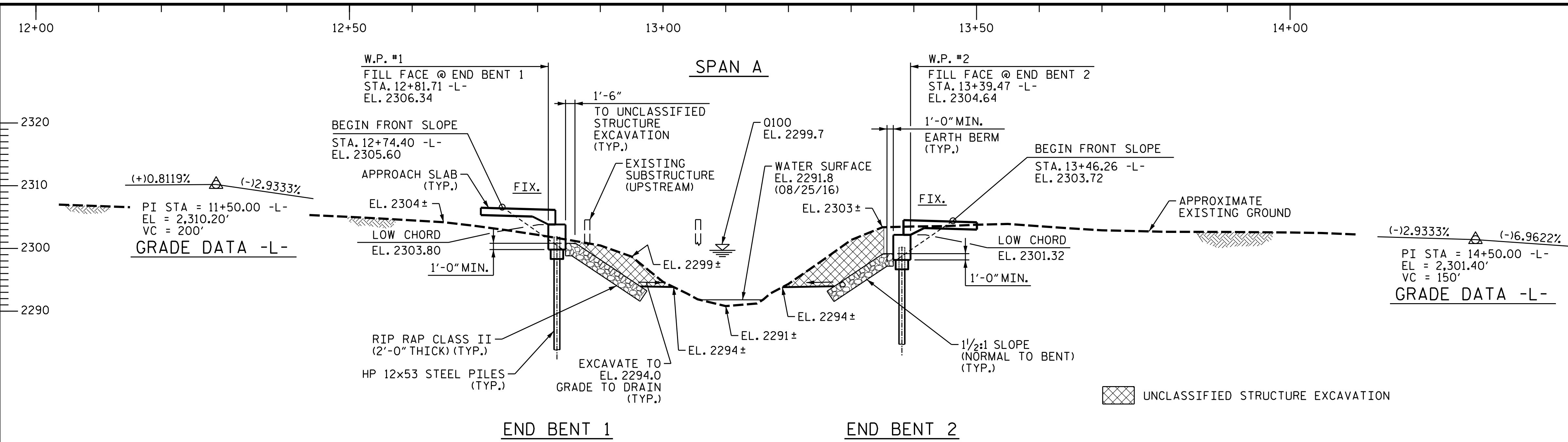


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**This file or an individual page  
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**HYDRAULIC DATA**

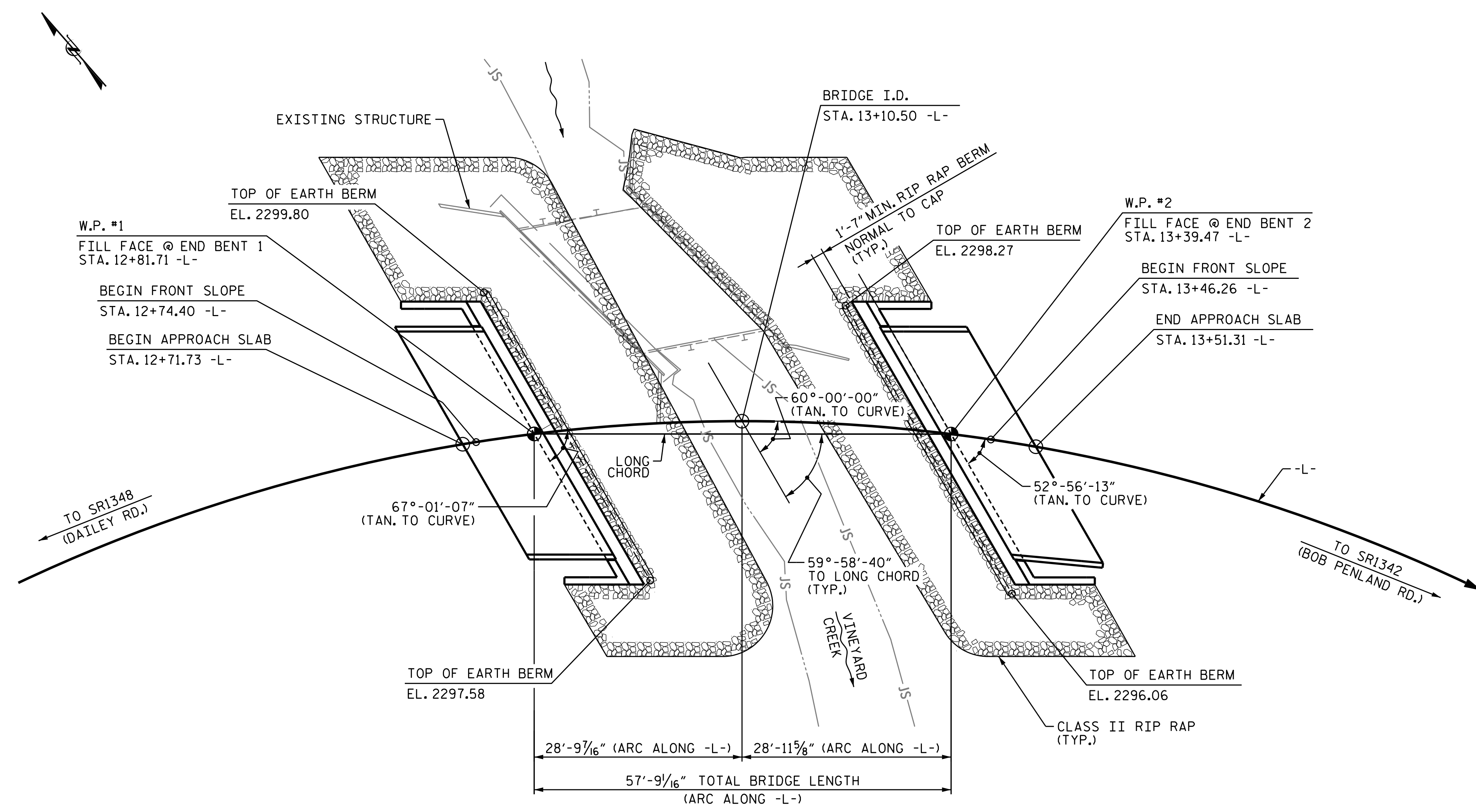
DESIGN DISCHARGE	= 600 CFS
FREQUENCY OF DESIGN FLOOD	= 25 YEARS
DESIGN HIGH WATER ELEVATION	= 2298.9
DRAINAGE AREA	= 1.65 SQ.MI.
BASE DISCHARGE (Q100)	= 800 CFS
BASE HIGH WATER ELEVATION	= 2299.7

**OVERTOPPING FLOOD DATA**

OVERTOPPING DISCHARGE	= 2150 CFS
FREQUENCY OF OVERTOPPING FLOOD	= >500 YEARS
OVERTOPPING FLOOD ELEVATION	= 2303.9
* OVERTOPPING WOULD OCCUR @ STA. 14+05 -L-	

**HORIZONTAL CURVE DATA**

PI STA. 13+65.23 -L-	
Δ = 106°-09'-03.2" (RT)	
D = 24°-22'-52.3"	
L = 435.38'	
T = 312.71'	
R = 235.00'	



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

**PROJECT NO. 17BP.14.R.169**  
**CLAY COUNTY**  
**STATION: 13+10.50 -L-**  
SHEET 1 OF 4 REPLACES BRIDGE NO. 99

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**GENERAL DRAWING**  
FOR BRIDGE ON SR 1168 OVER VINEYARD CREEK BETWEEN SR 1348 AND SR 1342

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

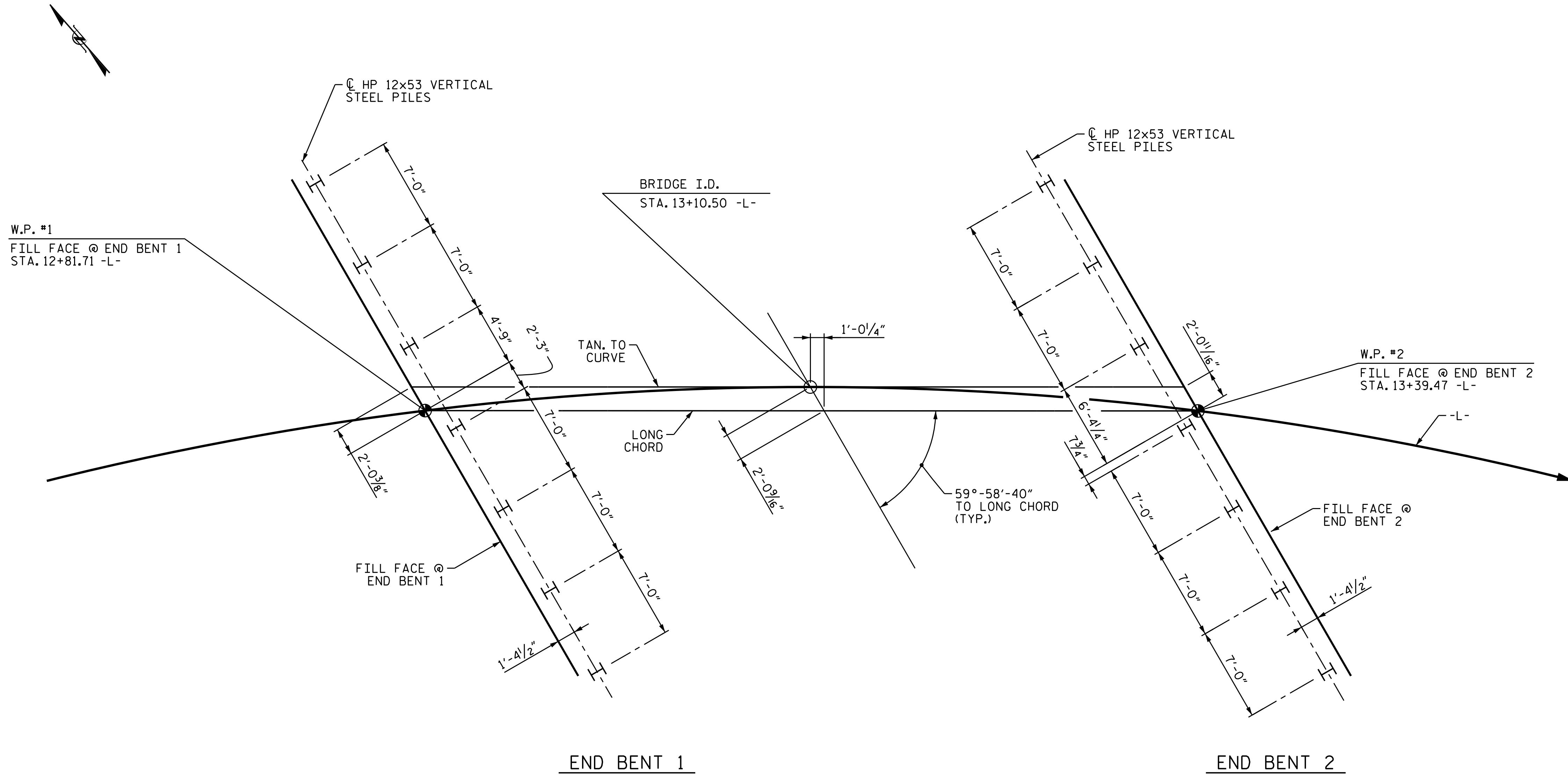
SHEET NO. S-1  
TOTAL SHEETS 17

9/29/2021 11:18:50 AM 2015 W Divisions Planning & Design On-Call 1183500 Group 3 Bridges\17BP.14.R.169\Structures\Drafting\CON\17BP.14.R.169\_001.dgn

DESIGNED BY: J. WHEATLEY DATE: 10/2021  
DRAWN BY: M. HOBBS DATE: 10/2021  
CHECKED BY: T. HARRIS DATE: 10/2021  
DESIGN ENGINEER OF RECORD: T. HARRIS DATE: 10/2021

**wsp**  
WSP USA Inc.  
434 FAYETTEVILLE STREET  
SUITE 1500  
RALEIGH, NC 27601  
TEL: 1.919.836.4040  
LICENSE NO. F-0165





### FOUNDATION LAYOUT

#### NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 75 TONS PER PILE.

DRIVE PILES AT END BENT 1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 125 TONS PER PILE.

DRILLED-IN PILES ARE REQUIRED TO INSTALL PILES AT END BENT 1 AND 2. EXCAVATE HOLES AT PILE LOCATIONS TO ELEVATION 2287FT. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILE RESTRIKES ARE NOT NECESSARY FOR PILES AT BOTH END BENTS.

PROJECT NO. 17BP.14.R.169  
CLAY COUNTY  
 STATION: 13+10.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1168 OVER  
 VINEYARD CREEK BETWEEN  
 SR 1348 AND SR 1342

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

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

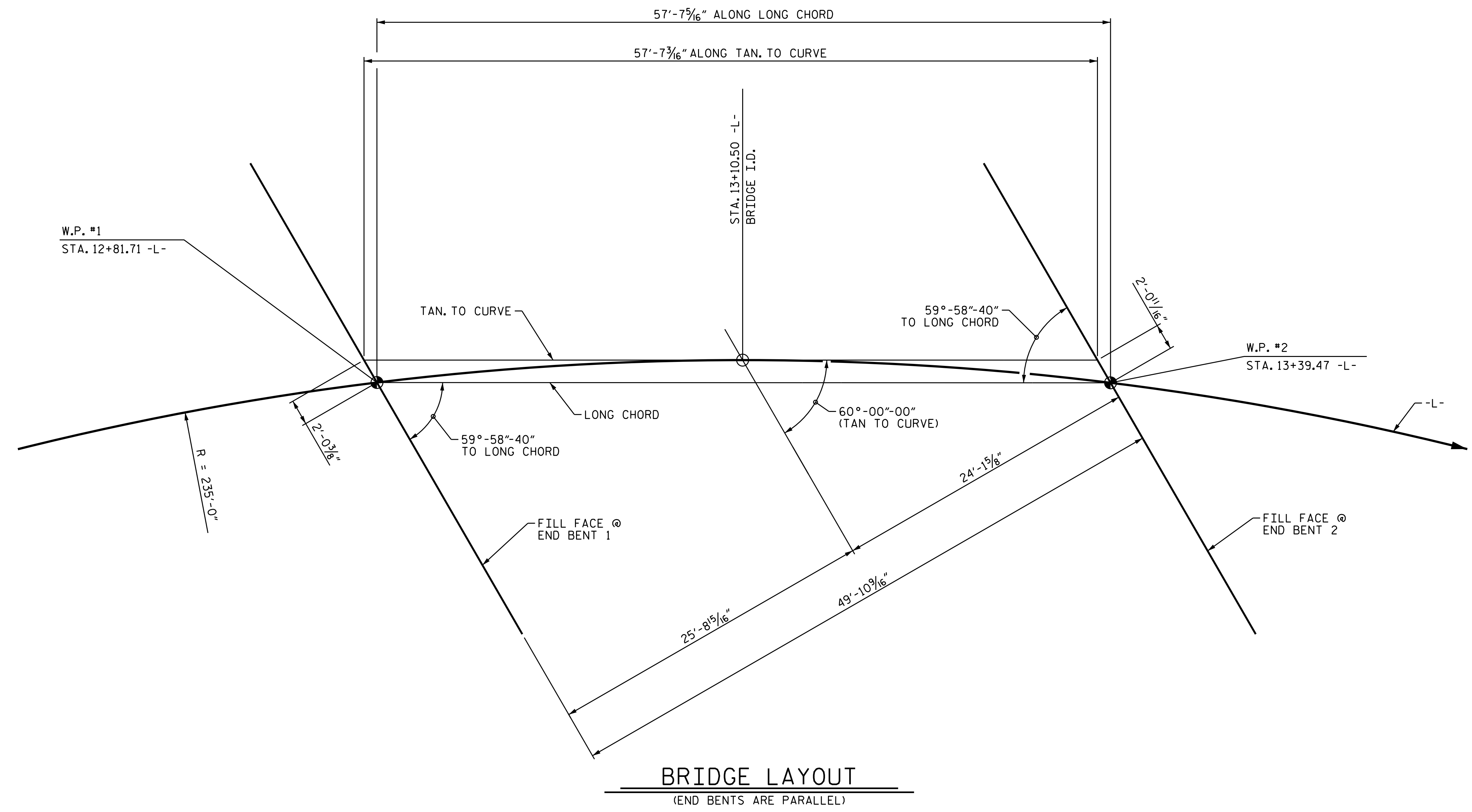
STATE OF NORTH CAROLINA  
 PROFESSIONAL SEAL  
 SEAL 19299  
 ENGINEER  
 THOMAS M. HARRIS  
 DocuSigned by:  
 Thomas Harris  
 11/23/2021  
 F9EB0057AC1A4EF...

**wsp**

WSP USA Inc.  
 434 FAYETTEVILLE STREET  
 SUITE 1500  
 RALEIGH, NC 27601  
 TEL: 1.919.836.4040  
 LICENSE NO. F-0165

9/27/2021 2:18:56 PM - 2015 W Divisions Planning & Design - On-Call\11893500\_Group\_3\_Bridges\17BP.14.R.169\_210999\_Structures\Drafting\06N\401\_003\_17BP.14.R.169\_002.dgn

DESIGNED BY:	J. WHEATLEY	DATE :	10/2021
DRAWN BY:	M. HOBBS	DATE :	10/2021
CHECKED BY:	T. HARRIS	DATE :	10/2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE :	10/2021



**BRIDGE LAYOUT**  
(END BENTS ARE PARALLEL)

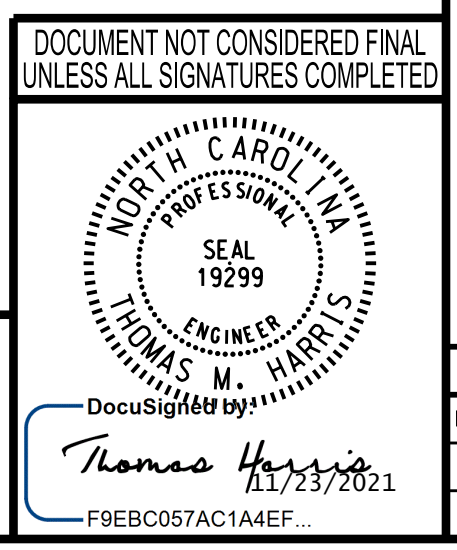
PROJECT NO. 17BP.14.R.169  
CLAY COUNTY  
 STATION: 13+10.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 FOR BRIDGE ON SR 1168 OVER  
 VINEYARD CREEK BETWEEN  
 SR 1348 AND SR 1342

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



**wsp**

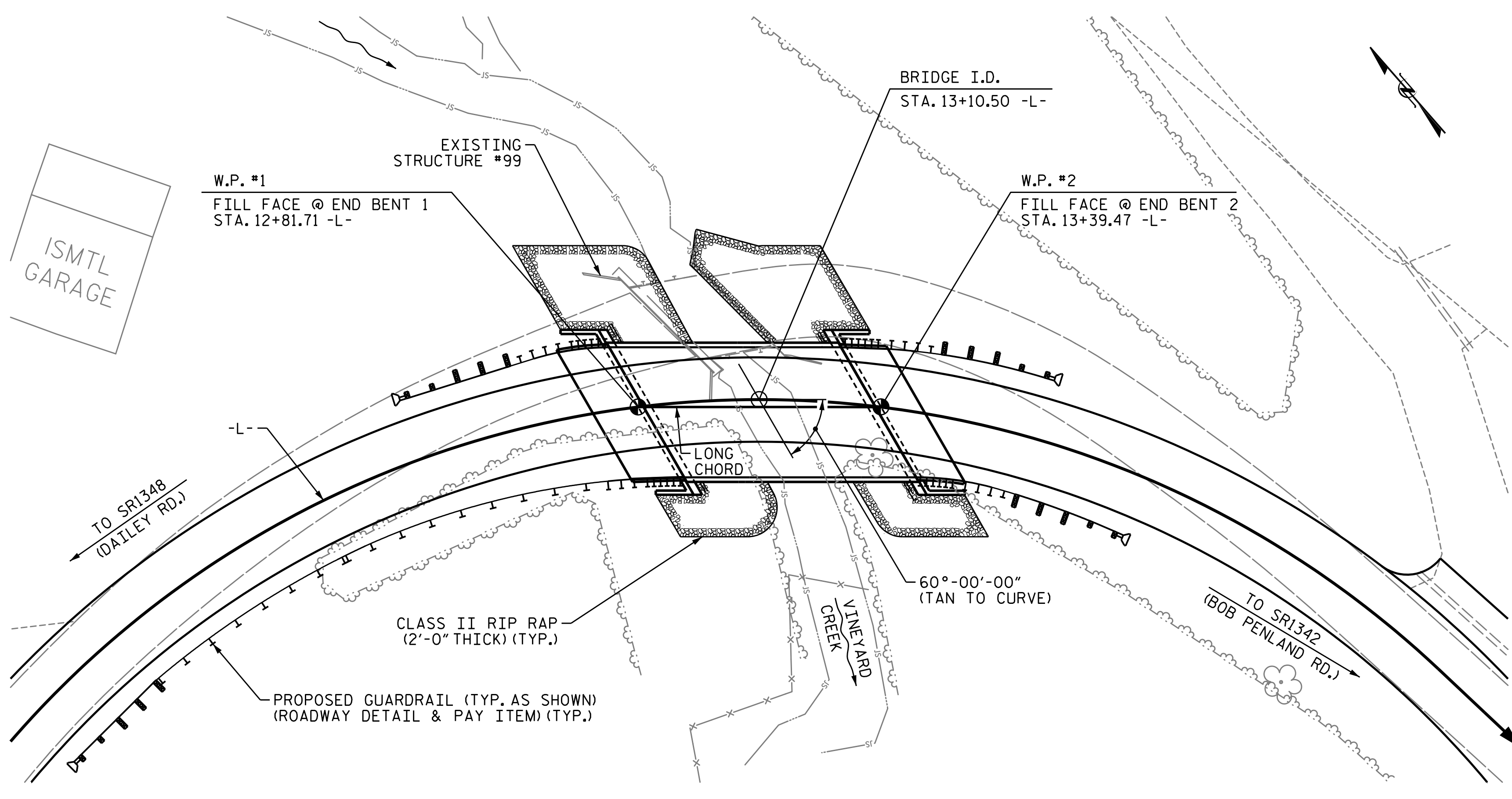
WSP USA Inc.  
 434 FAYETTEVILLE STREET  
 SUITE 1500  
 RALEIGH, NC 27601  
 TEL: 1.919.836.4040  
 LICENSE NO. F-0165

9/27/2021 2:18:36 PM C:\Users\T.Harris\OneDrive\Documents\17BP.14.R.169\17BP.14.R.169\_003.dgn  
 2015 W Divisions Planning & Design On-Call\1183500 Group 3 Bridges\17BP.14.R.169\Structures\Drafting\00N\1401\_005\_17BP.14.R.169\_003.dgn

DESIGNED BY:	J. WHEATLEY	DATE :	10/2021
DRAWN BY:	M. HOBBS	DATE :	10/2021
CHECKED BY:	T. HARRIS	DATE :	10/2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE :	10/2021



BM #1 STA. 14+59.77 -L-, OFFSET 25.1' RT., ELEV.= 2299.67', BENCHTIE 5" SPIKE SET IN 34" DOUBLE TULIP POPLAR



**LOCATION SKETCH**

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

**NOTES**

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THE EXISTING STRUCTURE CONSISTING OF A SINGLE SPAN @ 18'-6" WITH A CLEAR ROADWAY WIDTH OF 19'-0"; TIMBER DECK WITH ASPHALT WEARING SURFACE ON TIMBER JOISTS WITH TIMBER CAPS, TIMBER POSTS AND END BENTS AND LOCATED UPSTREAM FROM PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
- 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.
- 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".
- THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 40 FT. (LEFT) AND 31 FT. (RIGHT) OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.
- THE 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.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18 - EVALUATING SCOUR AT BRIDGES".
- ASPHALT WEARING SURFACE IS INCLUDED IN THE ROADWAY QUANTITY ON ROADWAY PLANS.
- 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.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

**TOTAL BILL OF MATERIAL**

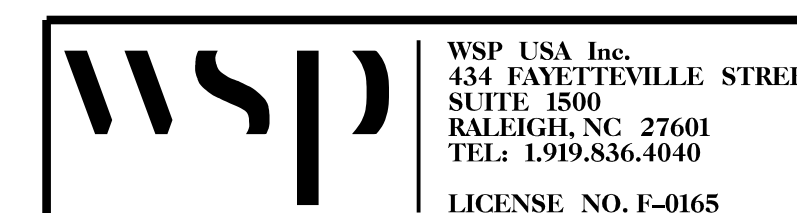
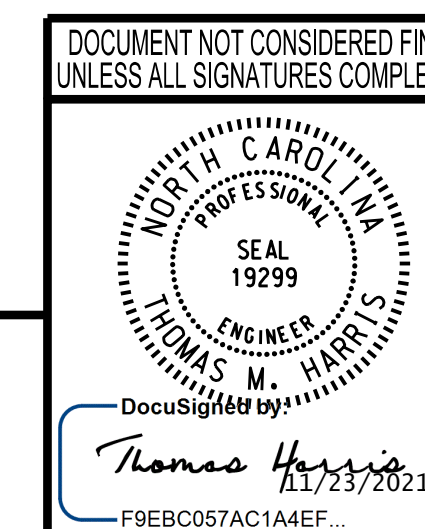
	REMOVAL OF EXISTING STRUCTURE @ STA. 13+10.50 -L-	ASBESTOS ASSESSMENT	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	UNCLASSIFIED STRUCTURE EXCAVATION @ STA. 13+10.50 -L-	CLASS A CONCRETE	BRIDGE APPROACH SLABS @ STA. 13+10.50 -L-	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 x 53 STEEL PILES	HP 12 X 53 STEEL PILES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	No.	No.	LIN. FT.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE											110.29				11 605.00
END BENT 1			60.0	35.0	LUMP SUM	24.1		2923	7	7	260		227	252	
END BENT 2			40.0	35.0	LUMP SUM	24.1		2923	7	7	245		220	244	
TOTAL	LUMP SUM	LUMP SUM	100.0	70.0	LUMP SUM	48.2	LUMP SUM	5846	14	14	505	110.29	447	496	LUMP SUM 11 605.00

PROJECT NO. 17BP.14.R.169  
CLAY COUNTY  
 STATION: 13+10.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GENERAL DRAWING  
 FOR BRIDGE ON SR 1168 OVER  
 VINEYARD CREEK BETWEEN  
 SR 1348 AND SR 1342



REVISIONS

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

SHEET NO. S-4  
 TOTAL SHEETS 17

9/28/2021 17BP.14.R.169 - 2015 W Divisions Planning & Design - Civil 1183500 - Group 3 Bridges\17BP.14.R.169\Structures\Drafting\CON\14.R.169\_004.dgn

DESIGNED BY: J. WHEATLEY DATE: 10/2021  
 DRAWN BY: M. HOBBS DATE: 10/2021  
 CHECKED BY: T. HARRIS DATE: 10/2021  
 DESIGN ENGINEER OF RECORD: T. HARRIS DATE: 10/2021



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

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						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)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	①	1.163	--	1.75	0.249	1.36	55'	EL	26.923	0.659	1.21	55'	EL	10.769	0.80	0.249	<b>1.16</b>	55'	EL	<b>26.923</b>		
	HL-93(Opr)	N/A	--	1.564	--	1.35	0.249	1.76	55'	EL	26.923	0.659	1.56	55'	EL	10.769	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	②	1.424	51.265	1.75	0.249	1.7	55'	EL	26.923	0.659	<b>1.42</b>	55'	EL	<b>10.769</b>	0.80	0.249	1.46	55'	EL	26.923		
	HS-20(Opr)	36.000	--	1.846	66.455	1.35	0.249	2.2	55'	EL	26.923	0.659	1.85	55'	EL	10.769	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	3.057	41.264	1.4	0.249	4.46	55'	EL	26.923	0.659	3.96	55'	EL	10.769	0.80	0.249	3.06	55'	EL	26.923	
		SNGARBS2	20.000	--	2.374	47.473	1.4	0.249	3.46	55'	EL	26.923	0.659	2.9	55'	EL	10.769	0.80	0.249	2.37	55'	EL	26.923	
		SNAGRIS2	22.000	--	2.291	50.392	1.4	0.249	3.34	55'	EL	26.923	0.659	2.72	55'	EL	10.769	0.80	0.249	2.29	55'	EL	26.923	
		SNCOTTS3	27.250	--	1.524	41.521	1.4	0.249	2.22	55'	EL	26.923	0.659	1.98	55'	EL	10.769	0.80	0.249	1.52	55'	EL	26.923	
		SNAGGRS4	34.925	--	1.31	45.74	1.4	0.249	1.91	55'	EL	26.923	0.659	1.71	55'	EL	10.769	0.80	0.249	1.31	55'	EL	26.923	
		SNS5A	35.550	--	1.278	45.439	1.4	0.249	1.86	55'	EL	26.923	0.659	1.76	55'	EL	10.769	0.80	0.249	1.28	55'	EL	26.923	
		SNS6A	39.950	--	1.189	47.481	1.4	0.249	1.73	55'	EL	26.923	0.659	1.63	55'	EL	10.769	0.80	0.249	1.19	55'	EL	26.923	
	SNS7B	42.000	--	1.132	47.562	1.4	0.249	1.65	55'	EL	26.923	0.659	1.64	55'	EL	10.769	0.80	0.249	1.13	55'	EL	26.923		
	TTST	TNAGRIT3	33.000	--	1.454	47.984	1.4	0.249	2.12	55'	EL	26.923	0.659	1.92	55'	EL	10.769	0.80	0.249	1.45	55'	EL	26.923	
		TNT4A	33.075	--	1.465	48.451	1.4	0.249	2.14	55'	EL	26.923	0.659	1.85	55'	EL	10.769	0.80	0.249	1.46	55'	EL	26.923	
		TNT6A	41.600	--	1.213	50.478	1.4	0.249	1.77	55'	EL	26.923	0.659	1.81	55'	EL	10.769	0.80	0.249	1.21	55'	EL	26.923	
		TNT7A	42.000	--	1.228	51.576	1.4	0.249	1.79	55'	EL	26.923	0.659	1.67	55'	EL	10.769	0.80	0.249	1.23	55'	EL	26.923	
		TNT7B	42.000	--	1.282	53.827	1.4	0.249	1.87	55'	EL	26.923	0.659	1.58	55'	EL	10.769	0.80	0.249	1.28	55'	EL	26.923	
		TNAGRIT4	43.000	--	1.213	52.158	1.4	0.249	1.77	55'	EL	26.923	0.659	1.52	55'	EL	10.769	0.80	0.249	1.21	55'	EL	26.923	
TNAGT5A		45.000	--	1.136	51.134	1.4	0.249	1.66	55'	EL	26.923	0.659	1.55	55'	EL	10.769	0.80	0.249	1.14	55'	EL	26.923		
TNAGT5B	45.000	③	1.116	50.224	1.4	0.249	1.63	55'	EL	26.923	0.659	1.44	55'	EL	10.769	0.80	0.249	<b>1.12</b>	55'	EL	<b>26.923</b>			

