

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.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL 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 THE 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.

ALL REINFORCING STEEL IN THE CONCRETE BARRIER RAIL SHALL BE EPOXY COATED.

THE D1, D2, D3, S1 AND S2 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO PROVIDE 2" CLEARANCE TO THE 1/2" EXPANSION JOINT AND ALL OPEN JOINTS IN THE BARRIER.

PROVIDE A 4" HIGH X 8" WIDE FORMED DRAINAGE SLOT IN THE LEFT SIDE BARRIER RAIL. THIS SLOT SHALL BE PLACED AT 4'-0" SPACING ALONG THE FULL LENGTH OF THE BRIDGE. PROVIDE 2" MIN. CLR TO THE "S" BARS IN THE BARRIER TO THE SLOT. THE SLOT SHALL BE PLUGGED AT THE COMPLETION OF THE PROJECT AFTER TRAFFIC IS PLACED IN THE PERMANENT CONDITION. SEE SPECIAL PROVISIONS. PLUGGING OF DECK DRAINS IS CONSIDERED INCIDENTAL TO THE COST OF THE "CONCRETE BARRIER RAIL".

SEE CONSTRUCTION SEQUENCE AND TYPICAL SECTION SHEETS FOR ADDITIONAL STAGING INFORMATION.

#5D1 AND #5D2 BARS SHALL BE MACHINE THREADED TO FIT TO COUPLER AND DELIVERED CONNECTED. THREADS SHALL BE GREASED TO PERMIT EASY SEPARATION AFTER INSTALLATION. COUPLERS ARE CONSIDERED INCIDENTAL TO THE COST OF CONCRETE BARRIER RAIL.

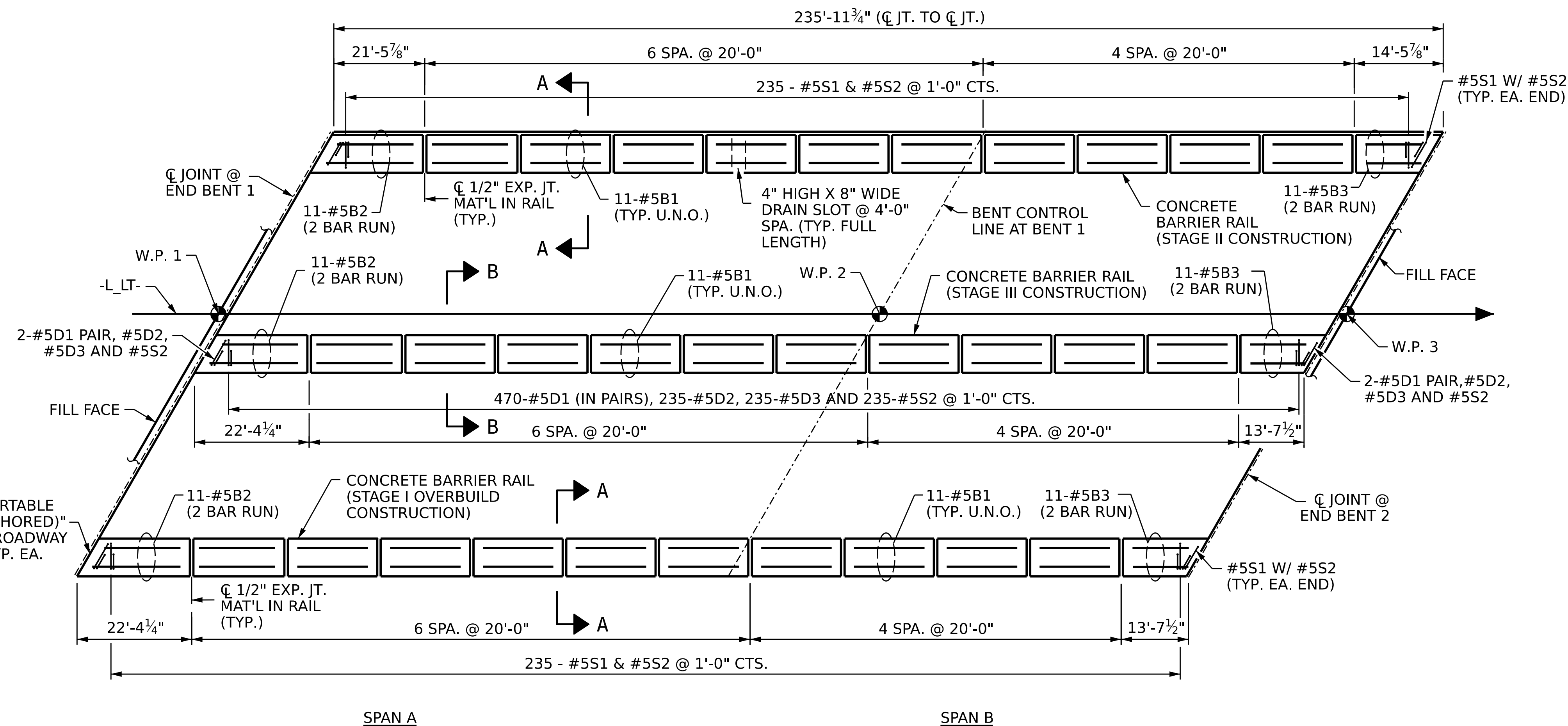
THE #5D1 COUPLED TO #5D2 OR #5D3 SHALL BE PUSHED INTO GREEN CONCRETE AFTER POURING AND SCREEDING THE DECK. THE COUPLER SHALL BE INSTALLED TO BE 3/16" BELOW THE TOP OF THE FINISHED CONCRETE DECK. ONCE DECK HAS CURED, #5D2 AND #5D3 SHALL BE UNTHREADED AND SET ASIDE. A TEMPORARY BOLT SHALL BE INSTALLED IN THE COUPLER AND SEALED TO PREVENT DEBRIS INTRUSION AND PROTECT THE THREADS. SEE DETAIL "D". WHEN CONSTRUCTING CONCRETE MEDIAN BARRIER, REMOVE SEALER AND TEMPORARY BOLT AND THREAD #5D2 AND #5D3 IN TO COUPLER.

PRIOR TO CURING, THE AREA UNDERNEATH THE STAGE III RIGHT CONCRETE BARRIER SHALL BE RAKE FINISHED TO A SURFACE ROUGHNESS OF 3/16".

THE CONTRACTOR MAY SUBMIT ALTERNATIVE DETAILS FOR ANCHORING THE STAGE III CONCRETE BARRIER RAIL INTO THE DECK TO THE ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION OF THE DECK. ANY ALTERNATIVE METHODS APPROVED FOR CONSTRUCTION SHALL BE AT NO ADDITIONAL COST TO THE DEPARTMENT.

THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS FOR THE D1, D2, D3, AND COUPLER PRIOR TO FABRICATION TO ENSURE PROPER FIT.

FOR SECTIONS AND DETAILS, SEE SHEET 2.



PLAN OF CONCRETE BARRIER RAIL

DISTANCES ARE MEASURED ALONG OUTSIDE FACE OF BARRIER RAIL

PROJECT NO. B-3186 / B-5898

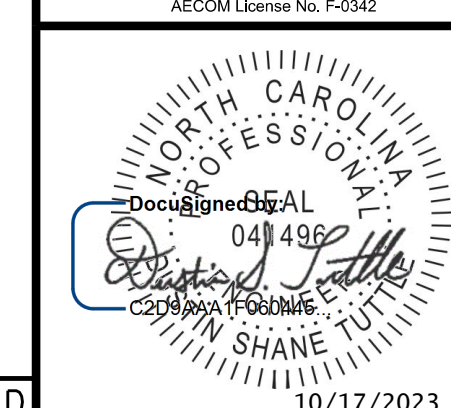
HAYWOOD COUNTY

STATION: 24+70.00 -L_LT-

SHEET 1 OF 2

DRAWN BY : T.E. NEAL DATE : 05/2023
 CHECKED BY : J.C. MORRISON DATE : 06/2023
 DESIGN ENGINEER OF RECORD : D. TUTTLE DATE : 06/2023

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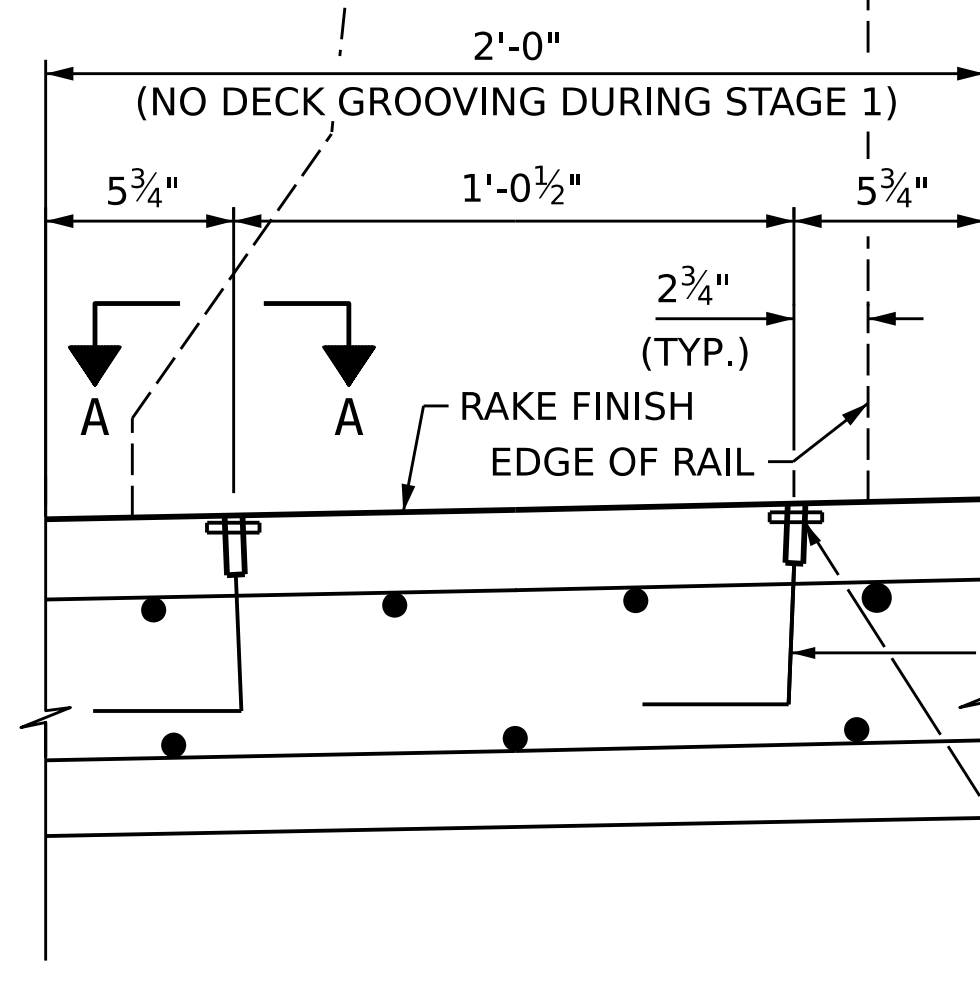
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUPERSTRUCTURE

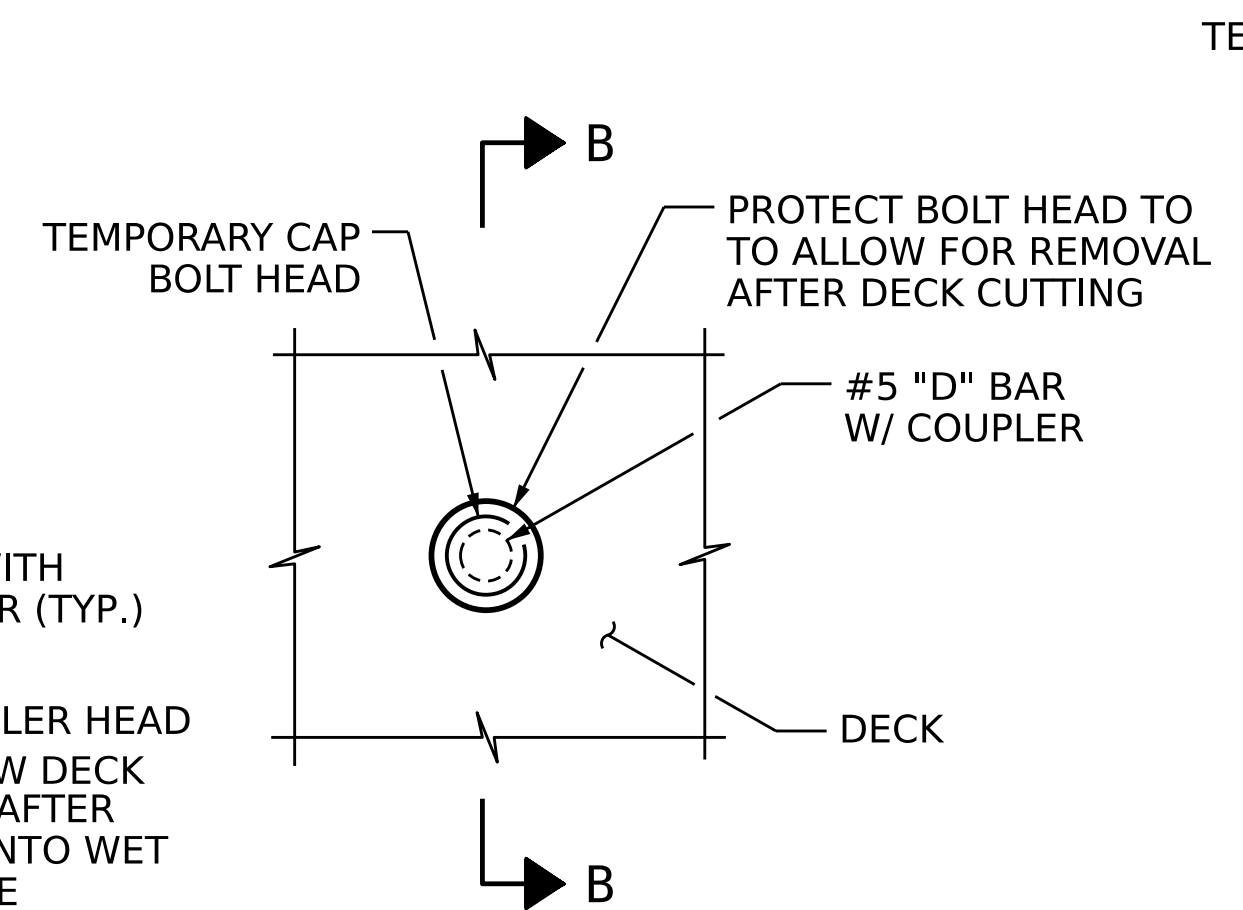
CONCRETE BARRIER RAIL
 PLAN VIEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-25
1			3			TOTAL SHEETS
2			4			50

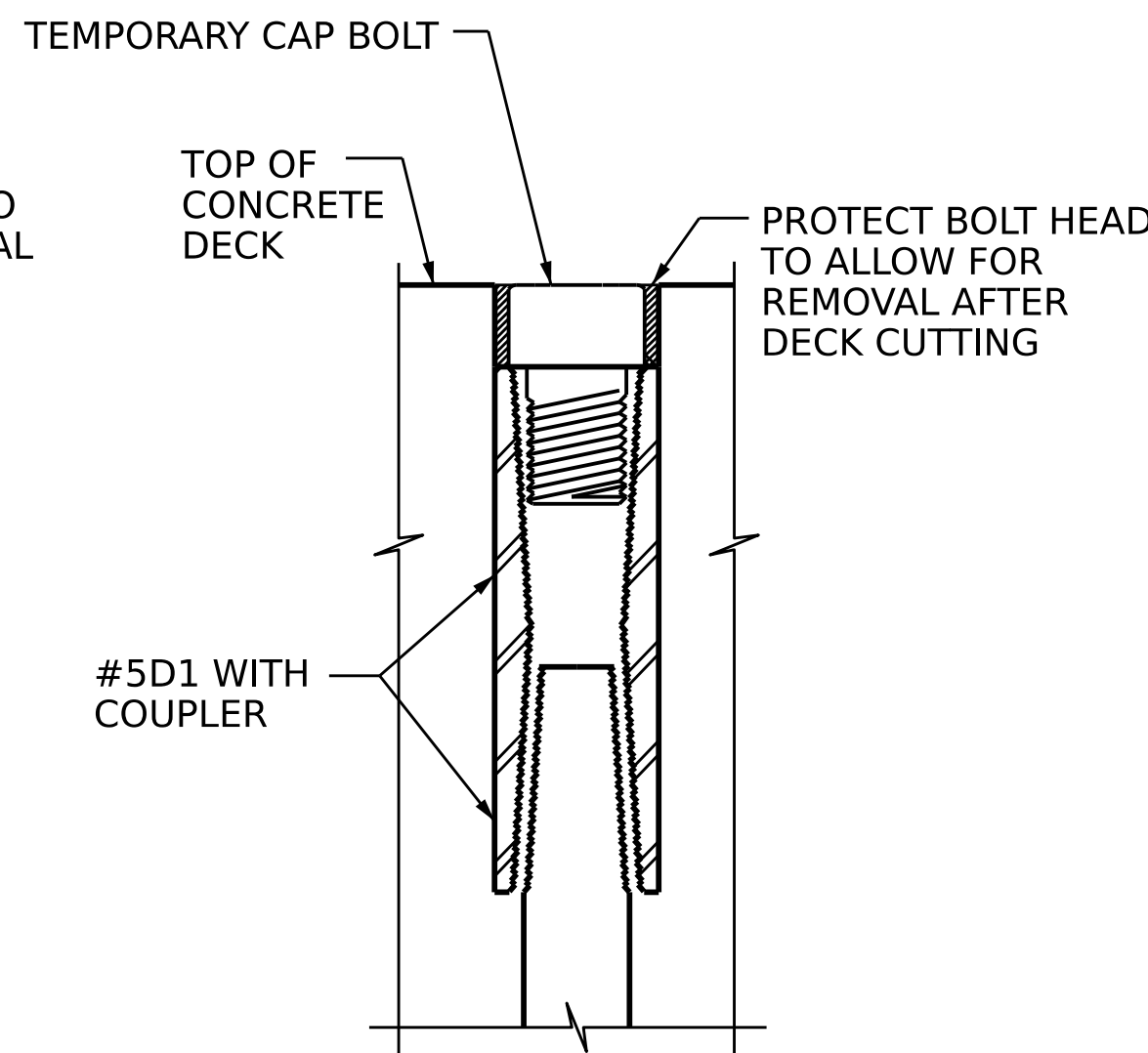
STD. NO. CBR1



SECTION THRU DECK
SHOWN AFTER BARS PUSHED INTO GREEN CONCRETE AND #5D2 AND #5D3 UNTHREADED



VIEW A-A



SECTION B-B

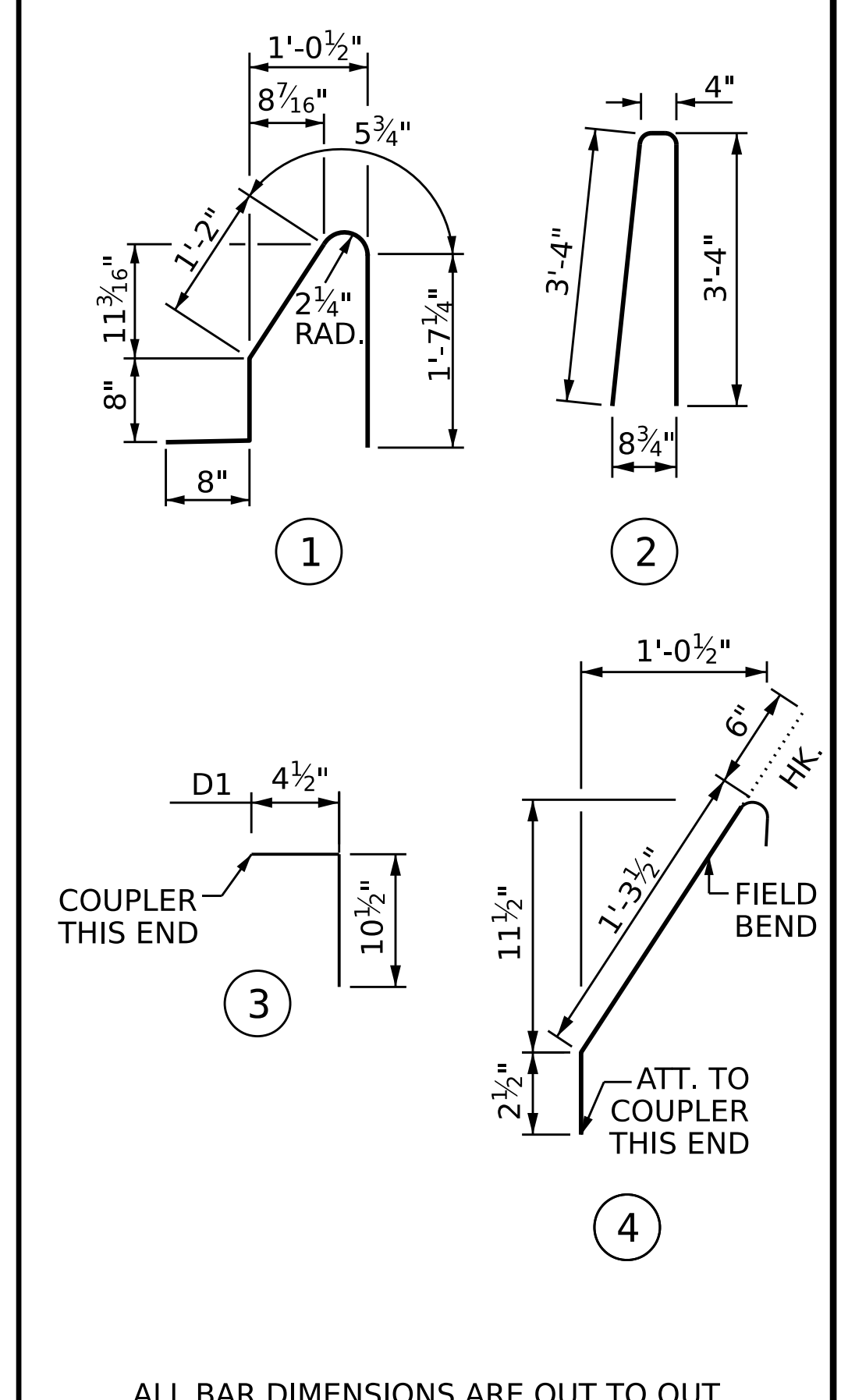
BARRIER COUPLER NOTES:

INSTALL TEMPORARY BOLT INTO COUPLER. BOLT SHALL NOT PROJECT ABOVE THE TOP OF THE DECK.
BOLT HEAD SHALL BE PROTECTED TO ALLOW FOR REMOVAL AFTER CURING OF DECK. ENGINEER SHALL APPROVE METHOD.
COST OF THE TEMPORARY BOLT AND SEALING THE BOLT ARE INCIDENTAL.

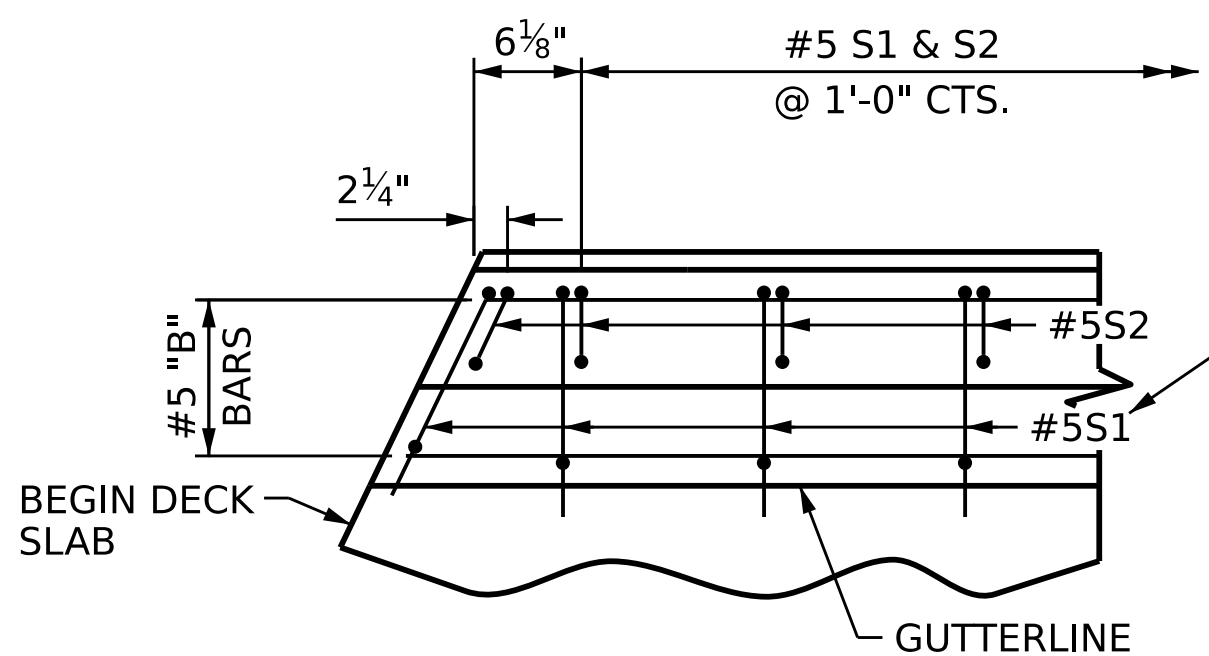
BILL OF MATERIAL

CONCRETE BARRIER RAIL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	330	5	STR	19'-8"	6,769
* B2	66	5	STR	12'-6"	860
* B3	66	5	STR	9'-0"	620
* S1	474	5	1	4'-7"	2,266
* S2	711	5	2	7'-0"	5,191
* D1	474	5	3	1'-3"	618
* D2	237	5	4	2'-0"	494
* D3	237	5	STR	3'-3"	803
* EPOXY COATED REINFORCING STEEL					17,621 LBS.
CLASS AA CONCRETE					96.3 C.Y.
CONCRETE BARRIER RAIL					708.1 L.F.

