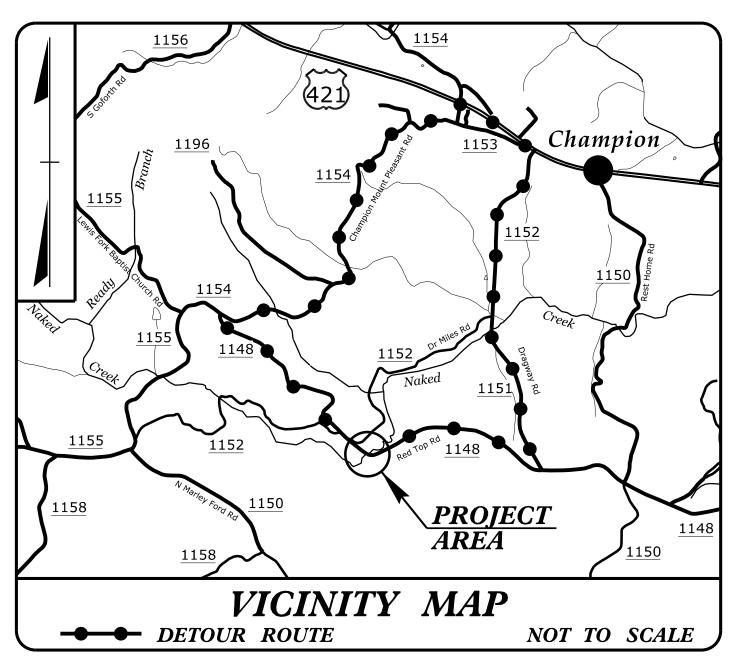
PROJECT: 17BP.11.R.153

T. C204550

VTRACT: (

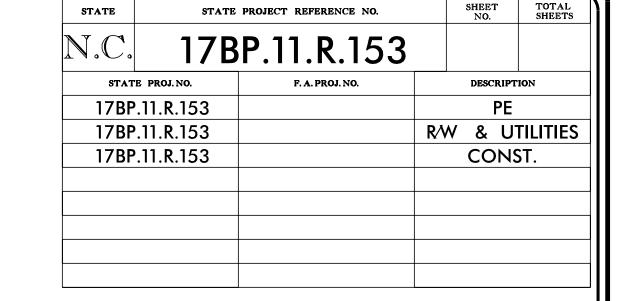


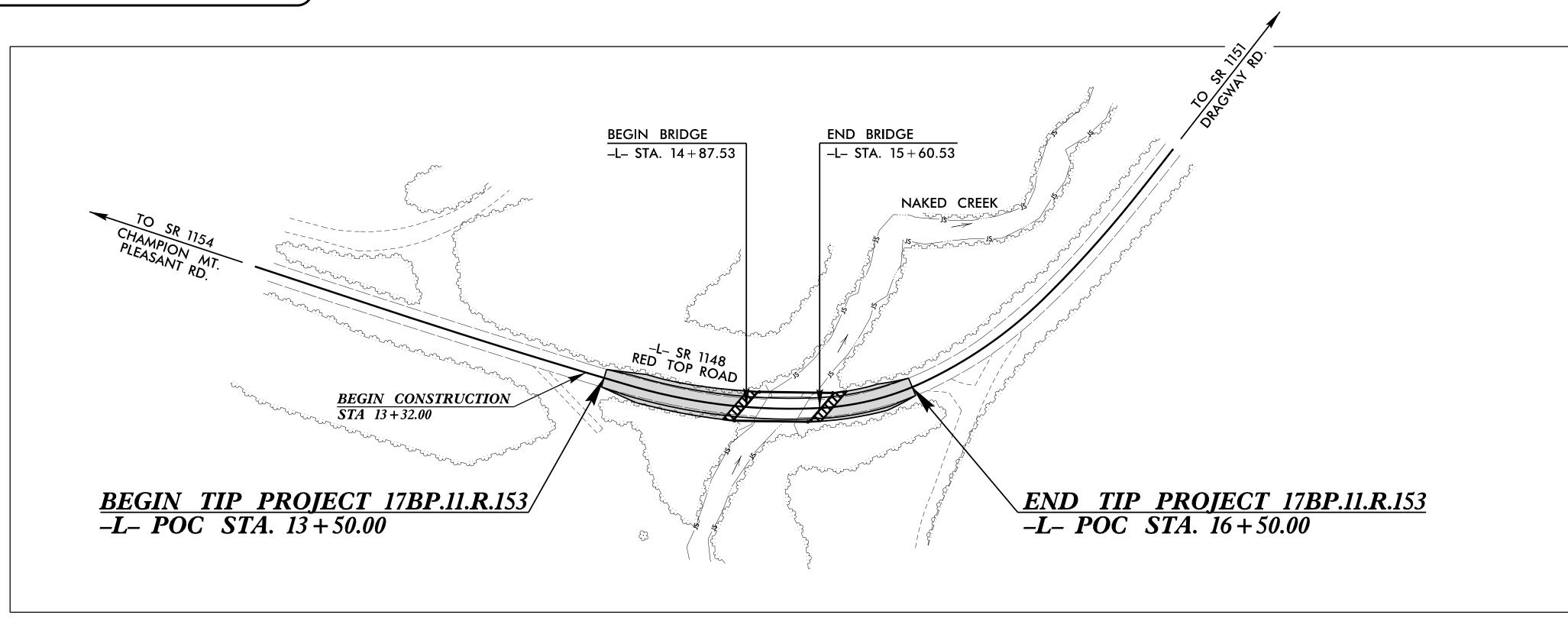
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

# WILKES COUNTY

LOCATION: REPLACE BRIDGE NO. 419 ON SR 1148 (RED TOP ROAD) OVER NAKED CREEK

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

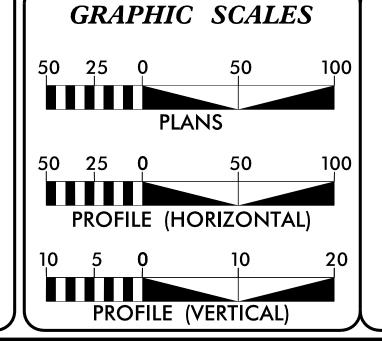




# **STRUCTURES**

DESIGN EXCEPTION FOR DESIGN SPEED OF 25 MPH AND HORIZONTAL STOPPING SIGHT DISTANCE FOR 20 MPH.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



# DESIGN DATAof 2020 = 50

ADT 2020 = 50 ADT 2045 = 100

V = 25 MPH

FUNC CLASS =
LOCAL
SUBREGIONAL TIER

### PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.11.R.153 = 0.043 MILES LENGTH STRUCTURE PROJECT 17BP.11.R.153 = 0.014 MILES

TOTAL LENGTH PROJECT 17BP.11.R.153 = 0.057 MILES

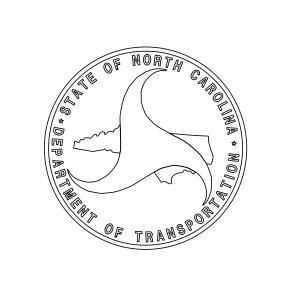
ms consultants, inc.
5444 Wade Park Blvd.
Suite 160
Raleigh, NC 27607
NC License Number: C-3239

