

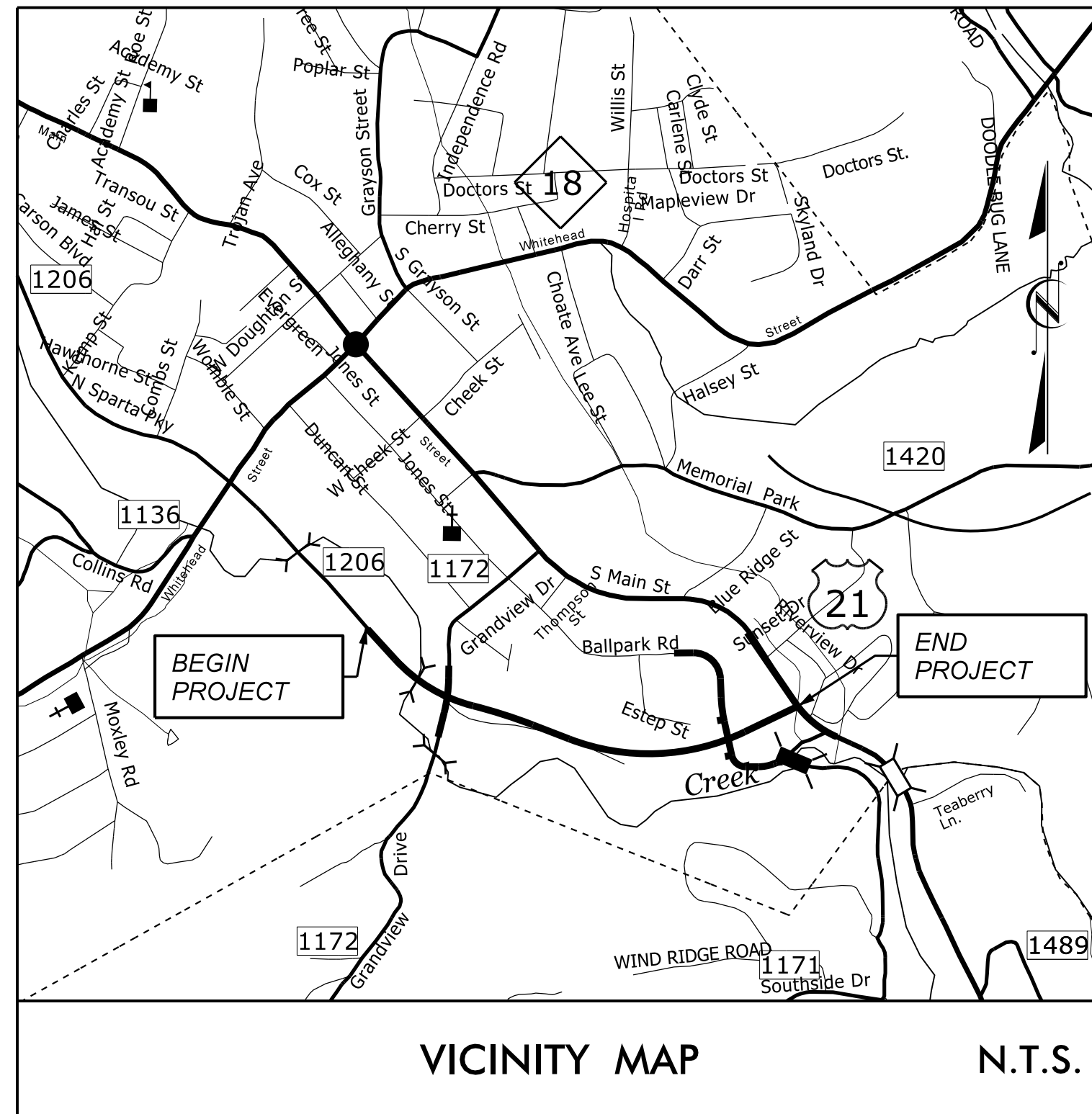
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and sealed by the individuals whose names and license
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with their signature on that page.**

**This file or an individual page
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TIP PROJECT: R-4060

CONTRACT: C203821

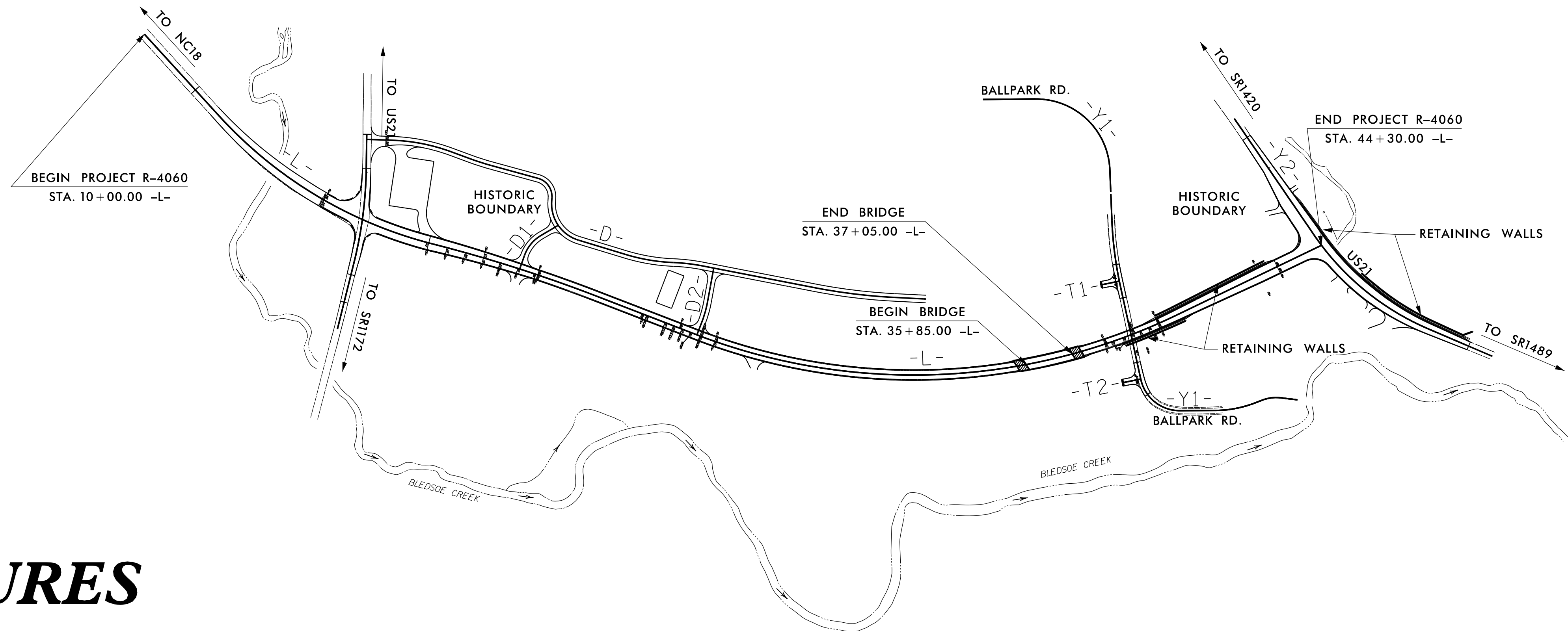
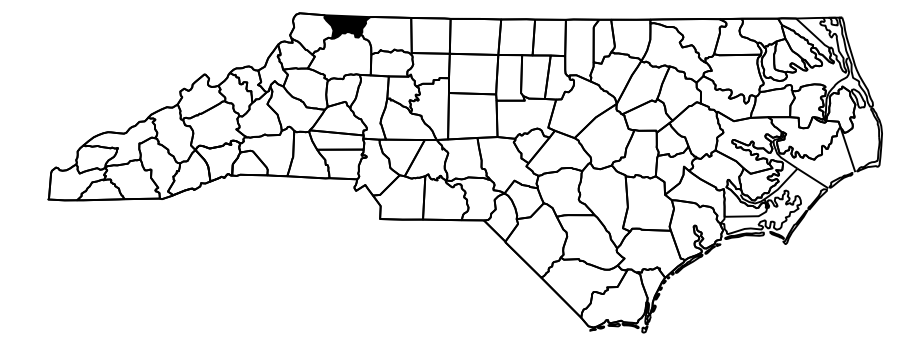


STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

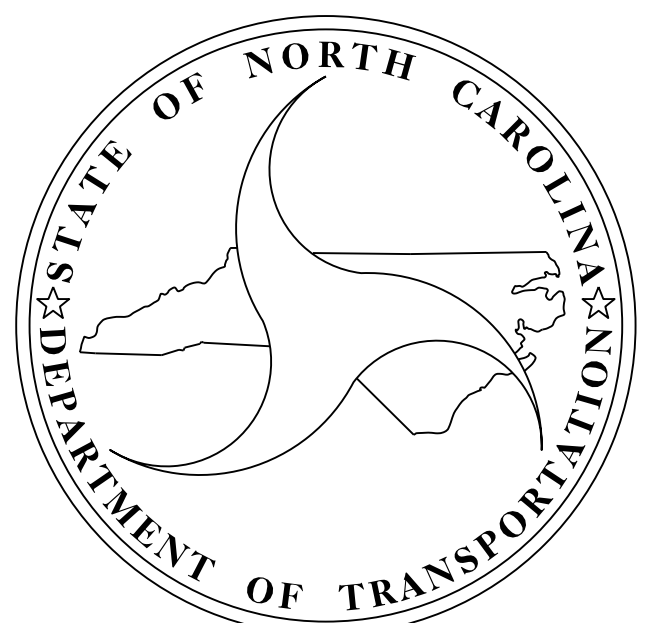
ALLEGHANY COUNTY

**LOCATION: SPARTA BYPASS FROM SR 1172 (GRANDVIEW DR.) TO
US 21 NEW LOCATION**
**TYPE OF WORK: GRADING, DRAINAGE, WIDENING, PAVING, AND
RETAINING WALLS**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-4060		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34605.1.2	STP-21(10)	P.E.	
34605.2.1		ROW	
34605.2.RU1		UTIL.	
34605.3.2		CONST.	



STRUCTURES



DESIGN DATA

ADT (2015) = 6,100
 ADT (2030) = 8,800
 DHV = 10%
 D = 55%
 T = 7% *
 V = 50 MPH
 * (TTST 2%, DUAL 5%)

REGIONAL TIER DESIGN
 FUNC CLASS = RURAL COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-4060 = 0.627 MILES
 LENGTH STRUCTURE TIP PROJECT R-4060 = 0.023 MILES

TOTAL LENGTH TIP PROJECT R-4060 = 0.650 MILES

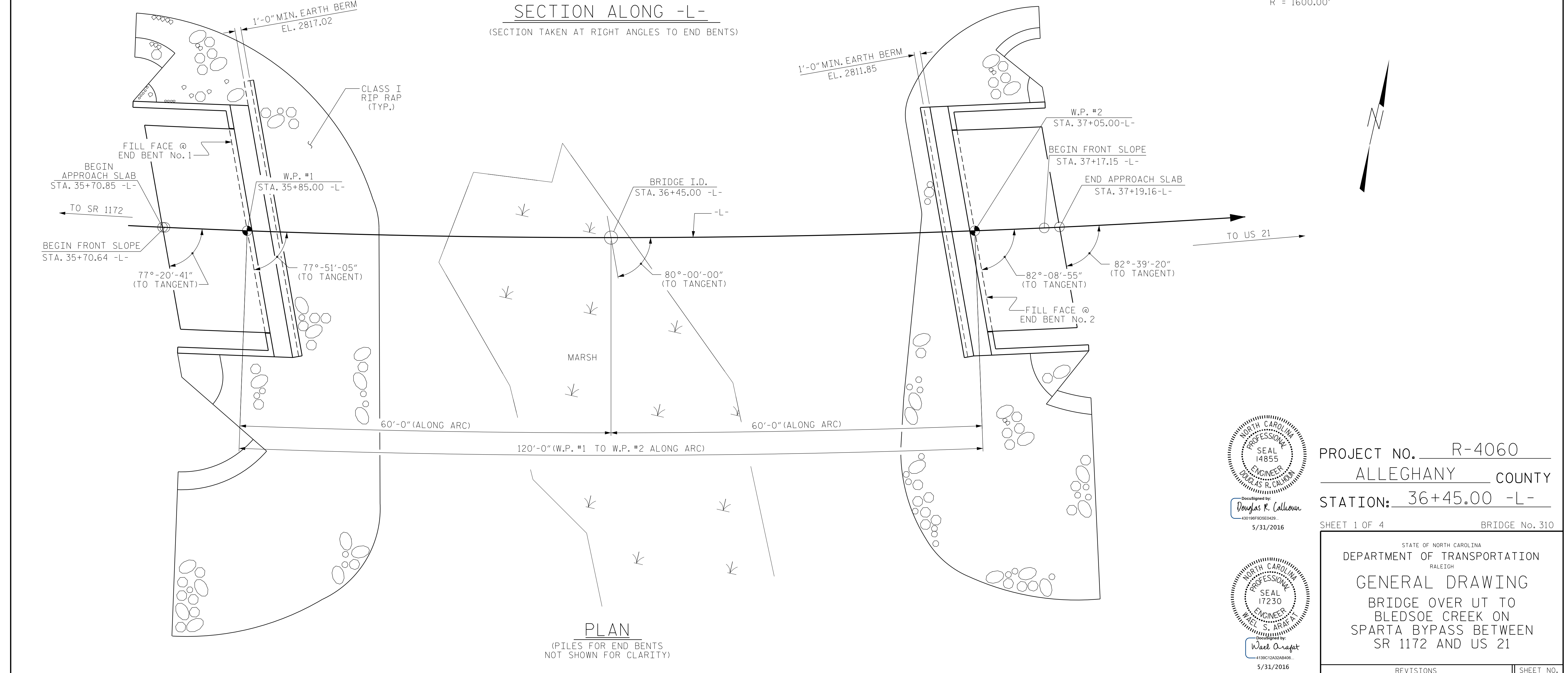
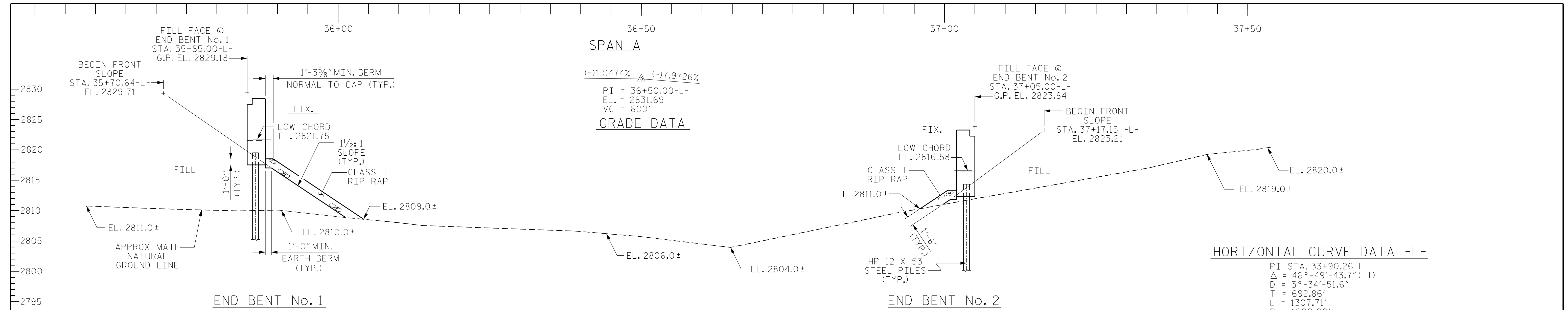
Prepared in the Office of:
DIVISION OF HIGHWAYS
 STRUCTURES MANAGEMENT UNIT
 1000 BIRCH RIDGE DR.
 RALEIGH, N.C. 27610

2012 STANDARD SPECIFICATIONS

LETTING DATE : AUGUST 16, 2016

D. R. CALHOUN, P.E.
PROJECT ENGINEER

W. S. ARAFAT, P.E.
PROJECT DESIGN ENGINEER



DRAWN BY: H. T. BARBOUR DATE: 10-1-14
 CHECKED BY: V. X. NGUYEN DATE: 3-21-16
 DESIGN ENGINEER OF RECORD: S. T. CHAMPION DATE: 4-6-16



Designed by:
 Douglas R. Calloway
 430196P0506429
 5/31/2016



Designed by:
 Wael Arafa
 4139C12A33A8406
 5/31/2016

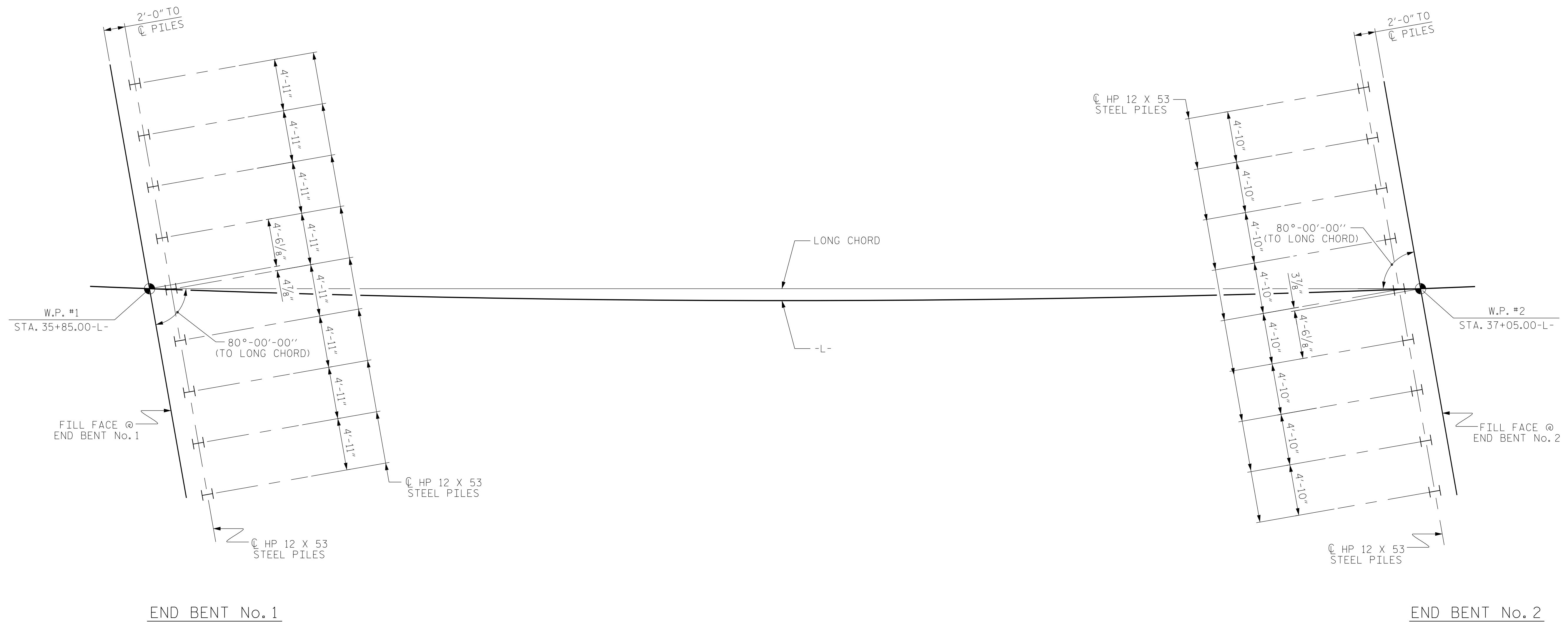
PROJECT NO. R-4060
 ALLEGHANY COUNTY
 STATION: 36+45.00 -L-

SHEET 1 OF 4 BRIDGE No. 310

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 BRIDGE OVER UT TO
 BLEDSOE CREEK ON
 SPARTA BYPASS BETWEEN
 SR 1172 AND US 21

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

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



FOUNDATION LAYOUT
DIMENSIONS LOCATING PILES ARE TO THE PILE C

NOTES

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

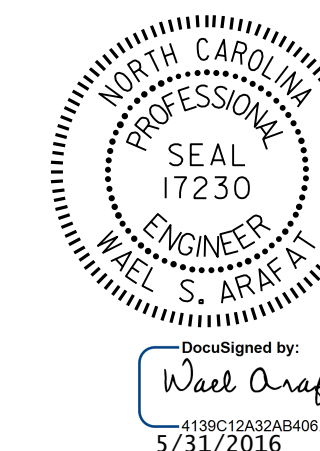
PILES AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 105 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 175 TONS PER PILE.

PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 105 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 175 TONS PER PILE.

OBSERVE A 1 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO THE BOTTOM OF CAP ELEVATION BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO.1 AND 2.

PROJECT NO. R-4060
ALLEGHANY COUNTY
STATION: 36+45.00 -L-

SHEET 2 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE OVER UT TO
BLEDSOE CREEK ON
SPARTA BYPASS BETWEEN
SR 1172 AND US 21

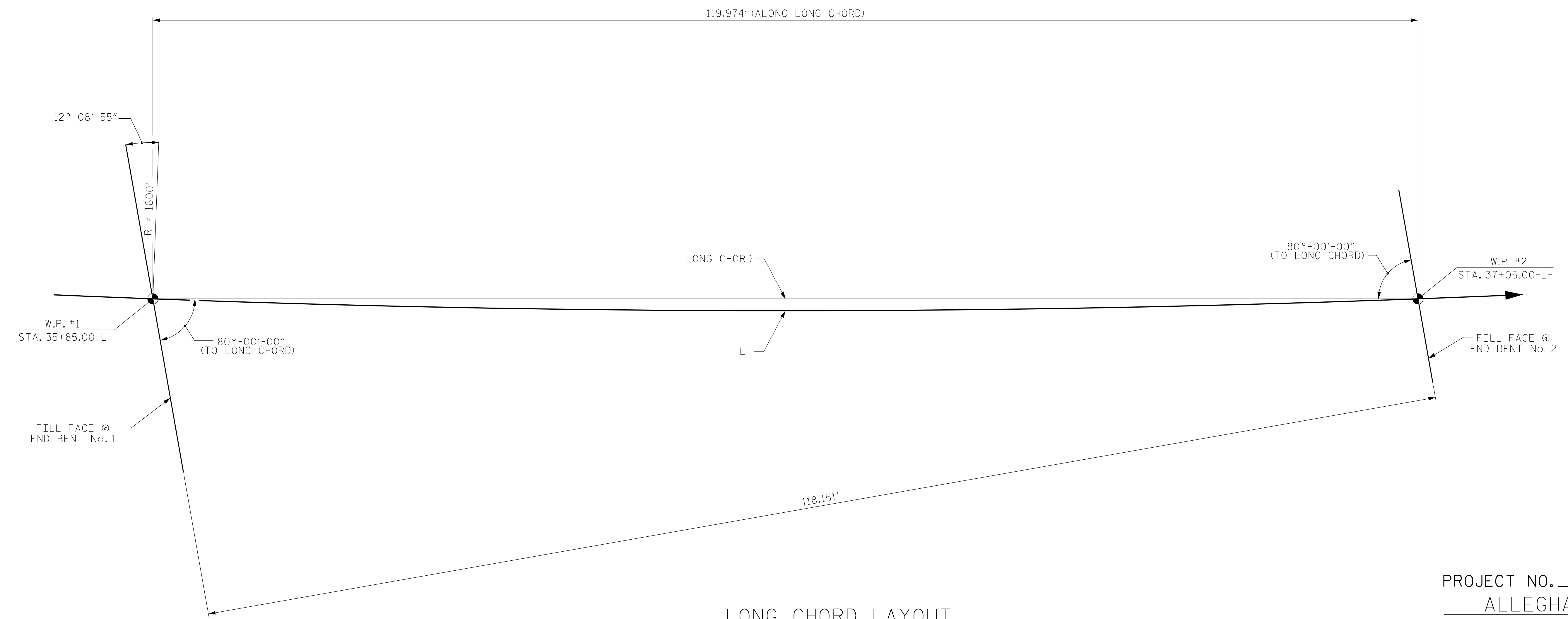
DRAWN BY : H.T. BARBOUR DATE : 12-04-15
CHECKED BY : V.X. NGUYEN DATE : 3-21-16
DESIGN ENGINEER OF RECORD: S.T. CHAMPION DATE : 4-6-16

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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

HORIZONTAL CURVE DATA -L-

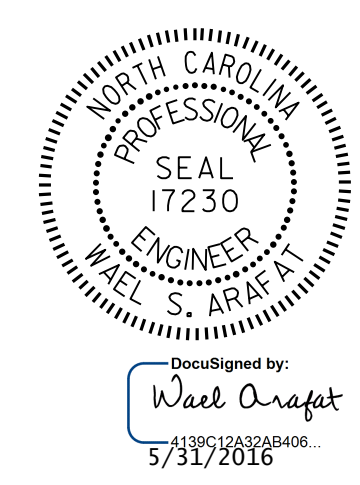
PI STA. 33+90.26-L-
 $\Delta = 46^\circ-49'-43.7''$ (LT)
 $D = 3^\circ-34'-51.6''$
 $T = 692.86'$
 $L = 1307.71'$
 $R = 1600.00'$



LONG CHORD LAYOUT

PROJECT NO. R-4060
ALLEGHANY COUNTY
 STATION: 36+45.00 -L-

SHEET 3 OF 4



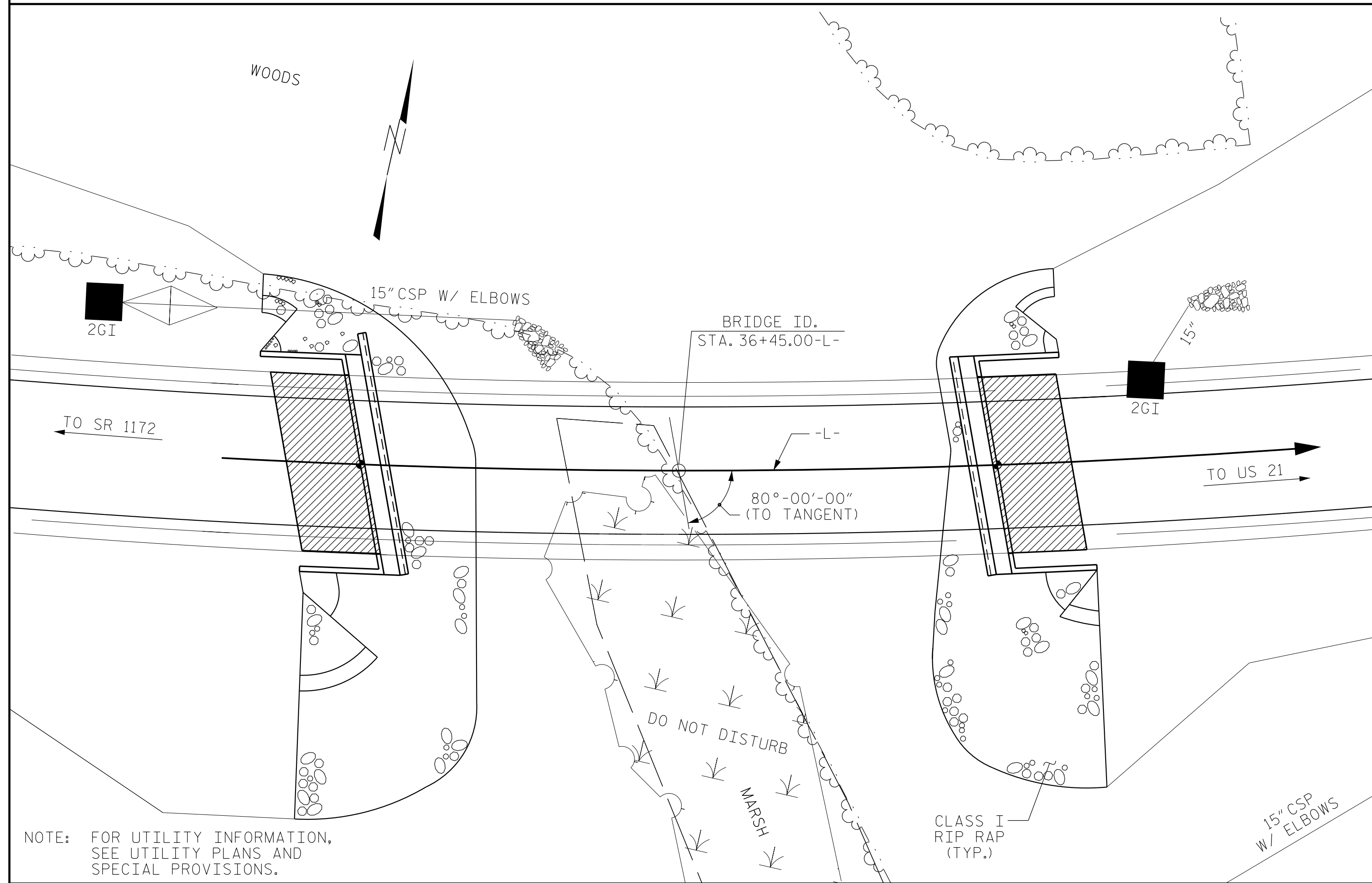
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 BRIDGE OVER UT TO
 BLEDSOE CREEK ON
 SPARTA BYPASS BETWEEN
 SR 1172 AND US 21

DRAWN BY : H.T. BARBOUR DATE : 12-04-15
 CHECKED BY : V.X. NGUYEN DATE : 3-21-16
 DESIGN ENGINEER OF RECORD: S.T. CHAMPION DATE : 4-6-16

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

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

BENCHMARK #2: STA. 36+71.77-L-, 276.5 FT. (RT) EL. 2795.14 NAVD88



LOCATION SKETCH

HYDRAULIC DATA

DESIGN DISCHARGE..... 47 CFS
 FREQUENCY OF DESIGN FLOOD..... 50 YEARS
 DESIGN HIGH WATER ELEVATION... N/A
 DRAINAGE AREA..... 10 AC.
 BASE DISCHARGE(0100)..... 50 CFS
 BASE HIGH WATER ELEVATION..... N/A

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE..... N/A
 FREQUENCY OF OVERTOPPING FLOOD... 500 YR.
 OVERTOPPING FLOOD ELEVATION..... N/A

NOTES

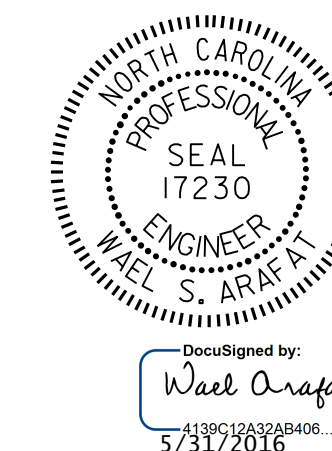
- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- 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.
- THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	MODIFIED 72" PRESTRESSED CONCRETE GIRDERS		HP 12 X 53 STEEL PILES		CONCRETE BARRIER RAIL	RIP RAP CLASS I 1'-6" THICK	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS
	SO. FT.	SO. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	NO.	LIN. FT.	LIN. FT.	TON	SO. YDS.	LUMP SUM
SUPERSTRUCTURE	4229	4242		LUMP SUM		4	469.75			236.62			LUMP SUM
END BENT NO. 1			43.7		7137			9	250		280	310	
END BENT NO. 2			42.5		6950			9	230		200	220	
TOTAL	4229	4242	86.2	LUMP SUM	14087	4	469.75	18	480	236.62	480	530	LUMP SUM

PROJECT NO. R-4060
ALLEGHANY COUNTY
 STATION: 36+45.00 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE OVER UT TO
 BLEDSOE CREEK ON
 SPARTA BYPASS BETWEEN
 SR 1172 AND US 21

DRAWN BY : H. T. BARBOUR DATE : 11-25-15
 CHECKED BY : V. X. NGUYEN DATE : 3-21-16

DOCUMENT NOT CONSIDERED
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 SIGNATURES COMPLETED

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

LOAD FACTORS:

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

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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVE-LOAD FACTORS (γ_{LL})	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	①	1.05	--	1.75	0.863	1.56	A	EL	58.028	0.935	1.31	A	I	5.802	0.80	0.935	1.05	A	I	58.017		
	HL-93 (OPERATING)	N/A		1.70	--	1.35	0.863	2.02	A	EL	58.028	0.935	1.70	A	I	5.802	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.53	54.957	1.75	0.863	2.25	A	EL	58.028	0.935	1.83	A	I	5.802	0.80	0.761	1.53	A	I	58.017		
	HS-20 (OPERATING)	36.000		2.37	85.476	1.35	0.863	2.92	A	EL	58.028	0.935	2.37	A	I	5.802	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.69	49.815	1.40	0.863	6.80	A	EL	58.028	0.935	5.72	A	I	5.802	0.80	0.761	3.69	A	I	58.017	
		SNGARBS2	20.000		2.64	52.850	1.40	0.863	4.87	A	EL	58.028	0.935	3.98	A	I	5.802	0.80	0.761	2.64	A	I	58.017	
		SNAGRIS2	22.000		2.46	54.119	1.40	0.863	4.53	A	EL	58.028	0.935	3.66	A	I	5.802	0.80	0.761	2.46	A	I	58.017	
		SNCOTTS3	27.250		1.83	49.951	1.40	0.863	3.38	A	EL	58.028	0.935	2.85	A	I	5.802	0.80	0.761	1.83	A	I	58.017	
		SNAGGRS4	34.925		1.49	52.051	1.40	0.863	2.75	A	EL	58.028	0.935	2.30	A	I	5.802	0.80	0.761	1.49	A	I	58.017	
		SNS5A	35.550		1.46	51.909	1.40	0.863	2.69	A	EL	58.028	0.935	2.30	A	I	5.802	0.80	0.761	1.46	A	I	58.017	
		SNS6A	39.950		1.32	52.854	1.40	0.863	2.44	A	EL	58.028	0.935	2.08	A	I	5.802	0.80	0.761	1.32	A	I	58.017	
	SNS7B	42.000		1.26	52.890	1.40	0.863	2.32	A	EL	58.028	0.935	2.01	A	I	5.802	0.80	0.761	1.26	A	I	58.017		
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.61	53.079	1.40	0.863	2.96	A	EL	58.028	0.935	2.49	A	I	5.802	0.80	0.761	1.61	A	I	58.017	
		TNT4A	33.075		1.61	53.285	1.40	0.863	2.97	A	EL	58.028	0.935	2.45	A	I	5.802	0.80	0.761	1.61	A	I	58.017	
		TNT6A	41.600		1.30	54.155	1.40	0.863	2.40	A	EL	58.028	0.935	2.09	A	I	5.802	0.80	0.761	1.30	A	I	58.017	
		TNT7A	42.000		1.30	54.608	1.40	0.863	2.40	A	EL	58.028	0.935	2.06	A	I	5.802	0.80	0.761	1.30	A	I	58.017	
		TNT7B	42.000		1.33	55.670	1.40	0.863	2.44	A	EL	58.028	0.935	1.98	A	I	5.802	0.80	0.761	1.33	A	I	58.017	
		TNAGRIT4	43.000		1.28	54.844	1.40	0.863	2.35	A	EL	58.028	0.935	1.93	A	I	5.802	0.80	0.761	1.28	A	I	58.017	
TNAGT5A		45.000		1.21	54.427	1.40	0.863	2.23	A	EL	58.028	0.935	1.88	A	I	5.802	0.80	0.761	1.21	A	I	58.017		
TNAGT5B	45.000	③	1.20	54.048	1.40	0.863	2.21	A	EL	58.028	0.935	1.84	A	I	5.802	0.80	0.761	1.20	A	I	58.017			

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.

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

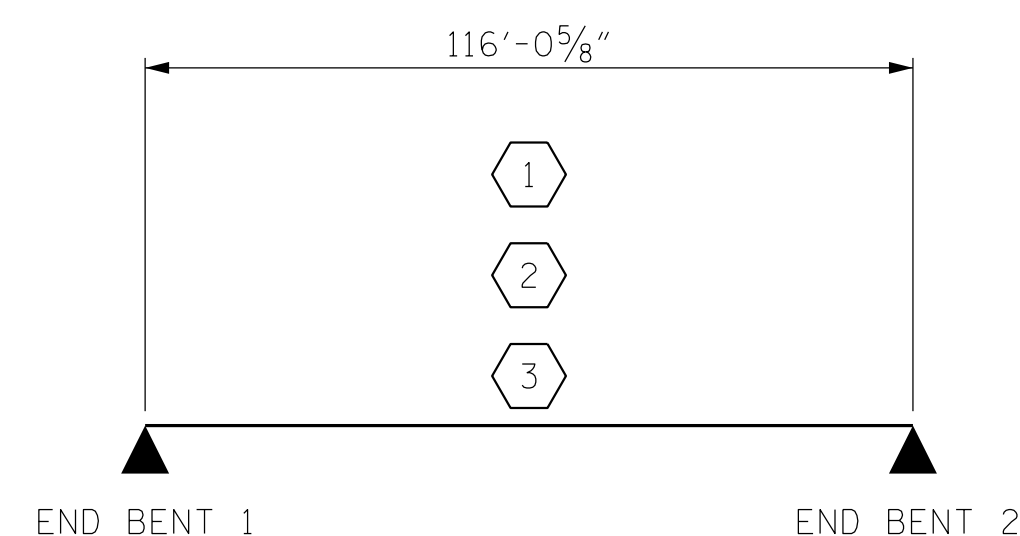
② DESIGN LOAD RATING (HS-20)

③ LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

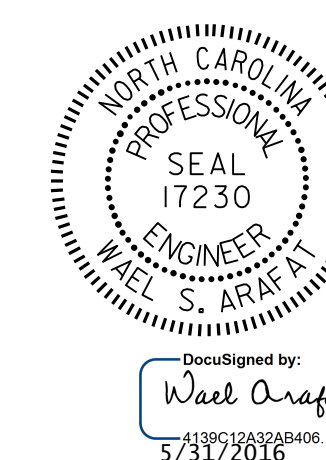
GIRDER LOCATION

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



LRFR SUMMARY

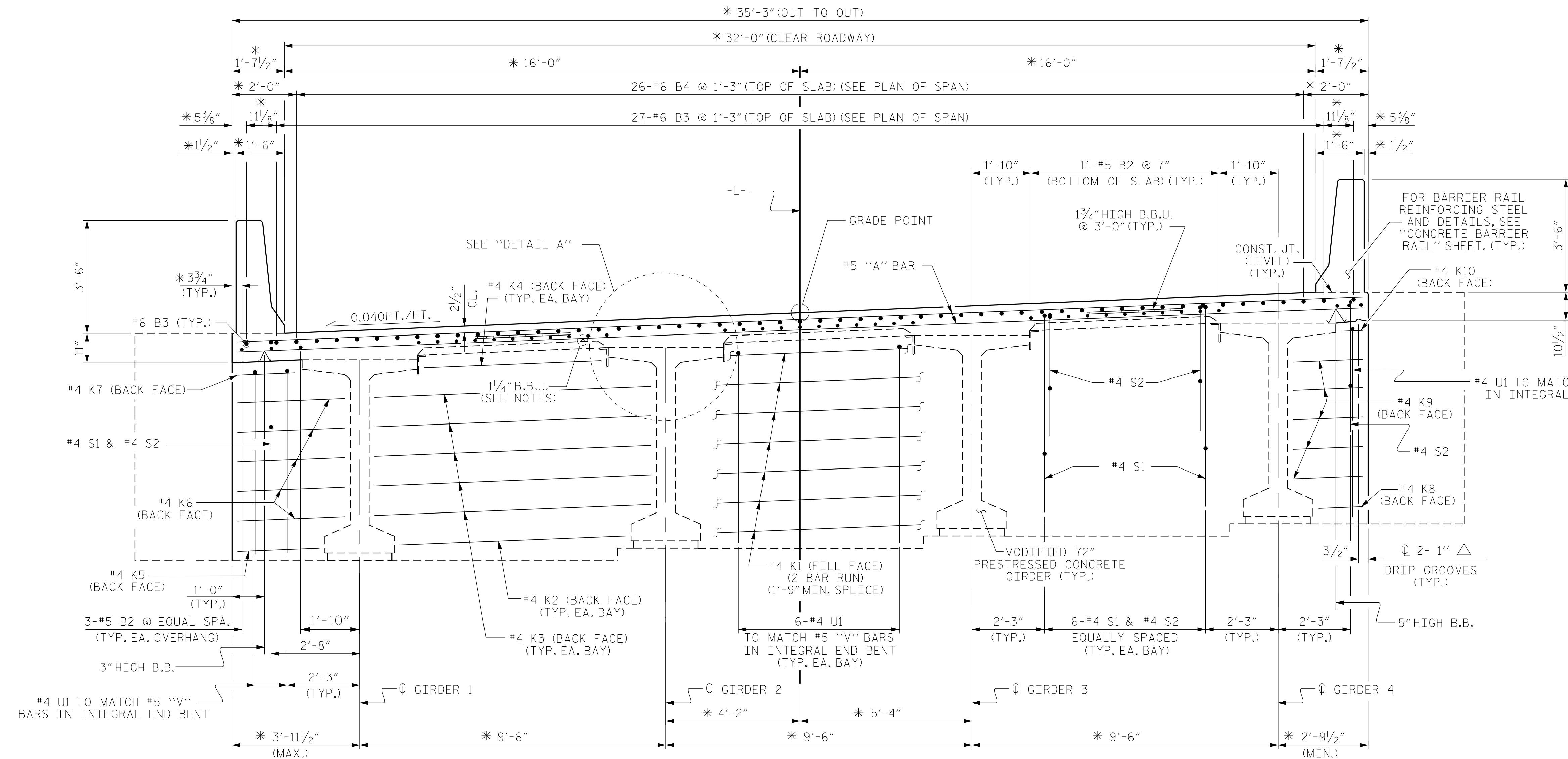
PROJECT NO. R-4060
ALLEGHANY COUNTY
 STATION: 36+45.00 -L-



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. S-5					
TOTAL SHEETS 26					

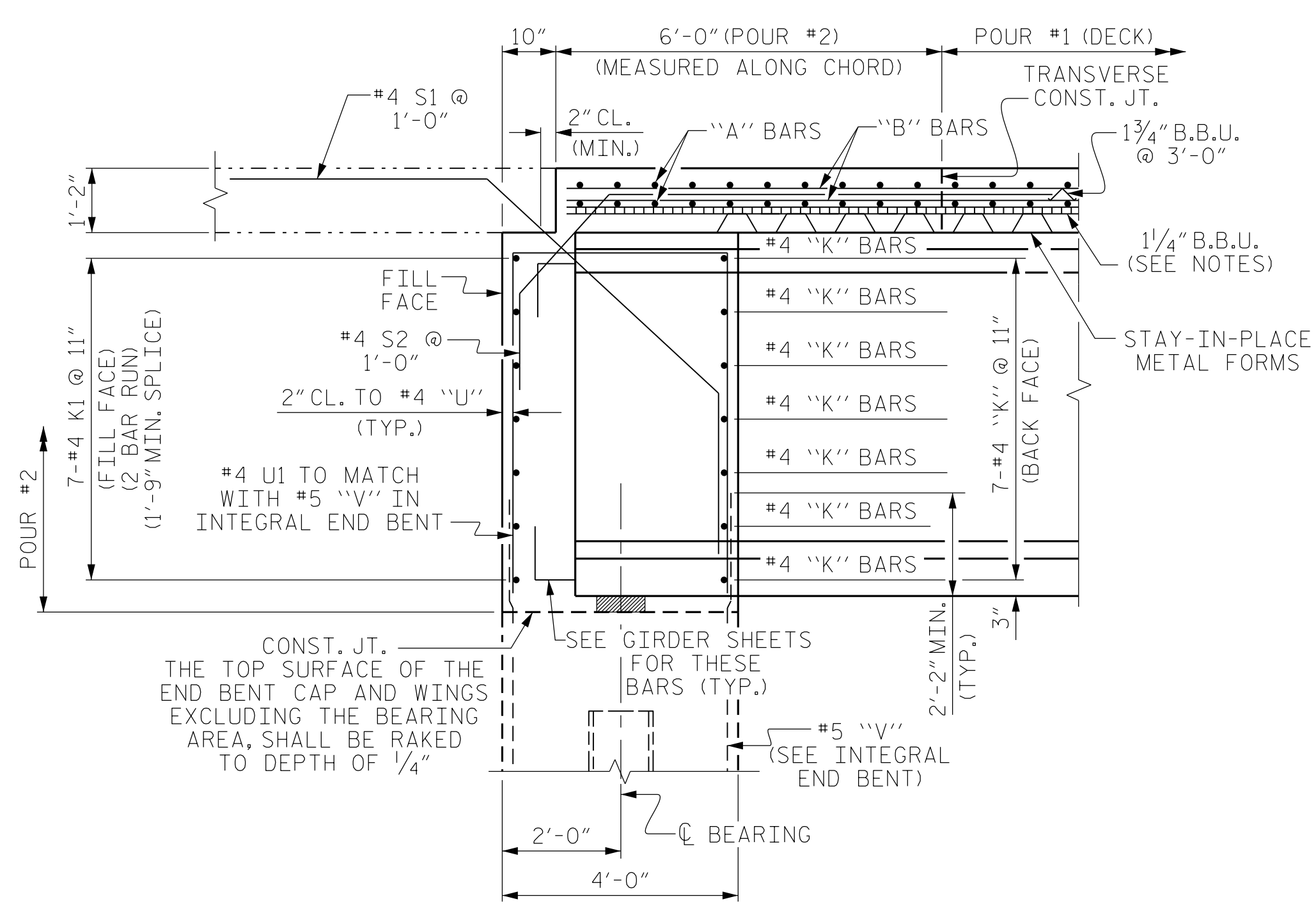
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

ASSEMBLED BY : V.X. NGUYEN DATE : 3/22/16
 CHECKED BY : H.T. BARBOUR DATE : 3/22/16
 DRAWN BY : MAA 1/08 REV. 11/2/08RR MAA/GM
 CHECKED BY : GM/DI 2/08 REV. 10/1/11 MAA/GM



TYPICAL SECTION @ INTEGRAL END BENT

*DIMENSIONS ARE RADIAL THROUGH THE WORKPOINT.