**LOAD FACTORS:**

DESIGN LOAD RATING FACTORS	LIMIT STATE	$\gamma_{DC}$	$\gamma_{DW}$
	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:**

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

**# CONTROLLING LOAD RATING**

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

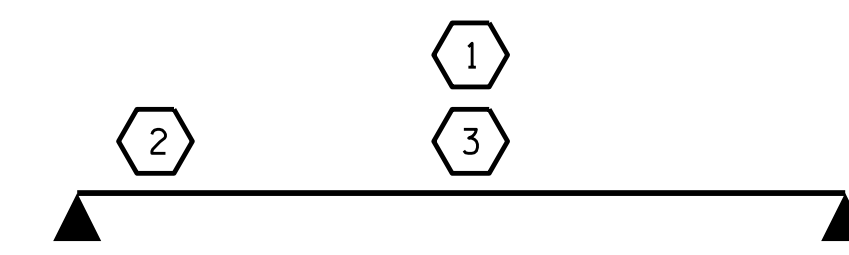
③ LEGAL LOAD RATING \*\*\*

\*\*\* SEE CHART FOR VEHICLE TYPE

---

**GIRDER LOCATION**

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



**LRFR SUMMARY**  
FOR SPAN 'A'

PROJECT NO. 17BP.14.R.169  
CLAY COUNTY  
STATION: 13+10.50 -L-

9/27/2021 11:58:50 AM - 2015 W Divisions Planning & Design On-Call 1183500 Group 3 Bridges\17BP.14.R.169\Structures\Drafting\00N\1401\_009\_11BP.14.R.169\_LRFR.dgn

ASSEMBLED BY: J. WHEATLEY DATE: 10/2021  
CHECKED BY: T. HARRIS DATE: 10/2021  
DESIGN ENGINEER OF RECORD: T. HARRIS DATE: 10/2021

DRAWN BY: CVC 6/10  
CHECKED BY: DNS 6/10

**wsp**  
WSP USA Inc.  
434 FAYETTEVILLE STREET  
SUITE 1500  
RALEIGH, NC 27601  
TEL: 1.919.836.4040  
LICENSE NO. F-0165

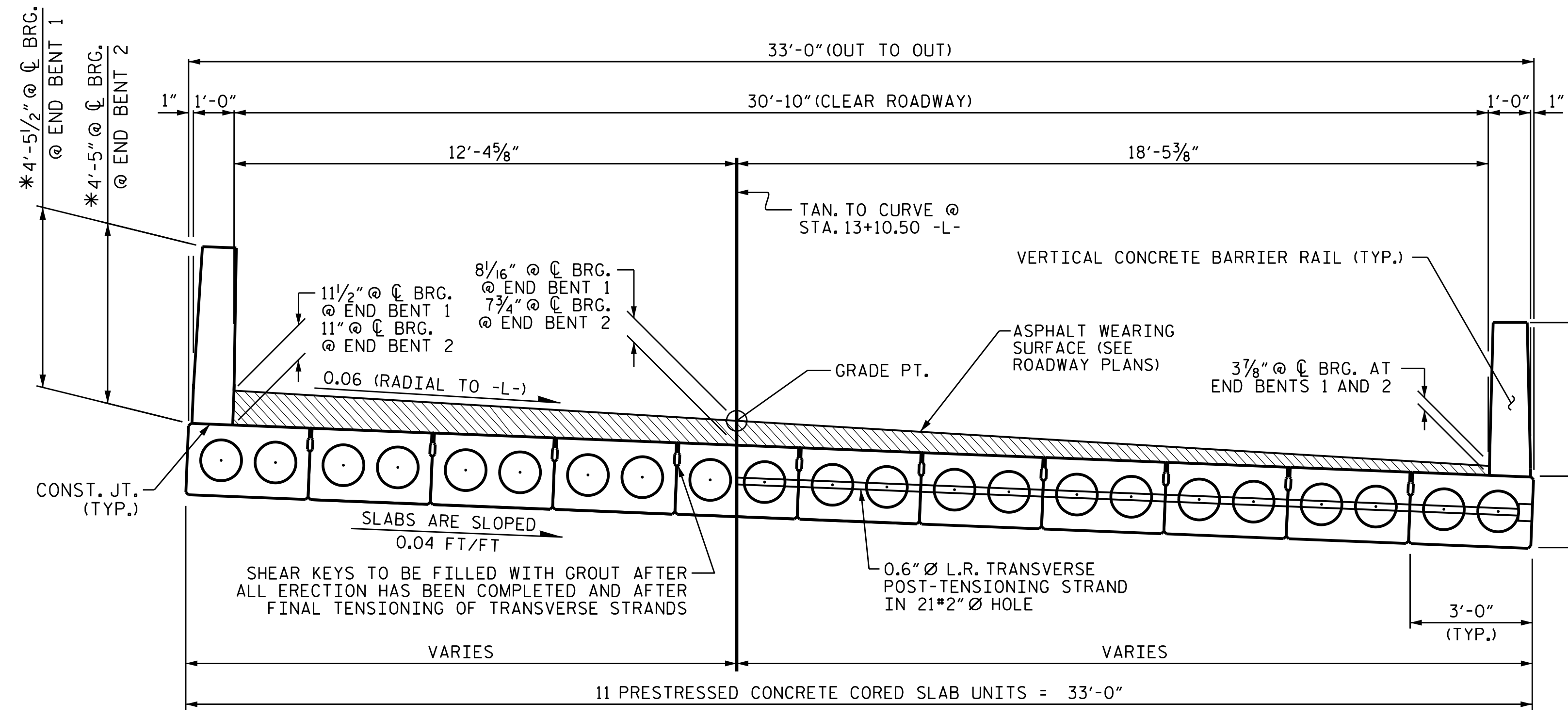
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
LRFR SUMMARY FOR  
55' CORED SLAB UNIT  
60° SKEW & 120° SKEW  
(NON-INTERSTATE TRAFFIC)

REVISIONS

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

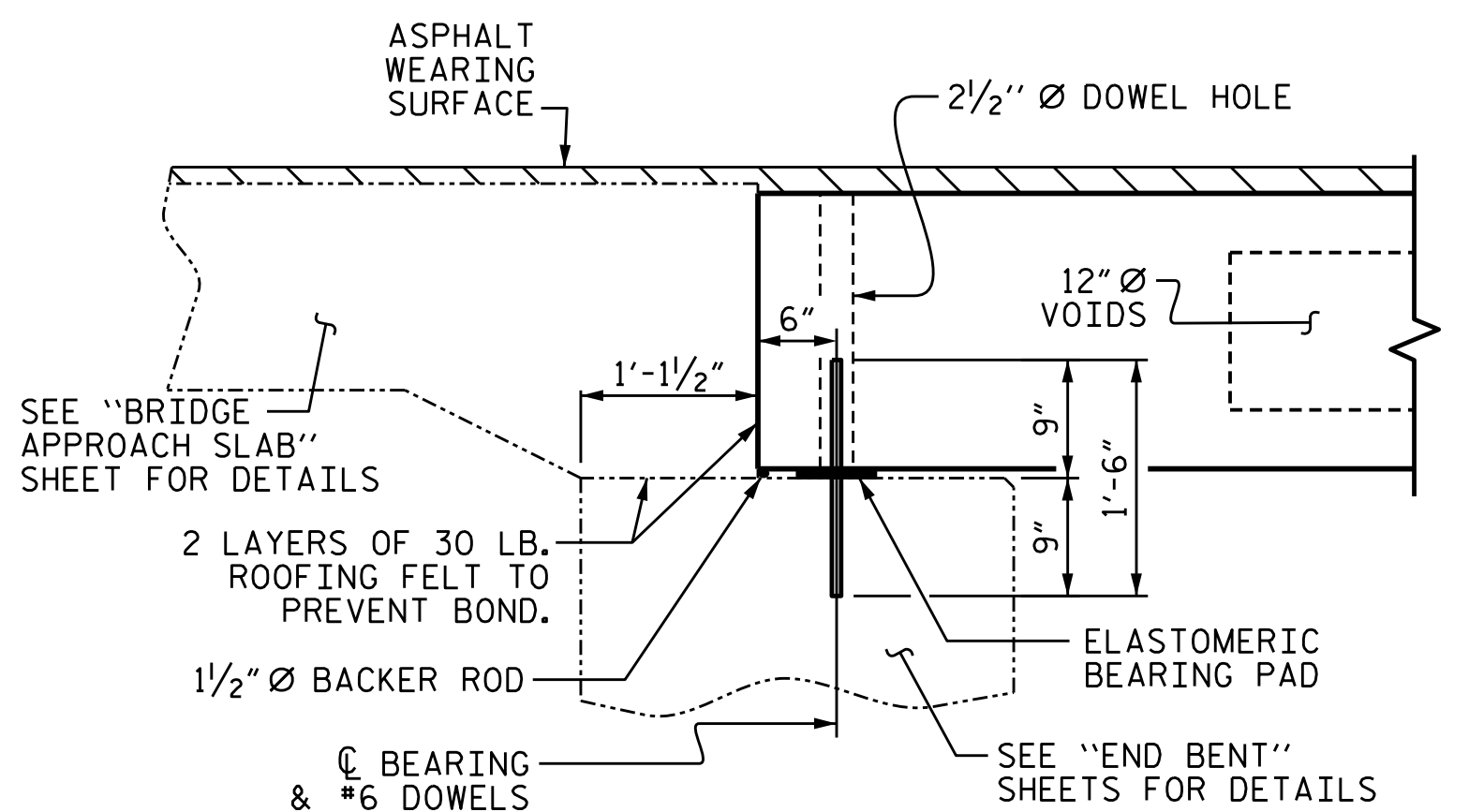
SHEET NO.  
**S-5**  
TOTAL SHEETS  
**17**



**PARTIAL SECTION THROUGH VOIDS**      **PARTIAL SECTION AT INTERMEDIATE DIAPHRAGMS**

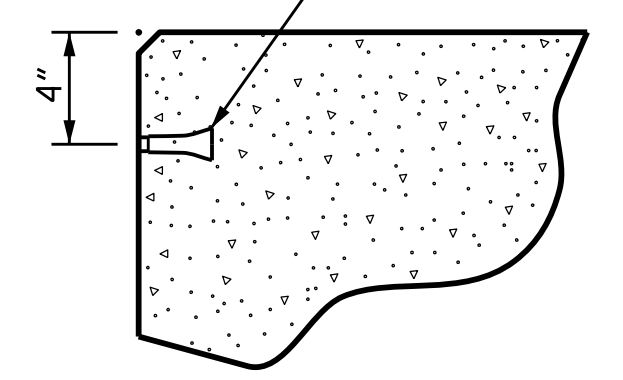
**TYPICAL SECTION**

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

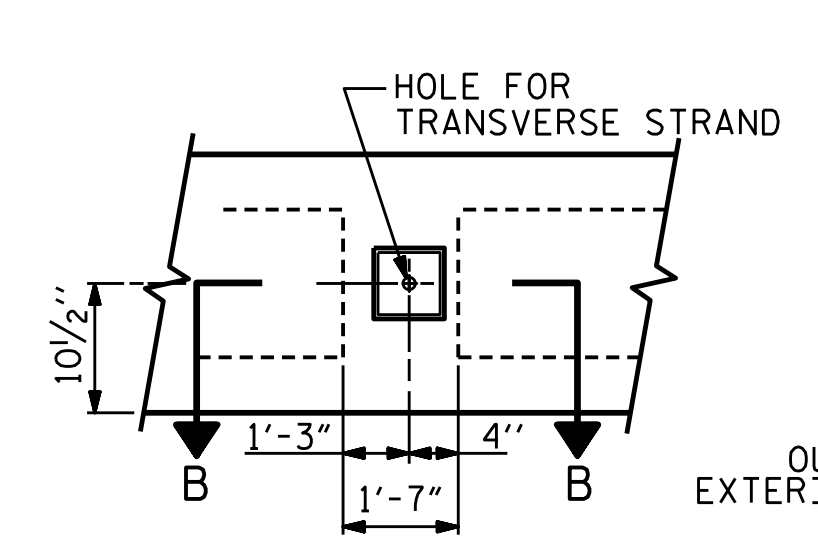


**SECTION AT END BENT**

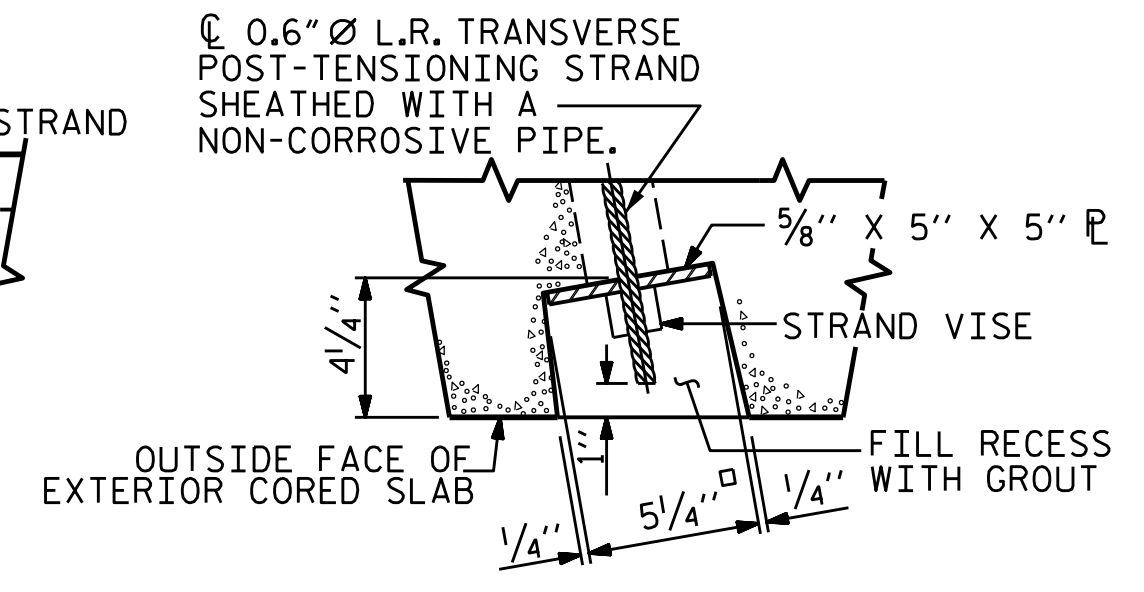
PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



**THREADED INSERT DETAIL**

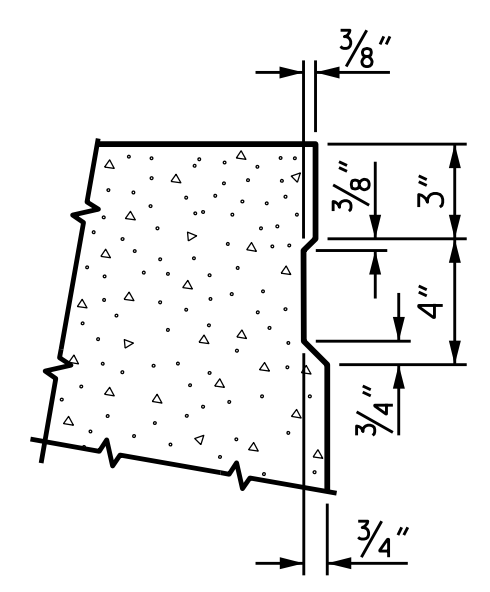


**ELEVATION VIEW**



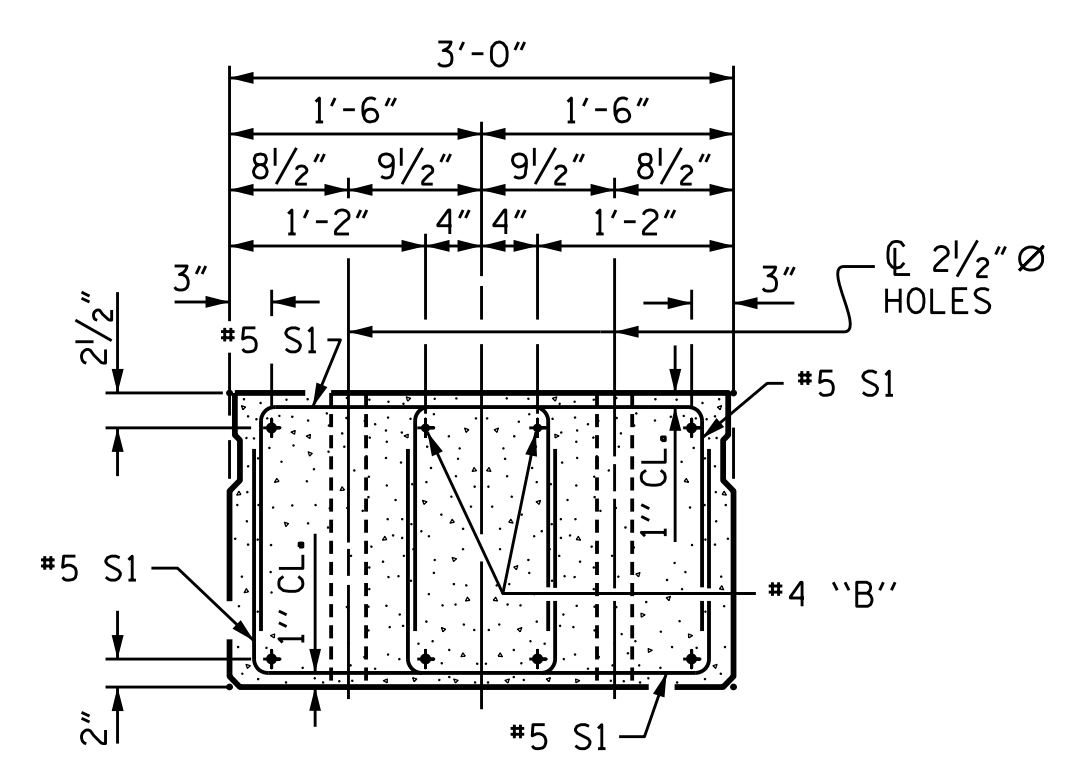
**SECTION B-B**

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



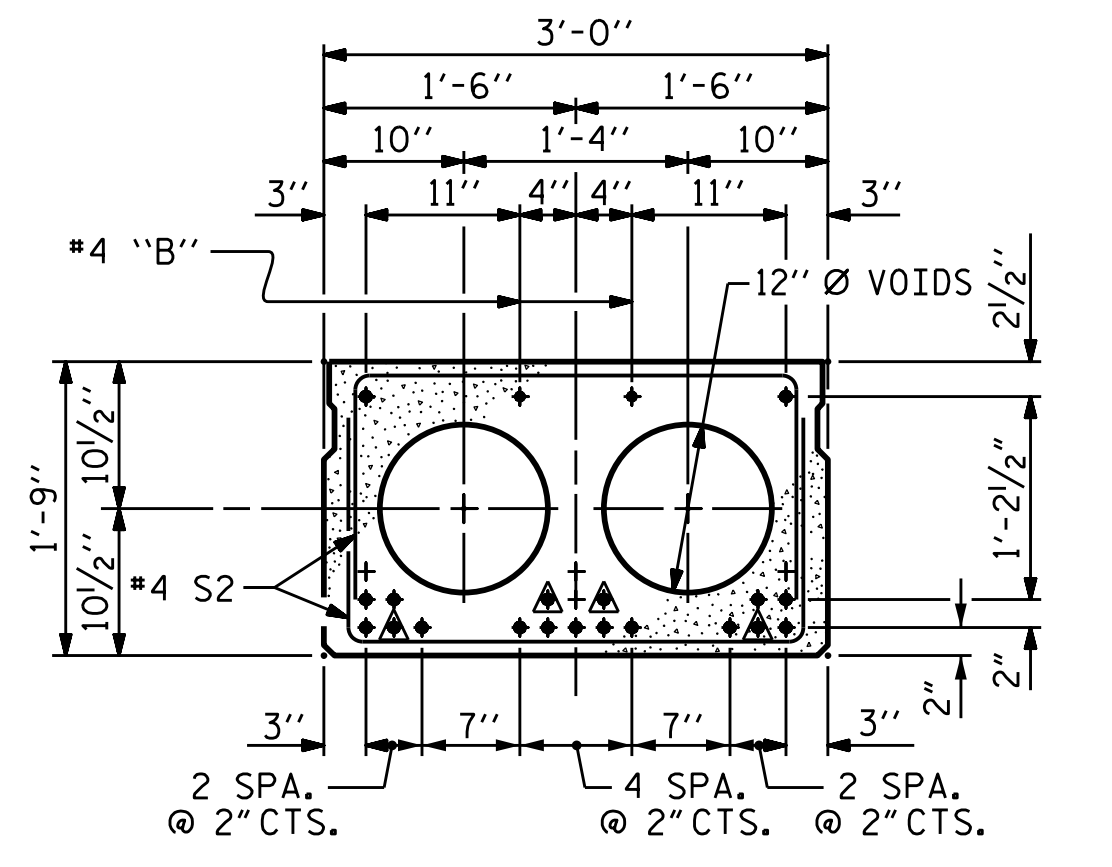
**SHEAR KEY DETAIL**

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



**END ELEVATION**

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF 2 1/2" Ø HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.

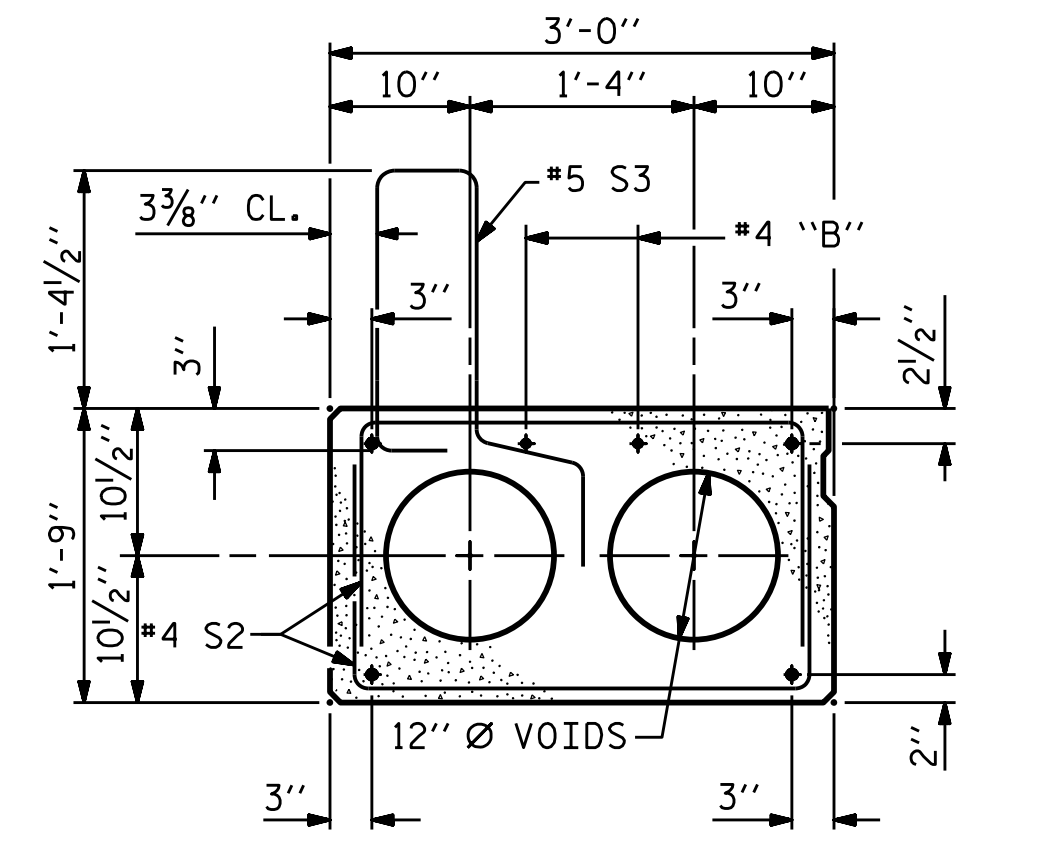


**INTERIOR SLAB SECTION (19 STRANDS REQUIRED)**

**0.6" 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**



**EXT. SLAB SECTION**

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTIONS)

PROJECT NO. 17BP.14.R.169  
CLAY COUNTY  
 STATION: 13+10.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 3'-0" X 1'-9"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 60° SKEW

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

THOMAS M. HARRIS  
 PROFESSIONAL ENGINEER  
 SEAL 19299  
 11/23/2021

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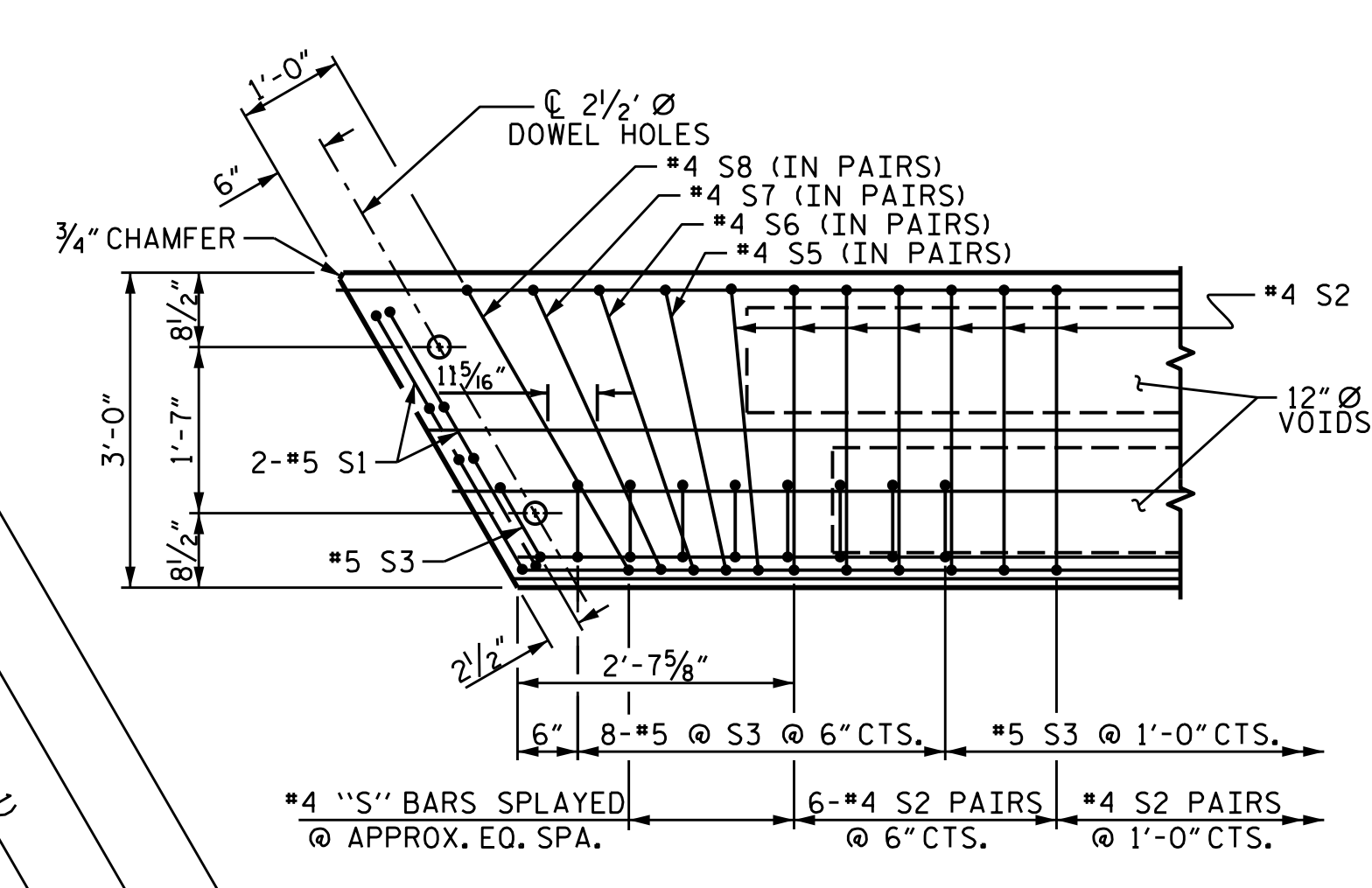
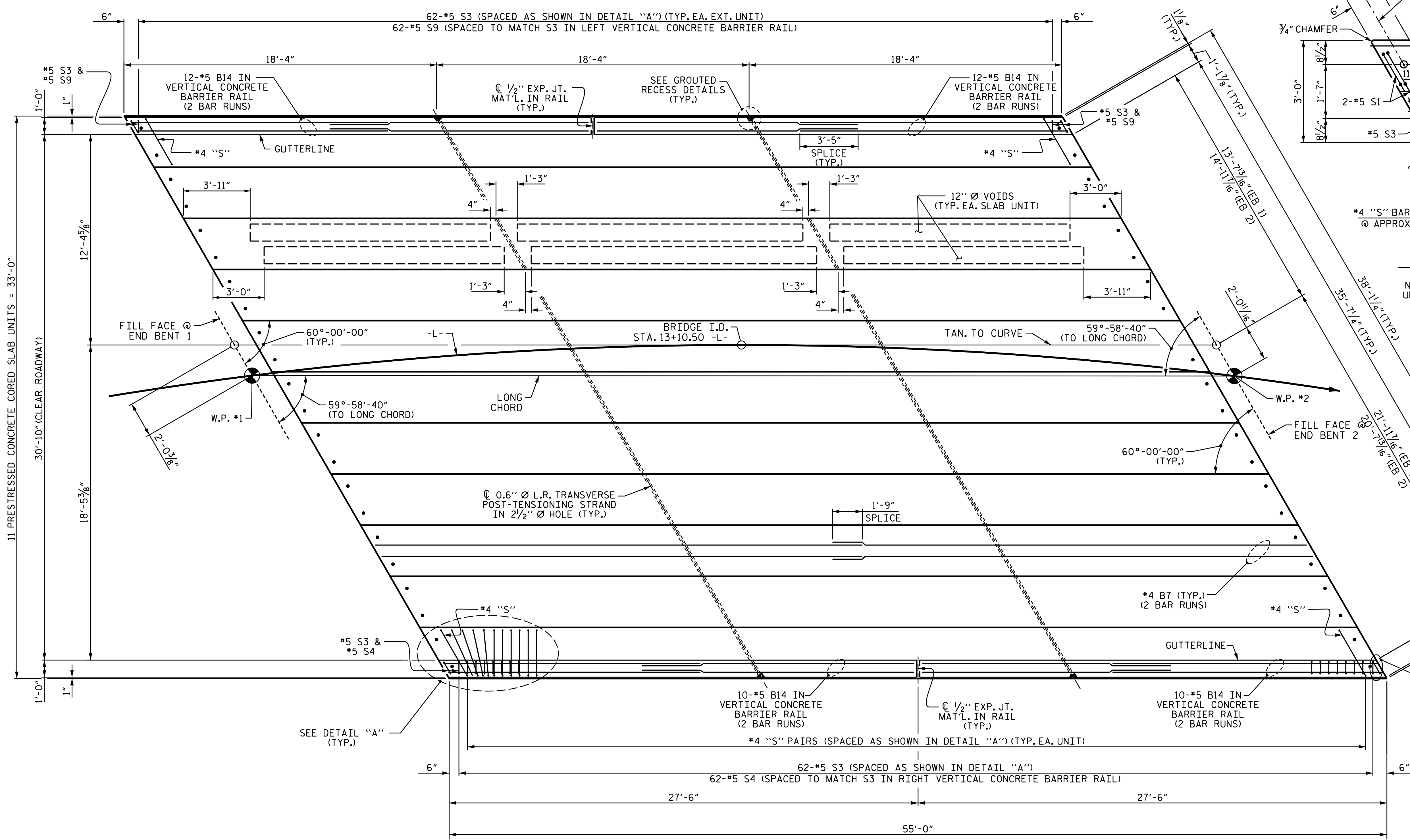
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NO.	BY:	DATE:	SHEET NO.
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2			TOTAL SHEETS 17

