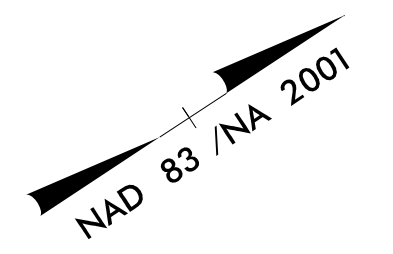
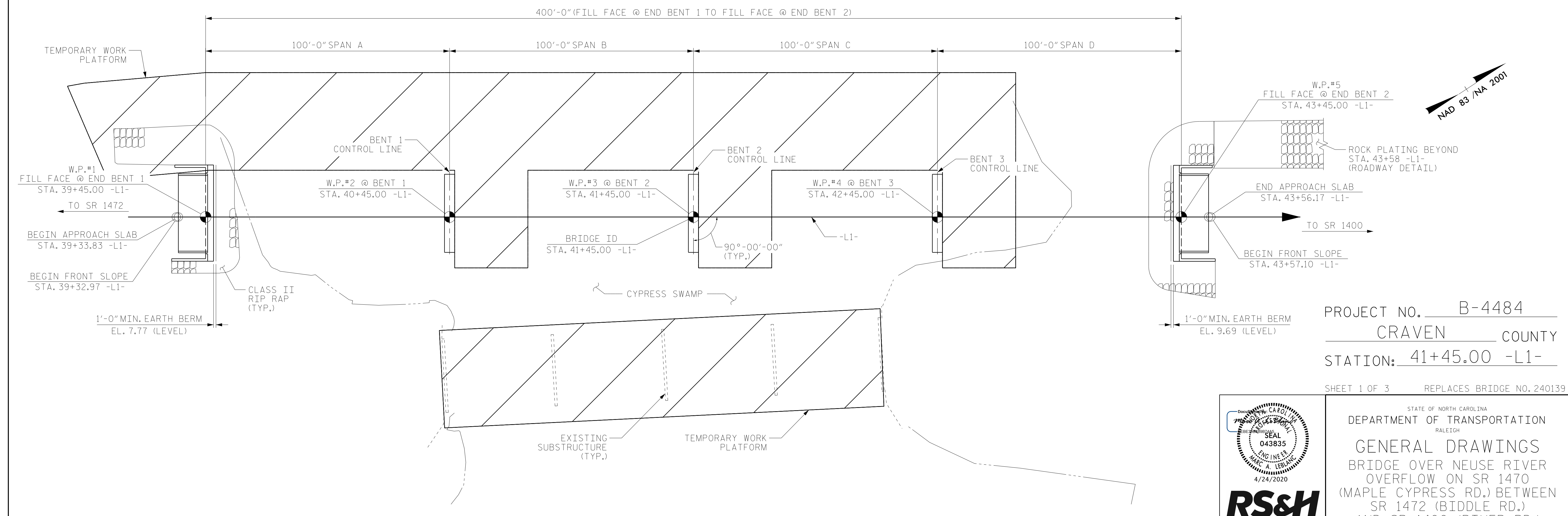


I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



PROJECT NO. B-4484
 CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 1 OF 3 REPLACES BRIDGE NO. 240139

DRAWN BY : NSC DATE : 04/2019
 CHECKED BY : JMR DATE : 05/2019
 DESIGN ENGINEER OF RECORD: PDS DATE : 06/2019

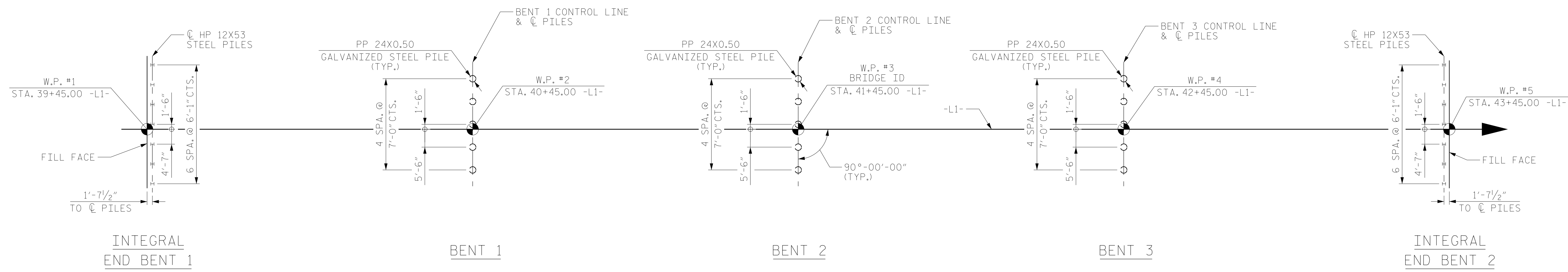
4/24/2020
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 CuonyN

PLAN ALONG -L1-
 PILES NOT SHOWN FOR CLARITY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 www.rsandh.com
 North Carolina License No. 00737-0403-C&E

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-1	
1			3			TOTAL SHEETS	
2			4			31	



FOUNDATION LAYOUT
DIMENSIONS LOCATING PILES SHOWN TO THE CENTERLINES OF PILES

NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO.1 AND END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILE.

PILES AT BENT NO.1, BENT NO.2, AND BENT NO.3 ARE DESIGNED FOR A FACTORED RESISTANCE OF 263 TONS PER PILE.

DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 155 TONS PER PILE.

DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 155 TONS PER PILE.

DRIVE PILE AT BENT NO.1, BENT NO.2, AND BENT NO.3 TO A REQUIRED DRIVING RESISTANCE OF 355 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR SCOUR.

INSTALL PILES AT BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN -29.0 FT.

INSTALL PILES AT BENT NO.2 TO A TIP ELEVATION NO HIGHER THAN -30.0 FT.

INSTALL PILES AT BENT NO.3 TO A TIP ELEVATION NO HIGHER THAN -30.0 FT.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 20 TO 40 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO.1 AND END BENT NO.2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 66 TO 75 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT NO.1, BENT NO.2, AND BENT NO.3. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENT NO.1 AND END BENT NO.2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT BENT NO.2 AND BENT NO.3. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PIPE PILE PLATES ARE REQUIRED FOR STEEL PIPE PILES AT BENT NO.1, BENT NO.2, AND BENT NO.3. USE PIPE PILE PLATES WITH A DIAMETER EQUAL TO THE PIPE PILE DIAMETER. FOR STEEL PIPE PILE PLATES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.1, BENT NO.2, AND BENT NO.3 IS ELEVATION -6 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATION FOR THE SETTLEMENT GAUGES REQUIRED AT END BENT NO.1 AND END BENT NO.2.

OBSERVE A 2 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO.1. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

OBSERVE A 3 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO.2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

TO REDUCE DOWNDRAG AND TO ALLOW ACCESS FOR PILE DRIVING AND PILE CAP CONSTRUCTION, CONSTRUCT EMBANKMENTS AT END BENT NO.1 AND END BENT NO.2 WITH A FRONT SLOPE NO STEEPER THAN 1:1, WITH SLOPE PROTECTION, TO THE BOTTOM OF THE PROPOSED PILE CAP.

PILE CUSHIONS ARE REQUIRED TO DRIVE STEEL PIPE PILES WITHIN THE LIMITS OF THE RIVER. REFER TO PROJECT SPECIAL PROVISIONS FOR MORE INFORMATION.

PROJECT NO. B-4484
CRAVEN COUNTY
STATION: 41+45.00 -L1-

SHEET 2 OF 3 REPLACES BRIDGE NO. 240139



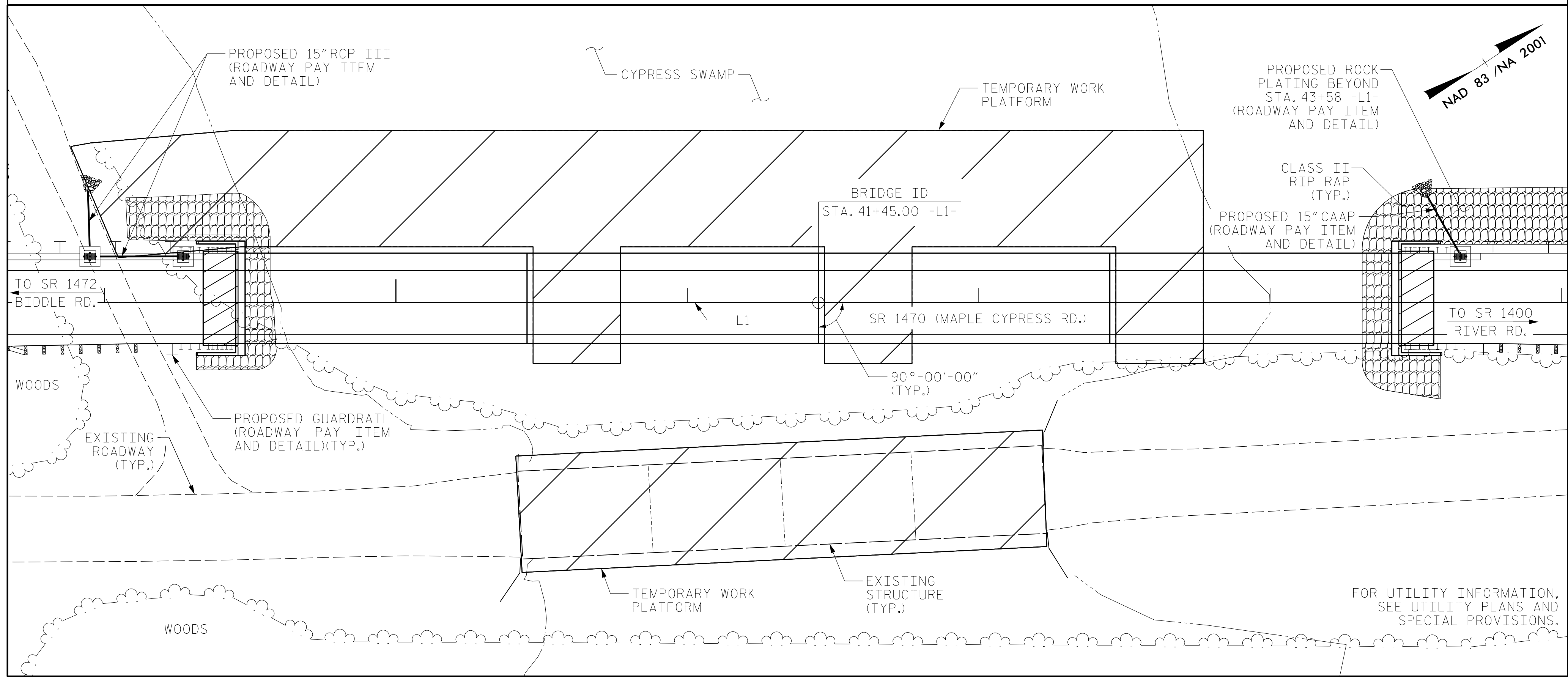
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWINGS
BRIDGE OVER NEUSE
RIVER OVERFLOW ON SR 1470
(MAPLE CYPRESS RD.) BETWEEN
SR 1472 (BIDDLE RD.)
AND SR 1400 (RIVER RD.)

DRAWN BY :	NSC	DATE :	04/2019
CHECKED BY :	JMR	DATE :	05/2019
DESIGN ENGINEER OF RECORD:	PDS	DATE :	06/2019

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-2	
1			3			TOTAL SHEETS	
2			4			31	

BENCHMARK - NCDOT GPS (B4484-1), 29' RT. OF -L1- STA. 19+61.00, EL. 24.22



LOCATION SKETCH

NOTES

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE CONSISTING OF 4 @ 45'-0" PRESTRESSED CONCRETE CORED SLAB SPANS WITH PPC CAPS AND H-PILES AND LOCATED APPROXIMATELY 65 FT DOWNSTREAM FROM THE 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 BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
- THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
- REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18 - EVALUATING SCOUR AT BRIDGES."
- FOR INTERIOR BENTS 1-3, ONLY PARTIAL GALVANIZING OF THE PILES IS REQUIRED. SEE INTERIOR BENT SHEETS FOR REQUIRED GALVANIZING LENGTHS. PAYMENT FOR PARTIALLY GALVANIZED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR GALVANIZED STEEL PILES.
- THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN, AND AFTERWARDS REMOVE THE TEMPORARY ACCESS AT STATION 41+45.00 -L1- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE.
- FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS AT STATION 41+45.00 -L1-, SEE SPECIAL PROVISIONS.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- FOR ABESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.
- 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.
- FOR PAYMENT OF TOP PIPE PILE PLATES, SEE "DRIVE STEEL PIPE PILES WITH PILE CUSHION" SPECIAL PROVISION.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

TOTAL BILL OF MATERIALS

	CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS AT STA. 41+45.00 -L1-	REMOVAL OF EXISTING STRUCTURE AT STA. 41+45.00 -L1-	ASBESTOS ASSESSMENT	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	
	LUMP SUM	LUMP SUM	LUMP SUM	EACH	SO. FT.	SO. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	EACH
SUPERSTRUCTURE	---	---	---	---	13,245	11,788	---	LUMP SUM	---	16	1,582.7	---
END BENT NO. 1	---	---	---	1	---	---	33.2	---	5,856	---	---	7
BENT NO. 1	---	---	---	---	---	---	20.3	---	3,253	---	---	---
BENT NO. 2	---	---	---	1	---	---	20.3	---	3,253	---	---	---
BENT NO. 3	---	---	---	1	---	---	20.3	---	3,253	---	---	---
END BENT NO. 2	---	---	---	1	---	---	33.2	---	5,856	---	---	7
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	4	13,245	11,788	127.3	LUMP SUM	21,471	16	1,582.7	14
	PILE DRIVING EQUIPMENT SETUP FOR PP 24X0.50 GALVANIZED STEEL PILES	HP 12X53 STEEL PILES	PP 24X0.50 GALVANIZED STEEL PILES	PIPE PILE PLATES	PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	TOP PIPE PILE PLATES		
	EACH	NO.	LIN. FT.	NO.	LIN. FT.	EACH	EACH	LIN. FT.	TONS	SO. YDS.	LUMP SUM	EACH
SUPERSTRUCTURE	---	---	---	---	---	---	---	796.7	---	---	LUMP SUM	---
END BENT NO. 1	---	7	525	---	---	---	4	---	170	185	---	---
BENT NO. 1	5	---	---	5	475	5	3	---	---	---	---	5
BENT NO. 2	5	---	---	5	500	5	3	---	---	---	---	5
BENT NO. 3	5	---	---	5	475	5	3	---	---	---	---	5
END BENT NO. 2	---	7	525	---	---	---	4	---	160	175	---	---
TOTAL	15	14	1050	15	1450	15	17	796.7	330	360	LUMP SUM	15

HYDRAULIC DATA

DESIGN DISCHARGE = 19,400 CFS
 FREQUENCY OF DESIGN DISCHARGE = 2 YRS
 DESIGN HIGH WATER ELEVATION = 13.2
 DRAINAGE AREA = 3,950 SQ. MI.
 BASE DISCHARGE (Q100) = 70,000 CFS
 BASE HIGH WATER ELEVATION = 23.3

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 22,400 CFS
 FREQUENCY OF OVERTOPPING = 2+ YRS
 * OVERTOPPING ELEVATION = 13.8
 * SAG @ STA. 07+20.00 -L1-

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 3 OF 3 REPLACES BRIDGE NO. 240139



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GENERAL DRAWINGS BRIDGE OVER NEUSE RIVER OVERFLOW ON SR 1470 (MAPLE CYPRESS RD.) BETWEEN SR 1472 (BIDDLE RD.) AND SR 1400 (RIVER RD.)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S2-3 TOTAL SHEETS 31

DRAWN BY : NSC DATE : 03/2019
 CHECKED BY : JMR DATE : 06/2019
 DESIGN ENGINEER OF RECORD: PDS DATE : 06/2019

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

LOAD FACTORS:

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

LOAD AND RESISTANCE FACTOR RATING (LRFR) 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	
						LIVE-LOAD FACTORS (γ_{LL})	MOMENT					SHEAR					LIVE-LOAD FACTORS (γ_{LL})	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 (INVENTORY)	N/A	①	1.01	--	1.75	0.8	1.23	B	E	48.88	0.8	1.73	A	E	38.76	0.80	0.72	1.01	B	I	48.88	1	
	HL-93 (OPERATING)	N/A		1.59	--	1.35	0.8	1.59	B	E	48.88	0.9	2.95	A	I	28.89	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	②	1.41	50.760	1.75	0.8	1.71	B	E	48.88	0.9	2.71	D	I	58.49	0.80	0.72	1.41	B	I	48.88		
	HS-20 (OPERATING)	36.000		2.22	79.920	1.35	0.8	2.22	B	E	48.88	0.9	3.78	A	I	28.89	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		3.34	45.090	1.40	0.8	5.09	B	E	48.88	0.9	9.00	A	I	28.89	0.80	0.72	3.34	C	I	48.88	
		SNGARBS2	20.000		2.42	48.400	1.40	0.8	3.68	B	E	48.63	0.9	6.32	A	I	28.89	0.80	0.72	2.42	C	I	48.88	
		SNAGRIS2	22.000		2.26	49.720	1.40	0.8	3.44	B	E	48.88	0.9	5.85	A	I	28.89	0.80	0.72	2.26	C	I	48.88	
		SNCOTTS3	27.250		1.66	45.235	1.40	0.8	2.53	B	E	48.88	0.9	4.39	A	I	28.89	0.80	0.72	1.66	C	I	48.88	
		SNAGGRS4	34.925		1.36	47.498	1.40	0.8	2.07	B	E	48.88	0.9	3.60	A	I	28.89	0.80	0.72	1.36	C	I	48.88	
		SNS5A	35.550		1.33	47.282	1.40	0.8	2.03	B	E	48.88	0.9	3.64	A	I	28.89	0.80	0.72	1.33	C	I	48.88	
		SNS6A	39.950		1.21	48.340	1.40	0.8	1.84	B	E	48.88	0.9	3.30	A	I	28.89	0.80	0.72	1.21	C	I	48.88	
		SNS7B	42.000		1.15	48.300	1.40	0.8	1.76	B	E	48.88	0.9	3.21	A	I	28.89	0.80	0.72	1.15	C	I	48.88	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.47	48.510	1.40	0.8	2.24	B	E	48.88	0.9	3.97	A	I	28.89	0.80	0.72	1.47	C	I	48.88	
		TNT4A	33.075		1.48	48.951	1.40	0.8	2.25	B	E	48.88	0.9	3.87	A	I	28.89	0.80	0.72	1.48	B	I	48.88	
		TNT6A	41.600		1.20	49.920	1.40	0.8	1.82	B	E	48.88	0.9	3.41	A	I	28.89	0.80	0.72	1.20	B	I	48.88	
		TNT7A	42.000		1.20	50.400	1.40	0.8	1.82	B	E	48.88	0.9	3.37	A	I	28.89	0.80	0.72	1.20	B	I	48.88	
		TNT7B	42.000		1.22	51.240	1.40	0.8	1.87	B	E	48.88	0.9	3.16	A	I	28.89	0.80	0.72	1.22	C	I	48.88	
		TNAGRIT4	43.000		1.17	50.310	1.40	0.8	1.79	B	E	48.88	0.9	3.05	A	I	28.89	0.80	0.72	1.17	C	I	48.88	
	TNAGT5A	45.000		1.11	49.950	1.40	0.8	1.70	B	E	48.88	0.9	2.99	B	I	38.96	0.80	0.72	1.11	C	I	48.88		
	TNAGT5B	45.000	③	1.10	49.500	1.40	0.8	1.68	B	E	48.88	0.9	2.75	D	I	58.49	0.80	0.72	1.10	C	I	48.88		

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. MINIMUM RATING FACTOR FOR SPAN C INTERIOR GIRDER ALSO 1.01.
 2. TRANSFORMING ALL PRESTRESSING TENDONS.
 3. GIRDERS DESIGNED AS SIMPLE SPANS FOR FLEXURE.
 4. GIRDERS DESIGNED AS SIMPLE-MADE-CONTINUOUS (FOR LIVE AND SUPERIMPOSED DEAD LOAD) FOR SHEAR.
 5. FACTORED SHEAR AND MOMENT CAPACITIES PROVIDED FOR STRENGTH I LIMIT STATE, SECTION PROPERTIES PROVIDED FOR SERVICE III LIMIT STATE.
 6. GIRDERS LOAD RATED AS SIMPLE SPANS.

① 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
 E - EXTERIOR GIRDER

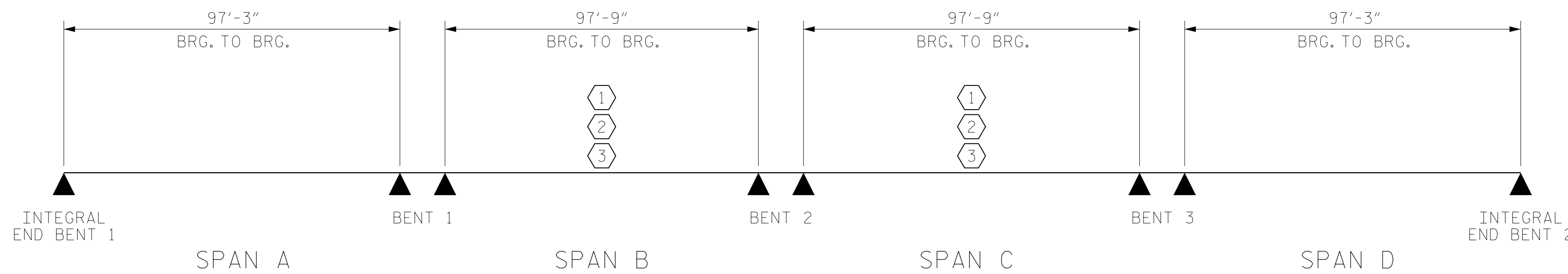
		CL BRG.	0.1L	0.2L	0.3L	0.4L	0.5L	0.6L	0.7L	0.8L	0.9L	CL BRG.
EXTERIOR GIRDER (E) SPAN B	ϕV_n (KIPS)	811	566	562	365	299	298	299	365	560	567	812
	ϕM_n (KIP-FT)	----	6517	8266	8497	8497	8497	8497	8497	8266	8562	----
INTERIOR GIRDER (I) SPAN B	ϕV_n (KIPS)	814	565	562	366	301	300	300	366	561	566	814
	ϕM_n (KIP-FT)	----	6614	8382	8631	8631	8631	8631	8631	8382	6614	----

SPAN B/C - INTERIOR			
	UNITS	NON-COMPOSITE	COMPOSITE
HEIGHT	IN	54.00	62.50
AREA	IN ²	826.80	1553.00
I_{xx}	IN ⁴	269,790	724,924
Y_{cg}	IN	24.01	40.15
SELF WT.	PLF	821.90	1778.10
EFF. WIDTH	IN	---	108.00

SECTION PROPERTIES PROVIDED AT MIDSPAN

PROJECT NO. B-4484
 CRAVEN COUNTY
 STATION: 41+45.00 -L1-

REPLACES BRIDGE NO. 240139



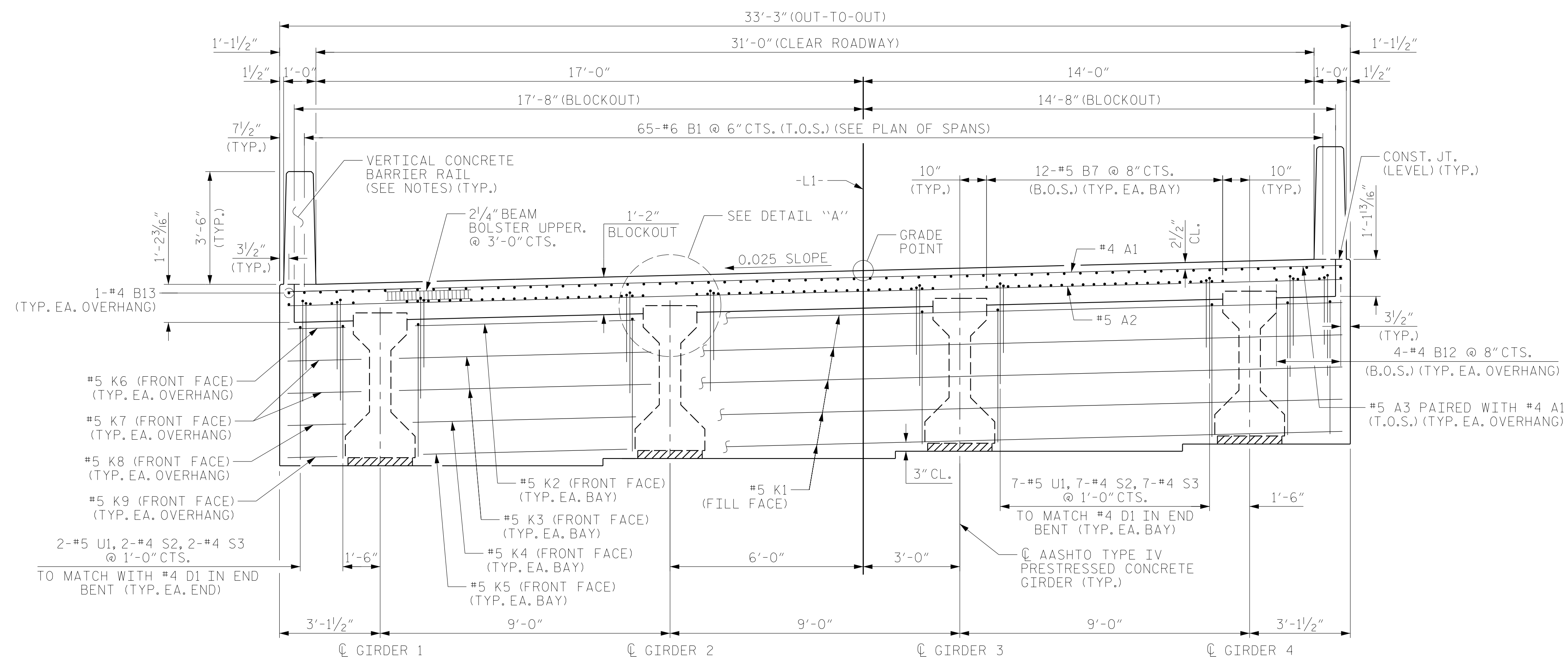
LRFR SUMMARY

DRAWN BY : NSC DATE : 04/2019
 CHECKED BY : JMR DATE : 06/2019
 DESIGN ENGINEER OF RECORD: PDS DATE : 06/2019

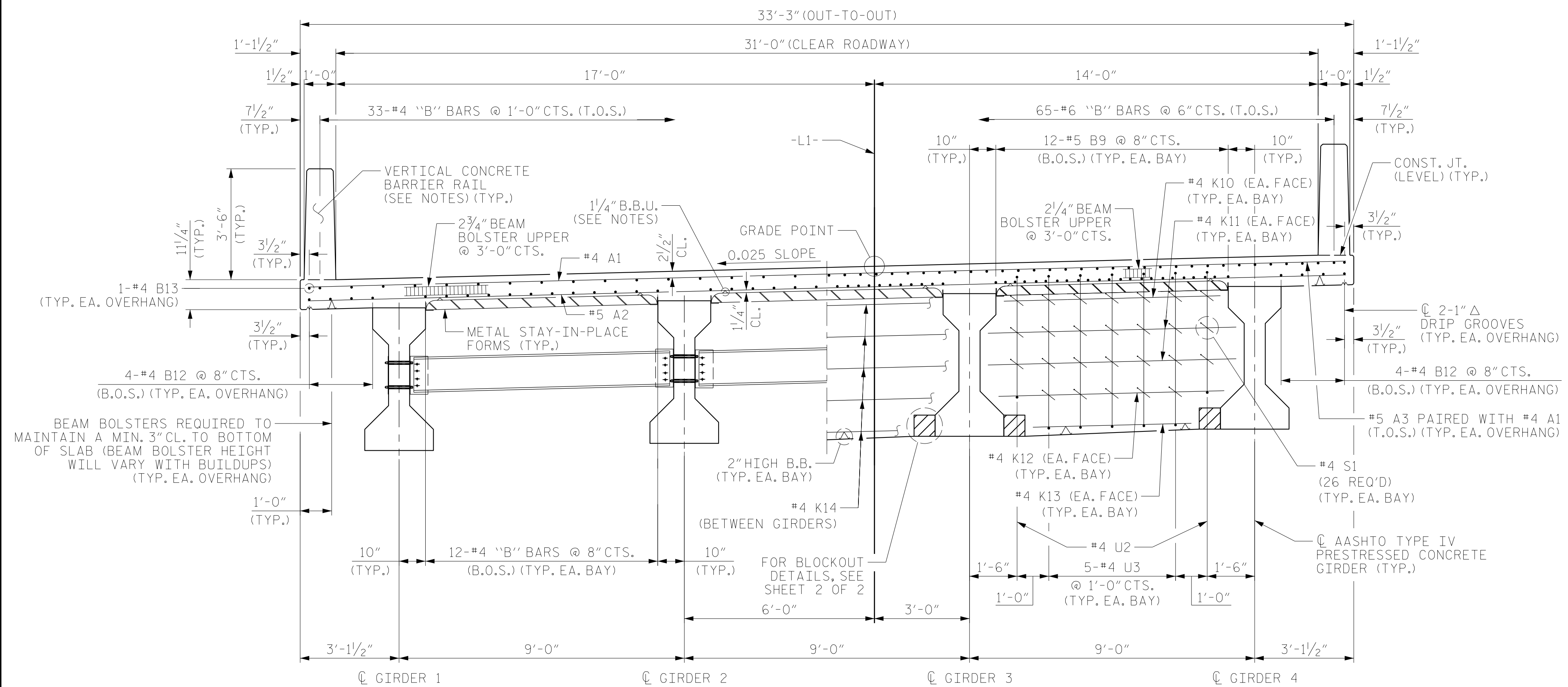
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 North Carolina License No. 00737-5403-C-02

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-4
1			3			TOTAL SHEETS 31
2			4			



TYPICAL SECTION AT INTEGRAL END BENT



HALF SECTION AT INTERMEDIATE DIAPHRAGM HALF SECTION AT CONTINUOUS BENT DIAPHRAGM

NOTES

PROVIDE 1/4" HIGH BEAM BOLSTER UPPERS @ 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK @ 4'-0" CTS. WITH A HEIGHT TO PROVIDE 2 1/2" CLEAR DISTANCE ABOVE FORMS.

LONGITUDINAL REINFORCING STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

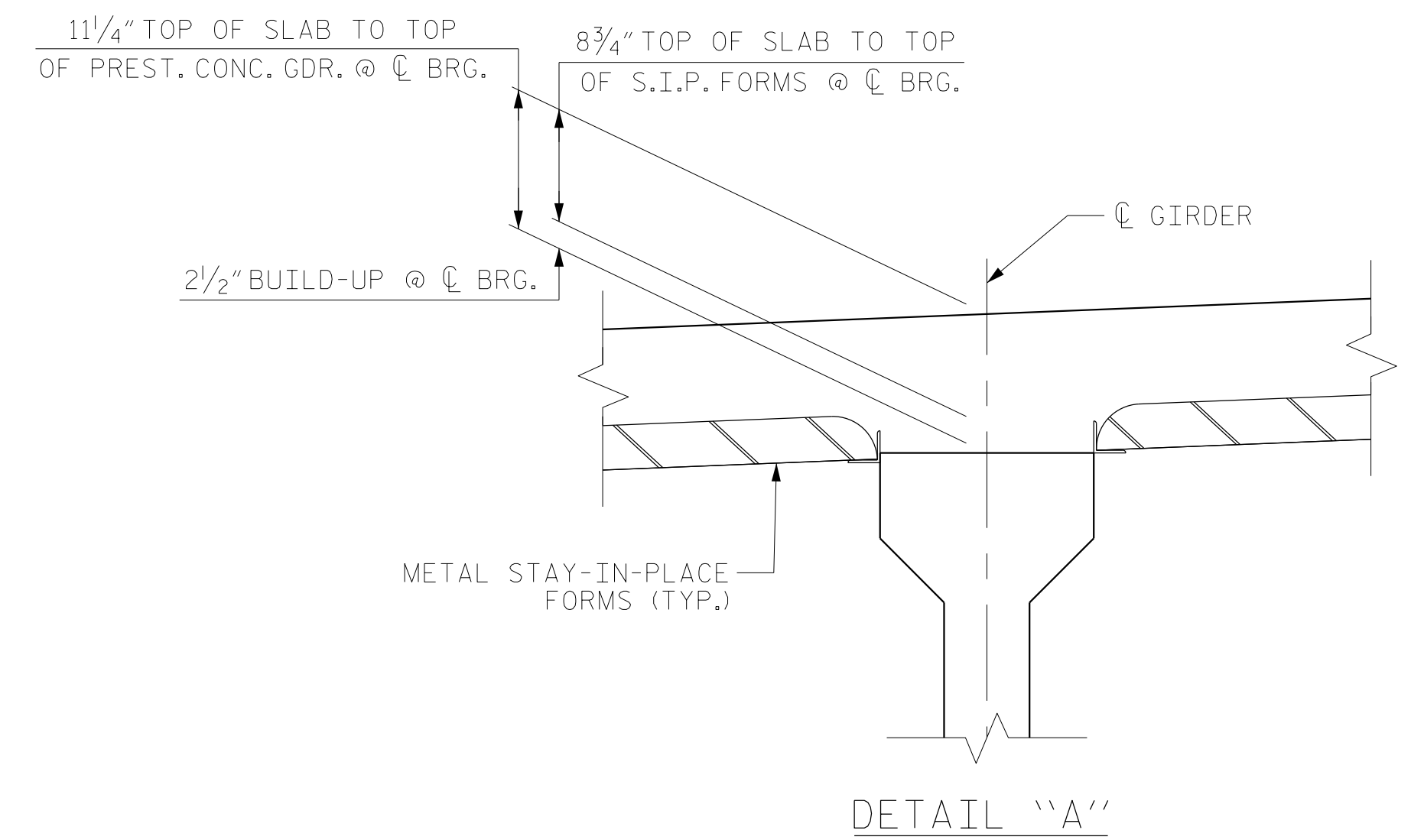
PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

FOR VERTICAL CONCRETE BARRIER RAIL REINFORCING STEEL AND DETAILS, SEE "VERTICAL CONCRETE BARRIER RAIL" SHEETS

CONCRETE BARRIER RAIL IN CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL DECK SLAB CONCRETE IN THAT UNIT HAS BEEN CAST AND HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

T.O.S. = TOP OF SLAB

B.O.S. = BOTTOM OF SLAB



DETAIL "A"

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 1 OF 2 REPLACES BRIDGE NO. 240139

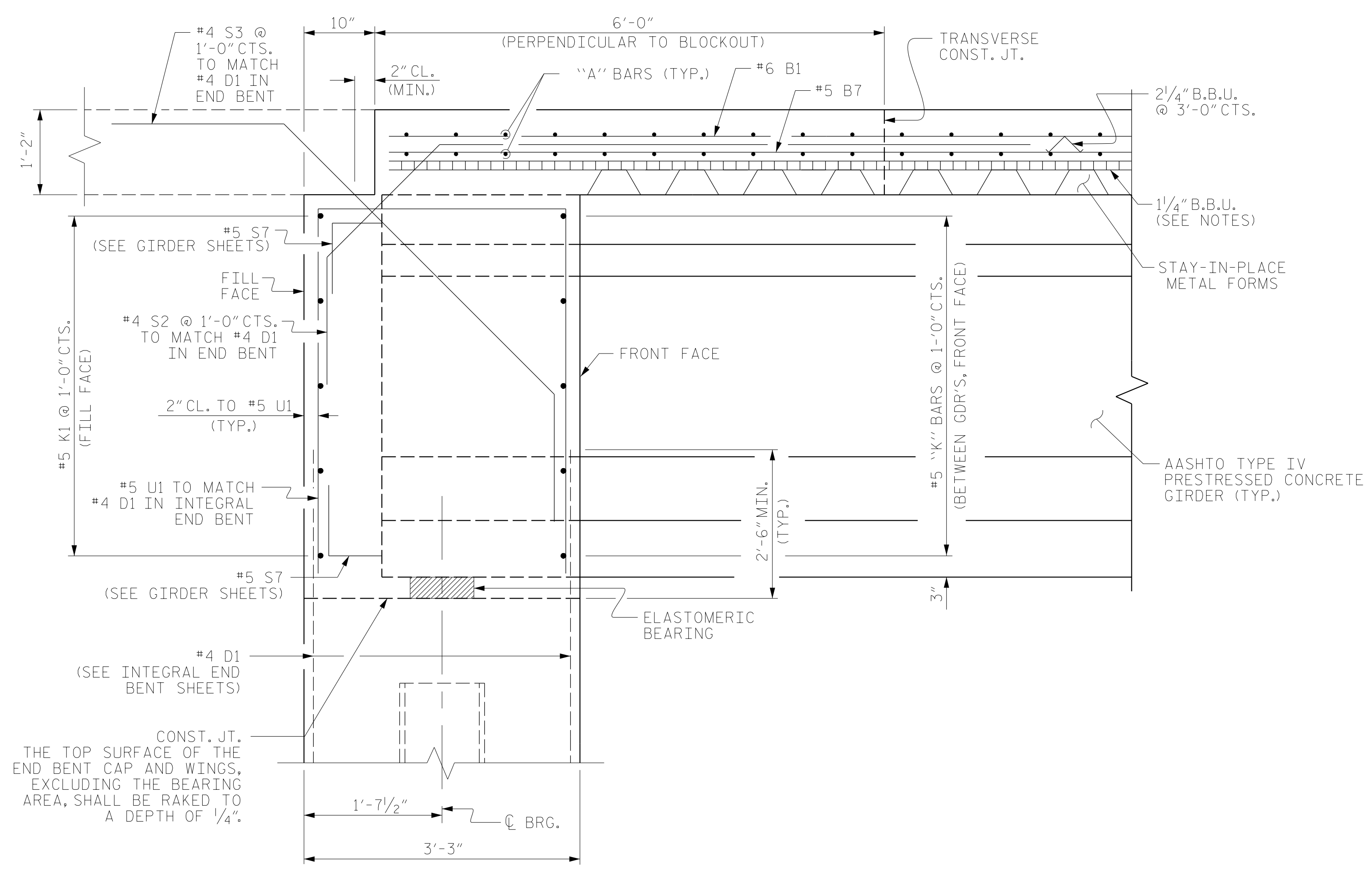


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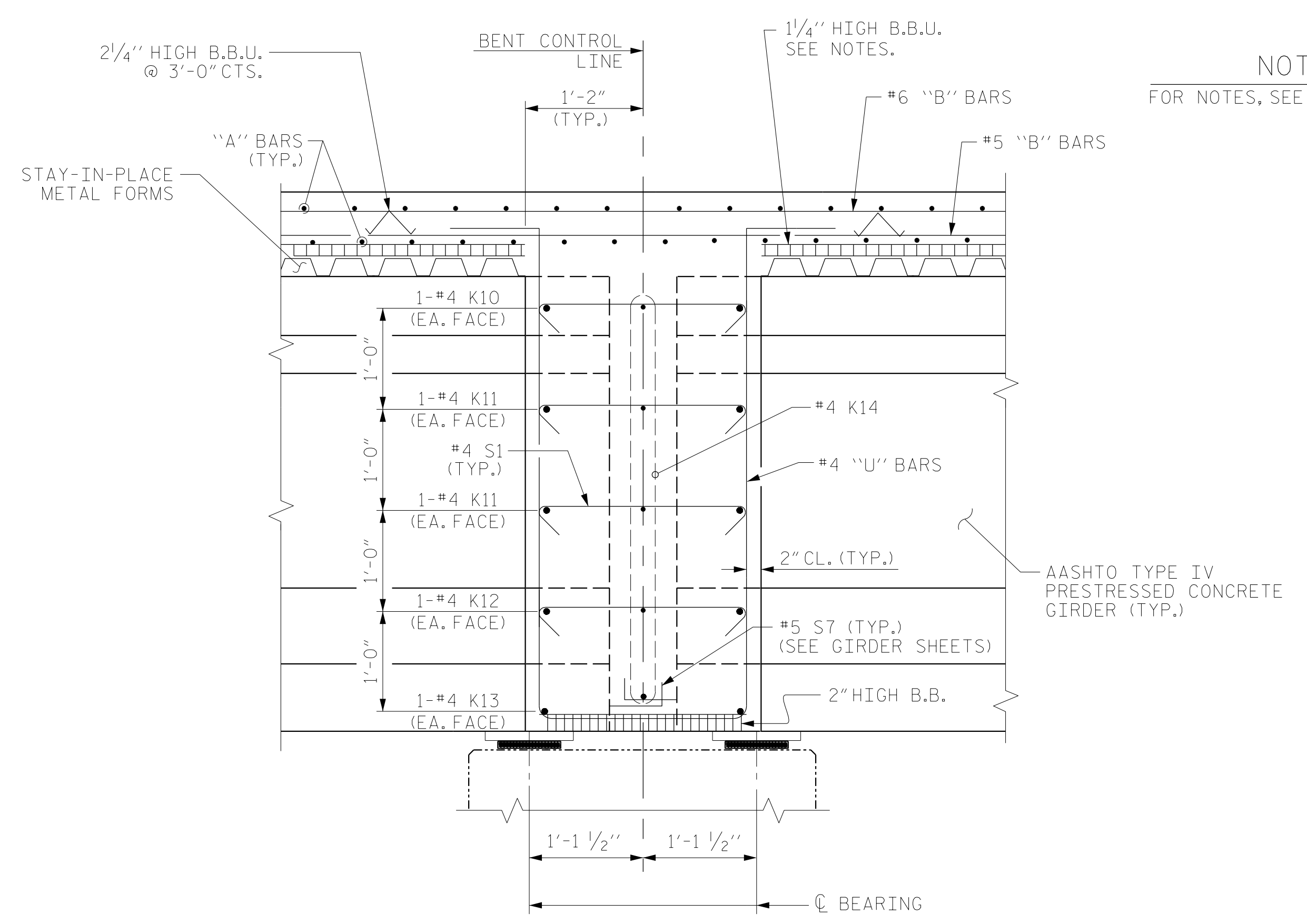
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NO.	BY:	DATE:	NO.	BY:	DATE:	S2-5
1			3			TOTAL SHEETS
2			4			31

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 CHECKED BY : JMR DATE : .05/2019
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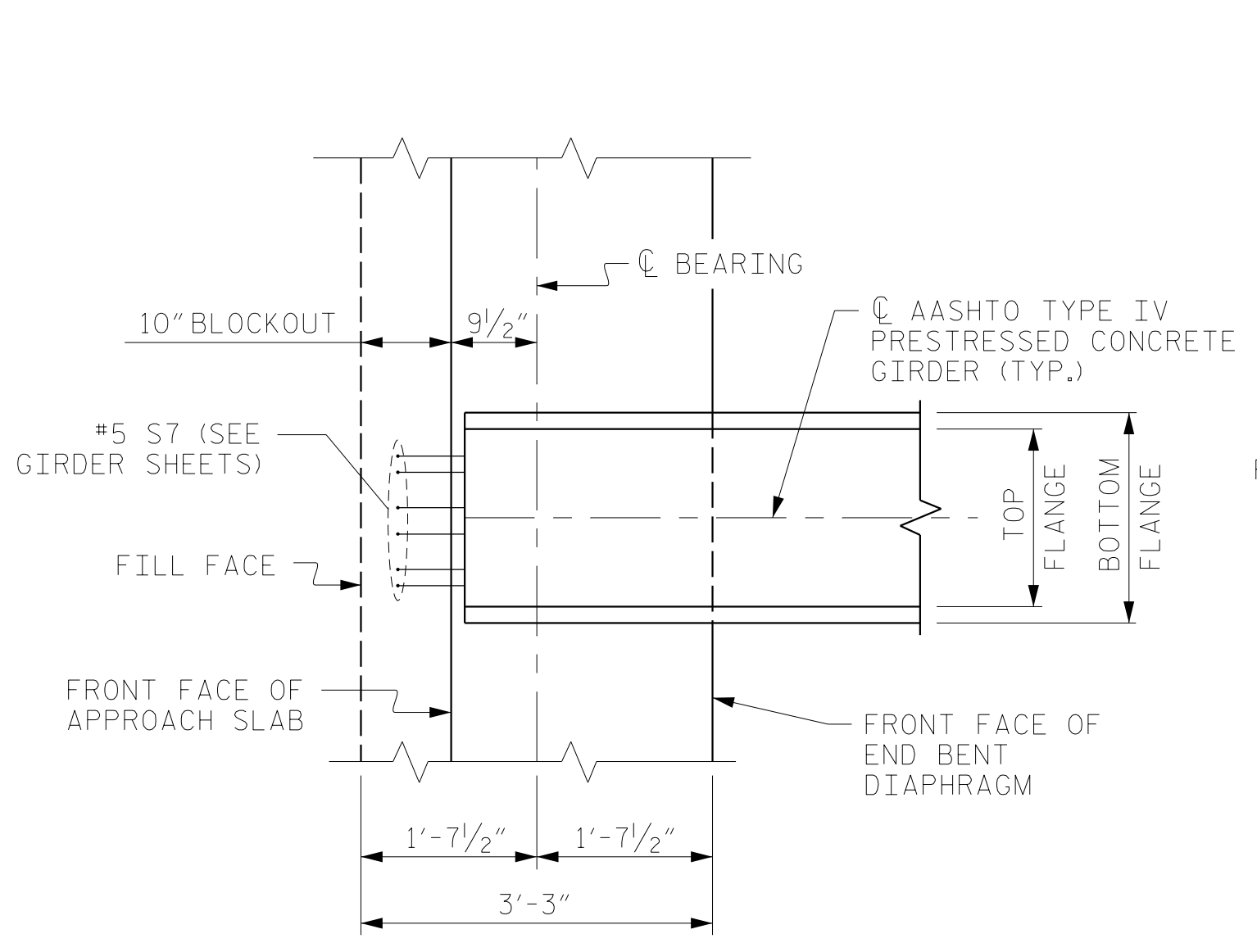


SECTION THROUGH INTEGRAL END BENT

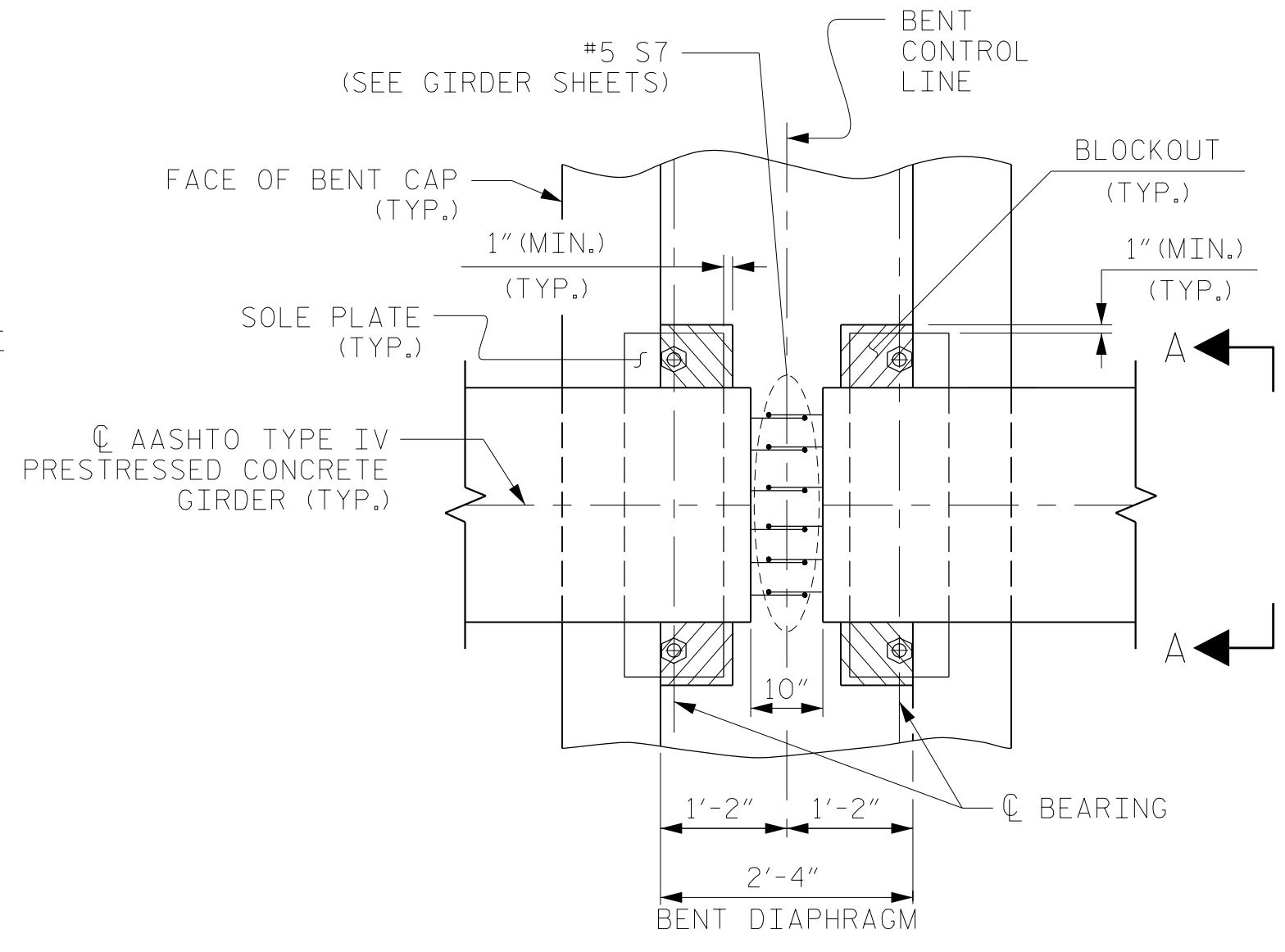


SECTION THROUGH CONTINUOUS BENT DIAPHRAGM

NOTES
FOR NOTES, SEE SHEET 1 OF 2.

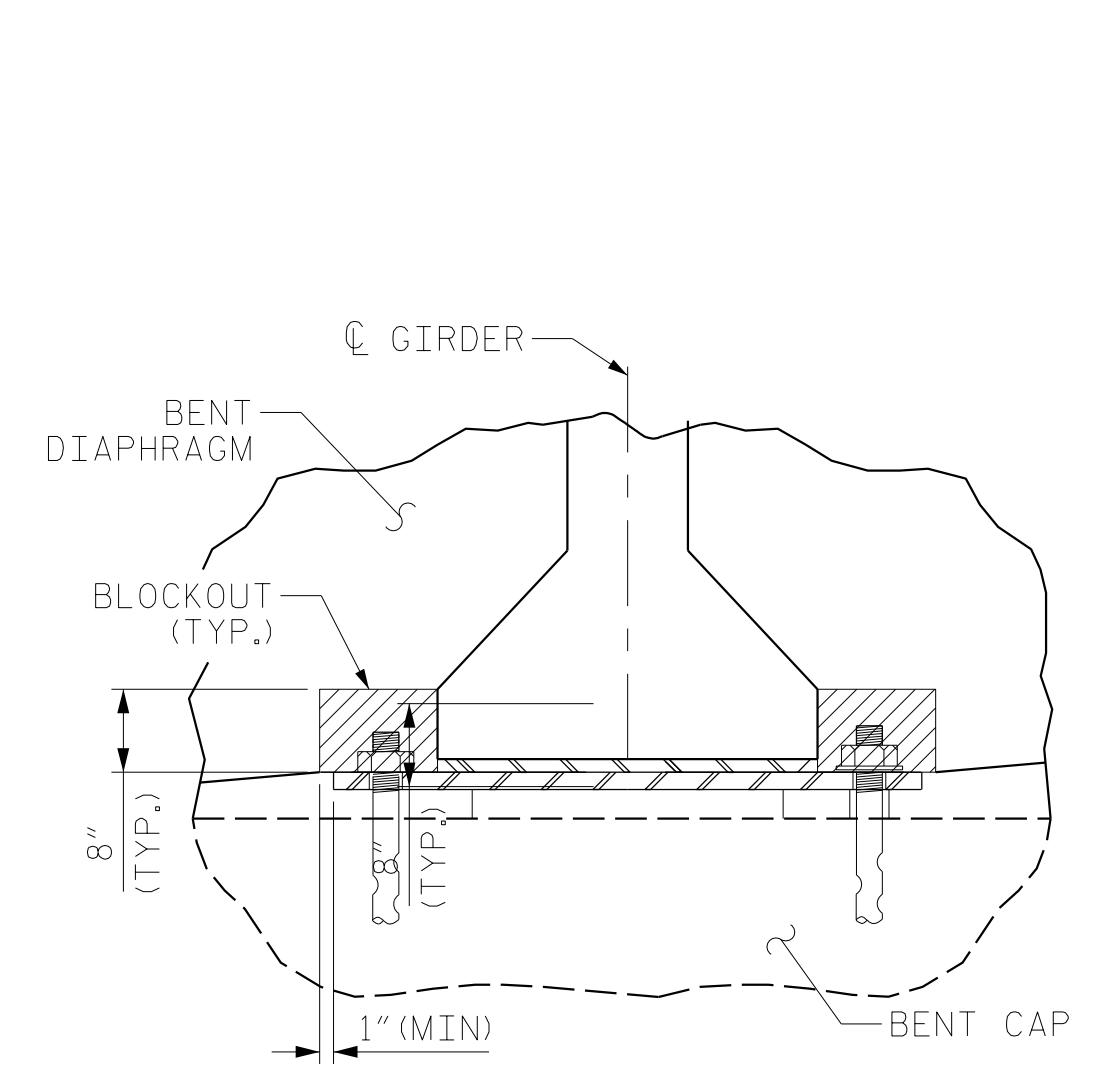


PLAN OF GIRDER AT INTEGRAL END BENT



PLAN VIEW

BENT DIAPHRAGM BLOCKOUT DETAIL



VIEW A-A

PROJECT NO. B-4484
CRAVEN COUNTY
STATION: 41+45.00 -L1-

SHEET 2 OF 2 REPLACES BRIDGE NO. 240139

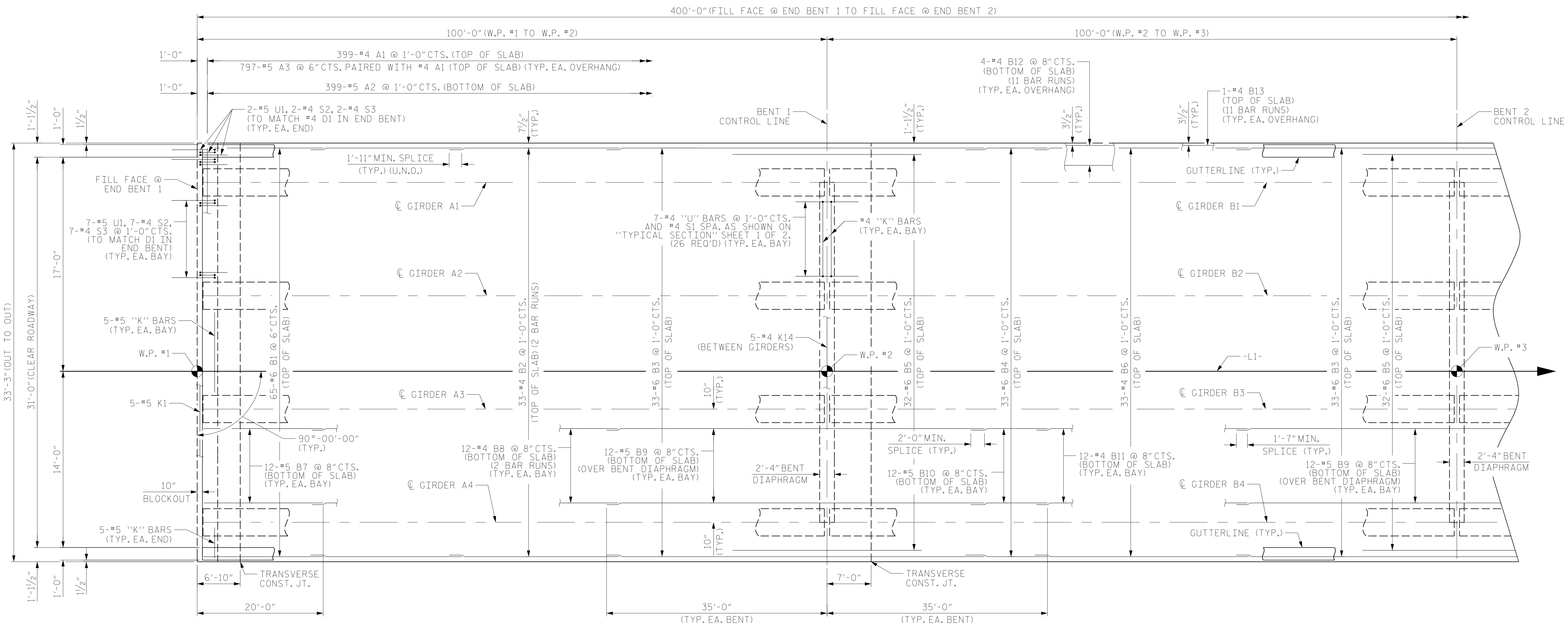


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION
DETAILS

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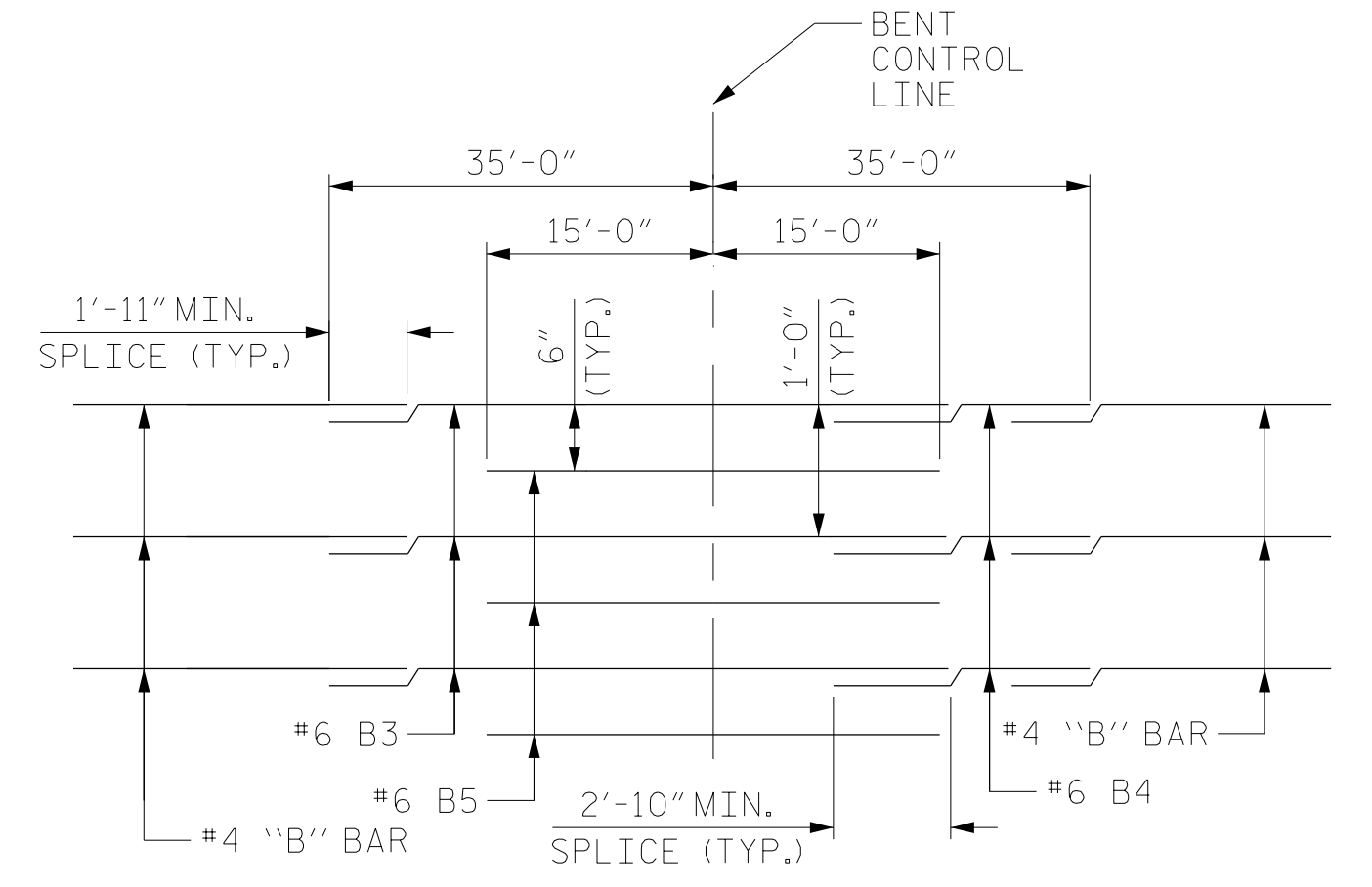
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-6
1			3			TOTAL SHEETS
2			4			31



PLAN OF SPANS A AND B

NOTES

- FOR SPLICE LENGTHS NOT SHOWN, REFER TO MINIMUM SPLICE LENGTH TABLE ON "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.
- FOR END BENT DIAPHRAGM BARS AND BENT DIAPHRAGM BARS, SEE TYPICAL SECTION SHEETS.
- BENT DIAPHRAGM BARS AT BENT 1 ARE TYPICAL FOR BENT 2.
- STEEL INTERMEDIATE DIAPHRAGMS NOT SHOWN FOR CLARITY. FOR LOCATIONS, SEE "FRAMING PLAN" SHEET.
- FOR POURING SEQUENCE, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.
- FOR BARRIER RAIL REINFORCING STEEL, SEE "VERTICAL CONCRETE BARRIER RAIL" SHEET.



TOP OF SLAB REINFORCING STEEL LAYOUT

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 1 OF 2 REPLACES BRIDGE NO. 240139



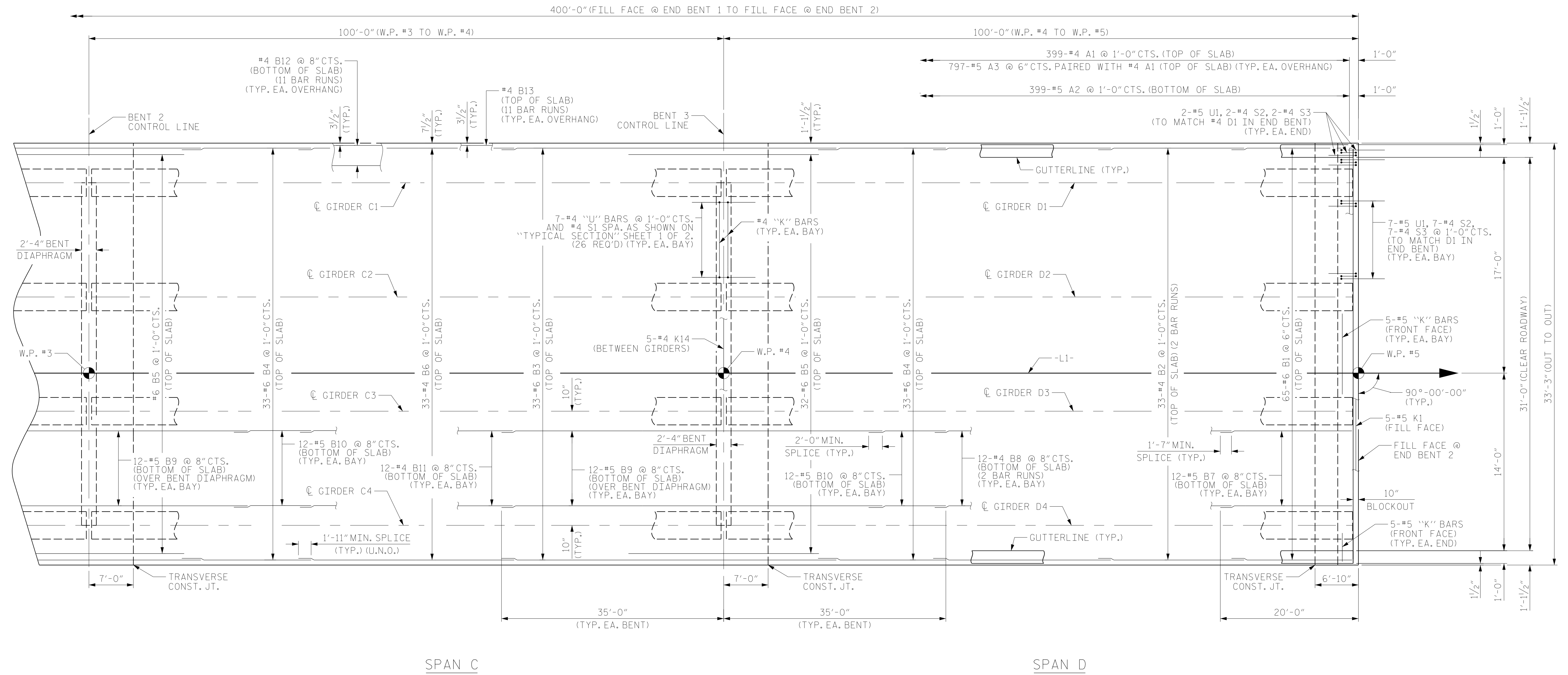
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STATE OF NORTH CAROLINA
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 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPANS
 A AND B

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PLAN OF SPANS C AND D

NOTES

FOR SPLICE LENGTHS NOT SHOWN, REFER TO MINIMUM SPLICE LENGTH TABLE ON "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.

FOR TOP OF SLAB REINFORCING LAYOUT, SEE SHEET 1 OF 2.

FOR END BENT DIAPHRAGM BARS AND BENT DIAPHRAGM BARS, SEE TYPICAL SECTION SHEETS.

BENT DIAPHRAGM BARS AT BENT 3 ARE TYPICAL FOR BENT 2.

STEEL INTERMEDIATE DIAPHRAGMS NOT SHOWN FOR CLARITY. FOR LOCATIONS, SEE "FRAMING PLAN" SHEET.

FOR POURING SEQUENCE, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.

FOR BARRIER RAIL REINFORCING STEEL, SEE "VERTICAL CONCRETE BARRIER RAIL" SHEET.

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 2 OF 2 REPLACES BRIDGE NO. 240139



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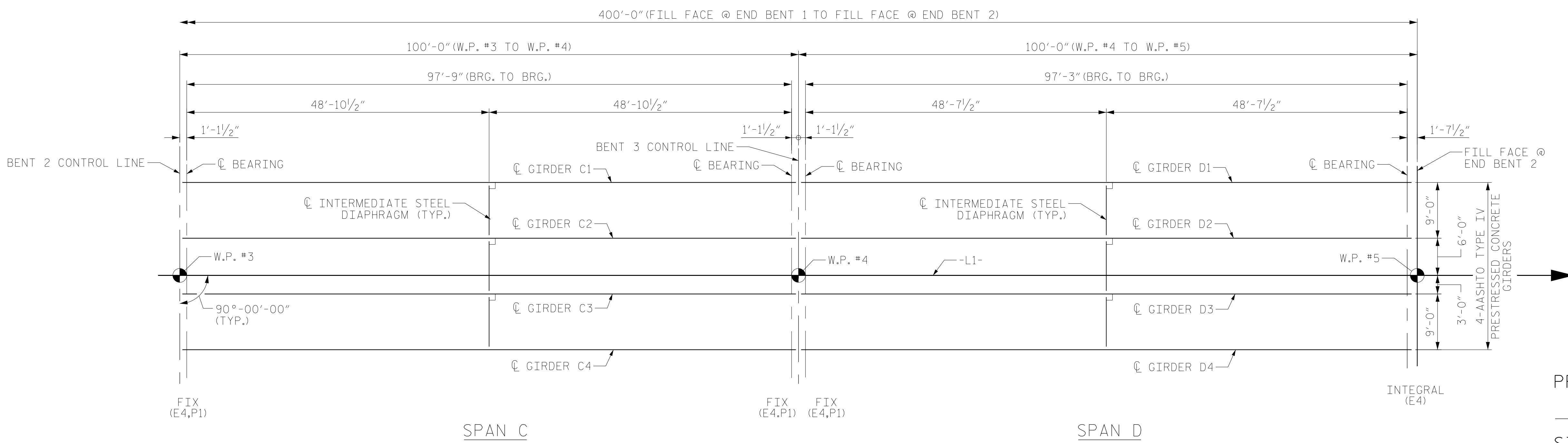
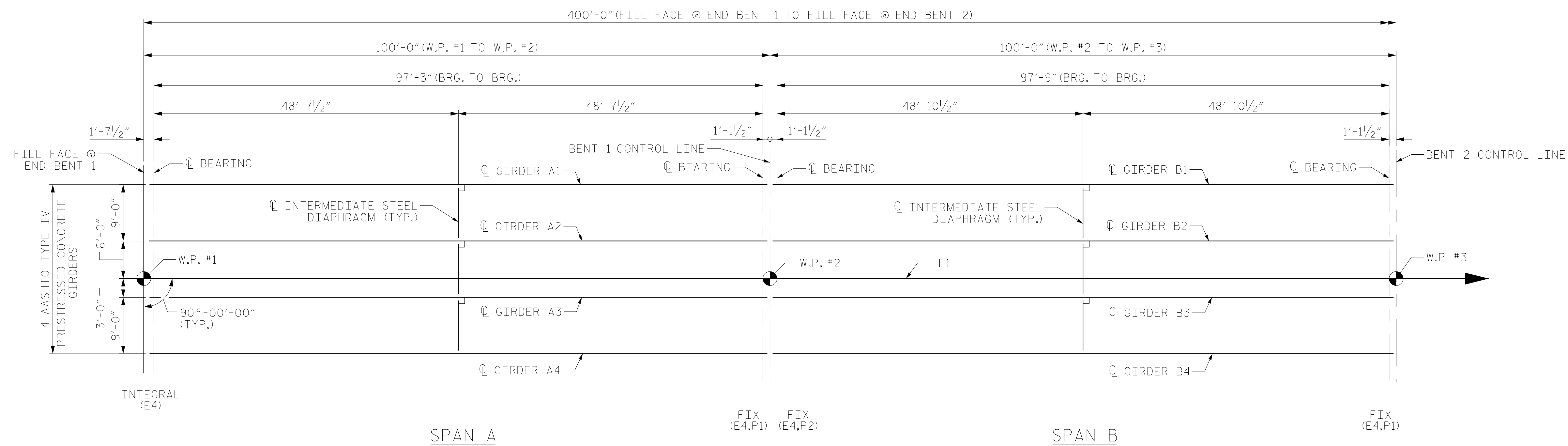
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 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPANS
 C AND D

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PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

REPLACES BRIDGE NO. 240139

FRAMING PLAN
 END BENT AND BENT DIAPHRAGMS
 NOT SHOWN FOR CLARITY

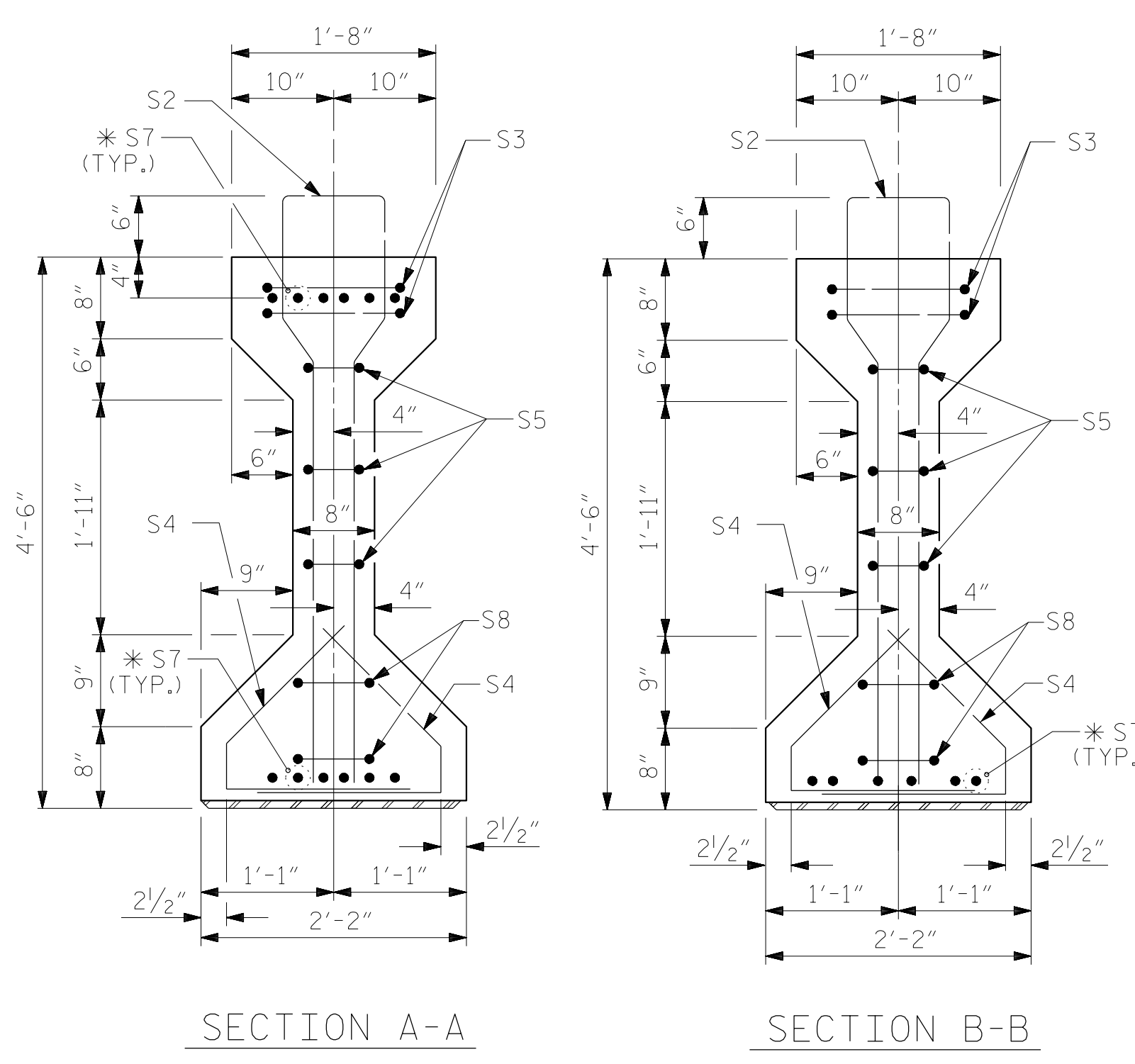


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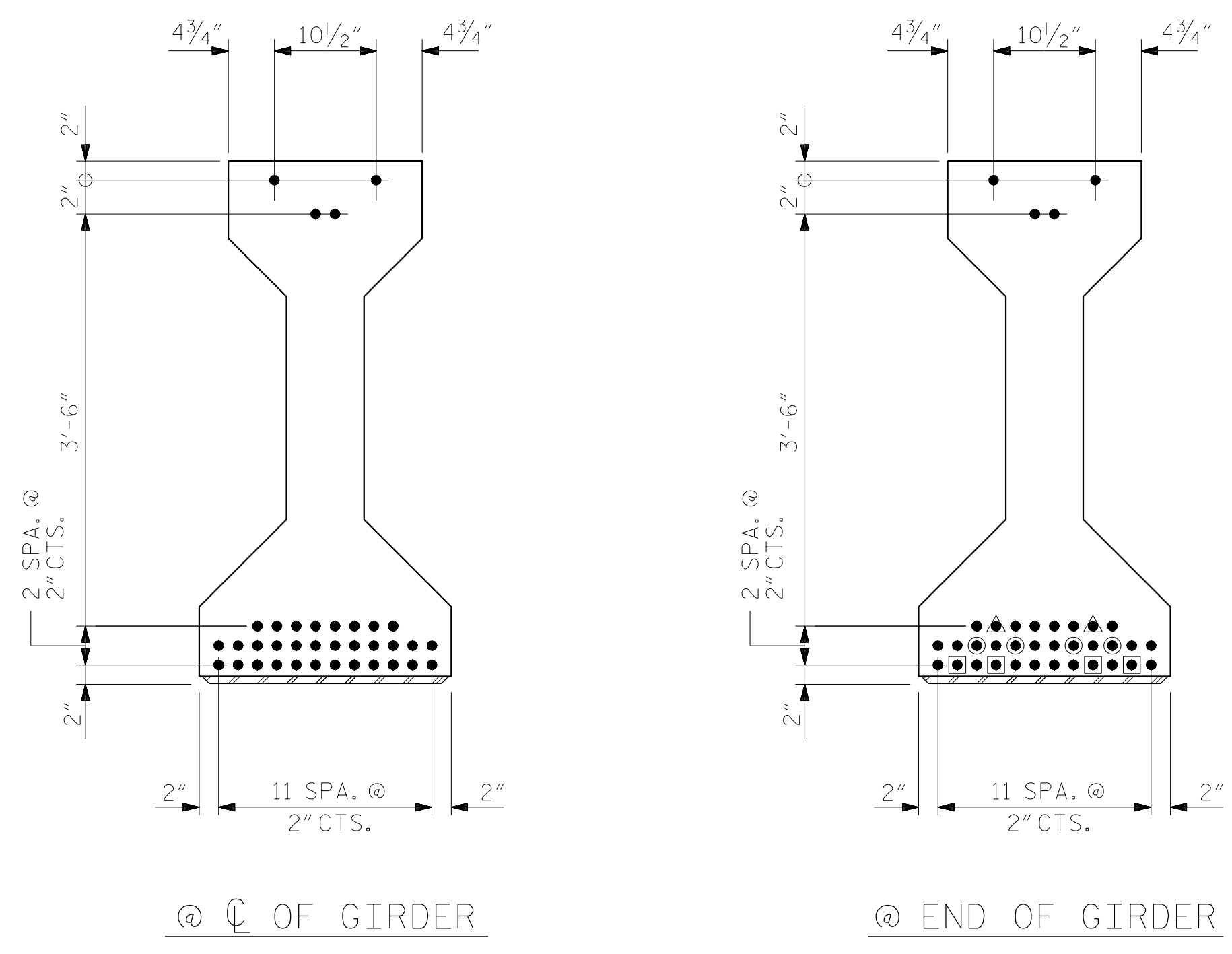
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE FRAMING PLAN					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S2-9					TOTAL SHEETS 31

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* FOR S7 BARS, SEE
DETAIL "A" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET



DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER

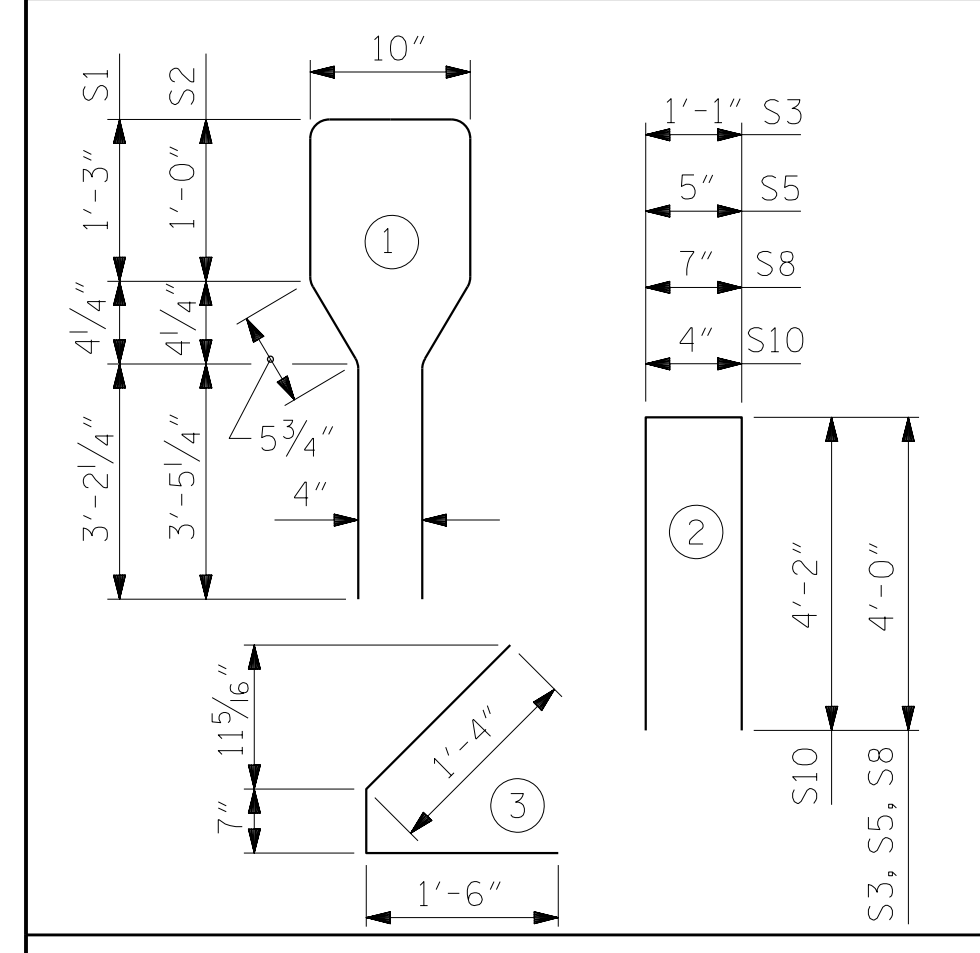
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	110	#4	1	10'-8"	784
S2	34	#6	1	10'-8"	545
S3	4	#4	2	9'-1"	24
S4	80	#4	3	3'-5"	183
S5	6	#4	2	8'-5"	34
* S7	18	#5	STR	3'-8"	69
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
** S10	2	#5	2	8'-8"	18
** S11	5	#4	STR	7'-0"	23
S12	1	#3	STR	1'-4"	1

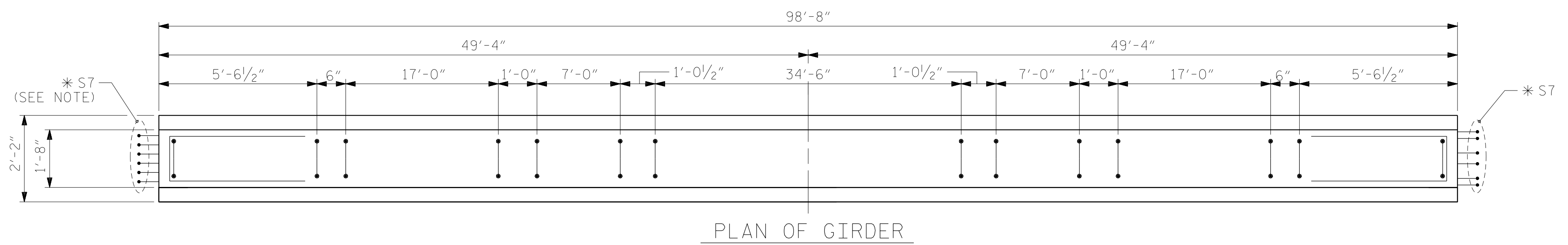
* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.
** FOR PLACEMENT OF S10 AND S11 BARS, SEE "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



0.6" Ø LOW RELAXATION STRAND LAYOUT



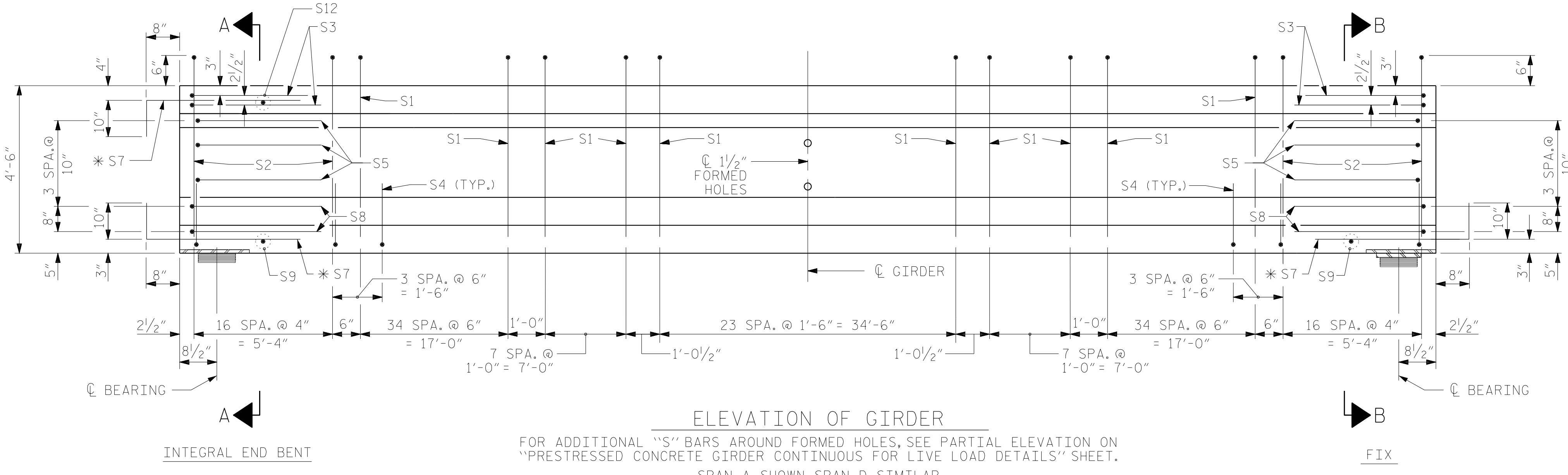
PLAN OF GIRDER
NOTE: S7 BARS IN BOTTOM BULB NOT SHOWN FOR CLARITY

QUANTITIES FOR ONE GIRDER			
REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L. R. STRANDS	
	LB.	C.Y.	No.
	1,704	20.0	36

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
8	98'-8"	789'-4"

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 1 OF 3 REPLACES BRIDGE NO. 240139



ELEVATION OF GIRDER

FOR ADDITIONAL "S" BARS AROUND FORMED HOLES, SEE PARTIAL ELEVATION ON "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET.
SPAN A SHOWN, SPAN D SIMILAR

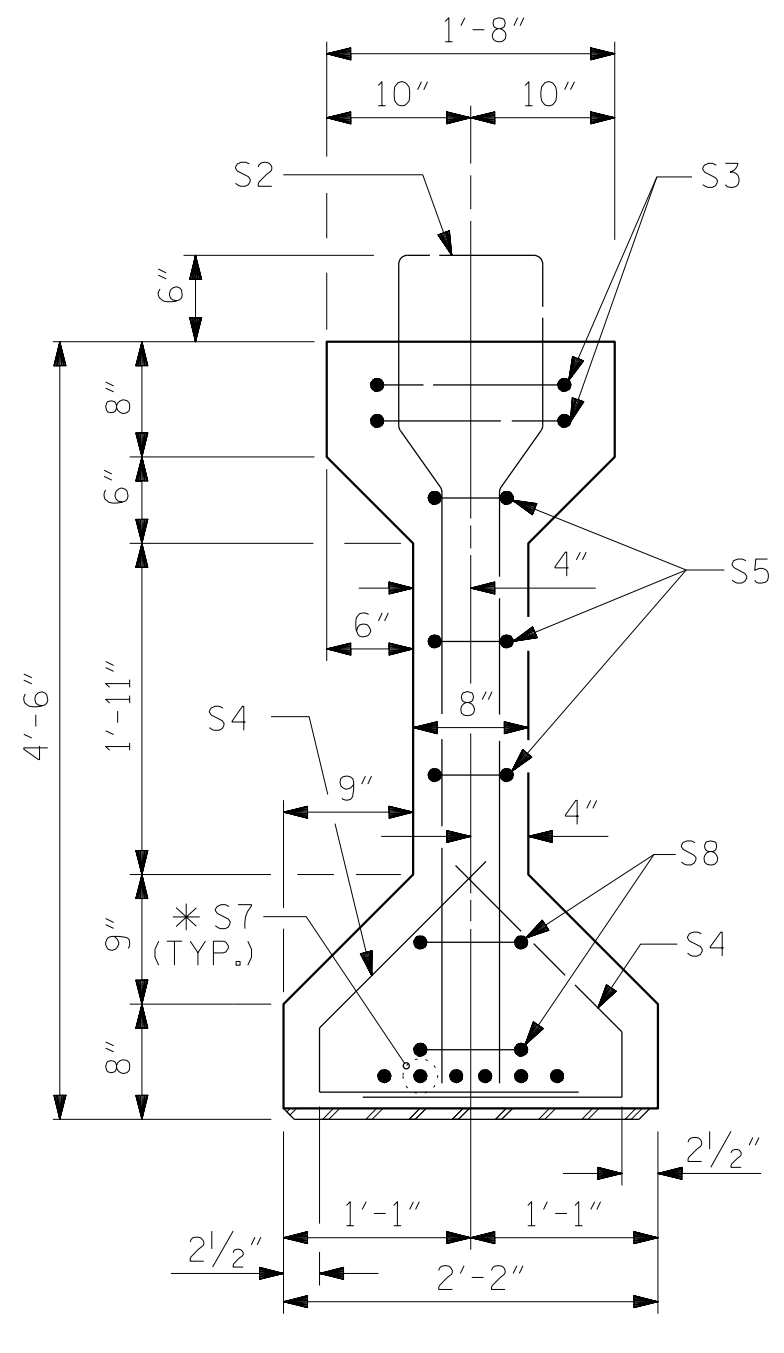
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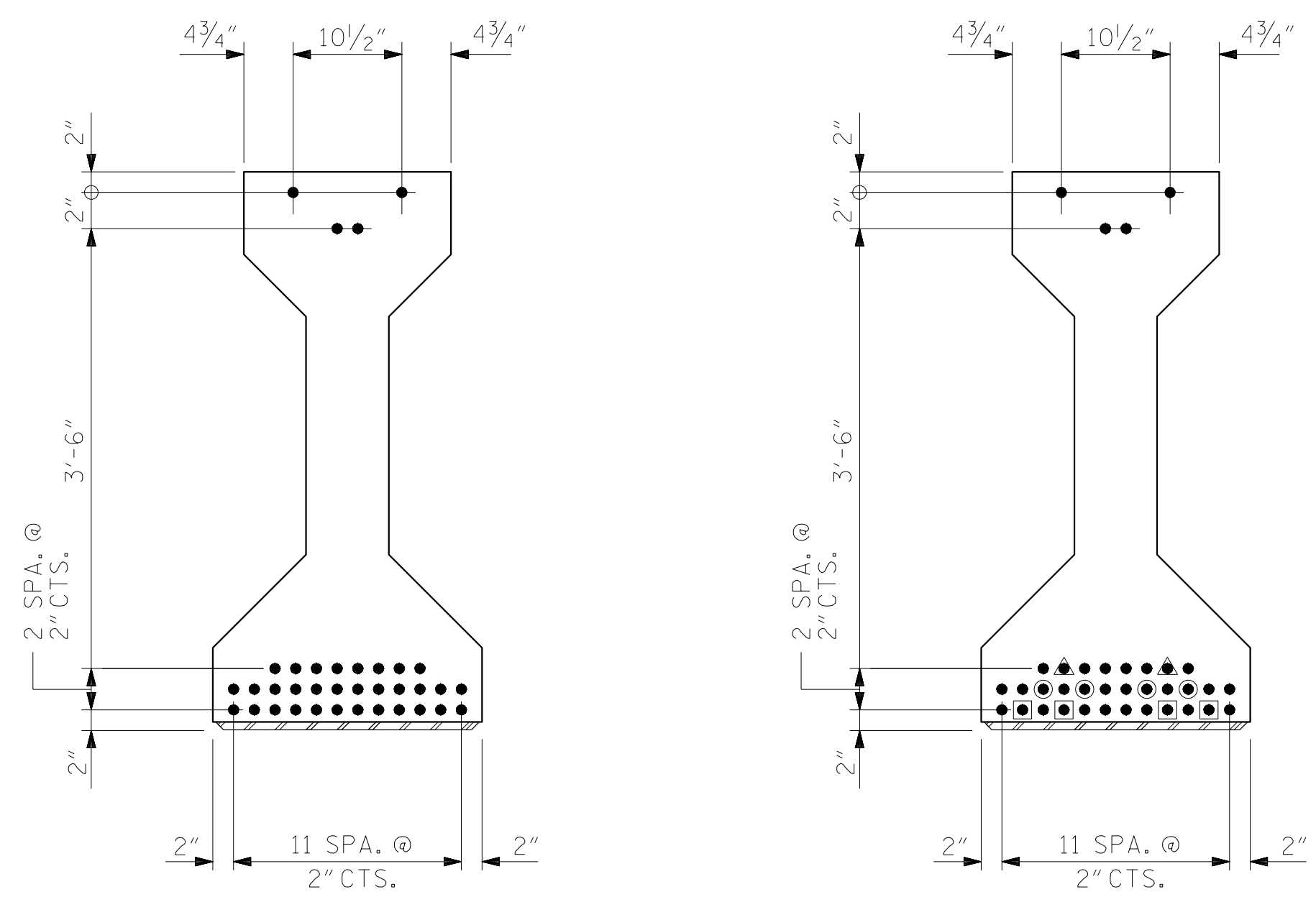
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 AASHTO TYPE IV
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 SPANS A & D

REVISIONS						SHEET NO. S2-10 TOTAL SHEETS 31
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1			3			
2			4			



* FOR S7 BARS, SEE
DETAIL "A" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET

SECTION A-A



@ C OF GIRDER @ END OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER

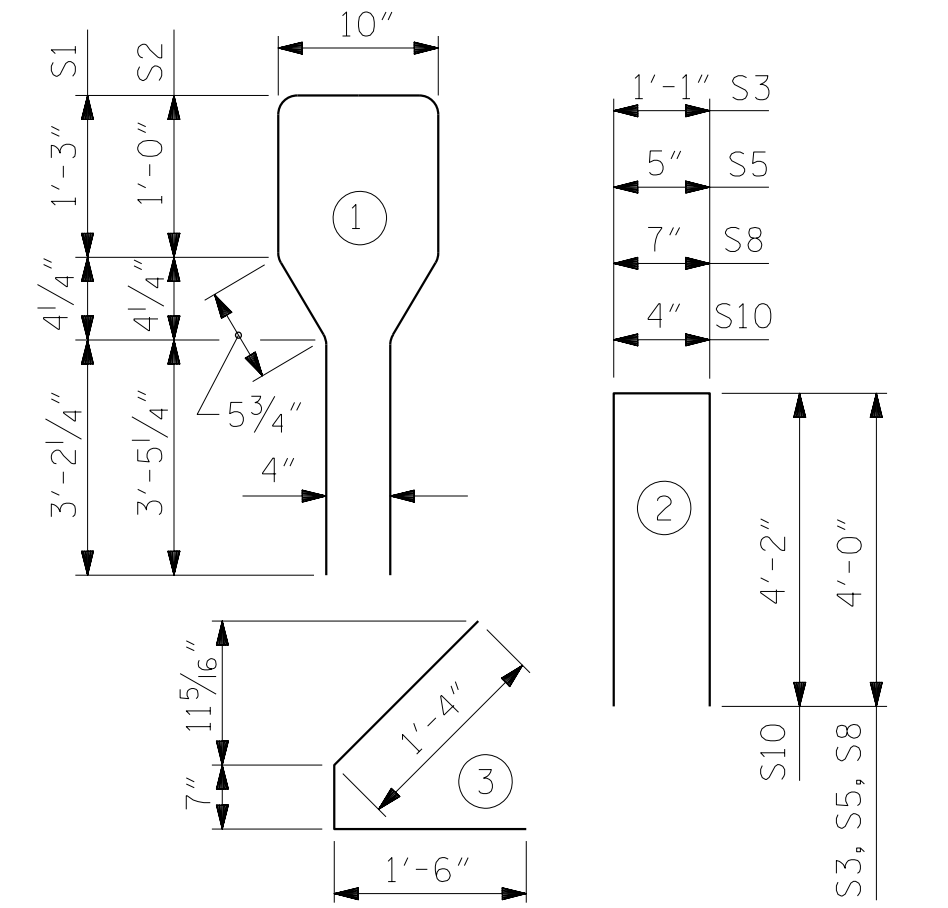
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
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S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
** S10	2	#5	2	8'-8"	18
** S11	5	#4	STR	7'-0"	23

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.
** FOR PLACEMENT OF S10 AND S11 BARS, SEE "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

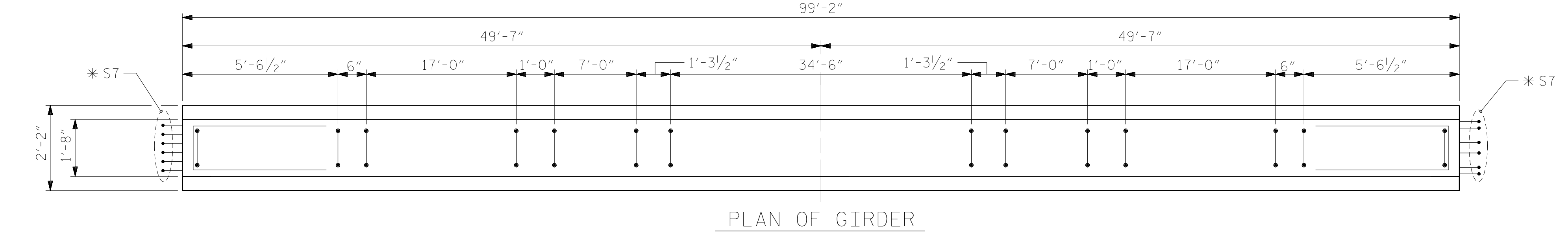
REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L. R. STRANDS
LB.	C.Y.	No.
1,681	20.1	36

GIRDERS REQUIRED

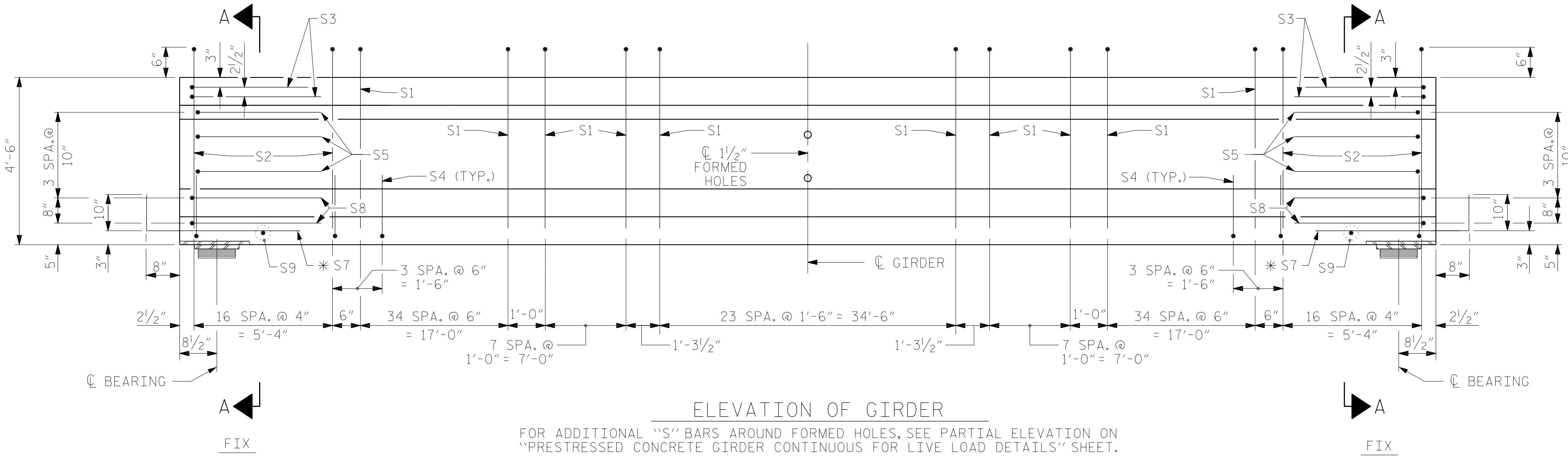
NUMBER	LENGTH	TOTAL LENGTH
8	99'-2"	793'-4"

PROJECT NO. B-4484
CRAVEN COUNTY
STATION: 41+45.00 -L1-

SHEET 2 OF 3 REPLACES BRIDGE NO. 240139



PLAN OF GIRDER



ELEVATION OF GIRDER

FOR ADDITIONAL "S" BARS AROUND FORMED HOLES, SEE PARTIAL ELEVATION ON "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET.