SECTION AT INTEGRAL END BENT

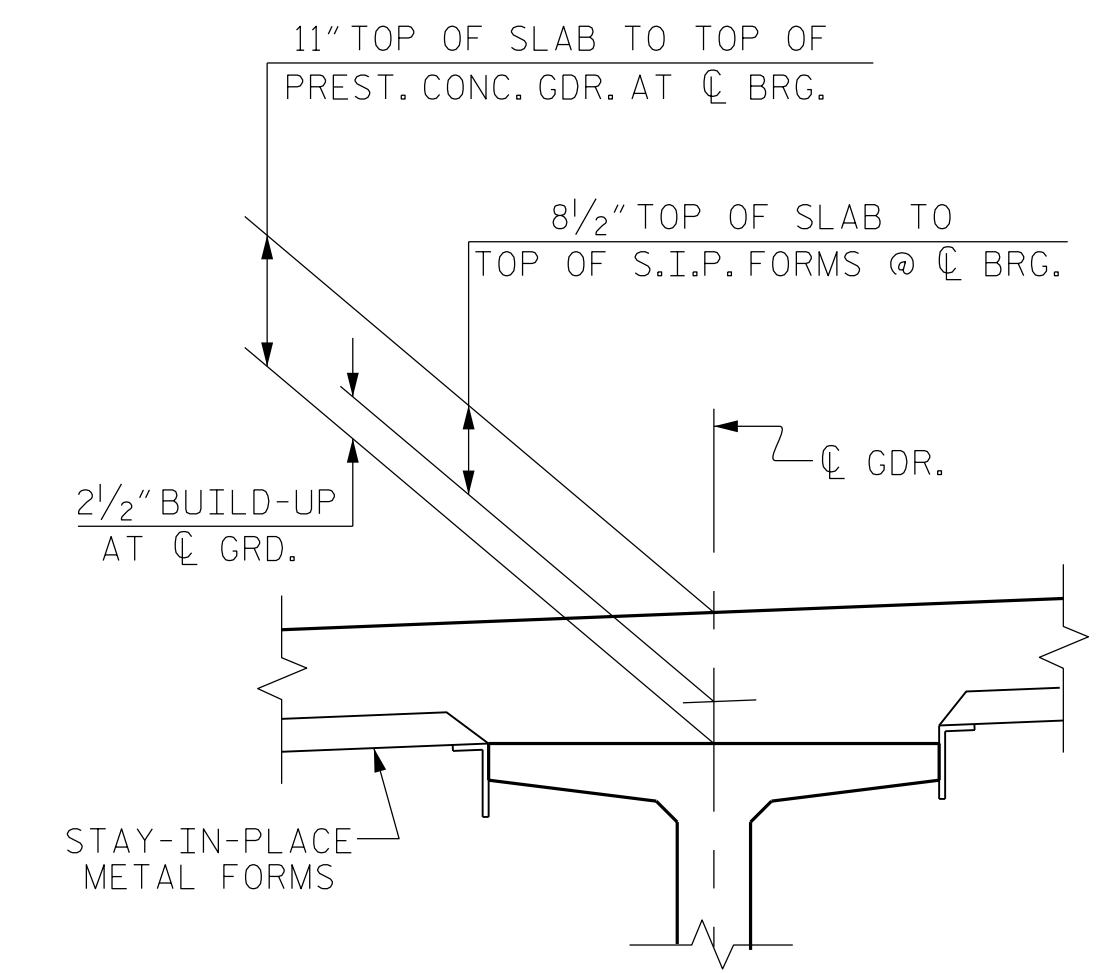
NOTES

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

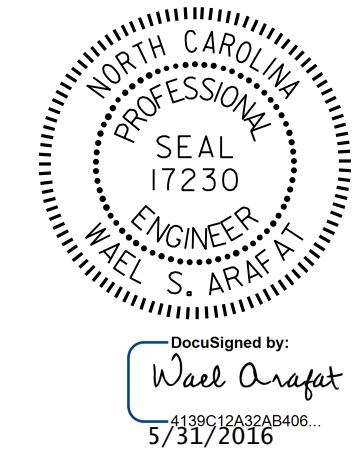
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.



DETAIL A

PROJECT NO. R-4060
 ALLEGHANY COUNTY
 STATION: 36+45.00 -L-

SHEET 1 OF 2

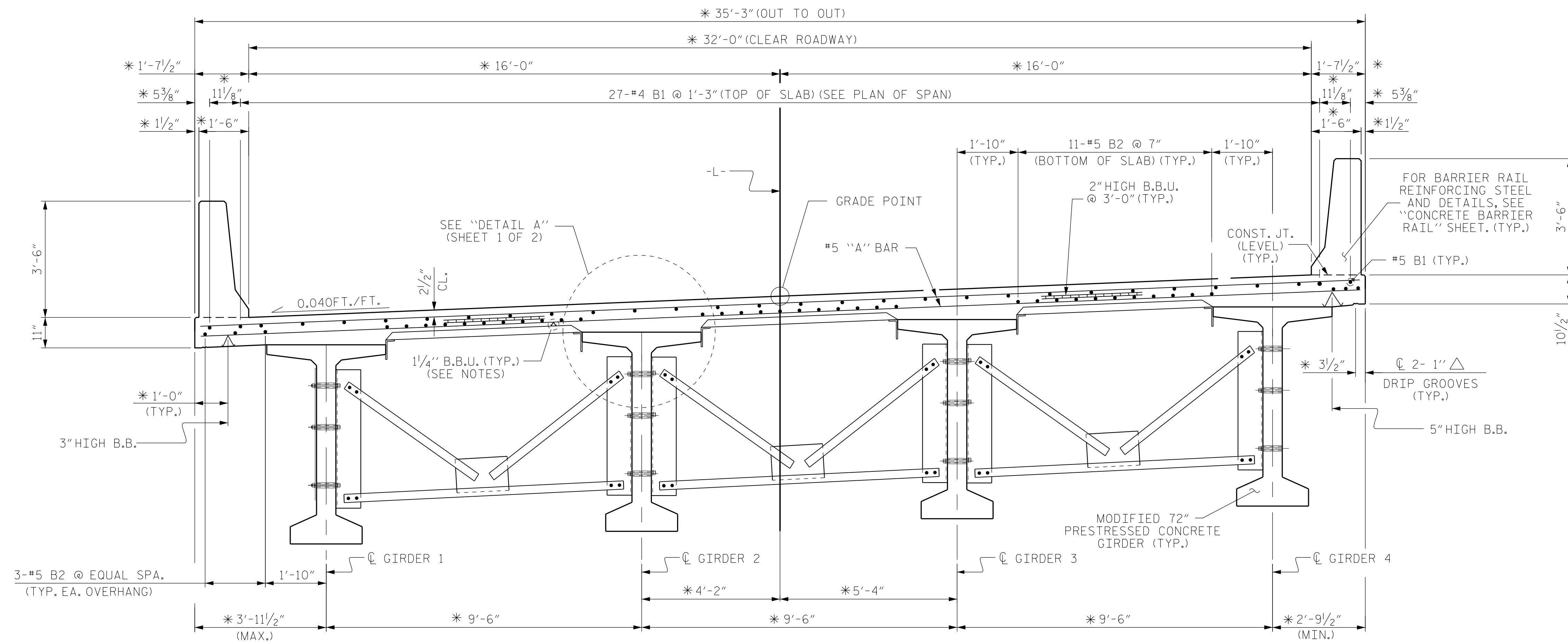


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 TYPICAL SECTION

DRAWN BY: H. T. BARBOUR DATE: 11-9-15
 CHECKED BY: V. X. NGUYEN DATE: 11-15
 DESIGN ENGINEER OF RECORD: S. I. CHAMPION DATE: 12-20-15

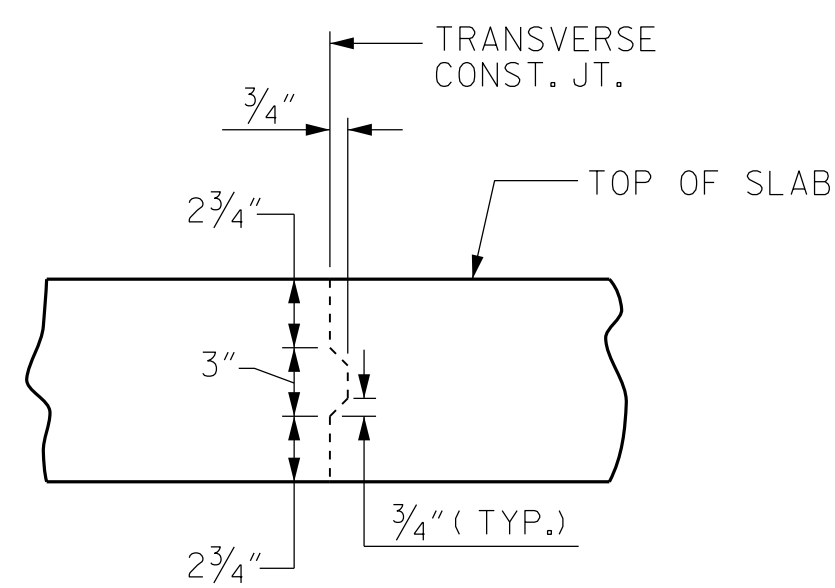
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			26



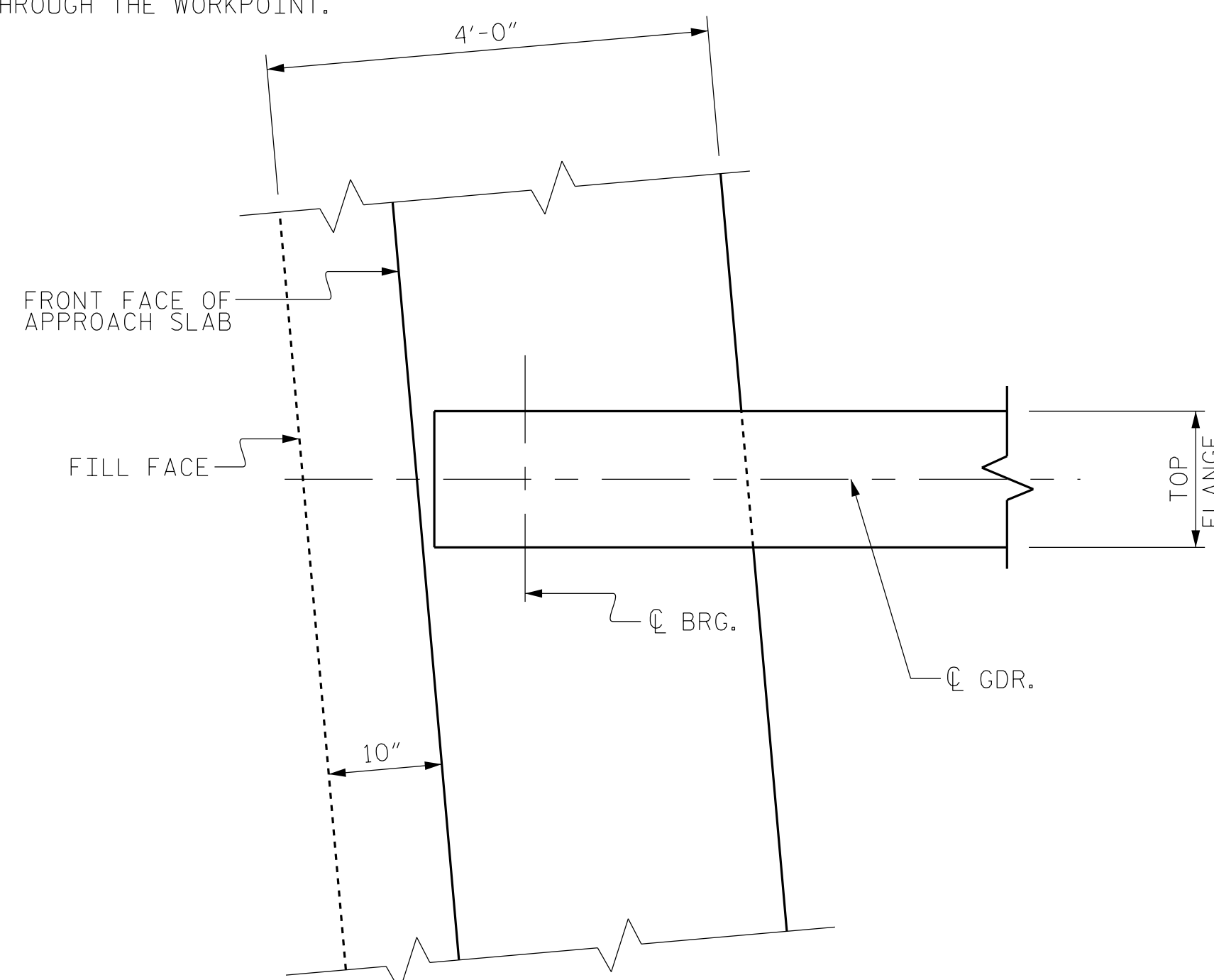
TYPICAL SECTION @ INTERMEDIATE DIAPHRAGMS

* DIMENSIONS ARE RADIAL THROUGH THE WORKPOINT.



TRANSVERSE CONSTRUCTION JOINT DETAIL

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



PLAN OF GIRDER AT INTEGRAL END BENT

PROJECT NO. R-4060
ALLEGHANY COUNTY
 STATION: 36+45.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 TYPICAL SECTION



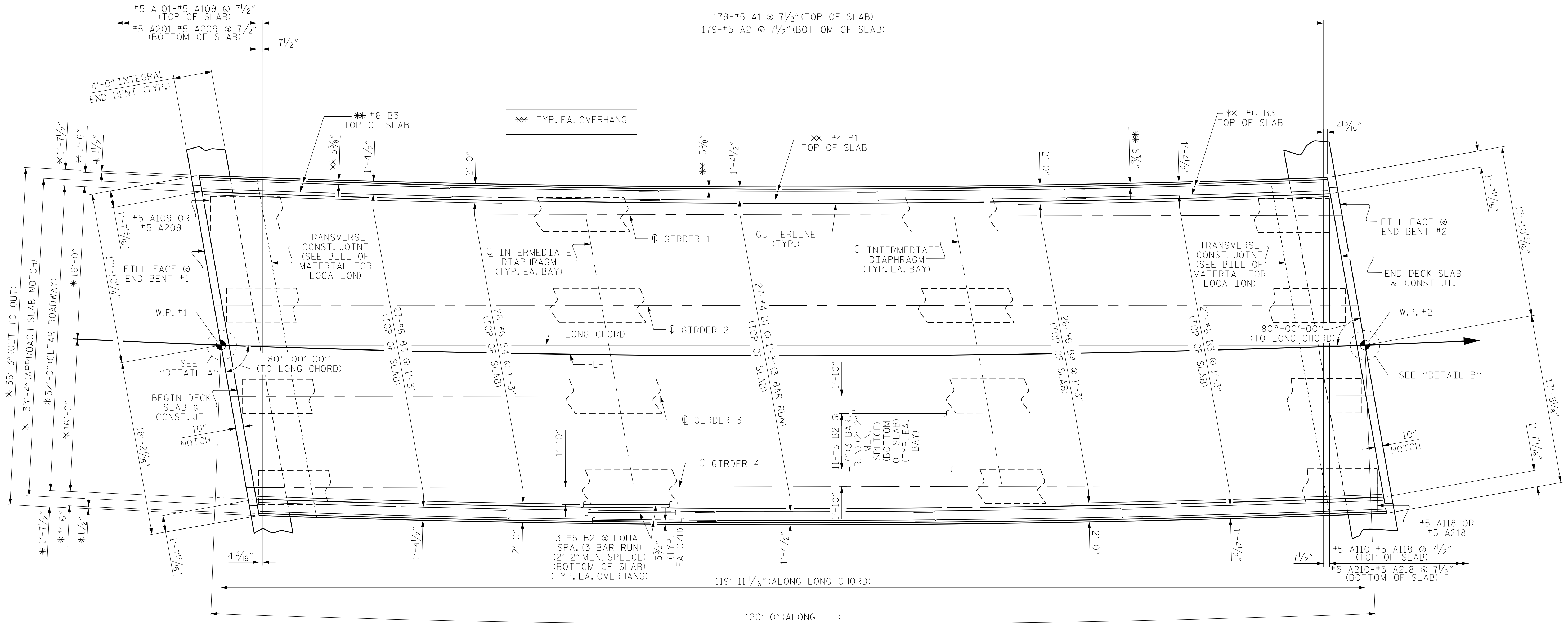
DocuSigned by:
 Will Arfat
 5/31/2016

DRAWN BY: H. T. BARBOUR DATE: 11-9-15
 CHECKED BY: V. X. NGUYEN DATE: 11-15
 DESIGN ENGINEER OF RECORD: S. I. CHAMPION DATE: 12-20-15

27-MAY-2016 09:23
 *****SDCN*****
 warafat AT SD-290338

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

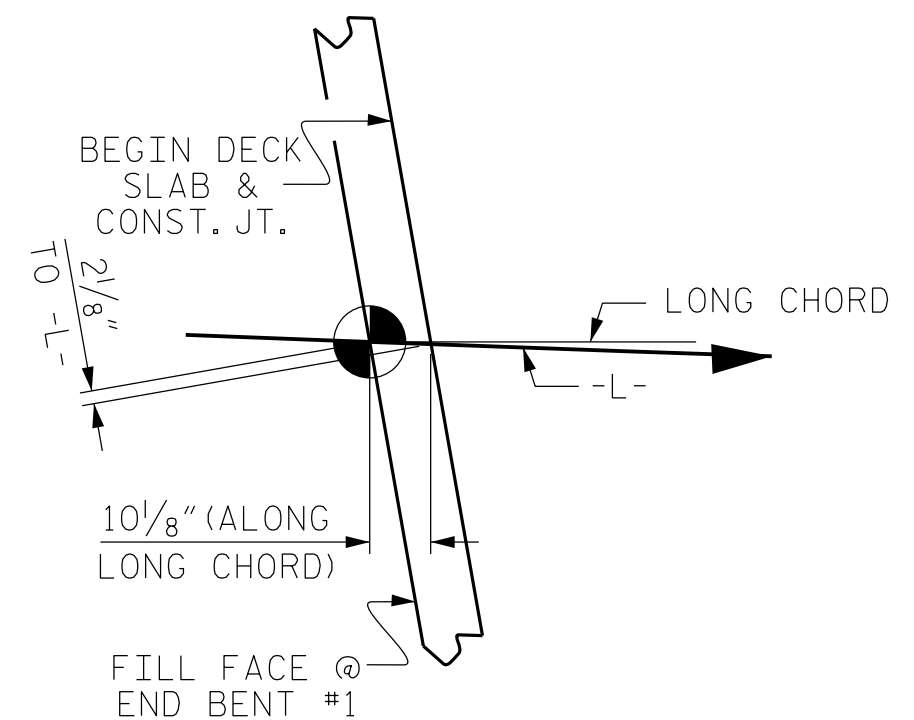
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			26



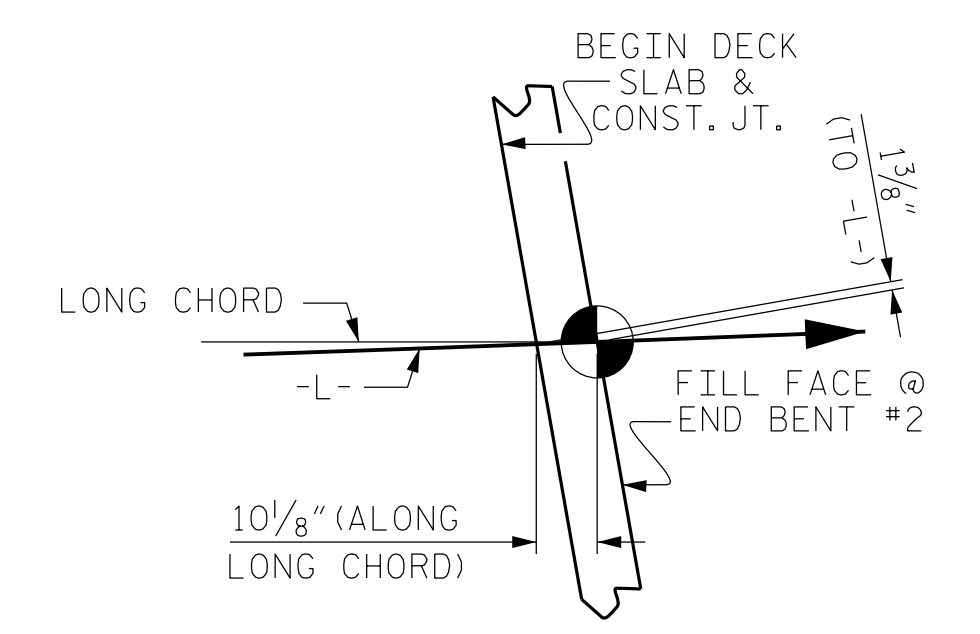
PLAN OF SPAN

FOR REINFORCING STEEL IN ABUTMENTS, SEE "PLAN OF SPAN DETAILS" SHEET.

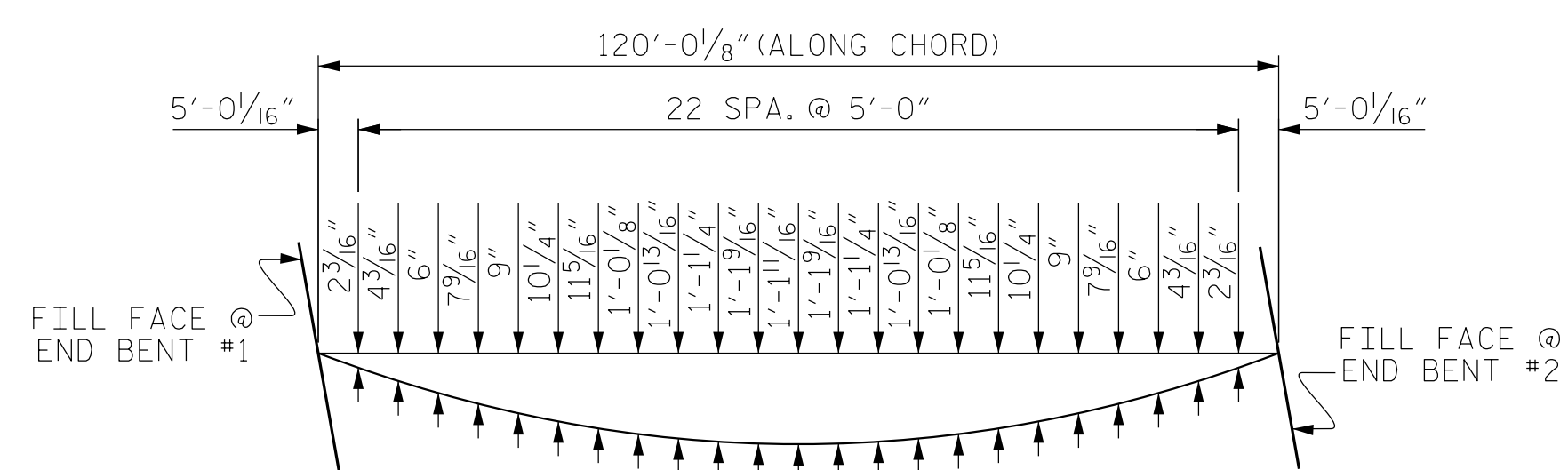
* DIMENSIONS ARE TO CIRCLES CONCENTRIC WITH -L- GIRDERS ARE ON THE CHORDS OF THESE CONCENTRIC CIRCLES.



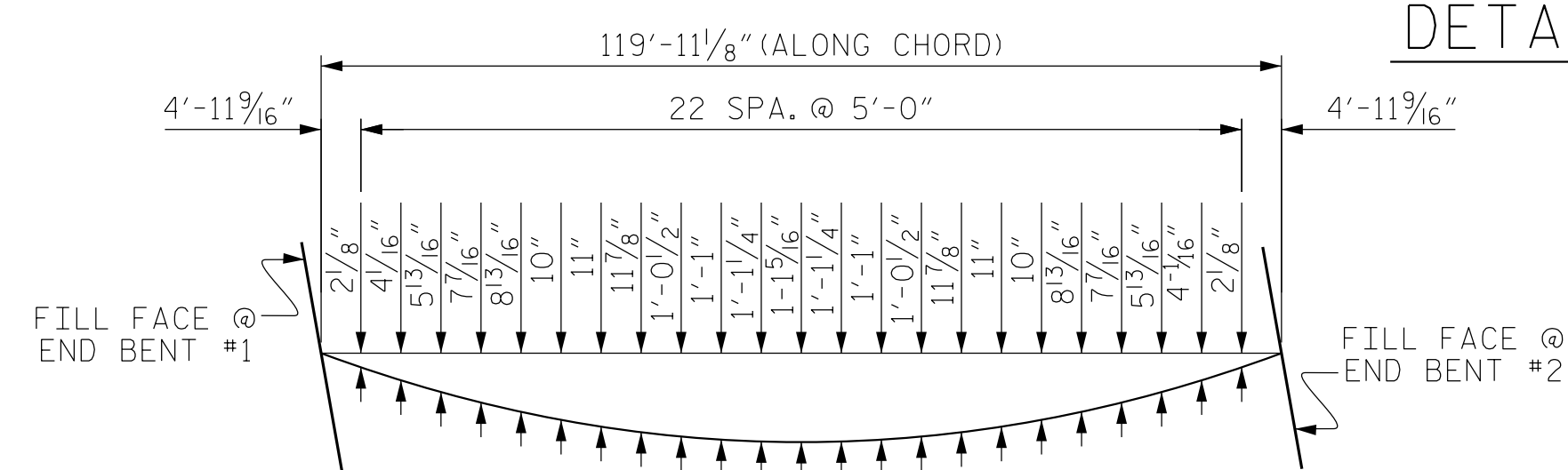
DETAIL A



DETAIL B



LEFT SIDE



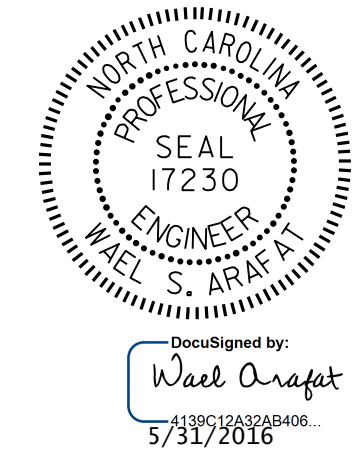
RIGHT SIDE

PROJECT NO. R-4060
ALLEGHANY COUNTY
 STATION: 36+45.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

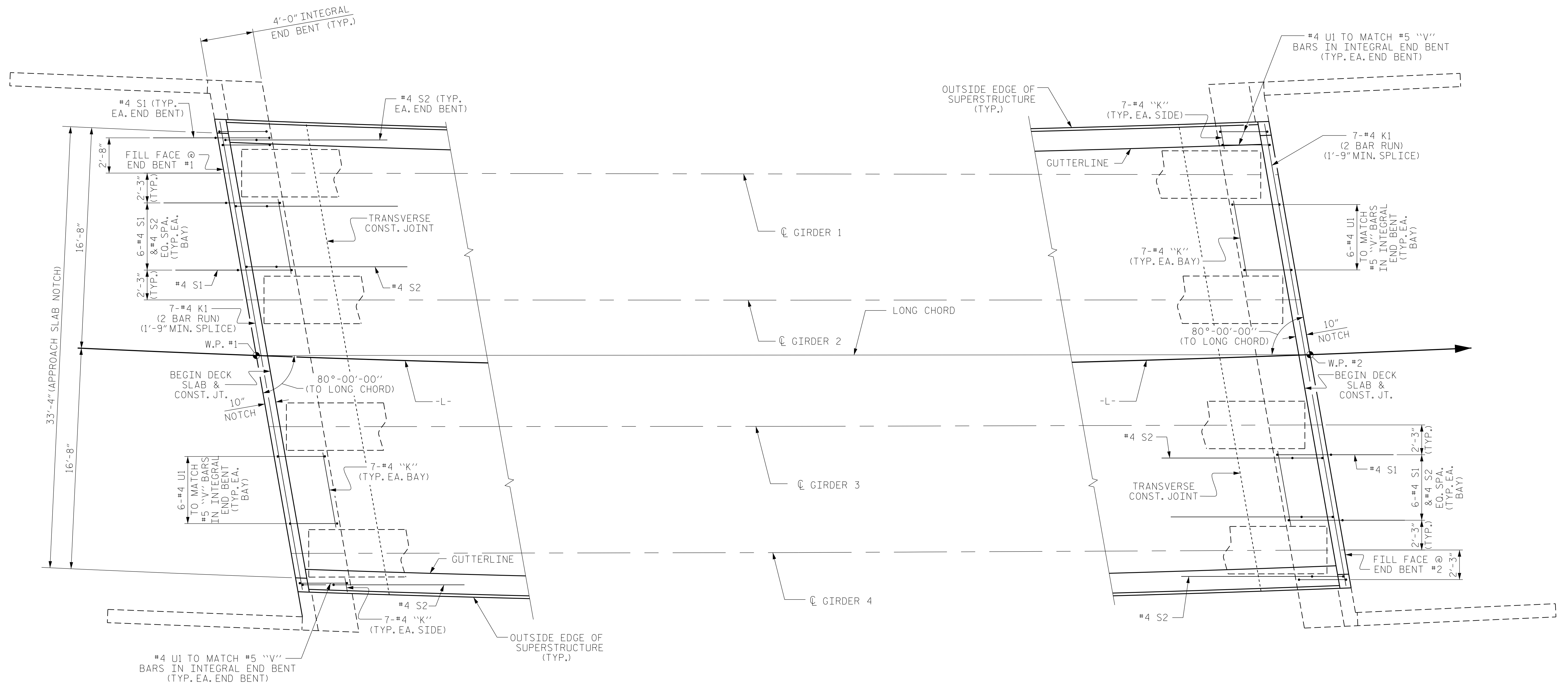
**SUPERSTRUCTURE
 PLAN OF SPAN A**



DRAWN BY: H. T. BARBOUR DATE: 11-9-15
 CHECKED BY: V. X. NGUYEN DATE: 11-15
 DESIGN ENGINEER OF RECORD: S. I. CHAMPION DATE: 12-20-15

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 SIGNATURES COMPLETED

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NO.	BY:	DATE:	NO.	BY:	DATE:	S-8
1			3			TOTAL SHEETS
2			4			26



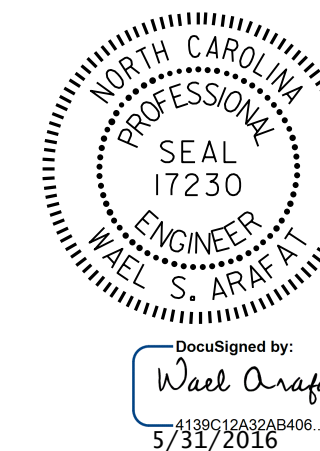
@ END BENT #1

@ END BENT #2

PLAN OF ABUTMENT WALLS

PROJECT NO. R-4060
ALLEGHANY COUNTY
 STATION: 36+45.00 -L-

SHEET 2 OF 2



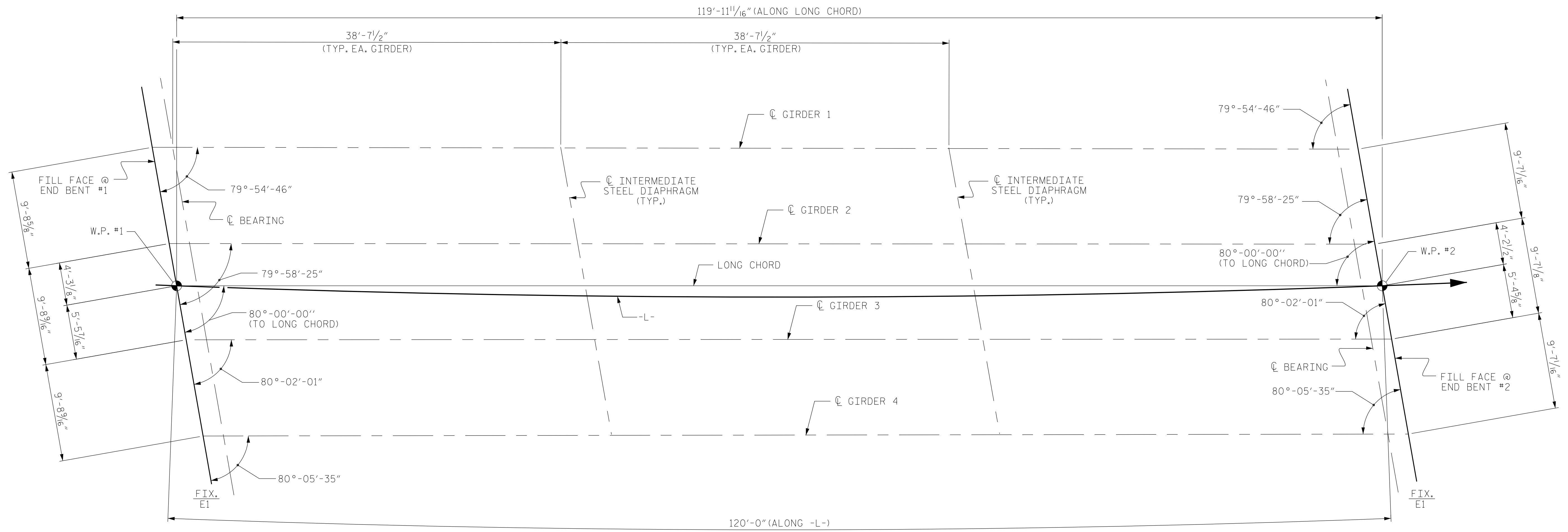
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 PLAN OF SPAN
 DETAILS

DRAWN BY : H. T. BARBOUR DATE : 11-10-15
 CHECKED BY : V. X. NGUYEN DATE : 11-15
 DESIGN ENGINEER OF RECORD: S. T. CHAMPION DATE : 12-20-15

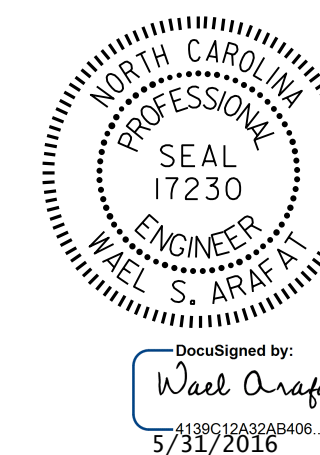
DOCUMENT NOT CONSIDERED
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			26



FRAMING PLAN

PROJECT NO. R-4060
ALLEGHANY COUNTY
 STATION: 36+45.00 -L-



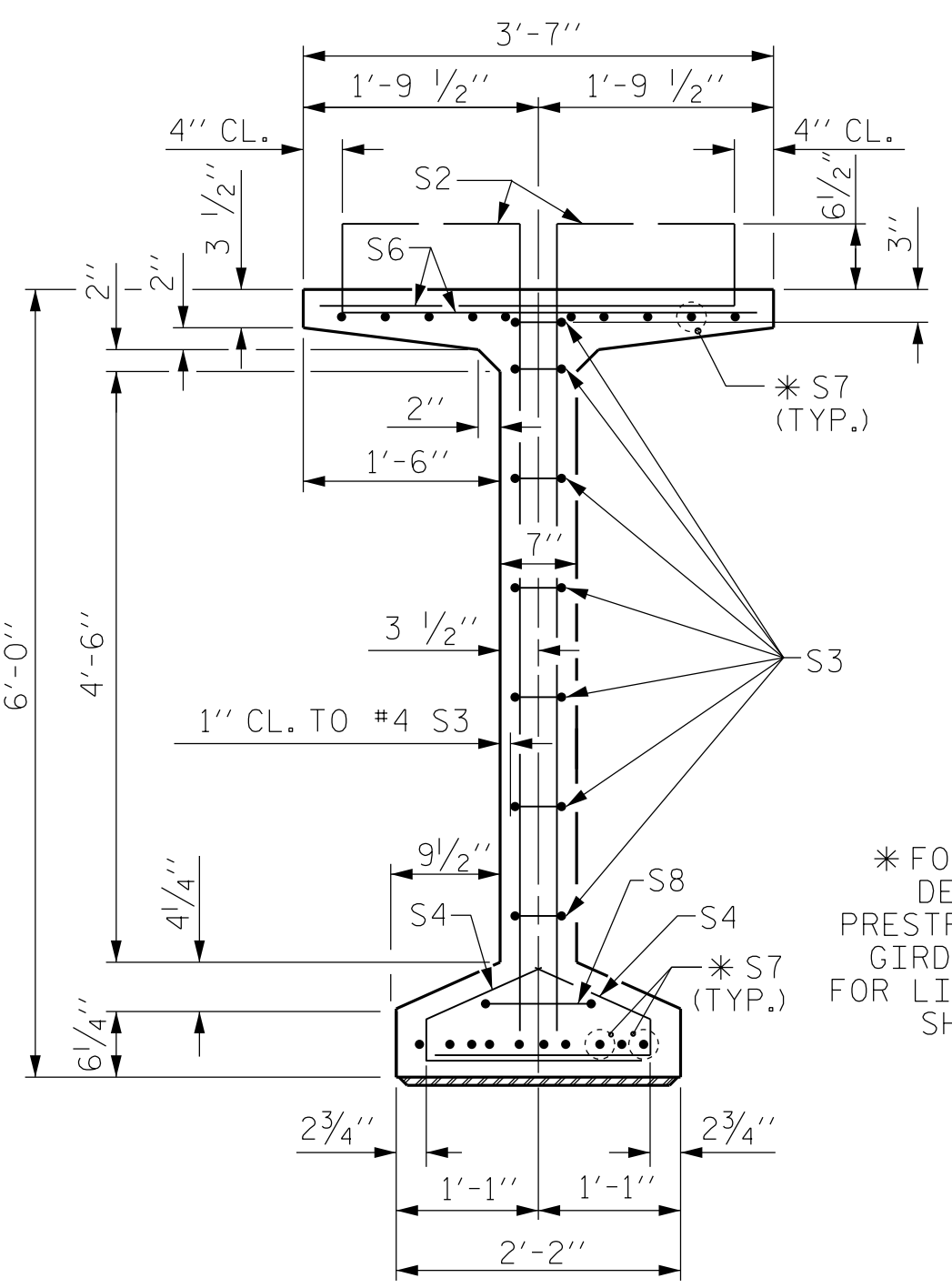
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE
 FRAMING PLAN

DRAWN BY : H. T. BARBOUR DATE : 11-17-15
 CHECKED BY : V. X. NGUYEN DATE : 11-15
 DESIGN ENGINEER OF RECORD: S. T. CHAMPION DATE : 12-20-15

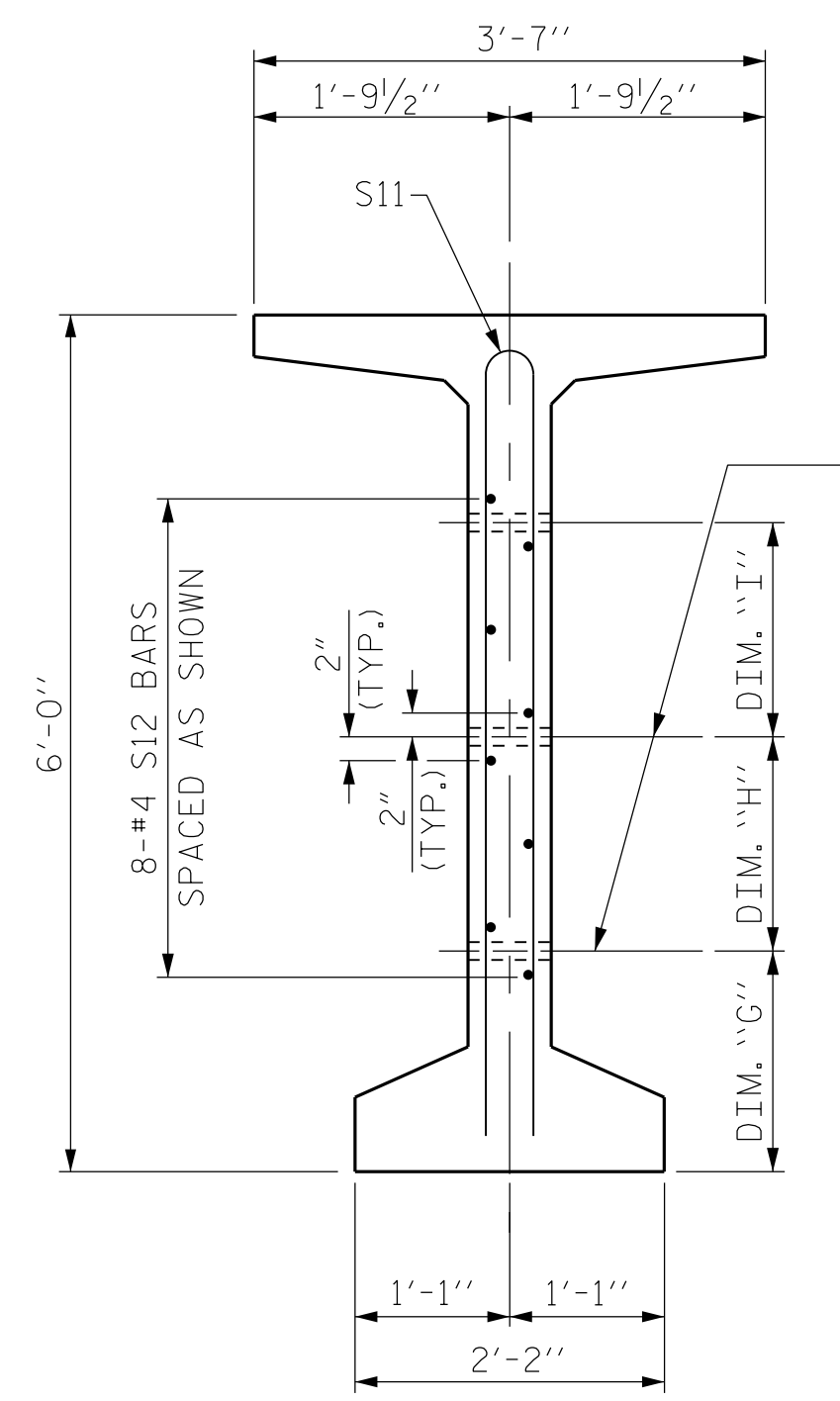
DOCUMENT NOT CONSIDERED
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 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			26



SECTION A-A

* FOR S7 BARS, SEE
DETAIL "C" OF
PRESTRESSED CONCRETE
GIRDER CONTINUOUS
FOR LIVE LOAD DETAILS
SHEET 2 OF 3.

