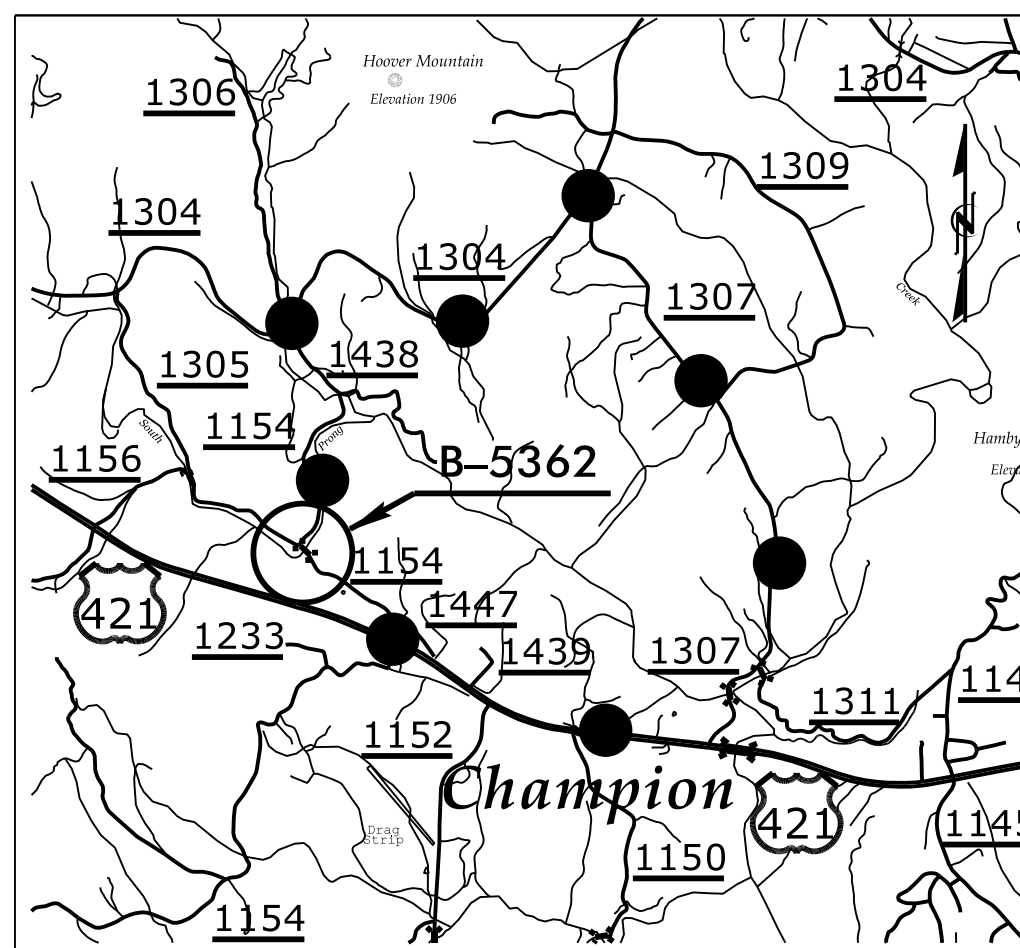


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CONTRACT: C203982 TIP PROJECT: B-4978



VICINITY MAP

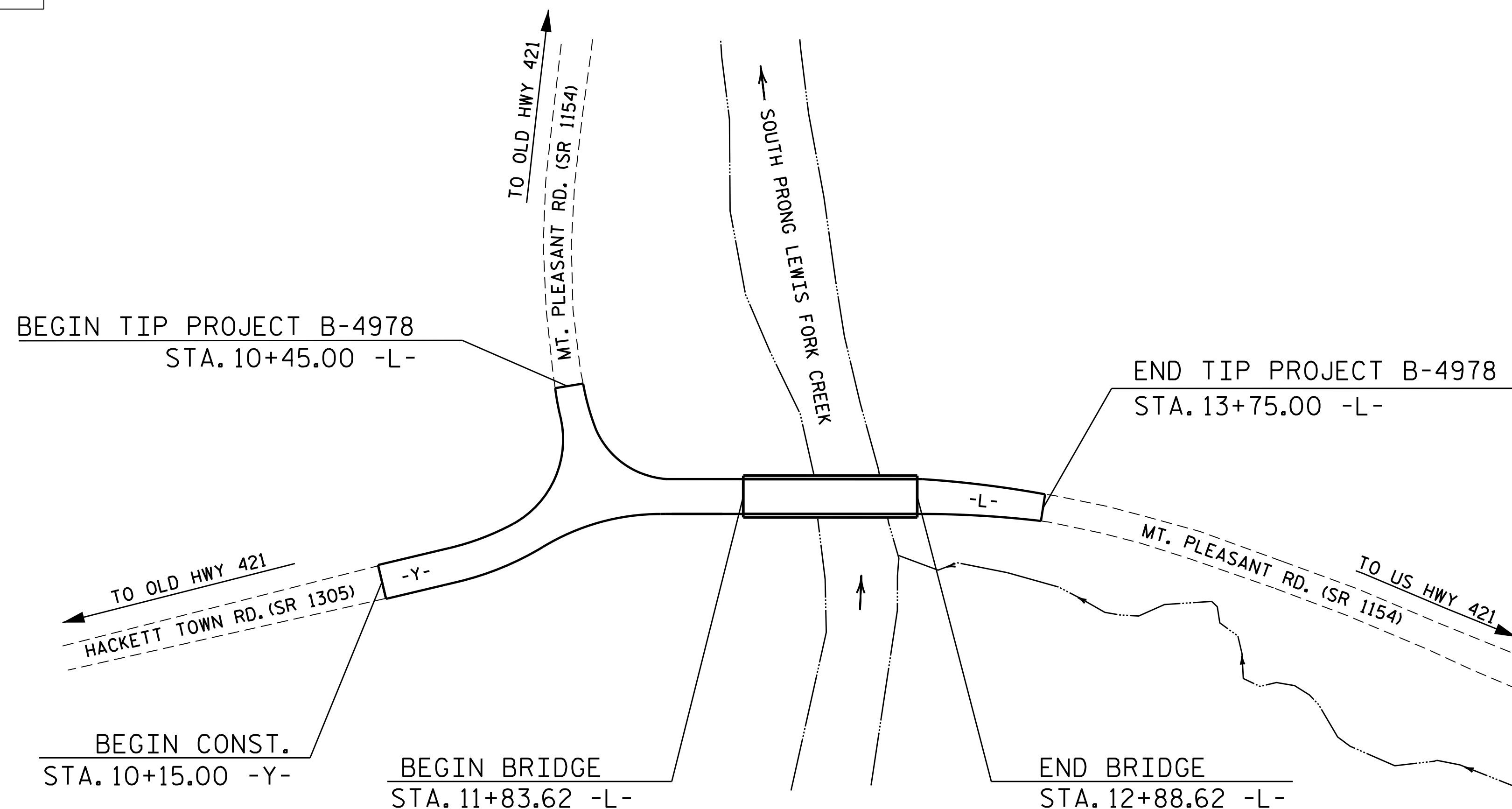
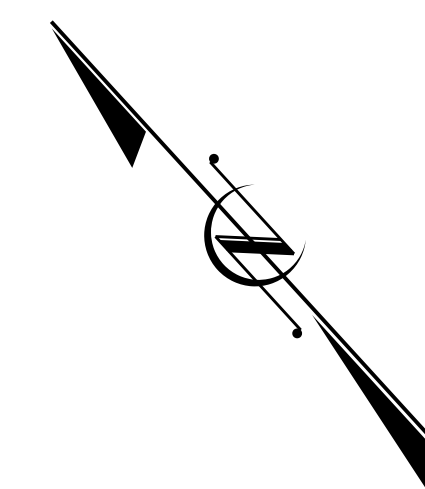
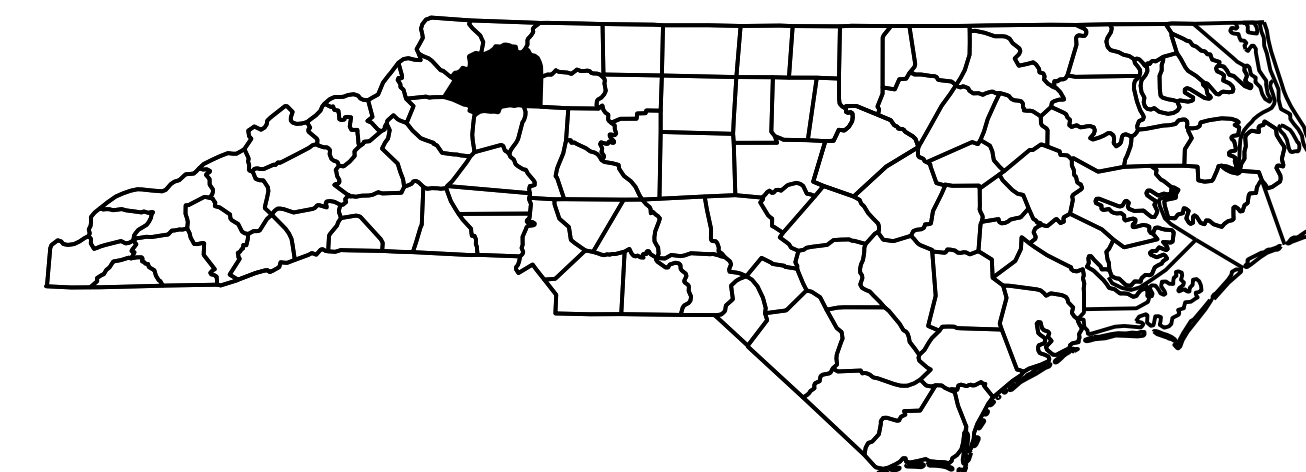
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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
WILKES COUNTY

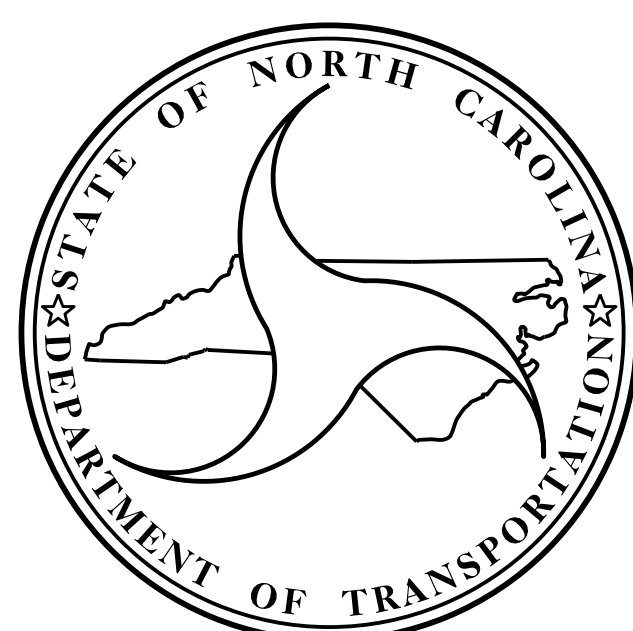
**LOCATION: BRIDGE 82 OVER SOUTH PRONG
LEWIS FORK CREEK ON SR 1154**

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4978		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
39897.1.1	BRZ-1154(6)	P. E.	
39897.1.2		RW	
39897.1.3		CONSTRUCTION	



STRUCTURE



DESIGN DATA

ADT 2017 = 218 ADT
ADT 2037 = 309 ADT
K = 10 %
D = 60 %
T = 5 % *
V = 15 MPH
* TTST = 2% DUAL 3%
FUNC CLASS = LOCAL
SUB REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4978 = 0.043 MI.
LENGTH OF STRUCTURES TIP PROJECT B-4978 = 0.020 MI.
TOTAL LENGTH OF TIP PROJECT B-4978 = 0.063 MI.

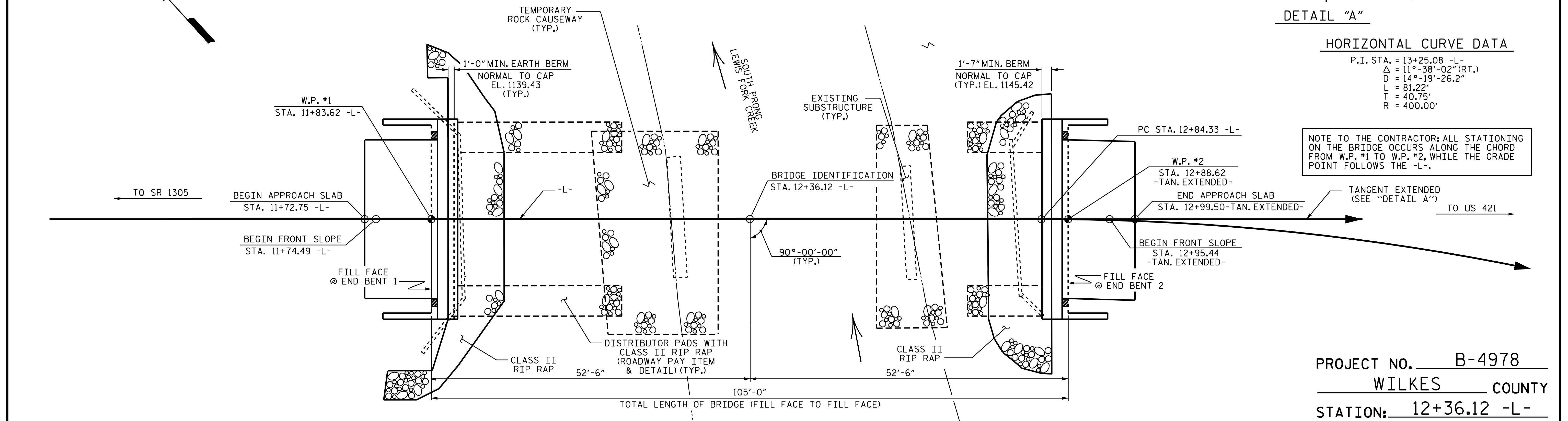
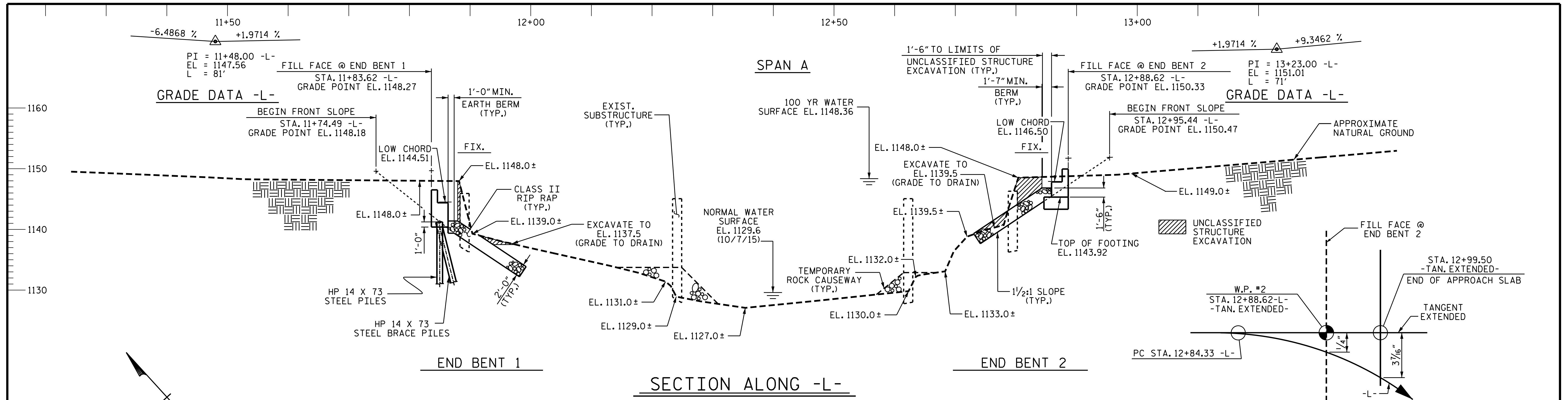
Prepared In the Office of:
DIVISION OF HIGHWAYS
STRUCTURES MANAGEMENT UNIT
1000 BIRCH RIDGE DR.
RALEIGH, N.C. 27610

2012 STANDARD SPECIFICATIONS

LETTING DATE : NOVEMBER 21, 2017

A. KEITH PASCHAL, P.E.
PROJECT ENGINEER

AMBER M. LEE, P.E.
PROJECT DESIGN ENGINEER

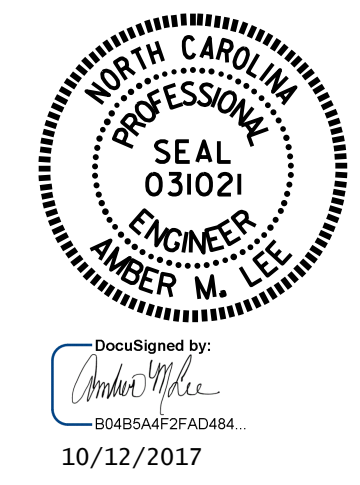
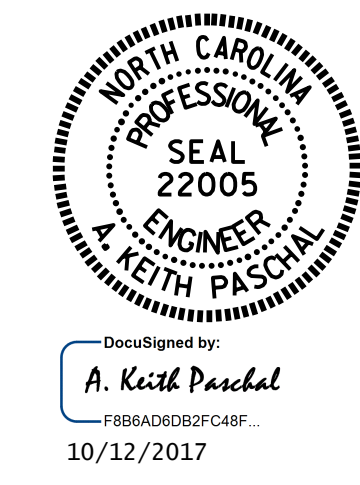


HORIZONTAL CURVE DATA

P.I. STA. = 13+25.08 -L-
 Δ = 11°-38'-02" (RT.)
 D = 14°-19'-26.2"
 L = 81.22'
 T = 40.75'
 R = 400.00'

NOTE TO THE CONTRACTOR: ALL STATIONING ON THE BRIDGE OCCURS ALONG THE CHORD FROM W.P. #1 TO W.P. #2, WHILE THE GRADE POINT FOLLOWS THE -L-.

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



PROJECT NO. B-4978
WILKES COUNTY
 STATION: 12+36.12 -L-
 SHEET 1 OF 3 REPLACES BRIDGE NO. 82

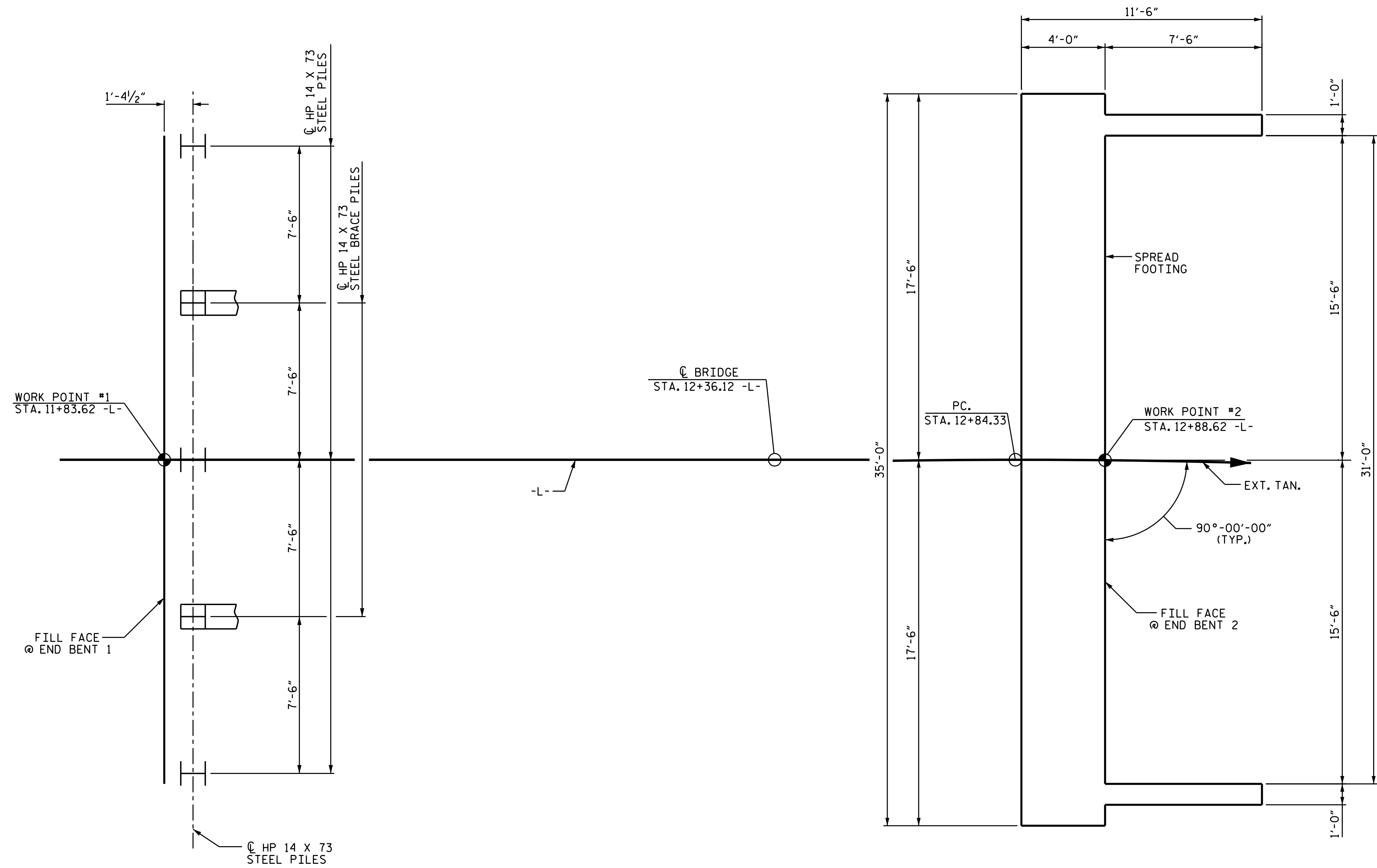
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER SOUTH PRONG LEWIS FORK CREEK ON SR 1305 AND US 421

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

DRAWN BY: R. PUITEK DATE: 8/2017
 CHECKED BY: H. T. BARBOUR DATE: 8/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



END BENT 1

END BENT 2

FOUNDATION LAYOUT

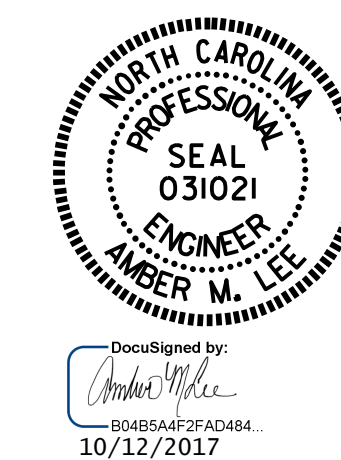
BRACE PILES AT END BENT 1 ARE TO BE BATTERED AT 3:12.

NOTES

- FOR PILES, SEE GEOTECHNICAL SPECIAL PROVISIONS AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
- PILES AT END BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 135 TONS PER PILE. DRIVE PILES AT END BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 225 TONS PER PILE.
- THE SPREAD FOOTING AT END BENT 2 IS DESIGNED FOR A FACTORED RESISTANCE OF 8 TSF. CHECK FIELD CONDITIONS FOR THE REQUIRED RESISTANCE OF 18 TSF JUST BEFORE PLACING CONCRETE.
- KEY IN FOOTING AT END BENT 2 AT LEAST 6" INTO ROCK WITH MINIMUM THICKNESS AS SHOWN ON THE PLANS.

PROJECT NO. B-4978
WILKES COUNTY
 STATION: 12+36.12 -L-

SHEET 2 OF 3



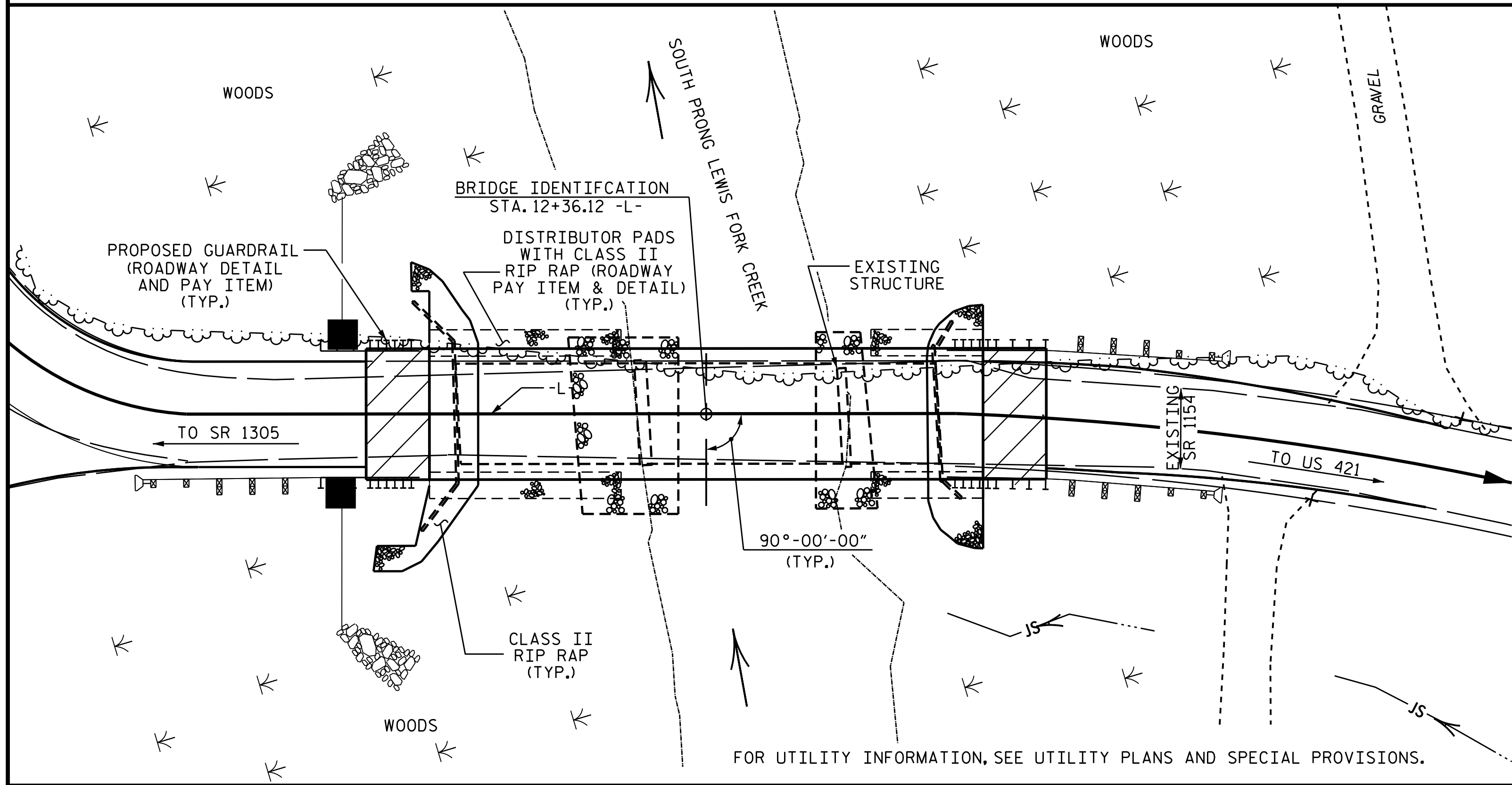
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE OVER SOUTH
 PRONG LEWIS FORK CREEK ON
 SR 1154 BETWEEN
 SR 1305 AND US 421

DRAWN BY : M. WELDON DATE : 07-2017
 CHECKED BY : H. T. BARBOUR DATE : 08-2017

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

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

BM #1: 8" SPIKE IN ROOT OF 20" POPLAR @ STA. 11+15.00 -L-, 78' RIGHT, EL. 1144.56



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.
 AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 12+36.12 -L-.

TEMPORARY CAUSEWAY ACCESS WILL BE REMOVED TO A WIDTH OF APPROXIMATELY THIRTY (30) FEET, ONCE EXISTING BENTS ARE REMOVED TO FACILITATE THE SETTING OF THE BOX BEAMS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 12+36.12 -L-."

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 15 FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS, 1 @ 17'-10", 1 @ 38'-8" AND 1 @ 35'-0" ON I BEAMS AND DOUBLE CHANNELS ON 4 X 8 TIMBER FLOOR; WITH A CLEAR ROADWAY WIDTH OF 19.083 FT. ON END BENTS AND BENTS WITH TIMBER CAP, PILES AND SILLS WITH CONCRETE FOOTINGS AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT. FOR REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

HYDRAULIC DATA

DESIGN DISCHARGE	= 4,400 C.F.S.
FREQUENCY OF DESIGN FLOOD	= 25 YRS.
DESIGN HIGH WATER ELEVATION	= 1139.2 FT.
DRAINAGE AREA	= 32.4 SQ. MI
BASE DISCHARGE (Q100)	= 13,806 C.F.S
BASE HIGH WATER ELEVATION	= 1148.36 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 11,763+ C.F.S.
FREQUENCY OF OVERTOPPING FLOOD	= 100- YRS.
OVERTOPPING FLOOD ELEVATION	= 1148.16 FT.

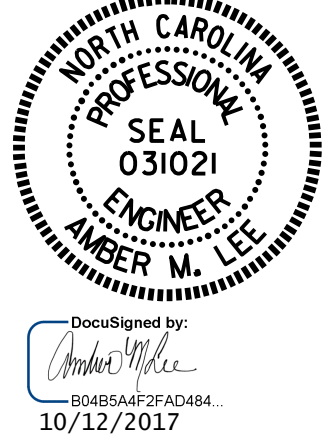
TOTAL BILL OF MATERIAL

	CONSTRUCTION MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS	REMOVAL OF EXISTING STRUCTURE	FOUNDATION EXCAVATION FOR END BENT 2	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 14 X 73 STEEL PILES	HP 14 X 73 STEEL PILES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAMS	ASBESTOS ASSESSMENT
	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	EA.	NO. LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	NO. LIN. FT.	LUMP SUM
SUPERSTRUCTURE										205.5				9 924.75	
END BENT 1				LUMP SUM	26.8		4,185	5	5 115.0		75	80			
END BENT 2			LUMP SUM	LUMP SUM	26.9		5,776				150	165			
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	53.7	LUMP SUM	9,961	5	5 115.0	205.5	225	245	LUMP SUM	9 924.75	LUMP SUM

PROJECT NO. B-4978
WILKES COUNTY
 STATION: 12+36.12 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE OVER SOUTH PRONG LEWIS FORK CREEK ON SR 1154 BETWEEN SR 1305 AND US 421



DRAWN BY : R. PUTTEK DATE : 08-2017
 CHECKED BY : H. T. BARBOUR DATE : 08-2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

12-OCT-2017 14:13
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 amlee

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

LOAD FACTORS:

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

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			
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT						
							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)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.04	--	1.75	0.272	1.07	A	EL	50.625	0.487	1.33	A	EL	5.063	0.80	0.272	1.04	A	EL	50.625		
	HL-93(0pr)	N/A	--	1.39	--	1.35	0.272	1.39	A	EL	50.625	0.487	1.73	A	EL	5.063	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.45	52.339	1.75	0.272	1.5	A	EL	50.625	0.487	1.8	A	EL	5.063	0.80	0.272	1.45	A	EL	50.625		
	HS-20(0pr)	36.000	--	1.94	69.971	1.35	0.272	1.94	A	EL	50.625	0.487	2.33	A	EL	5.063	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.46	46.689	1.4	0.272	4.46	A	EL	50.625	0.487	5.56	A	EL	5.063	0.80	0.272	3.46	A	EL	50.625	
		SNGARBS2	20.000	--	2.5	50.002	1.4	0.272	3.22	A	EL	50.625	0.487	3.88	A	EL	5.063	0.80	0.272	2.50	A	EL	50.625	
		SNAGRIS2	22.000	--	2.34	51.406	1.4	0.272	3.01	A	EL	50.625	0.487	3.58	A	EL	5.063	0.80	0.272	2.34	A	EL	50.625	
		SNCOTTS3	27.250	--	1.72	46.836	1.4	0.272	2.22	A	EL	50.625	0.487	2.77	A	EL	5.063	0.80	0.272	1.72	A	EL	50.625	
		SNAGGRS4	34.925	--	1.41	49.124	1.4	0.272	1.81	A	EL	50.625	0.487	2.25	A	EL	5.063	0.80	0.272	1.41	A	EL	50.625	
		SNS5A	35.550	--	1.38	48.969	1.4	0.272	1.78	A	EL	50.625	0.487	2.25	A	EL	5.063	0.80	0.272	1.38	A	EL	50.625	
		SNS6A	39.950	--	1.25	50.006	1.4	0.272	1.61	A	EL	50.625	0.487	2.04	A	EL	5.063	0.80	0.272	1.25	A	EL	50.625	
	SNS7B	42.000	--	1.19	50.046	1.4	0.272	1.54	A	EL	50.625	0.487	1.98	A	EL	5.063	0.80	0.272	1.19	A	EL	50.625		
	TTST	TNAGRIT3	33.000	--	1.52	50.254	1.4	0.272	1.96	A	EL	50.625	0.487	2.44	A	EL	5.063	0.80	0.272	1.52	A	EL	50.625	
		TNT4A	33.075	--	1.53	50.483	1.4	0.272	1.97	A	EL	50.625	0.487	2.4	A	EL	5.063	0.80	0.272	1.53	A	EL	50.625	
		TNT6A	41.600	--	1.24	51.446	1.4	0.272	1.59	A	EL	50.625	0.487	2.07	A	EL	5.063	0.80	0.272	1.24	A	EL	50.625	
		TNT7A	42.000	--	1.24	51.951	1.4	0.272	1.59	A	EL	50.625	0.487	2.03	A	EL	5.063	0.80	0.272	1.24	A	EL	50.625	
		TNT7B	42.000	--	1.27	53.138	1.4	0.272	1.63	A	EL	50.625	0.487	1.95	A	EL	5.063	0.80	0.272	1.27	A	EL	50.625	
		TNAGRIT4	43.000	--	1.21	52.214	1.4	0.272	1.57	A	EL	50.625	0.487	1.89	A	EL	5.063	0.80	0.272	1.21	A	EL	50.625	
TNAGT5A		45.000	--	1.15	51.749	1.4	0.272	1.48	A	EL	50.625	0.487	1.85	A	EL	5.063	0.80	0.272	1.15	A	EL	50.625		
TNAGT5B	45.000	3	1.14	51.328	1.4	0.272	1.47	A	EL	50.625	0.487	1.8	A	EL	5.063	0.80	0.272	1.14	A	EL	50.625			

NOTES:

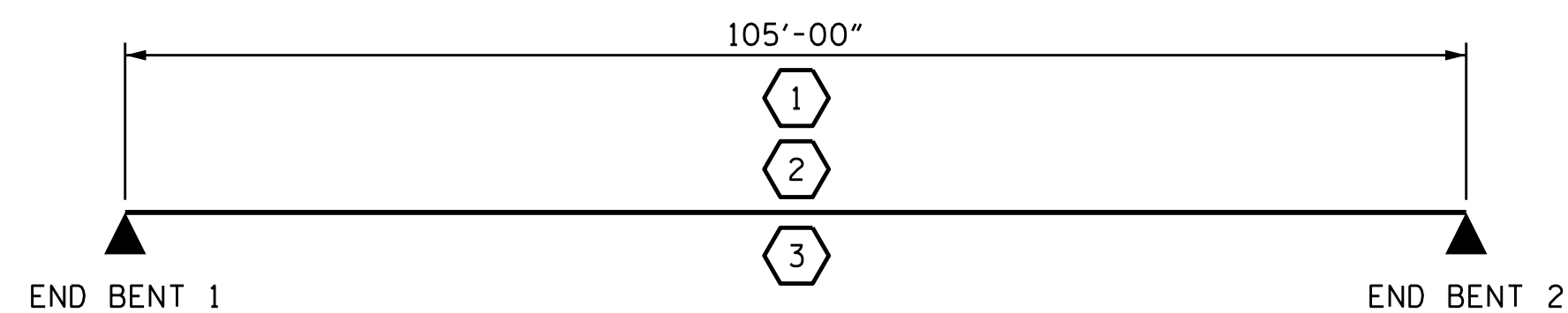
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

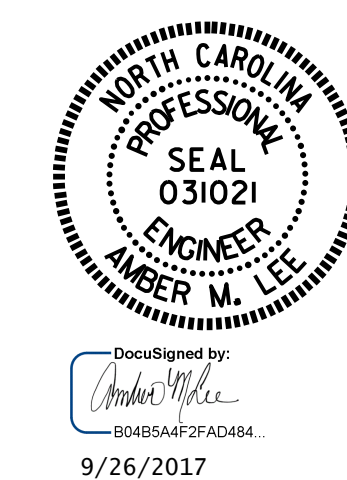
- 1.
- 2.
- 3.
- 4.

