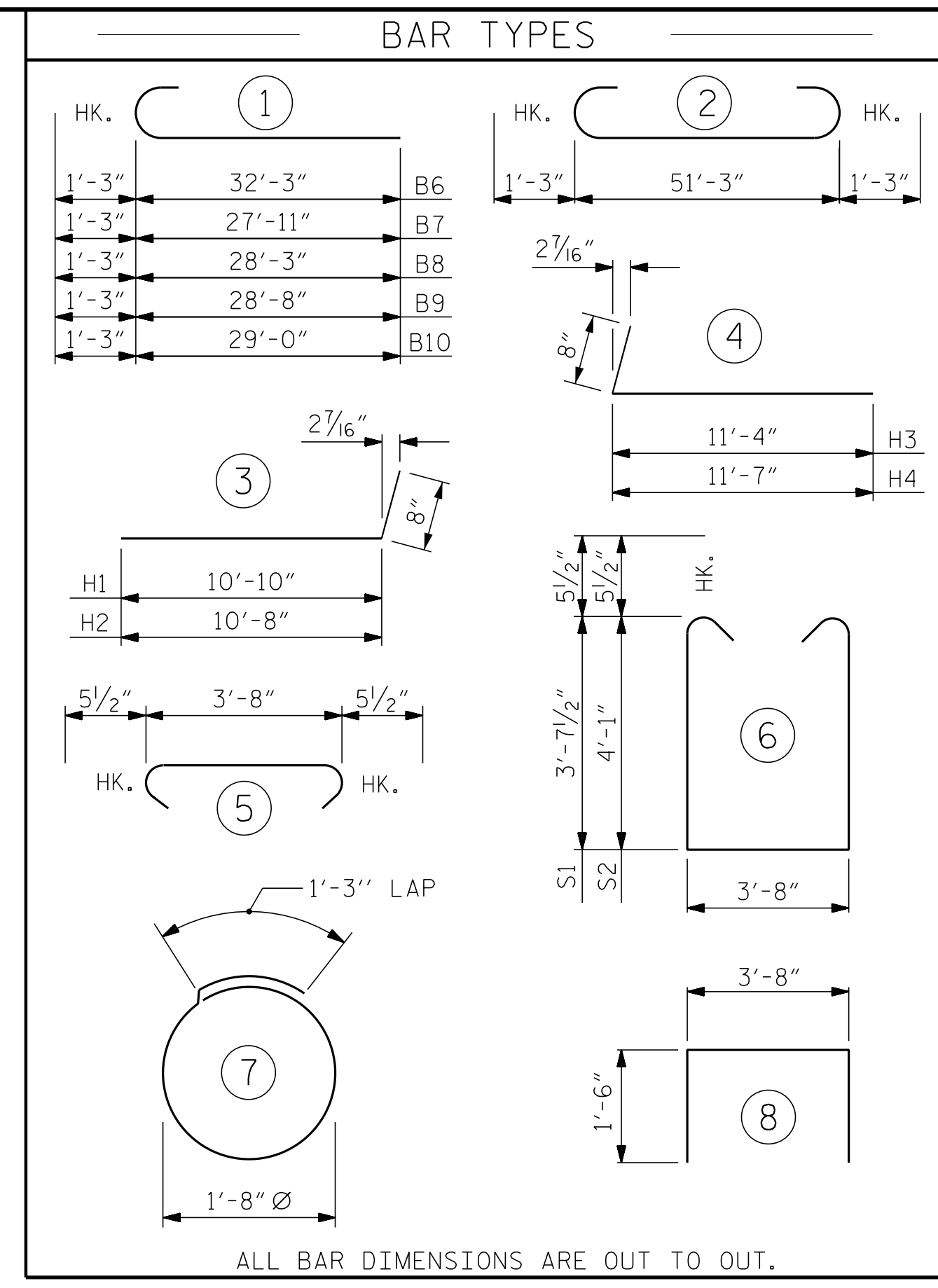
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

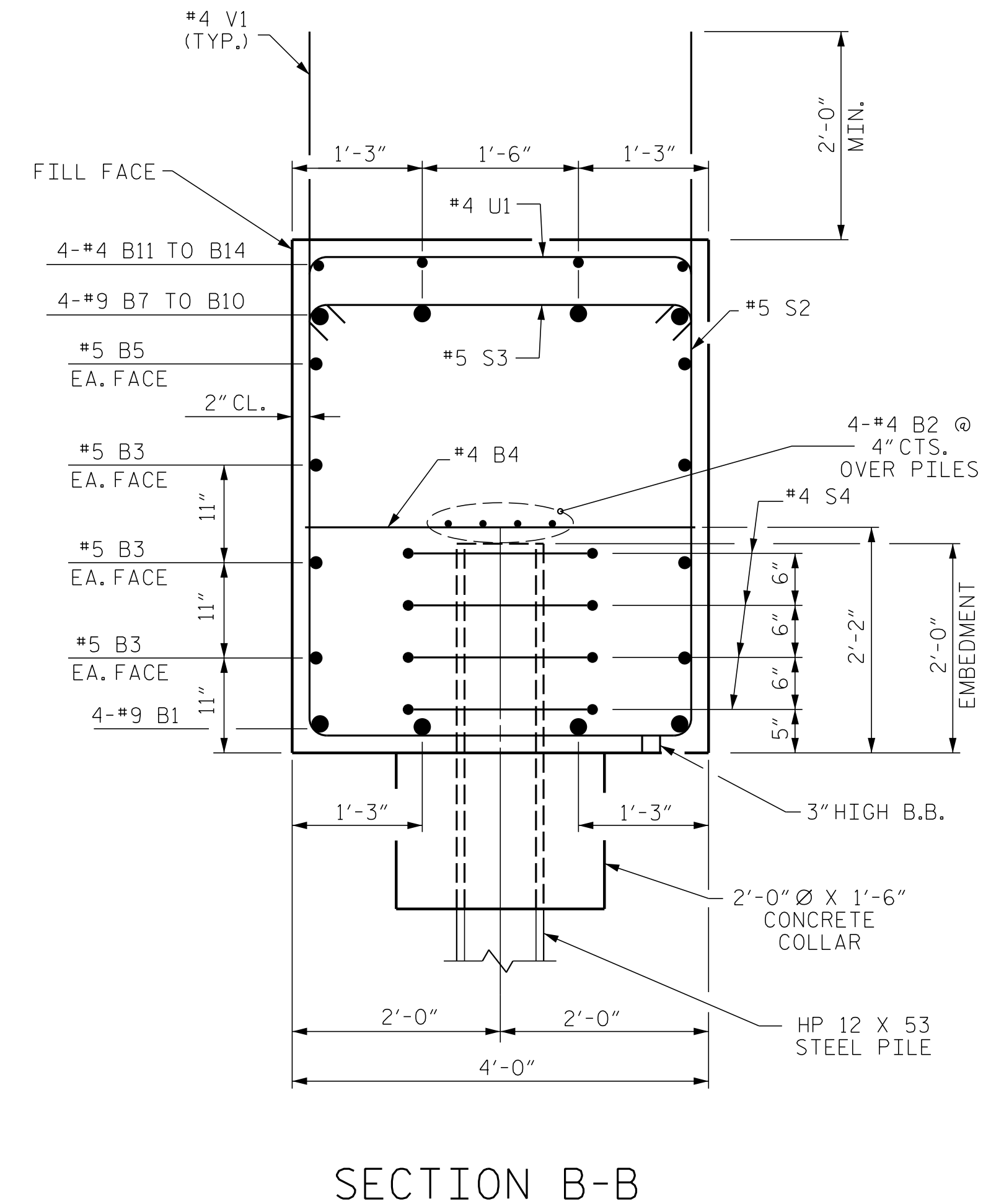
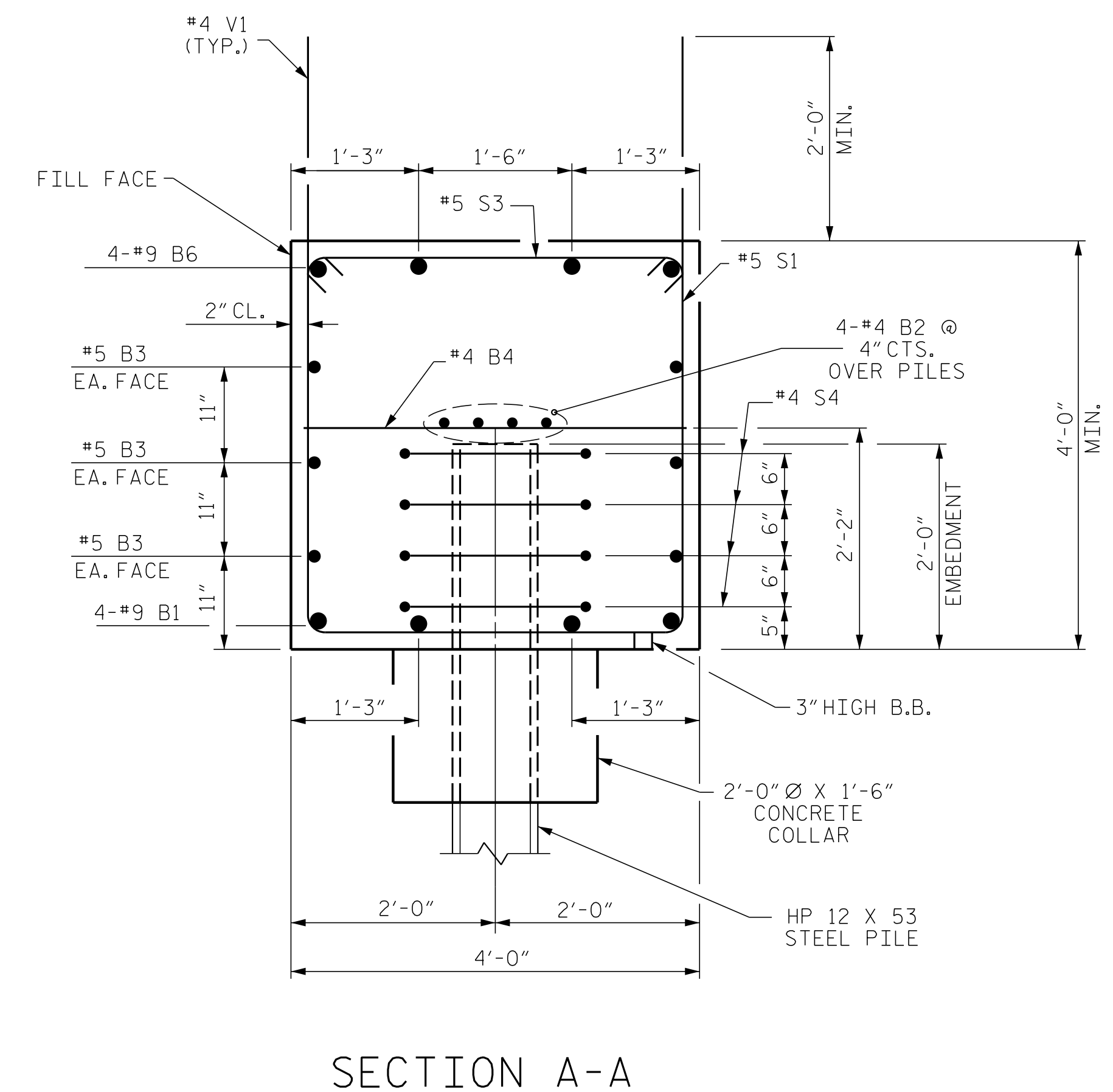
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS



BILL OF MATERIAL					
END BENT No. 2					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	4	#9	2	53'-9"	731
B2	8	#4	STR	27'-0"	144
B3	6	#5	STR	51'-5"	322
B4	15	#4	STR	3'-8"	37
B5	2	#5	STR	22'-4"	47
B6	4	#9	1	33'-6"	456
B7	1	#9	1	29'-2"	99
B8	1	#9	1	29'-6"	100
B9	1	#9	1	29'-11"	102
B10	1	#9	1	30'-3"	103
B11	1	#4	STR	9'-7"	6
B12	1	#4	STR	9'-11"	7
B13	1	#4	STR	10'-5"	7
B14	1	#4	STR	10'-8"	7
H1	21	#5	3	11'-6"	252
H2	21	#5	3	11'-4"	248
H3	23	#5	4	12'-0"	288
H4	23	#5	4	12'-3"	294
H5	52	#4	STR	3'-10"	133
S1	22	#5	6	11'-10"	272
S2	28	#5	6	12'-9"	372
S3	50	#5	5	4'-7"	239
S4	36	#4	7	6'-6"	156
U1	7	#4	8	6'-8"	31
V1	50	#4	STR	5'-9"	192
V2	32	#5	STR	10'-2"	339
V3	32	#5	STR	11'-3"	375



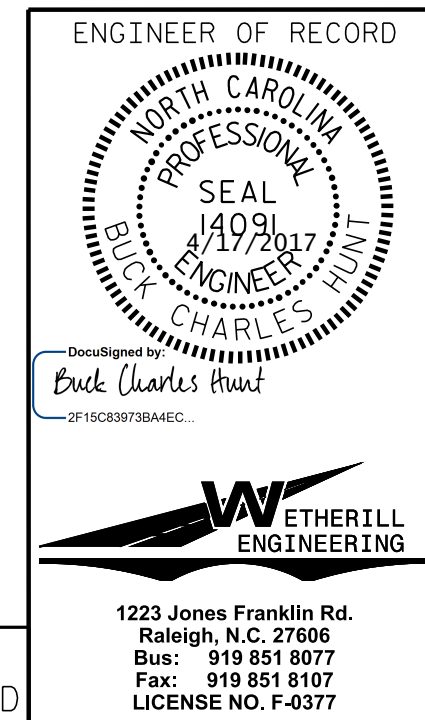
REINFORCING STEEL	5,359 LBS.
CLASS A CONCRETE BREAKDOWN	
POUR #1 CAP, CONC. COLLARS & LOWER PART OF WINGS	39.2 C.Y.
POUR #2 UPPER PART OF WINGS	7.0 C.Y.
TOTAL CLASS A CONCRETE	46.2 C.Y.
HP 12 X 53 STEEL PILES	
NO: 9	LIN. FT. = 900.0
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	9 EA.

PROJECT NO. R-5719

WAYNE COUNTY

STATION: 39+11.12 -L-

SHEET 3 OF 3



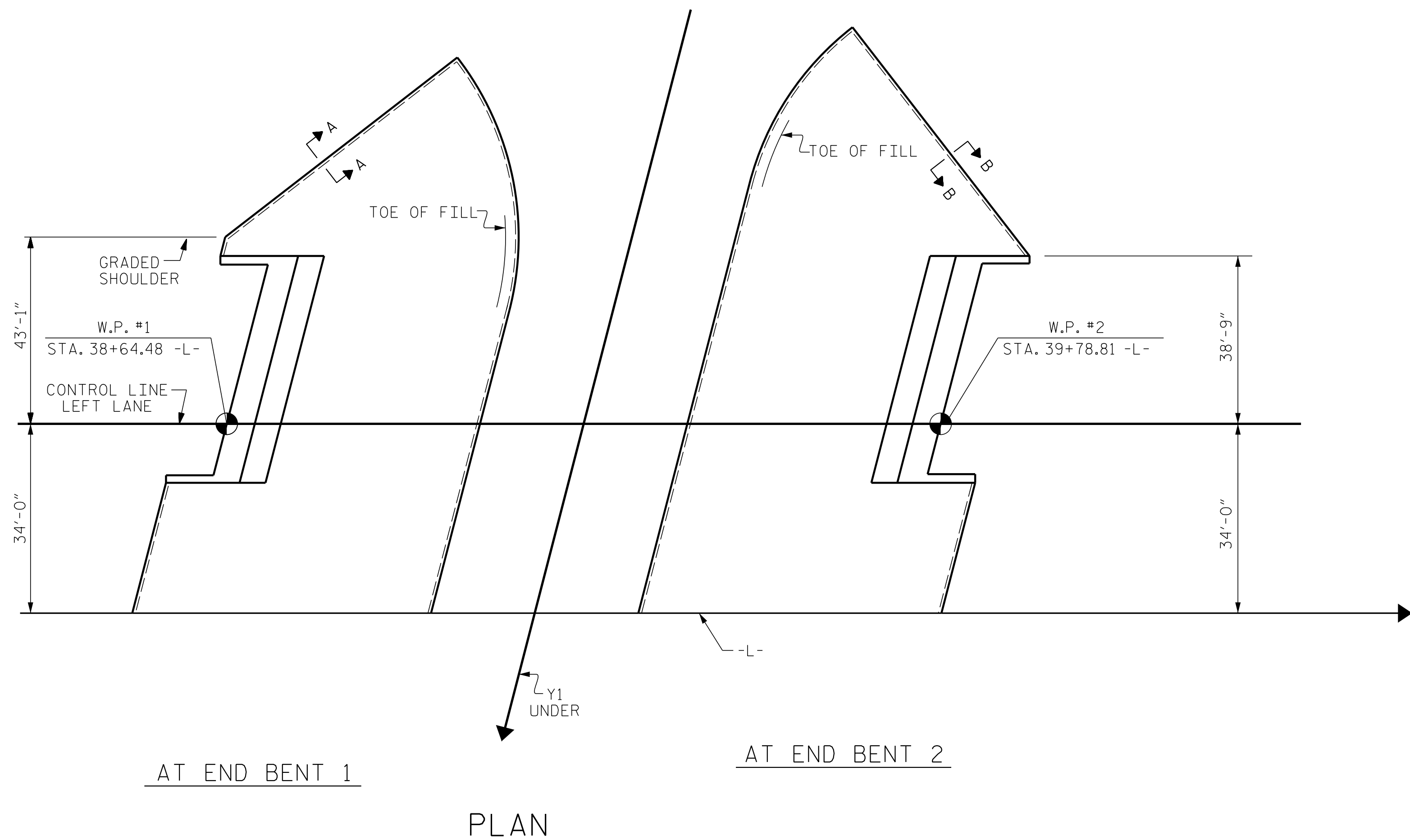
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 2 (LEFT LANE)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S01-22					TOTAL SHEETS 26

DRAWN BY: D. HODGE DATE: 2/16

CHECKED BY: J. DILWORTH DATE: 2/16

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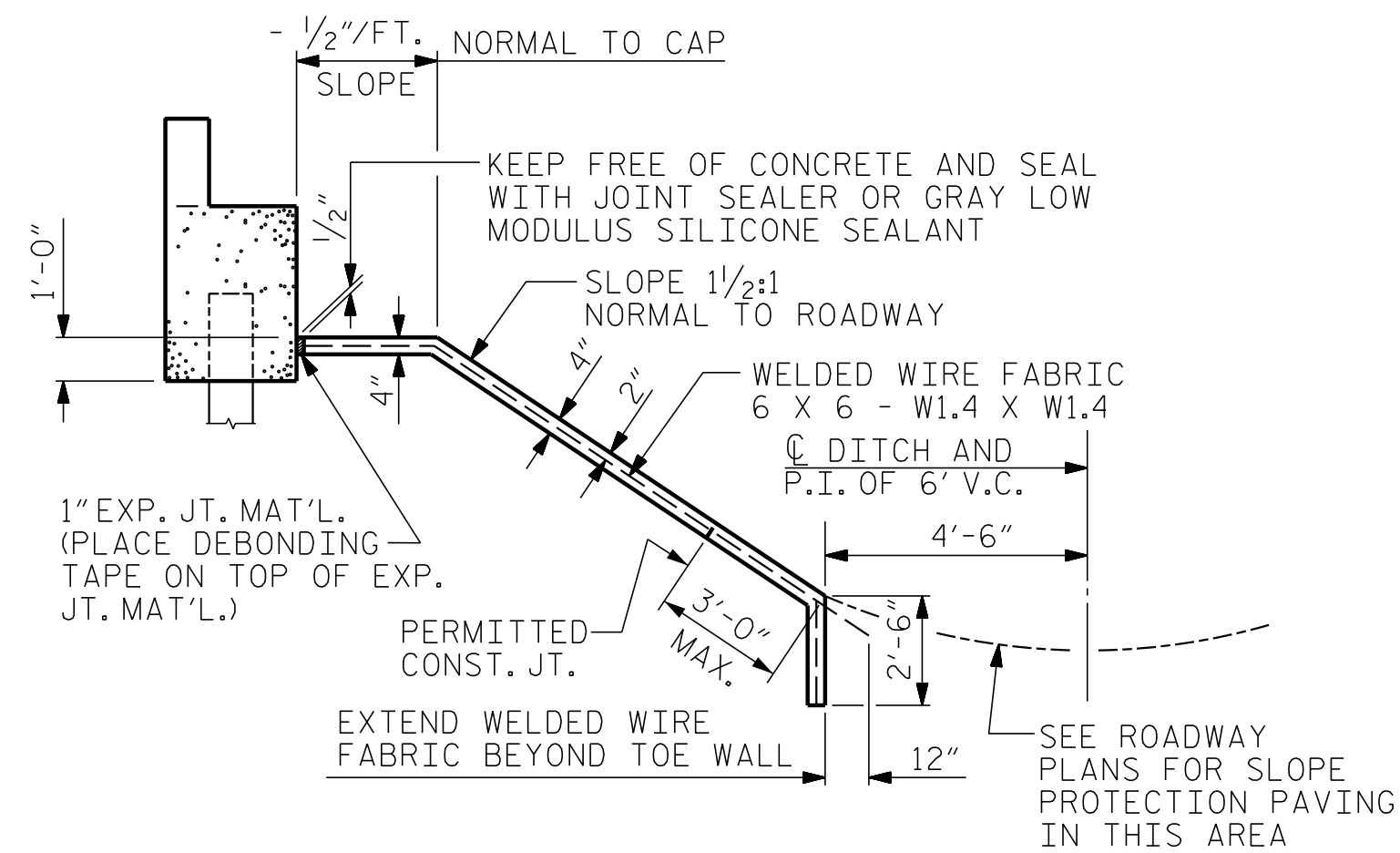
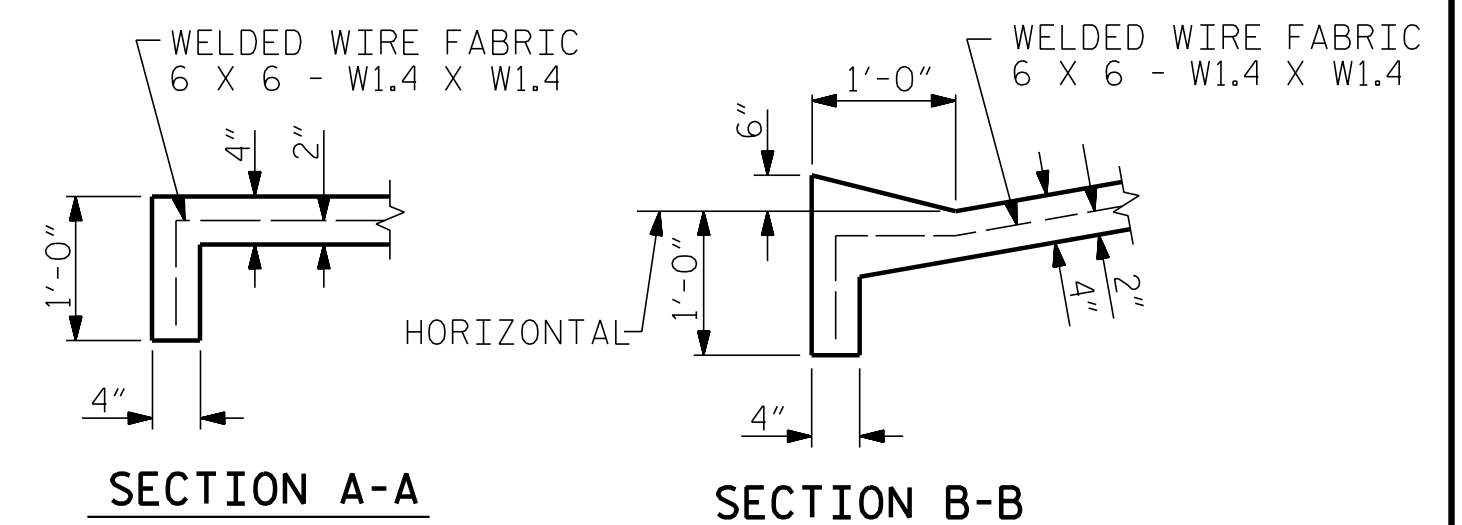


GENERAL NOTES

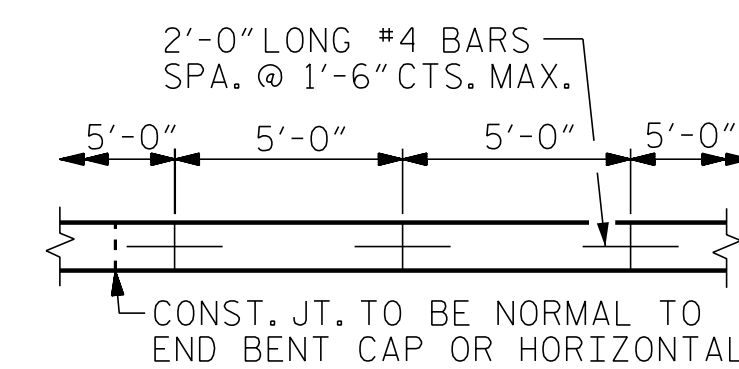
STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING. SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE 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. 39+11.12 -L- LEFT LANE	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	345	725
END BENT 2	345	725

* QUANTITY SHOWN IS BASED ON 5' POURS.

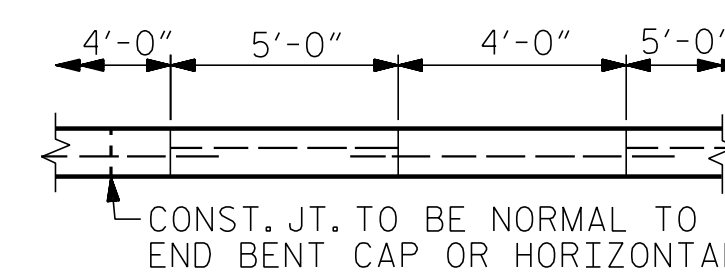


SECTION ALONG Q SURVEY WHEN FILL CATCHES IN DITCH



STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL

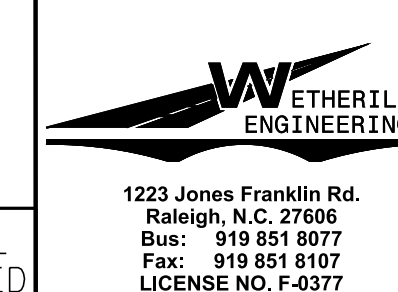
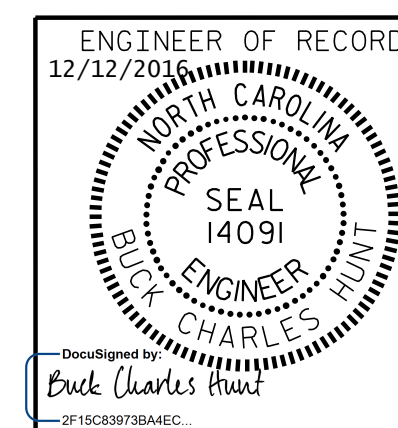


POUR A 4'-0" STRIP FIRST. STRIP WIDTHS MAY VARY IN CURVED PORTION.

OPTIONAL POURING DETAIL

PROJECT NO. R-5719
WAYNE COUNTY
 STATION: 39+11.12 -L-

SHEET 1 OF 2



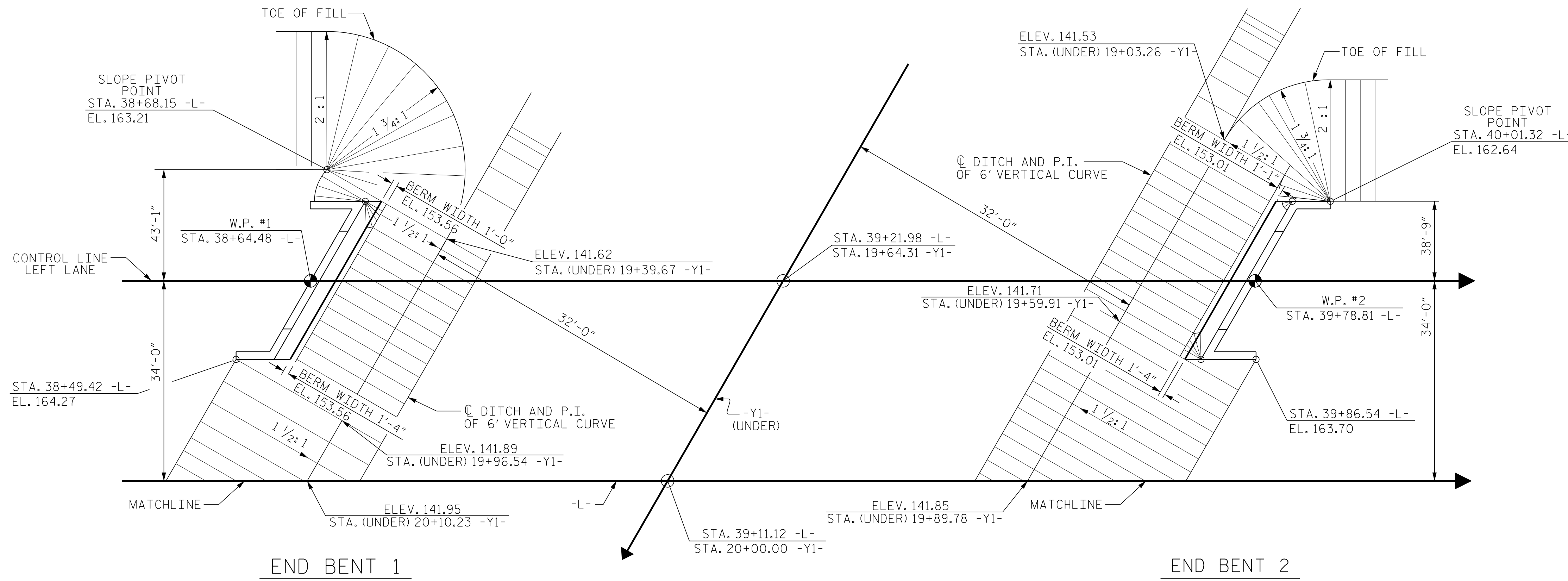
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SLOPE PROTECTION
 DETAILS
 LEFT LANE**

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

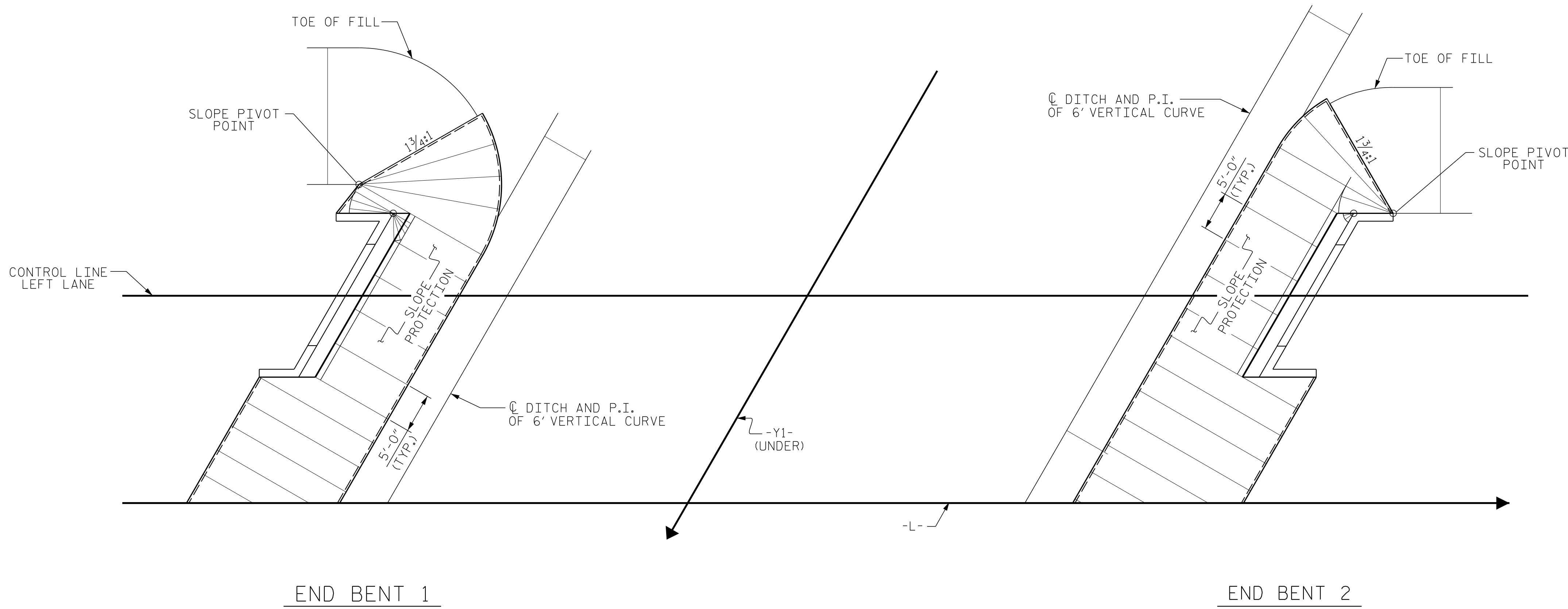
DRAWN BY : R. ASENCIO DATE : 1/28/16
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PLAN - GRADING

ELEVATIONS SHOWN AT STA. (UNDER) ARE AT TOP OF CONCRETE SLOPE PROTECTION



PLAN - CONCRETE PLACEMENT

PROJECT NO. R-5719
WAYNE COUNTY
 STATION: 39+11.12 -L-

SHEET 2 OF 2

ENGINEER OF RECORD
 12/12/2016

 DocuSigned by:
 Erik Charles Hunt
 2F15C9878BAEAC

 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD SLOPE PROTECTION DETAILS LEFT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S01-24					TOTAL SHEETS 26

DRAWN BY : R. ASENCIO DATE : 1/26/16
 CHECKED BY : J. DILWORTH DATE : 1/30/16

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NOTES

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

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

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

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

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

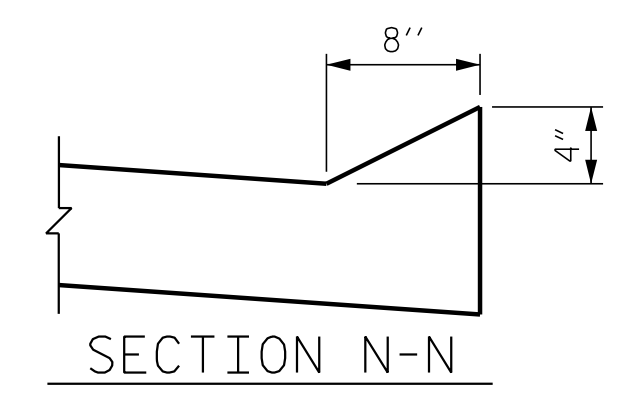
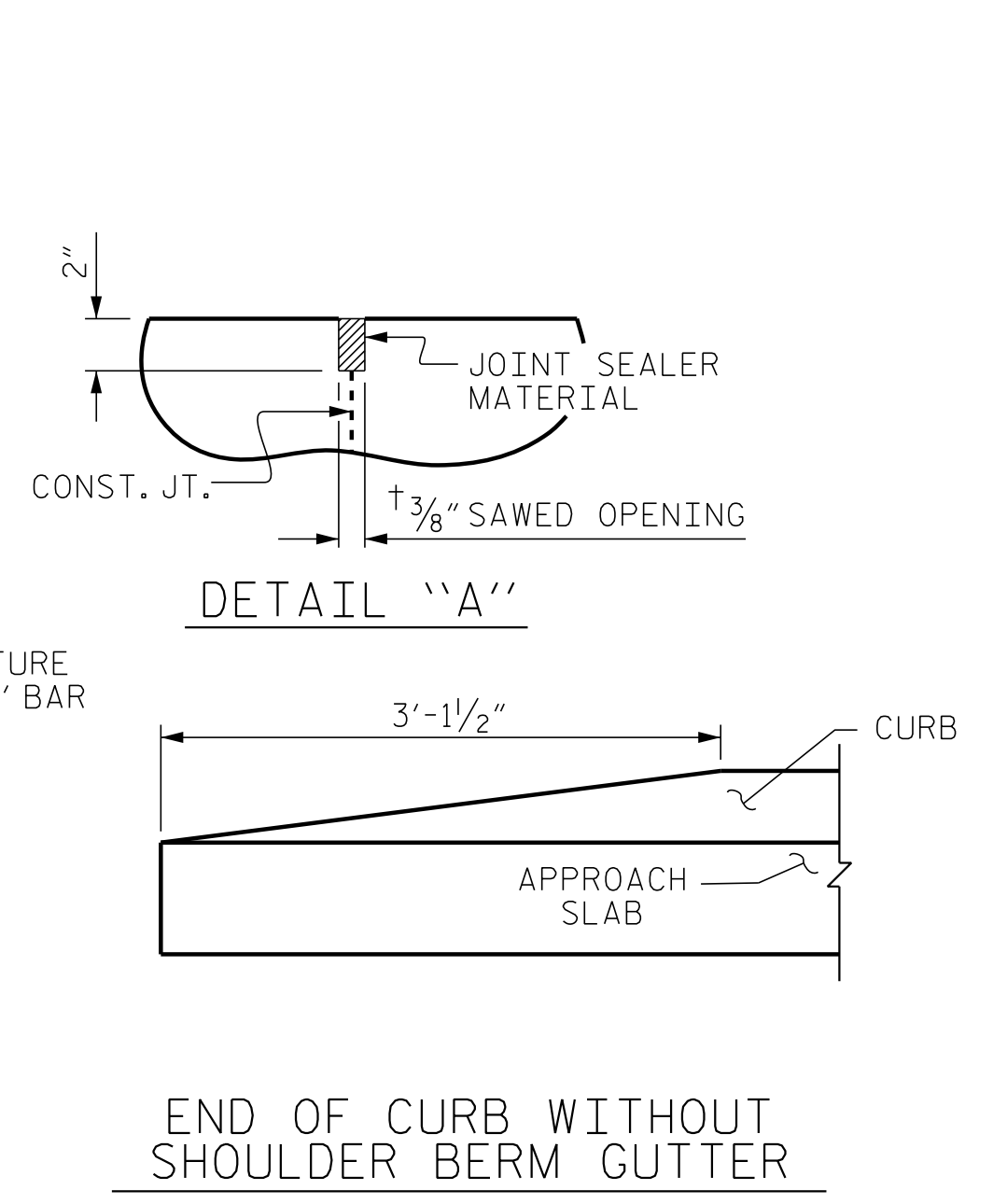
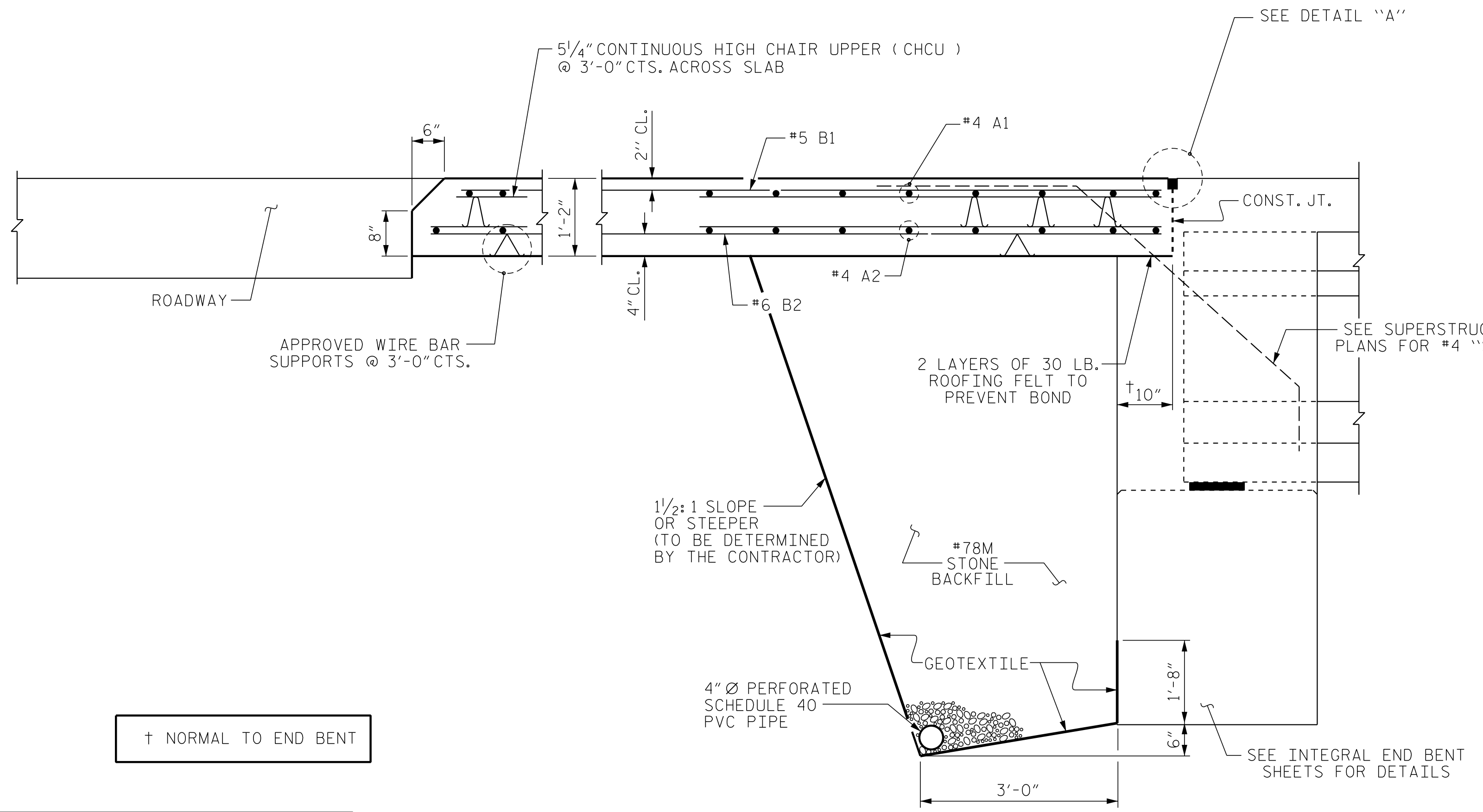
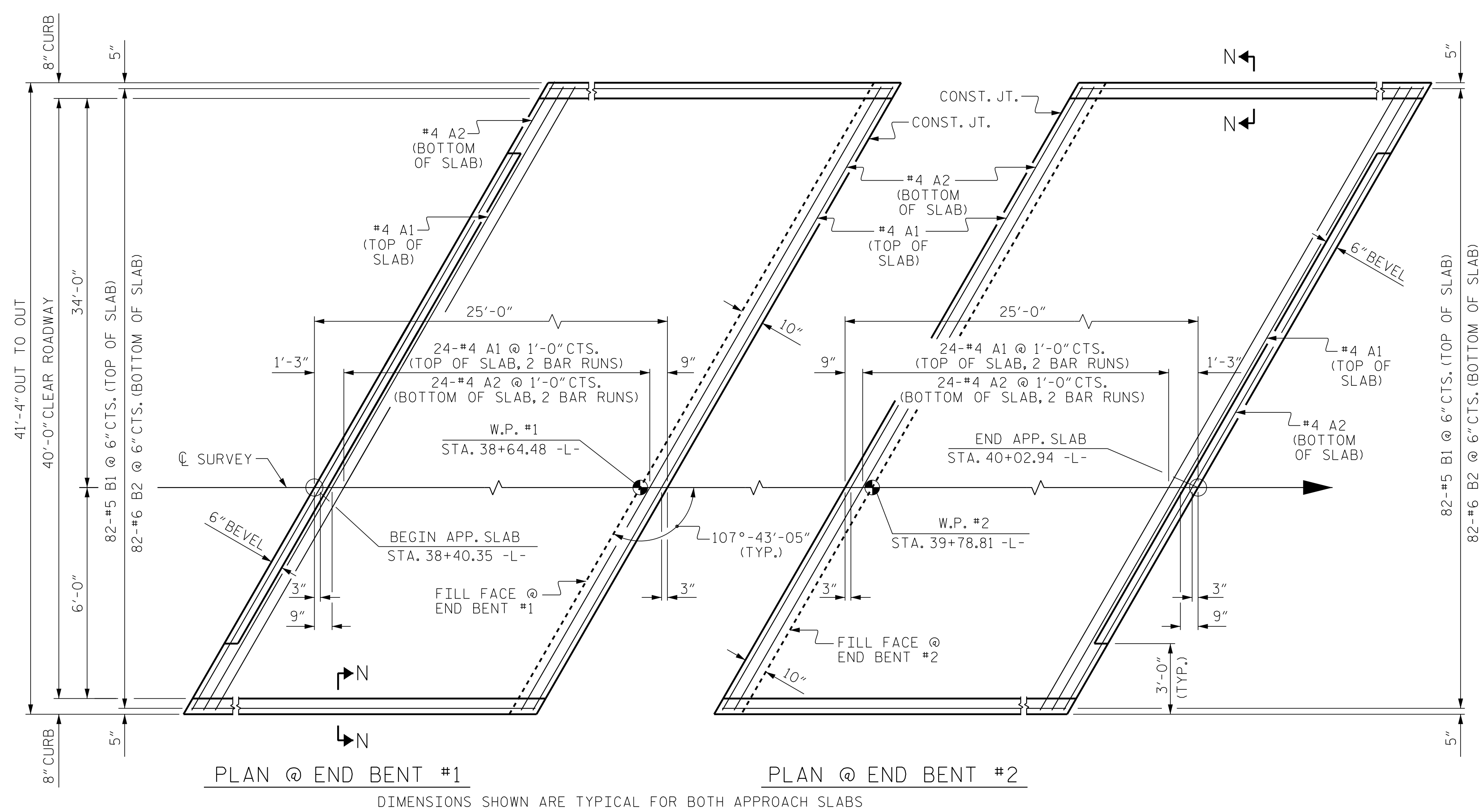
#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

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

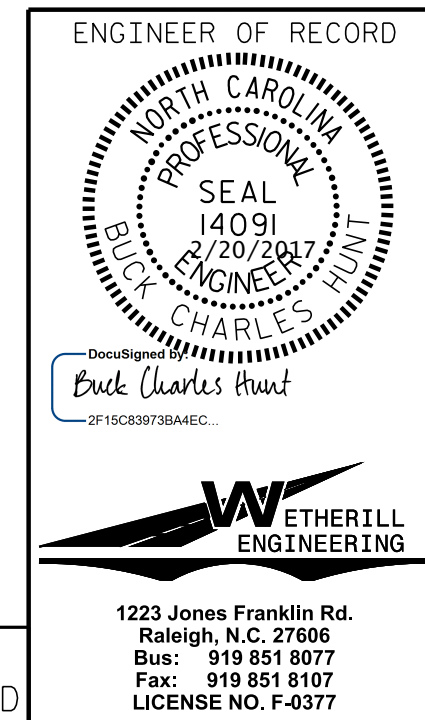
FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

BILL OF MATERIAL					
FOR ONE APPROACH SLAB (2 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	52	#4	STR	22'-7"	784
A2	52	#4	STR	22'-5"	779
* B1	82	#5	STR	24'-2"	2067
B2	82	#6	STR	24'-8"	3038
REINFORCING STEEL				LBS.	3817
* EPOXY COATED REINFORCING STEEL				LBS.	2851
CLASS AA CONCRETE				C. Y.	44.7

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



PROJECT NO. R-5719
 WAYNE COUNTY
 STATION: 39+11.12 -L-
 SHEET 1 OF 2



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT LEFT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

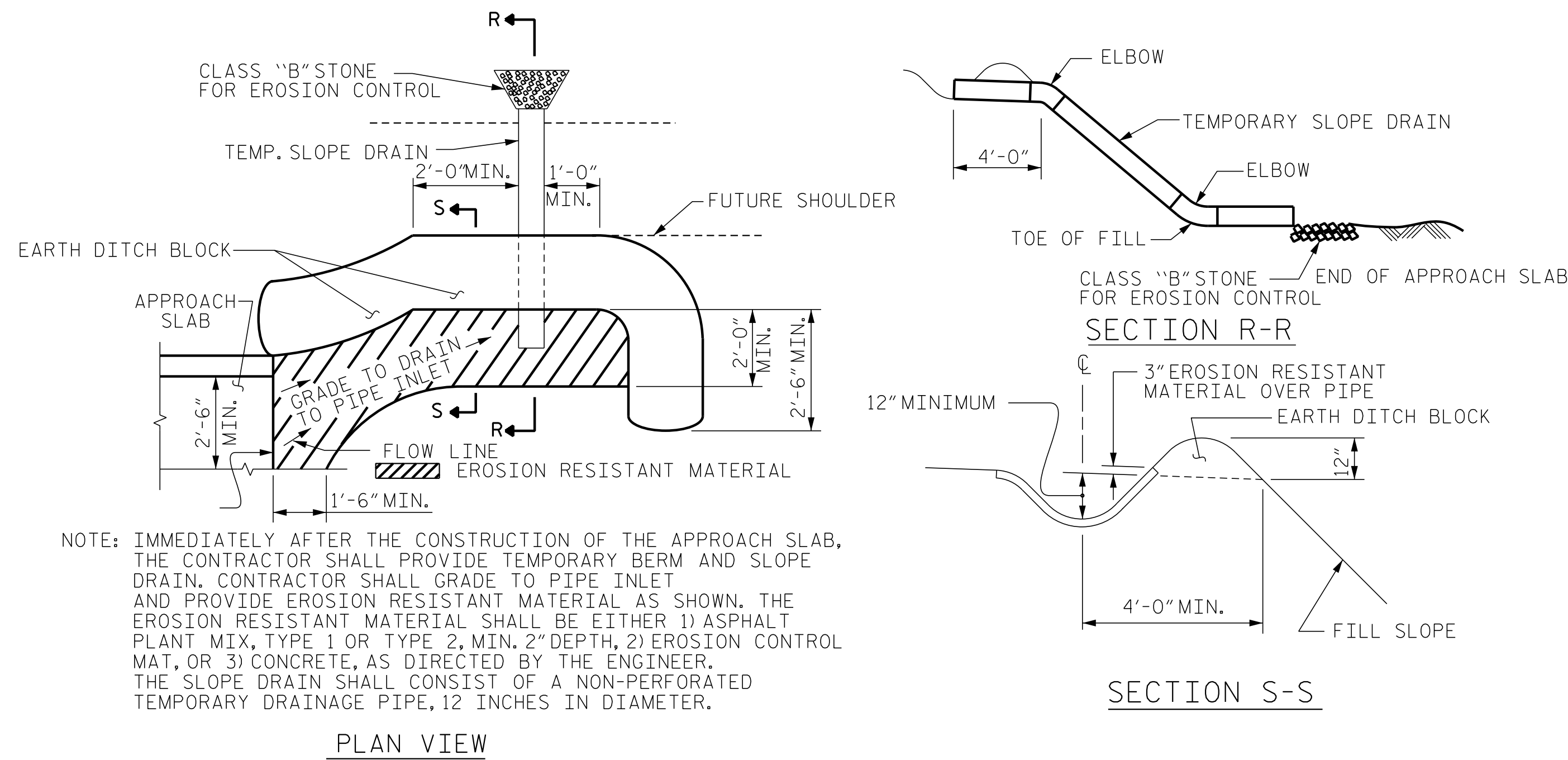
ASSEMBLED BY : B.C. HUNT	DATE : 10-6-15
CHECKED BY : G.M. GILLAND	DATE : 10-7-15
DRAWN BY : TLA 10/05	REV. 10/1/11 MAA/GM
CHECKED BY : GM 5/06	REV. 12/21/11 MAA/GM
	REV. 6/13 MAA/GM

SECTION THRU SLAB

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LICENSE NO. F-0377

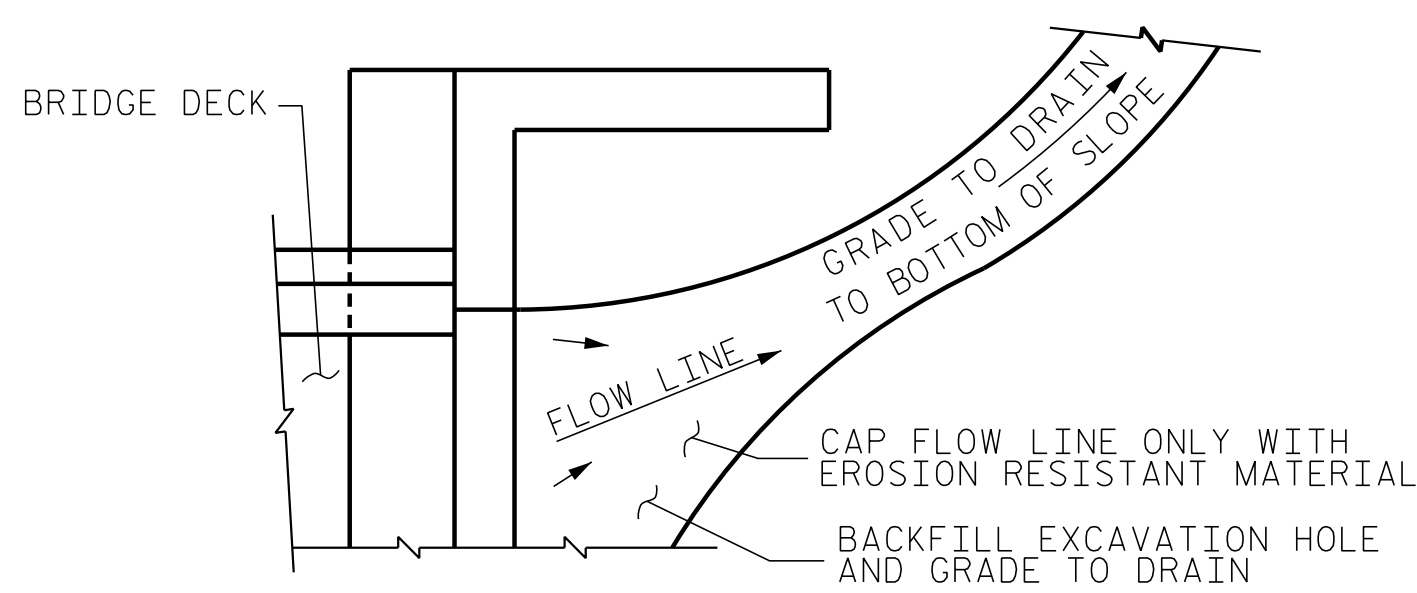
SHEET NO.		S01-25
TOTAL SHEETS		26



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

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

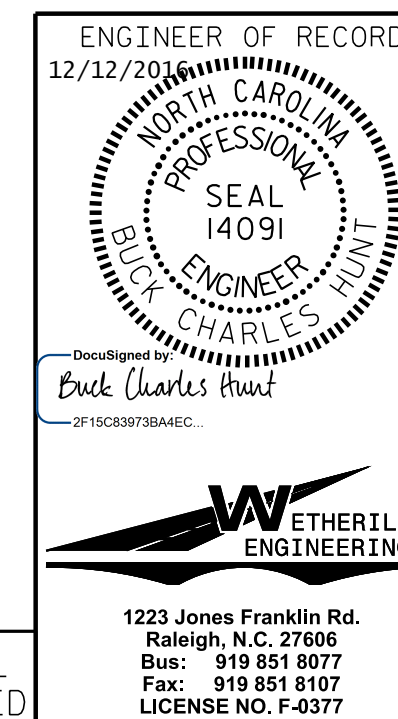


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. R-5719
WAYNE COUNTY
 STATION: 39+11.12 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 BRIDGE APPROACH
 SLAB DETAILS
 LEFT LANE

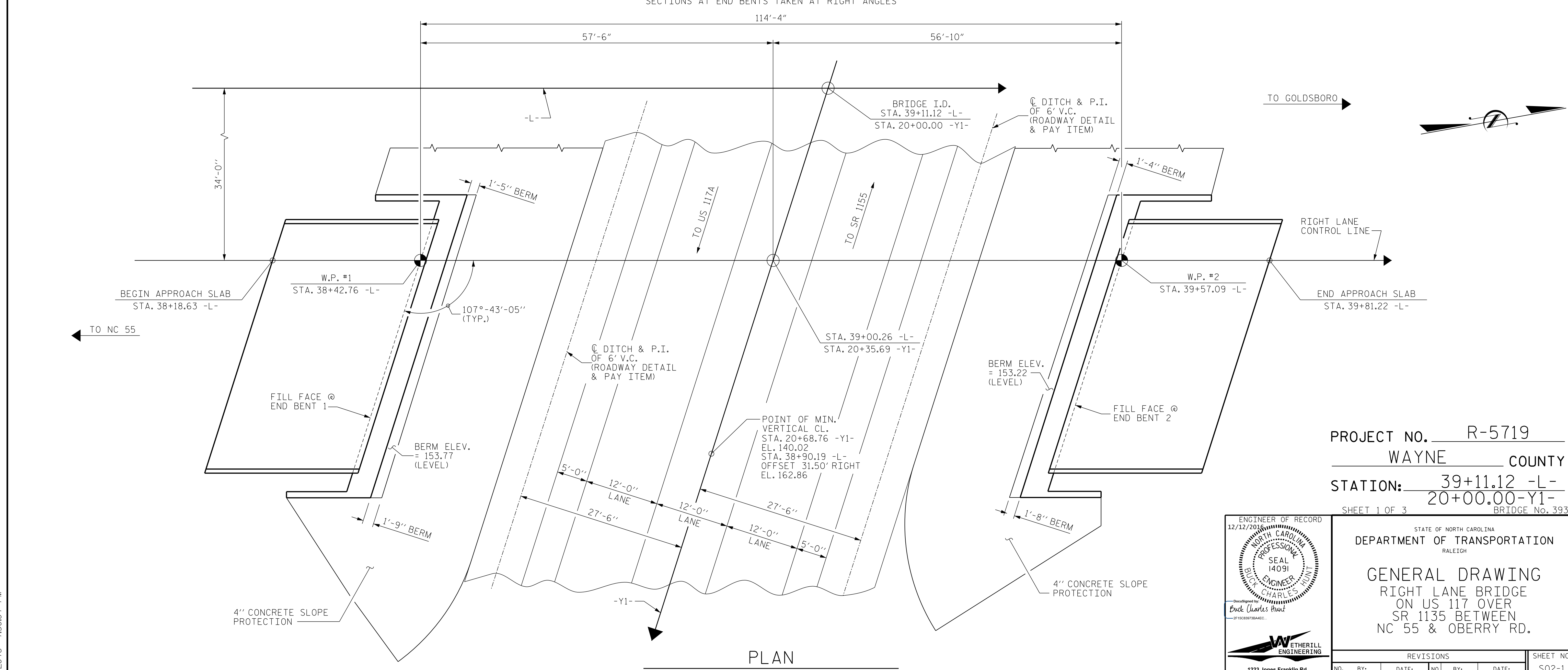
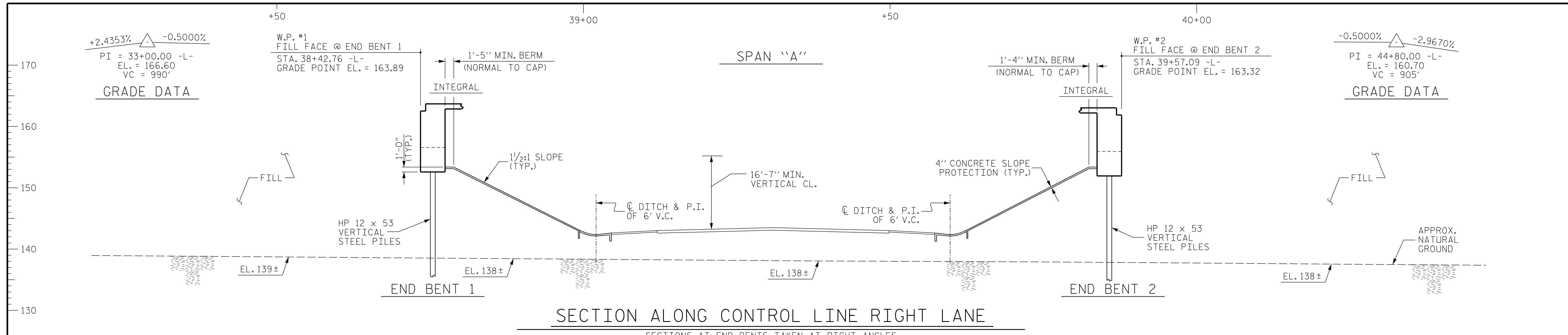
REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			TOTAL SHEETS
2			4			26

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 LICENSE NO. F-0377

ASSEMBLED BY : B.C. HUNT	DATE : 10-6-15
CHECKED BY : G.M. GILLAND	DATE : 10-7-15
DRAWN BY : FCJ 11/88	REV. 10/11/11 MAA/GM
CHECKED BY : ARB 11/88	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM



PROJECT NO. R-5719
 WAYNE COUNTY
 STATION: 39+11.12 -L-
20+00.00 -Y1-
 SHEET 1 OF 3 BRIDGE No. 393

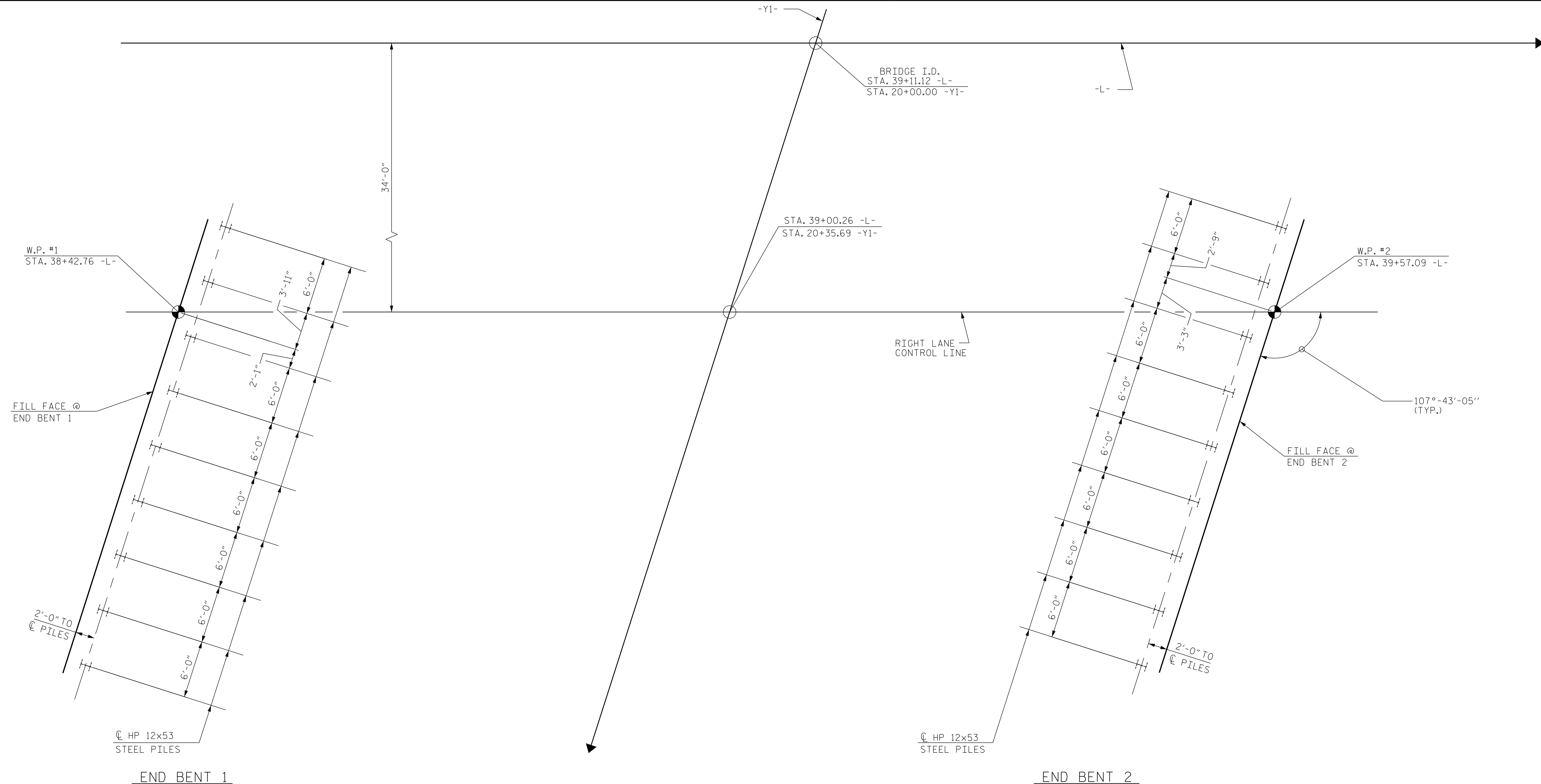
ENGINEER OF RECORD
 12/12/2016
 NORTH CAROLINA PROFESSIONAL SEAL 14091
 BOB CHARLES HUNN
 ENGINEER
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			26

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 CHECKED BY: BCH DATE: 5/16

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FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES

NOTES:

SEE ROADWAY PLANS AND SPECIAL PROVISIONS FOR THE SETTLEMENT GAUGES REQUIRED AT END BENTS 1 AND 2.

OBSERVE A 2 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FEET OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENTS 1 AND 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SPECIAL PROVISIONS.

FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.

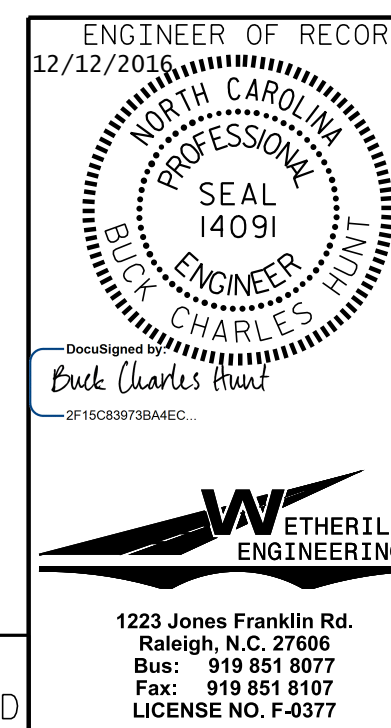
PILES AT END BENTS 1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILE.

DRIVE PILES AT END BENTS 1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 195 TONS PER PILE.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING, OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. R-5719
WAYNE COUNTY
 STATION: 39+11.12 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 RIGHT LANE BRIDGE
 ON US 117 OVER
 SR 1135 BETWEEN
 NC 55 & OBERRY RD.

REVISIONS

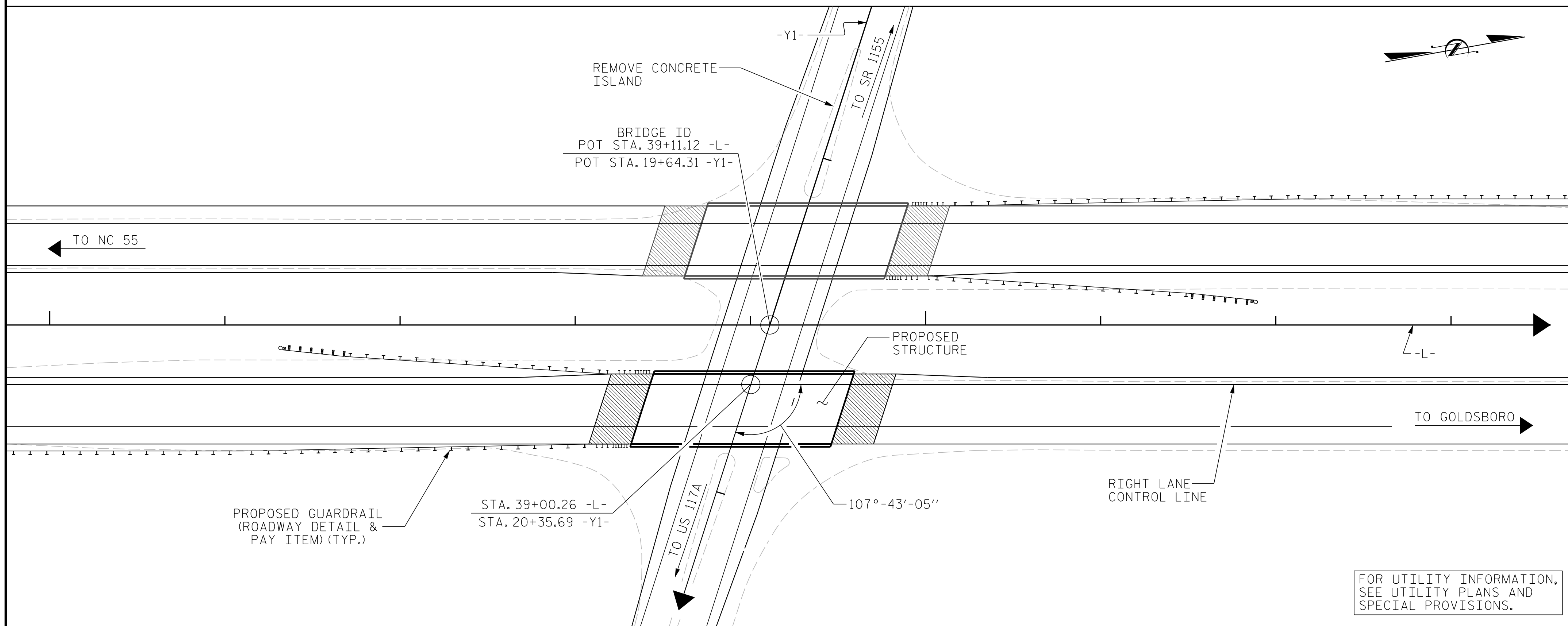
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1			3		
2			4		

SHEET NO.
S02-2
 TOTAL SHEETS
 26

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DRAWN BY : J. PENDERGRAFT DATE : 1-16
 CHECKED BY : J. DILWORTH DATE : 1-16

BM #2: 455' RT. OF STA. 38+69.00 -L-, ELEV. = 144.93



LOCATION SKETCH

GENERAL NOTES

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF 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.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- 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 MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

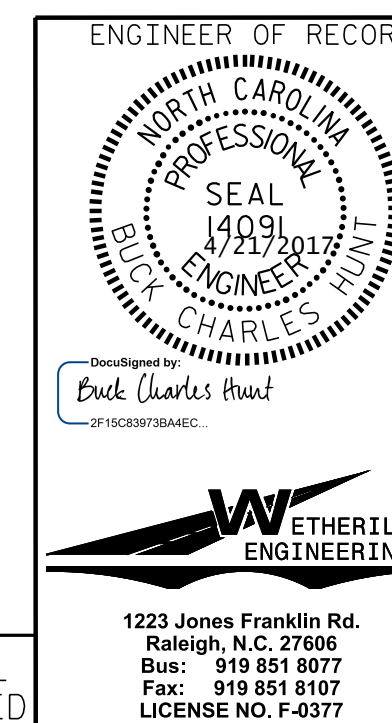
FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	MODIFIED 63" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES		HP 12 x 53 STEEL PILES	PILE REDRIVES	4" SLOPE PROTECTION	CONCRETE BARRIER RAIL	ELASTOMERIC BEARINGS
	EACH	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	No.	LIN. FT.	EACH	No.	LIN. FT.	EACH	SQ. YDS.	LIN. FT.	LUMP SUM
SUPERSTRUCTURE		4,869	5,964		LUMP SUM		5	557.76						225.17	LUMP SUM
END BENT No. 1				45.7		5360			9	9	900	9	370		
END BENT No. 2				45.7		5359			9	9	900	9	335		
TOTAL	1	4,869	5,964	91.4	LUMP SUM	10,719	5	557.76	18	18	1800	18	705	225.17	LUMP SUM

PROJECT NO. R-5719
WAYNE COUNTY
 STATION: 39+11.12 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 RIGHT LANE BRIDGE
 ON US 117 OVER
 SR 1135 BETWEEN
 NC 55 & OBERRY RD.

REVISIONS

NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
1			3			S02-3
2			4			TOTAL SHEETS 26

DRAWN BY : GMG/DAH DATE : 5/16
 CHECKED BY : BCH DATE : 5/16

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LOAD FACTORS:

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

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_L)	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_L)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.08	--	1.75	0.86	1.27	A	EL	55.07	0.90	1.13	A	EL	77.38	0.80	0.86	1.08	A	EL	55.07		
	HL-93 (OPERATING)	N/A		1.57	--	1.35	0.86	1.65	A	EL	55.07	0.92	1.57	A	I	99.69	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.54	55.43	1.75	0.86	1.82	A	EL	55.07	0.92	1.67	A	I	99.69	0.80	0.86	1.54	A	EL	55.07		
	HS-20 (OPERATING)	36.000		2.20	79.12	1.35	0.86	2.36	A	EL	55.07	0.92	2.20	A	I	99.69	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SH	12.500		4.01	50.15	1.40	0.86	5.92	A	EL	55.07	0.92	5.89	A	I	99.69	0.80	0.86	4.01	A	EL	55.07	
		S3C	21.500		2.34	50.39	1.40	0.86	3.46	A	EL	55.07	0.92	3.40	A	I	99.69	0.80	0.86	2.34	A	EL	55.07	
		S3A	22.750		2.22	50.49	1.40	0.86	3.27	A	EL	55.07	0.92	3.21	A	I	99.69	0.80	0.86	2.22	A	EL	55.07	
		S4A	26.750		1.94	51.85	1.40	0.86	2.86	A	EL	55.07	0.92	2.77	A	I	99.69	0.80	0.86	1.94	A	EL	55.07	
		S5A	30.500		1.71	52.11	1.40	0.86	2.52	A	EL	55.07	0.92	2.50	A	I	99.69	0.80	0.86	1.71	A	EL	55.07	
		S6A	34.500		1.54	53.14	1.40	0.86	2.27	A	EL	55.07	0.92	2.23	A	I	99.69	0.80	0.86	1.54	A	EL	55.07	
		S7B	38.500		1.40	53.77	1.40	0.86	2.06	A	EL	55.07	0.92	2.05	A	I	99.69	0.80	0.86	1.40	A	EL	55.07	
		S7A	40.000	③	1.37	54.86	1.40	0.86	2.02	A	EL	55.07	0.92	2.06	A	I	99.69	0.80	0.86	1.37	A	EL	55.07	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	T4A	28.250		1.89	53.47	1.40	0.86	2.79	A	EL	55.07	0.92	2.67	A	I	99.69	0.80	0.86	1.89	A	EL	55.07	
		T5B	32.000		1.66	53.27	1.40	0.86	2.46	A	EL	55.07	0.92	2.48	A	I	99.69	0.80	0.86	1.66	A	EL	55.07	
		T6A	36.000		1.51	54.53	1.40	0.86	2.23	A	EL	55.07	0.92	2.24	A	I	99.69	0.80	0.86	1.51	A	EL	55.07	
		T7A	40.000		1.39	55.78	1.40	0.86	2.06	A	EL	55.07	0.92	2.06	A	I	99.69	0.80	0.86	1.39	A	EL	55.07	
		T7B	40.000		1.46	58.53	1.40	0.86	2.16	A	EL	55.07	0.92	1.97	A	I	99.69	0.80	0.86	1.46	A	EL	55.07	

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.

⑥ CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

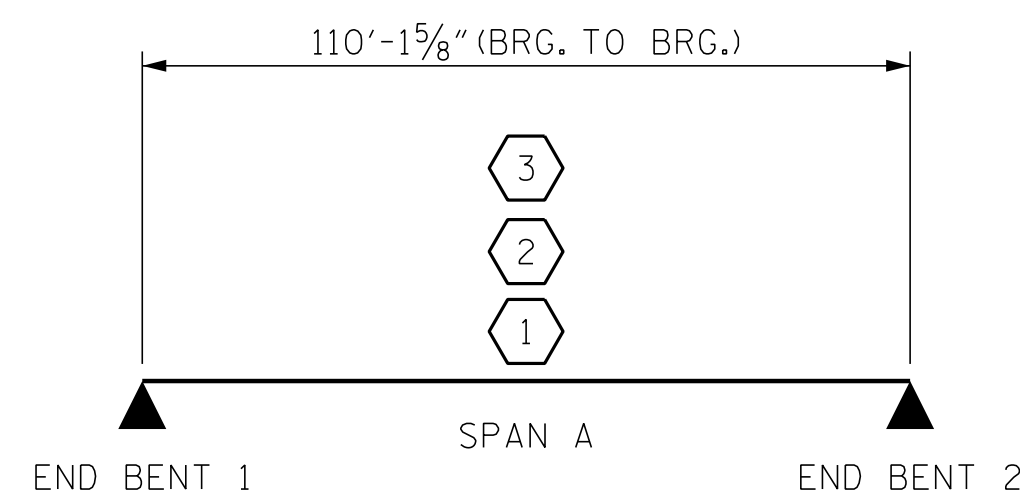
② DESIGN LOAD RATING (HS-20)

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. R-5719
WAYNE COUNTY
 STATION: 39+11.12 -L-

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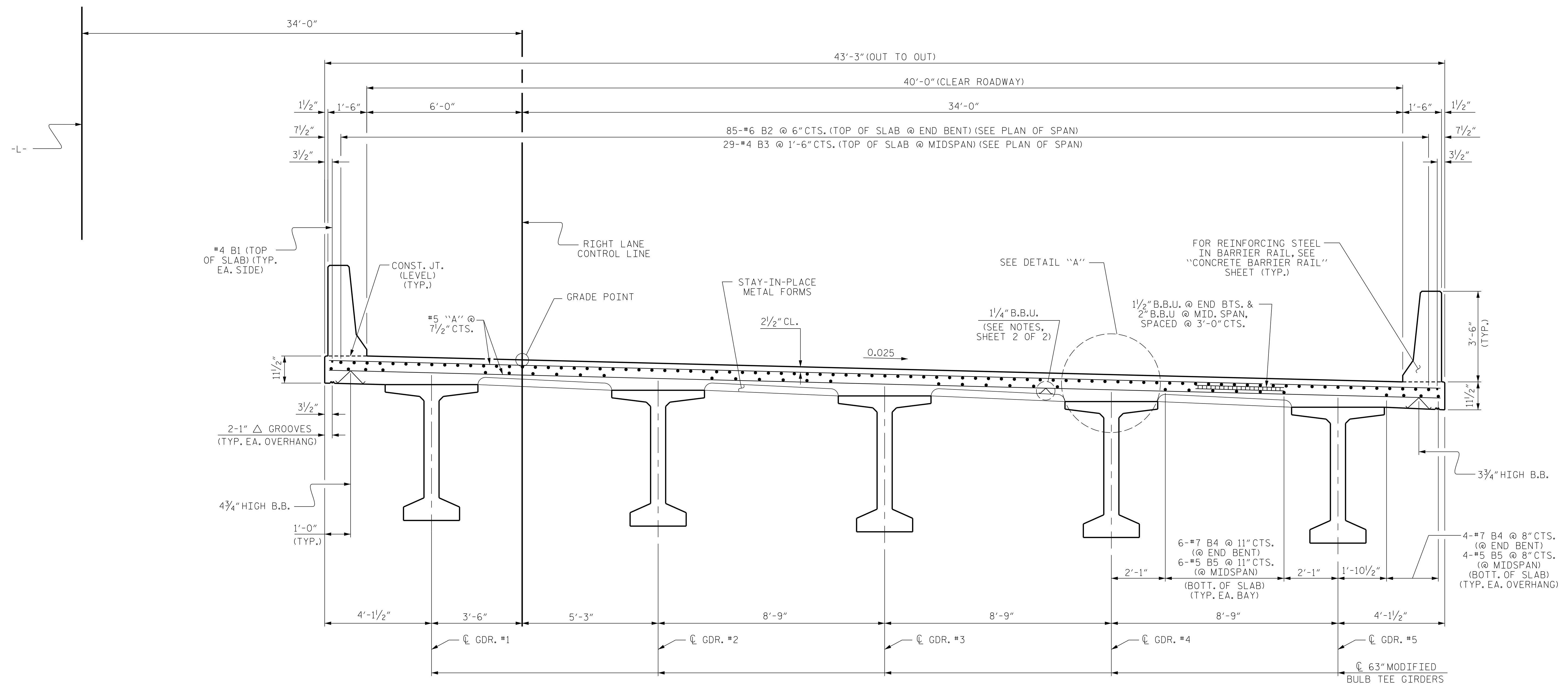
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 NORTH CAROLINA PROFESSIONAL SEAL
 14091
 ENGINEER
 BOCK CHARLES HUNN
 DocuSigned by:
 Buck Charles Hunn
 F15C83978A8EC

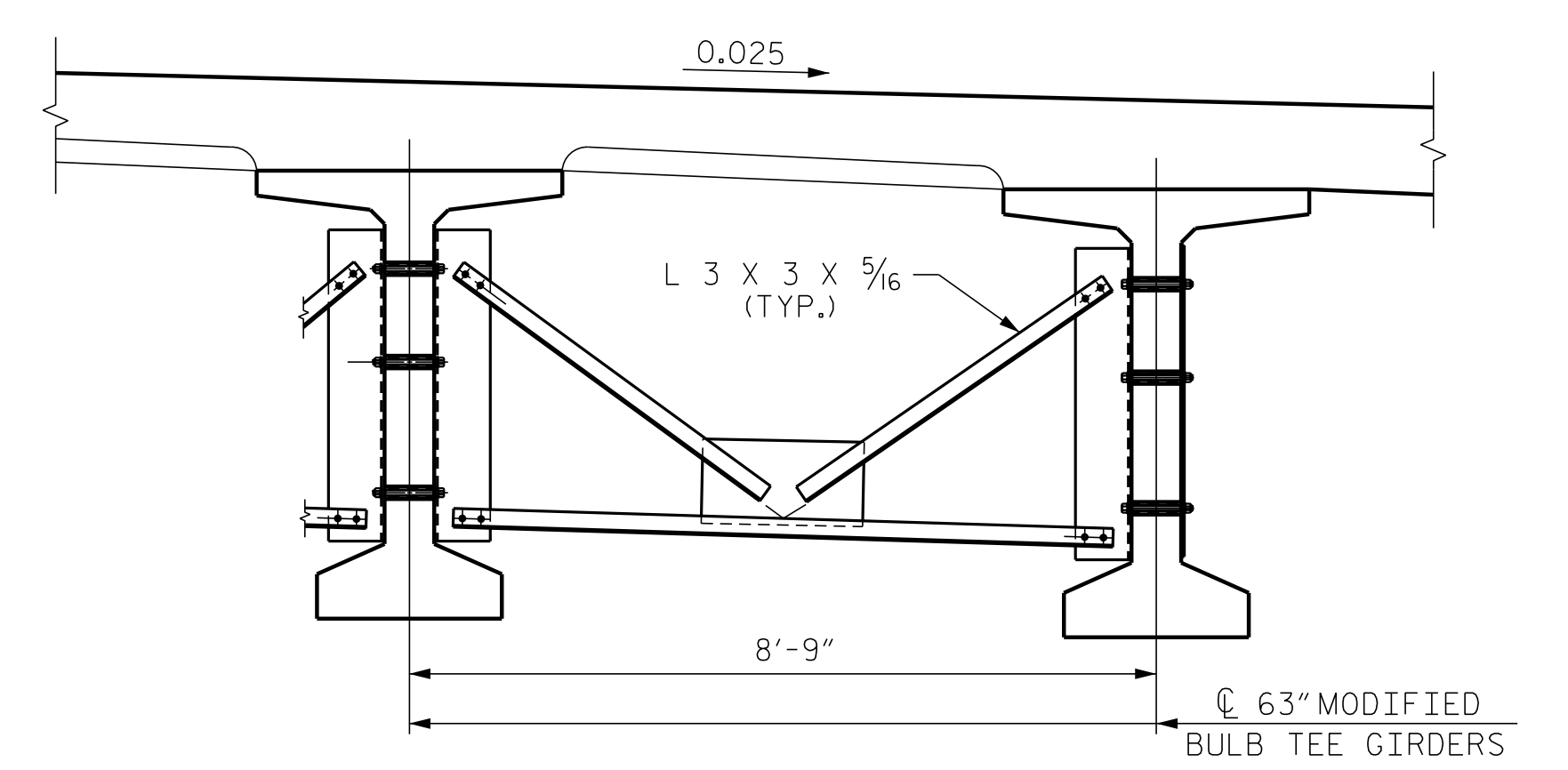
WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

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

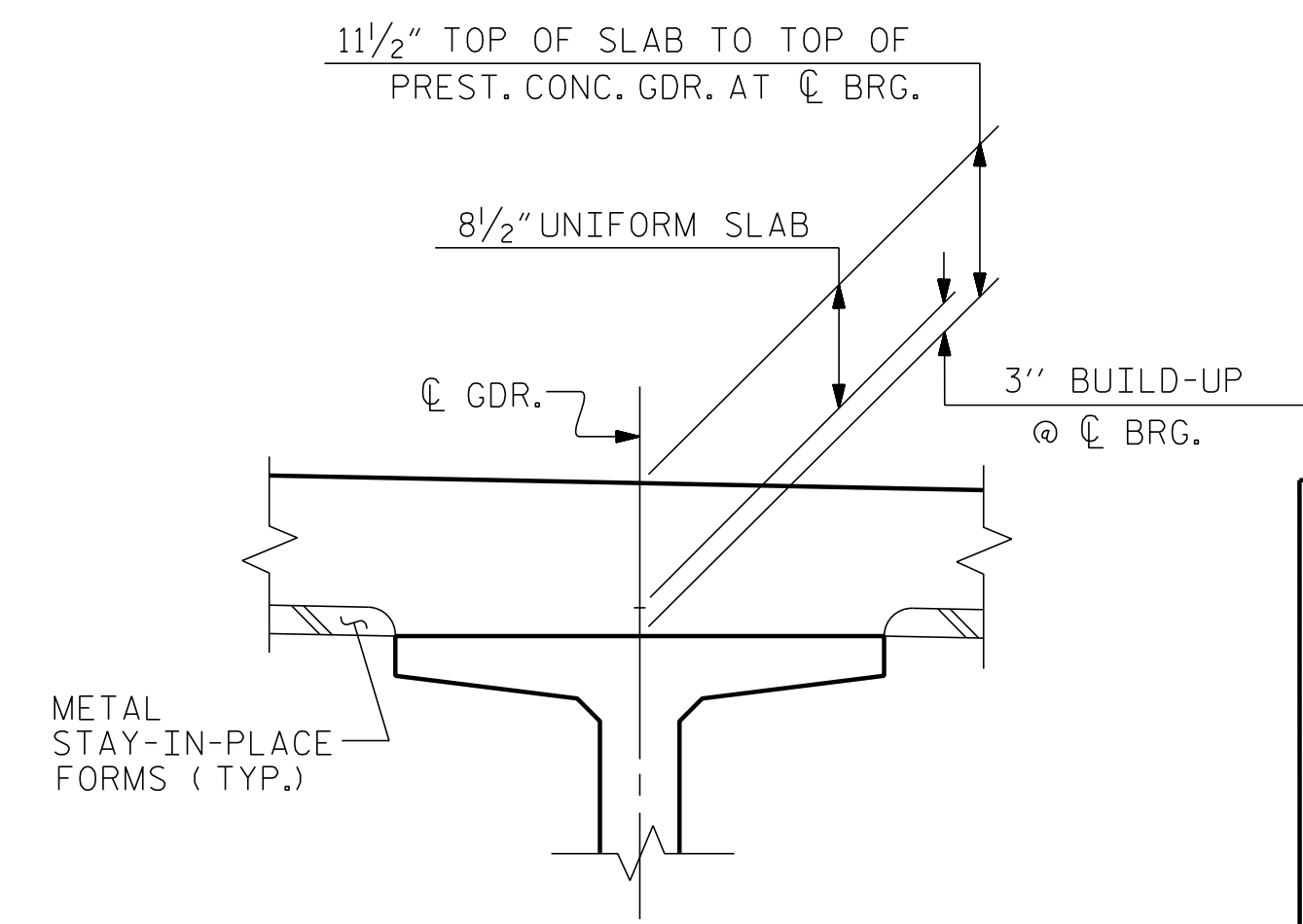
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S02-4
1			3			TOTAL SHEETS
2			4			26



TYPICAL SECTION

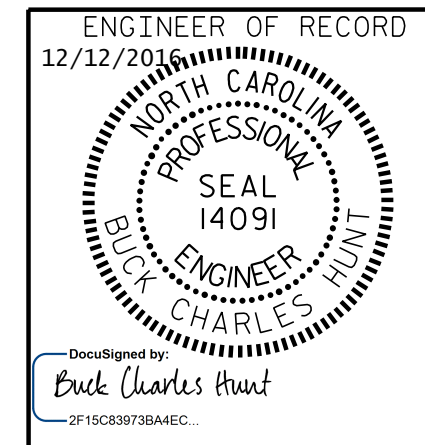


INTERIOR GIRDER EXTERIOR GIRDER
PART SECTION AT INTERMEDIATE DIAPHRAGM



DETAIL "A"

PROJECT NO. R-5719
WAYNE COUNTY
 STATION: 39+11.12 -L-
 SHEET 1 OF 2



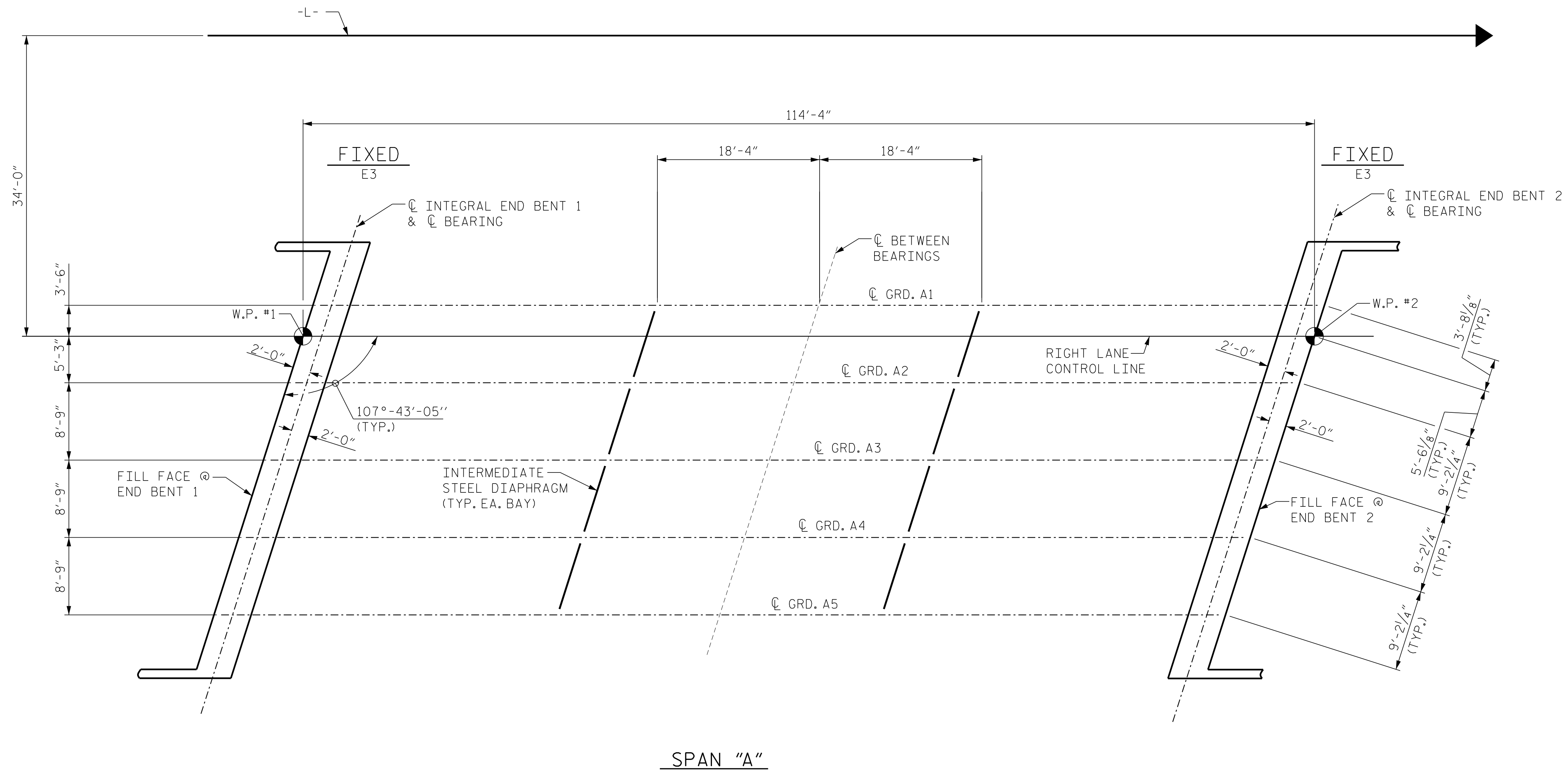
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 Raleigh, N.C. 27606
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 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE TYPICAL SECTION (RIGHT LANE)					
REVISIONS					
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1			3		
2			4		
SHEET NO.					S02-5
TOTAL SHEETS					26

