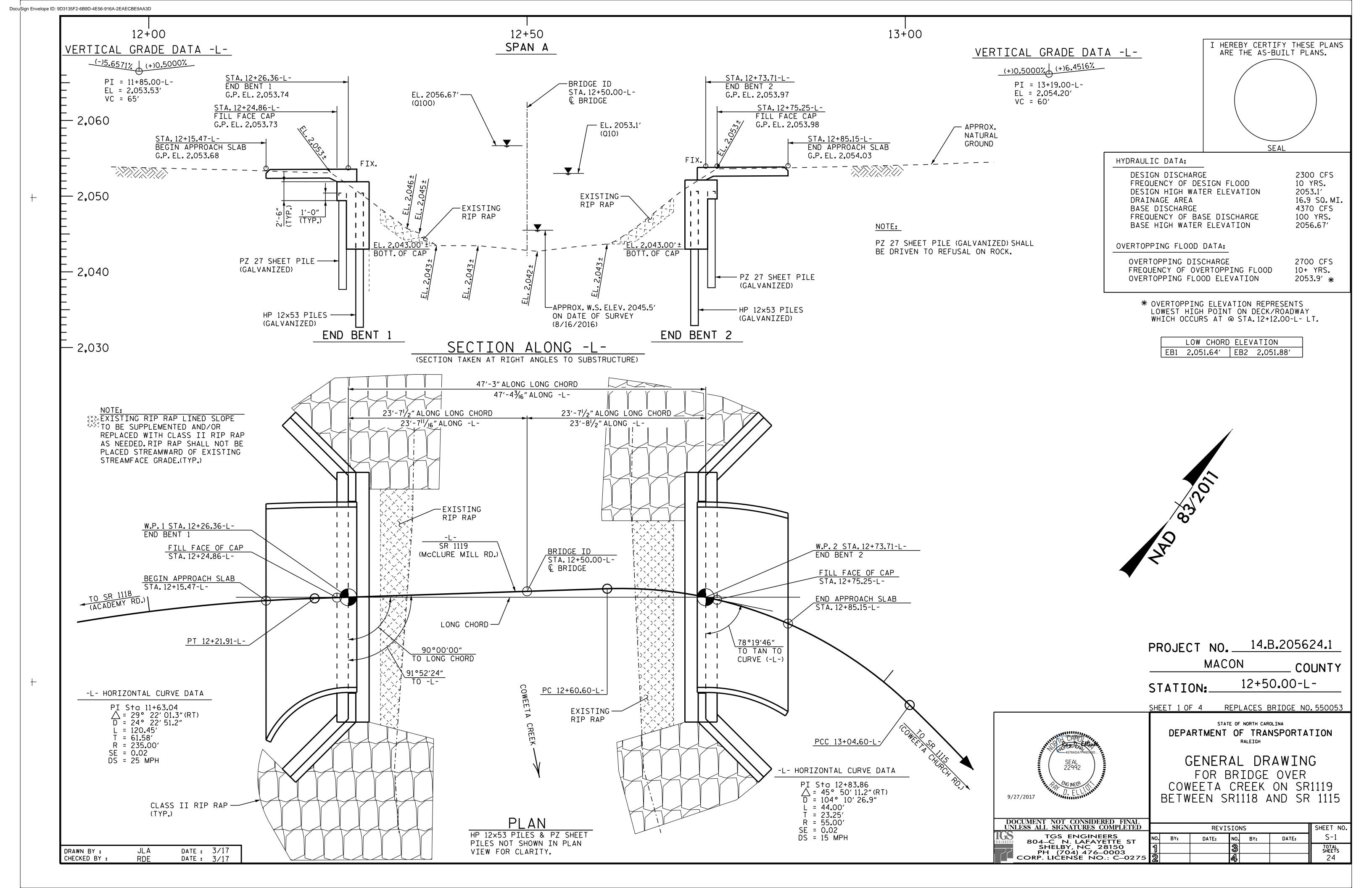
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-L- HORIZONTAL CURVE DATA

PI Sta 11+63.04

 \triangle = 29° 22′ 01.3″(RT)

D = 24° 22′ 51.2″

L = 120.45'

T = 61.58'R = 235.00'

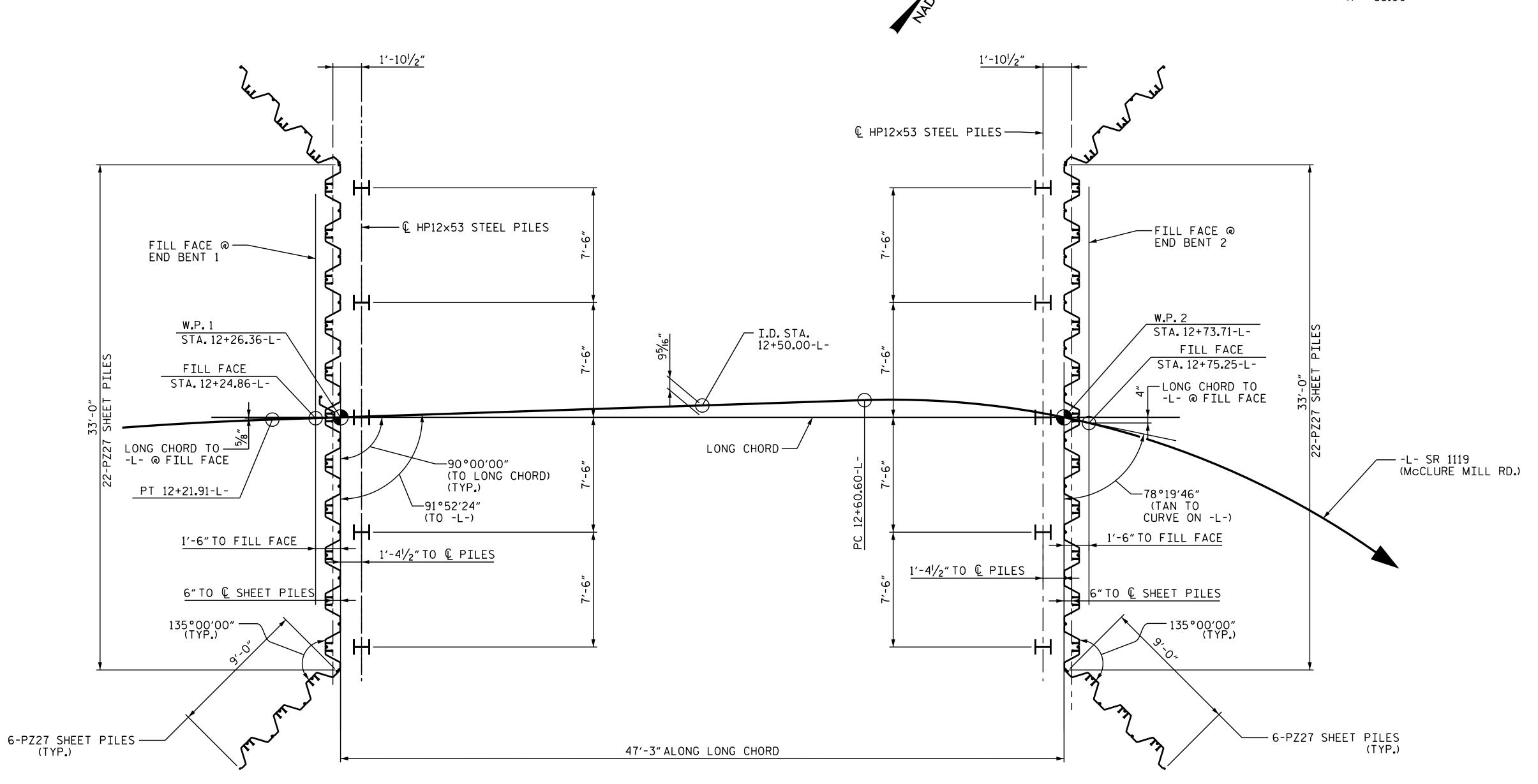
-L- HORIZONTAL CURVE DATA

PI Sta 12+83.86 \triangle = 45° 50′ 11.2″ (RT)

D = 104° 10′ 26.9″

L = 44.00'

T = 23.25'R = 55.00'



END BENT 1 LONG CHORD AND FOUNDATION LAYOUT

NOTES:

DIMENSIONS LOCATIONING PILES ARE SHOWN TO THE CENTERLINE OF PILES. ORIENT PILES AS SHOWN.

PZ27 SHEET PILING SHALL BE GALVANIZED.

HP12x53 PILES SHALL BE GALVANIZED.

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

PILES AT END BENT No.1 AND END BENT No.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 70 TONS PER PILE.

DRIVE PILES AT END BENT No.1 TO A REQUIRED DRIVING RESISTANCE OF 120 TONS PER PILE.

DRILLED-IN PILES ARE REQUIRED FOR END BENT No.1 AND END BENT No.2. EXCAVATE HOLES AT PILE LOCATIONS TO A DEPTH OF 10 FEET BELOW PILE CAP OR MINIMUM 5 FEET INTO CRYSTALLINE ROCK, WHICHEVER IS DEEPER. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

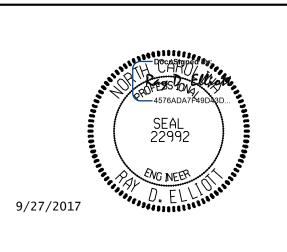
CONCRETE OR GROUT IS REQUIRED TO FILL HOLES FOR PILE EXCAVATIONS AT END BENT No. 1 AND END BENT No. 2.

PROJECT NO. 14.B.205624.1

MACON COUNTY

12+50.00-L-STATION:

SHEET 2 OF 4



END BENT 2

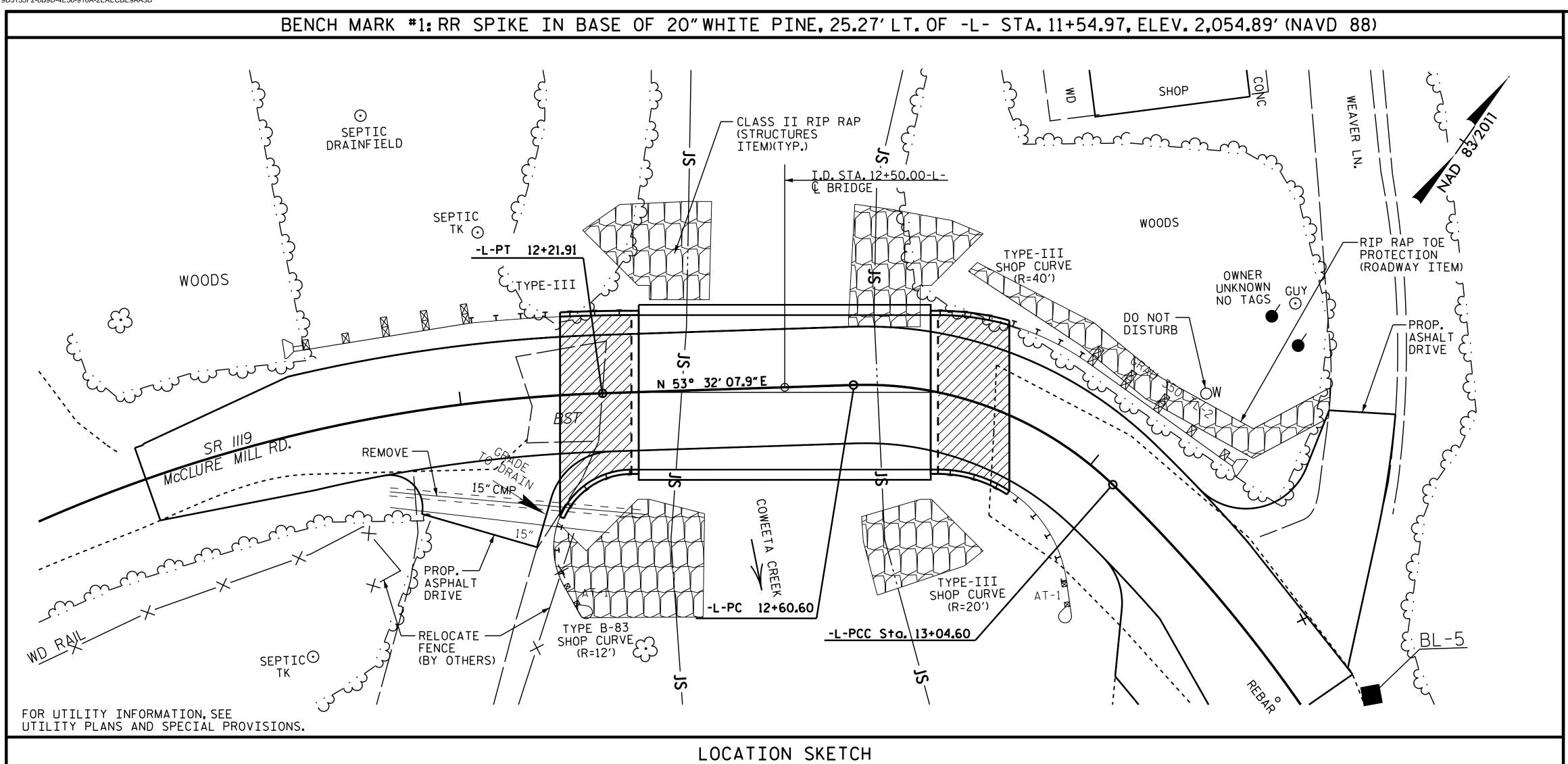
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

GENERAL DRAWING FOUNDATION LAYOUT FOR BRIDGE OVER COWEETA CREEK ON SR1119 BETWEEN SR1118 AND SR 1115

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SHEET NO. REVISIONS TGS ENGINEERS 804–C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476–0003 CORP. LICENSE NO.: C–0275 S-2 DATE: NO. BY: DATE: BY: TOTAL SHEETS 24

DATE : 3/17 DRAWN BY : DATE: 3/17 CHECKED BY :

DocuSign Envelope ID: 9D3135F2-6B9D-4E56-916A-2EAECBE9AA3D



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 NOTES SHEET. SN.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFTY, SEE SPECIAL PROVISIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGE."

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR 32"ALASKA RAIL, SEE SPECIAL PROVISIONS.

FOR 19" x 121/2" CONCRETE CURB, SEE SPECIAL PROVISIONS.

FOR STEEL SHEET PILES, SEE SPECIAL PROVISIONS.

PROJECT NO. 14.B.205624.1

MACON

COUNTY 12+50**.**00-L-STATION:

SHEET 3 OF 4



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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

GENERAL DRAWING LOCATION SKETCH FOR BRIDGE OVER COWEETA CREEK ON SR1119 BETWEEN SR1118 AND SR 1115

	REVIS	SIO	NS		SHEET NO.
BY:	DATE:	S-3			
		3			TOTAL SHEETS
·		4			24

DATE : 3/17 DRAWN BY : DATE: 3/17 CHECKED BY :

	TOTAL BILL OF MATERIAL														
ITEM	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	CLASS "A" CONCRETE (BRIDGE)	BRIDGE APPROACH SLABS	REINFORCING STEEL (BRIDGE)	GAL	P12×53 VANIZED STEEL PILES	PZ27 GALVANIZED STEEL SHEET PILING	32" ALASKA RAIL	19"×12½" CONCRETE CURB	RIP RAP, CLASS II (2'-0" THK.)	GEOTEXTILE	ELASTOMERIC BEARINGS	PRES	"× 1'-6" STRESSED ED SLABS
	LIN.FT.	LIN.FT.	C.Y.	LUMP SUM	LBS.	NO.	LIN.FT.	SO.FT.	LIN.FT.	LIN.FT.	TON	S.Y.	LUMP SUM	NO.	LIN.FT.
SUPERSTRUCTURE				LUMP SUM					75.0	90.0			LUMP SUM	9	405
END BENT 1	22	36	49.2		3,801	5	75	678			120	100			
END BENT 2	16	39	50.1		3,801	5	75	492			90	80			
TOTALS	38	75	99.3	LUMP SUM	7,602	10	150	1170	75.0	90.0	210	180	LUMP SUM	9	405

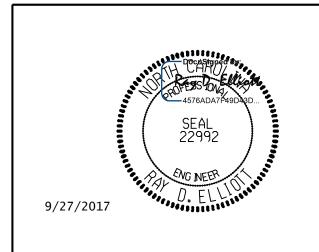
PROJECT NO. 14.B.205624.1

MACON COUNTY

MACON COUNTY

STATION: 12+50.00-L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

GENERAL DRAWING BILL OF MATERIAL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

	REVIS	SIO	NS		SHEET NO.
BY:	DATE:	NO.	BY:	DATE:	S-4
		3			TOTAL SHEETS
•		4			24

DRAWN BY: JLA DATE: 3/17
CHECKED BY: RDE DATE: 3/17

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

										STRE	ENGTH	I LIN	MIT S	TATE				SE	RVICE	III	LIMI	T STA	TE	
										MOMENT					SHEAR						MOMENT			
LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	LIVELOAD FACTORS	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)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	COMMENT NUMBER
		HL-93(Inv)	N/A	1	1.13		1.75	0.28	1.51	45′	EL	22	0.53	1.13	45′	EL	0	0.80	0.28	1.15	45′	EL	22	
DESIGN		HL-93(0pr)	N/A		1.46		1.35	0.28	1.96	45′	EL	22	0.53	1.46	45′	EL	0	N/A						
LOAD		HS-20(Inv)	36.000	2	1.34	48	1.75	0.28	1.86	45′	EL	22	0.53	1.34	45 ʻ	EL	0	0.80	0.28	1.41	45′	EL	22	
RATING		HS-20(0pr)	36.000		1.74	62	1.35	0.28	2.41	45′	EL	22	0.53	1.74	45′	EL	0	N/A						
		SNSH	13.500		2.75	37	1.4	0.28	4.53	45′	EL	22	0.53	3.74	45′	EL	0	0.80	0.28	2.75	45′	EL	22	
		SNGARBS2	20.000		2.22	44	1.4	0.28	3.65	45′	EL	17.5	0.53	2.73	45′	EL	0	0.80	0.28	2.22	45′	EL	22	
		SNAGRIS2	22.000		2.18	47	1.4	0.28	3 . 53	45′	EL	17.5	0.53	2.57	45′	EL	0	0.80	0.28	2.18	45′	EL	22	
		SNCOTTS3	27.250		1.37	37	1.4	0.28	2.26	45′	EL	22	0.53	1.87	45′	EL	0	0.80	0.28	1.37	45′	EL	22	
	SV	SNAGGRS4	34.925		1.21	42	1.4	0.28	2.00	45′	EL	22	0.53	1.61	45′	EL	0	0.80	0.28	1.21	45′	EL	22	
		SNS5A	35.550		1.18	41	1.4	0.28	1.95	45′	EL	22	0.53	1.66	45′	EL	0	0.80	0.28	1.18	45′	EL	22	
		SNS6A	39.950		1.11	44	1.4	0.28	1.83	45′	EL	22	0.53	1.54	45′	EL	0	0.80	0.28	1.11	45′	EL	22	
LEGAL		SNS7B	42.000	3	1.06	44	1.4	0.28	1.75	45′	EL	22	0.53	1.54	45′	EL	0	0.80	0.28	1.06	45′	EL	22	
LOAD		TNAGRIT3	33.000		1.36	44	1.4	0.28	2.25	45′	EL	22	0.53	1.81	45′	EL	0	0.80	0.28	1.36	45′	EL	22	
RATING		TNT4A	33.075		1.38	45	1.4	0.28	2.27	45′	EL	22	0.53	1.74	45′	EL	0	0.80	0.28	1.38	45′	EL	22	
		TNT6A	41.600		1.16	48	1.4	0.28	1.91	45′	EL	22	0.53	1.69	45′	EL	0	0.80	0.28	1.16	45 <i>′</i>	EL	22	
	.ST)	TNT7A	42.000		1.18	49	1.4	0.28	1.94	45′	EL	22	0.53	1.56	45′	EL	0	0.80	0.28	1.18	45 <i>′</i>	EL	22	
	(T1	TNT7B	42.000		1.23	51	1.4	0.28	2.02	45′	EL	22	0.53	1.48	45′	EL	0	0.80	0.28	1.23	45 <i>′</i>	EL	22	
		TNAGRIT4	43.000		1.17	50	1.4	0.28	1.93	45′	EL	22	0.53	1.43	45′	EL	0	0.80	0.28	1.17	45′	EL	22	
		TNAGT5A	45.000		1.09	49	1.4	0.28	1.79	45′	EL	22	0.53	1.45	45′	EL	0	0.80	0.28	1.09	45′	EL	22	
		TNAGT5B	45.000		1.06	47	1.4	0.28	1.75	45′	EL	22	0.53	1.35	45′	EL	0	0.80	0.28	1.06	45′	EL	22	