#	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. B-4978
WILKES COUNTY
 STATION: 12+36.12 -L-



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

ASSEMBLED BY : B. A. DUKE	DATE : 10-28-16
CHECKED BY : A. M. LEE	DATE : 8-2017
DRAWN BY : MAA 1/08	REV. 11/27/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM

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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4	
1			3			TOTAL SHEETS 19	
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 CAST WITH THE BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,000 PSI.

ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

VERTICAL 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. A VERTICAL 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 LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

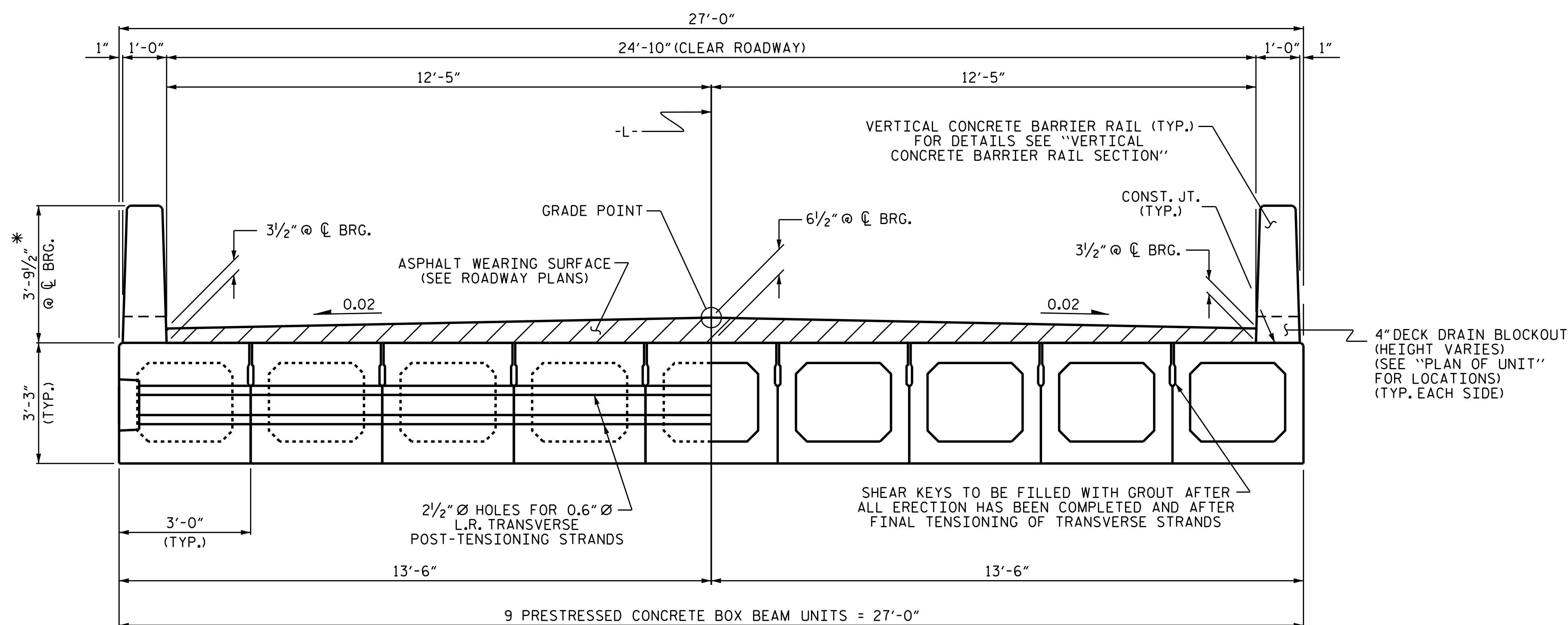
THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

THE DRAIN OPENING AT THE GUTTERLINE SHALL BE 4" X 5". THE HEIGHT OF THE BLOCKOUT IN THE VERTICAL CONCRETE BARRIER RAIL SHALL EXTEND FROM THE TOP OF THE BOX BEAM UNIT TO THE TOP OF THE DRAIN OPENING.

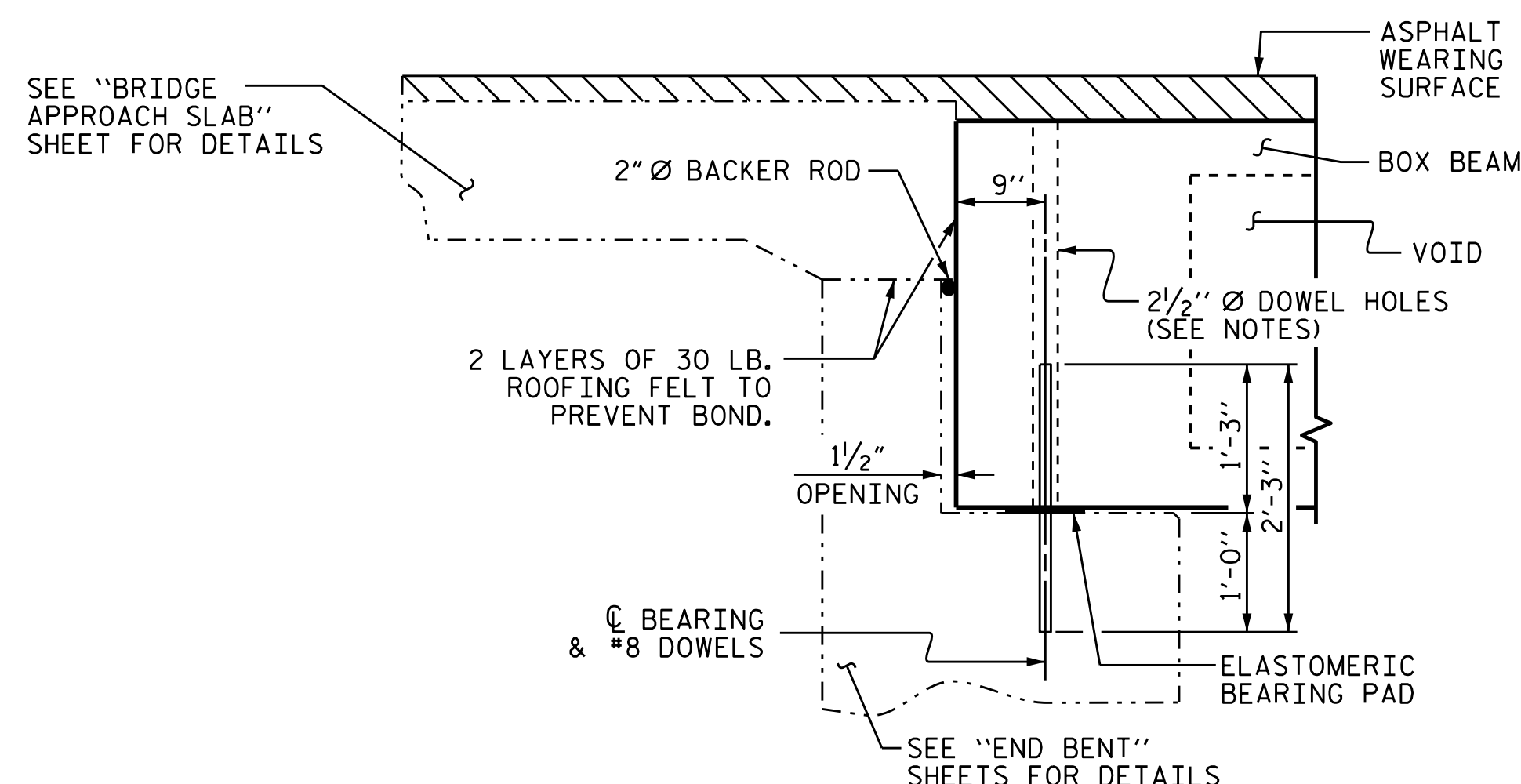
APPLY EPOXY PROTECTIVE COATING TO EXTERIOR FACE OF THE EXTERIOR BOX BEAM UNITS THAT REQUIRE DRAINS IN THE BARRIER RAIL.



HALF SECTION AT INTERMEDIATE DIAPHRAGMS
 HALF SECTION THROUGH VOIDS
TYPICAL SECTION

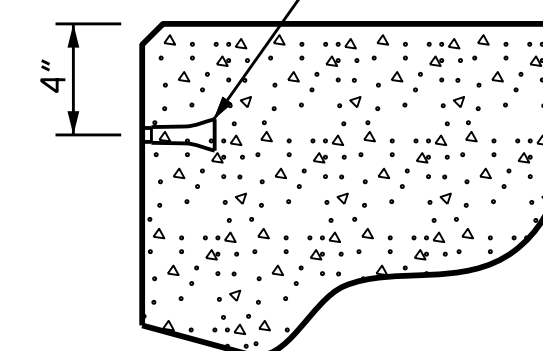
* THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

FIXED END



SECTION AT END BENT

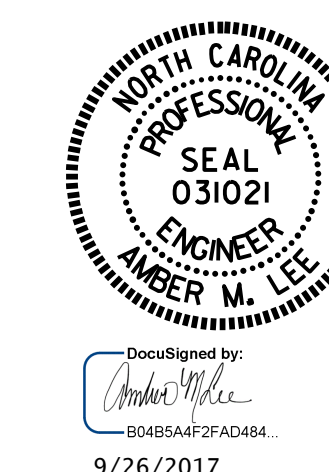
PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



THREADED INSERT DETAIL

PROJECT NO. B-4978
WILKES COUNTY
 STATION: 12+36.12 -L-

SHEET 1 OF 5

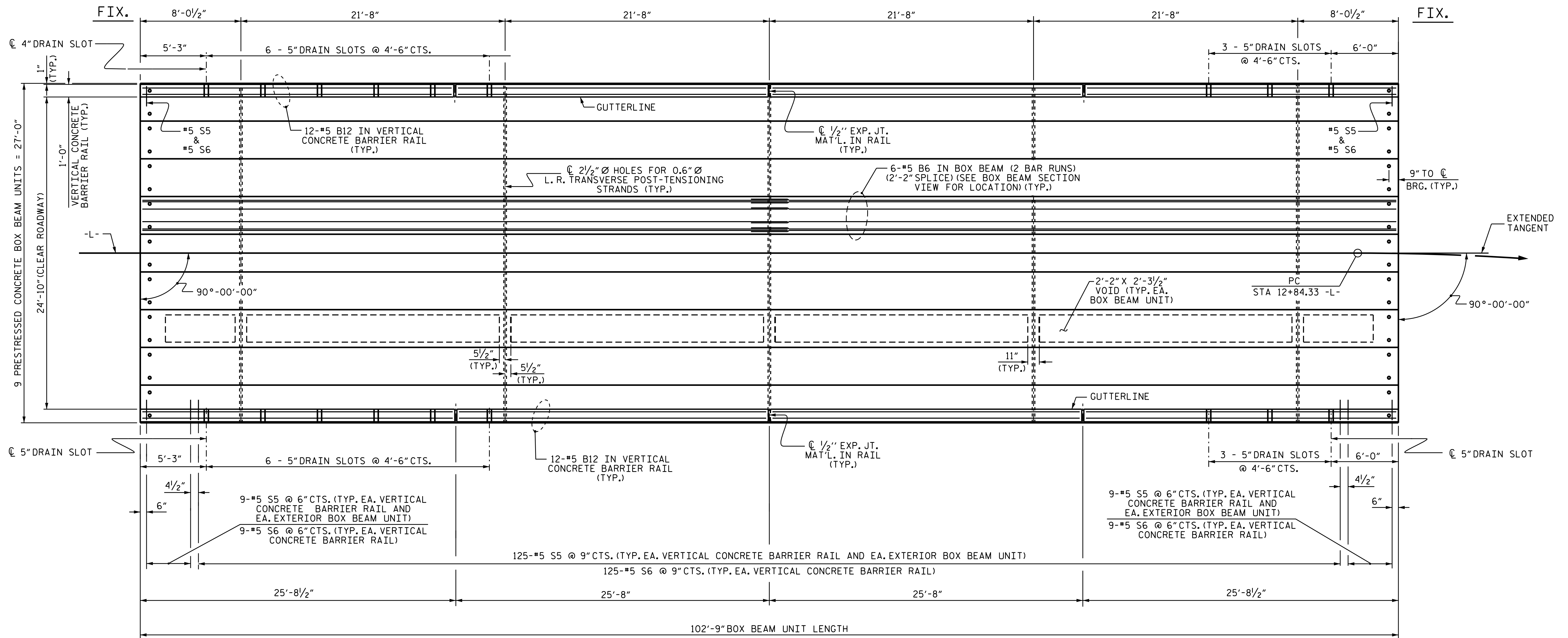


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

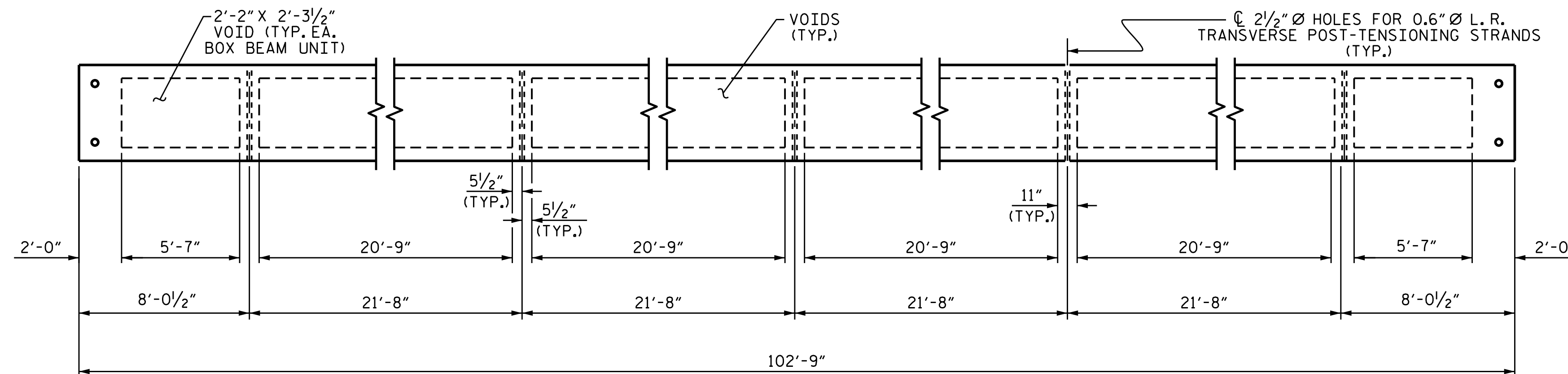
ASSEMBLED BY : B. A. DUKE	DATE : 10-20-16
CHECKED BY : G. KOUCHEKI	DATE : 11-2-16
DRAWN BY : DGE 8/II	REV. 10/15
CHECKED BY : TMG II/II	MAA/TMG

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS 19
2			4			



PLAN OF UNIT

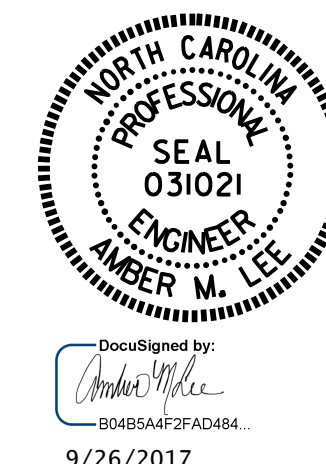


DIAPHRAGM AND VOID LAYOUT

DRAWN BY : B. A. DUKE DATE : 10-21-16
 CHECKED BY : G. KOUCHEKI DATE : 11-17-16
 DESIGN ENGINEER OF RECORD : D. SHACKLEFORD DATE : 12-16

26-SEP-2017 13:43
 R:\Structures\Final Plans\401.011.B4978.SMU.BB.006.960082.DGN
 amlee

PROJECT NO. B-4978
 WILKES COUNTY
 STATION: 12+36.12 -L-
 SHEET 1 OF 4

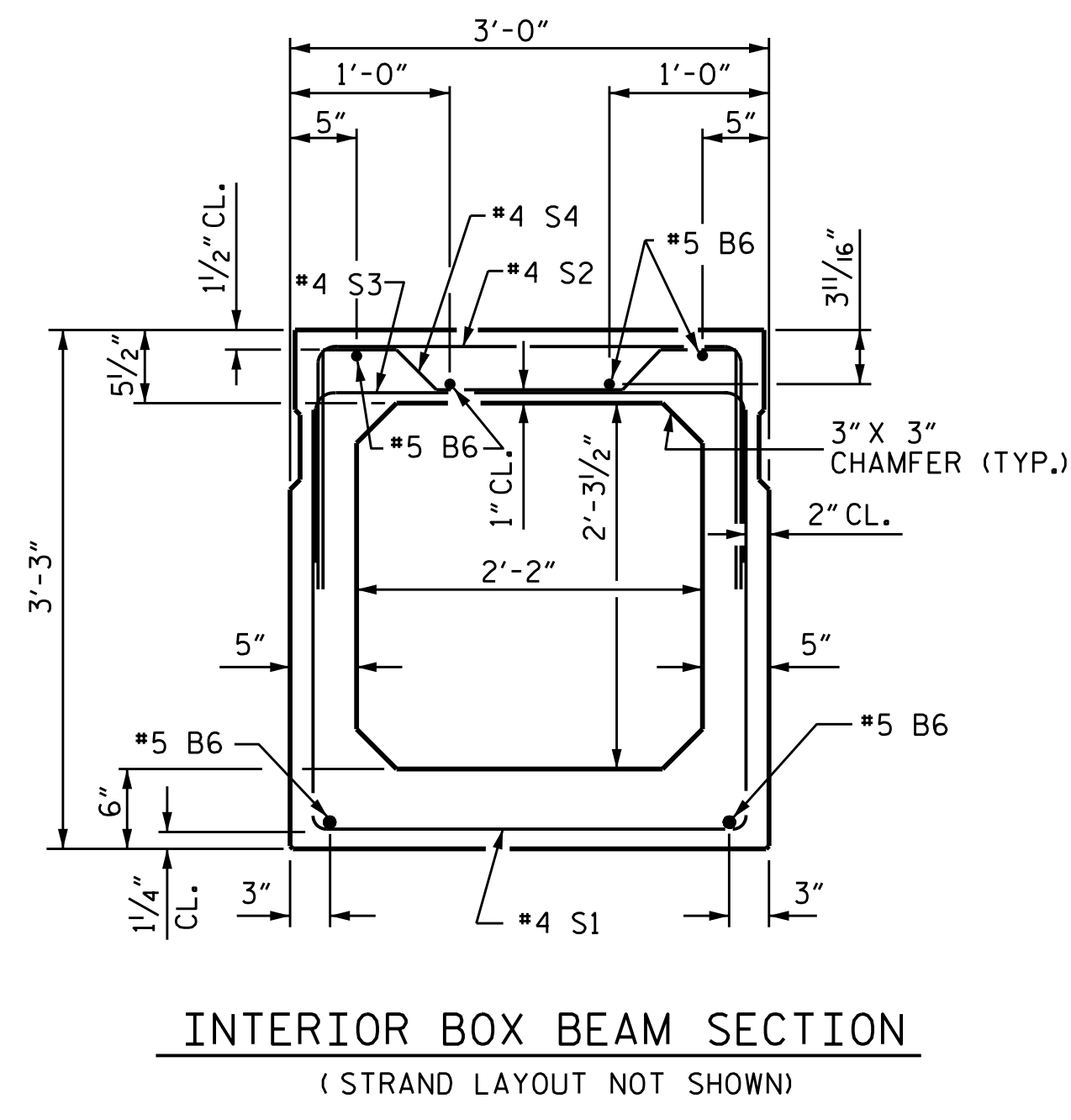


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PLAN OF 102'-9" UNIT
 24'-10" CLEAR ROADWAY
 90° SKEW

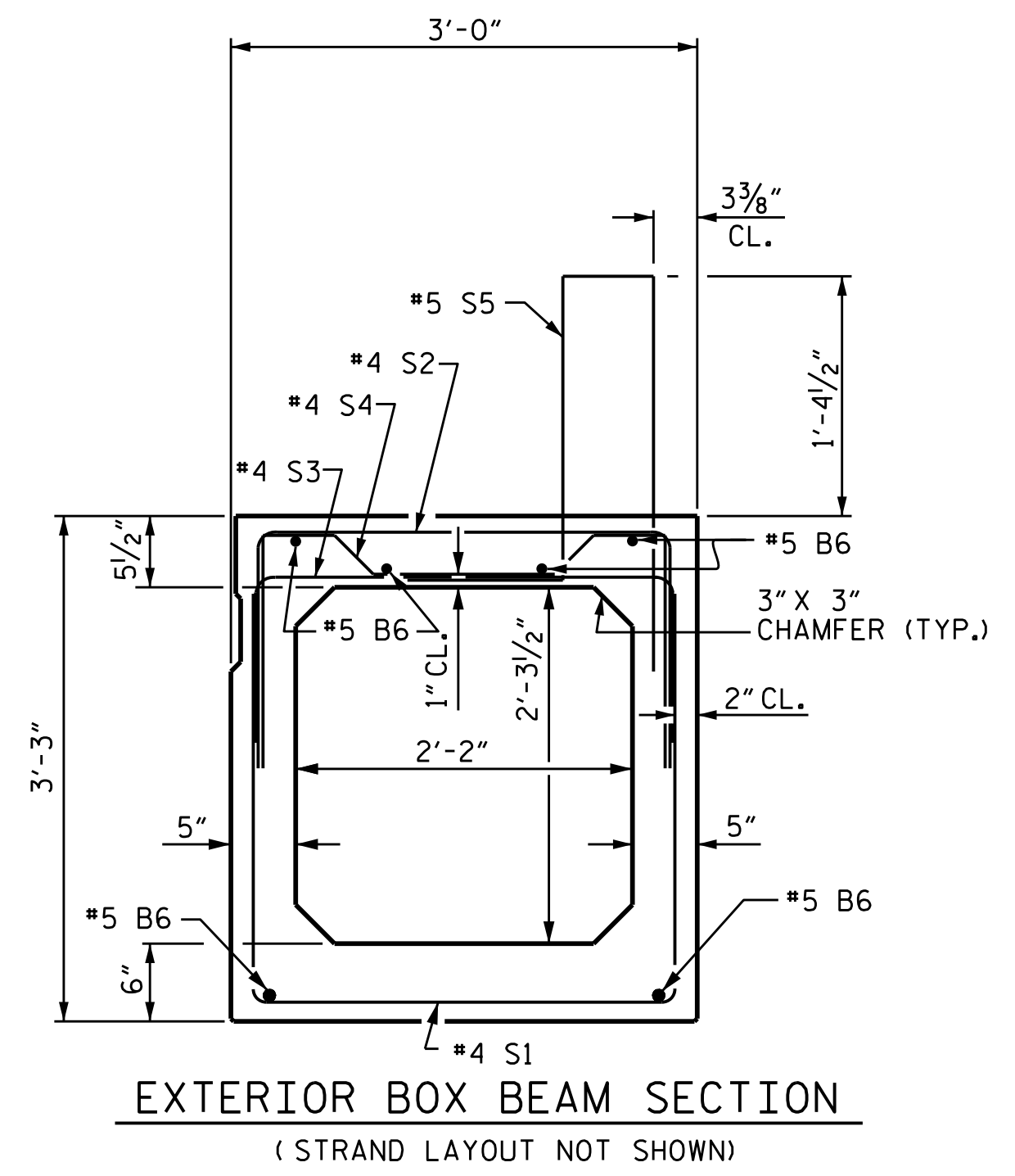
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

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2			4			

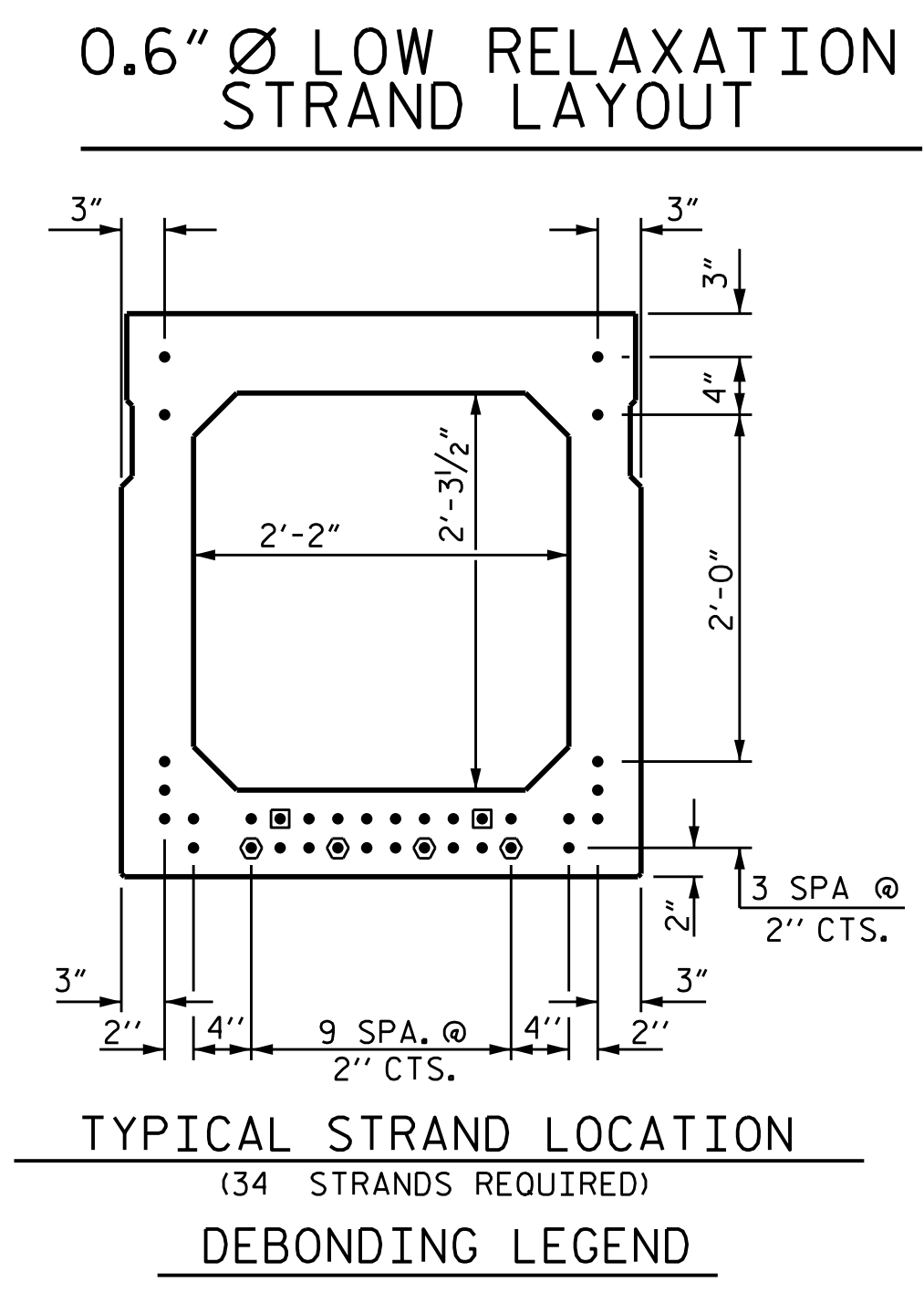
STD.NO.39PCBB_27_90S_100L



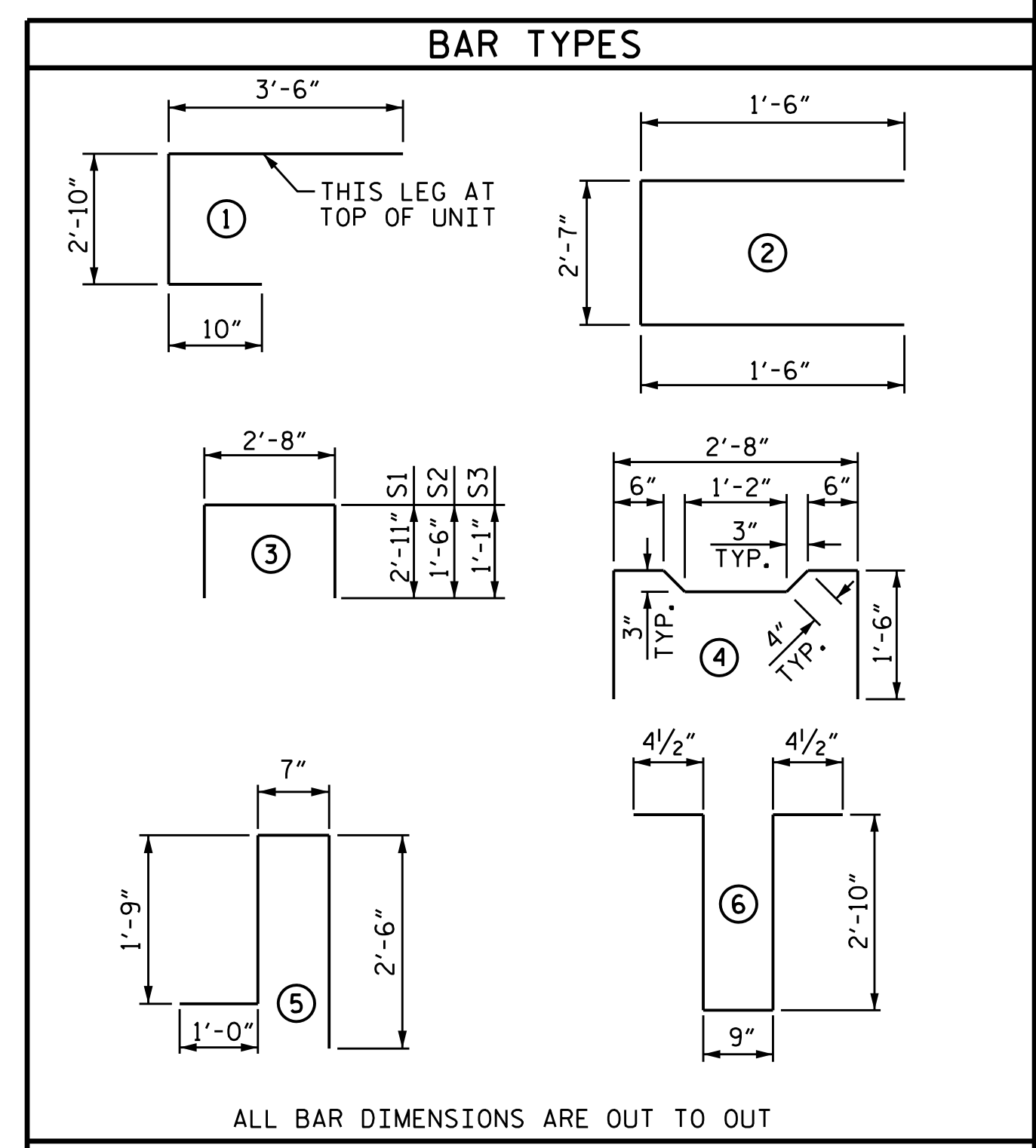
INTERIOR BOX BEAM SECTION
(STRAND LAYOUT NOT SHOWN)