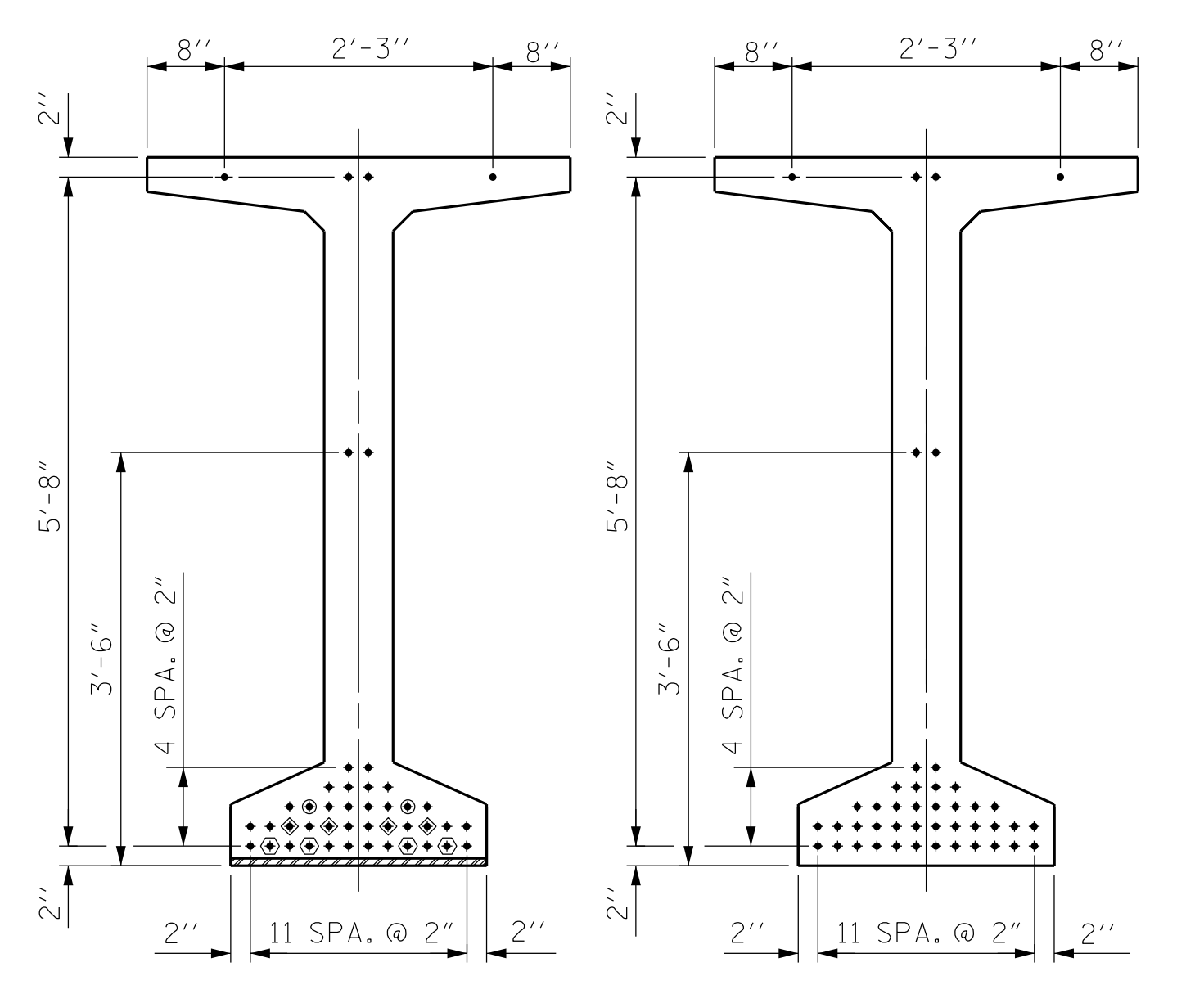


SECTION C-C

1/2" Ø FORMED
HOLE. SEE FRAMING
PLAN FOR LOCATION.
FOR DIM. "A", "B" & "C"
SEE "INTERMEDIATE
STEEL DIAPHRAGMS"
SHEET 3 OF 3.)

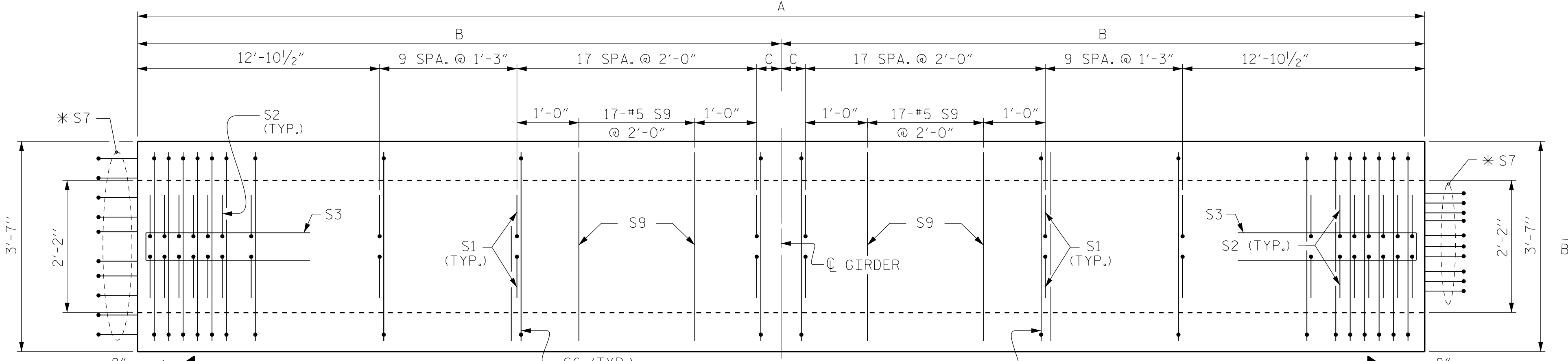
DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 14'-0" FROM END OF GIRDER

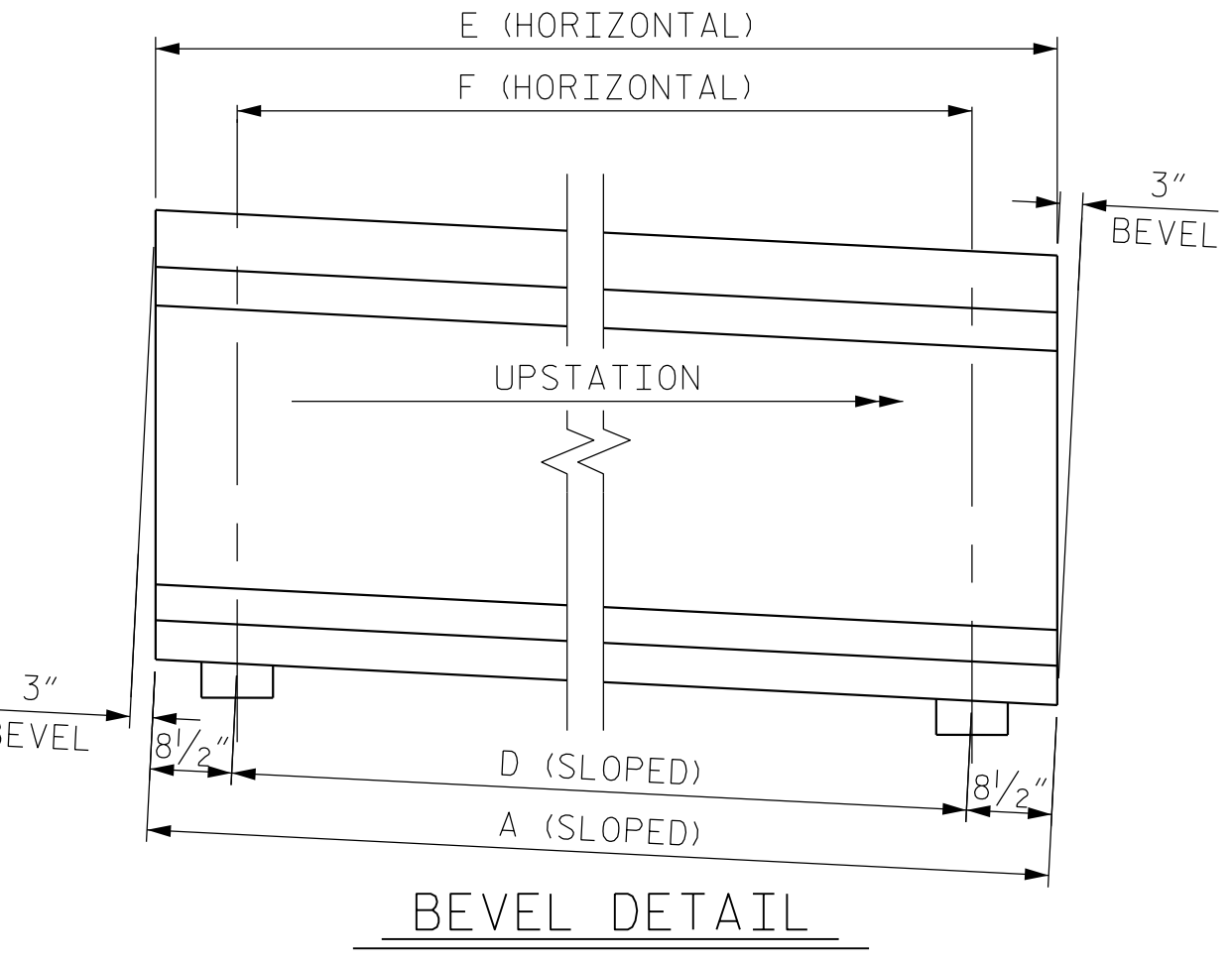


AT END OF GIRDER AT CL OF GIRDER

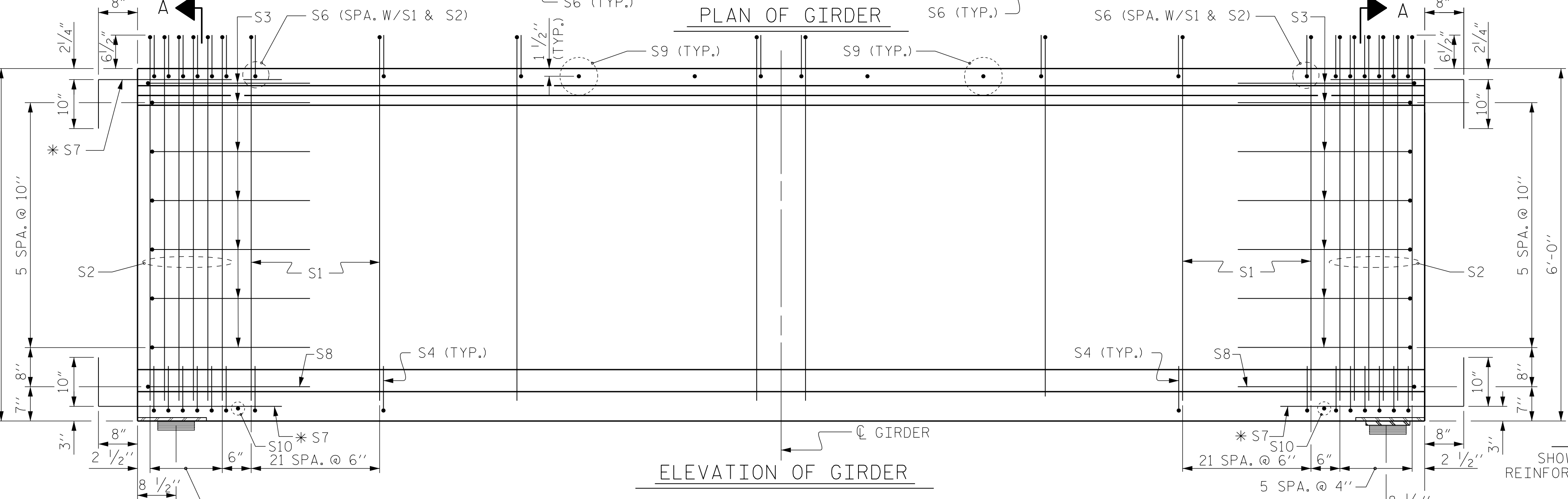
0.6" Ø LOW RELAXATION STRAND LAYOUT



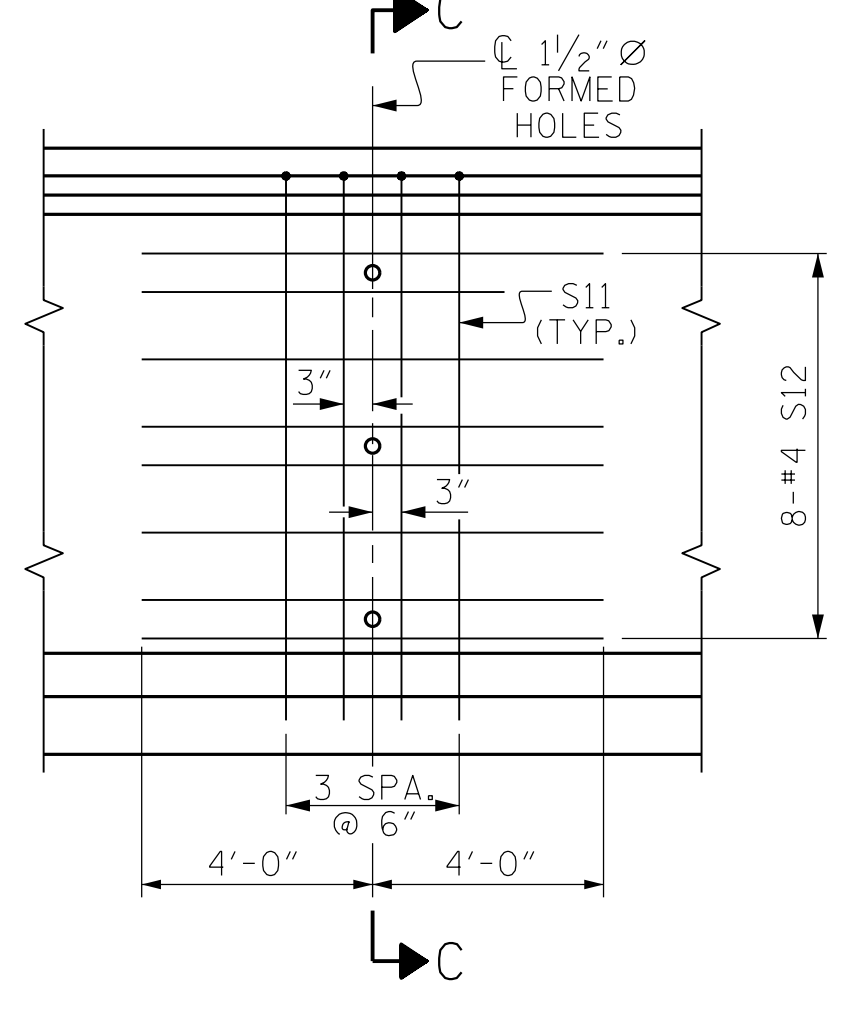
PLAN OF GIRDER



BEVEL DETAIL



ELEVATION OF GIRDER



PARTIAL ELEVATION

SHOWING INTERMEDIATE STEEL DIAPHRAGM
REINFORCING STEEL FOR GIRDER Nos. 1 THROUGH 4

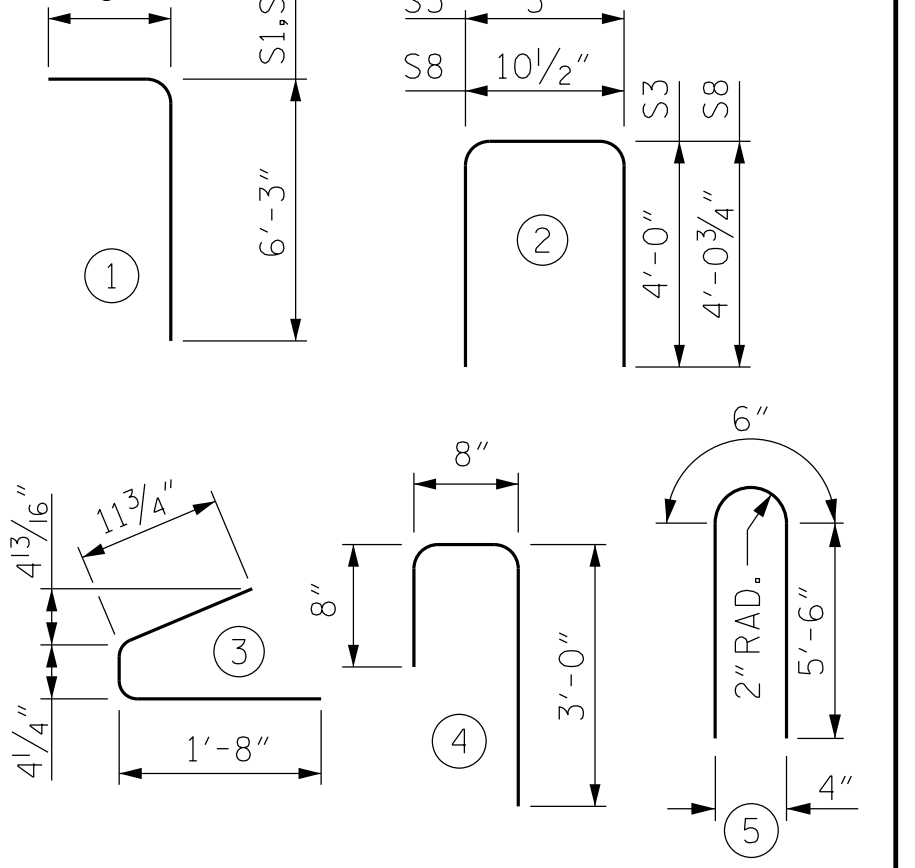
GIRDER LEGEND						
GIRDER No.	DIM. A	DIM. B	DIM. C	DIM. D	DIM. E	DIM. F
GIRDER 1	117'-5 5/8"	58'-8 13/16"	7 5/16"	116'-0 1/16"	117'-4 3/16"	115'-11 3/16"
GIRDER 2	117'-5 3/8"	58'-8 11/16"	7 3/16"	116'-0 1/16"	117'-4 1/16"	115'-11 1/16"
GIRDER 3	117'-5 1/8"	58'-8 9/16"	7 1/16"	116'-0 1/8"	117'-3 3/4"	115'-10 3/4"
GIRDER 4	117'-4 7/8"	58'-8 7/16"	6 5/16"	115'-11 1/8"	117'-3 1/2"	115'-10 1/2"

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	192	#4	1	6'-11"	887	
S2	24	#6	1	6'-11"	249	
S3	14	#4	2	8'-5"	79	
S4	112	#4	3	3'-0"	224	
S6	216	#5	4	4'-4"	976	
*S7	40	#5	STR	3'-8"	153	
S8	2	#5	2	9'-0"	19	
S9	34	#5	STR	3'-3"	115	
S10	2	#3	STR	1'-10"	1	
S11	8	#5	5	11'-6"	96	
S12	16	#4	STR	8'-0"	86	

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

BAR TYPES



ALL BAR DIMENSIONS ARE OUT-TO-OUT

QUANTITIES FOR ONE GIRDER			
REINFORCING STEEL	8500 PSI CONCRETE	0.6" Ø L. R. STRANDS	
LB.	C.Y.	No.	
GIRDERS 1 THRU 4	2885	25.2	44

GIRDERS REQUIRED

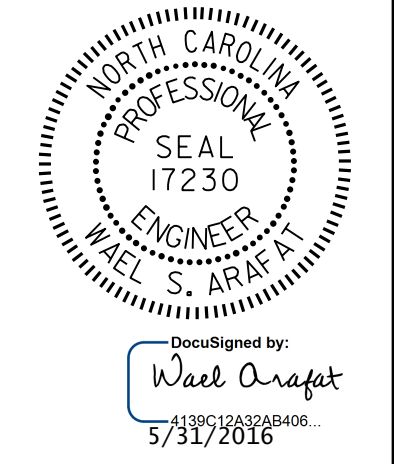
GIRDER	NUMBER	LENGTH
GIRDER 1	1	117'-5 5/8"
GIRDER 2	1	117'-5 3/8"
GIRDER 3	1	117'-5 1/8"
GIRDER 4	1	117'-4 7/8"
TOTAL LENGTH		469'-9"

PROJECT NO. R-4060
ALLEGHANY COUNTY
STATION: 36+45.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

72" PRESTRESSED CONCRETE
MODIFIED BULB TEE
CONTINUOUS FOR LIVE LOAD
SPAN "A"



ASSEMBLED BY: H. T. BARBOUR DATE: 11-18-15
CHECKED BY: V. X. NGUYEN DATE: 11-15

DRAWN BY: EEM 2/6/97 REV: 10/1/11 MAA/GM
CHECKED BY: VAP 2/6/97 REV: 6/13 REV: 1/15 MAA/GM

DESIGN ENGINEER OF RECORD:
S. I. CHAMPION DATE: 12-20-15

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			26

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.

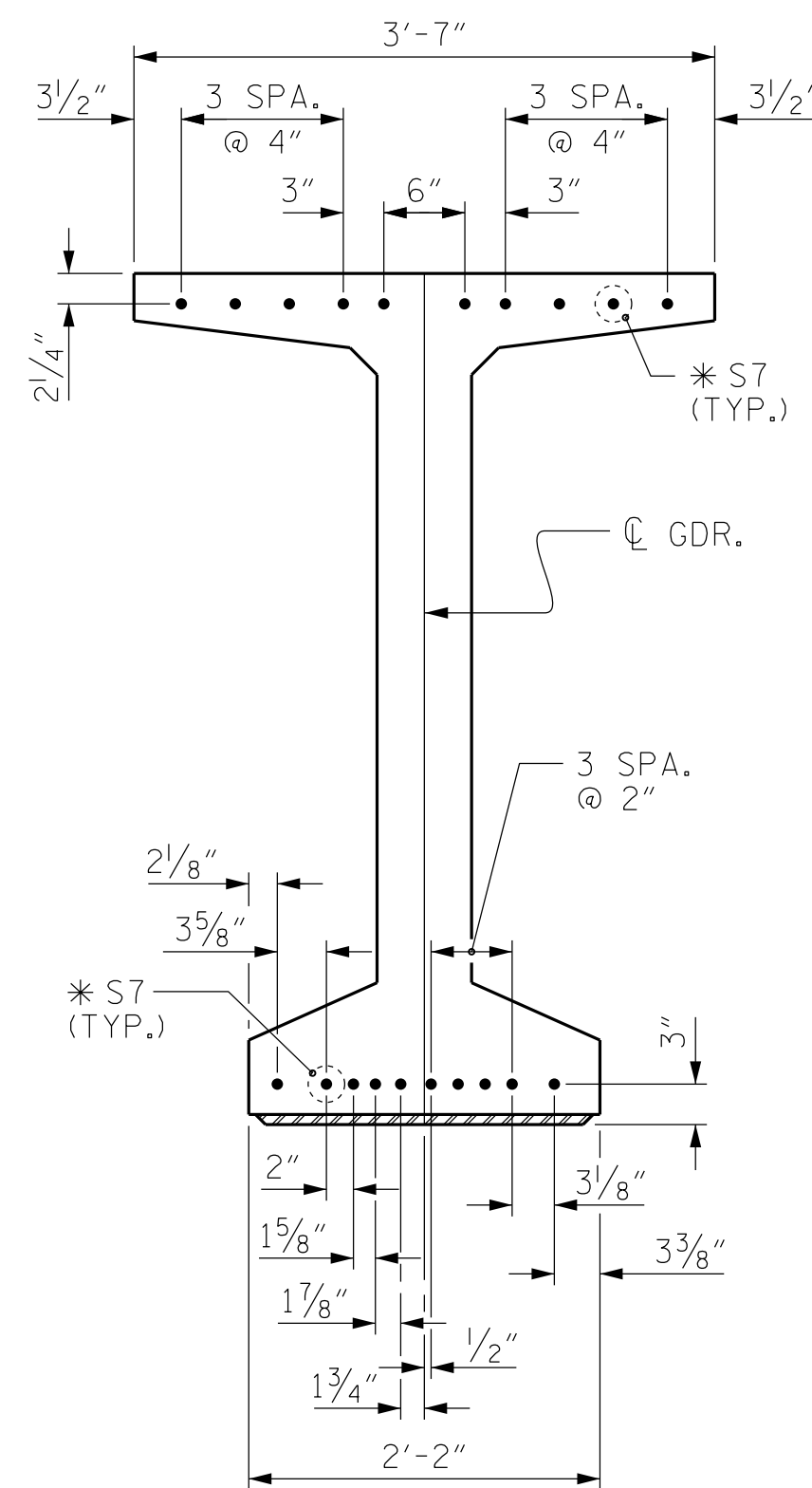
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 7200 PSI.

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

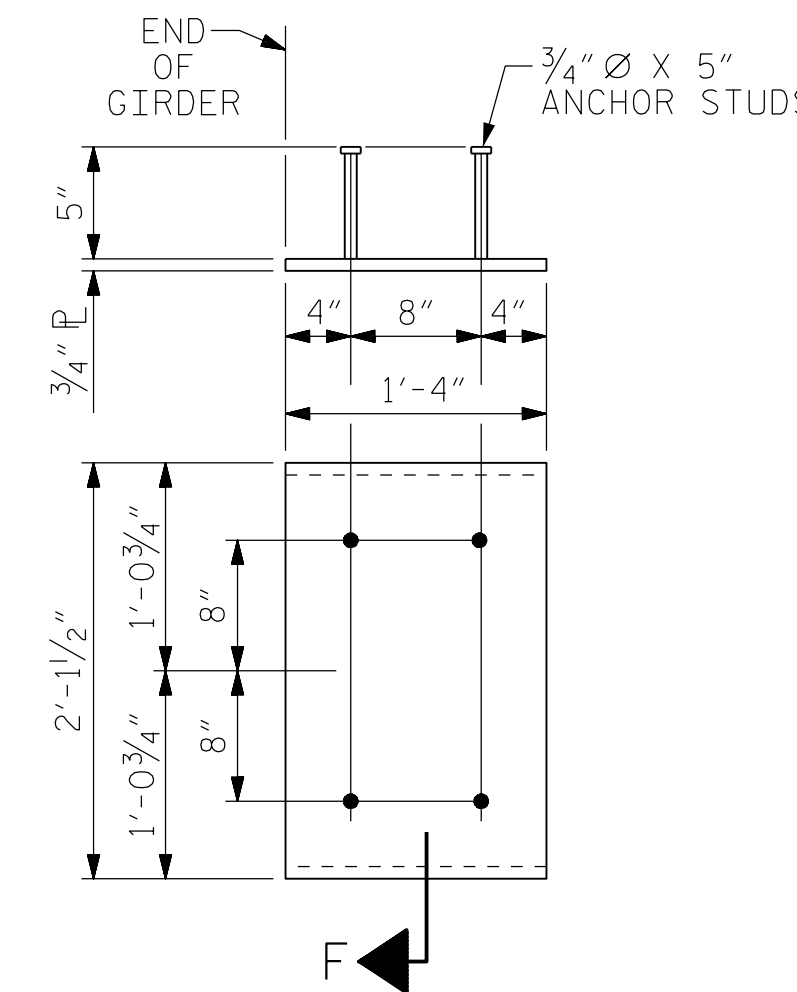
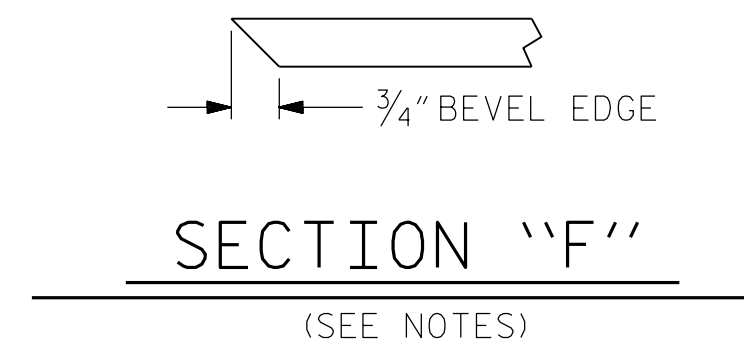
THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

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.



DETAIL "C"



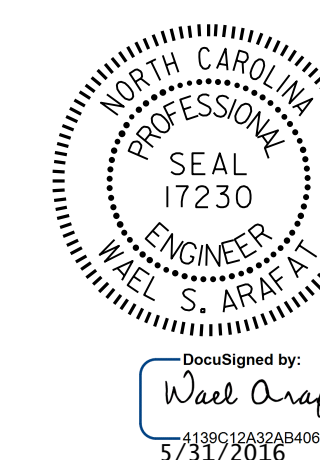
EMBEDDED PLATE "B-1" DETAILS FOR MODIFIED 72" PRESTRESSED GIRDER
(2 REQ'D PER GIRDER)

DEAD LOAD DEFLECTION TABLE																						
0.6" LOW RELAXATION		GIRDER 1																				
TWENTIETH POINTS		0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.0	0.042	0.083	0.122	0.157	0.189	0.215	0.236	0.252	0.261	0.264	0.261	0.252	0.236	0.215	0.189	0.157	0.122	0.083	0.042	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.0	0.022	0.044	0.064	0.083	0.099	0.114	0.124	0.134	0.137	0.140	0.137	0.134	0.124	0.114	0.099	0.083	0.064	0.044	0.022	0.0
FINAL CAMBER	↑	0.0	1/4"	7/16"	1 1/16"	7/8"	1 1/16"	1 3/16"	1 3/8"	1 7/16"	1 1/2"	1 1/2"	1 1/2"	1 7/16"	1 3/8"	1 3/16"	1 1/16"	7/8"	1 1/16"	7/16"	1/4"	0.0
DEAD LOAD DEFLECTION TABLE																						
0.6" LOW RELAXATION		GIRDERS 2 & 3																				
TWENTIETH POINTS		0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.0	0.042	0.083	0.122	0.157	0.189	0.215	0.236	0.252	0.261	0.264	0.261	0.252	0.236	0.215	0.189	0.157	0.122	0.083	0.042	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.0	0.025	0.050	0.073	0.095	0.113	0.130	0.141	0.152	0.156	0.160	0.156	0.152	0.141	0.130	0.113	0.095	0.073	0.050	0.025	0.0
FINAL CAMBER	↑	0.0	3/16"	3/8"	5/8"	3/4"	15/16"	1"	1 1/8"	1 3/16"	1 1/4"	1 1/4"	1 1/4"	1 3/16"	1 1/8"	1"	15/16"	3/4"	5/8"	3/8"	3/16"	0.0
DEAD LOAD DEFLECTION TABLE																						
0.6" LOW RELAXATION		GIRDER 4																				
TWENTIETH POINTS		0	.05	.10	.15	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.85	.90	.95	0
CAMBER (GIRDER ALONE IN PLACE)	↑	0.0	0.042	0.083	0.122	0.157	0.189	0.215	0.236	0.252	0.261	0.264	0.261	0.252	0.236	0.215	0.189	0.157	0.122	0.083	0.042	0.0
* DEFLECTION DUE TO SUPERIMPOSED D.L.	↓	0.0	0.024	0.047	0.068	0.088	0.105	0.121	0.131	0.141	0.145	0.149	0.145	0.141	0.131	0.121	0.105	0.088	0.068	0.047	0.024	0.0
FINAL CAMBER	↑	0.0	1/4"	7/16"	5/8"	13/16"	1"	1 1/8"	1 1/4"	1 5/16"	1 3/8"	1 3/8"	1 3/8"	1 5/16"	1 1/4"	1 1/8"	1"	13/16"	5/8"	7/16"	1/4"	0.0

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

PROJECT NO. R-4060
ALLEGHANY COUNTY
 STATION: 36+45.00 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 DETAILS

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NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			26

ASSEMBLED BY : H. T. BARBOUR	DATE : 11-18-15	DESIGN ENGINEER OF RECORD: S. I. CHAMPION DATE : 12-20-15
CHECKED BY : V. X. NGUYEN	DATE : 11-15	
DRAWN BY : ELR 11/91	REV. 10/1/11	MAA/GM MAA/TMG
CHECKED BY : GRP 11/91	REV. 1/15	

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.

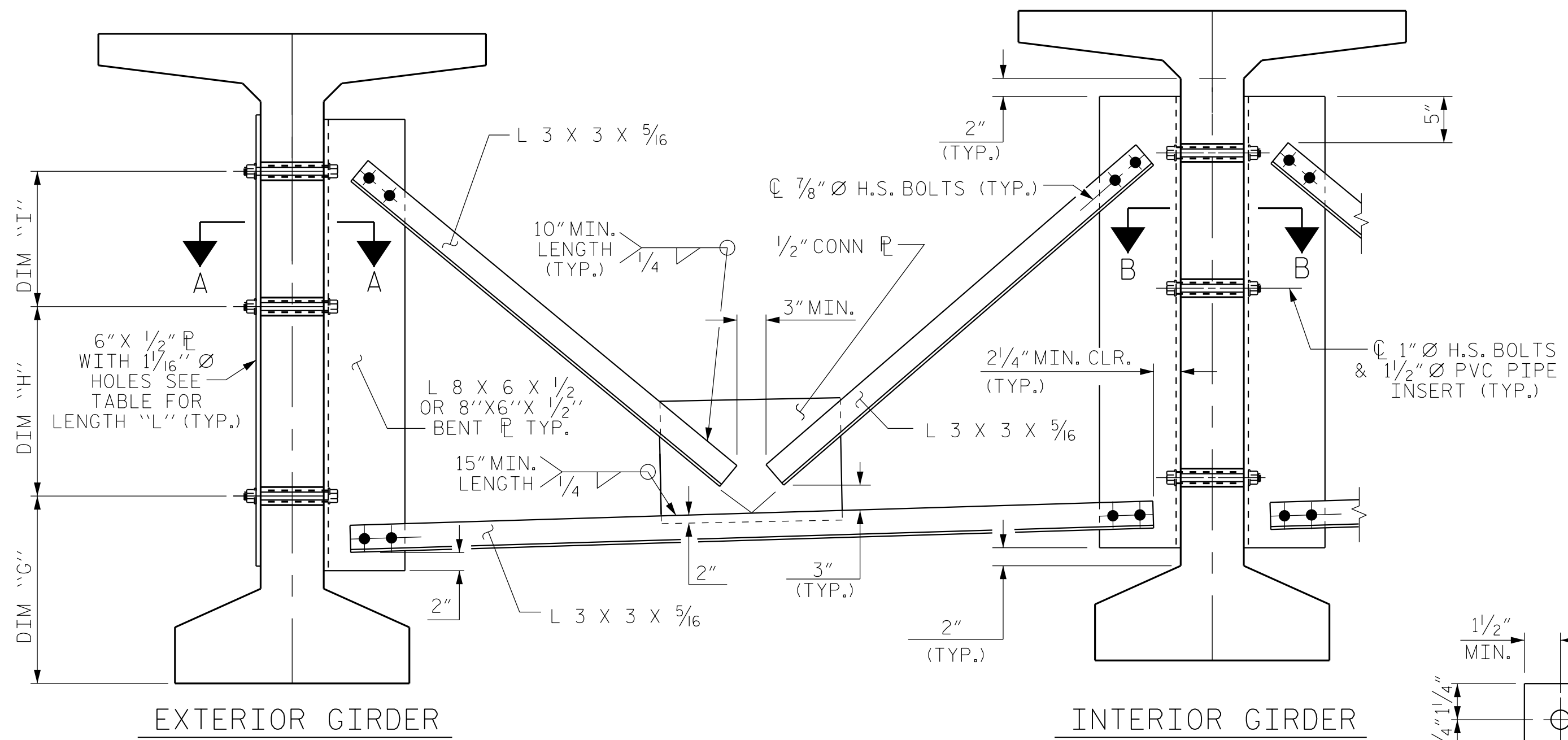
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

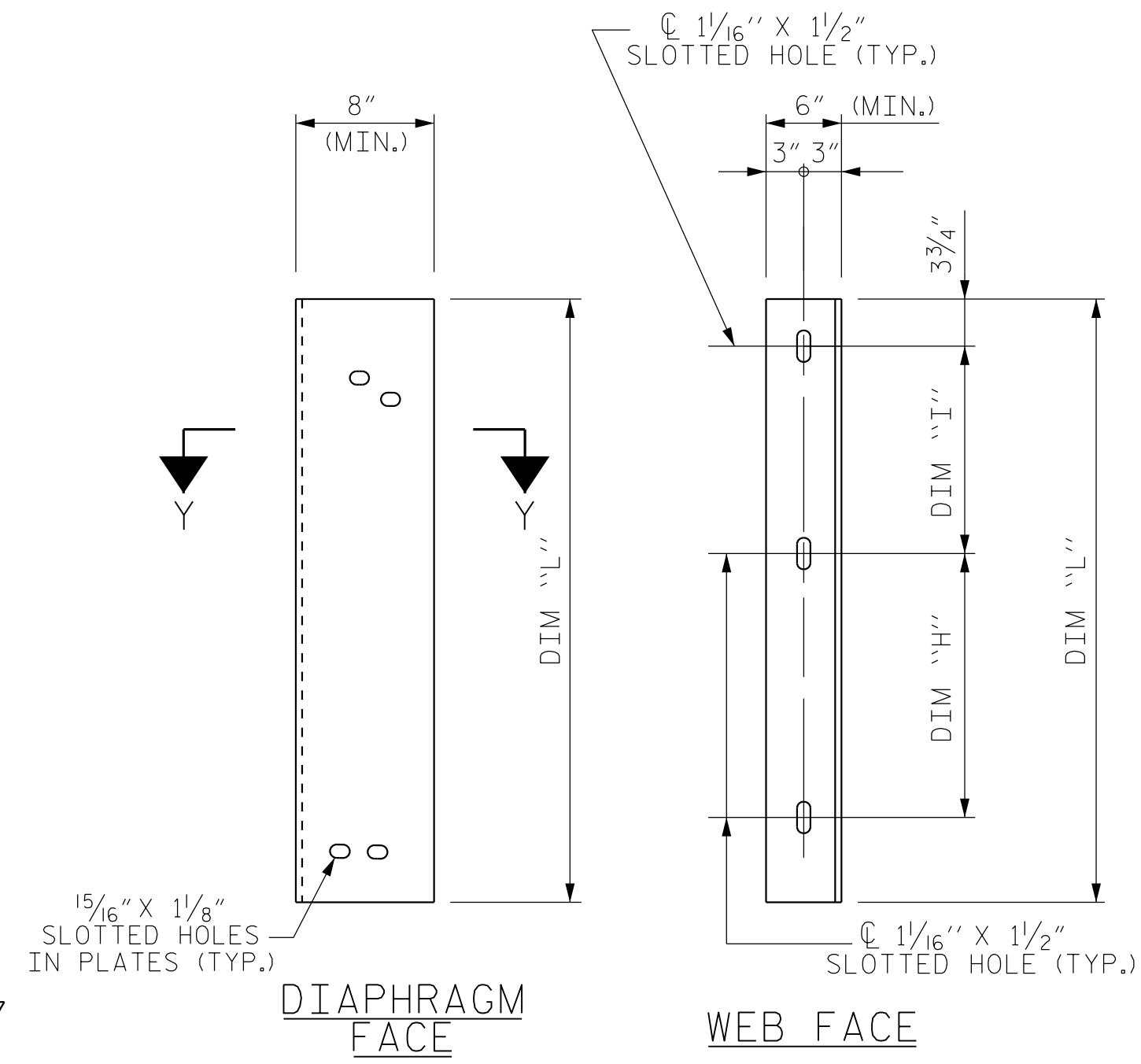
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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.

