

09/08/19  
 26-MAY-2021 08:41  
 N:\DOW\0839-06 17BP.11.R.153 NCDOT WILKES 419 OVER NAKED CREEK\Structures\03-Drawings\Sheets\401\_001\_17BP.11.R.153\_SMU\_TSH\_000.dgn  
 \$\$\$USERNAME\$\$\$

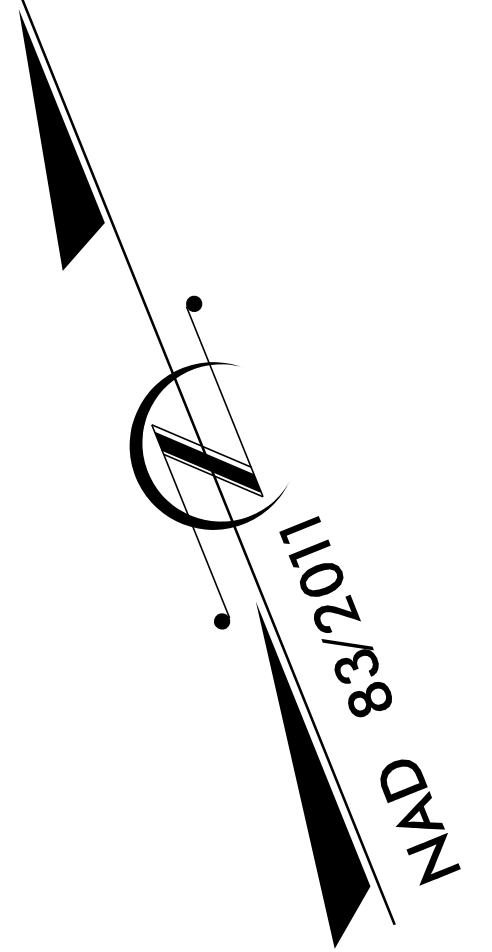
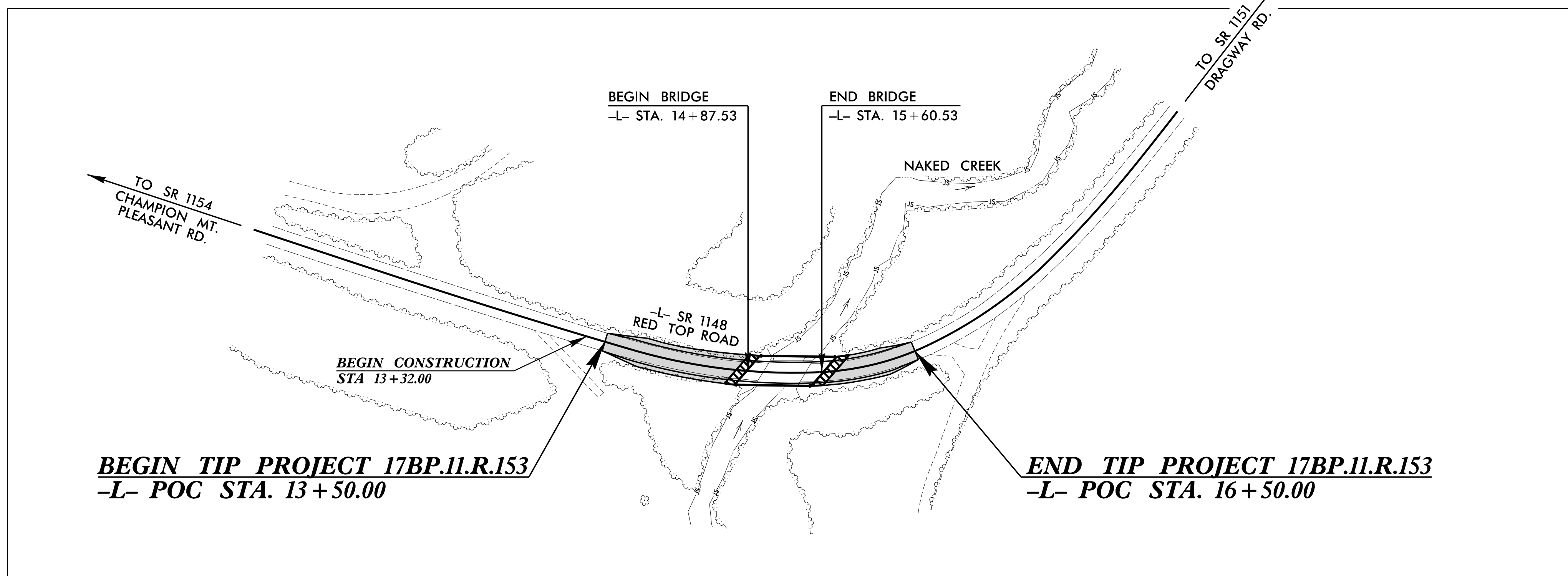
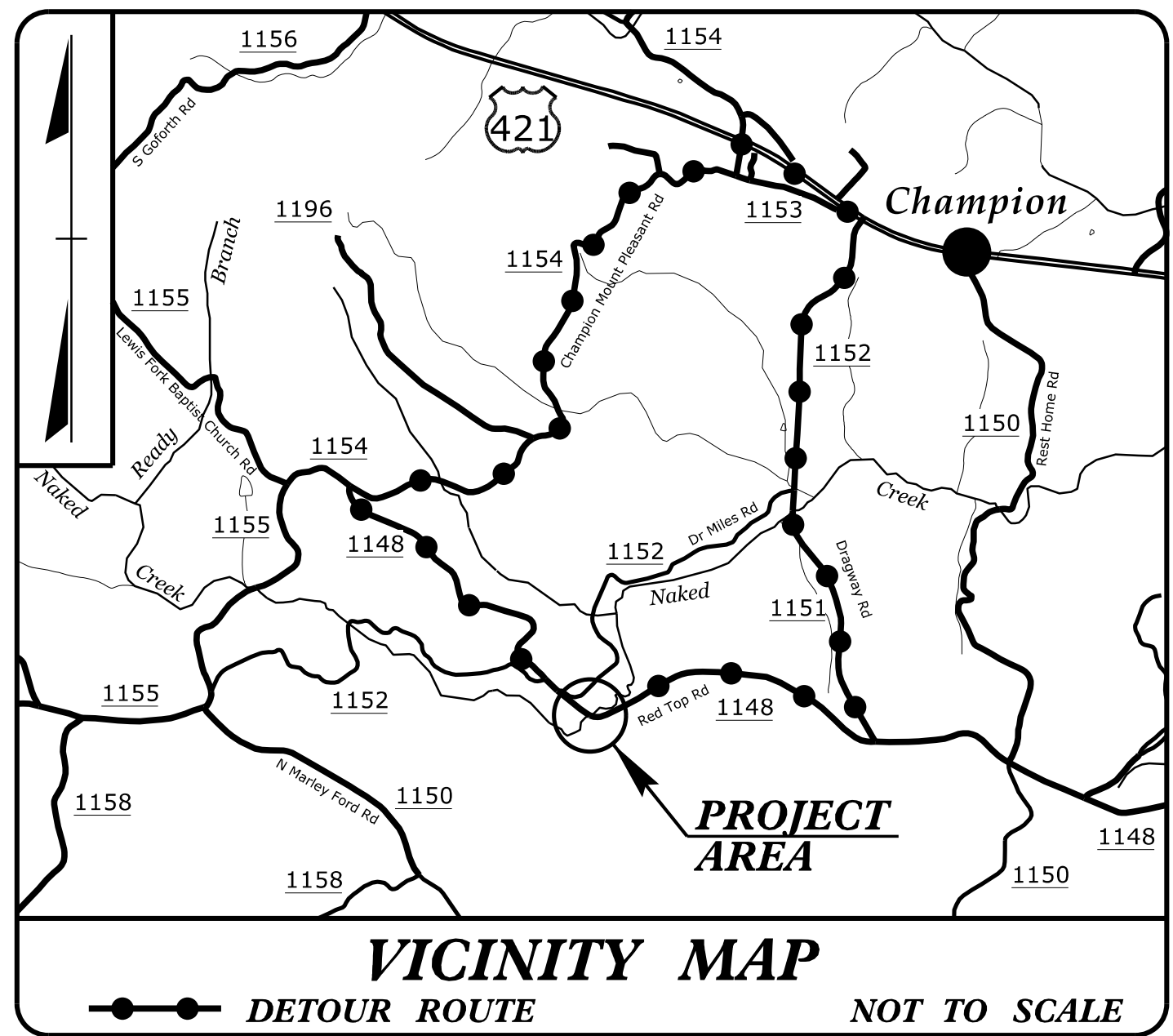
**TIP PROJECT: 17BP.11.R.153**  
**CONTRACT: C204550**

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# WILKES COUNTY

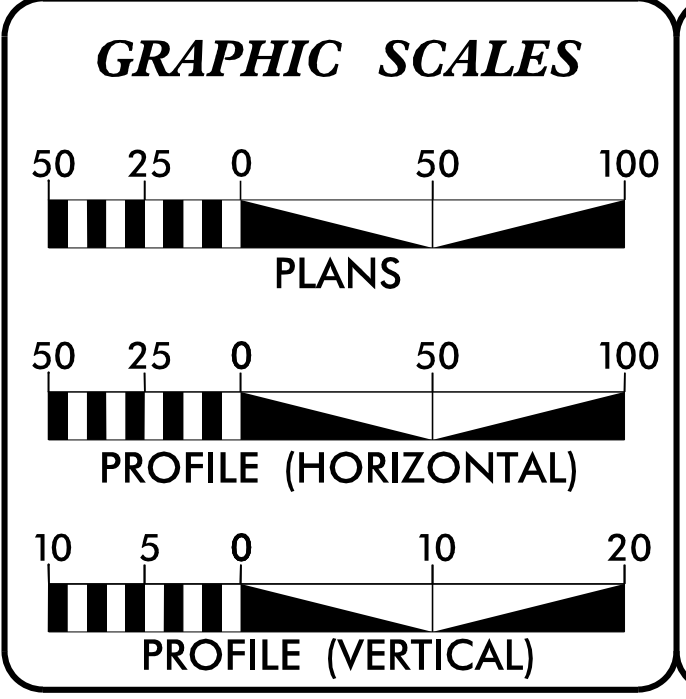
**LOCATION: REPLACE BRIDGE NO. 419 ON SR 1148  
(RED TOP ROAD) OVER NAKED CREEK**  
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.11.R.153		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.11.R.153		PE	
17BP.11.R.153		RW & UTILITIES	
17BP.11.R.153		CONST.	



## STRUCTURES

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



**DESIGN DATA**

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

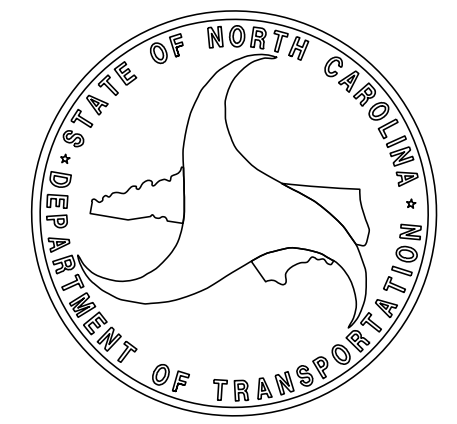
Plans Prepared By:  
 ms consultants, inc.  
 5444 Wade Park Blvd.  
 Suite 100  
 Raleigh, NC 27607  
 NC License Number - C-3239

2018 STANDARD SPECIFICATIONS

LETTING DATE:  
 JULY 20, 2021

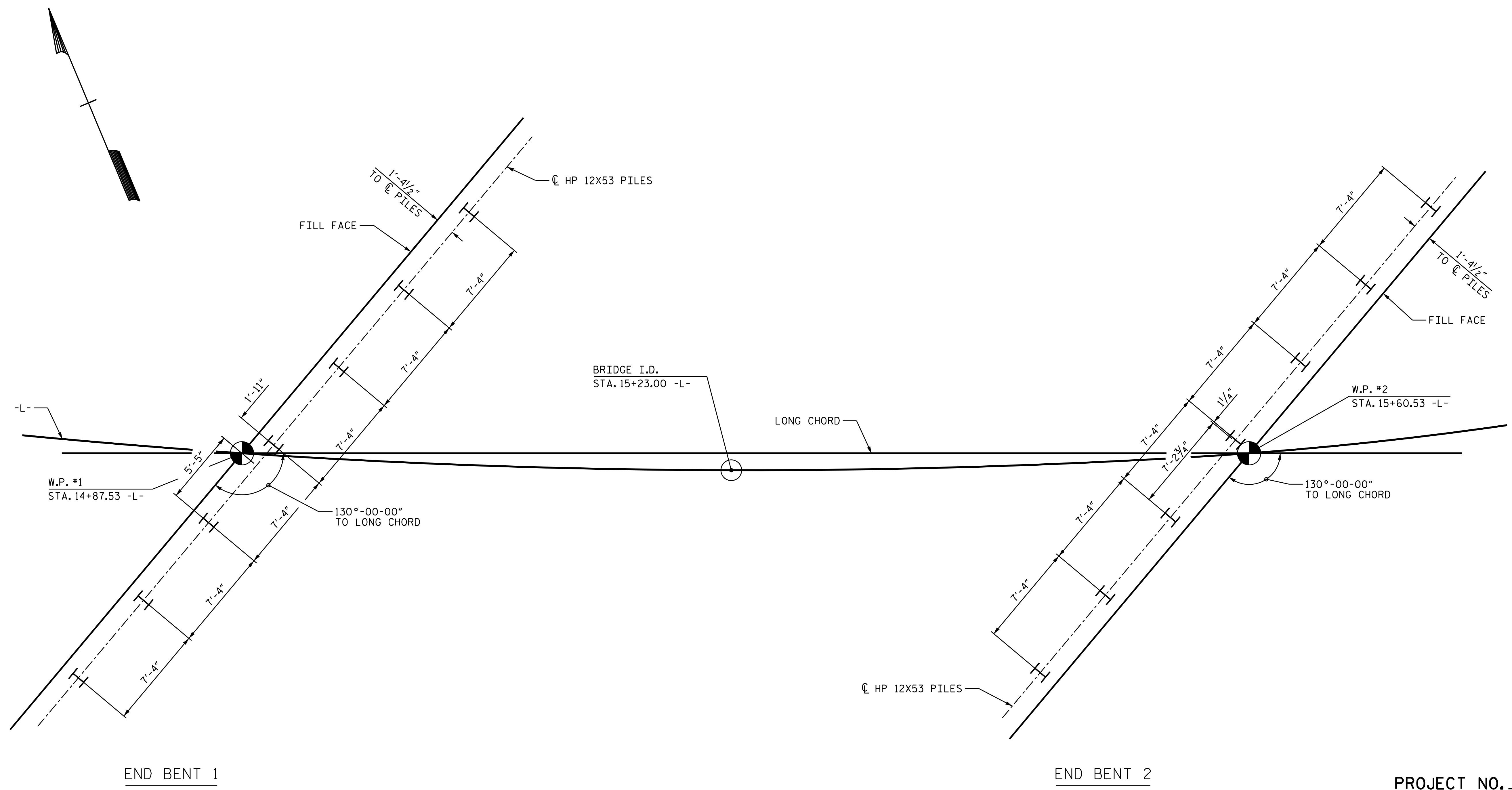
Plans Prepared For:  
 NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 1000 BIRCH RIDGE DRIVE  
 RALEIGH, NC 27610

DOCUMENT NOT CONSIDERED FINAL  
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END BENT 1

END BENT 2

**FOUNDATION LAYOUT**  
 DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE

PROJECT NO. 17BP.11.R.153  
WILKES COUNTY  
 STATION: 15+23.00 -L-  
 SHEET 2 of 3

**NOTES**

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.