EXTERIOR BOX BEAM SECTION
(STRAND LAYOUT NOT SHOWN)



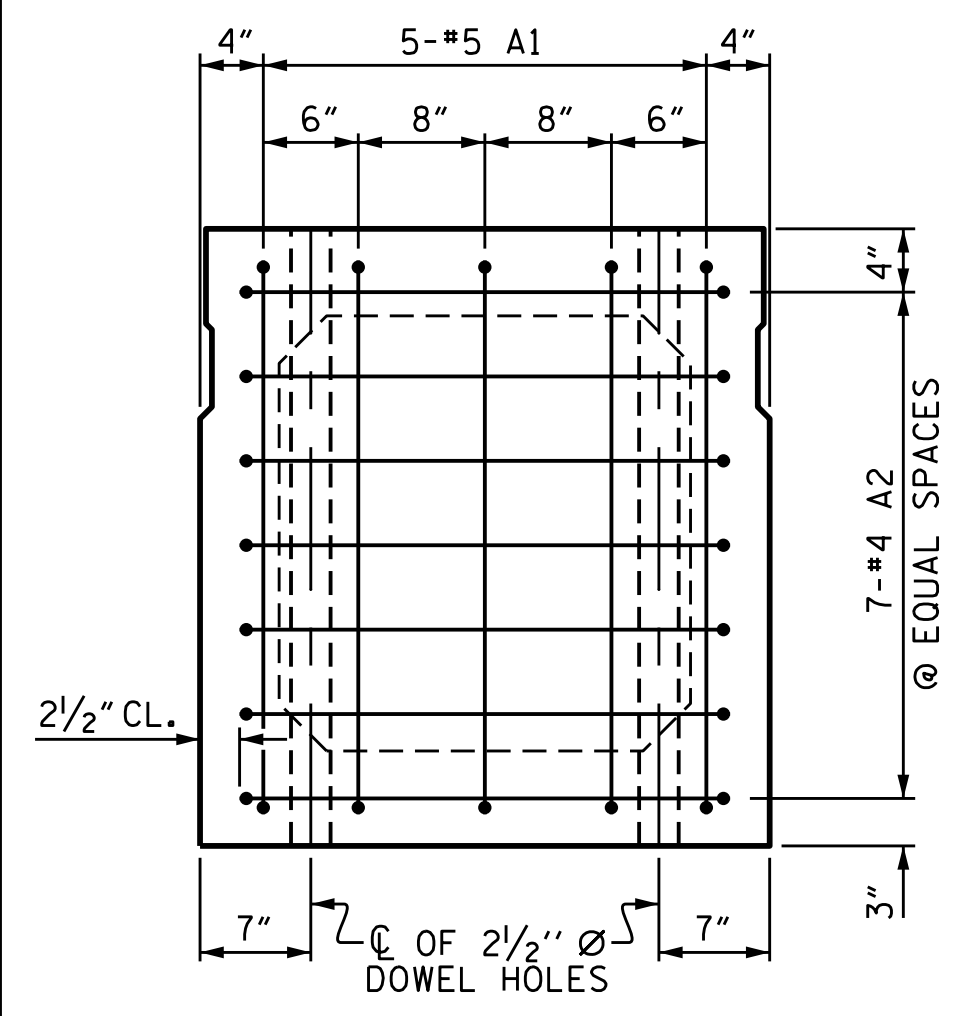
- FULLY BONDED STRANDS
 - STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
 - STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER
- BOND SHALL BE BROKEN ON STRANDS AS SHOWN FOR THE SPECIFIED LENGTH FROM EACH END OF THE BOX BEAM. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.



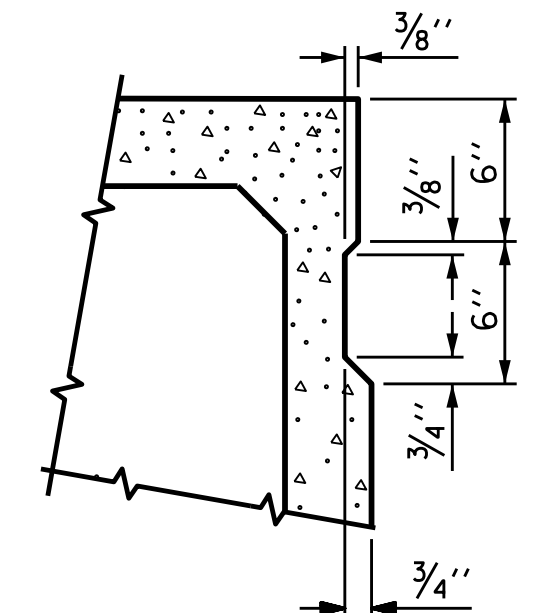
ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
A1	10	#5	1	7'-2"	75	7'-2"	75
A2	44	#4	2	5'-7"	164	5'-7"	164
B6	12	#5	STR	52'-4"	655	52'-4"	655
K1	15	#4	6	7'-2"	72	7'-2"	72
K2	10	#4	STR	2'-7"	17	2'-7"	17
S1	83	#4	3	8'-6"	471	8'-6"	471
S2	83	#4	3	5'-8"	314	5'-8"	314
S3	145	#4	3	4'-10"	468	4'-10"	468
S4	62	#4	4	5'-10"	242	5'-10"	242
*S5	143	#5	5	5'-10"	870	--	--
REINFORCING STEEL				2478	LBS.	2478	LBS.
*EPOXY COATED REINF. STEEL				870	LBS.		
7500 P.S.I. CONCRETE				20.1	CU. YDS.	19.9	CU. YDS.
0.6" Ø L.R. STRANDS				No. 34		No. 34	

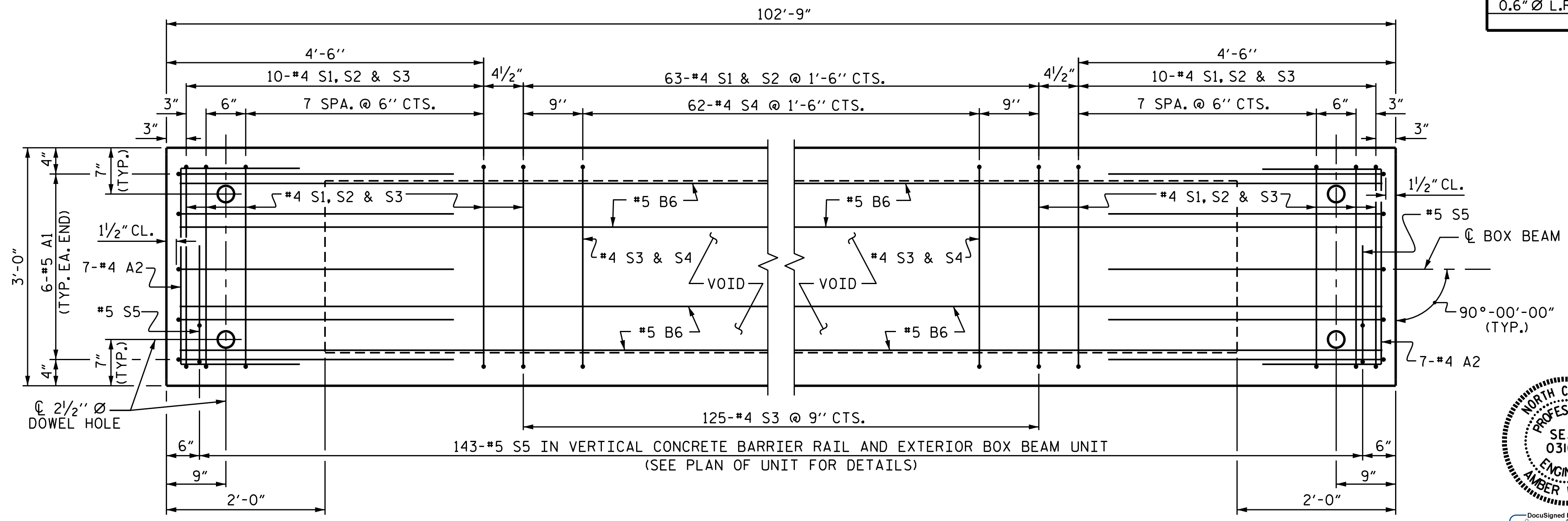


END ELEVATION
SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES. (INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION. STRAND LAYOUT NOT SHOWN.)



SHEAR KEY DETAIL
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.

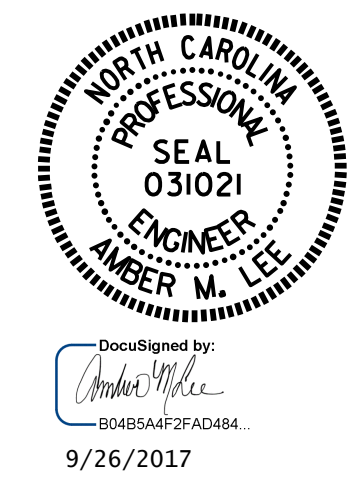
GRADE 270 STRANDS	
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950



PLAN OF BOX BEAM

EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS.
FOR LOCATION OF DIAPHRAGMS, SEE "PLAN OF UNIT".
FOR THREADED INSERTS, SEE "THREADED INSERT DETAIL".
FOR REINFORCING STEEL IN DIAPHRAGMS, SEE "DOUBLE DIAPHRAGM DETAILS".

PROJECT NO. B-4978
WILKES COUNTY
STATION: 12+36.12 -L-
SHEET 2 OF 4

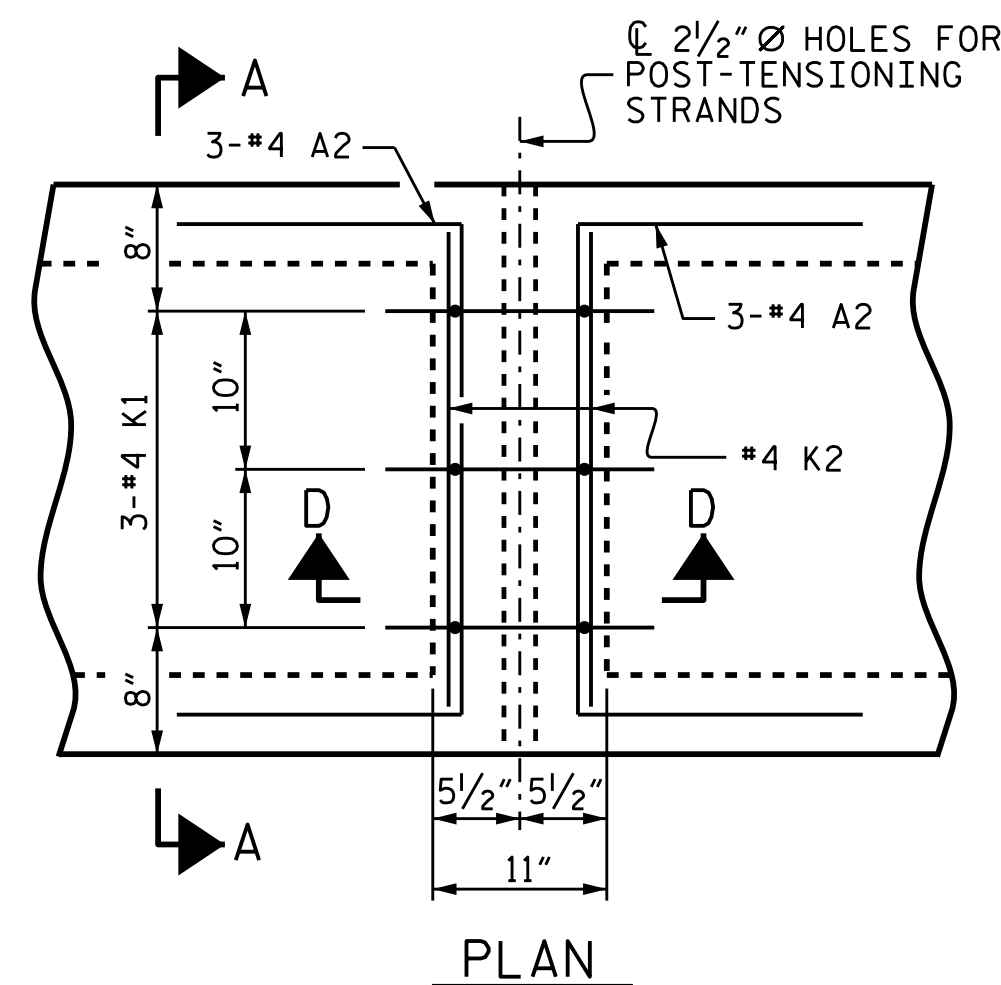


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

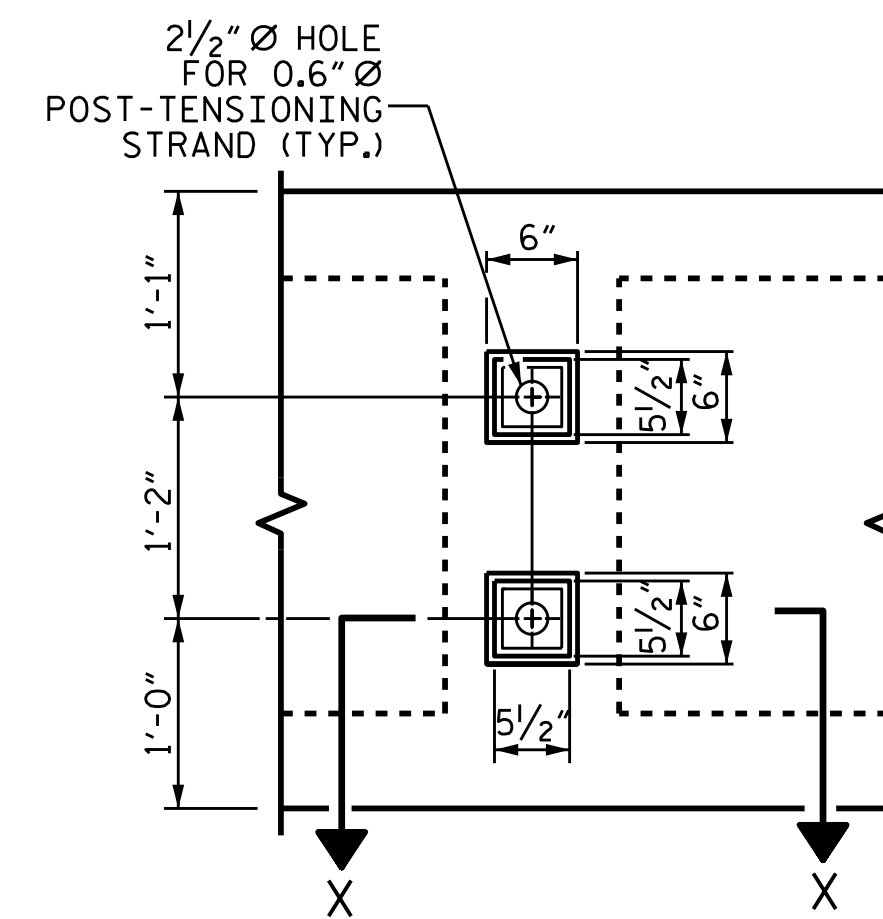
DRAWN BY : B. A. DUKE DATE : 10-26-16
CHECKED BY : G. KOUCHEKI DATE : 11-17-16
DESIGN ENGINEER OF RECORD : D. SHACKLEFORD DATE : 12-2016

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

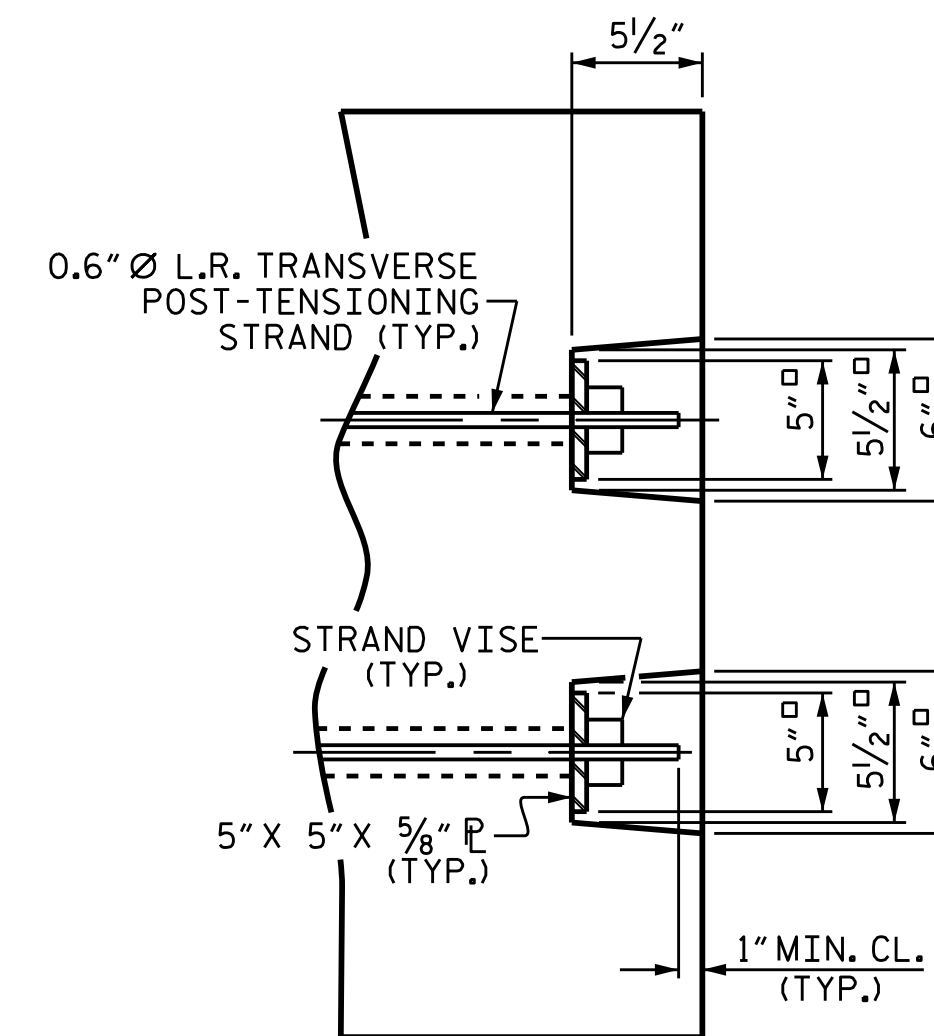
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS 19
2			4			



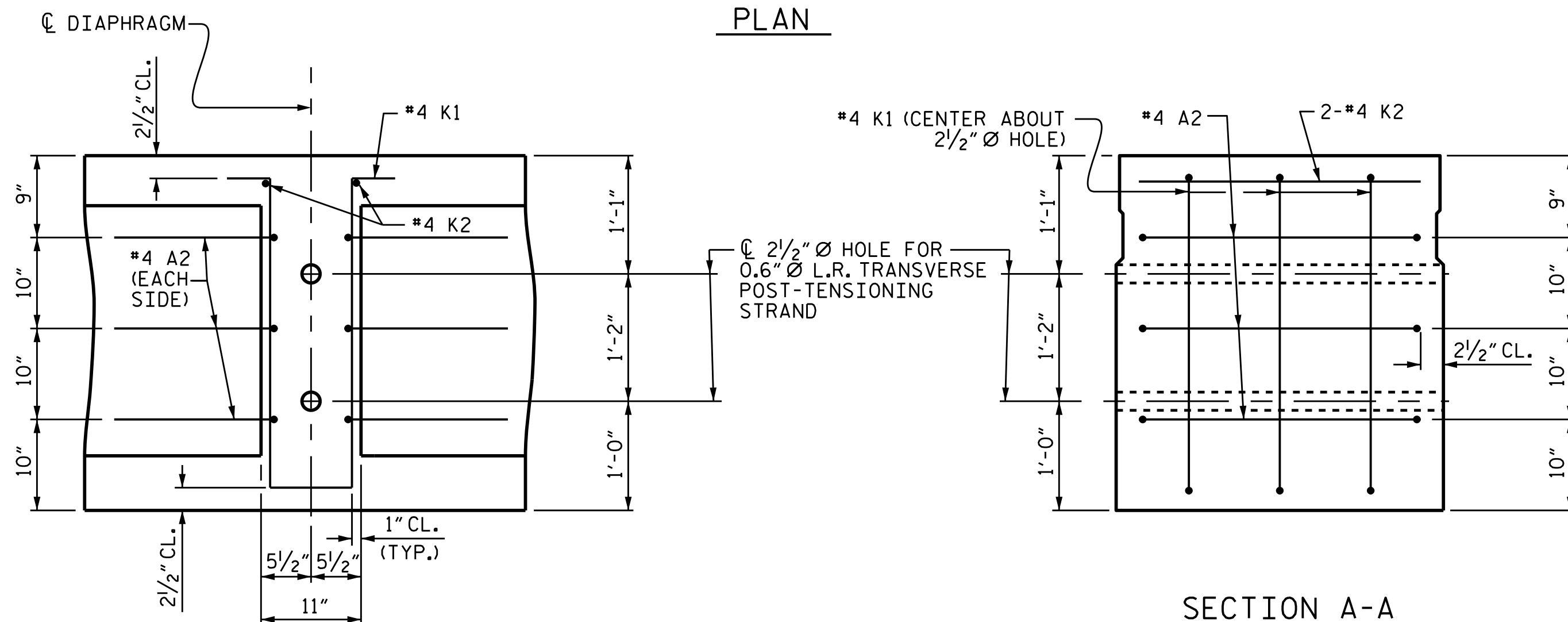
PLAN



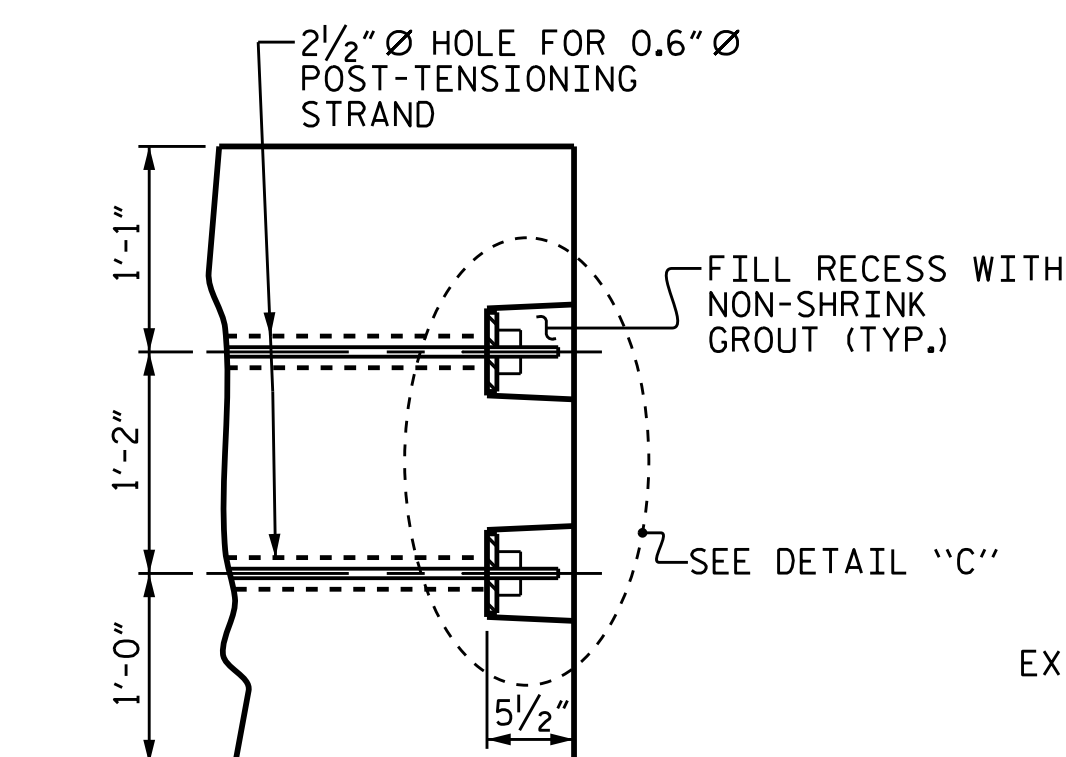
VIEW Y-Y
SHOWING ELEVATION VIEW OF GROUTED RECESS



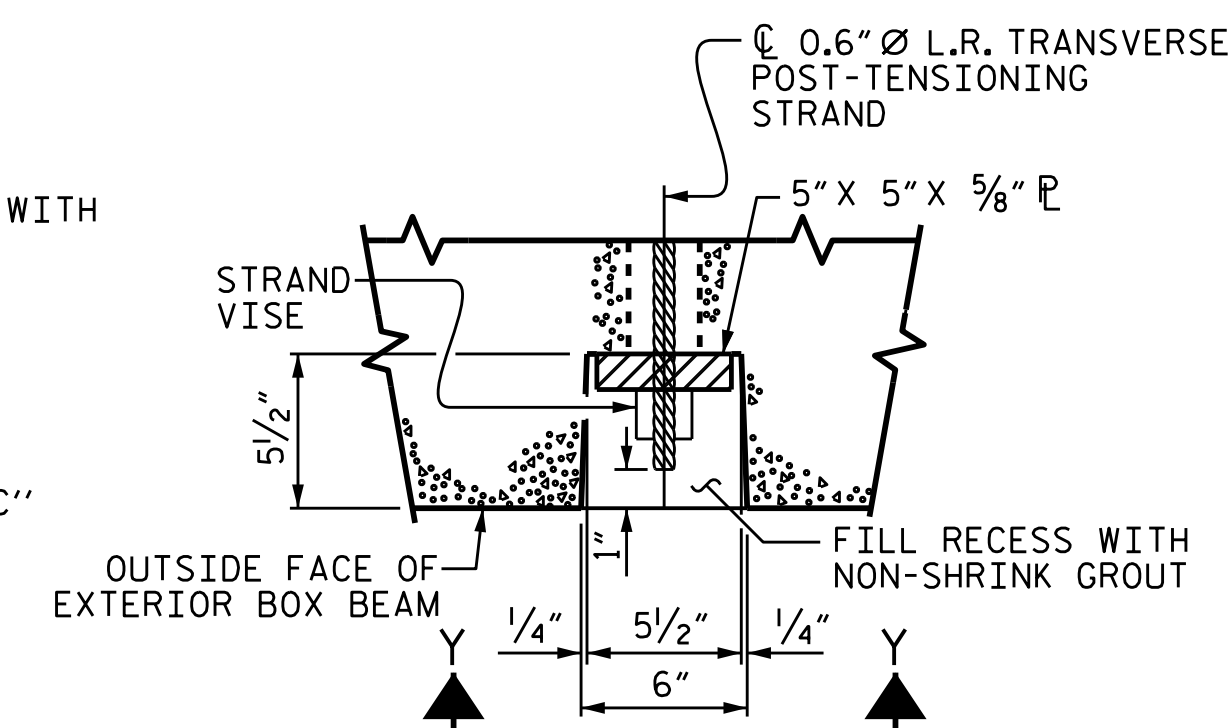
DETAIL "C"



SECTION A-A
VOIDS NOT SHOWN



PART SECTION AT RECESS



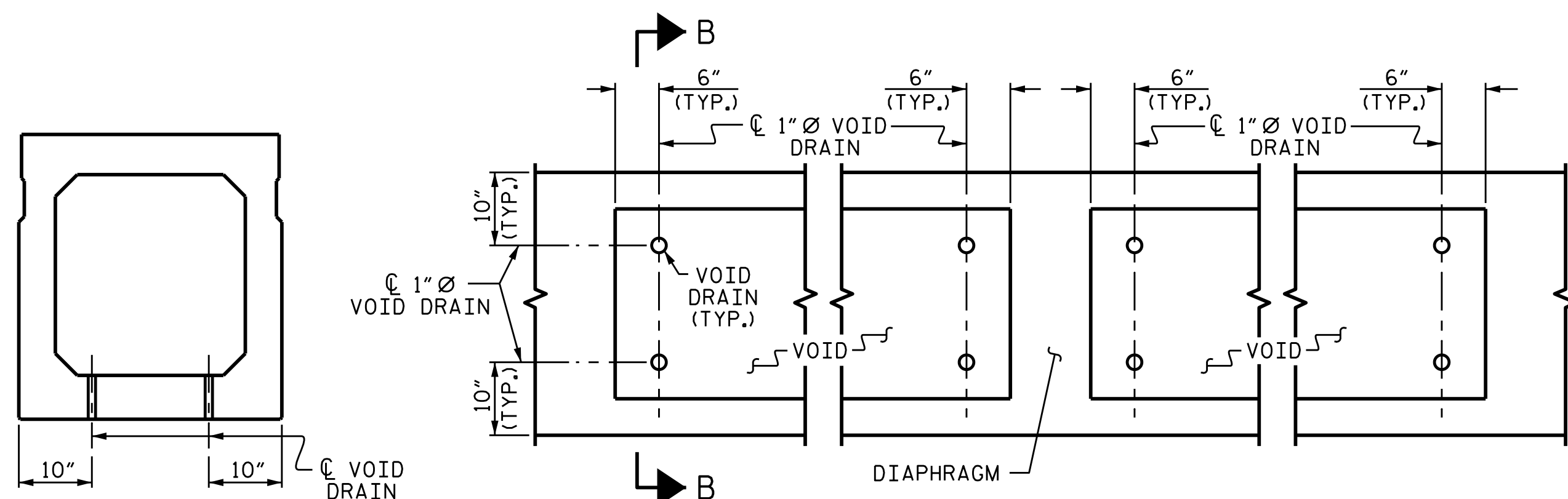
SECTION X-X
SHOWING PLAN VIEW OF GROUTED RECESS

SECTION D-D

DOUBLE DIAPHRAGM DETAILS

*4 "S" BARS NOT SHOWN. *4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2 1/2" Ø HOLE.