DIVISION OF HIGHWAYS
1000 BIRCH RIDGE DRIVE
RALEIGH, NC 27610

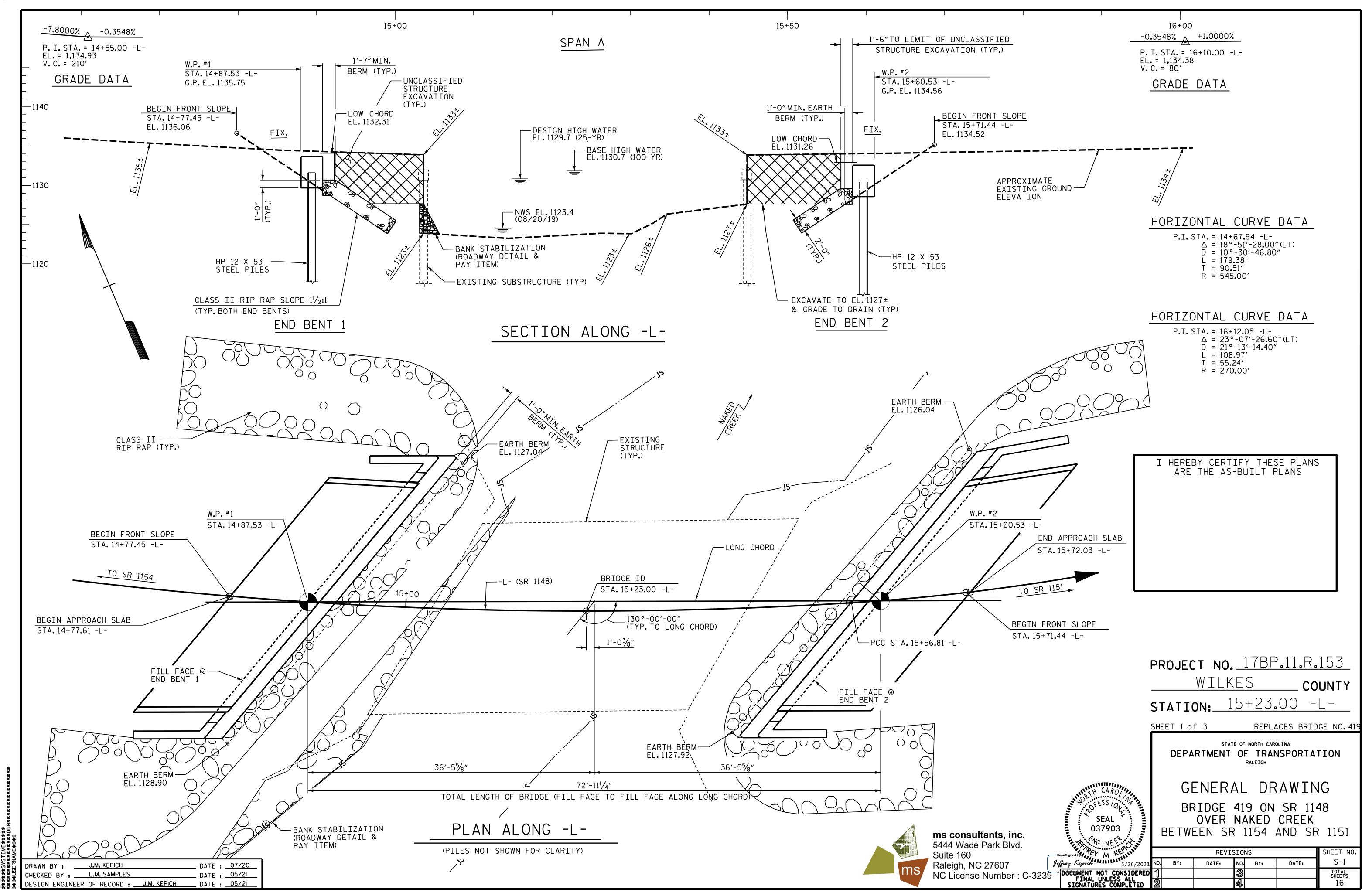
LETTING DATE:
JULY 20, 2021

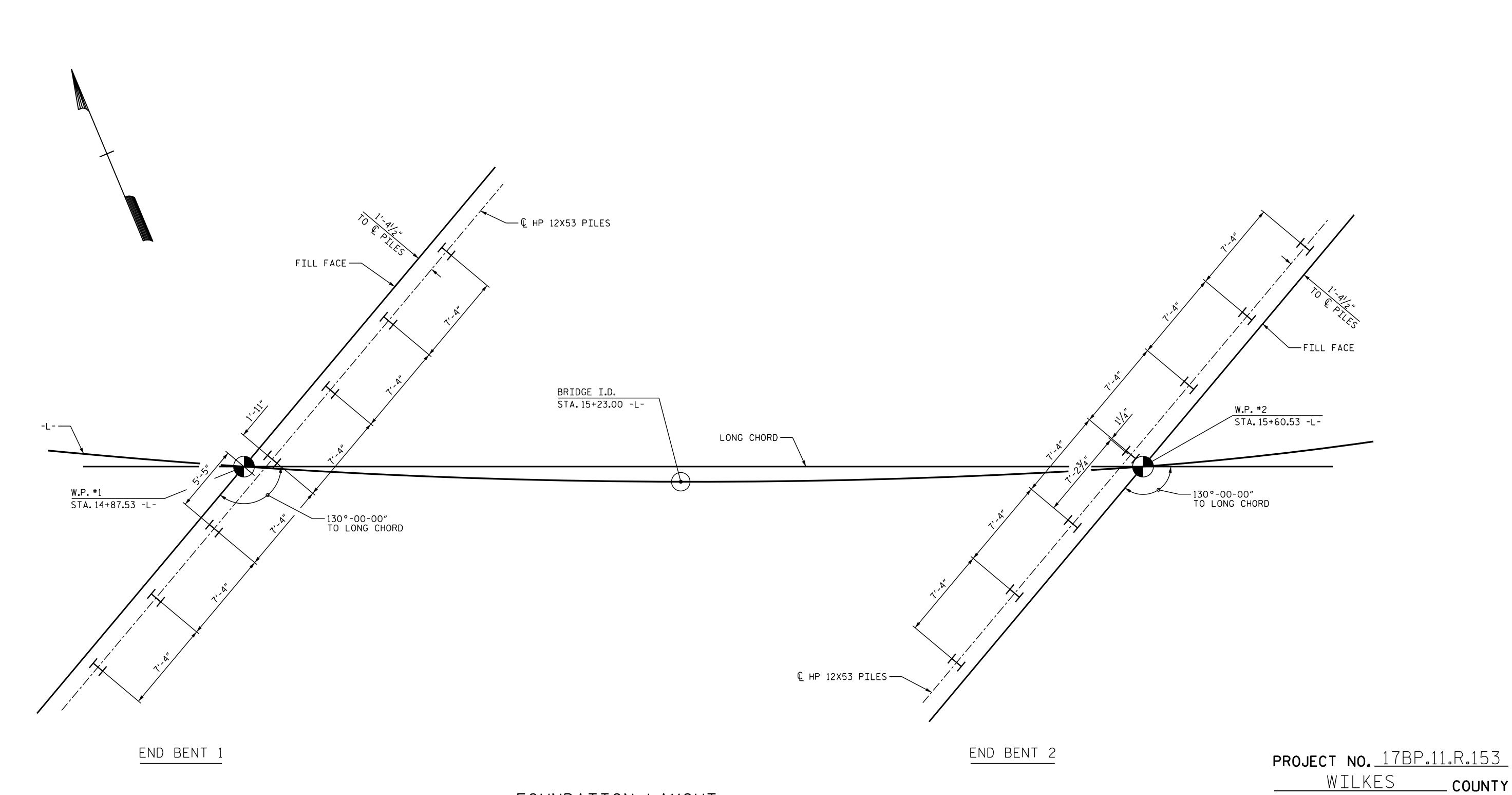
Plans Prepared By:

Plans Prepared For:



+





FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE

## <u>NOTES</u>

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS. PILES AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 80 TONS PER PILE. DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 133 TONS PER PILE. PILES AT END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 80 TONS PER PILE. DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 133 TONS PER PILE.

\_\_\_ DATE : <u>08/19</u> \_\_\_ DATE : <u>05/21</u> J.M. KEPICH L.M. SAMPLES 

ms consultants, inc. 5444 Wade Park Blvd. Suite 160

Suite 160
Raleigh, NC 27607
NC License Number: C-3239

Seffrey, Kepich 5/26/2021

Seffrey Kepich 5/26/2021

FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

STATION: 15+23.00 -L-

SHEET 2 of 3

FOUNDATION LAYOUT

BRIDGE 419 ON SR 1148 OVER NAKED CREEK BETWEEN SR 1154 & SR 1151

		SHEET NO.				
•	BY:	DATE:	NO.	IO. BY: DATE:		S-2
			3			TOTAL SHEETS
			4			16

### BM. #1 - BENCH TIE SET IN 18" WALNUT TREE, 139.00' RT. OF -L- STA. 14+83.00 EL. 1130.12 L' 7. WOODS CLASS I RIP RAP WOODS (ROADWAY DETAIL AND PAY ITEM) (TYP.) -- PROPOSED GUARDRAIL (ROADWAY DETAIL AND PAY ITEM) (TYP.) **PROPOSED** STRUCTURE -EXISTING STRUCTURE ·-----BRIDGE ID STA. 15+23.00 130°-00′-00′ CLASS II — RIP RAP PCC STA. 15+56.81 -L-(TYP.) WOODS WOODS UNCLASSIFIED-BANK STABILIZATION STRUCTURE (ROADWAY DETAIL & EXCAVATION PAY ITEM) (TYP.) FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS. 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.

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 15+23.00 -L-."

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 18 FT LEFT AND 37 FT RIGHT OF CENTERLINE ROADWAY AT END BENT NO.1 AND A DISTANCE OF 22 FT LEFT AND RIGHT OF CENTERLINE ROADWAY AT END BENT NO.2 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.

> ms consultants, inc. 5444 Wade Park Blvd.

Raleigh, NC 27607

Suite 160

THE EXISTING STRUCTURE CONSISTING OF A 41'-2" SINGLE SPAN WITH A CLEAR ROADWAY WIDTH OF 24'-1" AND TIMBER DECK WITH ASPHALT SUPPORTED BY STEEL GIRDERS ON TIMBER CAPS AND PILES LOCATED AT THE PROPOSED STRUCTURE SITE 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.

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 SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION 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.

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

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

FOR FIBER OPTIC CONDUIT SYSTEM, SEE SPECIAL PROVISIONS.

PROJECT NO. 178P.11.R.153 WILKES COUNTY STATION: 15+23.00 -L-

SHEET 3 of 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GENERAL DRAWING

BRIDGE 419 ON SR 1148 OVER NAKED CREEK BETWEEN SR 1154 AND SR 1151

SHEET NO. REVISIONS NO. BY: S-3 NO. BY: DATE: DATE: NC License Number: C-3239 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

### HYDRAULIC DATA

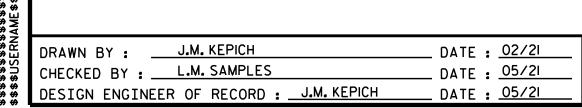
= 1,100 C.F.S = 25 YRS.

DESIGN DISCHARGE FREQUENCY OF DESIGN DISCHARGE DESIGN HIGH WATER ELEVATION DRAINAGE AREA

= 3.2 SQ. MI. BASE DISCHARGE (Q100) = 1,500 C.F.S. BASE HIGH WATER ELEVATION = 1130.70

### OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 8.640 C.F.S. FREQUENCY OF OVERTOPPING FLOOD = 500+ YRS. OVERTOPPING FLOOD ELEVATION = 1135**.**00 SAG LOCATION AT STA. 16+00.00 -L-, EDGE OF PAVEMENT RT.



34.346

34.346

0.685

0.685

1.55

1.47

70′

61.824

61.824

ER

0.80

0.229

1.57

70′

### LOAD FACTORS:

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

#### NOTES:

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

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

#### COMMENTS:

(#) 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. 178P.11.R.153

WILKES

STATION: 15+23.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

COUNTY

LRFR SUMMARY FOR 70'CORED SLAB UNIT 130° SKEW

(NON-INTERSTATE TRAFFIC)

	SHEET NO.				
BY:	DATE:	NO.	NO. BY: DATE:		S-4
		3			TOTAL SHEETS
		4			16

68′-85⁄<sub>16</sub>" (BRG TO BRG)

0.229

0.229

1.34

70′

70′

ER

LRFR SUMMARY

FOR SPAN 'A'