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AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPANS B & C

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-11
1			3			TOTAL SHEETS
2			4			31

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 SHALL BE GRADE 60.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

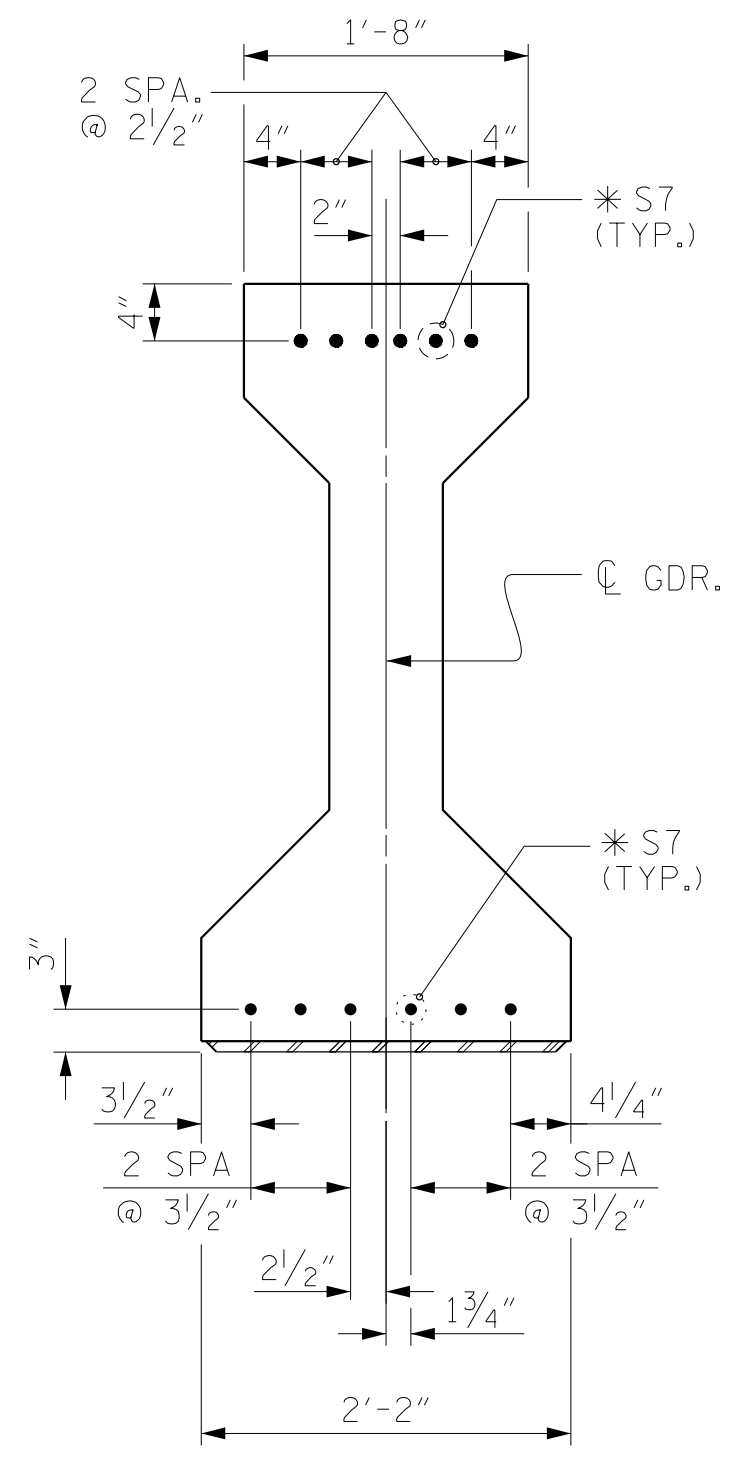
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,000 PSI.

DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

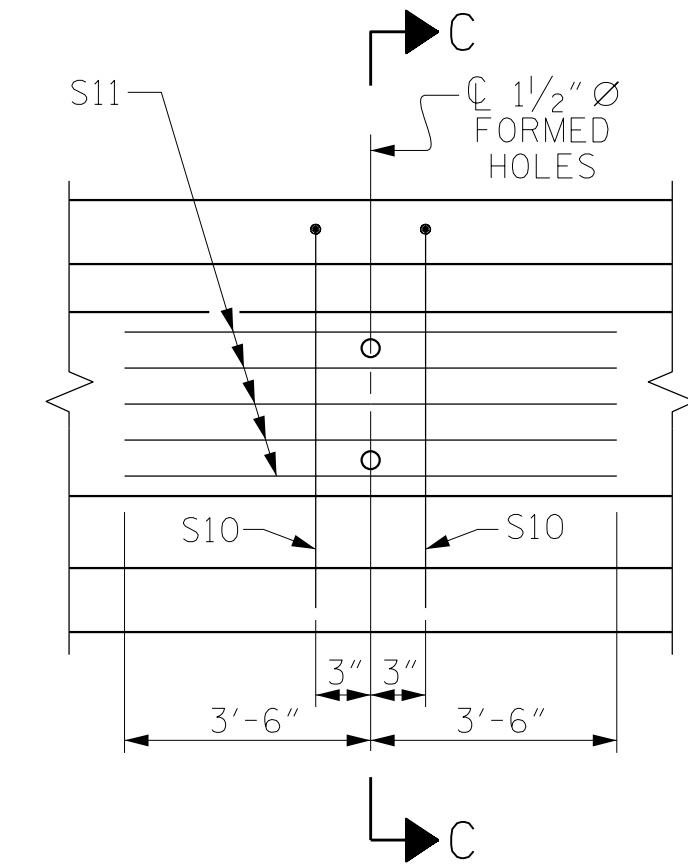
WHEN DRAPED STRANDS ARE DETAILED, THE LONGITUDINAL LOCATION OF THE HOLD DOWN DEVICES SHALL BE WITHIN 6" OF THE LOCATION SHOWN AND THE CENTER OF GRAVITY OF THE GROUP OF DRAPED STRANDS SHALL BE LOCATED WITHIN 1/2" OF THE THEORETICAL LOCATION SHOWN.

THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.



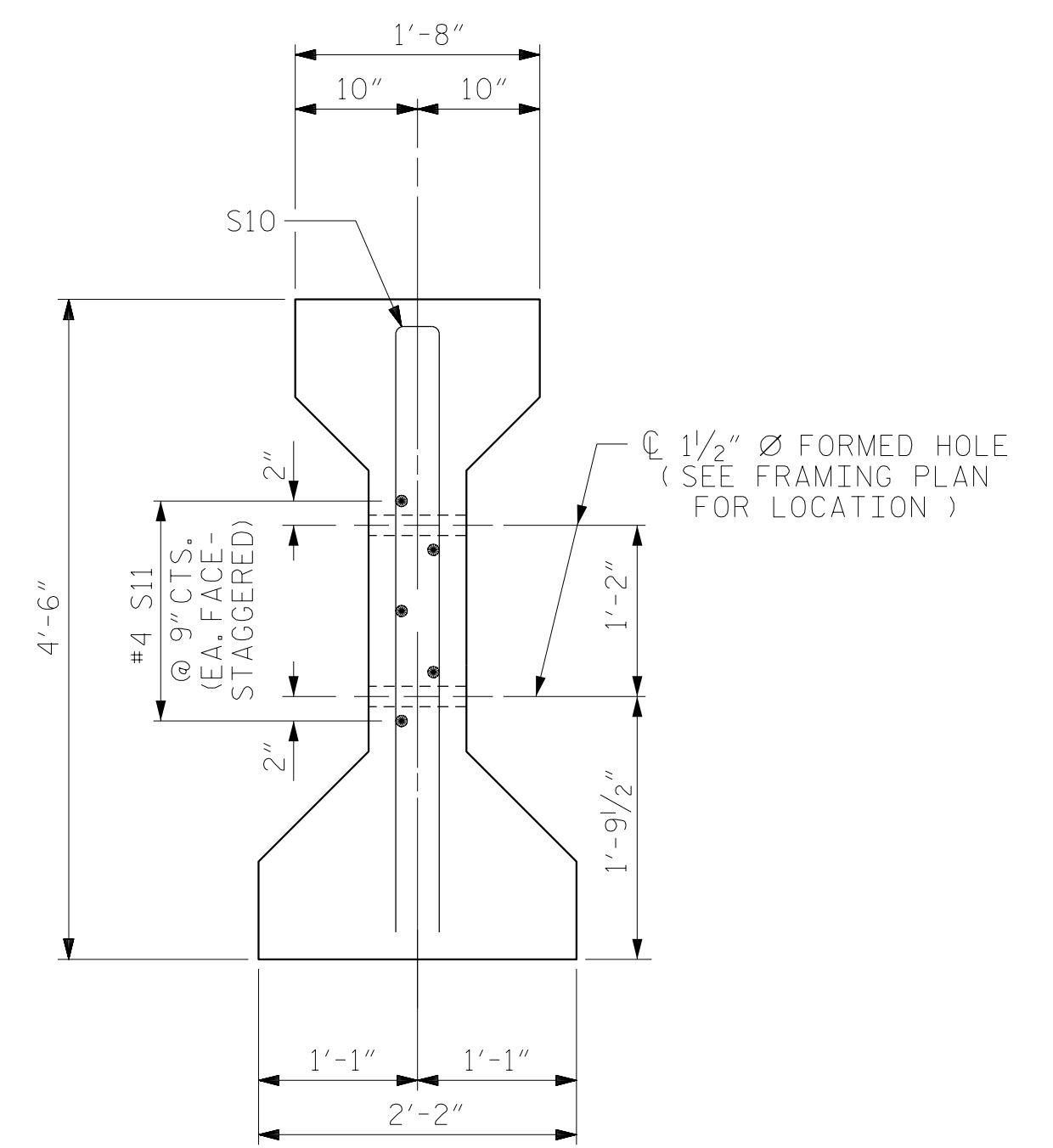
DETAIL "A"

(FOR AASHTO TYPE IV GIRDERS)



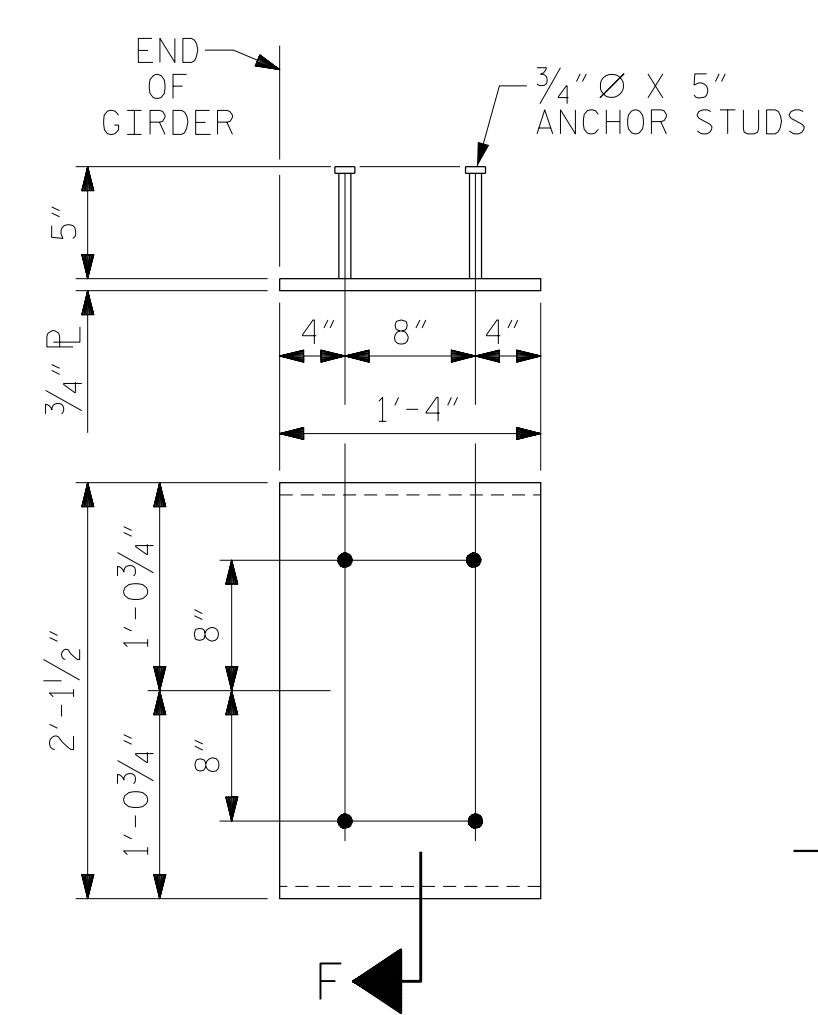
PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL



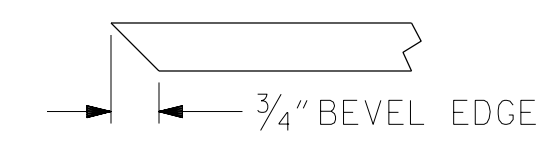
SECTION C-C

(S1 BARS NOT SHOWN)



EMBEDDED PLATE "B-1" DETAILS

(2 REQ'D PER GIRDER)



SECTION "F"

(SEE NOTES)

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 3 OF 3 REPLACES BRIDGE NO. 240139



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 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 DETAILS

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DRAWN BY : ELR 11/91	REV. 1/15 MAA/TMG
CHECKED BY : GRP 11/91	REV. 2/15 MAA/TMG
	REV. 12/17 MAA/THC

STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL AND CONNECTOR PLATES SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

TENSION ON THE ASTM A325 BOLTS THROUGH THE CHANNEL MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.

THE PLATES, BENT PLATES, CHANNELS, ANGLES, HIGH STRENGTH BOLTS, NUTS, WASHERS, AND DIRECT TENSION INDICATORS SHALL BE METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY A THERMAL SPRAYED COATING WITH A SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE DEPARTMENTS THERMAL SPRAYED COATINGS (METALLIZATION) PROGRAM. THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, WASHERS AND DIRECT TENSION INDICATORS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

USE AN ASTM F436 HARDENED WASHER WITH STANDARD AND SLOTTED HOLES UNDER EACH BOLT HEAD AND NUT.

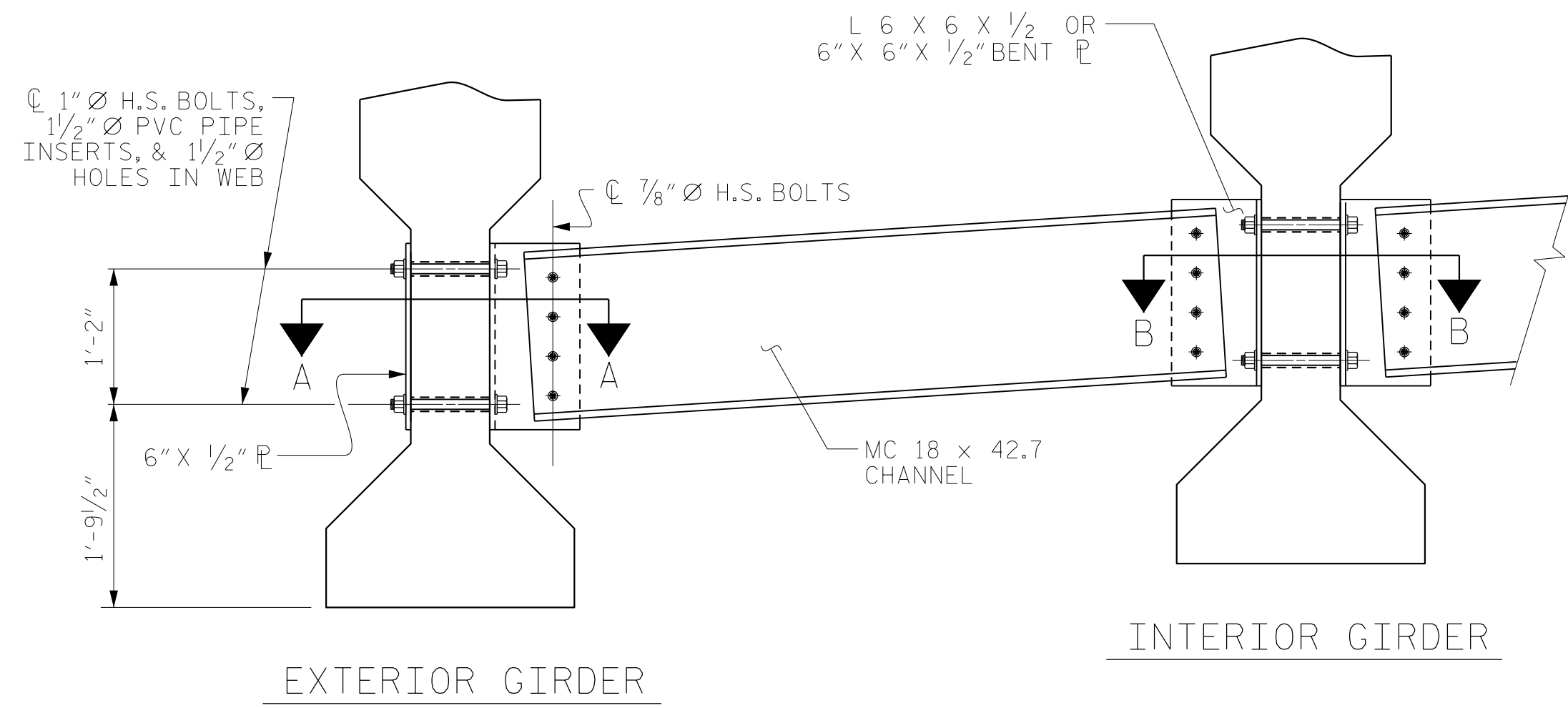
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

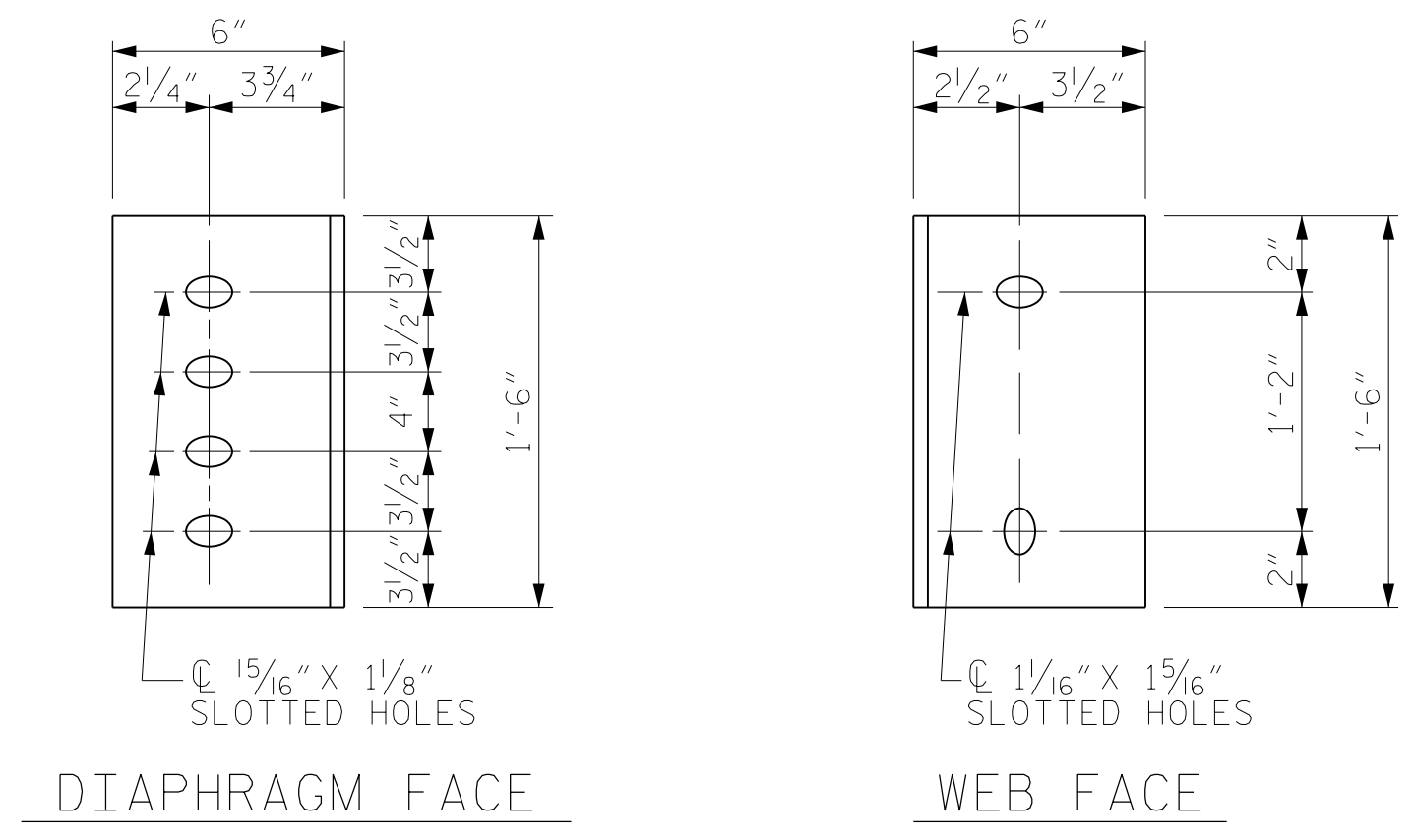
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

IN THE EXTERIOR BAYS, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

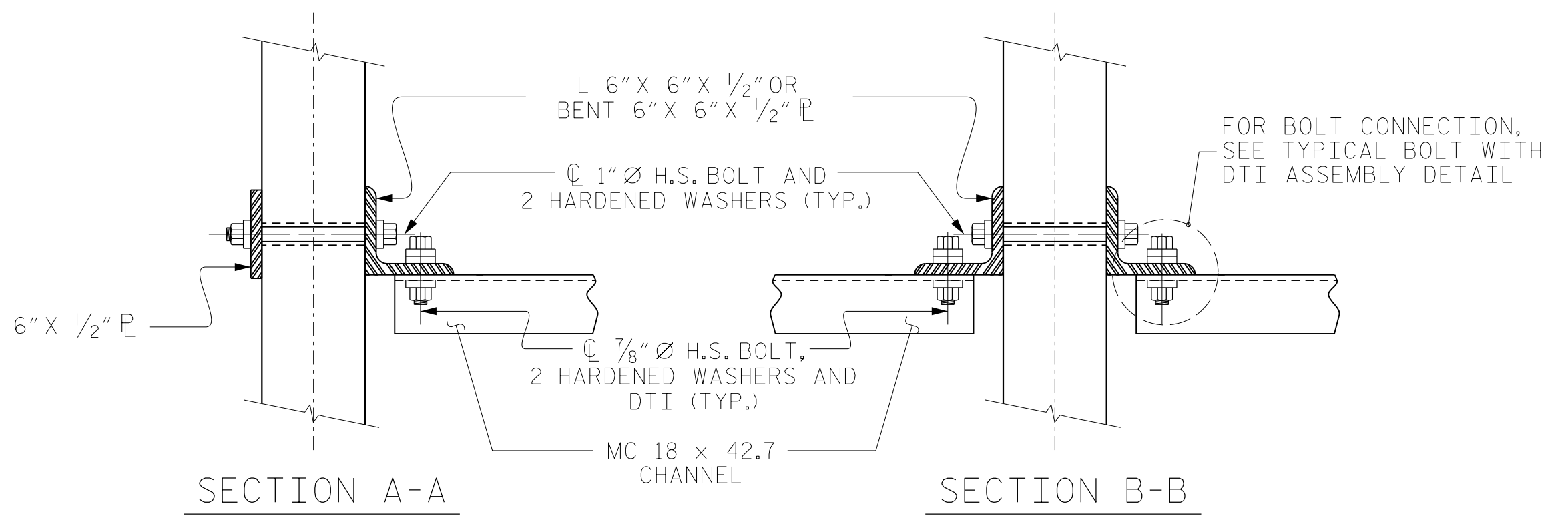
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



PART SECTION AT INTERMEDIATE DIAPHRAGM



CONNECTOR PLATE DETAILS



CONNECTION DETAILS

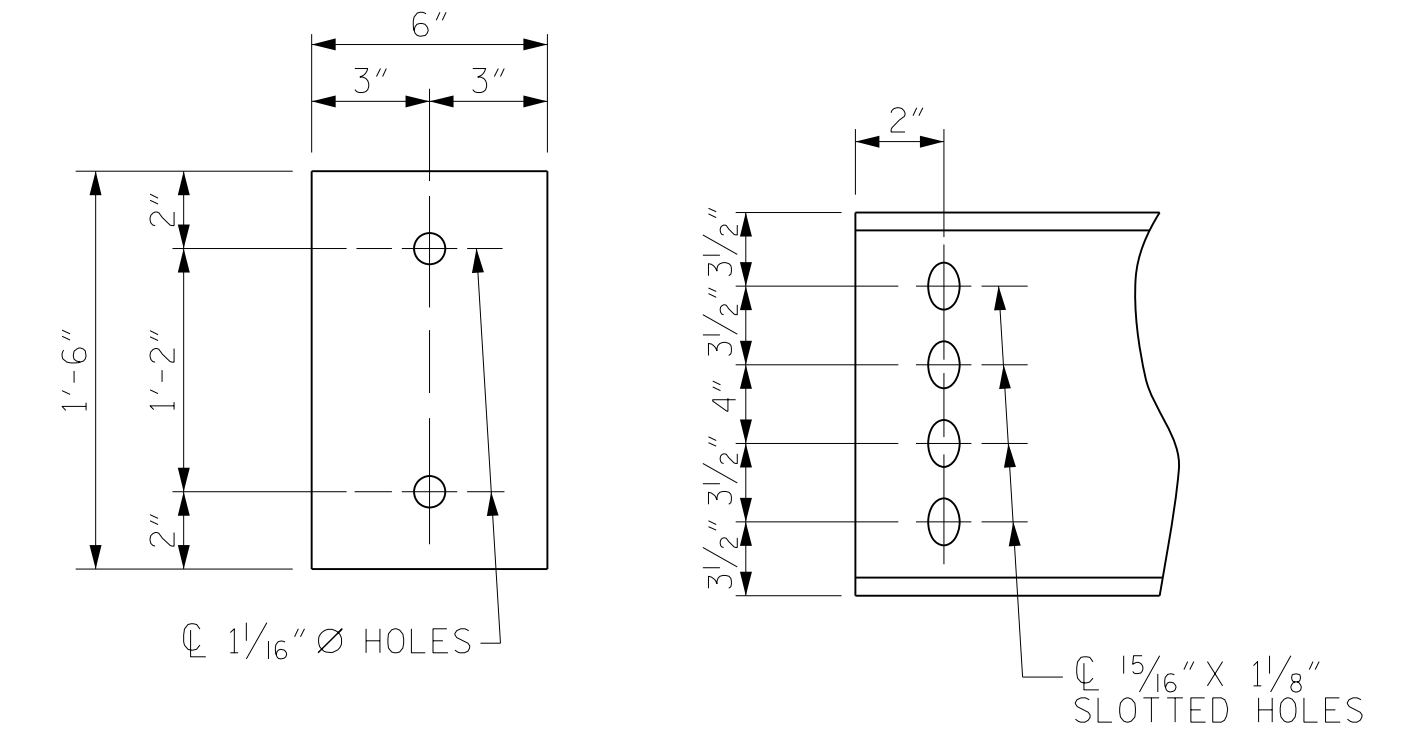
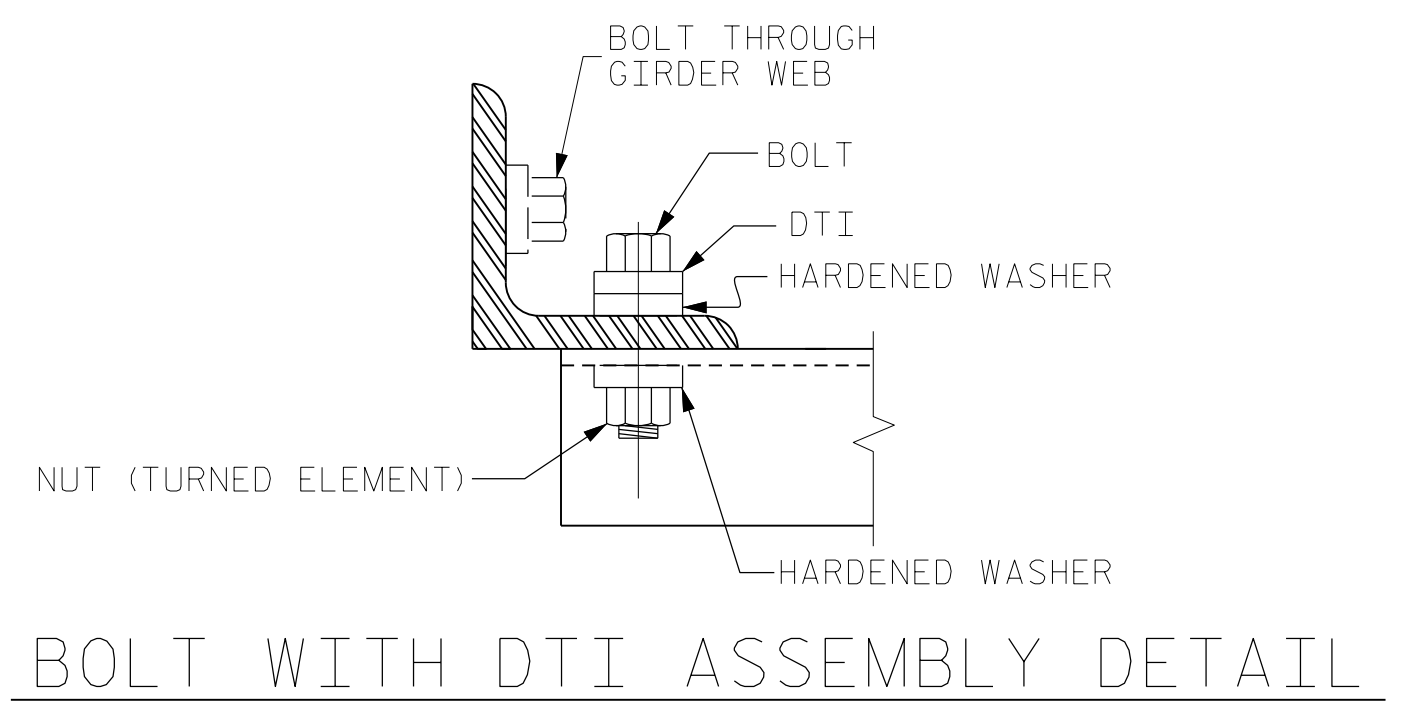


PLATE DETAILS CHANNEL END



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

REPLACES BRIDGE NO. 240139

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S2-13					TOTAL SHEETS 31

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ASSEMBLED BY : NSC	DATE : 03/2019
CHECKED BY : JMR	DATE : 05/2019
DRAWN BY : TLA 6/05	REV. 5/1/06RRR KMM/GM
CHECKED BY : VC 6/05	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

STEEL SOLE PLATES, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

SOLE PLATE "P", BOLTS, NUTS, AND WASHERS SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

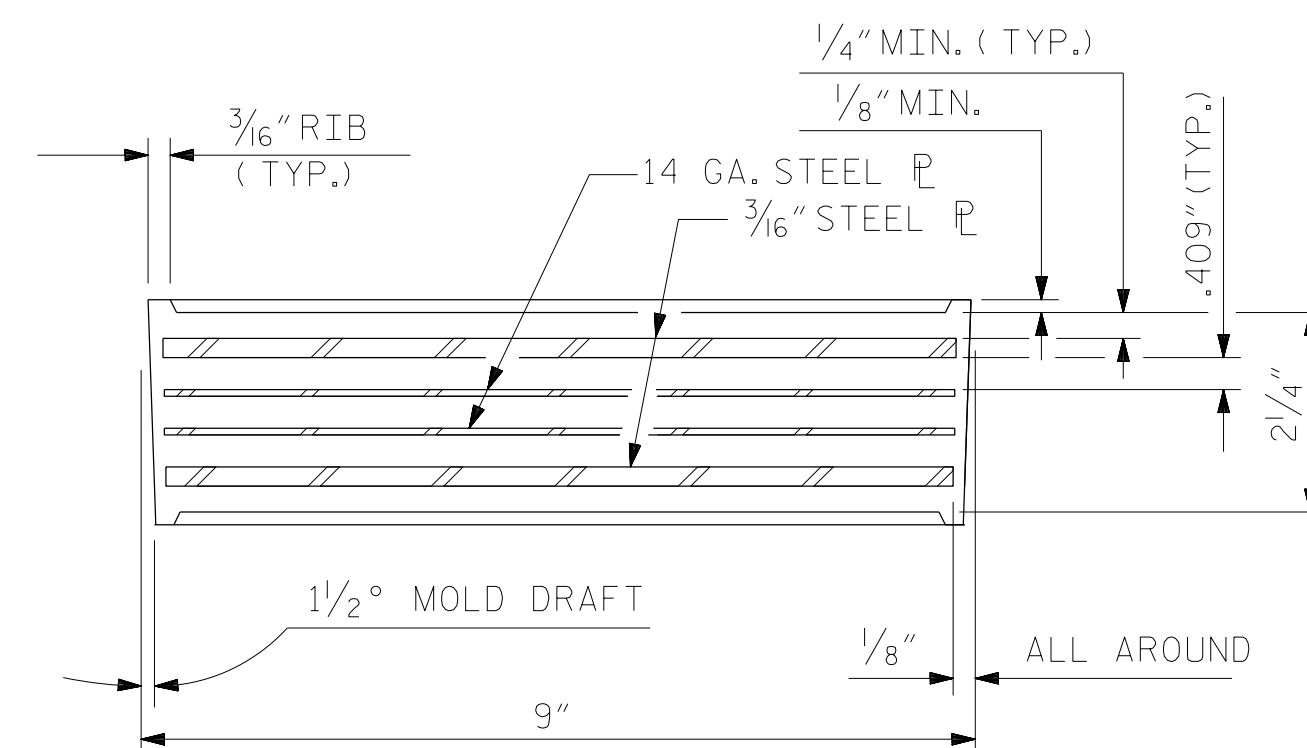
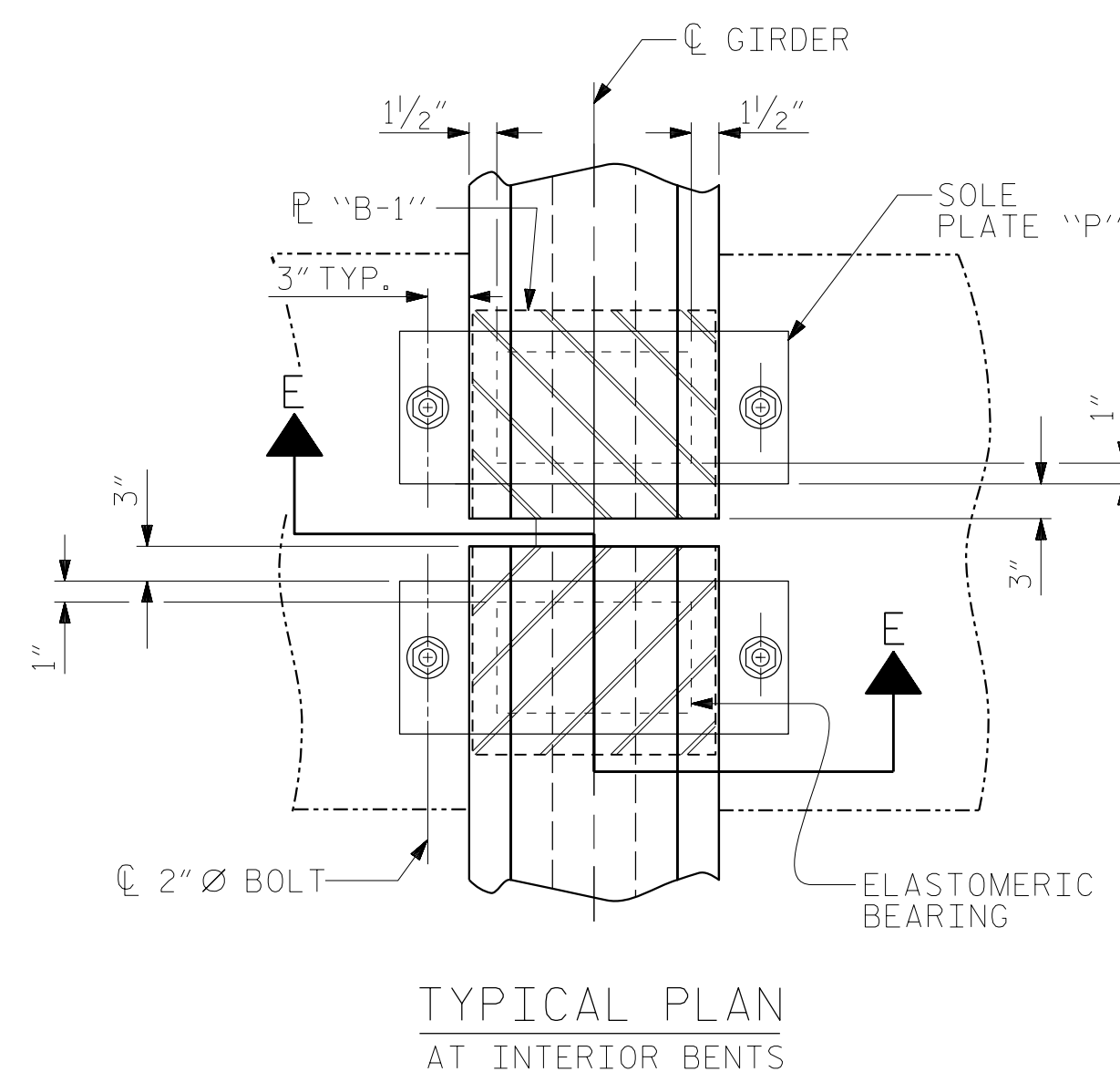
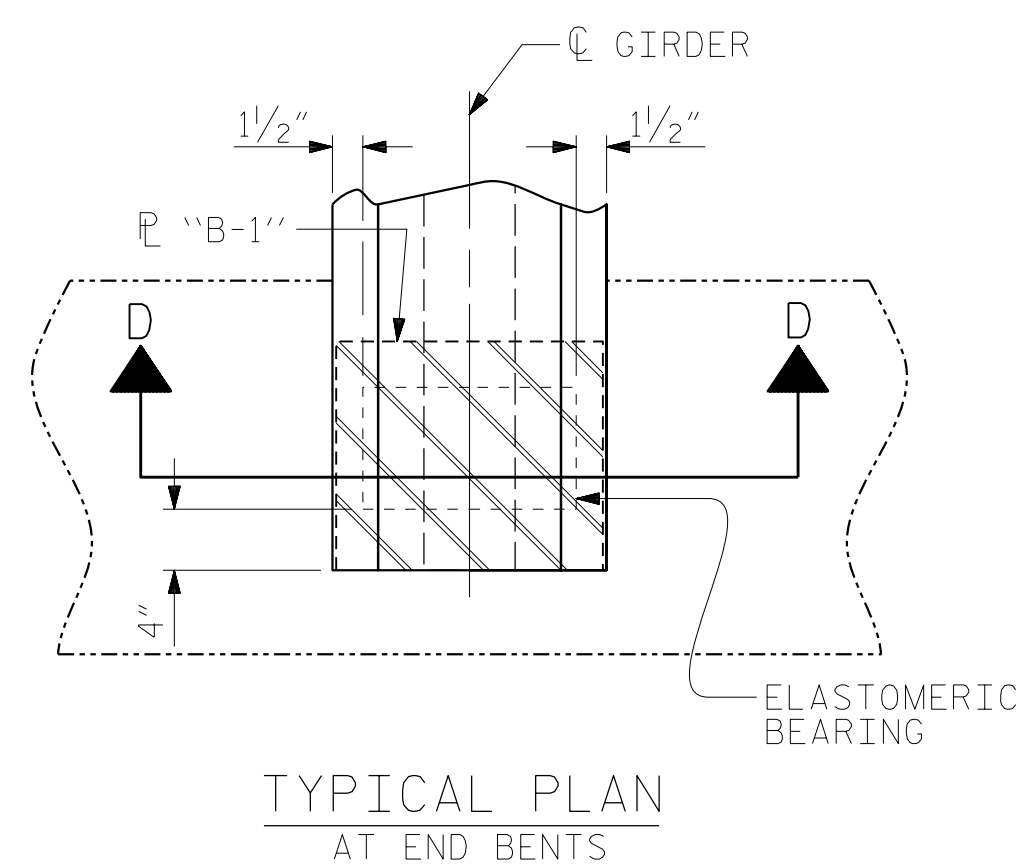
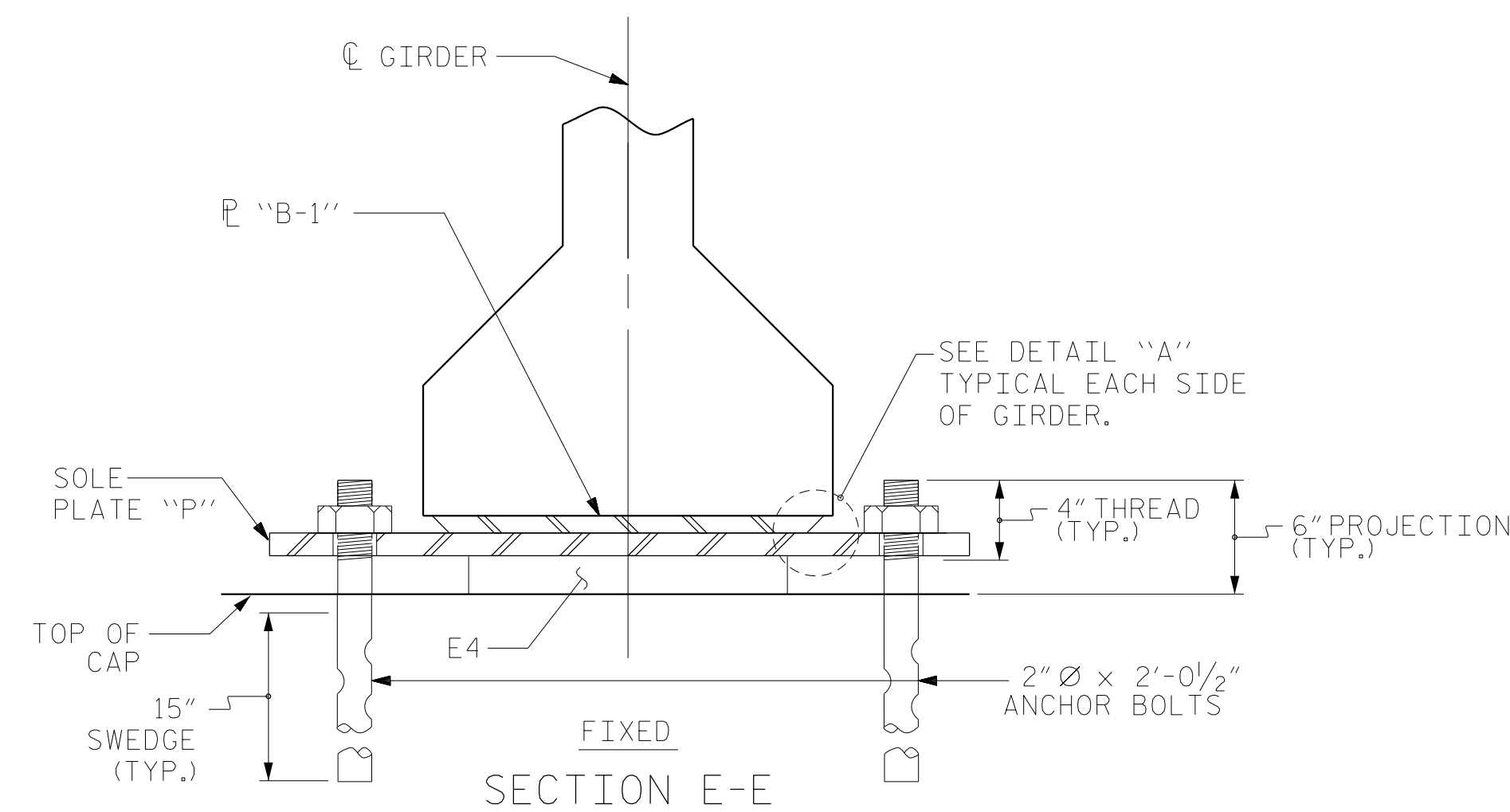
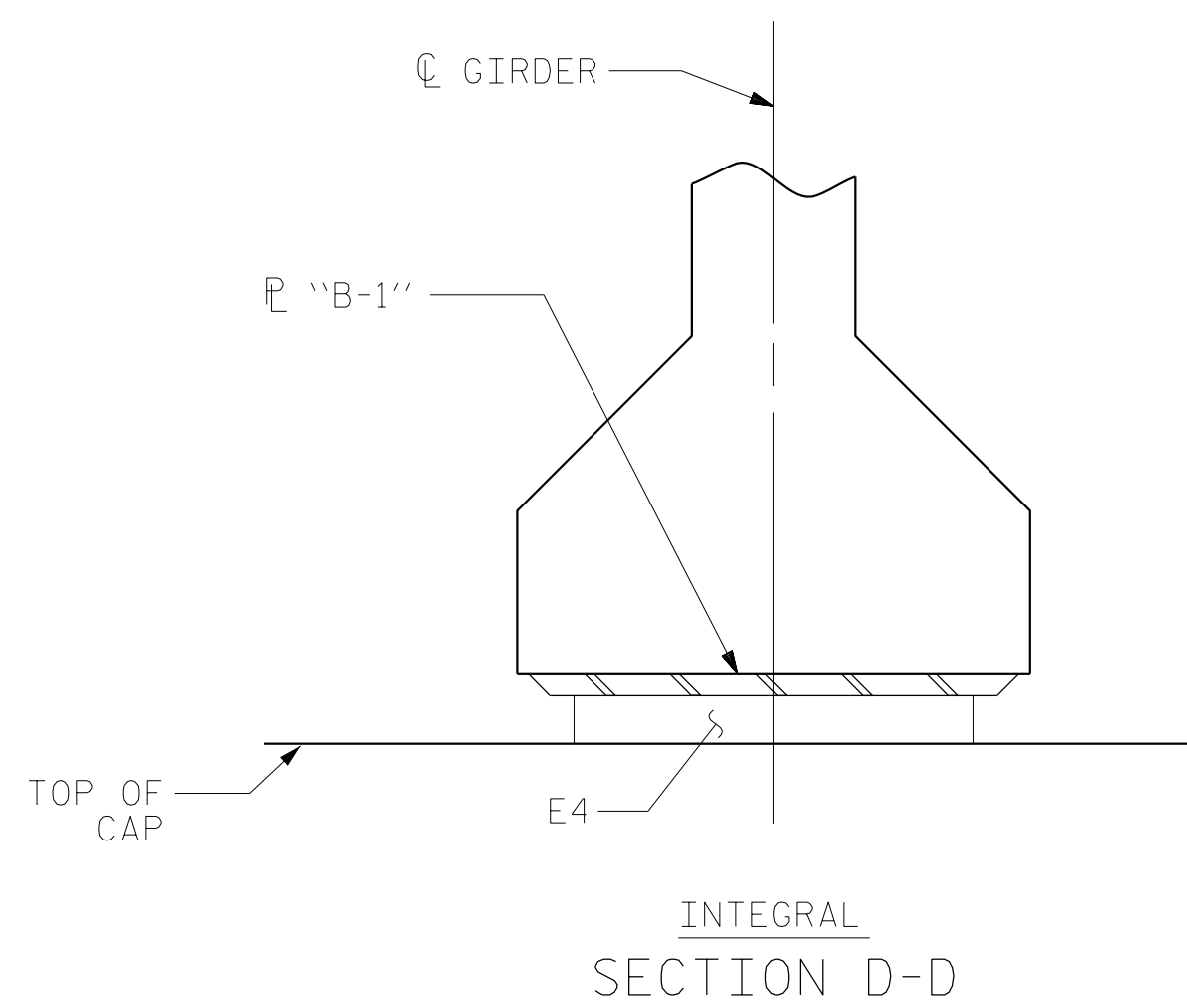
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

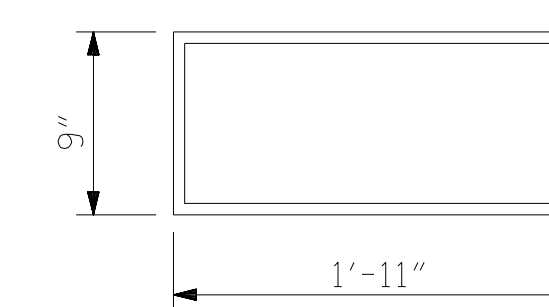
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

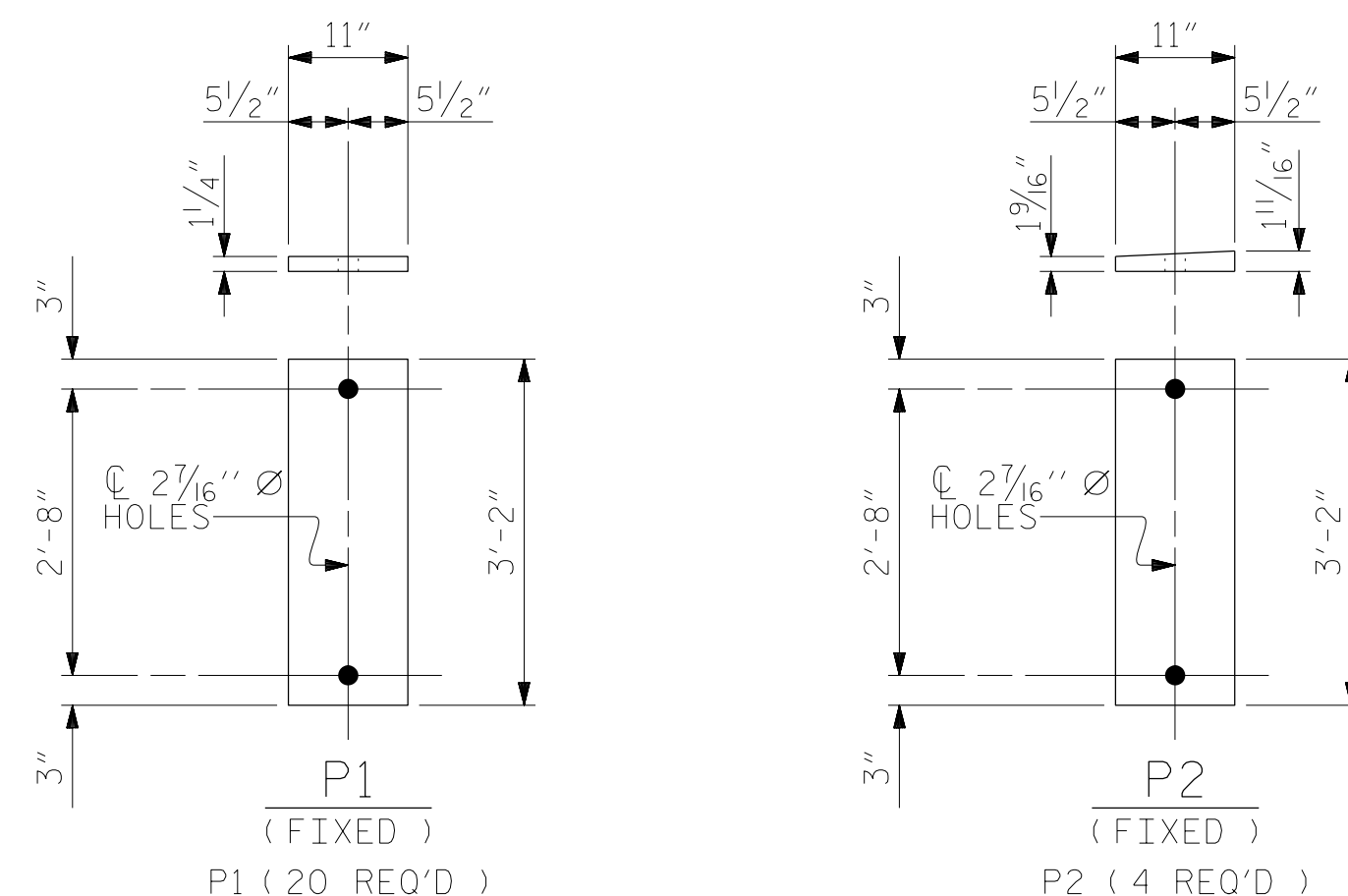
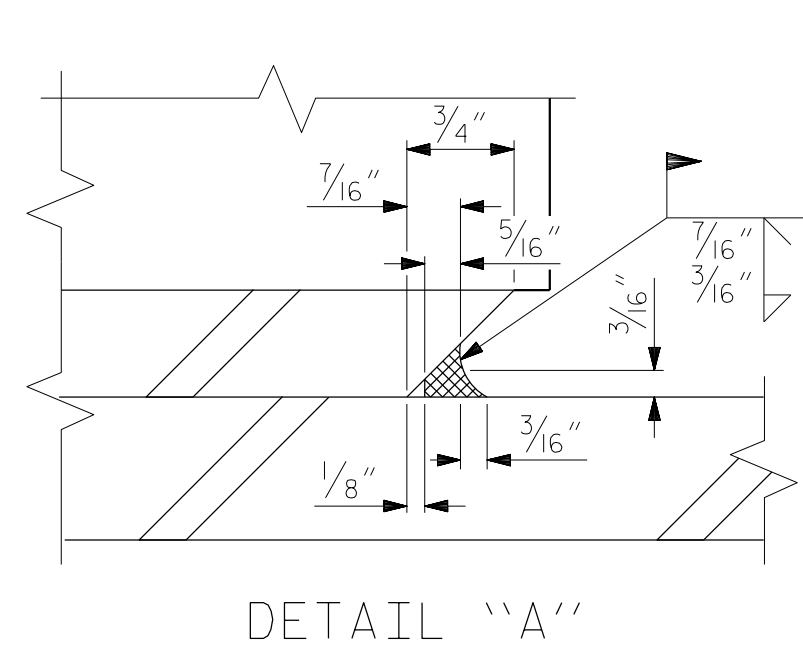
ALL BEARING PLATES SHALL BE AASHTO M270 GRADE 36.



TYPICAL SECTION OF ELASTOMERIC BEARINGS



PLAN VIEW OF ELASTOMERIC BEARING TYPE V



SOLE PLATE DETAILS ("P")

MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE V	365 k

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

REPLACES BRIDGE NO. 240139

Professional Engineer Seal for Justin Mark Robinson, License No. 039313, dated 3/27/2020. The seal includes the text 'STATE OF NORTH CAROLINA', 'DEPARTMENT OF TRANSPORTATION', 'RALEIGH', and 'RS&H Architects-Engineers-Planners, Inc.'.

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

ELASTOMERIC BEARING
 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-14
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : NSC DATE : 04/2019
 CHECKED BY : JMR DATE : 06/2019
 DESIGN ENGINEER OF RECORD: PDS DATE : 06/2019

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— DEAD LOAD DEFLECTION TABLE FOR GIRDERS —

0.6" Ø LOW RELAXATION	SPAN A											
	GIRDERS 1 AND 4 (EXTERIOR)											
TENTH POINTS	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.060	0.114	0.156	0.183	0.192	0.183	0.156	0.114	0.060	0.000	
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.043	0.083	0.115	0.136	0.143	0.136	0.116	0.084	0.043	0.000	
FINAL CAMBER ↑	0	3/16	3/8	1/2	9/16	9/16	9/16	1/2	3/8	3/16	0	
0.6" Ø LOW RELAXATION	SPAN A											
	GIRDERS 2 AND 3 (INTERIOR)											
TENTH POINTS	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.060	0.114	0.156	0.183	0.192	0.183	0.156	0.114	0.060	0.000	
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.048	0.093	0.130	0.153	0.161	0.153	0.130	0.094	0.049	0.000	
FINAL CAMBER ↑	0	1/8	1/4	5/16	3/8	3/8	3/8	5/16	1/4	1/8	0	

— DEAD LOAD DEFLECTION TABLE FOR GIRDERS —

0.6" Ø LOW RELAXATION	SPAN C											
	GIRDERS 1 AND 4 (EXTERIOR)											
TENTH POINTS	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.060	0.114	0.156	0.183	0.192	0.183	0.156	0.114	0.060	0.000	
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.045	0.088	0.121	0.142	0.149	0.142	0.121	0.088	0.045	0.000	
FINAL CAMBER ↑	0	3/16	5/16	7/16	1/2	1/2	1/2	7/16	5/16	3/16	0	
0.6" Ø LOW RELAXATION	SPAN C											
	GIRDERS 2 AND 3 (INTERIOR)											
TENTH POINTS	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.060	0.114	0.156	0.183	0.192	0.183	0.156	0.114	0.060	0.000	
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.051	0.098	0.135	0.159	0.167	0.159	0.135	0.098	0.051	0.000	
FINAL CAMBER ↑	0	1/8	3/16	1/4	5/16	5/16	5/16	1/4	3/16	1/8	0	

— DEAD LOAD DEFLECTION TABLE FOR GIRDERS —

0.6" Ø LOW RELAXATION	SPAN B											
	GIRDERS 1 AND 4 (EXTERIOR)											
TENTH POINTS	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.060	0.114	0.156	0.183	0.192	0.183	0.156	0.114	0.060	0.000	
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.045	0.088	0.121	0.142	0.149	0.142	0.121	0.088	0.045	0.000	
FINAL CAMBER ↑	0	3/16	5/16	7/16	1/2	1/2	1/2	7/16	5/16	3/16	0	
0.6" Ø LOW RELAXATION	SPAN B											
	GIRDERS 2 AND 3 (INTERIOR)											
TENTH POINTS	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.060	0.114	0.156	0.183	0.192	0.183	0.156	0.114	0.060	0.000	
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.051	0.098	0.135	0.159	0.167	0.159	0.135	0.098	0.051	0.000	
FINAL CAMBER ↑	0	1/8	3/16	1/4	5/16	5/16	5/16	1/4	3/16	1/8	0	

— DEAD LOAD DEFLECTION TABLE FOR GIRDERS —

0.6" Ø LOW RELAXATION	SPAN D											
	GIRDERS 1 AND 4 (EXTERIOR)											
TENTH POINTS	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.060	0.114	0.156	0.183	0.192	0.183	0.156	0.114	0.060	0.000	
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.044	0.085	0.117	0.138	0.145	0.137	0.117	0.084	0.043	0.000	
FINAL CAMBER ↑	0	3/16	3/8	7/16	9/16	9/16	9/16	7/16	3/8	3/16	0	
0.6" Ø LOW RELAXATION	SPAN D											
	GIRDERS 2 AND 3 (INTERIOR)											
TENTH POINTS	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.060	0.114	0.156	0.183	0.192	0.183	0.156	0.114	0.060	0.000	
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.049	0.095	0.132	0.155	0.163	0.155	0.131	0.095	0.049	0.000	
FINAL CAMBER ↑	0	1/8	1/4	5/16	5/16	3/8	5/16	5/16	1/4	1/8	0	

* INCLUDES FUTURE WEARING SURFACE IN SUPERIMPOSED DEAD LOAD.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

REPLACES BRIDGE NO. 240139



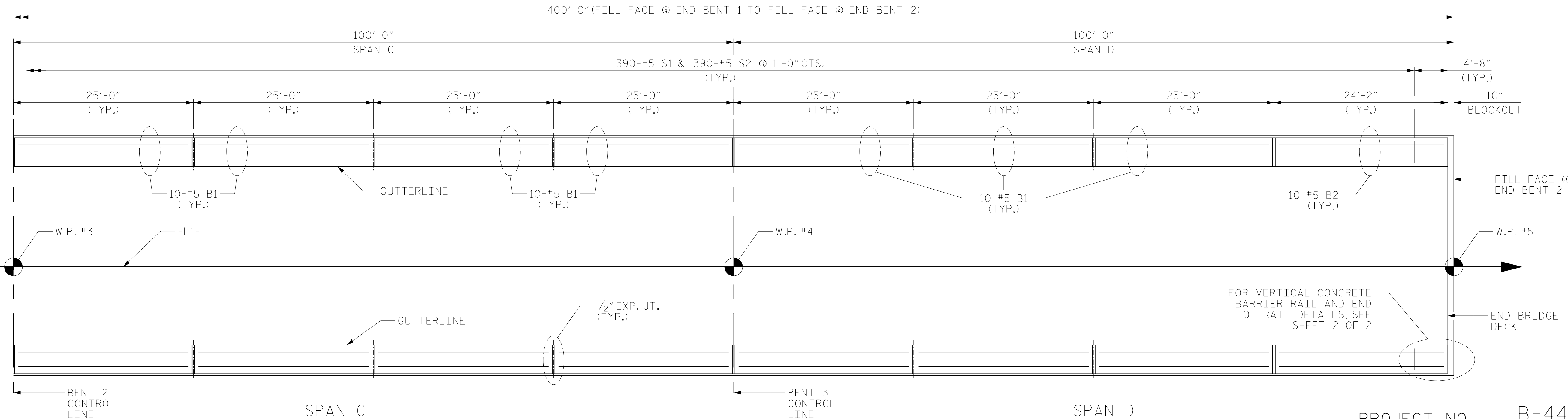
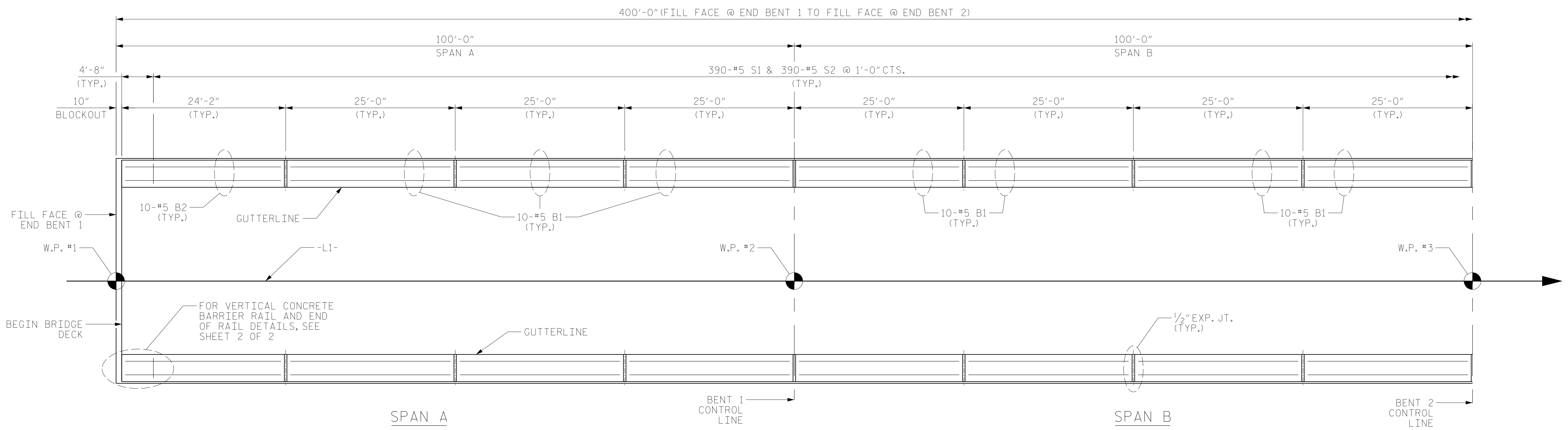
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 DEAD LOAD DEFLECTIONS

DRAWN BY : NSC DATE : 04/2019
 CHECKED BY : JMR DATE : 05/2019
 DESIGN ENGINEER OF RECORD: PDS DATE : 06/2019

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 www.rsandh.com
 North Carolina License Nos. 50737-F3403-C28

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-15
1			3			TOTAL SHEETS
2			4			31



PLAN OF VERTICAL CONCRETE BARRIER RAIL

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 1 OF 2 REPLACES BRIDGE NO. 240139



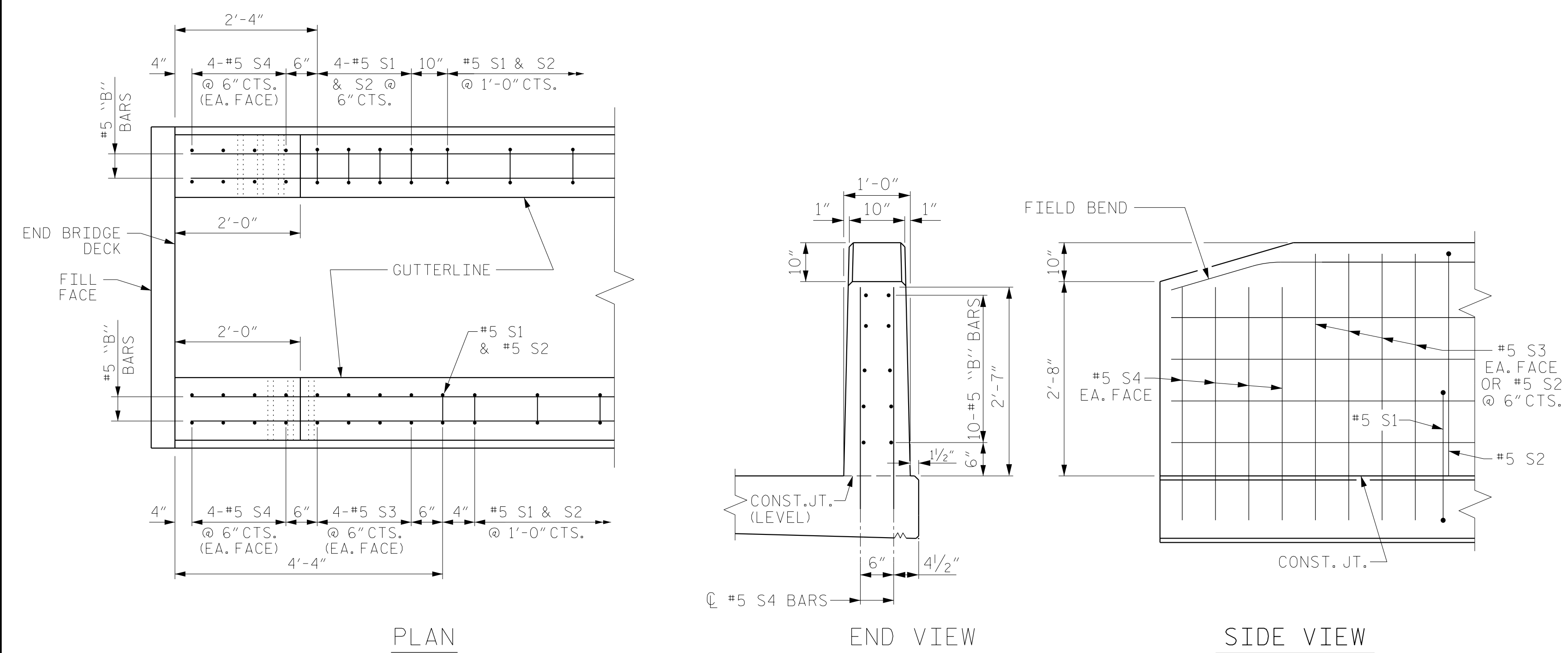
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 VERTICAL CONCRETE
 BARRIER RAIL
 SPANS A, B, C & D

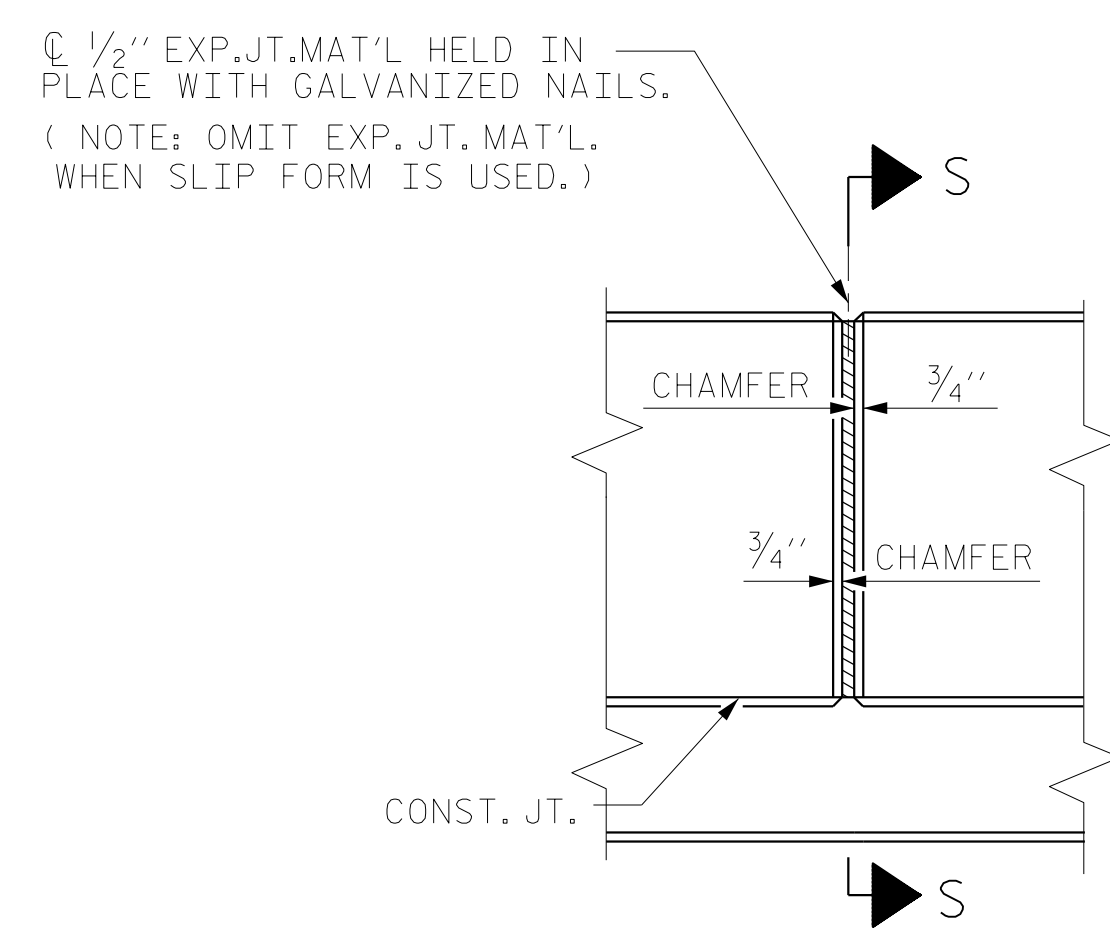
DRAWN BY :	TWL	DATE :	04/2019
CHECKED BY :	JMR	DATE :	05/2019
DESIGN ENGINEER OF RECORD:	PDS	DATE :	06/2019

DOCUMENT NOT CONSIDERED
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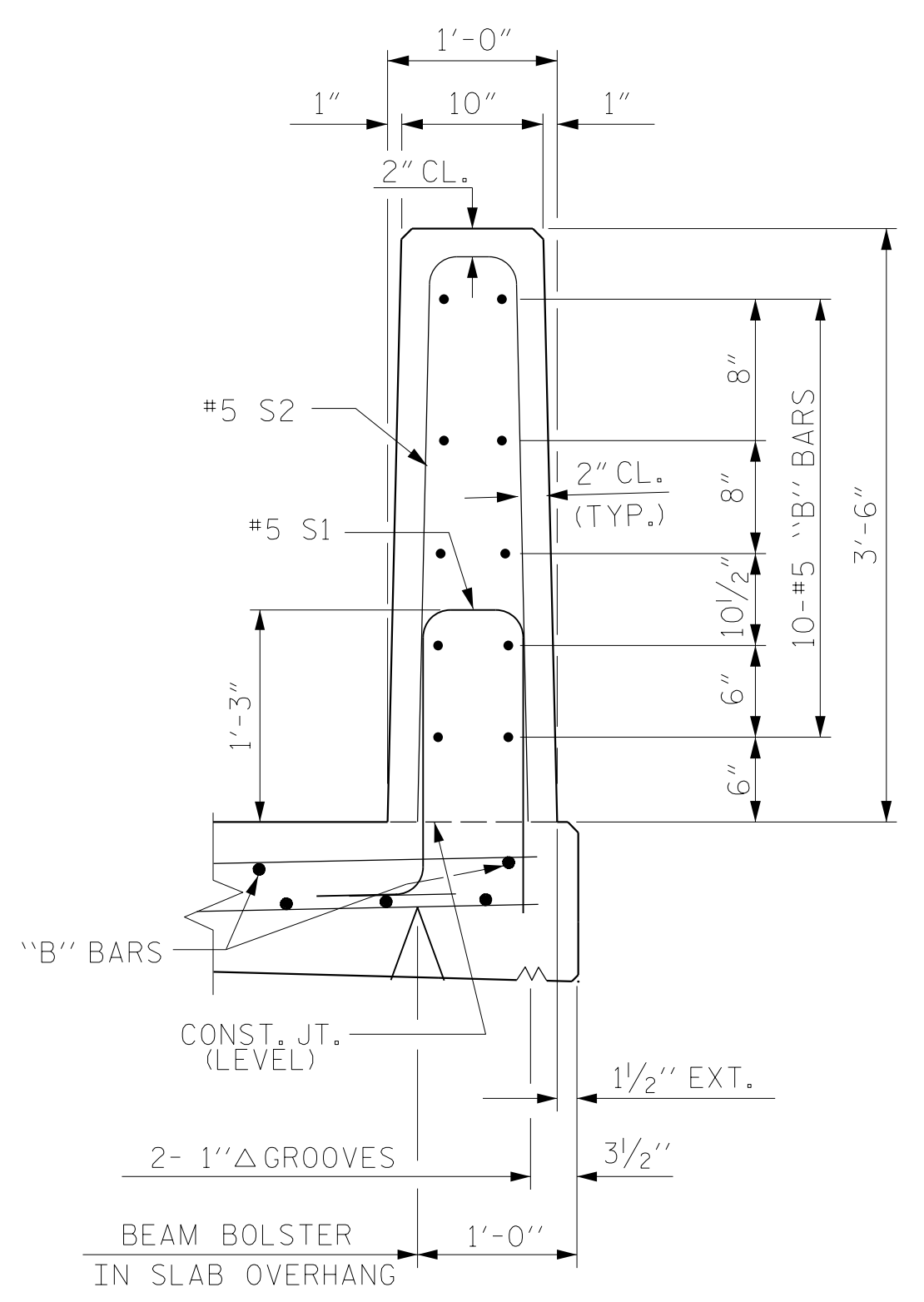
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-16	
1			3			TOTAL SHEETS	
2			4			31	



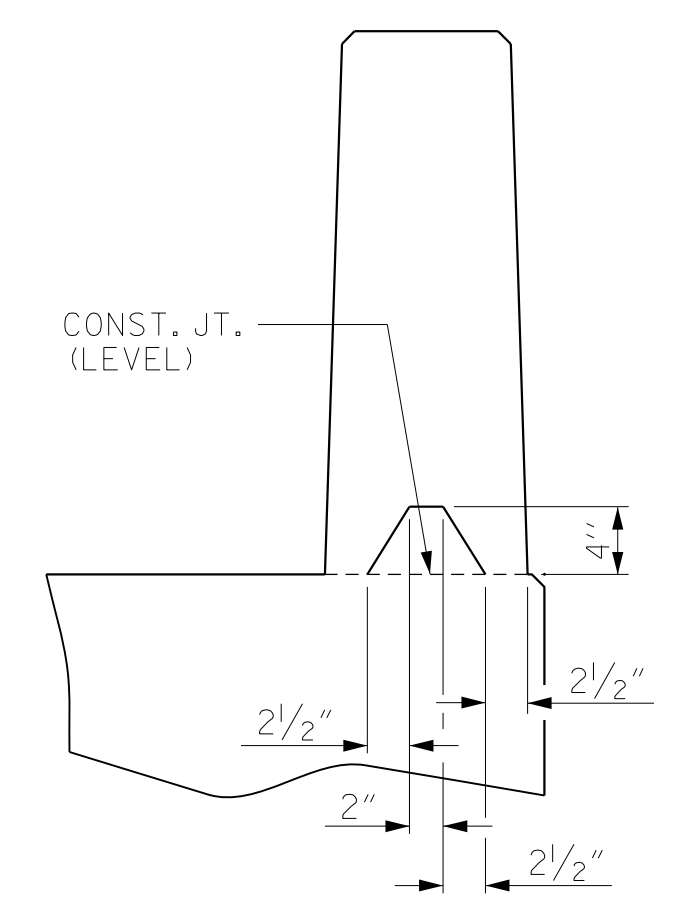
END OF RAIL DETAILS



ELEVATION AT EXPANSION JOINTS



SECTION THRU RAIL



SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

NOTES

THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

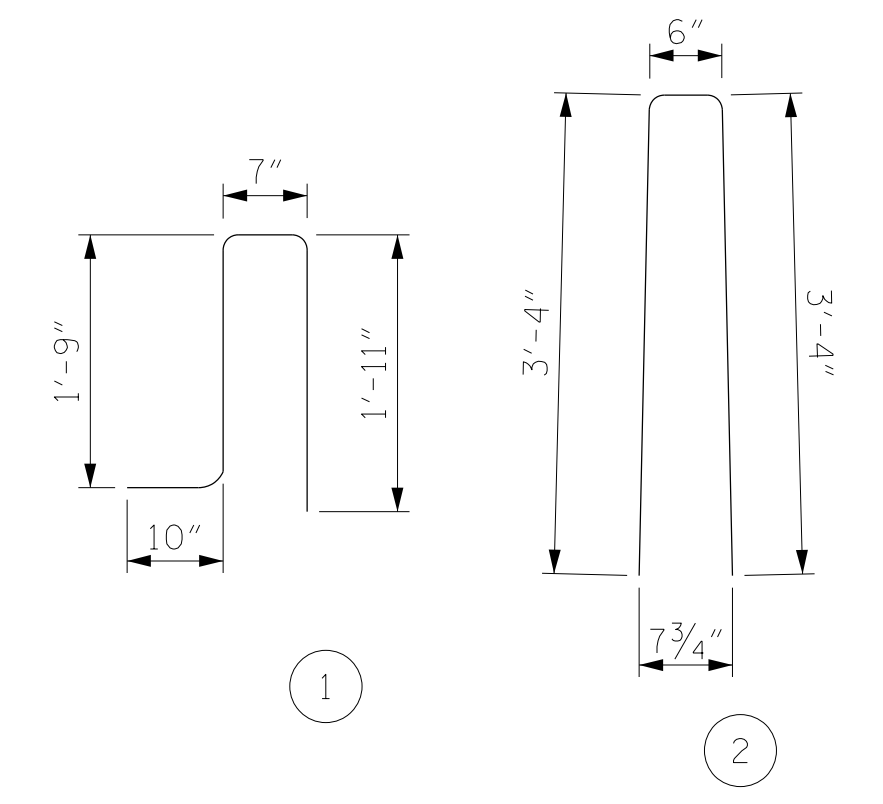
WHEN FOAM JOINT SEAL IS REQUIRED, THE JOINT IN THE DECK SHALL BE SAWED PRIOR TO THE CASTING OF VERTICAL CONCRETE BARRIER RAIL.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

THE #5 S3 & S4 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM, AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #5 S3 & S4 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

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. THE 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.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR VERTICAL CONCRETE BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	280	#5	STR	24'-6"	7155
*B2	40	#5	STR	23'-8"	987
*S1	790	#5	1	5'-1"	4188
*S2	790	#5	2	7'-2"	5905
*S3	16	#5	STR	4'-0"	67
*S4	32	#5	STR	3'-6"	117
*EPOXY COATED REINFORCING STEEL				18,419 LBS.	
CLASS AA CONCRETE				94.7 CU. YDS.	
VERTICAL CONCRETE BARRIER RAIL				796.7 LIN. FT	

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 2 OF 2 REPLACES BRIDGE NO. 240139



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 VERTICAL CONCRETE BARRIER RAIL

ASSEMBLED BY : NSC	DATE : 04/2019
CHECKED BY : JMR	DATE : 05/2019
DRAWN BY : MAA 5/10	REV. 12/5/11 MAA/GM
CHECKED BY : GM 5/10	REV. 12/17 MAA/THC
	REV. 5/18 MAA/THC

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			31
2			4			

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.

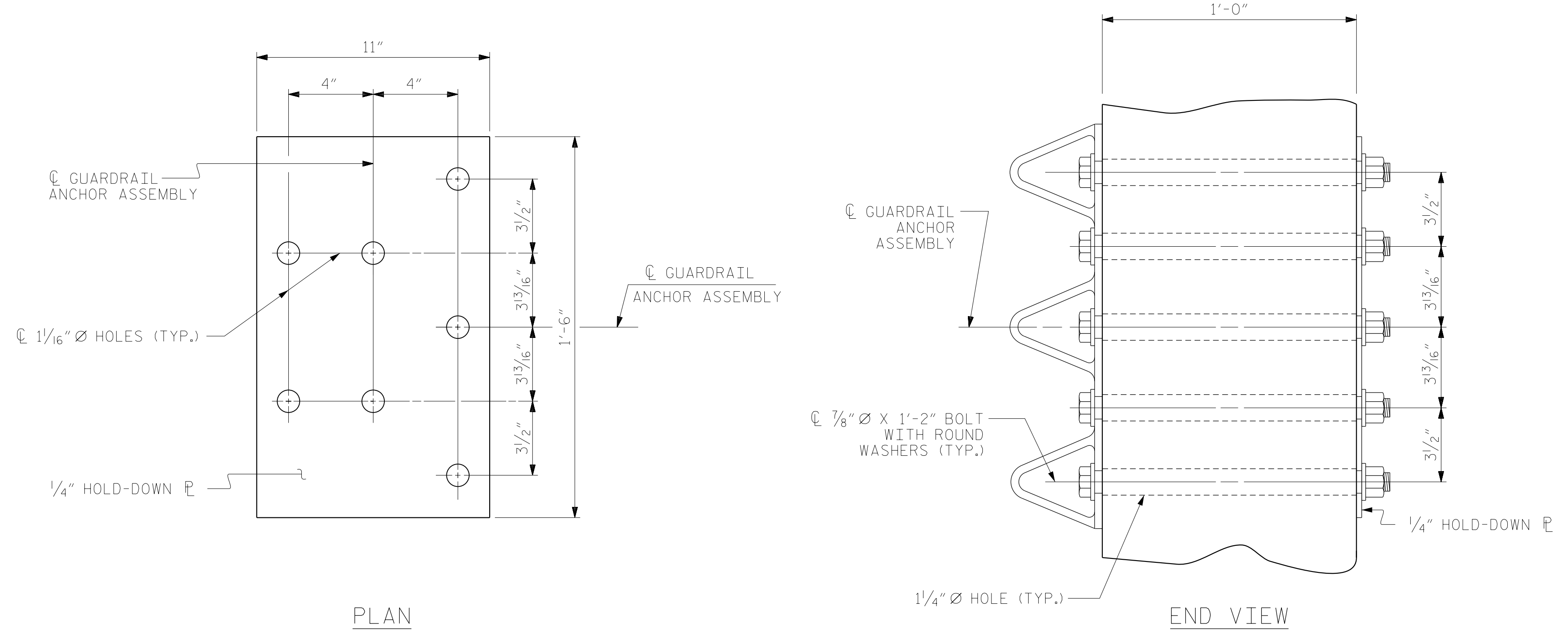
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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 VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

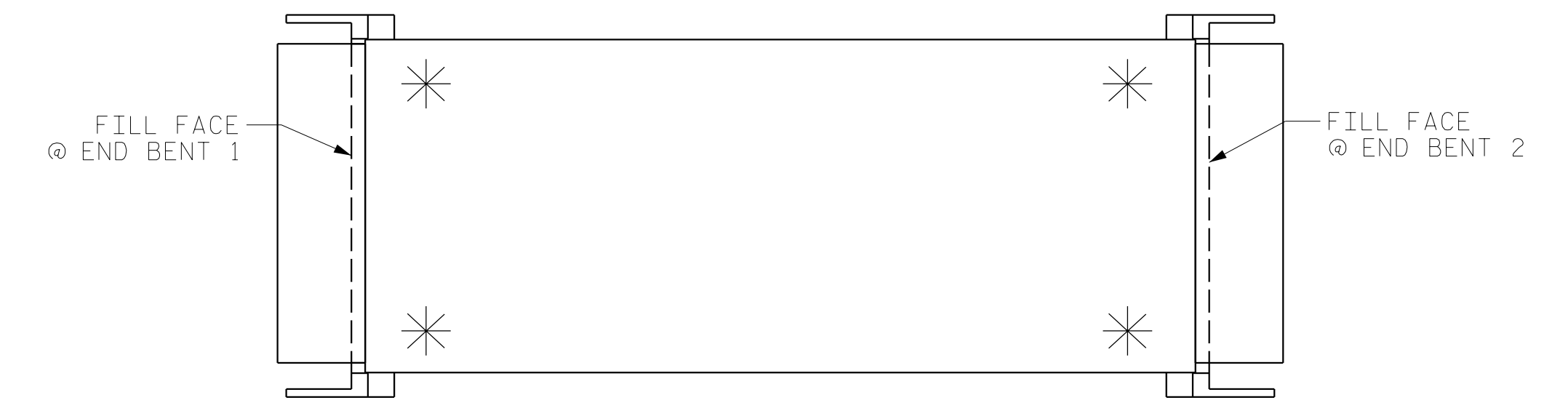
THE 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



PLAN

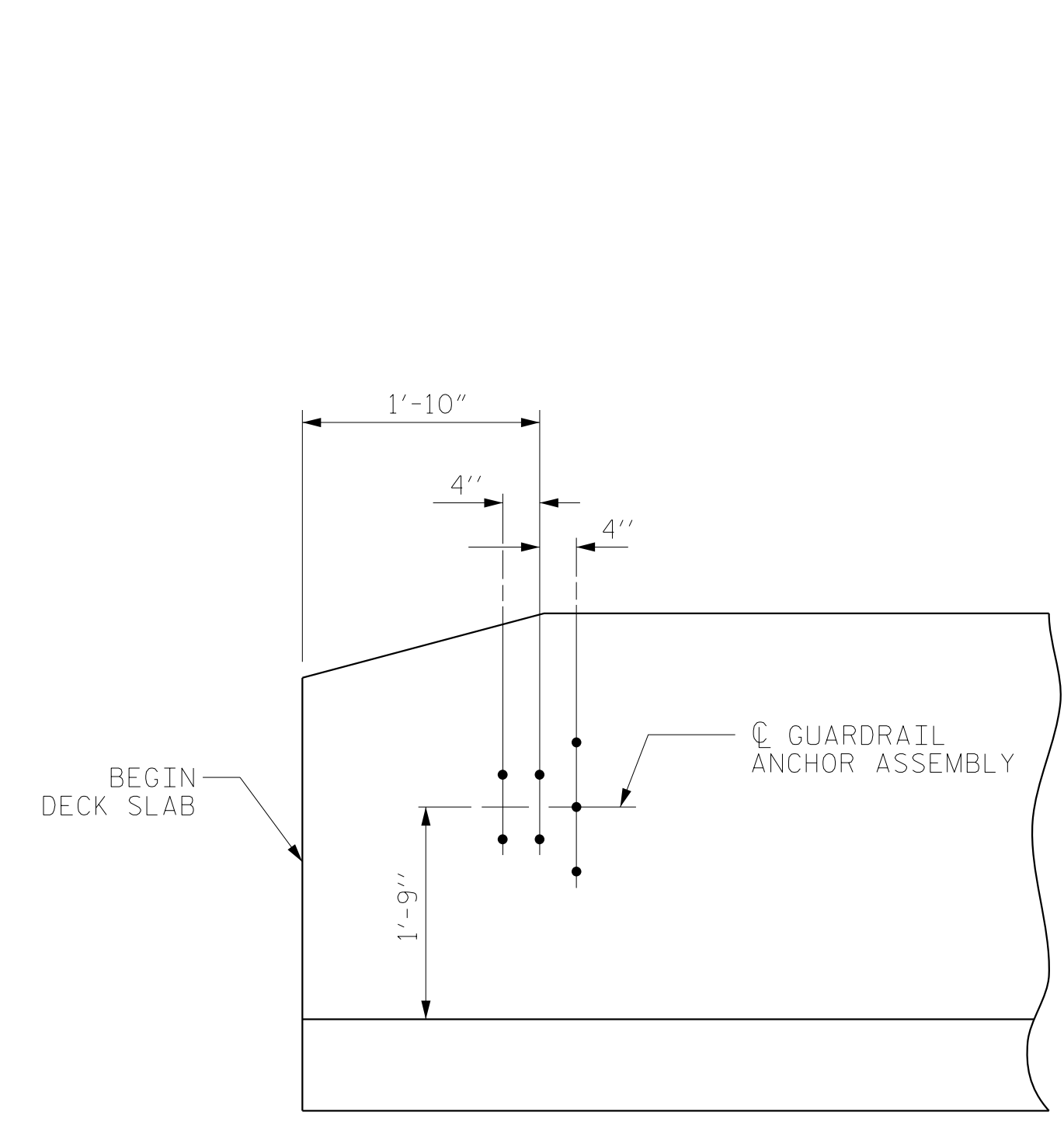
END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS

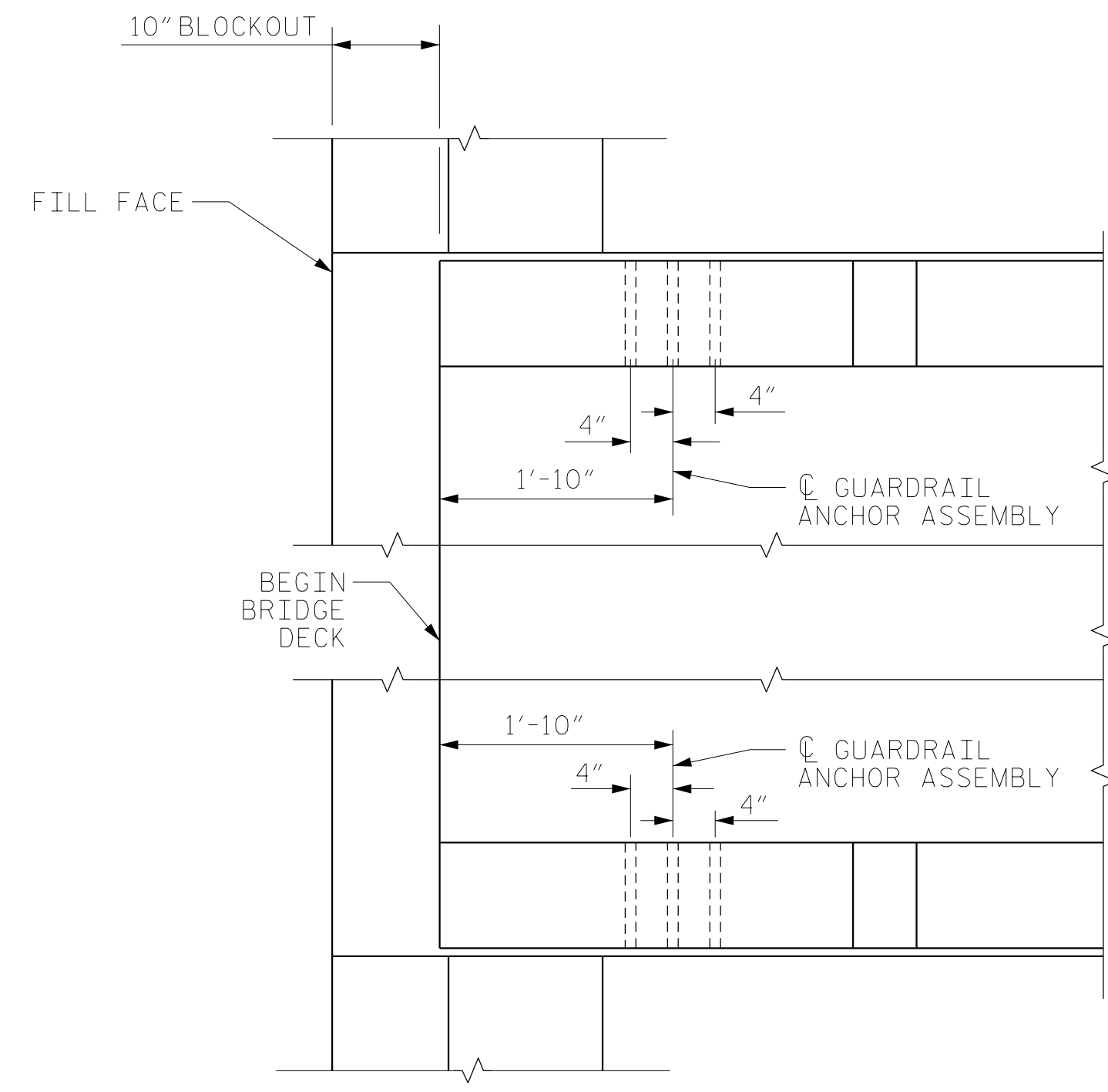


SKETCH SHOWING POINTS OF ATTACHMENT

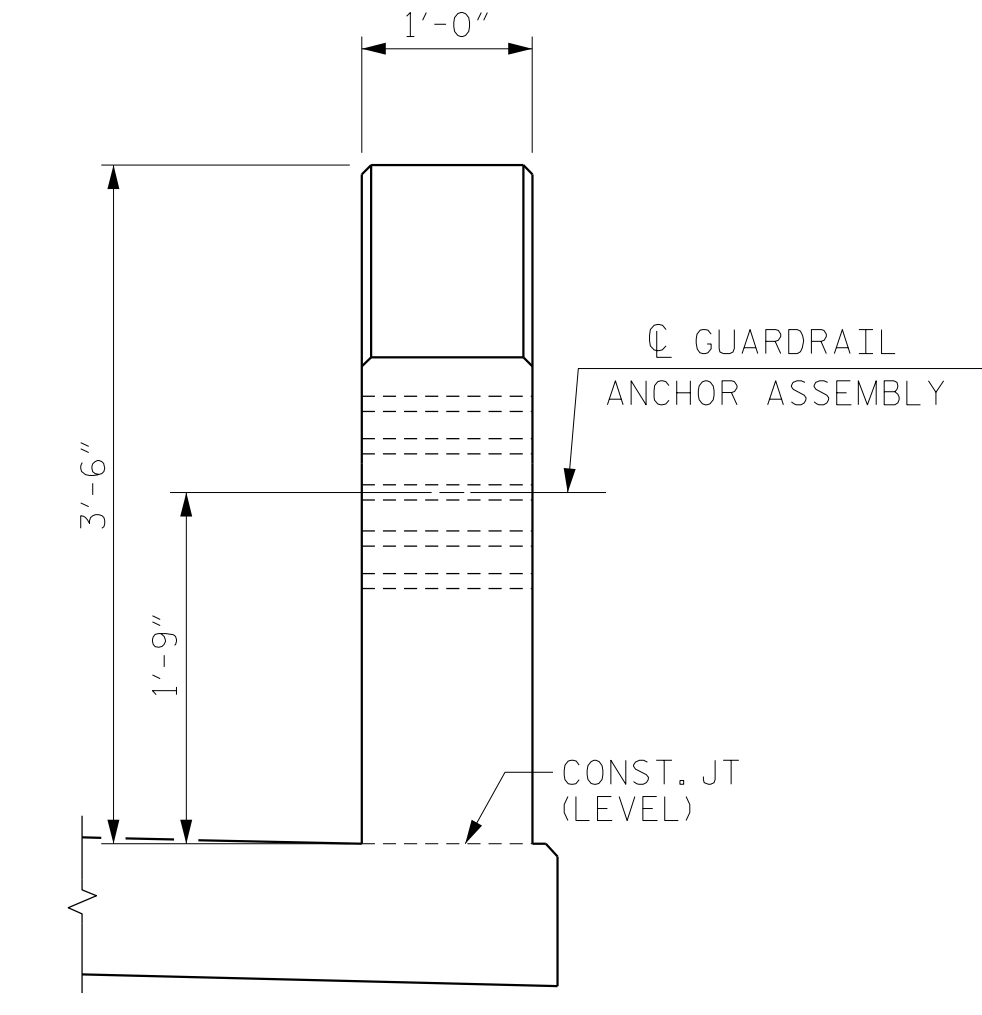
* LOCATION OF GUARDRAIL ATTACHMENT



ELEVATION



PLAN
END BENT 1 SHOWN,
END BENT 2 SIMILAR



END VIEW

LOCATION OF GUARDRAIL ANCHOR

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

REPLACES BRIDGE NO. 240139



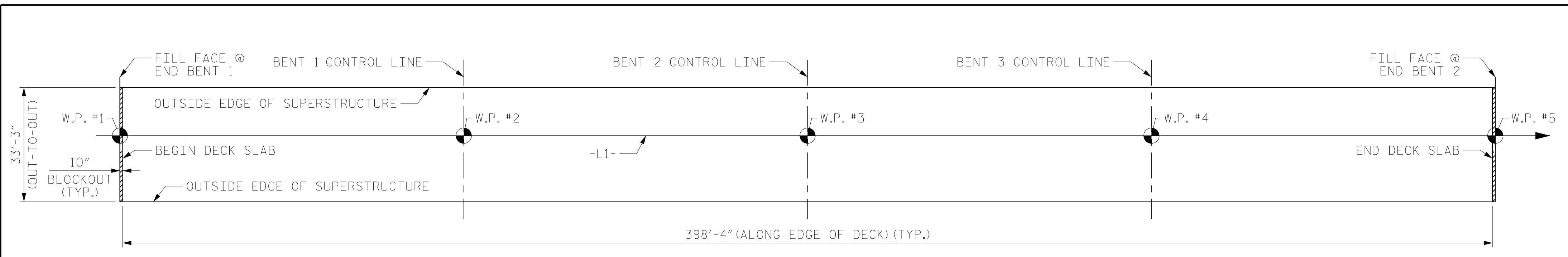
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 DETAILS FOR
 VERTICAL CONCRETE
 BARRIER RAIL

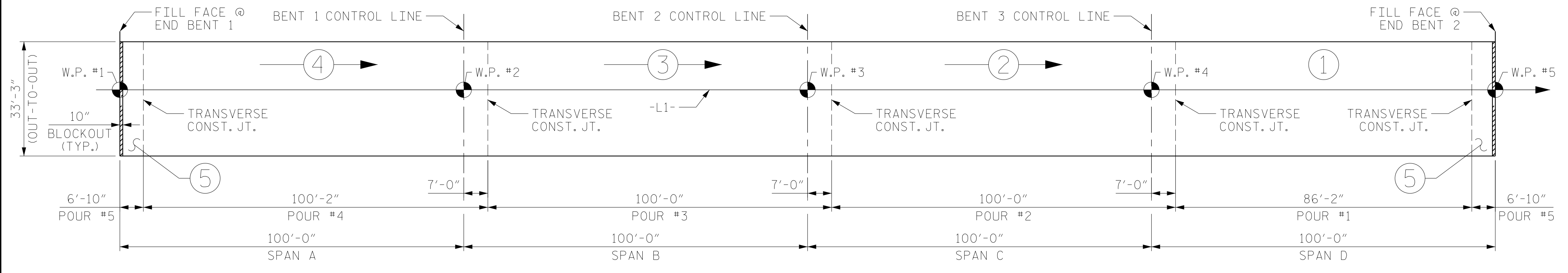
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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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2			4			

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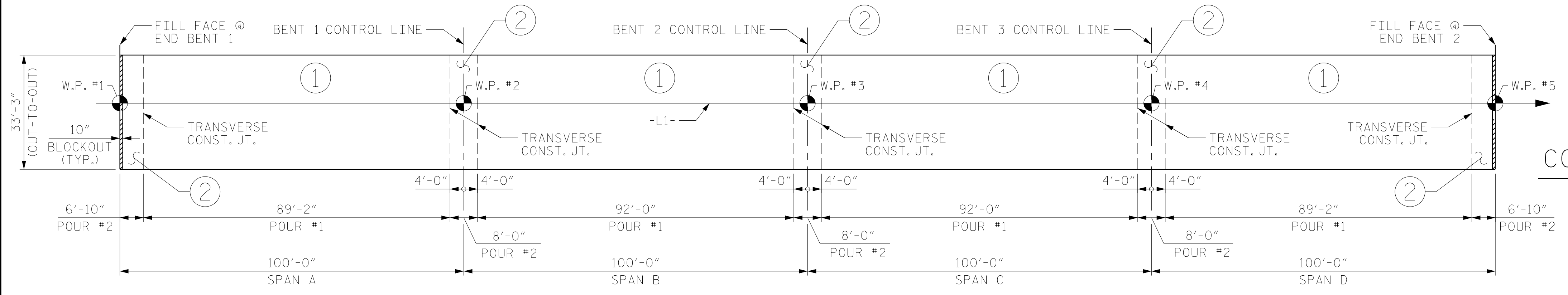
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CHECKED BY : JMR	DATE : 05/2019
DRAWN BY : MAA 5/10	REV. 1/15 MAA/TMG
CHECKED BY : GM 5/10	REV. 12/17 MAA/THC
	REV. 5/18 MAA/THC



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 13,245)

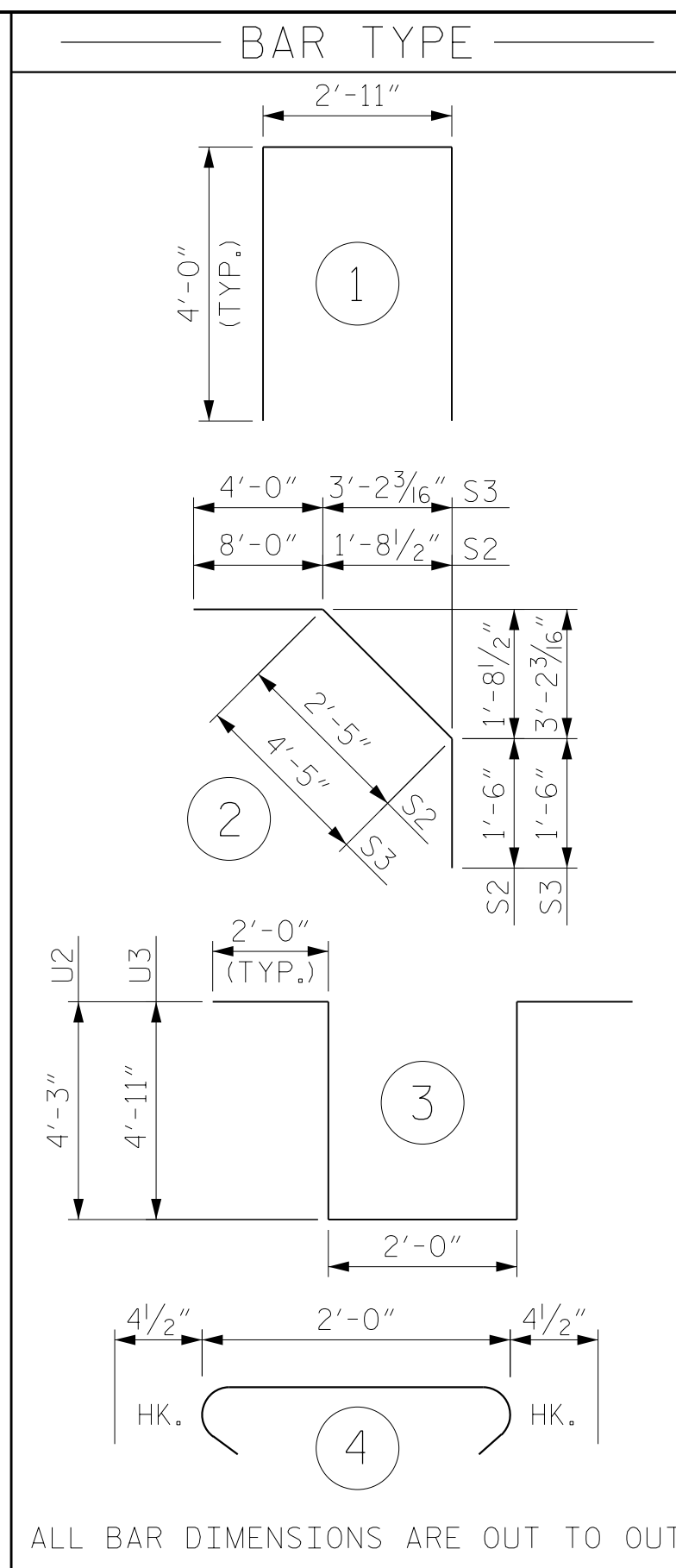


POURING SEQUENCE

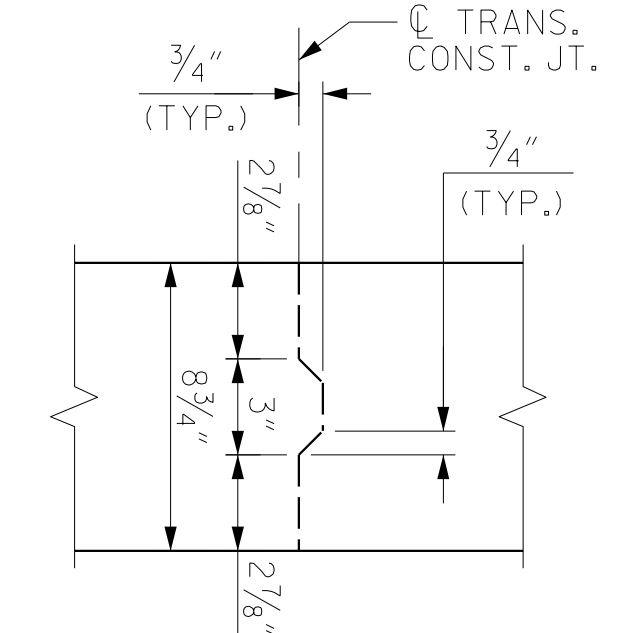


OPTIONAL POURING SEQUENCE

POUR ② CAN NOT BE STARTED UNTIL BOTH ADJACENT POURS REACH A MINIMUM OF 3,000 PSI



ALL BAR DIMENSIONS ARE OUT TO OUT.