45'-0" SLAB LENGTH 44'-0" BRG. TO BRG. LENGTH

LRFR SUMMARY

DATE: 3/17 DATE: 3/17 ASSEMBLED BY : CHECKED BY : DRAWN BY : CVC 6/10 CHECKED BY : DNS 6/10

FOR SPAN 'A'

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

(#) 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

PROJECT NO. 14.B.205624.1 MACON ___ COUNTY

12+50**.**00-L-

STATION:__

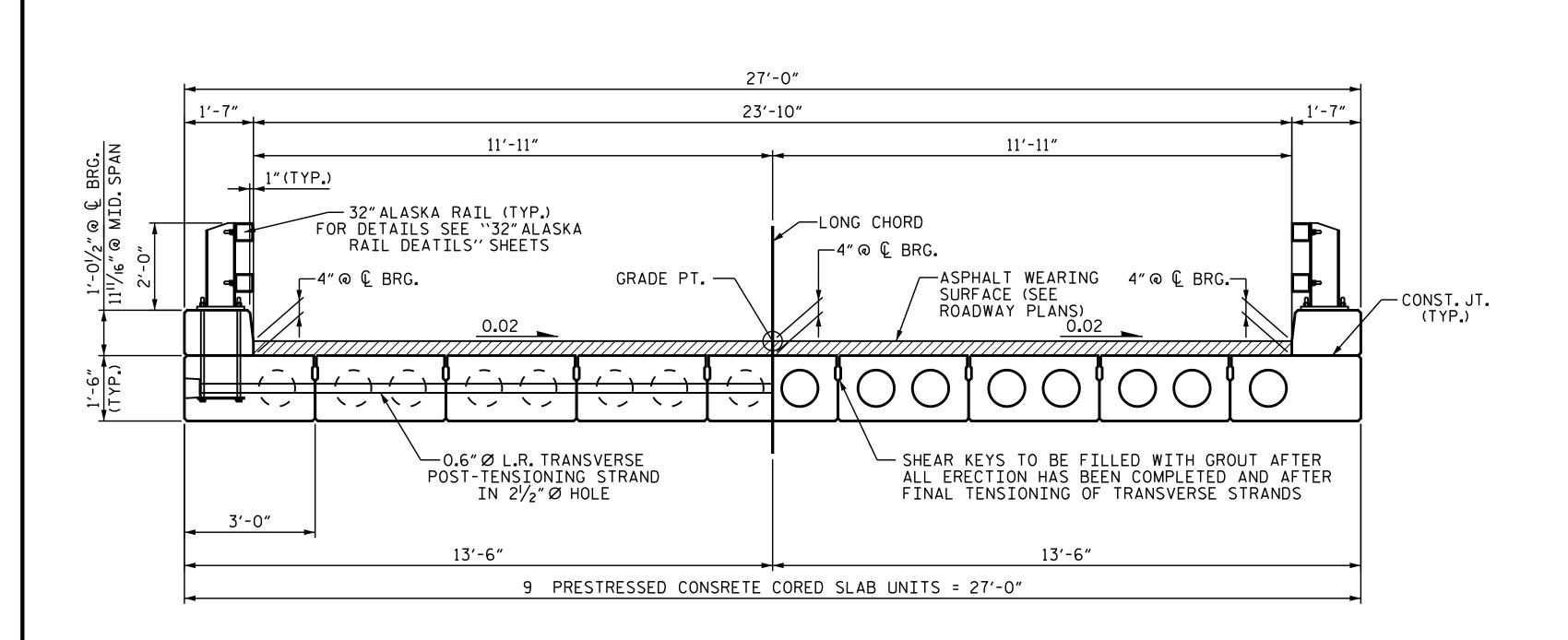


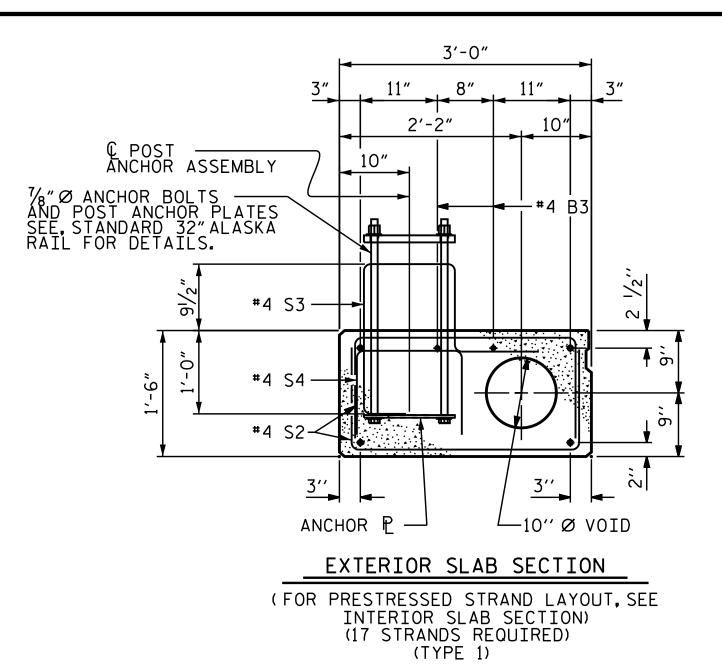
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD

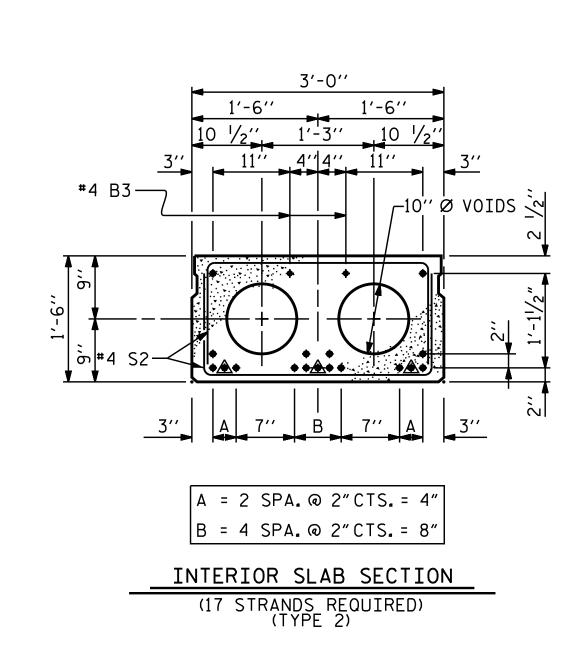
LRFR SUMMARY FOR 45' CORED SLAB UNIT 90° SKEW

(NON-INTERSTATE TRAFFIC)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED REVISIONS SHEET NO. TGS ENGINEERS
804–C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476–0003
CORP. LICENSE NO.: C-0275 S-5 DATE: NO. BY: DATE: BY: TOTAL SHEETS 24







O.6" Ø LOW RELAXATION STRAND LAYOUT

BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

PERMITTED 1/2" THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8". SIZE TO BE DETERMINED BY CONTRACTOR.

THREADED INSERT DETAIL

PROJECT NO. 14.B.205624.1 MACON

COUNTY

12+50.00-L-STATION:

SHEET 1 OF 3

9/27/2017

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS 804–C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476–0003 CORP. LICENSE NO.: C–0275

DEPARTMENT OF TRANSPORTATION RALEIGH

STATE OF NORTH CAROLINA

3'-0'' X 1'-6'' PRESTRESSED CONCRETE CORED SLAB UNIT 90° SKEW

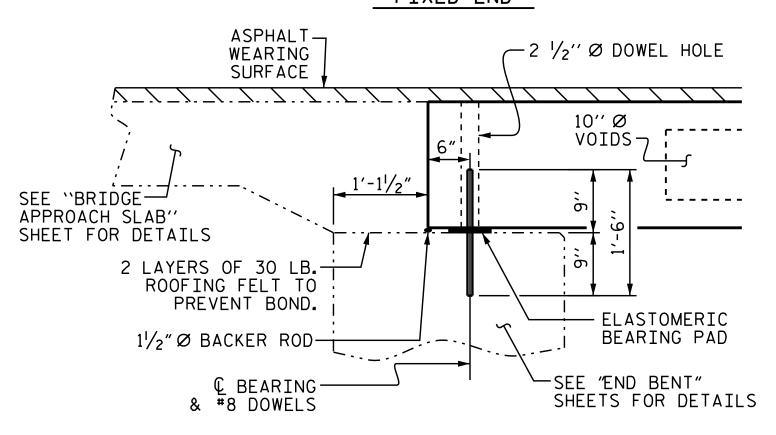
SHEET NO **REVISIONS** S-6 DATE: NO. BY: DATE: BY: TOTAL SHEETS 24

TYPICAL SECTION

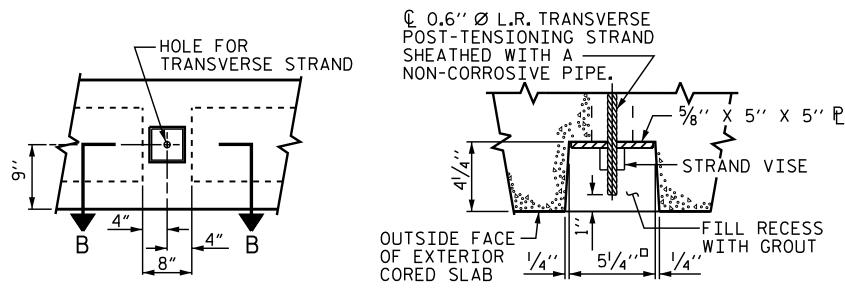
ONE SIMPLE SPAN WITH 18"PCCS UNITS

THE MAXIMUM CURB HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE CURB AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "32" ALASKA RAIL" DETAIL.

FIXED END



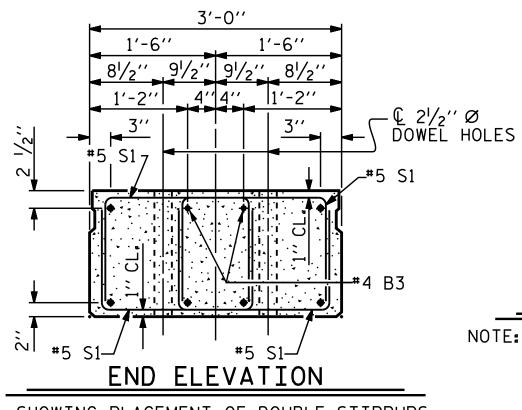
SECTION AT END BENT



ELEVATION VIEW

SECTION B-B

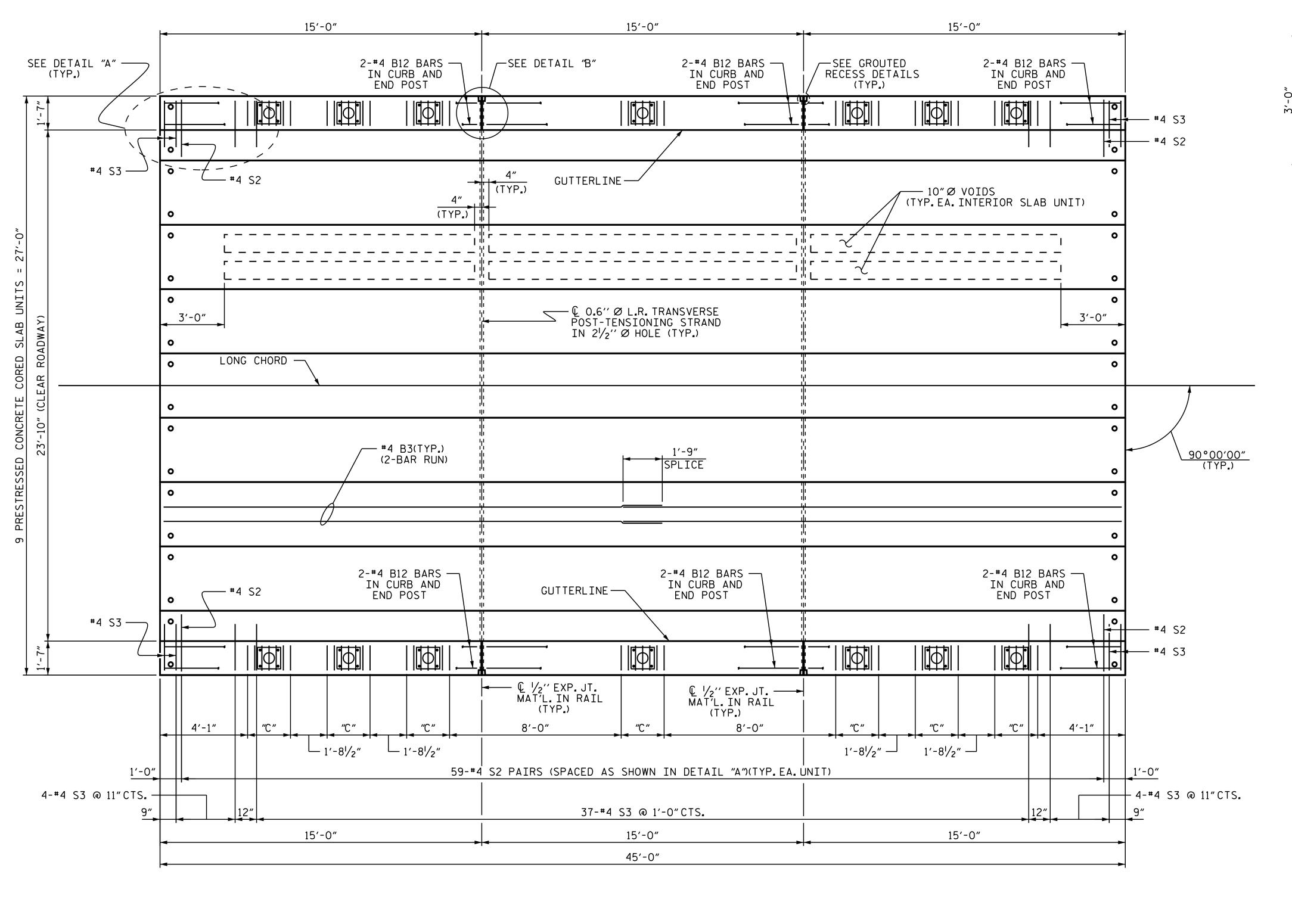
GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS



SHEAR KEY DETAIL NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

SHOWING PLACEMENT OF DOUBLE STIRRUPS
AND LOCATION OF DOWEL HOLES
(STRAND LAYOUT NOT SHOWN)
INTERIOR SLAB SECTION SHOWN-EXTERIOR SLAB
SECTION SIMILAR EXCEPT SHEAR KEY LOCATION.

DATE : 3/17 DRAWN BY : CHECKED BY : DATE: 3/17



__4 #4 S3 @ 11"CTS.__1'-0"__37 #4 S3 @ 1'-0"CTS.__ 21/2" #4 S3 -1" CL. DOWEL HOLES 9 #4 S2 PAIRS @ 6"CTS. 10" 41 #4 S2 PAIRS @ 10"CTS. 3'-0" DETAIL "A" (TYPICAL EACH END OF UNIT) NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #4 S3 BARS. 15'-0" 15'-0" -2-#4 B12 BARS IN CURB AND Ç ½" EXP.JT. → MAT'L.IN RAIL EXTERIOR — \
FACE (TYP.)

€ 0.6" Ø L.R. TRANSVERSE — POST-TENSIONING STRAND

IN $2\frac{1}{2}$ " Ø HOLE (TYP.)

DETAIL "B" #4 S2 & #4 S3 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1"CLEAR TO GROUTED RECESS AND

21/2" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

PROJECT NO. 14.B.205624.1 MACON COUNTY

∕ 10″Ø VOIDS

END POST

-10"Ø VOIDS

12+50**.**00-L-STATION:

SHEET 2 OF 3

9/27/2017

GUTTERLINE

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

PLAN OF 45' UNIT 23'-10" CLEAR ROADWAY 90° SKEW

SHEET NO.

S-7

TOTAL SHEETS

24

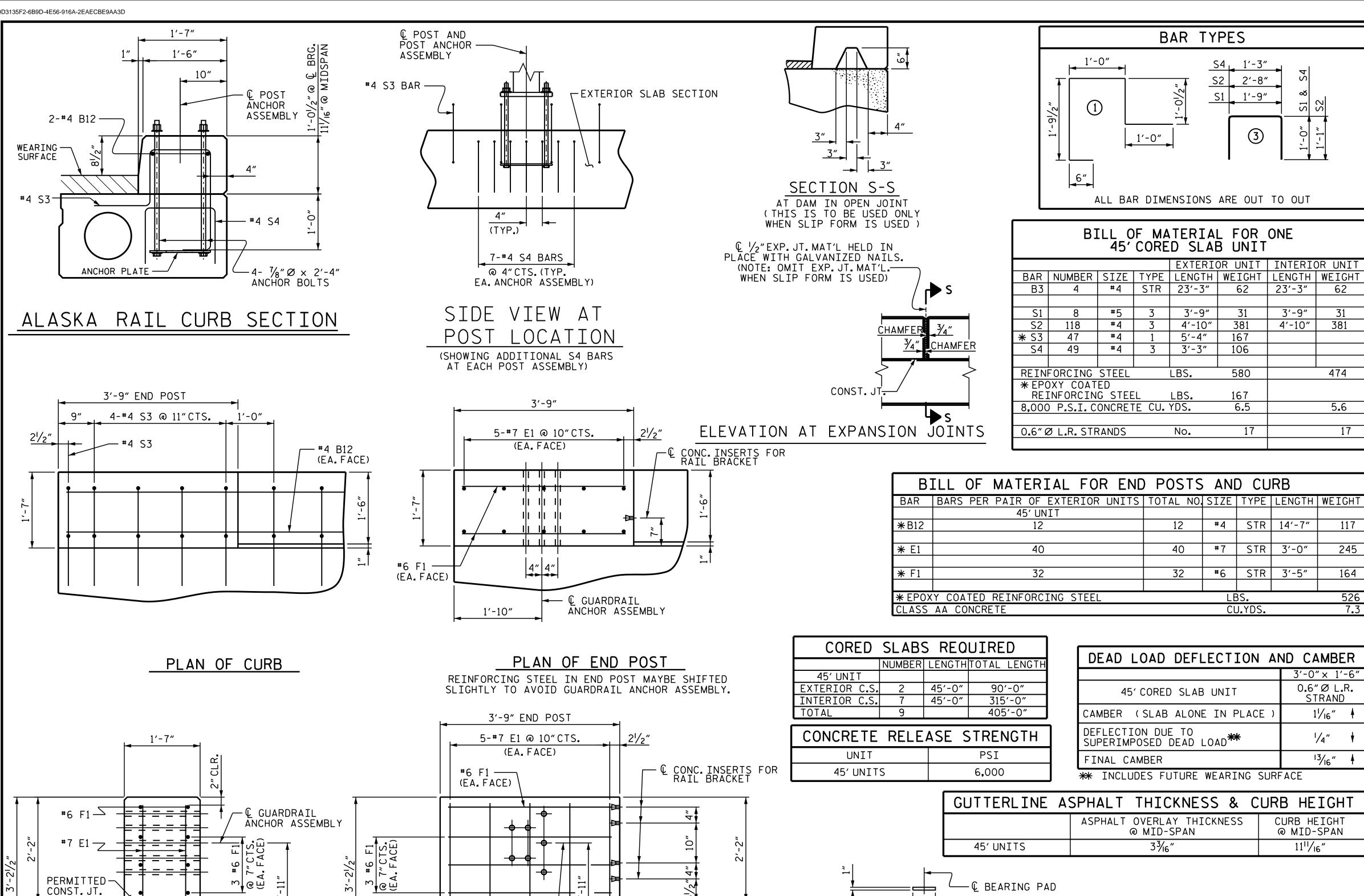
DATE:

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED **REVISIONS** TGS ENGINEERS 804–C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476–0003 CORP. LICENSE NO.: C–0275 NO. BY: DATE: BY:

PLAN OF UNIT

"C" = 7 #4 S4 @ 4" CTS. (TYP.AT EA.RAIL POST ANCHOR ASSEMBLY)

DATE : 3/17 DRAWN BY : CHECKED BY : DATE: 3/17



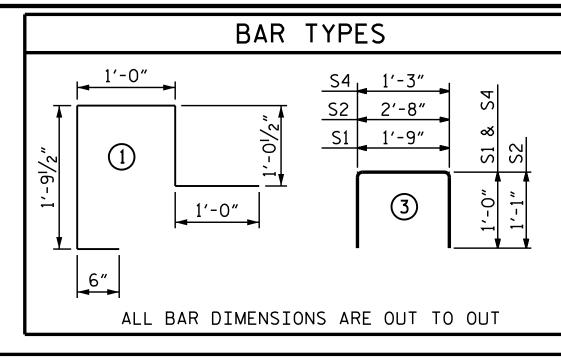
PERMITTED-

#4 S3 —

€ GUARDRAIL — ANCHOR ASSEMBLY

CONST. JT.