J.M. KEPICH DATE : 02/21 CHECKED BY : L.M. SAMPLES DATE : 05/21 \_ DATE : 05/21

45.000

45.000

1.34

60.22

1.4

TNAGT5A

TNAGT5B

ms consultants, inc. 5444 Wade Park Blvd. Raleigh, NC 27607

NC License Number: C-3239

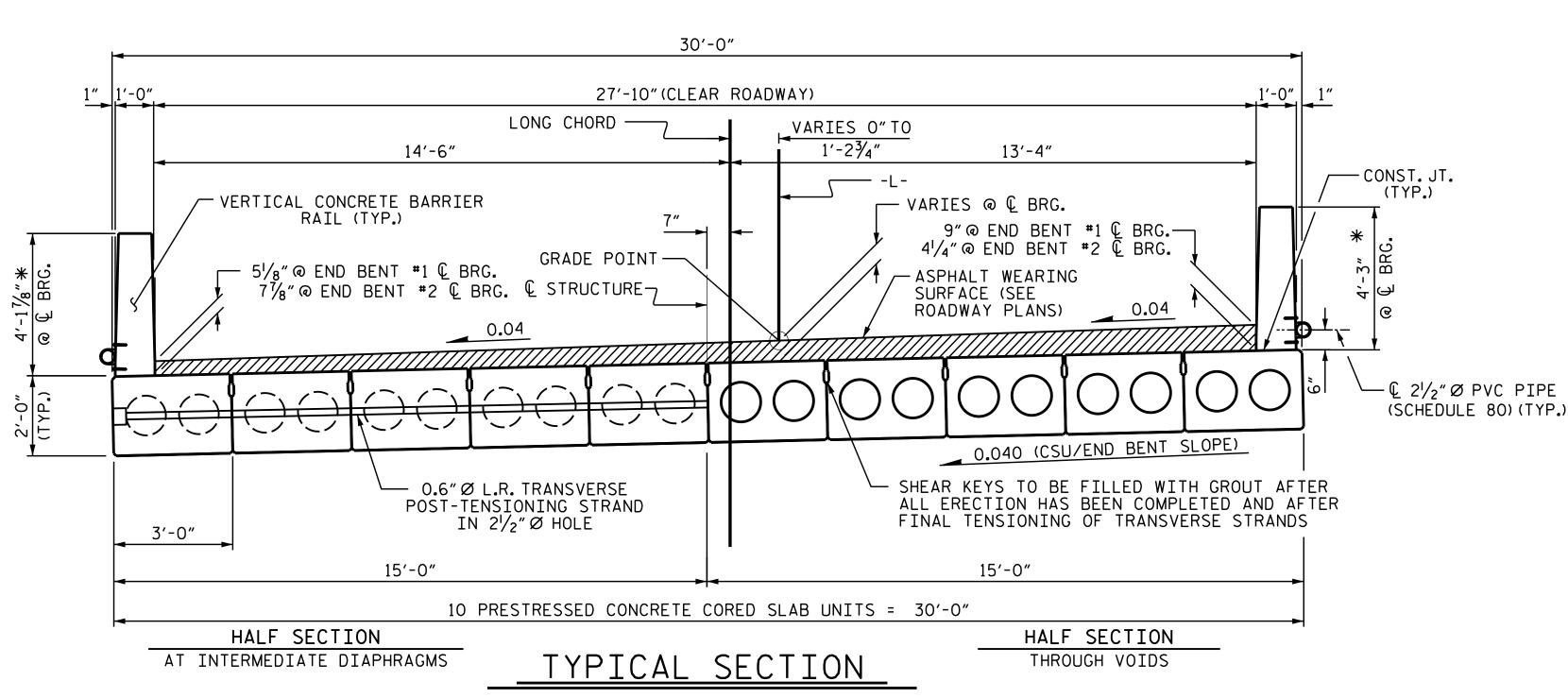
Seffrey Kepich 5/26/2021

SIGNATURES COMPLETED Suite 160

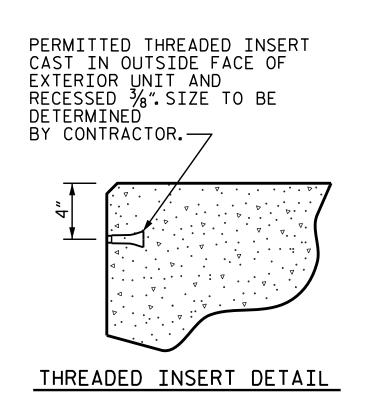
34.346

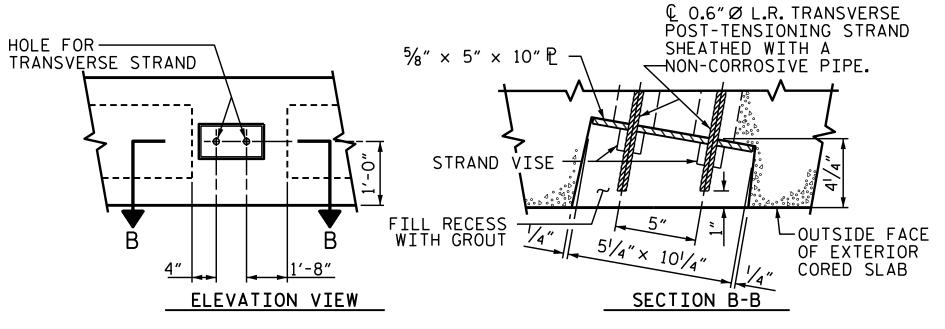
34.346

ER

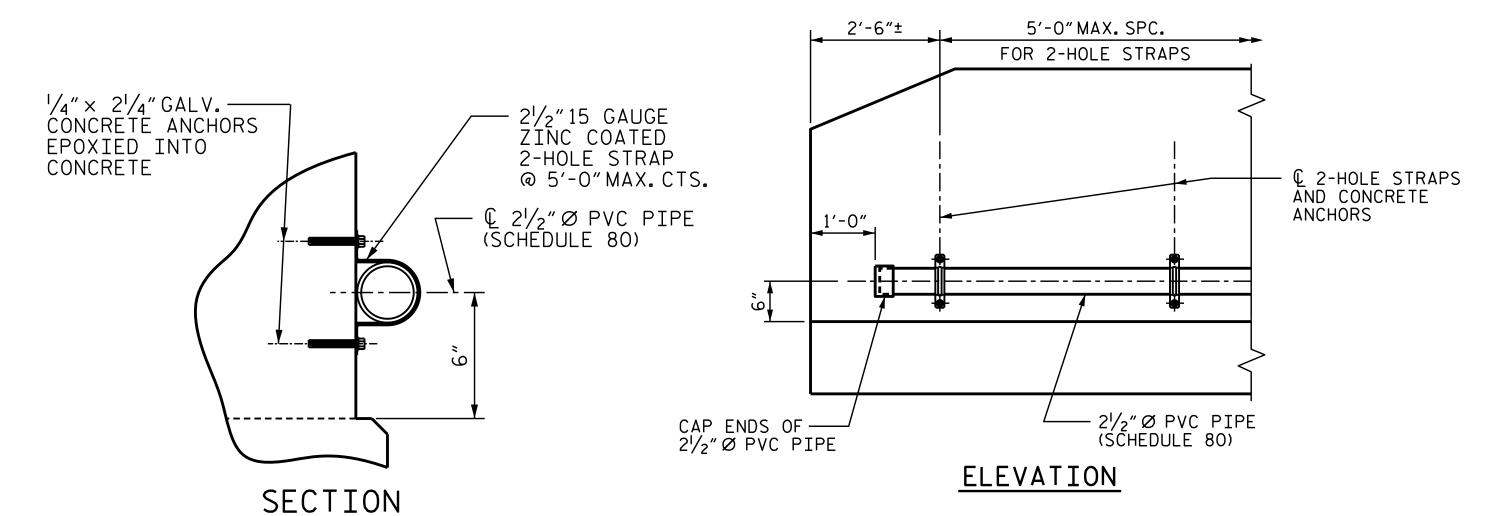


\* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



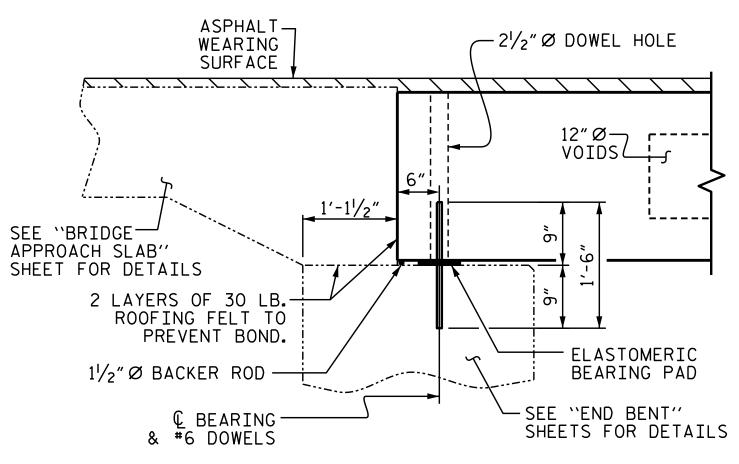


GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS

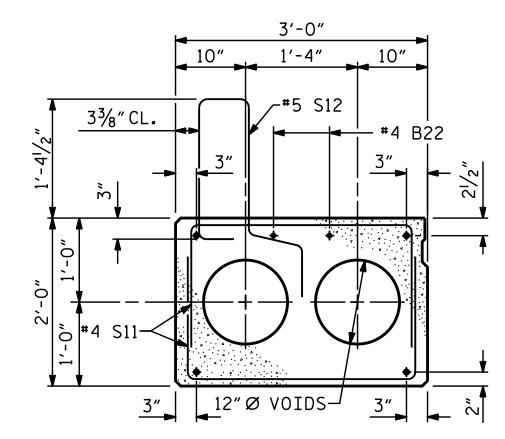


# FIBER OPTIC CONDUIT SYSTEM DETAILS

21/2" Ø SCHEDULE 80 PVC PIPE ATTACHED TO THE BACK OF BOTH RAILS FOR FUTURE FIBER OPTIC CABLE.

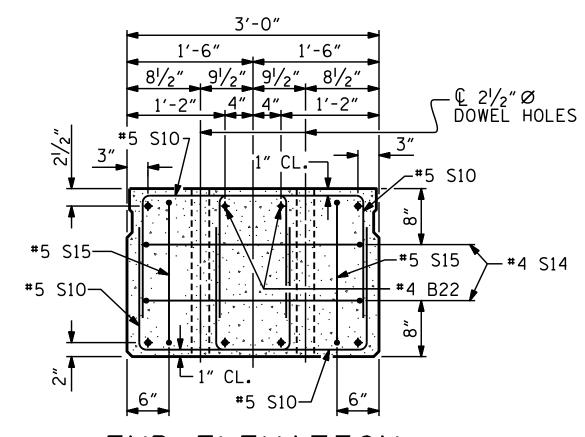


## SECTION AT END BENT



# EXTERIOR SLAB SECTION

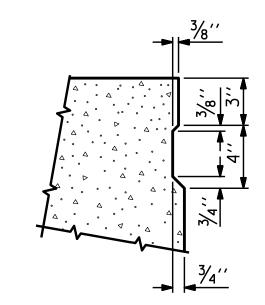
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



### END ELEVATION

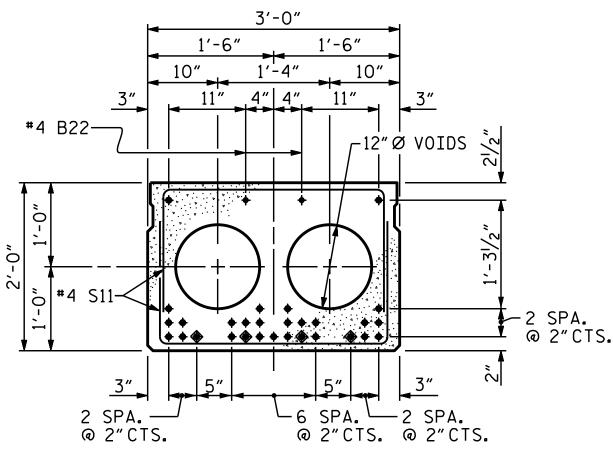
SHOWING PLACEMENT OF DOUBLE STIRRUPS
AND LOCATION OF DOWEL HOLES.
(STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION





SHEAR KEY DETAIL

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



INTERIOR SLAB SECTION (70' UNIT) (29 STRANDS REQUIRED)

RELAXATION STRAND LAYOUT

BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 14'-0"FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND

PROJECT NO. 178P.11.R.153

WILKES

15+23.00 -L-

SHEET 1 of 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

COUNTY

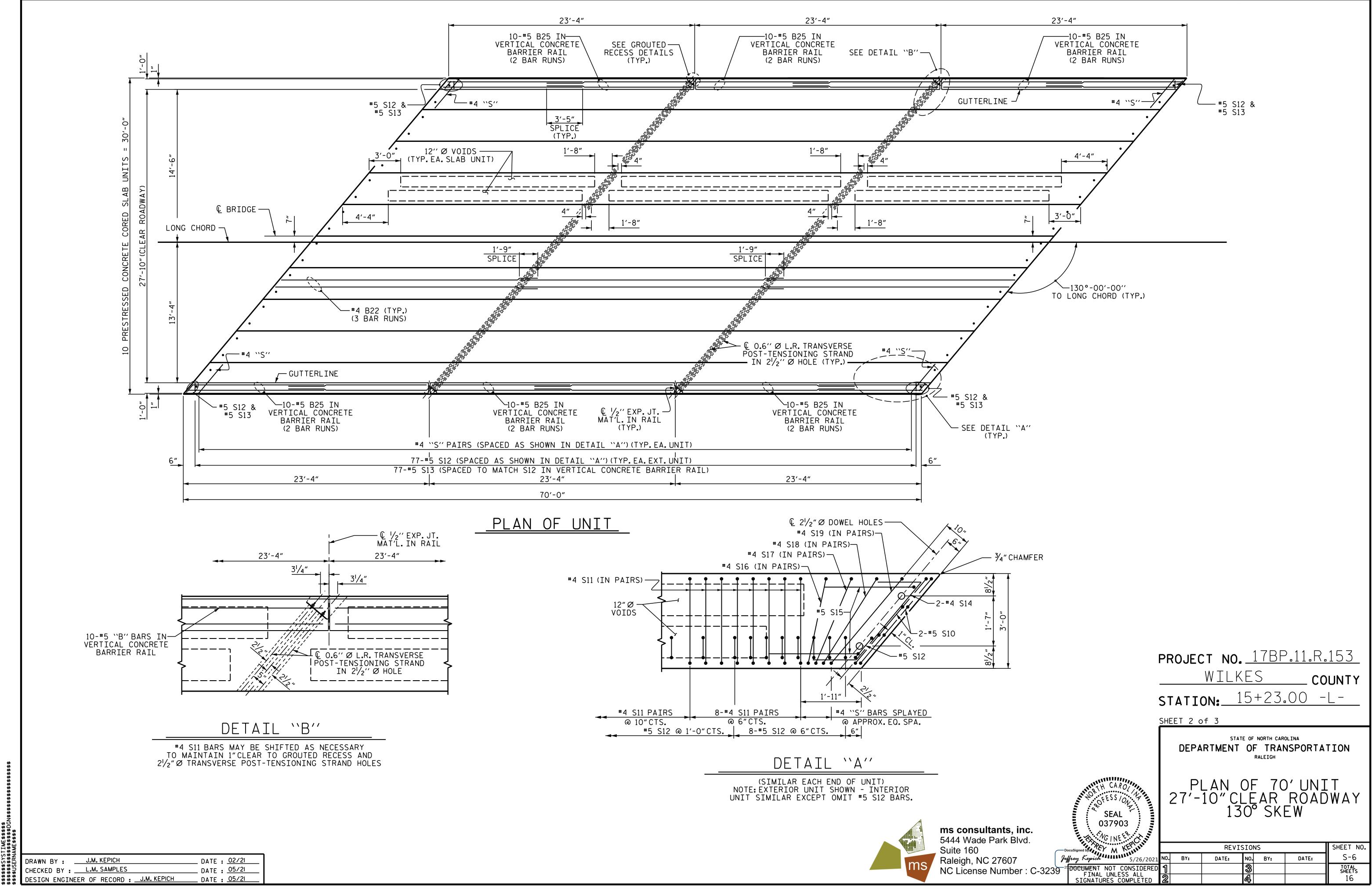
 $3'-0" \times 2'-0"$ PRESTRESSED CONCRETE CORED SLAB UNIT

REVISIONS SHEET NO. NO. BY: S-5 BY: DATE: DATE: TOTAL SHEETS

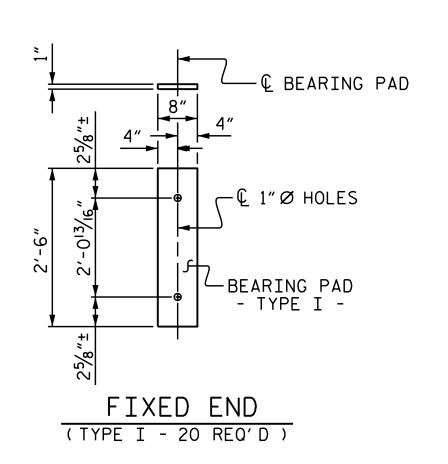
J.M. KEPICH CHECKED BY : L.M. SAMPLES DESIGN ENGINEER OF RECORD : J.M. KEPICH

DATE : 05/21 DATE : 05/21

DATE : 03/21



\*\*CYCTTMF\*\*\*



## ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT									
	ASPHALT OVERLAY THICKNESS RAIL HE			HEIGHT					
	LEFT SIDE	RIGHT SIDE	LEFT SIDE	RIGHT SIDE					
END BENT 1 € BEARING	5½"	9″	3′-11 1/8″	4′-3″					
MIDSPAN	2"	21/8"	3′-8″	3′-8 <sup>l</sup> / <sub>8</sub> ″					
END BENT 2 & BEARING	71/8"	4 <sup>1</sup> / <sub>4</sub> "	4'-1 1/8"	3'-101/4"					

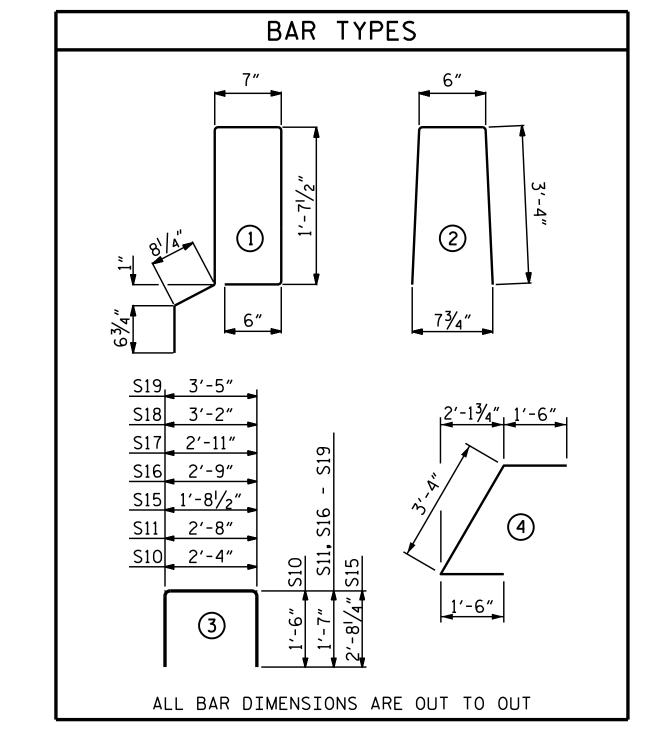
\_\_\_#5 S13

( TYP.)