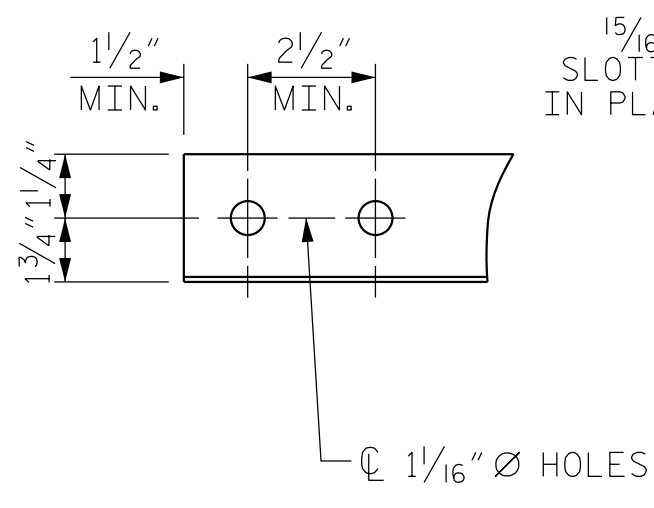
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



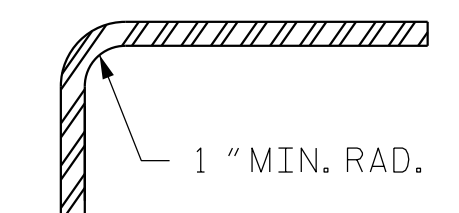
PART SECTION AT INTERMEDIATE DIAPHRAGM



CONNECTOR PLATE DETAILS



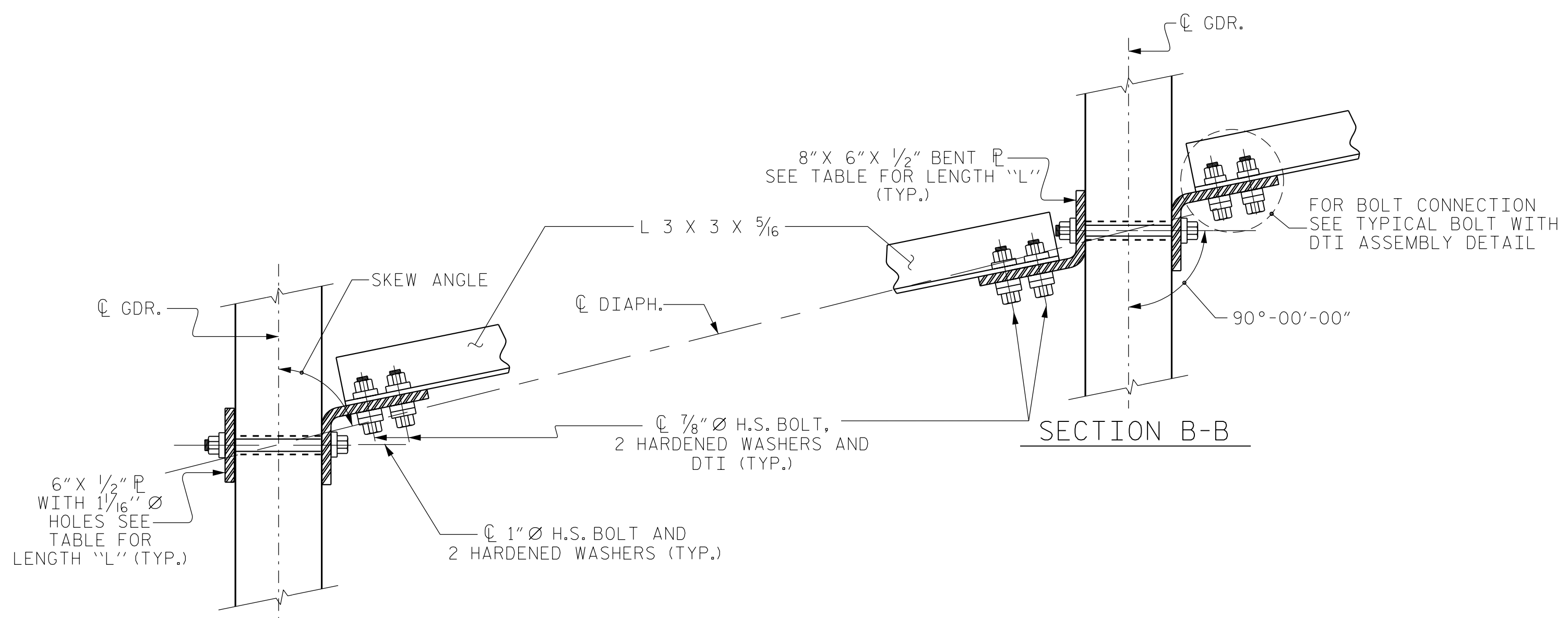
ANGLE END
(L 3 x 3 x 5/16)



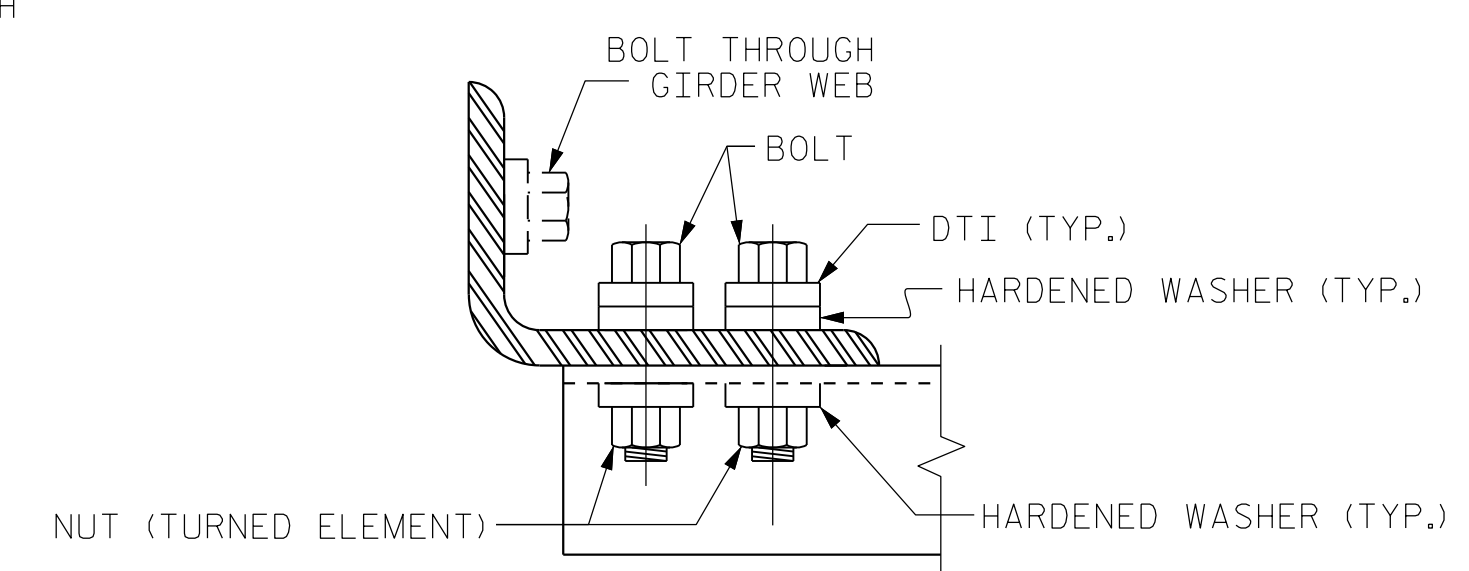
SECTION Y-Y

TABLE

GIRDER TYPE	DIM "G"	DIM "H"	DIM "I"	DIM "L"
72" BULB TEE	1'-4 3/4"	1'-9"	1'-9"	4'-2"



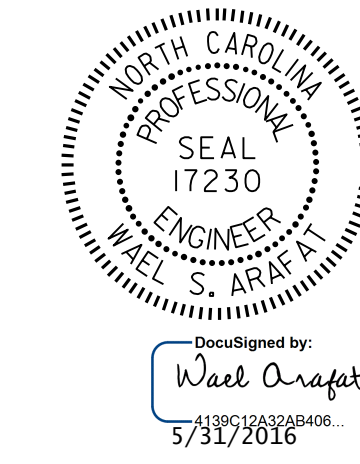
CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. R-4060
ALLEGHANY COUNTY
 STATION: 36+45.00 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 INTERMEDIATE
 STEEL DIAPHRAGMS
 FOR 72"
 MODIFIED BULB TEE
 PRESTRESSED CONCRETE
 GIRDERS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			26

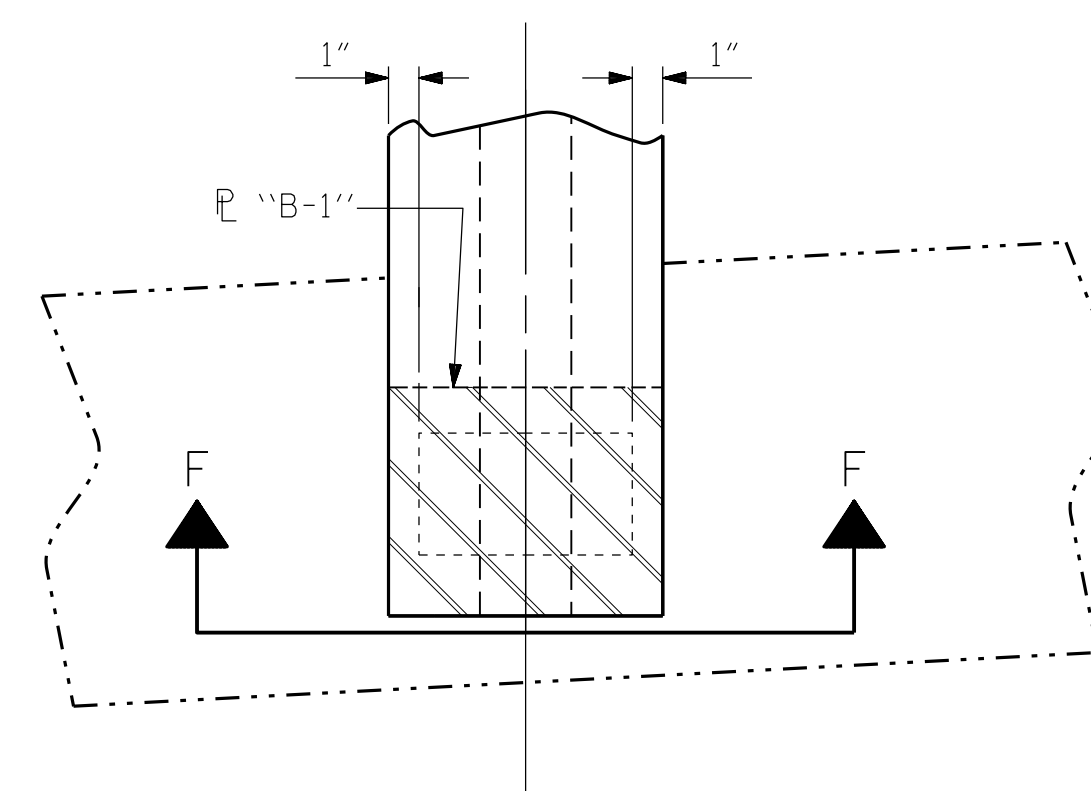
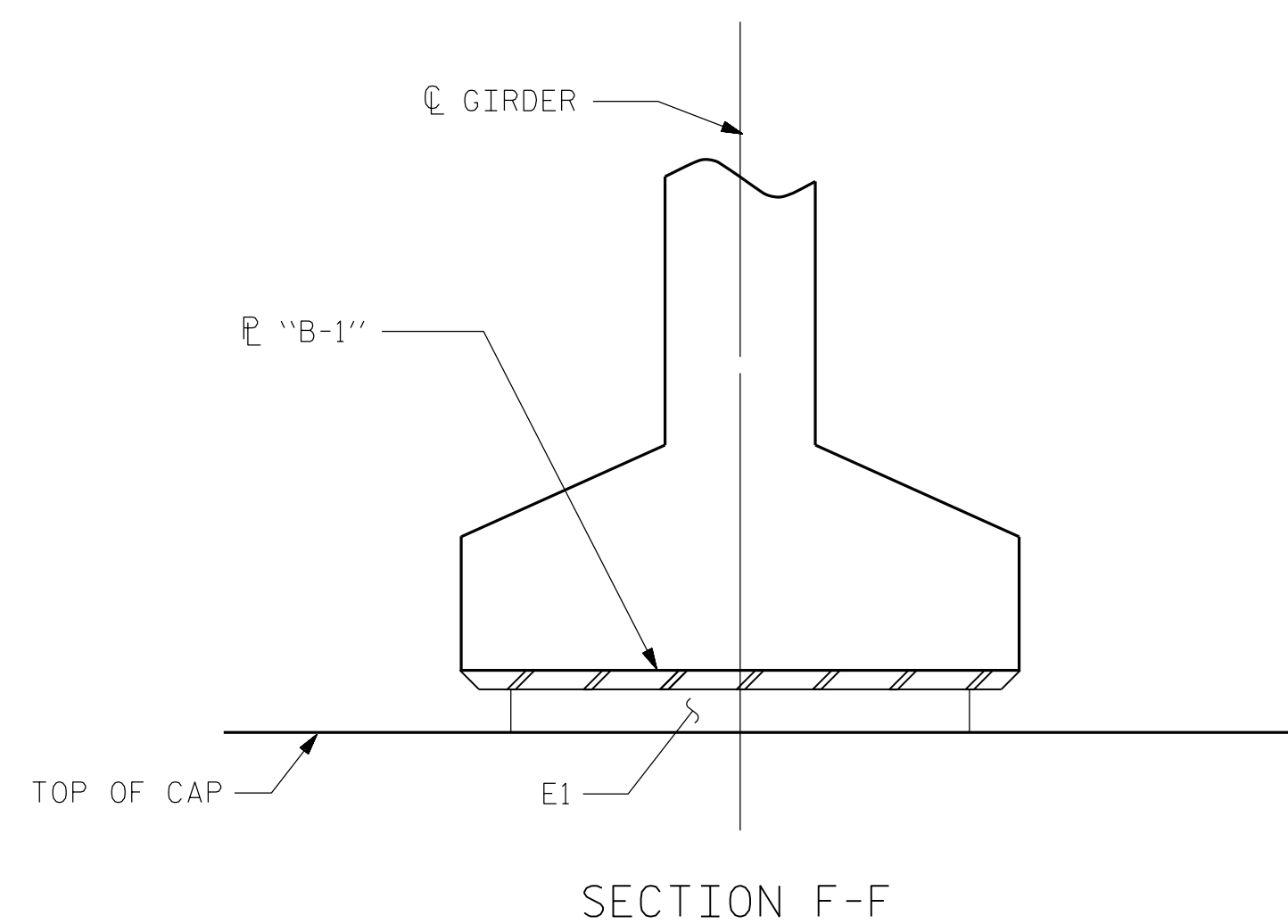
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : H. T. BARBOUR DATE : 11-20-14
 CHECKED BY : V. X. NGUYEN DATE : 11-15
 DRAWN BY : RWW 11/09 ADDED 11/23/09
 CHECKED BY : GM 11/09

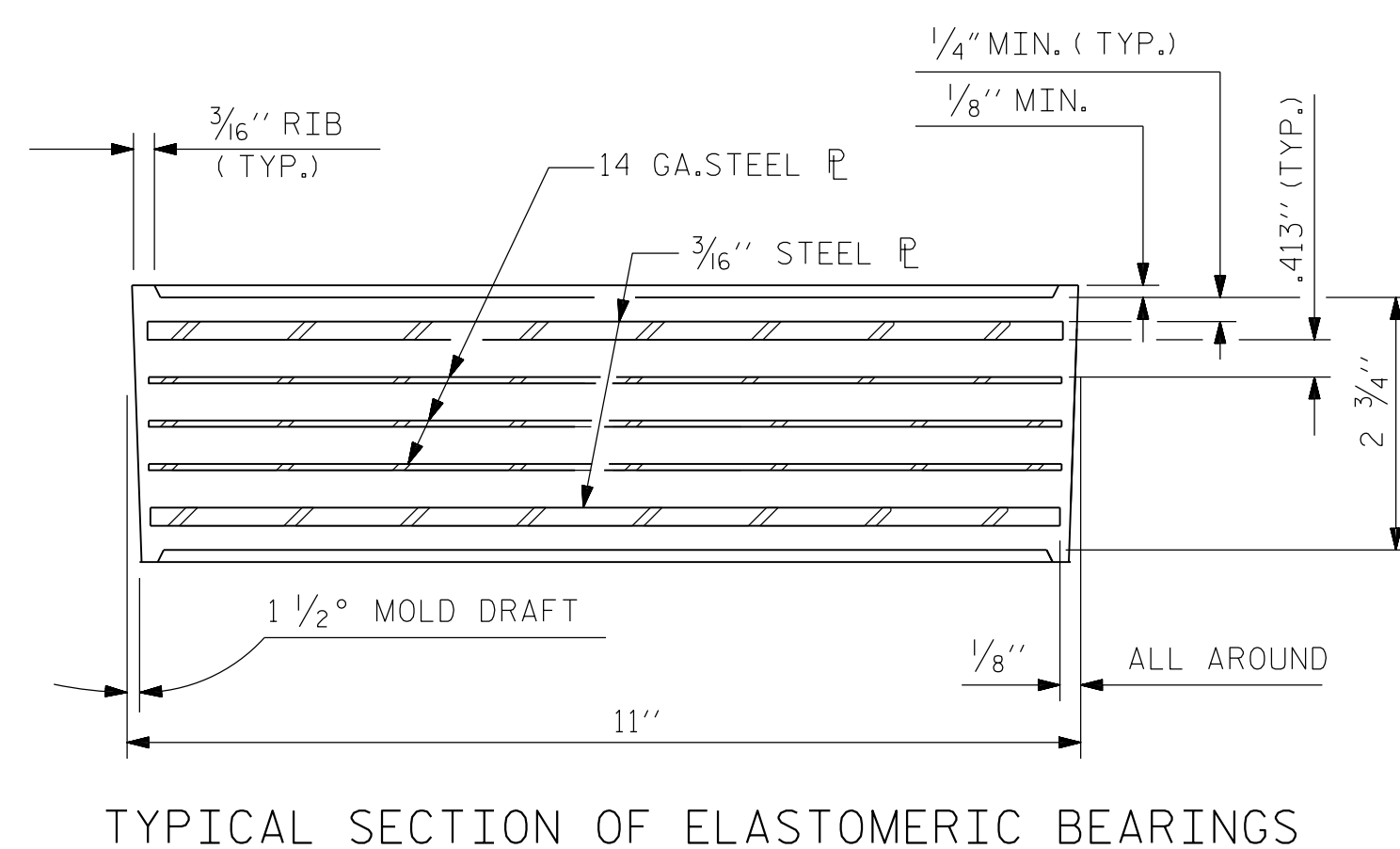
NOTES

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.

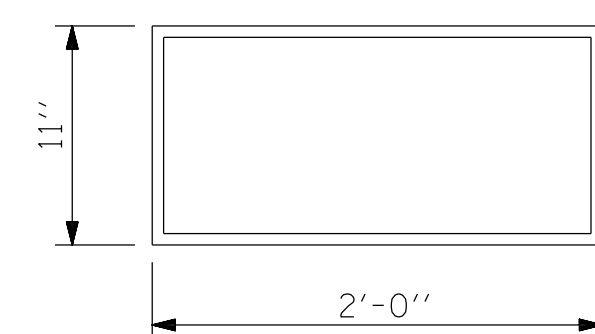


TYPICAL PLAN
(SHOWING INTEGRAL END BENT)



TYPICAL SECTION OF ELASTOMERIC BEARINGS

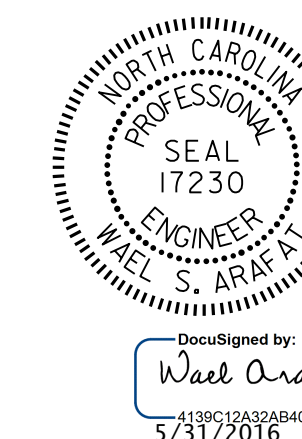
— LOAD RATINGS —	
	MAX.D.L.+ L.L.
TYPE VII	470 K



E1 (8 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING

TYPE VII

PROJECT NO. R-4060
ALLEGHANY COUNTY
STATION: 36+45.00 -L-



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:	TOTAL SHEETS
1			3			S-14
2			4			26

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SIGNATURES COMPLETED

ASSEMBLED BY :	H. T. BARBOUR	DATE :	11-20-14
CHECKED BY :	V. X. NGUYEN	DATE :	11-15
DRAWN BY :	EEM 2/97	REV. 10/1/11	MAA/GM
CHECKED BY :	VAP 2/97	REV. 6/13	AAC/MAA
		REV. 1/15	MAA/TMG

NOTES

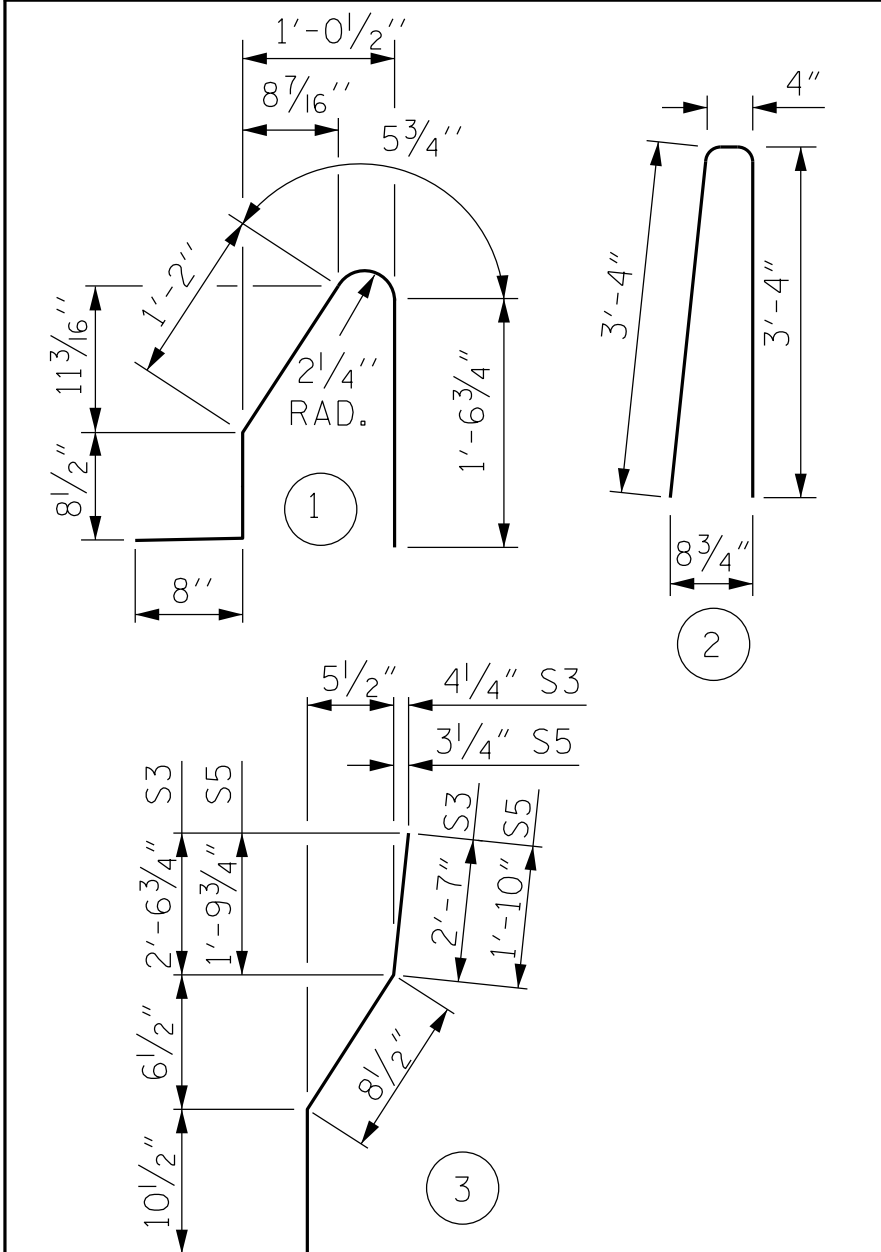
THE BARRIER RAIL IN SPAN "A" SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN SPAN "A" HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

THE #5 S3, S4, S5 AND S6 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM, AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #5 S3, S4, S5 AND S6 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

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.

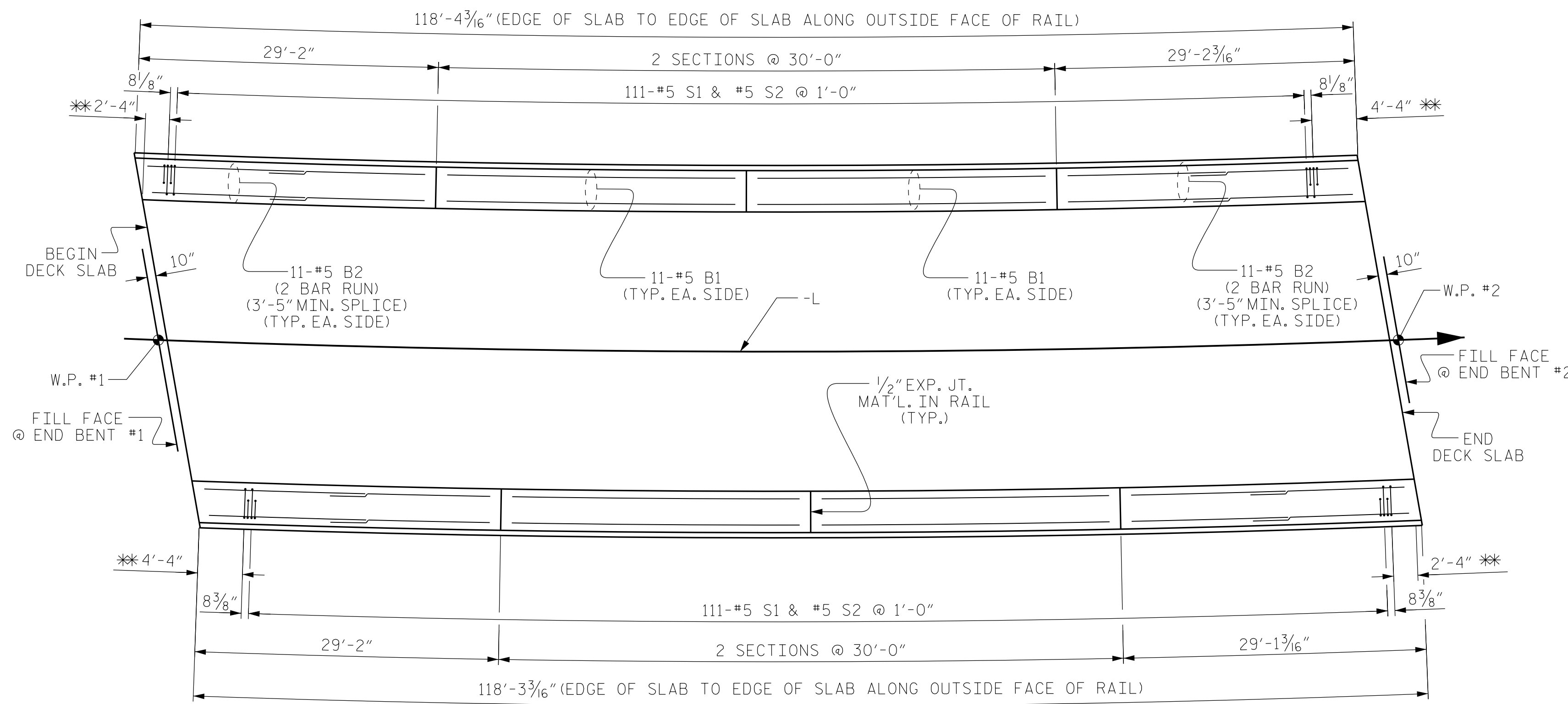
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

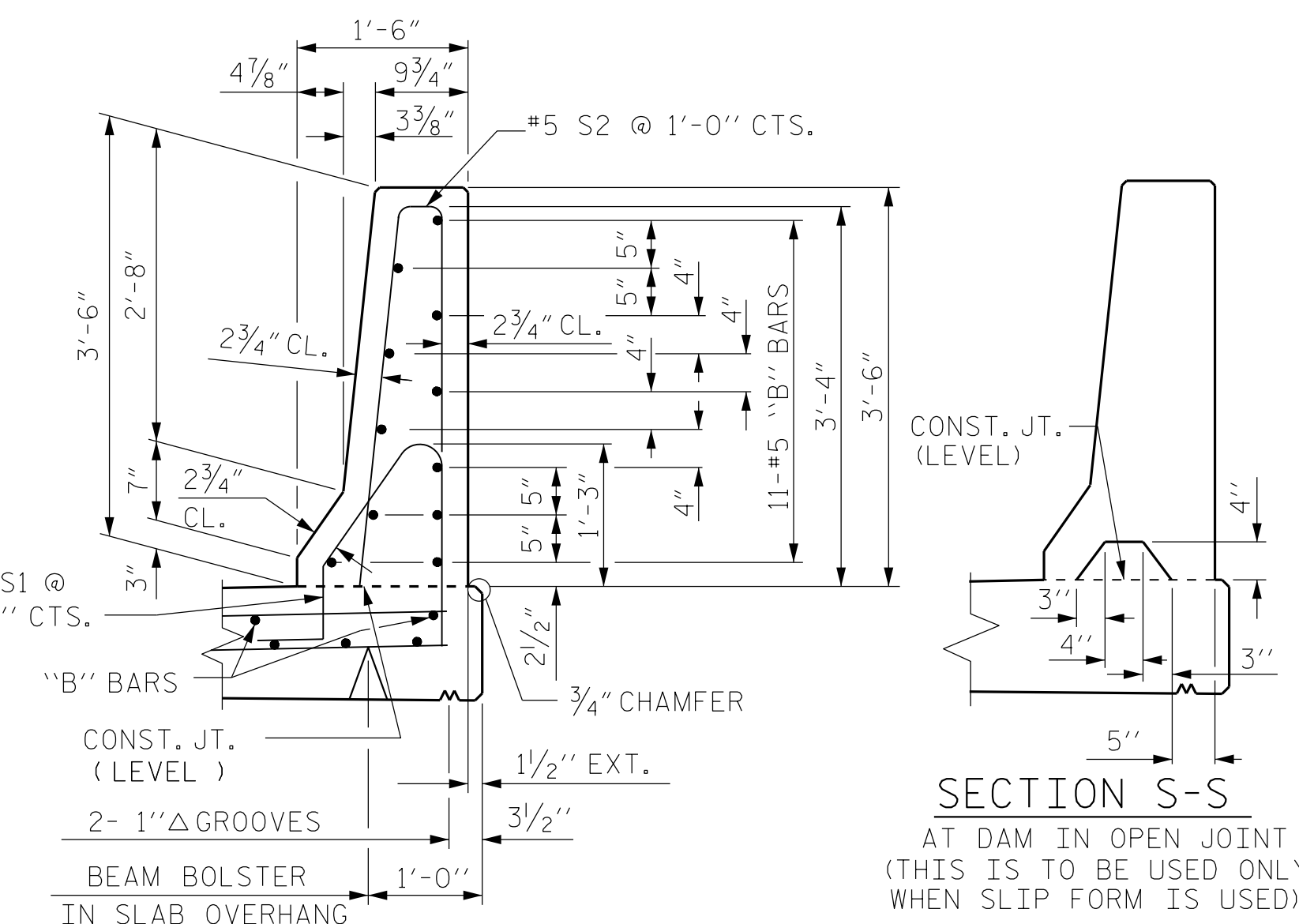
BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	44	#5	STR.	29'-7"	1358
* B2	88	#5	STR.	16'-3"	1491
* S1	226	#5	1	4'-7"	1080
* S2	226	#5	2	7'-0"	1650
* S3	4	#5	3	4'-2"	17
* S4	4	#5	STR.	4'-0"	17
* S5	8	#5	3	3'-5"	29
* S6	8	#5	STR.	3'-3"	27
* EPOXY COATED REINFORCING STEEL					5669 LBS.
CLASS AA CONCRETE					32.1 CU. YDS.
CONCRETE BARRIER RAIL					236.62 LIN. FT.



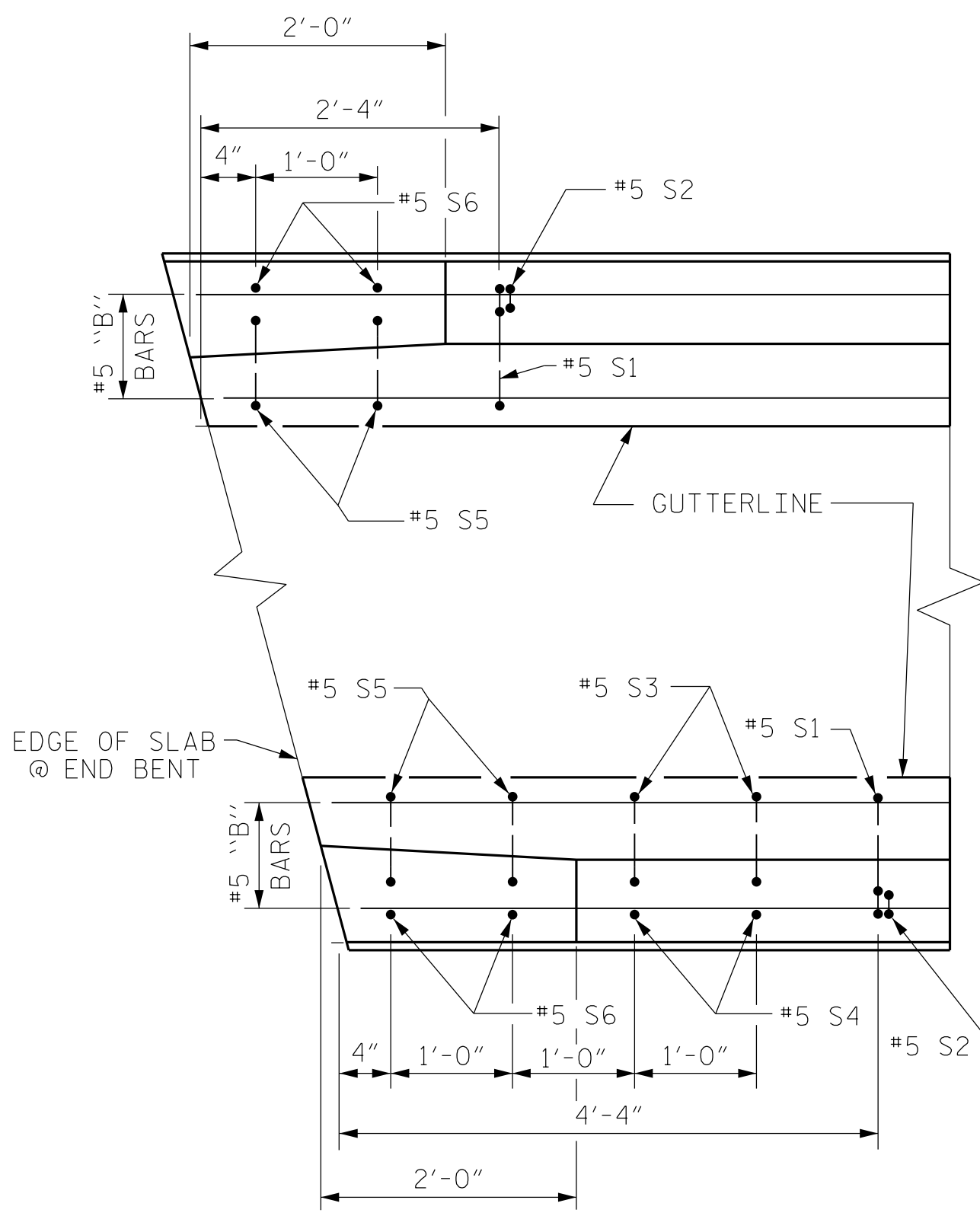
PLAN

(ALL DIMENSIONS ALONG ARC)
* SEE "END OF RAIL DETAILS - PLAN VIEW" FOR ADDITIONAL REINFORCING STEEL.

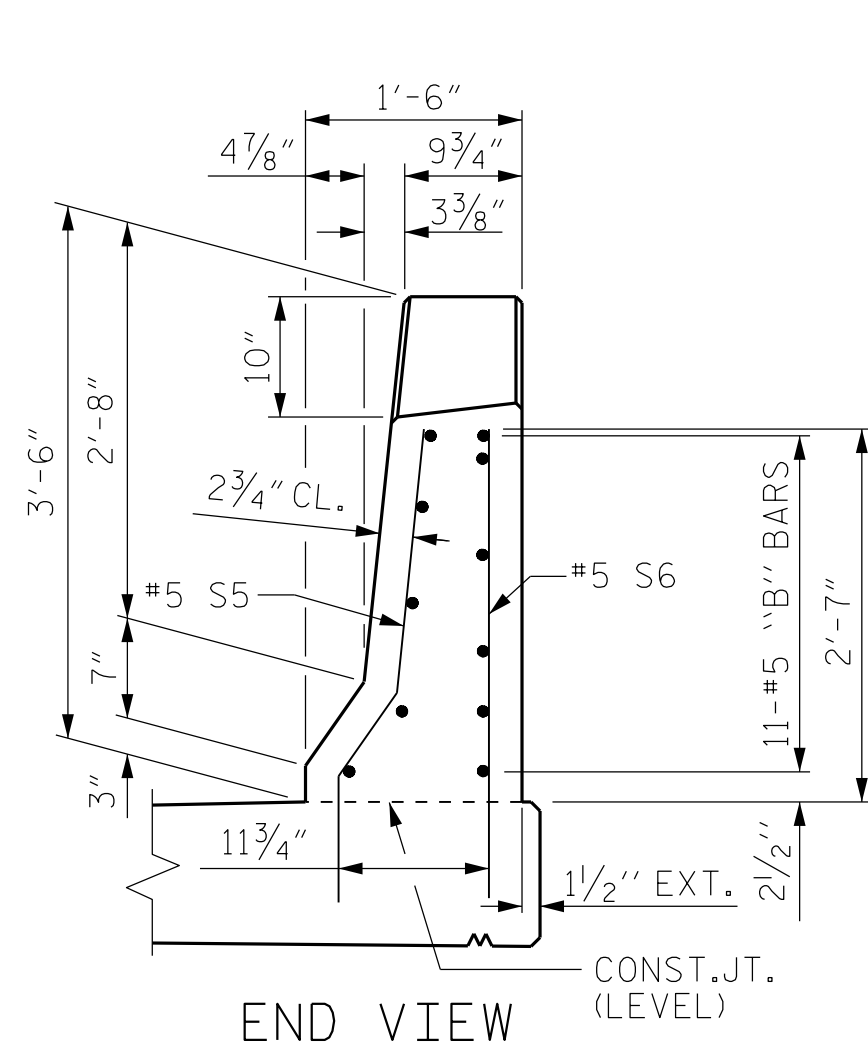


SECTION THRU RAIL

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

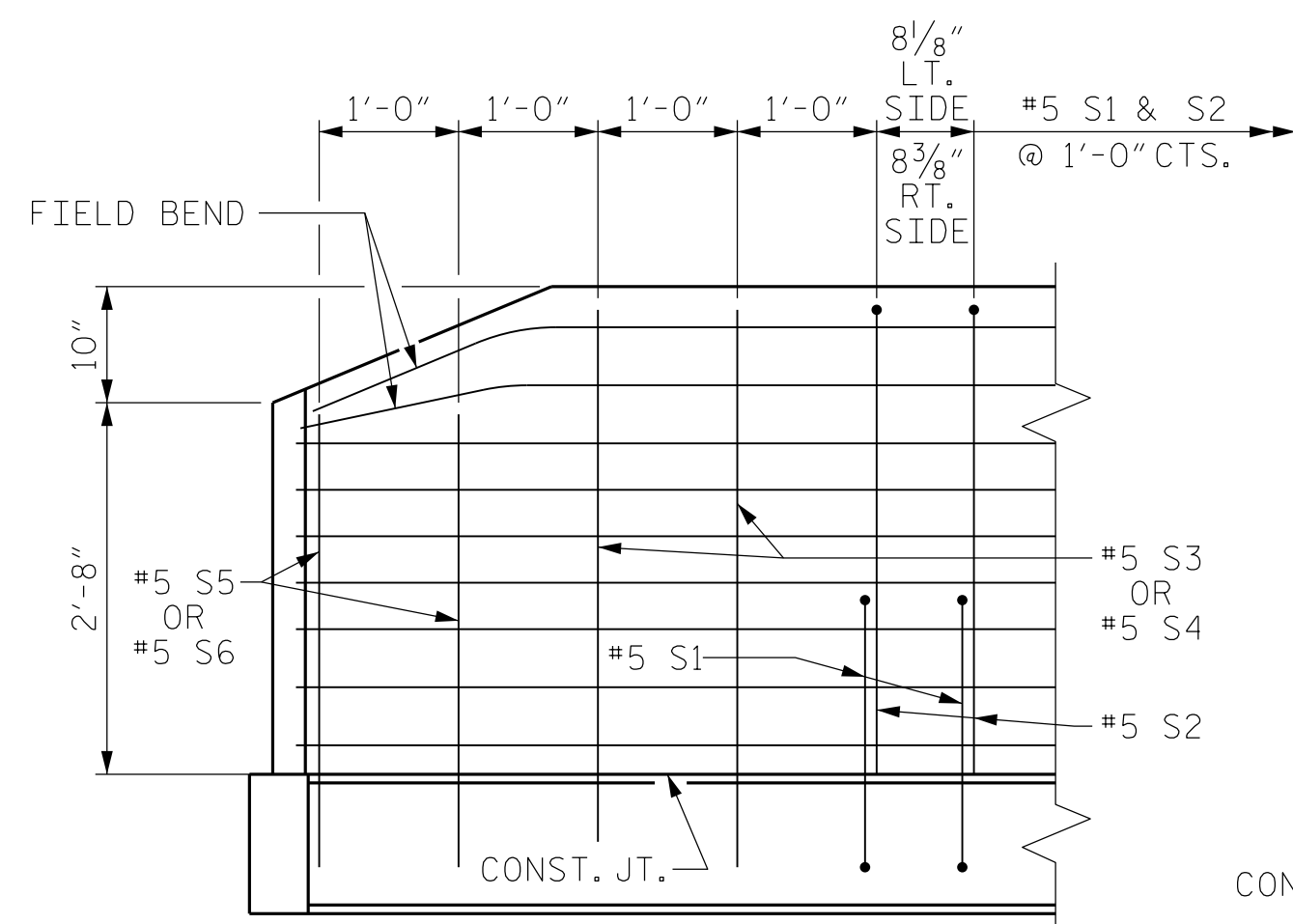


PLAN

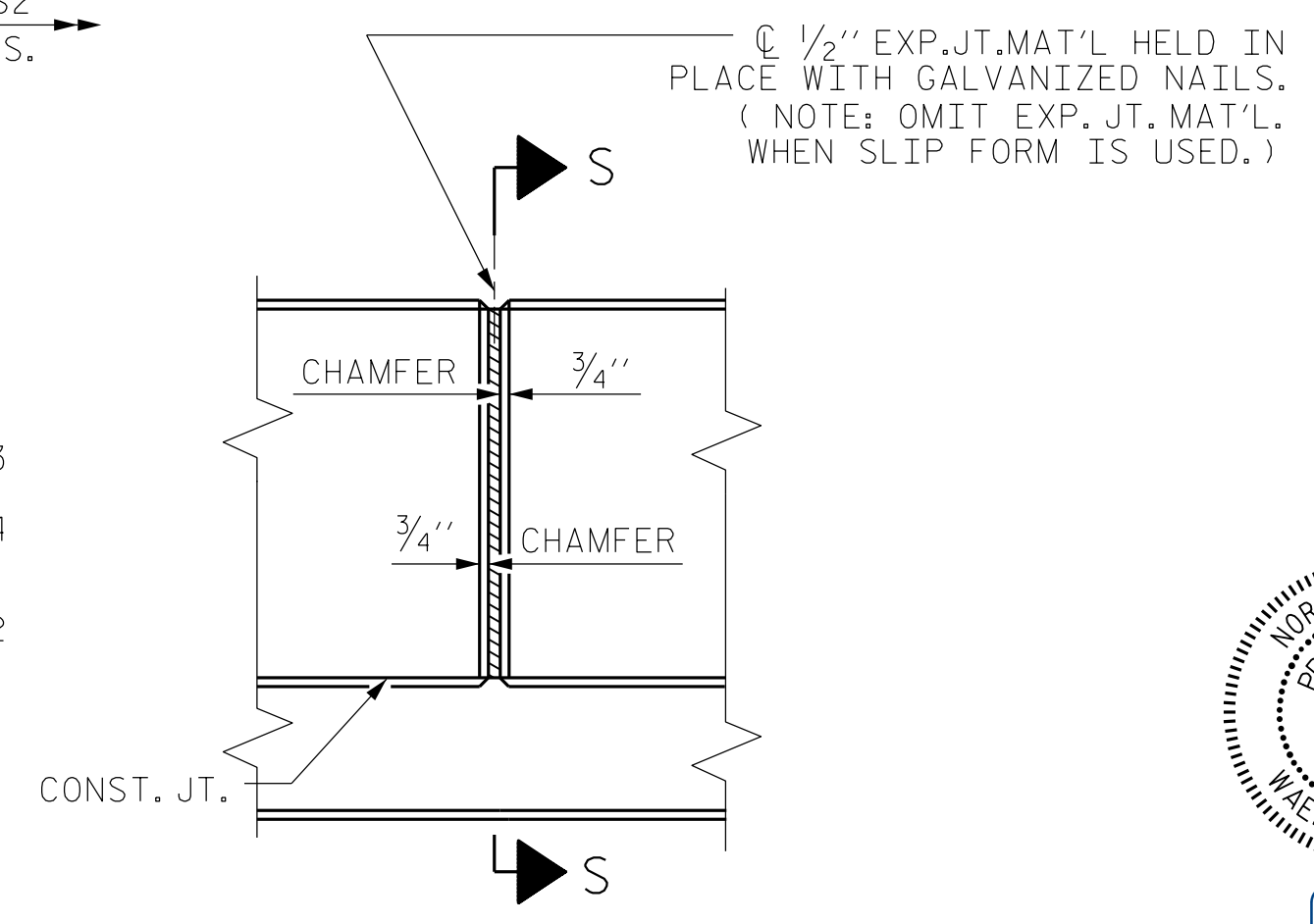


END VIEW

CONST. JT. (LEVEL)

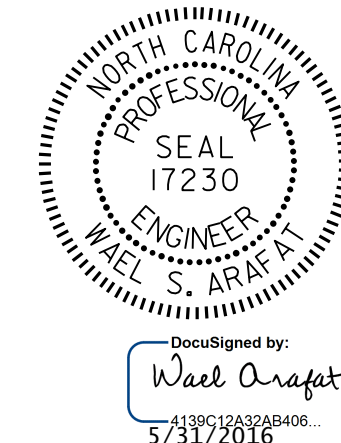


SIDE VIEW



ELEVATION AT EXPANSION JOINTS

BARRIER RAIL DETAILS



PROJECT NO. R-4060
ALLEGHANY COUNTY
STATION: 36+45.00 -L-

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

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

ASSEMBLED BY : H. T. BARBOUR	DATE : 11-20-14
CHECKED BY : V. X. NGUYEN	DATE : 11-15
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 - 7/8" 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 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.)