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DRAWN BY : DGE	5/09	REV. 9/14	MAA/TMG
CHECKED BY : BCH	6/09		
ASSEMBLED BY : J. WHEATLEY	DATE : 10/2021		
CHECKED BY : T. HARRIS	DATE : 10/2021		
DESIGN ENGINEER OF RECORD : T. HARRIS	DATE : 10/2021		



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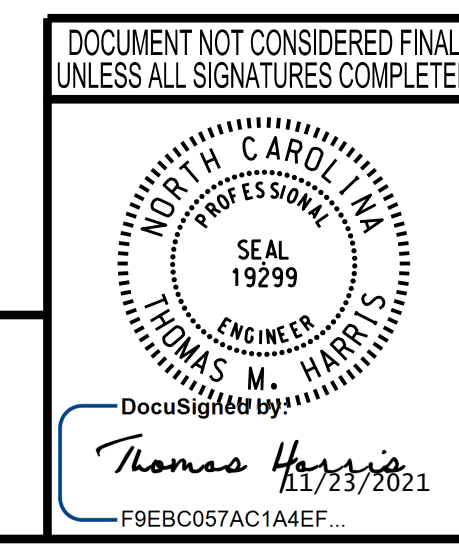
**DETAIL "A"**  
 (SIMILAR EACH END OF UNIT)  
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

**PLAN OF UNIT**

PROJECT NO. 17BP.14.R.169  
CLAY COUNTY  
 STATION: 13+10.50 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD PLAN OF 55' UNIT 30'-10" CLEAR ROADWAY 60° SKEW					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-7					TOTAL SHEETS 17



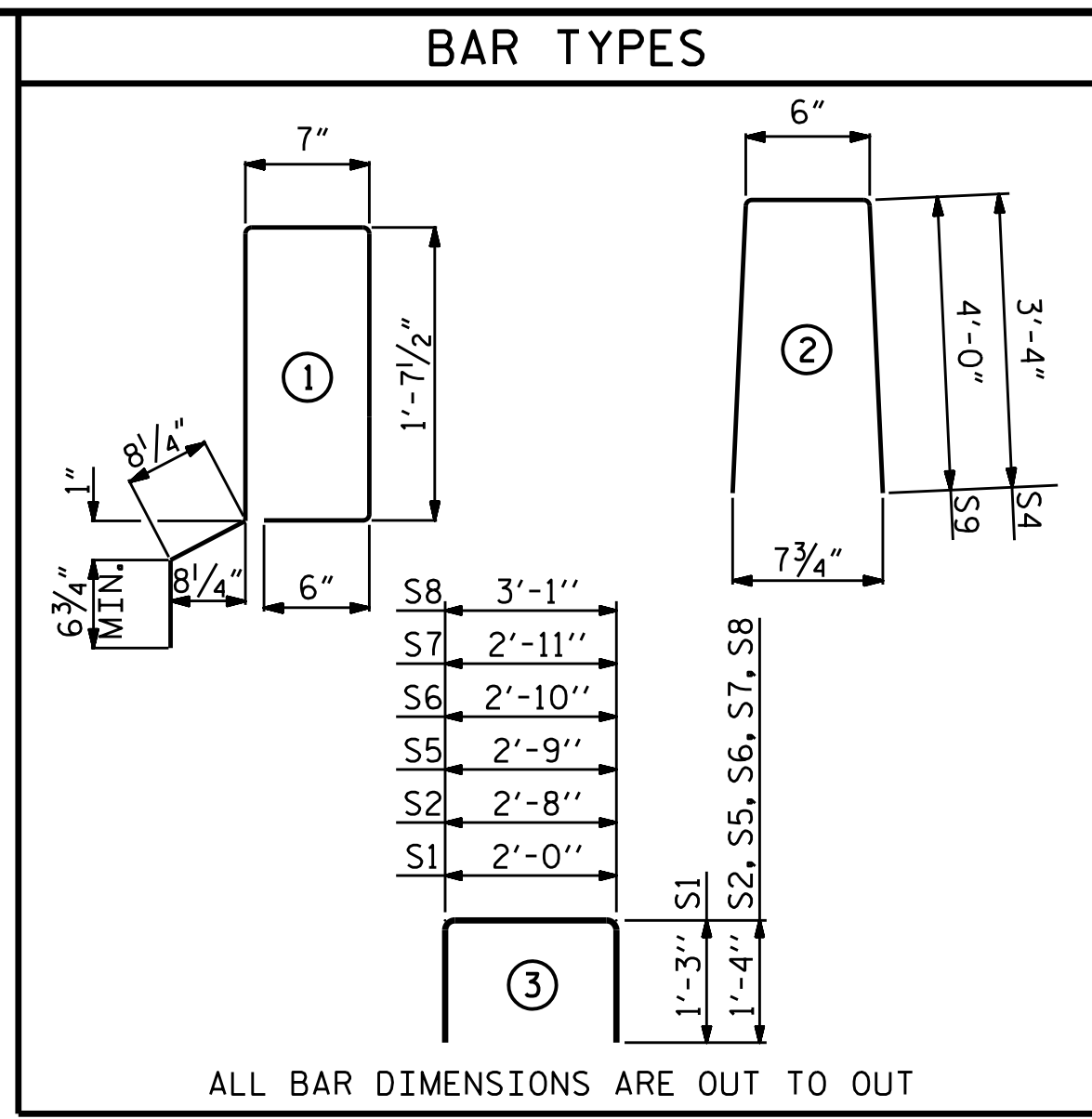
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ASSEMBLED BY: M. HOBBS	DATE: 08/2018	DRAWN BY: DCE	3/09	REV. 12/5/11	MAA/AAC
CHECKED BY: T. HARRIS	DATE: 12/2018	CHECKED BY: BCH	3/09	REV. 8/14	MAA/TMG
DESIGN ENGINEER OF RECORD: T. HARRIS	DATE: 04/2019				



CORED SLABS REQUIRED			
	NUMBER	LENGTH	TOTAL LENGTH
55' UNIT			
EXTERIOR C.S.	2	55'-0"	110.00
INTERIOR C.S.	9	55'-0"	495.00
TOTAL			605.00

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL						
BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
55' UNIT						
*B14	88	88	#5	STR	15'-6"	1423
*S4	64	64	#5	2	7'-2"	478
*S9	64	64	#5	2	8'-6"	567
* EPOXY COATED REINFORCING STEEL				LBS.		2468
CLASS AA CONCRETE				CU.YDS.		18.3
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		110.29



### 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 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 VERTICAL CONCRETE BARRIER RAIL 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, 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.

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.

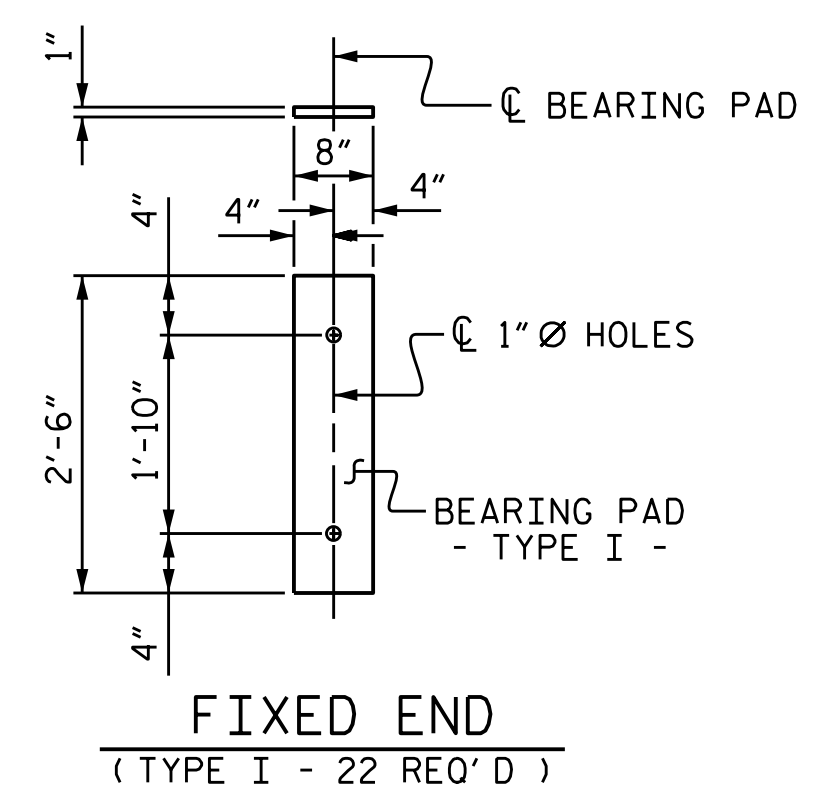
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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.

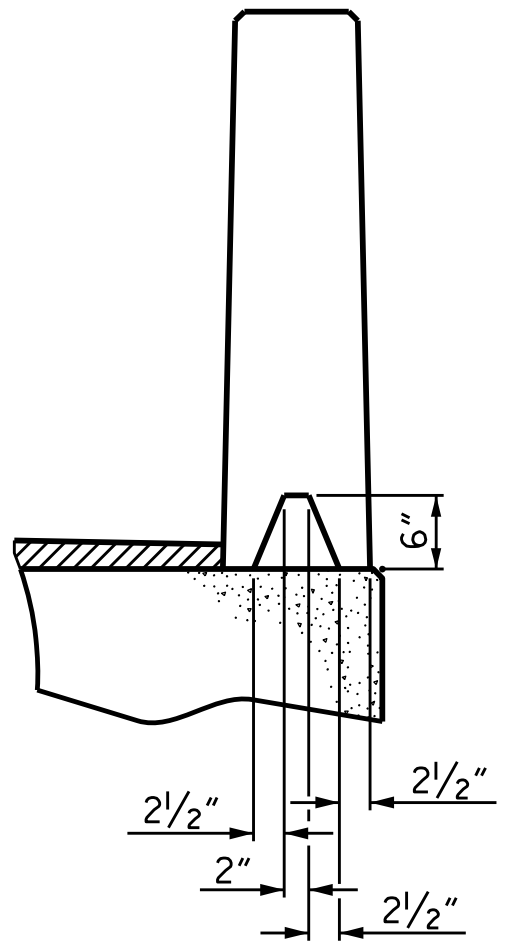
THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

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



DEAD LOAD DEFLECTION AND CAMBER	
55' CORED SLAB UNIT	3'-0" x 1'-9"
CAMBER (SLAB ALONE IN PLACE)	0.6" Ø L.R. STRAND
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**	1 1/2" ↑
FINAL CAMBER	3/8" ↓
	1/8" ↑

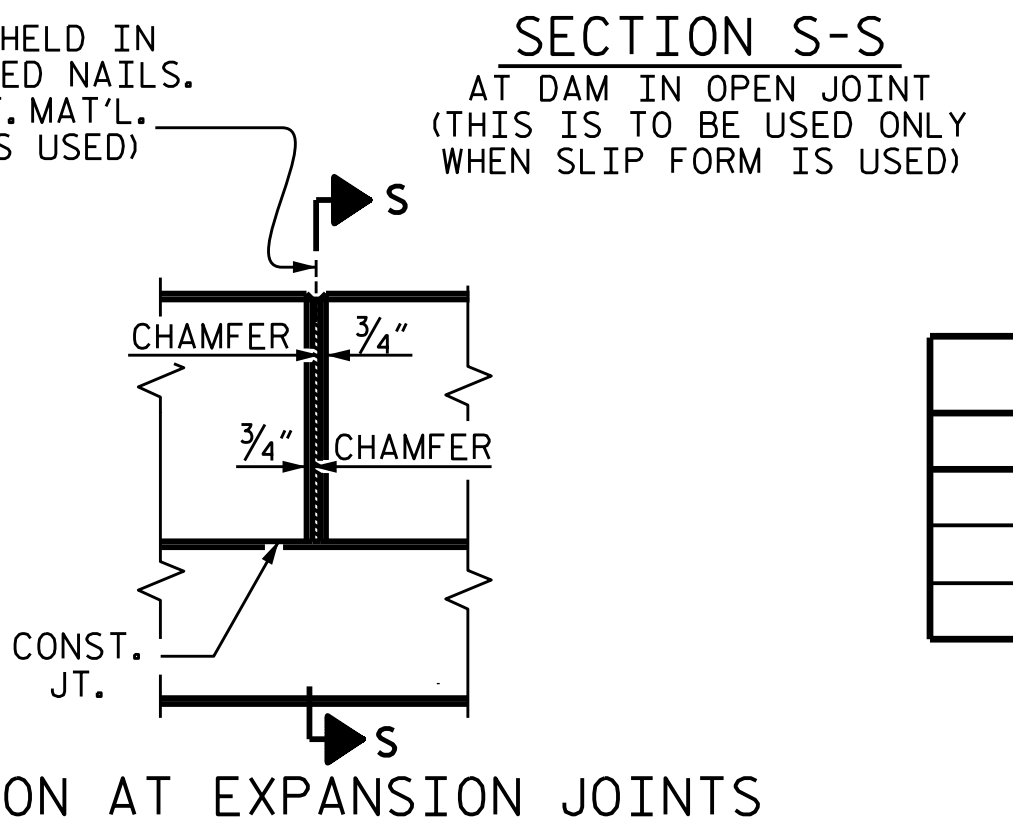
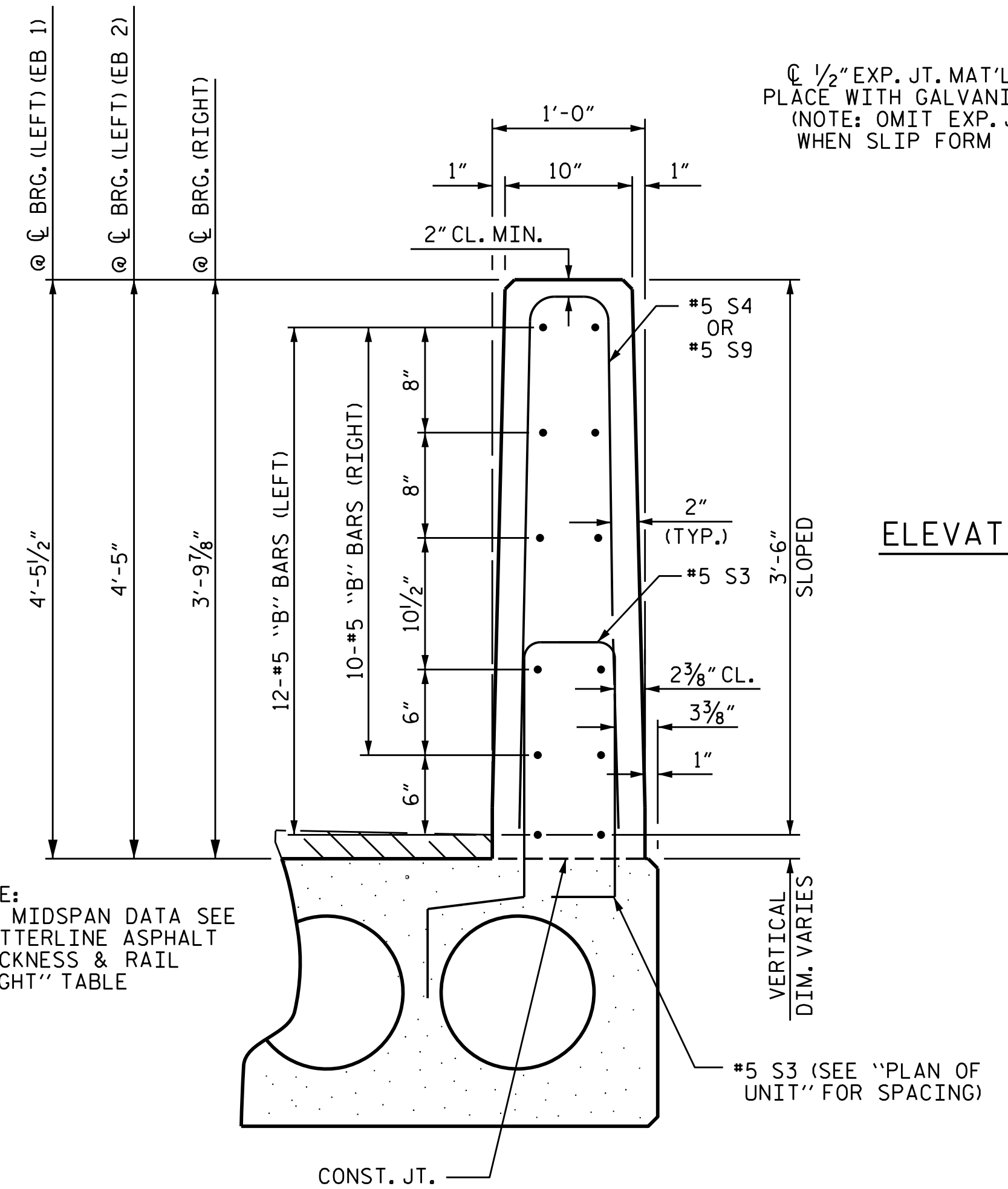
\*\* INCLUDES FUTURE WEARING SURFACE



BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT							
BAR	NUMBER	SIZE	TYPE	EXTERIOR UNIT		INTERIOR UNIT	
				LENGTH	WEIGHT	LENGTH	WEIGHT
B7	4	#4	STR	28'-3"	75	28'-3"	75
S1	8	#5	3	4'-6"	38	4'-6"	38
S2	112	#4	3	5'-4"	399	5'-4"	399
*S3	64	#5	1	5'-7"	373		
S5	4	#4	3	5'-5"	14	5'-5"	14
S6	4	#4	3	5'-6"	15	5'-6"	15
S7	4	#4	3	5'-7"	15	5'-7"	15
S8	4	#4	3	5'-9"	15	5'-9"	15
REINFORCING STEEL				LBS.	571		571
* EPOXY COATED REINFORCING STEEL				LBS.	373		
6500 P.S.I. CONCRETE				CU. YDS.	8.0		8.0
0.6" Ø L.R. STRANDS				No.	19		19

### ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

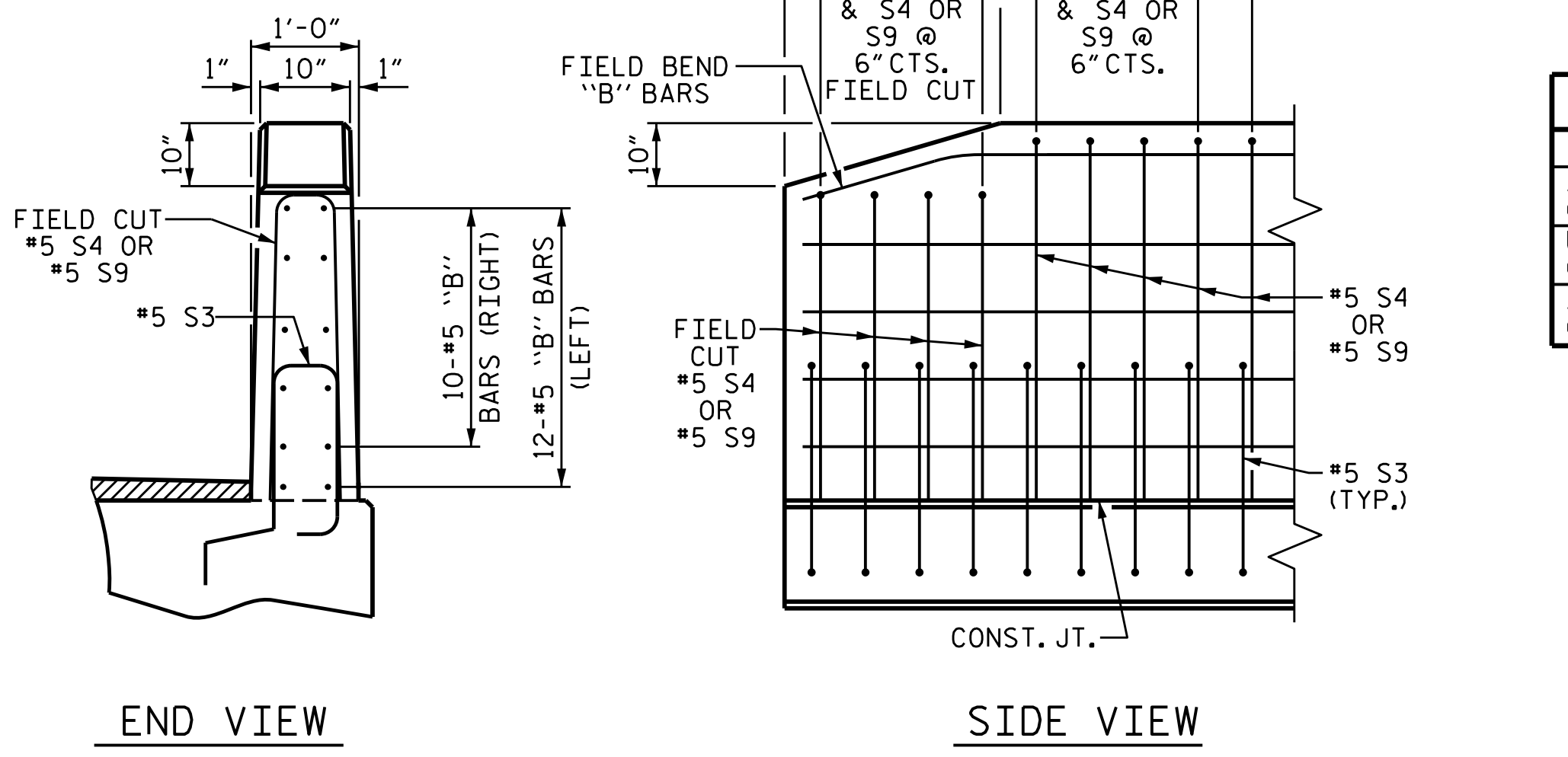


GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS	
	AT MID-SPAN	AT MID-SPAN
LEFT GUTTER	9/16"	4'-3 1/16"
RIGHT GUTTER	1 1/2"	3'-7 1/2"

CONCRETE RELEASE STRENGTH	
UNIT	PSI
55' UNITS	4900

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

PROJECT NO. 17BP.14.R.169  
CLAY COUNTY  
 STATION: 13+10.50 -L-  
 SHEET 3 OF 3



### VERTICAL CONCRETE BARRIER RAIL SECTION

### END OF RAIL DETAILS

ASSEMBLED BY: J. WHEATLEY	DATE: 10/2021	DRAWN BY: DCE	5/09	REV. 5/18	MAA/THC
CHECKED BY: T. HARRIS	DATE: 10/2021	CHECKED BY: BCH	6/09		
DESIGN ENGINEER OF RECORD: T. HARRIS	DATE: 10/2021				

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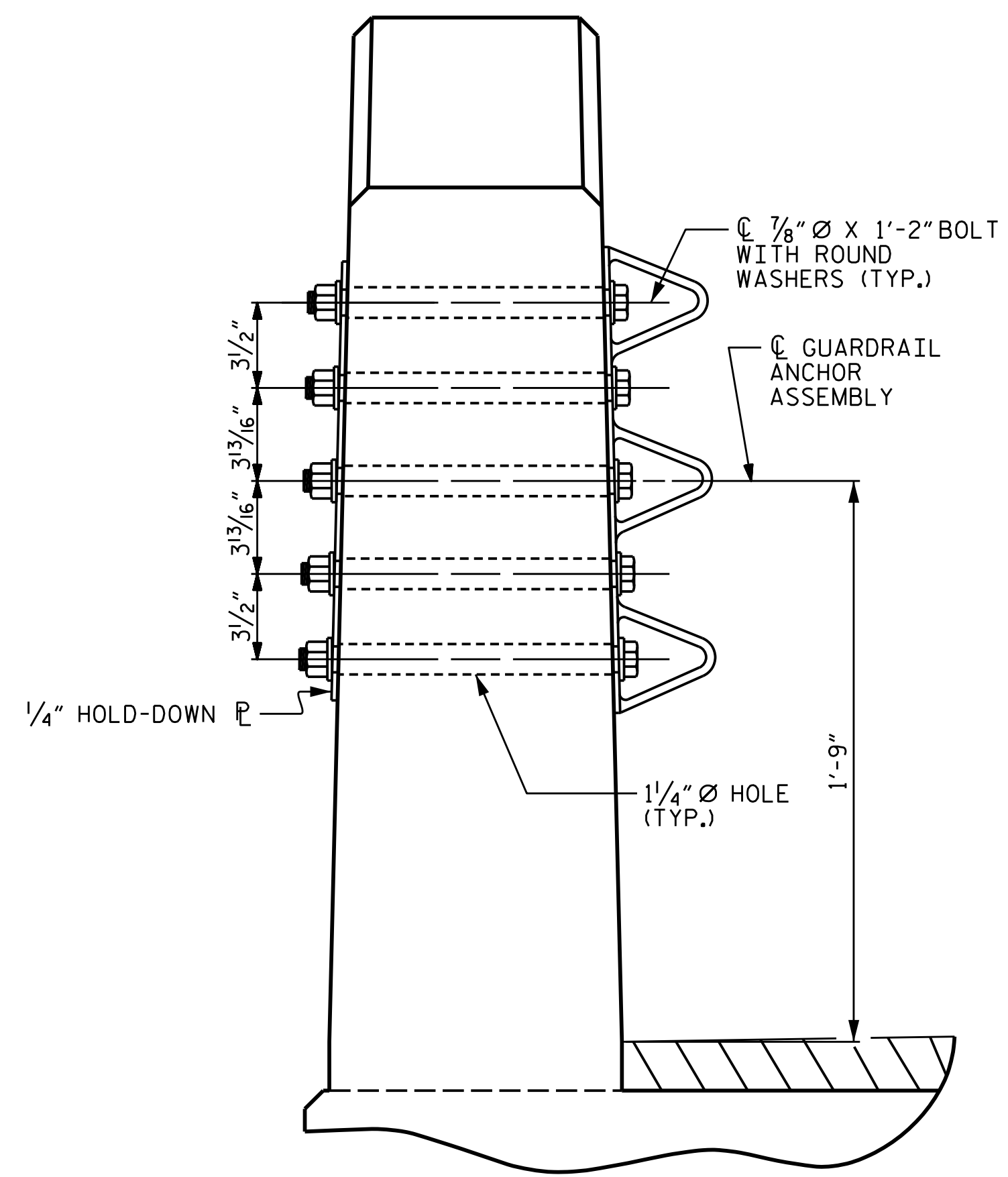
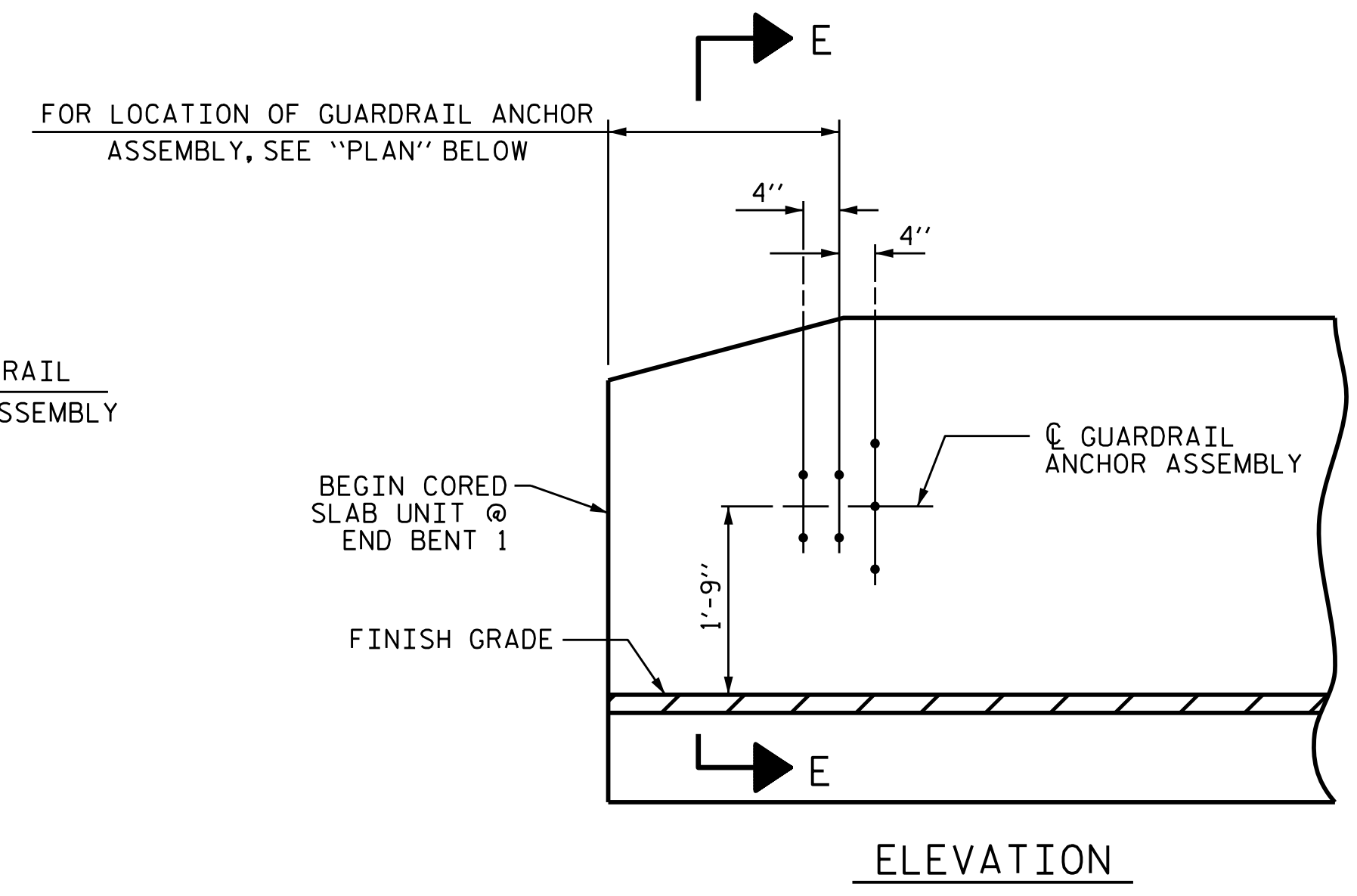
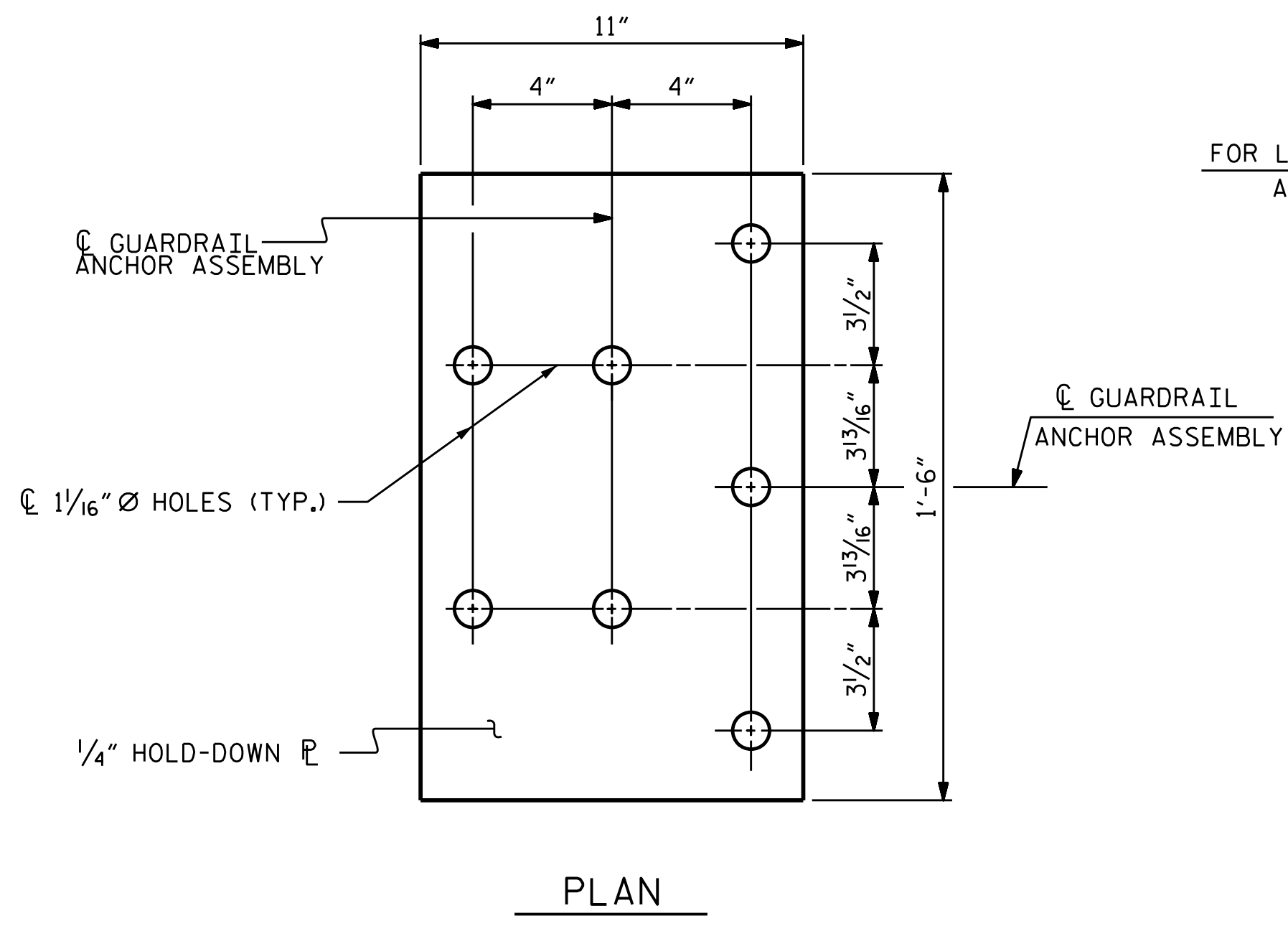
THOMAS M. HARRIS  
 PROFESSIONAL ENGINEER  
 SEAL 19299  
 11/23/2021  
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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 3'-0" X 1'-9"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 60° SKEW