<u>'2"CL.</u> | MIN.

BILL OF MATERIAL FOR ONE 70' CORED SLAB UNIT									
				EXTERI	OR UNIT	INTERIOR UNIT			
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT		
B22	6	#4	STR	24'-6"	98	24'-6"	98		
S10	8	#5	3	5′-4″	45	5′-4″	45		
S11	172	#4	3	5′-10″	670	5′-10″	670		
<b>*</b> S12	79	#5	1	5′-7″	460				
S14	4	#4	4	6'-4"	17	6'-4"	17		
S15	4	<b>#</b> 5	3	7'-1"	30	7'-1"	30		
S16	4	#4	3	5'-11"	16	5′-11″	16		
S17	4	#4	3	6'-1"	16	6'-1"	16		
S18	4	#4	3	6'-4"	17	6'-4"	17		
S19	4	#4	3	6′-7"	18	6′-7"	18		
REINFO	ORCING	STEEL	LB:	5.	927		927		
	Y COATE								
			LB:		460				
			CU. YDS	Š.	12.0		12.0		
0.6" Ø L.R. STRANDS				) <b>.</b>	29		29		

CORED SLABS REQUIRED						
	NUMBER	LENGTH	TOTAL LENGTH			
70'UNIT						
EXTERIOR C.S.	2	70'-0"	140'-0"			
INTERIOR C.S.	8	70′-0″	560'-0"			
TOTAL	10		700'-0"			



BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL									
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT			
	70' UNIT								
<b></b> ₩B25	120	120	#5	STR	13'-8"	1711			
<b>*</b> S13	158	158	<b>#</b> 5	2	7′-2″	1181			
* EPOX	Y COATED REINFORCING STEEL			LBS.		2892			
CLASS	AA CONCRETE			CU.YDS.		18.1			
TOTAL	VERTICAL CONCRETE BARRIER RAIL			LN.FT.		140.33			

DEAD LOAD DEFLECTION AN	ND CAMBER
	3'-0" × 2'-0"
70'CORED SLAB UNIT	0.6″Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	2 <sup>1</sup> / <sub>4</sub> "
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD	3⁄4″ ↓
FINAL CAMBER	11/2"
** INCLUDES FUTURE WEARING SURF	ACE

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

# 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 21/2" 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.

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.

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS,  $\frac{1}{2}$ " 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 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.

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

MAINTAIN A SYMMETRIC TENSION FORCE BETWEEN EACH PAIR OF TRANSVERSE POST TENSIONING STRANDS IN THE DIAPHRAGM.

THE #4 S11 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

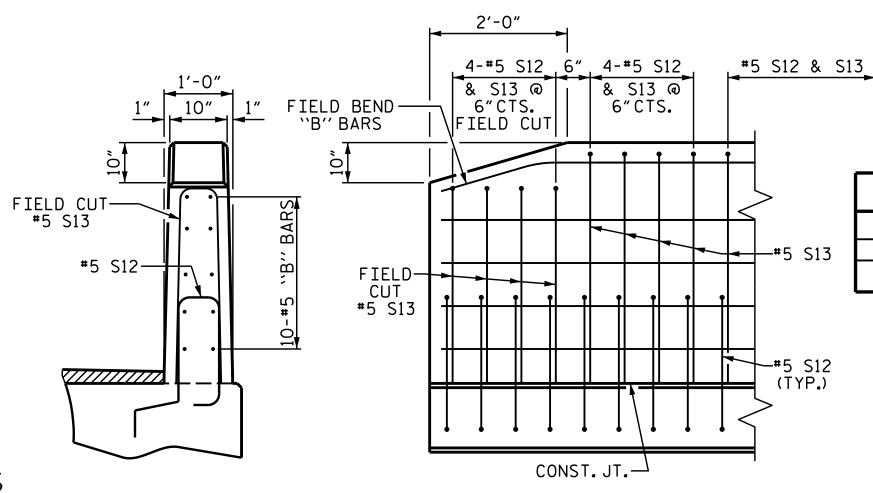
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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'-O"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.

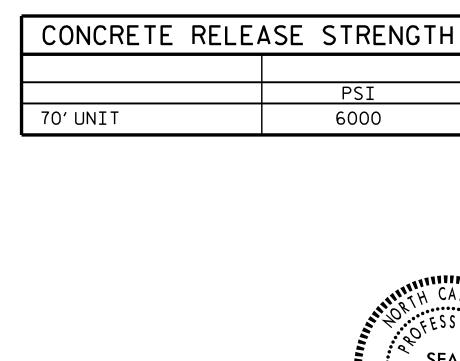
THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.



END VIEW

SIDE VIEW

END OF RAIL DETAILS



SEAL 037903 ms consultants, inc. 5444 Wade Park Blvd.

PROJECT NO. 178P.11.R.153 WILKES COUNTY 15+23.00 -L-

SHEET 3 of 3

BY:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

3'-0" X 2'-0"
PRESTRESSED CONCRETE CORED SLAB UNIT

> **REVISIONS** SHEET NO. S-7 NO. BY: DATE: DATE: TOTAL SHEETS

IM	KEDICH		02 (2)		·				
					ERTIC RRIER				
	SECTION	THRU	RAIL		ELEVAT	LON	<u> </u>	<u>- XPAI</u>	<u> </u>
			<b></b>			$T \cap V$	A T [		

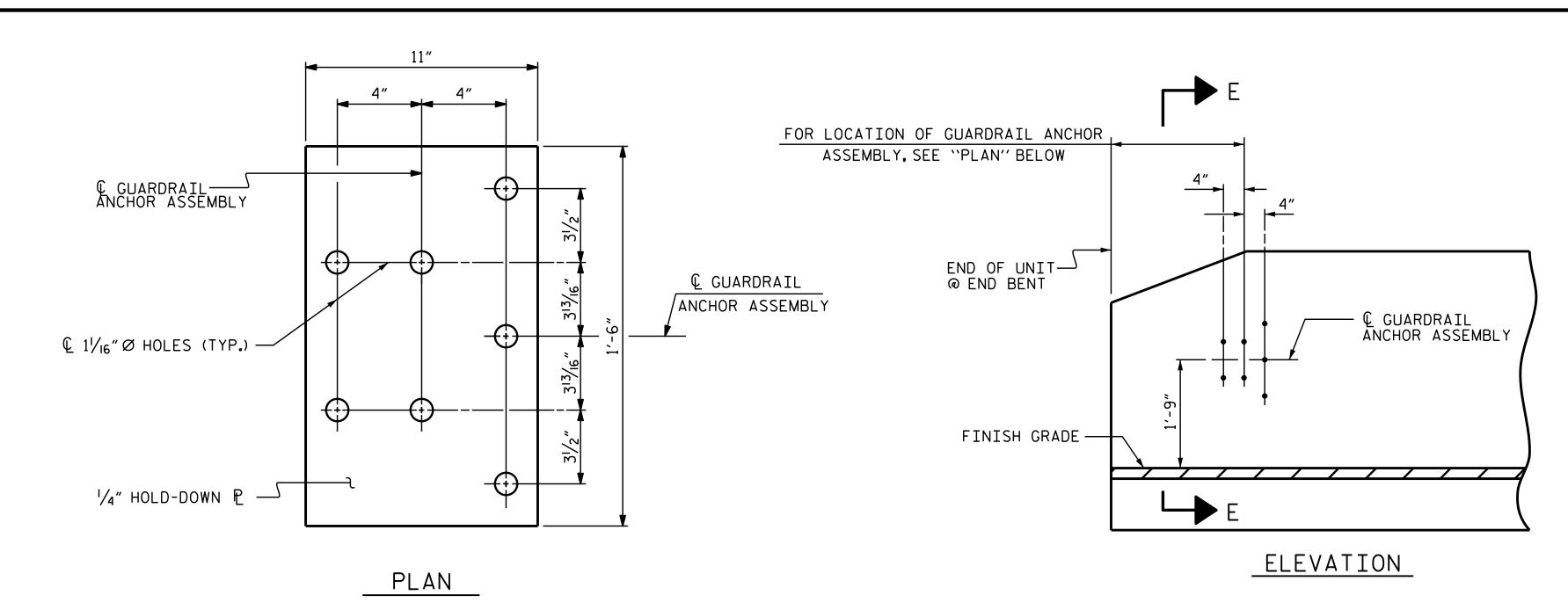
VARIES (SEE "GUTTERLINE THICKNESS & RAIL HEIGH 10//2 10-SECTION S-S \_2¾"CL. AT DAM IN OPEN JOINT 33/8" (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED) L 1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS. (NOTE: OMIT EXP.JT.MAT'L. WHEN SLIP FORM IS USED) VERTICAL DIM. VARIES CHAMFER **CHAMFER** CONST. J -#5 S12 SEE "PLAN OF UNIT" FOR SPACING CONST. JT. -ISION JOINTS

Aleigh, NC 27607

NC License Number: C-3239

Polyment not considered Final UNLESS ALL SIGNATURES COMPLETED Suite 160

J.M. KEPICH DATE : 02/21 CHECKED BY : L.M. SAMPLES \_ DATE : <u>05/2</u>1 \_ DATE : <u>05/21</u>



NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A  $\frac{1}{4}$ " HOLD DOWN PLATE AND 7 -  $\frac{7}{8}$ " 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 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

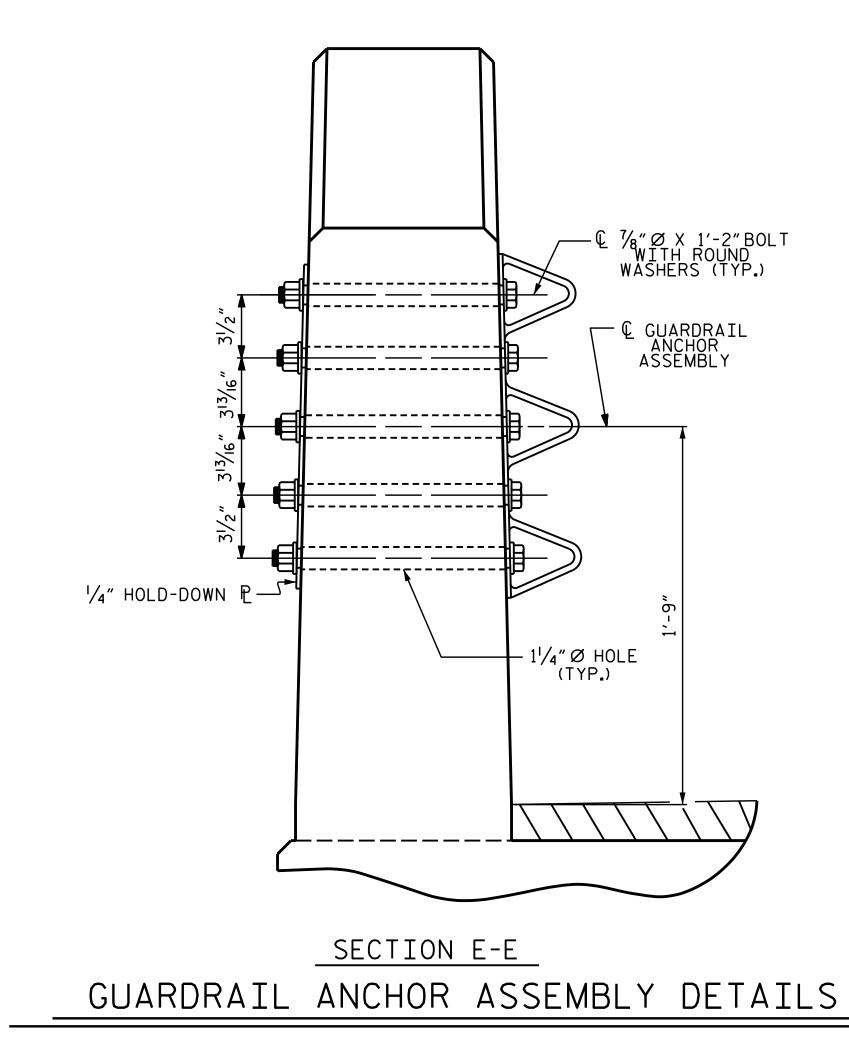
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL.FOR POINTS OF ATTACHMENT, SEE SKETCH.