GROUTED RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM



SECTION B-B

PART PLAN

VOID DRAIN DETAILS

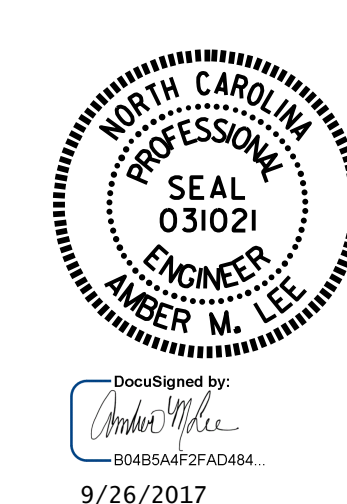
(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)

DEAD LOAD DEFLECTION AND CAMBER	
102'-9" BOX BEAM UNIT (NC)	3'-0" x 3'-3"
CAMBER (SLAB ALONE IN PLACE)	0.6" Ø L.R. STRAND
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	2" ↓
FINAL CAMBER	1/4" ↓
	3/4" ↑

** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. B-4978
WILKES COUNTY
 STATION: 12+36.12 -L-

SHEET 3 OF 4

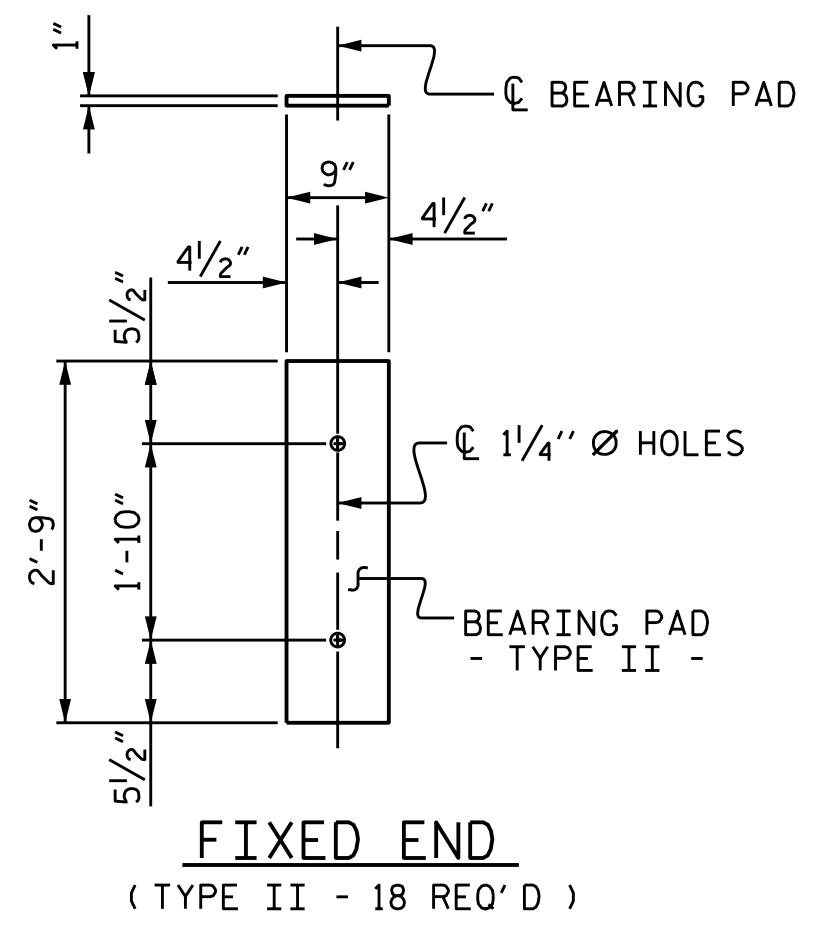


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 3'-0" X 3'-3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT

DRAWN BY : B. A. DUKE DATE : 10-24-16
 CHECKED BY : G. KOUICHEKI DATE : 11-17-16
 DESIGN ENGINEER OF RECORD: D. SHACKLEFORD DATE : 12-2016

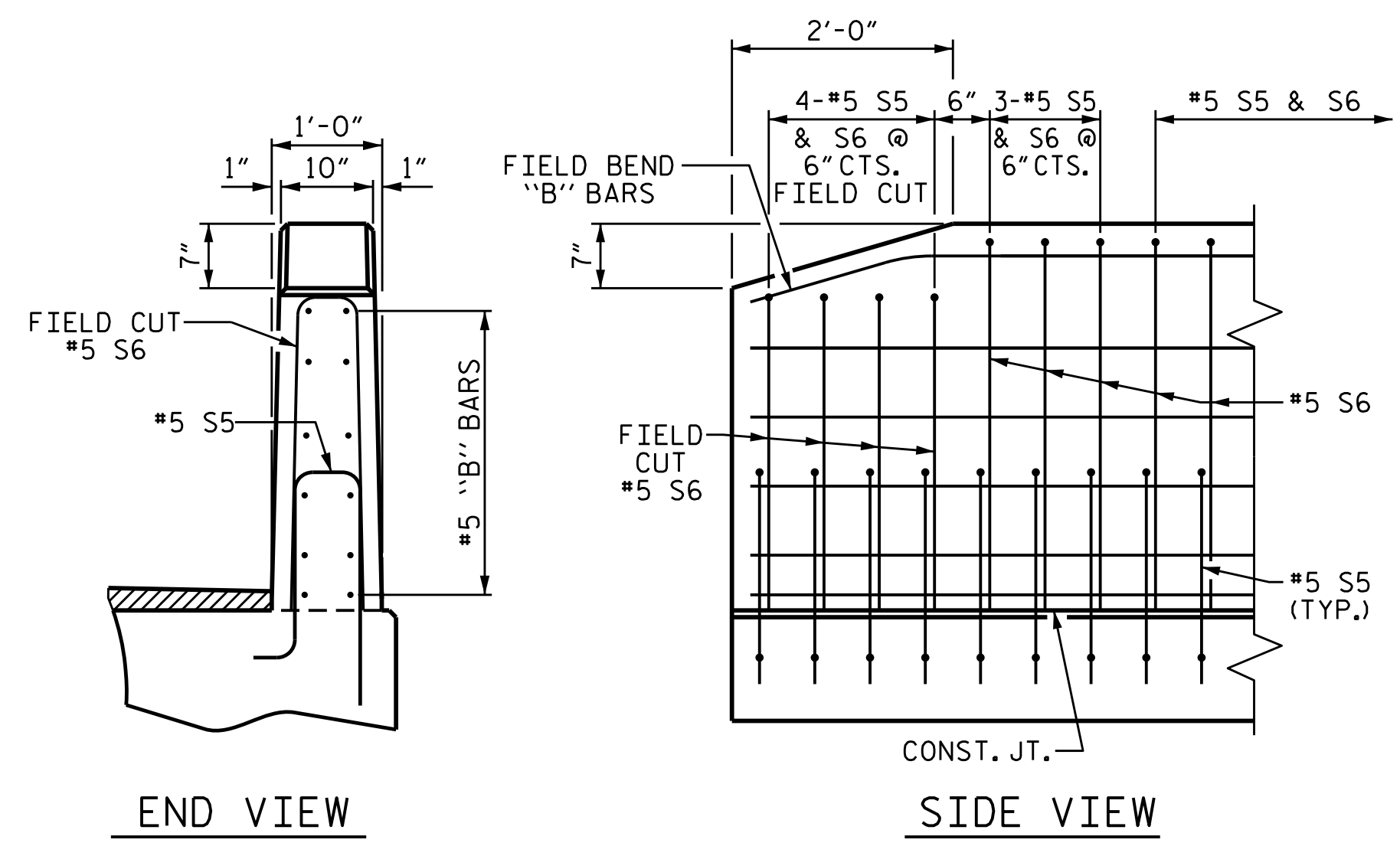
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-8	
1			3			TOTAL SHEETS	
2			4			19	



ELASTOMERIC BEARING DETAILS

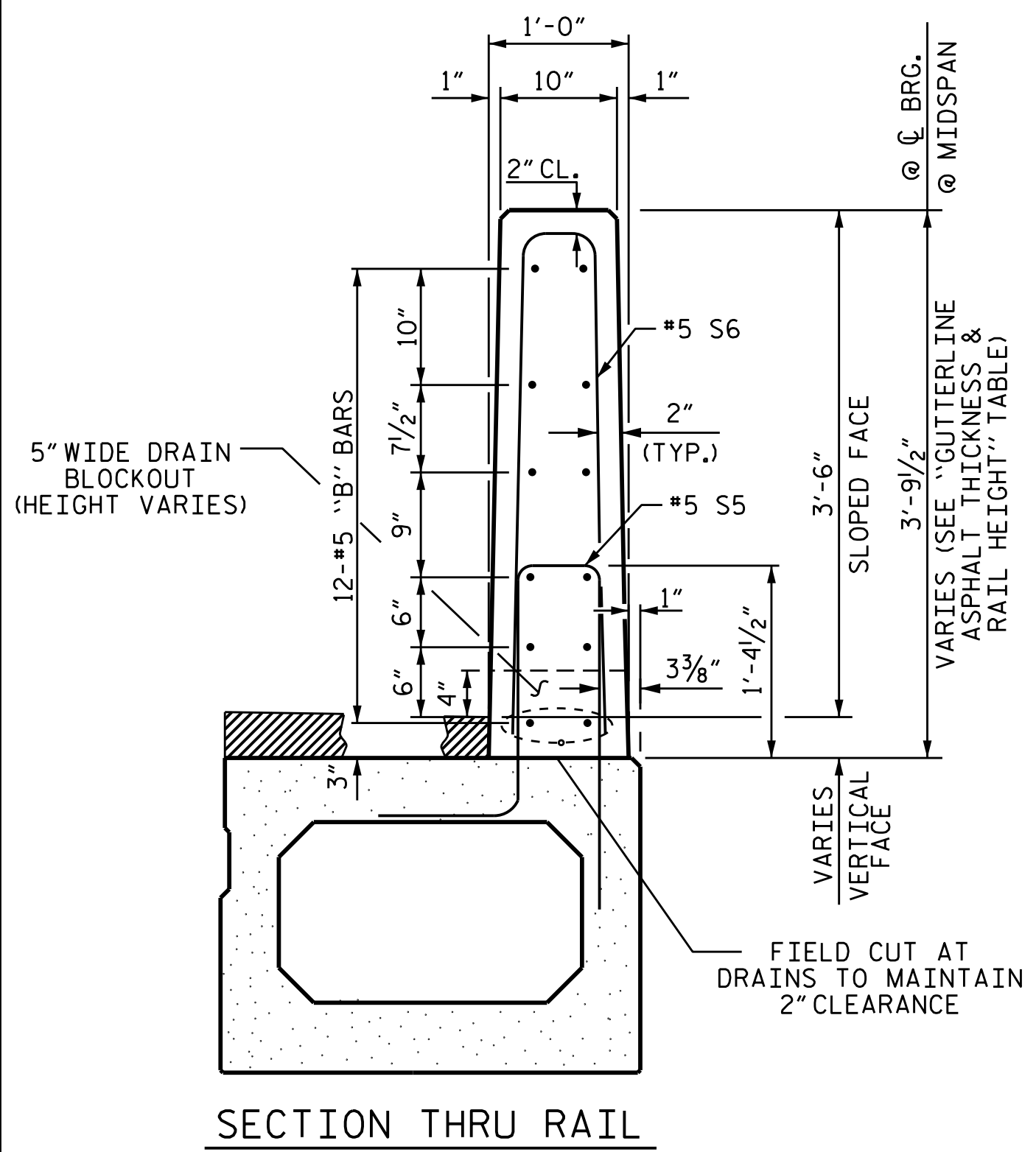
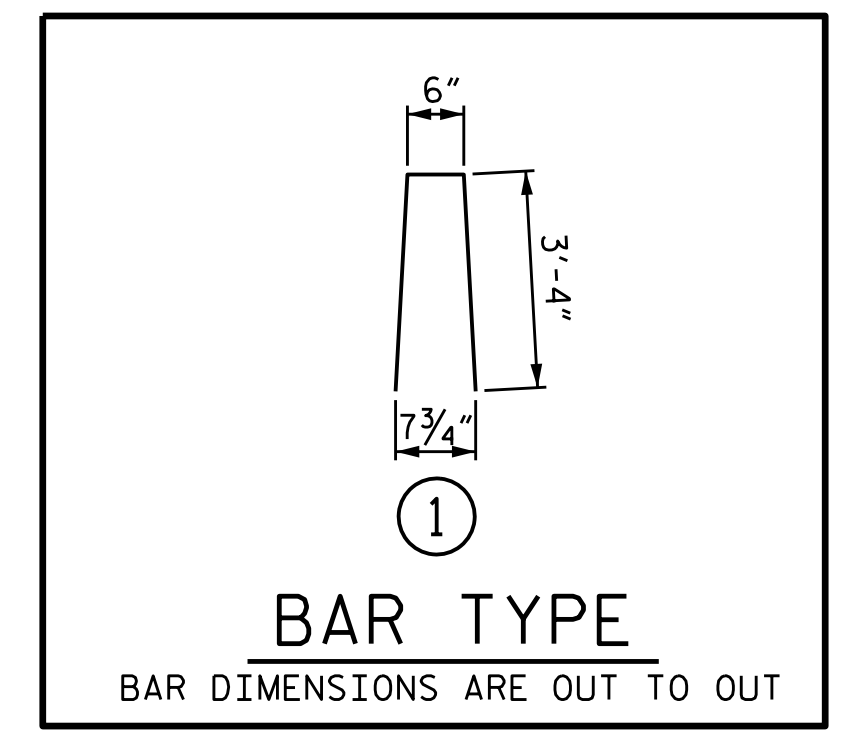
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



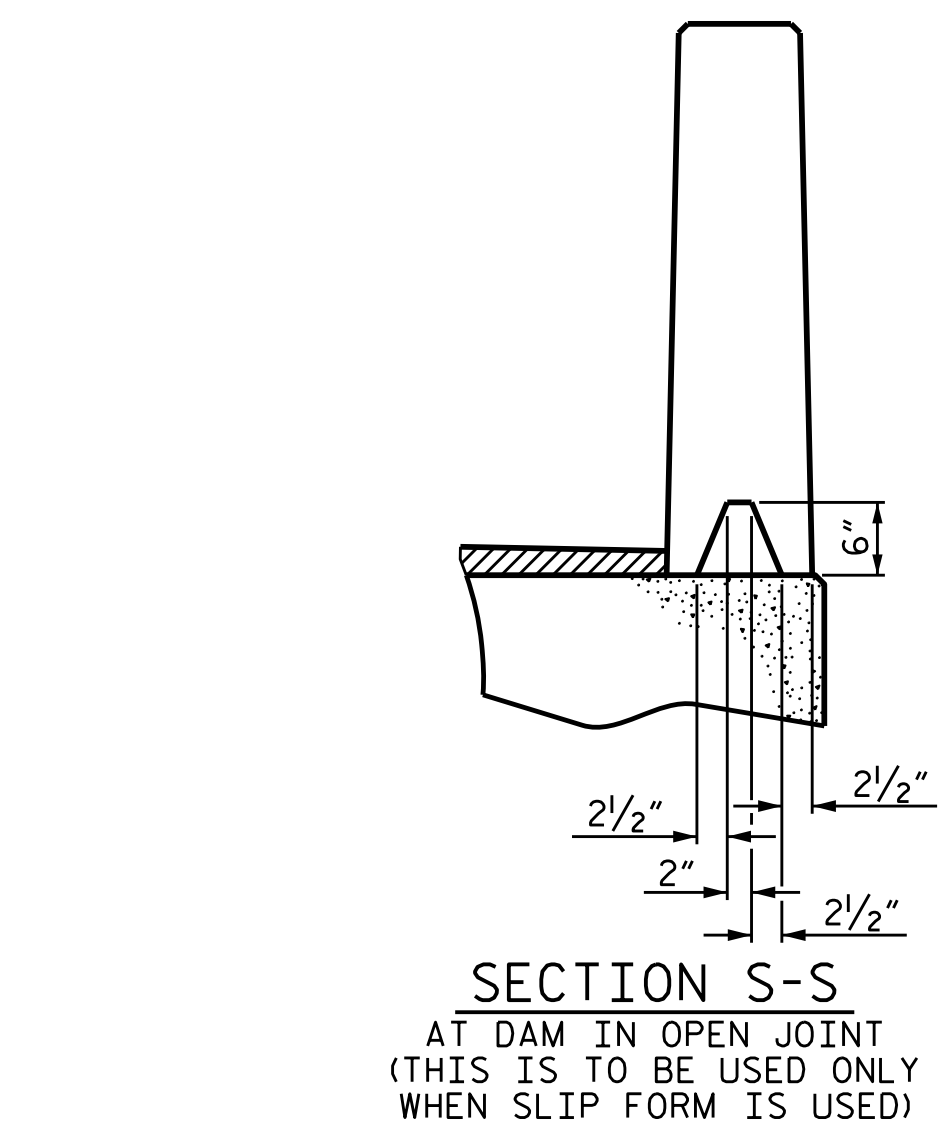
END OF RAIL DETAILS

BOX BEAM UNITS REQUIRED

	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR B.B.	2	102'-9"	205'-6"
INTERIOR B.B.	7	102'-9"	719'-3"
TOTAL	9		924'-9"

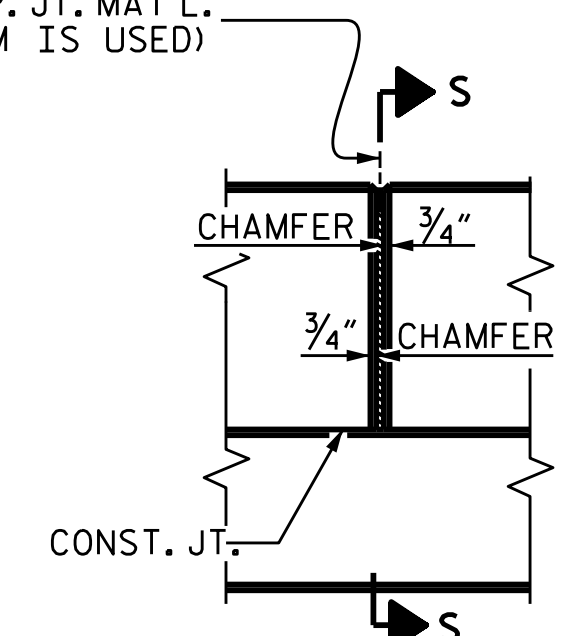


VERTICAL CONCRETE BARRIER RAIL DETAILS



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

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

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

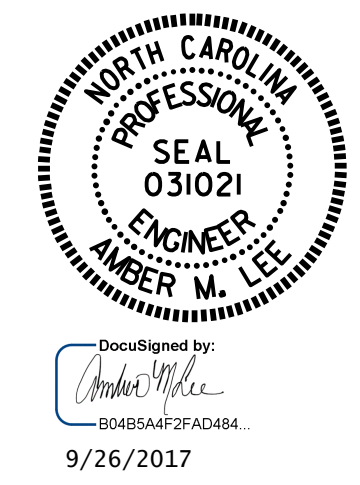
BAR	BARS PER PAIR OF EXTERIOR UNITS	SIZE	TYPE	LENGTH	WEIGHT
102'-9" UNIT					
*B12	96	#5	STR	25'-4"	2537
*S6	286	#5	1	7'-2"	2138
*EPOXY COATED REINFORCING STEEL				LBS.	4675
CLASS AA CONCRETE				CU.YDS.	26.5
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.	205.5

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
102'-9" UNITS	2 3/4"	3'-8 3/4"

PROJECT NO. B-4978
WILKES COUNTY
 STATION: 12+36.12 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 3'-0" X 3'-3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT

DRAWN BY : B. A. DUKE DATE : 10-24-16
 CHECKED BY : G. KOUCHEKI DATE : 11-17-16
 DESIGN ENGINEER OF RECORD: D. SHACKLEFORD DATE : 12-2016

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1			3			TOTAL SHEETS 19
2			4			

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.)

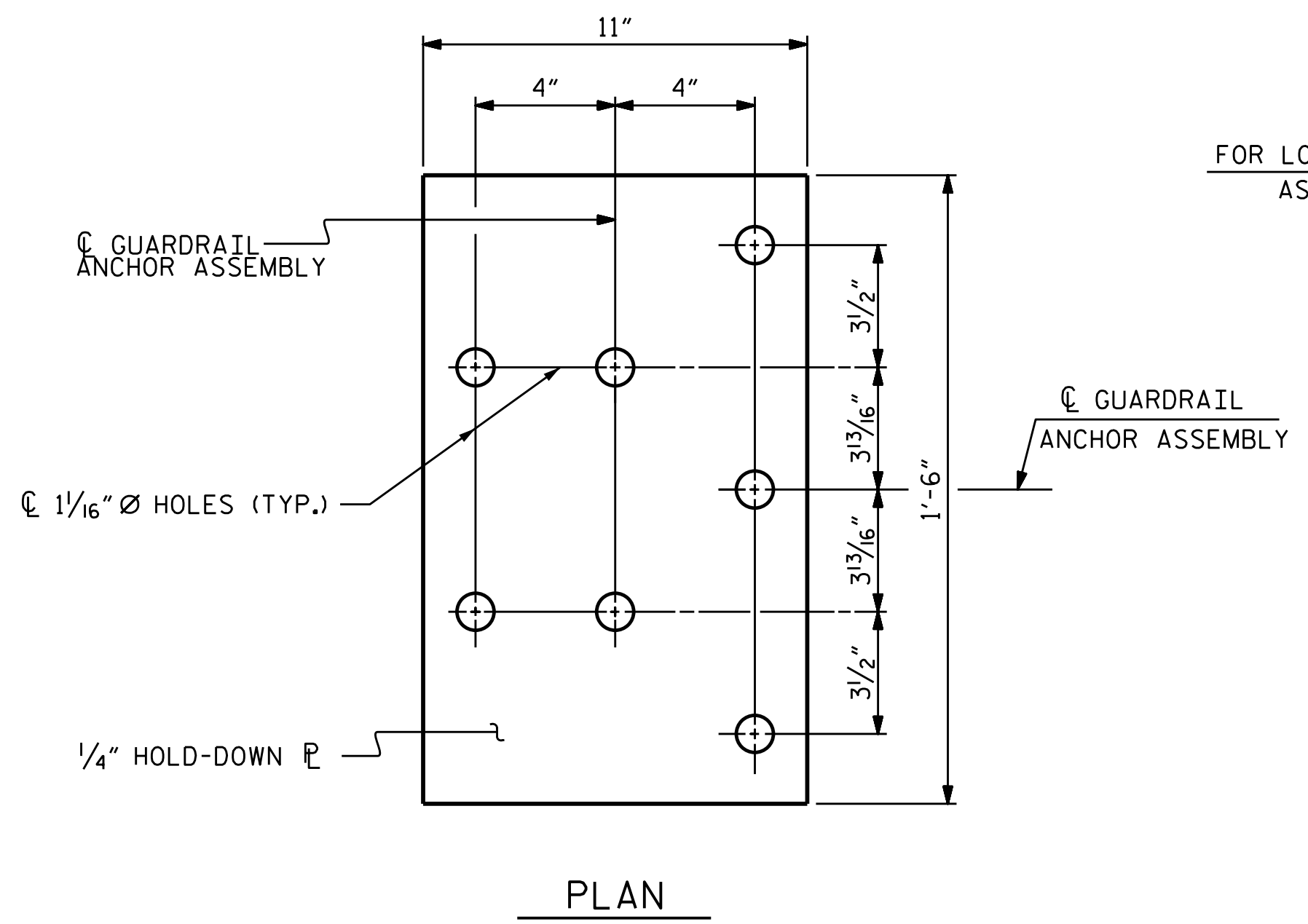
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

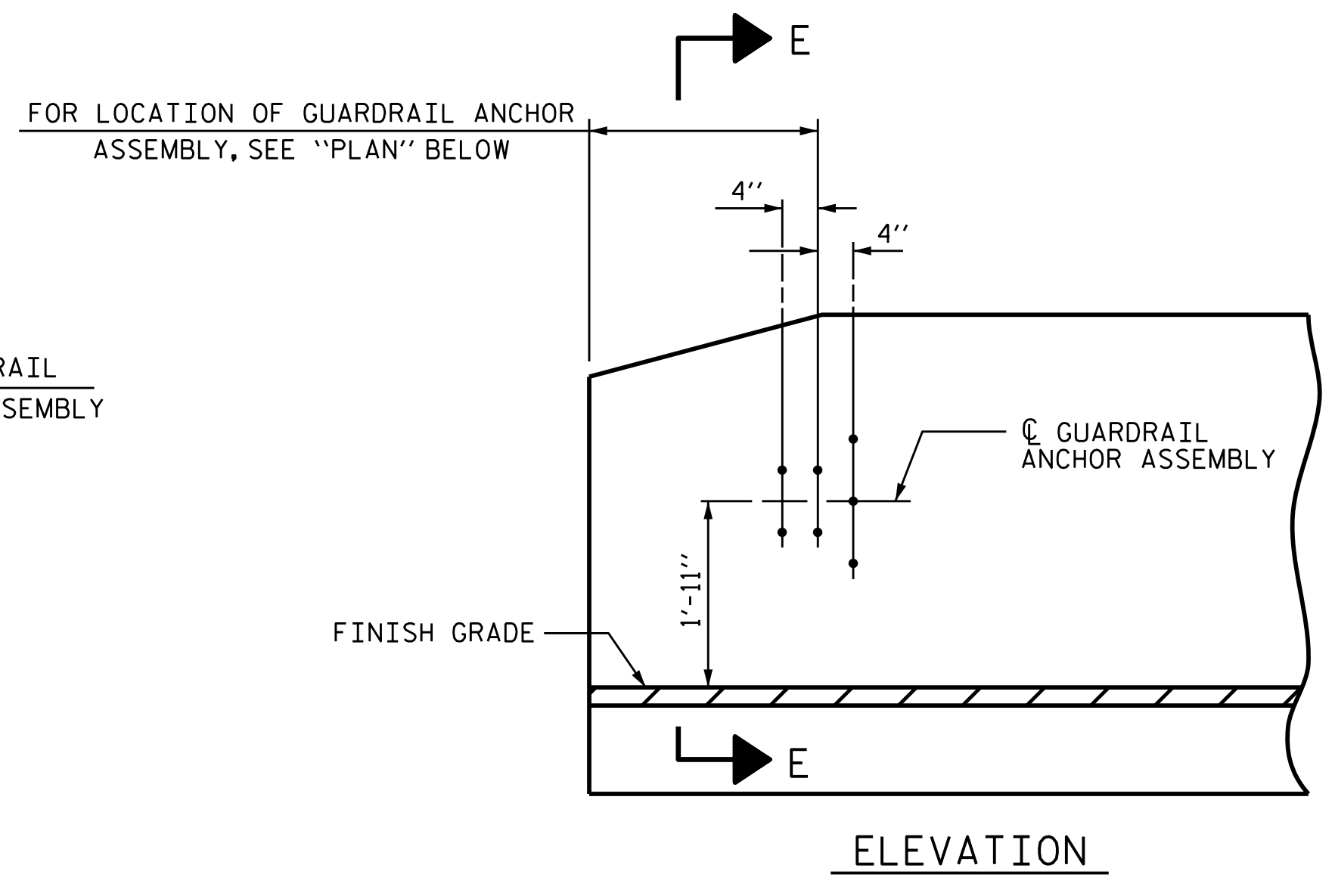
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

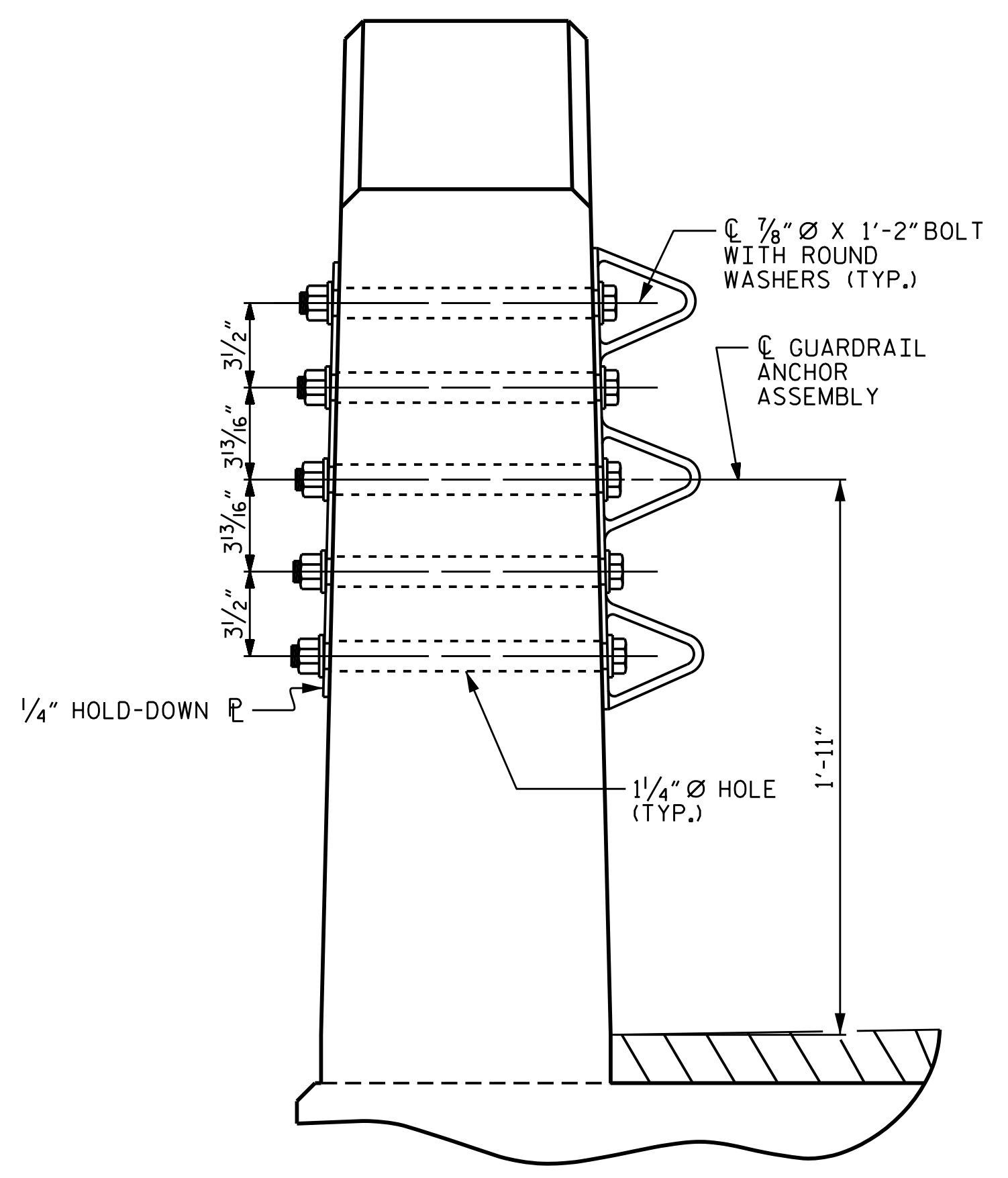
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



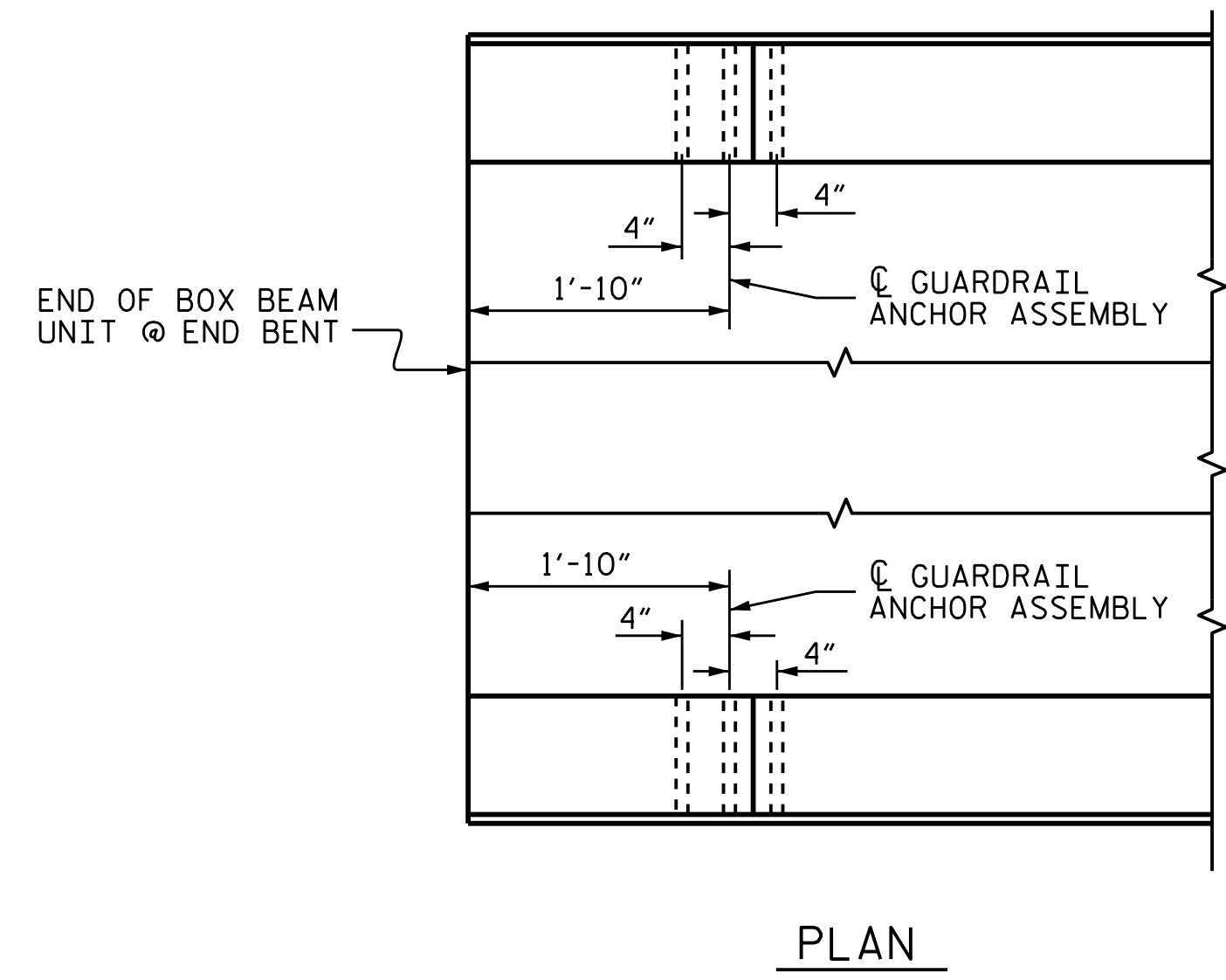
PLAN



ELEVATION



SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

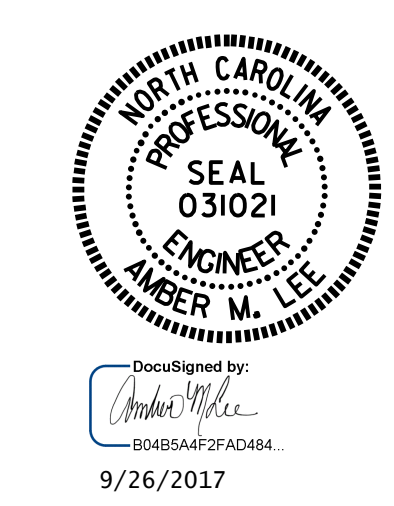
END BENT #1 SHOWN, END BENT #2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. B-4978
WILKES COUNTY
 STATION: 12+36.12 -L-