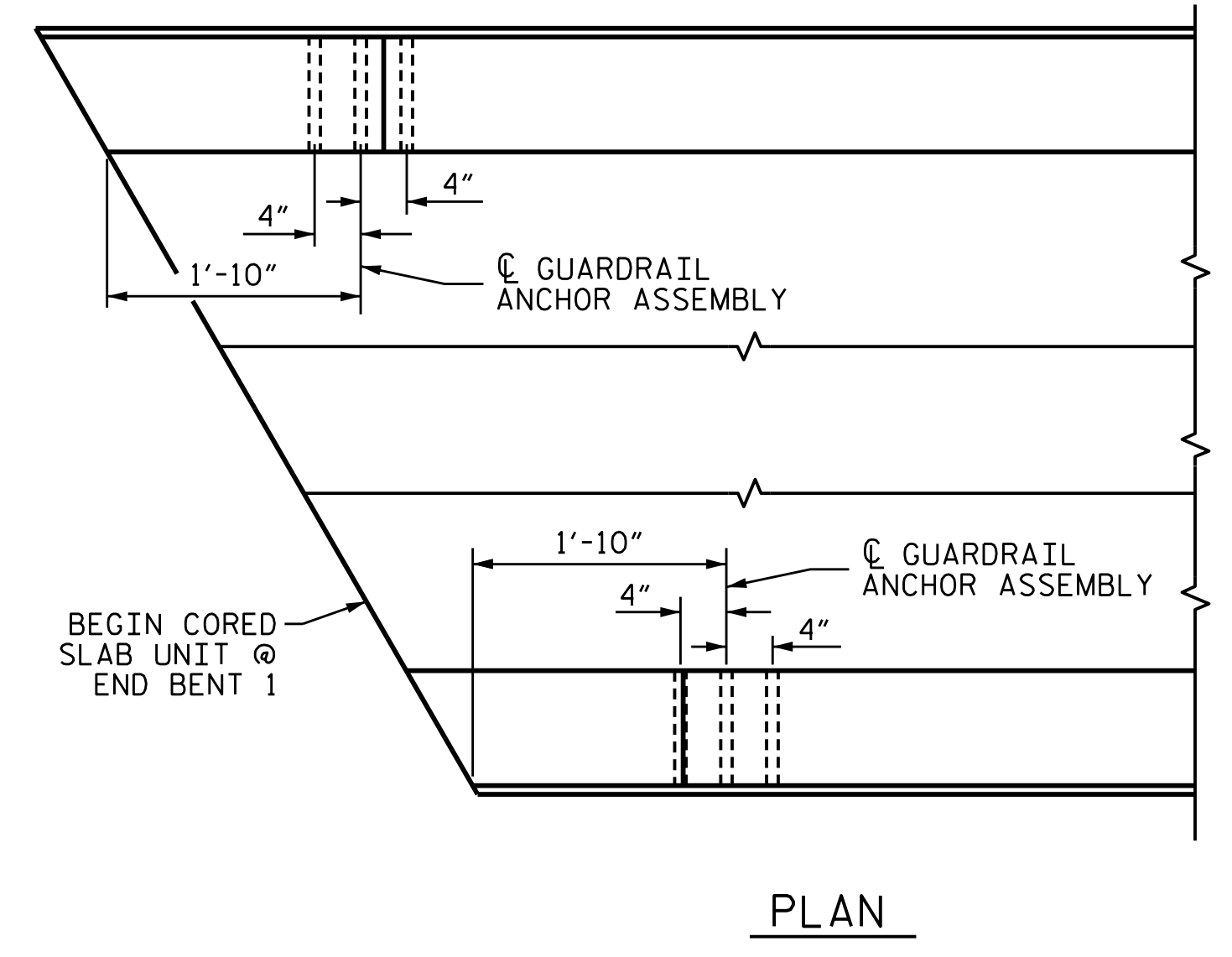
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SHEET NO. S-8  
 TOTAL SHEETS 17

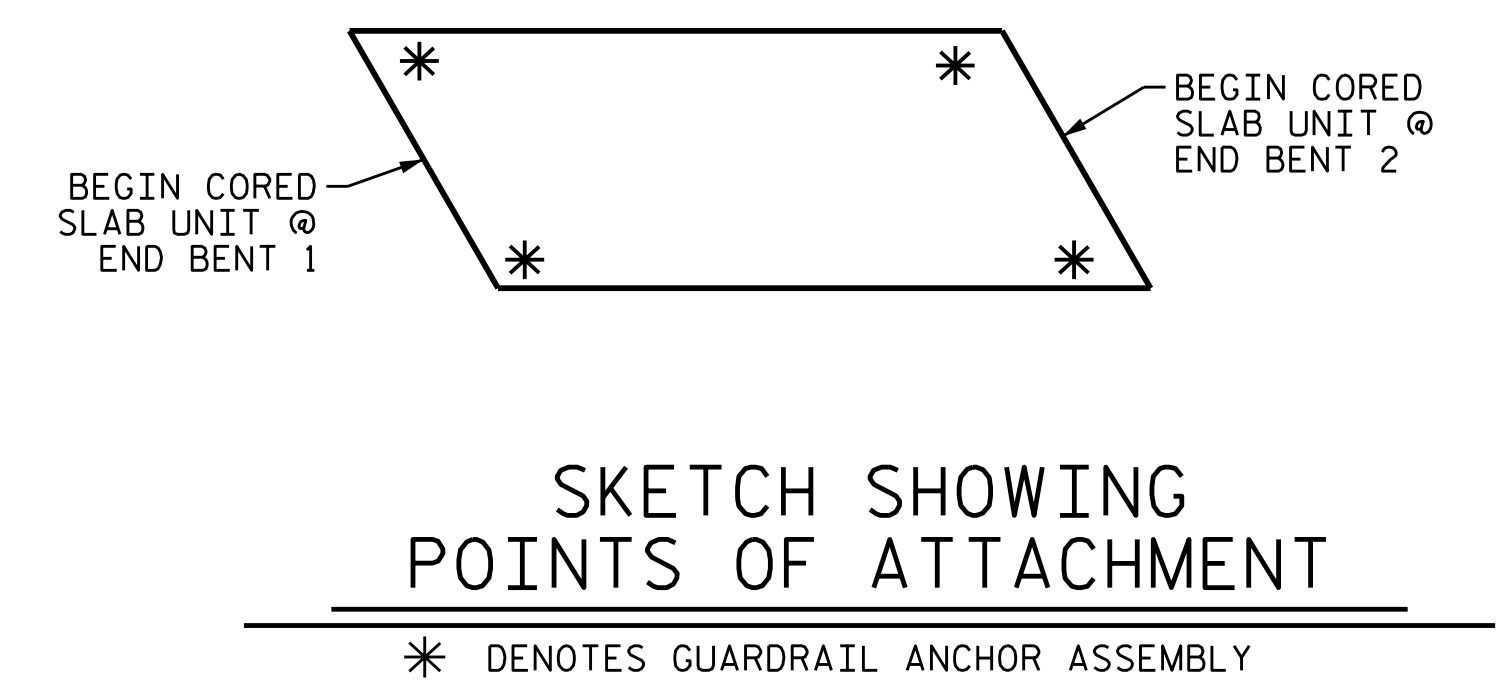
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GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

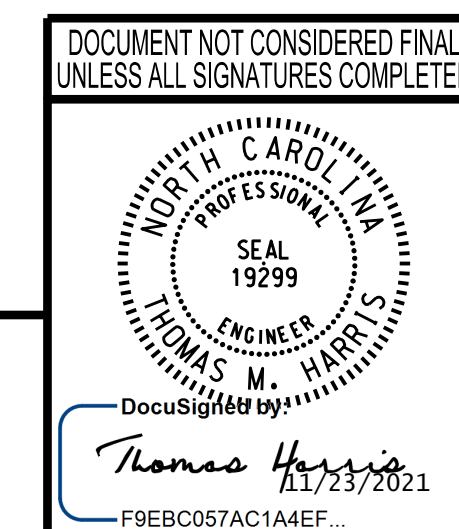


**NOTES**

- THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.
- THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.
- BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.
- AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.
- THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR VERTICAL CONCRETE BARRIER RAIL.
- THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.
- THE 1/4" 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.

PROJECT NO. 17BP.14.R.169  
CLAY COUNTY  
 STATION: 13+10.50 -L-

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



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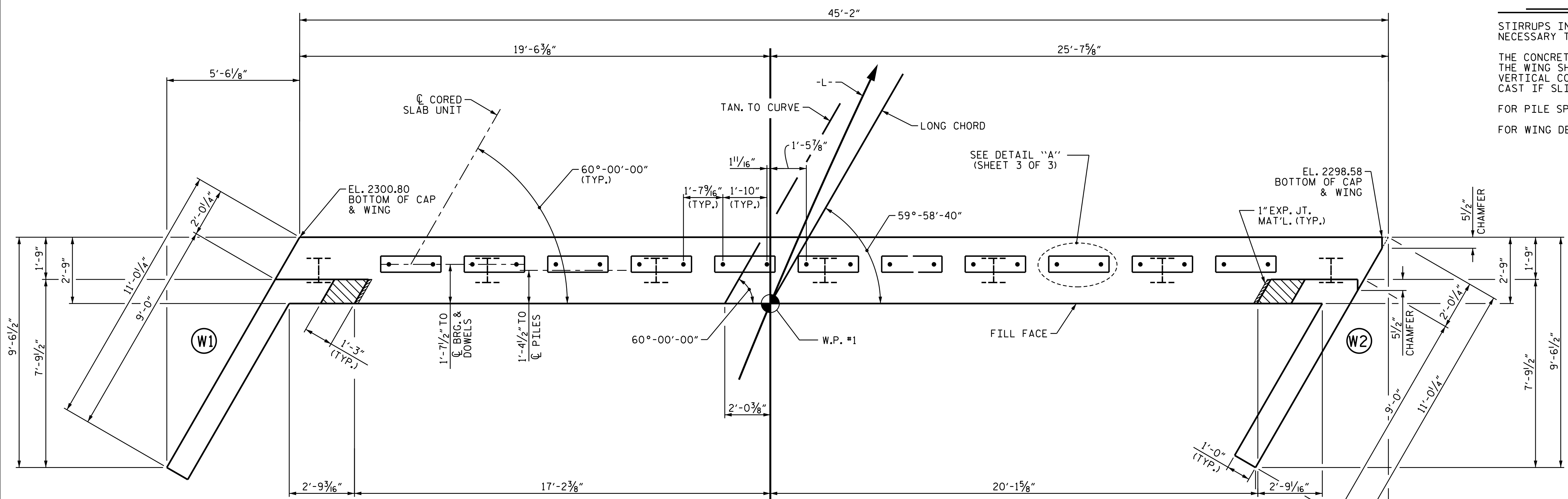
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CHECKED BY: T. HARRIS	DATE: 10/2021	CHECKED BY: GM	5/10	REV. 12/17	MAA/THG
DESIGN ENGINEER		REV. 5/18			MAA/THG
OF RECORD: T. HARRIS	DATE: 10/2021				



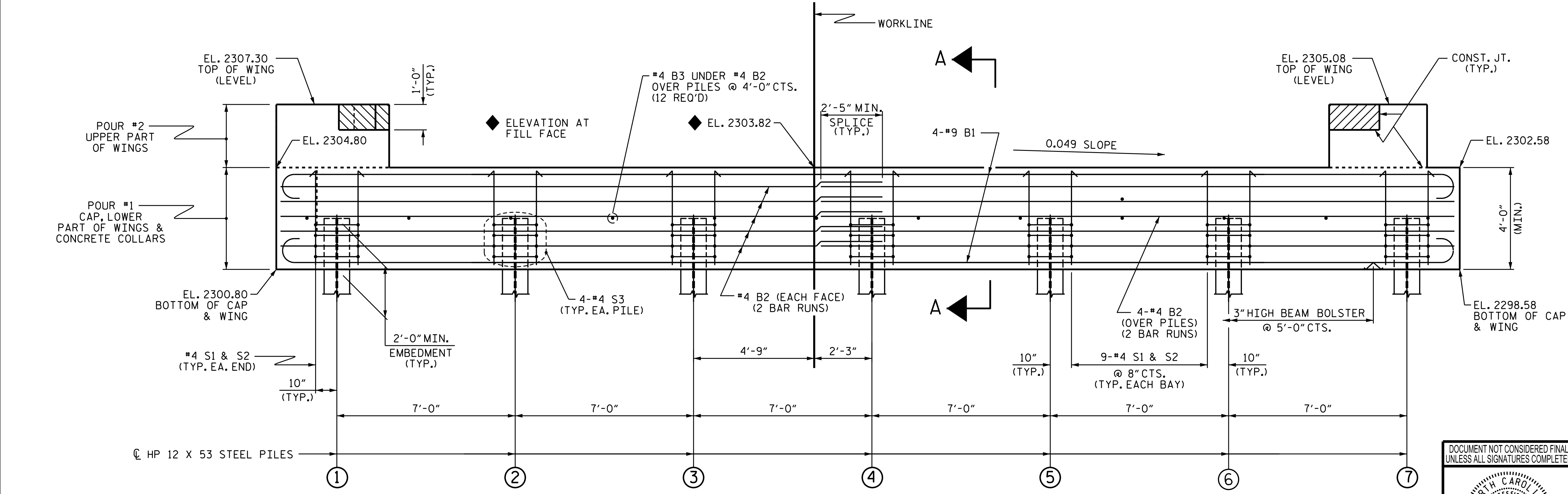
**NOTES**

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 S-12.  
 FOR WING DETAILS, SEE SHEET S-11.



**PLAN**

TOP OF PILE ELEVATIONS	
①	2302.75
②	2302.40
③	2302.06
④	2301.71
⑤	2301.37
⑥	2301.03
⑦	2300.68



**ELEVATION**

WINGS NOT SHOWN FOR CLARITY. FOR SECTION A-A, SEE SHEET S-12.  
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET S-12.

PROJECT NO. 17BP.14.R.169  
CLAY COUNTY  
 STATION: 13+10.50 -L-  
 SHEET 1 OF 3

STATE OF NORTH CAROLINA  
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 RALEIGH

SUBSTRUCTURE  
 END BENT 1

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 SEAL 19299  
 11/23/2021

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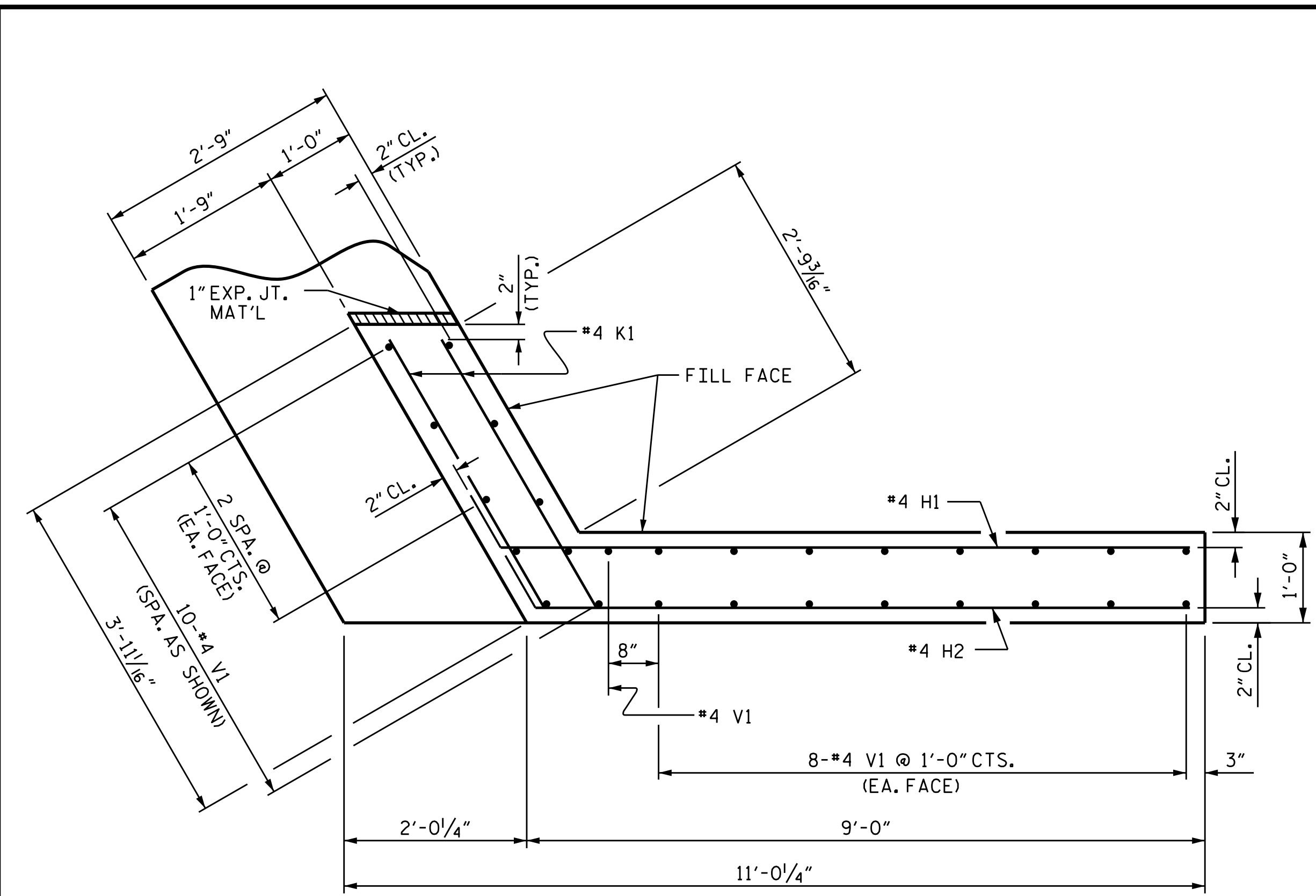
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 CHECKED BY: T. HARRIS DATE: 10/2021  
 DESIGN ENGINEER OF RECORD: T. HARRIS DATE: 10/2021

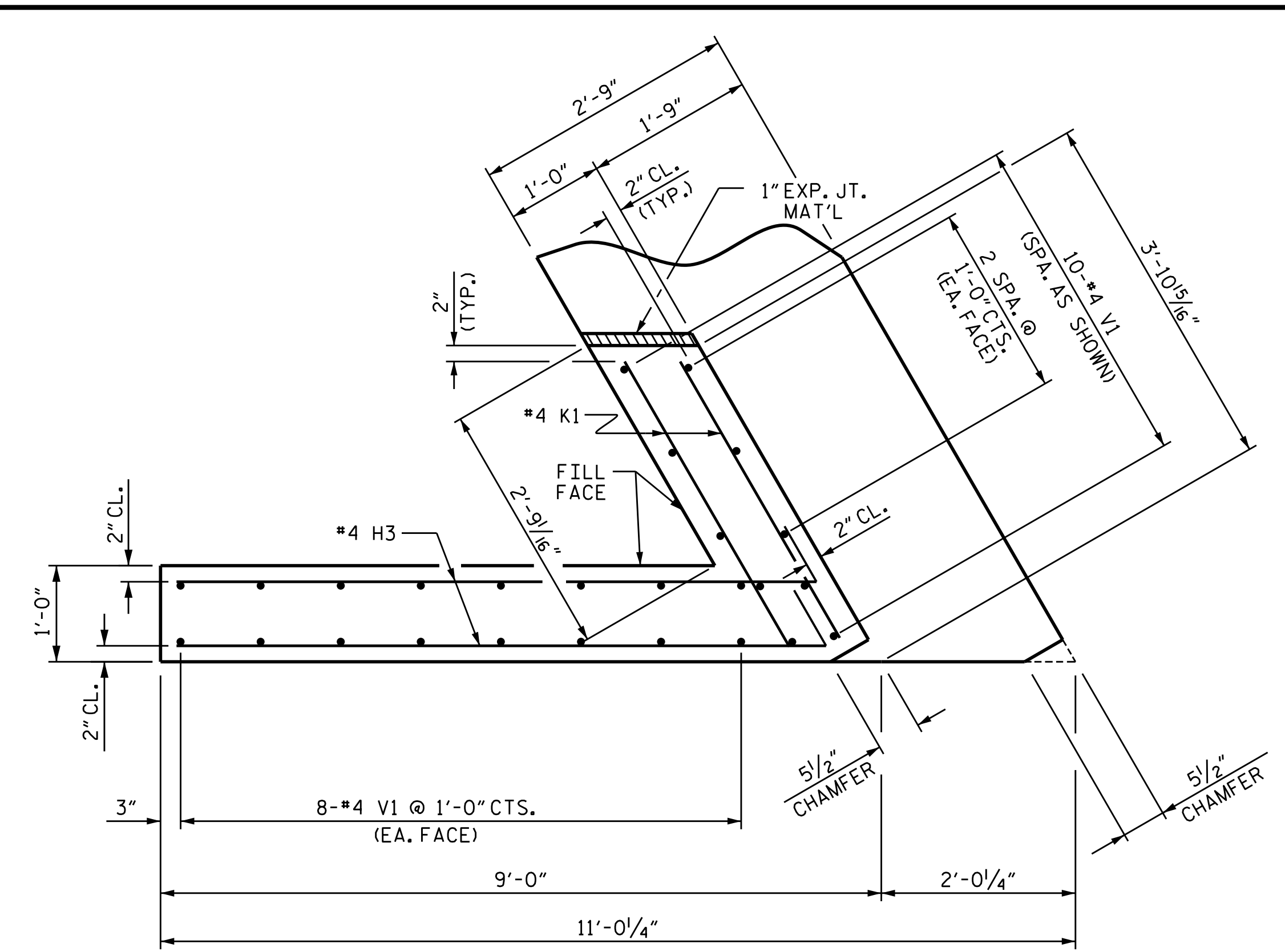
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 REV. 4/15 MAA/TMG