TRANSVERSE CONSTRUCTION JOINT DETAIL

REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL REINFORCEMENT SHALL BE CONTINUOUS THROUGH JOINT.

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	399	#4	STR	32'-11"	8773
A2	399	#5	STR	32'-11"	13699
* A3	1594	#5	STR	13'-3"	22029
* B1	130	#6	STR	19'-0"	3710
* B2	132	#4	STR	25'-5"	2241
* B3	99	#6	STR	60'-0"	8922
* B4	99	#6	STR	12'-10"	1908
* B5	96	#6	STR	30'-0"	4326
* B6	66	#4	STR	33'-10"	1492
B7	72	#5	STR	19'-0"	1427
B8	144	#4	STR	24'-11"	2397
B9	108	#5	STR	60'-0"	6759
B10	108	#5	STR	12'-0"	1352
B11	72	#4	STR	33'-2"	1595
B12	88	#4	STR	37'-8"	2214
* B13	22	#4	STR	38'-0"	558
K1	10	#5	STR	32'-11"	343
K2	6	#5	STR	7'-0"	44
K3	12	#5	STR	8'-0"	100
K4	6	#5	STR	7'-5"	46
K5	6	#5	STR	6'-6"	41
K6	4	#5	STR	1'-11"	8
K7	8	#5	STR	2'-5"	20
K8	4	#5	STR	2'-2"	9
K9	4	#5	STR	1'-8"	7
K10	18	#4	STR	7'-0"	84
K11	36	#4	STR	7'-11"	190
K12	18	#4	STR	7'-7"	91
K13	18	#4	STR	5'-5"	65
K14	15	#4	STR	26'-8"	267
S1	234	#4	4	2'-9"	430
* S2	50	#4	2	11'-11"	398
* S3	50	#4	2	9'-11"	331
U1	50	#4	1	10'-11"	365
U2	18	#4	3	14'-6"	174
U3	45	#4	3	15'-10"	476

REINFORCING STEEL 32,203 LBS.
*EPOXY COATED REINFORCING STEEL 54,688 LBS.

* QUANTITIES FOR CONCRETE PARAPET ARE NOT INCLUDED

GROOVING BRIDGE FLOORS	
BRIDGE DECK	11,154 SQ. FT.
APPROACH SLABS	634 SQ. FT.
TOTAL	11,788 SQ. FT.

CLASS AA CONCRETE	
POUR NO.	CU. YDS.
1	90.5 CY
2	114.9 CY
3	114.9 CY
4	115.1 CY
5	46.8 CY
TOTAL	482.2 CY

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPETS, AND BARRIER RAILS		APPROACH SLABS		PARAPETS AND BARRIER RAILS
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	1'-11"	1'-7"	1'-11"	1'-7"	2'-6"
#5	2'-5"	2'-0"	2'-5"	2'-0"	3'-1"
#6	2'-10"	2'-5"	3'-7"	2'-5"	3'-8"
#7	4'-2"	2'-9"			
#8	4'-9"	3'-2"			

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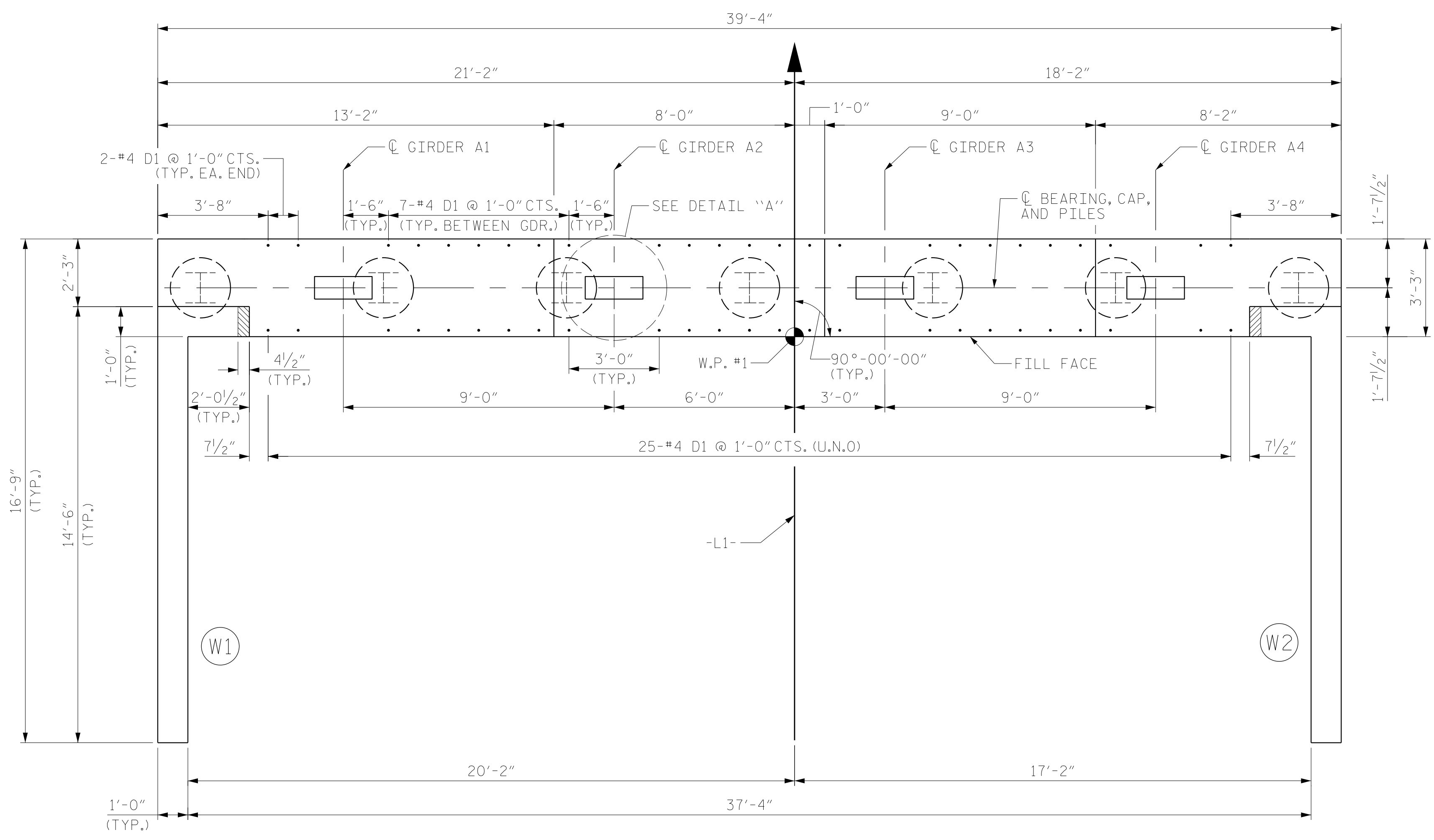


PROJECT NO. B-4484
CRAVEN COUNTY
STATION: 41+45.00 -L1-

REPLACES BRIDGE NO. 240139

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE					
BILL OF MATERIAL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S2-19
TOTAL SHEETS 31



PLAN

NOTES

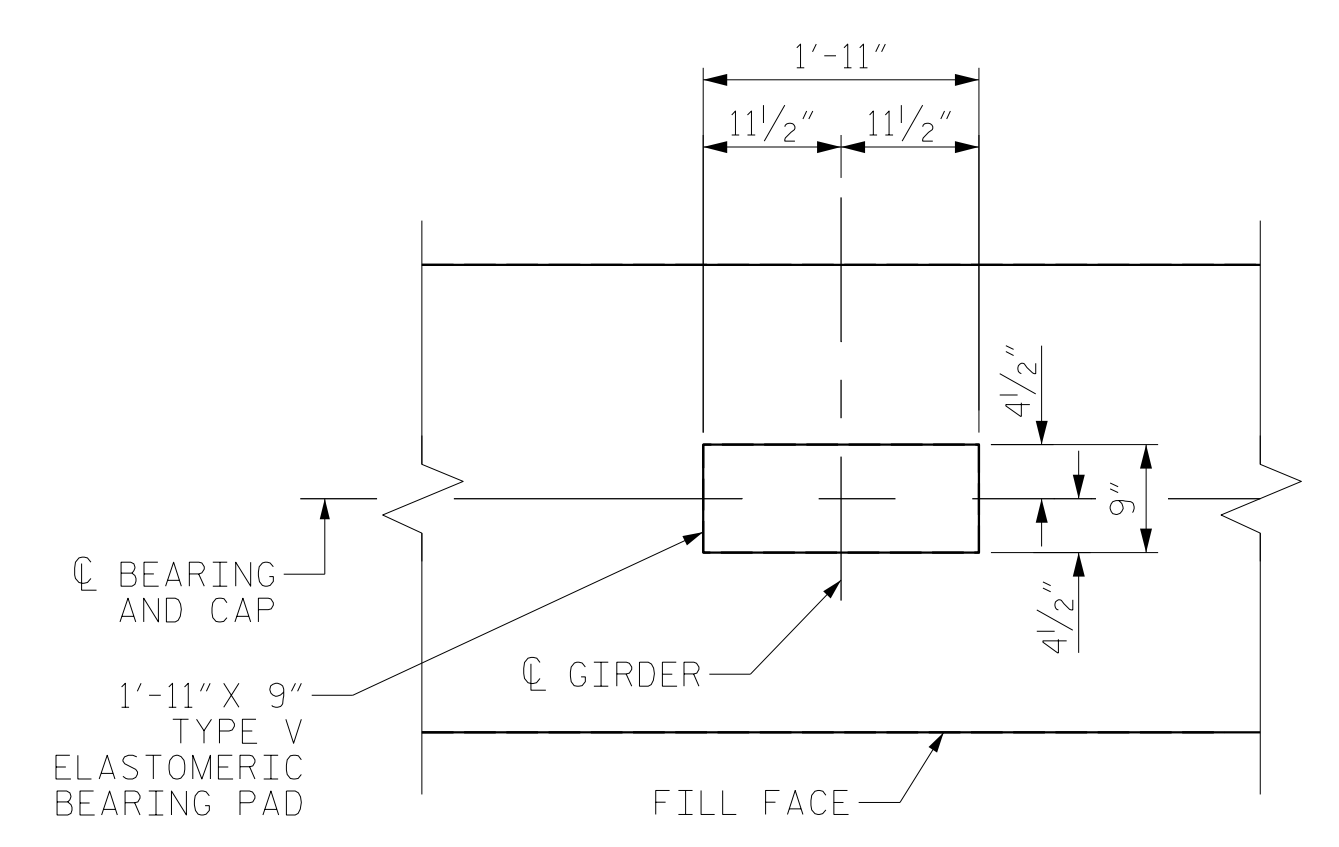
FOR SECTION A-A AND SECTION B-B, SEE SHEET 3 OF 3.

#4 D1 BARS MAY BE SHIFTED SLIGHTLY TO AVOID STIRRUPS IN CAP AND STEPS IN CAP.

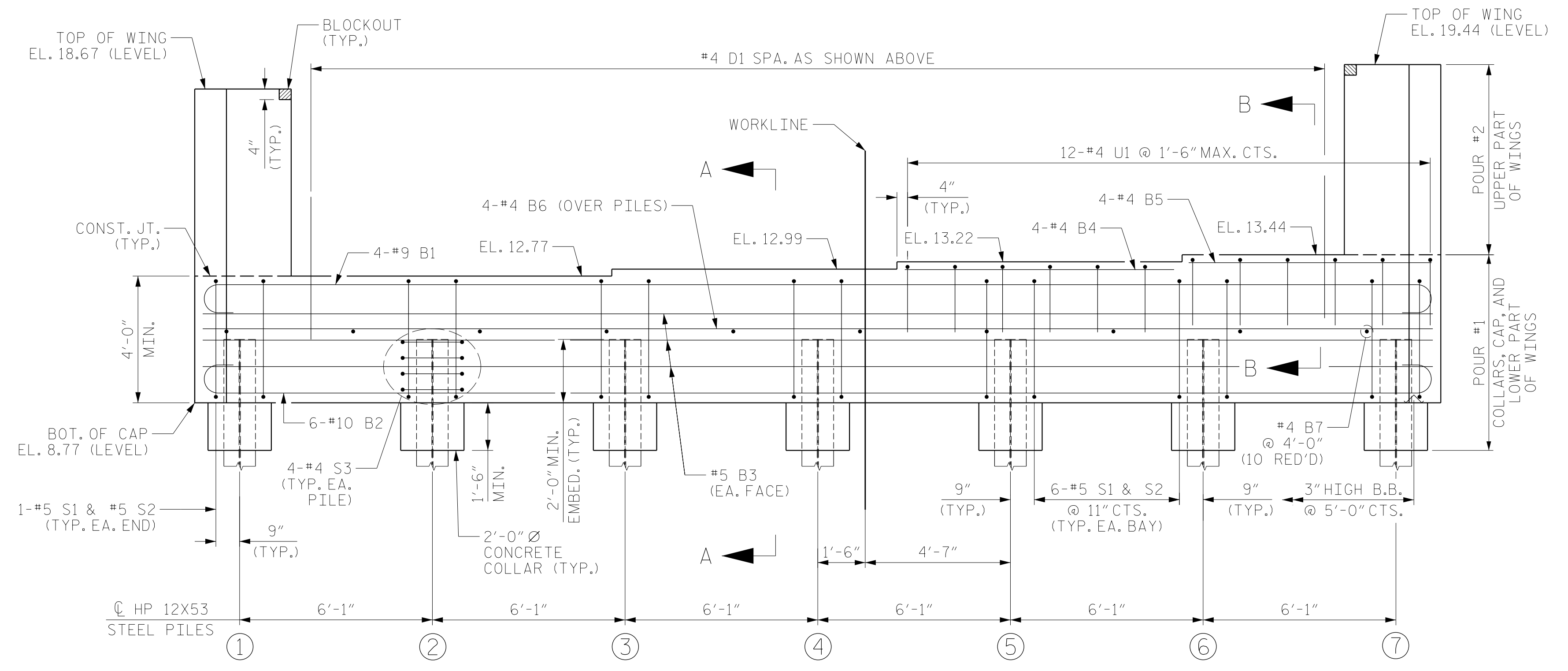
SEE SUPERSTRUCTURE SHEETS FOR UPPER PART OF INTEGRAL END BENT DETAILS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE BARRIER IS CAST IF SLIP FORMING IS USED.

THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".



DETAIL "A-A"
DIMENSIONS TYPICAL FOR EACH BEARING, PILES AND DOWELS NOT SHOWN FOR CLARITY.



ELEVATION

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 1 OF 3 REPLACES BRIDGE NO. 240139



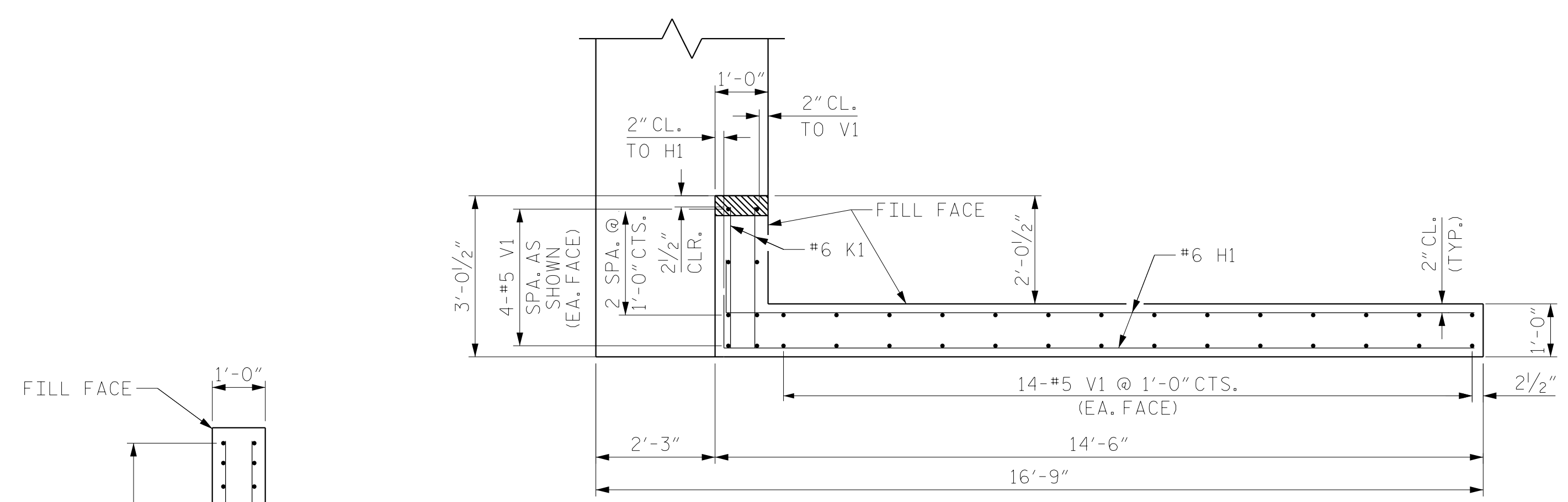
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 INTEGRAL
 END BENT NO. 1

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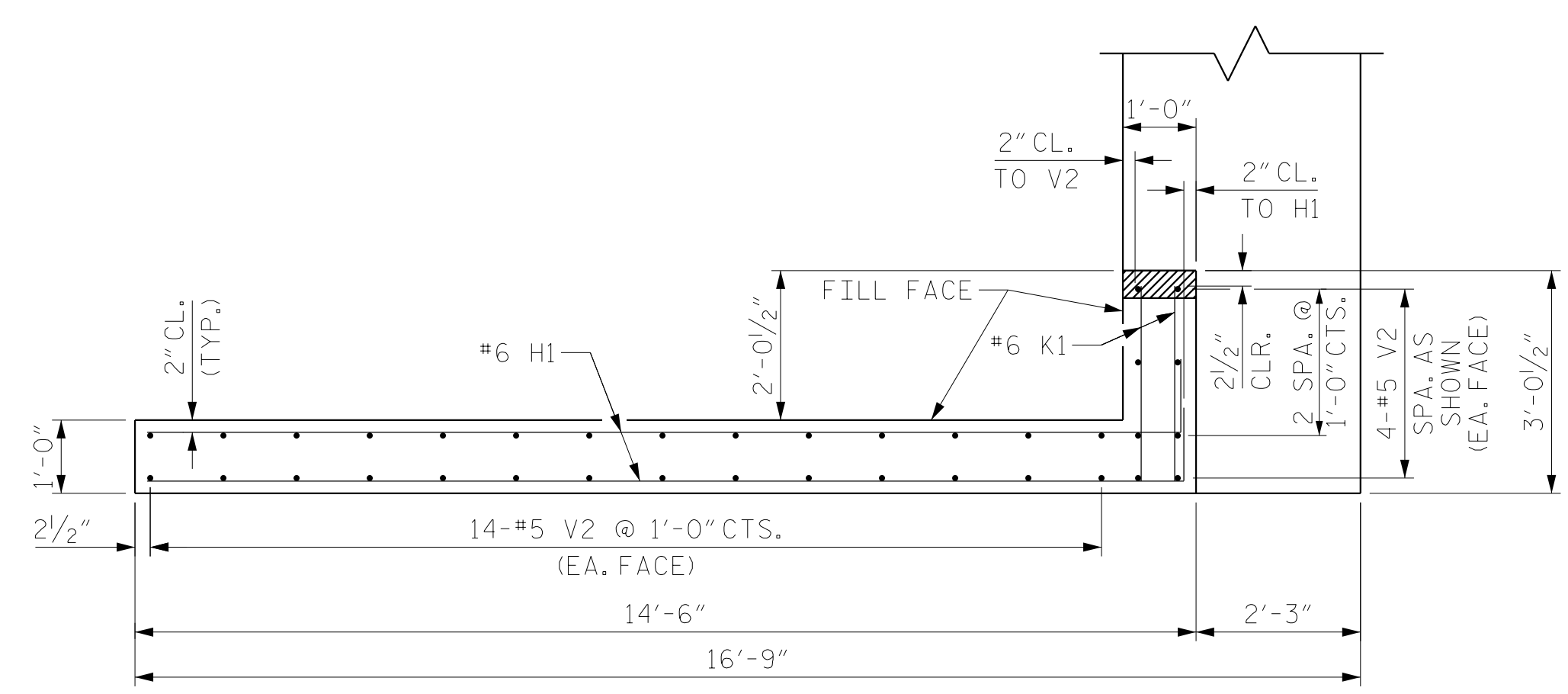
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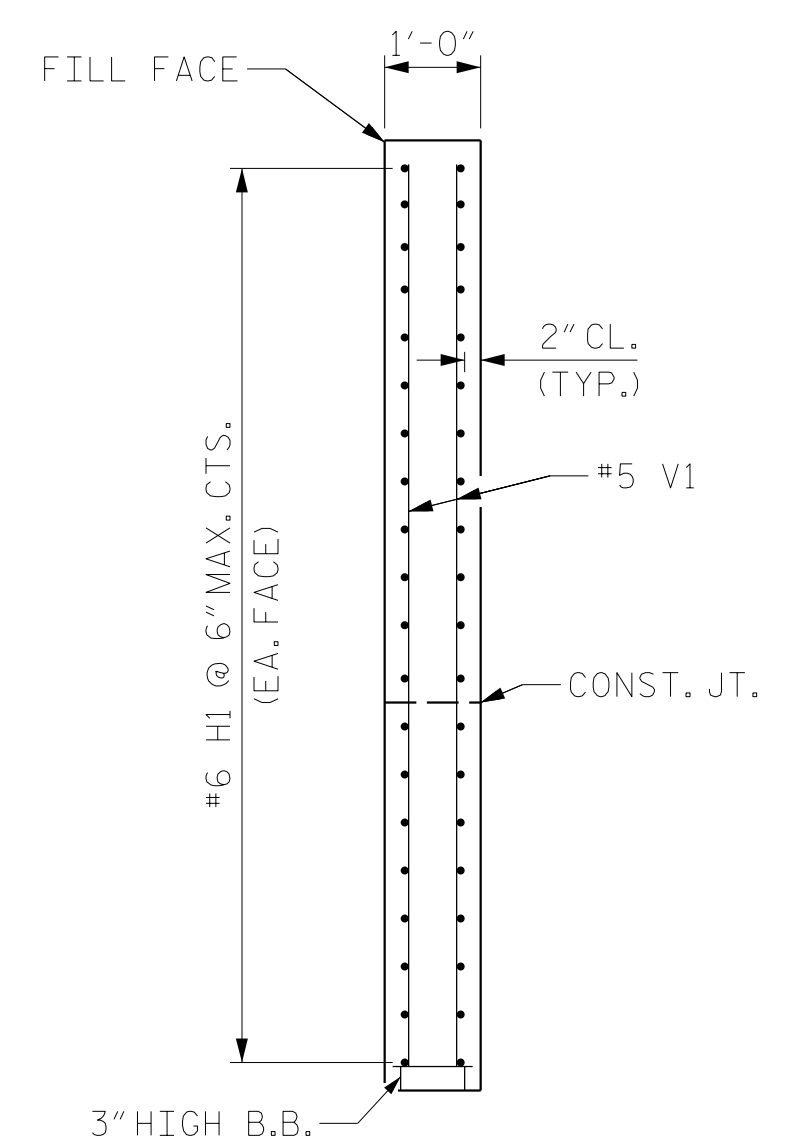
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1			3			TOTAL SHEETS
2			4			31



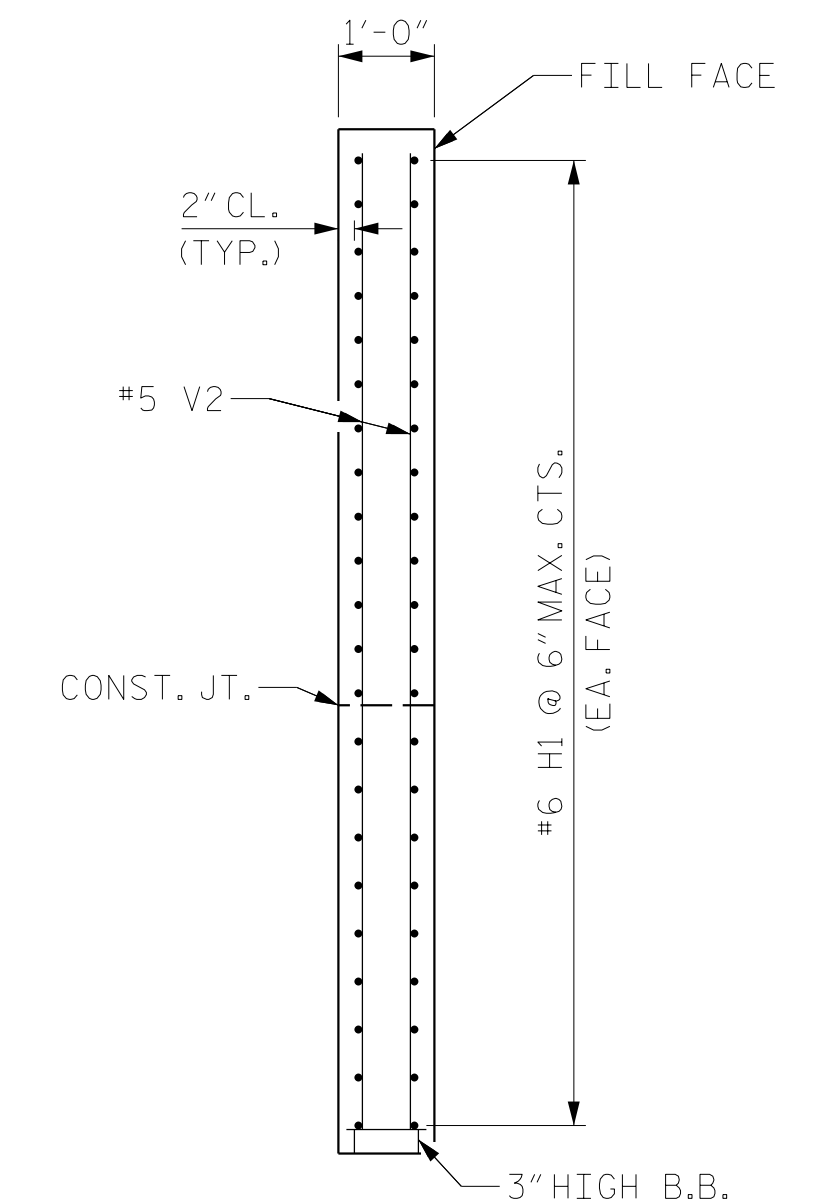
PLAN OF WING - W1



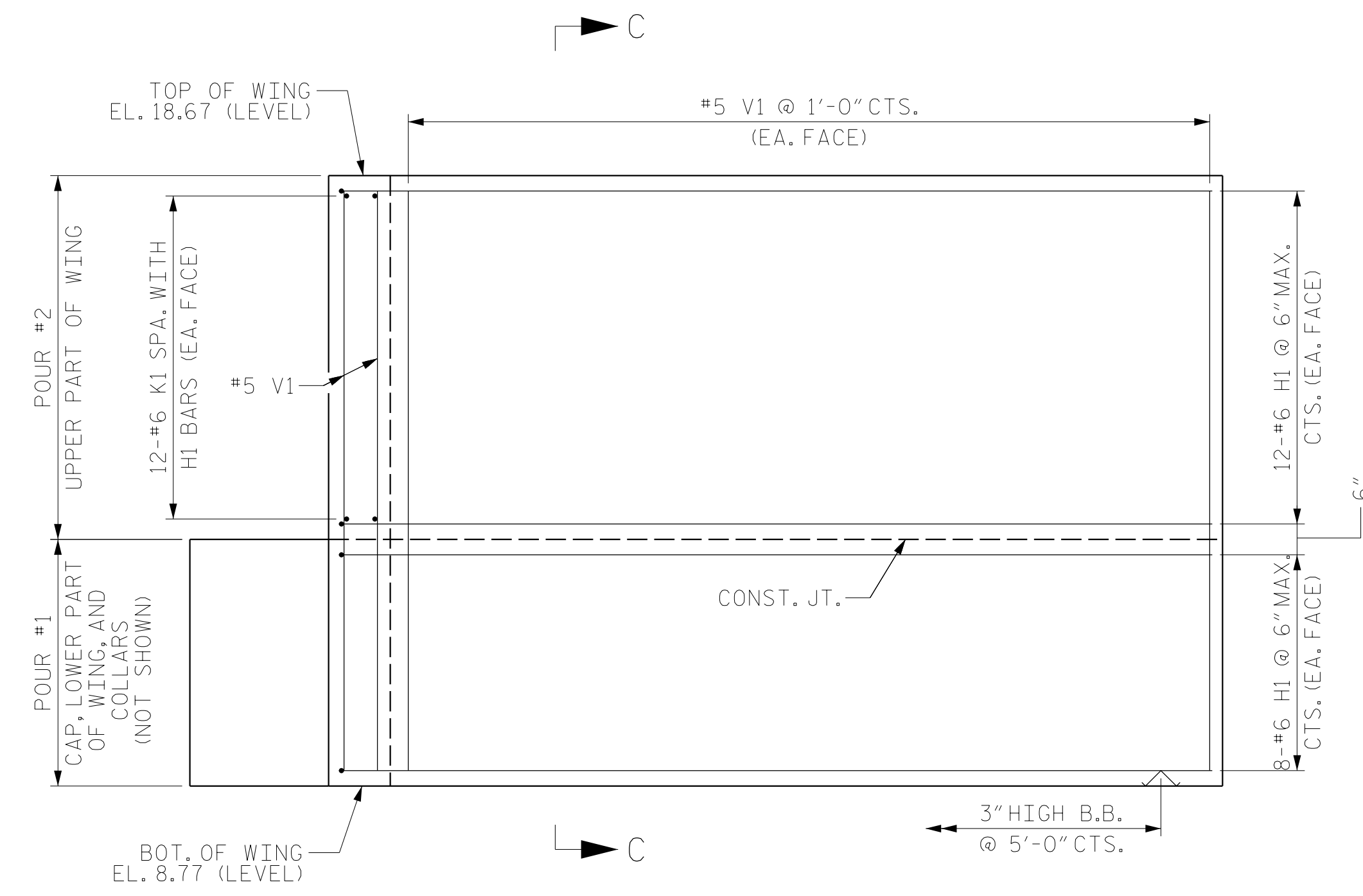
PLAN OF WING - W2



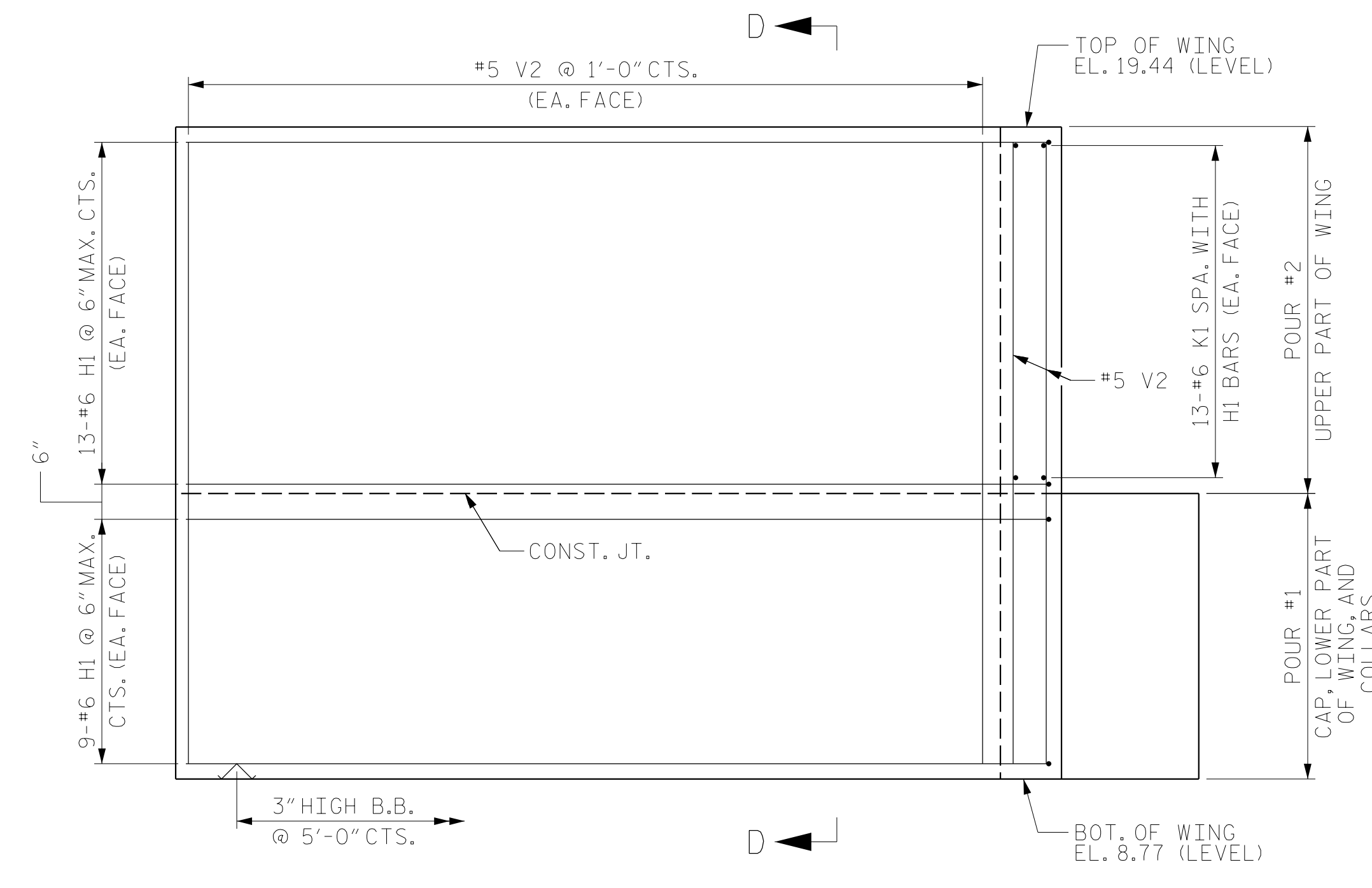
SECTION C-C



SECTION D-D



ELEVATION OF WING - W1



ELEVATION OF WING - W2

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 2 OF 3 REPLACES BRIDGE NO. 240139



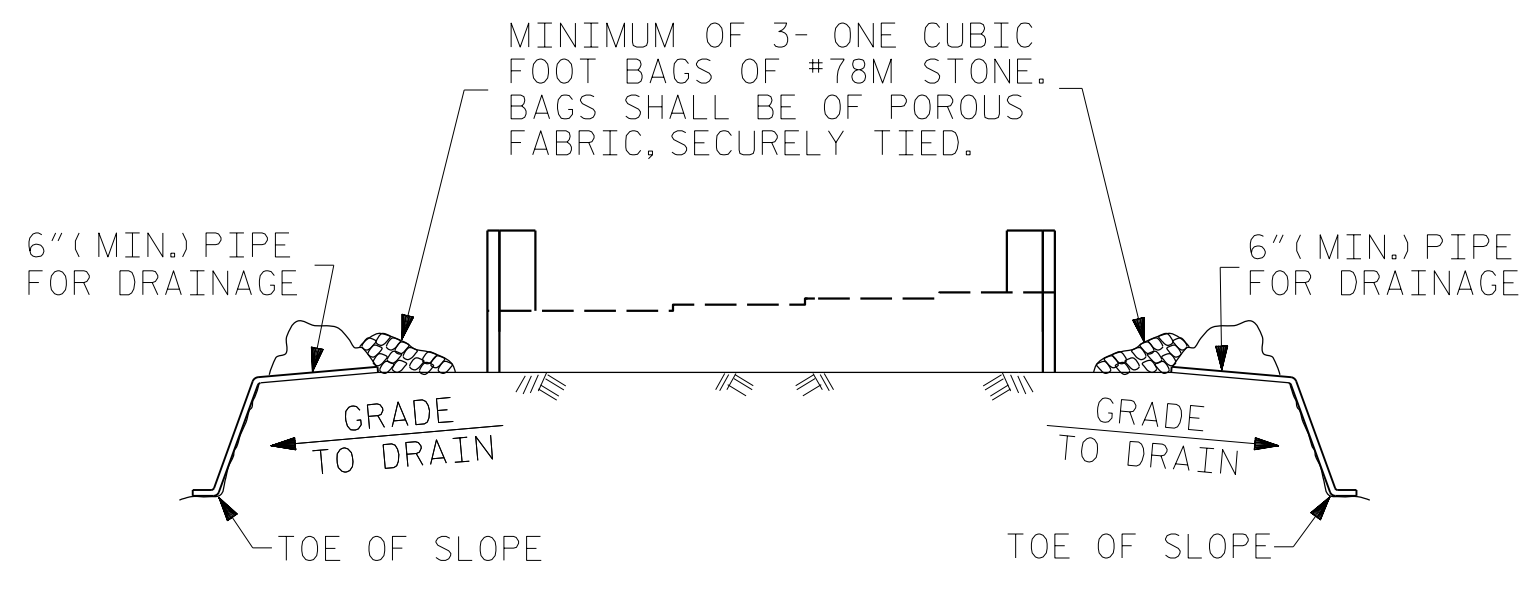
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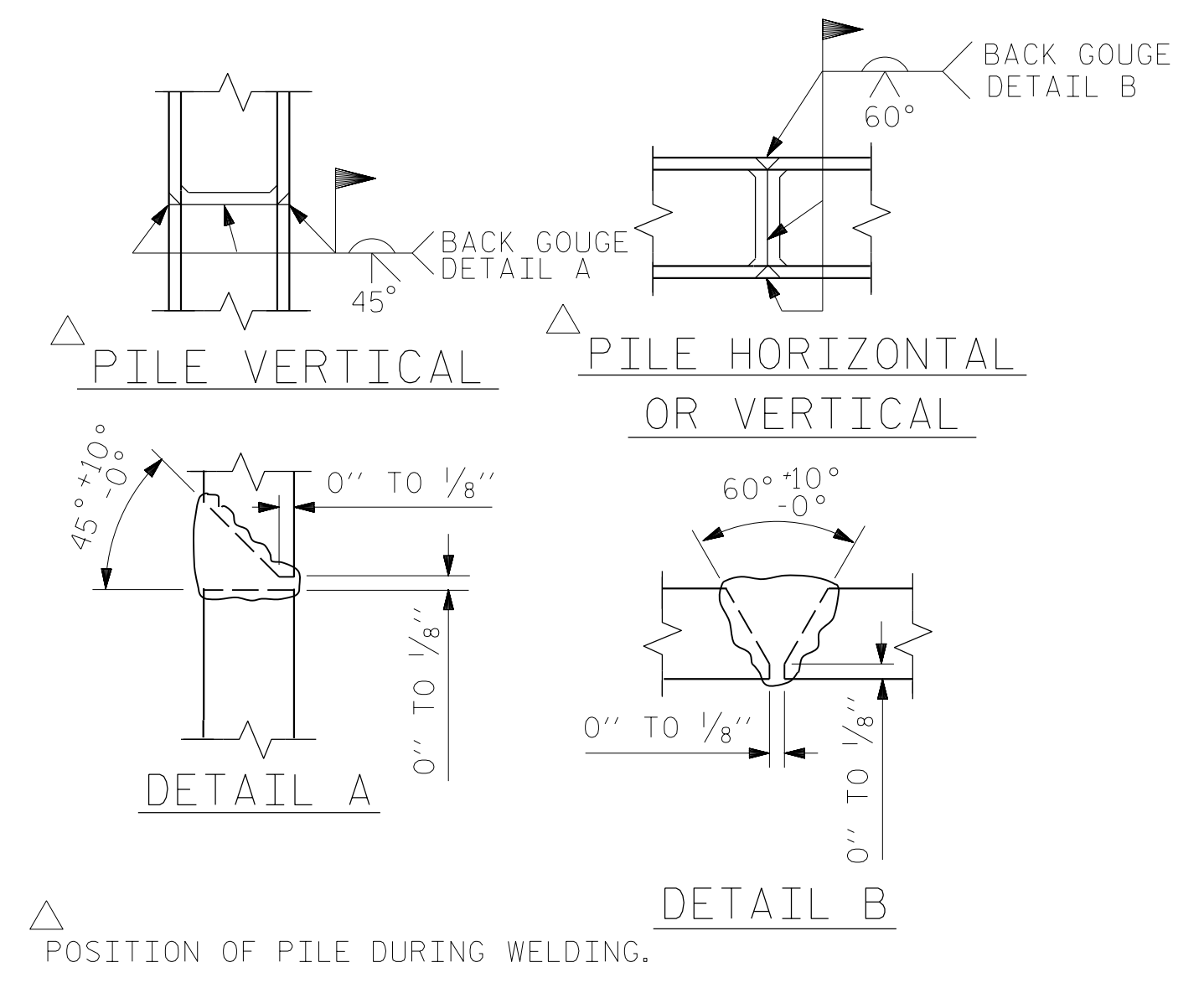


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

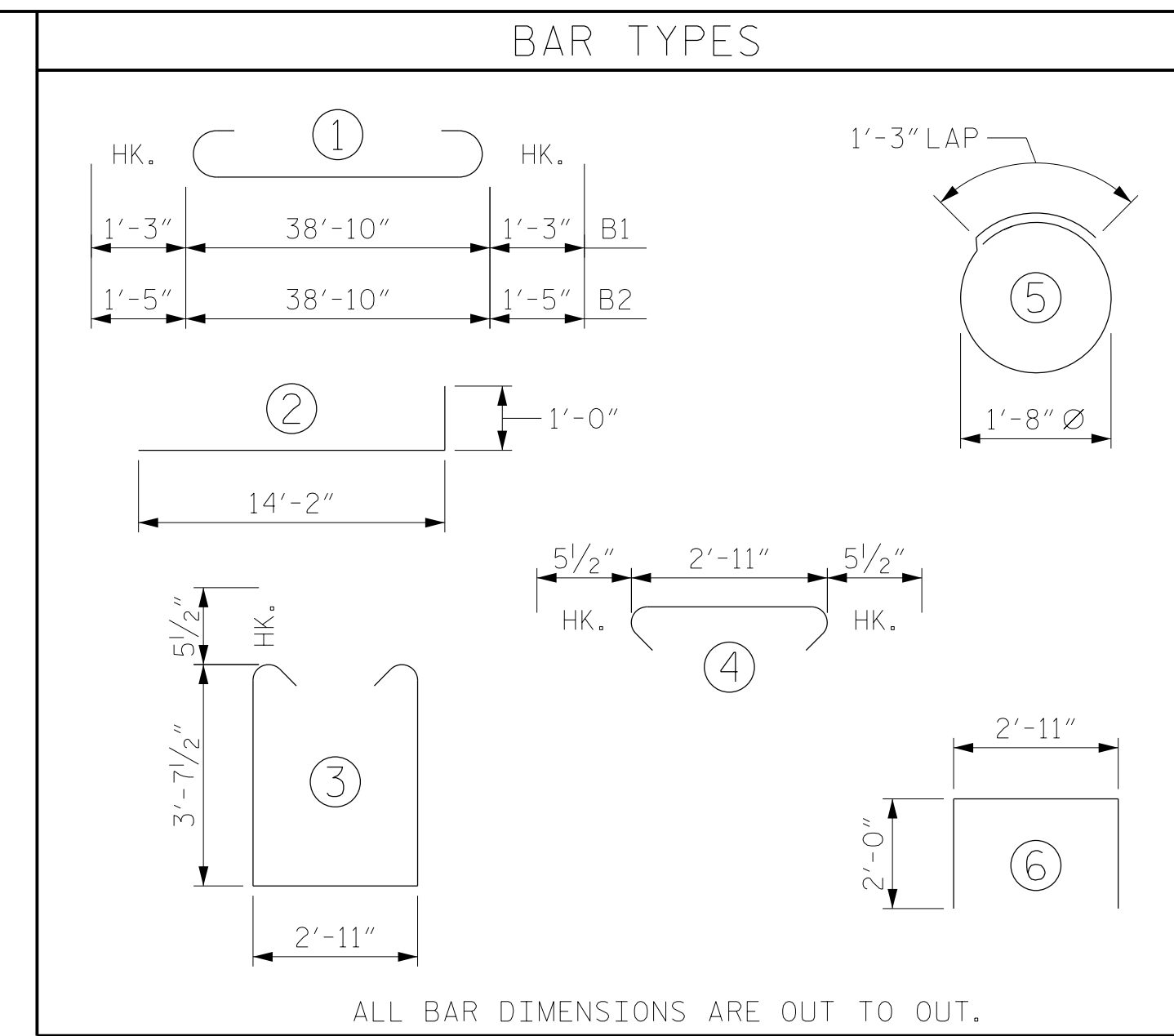
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

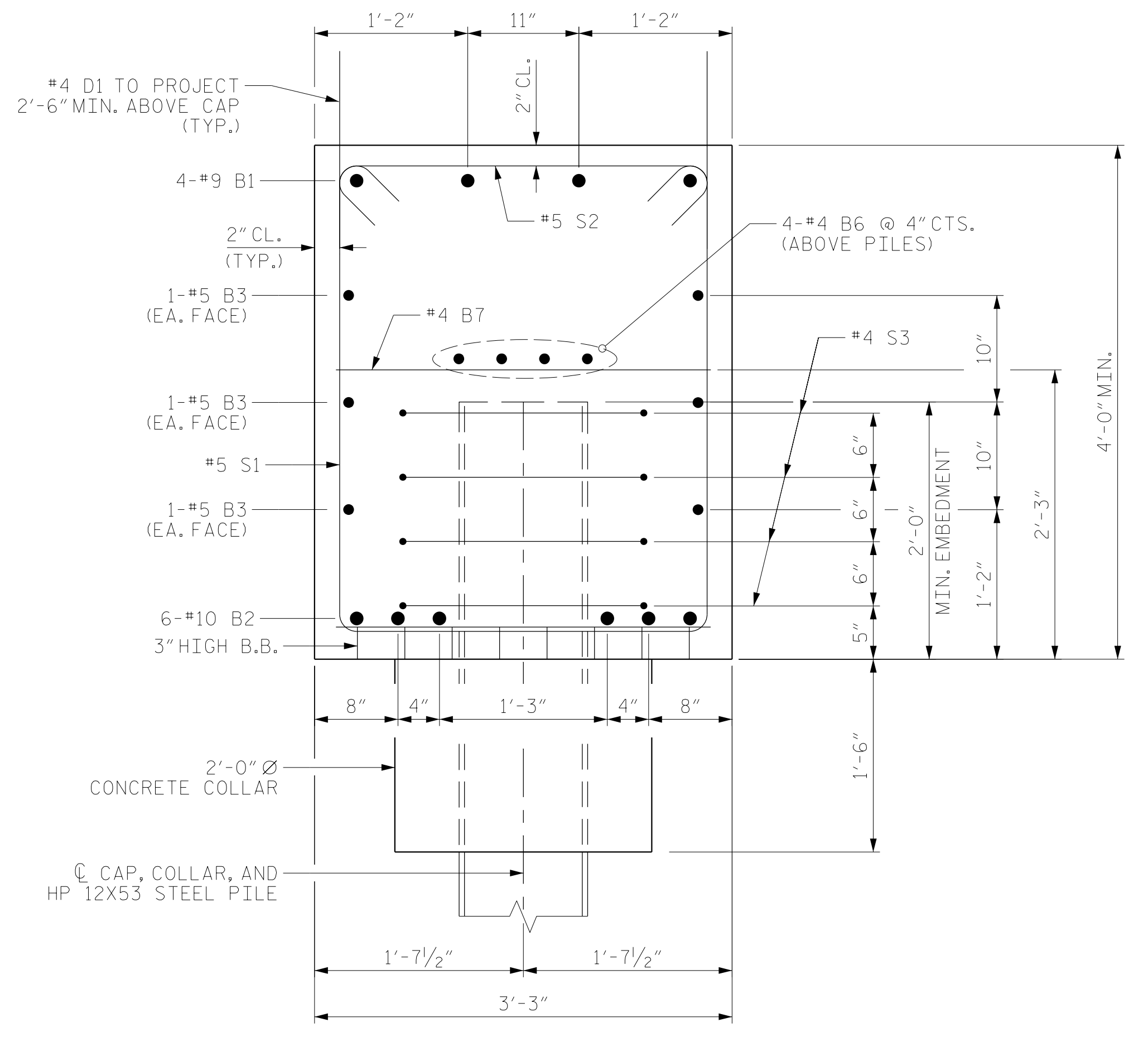


PILE SPLICE DETAILS



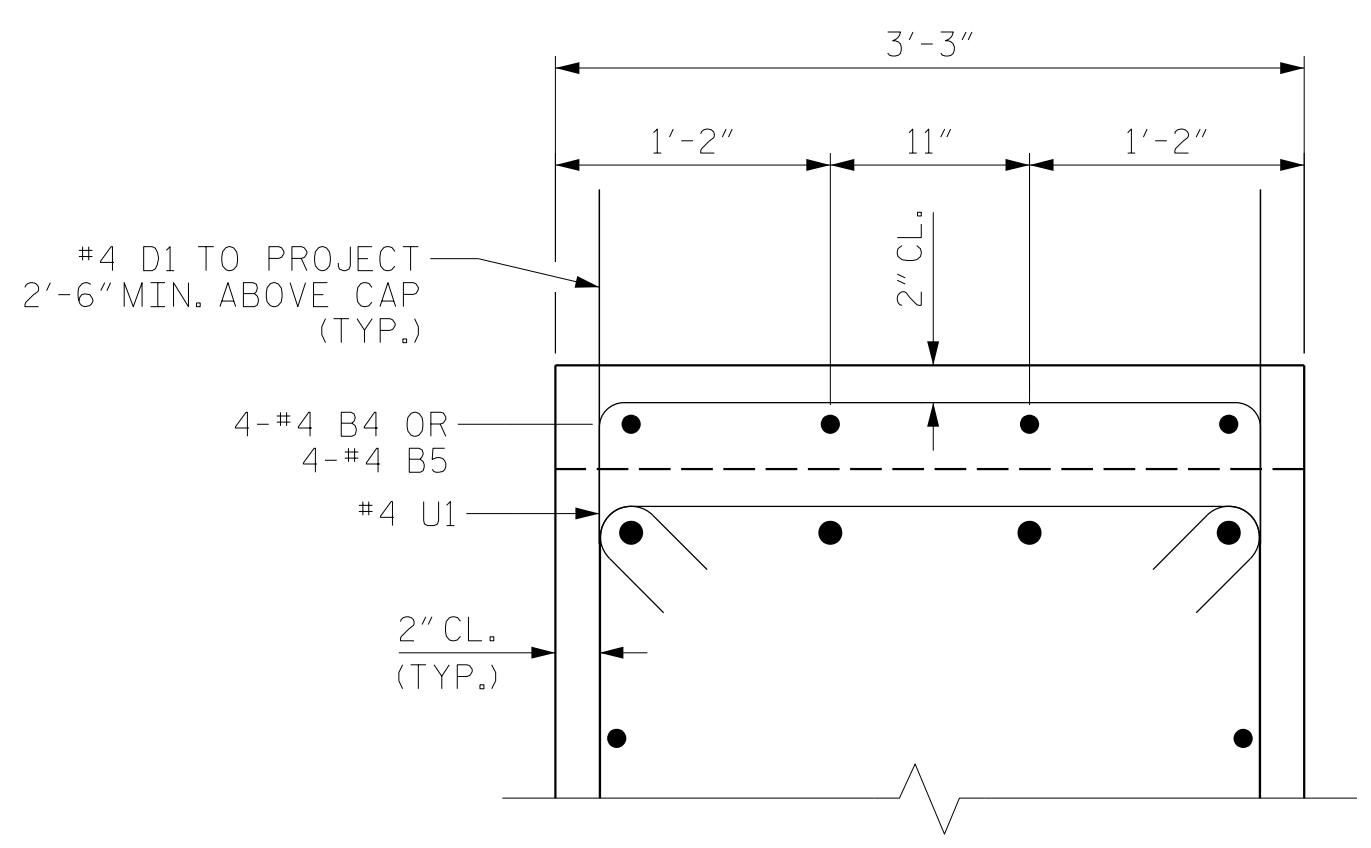
BILL OF MATERIAL					
END BENT NO. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9	1	41'-4"	562
B2	6	#10	1	41'-8"	1076
B3	6	#5	STR	38'-9"	242
B4	4	#4	STR	8'-6"	23
B5	4	#4	STR	7'-8"	20
B6	4	#4	STR	38'-9"	104
B7	10	#4	STR	2'-11"	19
D1	50	#4	STR	5'-9"	192
H1	84	#6	2	15'-2"	1914
K1	50	#6	STR	2'-8"	200
S1	38	#5	3	11'-1"	439
S2	38	#5	4	3'-10"	152
S3	28	#4	5	6'-6"	122
U1	12	#4	6	6'-11"	55
V1	36	#5	STR	9'-5"	354
V2	36	#5	STR	10'-2"	382

REINFORCING STEEL	5,856 LBS.
CLASS A CONCRETE	
POUR #1 COLLARS, CAP, AND LOWER PART OF WINGS	25.9 C.Y.
POUR #2 UPPER PART OF WINGS	7.3 C.Y.
TOTAL CLASS A CONCRETE	33.2 C.Y.
HP 12X53 STEEL PILES	
NO. 7	525 LIN. FT.
PILE DRIVING EQUIPMENT SETUP	7 EA.
PILE REDRIVES	4 EA.



SECTION A-A

THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4"



SECTION B-B

THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4"

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 3 OF 3 REPLACES BRIDGE NO. 240139



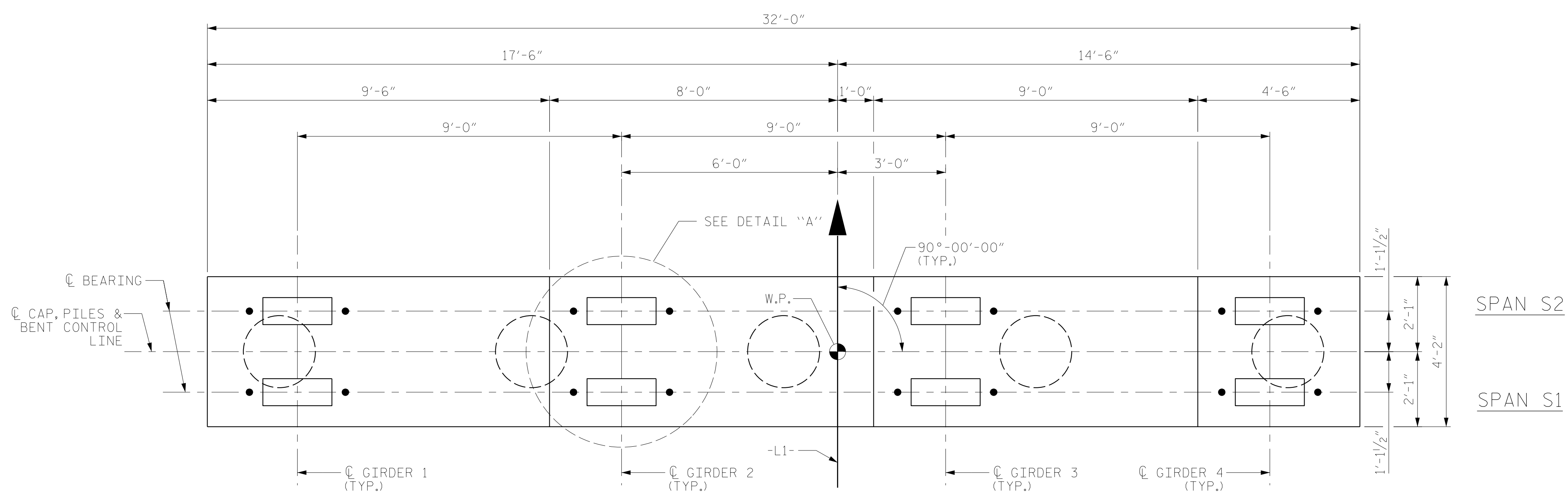
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 END BENT NO. 1
 DETAILS

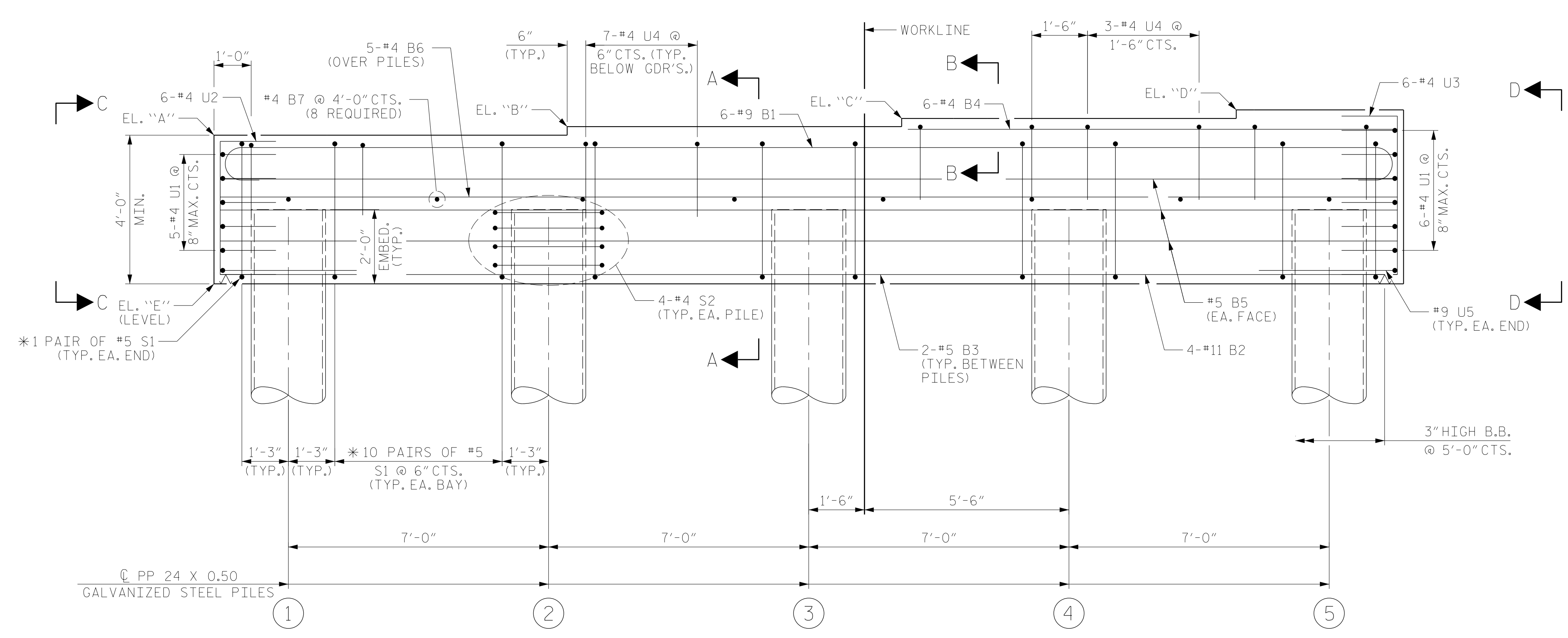
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2			4			TOTAL SHEETS 31

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PLAN



ELEVATION

BENT	W.P.	SPANS		ELEVATIONS					TOP OF PILE
		S1	S2	A	B	C	D	E	
1	2	A	B	13.71	13.94	14.16	14.39	9.71	11.71
2	3	B	C	14.63	14.85	15.08	15.30	10.63	12.63
3	4	C	D	14.93	15.15	15.38	15.60	10.93	12.93

NOTES

FOR SECTION A-A, PARTIAL SECTION B-B, VIEW C-C, AND VIEW D-D, SEE SHEET 2 OF 2.

FOR REINFORCING STEEL BILL OF MATERIAL, SEE SHEET 2 OF 2.

FOR ADDITIONAL REINFORCING STEEL AND CONCRETE IN PP 24 X 0.50 GALVANIZED STEEL PILES, SEE "24" STEEL PIPE PILE" SHEET.

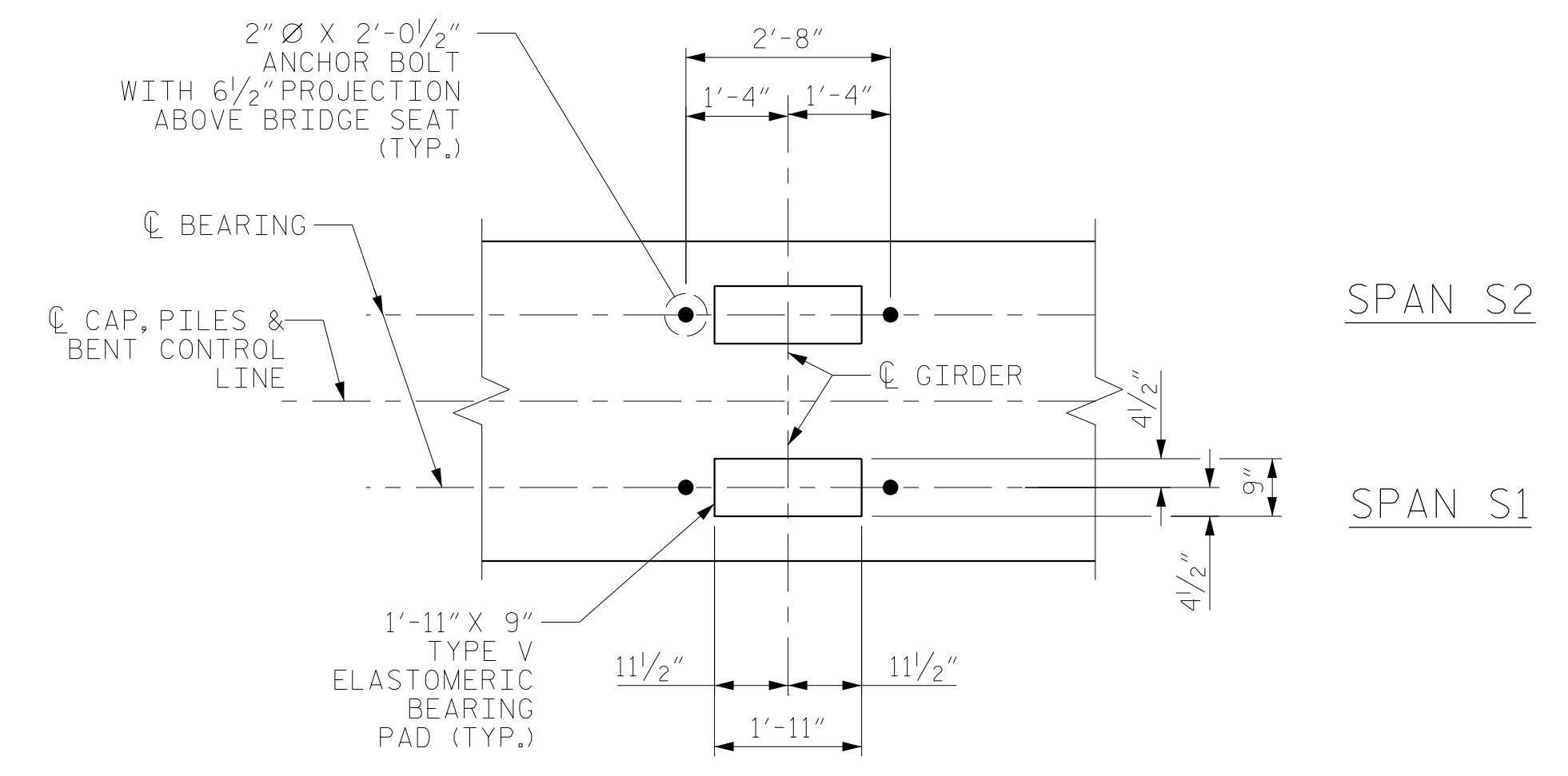
HOOKS ON V1 BARS IN CONCRETE PLUGS MAY BE TURNED AS NECESSARY TO AVOID EMBEDDED ANCHOR BOLTS.

U4 AND S1 BARS MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLT.

U2 AND U3 BARS MAY BE ROTATED AS NECESSARY SO THAT LEGS OF BARS CLEAR PIPE PILES.

* INVERT ALTERNATE #5 S1 STIRRUP PAIRS.

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 45 FEET. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



DETAIL "A"

DIMENSIONS TYPICAL FOR EACH BEARING. PILES AND STEP NOT SHOWN FOR CLARITY.

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 1 OF 2 REPLACES BRIDGE NO. 240139



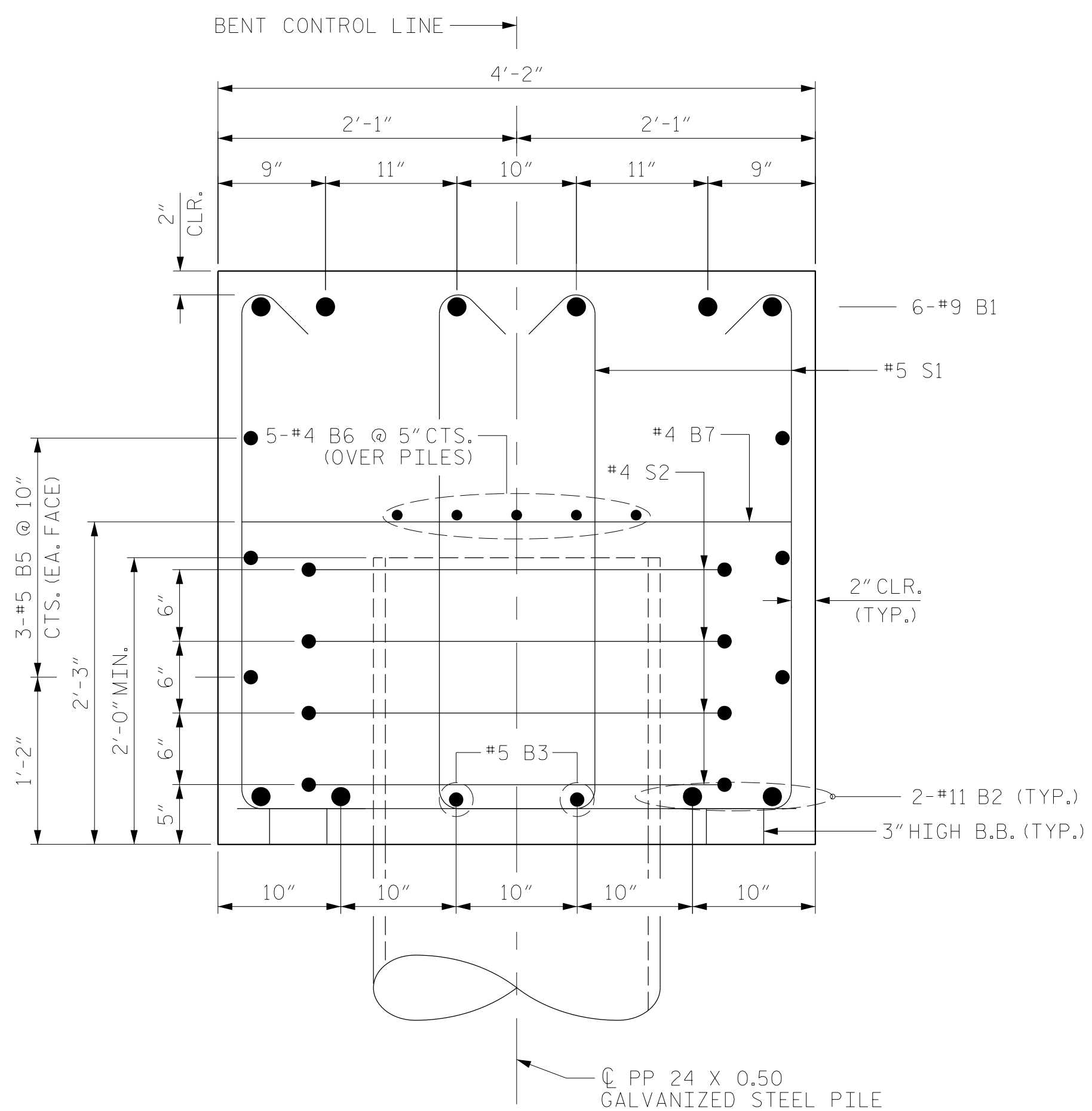
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 BENTS 1 - 3

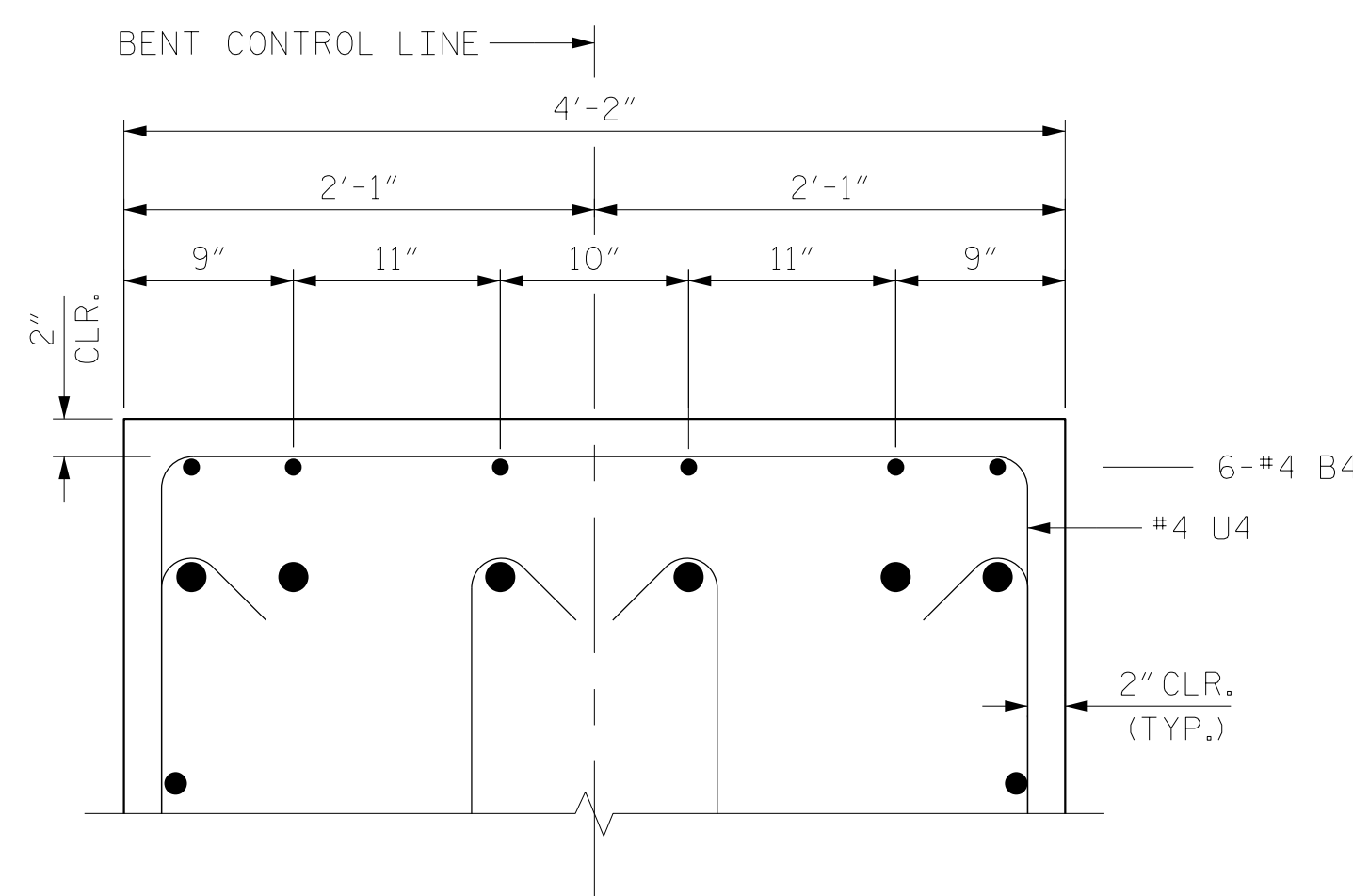
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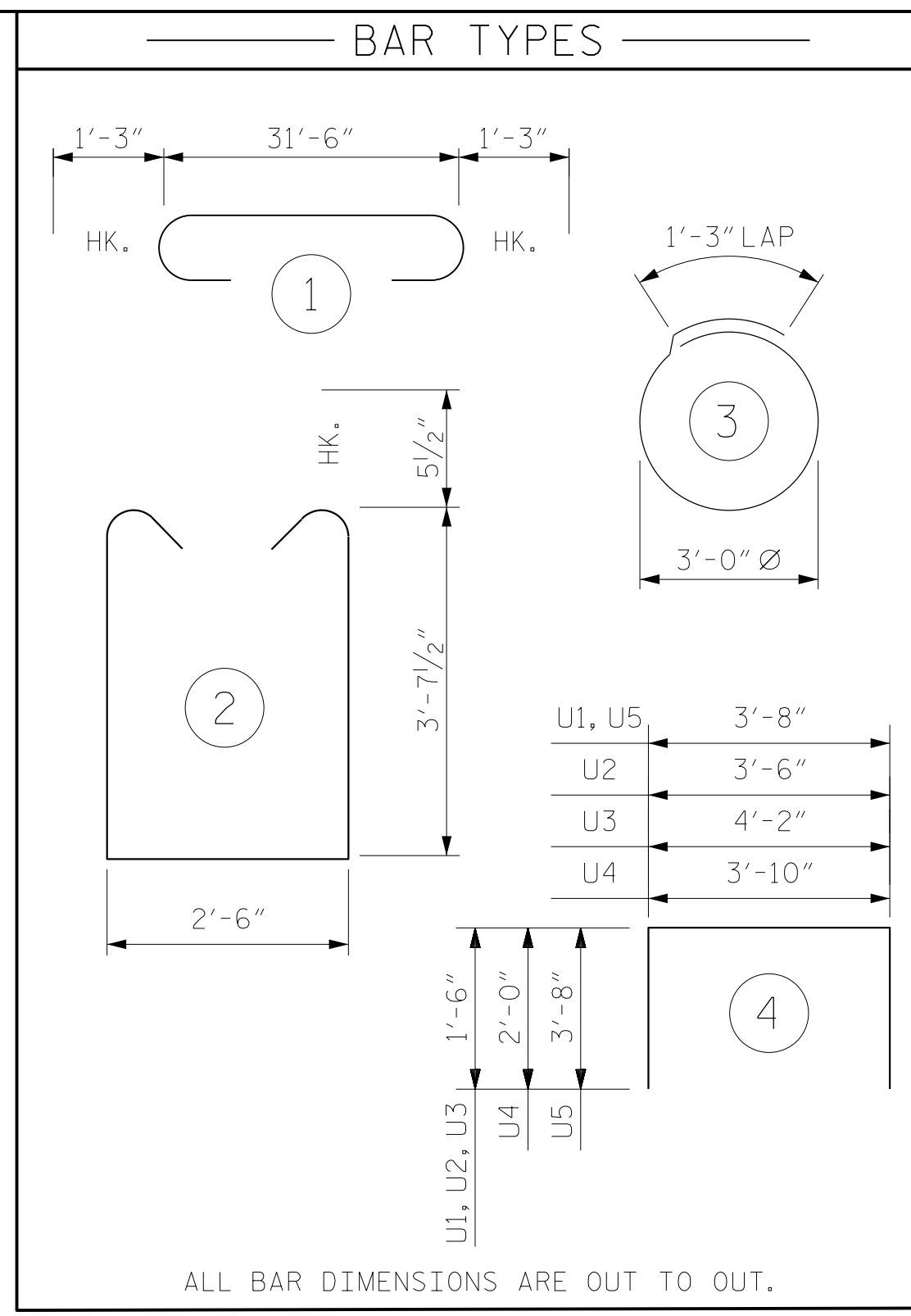
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1			3			TOTAL SHEETS 31
2			4			



SECTION A-A

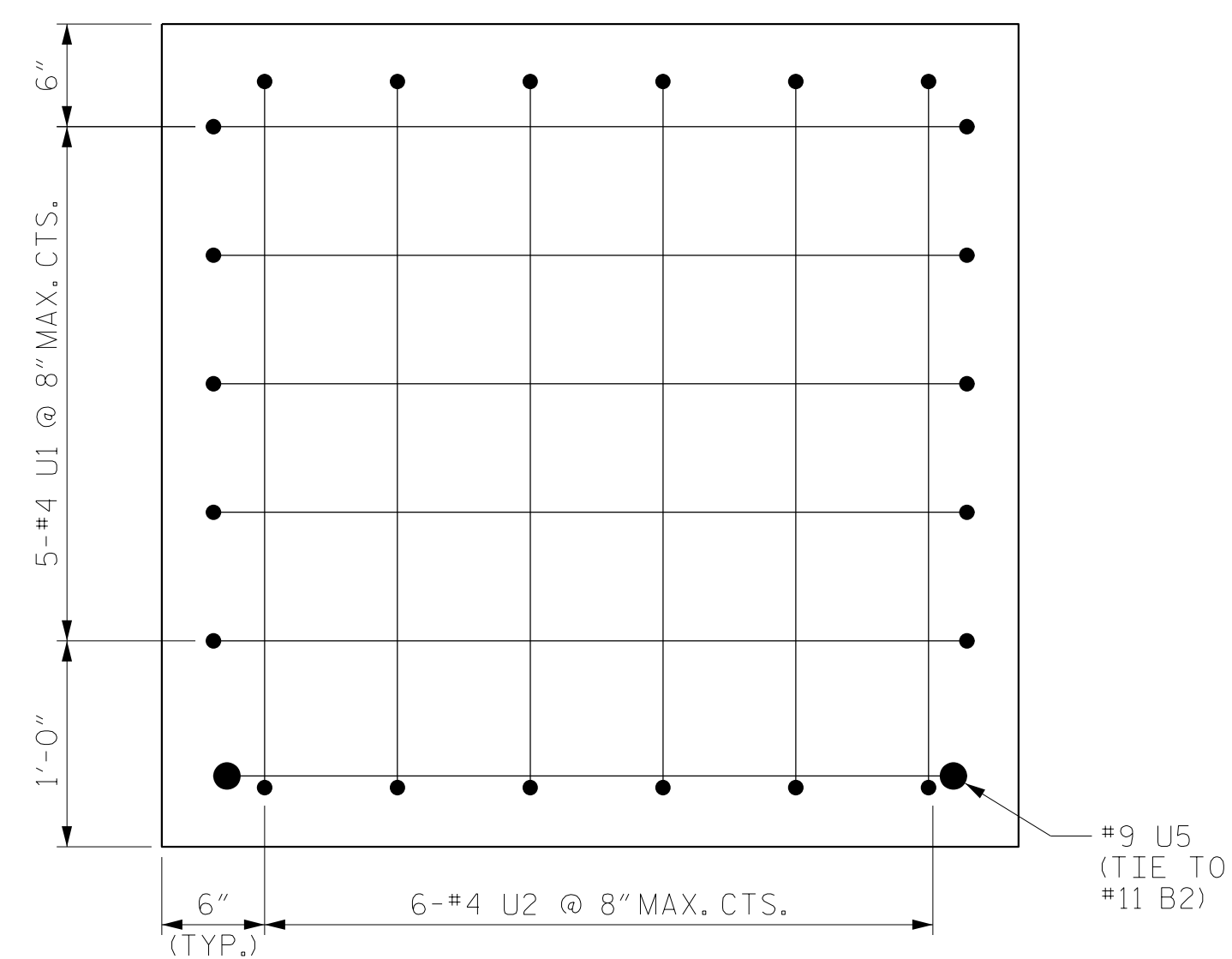


PARTIAL SECTION B-B

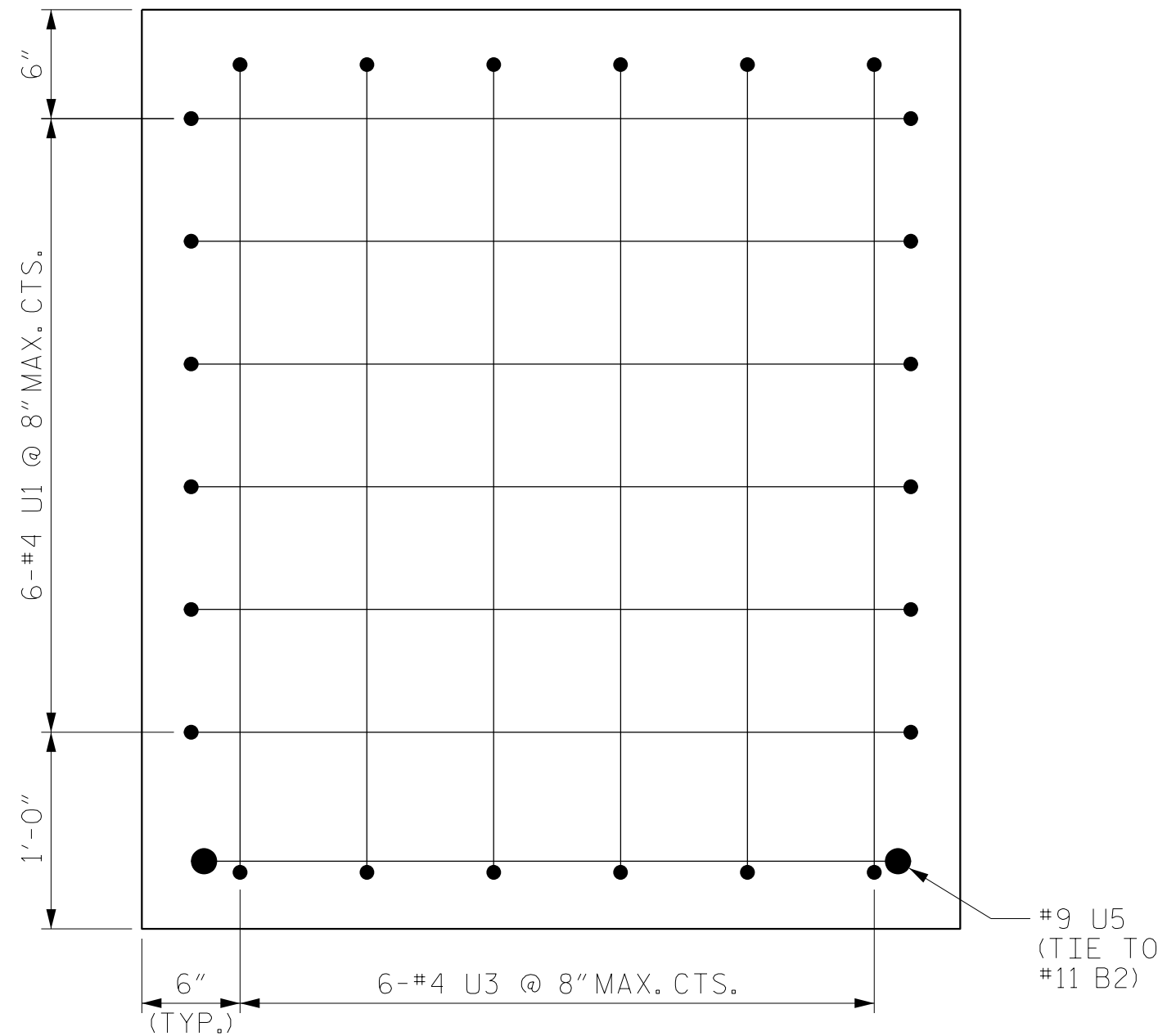


BILL OF MATERIAL						
FOR ONE BENT						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	6	#9	1	34'-0"	694	
B2	4	#11	STR	31'-6"	669	
B3	8	#5	STR	4'-8"	39	
B4	6	#4	STR	13'-1"	52	
B5	6	#5	STR	31'-6"	197	
B6	5	#4	STR	31'-6"	105	
B7	8	#4	STR	3'-10"	20	
S1	84	#5	2	10'-8"	935	
S2	20	#4	3	10'-8"	143	
U1	11	#5	4	6'-8"	76	
U2	6	#5	4	6'-6"	41	
U3	6	#5	4	7'-2"	45	
U4	31	#4	4	7'-10"	162	
U5	2	#9	4	11'-0"	75	
REINFORCING STEEL (FOR ONE BENT)					3,253 LBS.	
▲ CLASS A CONCRETE (FOR ONE BENT)					20.3 C.Y.	
PP 24 X 0.50 GALVANIZED STEEL PILES						
BENT NO. 1		NO. 5	475 LIN. FT.			
BENT NO. 2		NO. 5	500 LIN. FT.			
BENT NO. 3		NO. 5	475 LIN. FT.			
PIPE PILE PLATES (FOR ONE BENT)					NO. 5	
PILE DRIVING EQUIPMENT SETUP FOR PP 24 X 0.50 GALVANIZED STEEL PILES (FOR ONE BENT)					NO. 5	
PILE REDRIVES (FOR ONE BENT)					NO. 3	
TOP PIPE PILE PLATES (FOR ONE BENT)					NO. 5	

▲ CONCRETE DISPLACED BY THE PP 24 X 0.50 GALVANIZED STEEL PIPE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.



VIEW C-C



VIEW D-D

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 2 OF 2 REPLACES BRIDGE NO. 240139



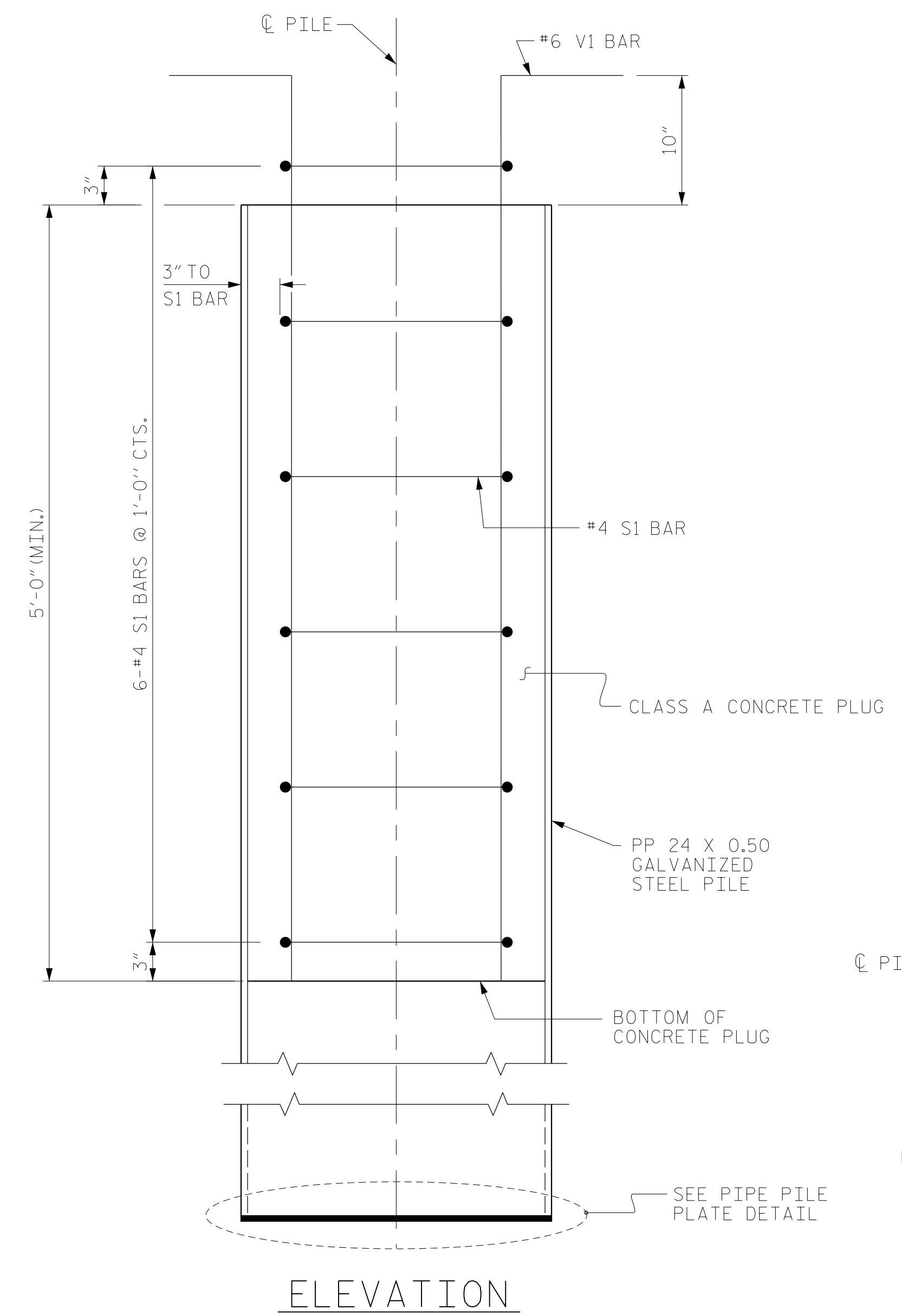
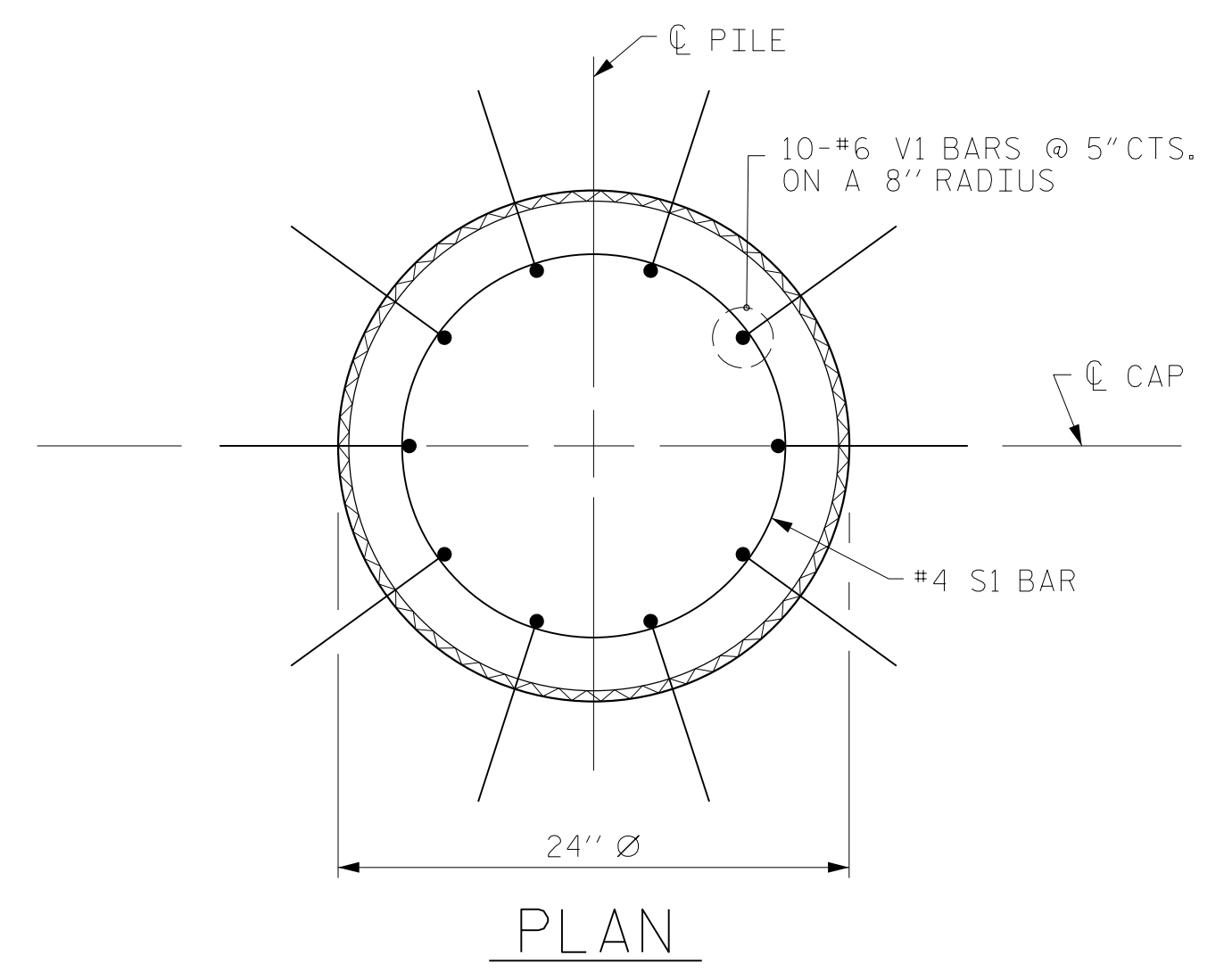
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 BENTS 1-3
 DETAILS

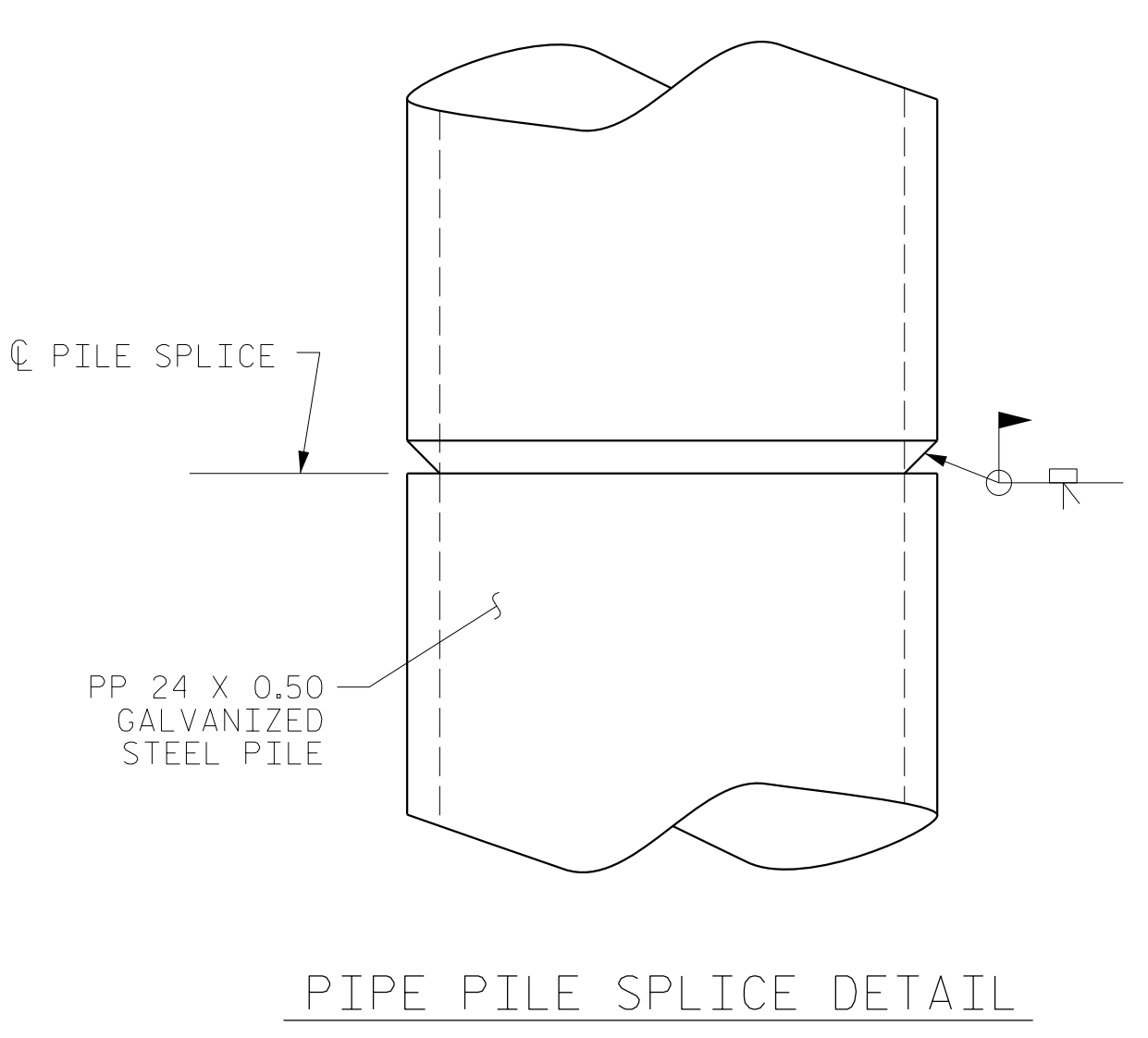
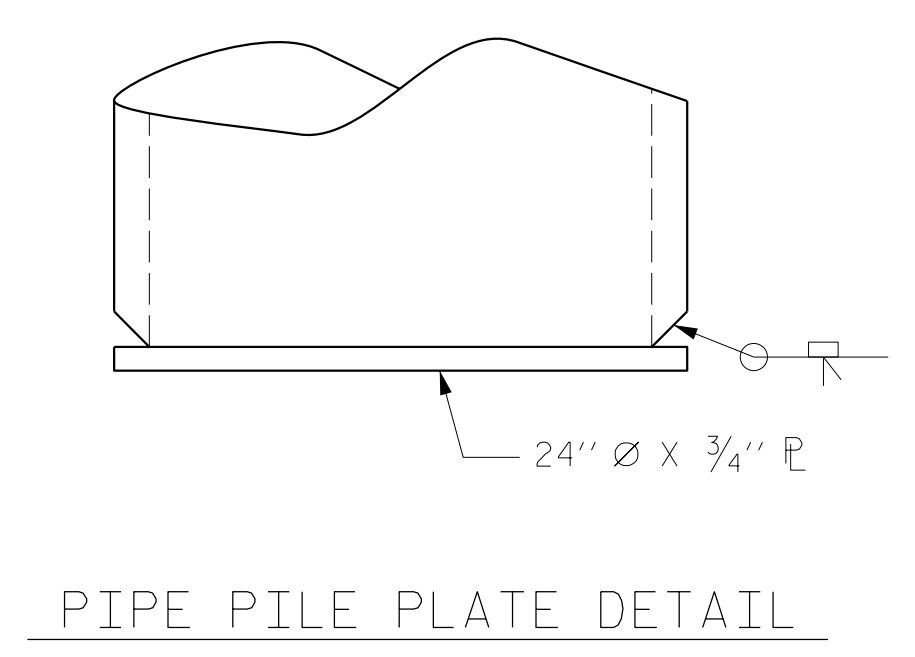
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1			3			S2-24
2			4			TOTAL SHEETS 31

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PP 24 X 0.50 GALVANIZED STEEL PILE
(CLOSED END)



NOTES

PIPE PILES SHALL BE IN ACCORDANCE WITH SECTION 1084 OF THE STANDARD SPECIFICATIONS.