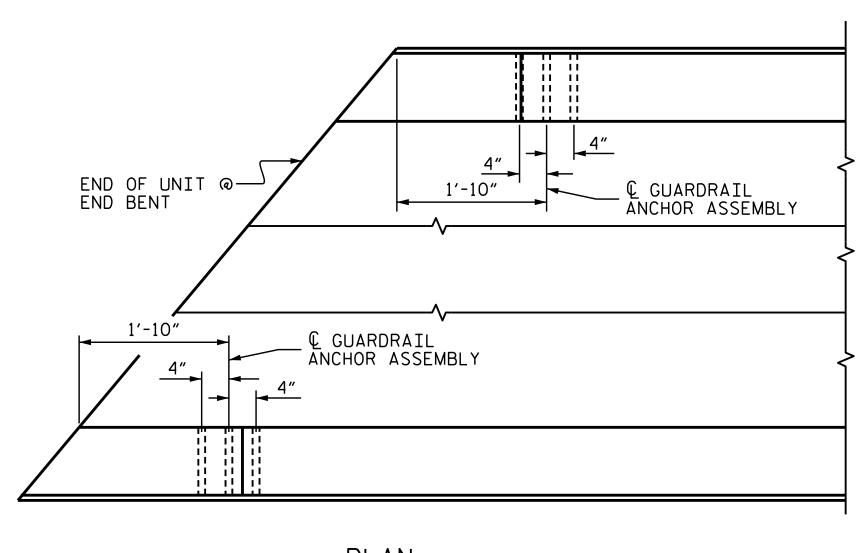
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

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

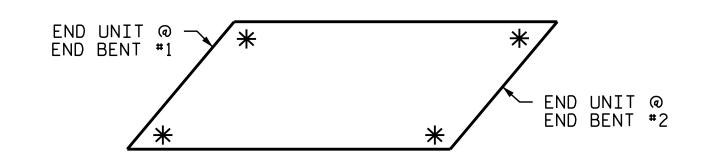




PLAN

LOCATION OF ANCHORS FOR GUARDRAIL

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



### SKETCH SHOWING POINTS OF ATTACHMENT

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. 178P.11.R.153 WILKES COUNTY STATION: 15+23.00 -L-

> STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GUARDRAIL ANCHORAGE DETAILS FOR VERTICAL CONCRETE BARRIER RAIL

SHEET NO. **REVISIONS** S-8 NO. BY: NO. BY: DATE: TOTAL SHEETS

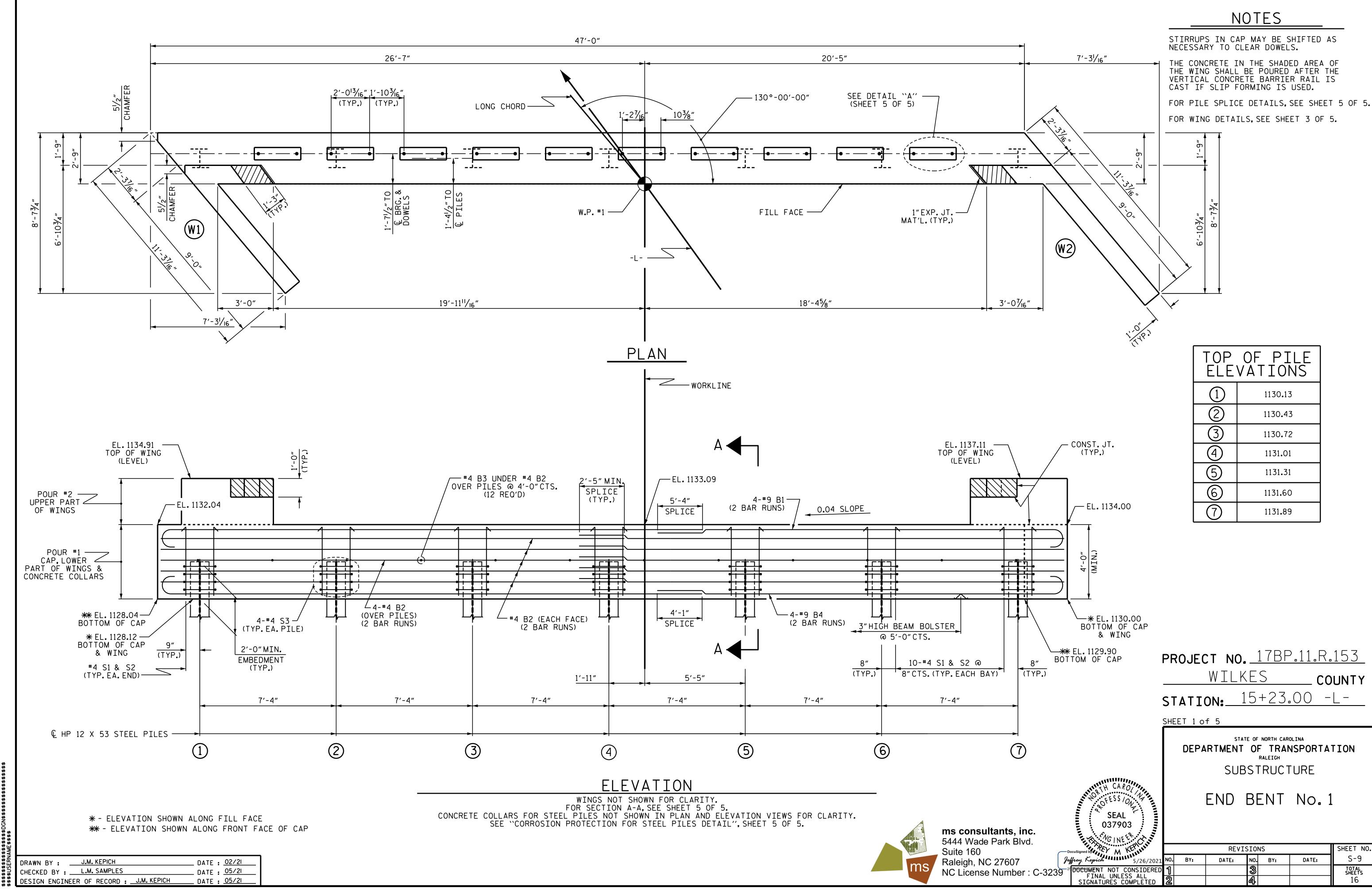
Suite 160

ms consultants, inc. 5444 Wade Park Blvd. Raleigh, NC 27607

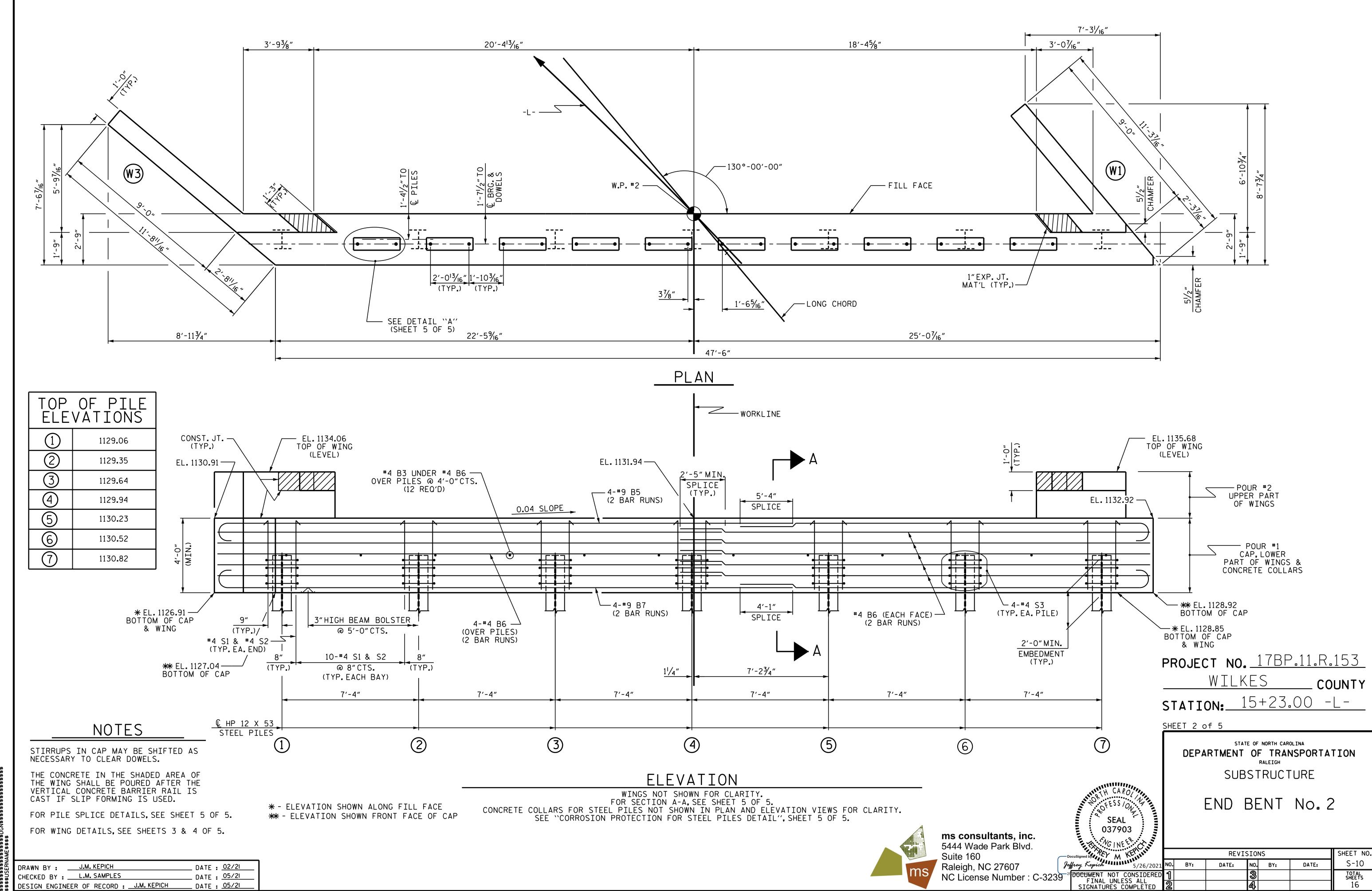
NC License Number: C-3239

Peffrey Kepich 1000 5/26/2021 NO 5/26/2021 NO SIGNATURES COMPLETED

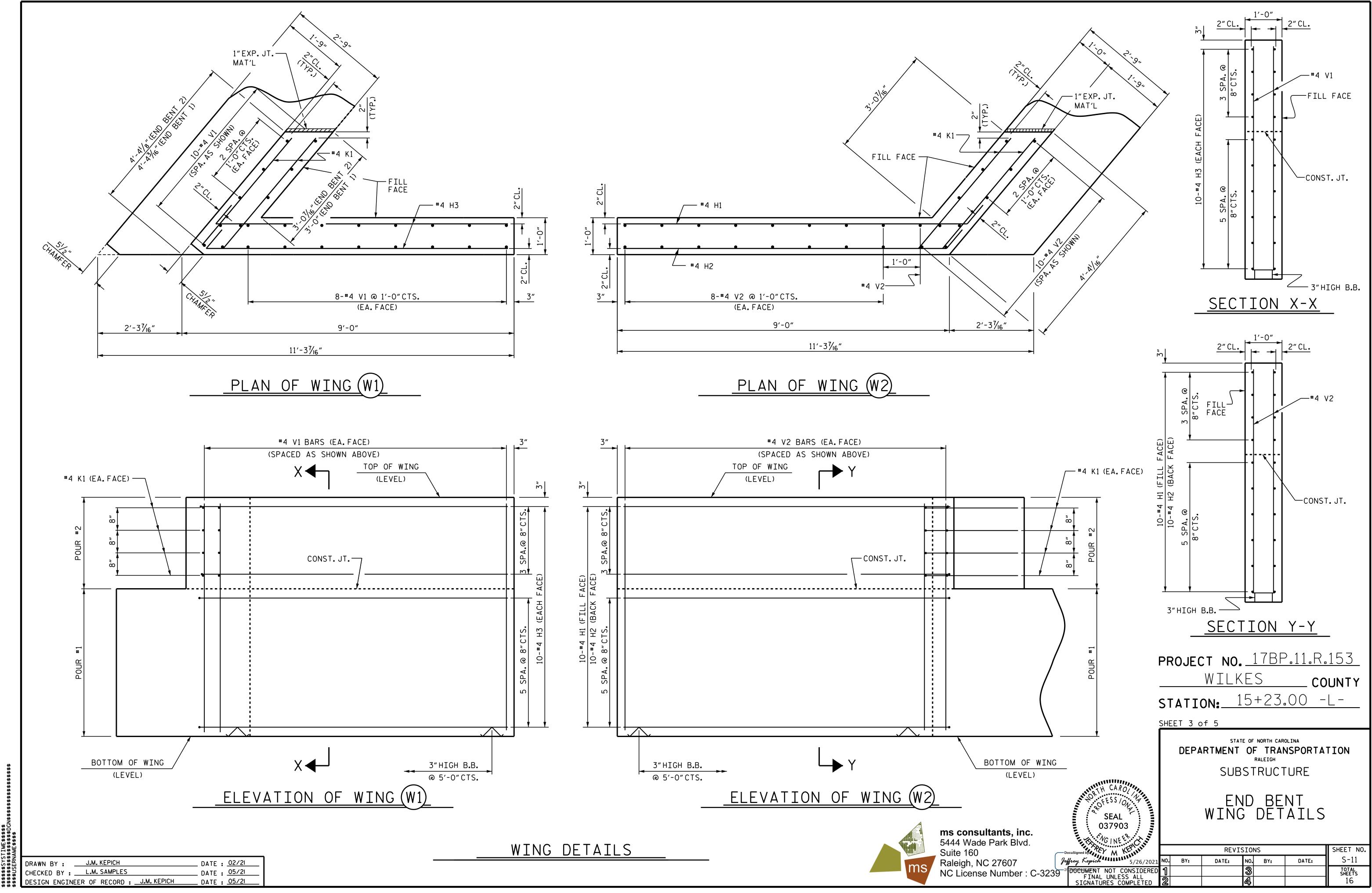
ASSEMBLED BY : J.M. KEPICH CHECKED BY : L.M. SAMPLES DATE : 04/21 DATE : 05/21 DRAWN BY : MAA 5/10 MAA/THC CHECKED BY : GM 5/10