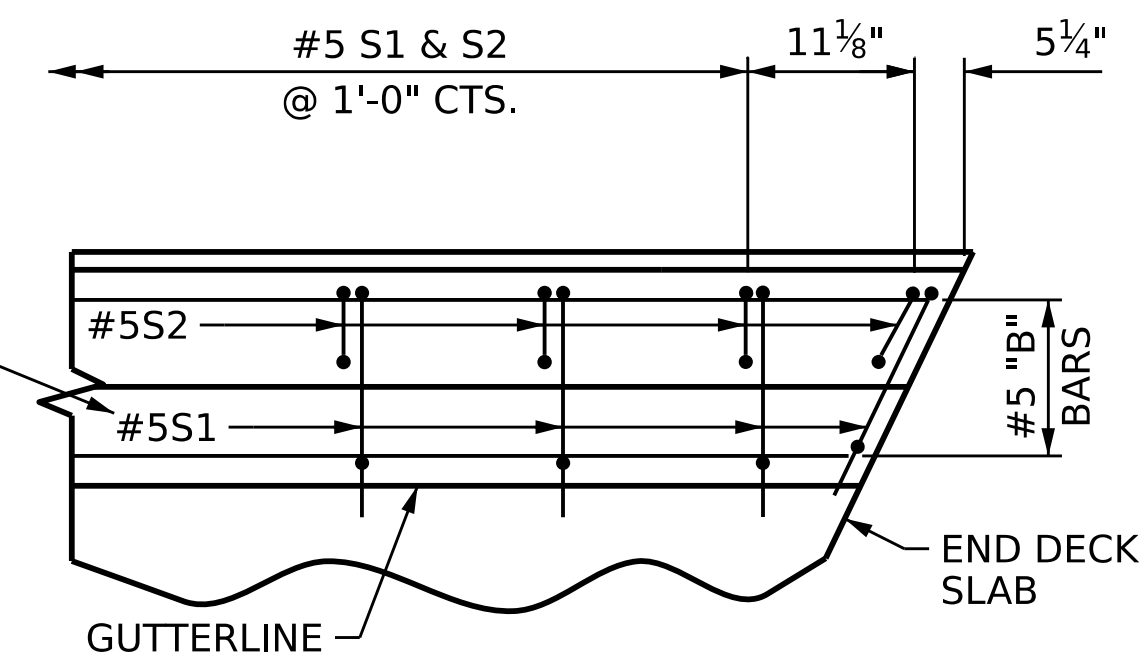
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

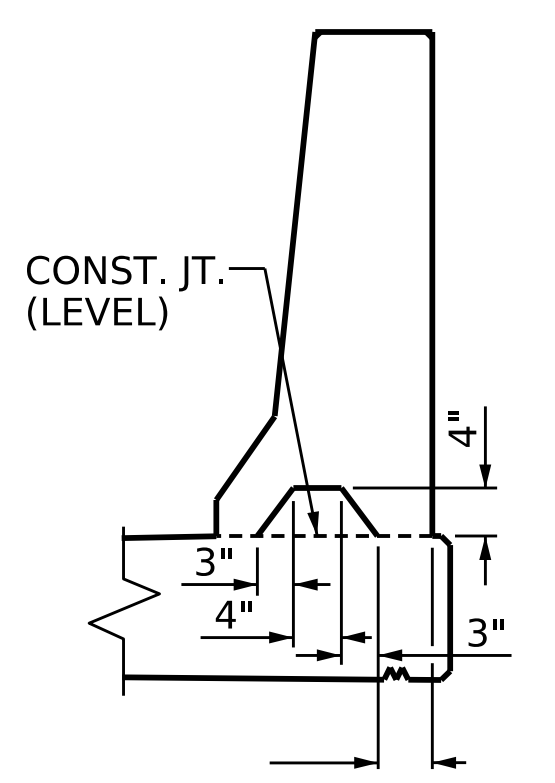


PLAN @ END BENT 1
(END BENT 2 SIMILAR BUT MIRRORED)

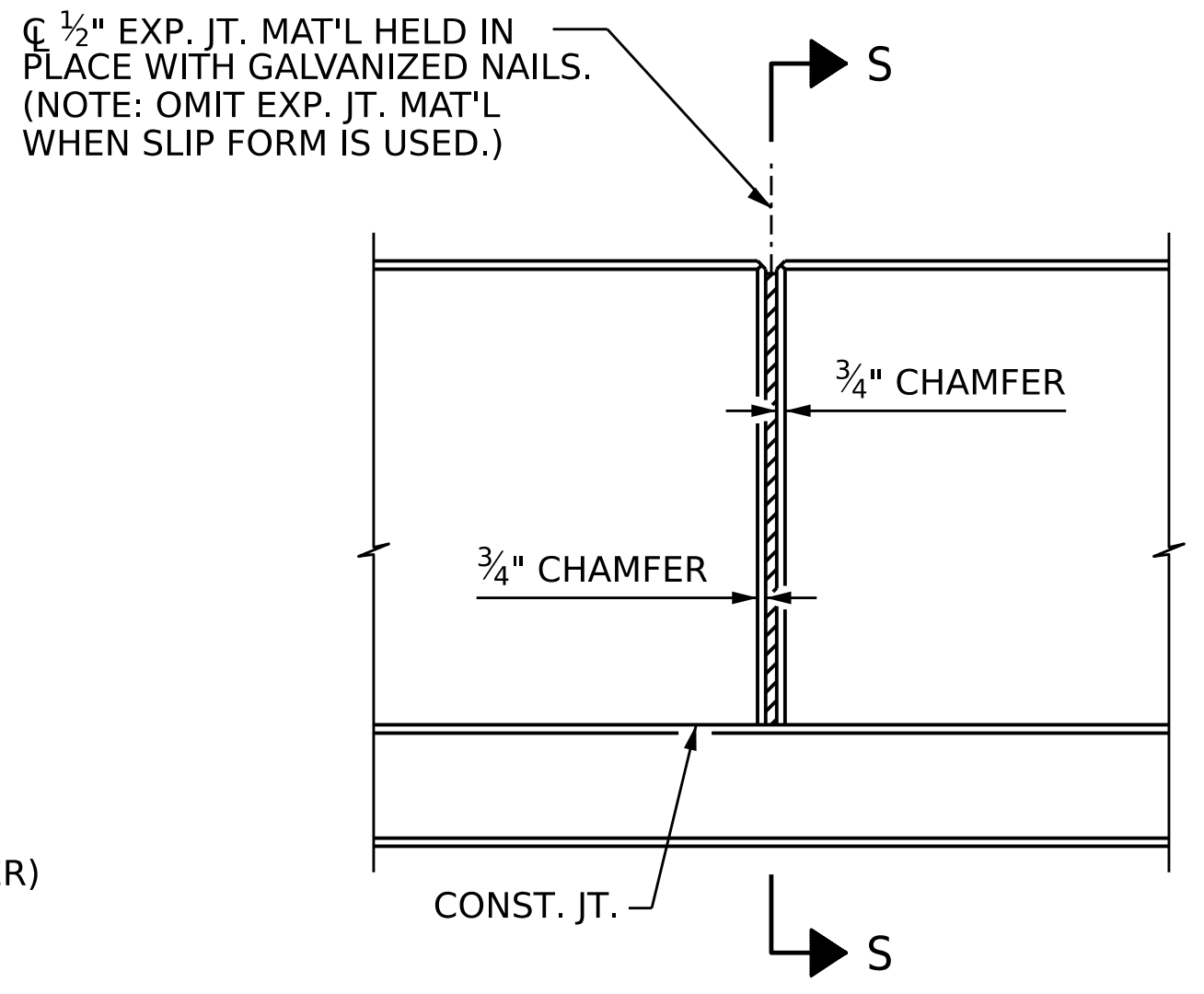


PLAN @ END BENT 2
(END BENT 1 SIMILAR BUT MIRRORED)

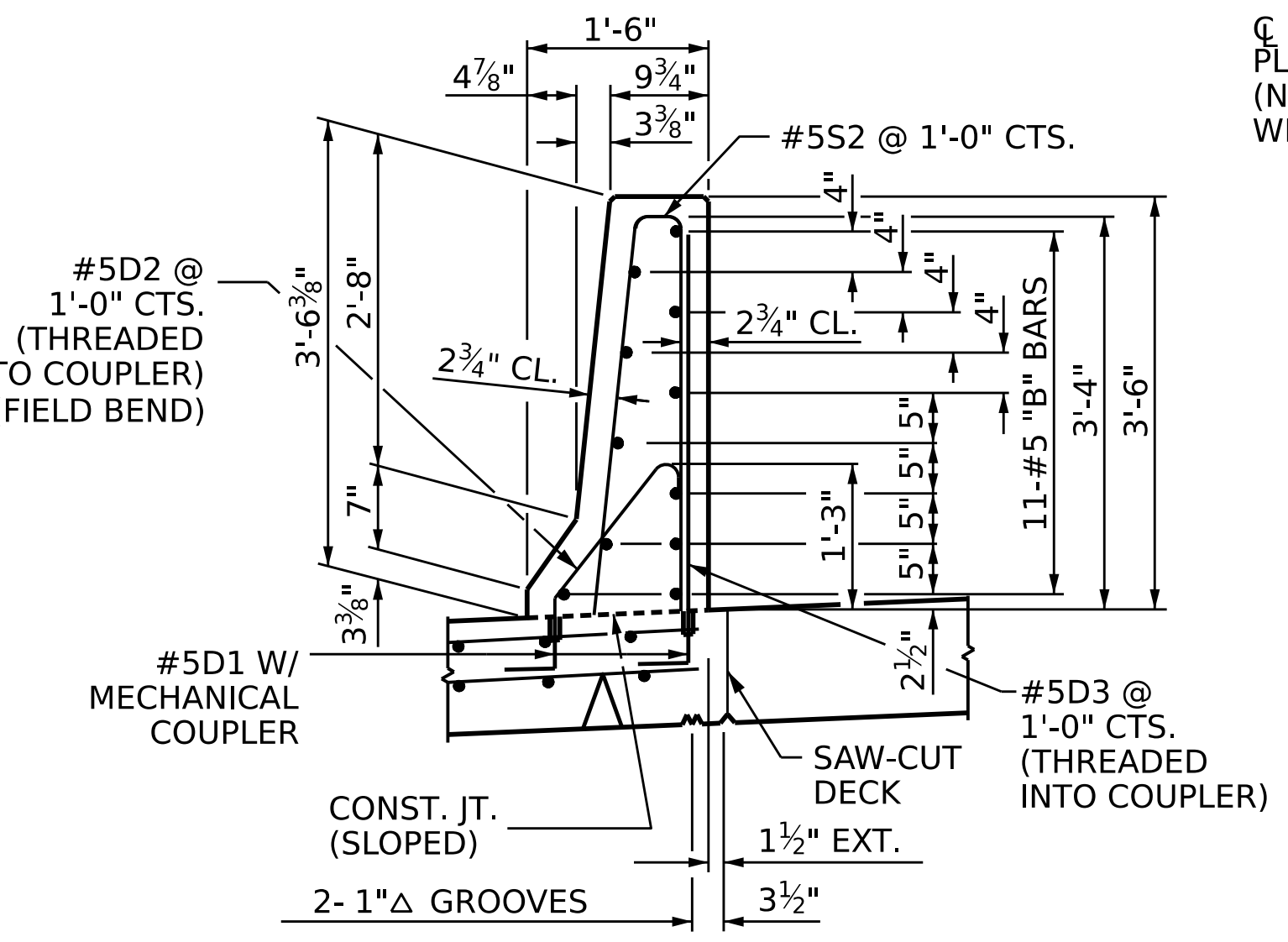
* FOR STAGE III CONCRETE BARRIER RAIL, S1 BARS ARE REPLACED WITH D1 (PAIRS), D2, AND D3 BARS



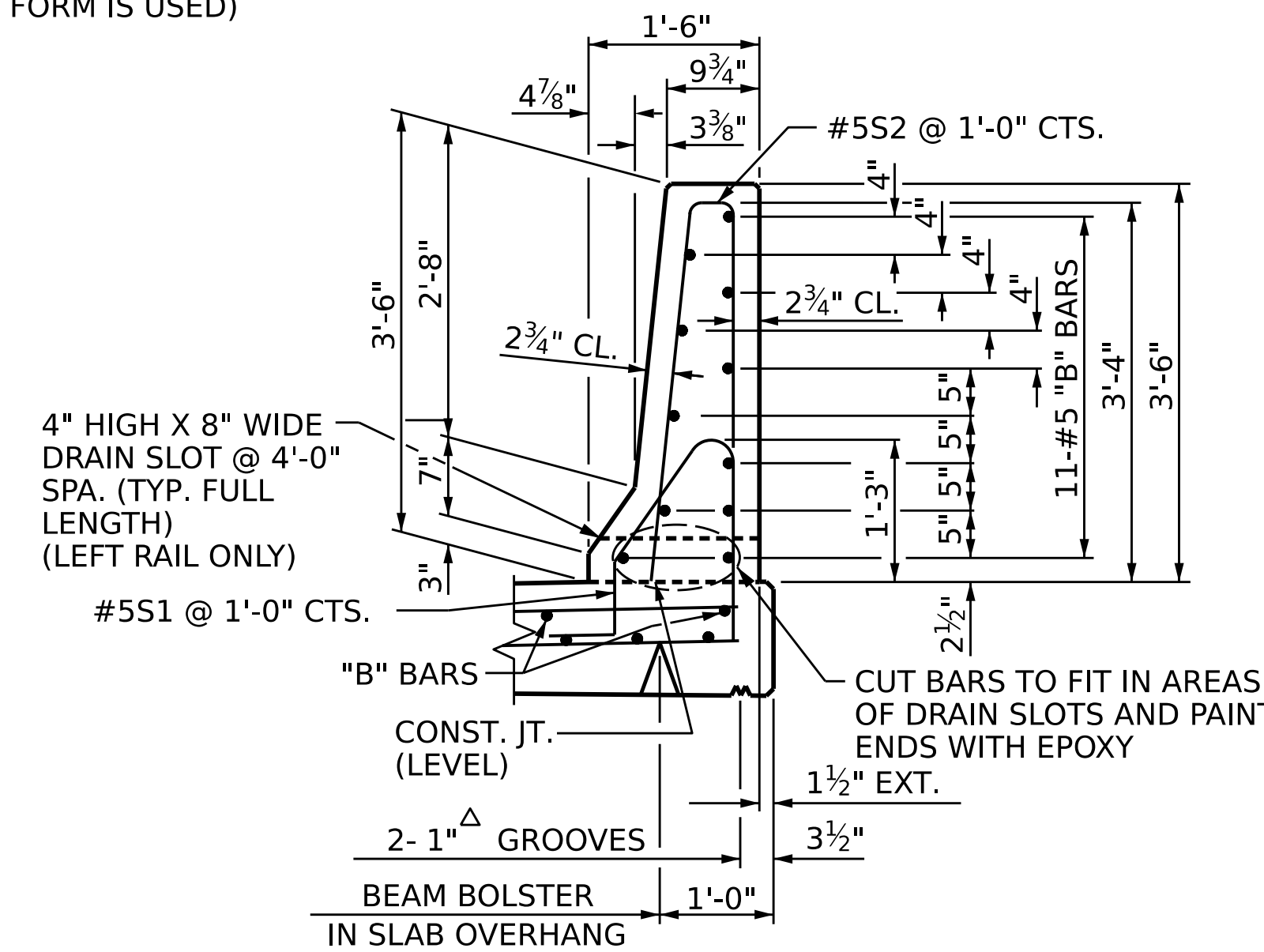
SECTION S-S
AT DAM IN OPEN JOINT (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS



SECTION B-B
(RIGHT RAIL STAGE III)



SECTION A-A
(RIGHT RAIL STAGE I AND LEFT RAIL STAGE II)

PROJECT NO. **B-3186 / B-5898**
HAYWOOD COUNTY
STATION: **24+70.00 -L LT-**
SHEET 2 OF 2

AECOM
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DESIGNED BY: *Shane Tuttle*
DATE: 04/19/23
CHECKED BY: *Shane Tuttle*
DATE: 04/19/23
DESIGNED BY: *Shane Tuttle*
DATE: 04/19/23

10/13/2023

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-26
1			3			TOTAL SHEETS
2			4			50

DRAWN BY: T.E. NEAL	DATE: 06/2023
CHECKED BY: J.C. MORRISON	DATE: 06/2023
DESIGN ENGINEER OF RECORD: D. TUTTLE	DATE: 06/2023

BARRIER RAIL DETAILS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD-DOWN PLATE AND 4 - 7/8" Ø BOLTS WITH NUTS AND WASHERS, RUBRAIL, AND ADHESIVELY ANCHORED BOLTS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

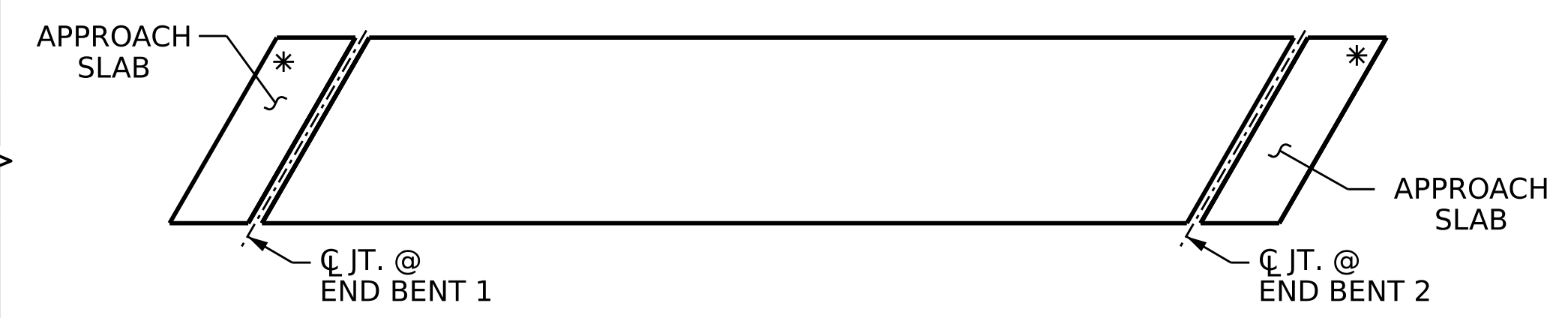
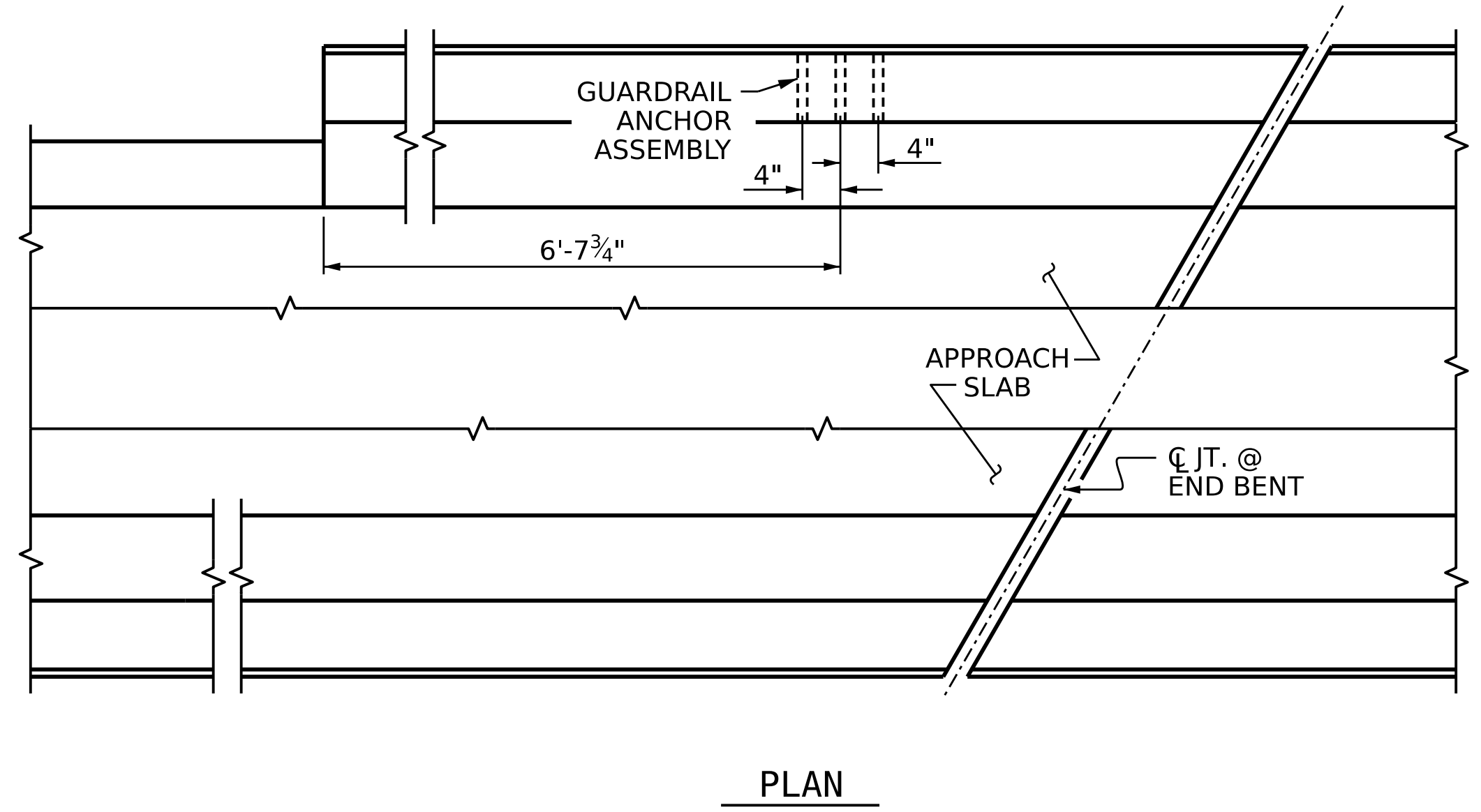
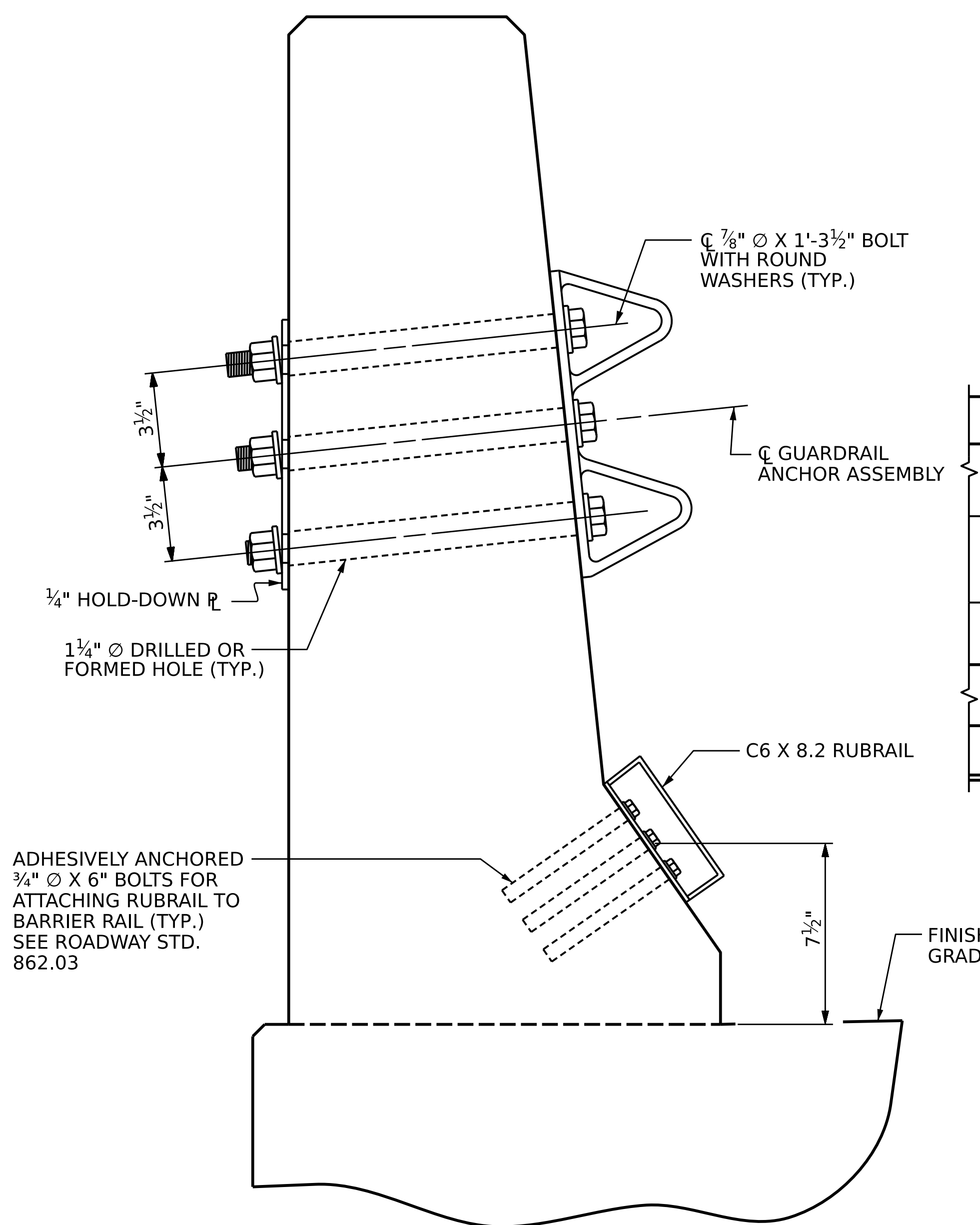
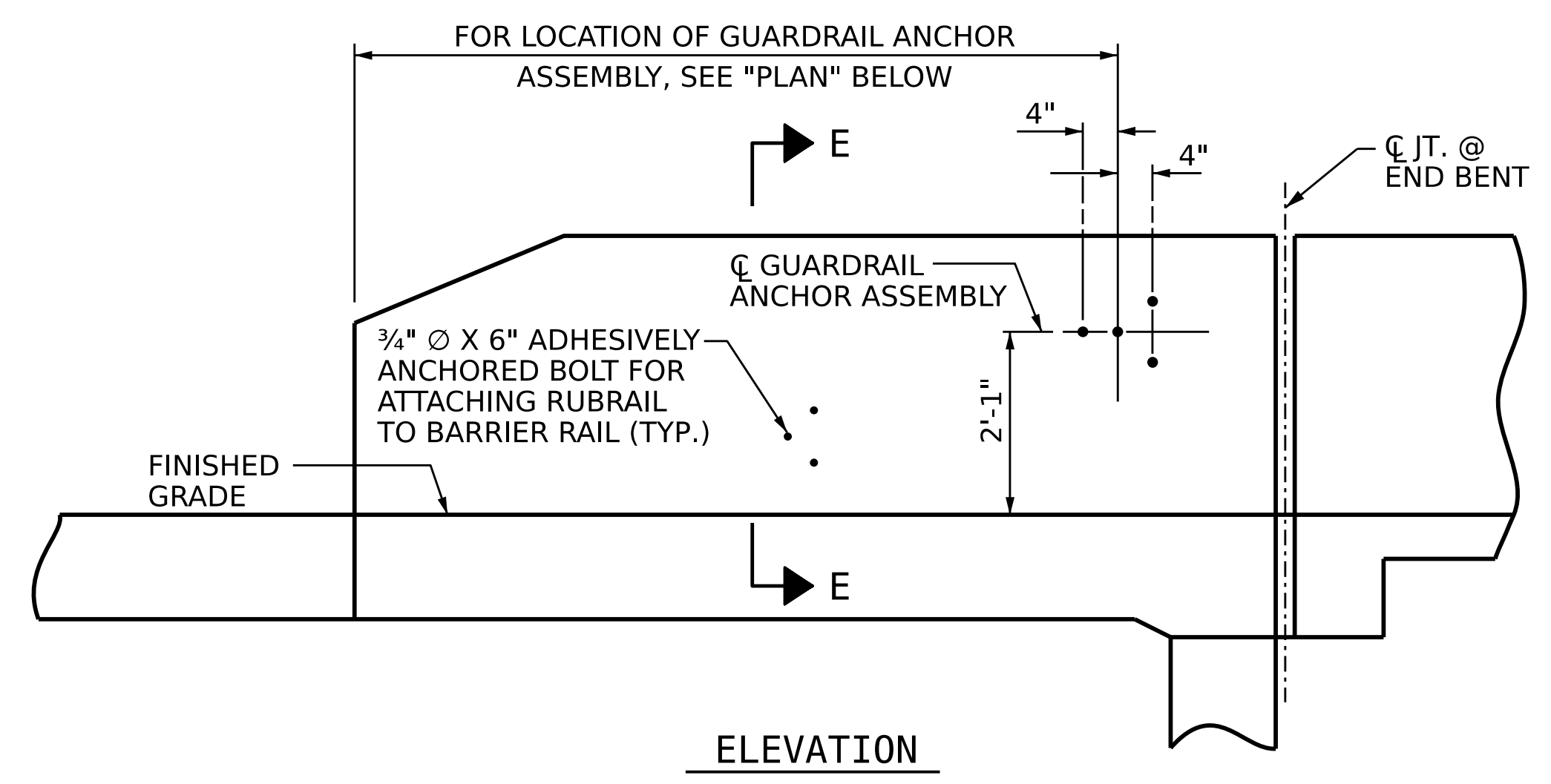
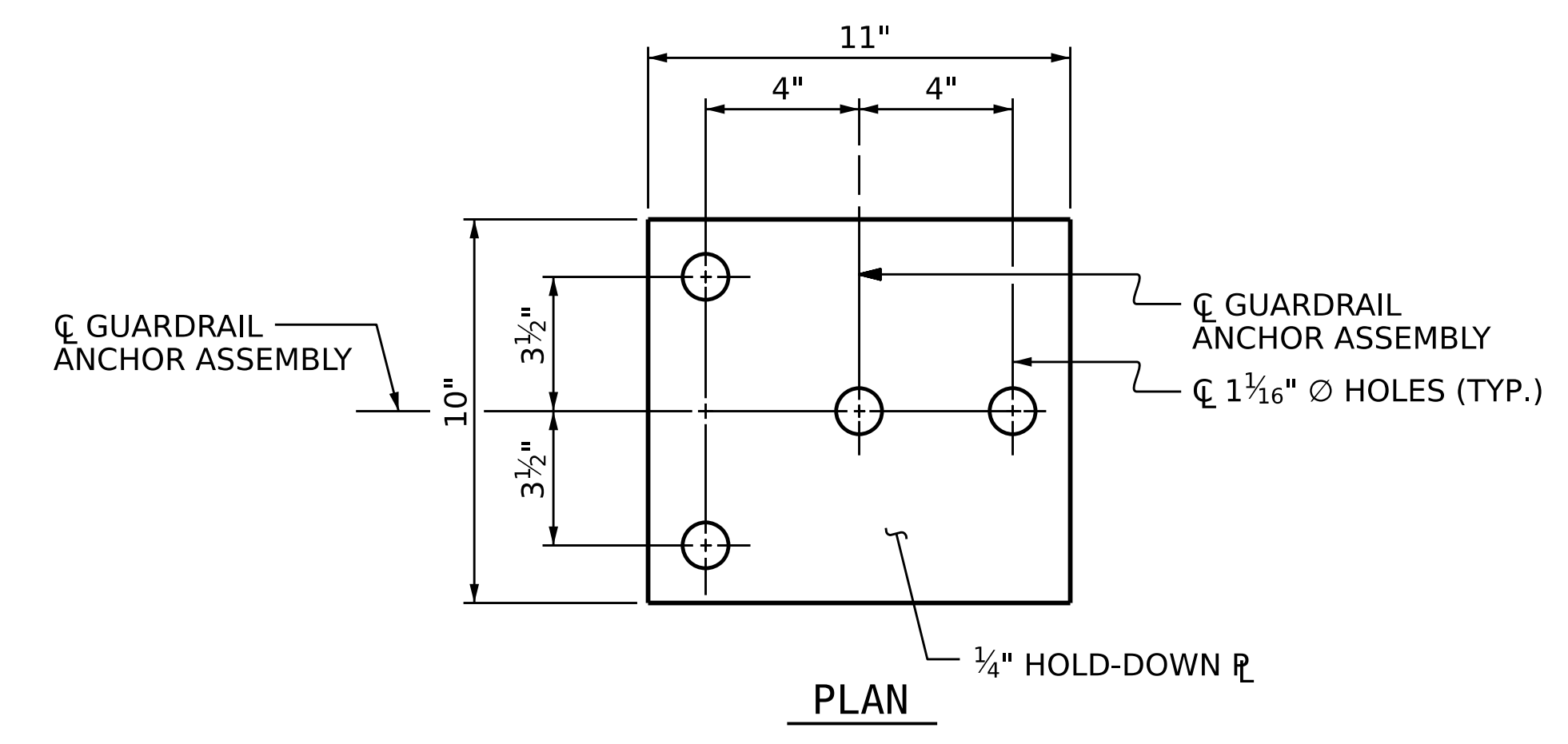
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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.