GALVANIZE STEEL PIPE PILES IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS UNLESS METALLIZING IS REQUIRED. GALVANIZING OR METALLIZING PIPE PILE PLATES IS NOT REQUIRED.

PIPE PILE PLATES, IF REQUIRED, SHALL BE IN ACCORDANCE WITH SECTION 450 OF THE STANDARD SPECIFICATIONS.

REMOVE AND REPLACE OR REPAIR TO THE SATISFACTION OF THE ENGINEER PILES THAT ARE DAMAGED, DEFORMED OR COLLAPSED DURING INSTALLATION OR DRIVING.

PILE SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND AWS D1.1.

FOR CLOSED END PIPE PILES, REMOVE ALL SOIL AND WATER FROM INSIDE THE PILES JUST PRIOR TO PLACING REINFORCING STEEL AND CONCRETE FOR THE CONCRETE PLUG.

FOR OPEN END PIPE PILES, REMOVE ENOUGH SOIL AND WATER FROM INSIDE THE PILES TO CONSTRUCT THE CONCRETE PLUG WITHOUT FOULING THE CONCRETE.

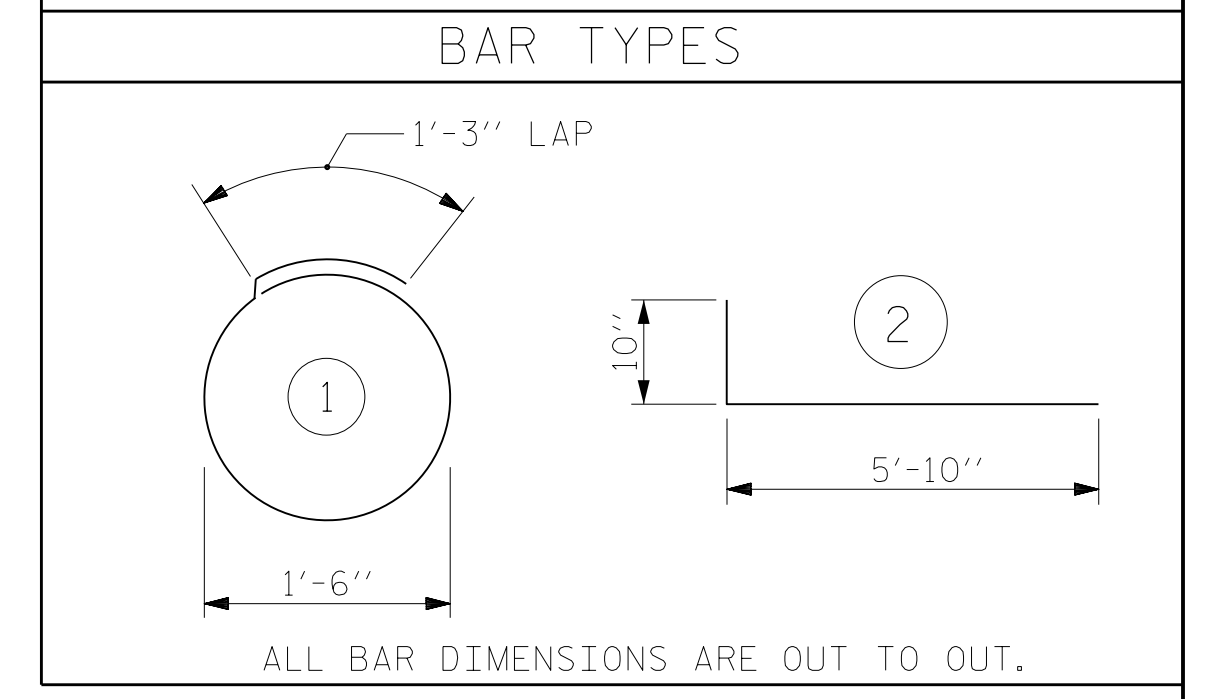
FORM THE CONCRETE PLUG SUCH THAT THE REINFORCING STEEL OR CONCRETE DOES NOT MOVE AND THE CLEARANCE FROM THE REINFORCING STEEL TO THE INSIDE OF THE PILE IS MAINTAINED AFTER CONCRETE PLACEMENT. DO NOT PLACE CONCRETE IN THE BENT CAP UNTIL THE CONCRETE PLUG HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

THE REINFORCING STEEL, CLASS A CONCRETE, AND GALVANIZING ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR PP 24 X 0.50 GALVANIZED STEEL PILES.

BILL OF MATERIAL FOR ONE PP 24 X 0.50 GALVANIZED STEEL PILE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	6	#4	1	6'-0"	24
V1	10	#6	2	6'-8"	100
REINFORCING STEEL =				124	lbs

CLASS A CONCRETE
5'-0" MINIMUM PLUG 0.5 CY



ALL BAR DIMENSIONS ARE OUT TO OUT.

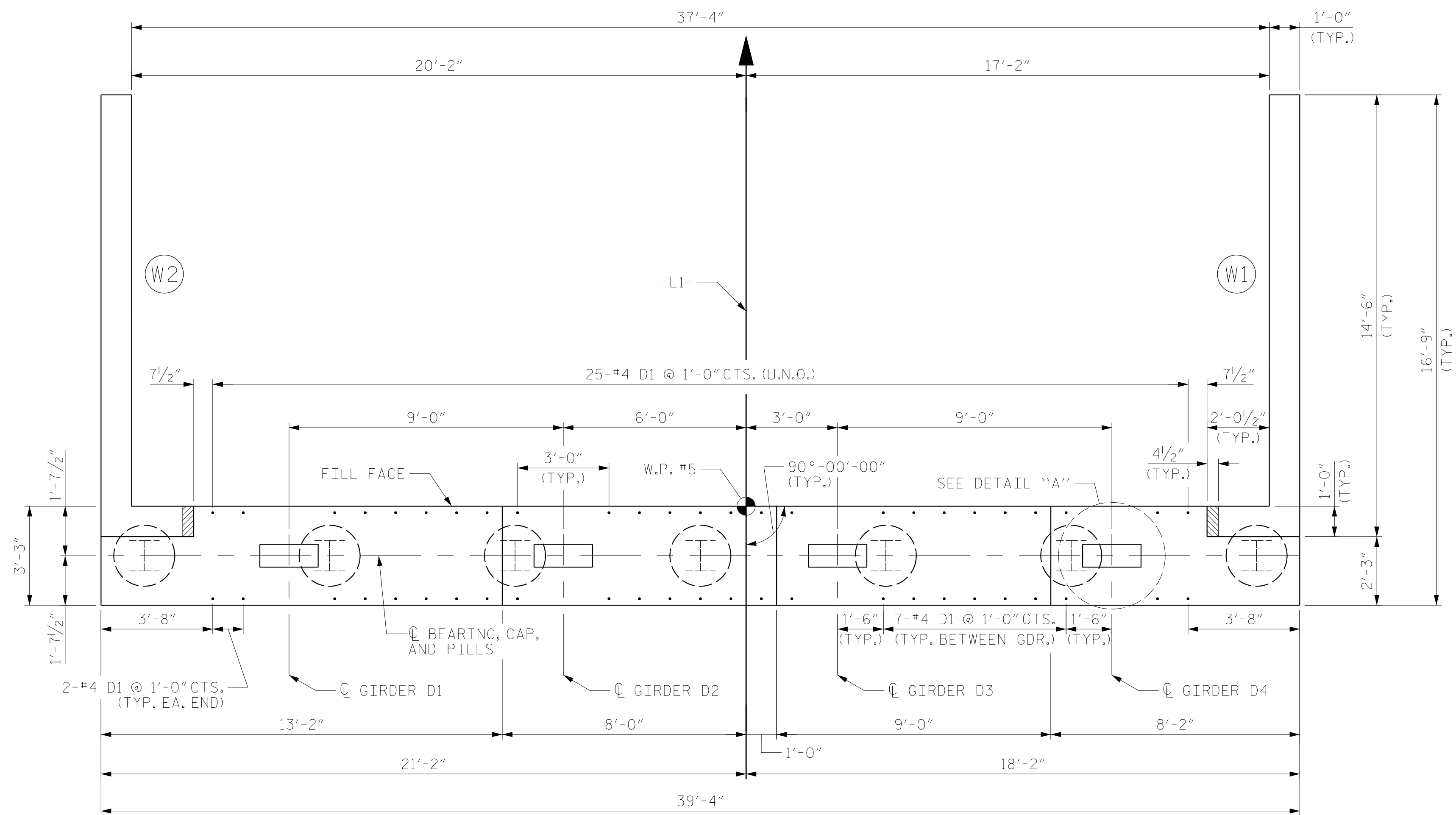
PROJECT NO. B-4484
CRAVEN COUNTY
STATION: 41+45.00 -L1-

REPLACES BRIDGE NO. 240139

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			31
2			4			

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CHECKED BY : CM 9/05	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC



PLAN

NOTES

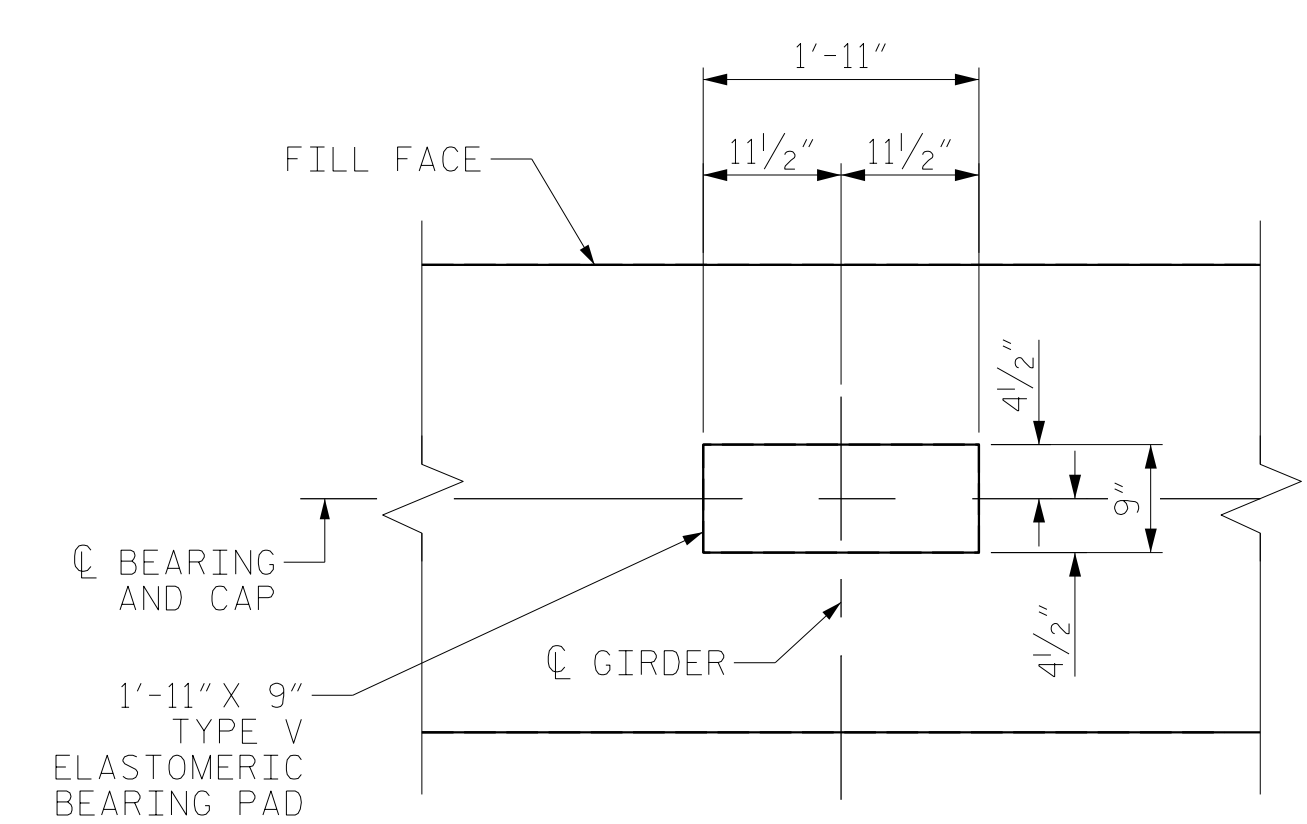
FOR SECTION A-A AND SECTION B-B, SEE SHEET 3 OF 3.

#4 D1 BARS MAY BE SHIFTED SLIGHTLY TO AVOID STIRRUPS IN CAP AND STEPS IN CAP.

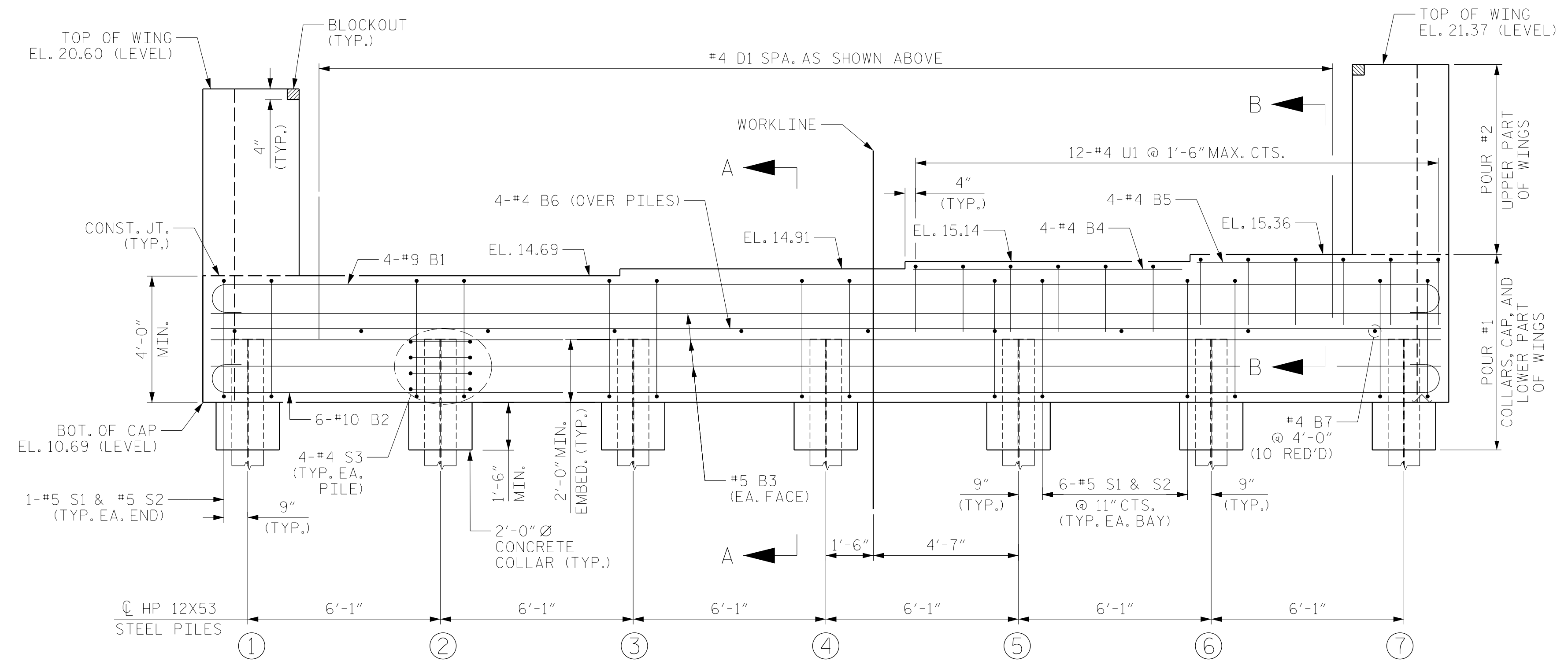
SEE SUPERSTRUCTURE SHEETS FOR UPPER PART OF INTEGRAL END BENT DETAILS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE BARRIER IS CAST IF SLIP FORMING IS USED.

THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".



DETAIL "A"
DIMENSIONS TYPICAL FOR EACH BEARING, PILES AND DOWELS NOT SHOWN FOR CLARITY.



ELEVATION

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 1 OF 3 REPLACES BRIDGE NO. 240139



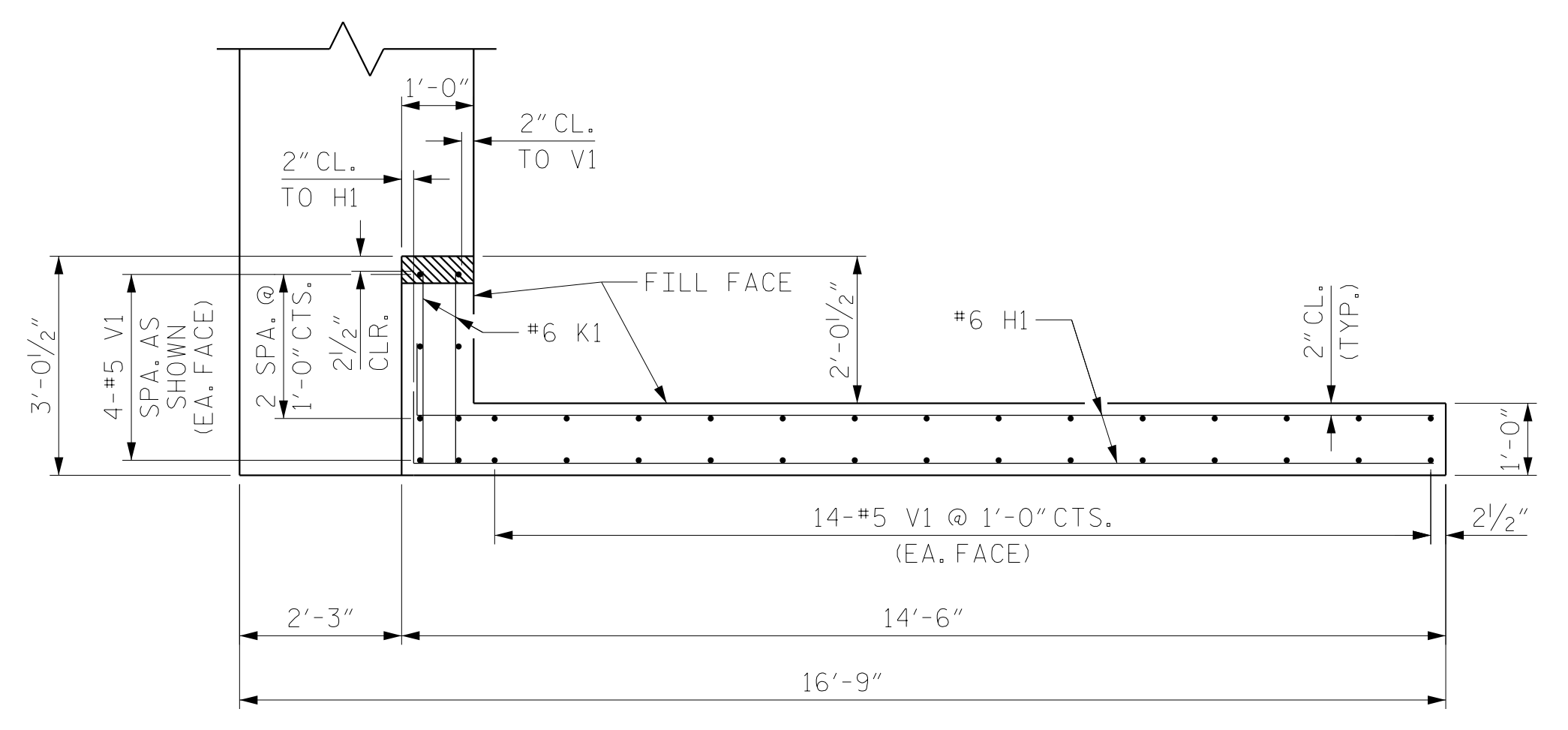
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 RALEIGH
 SUBSTRUCTURE
 INTEGRAL
 END BENT NO. 2

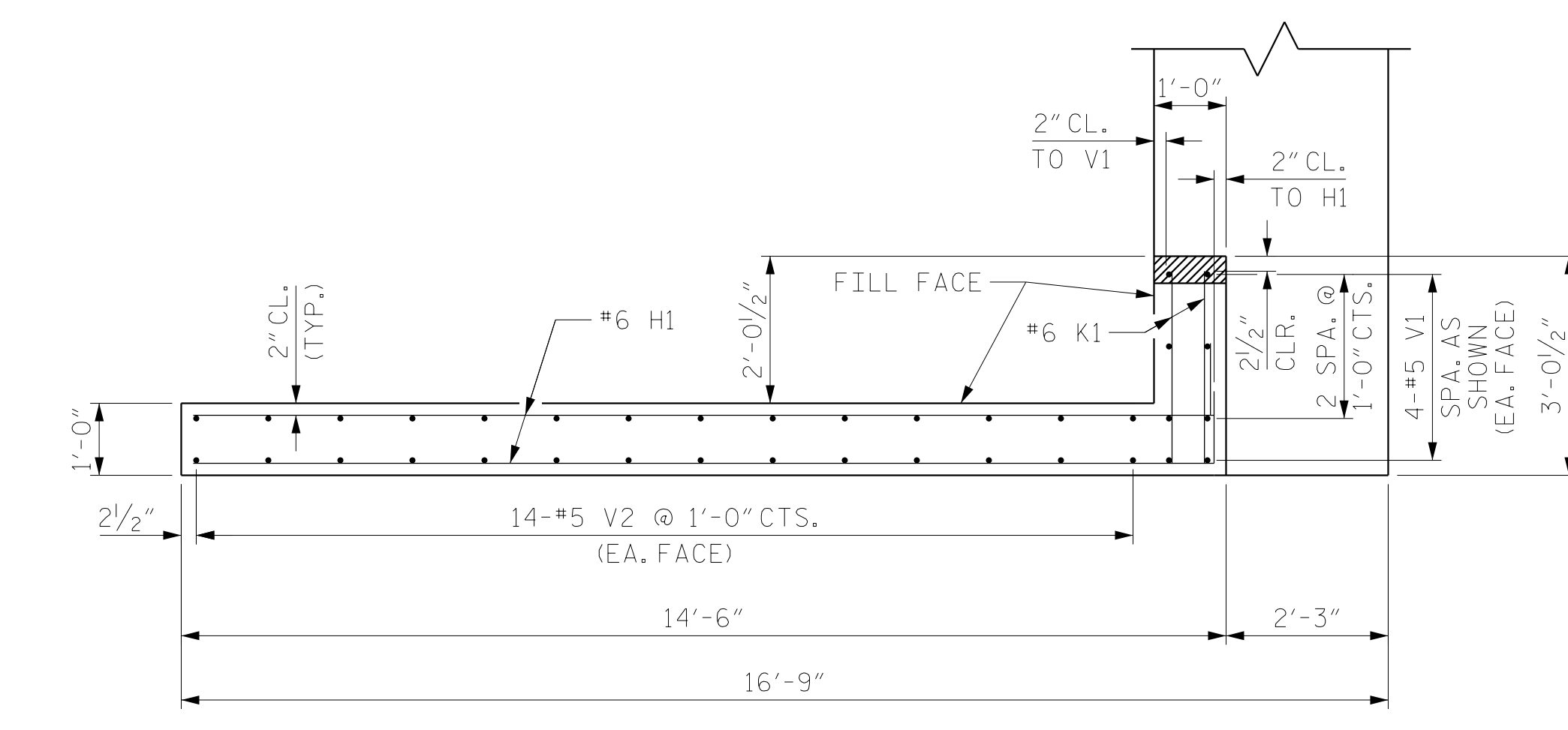
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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			31
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DRAWN BY : NSC DATE : 04/2019
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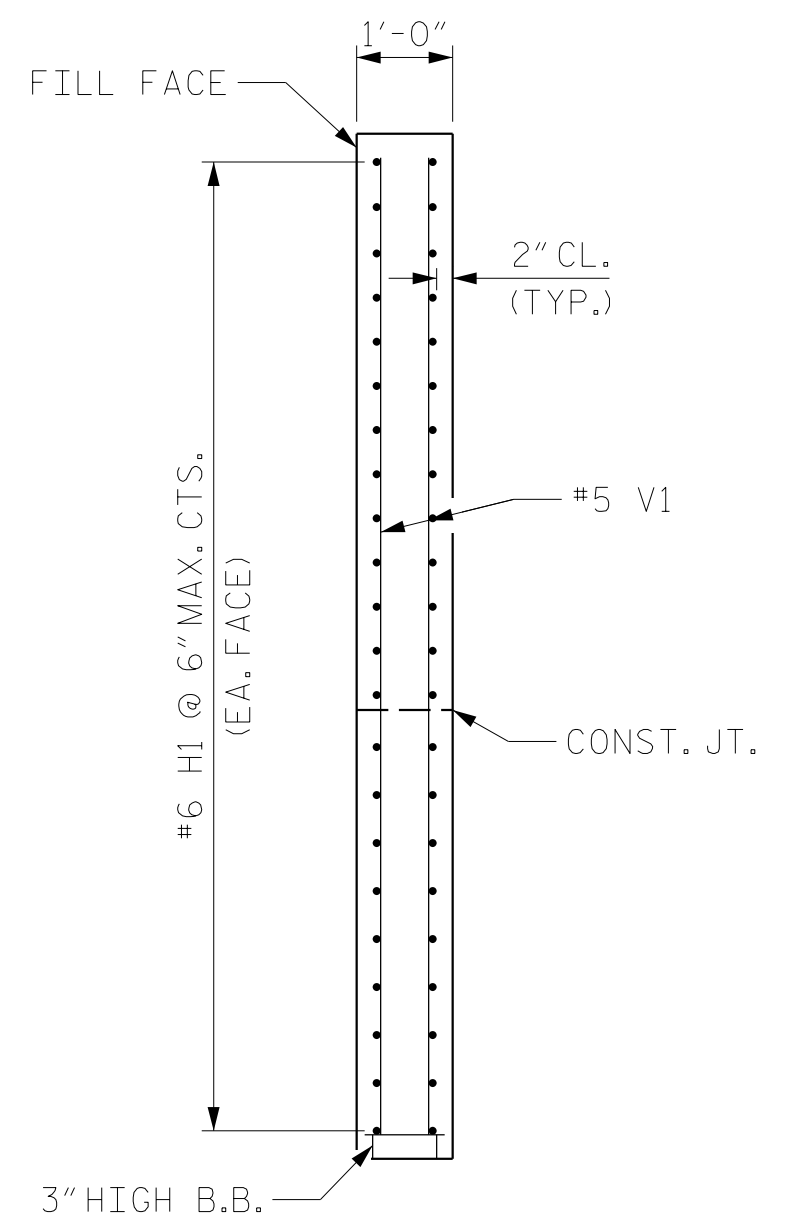
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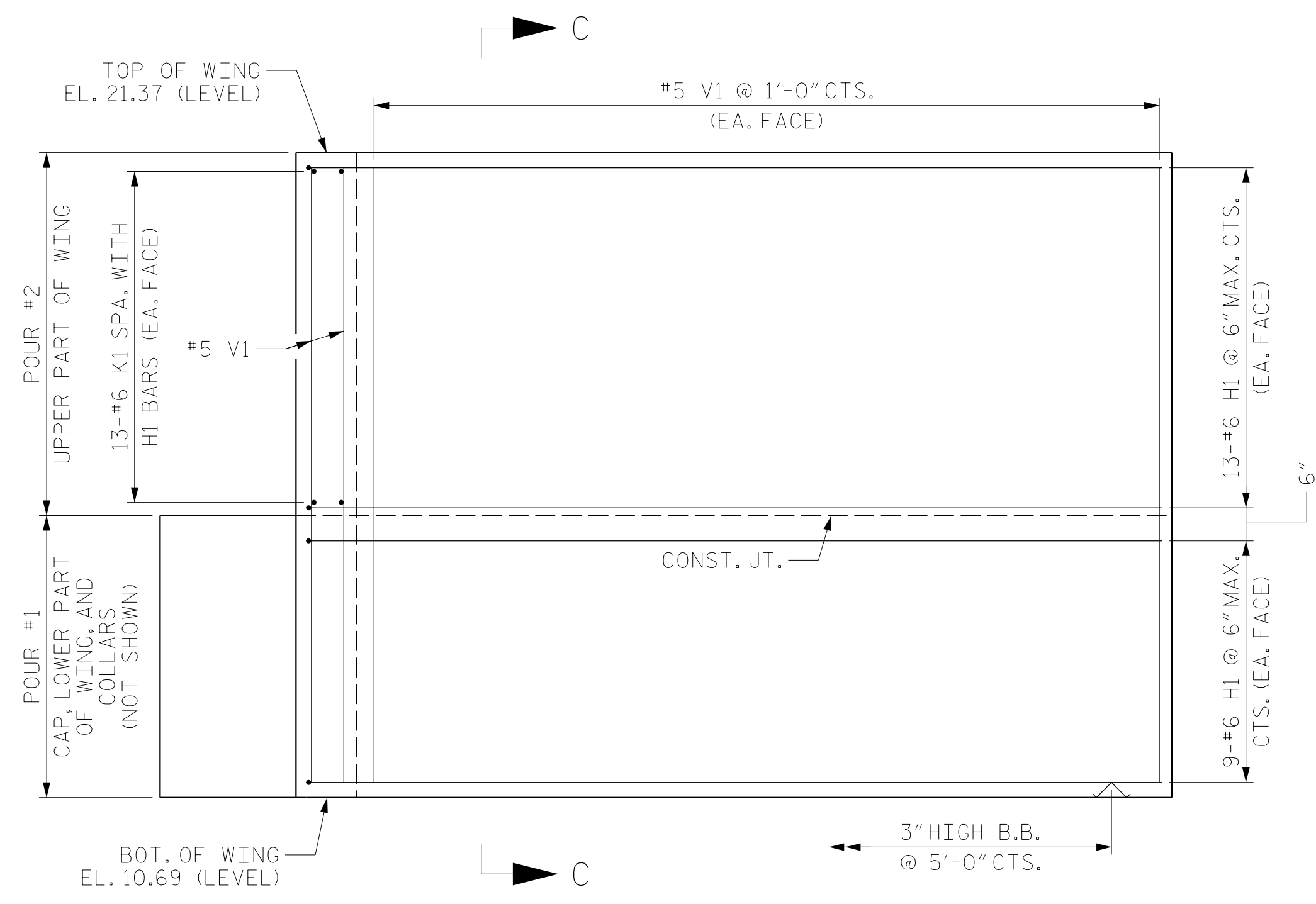
PLAN OF WING - W1



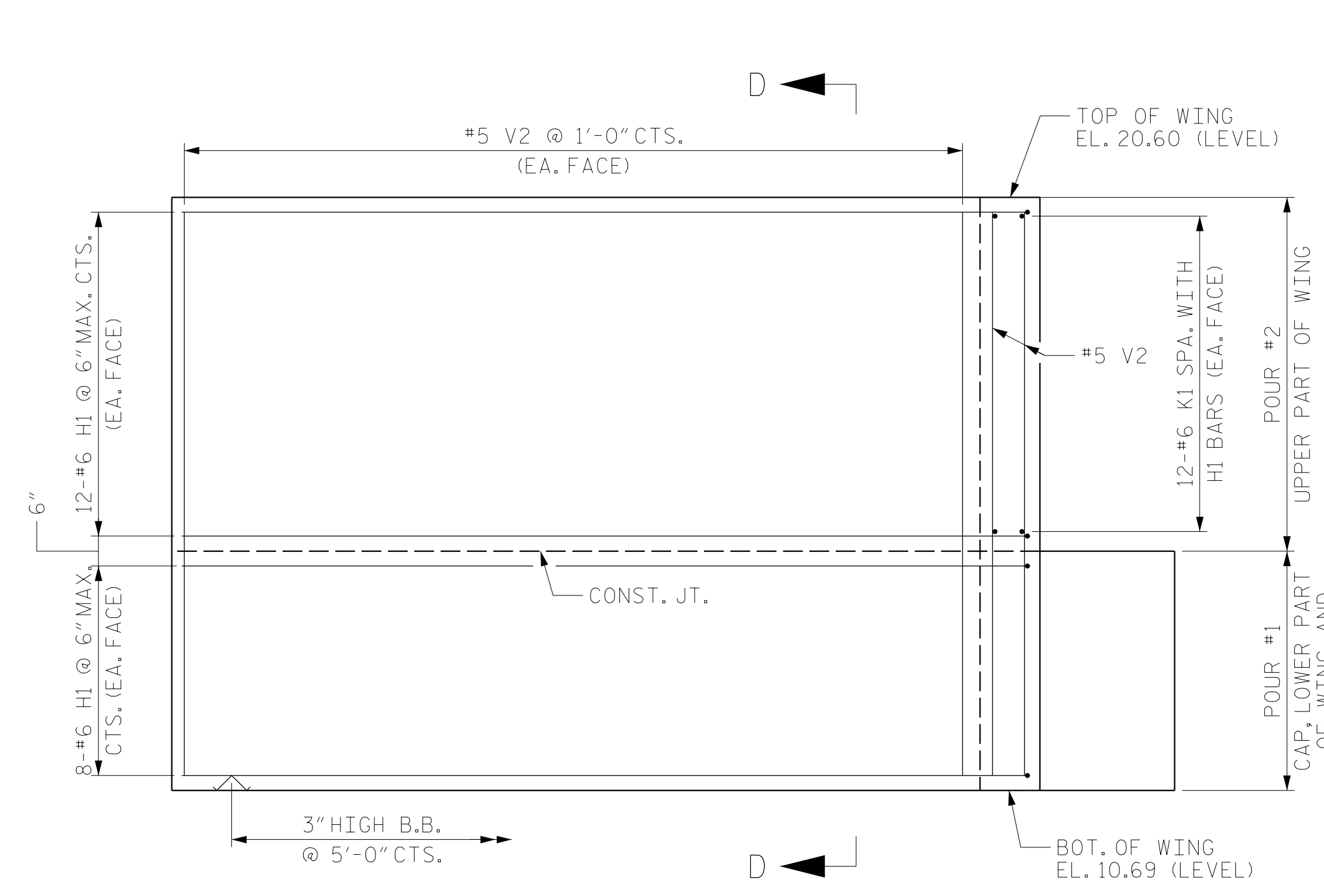
PLAN OF WING - W2



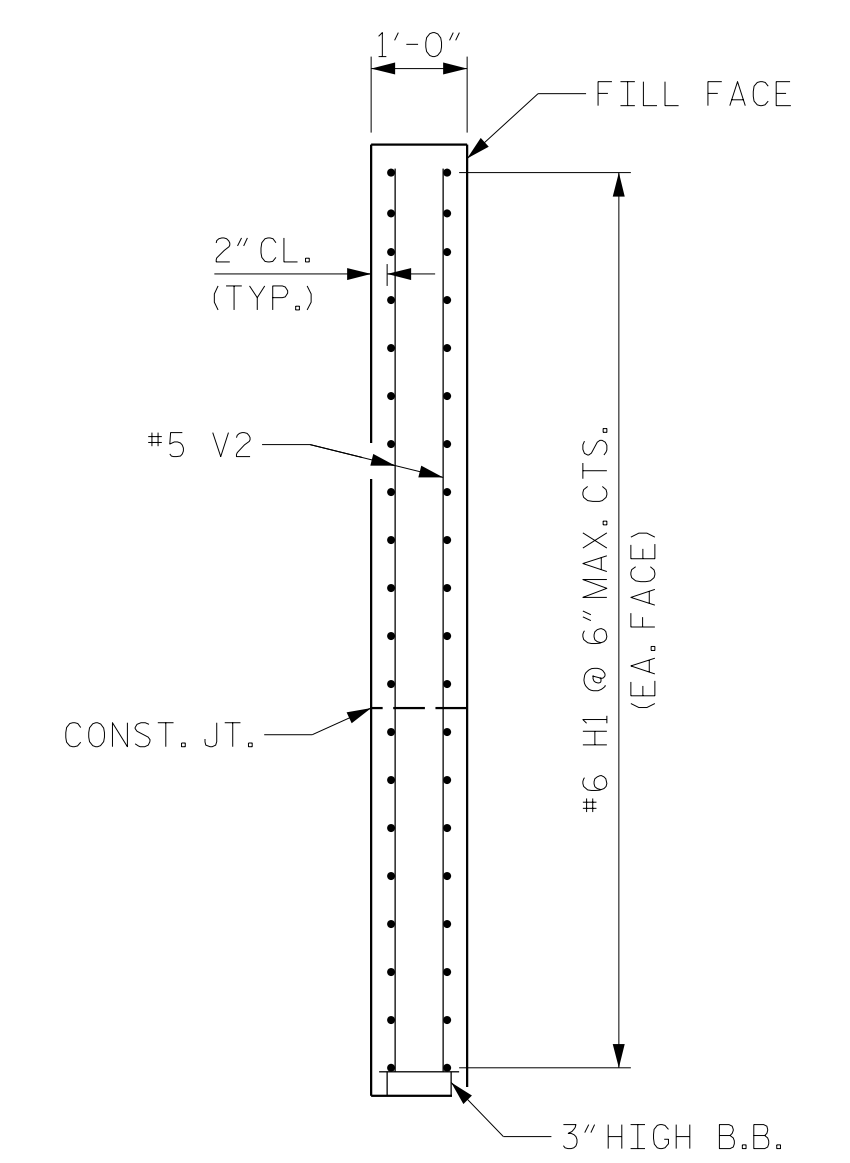
SECTION C-C



ELEVATION OF WING - W1



ELEVATION OF WING - W2



SECTION D-D

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 2 OF 3 REPLACES BRIDGE NO. 240139



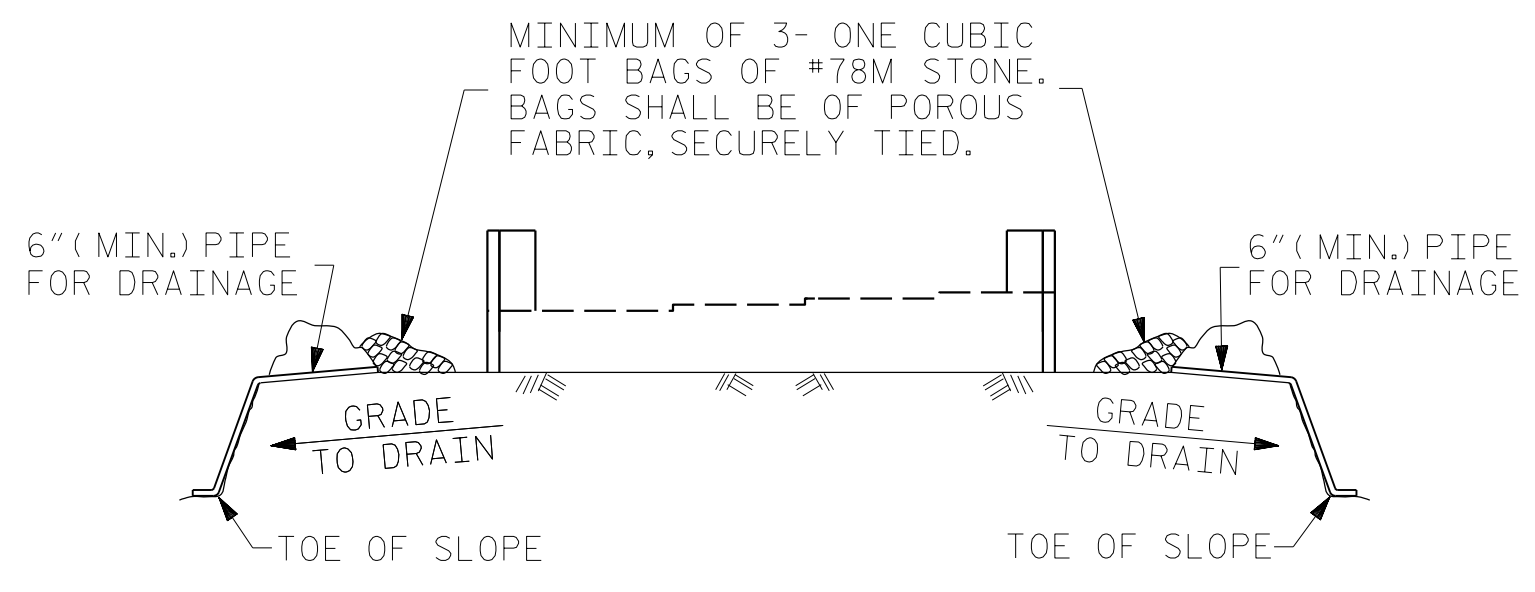
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1			3			TOTAL SHEETS
2			4			31

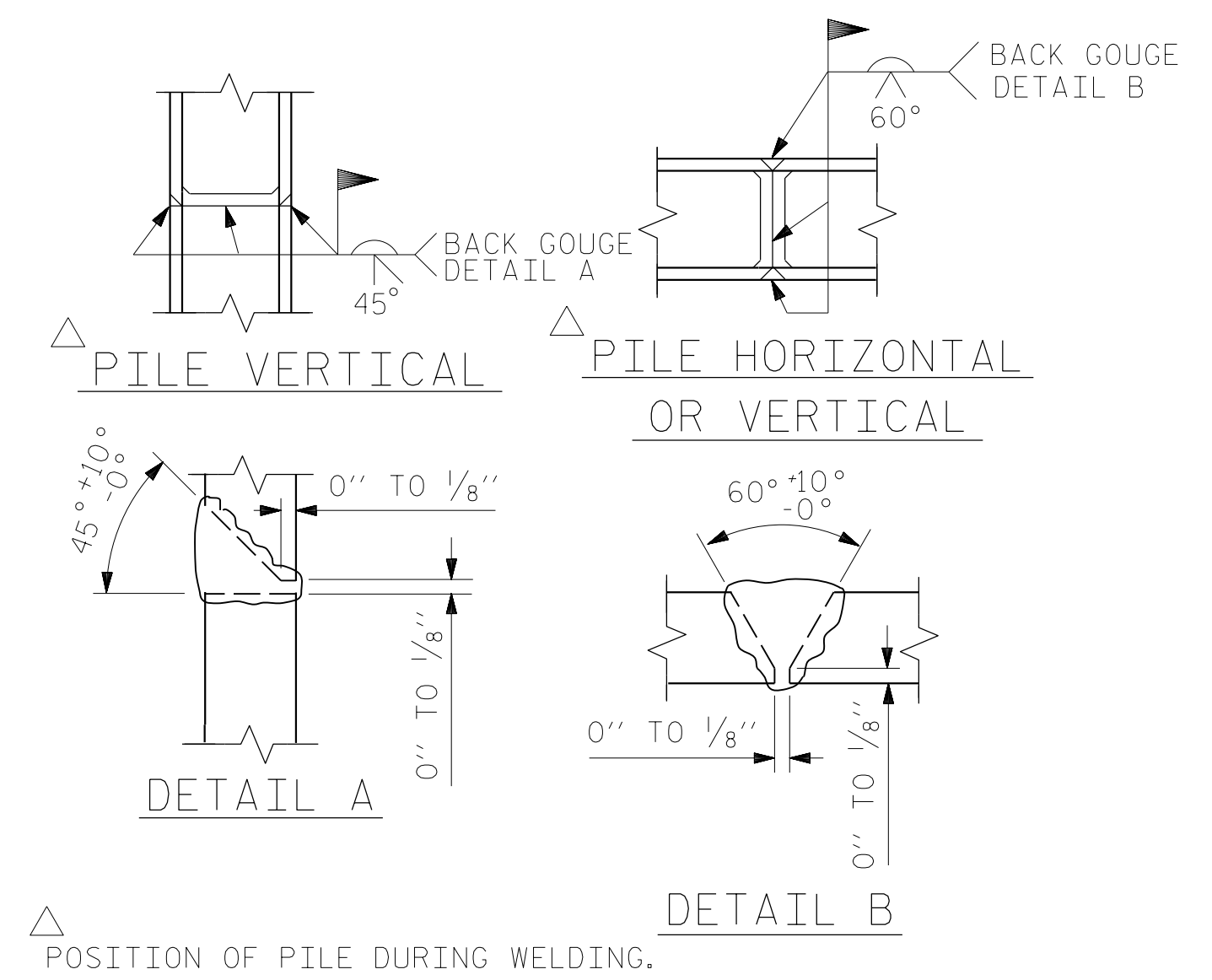


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

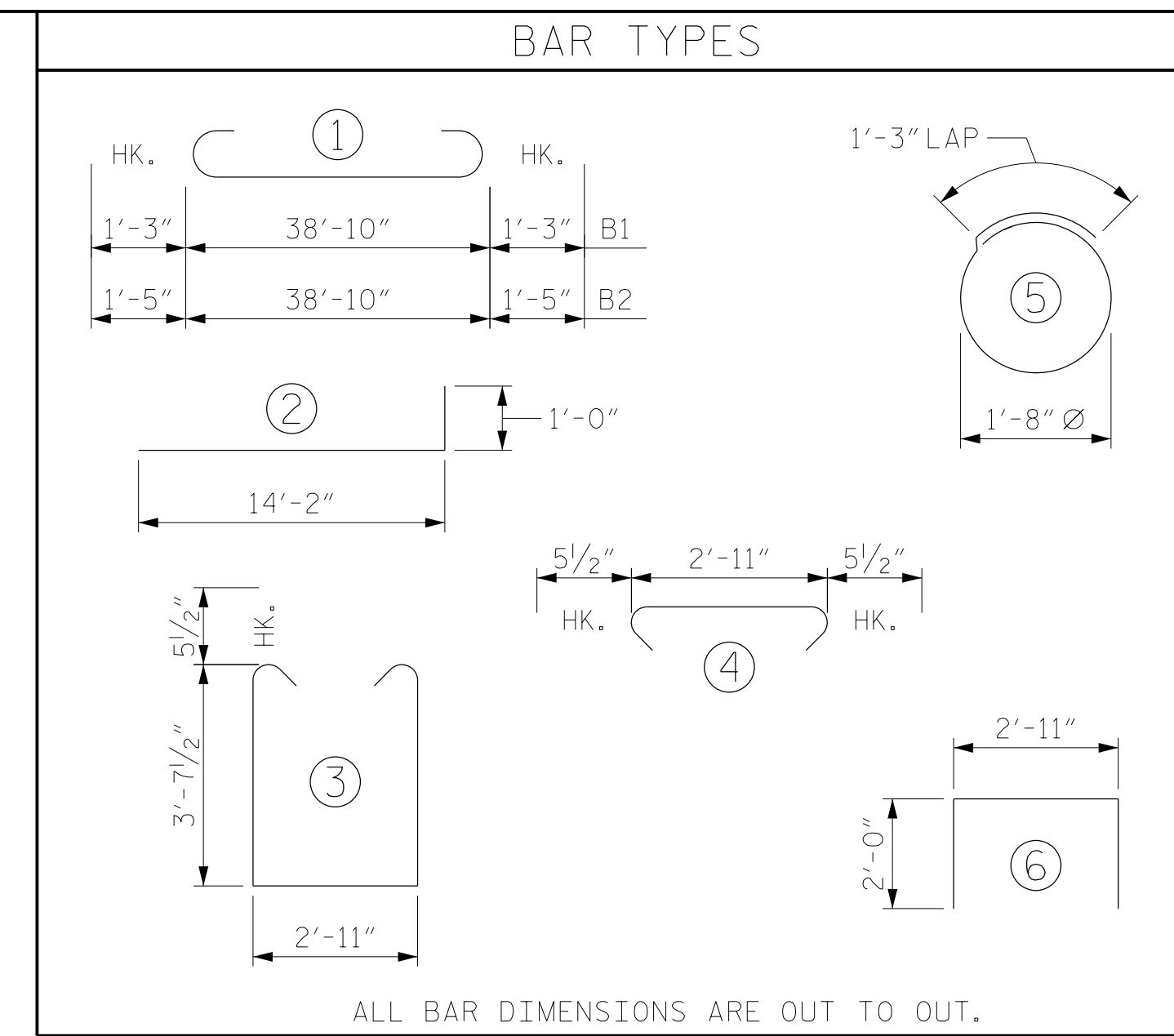
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

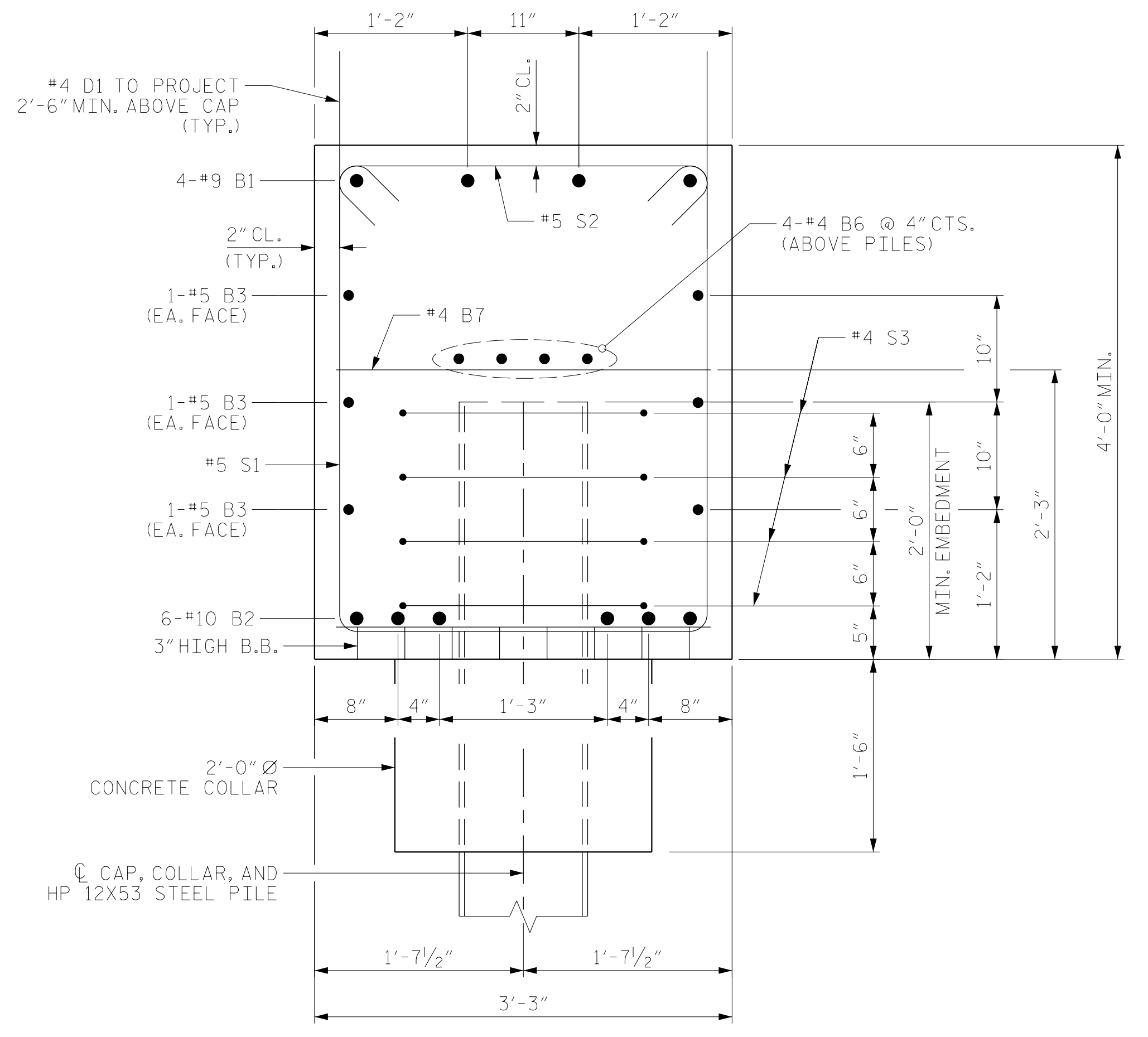
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

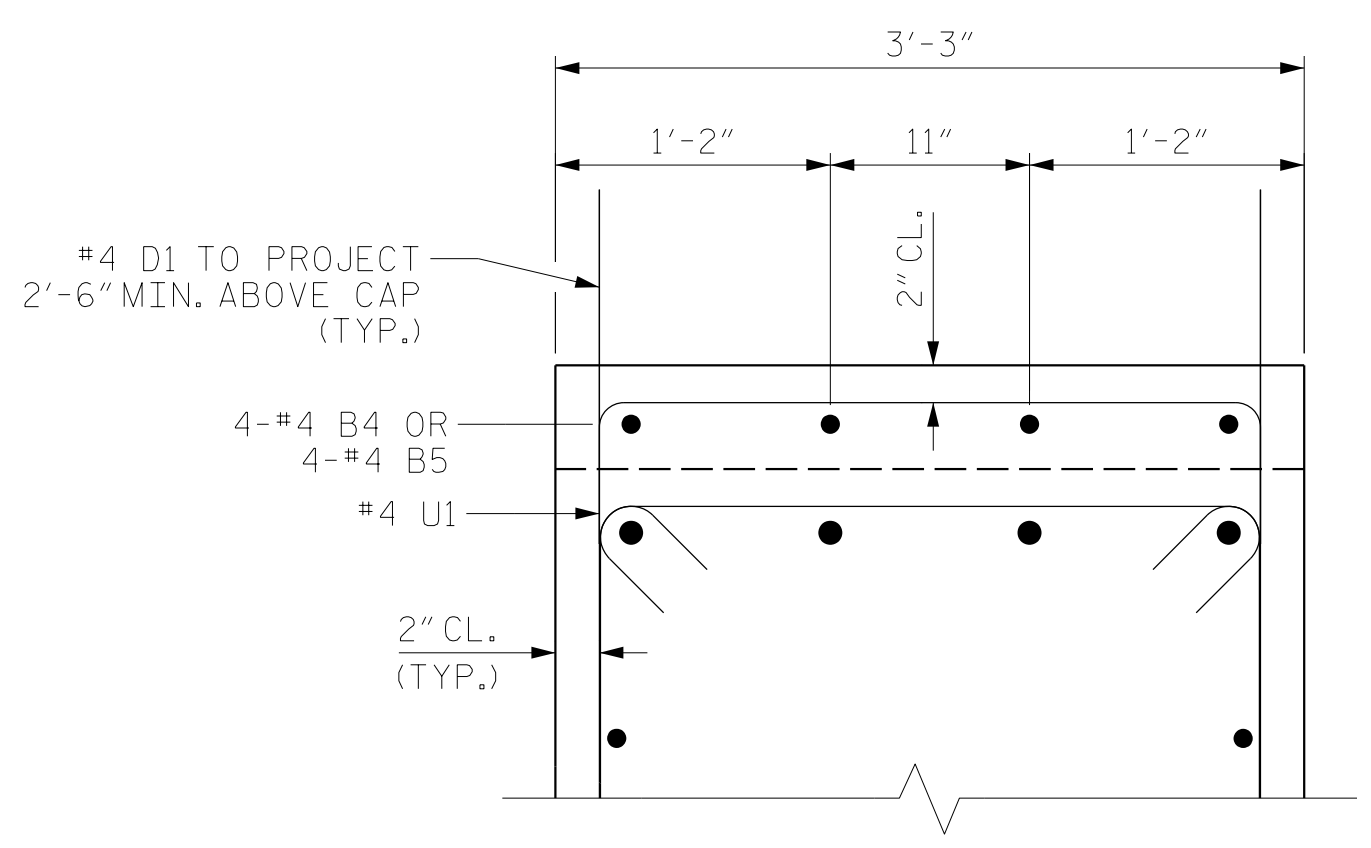


BILL OF MATERIAL					
END BENT NO. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9	1	41'-4"	562
B2	6	#10	1	41'-8"	1076
B3	6	#5	STR	38'-9"	242
B4	4	#4	STR	8'-6"	23
B5	4	#4	STR	7'-8"	20
B6	4	#4	STR	38'-9"	104
B7	10	#4	STR	2'-11"	19
D1	50	#4	STR	5'-9"	192
H1	84	#6	2	15'-2"	1914
K1	50	#6	STR	2'-8"	200
S1	38	#5	3	11'-1"	439
S2	38	#5	4	3'-10"	152
S3	28	#4	5	6'-6"	122
U1	12	#4	6	6'-11"	55
V1	36	#5	STR	10'-2"	382
V2	36	#5	STR	9'-5"	354
REINFORCING STEEL					5,856 LBS.
CLASS A CONCRETE					
POUR #1 COLLARS, CAP, AND LOWER PART OF WINGS					25.9 C.Y.
POUR #2 UPPER PART OF WINGS					7.3 C.Y.
TOTAL CLASS A CONCRETE					33.2 C.Y.
HP 12X53 STEEL PILES					
NO. 7					525 LIN. FT.
PILE DRIVING EQUIPMENT SETUP					7 EA.
PILE REDRIVES					4 EA.



SECTION A-A

THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4"



SECTION B-B

THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4"

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 3 OF 3 REPLACES BRIDGE NO. 240139

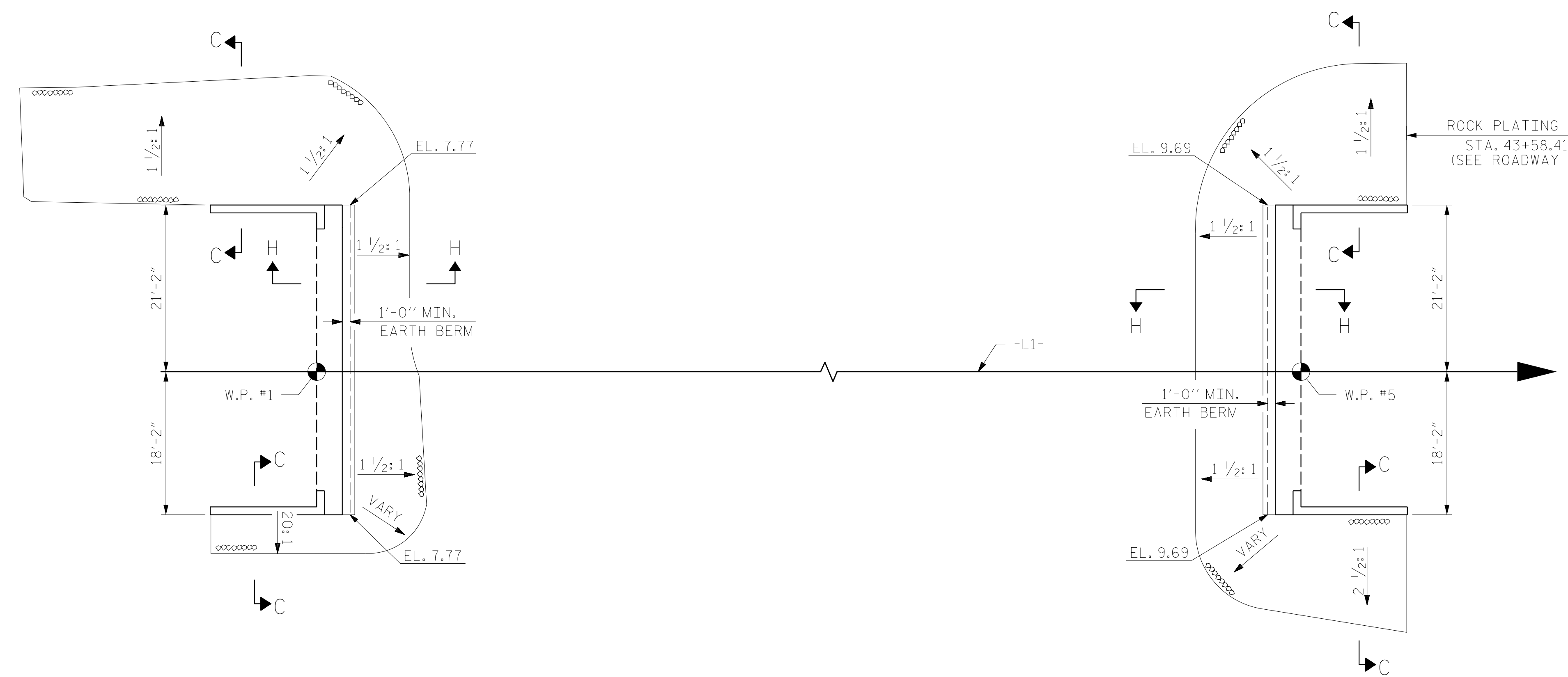
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 SUBSTRUCTURE
 INTEGRAL
 END BENT NO. 2
 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S2-28
2			4			TOTAL SHEETS 31

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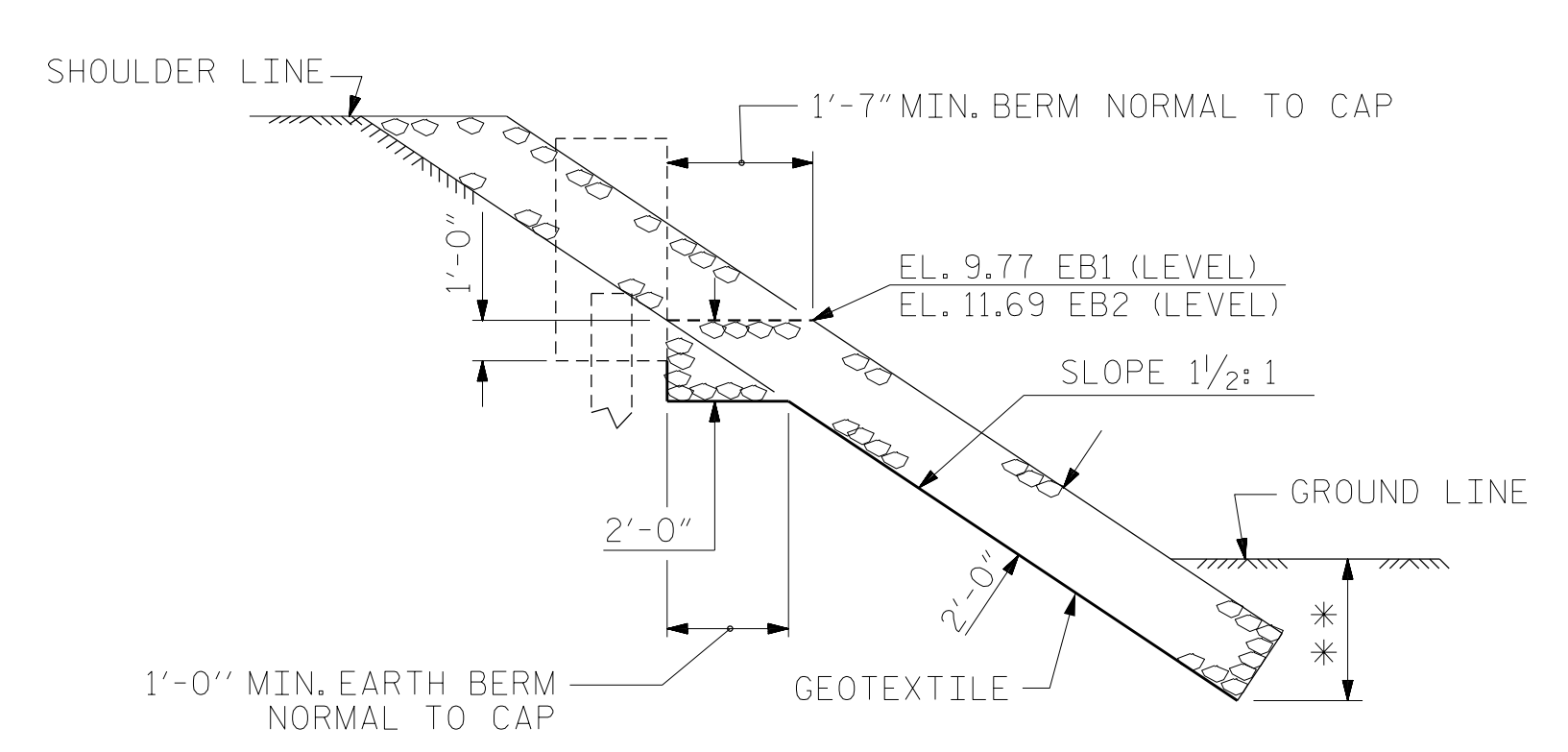
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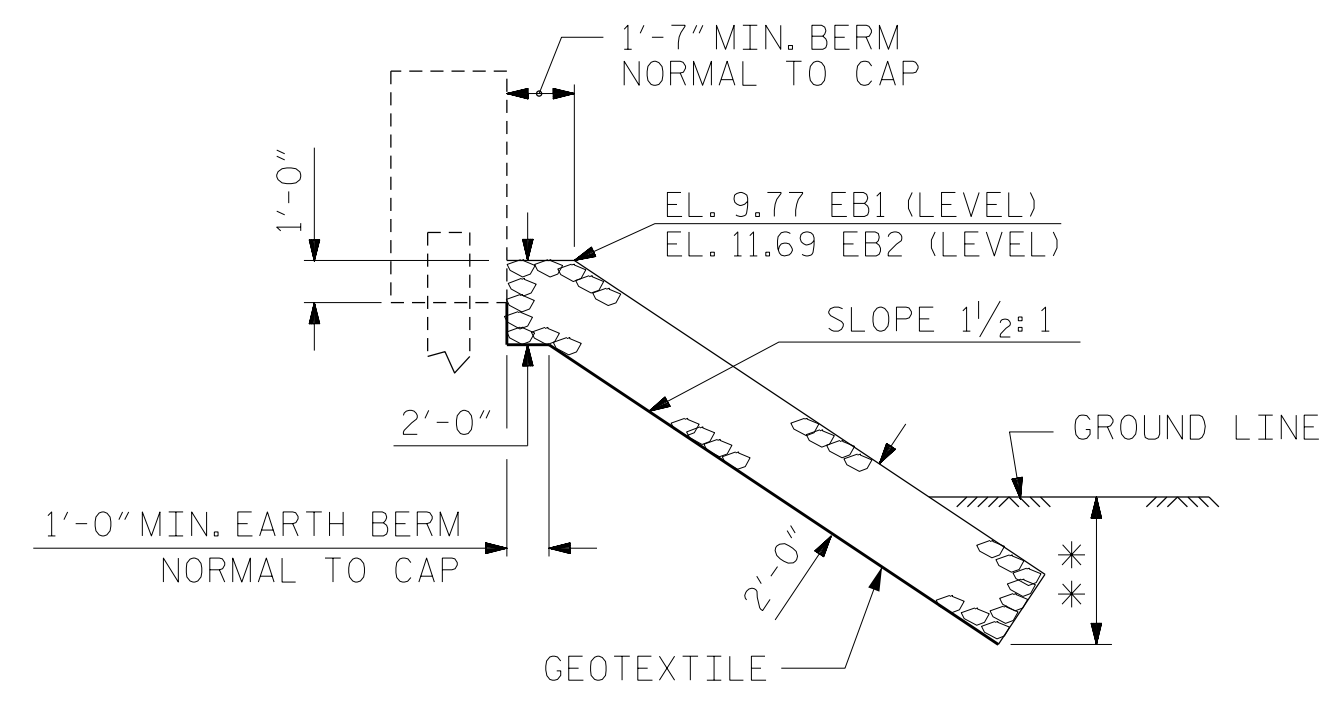
PLAN

NOTES
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

ESTIMATED QUANTITIES		
BRIDGE @ STA. 41+45.00 -L1-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	170	185
END BENT 2	160	175

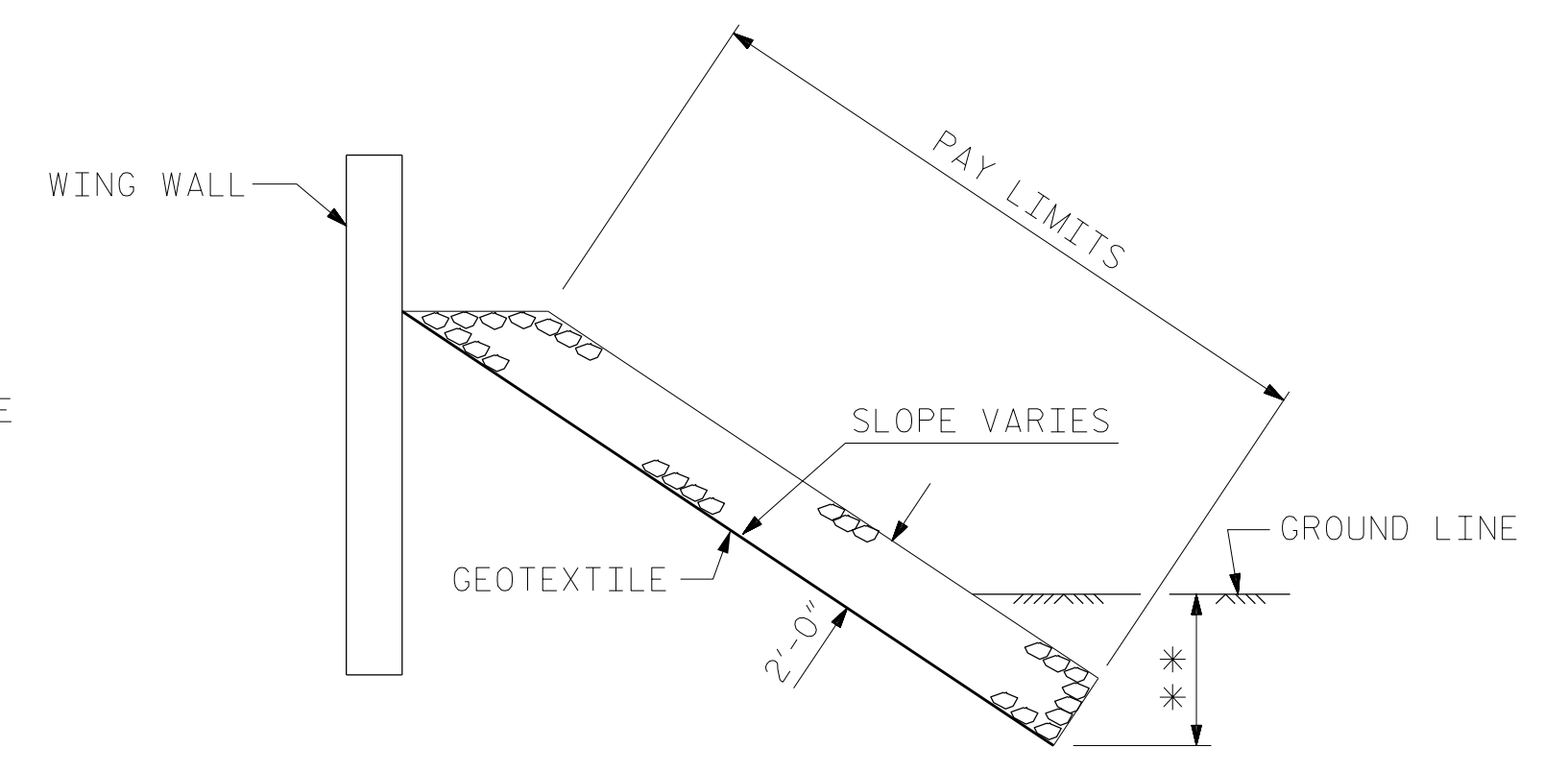


SECTION H-H



SECTION C-C
BERM RIP RAPPED

** KEY IN 3'-6" MIN. BELOW EL. 6.0 @ END BENT 1
KEY IN 3'-6" MIN. BELOW EL. 7.0 @ END BENT 2



SECTION C-C

PROJECT NO. B-4484
CRAVEN COUNTY
STATION: 41+45.00 -L1-

REPLACES BRIDGE NO. 240139



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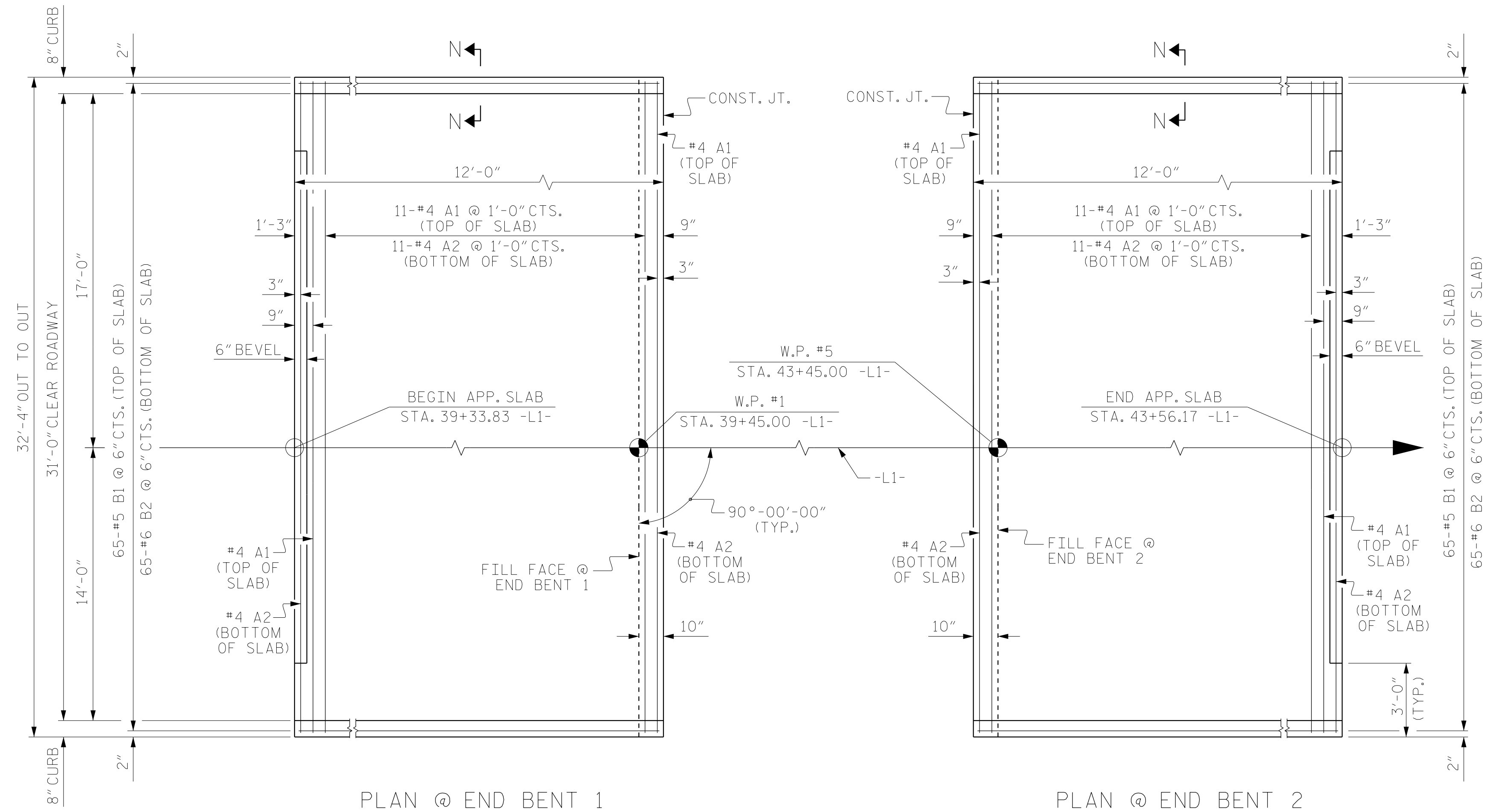
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RALEIGH

RIP RAP DETAILS

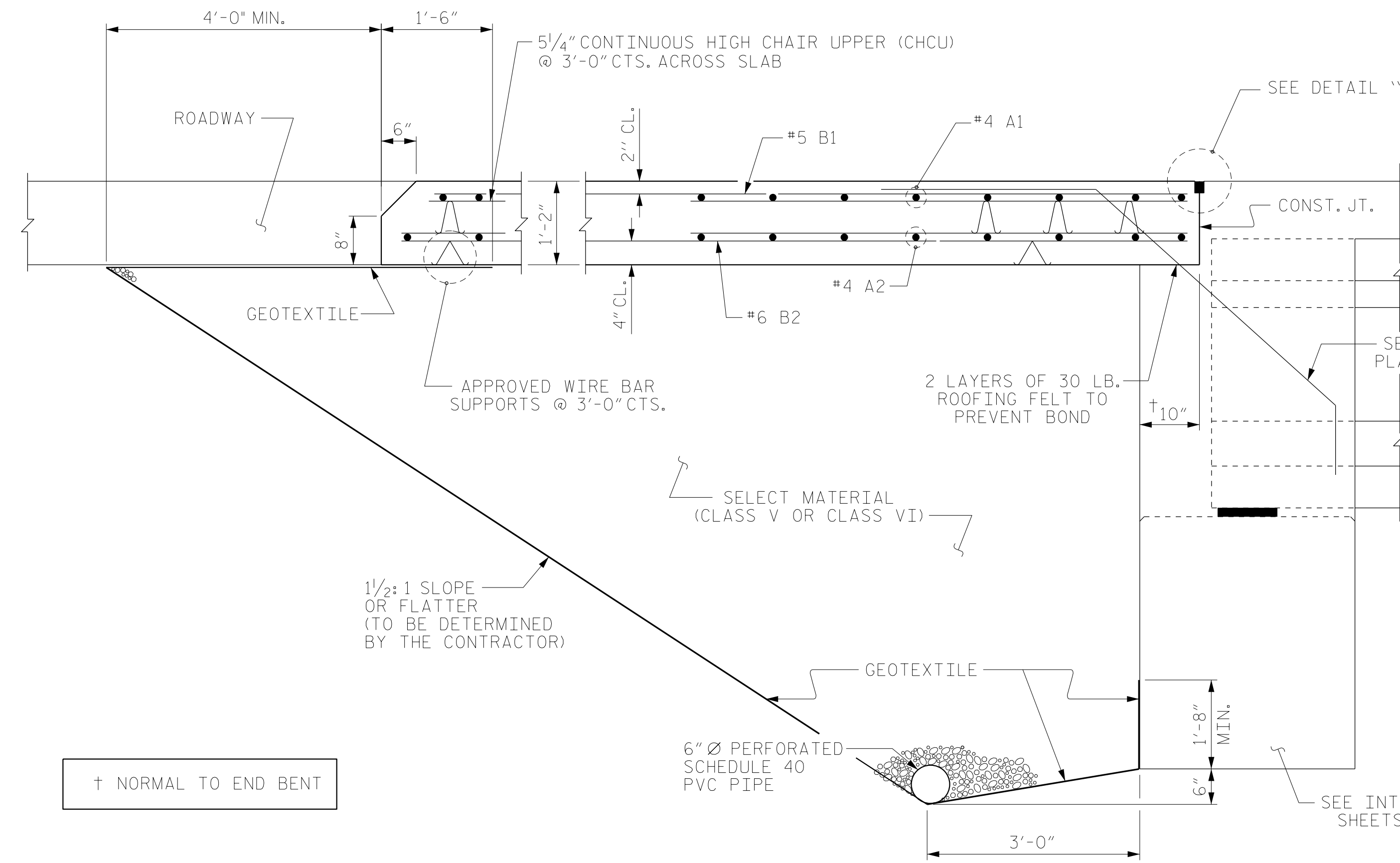
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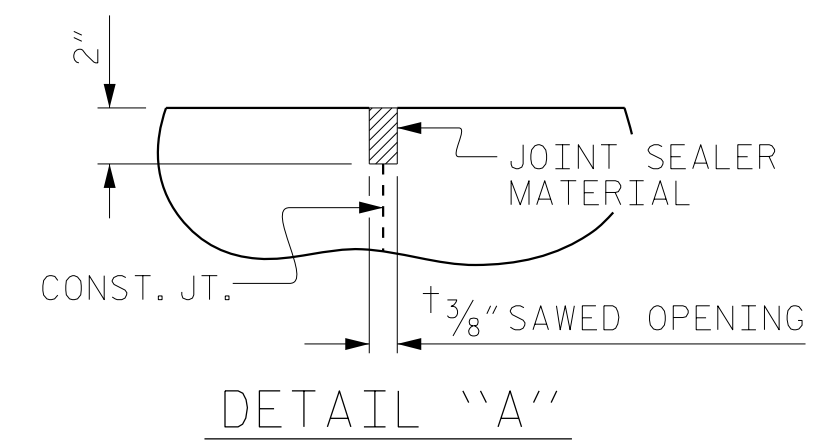
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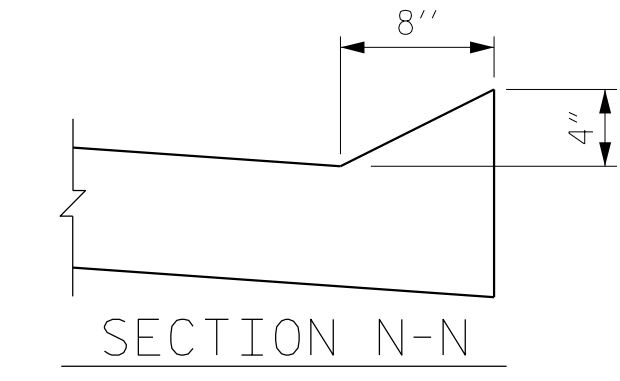
PLAN @ END BENT 1
 PLAN @ END BENT 2
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



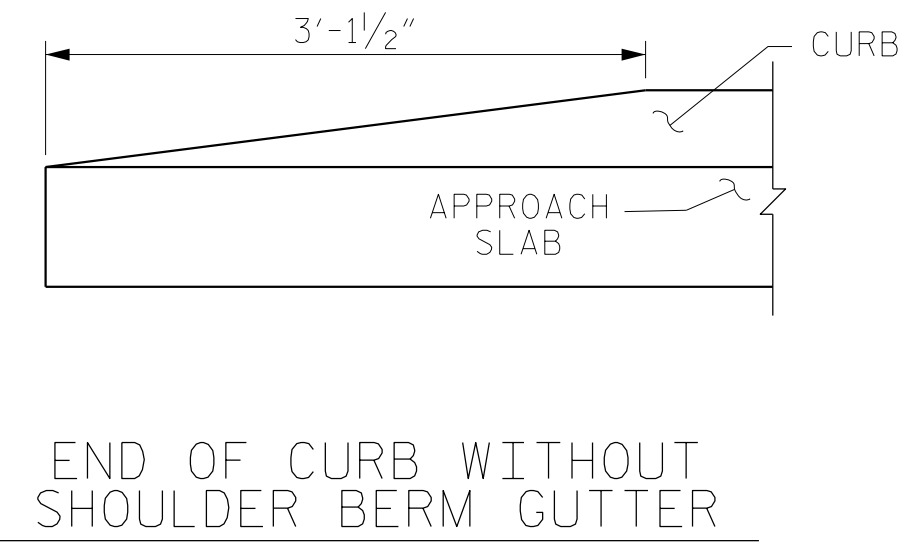
SECTION THRU SLAB
 (TYPE I - STANDARD APPROACH FILL)



DETAIL "A"



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

NOTES

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, AND SELECT MATERIAL, 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 6" 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.

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

AT THE CONTRACTORS OPTION, "TYPE A - ALTERNATE APPROACH FILL" IN LIEU OF "TYPE I - STANDARD APPROACH FILL" MAY BE CONSTRUCTED AT NO ADDITIONAL COST TO THE DEPARTMENT. SEE SHEET 2 OF 2 FOR DETAILS AND NOTES.

BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	32'-0"	278
A2	13	#4	STR	32'-0"	278
*B1	65	#5	STR	11'-2"	757
B2	65	#6	STR	11'-8"	1139
REINFORCING STEEL					1,417 LBS.
* EPOXY COATED REINFORCING STEEL					1,035 LBS.
CLASS AA CONCRETE					16.6 C.Y.

SPLICE LENGTHS

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

PROJECT NO. B-4484
 CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 1 OF 2 REPLACES BRIDGE NO. 240139

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB
 FOR INTEGRAL ABUTMENT
 WITH FLEXIBLE PAVEMENT

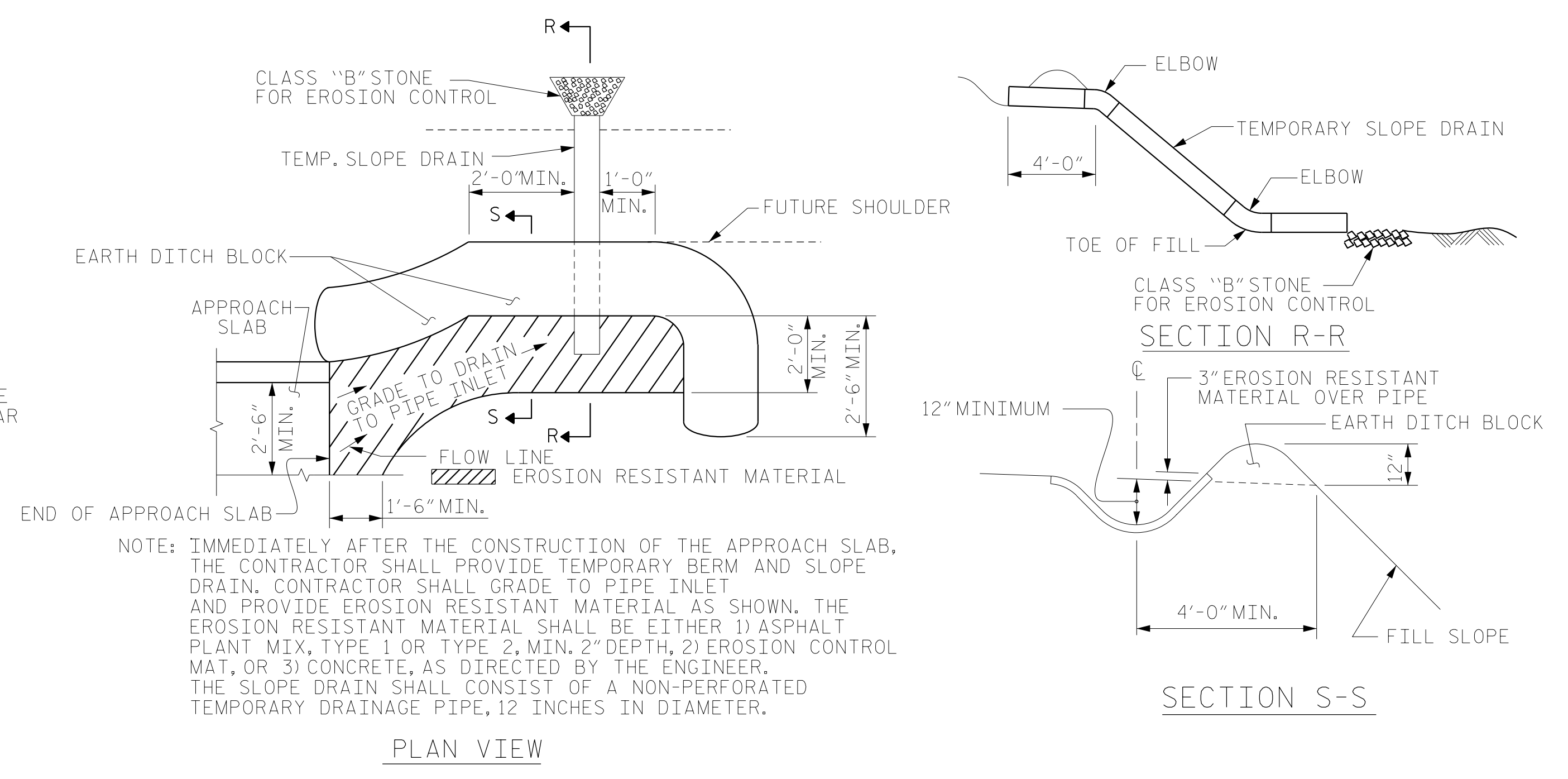
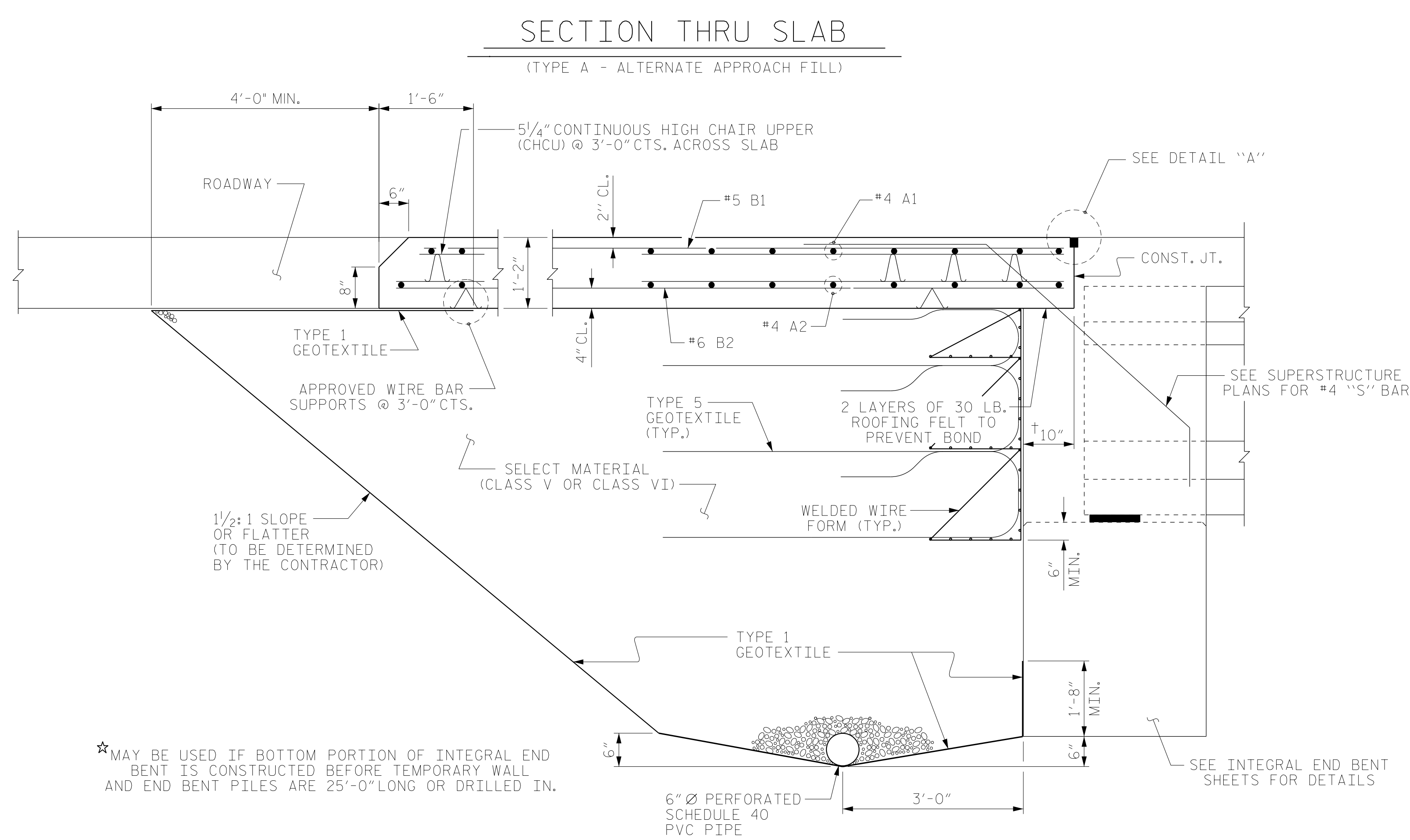
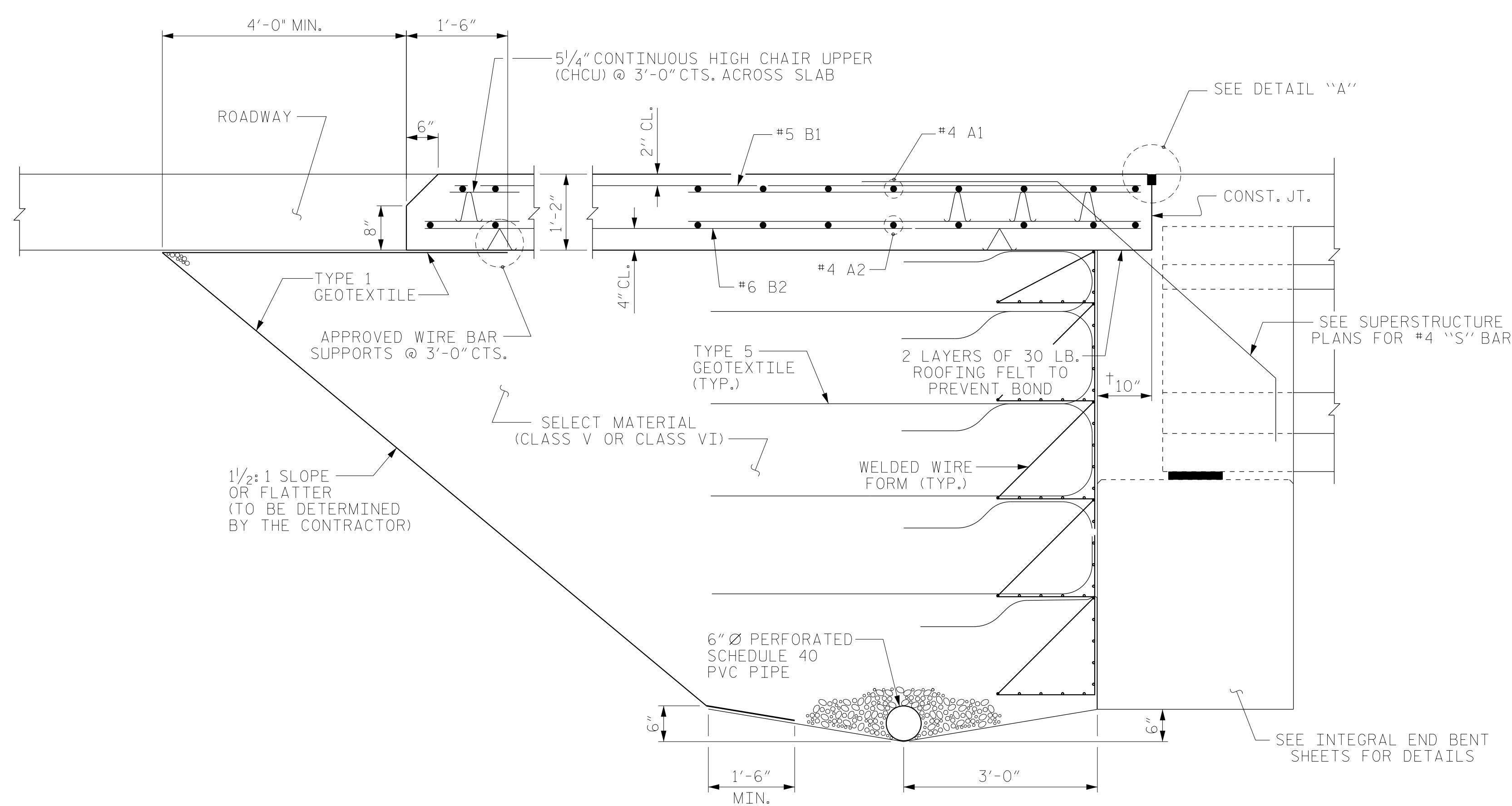


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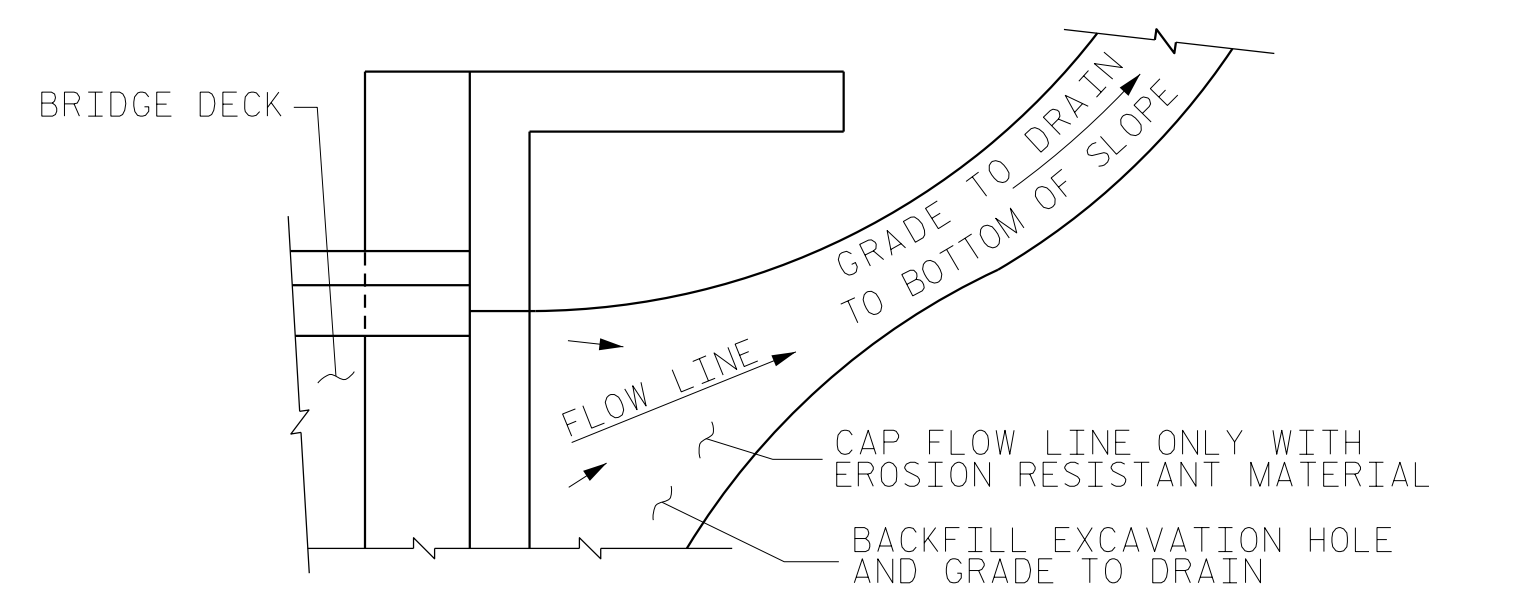
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	REV. 12/17 MAA/THC



TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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.