**wsp**

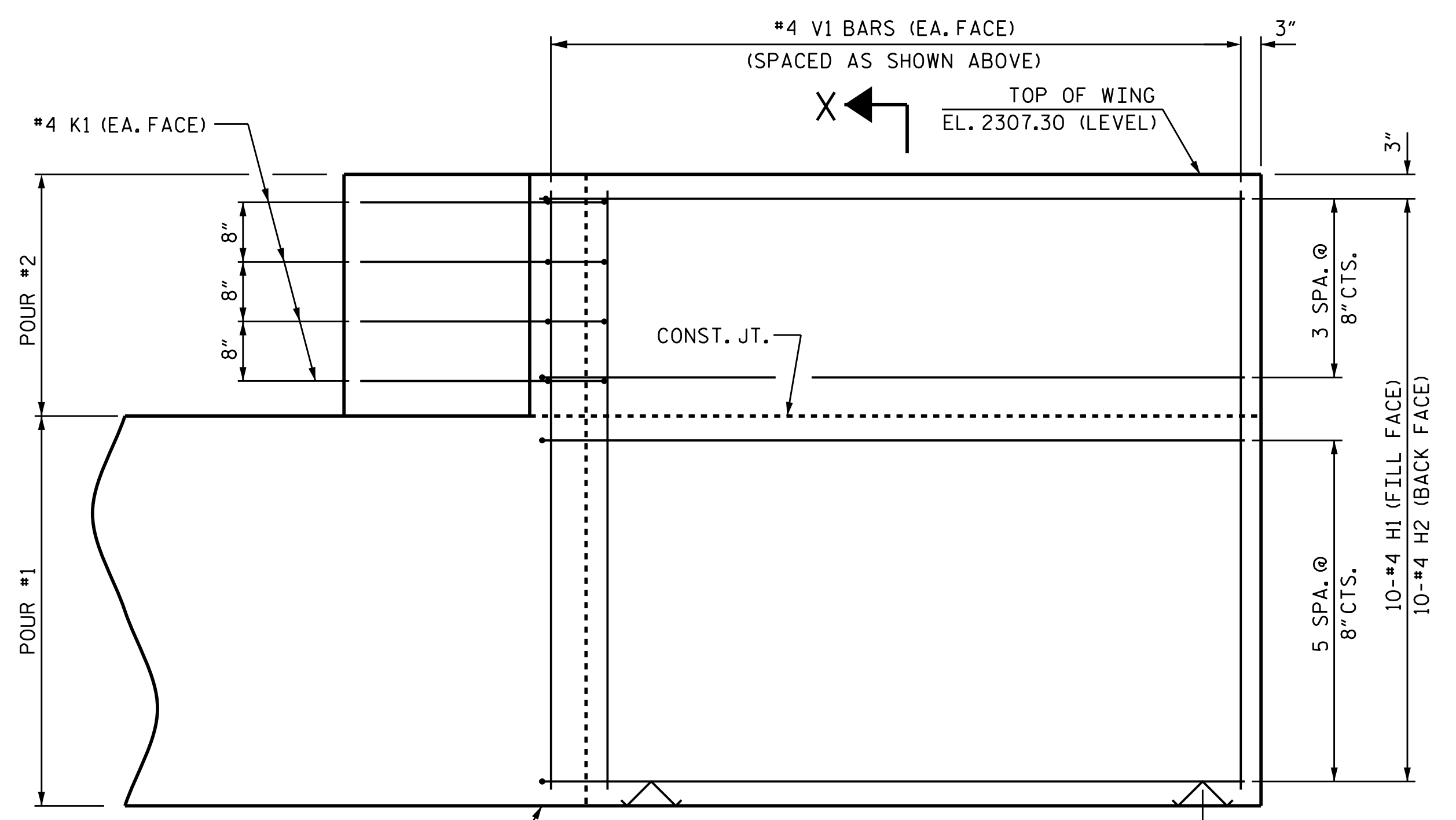
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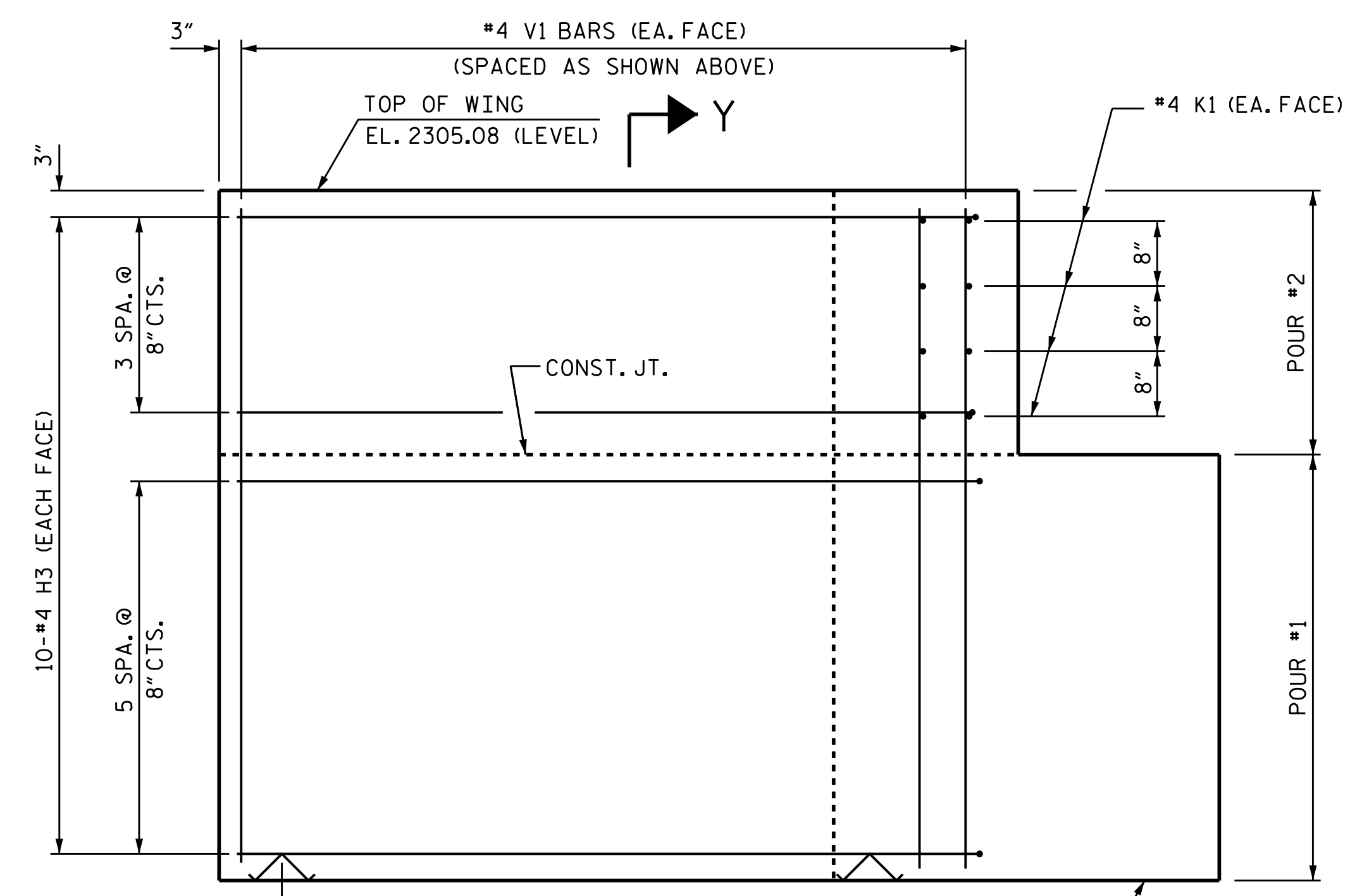
PLAN OF WING (W1)



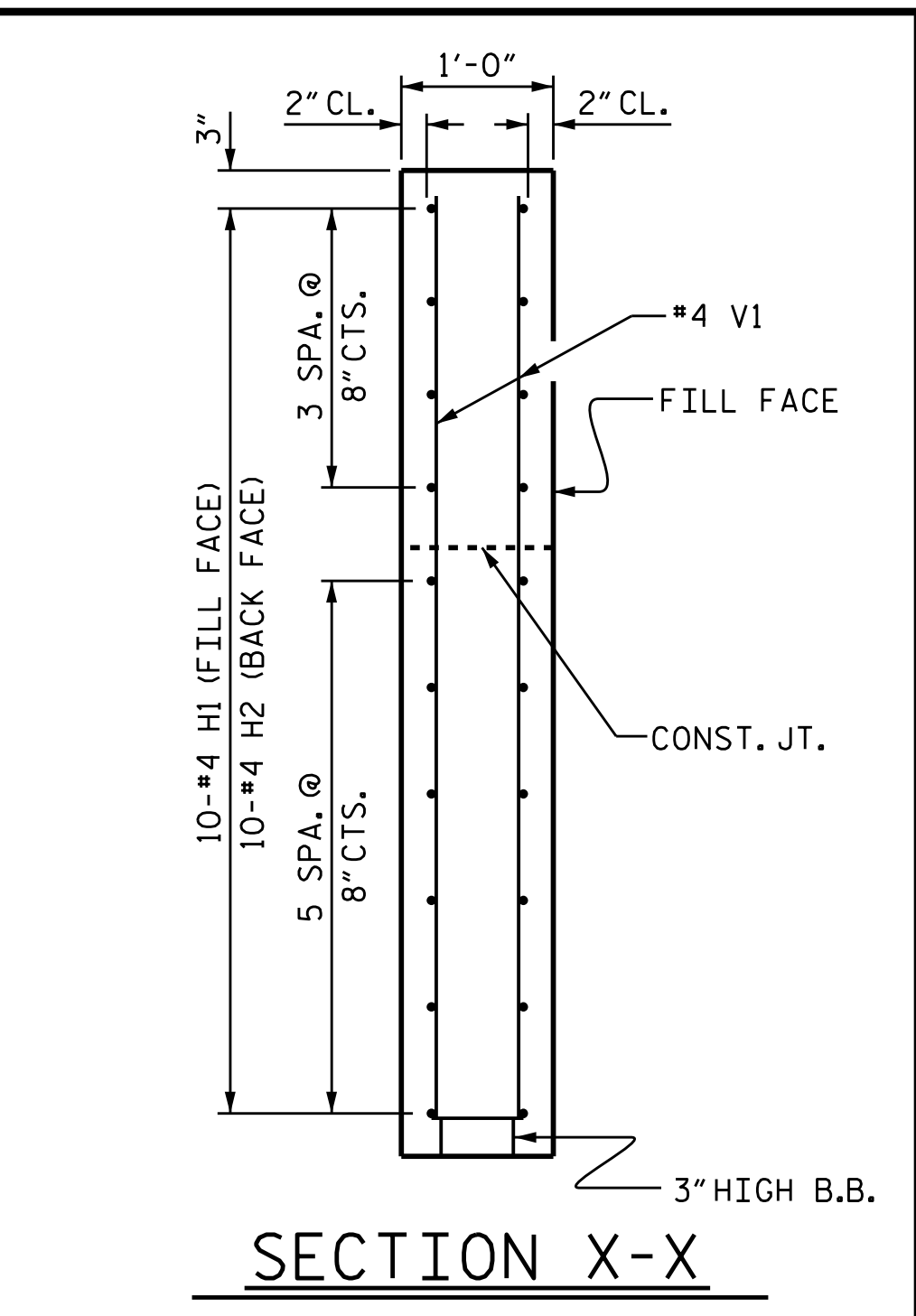
PLAN OF WING (W2)



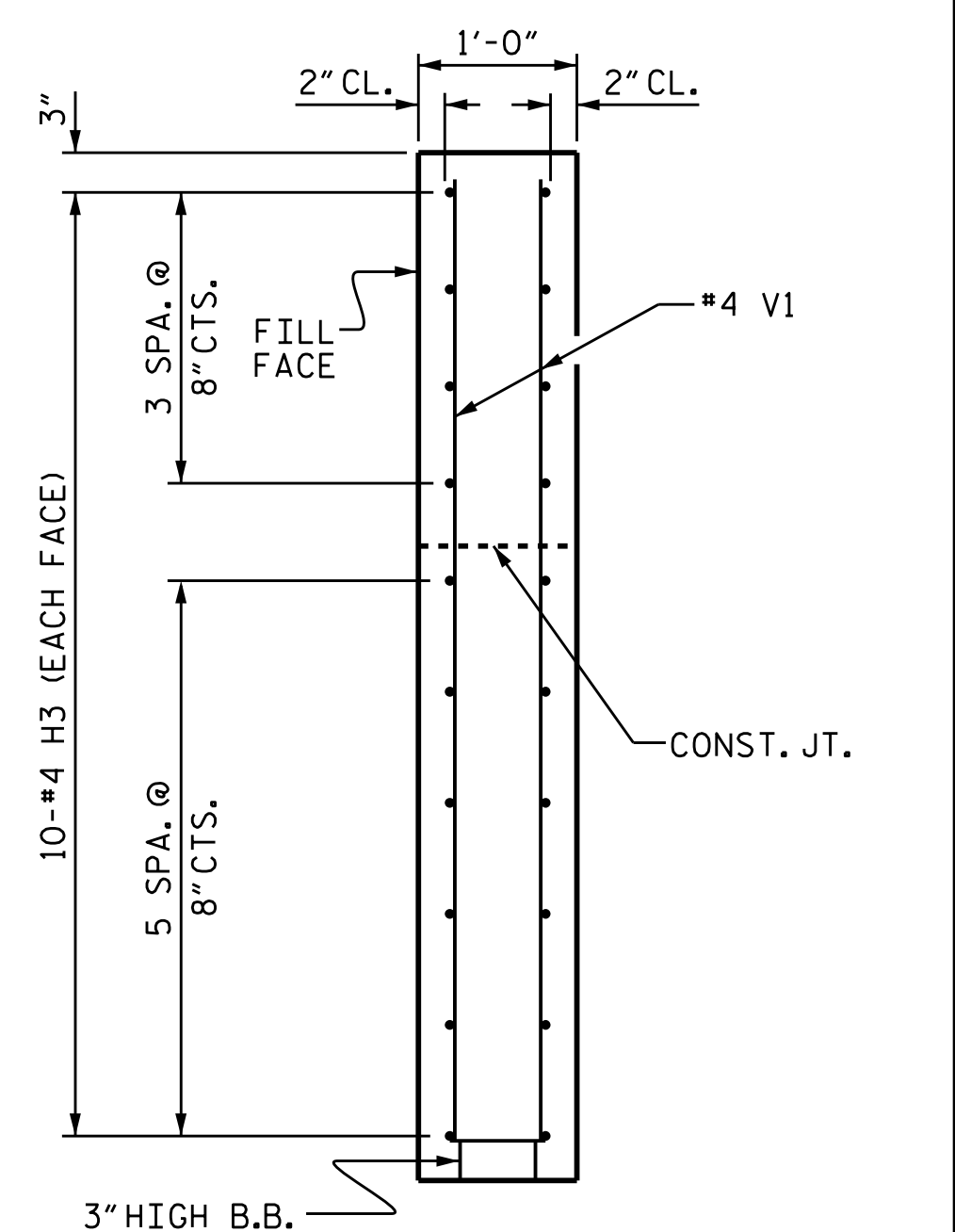
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION X-X



SECTION Y-Y

PROJECT NO. 17BP.14.R.169  
 CLAY COUNTY  
 STATION: 13+10.50 -L-  
 SHEET 2 OF 3

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CHECKED BY: T. HARRIS	DATE: 10/2021
DESIGN ENGINEER OF RECORD: T. HARRIS	DATE: 10/2021

DRAWN BY: WJH	12/11	REV. 4/15	MAA/TMG
CHECKED BY: AAC	12/11		

WING DETAILS

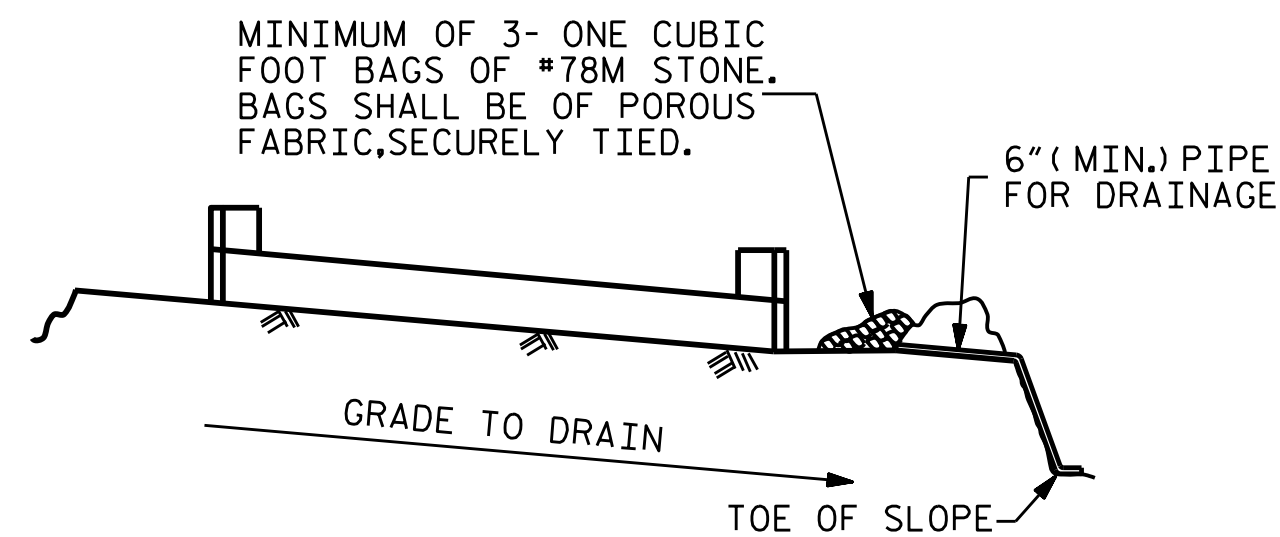
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 1 WING DETAILS					
REVISIONS					
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SHEET NO. S-11					TOTAL SHEETS 17



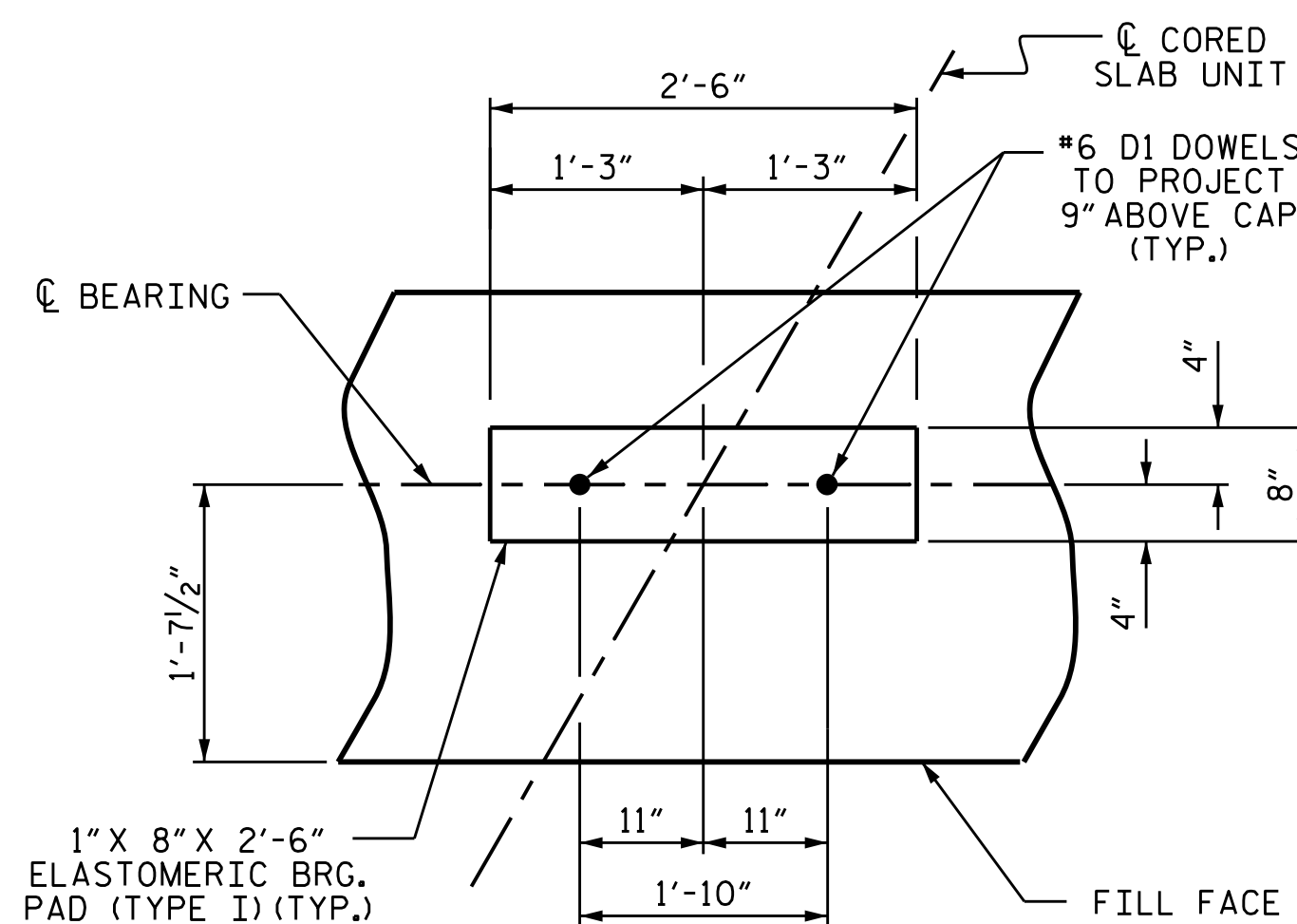


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

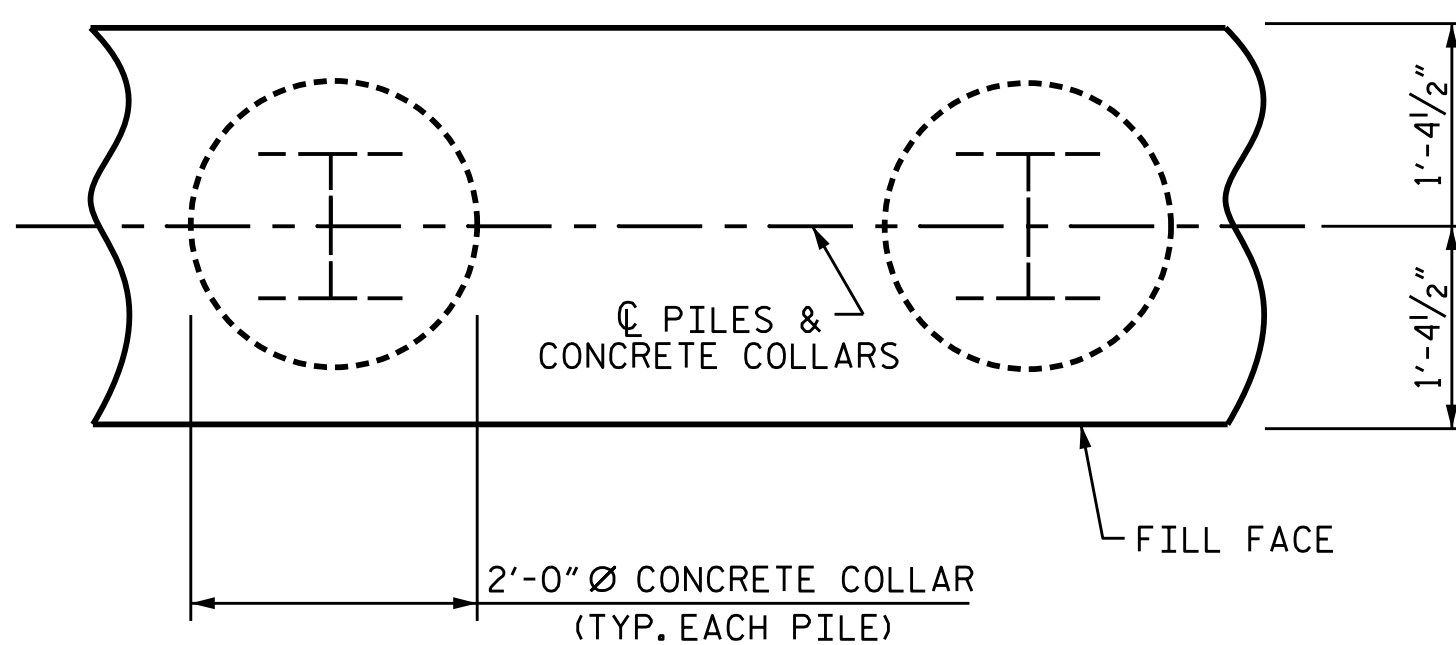
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

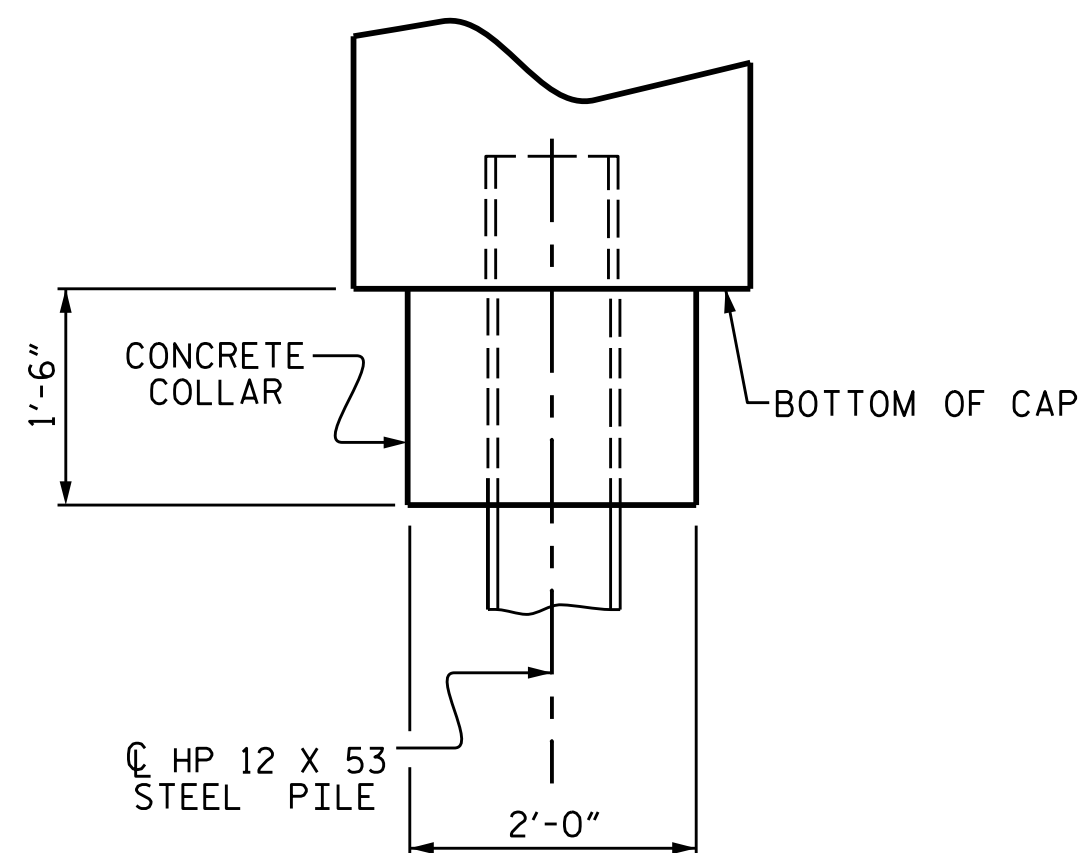
**TEMPORARY DRAINAGE AT END BENT**



DETAIL "A"

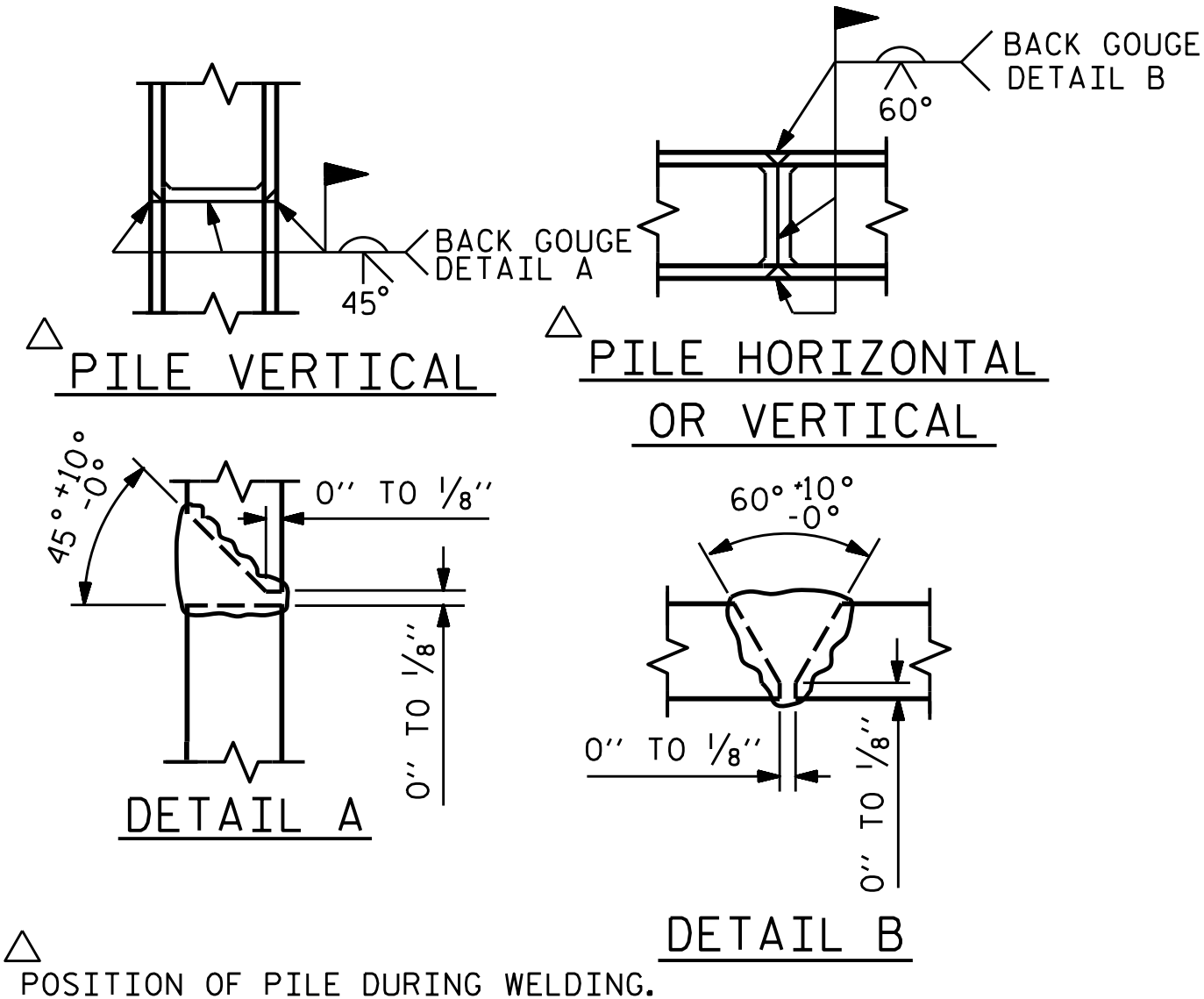


PLAN

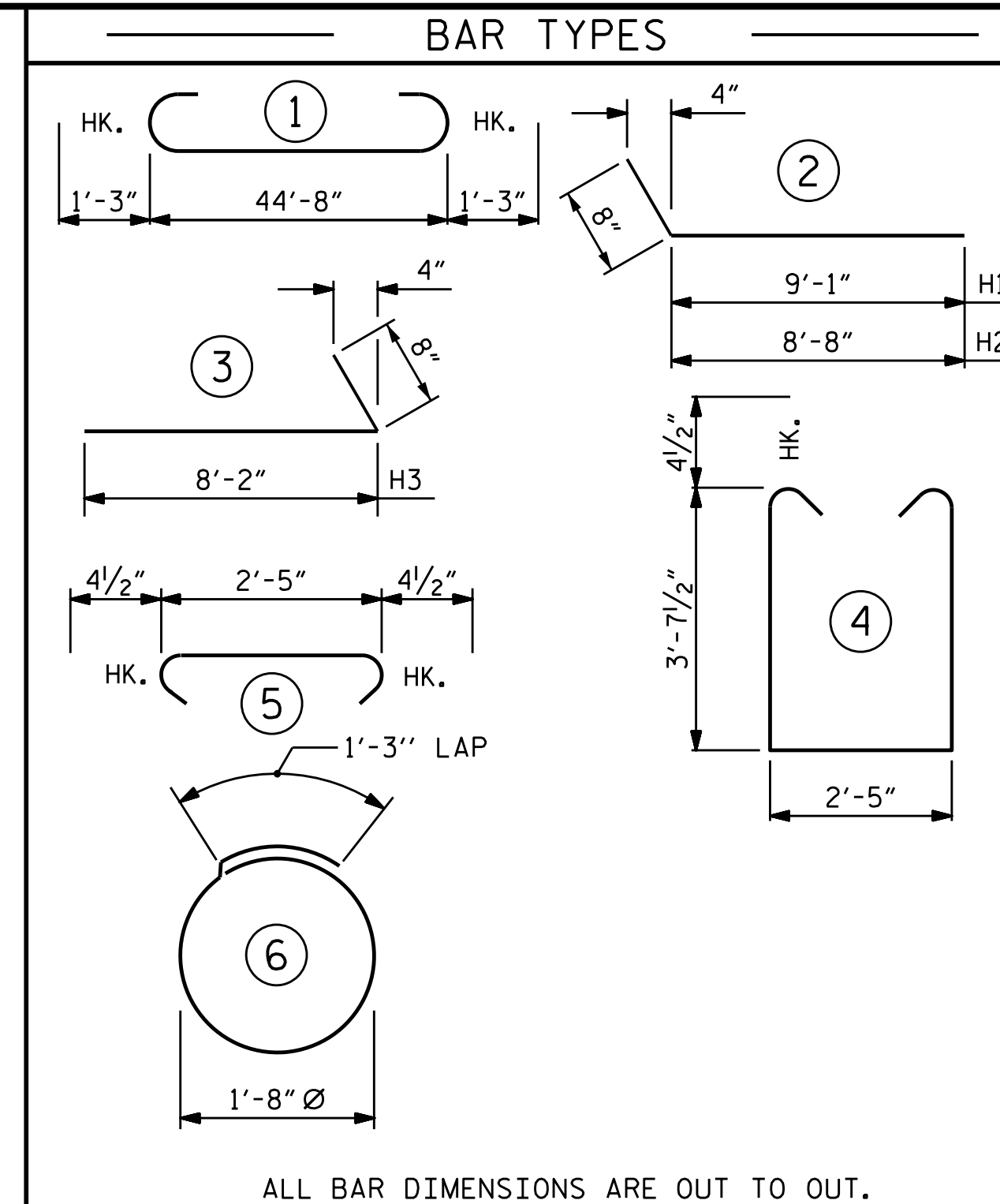


ELEVATION

**CORROSION PROTECTION FOR STEEL PILES DETAIL**



**PILE SPLICE DETAILS**



**BILL OF MATERIAL**

**END BENT 1**

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	#9	1	47'-2"	1283
B2	#4	STR	23'-8"	443
B3	#4	STR	2'-5"	19
D1	#6	STR	1'-6"	50
H1	#4	2	9'-9"	65
H2	#4	2	9'-4"	62
H3	#4	3	8'-10"	118
K1	#4	STR	3'-3"	35
S1	#6	4	10'-5"	390
S2	#4	5	3'-2"	118
S3	#4	6	6'-6"	122
V1	#4	STR	6'-2"	218