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

LOCATION OF ANCHORS FOR GUARDRAIL

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

PROJECT NO. B-3186 / B-5898
HAYWOOD COUNTY
 STATION: 24+70.00 -L LT-

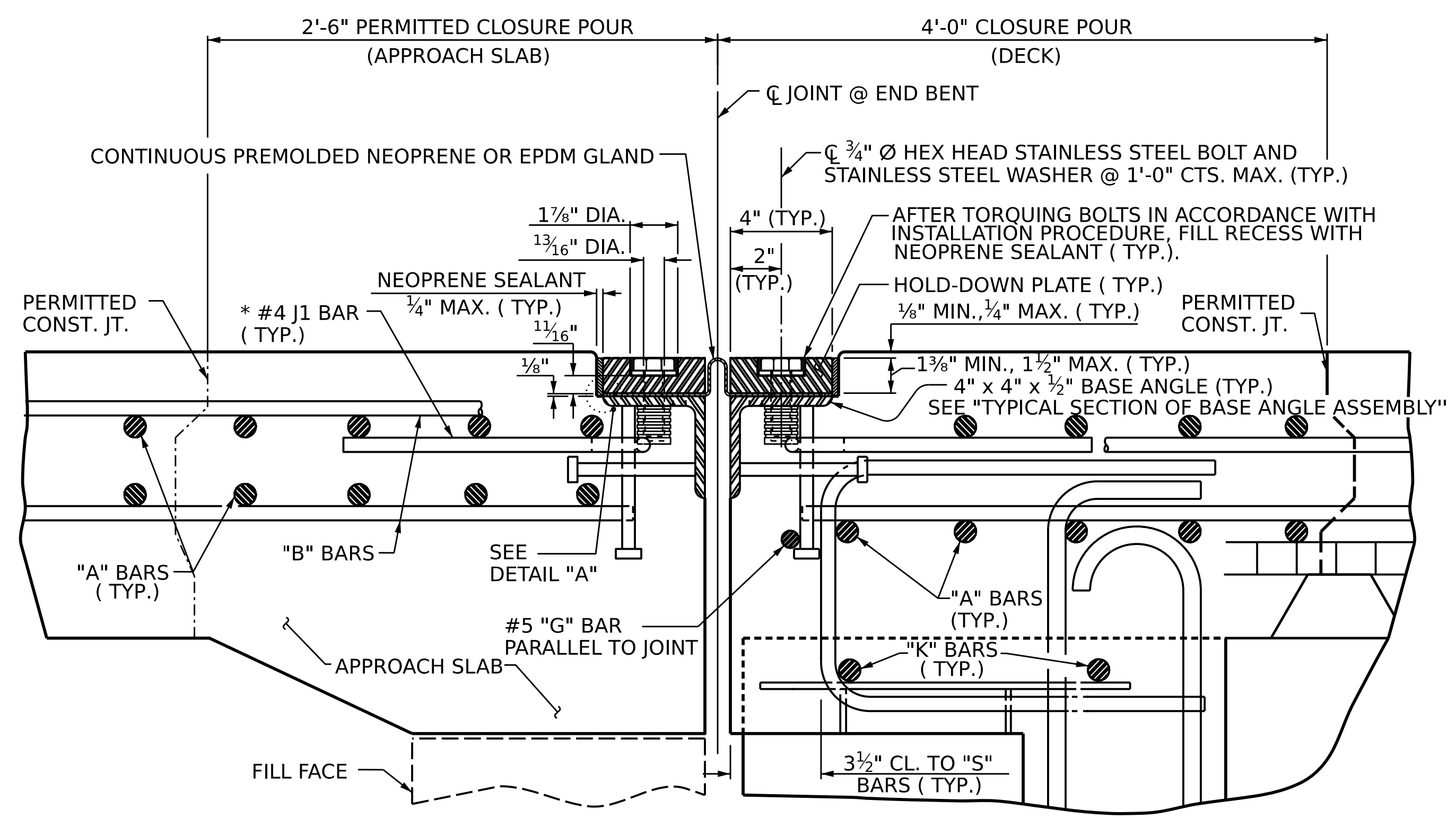
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 AECOM License No. F6242

DESIGNED BY: *[Signature]*
 DATE: 04/13/2023
 DRAWN BY: *[Signature]*
 DATE: 10/13/2023

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD GUARDRAIL ANCHORAGE FOR BARRIER RAIL					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 50

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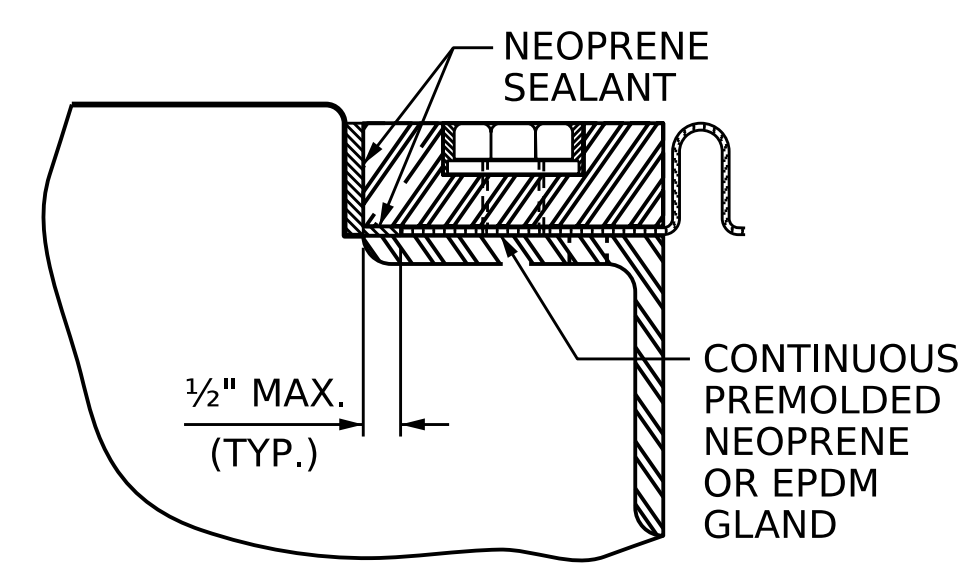
ASSEMBLED BY : A.R. VAN VUREN	DATE : 06/2023
CHECKED BY : C. MORRISON	DATE : 06/2023
DRAWN BY : TLA 5/06	REV. 7/12 MAA/GM
CHECKED BY : GM 5/06	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC



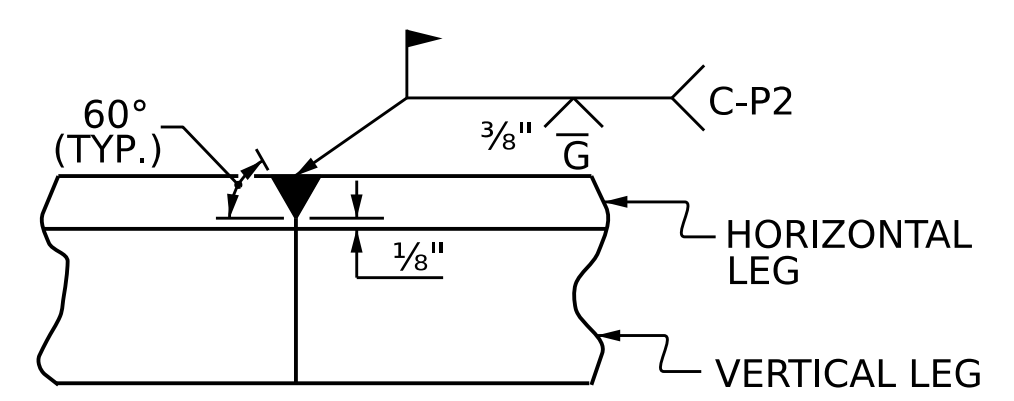
EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT -- PRESTRESSED GIRDER SUPERSTRUCTURE

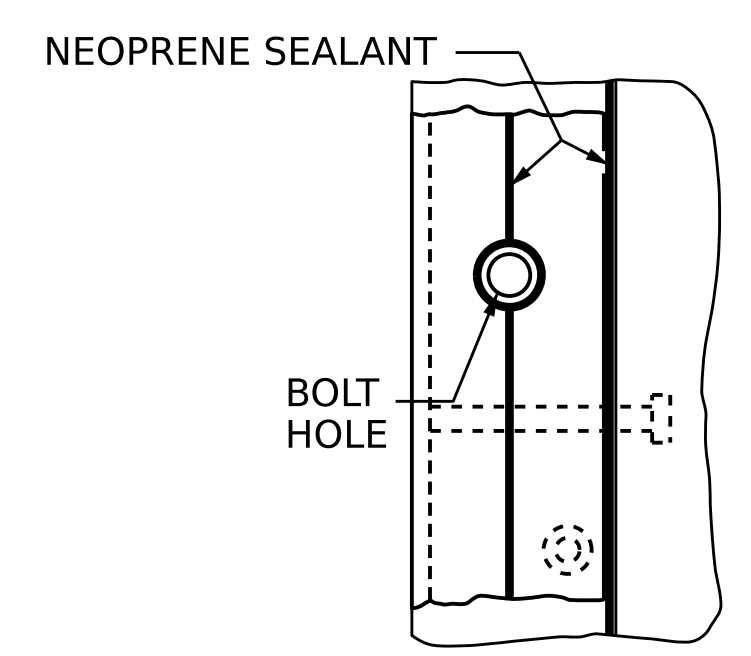
* THE QUANTITY OF #4 J1 BARS ON THE BILL OF MATERIAL IS BASED ON 1'-0" CENTERS. J1 BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF J1 BARS SPECIFIED, ADDITIONAL J1 BARS WILL NOT BE REQUIRED.



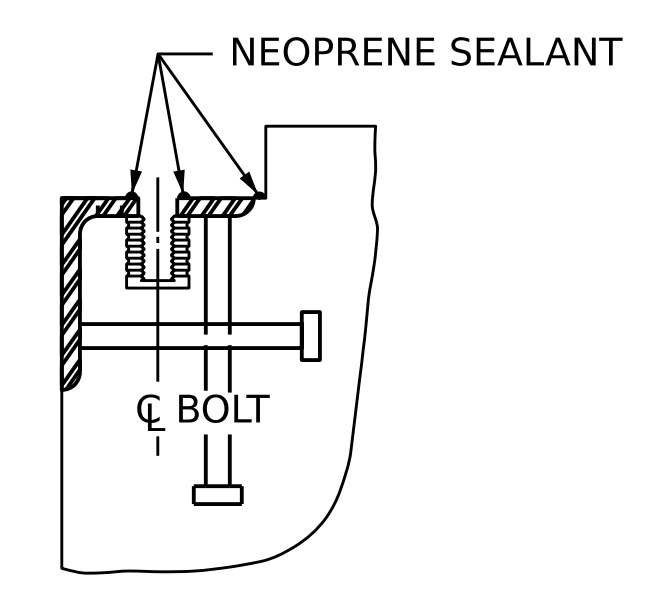
DETAIL "A"



**DETAIL - FIELD WELD
SPLICE OF BASE ANGLE**



PLAN VIEW



CROSS SECTION

INSTALLATION SKETCH

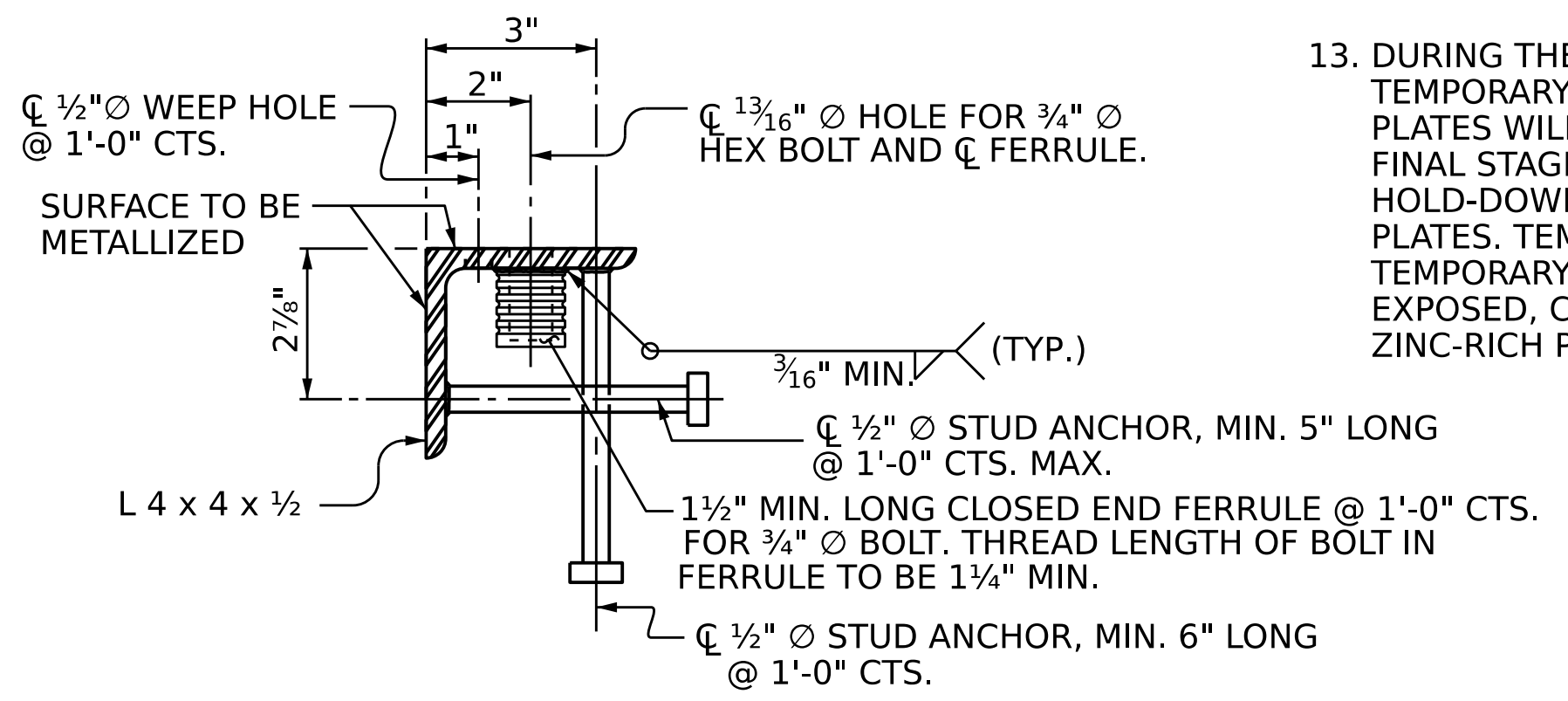
MOVEMENT AND SETTING AT JOINT					
LOCATION	SKEW ANGLE	TOTAL MOVEMENT (ALONG CL RDWY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
END BENT 1	120°00'00"	7/8"	2 1/16"	2 1/4"	2"
END BENT 2	120°00'00"	3/4"	2 3/16"	2 1/4"	2"

INSTALLATION PROCEDURE

1. A TEMPLATE OR OTHER SUITABLE DEVICE SHALL BE USED TO FORM THE TOP OF THE EXPANSION JOINT SEAL BLOCKOUT TO THE PROPER DEPTH AND WIDTH. THE TEMPLATE SHALL BE 4 1/8" TO 4 3/4" WIDE AND OF SUCH THICKNESS AS TO PROVIDE FOR CORRECT FINAL ELEVATION OF TOP OF HOLD-DOWN PLATES. THE TEMPLATE SHALL BE ATTACHED TO THE BASE ANGLE ASSEMBLY WITH THE 3/4" Ø HEX HEAD BOLTS PROVIDED FOR THE HOLD-DOWN PLATES. A 1" Ø HOLE SHALL BE PROVIDED IN THE TEMPLATE CENTERED OVER EACH WEEP HOLE IN THE 4" X 4" X 1/2" BASE ANGLE. OTHER METHODS OF INSURING DRAINAGE THROUGH WEEP HOLES MAY BE EMPLOYED SUBJECT TO ENGINEER'S APPROVAL.
2. AFTER THE CONCRETE HAS BEEN CAST ON BOTH SIDES OF THE JOINT, REMOVE THE TEMPLATE. THOROUGHLY CLEAN THE BOLT HOLES AND THE ANGLE PLATE. REMOVE ANY EXCESS CONCRETE THAT COMES OUT OF THE WEEP HOLES. ANY DAMAGED STEEL SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).
3. LAY THE GLAND ON THE BASE ANGLE AND FIELD MARK THE GLAND FOR THE BOLT HOLES. HOLES IN THE GLAND SHALL BE PUNCHED 7/8" IN DIAMETER WITH A HAND PUNCH.
4. IN ORDER TO CHECK FOR PROPER ALIGNMENT, PLACE THE GLAND AND HOLD-DOWN PLATES ON THE BASE ANGLE. DO NOT APPLY NEOPRENE SEALANT. BOLT THE HOLD-DOWN PLATES TO THE BASE ANGLE ASSEMBLY AND TORQUE THE BOLTS TO 88 FT-LBS WITH A TORQUE WRENCH. CHECK THE TORQUE AFTER THREE (3) HOURS AND, IF NECESSARY, RETIGHTEN TO 88 FT-LBS. A FINAL CHECK SHALL BE MADE AT SEVEN (7) DAYS. TORQUE SHALL NOT BE LESS THAN 80 FT-LBS AFTER SEVEN (7) DAYS.
6. AFTER PROPER TORQUING, CLEAN THE BOLT HOLE RECESSES, THE RECESS BETWEEN THE JOINT SEAL DEVICE AND CONCRETE, AND THE LIFTING HOLES IN THE HOLD-DOWN PLATE, AND COMPLETELY FILL THE RECESSES AND LIFTING HOLES WITH NEOPRENE SEALANT.

GENERAL NOTES

1. FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.
2. ALL PLATES AND ANGLES SHALL CONFORM TO AASHTO M270 GRADE 36 STEEL OR APPROVED EQUAL. ALL HOLD-DOWN BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL CONFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. ALL STUD ANCHORS SHALL CONFORM TO AASHTO M169, GRADES 1010 THRU 1020 OR APPROVED EQUAL. ALL CONCRETE INSERTS SHALL BE CLOSED END AND SHALL CONFORM TO AASHTO M169, GRADE 12L14. TENSILE CAPACITY SHALL BE 3000 LBS. MINIMUM.
3. A PREMOLDED CORRUGATED OR NON-CORRUGATED GLAND SHALL BE USED FOR JOINTS SKEWED BETWEEN 50° THRU 130°. FOR JOINTS SKEWED LESS THAN 50° OR MORE THAN 130°, ONLY A CORRUGATED GLAND SHALL BE USED. THE GLAND SHALL BE CONTINUOUS AT THE BREAKBACK. SUBMIT DETAILS FOR THE GLAND IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
4. CLOSED END FERRULES AND STUD ANCHORS SHALL BE SHOP WELDED AND ALL HOLES SHALL BE SHOP DRILLED AS SHOWN ON PLANS. STUD ANCHORS SHALL BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION.
5. SURFACES COMING IN CONTACT WITH NEOPRENE SHALL BE GROUND SMOOTH PRIOR TO METALLIZING.
6. UPON COMPLETION OF SHOP FABRICATION, THE HOLD-DOWN PLATE AND BASE ANGLE ASSEMBLY, AS SHOWN IN THE "TYPICAL SECTION OF BASE ANGLE ASSEMBLY", SHALL BE METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
7. THE COVER PLATES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
8. BASE ANGLE ASSEMBLY SHALL BE CONTINUOUS FOR THE LENGTH OF THE JOINT IN EACH STAGE. UPON INSTALLATION OF EACH SUBSEQUENT STAGE, FIELD WELD THE BASE ANGLE IN ACCORDANCE WITH THE DETAIL. AT CROWN BREAKS, THE ENDS OF THE BASE ANGLE ASSEMBLY SHALL BE CUT PARALLEL TO THE BRIDGE CENTERLINE FOR SKEWS LESS THAN 80° AND GREATER THAN 100°. FINISHED WELD SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).
9. FIELD SPLICES OF HOLD-DOWN PLATES SHALL BE KEPT TO A MINIMUM. CONTRACTOR SHALL FURNISH DETAILED PLANS SHOWING PROPOSED SPLICE LOCATIONS FOR APPROVAL. HOLD-DOWN PLATES SHALL NOT EXCEED 20' LENGTHS UNLESS APPROVED BY THE ENGINEER.
10. NO ALTERNATE JOINT DETAILS SHALL BE PERMITTED IN LIEU OF THOSE SHOWN ON THESE PLANS.
11. THE CONTRACTOR MAY, AT HIS OPTION, USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF CONCRETE INSERTS FOR COVER PLATES. THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.
12. THE FABRICATOR SHALL PROVIDE 1/2" Ø THREADED HOLES IN THE HOLD-DOWN PLATES TO ASSIST IN LIFTING AND PLACING. THE HOLES SHALL BE 3/4" DEEP AT 6'-0" MAXIMUM SPACING AND A MINIMUM OF TWO HOLES PER PLATE.
13. DURING THE TEMPORARY STAGES, UTILIZE TEMPORARY HOLD-DOWN PLATES AND A TEMPORARY GLAND IN THE REGION OF THE JOINT SEAL. NO BLOCKOUT OR HOLD-DOWN PLATES WILL BE PRESENT IN THE OVERBUILD PORTION. UPON CONSTRUCTION OF THE FINAL STAGE AND RIGHT-SIDE PERMANENT BARRIER RAIL, REMOVE THE TEMPORARY HOLD-DOWN PLATES AND GLAND AND INSTALL PERMANENT GLAND AND HOLD-DOWN PLATES. TEMPORARY PLATES, GLANDS, AND INSTALLATION AND REMOVAL OF TEMPORARY ITEMS IS CONSIDERED INCIDENTAL TO THE COST OF THE JOINT. ANY EXPOSED, CUT OR DAMAGED SURFACES, AND FIELD WELDS SHALL BE COATED WITH A ZINC-RICH PAINT.



TYPICAL SECTION OF BASE ANGLE ASSEMBLY

PROJECT NO. **B-3186 / B-5898**

HAYWOOD COUNTY

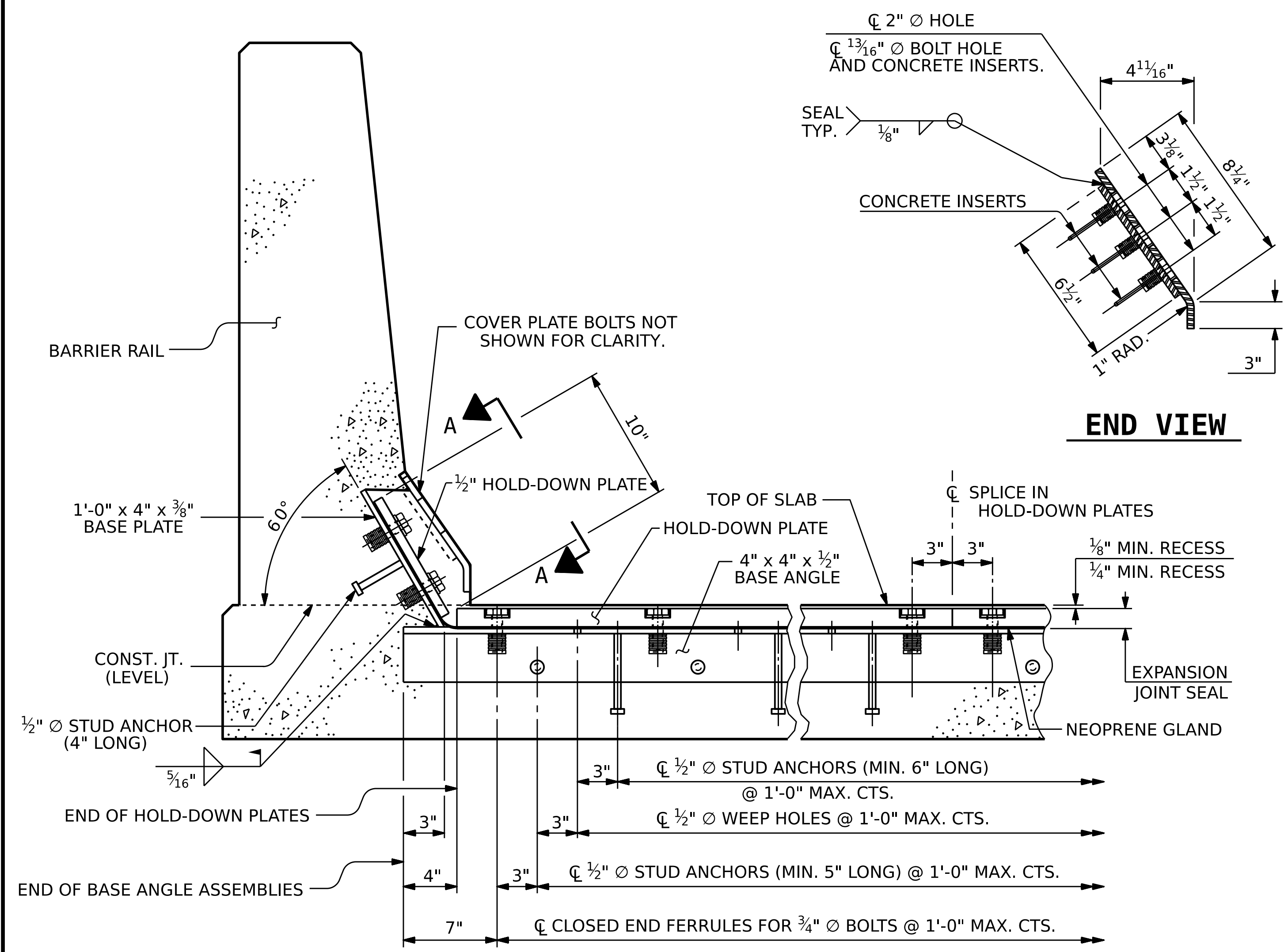
STATION: **24+70.00 -L LT-**

SHEET 1 OF 2

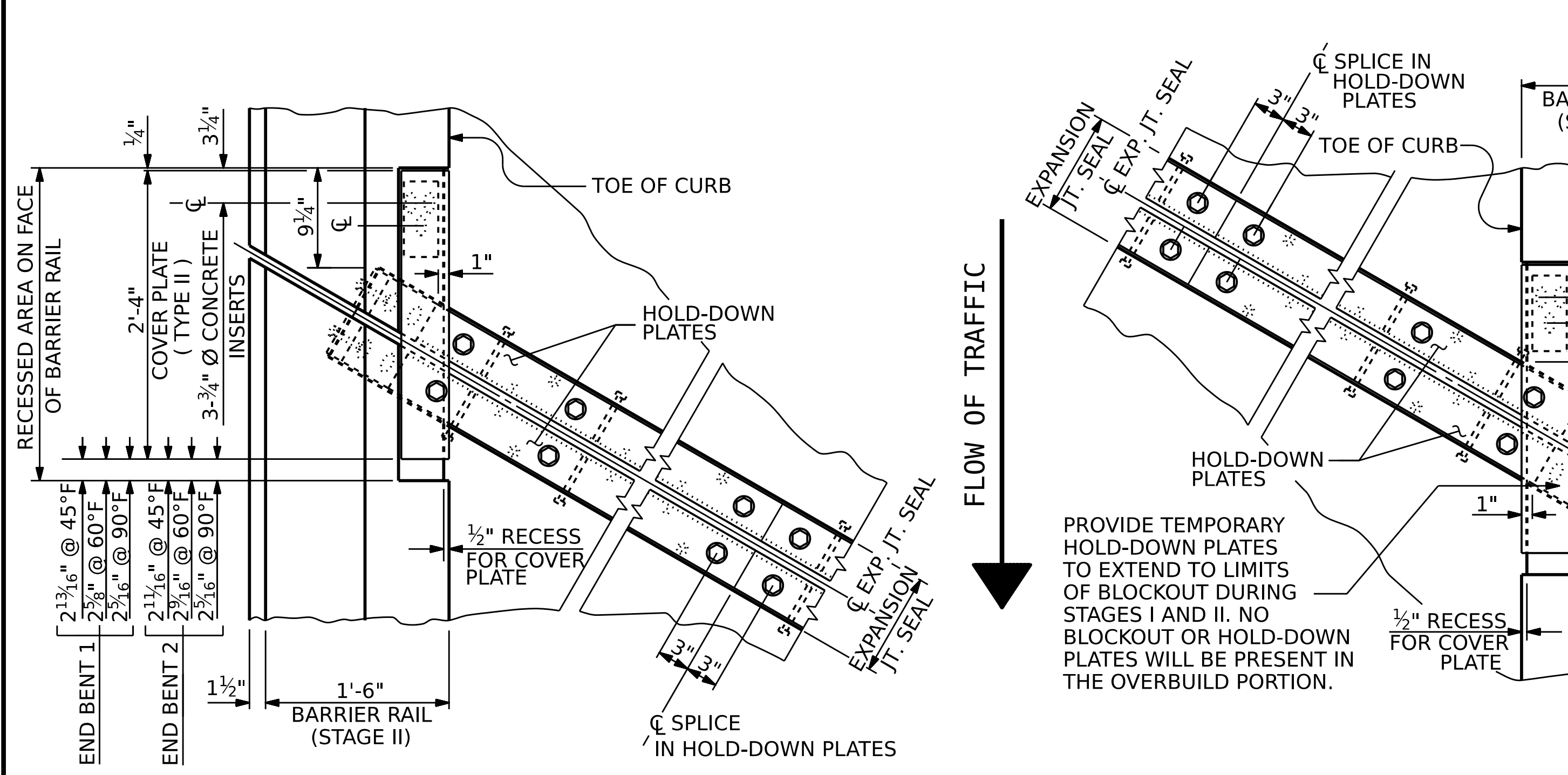
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
EXPANSION JOINT SEAL DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S3-28
					TOTAL SHEETS 50

