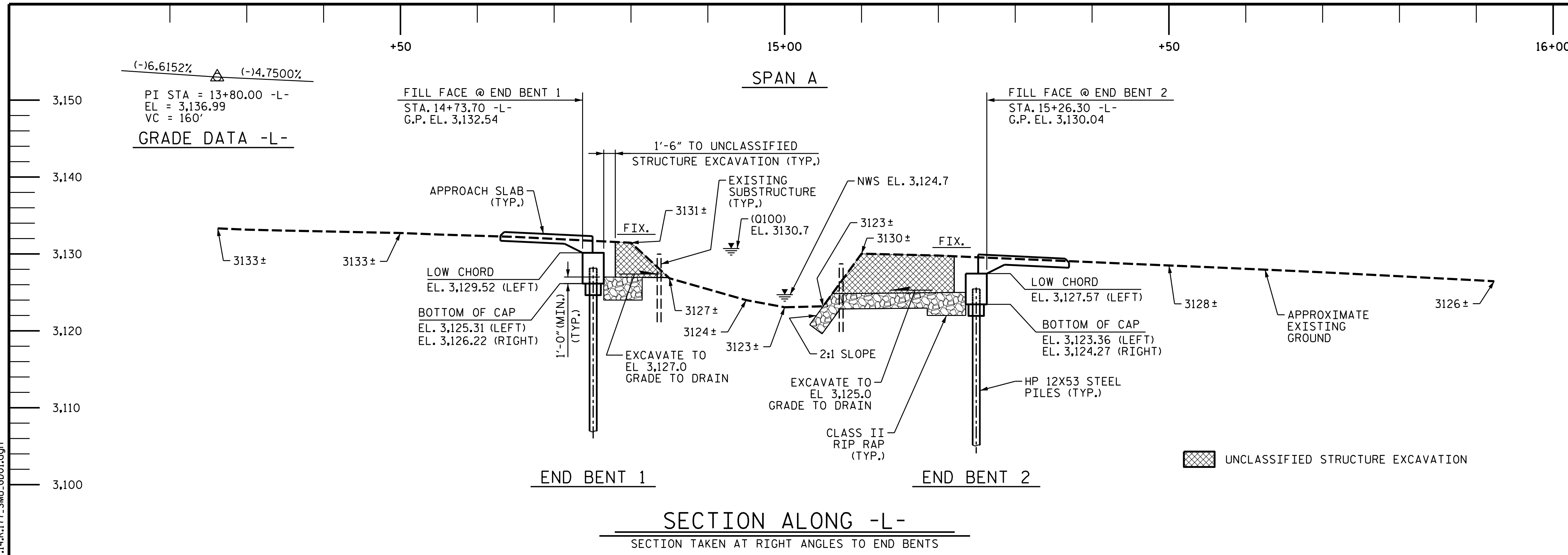


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11/3/2021 11:18:36 AM - 2015 W Divisions Planning & Design On-Call\1188360C Group 3 Bridges\17BP.14.R.177\430237\Structures\Drafting\Drawings\401.001.17BP.14.R.177_SMU.GD01.dgn



GRADE DATA -L-

PI STA = 13+80.00 -L-
EL = 3,136.99
VC = 160'

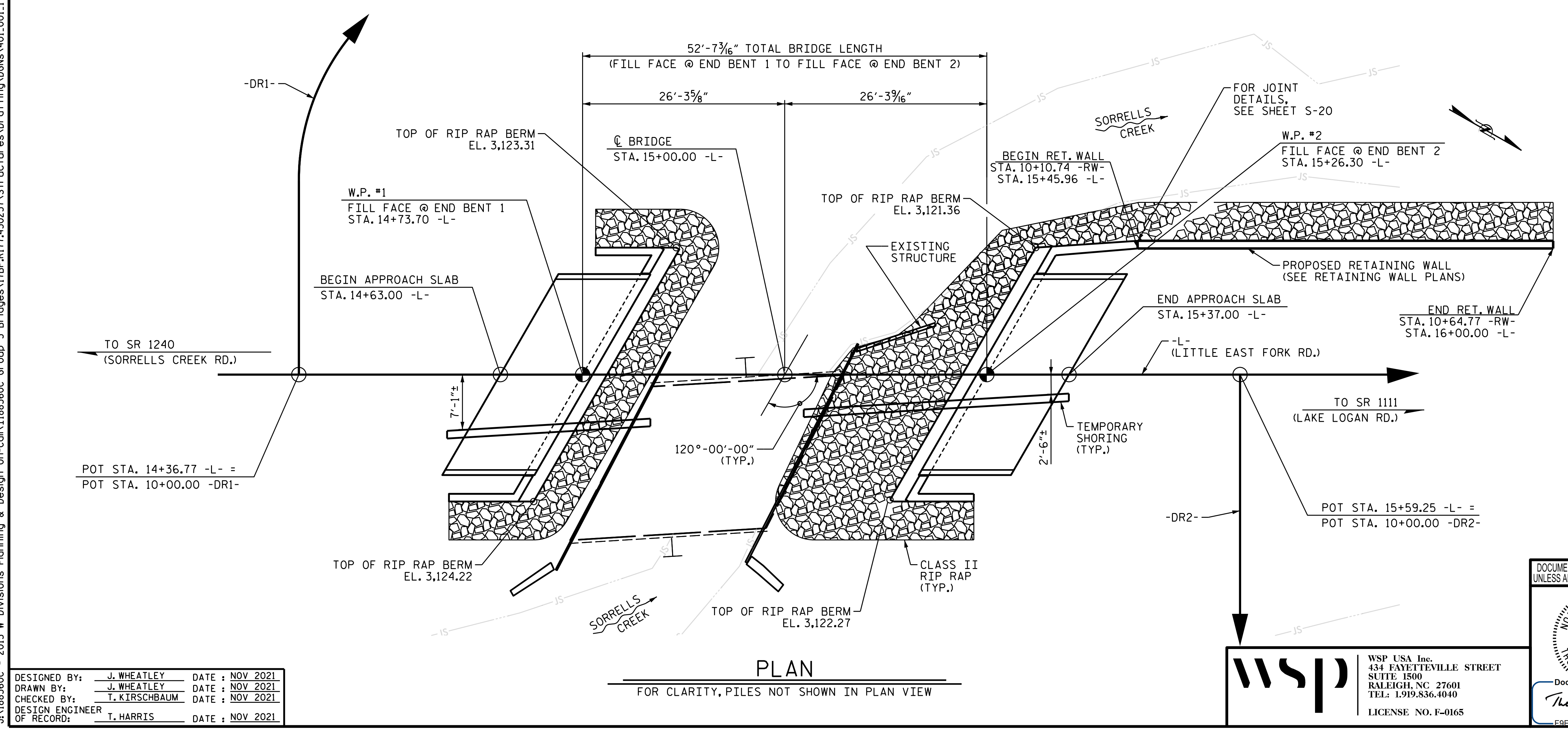
GRADE DATA -L-

HYDRAULIC DATA

DESIGN DISCHARGE 750 CFS
FREQUENCY OF DESIGN FLOOD 25 YRS. *
DESIGN HIGH WATER ELEVATION 3,129.7
DRAINAGE AREA 2.5 SQ.MI.
BASE DISCHARGE (Q100) 1100 CFS
BASE HIGH WATER ELEVATION 3,130.7
* MAINTAINS EXISTING LEVEL OF SERVICE

OVERTOPPING FLOOD DATA

OVERTOPPING FLOOD DISCHARGE 1100 CFS
FREQUENCY OF OVERTOPPING FLOOD ±100 YRS.
OVERTOPPING FLOOD ELEVATION 3,128.0
@ STA. 15+77.00 -L- @ DRIVEWAY



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

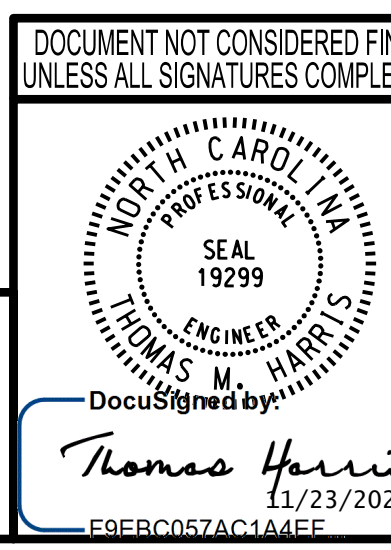
PROJECT NO. 17BP.14.R.177
HAYWOOD COUNTY
STATION: 15+00.00 -L-
SHEET 1 OF 3 REPLACES BRIDGE NO. 237

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**SUPERSTRUCTURE
GENERAL DRAWING**

FOR BRIDGE ON SR 1129 (LITTLE EAST FORK RD.) OVER SORRELLS CREEK BETWEEN SR 1111 & SR 1240

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			26

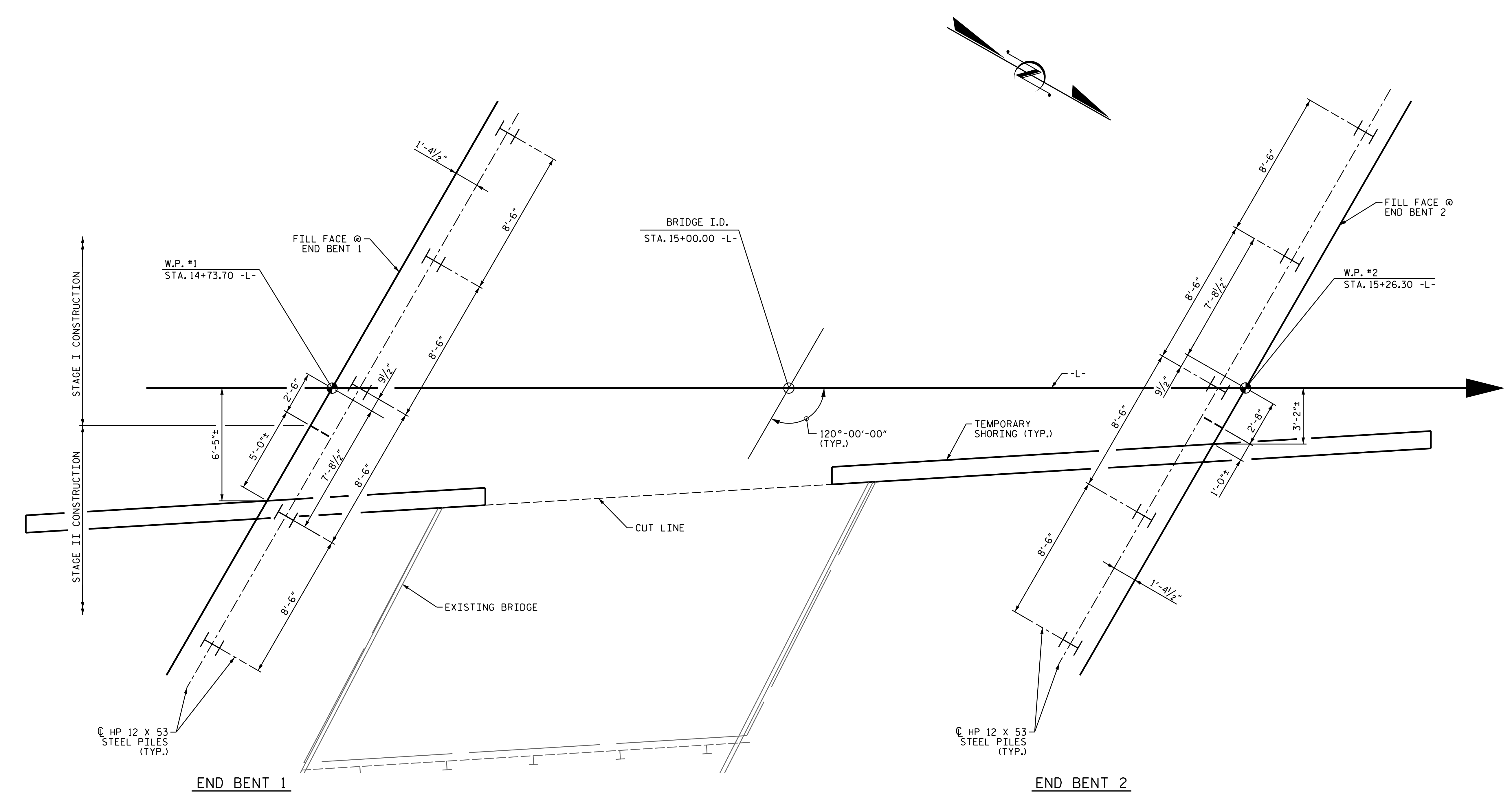


wsp

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

DESIGNED BY:	J. WHEATLEY	DATE:	NOV 2021
DRAWN BY:	J. WHEATLEY	DATE:	NOV 2021
CHECKED BY:	T. KIRSCHBAUM	DATE:	NOV 2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE:	NOV 2021

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FOUNDATION LAYOUT
(END BENTS ARE PARALLEL)

NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
 PILES AT END BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 80 TONS PER PILE.
 DRIVE PILES AT END BENT 1 TO A REQUIRED DRIVING RESISTANCE OF 135 TONS PER PILE.
 STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT 1. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 80 TONS PER PILE.
 DRIVE PILES AT END BENT 2 TO A REQUIRED DRIVING RESISTANCE OF 135 TONS PER PILE.
 STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
 IF NECESSARY, PREDRILL PILE LOCATIONS AT END BENT NO. 2 TO AN ELEVATION NO LOWER THAN 3118 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 12". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. 17BP.14.R.177
HAYWOOD COUNTY
STATION: 15+00.00 -L-
 SHEET 2 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1129 (LITTLE EAST FORK RD.) OVER SORRELLS CREEK BETWEEN SR 1111 & SR 1240

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			26
2			4			

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NORTH CAROLINA
 PROFESSIONAL SEAL
 19299
 ENGINEER
 THOMAS M. HARRIS

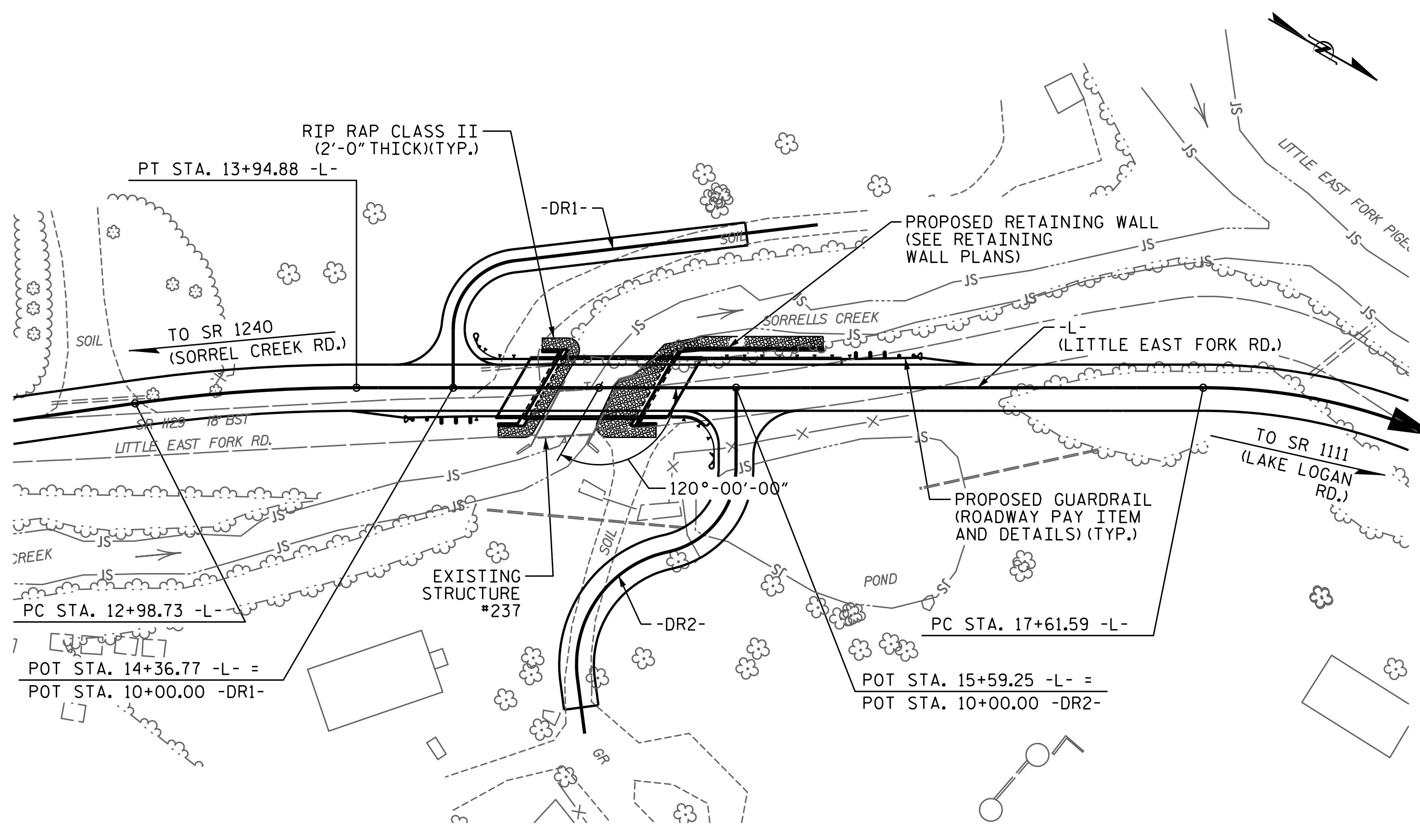
DocuSigned by:
Thomas Harris
 11/23/2021
 EB9C057AC14A4EE

wsp

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

DESIGNED BY:	J. WHEATLEY	DATE:	NOV 2021
DRAWN BY:	J. WHEATLEY	DATE:	NOV 2021
CHECKED BY:	T. KIRSCHBAUM	DATE:	NOV 2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE:	NOV 2021

BM #2 : NAIL IN BASE OF 8" POPLAR; -BL- STA. 9+93.76, 37.39' LT, ELEVATION = 3132.21'



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 REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE CONSISTING OF A SINGLE SPAN 25'-6" WITH A CLEAR ROADWAY WIDTH OF 19'-0"; TIMBER DECK WITH ASPHALT WEARING SURFACE ON STEEL I-BEAMS WITH TIMBER CAPS, TIMBER POSTS AND SILL END BENTS AND LOCATED AT PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE FURTHER DETERIORATE, THIS LOAD LIMITATION MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
- REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT PLANS FOR DEMOLITION AND REMOVE THE BRIDGE 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 @ STA. 15+00.00 -L-."
- THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 25 FT. (LEFT) AND 25 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.
- TEMPORARY SHORING WILL BE REQUIRED IN THE AREA INDICATED IN THE PLAN VIEW.
- FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.
- * ADDITIONAL RIP RAP DEPTH AT END BENTS INCLUDED IN QUANTITIES FOR 2'-0" THICK PAY ITEM

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE @ STA. 15+00.00 -L-	ASBESTOS ASSESSMENT	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	PILE DRIVING EQUIPMENT SETUP FOR HP 12 x 53 STEEL PILES	HP 12 X 53 STEEL PILES	STEEL PILE POINTS	42" OREGON RAIL	* RIP RAP CLASS II (2'-0")	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS
	LUMP SUM	LUMP SUM	LUMP SUM	CU. YDS.	LUMP SUM	LBS.	No.	No.	EA.	LIN. FT.	TONS	SQ. YDS.	LUMP SUM	No.
SUPERSTRUCTURE					LUMP SUM					82.98			LUMP SUM	9
END BENT 1			LUMP SUM	20.9		2,561	5	5	150	5	77	69		
END BENT 2			LUMP SUM	20.9		2,560	5	5	115	5	129	113		
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	41.8	LUMP SUM	5,121	10	10	265	10	206	182	LUMP SUM	9

PROJECT NO. 17BP.14.R.177
HAYWOOD COUNTY
 STATION: 15+00.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE ON SR 1129 (LITTLE EAST FORK RD.) OVER SORRELLS CREEK BETWEEN SR 1111 & SR 1240

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DocuSigned by:
 Thomas Harris
 11/23/2021
 E9EBC057AC144AE

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			26

11/11/2021 4:18:36C - 2015 W Divisions Planning & Design On-Call\18836C Group 3 Bridges\17BP.14.R.177\Structures\Drafting\DGNS\401_005_17BP.14.R.177_SMU.D003.dgn

DESIGNED BY: J. WHEATLEY DATE: NOV 2021
 DRAWN BY: J. WHEATLEY DATE: NOV 2021
 CHECKED BY: T. KIRSCHBAUM DATE: NOV 2021
 DESIGN ENGINEER OF RECORD: T. HARRIS DATE: NOV 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			
						LIVELOAD FACTORS	MOMENT					SHEAR					LIVELOAD FACTORS	MOMENT						
							DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.35	--	1.75	0.25	1.74	50'	EL	24.423	0.656	1.35	50'	EL	9.769	0.80	0.25	1.59	50'	EL	24.423		
	HL-93(Opr)	N/A	--	1.75	--	1.35	0.25	2.25	50'	EL	24.423	0.656	1.75	50'	EL	9.769	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.586	57.108	1.75	0.25	2.15	50'	EL	24.423	0.656	1.59	50'	EL	9.769	0.80	0.25	1.97	50'	EL	24.423		
	HS-20(Opr)	36.000	--	2.056	74.028	1.35	0.25	2.79	50'	EL	24.423	0.656	2.06	50'	EL	9.769	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	4.009	54.117	1.4	0.25	5.47	50'	EL	24.423	0.656	4.31	50'	EL	9.769	0.80	0.25	4.01	50'	EL	24.423	
		SNGARBS2	20.000	--	3.168	63.352	1.4	0.25	4.32	50'	EL	24.423	0.656	3.19	50'	EL	9.769	0.80	0.25	3.17	50'	EL	24.423	
		SNAGRIS2	22.000	--	3.009	66.192	1.4	0.25	4.18	50'	EL	19.538	0.656	3.01	50'	EL	9.769	0.80	0.25	3.07	50'	EL	24.423	
		SNCOTTS3	27.250	--	2	54.493	1.4	0.25	2.73	50'	EL	24.423	0.656	2.16	50'	EL	9.769	0.80	0.25	2.00	50'	EL	24.423	
		SNAGGRS4	34.925	--	1.739	60.742	1.4	0.25	2.37	50'	EL	24.423	0.656	1.88	50'	EL	9.769	0.80	0.25	1.74	50'	EL	24.423	
		SNS5A	35.550	--	1.696	60.292	1.4	0.25	2.31	50'	EL	24.423	0.656	1.96	50'	EL	9.769	0.80	0.25	1.70	50'	EL	24.423	
		SNS6A	39.950	--	1.586	63.364	1.4	0.25	2.16	50'	EL	24.423	0.656	1.82	50'	EL	9.769	0.80	0.25	1.59	50'	EL	24.423	
	SNS7B	42.000	--	1.512	63.487	1.4	0.25	2.06	50'	EL	24.423	0.656	1.85	50'	EL	9.769	0.80	0.25	1.51	50'	EL	24.423		
	TTST	TNAGRIT3	33.000	--	1.943	64.127	1.4	0.25	2.65	50'	EL	24.423	0.656	2.14	50'	EL	9.769	0.80	0.25	1.94	50'	EL	24.423	
		TNT4A	33.075	--	1.96	64.837	1.4	0.25	2.67	50'	EL	24.423	0.656	2.04	50'	EL	9.769	0.80	0.25	1.96	50'	EL	24.423	
		TNT6A	41.600	--	1.633	67.938	1.4	0.25	2.23	50'	EL	24.423	0.656	2	50'	EL	9.769	0.80	0.25	1.63	50'	EL	24.423	
		TNT7A	42.000	--	1.658	69.634	1.4	0.25	2.26	50'	EL	24.423	0.656	1.86	50'	EL	9.769	0.80	0.25	1.66	50'	EL	24.423	
		TNT7B	42.000	--	1.728	72.595	1.4	0.25	2.36	50'	EL	24.423	0.656	1.76	50'	EL	9.769	0.80	0.25	1.73	50'	EL	24.423	
		TNAGRIT4	43.000	--	1.64	70.537	1.4	0.25	2.24	50'	EL	24.423	0.656	1.69	50'	EL	9.769	0.80	0.25	1.64	50'	EL	24.423	
TNAGT5A		45.000	--	1.532	68.95	1.4	0.25	2.09	50'	EL	24.423	0.656	1.75	50'	EL	9.769	0.80	0.25	1.53	50'	EL	24.423		
TNAGT5B	45.000	3	1.501	67.548	1.4	0.25	2.05	50'	EL	24.423	0.656	1.6	50'	EL	9.769	0.80	0.25	1.50	50'	EL	24.423			

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{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)

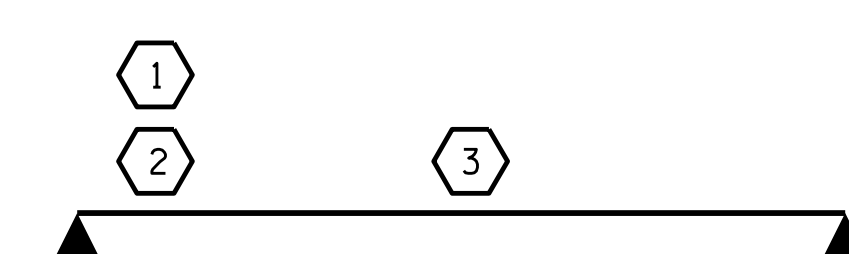
2 DESIGN LOAD RATING (HS-20)

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.177
HAYWOOD COUNTY
STATION: 15+00.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR
50' CORED SLAB UNIT
120° SKEW
(NON-INTERSTATE TRAFFIC)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			26

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DocuSigned by:
Thomas M. Harris
11/23/2021
E9EBC057AC144AE

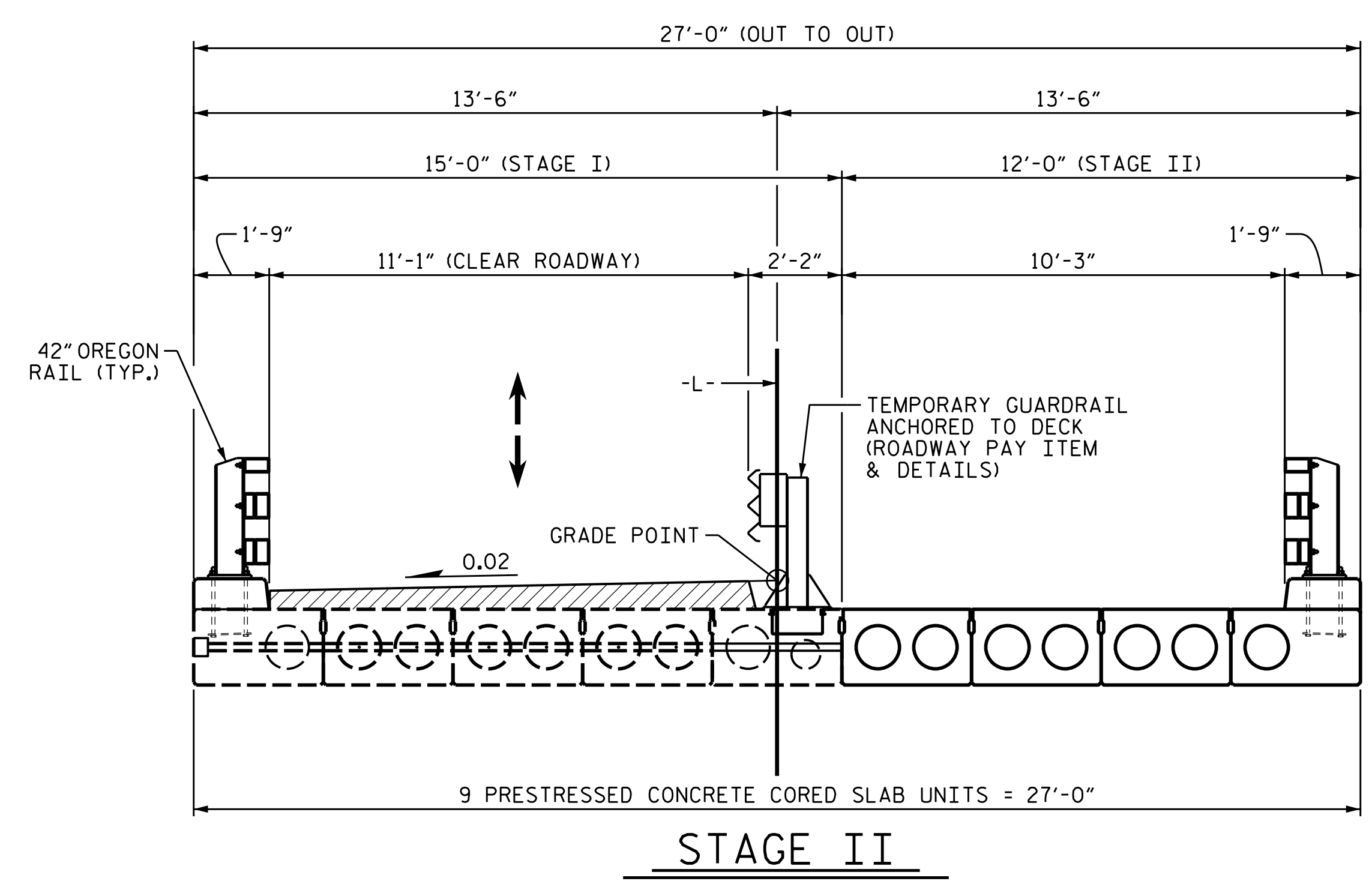
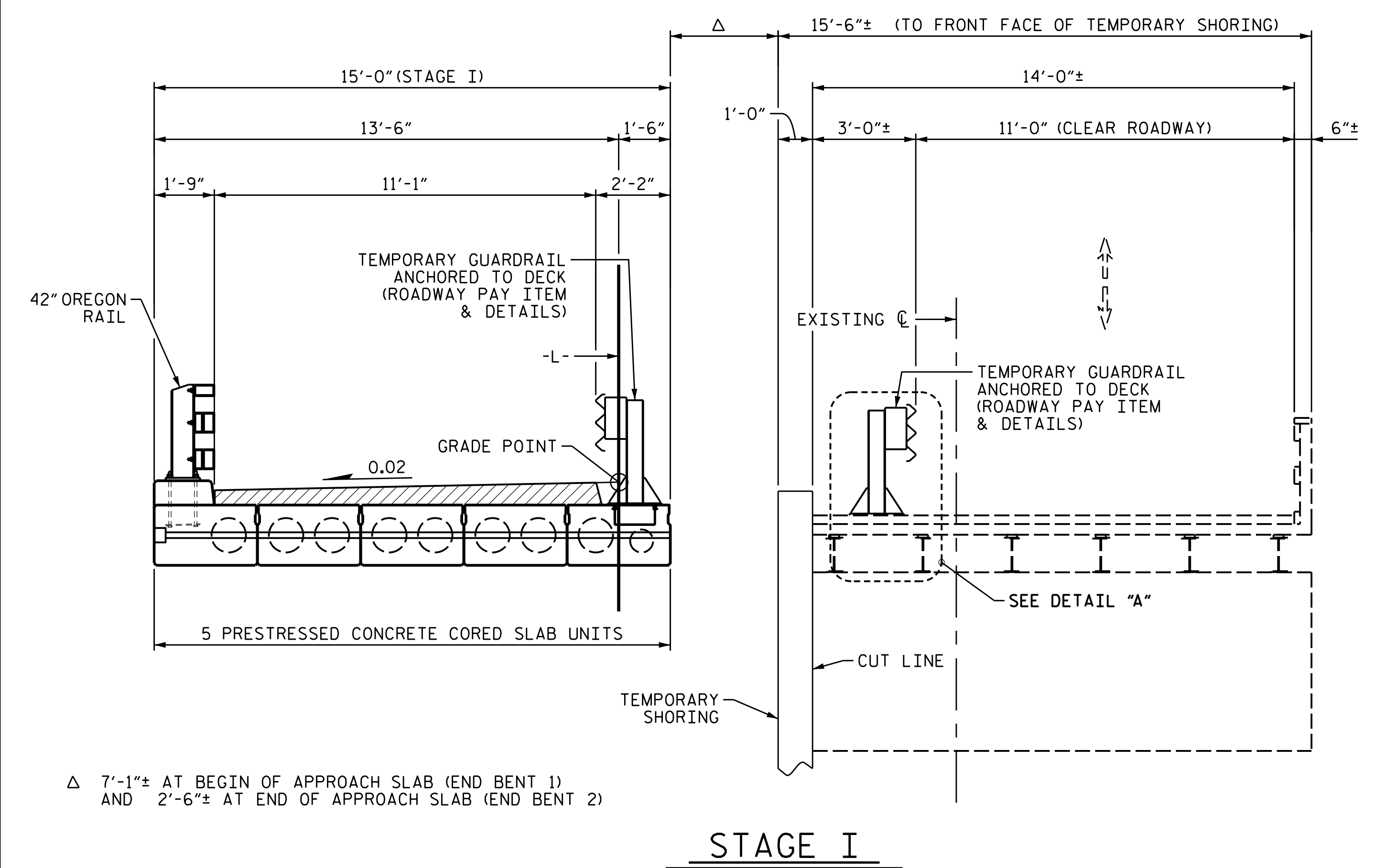
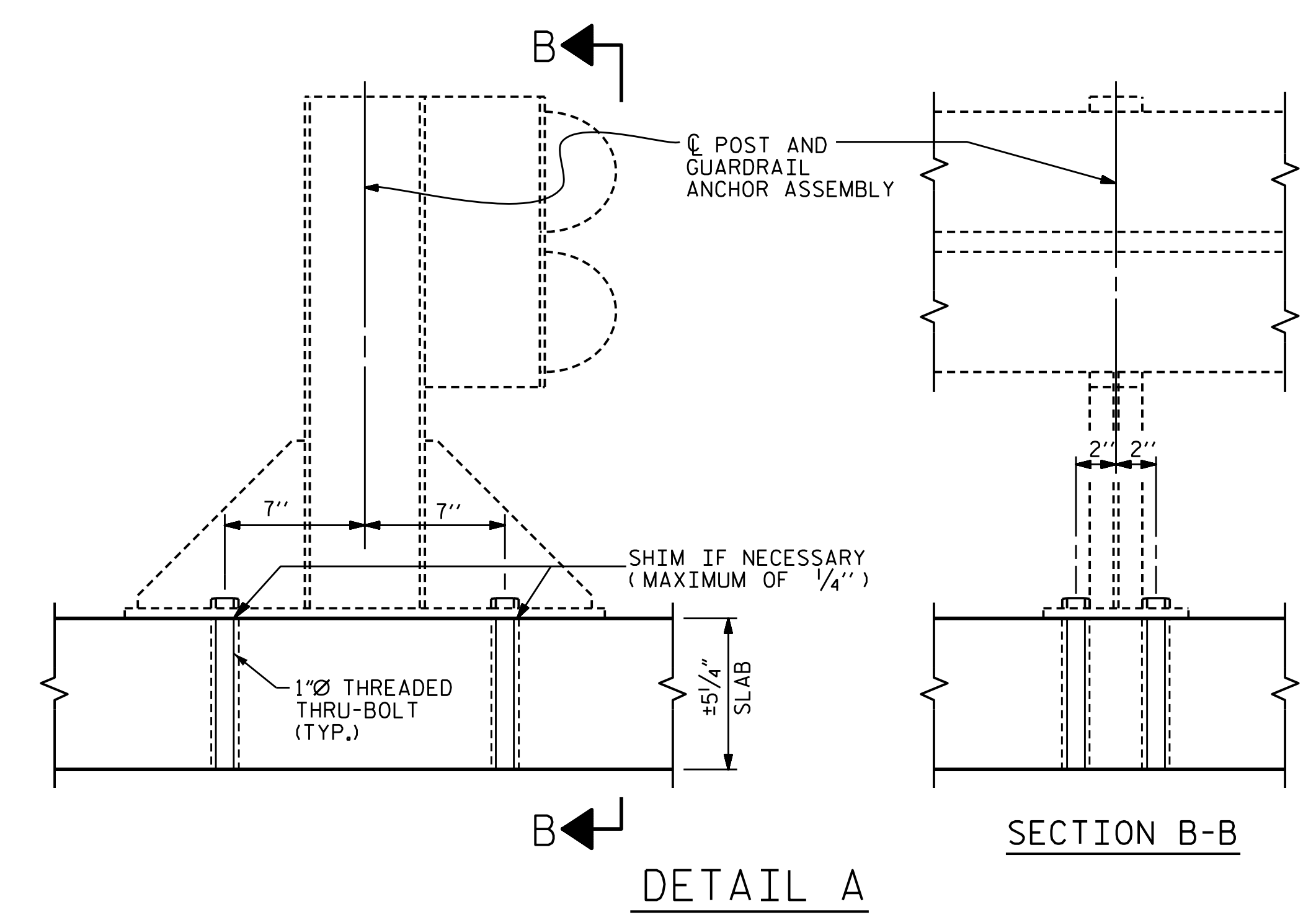
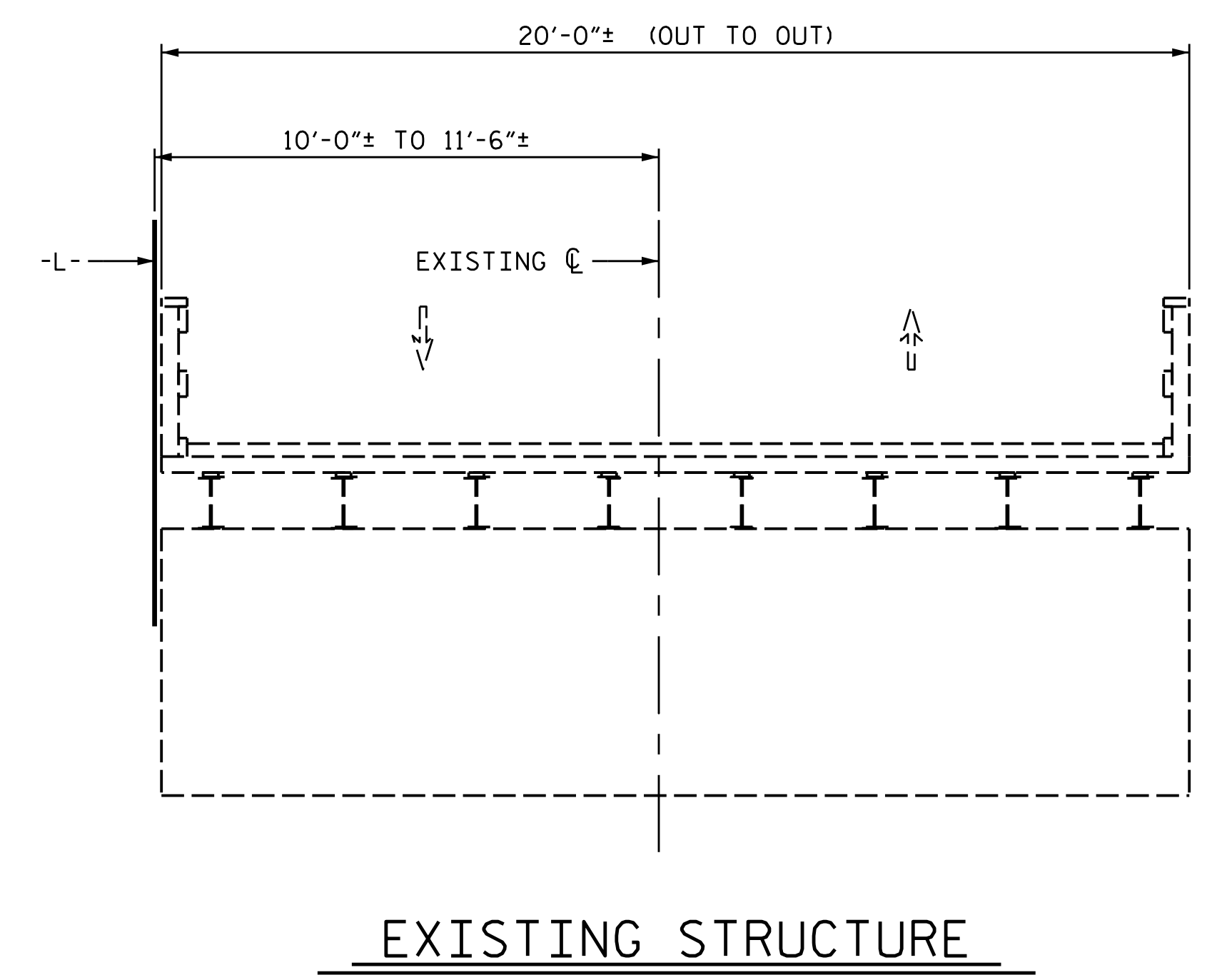
WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
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TEL: 1.919.836.4040
LICENSE NO. F-0165

11/3/2021 4:18:36PM - 2015 W Divisions Planning & Design On-Call\1188360C_Group_3_Bridges\17BP.14.R.177_SML_LRFR.dgn

ASSEMBLED BY: J. WHEATLEY DATE: NOV 2021	DRAWN BY: CVC 6/10
CHECKED BY: T. KIRSCHBAUM DATE: NOV 2021	CHECKED BY: DNS 6/10
DESIGN ENGINEER OF RECORD: T. HARRIS DATE: NOV 2021	

NOTES

DIMENSIONS ARE MEASURED NORMAL TO -L-



△ 7'-1"± AT BEGIN OF APPROACH SLAB (END BENT 1)
AND 2'-6"± AT END OF APPROACH SLAB (END BENT 2)

PROJECT NO. 17BP.14.R.177
HAYWOOD COUNTY
STATION: 15+00.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION SEQUENCE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			26

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THOMAS M. HARRIS
ENGINEER
11/23/2021
19299

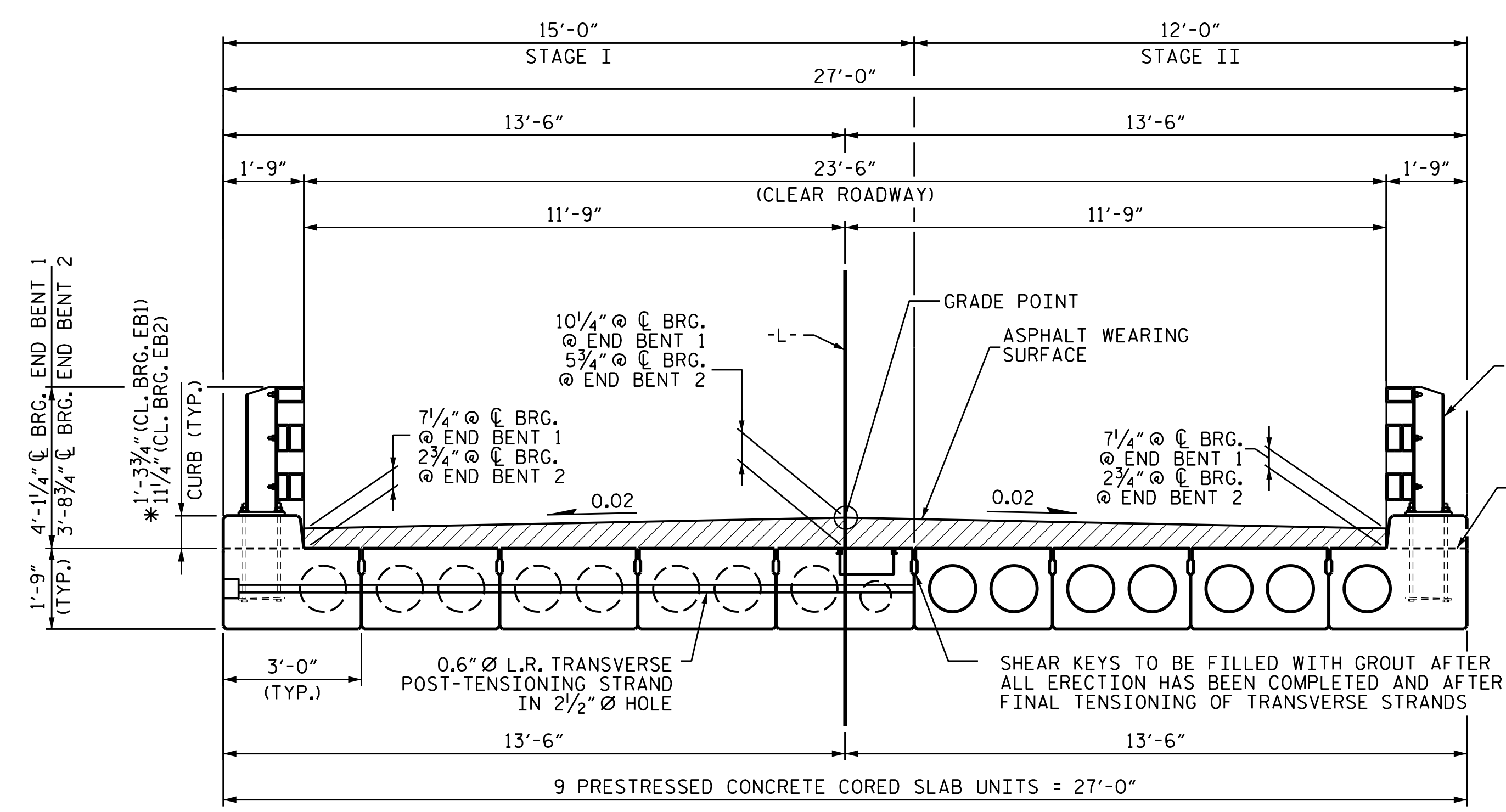
wsp

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RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

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DESIGNED BY: J. WHEATLEY DATE: NOV 2021
DRAWN BY: J. WHEATLEY DATE: NOV 2021
CHECKED BY: T. KIRSCHBAUM DATE: NOV 2021
DESIGN ENGINEER OF RECORD: T. HARRIS DATE: NOV 2021