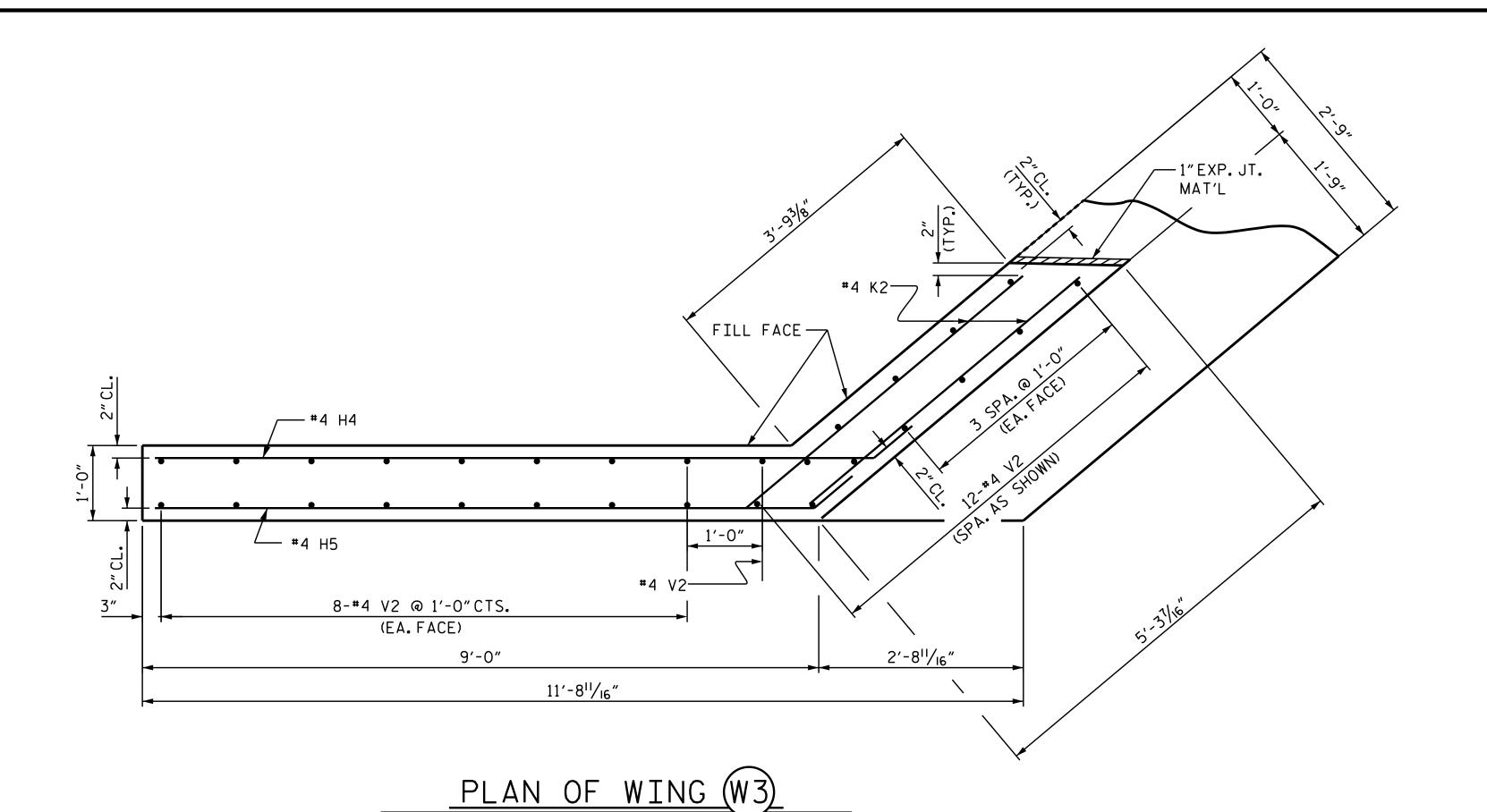


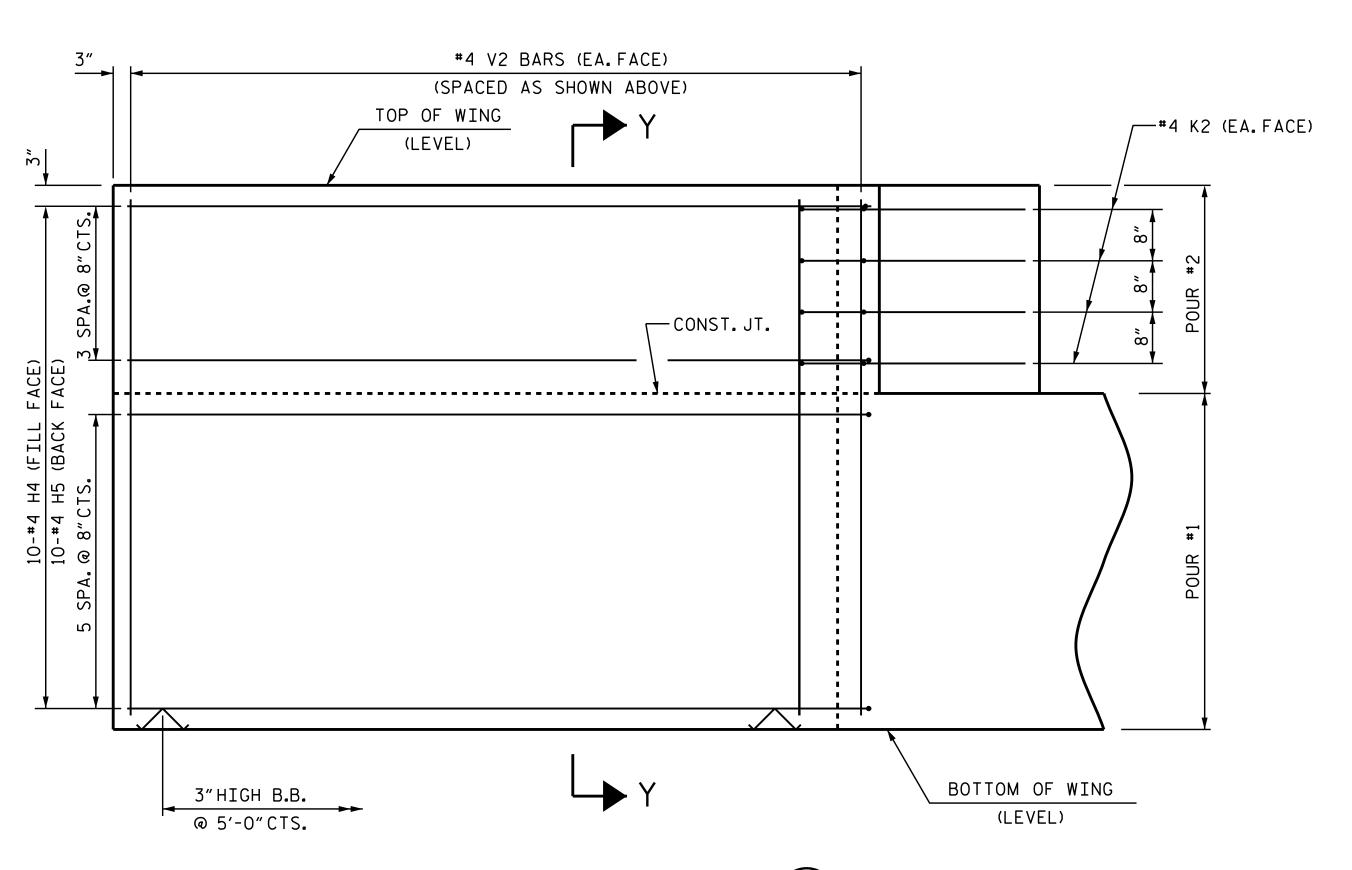
\_ DATE : <u>05/21</u>



SYSTIME







ELEVATION OF WING (W3)

WING DETAILS



ms consultants, inc. 5444 Wade Park Blvd.

Suite 160
Raleigh, NC 27607
NC License Number: C-3239

Pocusigned by A Considered Solution So

S SPA. 8 8 CTS. O-#4 H4 (FILL FACE) O-#4 H5 (BACK FACE) CONST. JT. 3"HIGH B.B. SECTION Y-Y

PROJECT NO. 178P.11.R.153

WILKES \_ COUNTY

STATION: 15+23.00 -L-

SHEET 4 of 5

STATE OF NORTH CAROLINA

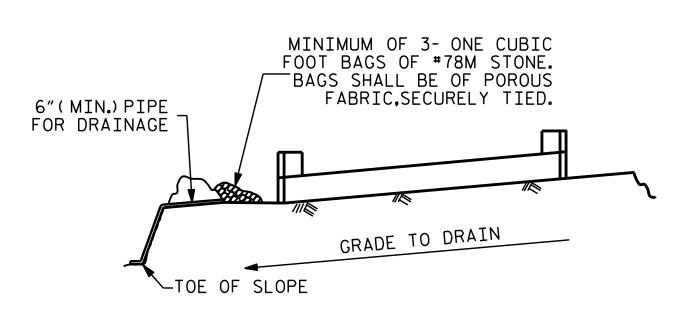
DEPARTMENT OF TRANSPORTATION

RALEIGH SUBSTRUCTURE

END BENT WING DETAILS

REVISIONS SHEET NO. S-12 5/26/2021 NO. BY: NO. BY: DATE: DATE: TOTAL SHEETS

DRAWN BY: J.M. KEPICH
CHECKED BY: L.M. SAMPLES \_\_ DATE : <u>02/2</u>| \_\_ DATE : <u>05/2</u>| \_\_ DATE : <u>05/2</u>| 

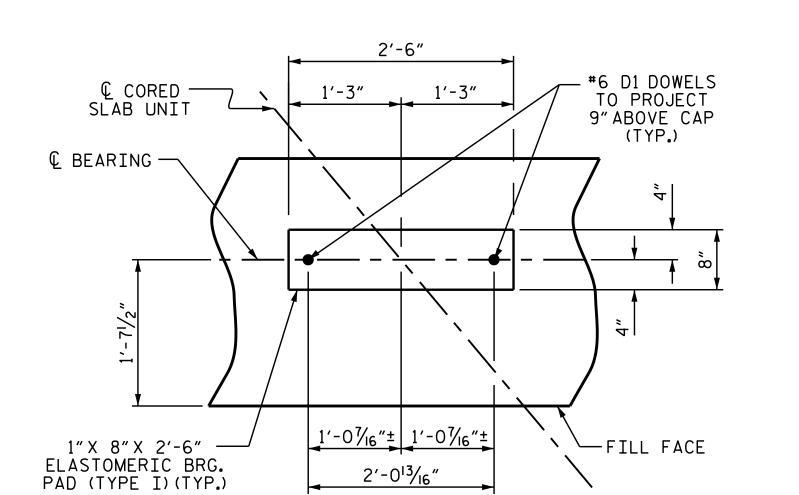


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

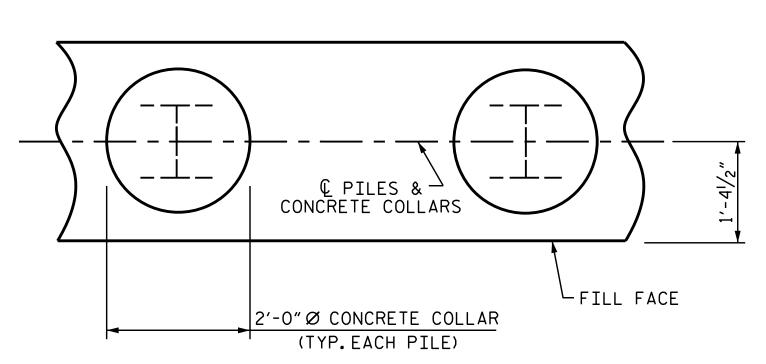
# TEMPORARY DRAINAGE AT END BENT



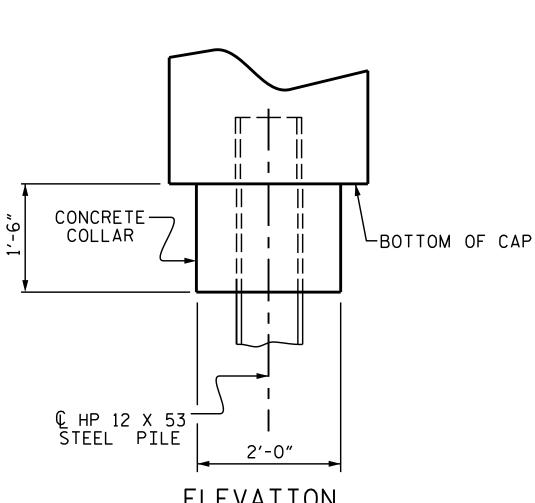
DETAIL "A"