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

ASSEMBLED BY : B. A. DUKE	DATE : 10-28-16
CHECKED BY : G. KOUCHEKI	DATE : 11-17-16
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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS 19
2			4			

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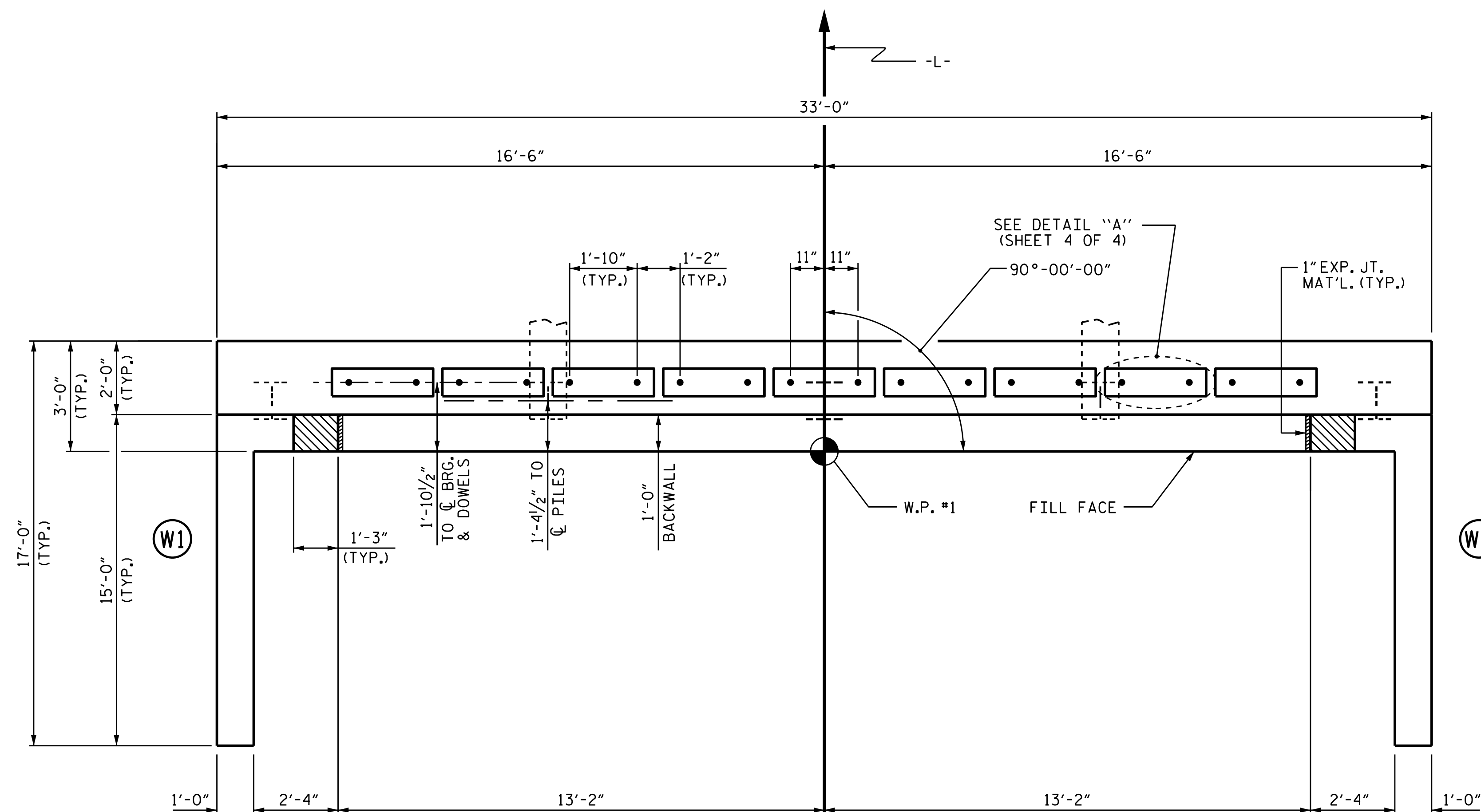
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

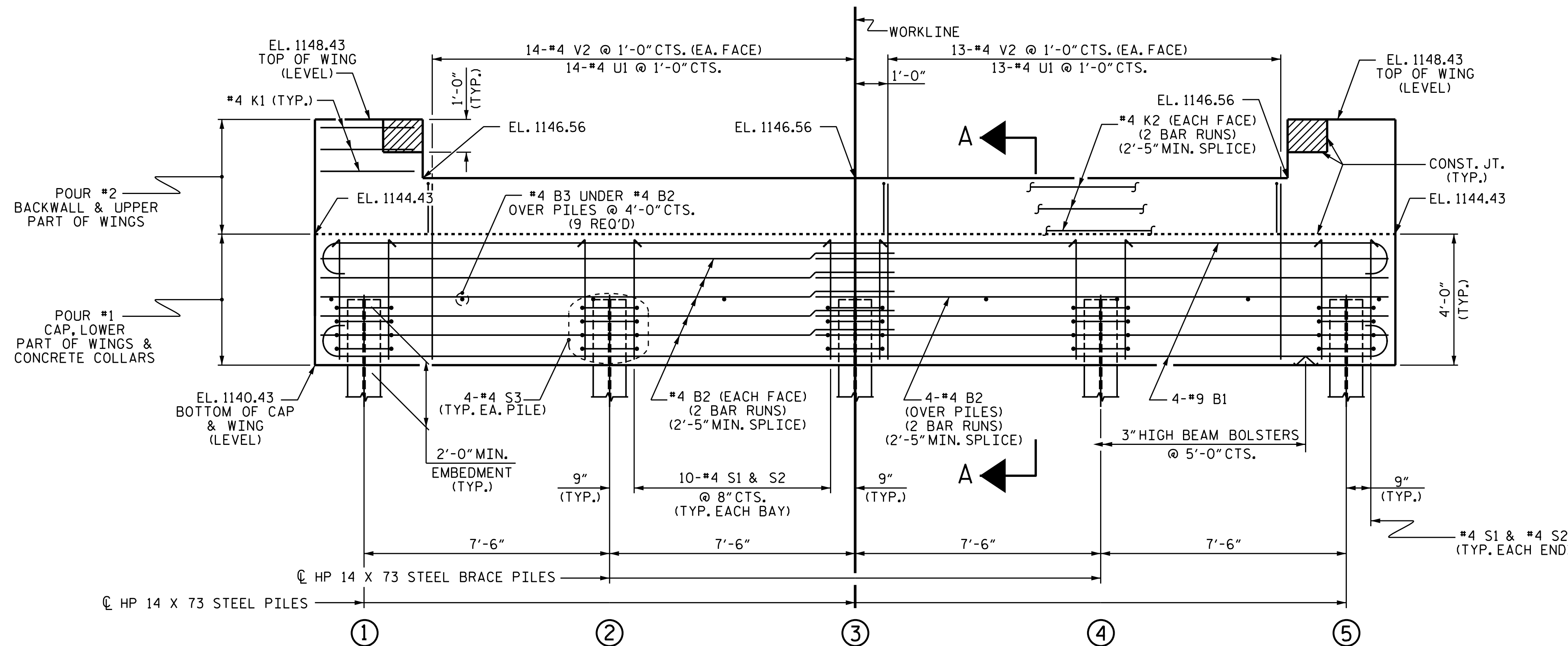
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.

FOR WING DETAILS, SEE SHEET 2 OF 3.



PLAN

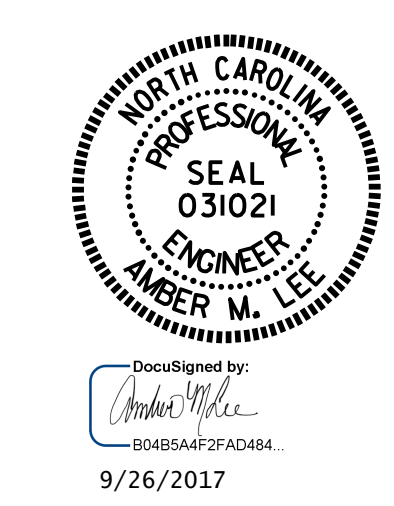


ELEVATION

WINGS NOT SHOWN FOR CLARITY.
 FOR SECTION A-A, SEE SHEET 3 OF 3.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 3 OF 3.

PROJECT NO. B-4978
WILKES COUNTY
 STATION: 12+36.12 -L-
 SHEET 1 OF 3

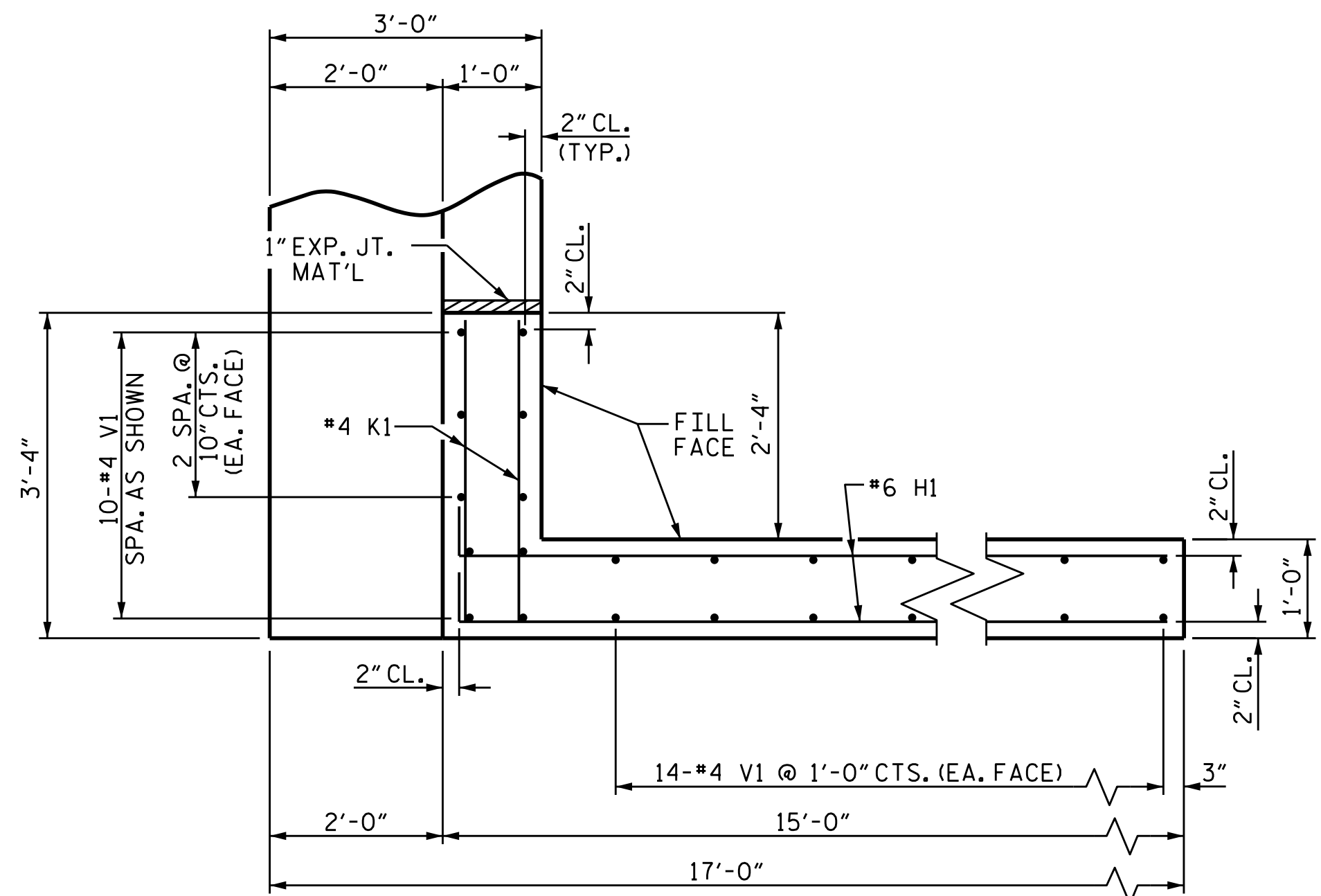
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1



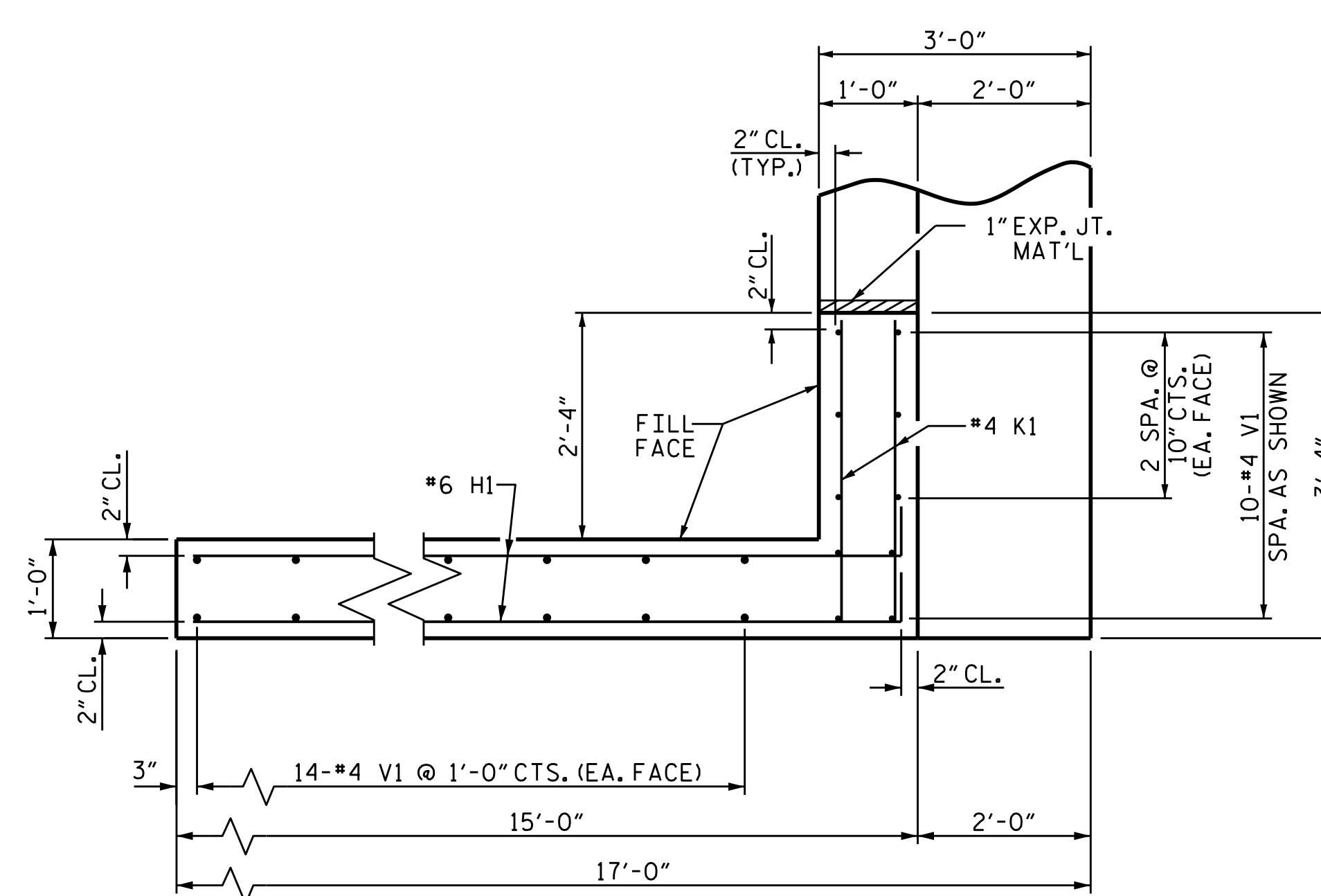
ASSEMBLED BY :	M. POOLE	DATE :	1-17
CHECKED BY :	E. K. POPE	DATE :	1-24-17
DRAWN BY :	WJH	12/11	REV. 4/15
CHECKED BY :	AAC	12/11	MAA/TMG

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

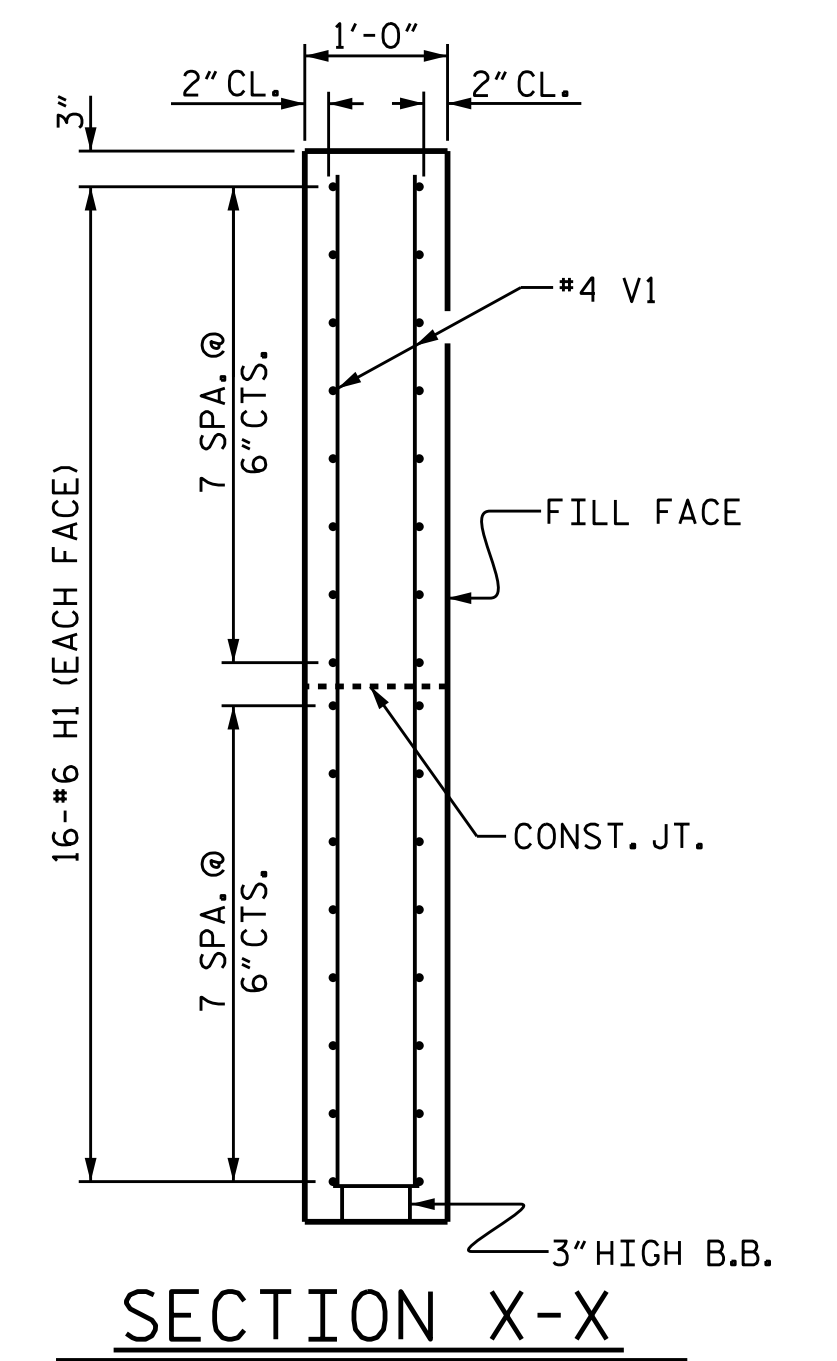
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS 19
2			4			



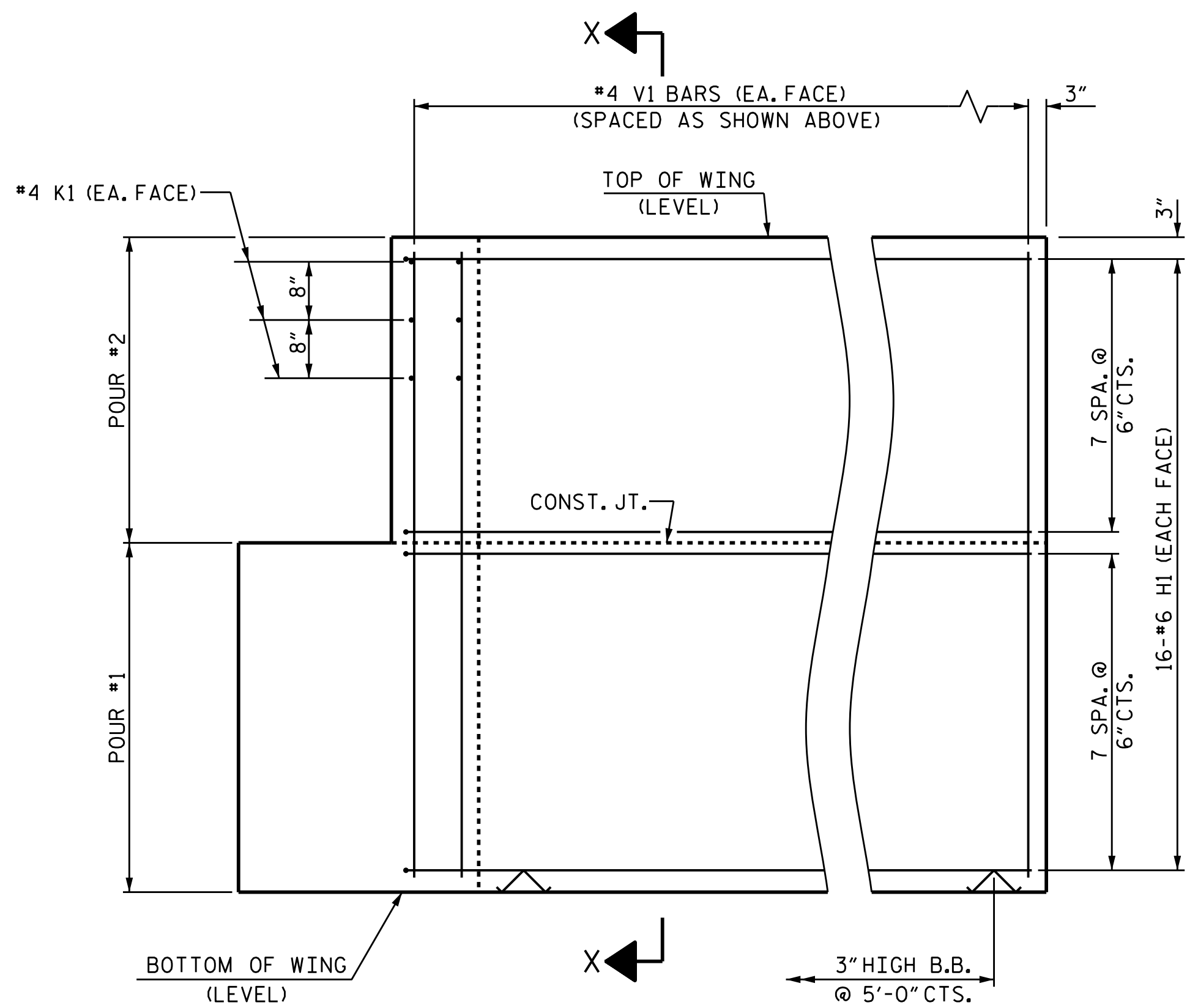
PLAN OF WING (W1)



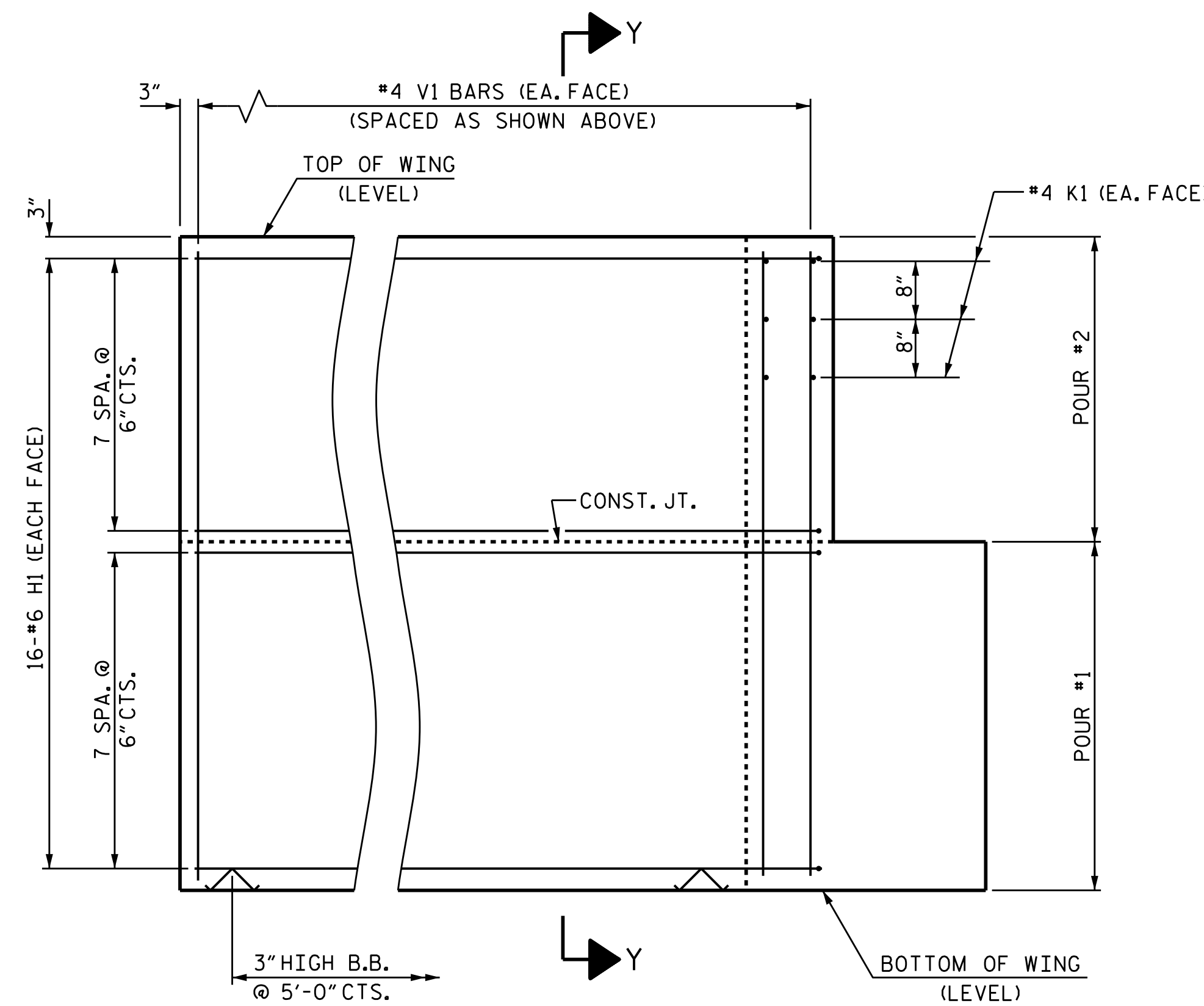
PLAN OF WING (W2)



SECTION X-X

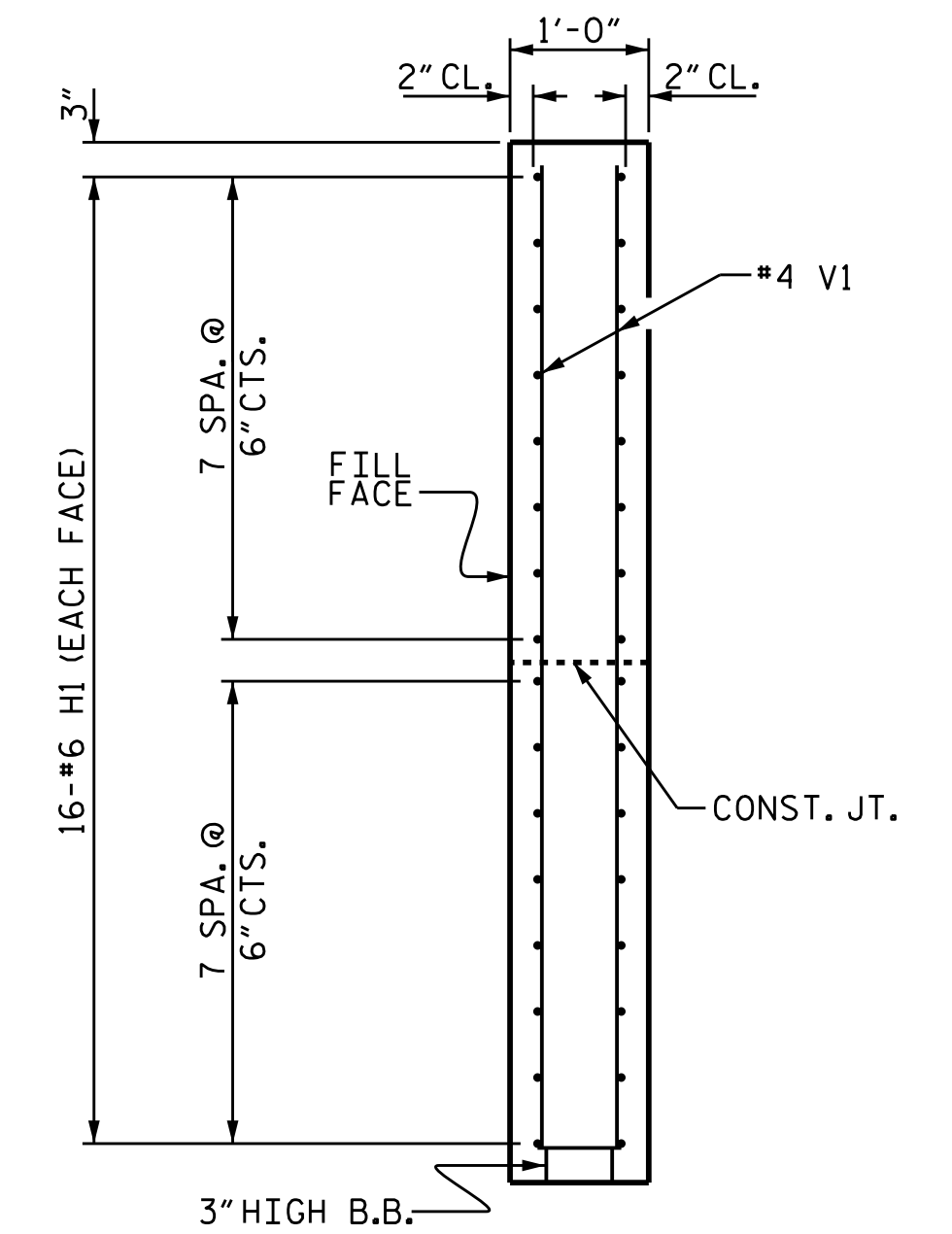


ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

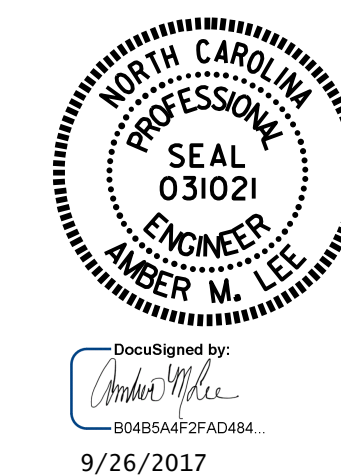
WING DETAILS



SECTION Y-Y

PROJECT NO. B-4978
 WILKES COUNTY
 STATION: 12+36.12 -L-

SHEET 2 OF 3

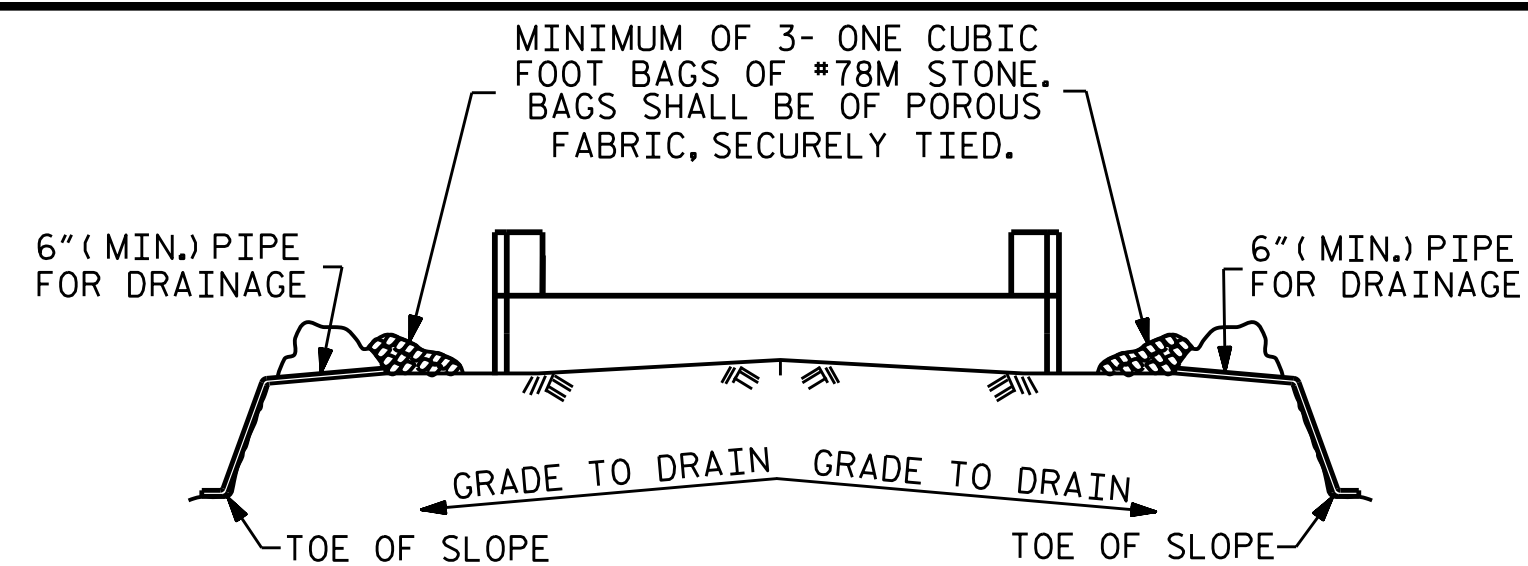


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1

ASSEMBLED BY : M. POOLE	DATE : 1-17
CHECKED BY : E. K. POPE	DATE : 1-24-17
DRAWN BY : WJH 12/11	REV. 4/15
CHECKED BY : AAC 12/11	MAA/TMG