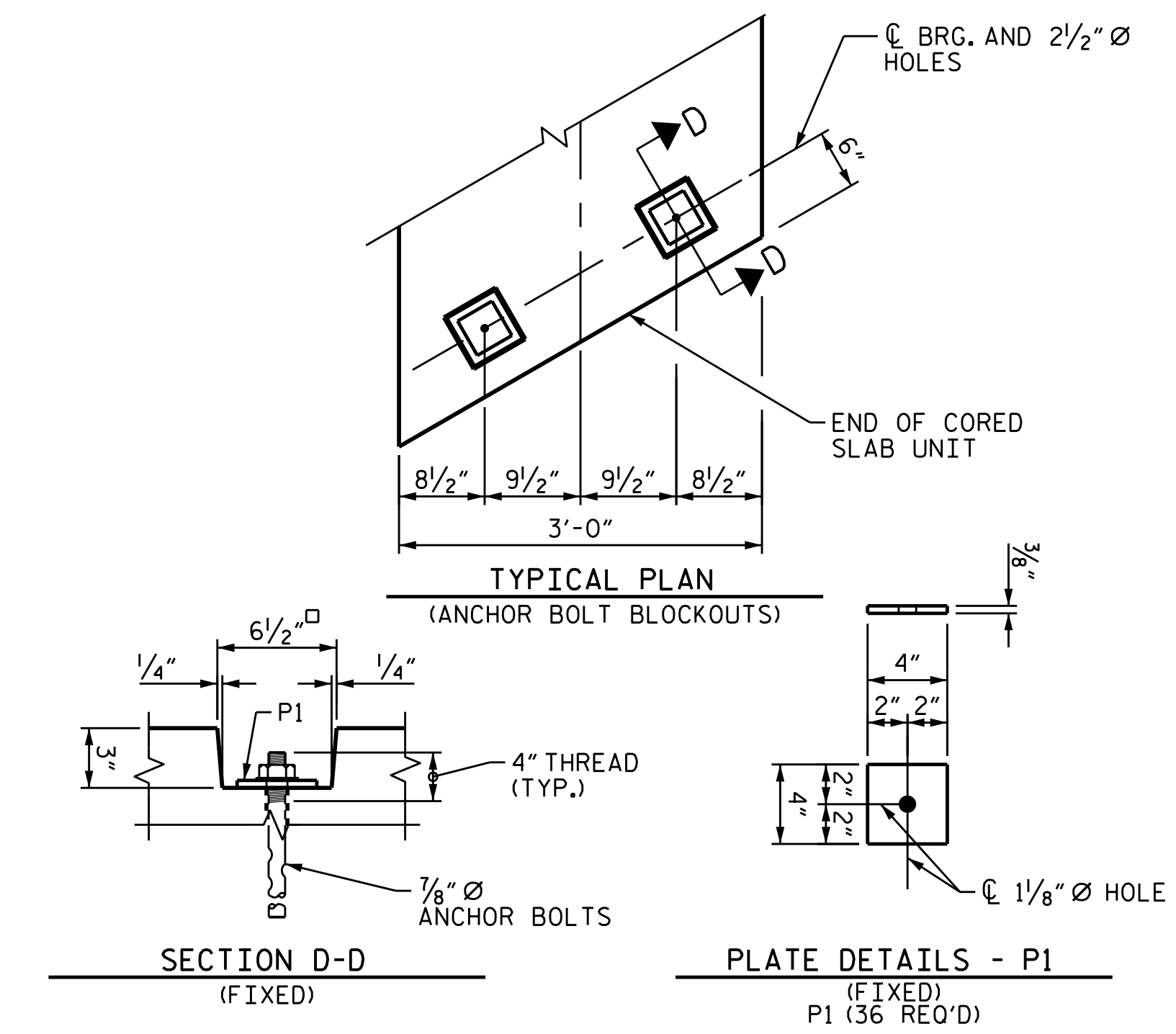
11/3/2021 4:18:36C - 2015 W Divisions Planning & Design On-Call\18836C Group 3 Bridges\17BP.14.R.177-SMU.CS01.dgn



HALF SECTION AT INTERMEDIATE DIAPHRAGMS **HALF SECTION THROUGH VOIDS**

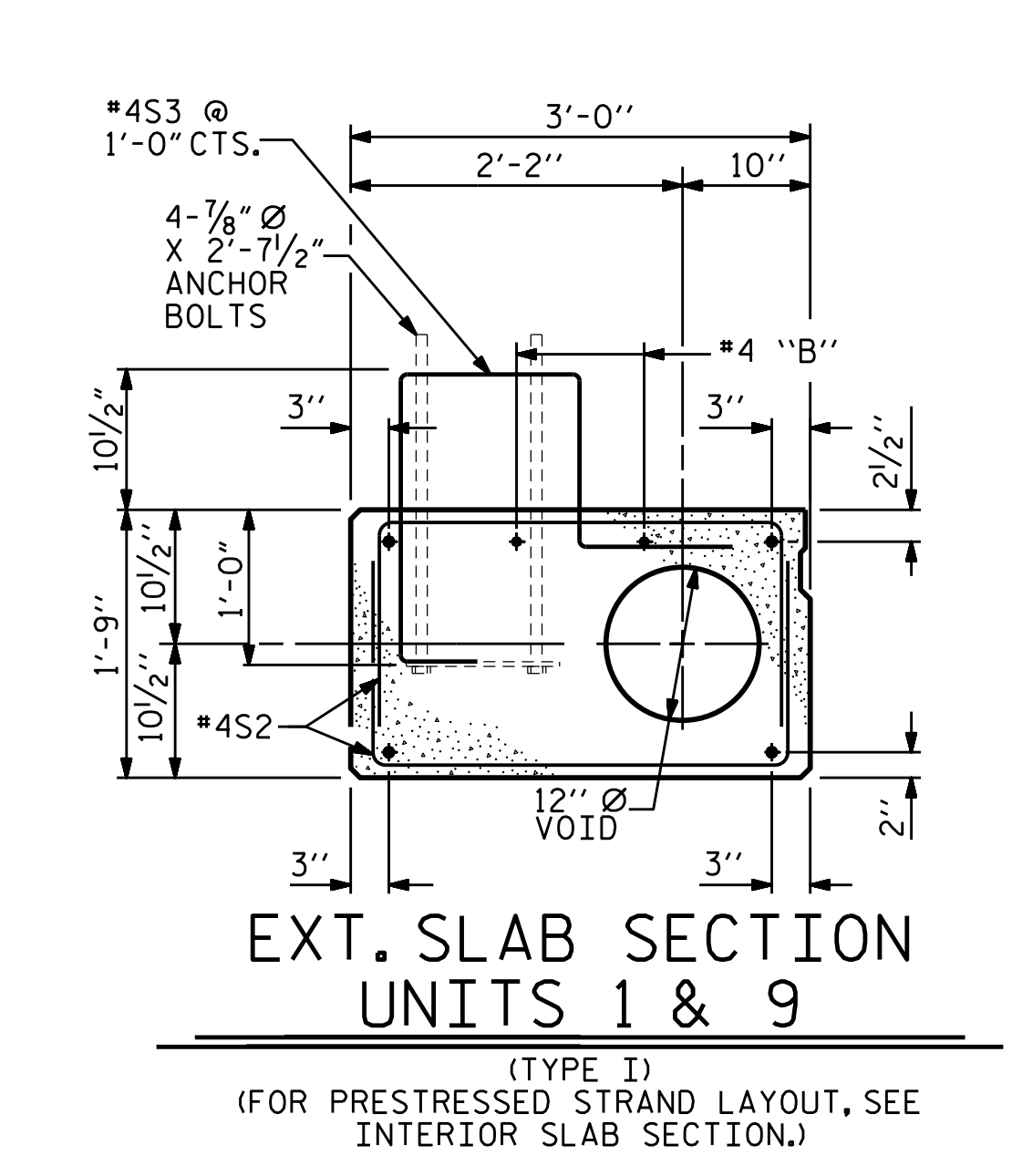
TYPICAL SECTION

*THE MAXIMUM CURB HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE CURB AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE CURB FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR CURB HEIGHT AND ASPHALT THICKNESS SEE "GUTTERLINE ASPHALT THICKNESS AND CURB HEIGHT" TABLE, SHEET 5 OF 5.



BLOCKOUT DETAIL FOR ANCHOR BOLTS

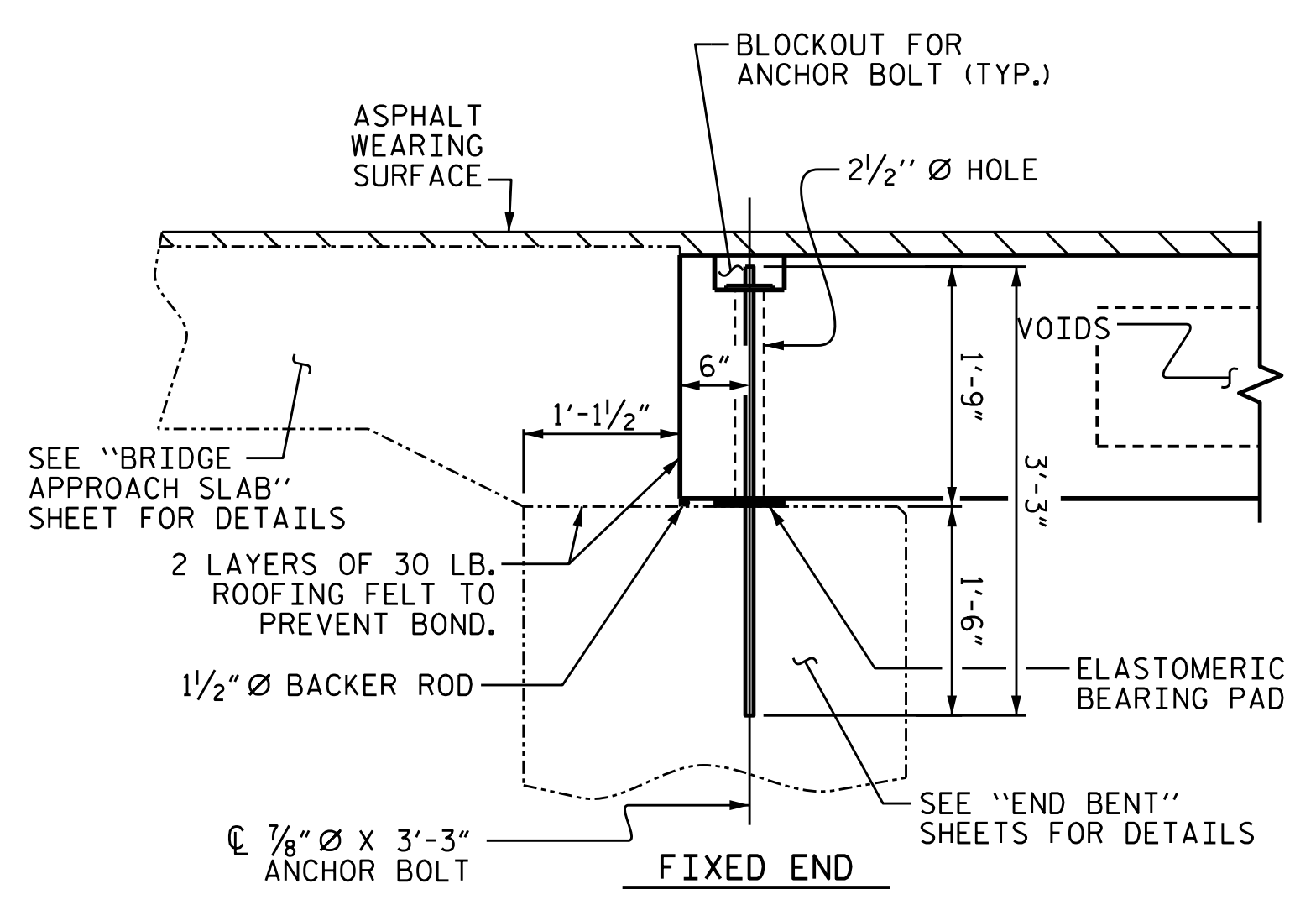
BLOCKOUTS SHALL BE FILLED WITH NONSHRINK GROUT.



EXT. SLAB SECTION UNITS 1 & 9 (TYPE I)
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

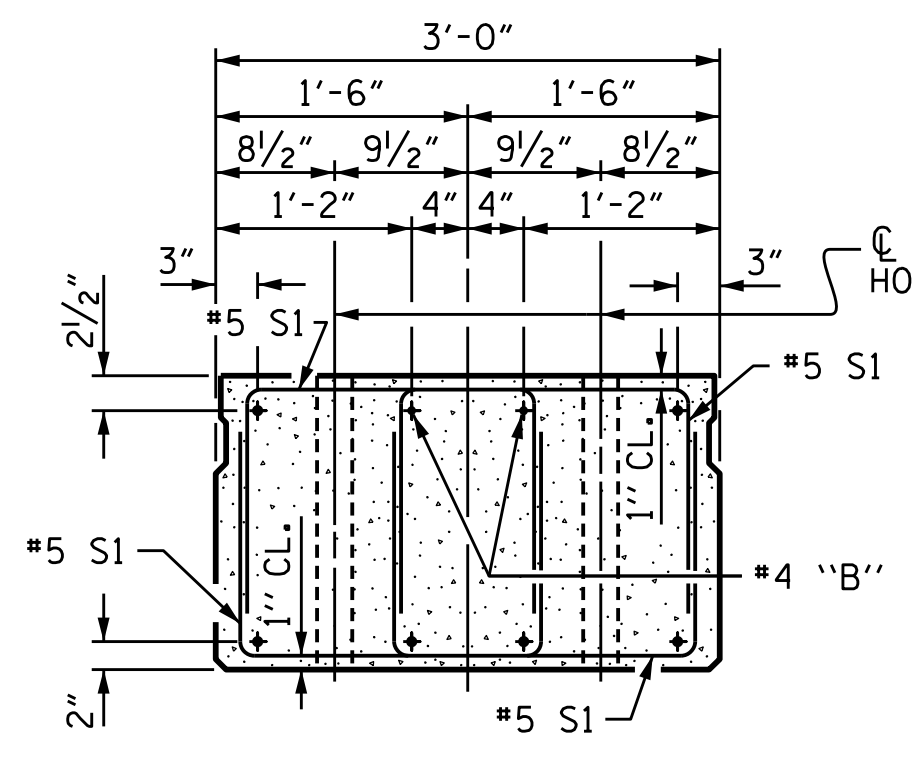
▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



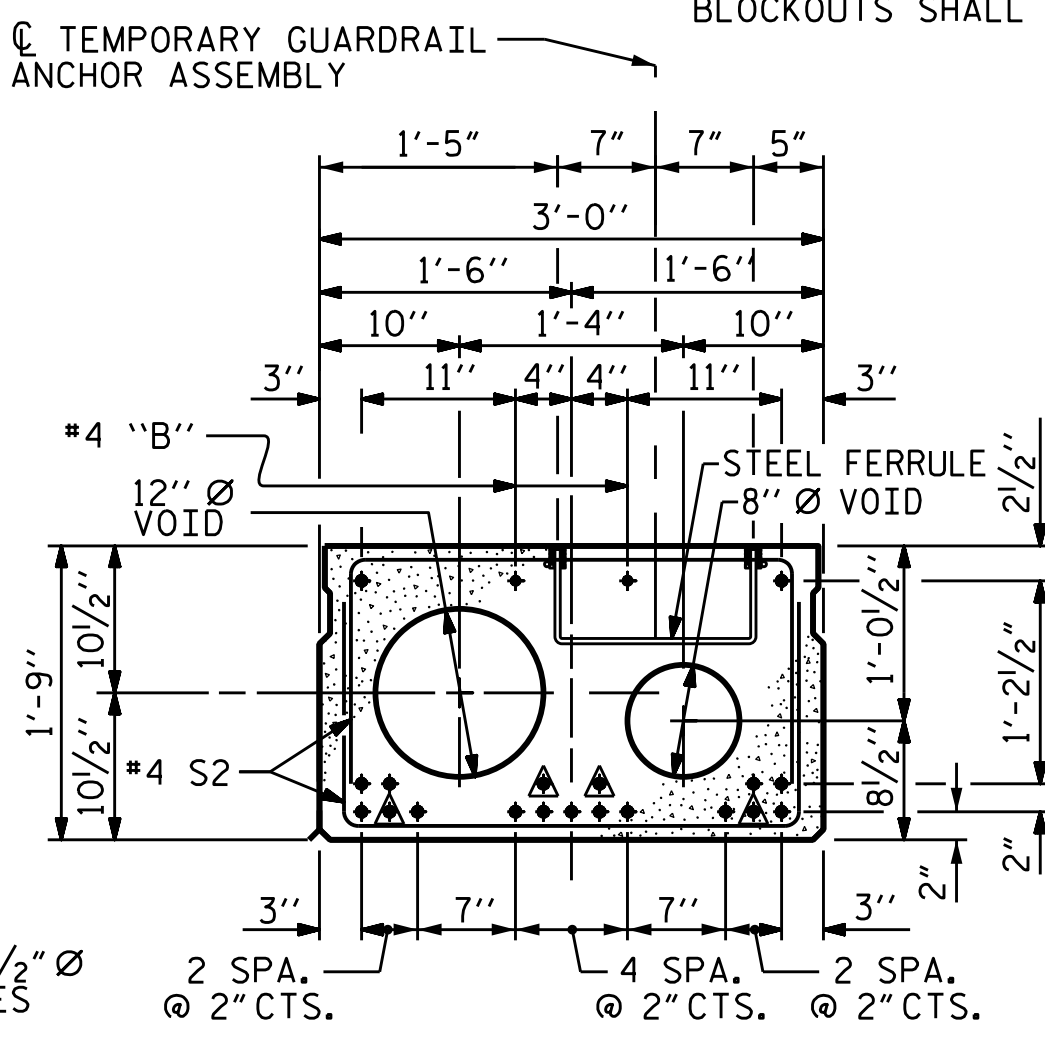
SECTION AT END BENT

THE COST OF ANCHOR BOLTS, PI PLATES AND NUTS SHALL BE INCLUDED IN THE PRICE BID FOR PRECAST UNITS.

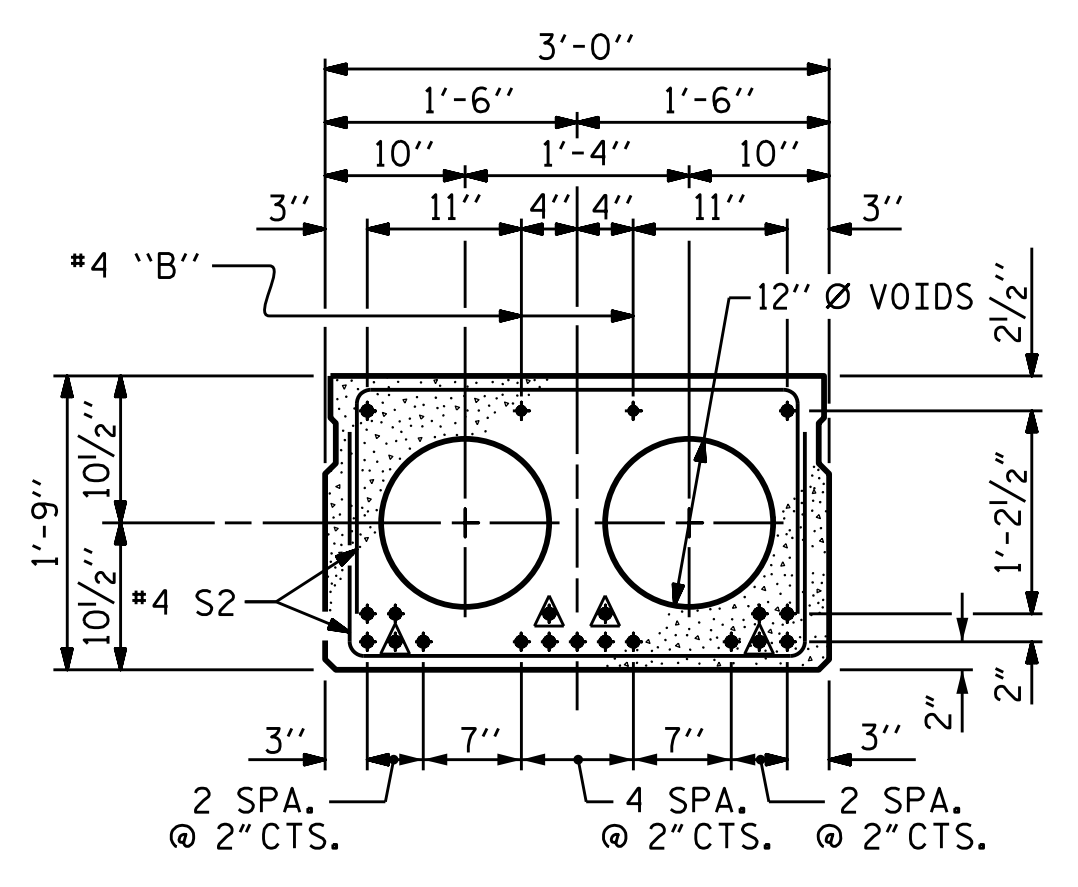


END ELEVATION

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

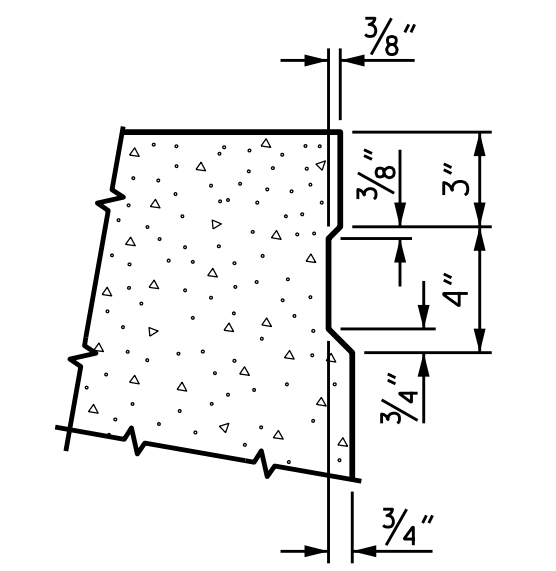


INTERIOR SLAB SECTION (50' UNIT) - UNIT 5 (TYPE II)
(19 STRANDS REQUIRED)



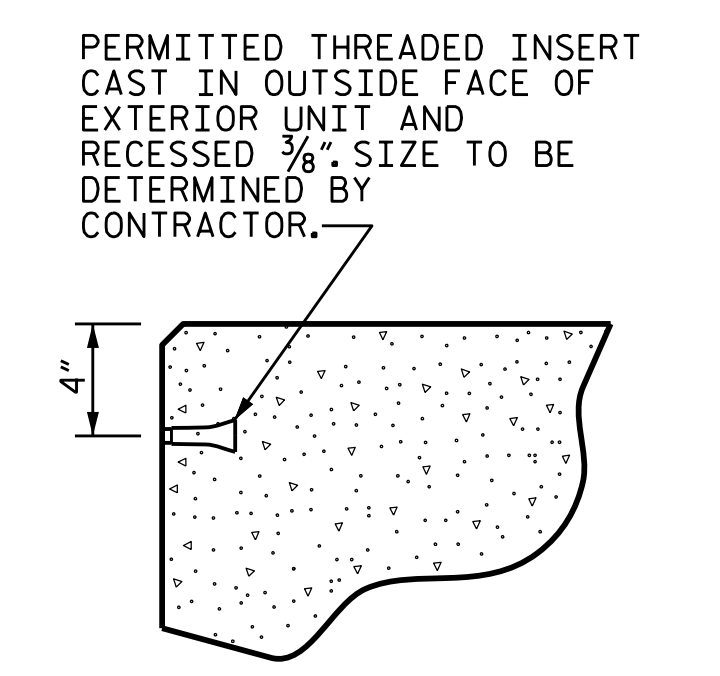
INTERIOR SLAB SECTION (50' UNIT) - UNITS 2-4 & 6-8 (TYPE II)
(19 STRANDS REQUIRED)

0.6" Ø LOW RELAXATION STRAND LAYOUT



SHEAR KEY DETAIL

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



THREADED INSERT DETAIL

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

PROJECT NO. 17BP.14.R.177
HAYWOOD COUNTY
STATION: 15+00.00 -L-

SHEET 1 OF 5

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

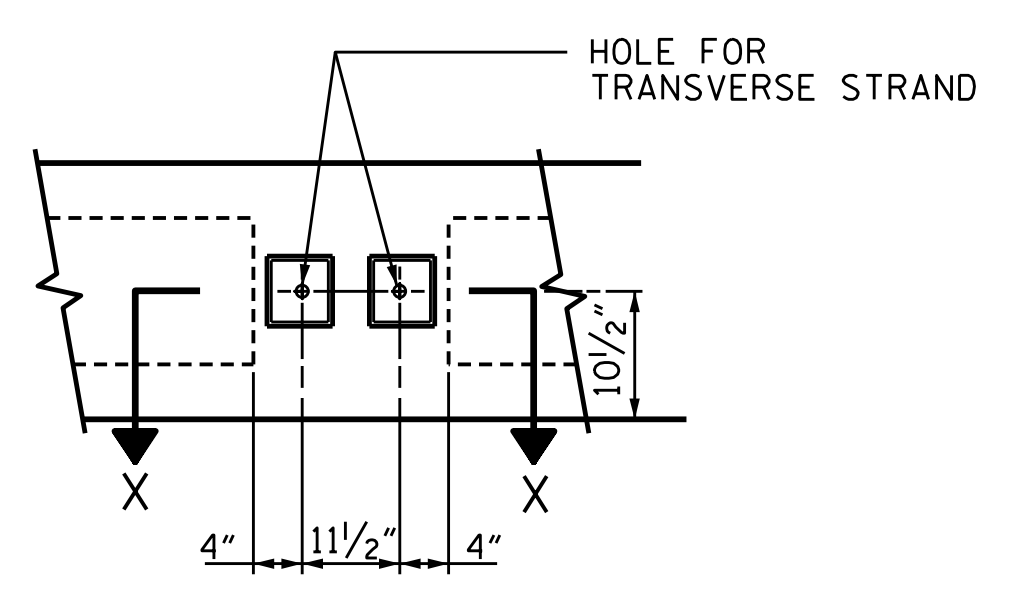
THOMAS M. HARRIS
ENGINEER
11/23/2021
E8BC057AC14AEE

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			26
2			4			

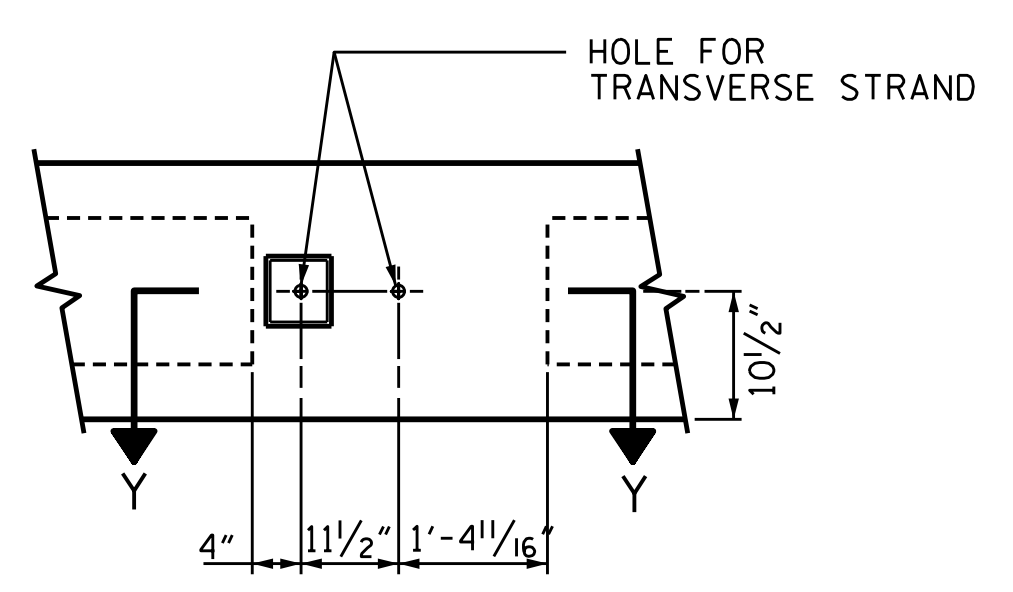
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DRAWN BY:	J. WHEATLEY	DATE:	NOV 2021
CHECKED BY:	T. KIRSCHBAUM	DATE:	NOV 2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE:	NOV 2021

wsp

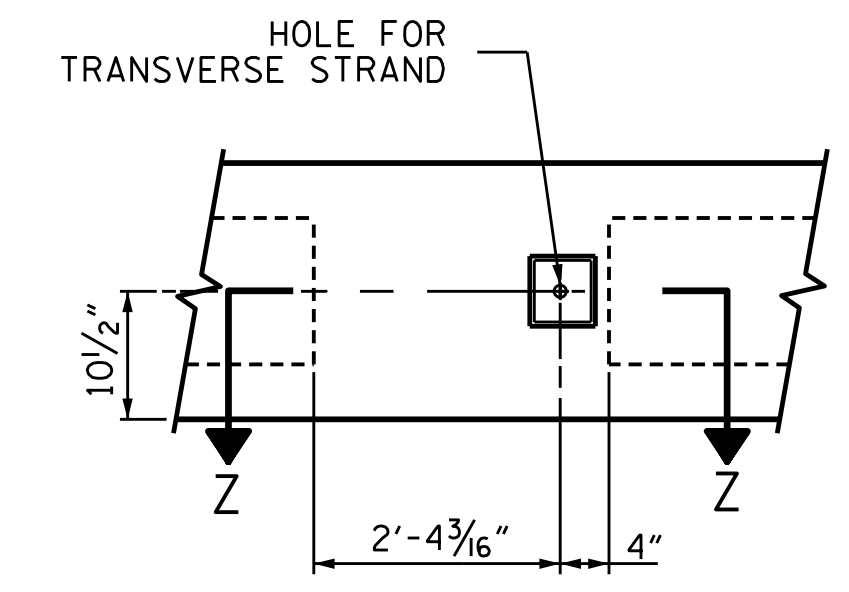
WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165



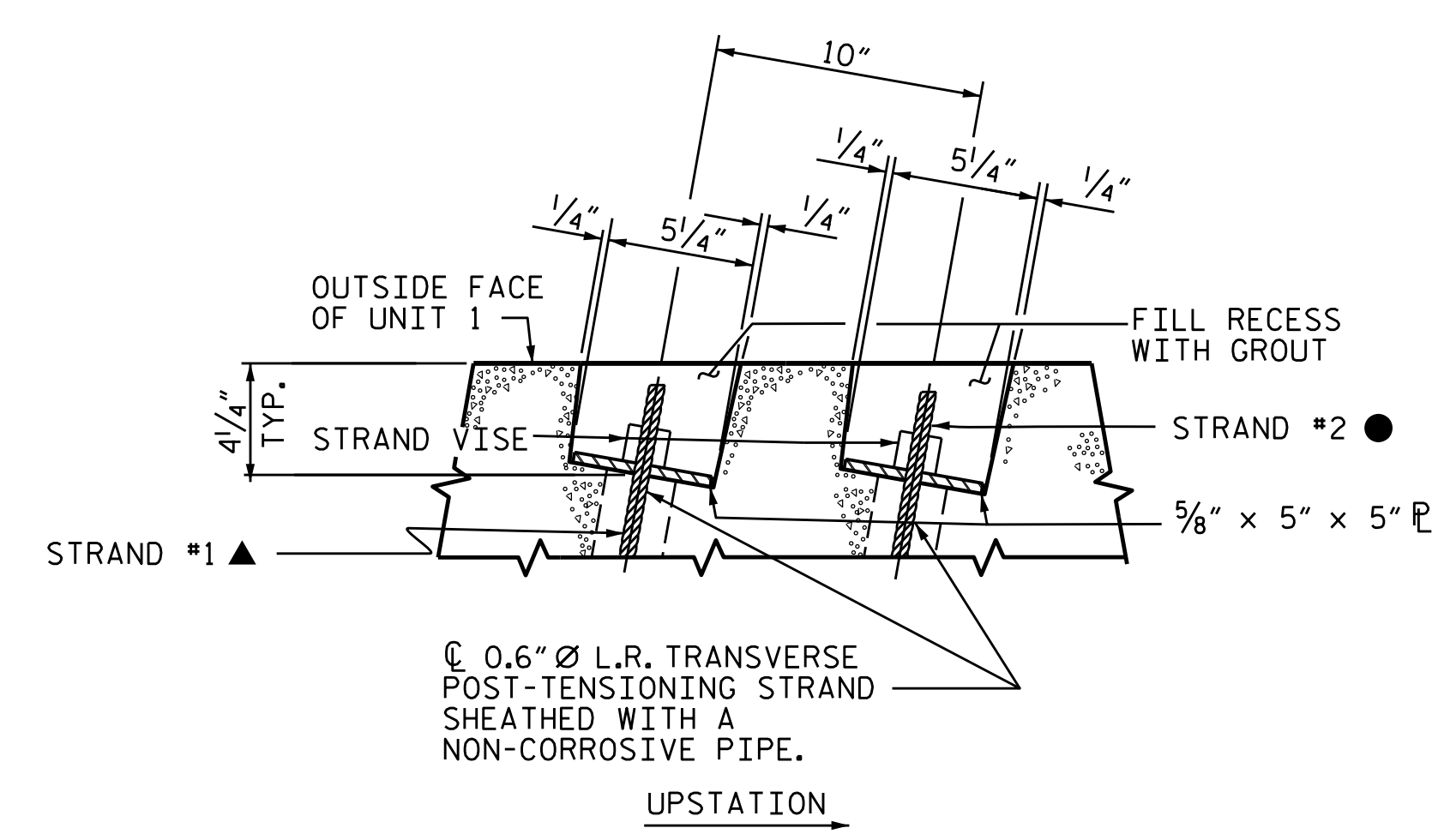
UPSTATION
VIEW A-A
SEE SHEET 3 OF 5



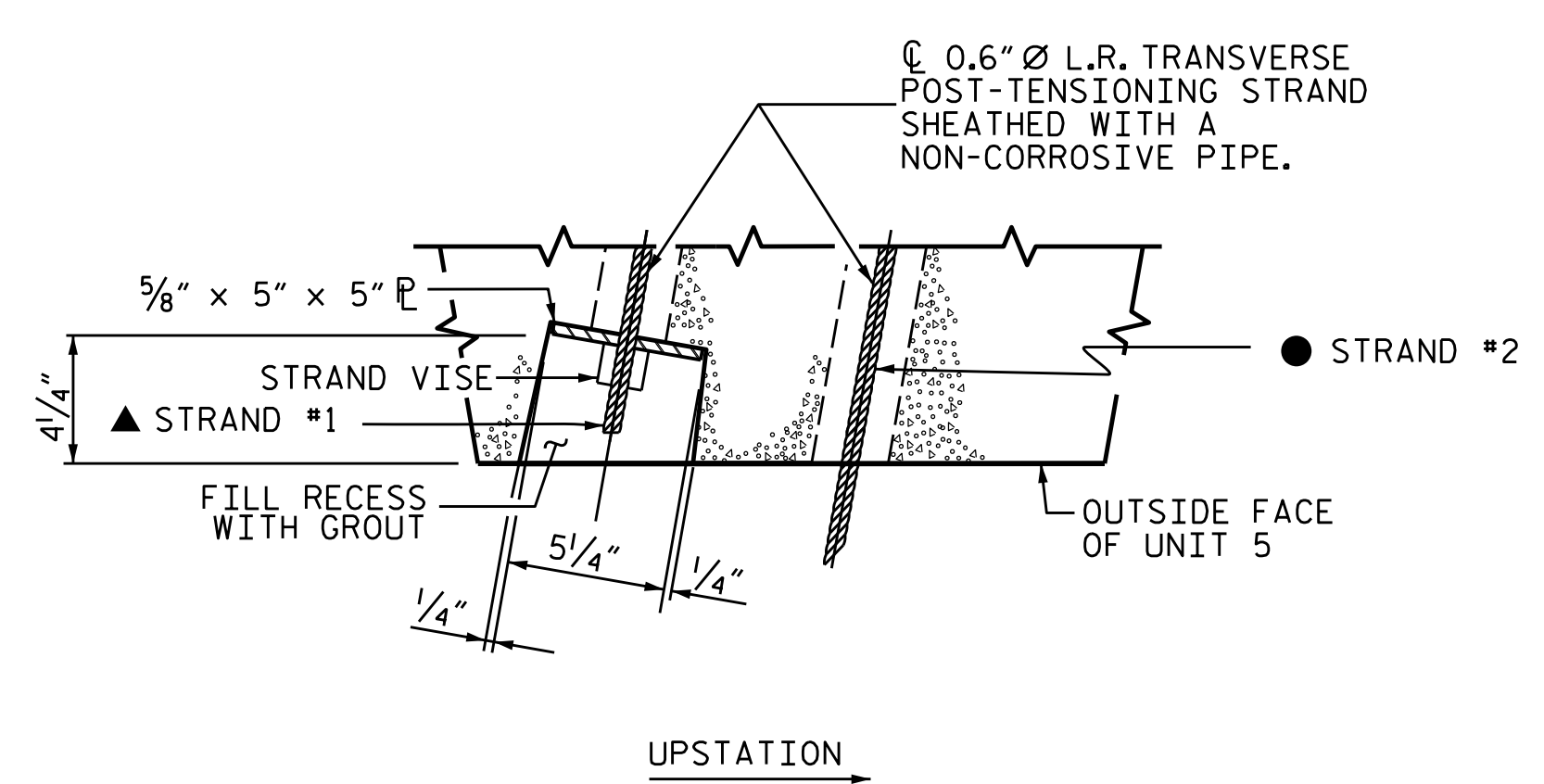
UPSTATION
VIEW B-B
SEE SHEET 3 OF 5



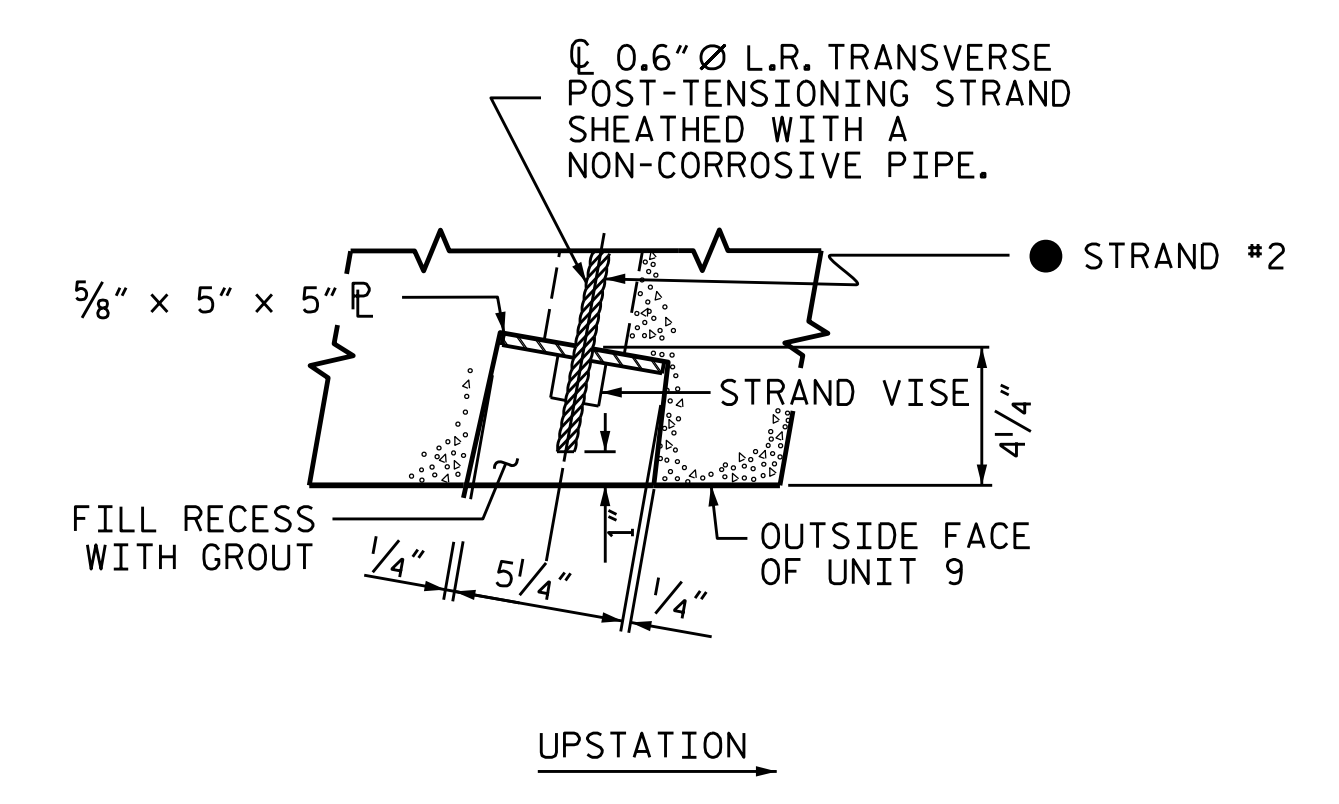
UPSTATION
VIEW C-C
SEE SHEET 4 OF 5



UPSTATION
SECTION X-X



UPSTATION
SECTION Y-Y



UPSTATION
SECTION Z-Z

GRouted RECESS AT END OF POST-TENSIONED STRAND CORED SLABS

- ▲ STRAND #1 GOES THROUGH 5 CORED SLAB UNITS (TO BE TENSIONED DURING STAGE I CONSTRUCTION)
- STRAND #2 GOES THROUGH ALL 9 CORED SLAB UNITS (TO BE TENSIONED DURING STAGE II CONSTRUCTION)

PROJECT NO. 17BP.14.R.177
HAYWOOD COUNTY
STATION: 15+00.00 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

3'-0" X 1'-9"
PRESTRESSED CONCRETE
CORED SLAB UNIT
120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			26

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UNLESS ALL SIGNATURES COMPLETED

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

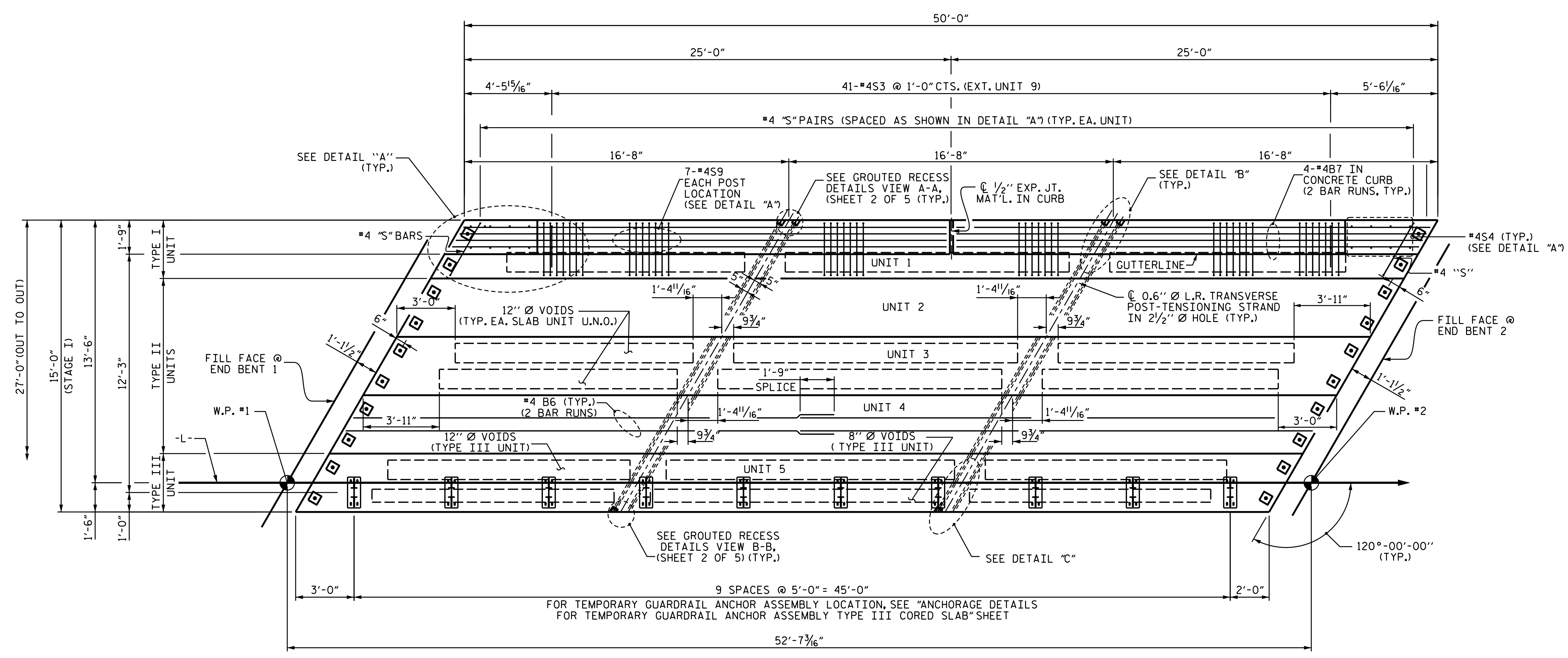
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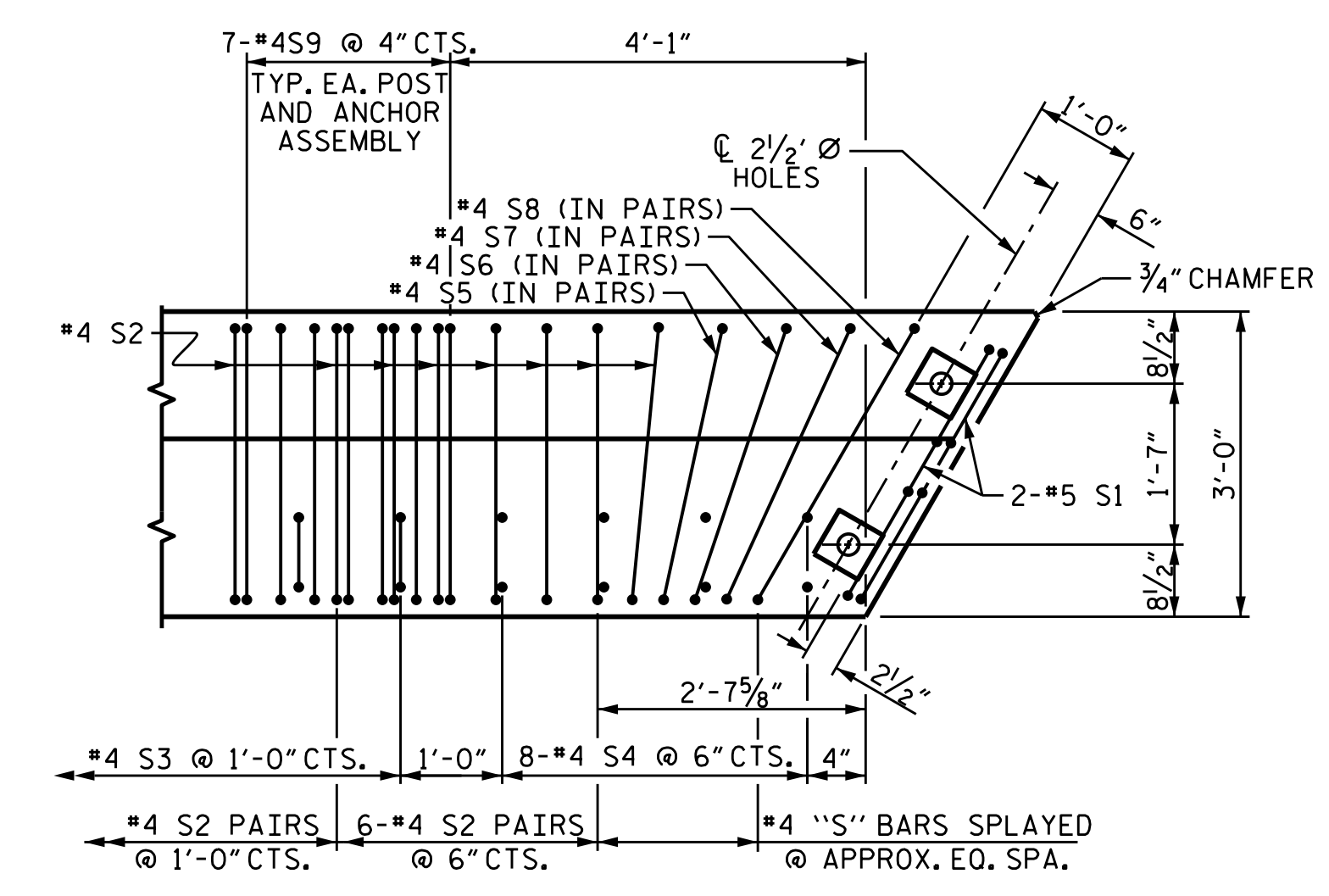
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DESIGNED BY: J. WHEATLEY DATE: NOV 2021
DRAWN BY: J. WHEATLEY DATE: NOV 2021
CHECKED BY: T. KIRSCHBAUM DATE: NOV 2021
DESIGN ENGINEER OF RECORD: T. HARRIS DATE: NOV 2021