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SPAN "A"
GIRDER LAYOUT

PROJECT NO. R-5719
WAYNE COUNTY
 STATION: 39+11.12 -L-

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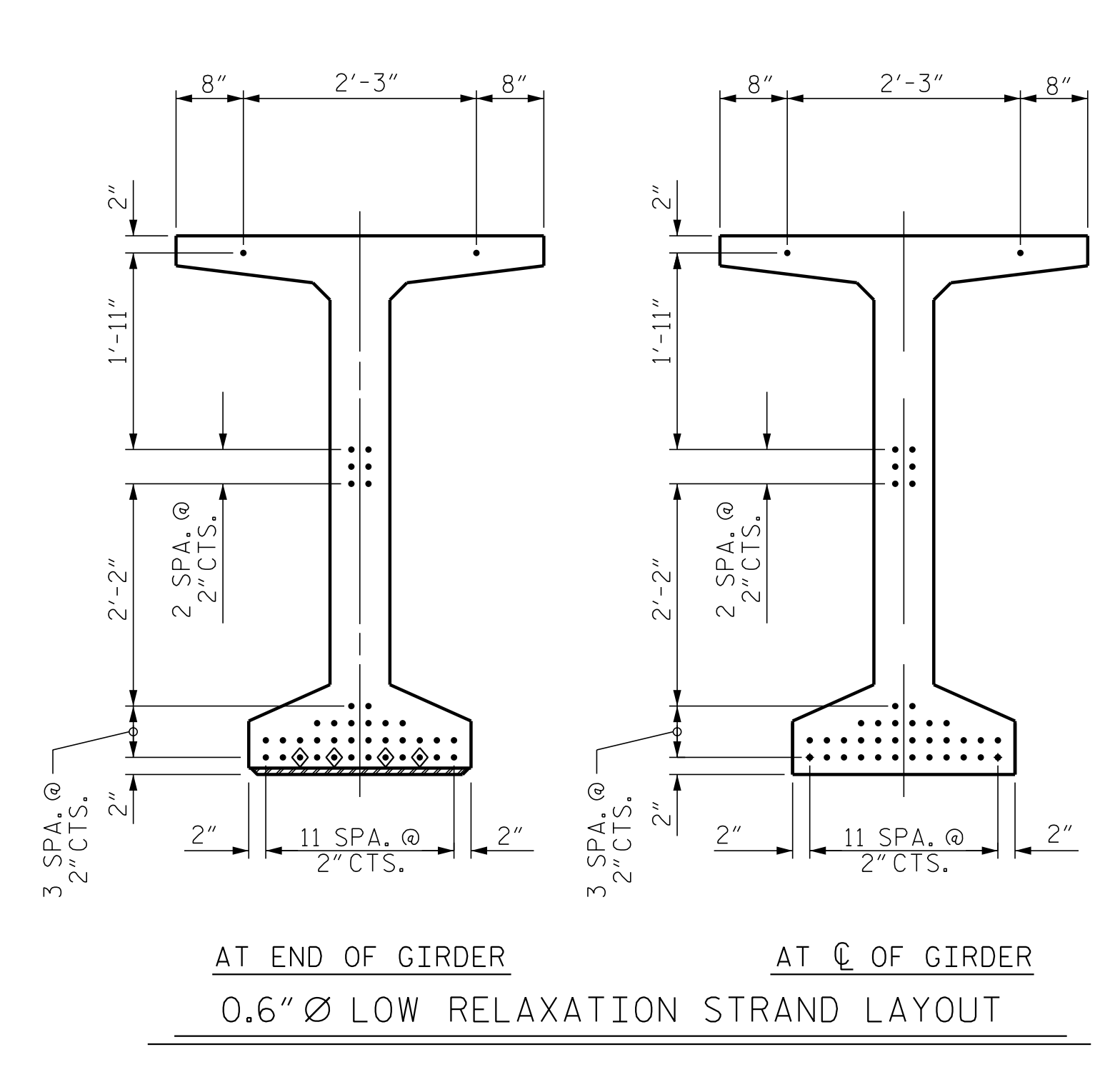
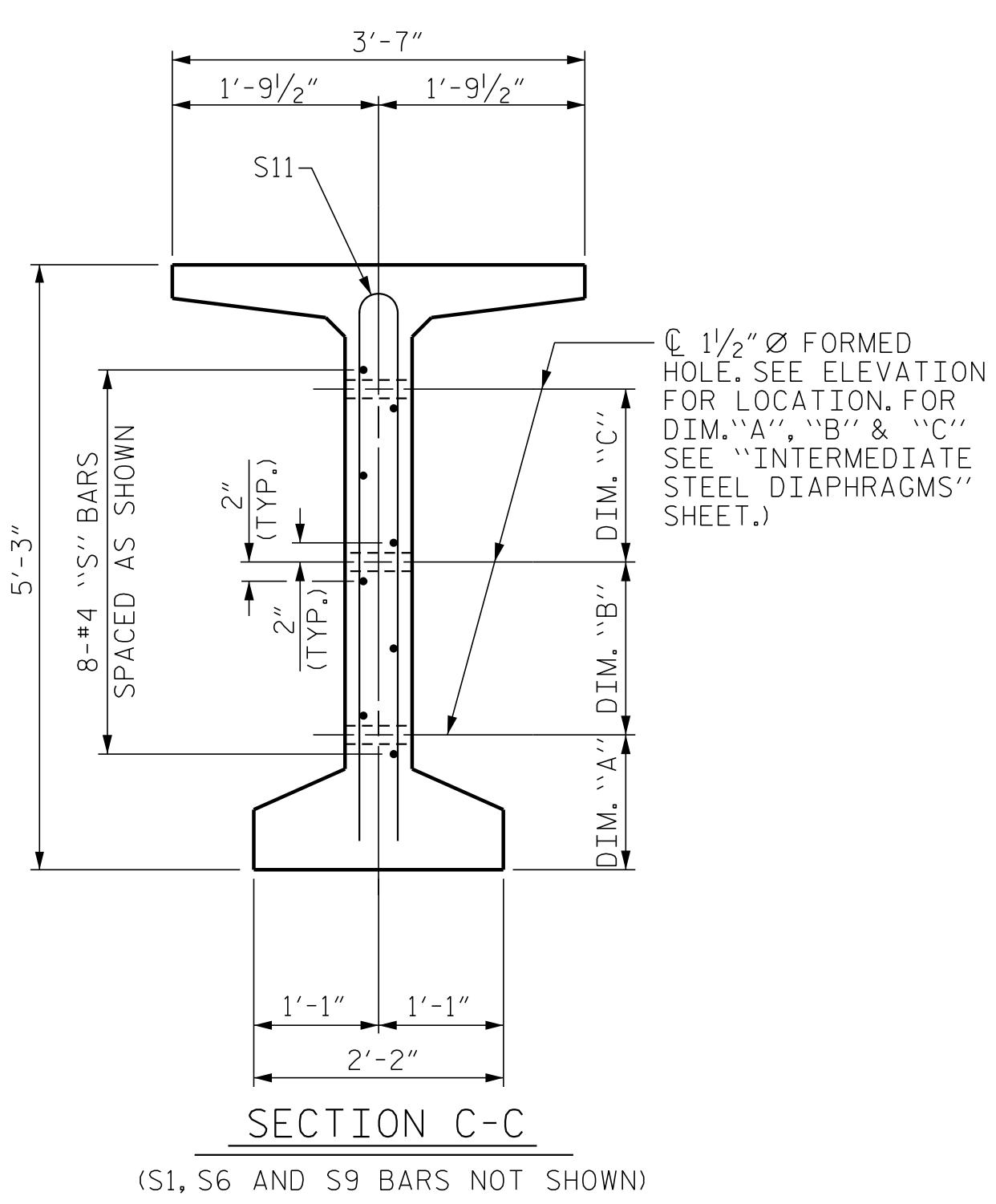
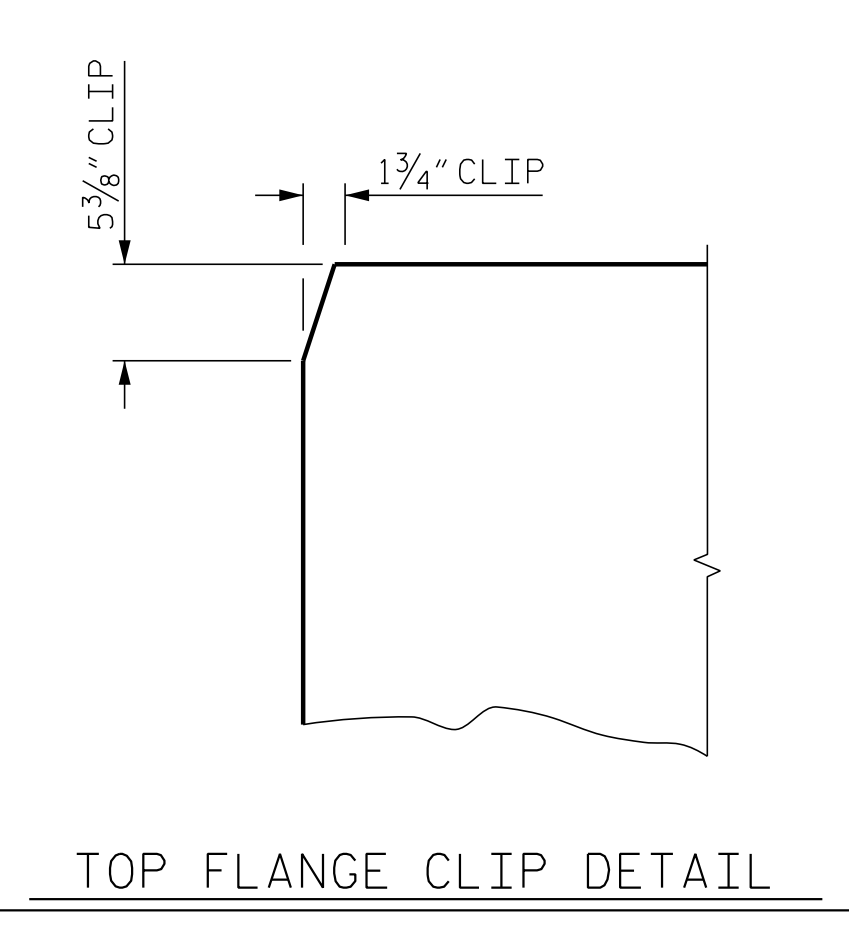
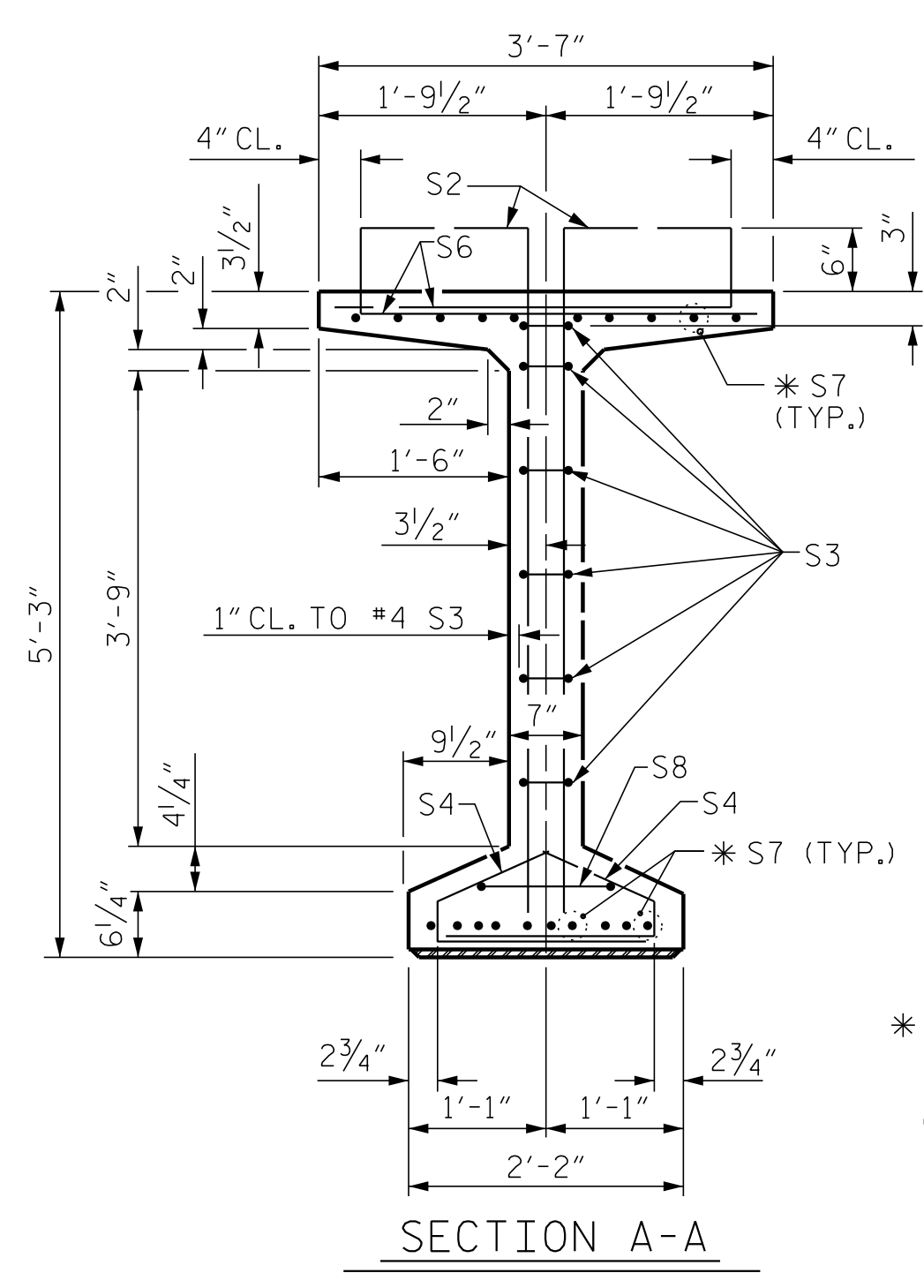
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 Chuck Charles Hunt
 2F15C8078A4EC

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 GIRDER LAYOUT
 RIGHT LANE

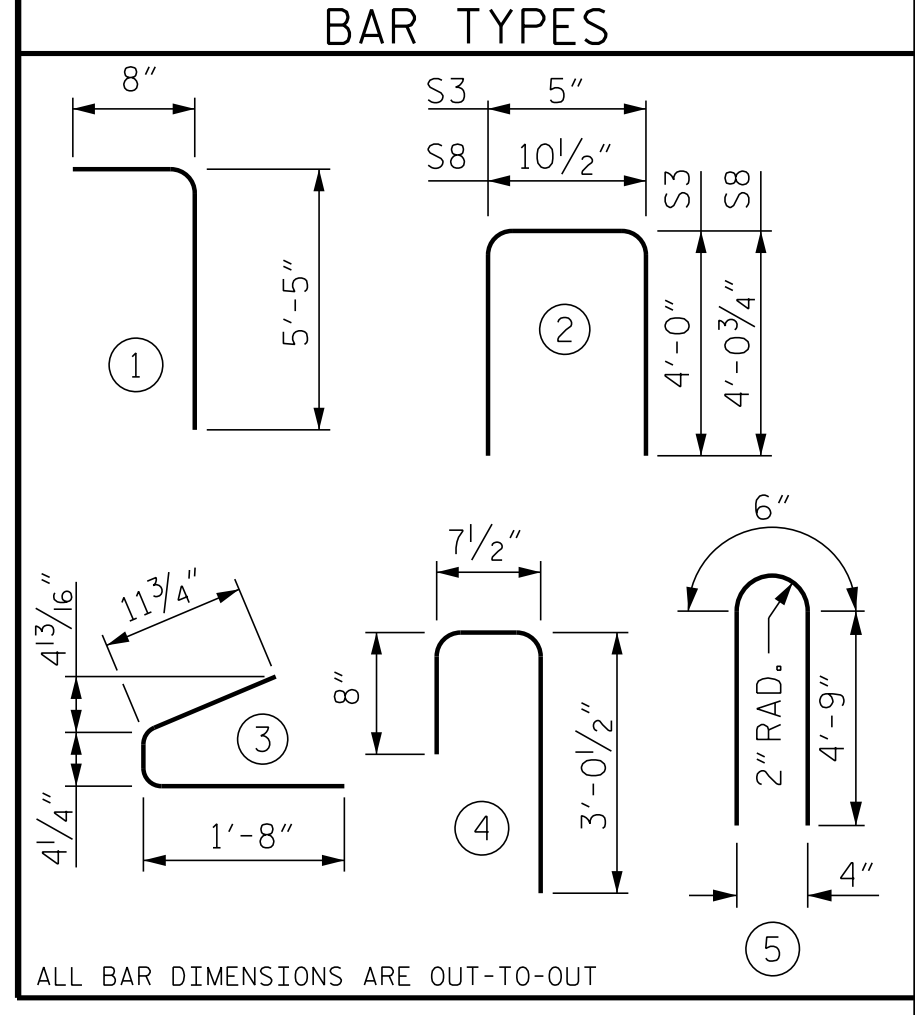
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1			3			TOTAL SHEETS
2			4			26



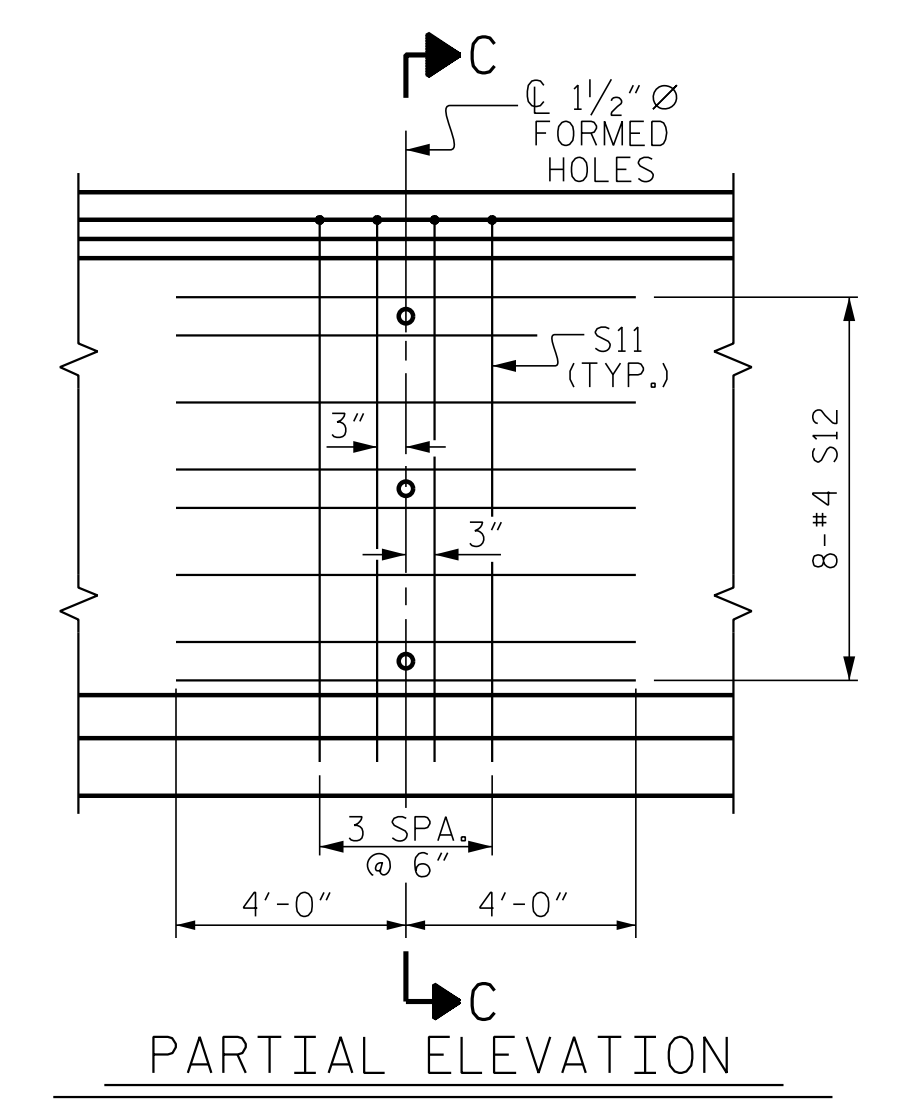
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	174	#4	1	6'-1"	707
S2	32	#6	1	6'-1"	292
S3	12	#4	2	8'-5"	67
S4	80	#4	3	3'-0"	160
S6	206	#5	4	4'-4"	931
*S7	40	#5	STR	3'-8"	153
S8	2	#5	2	9'-0"	19
S9	62	#5	STR	3'-3"	210
S10	2	#3	STR	1'-10"	1
S11	8	#5	5	10'-0"	83
S12	16	#4	STR	8'-0"	86

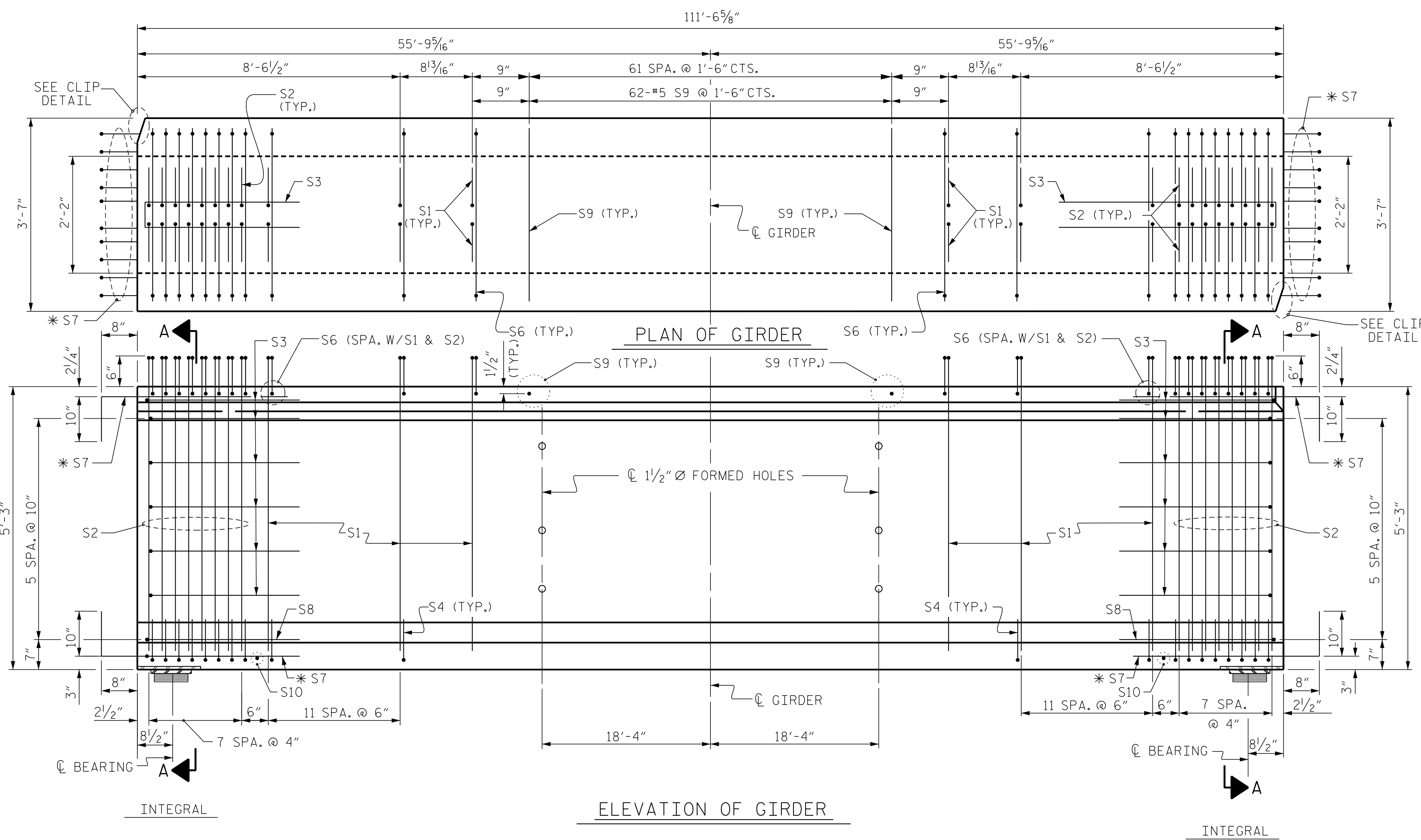
* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.



- DEBONDING LEGEND
- FULLY BONDED STRANDS
 - ◆ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER



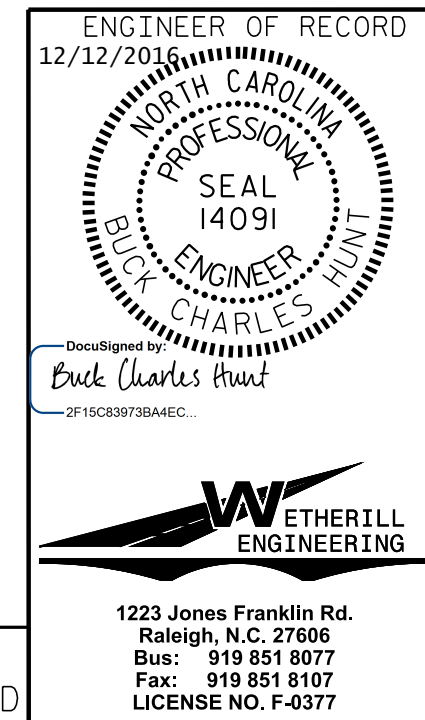
SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS



QUANTITIES FOR ONE GIRDER			
SPAN "A"	REINFORCING STEEL	9600 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
2709		22.1	40

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
5	111'-6 5/8"	557.76'

PROJECT NO. R-5719
 WAYNE COUNTY
 STATION: 39+11.12 -L-
 SHEET 1 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

63" PRESTRESSED CONCRETE MODIFIED BULB TEE RIGHT LANE

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

SHEET NO. S02-9
 TOTAL SHEETS 26

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 CHECKED BY: J. DILWORTH DATE: 12/8/15

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NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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 7200 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".

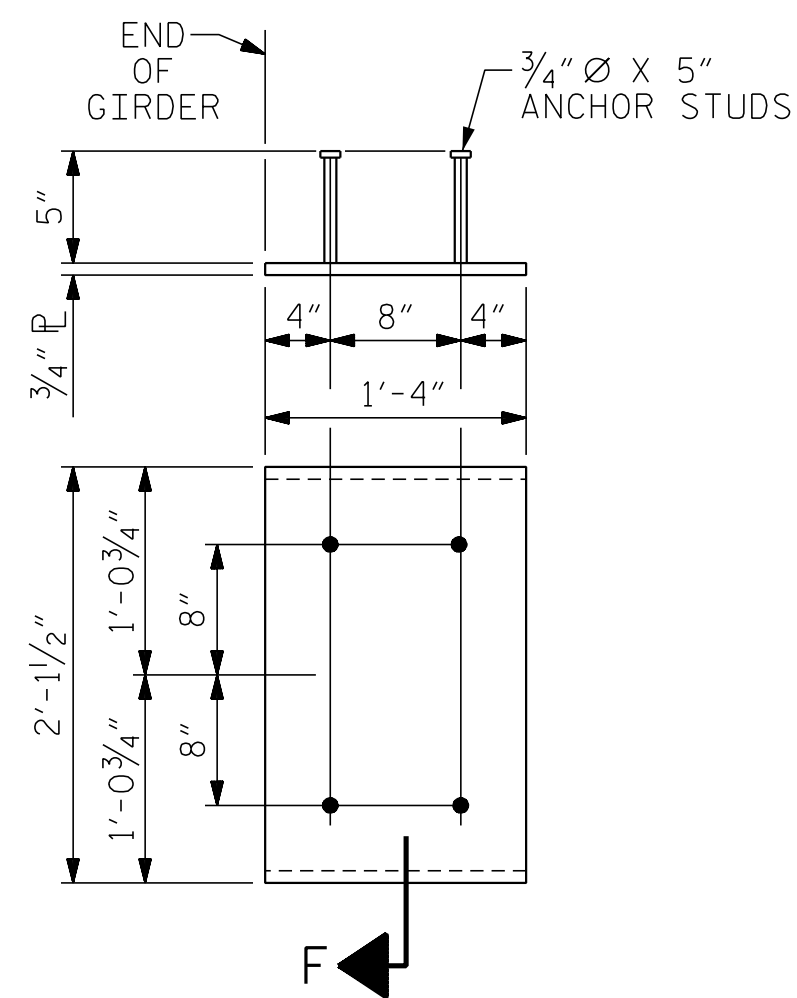
A 2" x 2" CHAMFER IS ALLOWED AT THE INTERSECTION OF THE WEB AND THE BOTTOM FLANGE OF THE 63" AND 72" MODIFIED BULB TEES ONLY.

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

FOR EMBEDDED CLIPS FOR PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

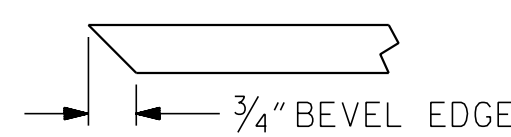
0.6" Ø LOW RELAXATION	DEAD LOAD DEFLECTION TABLE FOR GIRDERS 1 THRU 5																				
TWENTIETH POINTS	0	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.040	0.080	0.116	0.151	0.179	0.207	0.225	0.242	0.249	0.255	0.249	0.242	0.225	0.207	0.179	0.151	0.116	0.080	0.040	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.024	0.048	0.072	0.095	0.113	0.131	0.143	0.155	0.159	.163	0.159	0.155	0.143	0.131	0.113	0.095	0.048	0.048	0.024	0.000
FINAL CAMBER ↑	0	3/16"	3/8"	1/2"	11/16"	13/16"	7/8"	1"	11/16"	11/16"	11/8"	11/16"	11/16"	1"	7/8"	13/16"	11/16"	1/2"	3/8"	3/16"	0"

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



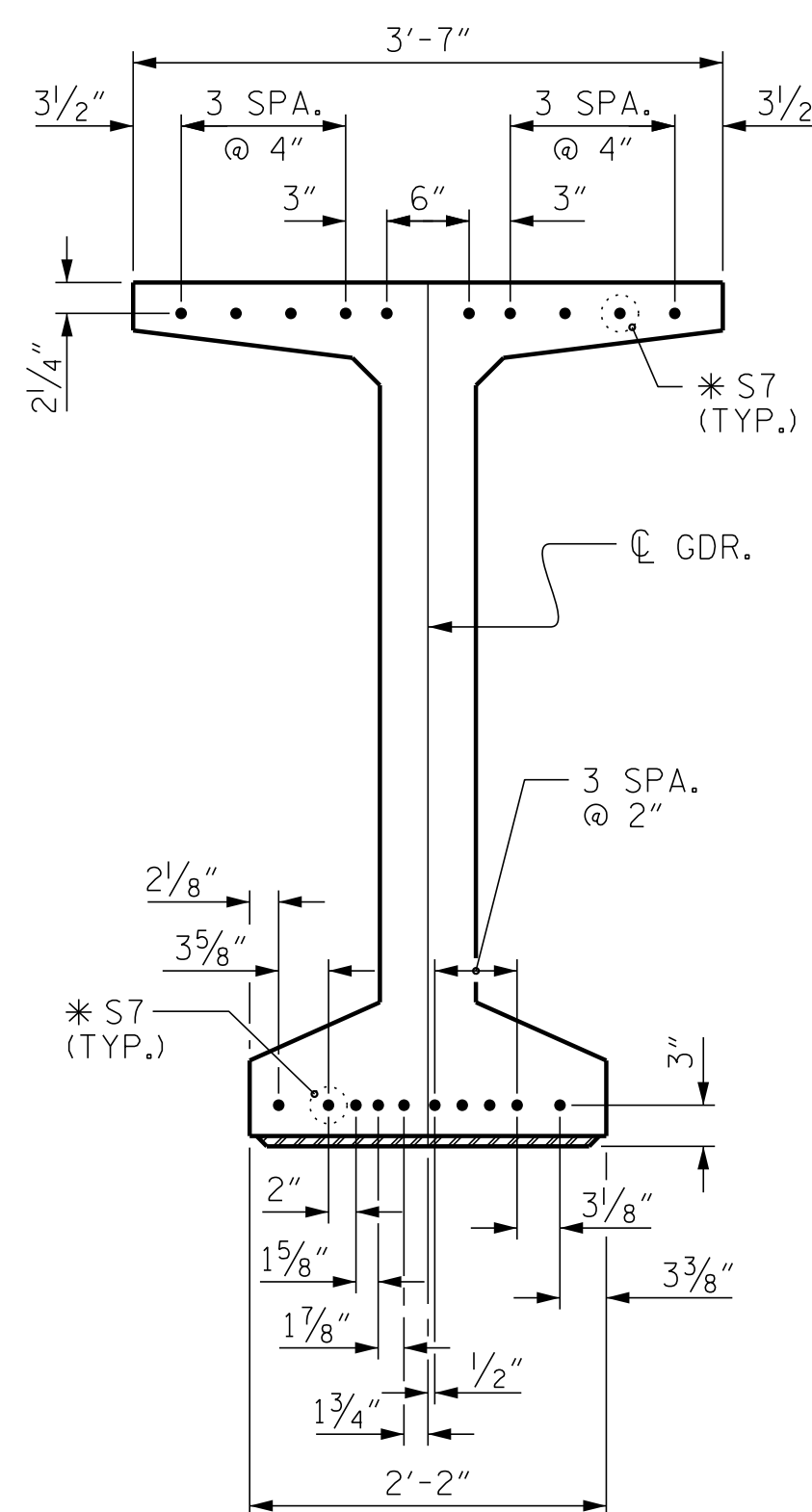
EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER AND 63" MODIFIED BULB TEES

(2 REQ'D PER GIRDER)



SECTION "F"

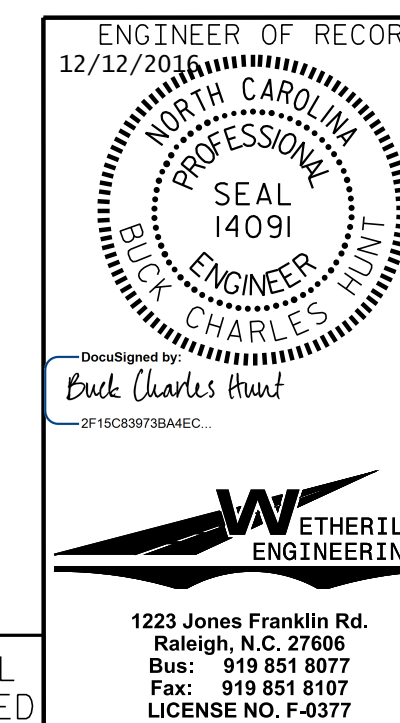
(SEE NOTES)



DETAIL "C"

PROJECT NO. R-5719
WAYNE COUNTY
STATION: 39+11.12 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
PRESTRESSED CONCRETE
GIRDER
DETAILS
RIGHT LANE

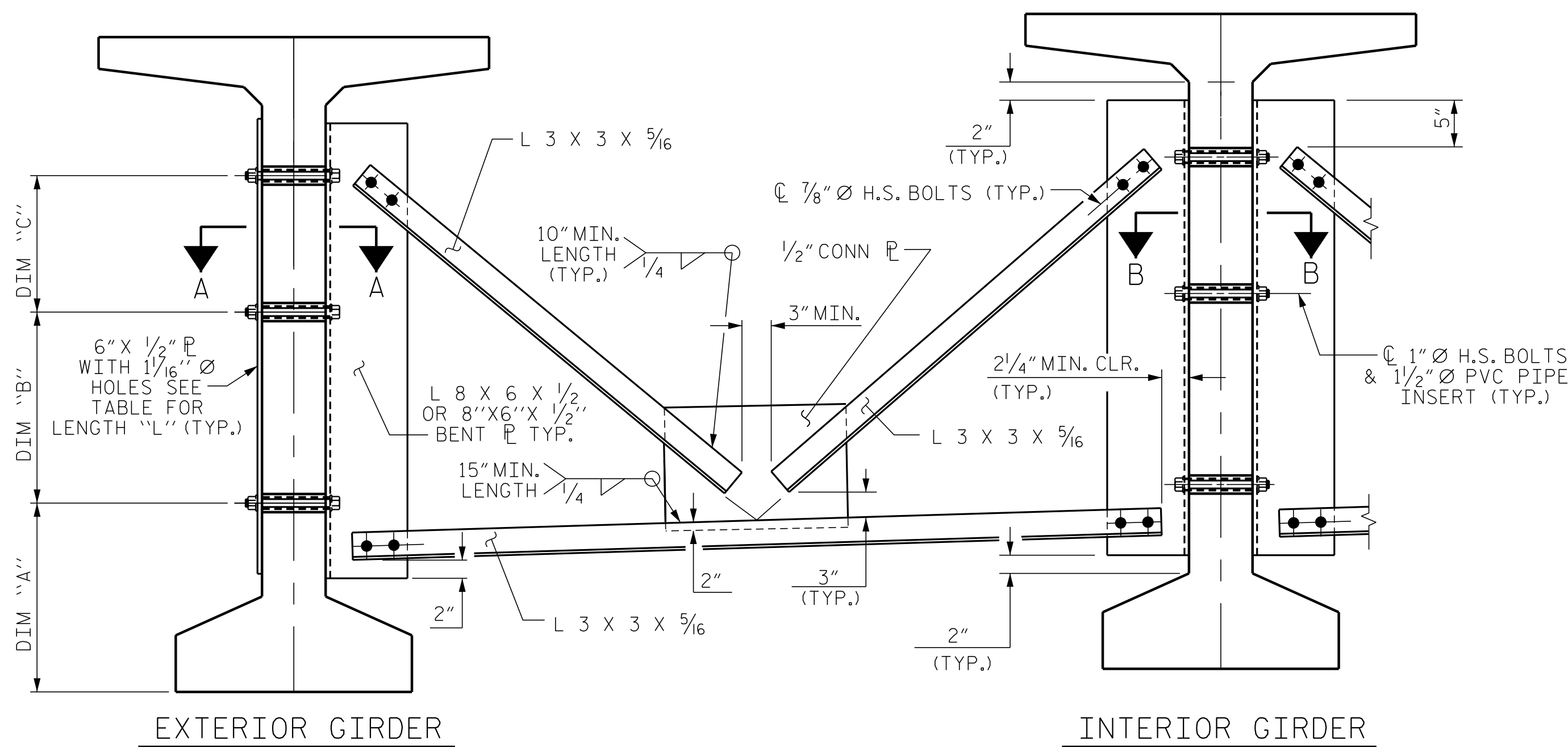
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NO.	BY:	DATE:	NO.	DATE:
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TOTAL SHEETS: 26

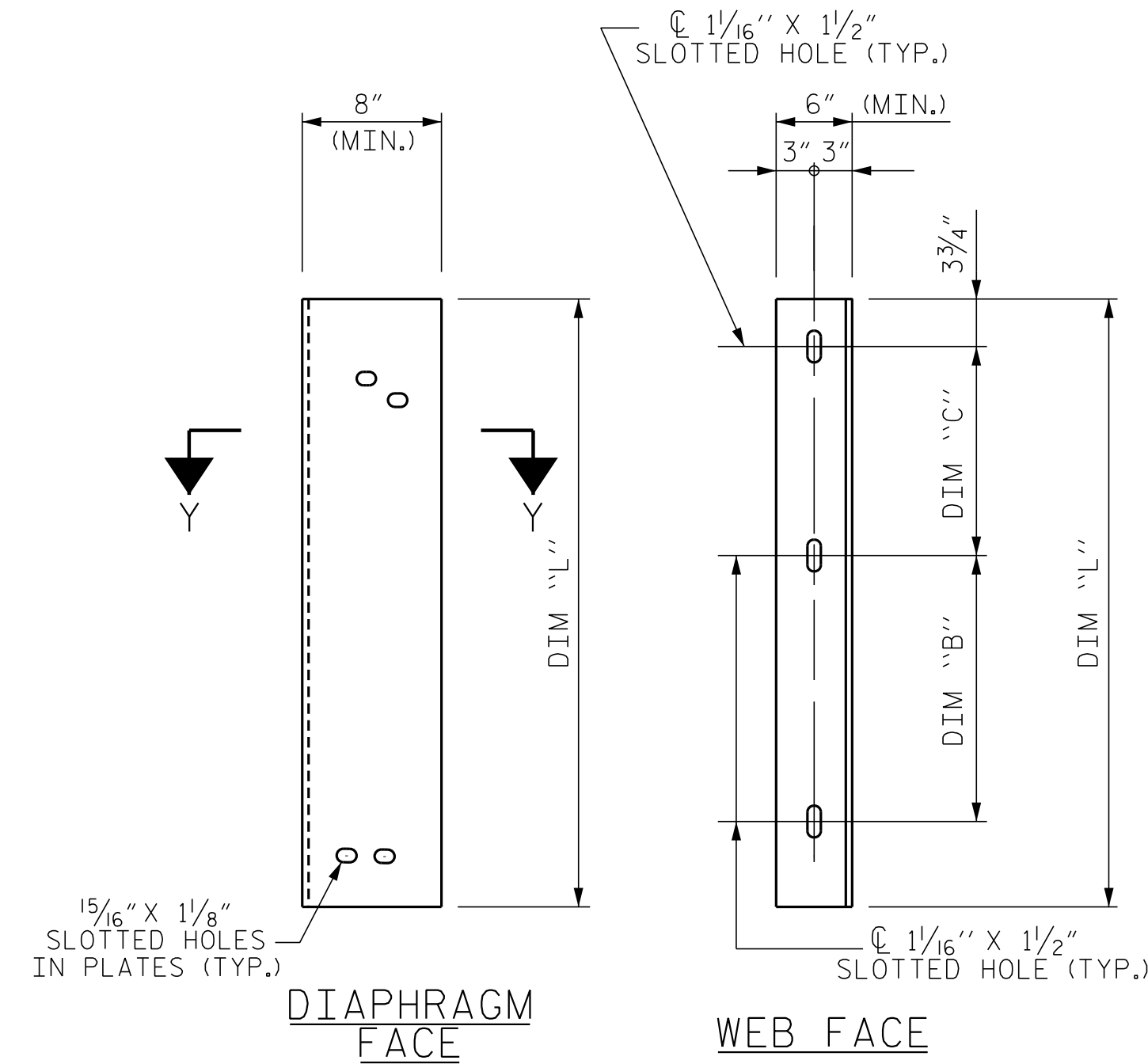
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PART SECTION AT INTERMEDIATE DIAPHRAGM



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 ANGLE 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, 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.

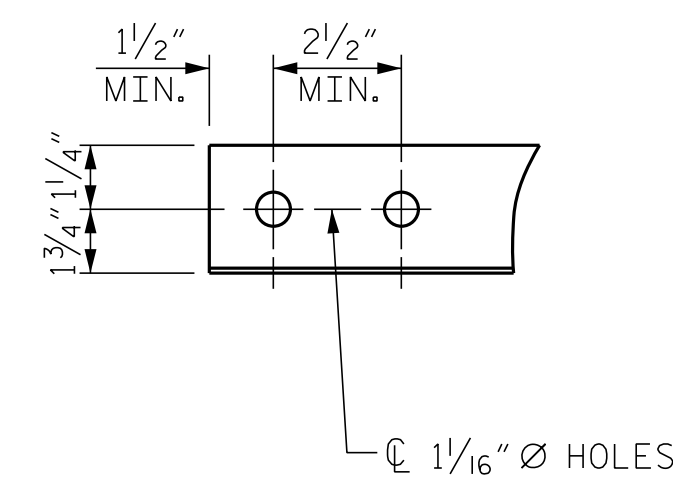
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

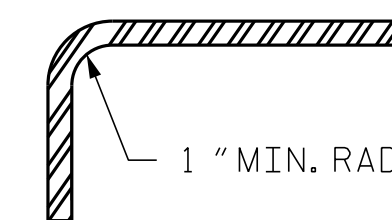
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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.

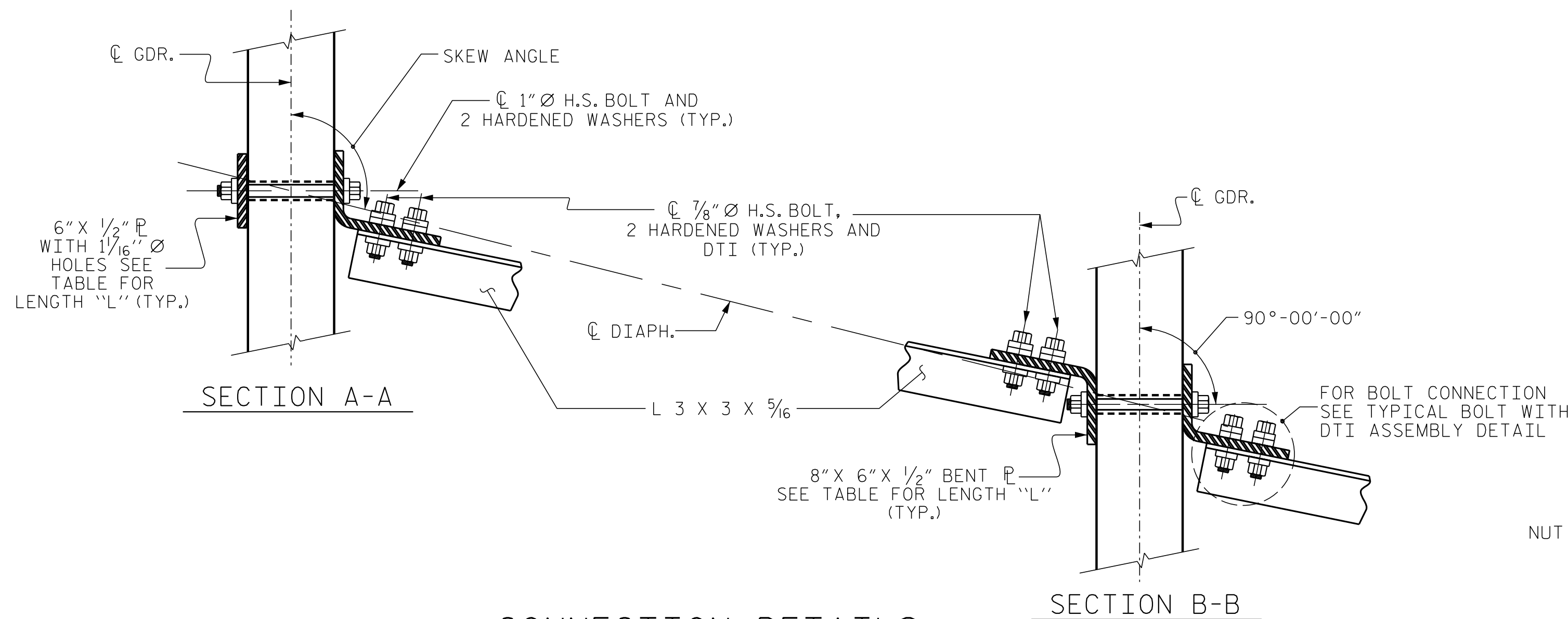


ANGLE END
(L 3 x 3 x 5/16)

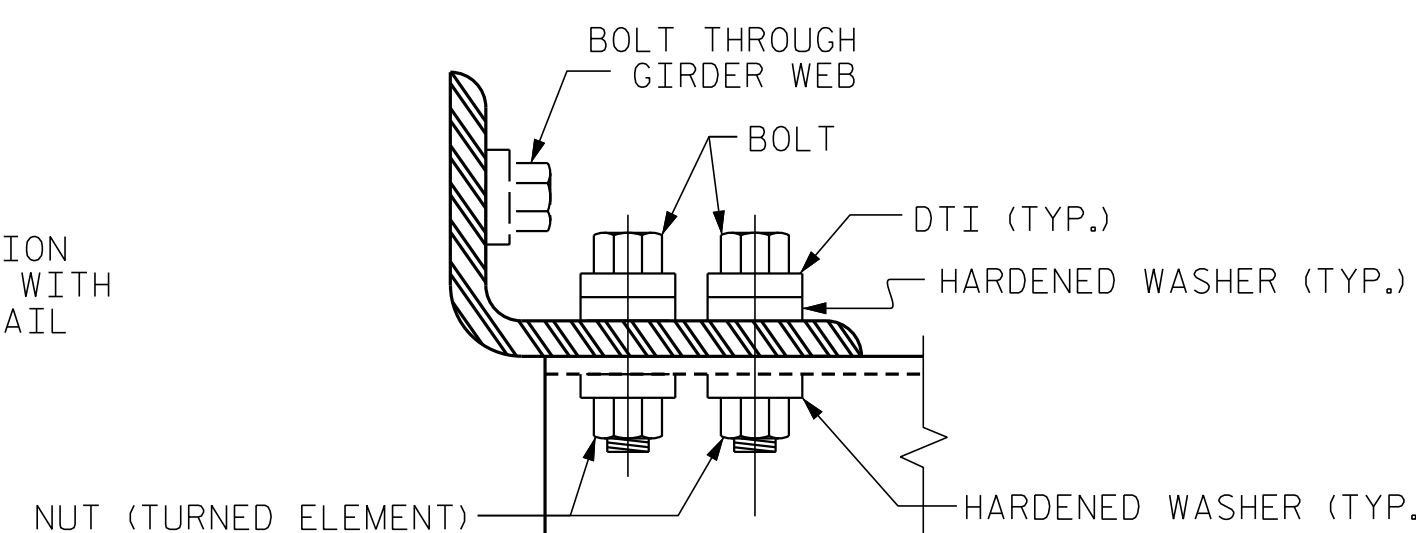


SECTION Y-Y

CONNECTOR PLATE DETAIL



CONNECTION DETAILS

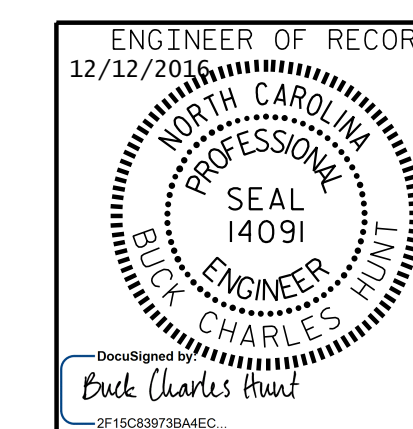


BOLT WITH DTI ASSEMBLY DETAIL

TABLE

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
63" BULB TEE	1'-4 1/2"	1'-2"	1'-7 1/4"	3'-5"

PROJECT NO. R-5719
WAYNE COUNTY
STATION: 39+11.12 -L-



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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
INTERMEDIATE STEEL
DIAPHRAGMS FOR 63"
MODIFIED BULB TEE
PRESTRESSED
CONCRETE GIRDERS

REVISIONS

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

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S02-11
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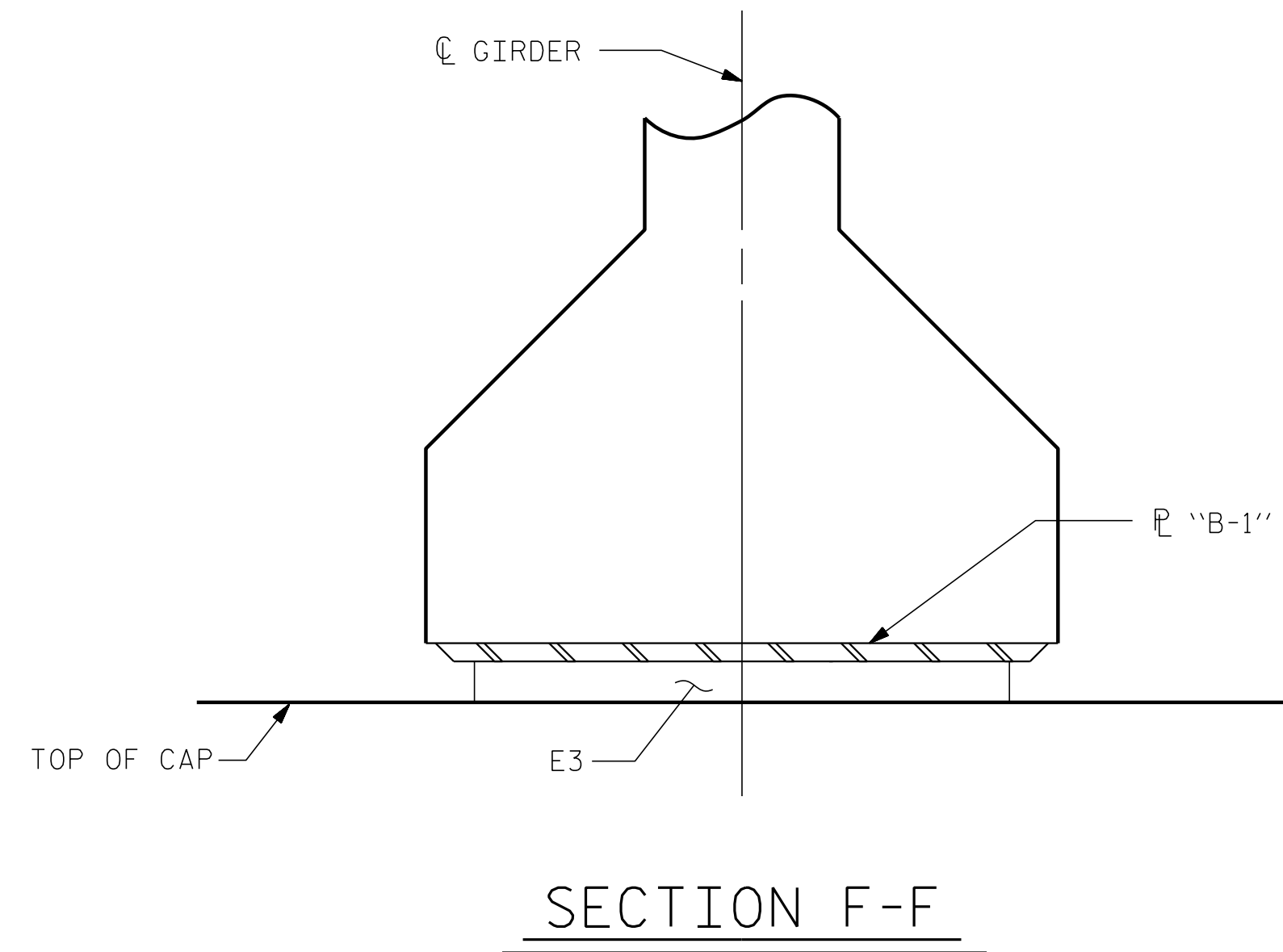
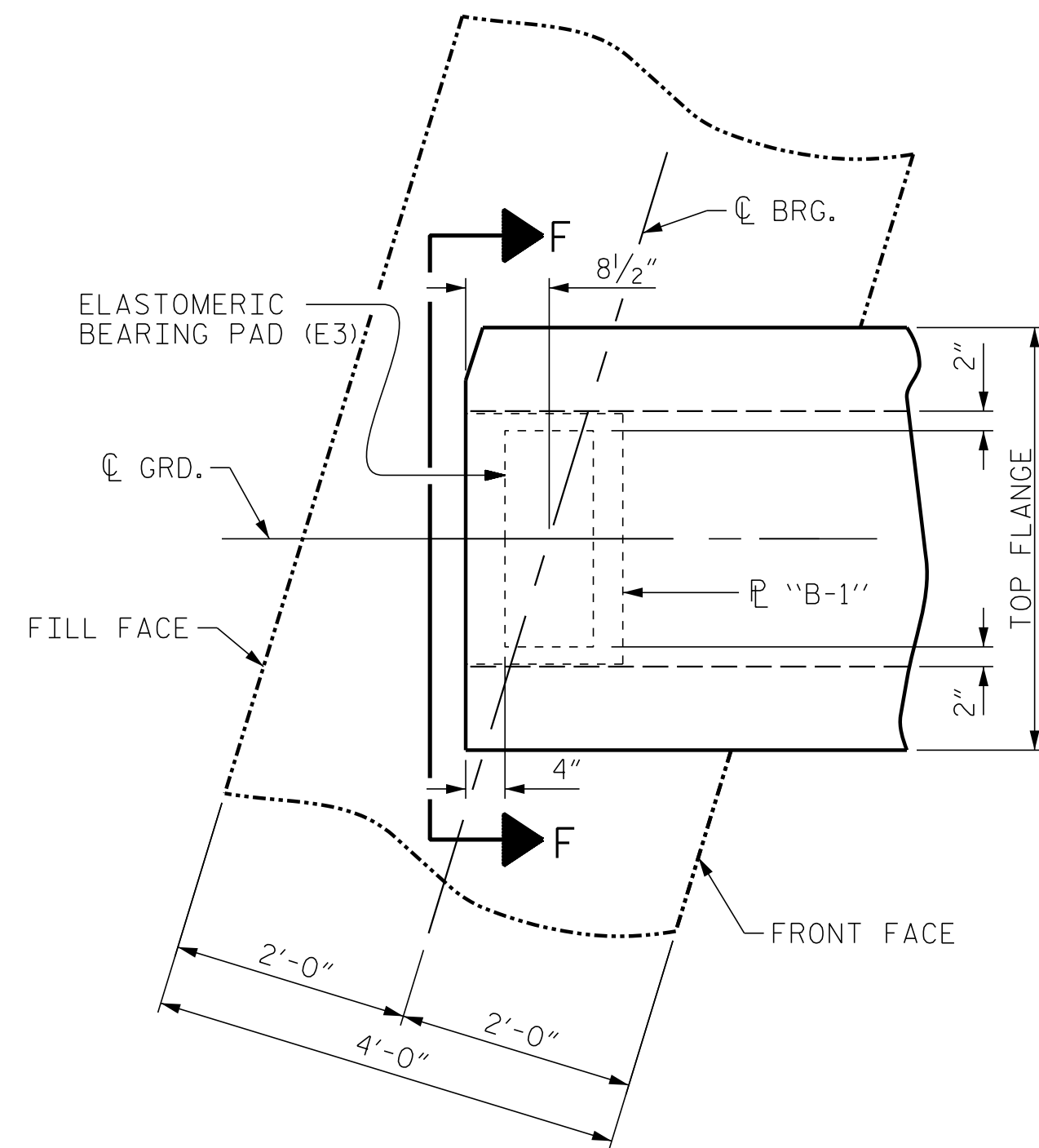
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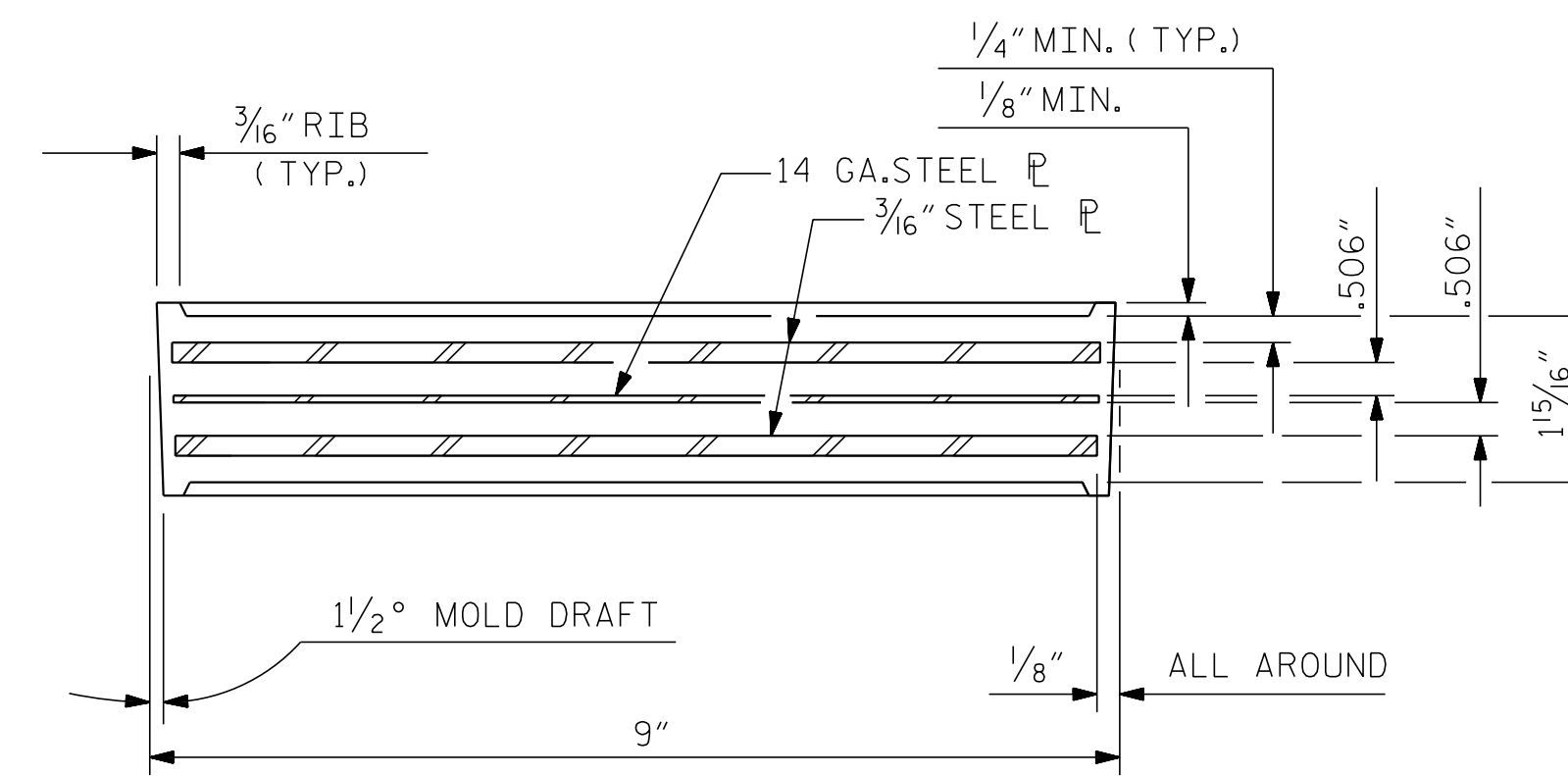
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

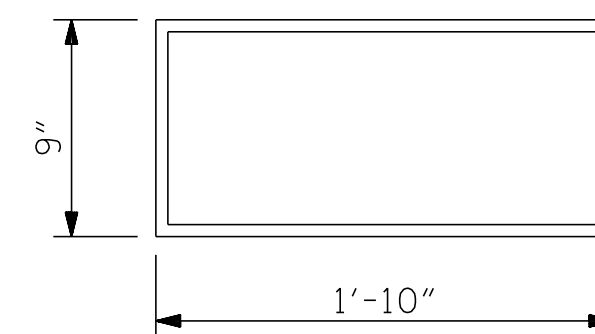
MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE IV	225 k



TYPICAL PLAN GIRDERS @ INTEGRAL END BENT

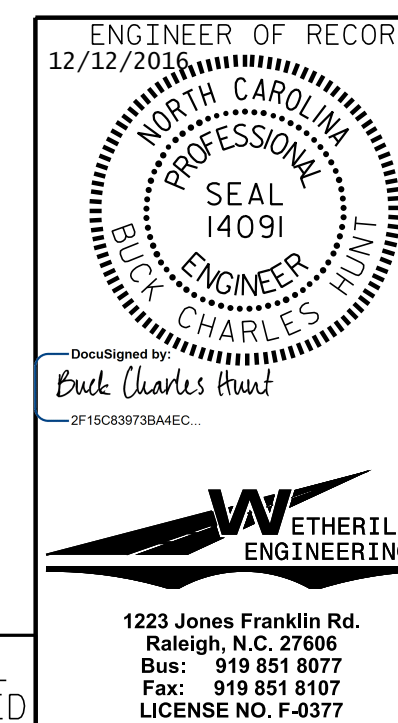


TYPICAL SECTION OF ELASTOMERIC BEARINGS



E3 (10 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE IV

PROJECT NO. R-5719
WAYNE COUNTY
STATION: 39+11.12 -L-



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

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1			3	
2			4	

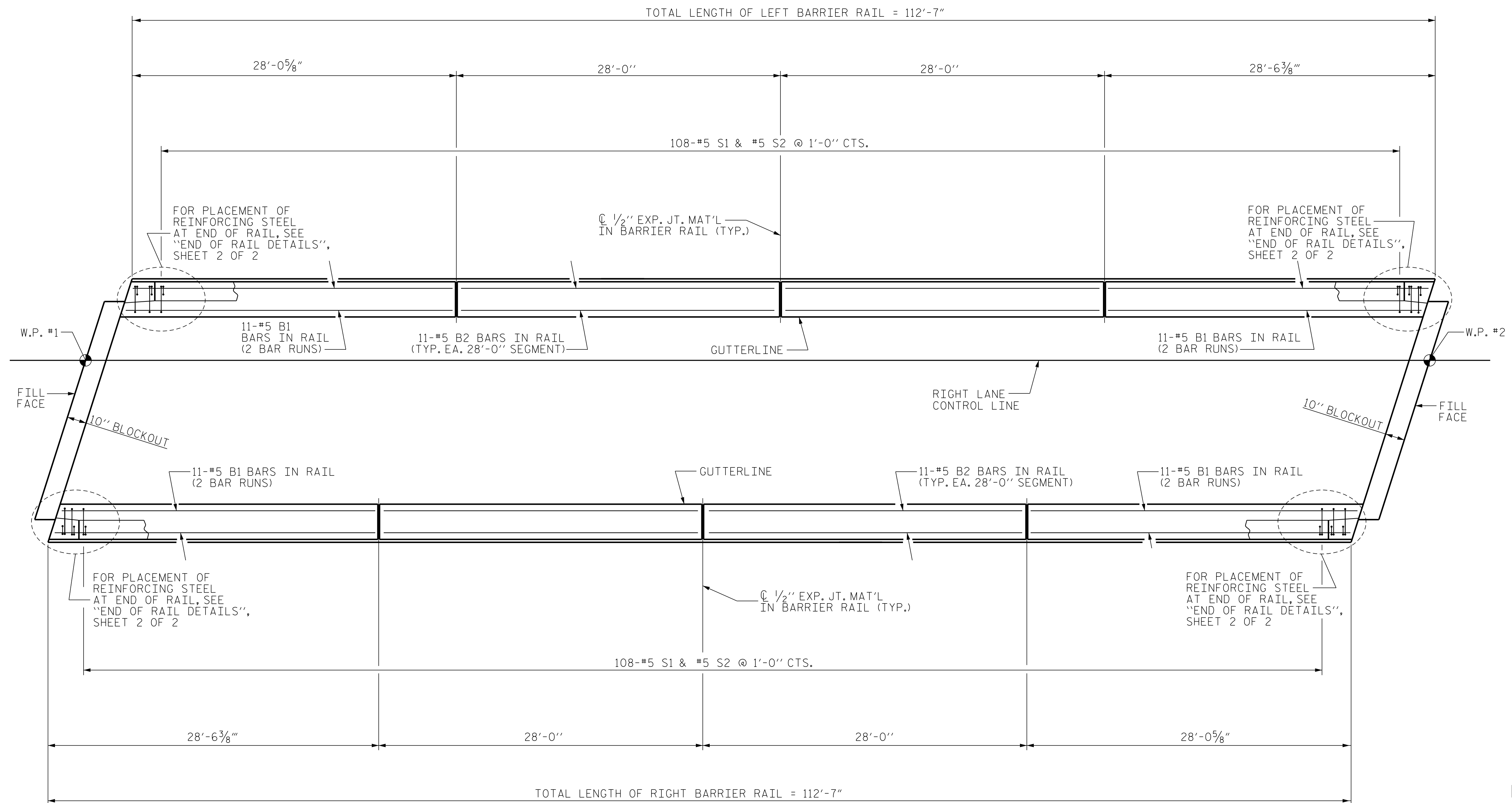
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PLAN OF CONCRETE BARRIER RAIL

ALL DIMENSIONS ARE MEASURED ALONG OUTSIDE FACE OF BARRIER RAIL

PROJECT NO. R-5719
WAYNE COUNTY
 STATION: 39+11.12 -L-

SHEET 1 OF 2

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 12/12/2016

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 Buck Charles Hunt
 2F15C9878BA8EC

 WETHERILL
 ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA					
DEPARTMENT OF TRANSPORTATION					
RALEIGH					
SUPERSTRUCTURE					
CONCRETE BARRIER RAIL					
RIGHT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S02-13
TOTAL SHEETS					26

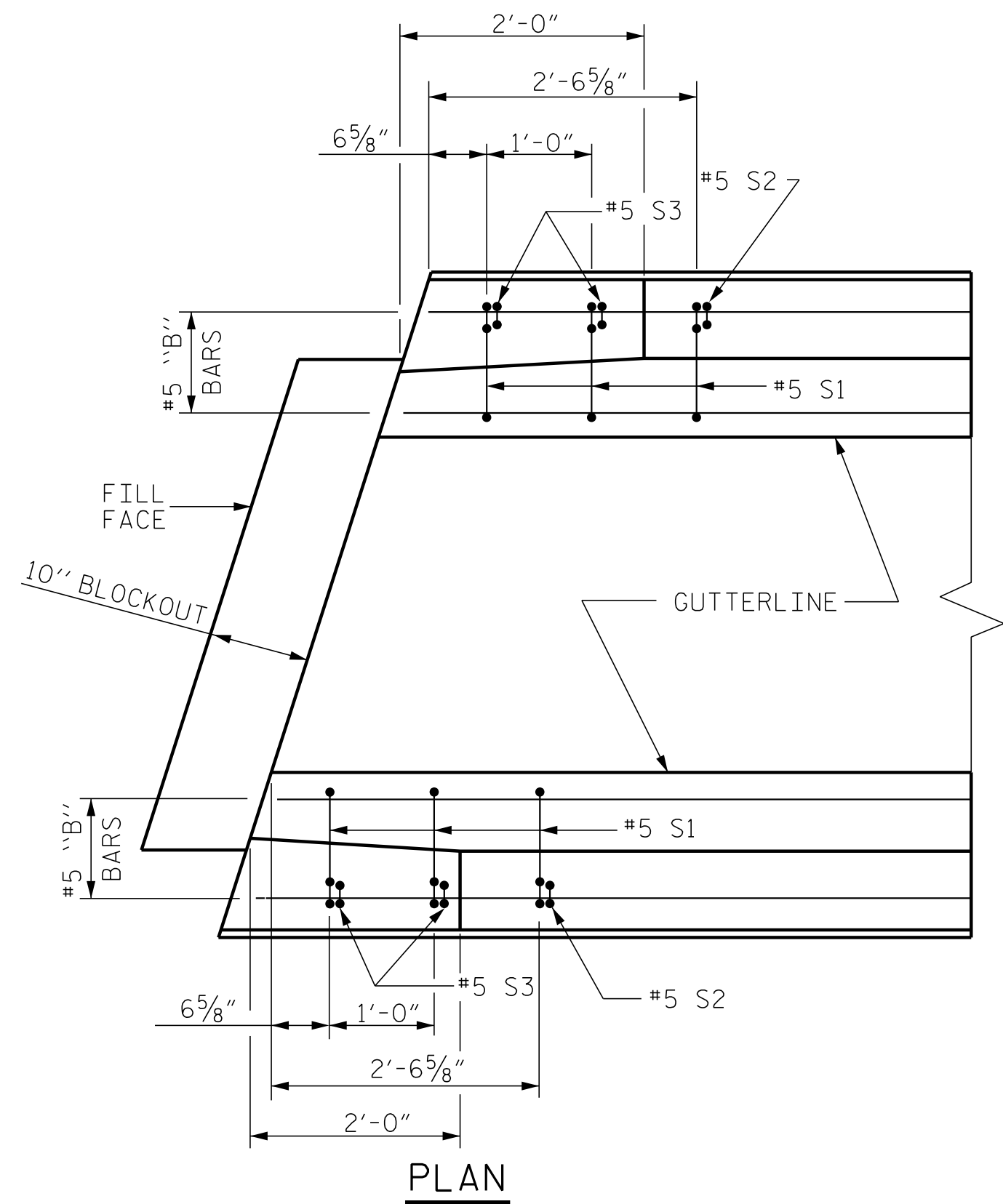
NOTES

THE BARRIER RAIL SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

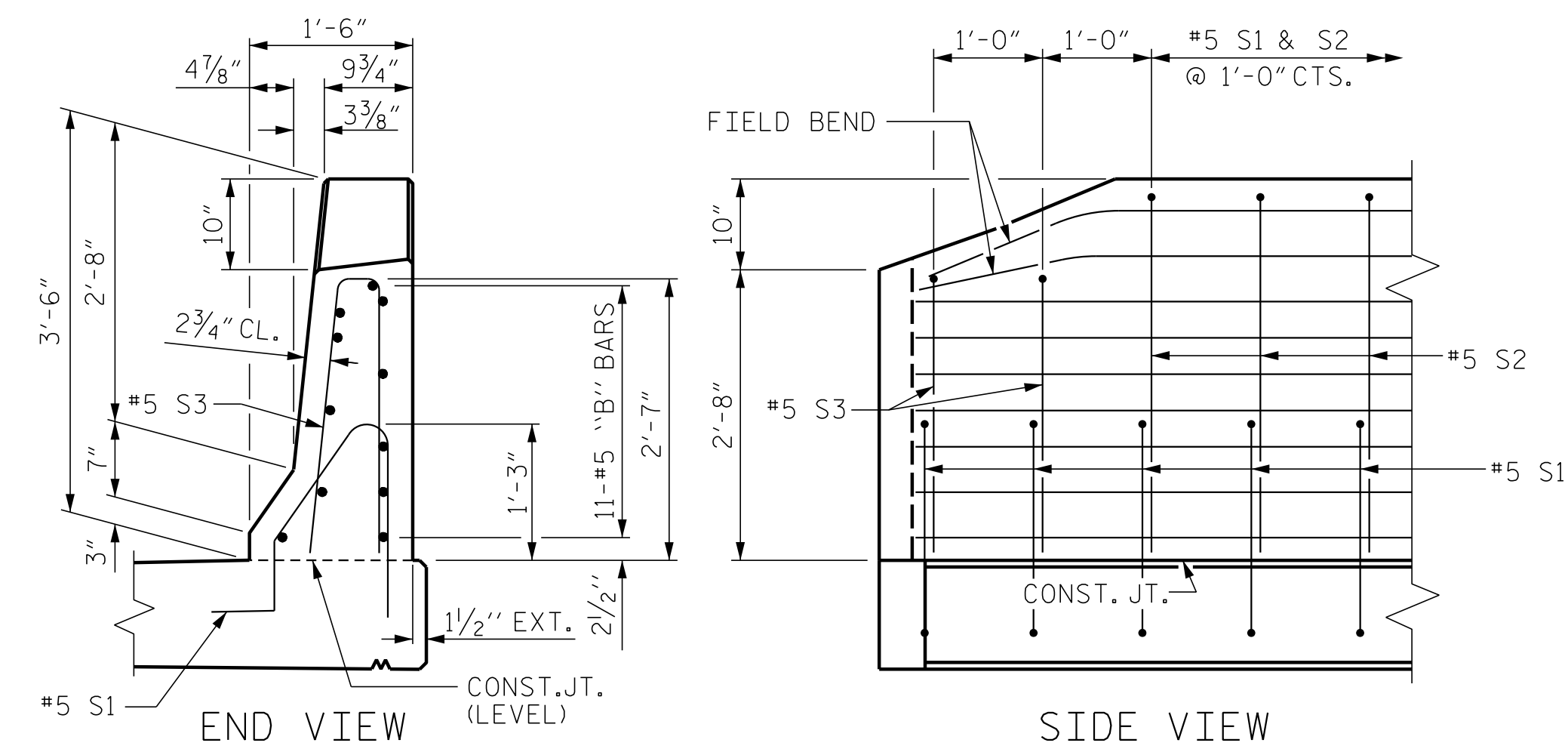
ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

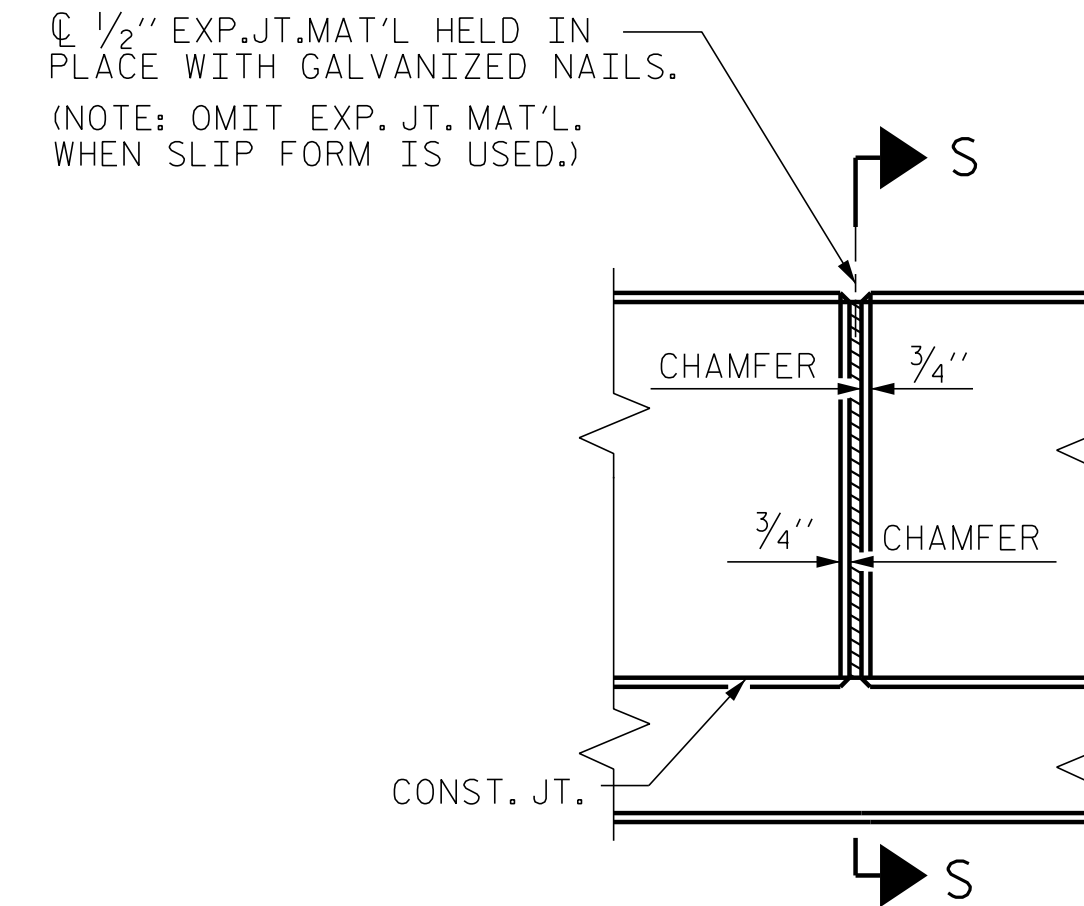
THE #5 S1 & S2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN THE BARRIER RAIL.



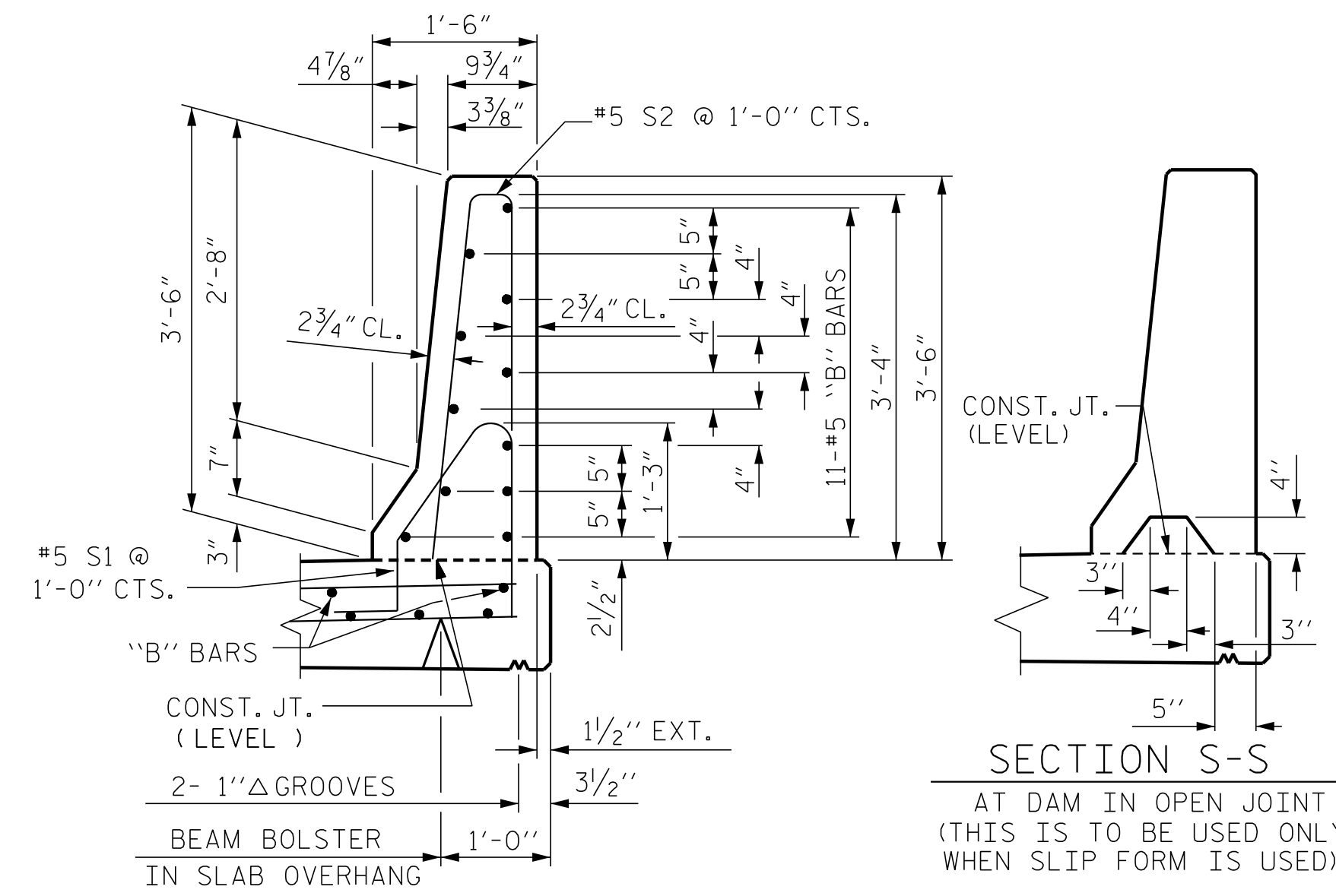
PLAN



END OF RAIL DETAILS



ELEVATION AT EXPANSION JOINTS

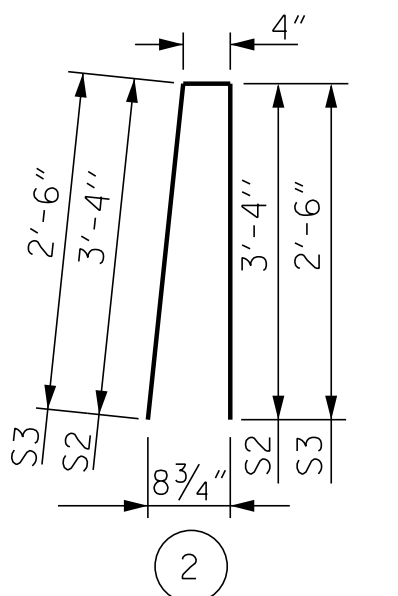
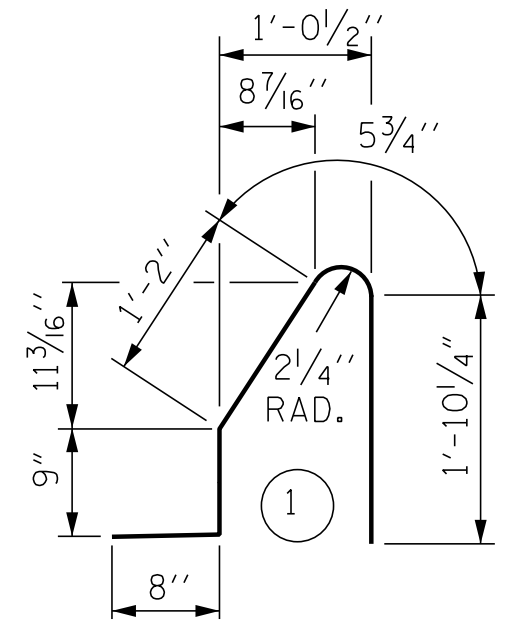


SECTION THRU RAIL

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

BARRIER RAIL DETAILS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

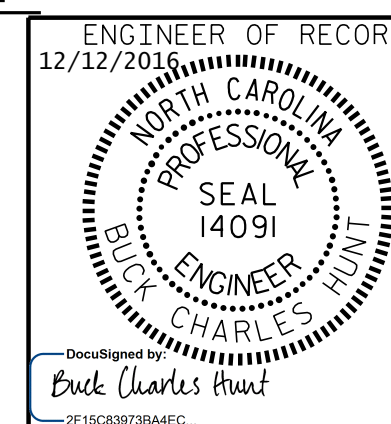
BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* S1	224	#5	1	4'-11"	1149
* S2	216	#5	2	7'-0"	1577
* S3	8	#5	2	5'-4"	45
* B1	88	#5	STR.	15'-10"	1453
* B2	44	#5	STR.	27'-8"	1270

* EPOXY COATED REINFORCING STEEL 5494 LBS.
CLASS AA CONCRETE 30.6 CU. YDS.
CONCRETE BARRIER RAIL 225.17 LIN. FT.

PROJECT NO. R-5719
WAYNE COUNTY
STATION: 39+11.12 -L-

SHEET 2 OF 2



1223 Jones Franklin Rd.
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
CONCRETE
BARRIER RAIL
RIGHT LANE

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

SHEET NO.
S02-14
TOTAL SHEETS
26

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : J. PENDERGRAFT	DATE : 12/15
CHECKED BY : J. DILWORTH	DATE : 12/15
DRAWN BY : ARB 5/87	REV. 10/1/11 MAA/GM
CHECKED BY : SJD 9/87	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM

NOTES

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

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.)

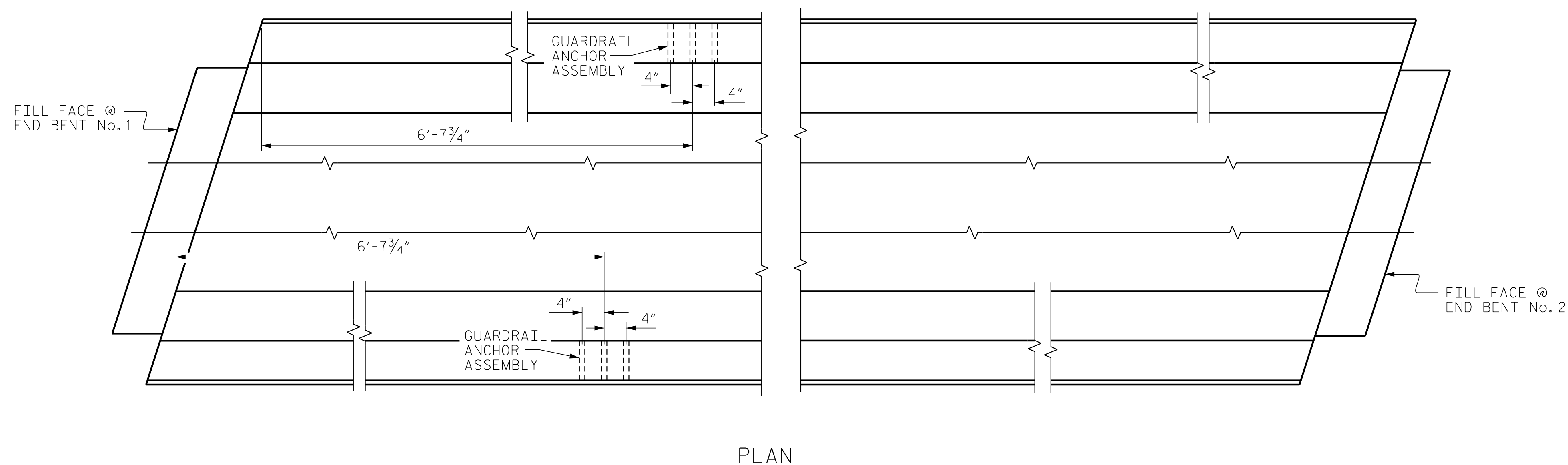
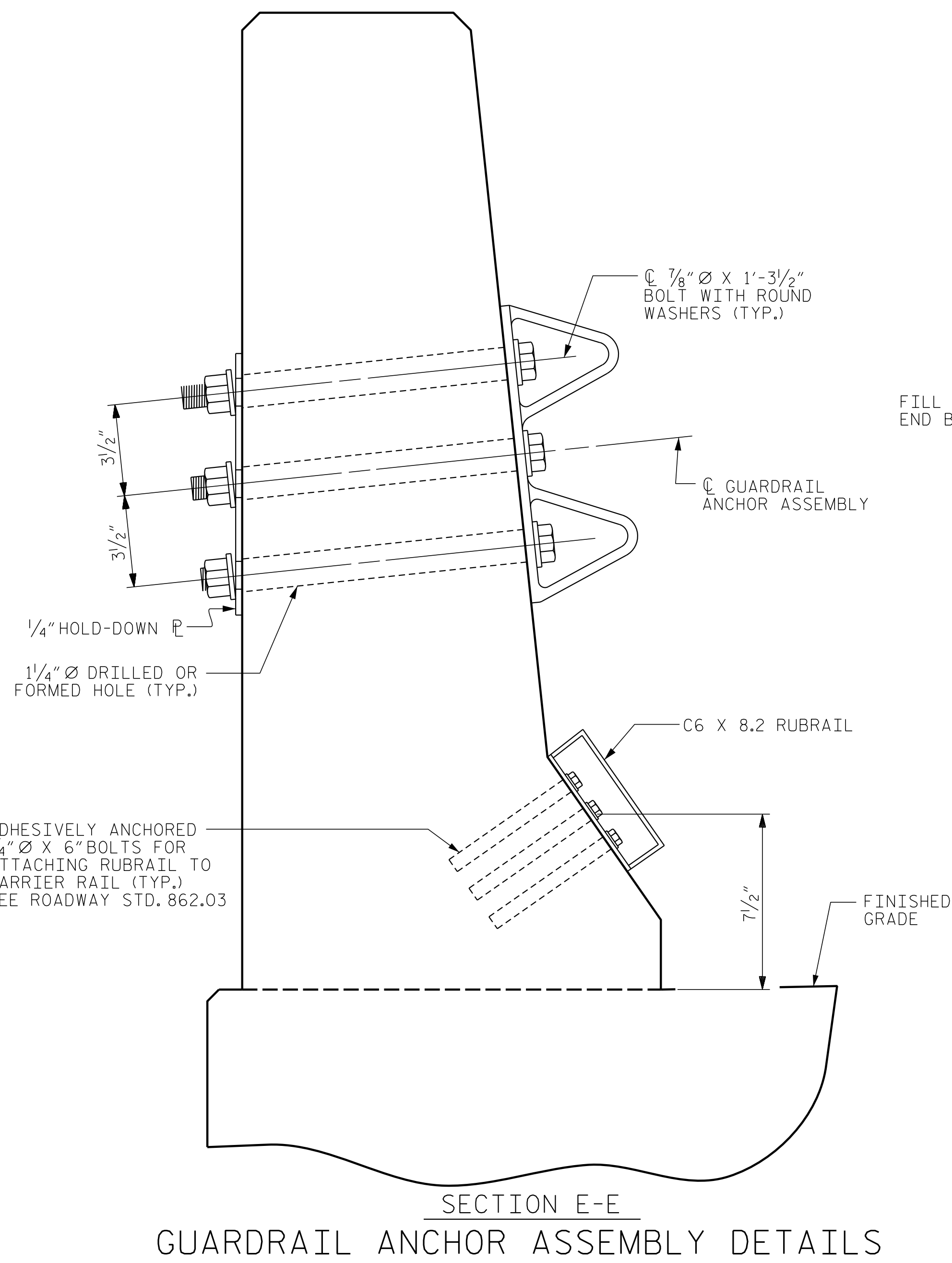
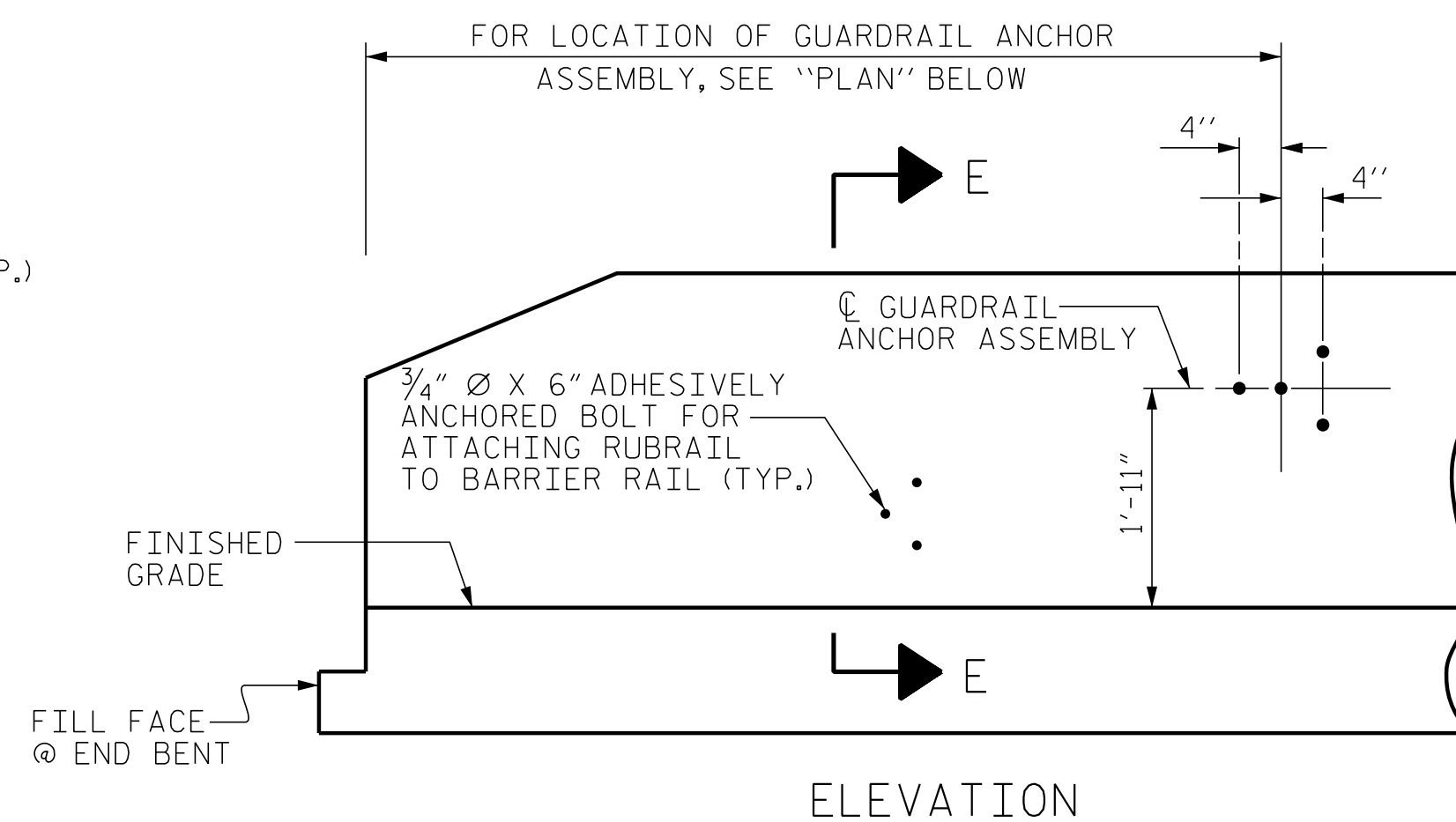
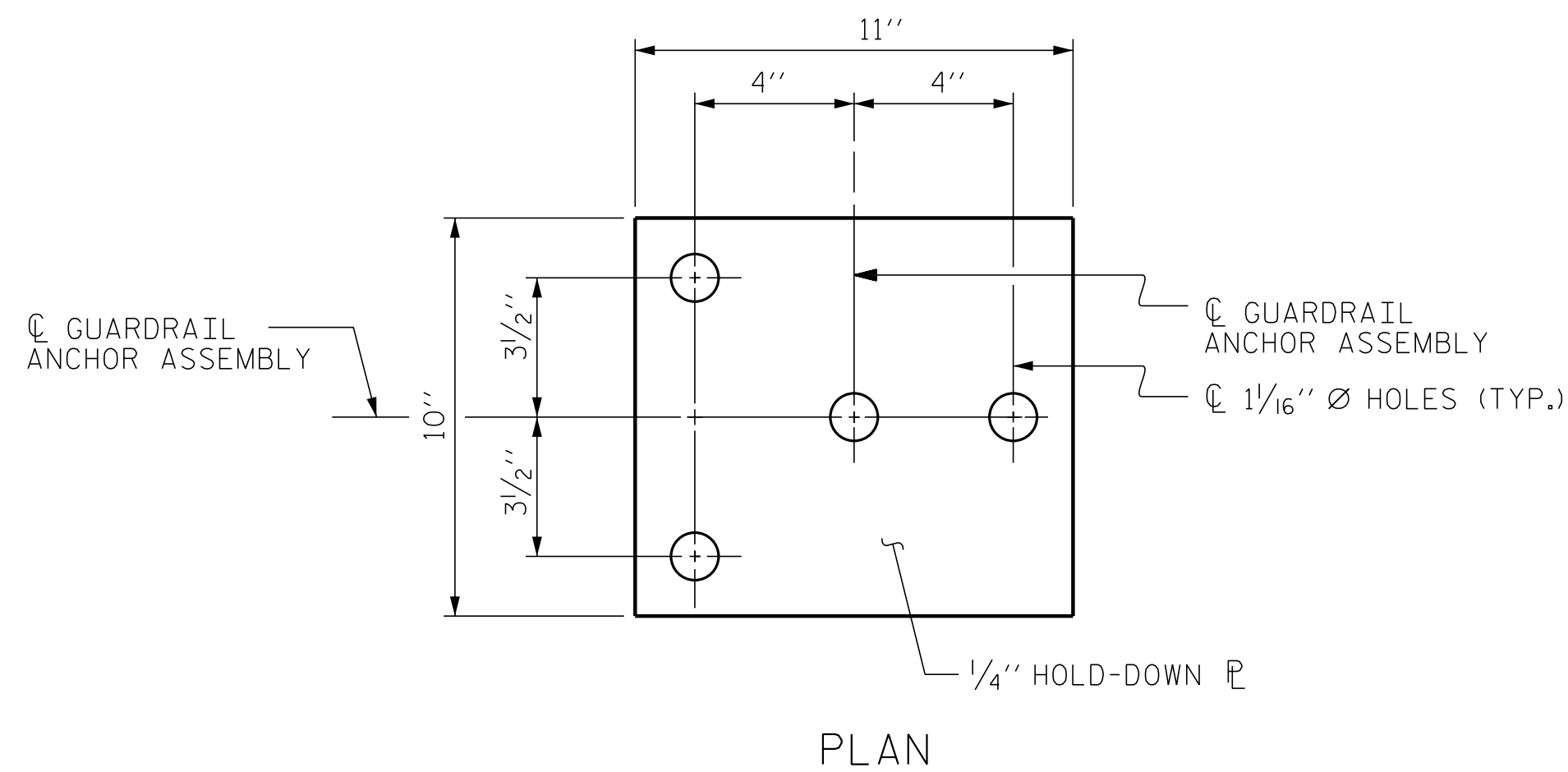
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

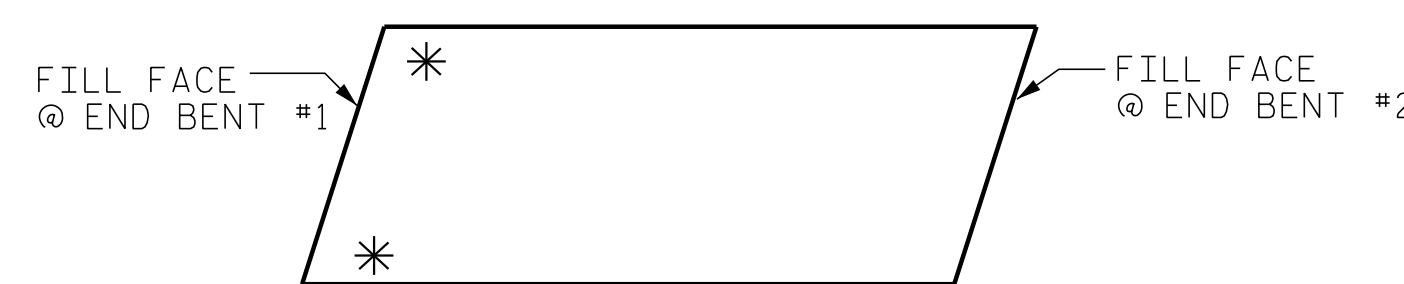
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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.