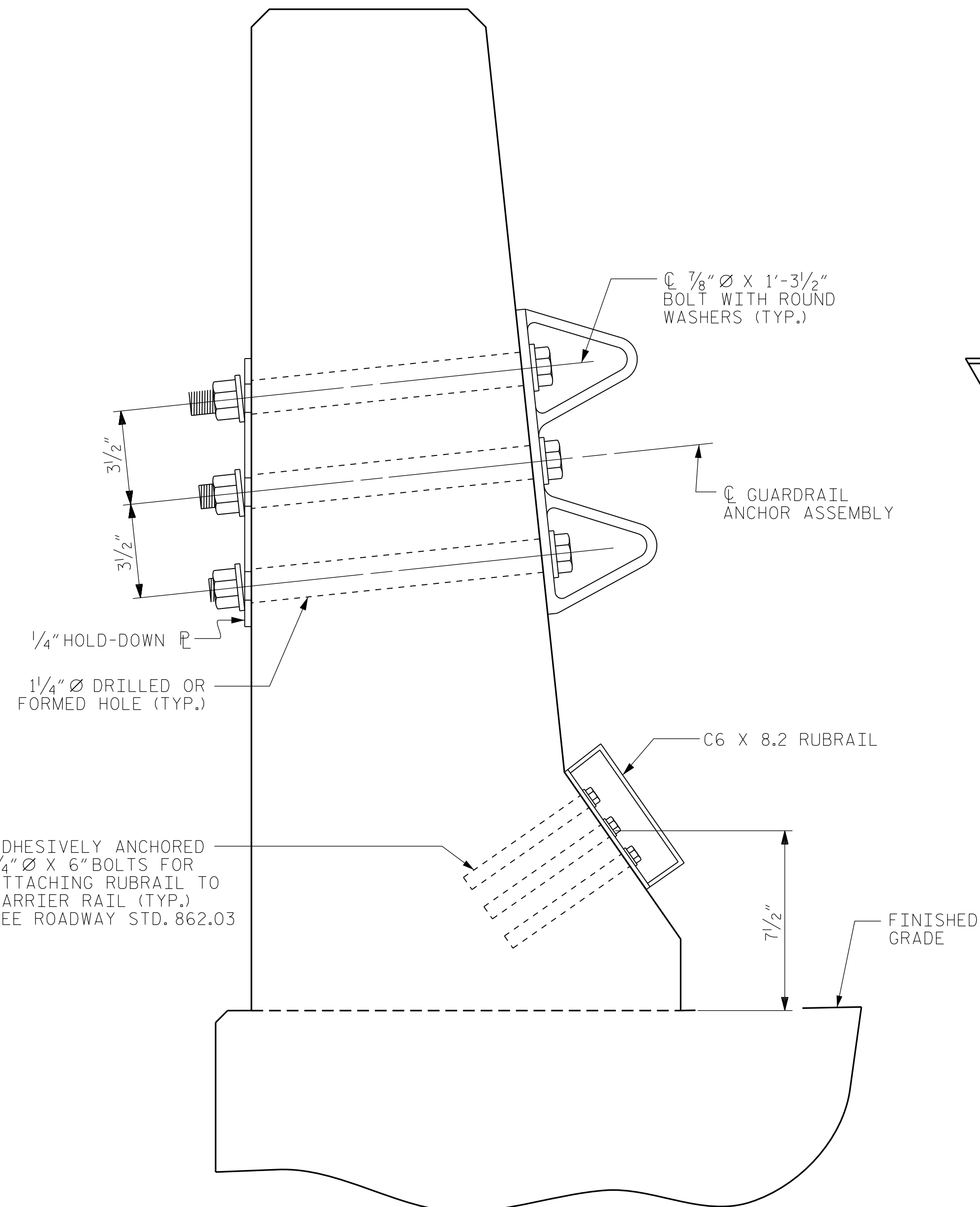
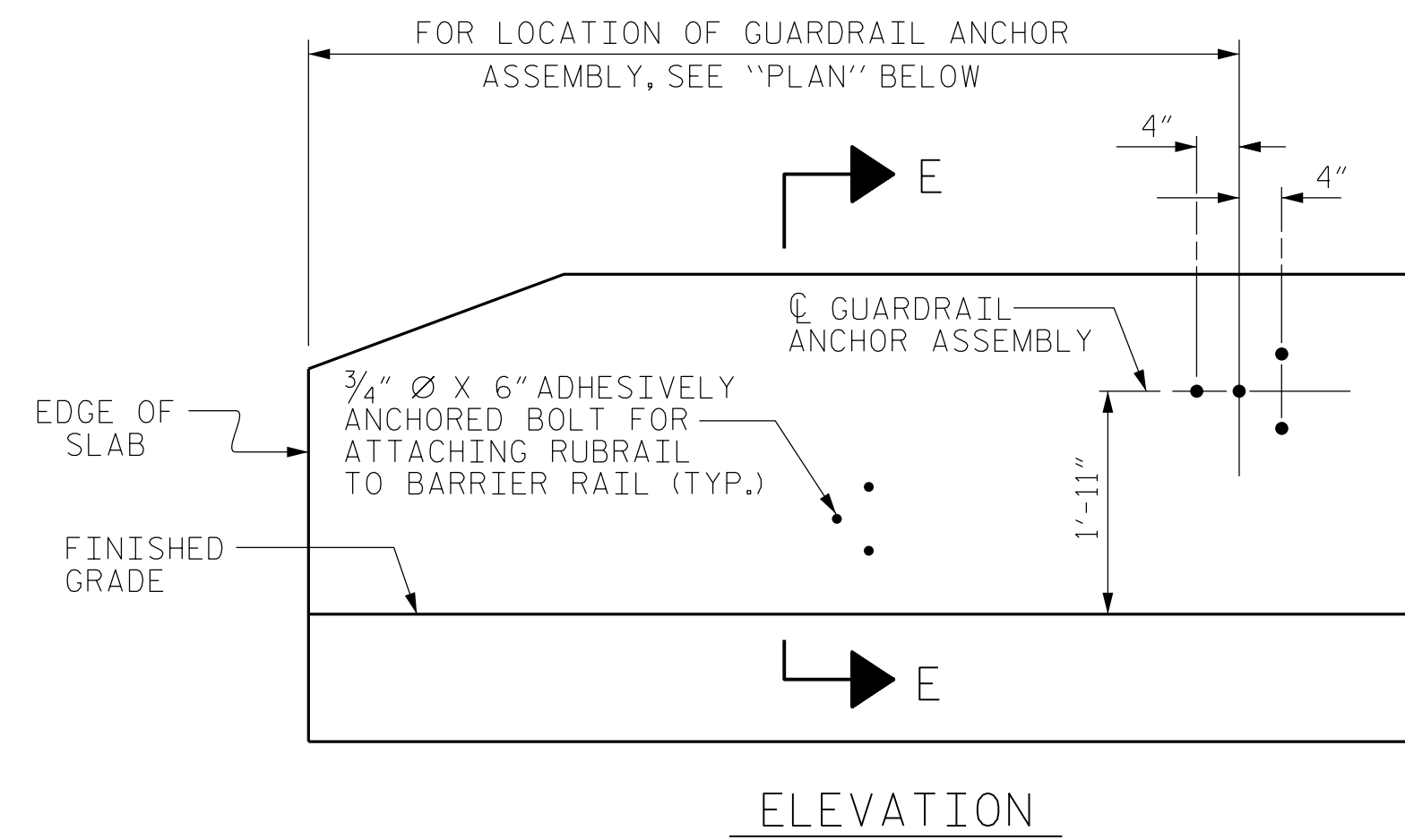
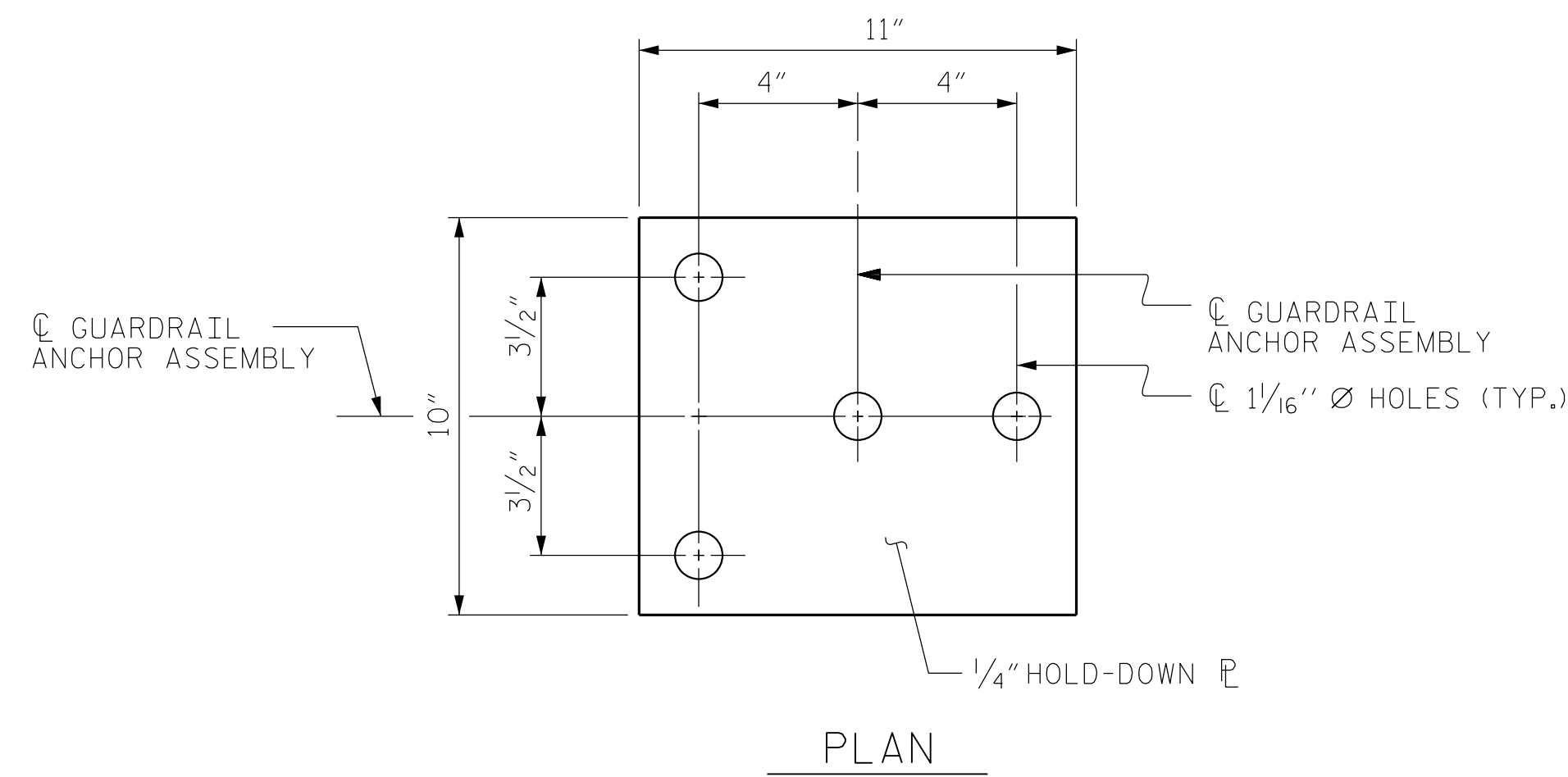
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

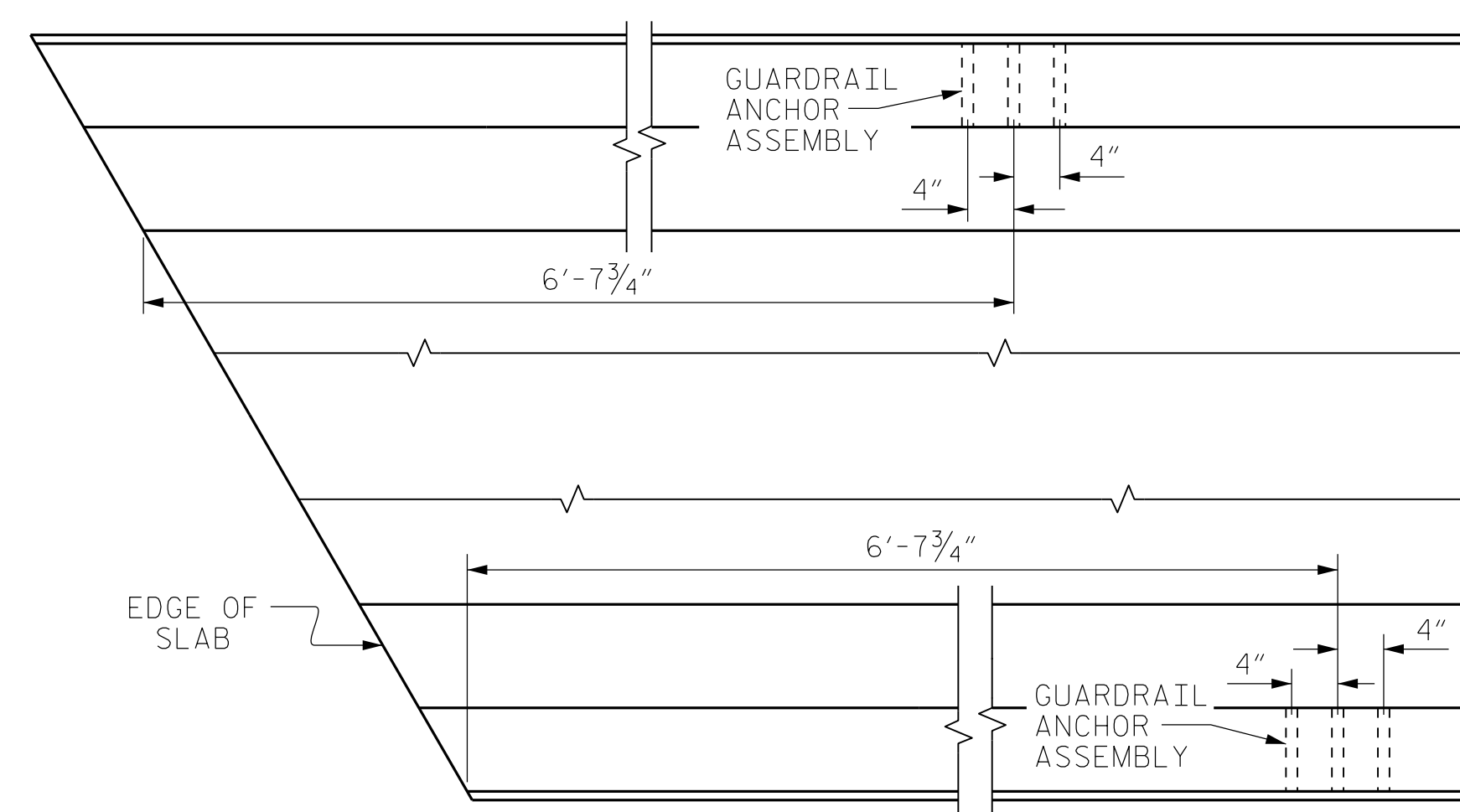
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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.

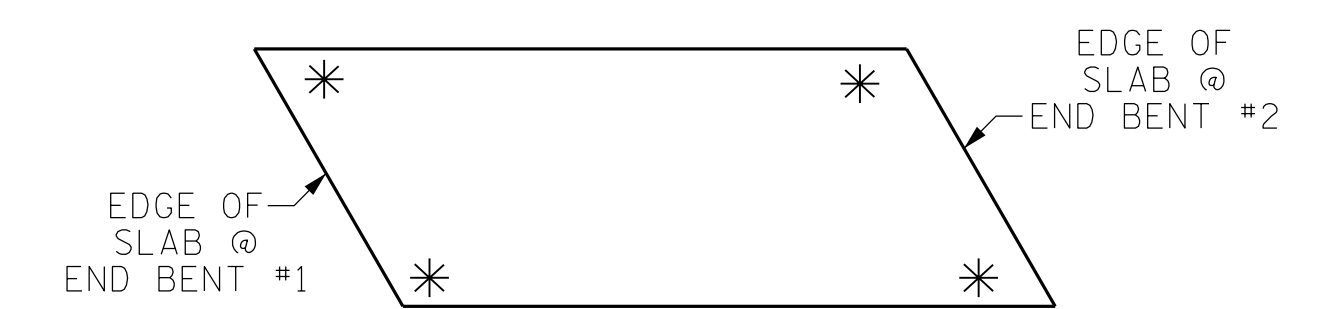


SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

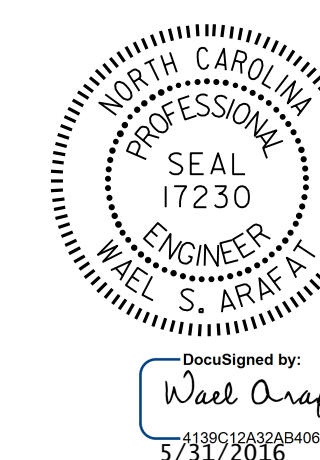
END BENT #1 SHOWN, END BENT #2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. R-4060
ALLEGHANY COUNTY
 STATION: 36+45.00 -L-

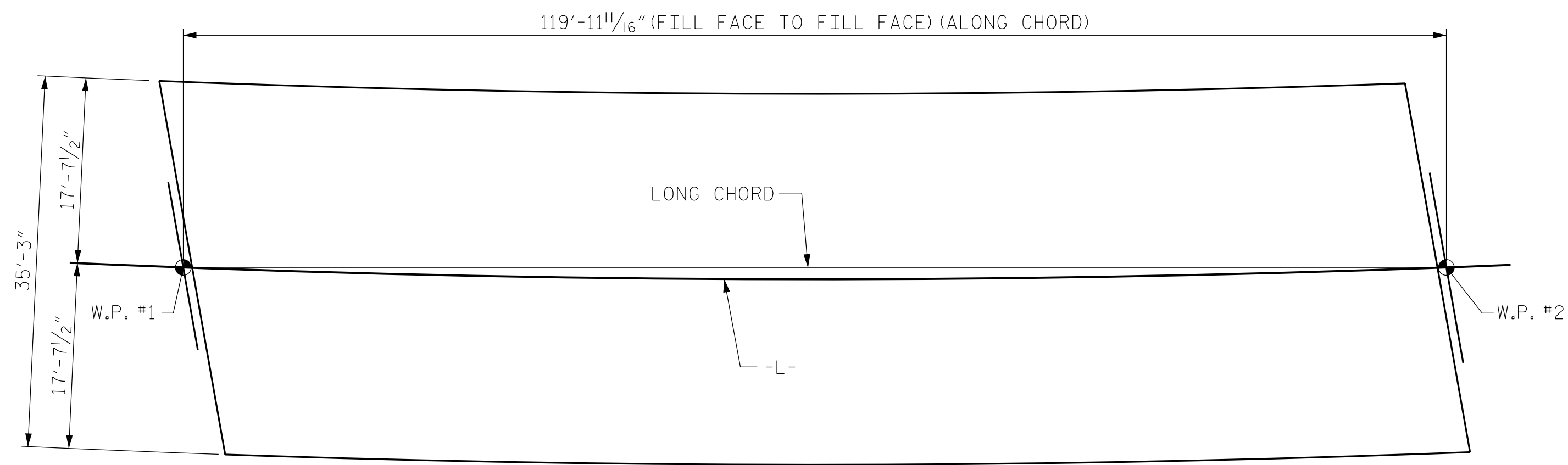


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 FOR BARRIER RAIL

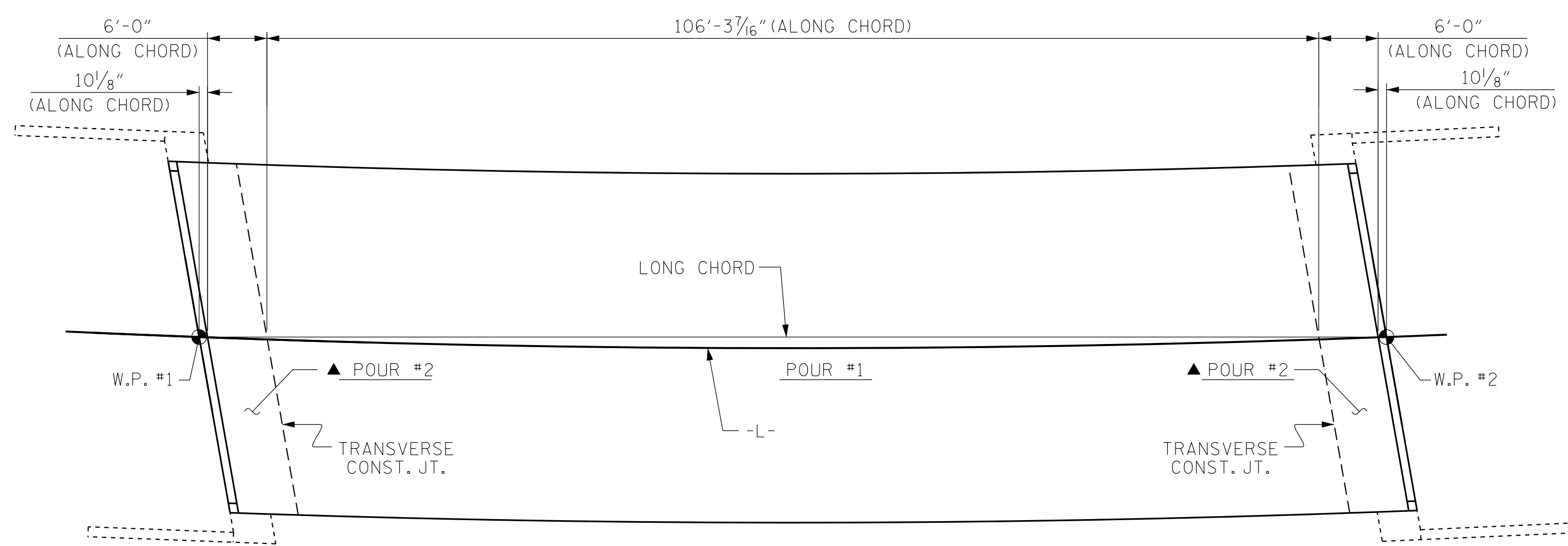
ASSEMBLED BY :	H. T. BARBOUR	DATE :	11-23-15
CHECKED BY :	V. X. NGUYEN	DATE :	11-15
DRAWN BY :	TLA	5/06	REV. 10/1/11
CHECKED BY :	GM	5/06	REV. 7/12
			REV. 6/13
			MAA/GM
			MAA/GM
			MAA/GM

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



LAYOUT FOR COMPUTING AREA
REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 4229)



POURING SEQUENCE

▲ POUR #2 INCLUDES THE UPPER PART OF THE INTEGRAL END BENTS AND END SECTIONS OF THE BRIDGE DECK.

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"			

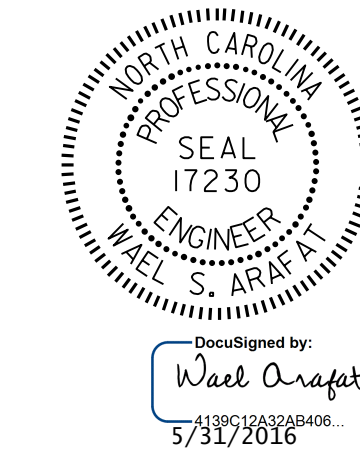
GROOVING BRIDGE FLOORS		
BRIDGE DECK	3421	SO.FT.
APPROACH SLAB	821	SO.FT.
TOTAL	4242	SO.FT.

SUPERSTRUCTURE BILL OF MATERIAL			
	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	*EPOXY COATED REINFORCING STEEL (LBS.)
POUR #1	119.7	-----	-----
POUR #2	87.9	-----	-----
TOTALS**	207.6	12,961	13,750

**QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

BAR TYPES				REINFORCING BAR SCHEDULE											
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT				
*A1	179	#5	STR	34'-11"	6519	A210	1	#5	STR	32'-10"	34				
A2	179	#5	STR	34'-11"	6519	A211	1	#5	STR	29'-3"	31				
						A212	1	#5	STR	25'-9"	27				
*A101	1	#5	STR	32'-10"	34	A213	1	#5	STR	22'-2"	23				
*A102	1	#5	STR	29'-4"	31	A214	1	#5	STR	18'-7"	19				
*A103	1	#5	STR	25'-10"	27	A215	1	#5	STR	15'-0"	16				
*A104	1	#5	STR	22'-4"	23	A216	1	#5	STR	11'-5"	12				
*A105	1	#5	STR	18'-9"	20	A217	1	#5	STR	7'-11"	8				
*A106	1	#5	STR	15'-3"	16	A218	1	#5	STR	4'-4"	5				
*A107	1	#5	STR	11'-9"	12										
*A108	1	#5	STR	8'-3"	9	*B1	87	#4	STR	24'-0"	1395				
*A109	1	#5	STR	4'-8"	5	B2	117	#5	STR	41'-4"	5044				
*A110	1	#5	STR	32'-10"	34	*B3	58	#6	STR	27'-10"	2425				
*A111	1	#5	STR	29'-3"	31	*B4	52	#6	STR	31'-1"	2428				
*A112	1	#5	STR	25'-9"	27										
*A113	1	#5	STR	22'-2"	23	K1	28	#4	STR	18'-9"	351				
*A114	1	#5	STR	18'-7"	19	K2	6	#4	STR	7'-1"	28				
*A115	1	#5	STR	15'-0"	16	K3	30	#4	STR	8'-8"	174				
*A116	1	#5	STR	11'-5"	12	K4	6	#4	STR	5'-8"	23				
*A117	1	#5	STR	7'-11"	8	K5	2	#4	STR	2'-5"	3				
*A118	1	#5	STR	4'-4"	5	K6	10	#4	STR	3'-3"	22				
						K7	2	#4	STR	2'-5"	3				
A201	1	#5	STR	32'-10"	34	K8	2	#4	STR	1'-6"	2				
A202	1	#5	STR	29'-4"	31	K9	10	#4	STR	2'-4"	16				
A203	1	#5	STR	25'-10"	27	K10	2	#4	STR	0'-10"	1				
A204	1	#5	STR	22'-4"	23										
A205	1	#5	STR	18'-9"	20	*S1	38	#4	2	12'-4"	313				
A206	1	#5	STR	15'-3"	16	*S2	40	#4	2	11'-11"	318				
A207	1	#5	STR	11'-9"	12										
A208	1	#5	STR	8'-3"	9	U1	42	#4	1	15'-1"	423				
A209	1	#5	STR	4'-8"	5										
											REINFORCING STEEL = 12,961 LBS				
											*EPOXY COATED REINF. STEEL = 13,750 LBS				

ALL BAR DIMENSIONS ARE OUT TO OUT

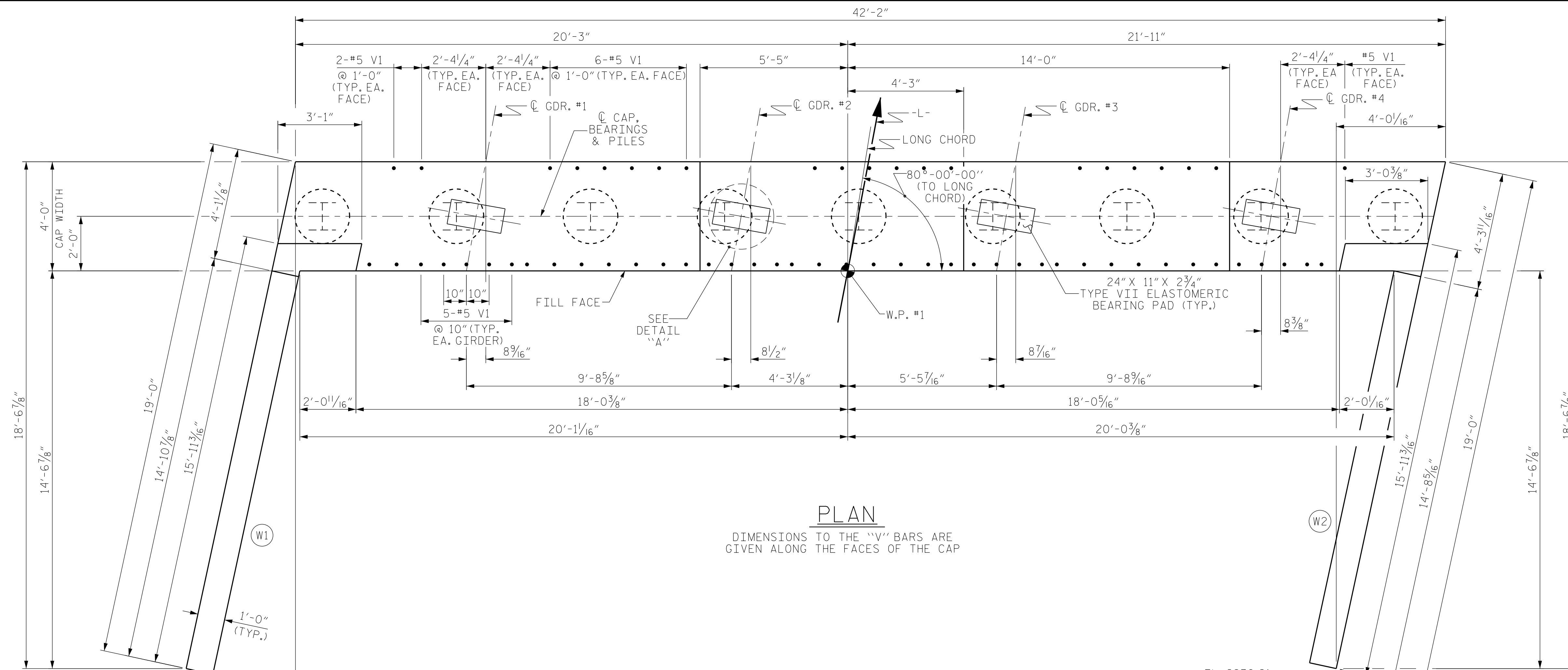


PROJECT NO. R-4060
ALLEGHANY COUNTY
STATION: 36+45.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE BILL OF MATERIAL					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					S-17
					TOTAL SHEETS 26

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY: H. T. BARBOUR DATE: 12-5-14
CHECKED BY: V. X. NGUYEN DATE: 11-15
DESIGN ENGINEER OF RECORD: S. I. CHAMPION DATE: 12-29-15



PLAN
DIMENSIONS TO THE "V" BARS ARE GIVEN ALONG THE FACES OF THE CAP

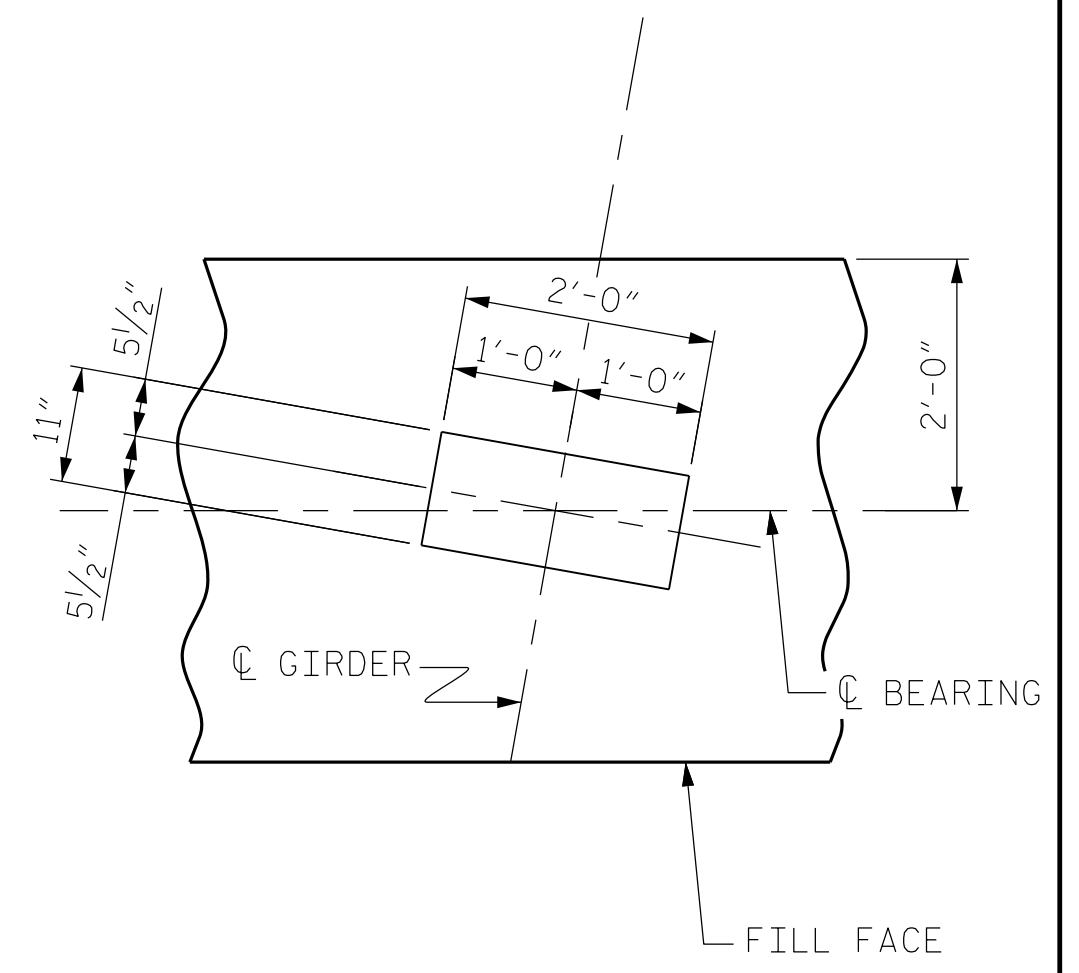
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #5 V1 BARS.

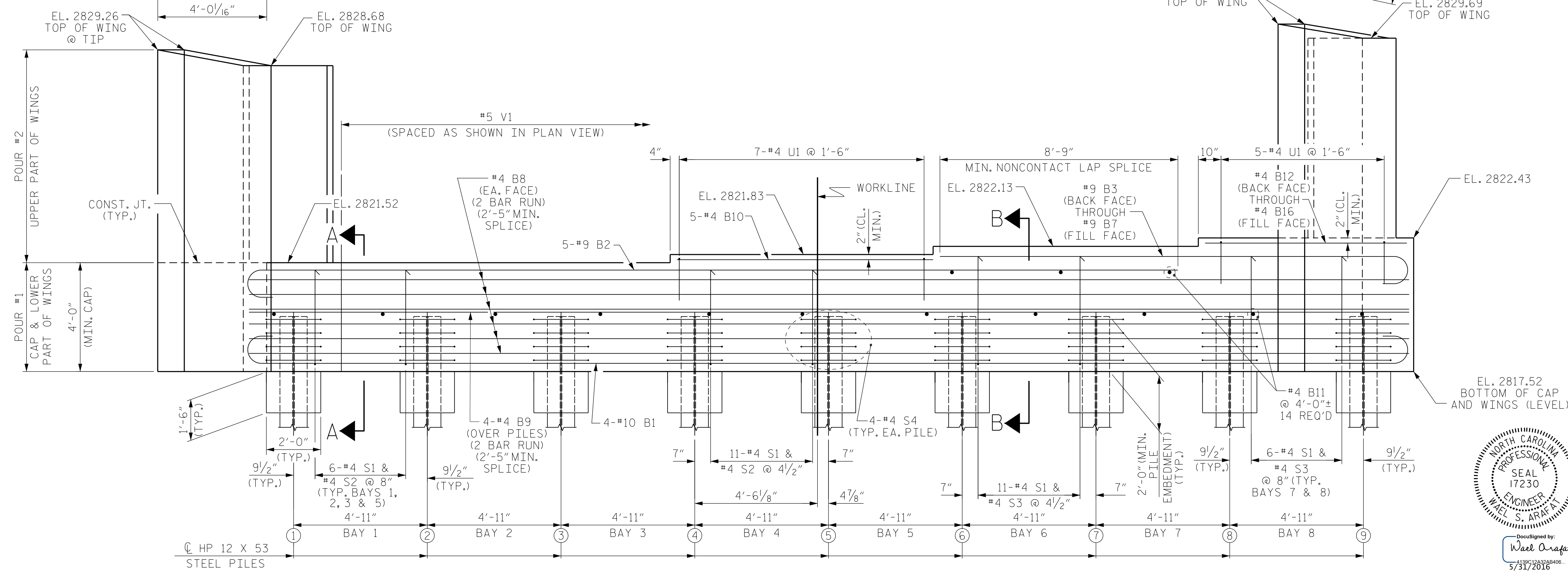
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

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

THE UPPER PORTION OF THE INTEGRAL END BENT SHALL BE POURED WITH THE SUPERSTRUCTURE. SEE SUPERSTRUCTURE PLANS.



DETAIL "A"
PILE NOT SHOWN



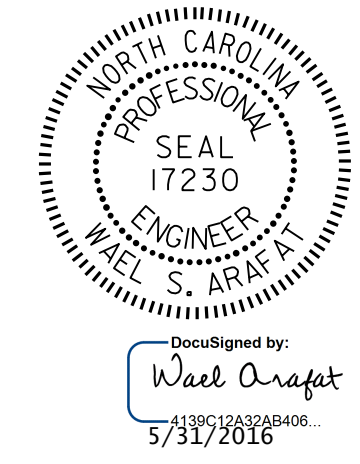
ELEVATION

PROJECT NO. R-4060
ALLEGHANY COUNTY
STATION: 36+45.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

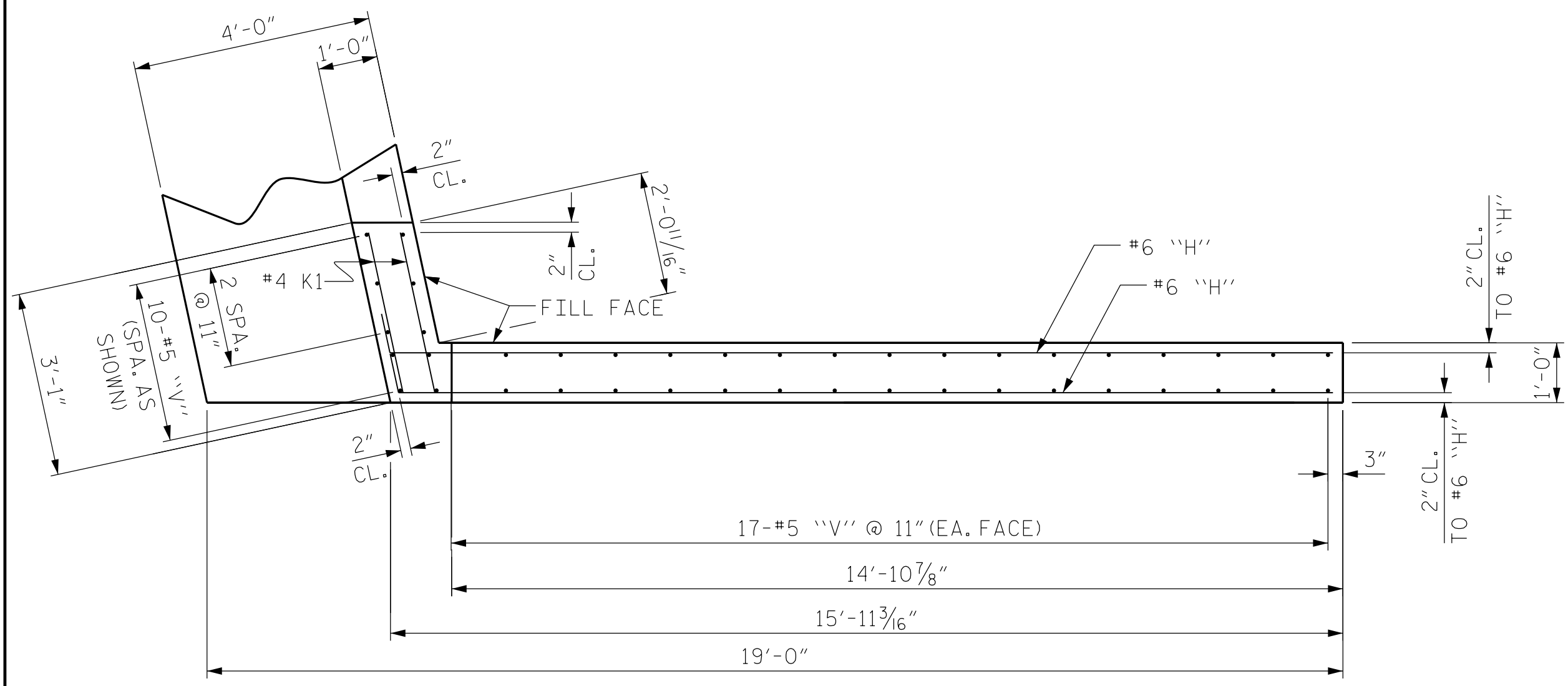
**SUBSTRUCTURE
INTEGRAL
END BENT #1**



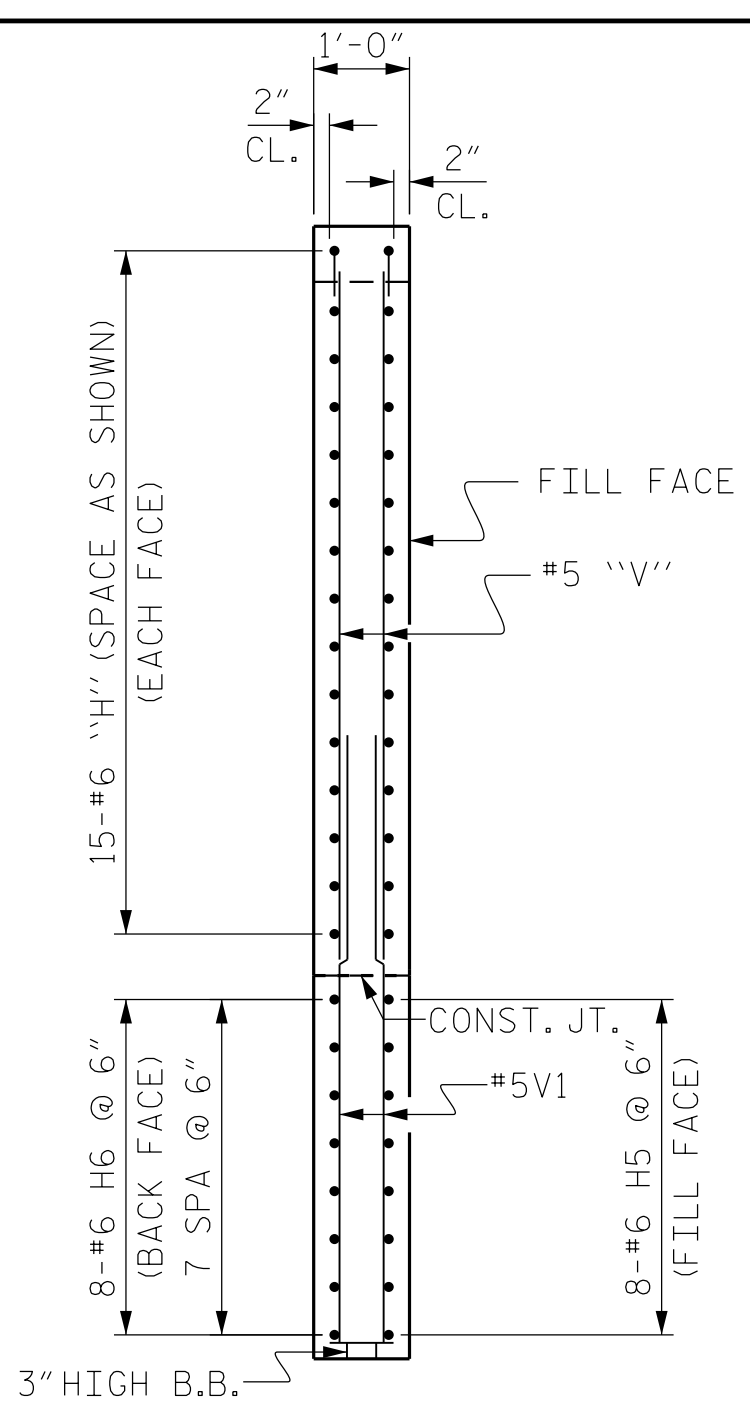
DRAWN BY: H. T. BARBOUR DATE: 3-3-15
CHECKED BY: V. X. NGUYEN DATE: 11-15
DESIGN ENGINEER OF RECORD: S. I. CHAMPION DATE: 12-15

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SIGNATURES COMPLETED

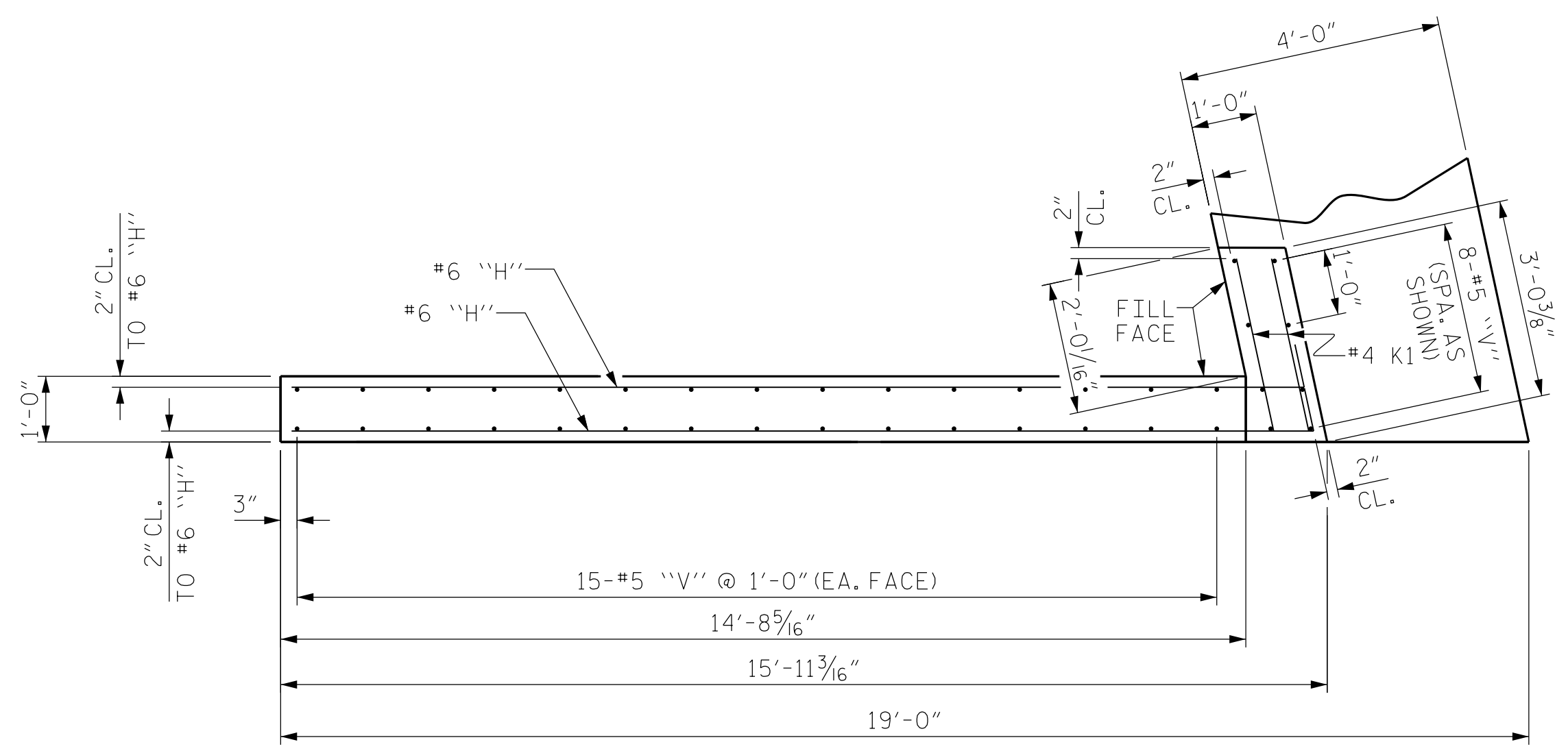
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			26