ASSEMBLED BY : T.E. NEAL	DATE : 03/2023
CHECKED BY : C. MORRISON	DATE : 03/2023
DRAWN BY : REK 9/87	REV. 10/17/11 MAA/GM
CHECKED BY : CRK 10/87	REV. 10/17 MAA/THC
	REV. 6/18 MAA/THC

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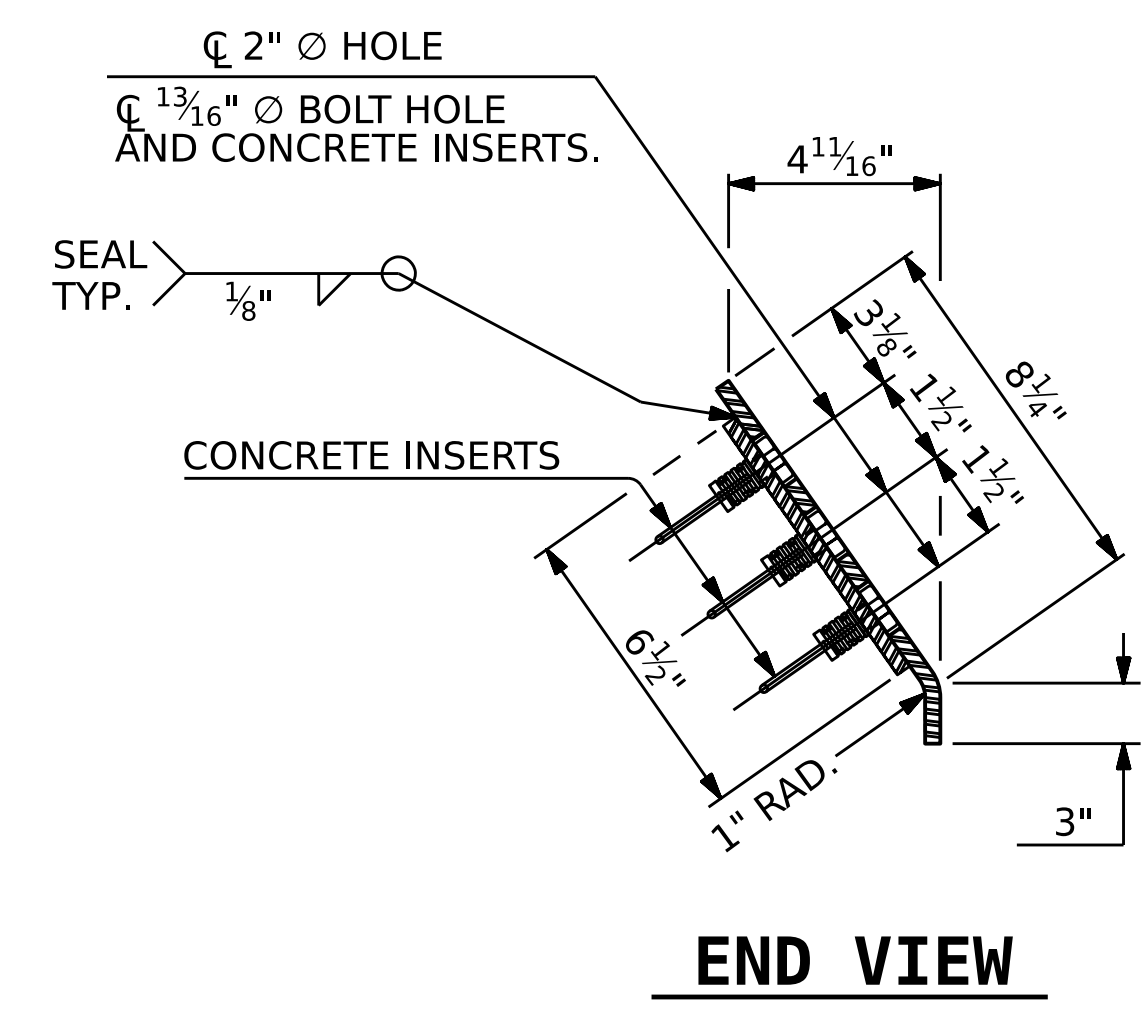


SECTION THRU RAIL NORMAL TO JOINT

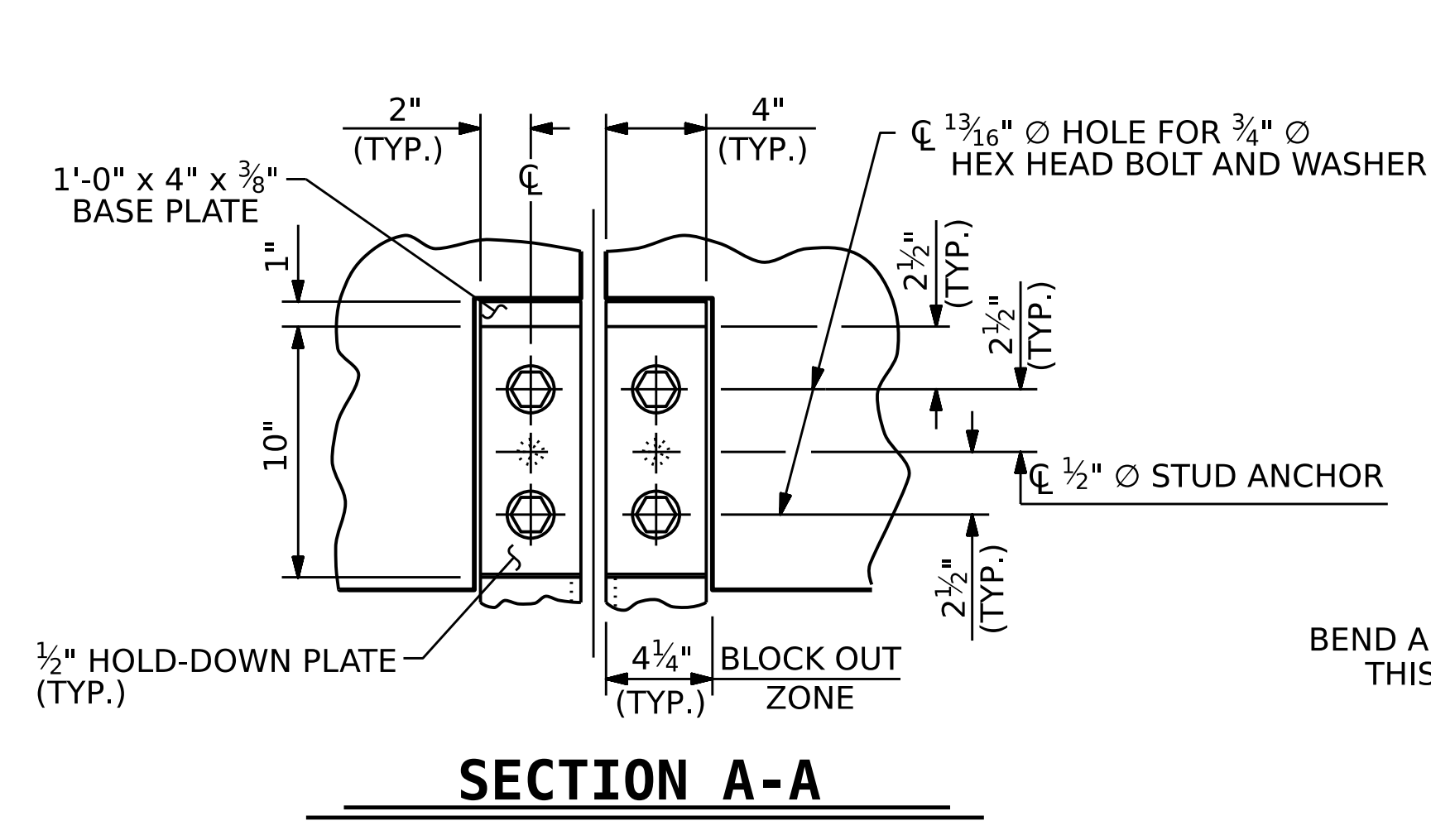


PLAN OF EXPANSION JOINT SEAL

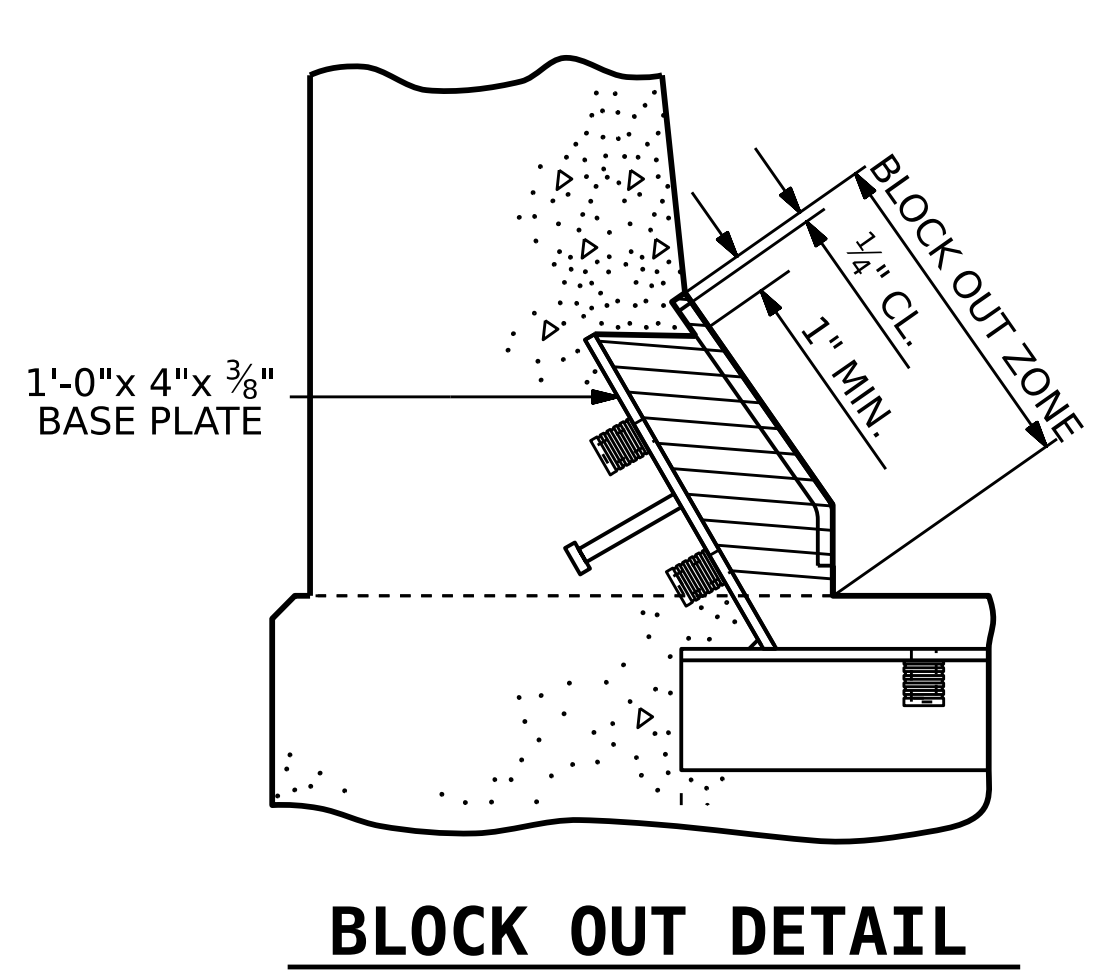
ASSEMBLED BY : T.E. NEAL	DATE : 04/2023
CHECKED BY : C. MORRISON	DATE : 04/2023
DRAWN BY : REK 9/87	REV. 7/12 MAA/GM
CHECKED BY : CRK 10/87	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC



END VIEW

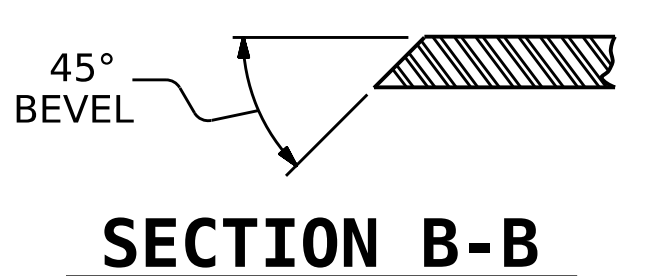


SECTION A-A

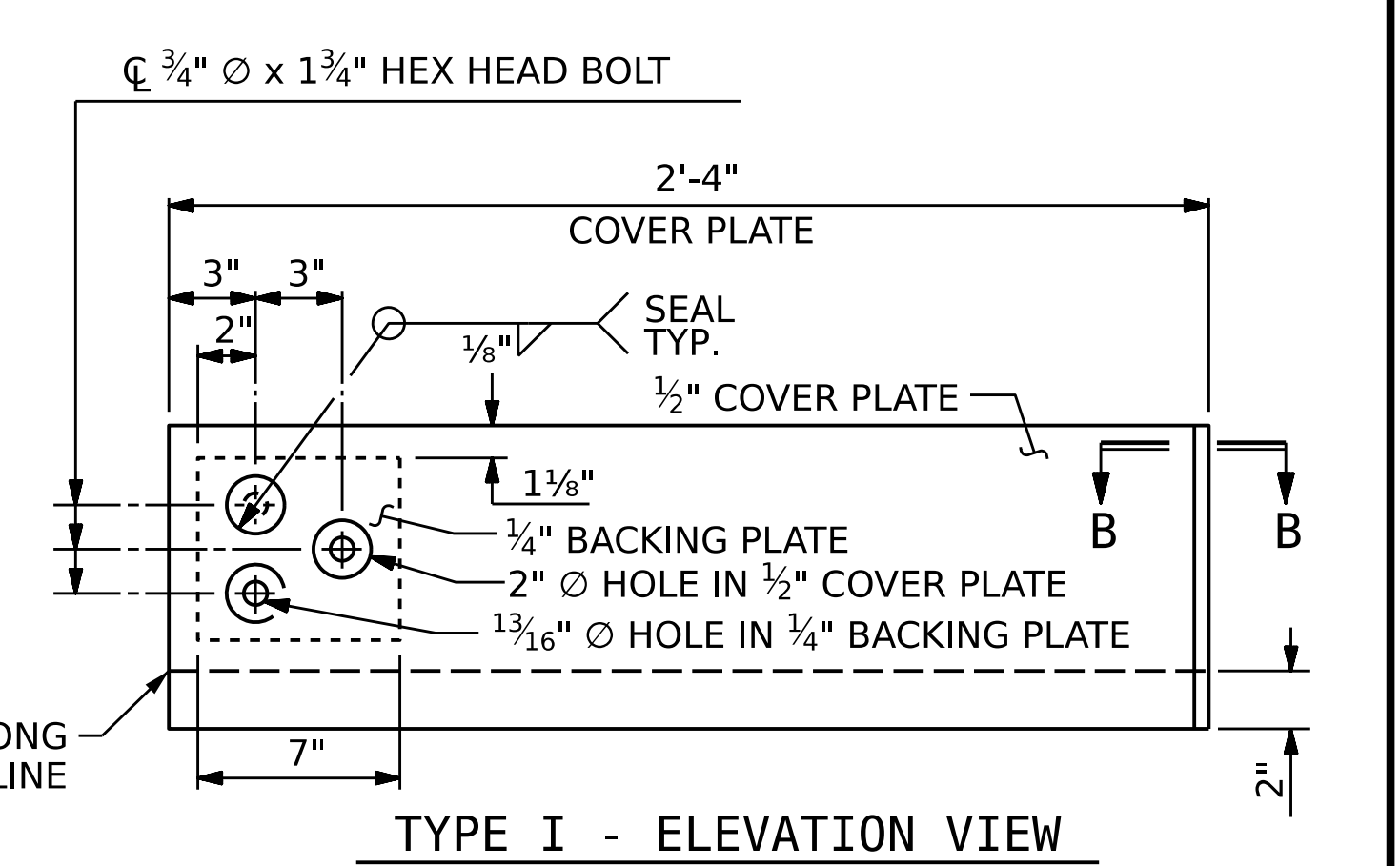


BLOCK OUT DETAIL

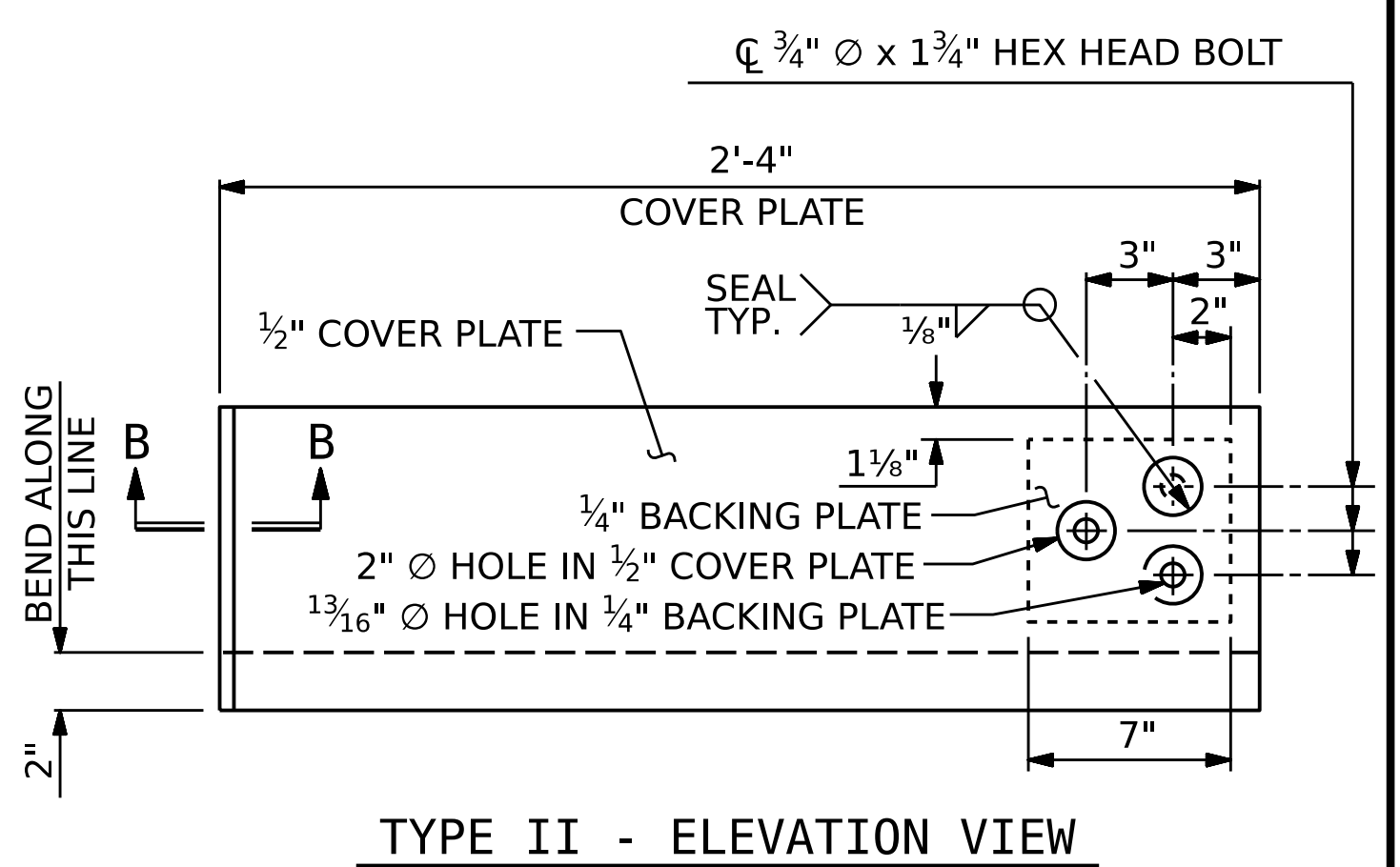
SEE "SECTION A - A" FOR OTHER DETAILS



SECTION B-B

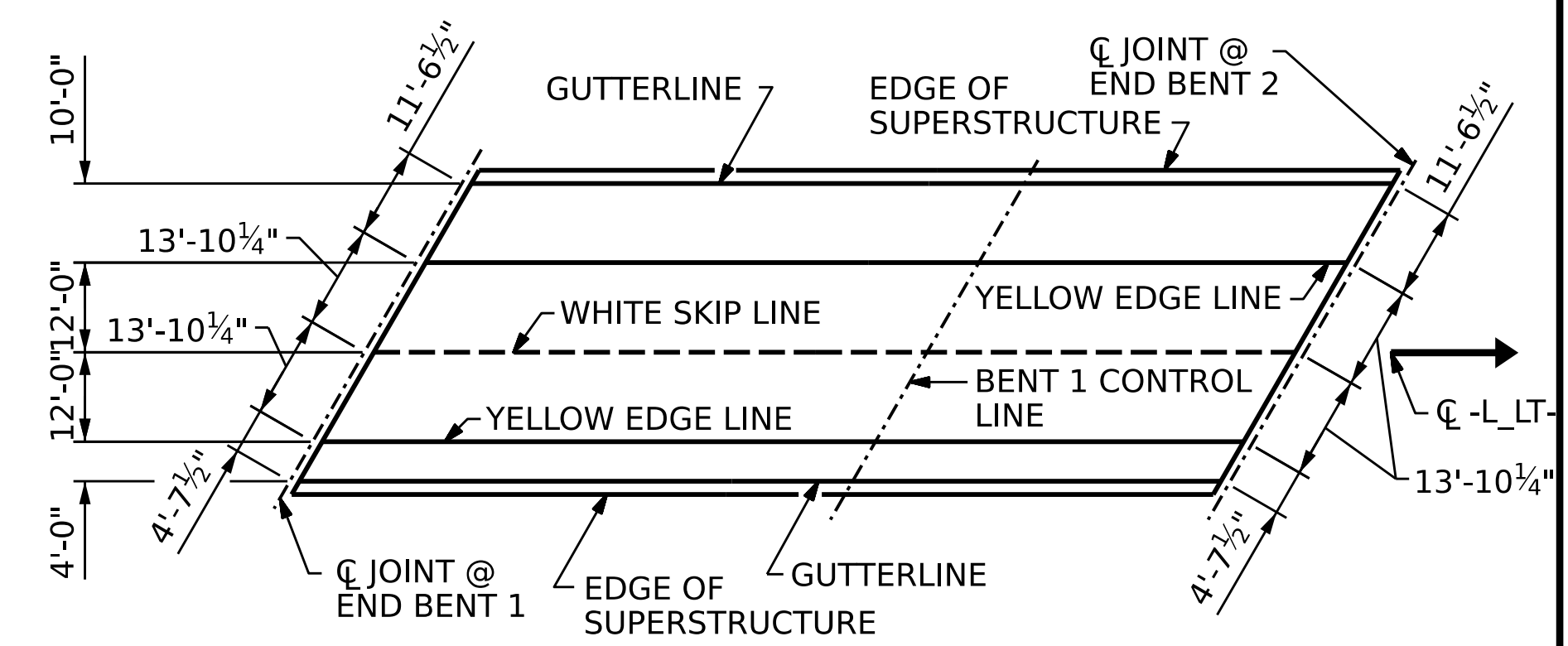


TYPE I - ELEVATION VIEW



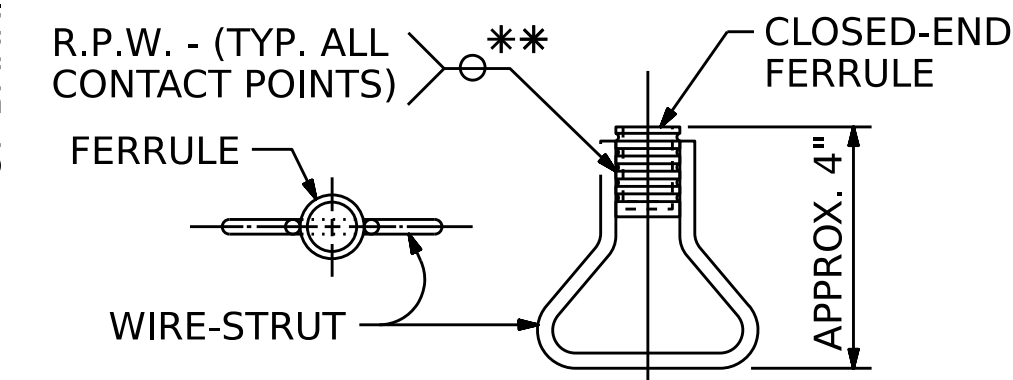
TYPE II - ELEVATION VIEW

COVER PLATE DETAILS



PAVEMENT MARKING ALIGNMENT

PROJECT NO. B-3186 / B-5898
 HAYWOOD COUNTY
 STATION: 24+70.00 -L_LT-
 SHEET 2 OF 2



CONCRETE INSERT

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

AECOM
 AECOM TECHNICAL SERVICES OF NC, INC.
 5438 WADE PARK BOULEVARD, SUITE 200
 RALEIGH, NC 27607
 (919) 854-6200 www.aecom.com
 AECOM License No. F-3342

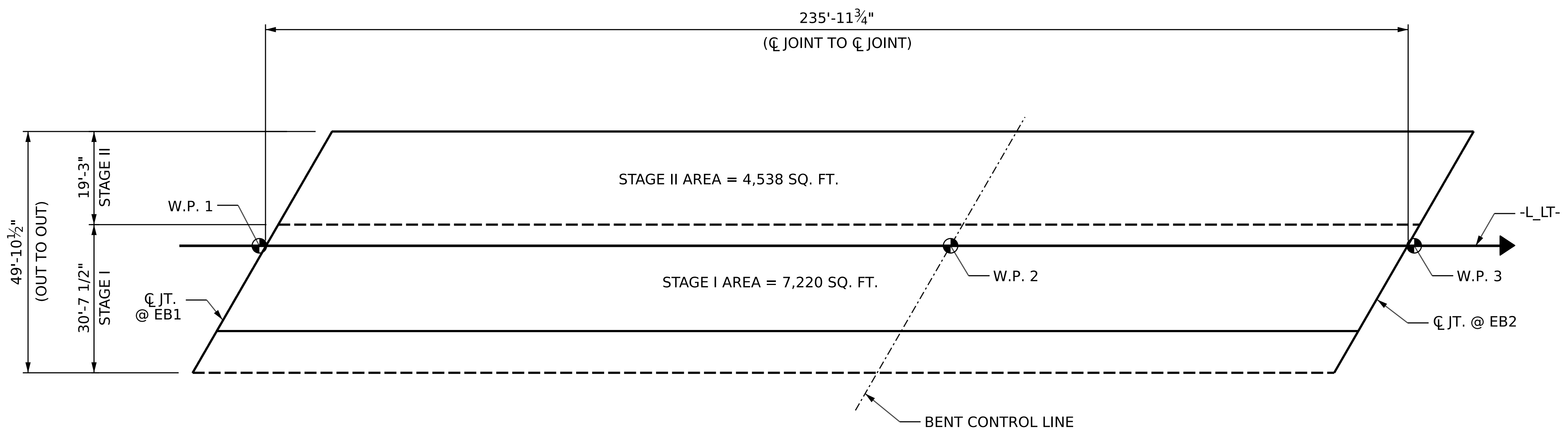
DESIGNED BY: [Signature]
 DATE: 04/4/2023
 CHECKED BY: [Signature]
 DATE: 04/13/2023

STATE OF NORTH CAROLINA		DEPARTMENT OF TRANSPORTATION	
RALEIGH		STANDARD	
EXPANSION JOINT SEAL DETAILS FOR BARRIER RAIL			
REVISIONS			
NO.	BY:	DATE:	NO.
1			3
2			4
SHEET NO. S3-29			TOTAL SHEETS 50

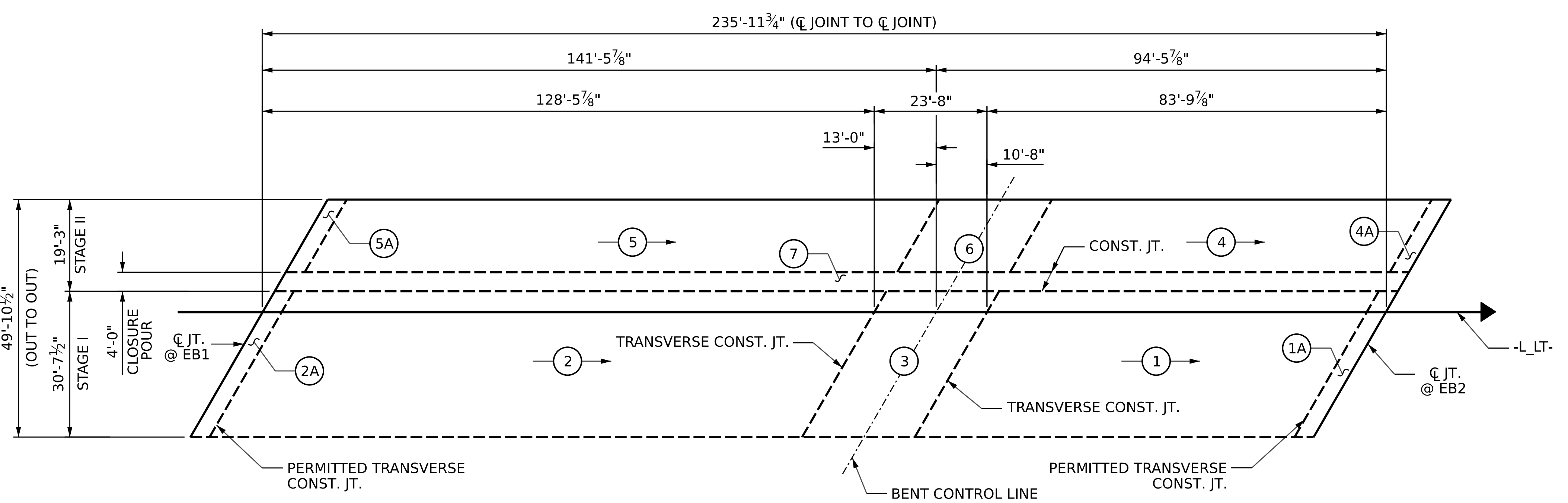
STD. NO. EJS2

NOTES:

GROOVING IS NOT PERMITTED UNDERNEATH THE STAGE III RIGHT CONCRETE BARRIER. THIS AREA HAS BEEN EXCLUDED FROM THE GROOVING AREA QUANTITIES SHOWN HERE. THIS AREA SHALL BE RAKE FINISHED TO A SURFACE ROUGHNESS OF 3/16".