NOTES

- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
- FOR TEMPORARY GEOTEXTILE WALL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.
- GEOTEXTILE (TYPE 1 OR TYPE 5) SHALL BE 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 6" 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.
- THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 2 OF 2 REPLACES BRIDGE NO. 240139

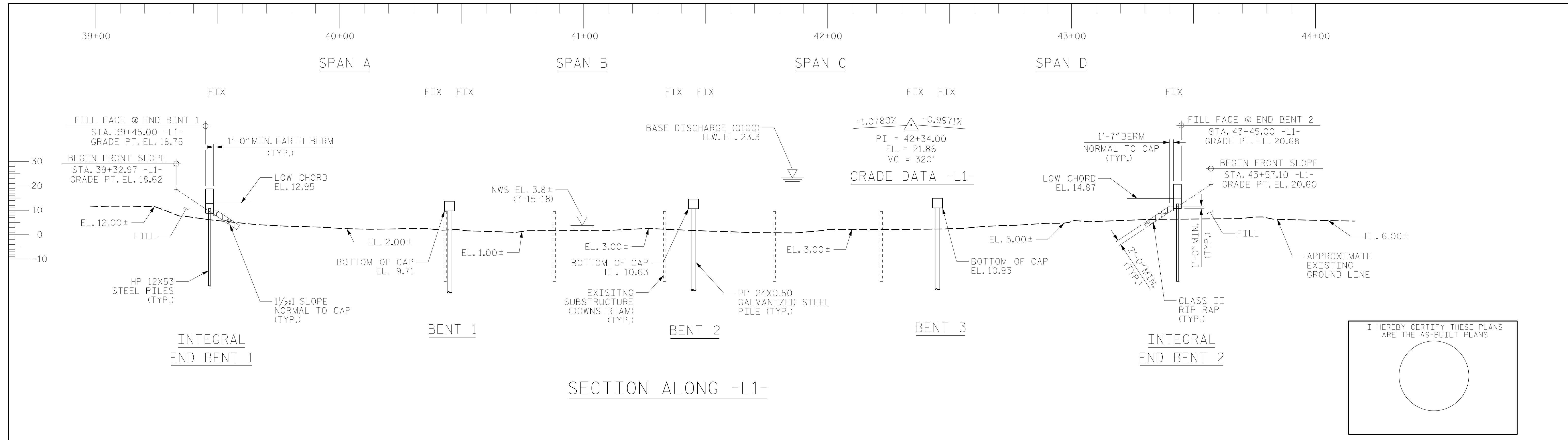


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH STANDARD BRIDGE APPROACH SLAB DETAILS					
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1			3		
2			4		
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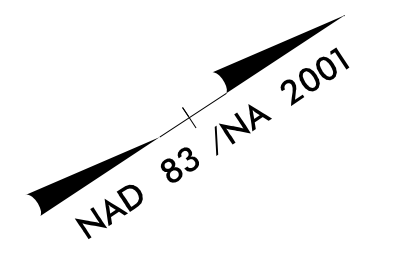
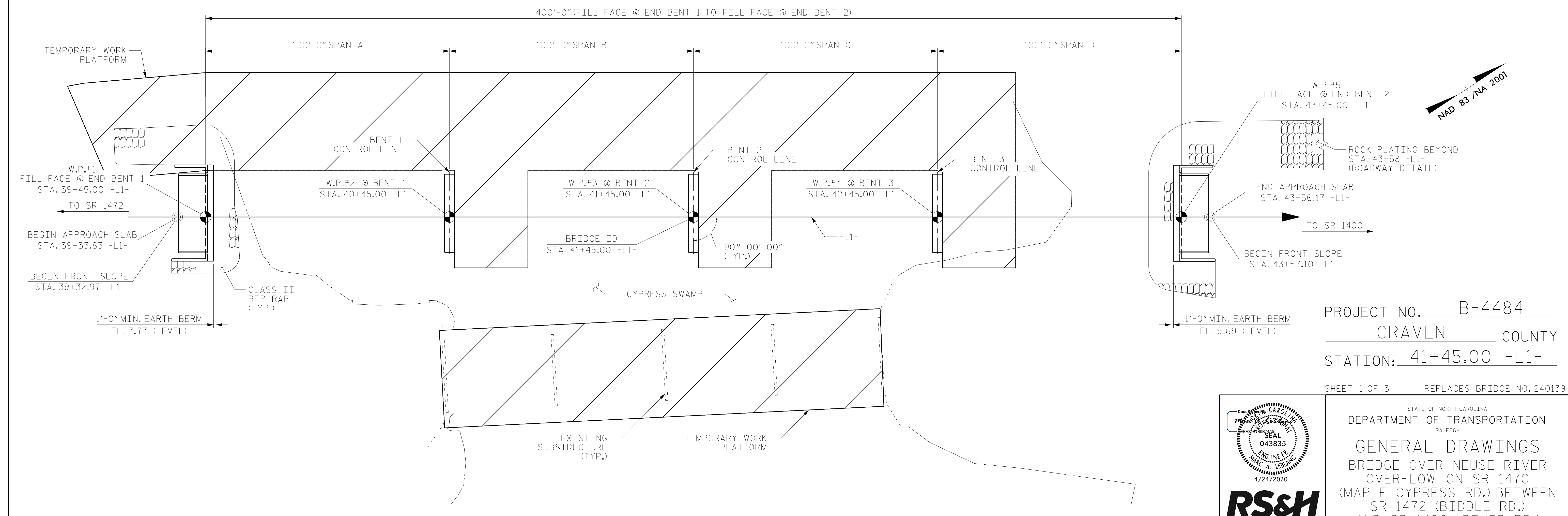
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SECTION THRU SLAB
 (TYPE A - ALTERNATE APPROACH FILL)

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I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



PROJECT NO. B-4484
 CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 1 OF 3 REPLACES BRIDGE NO. 240139

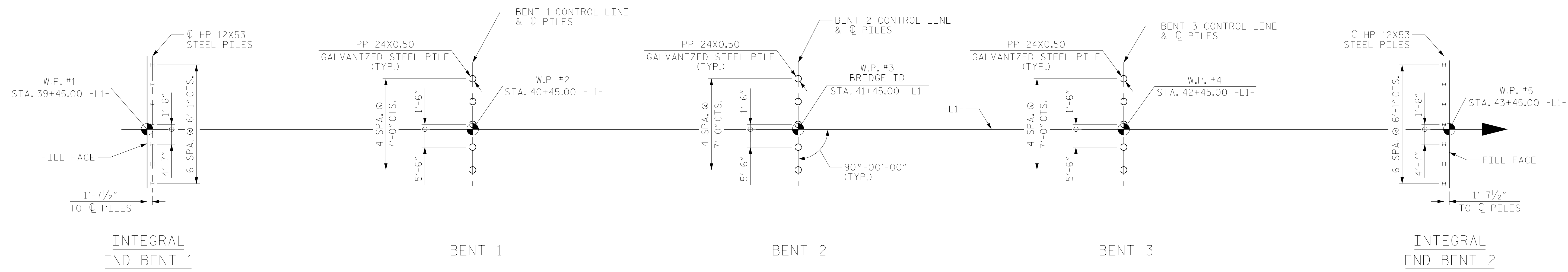
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PLAN ALONG -L1-
 PILES NOT SHOWN FOR CLARITY

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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GENERAL DRAWINGS BRIDGE OVER NEUSE RIVER OVERFLOW ON SR 1470 (MAPLE CYPRESS RD.) BETWEEN SR 1472 (BIDDLE RD.) AND SR 1400 (RIVER RD.)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S2-1
TOTAL SHEETS					31



FOUNDATION LAYOUT
DIMENSIONS LOCATING PILES SHOWN TO THE CENTERLINES OF PILES

NOTES

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO.1 AND END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 115 TONS PER PILE.

PILES AT BENT NO.1, BENT NO.2, AND BENT NO.3 ARE DESIGNED FOR A FACTORED RESISTANCE OF 263 TONS PER PILE.

DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 155 TONS PER PILE.

DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 155 TONS PER PILE.

DRIVE PILE AT BENT NO.1, BENT NO.2, AND BENT NO.3 TO A REQUIRED DRIVING RESISTANCE OF 355 TONS PER PILE. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR SCOUR.

INSTALL PILES AT BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN -29.0 FT.

INSTALL PILES AT BENT NO.2 TO A TIP ELEVATION NO HIGHER THAN -30.0 FT.

INSTALL PILES AT BENT NO.3 TO A TIP ELEVATION NO HIGHER THAN -30.0 FT.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 20 TO 40 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO.1 AND END BENT NO.2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 66 TO 75 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT NO.1, BENT NO.2, AND BENT NO.3. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENT NO.1 AND END BENT NO.2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT BENT NO.2 AND BENT NO.3. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PIPE PILE PLATES ARE REQUIRED FOR STEEL PIPE PILES AT BENT NO.1, BENT NO.2, AND BENT NO.3. USE PIPE PILE PLATES WITH A DIAMETER EQUAL TO THE PIPE PILE DIAMETER. FOR STEEL PIPE PILE PLATES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.1, BENT NO.2, AND BENT NO.3 IS ELEVATION -6 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATION FOR THE SETTLEMENT GAUGES REQUIRED AT END BENT NO.1 AND END BENT NO.2.

OBSERVE A 2 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO.1. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

OBSERVE A 3 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FT OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT NO.2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

TO REDUCE DOWNDRAG AND TO ALLOW ACCESS FOR PILE DRIVING AND PILE CAP CONSTRUCTION, CONSTRUCT EMBANKMENTS AT END BENT NO.1 AND END BENT NO.2 WITH A FRONT SLOPE NO STEEPER THAN 1:1, WITH SLOPE PROTECTION, TO THE BOTTOM OF THE PROPOSED PILE CAP.

PILE CUSHIONS ARE REQUIRED TO DRIVE STEEL PIPE PILES WITHIN THE LIMITS OF THE RIVER. REFER TO PROJECT SPECIAL PROVISIONS FOR MORE INFORMATION.

PROJECT NO. B-4484
CRAVEN COUNTY
STATION: 41+45.00 -L1-

SHEET 2 OF 3 REPLACES BRIDGE NO. 240139



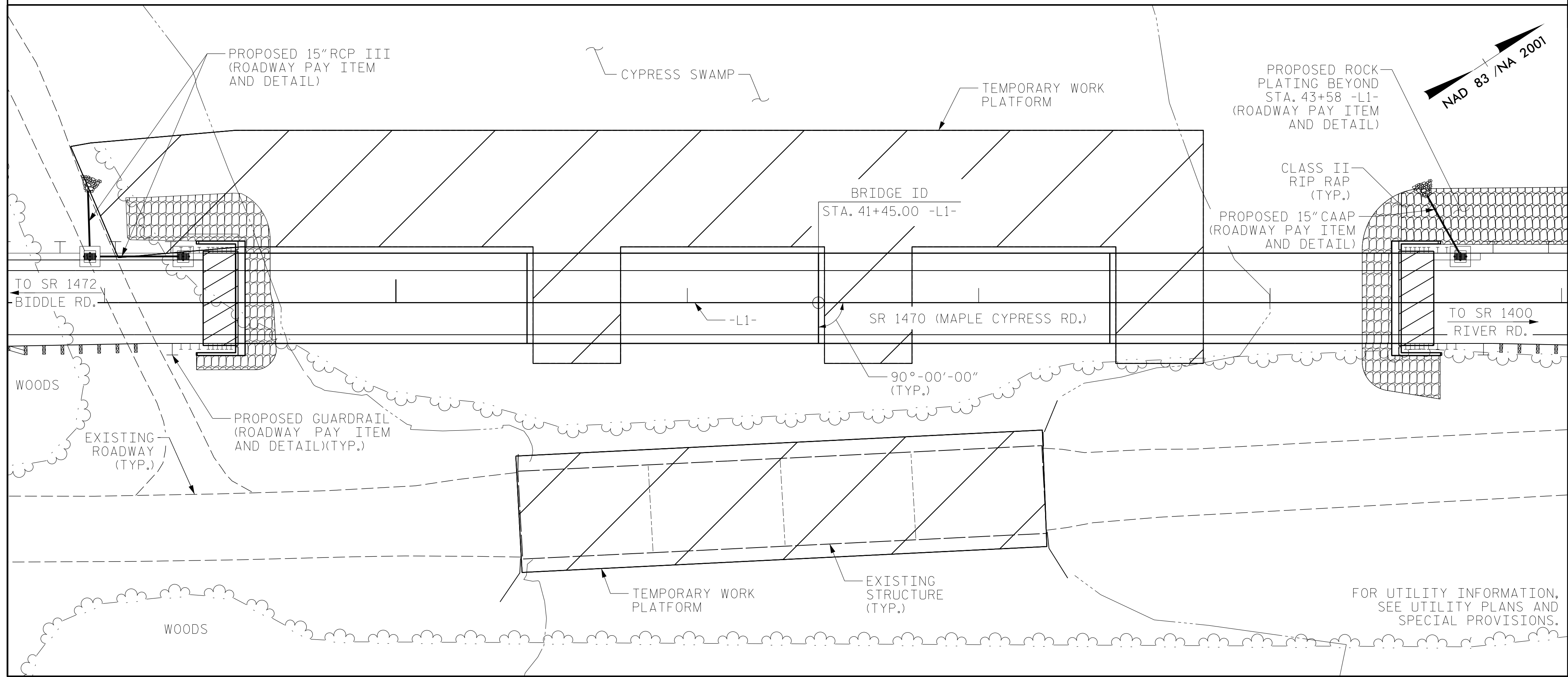
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWINGS
BRIDGE OVER NEUSE
RIVER OVERFLOW ON SR 1470
(MAPLE CYPRESS RD.) BETWEEN
SR 1472 (BIDDLE RD.)
AND SR 1400 (RIVER RD.)

DRAWN BY :	NSC	DATE :	04/2019
CHECKED BY :	JMR	DATE :	05/2019
DESIGN ENGINEER OF RECORD:	PDS	DATE :	06/2019

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REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-2	
1			3			TOTAL SHEETS	
2			4			31	

BENCHMARK - NCDOT GPS (B4484-1), 29' RT. OF -L1- STA. 19+61.00, EL. 24.22



LOCATION SKETCH

NOTES

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- PRESTRESSED CONCRETE DECK PANELS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.
- NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.
- AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE CONSISTING OF 4 @ 45'-0" PRESTRESSED CONCRETE CORED SLAB SPANS WITH PPC CAPS AND H-PILES AND LOCATED APPROXIMATELY 65 FT DOWNSTREAM FROM THE 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 BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
- THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.
- REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18 - EVALUATING SCOUR AT BRIDGES."
- FOR INTERIOR BENTS 1-3, ONLY PARTIAL GALVANIZING OF THE PILES IS REQUIRED. SEE INTERIOR BENT SHEETS FOR REQUIRED GALVANIZING LENGTHS. PAYMENT FOR PARTIALLY GALVANIZED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR GALVANIZED STEEL PILES.
- THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN, AND AFTERWARDS REMOVE THE TEMPORARY ACCESS AT STATION 41+45.00 -L1- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE.
- FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS AT STATION 41+45.00 -L1-, SEE SPECIAL PROVISIONS.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- FOR ABESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.
- 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.
- FOR REMOVAL OF EXISTING STRUCTURE AT STATION 41+45.00 -L1-, SEE SPECIAL PROVISIONS.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

TOTAL BILL OF MATERIALS

	CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS AT STA. 41+45.00 -L1-	REMOVAL OF EXISTING STRUCTURE AT STA. 41+45.00 -L1-	ASBESTOS ASSESSMENT	PDA TESTING	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS
	LUMP SUM	LUMP SUM	LUMP SUM	EACH	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	NO. LIN. FT.
SUPERSTRUCTURE	---	---	---	---	13,245	11,788	---	LUMP SUM	---	16 1,582.7
END BENT NO. 1	---	---	---	1	---	---	33.2	---	5,856	---
BENT NO. 1	---	---	---	---	---	---	20.3	---	3,253	---
BENT NO. 2	---	---	---	1	---	---	20.3	---	3,253	---
BENT NO. 3	---	---	---	1	---	---	20.3	---	3,253	---
END BENT NO. 2	---	---	---	1	---	---	33.2	---	5,856	---
TOTAL	LUMP SUM	LUMP SUM	LUMP SUM	4	13,245	11,788	127.3	LUMP SUM	21,471	16 1,582.7
	PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	PILE DRIVING EQUIPMENT SETUP FOR PP 24X0.50 GALVANIZED STEEL PILES	HP 12X53 STEEL PILES	PP 24X0.50 GALVANIZED STEEL PILES	PIPE PILE PLATES	PILE REDRIVES	VERTICAL CONCRETE BARRIER RAIL	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS
	EACH	EACH	NO. LIN. FT.	NO. LIN. FT.	EACH	EACH	LIN. FT.	TONS	SQ. YDS.	LUMP SUM
SUPERSTRUCTURE	---	---	---	---	---	---	796.7	---	---	LUMP SUM
END BENT NO. 1	7	---	7 525	---	---	4	---	170	185	---
BENT NO. 1	---	5	---	5 475	5	3	---	---	---	---
BENT NO. 2	---	5	---	5 500	5	3	---	---	---	---
BENT NO. 3	---	5	---	5 475	5	3	---	---	---	---
END BENT NO. 2	7	---	7 525	---	---	4	---	160	175	---
TOTAL	14	15	14 1050	15 1450	15	17	796.7	330	360	LUMP SUM

HYDRAULIC DATA

DESIGN DISCHARGE = 19,400 CFS
 FREQUENCY OF DESIGN DISCHARGE = 2 YRS
 DESIGN HIGH WATER ELEVATION = 13.2
 DRAINAGE AREA = 3,950 SQ. MI.
 BASE DISCHARGE (Q100) = 70,000 CFS
 BASE HIGH WATER ELEVATION = 23.3

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 22,400 CFS
 FREQUENCY OF OVERTOPPING = 2+ YRS
 * OVERTOPPING ELEVATION = 13.8
 * SAG @ STA. 07+20.00 -L1-

DRAWN BY : NSC DATE : 03/2019
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 DESIGN ENGINEER OF RECORD: PDS DATE : 06/2019

PROJECT NO. B-4484
 CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 3 OF 3 REPLACES BRIDGE NO. 240139



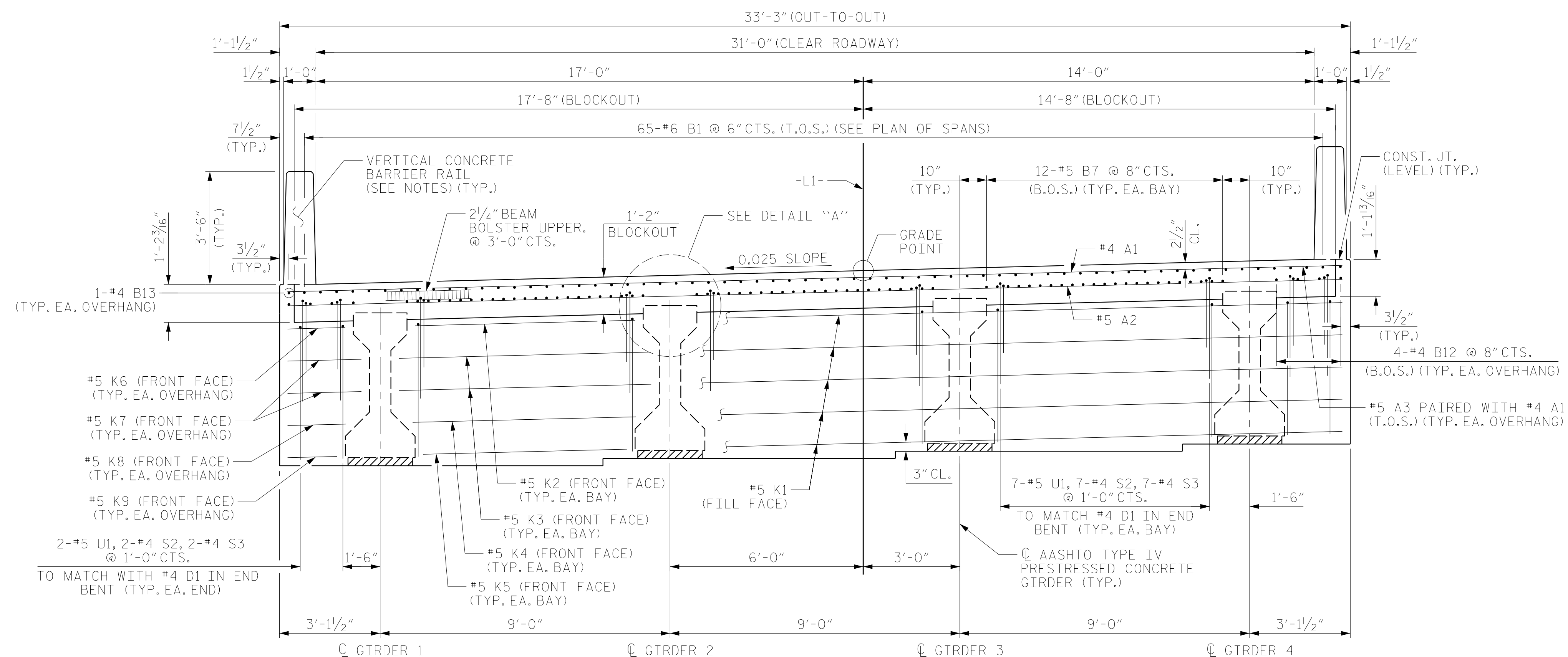
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWINGS
 BRIDGE OVER NEUSE RIVER
 OVERFLOW ON SR 1470
 (MAPLE CYPRESS RD.) BETWEEN
 SR 1472 (BIDDLE RD.)
 AND SR 1400 (RIVER RD.)

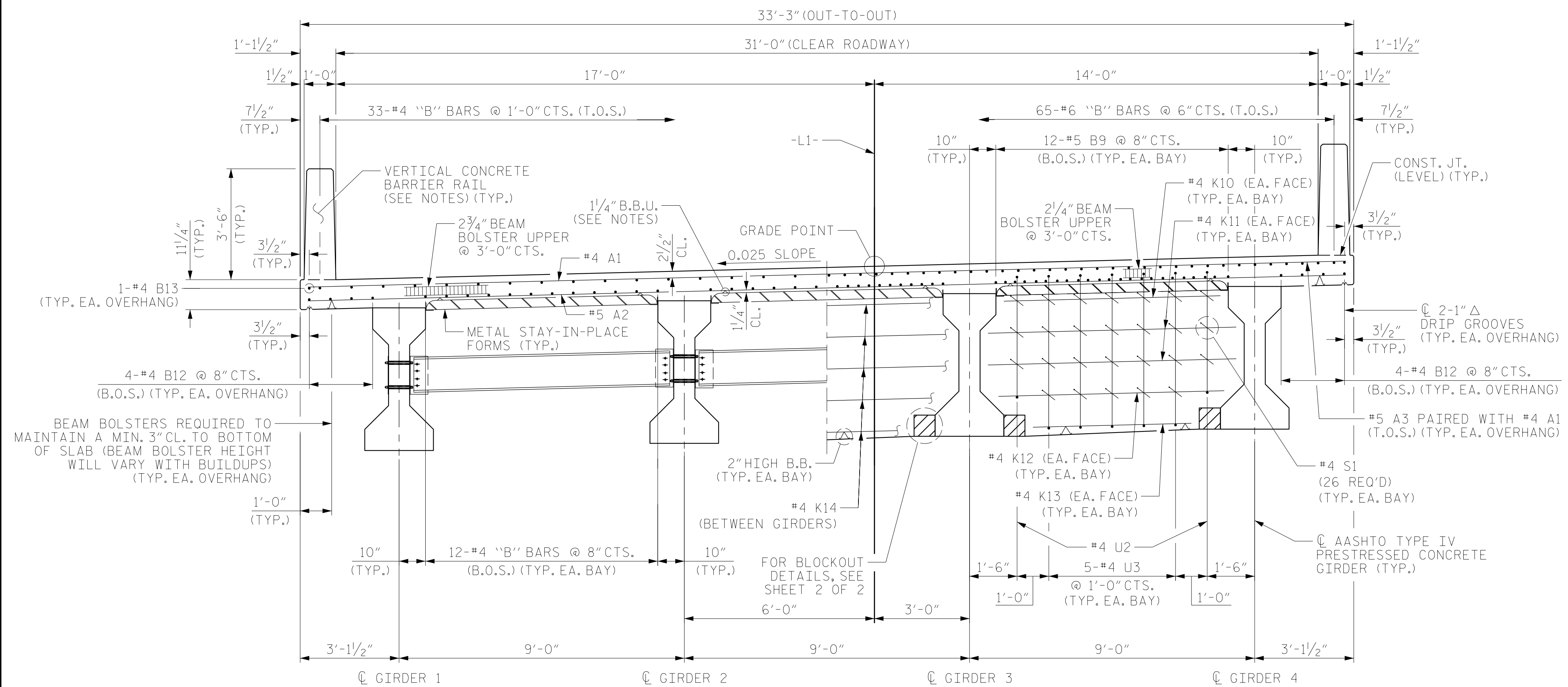
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1			3			TOTAL SHEETS
2			4			31

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TYPICAL SECTION AT INTEGRAL END BENT



HALF SECTION AT INTERMEDIATE DIAPHRAGM / HALF SECTION AT CONTINUOUS BENT DIAPHRAGM

NOTES

PROVIDE 1/4" HIGH BEAM BOLSTER UPPERS @ 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK @ 4'-0" CTS. WITH A HEIGHT TO PROVIDE 2 1/2" CLEAR DISTANCE ABOVE FORMS.

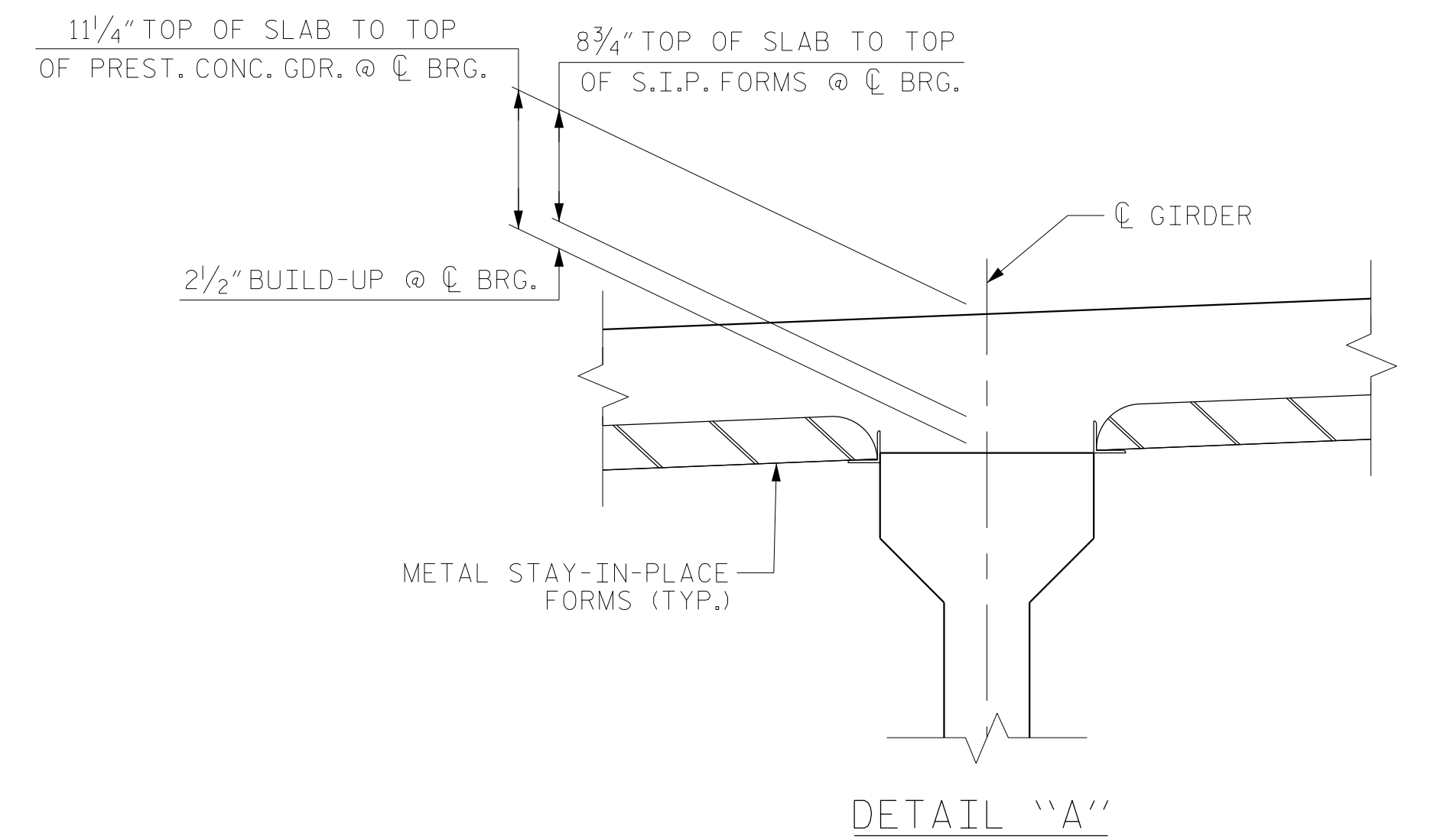
LONGITUDINAL REINFORCING STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

FOR VERTICAL CONCRETE BARRIER RAIL REINFORCING STEEL AND DETAILS, SEE "VERTICAL CONCRETE BARRIER RAIL" SHEETS

CONCRETE BARRIER RAIL IN CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL DECK SLAB CONCRETE IN THAT UNIT HAS BEEN CAST AND HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

T.O.S. = TOP OF SLAB
B.O.S. = BOTTOM OF SLAB



DETAIL "A"

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 1 OF 2 REPLACES BRIDGE NO. 240139

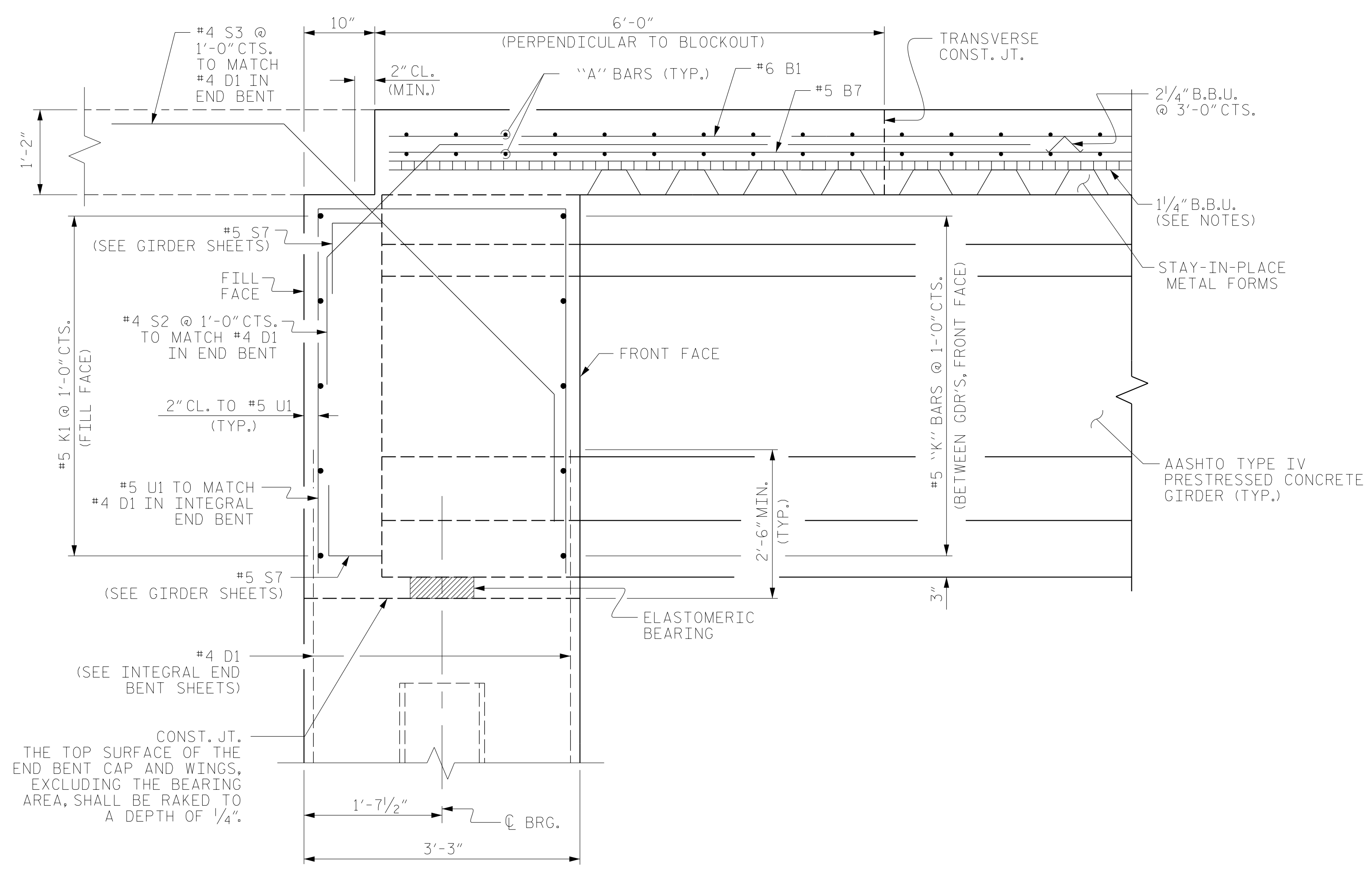


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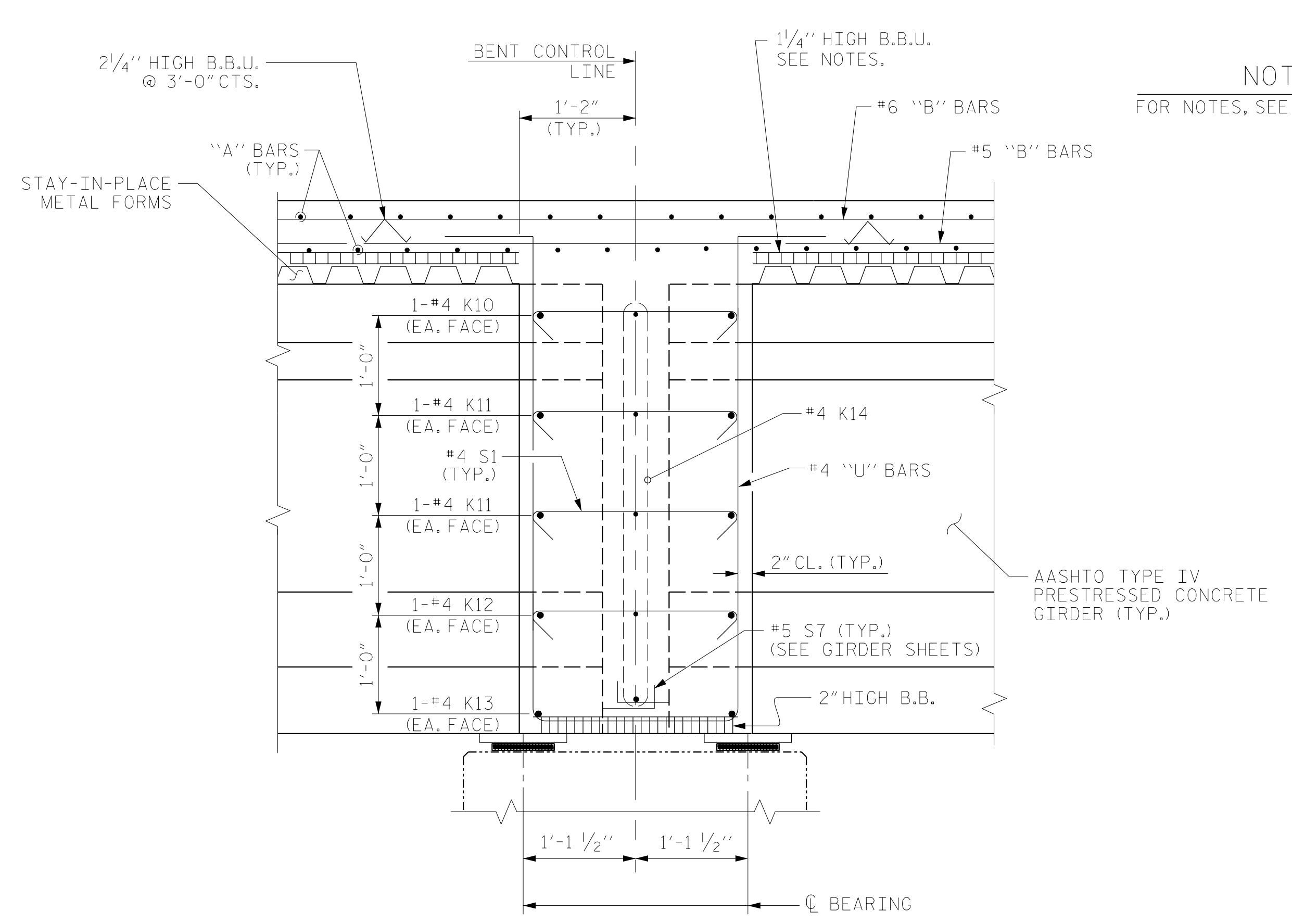
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-5
1			3			TOTAL SHEETS
2			4			31

DRAWN BY : NSC DATE : .04/2019
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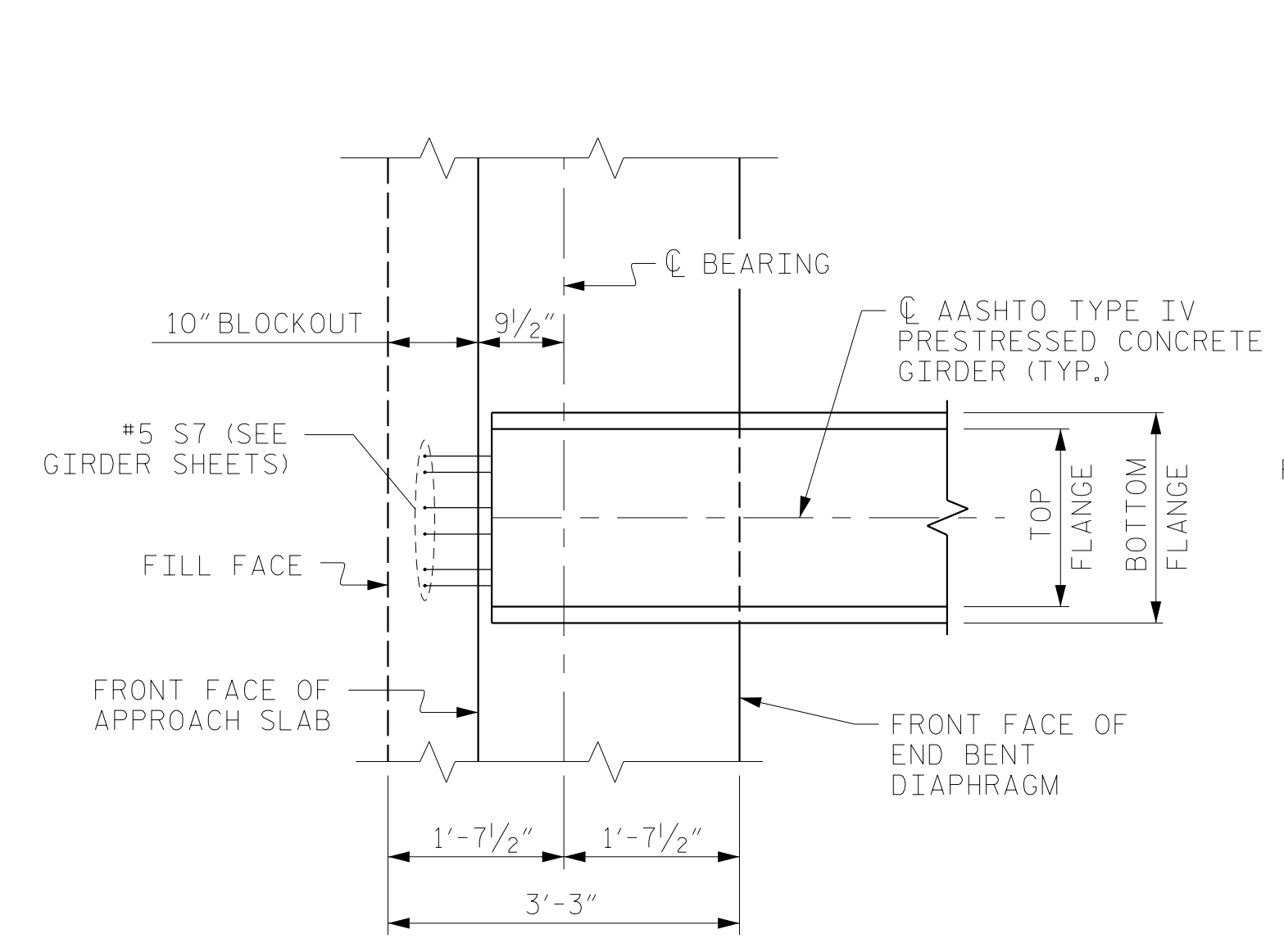


SECTION THROUGH INTEGRAL END BENT

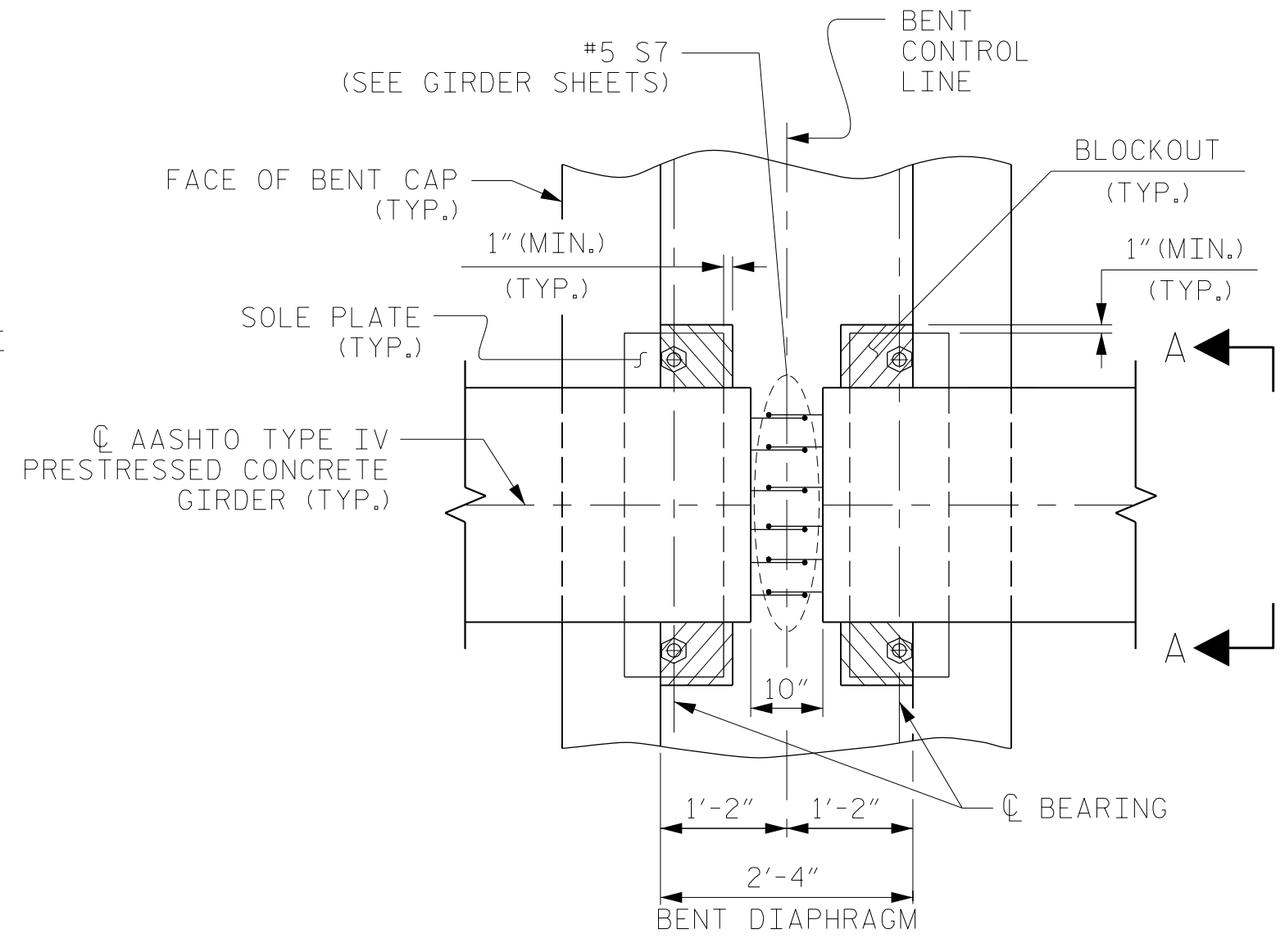


SECTION THROUGH CONTINUOUS BENT DIAPHRAGM

NOTES
FOR NOTES, SEE SHEET 1 OF 2.

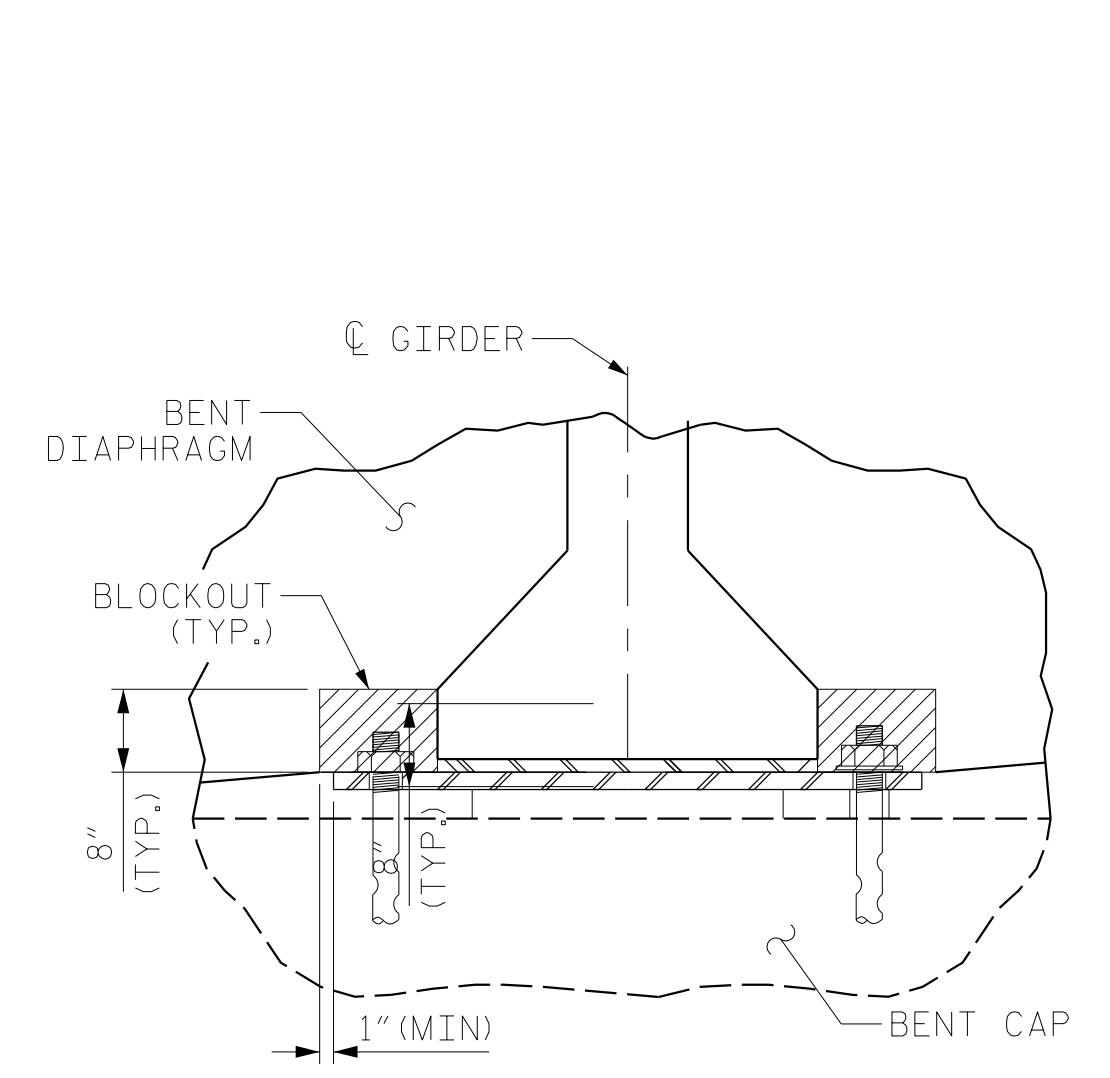


PLAN OF GIRDER AT INTEGRAL END BENT



PLAN VIEW

BENT DIAPHRAGM BLOCKOUT DETAIL



VIEW A-A

PROJECT NO. B-4484
CRAVEN COUNTY
STATION: 41+45.00 -L1-

SHEET 2 OF 2 REPLACES BRIDGE NO. 240139

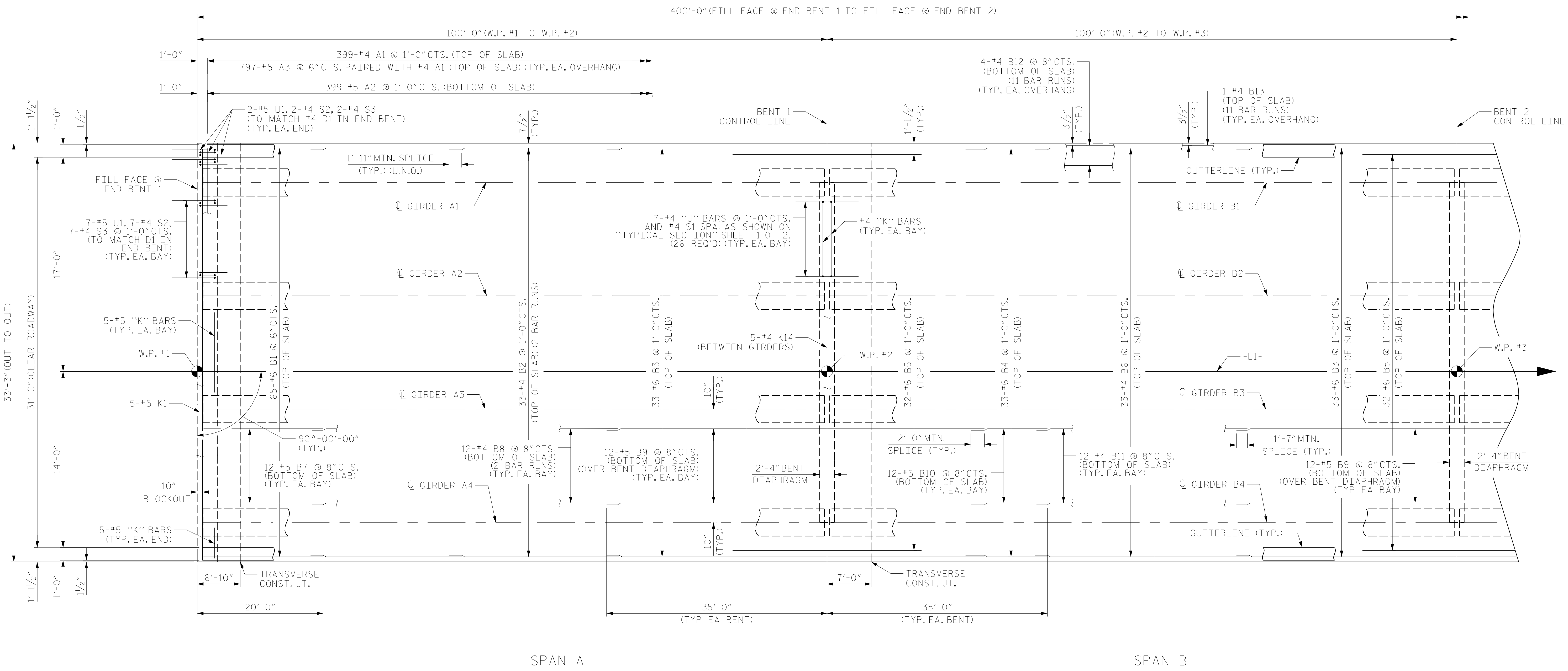


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
TYPICAL SECTION
DETAILS

DRAWN BY :	NSC	DATE :	03/2019
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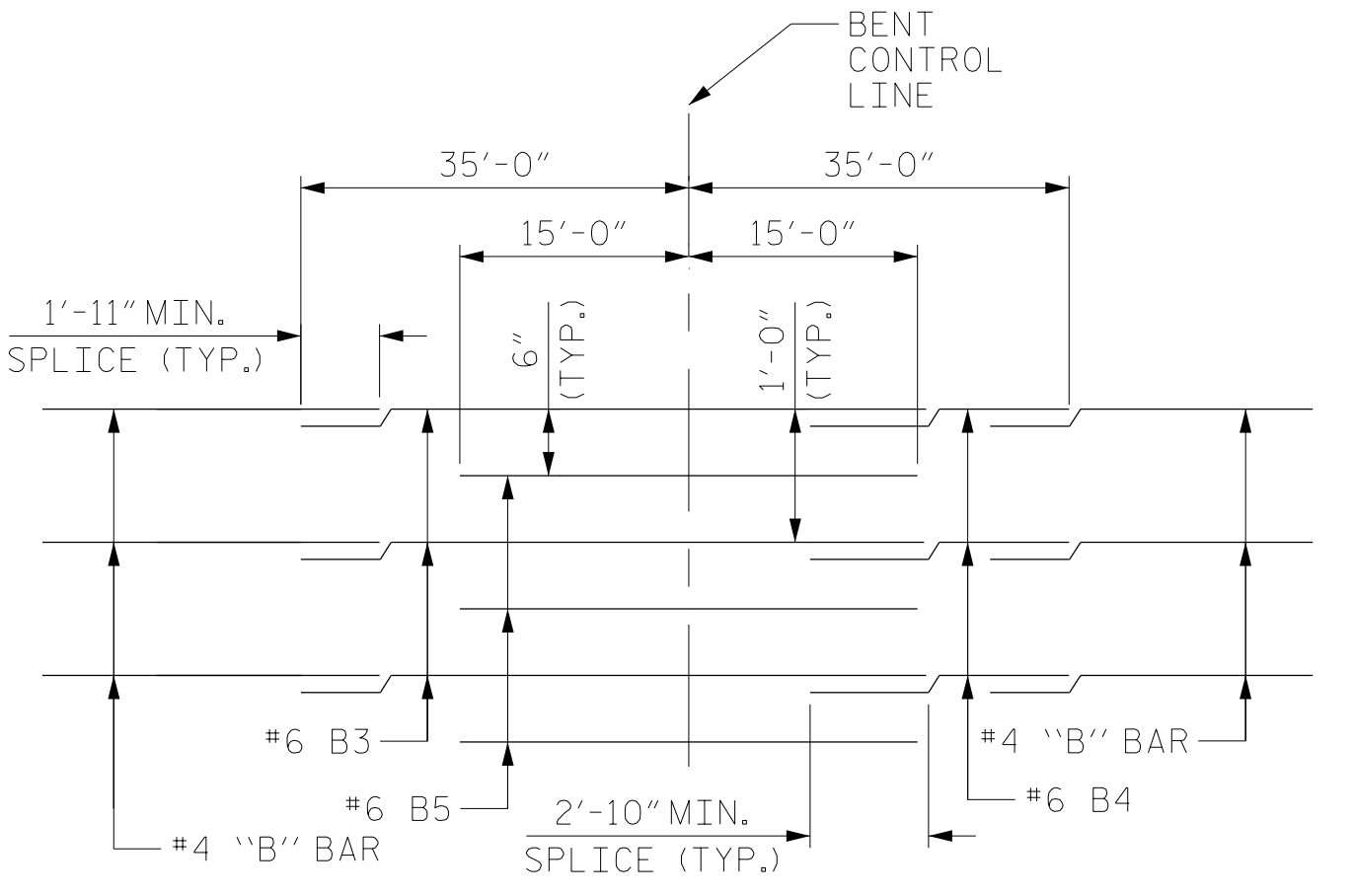
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-6
1			3			TOTAL SHEETS
2			4			31



PLAN OF SPANS A AND B

NOTES

- FOR SPLICE LENGTHS NOT SHOWN, REFER TO MINIMUM SPLICE LENGTH TABLE ON "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.
- FOR END BENT DIAPHRAGM BARS AND BENT DIAPHRAGM BARS, SEE TYPICAL SECTION SHEETS.
- BENT DIAPHRAGM BARS AT BENT 1 ARE TYPICAL FOR BENT 2.
- STEEL INTERMEDIATE DIAPHRAGMS NOT SHOWN FOR CLARITY. FOR LOCATIONS, SEE "FRAMING PLAN" SHEET.
- FOR POURING SEQUENCE, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.
- FOR BARRIER RAIL REINFORCING STEEL, SEE "VERTICAL CONCRETE BARRIER RAIL" SHEET.



TOP OF SLAB REINFORCING STEEL LAYOUT

PROJECT NO. B-4484
 CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 1 OF 2 REPLACES BRIDGE NO. 240139



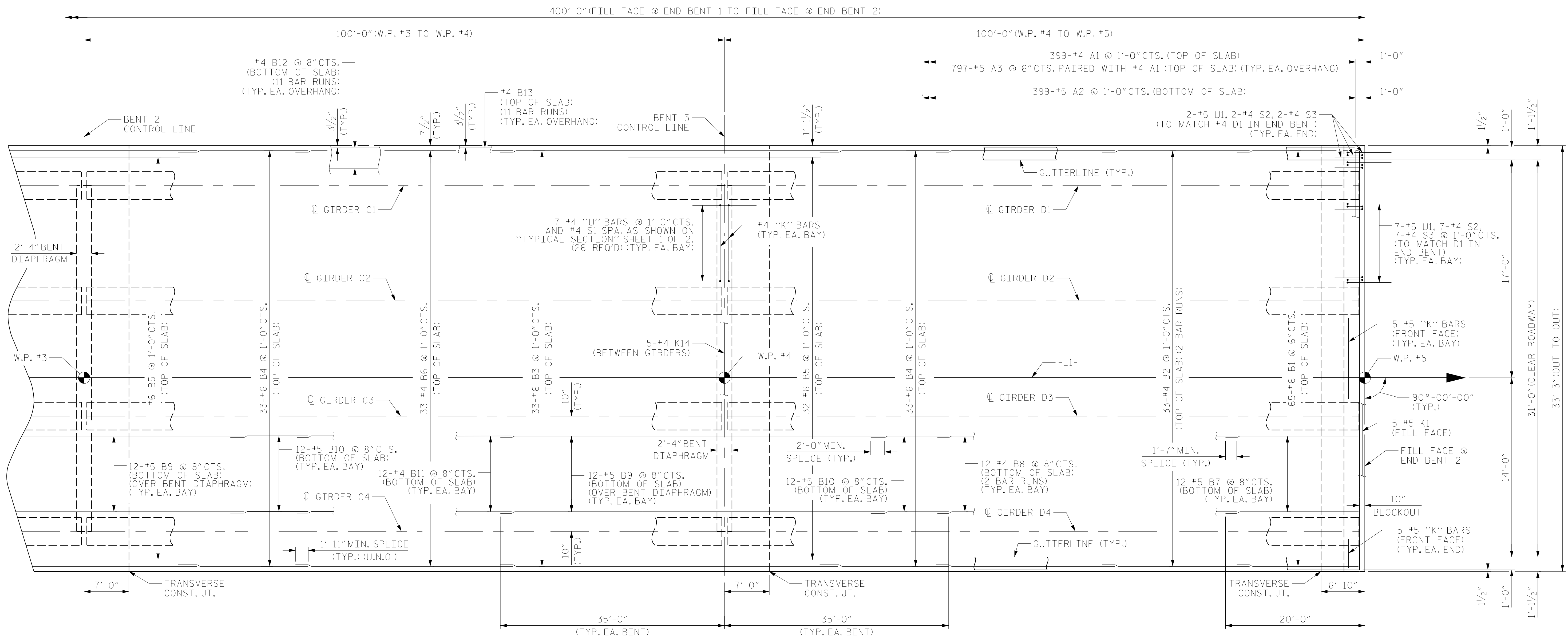
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPANS
 A AND B

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-7
1			3			TOTAL SHEETS
2			4			31

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SPAN C PLAN OF SPANS C AND D SPAN D

NOTES

- FOR SPLICE LENGTHS NOT SHOWN, REFER TO MINIMUM SPLICE LENGTH TABLE ON "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.
- FOR TOP OF SLAB REINFORCING LAYOUT, SEE SHEET 1 OF 2.
- FOR END BENT DIAPHRAGM BARS AND BENT DIAPHRAGM BARS, SEE TYPICAL SECTION SHEETS.
- BENT DIAPHRAGM BARS AT BENT 3 ARE TYPICAL FOR BENT 2.
- STEEL INTERMEDIATE DIAPHRAGMS NOT SHOWN FOR CLARITY. FOR LOCATIONS, SEE "FRAMING PLAN" SHEET.
- FOR POURING SEQUENCE, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.
- FOR BARRIER RAIL REINFORCING STEEL, SEE "VERTICAL CONCRETE BARRIER RAIL" SHEET.

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 2 OF 2 REPLACES BRIDGE NO. 240139



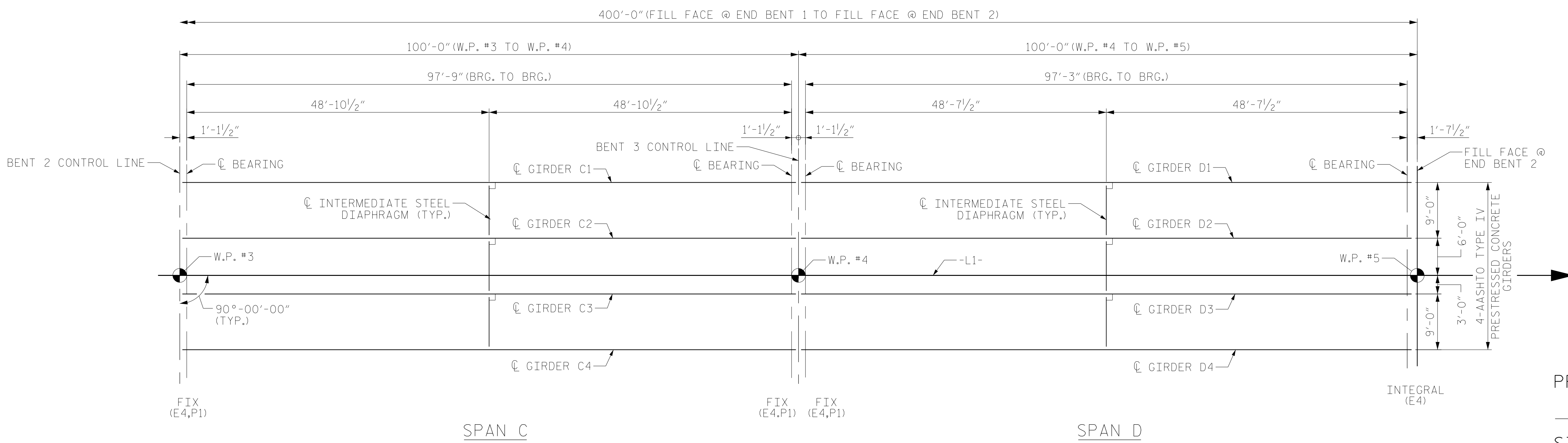
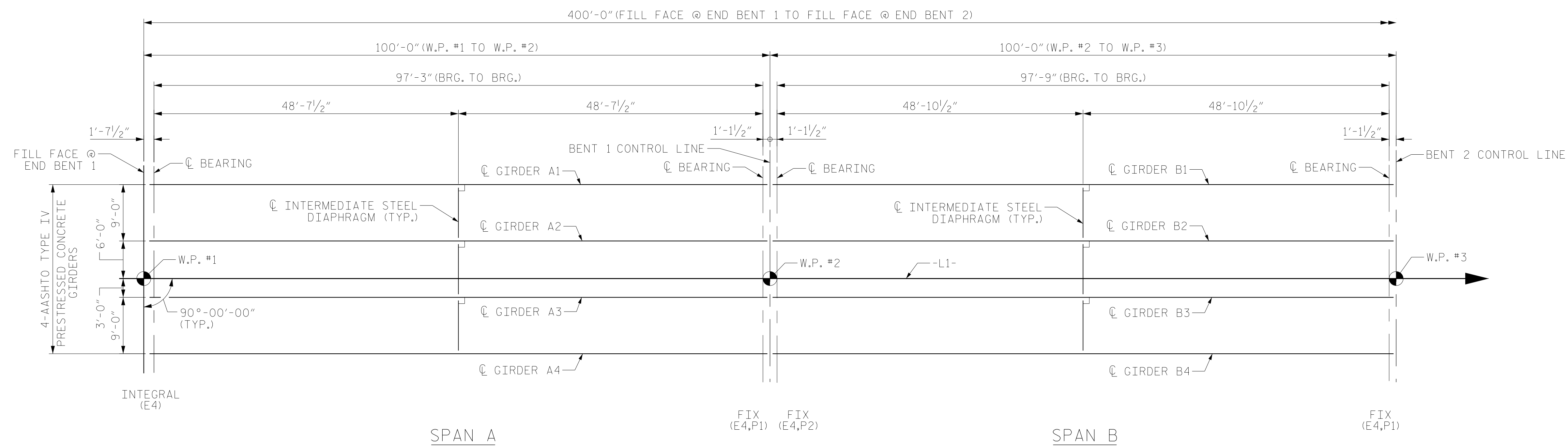
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STATE OF NORTH CAROLINA
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 RALEIGH
 SUPERSTRUCTURE
 PLAN OF SPANS
 C AND D

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-8
1			3			TOTAL SHEETS
2			4			31



PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

REPLACES BRIDGE NO. 240139

FRAMING PLAN
 END BENT AND BENT DIAPHRAGMS
 NOT SHOWN FOR CLARITY

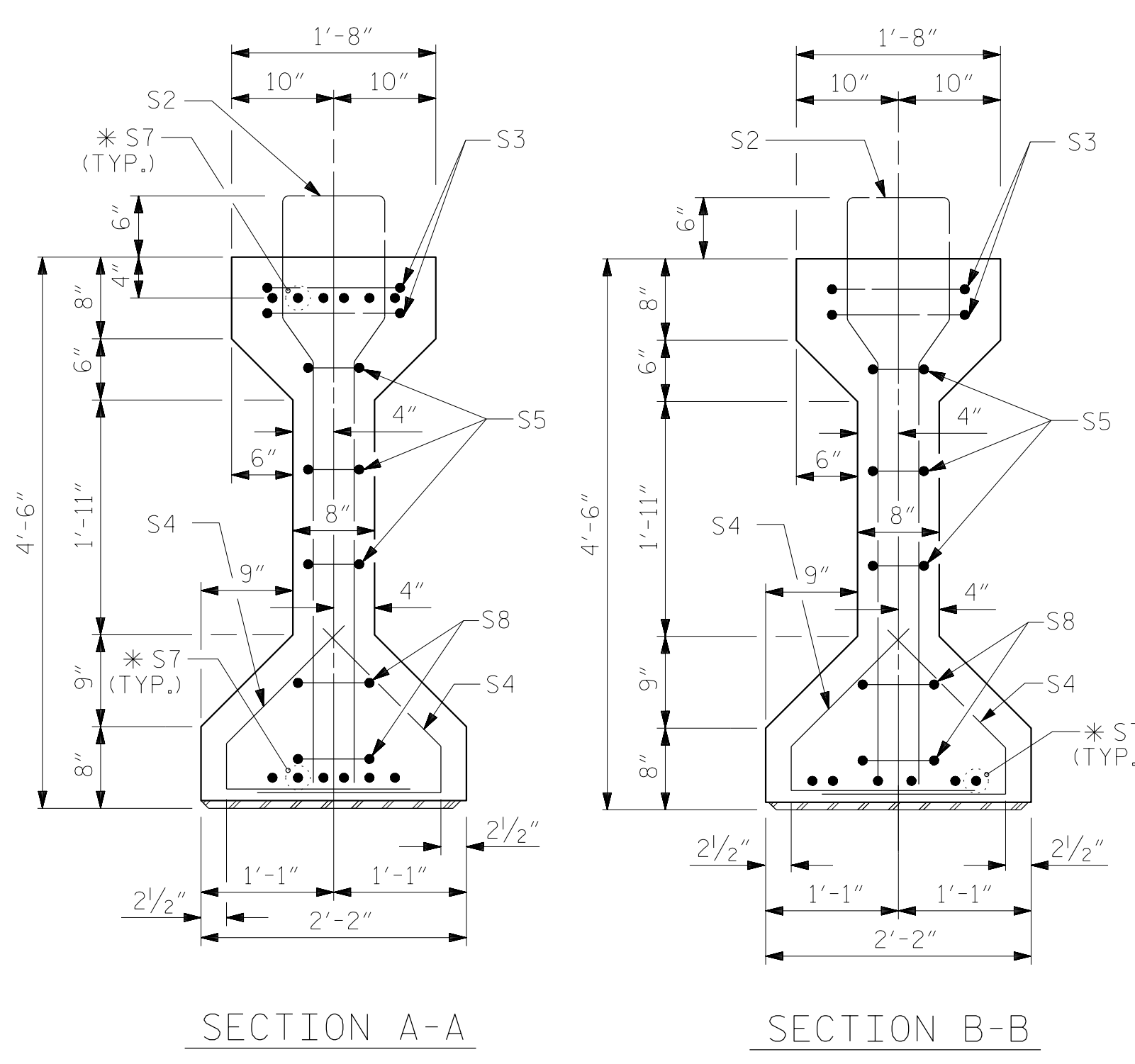


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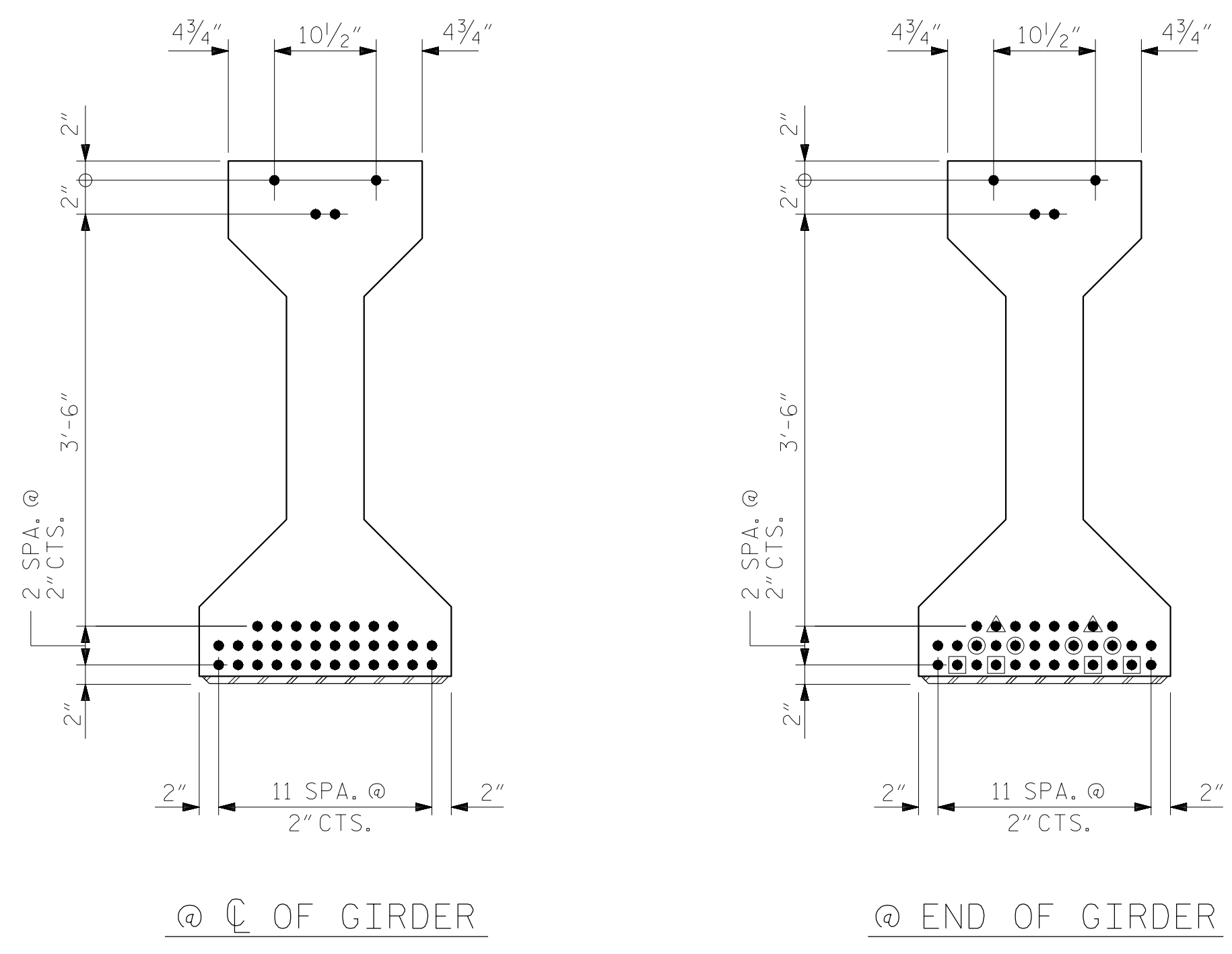
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE FRAMING PLAN					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S2-9					TOTAL SHEETS 31

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 DESIGN ENGINEER OF RECORD: PDS DATE : 06/2019

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* FOR S7 BARS, SEE
DETAIL "A" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET



DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER

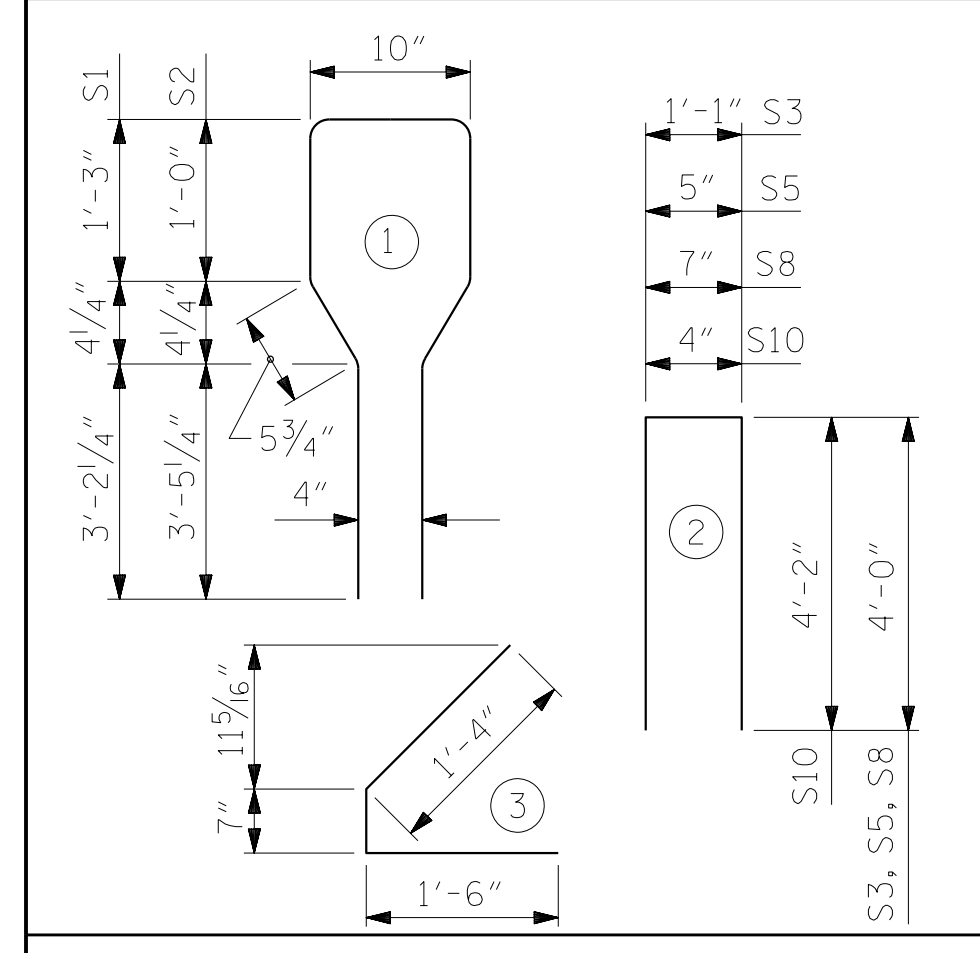
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	110	#4	1	10'-8"	784
S2	34	#6	1	10'-8"	545
S3	4	#4	2	9'-1"	24
S4	80	#4	3	3'-5"	183
S5	6	#4	2	8'-5"	34
* S7	18	#5	STR	3'-8"	69
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
** S10	2	#5	2	8'-8"	18
** S11	5	#4	STR	7'-0"	23
S12	1	#3	STR	1'-4"	1

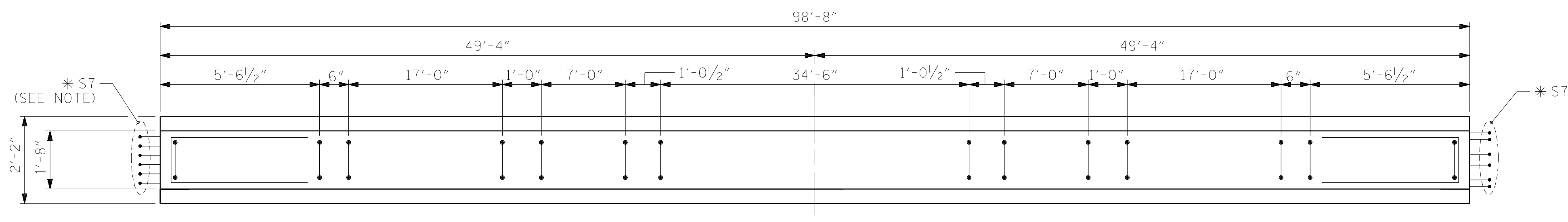
* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.
** FOR PLACEMENT OF S10 AND S11 BARS, SEE "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



0.6" Ø LOW RELAXATION STRAND LAYOUT



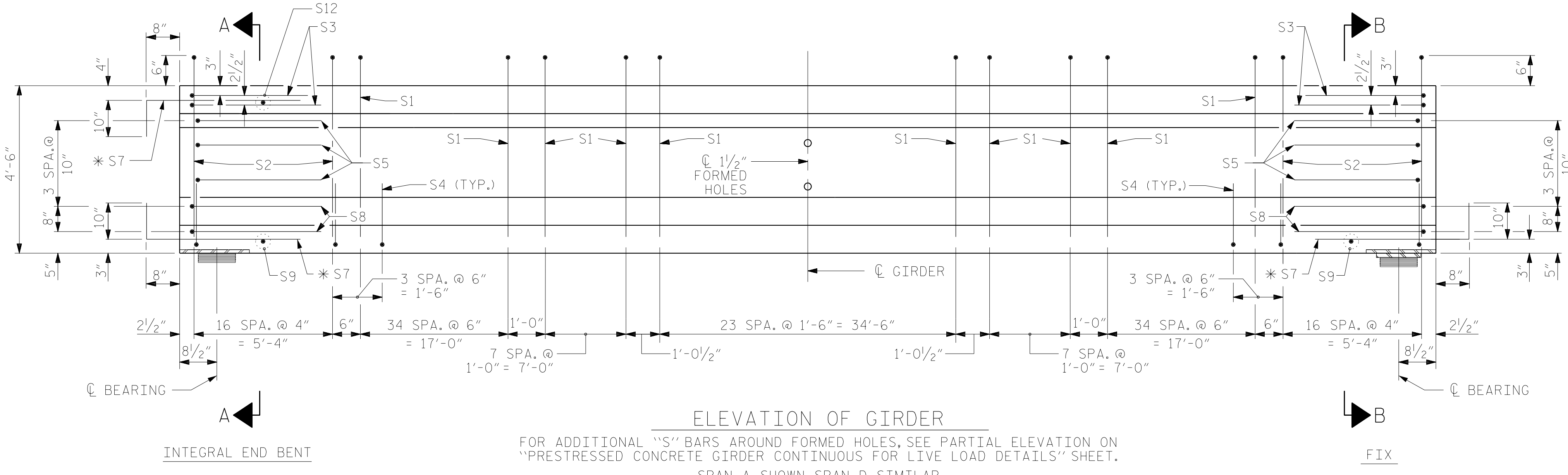
PLAN OF GIRDER
NOTE: S7 BARS IN BOTTOM BULB NOT SHOWN FOR CLARITY

QUANTITIES FOR ONE GIRDER			
REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L. R. STRANDS	
	LB.	C.Y.	No.
	1,704	20.0	36

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
8	98'-8"	789'-4"

PROJECT NO. B-4484
CRAVEN COUNTY
STATION: 41+45.00 -L1-

SHEET 1 OF 3 REPLACES BRIDGE NO. 240139



ELEVATION OF GIRDER

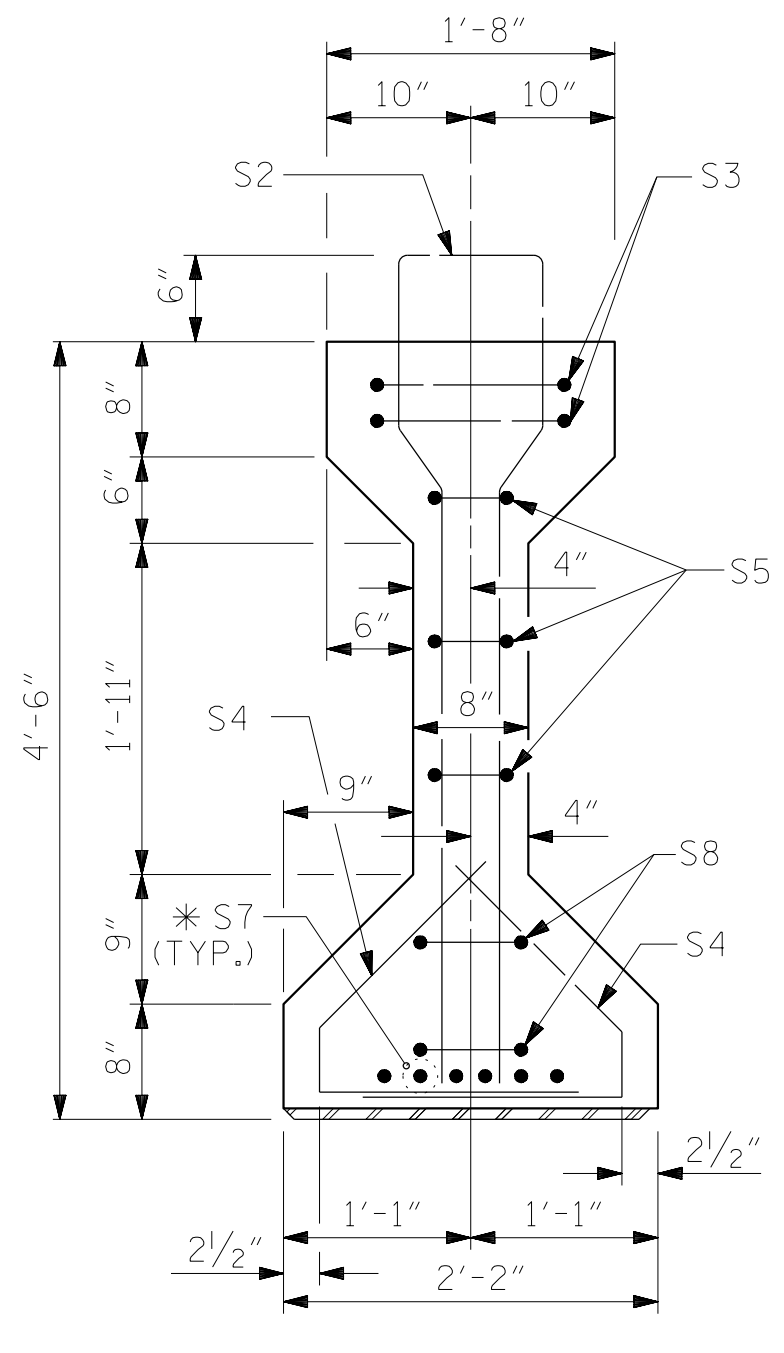
FOR ADDITIONAL "S" BARS AROUND FORMED HOLES, SEE PARTIAL ELEVATION ON "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET.
SPAN A SHOWN, SPAN D SIMILAR

DRAWN BY : NSC DATE : .04/2019
CHECKED BY : JMR DATE : .05/2019
DESIGN ENGINEER OF RECORD: PDS DATE : .06/2019

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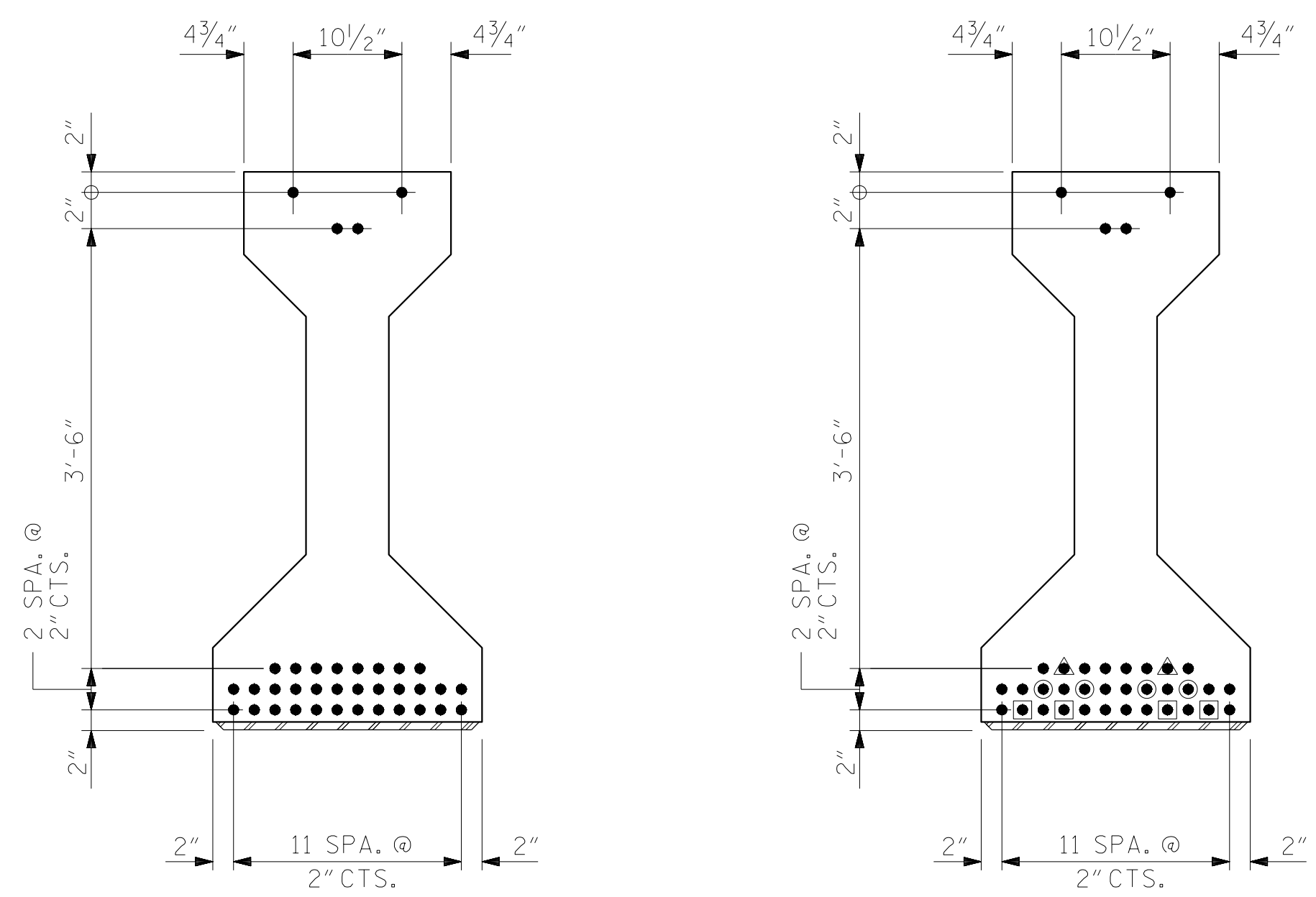
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPANS A & D

REVISIONS						SHEET NO. S2-10 TOTAL SHEETS 31
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



* FOR S7 BARS, SEE
DETAIL "A" OF
PRESTRESSED
CONCRETE GIRDER
CONTINUOUS FOR LIVE
LOAD DETAILS SHEET

SECTION A-A



@ CL OF GIRDER @ END OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT

DEBONDING LEGEND

- FULLY BONDED STRANDS
- STRANDS DEBONDED FOR 6'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 8'-0" FROM END OF GIRDER
- STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER

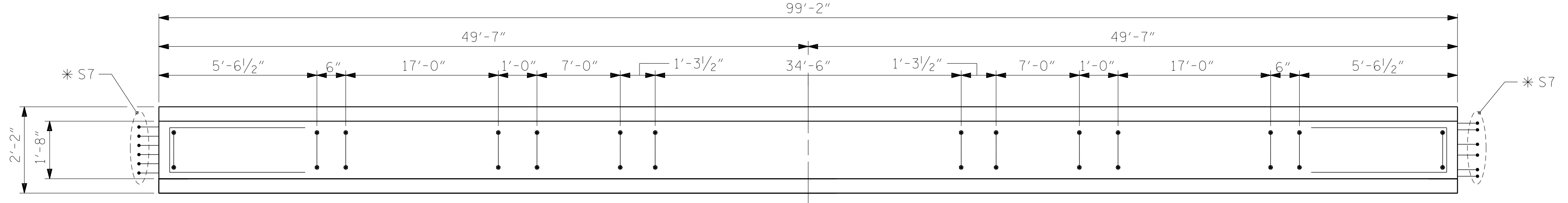
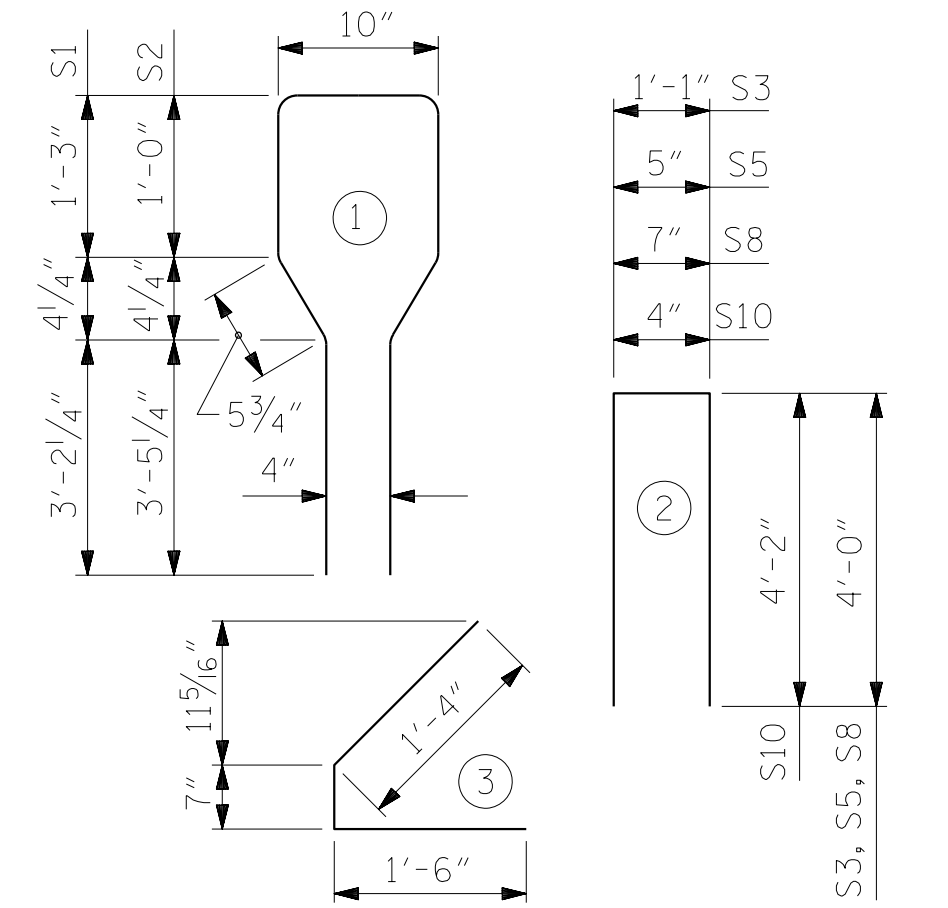
0.6" Ø L. R. GRADE 270 STRANDS		
AREA (SQUARE INCHES)	ULTIMATE STRENGTH (LBS. PER STRAND)	APPLIED PRESTRESS (LBS. PER STRAND)
0.217	58,600	43,950

REINFORCING STEEL FOR ONE GIRDER					
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT
S1	110	#4	1	10'-8"	784
S2	34	#6	1	10'-8"	545
S3	4	#4	2	9'-1"	24
S4	80	#4	3	3'-5"	183
S5	6	#4	2	8'-5"	34
* S7	12	#5	STR	3'-8"	46
S8	4	#4	2	8'-7"	23
S9	2	#3	STR	1'-10"	1
** S10	2	#5	2	8'-8"	18
** S11	5	#4	STR	7'-0"	23

* NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.
** FOR PLACEMENT OF S10 AND S11 BARS, SEE "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



PLAN OF GIRDER

QUANTITIES FOR ONE GIRDER

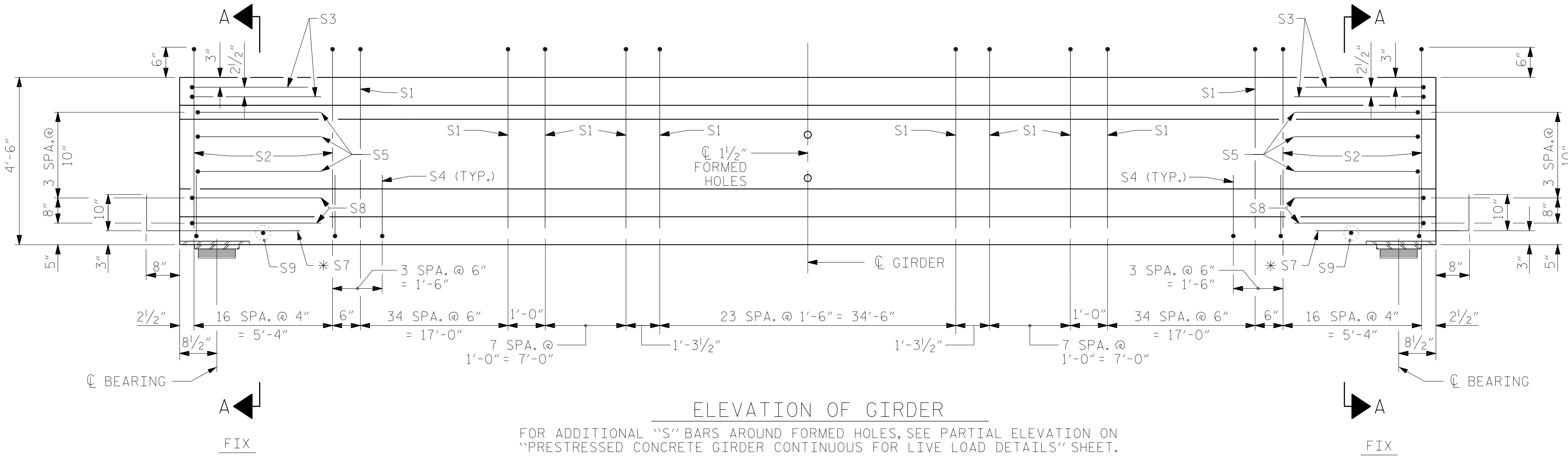
REINFORCING STEEL	8,000 PSI CONCRETE	0.6" Ø L. R. STRANDS
LB.	C.Y.	No.
1,681	20.1	36

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
8	99'-2"	793'-4"

PROJECT NO. B-4484
CRAVEN COUNTY
STATION: 41+45.00 -L1-

SHEET 2 OF 3 REPLACES BRIDGE NO. 240139



ELEVATION OF GIRDER

FOR ADDITIONAL "S" BARS AROUND FORMED HOLES, SEE PARTIAL ELEVATION ON "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET.