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



LOCATION OF ANCHORS FOR GUARDRAIL



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-5719
WAYNE COUNTY
 STATION: 39+11.12 -L-

ENGINEER OF RECORD
 NORTH CAROLINA PROFESSIONAL SEAL
 14091
 4/17/2017
 CHARLES HUNTER
 Buck Charles Hunt
 21-1520738AEC

1223 Jones Franklin Rd.
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 LICENSE NO. F-0377

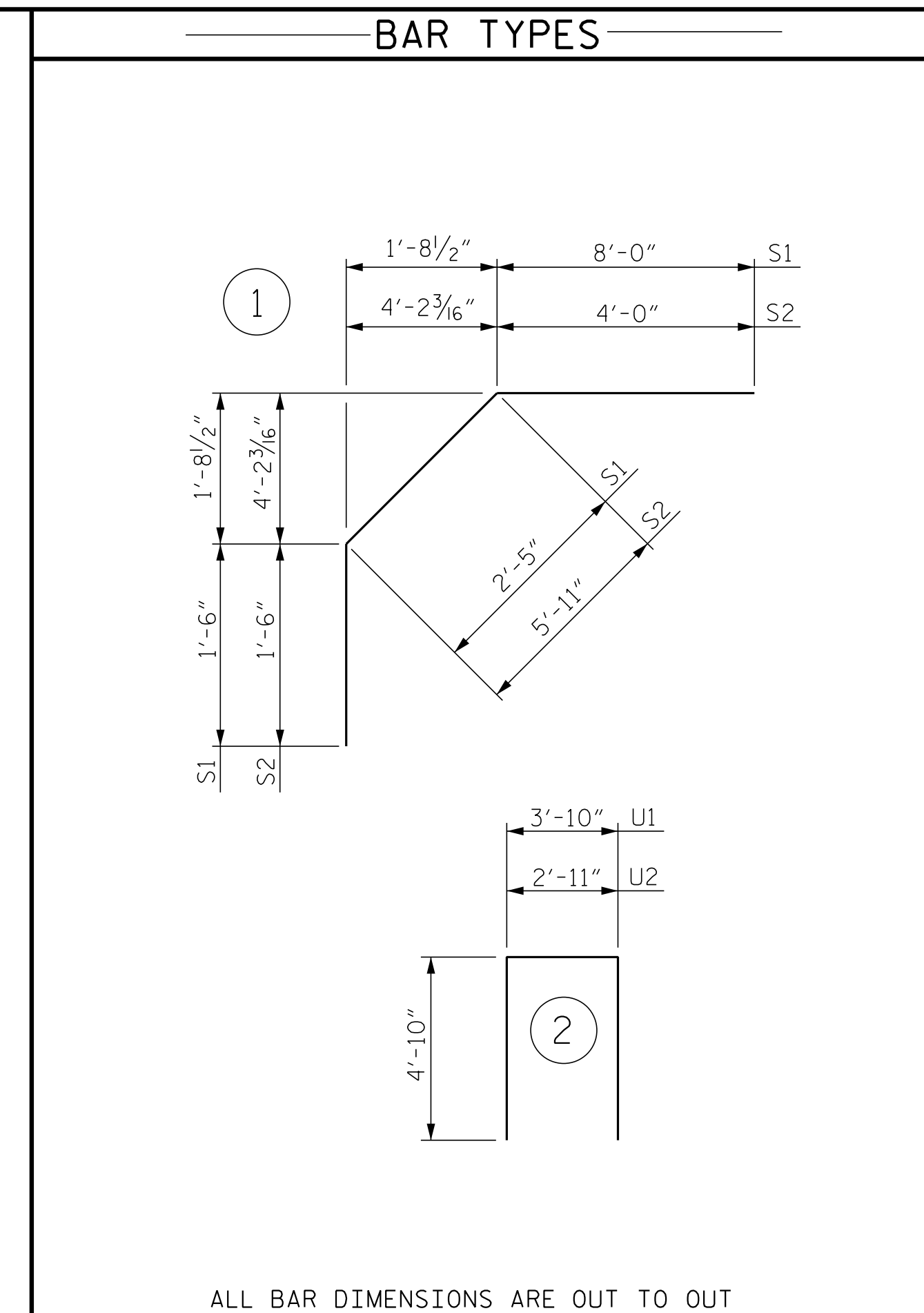
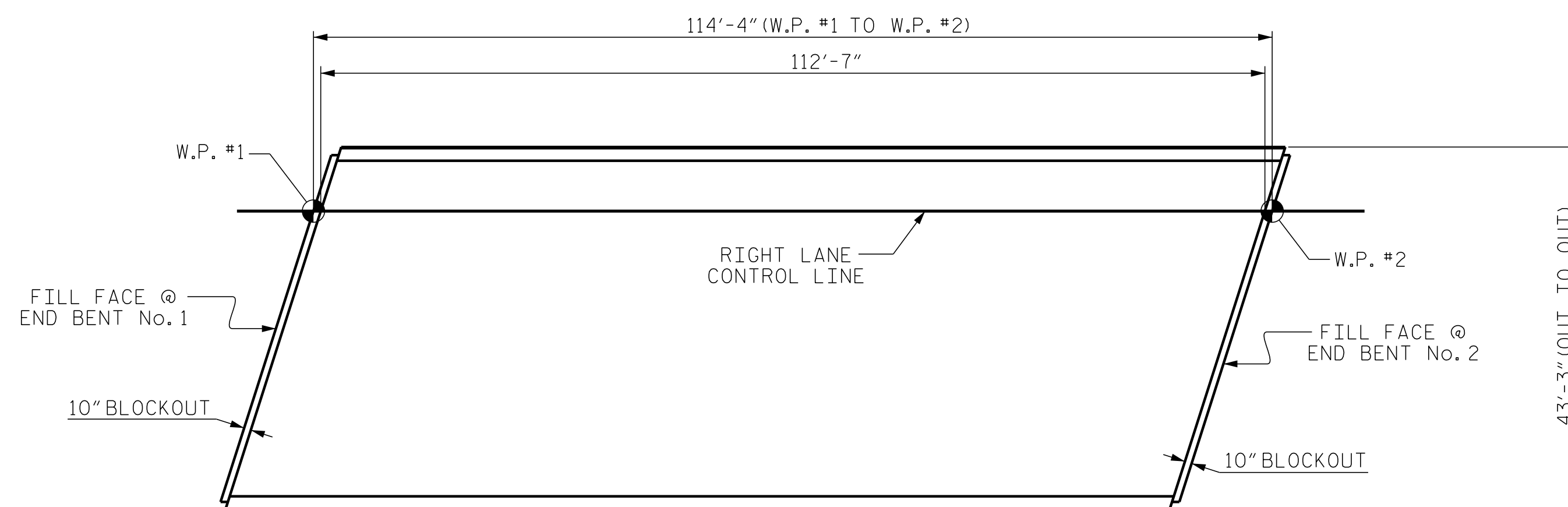
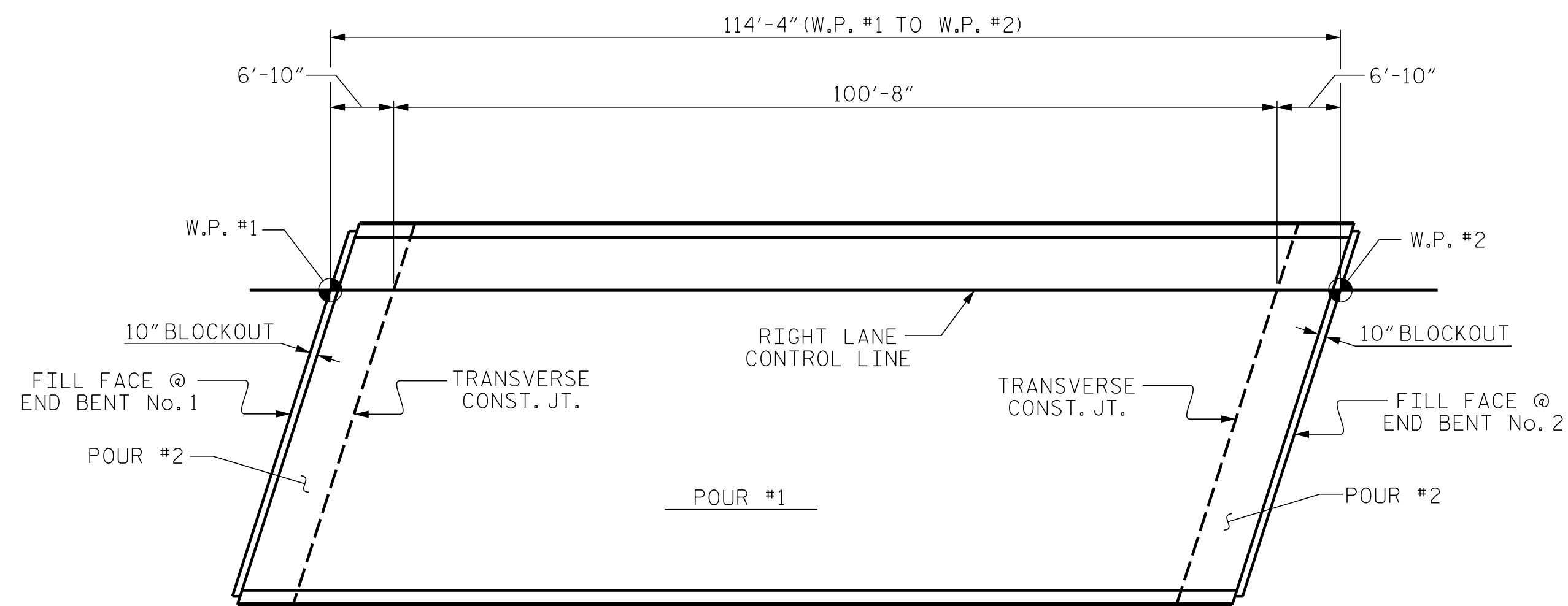
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 FOR BARRIER RAIL
 RIGHT LANE

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

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 UNLESS ALL SIGNATURES COMPLETED

(SHT 1b) STD. NO. GRA2

ASSEMBLED BY : J. PENDERGRAFT	DATE : 10-15
CHECKED BY : J. DILWORTH	DATE : 10-15
DRAWN BY : TLA 5/06	REV. 10/1/11 MAA/GM
CHECKED BY : GM 5/06	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM



BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	158	#5	STR	42'-11"	7072
A2	158	#5	STR	42'-11"	7072
* A101	4	#5	STR	39'-7"	165
* A102	4	#5	STR	35'-8"	149
* A103	4	#5	STR	31'-9"	132
* A104	4	#5	STR	27'-10"	116
* A105	4	#5	STR	23'-11"	100
* A106	4	#5	STR	20'-0"	83
* A107	4	#5	STR	16'-1"	67
* A108	4	#5	STR	12'-2"	51
* A109	4	#5	STR	8'-3"	34
* A110	4	#5	STR	4'-4"	18
A201	4	#5	STR	39'-7"	165
A202	4	#5	STR	35'-8"	149
A203	4	#5	STR	31'-9"	132
A204	4	#5	STR	27'-10"	116
A205	4	#5	STR	23'-11"	100
A206	4	#5	STR	20'-0"	83
A207	4	#5	STR	16'-1"	67
A208	4	#5	STR	12'-2"	51
A209	4	#5	STR	8'-3"	34
A210	4	#5	STR	4'-4"	18
* B1	8	#4	STR	29'-7"	158
* B2	170	#6	STR	23'-0"	5873
* B3	87	#4	STR	24'-9"	1438
B4	64	#7	STR	23'-0"	3009
B5	64	#5	STR	36'-5"	2431
K1	24	#4	STR	22'-5"	359
K2	32	#4	STR	8'-2"	175
K3	8	#4	STR	6'-6"	35
K4	8	#4	STR	5'-0"	27
K5	16	#4	STR	3'-8"	39
K6	4	#4	STR	2'-10"	8
K7	4	#4	STR	2'-1"	6
* S1	52	#4	1	11'-11"	414
* S2	48	#4	1	11'-5"	366
U1	48	#4	2	13'-6"	433
U2	4	#4	2	12'-7"	34

ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL			
	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	* EPOXY COATED REINFORCING STEEL (LBS.)
POUR #1	138.8		
POUR #2	83.8		
TOTALS**	222.6	14,543	16,236

REINFORCING STEEL	LBS.	14,543
* EPOXY COATED REINFORCING STEEL	LBS.	16,236

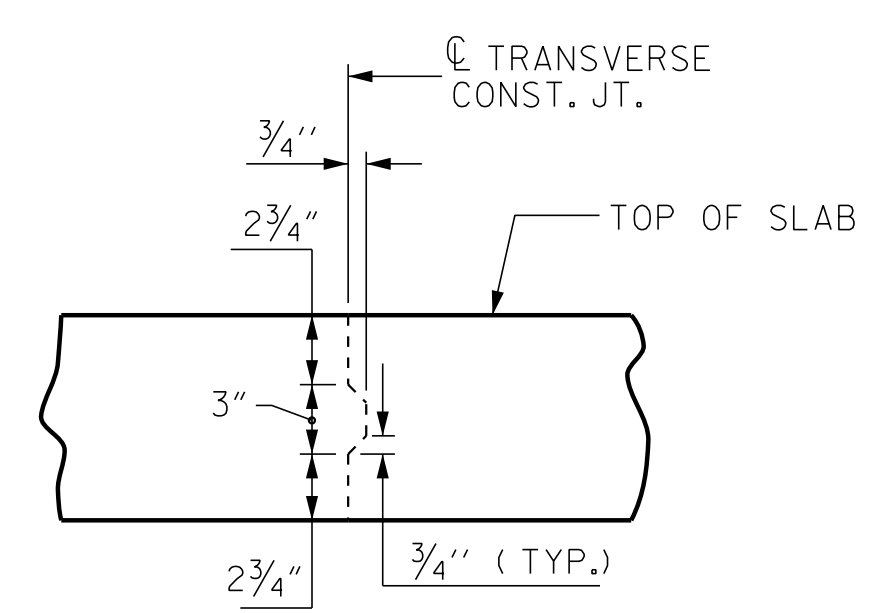
**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

* THESE BARS ARE EPOXY COATED.

GROOVING BRIDGE FLOORS	
APPROACH SLABS	1,798 SQ.FT.
BRIDGE DECK	4,166 SQ.FT.
TOTAL	5,964 SQ.FT.

PROJECT NO. R-5719
 WAYNE COUNTY
 STATION: 39+11.12 -L-

BAR SIZE	SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS		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"			



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

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ENGINEER OF RECORD
 12/12/2016
 NORTH CAROLINA PROFESSIONAL SEAL 14091
 BRUCE CHARLES HUNN
 ENGINEER
 2-F15C8973BAE.C
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE BILL OF MATERIAL (RIGHT LANE)

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

TOTAL SHEETS: 26

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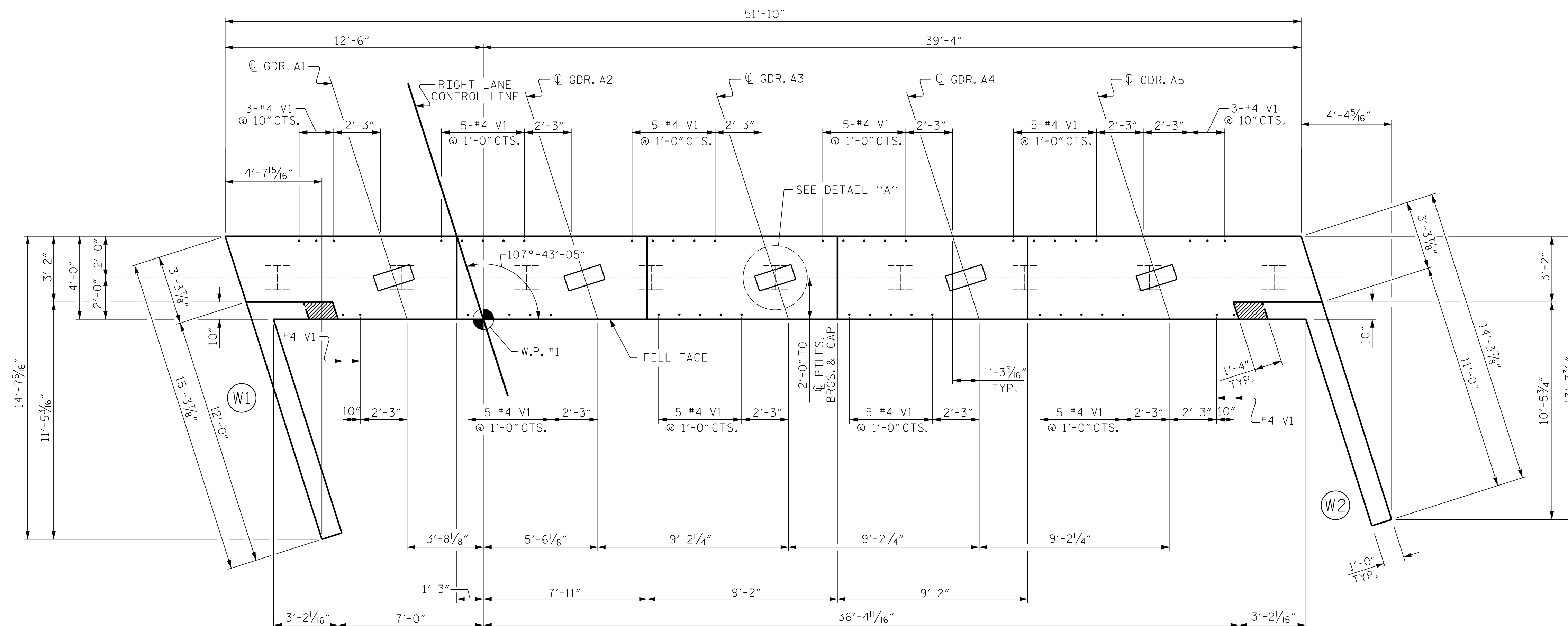
DRAWN BY: D. HODGE DATE: 1/16
 CHECKED BY: G.M. GILLAND DATE: 2/16

NOTES

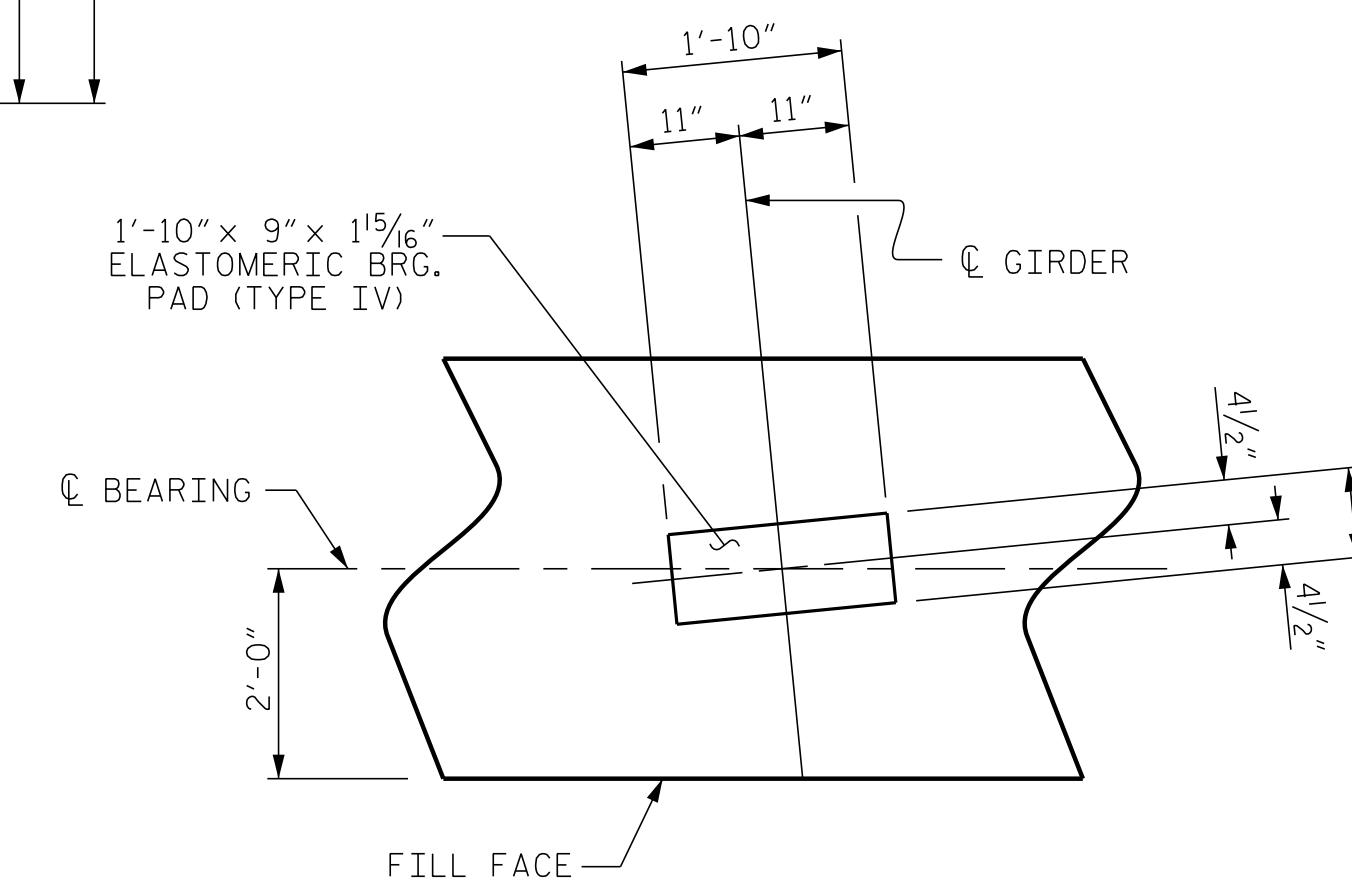
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAILS ARE CAST IF SLIP FORMING IS USED.

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.

THE TOP SURFACE OF THE END BENT CAP WITHIN THE LIMITS OF THE INTEGRAL ABUTMENT, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

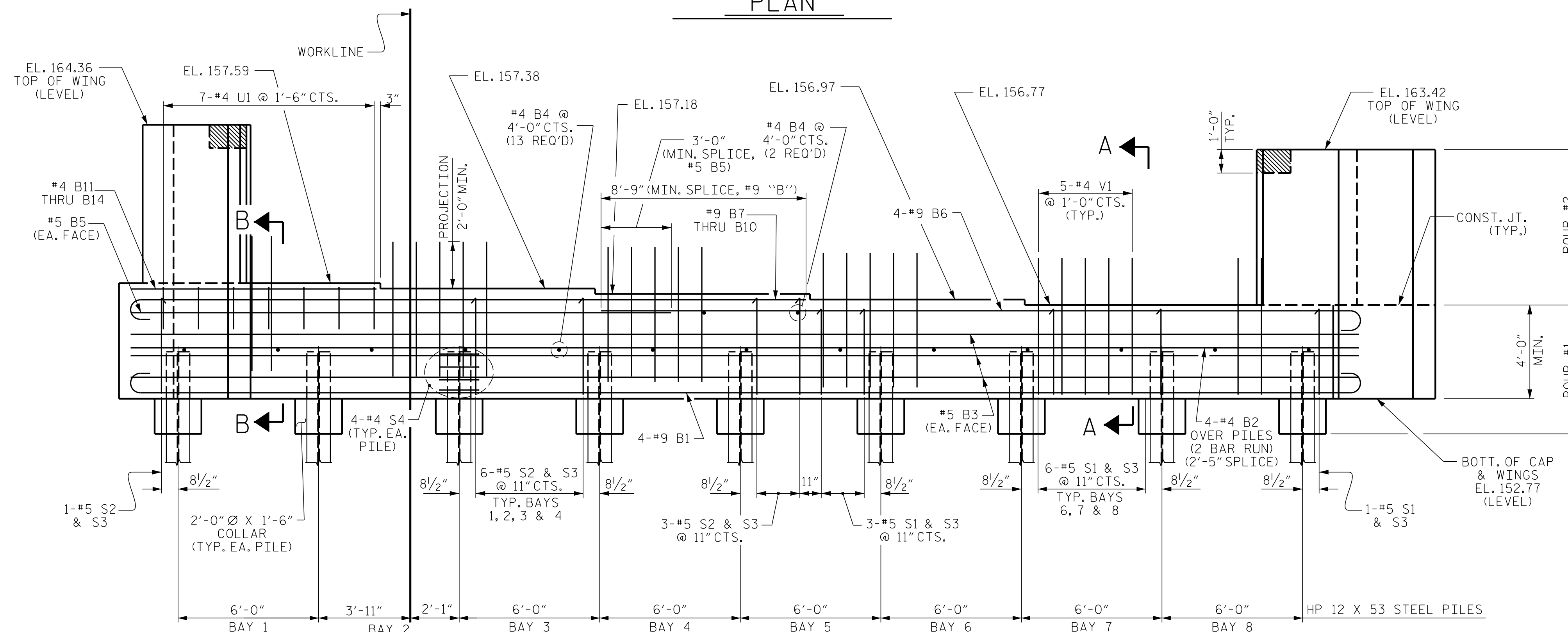


PLAN



DETAIL A

(TYP. EACH GIRDER)

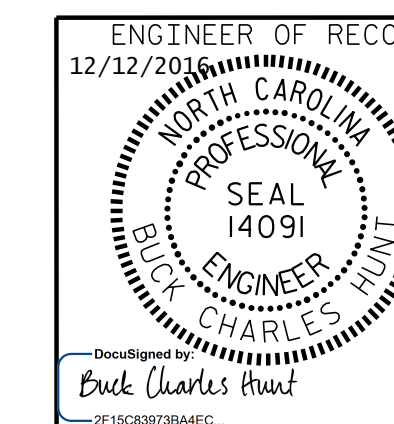


ELEVATION

FOR SECTIONS A-A & B-B, SEE SHEET 3 OF 3.

PROJECT NO. R-5719
WAYNE COUNTY
STATION: 39+11.12 -L-

SHEET 1 OF 3



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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 1
(RIGHT LANE)

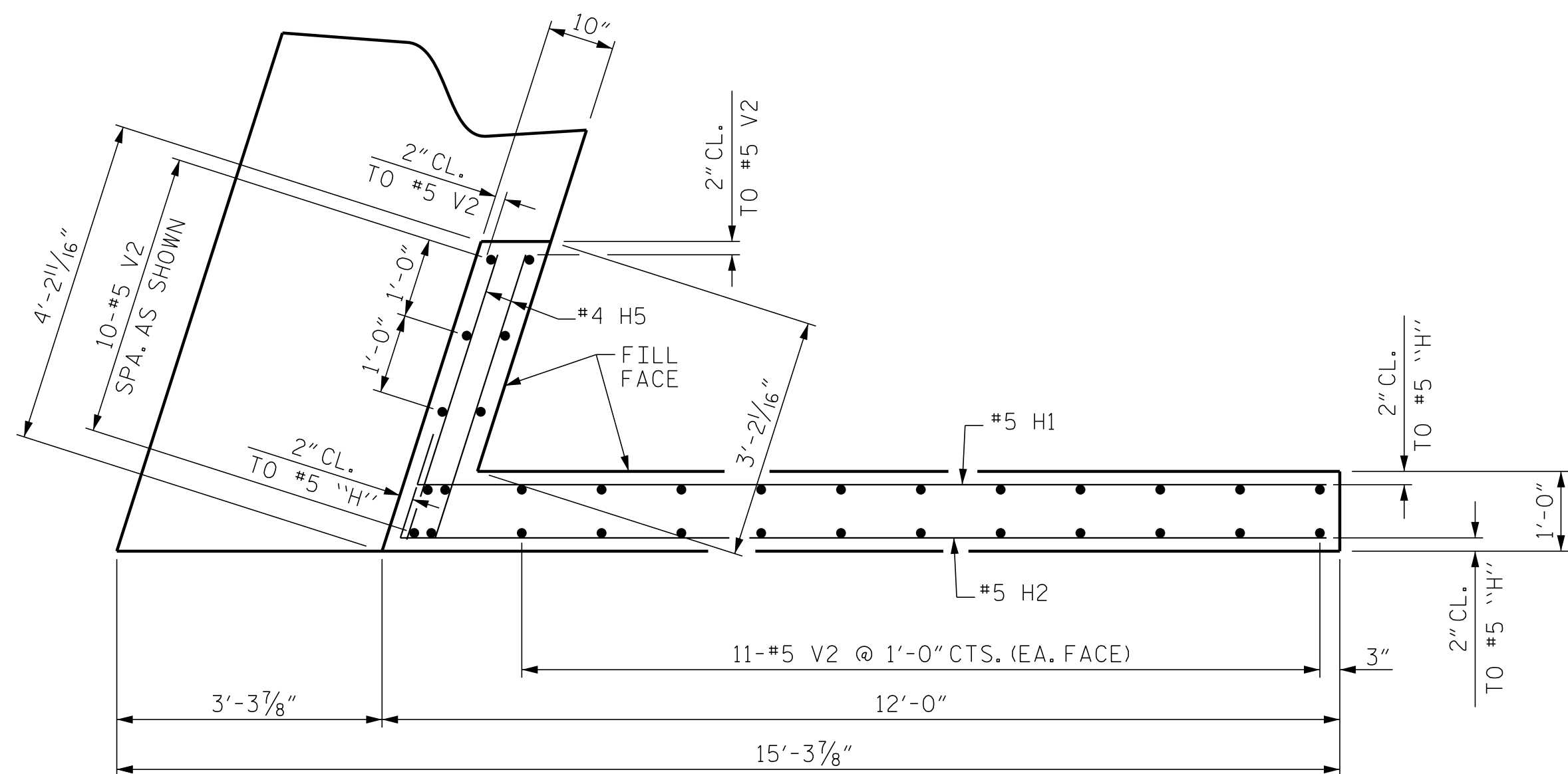
REVISIONS

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

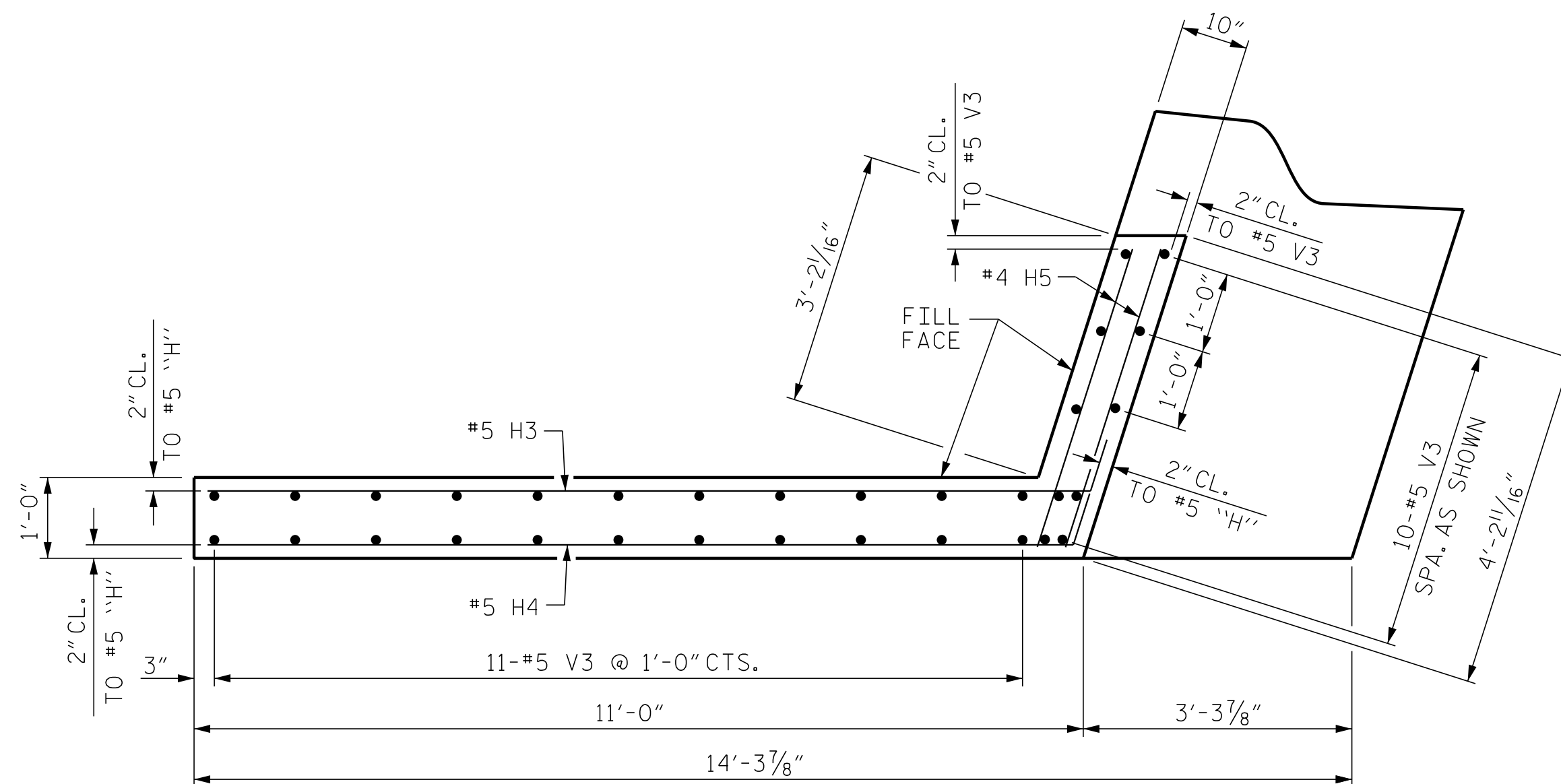
SHEET NO.
S02-17
TOTAL SHEETS
26

DRAWN BY: D. HODGE DATE: 2/16
CHECKED BY: J. DILWORTH DATE: 2/16

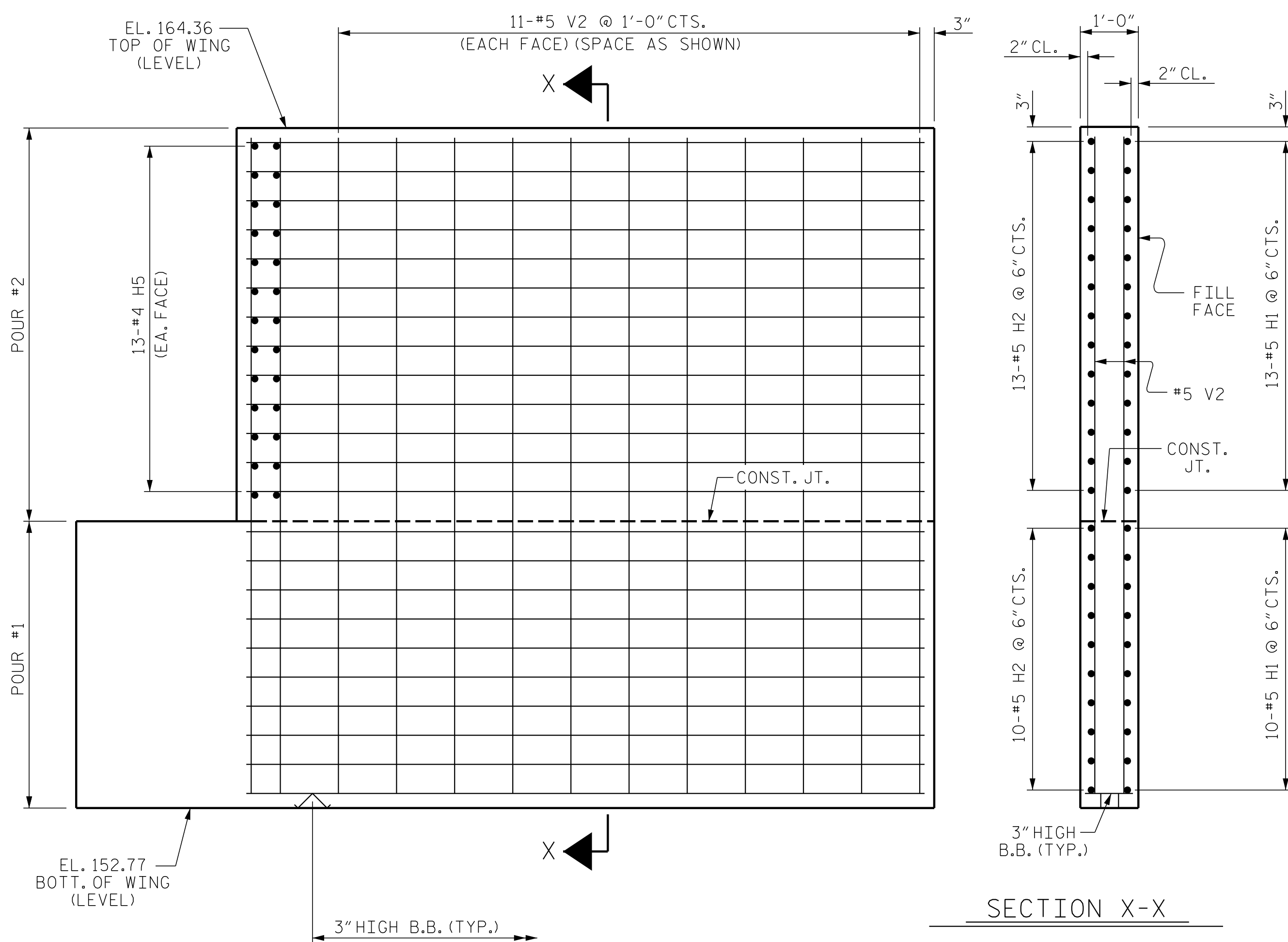
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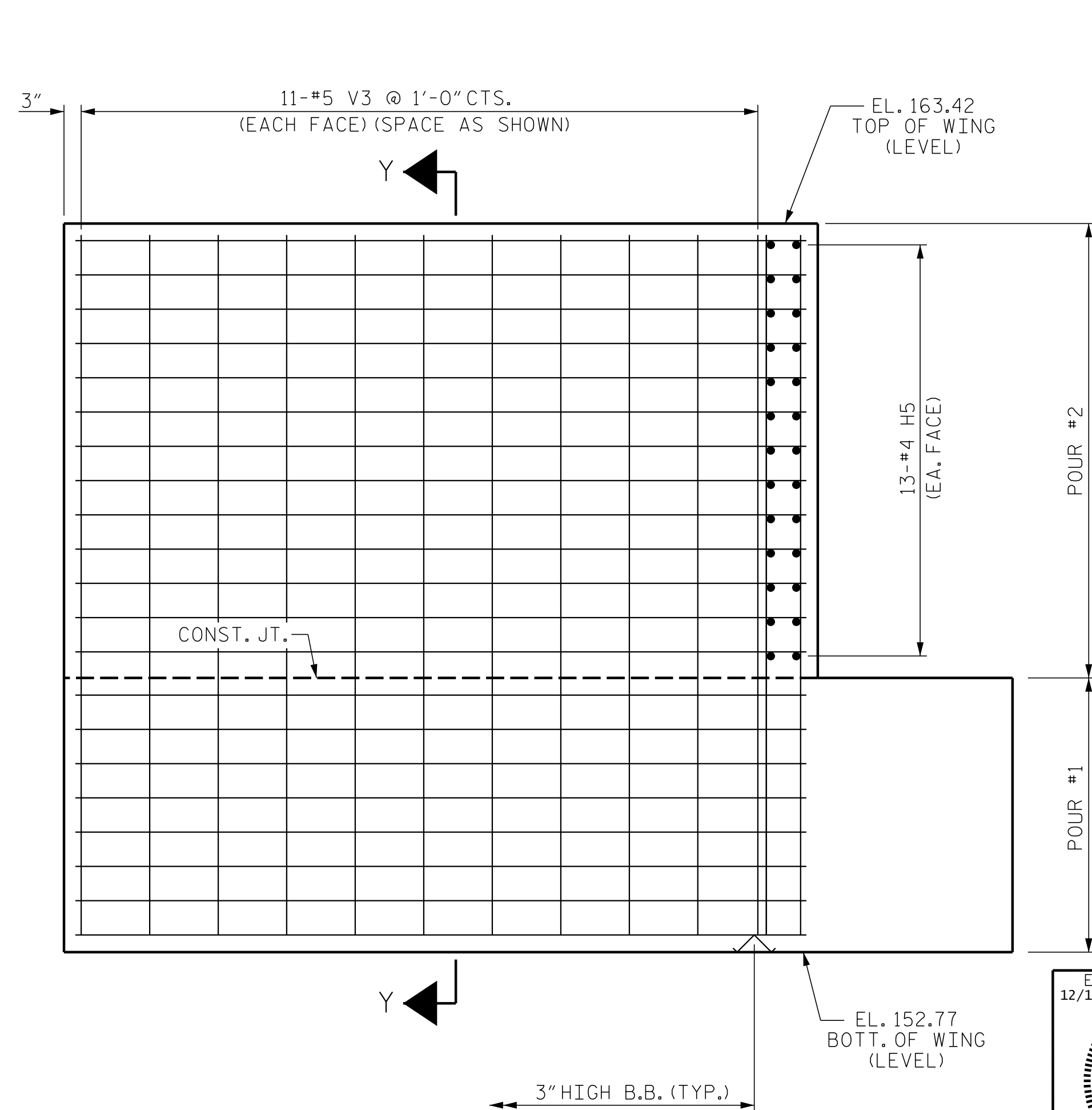
PLAN OF WING - W1



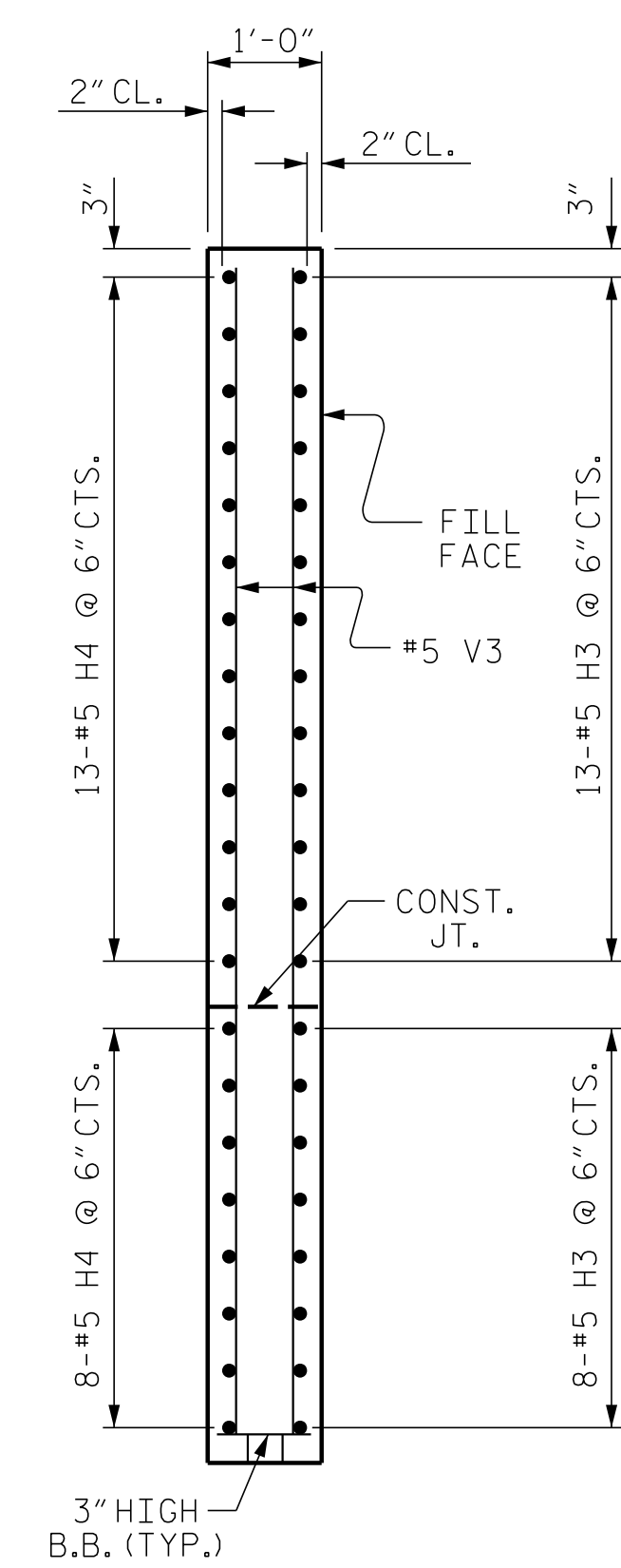
PLAN OF WING - W2



ELEVATION OF WING - W1



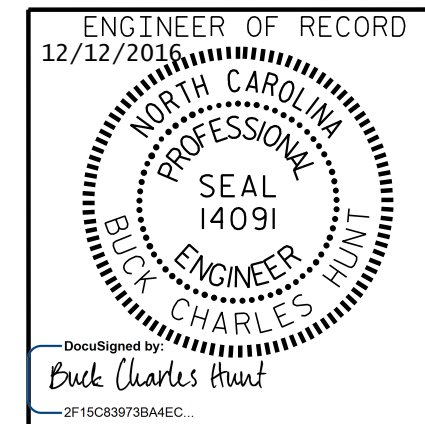
ELEVATION OF WING - W2



SECTION Y-Y

PROJECT NO. R-5719
 WAYNE COUNTY
 STATION: 39+11.12 -L-

SHEET 2 OF 3



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 Raleigh, N.C. 27606
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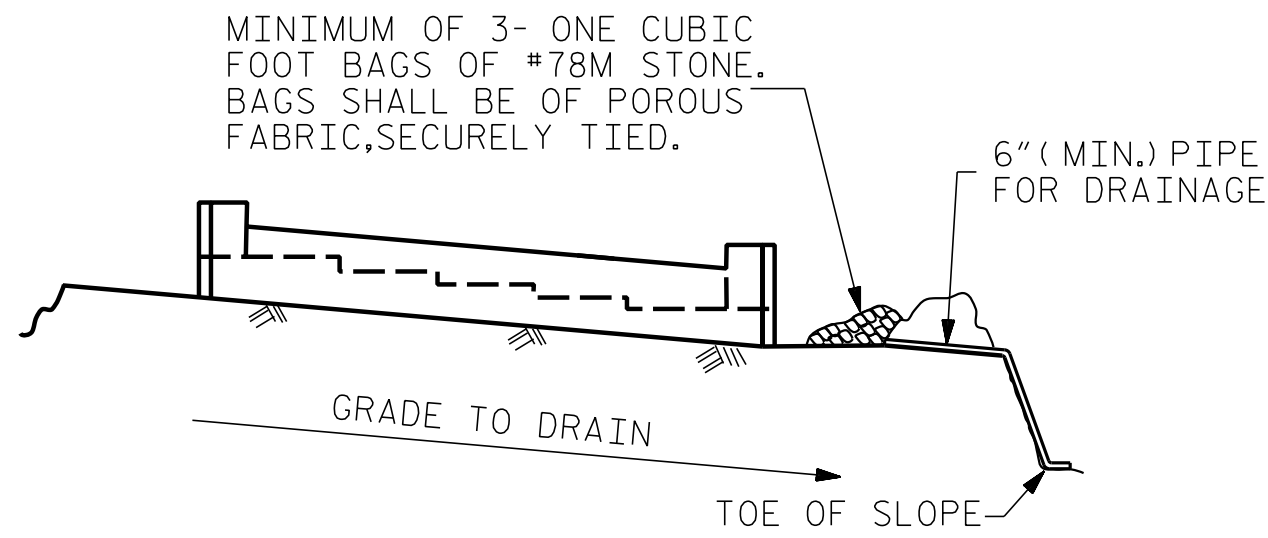
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT No. 1
 (RIGHT LANE)

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

DRAWN BY: D. HODGE DATE: 2/16
 CHECKED BY: J. DILWORTH DATE: 2/16

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

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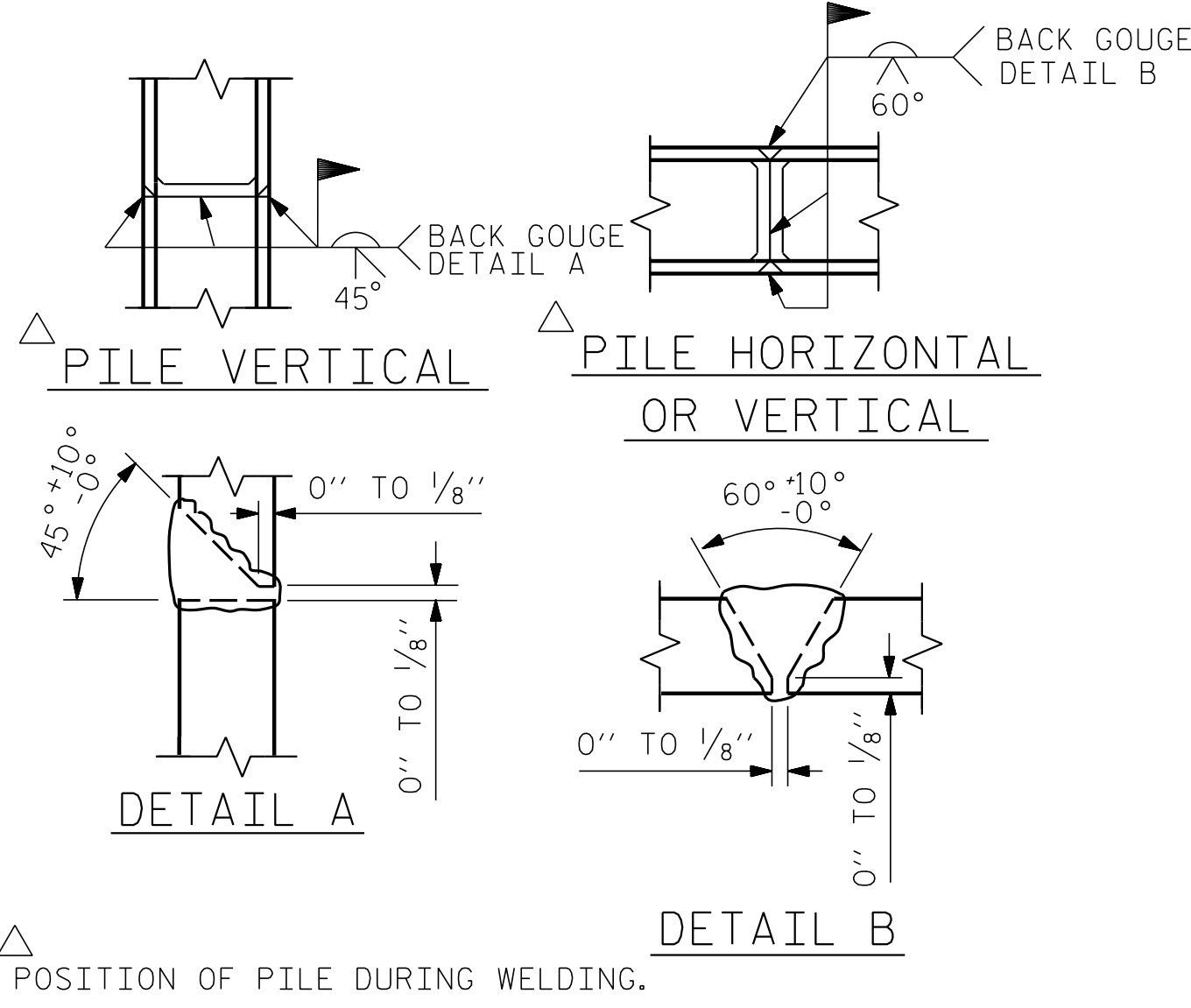


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

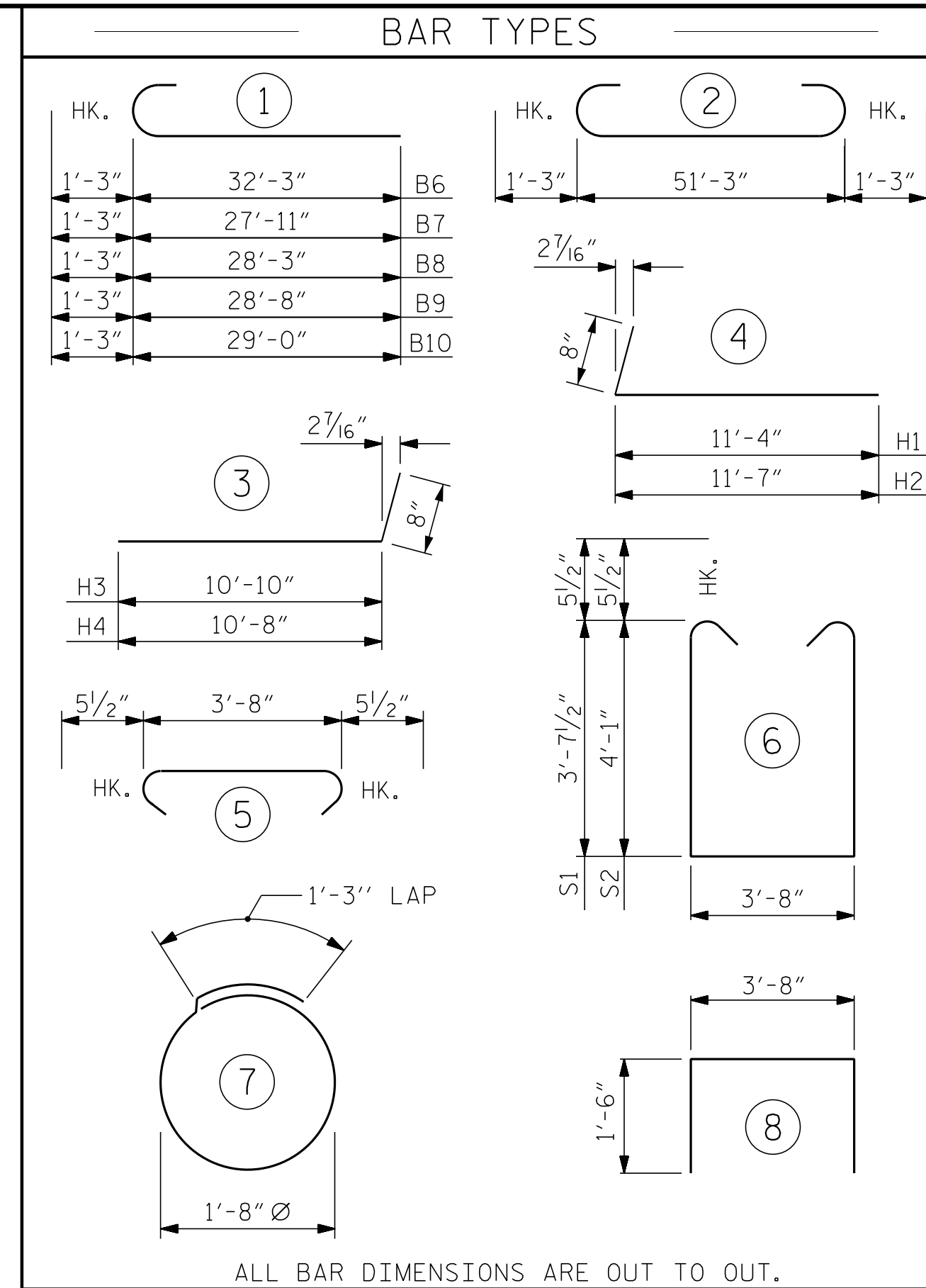
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT



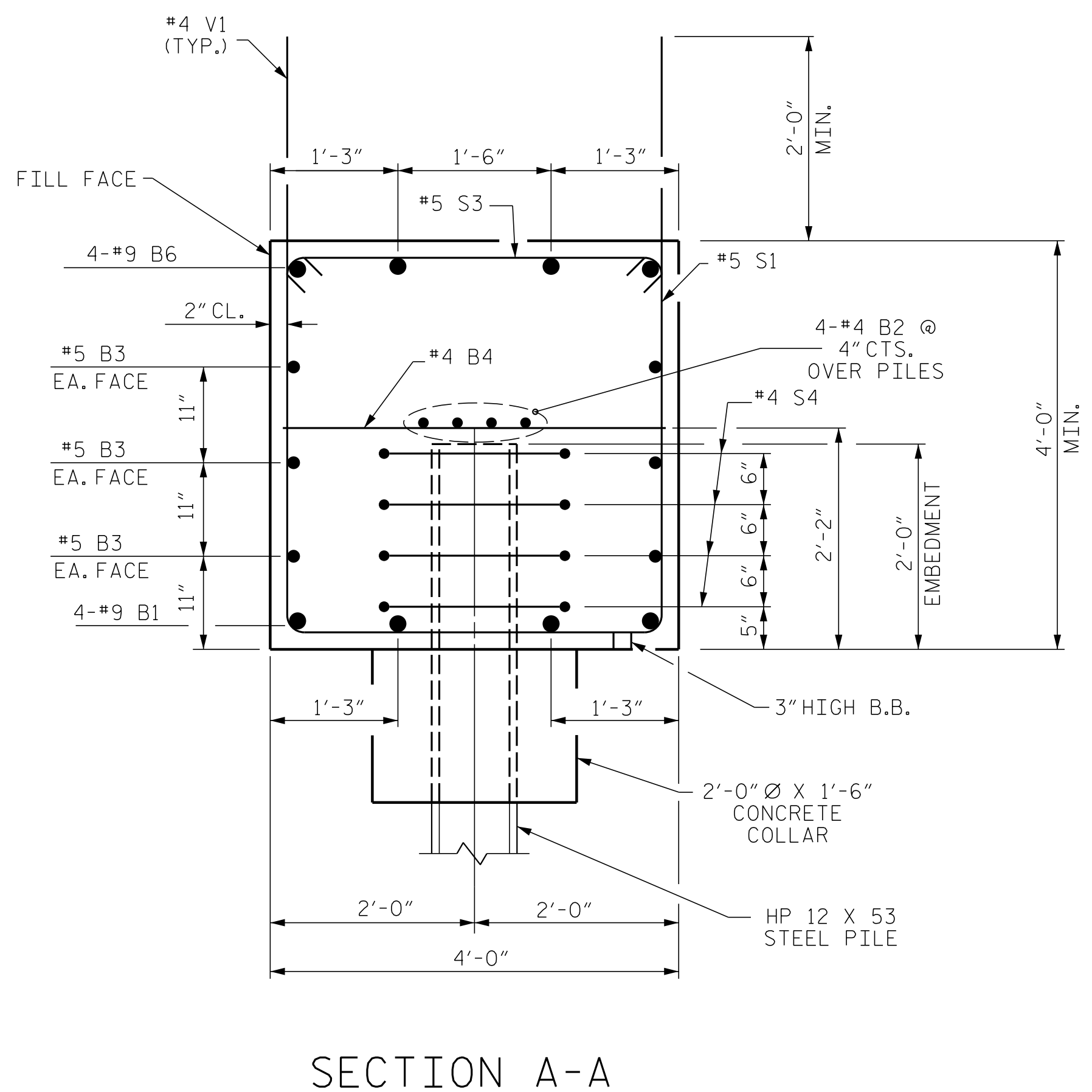
PILE SPLICE DETAILS



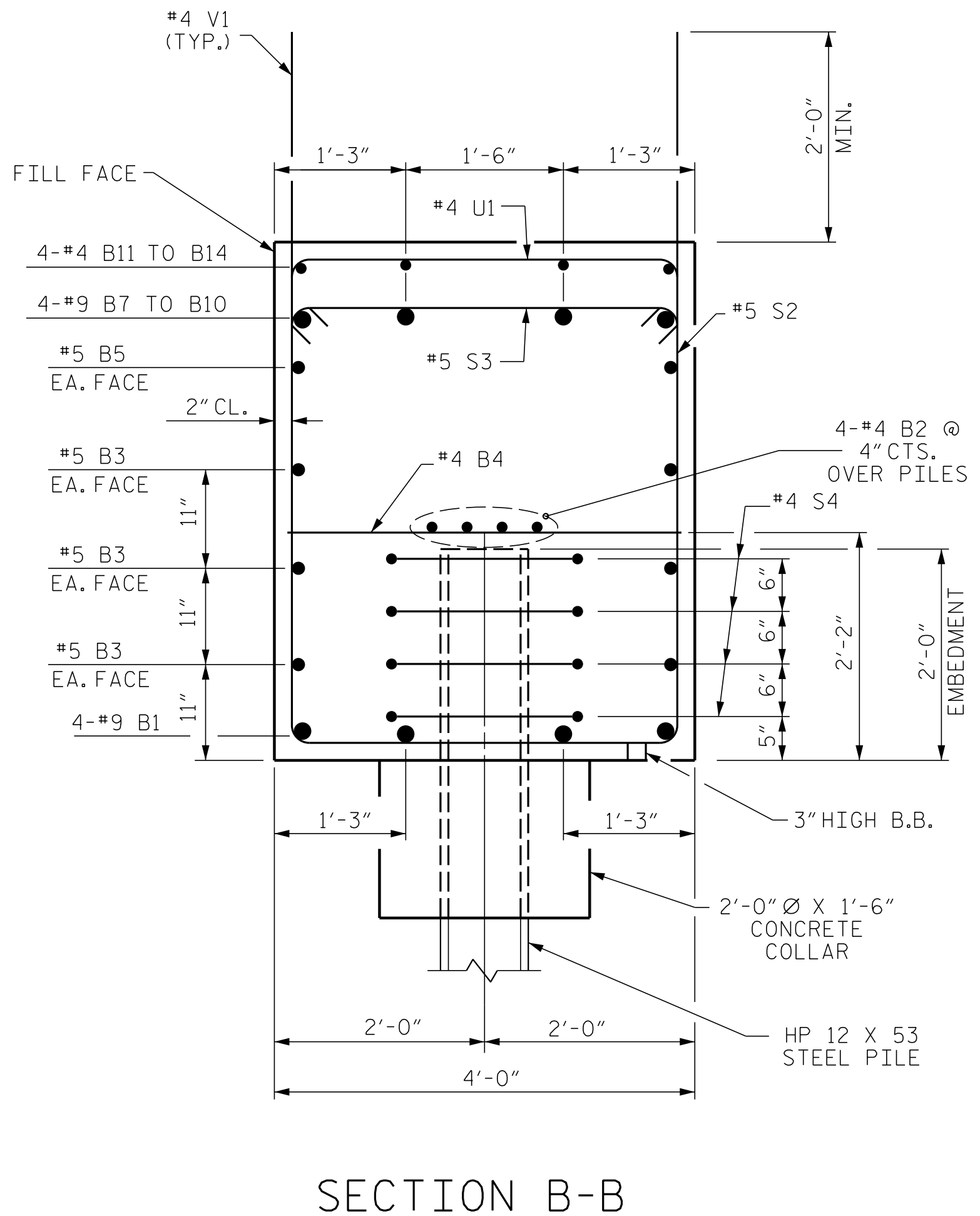
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT No. 1					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9	2	53'-9"	731
B2	8	#4	STR	27'-0"	144
B3	6	#5	STR	51'-5"	322
B4	15	#4	STR	3'-8"	37
B5	2	#5	STR	22'-4"	47
B6	4	#9	1	33'-6"	456
B7	1	#9	1	29'-2"	99
B8	1	#9	1	29'-6"	100
B9	1	#9	1	29'-11"	102
B10	1	#9	1	30'-3"	103
B11	1	#4	STR	9'-7"	6
B12	1	#4	STR	9'-11"	7
B13	1	#4	STR	10'-5"	7
B14	1	#4	STR	10'-8"	7
H1	23	#5	4	12'-0"	288
H2	23	#5	4	12'-3"	294
H3	21	#5	3	11'-6"	252
H4	21	#5	3	11'-4"	248
H5	52	#4	STR	3'-10"	133
S1	22	#5	6	11'-10"	272
S2	28	#5	6	12'-9"	372
S3	50	#5	5	4'-7"	239
S4	36	#4	7	6'-6"	156
U1	7	#4	8	6'-8"	31
V1	50	#4	STR	5'-9"	192
V2	32	#5	STR	11'-2"	373
V3	32	#5	STR	10'-3"	342

REINFORCING STEEL	5,360 LBS.
CLASS A CONCRETE BREAKDOWN	
POUR #1 CAP, CONC. COLLARS & LOWER PART OF WINGS	38.7 C.Y.
POUR #2 UPPER PART OF WINGS	7.0 C.Y.
TOTAL CLASS A CONCRETE	45.7 C.Y.
HP 12 X 53 STEEL PILES	
NO: 9	LIN. FT. = 900.0
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	9 EA.

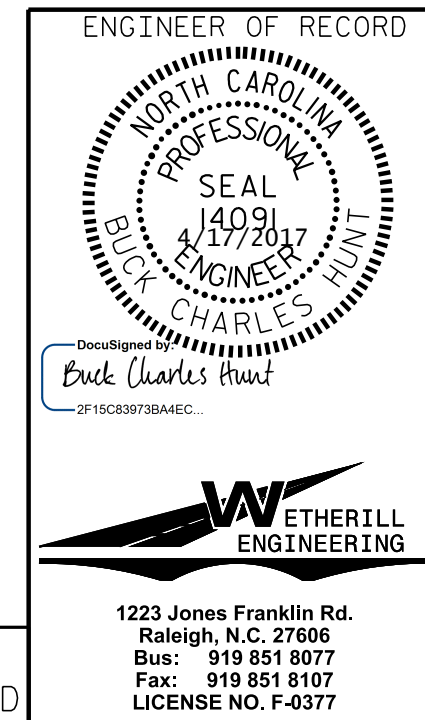


SECTION A-A



SECTION B-B

PROJECT NO. R-5719
WAYNE COUNTY
 STATION: 39+11.12 -L-
 SHEET 3 OF 3



ENGINEER OF RECORD
 NORTH CAROLINA PROFESSIONAL SEAL
 14091
 4/17/2017
 CHARLES HUNT
 BUCK CHARLES HUNT
 ETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

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

SHEET NO. S02-19
 TOTAL SHEETS 26

DRAWN BY: D. HODGE DATE: 2/16
 CHECKED BY: J. DILWORTH DATE: 2/16

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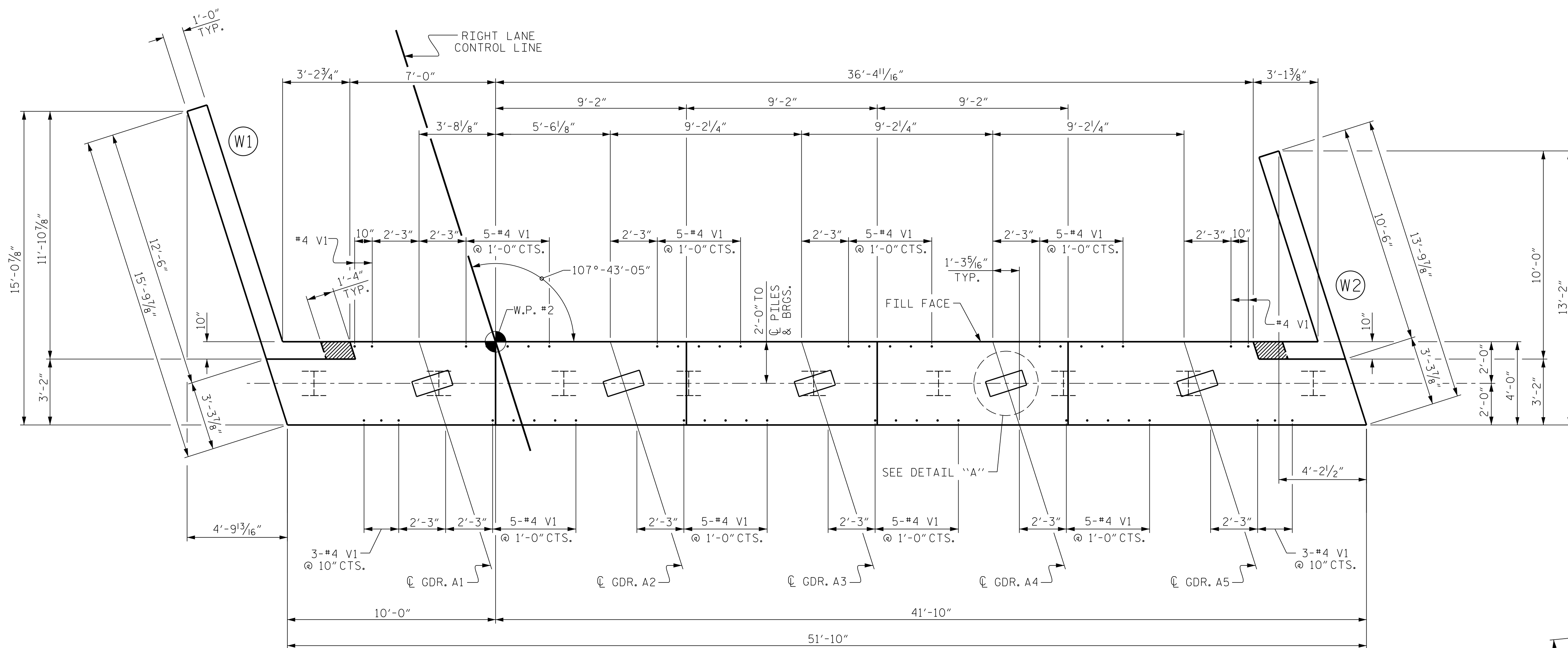
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NOTES

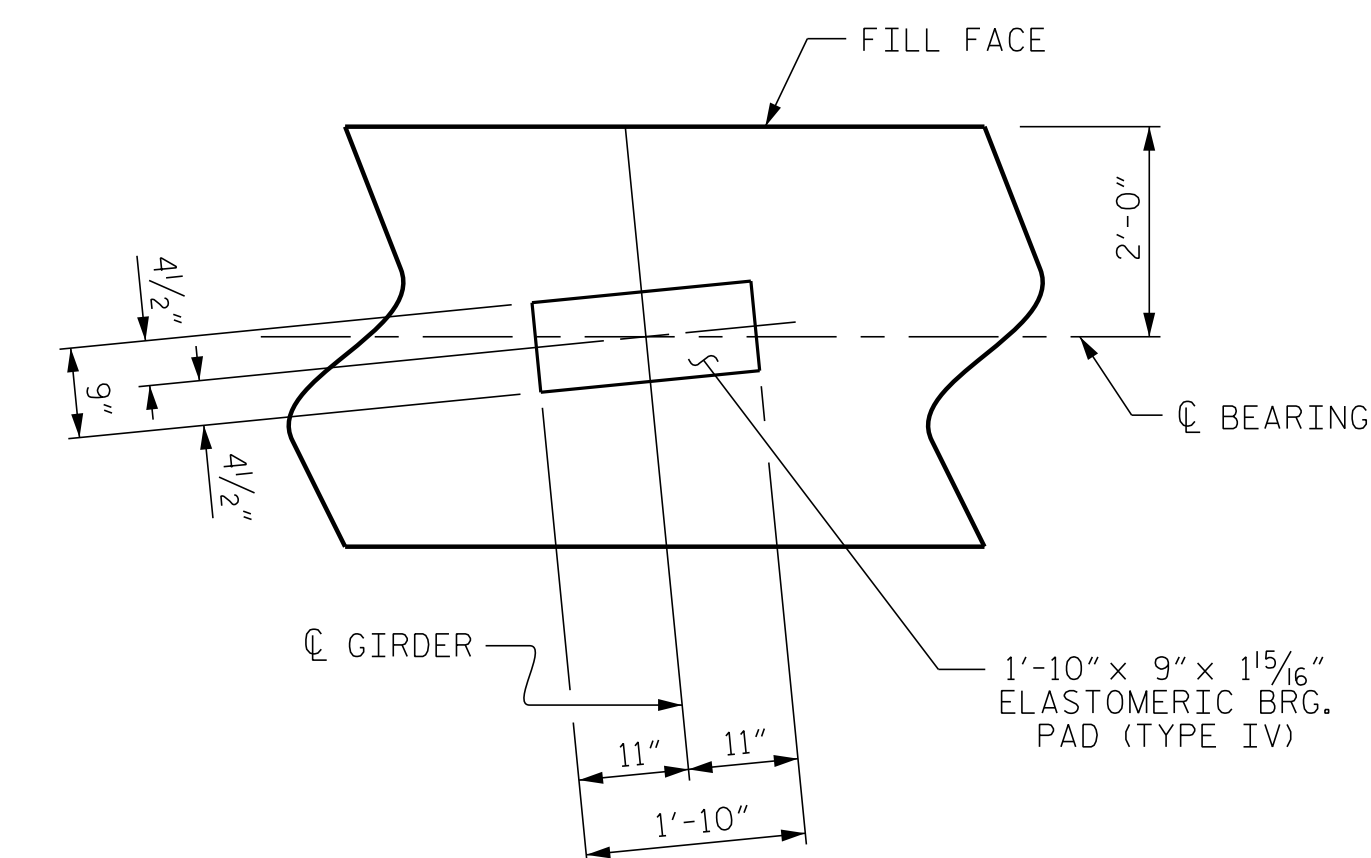
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE BARRIER RAILS ARE CAST IF SLIP FORMING IS USED.

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.

THE TOP SURFACE OF THE END BENT CAP WITHIN THE LIMITS OF THE INTEGRAL ABUTMENT, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

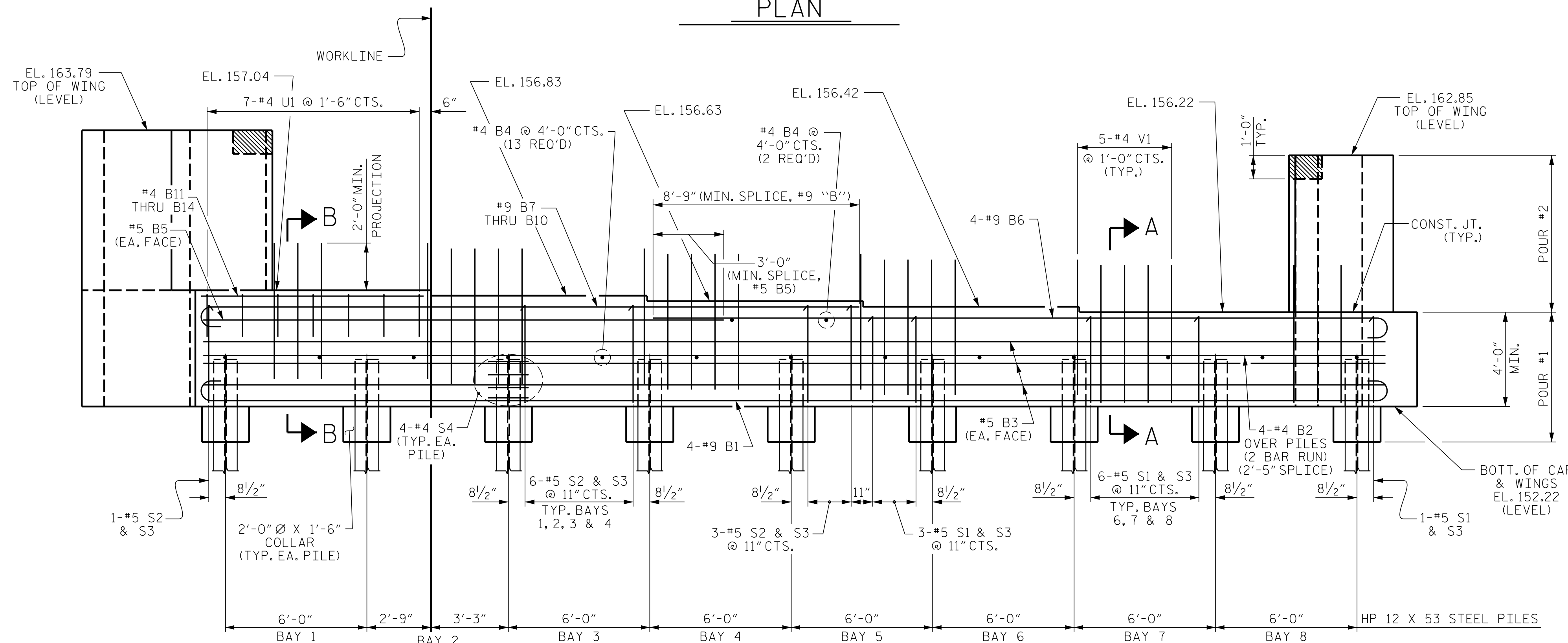


PLAN



DETAIL A

(TYP. EACH GIRDER)

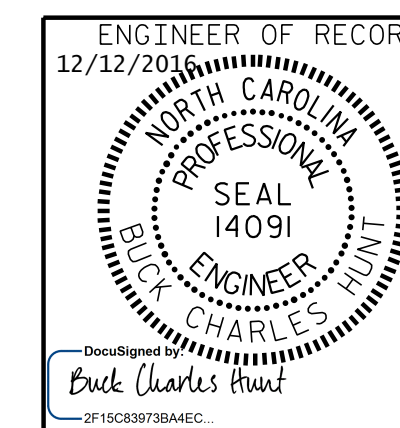


ELEVATION

FOR SECTIONS A-A & B-B, SEE SHEET 3 OF 3.

PROJECT NO. R-5719
WAYNE COUNTY
STATION: 39+11.12 -L-

SHEET 1 OF 3



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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 2
(RIGHT LANE)

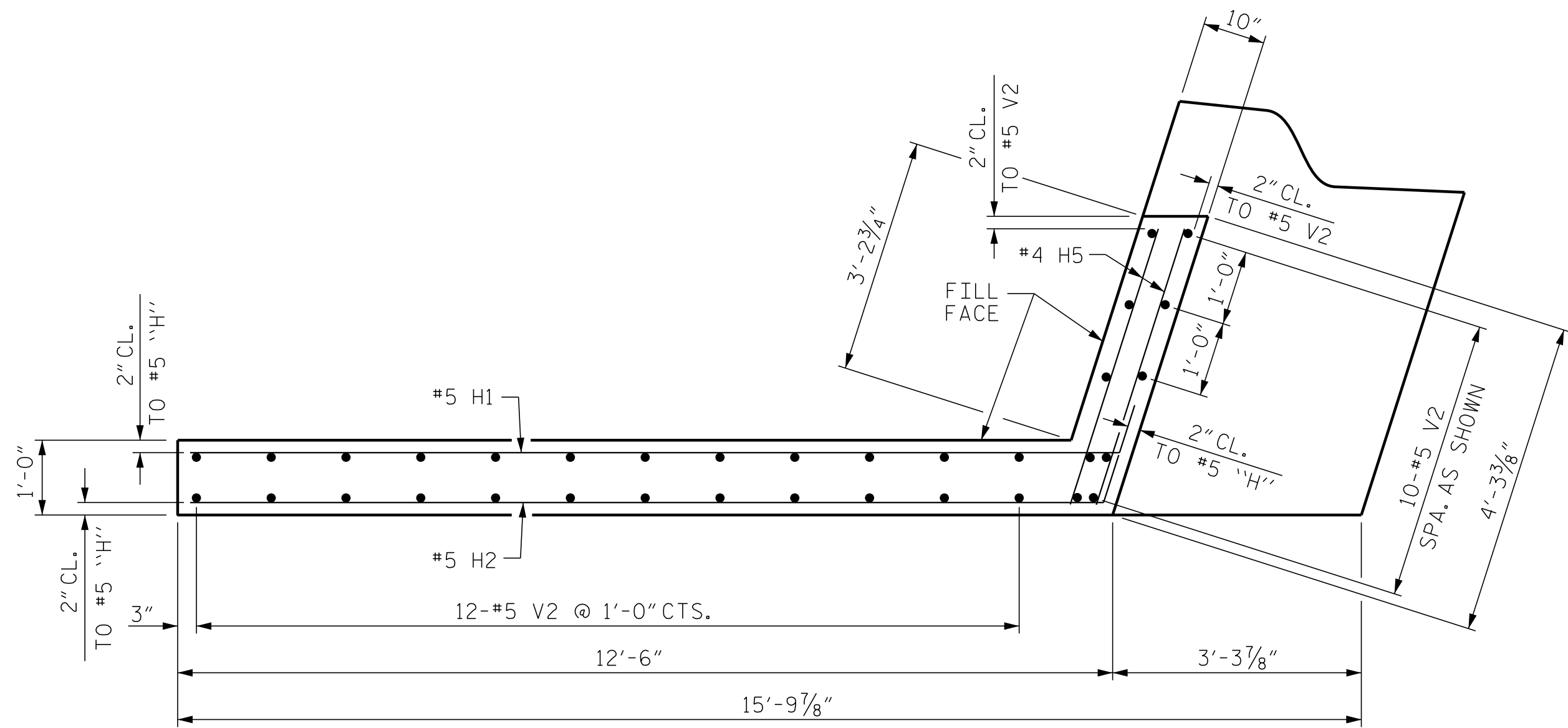
REVISIONS

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2			4		

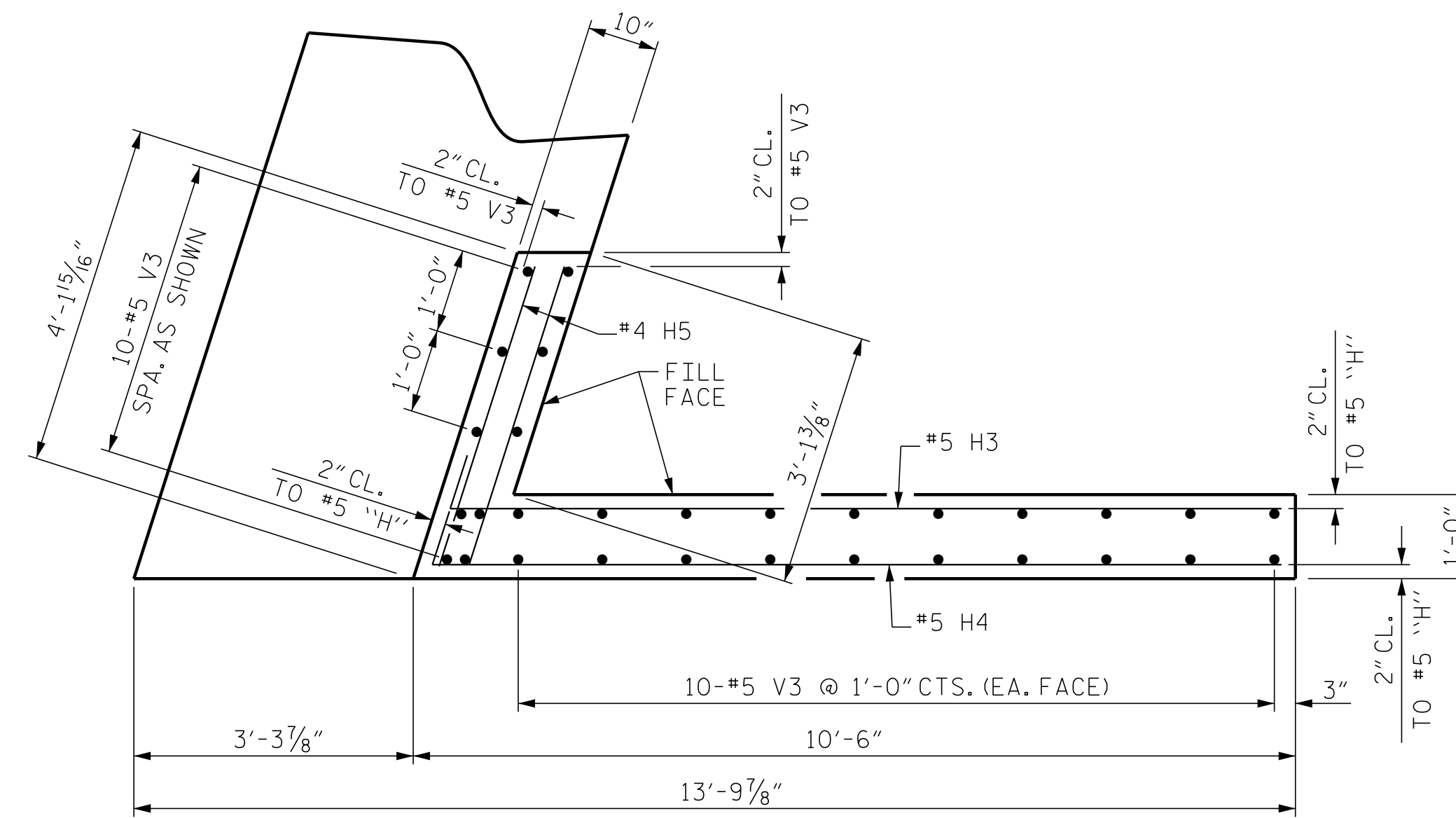
SHEET NO.
S02-20
TOTAL SHEETS
26

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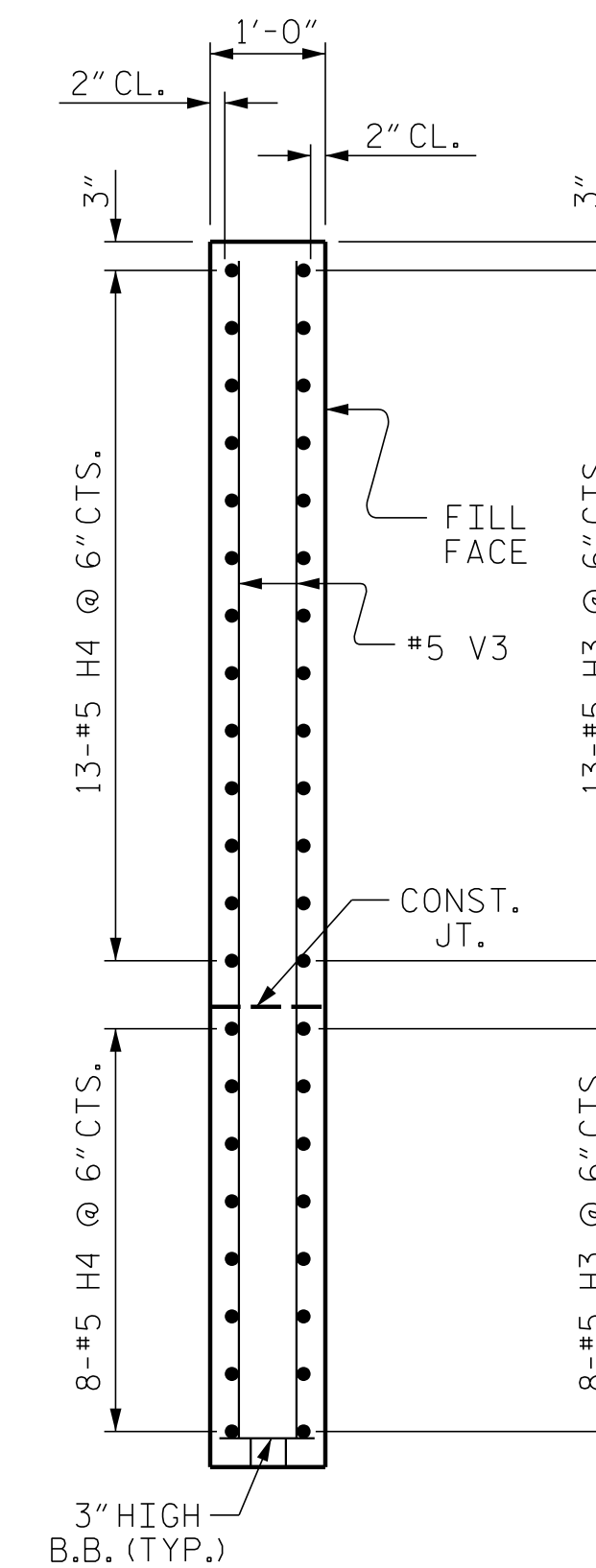
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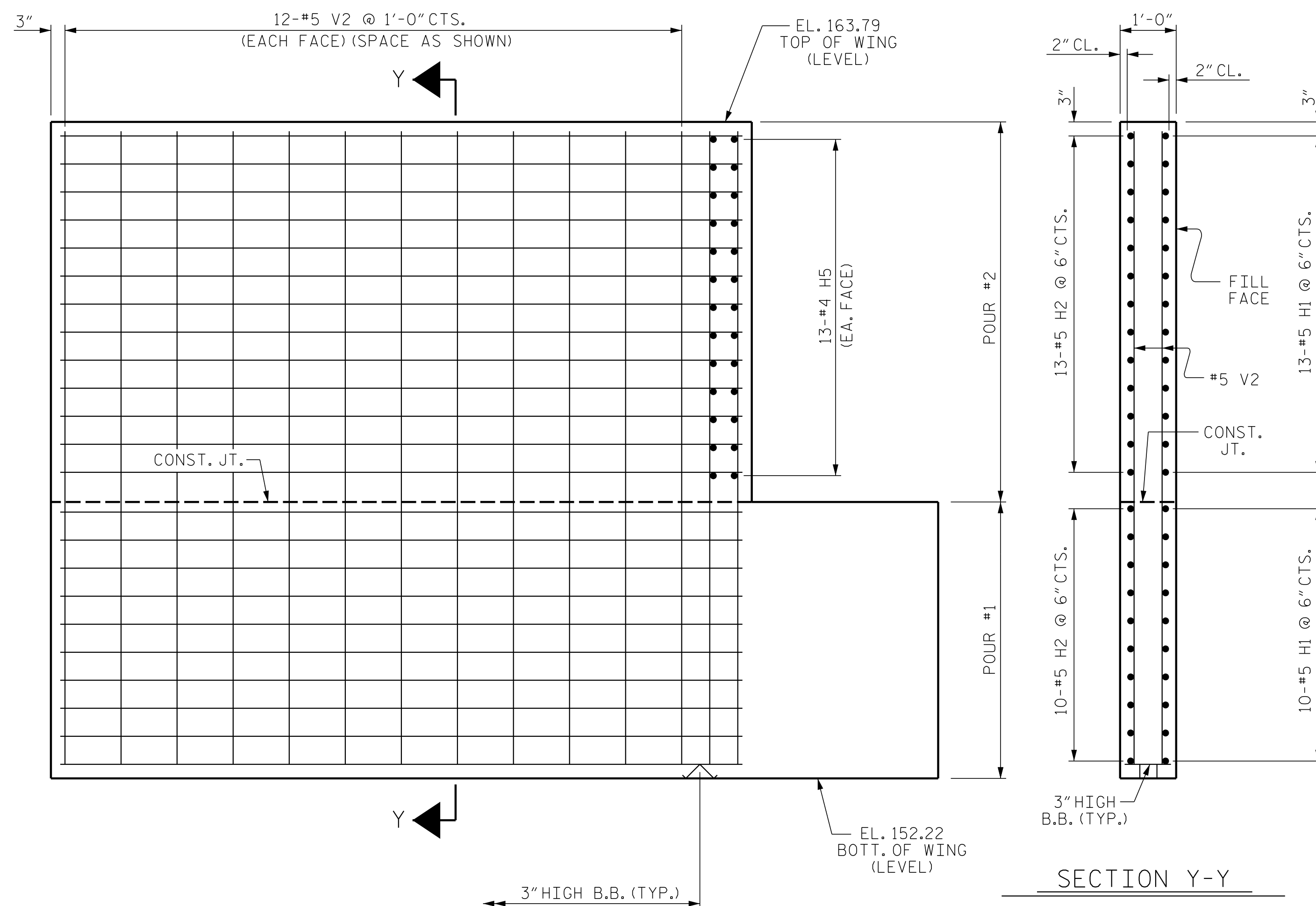
PLAN OF WING - W1



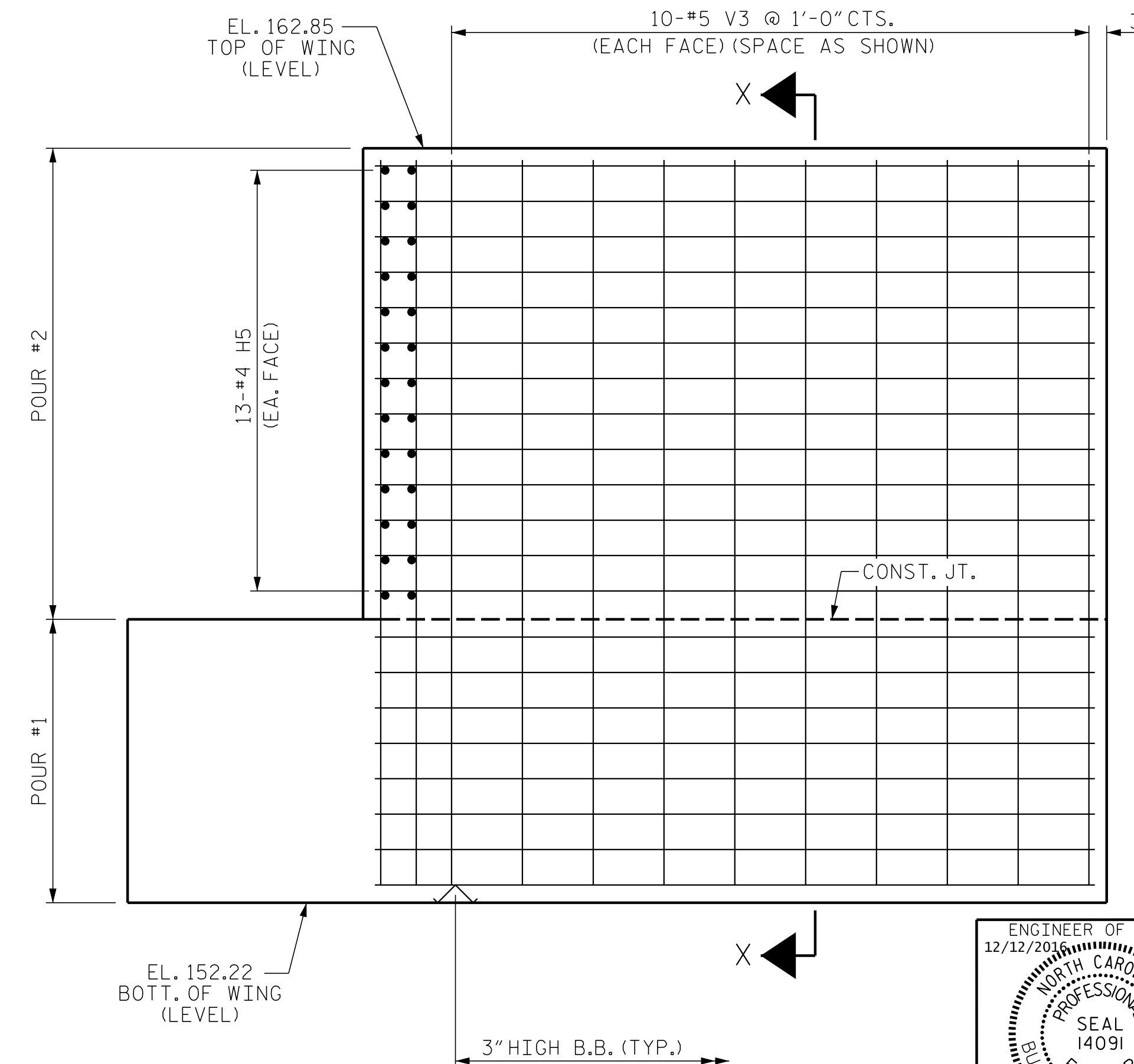
PLAN OF WING - W2



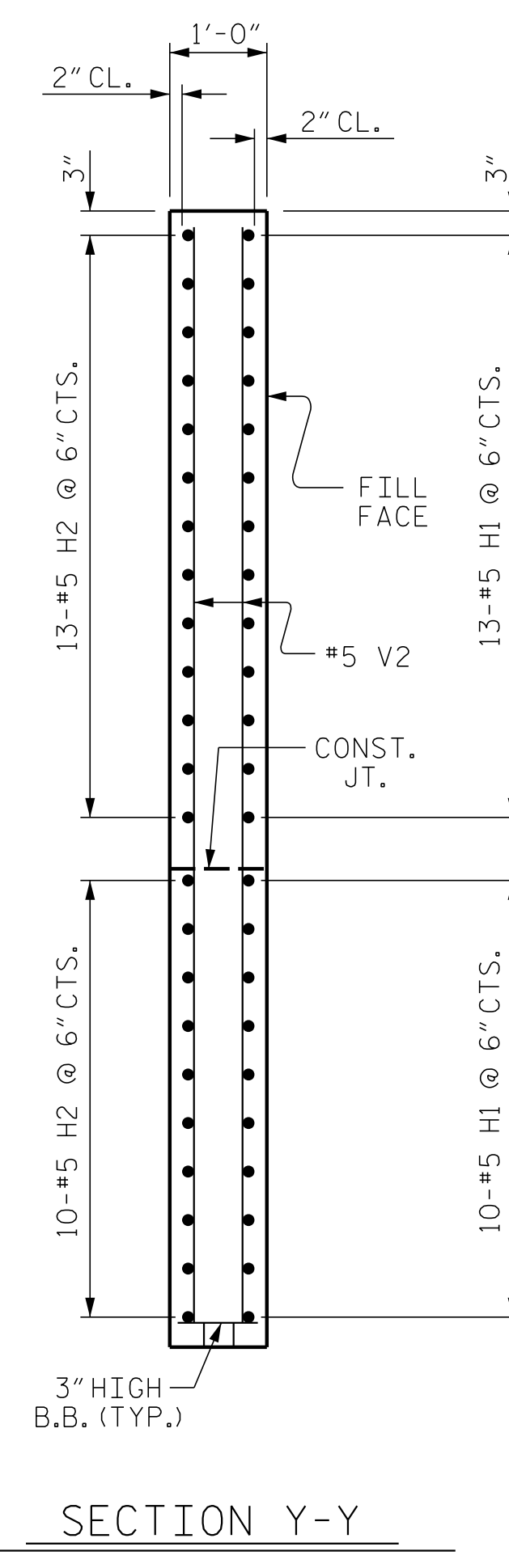
SECTION X-X



ELEVATION OF WING - W1



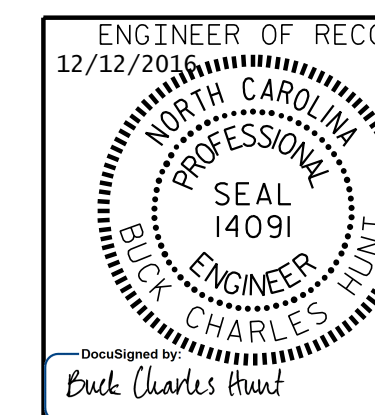
ELEVATION OF WING - W2



SECTION Y-Y

PROJECT NO. R-5719
 WAYNE COUNTY
 STATION: 39+11.12 -L-

SHEET 2 OF 3



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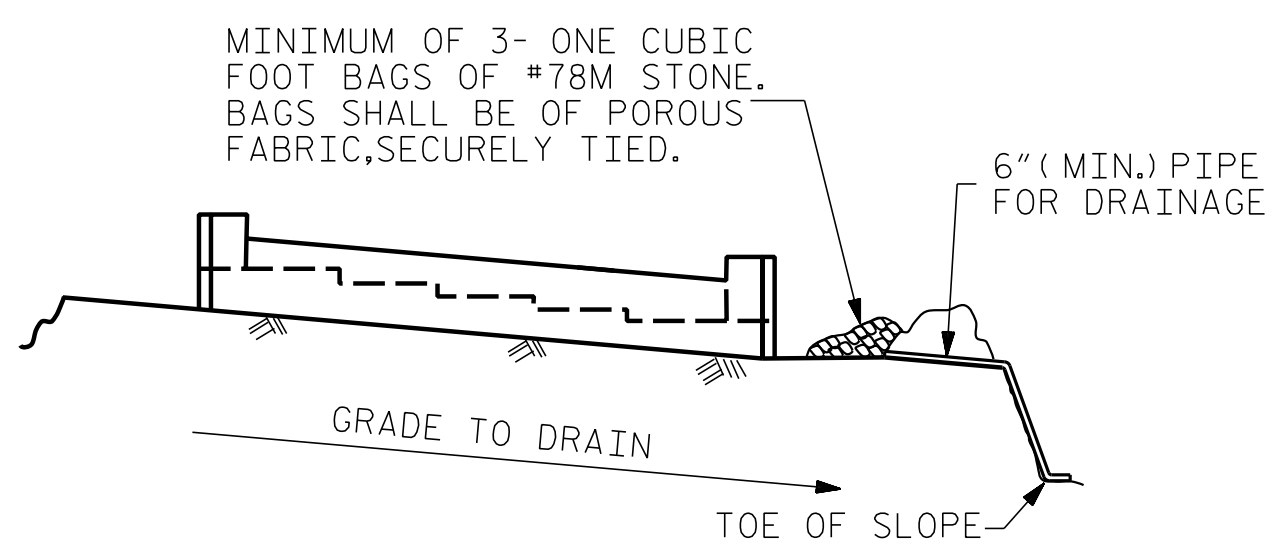
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 2
 (RIGHT LANE)

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

DRAWN BY: D. HODGE DATE: 2/16
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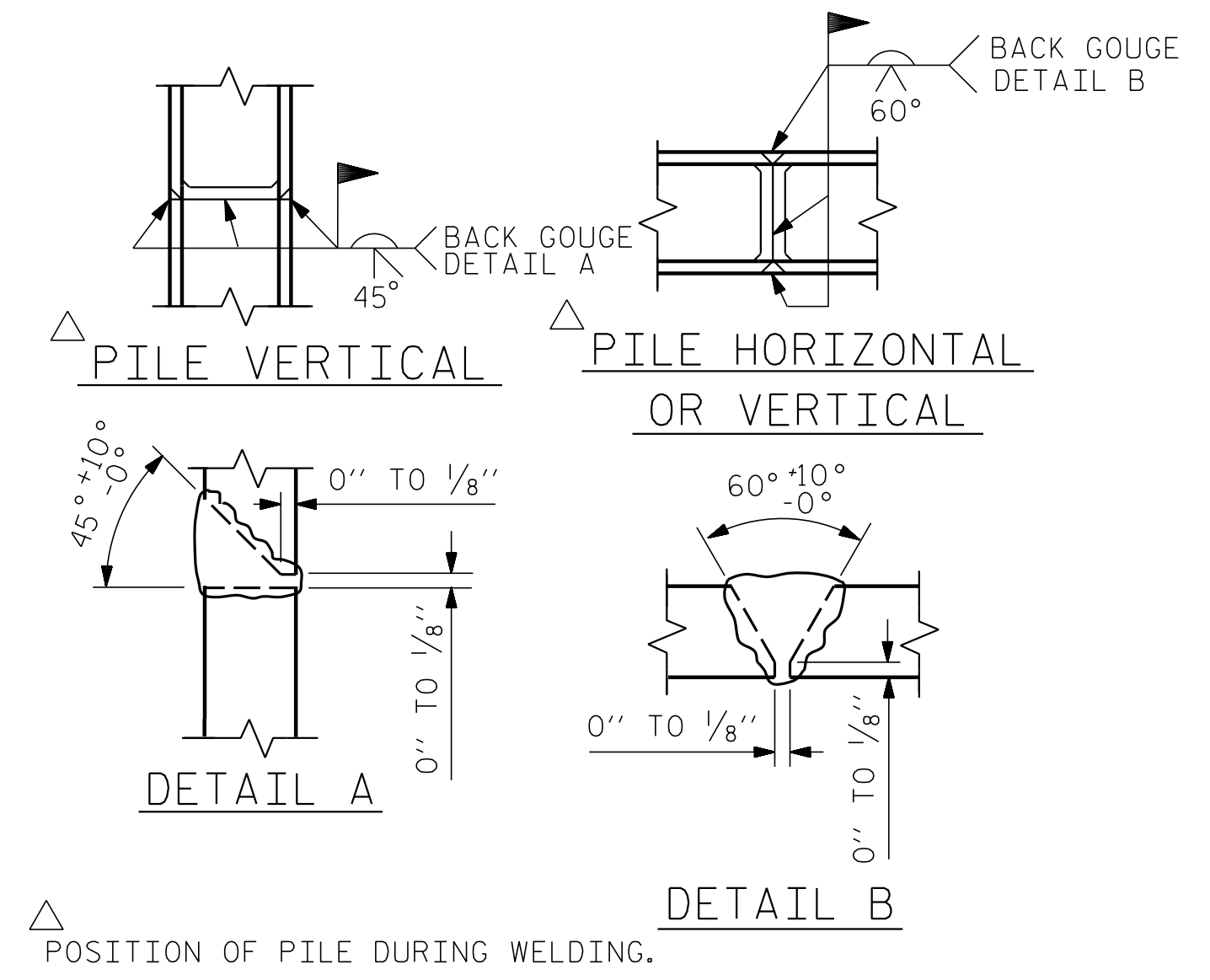


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

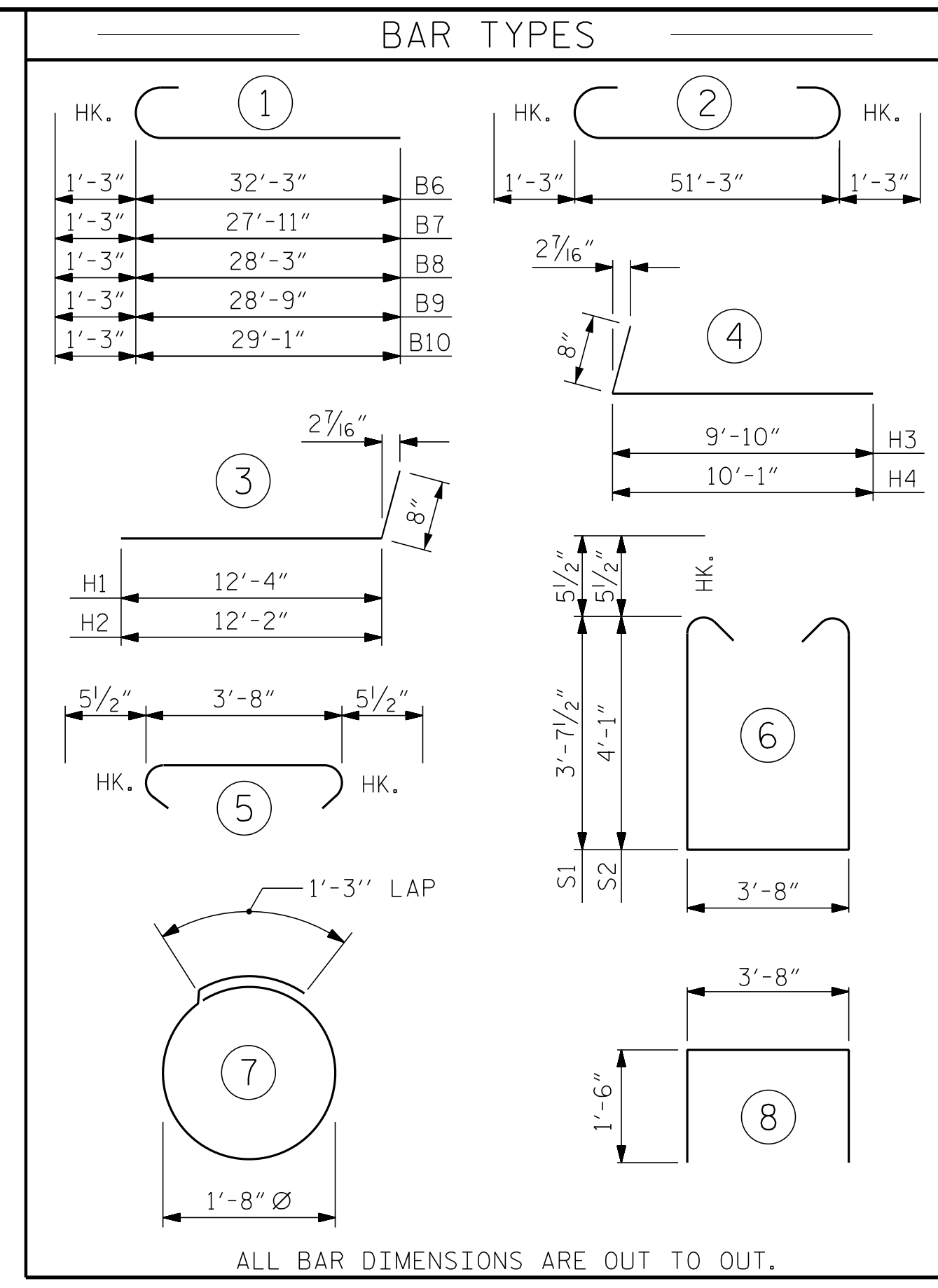
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL					
END BENT No. 2					
BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9	2	53'-9"	731
B2	8	#4	STR	27'-0"	144
B3	6	#5	STR	51'-5"	322
B4	15	#4	STR	3'-8"	37
B5	2	#5	STR	22'-4"	47
B6	4	#9	1	33'-6"	456
B7	1	#9	1	29'-2"	99
B8	1	#9	1	29'-6"	100
B9	1	#9	1	30'-0"	102
B10	1	#9	1	30'-4"	103
B11	1	#4	STR	9'-8"	6
B12	1	#4	STR	10'-0"	7
B13	1	#4	STR	10'-6"	7
B14	1	#4	STR	10'-10"	7
H1	23	#5	3	13'-0"	312
H2	23	#5	3	12'-10"	308
H3	21	#5	4	10'-6"	230
H4	21	#5	4	10'-9"	235
H5	52	#4	STR	3'-9"	130
S1	22	#5	6	11'-10"	272
S2	28	#5	6	12'-9"	372
S3	50	#5	5	4'-7"	239
S4	36	#4	7	6'-6"	156
U1	7	#4	8	6'-8"	31
V1	50	#4	STR	5'-9"	192
V2	34	#5	STR	11'-2"	396
V3	30	#5	STR	10'-2"	318

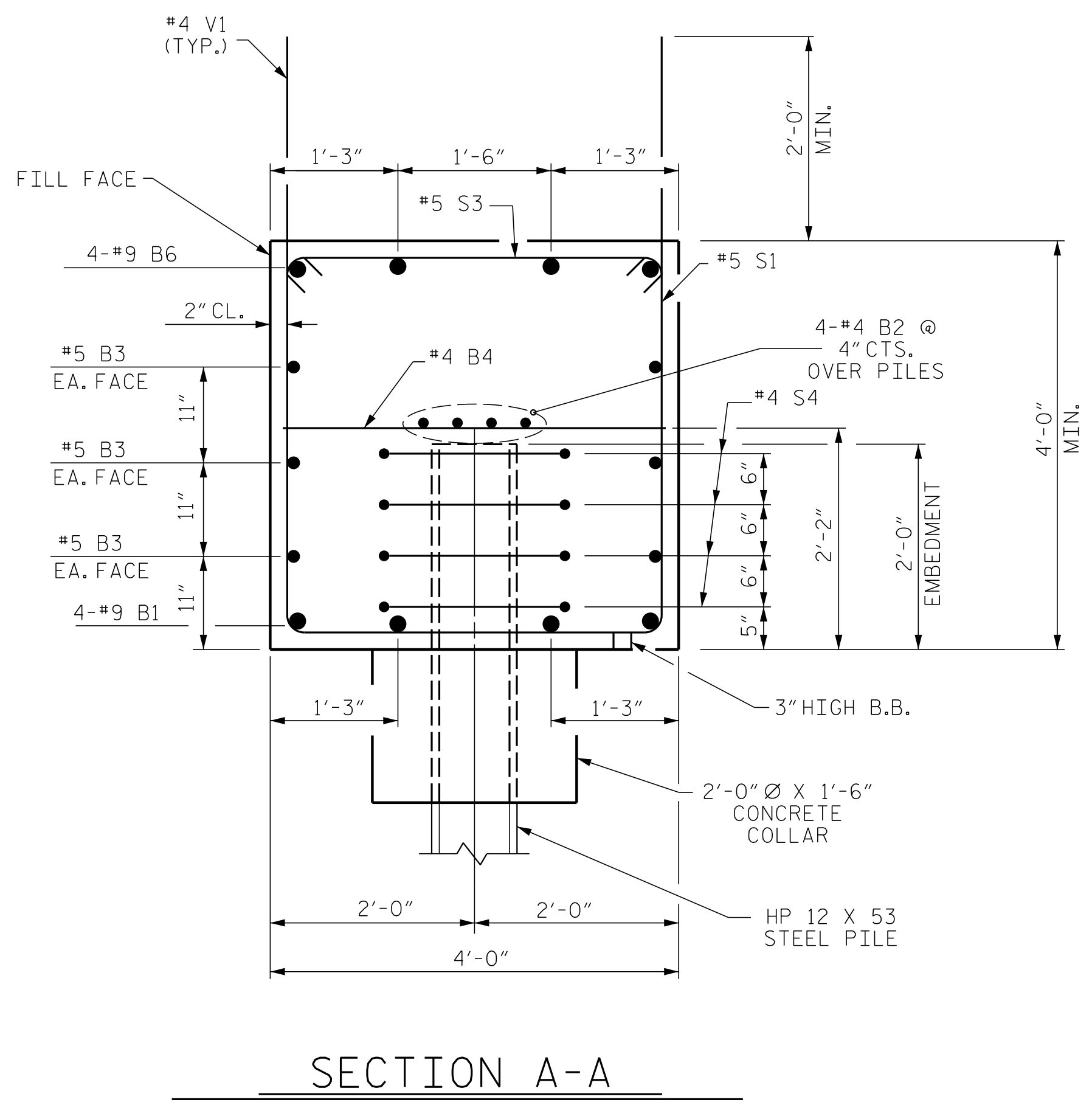
REINFORCING STEEL 5,359 LBS.