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 11,758)



POURING SEQUENCE - PLAN

(POUR #3 CANNOT BE STARTED UNTIL BOTH ADJACENT POURS LABELED POUR #1 & #2 REACH A MINIMUM OF 3000 PSI.)
(POUR #6 CANNOT BE STARTED UNTIL BOTH ADJACENT POURS LABELED POUR #4 & #5 REACH A MINIMUM OF 3000 PSI.)

① → INDICATES POUR DIRECTION AND NUMBER

GROOVING BRIDGE FLOORS	
STAGE I	
APPROACH SLABS	971 SQ. FT.
BRIDGE DECK	6,098 SQ. FT.
TOTAL	7,069 SQ. FT.
STAGE II	
APPROACH SLABS	768 SQ. FT.
BRIDGE DECK	3,782 SQ. FT.
TOTAL	4,550 SQ. FT.
TOTAL	
APPROACH SLABS	1,739 SQ. FT.
BRIDGE DECK	9,880 SQ. FT.
TOTAL	11,619 SQ. FT.

PROJECT NO. B-3186 / B-5898
HAYWOOD COUNTY
STATION: 24+70.00 -L_LT-

SHEET 1 OF 2

AECOM
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RALEIGH, NC 27607
(919) 854-6200 www.aecom.com
AECOM License No. F0242

DESIGNED BY: SHANE TUTTLE
DATE: 04/19/23
SCALE: AS SHOWN

10/13/2023

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

BILL OF MATERIALS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-30
1			3			TOTAL SHEETS
2			4			50

DRAWN BY :	M.L. CATER	DATE :	06/2023
CHECKED BY :	D. TUTTLE	DATE :	06/2023
DESIGN ENGINEER OF RECORD:	D. TUTTLE	DATE :	06/2023

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REINFORCING BAR SCHEDULE

STAGE I						STAGE I (CONT'D)						STAGE II (CONT'D)					
BAR	NO.	SIZE	TYPE	LENGTH	WT./LN. FT.	BAR	NO.	SIZE	TYPE	LENGTH	WT./LN. FT.	BAR	NO.	SIZE	TYPE	LENGTH	WT./LN. FT.
* D1	374	5	STR	5'-10"	2275	* B3	49	6	STR	48'-10"	3594	* B1	51	4	STR	33'-8"	1147
D2	374	5	STR	5'-10"	2275	* B4	54	4	STR	33'-0"	1190	* B2	34	6	STR	42'-3"	2158
						B5	95	5	STR	48'-10"	4839	* B3	30	6	STR	48'-10"	2200
** A1	365	6	STR	12'-2"	4441	B6	15	5	STR	57'-9"	903	* B4	34	4	STR	33'-0"	749
** A2	365	6	STR	12'-2"	4441							B5	55	5	STR	48'-10"	2801
* A3	356	5	STR	21'-8"	8045	* K1	4	8	1	11'-7"	124	B6	7	5	STR	57'-9"	422
A4	356	5	STR	21'-8"	8045	* K2	4	8	2	17'-0"	182						
						* K3	4	8	2	21'-6"	230	* K14	2	6	STR	2'-8"	8
**A101	2	6	STR	11'-1"	22	* K4	4	8	1	13'-0"	139	* K15	2	6	STR	3'-8"	11
**A102	2	6	STR	10'-0"	20	** K5	2	6	STR	5'-3"	11	* K16	2	6	STR	4'-2"	13
**A103	2	6	STR	8'-11"	18	** K6	2	6	STR	6'-3"	13	* K17	4	6	STR	6'-1"	37
**A104	2	6	STR	7'-10"	16	** K7	2	6	STR	7'-3"	15	* K18	4	8	STR	6'-1"	65
**A105	2	6	STR	6'-9"	14	* K8	4	6	STR	5'-1"	31	* K19	4	8	1	8'-2"	87
**A106	2	6	STR	5'-8"	11	* K9	4	6	STR	6'-1"	37	* K20	4	8	2	17'-0"	182
**A107	2	6	STR	4'-7"	9	* K10	4	6	STR	7'-1"	43	* K21	4	8	1	11'-11"	127
**A108	1	6	STR	3'-6"	4	** K11	4	6	STR	8'-4"	33	* K22	4	6	STR	2'-8"	16
**A109	1	6	STR	2'-5"	2	** K12	4	8	STR	8'-4"	33	* K23	4	6	STR	3'-8"	22
						* K13	8	6	STR	8'-1"	97	* K24	4	6	STR	4'-8"	28
**A201	2	6	STR	11'-9"	24	* K26	93	5	2	8'-3"	800	* K25	8	6	STR	5'-9"	69
**A202	2	6	STR	10'-8"	21	* K27	31	5	5	9'-4"	302	* K26	62	5	2	8'-3"	533
**A203	2	6	STR	9'-8"	19							* K27	31	5	5	9'-4"	302
**A204	2	6	STR	8'-7"	17	* S1	26	5	3	6'-4"	172						
**A205	2	6	STR	7'-6"	15	* S2	26	4	4	6'-8"	116	* S1	12	5	3	6'-4"	79
**A206	2	6	STR	6'-5"	13	* S3	24	4	5	3'-11"	63	* S2	12	4	4	6'-8"	53
**A207	2	6	STR	5'-4"	11							* S3	24	4	5	3'-11"	63
**A208	1	6	STR	4'-3"	4	* G1	2	5	STR	25'-1"	52						
**A209	1	6	STR	3'-2"	3	* G3	2	5	STR	9'-6"	20	* G2	2	5	STR	21'-11"	46
* A301	2	5	STR	20'-10"	43	* J1	48	4	6	1'-5"	45	* J1	40	4	6	1'-5"	38

STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WT./LN. FT.
* D3	375	5	STR	5'-10"	2282
D4	375	5	STR	5'-10"	2282
* A5	361	5	STR	14'-11"	5616
A6	363	5	STR	14'-11"	5648
* A501	2	5	STR	14'-7"	30
* A502	2	5	STR	13'-11"	29
* A503	2	5	STR	13'-3"	28
* A504	2	5	STR	12'-1"	25
* A505	2	5	STR	11'-1"	23
* A506	2	5	STR	10'-0"	21
* A507	2	5	STR	8'-11"	19
* A508	2	5	STR	7'-10"	16
* A509	2	5	STR	6'-9"	14
* A510	2	5	STR	5'-8"	12
* A511	2	5	STR	4'-7"	10
* A512	2	5	STR	3'-6"	7
* A513	1	5	STR	2'-5"	3
A601	2	5	STR	14'-8"	31
A602	2	5	STR	13'-11"	29
A603	2	5	STR	12'-10"	27
A604	2	5	STR	11'-9"	25
A605	2	5	STR	10'-8"	22
A606	2	5	STR	9'-7"	20
A607	2	5	STR	8'-6"	18
A608	2	5	STR	7'-5"	15
A609	2	5	STR	6'-4"	13
A610	2	5	STR	5'-3"	11
A611	2	5	STR	4'-2"	9
A612	1	5	STR	3'-1"	3

SUPERSTRUCTURE BILL OF MATERIAL

CLASS AA CONCRETE (CUBIC YARDS)

STAGE I		STAGE II	
POUR #1	80.5	POUR #4	39.8
POUR #1A	6.2	POUR #4A	3.1
POUR #2	143.2	POUR #5	70.8
POUR #2A	6.9	POUR #5A	3.4
POUR #3	25.9	POUR #6	12.8
		POUR #7	37.5
TOTALS ***	262.7	TOTALS ***	167.4

*** FINAL TOTAL = 430.1 CUBIC YARDS

*** QUANTITIES FOR BARRIER RAILS ARE NOT INCLUDED

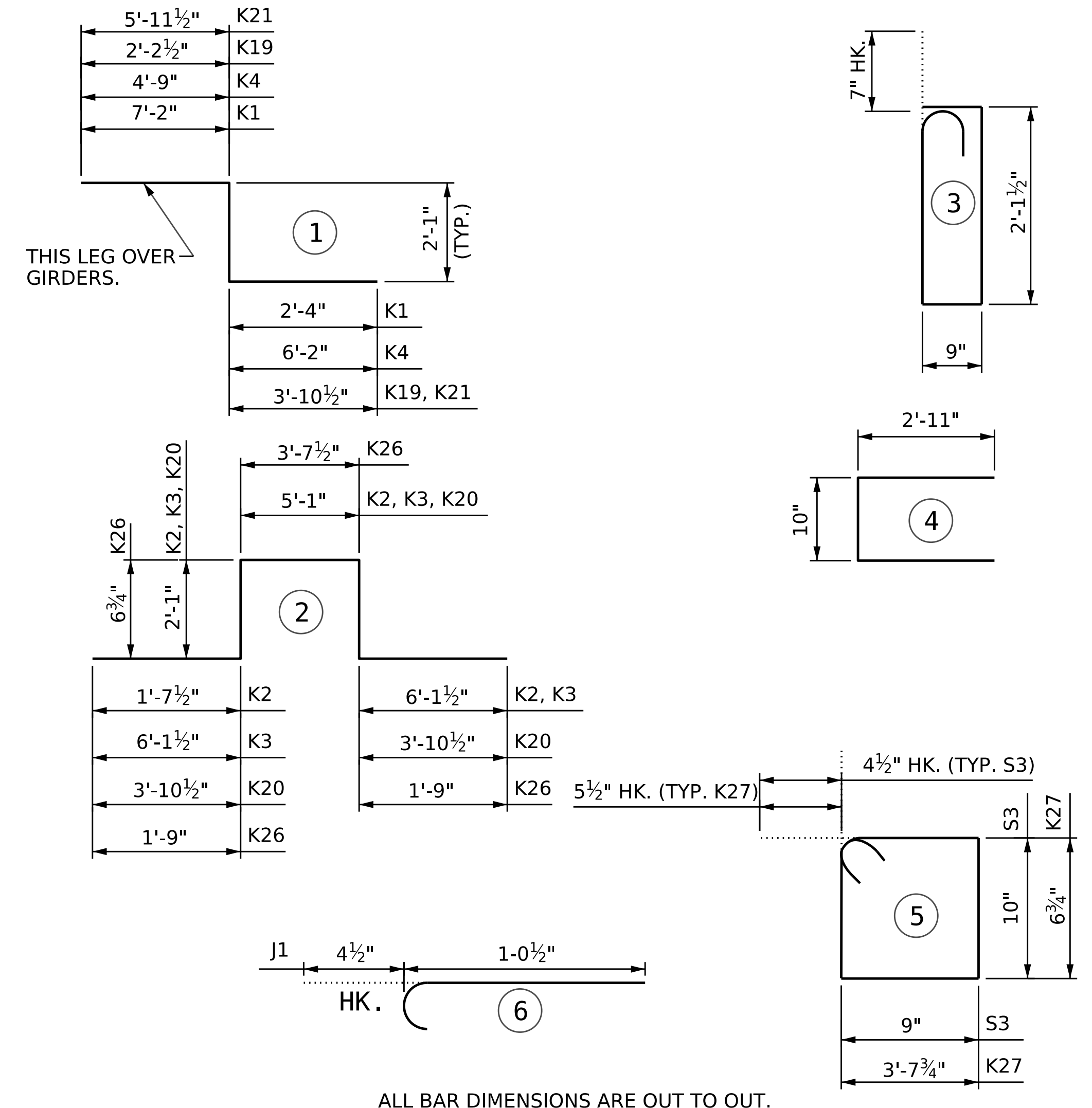
SUPERSTRUCTURE BILL OF MATERIAL

	GFRP REINFORCEMENT (LIN. FT.)	REINFORCING STEEL (LBS.)	EPOXY COATED REINFORCING STEEL (LBS.)
STAGE I	9,230	16,513	23,234
STAGE II	0	11,376	16,168

SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MIN. SPLICE LENGTHS

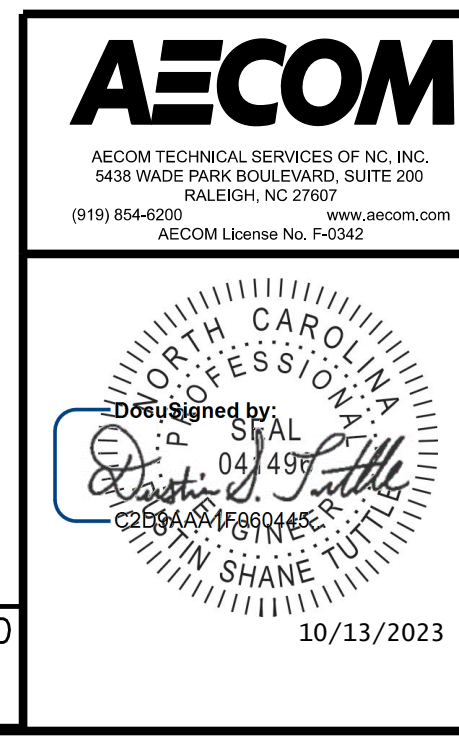
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPETS AND BARRIER RAILS
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	EPOXY COATED
#4	1'-11"	1'-7"	1'-11"	1'-7"	2'-6"
#5	2'-5"	2'-0"	2'-5"	2'-0"	3'-1"
#6	2'-10"	2'-5"	3'-7"	2'-5"	3'-8"
#7	4'-2"	2'-9"	-	-	-
#8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

BAR TYPES



* EPOXY COATED REINFORCING STEEL	39,402 LBS.
REINFORCING STEEL	27,889 LBS.
** GFRP REINFORCEMENT	9,230 LF.

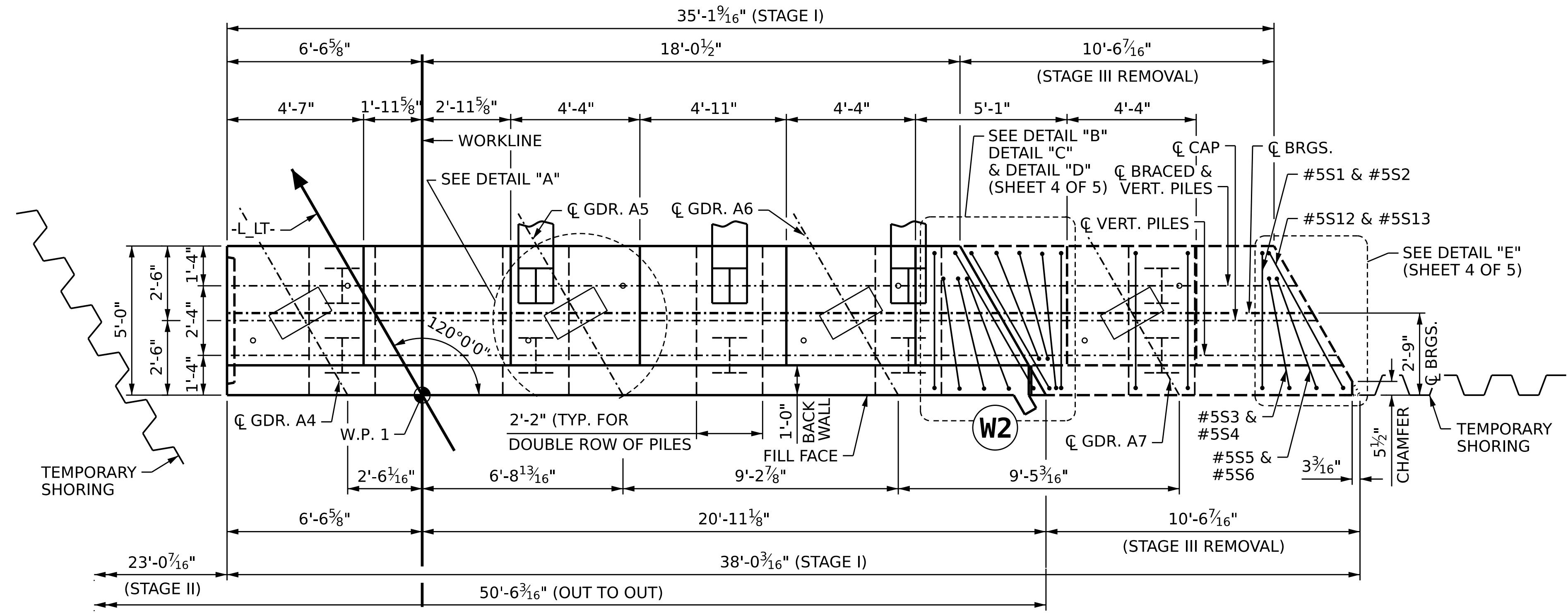
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 CHECKED BY: D. TUTTLE DATE: 06/2023
 DESIGN ENGINEER OF RECORD: D. TUTTLE DATE: 06/2023



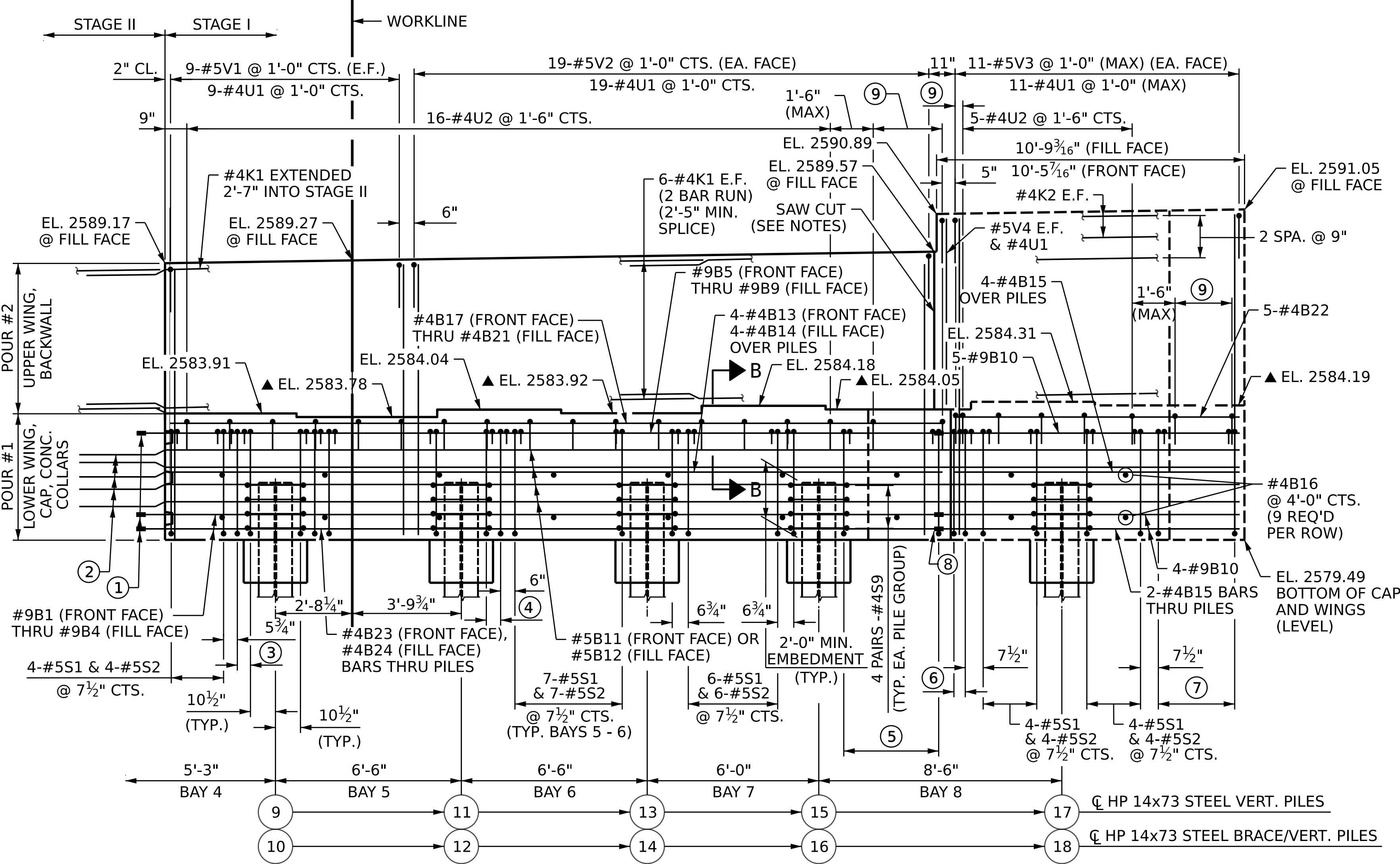
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUPERSTRUCTURE
BILL OF MATERIALS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-31
1			3			TOTALS
2			4			50

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PLAN



ELEVATION

NOTES:

MECHANICAL COUPLERS SHALL BE USED TO JOIN THE #9 "B" BARS IN STAGE I WITH THE #9 "B" BARS IN STAGE II. REINFORCING DIMENSIONS ARE PROVIDED ASSUMING A 1FT EXTENSION BEYOND THE CONSTRUCTION JOINT. THE CONTRACTOR SHALL ADJUST FABRICATED DIMENSIONS AS NECESSARY TO ACCOMMODATE THE COUPLER USED. SEE MECHANICAL BUTT SPLICES FOR REINFORCING STEEL IN STANDARD SPECIFICATIONS. NO ADDITIONAL PAYMENT WILL BE MADE FOR ANY ADJUSTMENTS.

STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHORS.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE FRONT FACE AT THE RATE OF 2%.

THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD, EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

DURING STAGE I CONSTRUCTION, A 3/4" TRIANGULAR BLOCKOUT (SEE DETAIL "C" ON SHEET 4 OF 5) WILL BE PLACED IN THE FRONT FACE OF THE BACKWALL AND FRONT AND TOP FACES OF THE CAP AT THE SAW CUT LOCATION TO FACILITATE SAW CUT AND SUCH THAT FINAL END BENT FACES MAY BE CHAMFERED ACCORDING TO THE STANDARD NOTES.

THREADED MECHANICAL COUPLERS SHALL BE USED TO JOIN THE #9 "B" BARS ON EITHER SIDE OF THE SAW-CUT LINE BETWEEN THE PERMANENT AND OVERBUILT PORTIONS OF STAGE I. THE CONTRACTOR SHALL ADJUST THE FABRICATED DIMENSIONS OF THE REINFORCING AS NECESSARY TO ACCOMMODATE FOR THE COUPLER USED WHILE PROVIDING AT LEAST 3" CLEAR FROM COUPLER TO THE SAW-CUT LINE. REINFORCING DIMENSIONS ARE PROVIDED ASSUMING A 3" EXTENSION BEYOND THE SAW-CUT LINE TO FACE OF COUPLER. DEBOND THE BAR BETWEEN THE COUPLER AND THE SAW-CUT LINE. #5 "B" BARS SHALL EXTEND THROUGH THE SAW-CUT LINE WITHOUT DEBONDING AND SHALL BE DRILLED OUT TO A DEPTH OF 2" DURING OVERBUILD REMOVAL. SEE "TEMPORARY OVERBUILD AND REMOVAL" SPECIAL PROVISION.

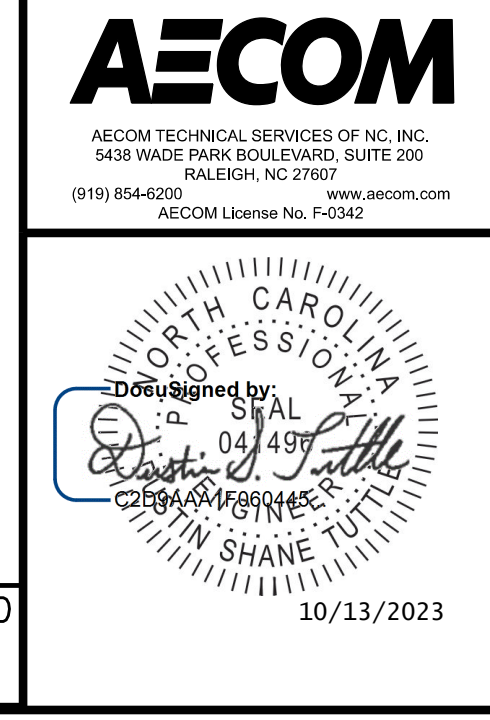
DURING STAGE III CONSTRUCTION, THE CONTRACTOR SHALL SAW CUT THE CAP AND BACKWALL. THE CAP SHALL BE CUT PARALLEL TO THE SKEWED ENDS OF THE CAP AND THE BACKWALL SHALL BE CUT NORMAL TO THE FILL FACE AS SHOWN ON THE PLANS. AFTER SAW CUTTING THE CAP AND BACKWALL, THE CONTRACTOR SHALL REMOVE THE OVERBUILD PORTION, UNTHREAD AND REMOVE OVERBUILD REINFORCEMENT FROM MECHANICAL COUPLERS IN STAGE I, DRILL OUT #5B11, #5B12, AND #4K1 BARS TO A DEPTH OF 2", AND PATCH EXTERIOR FACE WITH AN APPROVED GROUT. SEE SPECIAL PROVISIONS FOR DETAILS.

CONTRACTOR SHALL DRILL 1" DIAMETER HOLE IN THE PILES TO PERMIT #4B15, #4B23, & #4B24 BARS TO PASS THROUGH AT THE LOCATIONS SHOWN ON SECTION A-A. THE HOLE SHALL BE DRILLED AFTER PILE IS INSTALLED AND CUT-OFF. FLAME CUTTING SHALL NOT BE PERMITTED.

FOR DETAIL "A", SEE SHEET 2 OF 5.
FOR WING DETAILS, SEE SHEET 3 OF 5.
FOR SECTION A-A, SEE SHEET 4 OF 5.
FOR SECTION B-B, SEE SHEET 4 OF 5.
FOR PILE SPLICE DETAILS SEE SHEET 5 OF 5.
FOR TEMPORARY DRAINAGE DETAILS, SEE SHEET 5 OF 5.
FOR CONSTRUCTION JOINT DETAILS, SEE "KEYED CONSTRUCTION JOINT DETAIL" ON SHEET 4 OF 5.