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12	
1			3			TOTAL SHEETS 19	
2			4				

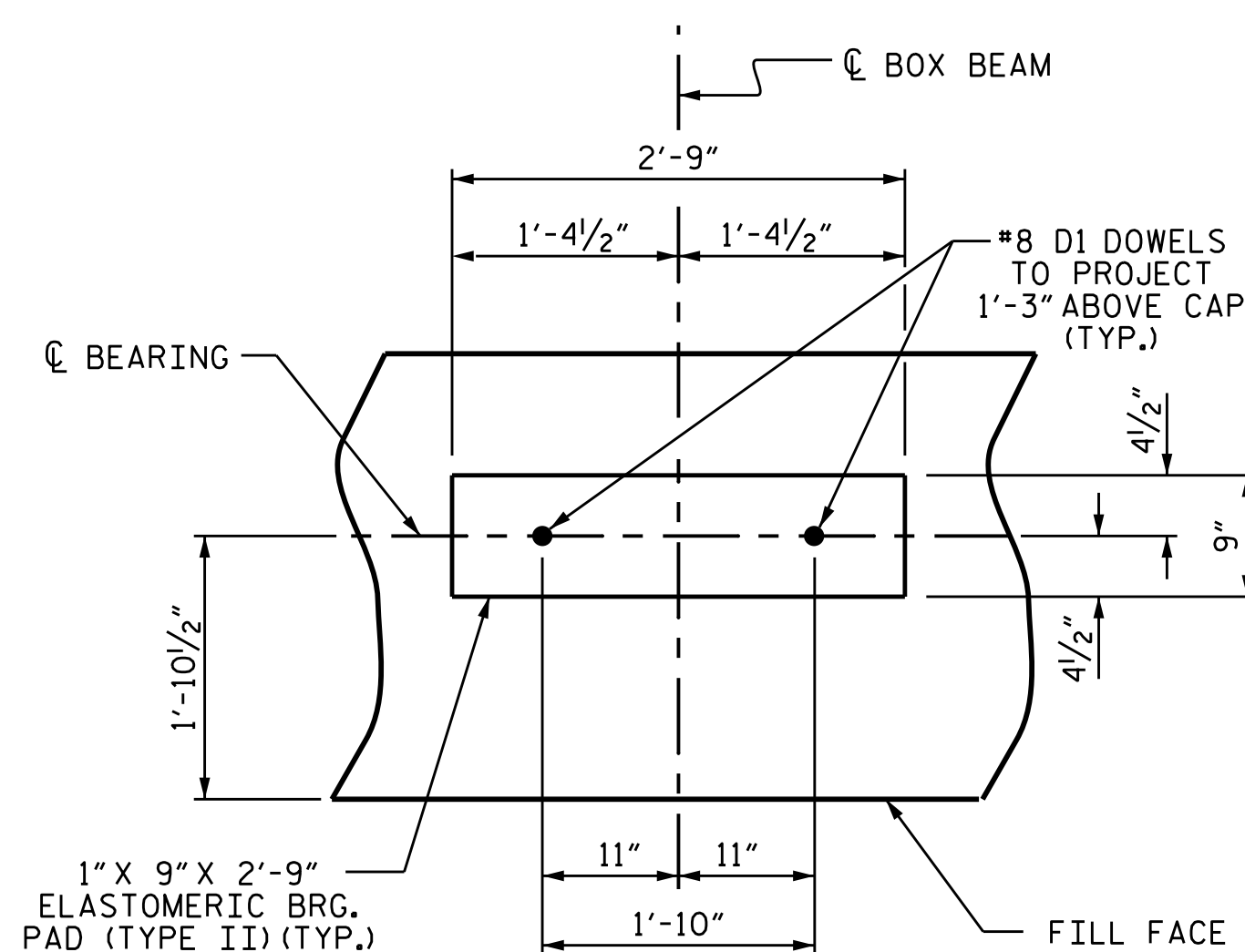


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

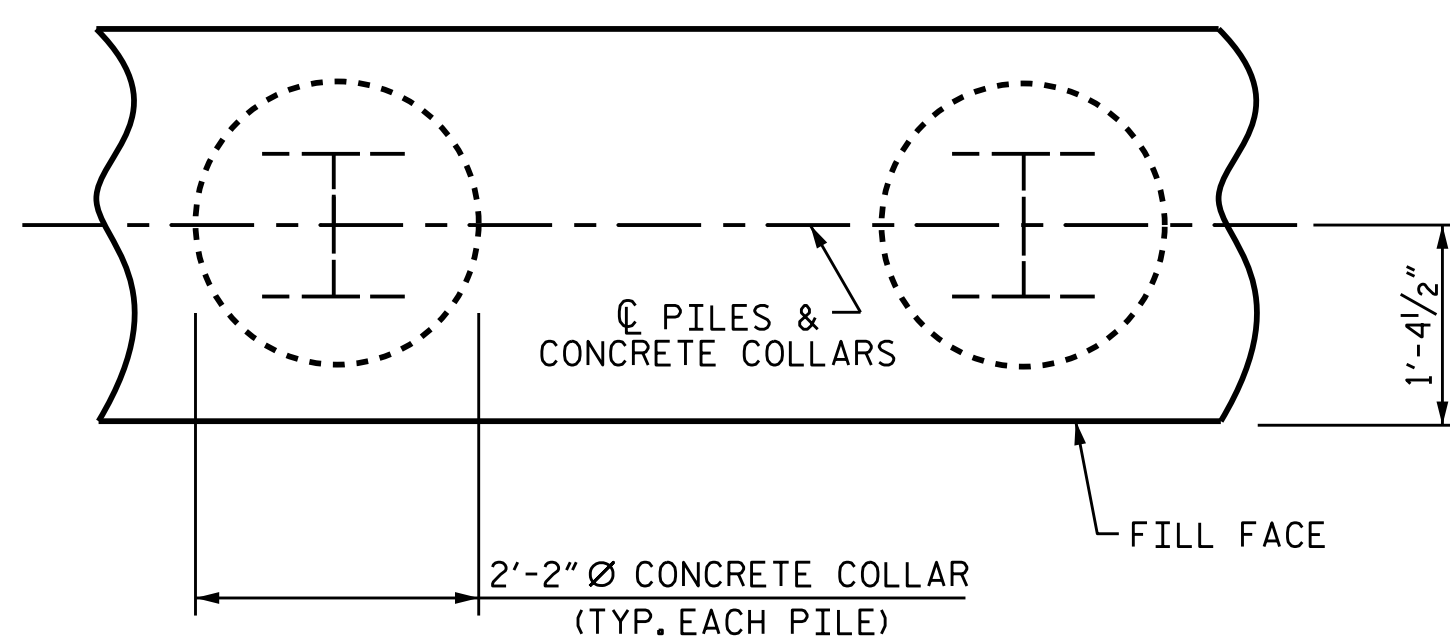
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



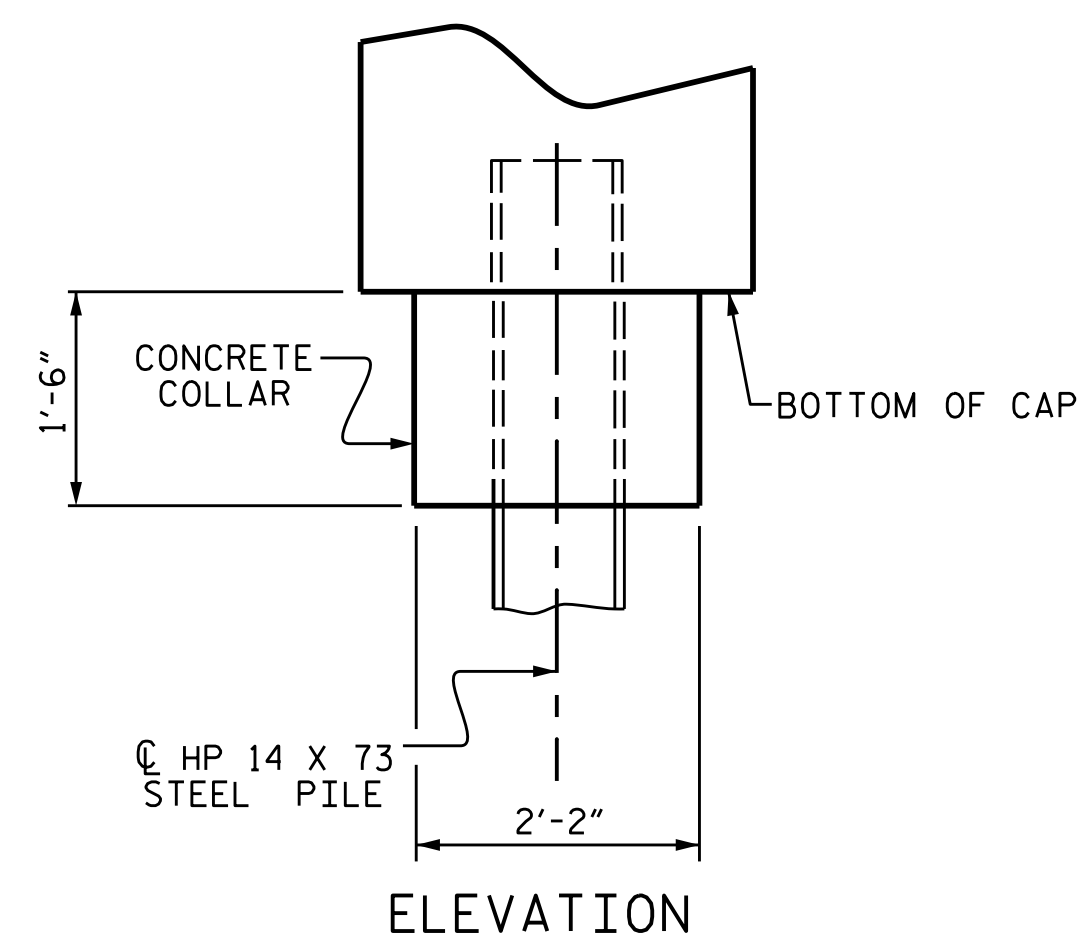
DETAIL "A"

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)

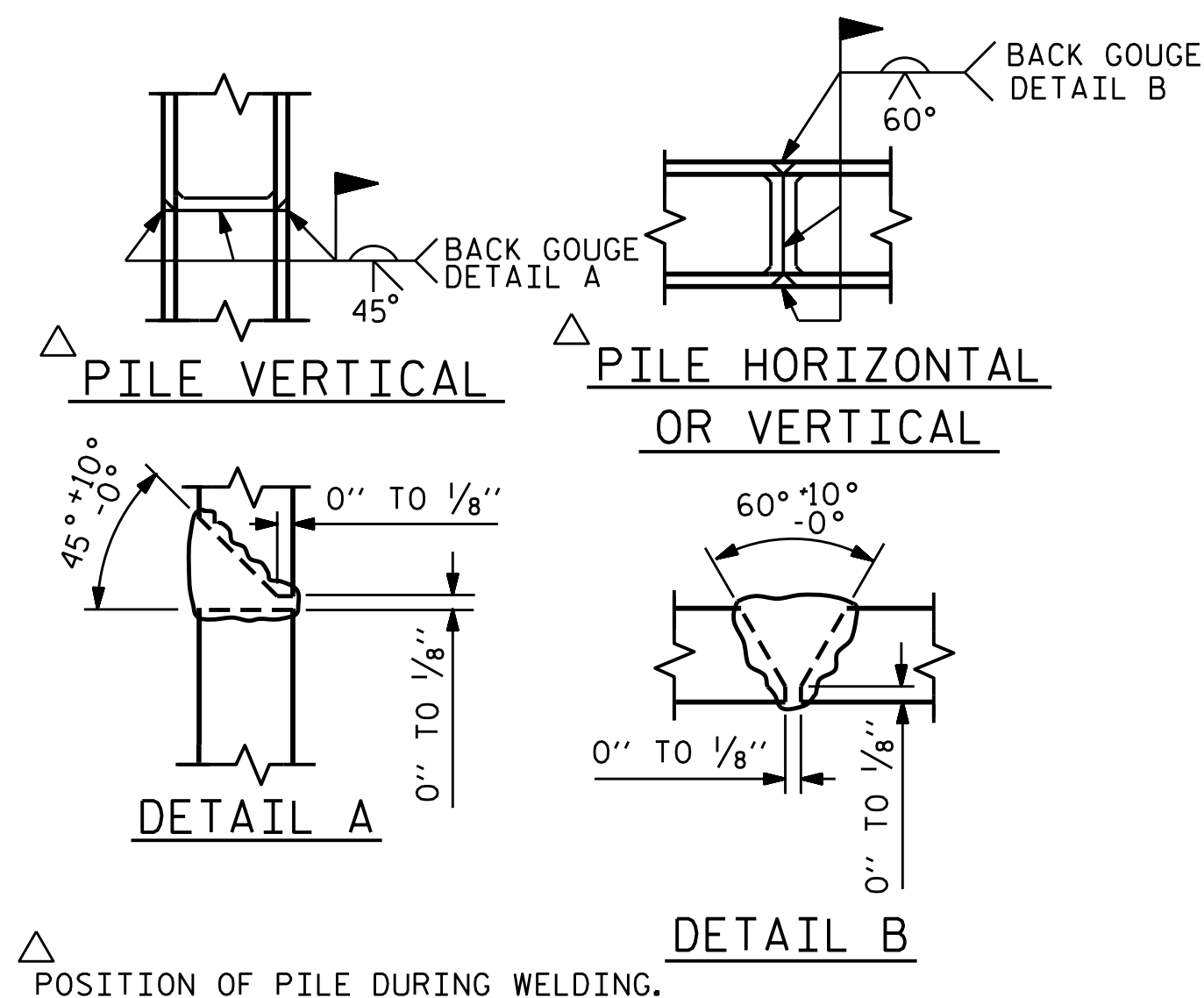


PLAN

CORROSION PROTECTION FOR STEEL PILES DETAIL



ELEVATION



PILE SPLICE DETAILS

BAR TYPES	

ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT No. 1

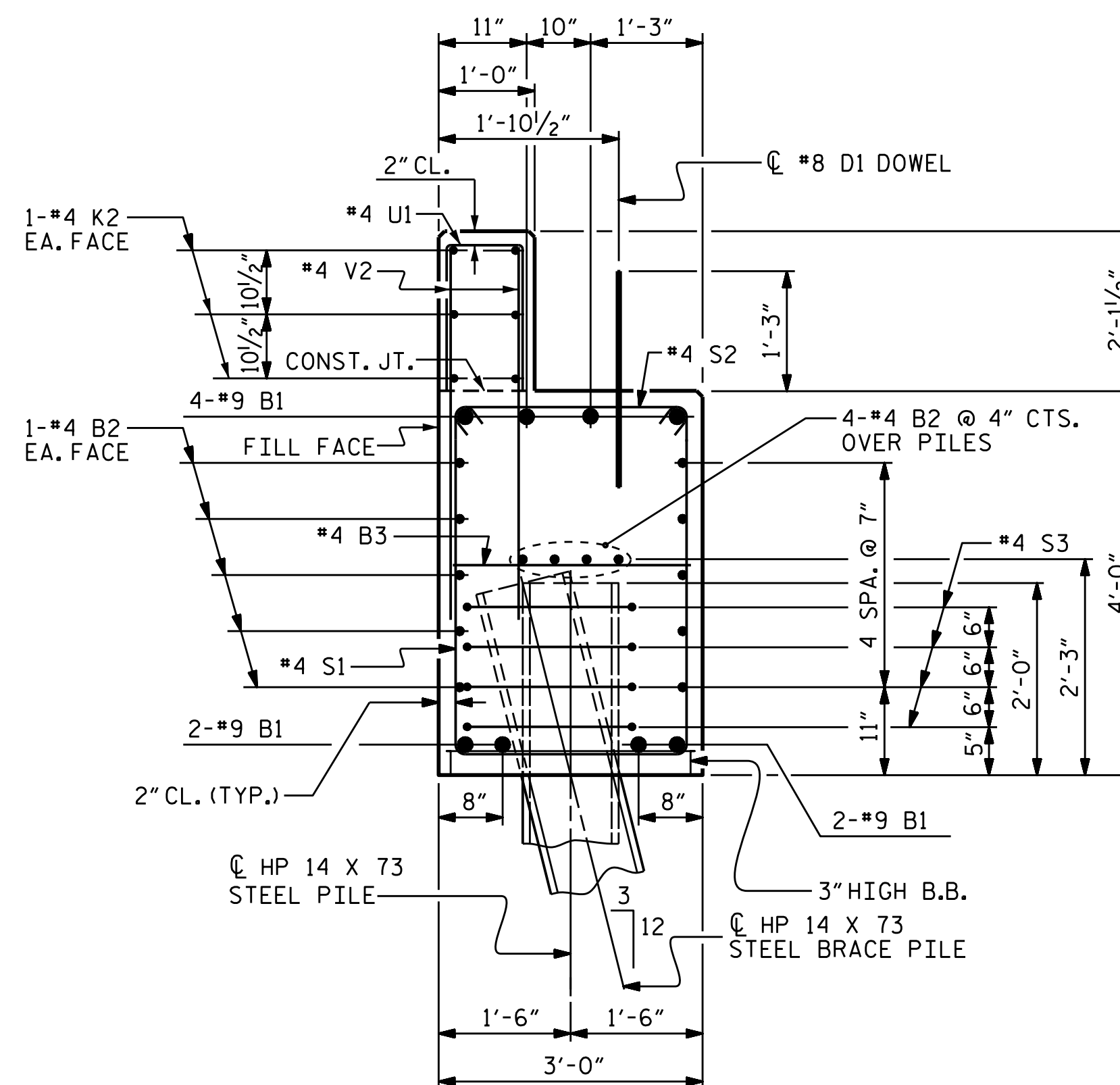
HP 14 X 73 STEEL PILES

NO : 5 LIN. FT. = 115

PILE DRIVING EQUIPMENT SET UP FOR HP 14 X 73 STEEL PILES

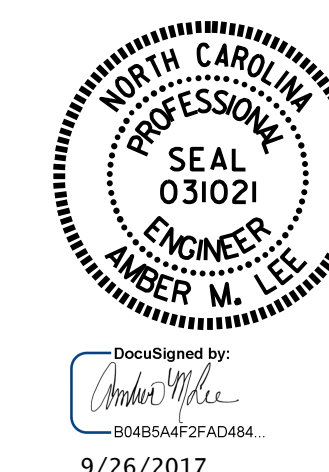
NO : 5

BILL OF MATERIAL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	35'-0"	952
B2	28	#4	STR	17'-7"	329
B3	9	#4	STR	2'-5"	15
D1	18	#8	STR	2'-3"	108
H1	64	#6	2	15'-4"	1474
K1	12	#4	STR	2'-11"	23
K2	12	#4	STR	17'-7"	140
S1	42	#4	3	10'-5"	292
S2	42	#4	4	3'-2"	89
S3	20	#4	5	7'-7"	101
U1	27	#4	6	3'-8"	66
V1	76	#4	STR	7'-8"	389
V2	54	#4	STR	5'-9"	207
REINFORCING STEEL (FOR ONE END BENT)					4185 LBS.
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)					
POUR #1	CAP, LOWER PART OF WINGS & COLLARS				19.5 C.Y.
POUR #2	BACKWALL & UPPER PART OF WINGS				7.3 C.Y.
TOTAL CLASS A CONCRETE					26.8 C.Y.



SECTION A-A

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



PROJECT NO. B-4978
WILKES COUNTY
STATION: 12+36.12 -L-
SHEET 3 OF 3

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

ASSEMBLED BY : M. POOLE	DATE : 1-17
CHECKED BY : E. K. POPE	DATE : 1-24-17
DRAWN BY : WJH	12/11
CHECKED BY : AAC	12/11
REV. 8/14	MAA/TMG

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13	
1			3			TOTAL SHEETS 19	
2			4				

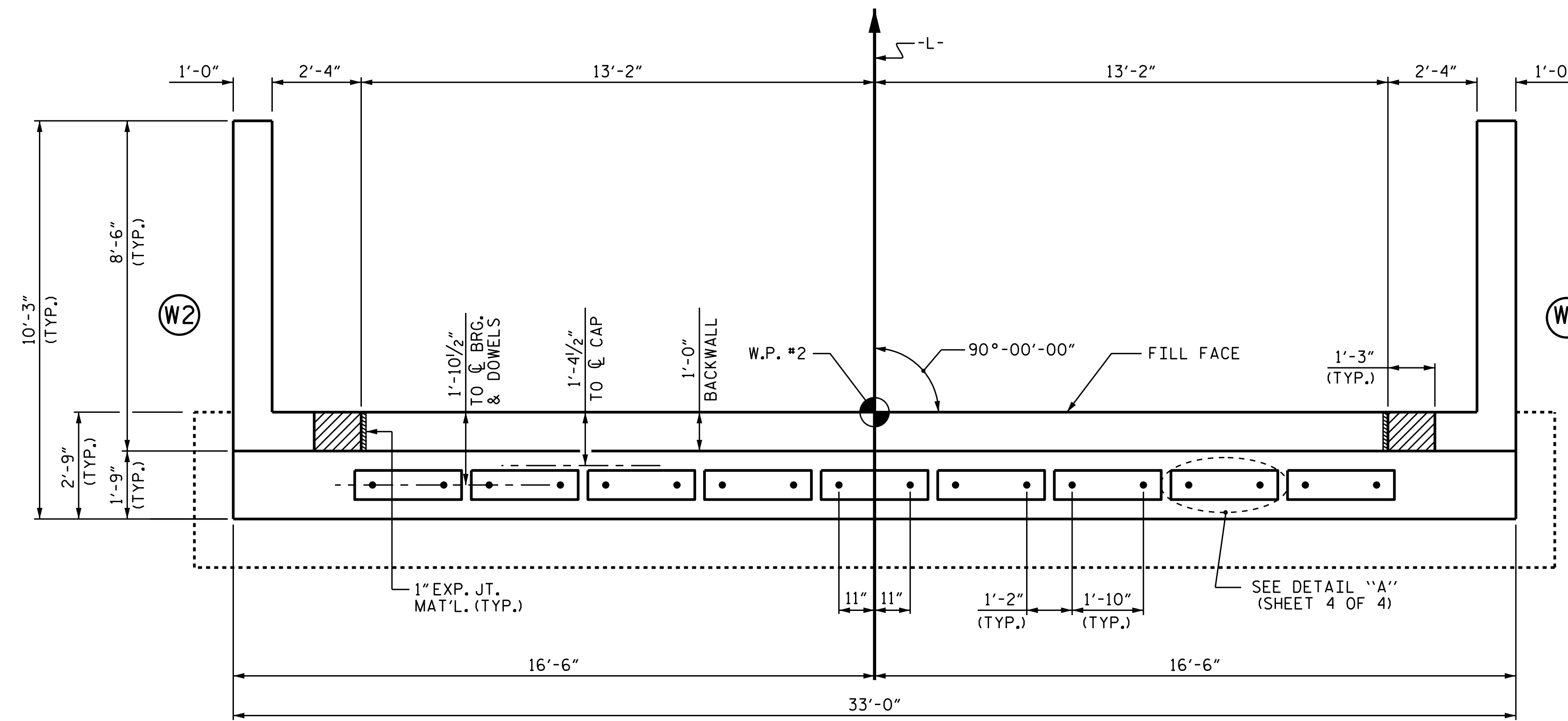
NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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

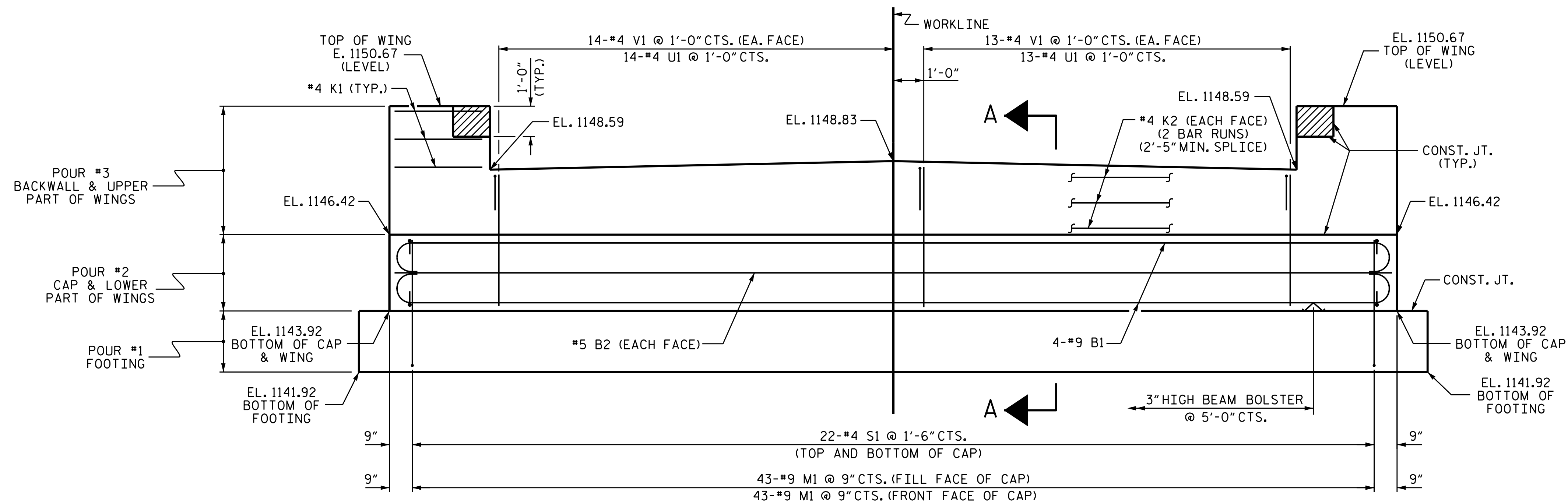
FOR WING DETAILS, SEE SHEET 3 OF 4.

INSTALL THE 4" Ø DRAIN PIPE THROUGH WINGWALL AS REQUIRED FOR SUBREGIONAL TIER BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WINGWALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



PLAN

FOR FOOTING DIMENSIONS AND REINFORCING STEEL, SEE SHEET 2 OF 4

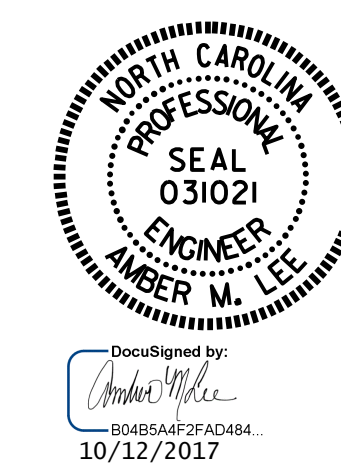


ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.