2'-0<sup>13</sup>/<sub>16</sub>"

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



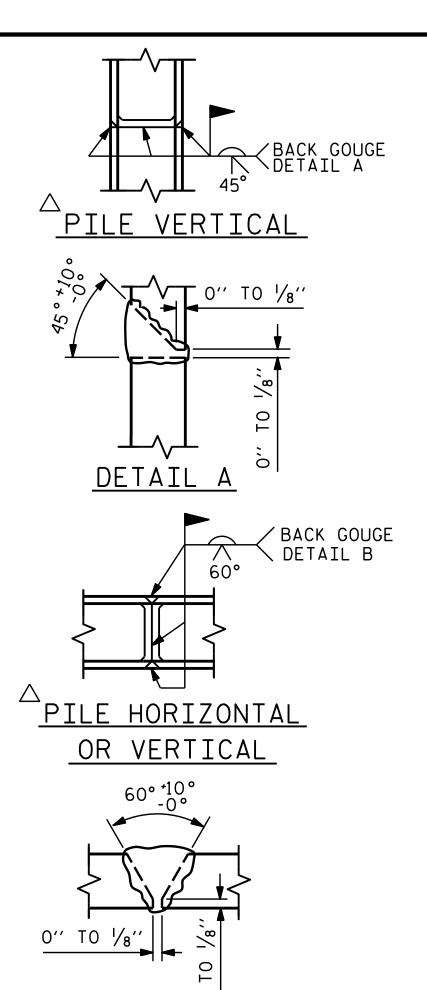
PLAN



CORROSION PROTECTION FOR STEEL PILES DETAIL

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

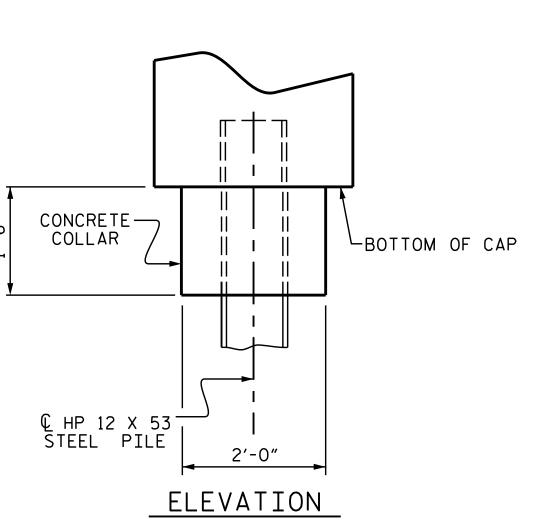
J.M. KEPICH DATE : 02/21 CHECKED BY : L.M. SAMPLES DATE : 05/21 DATE : 05/21



POSITION OF PILE DURING WELDING.

DETAIL B

# PILE SPLICE DETAILS



BAR TYPES HK. \_ H3 B2 28 25'-10" (3)25'-3" 26'-4" 7′-11″ 25'-9" H4, H5 H1, H2 (2)9'-3" H2 & H5 8'-9" 9'-6" ---1'-3" LAP 6 2'-5" 1′-8″Ø ALL BAR DIMENSIONS ARE OUT TO OUT. END BENT No. 1 END BENT No. 2 TOTAL CLASS A CONCRETE HP 12 X 53 STEEL PILES HP 12 X 53 STEEL PILES LIN. FT.= 140.0 NO: 7 LIN. FT.= 123.0 PILE DRIVING EQUIPMENT PILE DRIVING EQUIPMENT SETUP FOR SETUP FOR HP 12 X 53 STEEL PILES HP 12 X 53 STEEL PILES NO: 7

24'-10" B3 | 12 #4 | STR | #4 | STR 2′-5″ 20 В6 28 465 B4 8 #9 26′-6″ 721 В7 #9 27′-0″ 735 D1 20 #6 | STR | 1′-6″ 45 D1 20 #6 | STR | 1'-6" 45 H1 | 10 #4 | 2 9′-11″ 67 H3 | 20 #4 | 3 8′-7″ 115 #4 9′-5″ Н4 #4 68 10 63 10 10'-2" H3 20 #4 8'-7" 115 Н5 #4 9′-5″ 63 10 K1 | 16 #4 | STR | 3′-10″ 41 K1 8 #4 | STR | 3′-3" 17 #4 STR 4′-9" 25 Κ2 8 S1 | 62 10'-5" #4 432 4 S2 62 #4 3'-2" S1 131 62 10′-5″ 432 S3 28 122 S2 #4 6′-6" 62 #4 3′-2″ 131 S3 28 #4 6'-6" 122 #4 | STR | 6′-6″ V1 | 26 113 #4 | STR | 6'-10" V2 | 27 123 V1 | 26 | #4 | STR 6′-6" 113 V2 | 29 | #4 | STR | 6′-10″ 132 REINFORCING STEEL REINFORCING STEEL (FOR END BENT #2) (FOR END BENT #1) 3190 LBS. 3234 LBS CLASS A CONCRETE BREAKDOWN CLASS A CONCRETE BREAKDOWN (FOR END BENT #1) (FOR END BENT #2) 21.4 C.Y. POUR #1 CAP, LOWER PART | POUR #1 CAP,LOWER PART 21.8 C.Y. OF WINGS & COLLARS OF WINGS & COLLARS POUR #2 UPPER PART OF 2.7 C.Y. | POUR #2 UPPER PART OF 2.7 C.Y. WINGS WINGS

BILL OF MATERIAL

BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT

#4 | STR

#9

FOR ONE END BENT #2

2′-5″

27′-7"

20

751

24.5 C.Y.

COUNTY

BILL OF MATERIAL

#4 | STR | 24'-7"

| SIZE | TYPE | LENGTH | WEIGHT

27'-1"

737

460

В3

B5

12

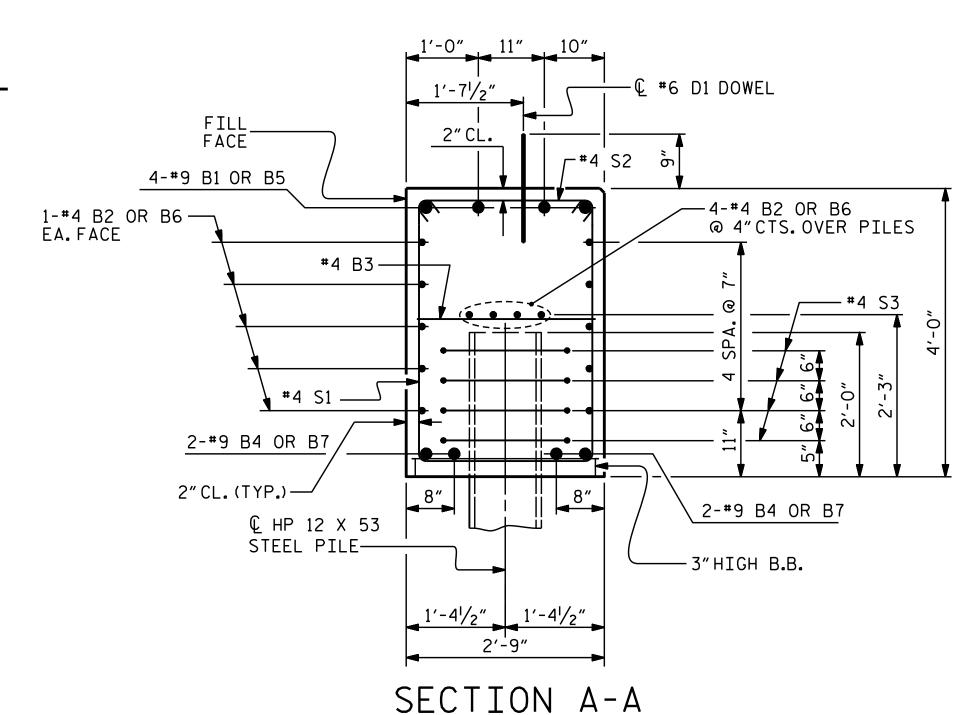
8

24.1 C.Y. TOTAL CLASS A CONCRETE

FOR ONE END BENT

#9

8



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

ms consultants, inc. 5444 Wade Park Blvd. Suite 160

NC License Number: C-3239

Seffrey Kepich 5/26/2021

Seffrey Kepich 5/26/2021

Seffrey Kepich 5/26/2021

SIGNATURES COMPLETED

PROJECT NO. 178P.11.R.153 WILKES

15+23.00 -L-

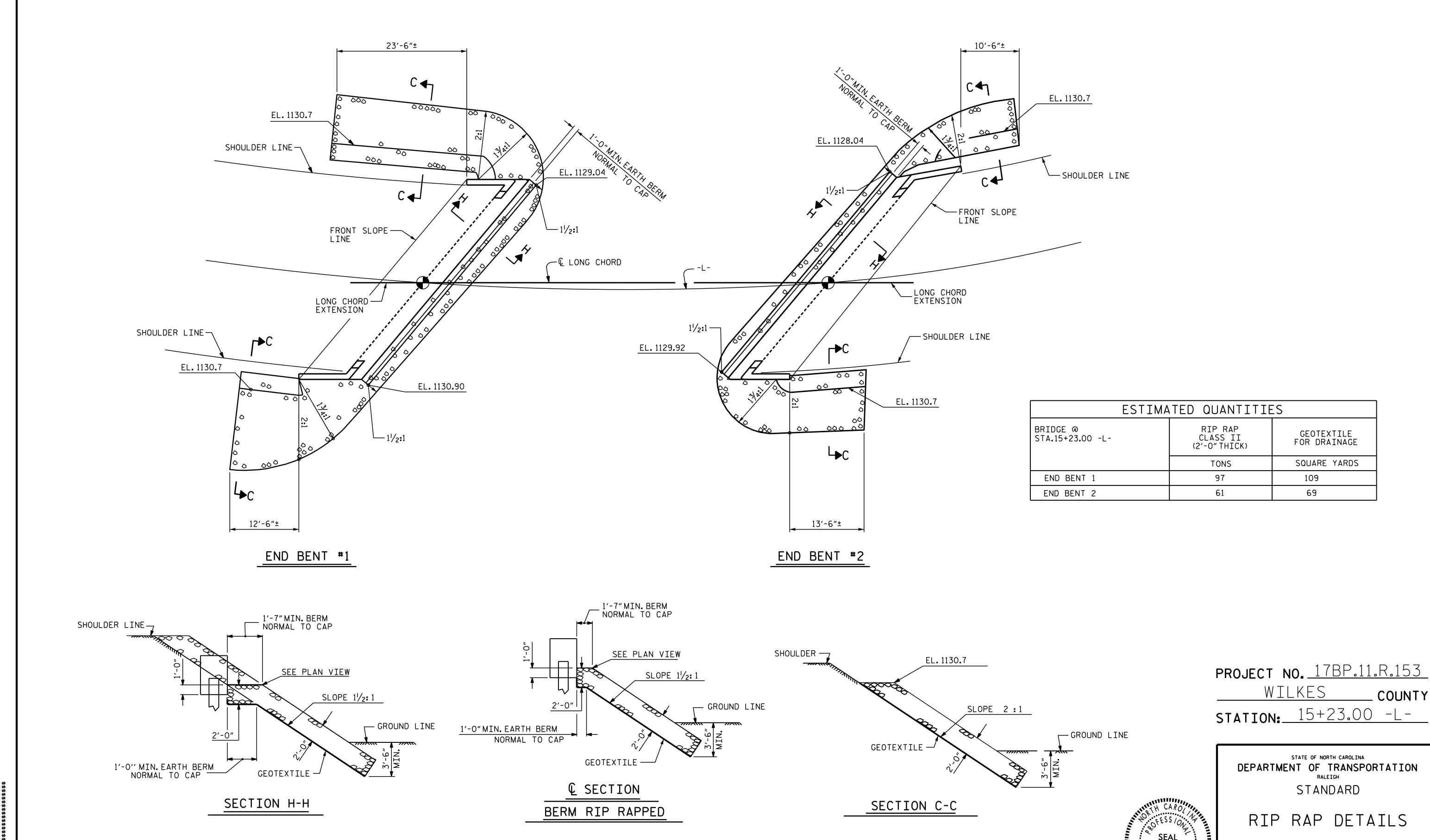
SHEET 5 of 5

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION SUBSTRUCTURE

END BENT No. 1 & 2 DETAILS

SHEET NO. REVISIONS S-13 5/26/2021 NO. BY: NO. BY: DATE: DATE: TOTAL SHEETS

+



DRAWN BY: J.M. KEPICH
CHECKED BY: L.M. SAMPLES \_\_ DATE : <u>02/2</u>I \_\_ DATE : <u>05/2</u>I \_ DATE : 05/21

ms consultants, inc. 5444 Wade Park Blvd.