DRAWN BY :	J.M. KEPICH	DATE :	08/19
CHECKED BY :	L.M. SAMPLES	DATE :	05/21
DESIGN ENGINEER OF RECORD :	J.M. KEPICH	DATE :	05/21

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



DocuSigned by:  
 Jeffrey Kepich  
 5/26/2021  
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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**FOUNDATION LAYOUT**

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

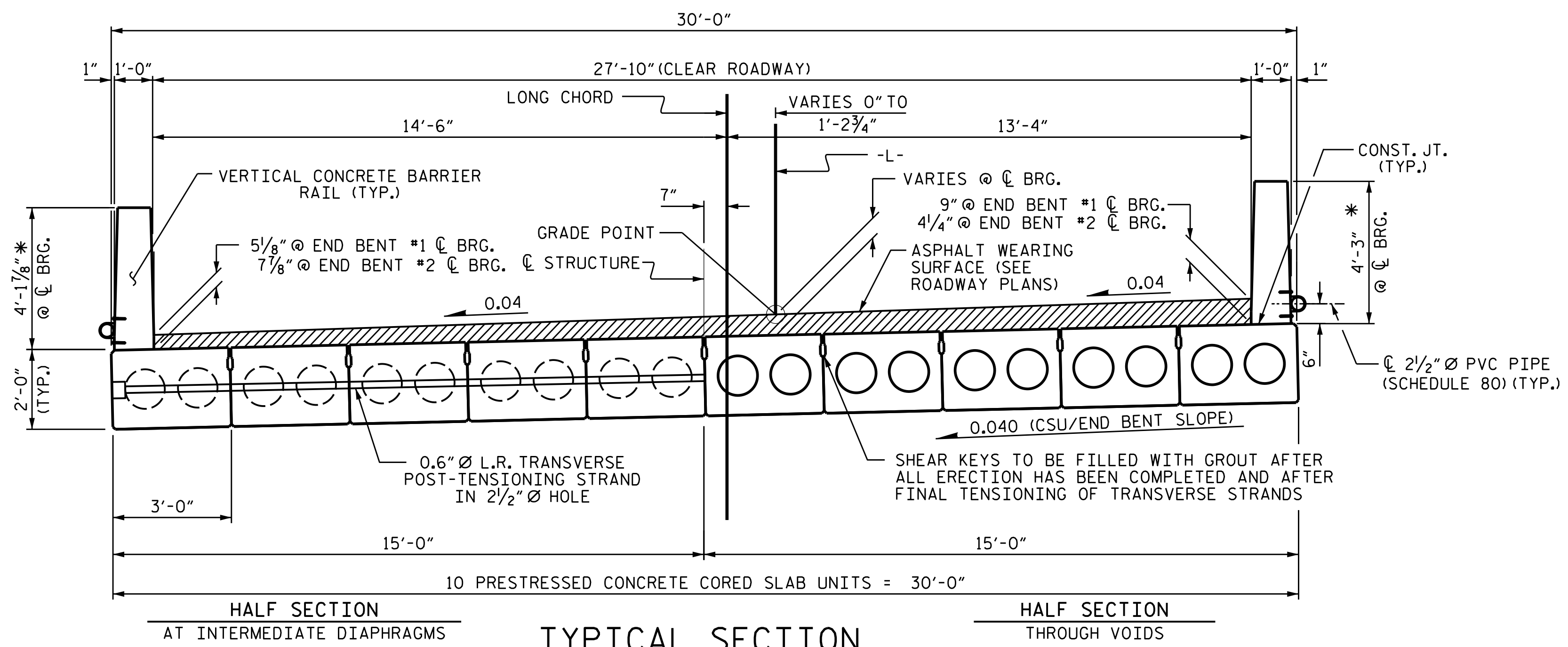
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			16



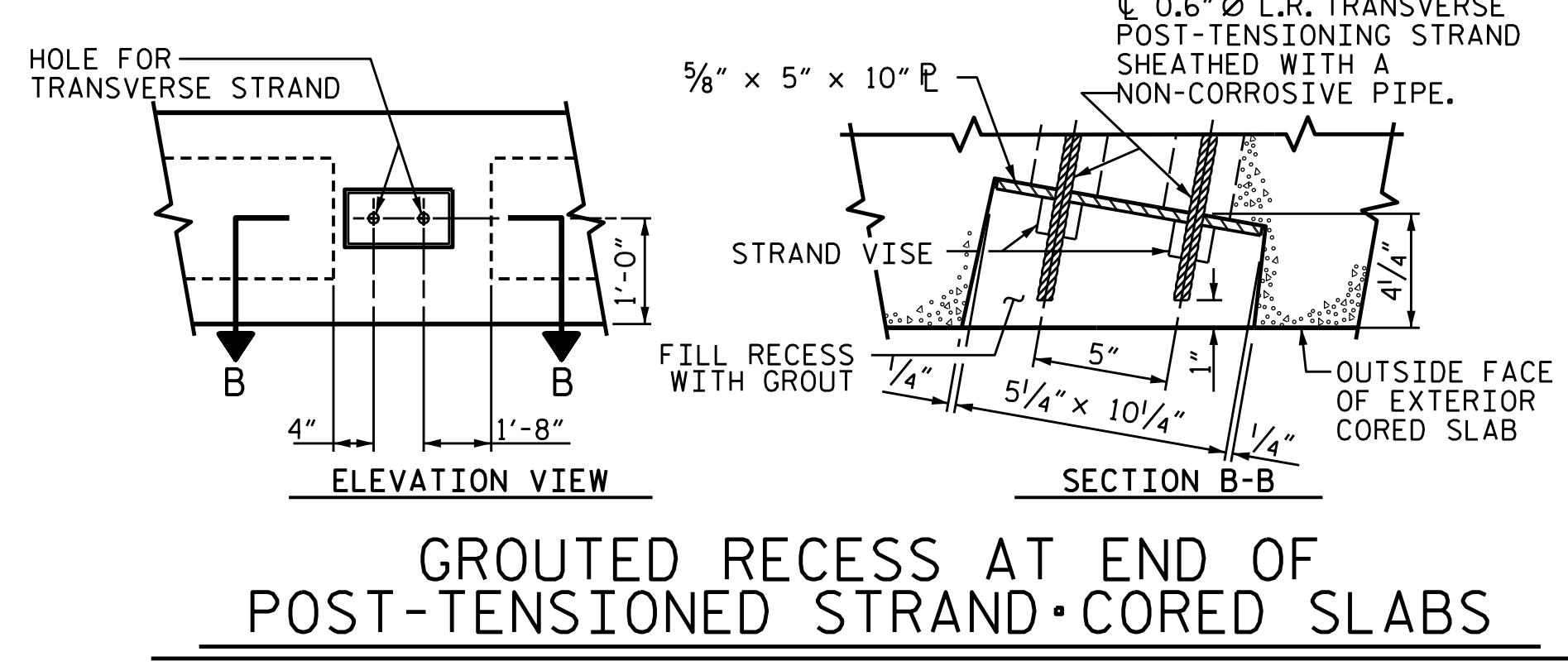
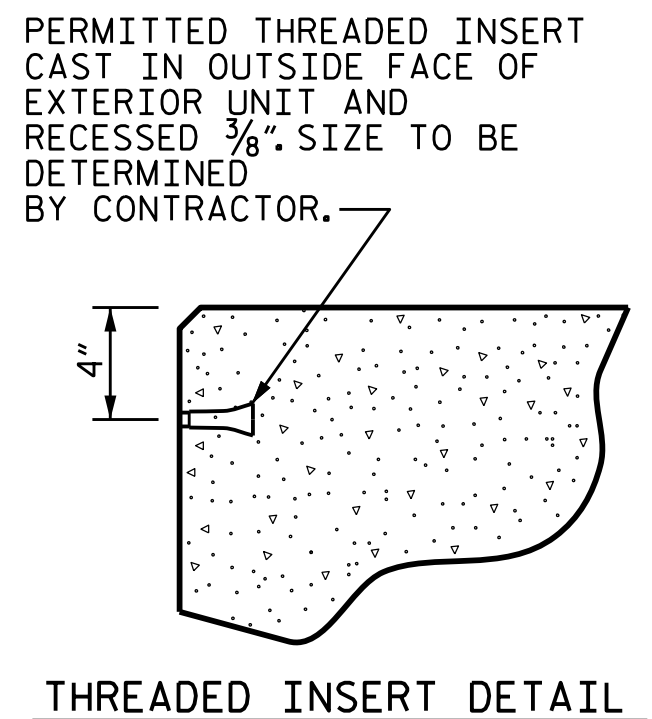
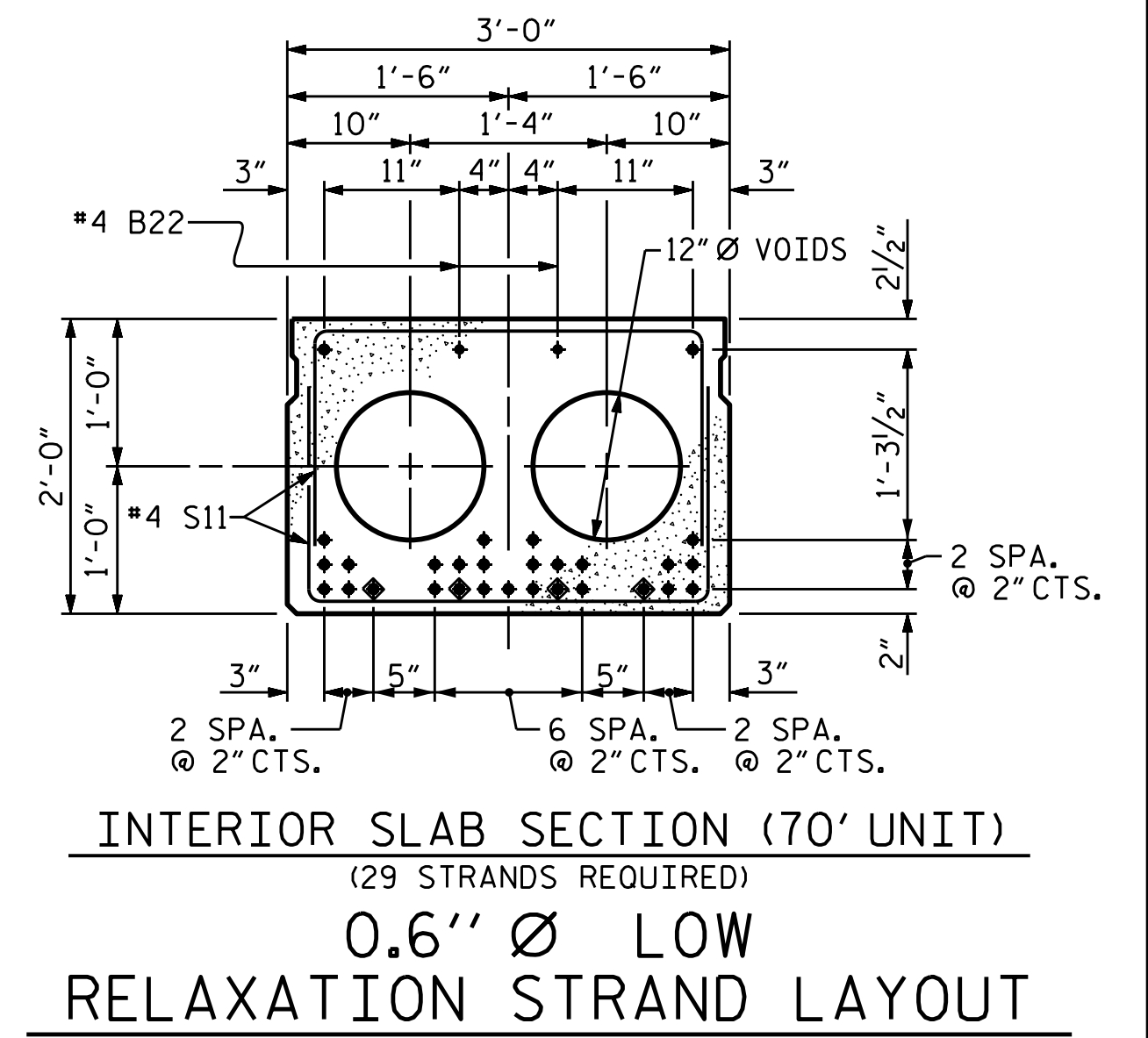
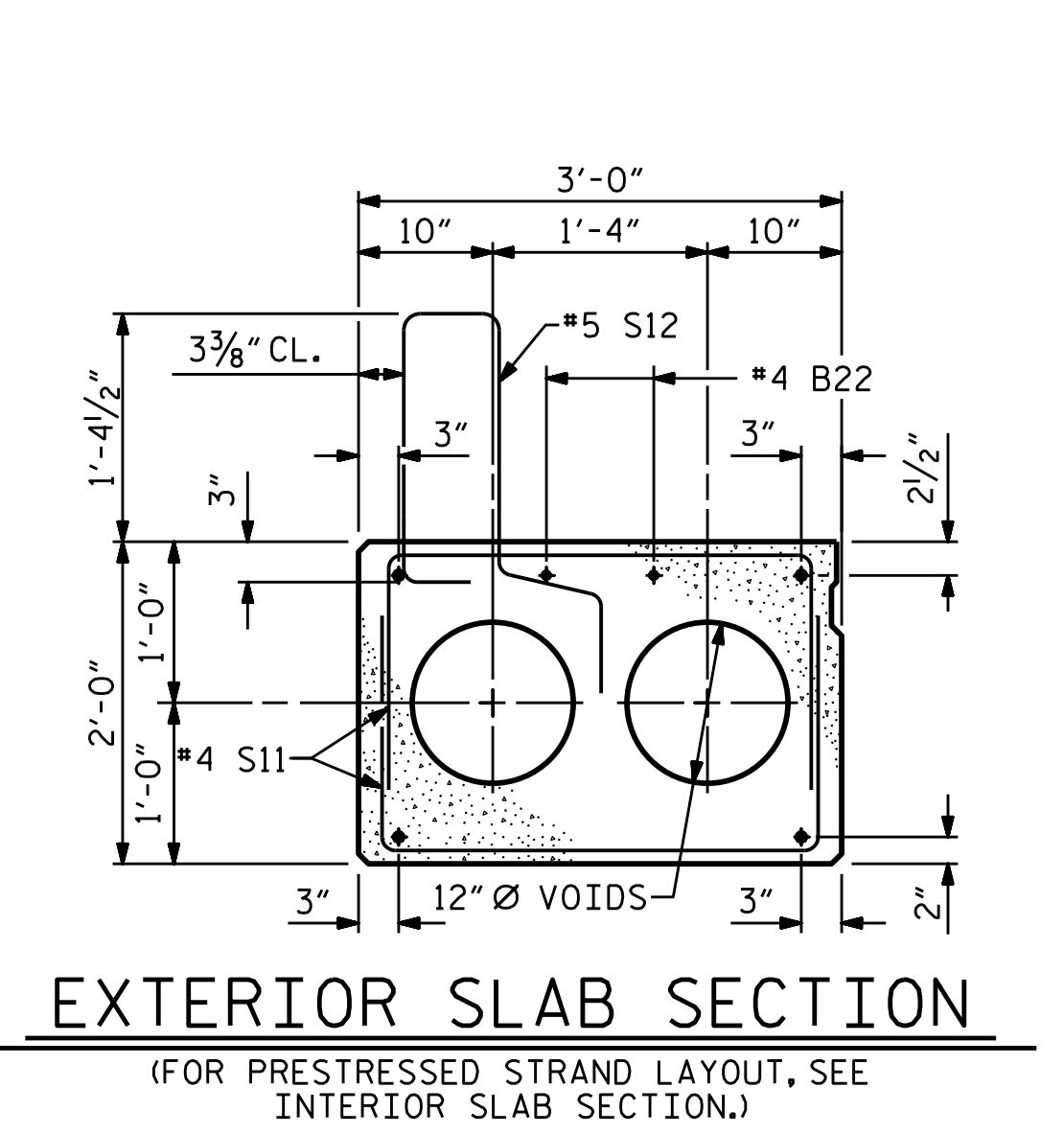
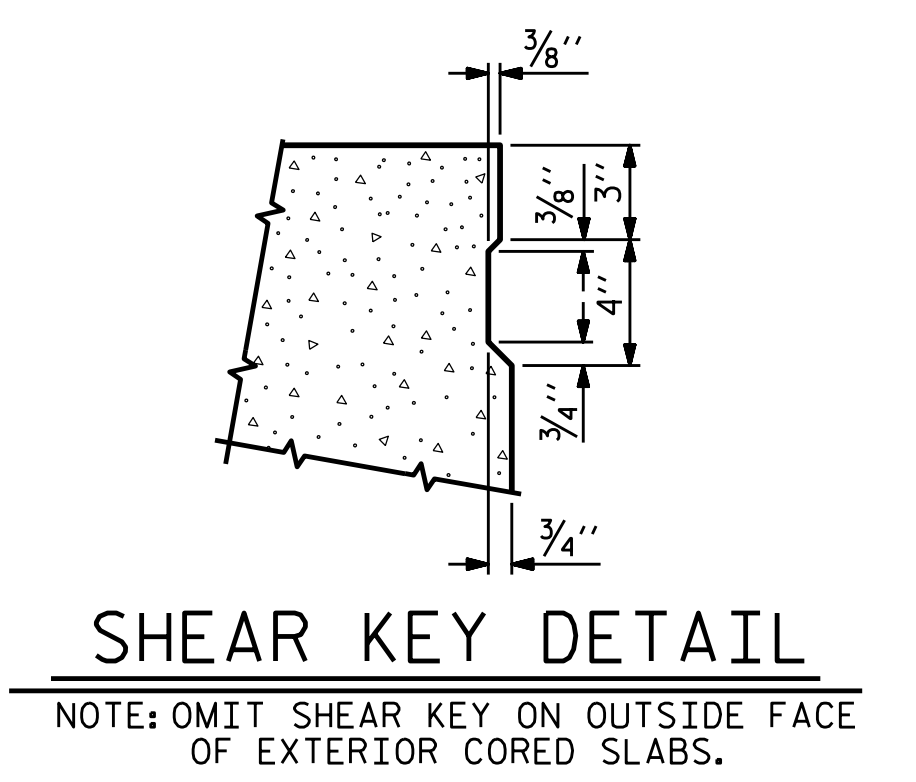
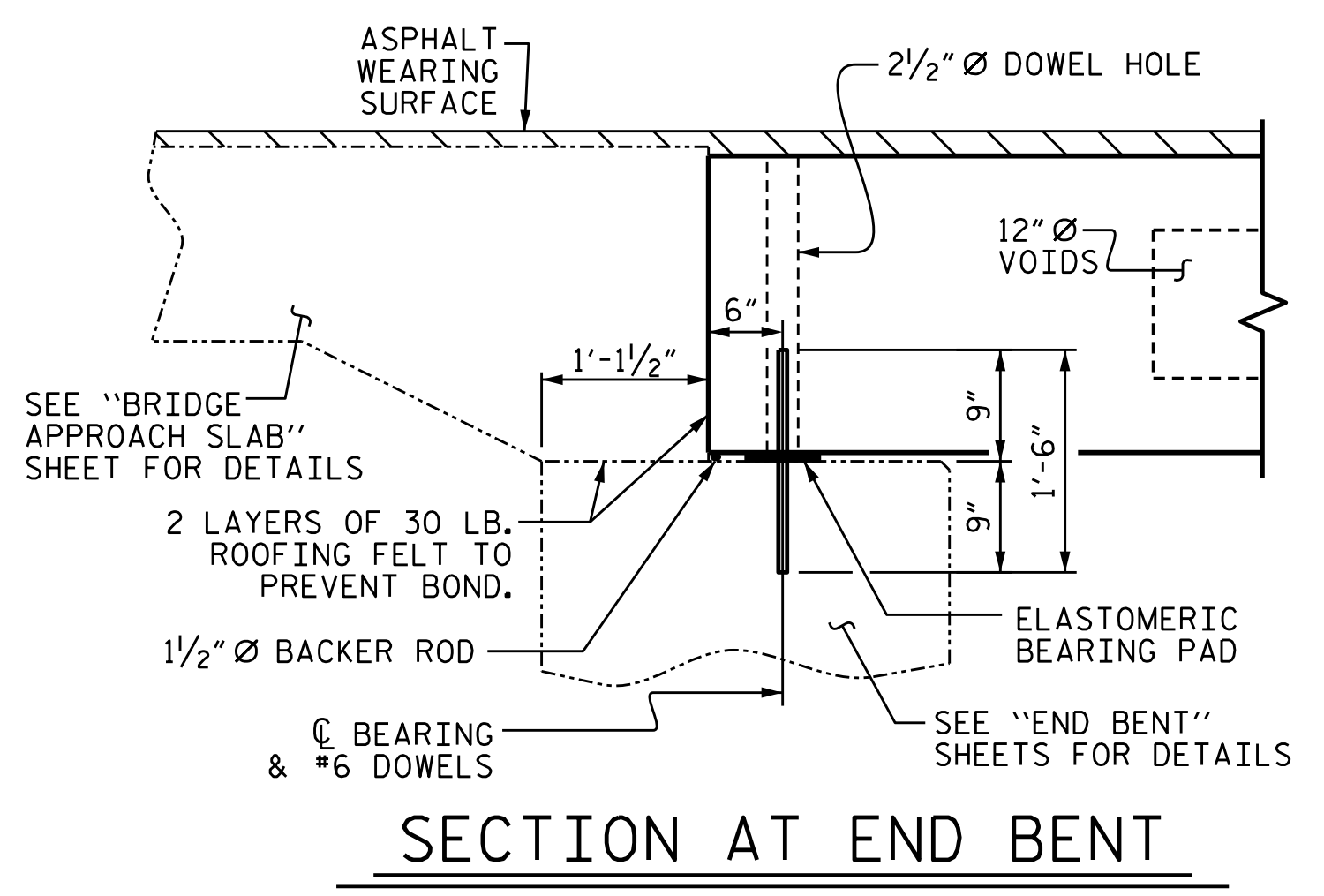