CLASS A CONCRETE BREAKDOWN	
POUR #1 CAP, CONC. COLLARS & LOWER PART OF WINGS	38.7 C.Y.
POUR #2 UPPER PART OF WINGS	7.0 C.Y.
TOTAL CLASS A CONCRETE	45.7 C.Y.

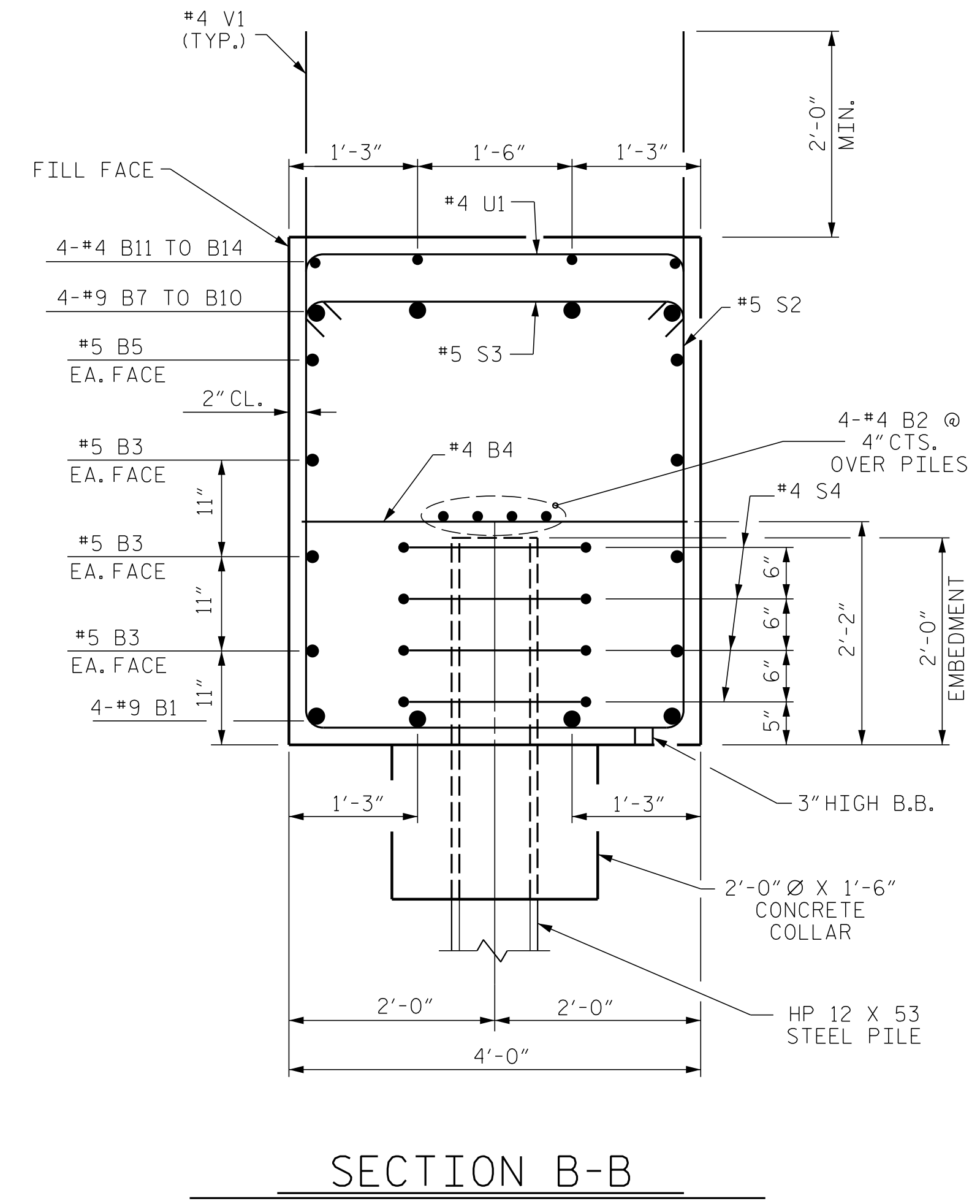
HP 12 X 53 STEEL PILES
NO: 9 LIN. FT. = 900.0

PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES
9 EA.

PROJECT NO. R-5719
WAYNE COUNTY
STATION: 39+11.12 -L-
SHEET 3 OF 3



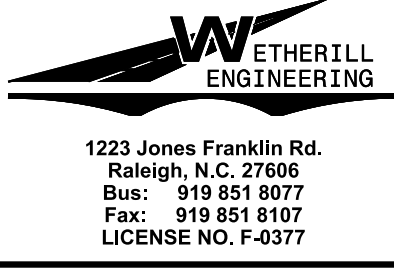
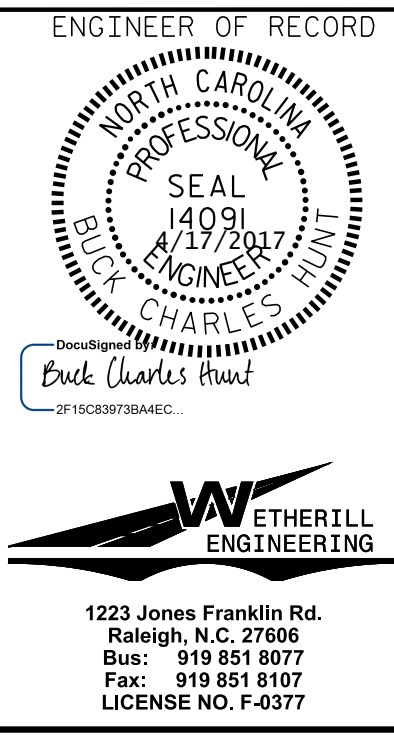
SECTION A-A



SECTION B-B

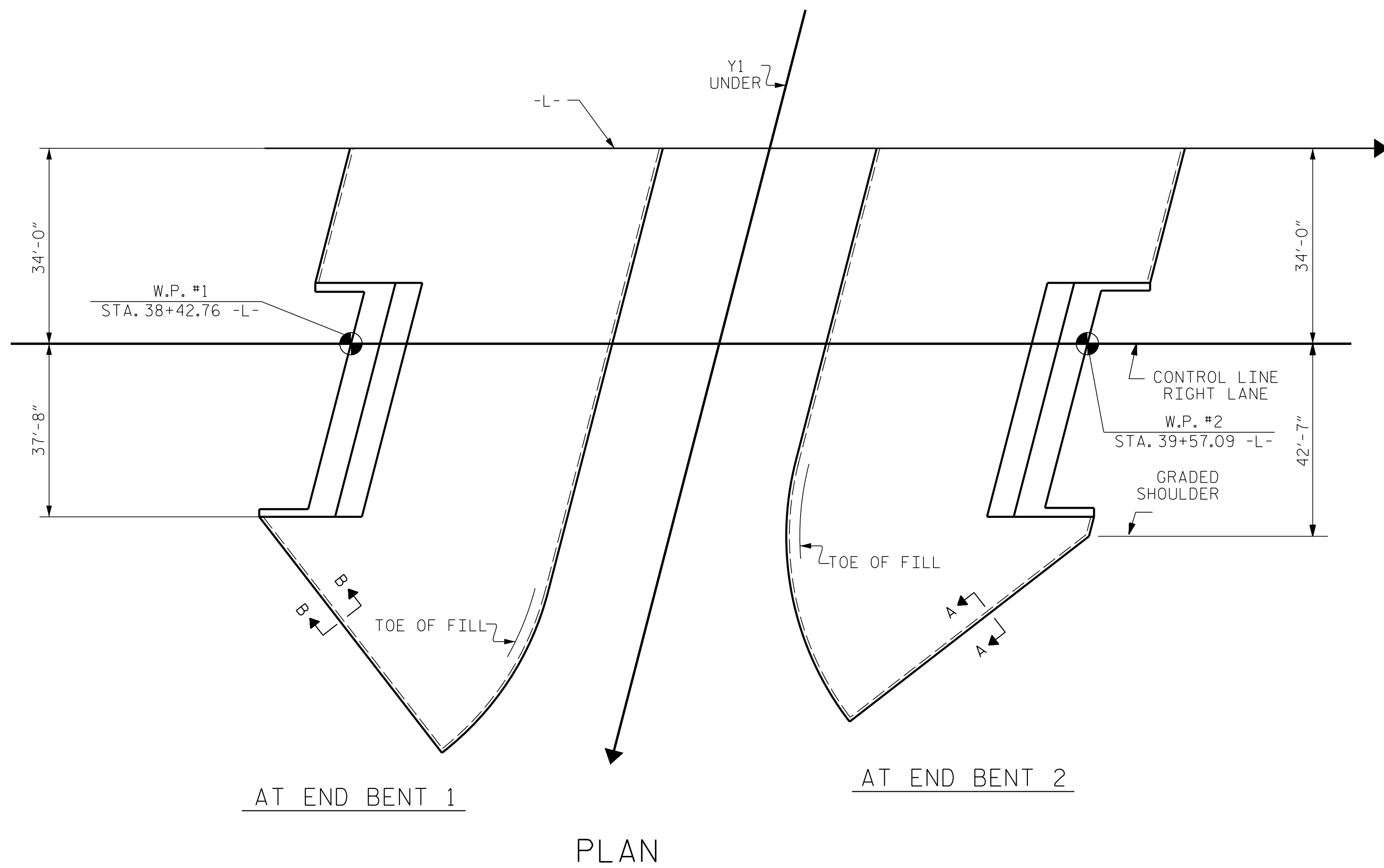
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SHEET NO. S02-22
TOTAL SHEETS 26

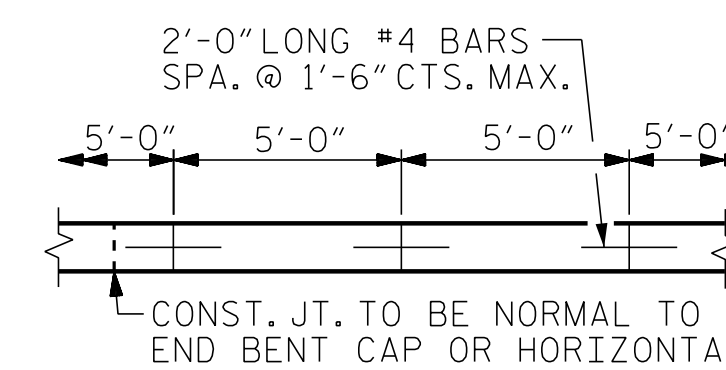
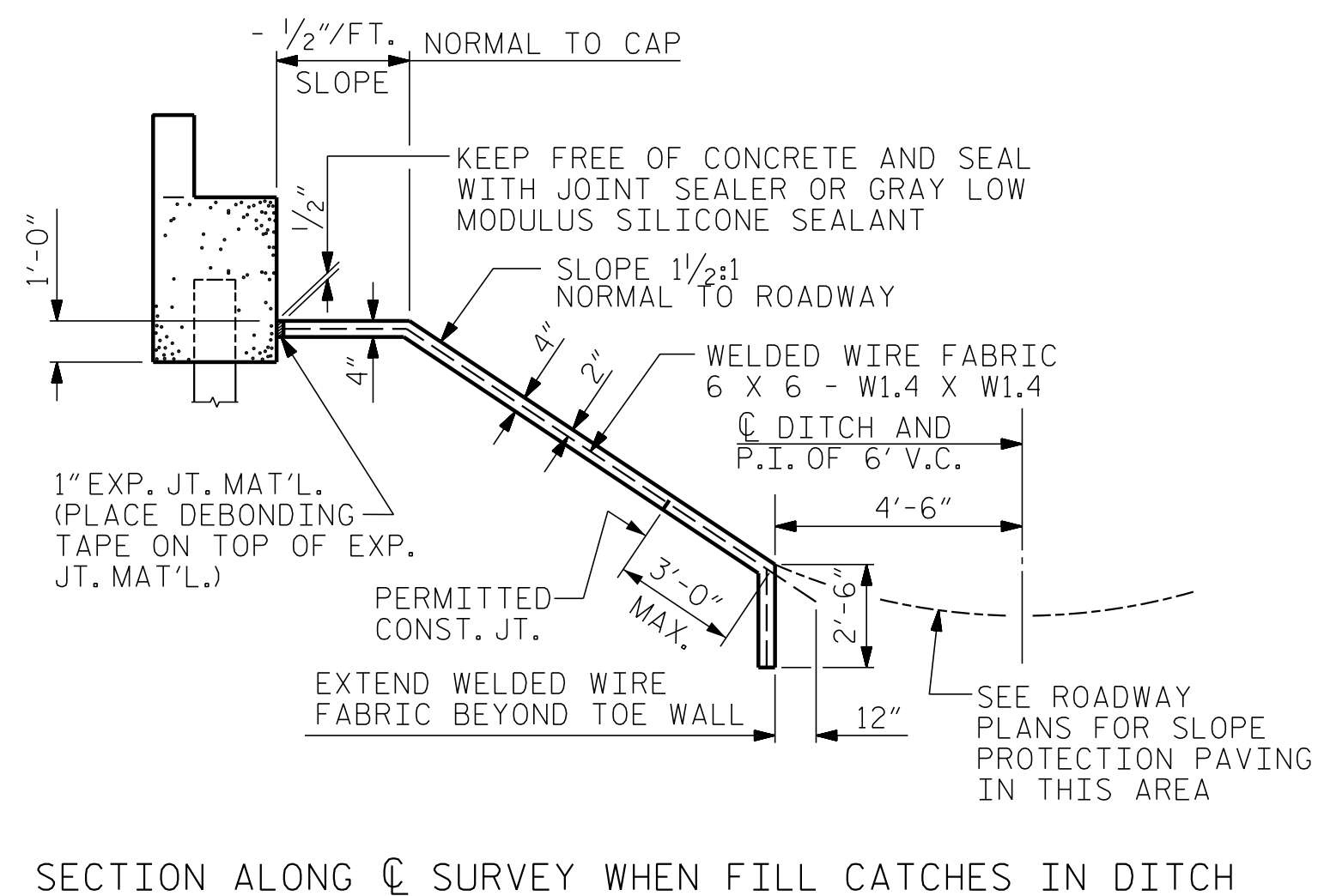
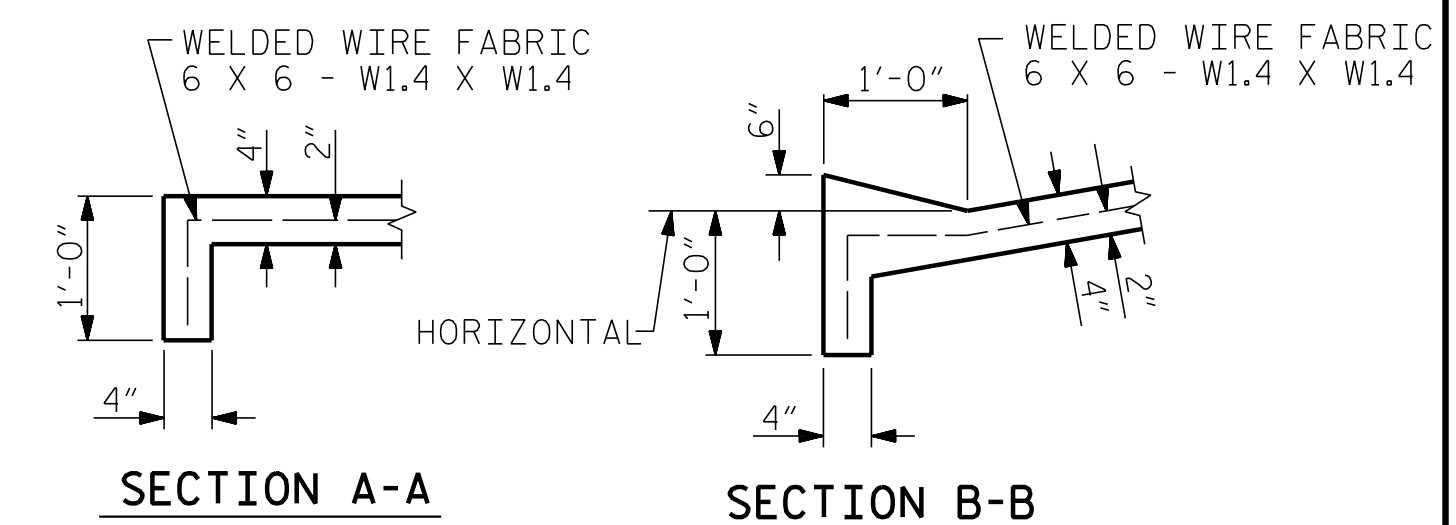


GENERAL NOTES

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. 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.

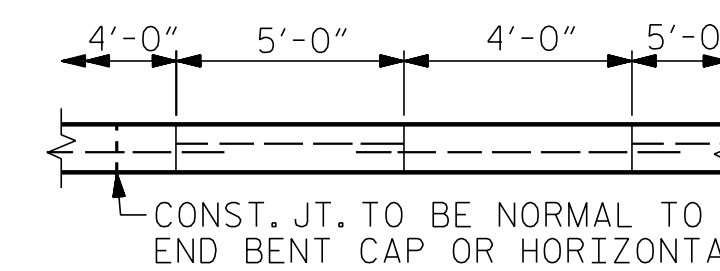
BRIDGE @ STA. 39+11.12 -L- RIGHT LANE	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	370	775
END BENT 2	335	700

* QUANTITY SHOWN IS BASED ON 5' POURS.



STRIP WIDTHS MAY VARY IN CURVED PORTION.

POURING DETAIL



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

OPTIONAL POURING DETAIL

PROJECT NO. R-5719
WAYNE COUNTY
 STATION: 39+11.12 -L-

SHEET 1 OF 2

ENGINEER OF RECORD
 12/12/2016

 Eric Charles Hunt
 2F15C087084E.C.

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 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**SLOPE PROTECTION
 DETAILS
 RIGHT LANE**

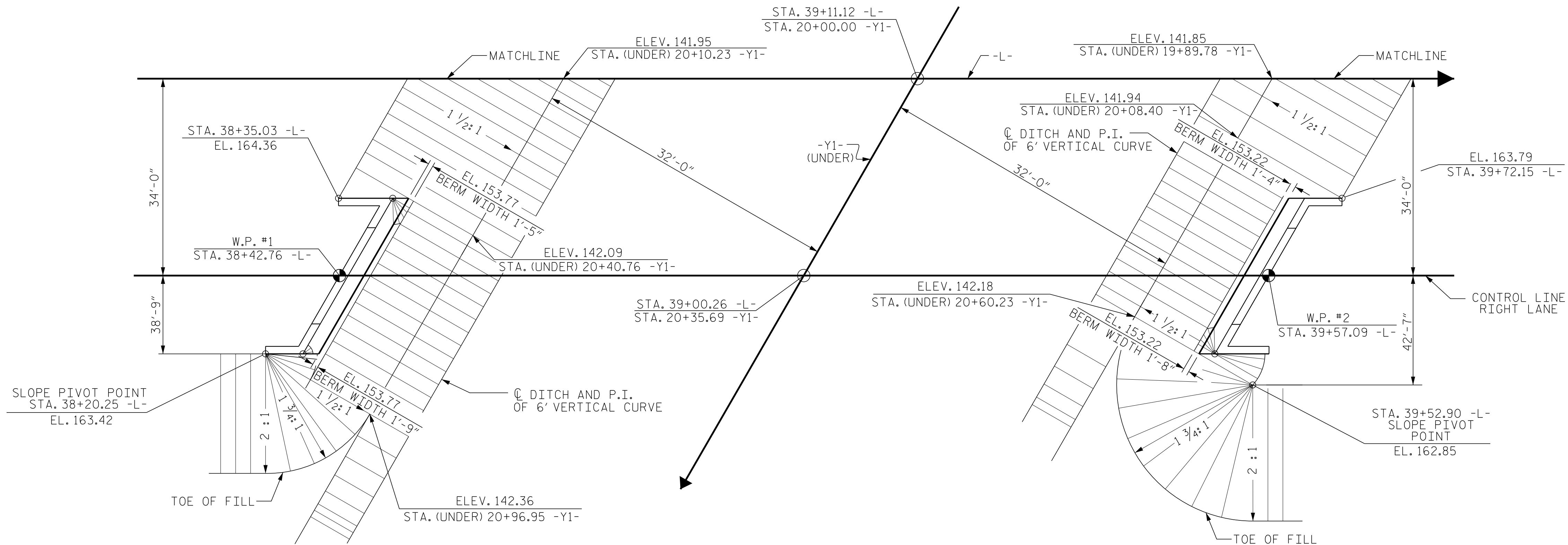
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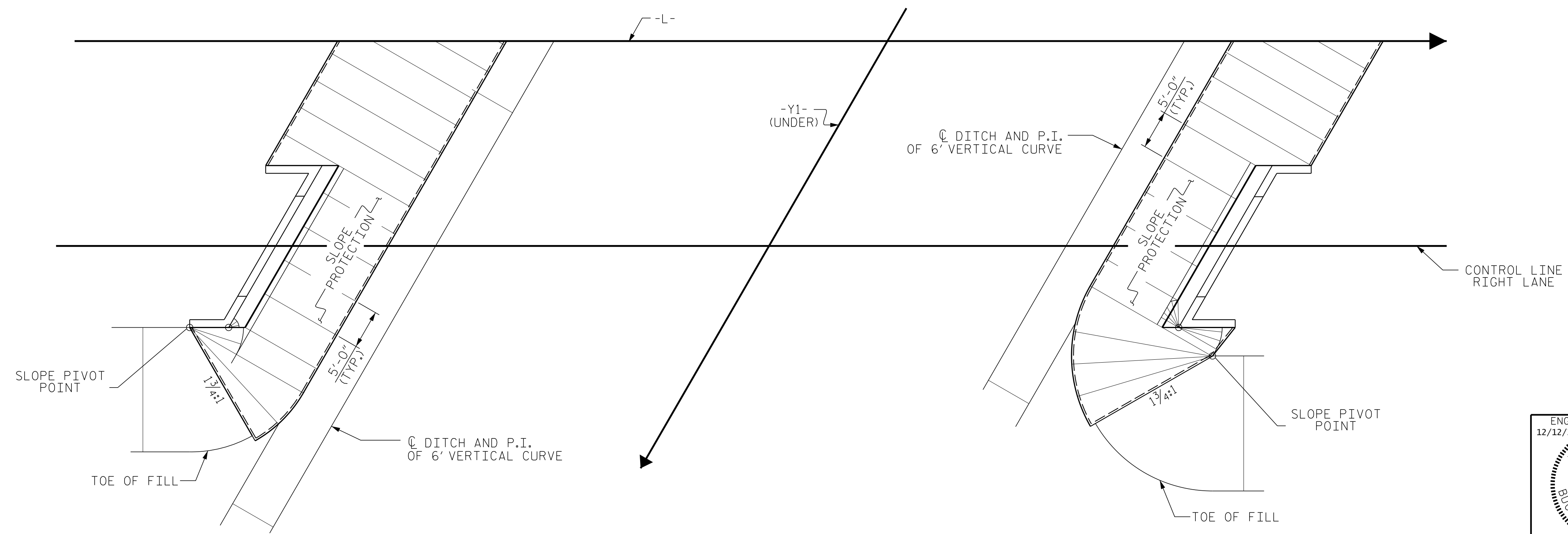


END BENT 1

END BENT 2

PLAN - GRADING

ELEVATIONS SHOWN AT STA. (UNDER) ARE AT TOP OF CONCRETE SLOPE PROTECTION

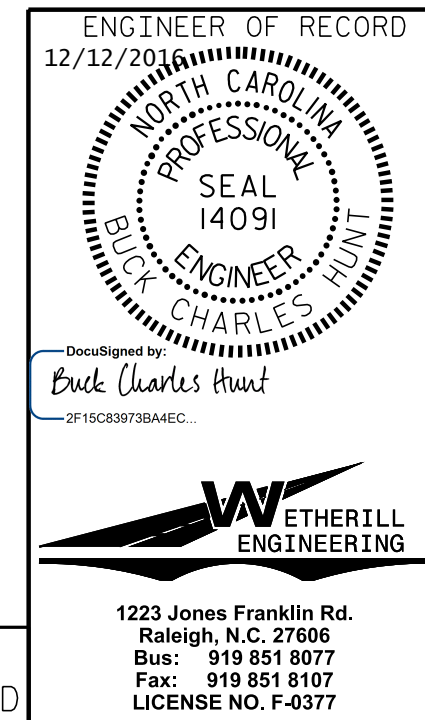


END BENT 1

END BENT 2

PLAN - CONCRETE PLACEMENT

PROJECT NO. R-5719
WAYNE COUNTY
 STATION: 39+11.12 -L-
 SHEET 2 OF 2

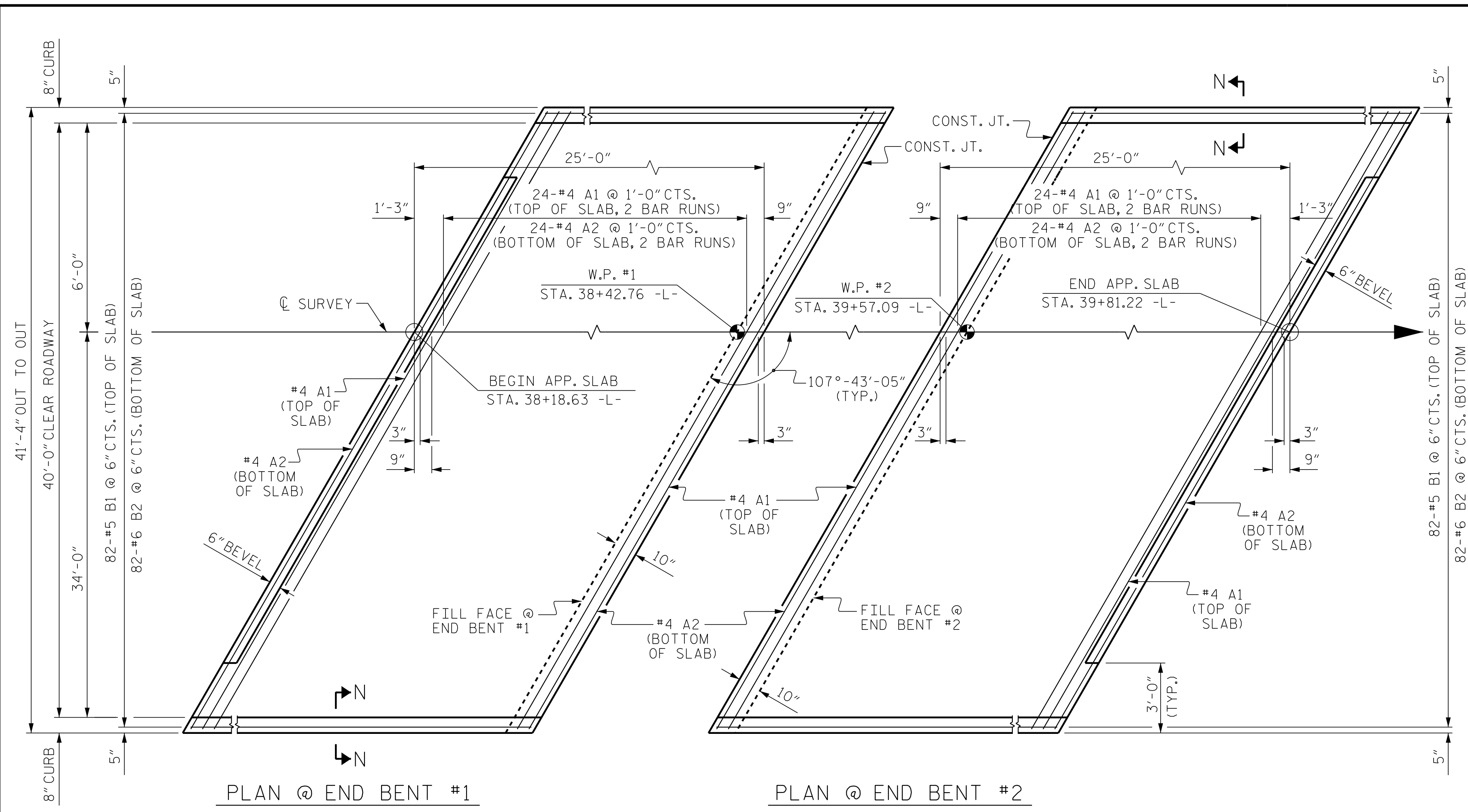


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD SLOPE PROTECTION DETAILS RIGHT LANE					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S02-24					TOTAL SHEETS 26

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

NOTES

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

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

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

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

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

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

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

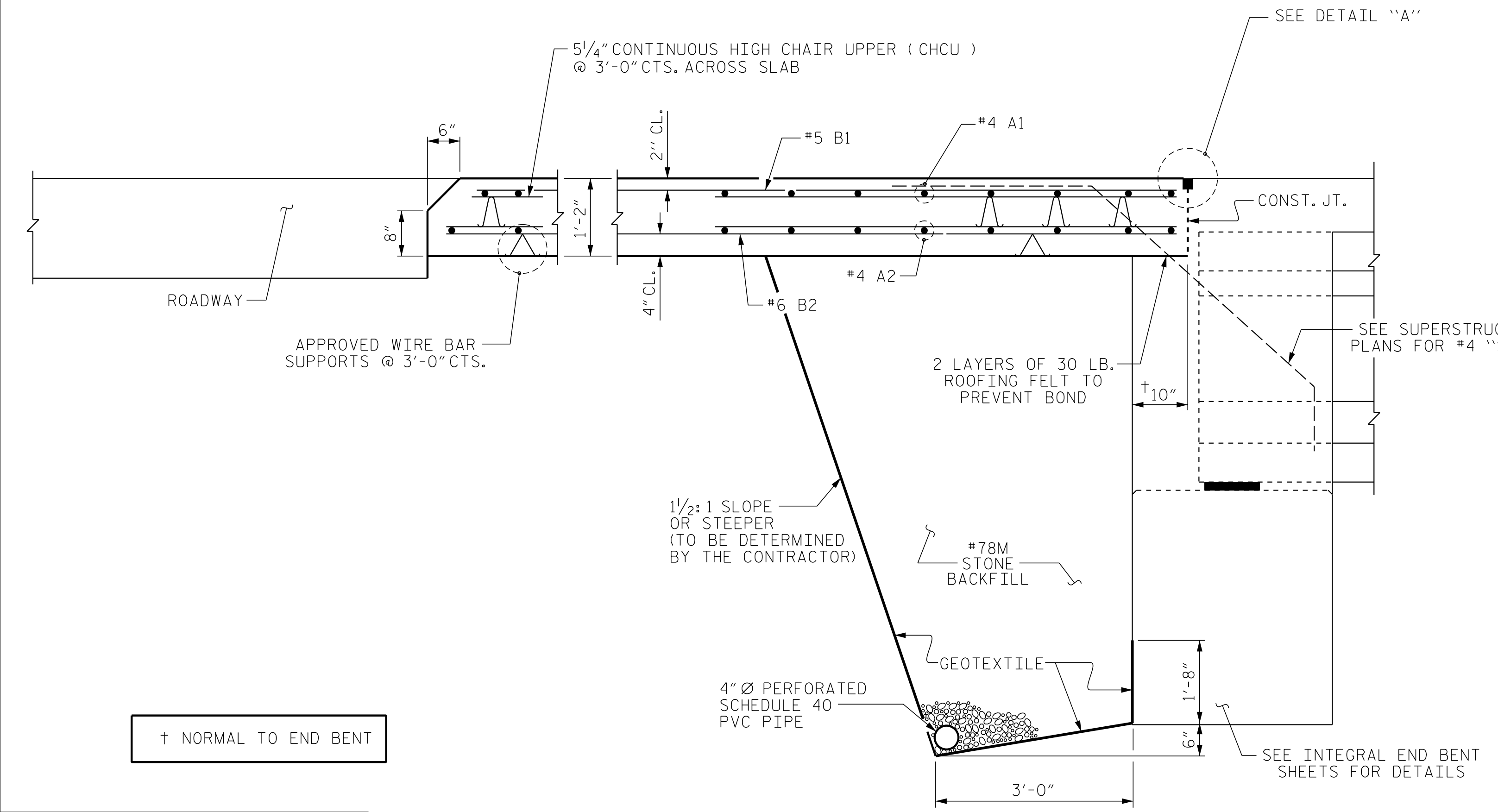
FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

BILL OF MATERIAL
 FOR ONE APPROACH SLAB
 (2 REQ'D)

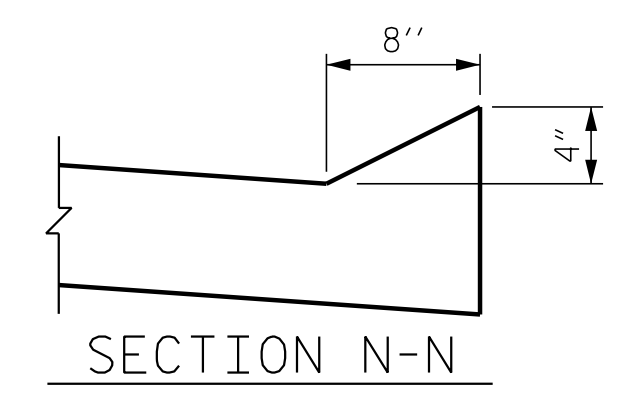
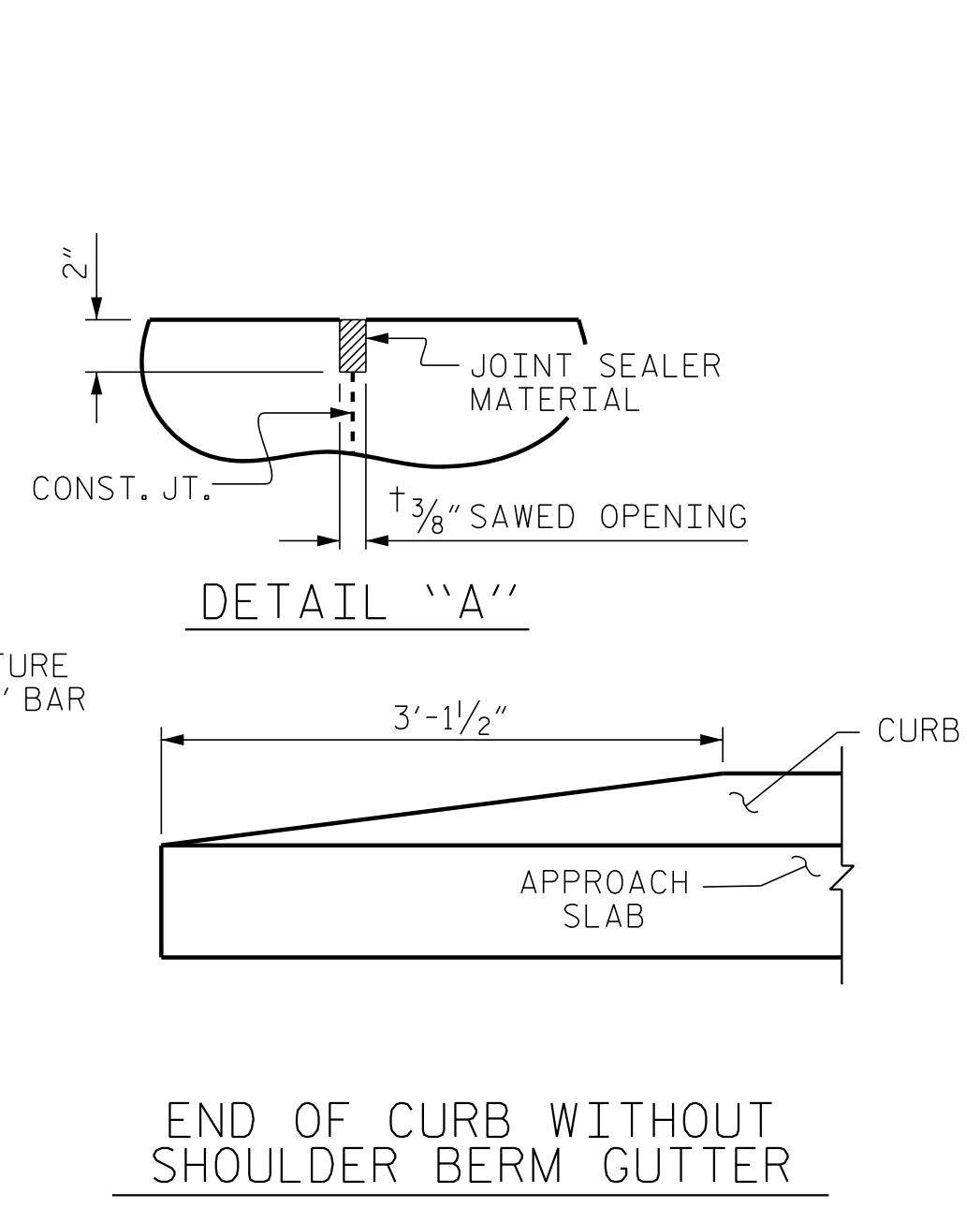
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	52	#4	STR	22'-7"	784
A2	52	#4	STR	22'-5"	779
* B1	82	#5	STR	24'-2"	2067
B2	82	#6	STR	24'-8"	3038
REINFORCING STEEL					LBS. 3817
* EPOXY COATED REINFORCING STEEL					LBS. 2851
CLASS AA CONCRETE					C. Y. 44.7

SPLICE LENGTHS

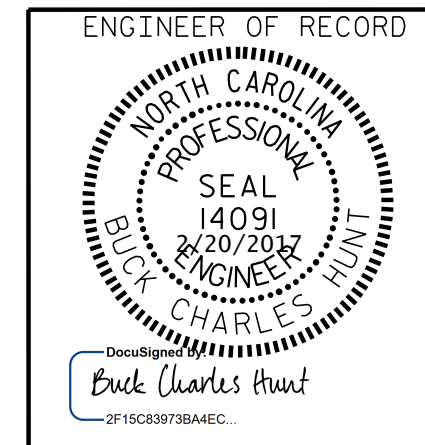
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"



SECTION THRU SLAB



PROJECT NO. R-5719
 WAYNE COUNTY
 STATION: 39+11.12 -L-
 SHEET 1 OF 2



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

REVISIONS

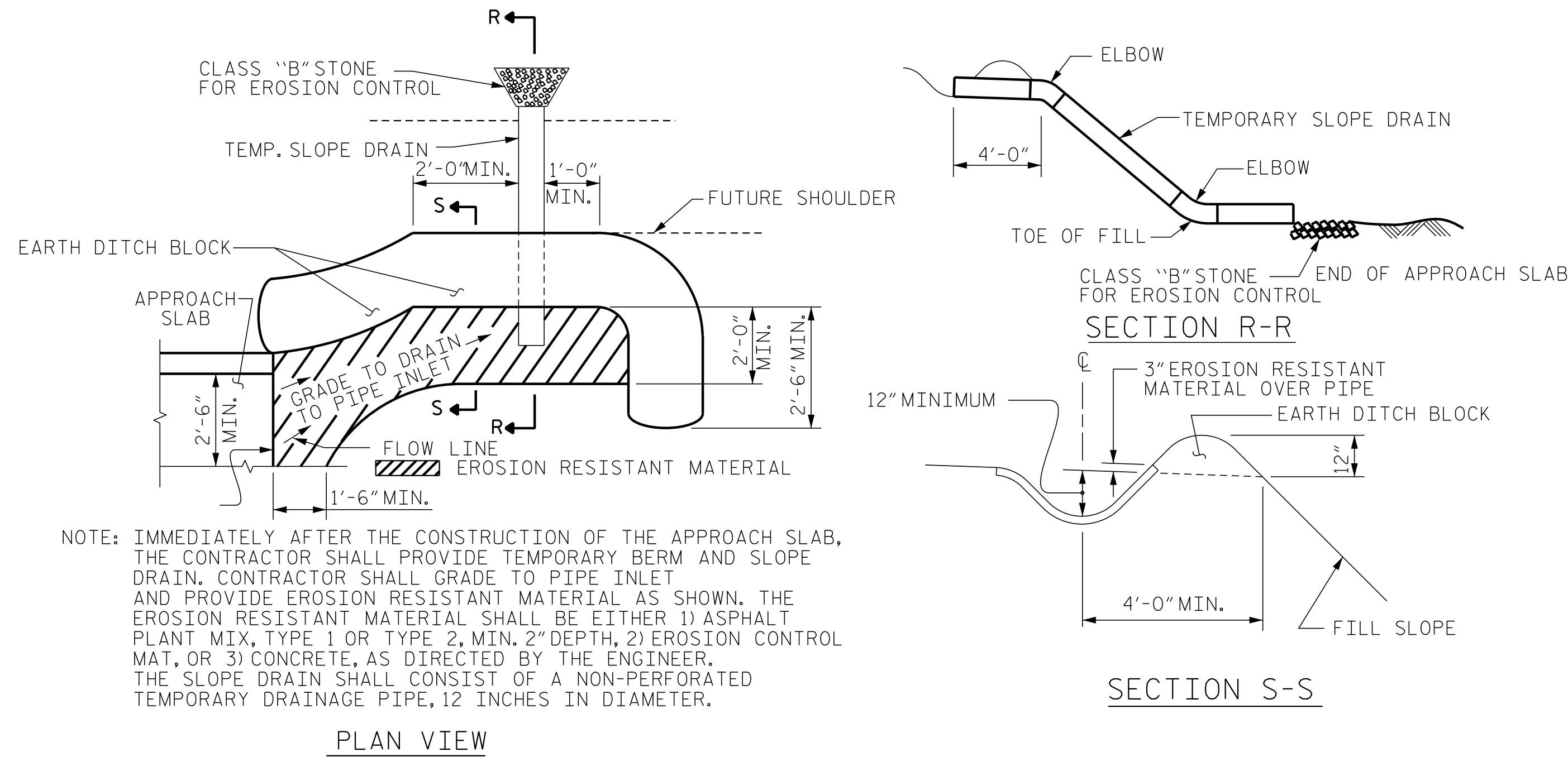
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SHEET NO. S02-25
 TOTAL SHEETS 26

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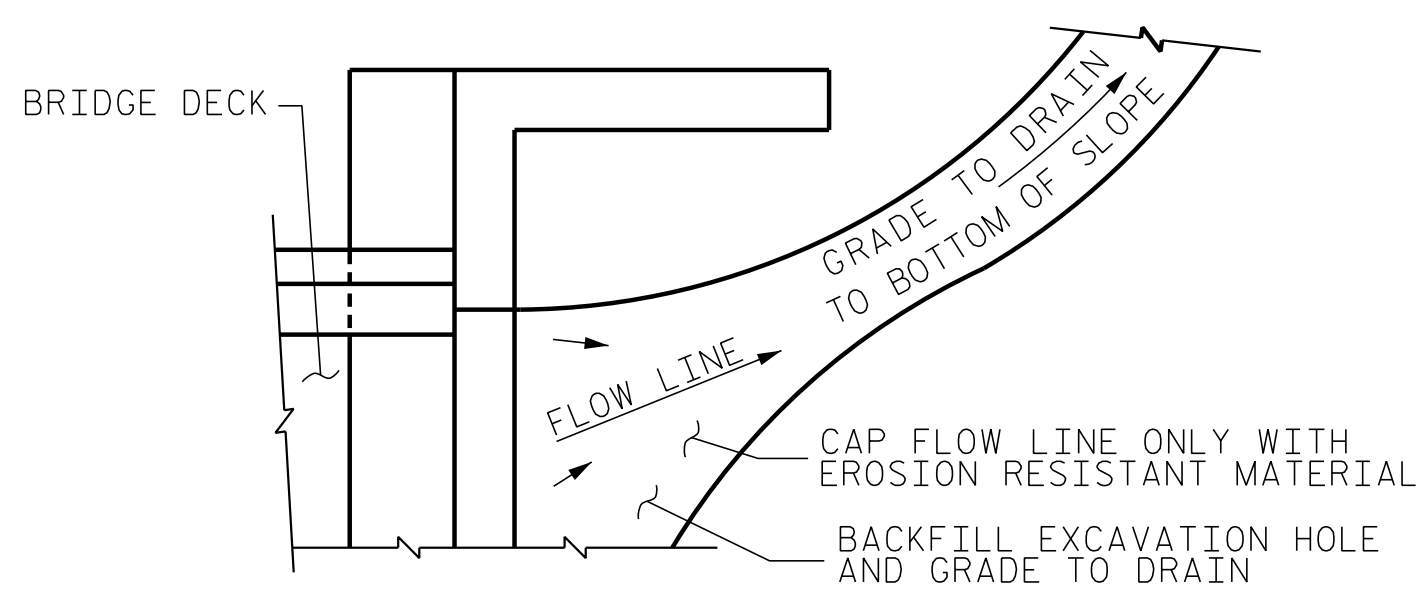
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 CHECKED BY: G.M. GILLAND DATE: 10-7-15
 DRAWN BY: TLA 10/05 MAA/GM
 CHECKED BY: GM 5/06 REV. 10/11 MAA/GM
 REV. 12/21/11 MAA/GM
 REV. 6/13 MAA/GM



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

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

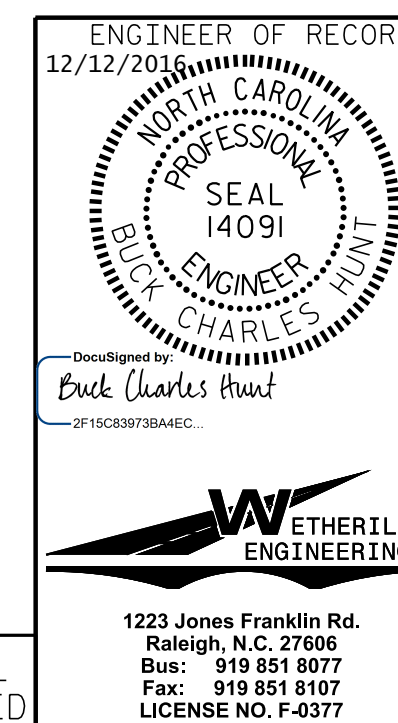


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. R-5719
WAYNE COUNTY
 STATION: 39+11.12 -L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 BRIDGE APPROACH
 SLAB DETAILS
 RIGHT LANE

REVISIONS

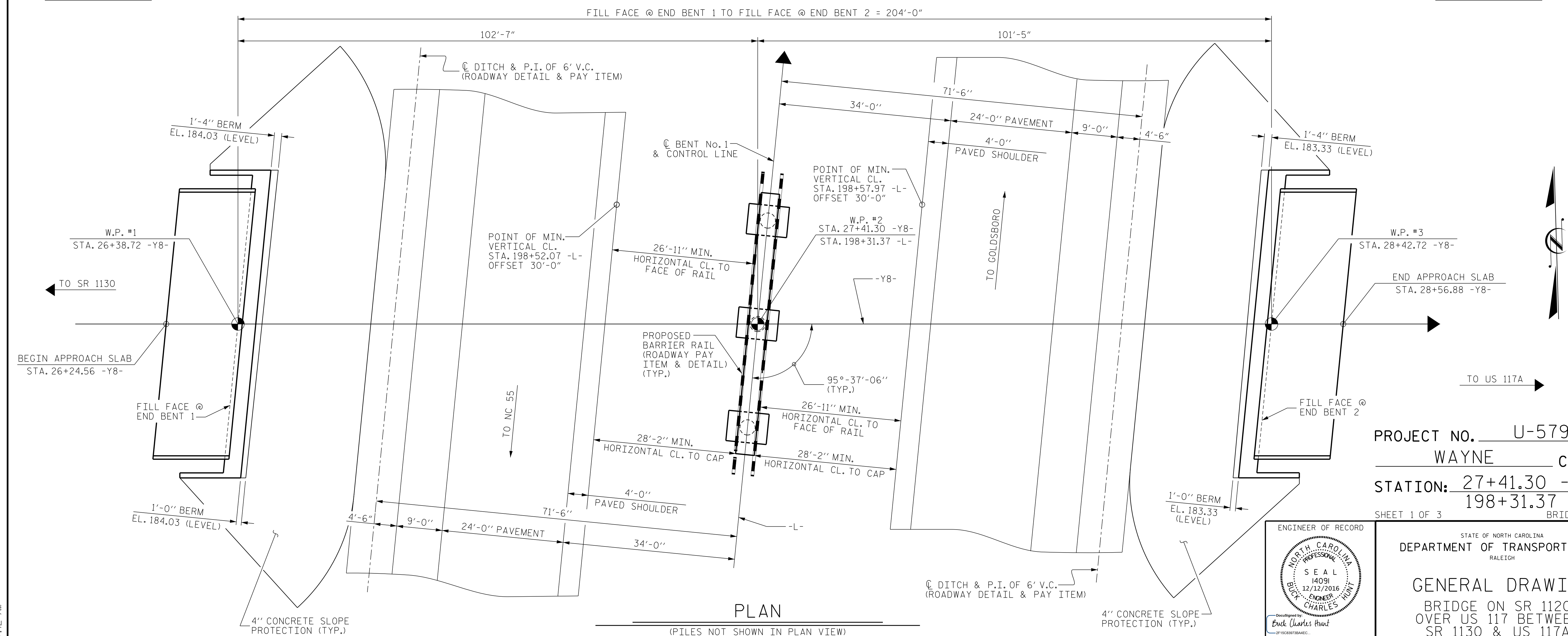
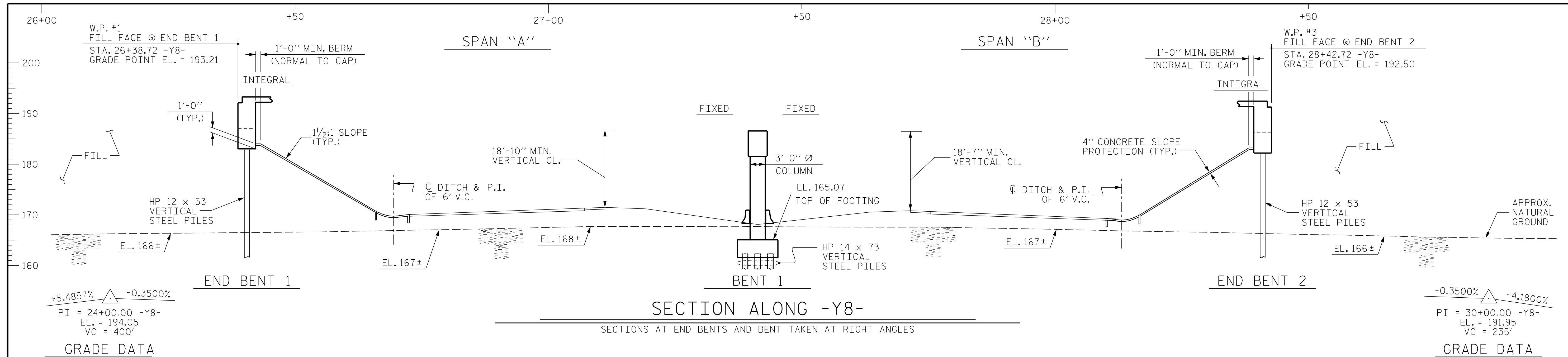
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.
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2			4			26

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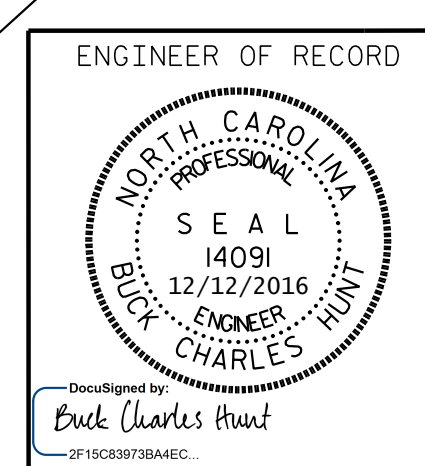
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ASSEMBLED BY : B.C. HUNT	DATE : 10-6-15
CHECKED BY : G.M. GILLAND	DATE : 10-7-15
DRAWN BY : FCJ 11/88	REV. 10/11/11 MAA/GM
CHECKED BY : ARB 11/88	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM



PROJECT NO. U-5796
 WAYNE COUNTY
 STATION: 27+41.30 -Y8-
 198+31.37 -L-
 SHEET 1 OF 3 BRIDGE No. 392



ENGINEER OF RECORD
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

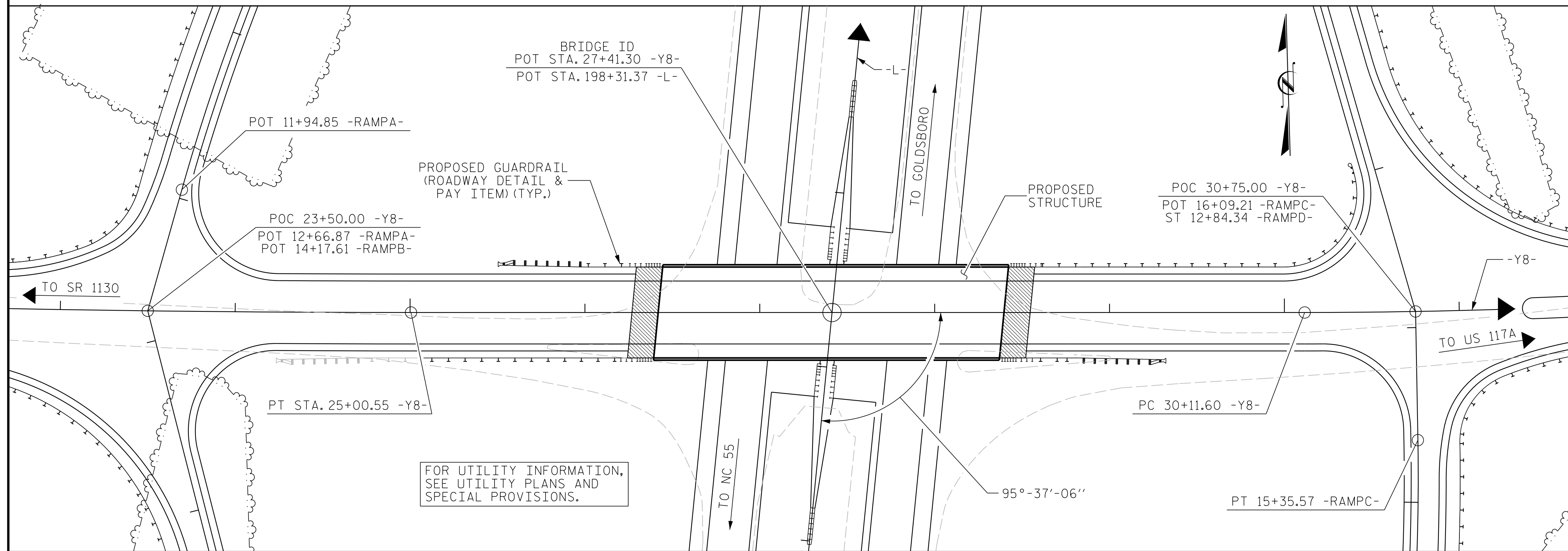
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GENERAL DRAWING BRIDGE ON SR 1120 OVER US 117 BETWEEN SR 1130 & US 117A					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S01-1					TOTAL SHEETS 34

DRAWN BY: G.M. GILLAND DATE: 6/16
 CHECKED BY: B.C. HUNT DATE: 6/16

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BM #2: 45.00' LT. OF STA. 37+28.58 -Y8-, ELEV. = 172.89



LOCATION SKETCH

NOTES :

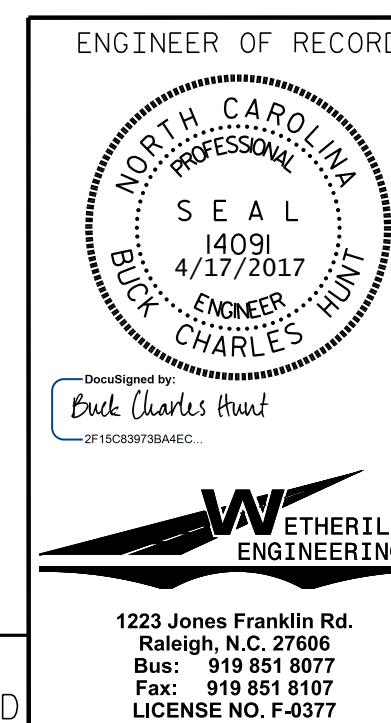
- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- 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.
- 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 MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

TOTAL BILL OF MATERIAL

	FOUNDATION EXCAVATION FOR BENT	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 STEEL PILES	HP 12 x 53 STEEL PILES		HP 14 x 73 STEEL PILES		PILE REDRIVES	TWO BAR METAL RAIL	1'-2" x 2'-6" CONCRETE PARAPET	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	
	LUMP SUM	EACH	SQ.FT.	SQ.FT.	CU.YDS.	LUMP SUM	LBS.	LBS.	No.	LIN.FT.	EA.	EA.	NO.	LIN.FT.	NO.	LIN.FT.	EA.	LIN.FT.	LIN.FT.	SO. YDS.	LUMP SUM	
SUPERSTRUCTURE			11,135	11,318					12	1,206.38								389.42	404.65			
END BENT 1					42.6		5,243				10		10	850			10				470	
BENT 1					68.4		10,566	1,157				18			18	1,260	18					
END BENT 2					42.6		5,243				10		10	900			10				450	
TOTAL	LUMP SUM	3	11,135	11,318	153.6	LUMP SUM	21,052	1,157	12	1,206.38	20	18	20	1,750	18	1,260	38	389.42	404.65	920	LUMP SUM	

PROJECT NO. U-5796
WAYNE COUNTY
 STATION: 27+41.30 -Y8-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE ON SR 1120
 OVER US 117 BETWEEN
 SR 1130 & US 117A

REVISIONS

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

SHEET NO.
 S01-3
 TOTAL SHEETS
 34

DRAWN BY : G.M. GILLAND DATE : 6/16
 CHECKED BY : B.C. HUNT DATE : 6/16

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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	1.02	---	1.75	0.880	1.430	A	E	49.850	0.890	1.220	A	E	70.070	0.80	0.880	1.020	A	E	49.850		
	HL-93 (OPERATING)	N/A		1.85	---	1.35	0.880	1.850	A	E	49.850	0.890	2.060	A	E	90.290	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.42	51.120	1.75	0.880	1.990	A	E	49.850	0.890	2.000	A	I	90.290	0.80	0.880	1.420	A	E	49.850		
	HS-20 (OPERATING)	36.000		2.58	92.880	1.35	0.880	2.580	A	E	49.850	0.890	2.620	A	I	90.290	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.36	45.360	1.40	0.880	5.910	A	E	49.850	0.890	6.400	A	I	90.290	0.80	0.880	3.360	A	E	49.850	
		SNGARBS2	20.000		2.43	48.600	1.40	0.880	4.280	A	E	49.850	0.890	4.440	A	I	90.290	0.80	0.880	2.430	A	E	49.850	
		SNAGRIS2	22.000		2.28	50.160	1.40	0.880	4.000	A	E	49.850	0.890	4.090	A	I	90.290	0.80	0.880	2.280	A	E	49.850	
		SNCOTTS3	27.250		1.67	45.508	1.40	0.880	2.940	A	E	49.850	0.890	3.120	A	I	90.290	0.80	0.880	1.670	A	E	49.850	
		SNAGGRS4	34.925		1.37	47.847	1.40	0.880	2.410	A	E	49.850	0.890	2.520	A	I	90.290	0.80	0.880	1.370	A	E	49.850	
		SNS5A	35.550		1.34	47.637	1.40	0.880	2.360	A	E	49.850	0.890	2.530	A	I	90.290	0.80	0.880	1.340	A	E	49.850	
		SNS6A	39.950		1.22	48.739	1.40	0.880	2.140	A	E	49.850	0.890	2.280	A	I	90.290	0.80	0.880	1.220	A	E	49.850	
		SNS7B	42.000		1.16	48.720	1.40	0.880	2.040	A	E	49.850	0.890	2.220	A	I	90.290	0.80	0.880	1.160	A	E	49.850	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.48	48.840	1.40	0.880	2.610	A	E	49.850	0.890	2.760	A	I	90.290	0.80	0.880	1.480	A	E	49.850	
		TNT4A	33.075		1.49	49.282	1.40	0.880	2.610	A	E	49.850	0.890	2.700	A	I	90.290	0.80	0.880	1.490	A	E	49.850	
		TNT6A	41.600		1.20	49.920	1.40	0.880	2.120	A	E	49.850	0.890	2.320	A	I	90.290	0.80	0.880	1.200	A	E	49.850	
		TNT7A	42.000		1.20	50.400	1.40	0.880	2.120	A	E	49.850	0.890	2.290	A	I	90.290	0.80	0.880	1.200	A	E	49.850	
		TNT7B	42.000		1.23	51.660	1.40	0.880	2.170	A	E	49.850	0.890	2.180	A	I	90.290	0.80	0.880	1.230	A	E	49.850	
		TNAGRIT4	43.000		1.18	50.740	1.40	0.880	2.080	A	E	49.850	0.890	2.110	A	I	90.290	0.80	0.880	1.180	A	E	49.850	
TNAGT5A	45.000		1.12	50.400	1.40	0.880	1.970	A	E	49.850	0.890	2.070	A	I	90.290	0.80	0.880	1.120	A	E	49.850			
TNAGT5B	45.000		③	1.11	49.950	1.40	0.880	1.950	A	E	49.850	0.890	2.010	A	I	90.290	0.80	0.880	1.110	A	E	49.850		

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:

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

Ⓝ CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

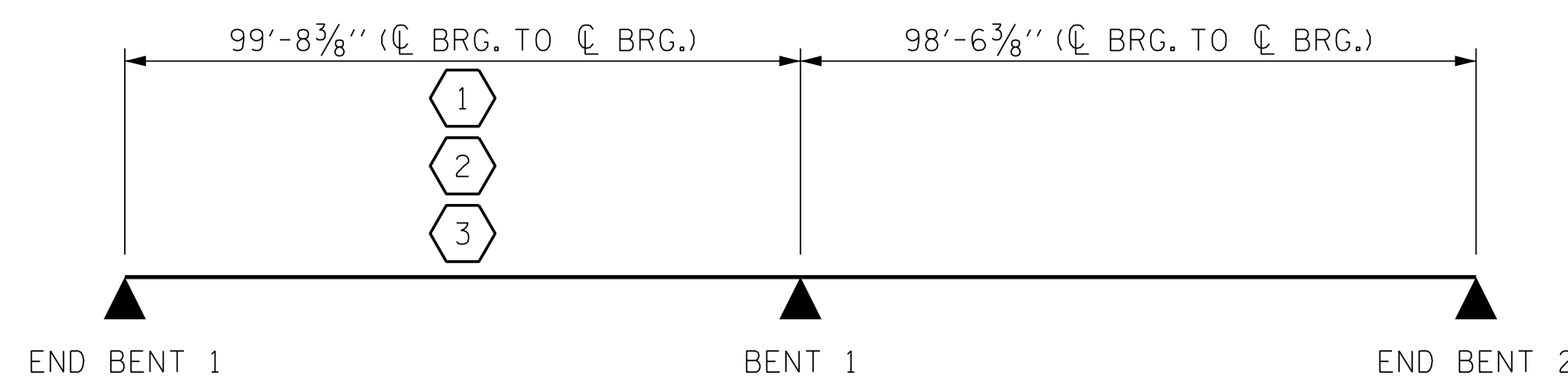
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER
E - EXTERIOR GIRDER



LRFR SUMMARY

PROJECT NO. U-5796
WAYNE COUNTY
 STATION: 27+41.30 -Y8-

P:\2015\U-5796 Structures\DG\U5796_LRFR_WE I.dgn 12/7/2016 10:06:48 AM

ASSEMBLED BY : G.M. GILLAND	DATE : 12-29-15
CHECKED BY : D. HODGE	DATE : 1-16
DRAWN BY : MAA 1/08	REV. 11/2/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM

DOCUMENT NOT CONSIDERED FINAL
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ENGINEER OF RECORD

SEAL
14091
12/12/2016
ENGINEER
CHARLES HUNT

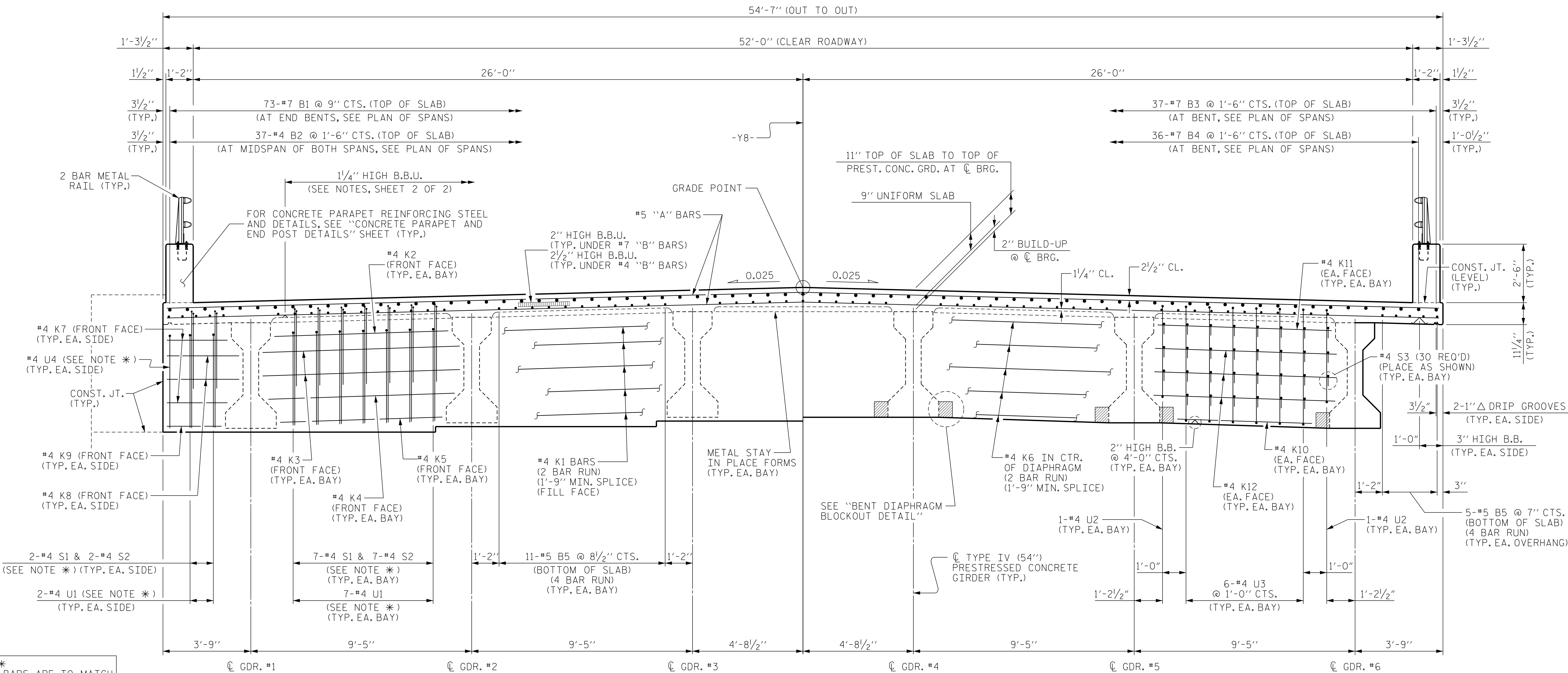
Buck Charles Hunt
215089788MEC

WETHERILL
ENGINEERING

1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

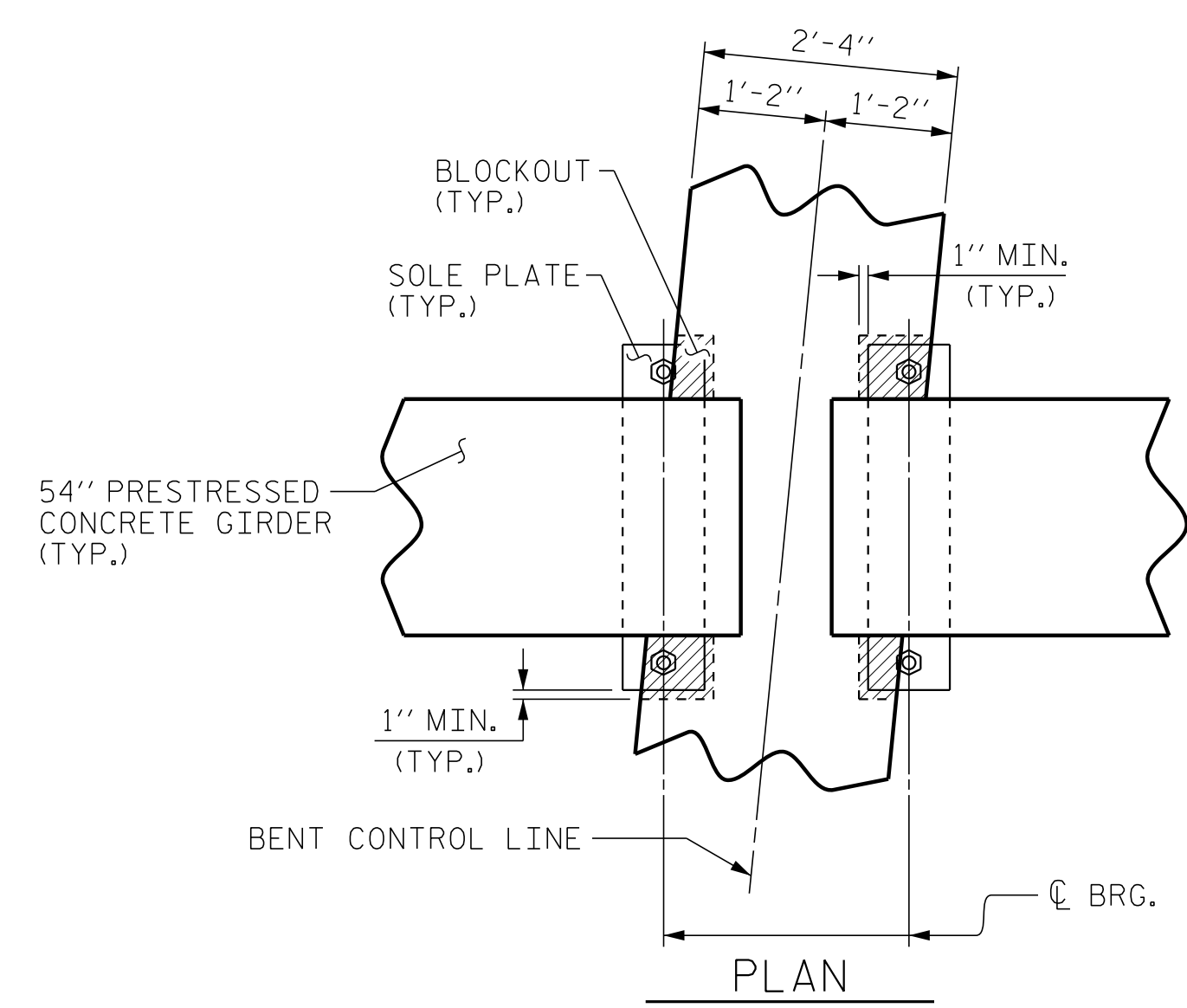
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS (NON-INTERSTATE TRAFFIC)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S01-4
					TOTAL SHEETS 34

STD. NO. LRFR1

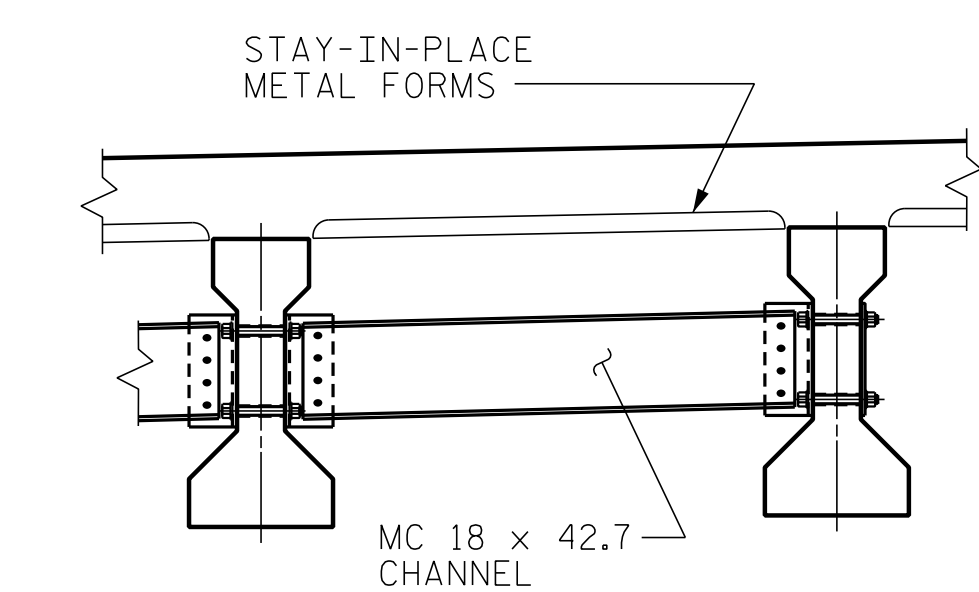
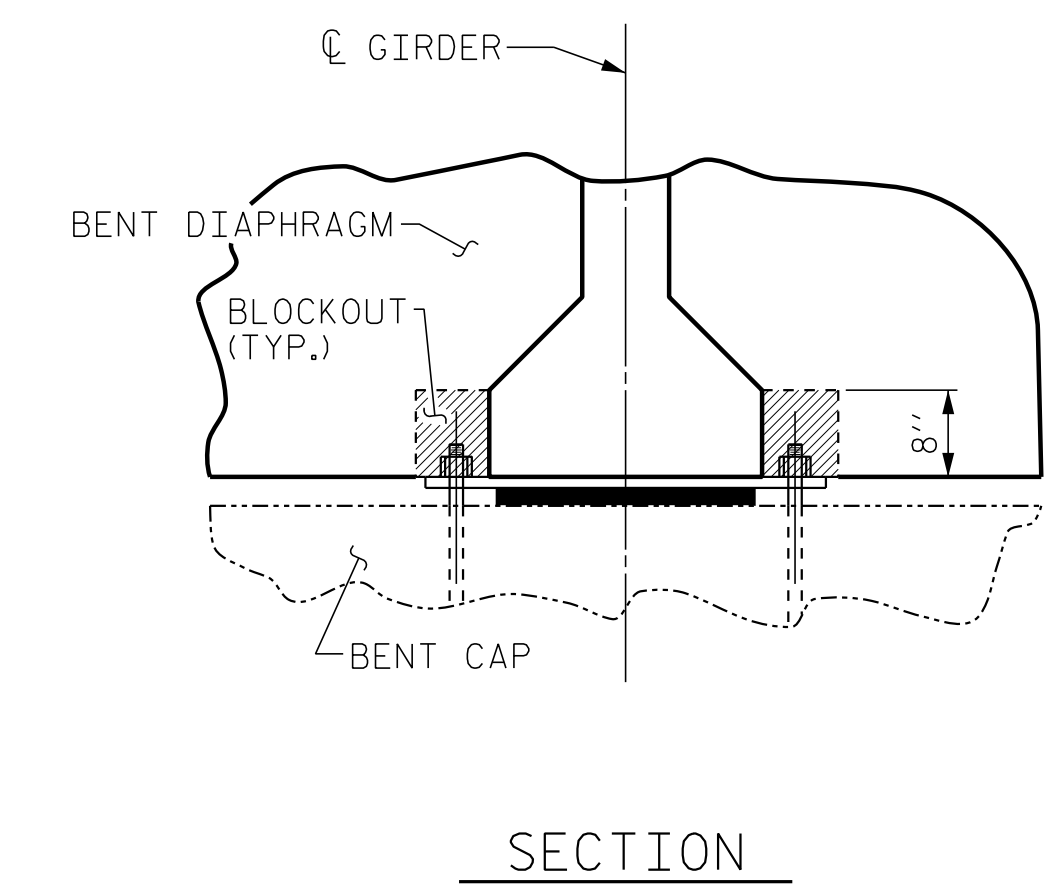


HALF SECTION - INTEGRAL END BENT DIAPHRAGM
TYPICAL SECTION
HALF SECTION - BENT DIAPHRAGM

NOTE *
THESE BARS ARE TO MATCH #4 "V" BARS IN END BENT



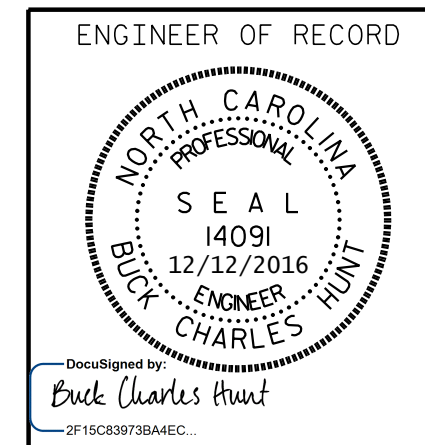
BENT DIAPHRAGM BLOCK-OUT DETAIL



TYPICAL INTERMEDIATE DIAPHRAGM

SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS" SHEET FOR DETAILS

PROJECT NO. U-5796
WAYNE COUNTY
STATION: 27+41.30 -Y8-
SHEET 1 OF 2



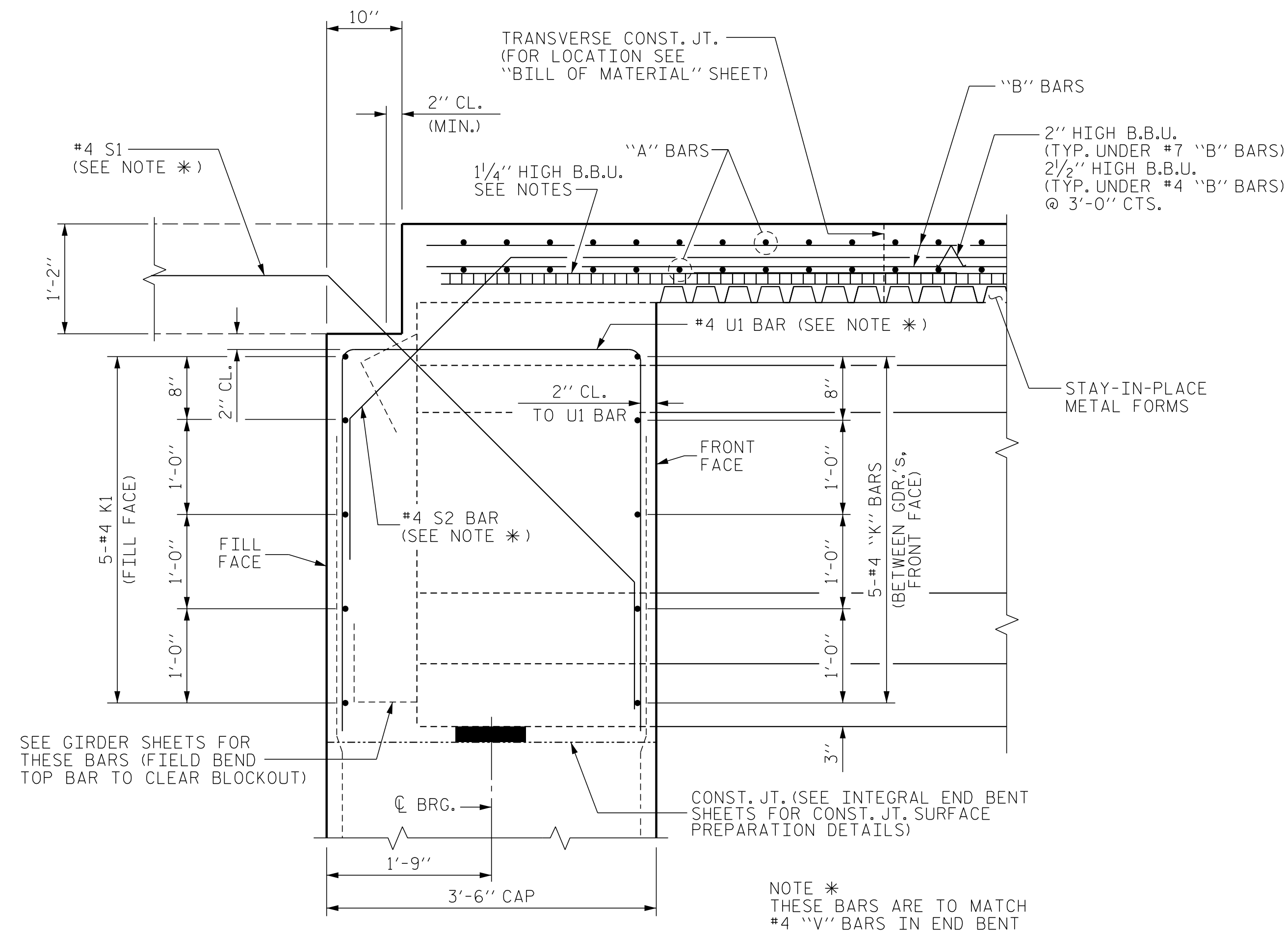
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SUPERSTRUCTURE TYPICAL SECTION					
REVISIONS					
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1			3		
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SHEET NO. S01-5					TOTAL SHEETS 34

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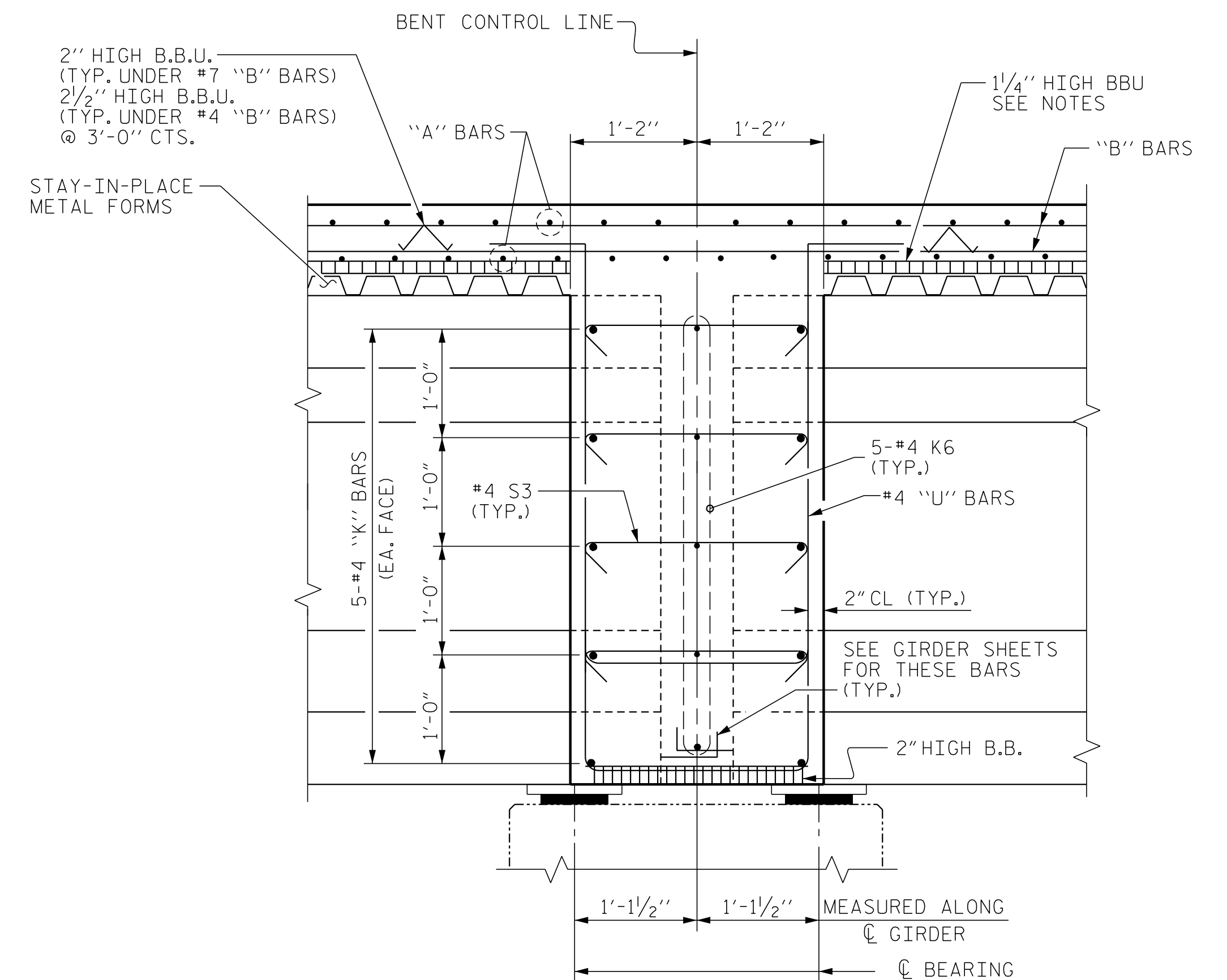
DRAWN BY: G.M. GILLAND DATE: 11-15
CHECKED BY: D. HODGE DATE: 1-16

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SECTION THRU INTEGRAL END BENT
(SHOWN PERPENDICULAR TO FILL FACE)



SECTION THRU CONTINUOUS BENT DIAPHRAGM
(SHOWN PERPENDICULAR TO BENT CONTROL LINE)

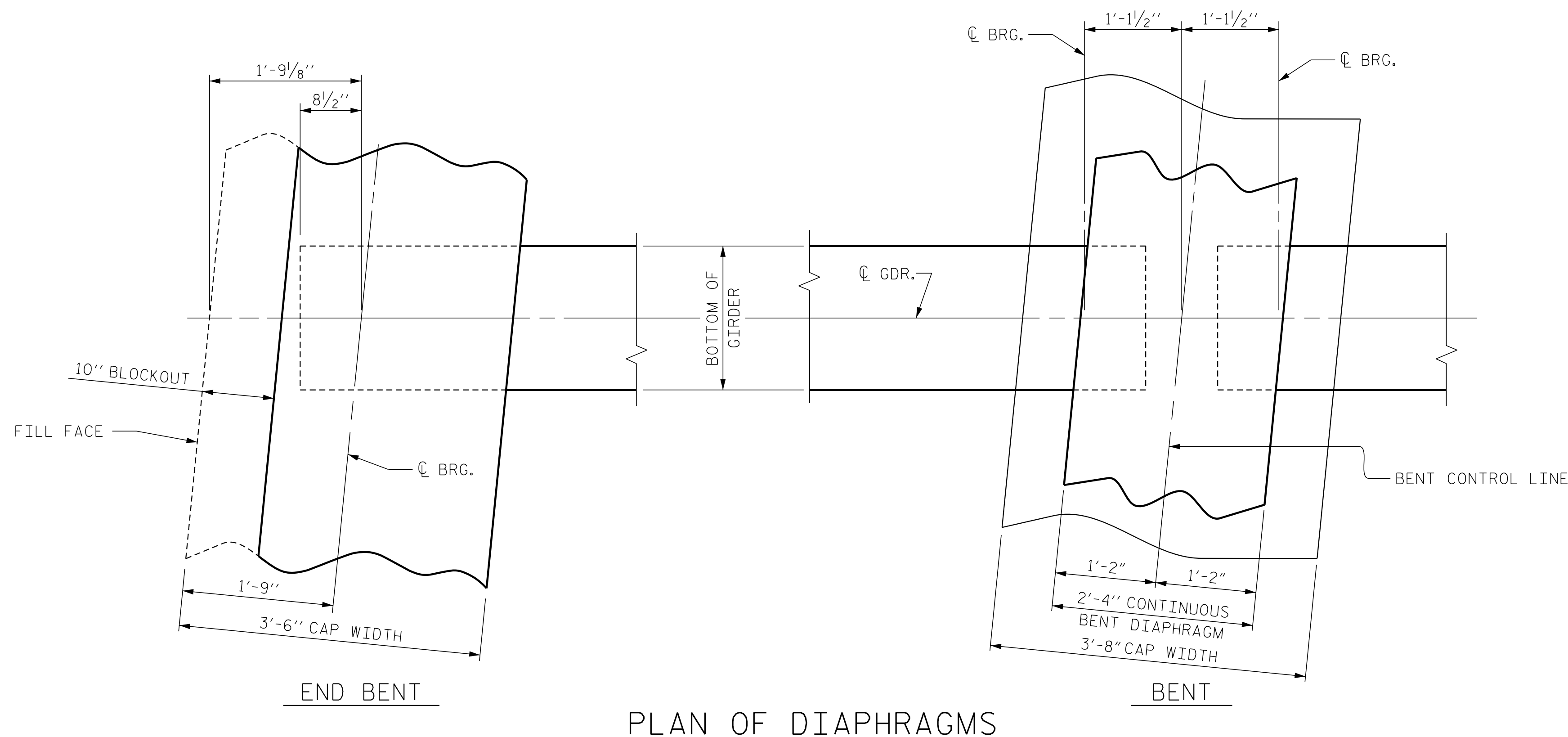
NOTES:

PROVIDE 1 1/4\"/>

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

PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

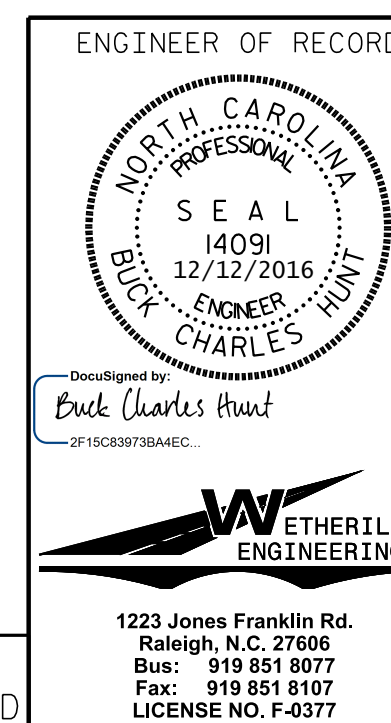
CONCRETE PARAPET IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.