∠2 #4 B12



BILL OF MATERIAL FOR ONE 45' CORED SLAB UNIT EXTERIOR UNIT | INTERIOR UNIT BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT | LENGTH | WEIGHT B3 l #4 | STR 23'-3" 62 23'-3" 4 3′-9" 3'-9" 31 118 #4 4'-10" 381 4'-10" | 381 ***** S3 47 #4 5'-4" 167 S4 49 #4 3′-3″ 106 580 REINFORCING STEEL LBS. ***** EPOXY COATED REINFORCING STEEL

8,000 P.S.I. CONCRETE CU. YDS. 6.5

12

40

32

40

32

0.6" Ø L.R. STRANDS No. 17

DEAD LOAD DEFLECTION AND CAMBER 3'-0" × 1'-6" 45' CORED SLAB UNIT STRAND 1 ½ 6" CAMBER (SLAB ALONE IN PLACE

DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD 1/4" ¹³/₁₆" FINAL CAMBER ** INCLUDES FUTURE WEARING SURFACE

BILL OF MATERIAL FOR END POSTS AND CURB

#4 | STR | 14'-7"

#7 | STR | 3'-0"

#6 | STR | 3'-5"

LBS.

CU.YDS

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 CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

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

THE $2\frac{1}{2}$ Ø DOWEL HOLES AT FIXED ENDS OF SLAB 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.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

ALL REINFORCING STEEL IN THE 32"ALASKA RAIL SHALL BE EPOXY COATED.

IN LENGTH.

245

164

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

TRANSVERSE POST TENSIONING OF THE CORED SLAB UNITS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

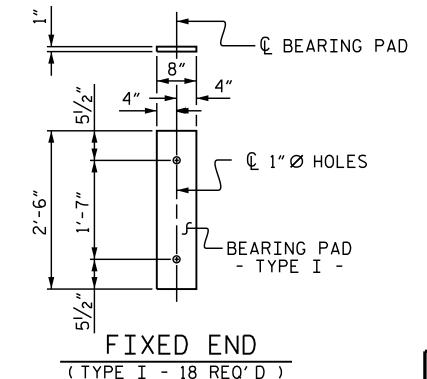
THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

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.





(EA. FACE)

#4 S3 @

1'-0" CTS.

PERMITTED CONST.JT.

ELEVATION

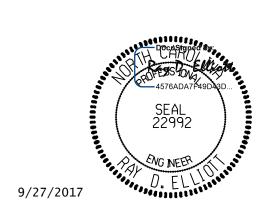
REINFORCING STEEL IN END POST MAYBE SHIFTED

SLIGHTLY TO AVOID GUARDRAIL ANCHOR ASSEMBLY.

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

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



PROJECT NO. 14.B.205624.1 MACON COUNTY 12+50.00-L-STATION:

SHEET 3 OF 3

DEPARTMENT OF TRANSPORTATION STANDARD 3'-0'' X 1'-6'' PRESTRESSED CONCRETE CORED SLAB UNI 90° SKEW

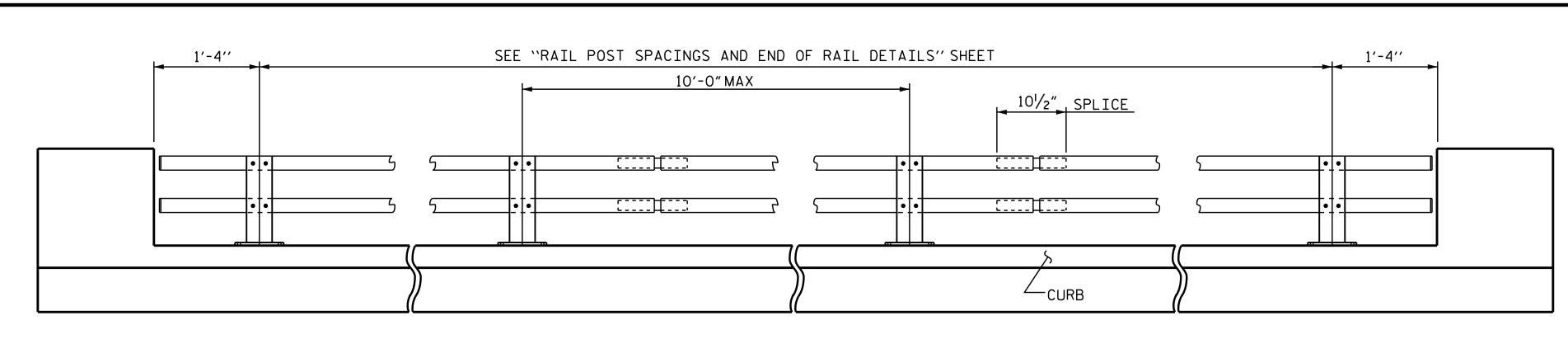
STATE OF NORTH CAROLINA

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SHEET NO **REVISIONS** TGS ENGINEERS
804–C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476–0003
CORP. LICENSE NO.: C–0275 S-8 DATE: NO. BY: DATE: BY: TOTAL SHEETS 24

CURB AND END POST FOR 32"ALASKA RAIL DATE : 3/17 DRAWN BY : CHECKED BY : DATE: 3/17

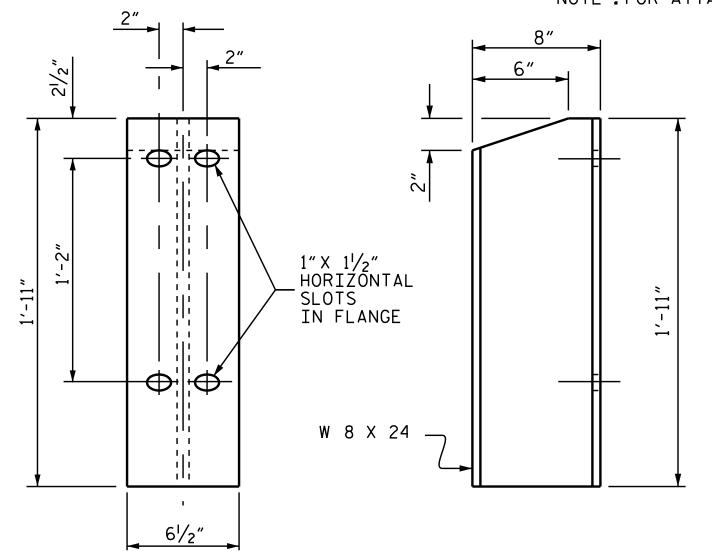
END VIEW

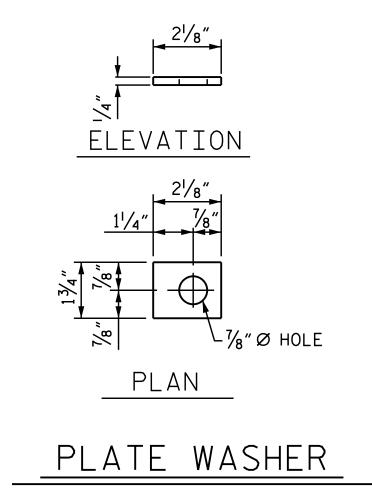
#4 S3 —

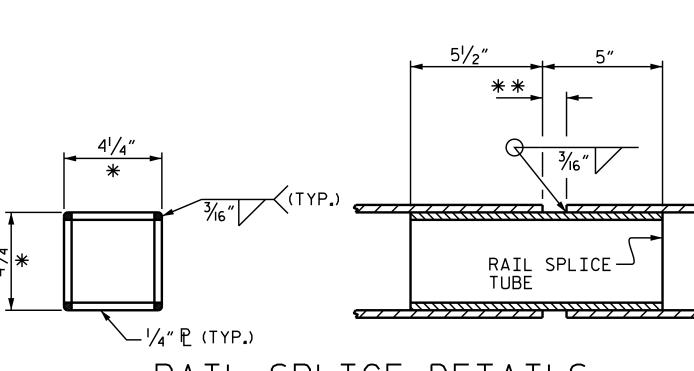


ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET S-10.







RAIL SPLICE DETAILS

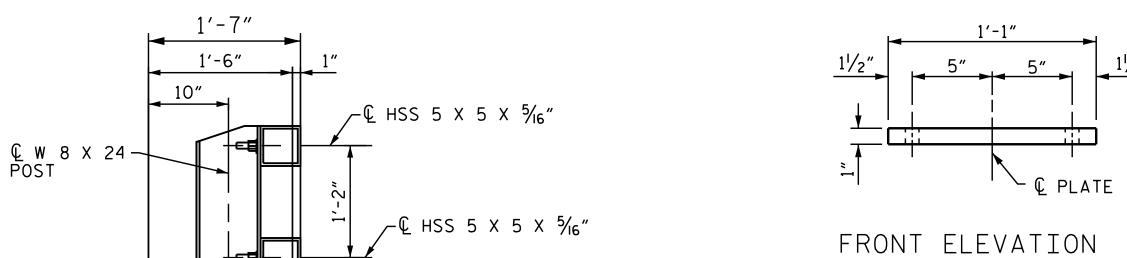
*- DIMENSION AFTER GRINDING RADIUS ON CORNERS TO MATCH INSIDE OF METAL RAIL. GRIND ALL EDGES PRIOR TO GALVANIZING TO ASSURE FIT.

** -1"FOR SPLICE NOT AT EXPANSION JOINT; SEE TABLE 1 FOR OPENING FOR SPLICES AT EXPANSION JOINTS.

FRONT ELEVATION

SIDE ELEVATION

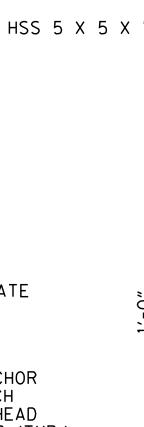
DETAILS OF POST



POST BASE

CONST. JT.

(LEVEL)



BOLTS
TED
ABOVE
NST. JT.

TACK WELD ANCHOR
PLATE TO EACH
ANCHOR BOLT HEAD
IN TWO PLACES (TYP.)

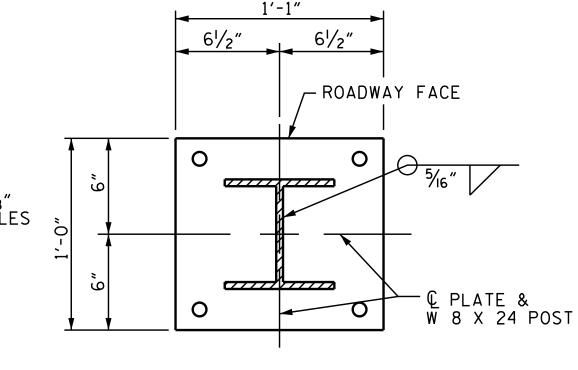
SECTION THRU RAIL

1'-1"

5"
5"
5"
1 1 1 2"

Q PLATE

W HOLES



PLAN

POST ATTACHMENT DETAIL

ASSEMBLED BY: JLA RDE DATE: 3/17 CHECKED BY: RWW 7/14 CHECKED BY: TMG 7/14 ADDED 1/15

4- 1/8" Ø
x 2'-3"

ANCHOR BOLTS
PROJECTED
15" MIN. ABOVE

THE CONST. JT.

POST BASE DETAILS

NOTES

METAL RAIL SHALL BE GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS. ALUMINUM RAIL WILL NOT BE AN OPTION.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, ANCHOR PLATES AND RAIL SPLICE TUBES: AASHTO M270 GRADE 36 STRUCTURAL STEEL-GALVANIZED TO AASHTO M111.

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

RAILS: ASTM A500 GRADE B - GALVANIZED TO AASHTO M111.

WELDED RAIL STUDS: ASTM A108-GALVANIZED TO AASHTO M111.

HIGH STRENGTH ANCHOR BOLTS SHALL CONFORM TO ASTM F1554 GRADE 105. HEAVY HEX NUTS SHALL CONFORM TO ASTM A563 DH, AND WASHERS TO ASTM F436, TYPE 1. NUTS AND WASHERS SHALL BE GALVANIZED TO AASHTO M111.

GENERAL NOTES

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

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR9.

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

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

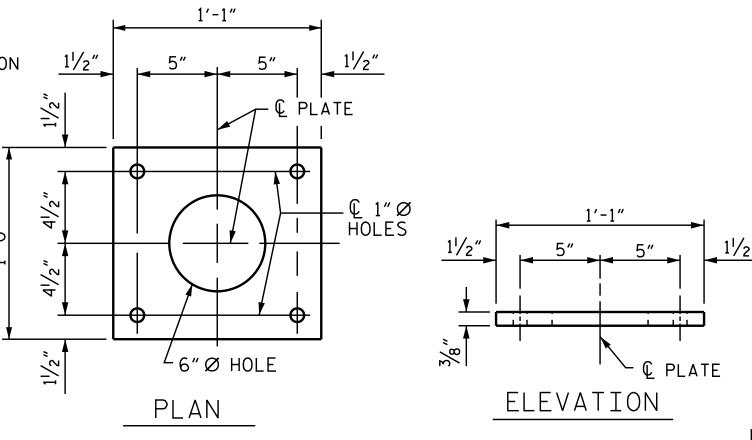
SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

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

THE RAIL SECTIONS SHALL BE ATTACHED TO THE POSTS BY TWO THREADED $\frac{3}{4}$ " Ø WELDED STUDS, PLATE WASHERS, LOCKWASHERS, AND NUTS.

FOR 32"ALASKA RAIL, SEE THE SPECIAL PROVISIONS.

PAY LENGTH _______ TS___ LIN.FT.



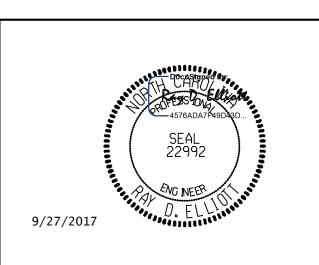
ANCHOR PLATE DETAILS

PROJECT NO. 14.B.205624.1

MACON COUNTY

STATION: 12+50.00-L-

SHEET 1 OF 2

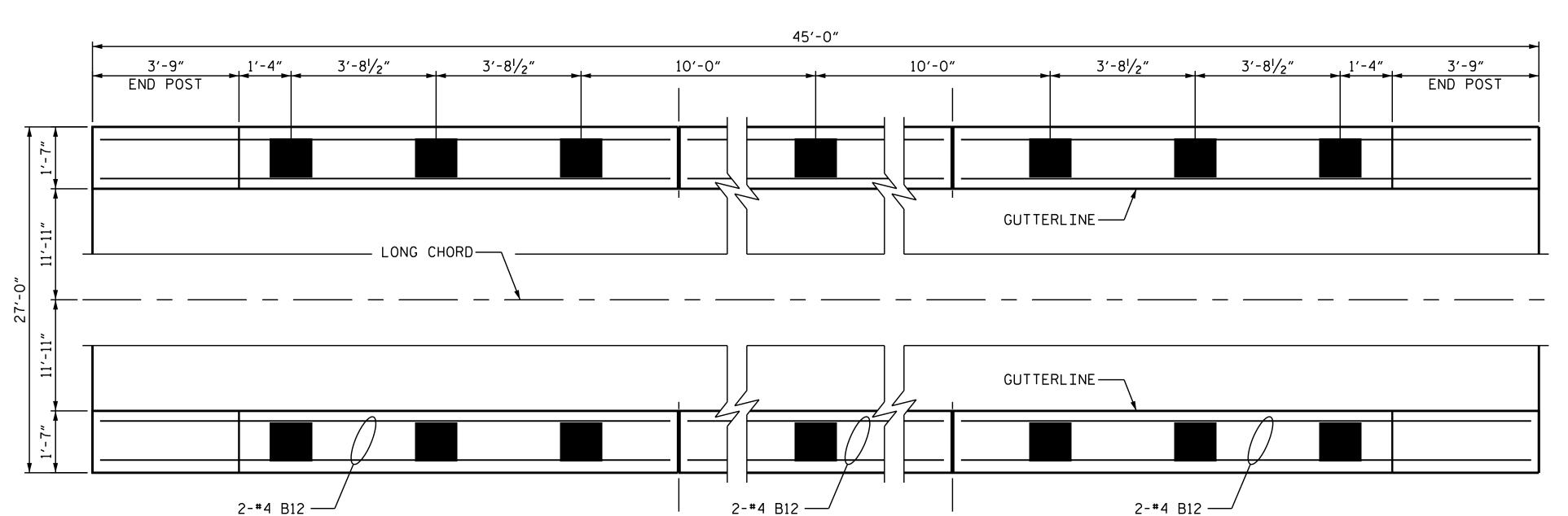


DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

32"ALASKA RAIL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			REVIS	SION	NS		SHEET N
TGS ENGINEERS 804-C N. LAFAYETTE ST	NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
SHELBY, NC 28150 PH (704) 476–0003	1			3			TOTAL SHEETS
CORP. LICENSE NO.: C-0275	2			4			24



PLAN OF RAIL POST SPACINGS

NOTES

STRUCTURAL CONCRETE INSERT

EACH STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- A. FERRULE SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 11/2".
- B. 1 3/4" Ø X 15/8" BOLT WITH WASHER.BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307.BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 15/8" GALVANIZED BOLT AND WASHER.THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- C. WIRE STRUT SHOWN IN THE STRUCTURAL CONCRETE INSERT DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A γ_{16} " Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

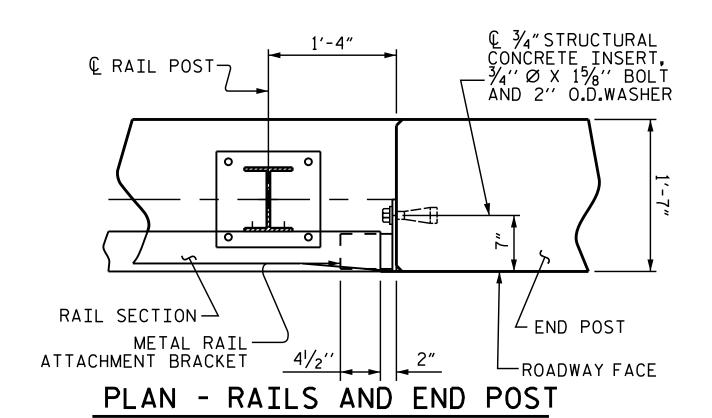
METAL RAIL TO END POST CONNECTION

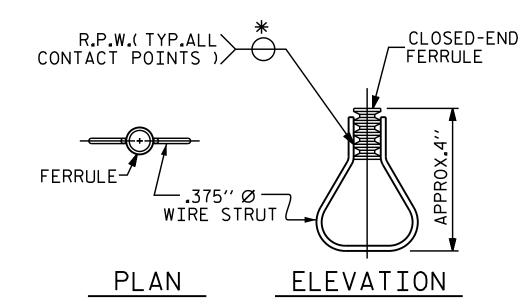
EACH METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- A. 1/2" METAL BRACKET PLATE AND 1/4" METAL RAIL INSERT TUBE SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION TO AASHTO M111.
- B. 3/4" STRUCTURAL CONCRETE INSERTS SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A $\frac{3}{4}$ " Ø X $1\frac{5}{8}$ " BOLT WITH 2" O.D. WASHER IN PLACE. THE $\frac{3}{4}$ " Ø X $1\frac{5}{8}$ " BOLT SHALL HAVE N. C. THREADS.
- THE $\frac{3}{4}$ " STRUCTURAL CONCRETE INSERTS WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE $\frac{3}{4}$ " STRUCTURAL CONCRETE INSERT, THE $\frac{1}{2}$ " BRACKET PLATES, AND THE RAIL INSERT TUBES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