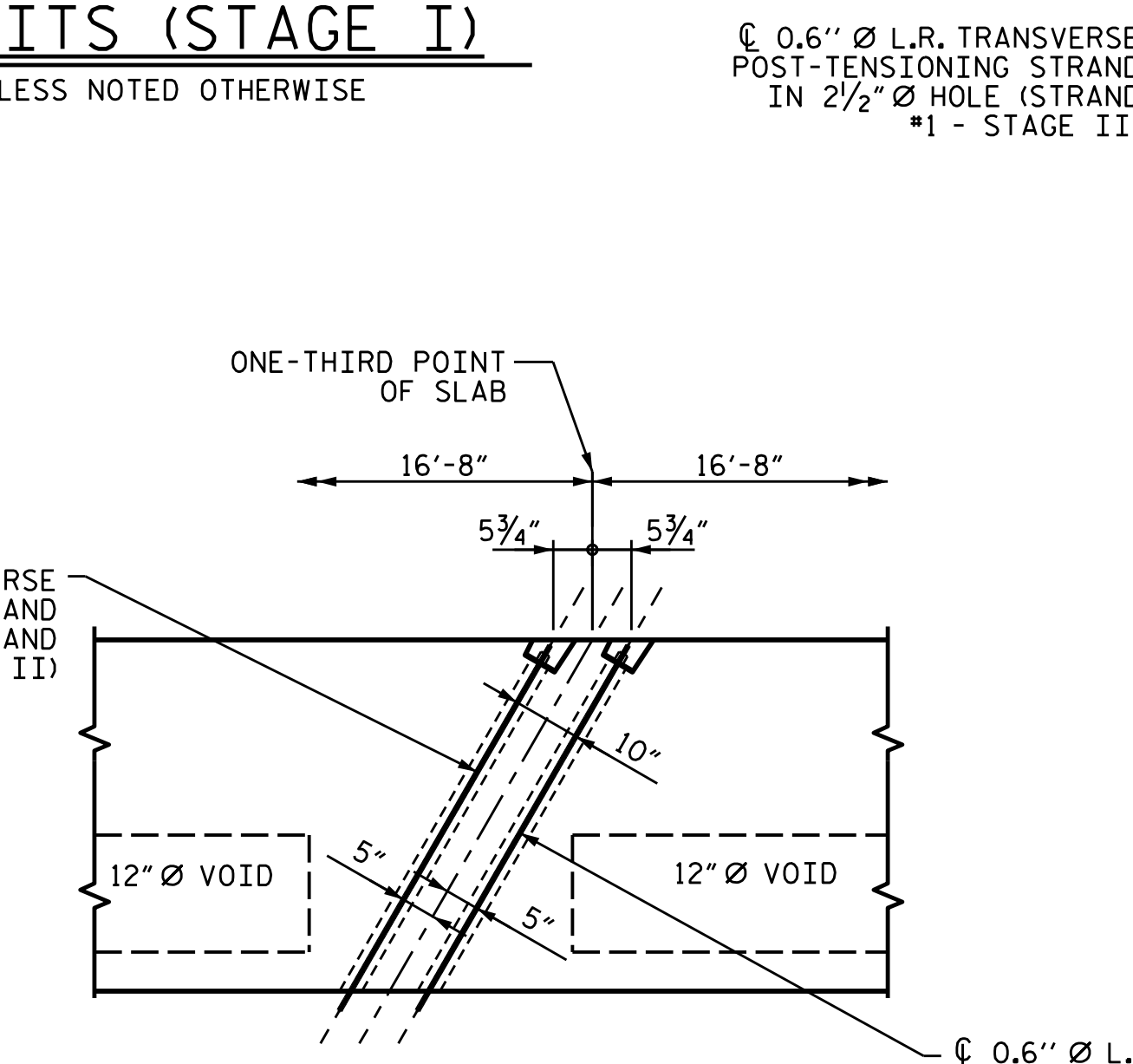
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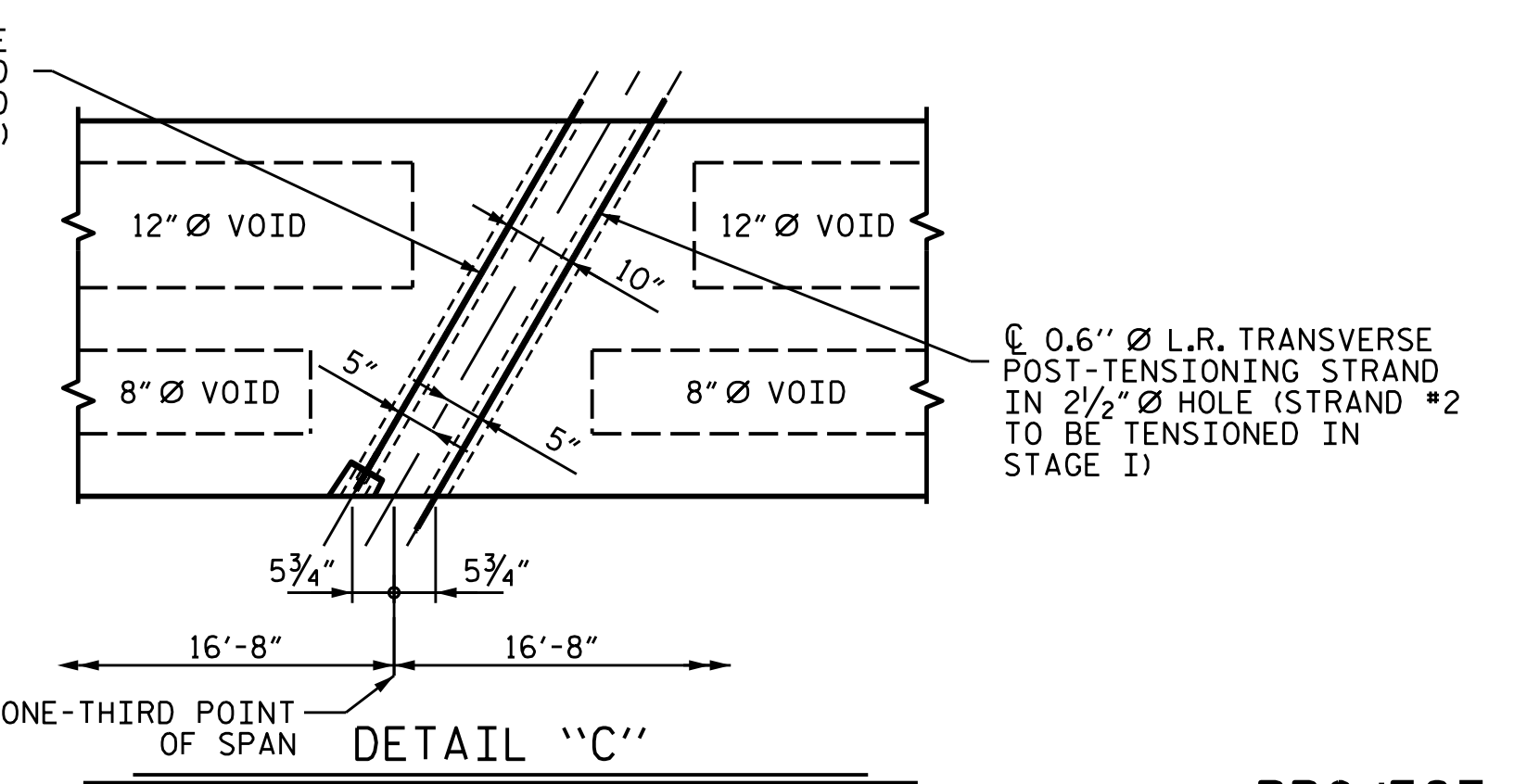
PLAN OF UNITS (STAGE I)
U.N.O. DENOTES UNLESS NOTED OTHERWISE



DETAIL "A"
(SIMILAR EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #4 S3 & #4 S4 AND #4 S9 BARS (VOIDS NOT SHOWN FOR CLARITY)



DETAIL "B"
#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUDED RECESS AND 2 1/2" TRANSVERSE POST-TENSIONING STRAND HOLES (TYPE I UNIT SHOWN)



DETAIL "C"
#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUDED RECESS AND 2 1/2" TRANSVERSE POST-TENSIONING STRAND HOLES (TYPE III UNIT SHOWN)

PROJECT NO. 17BP.14.R.177
HAYWOOD COUNTY
STATION: 15+00.00 -L-
SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**PLAN OF 50' UNITS
23'-6" CLEAR ROADWAY
120° SKEW**

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

SHEET NO. S-8
TOTAL SHEETS 26

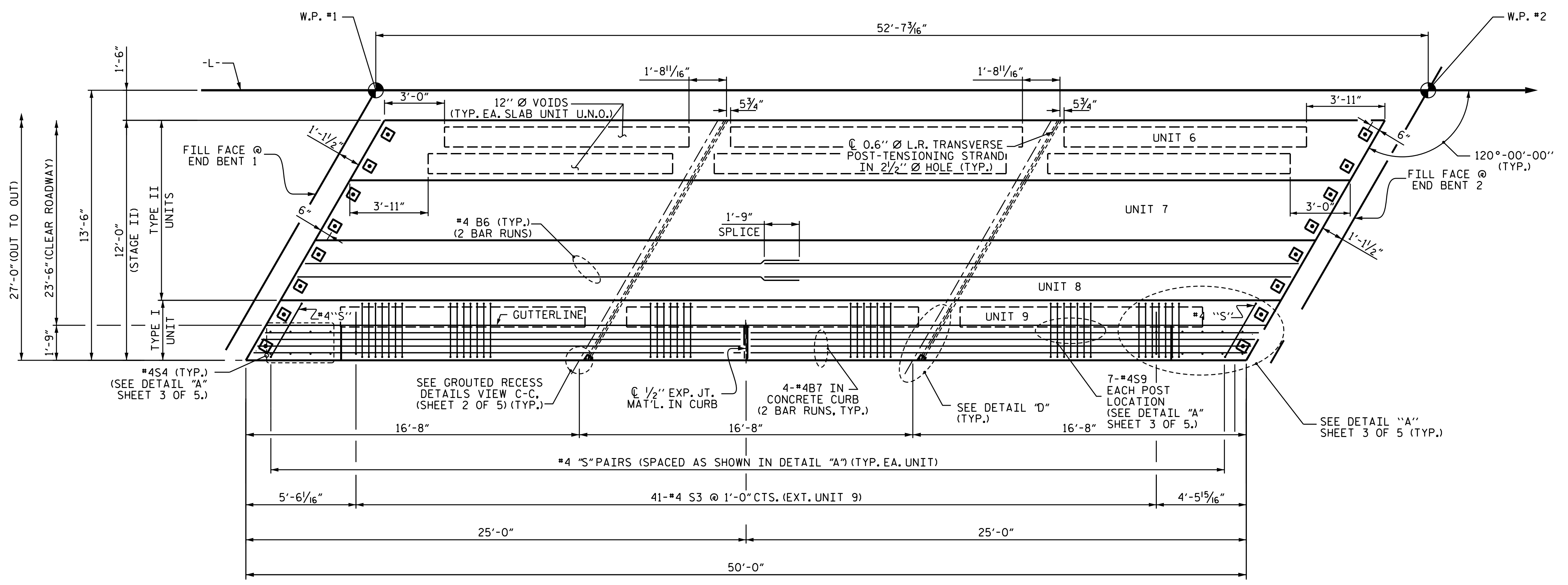
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DRAWN BY: J. WHEATLEY DATE: NOV 2021
CHECKED BY: T. KIRSCHBAUM DATE: NOV 2021
DESIGN ENGINEER OF RECORD: T. HARRIS DATE: NOV 2021

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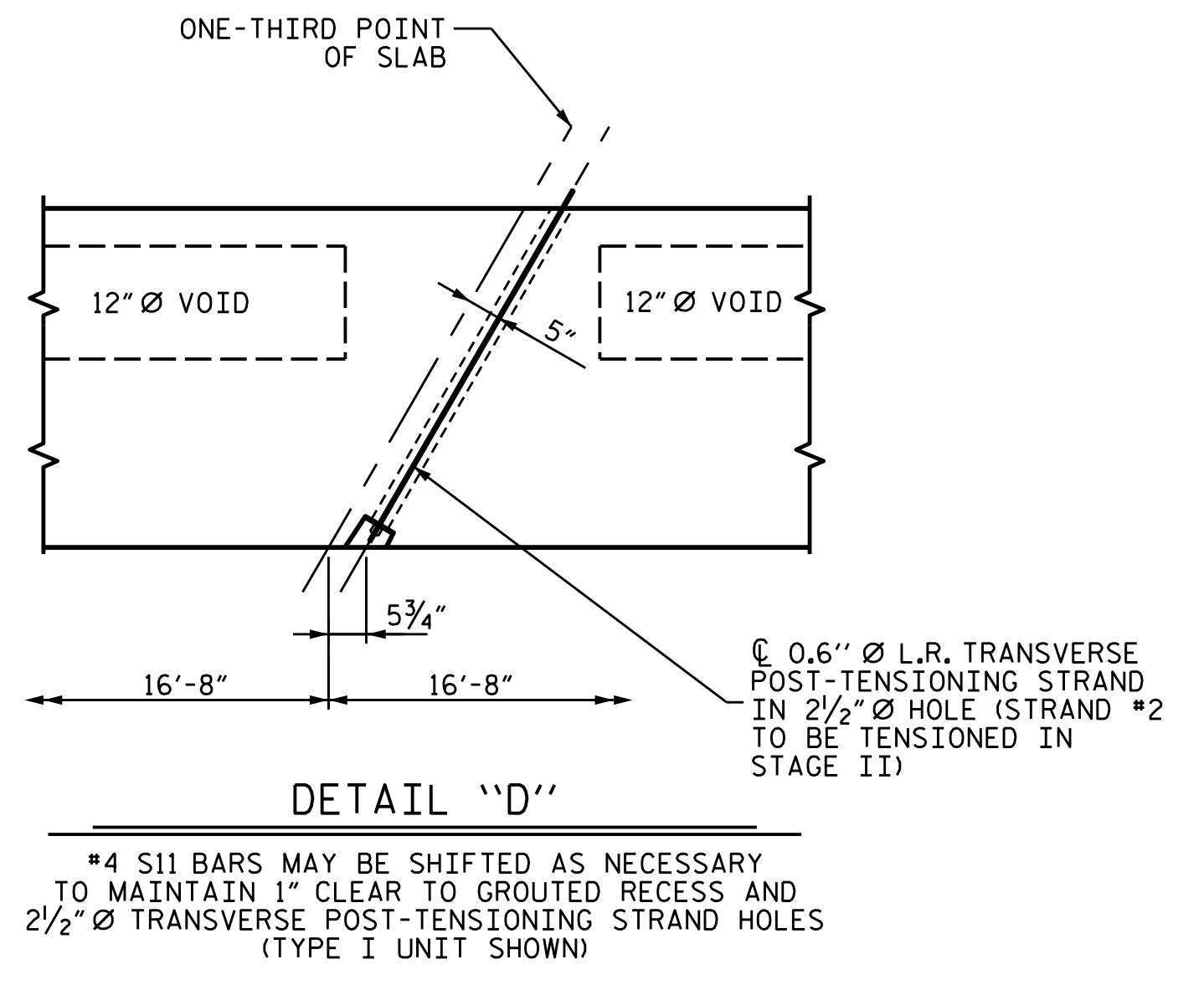
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THOMAS M. HARRIS
ENGINEER
11/23/2021
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PLAN OF UNITS (STAGE II)



PROJECT NO. 17BP.14.R.177
HAYWOOD COUNTY
 STATION: 15+00.00 -L-
 SHEET 4 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**PLAN OF 50' UNIT
 23'-6" CLEAR ROADWAY
 120° SKEW**

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

DocuSigned by:
 Thomas M. Harris
 11/23/2021
 E9EBC057AC14A4EE

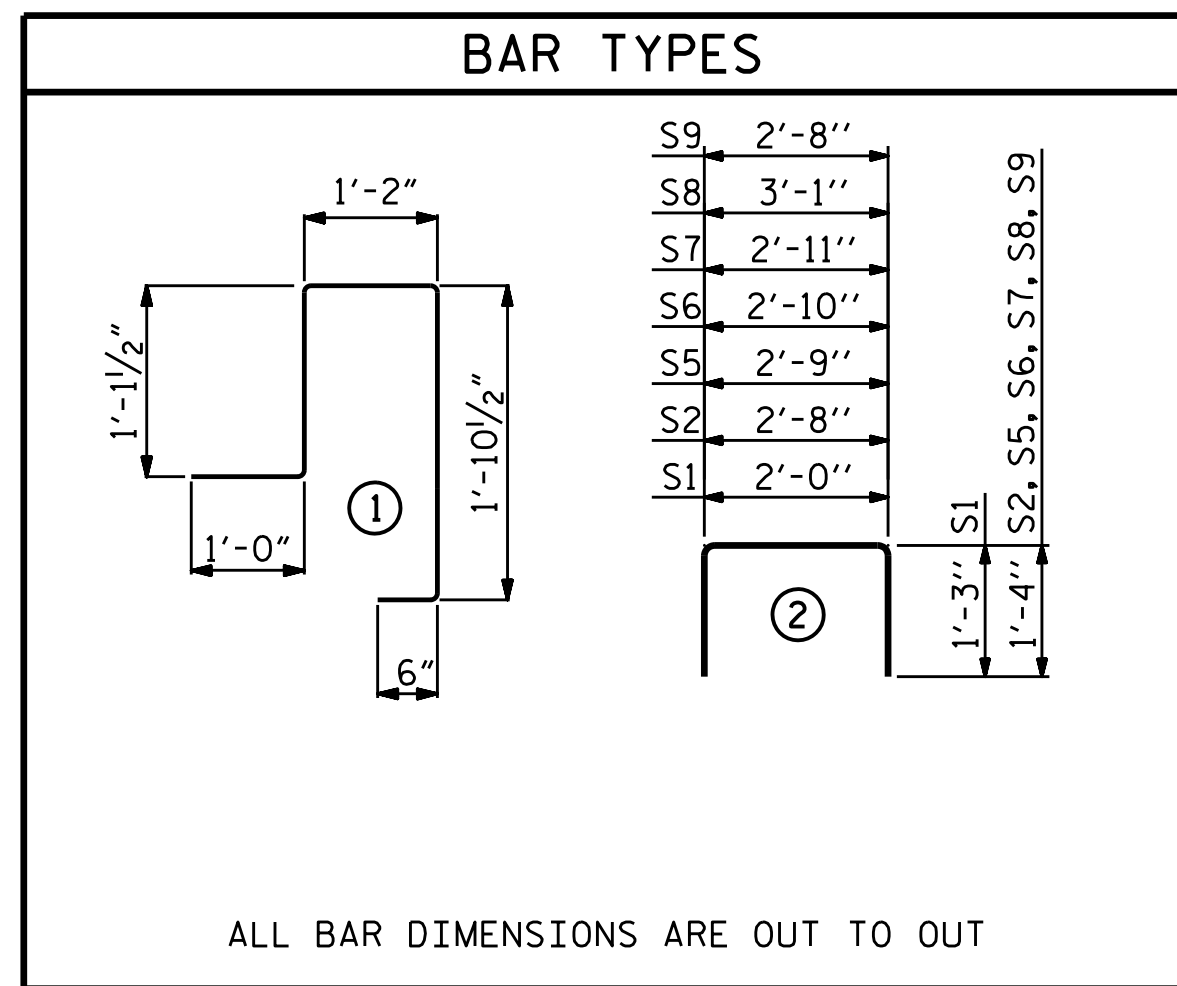
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DESIGNED BY:	J. WHEATLEY	DATE:	NOV 2021
DRAWN BY:	J. WHEATLEY	DATE:	NOV 2021
CHECKED BY:	T. KIRSCHBAUM	DATE:	NOV 2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE:	NOV 2021

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			26

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BILL OF MATERIAL FOR ONE 50' CORED SLAB UNIT									
BAR	NUMBER	SIZE	TYPE	EXT. UNIT (TYPE I) LENGTH	EXT. UNIT (TYPE I) WEIGHT	INT. UNIT (TYPE II) LENGTH	INT. UNIT (TYPE II) WEIGHT	INT. UNIT (TYPE III) LENGTH	INT. UNIT (TYPE III) WEIGHT
B6	4	#4	STR	25'-9"	69	25'-9"	69	25'-9"	69
S1	8	#5	2	4'-6"	38	4'-6"	38	4'-6"	38
S2	102	#4	2	5'-4"	363	5'-4"	363	5'-4"	363
* S3	41	#4	1	5'-8"	155	-	-	-	-
* S4	16	#4	STR	2'-6"	27	-	-	-	-
S5	4	#4	2	5'-5"	14	5'-5"	14	5'-5"	14
S6	4	#4	2	5'-6"	15	5'-6"	15	5'-6"	15
S7	4	#4	2	5'-7"	15	5'-7"	15	5'-7"	15
S8	4	#4	2	5'-9"	15	5'-9"	15	5'-9"	15
S9	42	#4	2	5'-4"	150	-	-	-	-
REINFORCING STEEL				LBS.	679		529		529
* EPOXY COATED REINFORCING STEEL				LBS.	182		-		-
6500 P.S.I. CONCRETE				CU. YDS.	8.4		7.3		7.9
0.6" Ø L.R. STRANDS				No.	19		19		19



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.

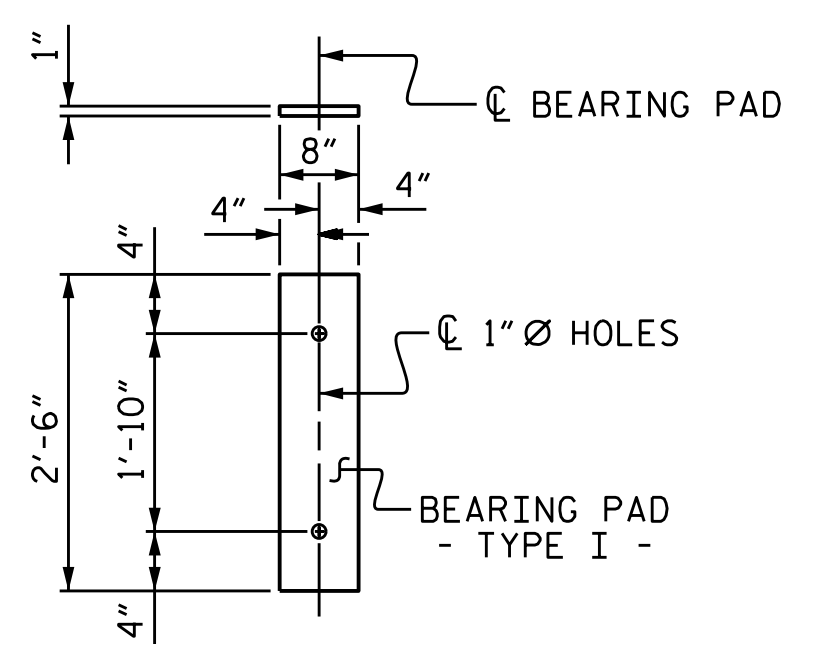
THE 2 1/2" Ø HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

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.

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

50' CORED SLABS REQUIRED				
STAGE I	TYPE I	NUMBER	LENGTH	TOTAL LENGTH
	TYPE II	3	50'-0"	150'-0"
	TYPE III	1	50'-0"	50'-0"
STAGE II	TYPE I	1	50'-0"	50'-0"
	TYPE II	3	50'-0"	150'-0"
	TOTAL	9		450'-0"



ELASTOMERIC BEARING DETAILS

(TYPE I - 18 REQ'D)

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT		
	ASPHALT OVERLAY THICKNESS	CURB HEIGHT
	@ MID-SPAN	@ MID-SPAN
50' UNITS	1 5/8"	1'-0 1/2"

NOTE: FOR ASPHALT OVERLAY THICKNESS AND RAIL HEIGHT AT END BENTS, SEE TYPICAL SECTION, SHEET 1 OF 4.

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

** INCLUDES FUTURE WEARING SURFACE

CONCRETE RELEASE STRENGTH	
UNIT	PSI
50' UNITS	4900

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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.

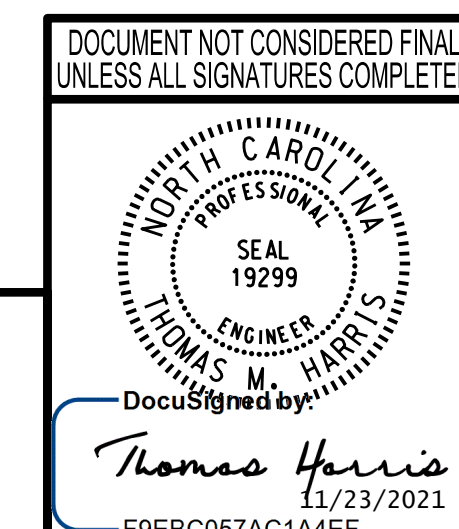
THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

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

ANCHOR BOLTS AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM A449 AND SHALL BE GALVANIZED. NO SEPARATE PAYMENT WILL BE MADE FOR THE ANCHOR BOLTS AND THE COST OF MATERIALS AND INSTALLATION SHALL BE INCLUDED IN OTHER PAY ITEMS.

PROJECT NO. 17BP.14.R.177
HAYWOOD COUNTY
 STATION: 15+00.00 -L-

SHEET 5 OF 5



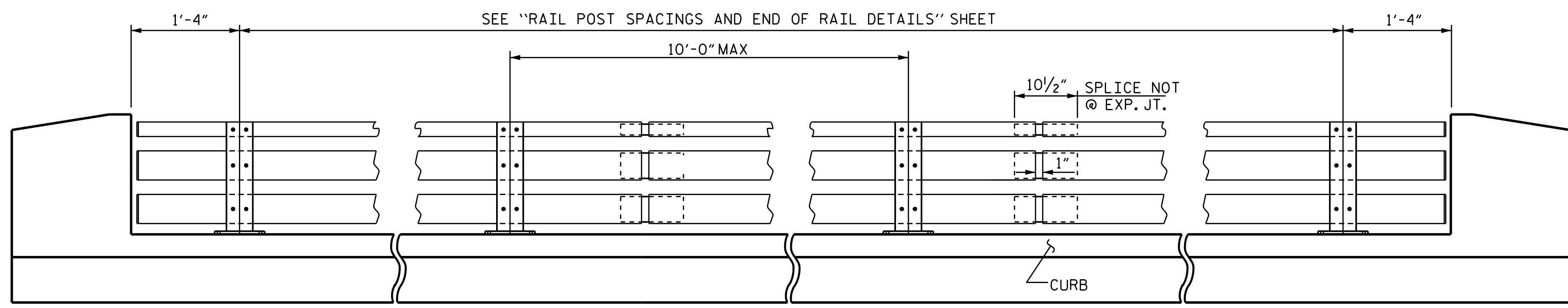
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 120° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			26

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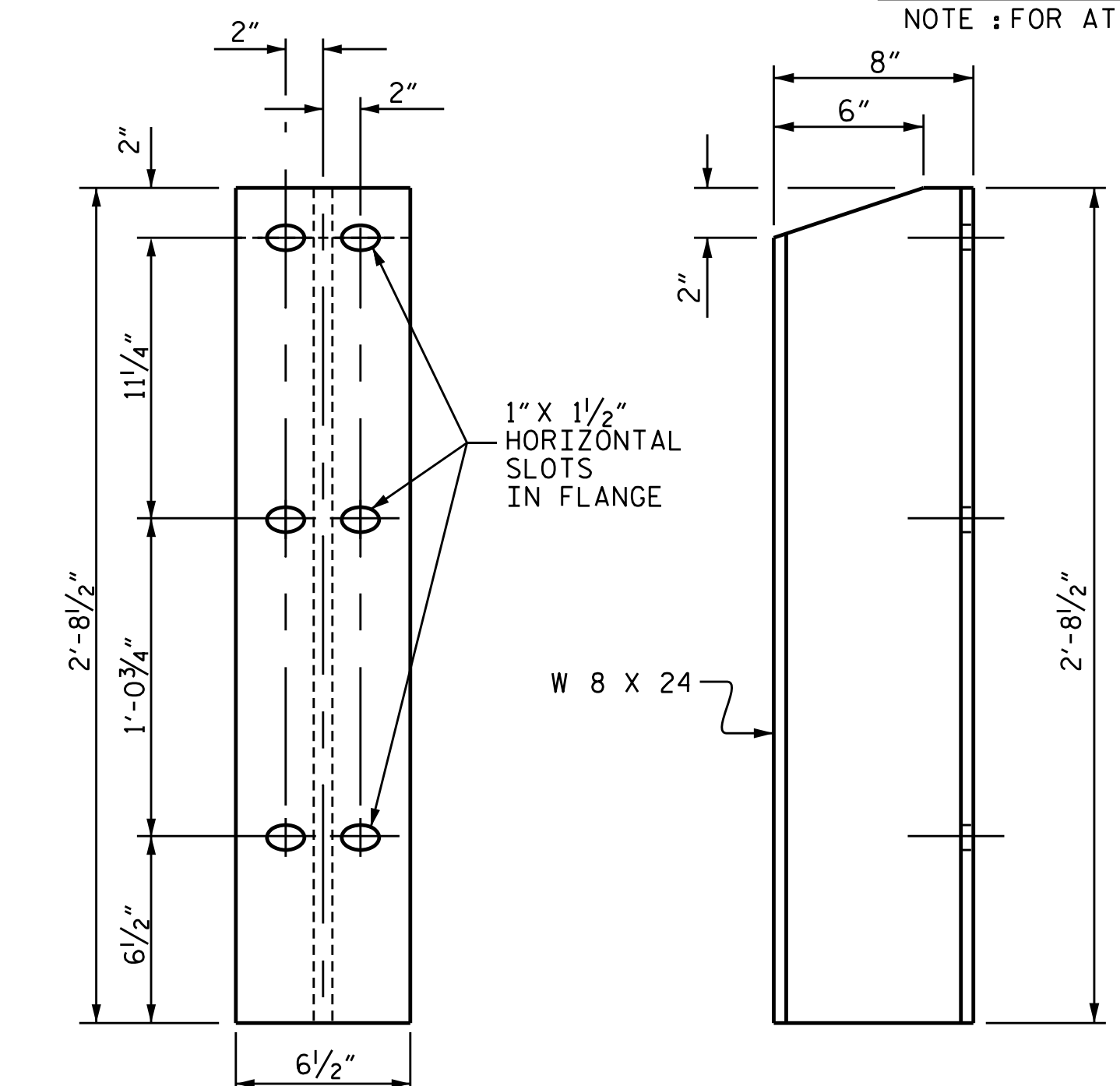
ASSEMBLED BY: J. WHEATLEY	DATE: NOV 2021	DRAWN BY: DGE	5/09	REV. 5/18	MAA/THC
CHECKED BY: T. KIRSCHBAUM	DATE: NOV 2021	CHECKED BY: BCH	6/09		
DESIGN ENGINEER OF RECORD: T. HARRIS	DATE: NOV 2021				

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ELEVATION

NOTE: FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET 2 OF 2.



FRONT ELEVATION SIDE ELEVATION
DETAILS OF POST

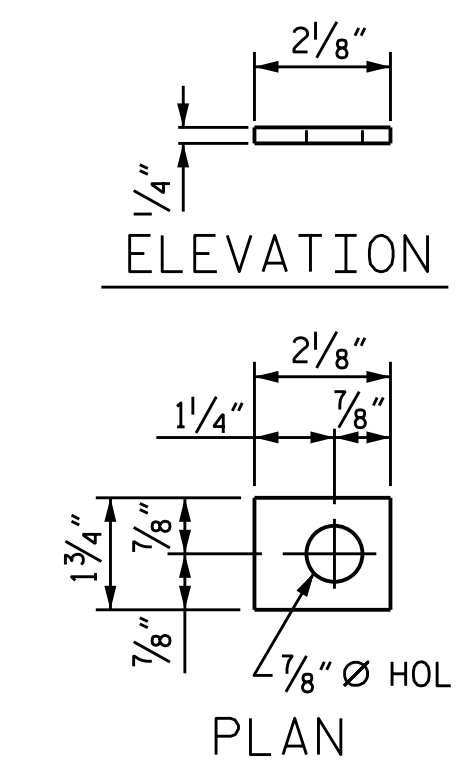
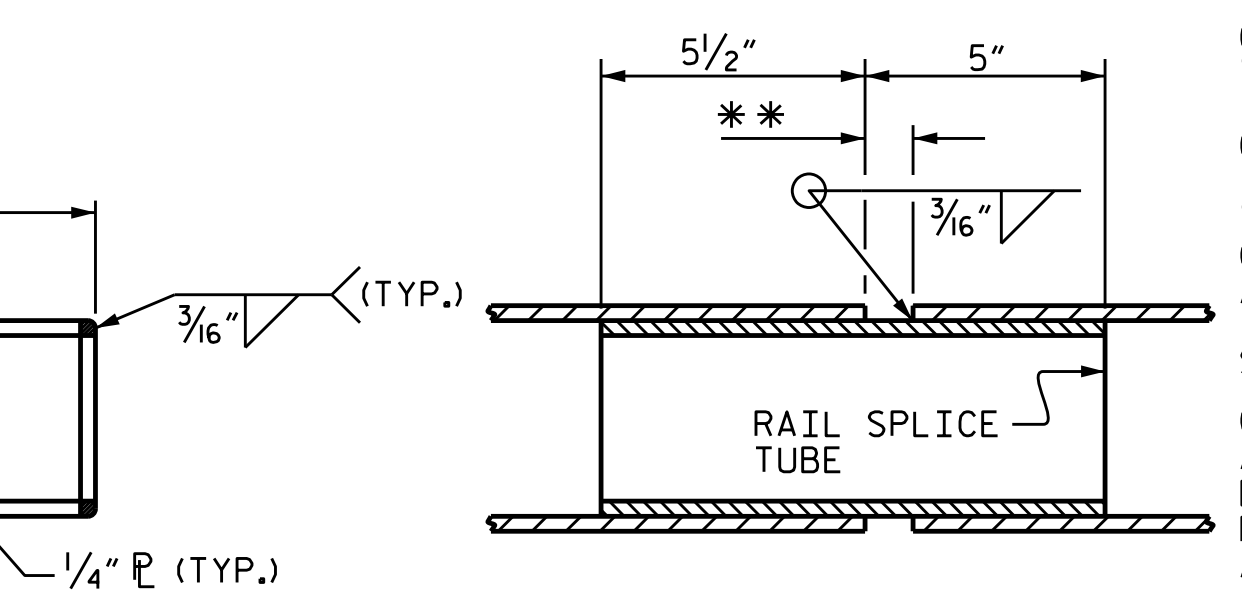
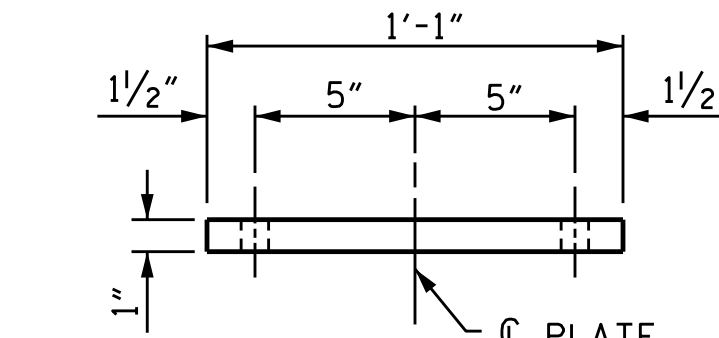


PLATE WASHER

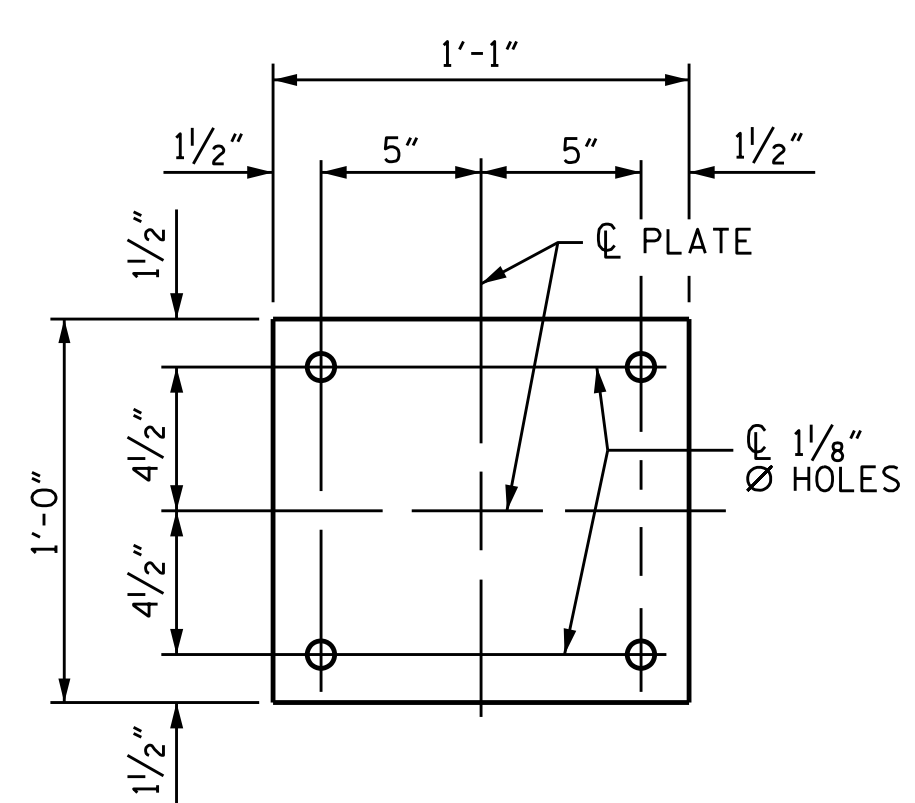


RAIL SPLICE DETAILS

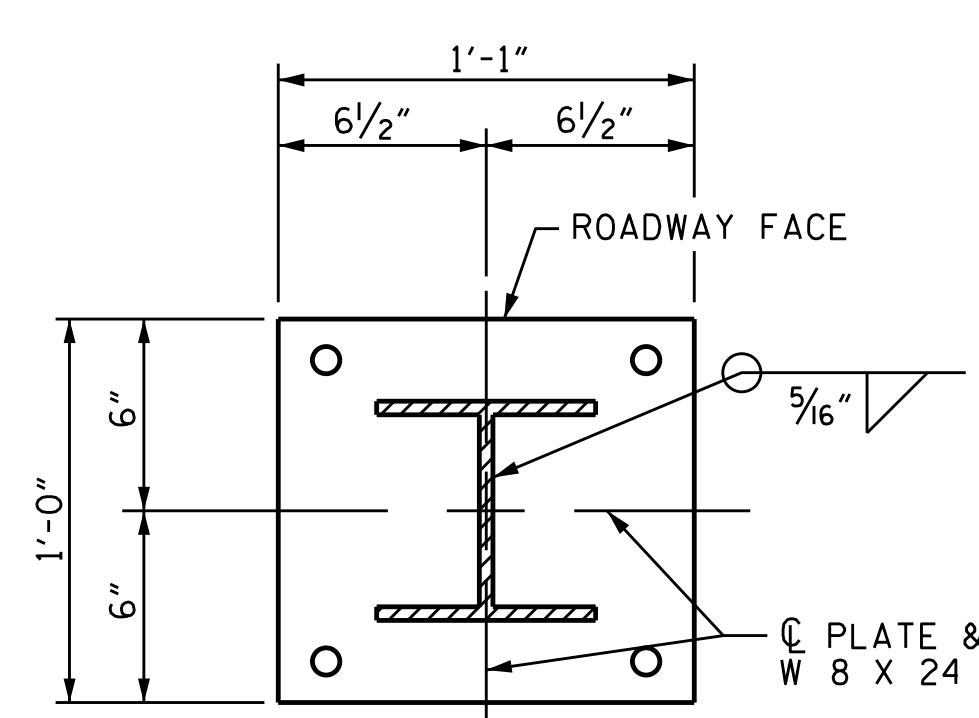
* - DIMENSION AFTER GRINDING RADIUS ON CORNERS TO MATCH INSIDE OF METAL RAIL, GRIND ALL EDGES PRIOR TO GALVANIZING TO ASSURE FIT.
** - 1" FOR SPLICE NOT AT EXPANSION JOINT



FRONT ELEVATION

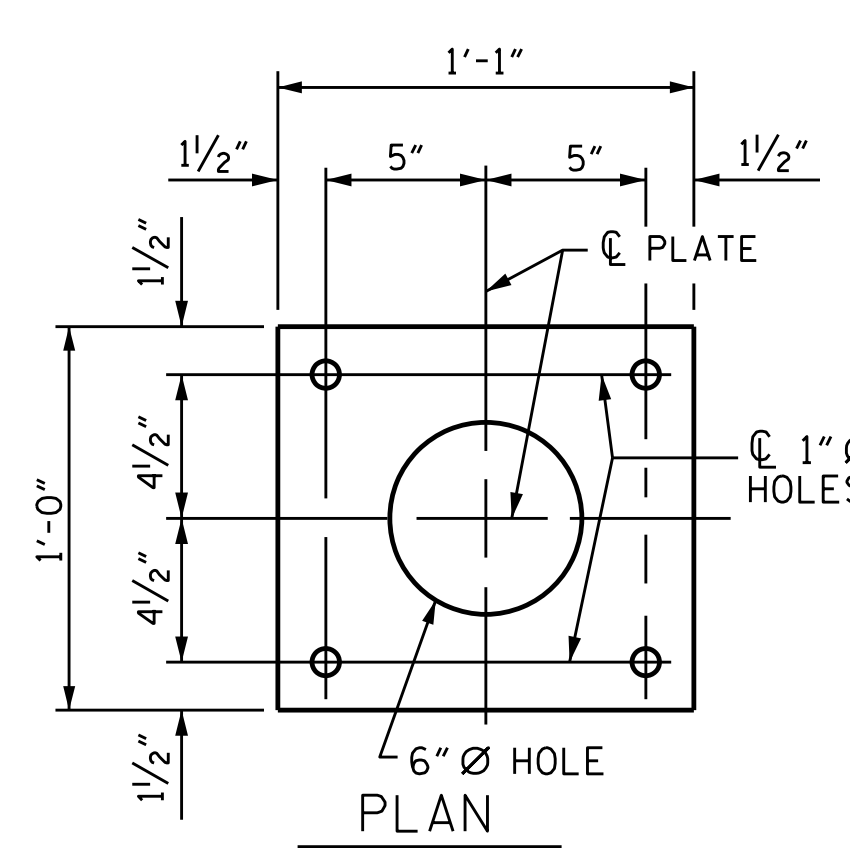


PLAN

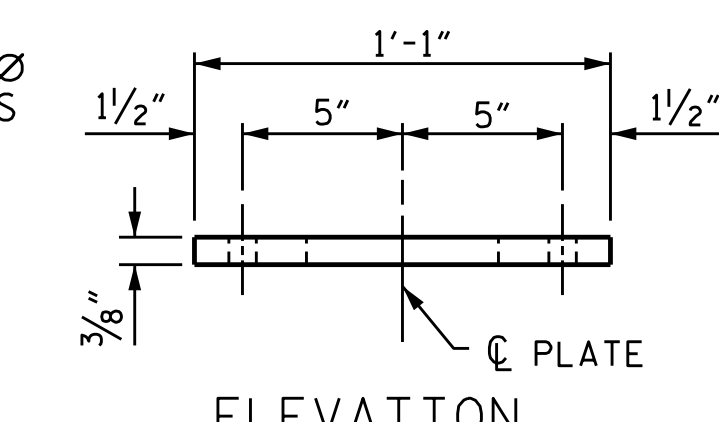


POST ATTACHMENT DETAIL

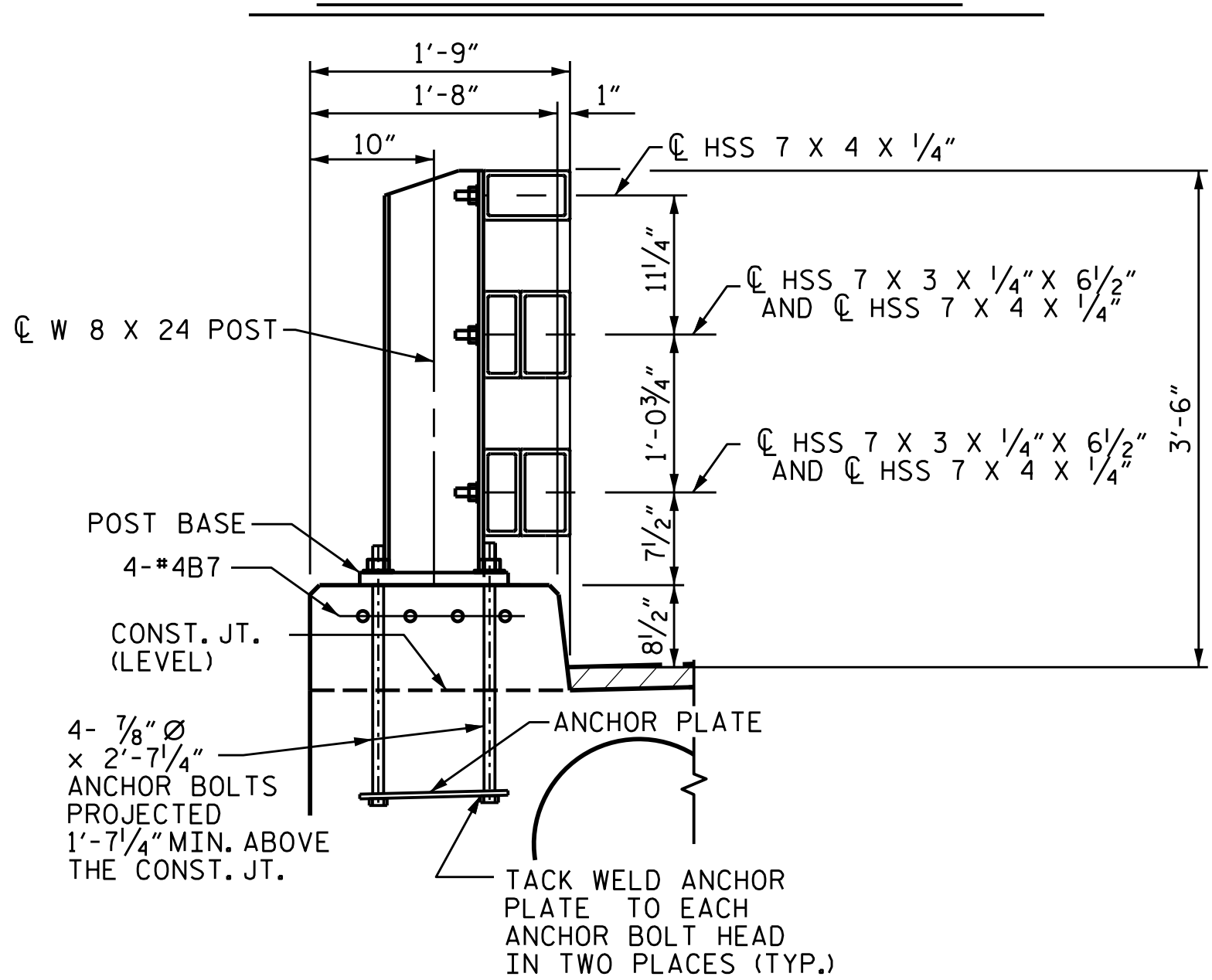
POST BASE DETAILS



ANCHOR PLATE DETAILS



ELEVATION



SECTION THRU RAIL

NOTES

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

GALVANIZED STEEL RAILS

- MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:
- POST, POST BASES, ANCHOR PLATES, AND RAIL SPLICE TUBES: AASHTO M270 GRADE 36 STRUCTURAL STEEL-GALVANIZED TO AASHTO M111.
- THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.
- RAILS: ASTM A500 GRADE B - GALVANIZED TO AASHTO M111.
- WELDED RAIL STUDS: ASTM A108-GALVANIZED TO AASHTO M111.
- HIGH STRENGTH ANCHOR BOLTS SHALL CONFORM TO ASTM F1554 GRADE 105. HEAVY HEX NUTS SHALL CONFORM TO ASTM A563 DH, AND WASHERS TO ASTM F436, TYPE 1. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED TO AASHTO M111.