- ① MECHANICAL COUPLER, SEE NOTES
- ② #5B11, #5B12, #4B13, & #4B14 EXTENDED 3'-2" MIN. INTO STAGE II. FIELD BEND AS NEEDED TO AVOID TEMPORARY SHORING.
- ③ 2-#5S1 & 2-#5S2 @ 5 1/2" CTS.
- ④ 2-#5S1 & 2-#5S2 @ 6" CTS.
- ⑤ 5 BAR PAIRS: #5S1 & #5S2, 2-#5S3 & 2-#5S4, #5S5 & #5S6 AND #5S7 & #5S8 @ 11" MAX (AS SHOWN IN DETAIL "B")
- ⑥ 5 BAR PAIRS: 2-#5S1 & 2-#5S2, #5S3 & #5S4, #5S5 & #5S6 AND #5S9 & #5S10 @ 11" MAX (AS SHOWN ABOVE IN PLAN)
- ⑦ 4 BAR PAIRS: #5S3 & #5S2, #5S3 & #5S4, #5S5 & #5S6 AND #5S9 & #5S10 @ 11" MAX (AS SHOWN ABOVE IN PLAN)
- ⑧ THREADED MECHANICAL COUPLER REQ'D (SEE NOTES) (TYP. AT SAW CUT LOCATION)
- ⑨ #4U3, #4U4, AND #4U5 @ 1'-6" MAX (AS SHOWN IN DETAIL "D")

PROJECT NO. B-3186 / B-5898
HAYWOOD COUNTY
 STATION: 24+70.00 -L LT-
 SHEET 1 OF 5

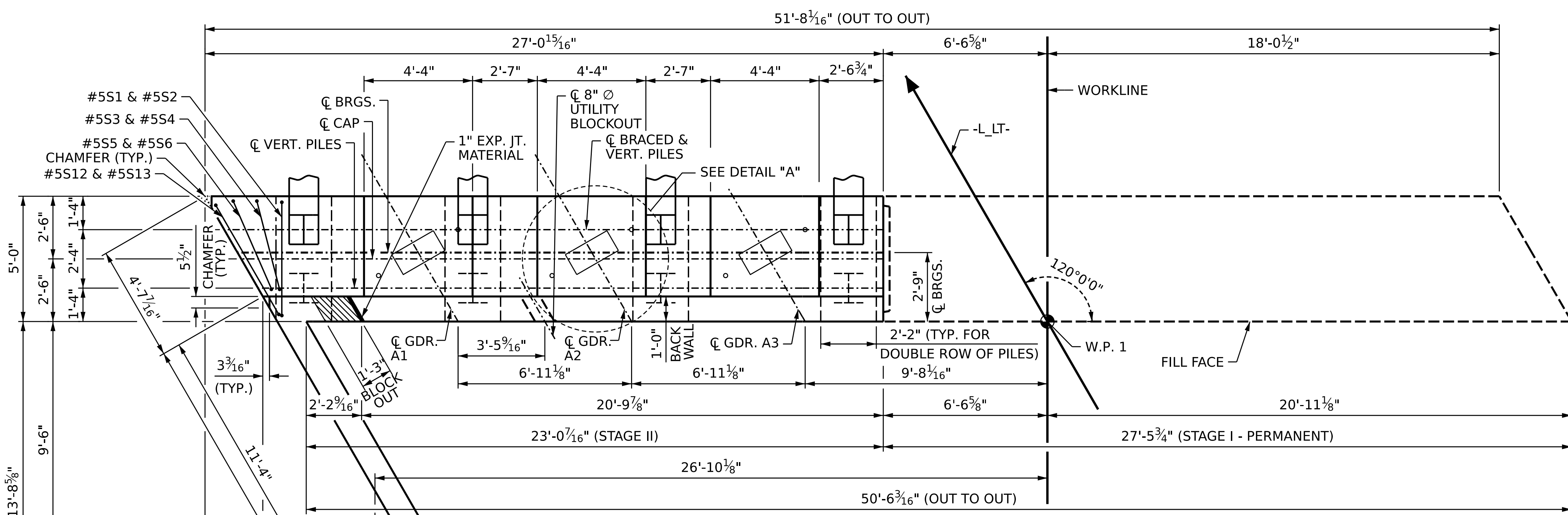


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-32
1			3			TOTALS
2			4			50

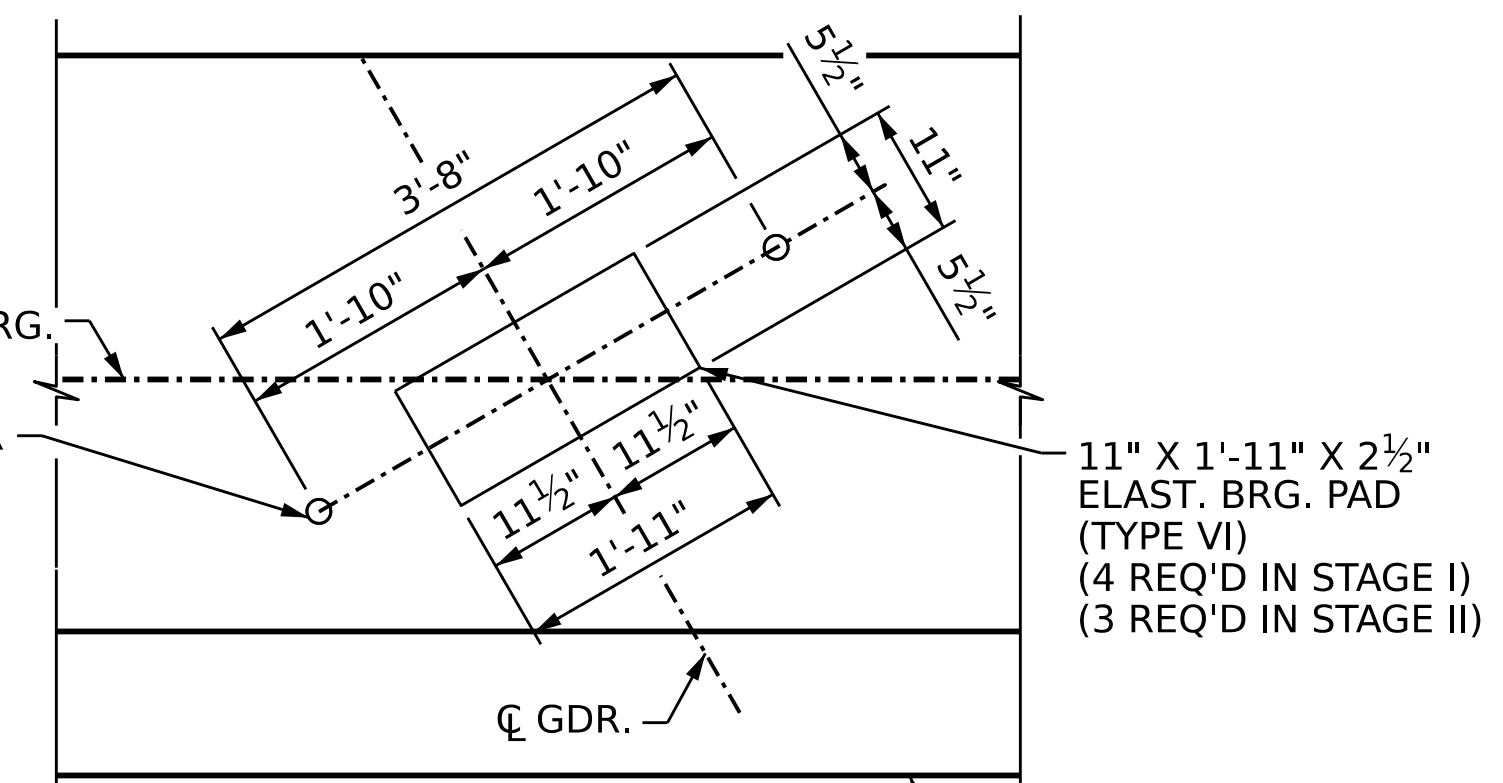
DRAWN BY: D. RITACCO DATE: 05/2023
 CHECKED BY: D. TUTTLE DATE: 06/2023
 DESIGN ENGINEER OF RECORD: D. TUTTLE DATE: 06/2023

▲ FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILDUPS, SEE SECTION A-A ON SHEET 4 OF 5.

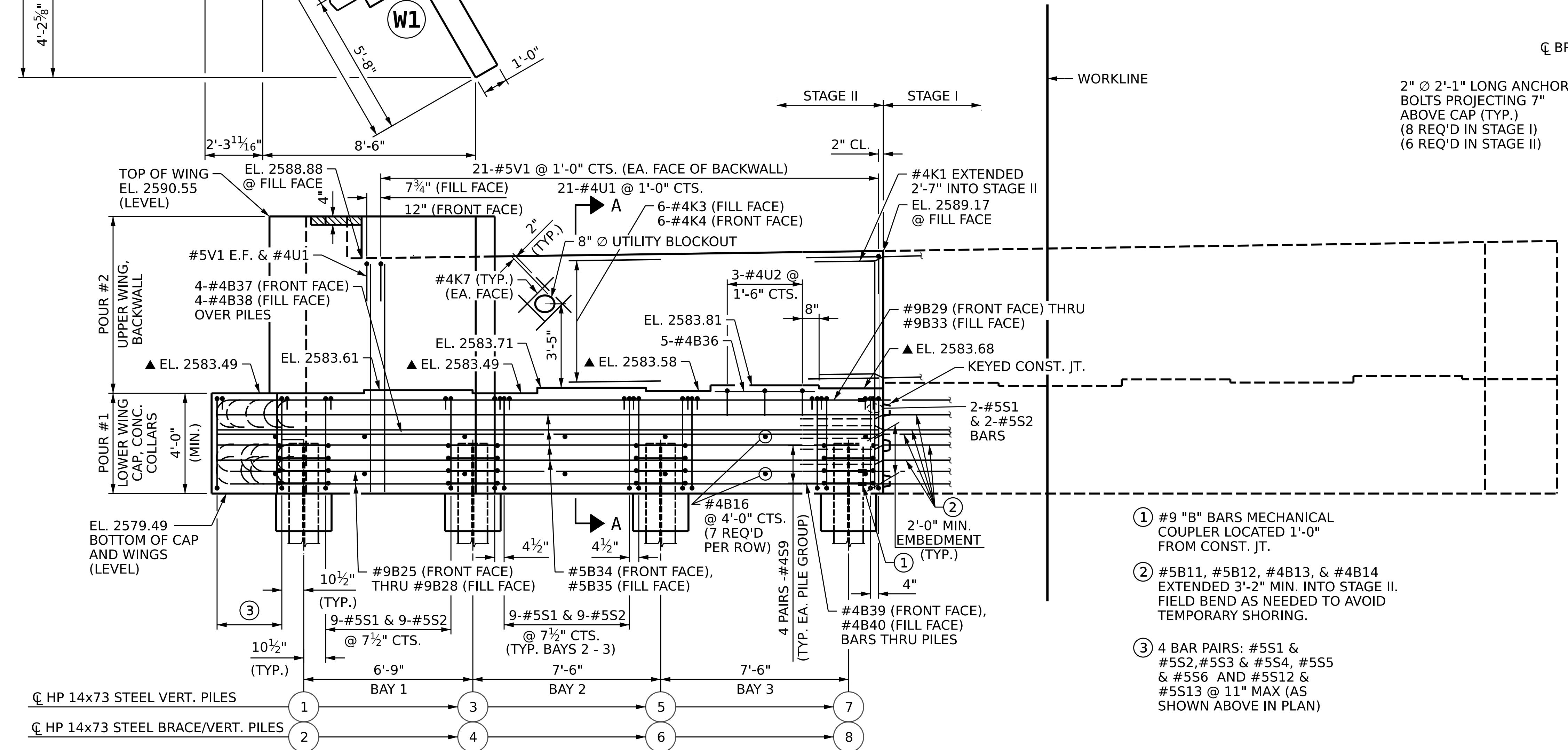
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PLAN



DETAIL "A"



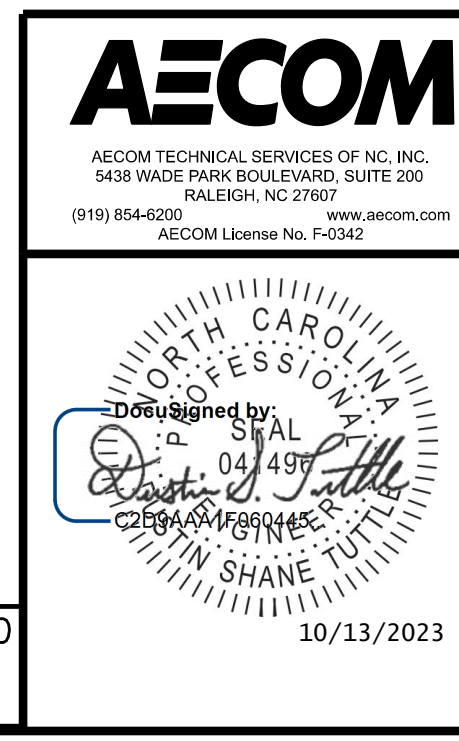
ELEVATION

- ① #9 "B" BARS MECHANICAL COUPLER LOCATED 1'-0" FROM CONST. JT.
- ② #5B11, #5B12, #4B13, & #4B14 EXTENDED 3'-2" MIN. INTO STAGE II. FIELD BEND AS NEEDED TO AVOID TEMPORARY SHORING.
- ③ 4 BAR PAIRS: #5S1 & #5S2, #5S3 & #5S4, #5S5 & #5S6 AND #5S12 & #5S13 @ 11" MAX (AS SHOWN ABOVE IN PLAN)

▲ FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILDUPS, SEE SECTION A-A ON SHEET 4 OF 5.

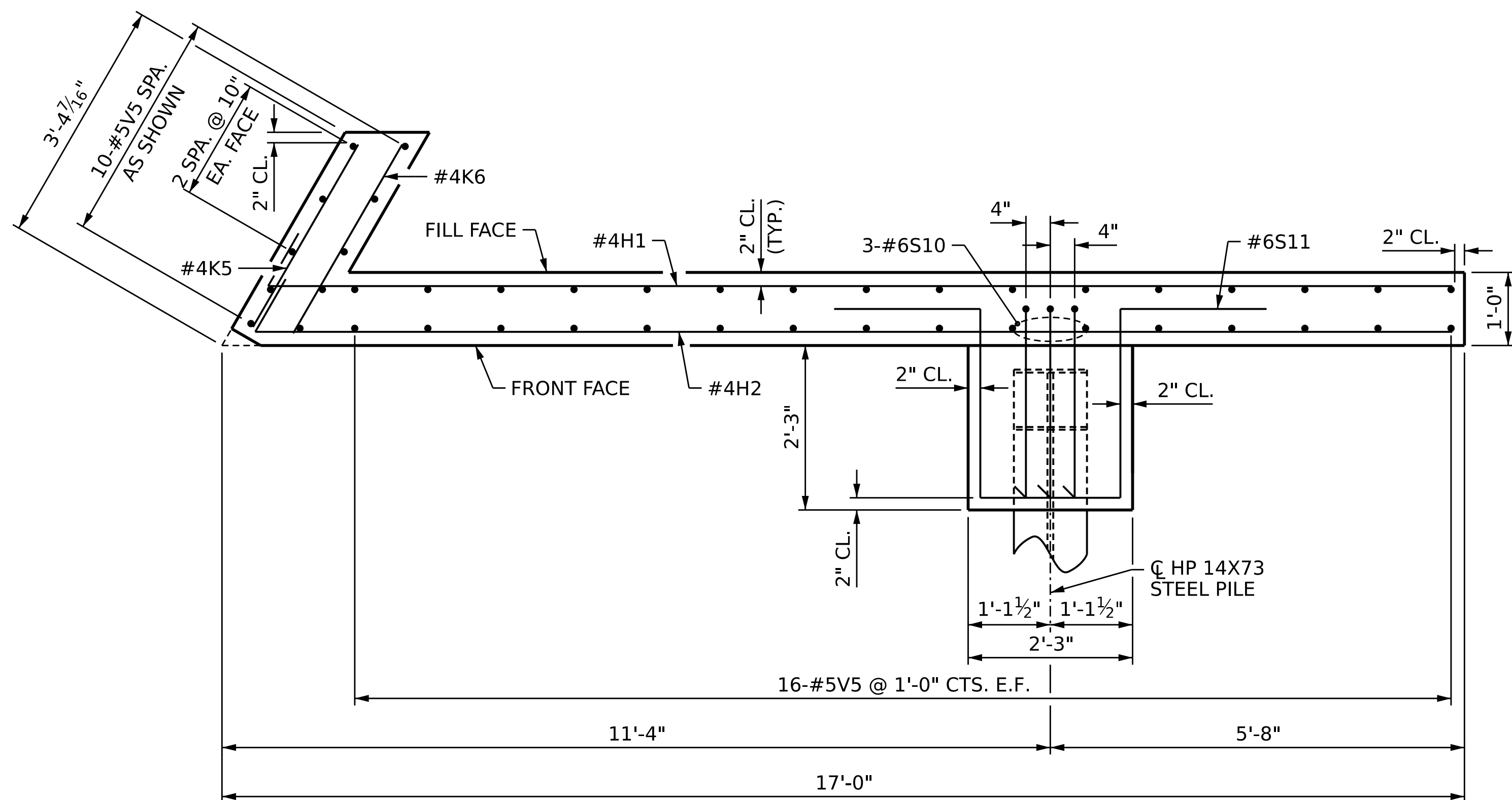
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PROJECT NO. **B-3186 / B-5898**
HAYWOOD COUNTY
 STATION: **24+70.00 -L_LT-**
 SHEET 2 OF 5

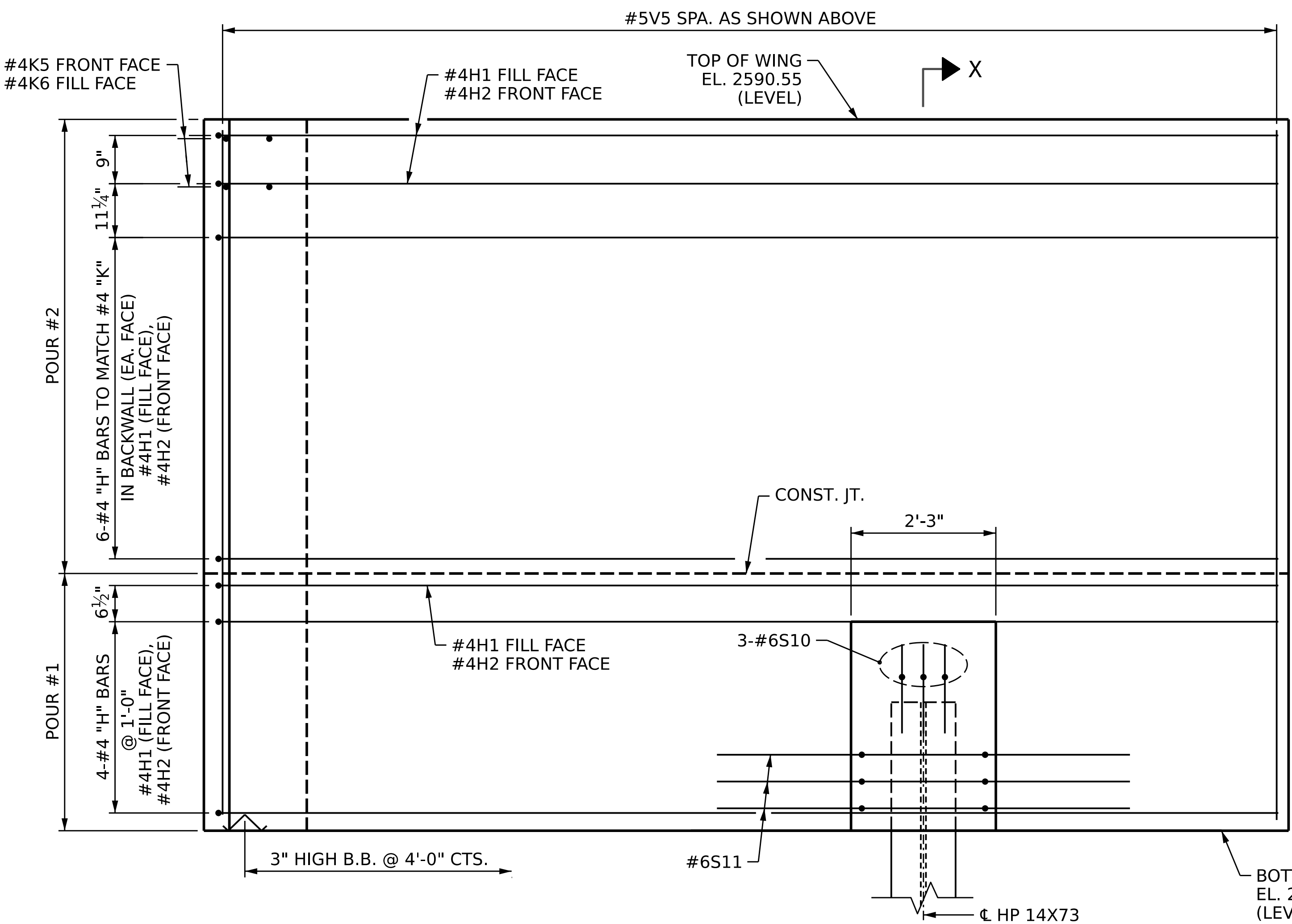


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-33
1			3			TOTALS
2			4			50

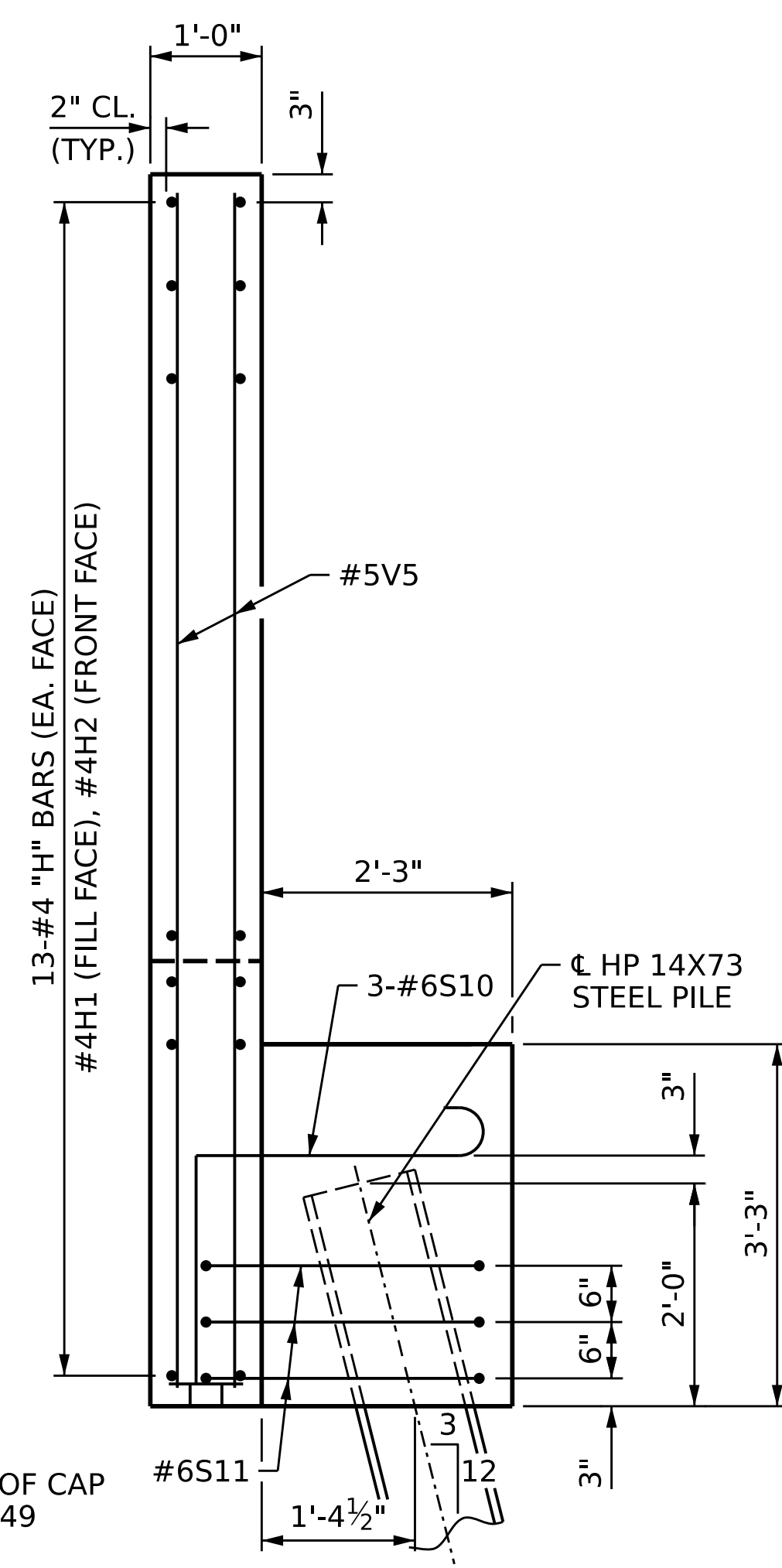
DRAWN BY: <u>D. RITACCO</u>	DATE: <u>05/2023</u>
CHECKED BY: <u>D. TUTTLE</u>	DATE: <u>06/2023</u>
DESIGN ENGINEER OF RECORD: <u>D. TUTTLE</u>	DATE: <u>06/2023</u>