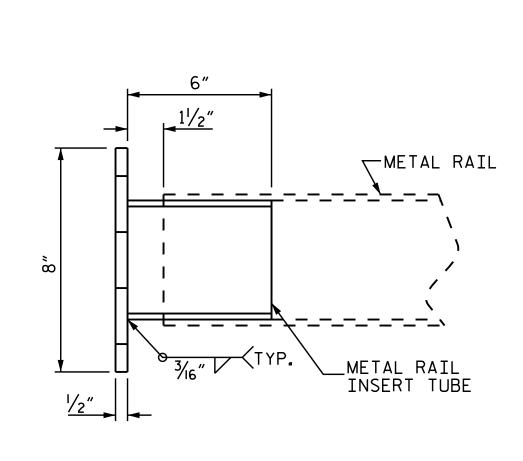
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE $\frac{3}{4}$ " Ø X $\frac{15}{8}$ " BOLTS WITH WASHERS SHALL BE REPLACED WITH $\frac{3}{4}$ " Ø X $\frac{6}{2}$ " BOLTS AND 2" O.D. WASHERS. ALL SPECIFICATIONS THAT APPLY TO THE $\frac{3}{4}$ " Ø X $\frac{15}{8}$ " BOLTS SHALL APPLY TO THE $\frac{3}{4}$ " Ø X $\frac{6}{2}$ " BOLTS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

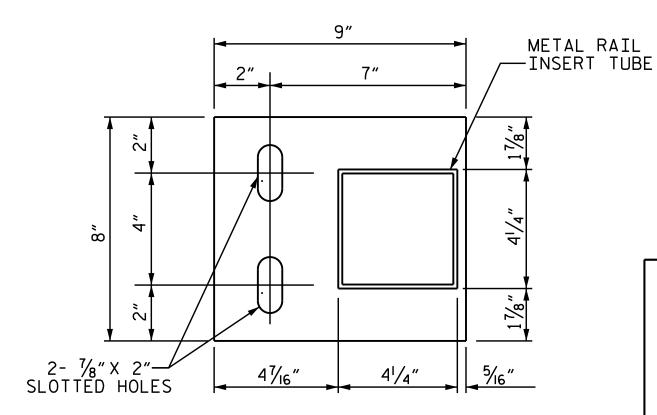




STRUCTURAL CONCRETE

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





9/27/2017

PROJECT NO. 14.B.205624.1 MACON COUNTY

12+50.00-L-STATION:

SHEET 2 OF 2

RALEIGH STANDARD

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

RAIL POST SPACINGS END OF RAIL DETAILS

FOR 32"ALASKA RAIL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SHEET NO. REVISIONS TGS ENGINEERS 804–C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476–0003 CORP. LICENSE NO.: C–0275 S-10 DATE: NO. BY: DATE: BY: TOTAL SHEETS 24

METAL RAIL ATTACHMENT BRACKET

THE METAL RAIL INSERT TUBE SHALL BE FABRICATED FROM 1/4" PLATES.

ELEVATION

2"(TYP.)

— € POST

2"(TYP.)

_¾″∅ WELDED RAIL STUDS

RAIL STUD DETAILS

Q HSS 5 X 5 X 5/6

__2-¾"Ø WELDED __RAIL STUDS

RAIL SECTION

JL A RDE DATE : 3/17 ASSEMBLED BY : CHECKED BY : DATE: 3/17 DRAWN BY: RWW 7/14 CHECKED BY : TMG 7/14

ASSEMBLED BY :

DRAWN BY : MAA 5/10

CHECKED BY : GM 5/10

CHECKED BY :

JLA RDE

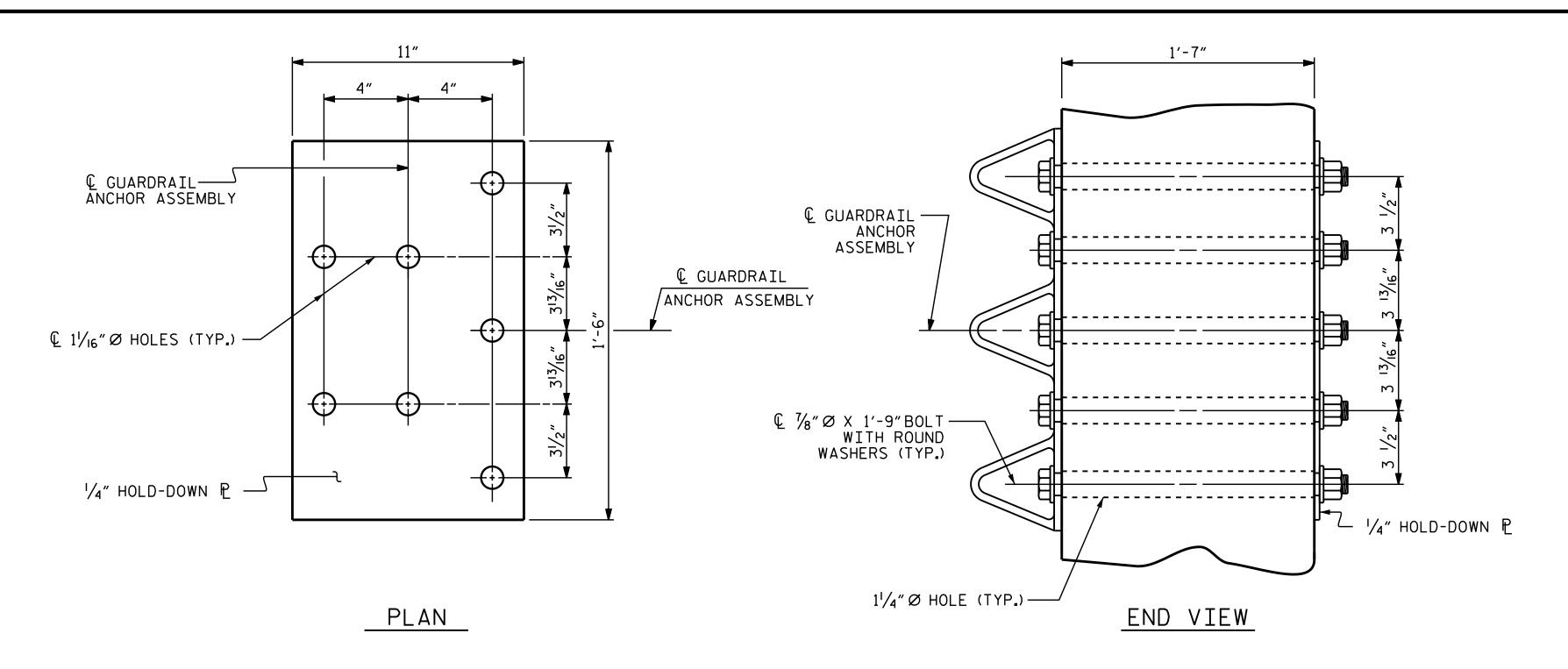
DATE: 3/17

DATE: 3/17

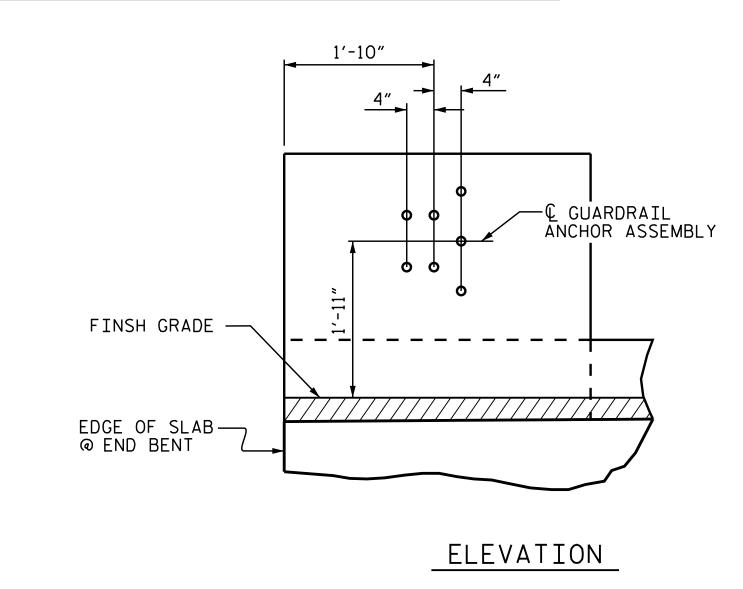
MAA/GM

MAA/GM MAA/TMG

REV. 12/5/II REV. 6/I3 REV. 1/I5



GUARDRAIL ANCHOR ASSEMBLY DETAILS



1'-10"

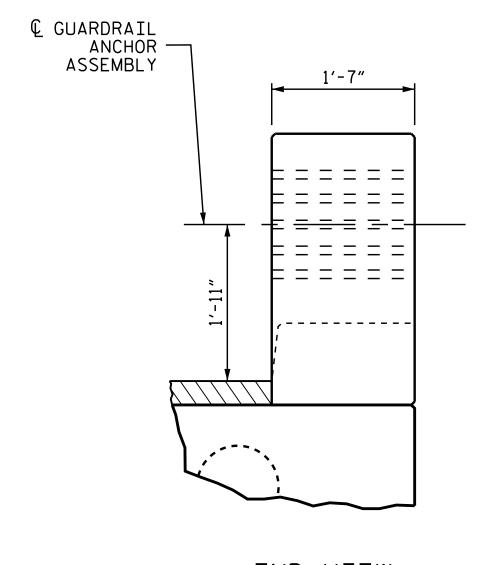
, ii ii

PLAN

Q GUARDRAIL

ANCHOR ASSEMBLY

€ GUARDRAIL ANCHOR ASSEMBLY



END VIEW (32"ALASKA RAIL)

LOCATION OF GUARDRAIL ANCHOR AT END POST

NOTES

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

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

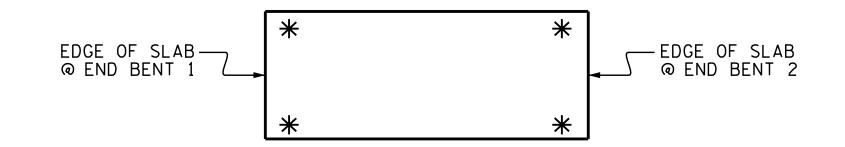
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

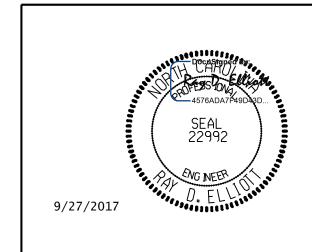
THE 1 $\frac{1}{4}$ " Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



SKETCH SHOWING POINTS OF ATTACHMENT

*LOCATION OF GUARDRAIL ATTACHMENT

MACON COUNTY 12+50.00-L-STATION:



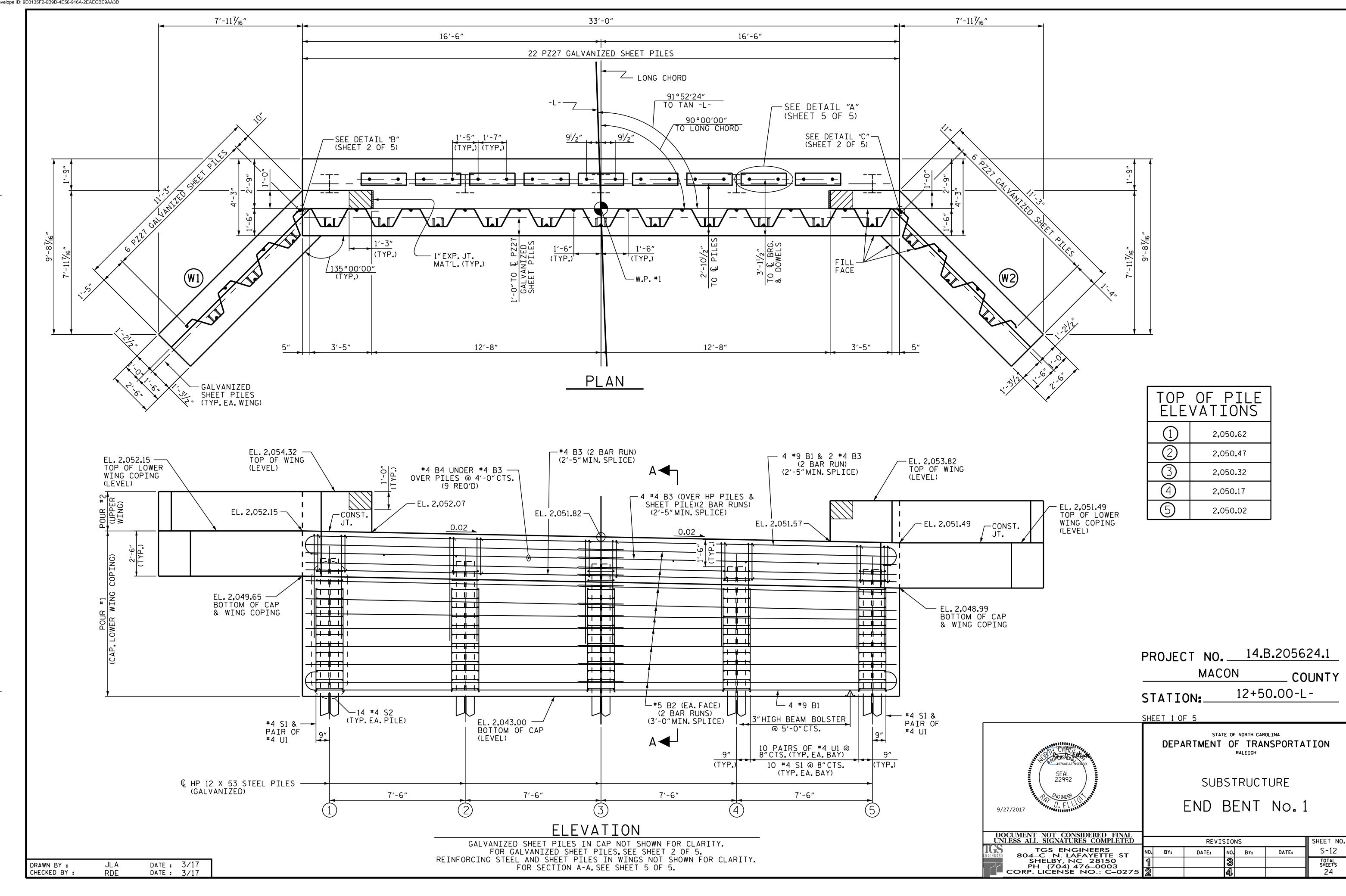
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

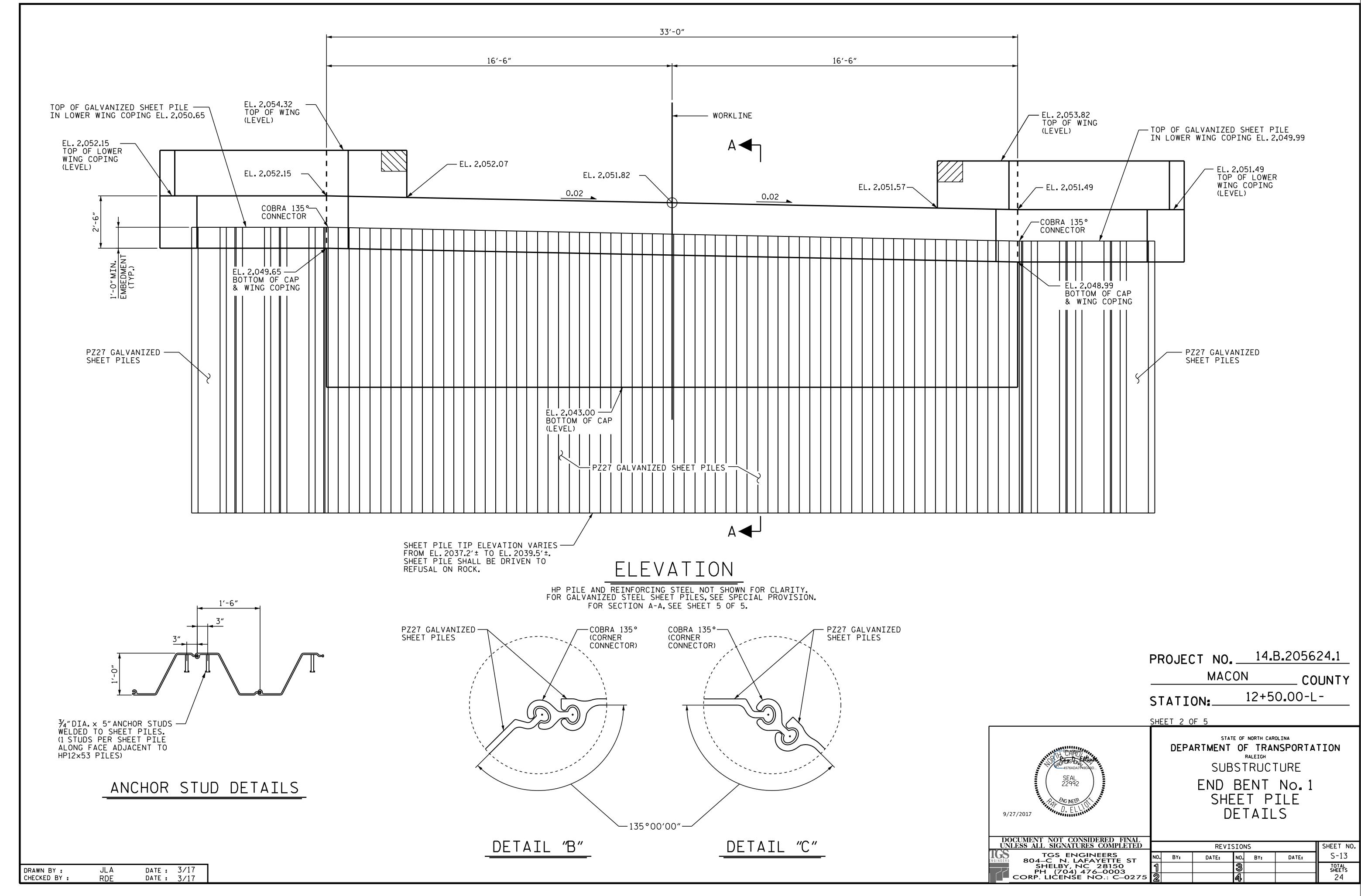
GUARDRAIL ANCHORAGE DETAILS FOR METAL TUBE RAILS