GENERAL NOTES

- RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.
- FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR11.
- CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.
- METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.
- CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.
- TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.
- SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.
- GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE CURB AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN CURB EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF CURB SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.
- THE RAIL SECTIONS SHALL BE ATTACHED TO THE POSTS BY TWO THREADED 3/4" Ø WELDED STUDS, PLATE WASHERS, LOCKWASHERS, AND NUTS.

FOR 42" OREGON RAIL, SEE THE STANDARD SPECIFICATIONS.

PAY LENGTH 82.98 LIN. FT.

PROJECT NO. 17BP.14.R.177
HAYWOOD COUNTY
STATION: 15+00.00 -L-

SHEET 1 OF 2

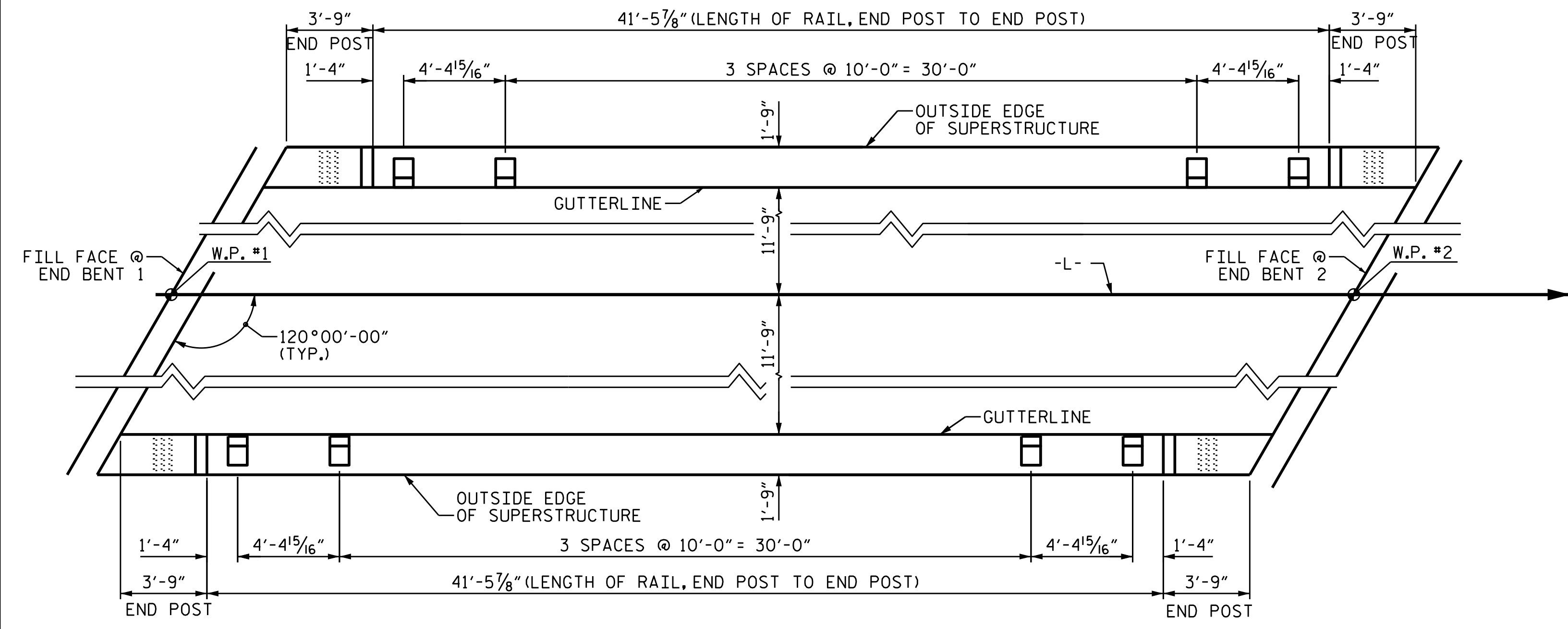
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
42" OREGON RAIL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

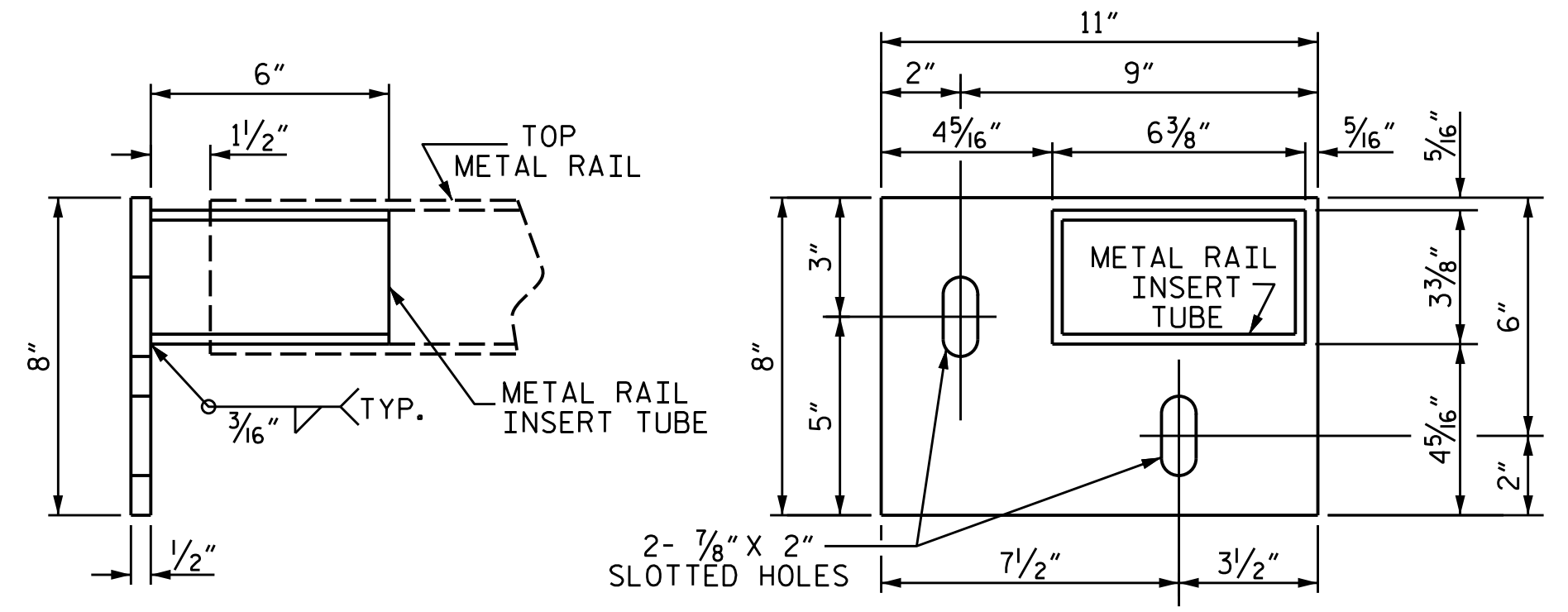
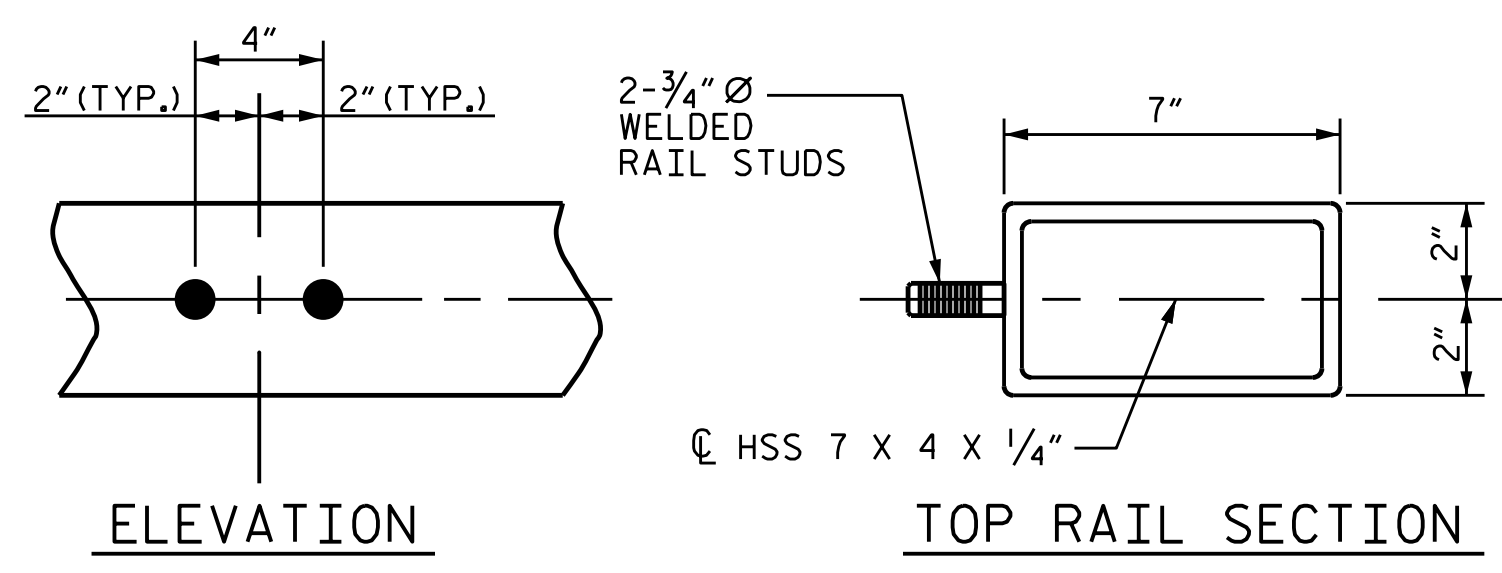
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434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

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2			4			26

11/3/2021 4:18:36OC - 2015 W Divisions Planning & Design On-Call\118836OC Group 3 Bridges\17BP.14.R.177\Structures\Drafting\DGNS\401_023_17BP.14.R.177_SML_BRO2.dgn

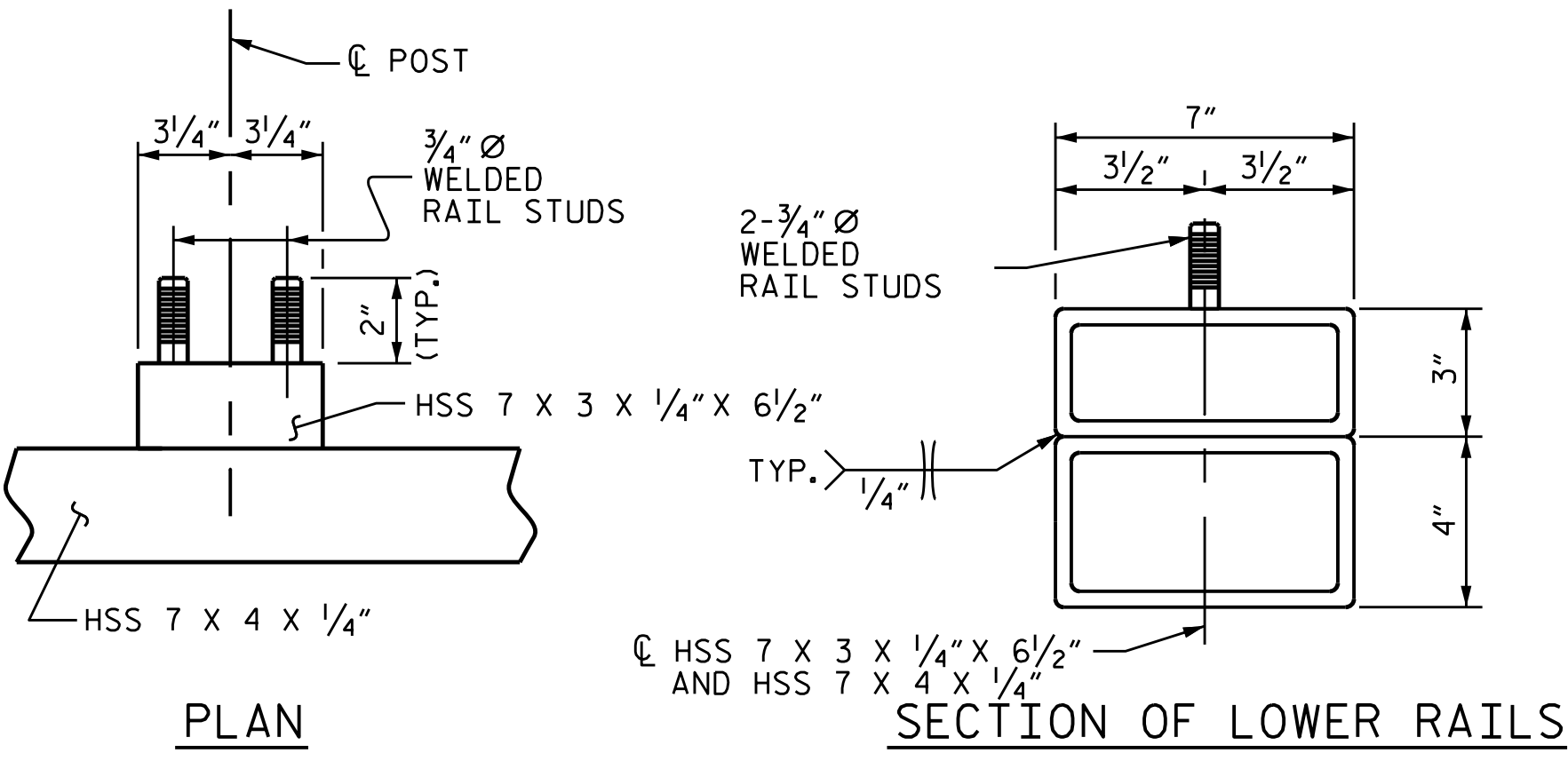


PLAN OF RAIL POST SPACINGS

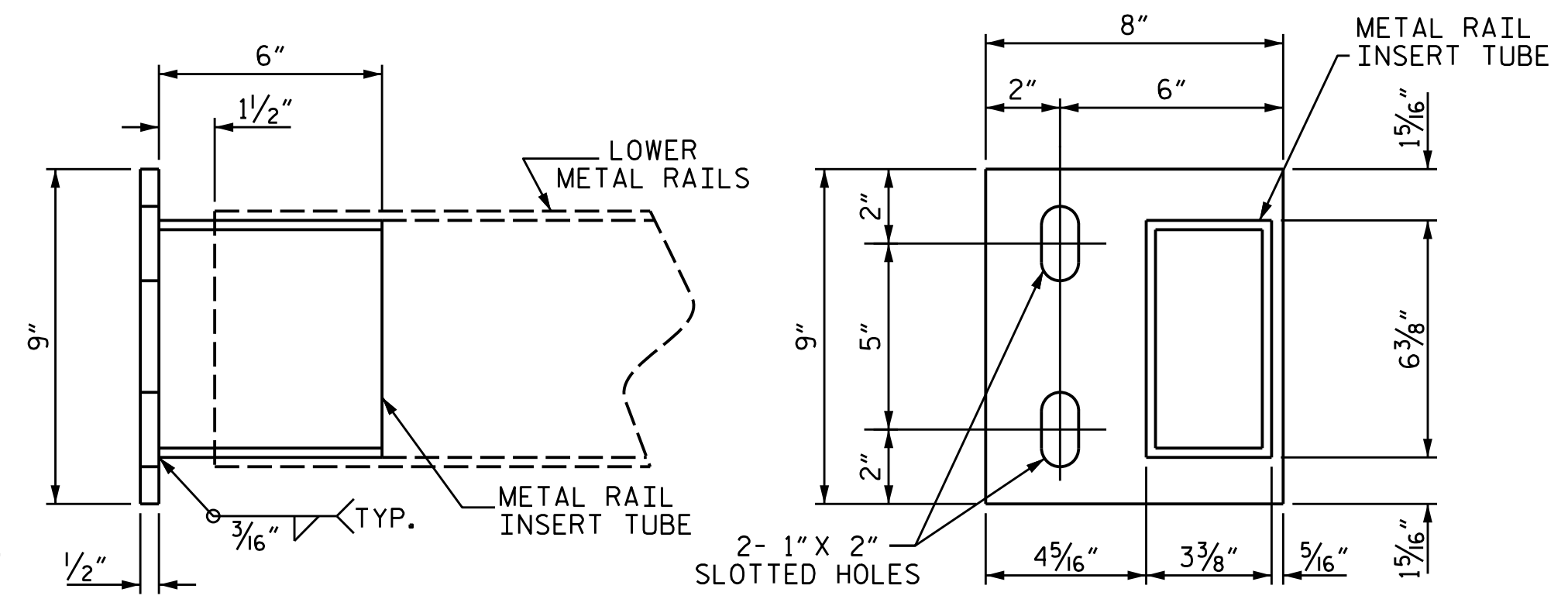


TOP METAL RAIL ATTACHMENT BRACKET

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

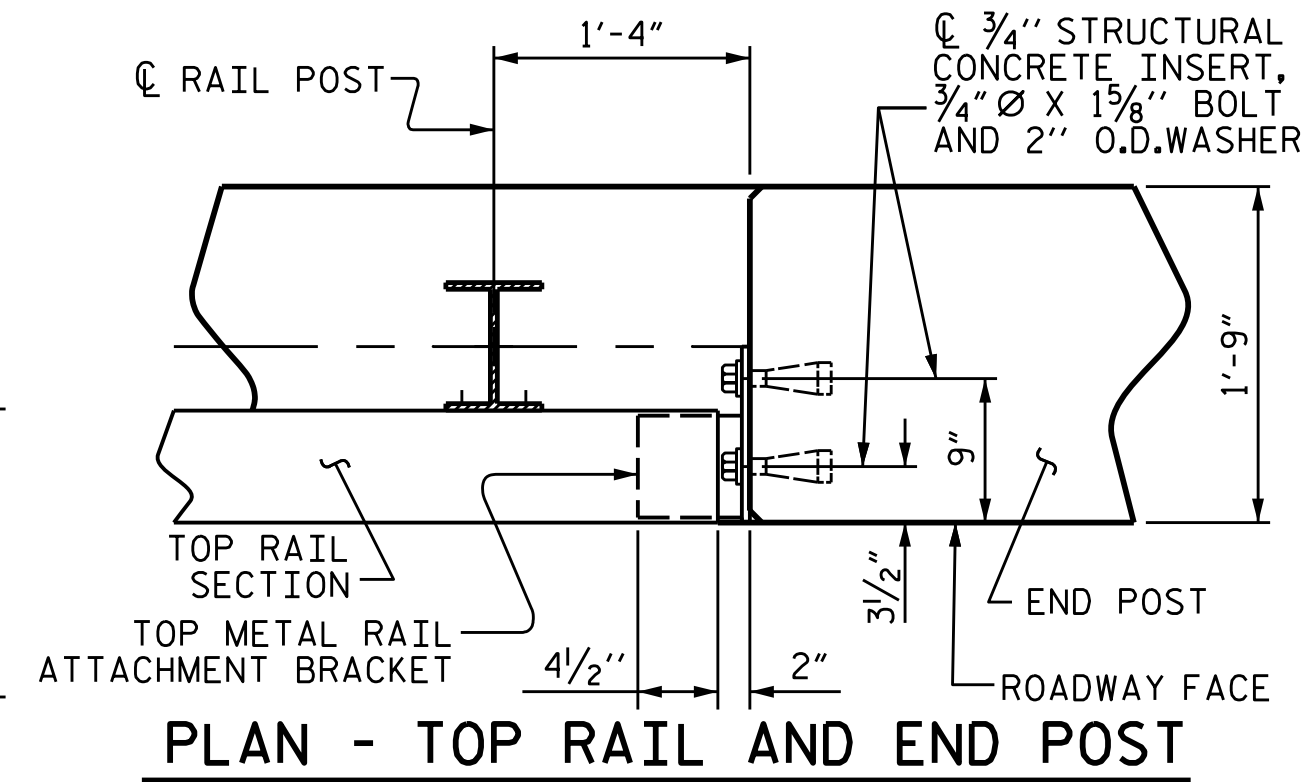


RAIL STUD DETAILS

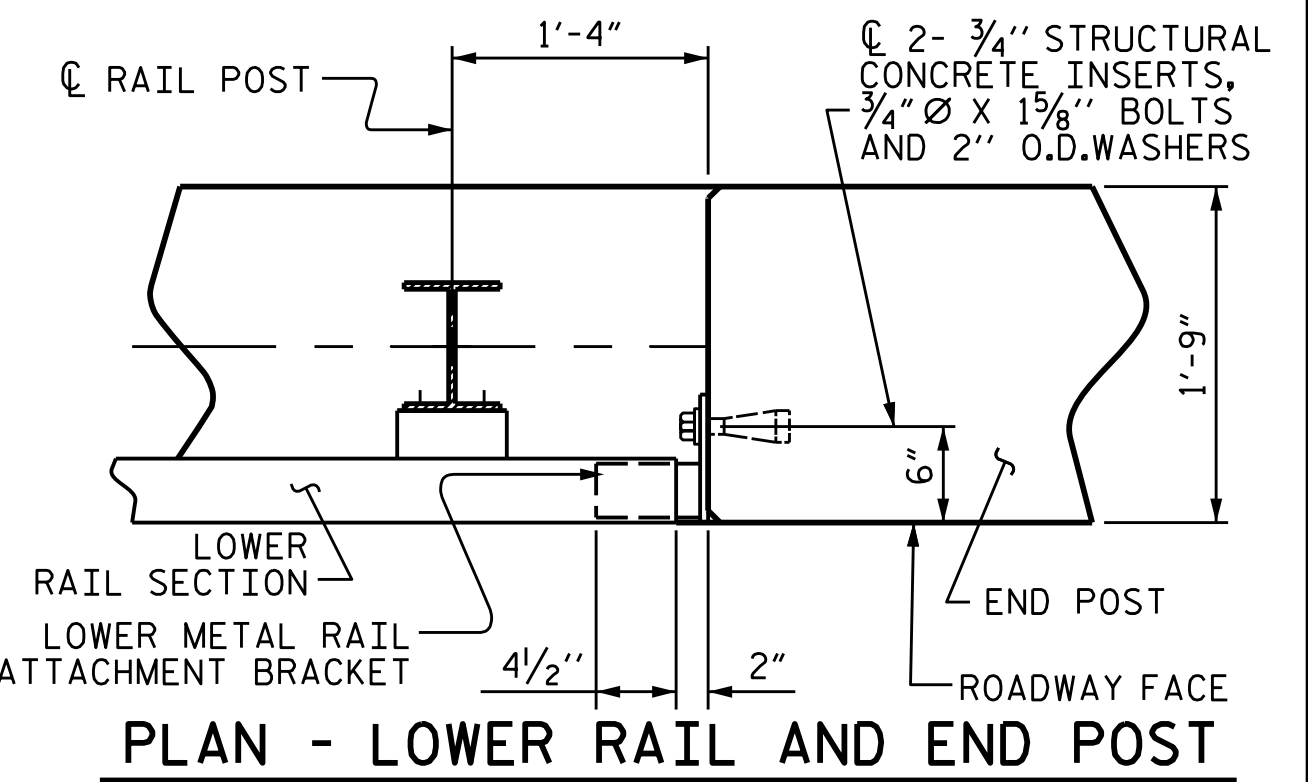


LOWER METAL RAILS ATTACHMENT BRACKET

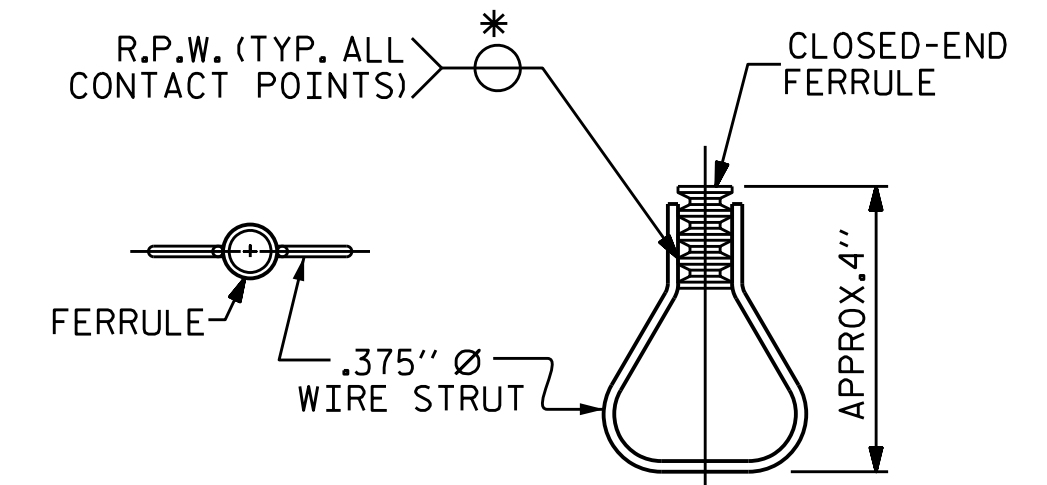
THE METAL RAIL INSERT TUBE SHALL BE FABRICATED FROM 1/4" PLATES.



PLAN - TOP RAIL AND END POST

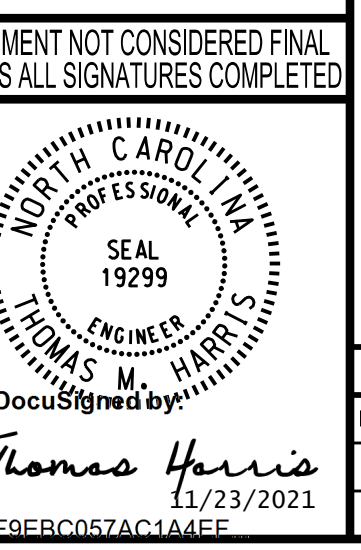


PLAN - LOWER RAIL AND END POST



STRUCTURAL CONCRETE INSERT

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



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 HAYWOOD COUNTY
 STATION: 15+00.00 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD RAIL POST SPACINGS AND END OF RAIL DETAILS FOR 42" OREGON RAIL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-12
					TOTAL SHEETS 26

NOTES

STRUCTURAL CONCRETE INSERT

- EACH STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- FERRULE SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
 - 1 - 3/4" Ø X 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
 - WIRE STRUT SHOWN IN THE STRUCTURAL CONCRETE INSERT DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

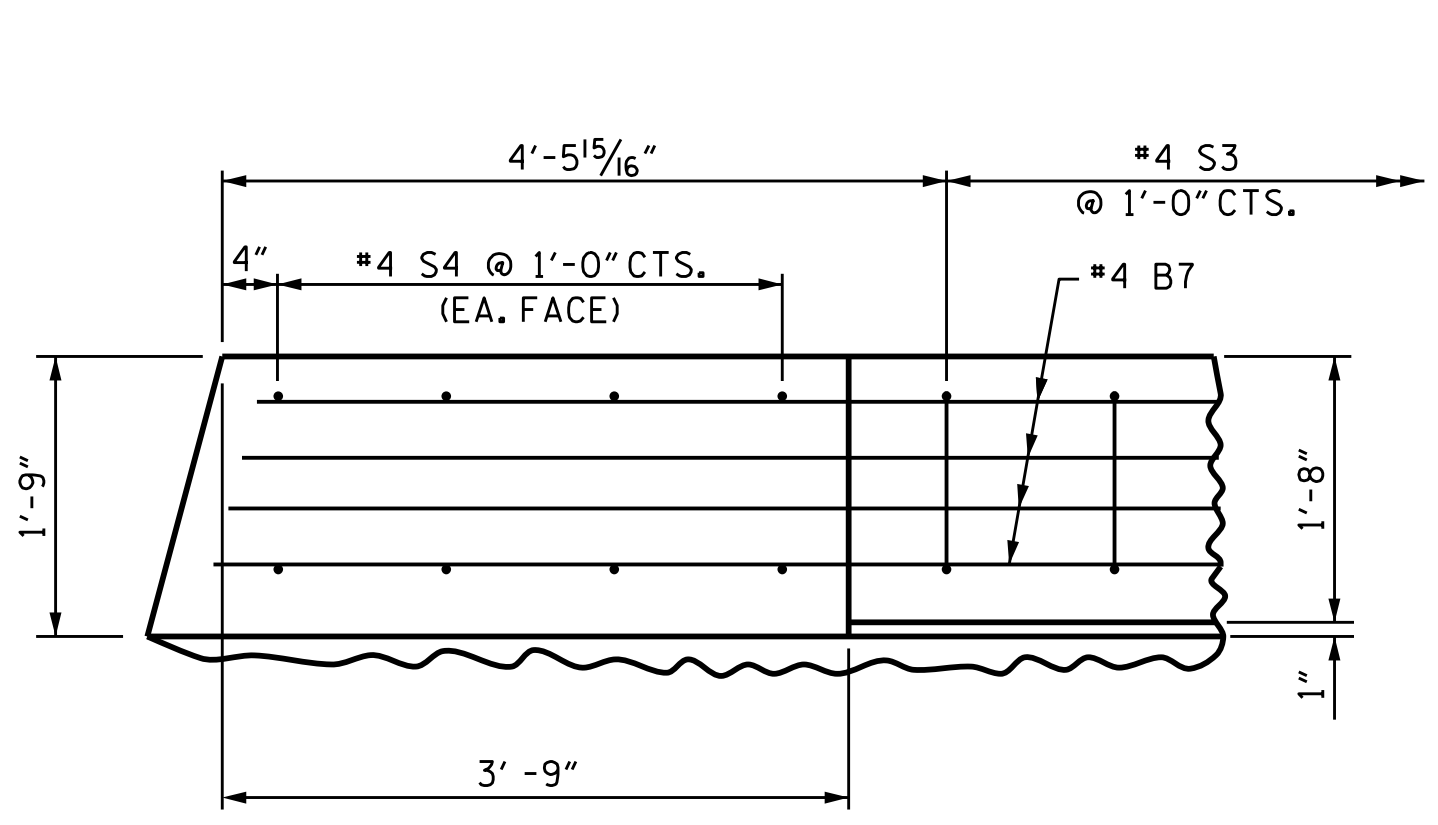
- EACH METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- 1/2" METAL BRACKET PLATE AND 1/4" METAL RAIL INSERT TUBE SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION TO AASHTO M111.
 - 3/4" STRUCTURAL CONCRETE INSERTS SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N. C. THREADS.
- THE 3/4" STRUCTURAL CONCRETE INSERTS WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP.
- THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT, THE 1/2" BRACKET PLATES, AND THE RAIL INSERT TUBES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLTS WITH WASHERS SHALL BE REPLACED WITH 3/4" Ø X 6 1/2" BOLTS AND 2" O.D. WASHERS. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLTS SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLTS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

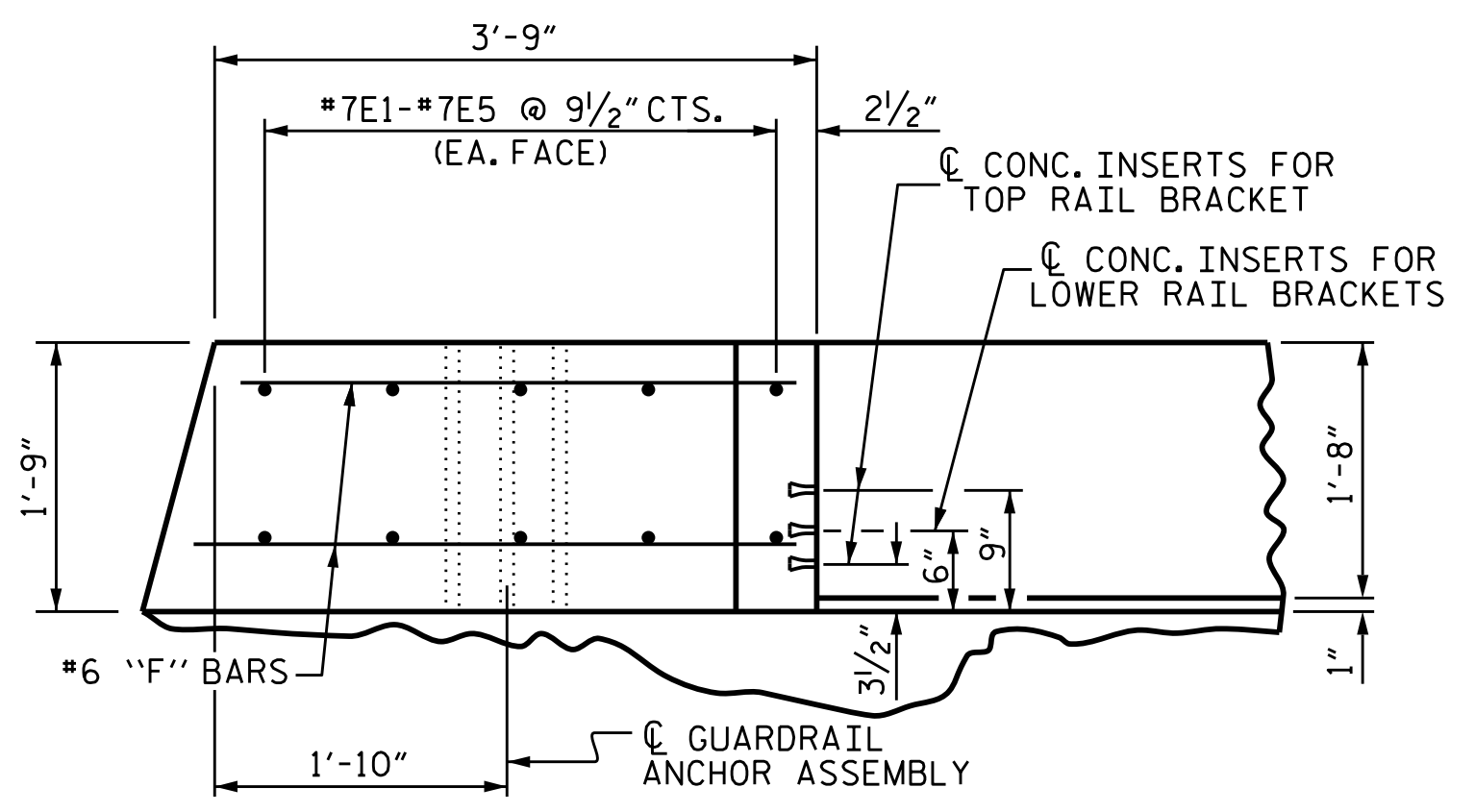
NOTES

END POST DETAILS ARE TYPICAL FOR ALL LOCATIONS.
 FOR DETAILS OF CONCRETE INSERTS, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS FOR 42" OREGON RAIL" SHEET 2 OF 2."
 FOR GUARDRAIL ANCHOR ASSEMBLY, SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS" SHEET.

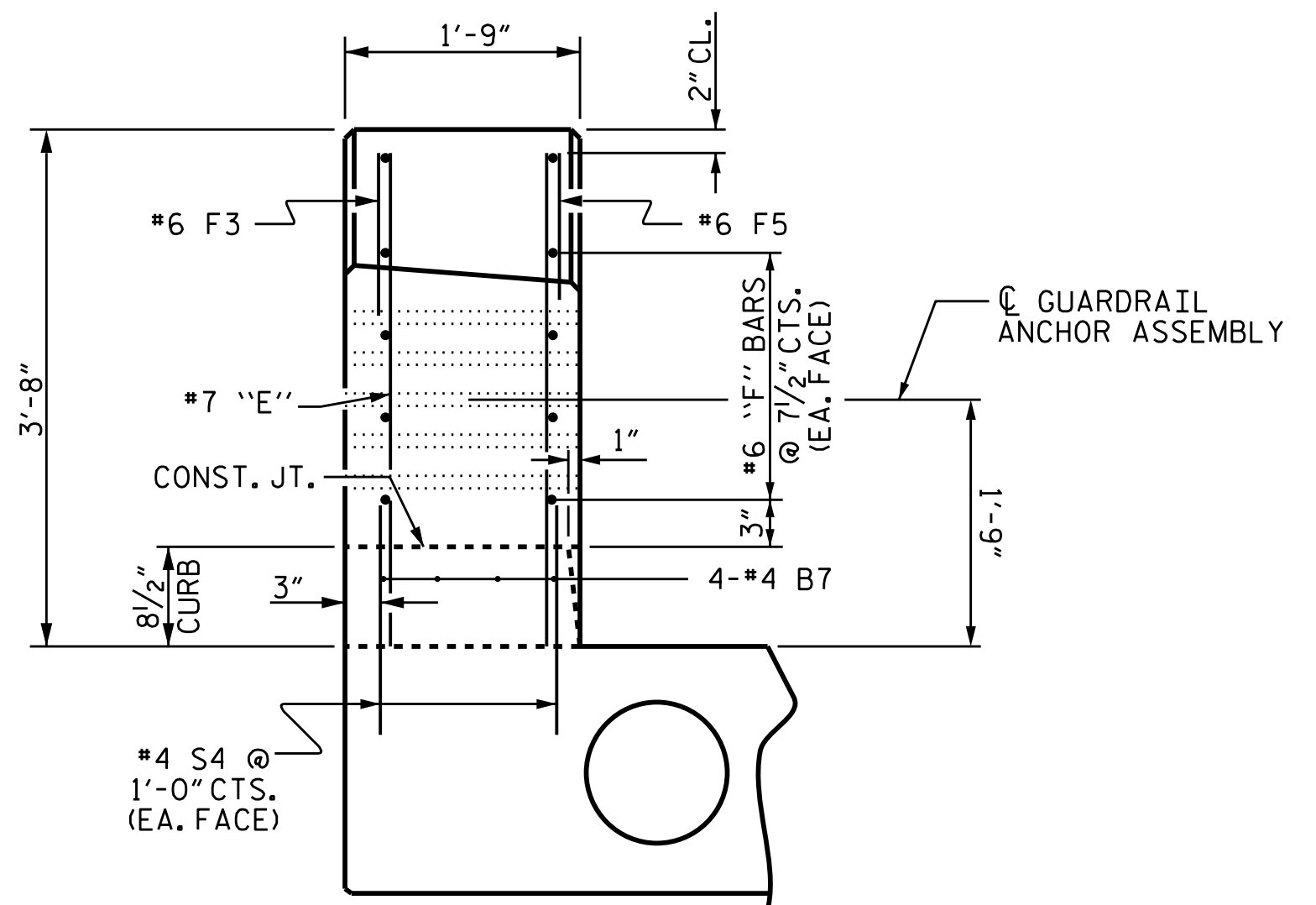
BILL OF MATERIAL FOR 42" OREGON RAIL END POST AND CURB (PER STAGE)						
BAR	BARS PER EXTERIOR UNIT 1 OR 9	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
* B7	16	16	#4	STR	14'-3"	152
* E1	2	2	#7	STR	2'-3"	9
* E2	2	2	#7	STR	2'-8"	11
* E3	2	2	#7	STR	2'-11"	12
* E4	2	2	#7	STR	3'-2"	13
* E5	2	2	#7	STR	3'-4"	14
* F1	3	3	#6	STR	3'-5"	15
* F2	2	2	#6	STR	2'-8"	8
* F3	1	1	#6	STR	3'-6"	5
* F4	3	3	#6	STR	3'-10"	17
* F5	1	1	#6	STR	4'-0"	6
* EPOXY COATED REINFORCING STEEL (PER STAGE)					LBS.	262
CLASS AA CONCRETE (2 END POST AND CURB, PER STAGE)					CU.YDS.	4.6
42" OREGON RAIL (PER STAGE)					LN. FT.	41.49



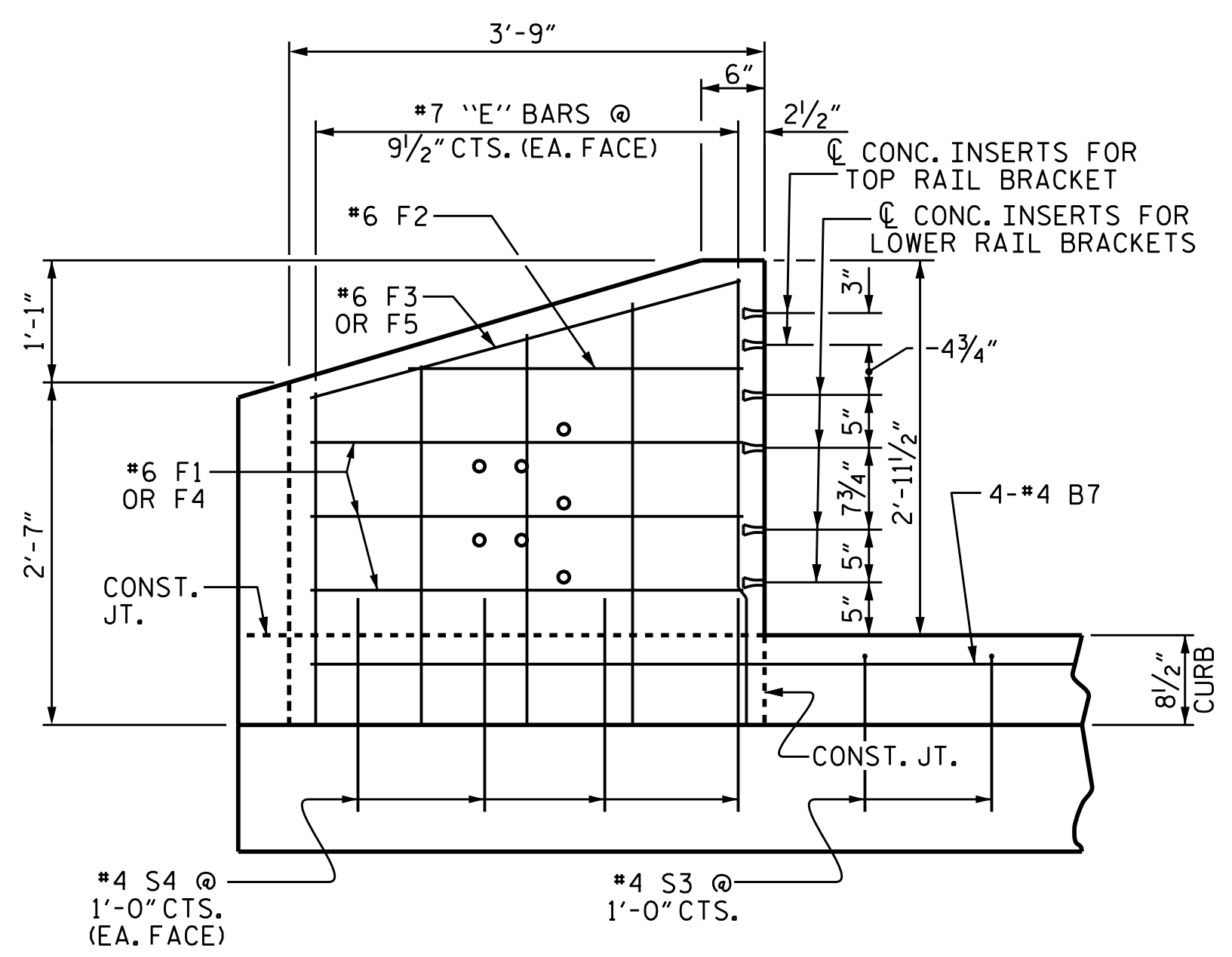
PLAN OF CURB



PLAN OF END POST



END VIEW



ELEVATION

CURB AND END POST FOR 42" OREGON RAIL

PROJECT NO. 17BP.14.R.177
 HAYWOOD COUNTY
 STATION: 15+00.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CONCRETE CURB
 AND END POST
 DETAILS

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

SHEET NO. S-13
 TOTAL SHEETS 26

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THOMAS M. HARRIS
 ENGINEER
 11/23/2021
 F9EBC057AC14A4EE

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 SUITE 1500
 RALEIGH, NC 27601
 TEL: 1.919.836.4040
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11/3/2021 4:18:36 PM - 2015 W Divisions Planning & Design On-Call\VI188360C Group 3 Bridges\17BP.14.R.177\Structures\Drafting\DGNS\401.025.17BP.14.R.177_SMU_BRO3.dgn

DESIGNED BY: J. WHEATLEY DATE: NOV 2021
 DRAWN BY: J. WHEATLEY DATE: NOV 2021
 CHECKED BY: T. KIRSCHBAUM DATE: NOV 2021
 DESIGN ENGINEER OF RECORD: T. HARRIS DATE: NOV 2021

NOTES

THE TEMPORARY GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF ASSHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2 1/2".
- B. 4 - 1" @ X 2 1/4" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1" @ X 2 1/4" GALVANIZED BOLTS 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.
- C. WIRE STRUTS SHOWN IN THE TEMPORARY GUARDRAIL ANCHOR ASSEMBLY DETAIL ARE THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI.