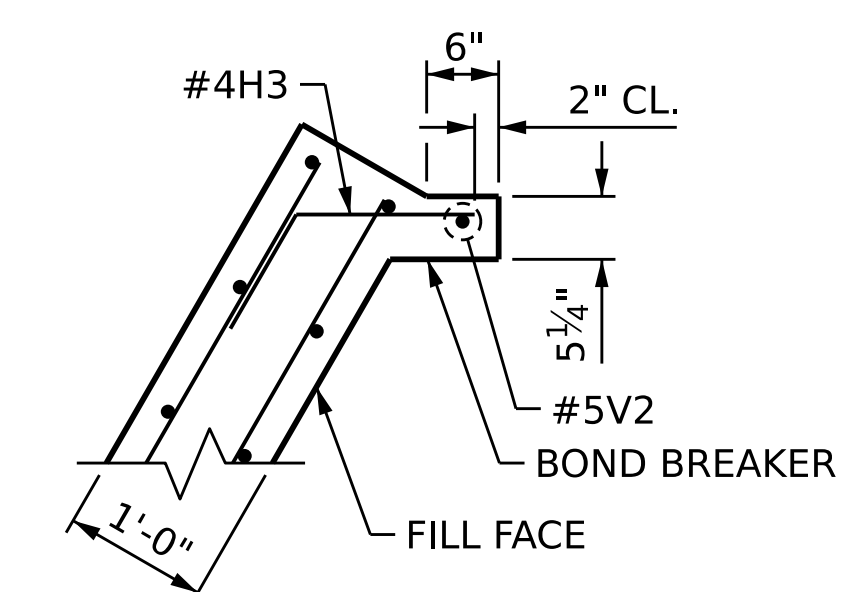
PLAN OF W1



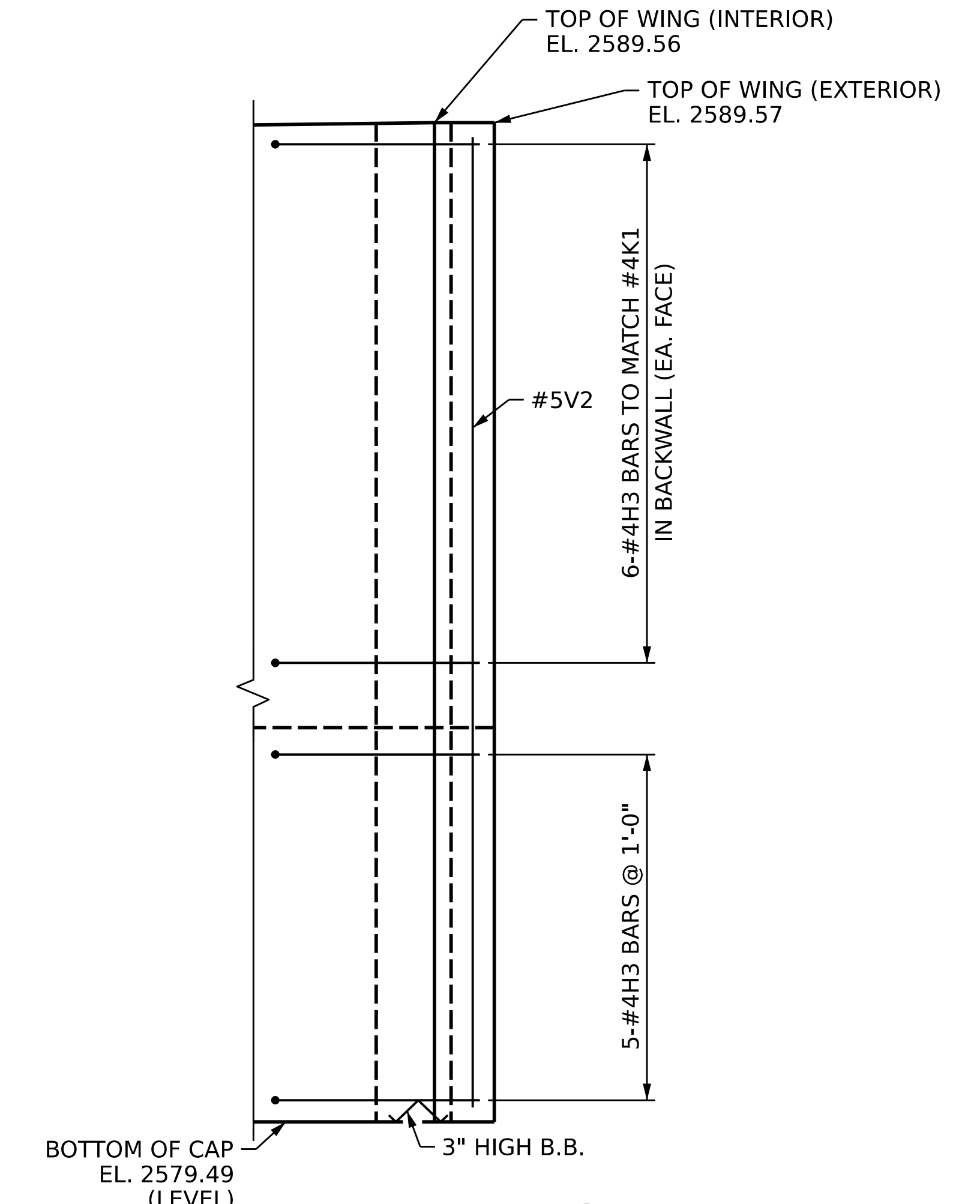
ELEVATION OF W1



SECTION X-X



PLAN OF WING W2



ELEVATION OF WING W2

PROJECT NO. B-3186 / B-5898
HAYWOOD COUNTY
 STATION: 24+70.00 -L_LT-
 SHEET 3 OF 5

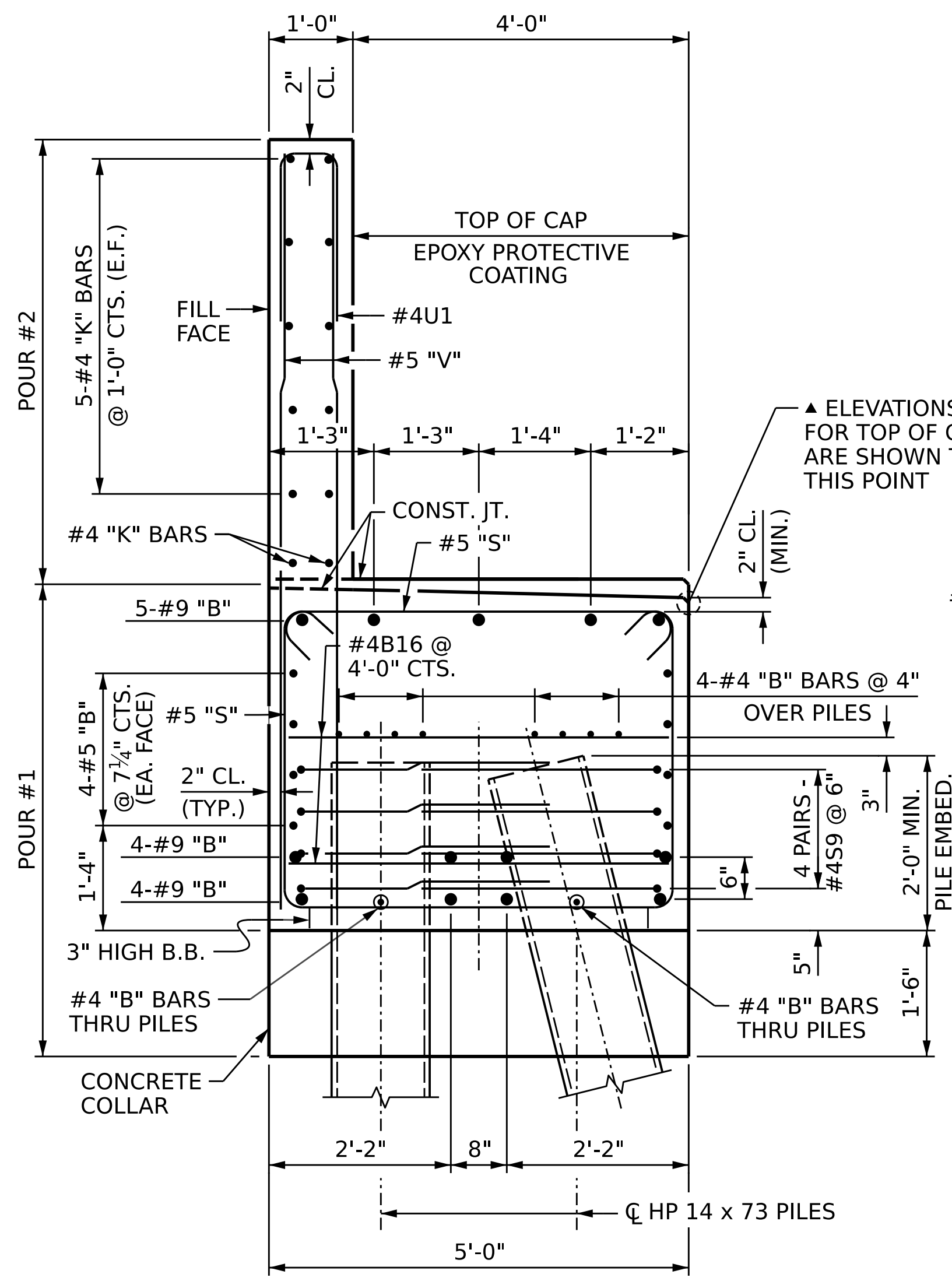
AECOM
AECOM TECHNICAL SERVICES OF NC, INC.
 5430 WADE PARK BOULEVARD, SUITE 200
 RALEIGH, NC 27607
 (919) 854-6200 www.aecom.com
 AECOM License No. F0242

DESIGNED BY: SPAL
 DATE: 04/4/2023
 DRAWN BY: SHANE TULL
 DATE: 10/13/2023

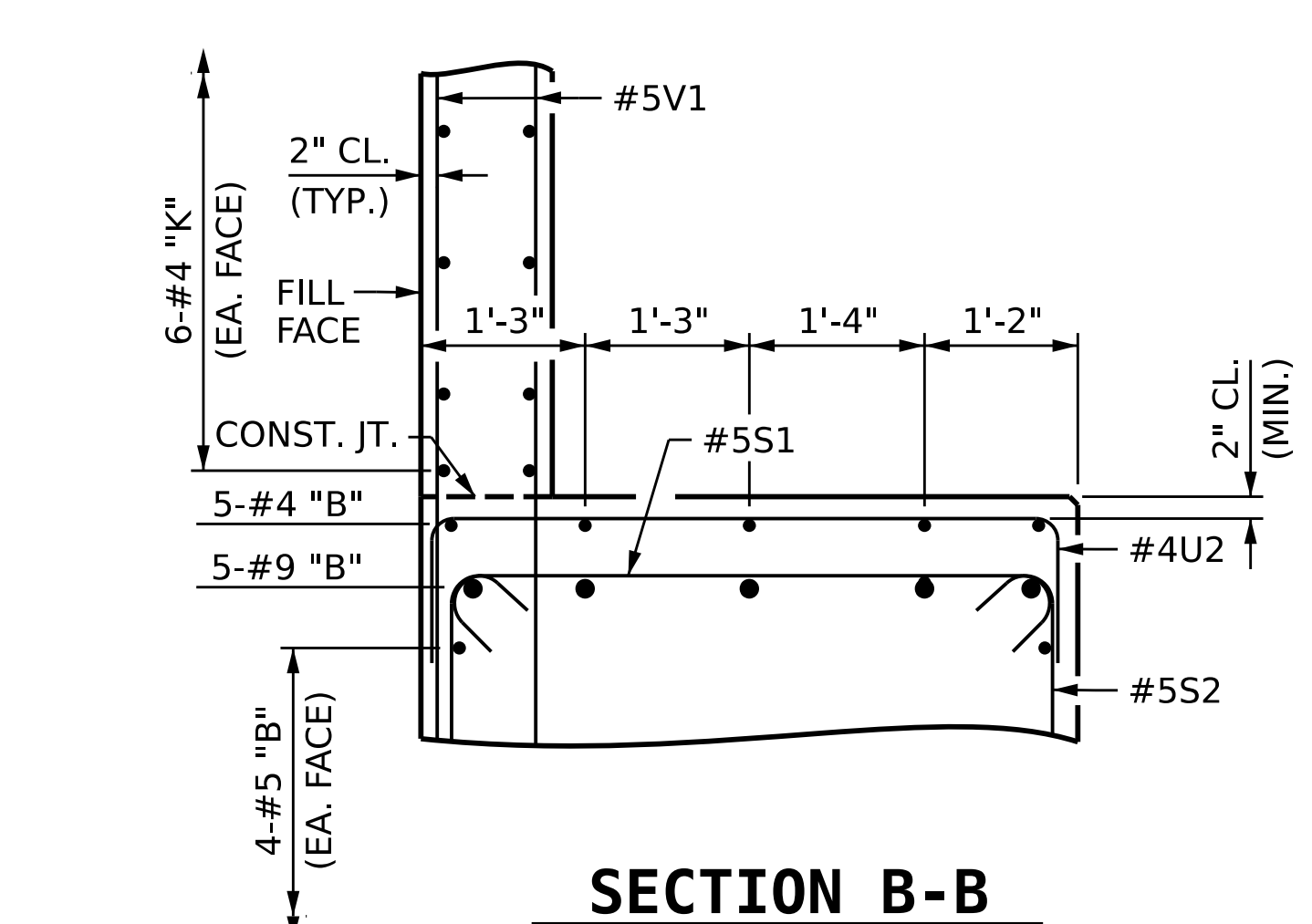
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 1 WINGWALLS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S3-34
					TOTAL SHEETS 50

DRAWN BY: D. RITACCO DATE: 05/2023
 CHECKED BY: D. TUTTLE DATE: 06/2023
 DESIGN ENGINEER OF RECORD: D. TUTTLE DATE: 06/2023

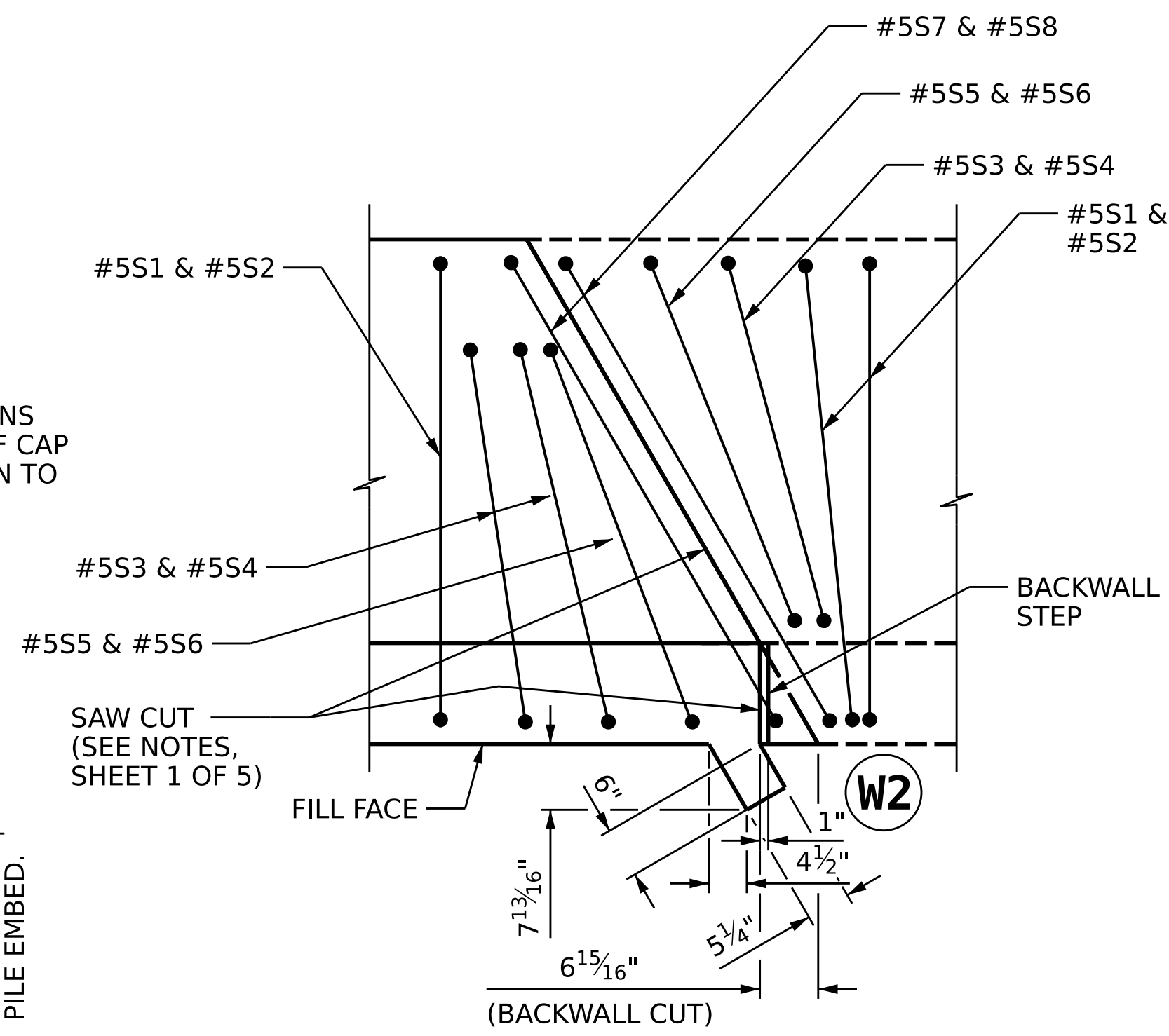
DOCUMENT NOT CONSIDERED
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 SIGNATURES COMPLETED



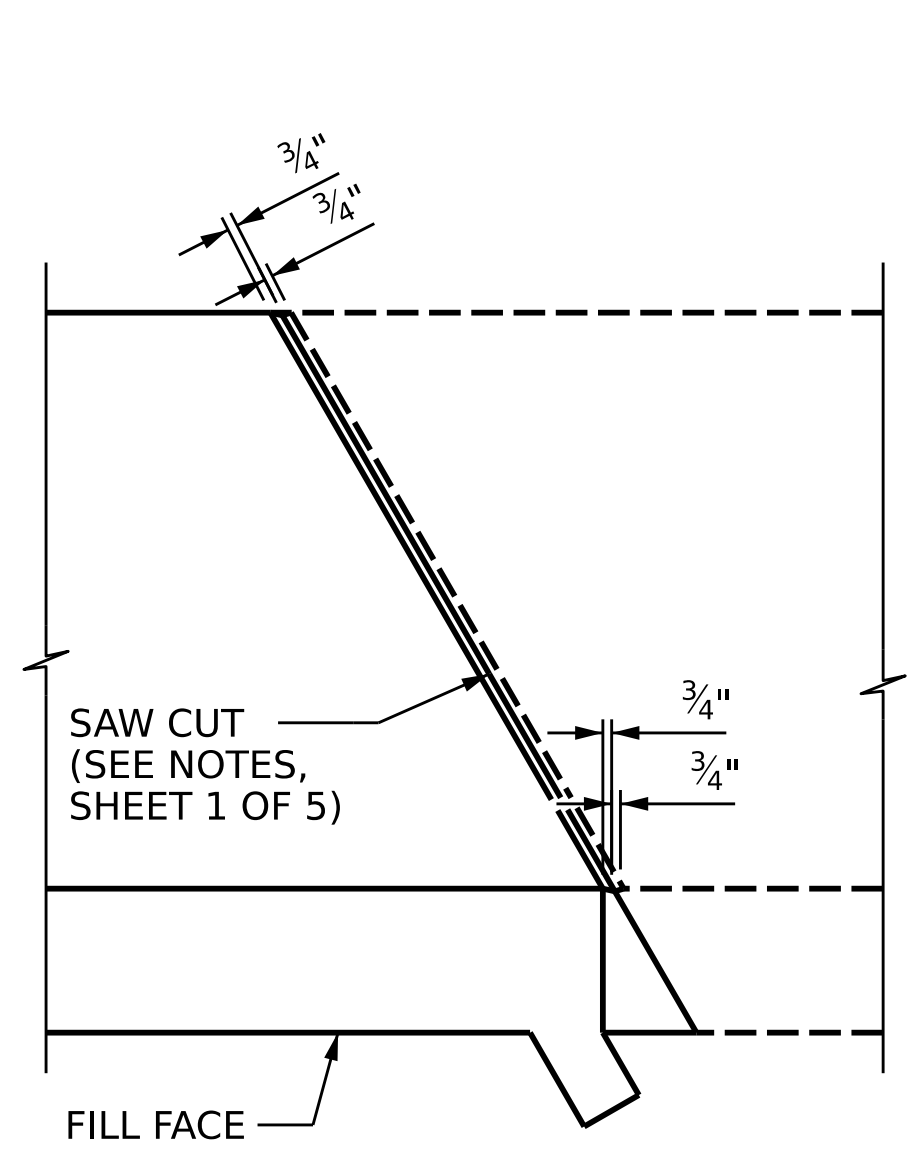
SECTION A-A



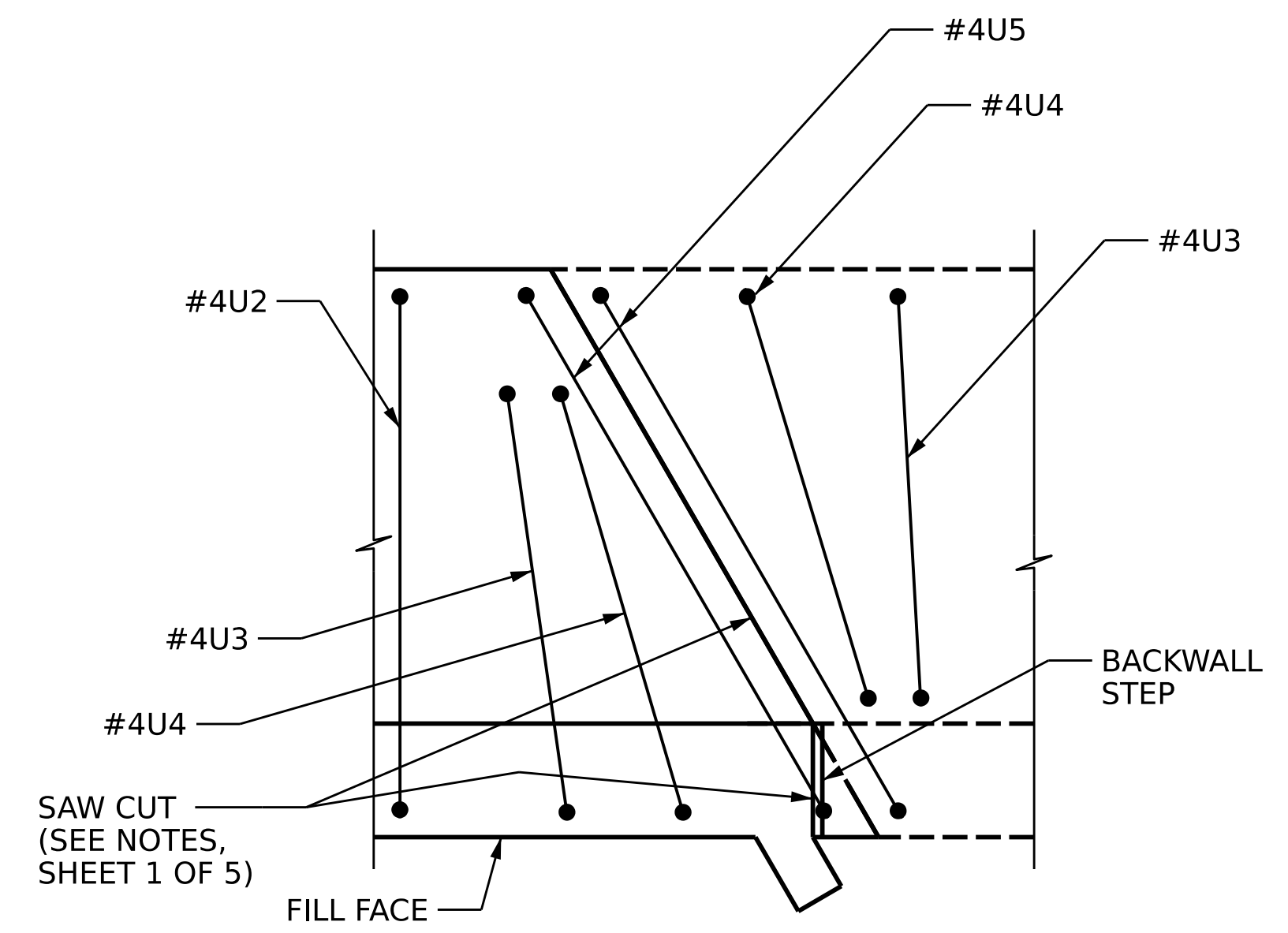
SECTION B-B



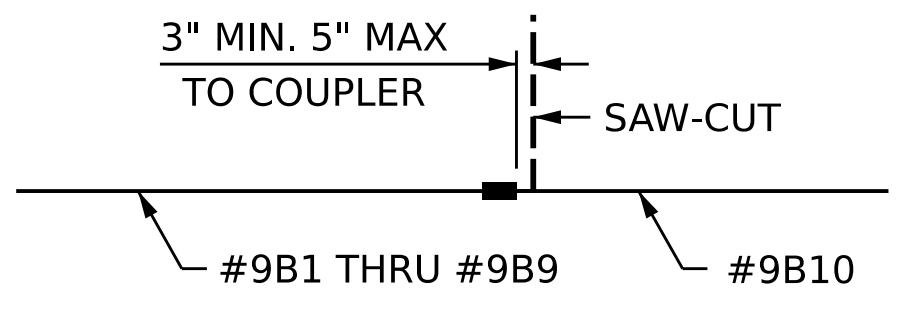
DETAIL "B"



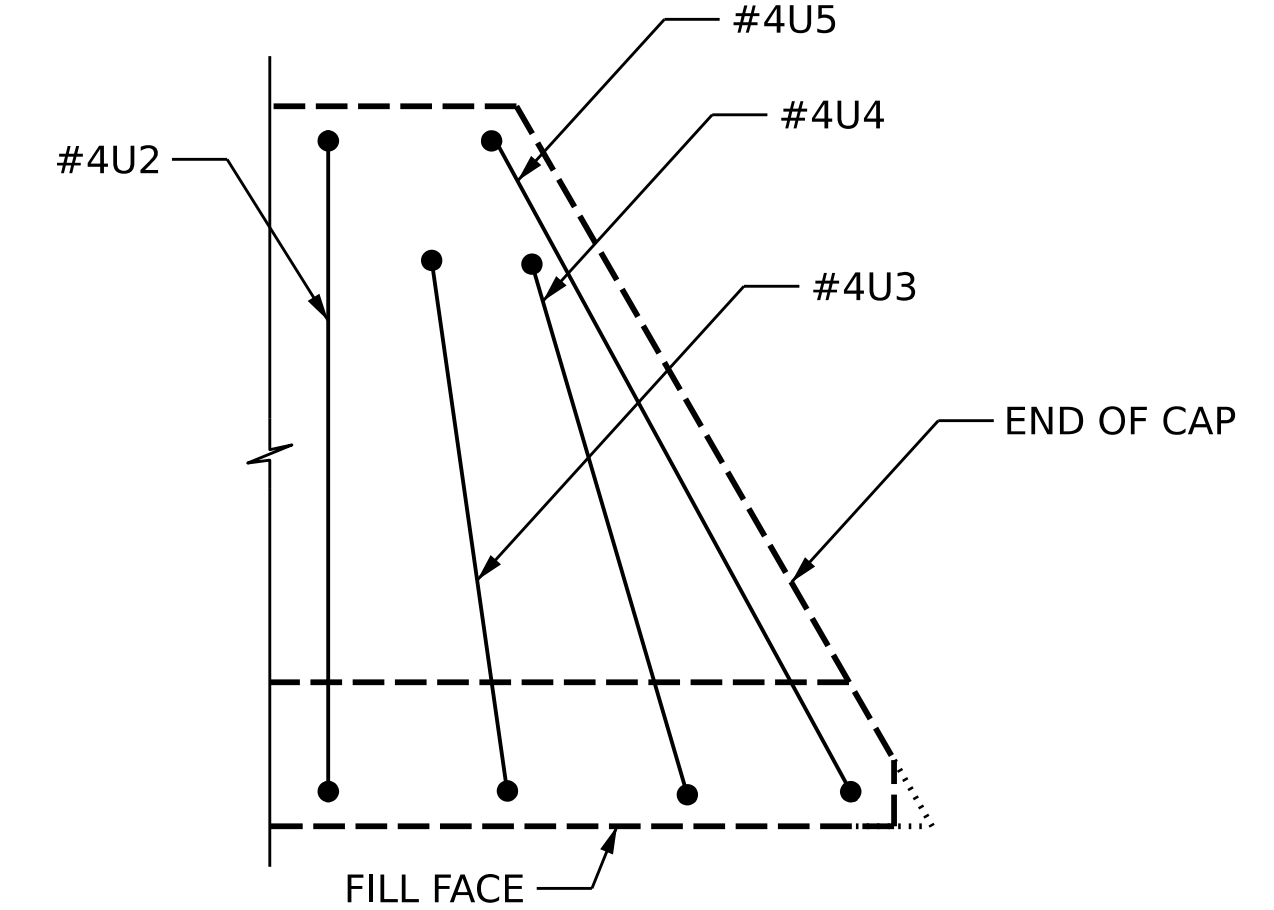
DETAIL "C"



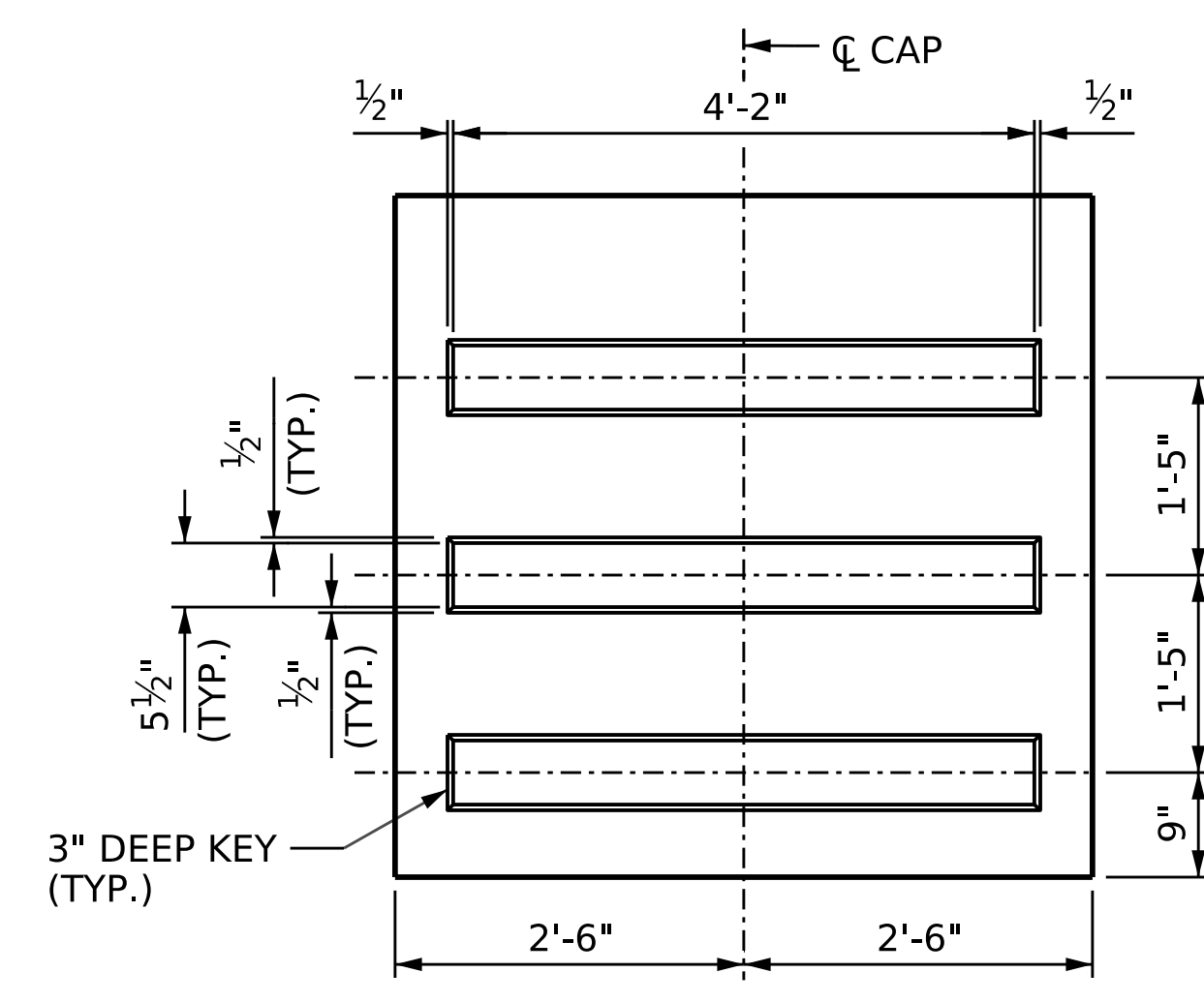
DETAIL "D"