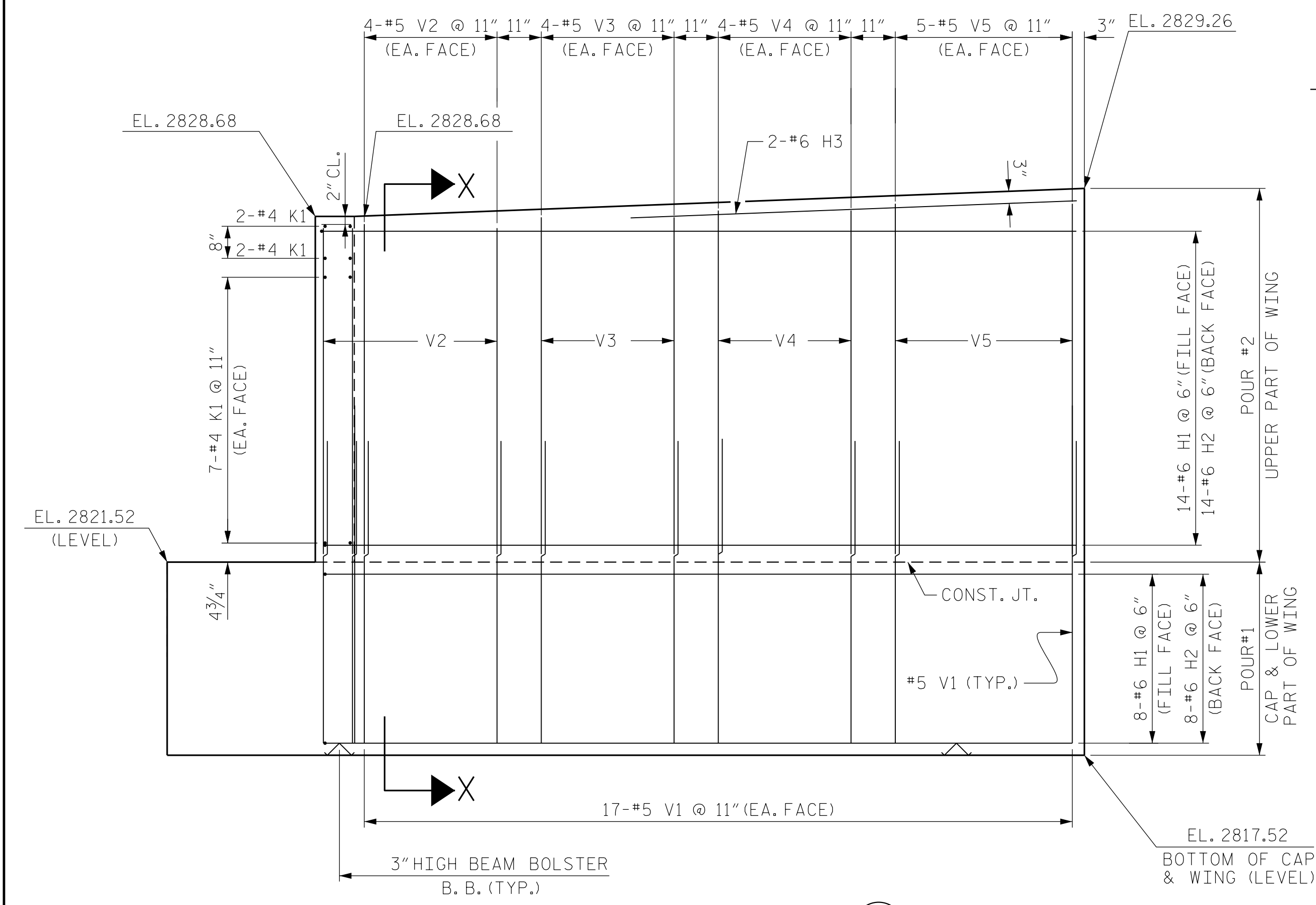
PLAN OF LEFT WING (W1)



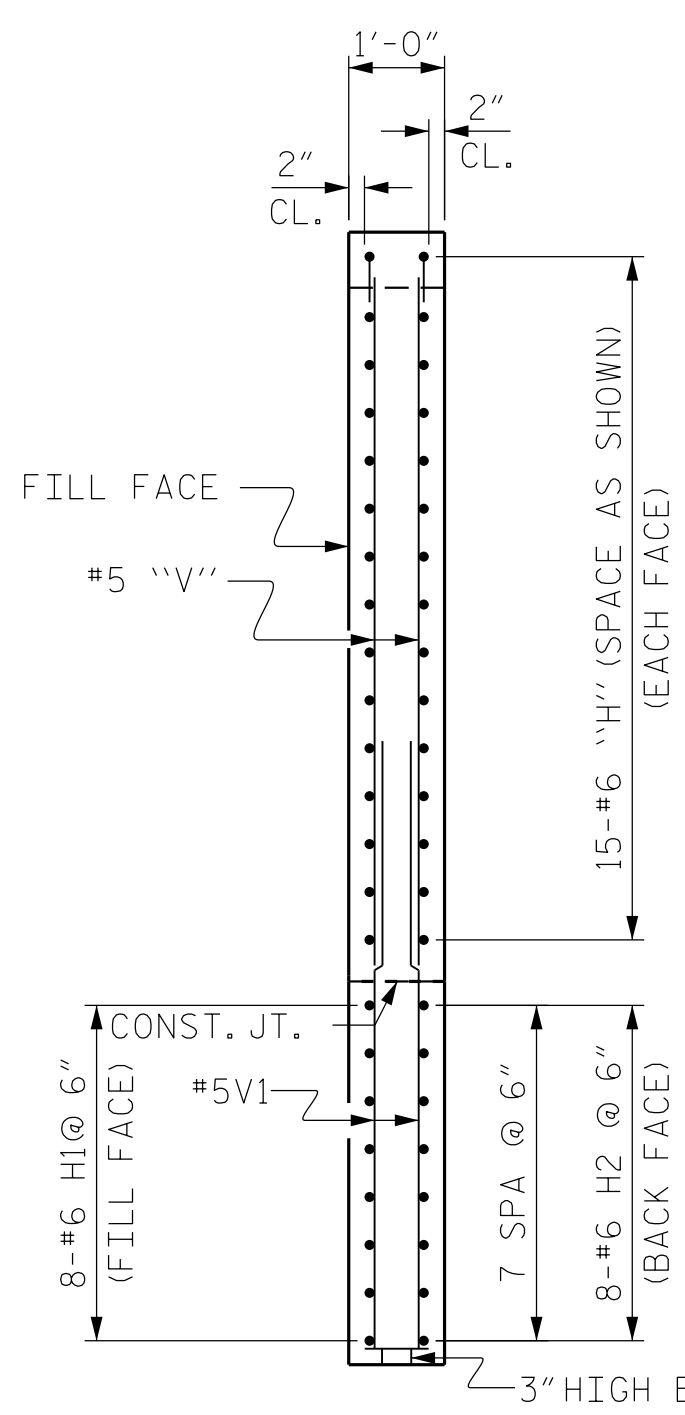
SECTION Y-Y



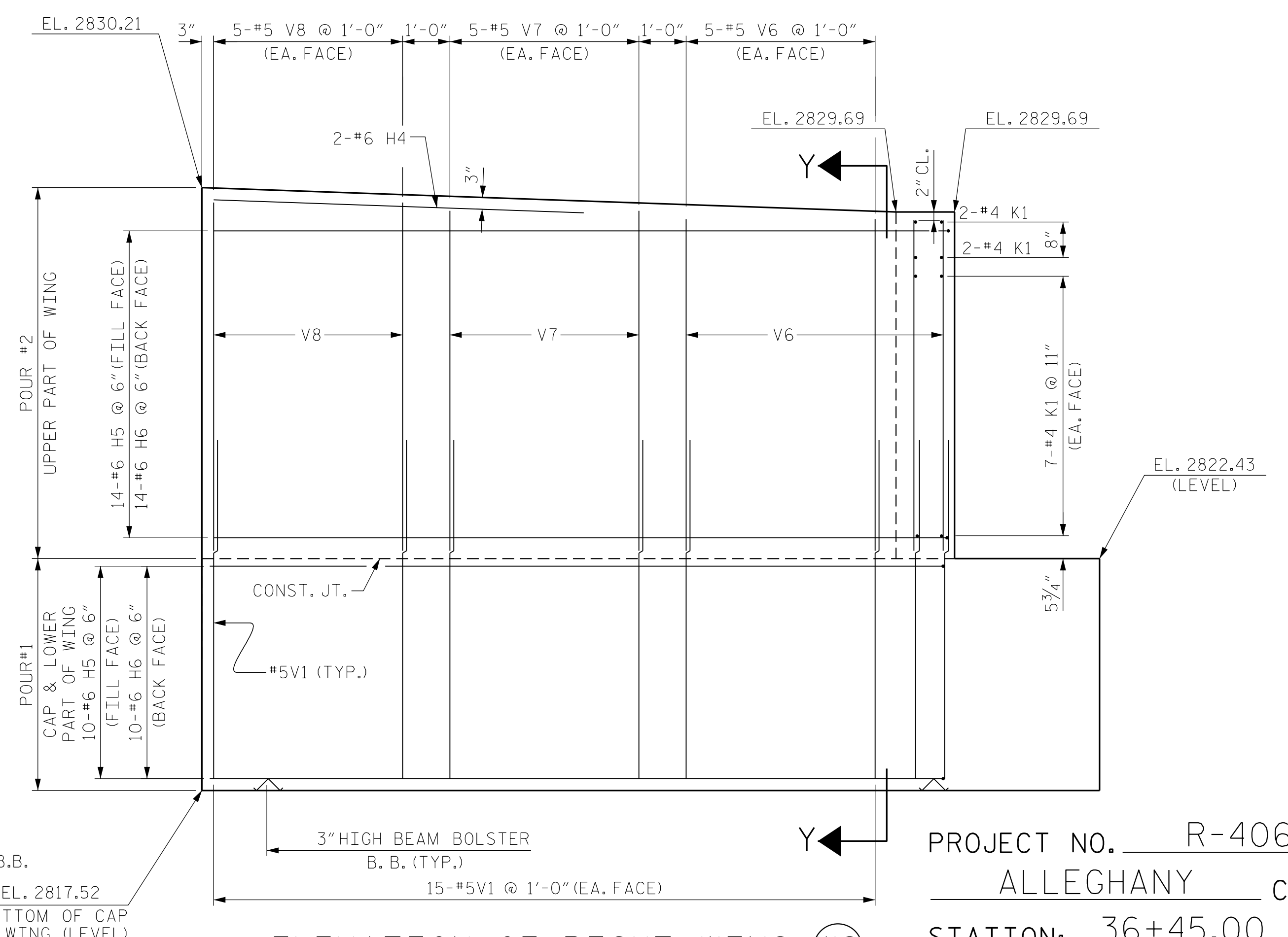
PLAN OF RIGHT WING (W2)



ELEVATION OF LEFT WING (W1)



SECTION X-X



ELEVATION OF RIGHT WING (W2)

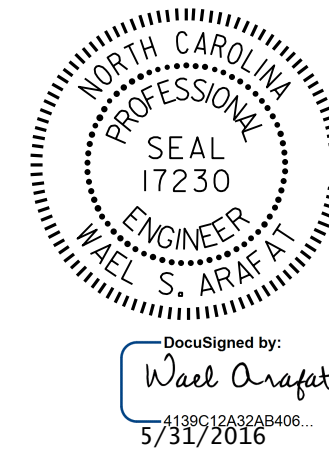
PROJECT NO. R-4060
 ALLEGHANY COUNTY
 STATION: 36+45.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

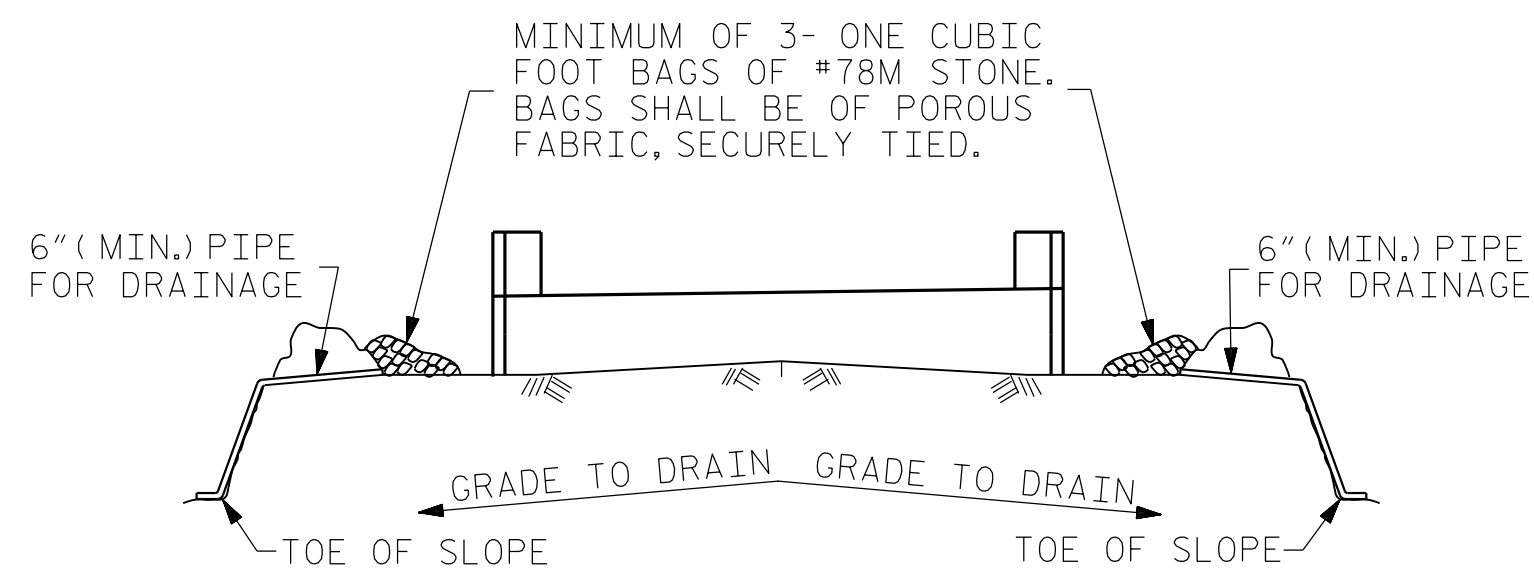
SUBSTRUCTURE
 INTEGRAL
 END BENT #1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			26



DRAWN BY: H. T. BARBOUR DATE: 12-2-14
 CHECKED BY: V. X. NGUYEN DATE: 11-15
 DESIGN ENGINEER OF RECORD: S. I. CHAMPION DATE: 12-15

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

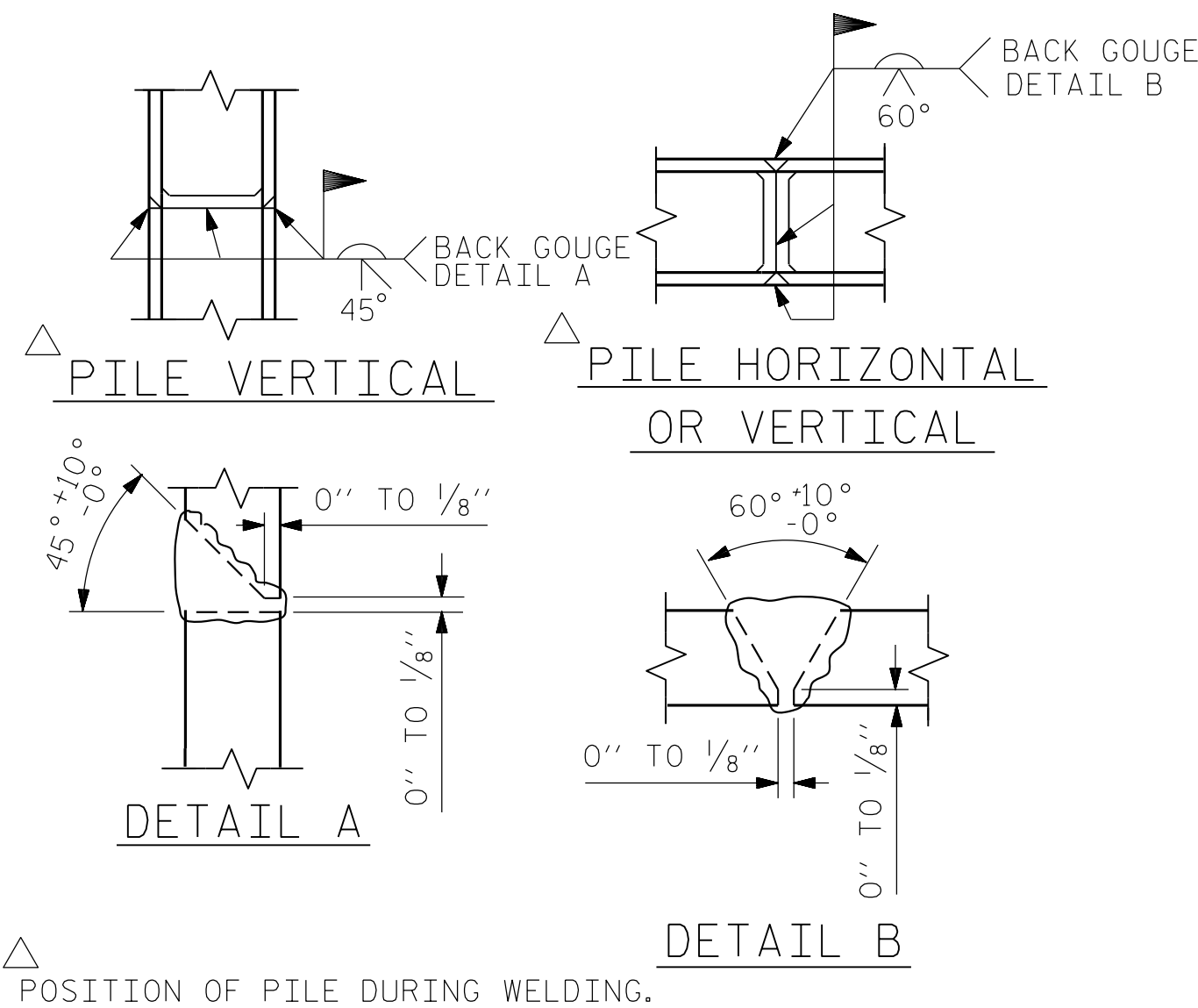


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

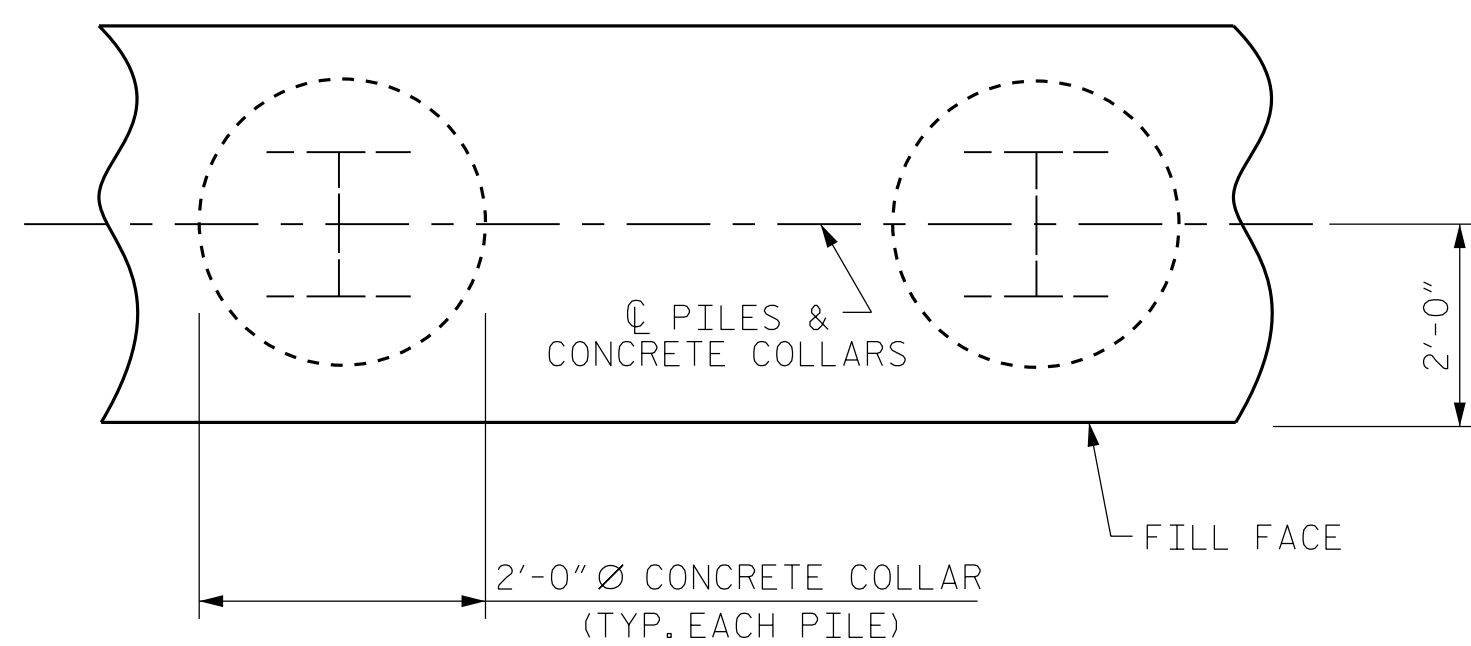
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

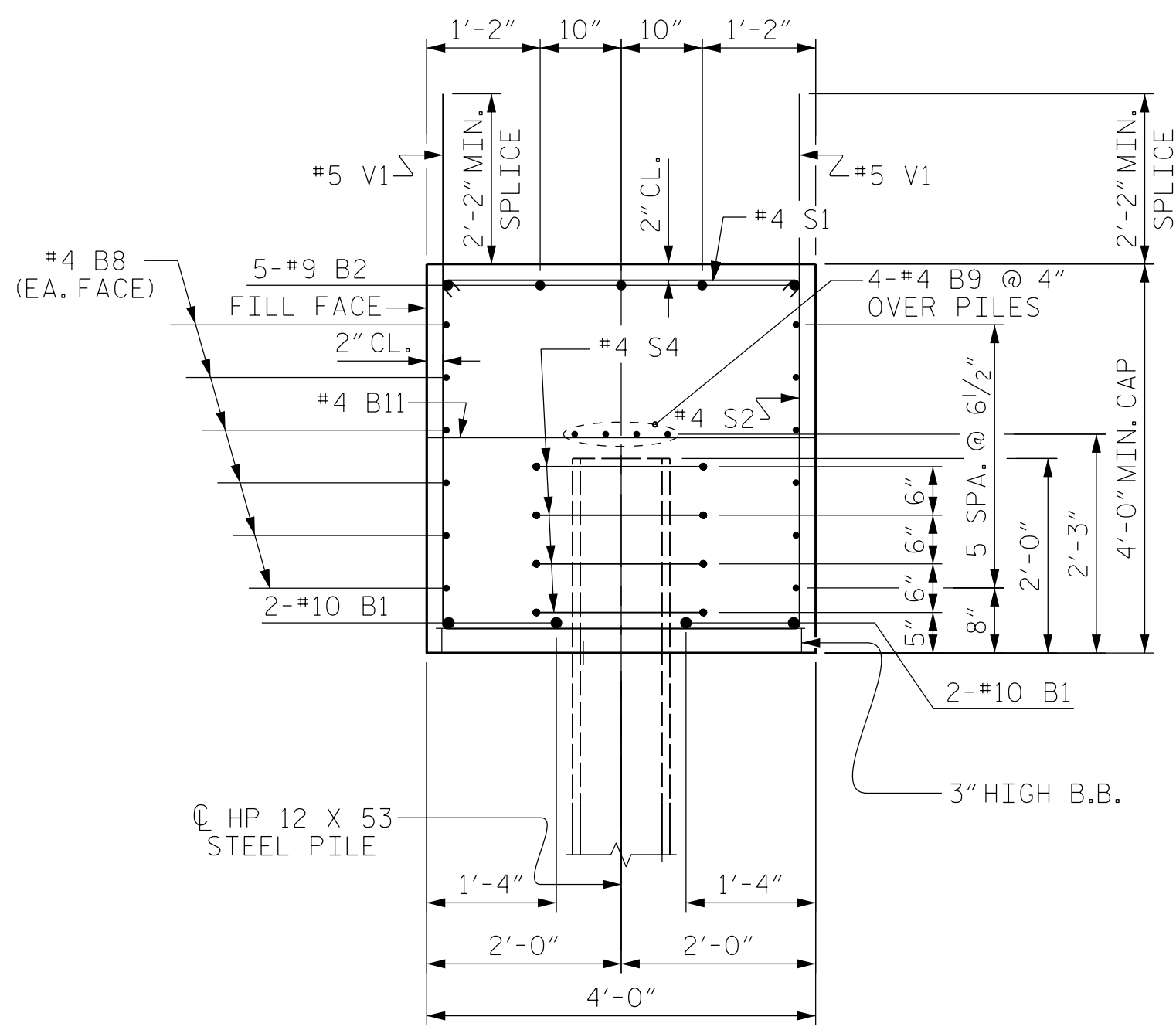
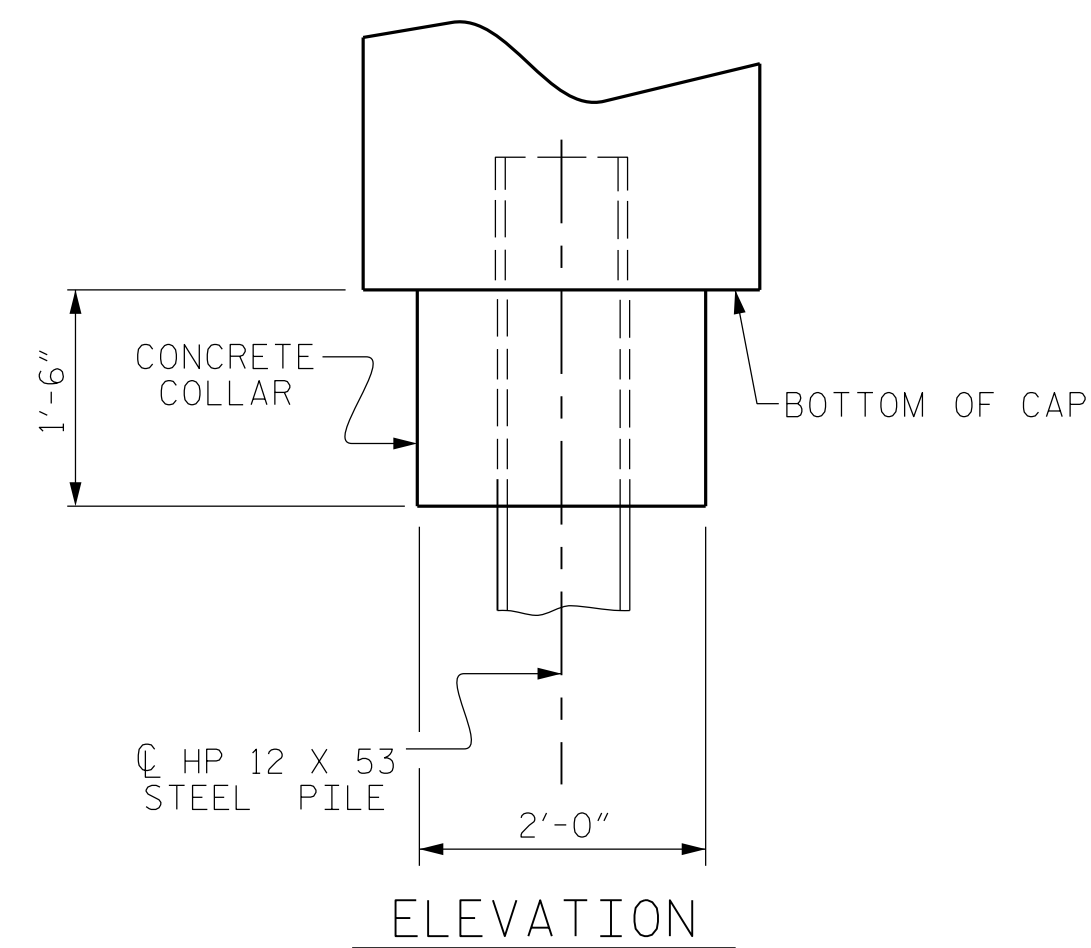
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS



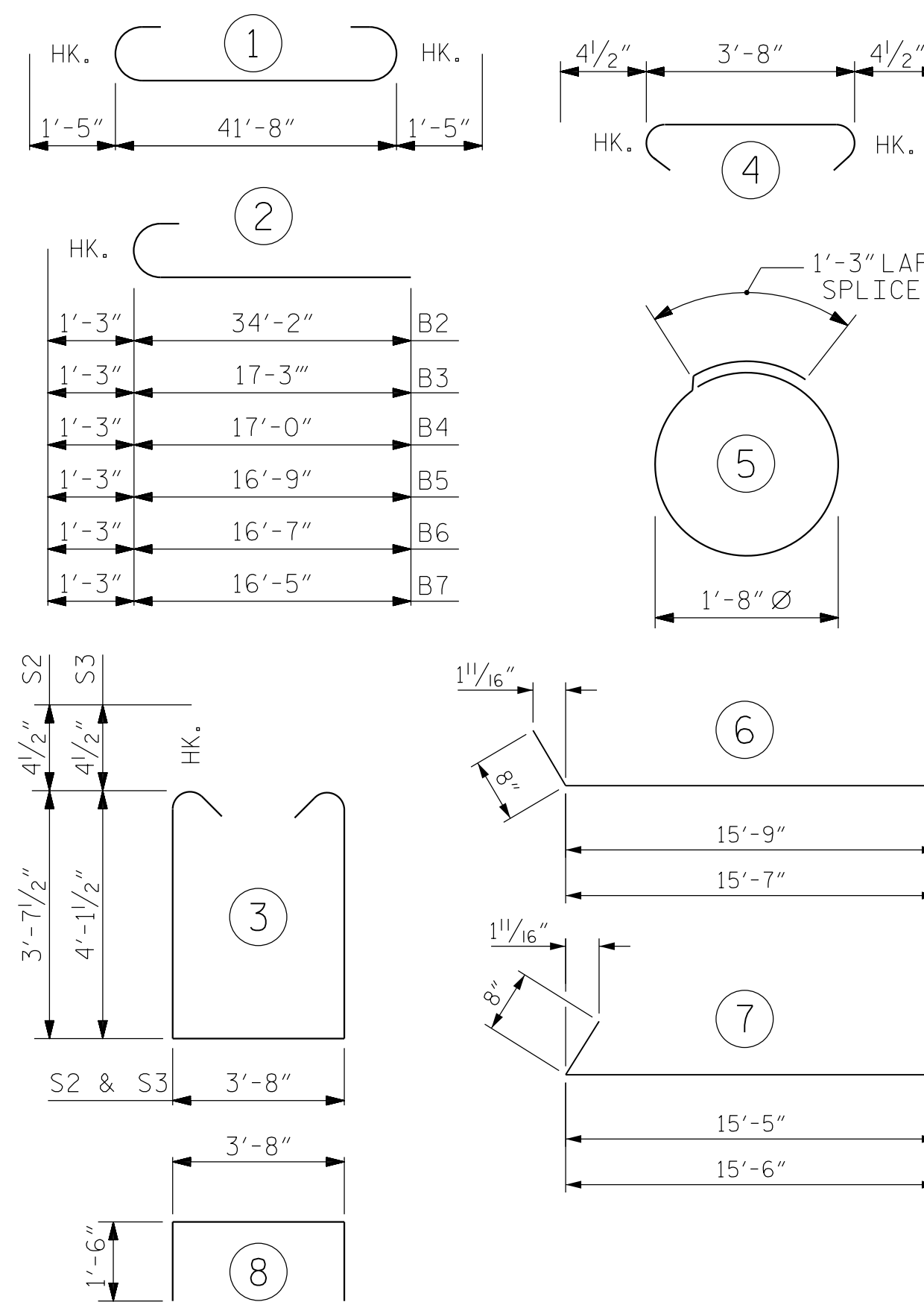
CORROSION PROTECTION FOR STEEL PILES DETAIL



SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT #1

BAR NO.	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	44'-6"	766
B2	5	#9	2	35'-5"	602
B3	1	#9	2	18'-6"	63
B4	1	#9	2	18'-3"	62
B5	1	#9	2	18'-0"	61
B6	1	#9	2	17'-10"	61
B7	1	#9	2	17'-8"	60
B8	24	#4	STR	22'-2"	355
B9	8	#4	STR	22'-2"	118
B10	5	#4	STR	9'-5"	31
B11	14	#4	STR	3'-8"	34
B12	1	#4	STR	7'-6"	5
B13	1	#4	STR	7'-3"	5
B14	1	#4	STR	7'-1"	5
B15	1	#4	STR	6'-11"	5
B16	1	#4	STR	6'-9"	5
H1	22	#6	6	16'-5"	542
H2	22	#6	6	16'-3"	537
H3	2	#6	STR	9'-3"	28
H4	2	#6	STR	7'-10"	24
H5	24	#6	7	16'-1"	580
H6	24	#6	7	16'-2"	583
K1	36	#4	STR	2'-8"	64
S1	58	#4	4	4'-5"	171
S2	35	#4	3	11'-8"	273
S3	23	#4	3	12'-8"	195
S4	36	#4	5	6'-6"	156
U1	12	#4	8	6'-8"	53
V1	144	#5	STR	7'-3"	1089
V2	18	#5	STR	6'-10"	128
V3	8	#5	STR	7'-0"	58
V4	8	#5	STR	7'-2"	60
V5	10	#5	STR	7'-3"	76
V6	18	#5	STR	7'-0"	131
V7	10	#5	STR	7'-2"	75
V8	10	#5	STR	7'-4"	76

REINFORCING STEEL (FOR ONE END BENT) 7137 LBS.

CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 33.8 C.Y.

POUR #2 UPPER PART OF WINGS 9.9 C.Y.

TOTAL CLASS A CONCRETE 43.7 C.Y.

HP 12 X 53 STEEL PILES
NO: 9 LIN. FT. = 250

PROJECT NO. R-4060

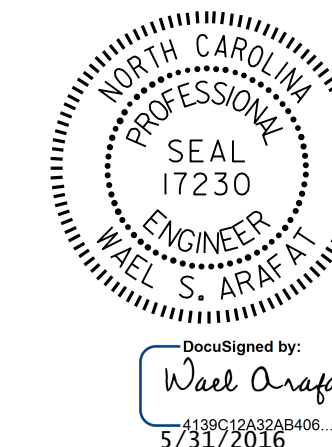
ALLEGHANY COUNTY

STATION: 36+45.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
INTEGRAL
END BENT #1



REVISIONS

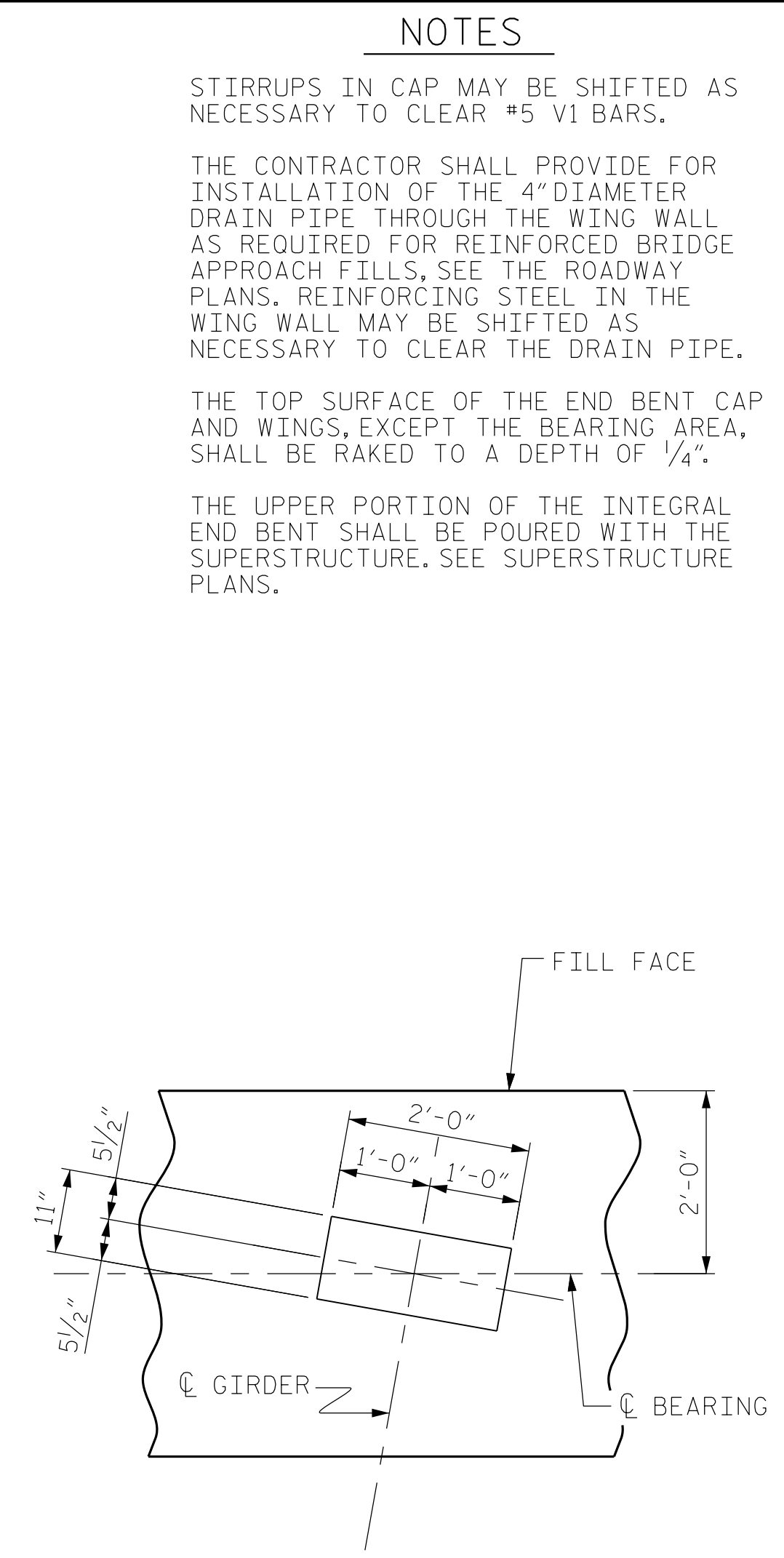
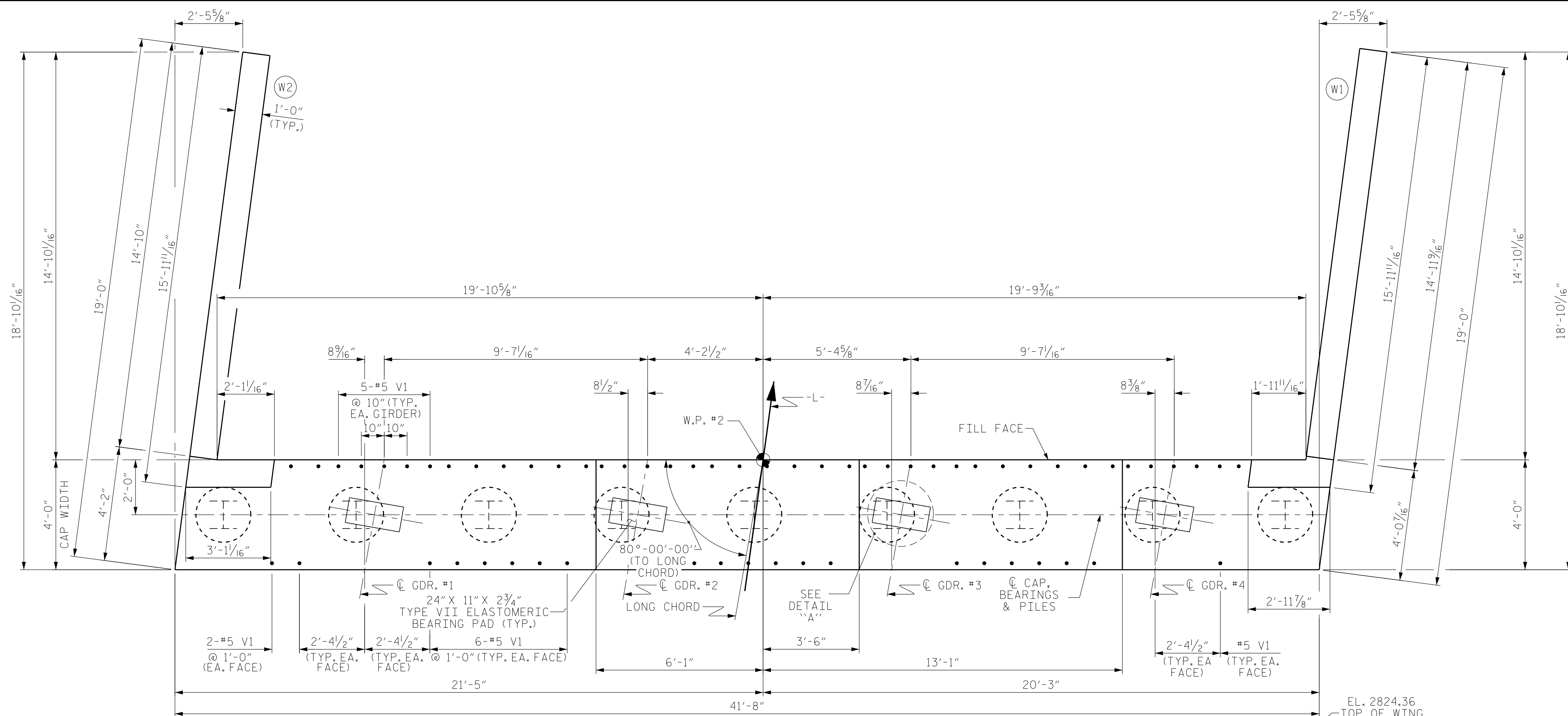
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S-20

TOTAL SHEETS
26

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY: H. T. BARBOUR DATE: 3-3-15
CHECKED BY: V. X. NGUYEN DATE: 11-15
DESIGN ENGINEER OF RECORD: S. T. CHAMPION DATE: 12-15



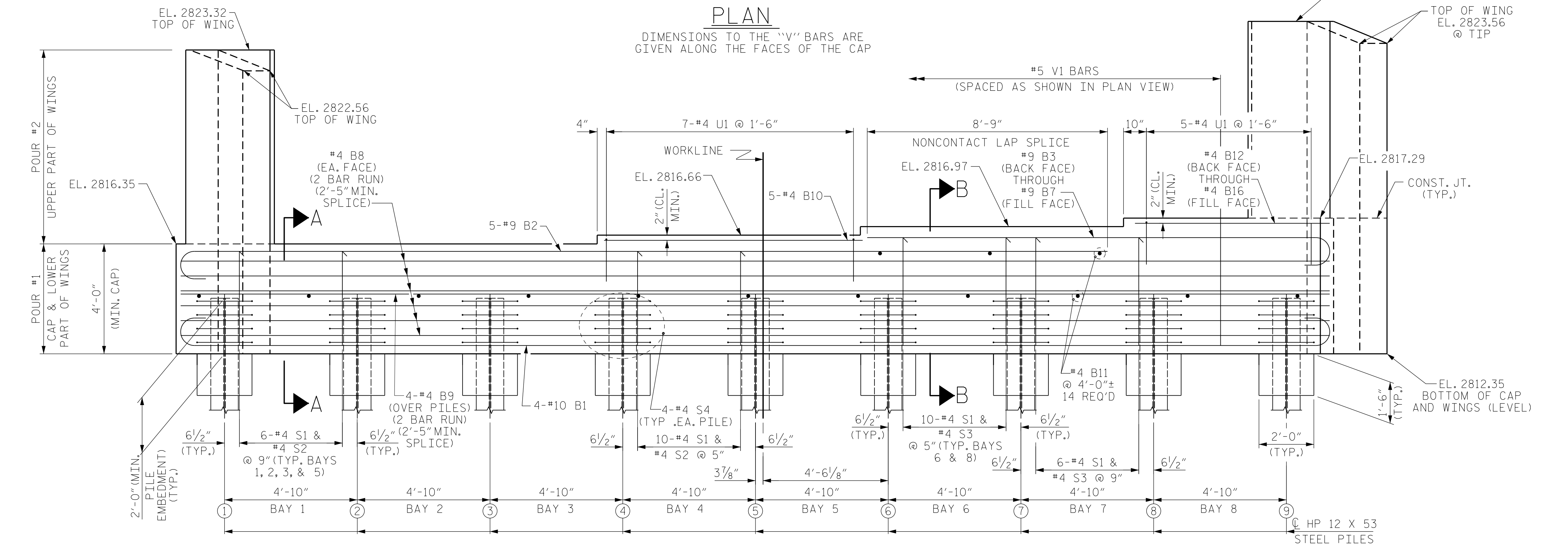
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #5 V1 BARS.

THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER 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 AND WINGS, EXCEPT THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".

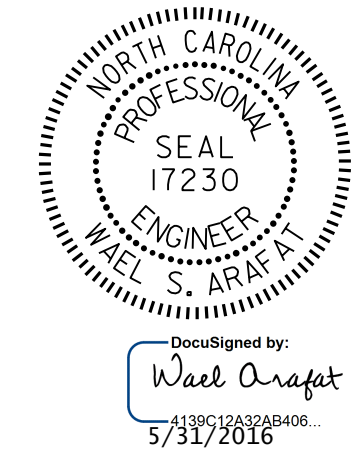
THE UPPER PORTION OF THE INTEGRAL END BENT SHALL BE POURED WITH THE SUPERSTRUCTURE. SEE SUPERSTRUCTURE PLANS.



PROJECT NO. R-4060
ALLEGHANY COUNTY
 STATION: 36+45.00 -L-

SHEET 1 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

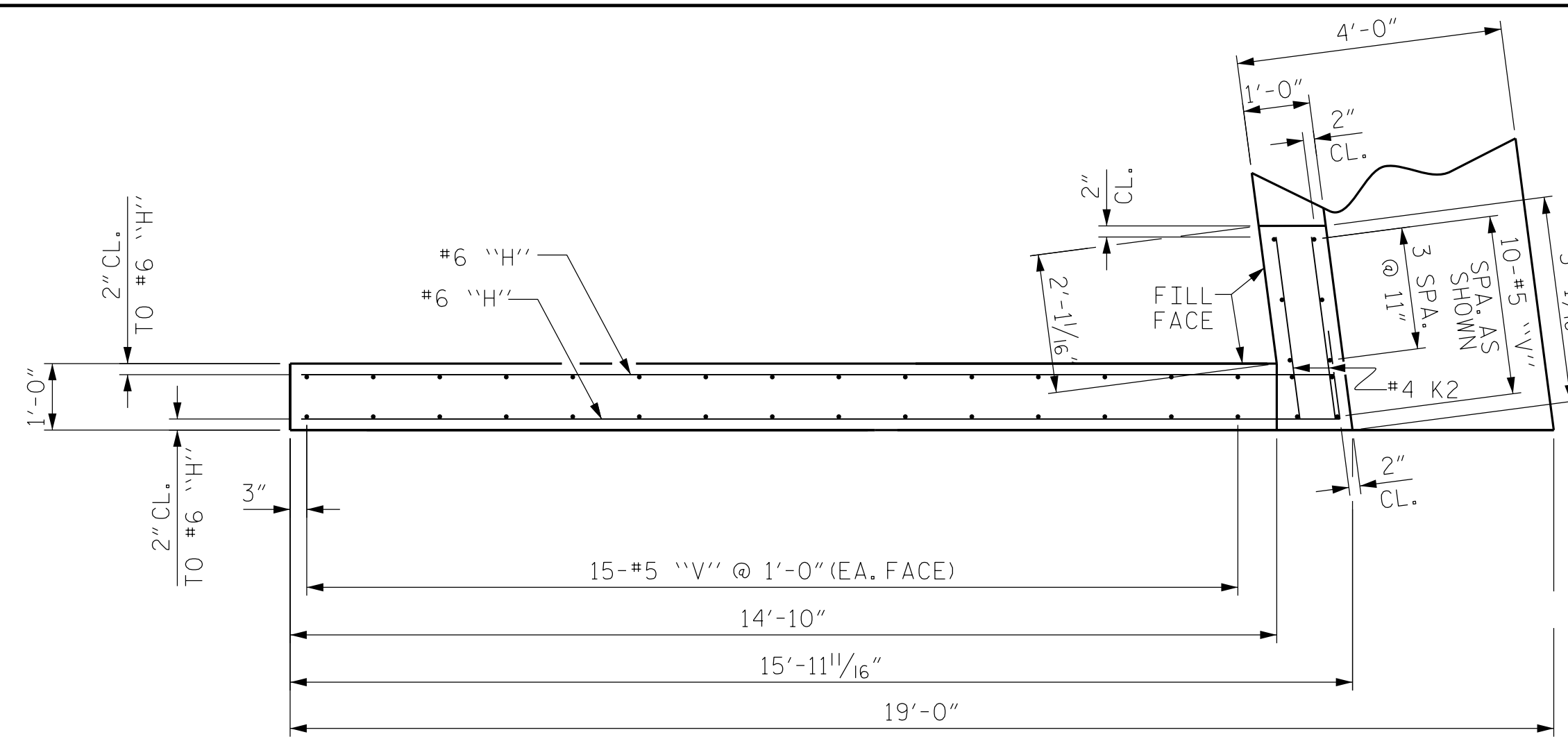
**SUBSTRUCTURE
 INTEGRAL
 END BENT #2**



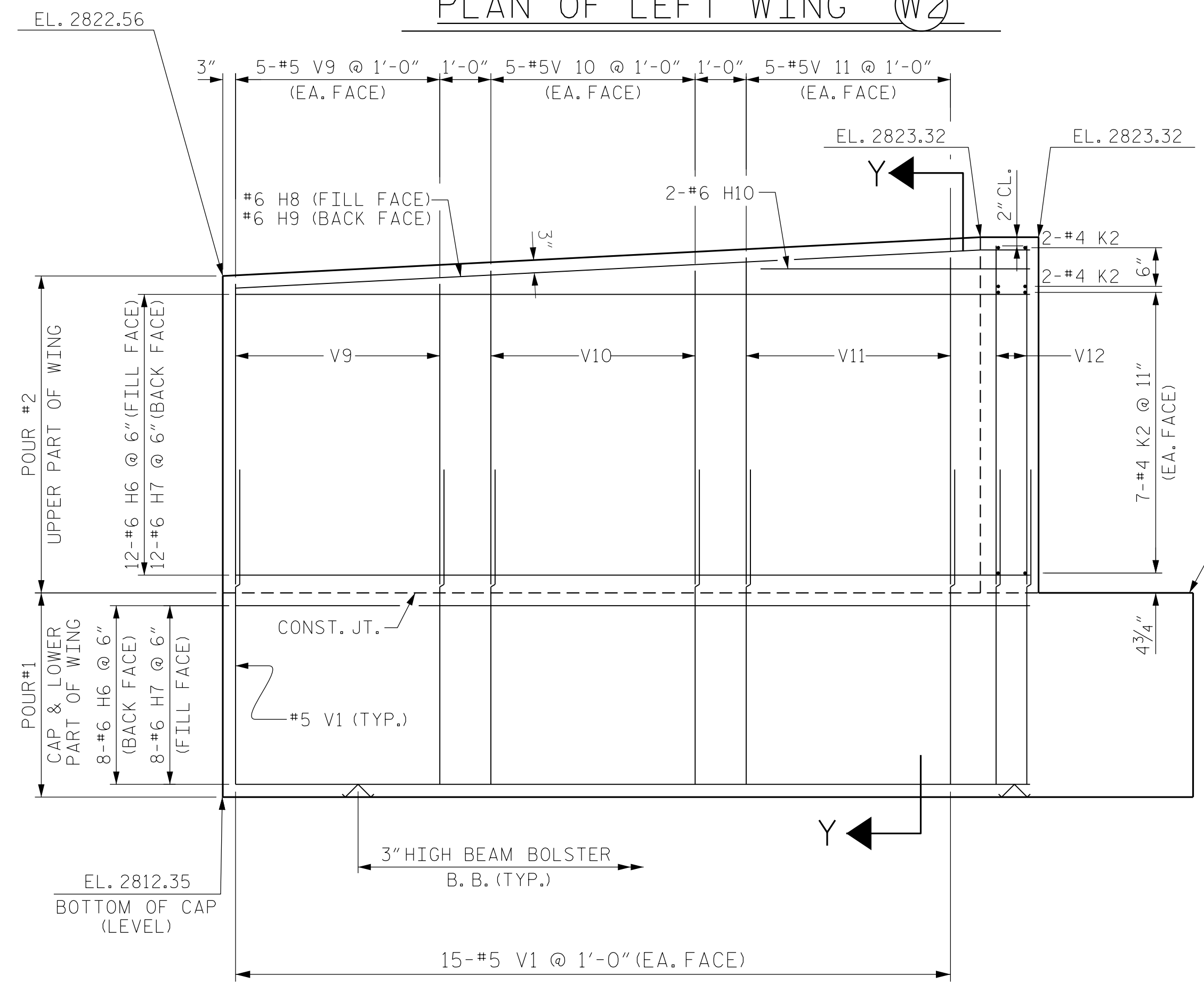
DRAWN BY: H. T. BARBOUR DATE: 3-4-15
 CHECKED BY: V. X. NGUYEN DATE: 11-15
 DESIGN ENGINEER OF RECORD: S. I. CHAMPION DATE: 12-15

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

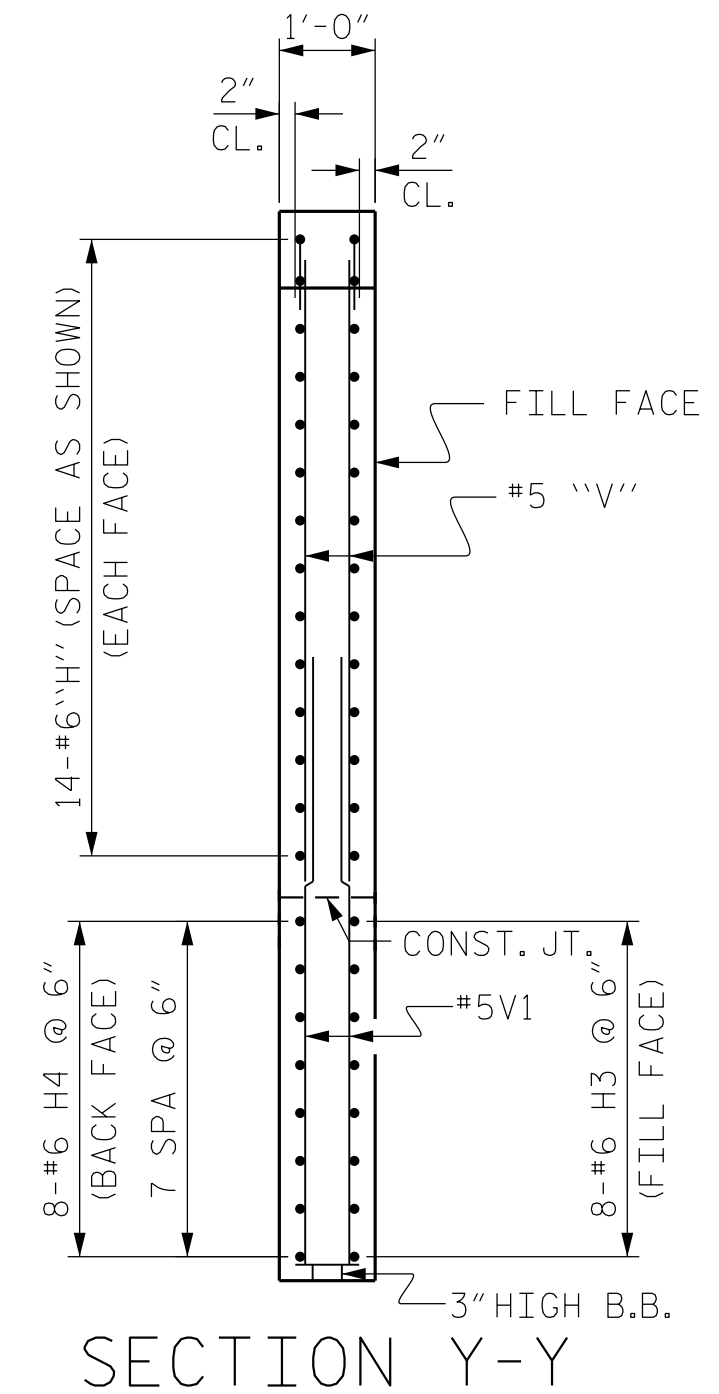
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			26



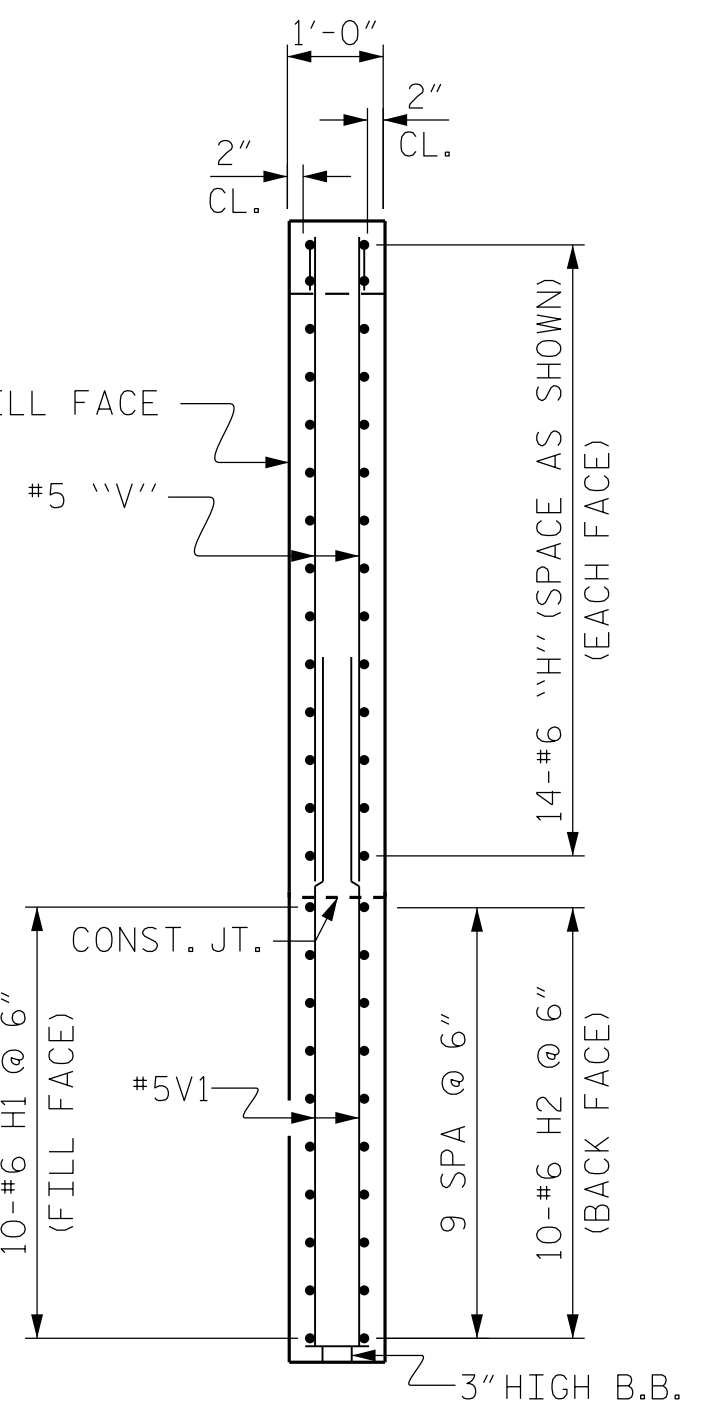
PLAN OF LEFT WING (W2)



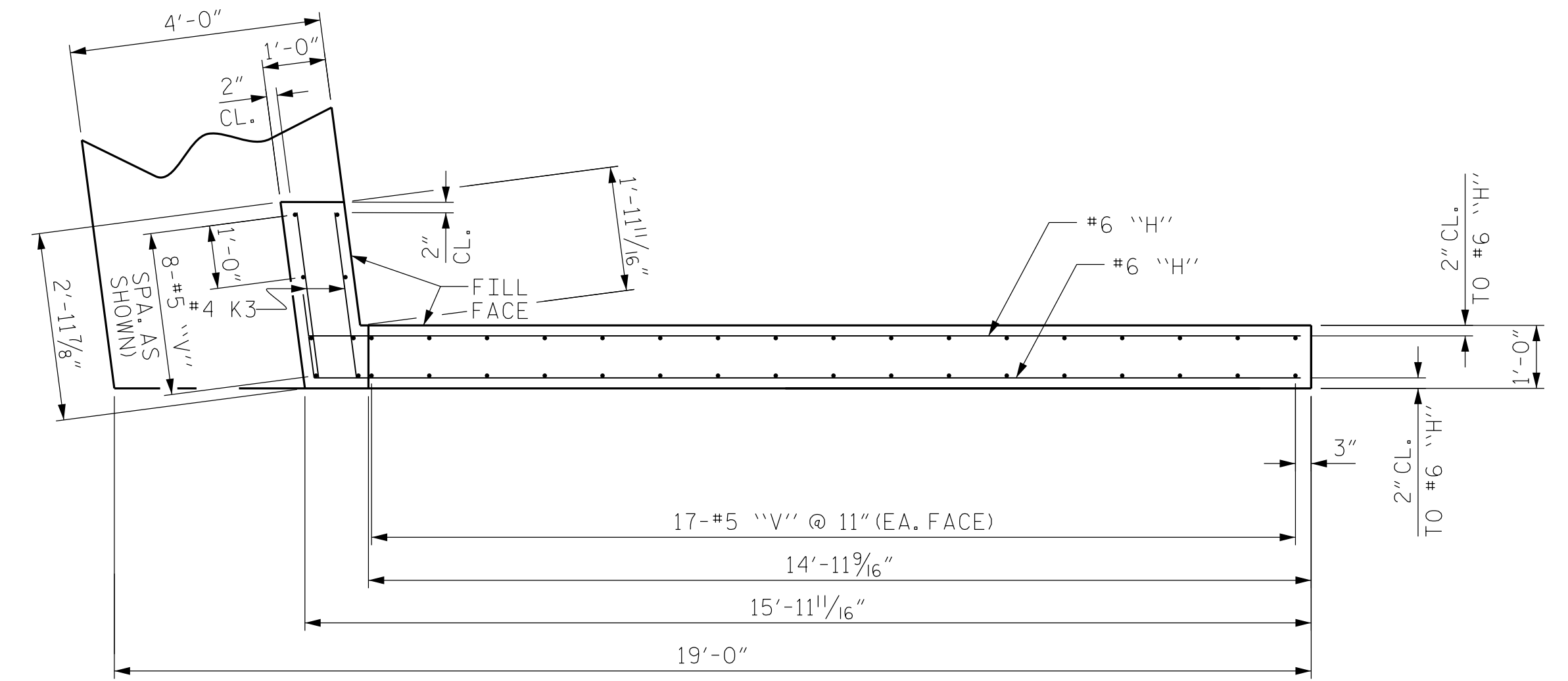
ELEVATION OF LEFT WING (W2)



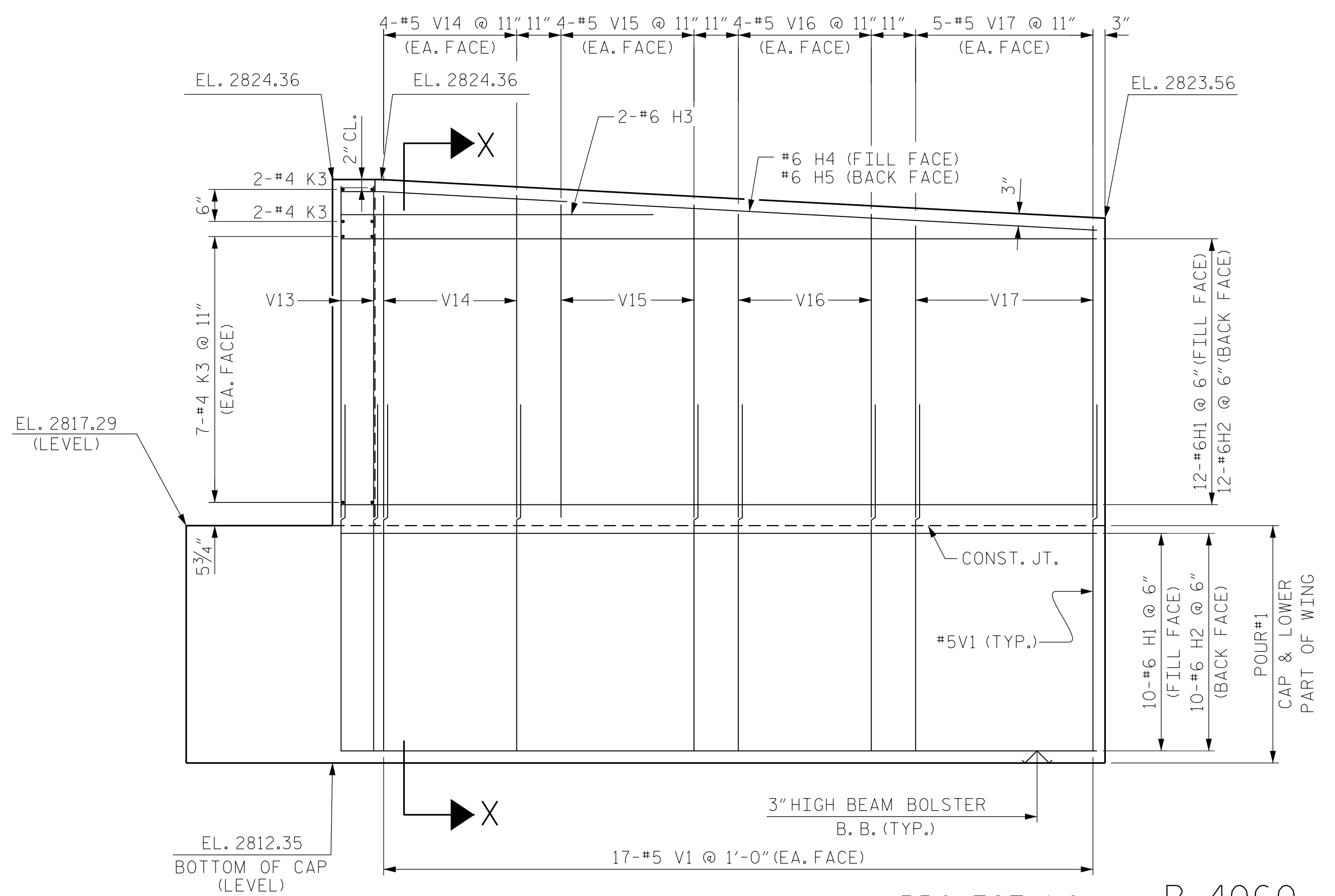
SECTION Y-Y



SECTION X-X



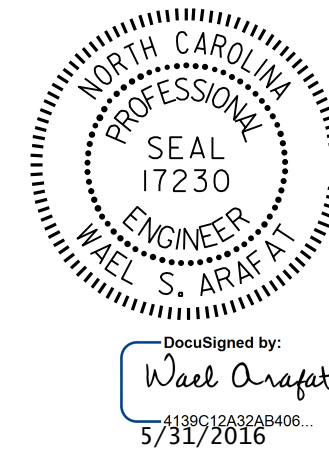
PLAN OF RIGHT WING (W1)



ELEVATION OF RIGHT WING (W1)

PROJECT NO. R-4060
 ALLEGHANY COUNTY
 STATION: 36+45.00 -L-

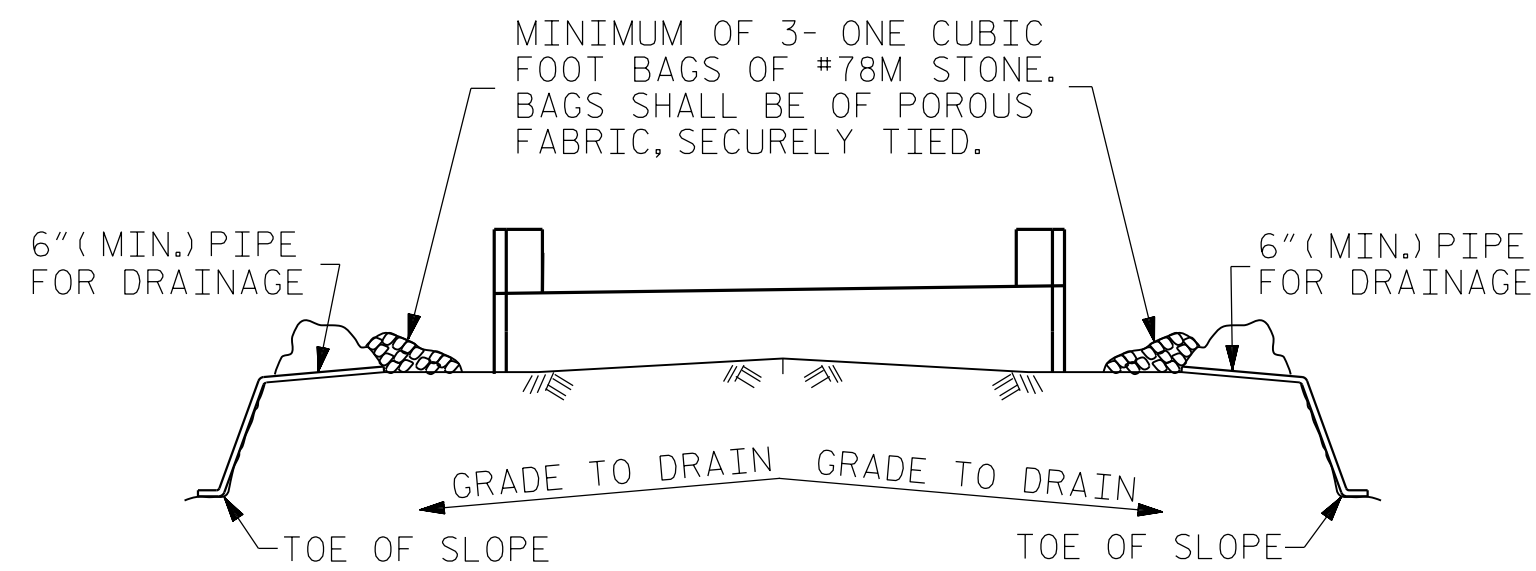
SHEET 2 OF 3
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 INTEGRAL
 END BENT #2



DRAWN BY: H. T. BARBOUR DATE: 12-2-14
 CHECKED BY: V. X. NGUYEN DATE: 11-15
 DESIGN ENGINEER OF RECORD: S. T. CHAMPION DATE: 12-15

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO. S-22
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 26
2			4			

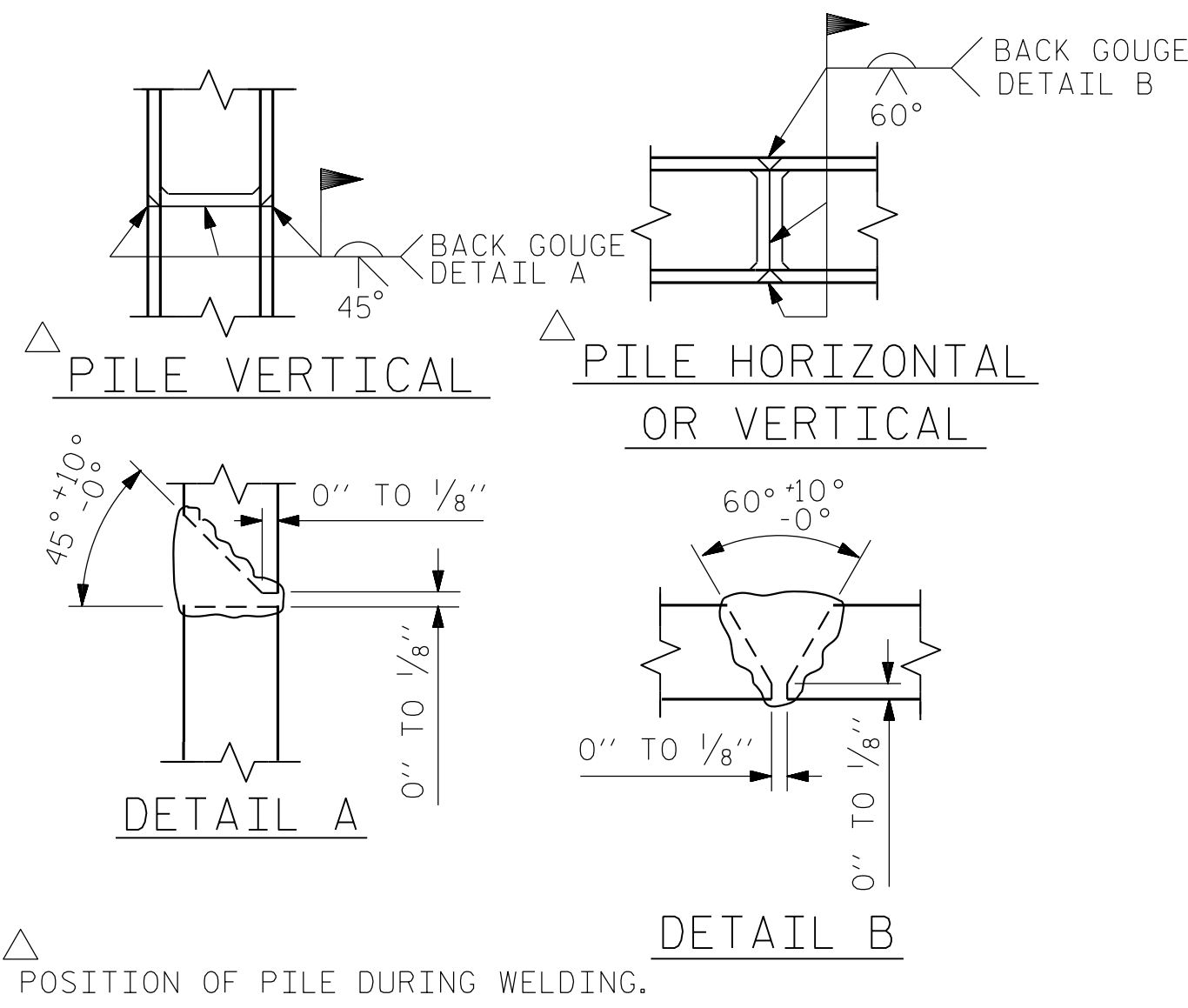


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

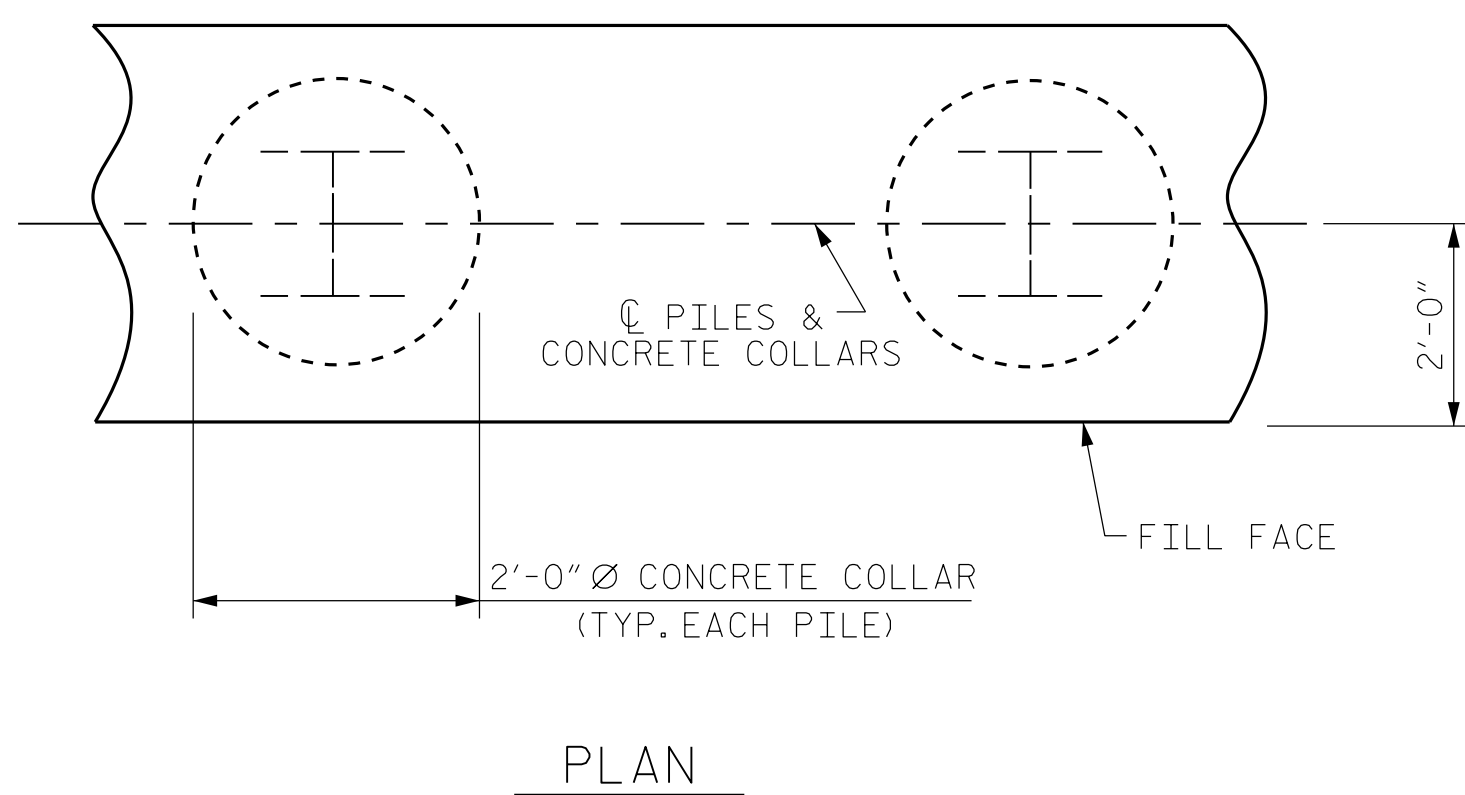
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

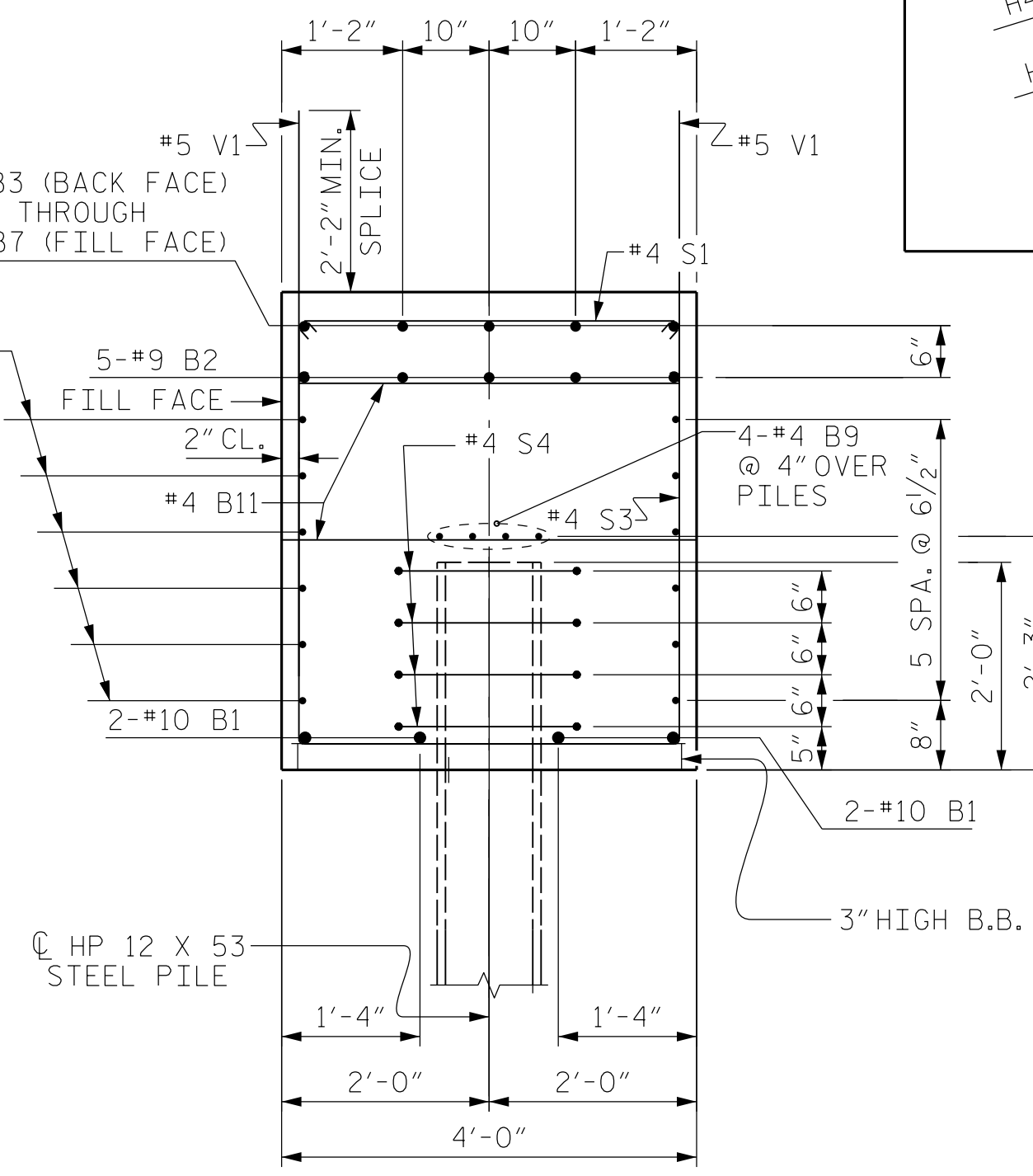
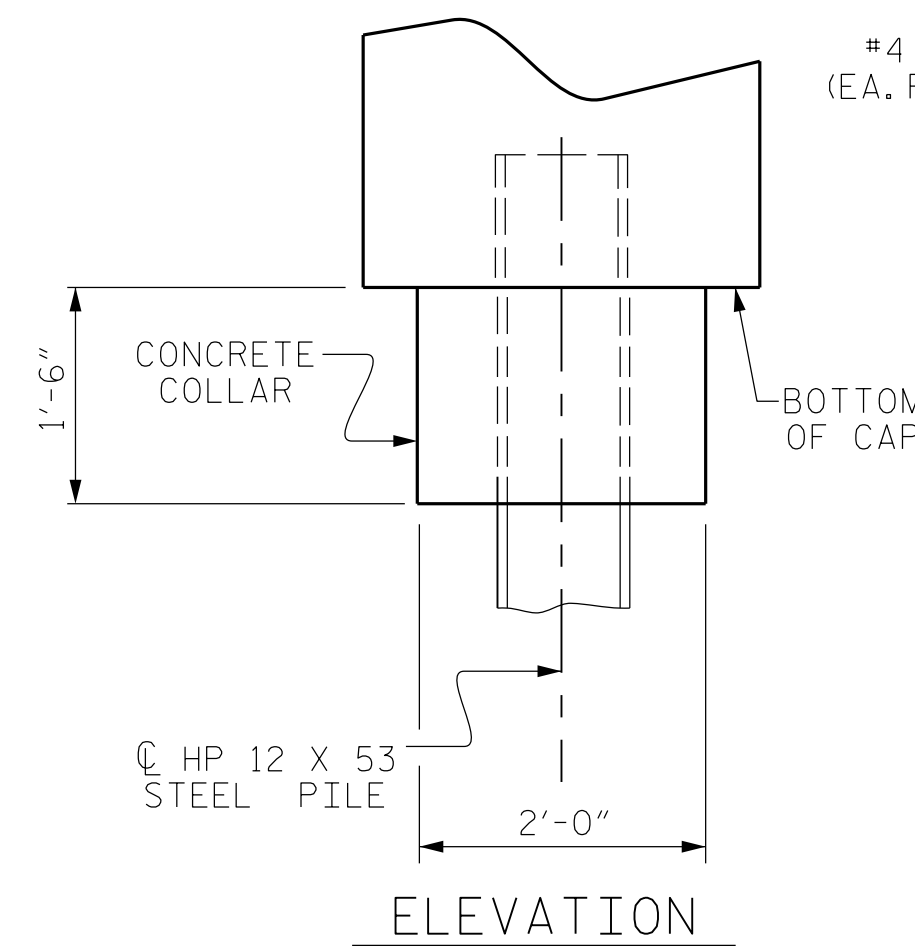
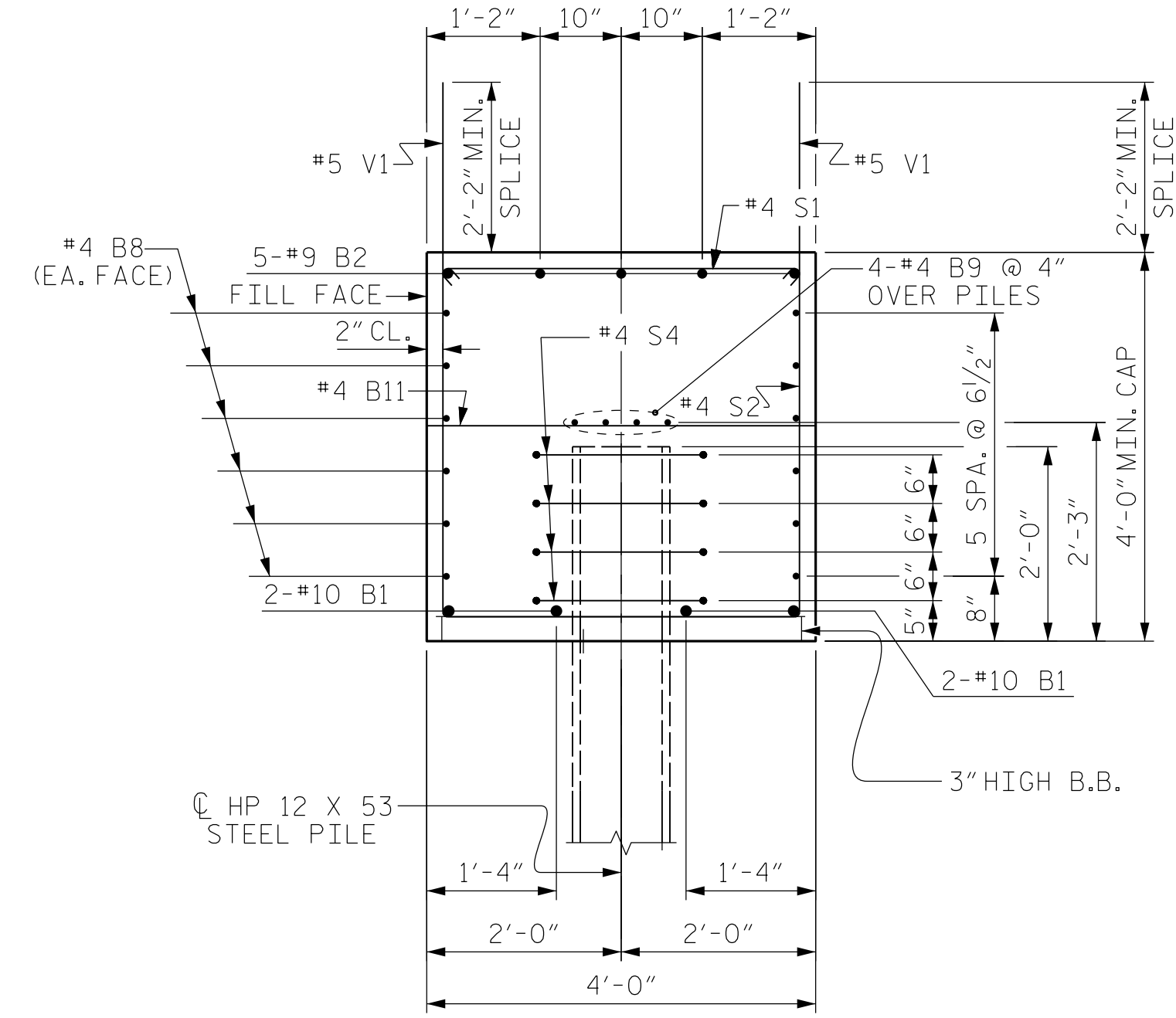
TEMPORARY DRAINAGE AT END BENT



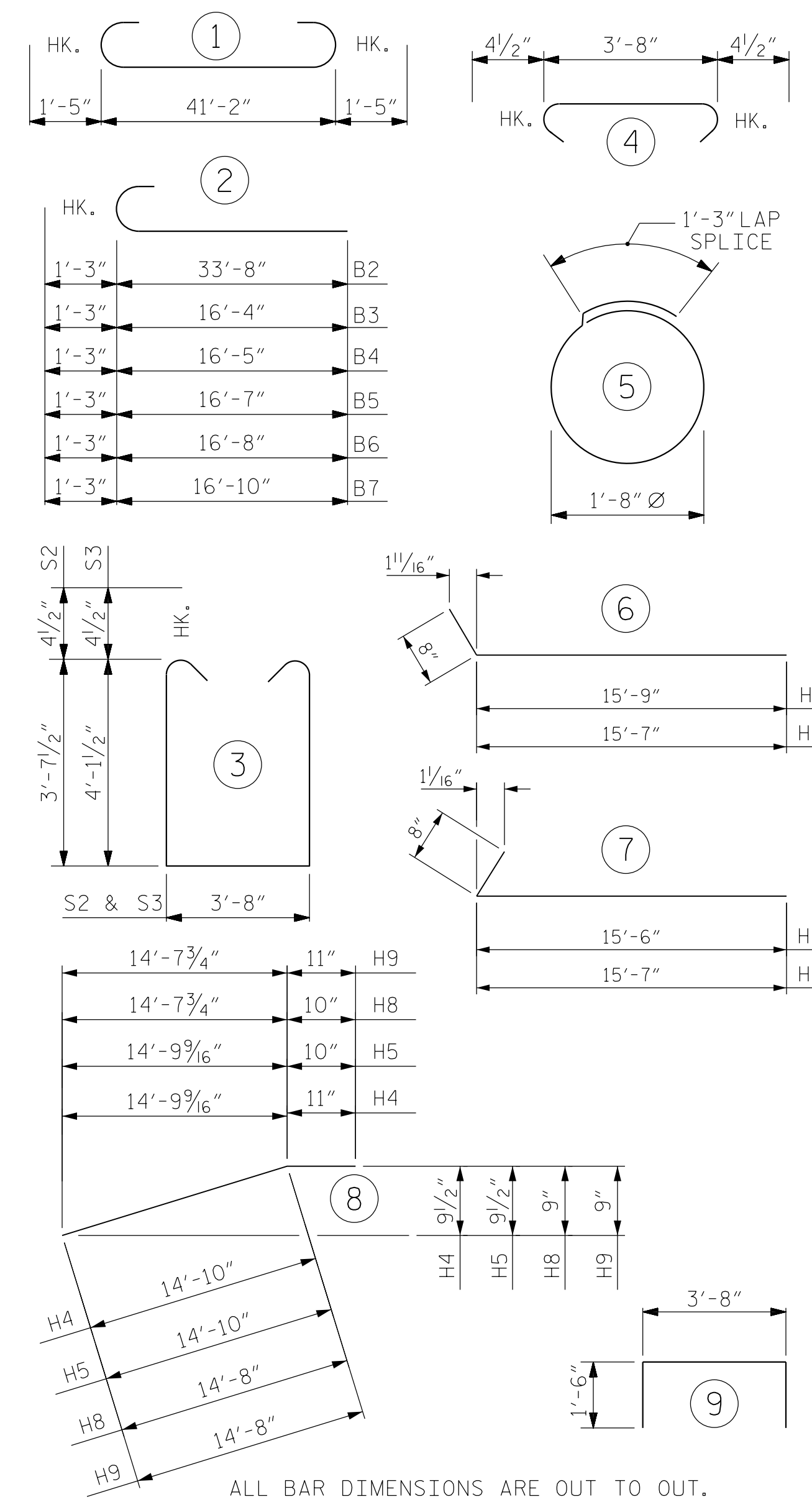
PILE SPLICE DETAILS



CORROSION PROTECTION FOR STEEL PILES DETAIL



BAR TYPES



BILL OF MATERIAL

END BENT #2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	44'-0"	757
B2	5	#9	2	34'-11"	594
B3	1	#9	2	17'-7"	60
B4	1	#9	2	17'-8"	60
B5	1	#9	2	17'-10"	61
B6	1	#9	2	17'-11"	61
B7	1	#9	2	18'-1"	61
B8	24	#4	STR	21'-11"	351
B9	8	#4	STR	21'-11"	117
B10	5	#4	STR	9'-3"	31
B11	14	#4	STR	3'-8"	34
B12	1	#4	STR	6'-10"	5
B13	1	#4	STR	6'-11"	5
B14	1	#4	STR	7'-1"	5
B15	1	#4	STR	7'-2"	5
B16	1	#4	STR	7'-4"	5
H1	22	#6	6	16'-5"	542
H2	22	#6	6	16'-3"	537
H3	2	#6	STR	6'-5"	19
H4	1	#6	8	15'-9"	24
H5	1	#6	8	15'-8"	24
H6	20	#6	7	16'-2"	486
H7	20	#6	7	16'-3"	488
H8	1	#6	8	15'-6"	23
H9	1	#6	8	15'-7"	23
H10	2	#6	STR	5'-3"	16
K2	18	#4	STR	2'-9"	33
K3	18	#4	STR	2'-7"	31
S1	60	#4	4	4'-5"	177
S2	34	#4	3	11'-8"	265
S3	26	#4	3	12'-8"	220
S4	36	#4	5	6'-6"	156
U1	12	#4	9	6'-8"	53
V1	144	#5	STR	7'-2"	1076
V9	10	#5	STR	5'-11"	62
V10	10	#5	STR	6'-2"	64
V11	10	#5	STR	6'-5"	67
V12	10	#5	STR	6'-8"	70
V13	8	#5	STR	6'-10"	57
V14	8	#5	STR	6'-8"	56
V15	8	#5	STR	6'-5"	54
V16	8	#5	STR	6'-3"	52
V17	10	#5	STR	6'-0"	63

REINFORCING STEEL (FOR ONE END BENT) 6950 LBS.