TEMPORARY GUARDRAIL ANCHOR ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.

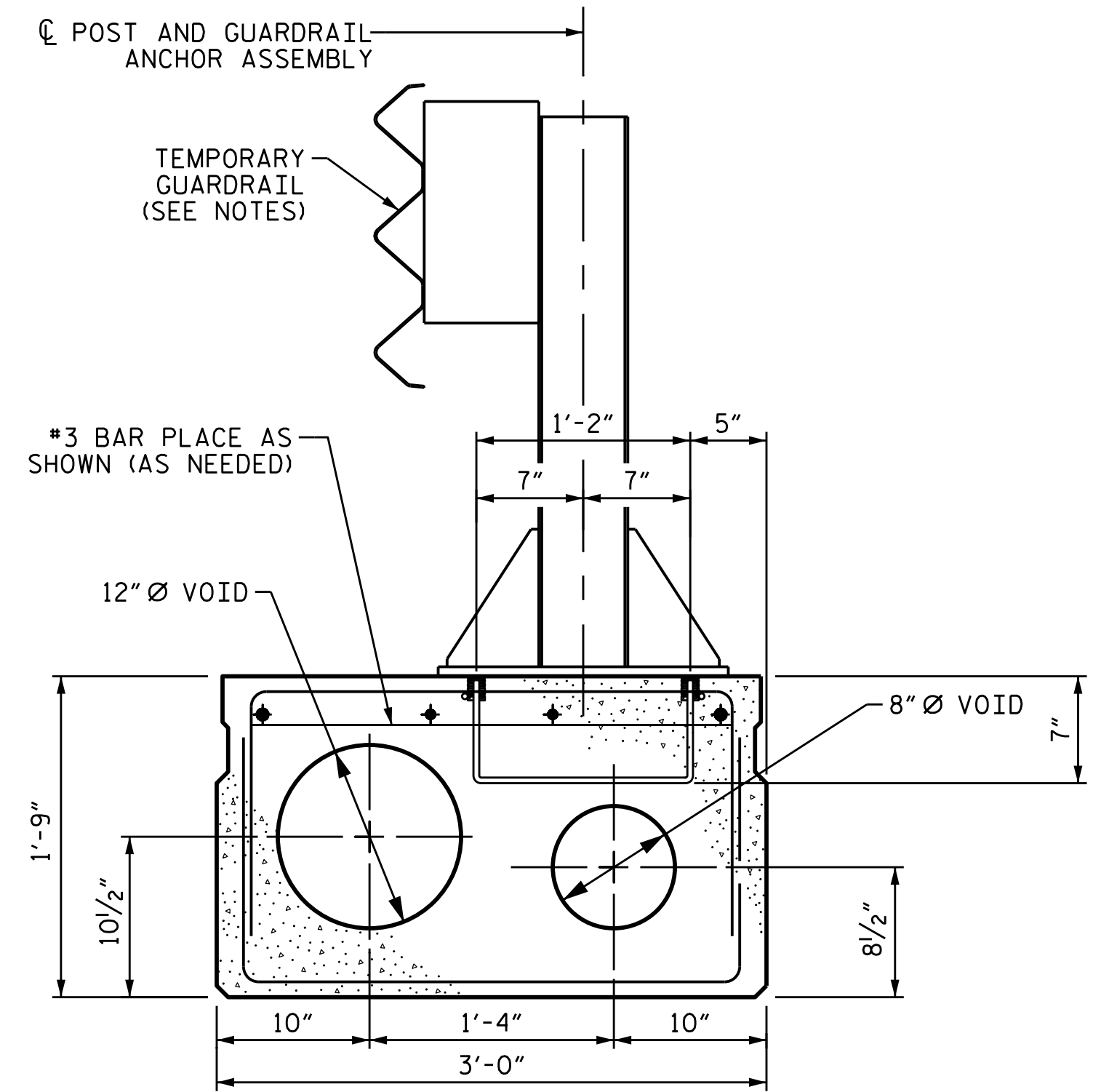
THE COST OF THE TEMPORARY GUARDRAIL ANCHOR ASSEMBLY COMPLETE IN PLACE, SHALL BE INCLUDED, AS APPLICABLE, IN THE UNIT CONTRACT PRICE BID FOR 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB OR LUMP SUM PRICE BID FOR APPROACH SLABS.

FERRULES TO BE PLUGGED DURING THE CASTING OF THE CORED SLAB UNITS OR POURING OF APPROACH SLAB AS RECOMMENDED BY THE MANUFACTURER.

AT THE CONTRACTOR'S OPTION, FERRULES WITH OPEN OR CLOSED ENDS MAY BE USED.

PAYMENT FOR TEMPORARY GUARDRAIL, POST AND POST PLATES IS INCLUDED IN ROADWAY PAY ITEMS.

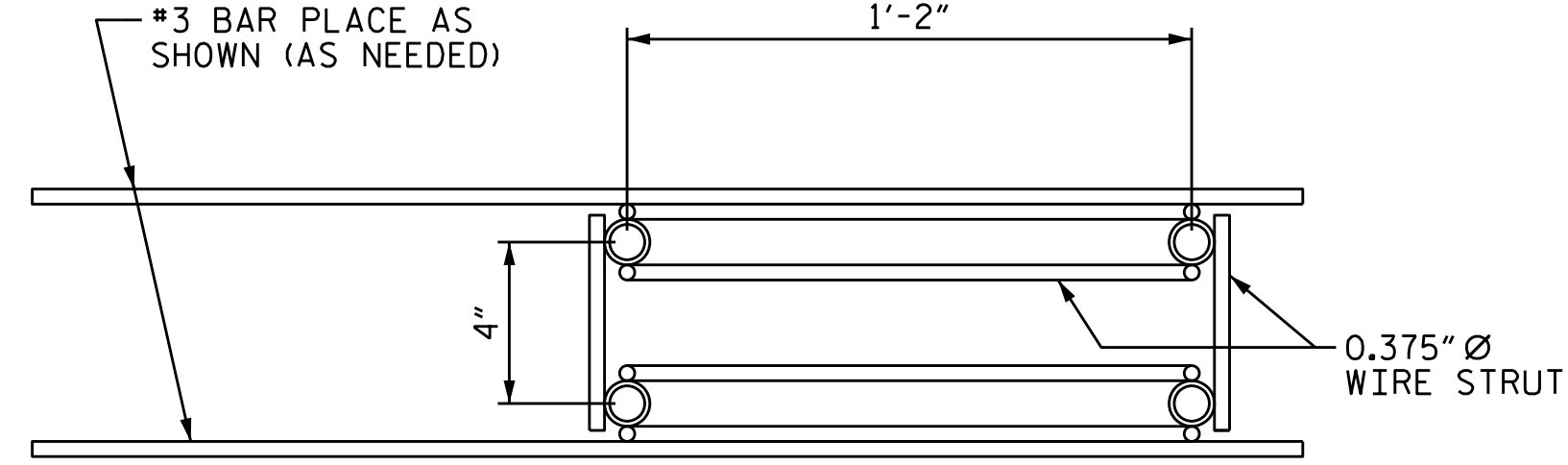
FOR APPROACH SLAB DETAILS, SEE SHEETS S-25.



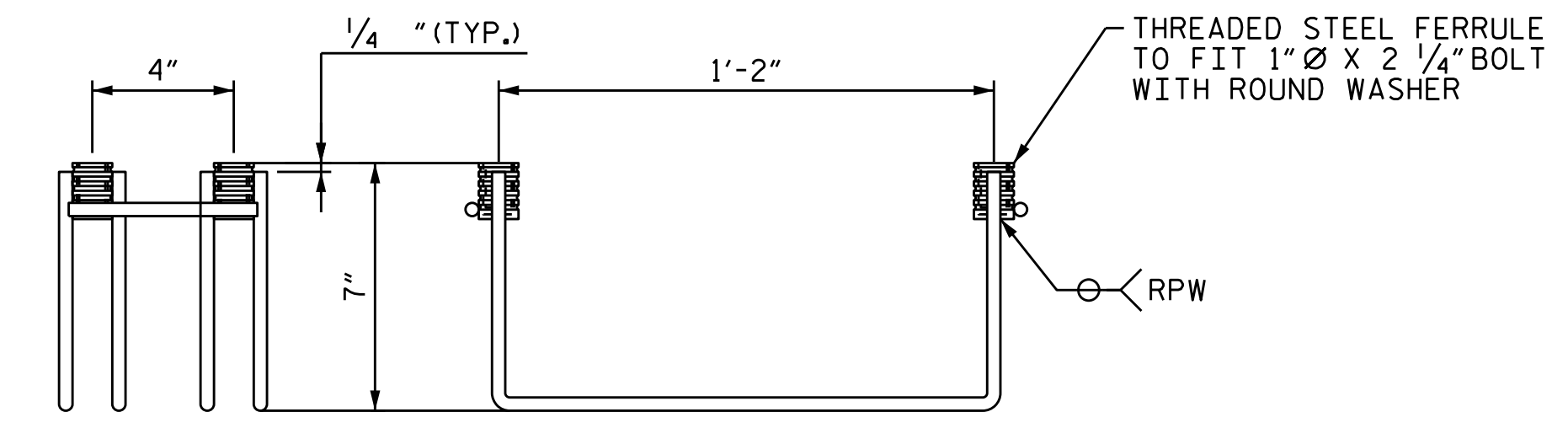
SECTION OF ANCHOR ASSEMBLY LOCATION

(TYPE III UNIT OF STAGE I)

THE #3 BARS ARE INCIDENTAL AND THEIR COST SHALL BE INCLUDED IN THE PRICE BID FOR THE PRESTRESSED CONCRETE CORED SLABS.



PLAN

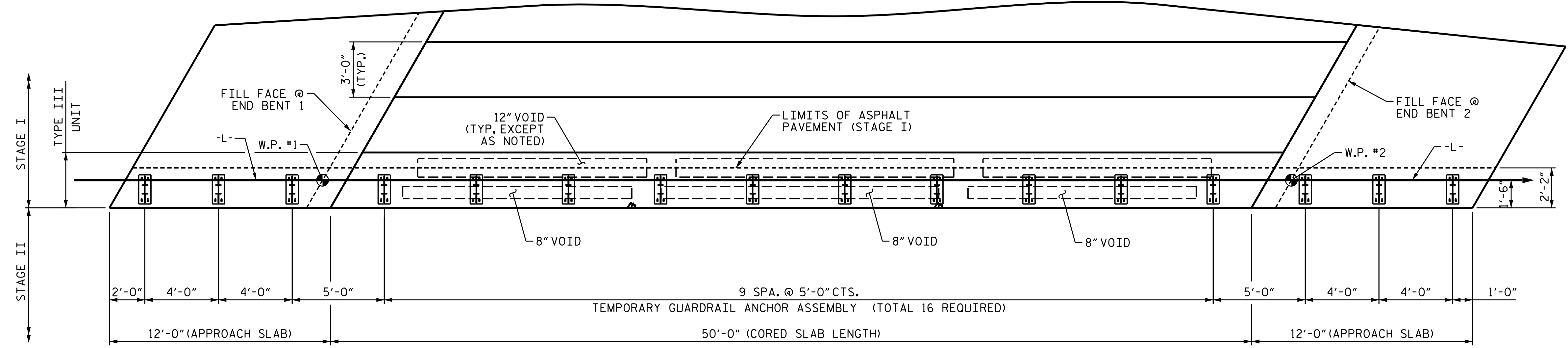


SIDE VIEW

ELEVATION

TEMPORARY GUARDRAIL ANCHOR ASSEMBLY

(10 ASSEMBLIES REQUIRED IN THE TYPE III CORED SLAB UNIT)
(6 ASSEMBLIES REQUIRED IN THE APPROACH SLABS)



RAIL POST SPACING FOR TEMPORARY GUARDRAIL - STAGE I

PROJECT NO. 17BP.14.R.177
HAYWOOD COUNTY
STATION: 15+00.00 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ANCHORAGE DETAILS FOR
TEMPORARY GUARDRAIL
ANCHOR ASSEMBLY FOR
TYPE III CORED SLAB

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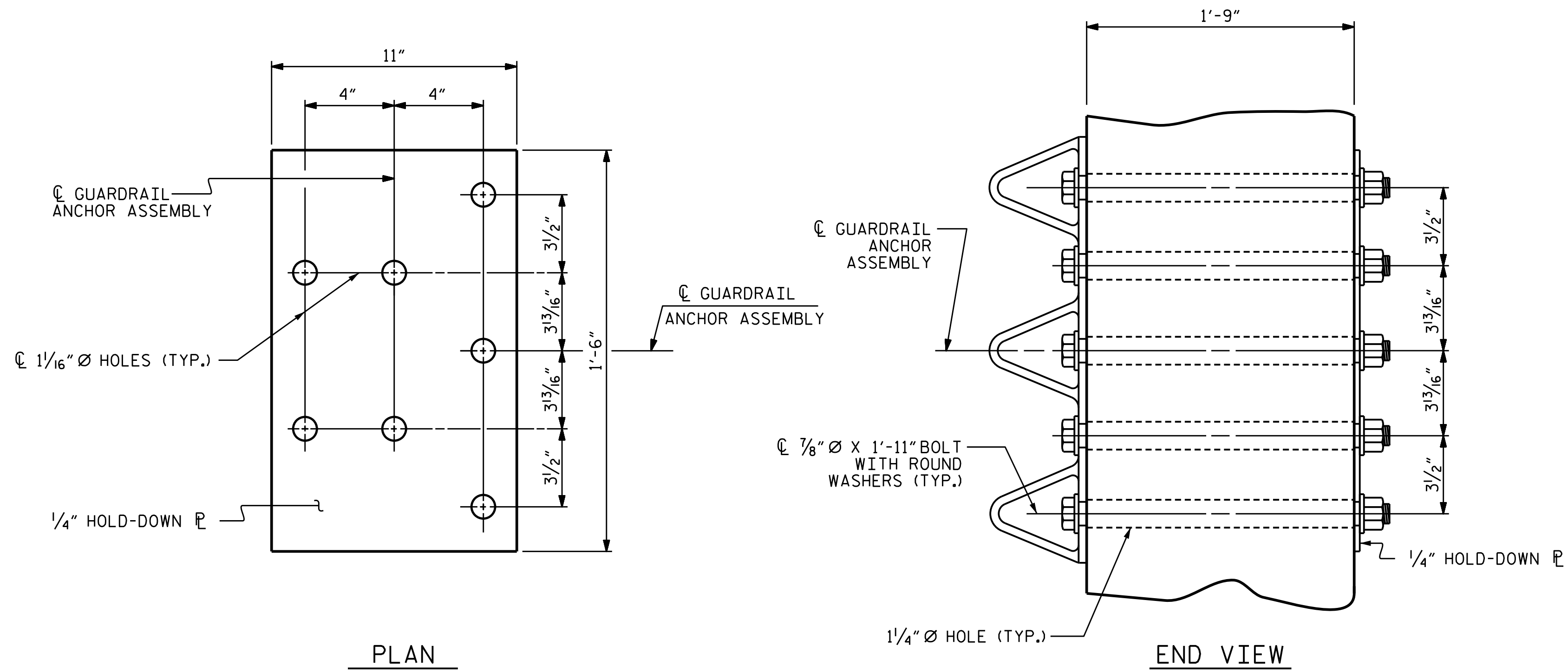
DocuSigned by:
Thomas M. Harris
11/23/2021
E9EBC057AC14A4E

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1			3			S-14
2			4			TOTAL SHEETS 26

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11/3/2021 4:18:36OC - 2015 W Divisions Planning & Design On-Call\18836OC Group 3 Bridges\17BP.14.R.177\Structures\Drafting\DGNS\401.027.17BP.14.R.177_SML_TGRA.dgn

DESIGNED BY:	J. WHEATLEY	DATE:	NOV 2021
DRAWN BY:	J. WHEATLEY	DATE:	NOV 2021
CHECKED BY:	T. KIRSCHBAUM	DATE:	NOV 2021
DESIGN ENGINEER OF RECORD:	T. HARRIS	DATE:	NOV 2021



GUARDRAIL ANCHOR ASSEMBLY DETAILS

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 THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

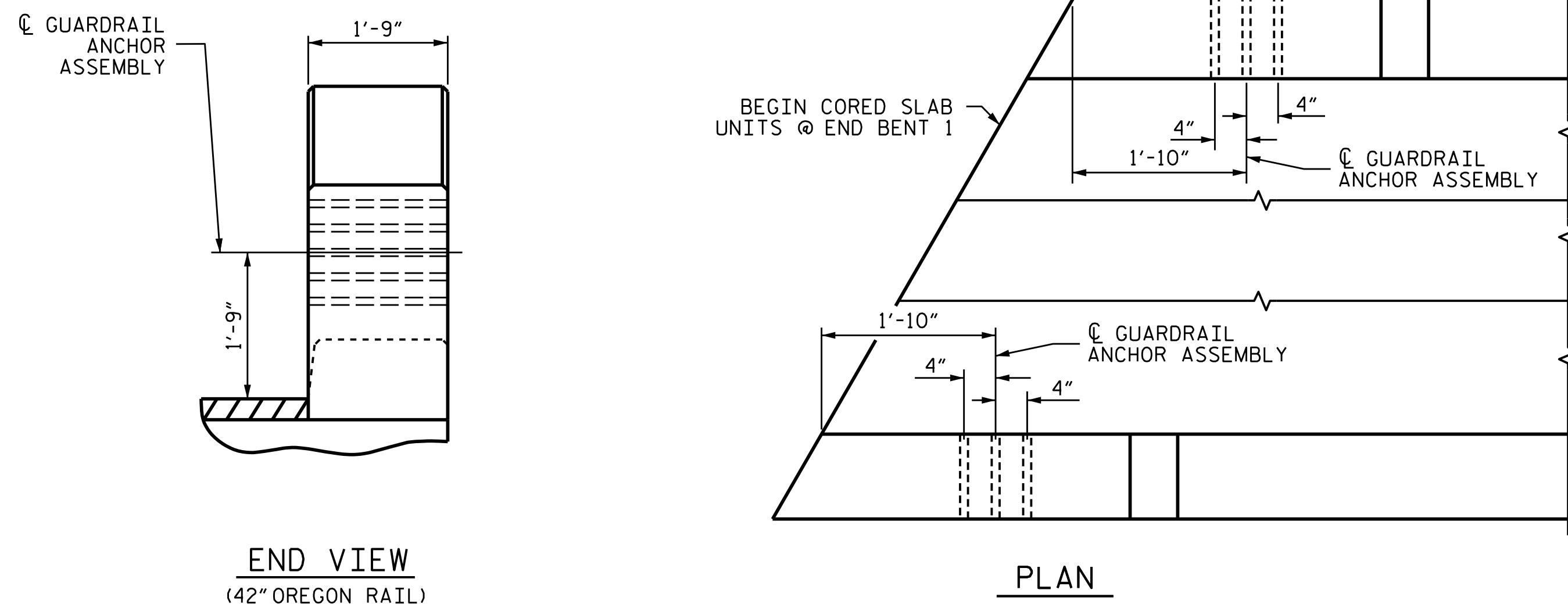
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

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



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. 17BP.14.R.177
HAYWOOD COUNTY
 STATION: 15+00.00 -L-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-15
					TOTAL SHEETS 26

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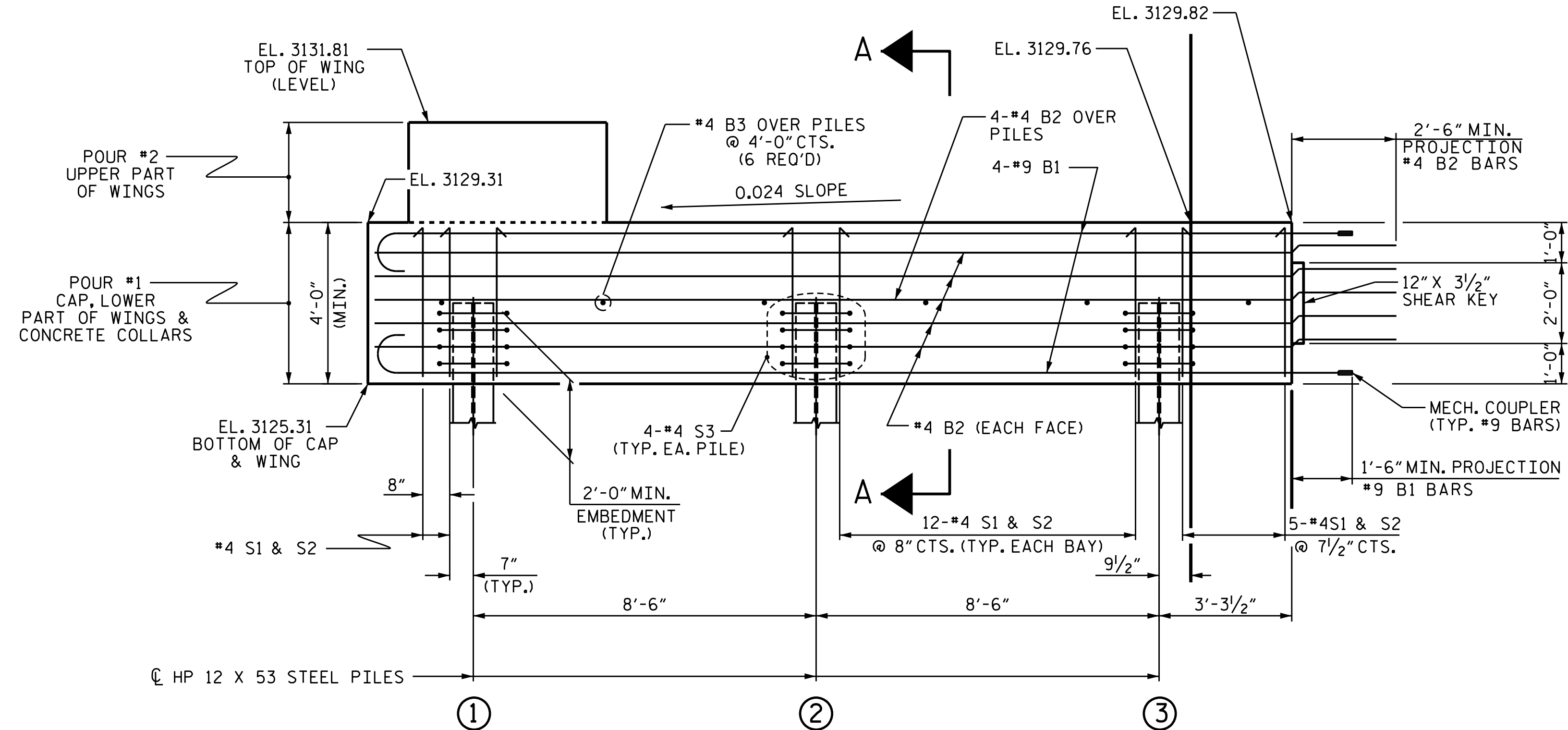
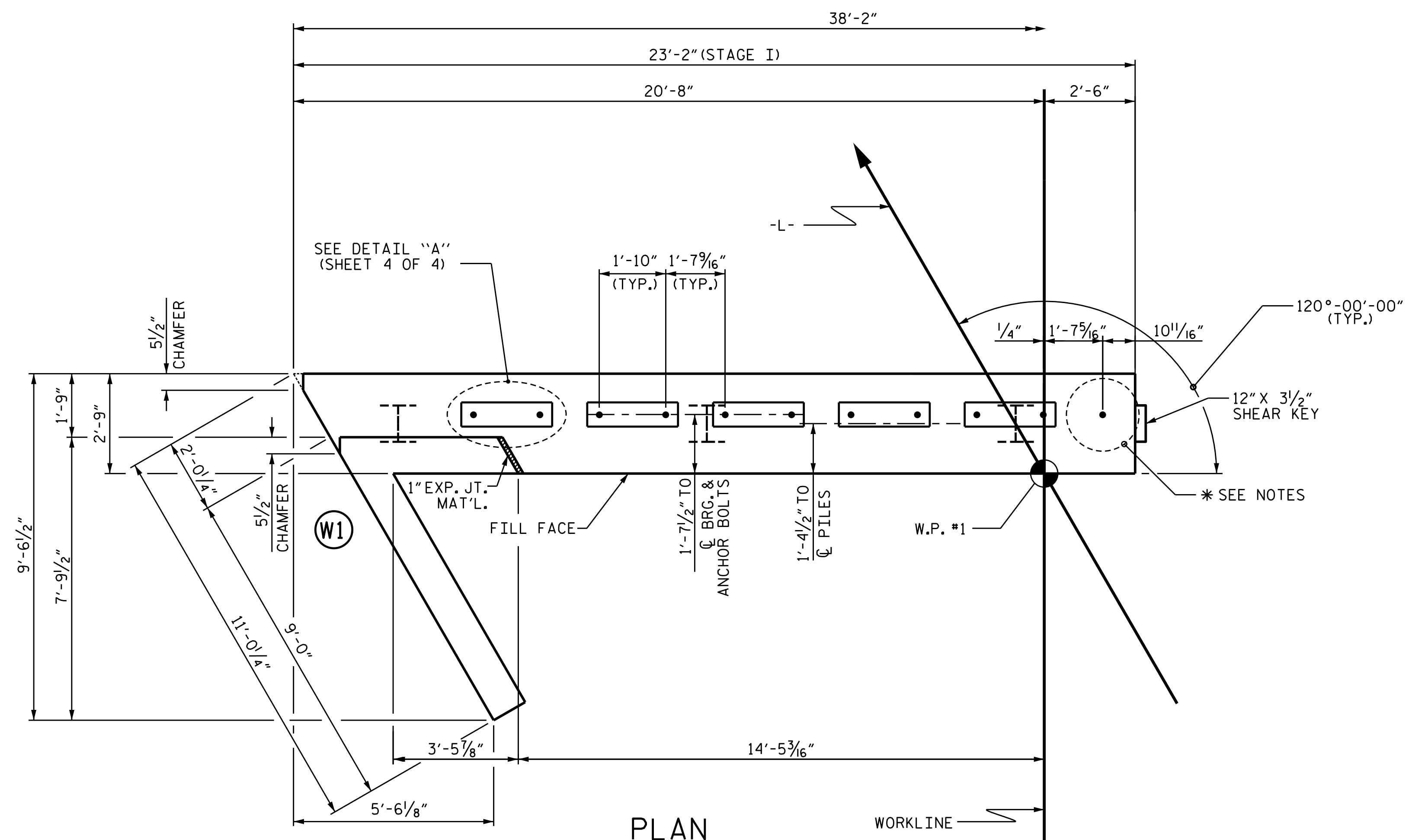
THOMAS M. HARRIS
ENGINEER
11/23/2021
17BP14R177

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SUITE 1500
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ASSEMBLED BY: J. WHEATLEY	DATE: NOV 2021	DRAWN BY: MAA	5/10	REV. 1/15	MAA/TMG
CHECKED BY: T. KIRSCHBAUM	DATE: NOV 2021	CHECKED BY: GM	5/10	REV. 12/17	MAA/THC
DESIGN ENGINEER OF RECORD: T. HARRIS	DATE: NOV 2021			REV. 5/18	MAA/THC



TOP OF PILE ELEVATIONS	
①	3127.37
②	3127.58
③	3127.78

PROJECT NO. 17BP.14.R.177
HAYWOOD COUNTY
 STATION: 15+00.00 -L-
 SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1
 STAGE I

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS 26
2			4			

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 PROFESSIONAL ENGINEER
 SEAL 19299
 11/23/2021
 E9EBC057AC14A4E

wsp

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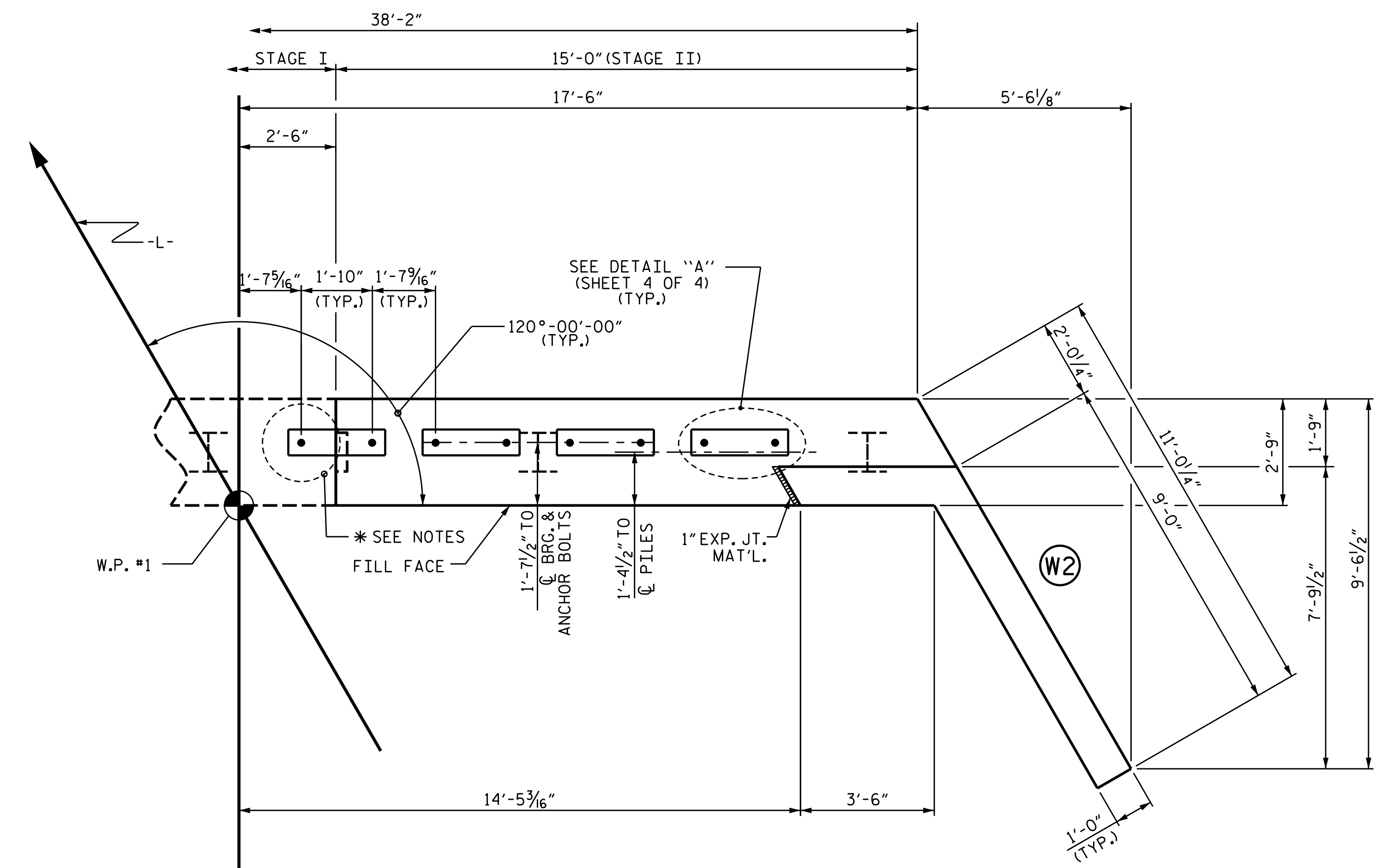
ELEVATION

WINGS NOT SHOWN FOR CLARITY.
 FOR SECTION A-A, SEE SHEET 4 OF 4.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN
 AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

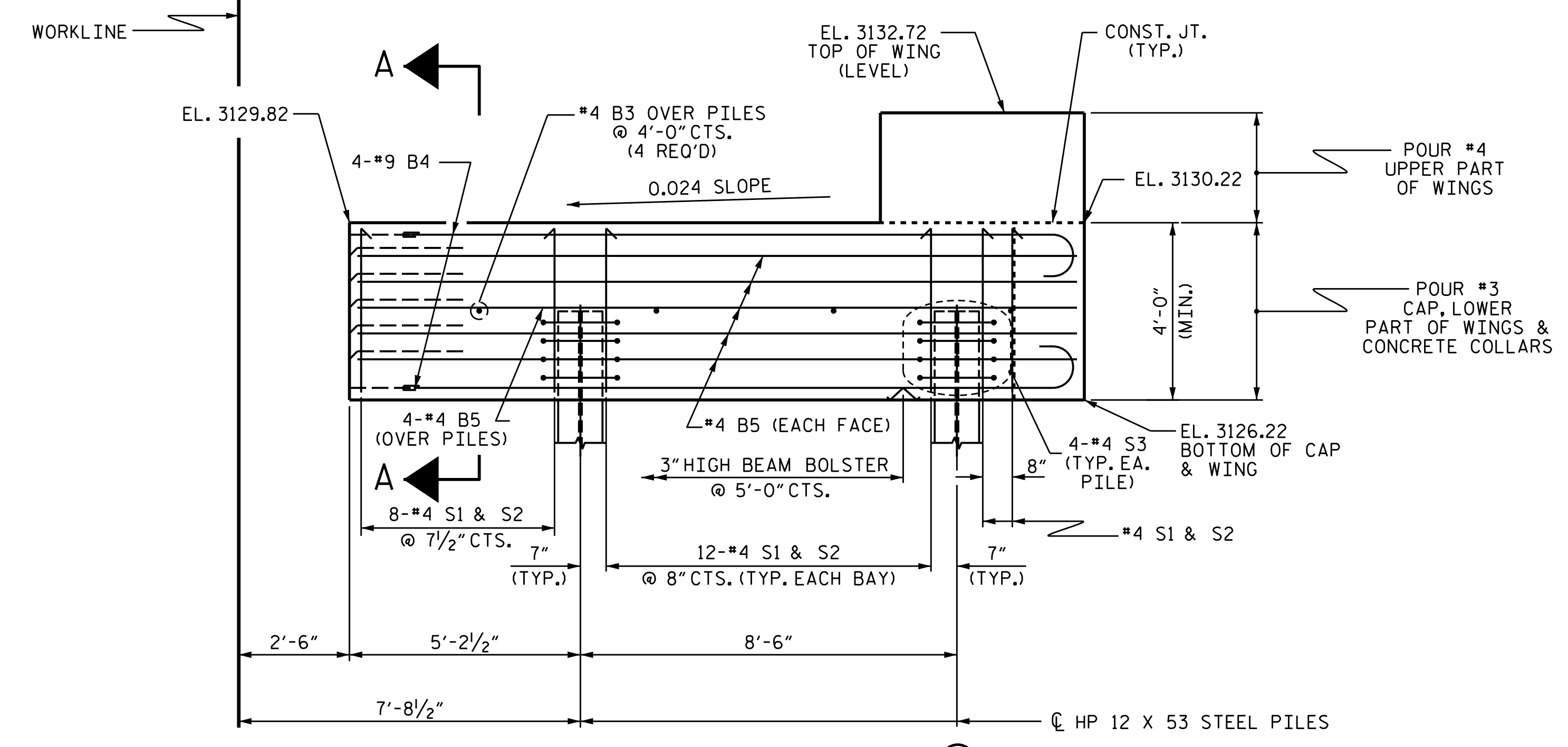
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CHECKED BY : AAC 12/11		
ASSEMBLED BY : J. WHEATLEY DATE : NOV 2021		
CHECKED BY : T. KIRSCHBAUM DATE : NOV 2021		
DESIGN ENGINEER OF RECORD : T. HARRIS DATE : NOV 2021		

11/3/2021
 J:\188360C - 2015 W Divisions Planning & Design On-Call\188360C Group 3 Bridges\17BP.14.R.177\430237\Structures\Drafting\DGNS\401_031_17BP.14.R.177_SMU_EBI01.dgn

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PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
 FOR SECTION A-A, SEE SHEET 4 OF 4.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN
 AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

NOTES
 FOR NOTES SHEET SHEET 1 OF 4.

TOP OF PILE ELEVATIONS	
④	3127.98
⑤	3128.18

PROJECT NO. 17BP.14.R.177
HAYWOOD COUNTY
 STATION: 15+00.00 -L-
 SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1
 STAGE II

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			26

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

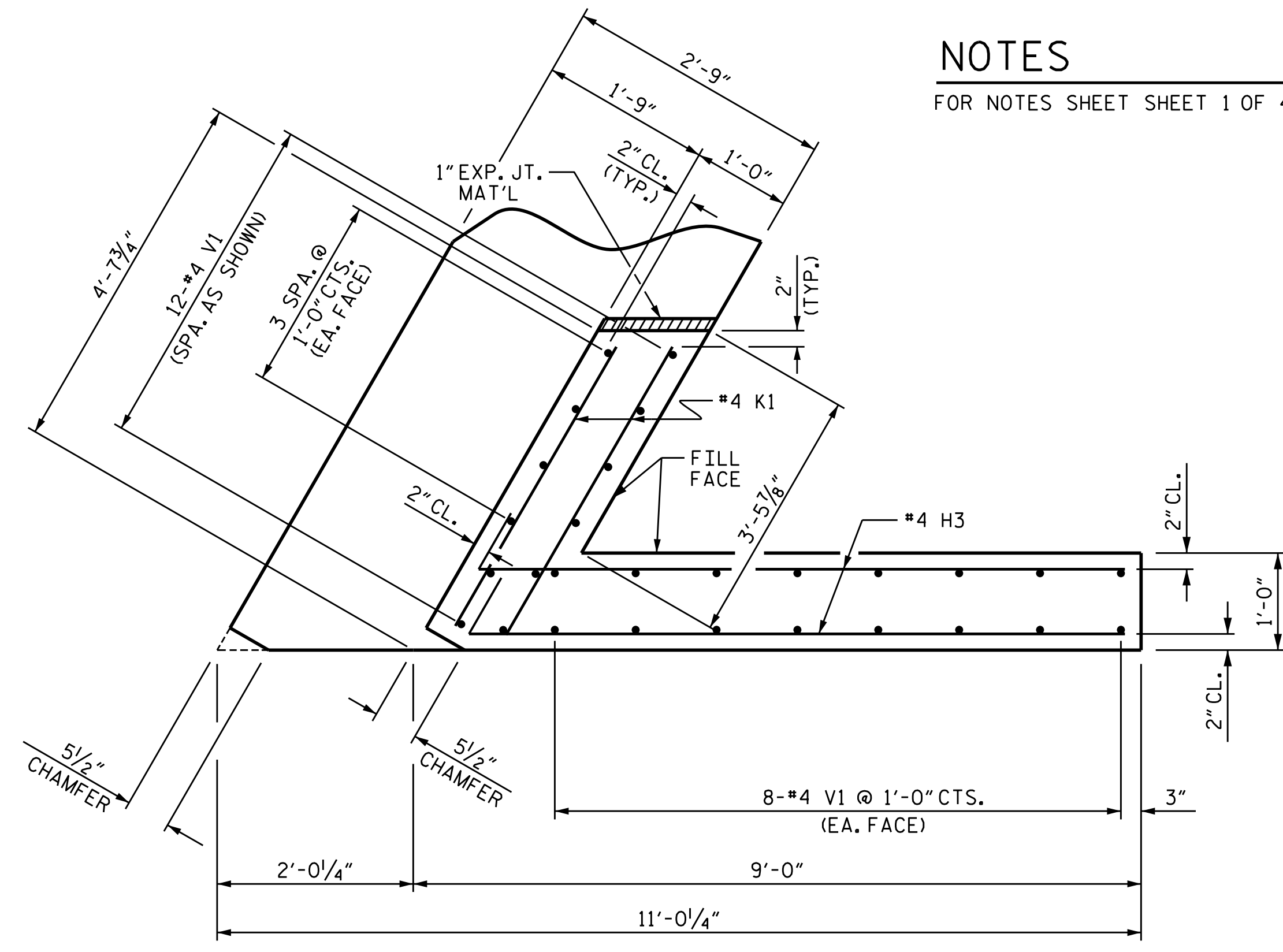
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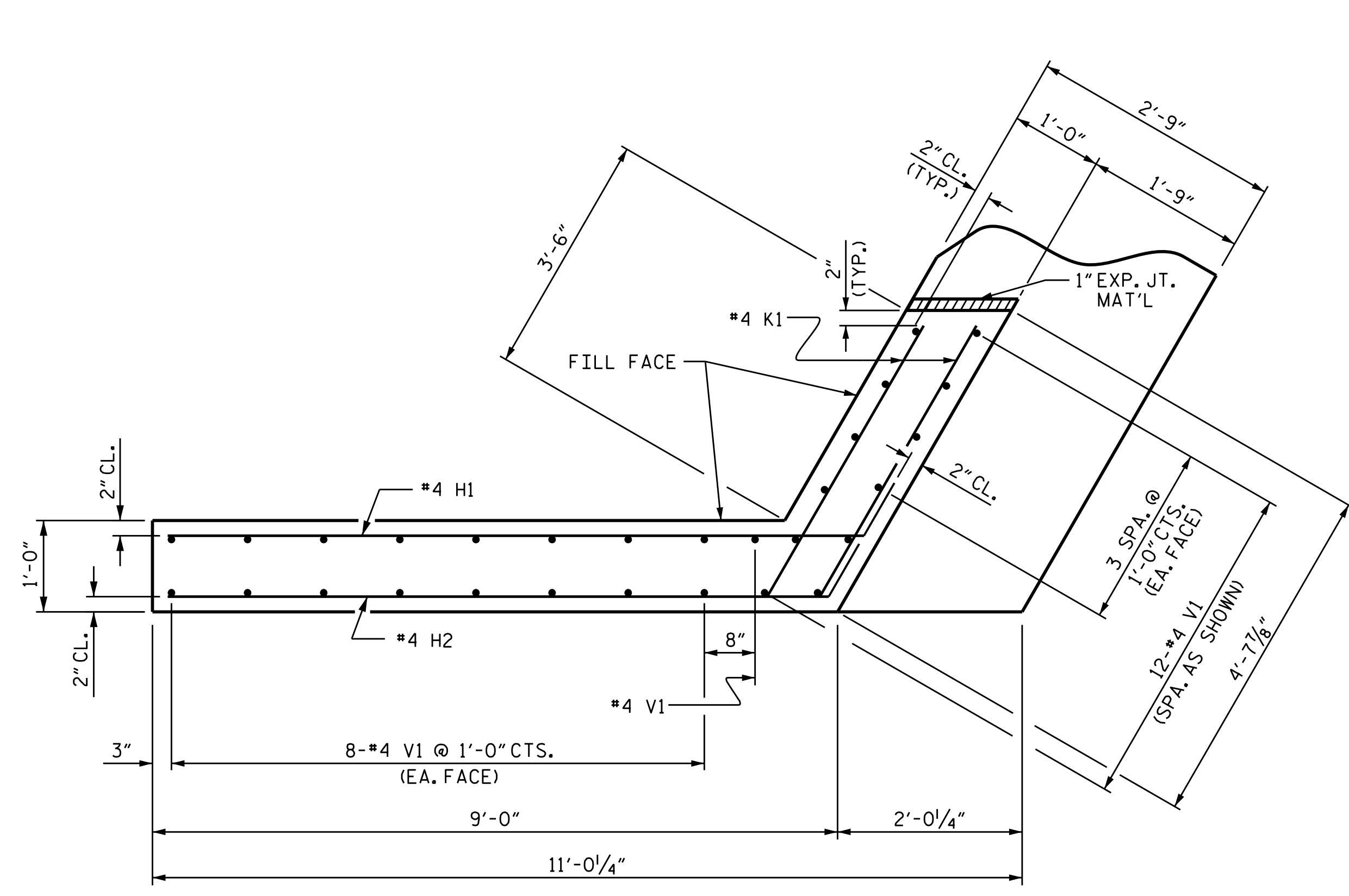
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 PROFESSIONAL ENGINEER
 SEAL 19299
 11/23/2021
 E9EBC057AC14A4EE