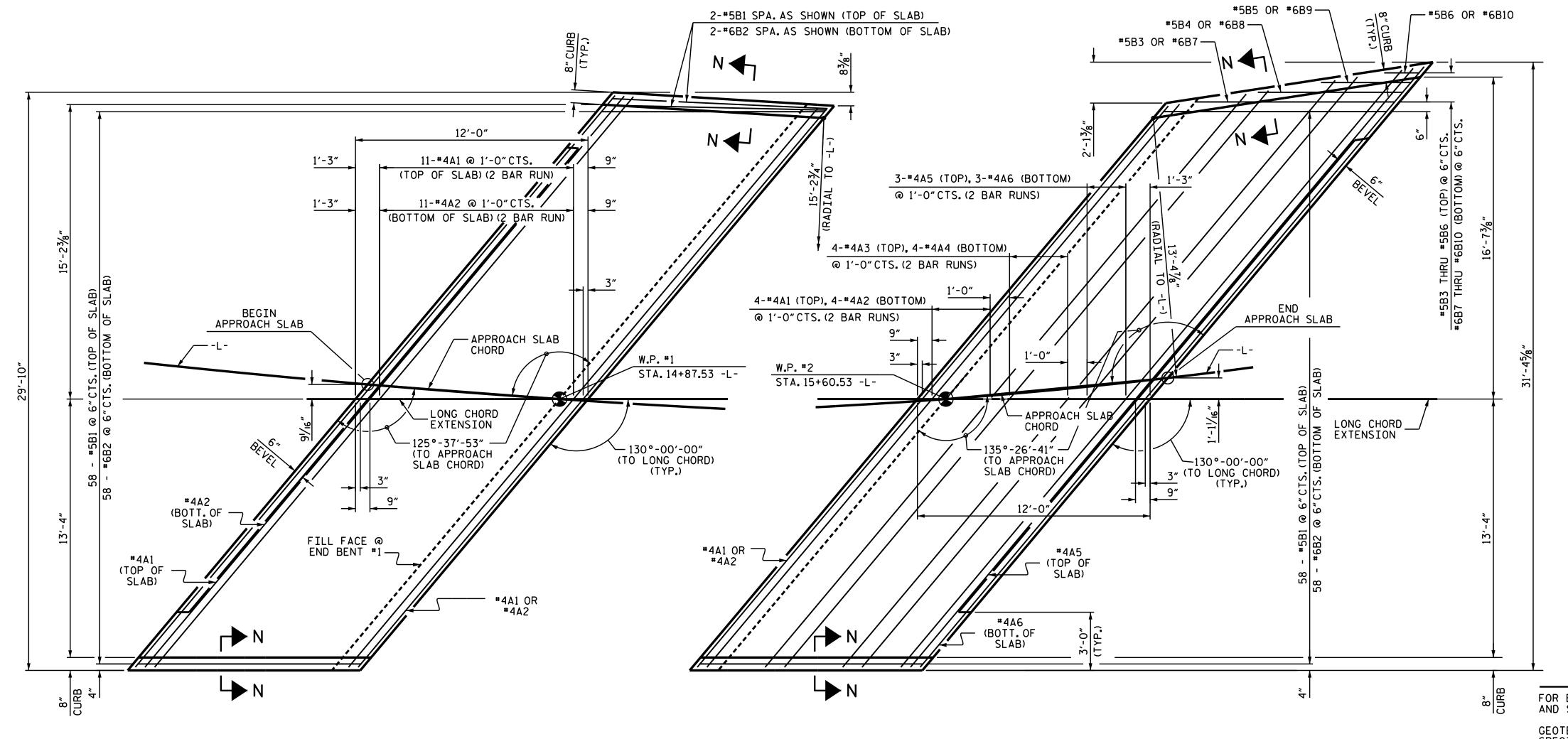
Suite 160

Suite 160
Raleigh, NC 27607
NC License Number: C-3239

Jeffrey Kepich

5/26/2021
NC
FINAL UNLESS ALL
SIGNATURES COMPLETED 5/26/2021 NO. BY:

REVISIONS SHEET NO. NO. BY: S-14 DATE: DATE: TOTAL SHEETS 16



NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

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

SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

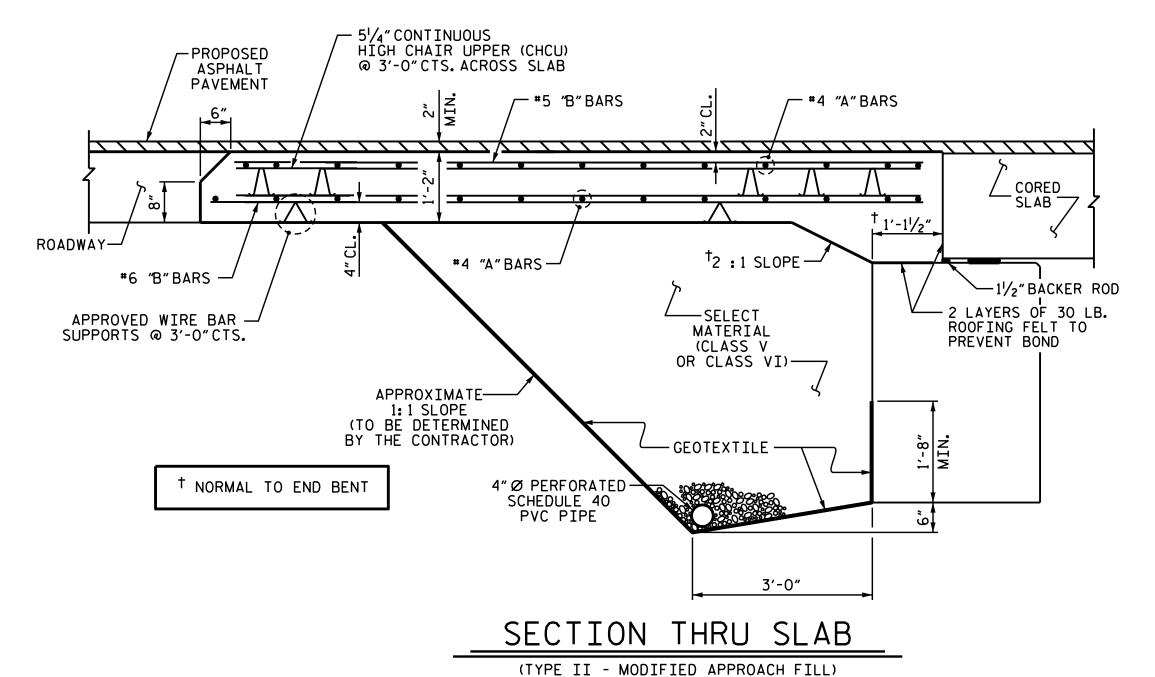
FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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.

PLAN @ END BENT #1

PLAN @ END BENT #2



SPLICE LENGTHS EPOXY UNCOATED 1'-11" **#**5 2'-5" 2'-0" 3'-7" 2'-5"

> PROJECT NO. 178P.11.R.153 WILKES COUNTY

15+23.00 -L-

SHEET 1 of 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

BILL OF MATERIAL

APPROACH SLAB AT EB #1

BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT

#4 | STR | 20'-1"

APPROACH SLAB AT EB #2 BAR NO. SIZE TYPE LENGTH WEIGHT

#4 | STR | 20'-4"

#4 | STR | 20'-2"

#4 | STR | 20'-9"

#4 | STR | 20'-7"

#4 | STR | 21'-2" #4 | STR | 21'-1"

#5 | STR | 11'-1"

#5 | STR | 7'-6"

#5 | STR | 1'-10"

#6 | STR | 1'-10"

#6 | STR | 10'-4" #6 | STR | 7'-6" #6 | STR | 4'-8"

#6 STR #5 STR

**\***5 | STR

11'-7"

10'-4"

4'-8"

LBS.

LBS.

C. Y.

1044

1009

1404

18.3

LBS.

LBS.

C. Y. 17.9

\* A1 | 26 | #4 | STR | 20'-3"

60 #5 STR 11'-1" B2 60 #6 STR 11'-7"

A2 | 26 |

REINFORCING STEEL

CLASS AA CONCRETE

REINFORCING STEEL

\* EPOXY COATED

\* A3 | 8

58

REINFORCING STEEL

CLASS AA CONCRETE

REINFORCING STEEL

\* EPOXY COATED

\* A5

BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER) 130° SKEW

**REVISIONS** SHEET NO. S-15 5/26/2021 NO. BY: NO. BY: DATE: DATE: TOTAL SHEETS

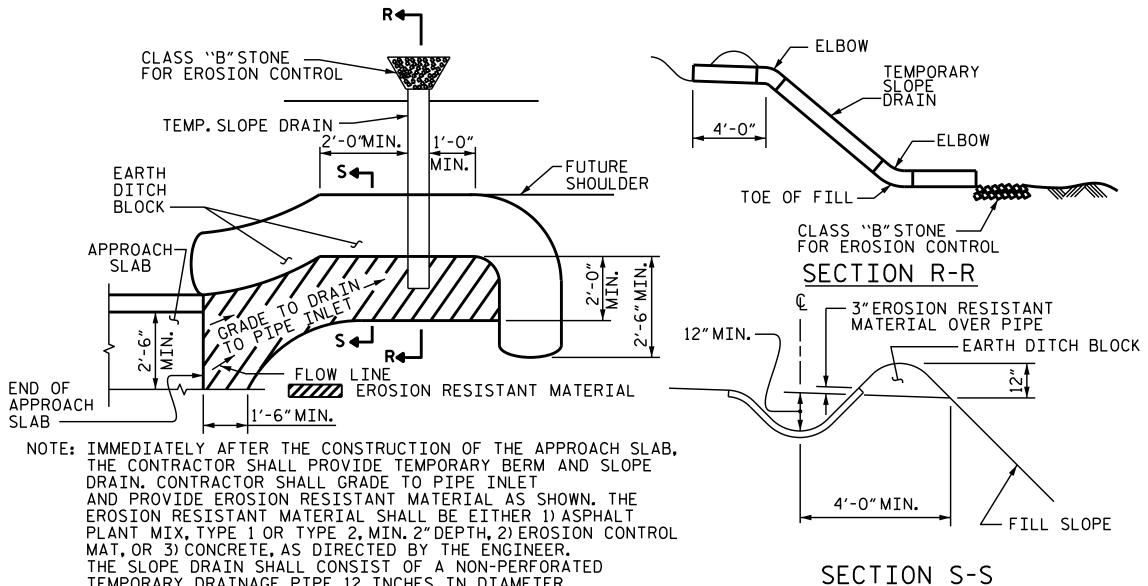
5444 Wade Park Blvd. Suite 160 Raleigh, NC 27607

ms consultants, inc. NC License Number: C-3239 FINAL UNLESS ALL SIGNATURES COMPLETED

J.M. KEPICH DATE : 02/21 CHECKED BY : L.M. SAMPLES DATE : 05/21 DATE : 05/21

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



PLAN VIEW

# TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

SECTION N-N

CURB DETAILS

PROJECT NO. 178P.11.R.153 WILKES COUNTY STATION: 15+23.00 -L-

SHEET 2 of 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH

APPROACH SLAB DETAILS FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER)

REVISIONS SHEET NO. S-16 5/26/2021 NO. BY: NO. BY: DATE: DATE: TOTAL SHEETS

ms consultants, inc. 5444 Wade Park Blvd. Raleigh, NC 27607

NC License Number: C-3239

Suite 160

Seffrey Kepich 5/26/2021 NO 5/26/2021 NO CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED Suite 160

J.M. KEPICH CHECKED BY : L.M. SAMPLES DESIGN ENGINEER OF RECORD : J.M. KEPICH \_ DATE : <u>05/21</u>

TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

SECTION S-S

DATE : 02/21 \_ DATE : <u>05/2</u>1

### STANDARD NOTES

#### DESIGN DATA:

---- A.A.S.H.T.O. (CURRENT) SPECIFICATIONS 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 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 2018 "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 11/2" 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  $\frac{1}{8}$ " Ø SHEAR STUDS FOR THE  $\frac{3}{4}$ " Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 -  $\frac{1}{8}$ " Ø STUDS FOR 4 -  $\frac{3}{4}$ " Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF  $\frac{1}{8}$ " Ø STUDS ALONG THE BEAM AS SHOWN FOR  $\frac{3}{4}$ " Ø STUDS BASED ON THE RATIO OF 3 -  $\frac{1}{8}$ " Ø STUDS FOR 4 -  $\frac{3}{4}$ " 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 \( \frac{1}{6} \) 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.

ENGLISH

JANUARY, 1990

REV. 6-16-95 EEM (1) RGW REV. 5-7-03 RWW (1) JTE REV. 10-1-11 MAA (1) GM REV. 8-16-99 RWW (1) LES REV. 5-1-06 TLA (1) GM REV. 12-17 MAA (1) THC

STD. NO. SN