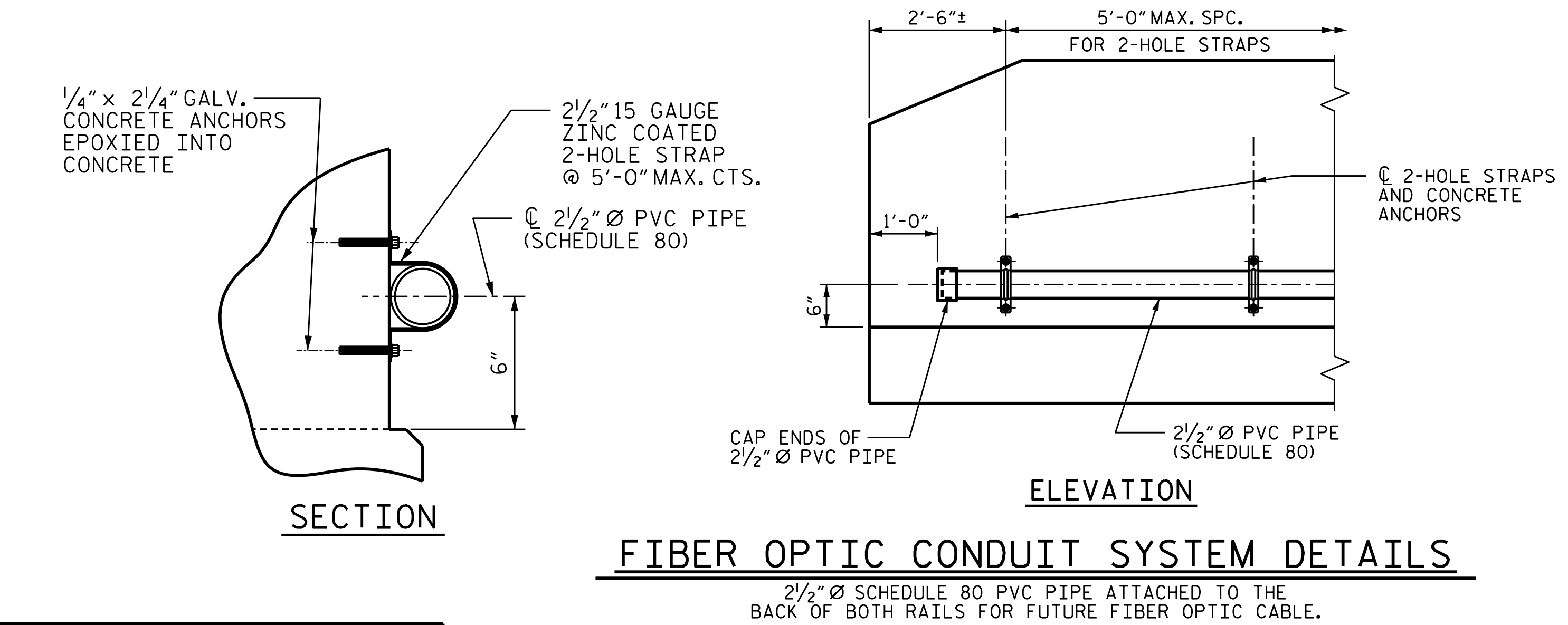
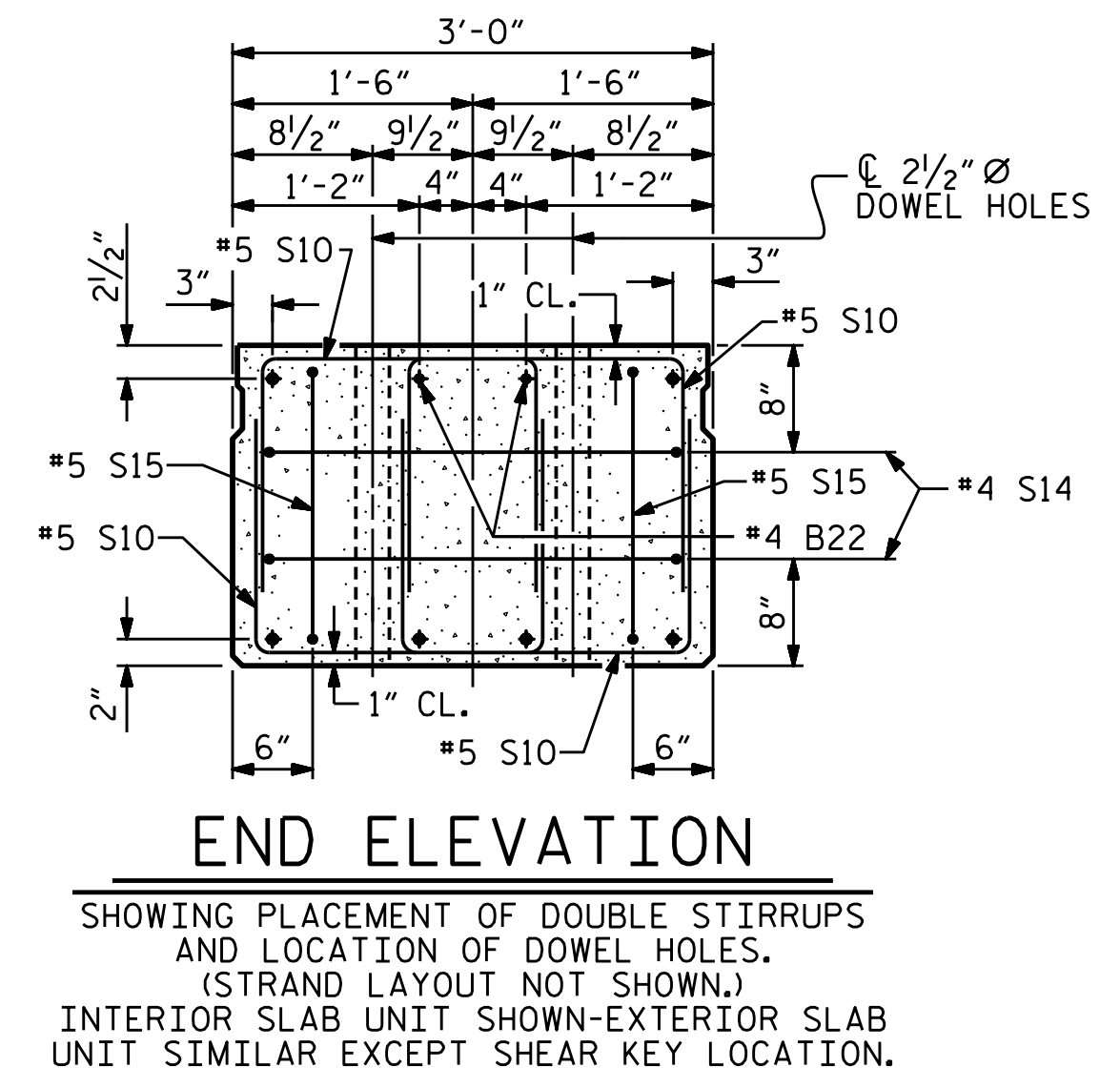


\* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

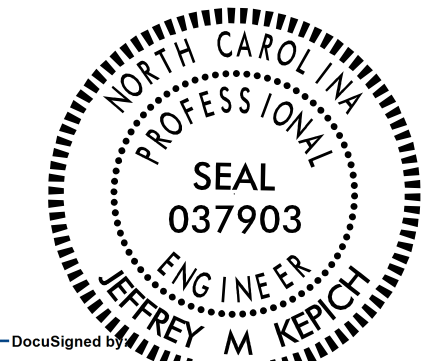


◆ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 14'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

**DEBONDING LEGEND**



PROJECT NO. 17BP.11.R.153  
 WILKES COUNTY  
 STATION: 15+23.00 -L-  
 SHEET 1 of 3



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS 16
2			4			

DRAWN BY : J.M. KEPICH DATE : 03/21  
 CHECKED BY : L.M. SAMPLES DATE : 05/21  
 DESIGN ENGINEER OF RECORD : J.M. KEPICH DATE : 05/21

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

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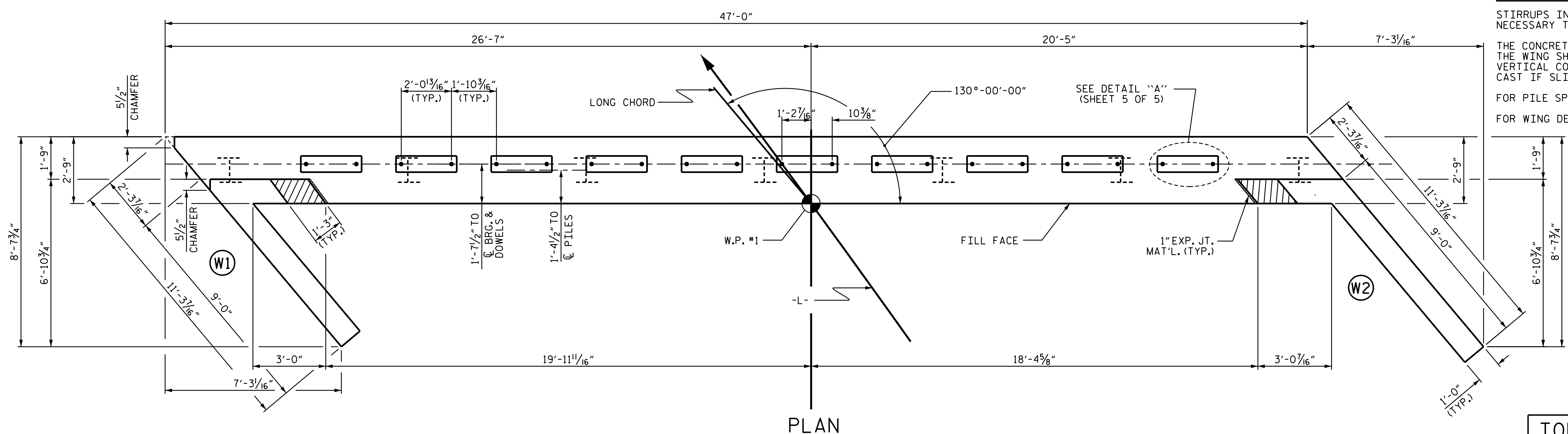




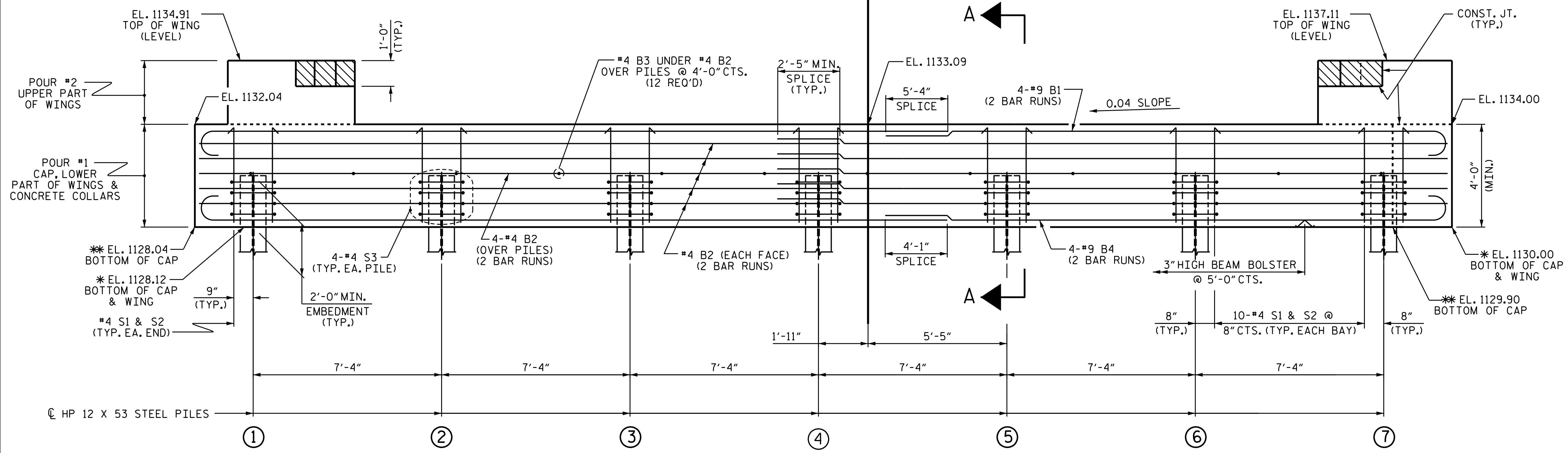


NOTES

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.  
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.  
 FOR PILE SPLICE DETAILS, SEE SHEET 5 OF 5.  
 FOR WING DETAILS, SEE SHEET 3 OF 5.



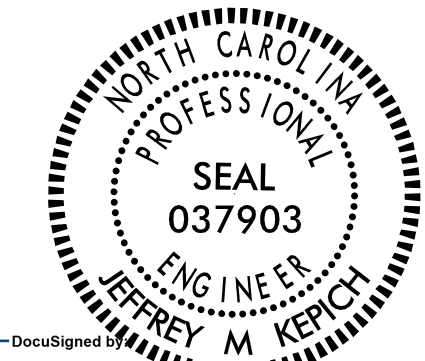
TOP OF PILE ELEVATIONS	
①	1130.13
②	1130.43
③	1130.72
④	1131.01
⑤	1131.31
⑥	1131.60
⑦	1131.89



PROJECT NO. 17BP.11.R.153  
 WILKES COUNTY  
 STATION: 15+23.00 -L-

SHEET 1 of 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT No. 1



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

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

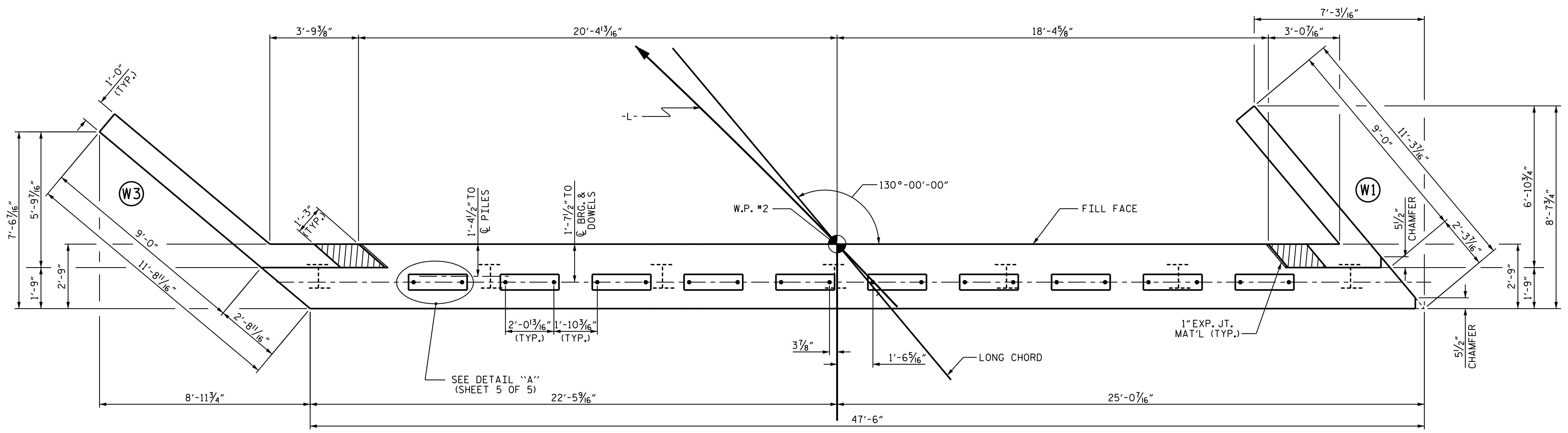
TOTAL SHEETS: 16

DRAWN BY : J.M. KEPICH DATE : 02/21  
 CHECKED BY : L.M. SAMPLES DATE : 05/21  
 DESIGN ENGINEER OF RECORD : J.M. KEPICH DATE : 05/21

WINGS NOT SHOWN FOR CLARITY.  
 FOR SECTION A-A, SEE SHEET 5 OF 5.  
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 5 OF 5.

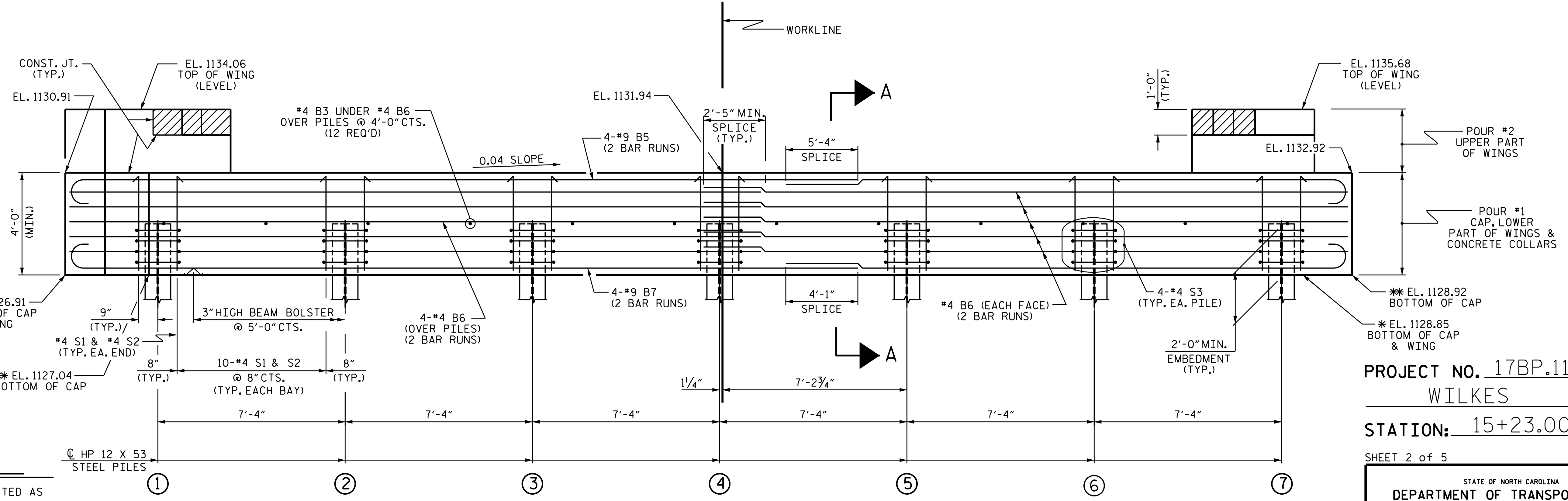
\* - ELEVATION SHOWN ALONG FILL FACE  
 \*\* - ELEVATION SHOWN ALONG FRONT FACE OF CAP





PLAN

TOP OF PILE ELEVATIONS	
①	1129.06
②	1129.35
③	1129.64
④	1129.94
⑤	1130.23
⑥	1130.52
⑦	1130.82



ELEVATION

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
- FOR PILE SPLICE DETAILS, SEE SHEET 5 OF 5.
- FOR WING DETAILS, SEE SHEETS 3 & 4 OF 5.
- \* - ELEVATION SHOWN ALONG FILL FACE
- \*\* - ELEVATION SHOWN FRONT FACE OF CAP

WINGS NOT SHOWN FOR CLARITY. FOR SECTION A-A, SEE SHEET 5 OF 5.  
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 5 OF 5.