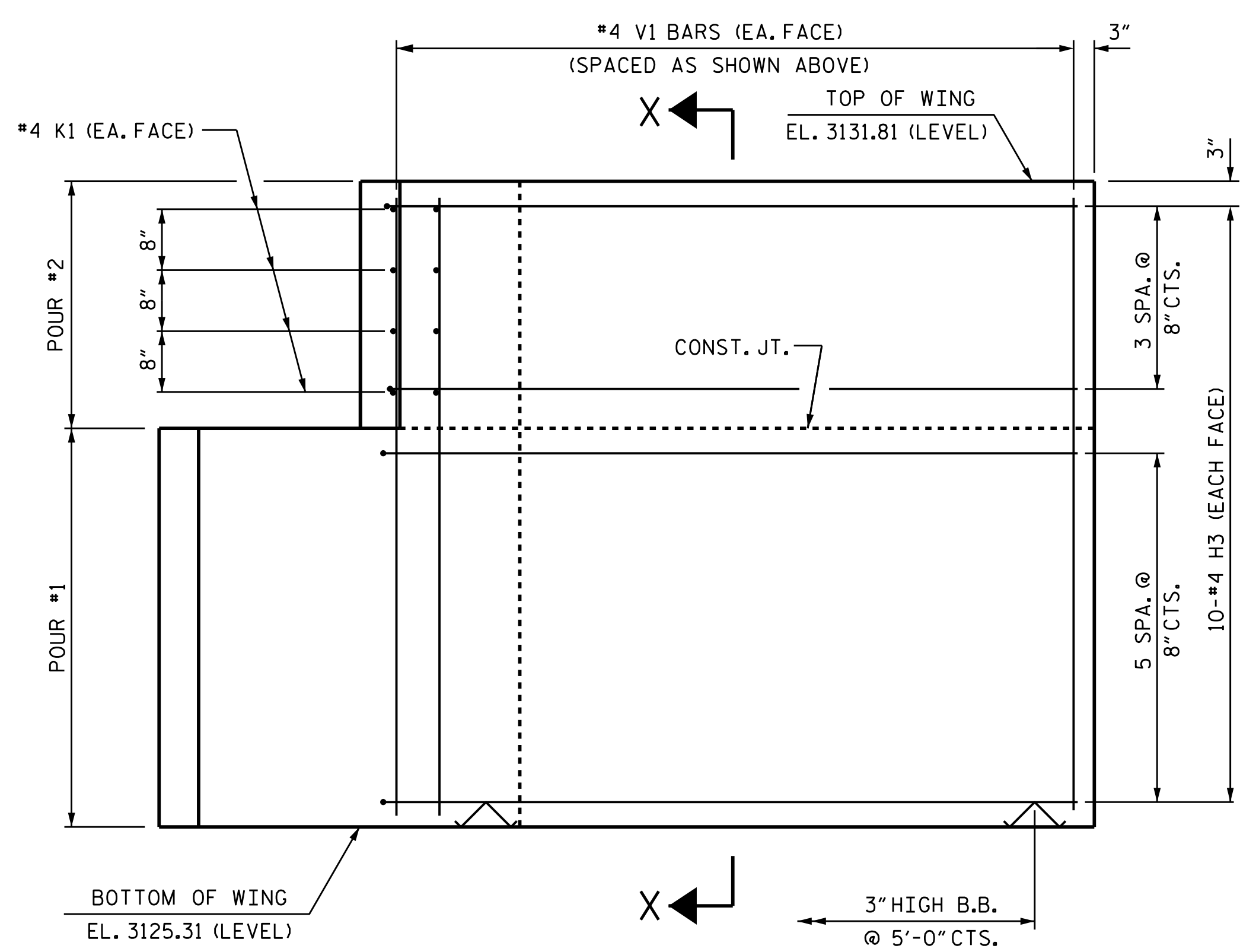
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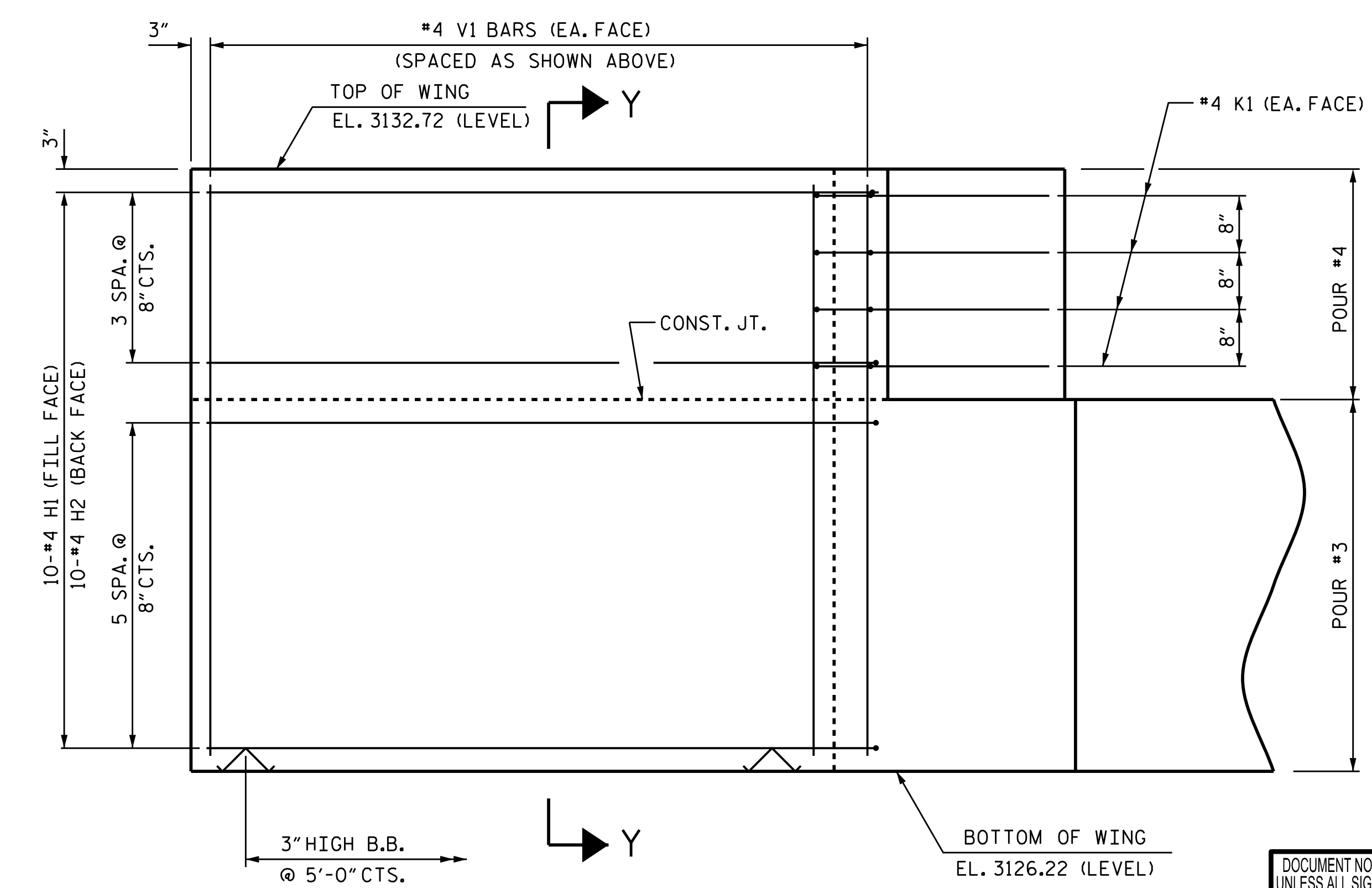
PLAN OF WING (W1)
STAGE I



PLAN OF WING (W2)
STAGE II



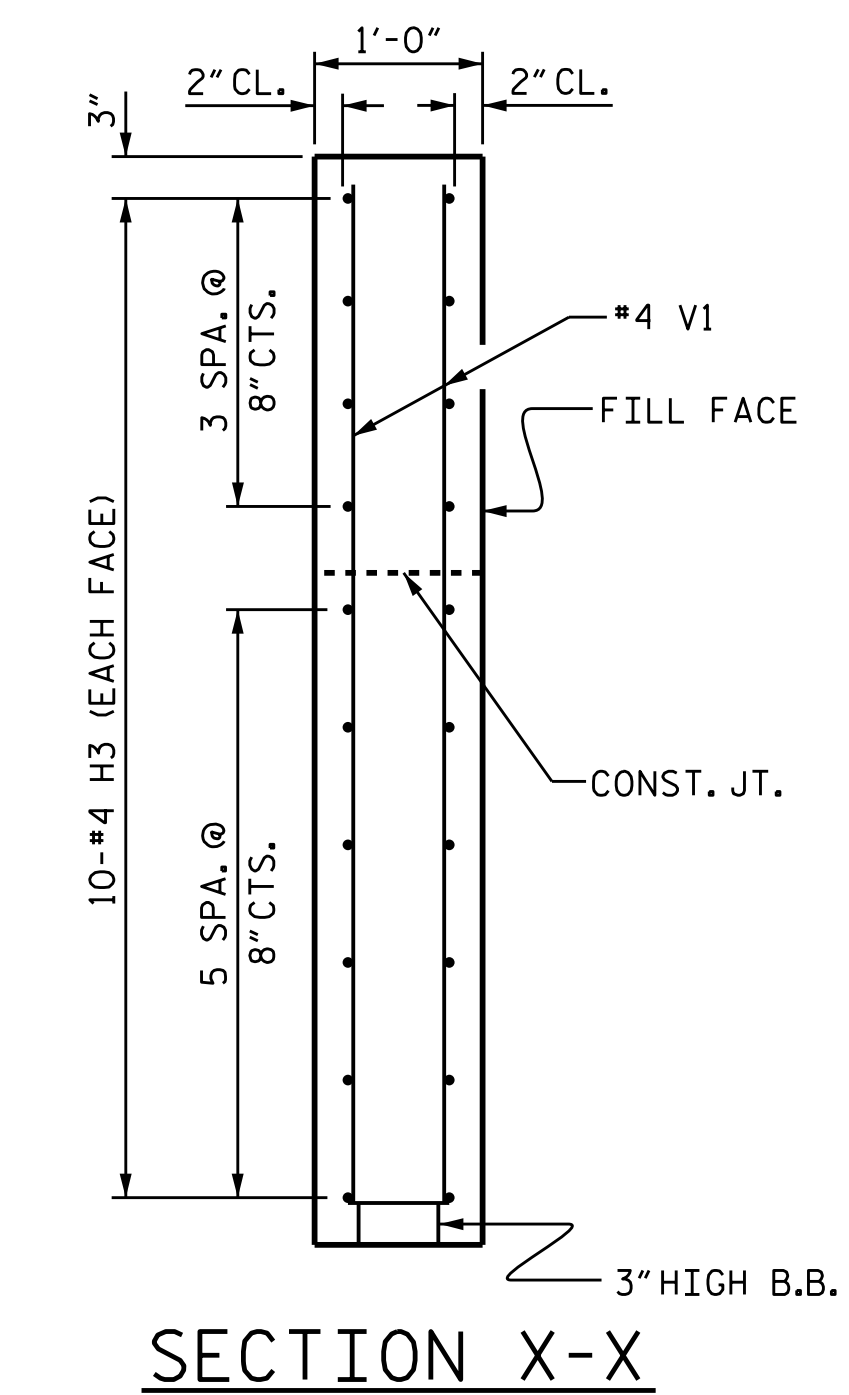
ELEVATION OF WING (W1)
STAGE I



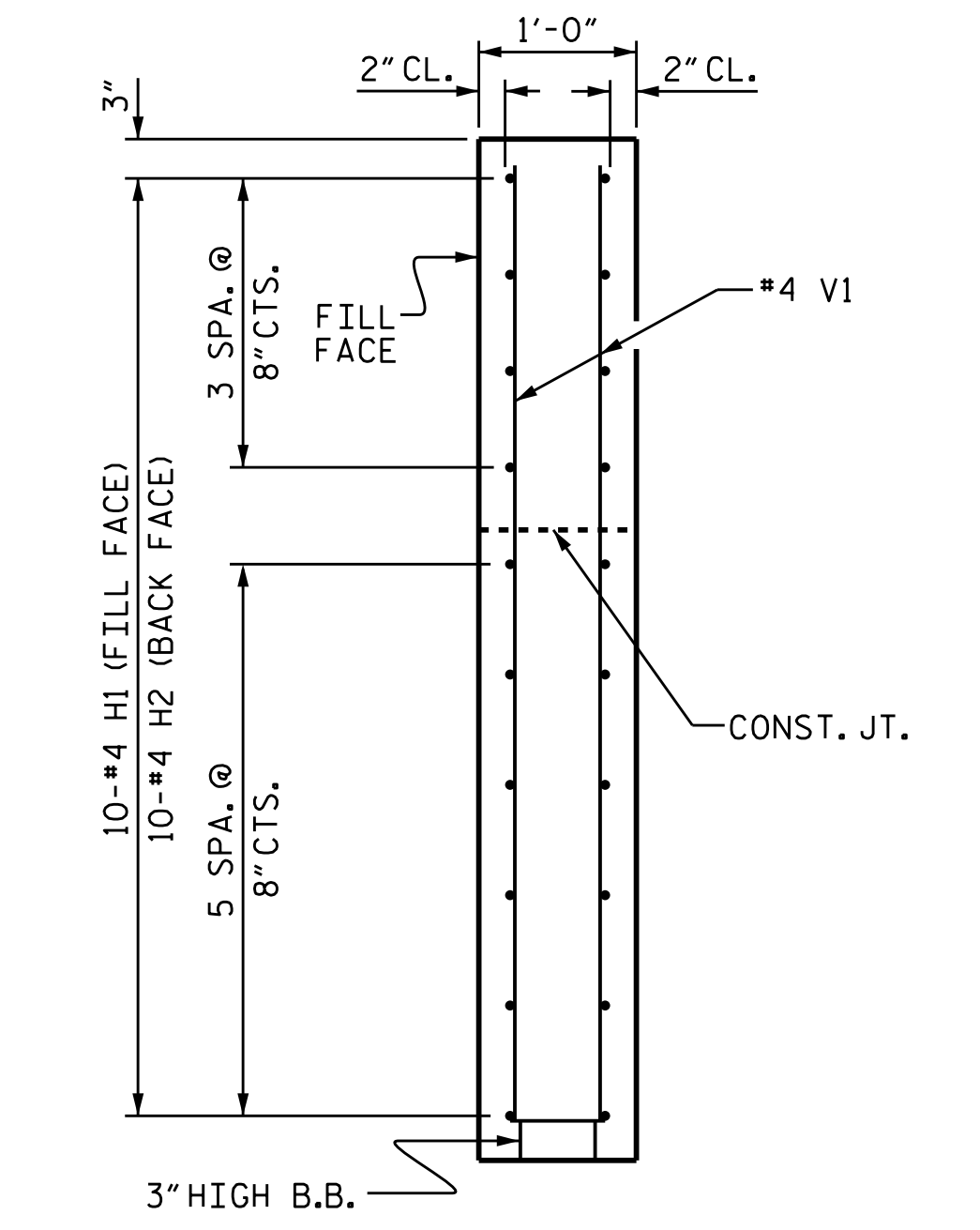
ELEVATION OF WING (W2)
STAGE II

WING DETAILS

NOTES
FOR NOTES SHEET SHEET 1 OF 4.



SECTION X-X



SECTION Y-Y

PROJECT NO. 17BP.14.R.177
HAYWOOD COUNTY
STATION: 15+00.00 -L-
SHEET 3 OF 4

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

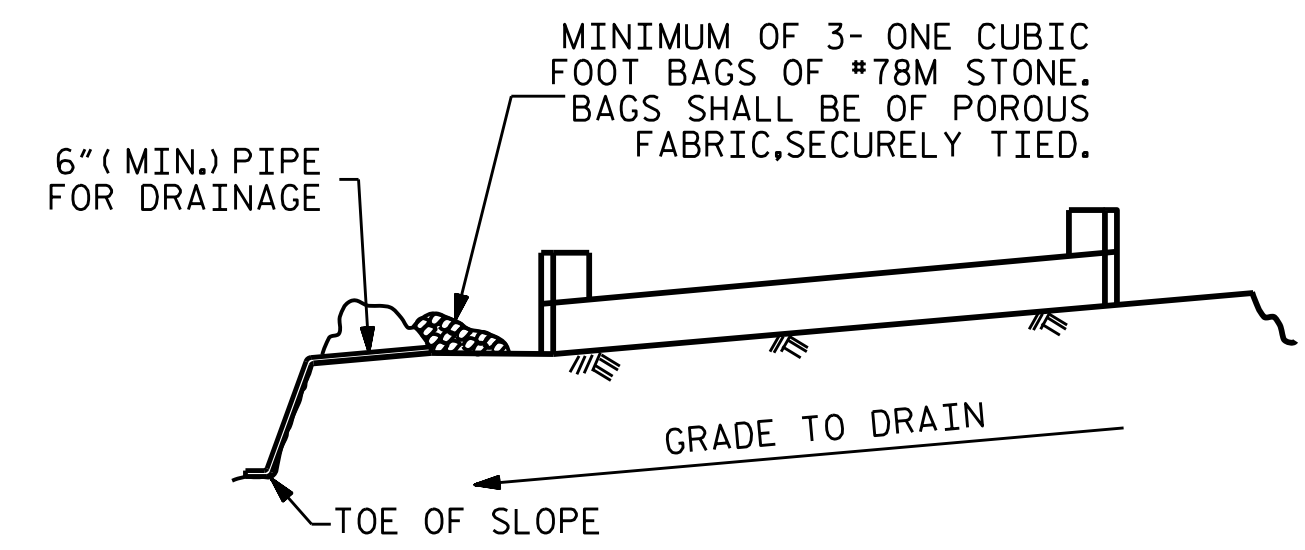
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

THOMAS M. HARRIS
ENGINEER
SEAL 19299
11/23/2021
F89C057AC14A4EE

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

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			26

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

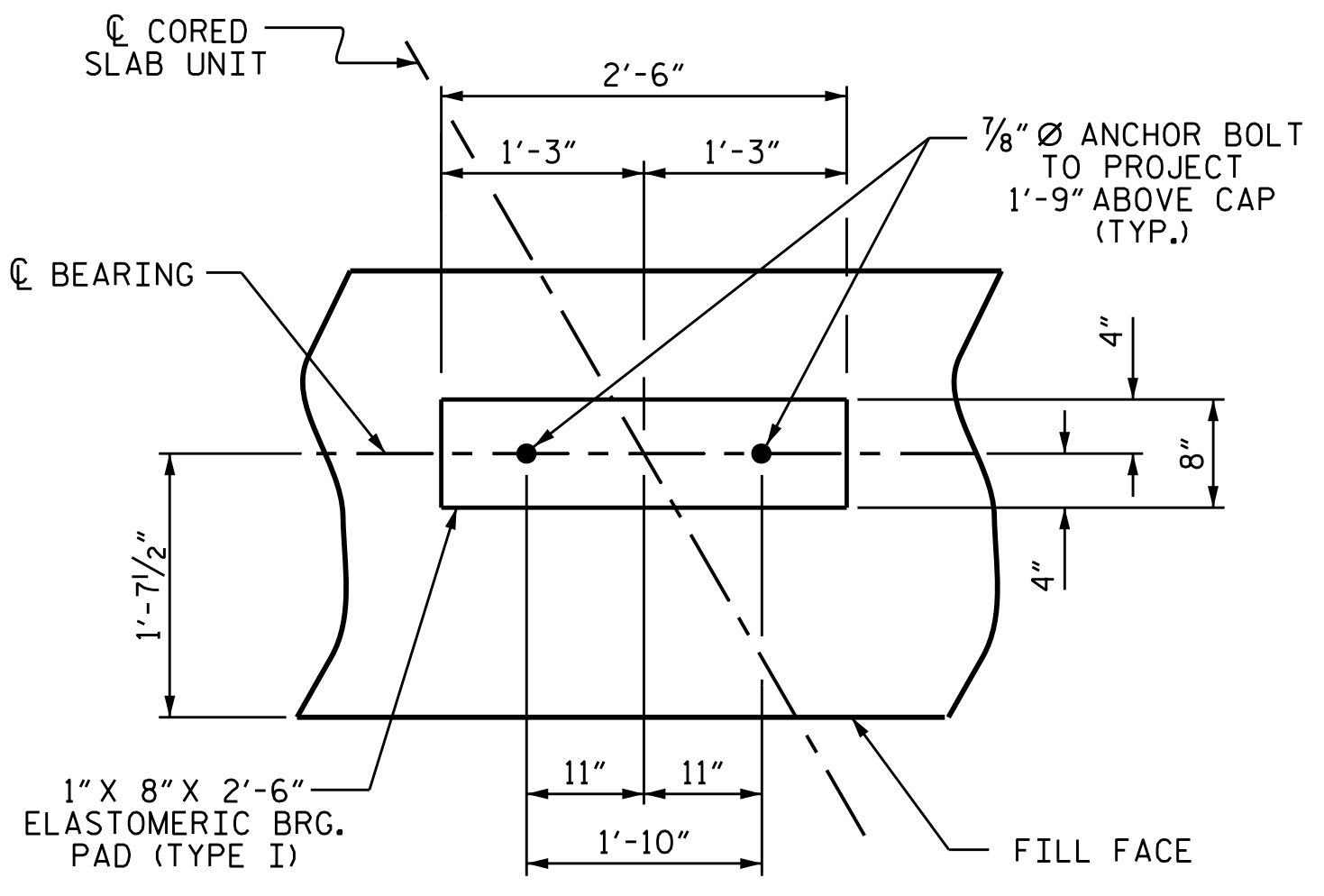


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

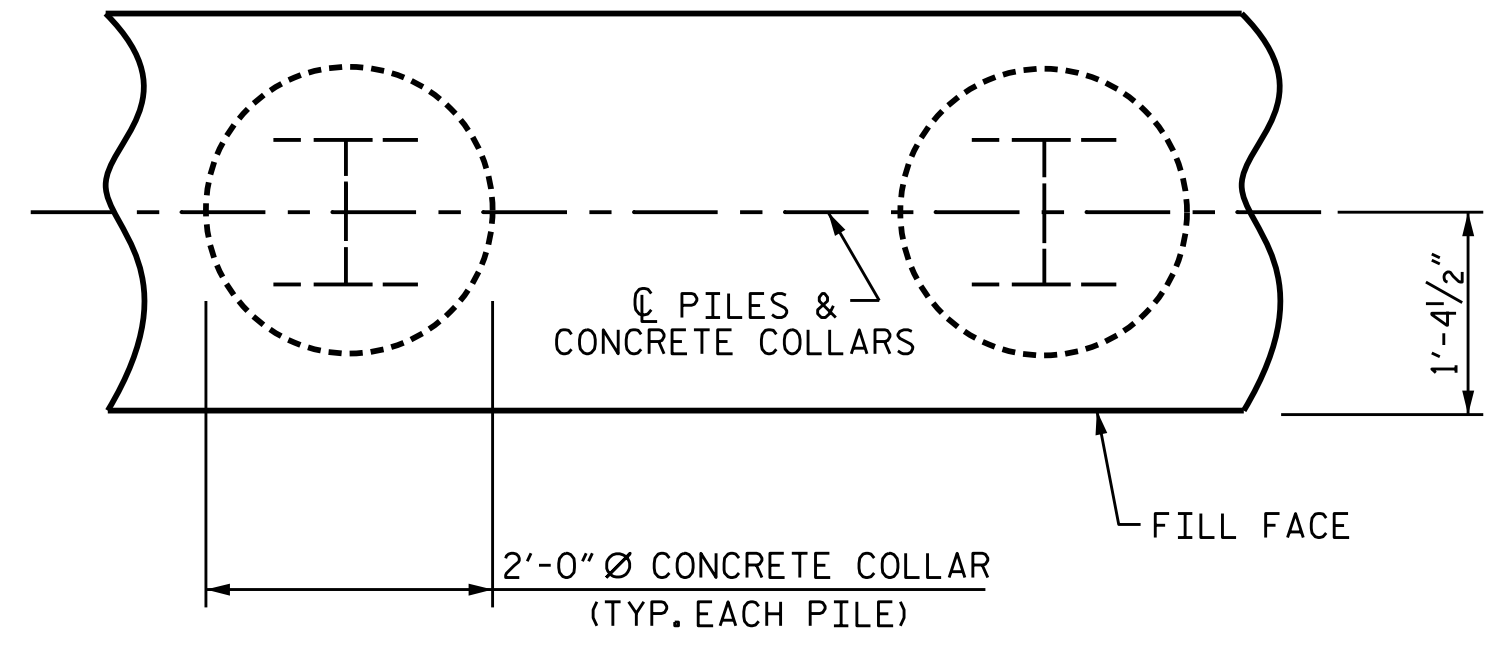
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

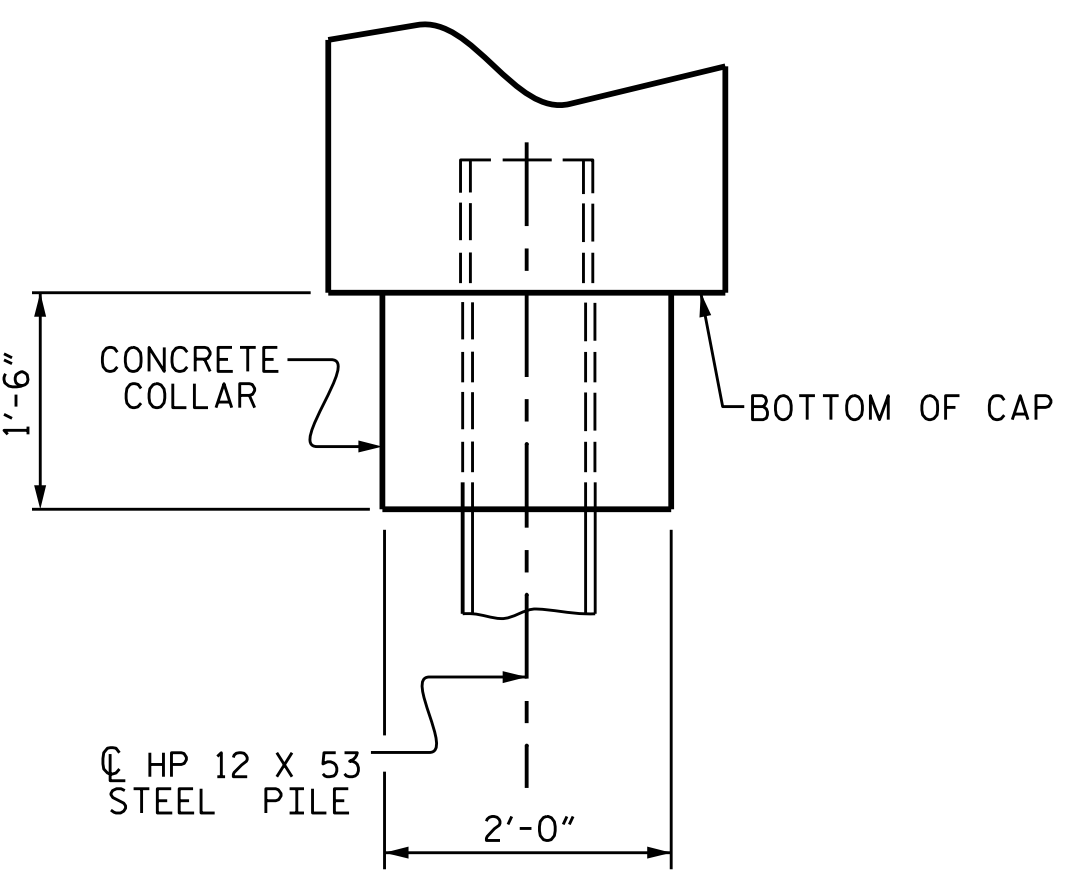


DETAIL "A"

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



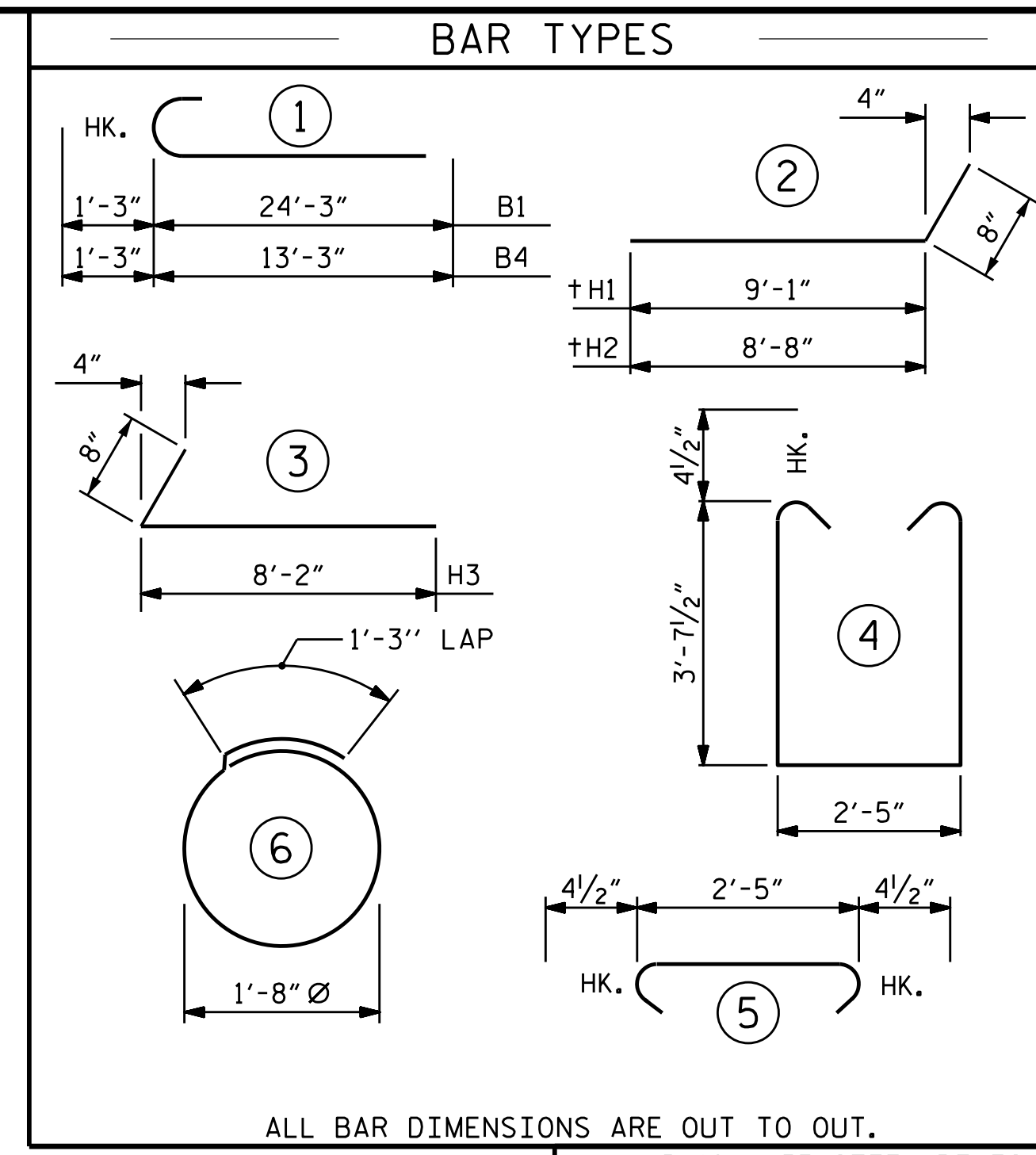
PLAN



ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

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



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

END BENT 1 - STAGE I

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	#9	1	25'-6"	694
B2	#4	STR	25'-3"	236
B3	#4	STR	2'-5"	10
H3	#4	3	8'-10"	118
K1	#4	STR	3'-3"	17
S1	#4	4	10'-5"	216
S2	#4	5	3'-2"	66
S3	#4	6	6'-6"	52
V1	#4	STR	6'-2"	115

REINFORCING STEEL (FOR END BENT 1 - STAGE I) 1524 LBS.

CLASS A CONCRETE - END BENT 1 STAGE I

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 10.8 C.Y.

POUR #2 UPPER PART OF WINGS 1.1 C.Y.

TOTAL CLASS A CONCRETE 11.9 C.Y.

HP 12 X 53 STEEL PILES

STAGE I	STAGE II
NO: 3 LIN. FT. = 90	NO: 2 LIN. FT. = 60

PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES

STAGE I	STAGE II
NO: 3	NO: 2

END BENT 1 - STAGE II

BAR NO.	SIZE	TYPE	LENGTH	WEIGHT
B3	#4	STR	2'-5"	6
B4	#9	1	14'-6"	394
B5	#4	STR	14'-8"	137
H1	#4	2	9'-9"	65
H2	#4	2	9'-4"	62
K1	#4	STR	3'-3"	17
S1	#4	4	10'-5"	153
S2	#4	5	3'-2"	47
S3	#4	6	6'-6"	35
V1	#4	STR	6'-2"	119

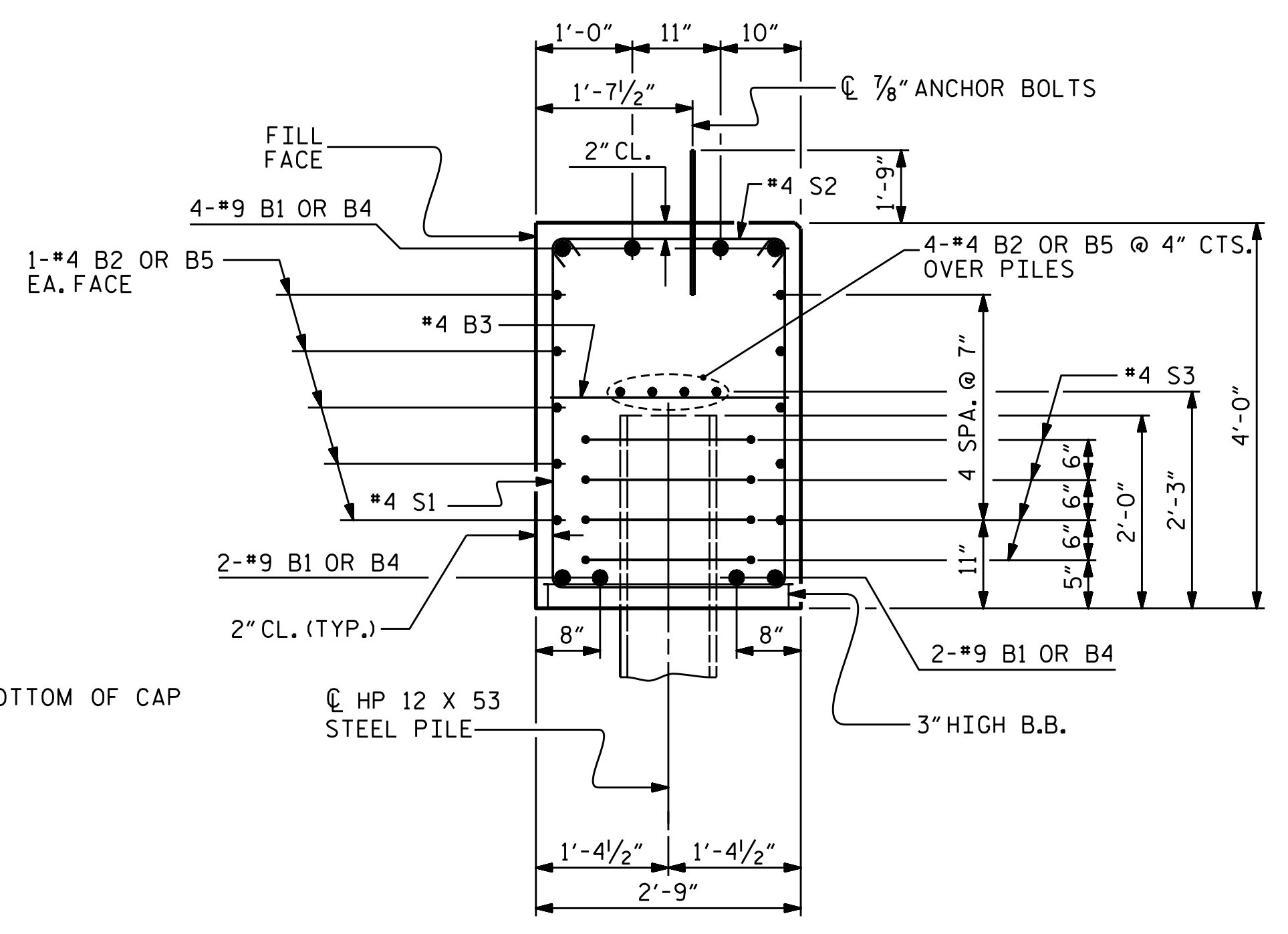
REINFORCING STEEL (FOR END BENT 1 - STAGE II) 1037 LBS.

CLASS A CONCRETE - END BENT 1 STAGE II

POUR #3 CAP, LOWER PART OF WINGS & COLLARS 7.9 C.Y.

POUR #4 UPPER PART OF WINGS 1.1 C.Y.

TOTAL CLASS A CONCRETE 9.0 C.Y.



SECTION A-A

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

PROJECT NO. 17BP.14.R.177
HAYWOOD COUNTY
STATION: 15+00.00 -L-
SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 1
DETAILS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

THOMAS M. HARRIS
ENGINEER
11/23/2021
11/23/2021
11/23/2021

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

REVISIONS

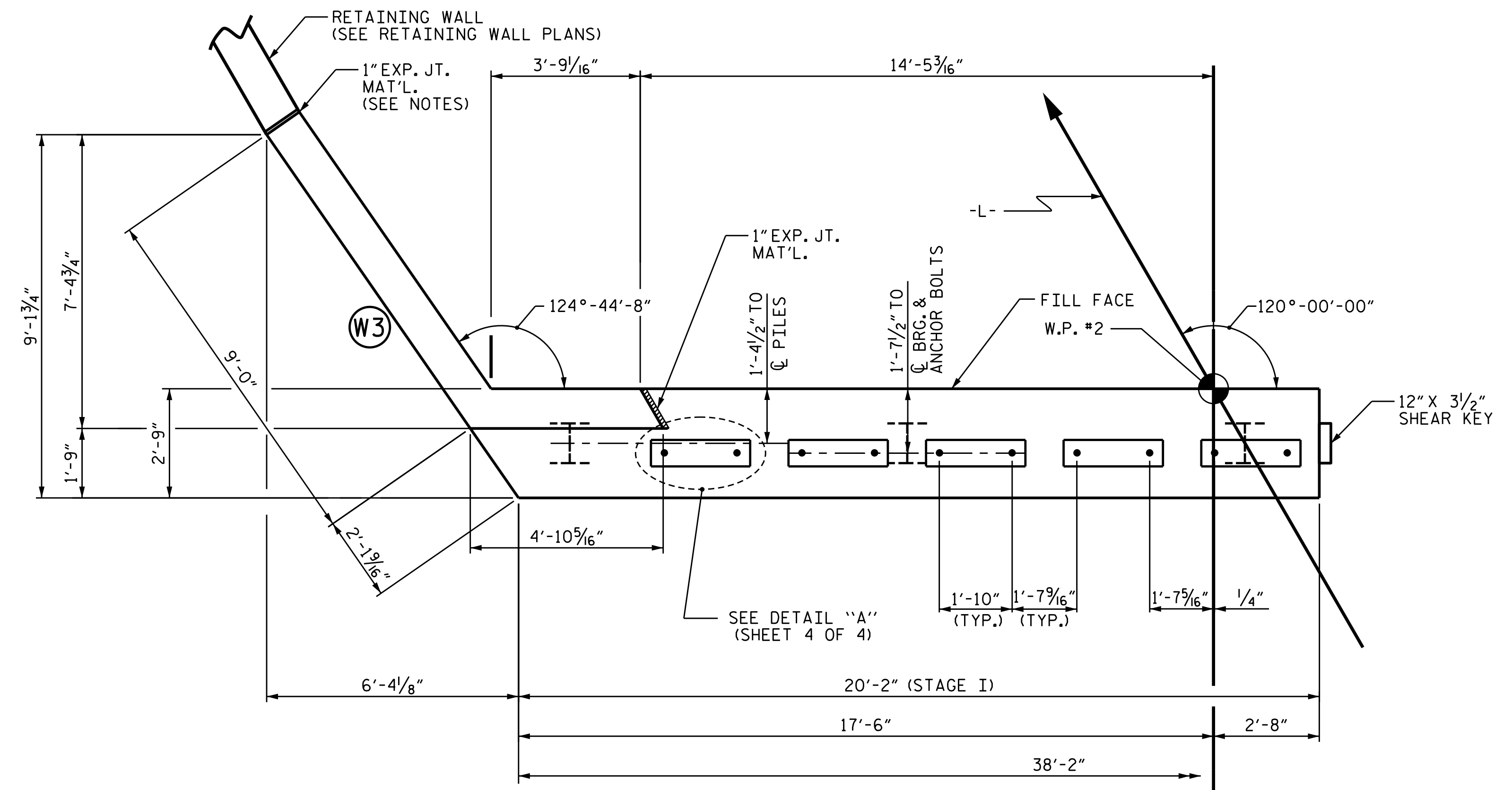
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-19
TOTAL SHEETS 26

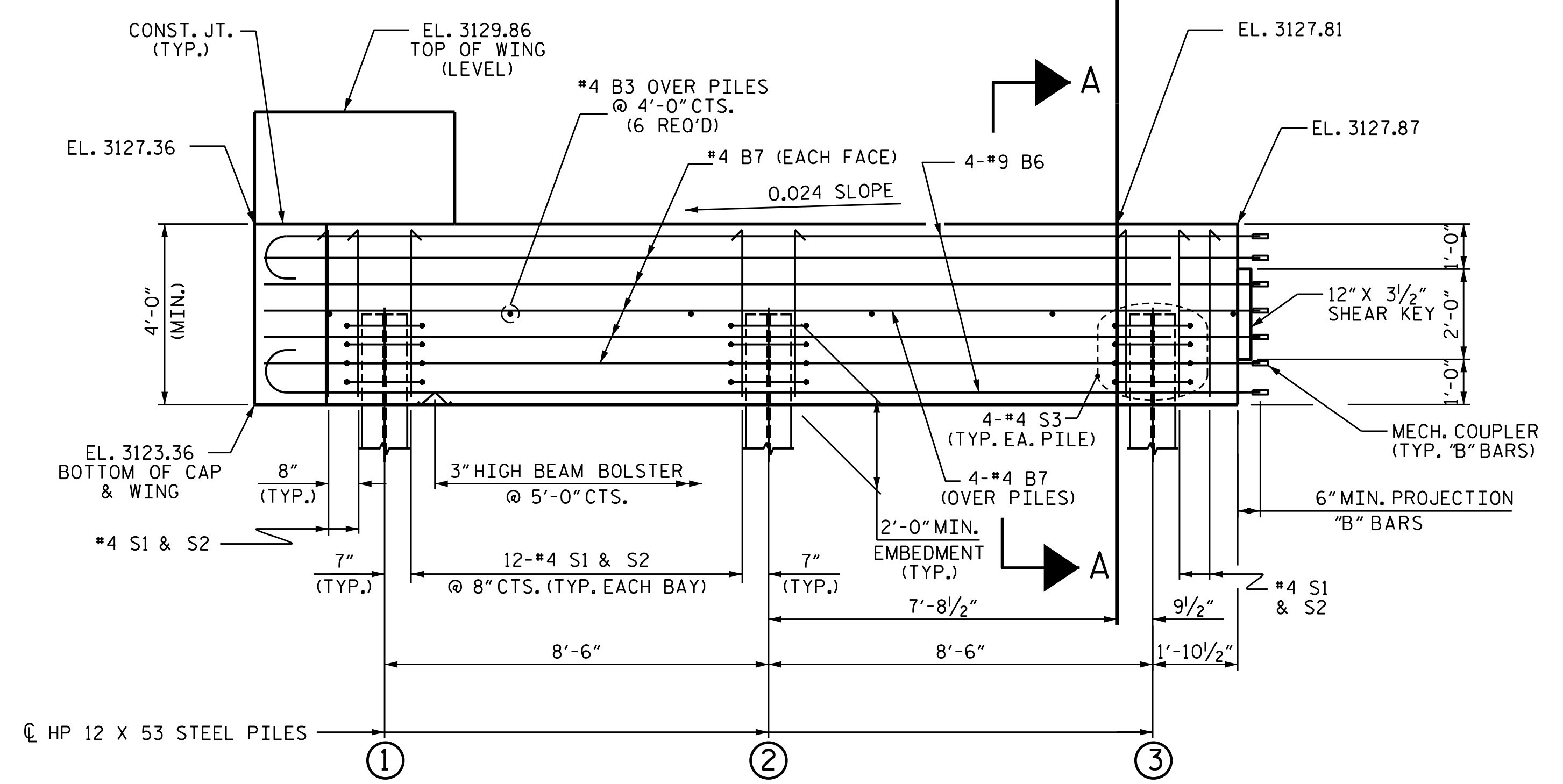
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ASSEMBLED BY: J. WHEATLEY	DATE: NOV 2021	DRAWN BY: WJH	12/11	REV. 4/17	MAA/THC
CHECKED BY: T. KIRSCHBAUM	DATE: NOV 2021	CHECKED BY: AAC	12/11		
DESIGN ENGINEER OF RECORD: T. HARRIS	DATE: NOV 2021				

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PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
 FOR SECTION A-A, SEE SHEET 4 OF 4.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN
 AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.
- FOR WING DETAILS, SEE SHEET 3 OF 4.
- ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449 AND SHALL BE GALVANIZED. NO SEPARATE PAYMENT WILL BE MADE FOR THE ANCHOR BOLTS AND THE COST OF MATERIALS AND INSTALLATION SHALL BE INCLUDED IN OTHER PAY ITEMS.
- FOR MECHANICAL COUPLERS, SEE MECHANICAL BUTT SPLICES FOR REINFORCING STEEL IN STANDARD PROVISIONS.
- MECHANICAL COUPLERS SHALL BE USED TO JOIN "B" BARS IN STAGE I WITH "B" BARS IN STAGE II. THE LOCATION OF THE COUPLERS SHALL BE STAGGERED ON ALTERNATING BARS BY 1 FOOT AND THE BARS SHALL BE CUT ACCORDINGLY TO ALLOW A MINIMUM OF 6" EXTENSION INTO STAGE II CONSTRUCTION.
- A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.