PROJECT NO. B-4978
WILKES COUNTY
 STATION: 12+36.12 -L-

SHEET 1 OF 4

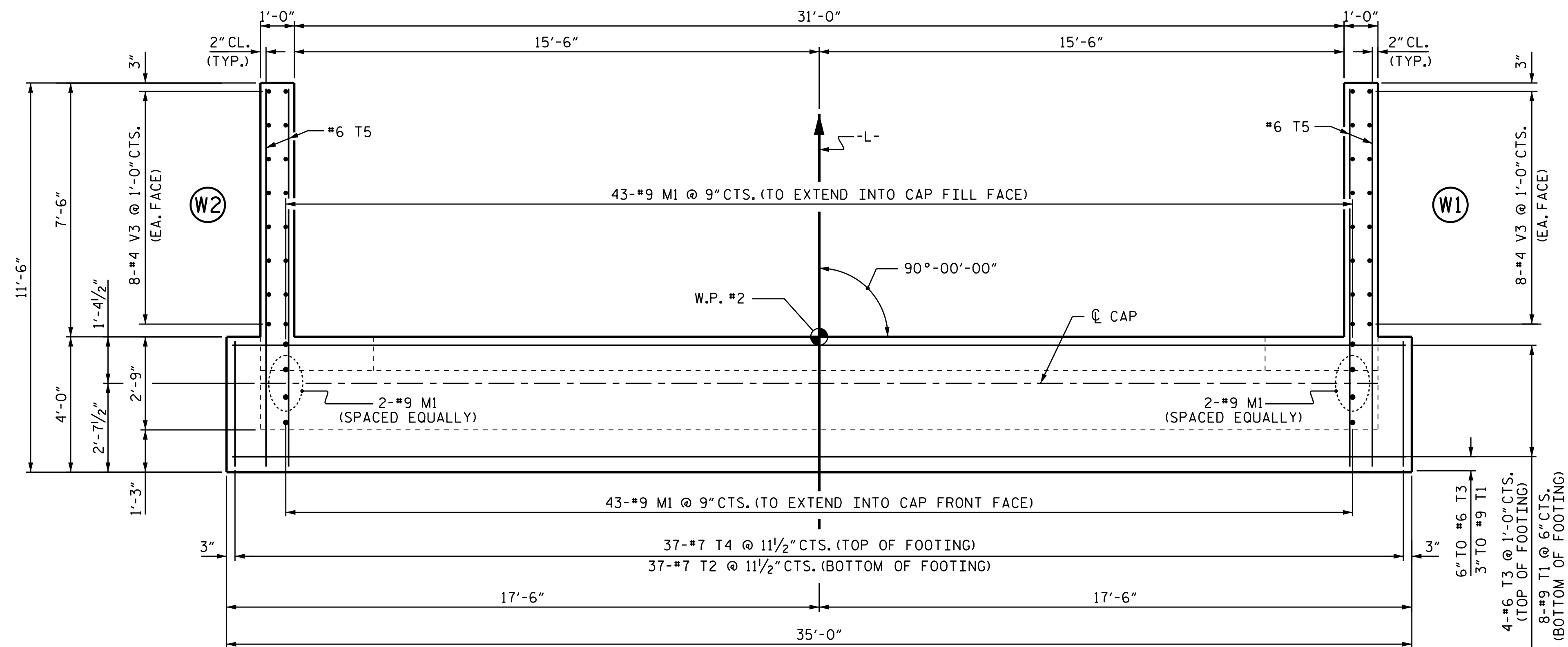


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 2

DRAWN BY : H. T. BARBOUR DATE : 10-10-17
 CHECKED BY : H. T. BARBOUR DATE : 10-11-17
 DESIGN ENGINEER OF RECORD: A. SORSENGINH DATE : 10-11-17

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

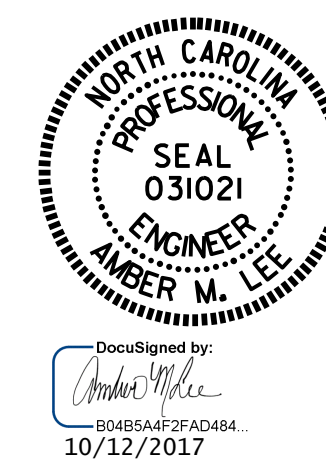
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14	
1			3			TOTAL SHEETS	
2			4			19	



PLAN OF FOOTING

PROJECT NO. B-4978
WILKES COUNTY
 STATION: 12+36.12 -L-

SHEET 2 OF 4



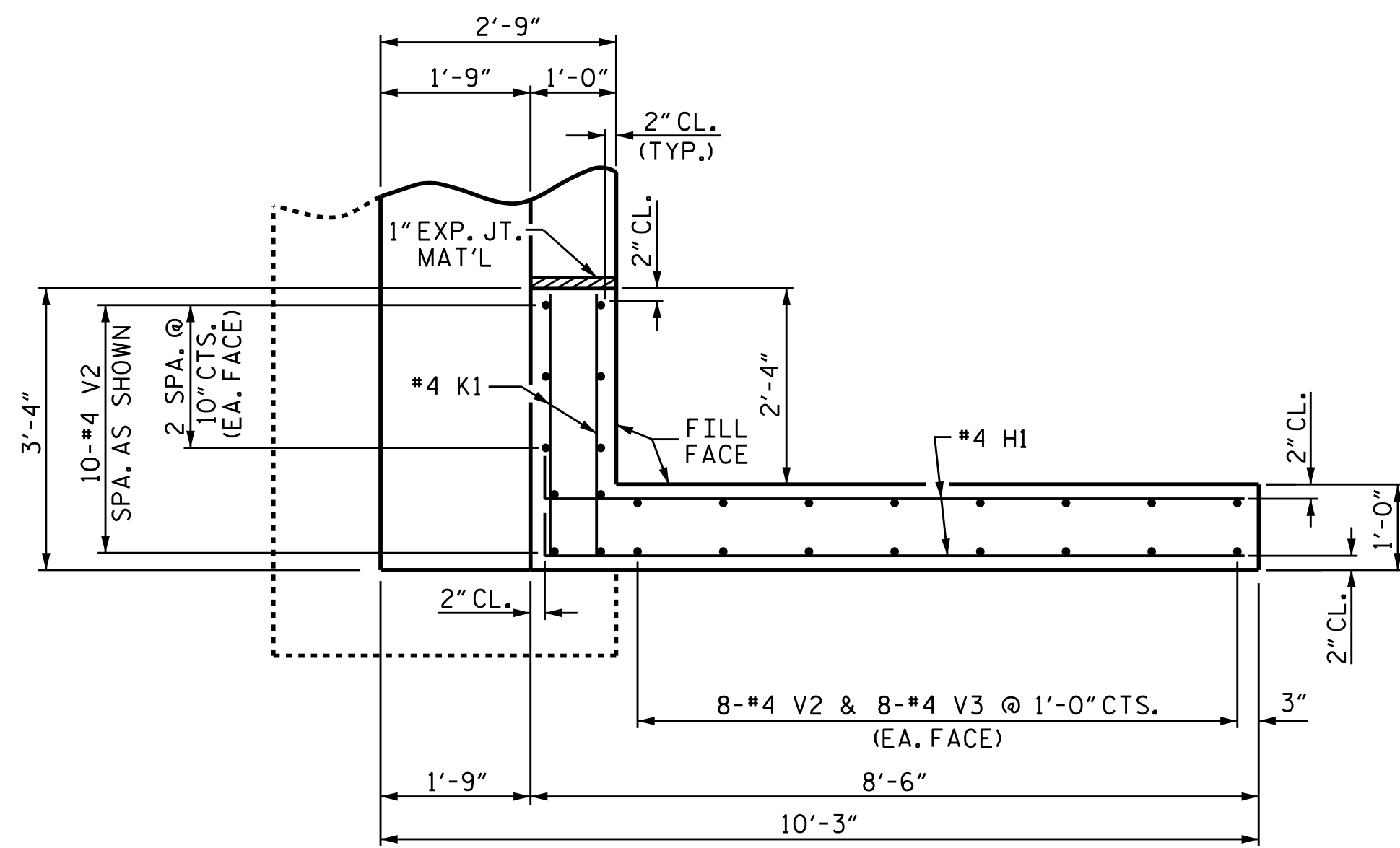
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2

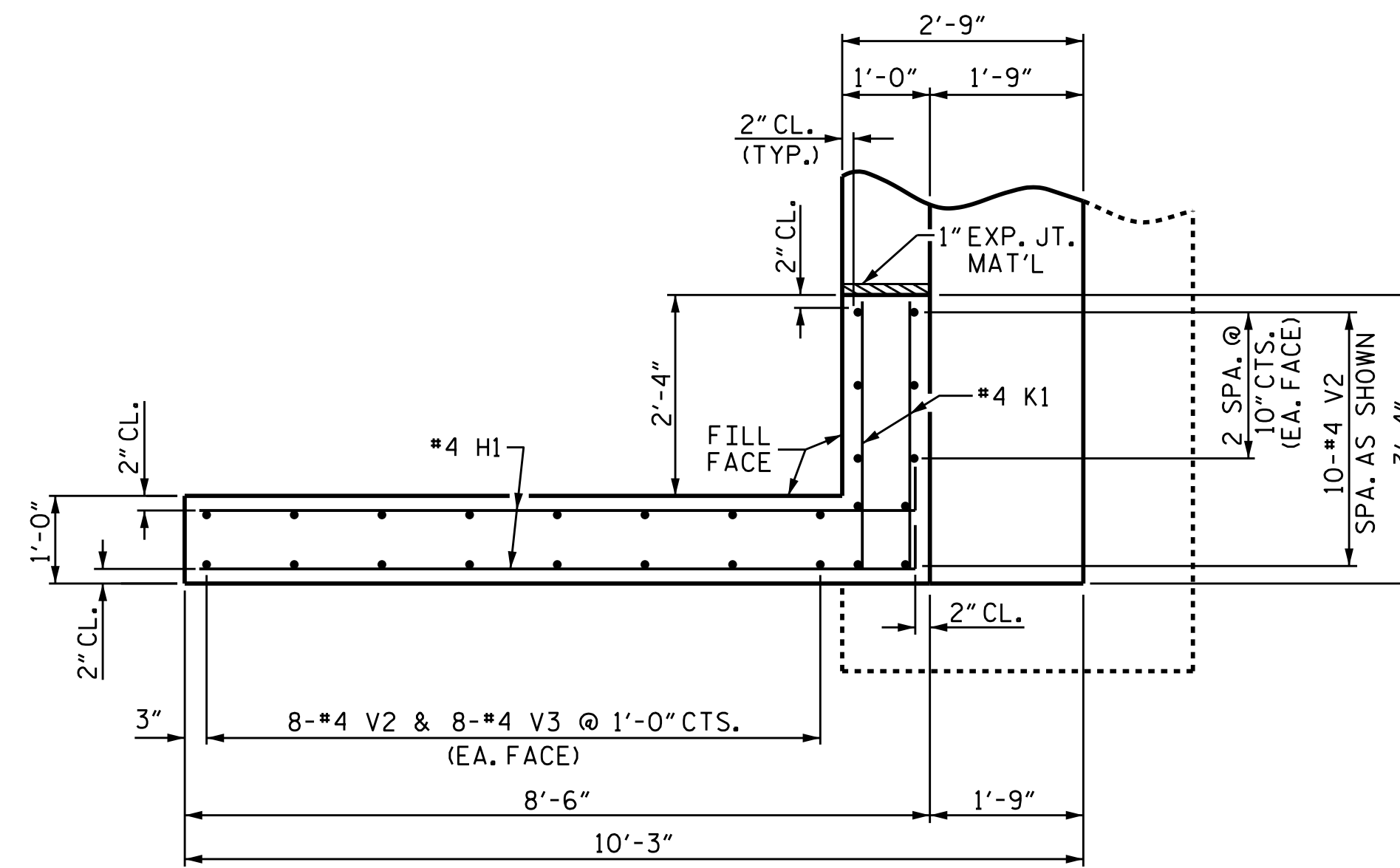
DRAWN BY : A. SORSENGINH DATE : 10-9-17
 CHECKED BY : H. T. BARBOUR DATE : 10-11-17
 DESIGN ENGINEER OF RECORD: A. SORSENGINH DATE : 10-11-17

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

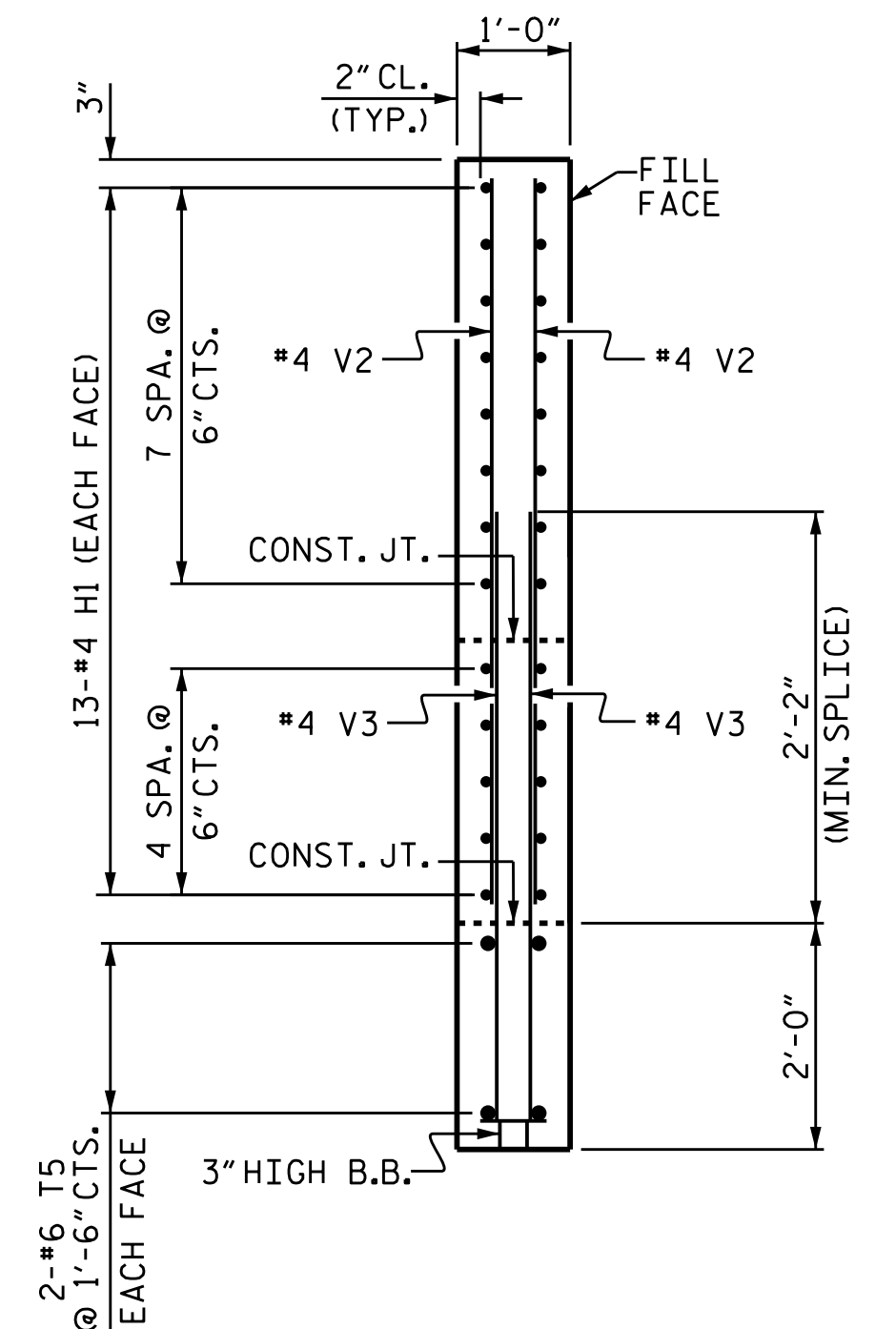
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15	
1			3			TOTAL SHEETS	
2			4			19	



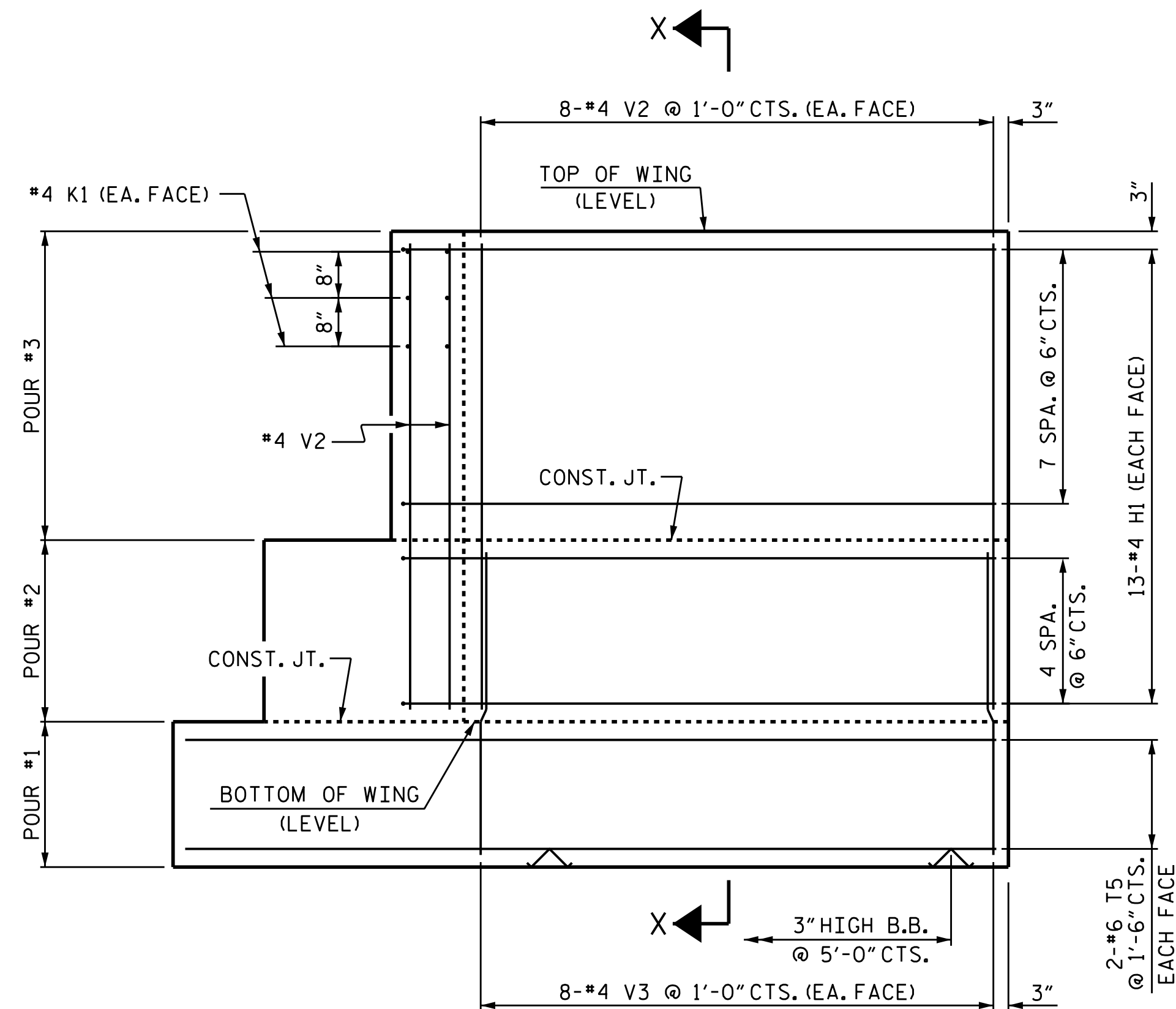
PLAN OF WING (W1)



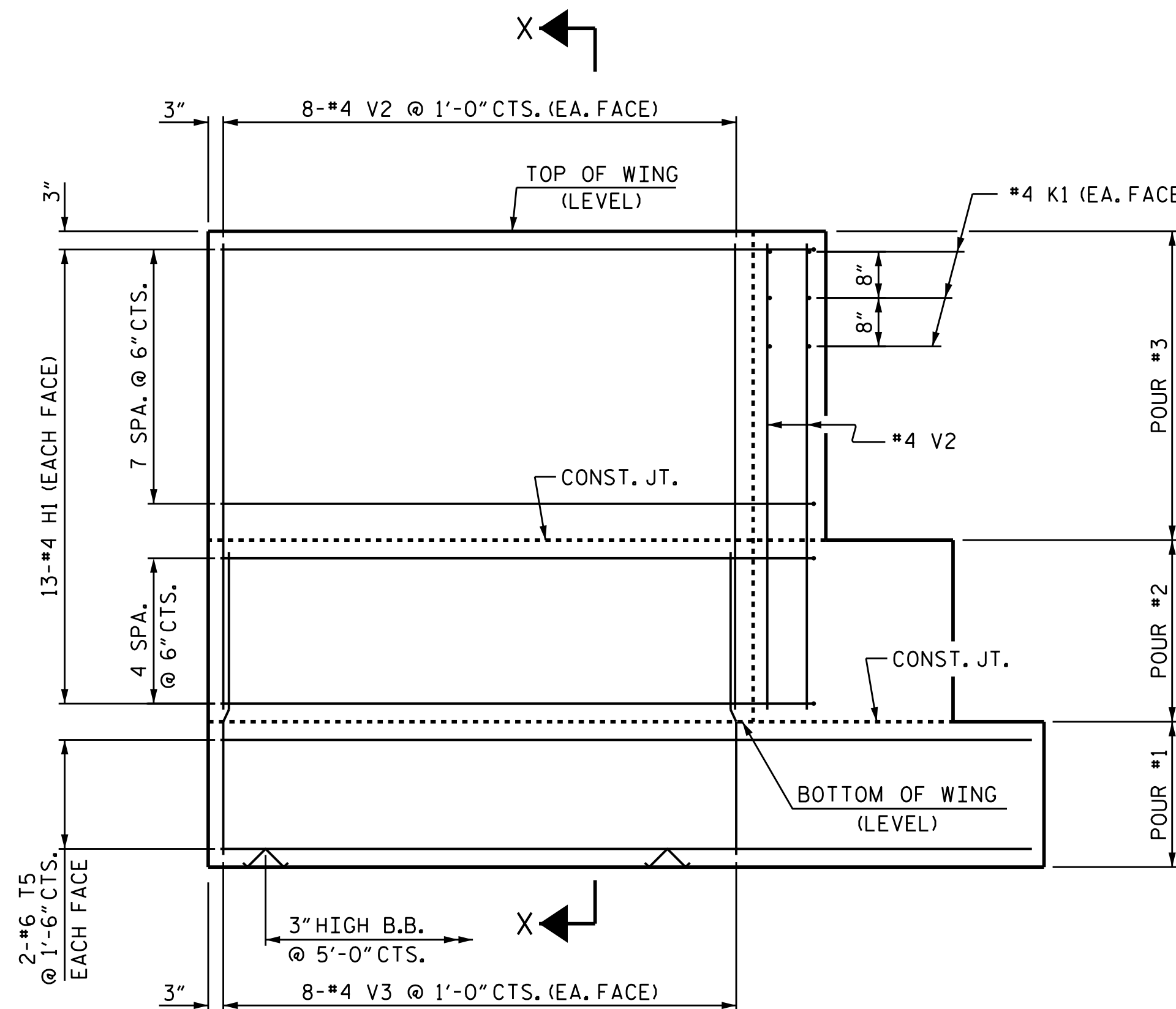
PLAN OF WING (W2)



SECTION X-X

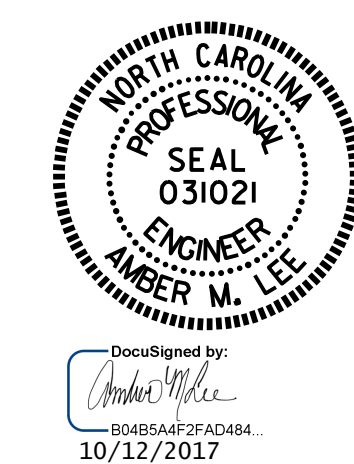


ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

PROJECT NO. B-4978
 WILKES COUNTY
 STATION: 12+36.12 -L-
 SHEET 3 OF 4

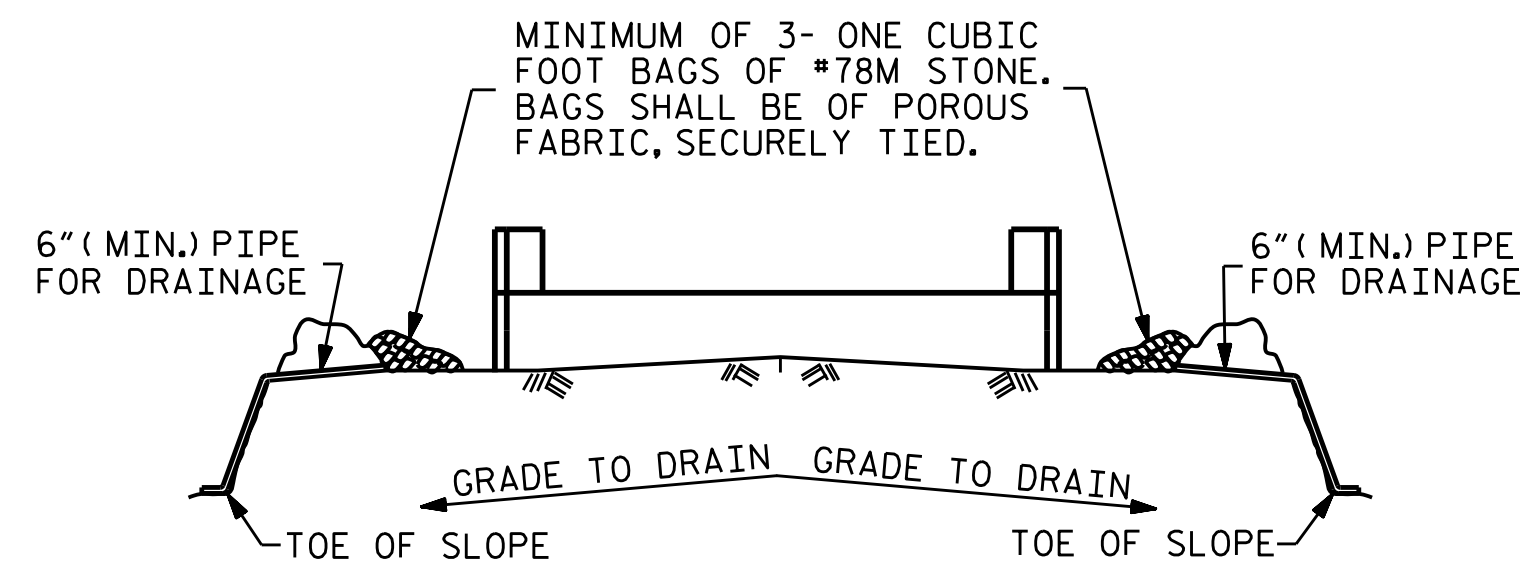


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 2

DRAWN BY : A. SORSENGINH DATE : 10-9-17
 CHECKED BY : H. I. BARBOUR DATE : 10-11-17
 DESIGN ENGINEER OF RECORD: A. SORSENGINH DATE : 10-11-17

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			19

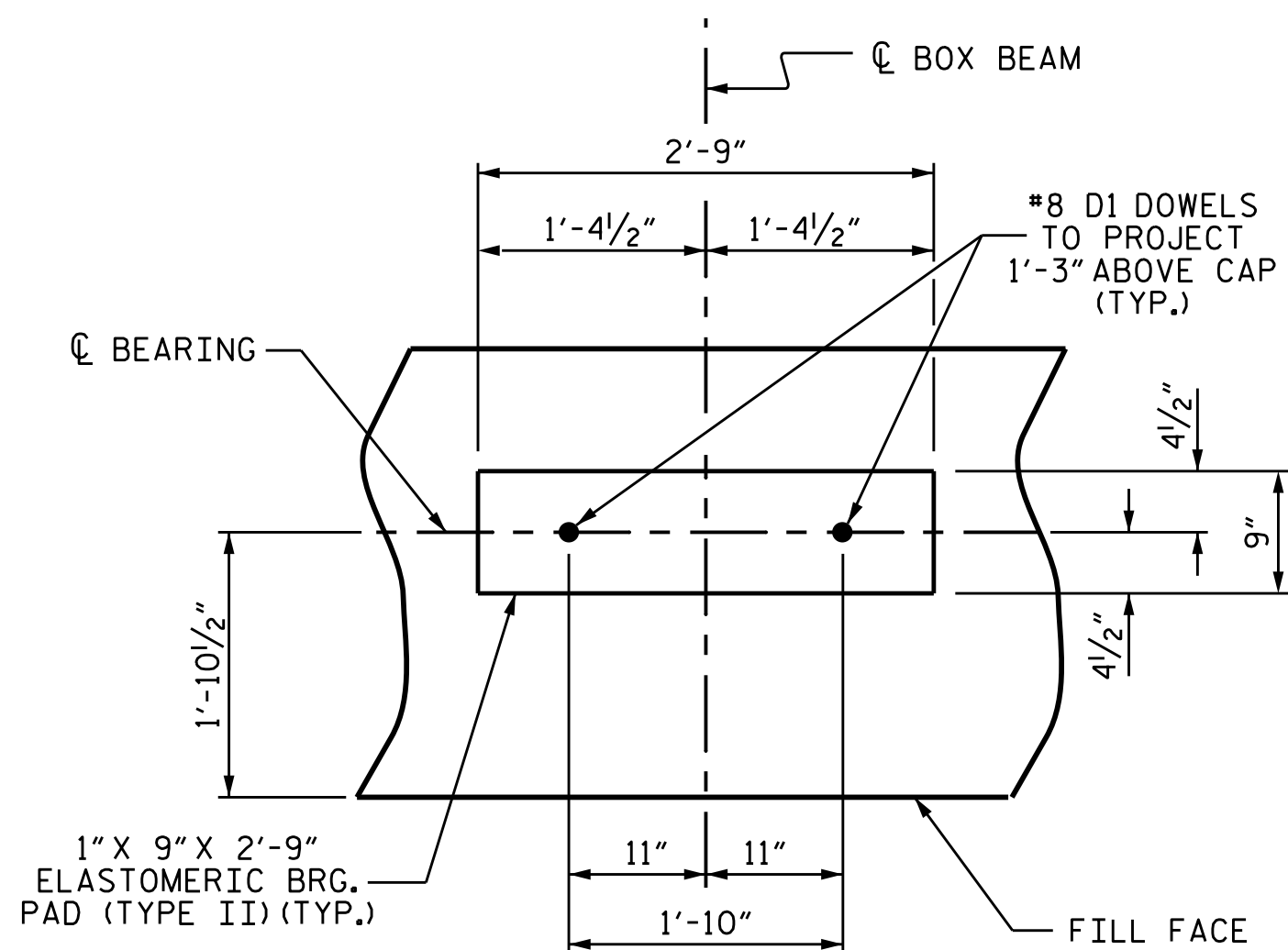


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BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER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

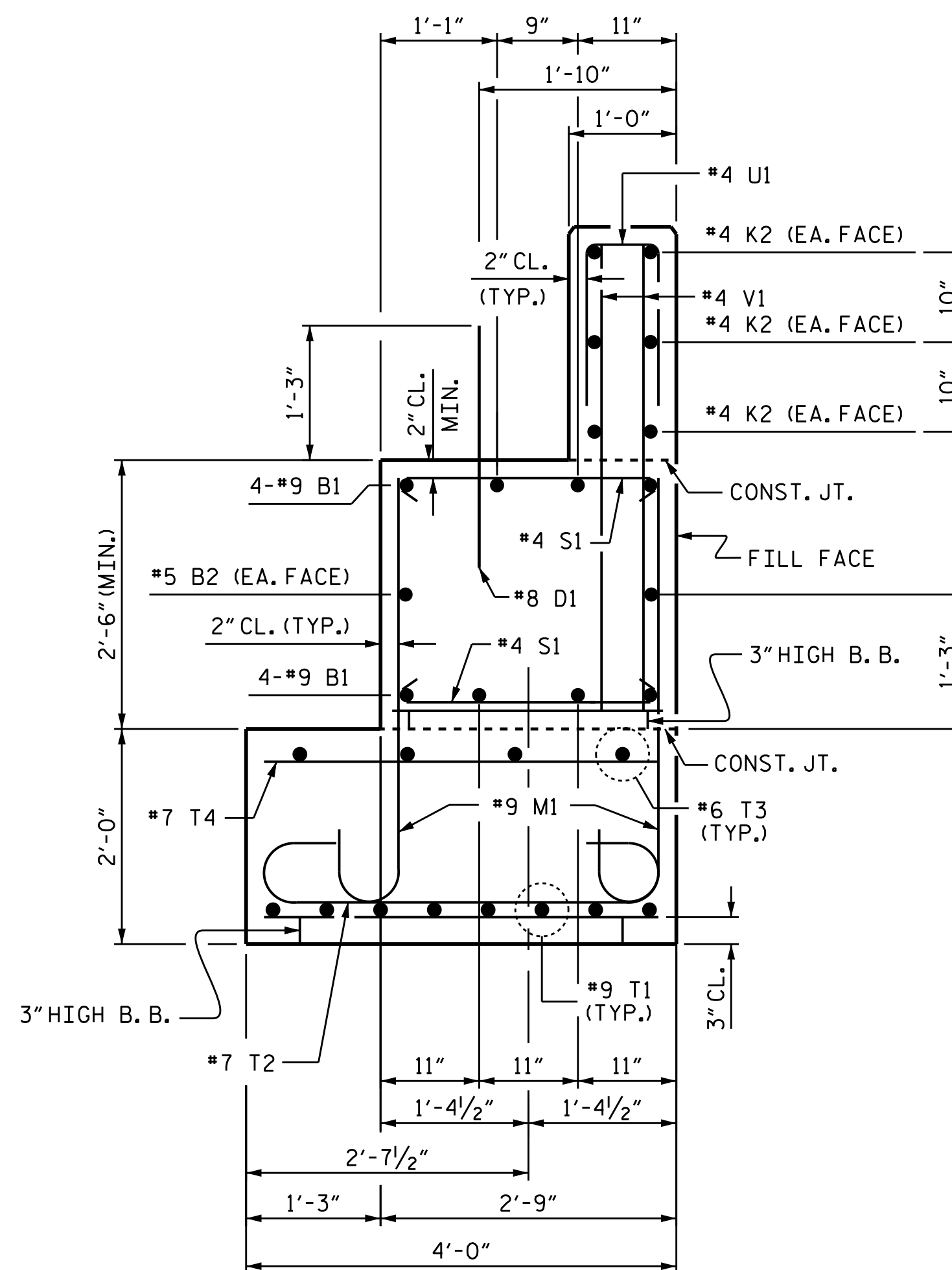
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

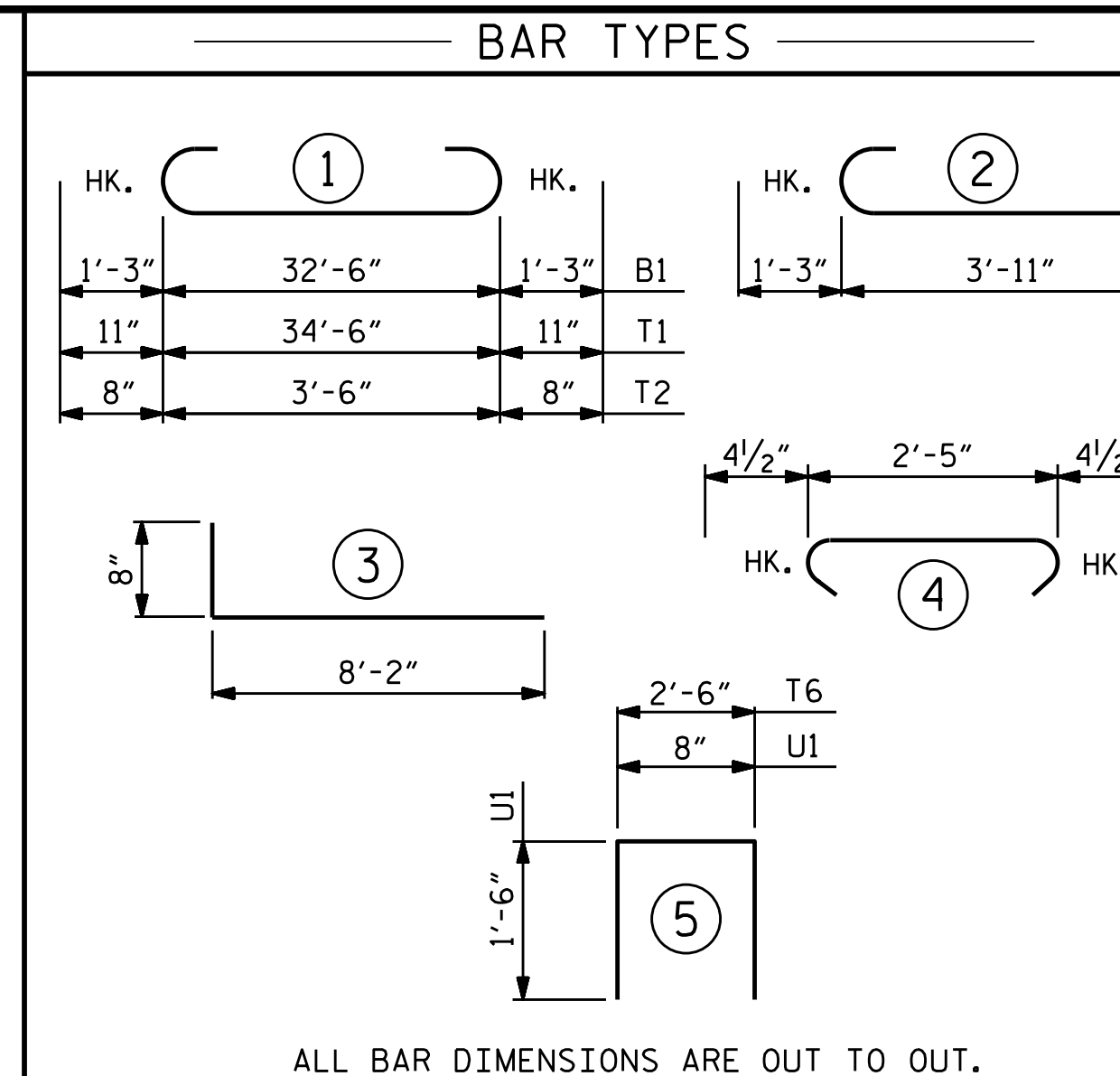


DETAIL "A"

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)

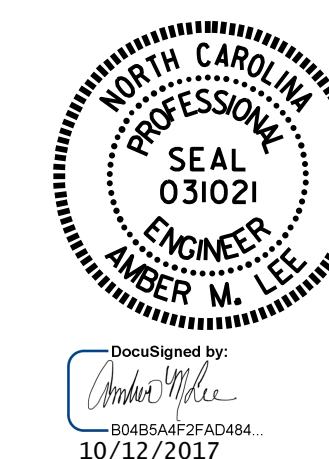


SECTION A-A



BILL OF MATERIAL					
END BENT No. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	35'-0"	952
B2	2	#5	STR	32'-8"	68
D1	18	#8	STR	2'-3"	108
H1	52	#4	3	8'-10"	307
K1	12	#4	STR	3'-0"	24
K2	12	#4	STR	17'-8"	142
M1	90	#9	2	5'-2"	1581
S1	44	#4	4	3'-2"	93
T1	8	#9	1	36'-4"	988
T2	37	#7	1	4'-10"	366
T3	4	#6	STR	34'-8"	208
T4	37	#7	STR	3'-8"	277
T5	8	#6	STR	11'-2"	134
U1	27	#4	5	3'-8"	66
V1	54	#4	STR	4'-3"	153
V2	52	#4	STR	6'-5"	223
V3	32	#4	STR	4'-0"	86
REINFORCING STEEL					5,776 LBS.
FOUNDATION EXCAVATION					80 C.Y.
CLASS A CONCRETE BREAKDOWN					
POUR #1 FOOTING					11.5 C.Y.
POUR #2 CAP & LOWER PART OF WINGS					9.8 C.Y.
POUR #3 BACKWALL & UPPER PART OF WINGS					5.6 C.Y.
TOTAL CLASS A CONCRETE					26.9 C.Y.