PLAN OF DIAPHRAGMS

PROJECT NO. U-5796
 WAYNE COUNTY
 STATION: 27+41.30 -Y8-

SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION

REVISIONS

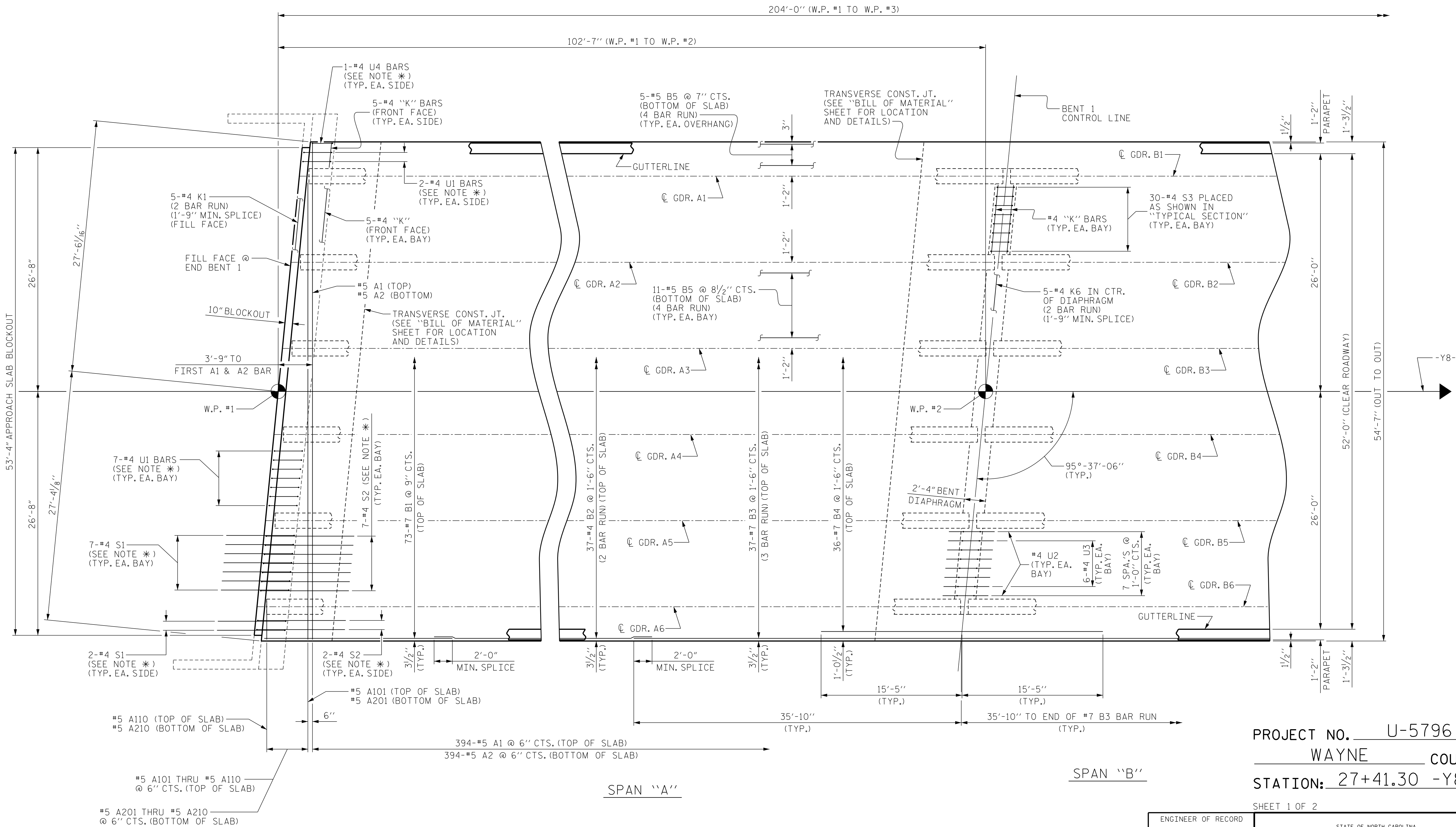
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SHEET NO.
 S01-6
 TOTAL SHEETS
 34

DRAWN BY : G. M. GILLAND DATE : 11-15
 CHECKED BY : D. HODGE DATE : 1-16

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PROJECT NO. U-5796
 WAYNE COUNTY
 STATION: 27+41.30 -Y8-

SHEET 1 OF 2

PARTIAL PLAN OF SPAN

NOTES :
 FOR CONCRETE PARAPET DETAILS AND REINFORCING STEEL,
 SEE "CONCRETE PARAPET" SHEETS.
 * THESE BARS ARE TO MATCH SPACING OF THE
 #4 "V" BARS IN END BENT.
 FOR LOCATIONS OF INTERMEDIATE STEEL DIAPHRAGMS,
 SEE "GIRDER LAYOUT" SHEET.

ENGINEER OF RECORD

 Buck Charles Hunt
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

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

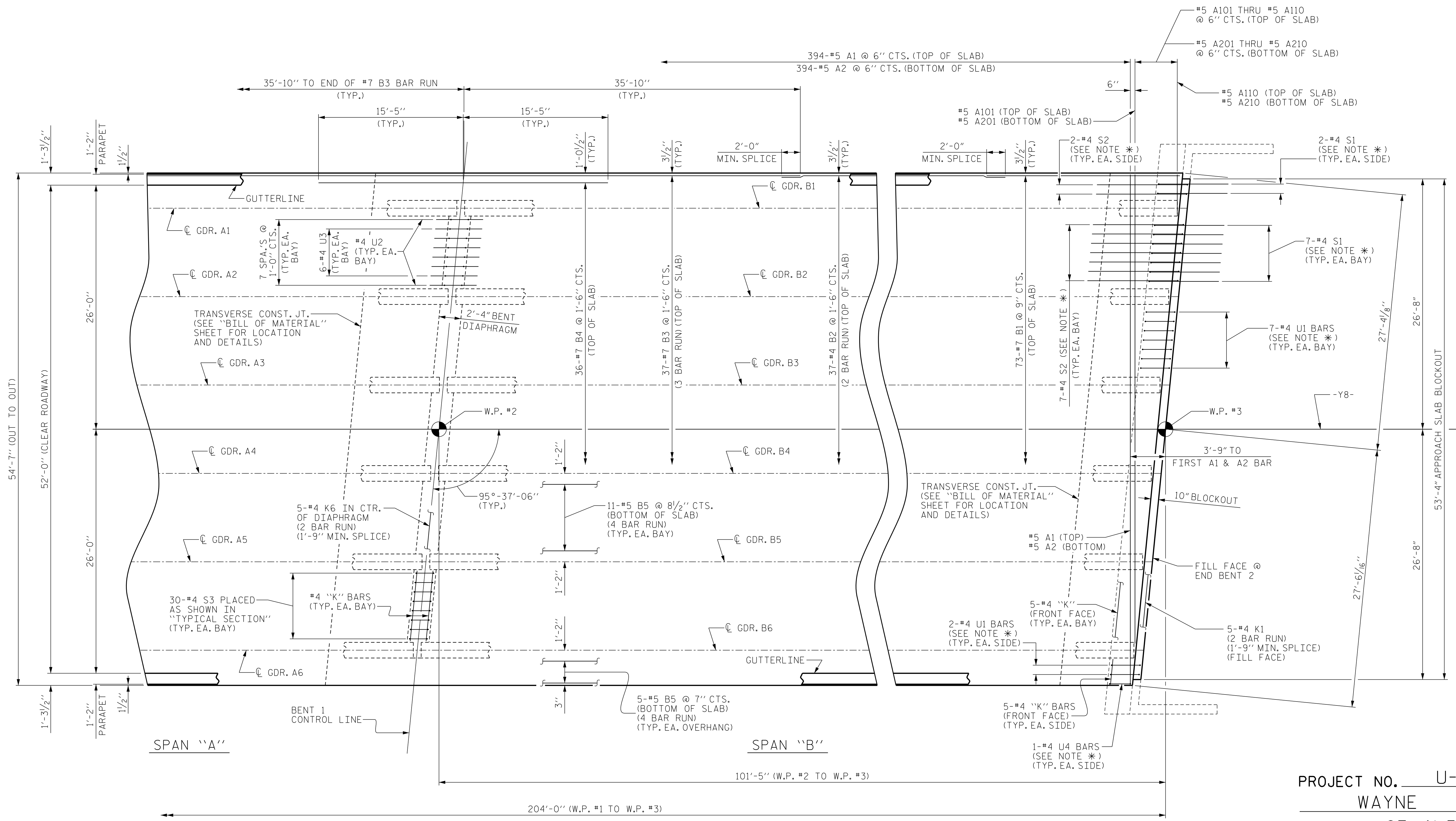
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SHEET NO. S01-7
 TOTAL SHEETS 34

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 CHECKED BY : D. HODGE DATE : 1-16

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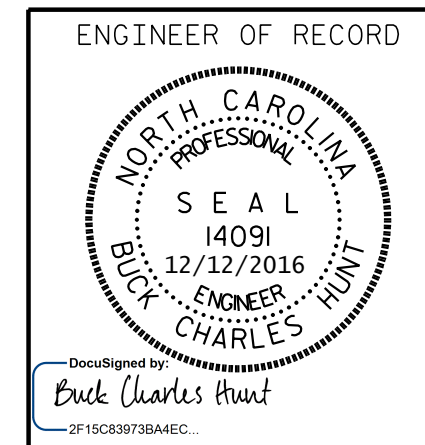
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PARTIAL PLAN OF SPAN

NOTES :
 FOR CONCRETE PARAPET DETAILS AND REINFORCING STEEL, SEE "CONCRETE PARAPET" SHEETS.
 * THESE BARS ARE TO MATCH SPACING OF THE #4 "V" BARS IN END BENT.
 FOR LOCATIONS OF INTERMEDIATE STEEL DIAPHRAGMS, SEE "GIRDER LAYOUT" SHEET.

PROJECT NO. U-5796
 WAYNE COUNTY
 STATION: 27+41.30 -Y8-
 SHEET 2 OF 2



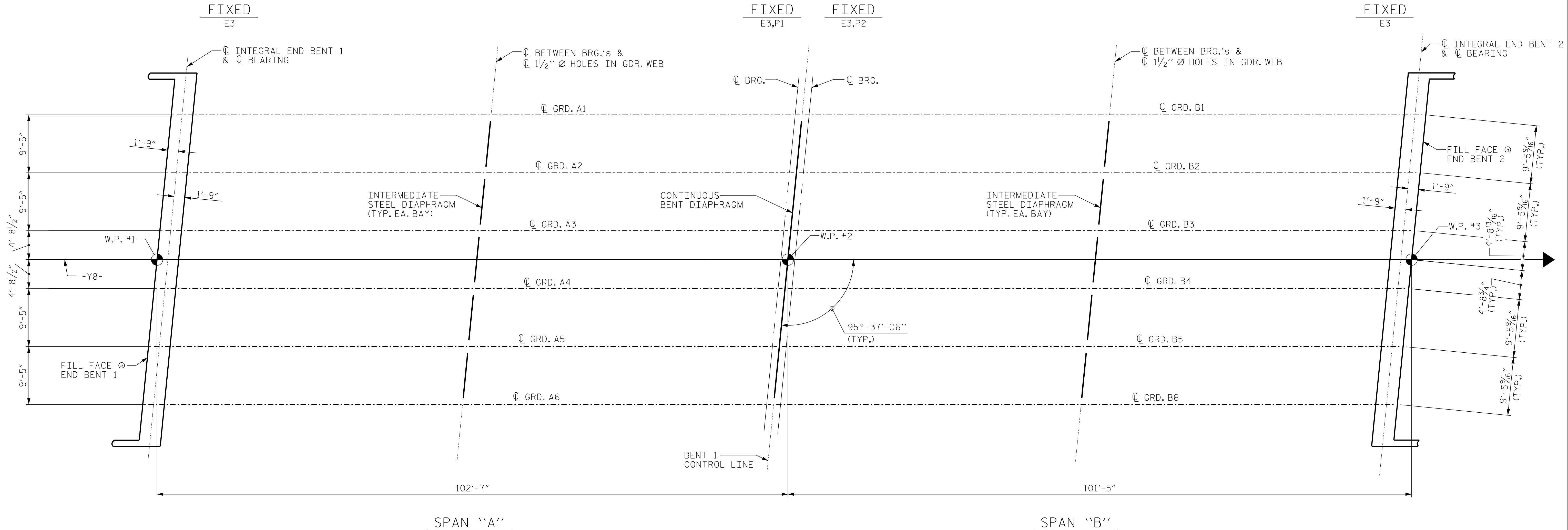
WETHERILL ENGINEERING
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 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH		SUPERSTRUCTURE PLAN OF SPAN	
REVISIONS			
NO.	BY:	DATE:	SHEET NO.
1			S01-8
2			TOTAL SHEETS 34

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DRAWN BY : G.M. GILLAND DATE : 12-15
 CHECKED BY : D. HODGE DATE : 1-16

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GIRDER LAYOUT

PROJECT NO. U-5796
WAYNE COUNTY
 STATION: 27+41.30 -Y8-

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DRAWN BY : J. PENDERGRAFT DATE : 11-15
 CHECKED BY : J. DILWORTH DATE : 11-15

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ENGINEER OF RECORD

DocuSigned by:
 Buck Charles Hunt
 2F18C8978A8E6C...

ETHERILL ENGINEERING

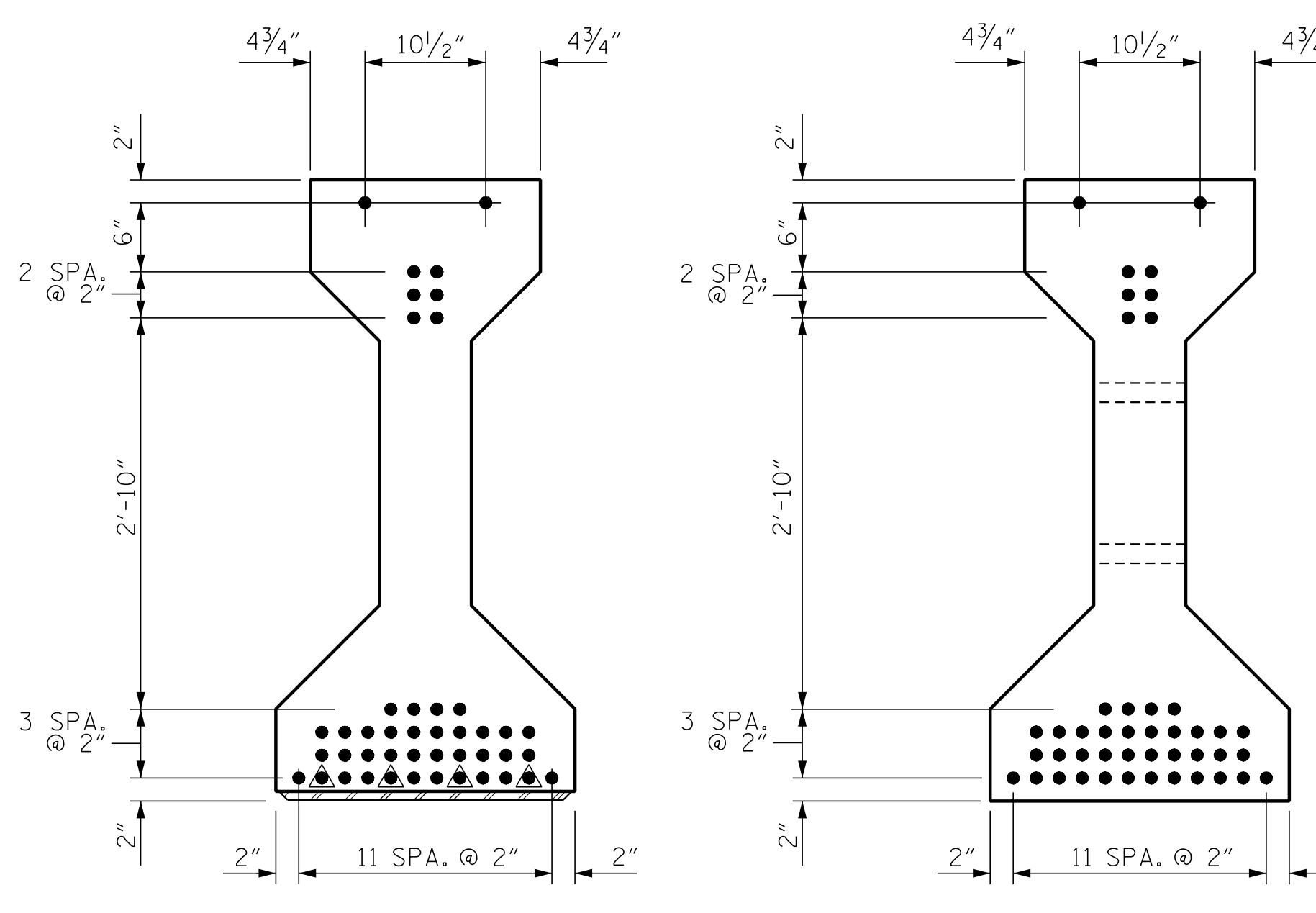
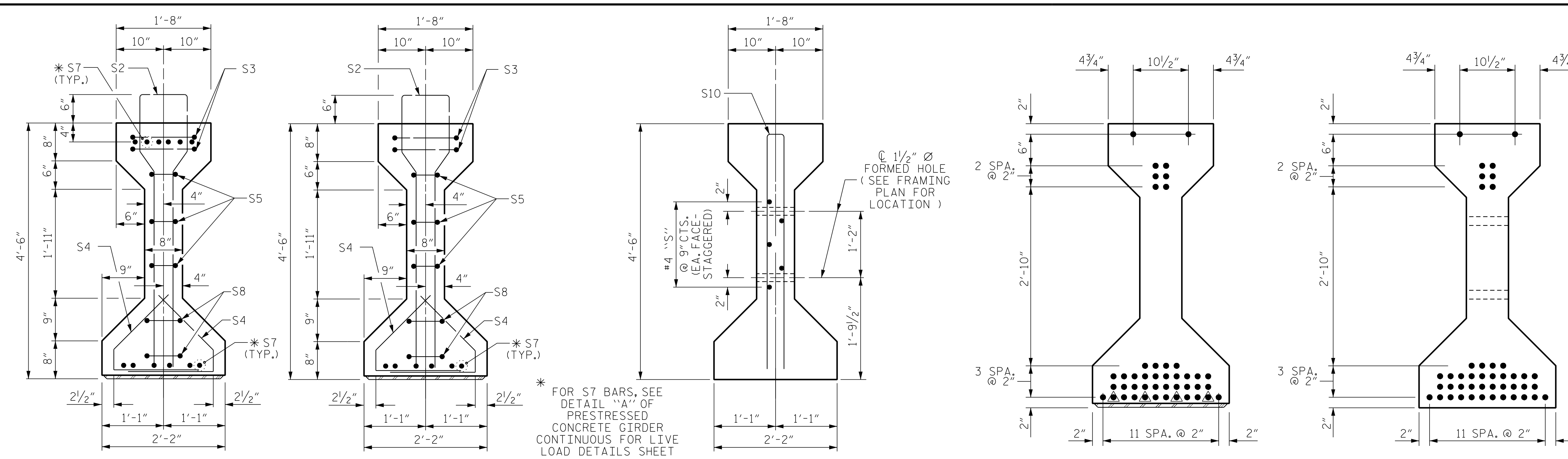
1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 GIRDER LAYOUT

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

SHEET NO. S01-9
 TOTAL SHEETS 34

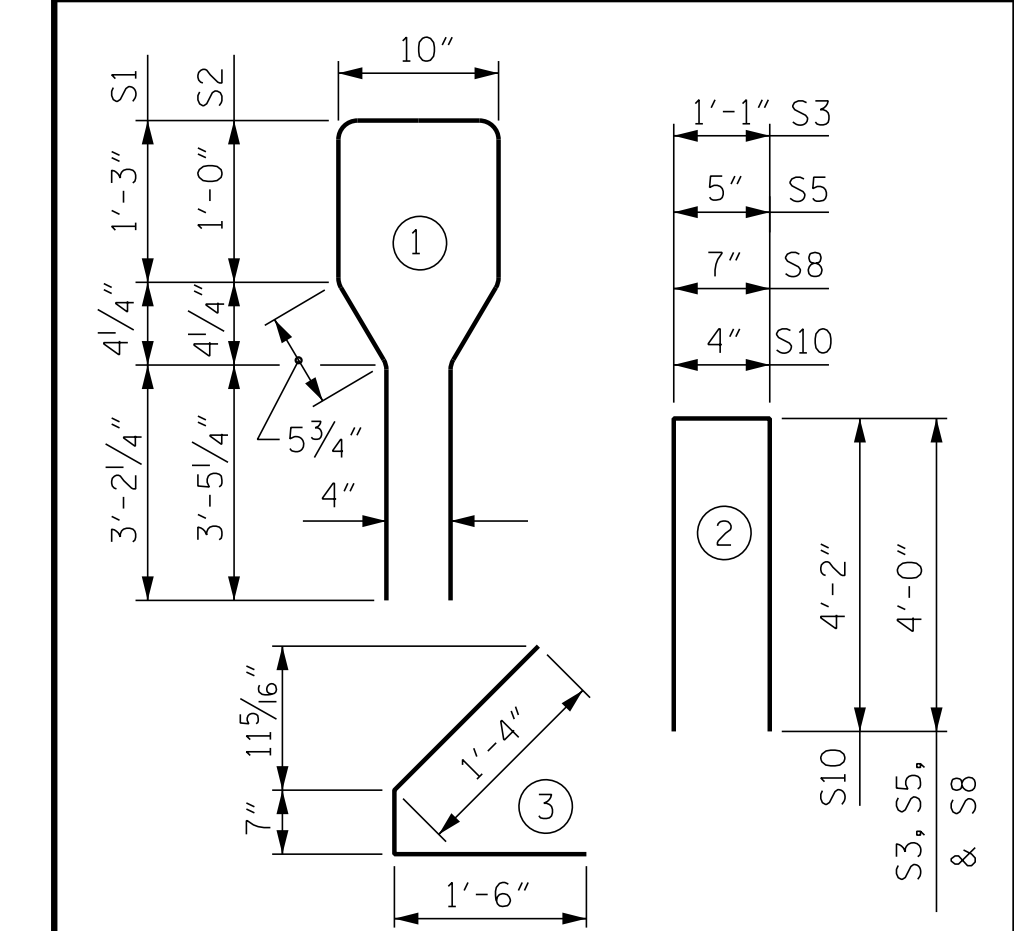


0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

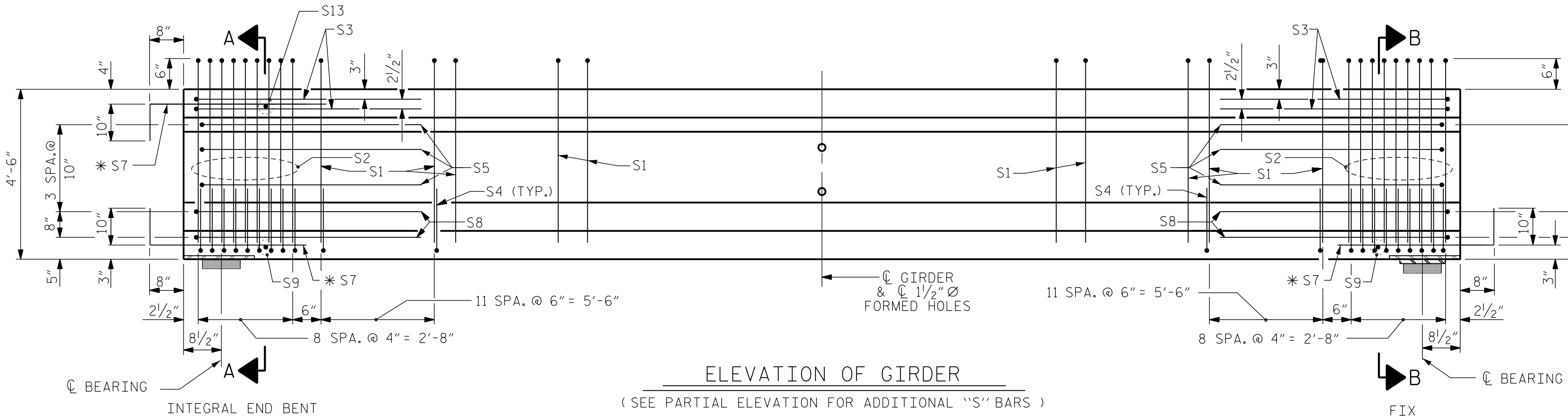
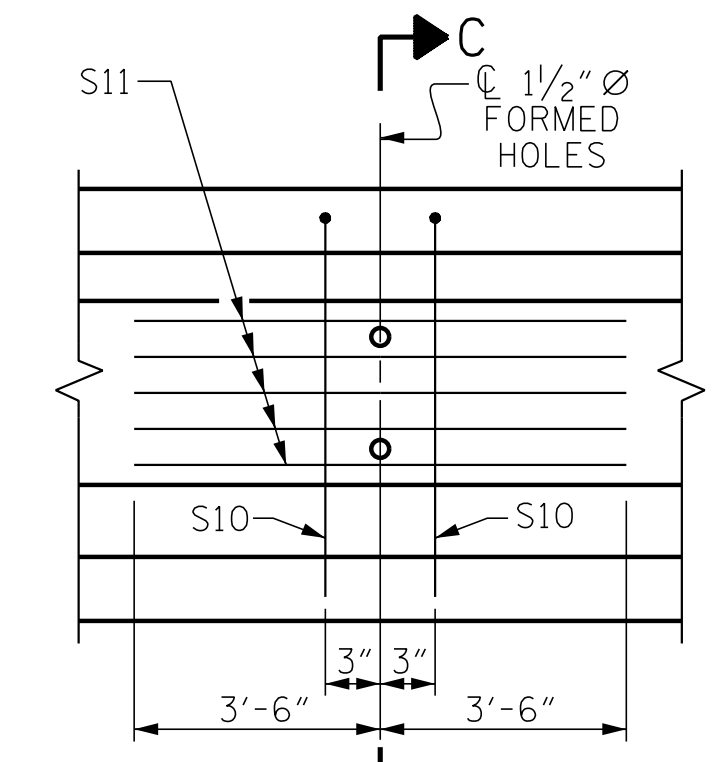
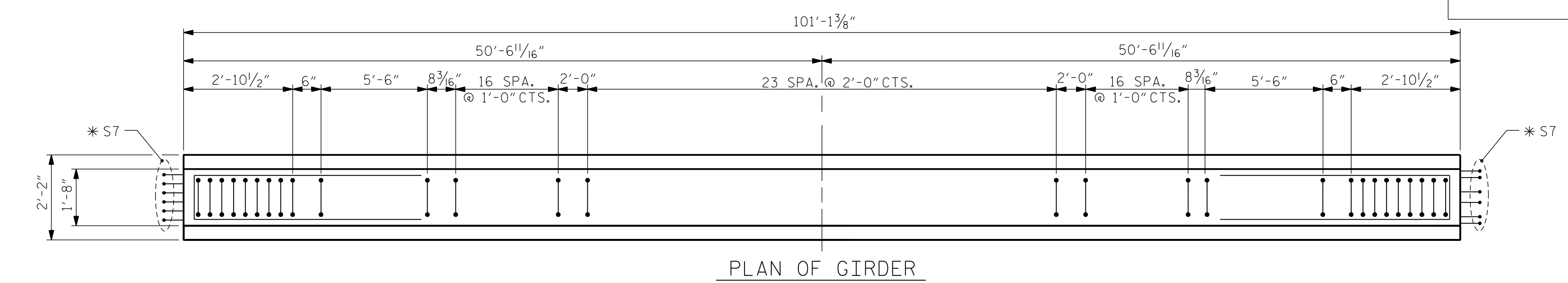
REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	82	#4	1	10'-8"	584
S2	18	#6	1	10'-8"	288
S3	4	#4	2	9'-1"	24
S4	84	#4	3	3'-5"	192
S5	6	#4	2	8'-5"	34
*S7	18	#5	STR	3'-8"	69
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
S10	2	#5	2	8'-8"	18
S11	5	#4	STR	7'-0"	23
S13	1	#3	STR	1'-4"	1

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

BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT



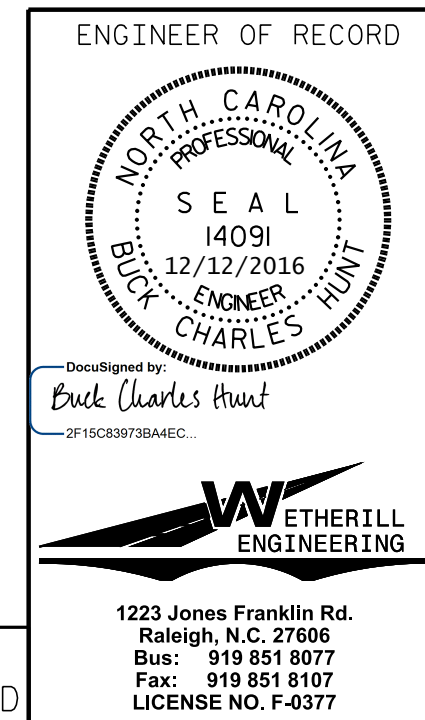
● FULLY BONDED STRANDS
 ▲ DENOTES STRAND TO BE DEBONDED FOR 12'-0" FROM END OF GIRDER



QUANTITIES FOR ONE GIRDER			
SPAN "A"	REINFORCING STEEL	9000 PSI CONCRETE	0.6" Ø L. R. STRANDS
	LB.	C.Y.	No.
SPAN "A"	1257	20.5	44

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
6	101'-1 3/8"	606.69'

PROJECT NO. U-5796
 WAYNE COUNTY
 STATION: 27+41.30 -Y8-
 SHEET 1 OF 3



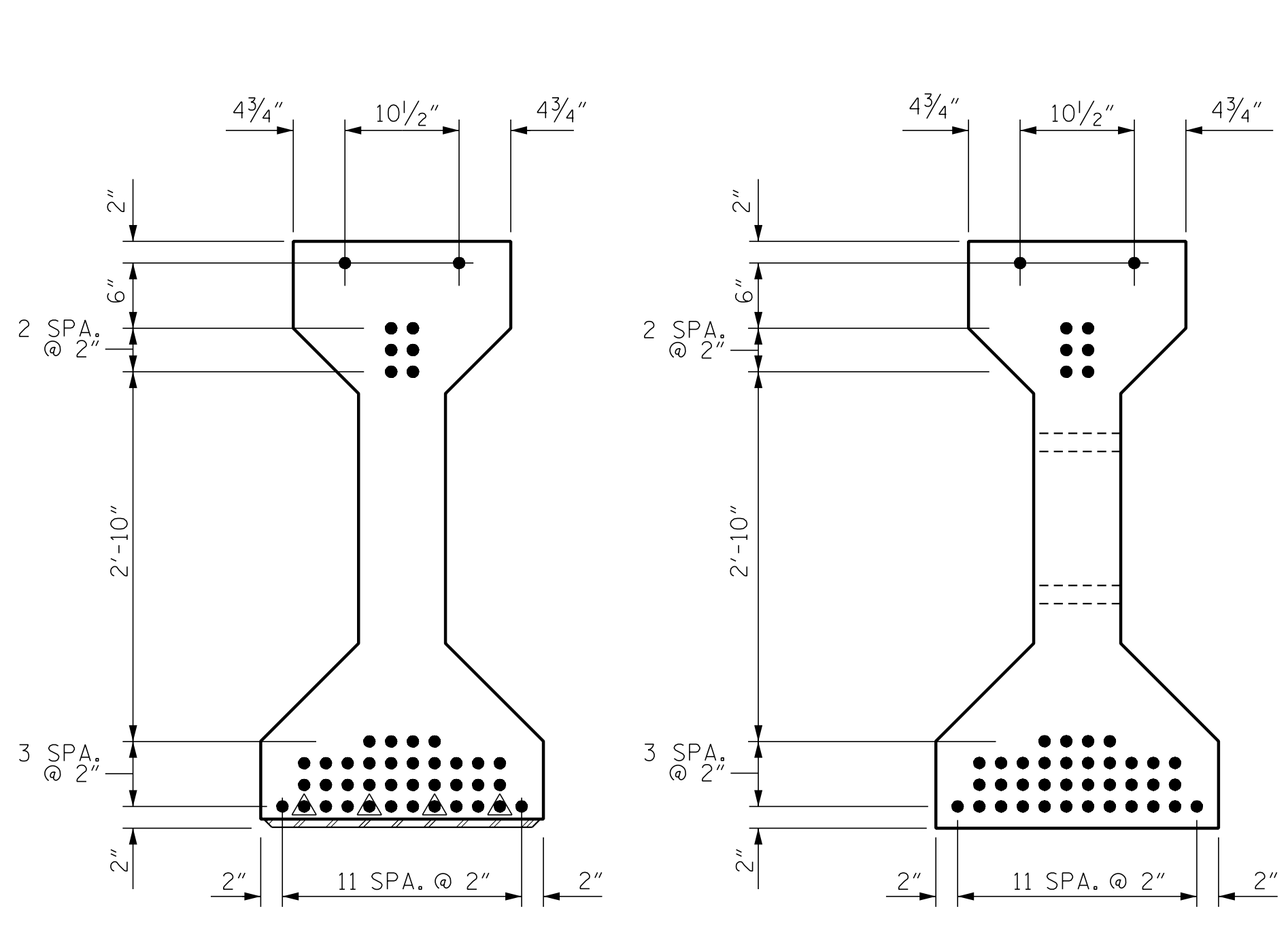
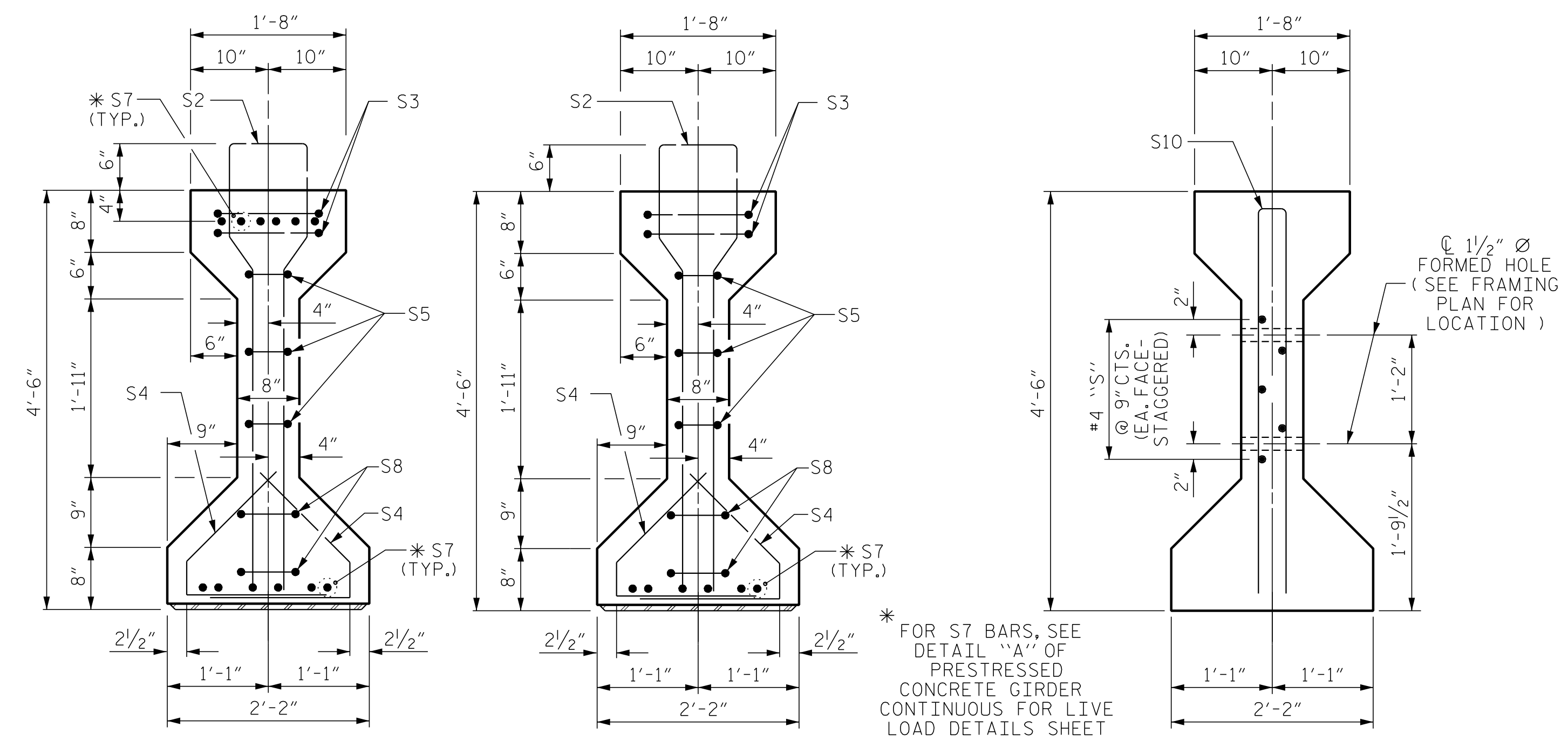
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD AASHTO TYPE IV PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD SPAN "A"					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.	
S01-10	TOTAL SHEETS 34

ASSEMBLED BY : J. PENDERGRAFT DATE : 11-15
 CHECKED BY : J. DILWORTH DATE : 11-15
 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

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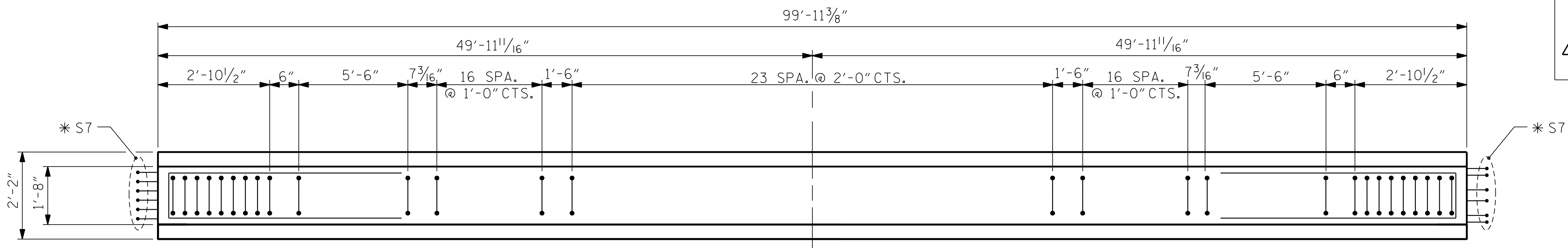
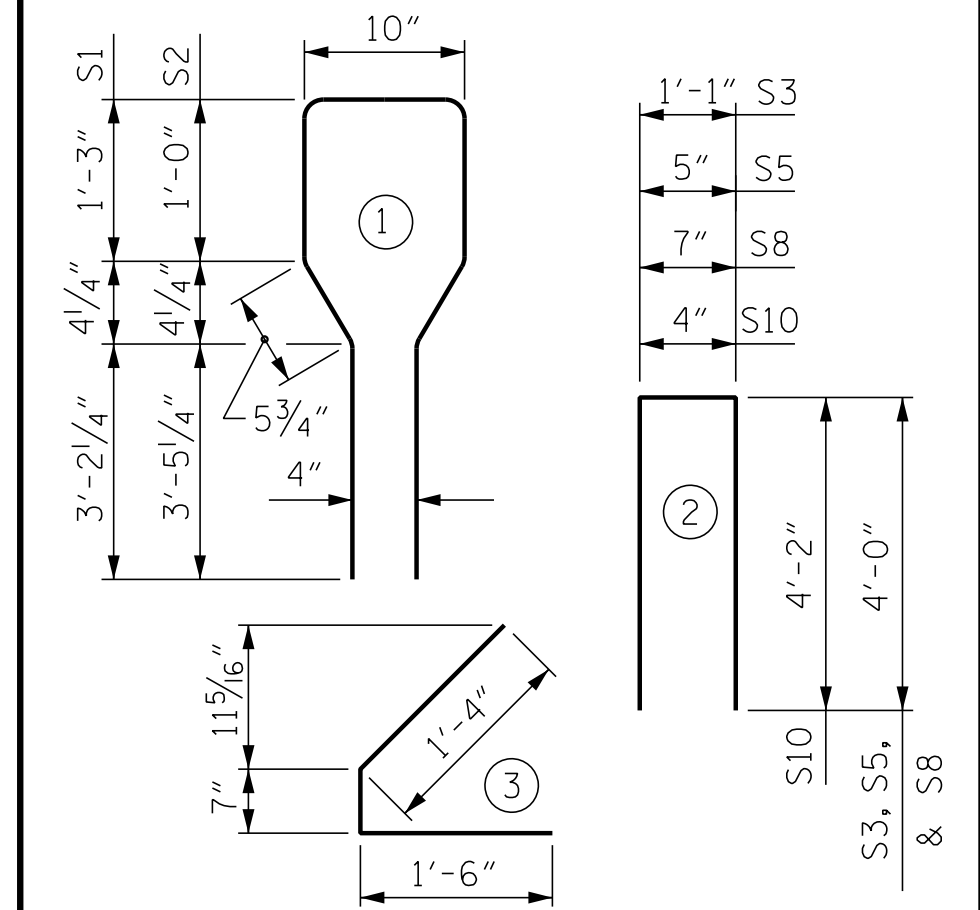


0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

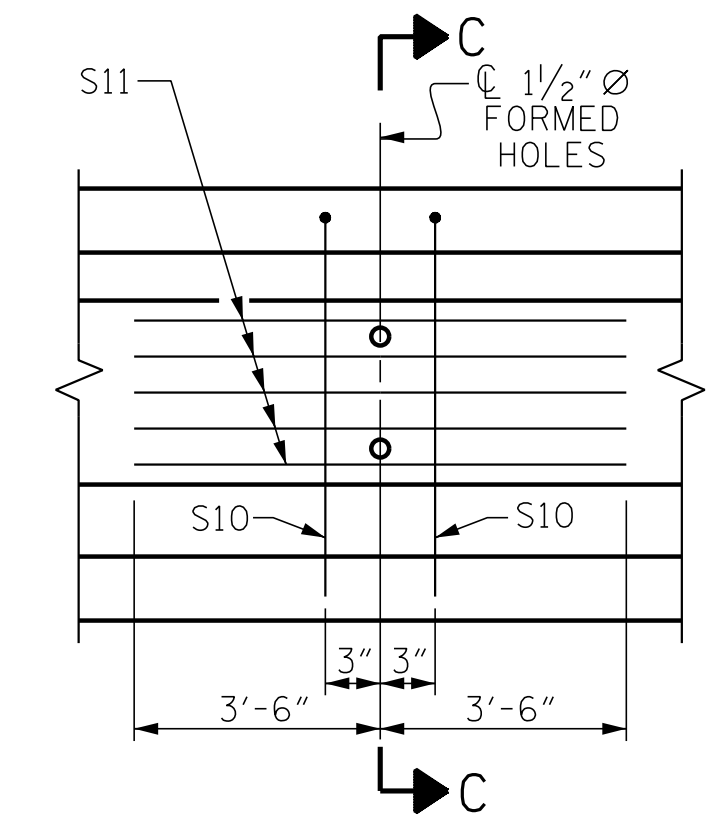
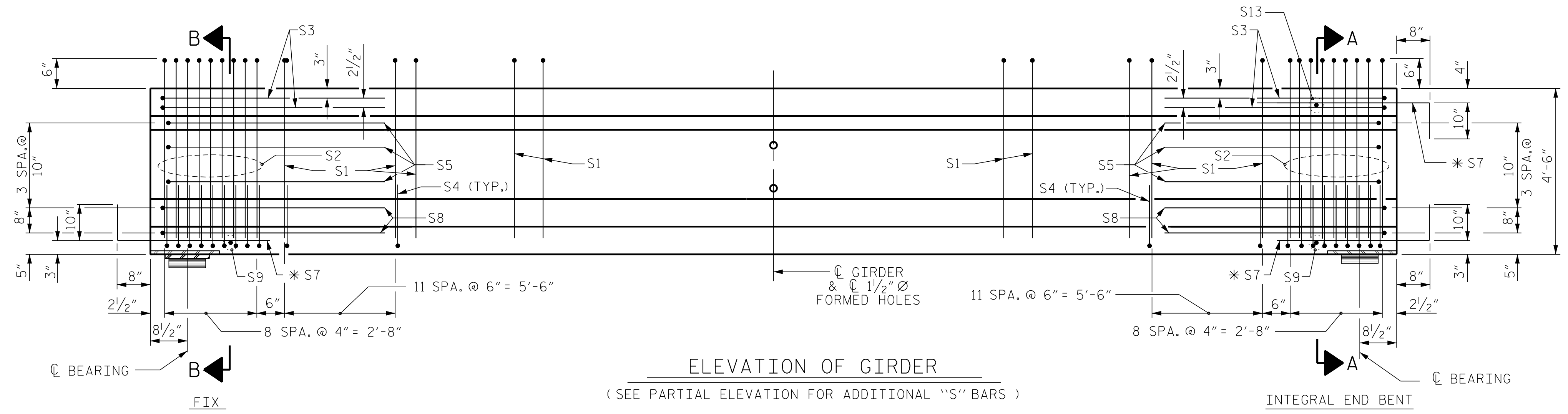
REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
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* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES
ALL BAR DIMENSIONS ARE OUT-TO-OUT



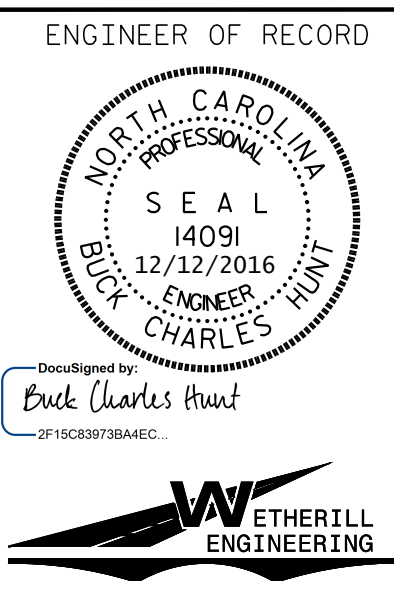
● FULLY BONDED STRANDS
▲ DENOTES STRAND TO BE DEBONDED FOR 12'-0" FROM END OF GIRDER



SPAN "B"	QUANTITIES FOR ONE GIRDER		
	REINFORCING STEEL LB.	9000 PSI CONCRETE C.Y.	0.6" Ø L. R. STRANDS No.
	1257	20.3	44

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
6	99'-11 3/8"	599.69'

PROJECT NO. U-5796
WAYNE COUNTY
STATION: 27+41.30 -Y8-
SHEET 2 OF 3



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

ASSEMBLED BY : J. PENDERGRAFT	DATE : 11-15
CHECKED BY : J. DILWORTH	DATE : 11-15
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

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REVISIONS						SHEET NO. S01-11
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 34
2			4			

NOTES

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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.

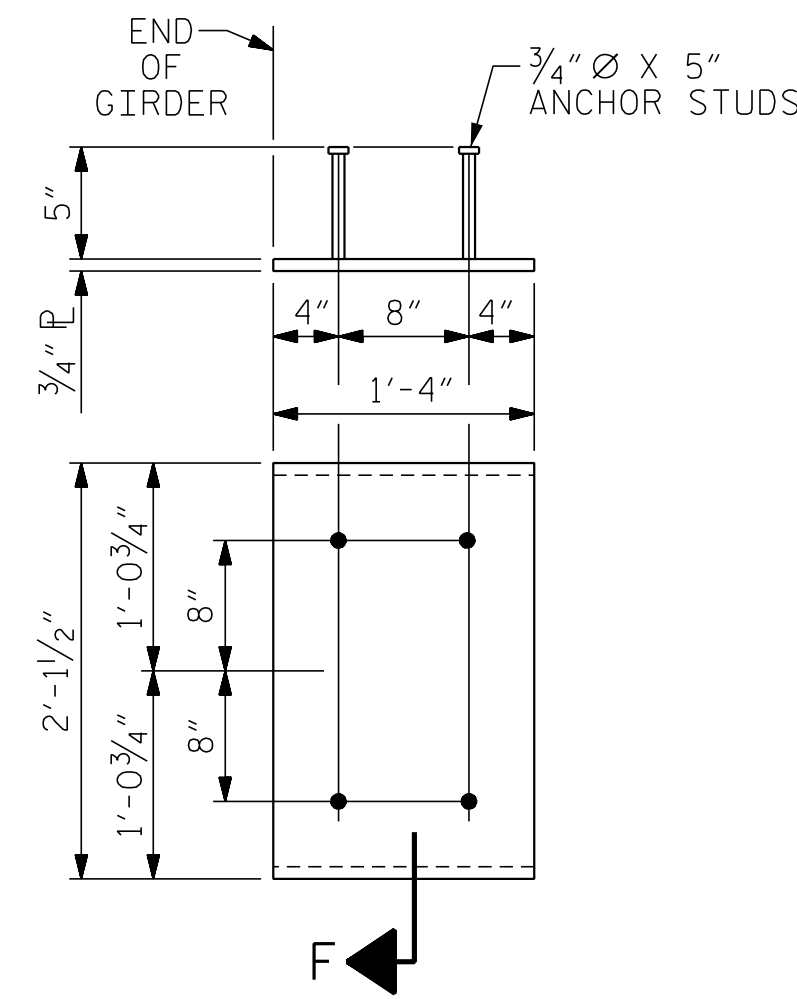
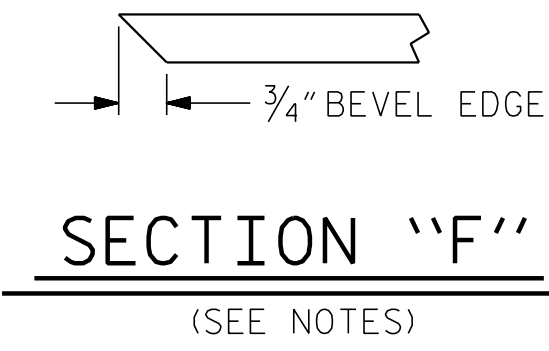
AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

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

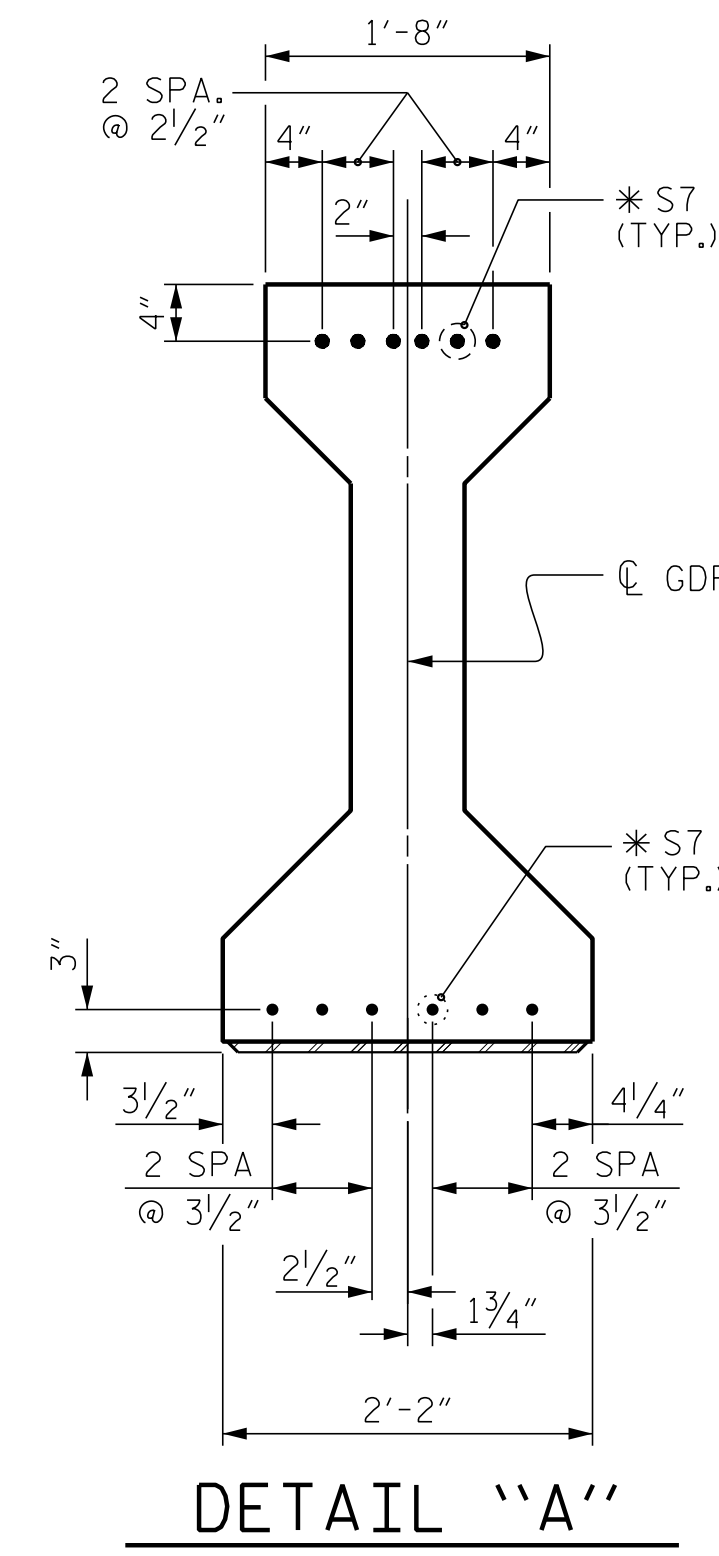
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

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

FOR EMBEDDED CLIPS FOR PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.



EMBEDDED PLATE "B-1" DETAILS FOR AASHTO TYPE IV GIRDER
(2 REQ'D PER GIRDER)



DEAD LOAD DEFLECTION TABLE FOR GIRDERS

TWENTIETH POINTS	SPANS "A" & "B"																				
	GIRDERS 1 THRU 6																				
	0	0.05	0.1	0.15	0.2	0.25	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.65	0.7	0.75	0.8	0.85	0.9	0.95	1.0
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.028	0.055	0.080	0.104	0.123	0.142	0.155	0.167	0.171	0.175	0.171	0.167	0.155	0.142	0.123	0.104	0.080	0.055	0.028	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.025	0.049	0.073	0.096	0.115	0.133	0.145	0.157	0.161	0.165	0.161	0.157	0.145	0.133	0.115	0.096	0.073	0.049	0.025	0.000
FINAL CAMBER ↑	0	1/16"	1/16"	1/16"	1/16"	1/16"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/8"	1/16"	1/16"	1/16"	1/16"	1/16"	0

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

PROJECT NO. U-5796
WAYNE COUNTY
STATION: 27+41.30 -Y8-

SHEET 3 OF 3

<p>ENGINEER OF RECORD NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 14091 12/12/2016 CHARLES HUNT DocuSigned by: Buck Charles Hunt 2F15C8978A8EC...</p>	STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS		REVISIONS NO. BY: DATE: NO. BY: DATE:		SHEET NO. S01-12
	1223 Jones Franklin Rd. Raleigh, N.C. 27606 Bus: 919 851 8077 Fax: 919 851 8107 LICENSE NO. F-0377		1 2	3 4	TOTAL SHEETS 34

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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.

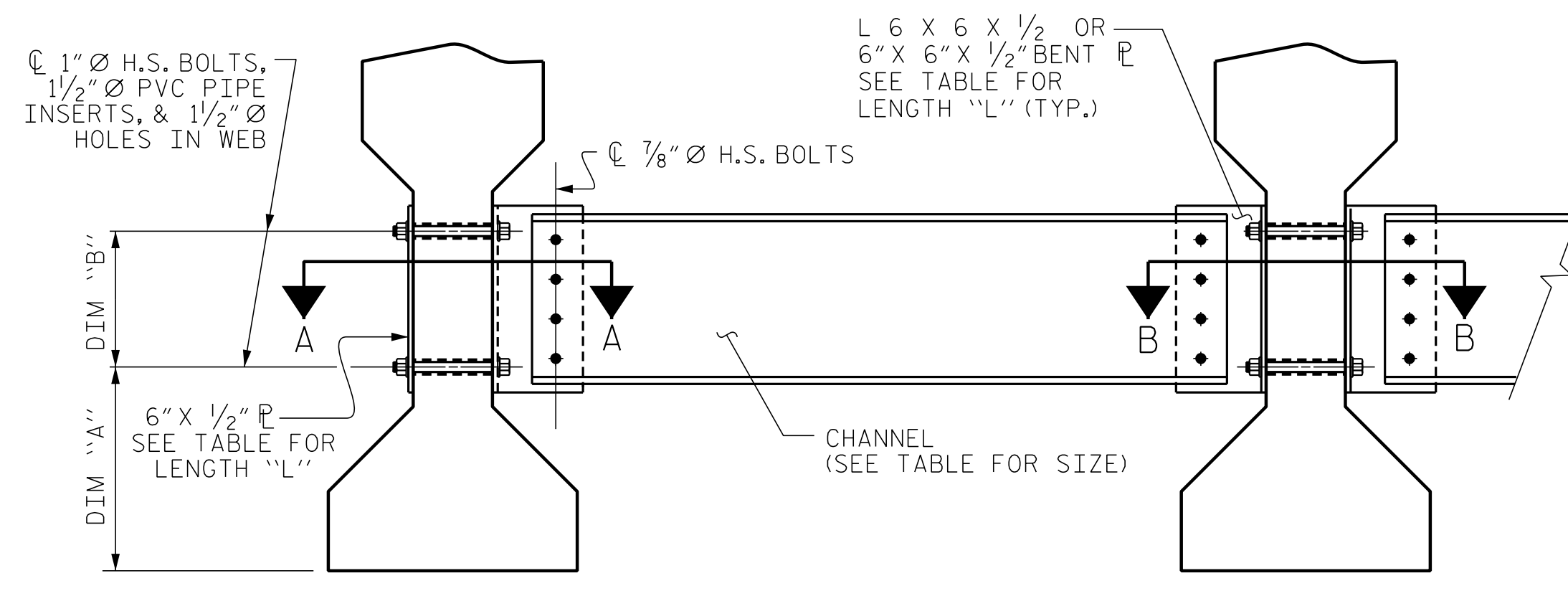
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

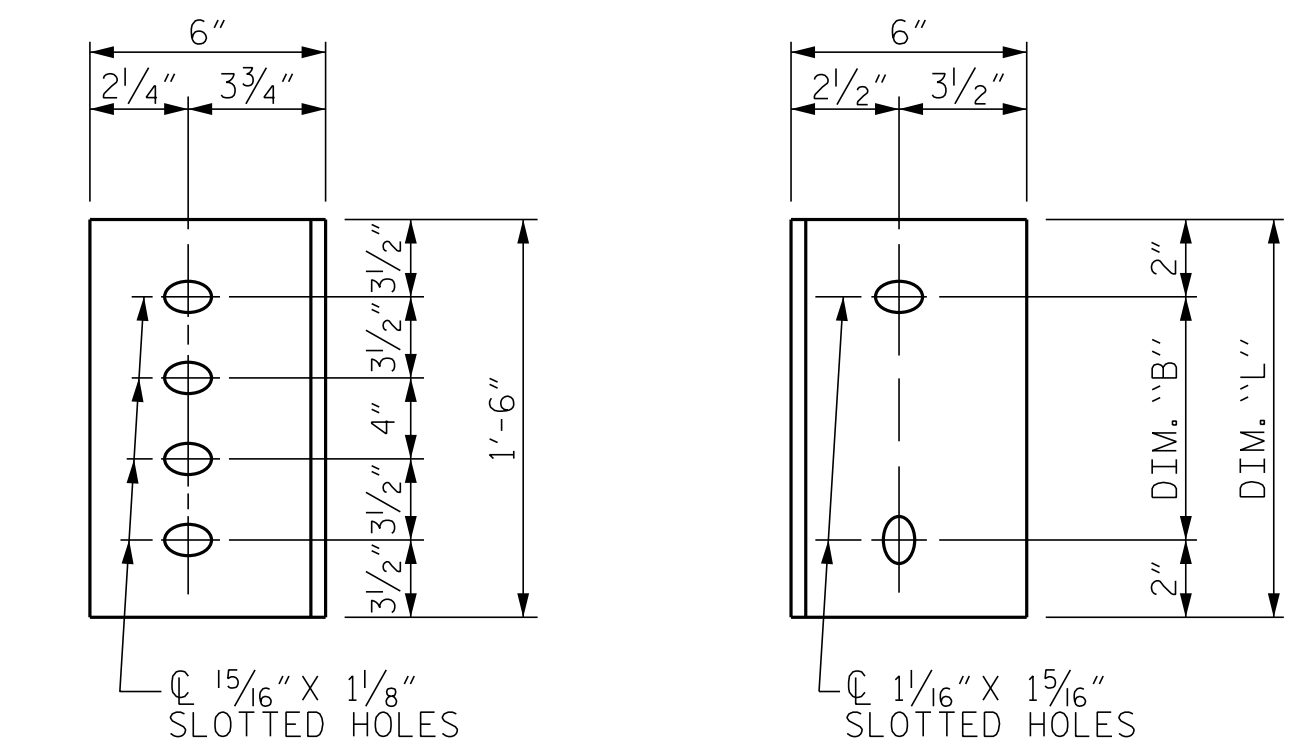
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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 PLATE DETAILS

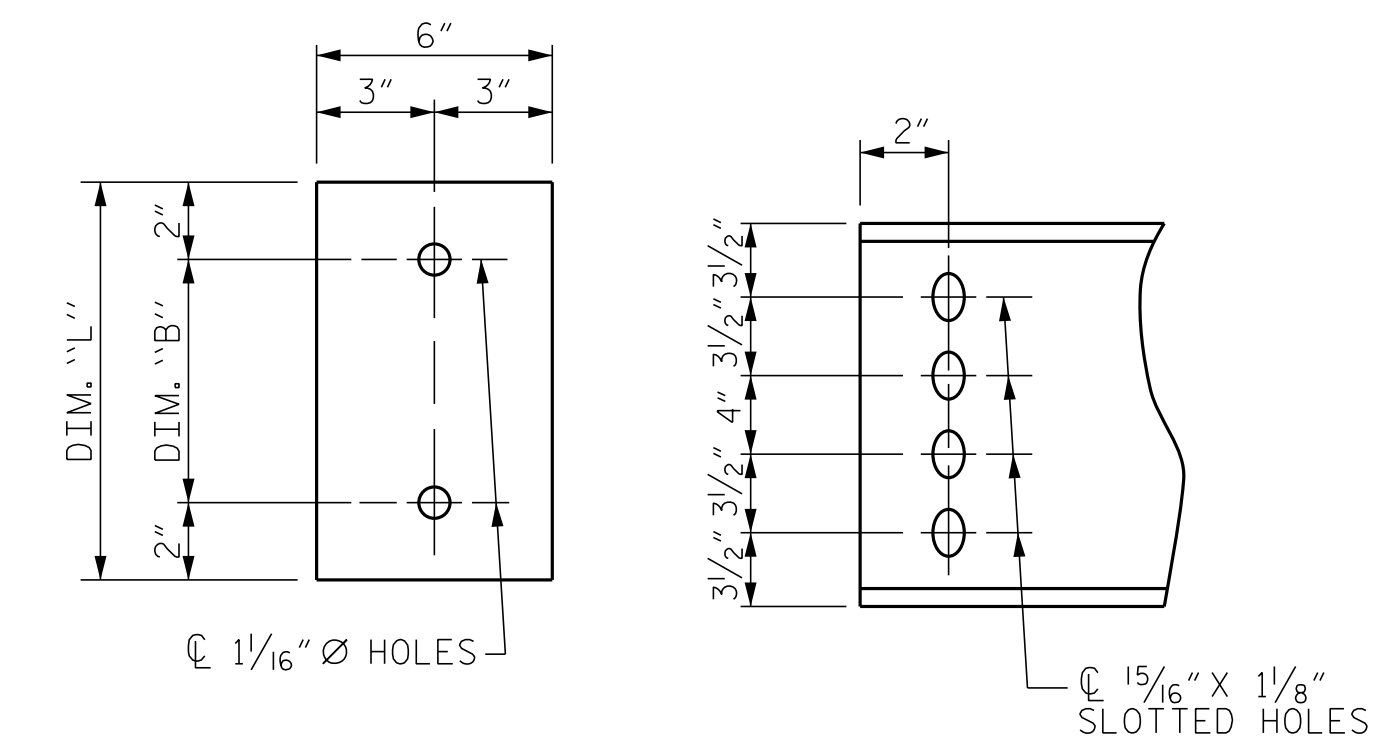
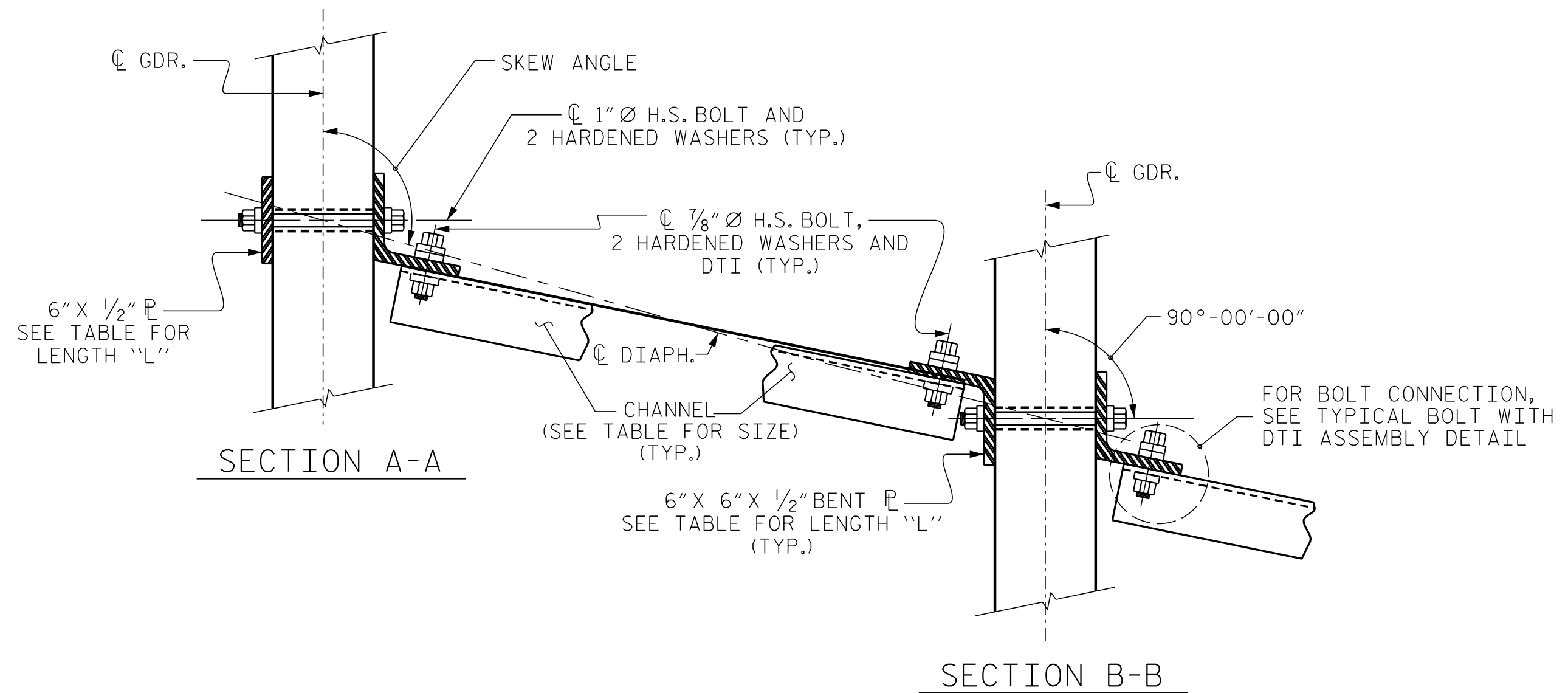


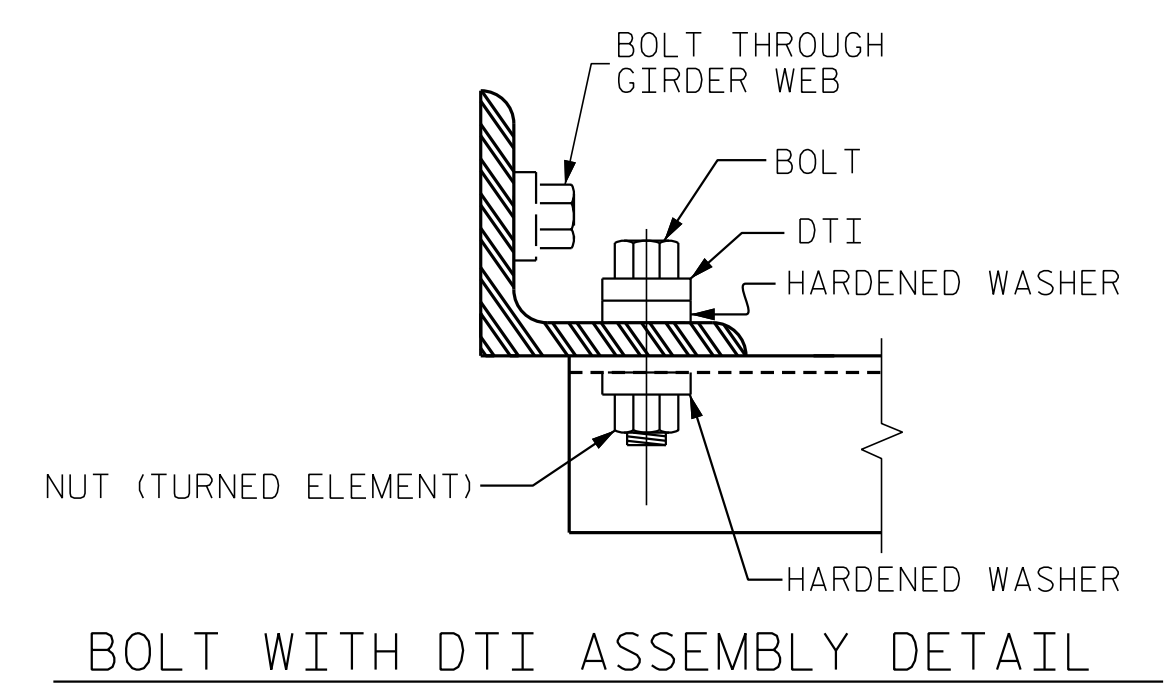
PLATE DETAILS CHANNEL END

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"

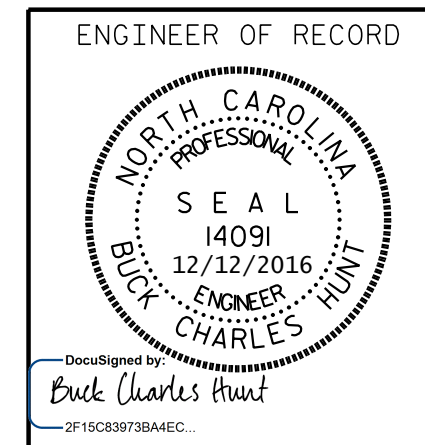


SECTION A-A SECTION B-B
CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

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WAYNE COUNTY
STATION: 27+41.30 -Y8-



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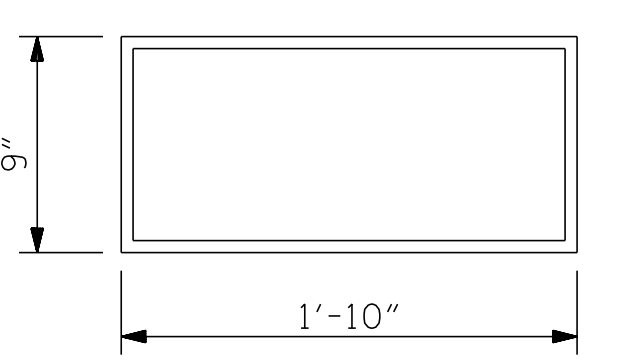
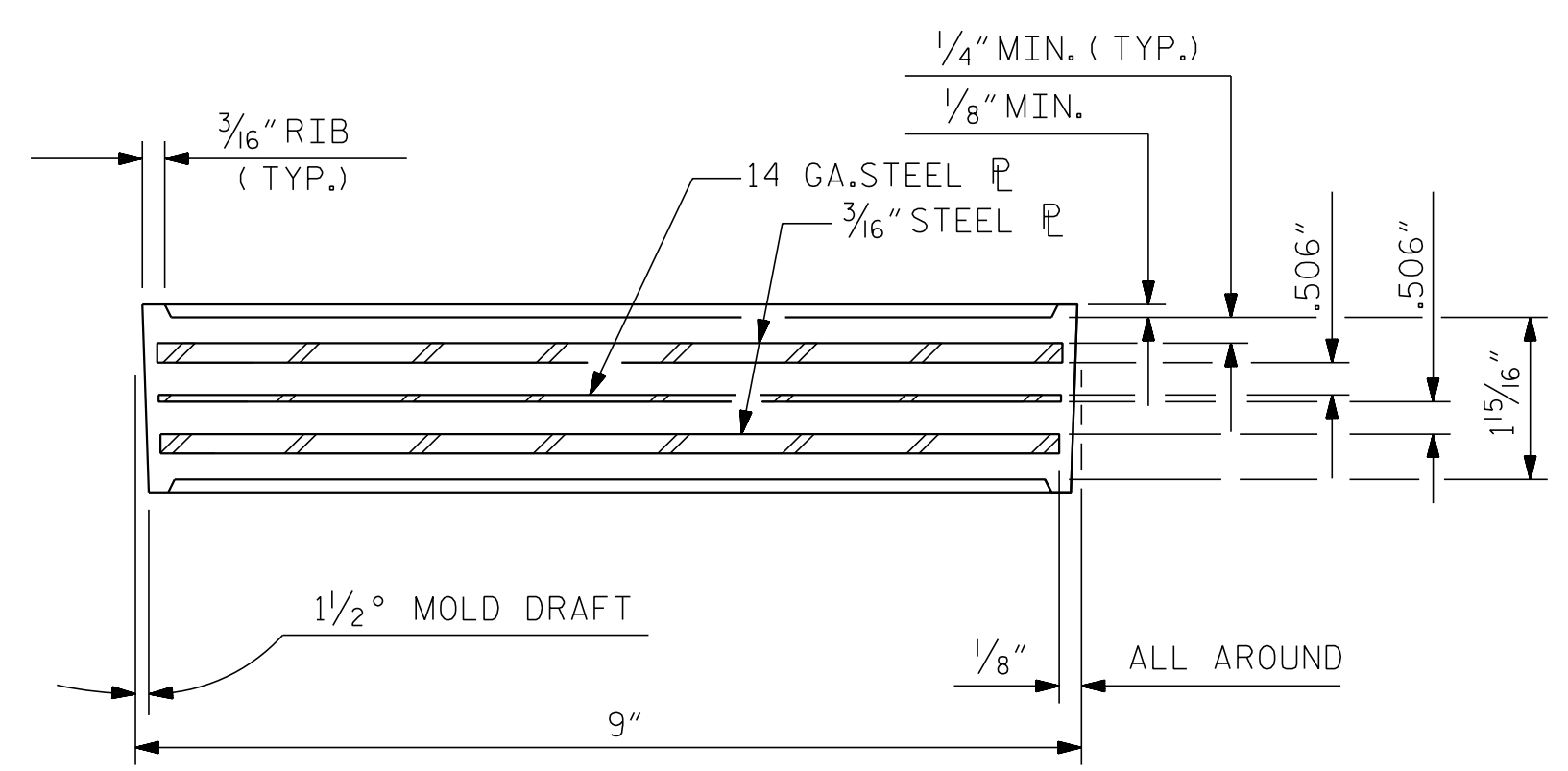
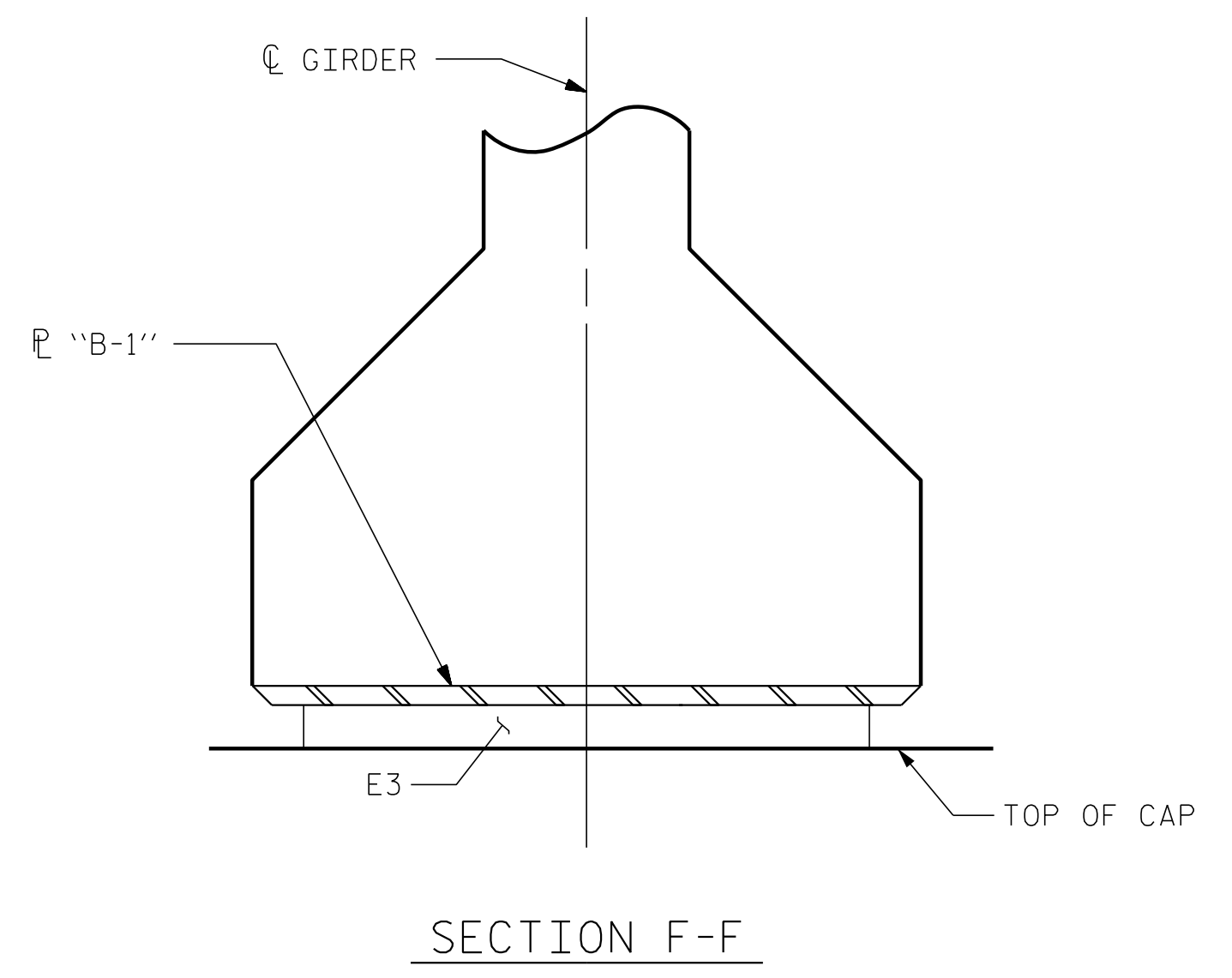
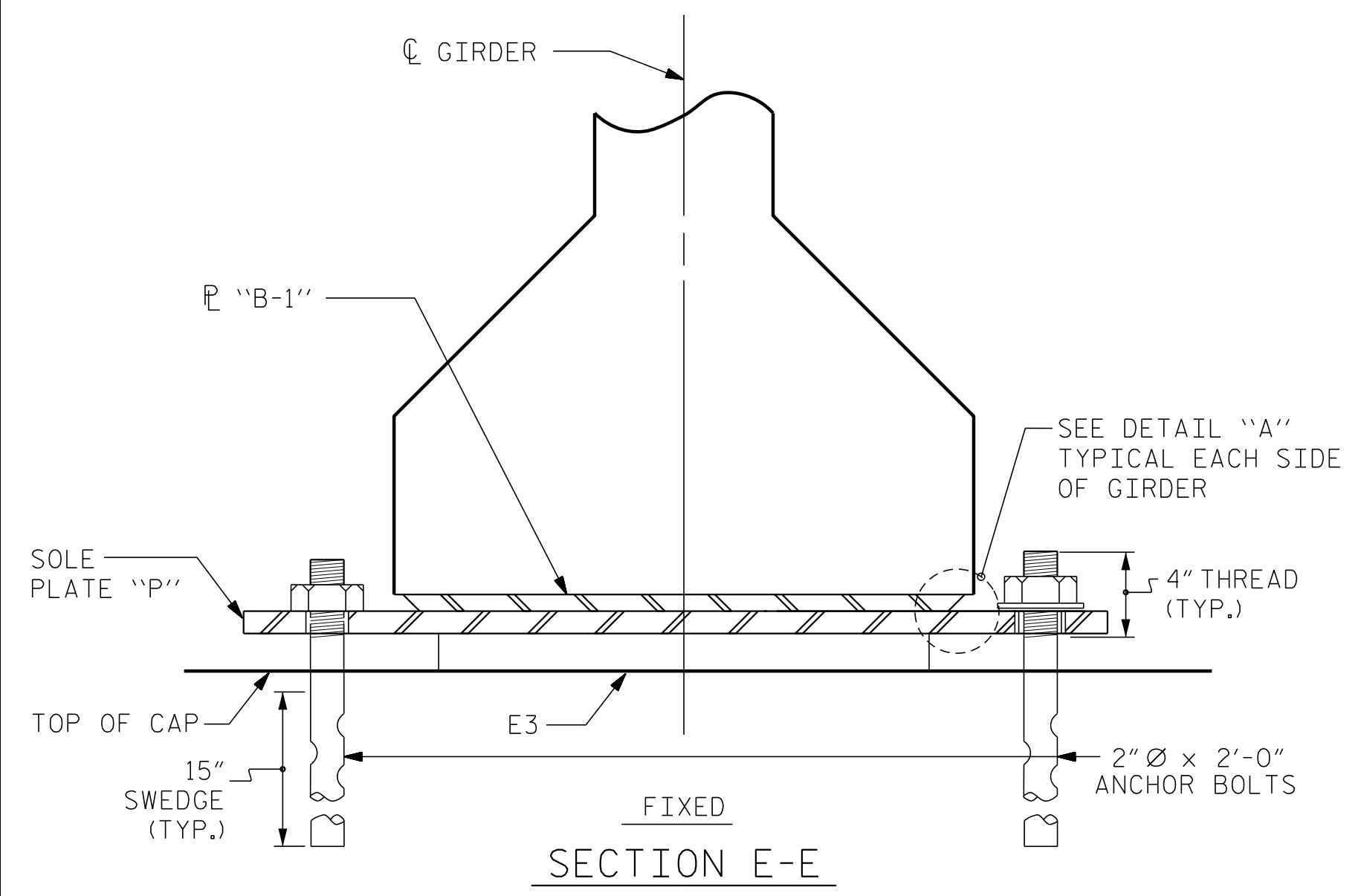
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
INTERMEDIATE
STEEL DIAPHRAGMS
FOR TYPE IV
PRESTRESSED CONCRETE
GIRDERS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-13
1			3			TOTAL SHEETS
2			4			34

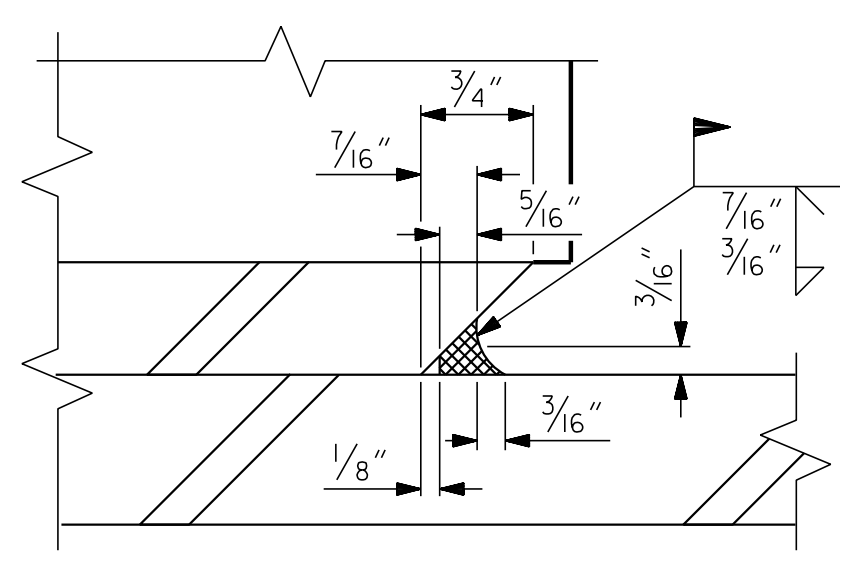
DOCUMENT NOT CONSIDERED FINAL
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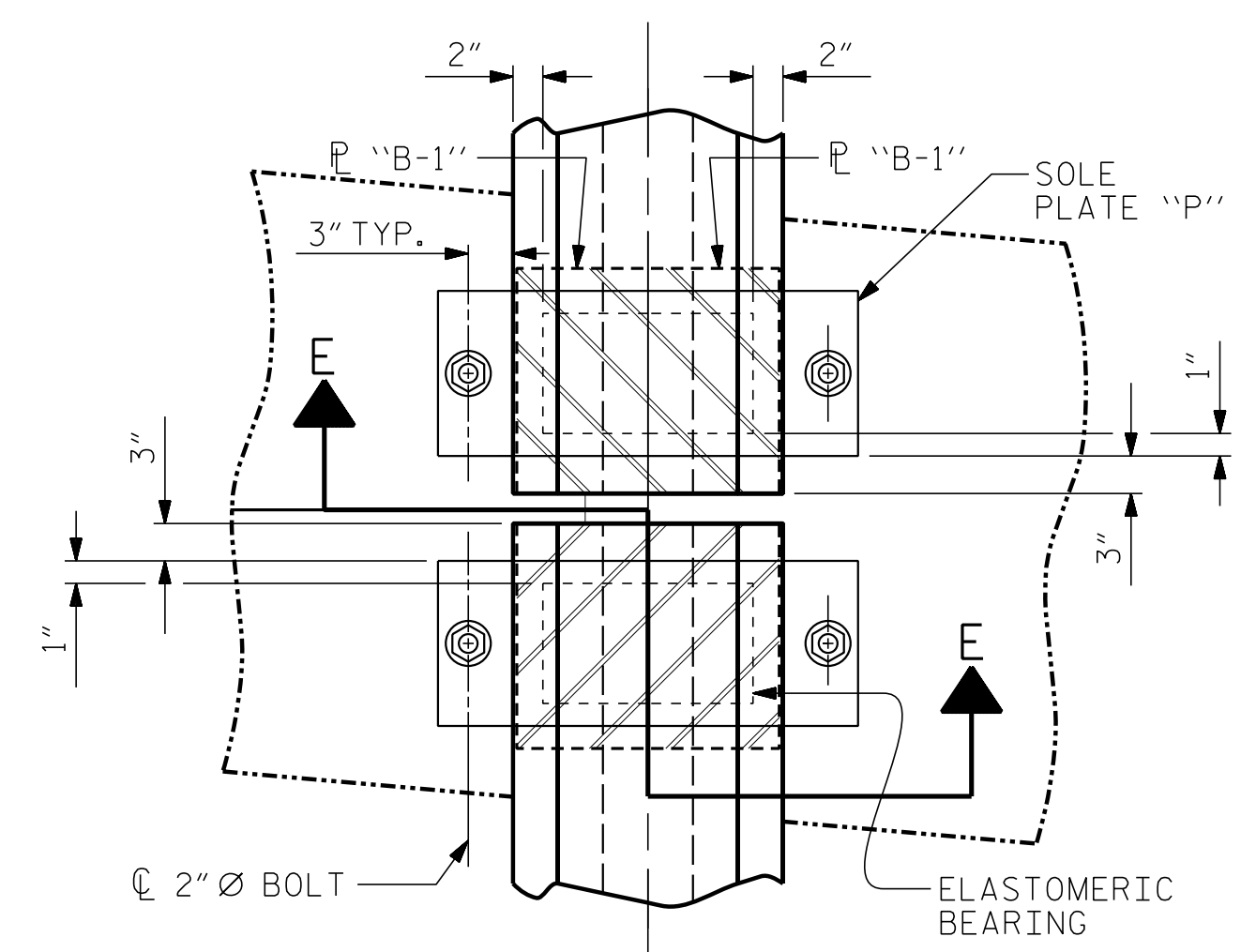
ASSEMBLED BY : J. PENDERGRAFT	DATE : 11-15
CHECKED BY : J. DILWORTH	DATE : 11-15
DRAWN BY : TLA 6/05	ADDED 10/21/05
CHECKED BY : VC 6/05	REV. 5/1/06RRR KMM/GM
	REV. 10/1/11 MAA/GM



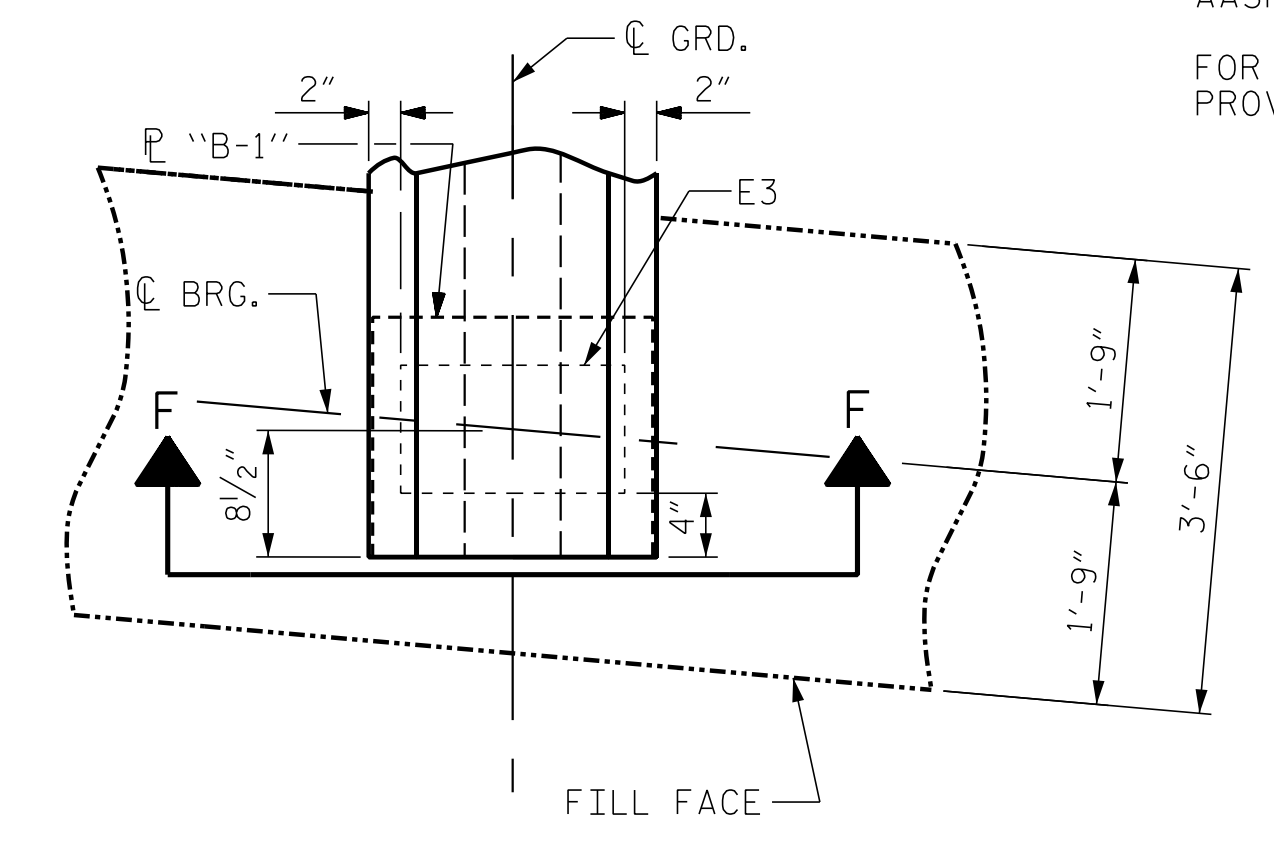
E3 (24 REQ'D)
 PLAN VIEW OF ELASTOMERIC BEARING
 TYPE IV



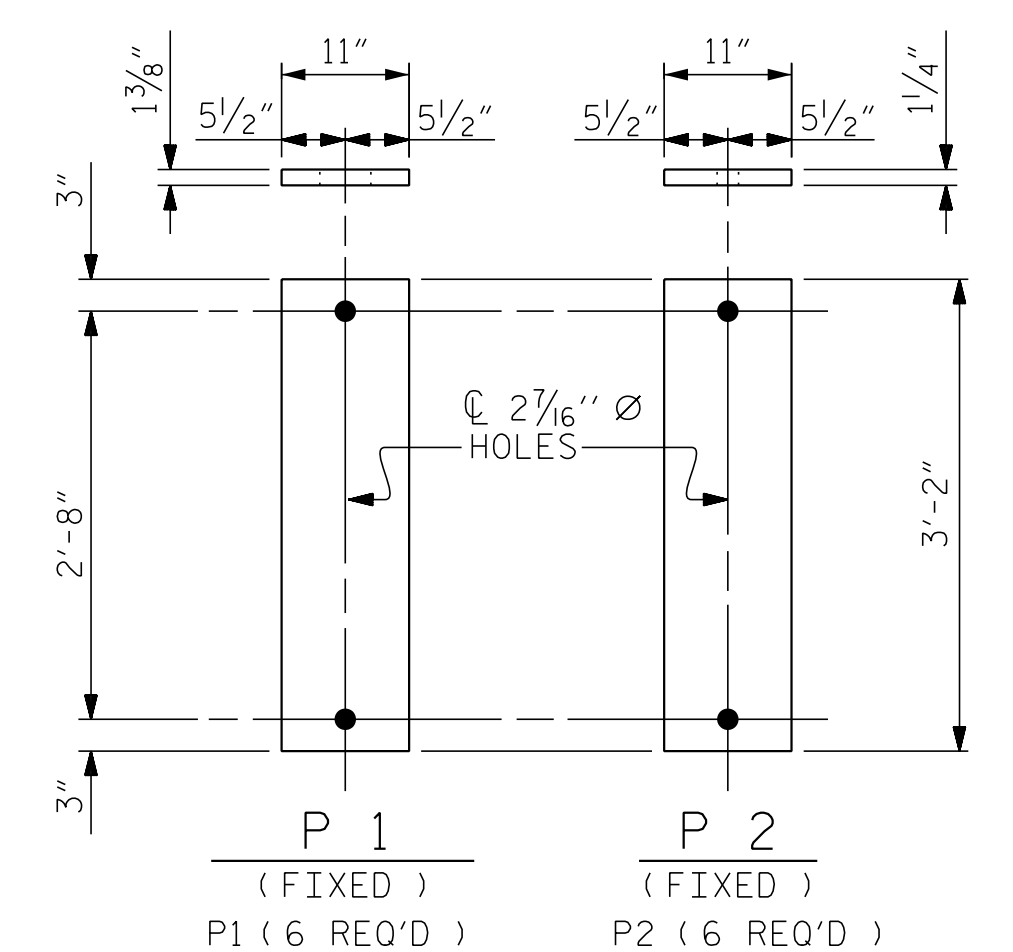
DETAIL "A"



TYPICAL PLAN @ BENT
 (SHOWING CONTINUOUS BENT)



TYPICAL PLAN @ END BENT



SOLE PLATE DETAILS ("P")

NOTES

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

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

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

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

SOLE PLATE "P", BOLTS, NUTS, 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. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

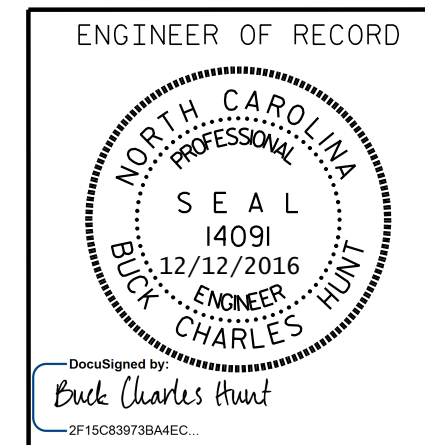
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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.