TOP OF PILE ELEVATIONS	
①	3125.43
②	3125.63
③	3125.83

PROJECT NO. 17BP.14.R.177
HAYWOOD COUNTY
 STATION: 15+00.00 -L-
 SHEET 1 OF 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT No. 2 STAGE I					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S-20
					TOTAL SHEETS 26

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

wsp

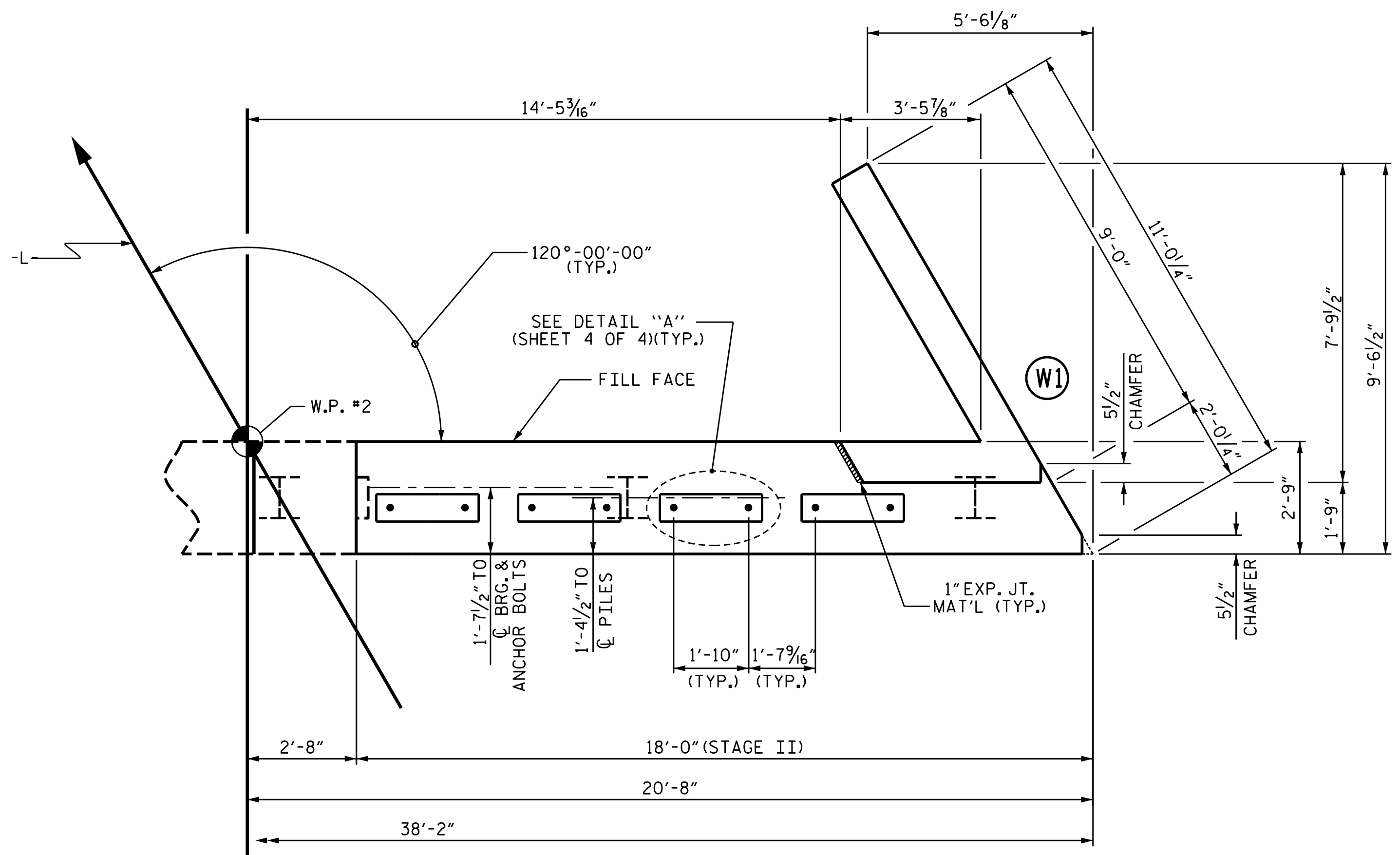
WSP USA Inc.
 434 FAYETTEVILLE STREET
 SUITE 1500
 RALEIGH, NC 27601
 TEL: 1.919.836.4040
 LICENSE NO. F-0165

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

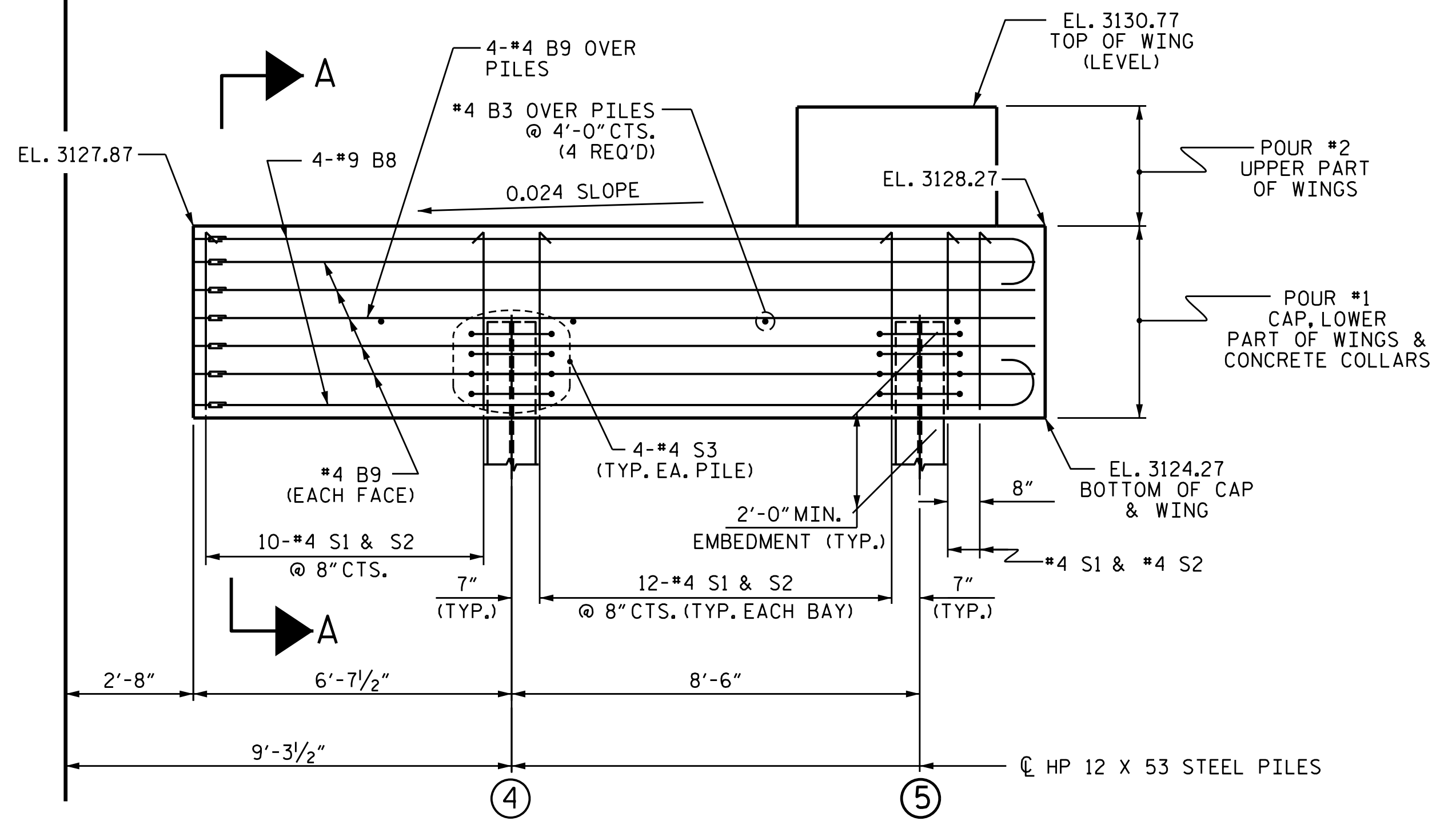
THOMAS M. HARRIS
 PROFESSIONAL ENGINEER
 SEAL 19299
 11/23/2021
 EB201.dgn

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NOTES
FOR NOTES SHEET SHEET 1 OF 4.



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTION A-A, SEE SHEET 4 OF 4.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN
AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

TOP OF PILE ELEVATIONS	
④	3126.03
⑤	3126.24

PROJECT NO. 17BP.14.R.177
HAYWOOD COUNTY
STATION: 15+00.00 -L-
SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 2
STAGE II

DOCUMENT NOT CONSIDERED FINAL
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THOMAS M. HARRIS
ENGINEER
11/23/2021
19299

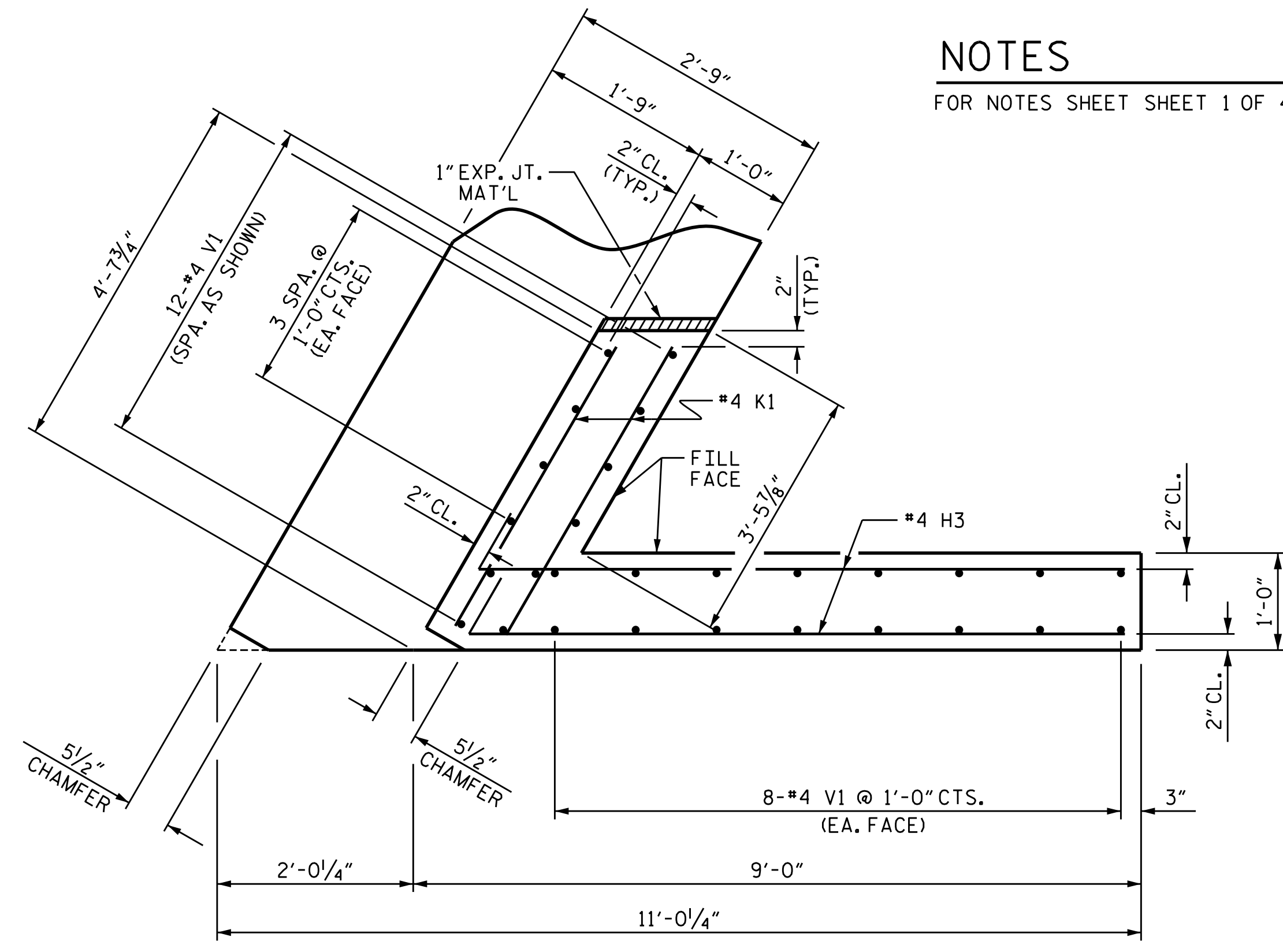
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NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			26

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

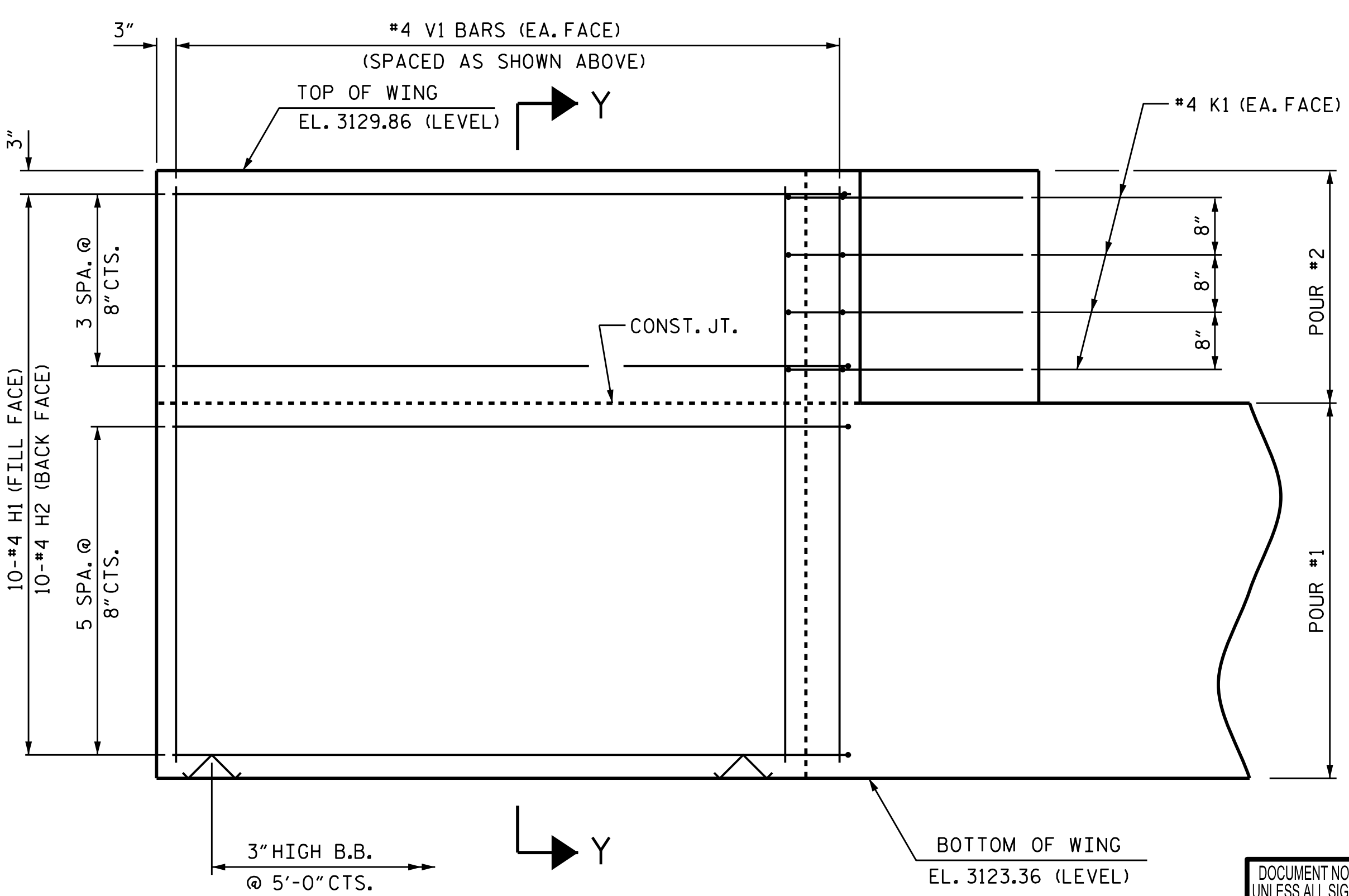
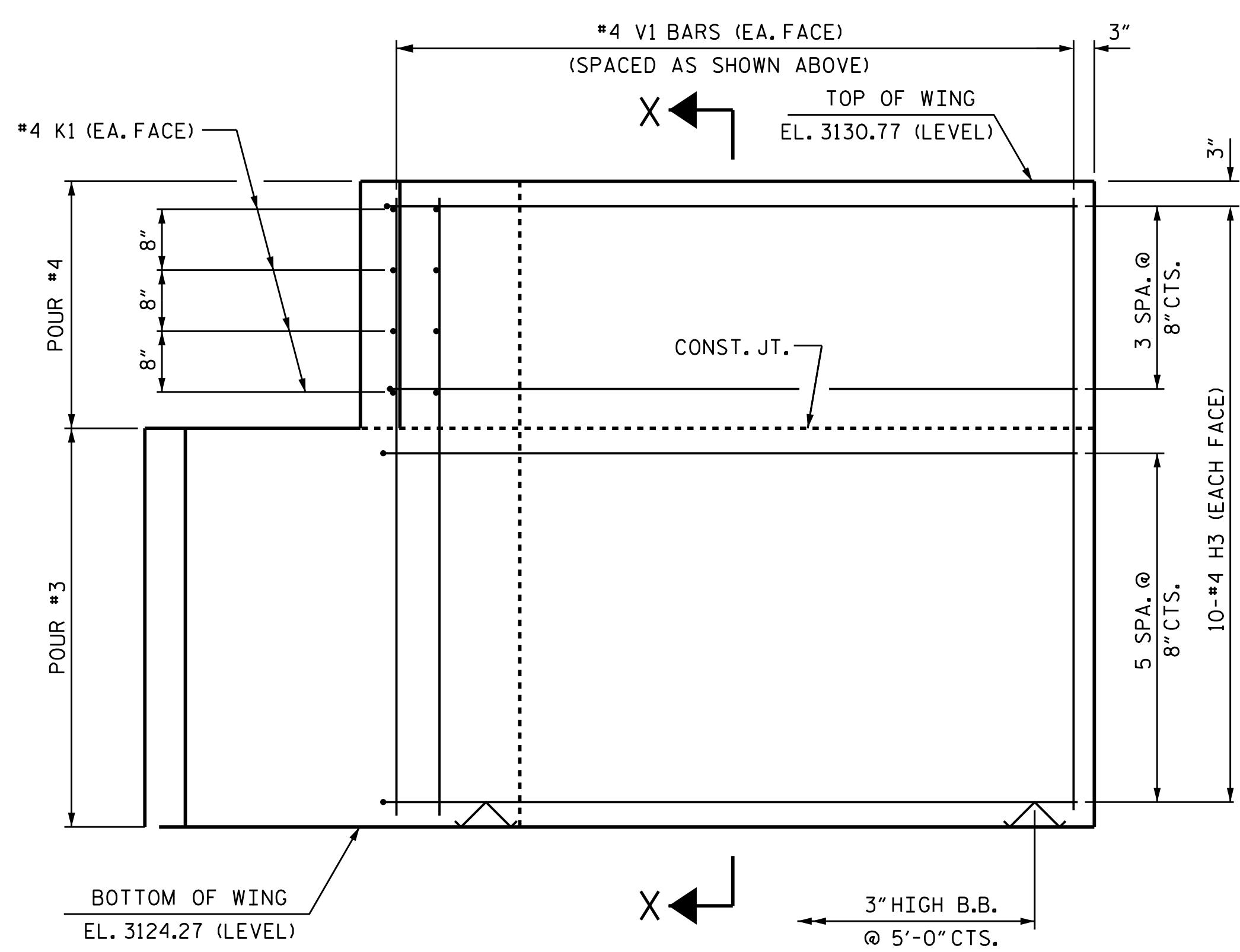
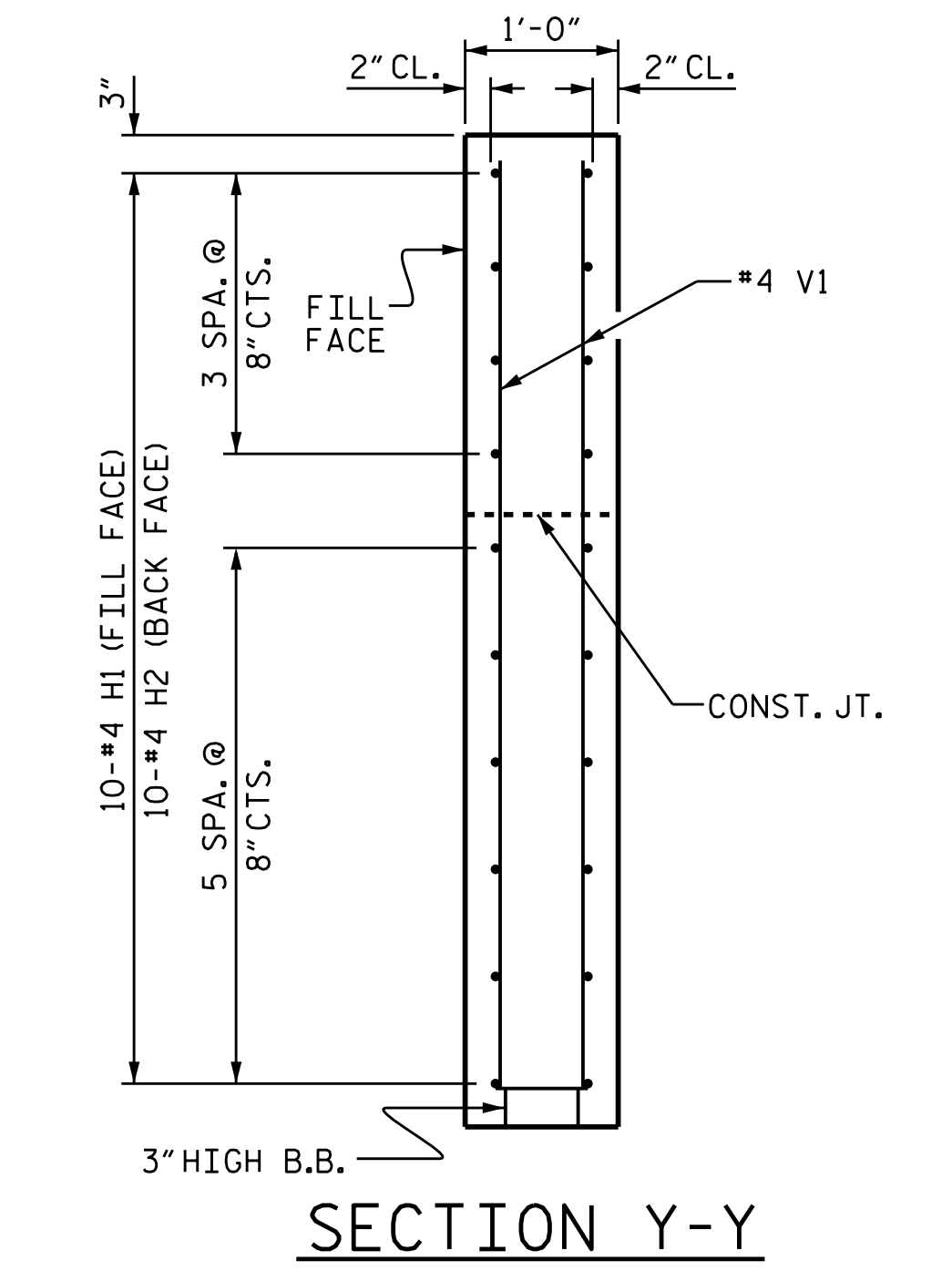
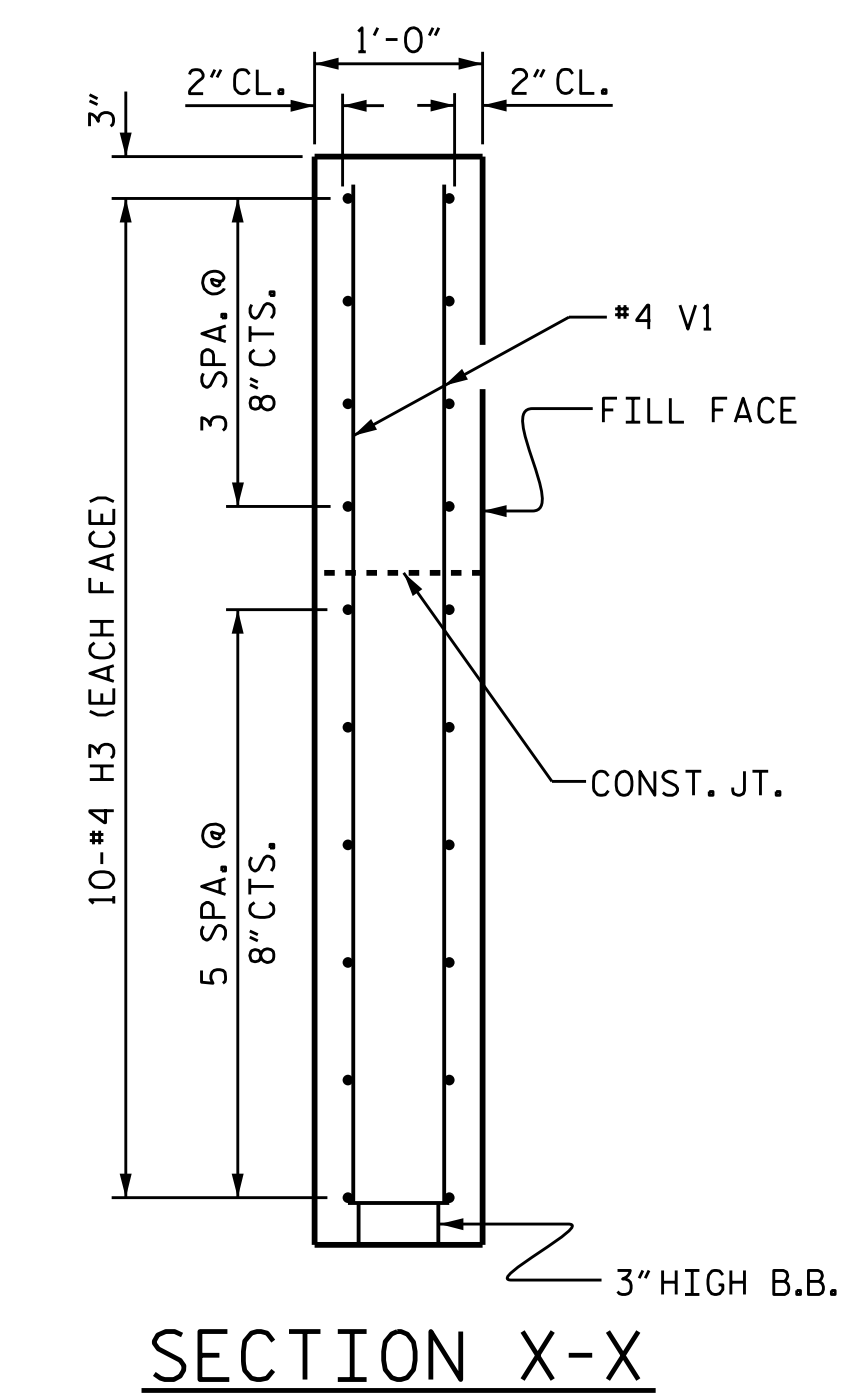
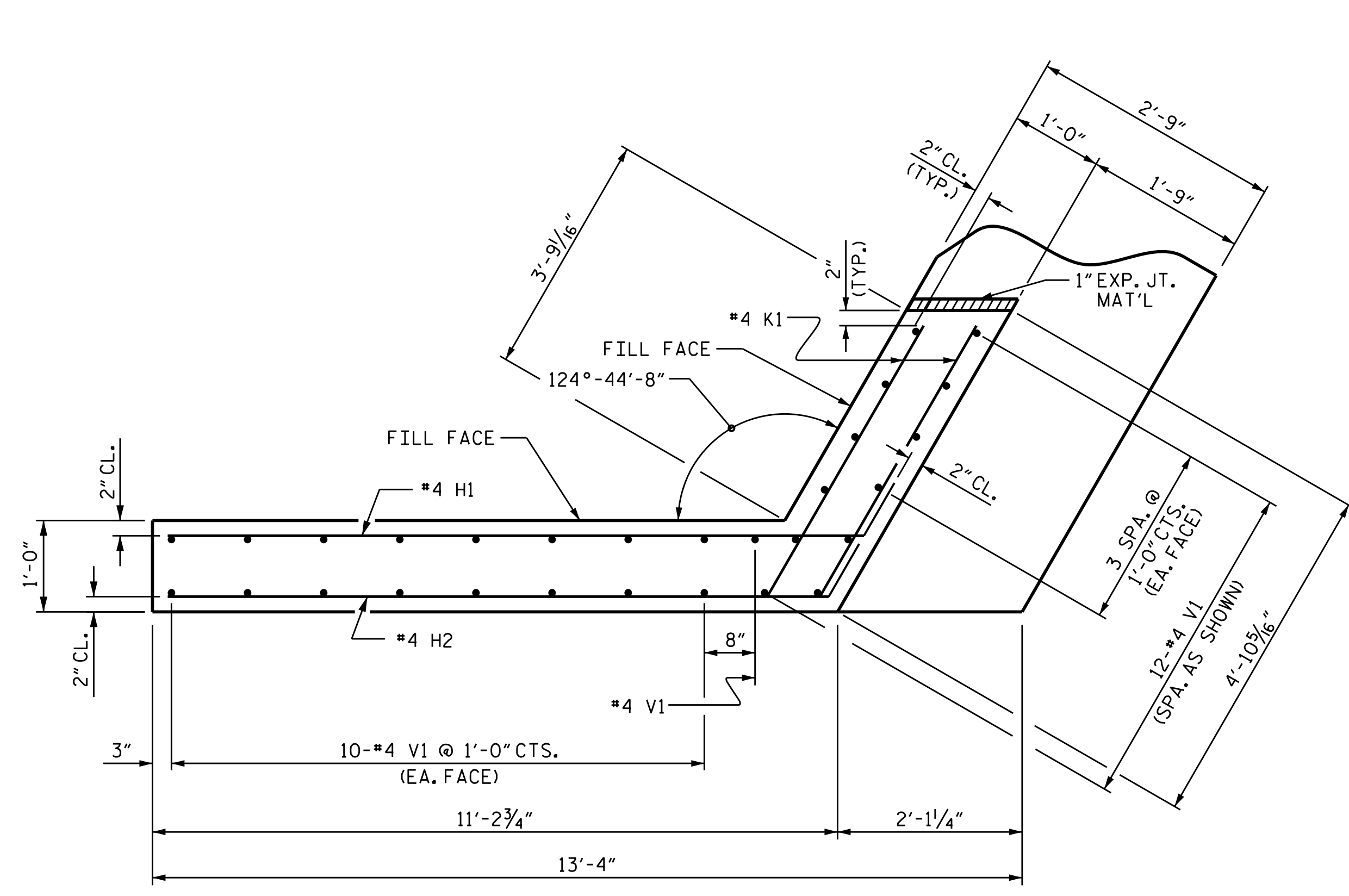
wsp

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

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NOTES
FOR NOTES SHEET SHEET 1 OF 4.



PROJECT NO. 17BP.14.R.177
HAYWOOD COUNTY
STATION: 15+00.00 -L-
SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT No. 2
WING DETAILS

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

THOMAS M. HARRIS
ENGINEER
SEAL 19299
11/23/2021
F89C057AC14A4E

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

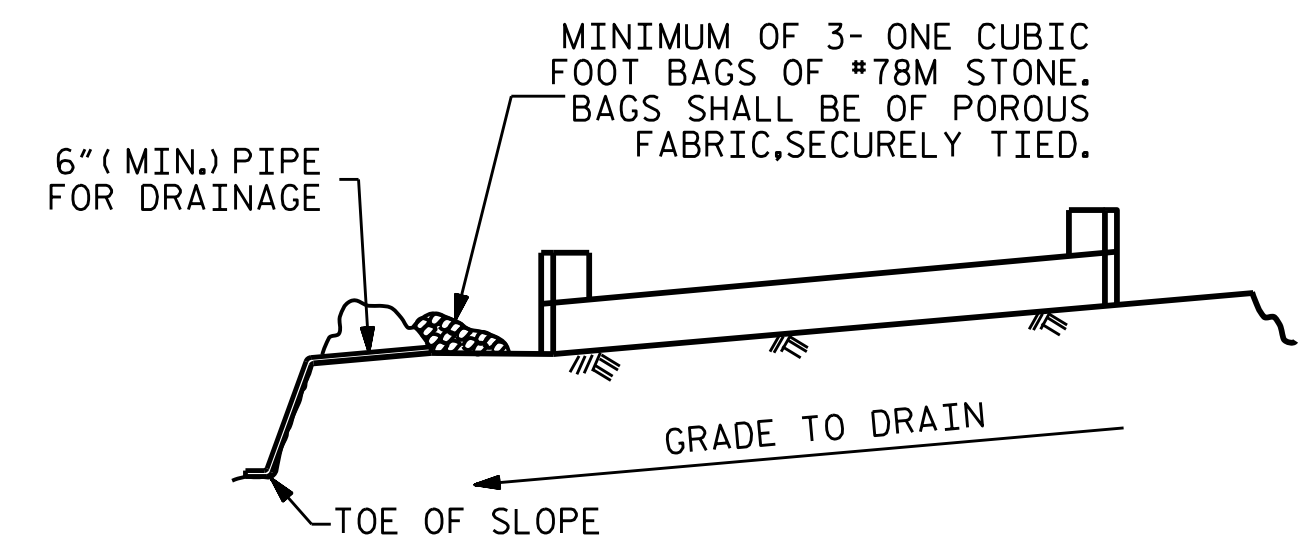
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-22
1			3			TOTAL SHEETS
2			4			26

ASSEMBLED BY: J. WHEATLEY DATE: NOV 2021
CHECKED BY: T. KIRSCHBAUM DATE: NOV 2021
DESIGN ENGINEER OF RECORD: T. HARRIS DATE: NOV 2021

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

WING DETAILS

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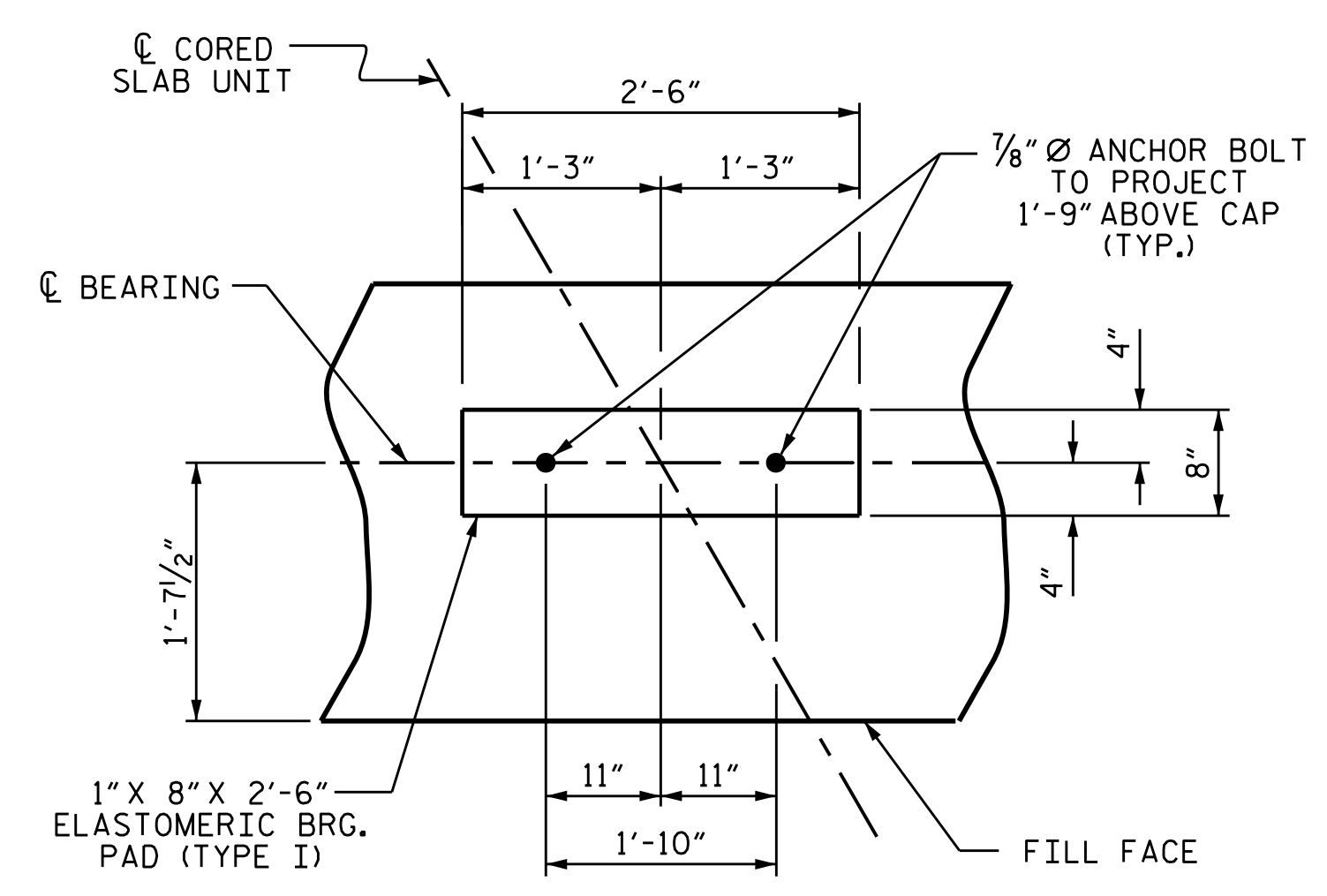


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

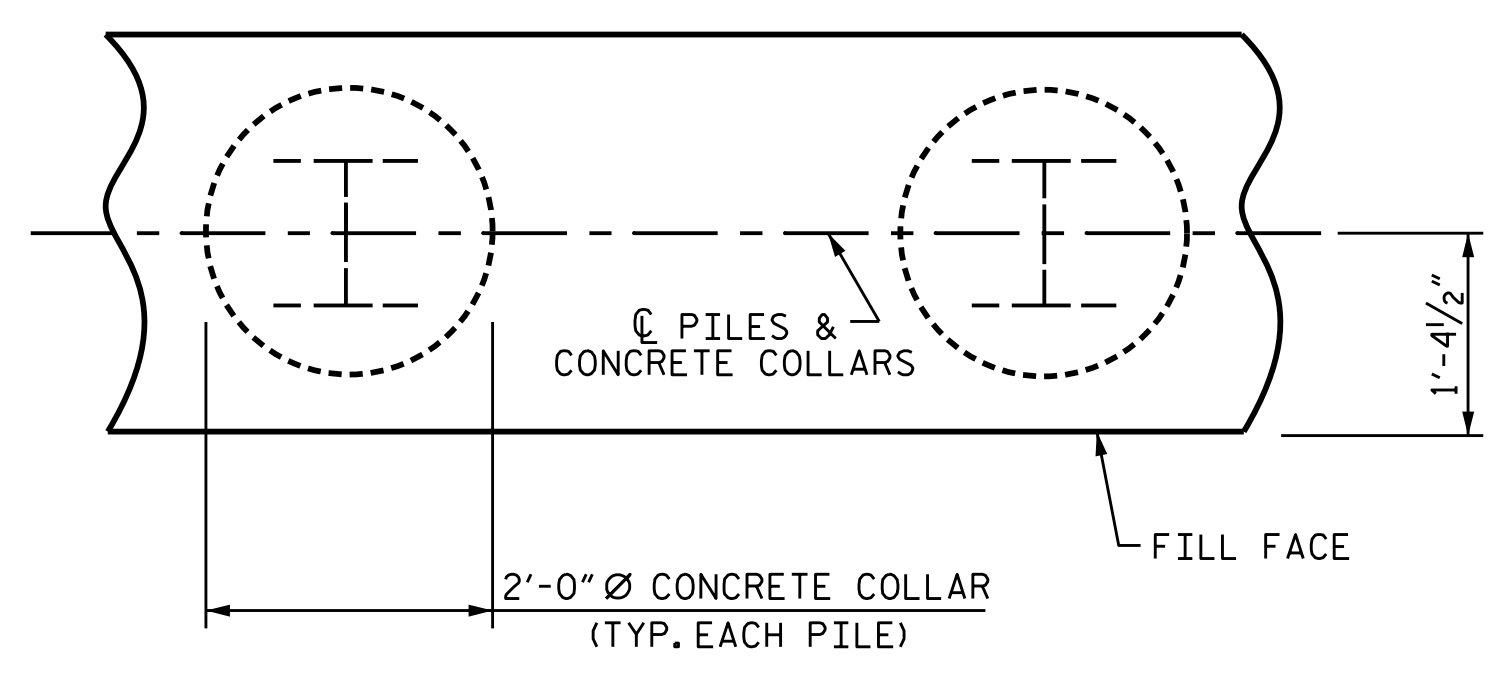
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

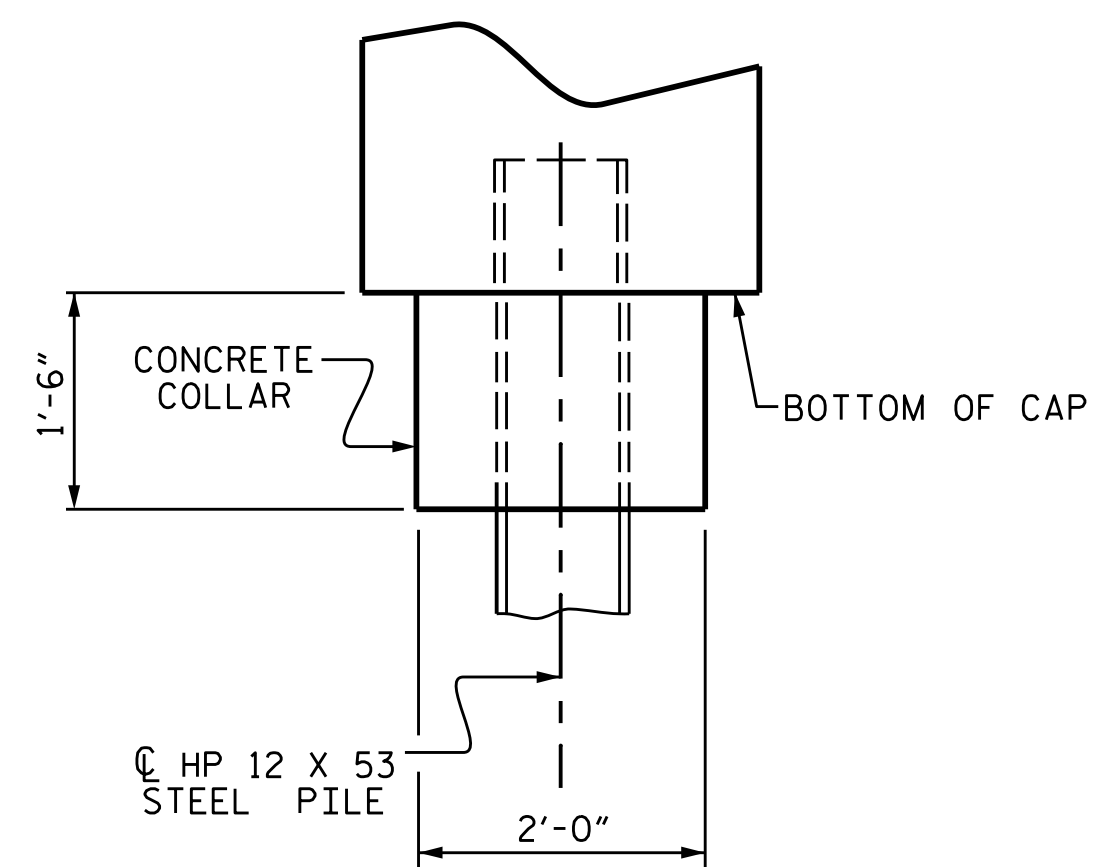


DETAIL "A"

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



PLAN

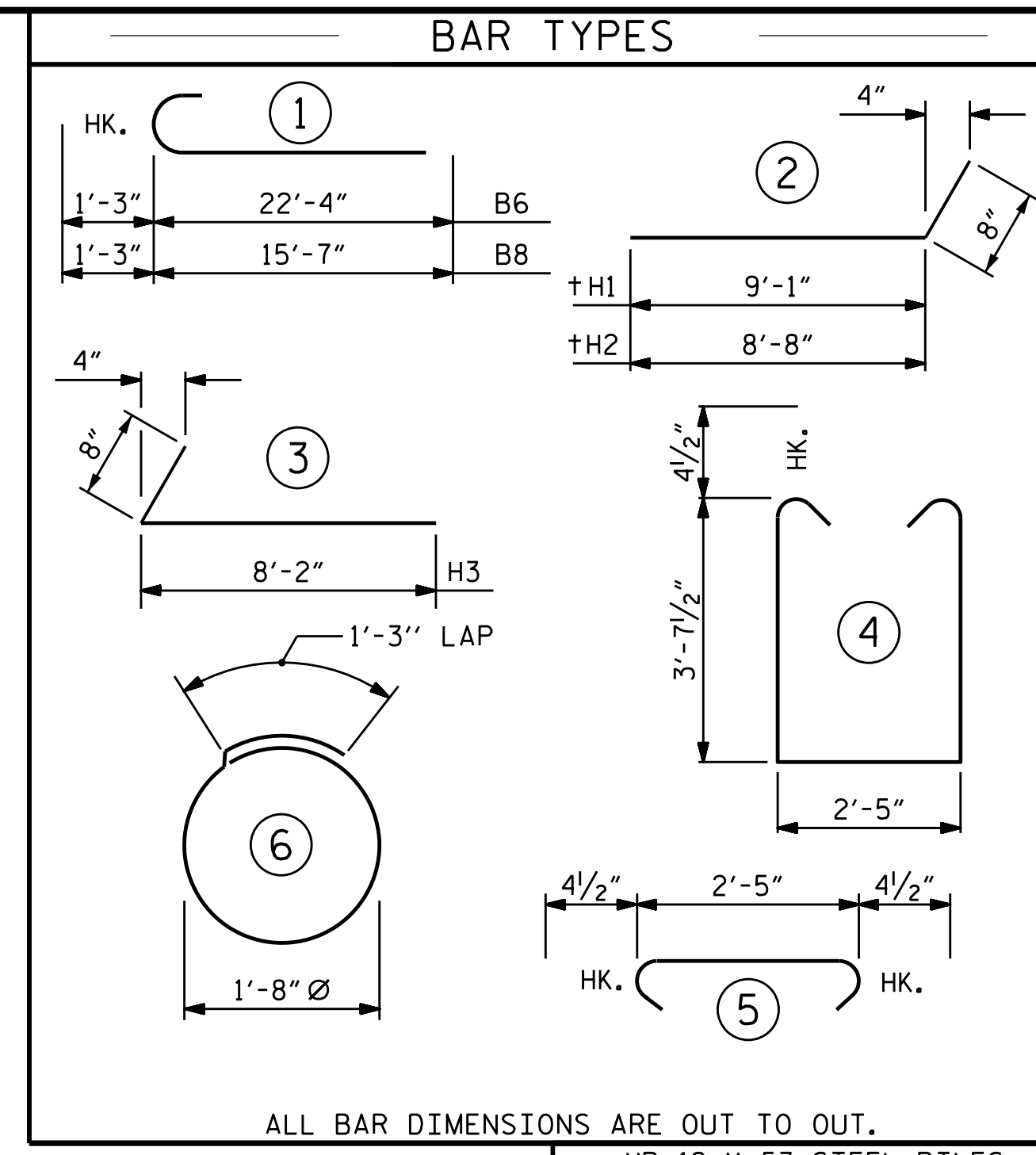


ELEVATION

CORROSION PROTECTION FOR STEEL PILES DETAIL

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

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



ALL BAR DIMENSIONS ARE OUT TO OUT.