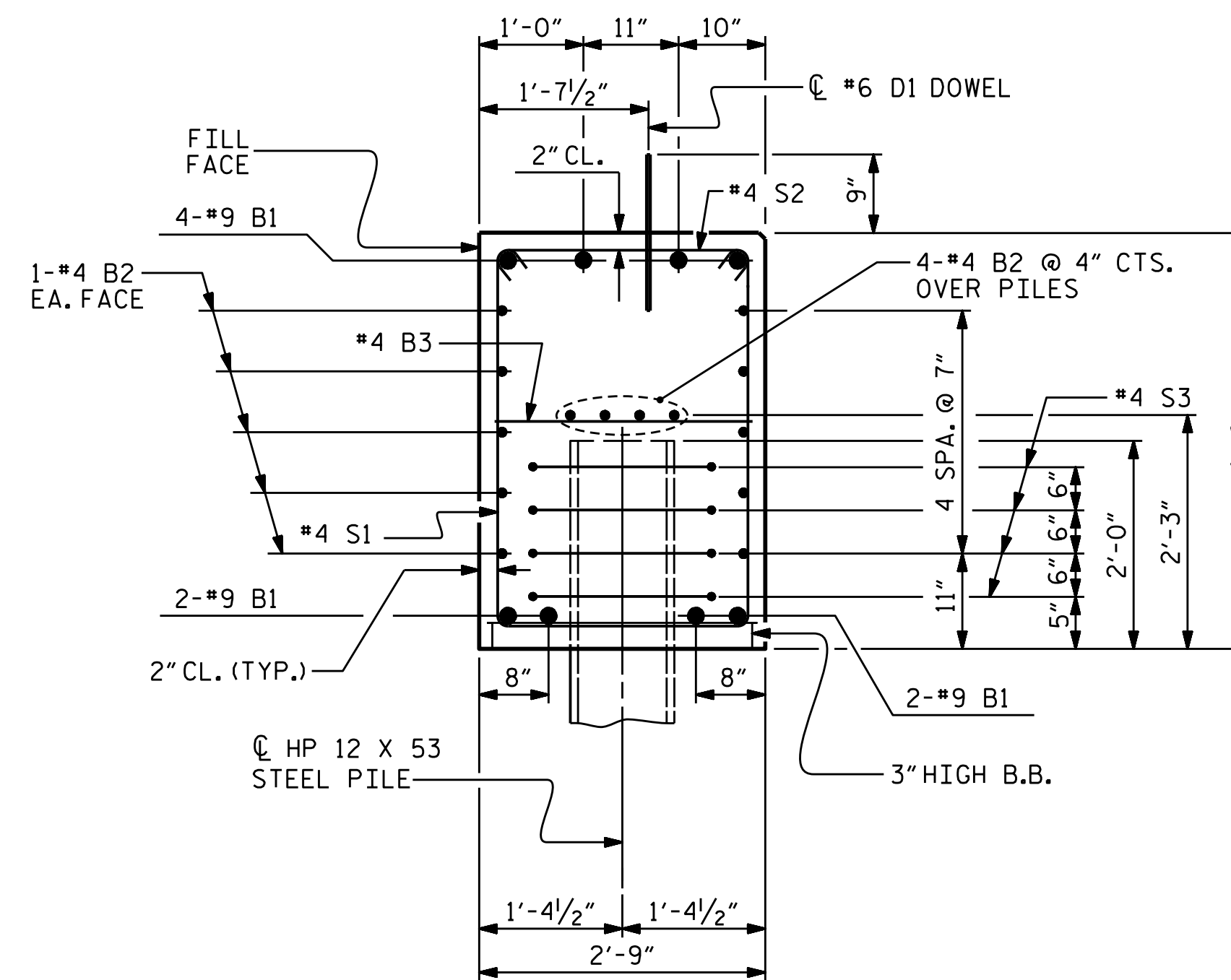
REINFORCING STEEL 2923 LBS.

**CLASS A CONCRETE BREAKDOWN**

POUR #1	CAP, LOWER PART OF WINGS & COLLARS	21.9 C.Y.
POUR #2	UPPER PART OF WINGS	2.2 C.Y.
TOTAL CLASS A CONCRETE		24.1 C.Y.

**END BENT 1**

HP 12 X 53 STEEL PILES	NO: 7	LIN. FT.= 260.0
PILE EXCAVATION IN SOIL		LIN. FT.= 60.0
PILE EXCAVATION NOT IN SOIL		LIN. FT.= 35.0
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	NO: 7	



**SECTION A-A**

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

PROJECT NO. 17BP.14.R.169  
CLAY COUNTY  
STATION: 13+10.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

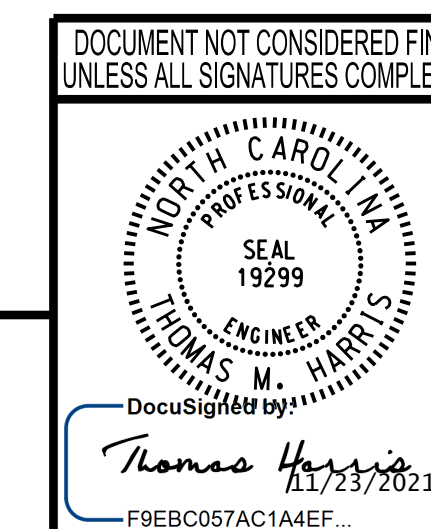
**SUBSTRUCTURE  
END BENT 1  
DETAILS**

**REVISIONS**

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

SHEET NO. S-12

TOTAL SHEETS 17



WSP USA Inc.  
434 FAYETTEVILLE STREET  
SUITE 1500  
RALEIGH, NC 27601  
TEL: 1.919.836.4040  
LICENSE NO. P-0165

ASSEMBLED BY: J. WHEATLEY DATE: 10/2021  
CHECKED BY: T. HARRIS DATE: 10/2021  
DESIGN ENGINEER OF RECORD: T. HARRIS DATE: 10/2021

DRAWN BY: WJH 12/11  
CHECKED BY: AAC 12/11  
REV. 4/17 MAA/THG

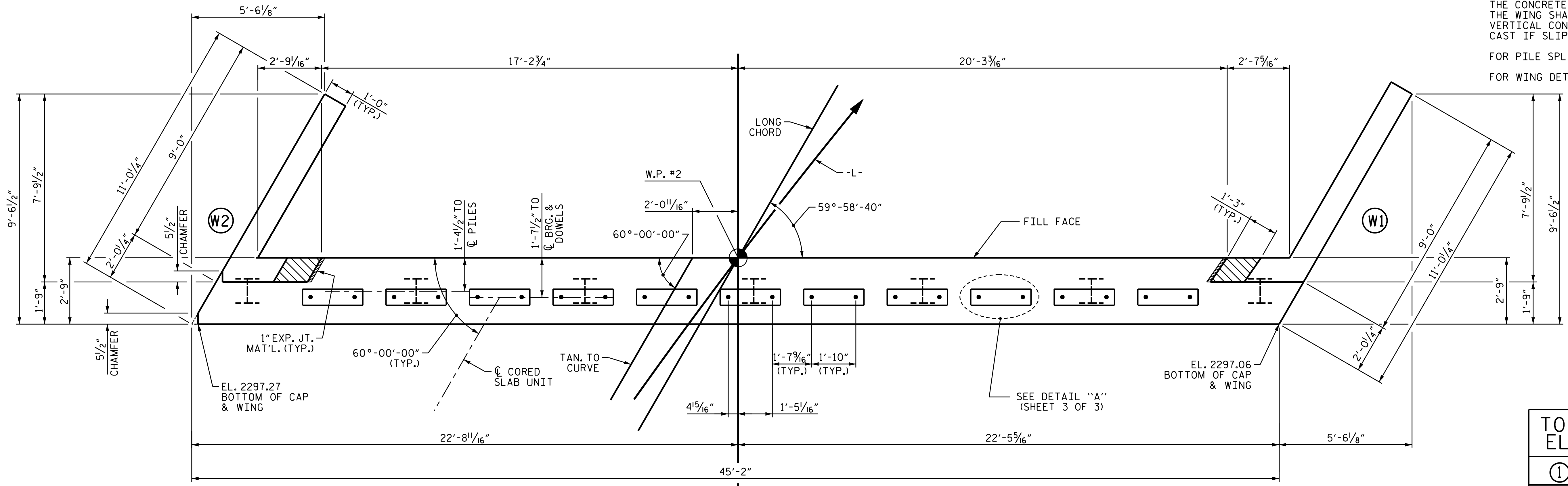
**NOTES**

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.

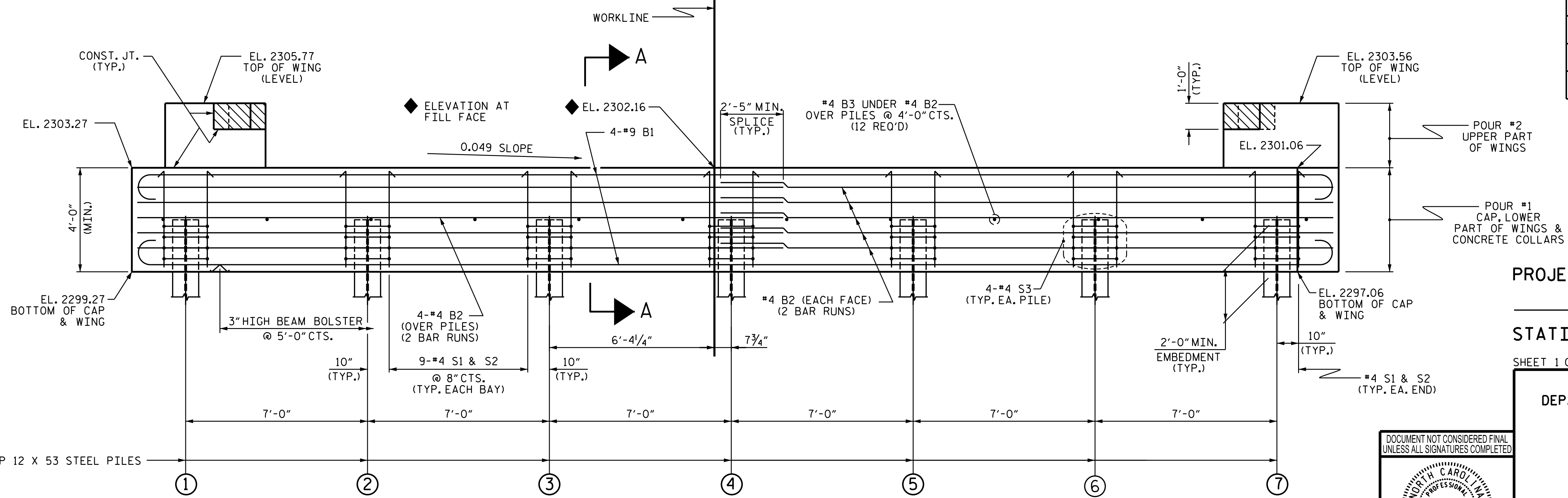
FOR PILE SPLICE DETAILS, SEE SHEET S-15.

FOR WING DETAILS, SEE SHEET S-14.



**PLAN**

TOP OF PILE ELEVATIONS	
①	2301.18
②	2300.84
③	2300.50
④	2300.14
⑤	2299.81
⑥	2299.46
⑦	2299.12



**ELEVATION**

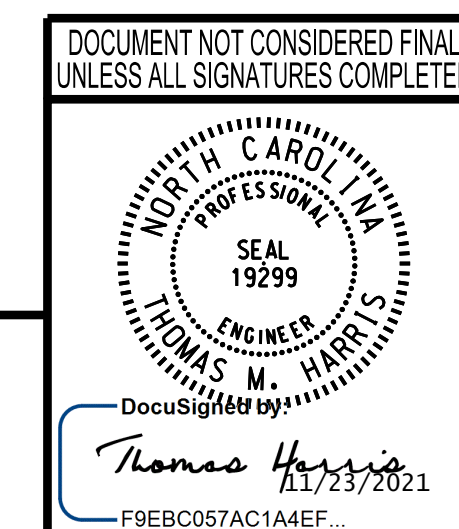
PROJECT NO. 17BP.14.R.169  
CLAY COUNTY  
 STATION: 13+10.50 -L-  
 SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE  
 END BENT 2**

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

SHEET NO. **S-13**  
 TOTAL SHEETS **17**



**wsp**

WSP USA Inc.  
 434 FAYETTEVILLE STREET  
 SUITE 1500  
 RALEIGH, NC 27601  
 TEL: 1.919.836.4040  
 LICENSE NO. F-0165

WINGS NOT SHOWN FOR CLARITY.  
 FOR SECTION A-A, SEE SHEET S-15.  
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET S-15.

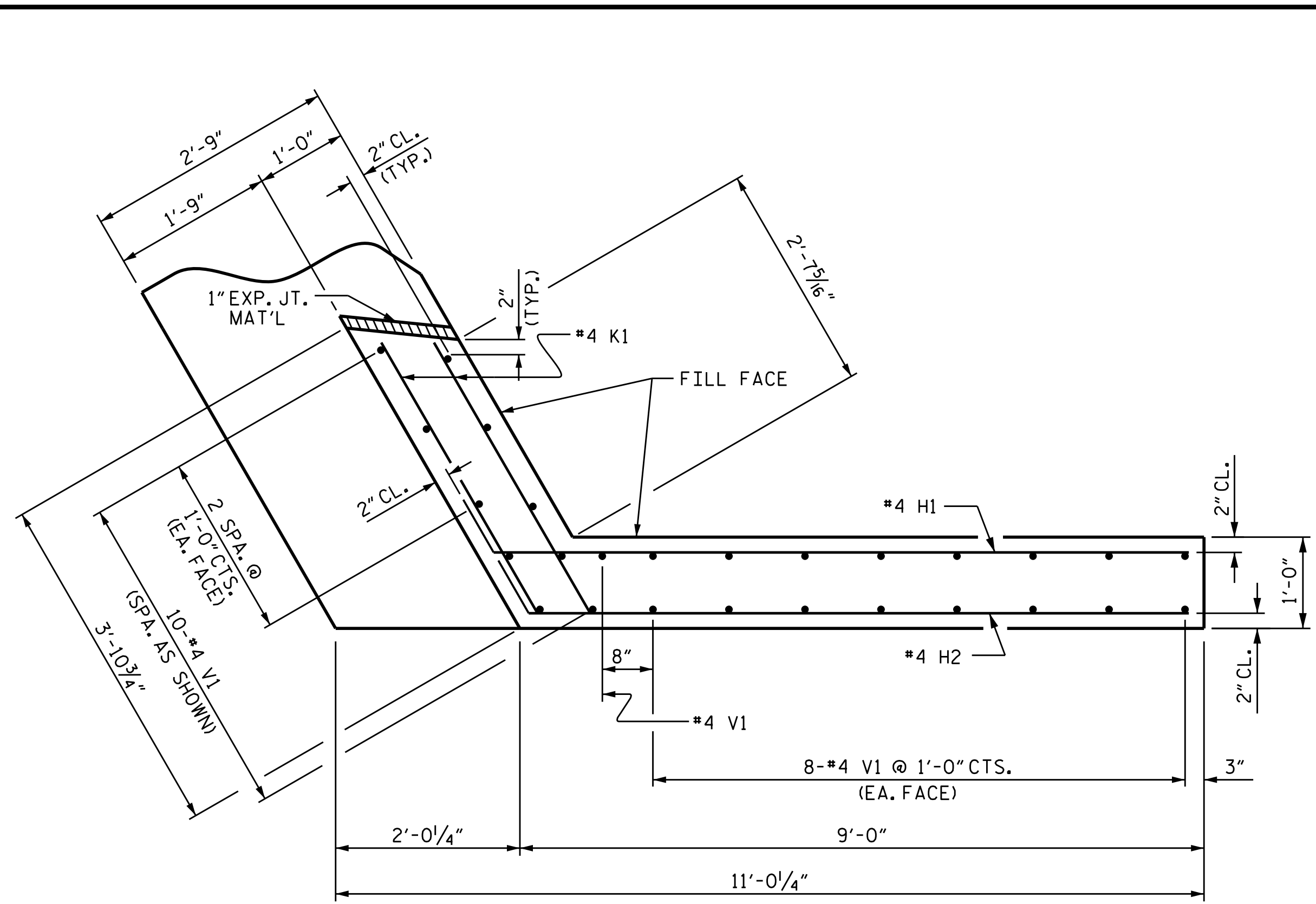
ASSEMBLED BY: J. WHEATLEY DATE: 10/2021  
 CHECKED BY: T. HARRIS DATE: 10/2021  
 DESIGN ENGINEER OF RECORD: T. HARRIS DATE: 10/2021

DRAWN BY: WJH 12/11  
 CHECKED BY: AAC 12/11  
 REV. 4/15 MAA/TMG

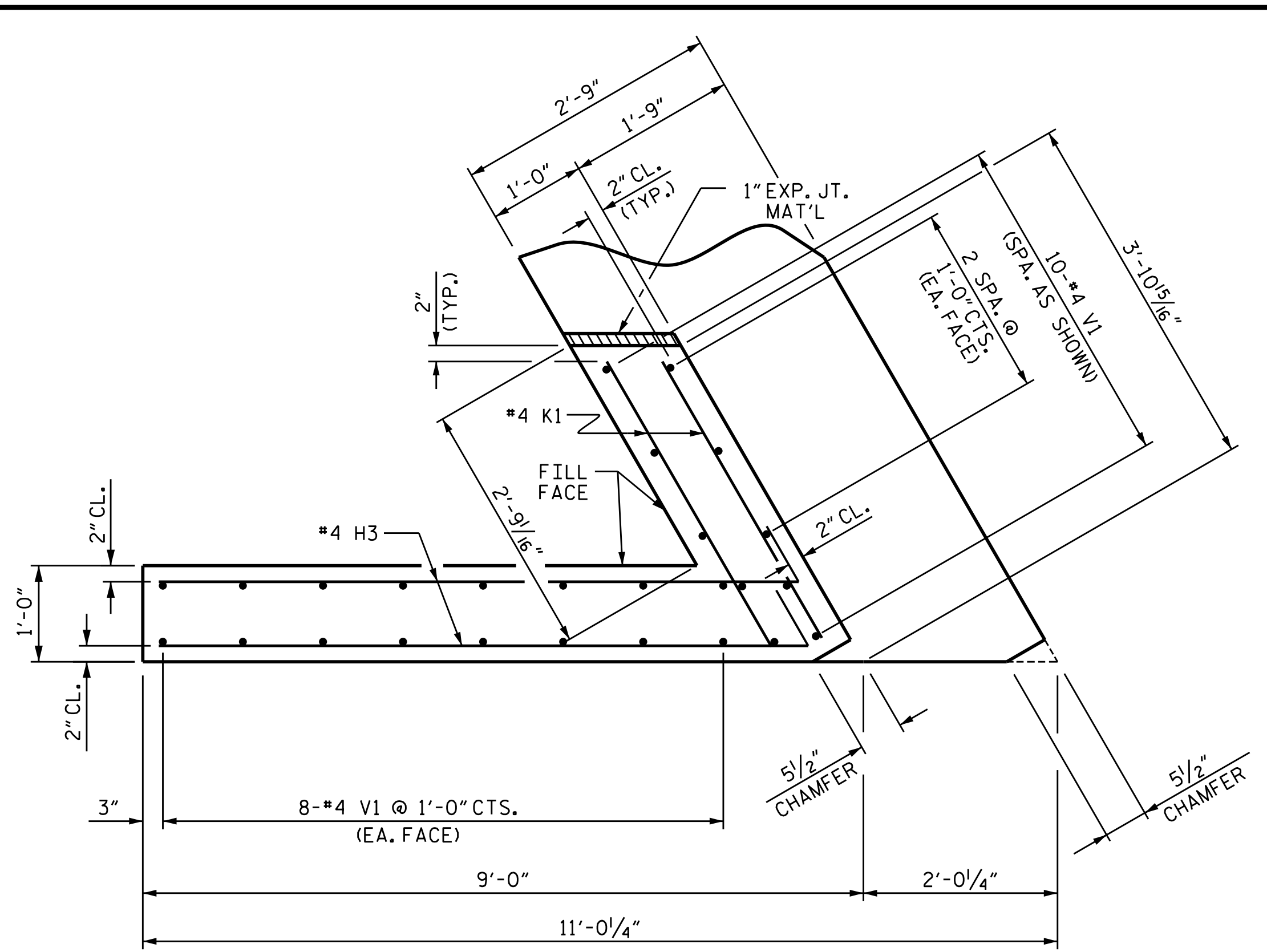
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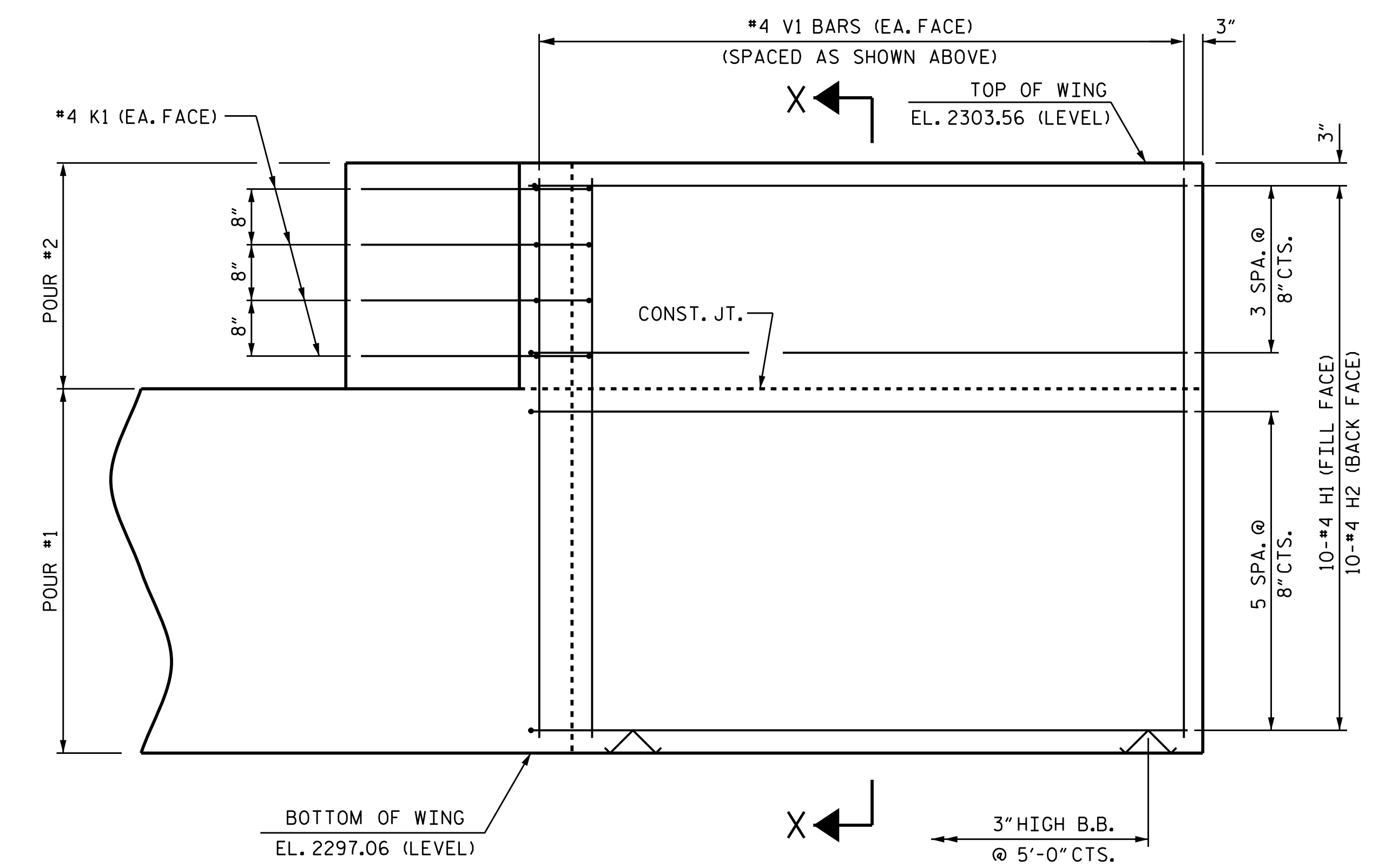
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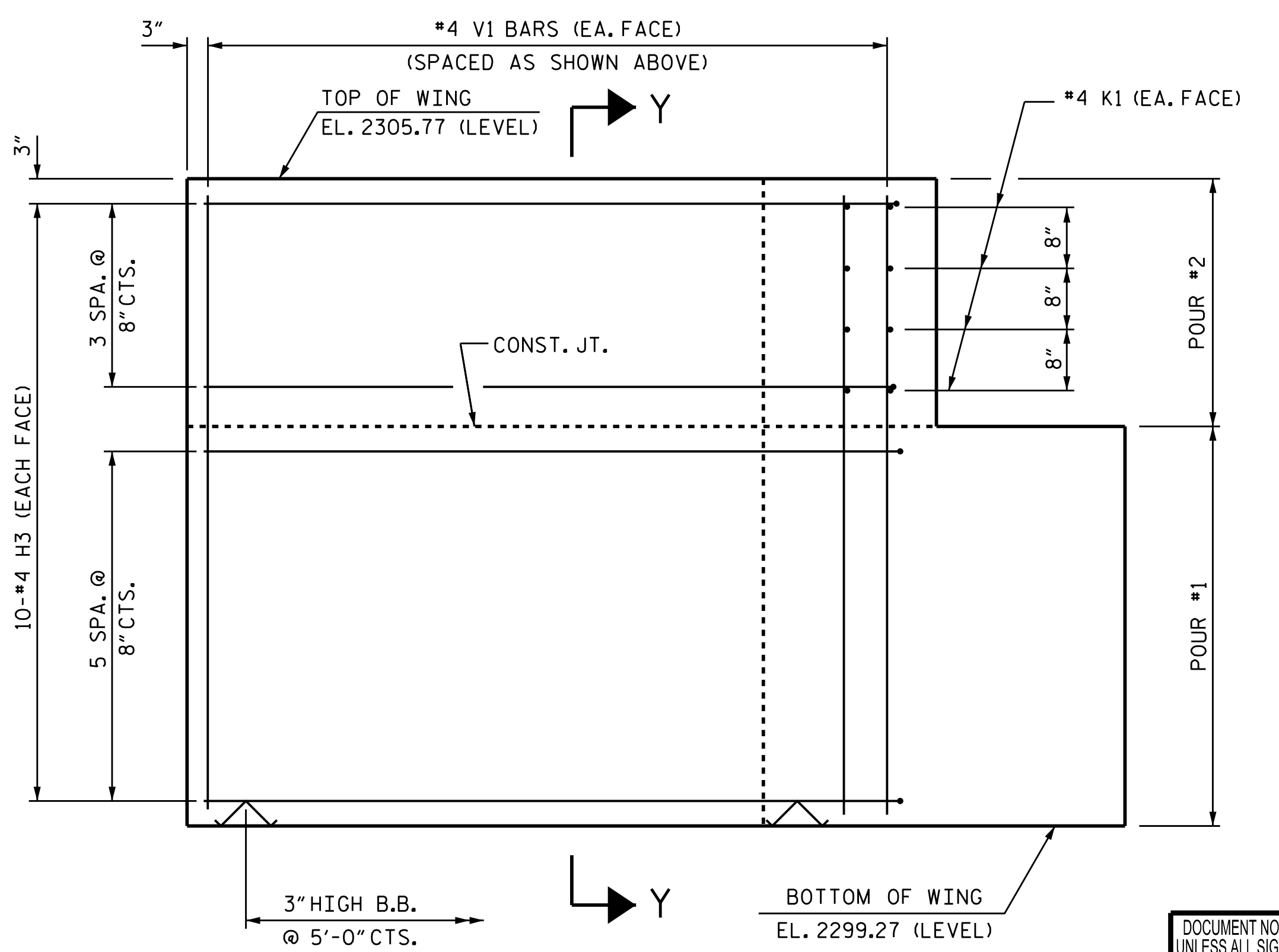
**PLAN OF WING (W1)**