DRAWN BY : NSC DATE : 04/2019
CHECKED BY : JMR DATE : 06/2019
DESIGN ENGINEER OF RECORD: PDS DATE : 06/2019

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
AASHTO TYPE IV
PRESTRESSED CONCRETE GIRDER
CONTINUOUS FOR LIVE LOAD
SPANS B & C

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-11
1			3			TOTAL SHEETS
2			4			31

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 SHALL BE GRADE 60.

APPLY EPOXY PROTECTIVE COATING TO END OF GIRDER SURFACES INDICATED IN ELEVATION VIEW.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

AT ENDS OF GIRDERS TO BE EMBEDDED IN CONCRETE DIAPHRAGMS OR END WALLS, PRESTRESSING STRANDS MAY EXTEND A MAXIMUM OF 2" BEYOND THE GIRDER ENDS. OTHERWISE, PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

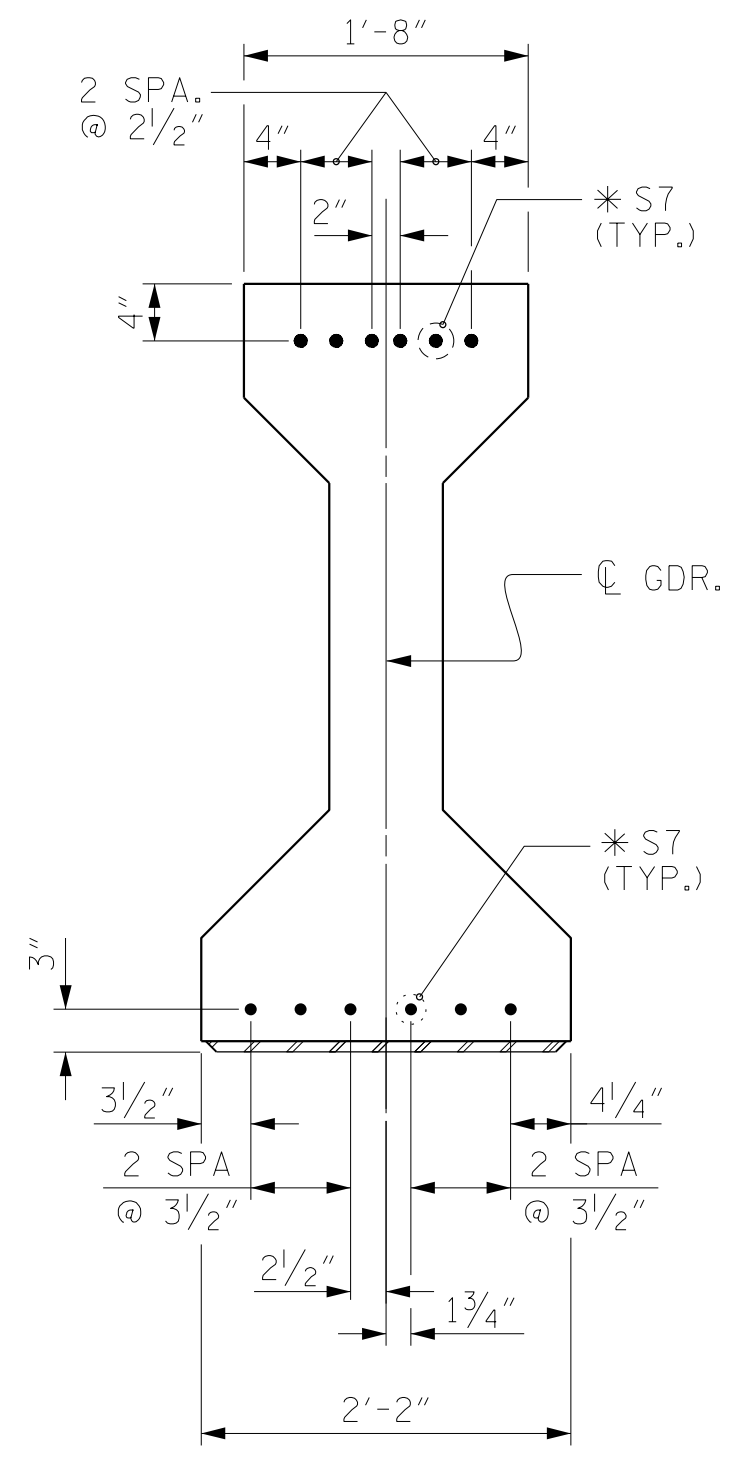
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,000 PSI.

DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4".

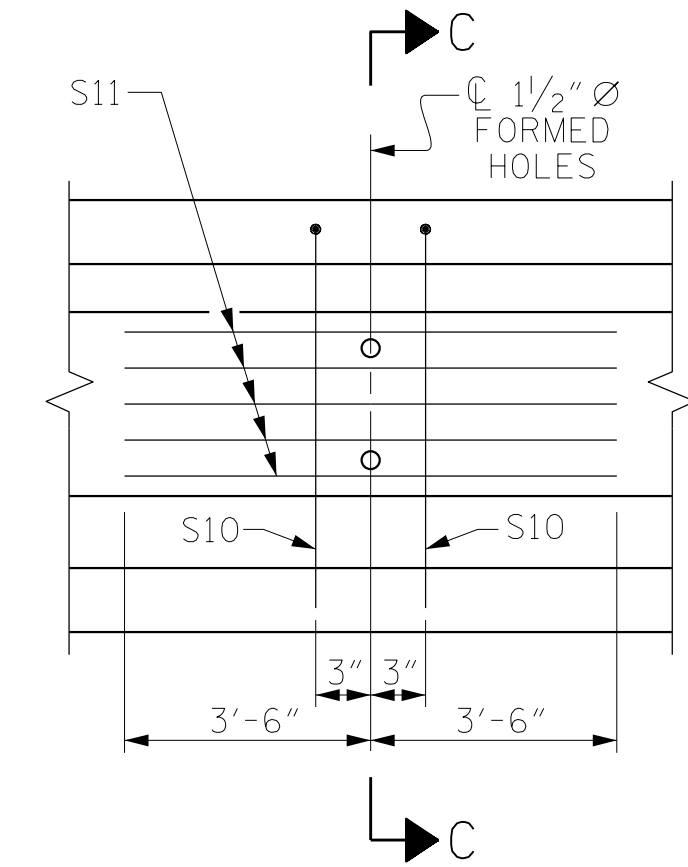
WHEN DRAPED STRANDS ARE DETAILED, THE LONGITUDINAL LOCATION OF THE HOLD DOWN DEVICES SHALL BE WITHIN 6" OF THE LOCATION SHOWN AND THE CENTER OF GRAVITY OF THE GROUP OF DRAPED STRANDS SHALL BE LOCATED WITHIN 1/2" OF THE THEORETICAL LOCATION SHOWN.

THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.



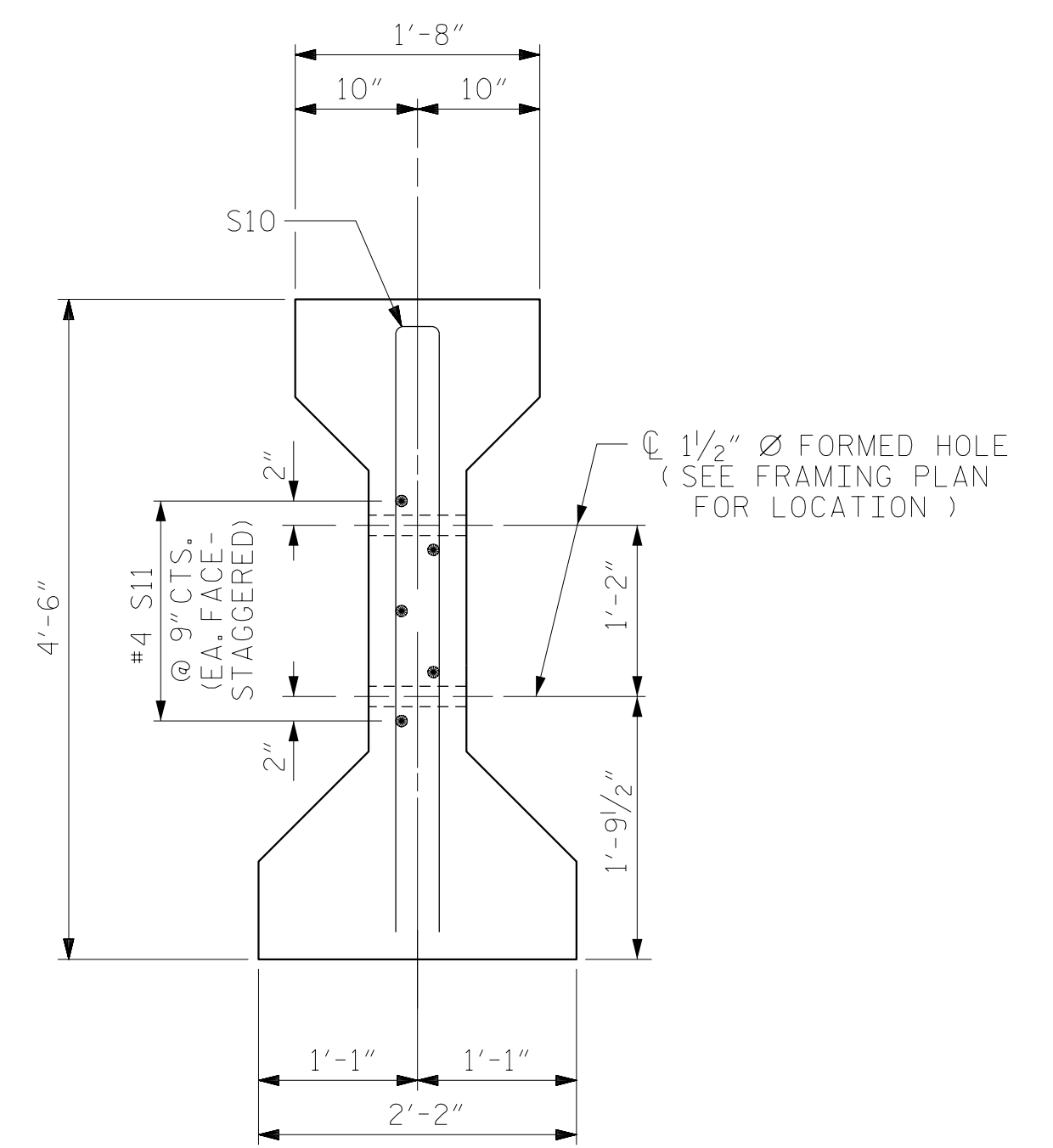
DETAIL "A"

(FOR AASHTO TYPE IV GIRDERS)



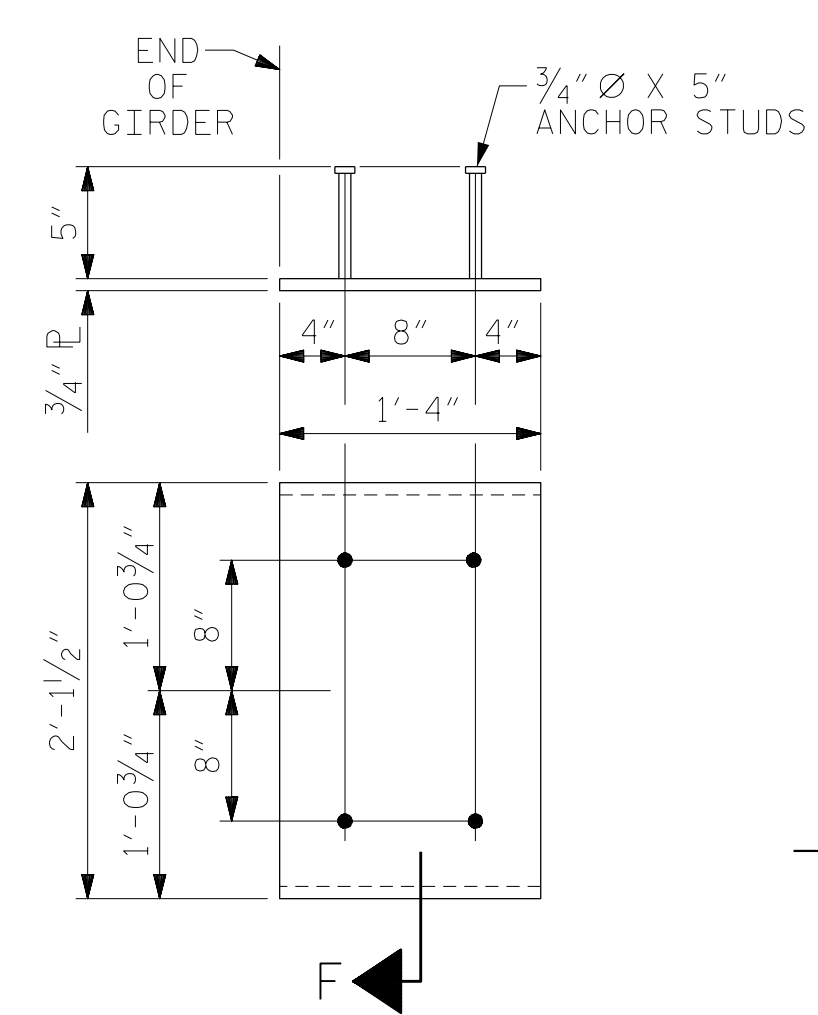
PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL



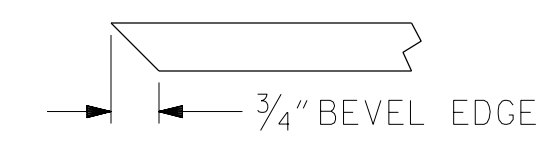
SECTION C-C

(S1 BARS NOT SHOWN)



EMBEDDED PLATE "B-1" DETAILS

(2 REQ'D PER GIRDER)



SECTION "F"

(SEE NOTES)

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 3 OF 3 REPLACES BRIDGE NO. 240139



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 www.rsandh.com
 North Carolina License Nos. 50737-F-0403-C-08

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 PRESTRESSED CONCRETE GIRDER
 CONTINUOUS FOR LIVE LOAD
 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-12
1			3			TOTAL SHEETS
2			4			31

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ASSEMBLED BY : NSC	DATE : 03/2019
CHECKED BY : JMR	DATE : 05/2019
DRAWN BY : ELR 11/91	REV. 1/15 MAA/TMG
CHECKED BY : GRP 11/91	REV. 2/15 MAA/TMG
	REV. 12/17 MAA/THC

STRUCTURAL STEEL NOTES

ALL INTERMEDIATE DIAPHRAGM STEEL AND CONNECTOR PLATES SHALL BE AASHTO M270 GRADE 50 OR APPROVED EQUAL.

TENSION ON THE ASTM A325 BOLTS THROUGH THE CHANNEL MEMBER SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL 1/4 TURN.

THE PLATES, BENT PLATES, CHANNELS, ANGLES, HIGH STRENGTH BOLTS, NUTS, WASHERS, AND DIRECT TENSION INDICATORS SHALL BE METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

FOR METALLIZATION, APPLY A THERMAL SPRAYED COATING WITH A SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE DEPARTMENTS THERMAL SPRAYED COATINGS (METALLIZATION) PROGRAM. THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

GALVANIZE THE HIGH STRENGTH BOLTS, NUTS, WASHERS AND DIRECT TENSION INDICATORS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

USE AN ASTM F436 HARDENED WASHER WITH STANDARD AND SLOTTED HOLES UNDER EACH BOLT HEAD AND NUT.

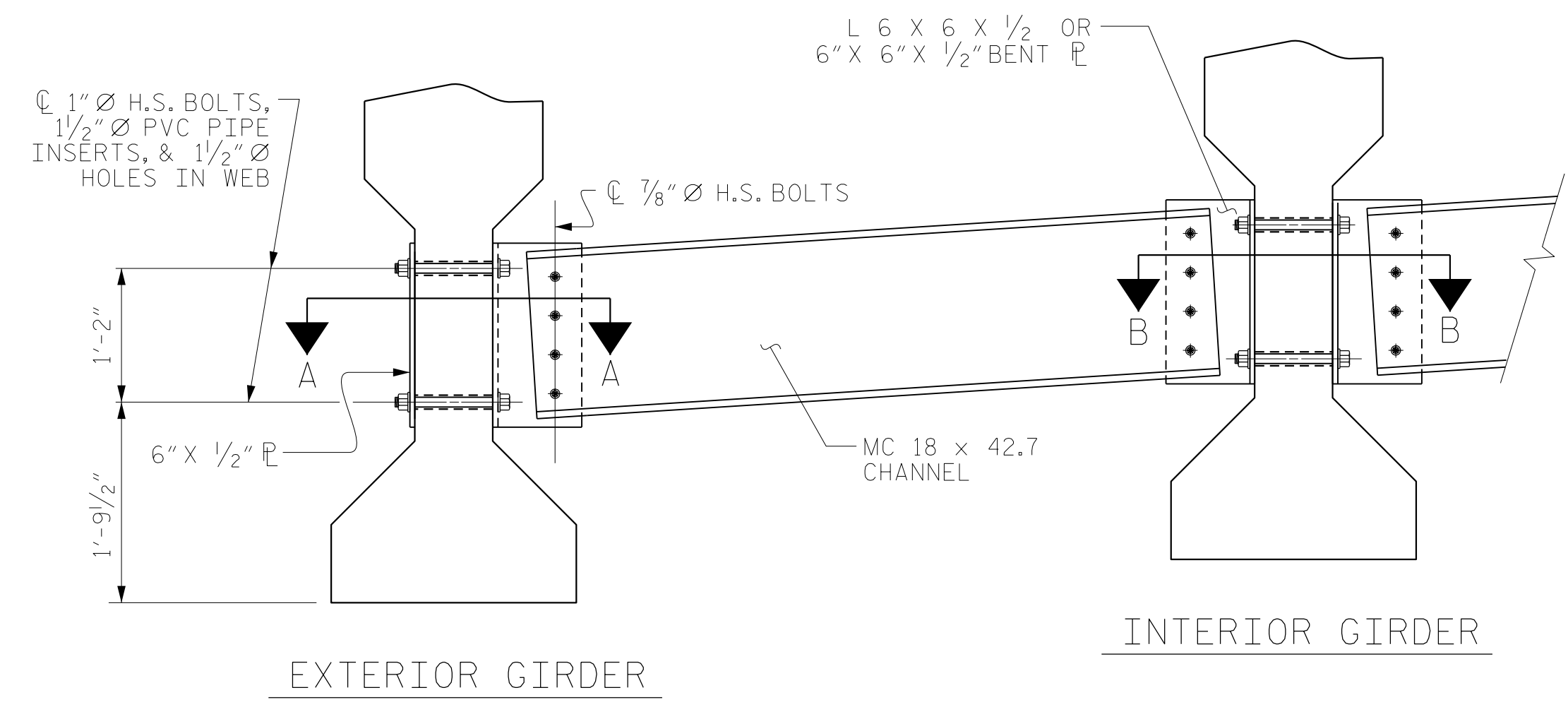
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

INTERMEDIATE DIAPHRAGM ASSEMBLY SHALL COMPLY WITH SECTION 1072 OF THE STANDARD SPECIFICATIONS.

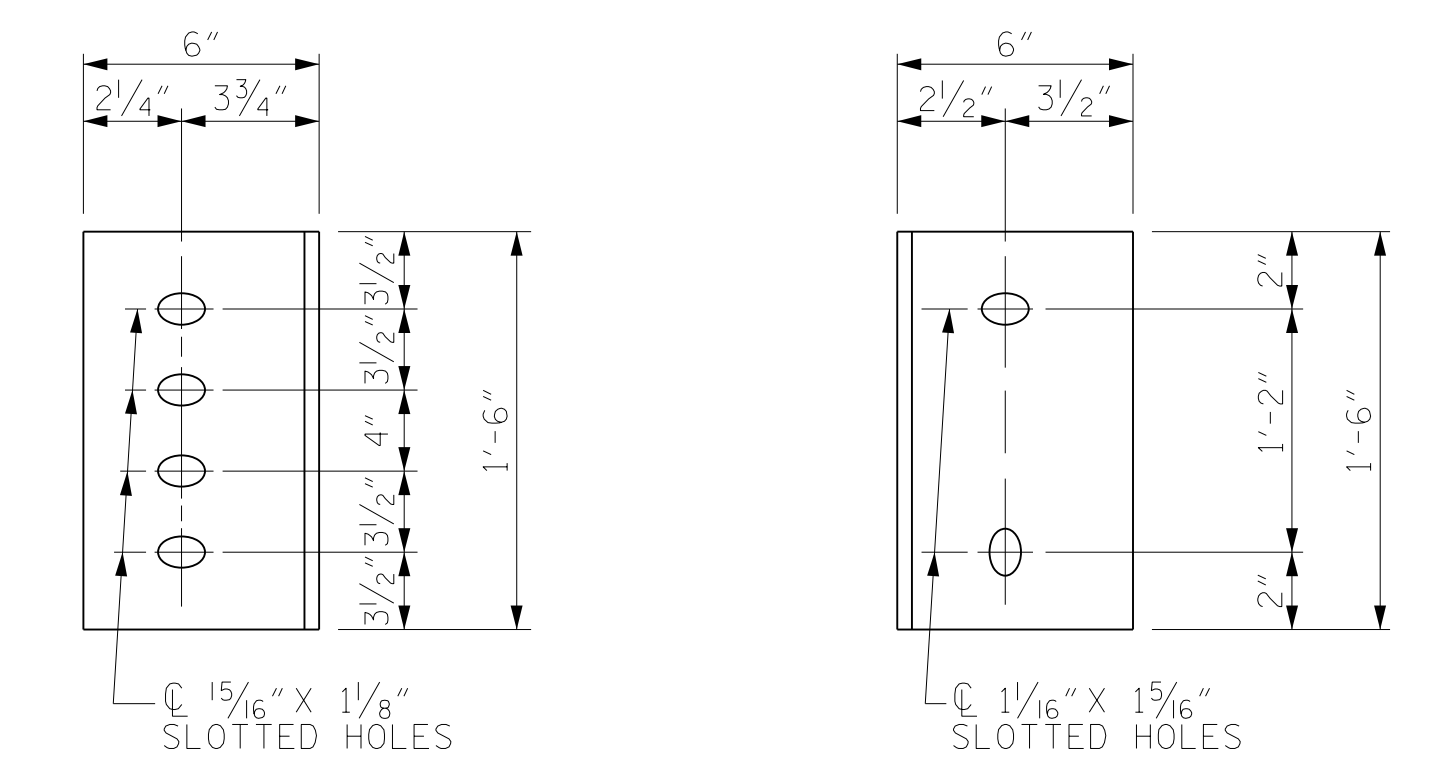
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

IN THE EXTERIOR BAYS, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

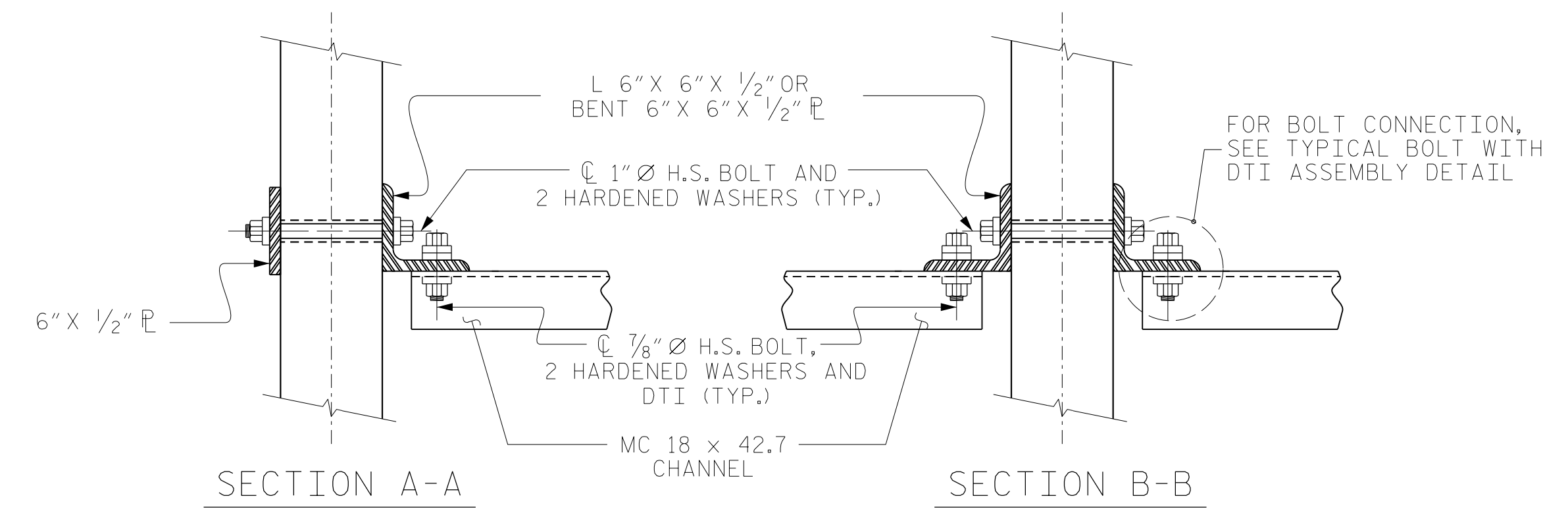
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



PART SECTION AT INTERMEDIATE DIAPHRAGM



CONNECTOR PLATE DETAILS



CONNECTION DETAILS

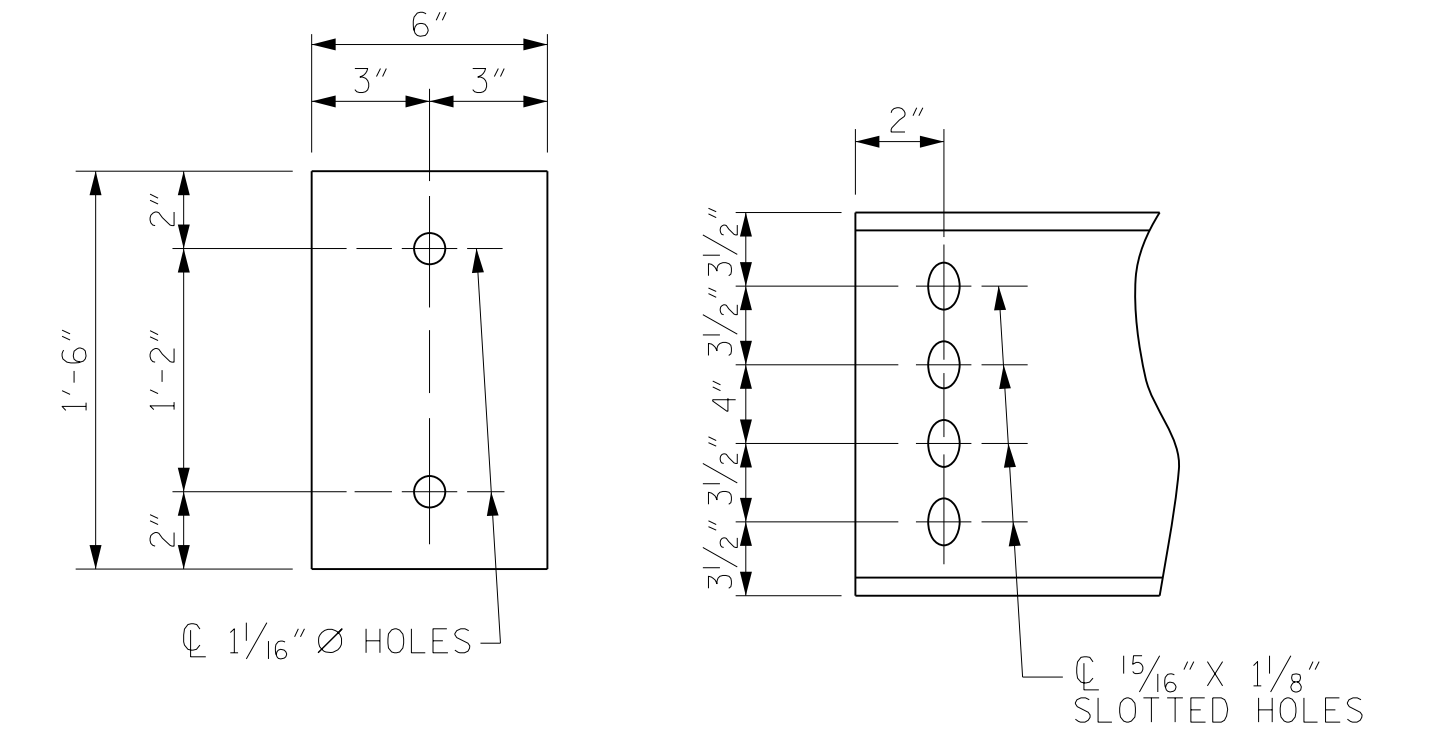
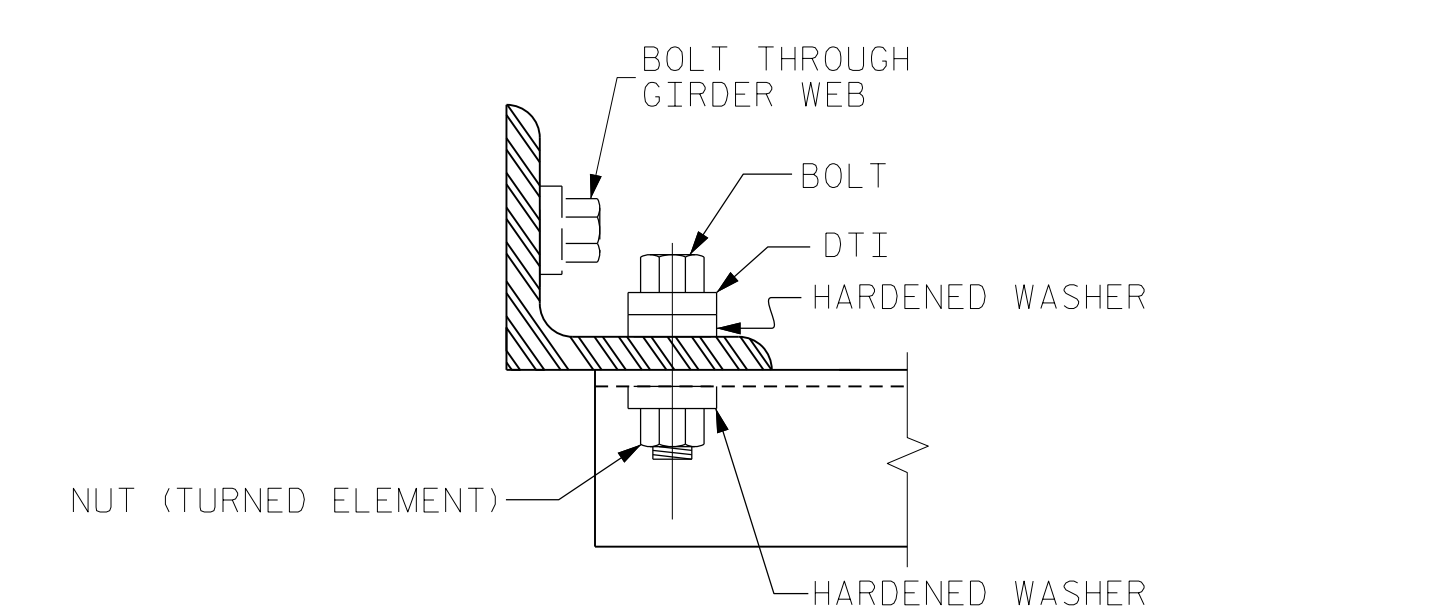


PLATE DETAILS CHANNEL END



BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

REPLACES BRIDGE NO. 240139

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S2-13
STANDARD						TOTAL SHEETS 31
INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS						
REVISIONS						
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

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ASSEMBLED BY : NSC	DATE : 03/2019
CHECKED BY : JMR	DATE : 05/2019
DRAWN BY : TLA 6/05	REV. 5/1/06RRR KMM/GM
CHECKED BY : VC 6/05	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

STEEL SOLE PLATES, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

PRIOR TO WELDING, GRIND THE GALVANIZED SURFACE OF THE PORTION OF THE EMBEDDED PLATE AND SOLE PLATE THAT ARE TO BE WELDED. AFTER WELDING, DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

WHEN WELDING THE SOLE PLATE TO THE EMBEDDED PLATE IN THE GIRDER, USE TEMPERATURE INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE TEMPERATURE OF THE SOLE PLATE DOES NOT EXCEED 300°F. TEMPERATURES ABOVE THIS MAY DAMAGE THE ELASTOMER.

SOLE PLATE "P", BOLTS, NUTS, AND WASHERS SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

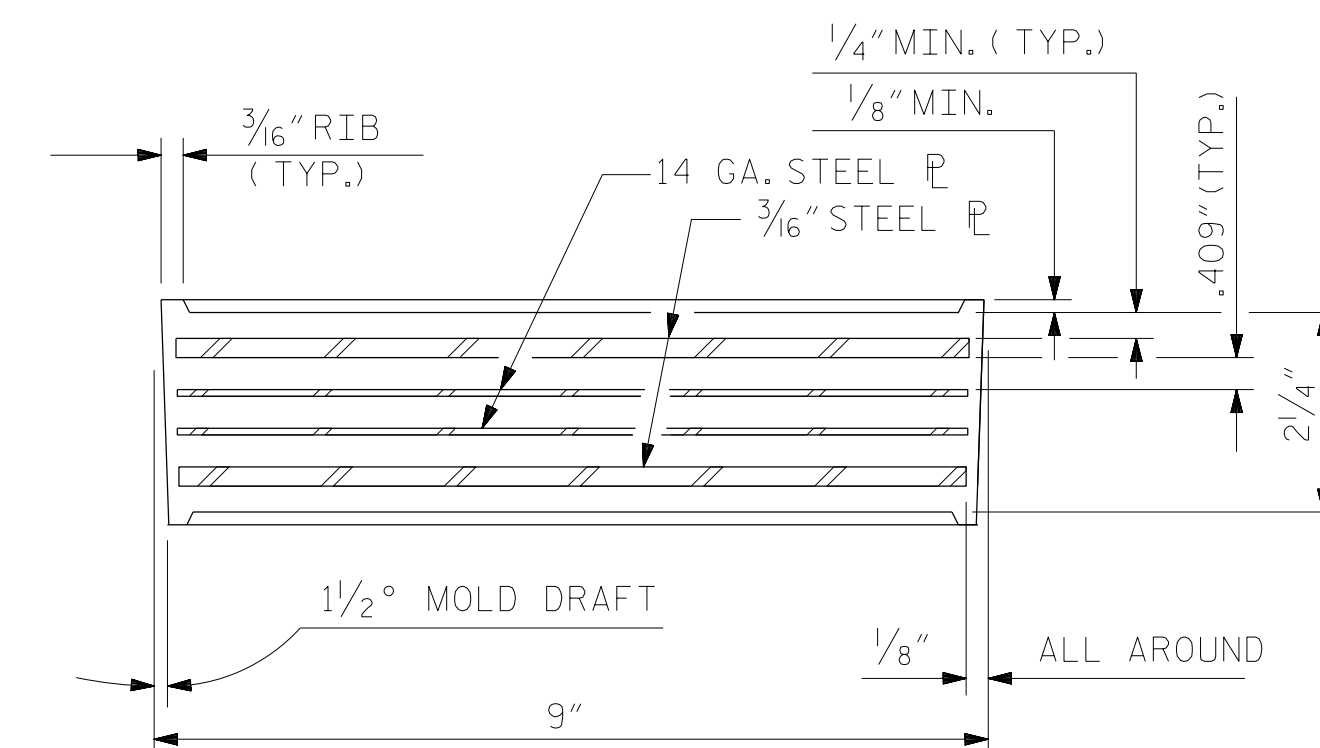
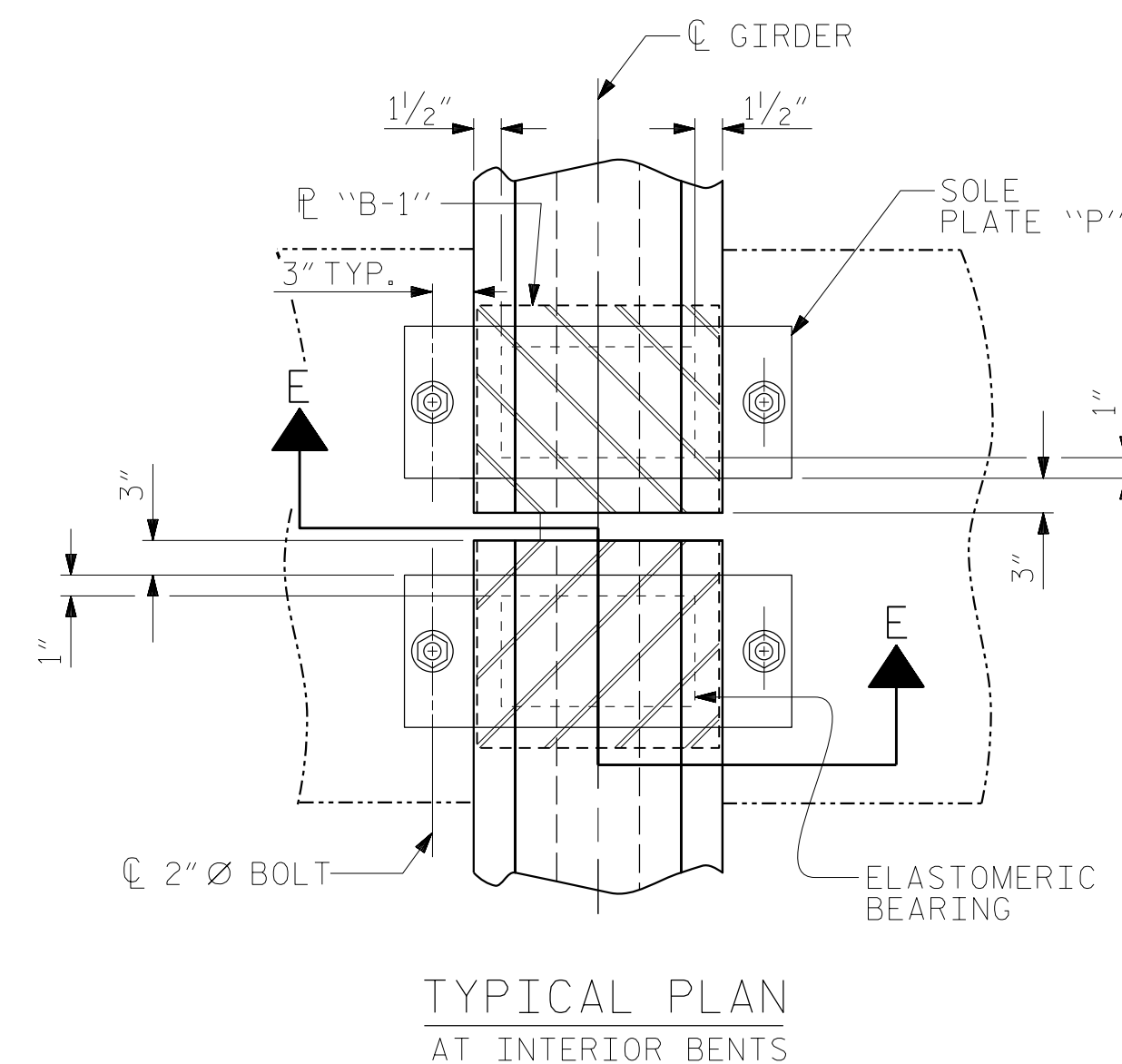
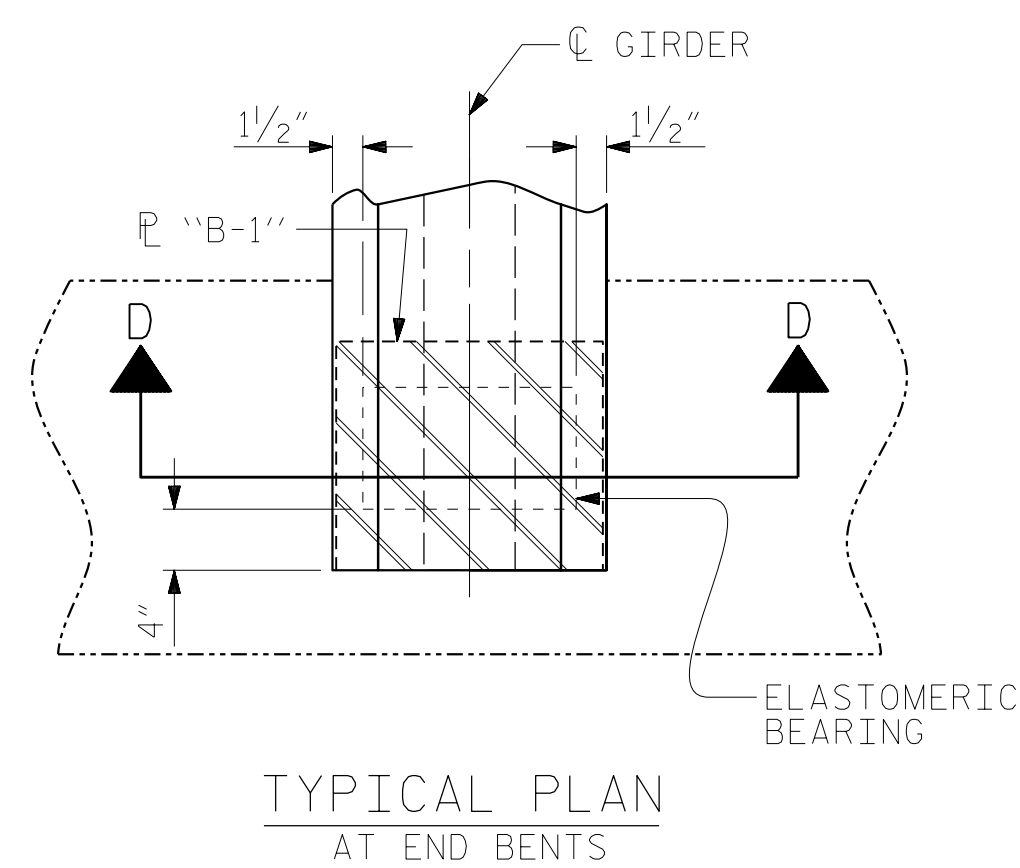
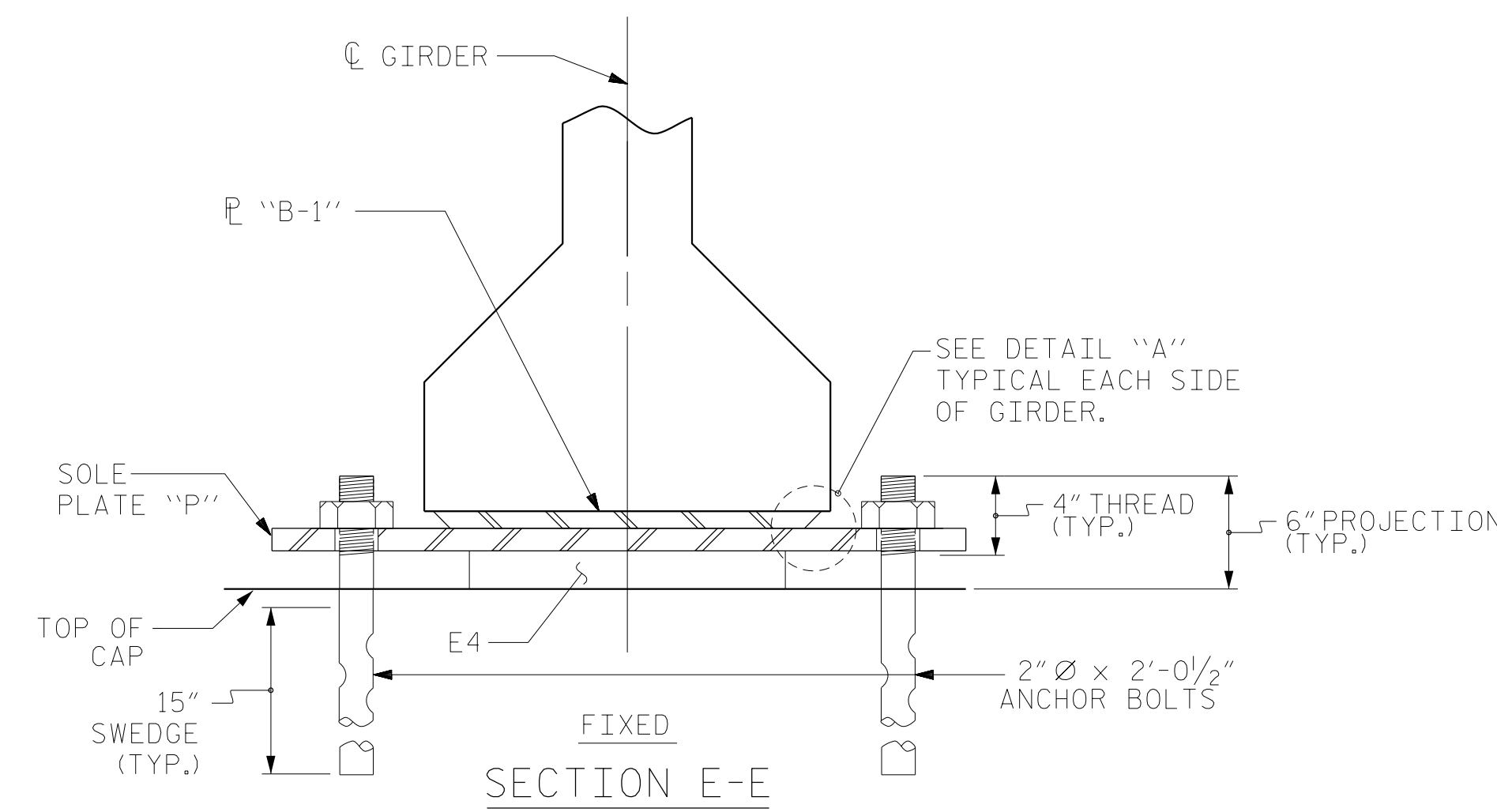
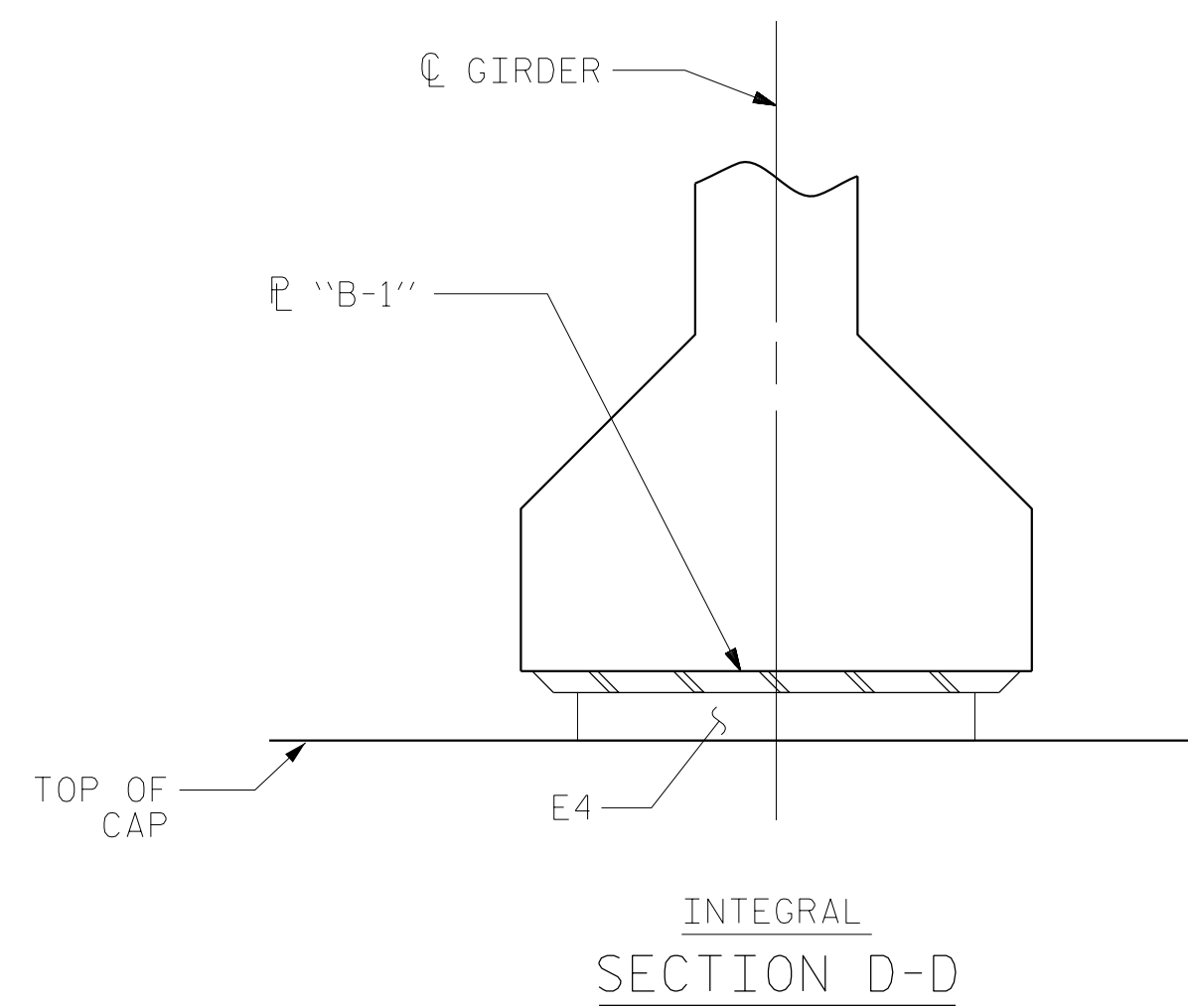
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. NO SHOP DRAWINGS ARE REQUIRED FOR ANCHOR BOLTS, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

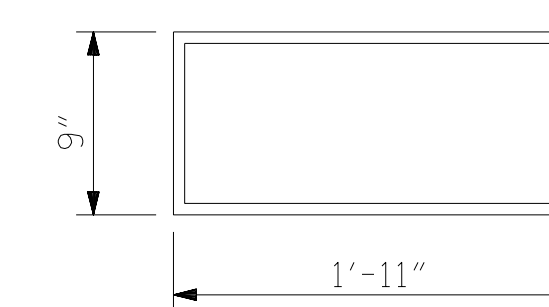
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

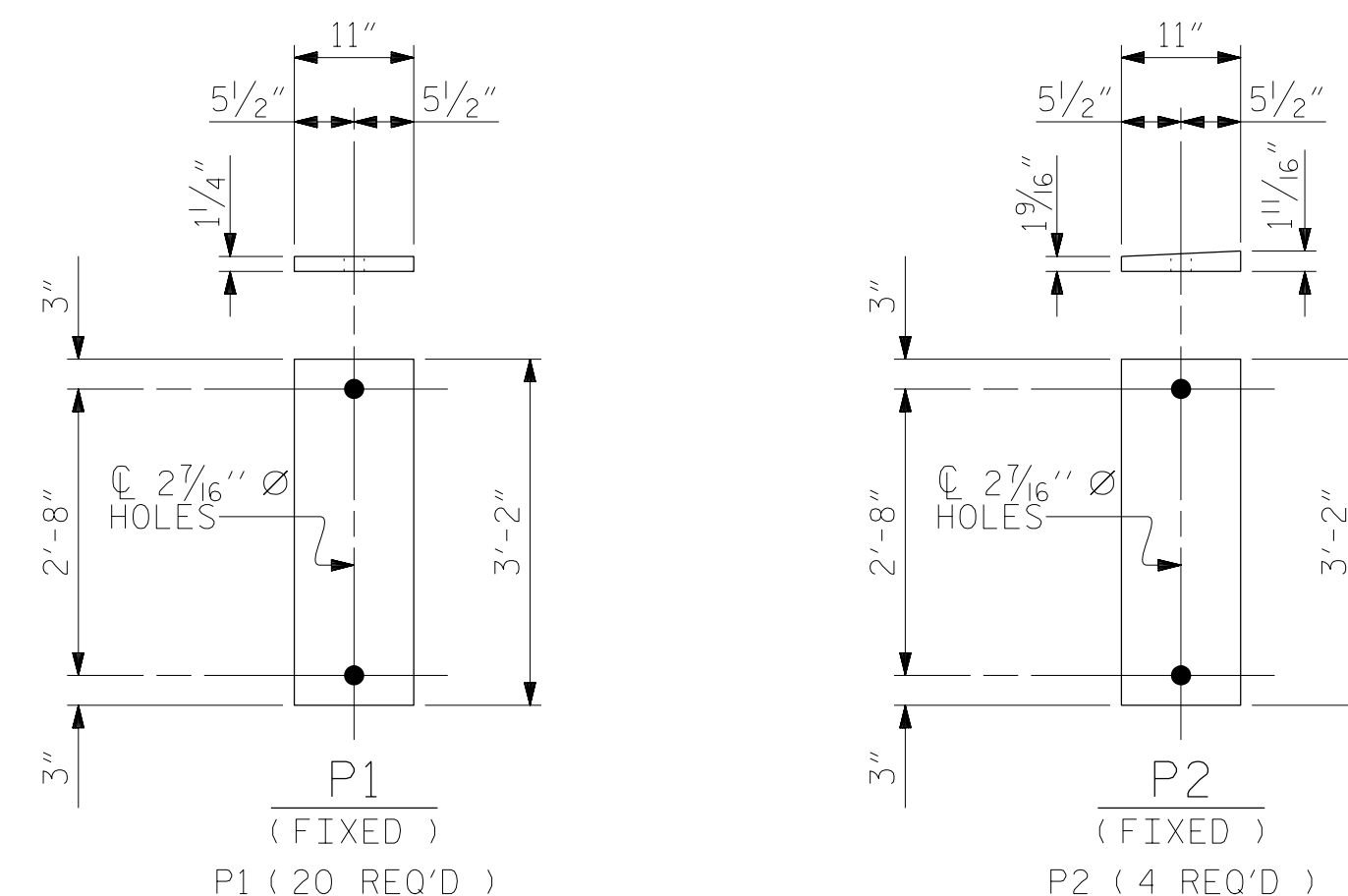
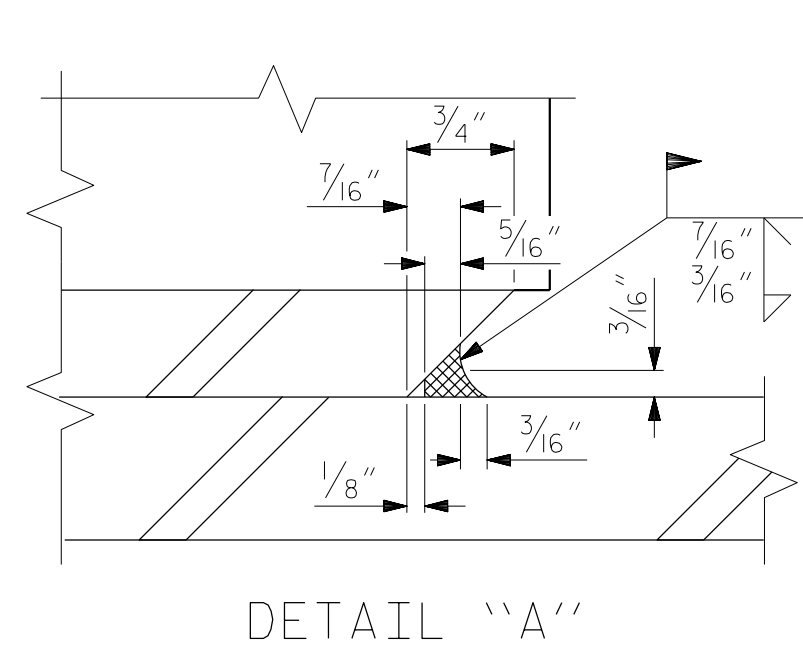
ALL BEARING PLATES SHALL BE AASHTO M270 GRADE 36.



TYPICAL SECTION OF ELASTOMERIC BEARINGS



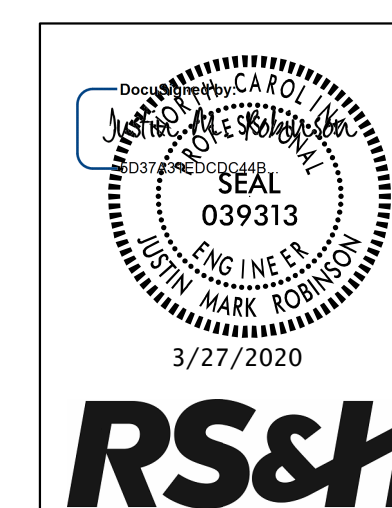
PLAN VIEW OF ELASTOMERIC BEARING TYPE V



MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE V	365 k

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

REPLACES BRIDGE NO. 240139



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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 ELASTOMERIC BEARING
 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-14
1			3			TOTAL SHEETS
2			4			31

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DRAWN BY : NSC DATE : 04/2019
 CHECKED BY : JMR DATE : 06/2019
 DESIGN ENGINEER OF RECORD: PDS DATE : 06/2019

— DEAD LOAD DEFLECTION TABLE FOR GIRDERS —

0.6" Ø LOW RELAXATION	SPAN A											
	GIRDERS 1 AND 4 (EXTERIOR)											
TENTH POINTS	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.060	0.114	0.156	0.183	0.192	0.183	0.156	0.114	0.060	0.000	
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.043	0.083	0.115	0.136	0.143	0.136	0.116	0.084	0.043	0.000	
FINAL CAMBER ↑	0	3/16	3/8	1/2	9/16	9/16	9/16	1/2	3/8	3/16	0	
0.6" Ø LOW RELAXATION	SPAN A											
	GIRDERS 2 AND 3 (INTERIOR)											
TENTH POINTS	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.060	0.114	0.156	0.183	0.192	0.183	0.156	0.114	0.060	0.000	
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.048	0.093	0.130	0.153	0.161	0.153	0.130	0.094	0.049	0.000	
FINAL CAMBER ↑	0	1/8	1/4	5/16	3/8	3/8	3/8	5/16	1/4	1/8	0	

— DEAD LOAD DEFLECTION TABLE FOR GIRDERS —

0.6" Ø LOW RELAXATION	SPAN C											
	GIRDERS 1 AND 4 (EXTERIOR)											
TENTH POINTS	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.060	0.114	0.156	0.183	0.192	0.183	0.156	0.114	0.060	0.000	
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.045	0.088	0.121	0.142	0.149	0.142	0.121	0.088	0.045	0.000	
FINAL CAMBER ↑	0	3/16	5/16	7/16	1/2	1/2	1/2	7/16	5/16	3/16	0	
0.6" Ø LOW RELAXATION	SPAN C											
	GIRDERS 2 AND 3 (INTERIOR)											
TENTH POINTS	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.060	0.114	0.156	0.183	0.192	0.183	0.156	0.114	0.060	0.000	
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.051	0.098	0.135	0.159	0.167	0.159	0.135	0.098	0.051	0.000	
FINAL CAMBER ↑	0	1/8	3/16	1/4	5/16	5/16	5/16	1/4	3/16	1/8	0	

— DEAD LOAD DEFLECTION TABLE FOR GIRDERS —

0.6" Ø LOW RELAXATION	SPAN B											
	GIRDERS 1 AND 4 (EXTERIOR)											
TENTH POINTS	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.060	0.114	0.156	0.183	0.192	0.183	0.156	0.114	0.060	0.000	
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.045	0.088	0.121	0.142	0.149	0.142	0.121	0.088	0.045	0.000	
FINAL CAMBER ↑	0	3/16	5/16	7/16	1/2	1/2	1/2	7/16	5/16	3/16	0	
0.6" Ø LOW RELAXATION	SPAN B											
	GIRDERS 2 AND 3 (INTERIOR)											
TENTH POINTS	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.060	0.114	0.156	0.183	0.192	0.183	0.156	0.114	0.060	0.000	
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.051	0.098	0.135	0.159	0.167	0.159	0.135	0.098	0.051	0.000	
FINAL CAMBER ↑	0	1/8	3/16	1/4	5/16	5/16	5/16	1/4	3/16	1/8	0	

— DEAD LOAD DEFLECTION TABLE FOR GIRDERS —

0.6" Ø LOW RELAXATION	SPAN D											
	GIRDERS 1 AND 4 (EXTERIOR)											
TENTH POINTS	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.060	0.114	0.156	0.183	0.192	0.183	0.156	0.114	0.060	0.000	
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.044	0.085	0.117	0.138	0.145	0.137	0.117	0.084	0.043	0.000	
FINAL CAMBER ↑	0	3/16	3/8	7/16	9/16	9/16	9/16	7/16	3/8	3/16	0	
0.6" Ø LOW RELAXATION	SPAN D											
	GIRDERS 2 AND 3 (INTERIOR)											
TENTH POINTS	0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.060	0.114	0.156	0.183	0.192	0.183	0.156	0.114	0.060	0.000	
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.049	0.095	0.132	0.155	0.163	0.155	0.131	0.095	0.049	0.000	
FINAL CAMBER ↑	0	1/8	1/4	5/16	5/16	3/8	5/16	5/16	1/4	1/8	0	

* INCLUDES FUTURE WEARING SURFACE IN SUPERIMPOSED DEAD LOAD.
ALL VALUES ARE SHOWN IN FEET (DECIMAL FORM), EXCEPT "FINAL CAMBER", WHICH IS GIVEN IN INCHES (FRACTION FORM).

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

REPLACES BRIDGE NO. 240139



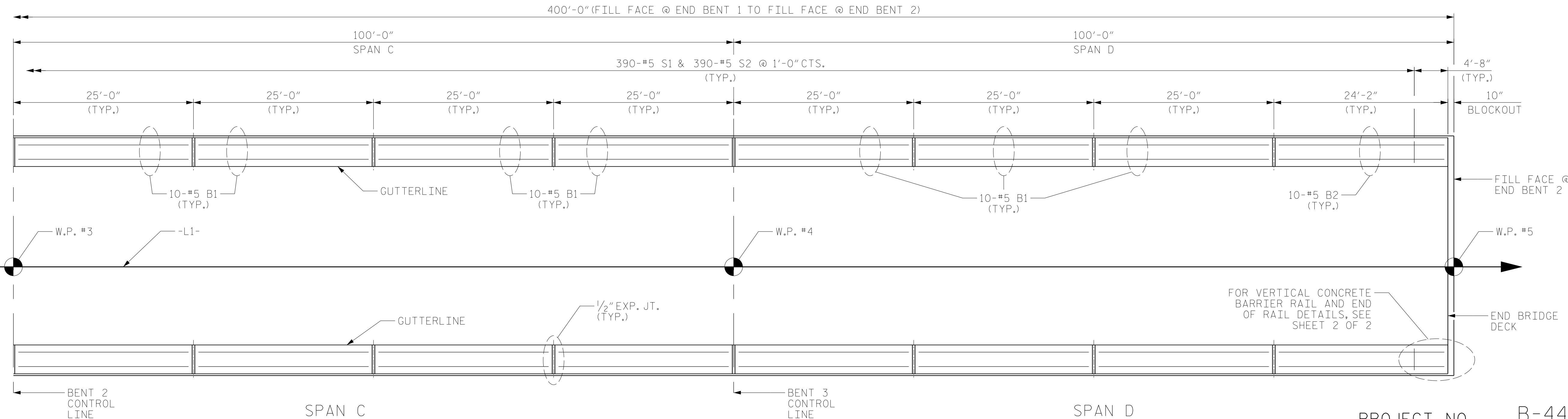
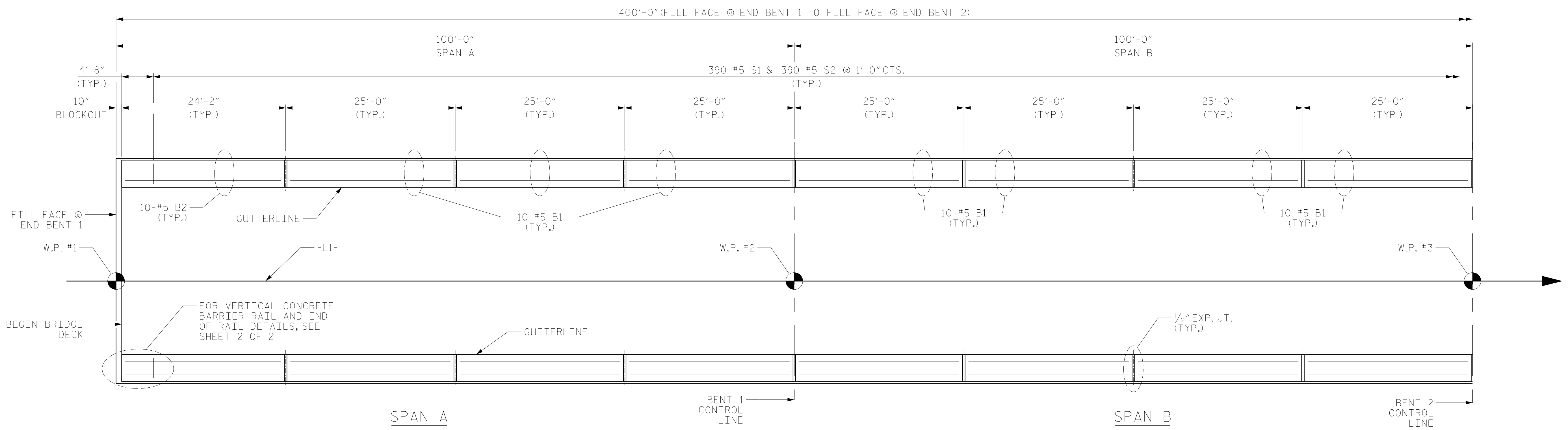
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 DEAD LOAD DEFLECTIONS

DRAWN BY : NSC DATE : 04/2019
 CHECKED BY : JMR DATE : 05/2019
 DESIGN ENGINEER OF RECORD: PDS DATE : 06/2019

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1			3			TOTAL SHEETS
2			4			31



PLAN OF VERTICAL CONCRETE BARRIER RAIL

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 1 OF 2 REPLACES BRIDGE NO. 240139

DRAWN BY : TWL DATE : 04/2019
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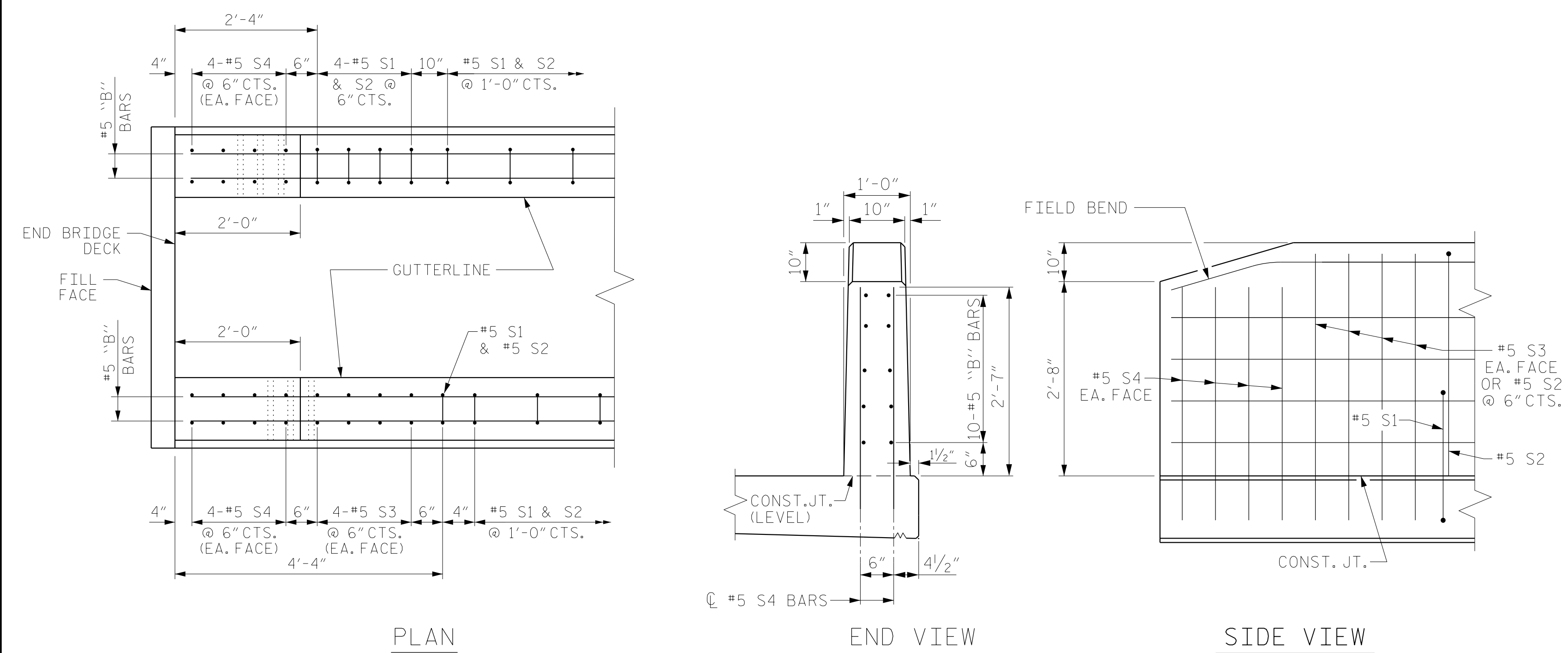
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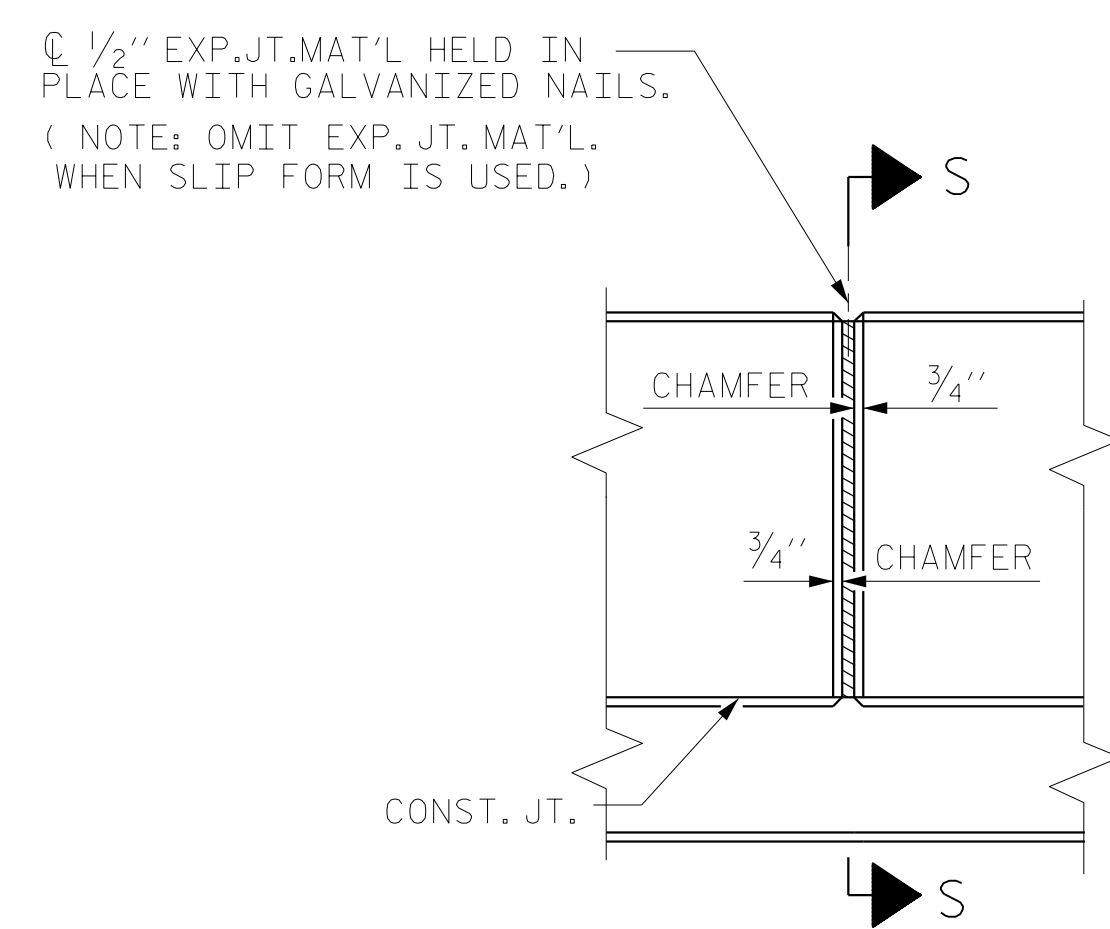


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
 VERTICAL CONCRETE
 BARRIER RAIL
 SPANS A, B, C & D

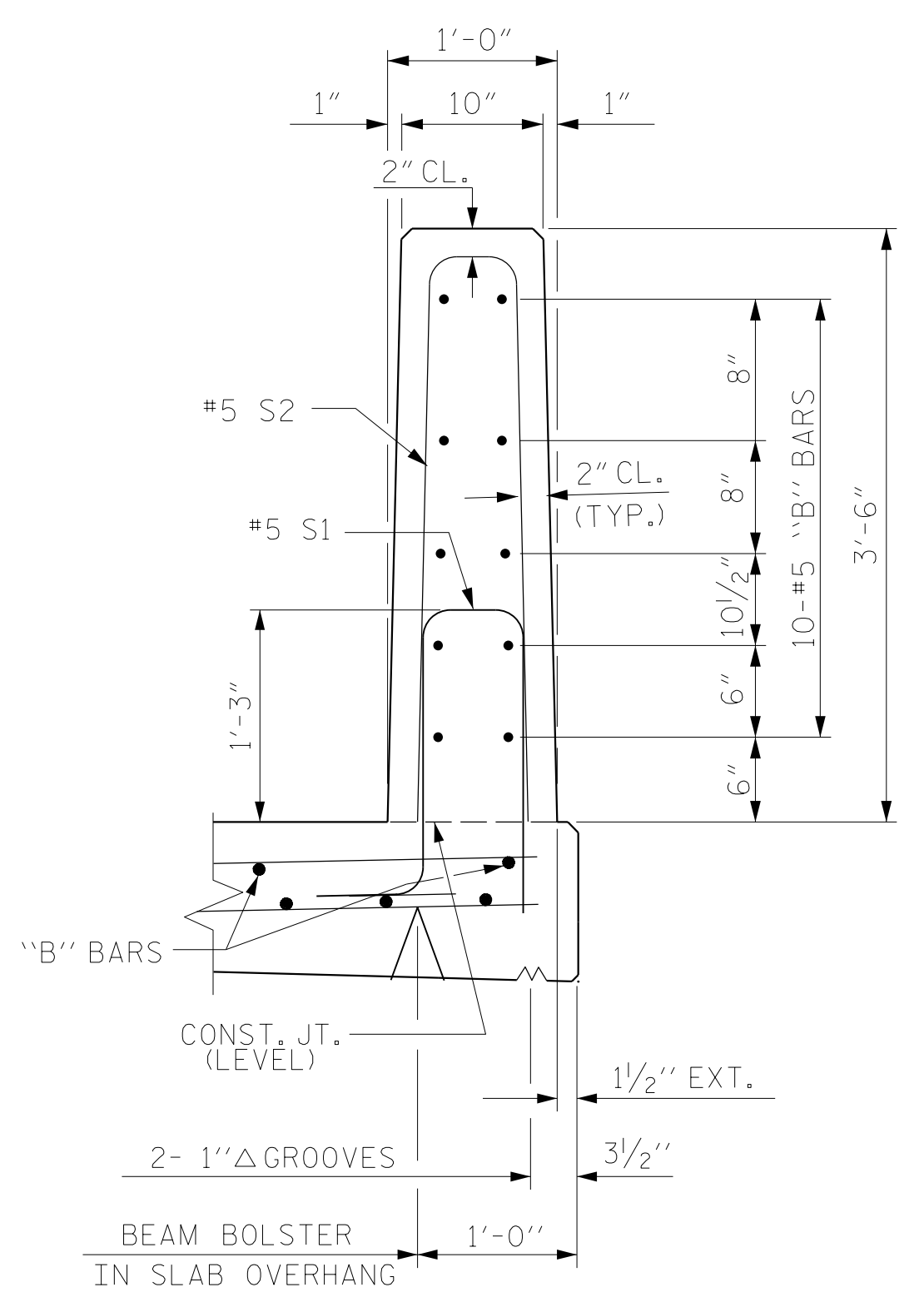
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NO.	BY:	DATE:	NO.	BY:	DATE:	S2-16	
1			3			TOTAL SHEETS	
2			4			31	



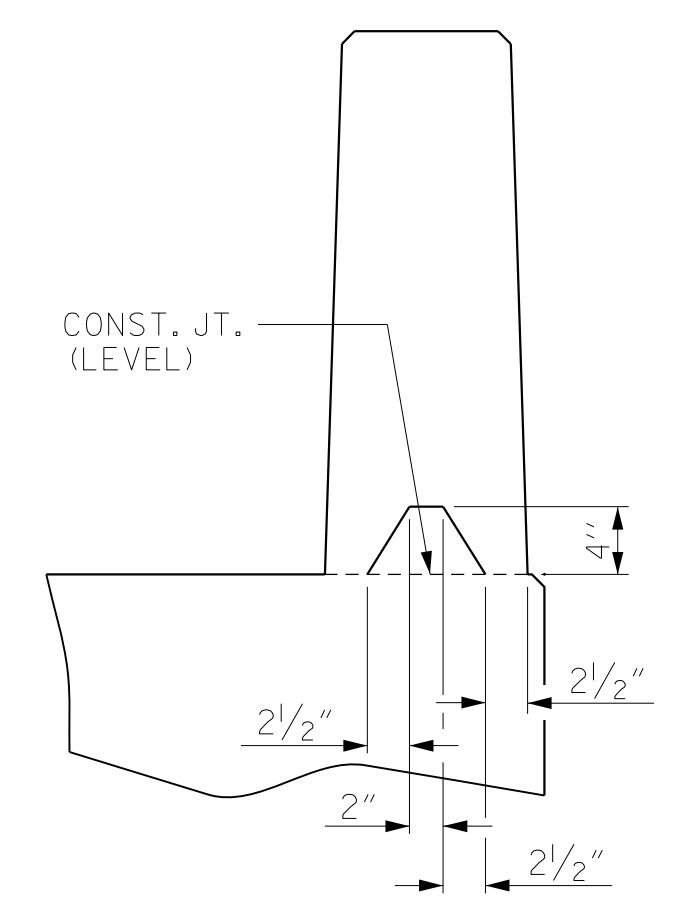
END OF RAIL DETAILS



ELEVATION AT EXPANSION JOINTS



SECTION THRU RAIL



SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY
WHEN SLIP FORM IS USED)

NOTES

THE BARRIER RAIL IN EACH SPAN SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THAT SPAN HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

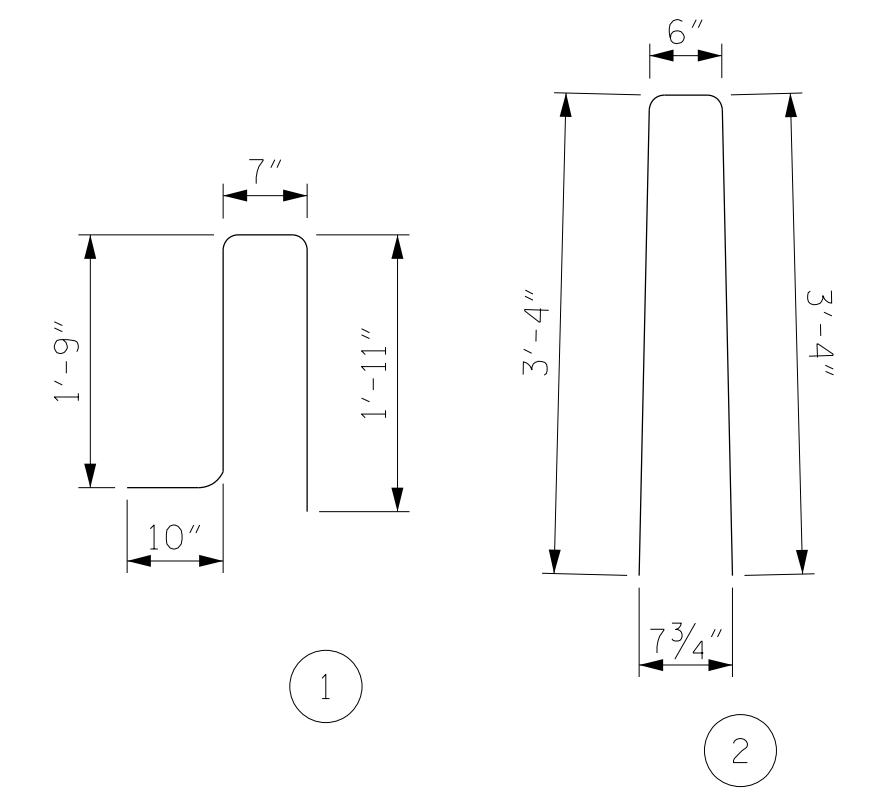
WHEN FOAM JOINT SEAL IS REQUIRED, THE JOINT IN THE DECK SHALL BE SAWSAWED PRIOR TO THE CASTING OF VERTICAL CONCRETE BARRIER RAIL.

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

THE #5 S3 & S4 BARS SHALL BE INSTALLED, USING AN ADHESIVE ANCHORING SYSTEM, AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #5 S3 & S4 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

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. THE 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.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR VERTICAL CONCRETE BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	280	#5	STR	24'-6"	7155
*B2	40	#5	STR	23'-8"	987
*S1	790	#5	1	5'-1"	4188
*S2	790	#5	2	7'-2"	5905
*S3	16	#5	STR	4'-0"	67
*S4	32	#5	STR	3'-6"	117
*EPOXY COATED REINFORCING STEEL				18,419 LBS.	
CLASS AA CONCRETE				94.7 CU. YDS.	
VERTICAL CONCRETE BARRIER RAIL				796.7 LIN. FT	

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 2 OF 2 REPLACES BRIDGE NO. 240139



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 VERTICAL
 CONCRETE
 BARRIER RAIL

ASSEMBLED BY : NSC	DATE : 04/2019
CHECKED BY : JMR	DATE : 05/2019
DRAWN BY : MAA 5/10	REV. 12/5/11 MAA/GM
CHECKED BY : GM 5/10	REV. 12/17 MAA/THC
	REV. 5/18 MAA/THC

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			31
2			4			

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.

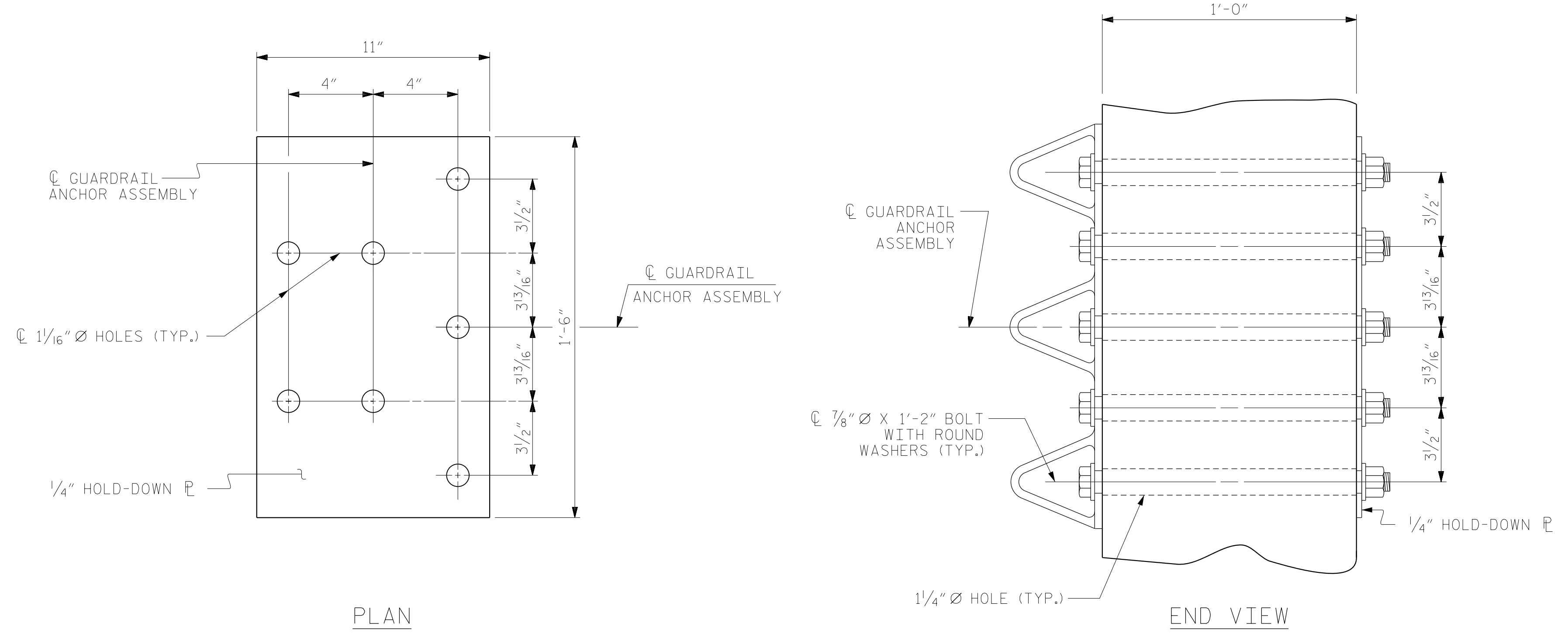
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

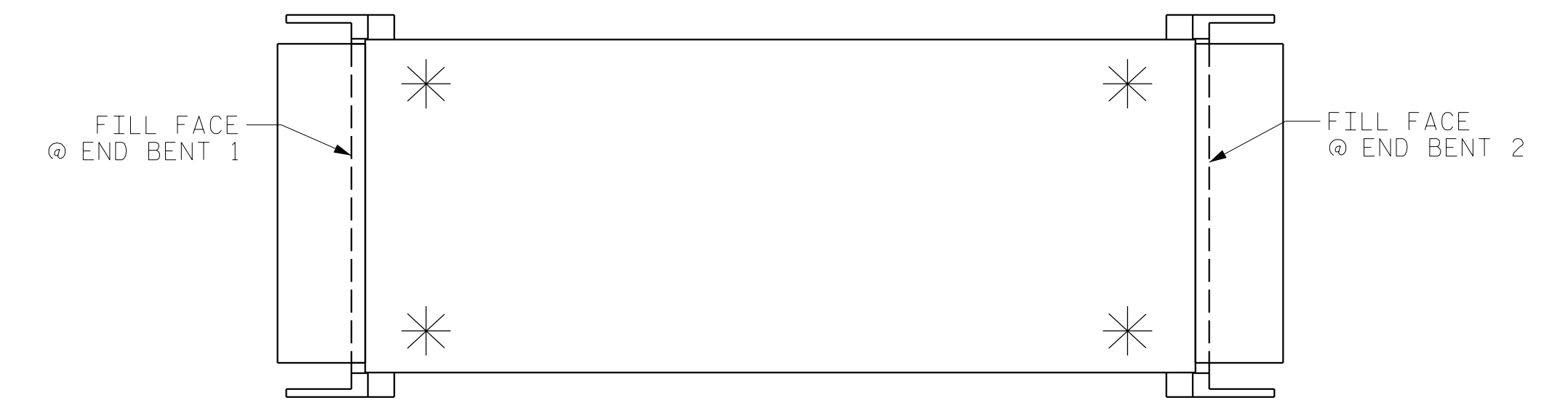
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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

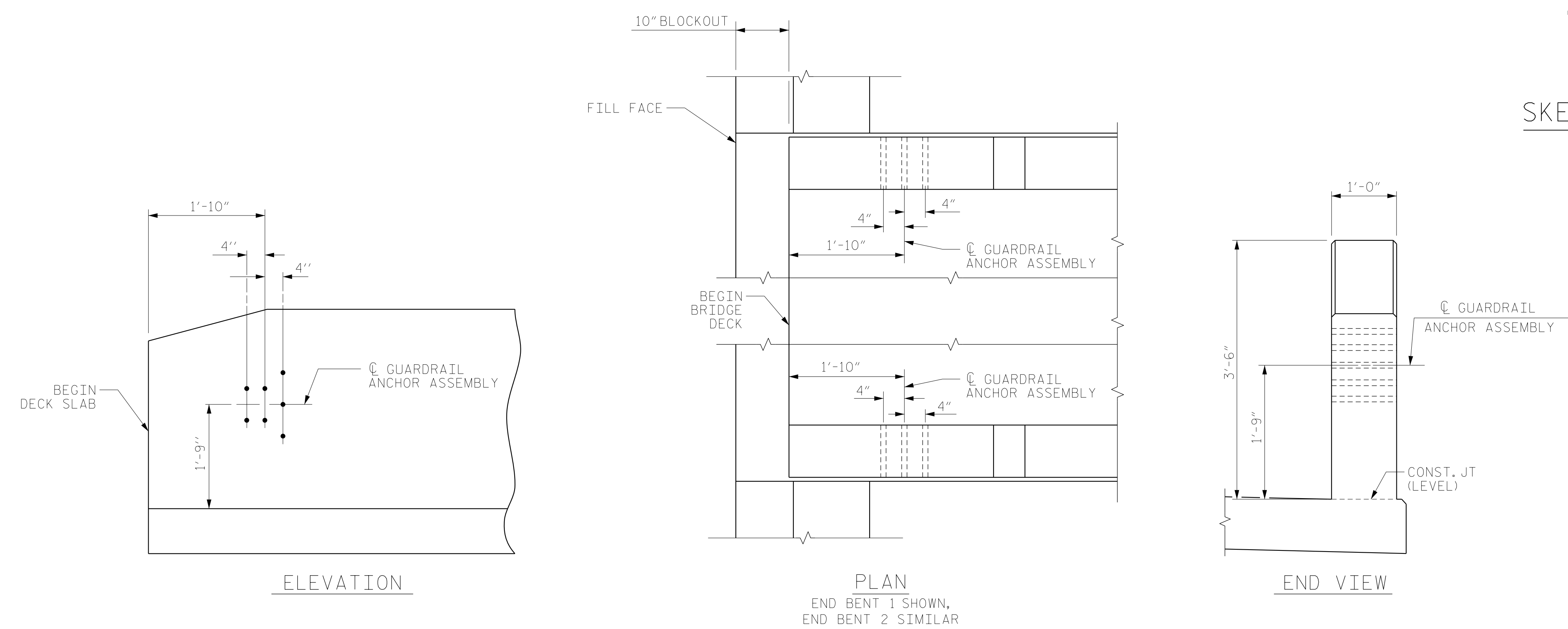


GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



LOCATION OF GUARDRAIL ANCHOR

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

REPLACES BRIDGE NO. 240139

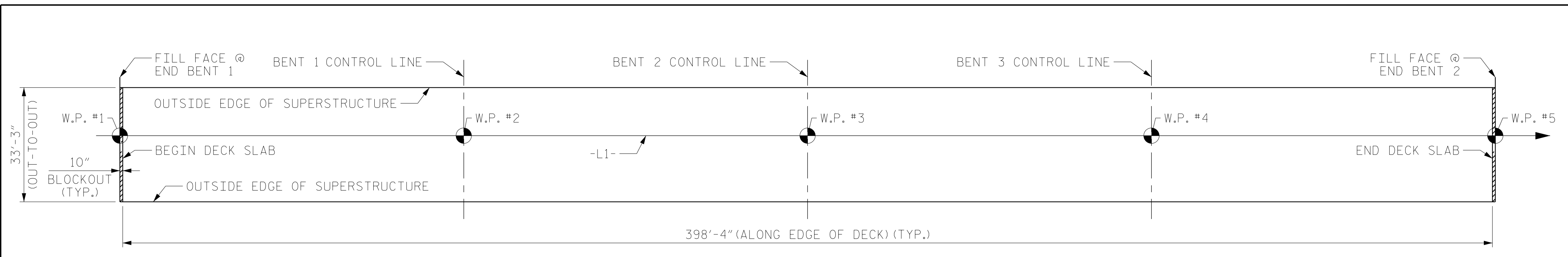


STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 DETAILS FOR
 VERTICAL CONCRETE
 BARRIER RAIL

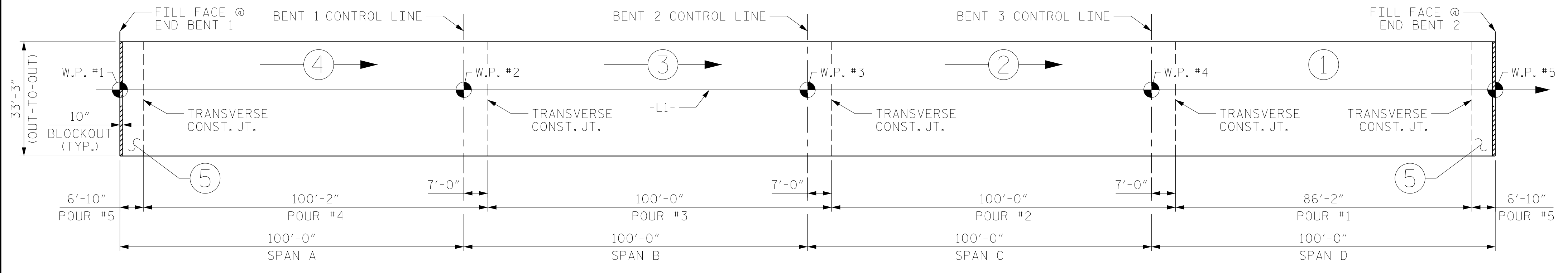
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1			3			31
2			4			

ASSEMBLED BY : NSC	DATE : 04/2019
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DRAWN BY : MAA 5/10	REV. 1/15 MAA/TMG
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	REV. 5/18 MAA/THC

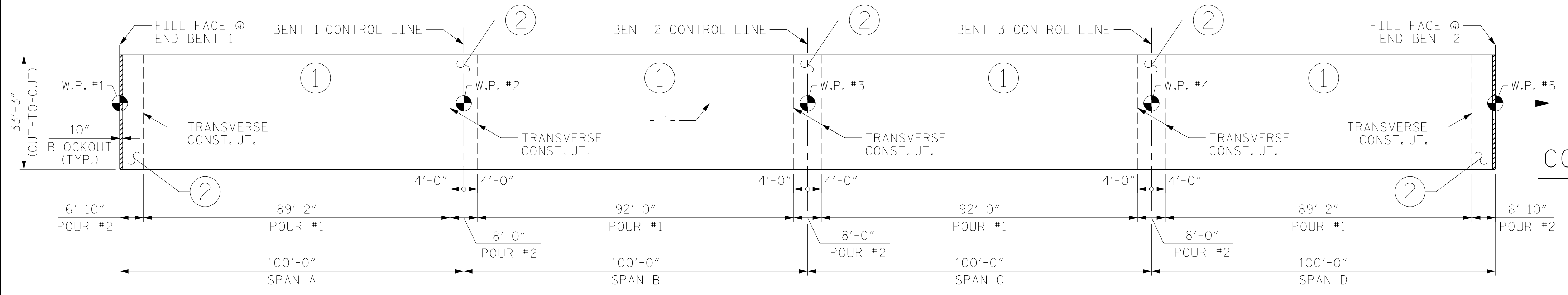
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LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 13,245)

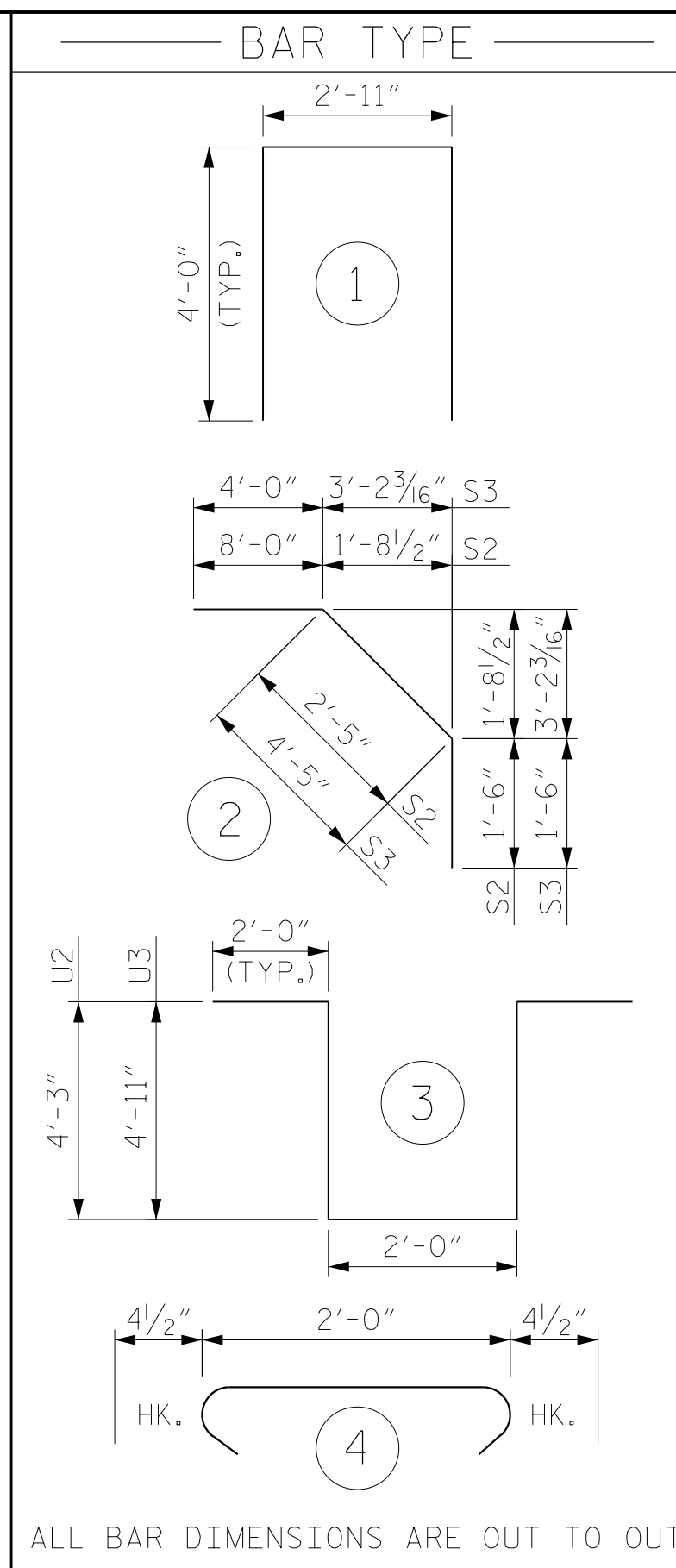


POURING SEQUENCE

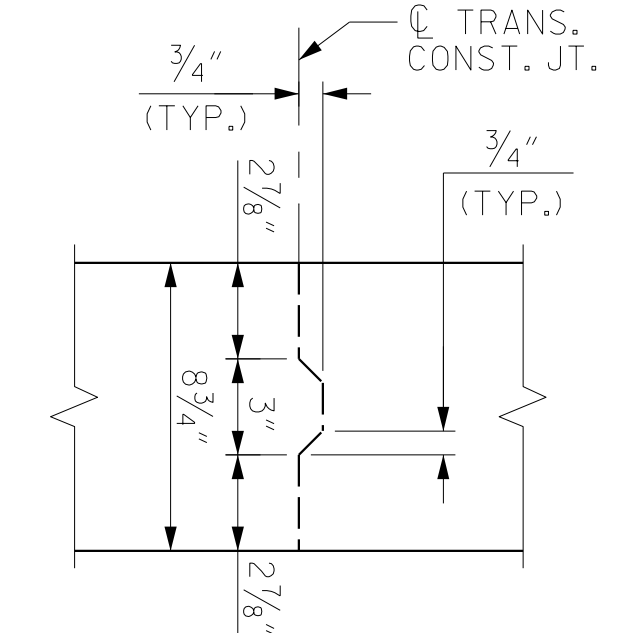


OPTIONAL POURING SEQUENCE

POUR ② CAN NOT BE STARTED UNTIL BOTH ADJACENT POURS REACH A MINIMUM OF 3,000 PSI



ALL BAR DIMENSIONS ARE OUT TO OUT.