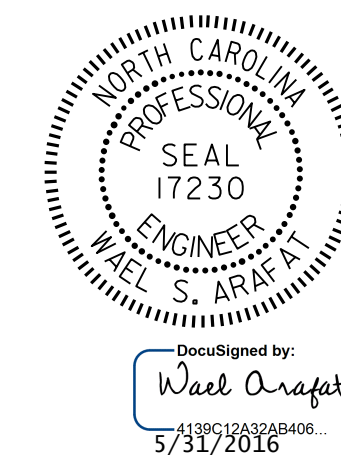
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)
 POUR #1 CAP, LOWER PART OF WINGS & COLLARS 33.6 C.Y.
 POUR #2 UPPER PART OF WINGS 8.9 C.Y.
 TOTAL CLASS A CONCRETE 42.5 C.Y.

PROJECT NO. R-4060
 ALLEGHANY COUNTY
 STATION: 36+45.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 INTEGRAL
 END BENT #2



REVISIONS

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

SHEET NO.

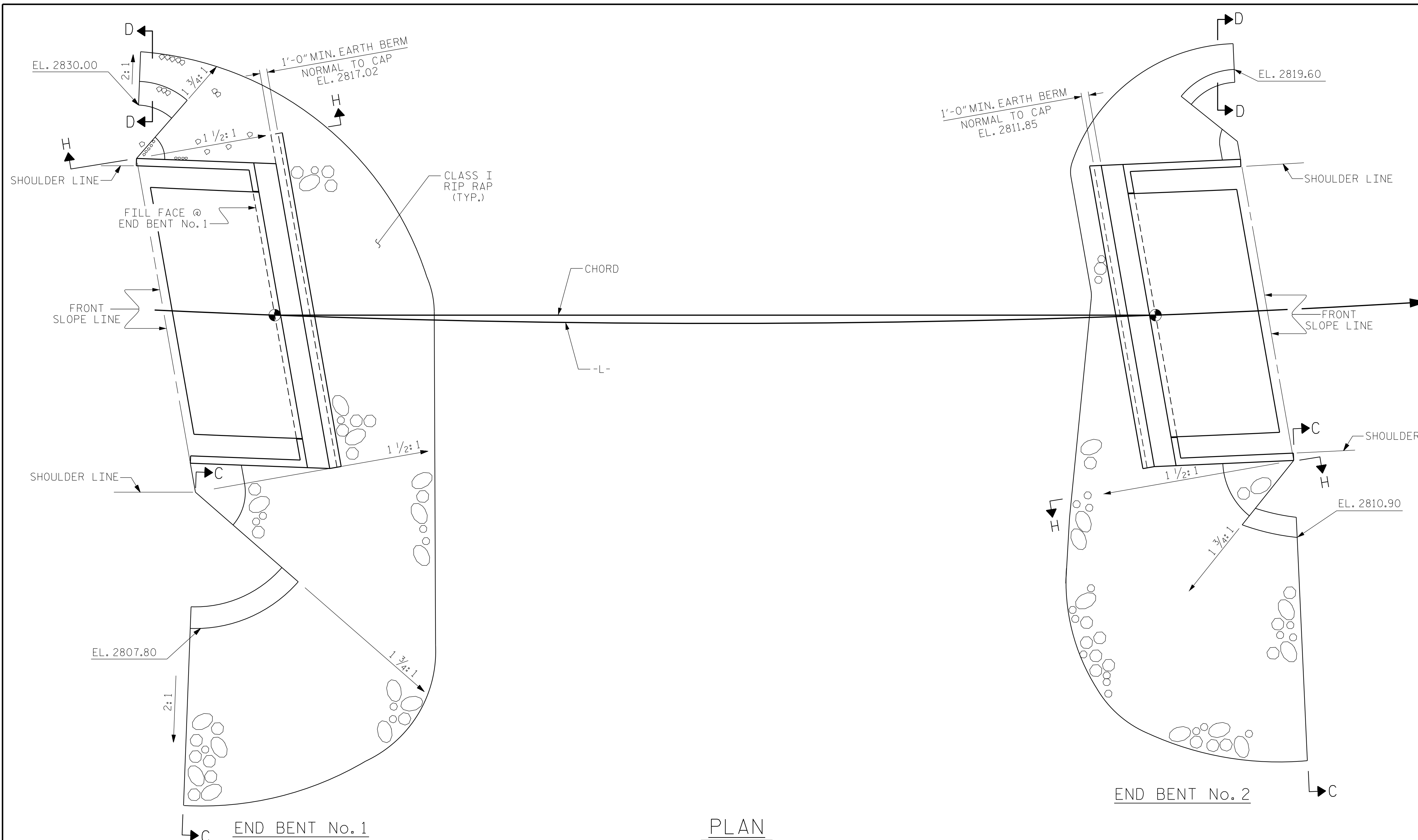
S-23

TOTAL SHEETS

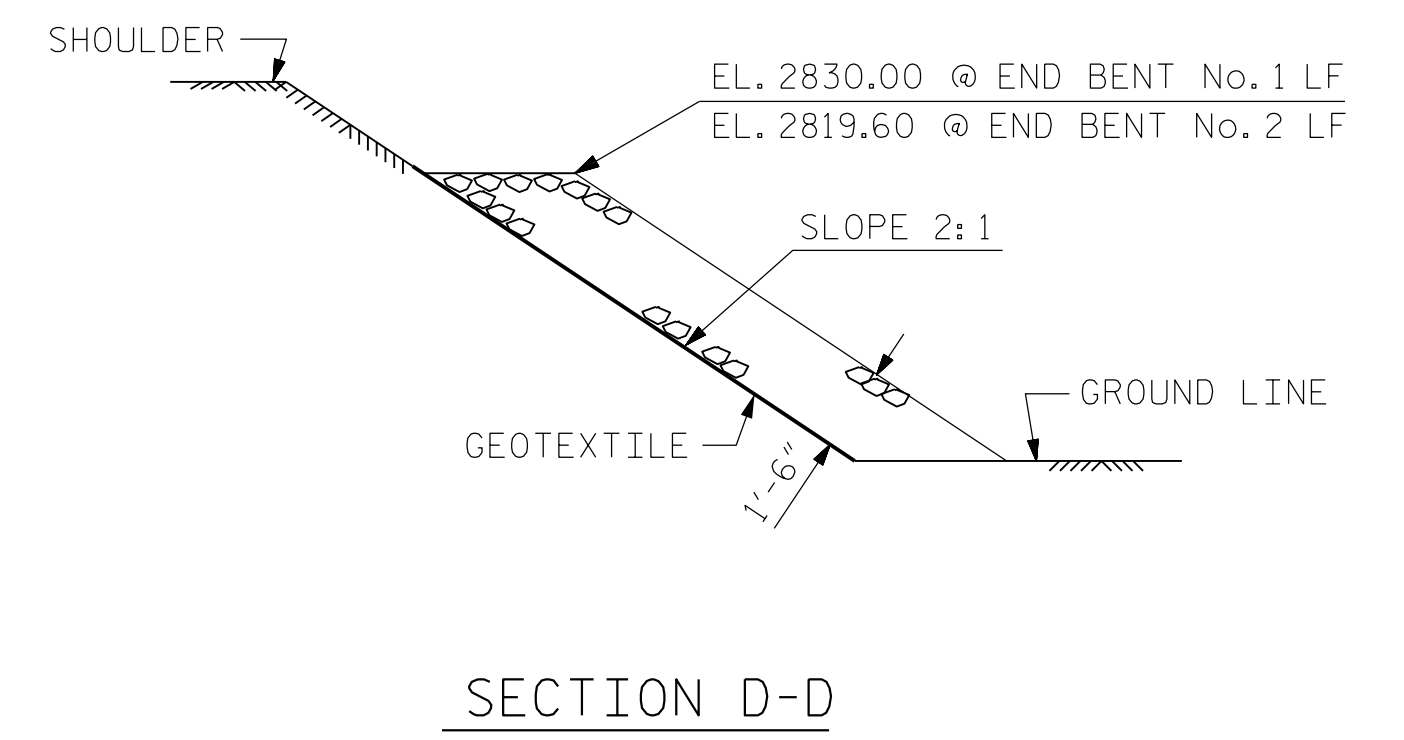
26

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

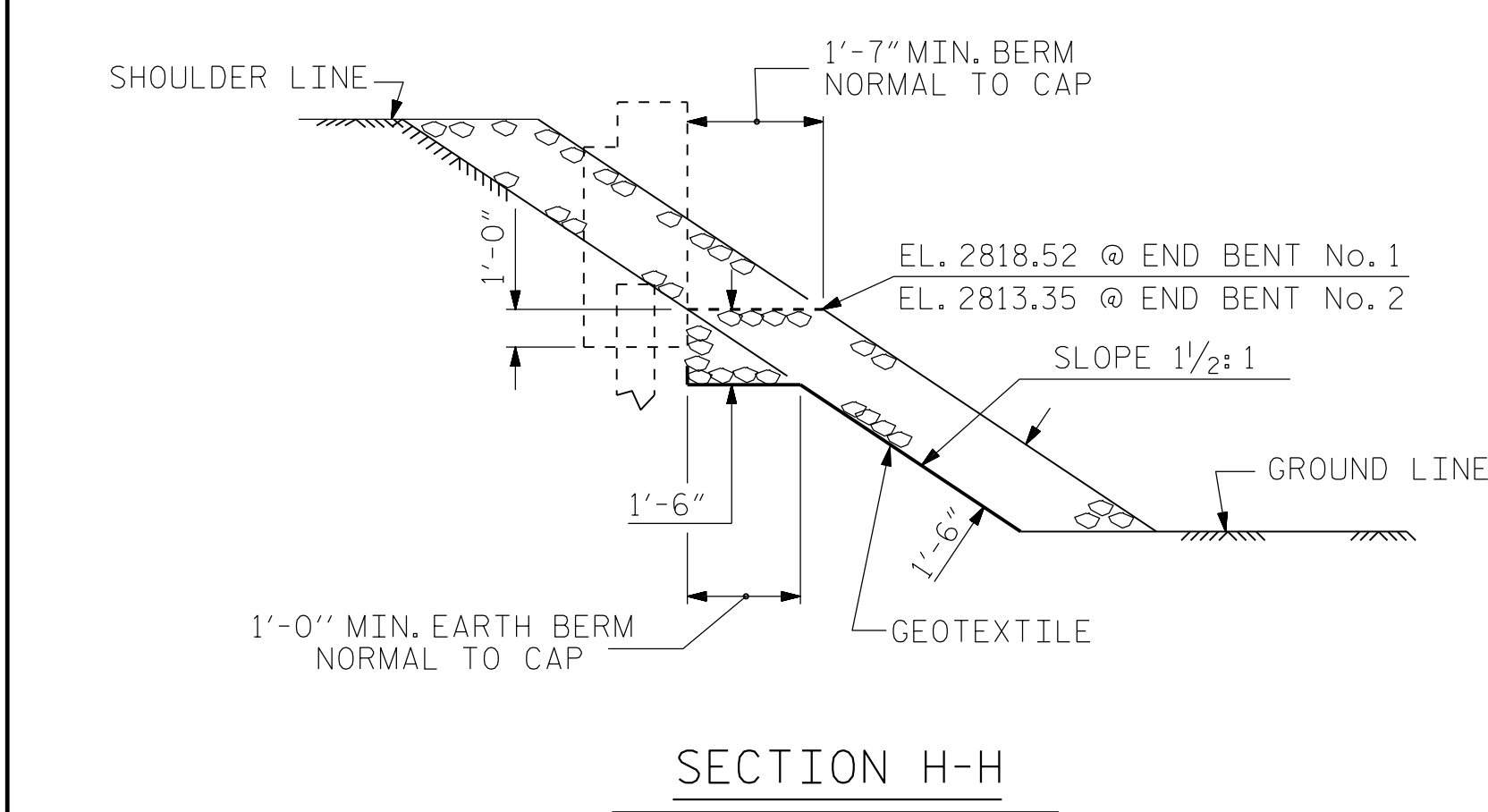
DRAWN BY: H. T. BARBOUR DATE: 3-3-15
 CHECKED BY: V. X. NGUYEN DATE: 11-15
 DESIGN ENGINEER OF RECORD: S. I. CHAMPION DATE: 12-15



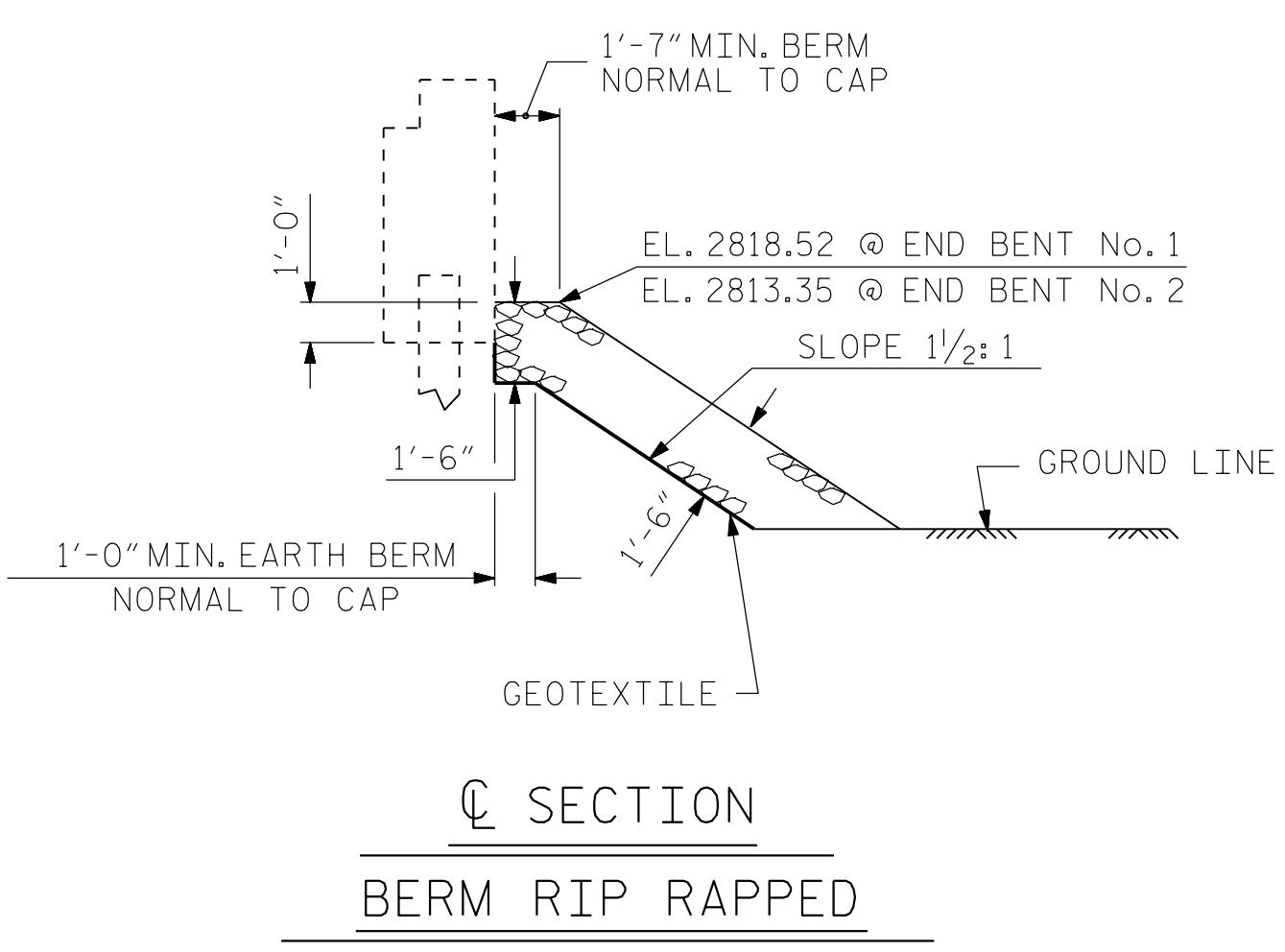
ESTIMATED QUANTITIES		
BRIDGE @ STA. 36+45.00-L-	RIP RAP CLASS I (1'-6" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	280	310
END BENT 2	200	220
TOTAL	480	530



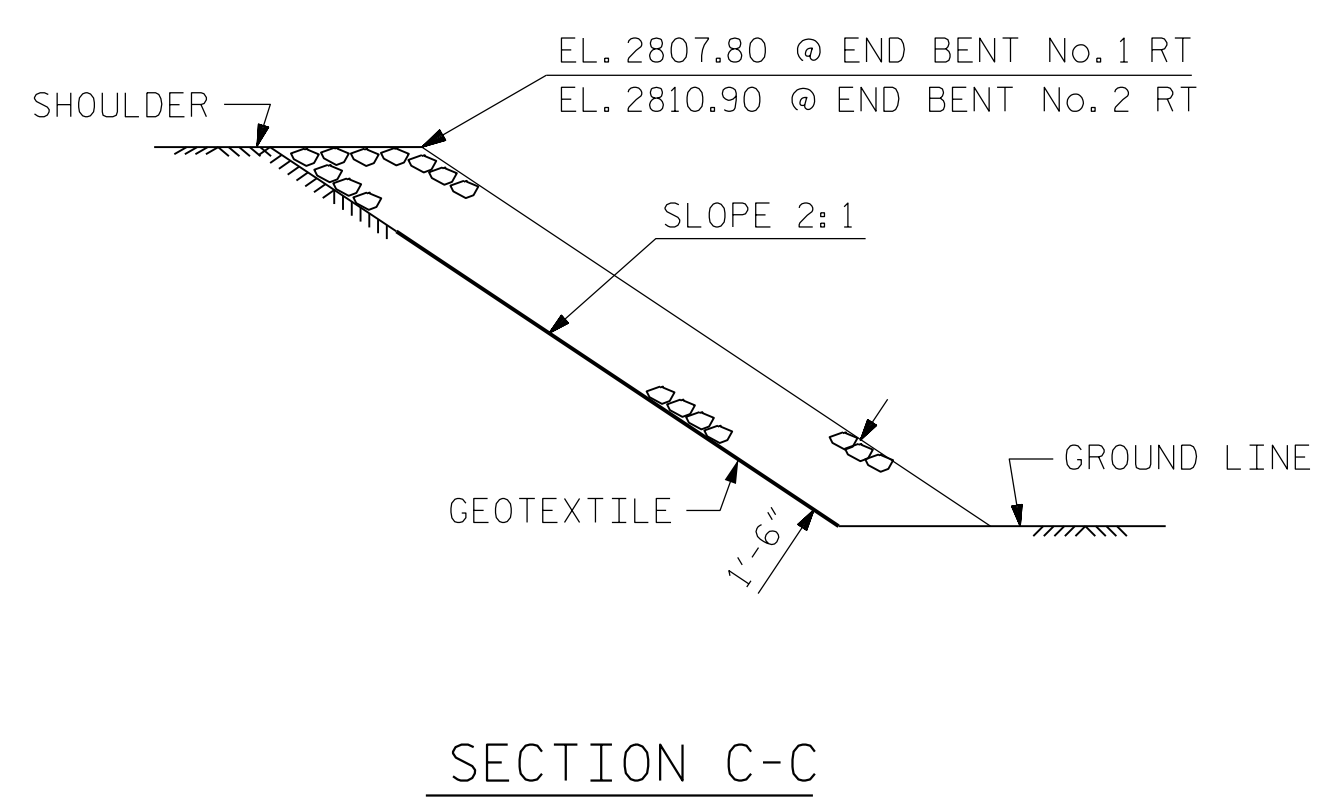
PLAN



SECTION H-H

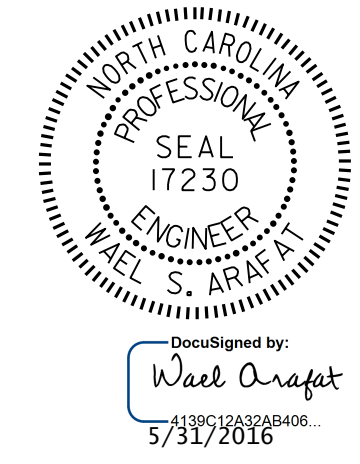


SECTION C-C
BERM RIP RAPPED



SECTION C-C

PROJECT NO. R-4060
ALLEGHANY COUNTY
 STATION: 36+45.00 -L-



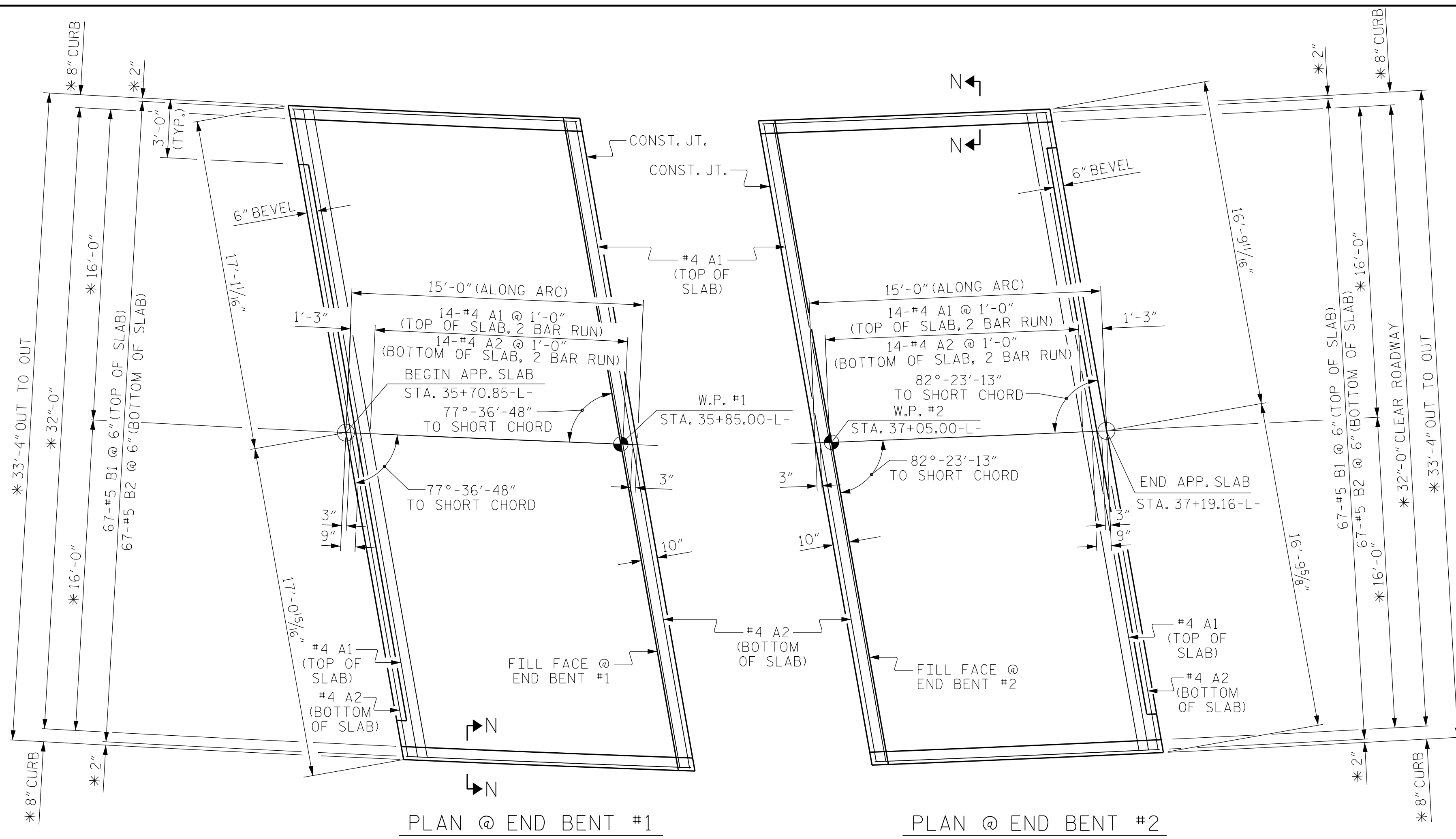
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

== RIP RAP DETAILS ==

DRAWN BY : H. T. BARBOUR DATE : 11-09-15
 CHECKED BY : V. X. NGUYEN DATE : 3-16

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO. S-24
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 26
2			4			



NOTES

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

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

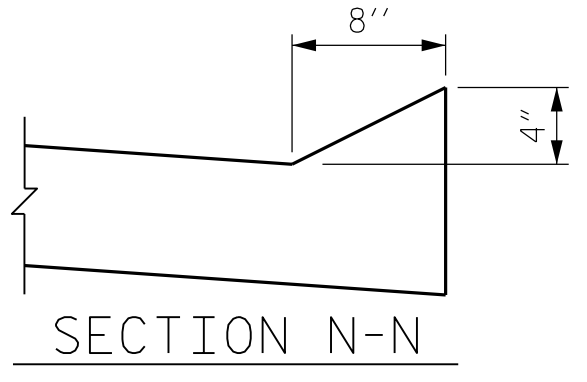
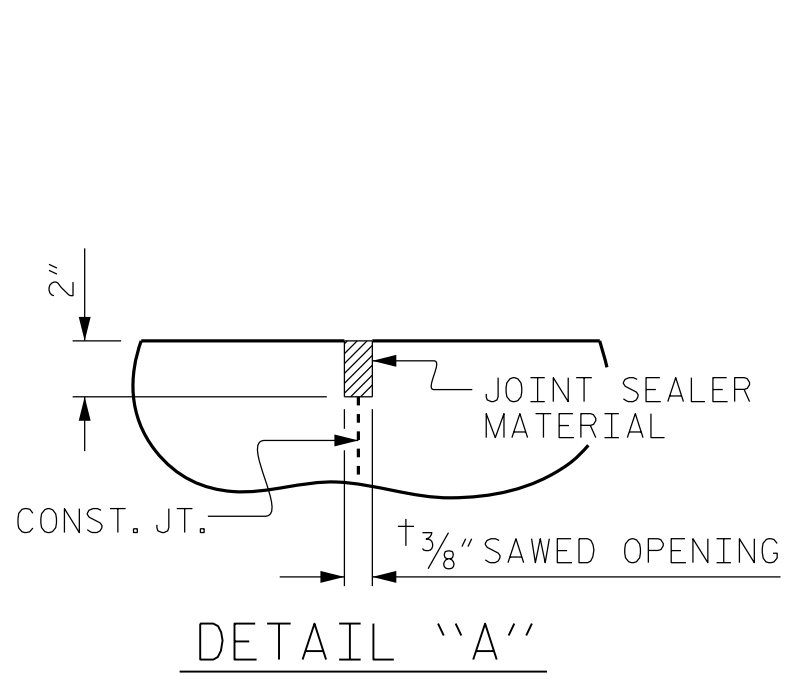
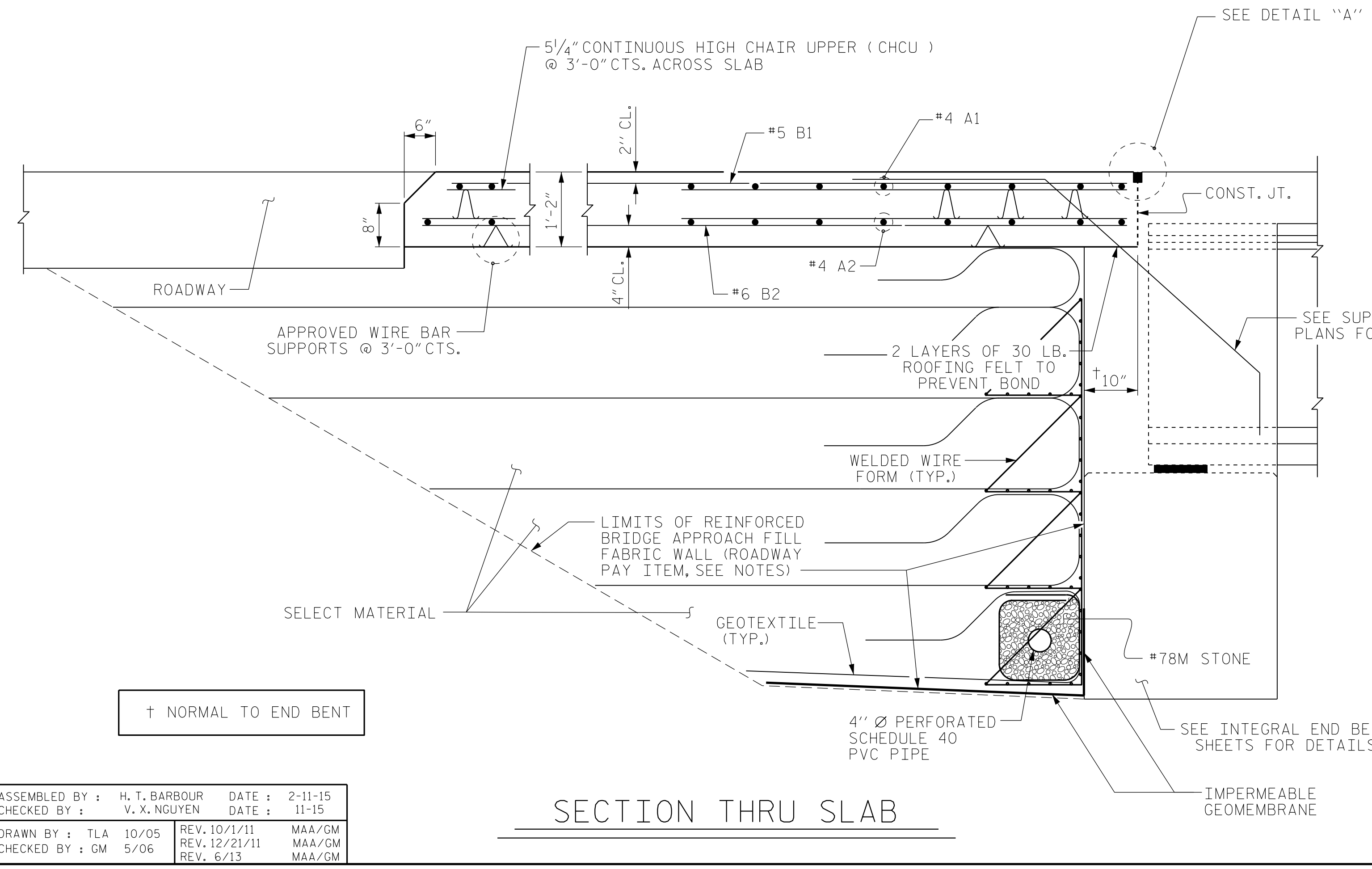
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

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

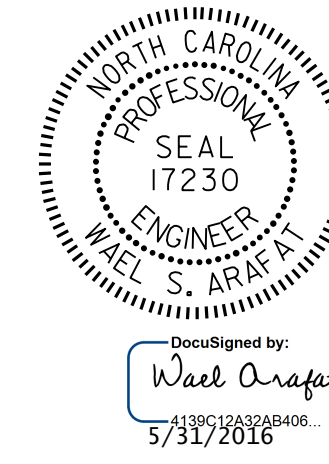
BILL OF MATERIAL					
APPROACH SLAB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	32	#4	STR	17'-11"	383
A2	32	#4	STR	17'-10"	381
* B1	67	#5	STR	14'-1"	984
B2	67	#6	STR	14'-7"	1468
REINFORCING STEEL					1849 LBS.
* EPOXY COATED REINFORCING STEEL					1367 LBS.
CLASS AA CONCRETE					21.7 C. Y.

APPROACH SLAB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	32	#4	STR	17'-8"	378
A2	32	#4	STR	17'-7"	376
* B1	67	#5	STR	14'-1"	984
B2	67	#6	STR	14'-7"	1468
REINFORCING STEEL					1844 LBS.
* EPOXY COATED REINFORCING STEEL					1362 LBS.
CLASS AA CONCRETE					21.7 C. Y.

* RADIAL DIMENSIONS



PROJECT NO. R-4060
ALLEGHANY COUNTY
 STATION: 36+45.00-L-



SHEET 1 OF 2

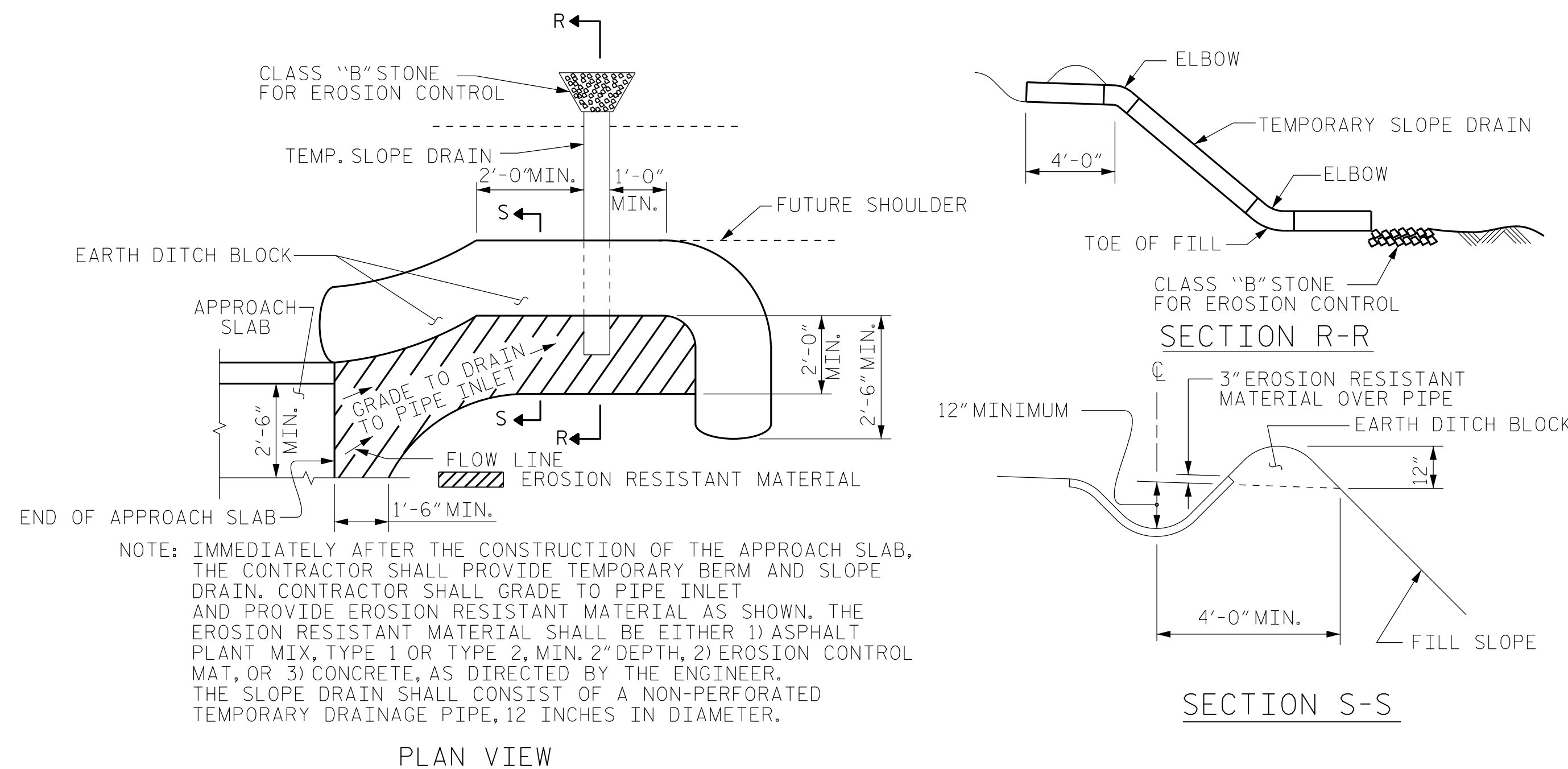
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			26

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY :	H. T. BARBOUR	DATE :	2-11-15
CHECKED BY :	V. X. NGUYEN	DATE :	11-15
DRAWN BY :	TLA	REV. 10/1/11	MAA/GM
CHECKED BY :	GM	REV. 12/21/11	MAA/GM
		REV. 6/13	MAA/GM



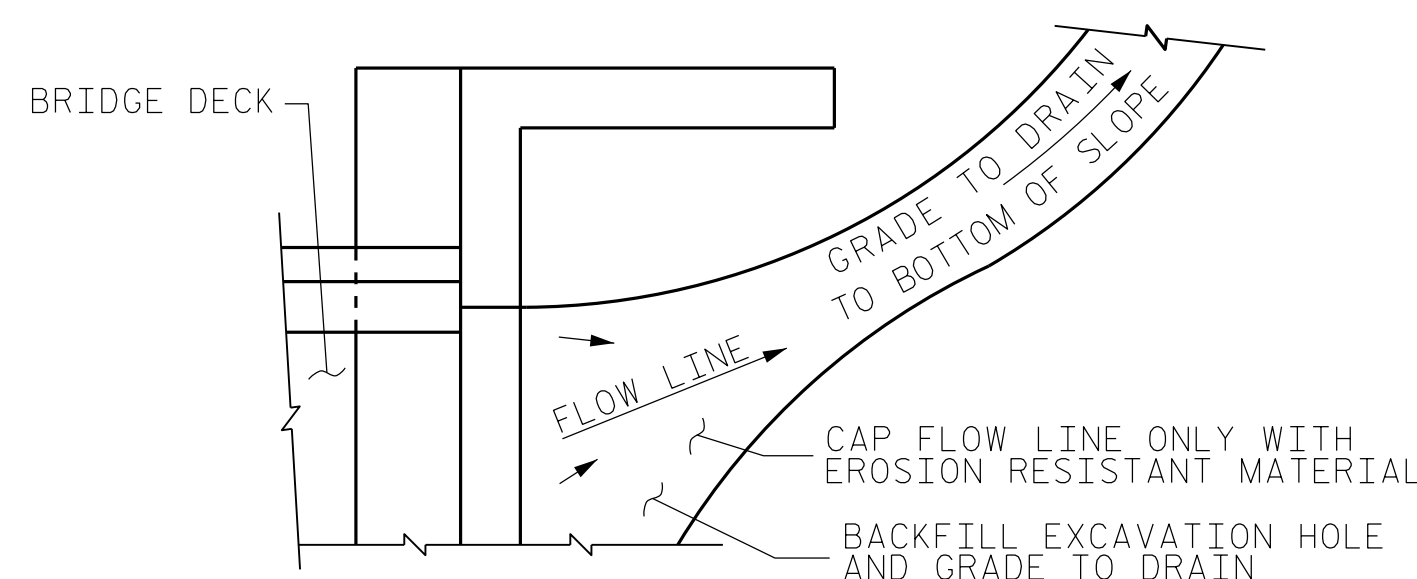
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW

SECTION S-S

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

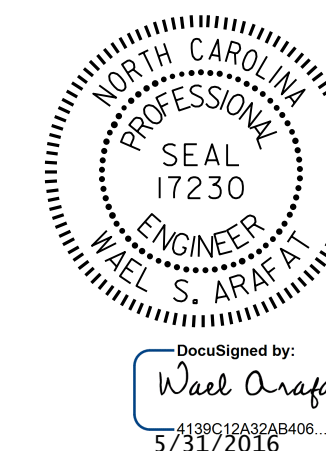


NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT 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-4060
ALLEGHANY COUNTY
 STATION: 36+45.00-L-

SHEET 2 OF 2



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

BRIDGE APPROACH
 SLAB DETAILS

ASSEMBLED BY :	H. T. BARBOUR	DATE :	2-11-15
CHECKED BY :	V. X. NGUYEN	DATE :	11-15
DRAWN BY :	FCJ 11/88	REV. 10/1/11	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

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