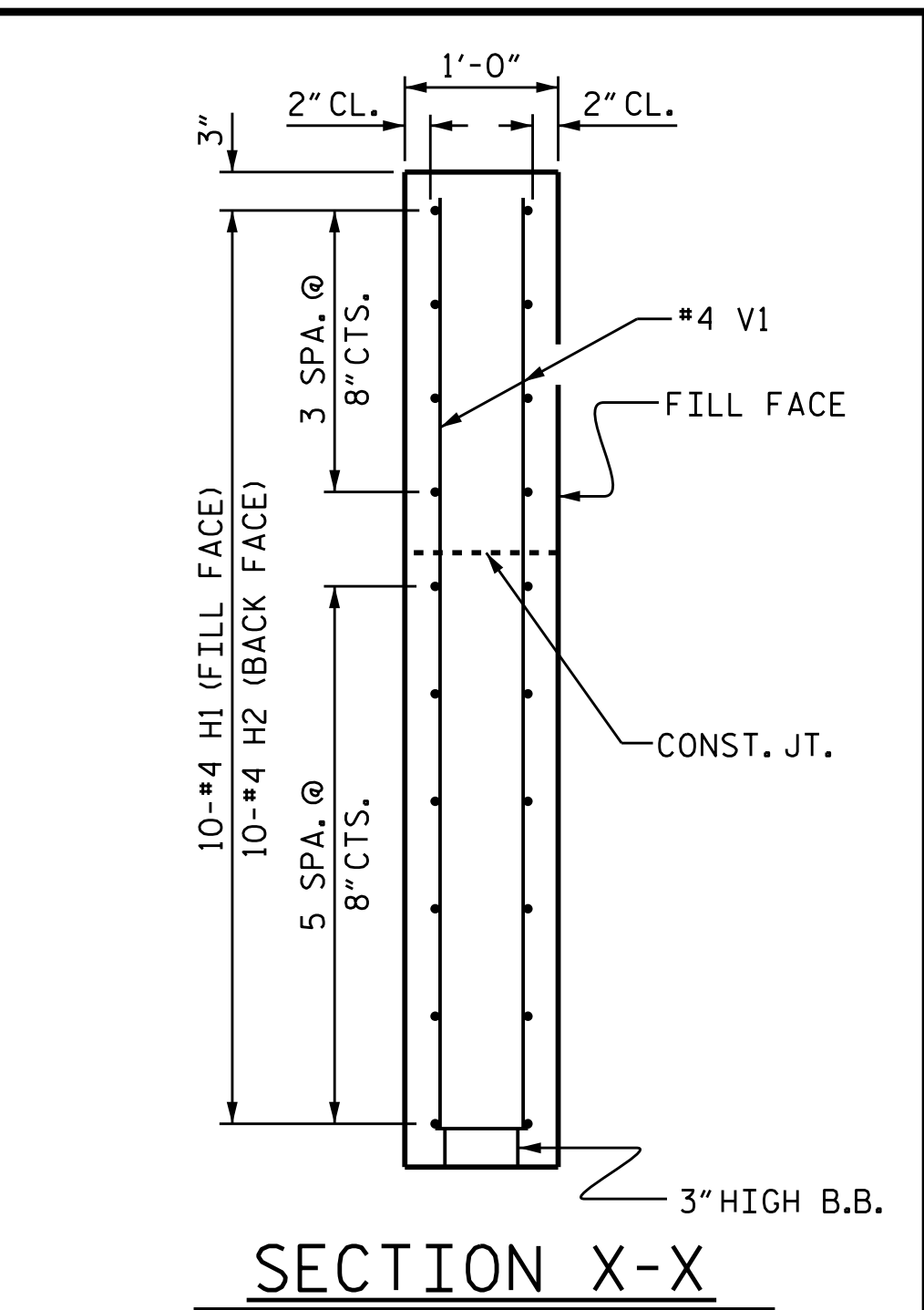
**PLAN OF WING (W2)**



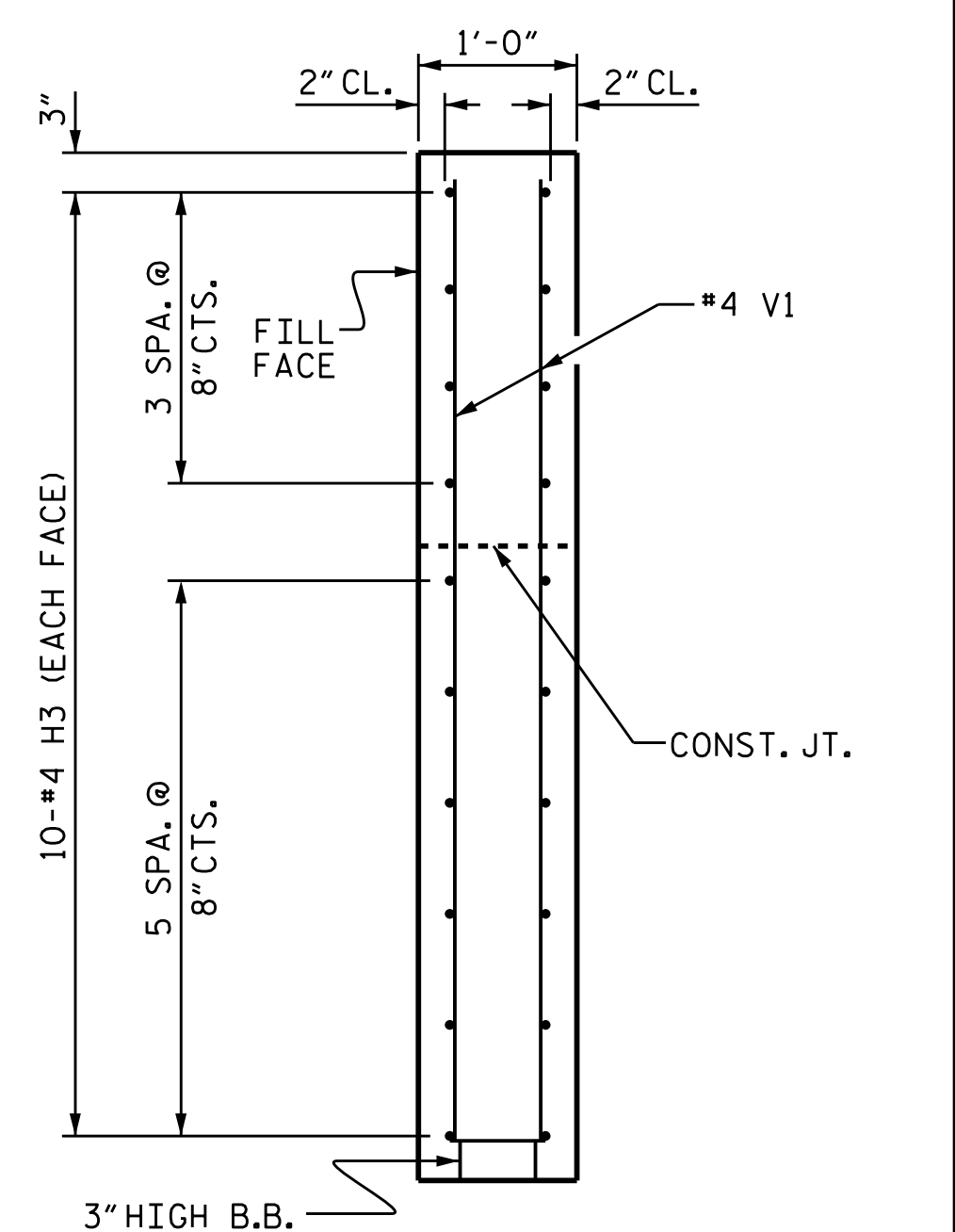
**ELEVATION OF WING (W1)**



**ELEVATION OF WING (W2)**



**SECTION X-X**



**SECTION Y-Y**

PROJECT NO. 17BP.14.R.169  
CLAY COUNTY  
 STATION: 13+10.50 -L-  
 SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
**END BENT 2**  
**WING DETAILS**

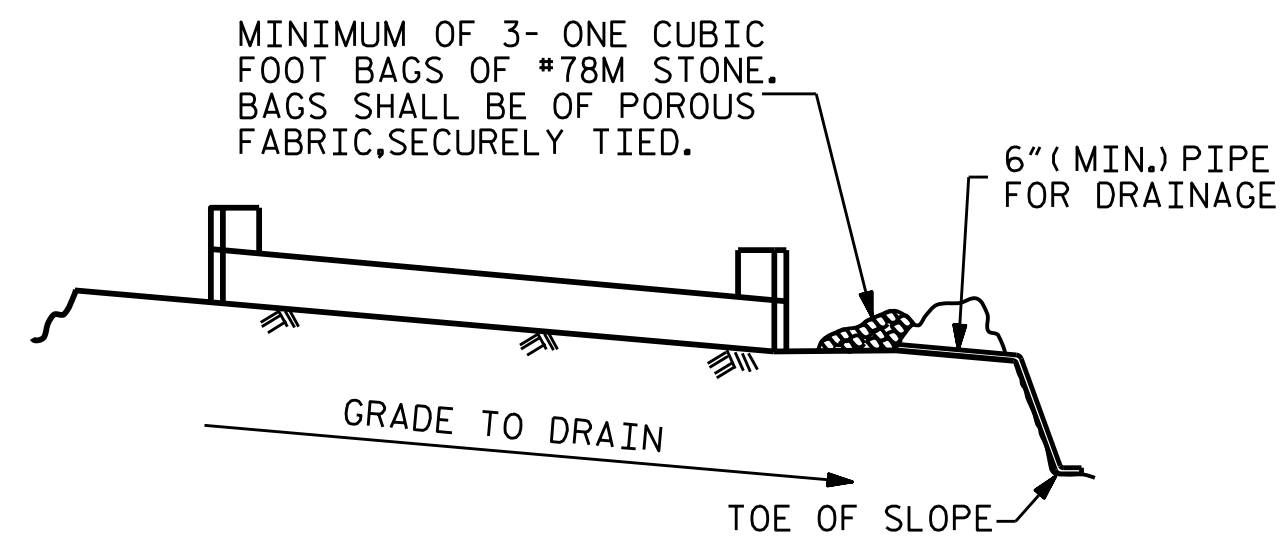
DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED  
  
 Thomas M. Harris  
 11/23/2021  
 F9EB0057AC1A4EF...

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS 17
2			4			

**WING DETAILS**

ASSEMBLED BY: J. WHEATLEY	DATE: 10/2021	DRAWN BY: WJH 12/11	REV. 4/15	MAA/TMG
CHECKED BY: T. HARRIS	DATE: 10/2021			
DESIGN ENGINEER				
OF RECORD: T. HARRIS	DATE: 10/2021			
	CHECKED BY: AAC 12/11			

WSP USA Inc.  
 434 FAYETTEVILLE STREET  
 SUITE 1500  
 RALEIGH, NC 27601  
 TEL: 1.919.836.4040  
 LICENSE NO. F-0165

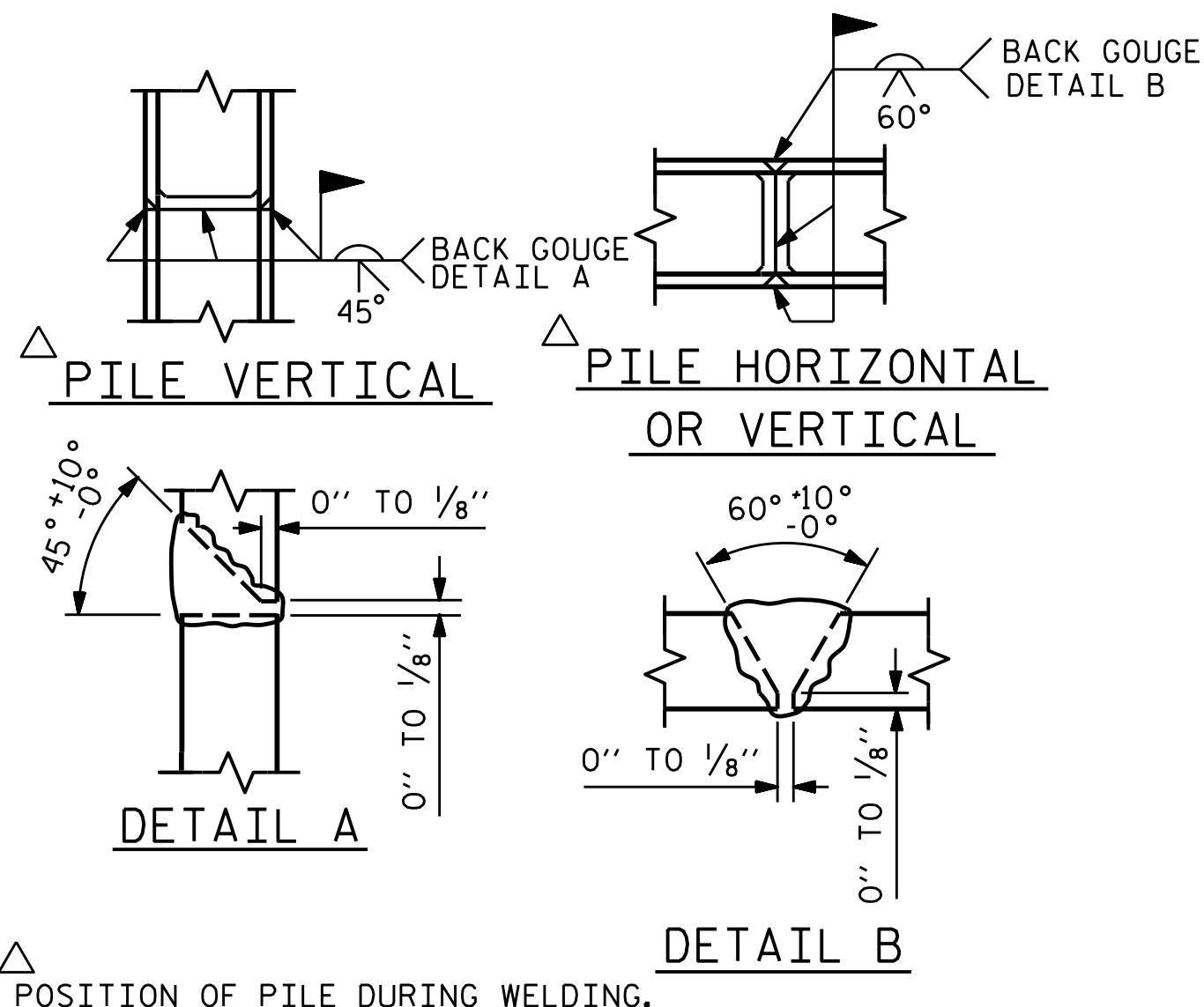


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

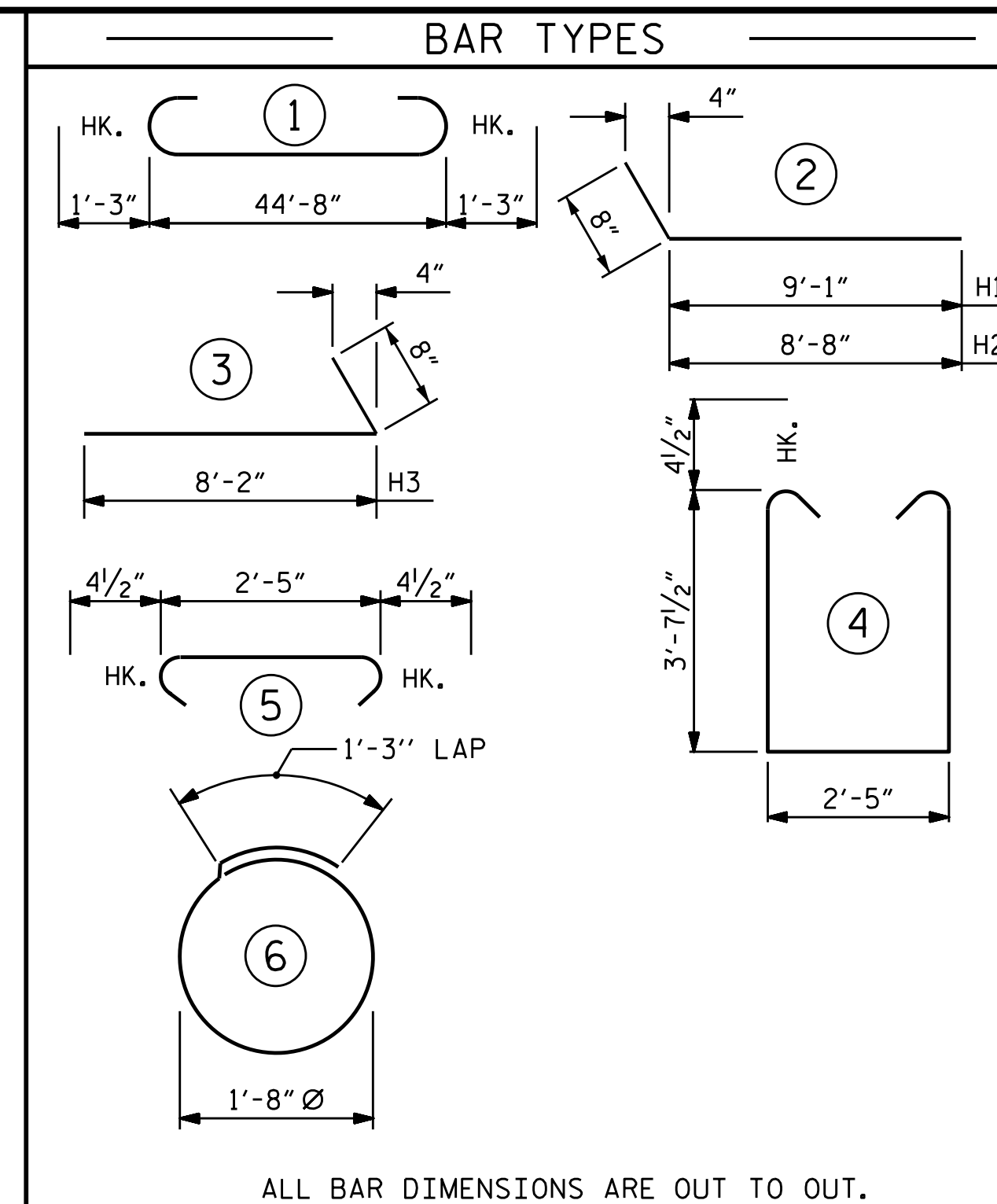
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NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

**TEMPORARY DRAINAGE AT END BENT**



**PILE SPLICE DETAILS**



ALL BAR DIMENSIONS ARE OUT TO OUT.

**BILL OF MATERIAL**

**END BENT 2**

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	#9	1	47'-2"	1283
B2	#4	STR	23'-8"	443
B3	#4	STR	2'-5"	19
D1	#6	STR	1'-6"	50
H1	#4	2	9'-9"	65
H2	#4	2	9'-4"	62
H3	#4	3	8'-10"	118
K1	#4	STR	3'-3"	35
S1	#4	4	10'-5"	390
S2	#4	5	3'-2"	118
S3	#4	6	6'-6"	122
V1	#4	STR	6'-2"	218

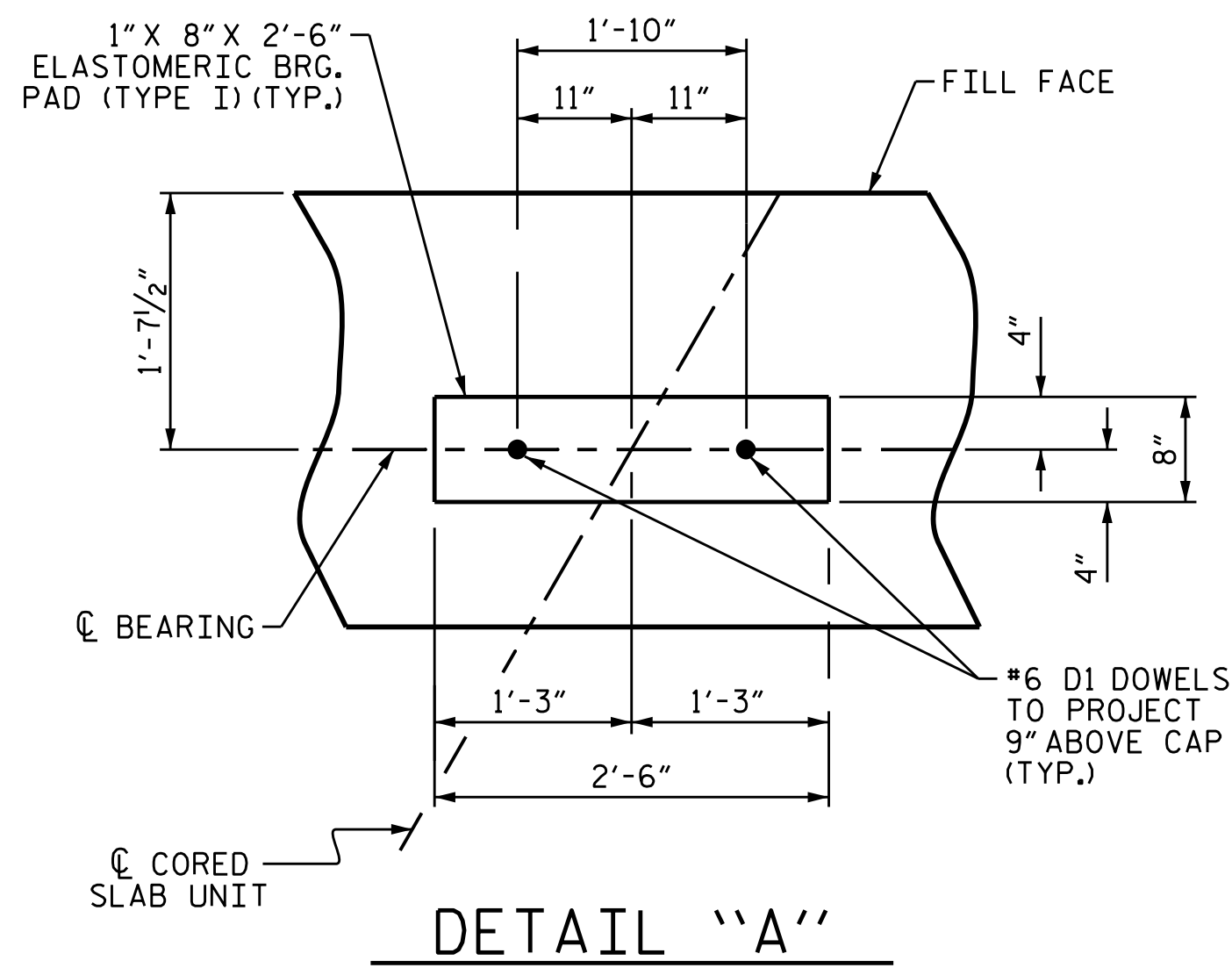
REINFORCING STEEL 2923 LBS.

CLASS A CONCRETE BREAKDOWN

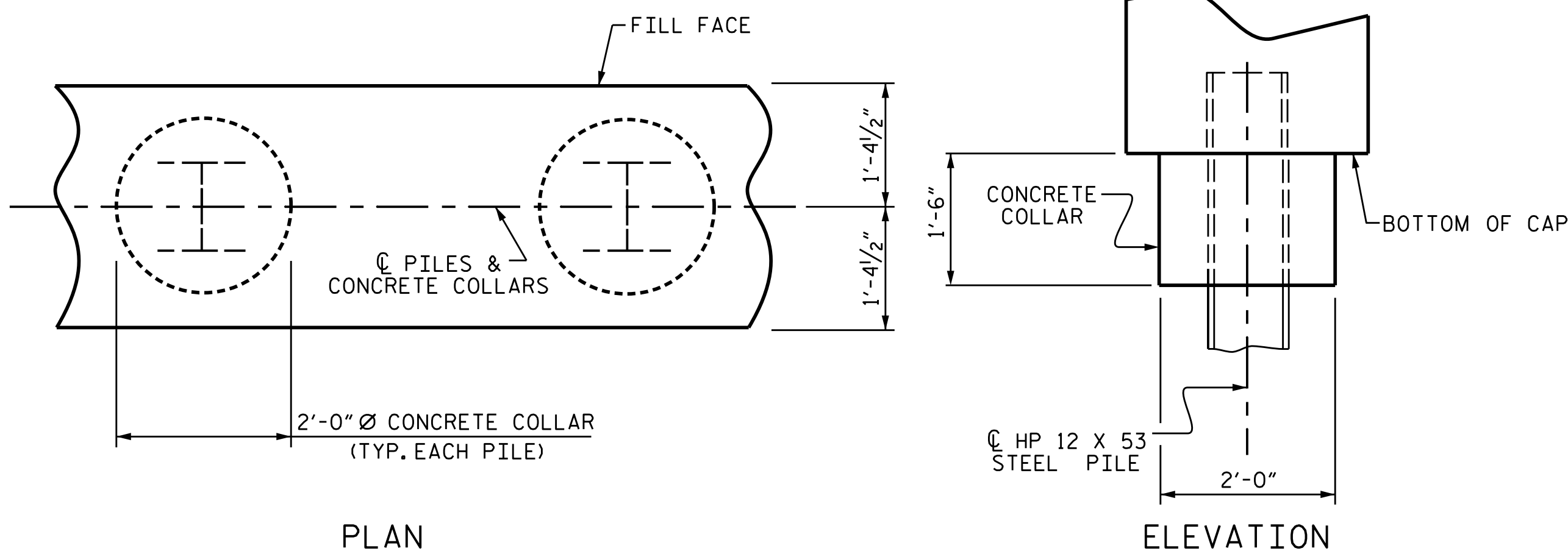
POUR #1	CAP, LOWER PART OF WINGS & COLLARS	21.9 C.Y.
POUR #2	UPPER PART OF WINGS	2.2 C.Y.
TOTAL CLASS A CONCRETE		24.1 C.Y.

**END BENT 2**

HP 12 X 53 STEEL PILES	NO: 7	LIN. FT. = 245.0
PILE EXCAVATION IN SOIL		LIN. FT. = 40.0
PILE EXCAVATION NOT IN SOIL		LIN. FT. = 35.0
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	NO: 7	



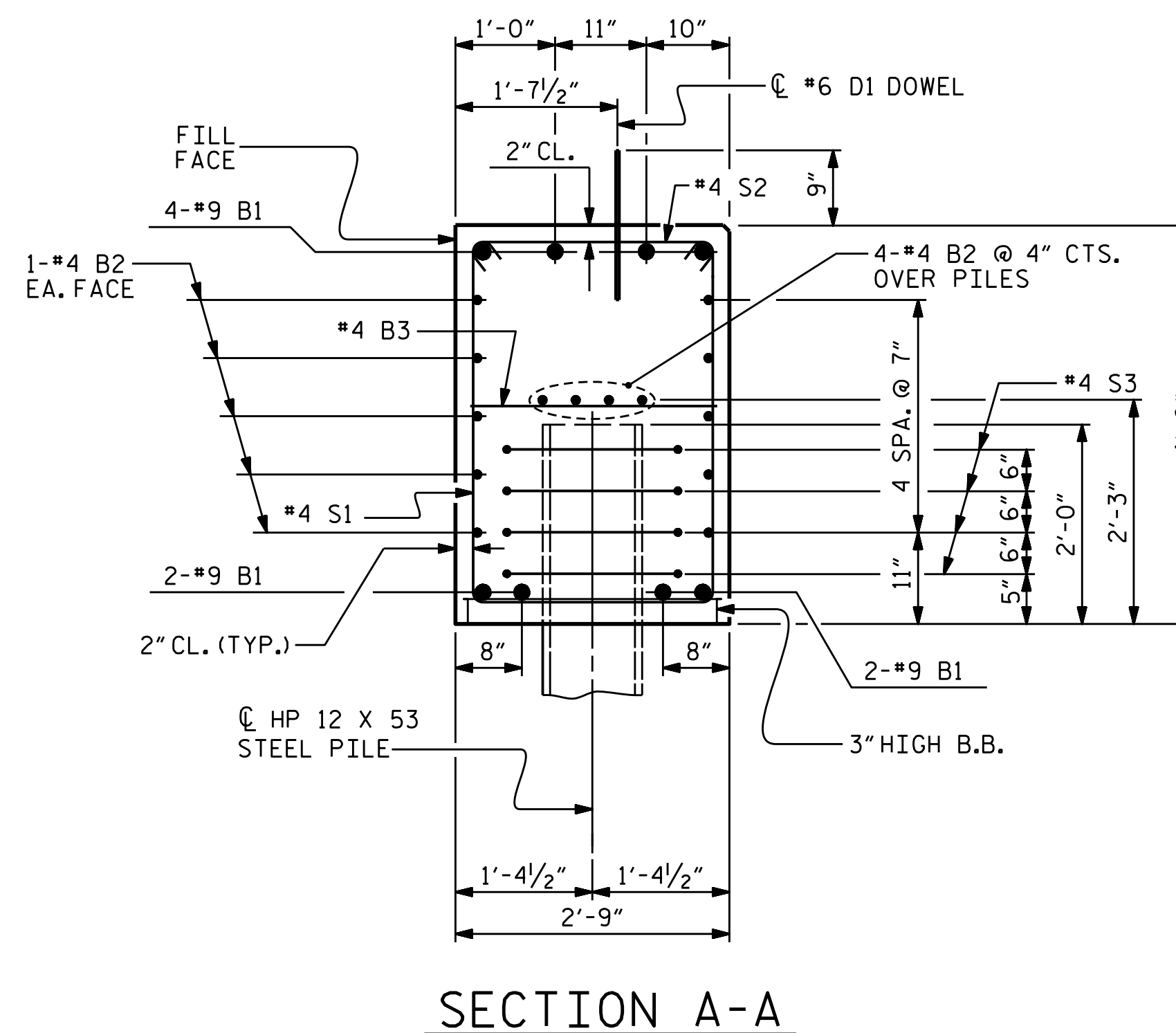
DETAIL "A"