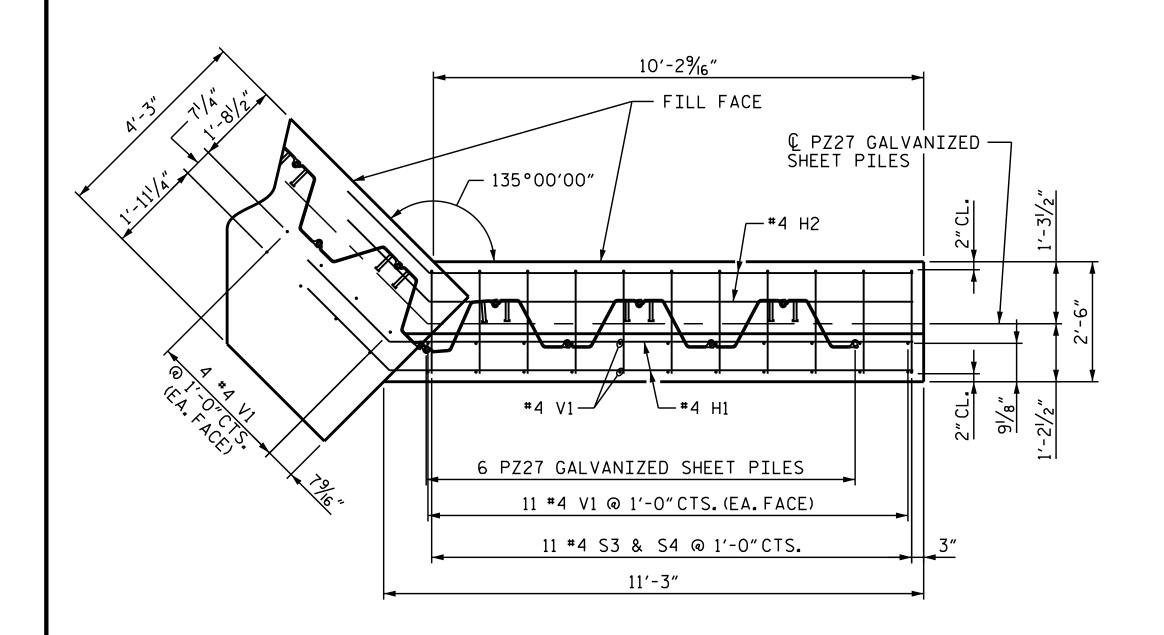
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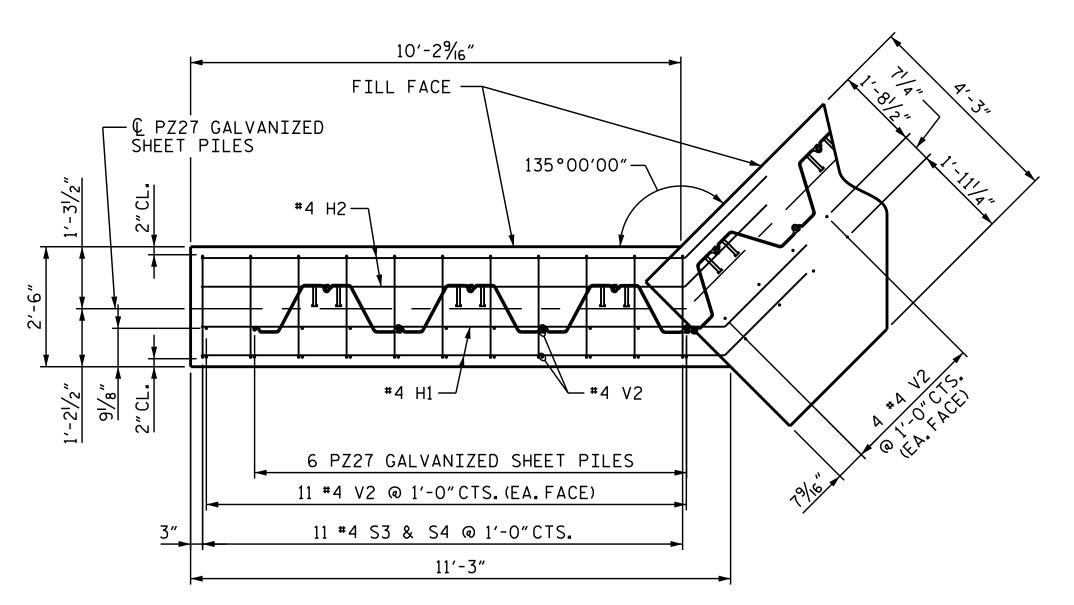
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BY:	DATE:	DATE:	S-11		
		3			TOTAL SHEETS
		4			24

PROJECT NO. 14.B.205624.1

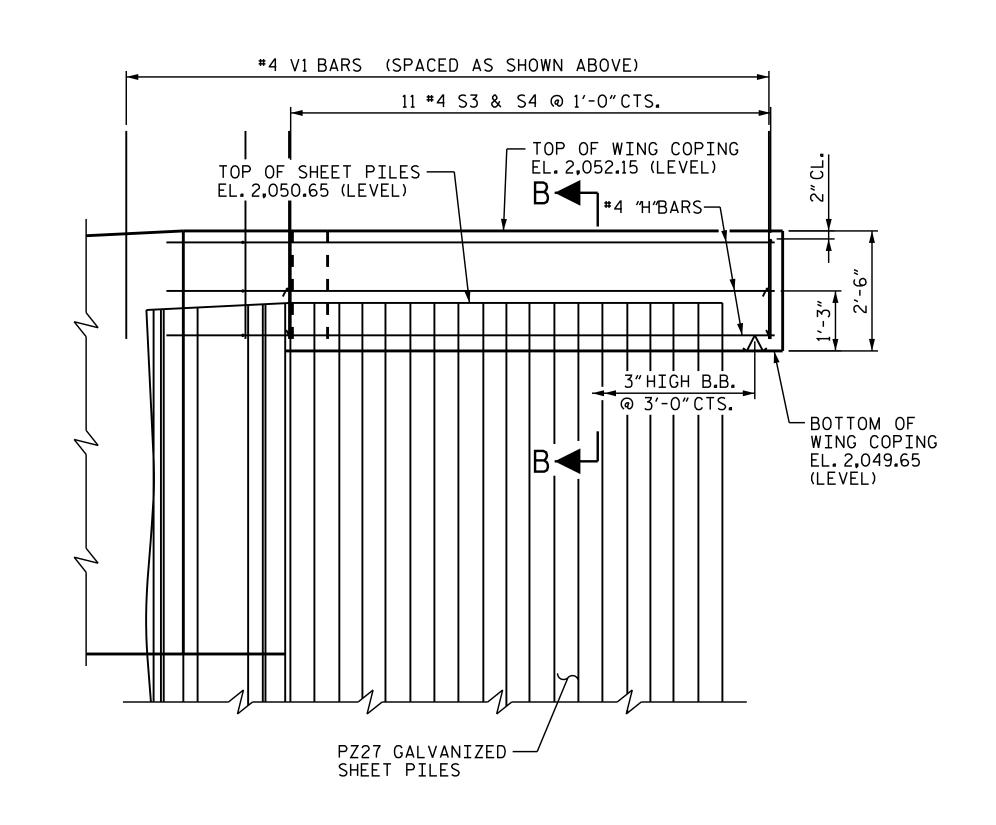




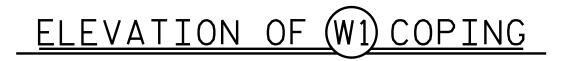


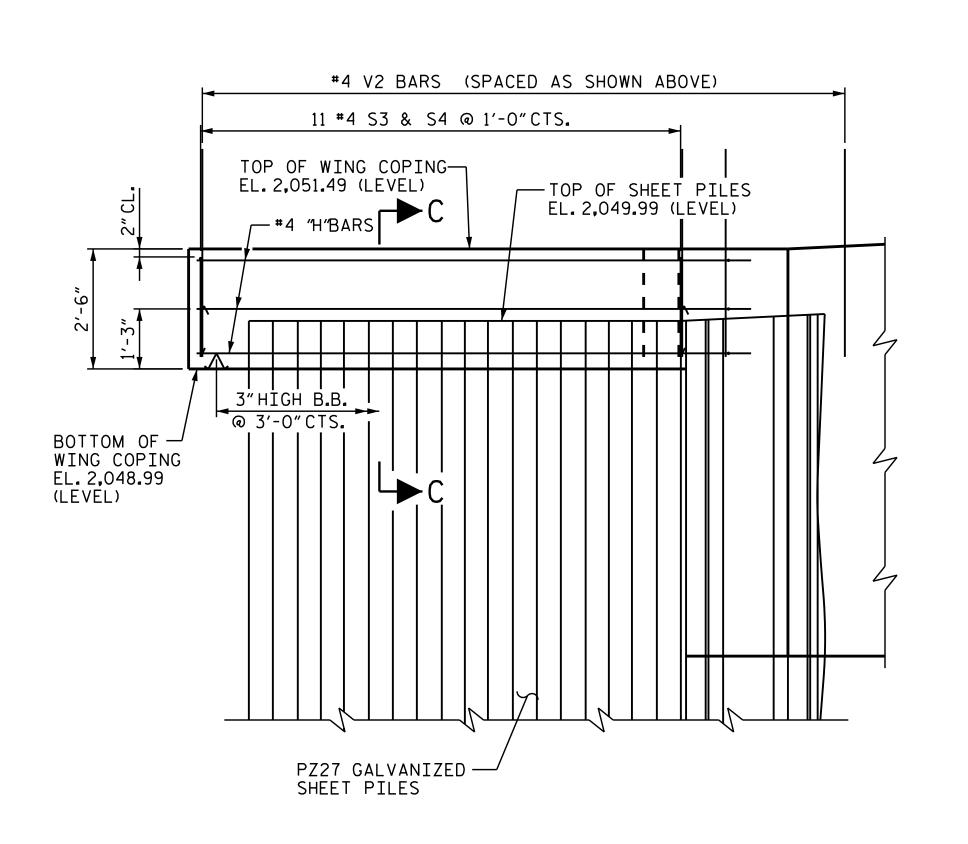


PLAN OF W2 COPING

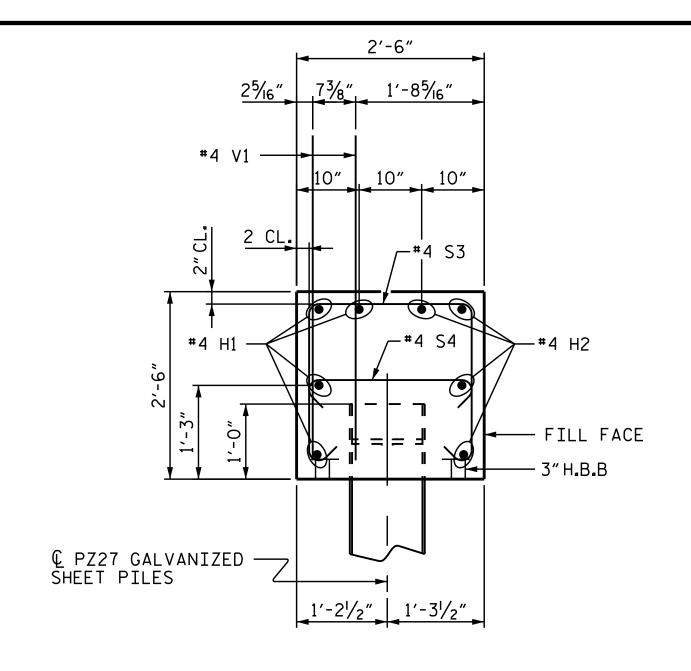


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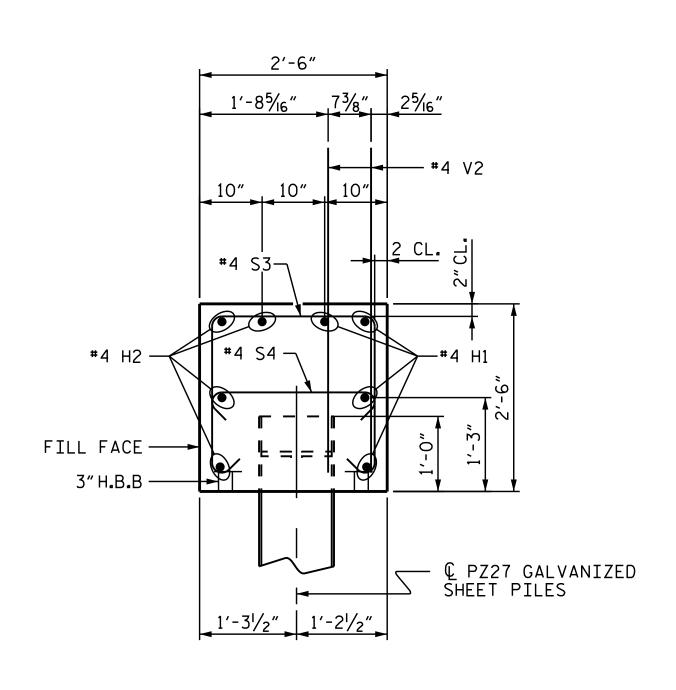




ELEVATION OF (W2) COPING



SECTION B-B

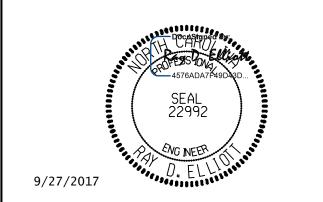


<u>SECTION C-C</u>

PROJECT NO. 14.B.205624.1

MACON COUNTY

STATION: 12+50.00-L
SHEET 3 OF 5



DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE

END BENT No.1 WING COPING DETAILS

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TGS ENGINEERS
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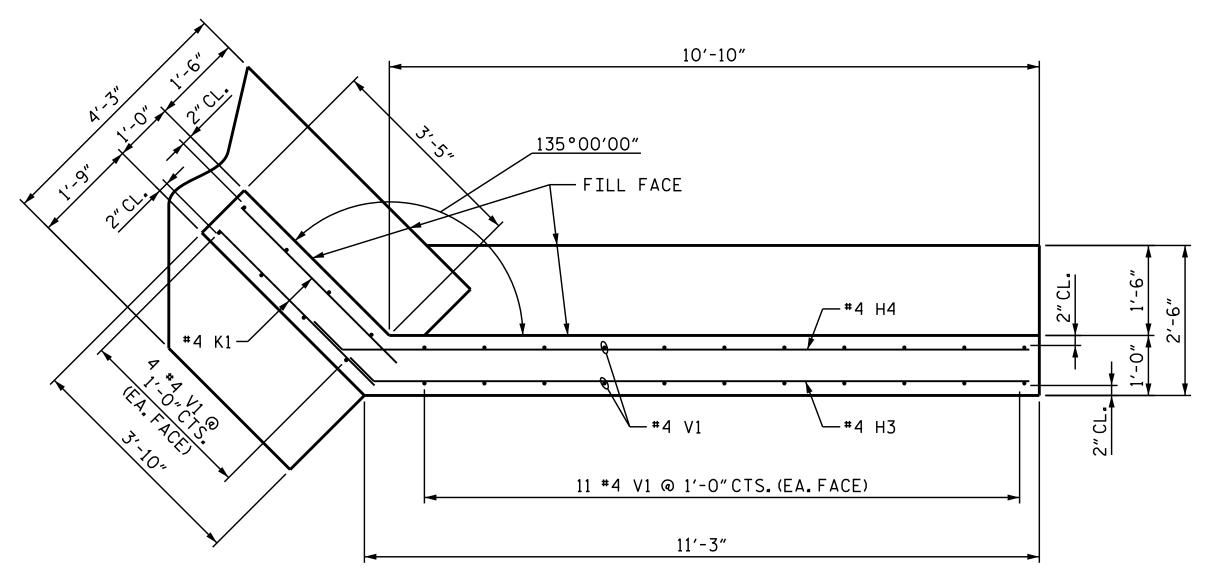
TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

TOTAL
SHEET NO.

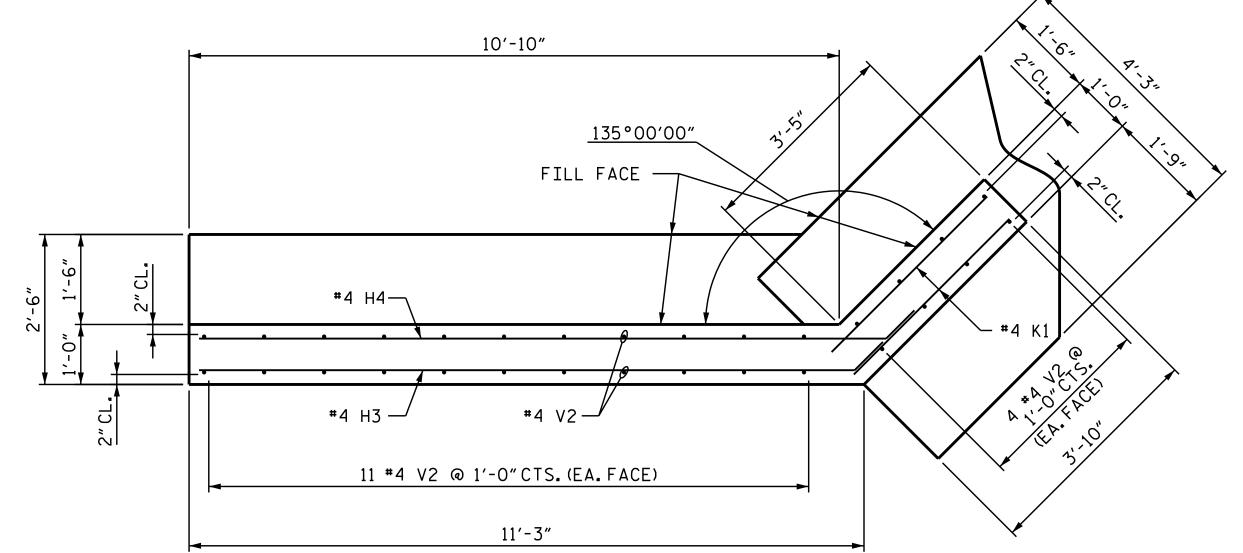
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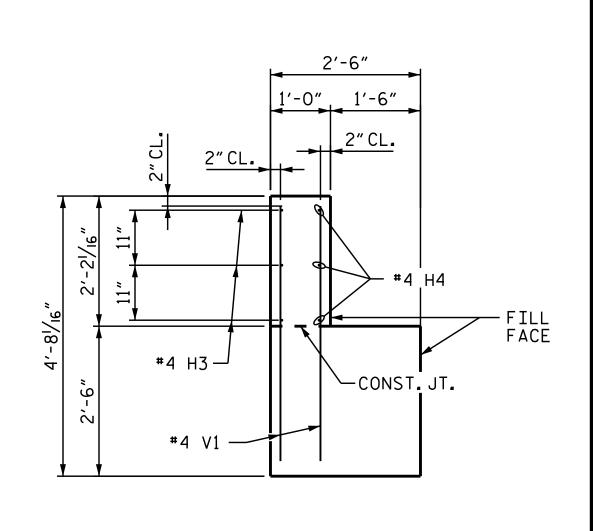
24

DRAWN BY :	JLA	DATE :	3/17
CHECKED BY :	RDF	DATF :	3/17



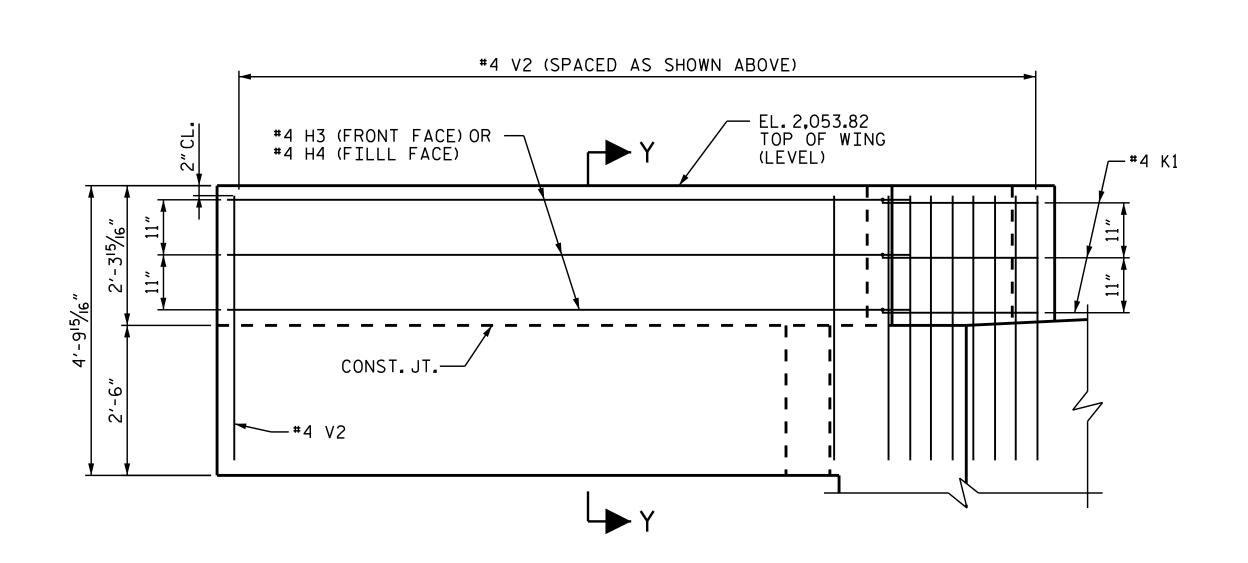
PLAN OF (W1)