PROJECT NO. 17BP.11.R.153  
WILKES COUNTY  
 STATION: 15+23.00 -L-  
 SHEET 2 of 5

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE

END BENT No. 2



DRAWN BY :	J.M. KEPICH	DATE :	02/21
CHECKED BY :	L.M. SAMPLES	DATE :	05/21
DESIGN ENGINEER OF RECORD :	J.M. KEPICH	DATE :	05/21

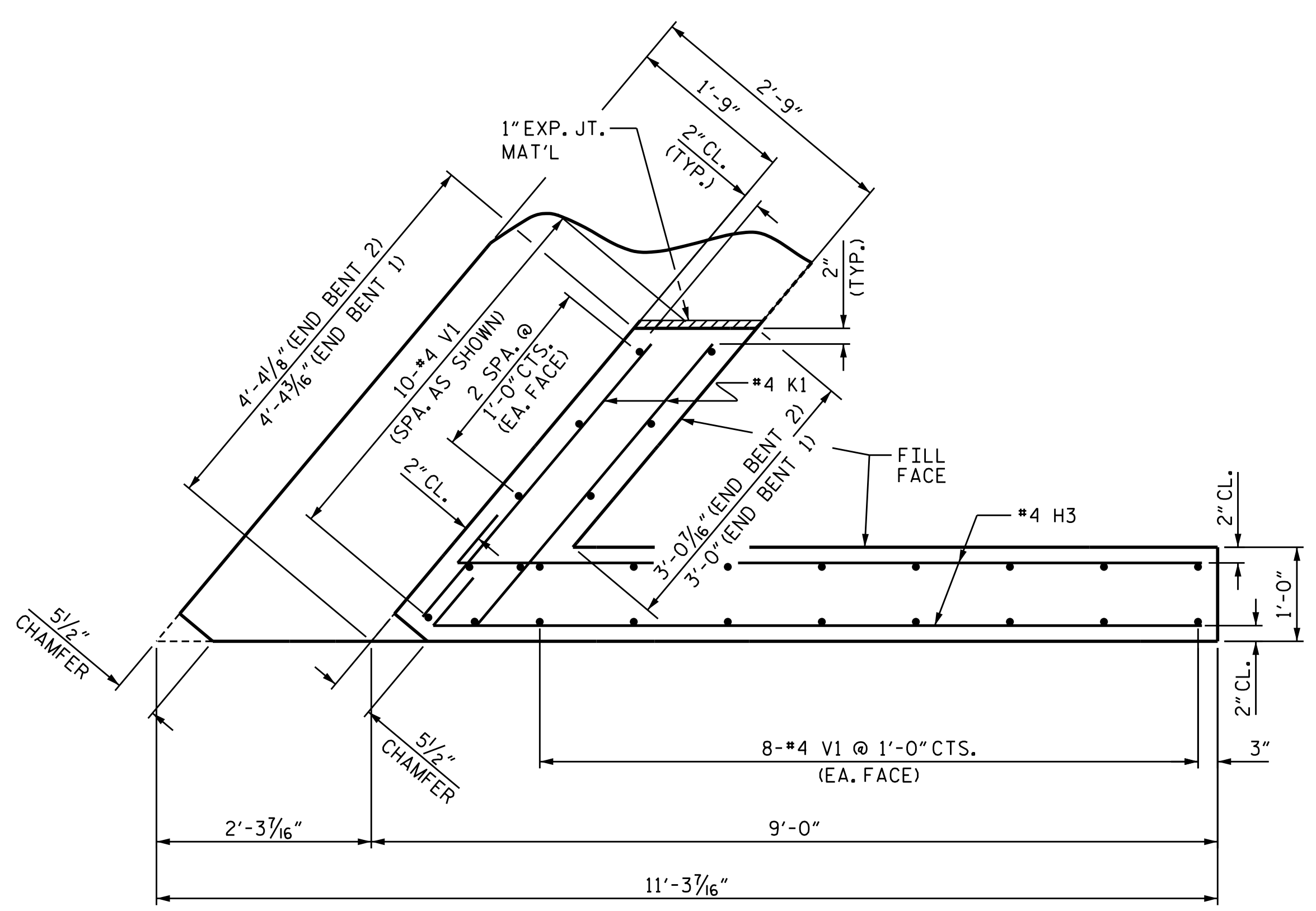
**ms consultants, inc.**  
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 Raleigh, NC 27607  
 NC License Number : C-3239

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

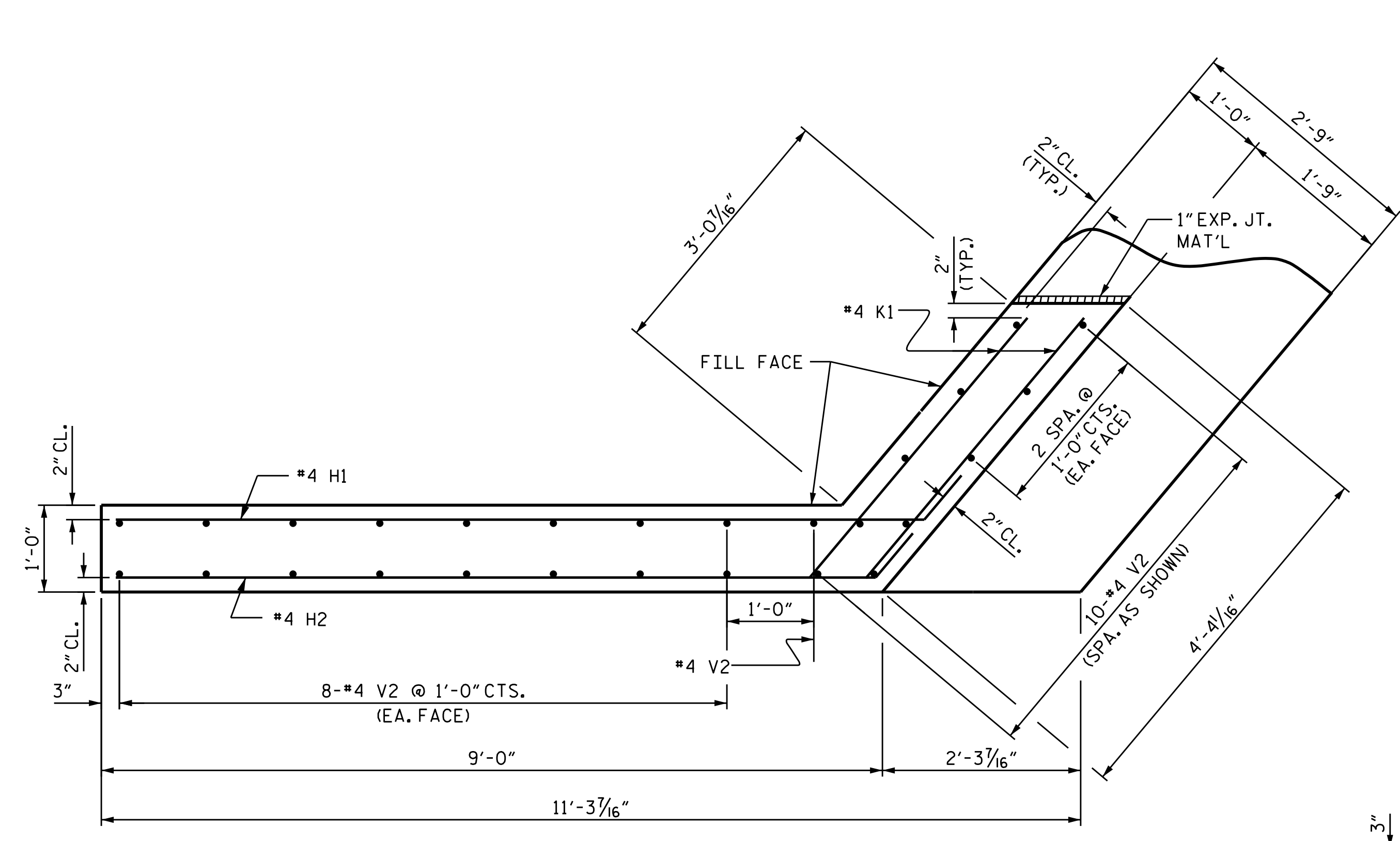
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SHEET NO. S-10  
 TOTAL SHEETS 16

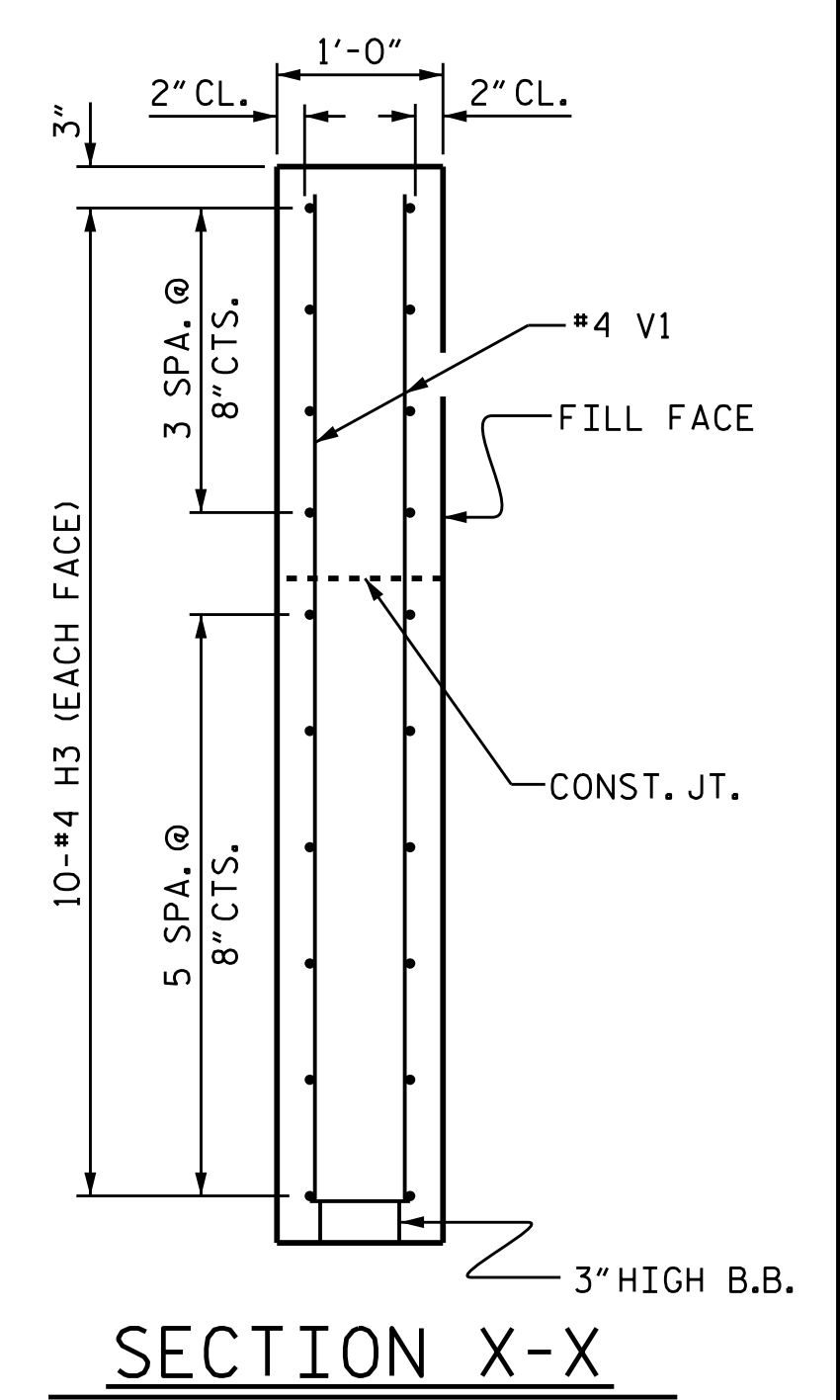




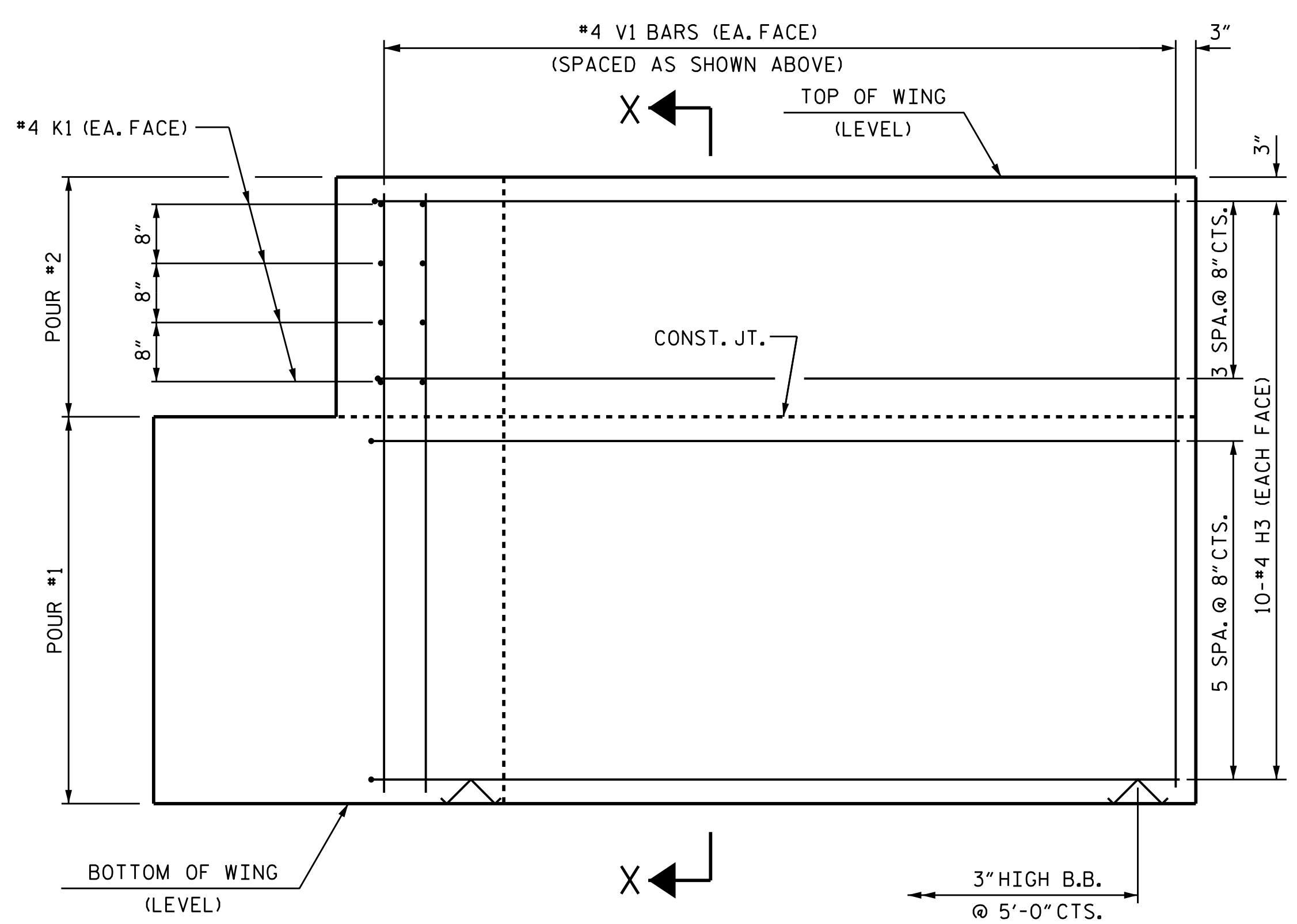
PLAN OF WING (W1)