PLAN

ELEVATION

**CORROSION PROTECTION FOR STEEL PILES DETAIL**



SECTION A-A

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

PROJECT NO. 17BP.14.R.169  
CLAY COUNTY  
STATION: 13+10.50 -L-

SHEET 3 OF 3

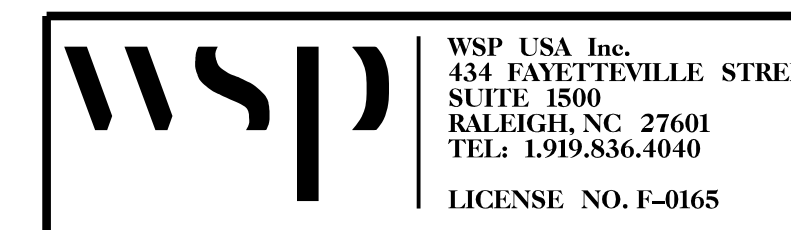
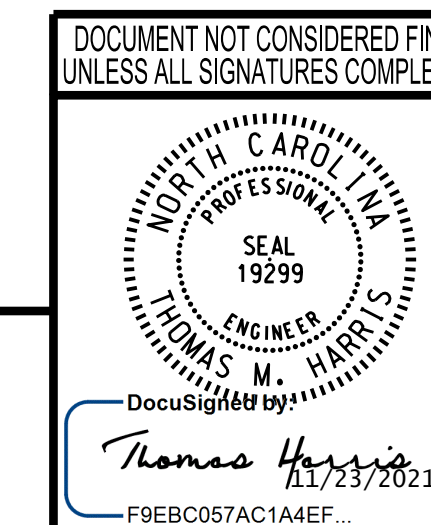
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT 2  
DETAILS

REVISIONS

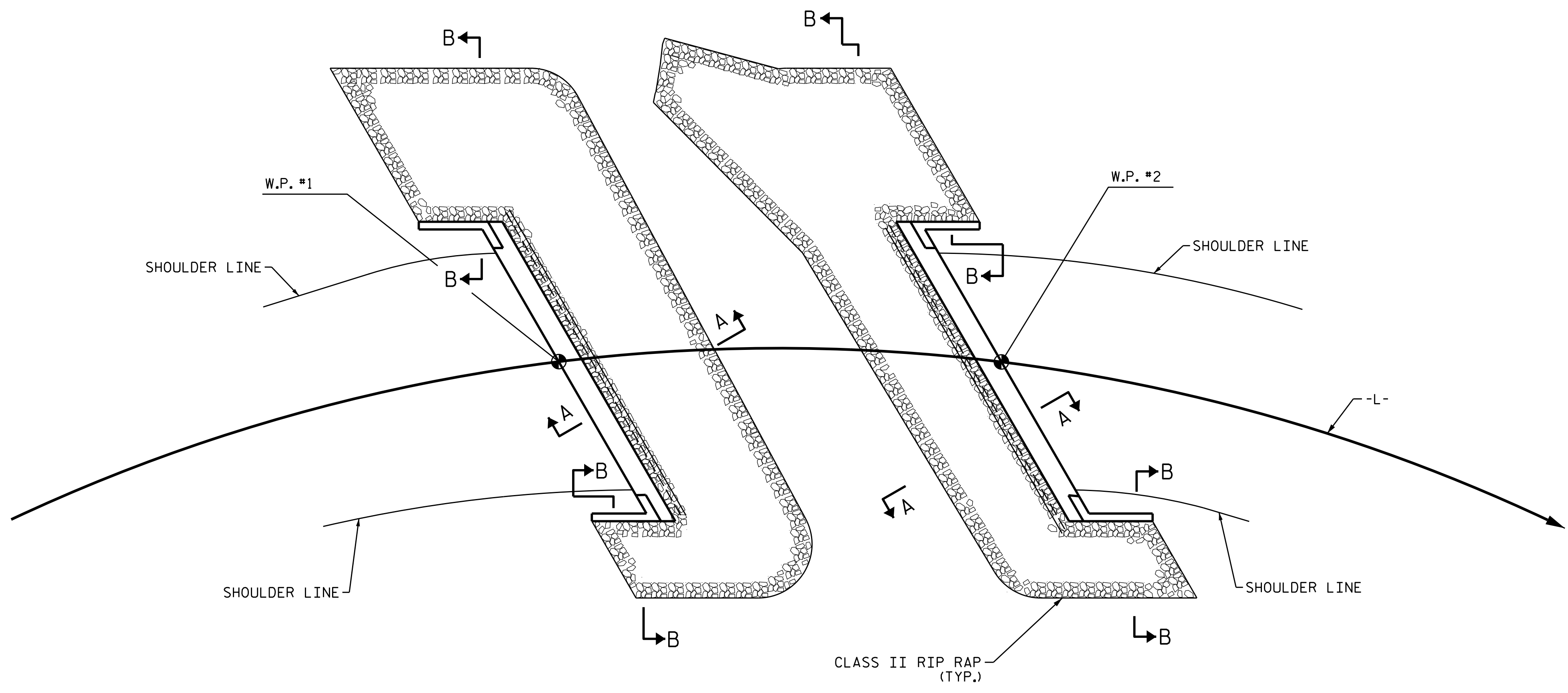
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-15  
TOTAL SHEETS 17



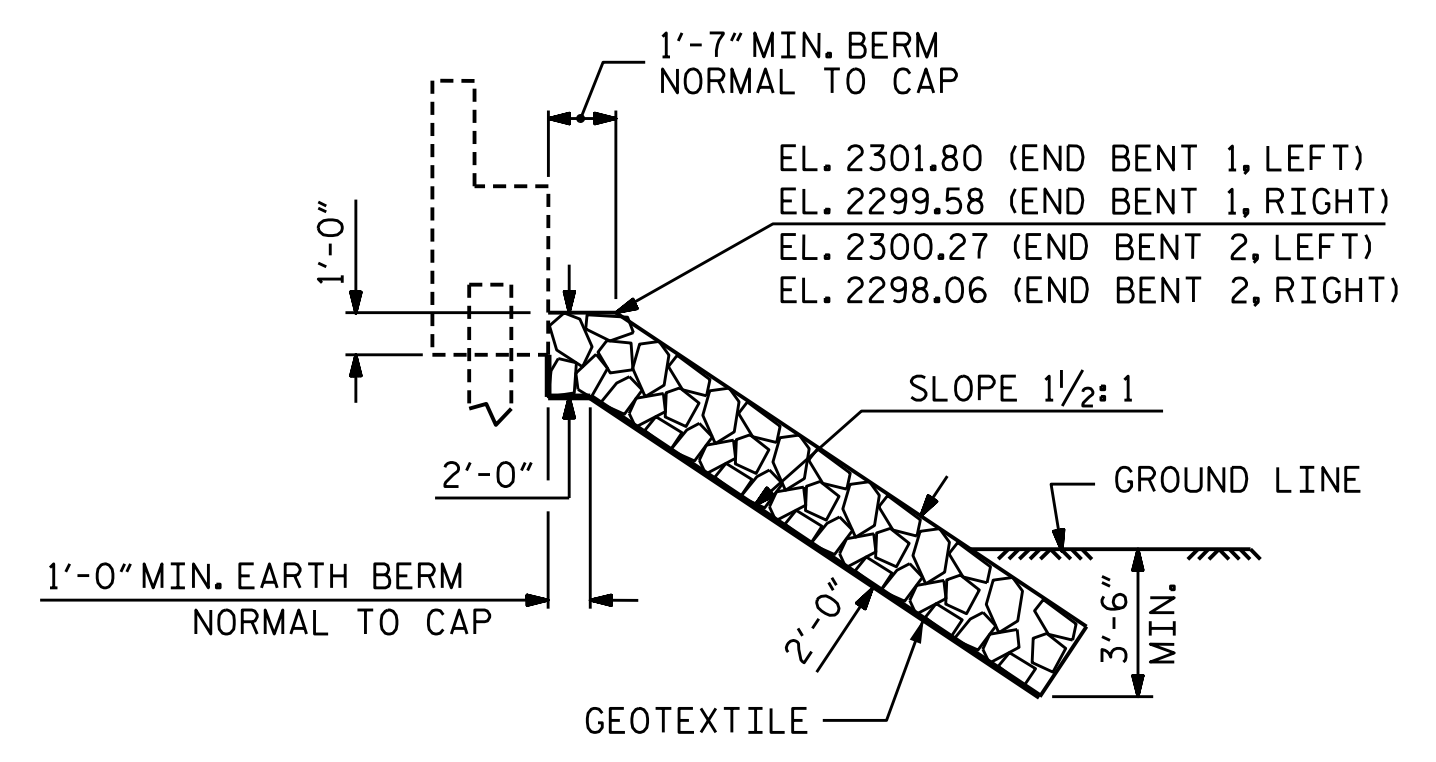
ASSEMBLED BY: J. WHEATLEY	DATE: 10/2021	DRAWN BY: WJH	12/11	REV. 4/17	MAA/THG
CHECKED BY: T. HARRIS	DATE: 10/2021	CHECKED BY: AAC	12/11		
DESIGN ENGINEER OF RECORD: T. HARRIS	DATE: 10/2021				



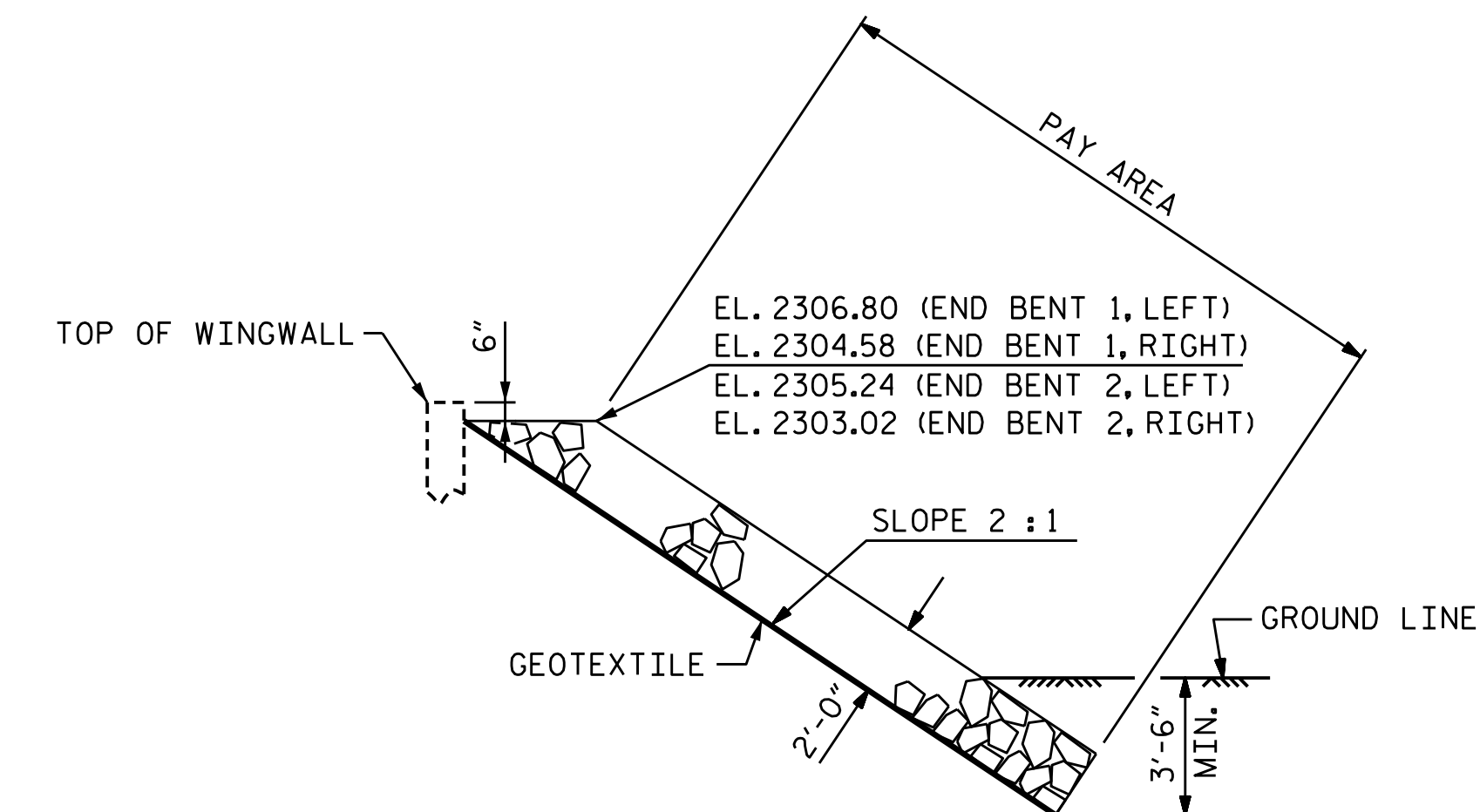


PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+10.50 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	227	252
END BENT 2	220	244



SECTION A-A



SECTION B-B

PROJECT NO. 17BP.14.R.169  
CLAY COUNTY  
 STATION: 13+10.50 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**RIP RAP DETAILS**

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

DocuSign Envelope ID: F9EBC057AC1A4EF...

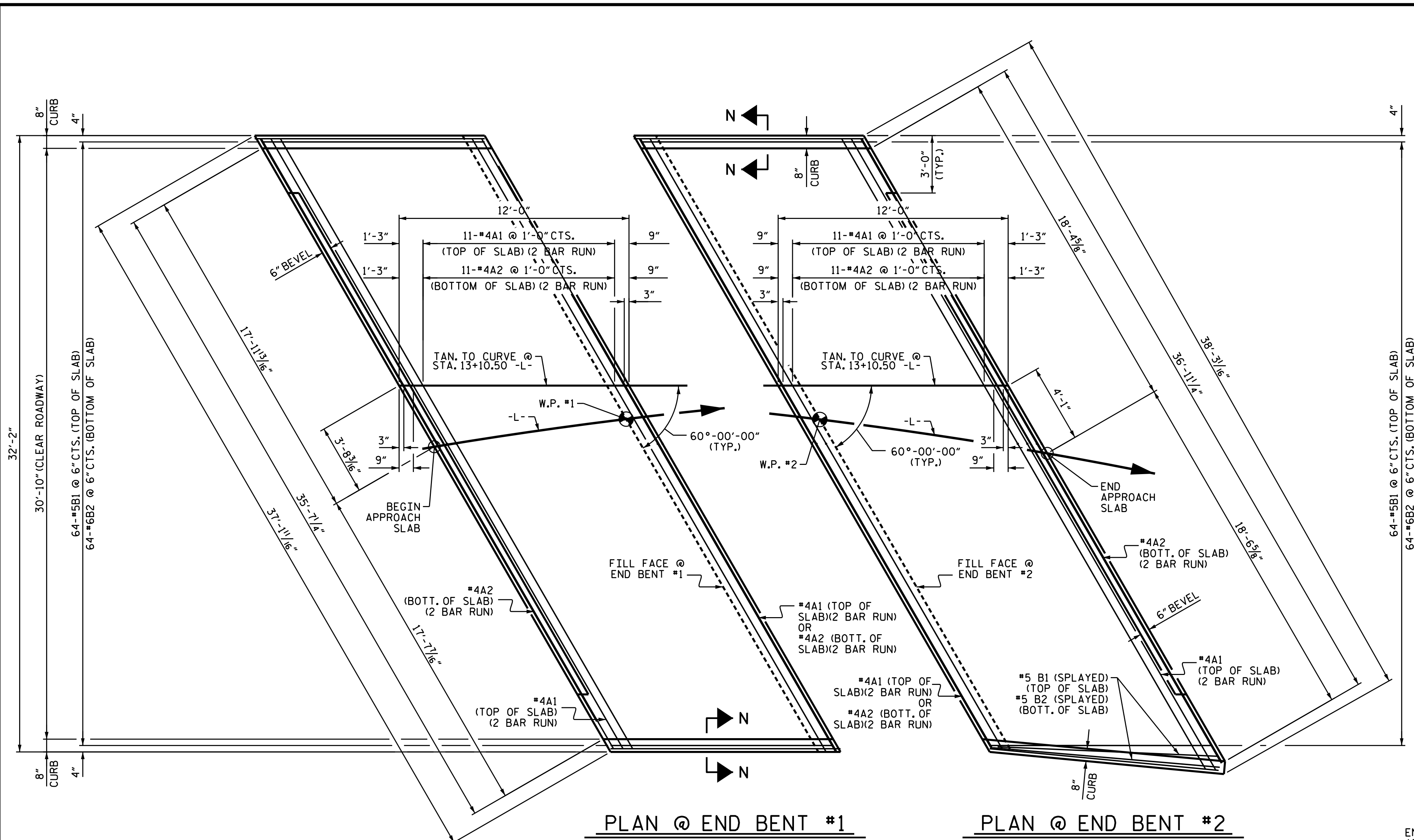
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			17

WSP USA Inc.  
 434 FAYETTEVILLE STREET  
 SUITE 1500  
 RALEIGH, NC 27601  
 TEL: 1.919.836.4040  
 LICENSE NO. F-0165

9/27/2021 9:18:36 AM - 2015 W Divisions Planning & Design - On-Call\1883500 Group 3 Bridges\17BP.14.R.169\Structures\Drafting\CON\03\03\17BP.14.R.169.RR.dgn

DESIGNED BY:	J. WHEATLEY	DATE:	10/2021
DRAWN BY:	M. HOBBS	DATE:	10/2021
CHECKED BY:	T. HARRIS	DATE:	10/2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE:	10/2021





PLAN @ END BENT #1

PLAN @ END BENT #2

**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.

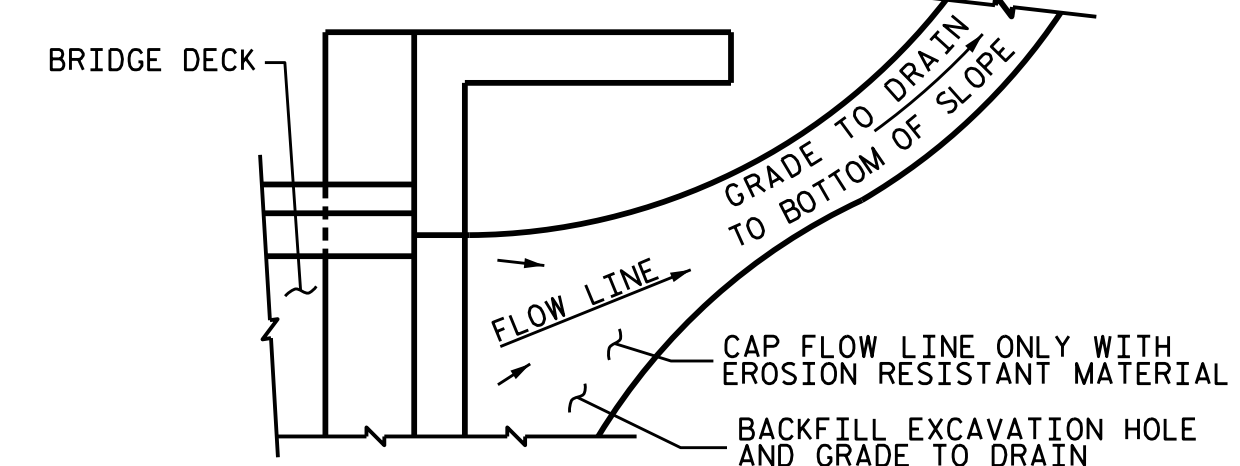
SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

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.

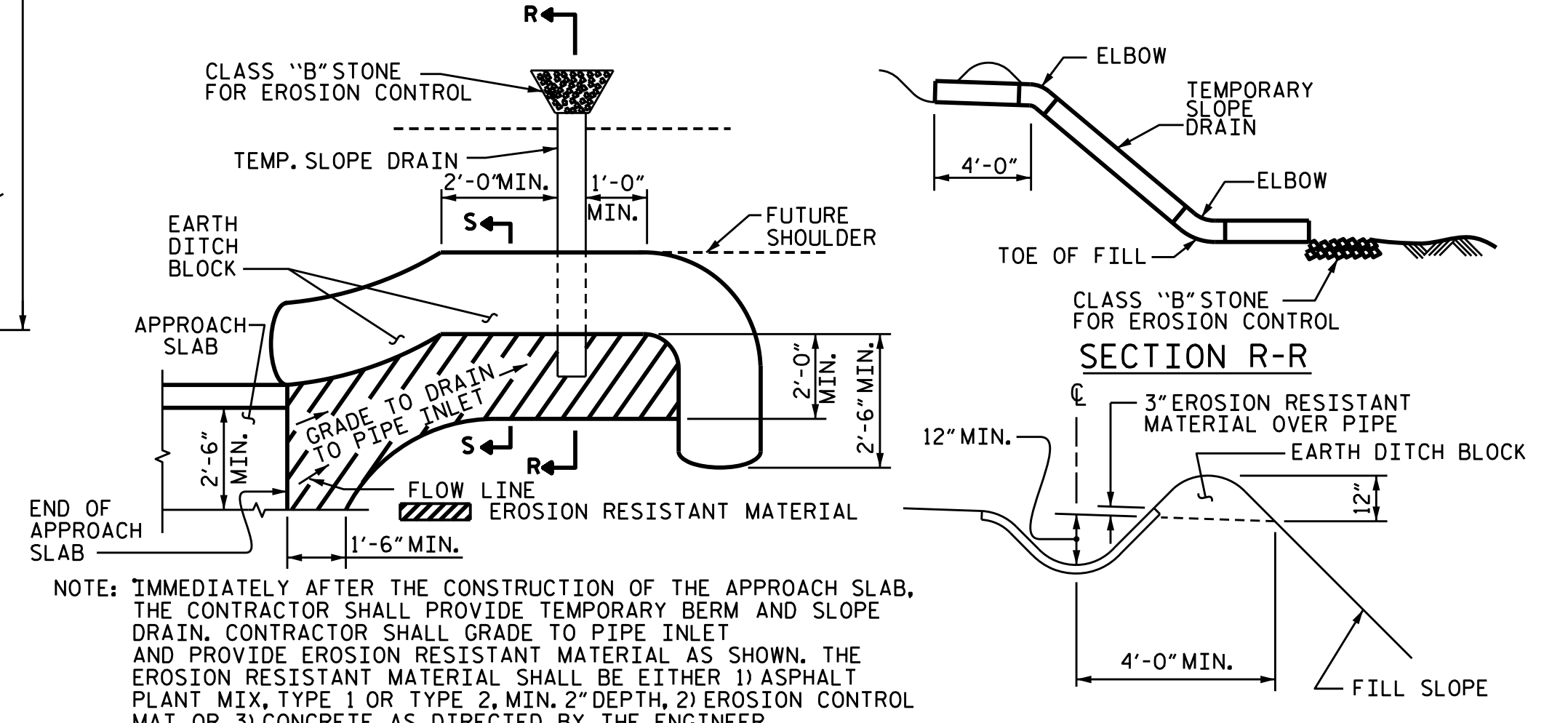
APPROACH SLAB GROOVING IS NOT REQUIRED.

APPLY TYPE 4 OR 5 GEOTEXTILE ONE FOOT BELOW THE APPROACH SLAB FOR THE FULL WIDTH OF THE APPROACH FILL PER NCDOT MEMO DATED 2/25/2021.



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**



NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

**PLAN VIEW**

**TEMPORARY BERM AND SLOPE DRAIN DETAILS**

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

**BILL OF MATERIAL**

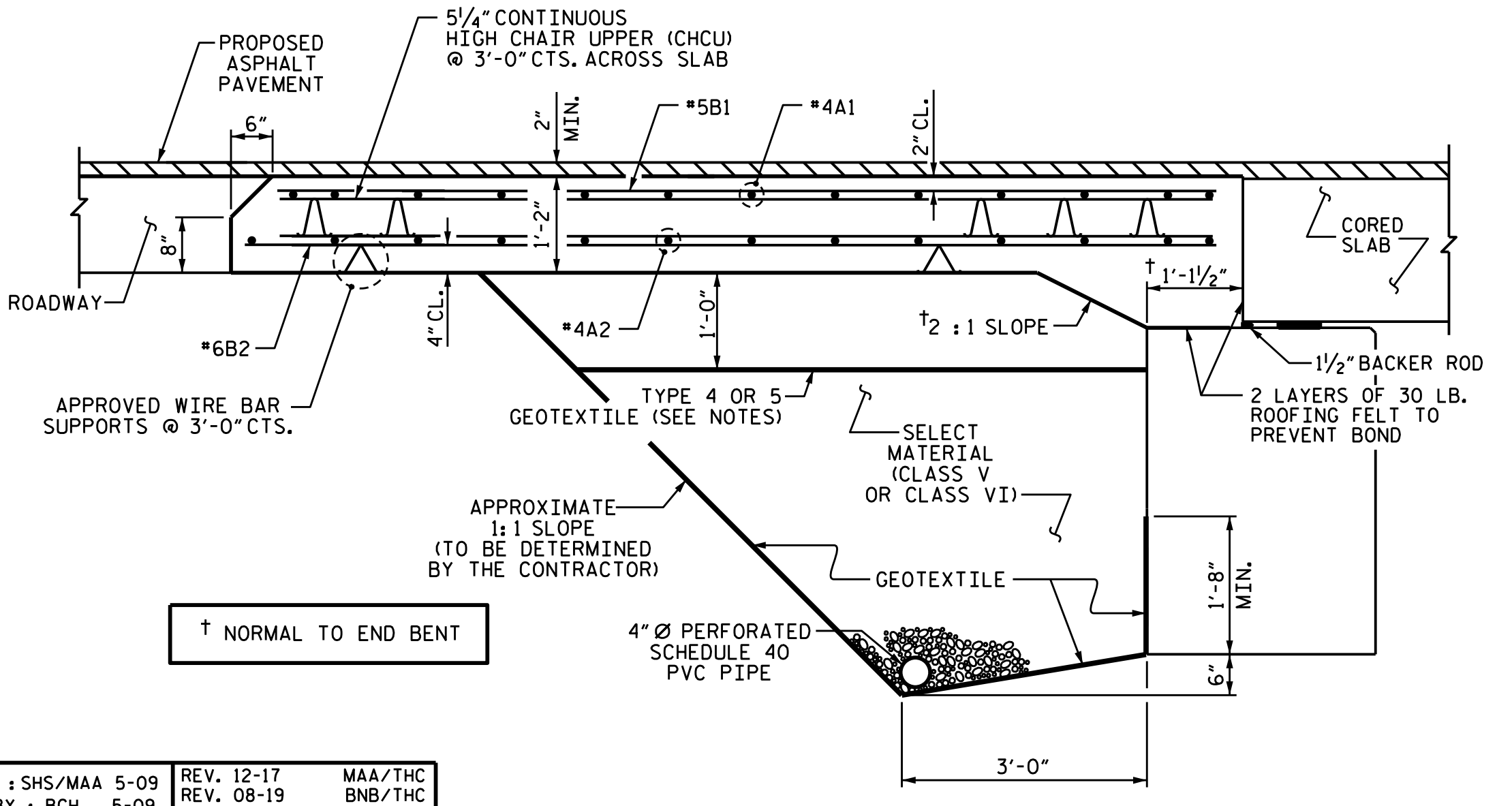
APPROACH SLAB AT EB 1						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	26	#4	STR	19'-5"	337	
A2	26	#4	STR	19'-4"	336	
*B1	64	#5	STR	11'-1"	740	
B2	64	#6	STR	11'-7"	1113	
REINFORCING STEEL					LBS.	1449
* EPOXY COATED REINFORCING STEEL					LBS.	1077
CLASS AA CONCRETE					C. Y.	18.6

APPROACH SLAB AT EB 2						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	26	#4	STR	20'-0"	347	
A2	26	#4	STR	19'-11"	346	
*B1	66	#5	STR	11'-1"	763	
B2	66	#6	STR	11'-7"	1148	
REINFORCING STEEL					LBS.	1497
* EPOXY COATED REINFORCING STEEL					LBS.	1110
CLASS AA CONCRETE					C. Y.	18.9

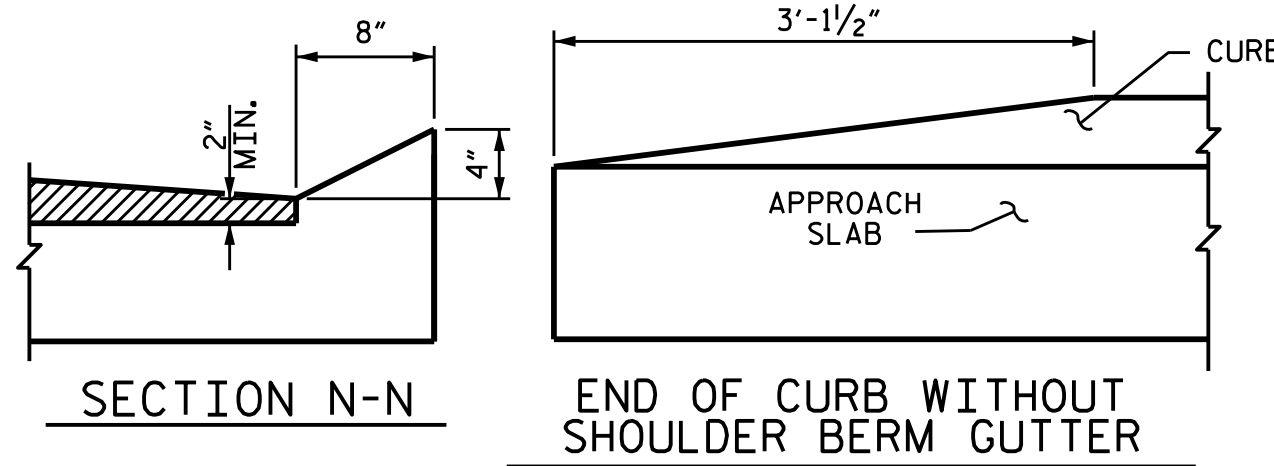
**SPLICE LENGTHS**

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



**SECTION THRU SLAB**

(TYPE II - MODIFIED APPROACH FILL)



SECTION N-N

END OF CURB WITHOUT SHOULDER BERM GUTTER

**CURB DETAILS**

DRAWN BY: SHS/MAA 5-09	REV. 12-17	MAA/THC
CHECKED BY: BCH 5-09	REV. 08-19	BNB/THC
ASSEMBLED BY: J. WHEATLEY	DATE: 10/2021	
CHECKED BY: T. HARRIS	DATE: 10/2021	
DESIGN ENGINEER		
OF RECORD: T. HARRIS	DATE: 10/2021	

**wsp**

WSP USA Inc.  
434 FAYETTEVILLE STREET  
SUITE 1500  
RALEIGH, NC 27601  
TEL: 1.919.836.4040  
LICENSE NO. P-0165

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

THOMAS M. HARRIS  
REGISTERED PROFESSIONAL ENGINEER  
SEAL 19299  
11/23/2021

PROJECT NO. 17BP.14.R.169  
CLAY COUNTY  
STATION: 13+10.50 -L-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

STANDARD  
BRIDGE APPROACH SLAB  
FOR PRESTRESSED CONCRETE  
CORED SLAB UNIT  
(SUB-REGIONAL TIER)  
60° SKEW

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

SHEET NO. S-17  
TOTAL SHEETS 17