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE IV	225 k

PROJECT NO. U-5796
 WAYNE COUNTY
 STATION: 27+41.30 -Y8-



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

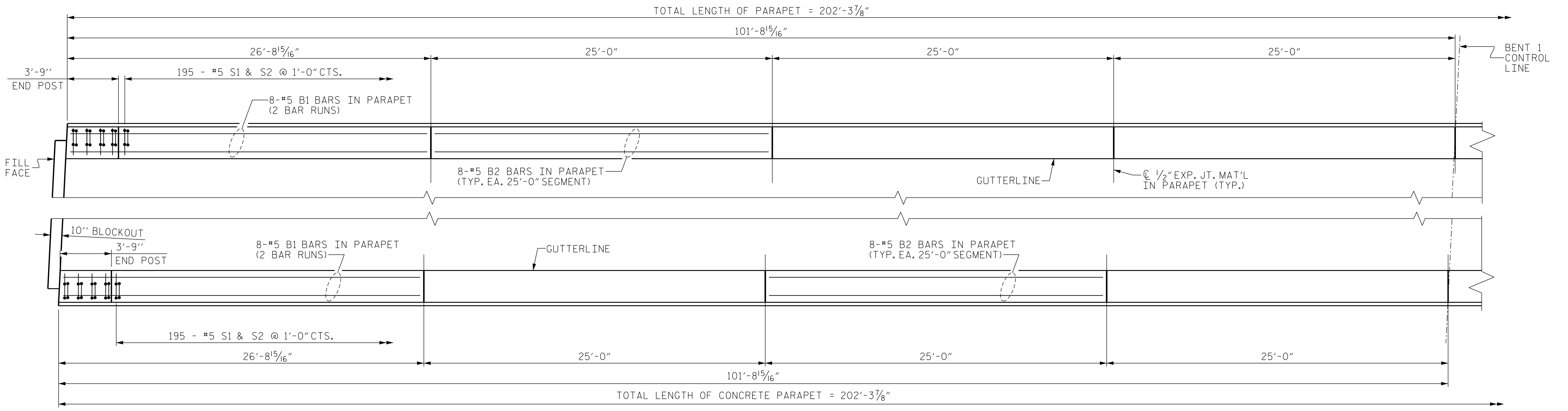
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-14
1			3			TOTAL SHEETS
2			4			34

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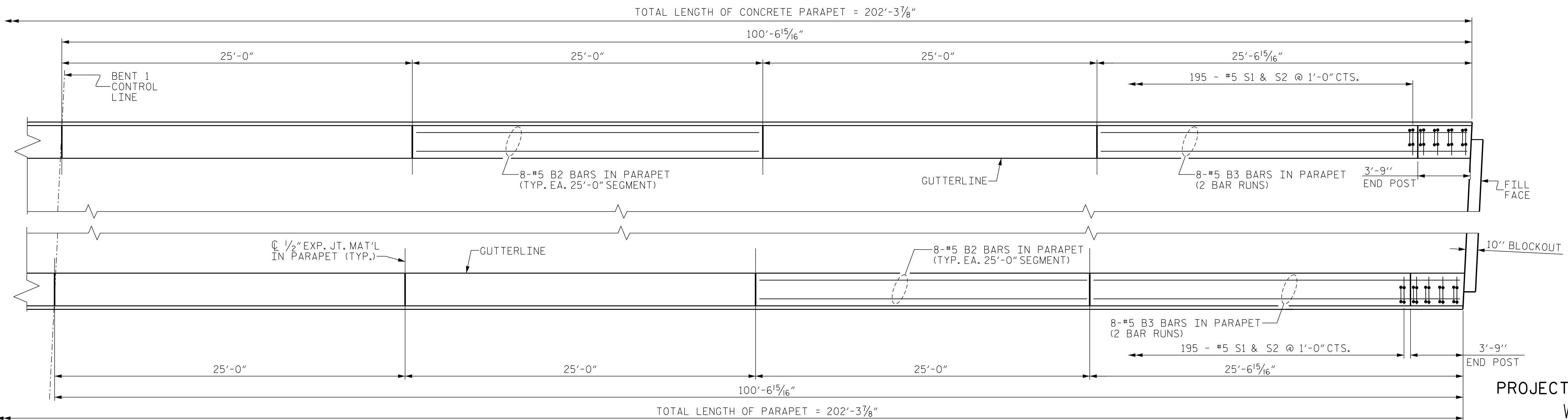
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ASSEMBLED BY : J. PENDERGRAFT	DATE : 11-15
CHECKED BY : J. DILWORTH	DATE : 11-15
DRAWN BY : WJH 8/89	REV. 10/1/11 MAA/GM
CHECKED BY : CRK 8/89	REV. 6/13 AAC/MAA
	REV. 1/15 MAA/TMG



PLAN OF SPAN "A"



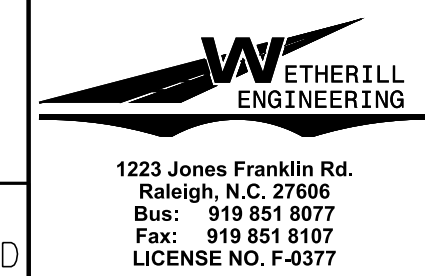
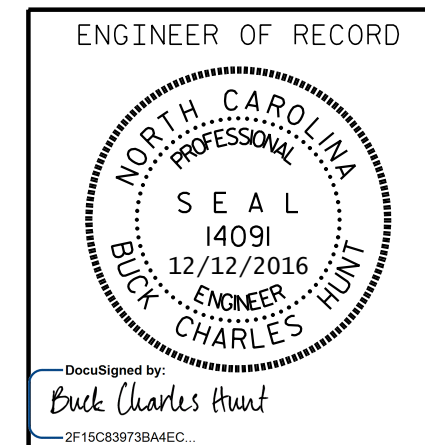
PLAN OF SPAN "B"

PROJECT NO. U-5796

WAYNE COUNTY

STATION: 27+41.30 -Y8-

SHEET 1 OF 2



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

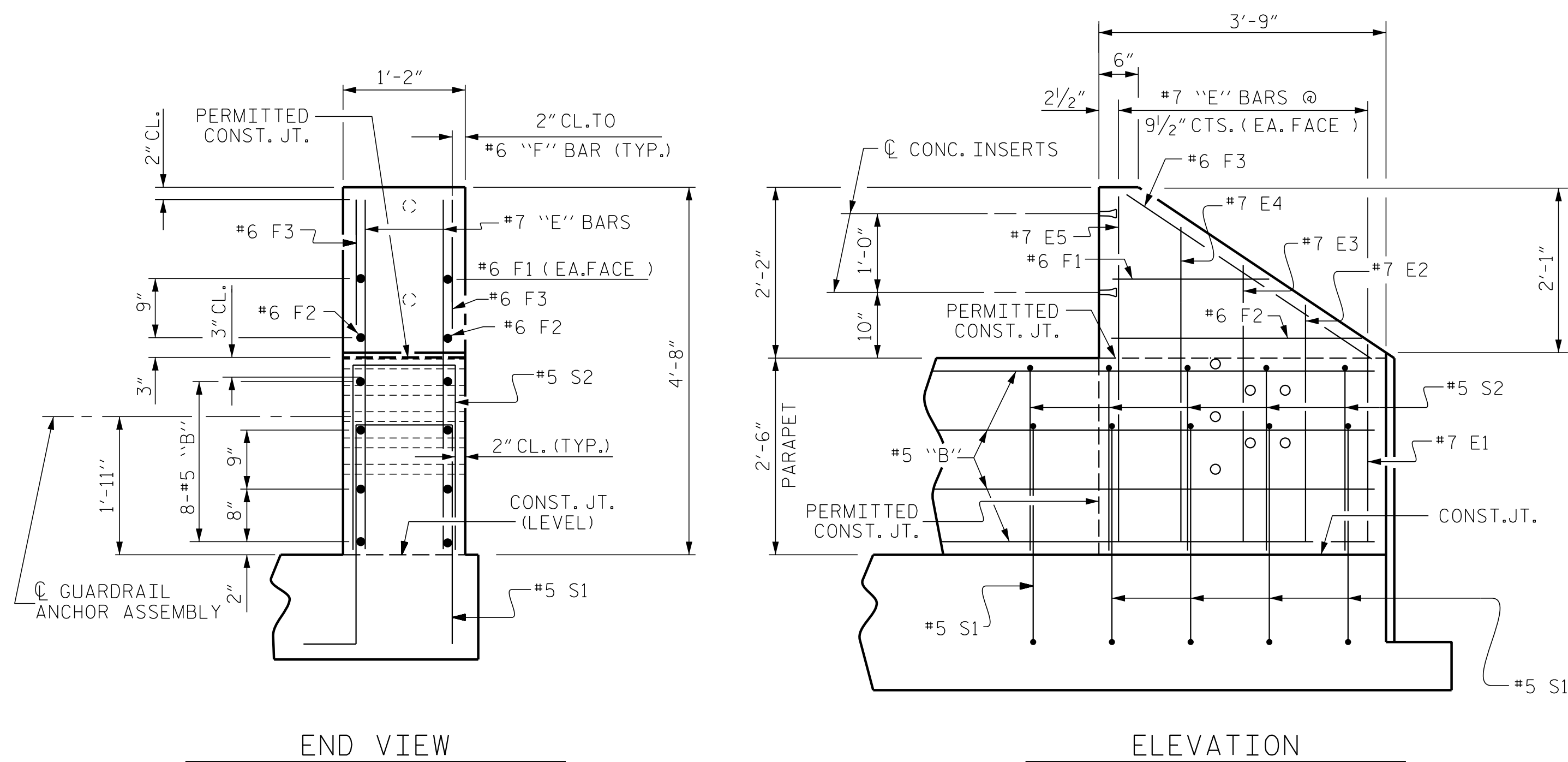
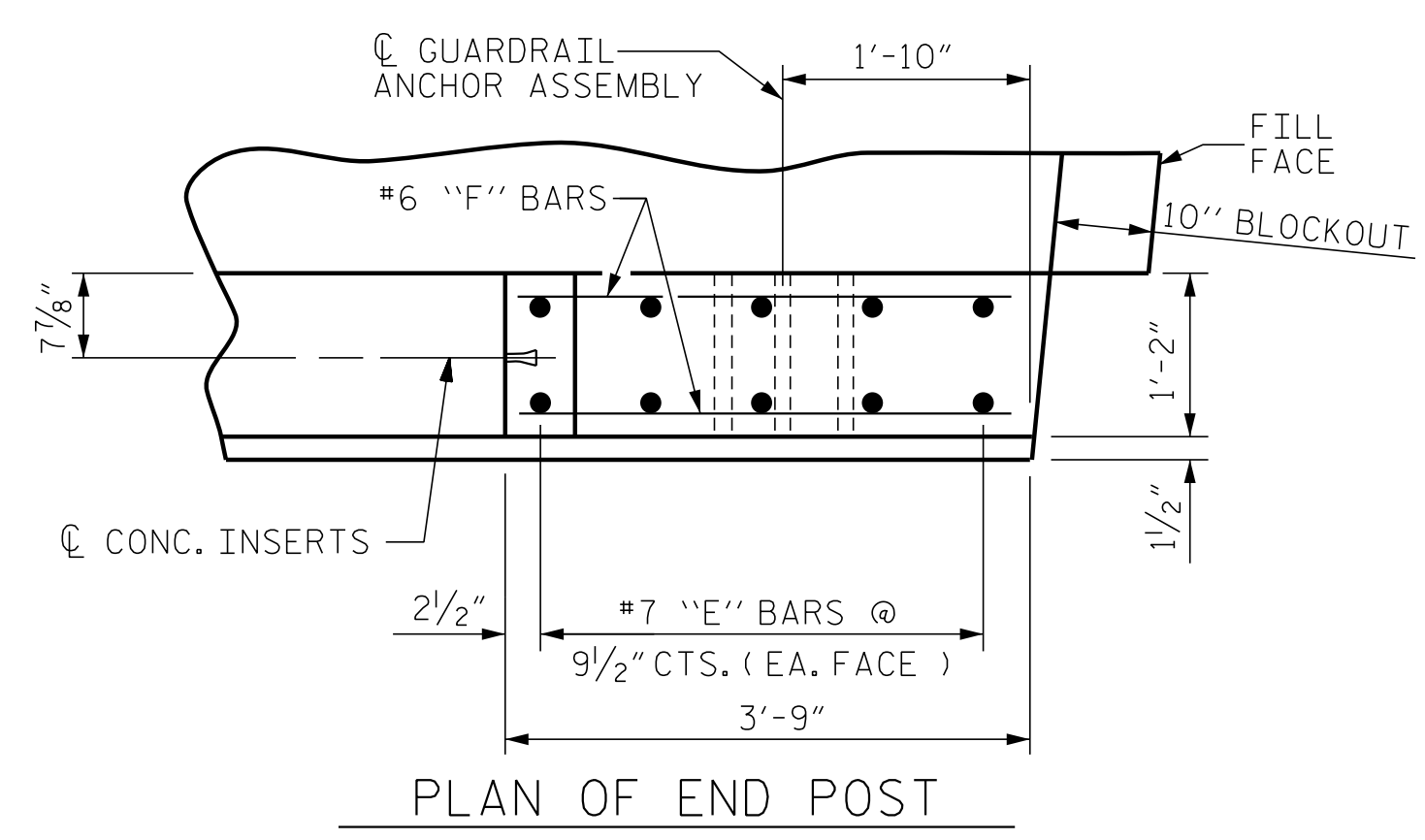
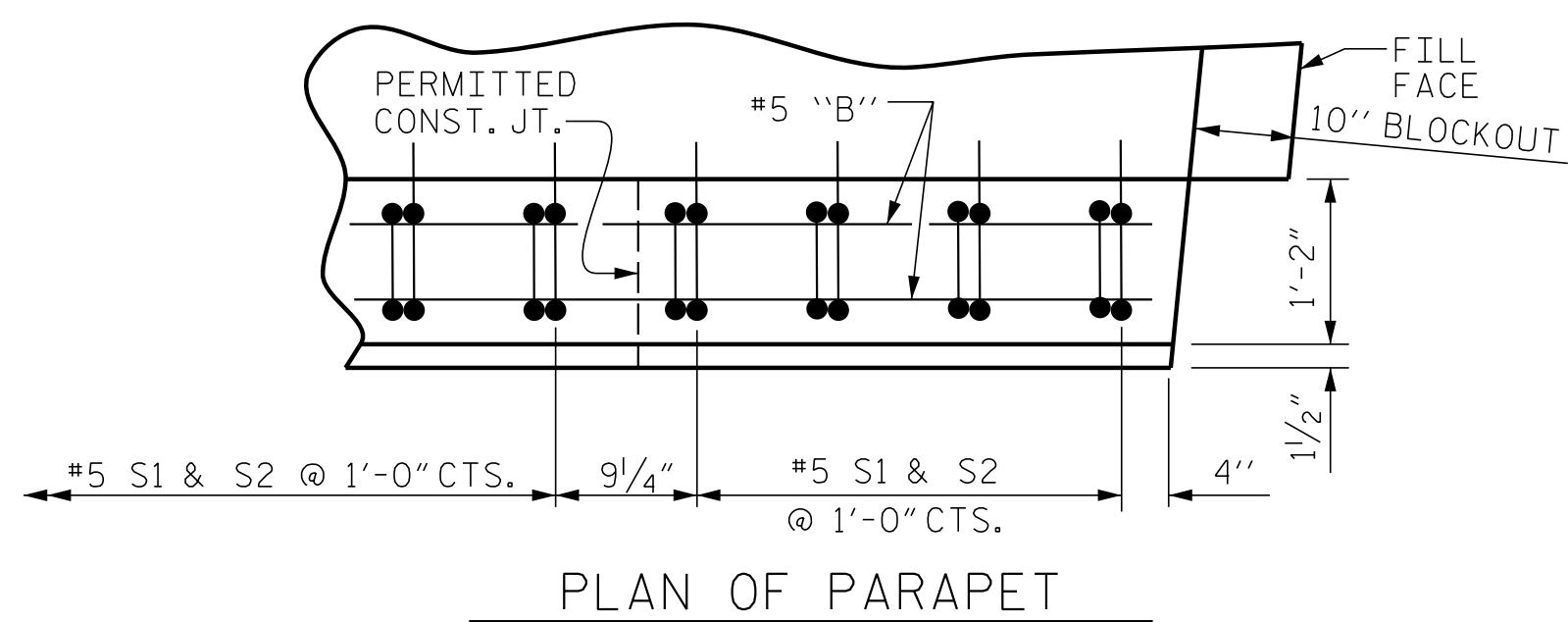
SUPERSTRUCTURE
CONCRETE PARAPET

REVISIONS				SHEET NO.			
NO.	BY:	DATE:	NO.	BY:	DATE:	SHEET NO.	
1			3			S01-15	
2			4			TOTAL SHEETS 34	

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DRAWN BY : J. PENDERGRAFT DATE : 10-15
 CHECKED BY : J. DILWORTH DATE : 10-15

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PARAPET AND END POST FOR TWO BAR RAIL

NOTES

THE PARAPET IN THE CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

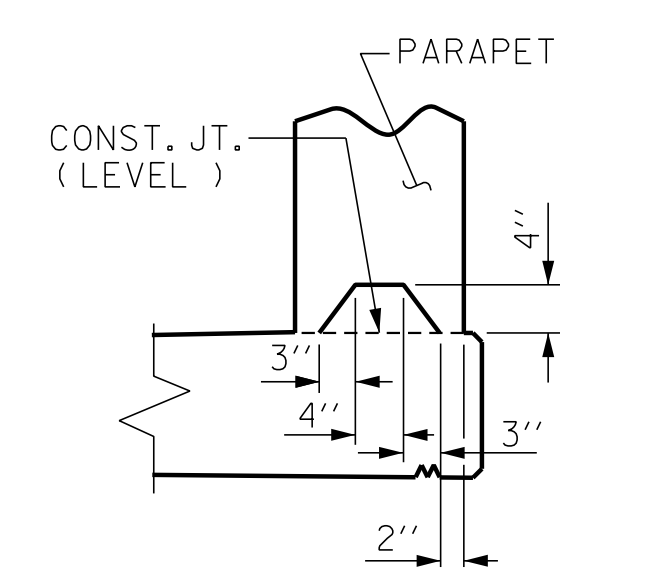
ALL REINFORCING STEEL IN PARAPET SHALL BE EPOXY COATED.

THE #5 S1 & S2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN PARAPET.

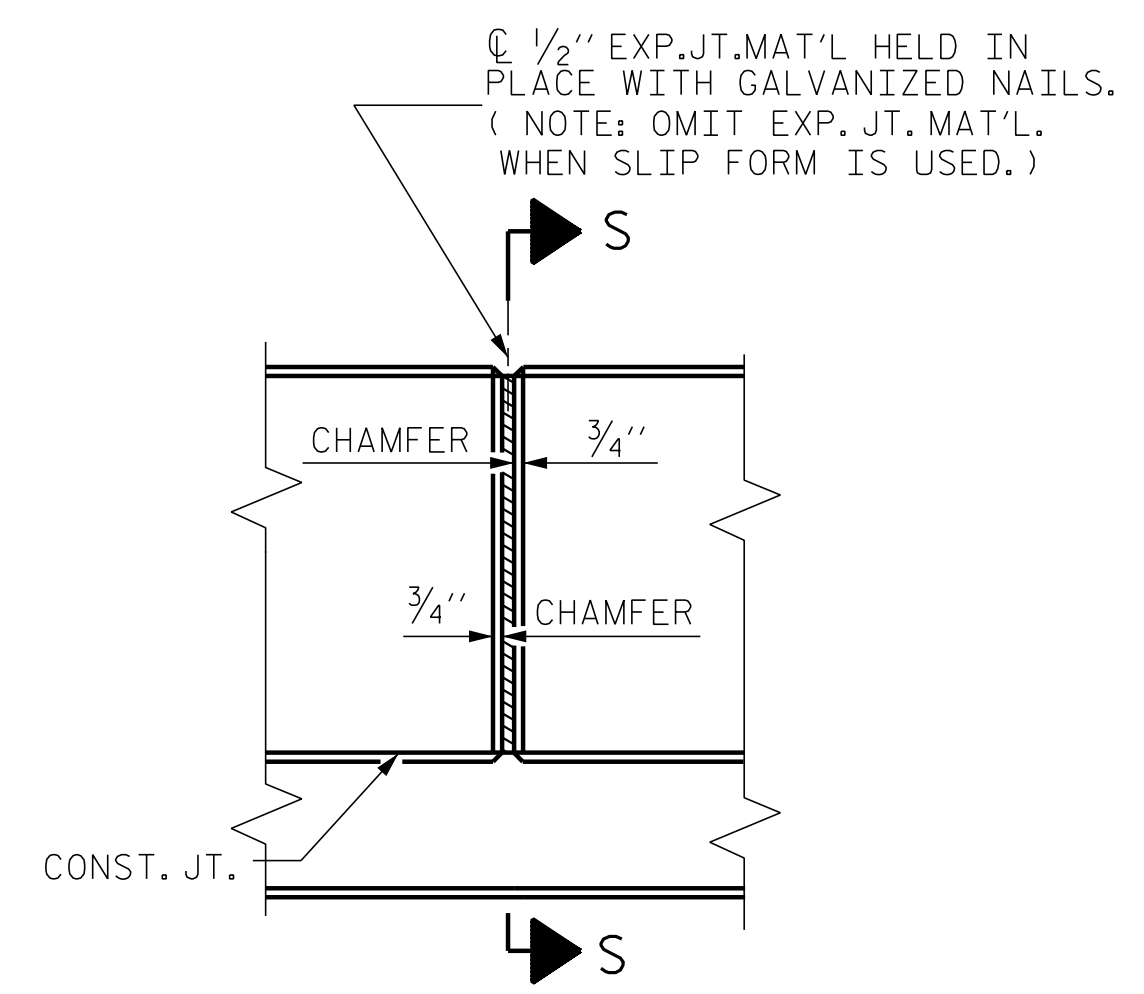
FOR DETAILS OF CONCRETE INSERTS IN END POSTS, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET.

FOR DETAILS OF GUARDRAIL ANCHOR ASSEMBLIES, SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS" SHEET.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN EXPANSION JOINTS.



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

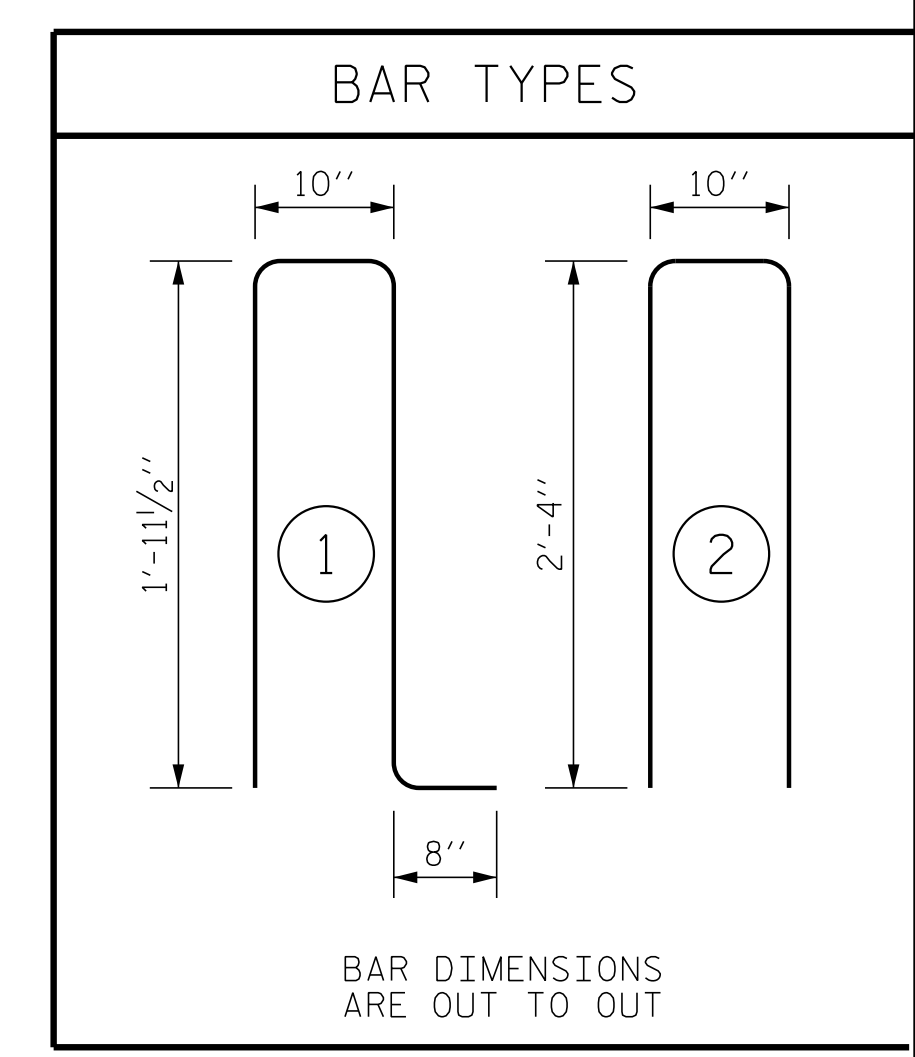


ELEVATION AT EXPANSION JOINTS

—BILL OF MATERIAL—

FOR CONCRETE PARAPET & END POST ONLY						
BAR	No.	SIZE	TYPE	LENGTH	WEIGHT	
* B1	32	#5	STR.	15'-0"	501	
* B2	96	#5	STR.	24'-7"	2461	
* B3	32	#5	STR.	14'-5"	481	
* E1	8	#7	STR.	2'-6"	41	
* E2	8	#7	STR.	3'-0"	49	
* E3	8	#7	STR.	3'-6"	57	
* E4	8	#7	STR.	4'-0"	65	
* E5	8	#7	STR.	4'-4"	71	
* F1	8	#6	STR.	1'-10"	22	
* F2	8	#6	STR.	3'-0"	36	
* F3	8	#6	STR.	3'-8"	44	
* S1	406	#5	1	5'-5"	2294	
* S2	406	#5	2	5'-6"	2329	
* EPOXY COATED REINFORCING STEEL					8451 LBS.	
CLASS AA CONCRETE					44.5 C.Y.	
1'-2" x 2'-6" CONCRETE PARAPET					404.65 L.F.	

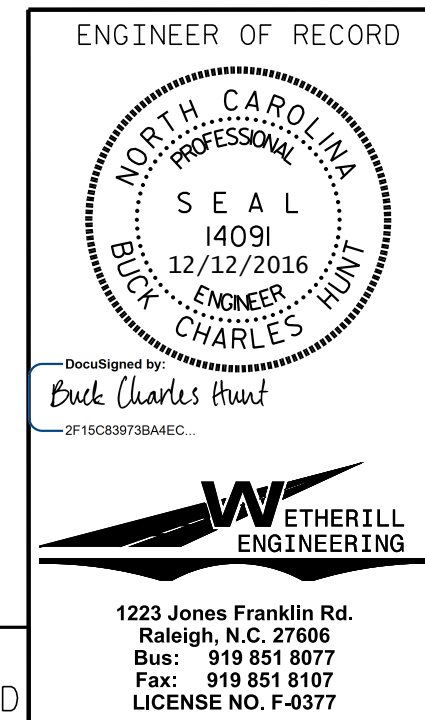
* THESE BARS ARE EPOXY COATED



BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. U-5796
WAYNE COUNTY
STATION: 27+41.30 -Y8-

SHEET 2 OF 2



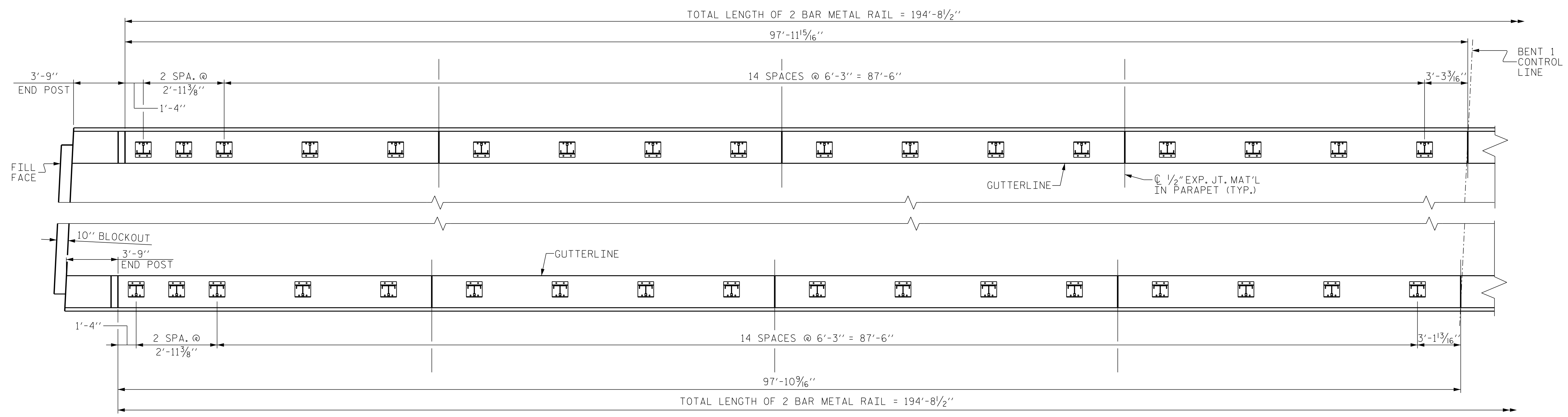
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE CONCRETE PARAPET					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S01-16
TOTAL SHEETS 34

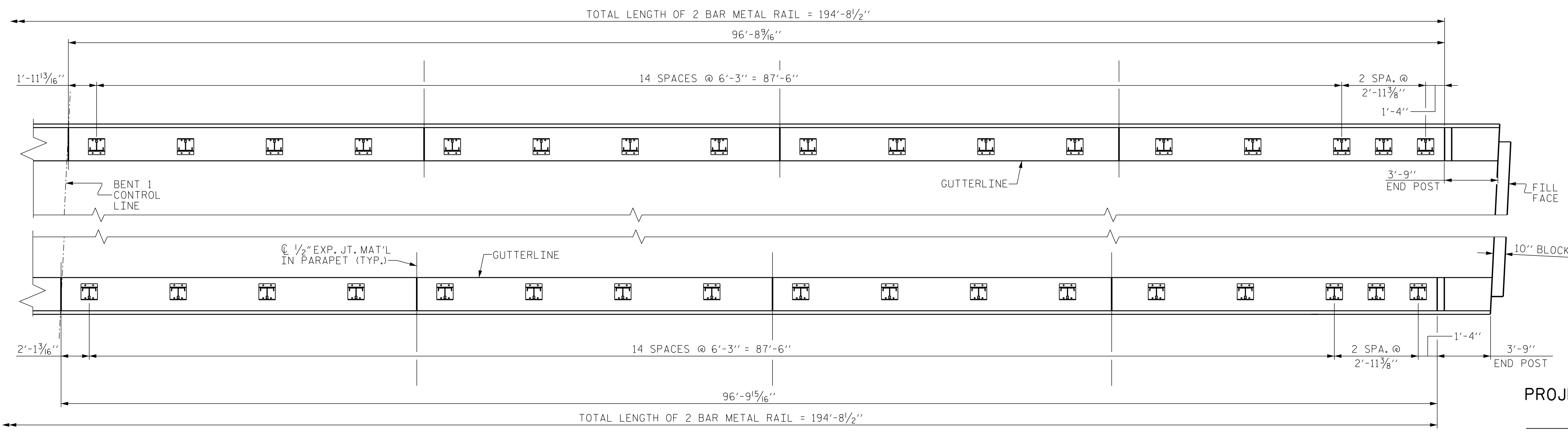
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY: J. PENDERGRAFT DATE: 10-15
CHECKED BY: J. DILWORTH DATE: 10-15

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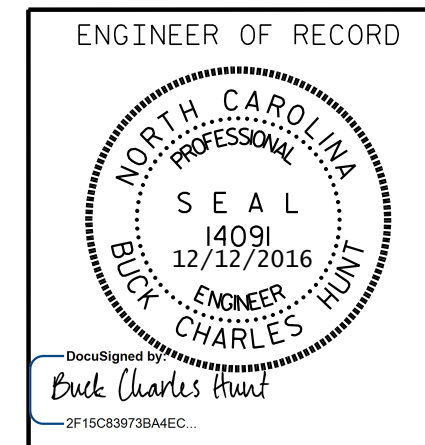
PLAN OF SPAN "A"



PLAN OF SPAN "B"

PROJECT NO. U-5796
 WAYNE COUNTY
 STATION: 27+41.30 -Y8-

ALL DIMENSIONS ARE MEASURED TO THE OUTSIDE FACE OF PARAPET



ETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE 2 BAR METAL RAIL POST SPACING					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S01-17					TOTAL SHEETS 34

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DRAWN BY: J. PENDERGRAFT DATE: 10-15
 CHECKED BY: J. DILWORTH DATE: 10-15

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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 LRFB 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 STANDARD NO. BMR2.

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

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

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

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

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

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

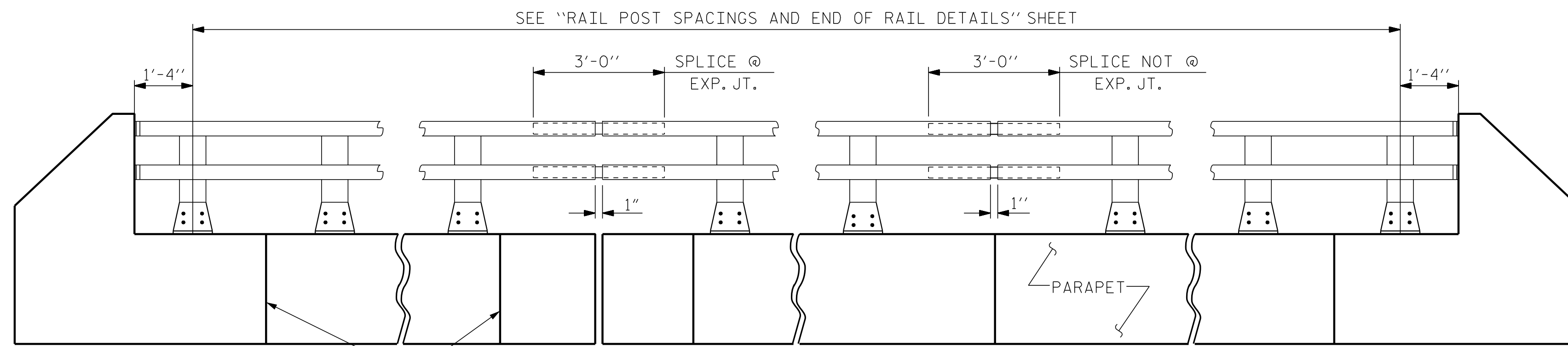
MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND 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.

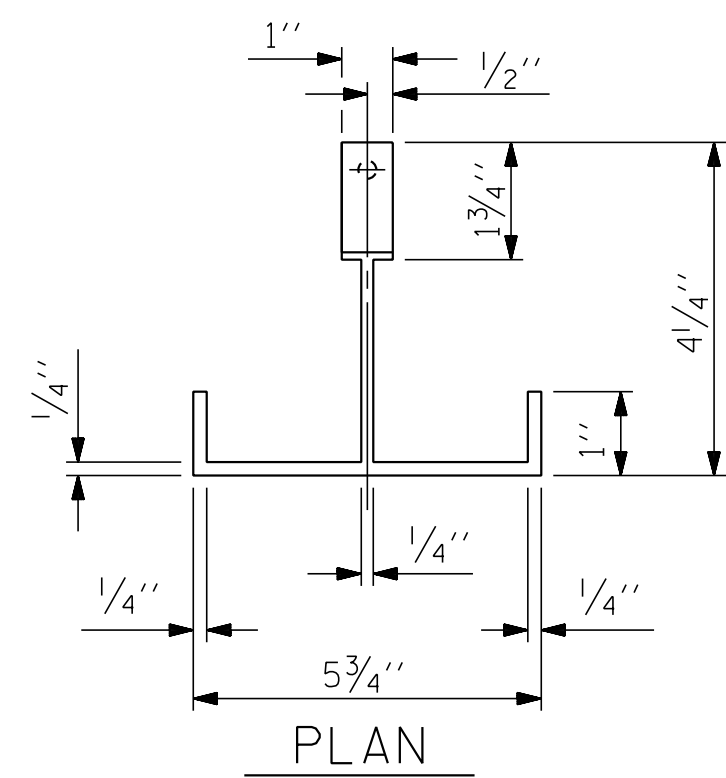
PAY LENGTH = 389.42 LIN. FT.

PROJECT NO. U-5796
WAYNE COUNTY
 STATION: 27+41.30 -Y8-

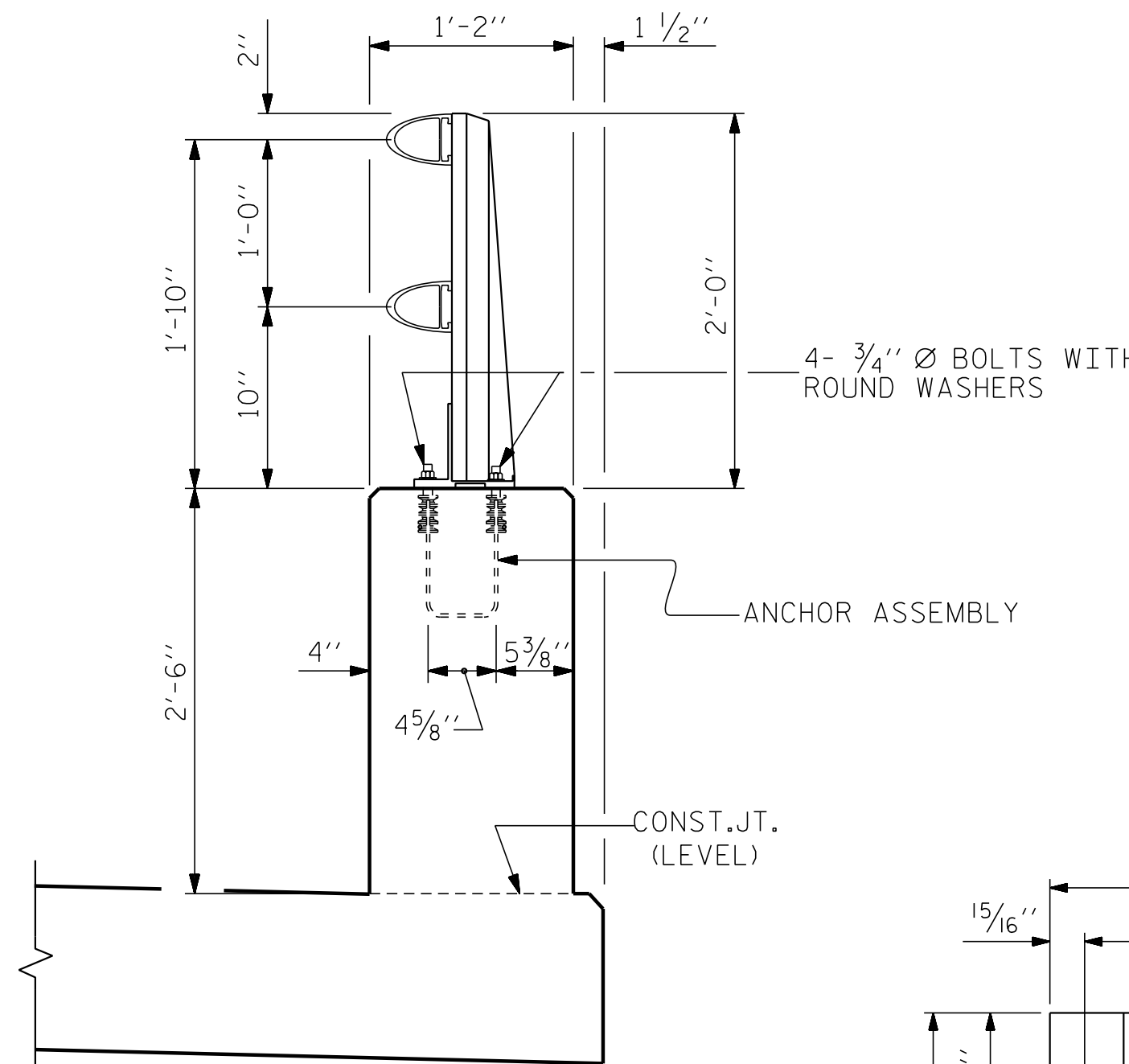
SHEET 1 OF 3



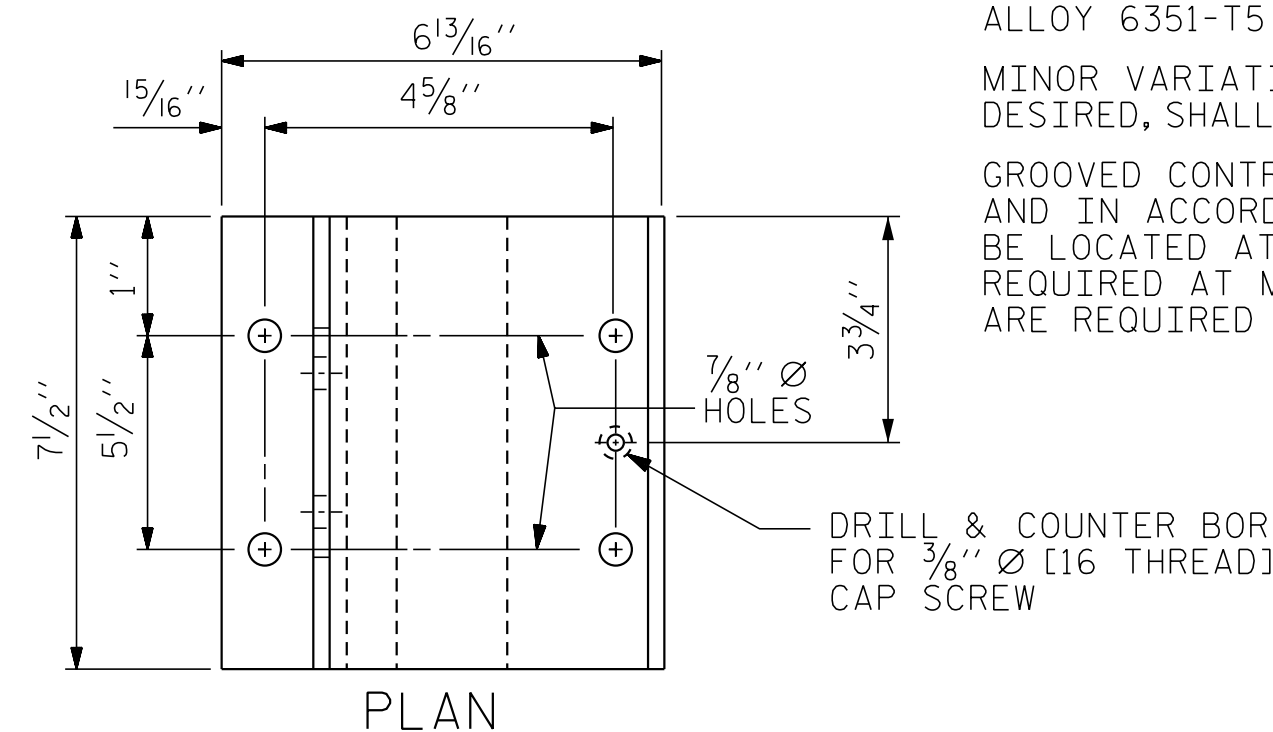
ELEVATION
 NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET 3 OF 3.



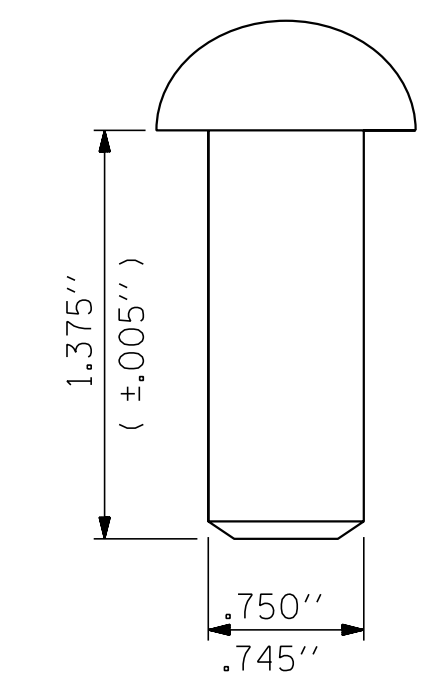
PLAN



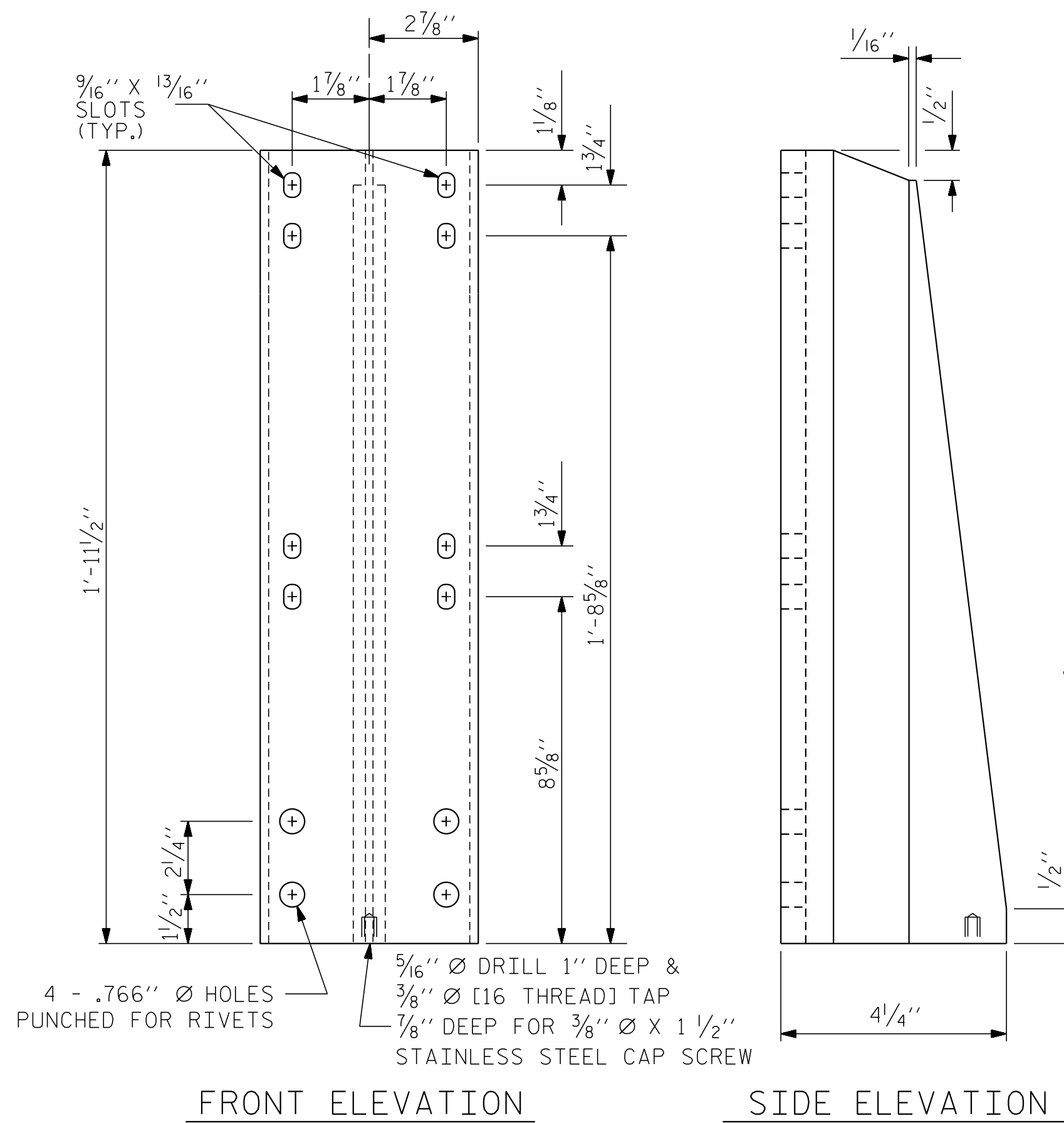
SECTION THRU PARAPET AND RAIL



PLAN



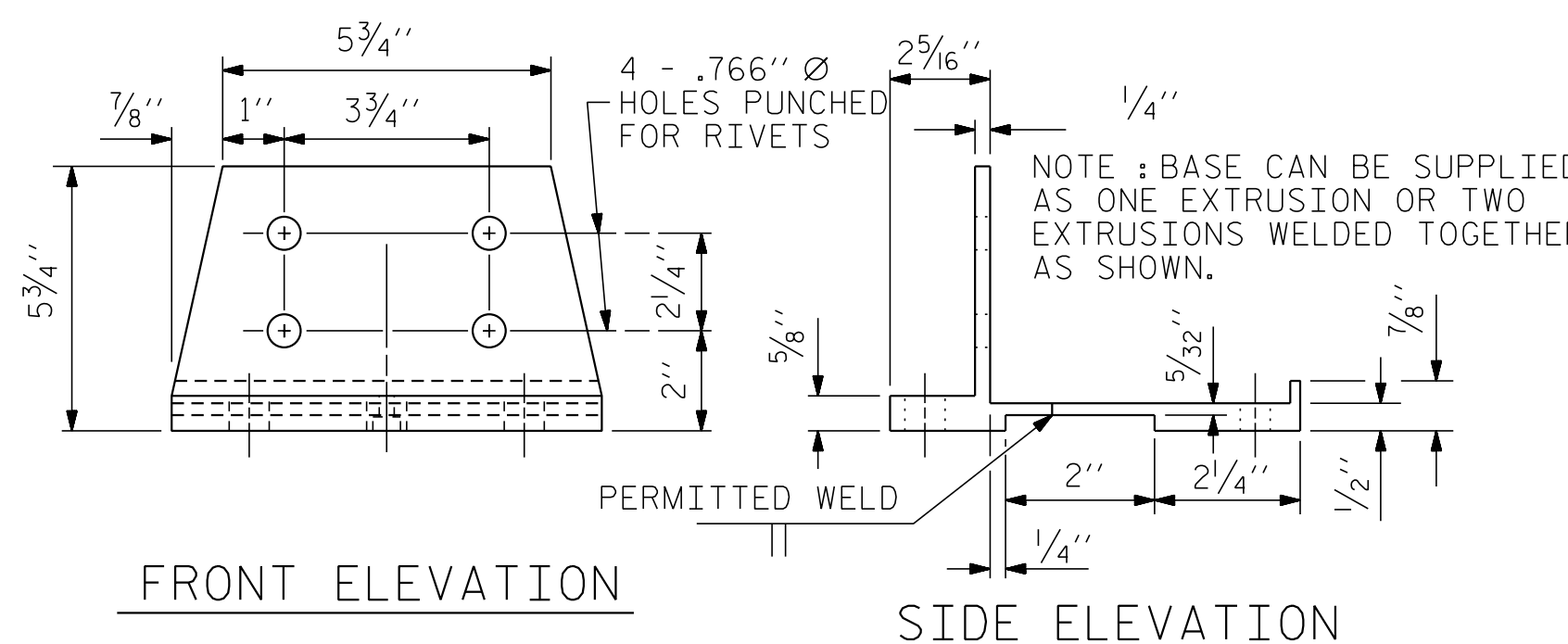
RIVET DETAIL



FRONT ELEVATION

SIDE ELEVATION

DETAILS OF POST



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD

 BUCK CHARLES HUNT
 ENGINEER
 WETHERILL ENGINEERING
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

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

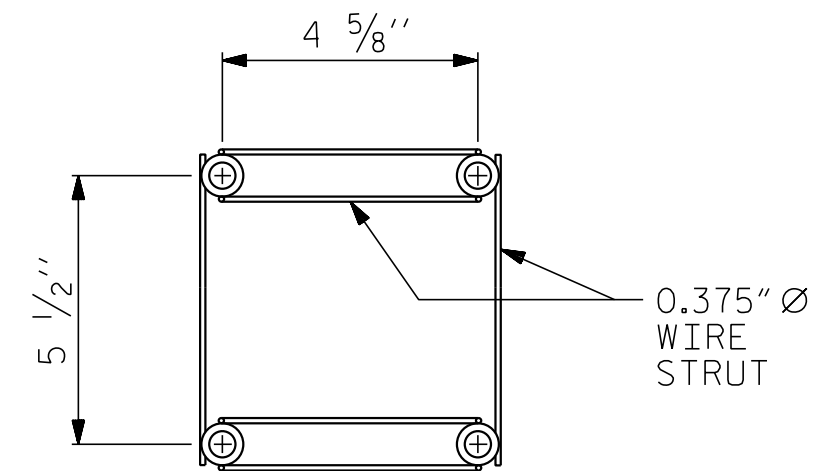
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S01-18
 TOTAL SHEETS 34

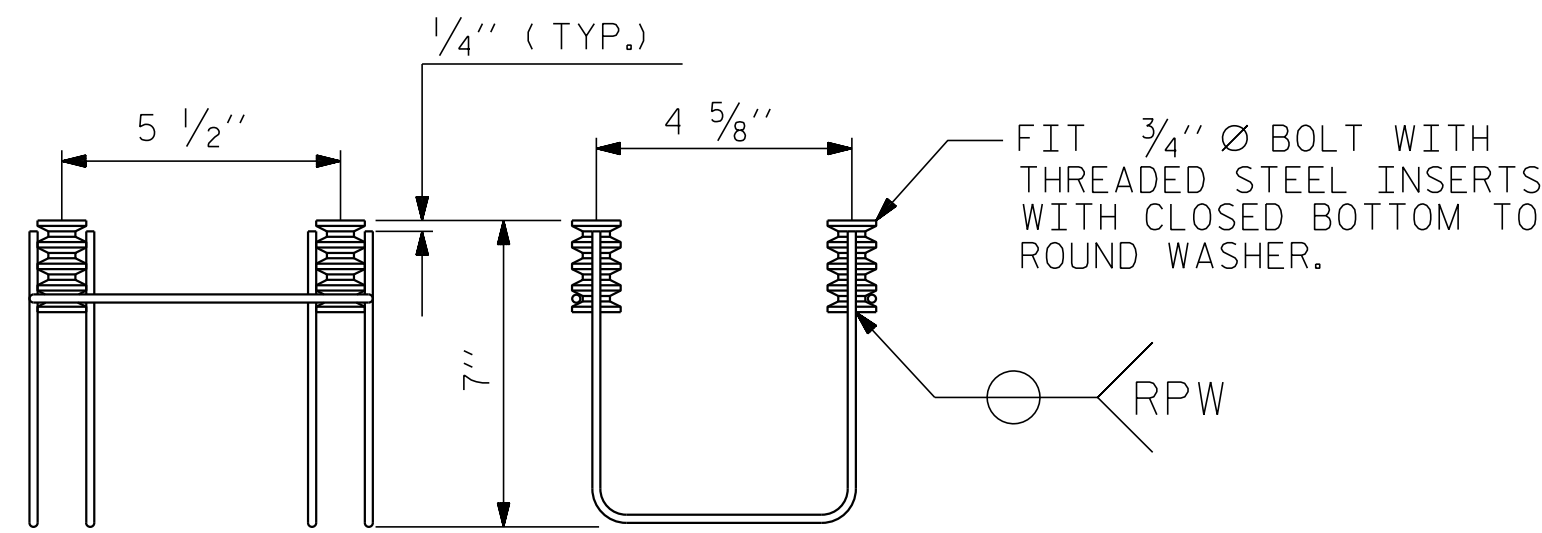
STD. NO. BMR3

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ASSEMBLED BY : J. PENDERGRAFT	DATE : 10-15
CHECKED BY : J. DILWORTH	DATE : 10-15
DRAWN BY : EEM 6/94	REV. 5/1/06 TLA/GM
CHECKED BY : RGW 6/94	REV. 10/1/11 MAA/GM
	REV. 6/13 MAA/GM



PLAN



SIDE VIEW

ELEVATION

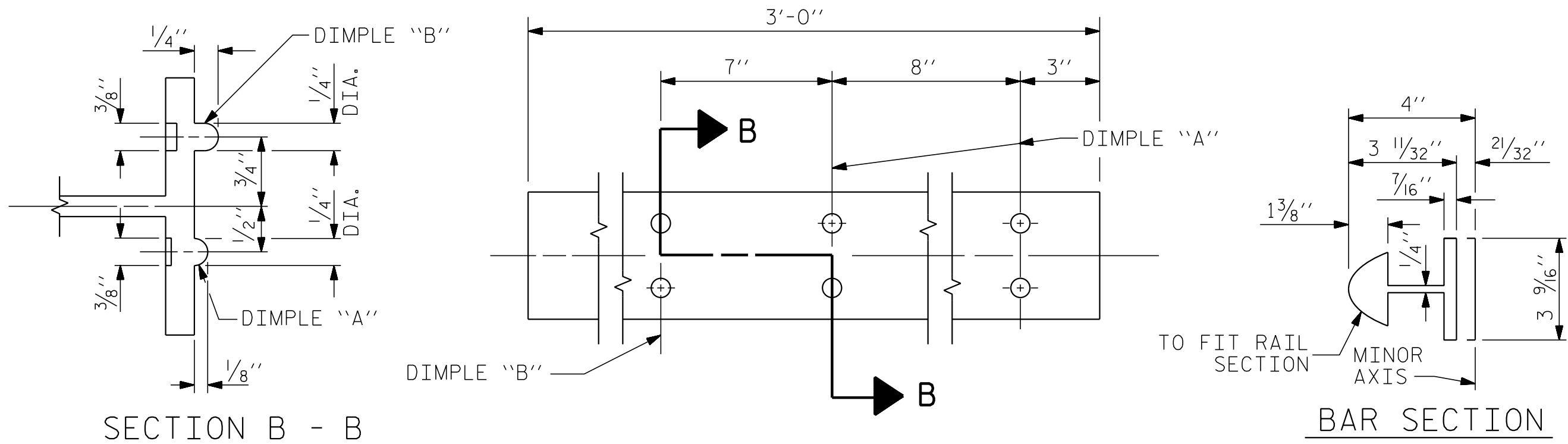
4-BOLT METAL RAIL ANCHOR ASSEMBLY

(68 ASSEMBLIES REQUIRED)

- 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.
 - 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
 - WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
 - THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
 - THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
 - BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

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

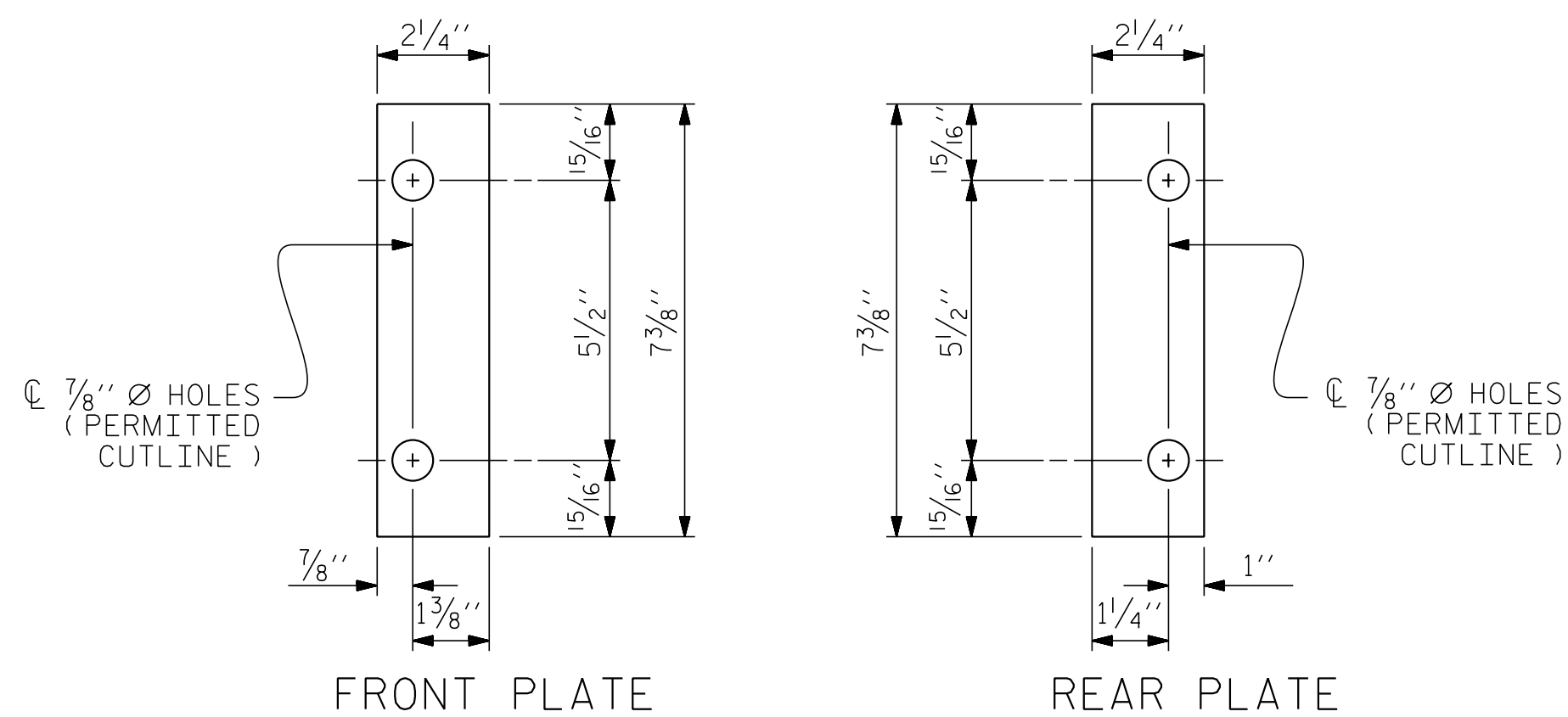
WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY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



SECTION B - B

EXPANSION BAR DETAILS

BAR SECTION

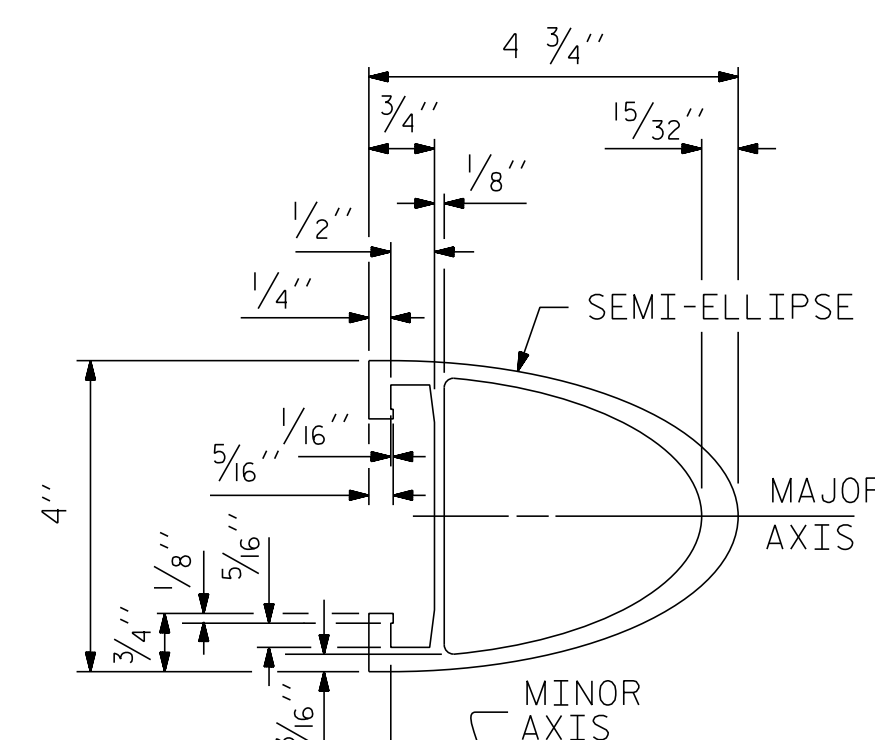


FRONT PLATE

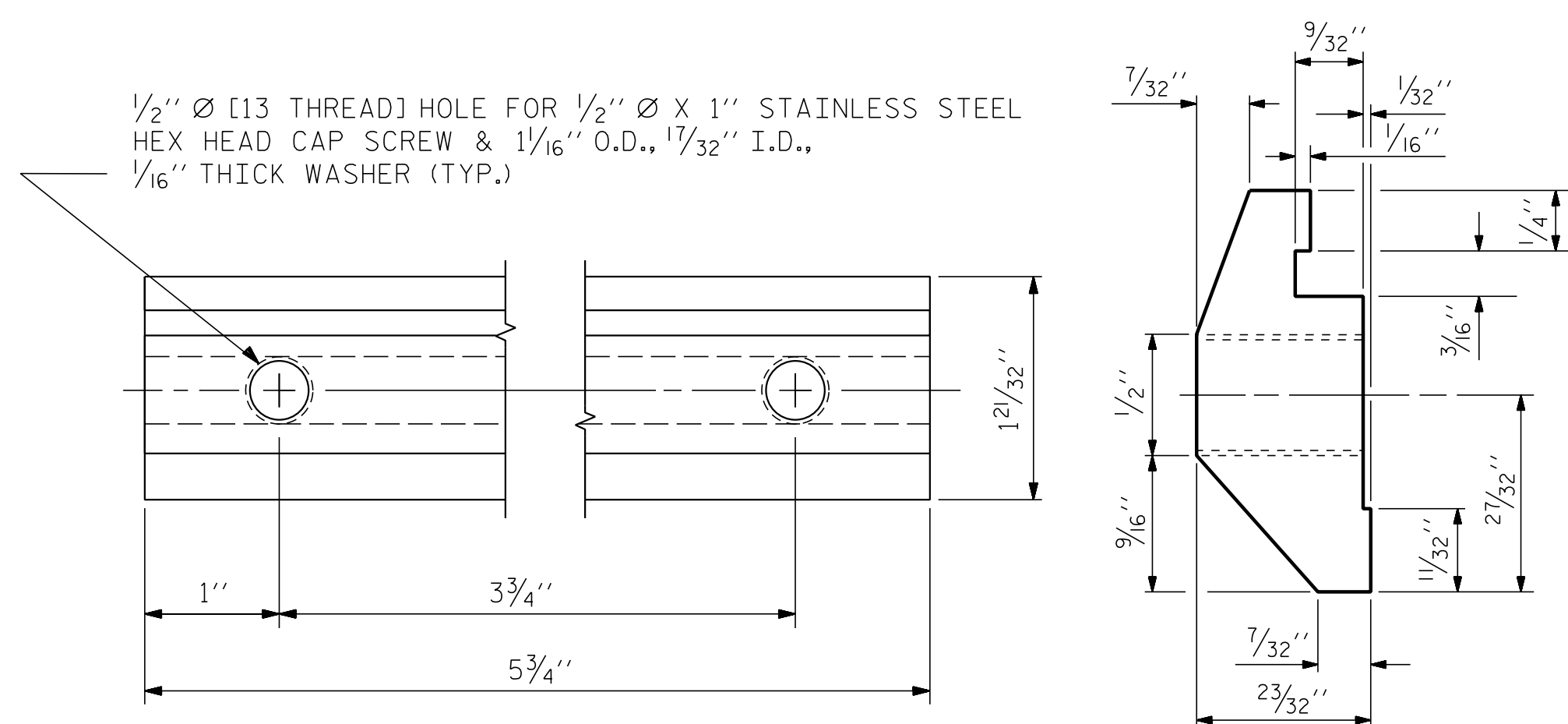
REAR PLATE

SHIM DETAILS

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

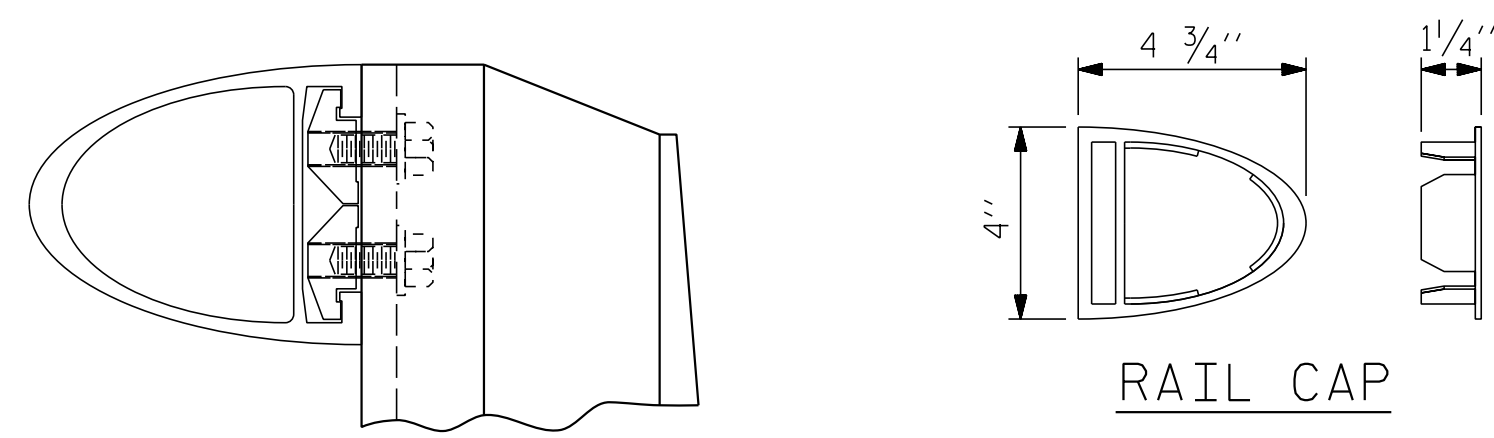


RAIL SECTION



CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY

RAIL CAP

PROJECT NO. U-5796
WAYNE COUNTY
STATION: 27+41.30 -Y8-

SHEET 2 OF 3

ASSEMBLED BY : J. PENDERGRAFT	DATE : 10-15
CHECKED BY : J. DILWORTH	DATE : 10-15
DRAWN BY : EEM 6/94	REV. 8/16/99 MAB/LES
CHECKED BY : RGW 6/94	REV. 5/1/06R KMM/GM
	REV. 10/1/11 MAA/GM

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ENGINEER OF RECORD

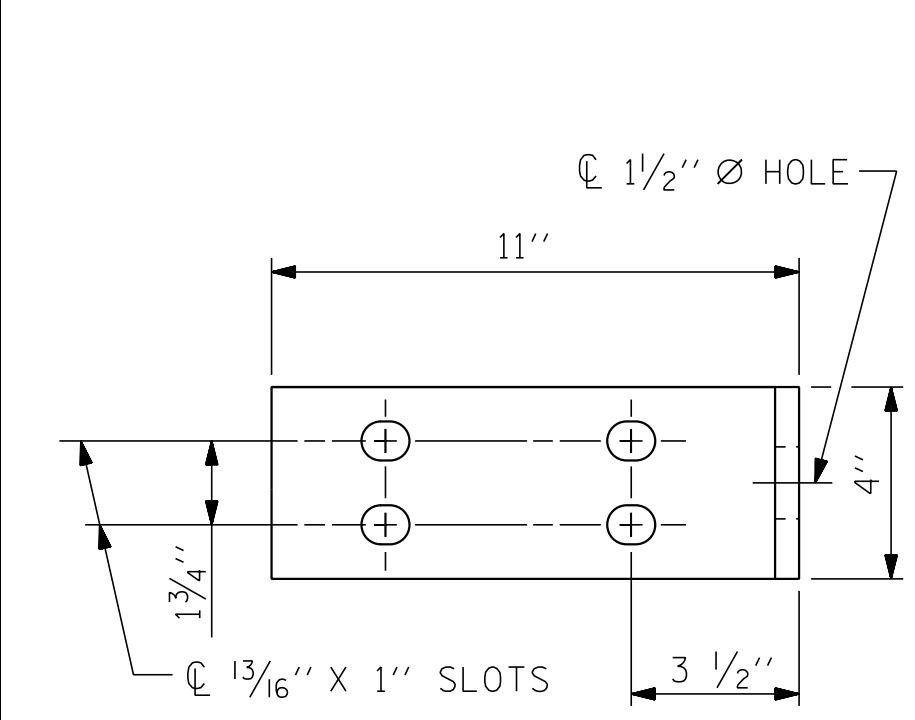
DocuSign
Erick Charles Hunt
2F15C859758A1EC

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ENGINEERING

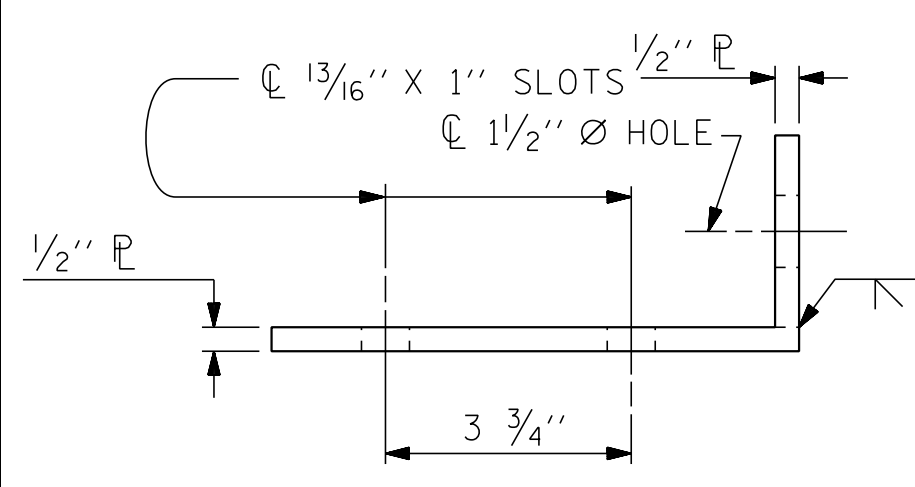
1223 Jones Franklin Rd.
Raleigh, N.C. 27606
Bus: 919 851 8077
Fax: 919 851 8107
LICENSE NO. F-0377

STATE OF NORTH CAROLINA		DEPARTMENT OF TRANSPORTATION		RALEIGH	
STANDARD					
2 BAR METAL RAIL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S01-19					TOTAL SHEETS 34

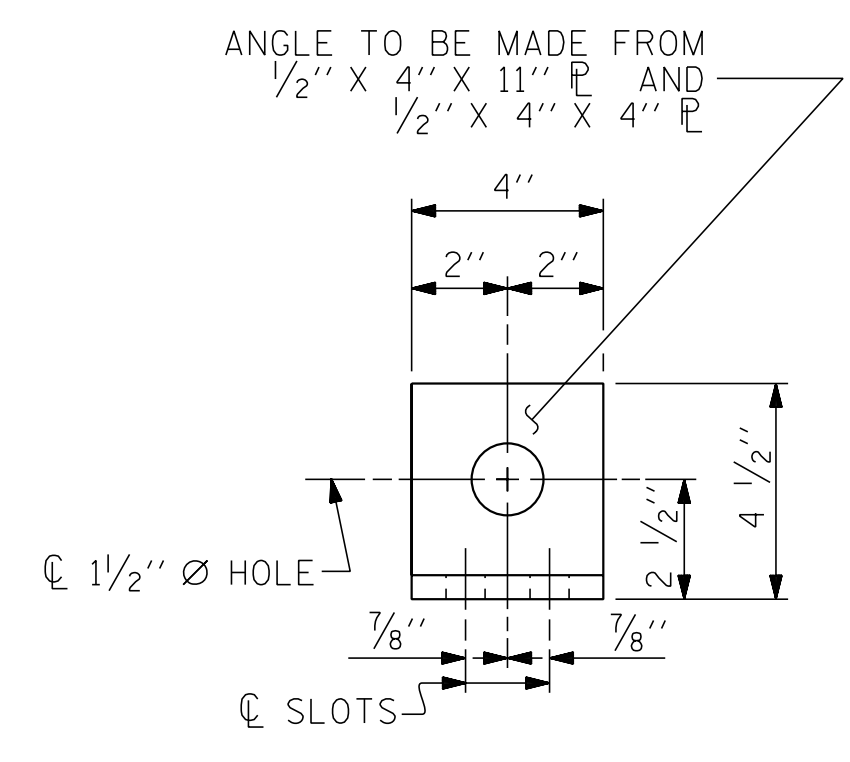
STD. NO. BMR4



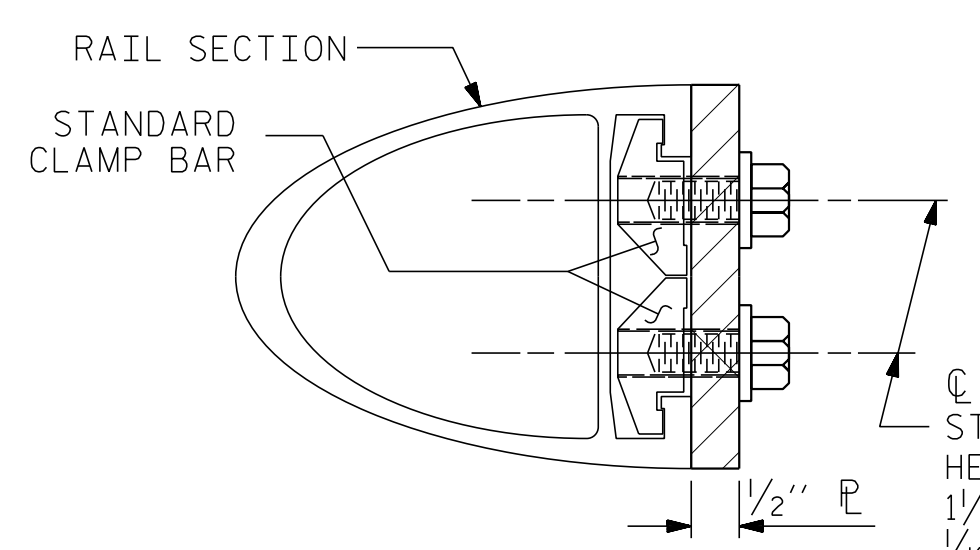
ELEVATION



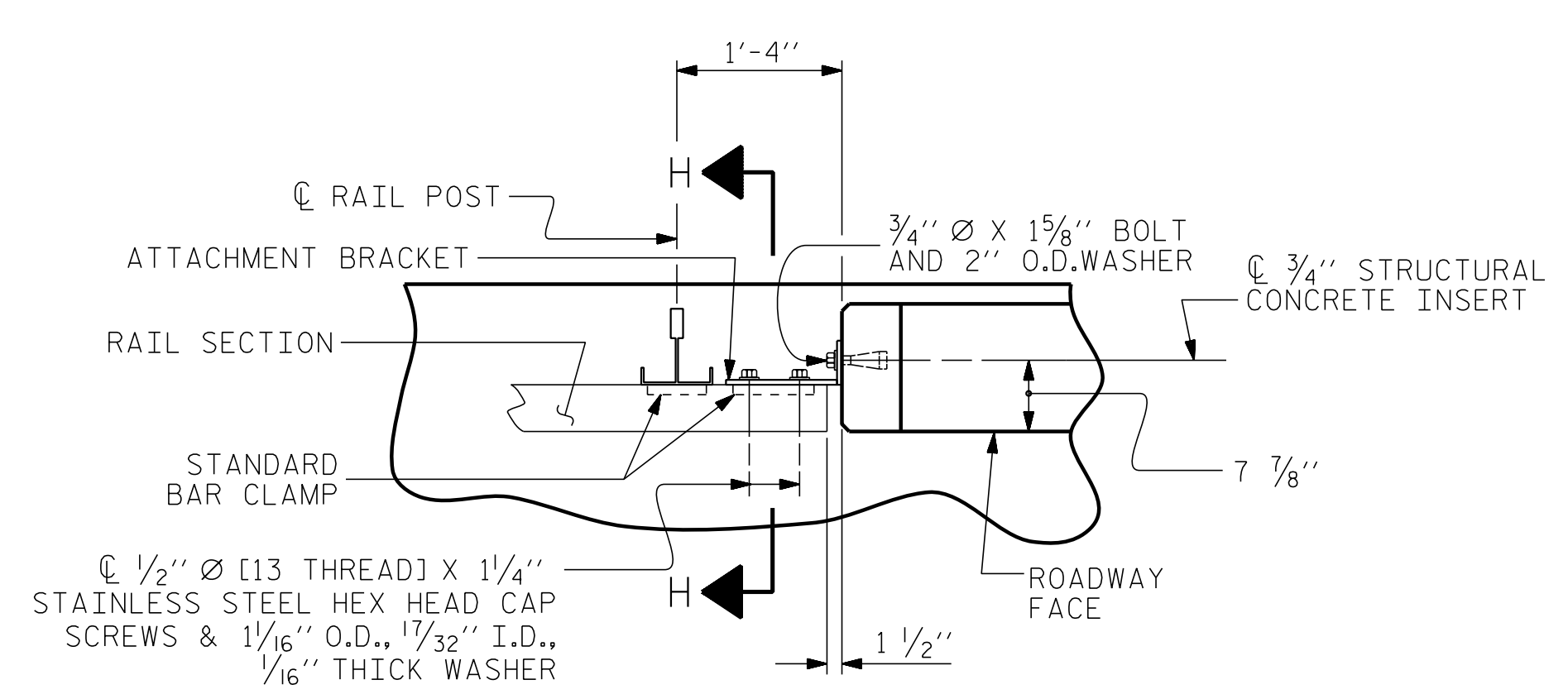
TOP VIEW



END VIEW (FIX AND EXP.)

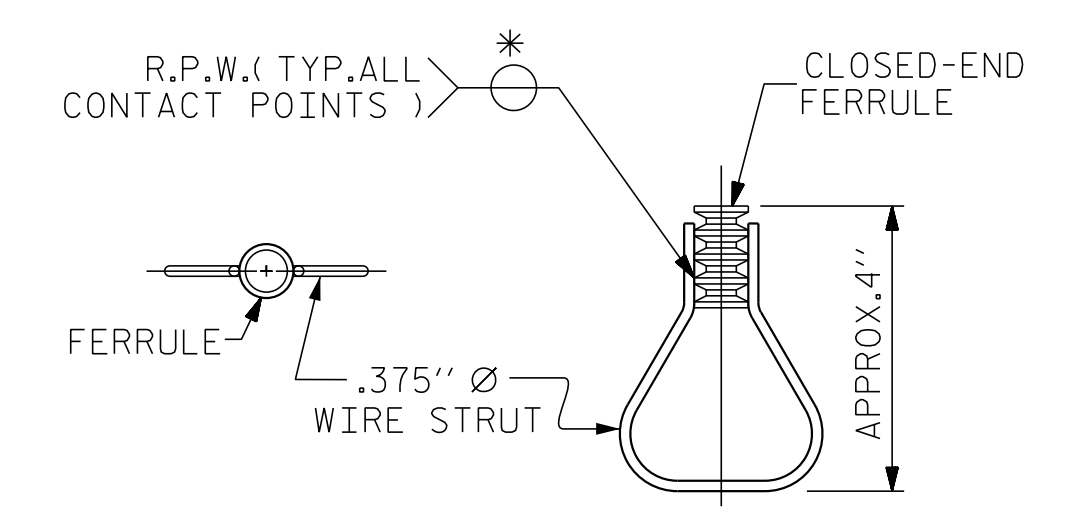


SECTION H-H (FIX)



PLAN - RAIL AND END POST

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



STRUCTURAL CONCRETE INSERT

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

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

NOTES

METAL RAIL TO END POST CONNECTION

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

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

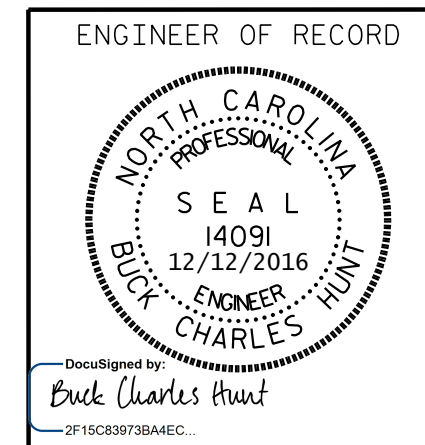
THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

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

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

PROJECT NO. U-5796
WAYNE COUNTY
 STATION: 27+41.30 -Y8-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**STANDARD
 2 BAR METAL RAIL**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S01-20
1			3			TOTAL SHEETS
2			4			34

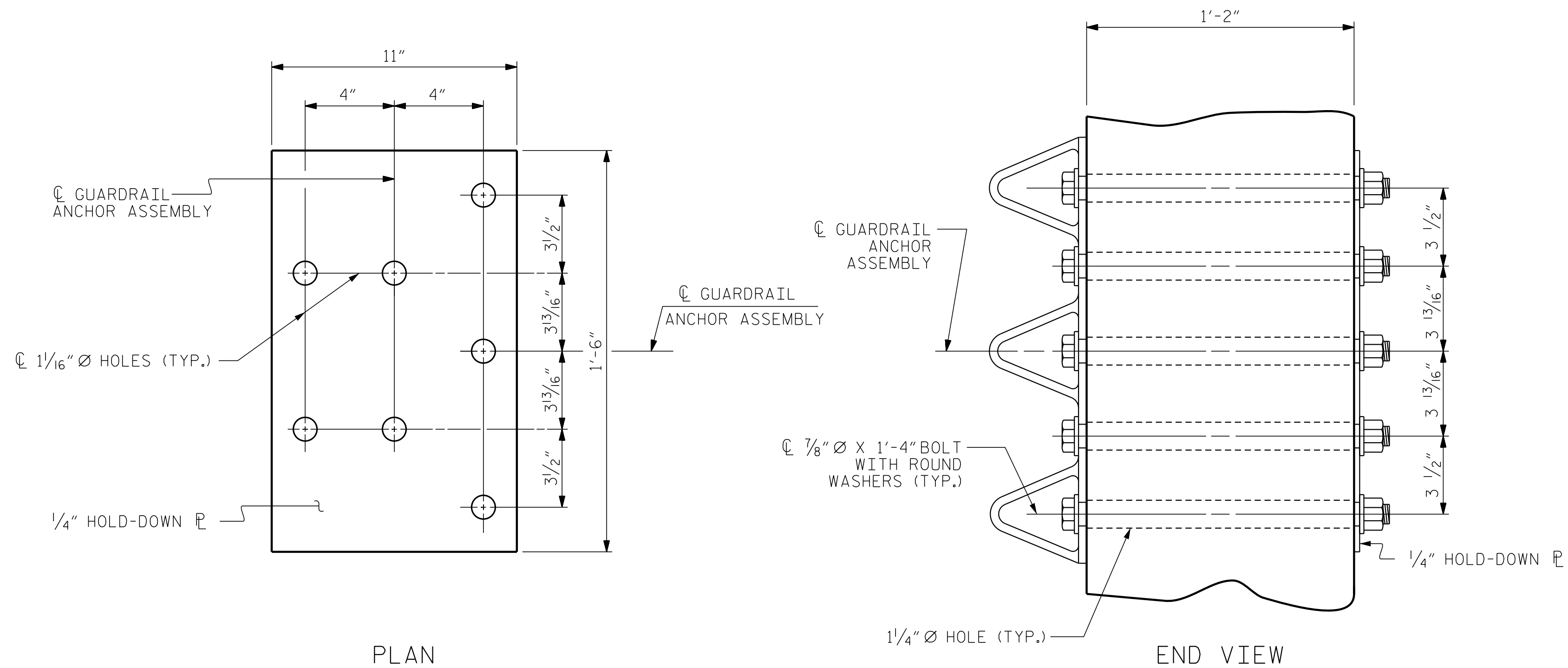
DOCUMENT NOT CONSIDERED FINAL
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 Fax: 919 851 8107
 LICENSE NO. F-0377

STD. NO. BMR2

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ASSEMBLED BY : J. PENDERGRAFT	DATE : 10-15
CHECKED BY : J. DILWORTH	DATE : 10-15
DRAWN BY : EEM 6/94	REV. 8/16/99 MAB/LES
CHECKED BY : RGW 6/94	REV. 5/1/06R KMM/GM
	REV. 10/1/11 MAA/GM



GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

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

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

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

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

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

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

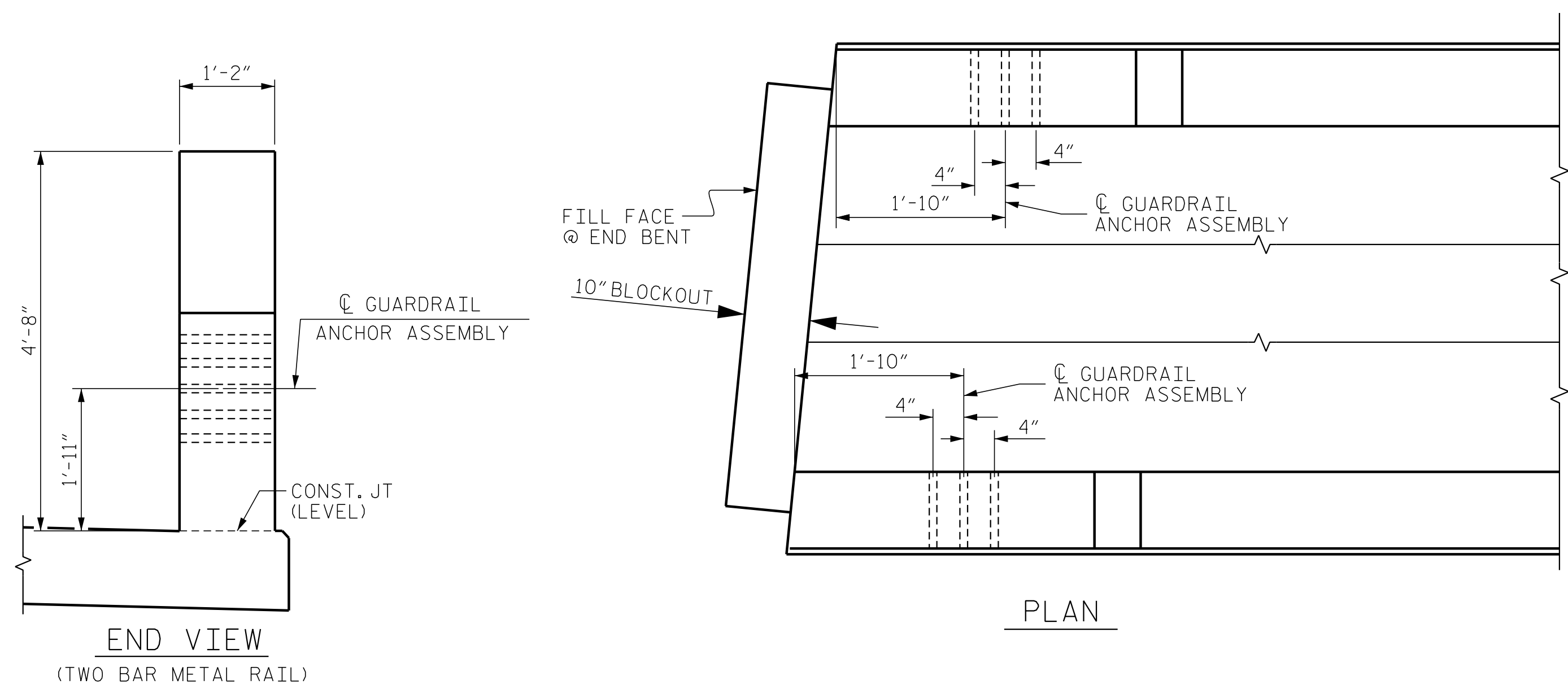
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

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



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. U-5796
WAYNE COUNTY
 STATION: 27+41.30 -Y8-

ENGINEER OF RECORD

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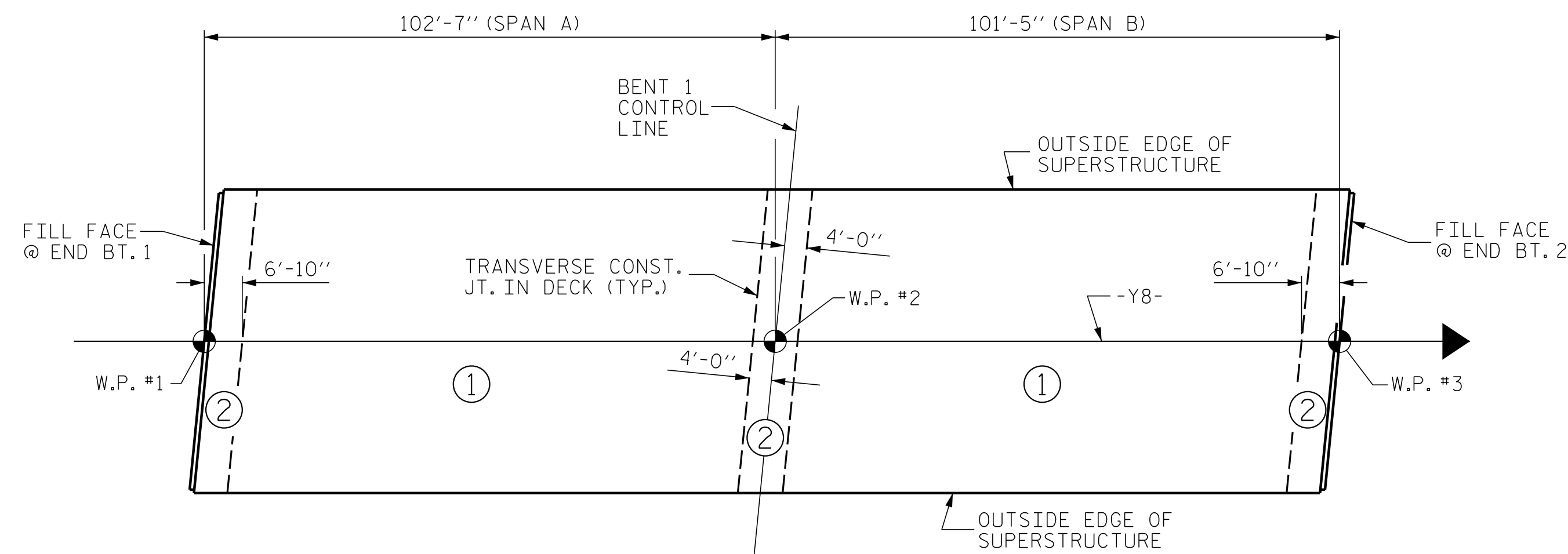
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. 21
					TOTAL SHEETS 34

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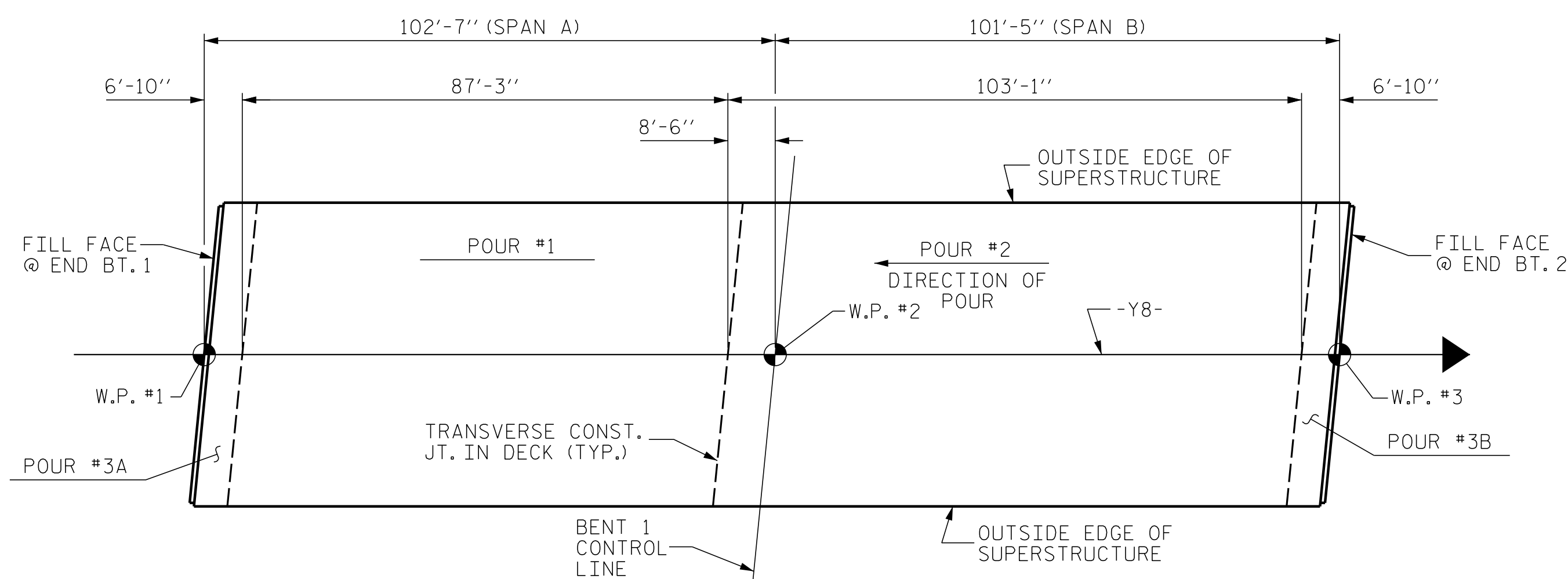
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ASSEMBLED BY : J. PENDERGRAFT	DATE : 10-15
CHECKED BY : J. DILWORTH	DATE : 10-15
DRAWN BY : MAA 5/10	REV. 12/5/11 MAA/GM
CHECKED BY : GM 5/10	REV. 6/13 MAA/GM
	REV. 1/15 MAA/TMG

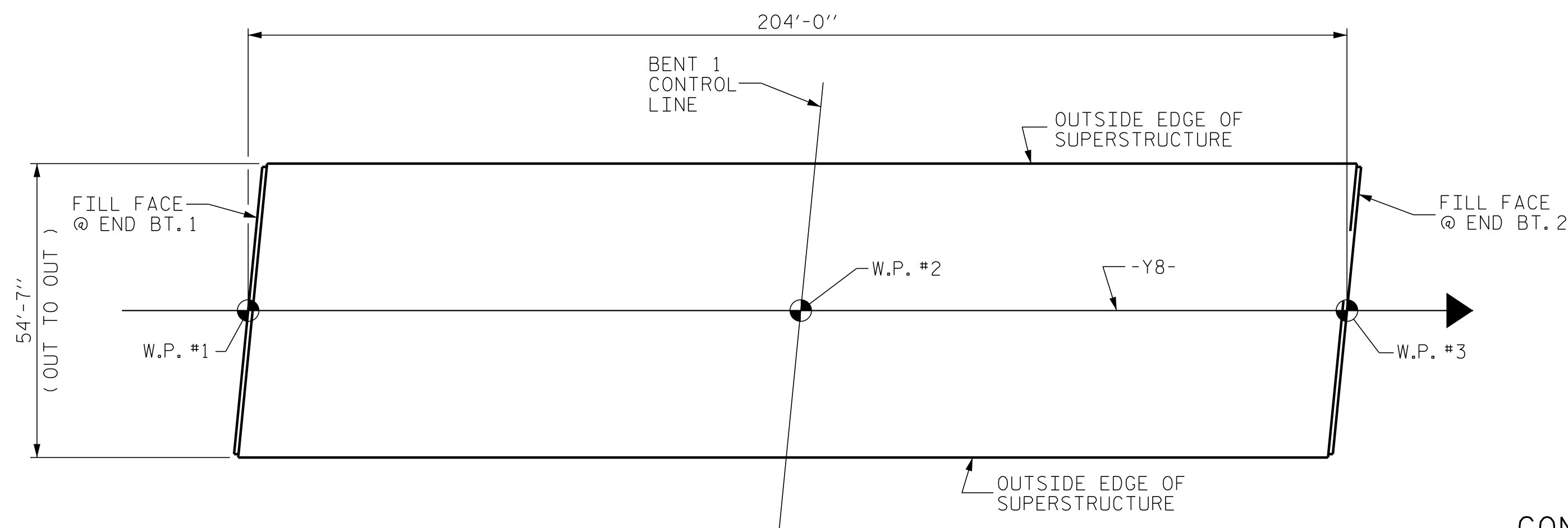


OPTIONAL DECK POUR DETAIL



CONCRETE DECK POUR DETAIL

NOTE : EACH POUR #3 INCLUDES UPPER PART OF THE INTEGRAL END BENT.