SECTION X-X

#4 V1 (SPACED AS SHOWN ABOVE) #4 H3 (FRONT FACE) OR #4 H4 (FILLL FACE) #4 K1─ CONST.JT.— #4 V1 —



PLAN OF W2

SECTION Y-Y

PROJECT NO. 14.B.205624.1

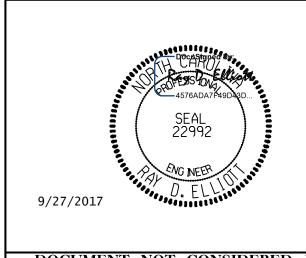
MACON __ COUNTY

12+50.00-L-STATION:__

SHEET 4 OF 5

ELEVATION OF (W1)

ELEVATION OF W2

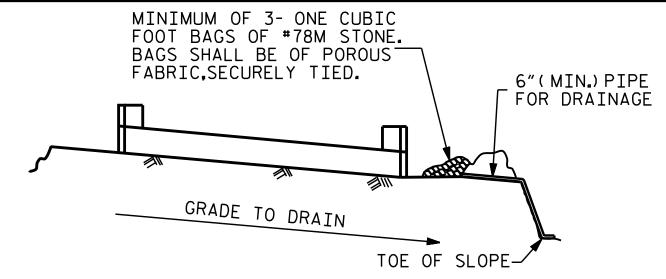


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RALEIGH SUBSTRUCTURE

END BENT No.1 WING DETAILS

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SS ALL SIGNATURES COMPLETED			REV:	ISION	S		SHEET NO.
TGS ENGINEERS 804–C N. LAFAYETTE ST	NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
SHELBY, NC 28150	1			3			TOTAL SHEETS
ORP. LICENSE NO.: C-0275	2			4			24

DATE: 3/17 DATE: 3/17 DRAWN BY : CHECKED BY :

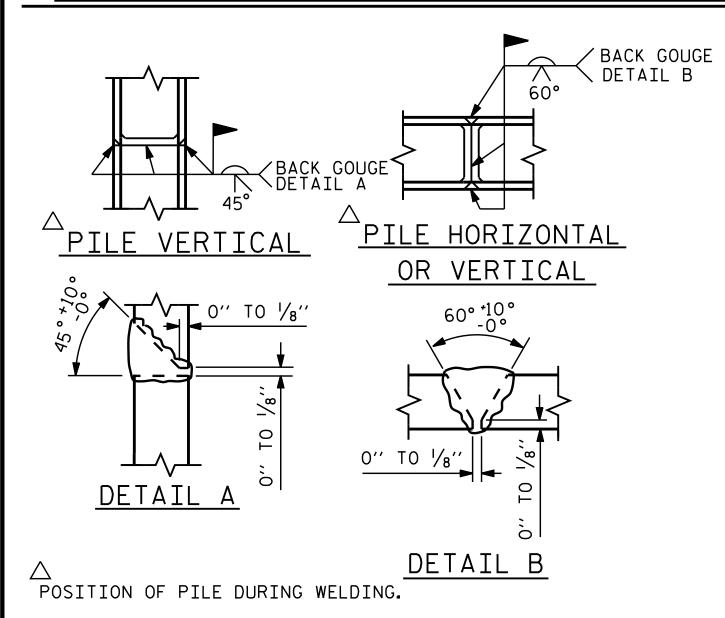


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

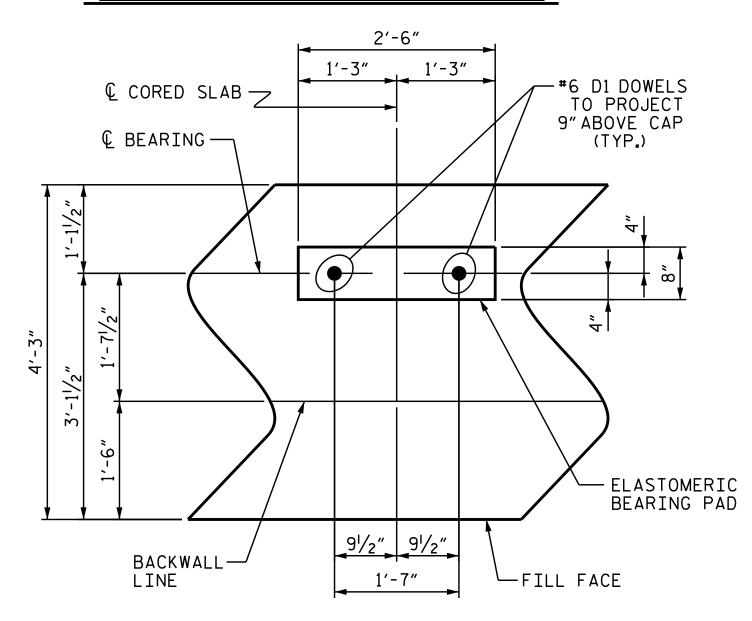
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETER-MINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

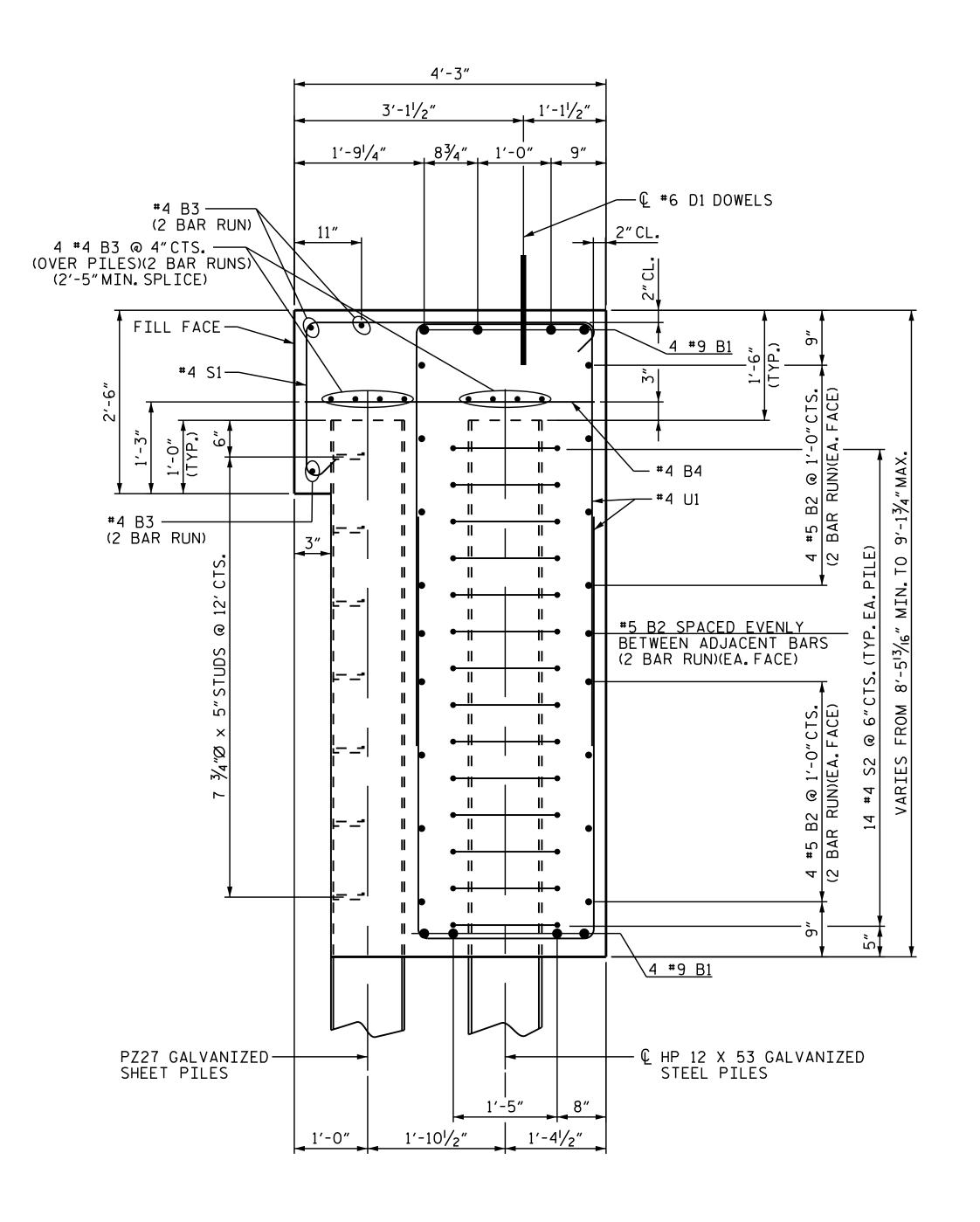


PILE SPLICE DETAILS

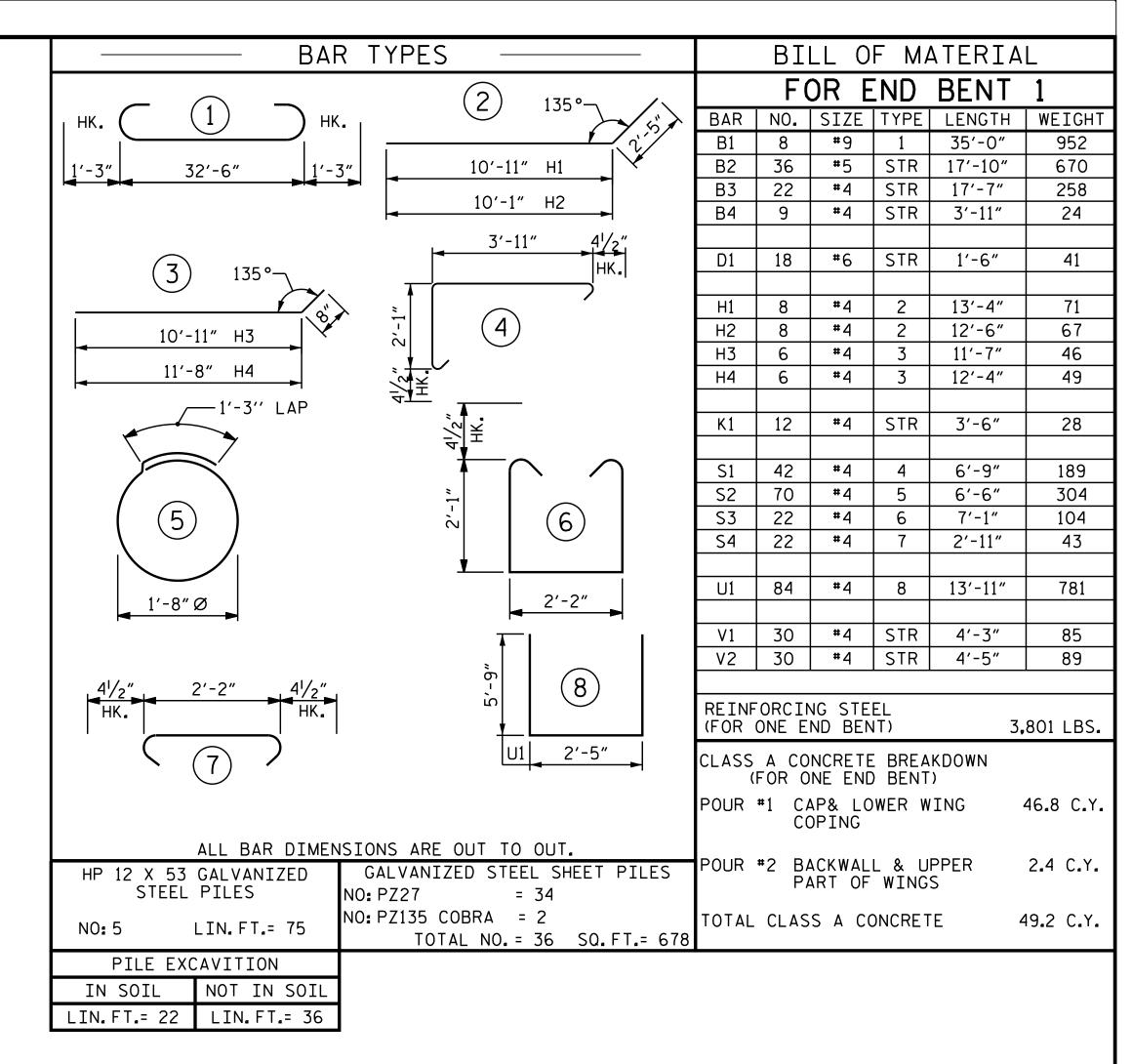


DETAIL "A"

DRAWN BY: JLA DATE: 3/17 CHECKED BY: RDE DATE: 3/17



SECTION A-A



PROJECT NO. 14.B.205624.1

MACON COUNTY

STATION: 12+50.00-L-

STATION: 12+50.00-L-

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

SUBSTRUCTURE

END BENT No.1 DETAILS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

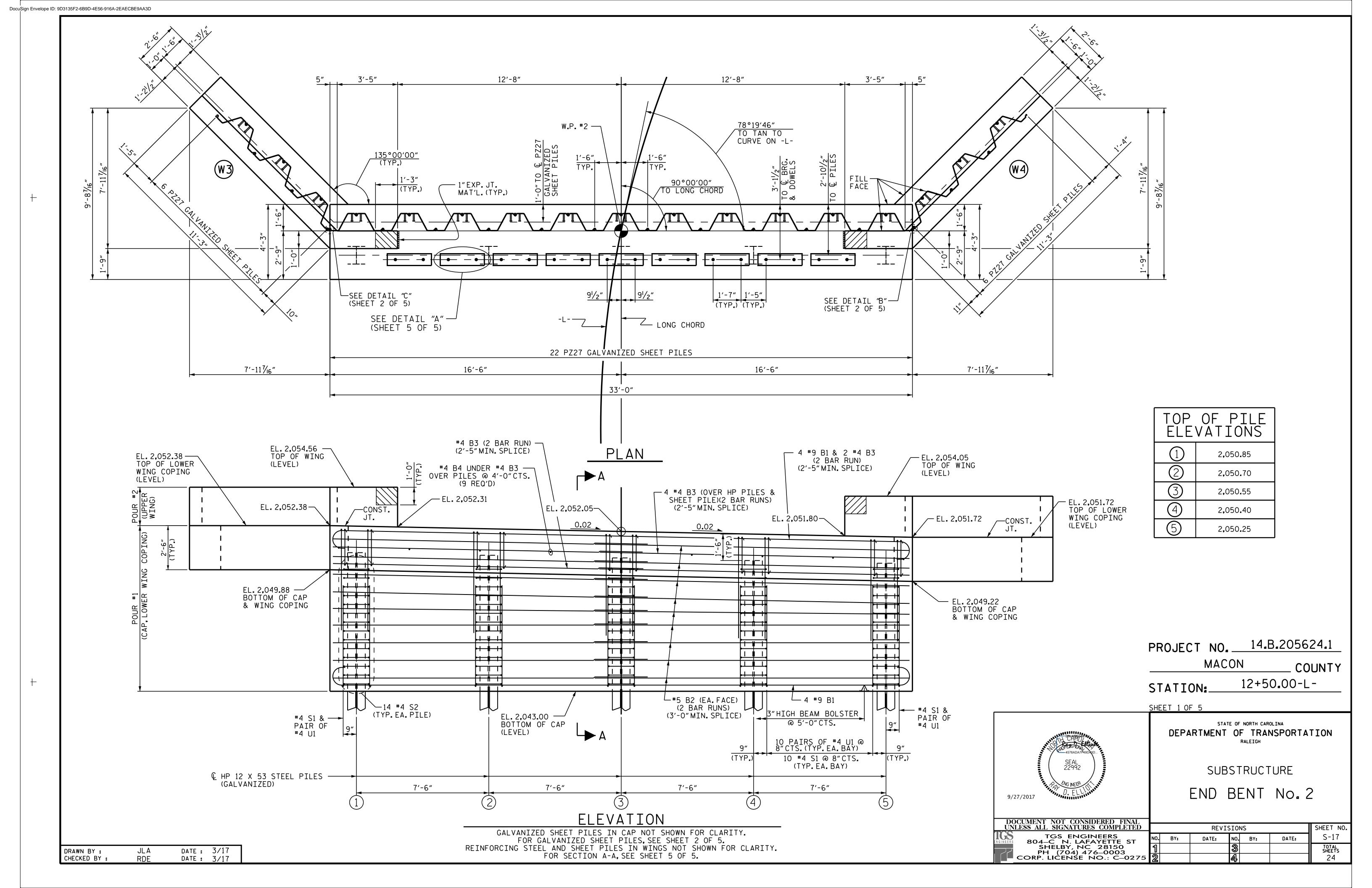
TGS ENGINEERS
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SHELBY, NC 28150
PH (704) 476-0003
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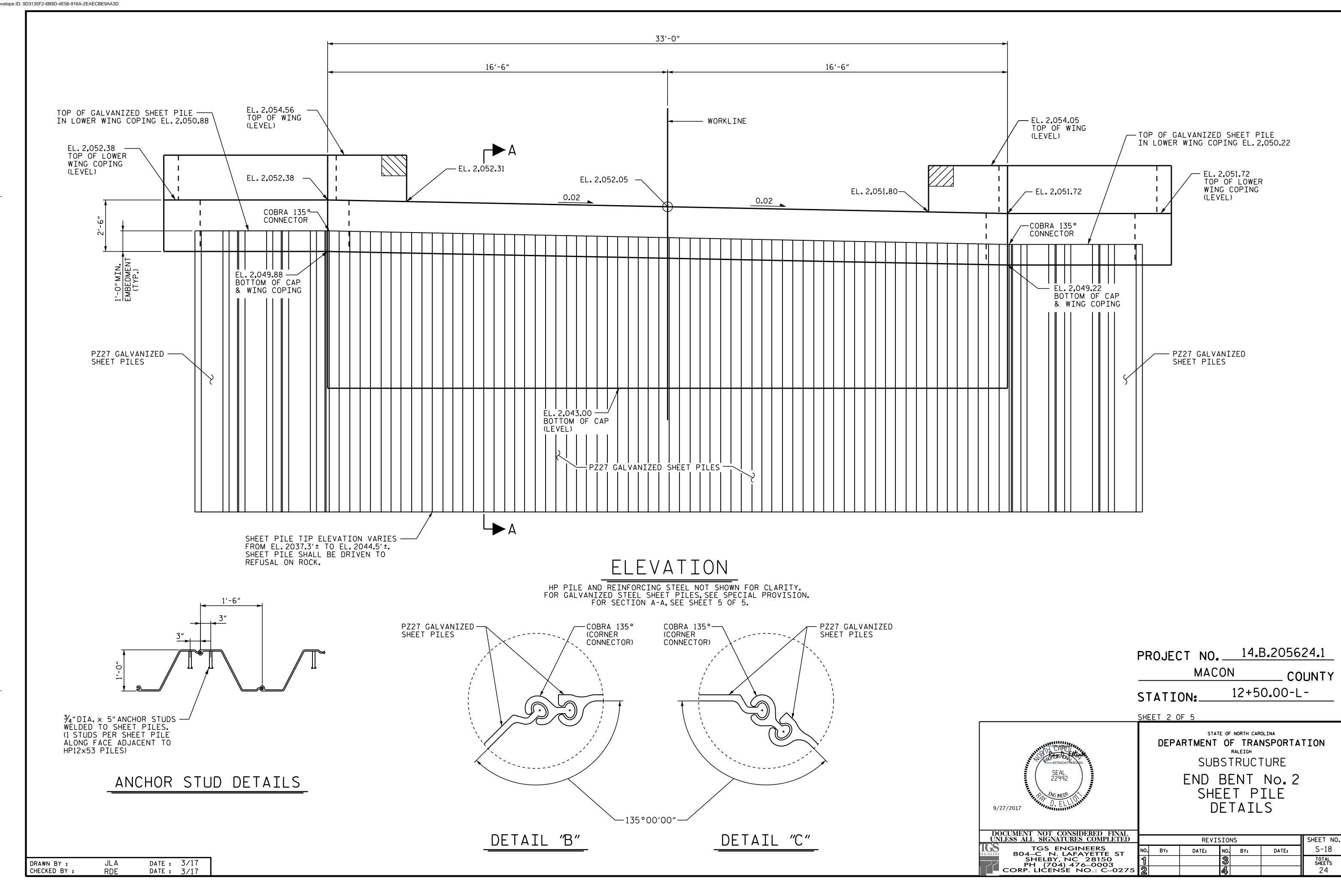
TREVISIONS