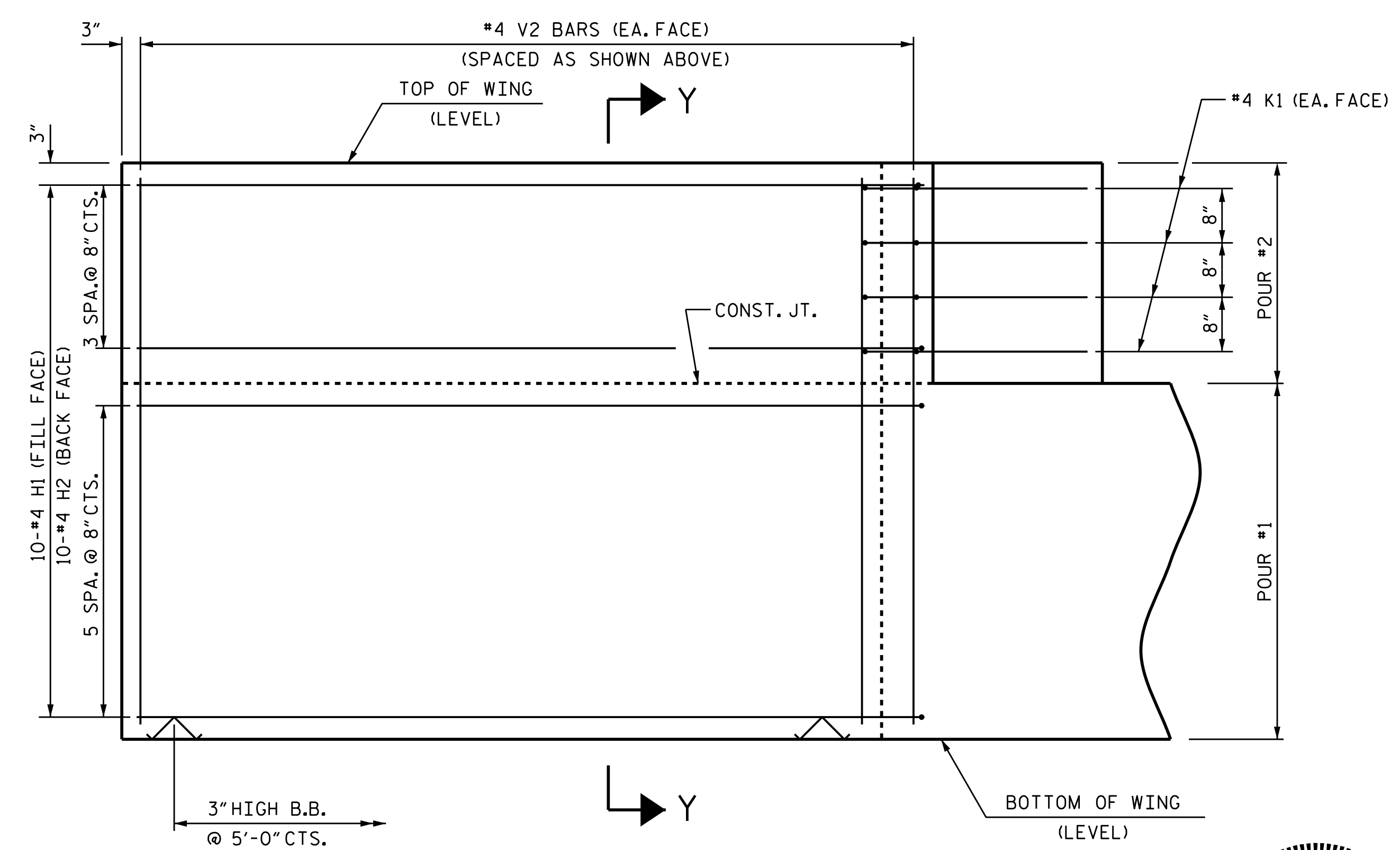
PLAN OF WING (W2)



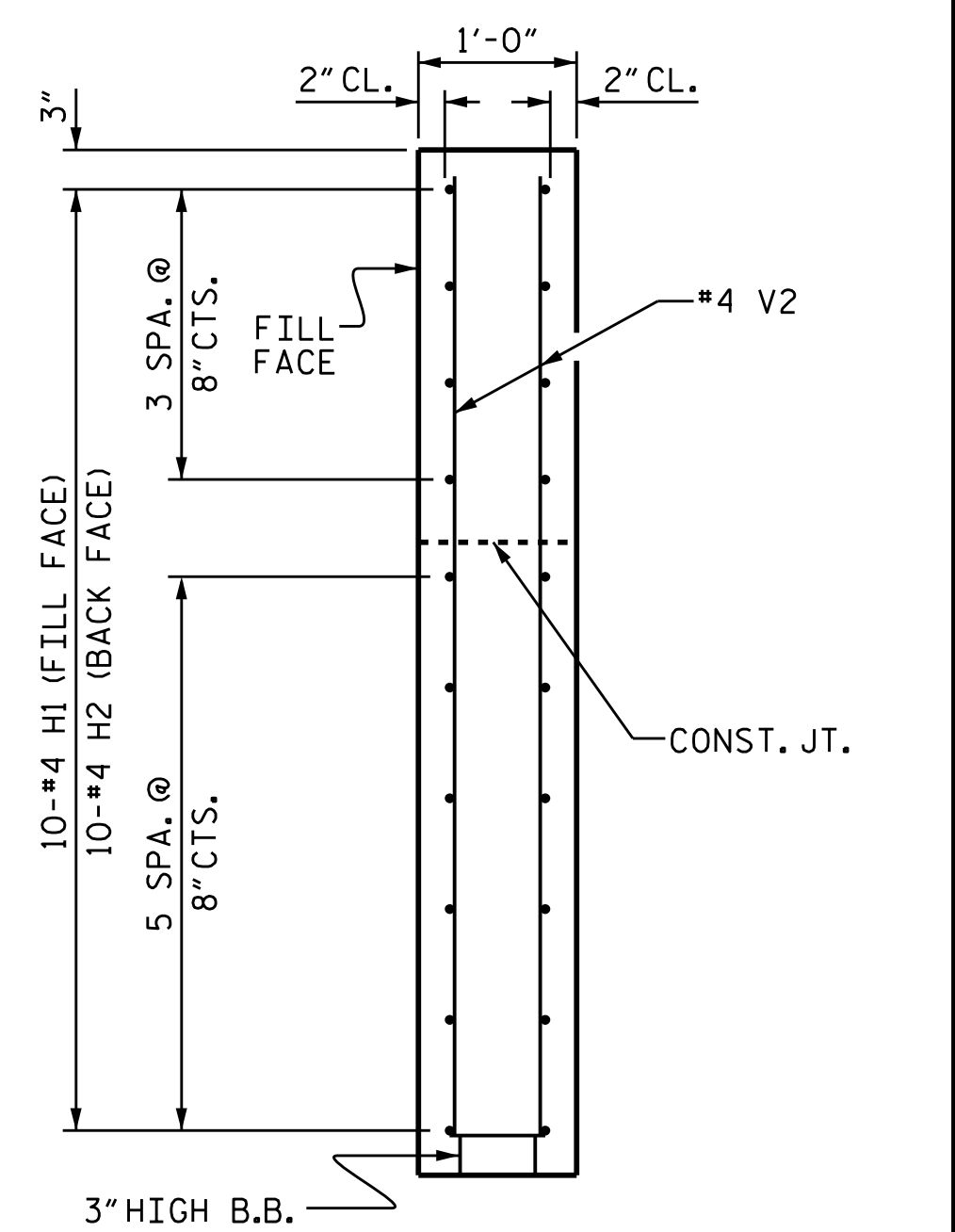
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



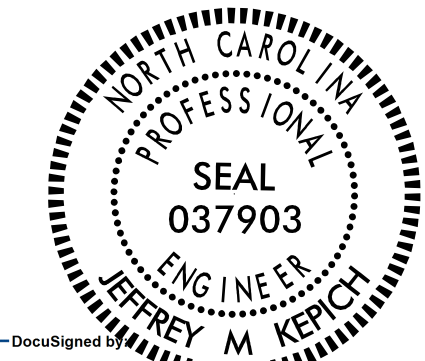
SECTION Y-Y

PROJECT NO. 17BP.11.R.153  
 WILKES COUNTY  
 STATION: 15+23.00 -L-  
 SHEET 3 of 5

WING DETAILS

DRAWN BY : J.M. KEPICH DATE : 02/21  
 CHECKED BY : L.M. SAMPLES DATE : 05/21  
 DESIGN ENGINEER OF RECORD : J.M. KEPICH DATE : 05/21

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 Raleigh, NC 27607  
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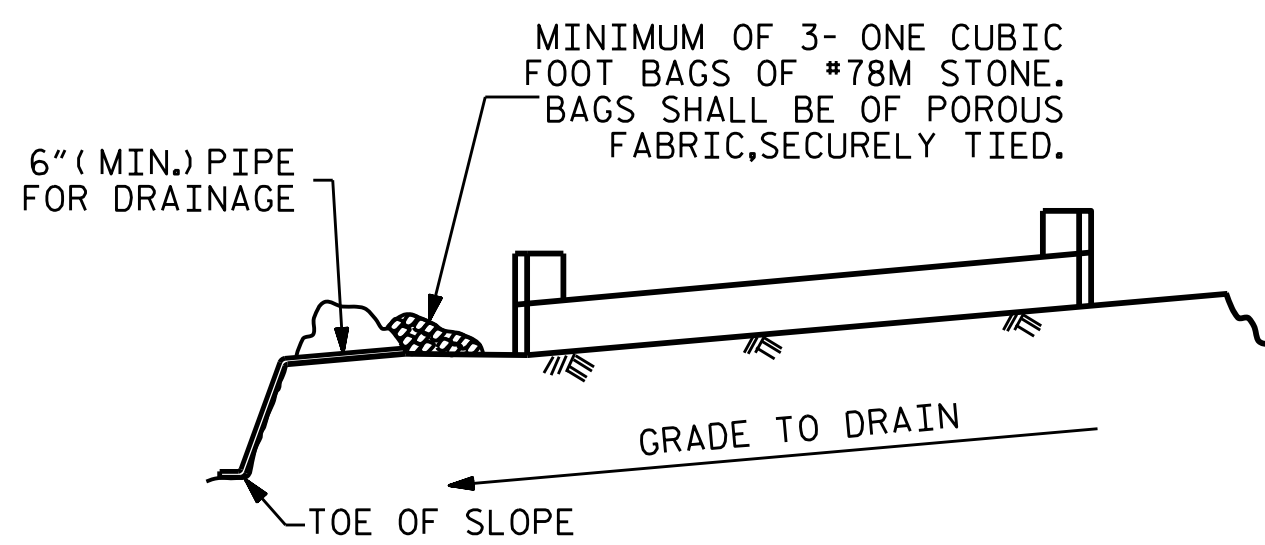
5/26/2021  
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
END BENT WING DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S-11
TOTAL SHEETS					16