TRANSVERSE CONSTRUCTION JOINT DETAIL

REINFORCING STEEL IN SLAB NOT SHOWN. LONGITUDINAL REINFORCEMENT SHALL BE CONTINUOUS THROUGH JOINT.

BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	399	#4	STR	32'-11"	8773
A2	399	#5	STR	32'-11"	13699
* A3	1594	#5	STR	13'-3"	22029
* B1	130	#6	STR	19'-0"	3710
* B2	132	#4	STR	25'-5"	2241
* B3	99	#6	STR	60'-0"	8922
* B4	99	#6	STR	12'-10"	1908
* B5	96	#6	STR	30'-0"	4326
* B6	66	#4	STR	33'-10"	1492
B7	72	#5	STR	19'-0"	1427
B8	144	#4	STR	24'-11"	2397
B9	108	#5	STR	60'-0"	6759
B10	108	#5	STR	12'-0"	1352
B11	72	#4	STR	33'-2"	1595
B12	88	#4	STR	37'-8"	2214
* B13	22	#4	STR	38'-0"	558
K1	10	#5	STR	32'-11"	343
K2	6	#5	STR	7'-0"	44
K3	12	#5	STR	8'-0"	100
K4	6	#5	STR	7'-5"	46
K5	6	#5	STR	6'-6"	41
K6	4	#5	STR	1'-11"	8
K7	8	#5	STR	2'-5"	20
K8	4	#5	STR	2'-2"	9
K9	4	#5	STR	1'-8"	7
K10	18	#4	STR	7'-0"	84
K11	36	#4	STR	7'-11"	190
K12	18	#4	STR	7'-7"	91
K13	18	#4	STR	5'-5"	65
K14	15	#4	STR	26'-8"	267
S1	234	#4	4	2'-9"	430
* S2	50	#4	2	11'-11"	398
* S3	50	#4	2	9'-11"	331
U1	50	#4	1	10'-11"	365
U2	18	#4	3	14'-6"	174
U3	45	#4	3	15'-10"	476

REINFORCING STEEL 32,203 LBS.
*EPOXY COATED REINFORCING STEEL 54,688 LBS.

* QUANTITIES FOR CONCRETE PARAPET ARE NOT INCLUDED

GROOVING BRIDGE FLOORS	
BRIDGE DECK	11,154 SQ. FT.
APPROACH SLABS	634 SQ. FT.
TOTAL	11,788 SQ. FT.

CLASS AA CONCRETE	
POUR NO.	CU. YDS.
1	90.5 CY
2	114.9 CY
3	114.9 CY
4	115.1 CY
5	46.8 CY
TOTAL	482.2 CY

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPETS, AND BARRIER RAILS		APPROACH SLABS		PARAPETS AND BARRIER RAILS
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	1'-11"	1'-7"	1'-11"	1'-7"	2'-6"
#5	2'-5"	2'-0"	2'-5"	2'-0"	3'-1"
#6	2'-10"	2'-5"	3'-7"	2'-5"	3'-8"
#7	4'-2"	2'-9"			
#8	4'-9"	3'-2"			

DRAWN BY : MRA DATE : 04/2019
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DESIGN ENGINEER OF RECORD: PDS DATE : 06/2019

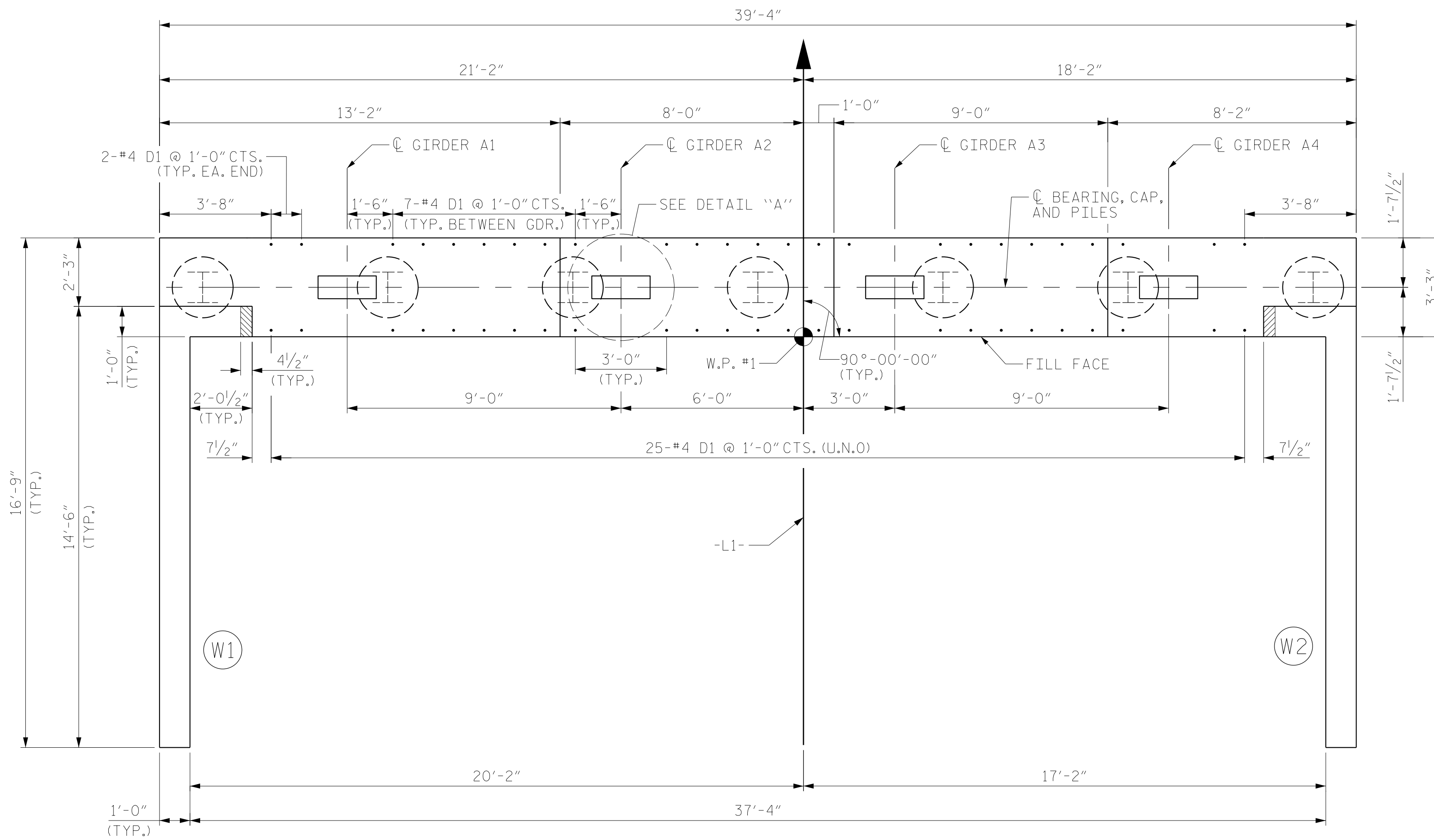
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PROJECT NO. B-4484
CRAVEN COUNTY
STATION: 41+45.00 -L1-

REPLACES BRIDGE NO. 240139

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE					
BILL OF MATERIAL					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.	
S2-19	TOTAL SHEETS 31



PLAN

NOTES

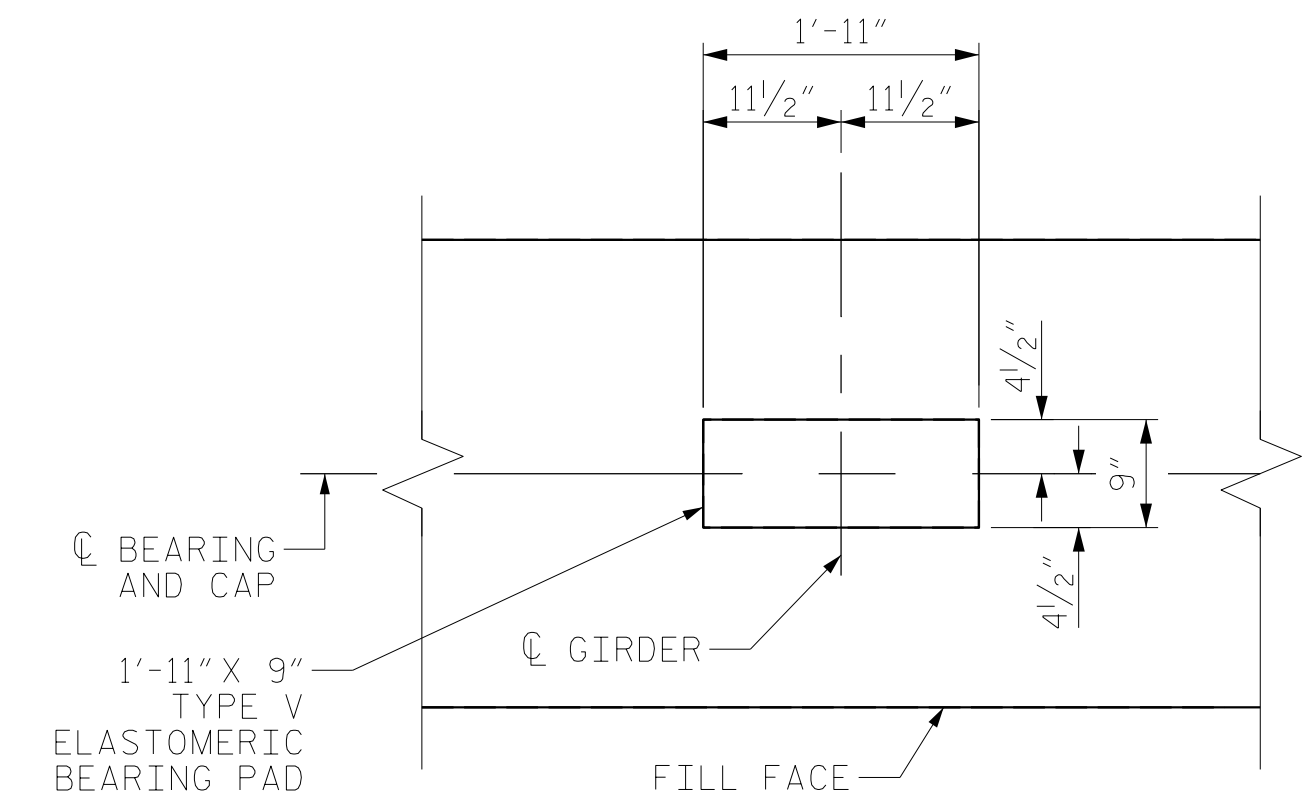
FOR SECTION A-A AND SECTION B-B, SEE SHEET 3 OF 3.

#4 D1 BARS MAY BE SHIFTED SLIGHTLY TO AVOID STIRRUPS IN CAP AND STEPS IN CAP.

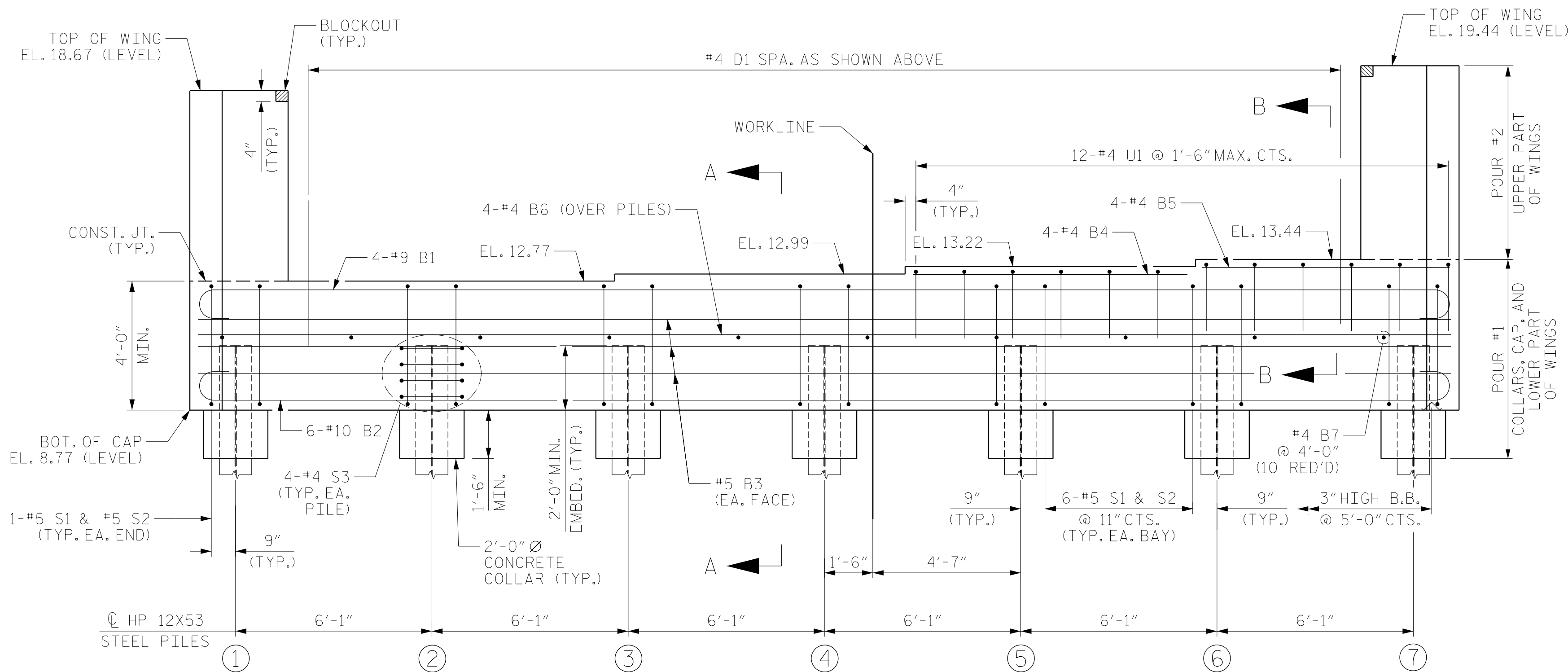
SEE SUPERSTRUCTURE SHEETS FOR UPPER PART OF INTEGRAL END BENT DETAILS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE BARRIER IS CAST IF SLIP FORMING IS USED.

THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".



DETAIL "A-A"
DIMENSIONS TYPICAL FOR EACH BEARING, PILES AND DOWELS NOT SHOWN FOR CLARITY.



ELEVATION

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 1 OF 3 REPLACES BRIDGE NO. 240139



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

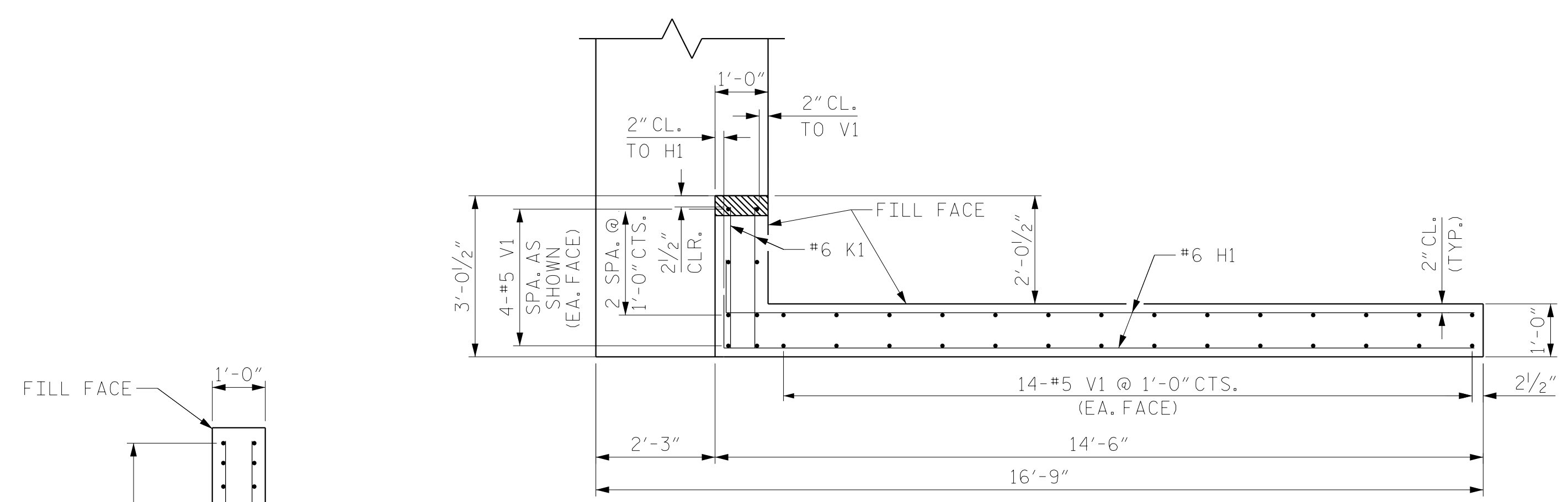
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4/24/2020
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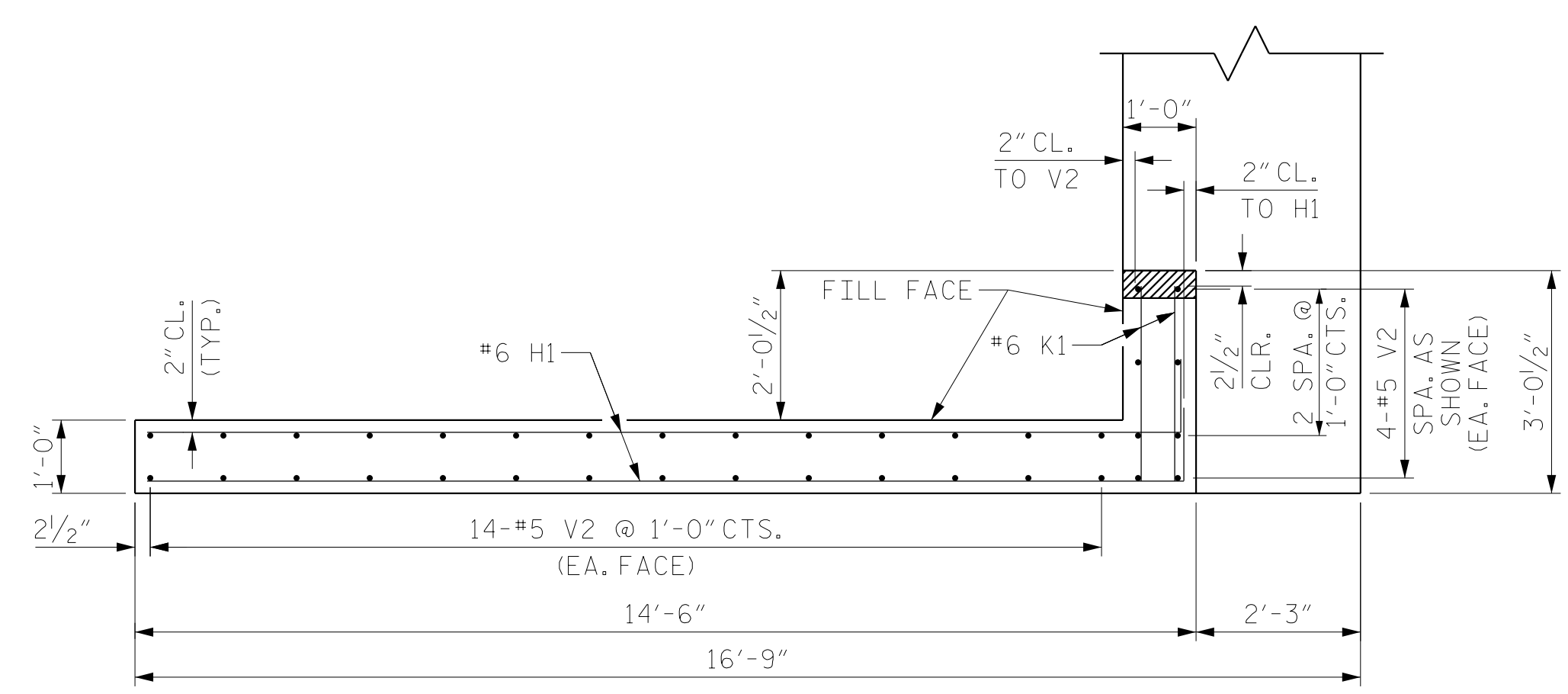
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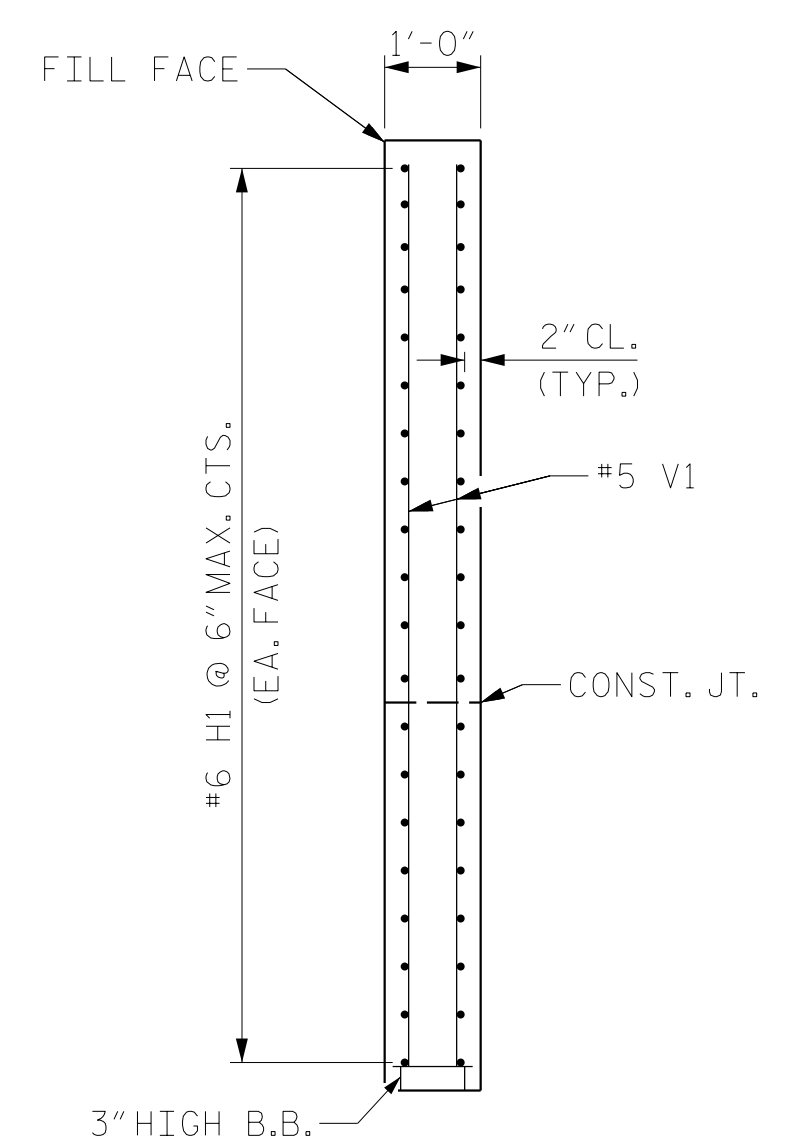
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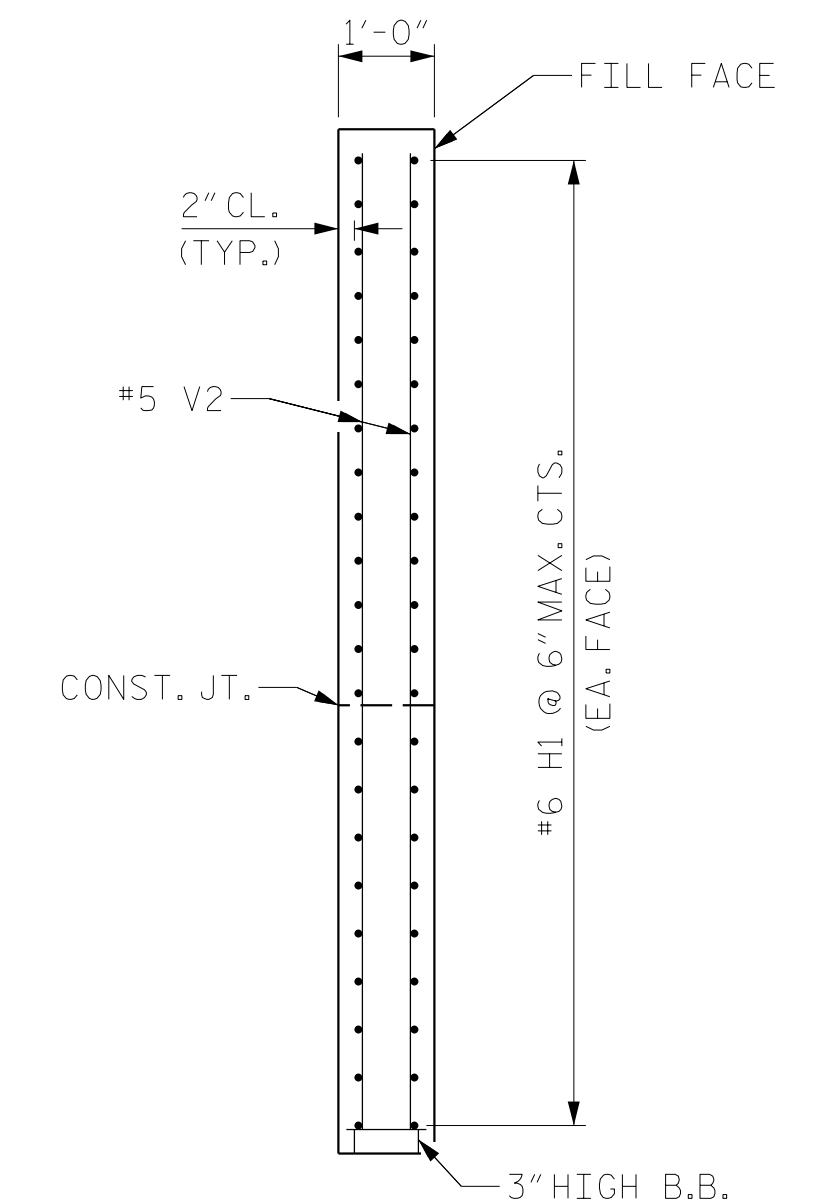
PLAN OF WING - W1



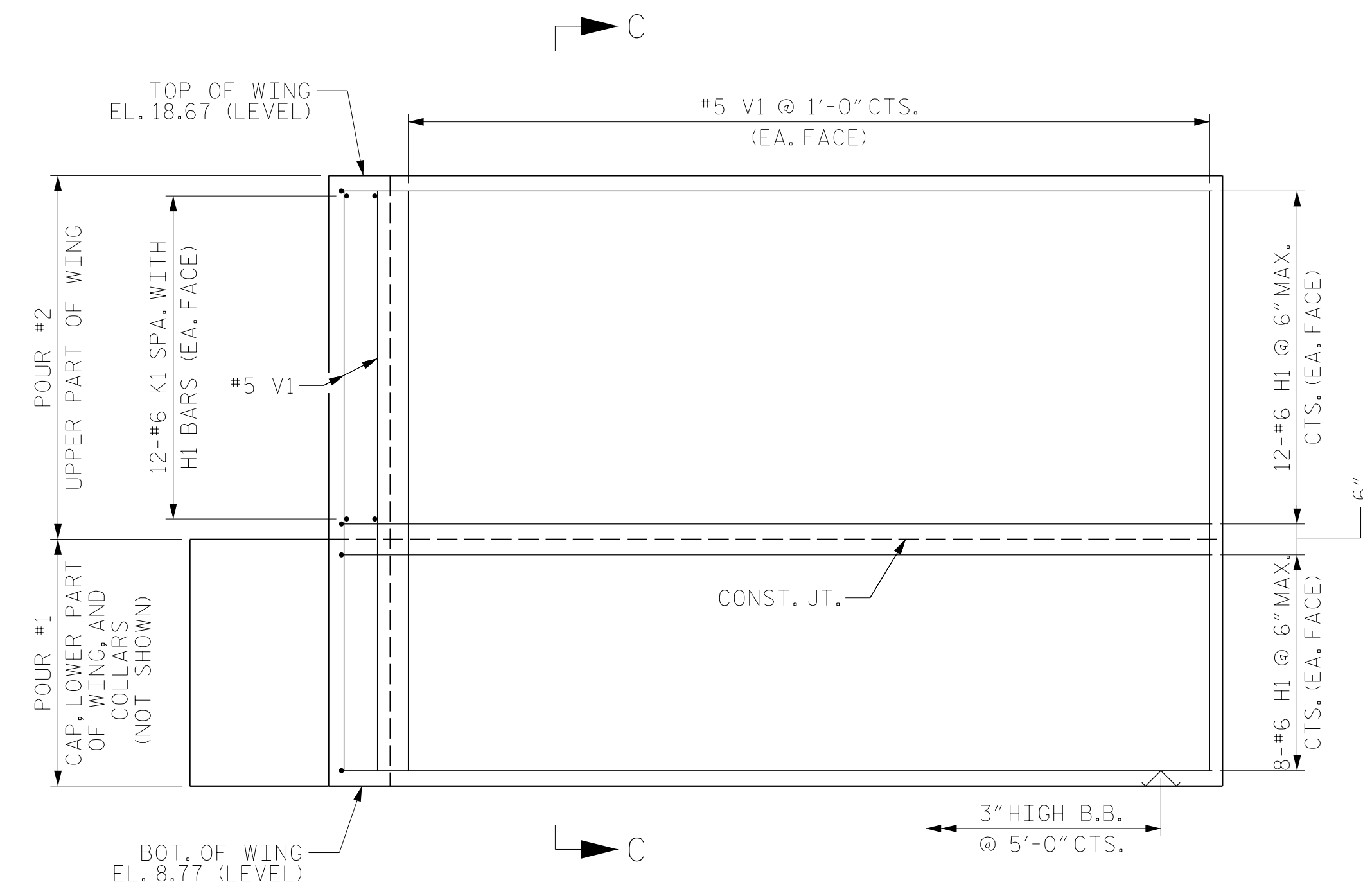
PLAN OF WING - W2



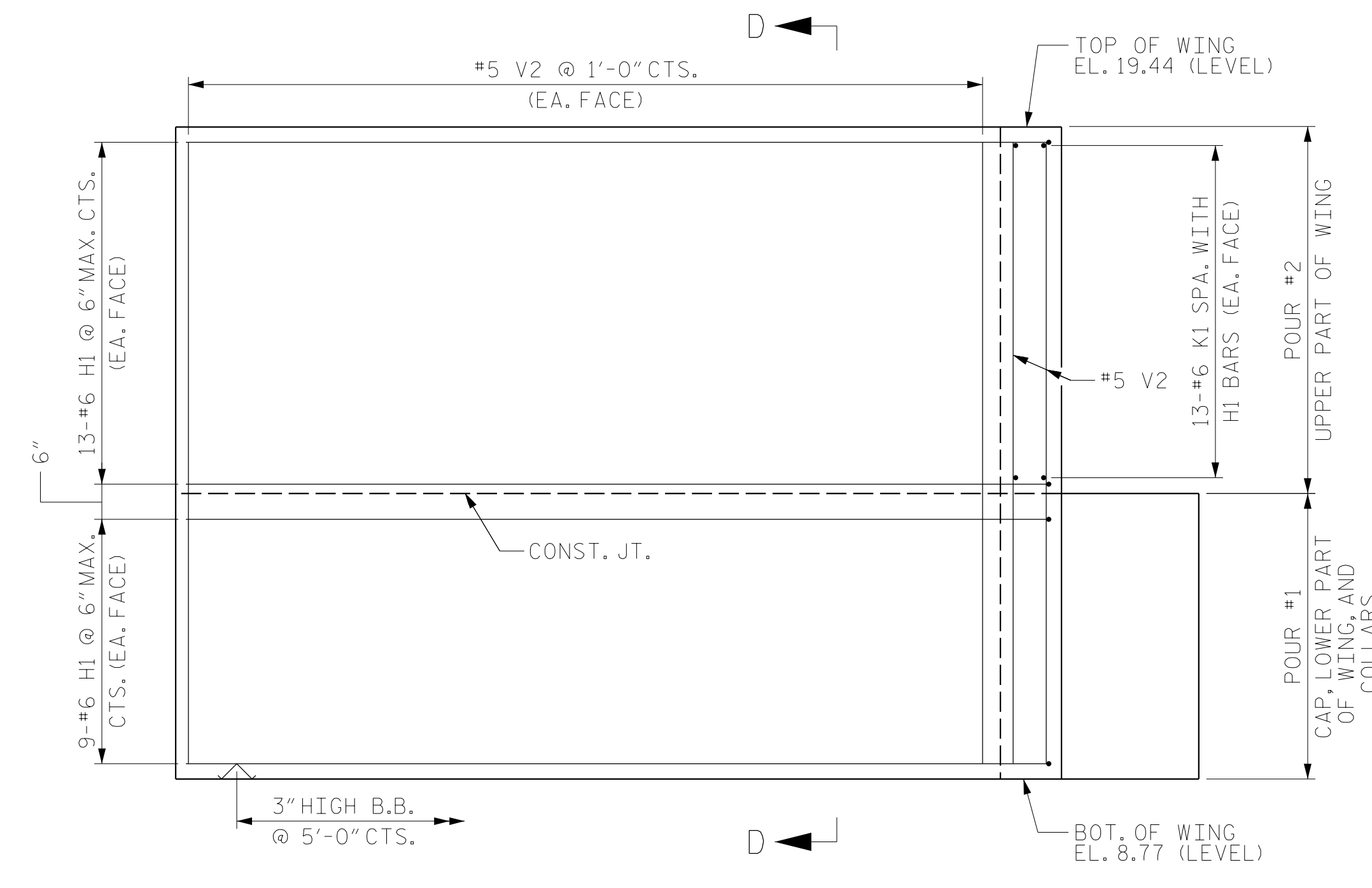
SECTION C-C



SECTION D-D



ELEVATION OF WING - W1



ELEVATION OF WING - W2

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 2 OF 3 REPLACES BRIDGE NO. 240139



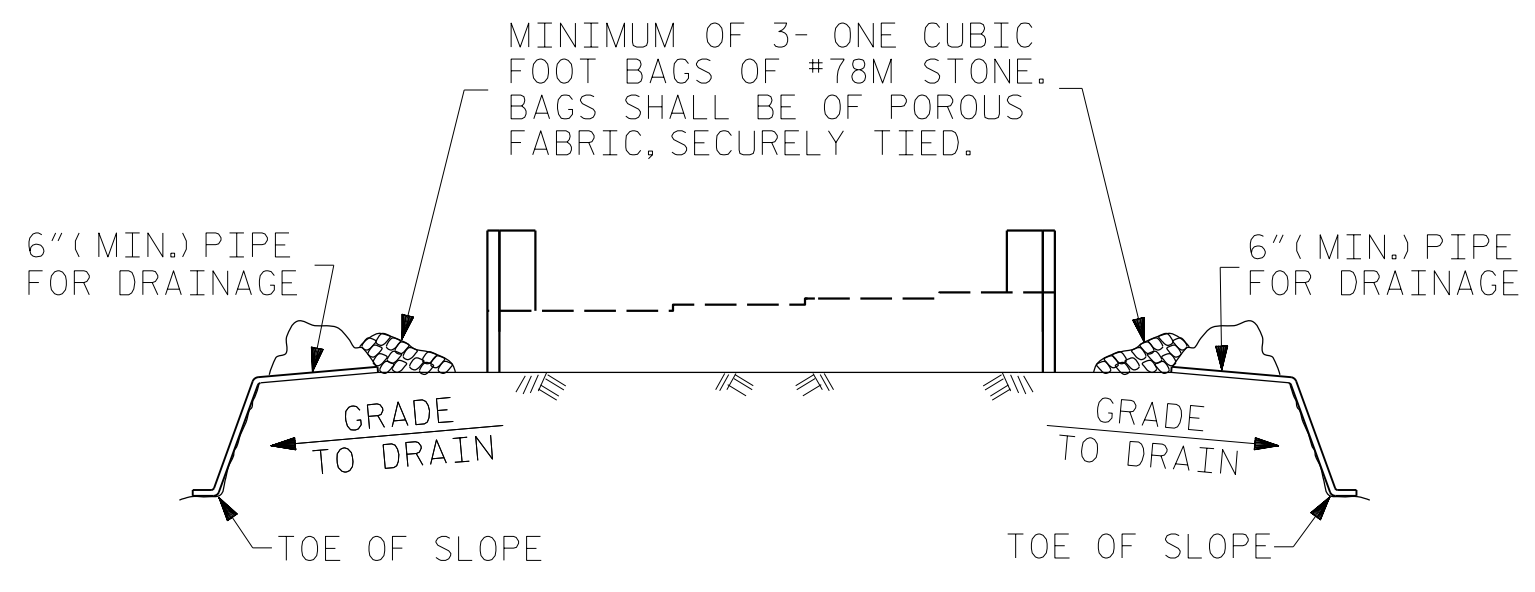
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 INTEGRAL
 END BENT NO. 1

DRAWN BY :	NSC	DATE :	05/2019
CHECKED BY :	JMR	DATE :	05/2019
DESIGN ENGINEER OF RECORD:	PDS	DATE :	06/2019

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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-21
1			3			TOTAL SHEETS
2			4			31

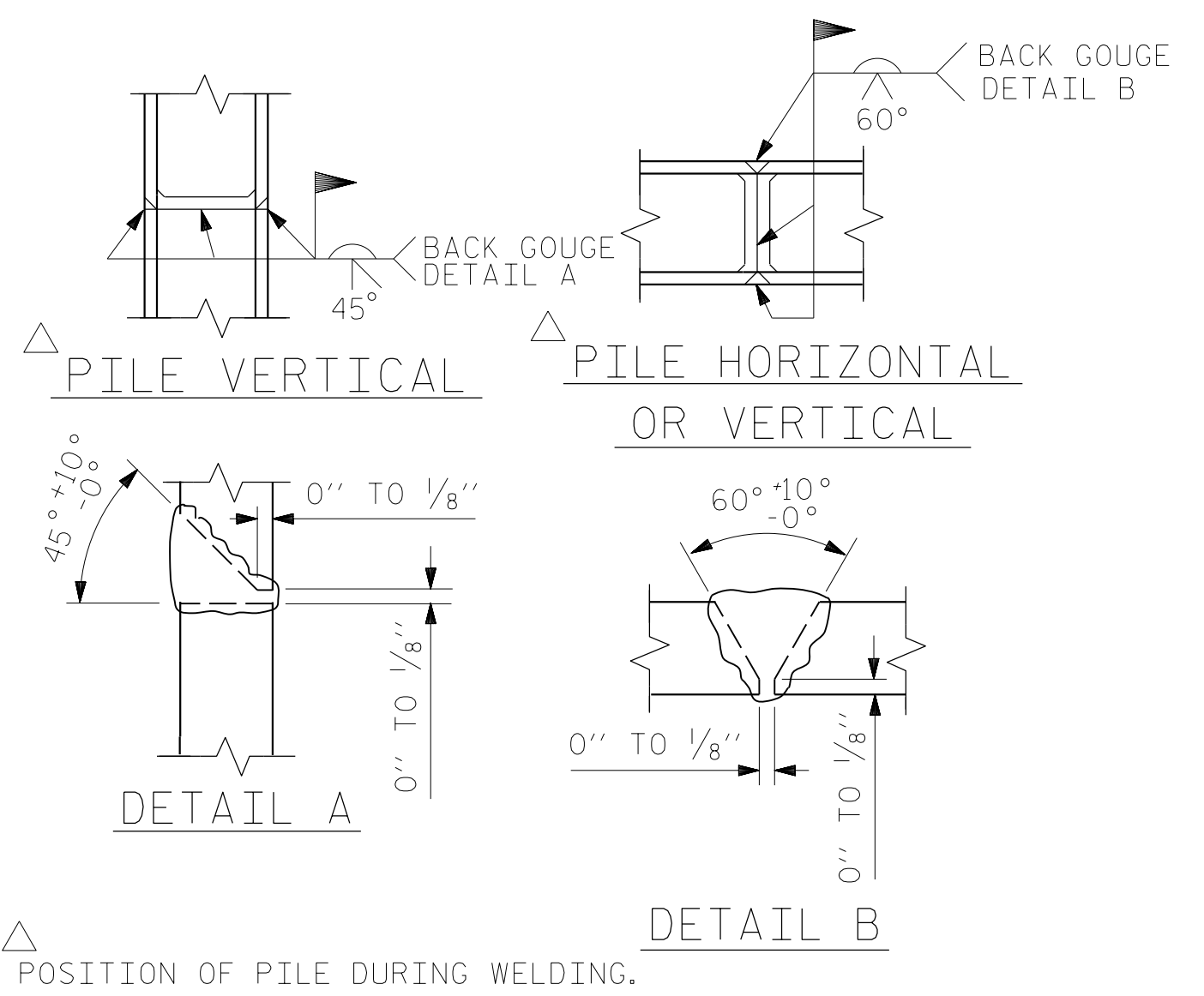


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

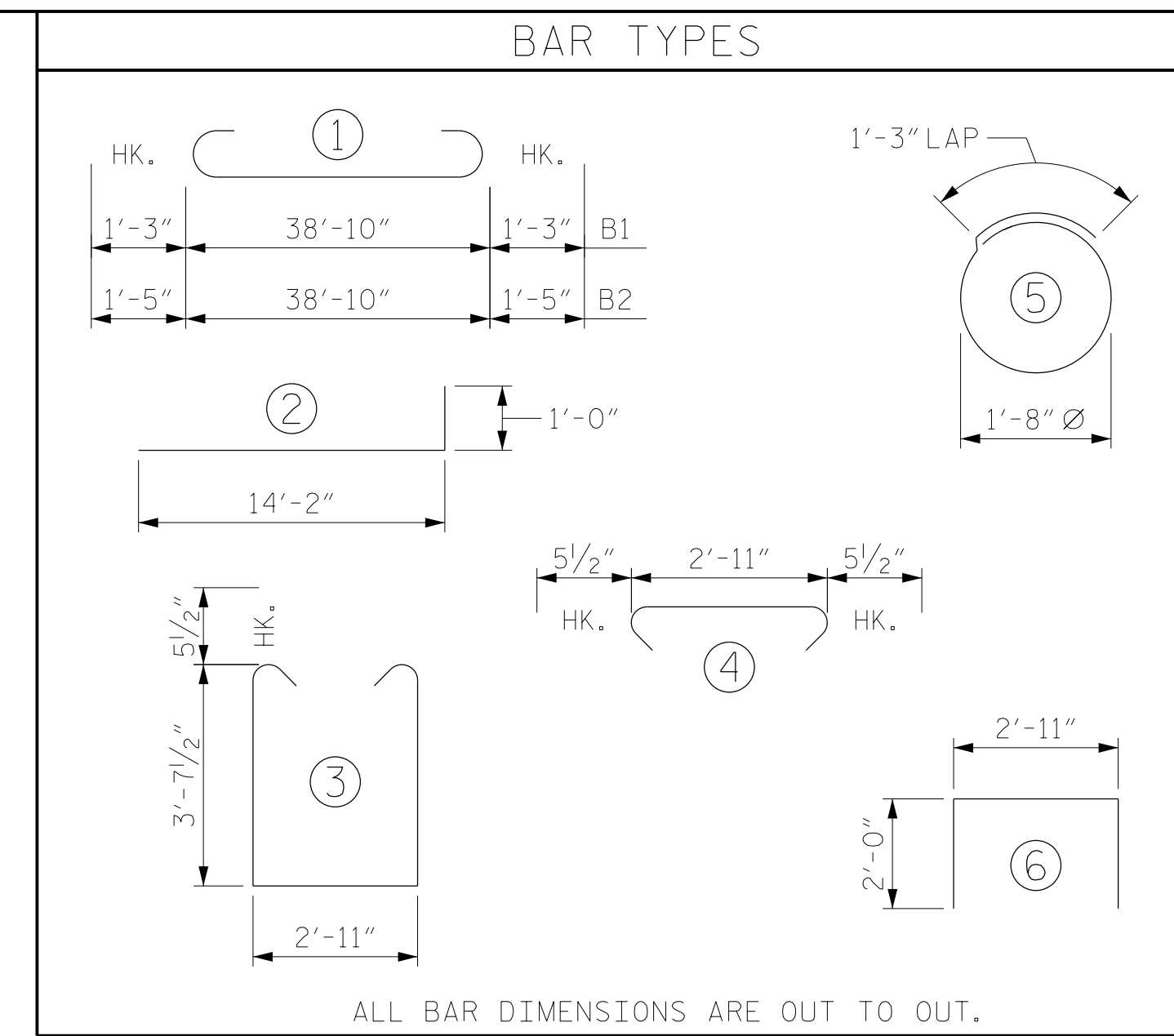
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

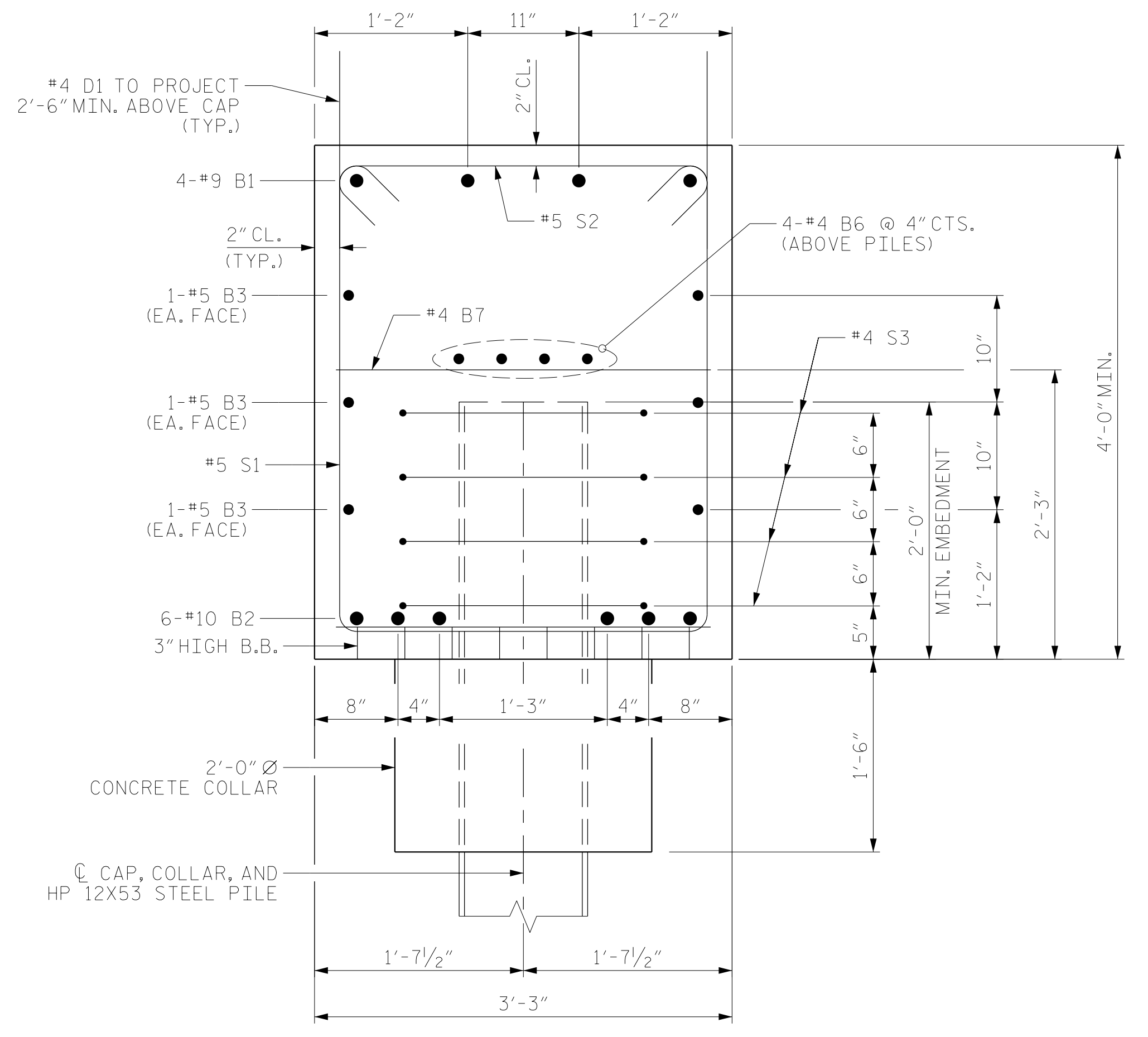
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

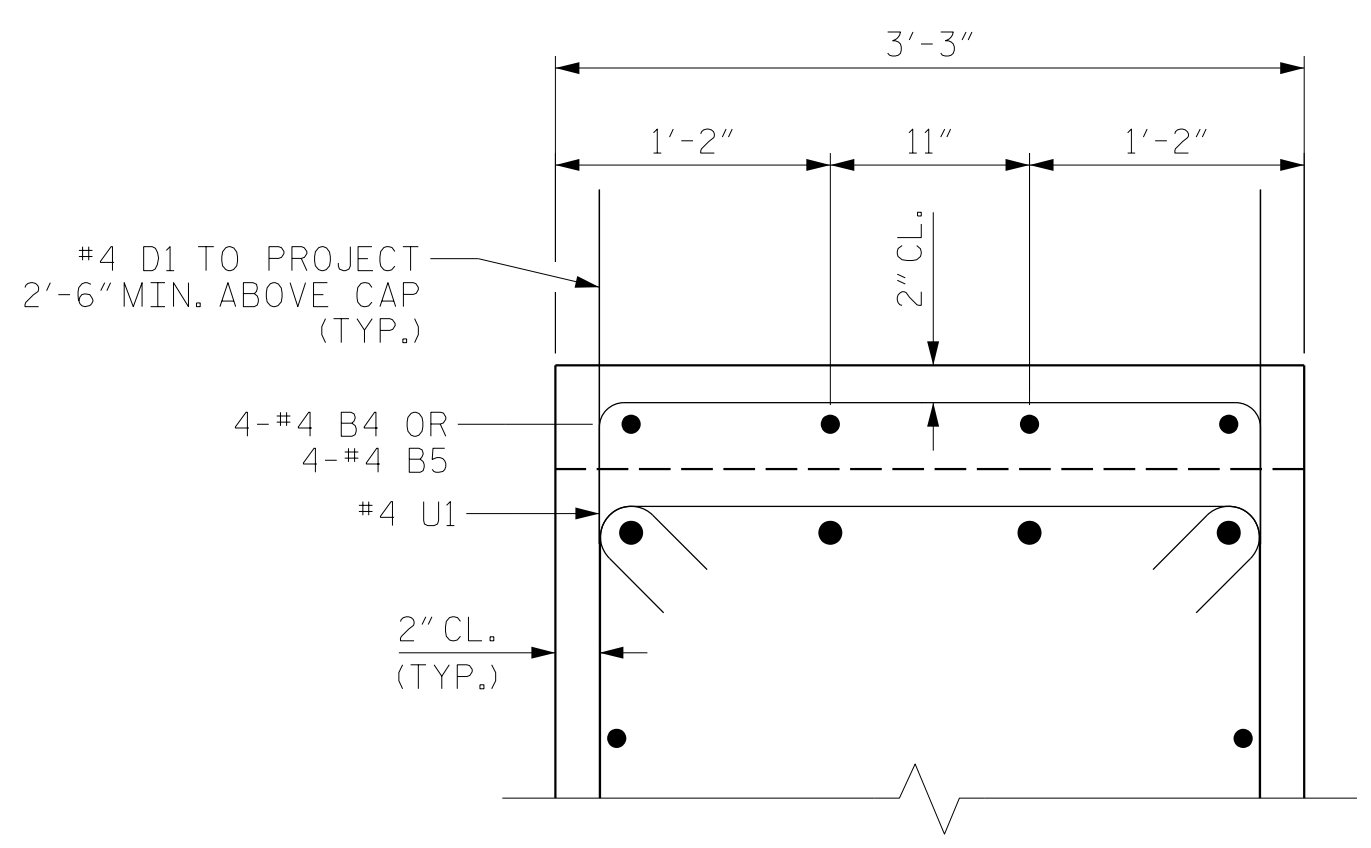


BILL OF MATERIAL					
END BENT NO. 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9	1	41'-4"	562
B2	6	#10	1	41'-8"	1076
B3	6	#5	STR	38'-9"	242
B4	4	#4	STR	8'-6"	23
B5	4	#4	STR	7'-8"	20
B6	4	#4	STR	38'-9"	104
B7	10	#4	STR	2'-11"	19
D1	50	#4	STR	5'-9"	192
H1	84	#6	2	15'-2"	1914
K1	50	#6	STR	2'-8"	200
S1	38	#5	3	11'-1"	439
S2	38	#5	4	3'-10"	152
S3	28	#4	5	6'-6"	122
U1	12	#4	6	6'-11"	55
V1	36	#5	STR	9'-5"	354
V2	36	#5	STR	10'-2"	382
REINFORCING STEEL					5,856 LBS.
CLASS A CONCRETE					
POUR #1 COLLARS, CAP, AND LOWER PART OF WINGS					25.9 C.Y.
POUR #2 UPPER PART OF WINGS					7.3 C.Y.
TOTAL CLASS A CONCRETE					33.2 C.Y.
HP 12X53 STEEL PILES					
NO. 7					525 LIN. FT.
PILE DRIVING EQUIPMENT SETUP					7 EA.
PILE REDRIVES					4 EA.



SECTION A-A

THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4"



SECTION B-B

THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4"

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 3 OF 3 REPLACES BRIDGE NO. 240139



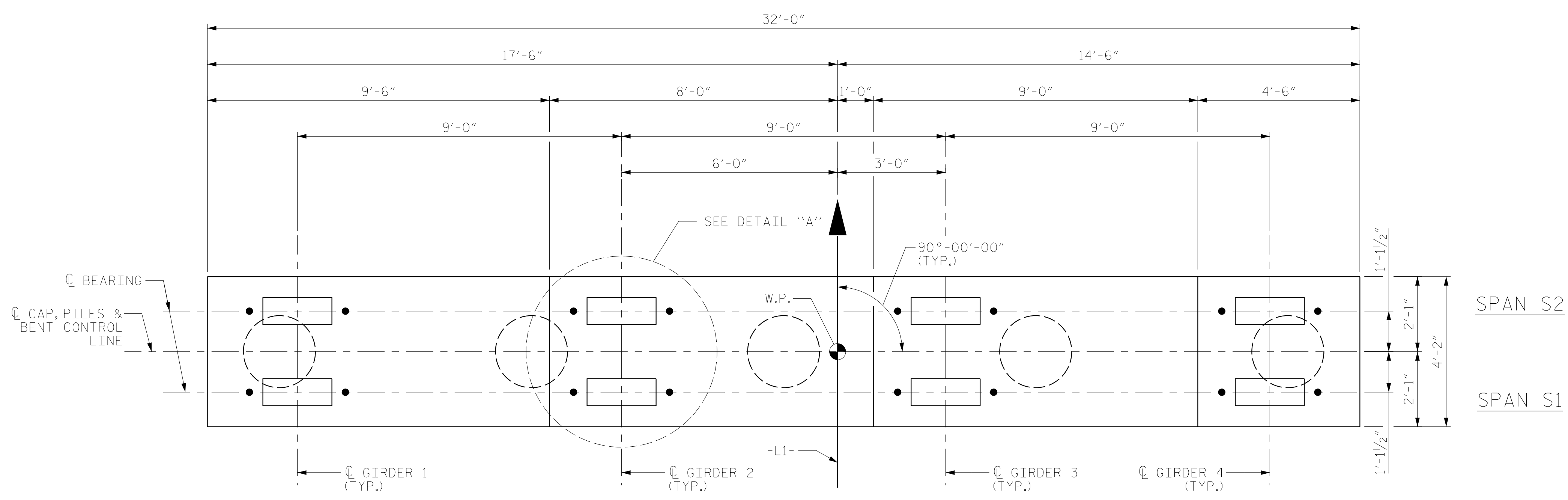
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 RALEIGH
 SUBSTRUCTURE
 INTEGRAL
 END BENT NO. 1
 DETAILS

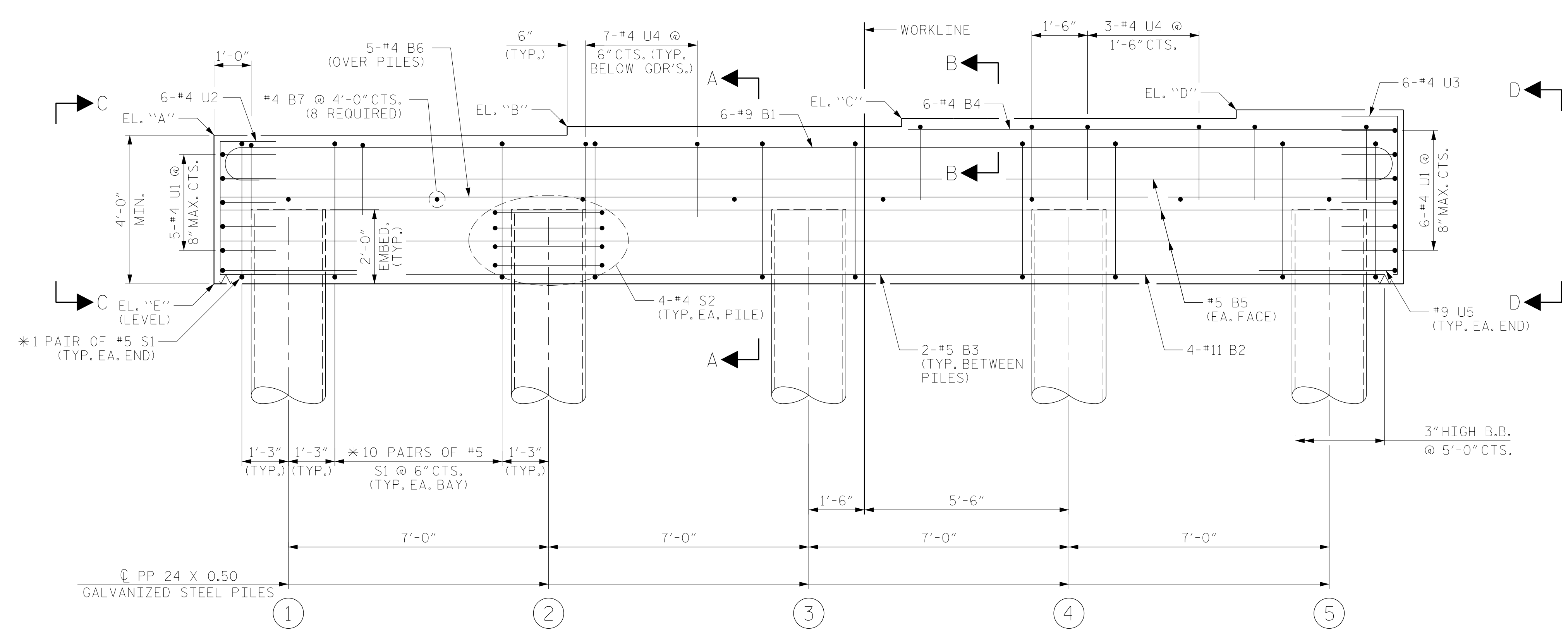
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S2-22
2			4			TOTAL SHEETS 31

DRAWN BY : NSC DATE : 04/2019
 CHECKED BY : JMR DATE : 05/2019
 DESIGN ENGINEER OF RECORD: PDS DATE : 06/2019

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PLAN



ELEVATION

BENT	W.P.	SPANS		ELEVATIONS					TOP OF PILE
		S1	S2	A	B	C	D	E	
1	2	A	B	13.71	13.94	14.16	14.39	9.71	11.71
2	3	B	C	14.63	14.85	15.08	15.30	10.63	12.63
3	4	C	D	14.93	15.15	15.38	15.60	10.93	12.93

NOTES

FOR SECTION A-A, PARTIAL SECTION B-B, VIEW C-C, AND VIEW D-D, SEE SHEET 2 OF 2.

FOR REINFORCING STEEL BILL OF MATERIAL, SEE SHEET 2 OF 2.

FOR ADDITIONAL REINFORCING STEEL AND CONCRETE IN PP 24 X 0.50 GALVANIZED STEEL PILES, SEE "24" STEEL PIPE PILE" SHEET.

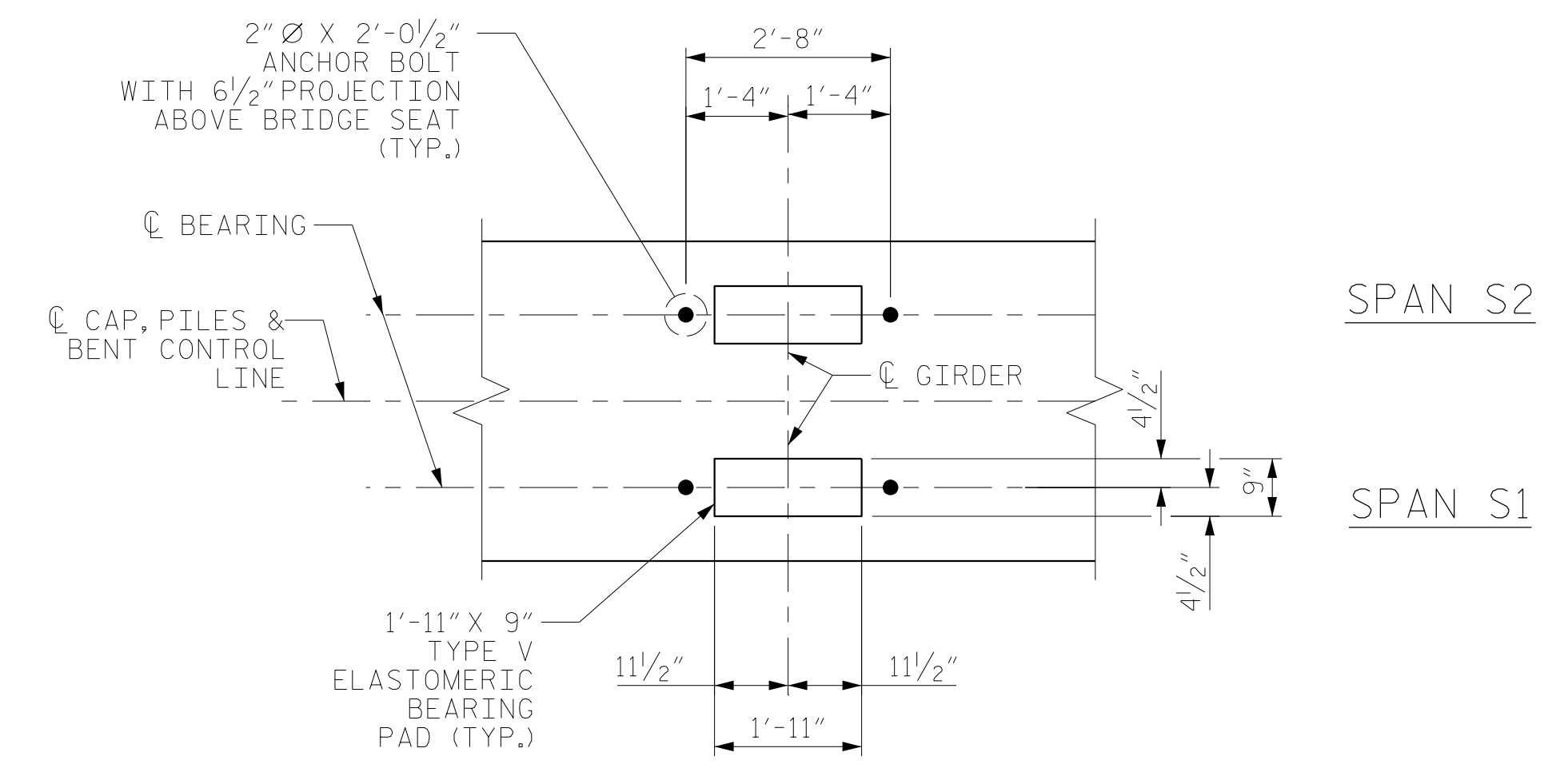
HOOKS ON V1 BARS IN CONCRETE PLUGS MAY BE TURNED AS NECESSARY TO AVOID EMBEDDED ANCHOR BOLTS.

U4 AND S1 BARS MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLT.

U2 AND U3 BARS MAY BE ROTATED AS NECESSARY SO THAT LEGS OF BARS CLEAR PIPE PILES.

* INVERT ALTERNATE #5 S1 STIRRUP PAIRS.

GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 45 FEET. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.



DETAIL "A"

DIMENSIONS TYPICAL FOR EACH BEARING. PILES AND STEP NOT SHOWN FOR CLARITY.

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 1 OF 2 REPLACES BRIDGE NO. 240139



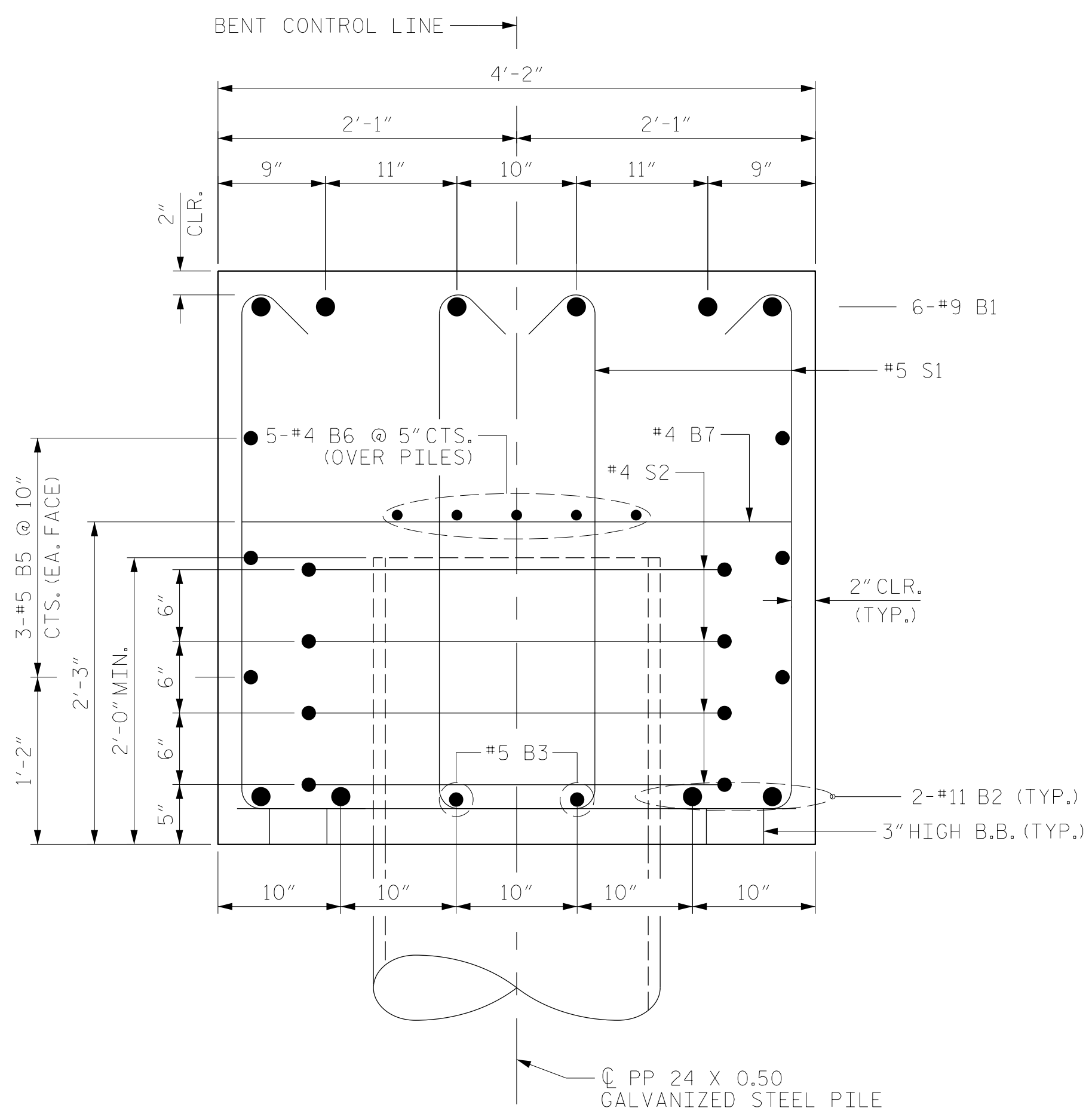
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STATE OF NORTH CAROLINA
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 BENTS 1 - 3

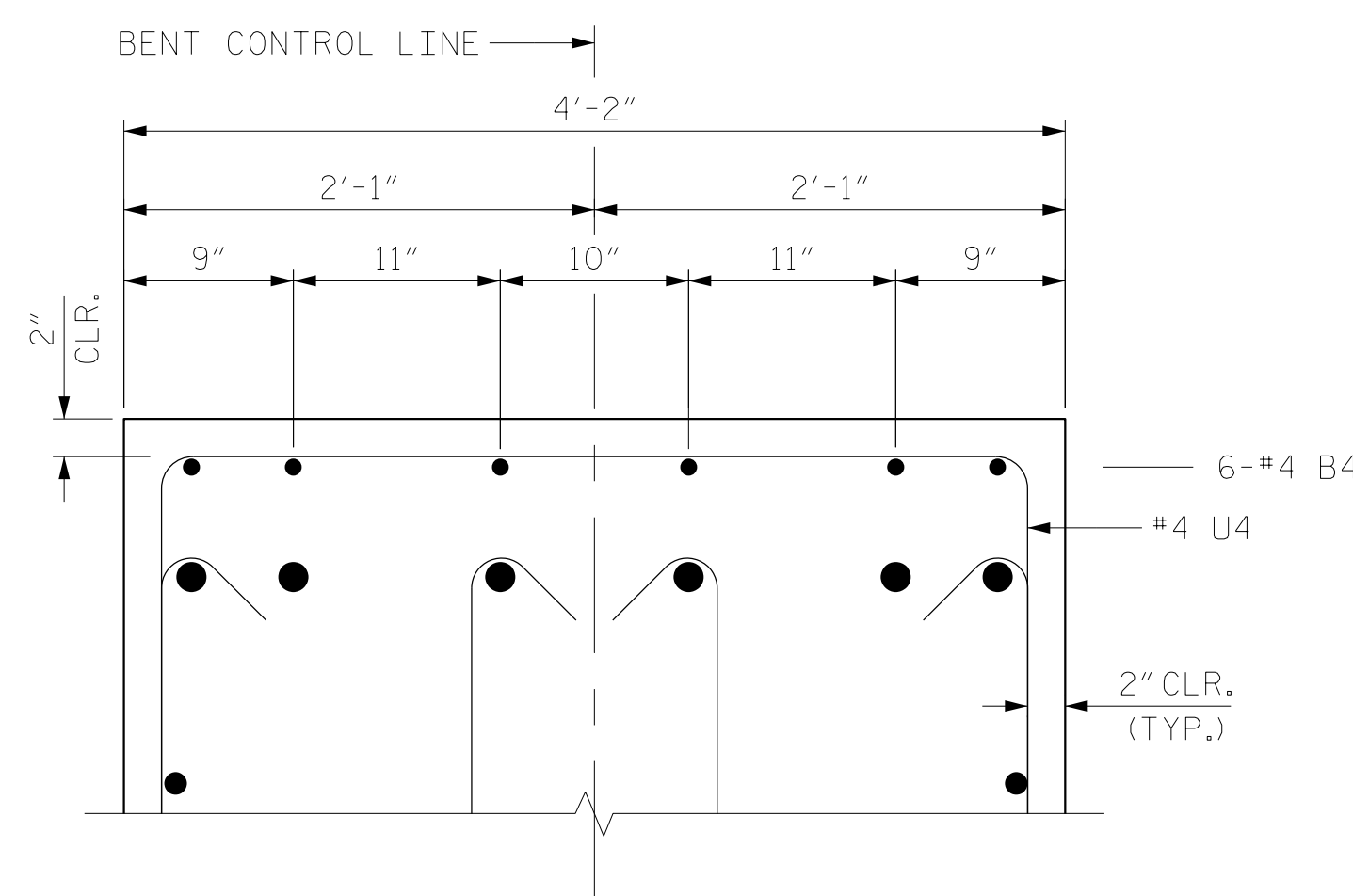
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 DESIGN ENGINEER OF RECORD: PDS DATE : 06/2019

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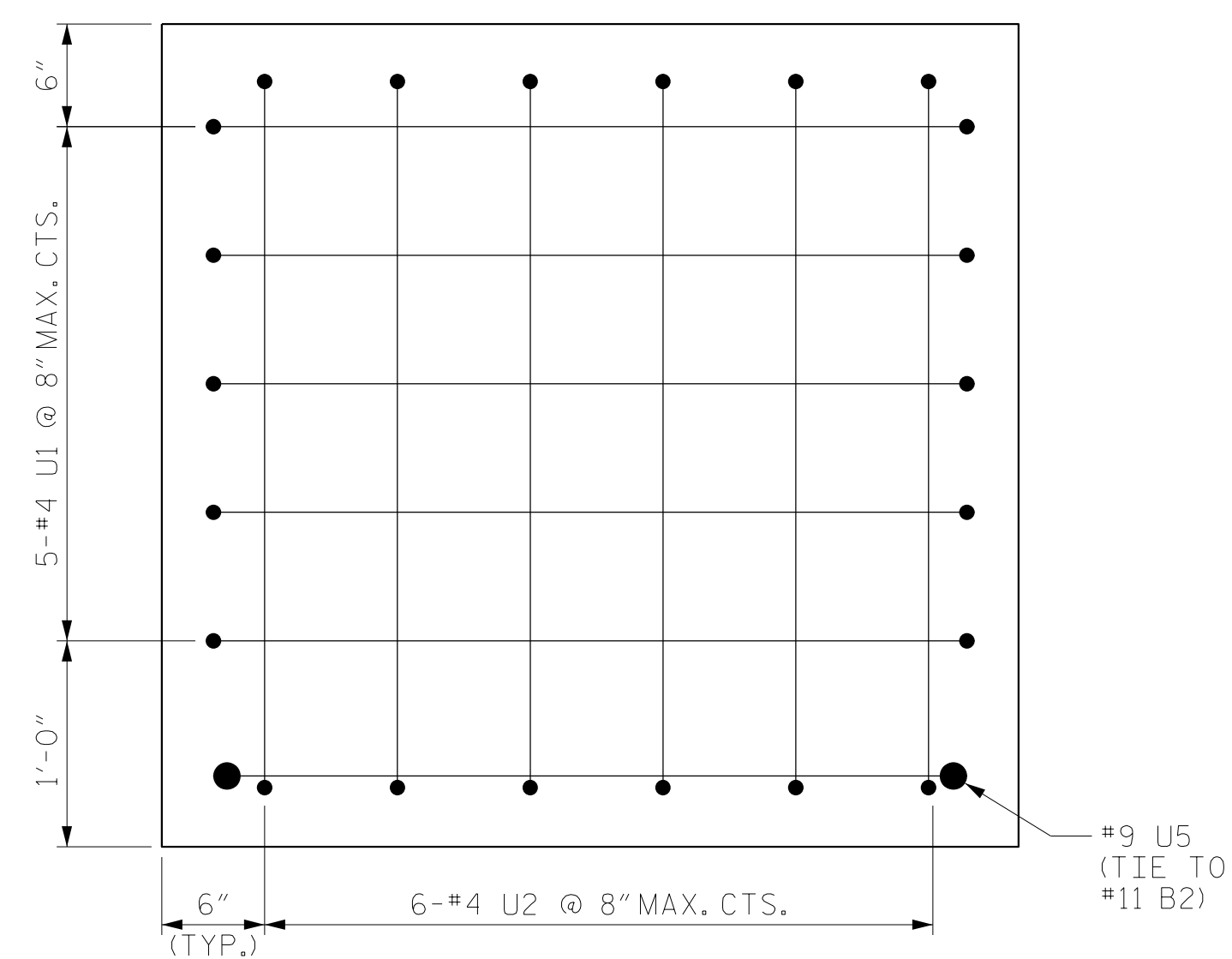
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1			3			TOTAL SHEETS 31
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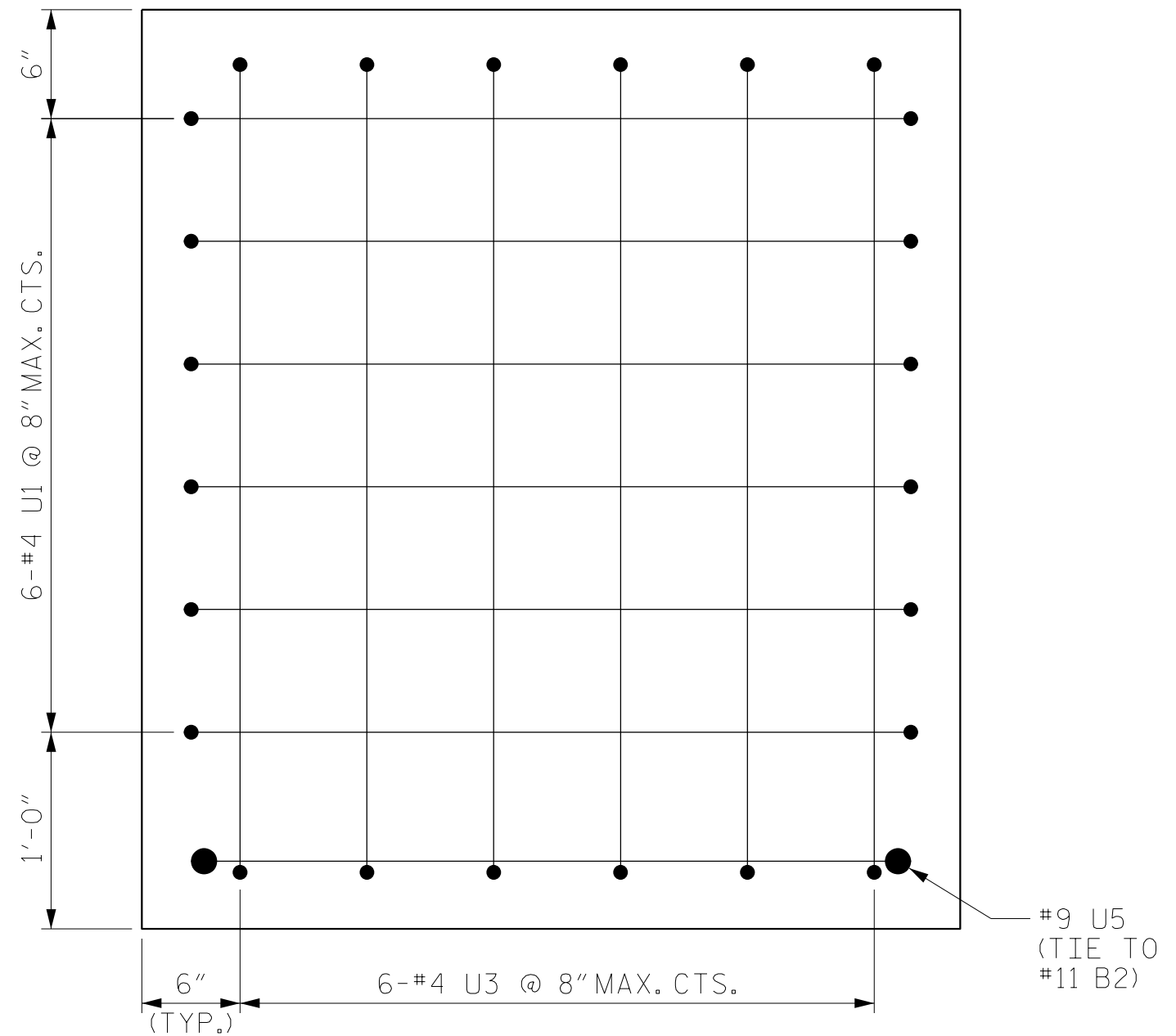
SECTION A-A



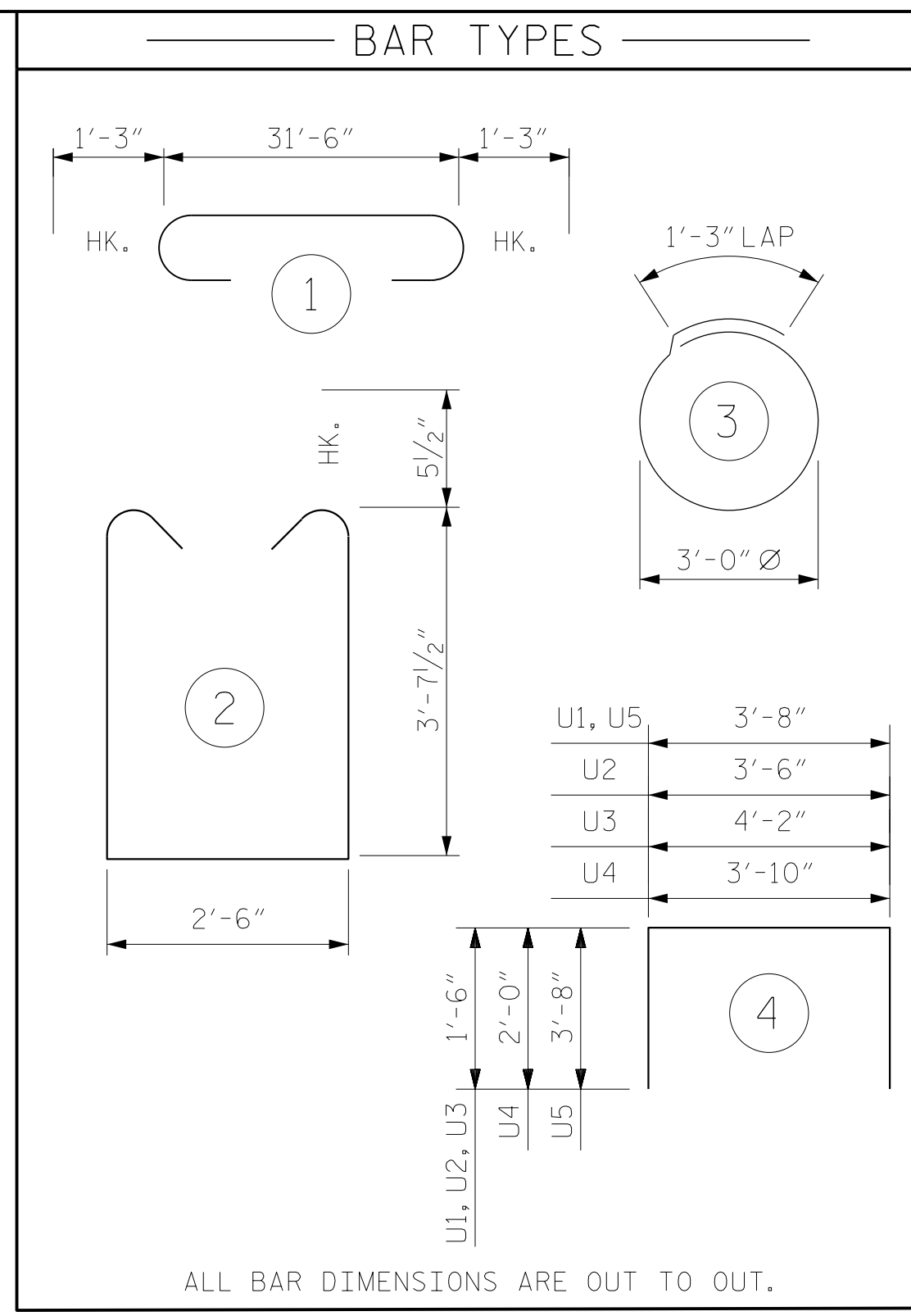
PARTIAL SECTION B-B



VIEW C-C



VIEW D-D



BILL OF MATERIAL						
FOR ONE BENT						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
B1	6	#9	1	34'-0"	694	
B2	4	#11	STR	31'-6"	669	
B3	8	#5	STR	4'-8"	39	
B4	6	#4	STR	13'-1"	52	
B5	6	#5	STR	31'-6"	197	
B6	5	#4	STR	31'-6"	105	
B7	8	#4	STR	3'-10"	20	
S1	84	#5	2	10'-8"	935	
S2	20	#4	3	10'-8"	143	
U1	11	#5	4	6'-8"	76	
U2	6	#5	4	6'-6"	41	
U3	6	#5	4	7'-2"	45	
U4	31	#4	4	7'-10"	162	
U5	2	#9	4	11'-0"	75	
REINFORCING STEEL (FOR ONE BENT)					3,253 LBS.	
▲ CLASS A CONCRETE (FOR ONE BENT)					20.3 C.Y.	
PP 24 X 0.50 GALVANIZED STEEL PILES						
BENT NO. 1		NO. 5	475 LIN. FT.			
BENT NO. 2		NO. 5	500 LIN. FT.			
BENT NO. 3		NO. 5	475 LIN. FT.			
PIPE PILE PLATES (FOR ONE BENT)					NO. 5	
PILE DRIVING EQUIPMENT SETUP FOR PP 24 X 0.50 GALVANIZED STEEL PILES (FOR ONE BENT)					NO. 5	
PILE REDRIVES (FOR ONE BENT)					NO. 3	

▲ CONCRETE DISPLACED BY THE PP 24 X 0.50 GALVANIZED STEEL PIPE PILES HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 2 OF 2 REPLACES BRIDGE NO. 240139

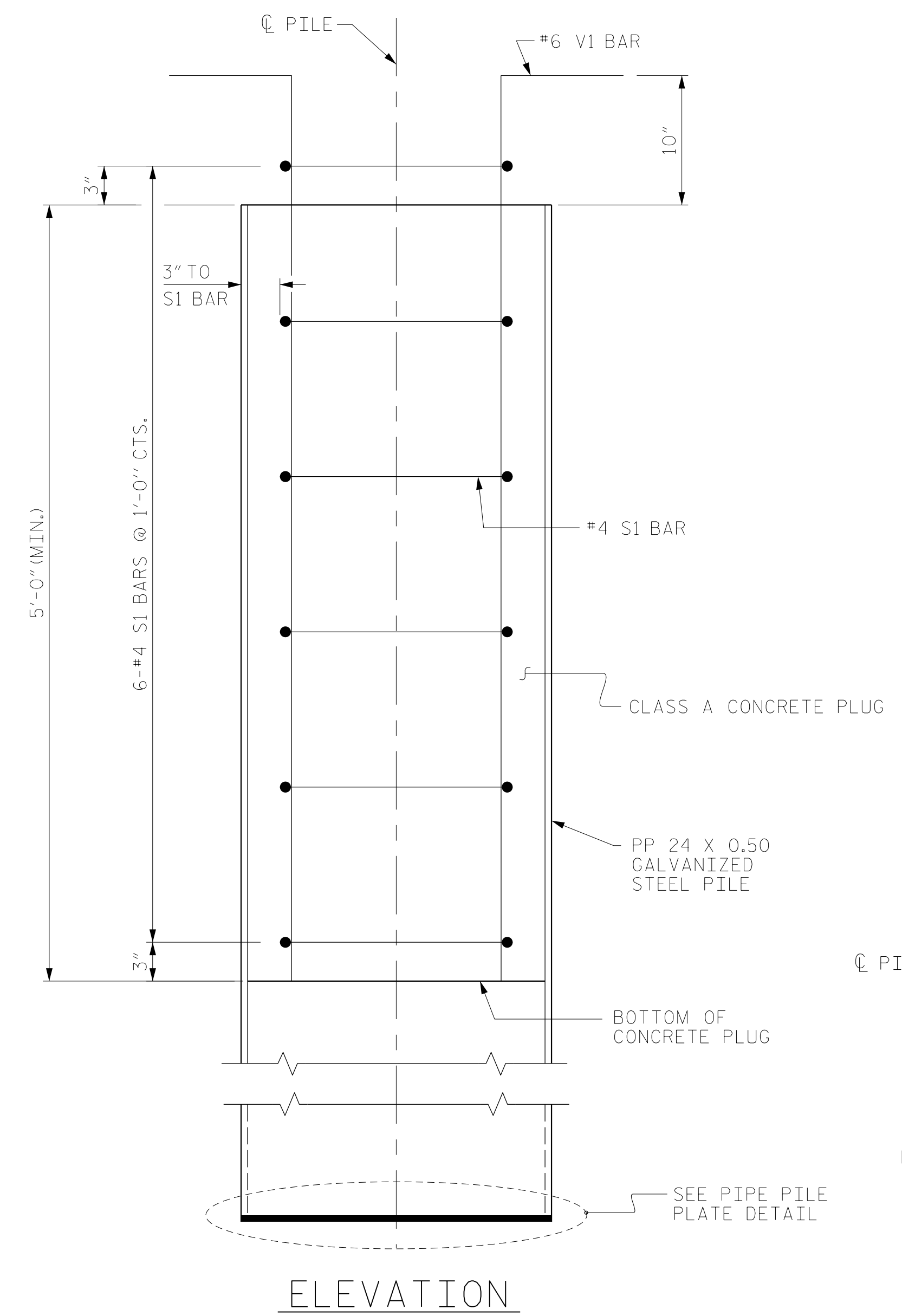
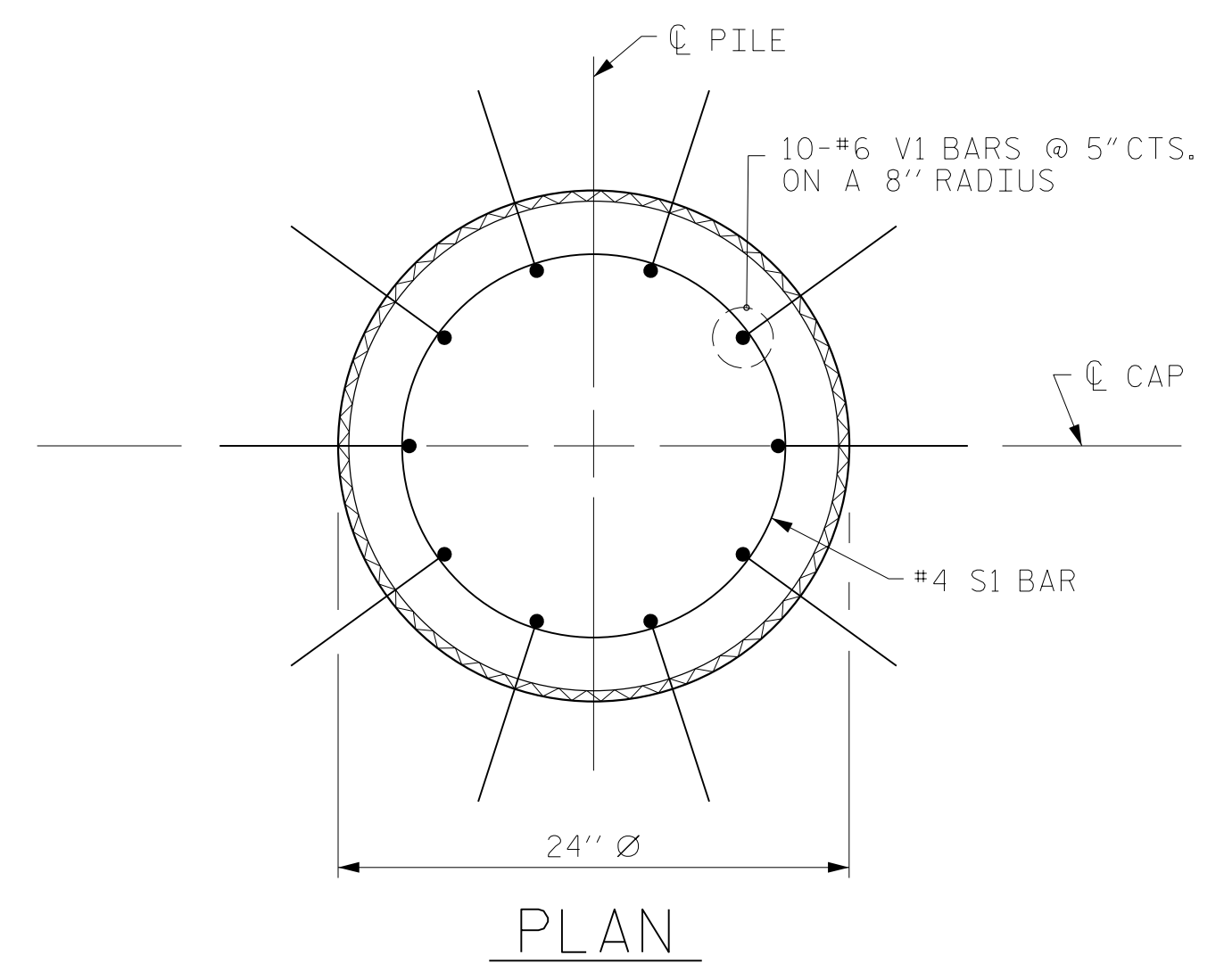


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 SUBSTRUCTURE
 BENTS 1-3
 DETAILS

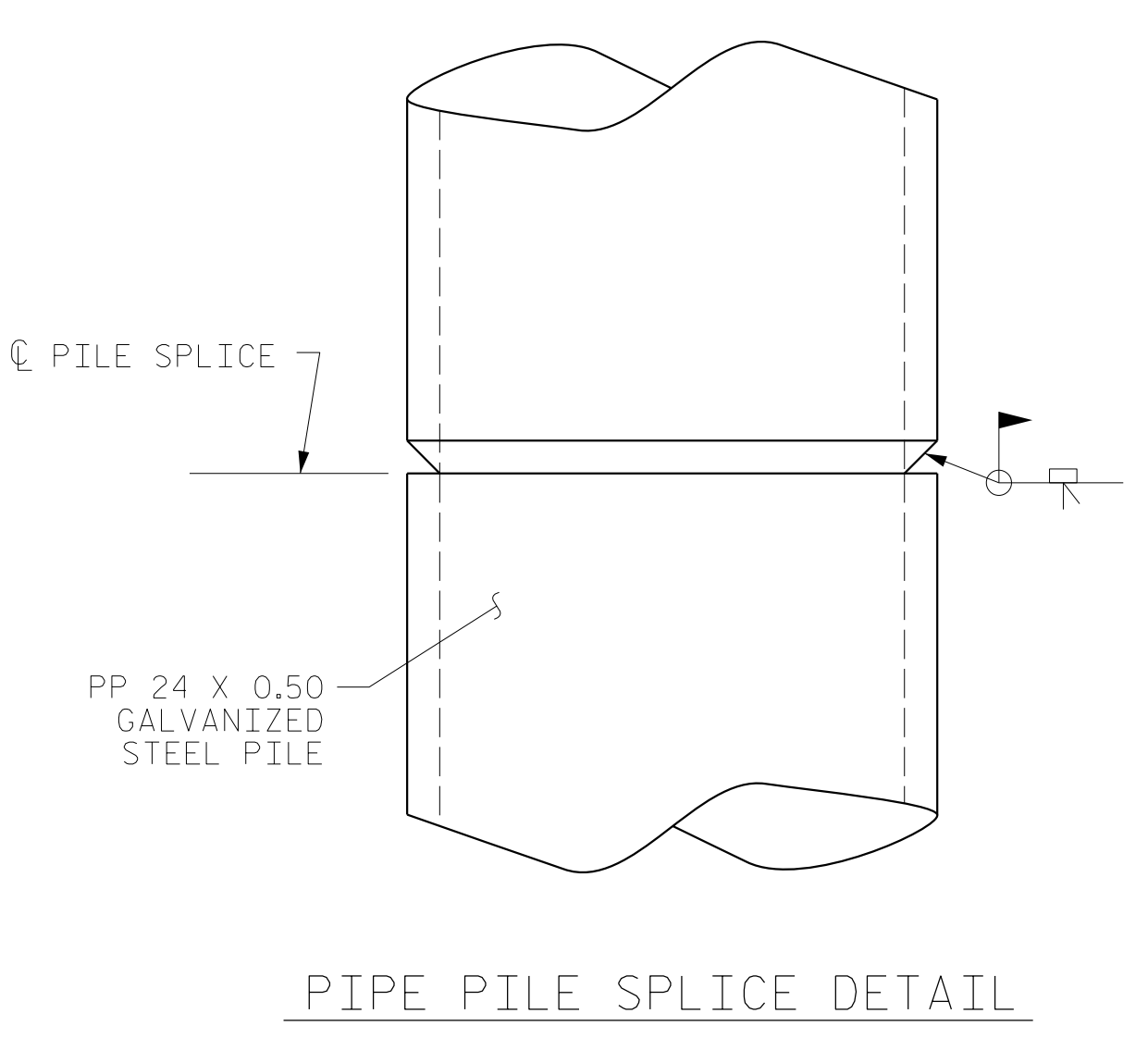
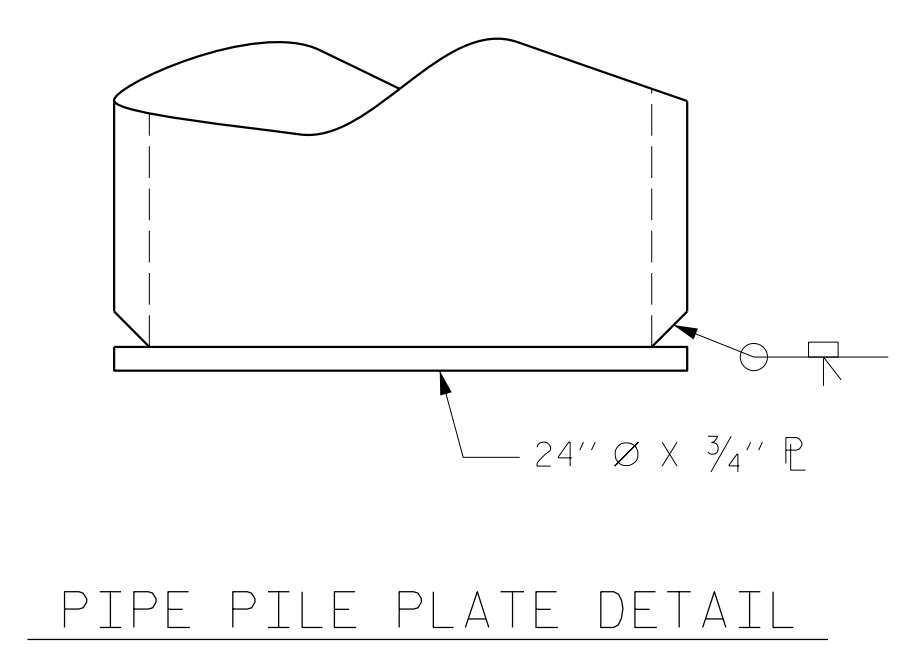
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
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PP 24 X 0.50 GALVANIZED STEEL PILE
(CLOSED END)



NOTES

PIPE PILES SHALL BE IN ACCORDANCE WITH SECTION 1084 OF THE STANDARD SPECIFICATIONS.

GALVANIZE STEEL PIPE PILES IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS UNLESS METALLIZING IS REQUIRED. GALVANIZING OR METALLIZING PIPE PILE PLATES IS NOT REQUIRED.