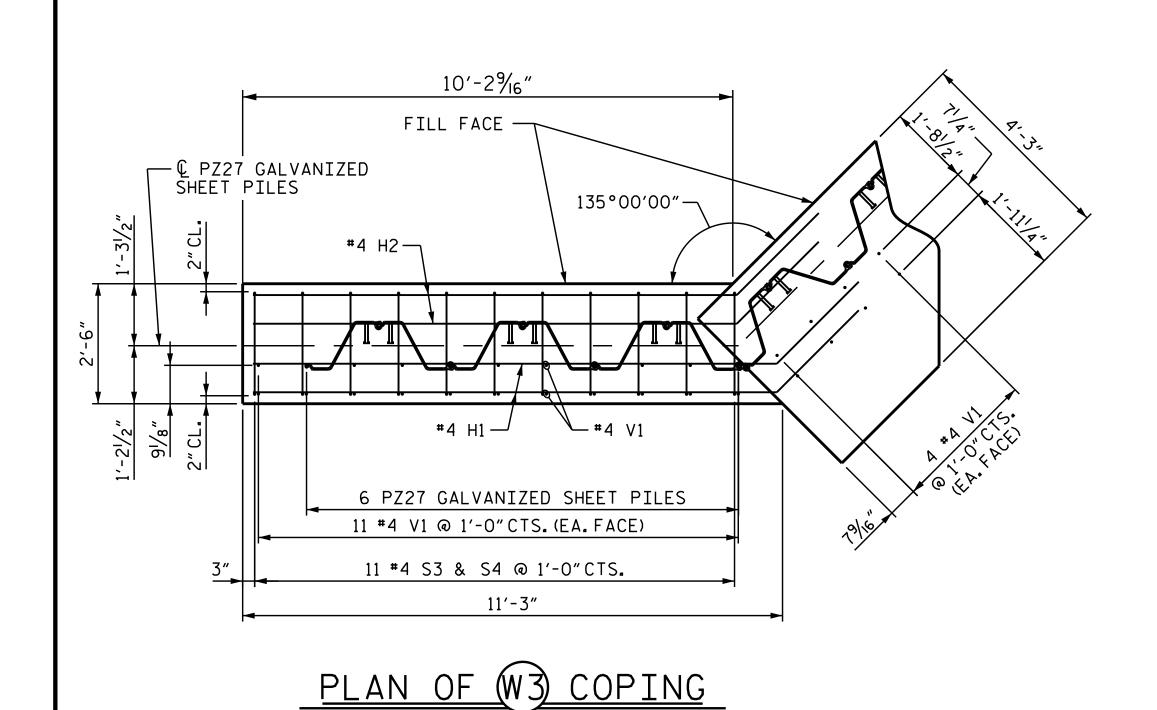
REVISIONS

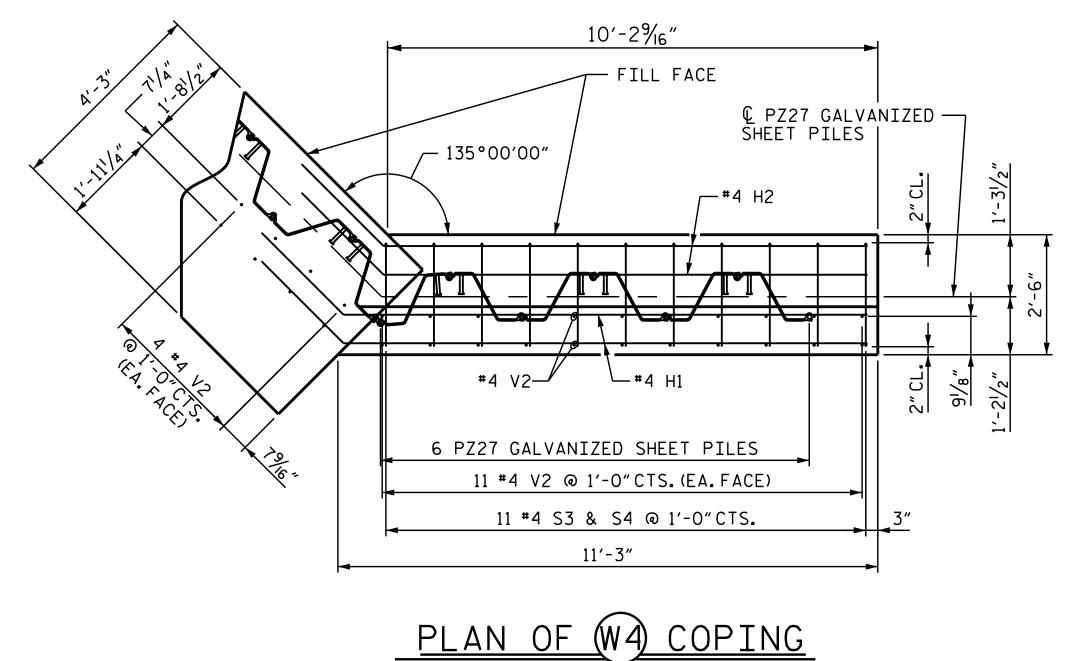
SHEET NO.
BY:
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DATE:
1074
SHEETS
24

SHEET 5 OF 5





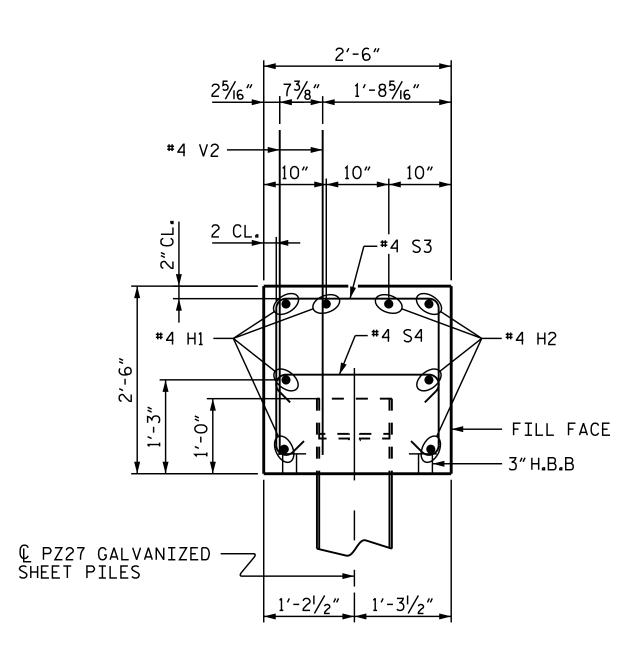




SECTION B-B

FILL FACE-

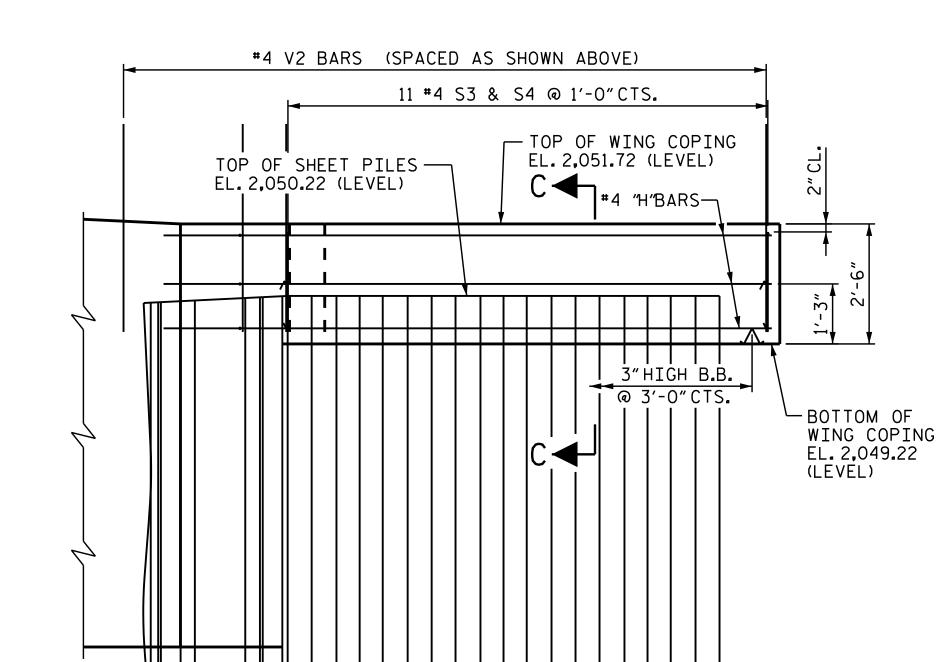
3" H.B.B -



1'-31/2" 1'-21/2"

1'-85/16" ___73/8", __25/16"

10" 10"



PZ27 GALVANIZED — SHEET PILES

SECTION C-C

SHEET 3 OF 5

PROJECT NO. 14.B.205624.1 MACON COUNTY 12+50.00-L-STATION:



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION SUBSTRUCTURE END BENT No. 2 WING COPING DETAILS

NO. BY:

DATE:

SHEET NO.

S-19

TOTAL SHEETS 24

DATE:

REVISIONS

BY:

TGS ENGINEERS
804–C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476–0003
CORP. LICENSE NO.: C–0275

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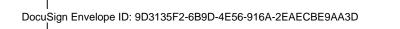
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

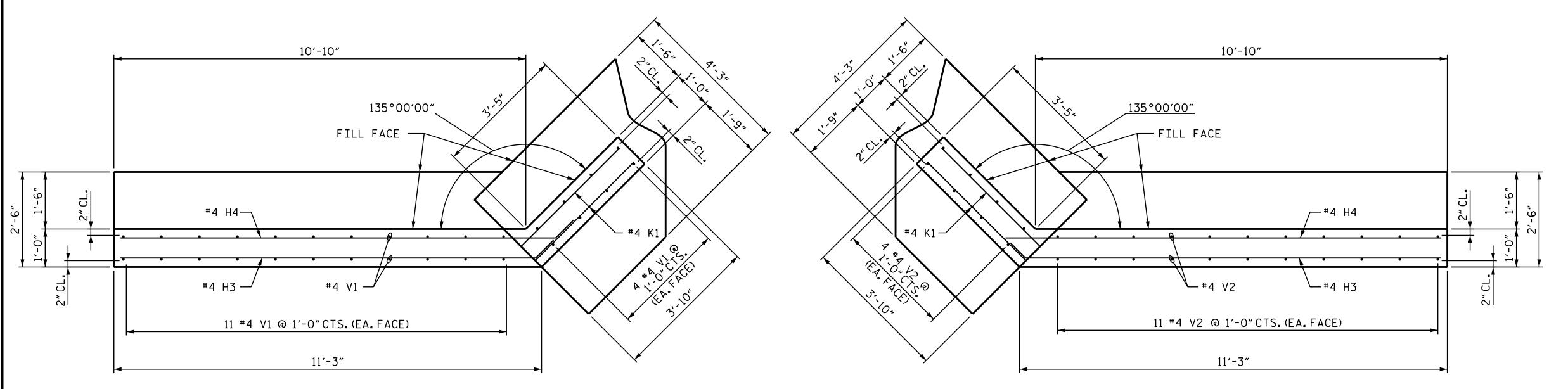
DATE: 3/17 DATE: 3/17 DRAWN BY : CHECKED BY :

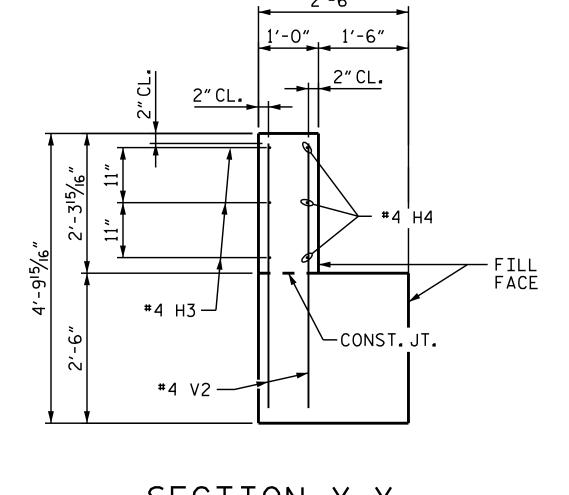
#4 V1 BARS (SPACED AS SHOWN ABOVE) 11 #4 S3 & S4 @ 1'-0"CTS. TOP OF WING COPING— EL. 2,052.38 (LEVEL) TOP OF SHEET PILES EL. 2,050.88 (LEVEL) T#4 "H"BARS B 3" HIGH B.B. @ 3'-0" CTS. BOTTOM OF — WING COPING EL. 2,049.88 (LEVEL) PZ27 GALVANIZED —/ SHEET PILES

<u>ELEVATION OF (W3) COPING</u>

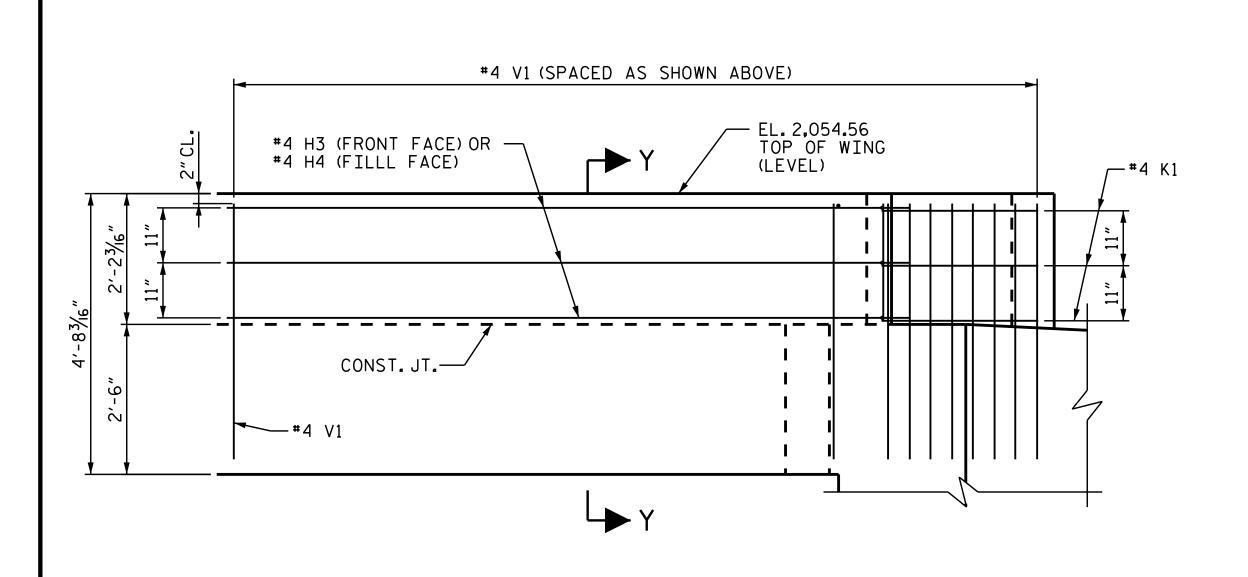
ELEVATION OF (W4) COPING

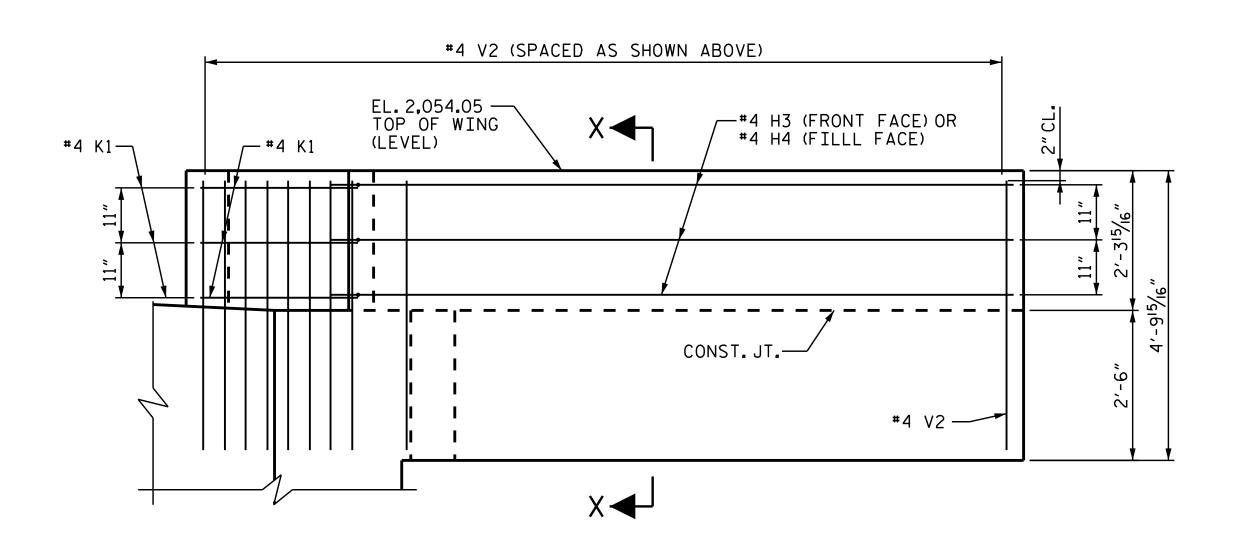




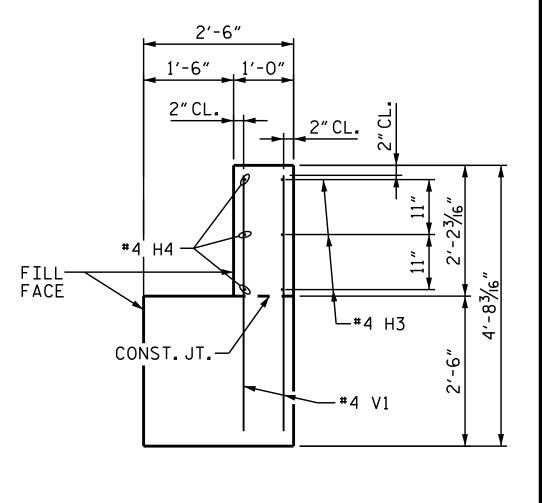


SECTION X-X





PLAN OF W4



SECTION Y-Y

PROJECT NO. 14.B.205624.1 MACON __ COUNTY

12+50.00-L-STATION:__

SHEET 4 OF 5

ELEVATION OF (W4)



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
RALEIGH SUBSTRUCTURE

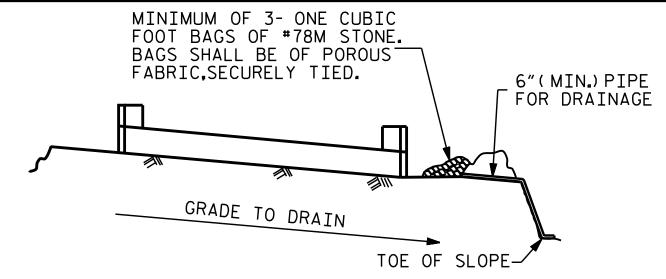
END BENT No.2 WING DETAILS

CUMENT NOT CONSIDERED FINAL ESS ALL SIGNATURES COMPLETED			REV	ISION	S		SHEET NO.
TGS ENGINEERS 804–C N. LAFAYETTE ST	NO.	BY:	DATE:	NO.	BY:	DATE:	S-20
SHELBY NC 28150	1			3			TOTAL SHEETS
PH (704) 476–0003 CORP. LICENSE NO.: C–0275	2			4			24