LAYOUT FOR COMPUTING AREA REINFORCED CONCRETE DECK SLAB (SQ. FT. = 11,135)

REINFORCING BAR SCHEDULE

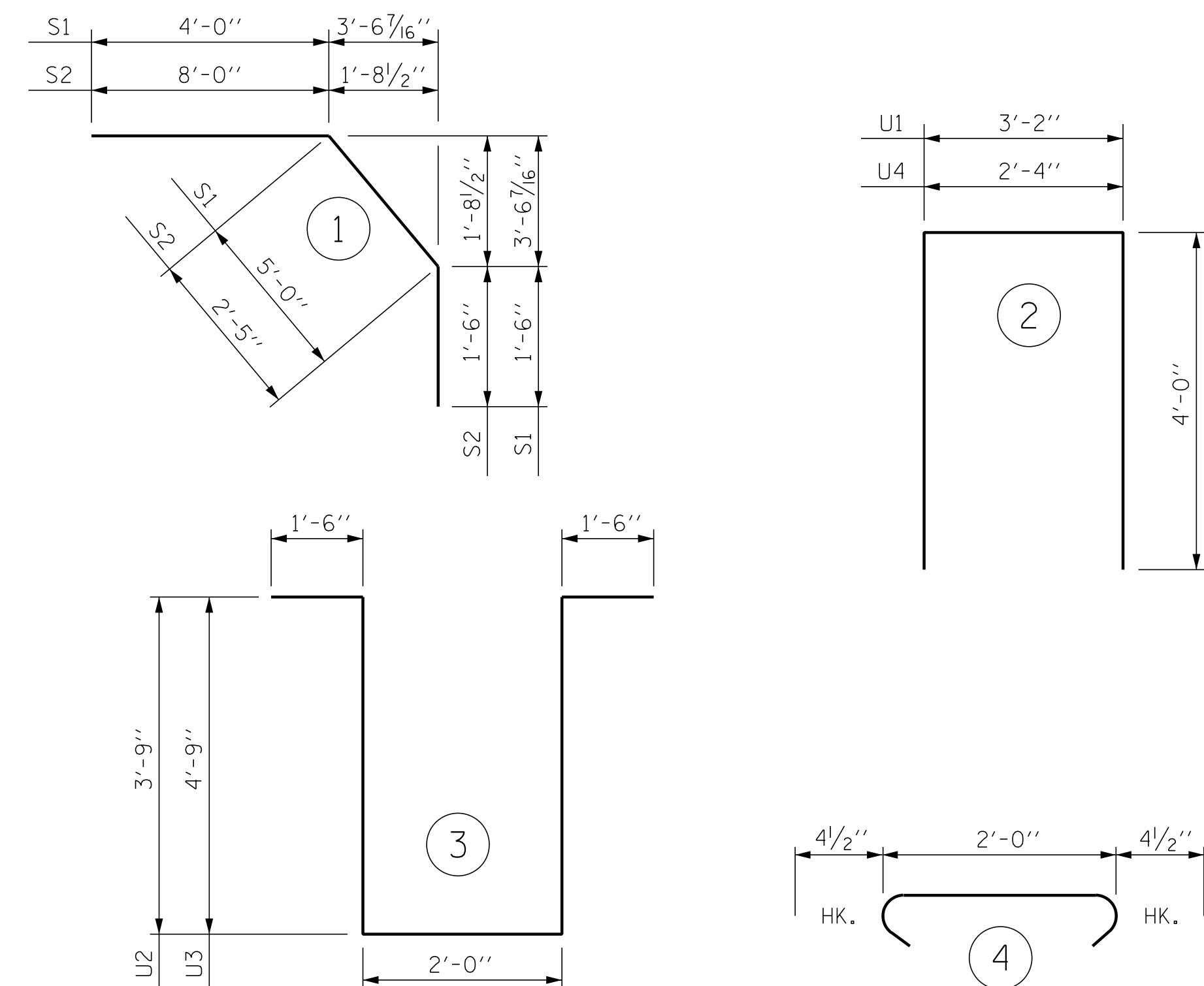
SPAN "A-B"

BAR	No.	SIZE	TYPE	LENGTH	WEIGHT
*A1	394	#5	STR	54'-3"	22294
A2	394	#5	STR	54'-3"	22294
*A101	2	#5	STR	49'-11"	104
*A102	2	#5	STR	44'-10"	94
*A103	2	#5	STR	39'-9"	83
*A104	2	#5	STR	34'-8"	72
*A105	2	#5	STR	29'-7"	62
*A106	2	#5	STR	24'-6"	51
*A107	2	#5	STR	19'-5"	41
*A108	2	#5	STR	14'-4"	30
*A109	2	#5	STR	9'-3"	19
*A110	2	#5	STR	4'-2"	9
A201	2	#5	STR	49'-11"	104
A202	2	#5	STR	44'-10"	94
A203	2	#5	STR	39'-9"	83
A204	2	#5	STR	34'-8"	72
A205	2	#5	STR	29'-7"	62
A206	2	#5	STR	24'-6"	51
A207	2	#5	STR	19'-5"	41
A208	2	#5	STR	14'-4"	30
A209	2	#5	STR	9'-3"	19
A210	2	#5	STR	4'-2"	9
*B1	146	#7	STR	20'-7"	6143
*B2	148	#4	STR	25'-7"	2529
*B3	111	#7	STR	27'-5"	6220
*B4	36	#7	STR	30'-10"	2269
B5	260	#5	STR	52'-2"	14147
K1	20	#4	STR	27'-7"	369
K2	10	#4	STR	7'-5"	50
K3	20	#4	STR	8'-5"	112
K4	10	#4	STR	7'-11"	53
K5	10	#4	STR	6'-11"	46
K6	10	#4	STR	24'-9"	165
K7	8	#4	STR	2'-7"	14
K8	8	#4	STR	3'-1"	16
K9	4	#4	STR	2'-4"	6
K10	10	#4	STR	5'-9"	38
K11	10	#4	STR	7'-5"	50
K12	30	#4	STR	7'-9"	155
*S1	78	#4	1	10'-6"	547
*S2	78	#4	1	11'-11"	621
S3	150	#4	4	2'-9"	276
U1	78	#4	2	11'-2"	582
U2	10	#4	3	12'-6"	84
U3	30	#4	3	14'-6"	291
U4	4	#4	2	10'-4"	28

REINFORCING STEEL 39,341 LBS.
* EPOXY COATED REINFORCING STEEL 41,188 LBS.

* THESE BARS ARE EPOXY COATED

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	* EPOXY COATED REINFORCING STEEL (LBS.)
TOTALS **	429.8	39,341	41,188

** QUANTITIES FOR CONCRETE PARAPET ARE NOT INCLUDED

GROOVING BRIDGE FLOORS

APPROACH SLABS	1,404 SQ.FT.
BRIDGE DECK	9,914 SQ.FT.
TOTAL	11,318 SQ.FT.

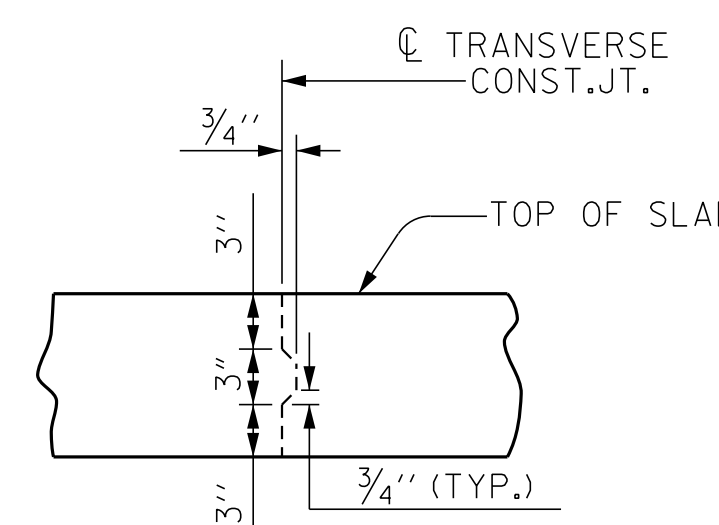
SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

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"			

CLASS AA CONCRETE BREAKDOWN

POUR #1	153.0	CY
POUR #2	198.6	CY
POUR #3A	39.1	CY
POUR #3B	39.1	CY
CLASS AA CONCRETE BREAKDOWN TOTAL	429.8	CY

PROJECT NO. U-5796
WAYNE COUNTY
STATION: 27+41.30 -Y8-



TRANSVERSE CONSTRUCTION JOINT DETAIL

NOTE: SLAB REINFORCING STEEL SHALL BE CONTINUOUS THRU JOINT

ENGINEER OF RECORD
NORTH CAROLINA PROFESSIONAL SEAL
14091
12/12/2016
B. BUCK
ENGINEER
CHARLES HUNT
DocuSigned by:
Erick Charles Hunt
2F15C8978A8EAC

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

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

SHEET NO. S01-22
TOTAL SHEETS 34

DRAWN BY : G.M. GILLAND DATE : 12-15
CHECKED BY : D. HODGE DATE : 1-16

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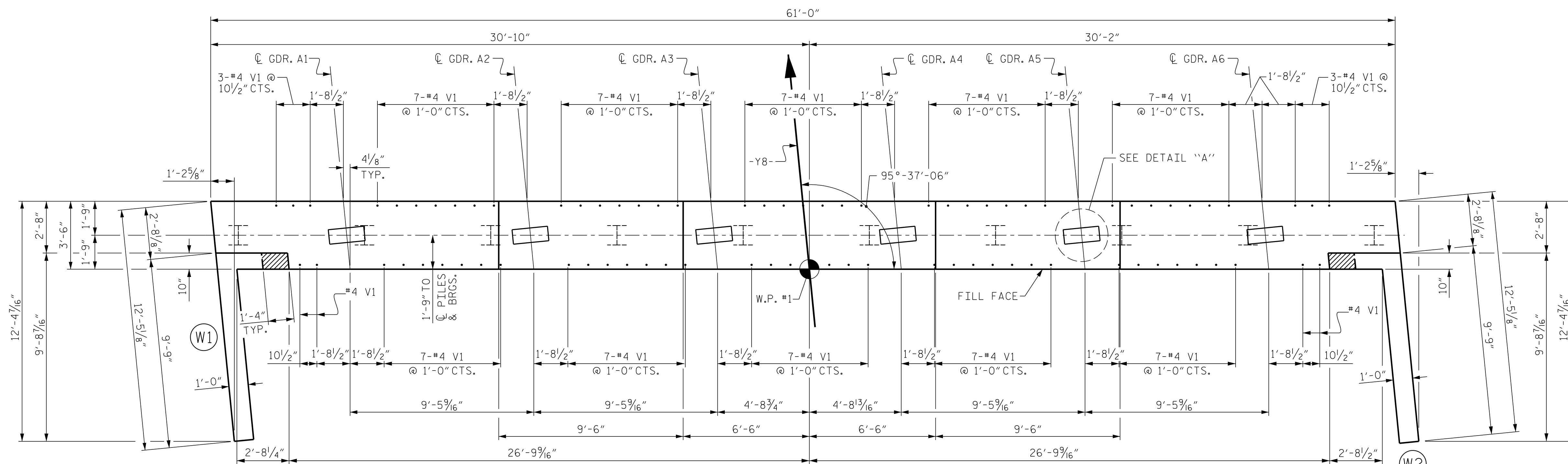
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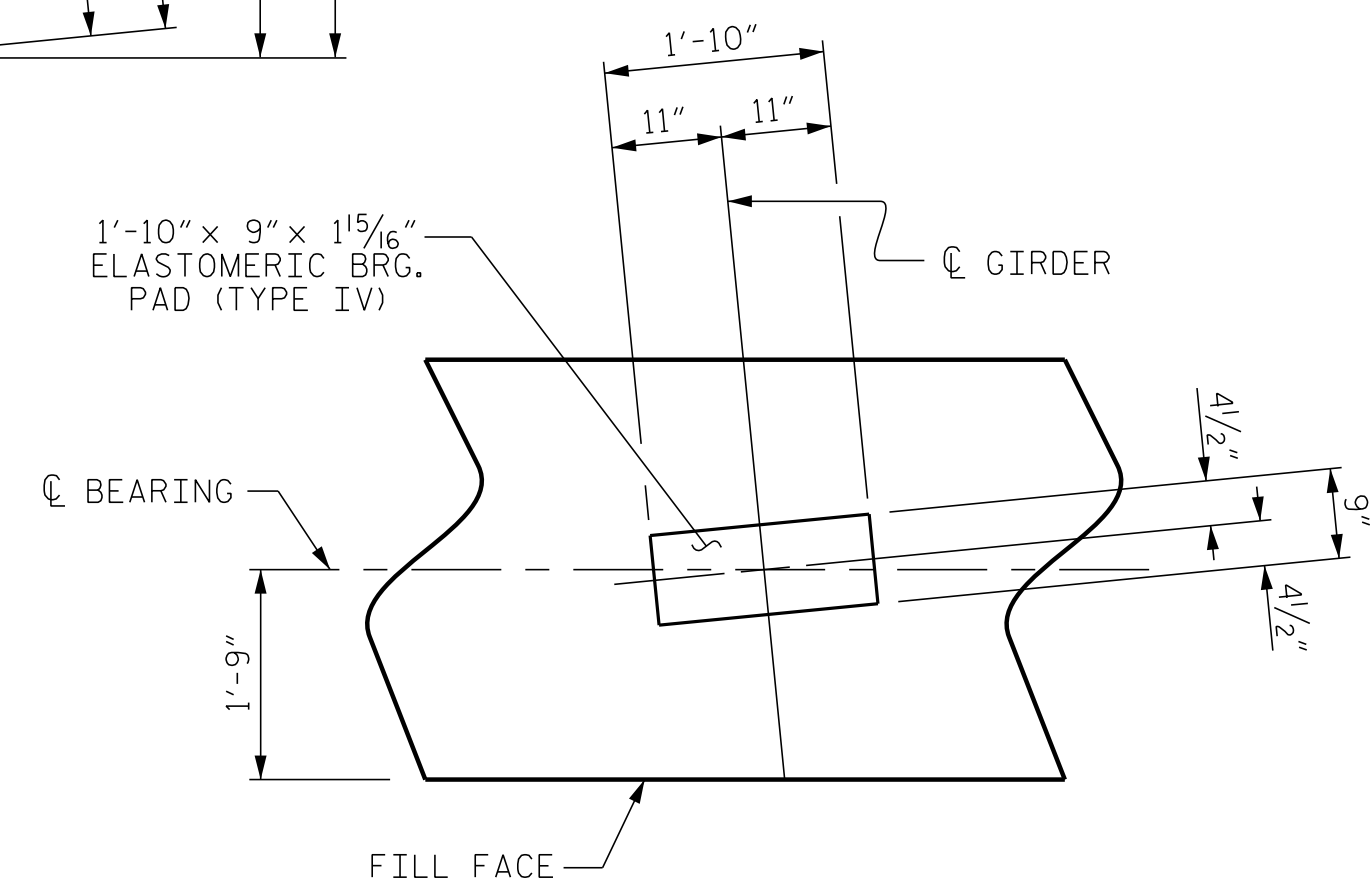
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE PARAPET AND END POST ARE CAST IF SLIP FORMING IS USED.

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.

THE TOP SURFACE OF THE END BENT CAP WITHIN THE LIMITS OF THE INTEGRAL ABUTMENT, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

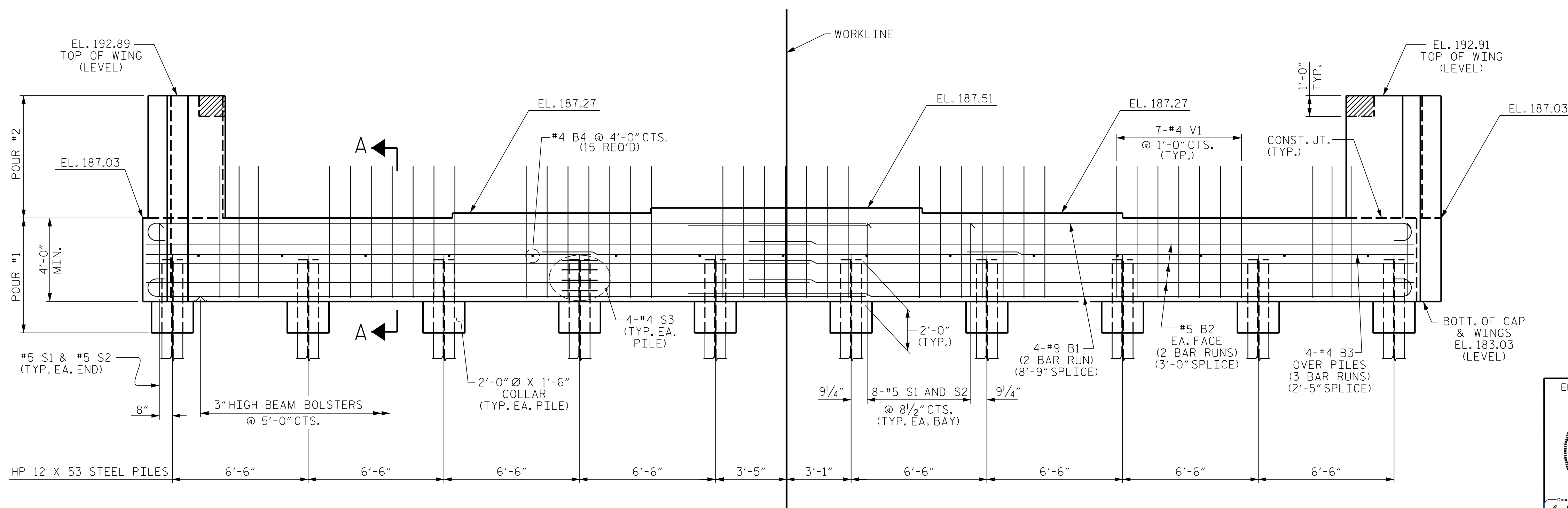


PLAN



DETAIL A

(TYP. EACH GIRDER)

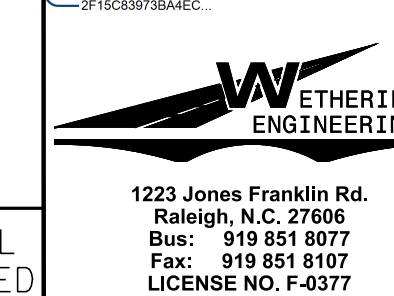
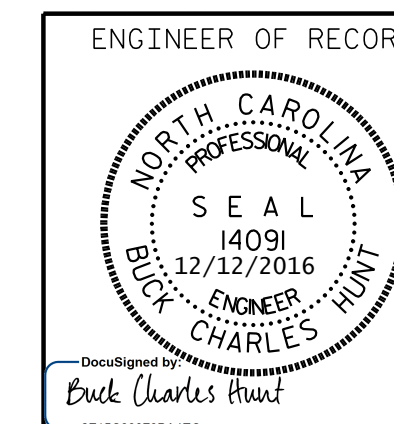


ELEVATION

FOR SECTION A-A, SEE SHEET 3 OF 3.

PROJECT NO. U-5796
 WAYNE COUNTY
 STATION: 27+41.30 -Y8-

SHEET 1 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1

REVISIONS

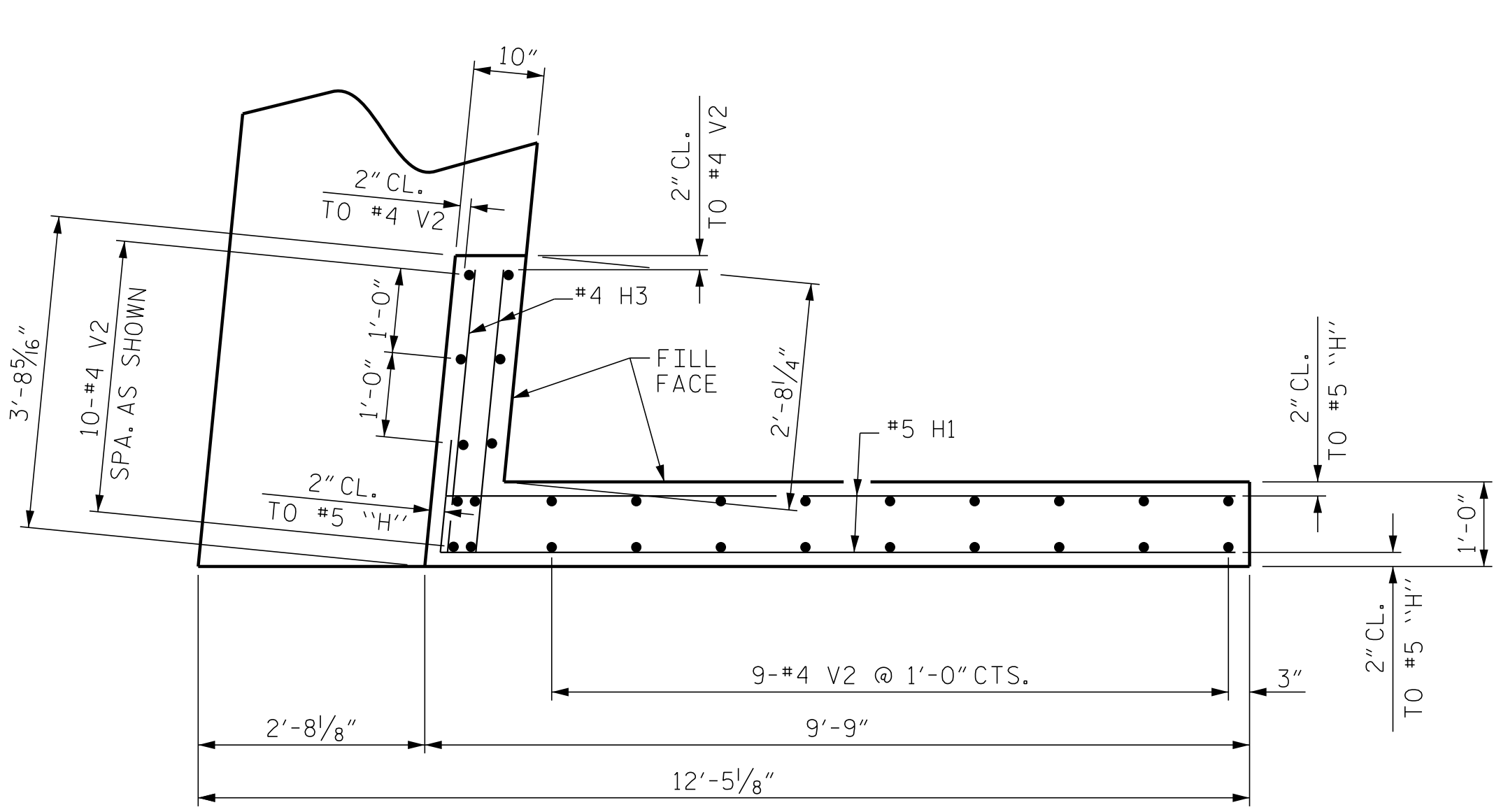
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SHEET NO.
 S01-23
 TOTAL SHEETS
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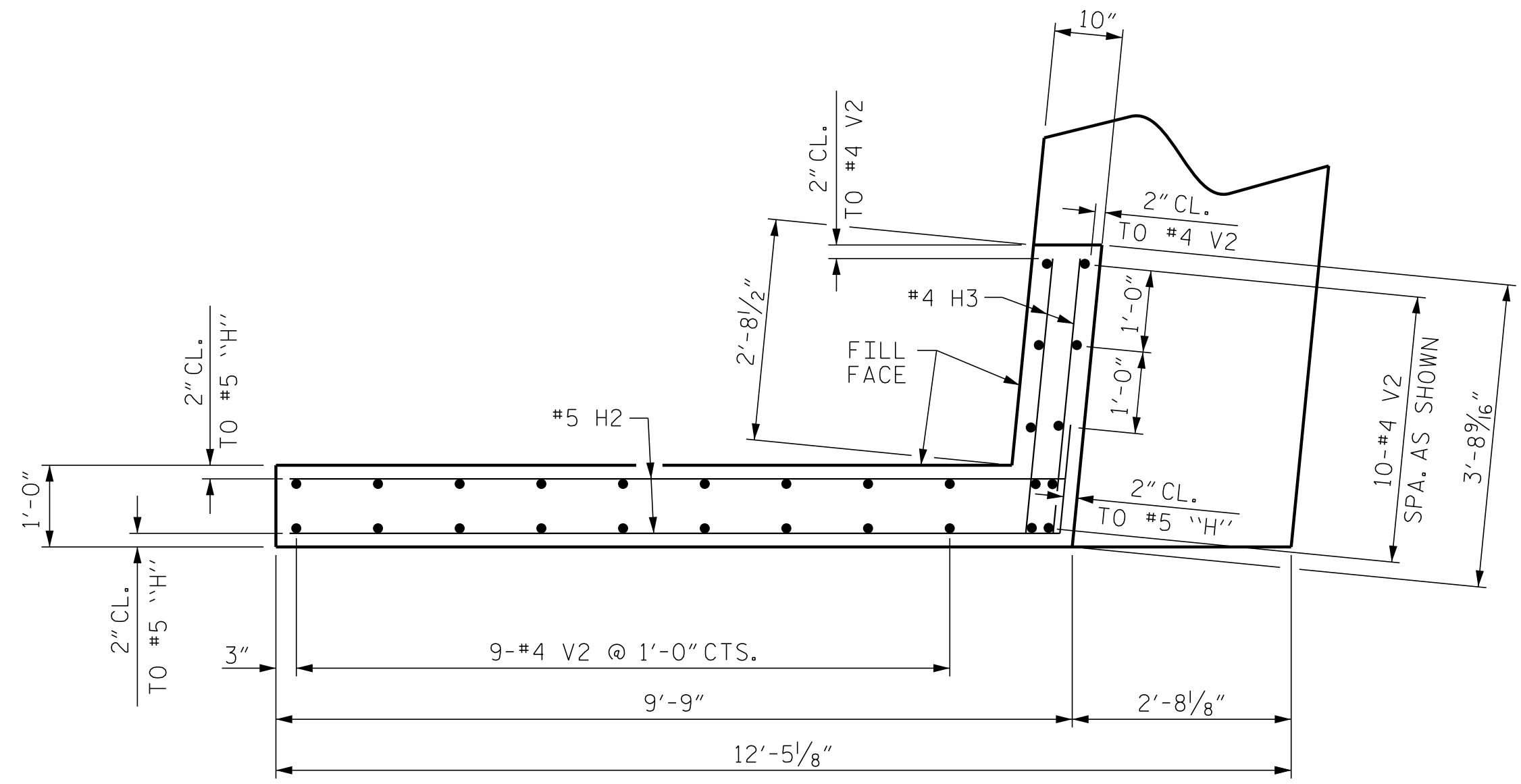
DRAWN BY: B.C. HUNT/DAH DATE: 2/16
 CHECKED BY: J. DILWORTH DATE: 2/16

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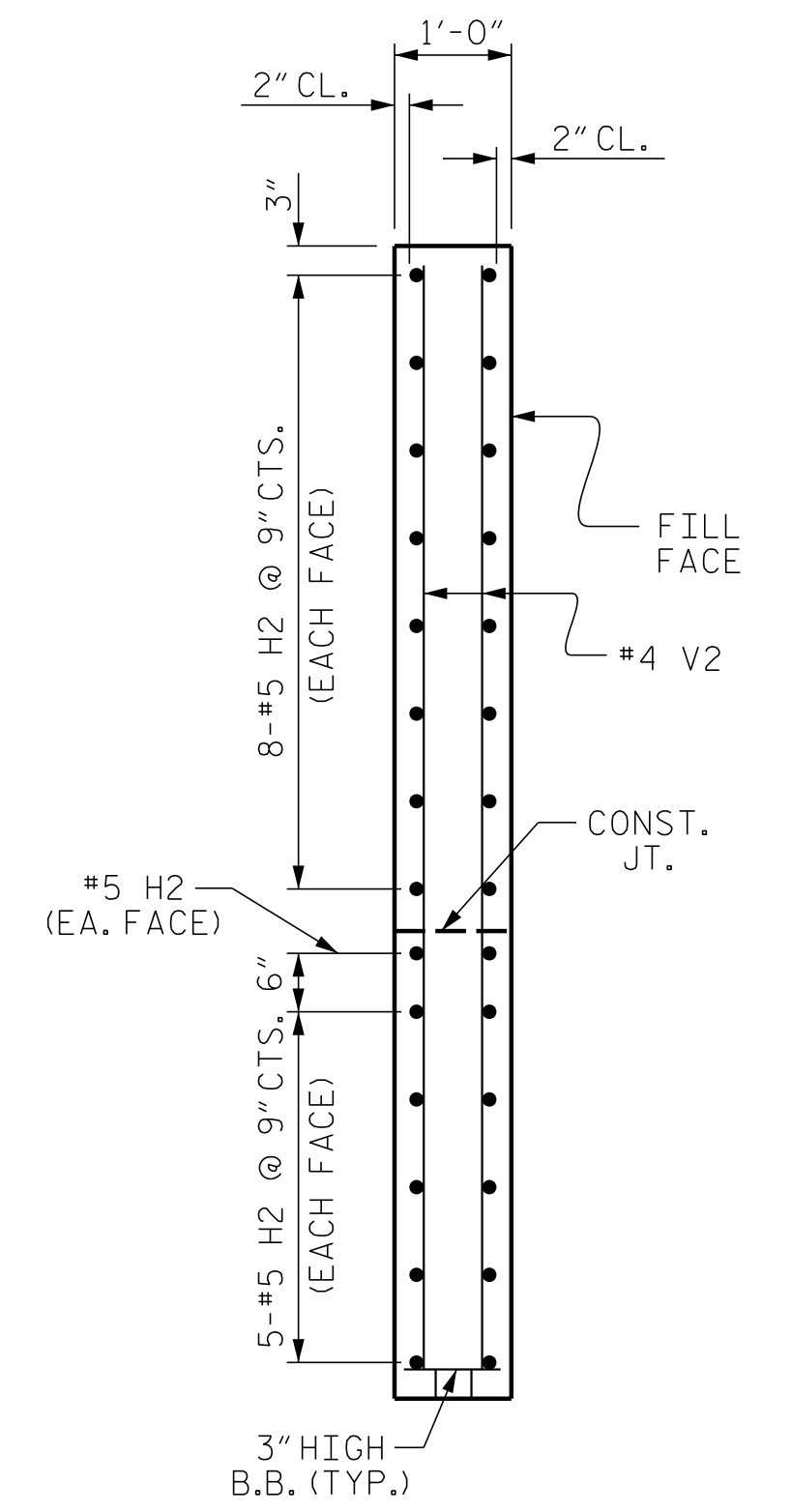
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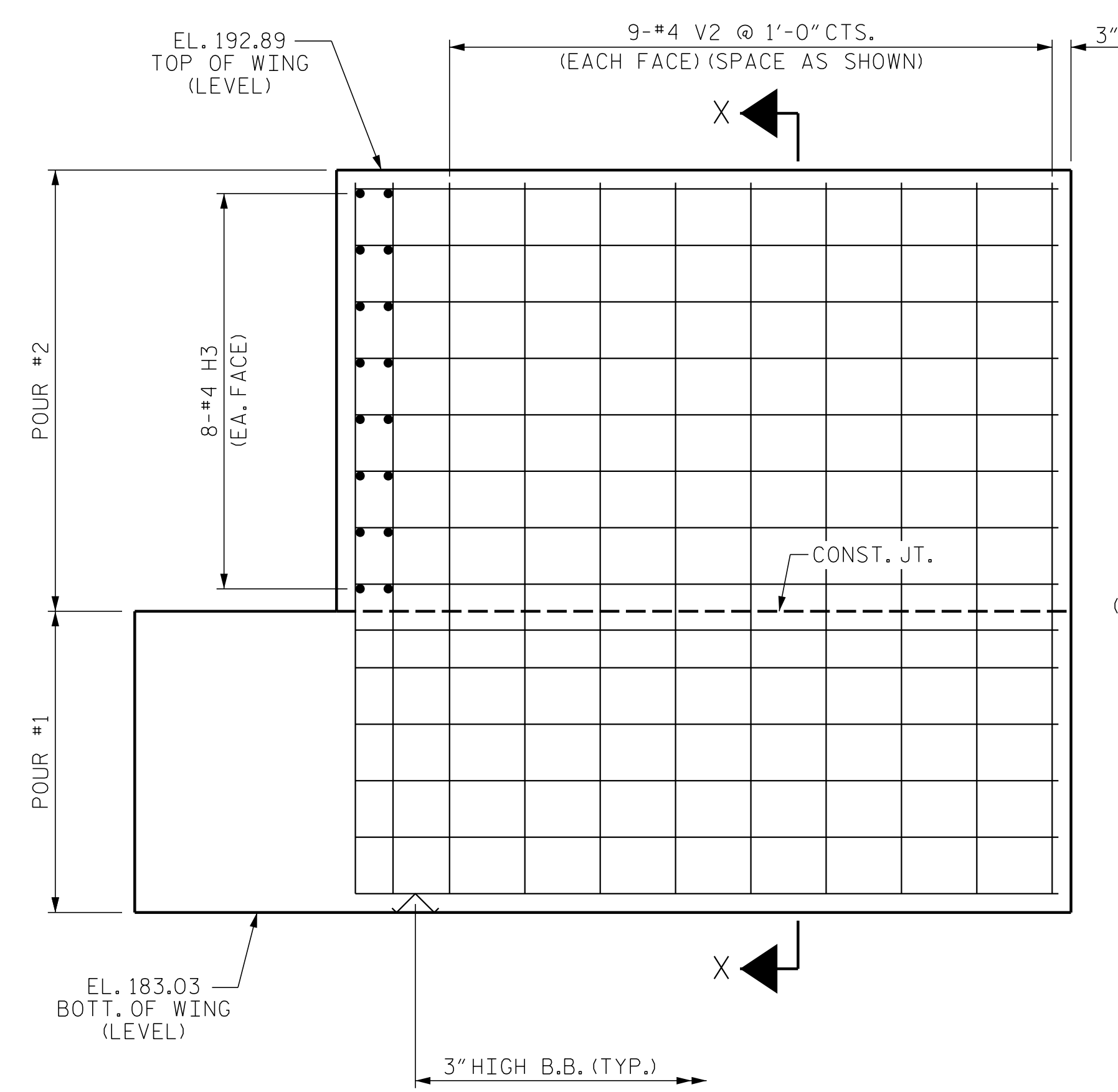
PLAN OF WING - W1



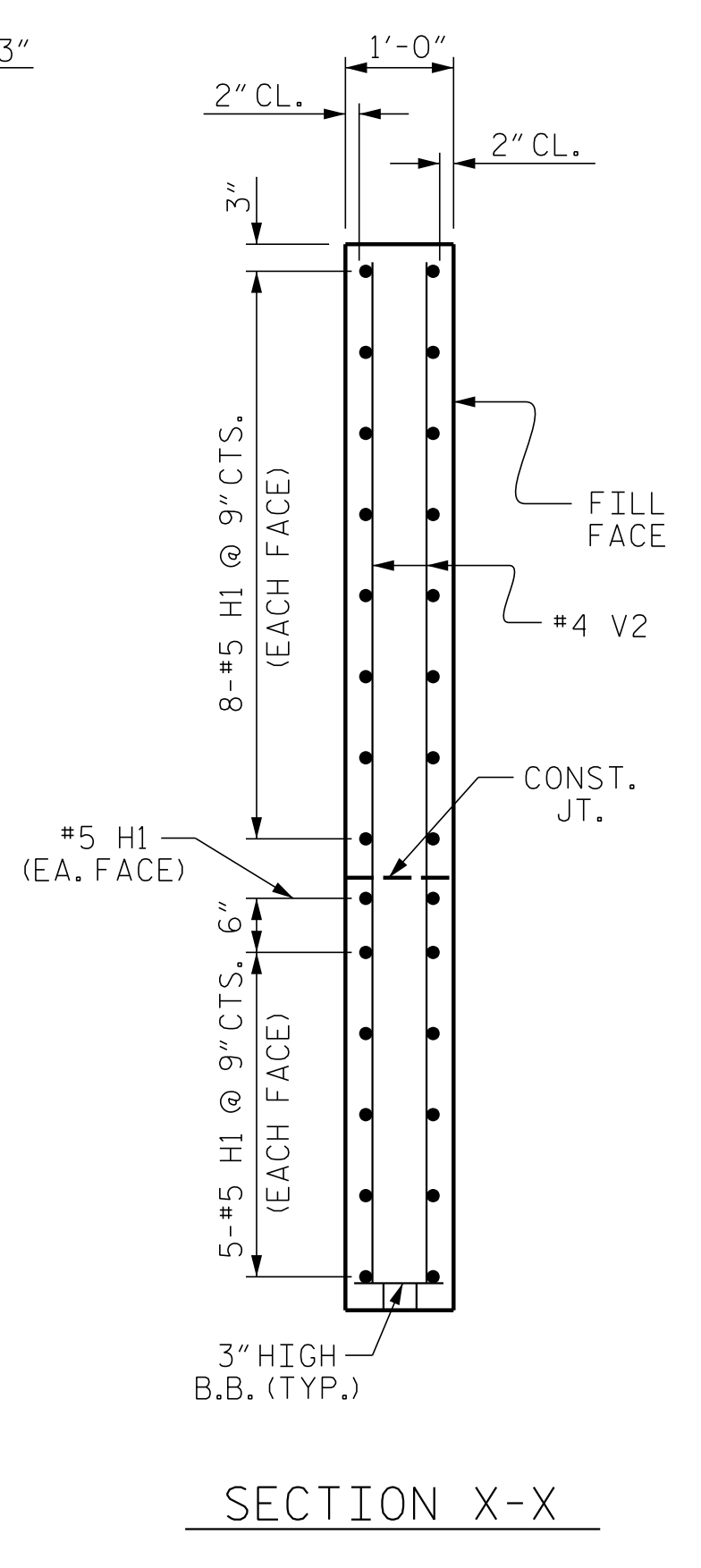
PLAN OF WING - W2



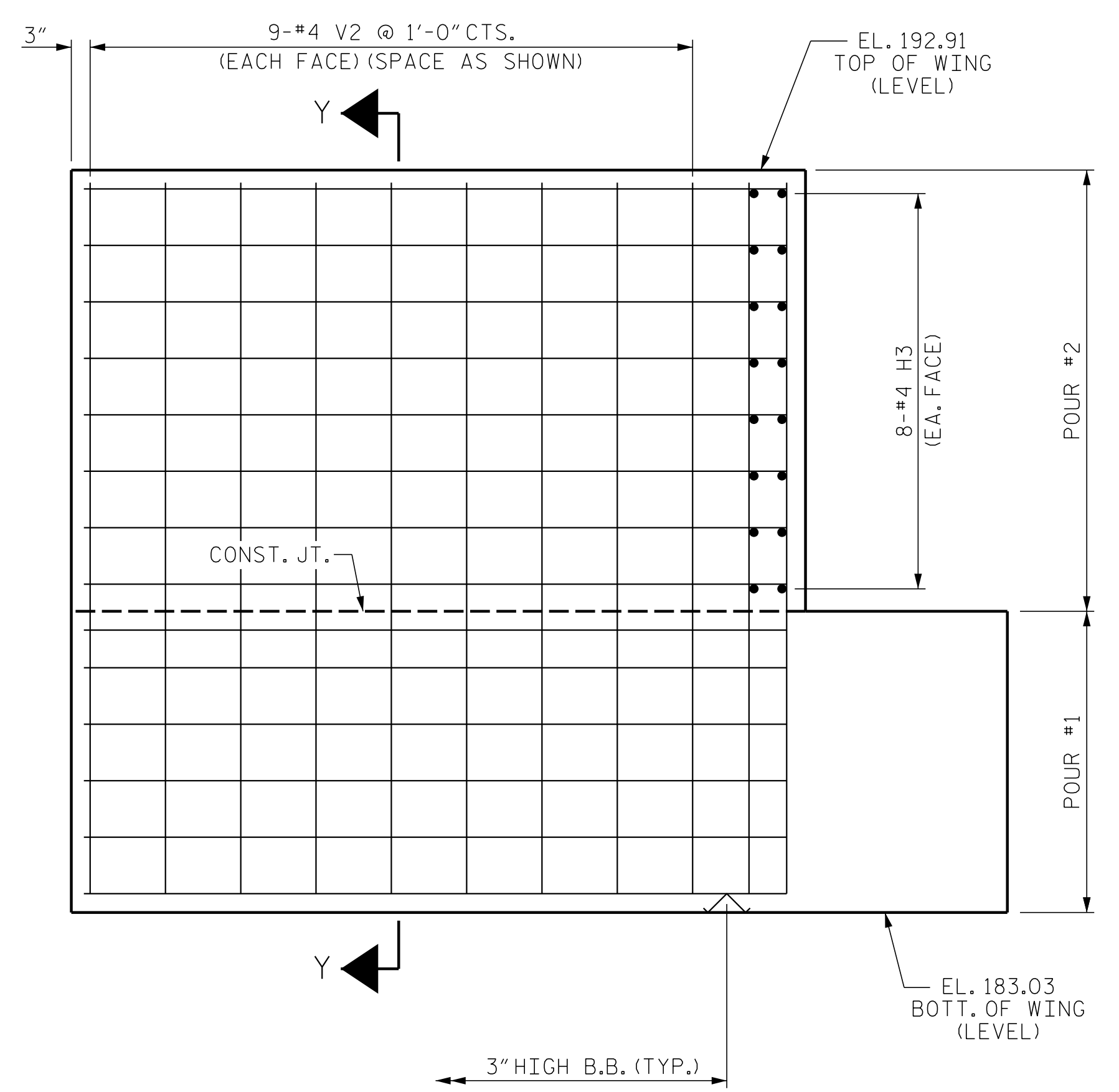
SECTION Y-Y



ELEVATION OF WING - W1



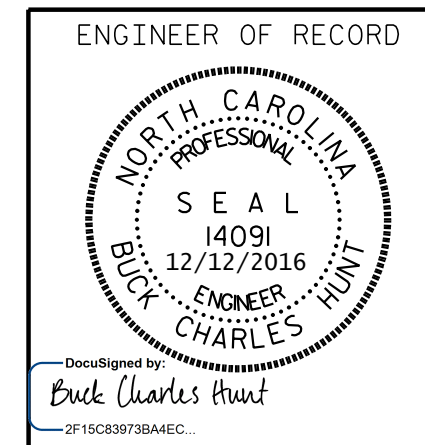
SECTION X-X



ELEVATION OF WING - W2

PROJECT NO. U-5796
 WAYNE COUNTY
 STATION: 27+41.30 -Y8-

SHEET 2 OF 3



ETHERILL ENGINEERING
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 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1

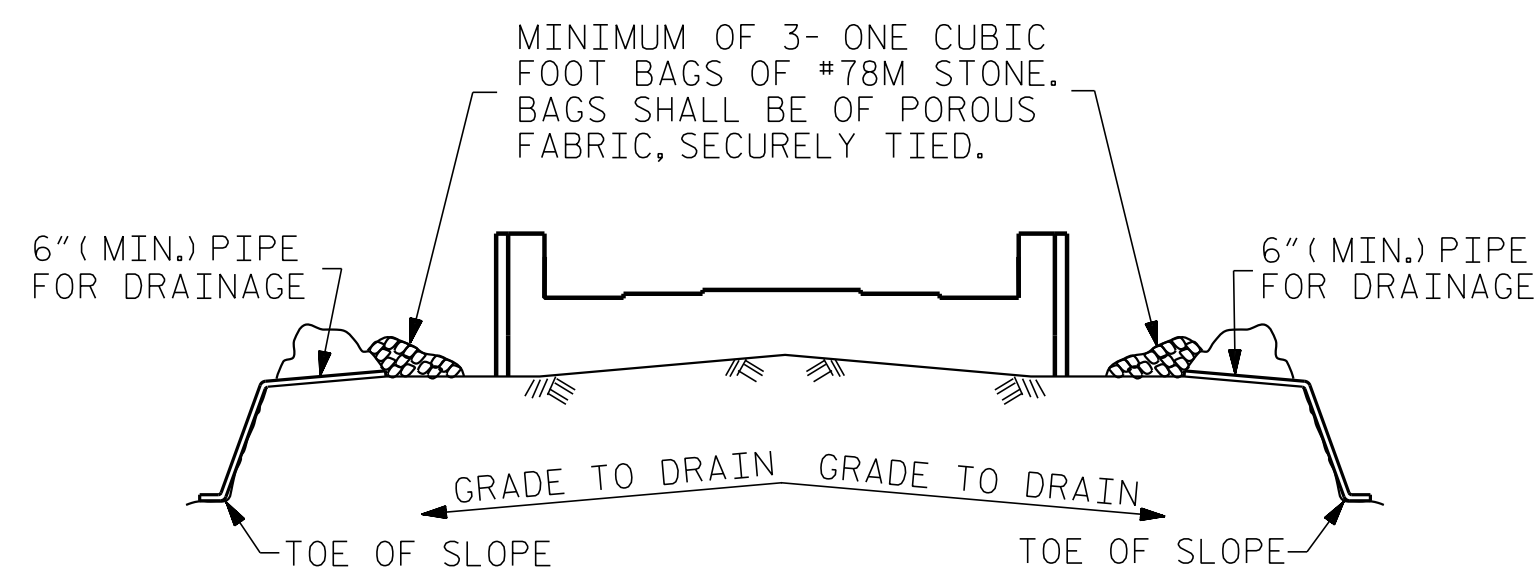
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NO.	BY:	DATE:	NO.	BY:	DATE:
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TOTAL SHEETS: 34

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DRAWN BY: D. HODGE DATE: 2/16
 CHECKED BY: J. DILWORTH DATE: 2/16

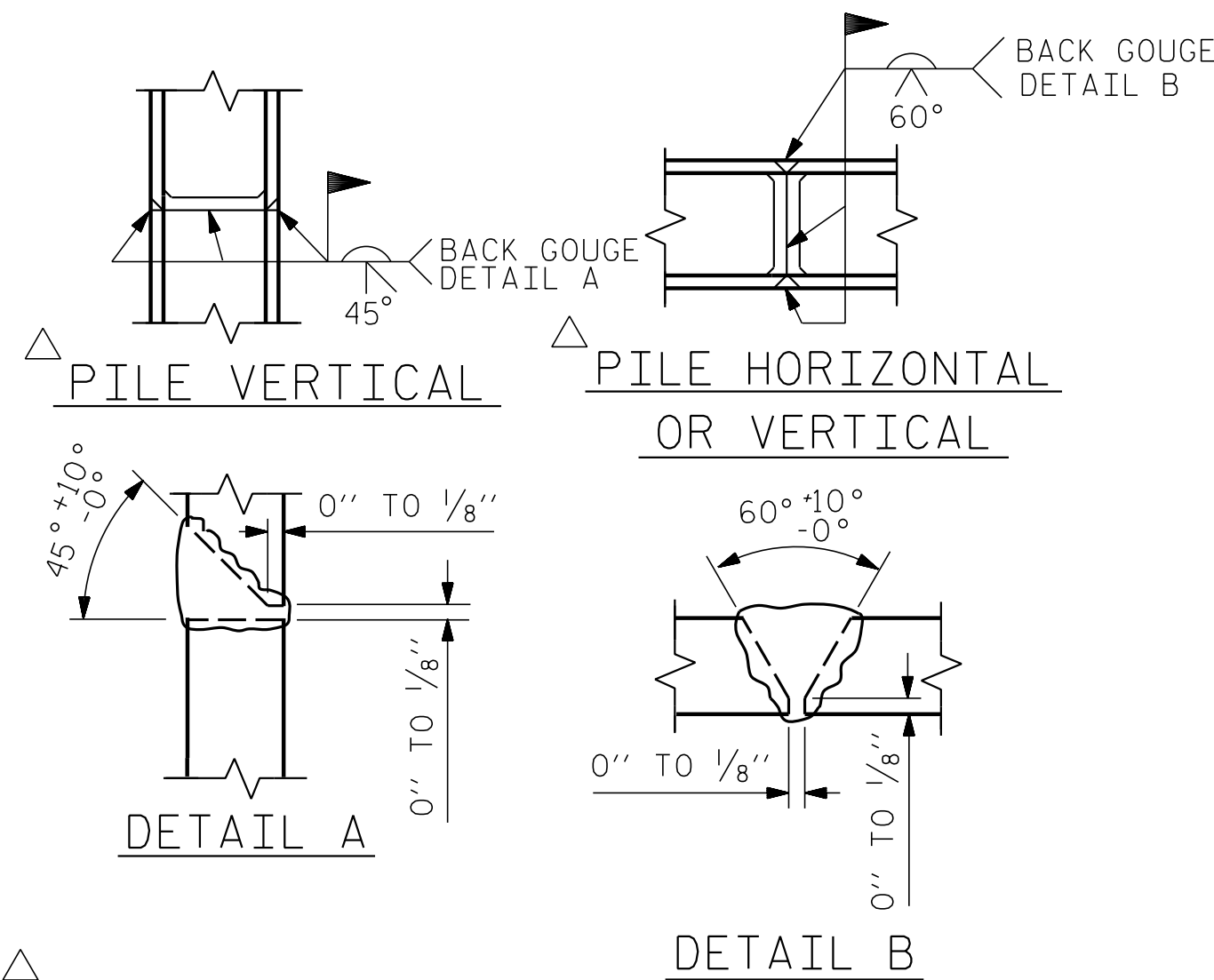


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

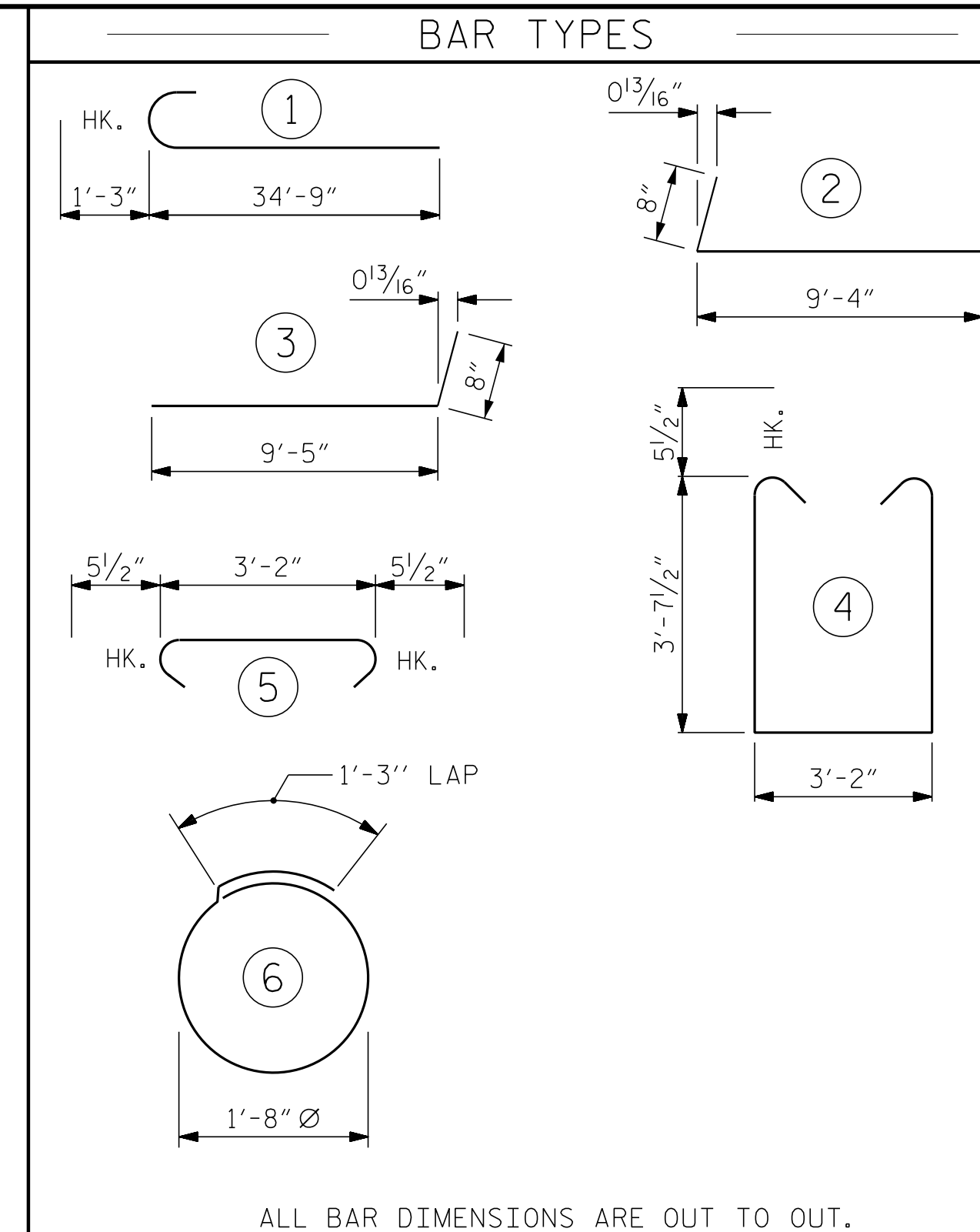
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

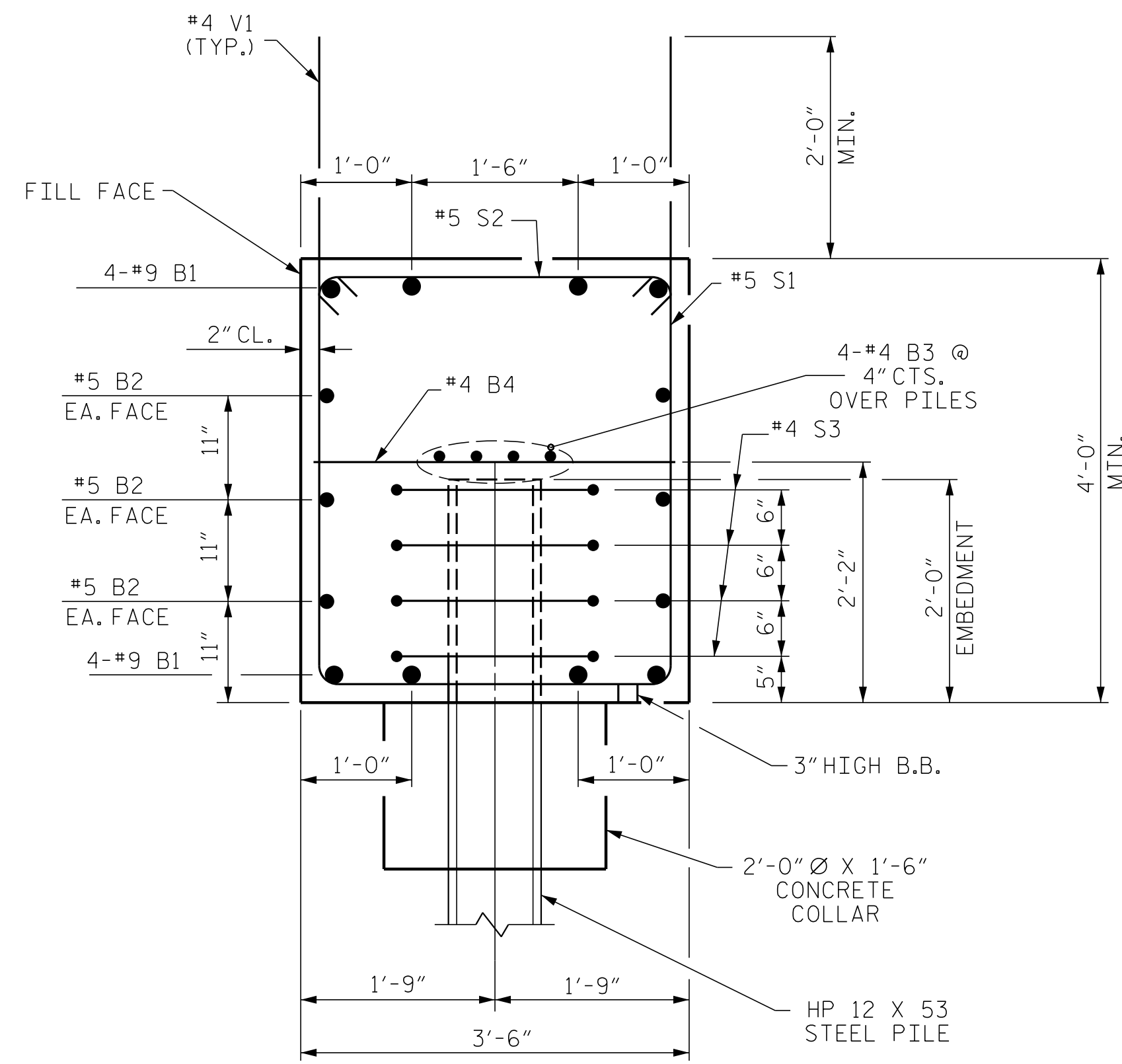
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

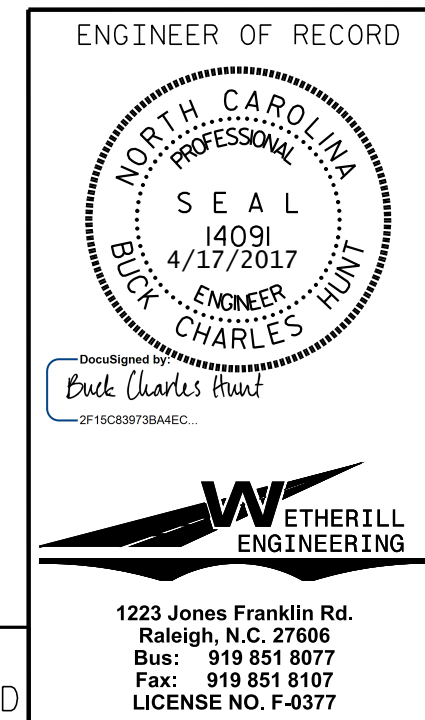


BILL OF MATERIAL					
END BENT No. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	16	#9	1	36'-0"	1958
B2	12	#5	STR	31'-10"	398
B3	12	#4	STR	21'-10"	175
B4	15	#4	STR	3'-2"	32
H1	28	#5	2	10'-0"	292
H2	28	#5	3	10'-1"	294
H3	32	#4	STR	3'-4"	71
S1	74	#5	4	11'-4"	875
S2	74	#5	5	4'-1"	315
S3	40	#4	6	6'-6"	174
V1	80	#4	STR	5'-9"	307
V2	56	#4	STR	9'-5"	352
REINFORCING STEEL					5,243 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #1	CAP, CONC, COLLARS & LOWER PART OF WINGS				37.4 C.Y.
POUR #2	UPPER PART OF WINGS				5.2 C.Y.
TOTAL CLASS A CONCRETE					42.6 C.Y.
HP 12 X 53 STEEL PILES					
NO: 10					LIN. FT.= 850
PILE REDRIVES					10 EA.
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES					10 EA.



SECTION A-A

PROJECT NO. U-5796
WAYNE COUNTY
 STATION: 27+41.30 -Y8-
 SHEET 3 OF 3



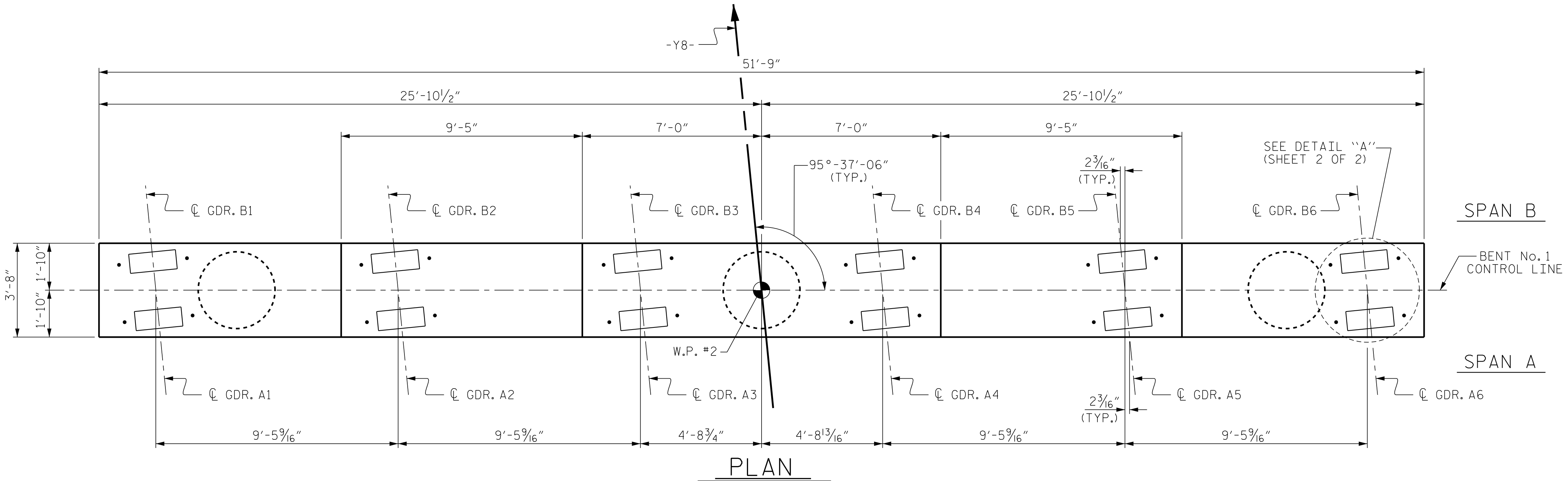
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 1					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
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SHEET NO. S01-25				
TOTAL SHEETS 34				

DRAWN BY: D. HODGE DATE: 2/16
 CHECKED BY: J. DILWORTH DATE: 2/16

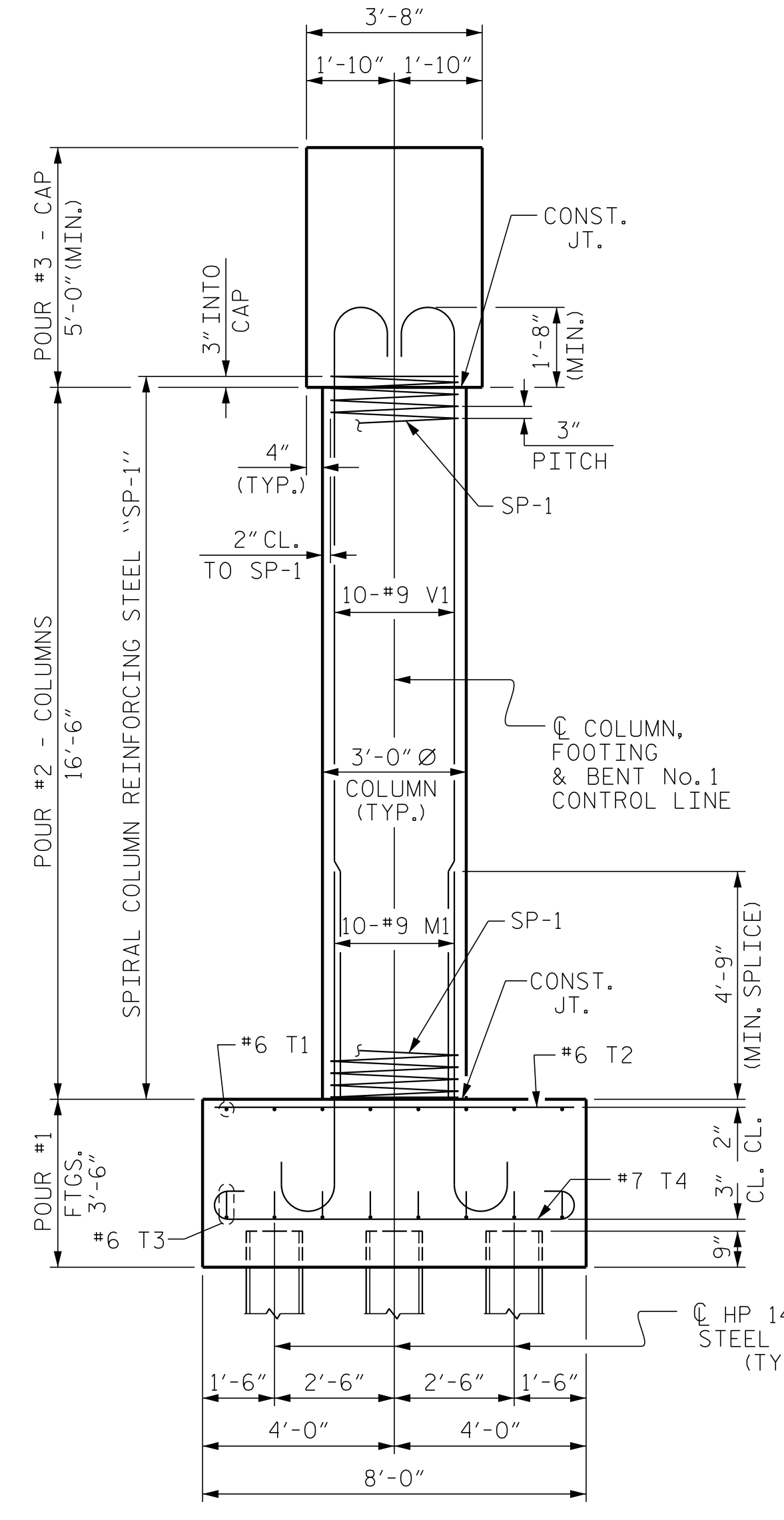
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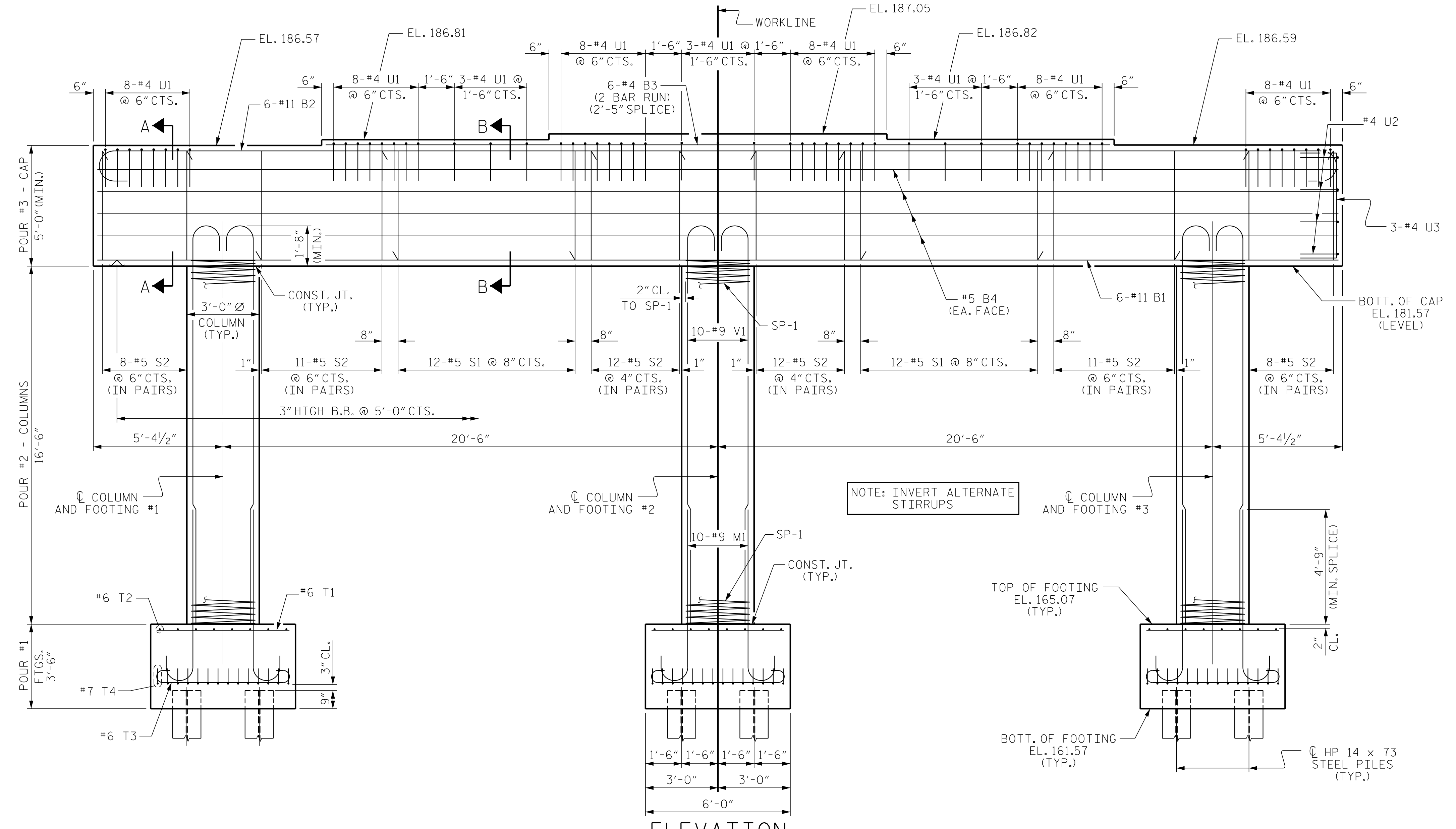


PLAN

NOTES:
 STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
 HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.



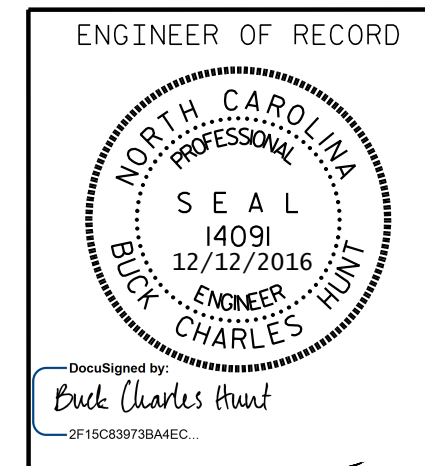
END ELEVATION



ELEVATION

PILE PLACEMENT, REINFORCING STEEL AND DIMENSIONS ARE TYPICAL FOR EACH FOOTING AND COLUMN.

PROJECT NO. U-5796
 WAYNE COUNTY
 STATION: 27+41.30 -Y8-
 SHEET 1 OF 2



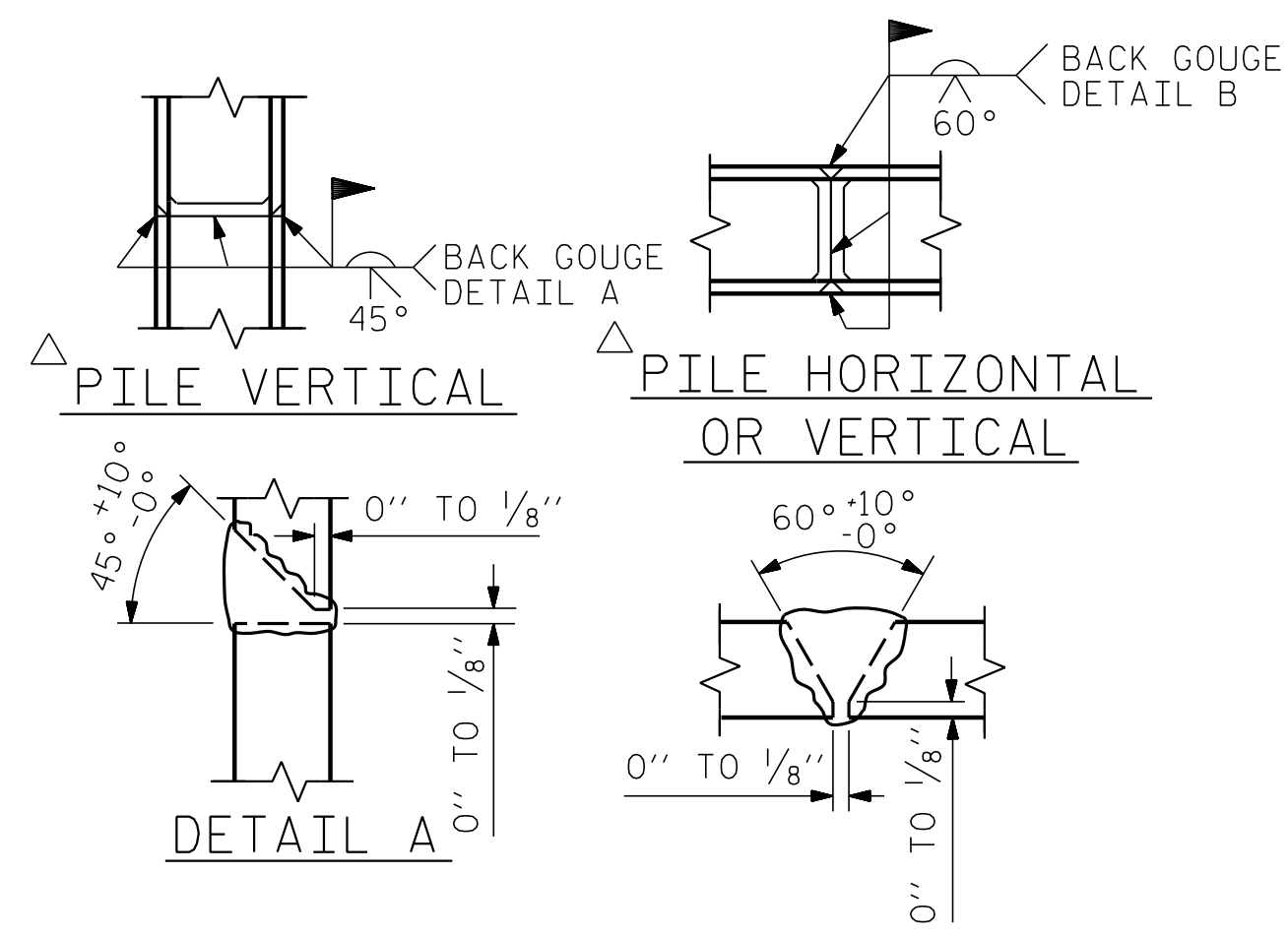
DocuSigned by:
 Buck Charles Hunt
 1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

ENGINEER OF RECORD		STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH			
SUBSTRUCTURE		BENT No. 1			
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
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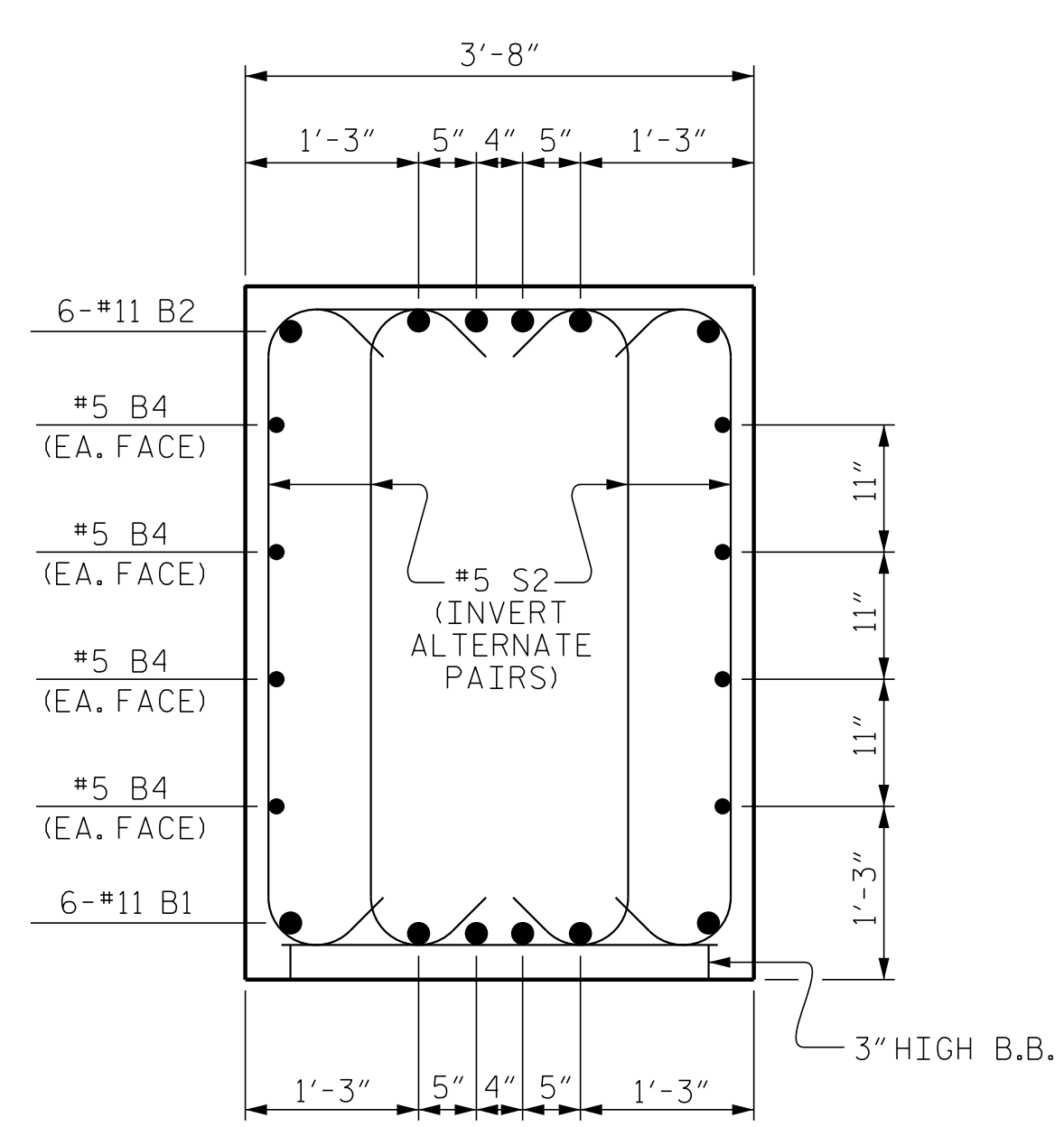
DRAWN BY: D. HODGE DATE: 3/16
 CHECKED BY: G.M. GILLAND DATE: 4/16

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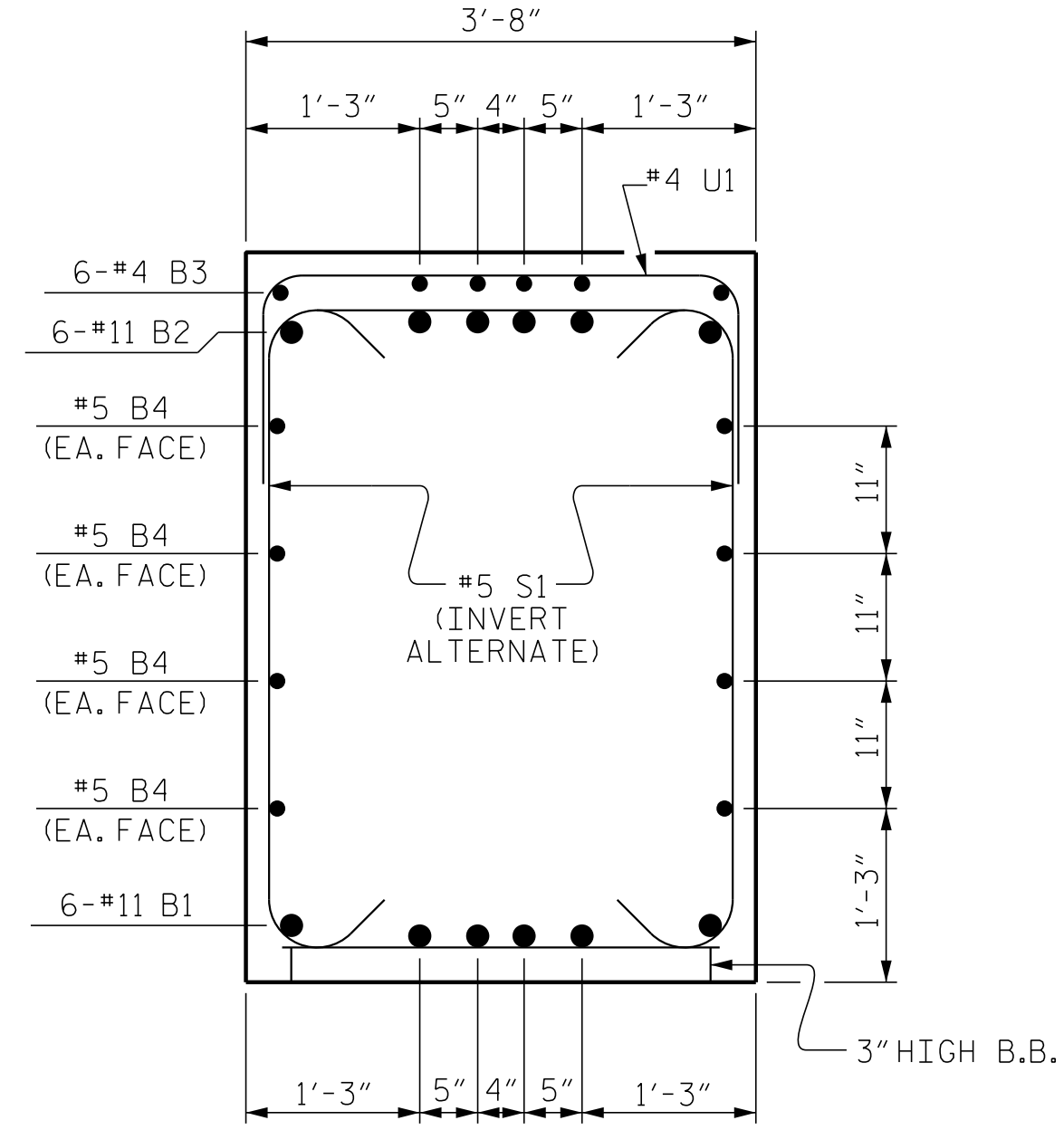
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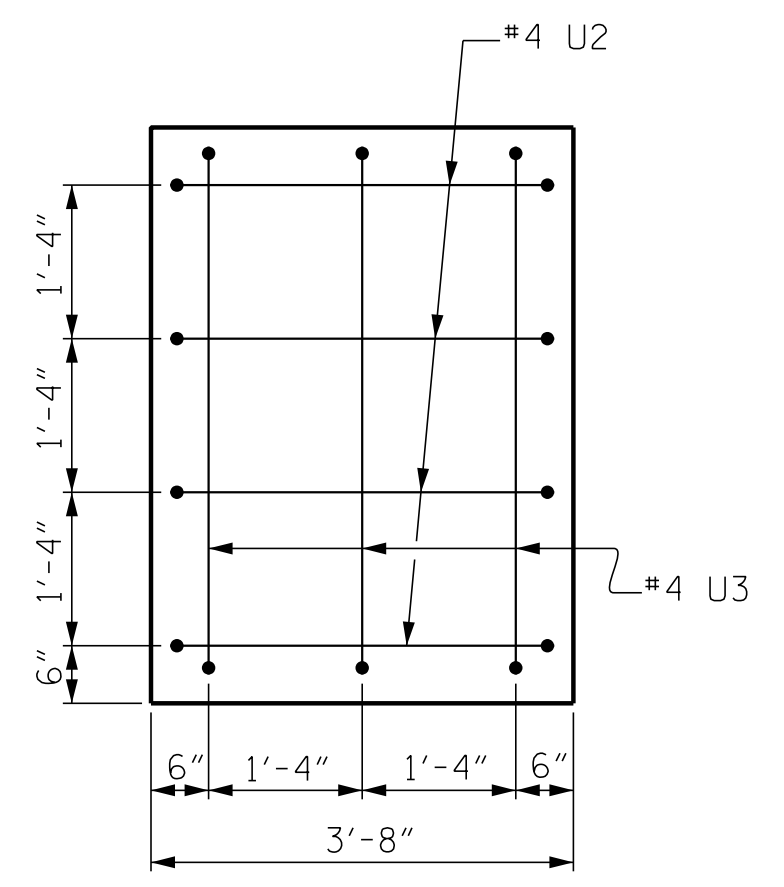
POSITION OF PILE DURING WELDING.
PILE SPlice DETAILS



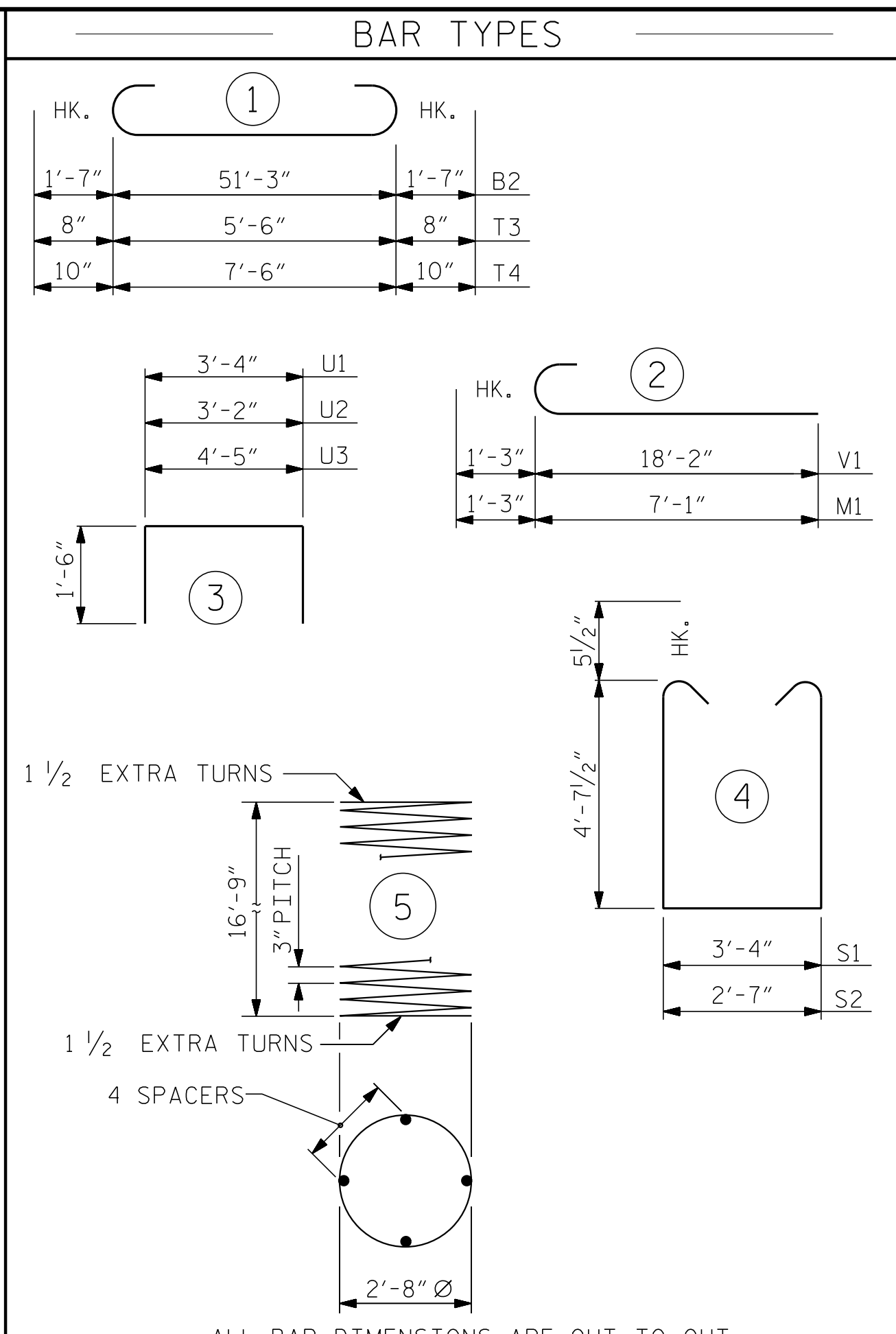
SECTION A-A



SECTION B-B

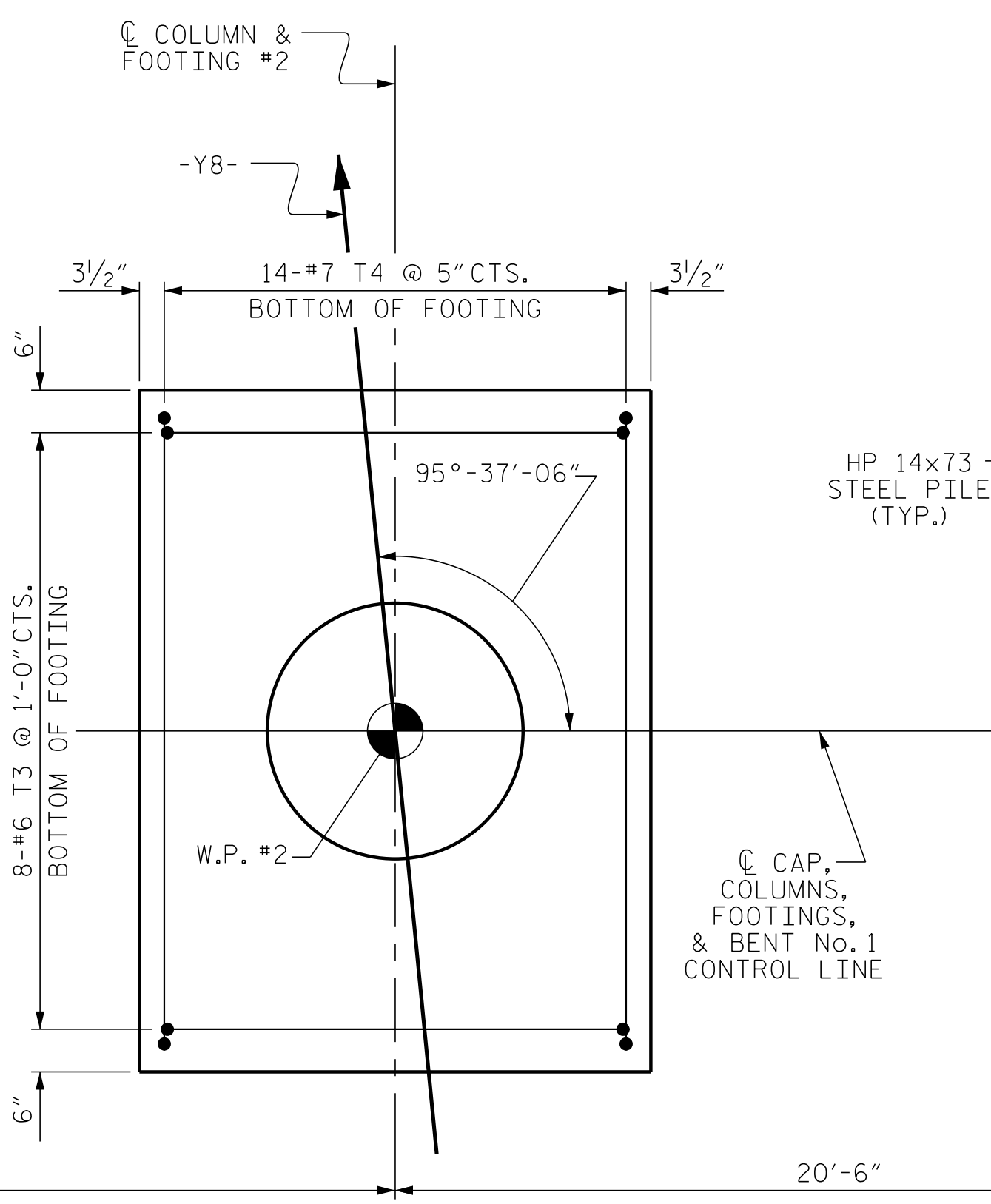
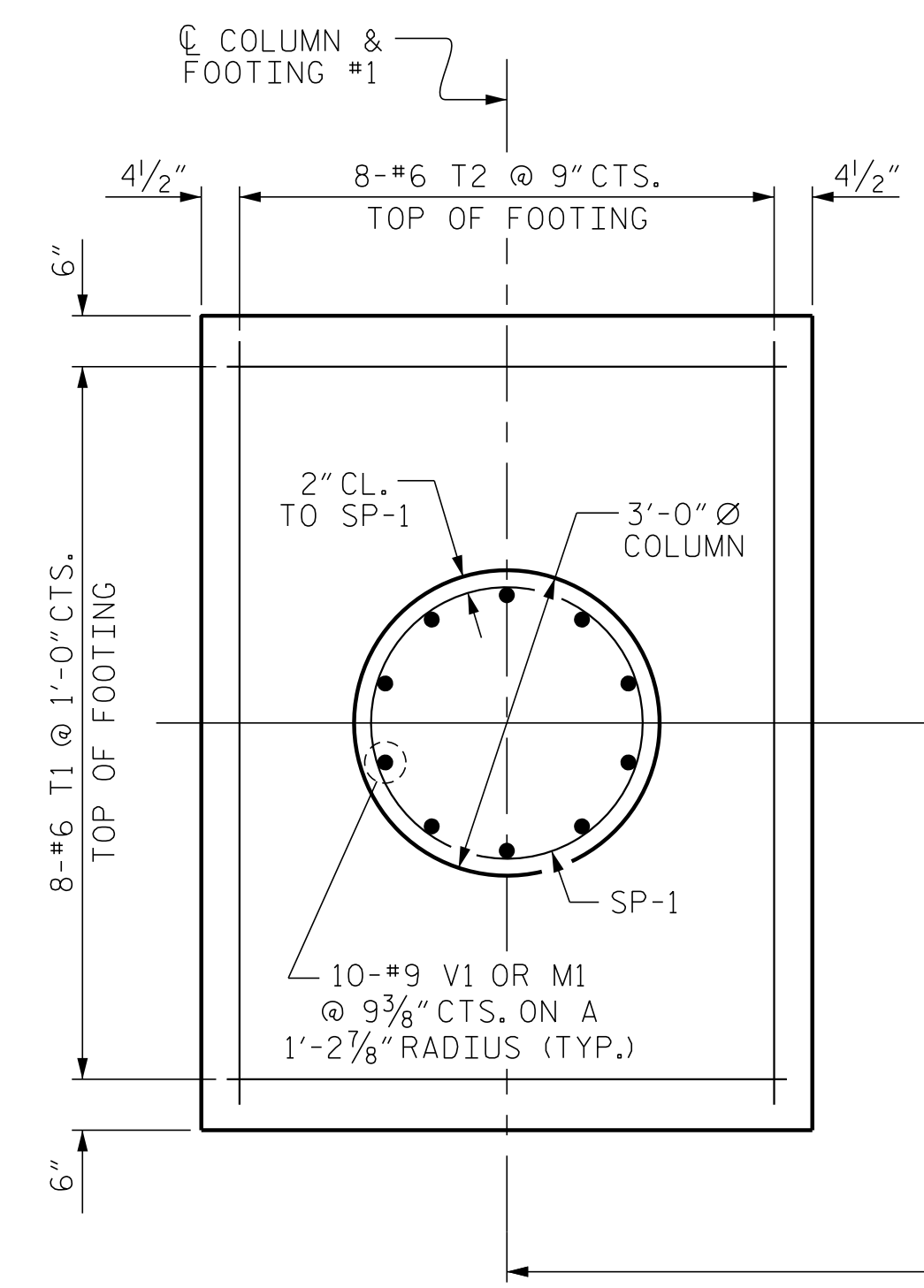


END OF CAP VIEW
(TYP. EA. END)

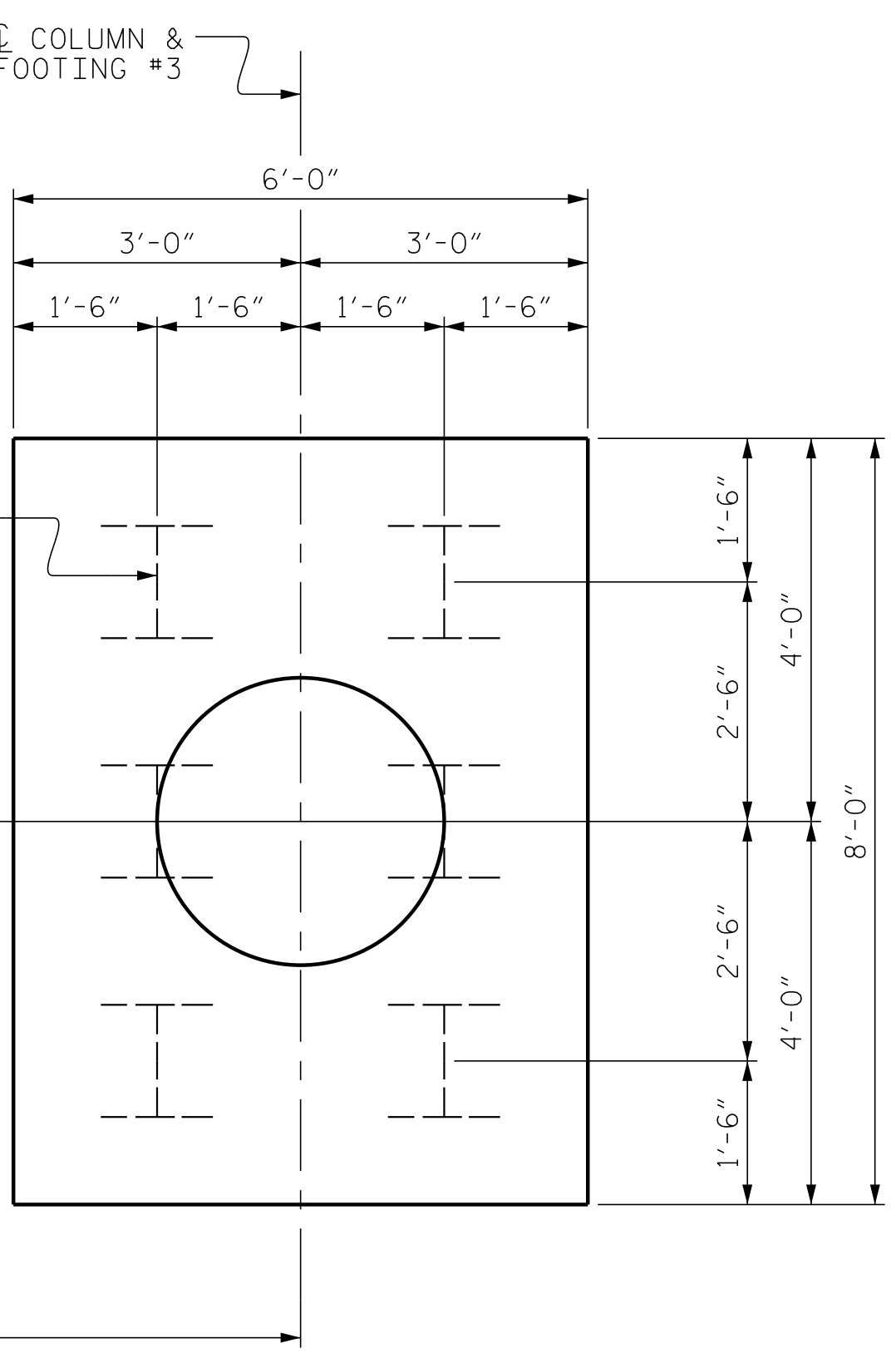


ALL BAR DIMENSIONS ARE OUT TO OUT.
** THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

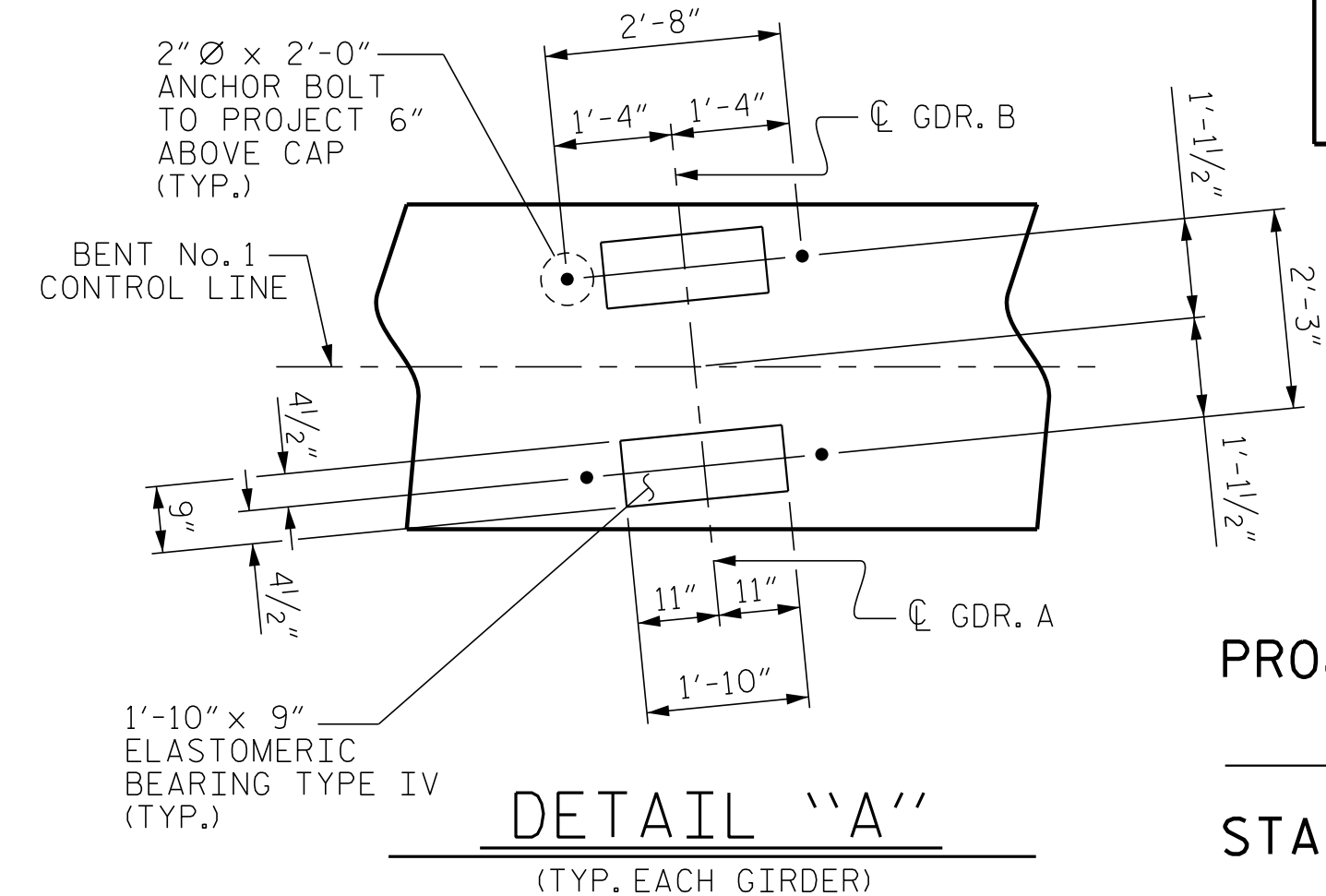
BILL OF MATERIAL					
BENT No. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#11	STR	51'-5"	1639
B2	6	#11	1	54'-5"	1735
B3	12	#4	STR	17'-6"	140
B4	8	#5	STR	51'-5"	429
M1	30	#9	2	8'-4"	850
S1	24	#5	4	13'-6"	338
S2	124	#5	4	12'-9"	1649
T1	24	#6	STR	5'-6"	198
T2	24	#6	STR	7'-6"	270
T3	24	#6	1	6'-10"	246
T4	42	#7	1	9'-2"	787
U1	57	#4	3	6'-4"	241
U2	8	#4	3	6'-2"	33
U3	6	#4	3	7'-5"	30
V1	30	#9	2	19'-5"	1981
REINFORCING STEEL					10,566 LBS.
SP-1	3	**	5	577'-7"	1157
SPIRAL COLUMN REINFORCING STEEL					1,157 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #1 FOOTINGS					18.7 C.Y.
POUR #2 COLUMNS					13.0 C.Y.
POUR #3 CAP					36.7 C.Y.
TOTAL CLASS A CONCRETE					68.4 C.Y.
HP 14 X 73 STEEL PILES					
NO: 18					LIN. FT. = 1,260
PILE REDRIVES					18 EA.
FOUNDATION EXCAVATION					LUMP SUM
PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 STEEL PILES					18 EA.