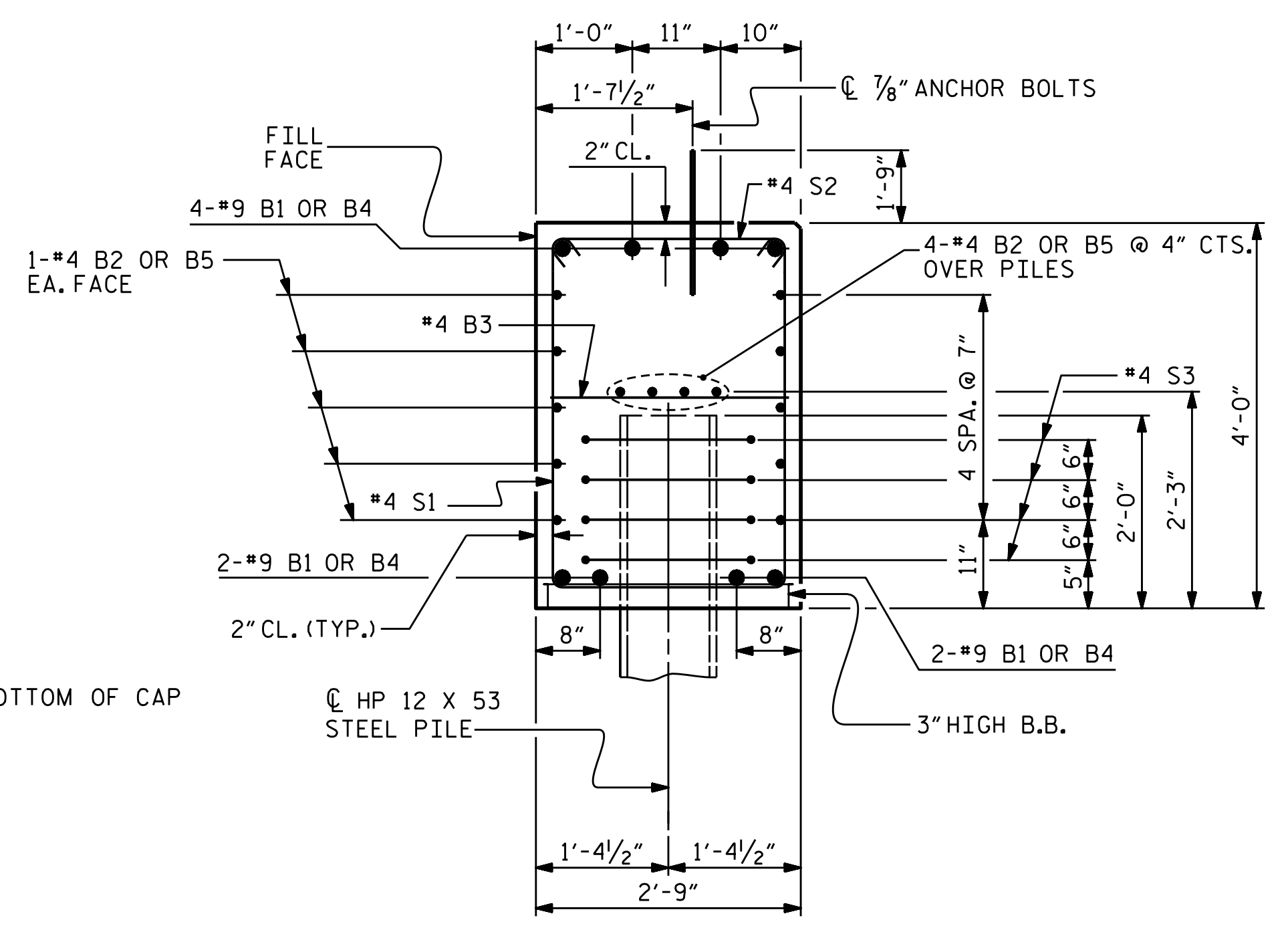
BILL OF MATERIAL					
END BENT 2 - STAGE I					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B3	#4	STR	2'-5"	10	
B6	#9	1	23'-7"	641	
B7	#4	STR	22'-4"	209	
H1	#4	2	9'-9"	65	
H2	#4	2	9'-4"	62	
K1	#4	STR	3'-3"	17	
S1	#4	4	10'-5"	195	
S2	#4	5	3'-2"	59	
S3	#4	6	6'-6"	52	
V1	#4	STR	6'-2"	136	
REINFORCING STEEL (FOR END BENT 2 - STAGE I)					1447 LBS.
CLASS A CONCRETE - END BENT 2 STAGE I					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS					10.2 C.Y.
POUR #2 UPPER PART OF WINGS					1.1 C.Y.
TOTAL CLASS A CONCRETE					11.3 C.Y.

HP 12 X 53 STEEL PILES	
STAGE I	STAGE II
NO: 3	NO: 2
LIN. FT. = 75	LIN. FT. = 40
PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	
STAGE I	STAGE II
NO: 3	NO: 2

END BENT 2 - STAGE II					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
B3	#4	STR	2'-5"	6	
B8	#9	1	16'-10"	458	
B9	#4	STR	15'-7"	146	
H3	#4	3	8'-10"	118	
K1	#4	STR	3'-3"	17	
S1	#4	4	10'-5"	167	
S2	#4	5	3'-2"	51	
S3	#4	6	6'-6"	35	
V1	#4	STR	6'-2"	115	

REINFORCING STEEL (FOR END BENT 2 - STAGE II)		1113 LBS.
CLASS A CONCRETE - END BENT 2 STAGE II		
POUR #3 CAP, LOWER PART OF WINGS & COLLARS		8.5 C.Y.
POUR #4 UPPER PART OF WINGS		1.1 C.Y.
TOTAL CLASS A CONCRETE		9.6 C.Y.

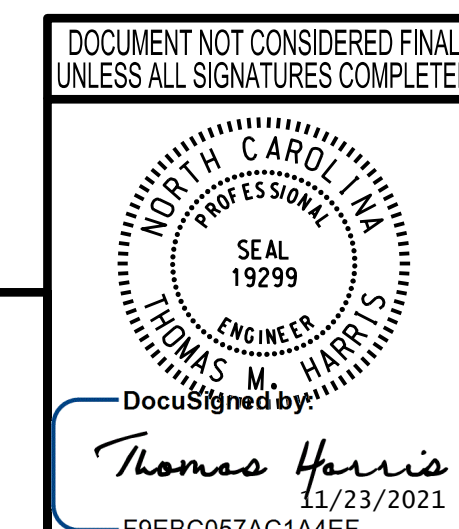
+ FIELD BEND #4 "H" BARS AS NEEDED FOR STAGE I.



SECTION A-A

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

PROJECT NO. 17BP.14.R.177
HAYWOOD COUNTY
STATION: 15+00.00 -L-
SHEET 4 OF 4

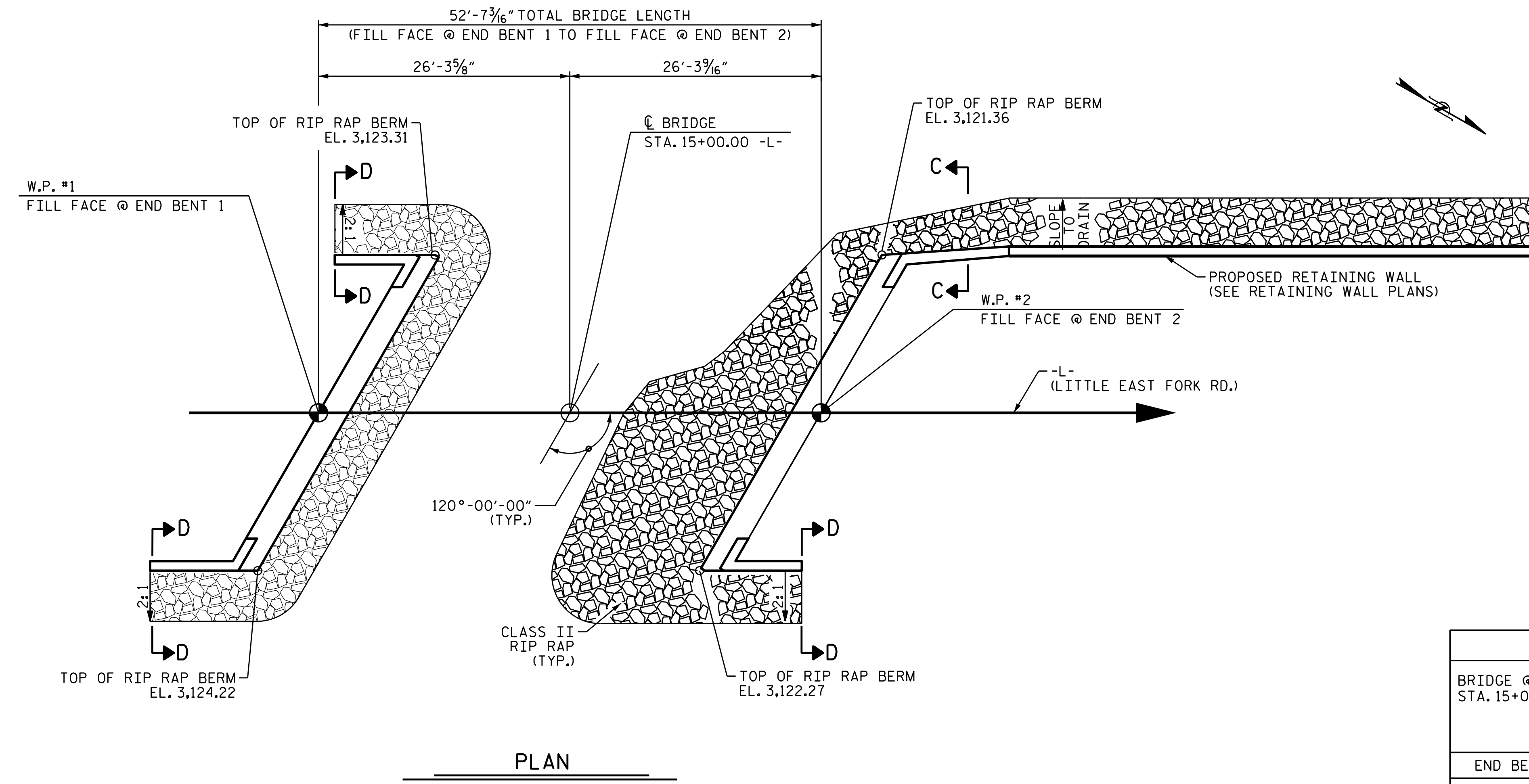


wsp
WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
LICENSE NO. F-0165

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
END BENT No. 2 DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-23				
TOTAL SHEETS 26				

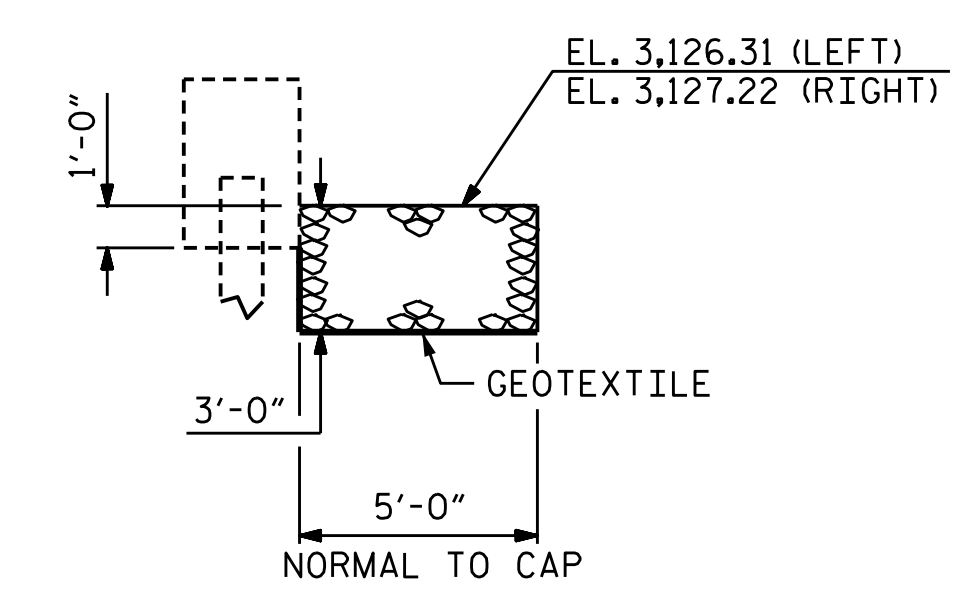
NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



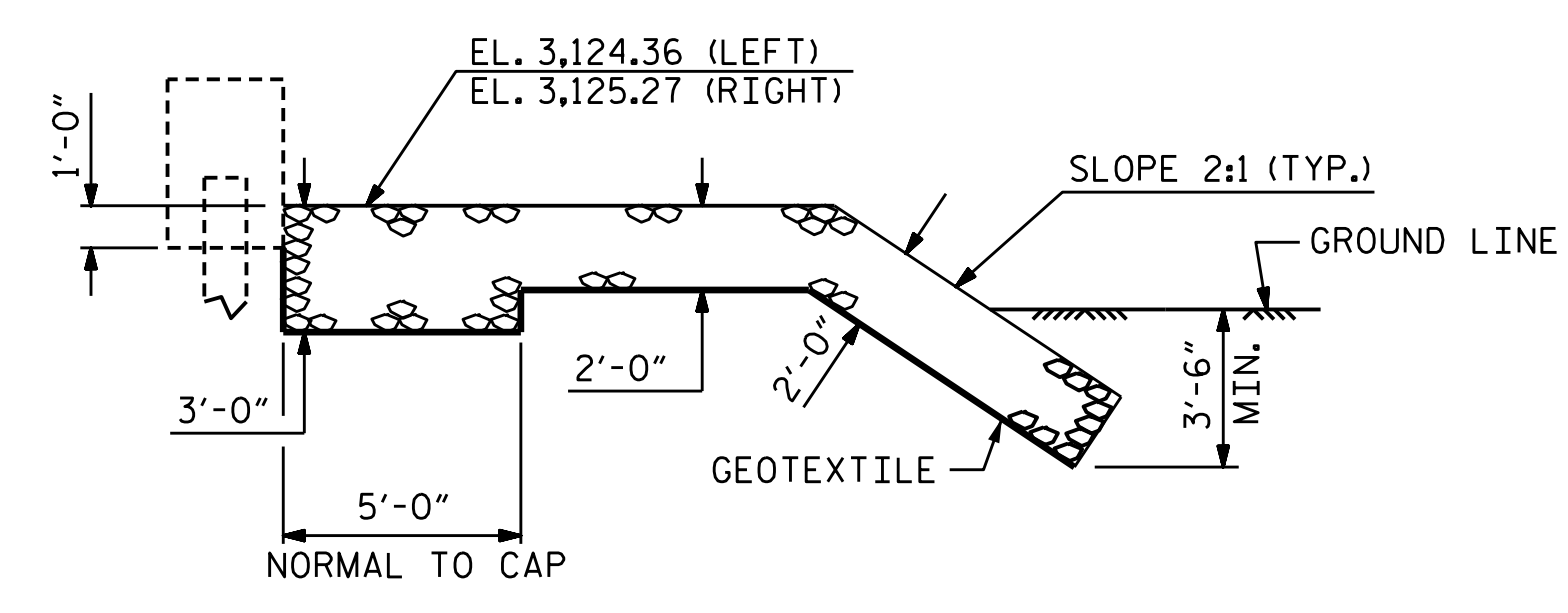
ESTIMATED QUANTITIES		
BRIDGE @ STA. 15+00.00 -L-	* RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	77	69
END BENT 2	129	113

* ADDITIONAL RIP RAP DEPTH AT END BENTS INCLUDED IN QUANTITIES FOR 2'-0" THICK PAY ITEM.

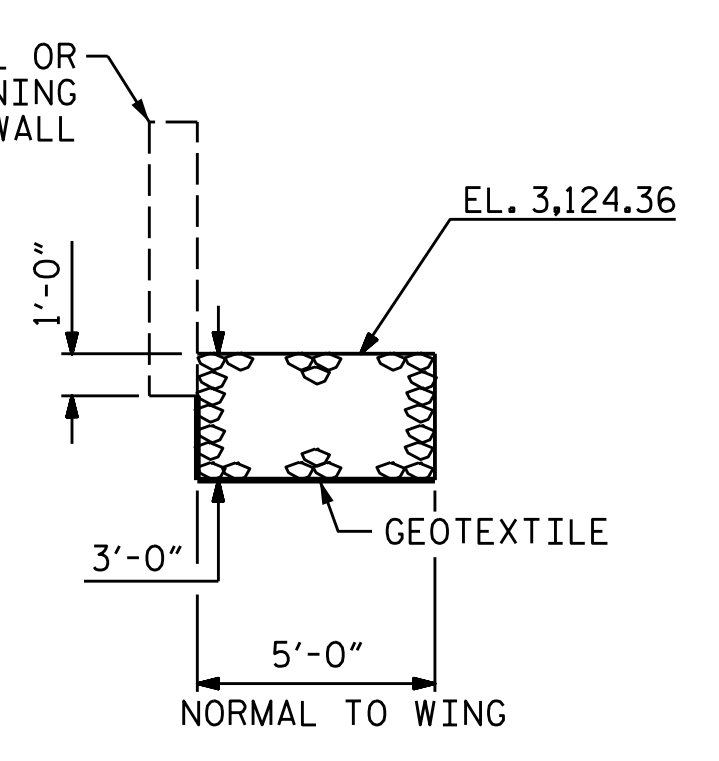
PLAN



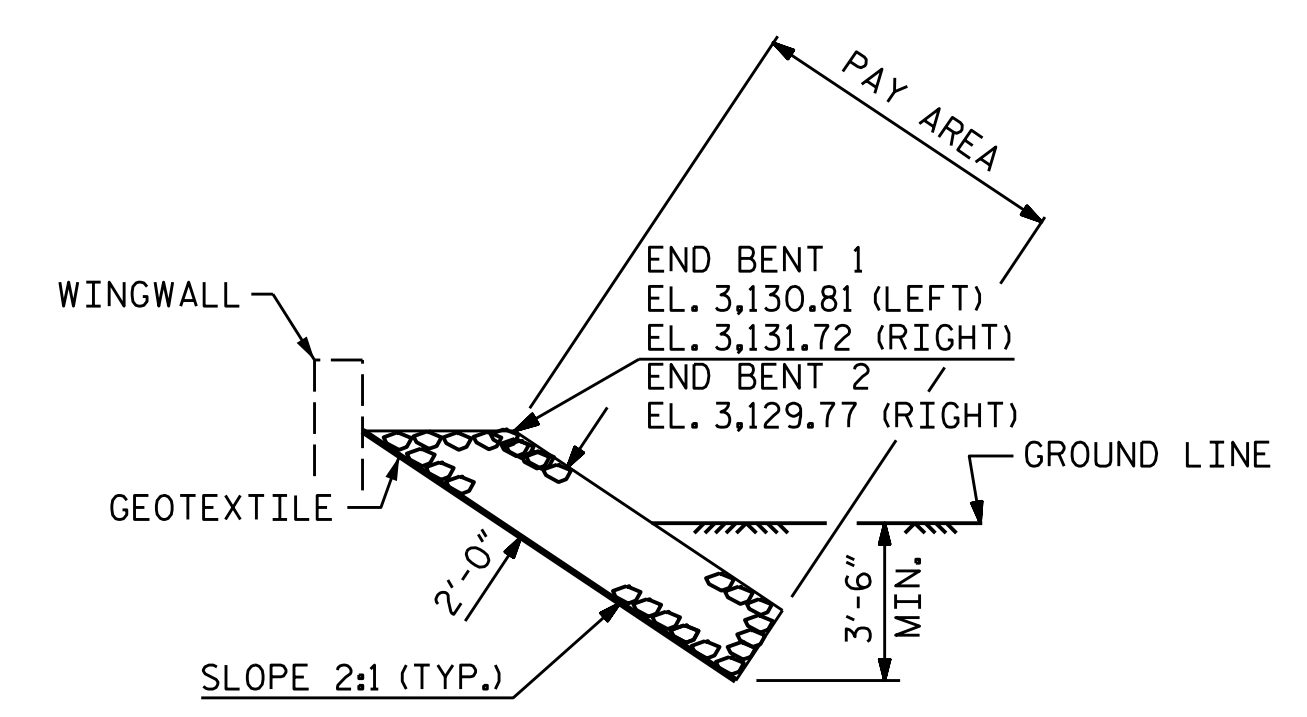
SECTION END BENT 1
BERM RIP RAPPED



SECTION END BENT 2
BERM RIP RAPPED



SECTION C-C



SECTION D-D

PROJECT NO. 17BP.14.R.177
HAYWOOD COUNTY
STATION: 15+00.00 -L-

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

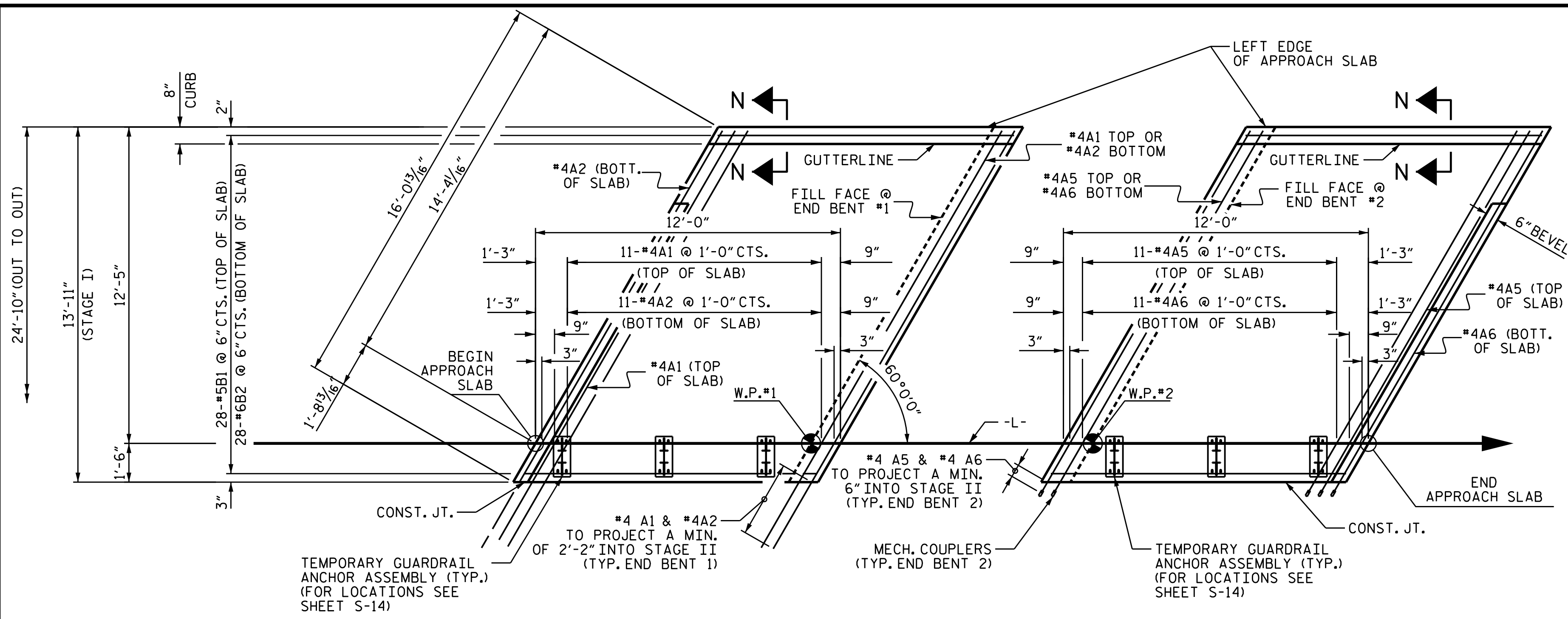
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WSP USA Inc.
434 FAYETTEVILLE STREET
SUITE 1500
RALEIGH, NC 27601
TEL: 1.919.836.4040
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2			4			TOTAL SHEETS 26

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ASSEMBLED BY: J. WHEATLEY	DATE: NOV 2021	DRAWN BY: REK	1/84	REV. 10/1/11	MAA/GM
CHECKED BY: T. KIRSCHBAUM	DATE: NOV 2021	CHECKED BY: RDU	1/84	REV. 12/21/11	MAA/GM
DESIGN ENGINEER OF RECORD: T. HARRIS	DATE: NOV 2021			REV. 12/17	MAA/THC



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.

FOR MECHANICAL COUPLERS, SEE MECHANICAL BUTT SPLICES FOR REINFORCING STEEL IN STANDARD PROVISIONS.

MECHANICAL COUPLERS SHALL BE USED TO JOIN #4 "A" BARS IN STAGE I WITH #9 "A" BARS IN STAGE II AT END BENT 2 APPROACH SLAB. THE LOCATION OF THE COUPLERS SHALL BE STAGGERED ON ALTERNATING BARS BY 1 FOOT AND THE BARS SHALL BE CUT ACCORDINGLY TO ALLOW A MINIMUM OF 6" EXTENSION INTO STAGE II CONSTRUCTION.

APPLY TYPE 4 OR 5 GEOTEXTILE ONE FOOT BELOW THE APPROACH SLAB FOR THE FULL WIDTH OF THE APPROACH FILL.

BILL OF MATERIAL

END BENT 1 - STAGE I

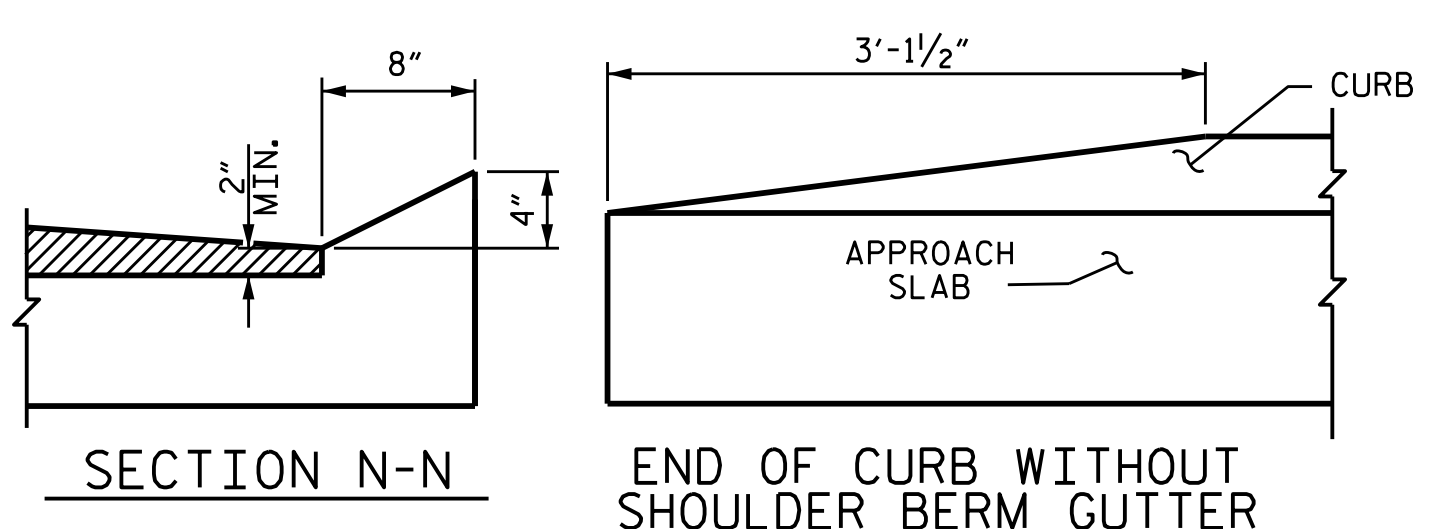
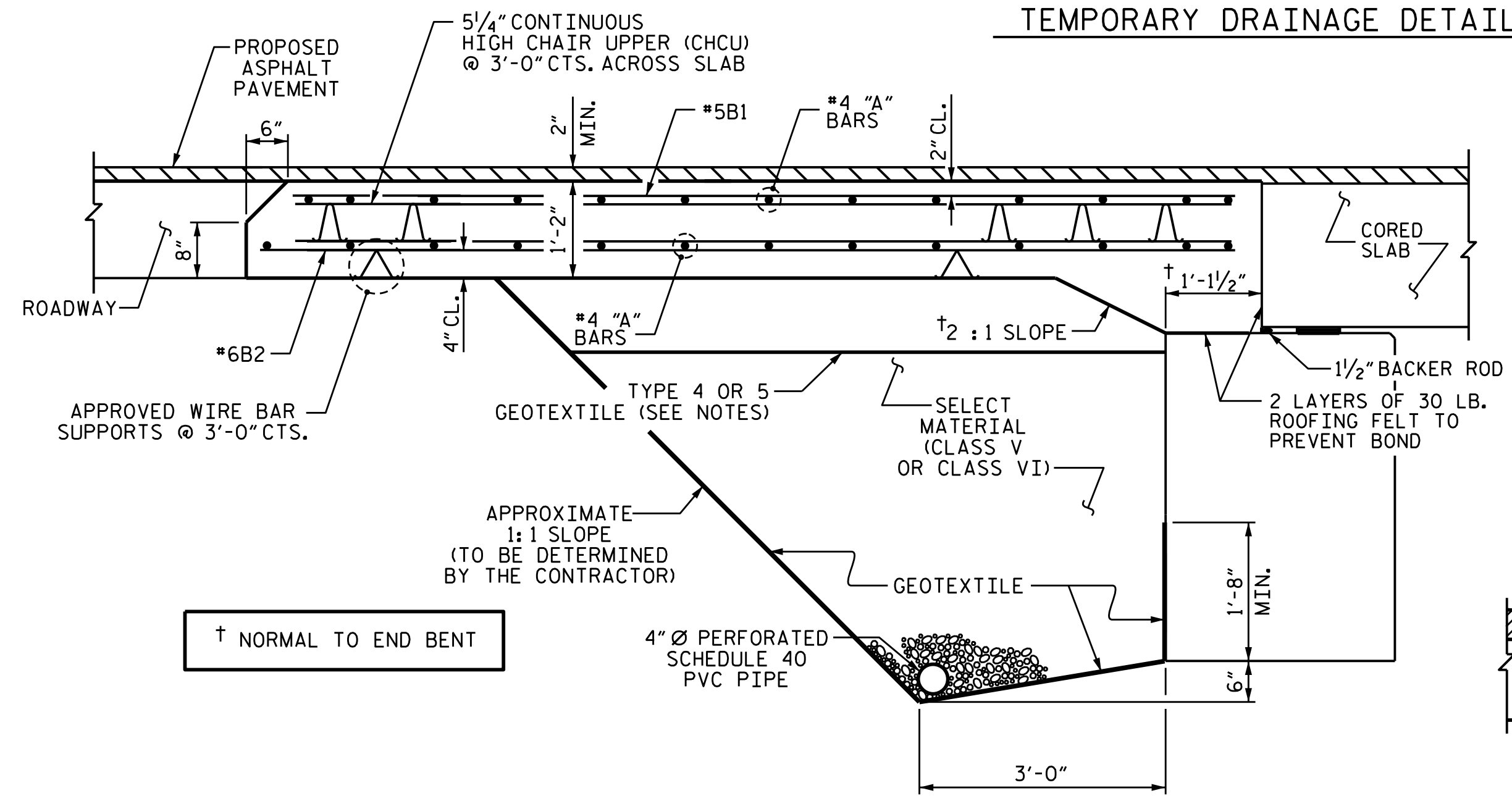
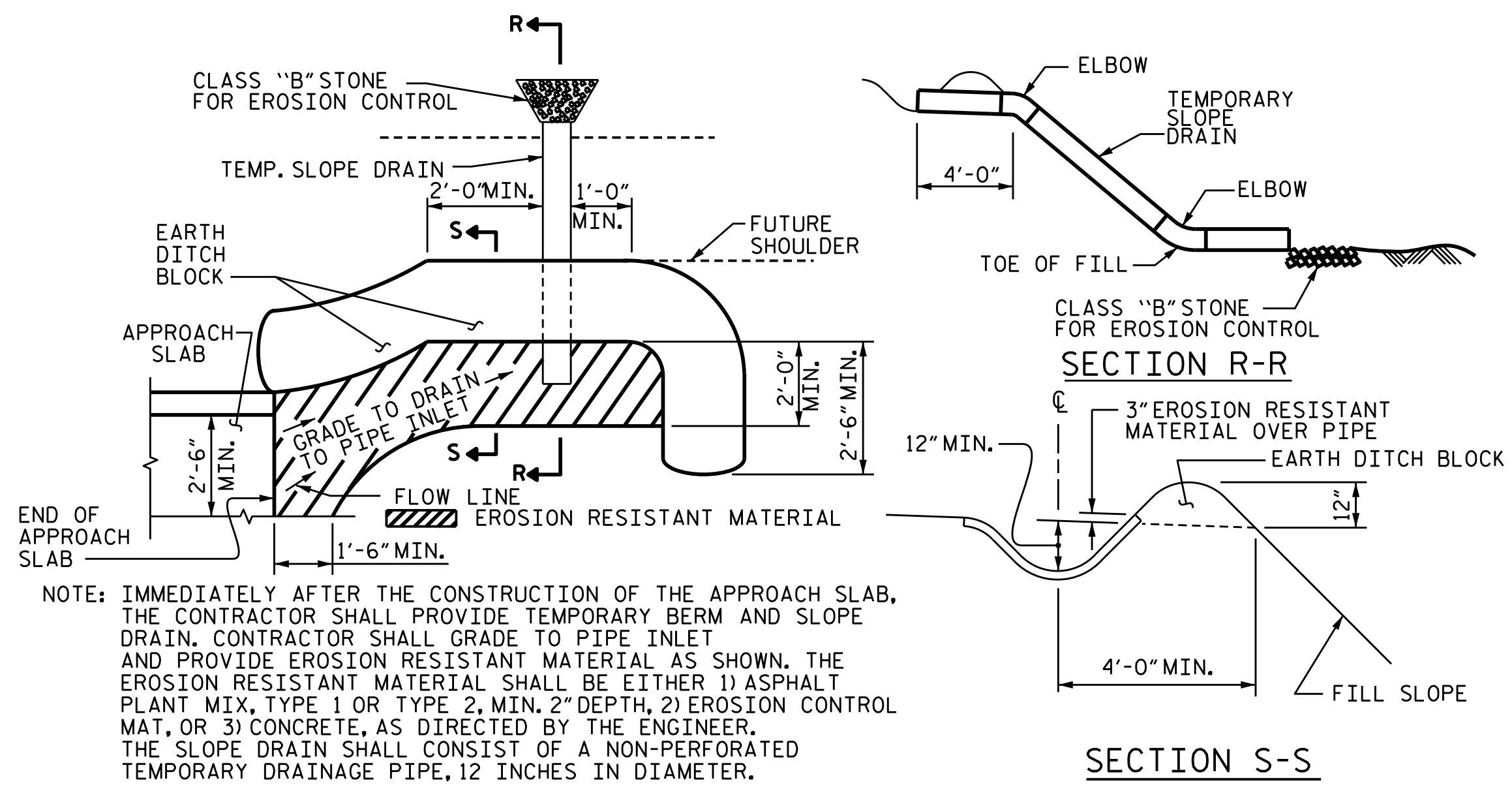
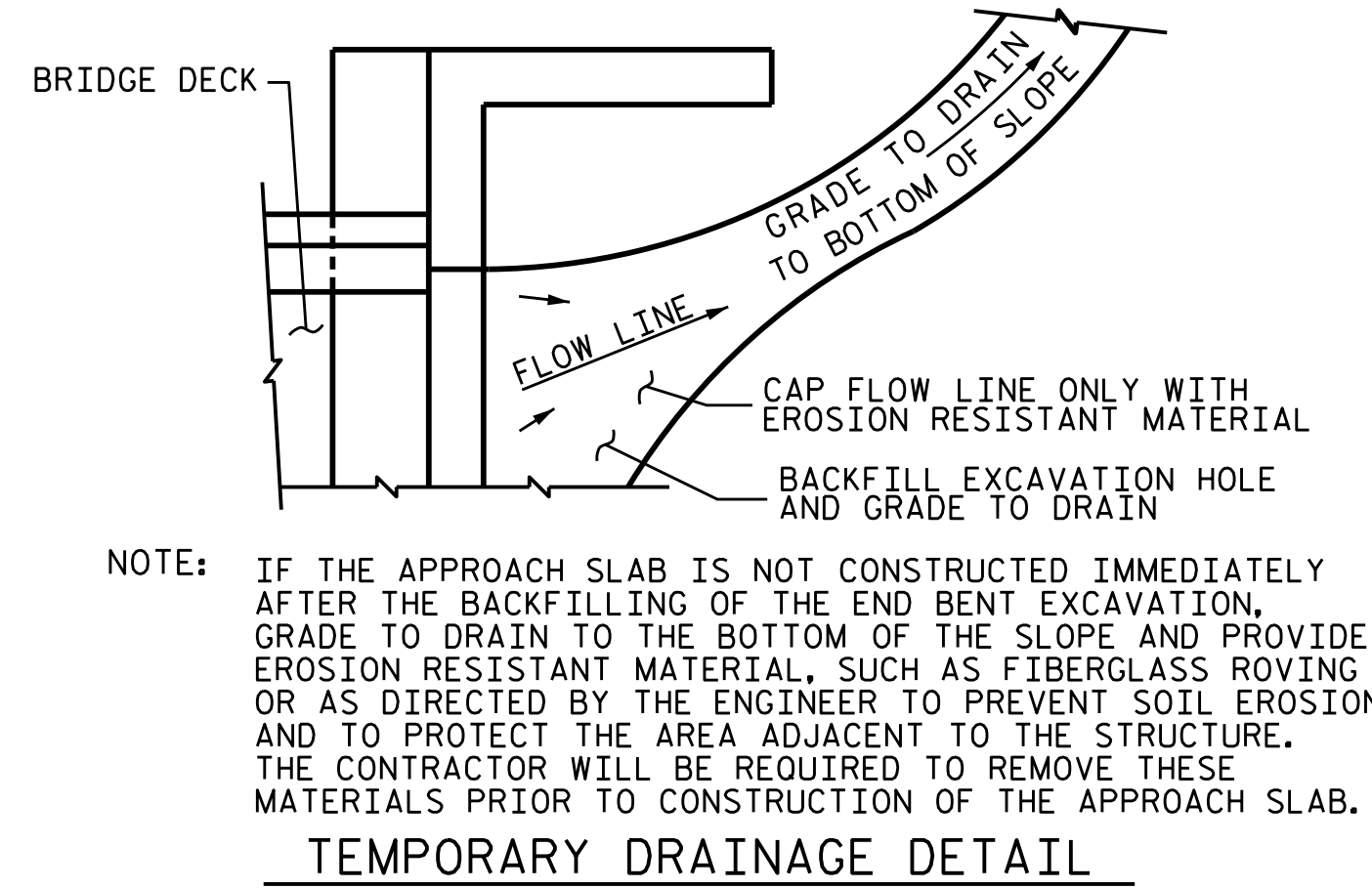
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	13	#4	STR	18'-1"	157	
A2	13	#4	STR	18'-1"	157	
*B1	28	#5	STR	11'-1"	324	
B2	28	#6	STR	11'-7"	487	
REINFORCING STEEL					LBS.	644
* EPOXY COATED REINFORCING STEEL					LBS.	481
CLASS AA CONCRETE					C. Y.	7.9

END BENT 2 - STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A5	13	#4	STR	16'-5"	143	
A6	13	#4	STR	16'-5"	143	
*B1	28	#5	STR	11'-1"	324	
B2	28	#6	STR	11'-7"	487	
REINFORCING STEEL					LBS.	630
* EPOXY COATED REINFORCING STEEL					LBS.	466
CLASS AA CONCRETE					C. Y.	7.9

SPLICE LENGTHS

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



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

wsp

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

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THOMAS M. HARRIS
 ENGINEER
 11/23/2021
 FERC057AC14AEF

PROJECT NO. 17BP.14.R.177
 HAYWOOD COUNTY
 STATION: 15+00.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER) STAGE I

REVISIONS				SHEET NO.	
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 TOTAL SHEETS 26

STD. NO. BAS_27_120S

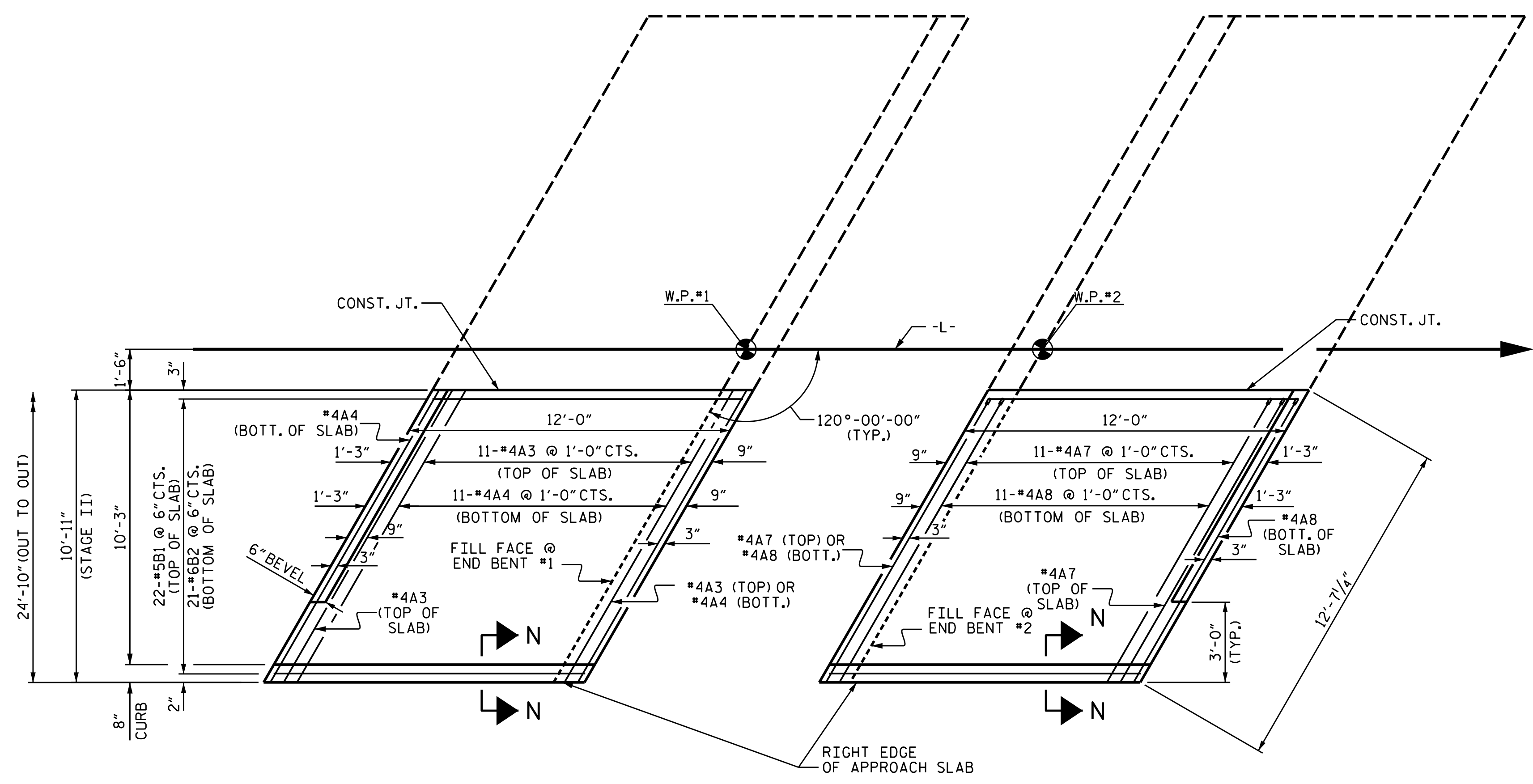
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NOTES

FOR NOTES AND DETAILS, SEE SHEET 1 OF 2

BILL OF MATERIAL

END BENT 1 - STAGE II						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* A3	13	#4	STR	12'-4"	107	
A4	13	#4	STR	12'-4"	107	
* B1	11	#5	STR	11'-1"	254	
B2	11	#6	STR	11'-7"	383	
REINFORCING STEEL					LBS.	490
* EPOXY COATED REINFORCING STEEL					LBS.	361
CLASS AA CONCRETE					C. Y.	6.1
END BENT 2 - STAGE II						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* A7	13	#4	STR	11'-11"	103	
A8	13	#4	STR	11'-11"	103	
* B1	22	#5	STR	11'-1"	254	
B2	22	#6	STR	11'-7"	383	
REINFORCING STEEL					LBS.	486
* EPOXY COATED REINFORCING STEEL					LBS.	358
CLASS AA CONCRETE					C. Y.	6.1



PLAN @ END BENT #1 PLAN @ END BENT #2
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

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ASSEMBLED BY : J. WHEATLEY	DATE : NOV 2021		
CHECKED BY : T. KIRSCHBAUM	DATE : NOV 2021		
DESIGN ENGINEER OF RECORD : T. HARRIS	DATE : NOV 2021		

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STATE OF NORTH CAROLINA
 PROFESSIONAL ENGINEER
 SEAL 19299
 THOMAS M. HARRIS
 11/23/2021
 E9EBC057AC1A4EE

PROJECT NO. 17BP.14.R.177
HAYWOOD COUNTY
 STATION: 15+00.00 -L-
 SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR PRESTRESSED CONCRETE
 CORED SLAB UNIT
 (SUB-REGIONAL TIER)
 STAGE II

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1			3			S-26
2			4			TOTAL SHEETS 26

STD. NO. BAS_27_120S

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS - - - - -	A.A.S.H.T.O. (CURRENT)
LIVE LOAD - - - - -	SEE PLANS
IMPACT ALLOWANCE - - - - -	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF STRUCTURAL STEEL - AASHTO M270 GRADE 36 - -	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W - -	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50 - -	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION - GRADE 60 - - -	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION - - - - -	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR - - - - -	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR UNTREATED EXTREME FIBER STRESS - - -	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER - - - - -	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH - - - - -	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 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 1 1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 3/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16" INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990

STD. NO. SN