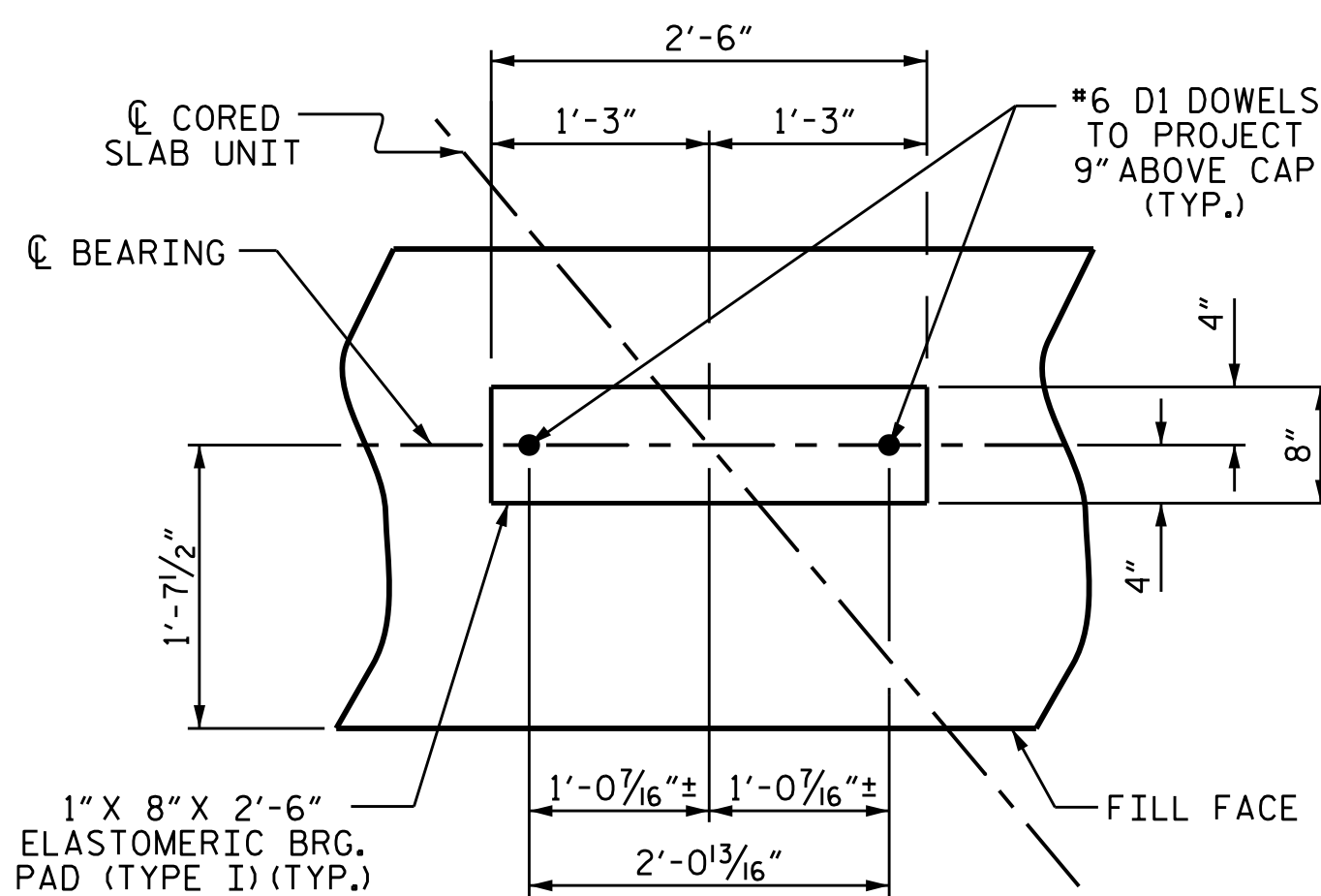


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

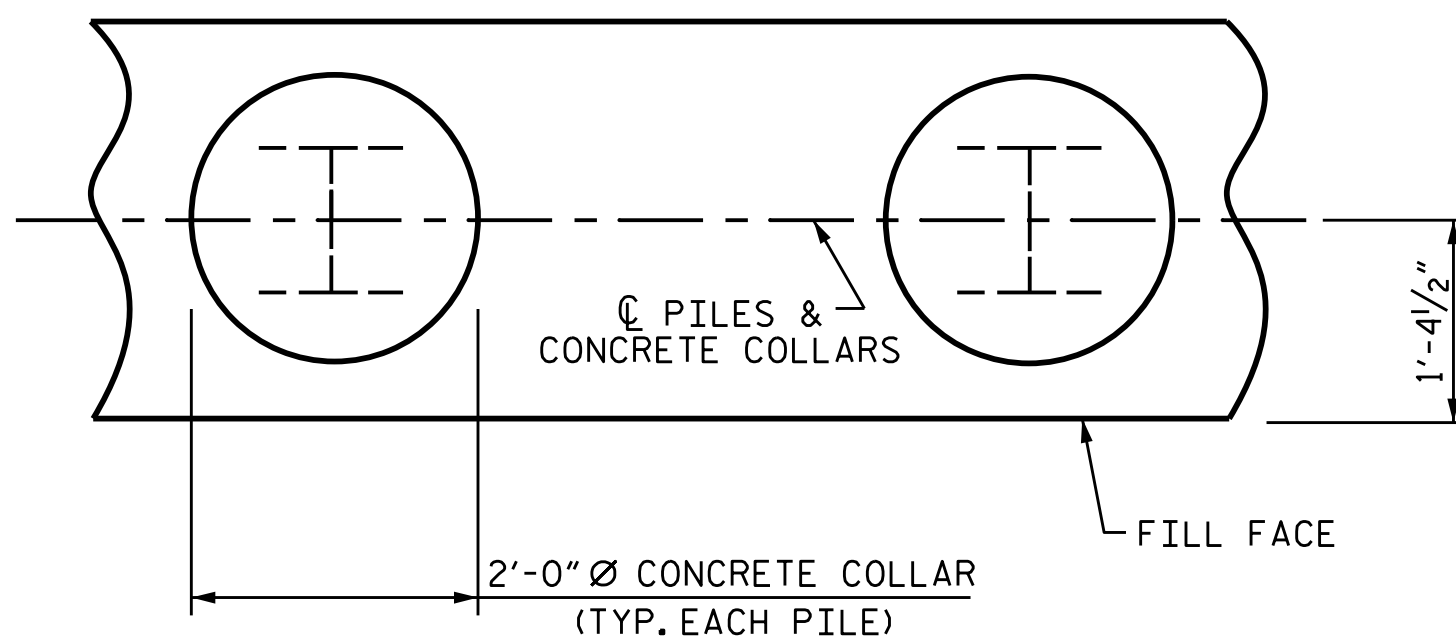
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

### TEMPORARY DRAINAGE AT END BENT



DETAIL "A"

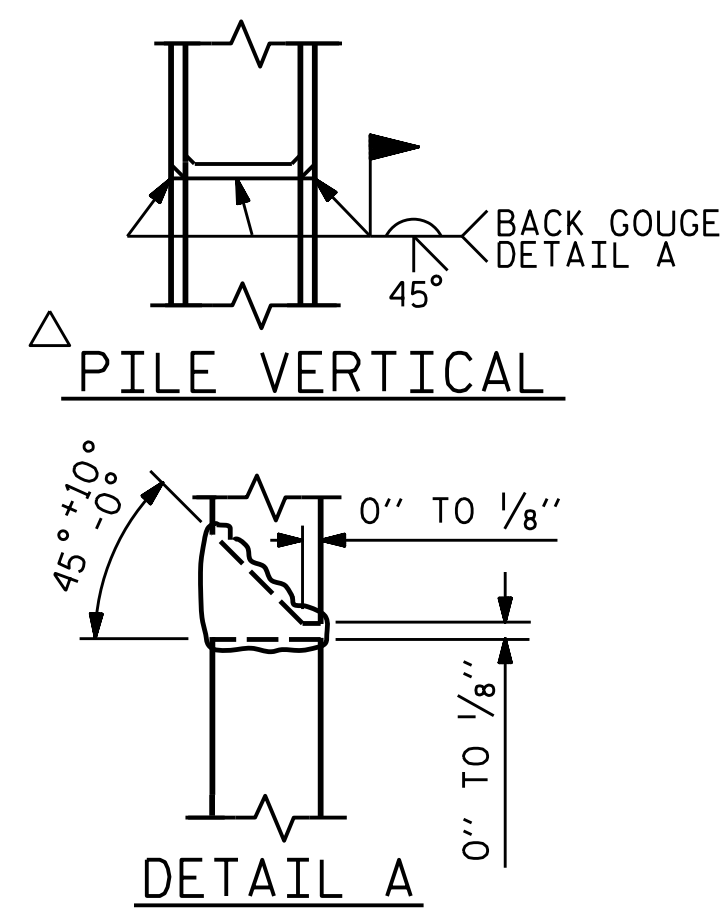
(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



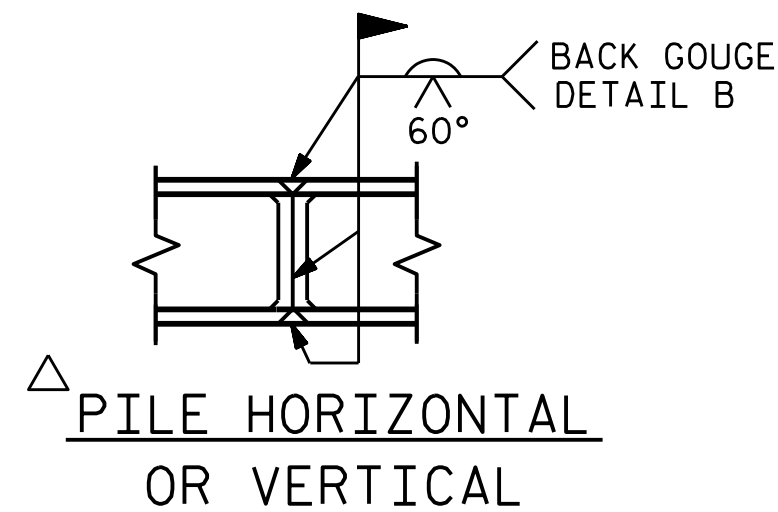
PLAN

### CORROSION PROTECTION FOR STEEL PILES DETAIL

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



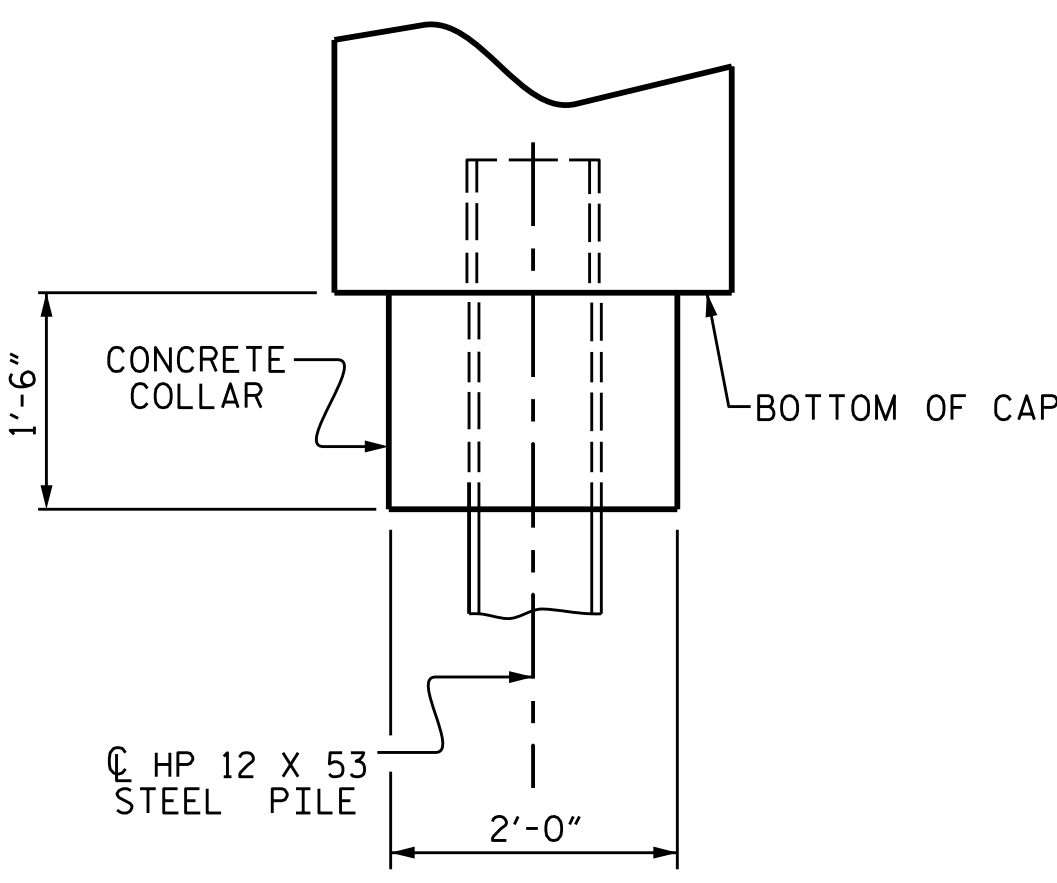
DETAIL A



DETAIL B

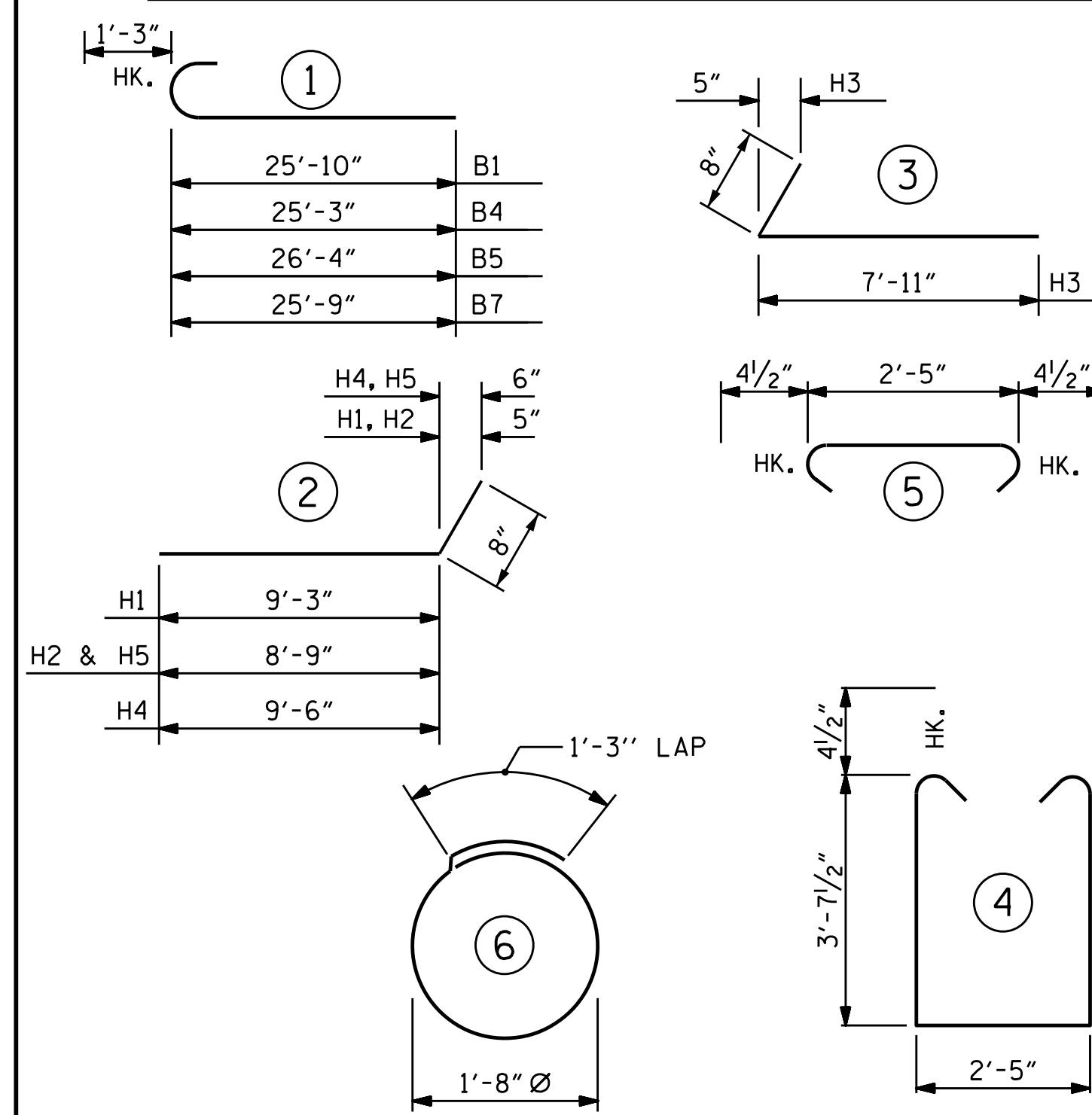
POSITION OF PILE DURING WELDING.