PLAN OF FOOTINGS AND COLUMNS

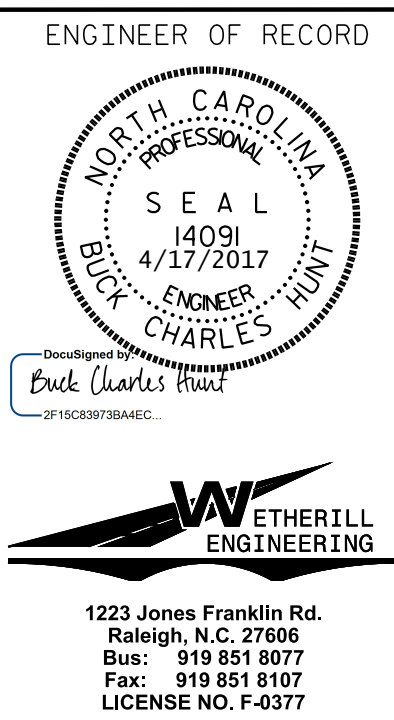


PILE PLACEMENT, REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL FOR EACH COLUMN AND FOOTING.



DETAIL "A"
(TYP. EACH GIRDER)

PROJECT NO. U-5796
WAYNE COUNTY
STATION: 27+41.30 -Y8-
SHEET 2 OF 2



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

SHEET NO. S01-27
TOTAL SHEETS 34

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CHECKED BY: G.M. GILLAND DATE: 4/16

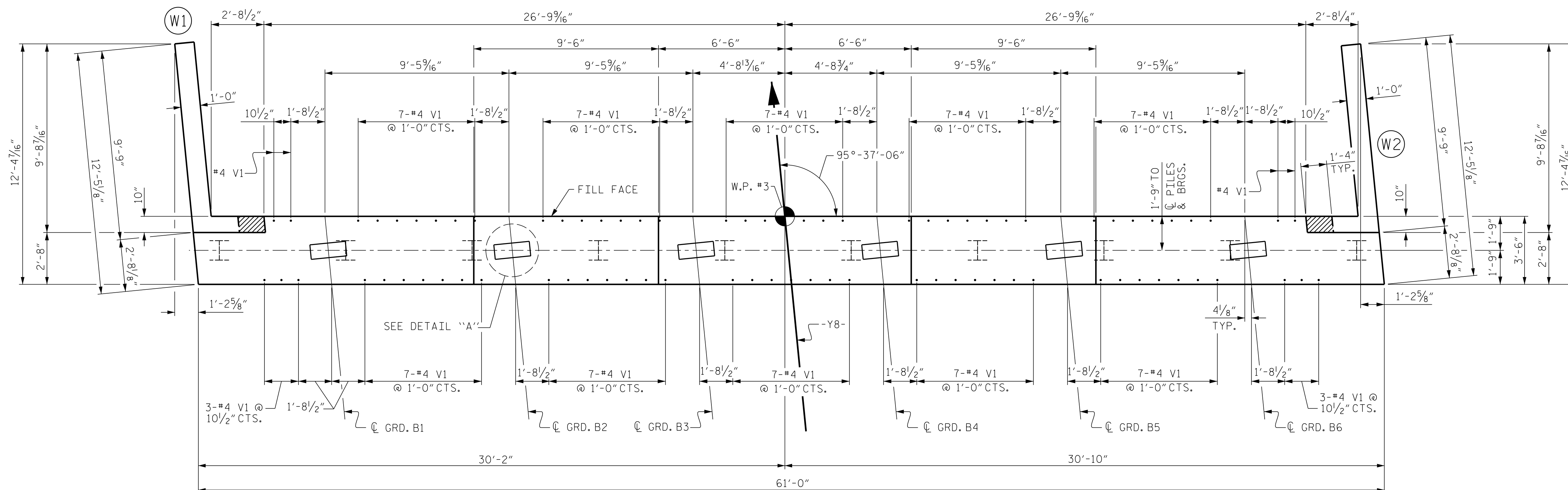
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Raleigh, N.C. 27606
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LICENSE NO. F-0377

NOTES

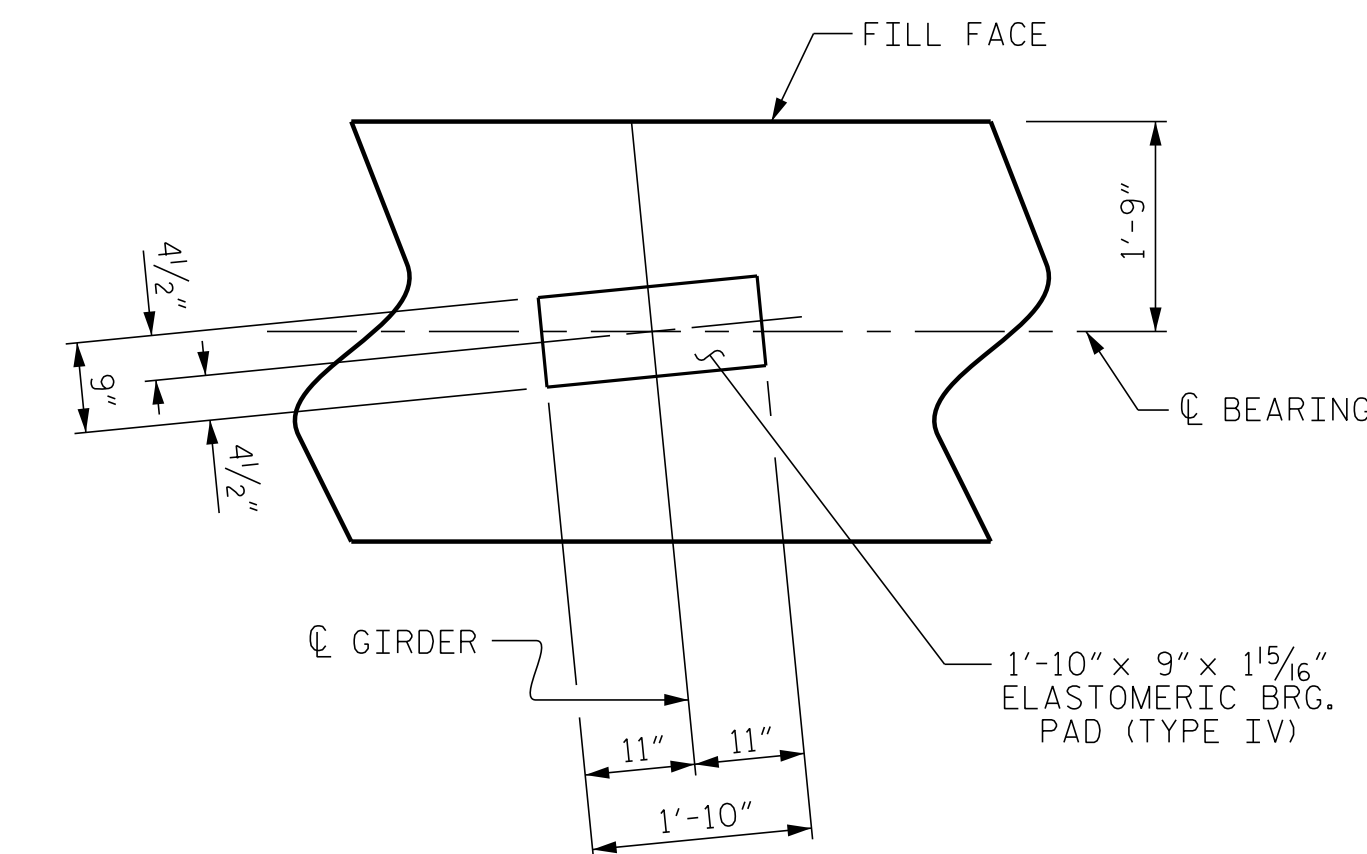
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE PARAPET AND END POST ARE CAST IF SLIP FORMING IS USED.

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.

THE TOP SURFACE OF THE END BENT CAP WITHIN THE LIMITS OF THE INTEGRAL ABUTMENT, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

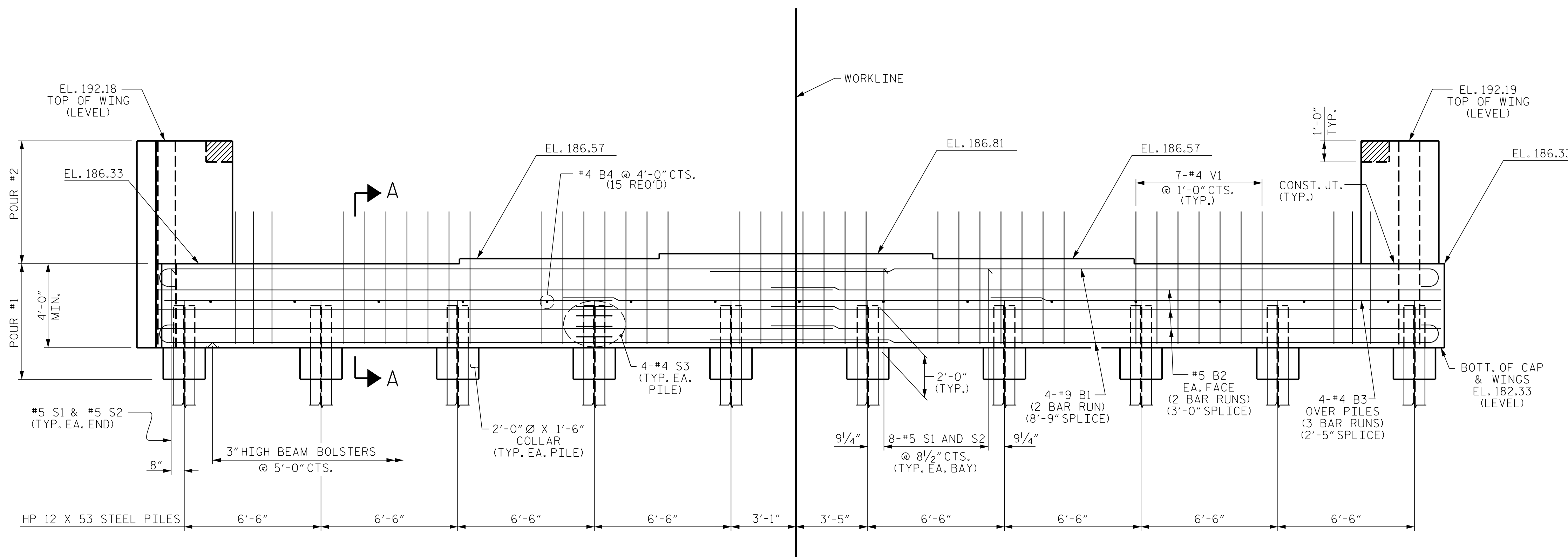


PLAN



DETAIL A

(TYP. EACH GIRDER)

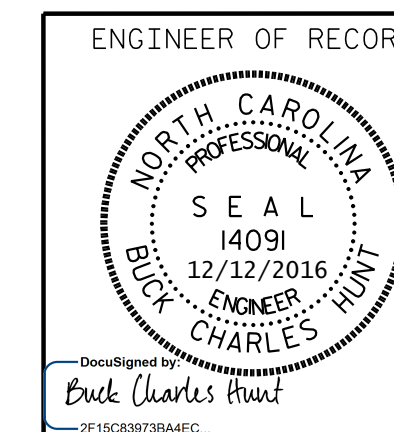


ELEVATION

FOR SECTION A-A, SEE SHEET 3 OF 3.

PROJECT NO. U-5796
 WAYNE COUNTY
 STATION: 27+41.30 -Y8-

SHEET 1 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 2

REVISIONS

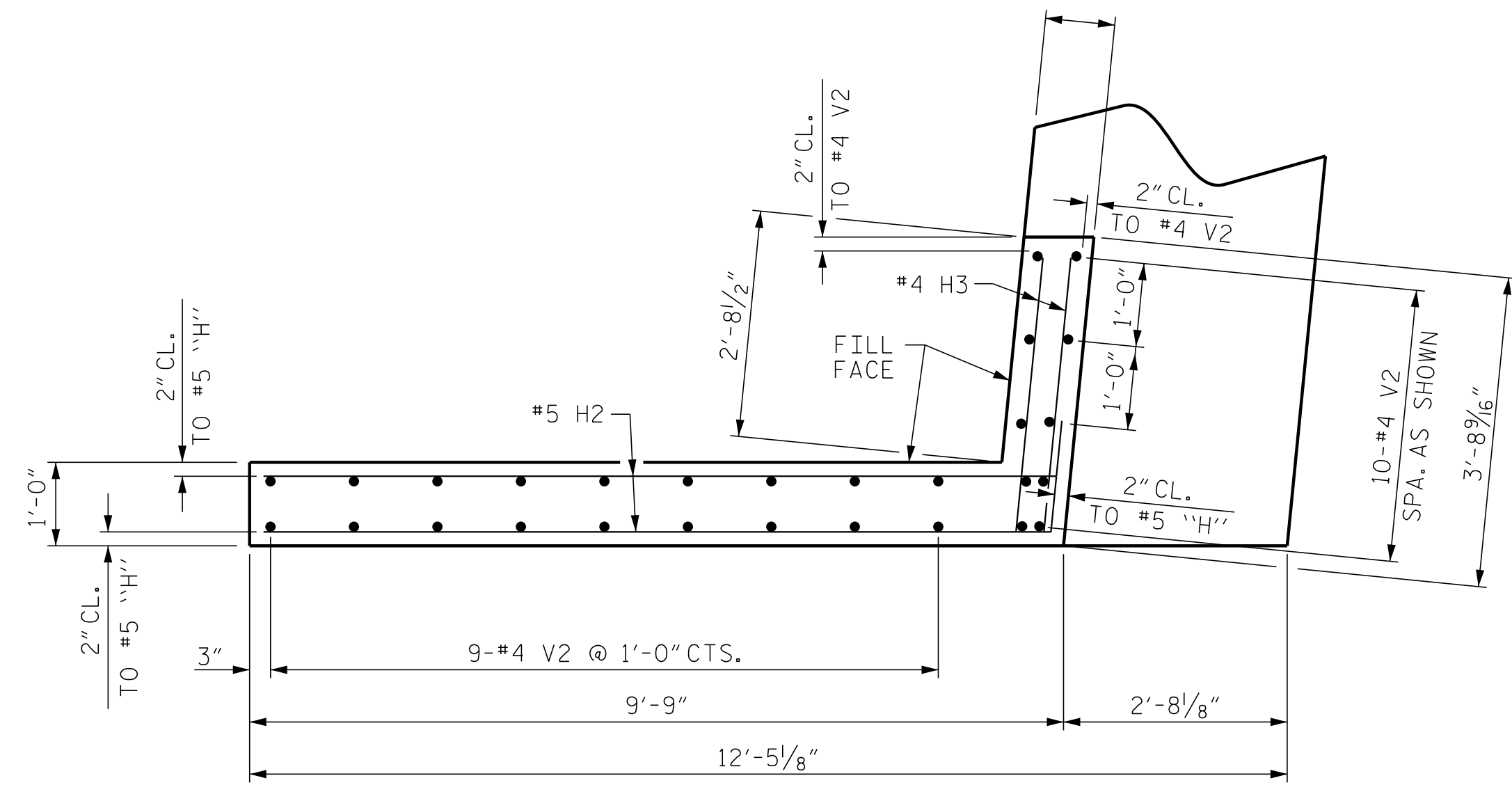
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SHEET NO.	S01-28
TOTAL SHEETS	34

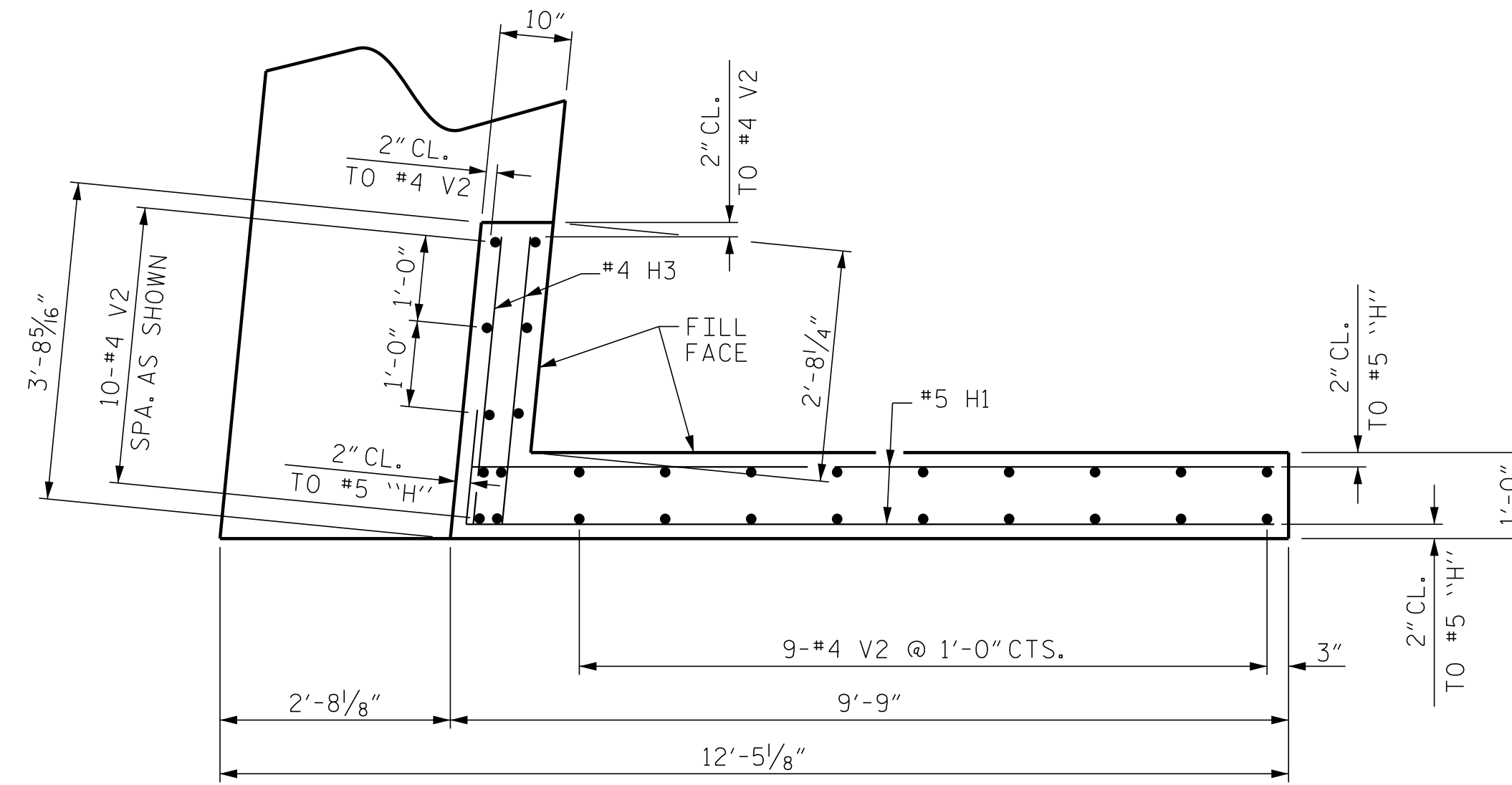
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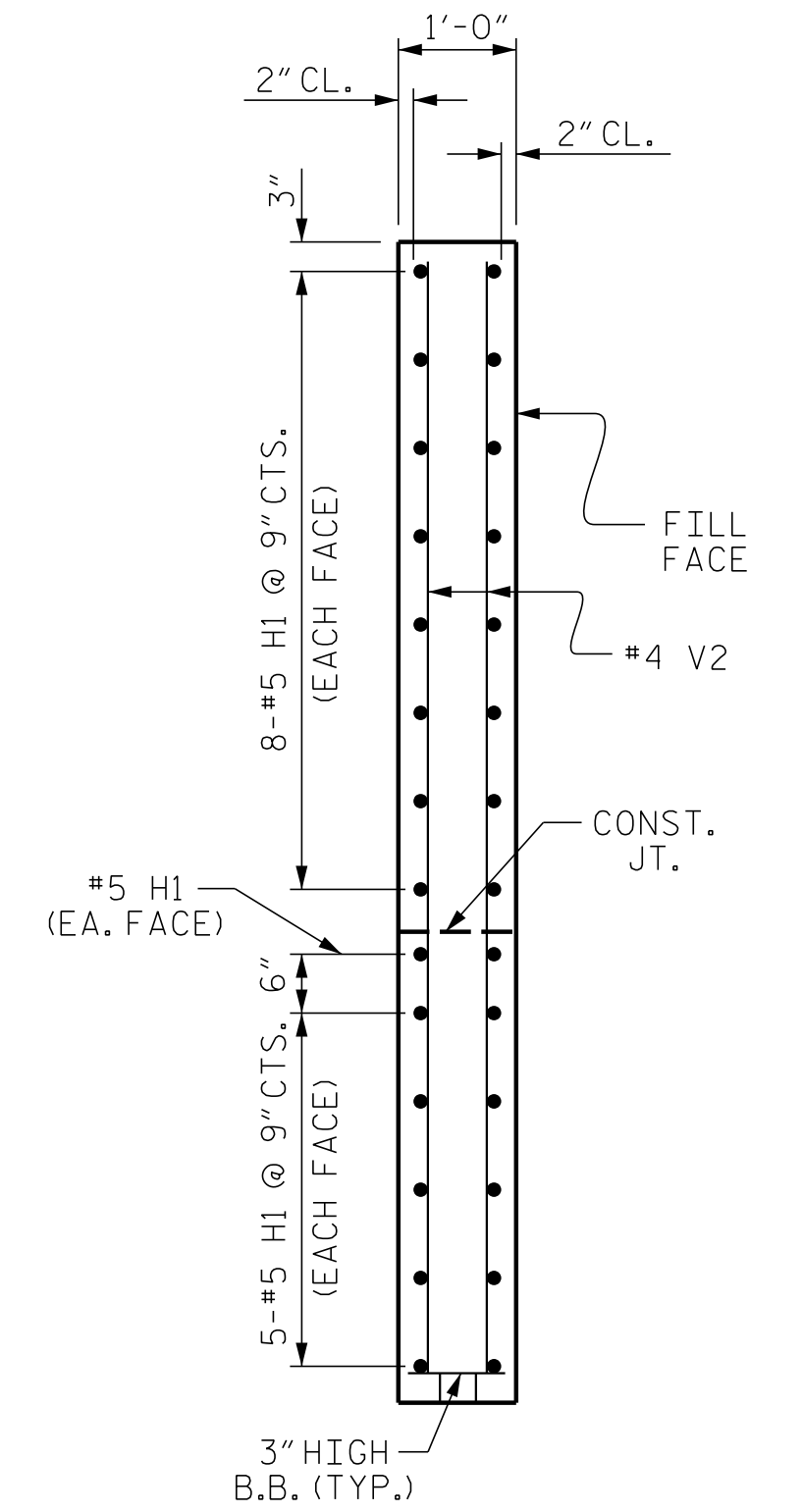
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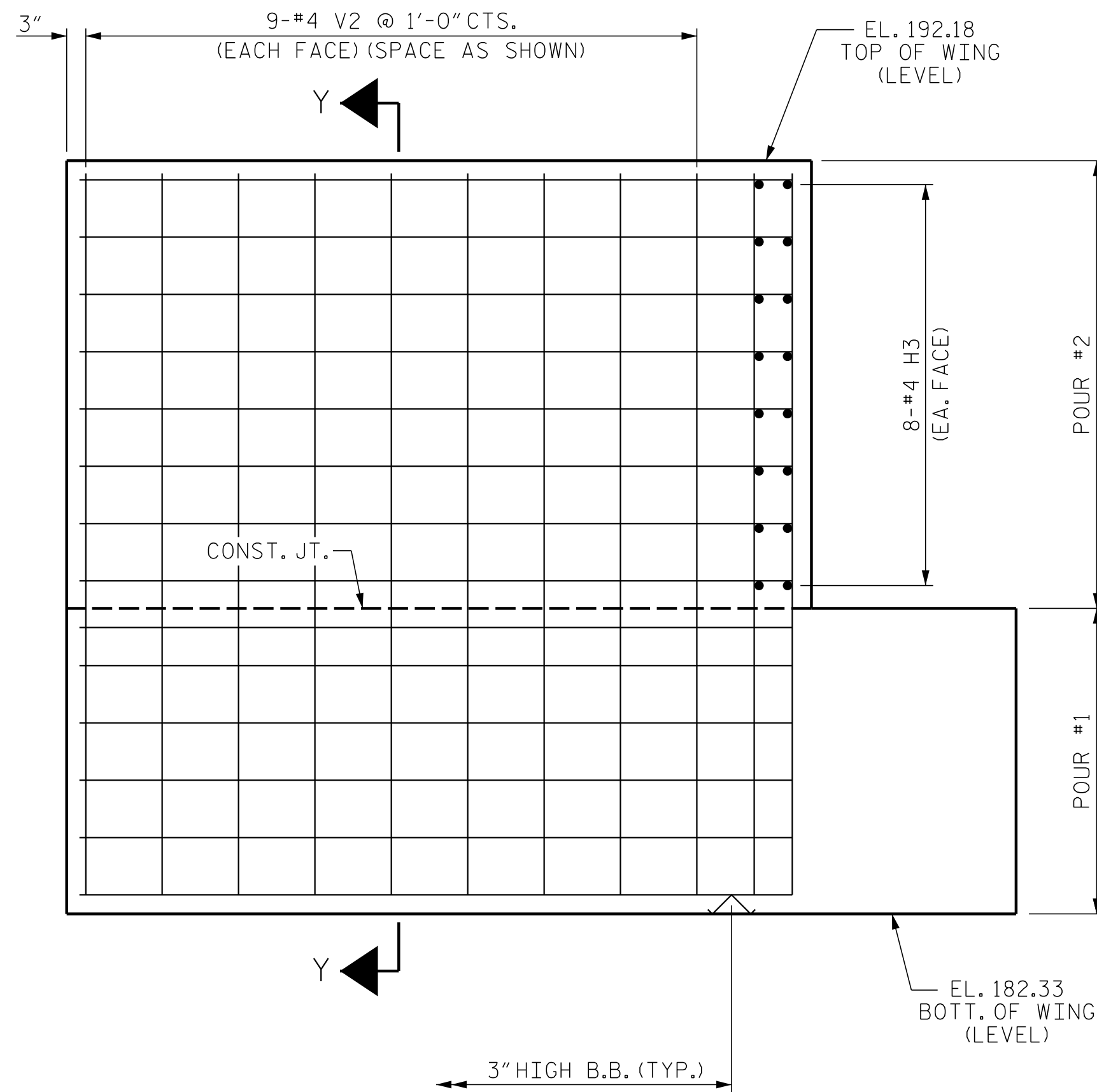
PLAN OF WING - W1



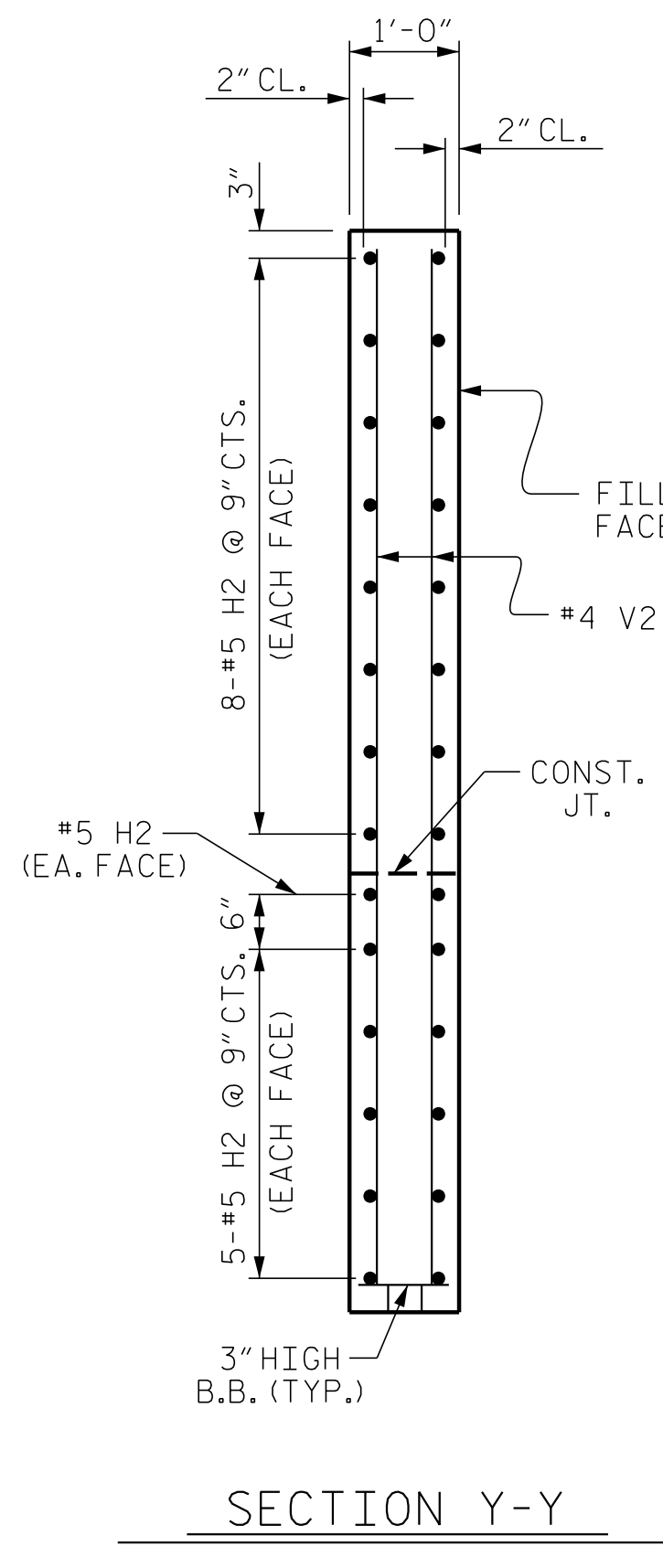
PLAN OF WING - W2



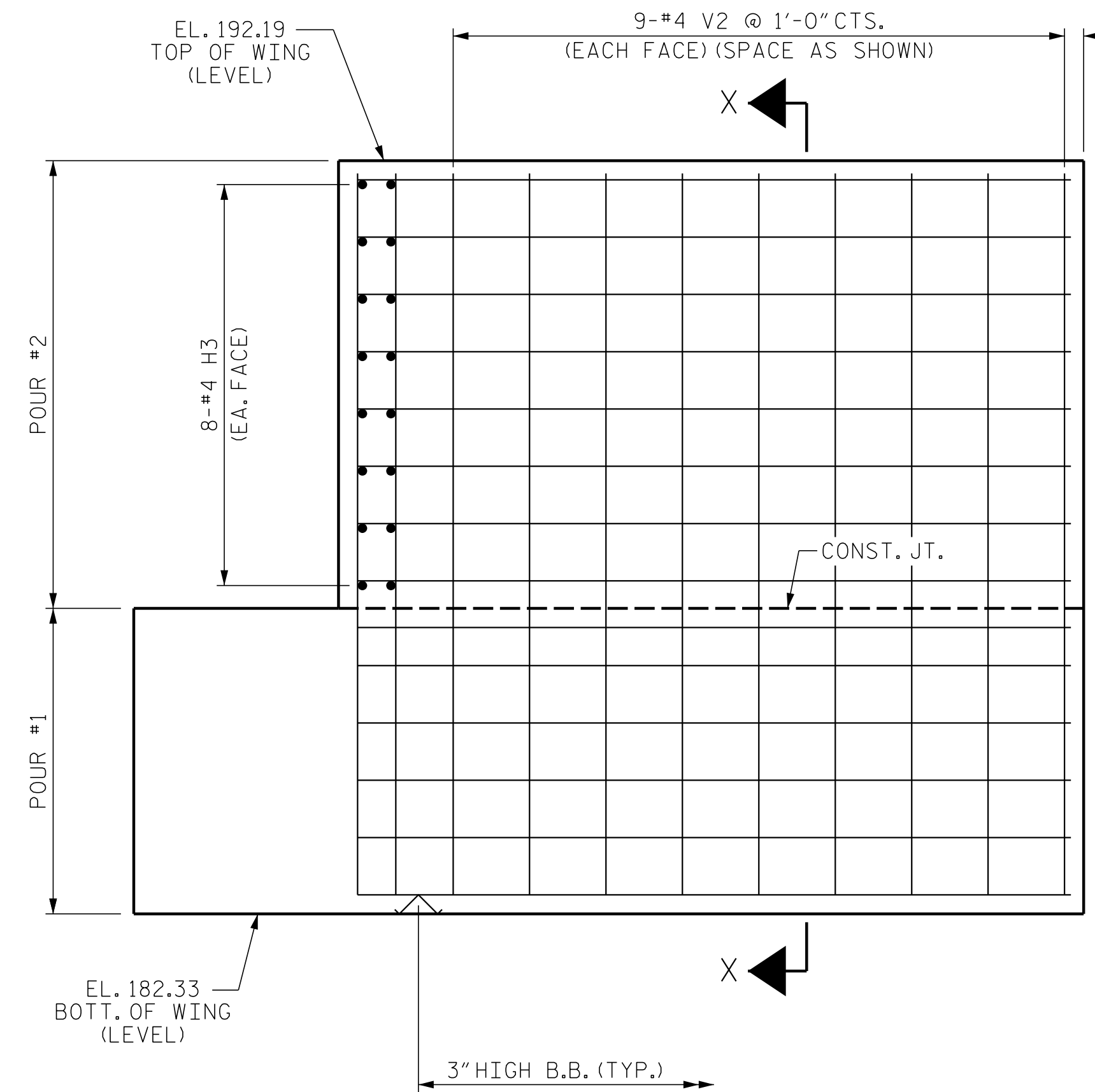
SECTION X-X



ELEVATION OF WING - W1



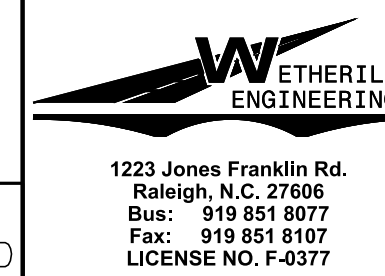
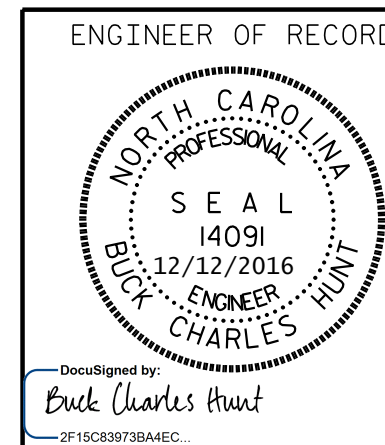
SECTION Y-Y



ELEVATION OF WING - W2

PROJECT NO. U-5796
WAYNE COUNTY
 STATION: 27+41.30 -Y8-

SHEET 2 OF 3

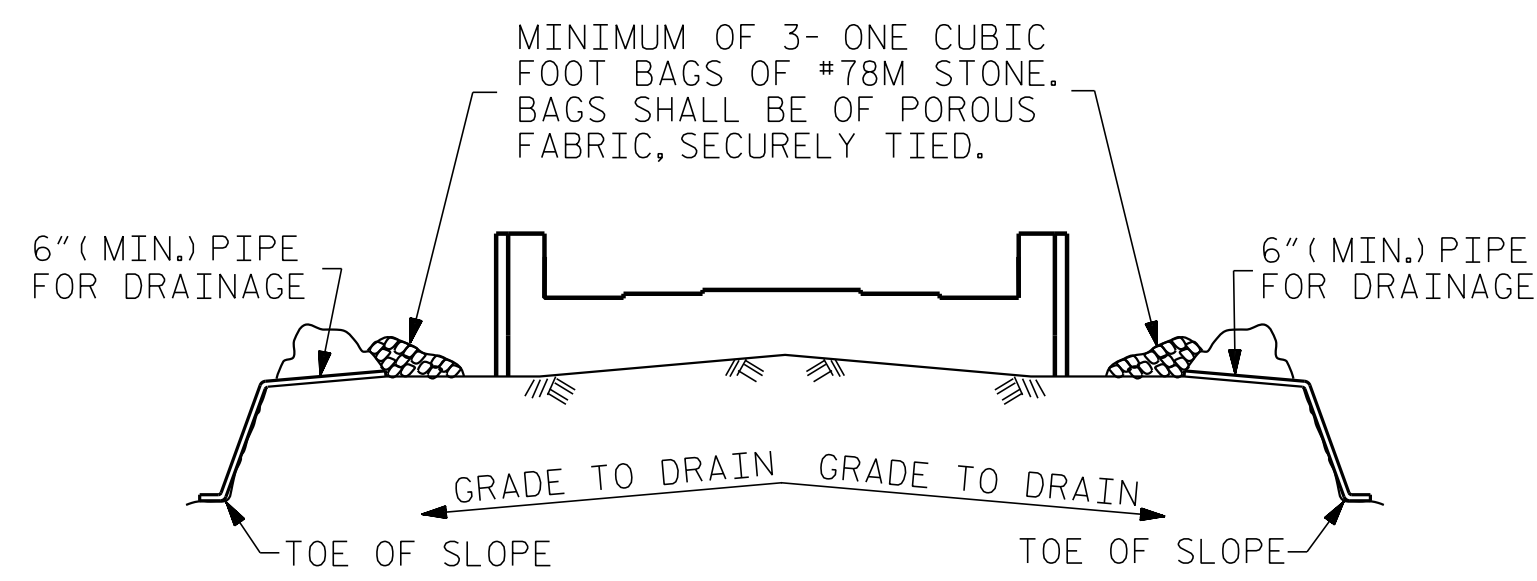


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 2					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S01-29					TOTAL SHEETS 34

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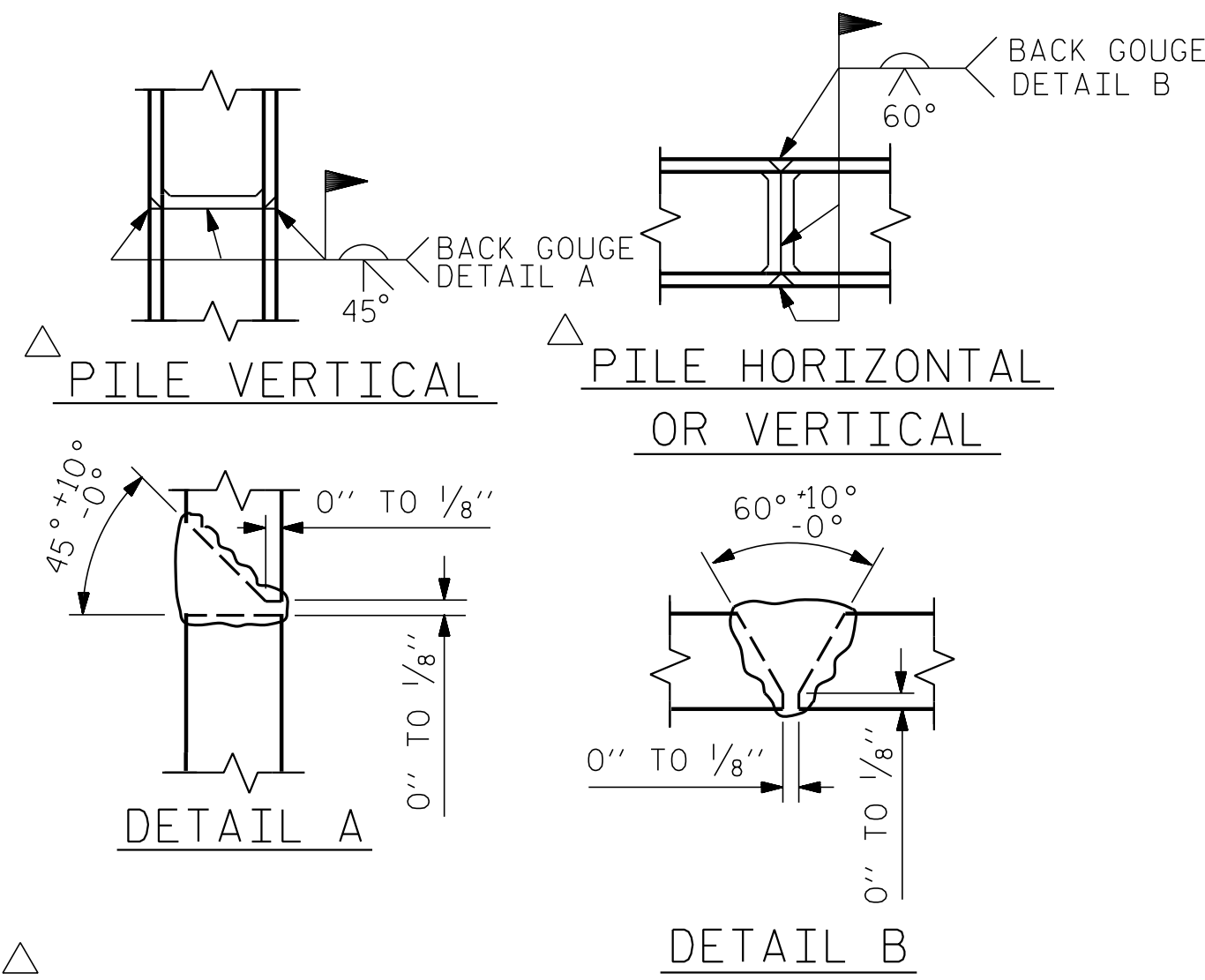


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

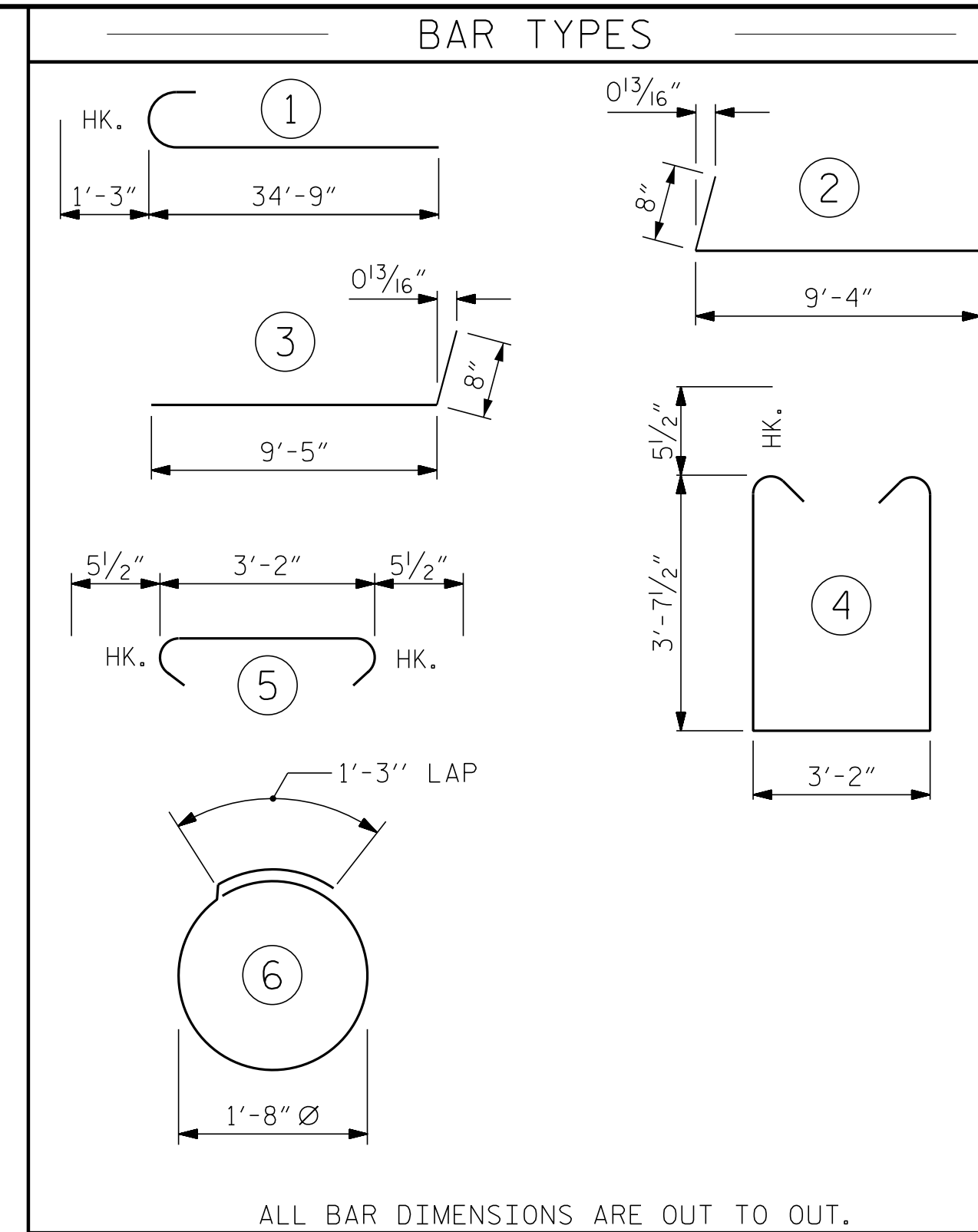
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

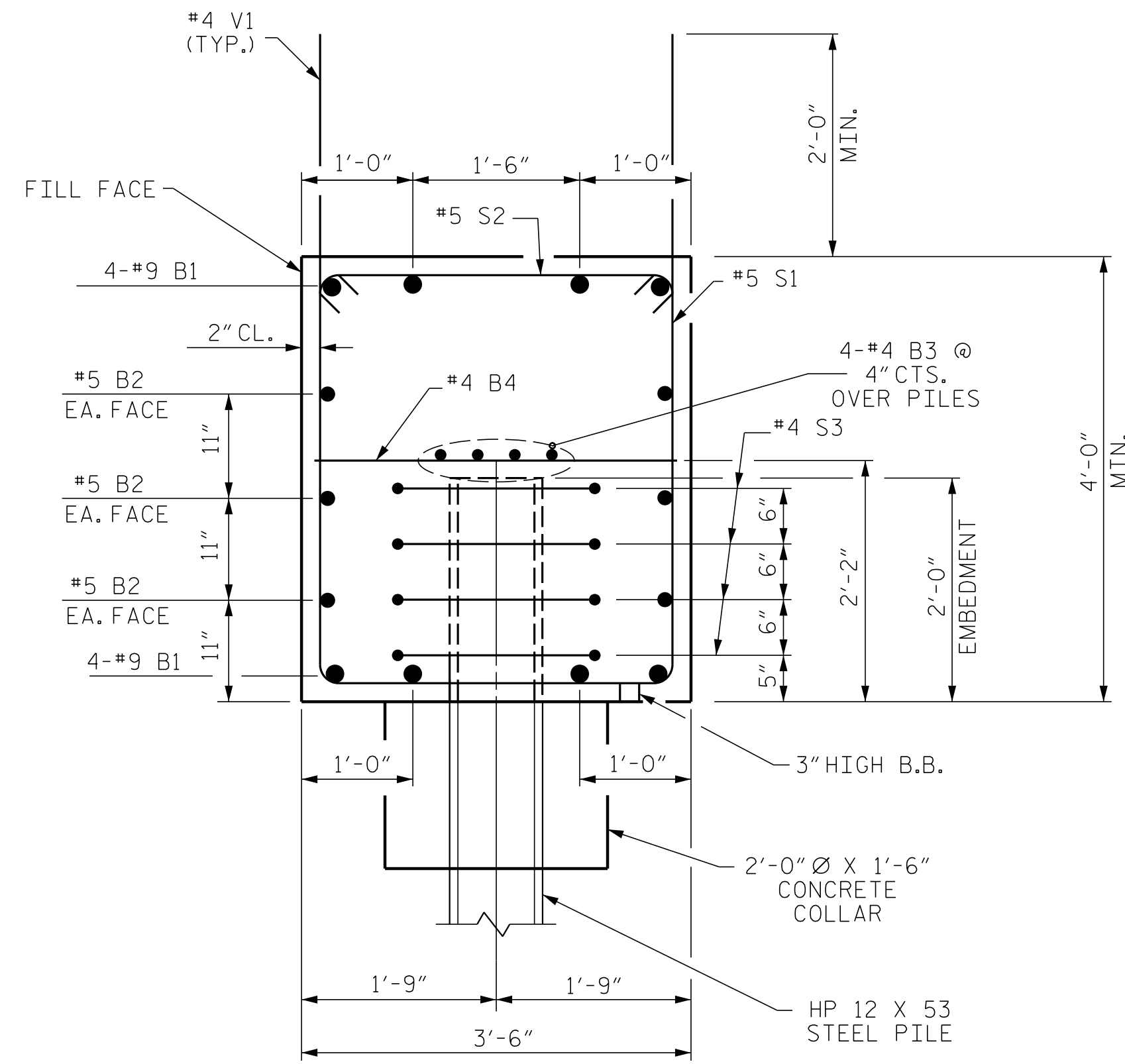
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

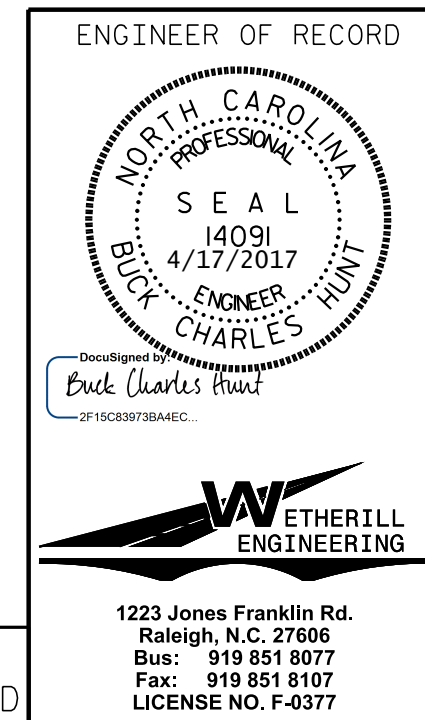


BILL OF MATERIAL					
END BENT No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	16	#9	1	36'-0"	1958
B2	12	#5	STR	31'-10"	398
B3	12	#4	STR	21'-10"	175
B4	15	#4	STR	3'-2"	32
H1	28	#5	2	10'-0"	292
H2	28	#5	3	10'-1"	294
H3	32	#4	STR	3'-2"	71
S1	74	#5	4	11'-4"	875
S2	74	#5	5	4'-1"	315
S3	40	#4	6	6'-6"	174
V1	80	#4	STR	5'-9"	307
V2	56	#4	STR	9'-5"	352
REINFORCING STEEL					5,243 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR #1	CAP, CONC, COLLARS & LOWER PART OF WINGS				37.4 C.Y.
POUR #2	UPPER PART OF WINGS				5.2 C.Y.
TOTAL CLASS A CONCRETE					42.6 C.Y.
HP 12 X 53 STEEL PILES					
NO: 10					LIN. FT. = 900
PILE REDRIVES					10 EA.
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES					10 EA.



SECTION A-A

PROJECT NO. U-5796
WAYNE COUNTY
 STATION: 27+41.30 -Y8-
 SHEET 3 OF 3



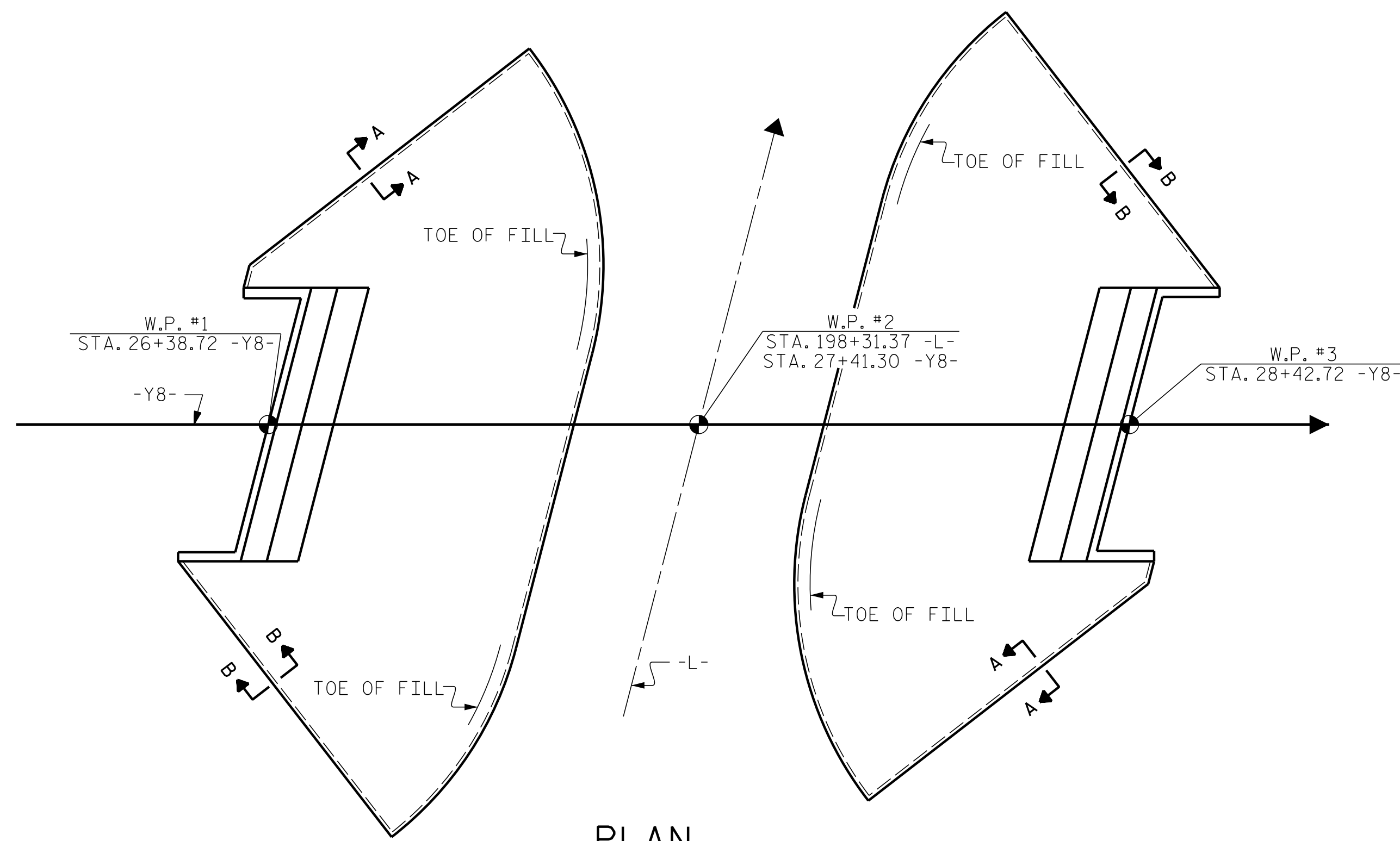
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SHEET NO. S01-30				
TOTAL SHEETS 34				

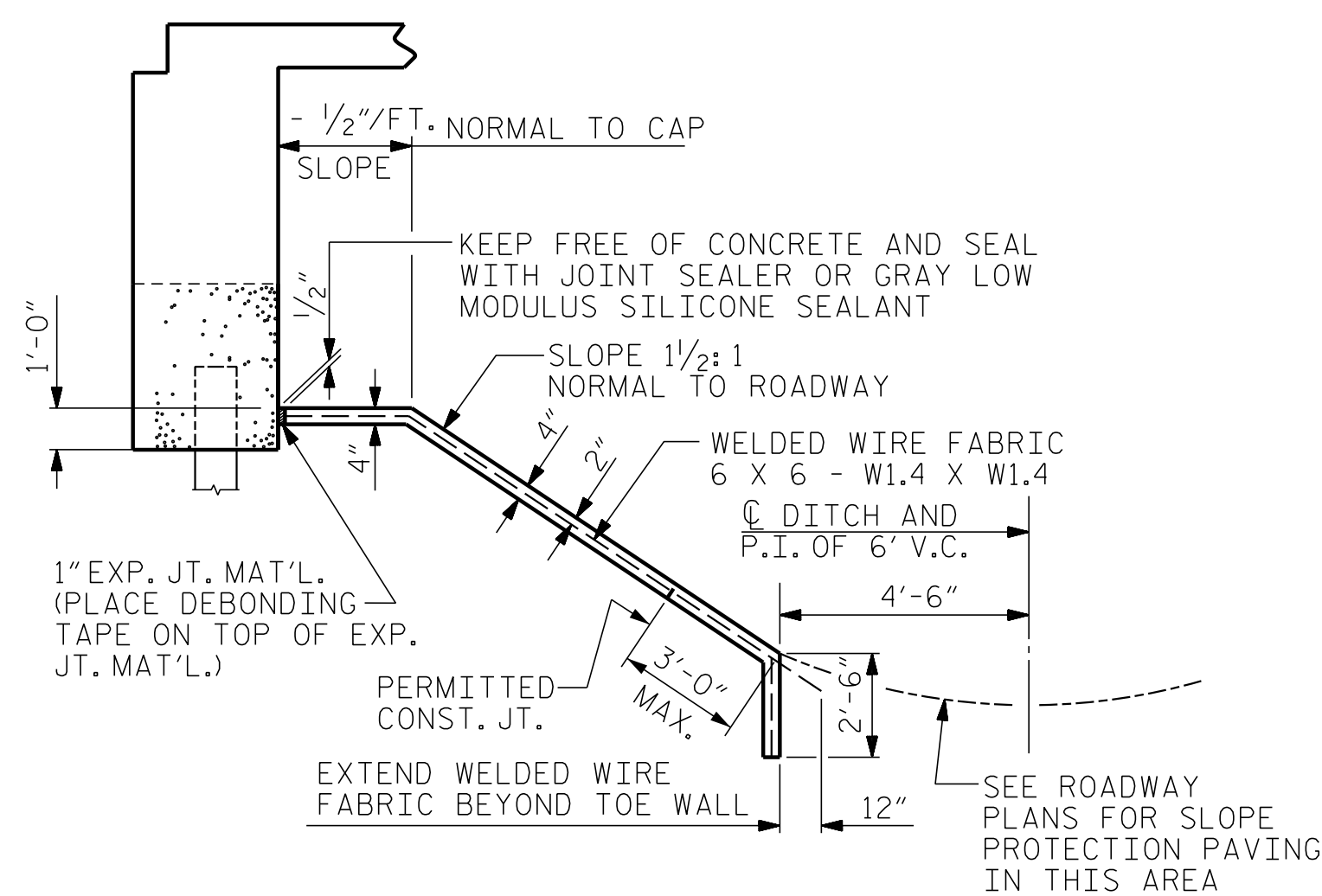
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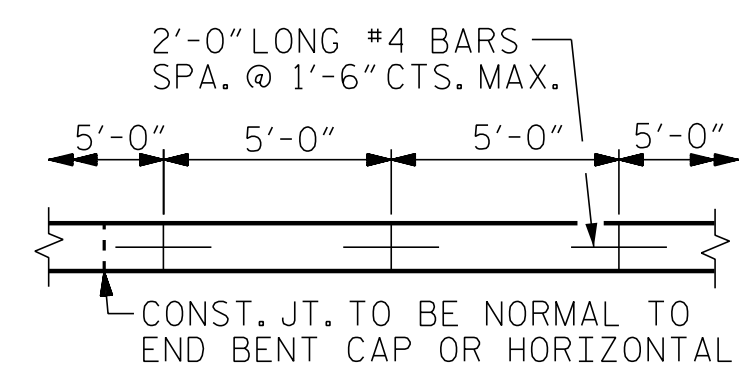
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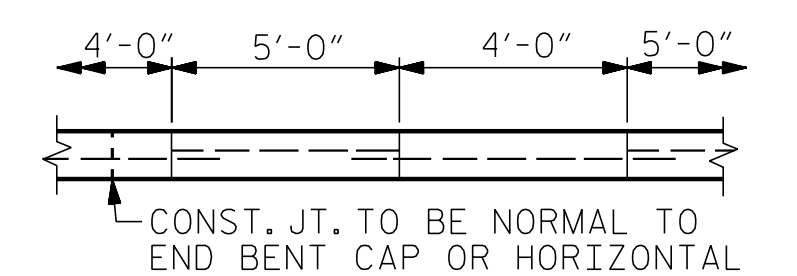
PLAN



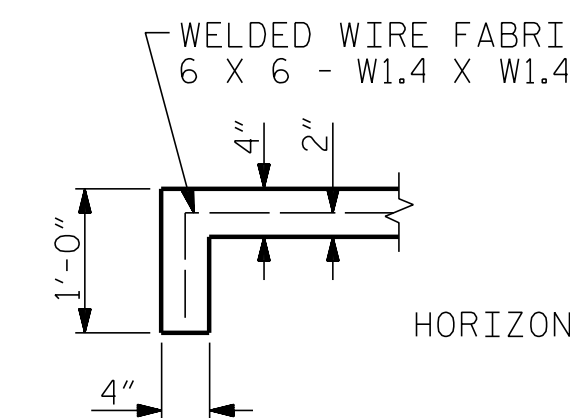
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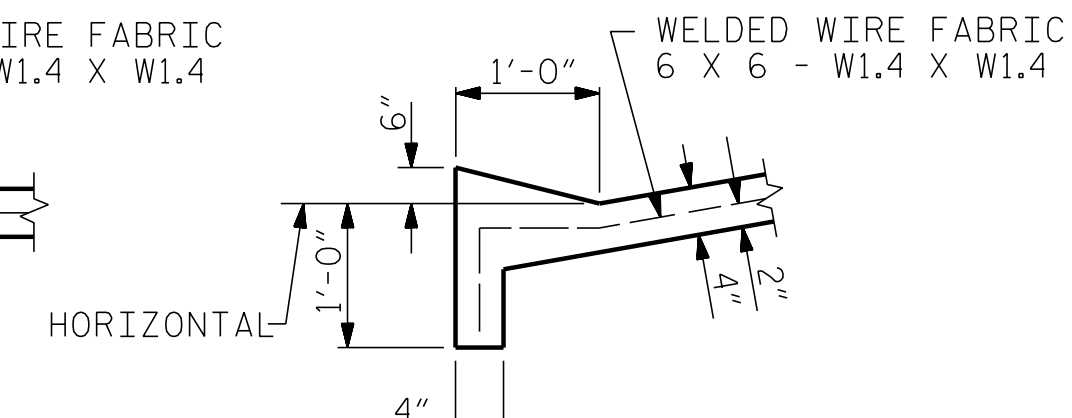
POURING DETAIL



OPTIONAL POURING DETAIL



SECTION A-A



SECTION B-B

GENERAL NOTES

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. 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. 27+41.30 -Y8-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	470	1145
END BENT 2	450	1110

* QUANTITY SHOWN IS BASED ON 5' POURS.

PROJECT NO. U-5796
WAYNE COUNTY
 STATION: 27+41.30 -Y8-

SHEET 1 OF 2

ENGINEER OF RECORD

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ETHERILL ENGINEERING

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 LICENSE NO. F-0377

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

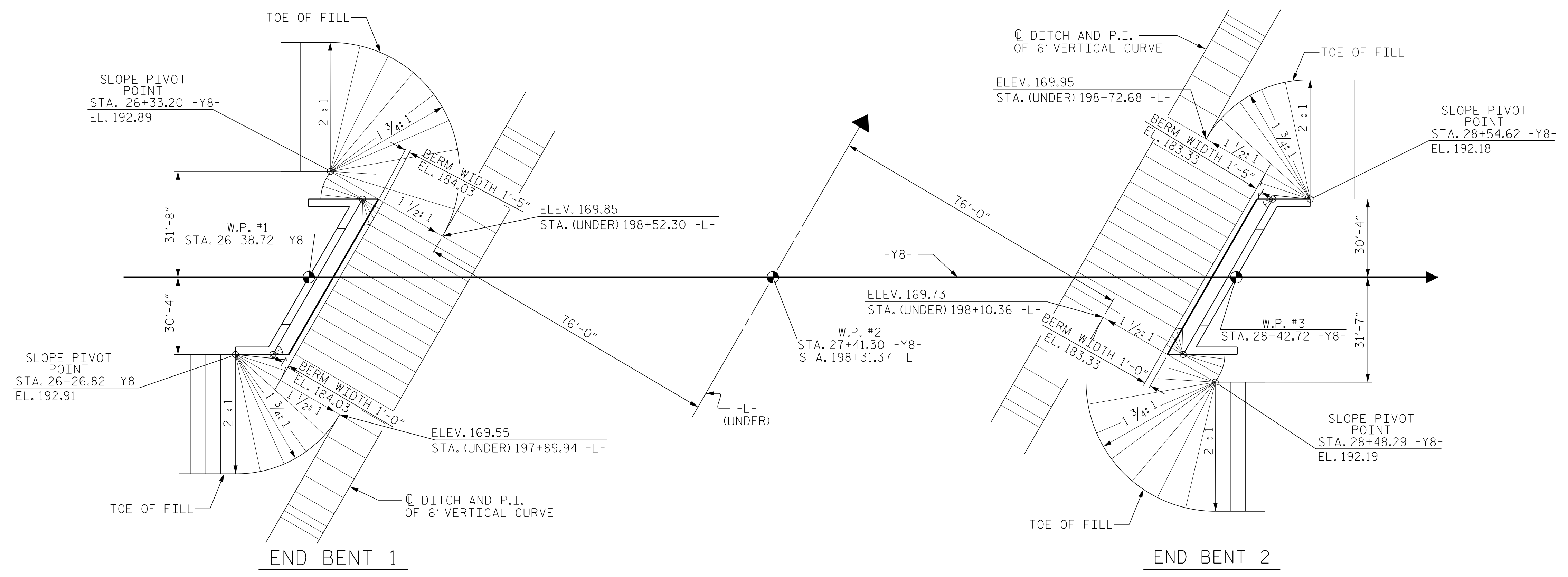
STANDARD
 SLOPE PROTECTION
 DETAILS

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

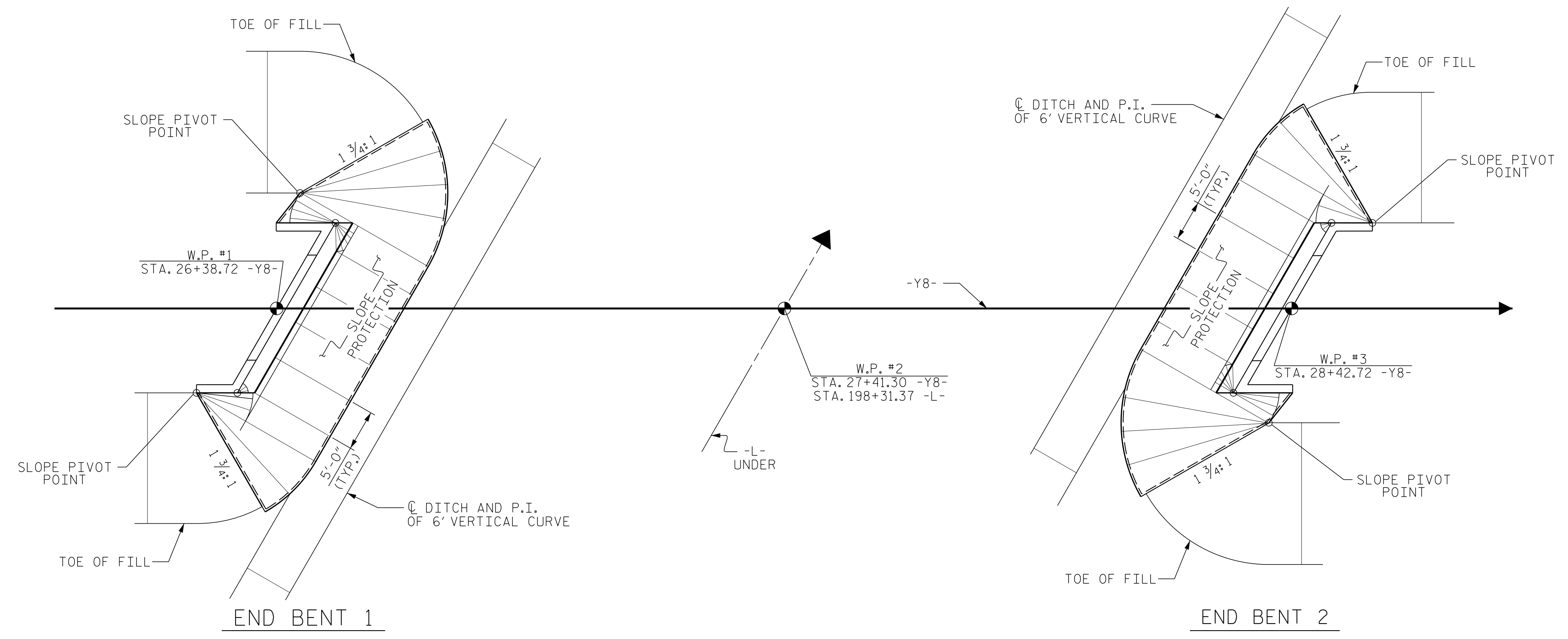
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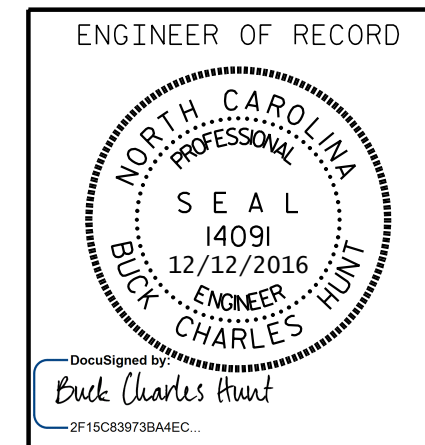


PLAN - GRADING



PLAN - CONCRETE PLACEMENT
(1 1/2 : 1 SLOPE)

PROJECT NO. U-5796
WAYNE COUNTY
 STATION: 27+41.30 -Y8-
 SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 SLOPE PROTECTION
 DETAILS

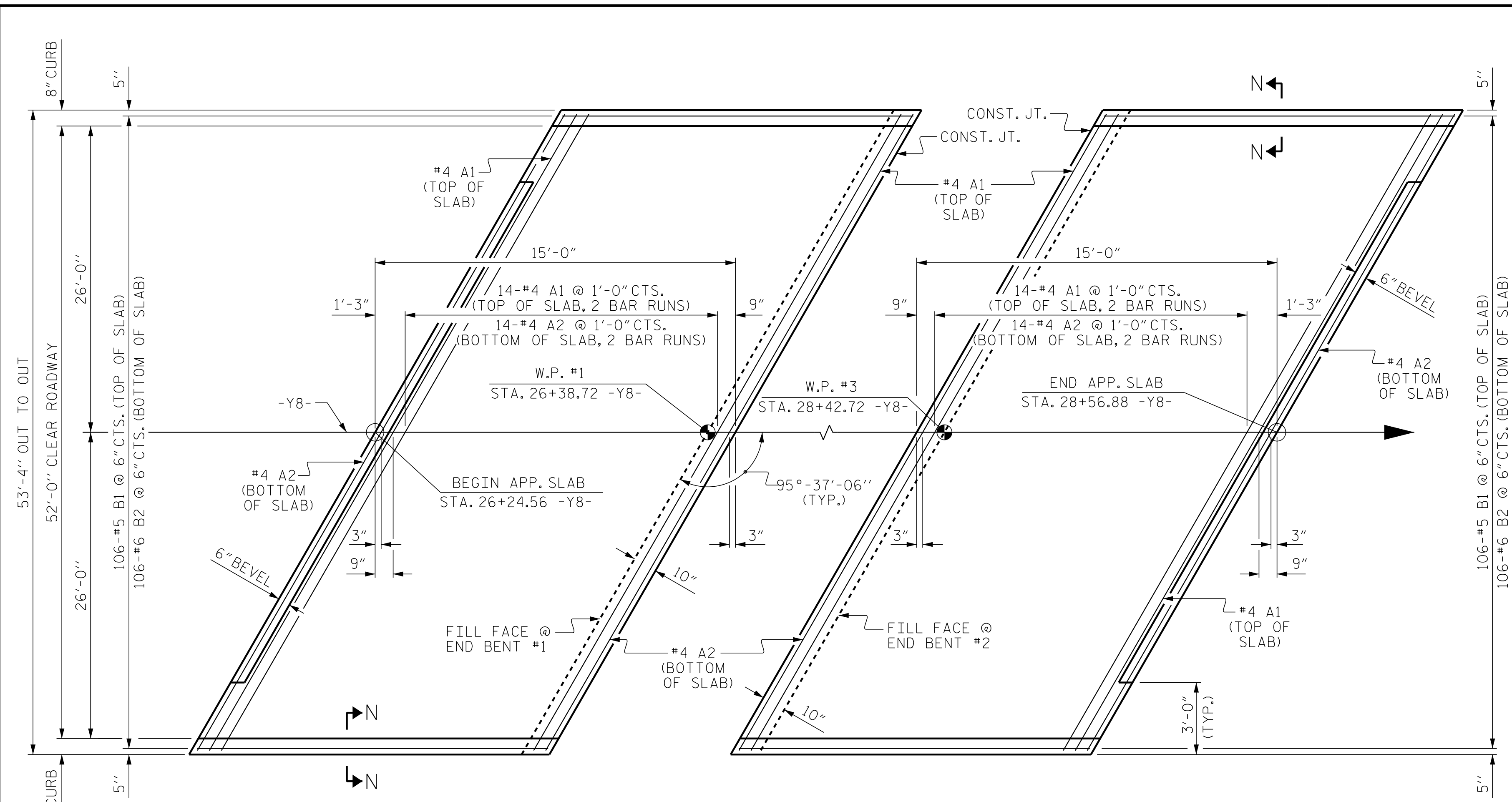
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1			3		
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TOTAL SHEETS: 34

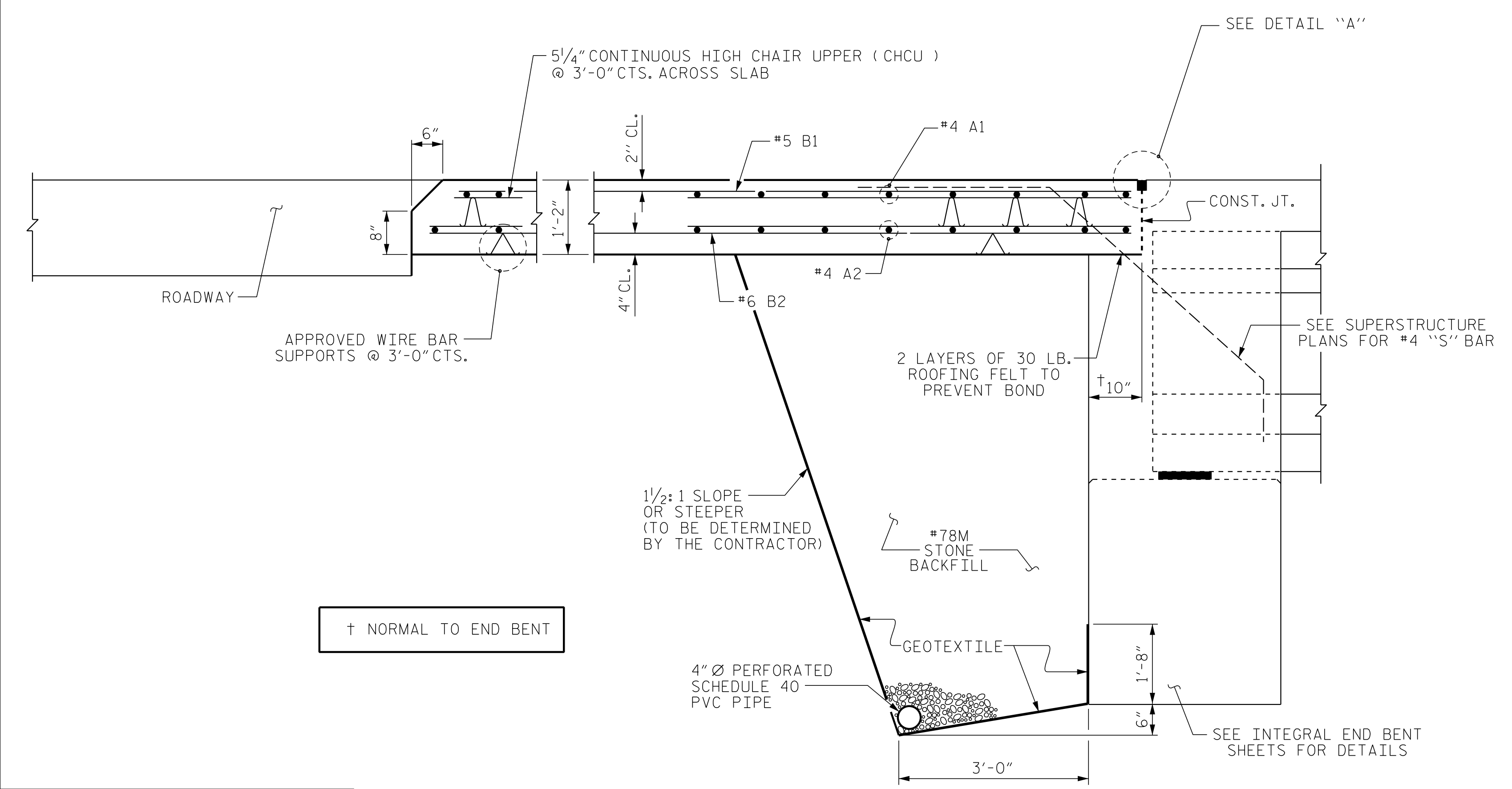
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PLAN @ END BENT #1 PLAN @ END BENT #2
DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB

NOTES

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

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

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

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

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

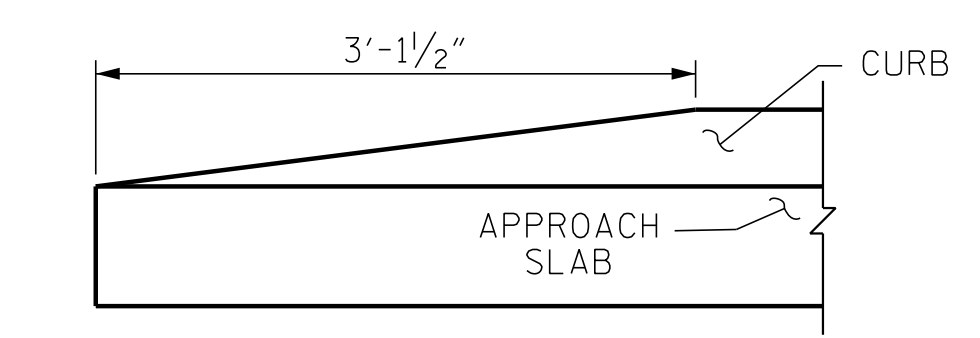
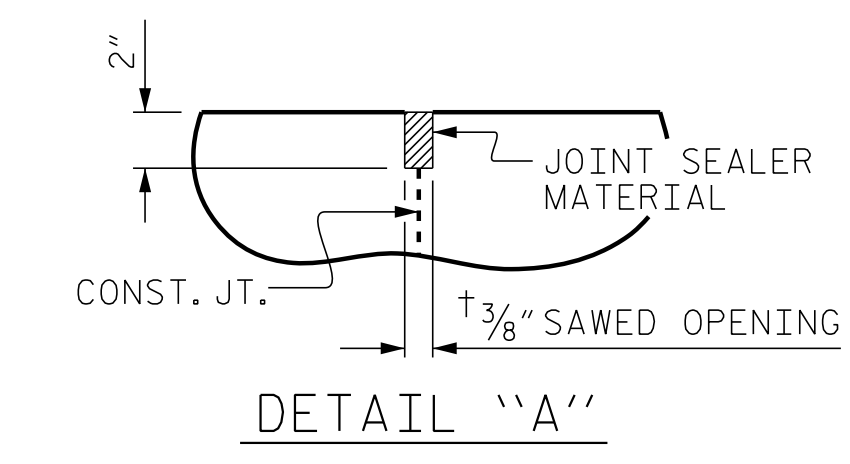
#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

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

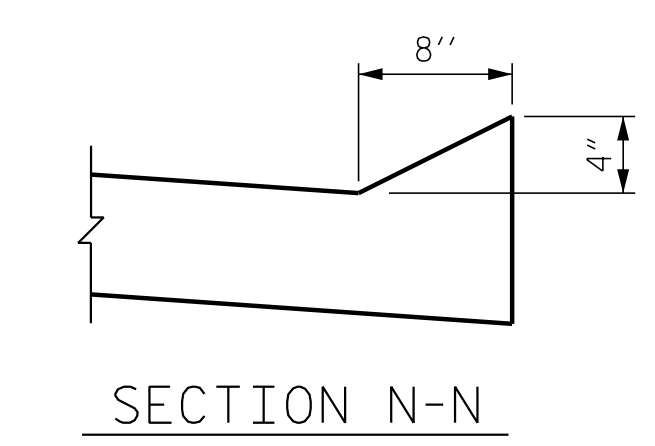
FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

BILL OF MATERIAL					
FOR ONE APPROACH SLAB (2 REQ'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	32	#4	STR	27'-8"	591
A2	32	#4	STR	27'-7"	590
* B1	106	#5	STR	14'-2"	1566
B2	106	#6	STR	14'-8"	2335
REINFORCING STEEL				LBS.	2925
* EPOXY COATED REINFORCING STEEL				LBS.	2157
CLASS AA CONCRETE				C. Y.	34.4

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



END OF CURB WITHOUT SHOULDER BERM GUTTER



SECTION N-N

PROJECT NO. U-5796
WAYNE COUNTY
STATION: 27+41.30 -Y8-
SHEET 1 OF 2

ENGINEER OF RECORD

WETHERILL ENGINEERING
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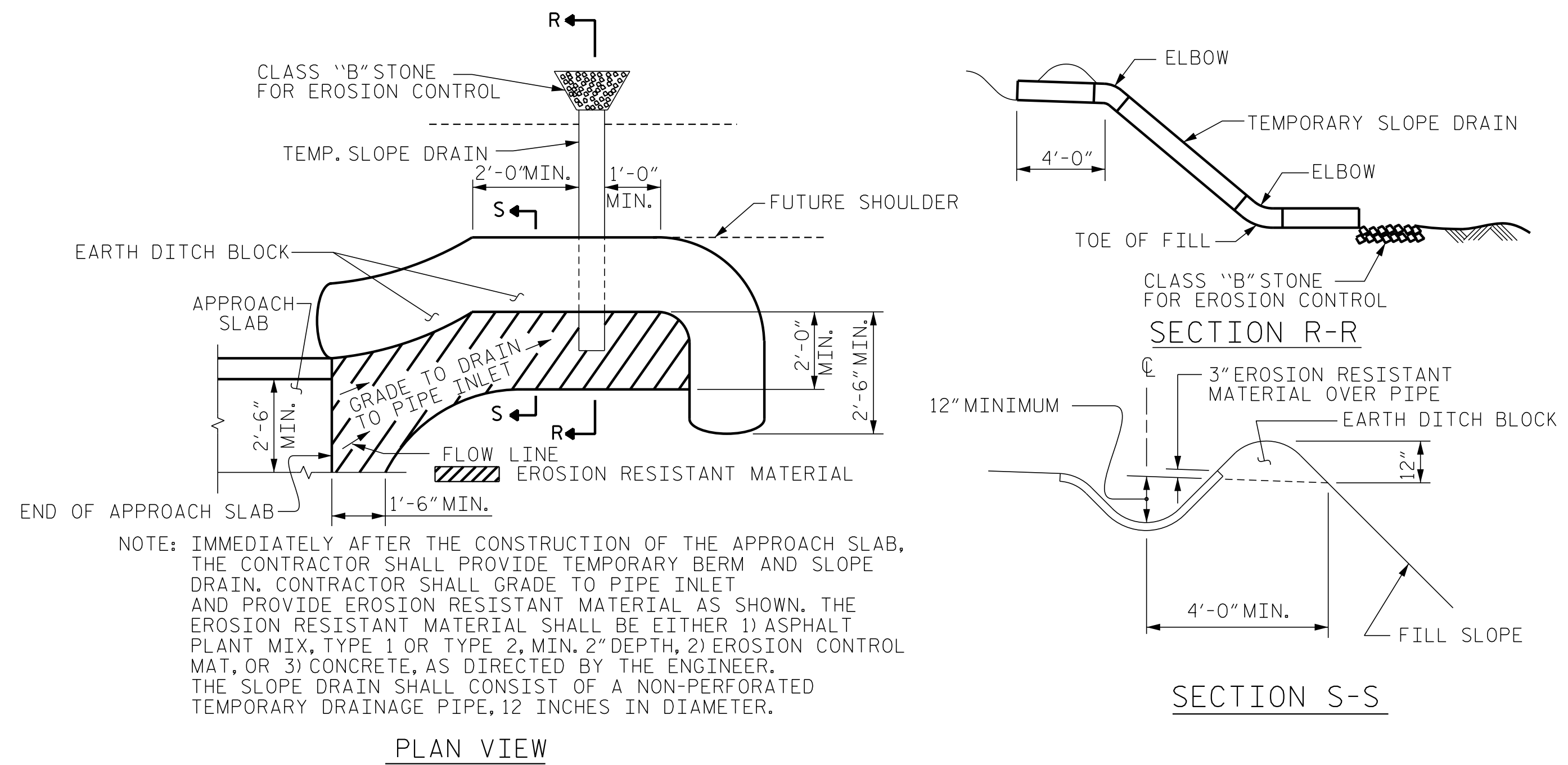
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
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2			4		

SHEET NO. S01-33
TOTAL SHEETS 34

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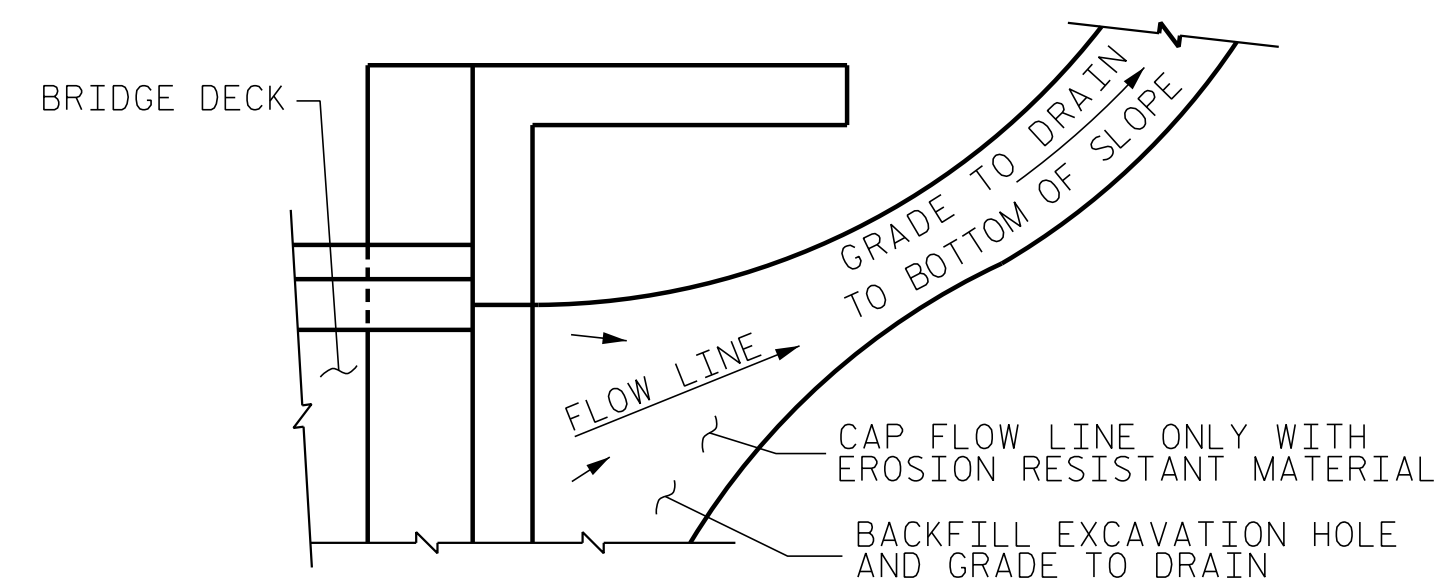
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ASSEMBLED BY : G.M. GILLAND	DATE : 10-6-15
CHECKED BY : B.C. HUNT	DATE : 10-7-15
DRAWN BY : TLA 10/05	REV. 10/11 MAA/GM
CHECKED BY : GM 5/06	REV. 12/21/11 MAA/GM
	REV. 6/13 MAA/GM



TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

PROJECT NO. U-5796
WAYNE COUNTY
 STATION: 27+41.30 -Y8-

SHEET 2 OF 2

ASSEMBLED BY : G.M. GILLAND	DATE : 10-6-15
CHECKED BY : B.C. HUNT	DATE : 10-7-15
DRAWN BY : FCJ 11/88	REV. 10/11/11 MAA/GM
CHECKED BY : ARB 11/88	REV. 7/12 MAA/GM
	REV. 6/13 MAA/GM

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

ENGINEER OF RECORD

SEAL
 14091
 12/12/2016
 ENGINEER
 CHARLES HUNT

WETHERILL ENGINEERING

1223 Jones Franklin Rd.
 Raleigh, N.C. 27606
 Bus: 919 851 8077
 Fax: 919 851 8107
 LICENSE NO. F-0377

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD BRIDGE APPROACH SLAB DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S01-34
					TOTAL SHEETS 34

STD. NO. BAS4

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STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	- - - - -	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	- - - - -	SEE PLANS
IMPACT ALLOWANCE	- - - - -	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF		
STRUCTURAL STEEL - AASHTO M270 GRADE 36	-	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	-	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	-	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION		
GRADE 60	- -	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	- - - - -	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	- - - - -	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR		
UNTREATED - EXTREME FIBER STRESS	- - - - -	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	- - - - -	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	- - - - -	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990

STD. NO. SN