PROJECT NO. B-4978
WILKES COUNTY
 STATION: 12+36.12 -L-
 SHEET 4 OF 4

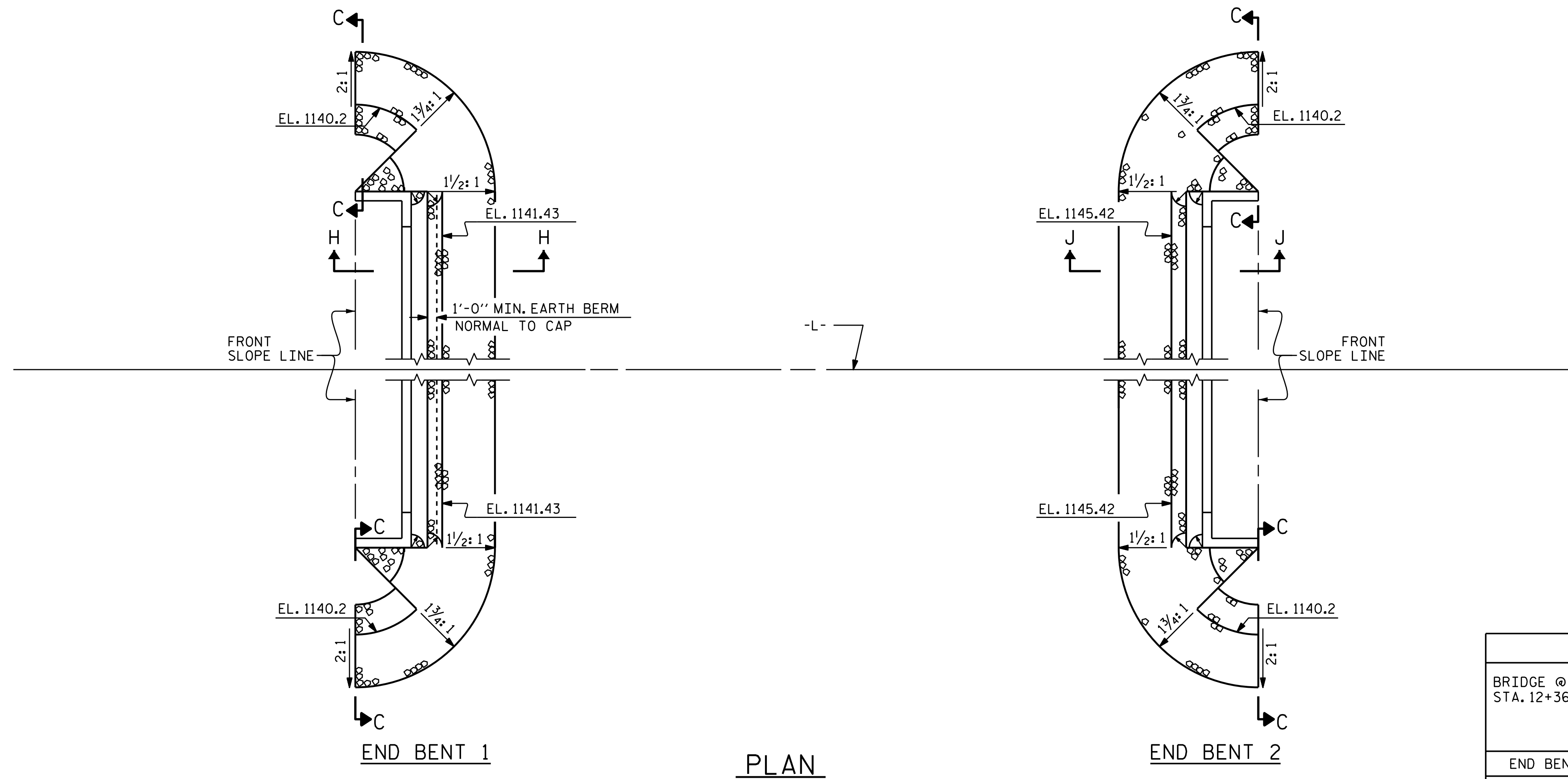


DocuSigned by:
 Amber M. Lee
 00B55A4F22AD484
 10/12/2017

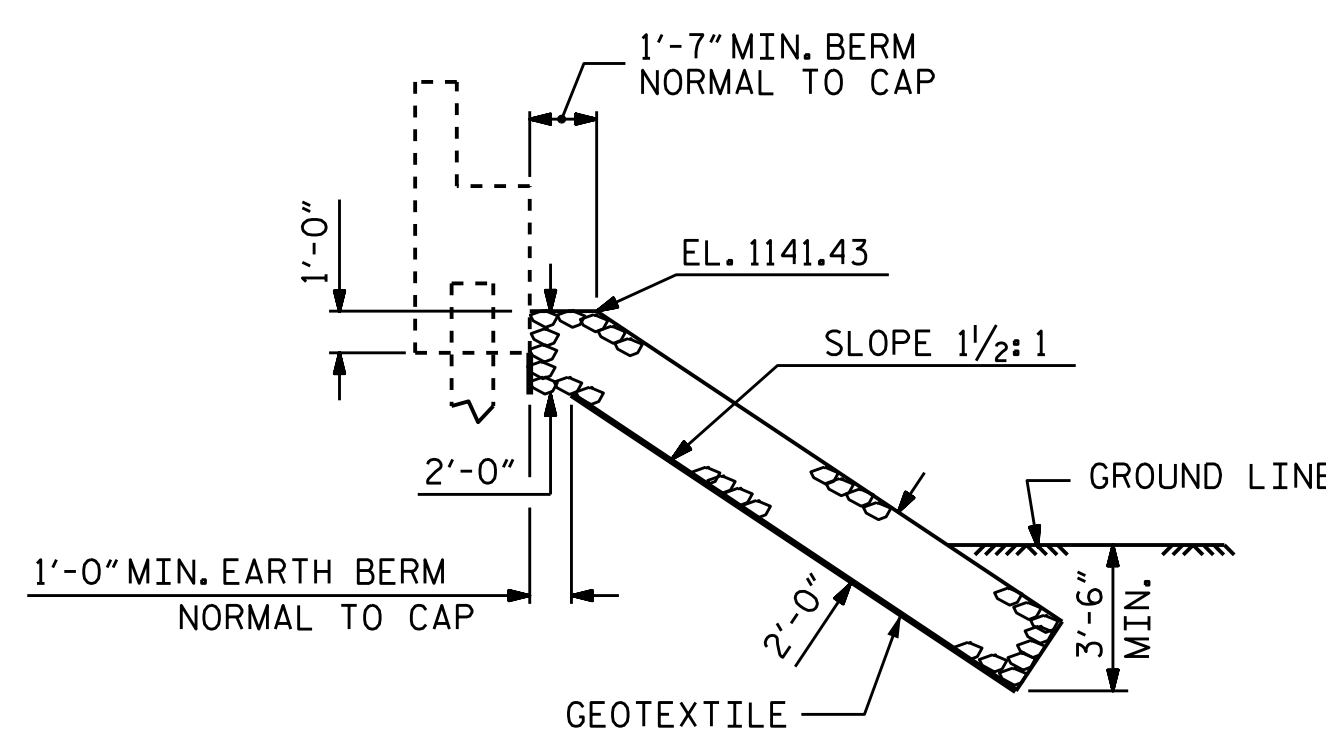
DRAWN BY : A. SORSENGINH DATE : 10-10-17
 CHECKED BY : H. T. BARBOUR DATE : 10-11-17
 DESIGN ENGINEER OF RECORD: A. SORSENGINH DATE : 10-11-17

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

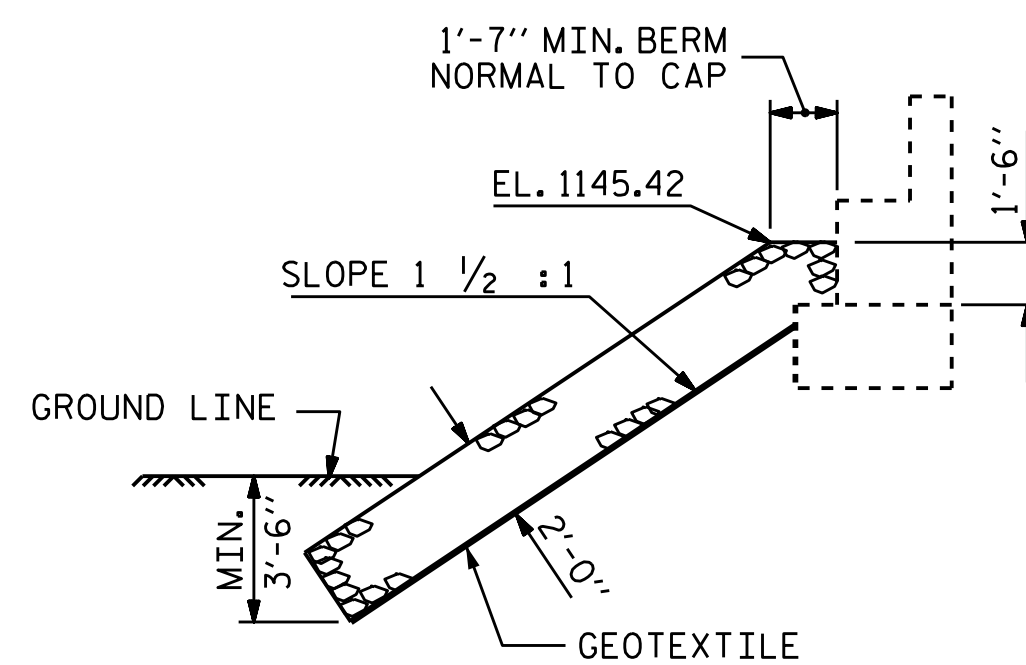
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			19



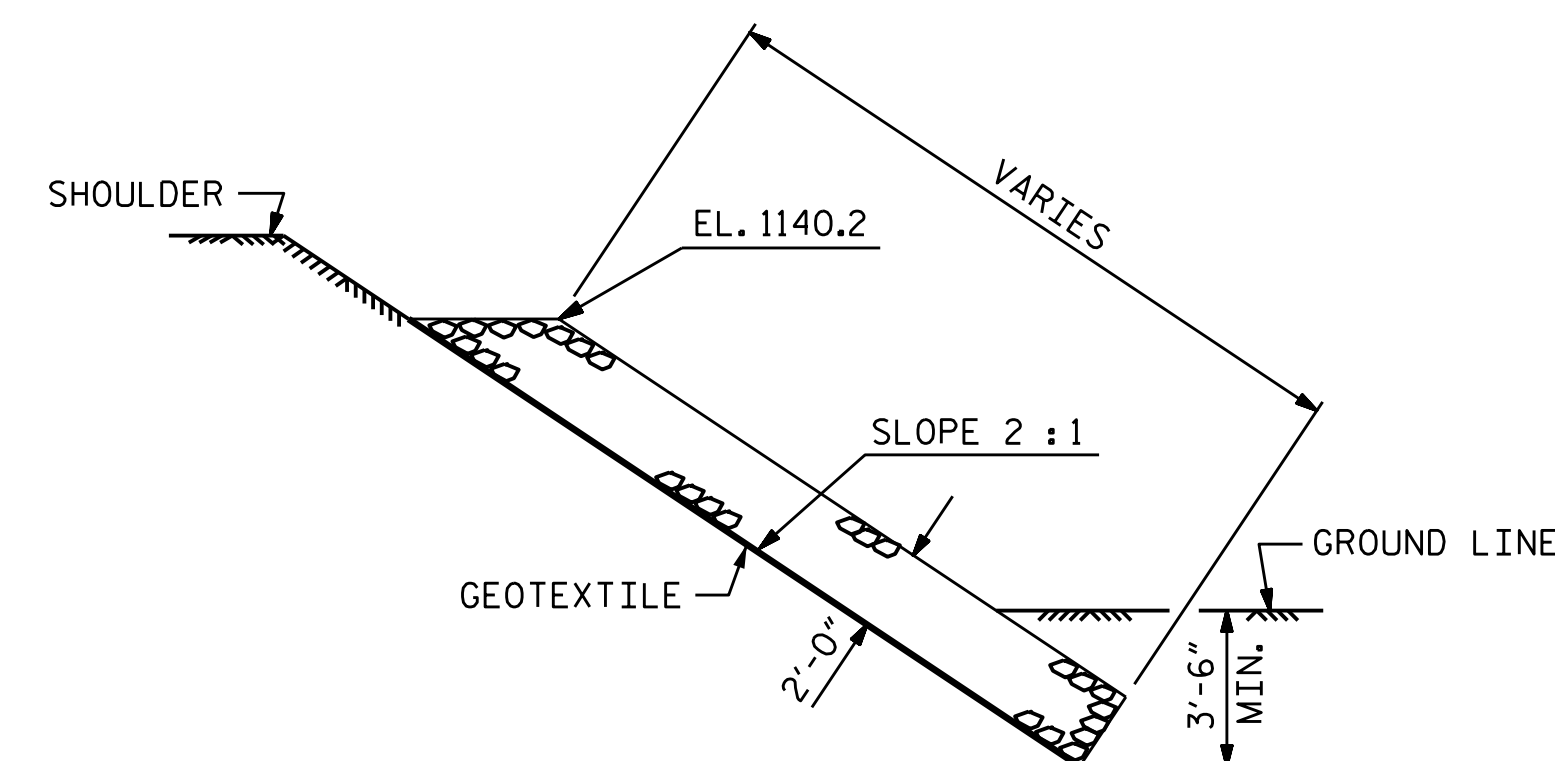
ESTIMATED QUANTITIES		
BRIDGE @ STA. 12+36.12 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	75	80
END BENT 2	150	165
TOTAL	225	245



SECTION H-H



SECTION J-J



SECTION C-C

PROJECT NO. B-4978
WILKES COUNTY
 STATION: 12+36.12 -L-



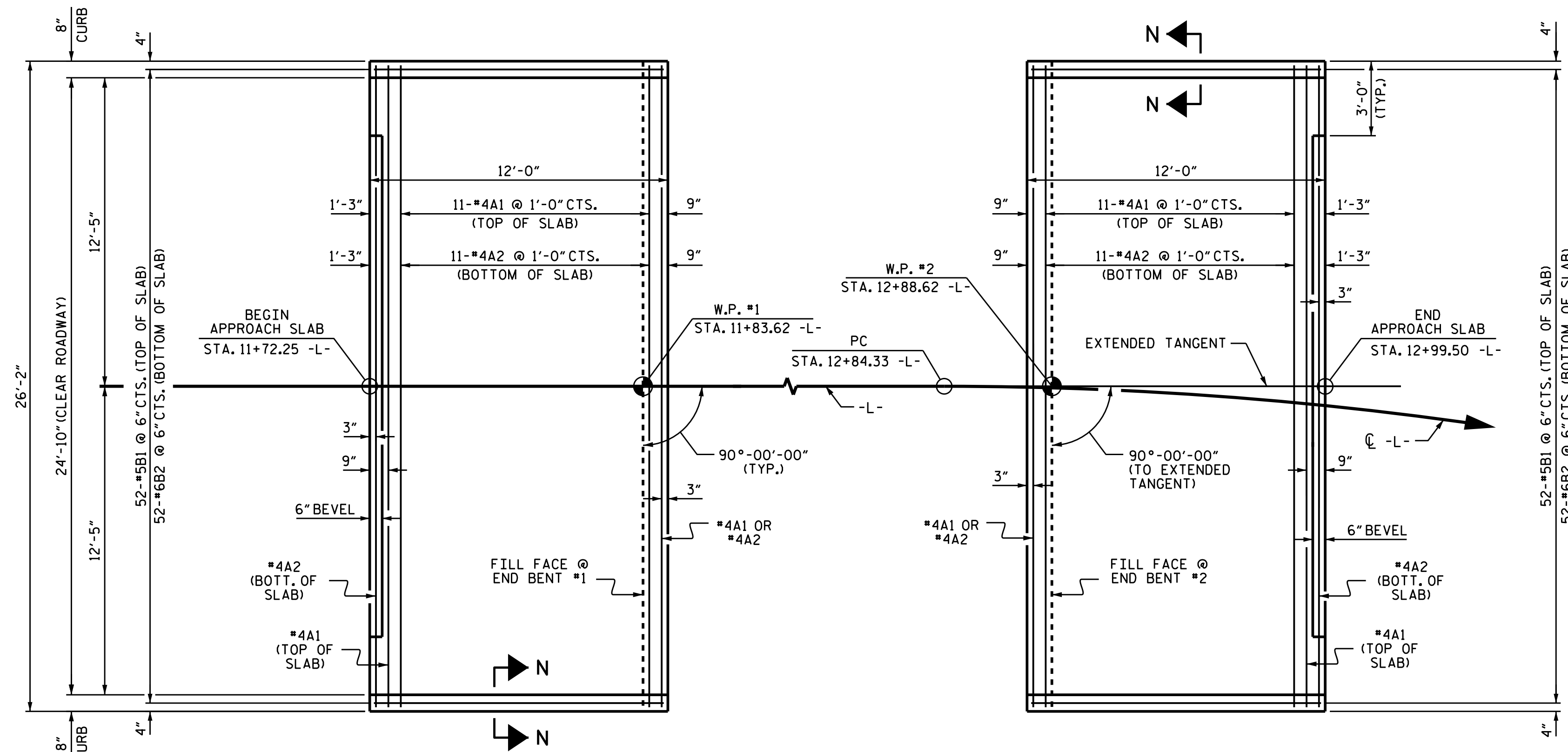
DocuSigned by:
 Amber M. Lee
 10/12/2017

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 = RIP RAP DETAILS =

ASSEMBLED BY : T.L. AVERETTE DATE : 7/2017
 CHECKED BY : E.K. POPE DATE : 7/2017
 DRAWN BY : REK 1/84 REV. 5/1/06R TLA/GM
 CHECKED BY : ROU 1/84 REV. 10/1/11 MAA/GM
 REV. 12/21/11 MAA/GM

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS 19
2			4			



PLAN @ END BENT #1

PLAN @ END BENT #2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

NOTES

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.

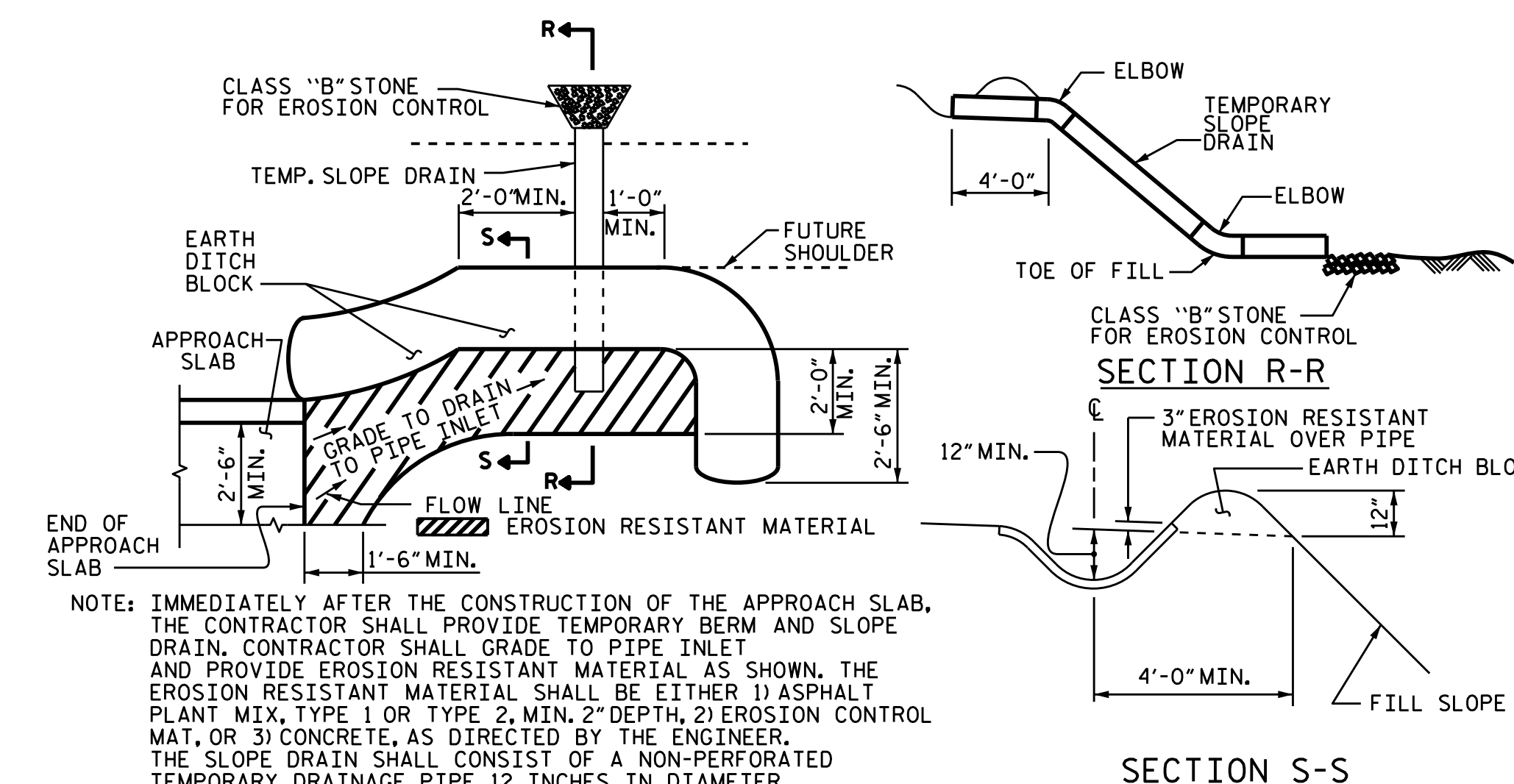
FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

END BENT 2. INSTALL THE 4" Ø DRAIN PIPE THROUGH WINGWALL AS REQUIRED FOR SUBREGIONAL TIER BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WINGWALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

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.

APPROACH SLAB GROOVING IS NOT REQUIRED.

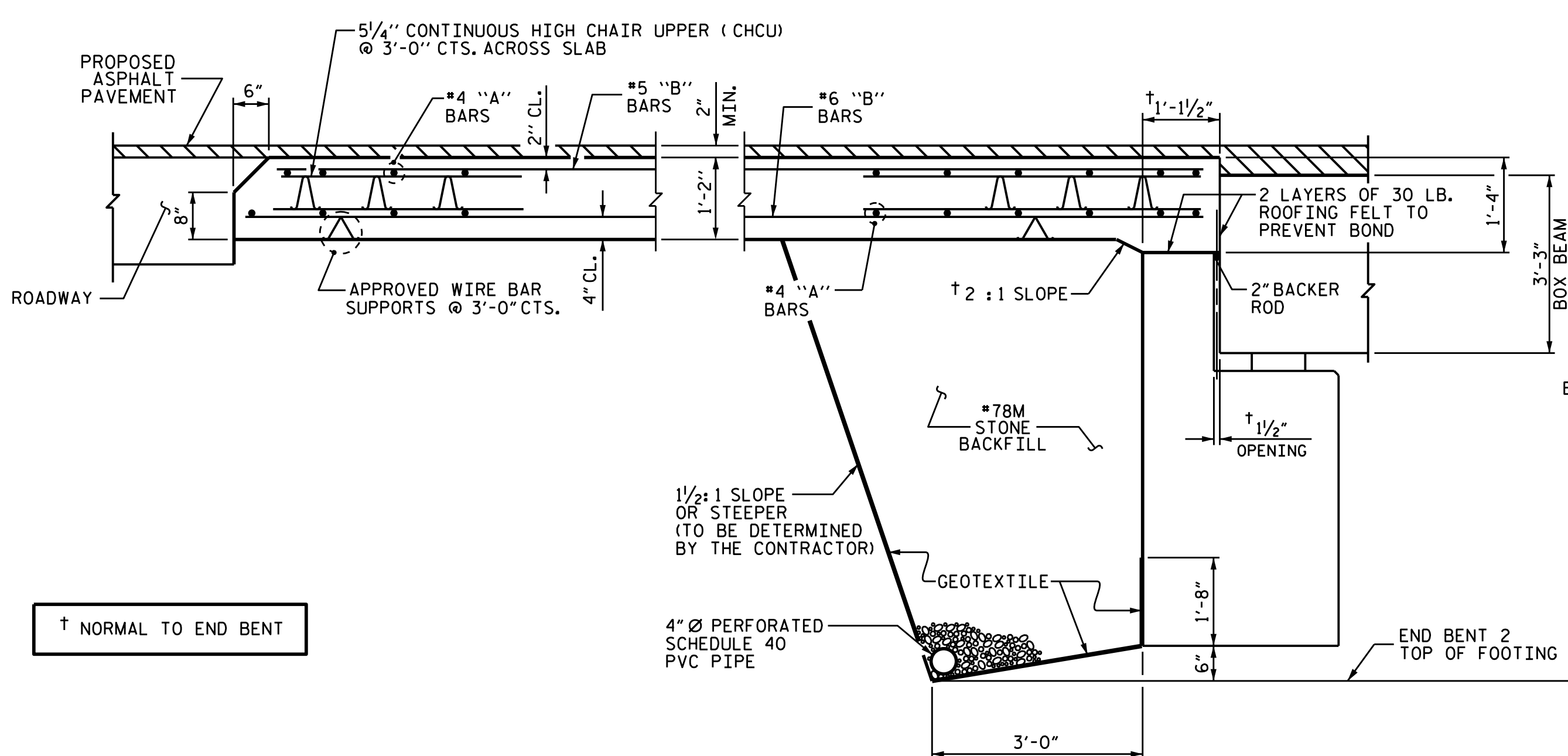
BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	25'-10"	224
A2	13	#4	STR	25'-10"	224
*B1	52	#5	STR	11'-2"	606
B2	52	#6	STR	11'-8"	911
REINFORCING STEEL				LBS.	1135
*EPOXY COATED REINFORCING STEEL				LBS.	830
CLASS AA CONCRETE				C. Y.	13.9
APPROACH SLAB AT EB #2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	25'-10"	224
A2	13	#4	STR	25'-10"	224
*B1	52	#5	STR	11'-2"	606
B2	52	#6	STR	11'-8"	911
REINFORCING STEEL				LBS.	1135
*EPOXY COATED REINFORCING STEEL				LBS.	830
CLASS AA CONCRETE				C. Y.	13.9



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.

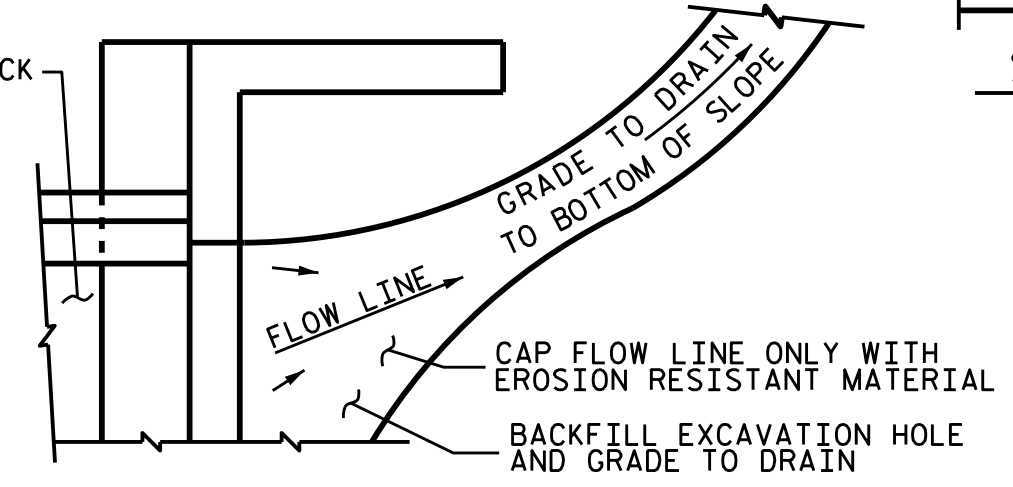
TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

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



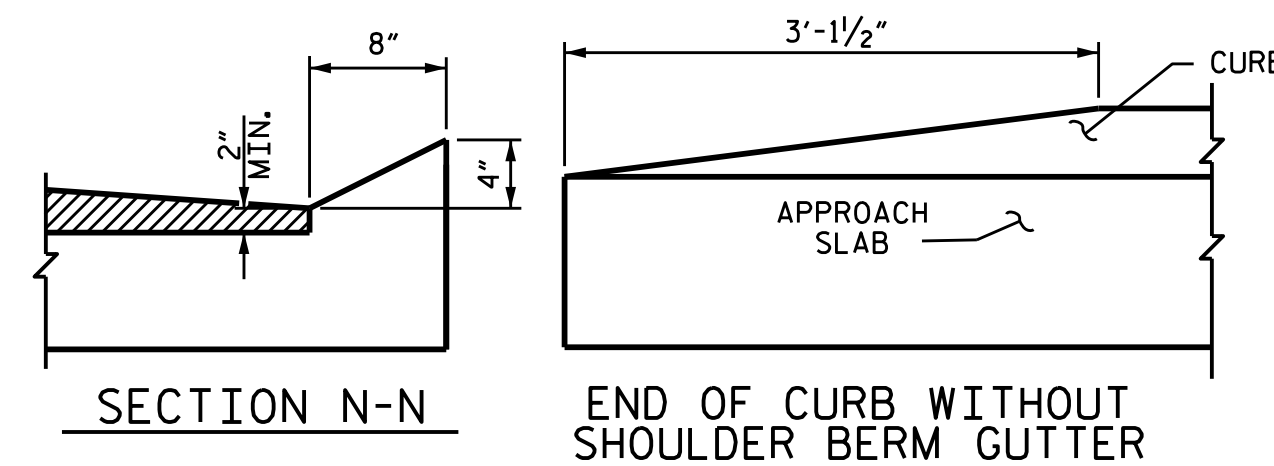
SECTION THRU SLAB

END BENT 2 SIMILAR



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



CURB DETAILS

PROJECT NO. B-4978
WILKES COUNTY
STATION: 12+36.12 -L-



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
BRIDGE APPROACH SLAB
FOR PRESTRESSED CONCRETE
BOX BEAM UNIT
(SUB-REGIONAL TIER)
90° SKEW

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : B. A. DUKE	DATE : 10-28-16
CHECKED BY : A. M. LEE	DATE : 8-2017
DRAWN BY : MAA	11/11
CHECKED BY : AAC	11/11
REV. 9-15	MAA/TMG

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.

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