### PILE SPLICE DETAILS



ELEVATION

### BAR TYPES

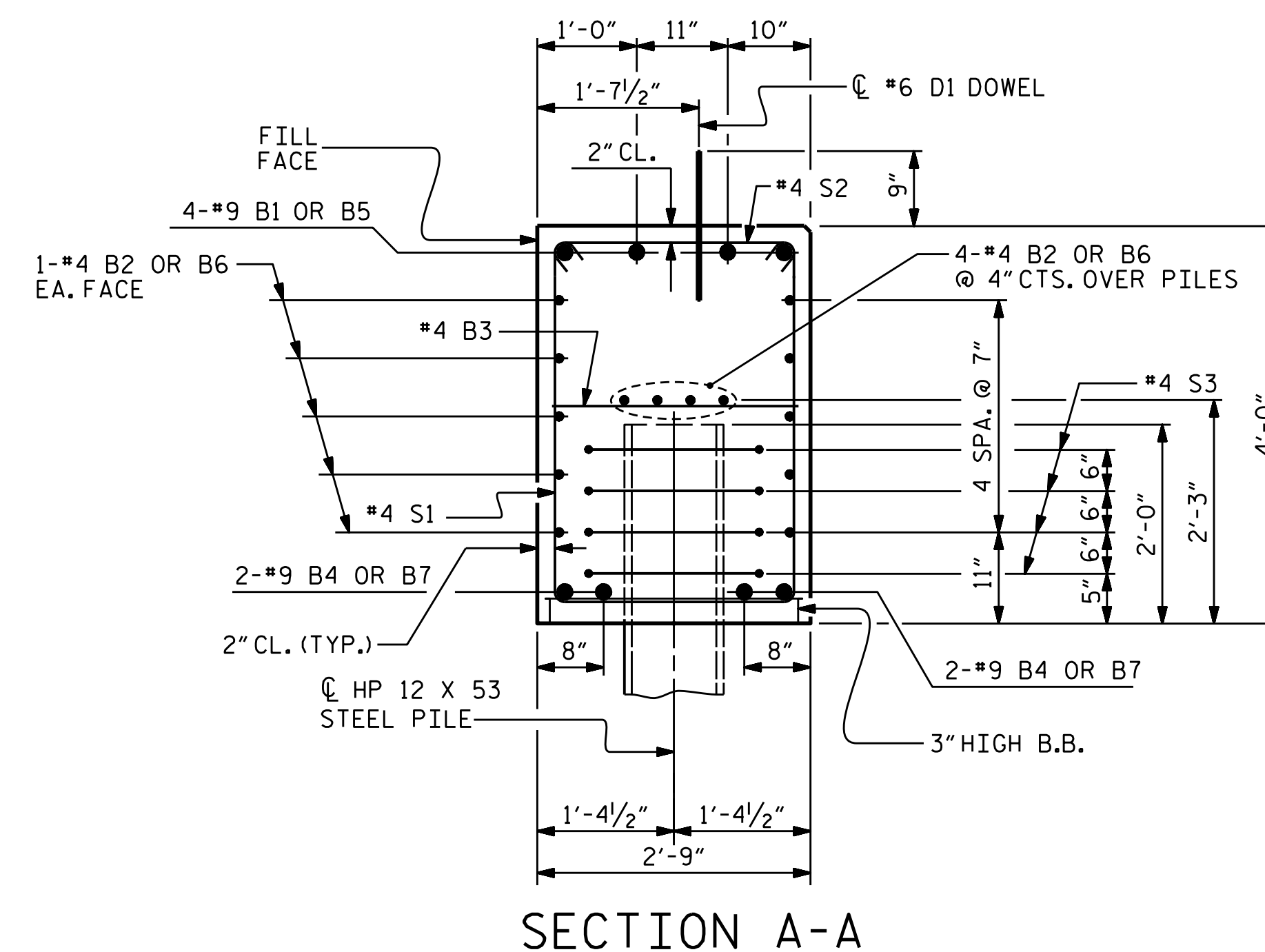


ALL BAR DIMENSIONS ARE OUT TO OUT.

END BENT No. 1		END BENT No. 2	
HP 12 X 53 STEEL PILES NO: 7 LIN. FT. = 140.0		HP 12 X 53 STEEL PILES NO: 7 LIN. FT. = 123.0	
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7		PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES NO: 7	

BILL OF MATERIAL FOR ONE END BENT #1					BILL OF MATERIAL FOR ONE END BENT #2				
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	#9	1	27'-1"	737	B3	#4	STR	2'-5"	20
B2	#4	STR	24'-7"	460	B5	#9	1	27'-7"	751
B3	#4	STR	2'-5"	20	B6	#4	STR	24'-10"	465
B4	#9	1	26'-6"	721	B7	#9	1	27'-0"	735
D1	#6	STR	1'-6"	45	D1	#6	STR	1'-6"	45
H1	#4	2	9'-11"	67	H3	#4	3	8'-7"	115
H2	#4	2	9'-5"	63	H4	#4	2	10'-2"	68
H3	#4	3	8'-7"	115	H5	#4	2	9'-5"	63
K1	#4	STR	3'-10"	41	K1	#4	STR	3'-3"	17
					K2	#4	STR	4'-9"	25
S1	#4	4	10'-5"	432	S1	#4	4	10'-5"	432
S2	#4	5	3'-2"	131	S2	#4	5	3'-2"	131
S3	#4	6	6'-6"	122	S3	#4	6	6'-6"	122
V1	#4	STR	6'-6"	113	V1	#4	STR	6'-6"	113
V2	#4	STR	6'-10"	123	V2	#4	STR	6'-10"	132

REINFORCING STEEL (FOR END BENT #1)		REINFORCING STEEL (FOR END BENT #2)	
	3190 LBS.		3234 LBS.
CLASS A CONCRETE BREAKDOWN (FOR END BENT #1)		CLASS A CONCRETE BREAKDOWN (FOR END BENT #2)	
POUR #1 CAP, LOWER PART OF WINGS & COLLARS	21.4 C.Y.	POUR #1 CAP, LOWER PART OF WINGS & COLLARS	21.8 C.Y.
POUR #2 UPPER PART OF WINGS	2.7 C.Y.	POUR #2 UPPER PART OF WINGS	2.7 C.Y.
TOTAL CLASS A CONCRETE	24.1 C.Y.	TOTAL CLASS A CONCRETE	24.5 C.Y.



SECTION A-A

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

PROJECT NO. 17BP.11.R.153  
WILKES COUNTY  
STATION: 15+23.00 -L-

SHEET 5 of 5

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE  
END BENT No. 1 & 2  
DETAILS



DESIGNED BY: Jeffrey M. Kepich  
DATE: 5/26/2021  
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

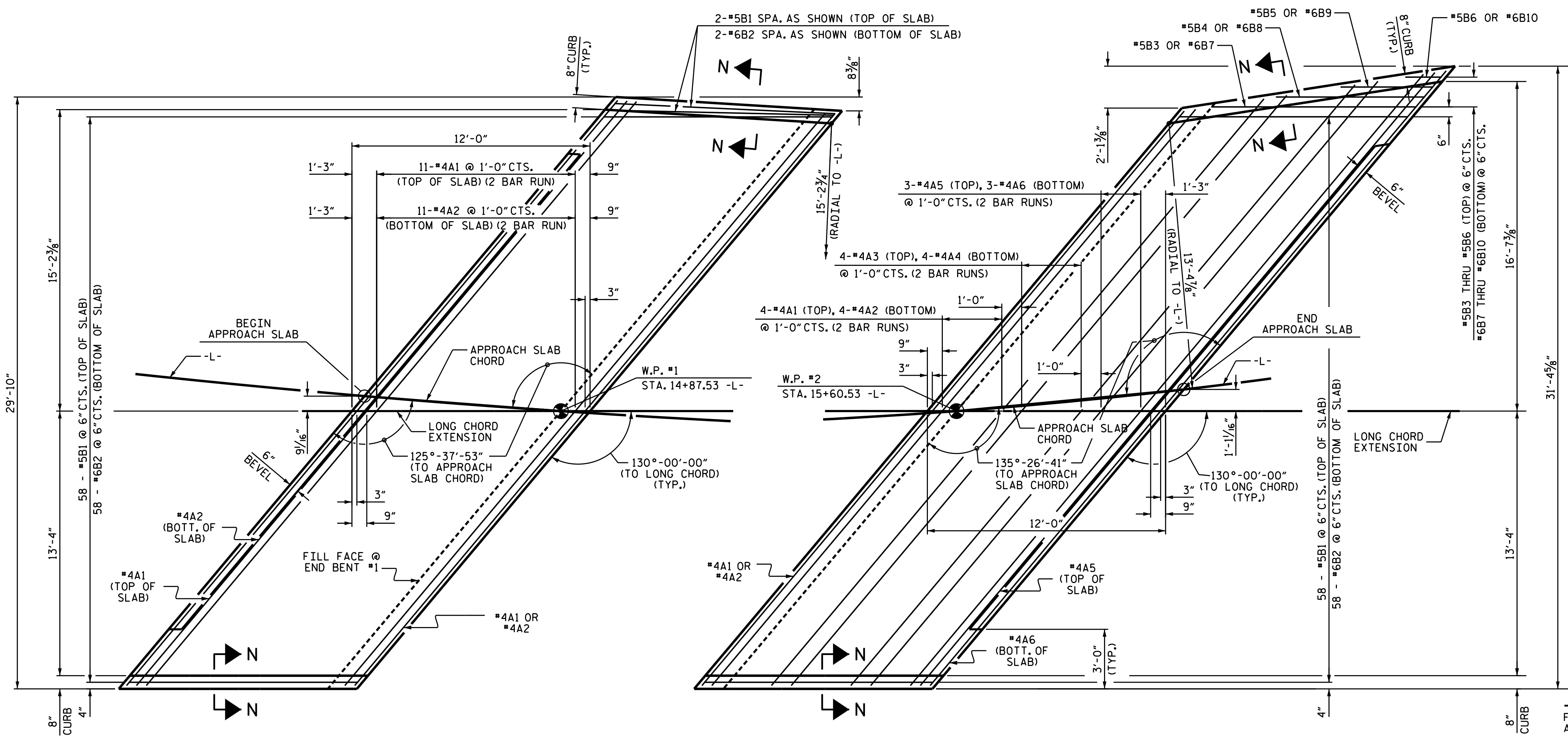
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

DRAWN BY: J.M. KEPICH DATE: 02/21  
CHECKED BY: L.M. SAMPLES DATE: 05/21  
DESIGN ENGINEER OF RECORD: J.M. KEPICH DATE: 05/21

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

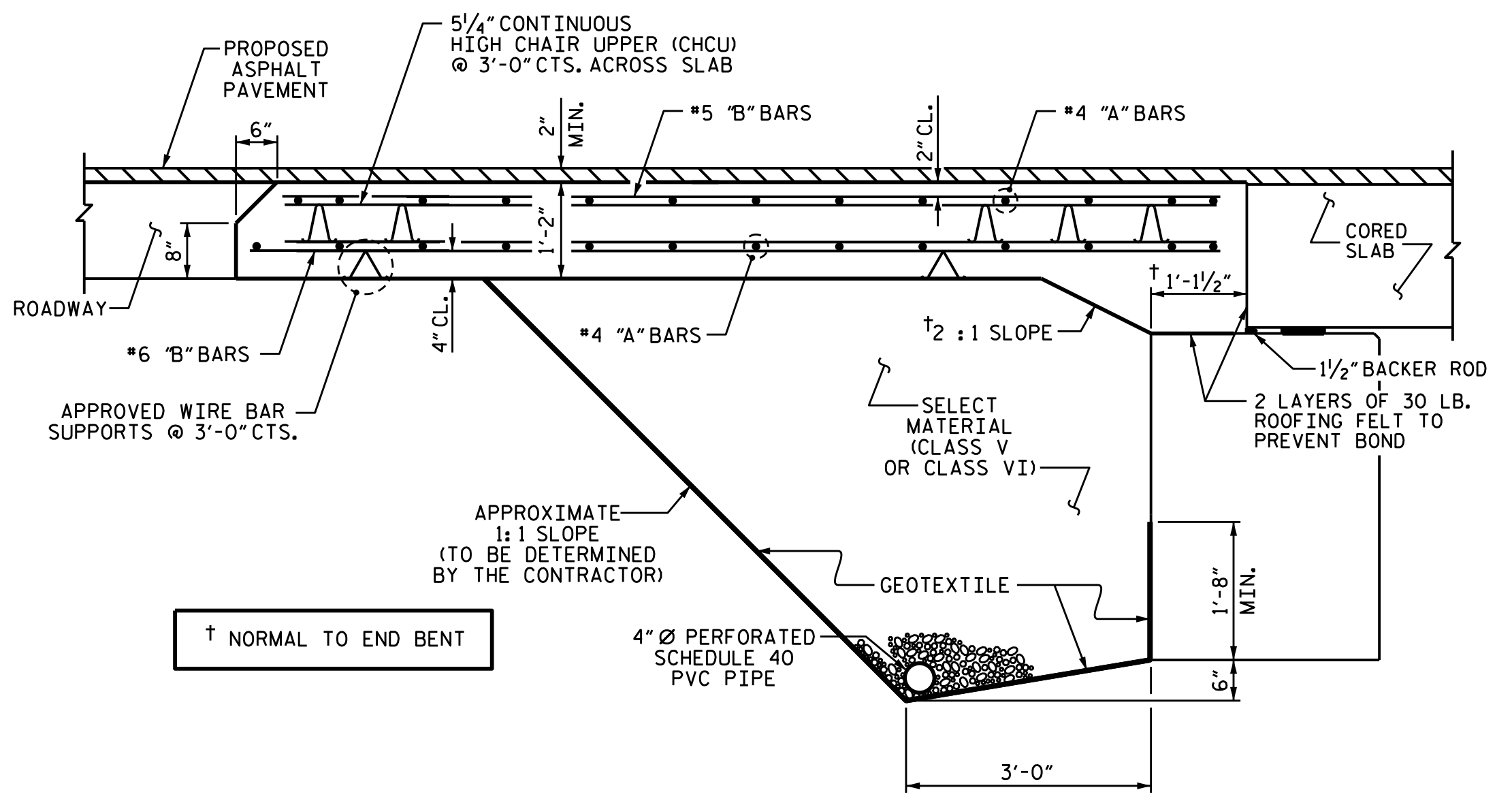






PLAN @ END BENT #1

PLAN @ END BENT #2



SECTION THRU SLAB  
(TYPE II - MODIFIED APPROACH FILL)

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	1'-11"	1'-7"
#5	2'-5"	2'-0"
#6	3'-7"	2'-5"

BILL OF MATERIAL						
APPROACH SLAB AT EB #1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	26	#4	STR	20'-3"	352	
A2	26	#4	STR	20'-1"	349	
*B1	60	#5	STR	11'-1"	694	
B2	60	#6	STR	11'-7"	1044	
REINFORCING STEEL					LBS.	1393
* EPOXY COATED REINFORCING STEEL					LBS.	1046
CLASS AA CONCRETE					C. Y.	17.9
APPROACH SLAB AT EB #2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	10	#4	STR	20'-4"	136	
A2	10	#4	STR	20'-2"	135	
*A3	8	#4	STR	20'-9"	111	
A4	8	#4	STR	20'-7"	110	
*A5	8	#4	STR	21'-2"	113	
A6	8	#4	STR	21'-1"	113	
*B1	58	#5	STR	11'-1"	670	
B2	58	#6	STR	11'-7"	1009	
*B3	1	#5	STR	10'-4"	11	
*B4	1	#5	STR	7'-6"	8	
*B5	1	#5	STR	4'-8"	5	
*B6	1	#5	STR	1'-10"	2	
B7	1	#6	STR	10'-4"	16	
B8	1	#6	STR	7'-6"	11	
B9	1	#6	STR	4'-8"	7	
B10	1	#6	STR	1'-10"	3	
REINFORCING STEEL					LBS.	1404
* EPOXY COATED REINFORCING STEEL					LBS.	1056
CLASS AA CONCRETE					C. Y.	18.3

NOTES

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

PROJECT NO. 17BP.11.R.153  
 WILKES COUNTY  
 STATION: 15+23.00 -L-  
 SHEET 1 of 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

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



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

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

TOTAL SHEETS: 16

DRAWN BY : J.M. KEPICH DATE : 02/21  
 CHECKED BY : L.M. SAMPLES DATE : 05/21  
 DESIGN ENGINEER OF RECORD : J.M. KEPICH DATE : 05/21