ELEVATION OF (W3)

PLAN OF (W3)

DATE: 3/17 DATE: 3/17 DRAWN BY : CHECKED BY :

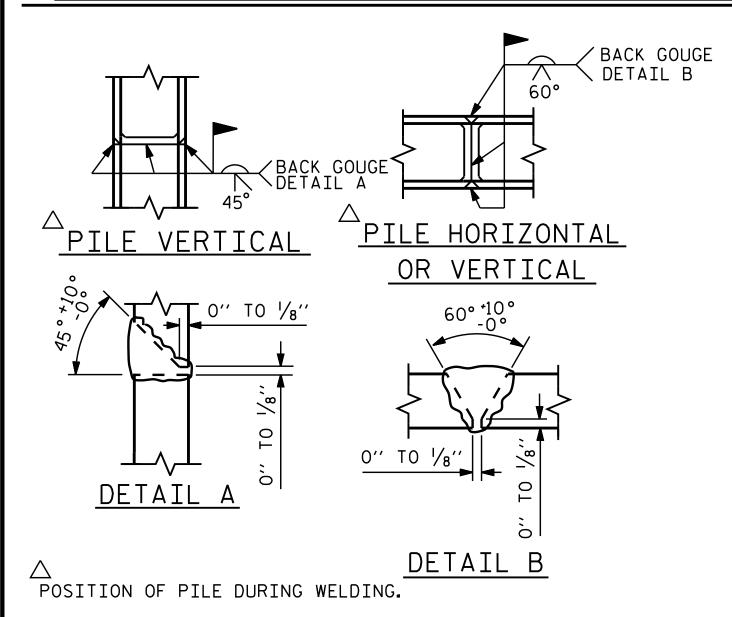


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL. CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

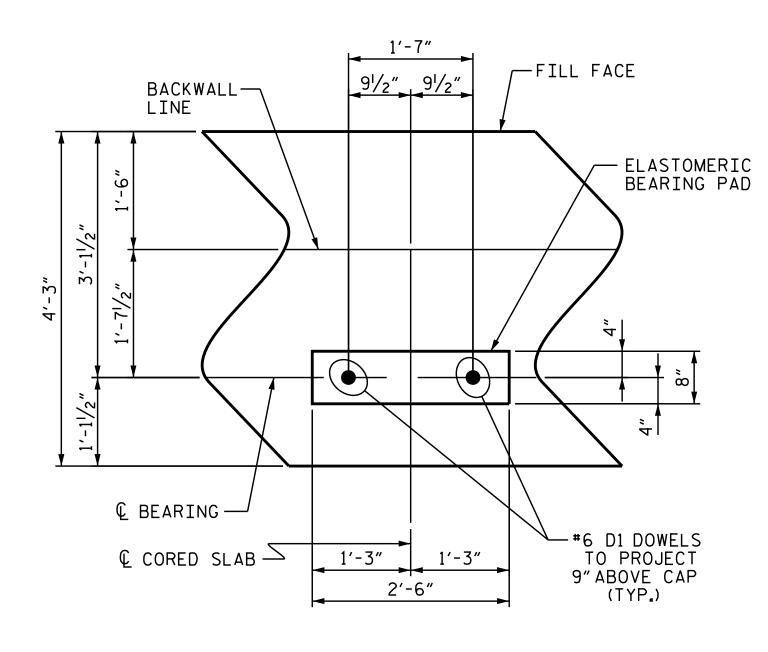
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETER-MINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

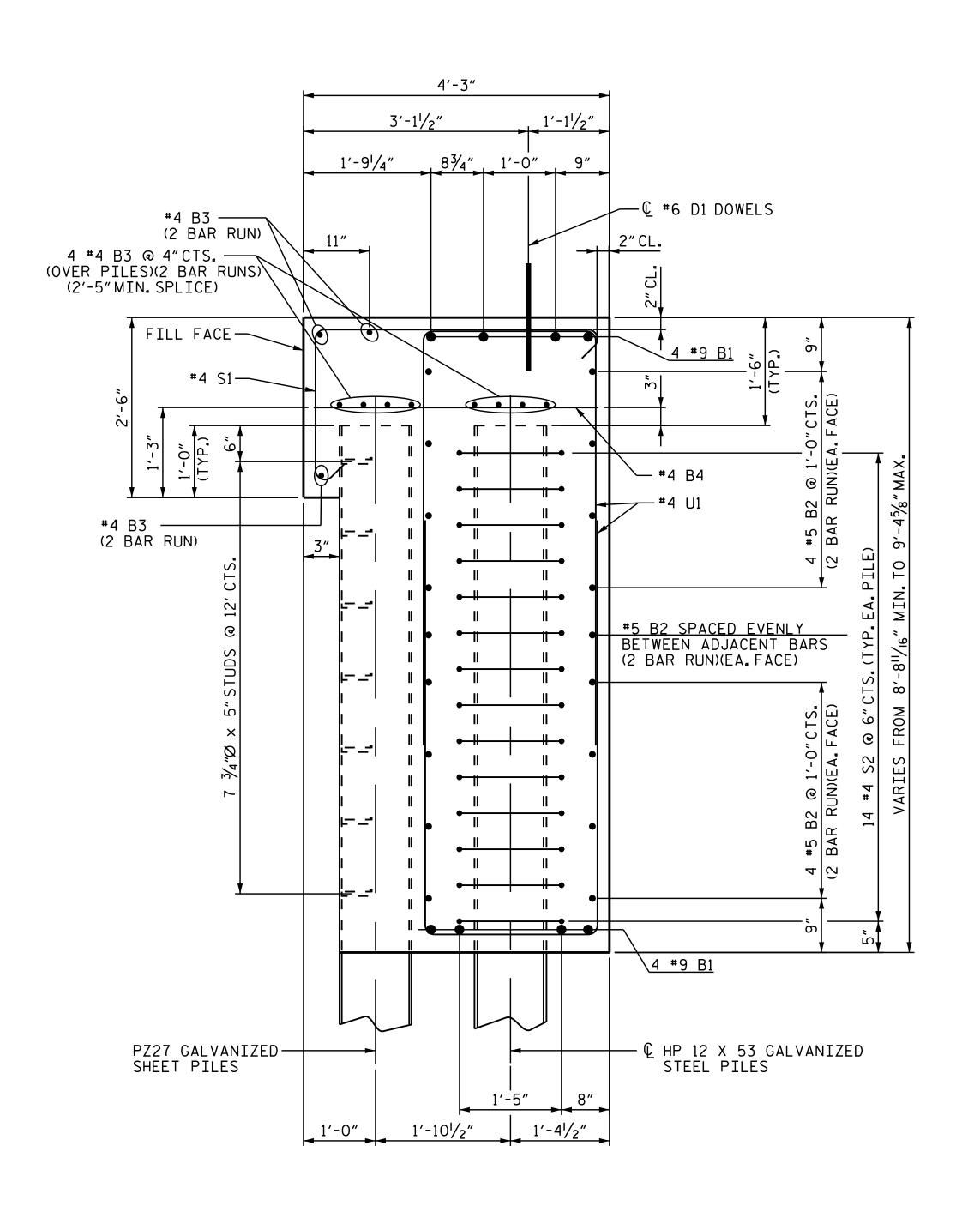


PILE SPLICE DETAILS

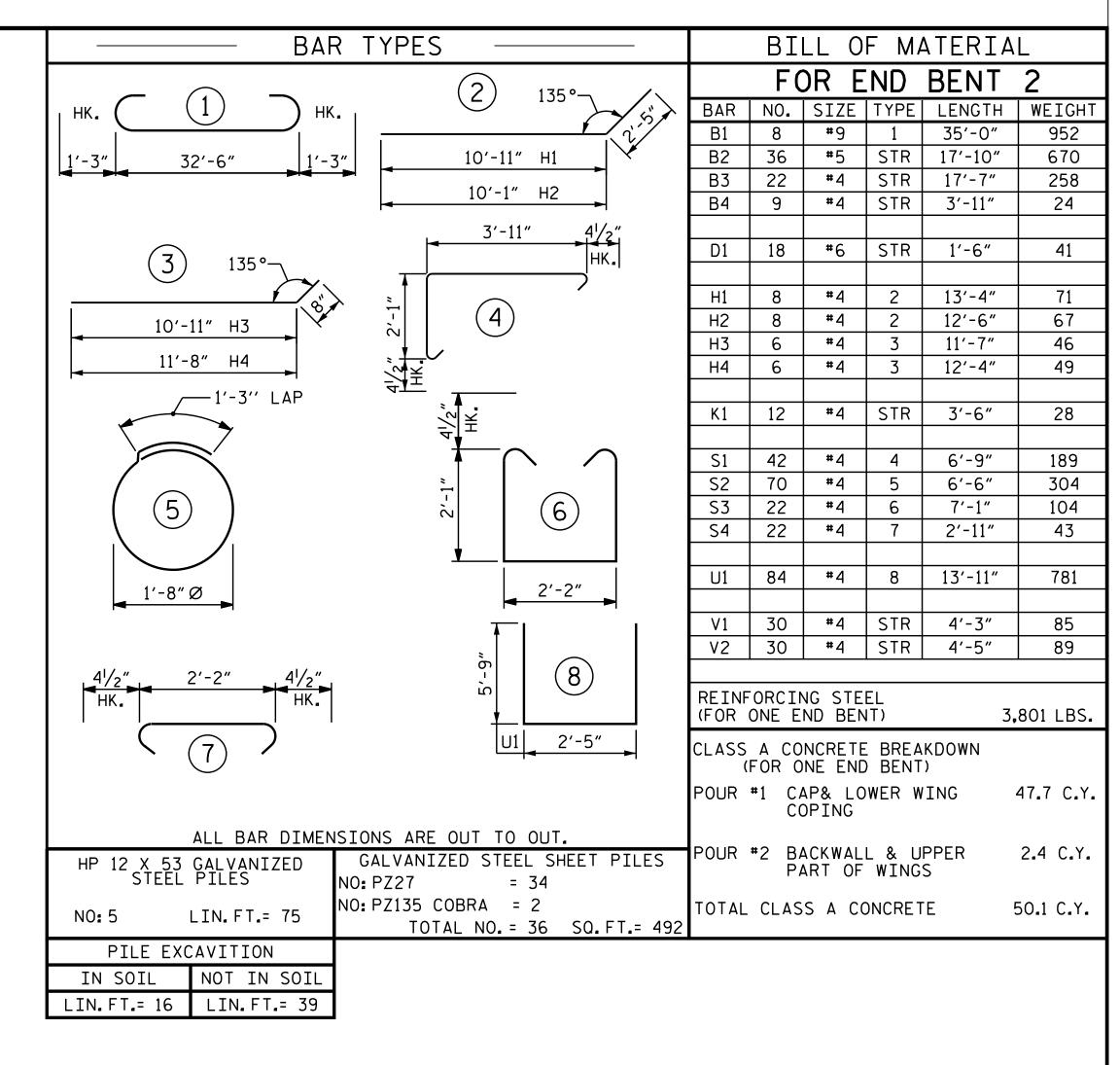


DETAIL "A"

DATE : 3/17 DRAWN BY : CHECKED BY : DATE: 3/17



SECTION A-A



PROJECT NO. 14.B.205624.1 MACON _ COUNTY

12+50.00-L-STATION:

9/27/2017

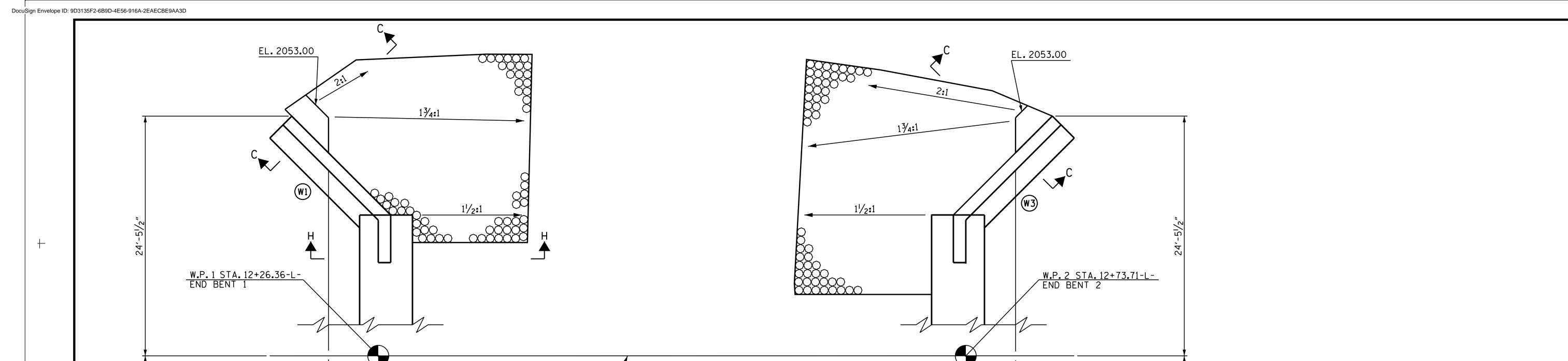
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

SUBSTRUCTURE

END BENT No. 2 DETAILS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED SHEET NO. REVISIONS TGS ENGINEERS 804–C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476–0003 CORP. LICENSE NO.: C–0275 S-21 NO. BY: DATE: DATE: BY: TOTAL SHEETS 24

SHEET 5 OF 5



LONG CHORD -

PLAN OF RIP RAP

-GROUND LINE

/////\\\

* ALL RIP RAP SHALL BE CLASS II

BERM RIP RAPPED

1 1 1

1 1 1 1 1 1

13/4:1

GROUND LINE

FRONT SLOPE —— LINE

EL. 2053.00

EL. 2053.00

L1 L1

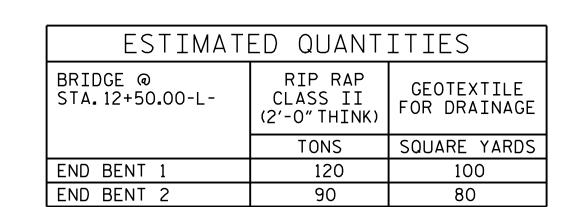
SECTION H-H

DATE: 3/17 DATE: 3/17 SLOPE 11/2:1

GROUND LINE

GEOTEXTILE-

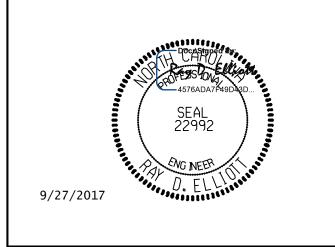
DRAWN BY : CHECKED BY :



PROJECT NO. 14.B.205624.1

MACON COUNTY

STATION: 12+50.00-L-



GROUND LINE

— FRONT SLOPE LINE

EL. 2053.00

SLOPE 2:1

SECTION C-C

EL. 2053.00

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

RIP RAP DETAILS

SHEET NO.

S-22

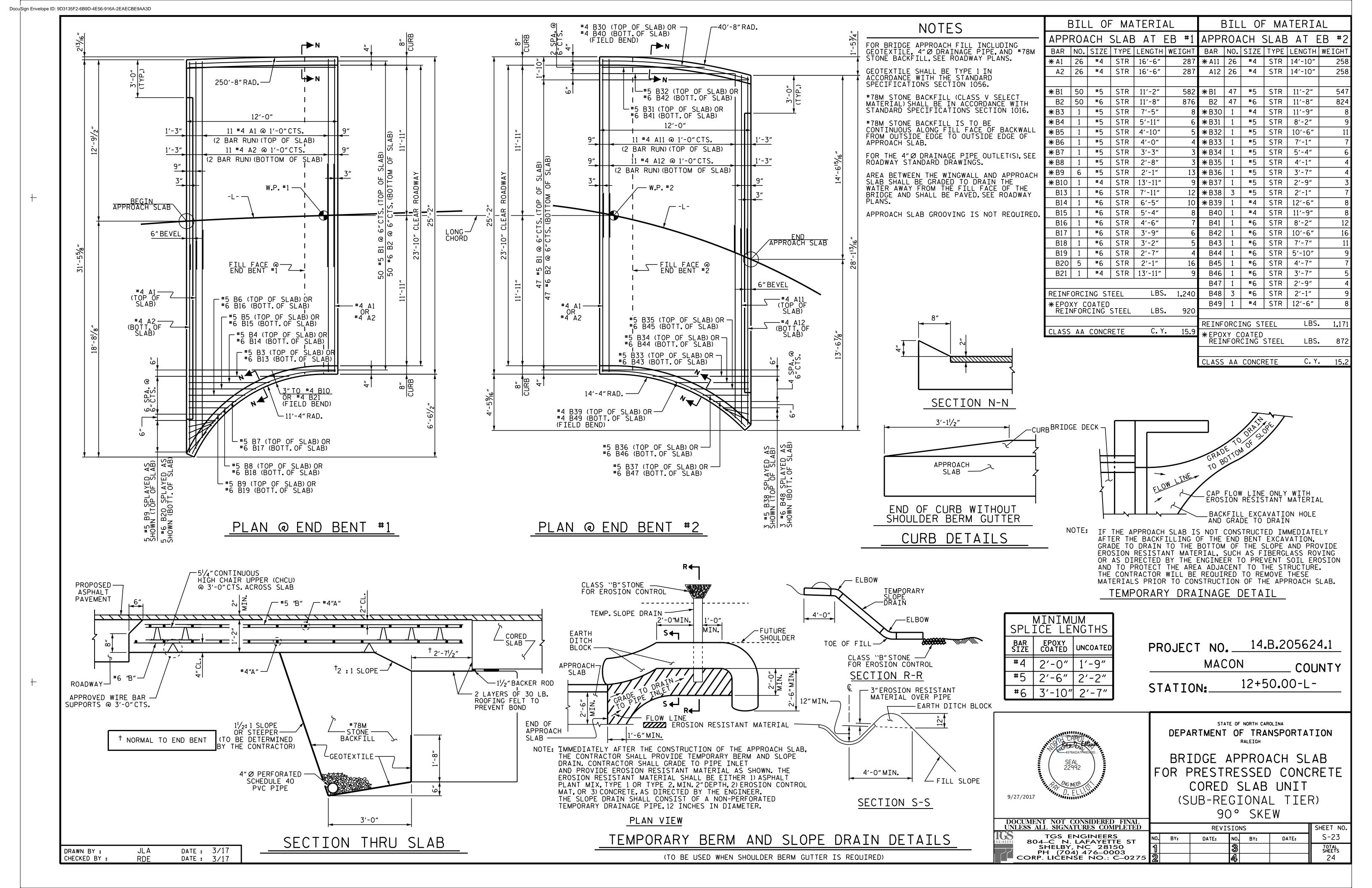
TOTAL SHEETS 24

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

REVISIONS

NO. BY: DATE: NO. BY: DATE



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 - 20,000 LBS. PER SQ. IN. STRUCTURAL STEEL - AASHTO M270 GRADE 36 - AASHTO M270 GRADE 50W - 27,000 LBS.PER SQ.IN. - AASHTO M270 GRADE 50 - 27,000 LBS.PER SQ.IN. REINFORCING STEEL IN TENSION - - 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 375 LBS. PER SQ. IN. OF TIMBER ----

MATERIAL AND WORKMANSHIP:

EQUIVALENT FLUID PRESSURE OF EARTH

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.

30 LBS.PER CU.FT.

(MINIMUM)

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. FINS 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.

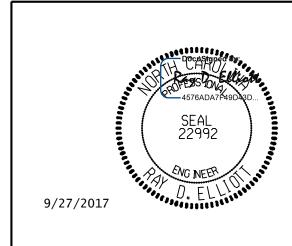
SPECIAL NOTES:

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.

PROJECT NO. 14.B.205624.1

MACON COUNTY

STATION: 12+50.00-L-



DEPARTMENT OF TRANSPORTATION RALEIGH

STANDARD NOTES

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
804-C N. LAFAYETTE ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

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

ASSEMBLED BY: JLA DATE: 3/17
CHECKED BY: RDE DATE: 3/17

REV. 6-16-95 EEM (/) RGW REV. 5-7-03 RWW (/) JTE REV. 8-16-99 RWW (/) LES REV. 10-1-11 MAA (/) GM