PIPE PILE PLATES, IF REQUIRED, SHALL BE IN ACCORDANCE WITH SECTION 450 OF THE STANDARD SPECIFICATIONS.

REMOVE AND REPLACE OR REPAIR TO THE SATISFACTION OF THE ENGINEER PILES THAT ARE DAMAGED, DEFORMED OR COLLAPSED DURING INSTALLATION OR DRIVING.

PILE SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND AWS D1.1.

FOR CLOSED END PIPE PILES, REMOVE ALL SOIL AND WATER FROM INSIDE THE PILES JUST PRIOR TO PLACING REINFORCING STEEL AND CONCRETE FOR THE CONCRETE PLUG.

FOR OPEN END PIPE PILES, REMOVE ENOUGH SOIL AND WATER FROM INSIDE THE PILES TO CONSTRUCT THE CONCRETE PLUG WITHOUT FOULING THE CONCRETE.

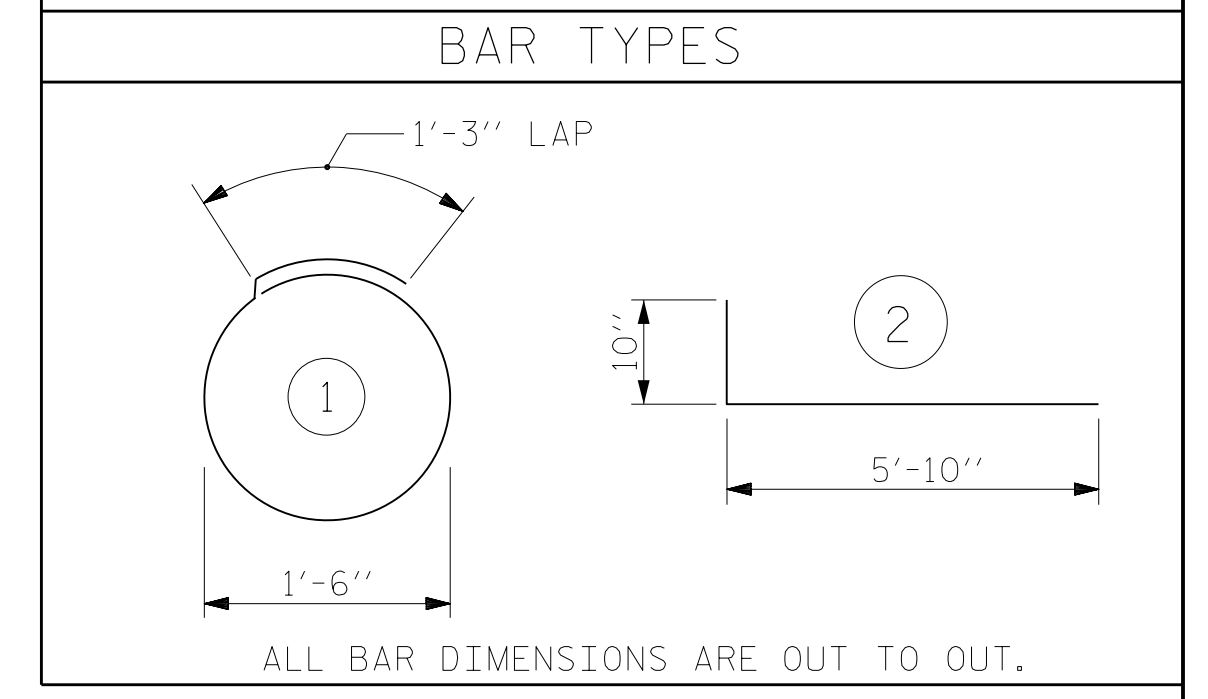
FORM THE CONCRETE PLUG SUCH THAT THE REINFORCING STEEL OR CONCRETE DOES NOT MOVE AND THE CLEARANCE FROM THE REINFORCING STEEL TO THE INSIDE OF THE PILE IS MAINTAINED AFTER CONCRETE PLACEMENT. DO NOT PLACE CONCRETE IN THE BENT CAP UNTIL THE CONCRETE PLUG HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

THE REINFORCING STEEL, CLASS A CONCRETE, AND GALVANIZING ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR PP 24 X 0.50 GALVANIZED STEEL PILES.

BILL OF MATERIAL FOR ONE PP 24 X 0.50 GALVANIZED STEEL PILE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
S1	6	#4	1	6'-0"	24
V1	10	#6	2	6'-8"	100
REINFORCING STEEL =				124	lbs

CLASS A CONCRETE
5'-0" MINIMUM PLUG 0.5 CY



PROJECT NO. B-4484
CRAVEN COUNTY
STATION: 41+45.00 -L1-

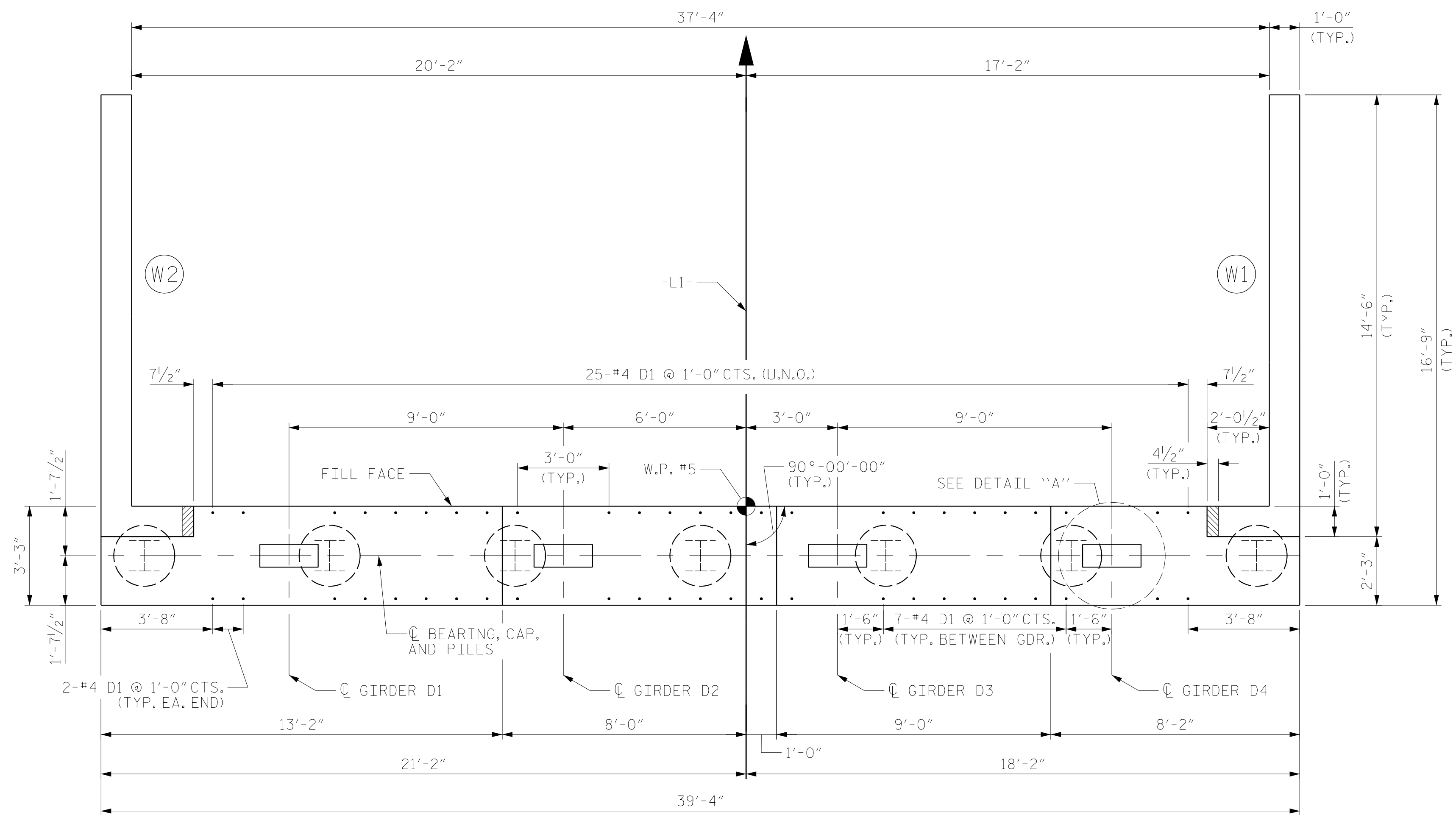
REPLACES BRIDGE NO. 240139

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REVISIONS						SHEET NO.
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1			3			31
2			4			

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CHECKED BY : JMR	DATE : 05/2019
DRAWN BY : TLA 8/05	REV. 5/1/06R MAA/KMM
CHECKED BY : CM 9/05	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC



PLAN

NOTES

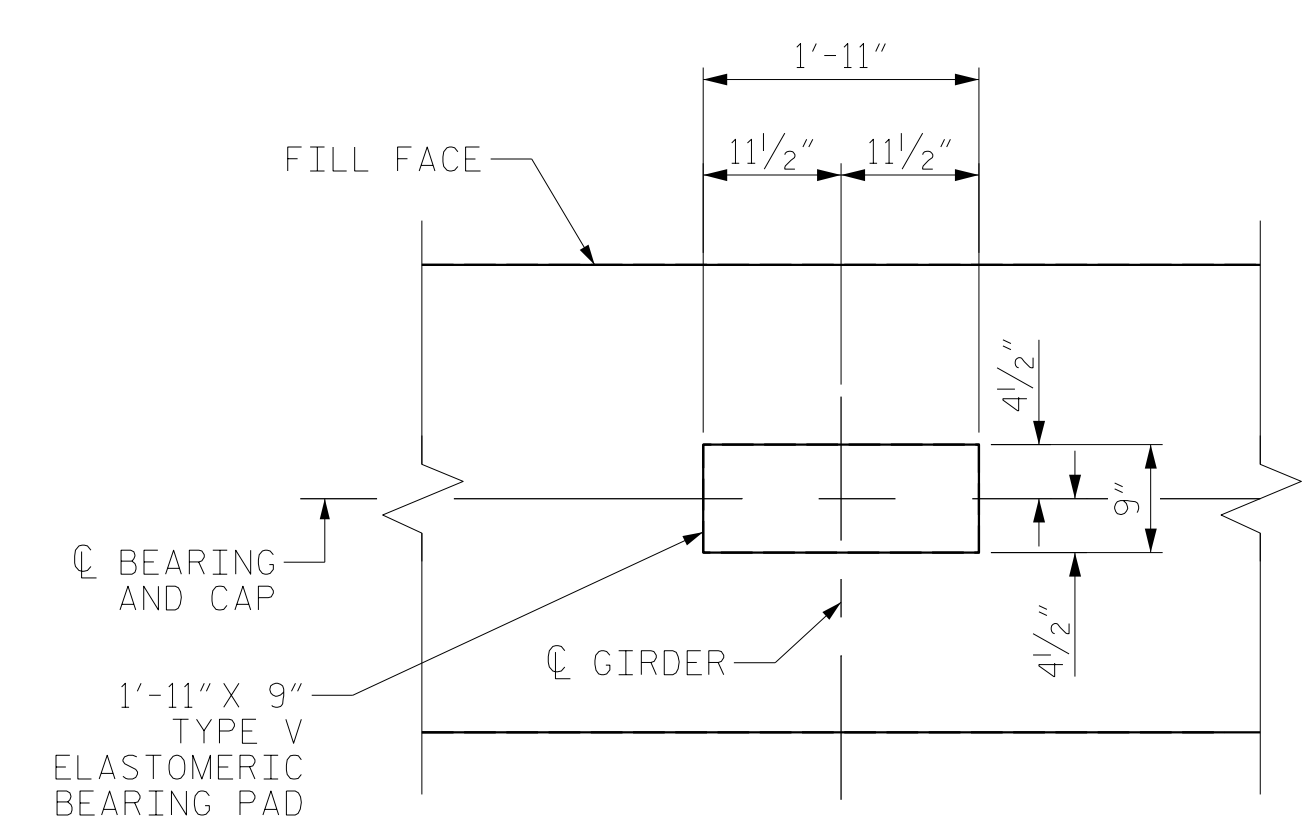
FOR SECTION A-A AND SECTION B-B, SEE SHEET 3 OF 3.

#4 D1 BARS MAY BE SHIFTED SLIGHTLY TO AVOID STIRRUPS IN CAP AND STEPS IN CAP.

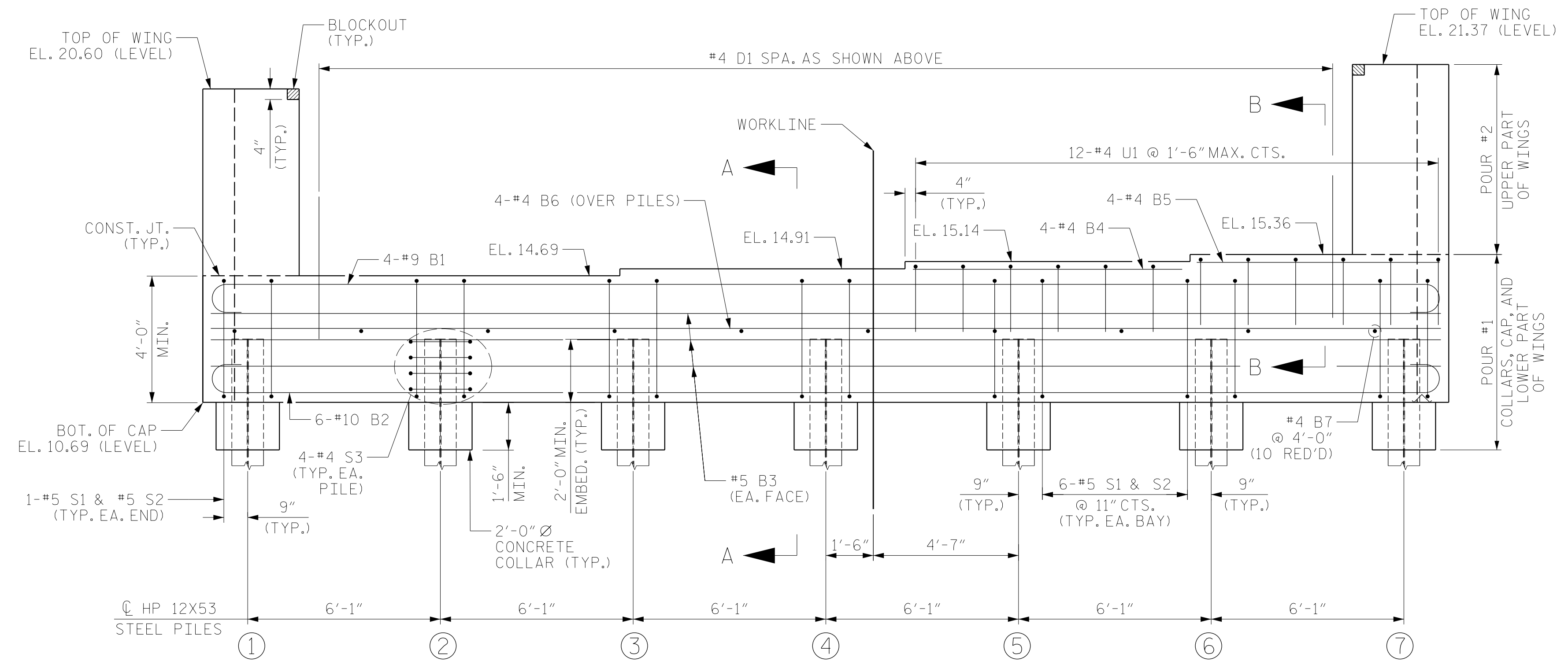
SEE SUPERSTRUCTURE SHEETS FOR UPPER PART OF INTEGRAL END BENT DETAILS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE BARRIER IS CAST IF SLIP FORMING IS USED.

THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4".



DETAIL "A"
DIMENSIONS TYPICAL FOR EACH BEARING, PILES AND DOWELS NOT SHOWN FOR CLARITY.



ELEVATION

PROJECT NO. B-4484
CRAVEN COUNTY
STATION: 41+45.00 -L1-
SHEET 1 OF 3 REPLACES BRIDGE NO. 240139



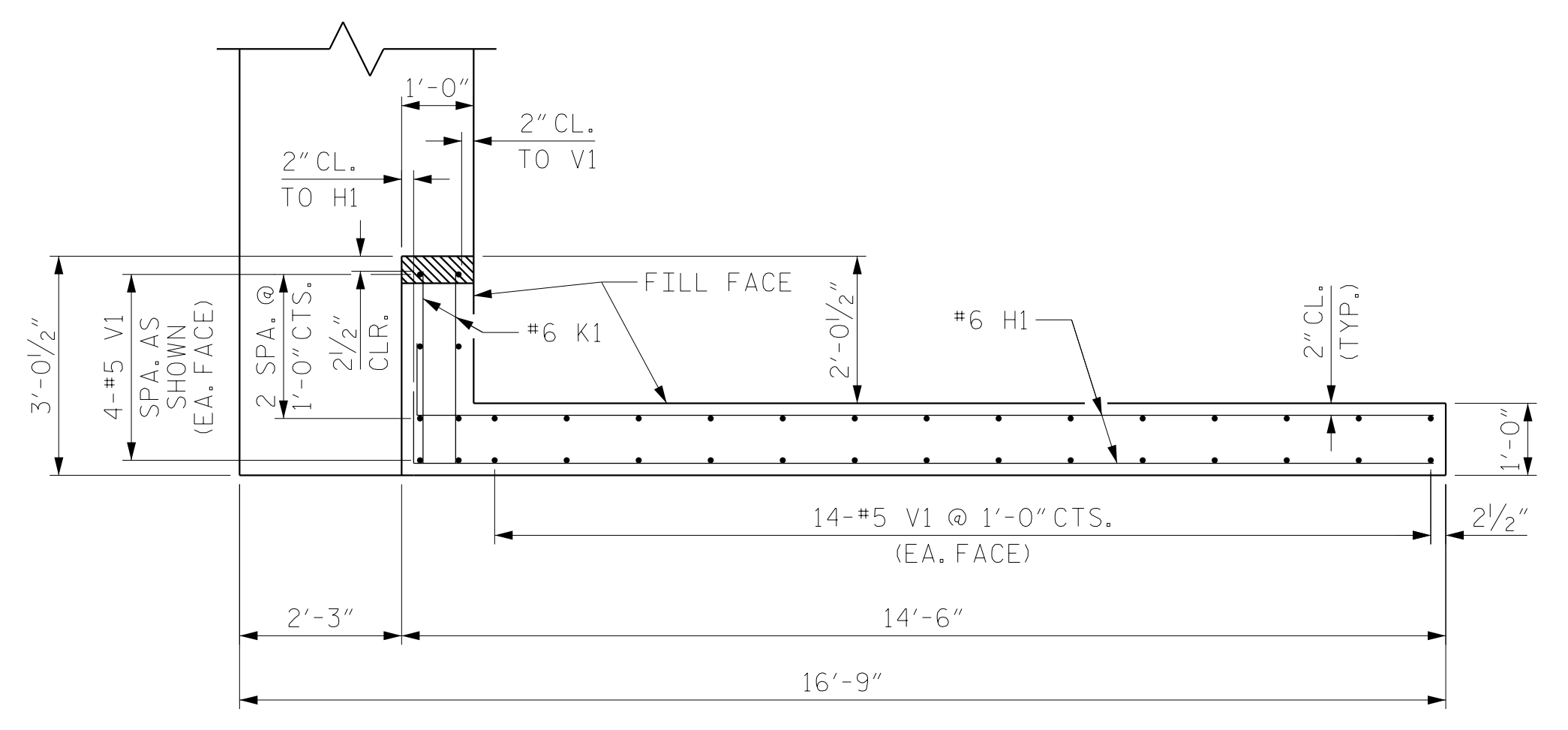
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SUBSTRUCTURE
INTEGRAL
END BENT NO. 2

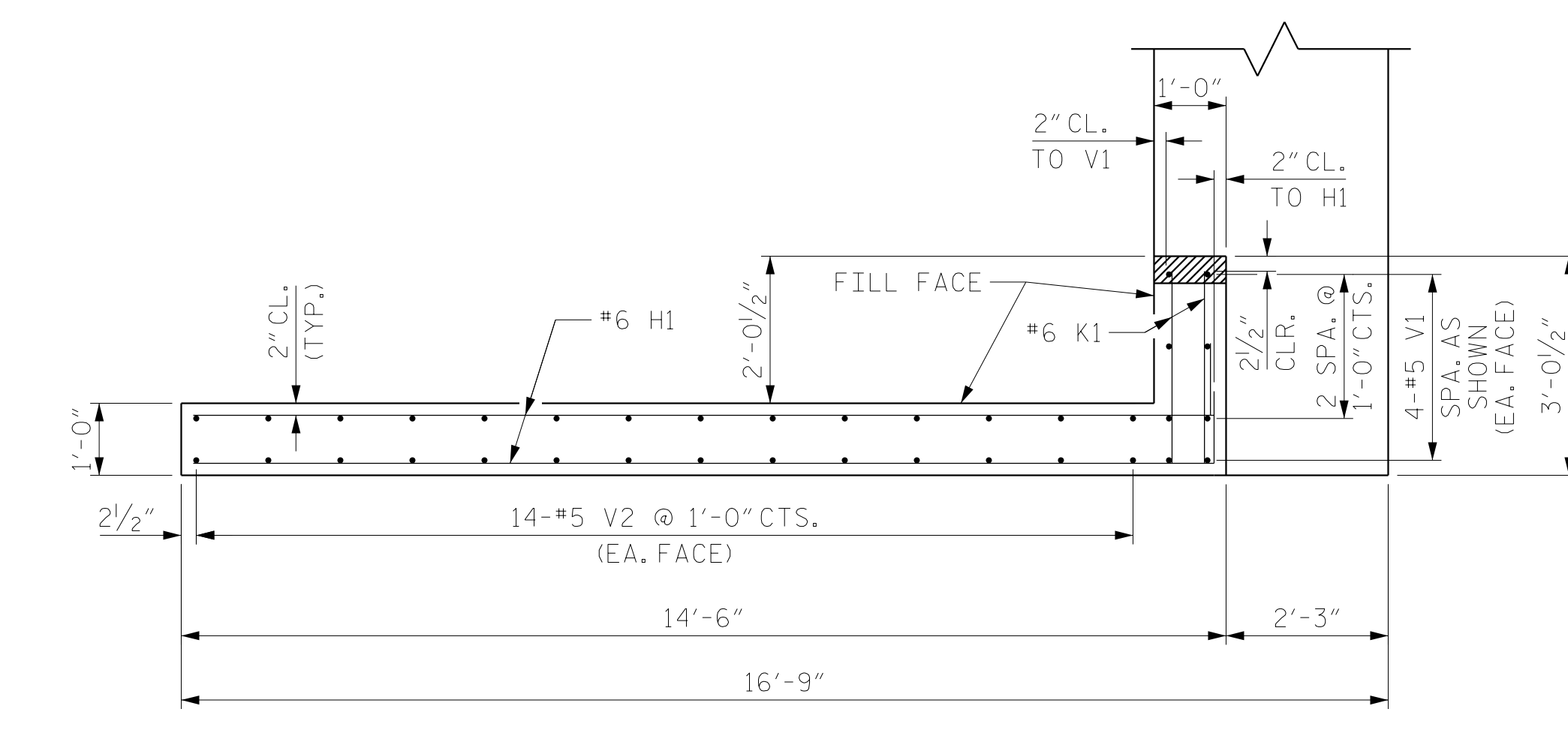
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NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

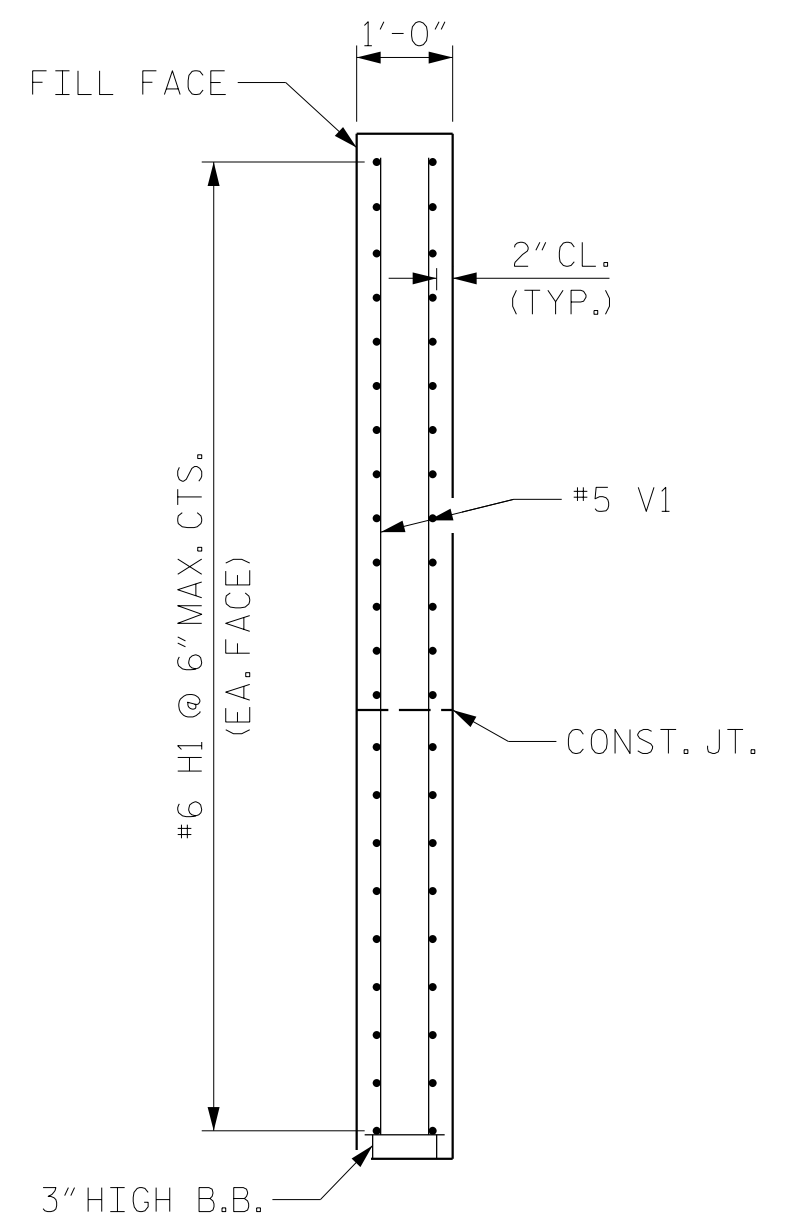
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DESIGN ENGINEER OF RECORD: PDS DATE : 06/2019



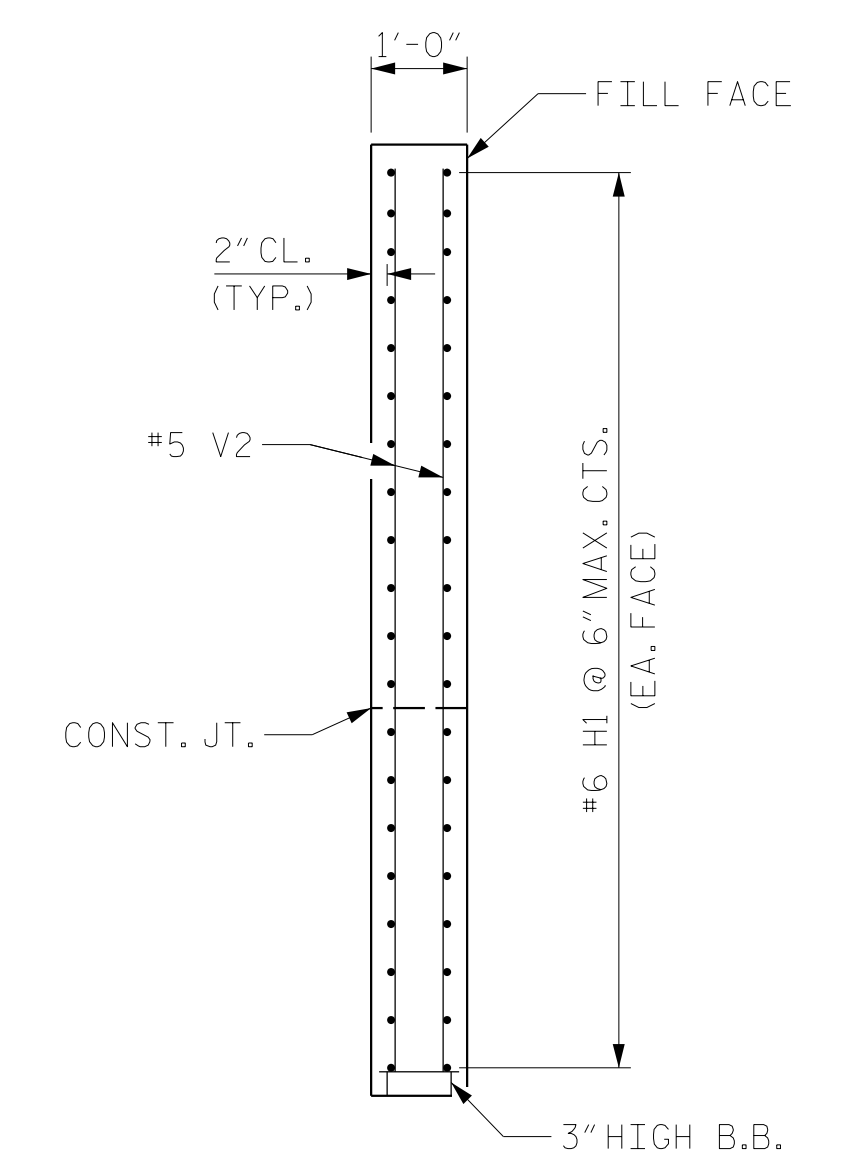
PLAN OF WING - W1



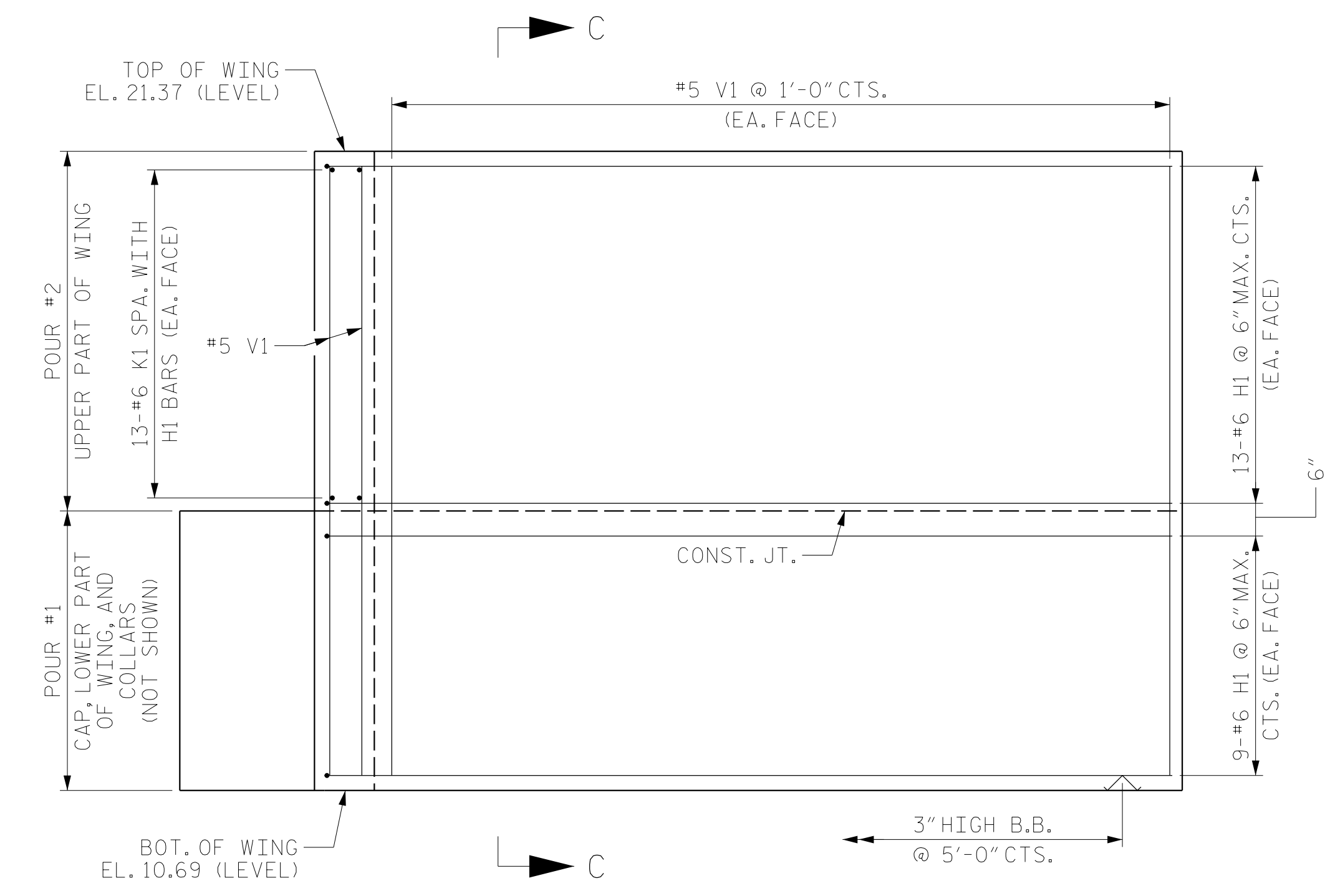
PLAN OF WING - W2



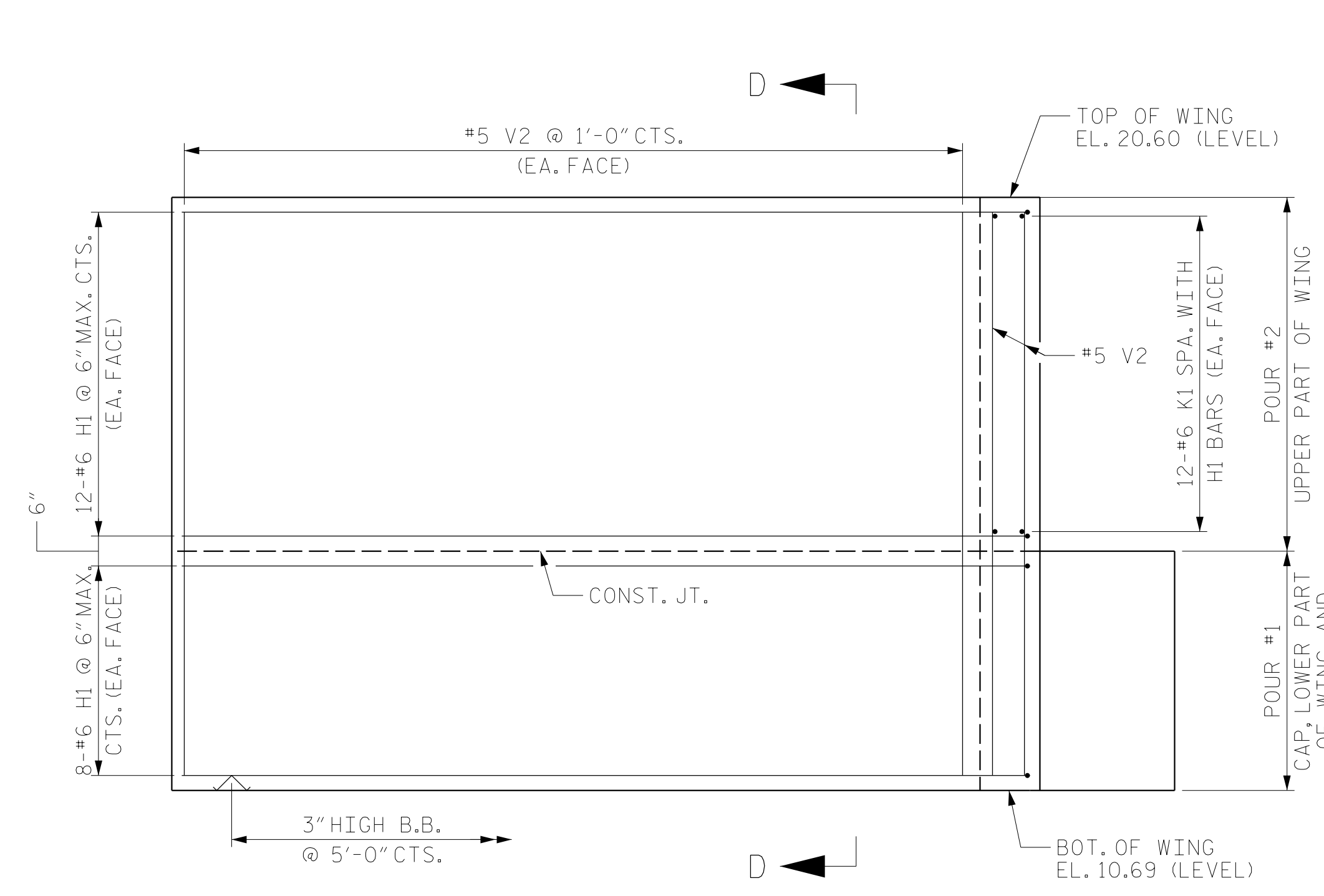
SECTION C-C



SECTION D-D



ELEVATION OF WING - W1



ELEVATION OF WING - W2

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 2 OF 3 REPLACES BRIDGE NO. 240139



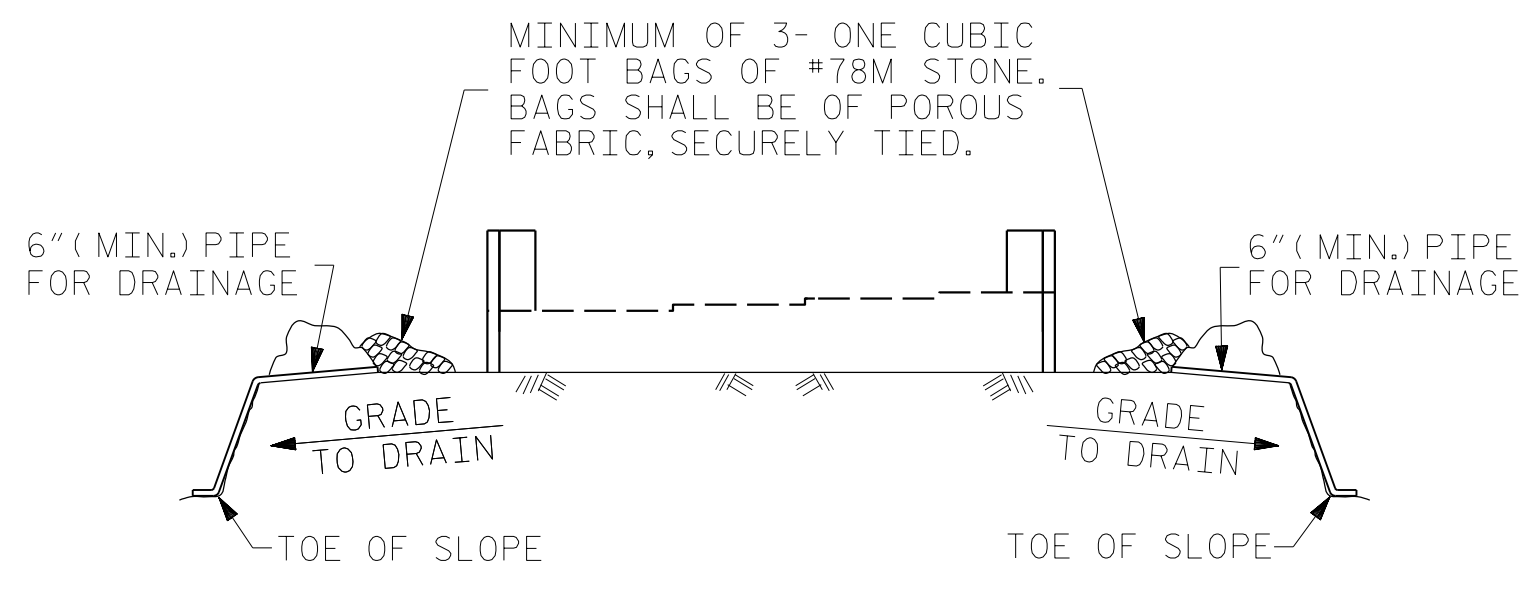
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STATE OF NORTH CAROLINA
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 END BENT NO. 2

DRAWN BY :	NSC	DATE :	04/2019
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DESIGN ENGINEER OF RECORD:	PDS	DATE :	06/2019

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1			3			TOTAL SHEETS
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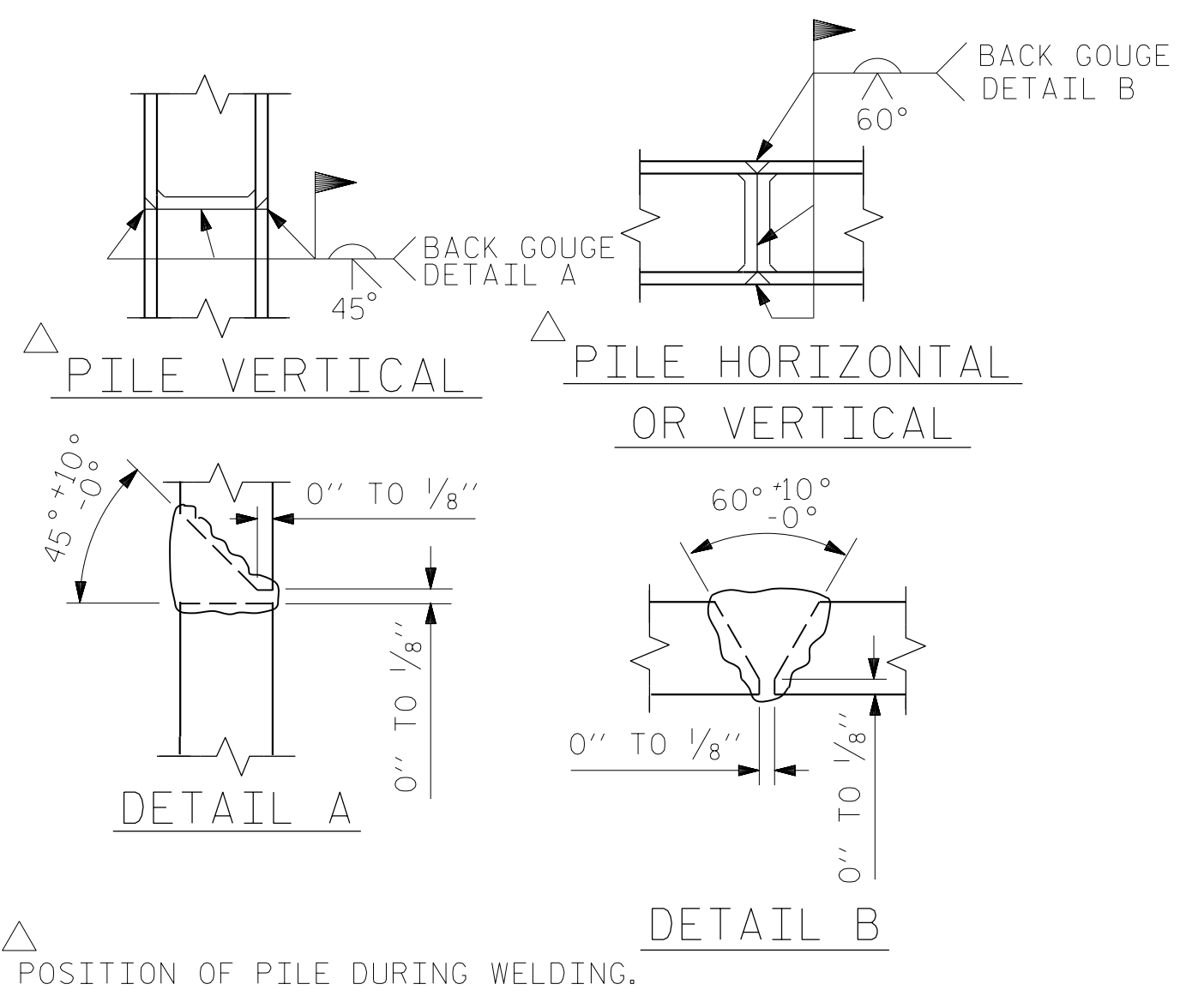


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

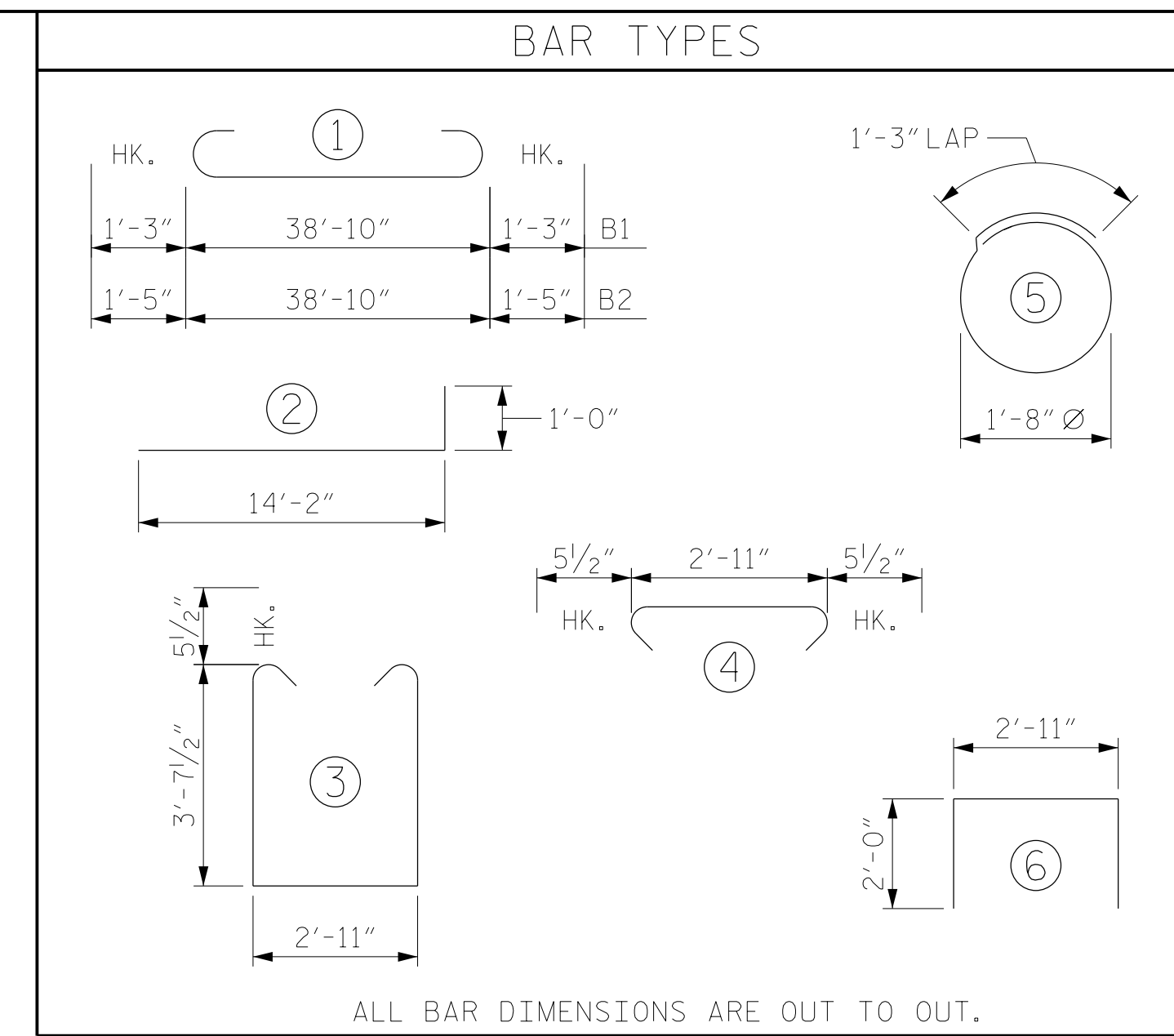
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

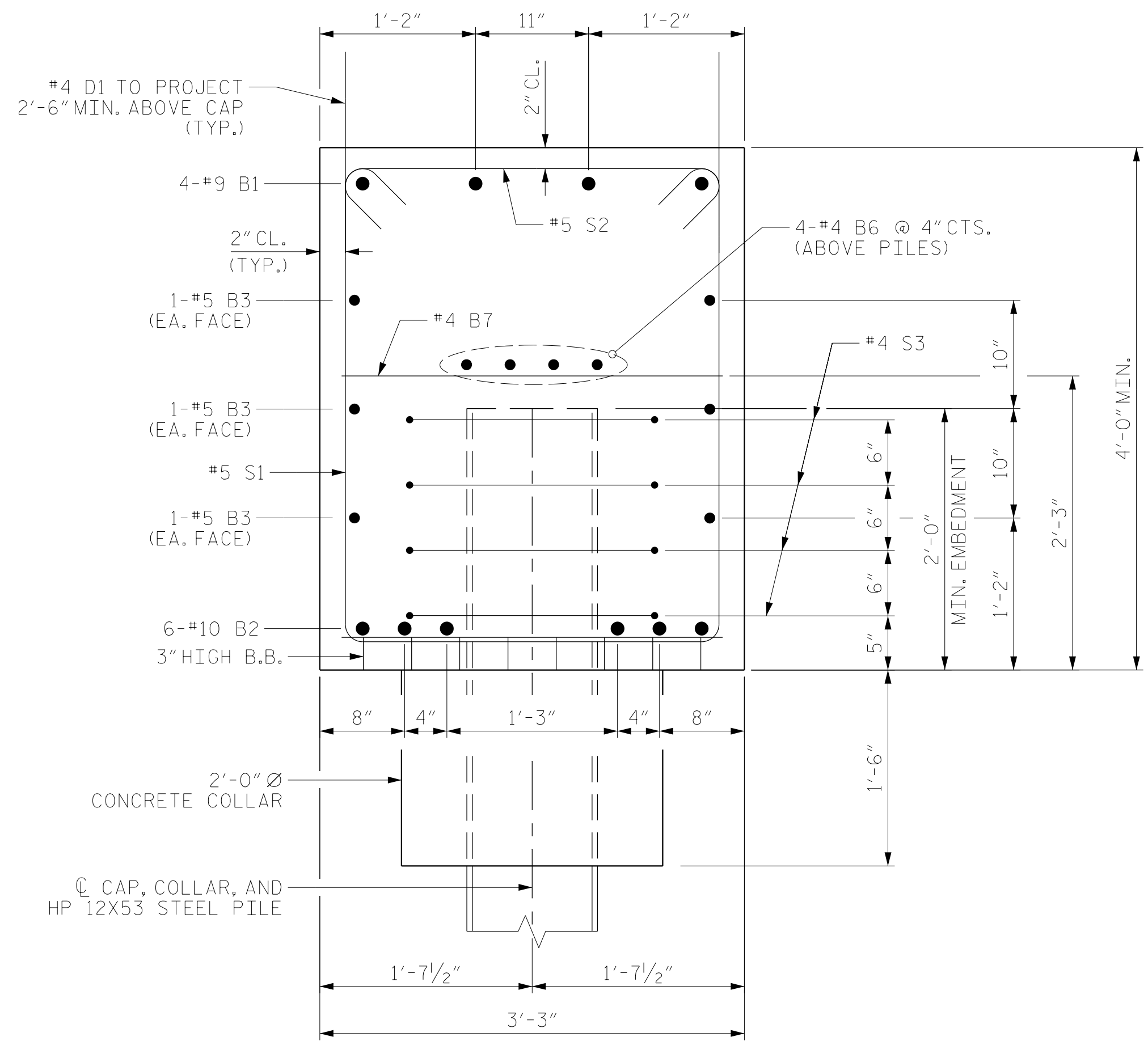


PILE SPLICE DETAILS



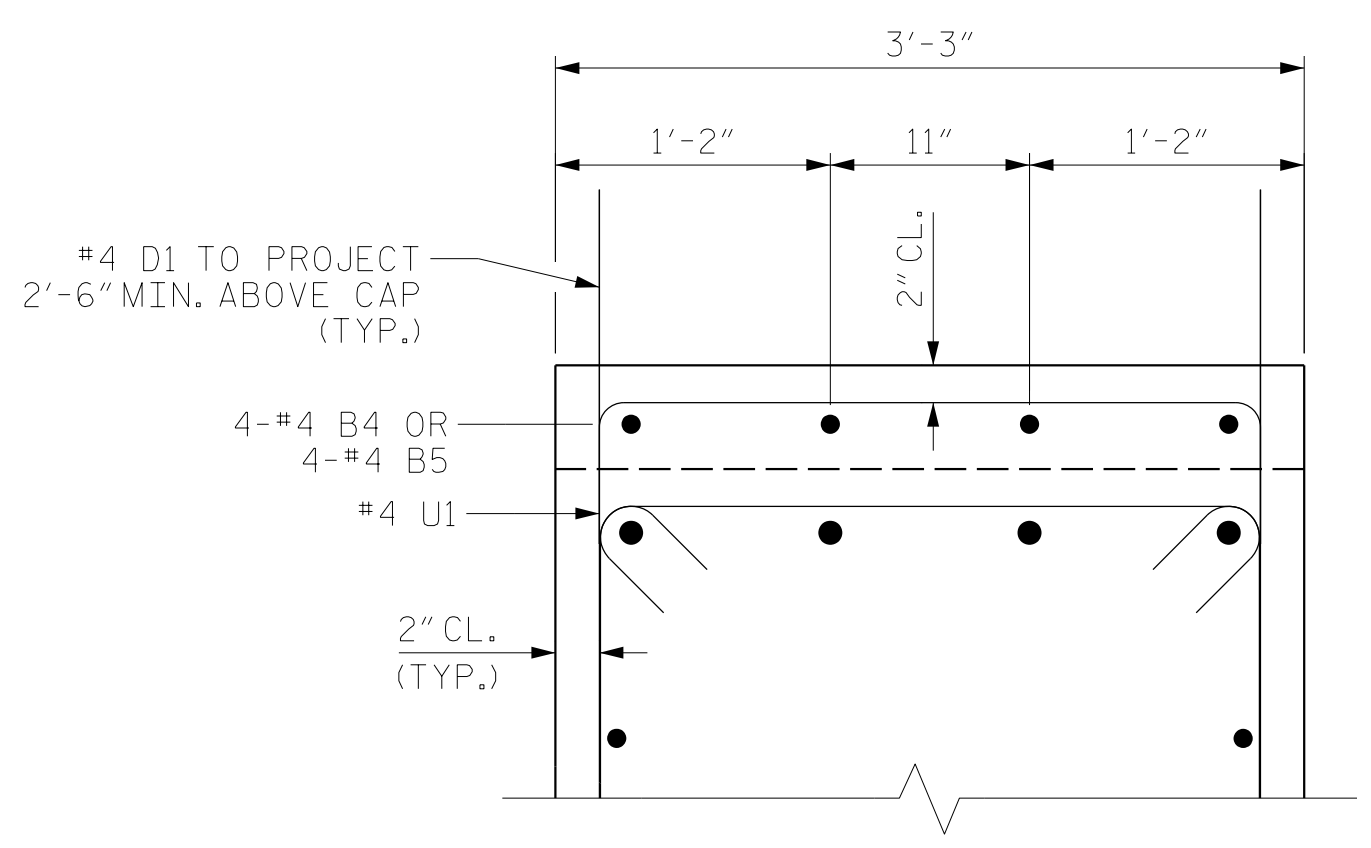
BILL OF MATERIAL					
END BENT NO. 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#9	1	41'-4"	562
B2	6	#10	1	41'-8"	1076
B3	6	#5	STR	38'-9"	242
B4	4	#4	STR	8'-6"	23
B5	4	#4	STR	7'-8"	20
B6	4	#4	STR	38'-9"	104
B7	10	#4	STR	2'-11"	19
D1	50	#4	STR	5'-9"	192
H1	84	#6	2	15'-2"	1914
K1	50	#6	STR	2'-8"	200
S1	38	#5	3	11'-1"	439
S2	38	#5	4	3'-10"	152
S3	28	#4	5	6'-6"	122
U1	12	#4	6	6'-11"	55
V1	36	#5	STR	10'-2"	382
V2	36	#5	STR	9'-5"	354

REINFORCING STEEL	5,856 LBS.
CLASS A CONCRETE	
POUR #1 COLLARS, CAP, AND LOWER PART OF WINGS	25.9 C.Y.
POUR #2 UPPER PART OF WINGS	7.3 C.Y.
TOTAL CLASS A CONCRETE	33.2 C.Y.
HP 12X53 STEEL PILES	
NO. 7	525 LIN. FT.
PILE DRIVING EQUIPMENT SETUP	7 EA.
PILE REDRIVES	4 EA.



SECTION A-A

THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4"



SECTION B-B

THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING AREA, SHALL BE RAKED TO A DEPTH OF 1/4"

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 3 OF 3 REPLACES BRIDGE NO. 240139

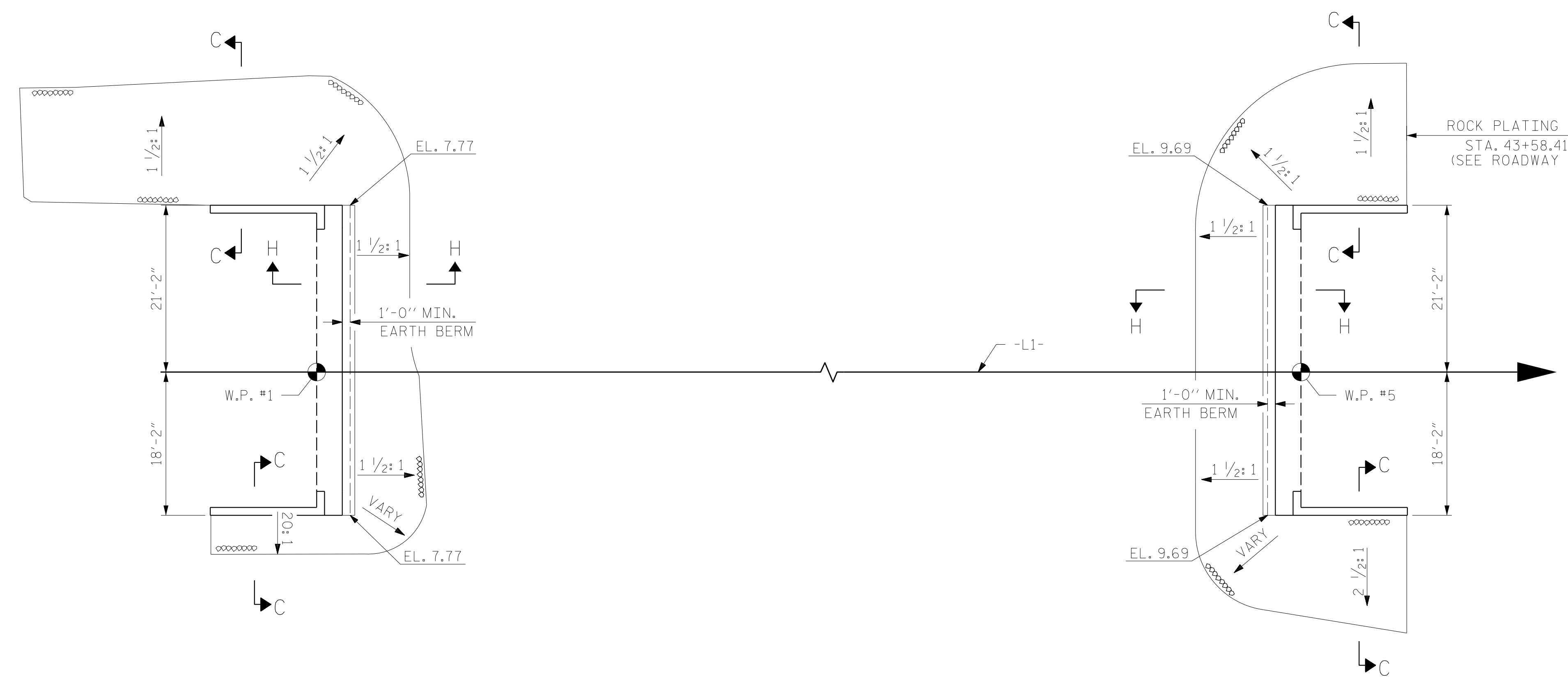
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 INTEGRAL
 END BENT NO. 2
 DETAILS

REVISIONS						SHEET NO.
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1			3			31
2			4			

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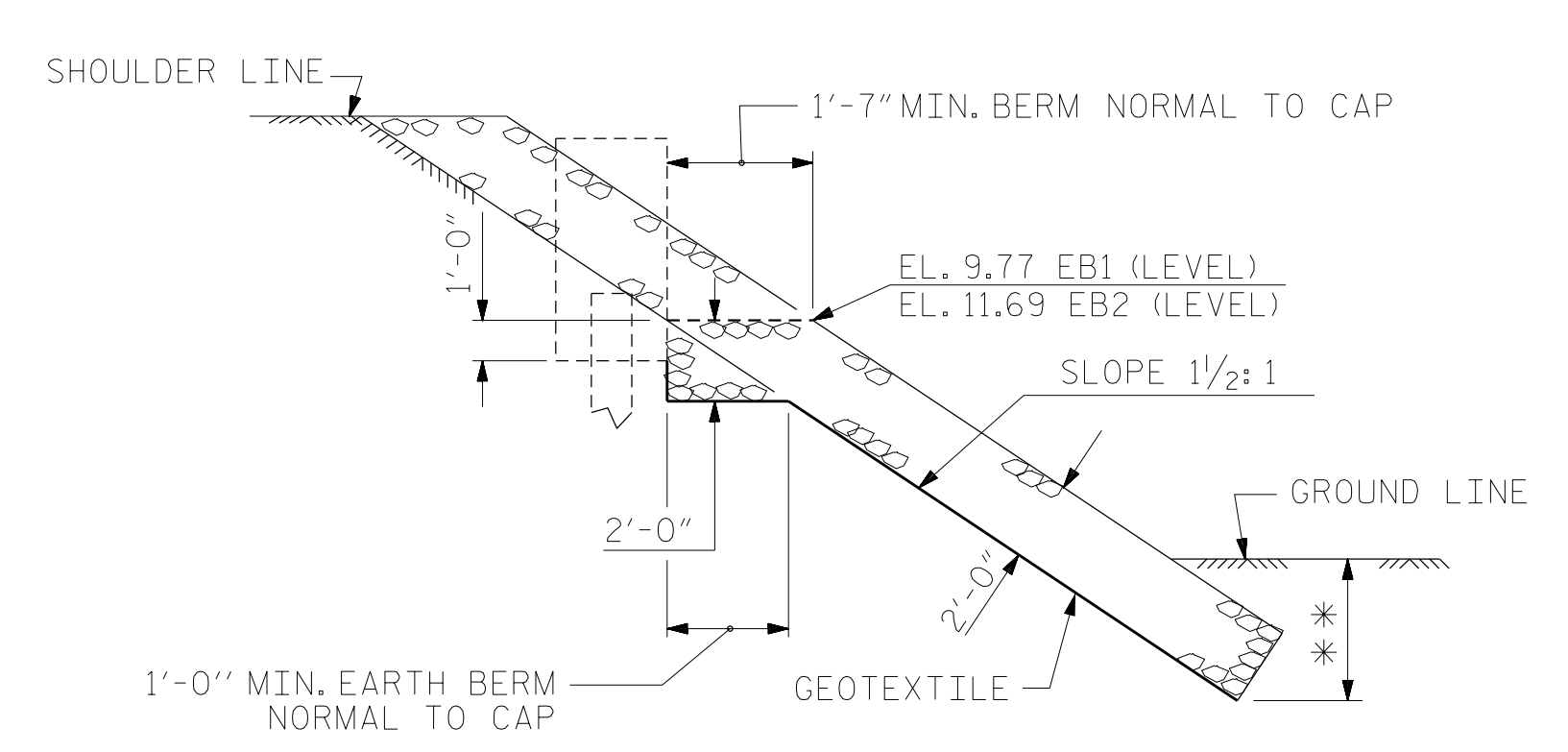
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CHECKED BY :	JMR	DATE :	05/2019
DESIGN ENGINEER OF RECORD:	PDS	DATE :	06/2019



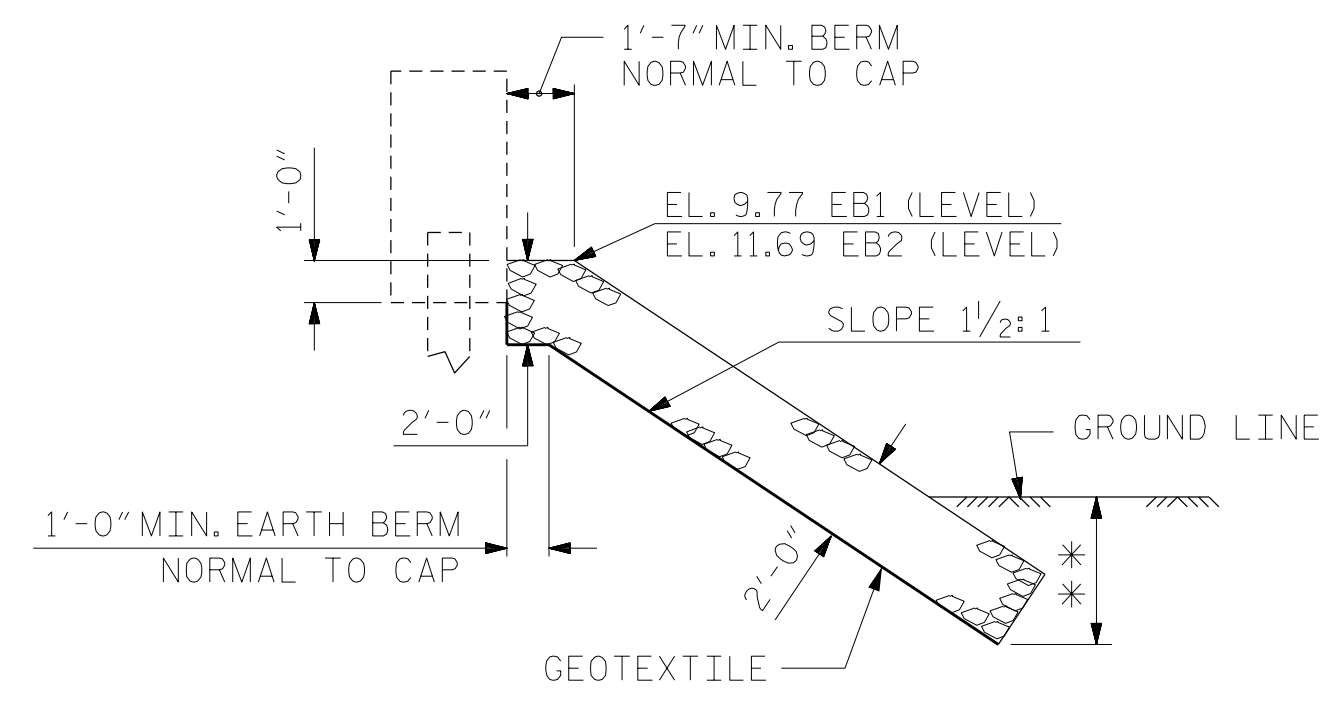
PLAN

NOTES
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

ESTIMATED QUANTITIES		
BRIDGE @ STA. 41+45.00 -L1-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	170	185
END BENT 2	160	175

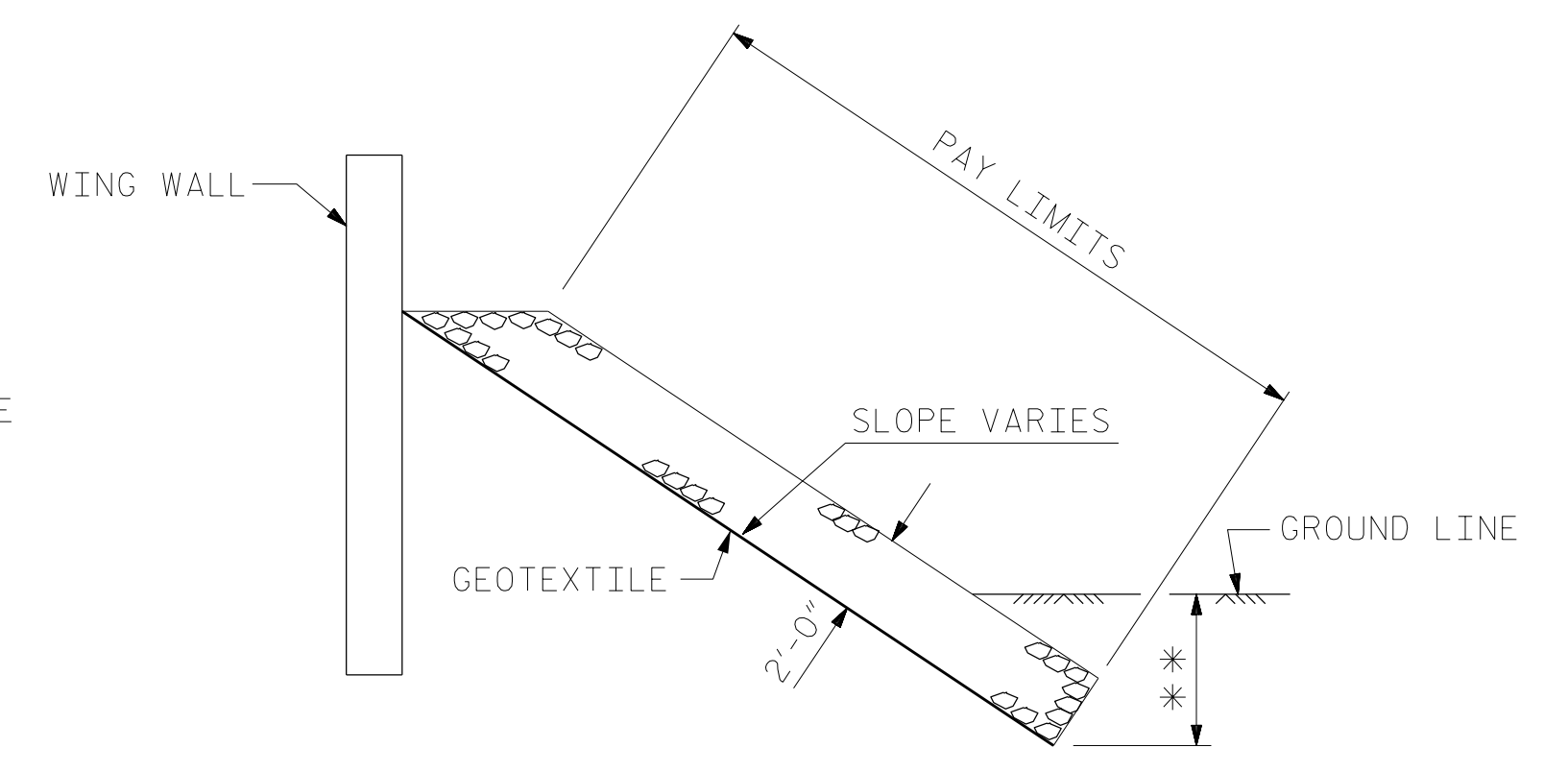


SECTION H-H



SECTION C-C
BERM RIP RAPPED

** KEY IN 3'-6" MIN. BELOW EL. 6.0 @ END BENT 1
KEY IN 3'-6" MIN. BELOW EL. 7.0 @ END BENT 2



SECTION C-C

PROJECT NO. B-4484
CRAVEN COUNTY
STATION: 41+45.00 -L1-

REPLACES BRIDGE NO. 240139



RS&H
RS&H Architects-Engineers-Planners, Inc.
8521 Six Forks Road, Suite 400
919-926-4100 FAX 919-846-9080
www.rsandh.com
North Carolina License No. 50737-F-0403-C-02

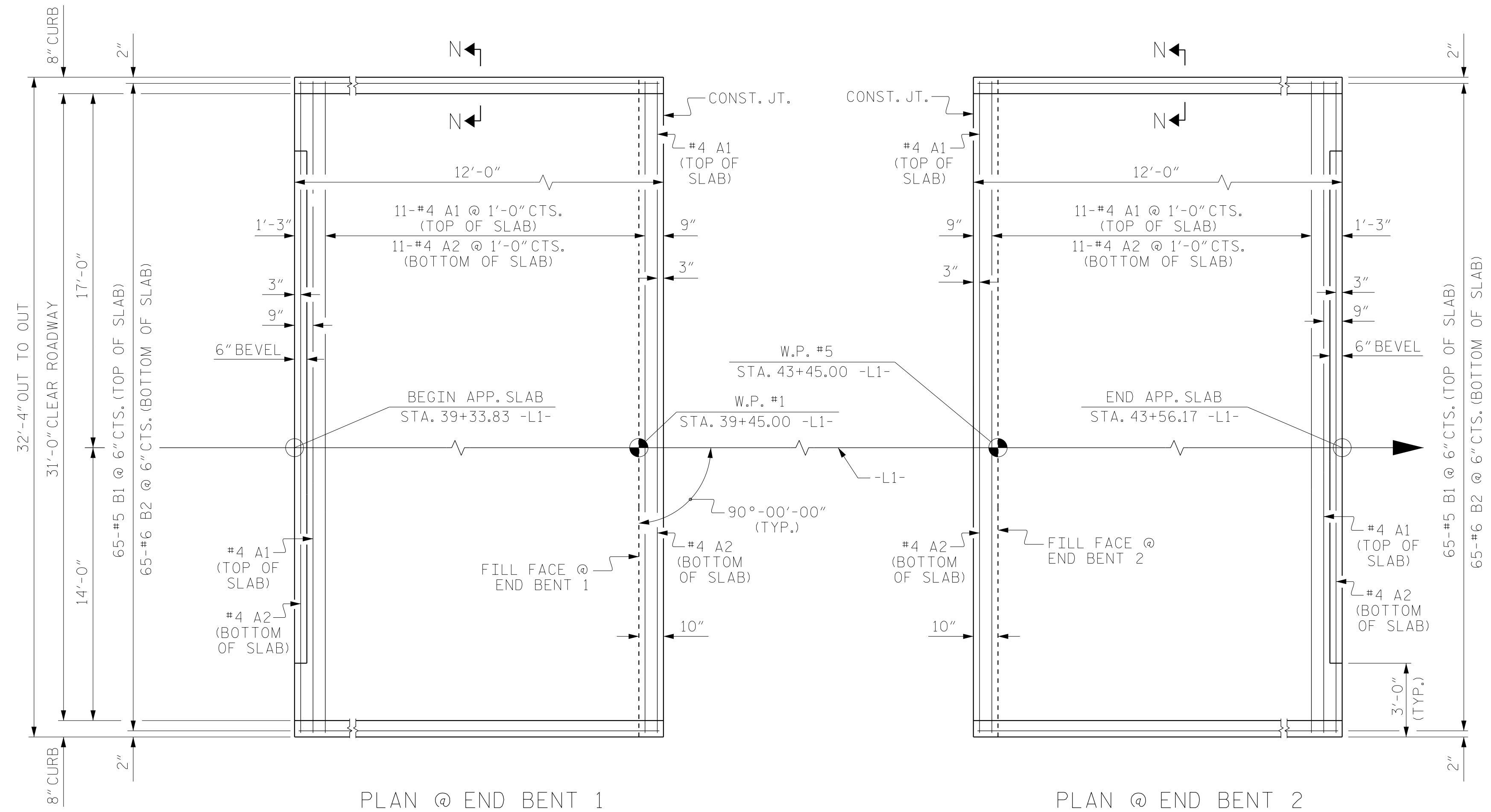
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

RIP RAP DETAILS

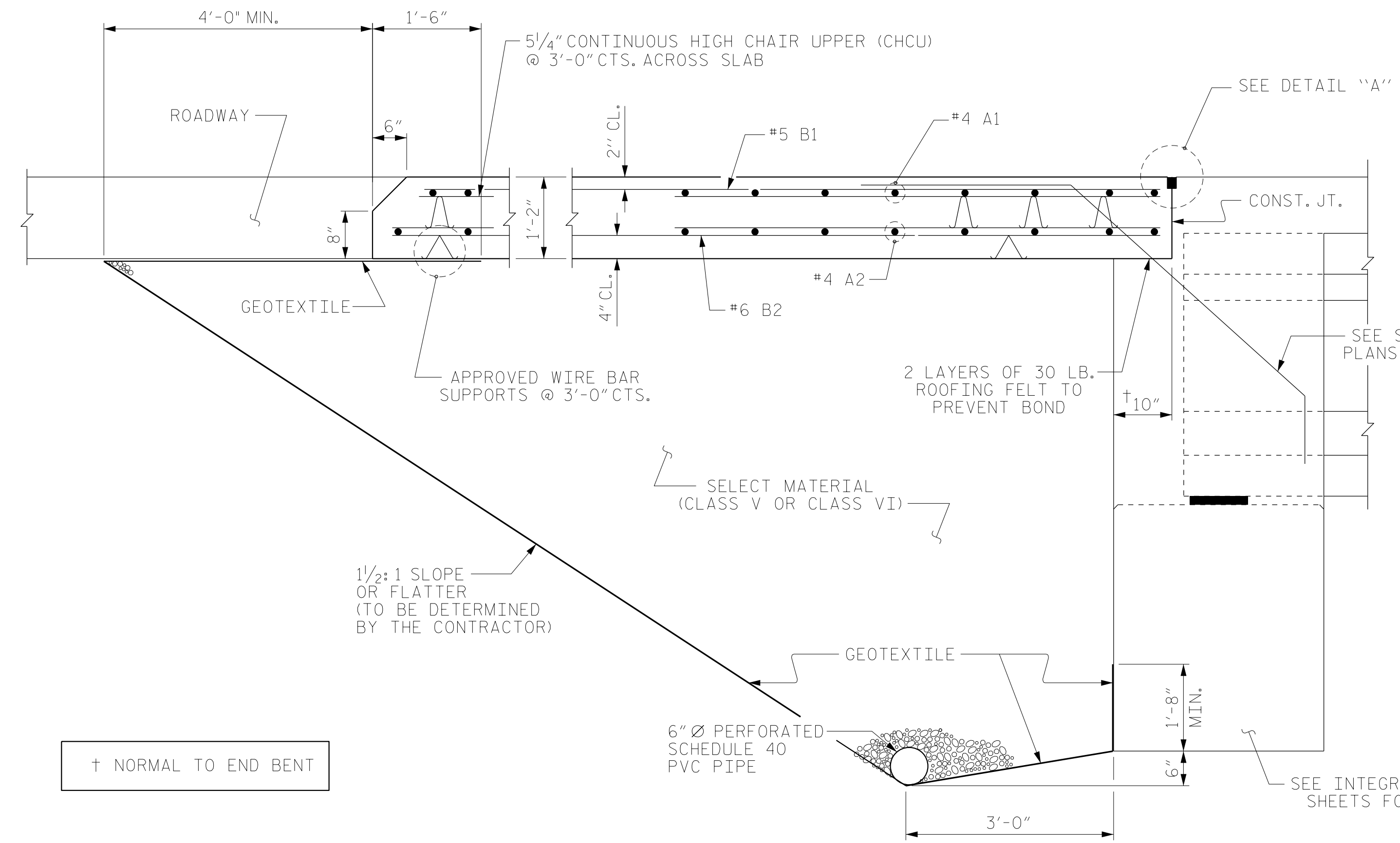
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS
1			3			31
2			4			

DRAWN BY : NSC DATE : 04/2019
CHECKED BY : JMR DATE : 06/2019
DESIGN ENGINEER OF RECORD: PDS DATE : 06/2019

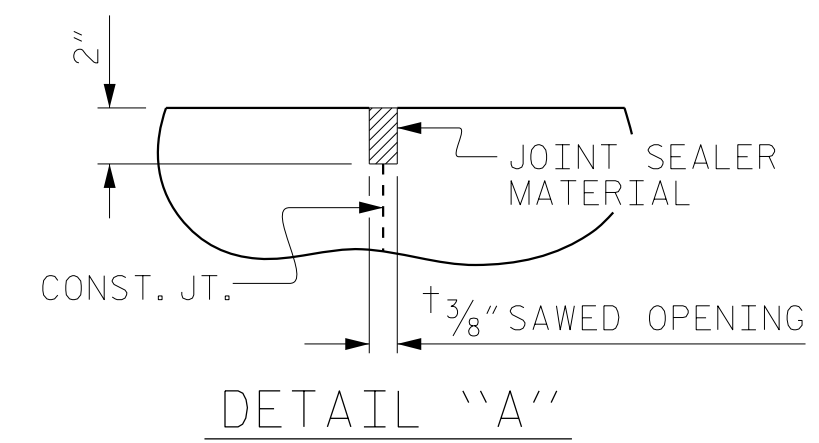
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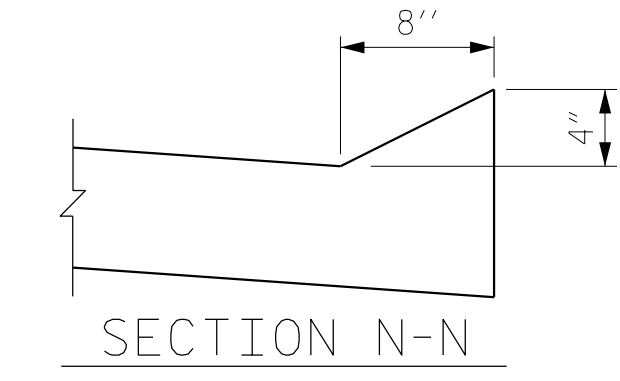
PLAN @ END BENT 1
 PLAN @ END BENT 2
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



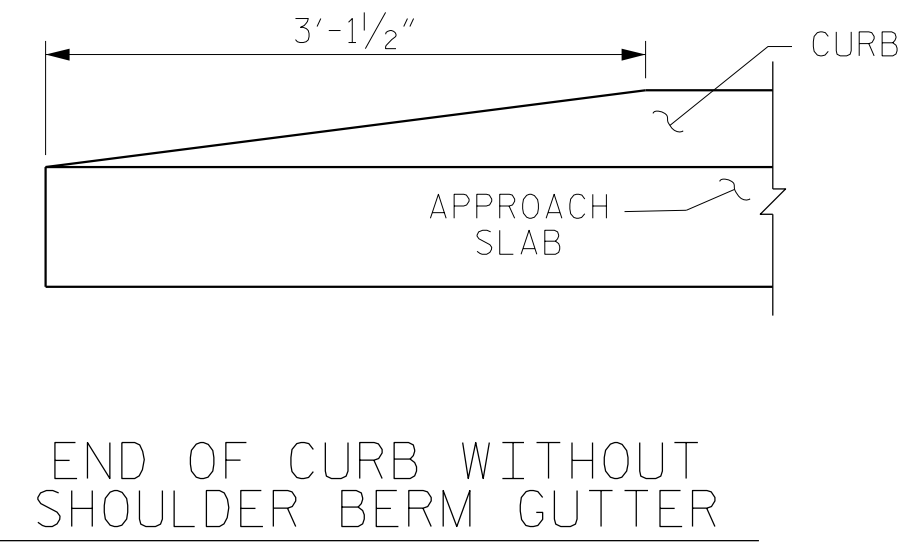
SECTION THRU SLAB
 (TYPE I - STANDARD APPROACH FILL)



DETAIL "A"



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

NOTES

APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, AND SELECT MATERIAL, 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 6" 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.

THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

AT THE CONTRACTORS OPTION, "TYPE A - ALTERNATE APPROACH FILL" IN LIEU OF "TYPE I - STANDARD APPROACH FILL" MAY BE CONSTRUCTED AT NO ADDITIONAL COST TO THE DEPARTMENT. SEE SHEET 2 OF 2 FOR DETAILS AND NOTES.

BILL OF MATERIAL

FOR ONE APPROACH SLAB (2 REQ'D)

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	13	#4	STR	32'-0"	278
A2	13	#4	STR	32'-0"	278
*B1	65	#5	STR	11'-2"	757
B2	65	#6	STR	11'-8"	1139
REINFORCING STEEL					1,417 LBS.
* EPOXY COATED REINFORCING STEEL					1,035 LBS.
CLASS AA CONCRETE					16.6 C.Y.

SPLICE LENGTHS

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

ASSEMBLED BY : NSC	DATE : 04/2019
CHECKED BY : JMR	DATE : 05/2019
DRAWN BY : TLA 10/05	REV. 12/21/11 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

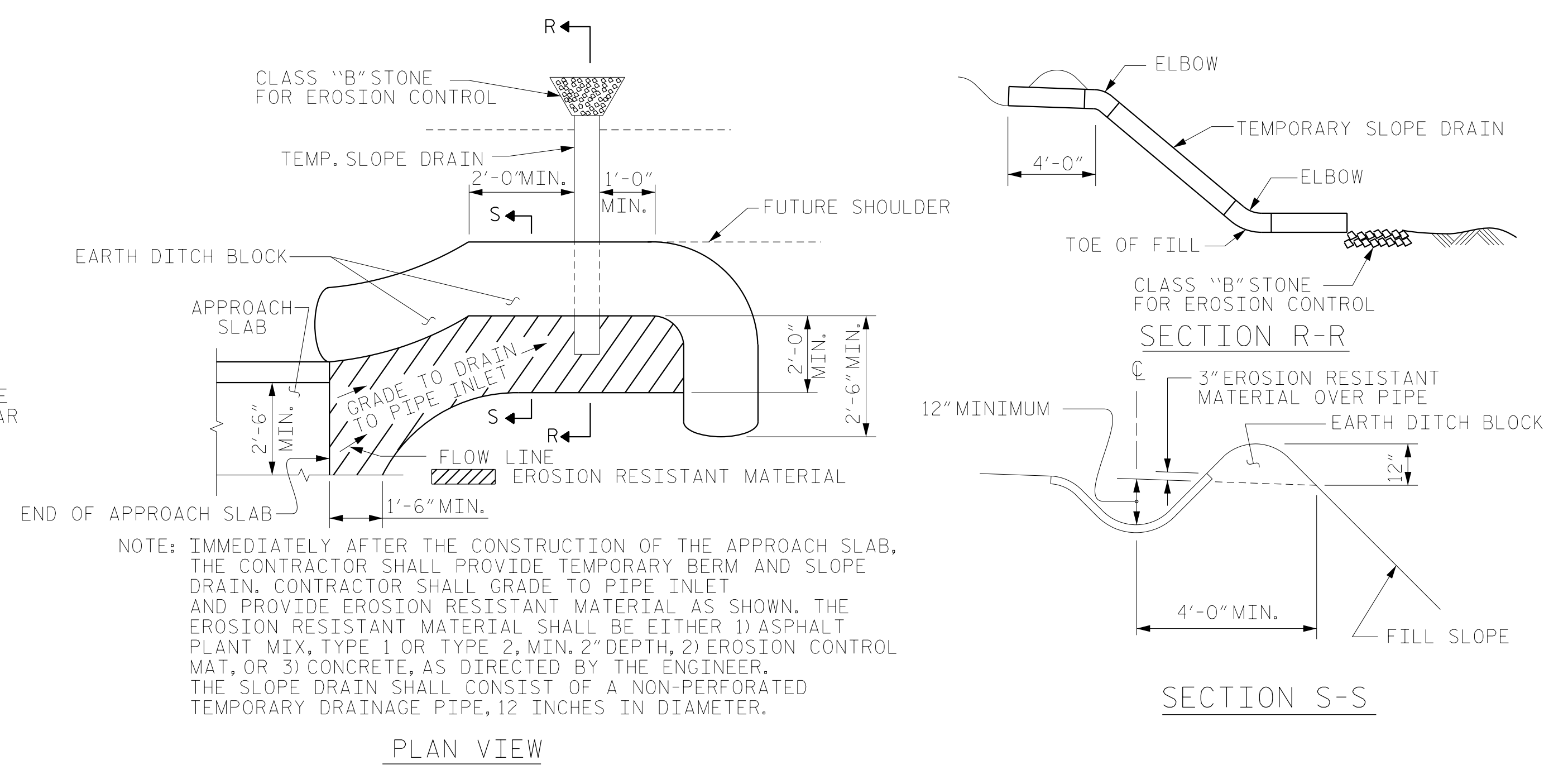
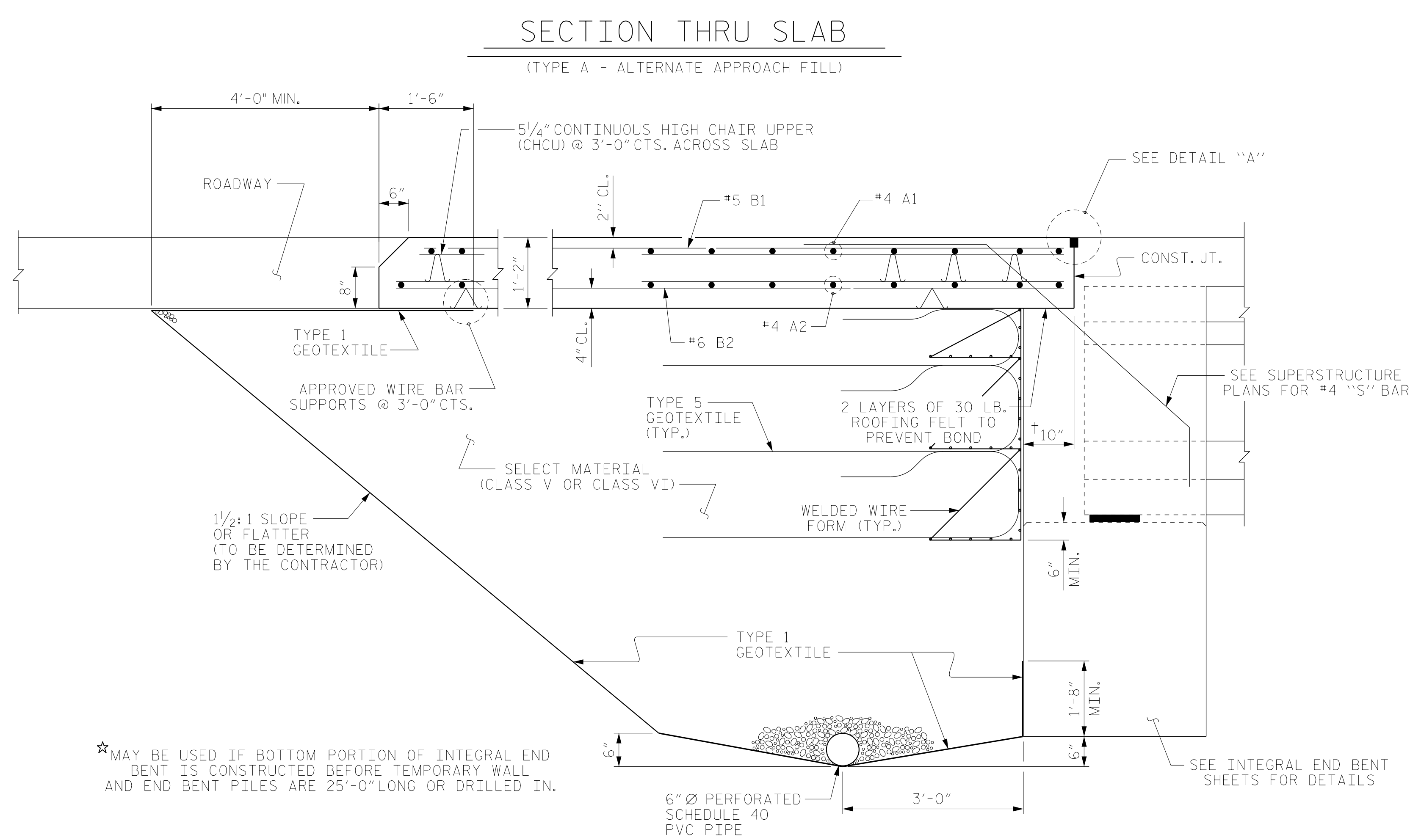
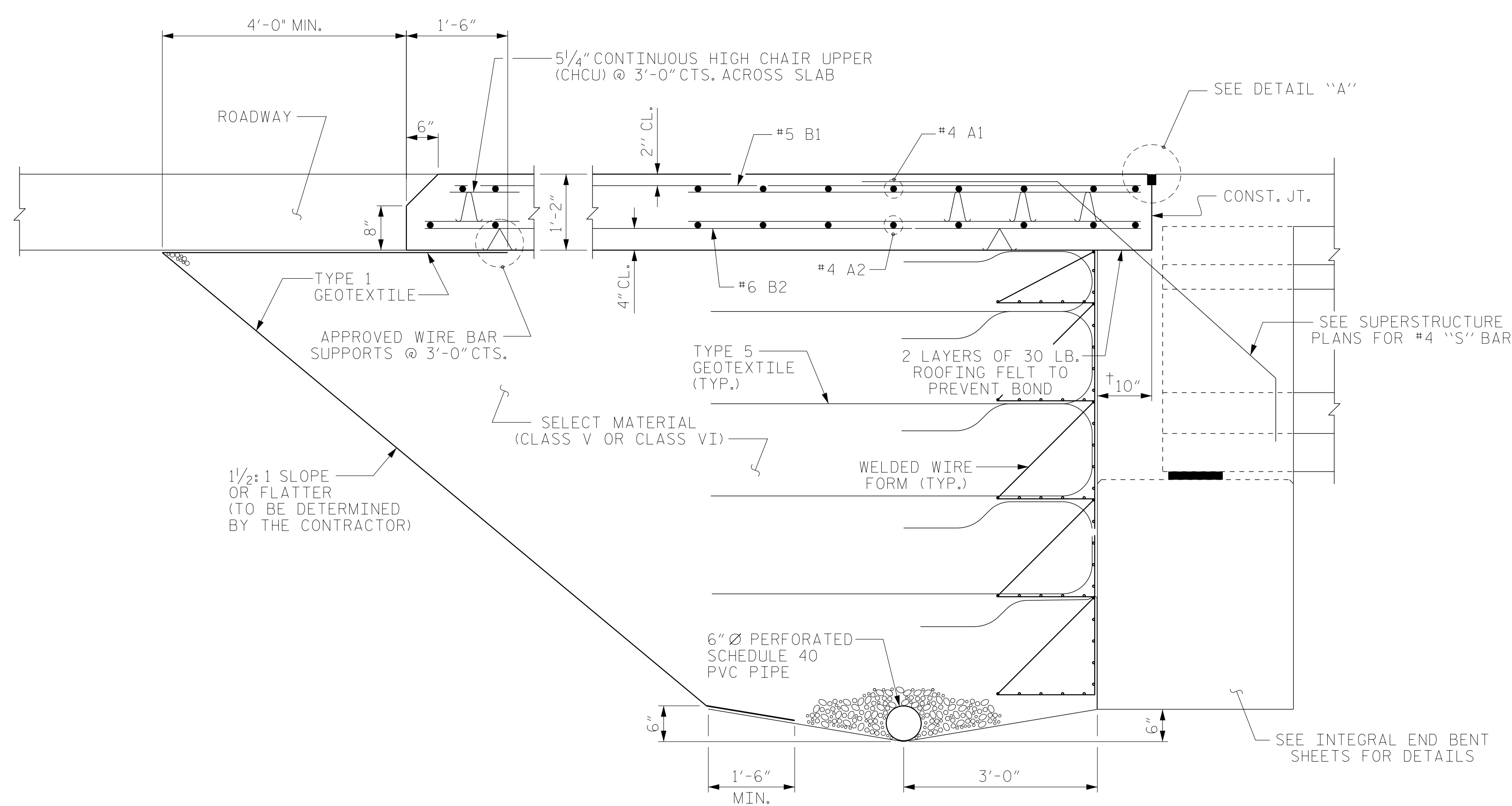
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PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

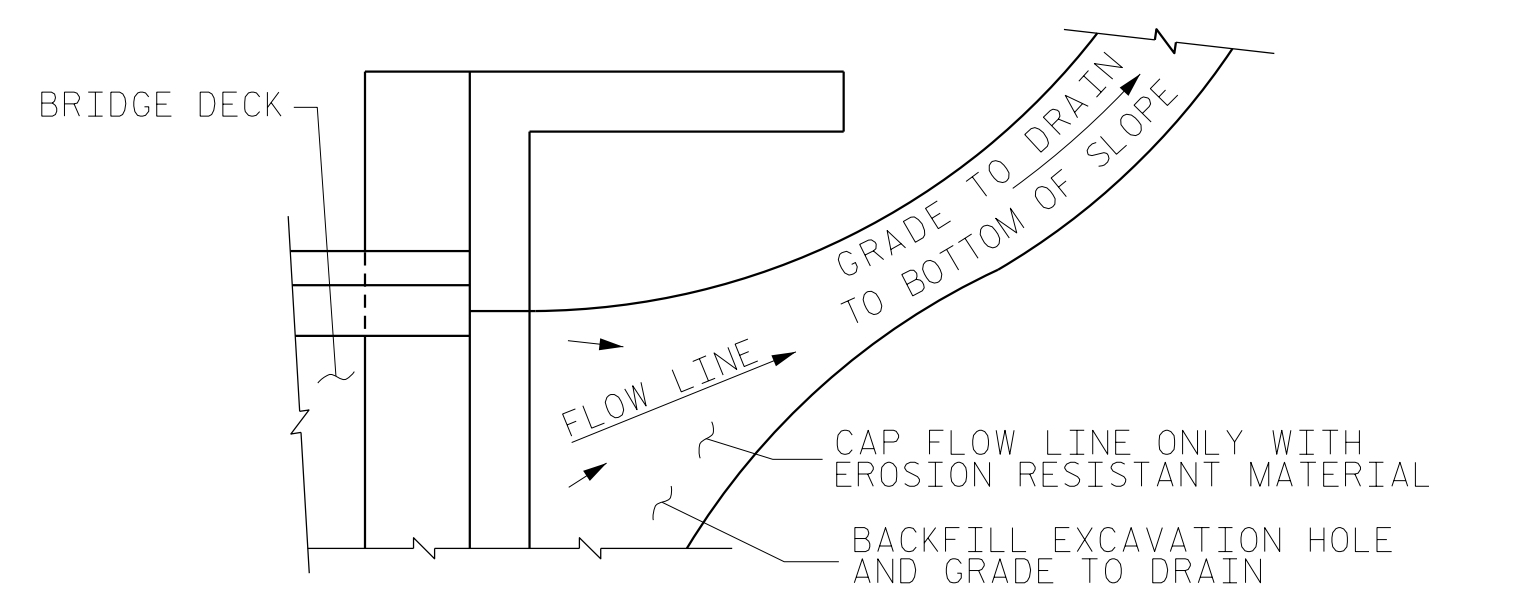
SHEET 1 OF 2 REPLACES BRIDGE NO. 240139

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH SLAB FOR INTEGRAL ABUTMENT WITH FLEXIBLE PAVEMENT

REVISIONS						SHEET NO.
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1			3			TOTAL SHEETS
2			4			31



TEMPORARY BERM AND SLOPE DRAIN DETAILS
(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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.

NOTES

- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
- FOR TEMPORARY GEOTEXTILE WALL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.
- GEOTEXTILE (TYPE 1 OR TYPE 5) SHALL BE 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 6" 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.
- THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. B-4484
CRAVEN COUNTY
 STATION: 41+45.00 -L1-

SHEET 2 OF 2 REPLACES BRIDGE NO. 240139



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 BRIDGE APPROACH
 SLAB DETAILS

ASSEMBLED BY : NSC	DATE : 04/2019
CHECKED BY : JMR	DATE : 05/2019
DRAWN BY : TLA 10/05	REV. 12/21/11 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC

SECTION THRU SLAB
 (TYPE A - ALTERNATE APPROACH FILL)

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 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S2-31
1			3			TOTAL SHEETS
2			4			31