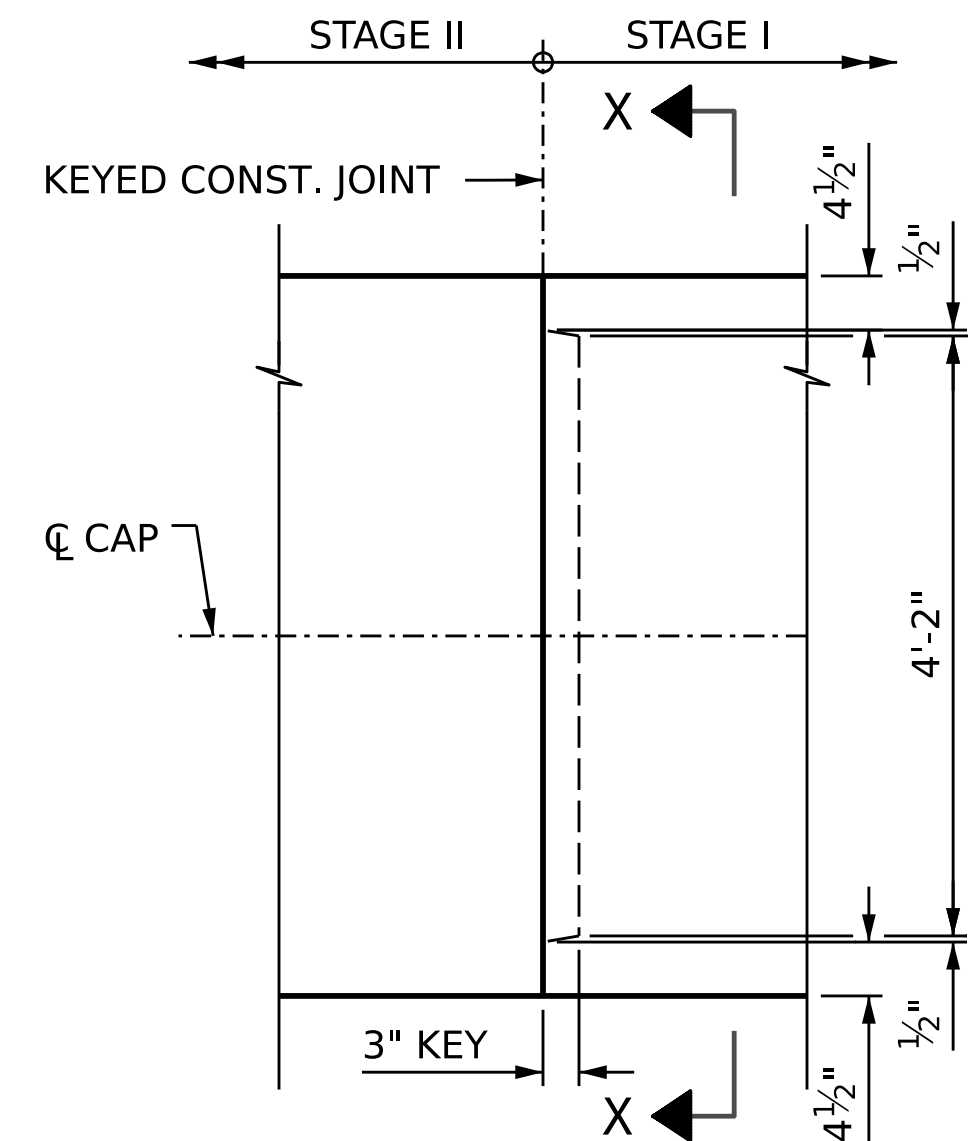
THREADED BAR DETAIL



DETAIL "E"



SECTION X-X



PLAN

KEYED CONSTRUCTION JOINT DETAIL

PROJECT NO. B-3186 / B-5898
HAYWOOD COUNTY
 STATION: 24+70.00 -L_LT-
 SHEET 4 OF 5

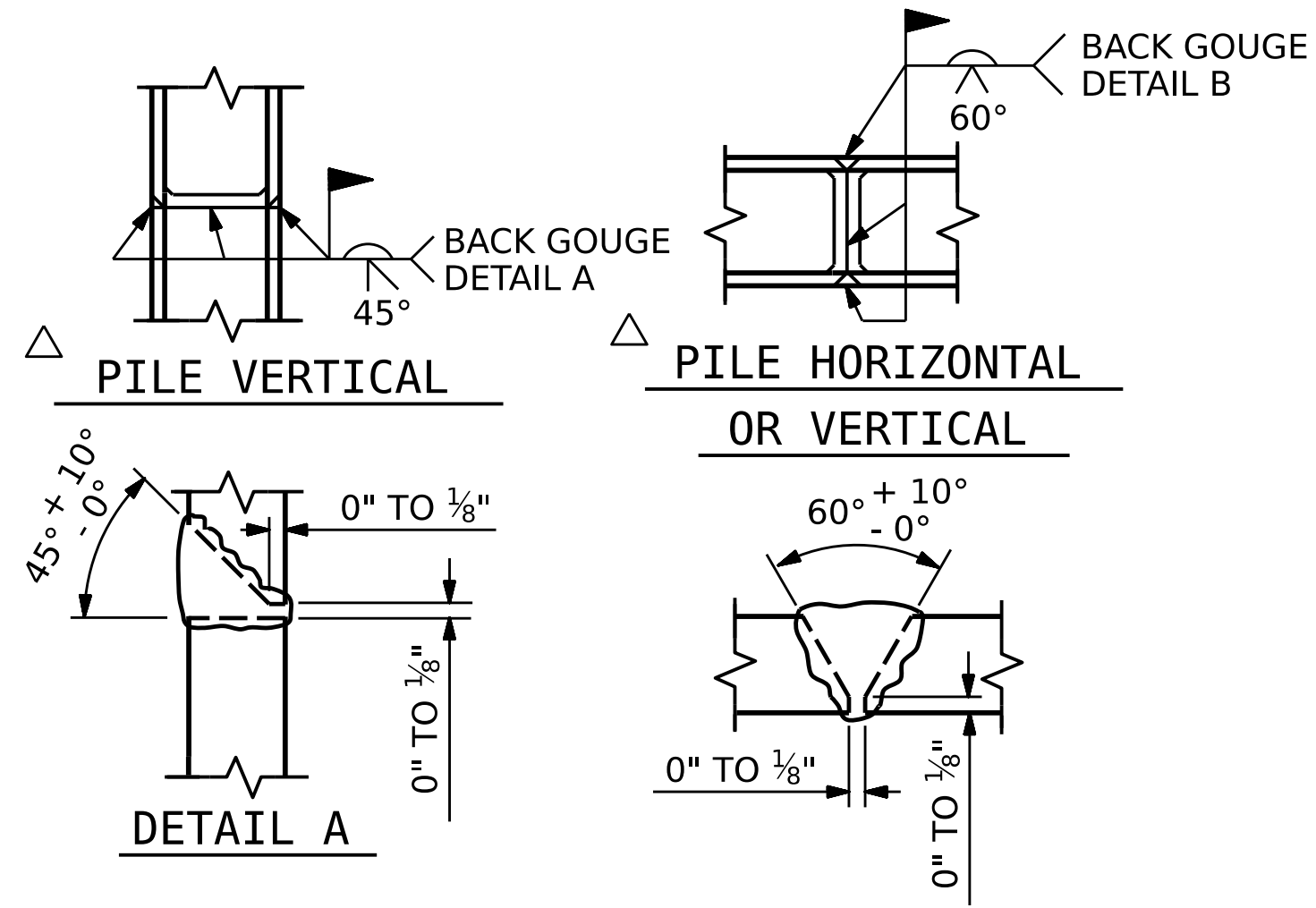
AECOM
AECOM TECHNICAL SERVICES OF NC, INC.
 5430 WADE PARK BOULEVARD, SUITE 200
 RALEIGH, NC 27607
 (919) 854-6200 www.aecom.com
 AECOM License No. F0242

DESIGNED BY: *[Signature]*
 DATE: 04/19/23
 CHECKED BY: *[Signature]*
 DATE: 06/08/23
 10/13/2023

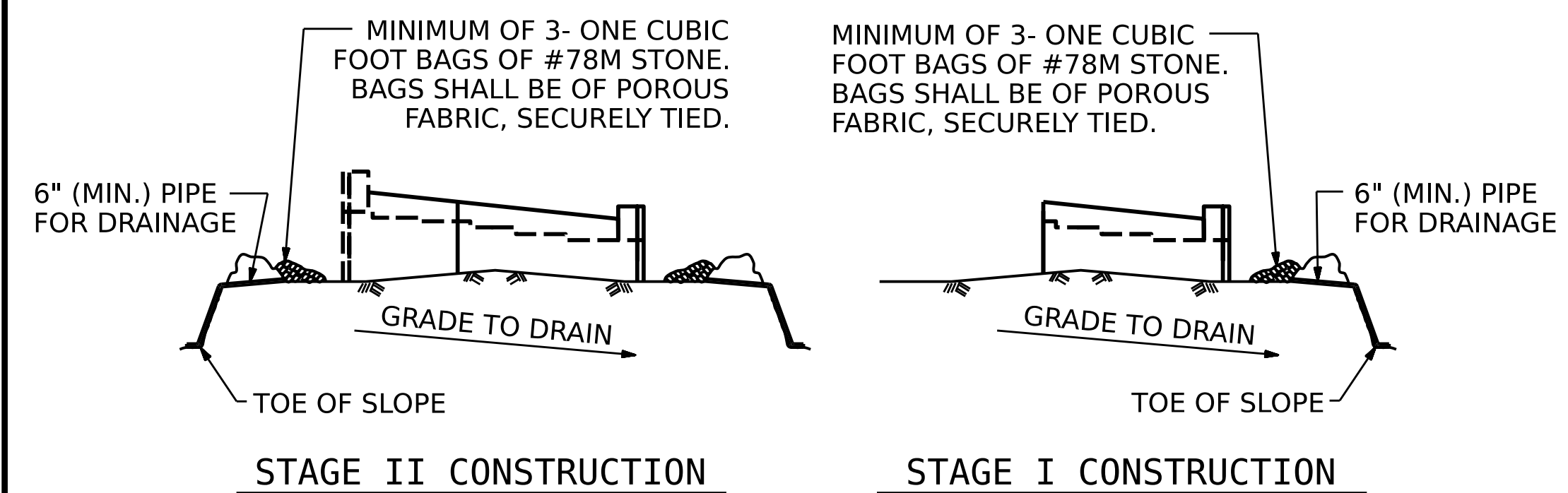
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 1 SECTIONS & DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S3-35
TOTAL SHEETS					50

DRAWN BY: D. RITACCO DATE: 05/2023
 CHECKED BY: D. TUTTLE DATE: 06/2023
 DESIGN ENGINEER OF RECORD: D. TUTTLE DATE: 06/2023

DOCUMENT NOT CONSIDERED
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PILE SPLICE DETAILS



TEMPORARY DRAINAGE AT END BENT

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.

DRAWN BY :	D. RITACCO	DATE :	05/2023
CHECKED BY :	D. TUTTLE	DATE :	06/2023
DESIGN ENGINEER OF RECORD:	D. TUTTLE	DATE :	06/2023

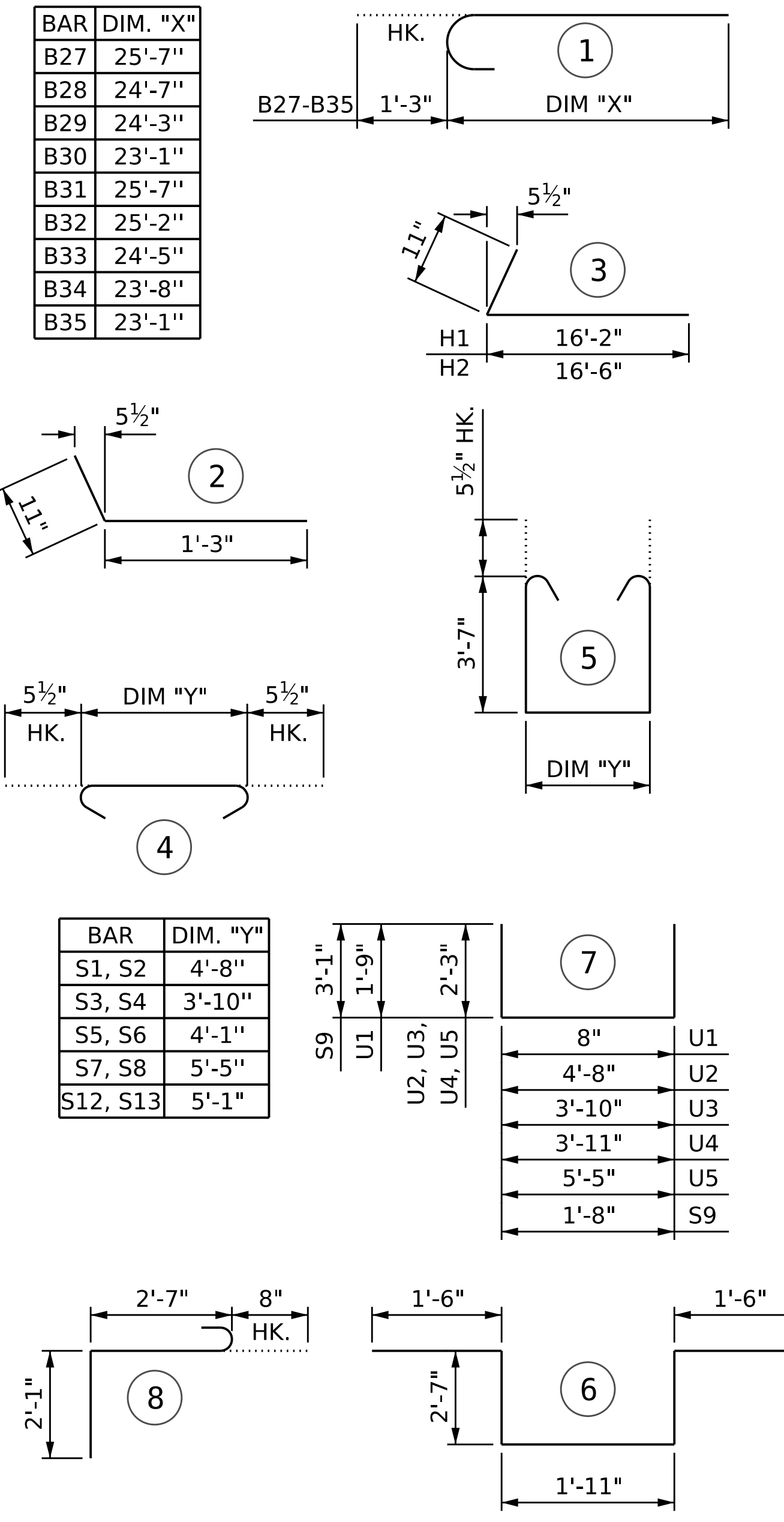
BILL OF MATERIAL

END BENT 1

STAGE I					STAGE II						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	9	STR	25'-6"	173	B16	14	4	STR	4'-8"	44
B2	2	9	STR	26'-7"	181	B25	2	9	1	26'-10"	182
B3	2	9	STR	27'-0"	184	B26	2	9	1	25'-10"	176
B4	2	9	STR	28'-1"	191	B27	2	9	1	25'-6"	173
B5	1	9	STR	25'-6"	87	B28	2	9	1	24'-4"	165
B6	1	9	STR	26'-0"	88	B29	1	9	1	26'-10"	91
B7	1	9	STR	26'-9"	91	B30	1	9	1	26'-5"	90
B8	1	9	STR	27'-6"	94	B31	1	9	1	25'-8"	87
B9	1	9	STR	28'-1"	95	B32	1	9	1	24'-11"	85
B10	13	9	STR	10'-7"	468	B33	1	9	1	24'-4"	83
B11	4	5	STR	38'-2"	159	B34	4	5	STR	26'-5"	110
B12	4	5	STR	40'-10"	170	B35	4	5	STR	24'-0"	100
B13	4	4	STR	28'-8"	77	B36	5	4	STR	4'-0"	13
B14	4	4	STR	30'-0"	80	B37	4	4	STR	25'-9"	69
B15	10	4	STR	10'-1"	67	B38	4	4	STR	24'-3"	65
B16	18	4	STR	4'-8"	56	B39	1	4	STR	25'-11"	17
B17	1	4	STR	24'-4"	16	B40	1	4	STR	24'-7"	16
B18	1	4	STR	24'-10"	17						
B19	1	4	STR	25'-8"	17	H1	13	4	3	17'-1"	148
B20	1	4	STR	26'-4"	18	H2	13	4	3	17'-5"	151
B21	1	4	STR	26'-11"	18						
B22	5	4	STR	10'-0"	33	K3	6	4	STR	24'-0"	96
B23	1	4	STR	25'-0"	17	K4	6	4	STR	24'-2"	97
B24	1	4	STR	26'-4"	18	K5	2	4	STR	2'-9"	4
						K6	2	4	STR	2'-11"	4
						K7	8	4	STR	2'-0"	11
H3	11	4	2	2'-2"	16						
K1	24	4	STR	21'-4"	342	S1	34	5	4	5'-7"	198
K2	2	4	STR	10'-2"	14	S2	34	5	5	12'-9"	452
						S3	1	5	4	4'-9"	5
S1	44	5	4	5'-7"	256	S4	1	5	5	11'-11"	12
S2	44	5	5	12'-9"	585	S5	1	5	4	5'-0"	5
S3	4	5	4	4'-9"	20	S6	1	5	5	12'-2"	13
S4	4	5	5	11'-11"	50	S9	32	4	7	7'-10"	167
S5	3	5	4	5'-0"	16	S10	3	6	8	5'-4"	24
S6	3	5	5	12'-2"	38	S11	3	6	6	10'-1"	45
S7	2	5	4	6'-4"	13	S12	1	5	4	6'-0"	6
S8	2	5	5	13'-6"	28	S13	1	5	5	13'-2"	14
S9	40	4	7	7'-10"	209						
S12	1	5	4	6'-0"	6	U1	22	4	7	4'-2"	61
S13	1	5	5	13'-2"	14	U2	3	4	7	9'-2"	18
U1	40	4	7	4'-2"	111	V1	44	5	STR	8'-11"	409
U2	21	4	7	9'-2"	129	V5	42	5	STR	10'-7"	464
U3	3	4	7	8'-4"	17						
U4	3	4	7	8'-5"	17						
U5	3	4	7	9'-11"	20						
V1	18	5	STR	8'-11"	167						
V2	39	5	STR	9'-4"	380						
V3	22	5	STR	10'-11"	250						
V4	2	5	STR	6'-6"	14						
REINFORCING STEEL					5,127 LBS.	REINFORCING STEEL					3,970 LBS.
CLASS A CONCRETE						CLASS A CONCRETE					
POUR #1 (CAP, COLLARS, & LOWER WINGWALL)					33.9 C.Y.	POUR #1 (CAP, COLLARS, & LOWER WINGWALL)					25.0 C.Y.
POUR #2 (BACKWALL & UPPER WINGWALL)					8.1 C.Y.	POUR #2 (BACKWALL & UPPER WINGWALL)					9.2 C.Y.
TOTAL = 42.0 C.Y.						TOTAL = 34.2 C.Y.					

NOTE: SEE GEOTECHNICAL FOUNDATION TABLES FOR ADDITIONAL PILE INFORMATION

BAR TYPES



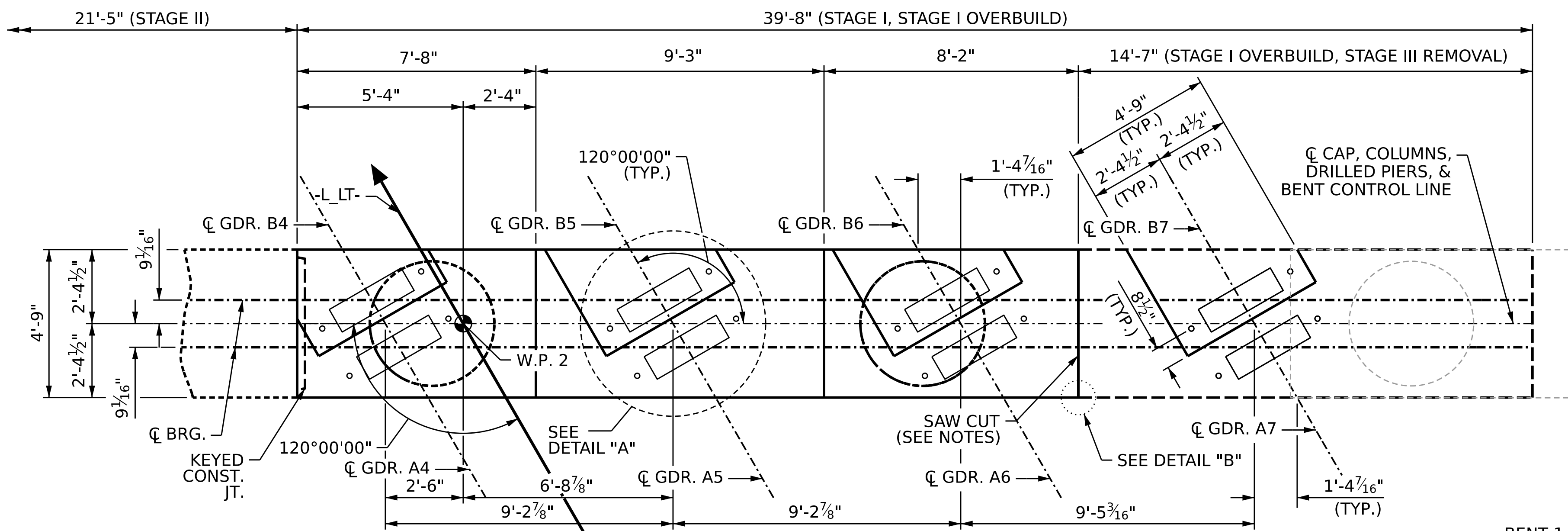
ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. B-3186 / B-5898
HAYWOOD COUNTY
 STATION: 24+70.00 -L_ LT-

SHEET 5 OF 5

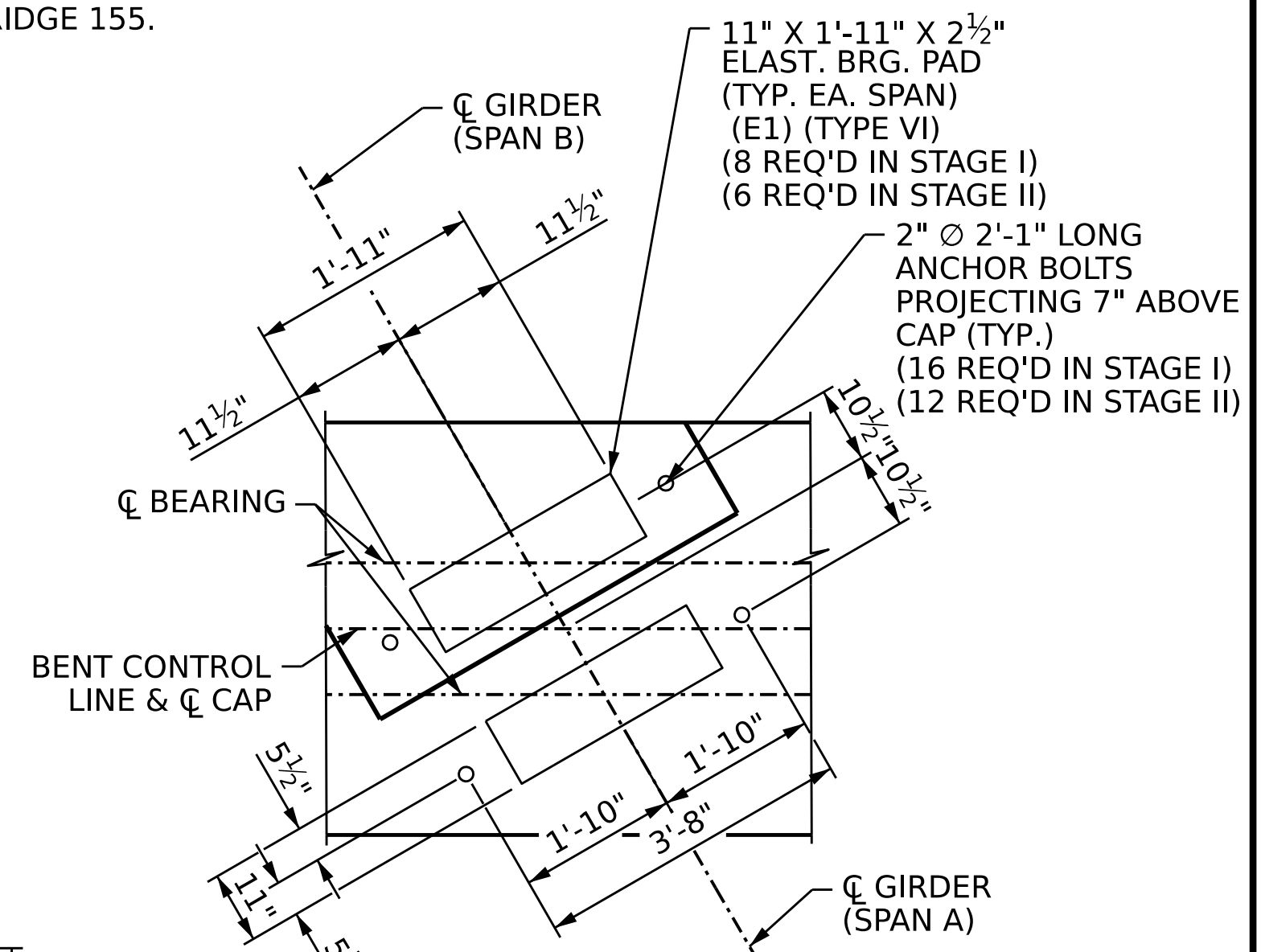
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 1 BILL OF MATERIALS & DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S3-36
TOTAL SHEETS					50

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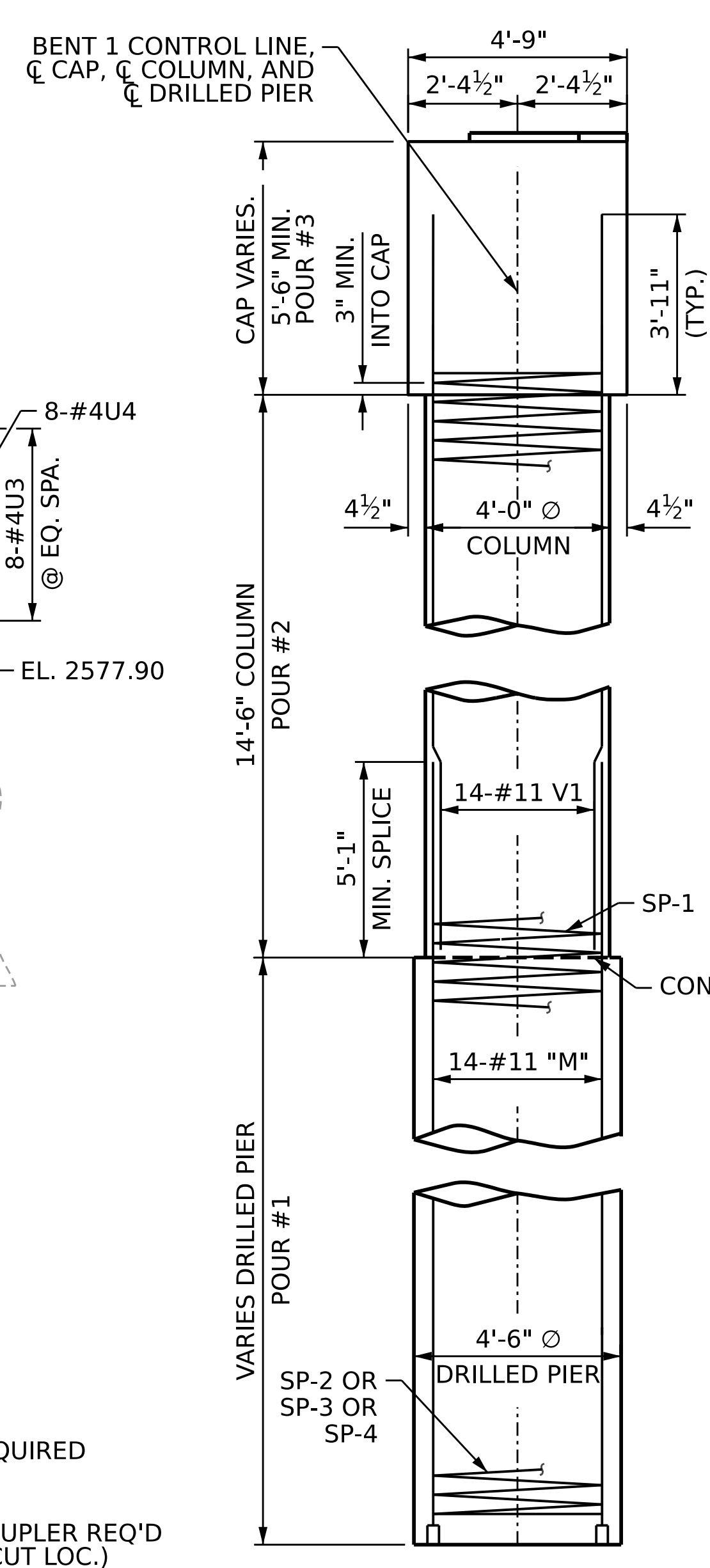


NOTES:
 FOR ADDITIONAL NOTES, SEE SHEET 3 OF 3.
 FOR SECTION A-A, B-B, SEE CAP END VIEW, KEYED CONST. JT. DETAIL, AND COLUMN/PIER CONST. JT. DETAIL SEE SHEET 2 OF 3.
 THE CENTERLINE OF THE TEMPORARY SUPPORT SHOULD BE AT THE CENTERLINE OF COLUMN 1 OF BRIDGE 155.

SPAN B



SPAN A

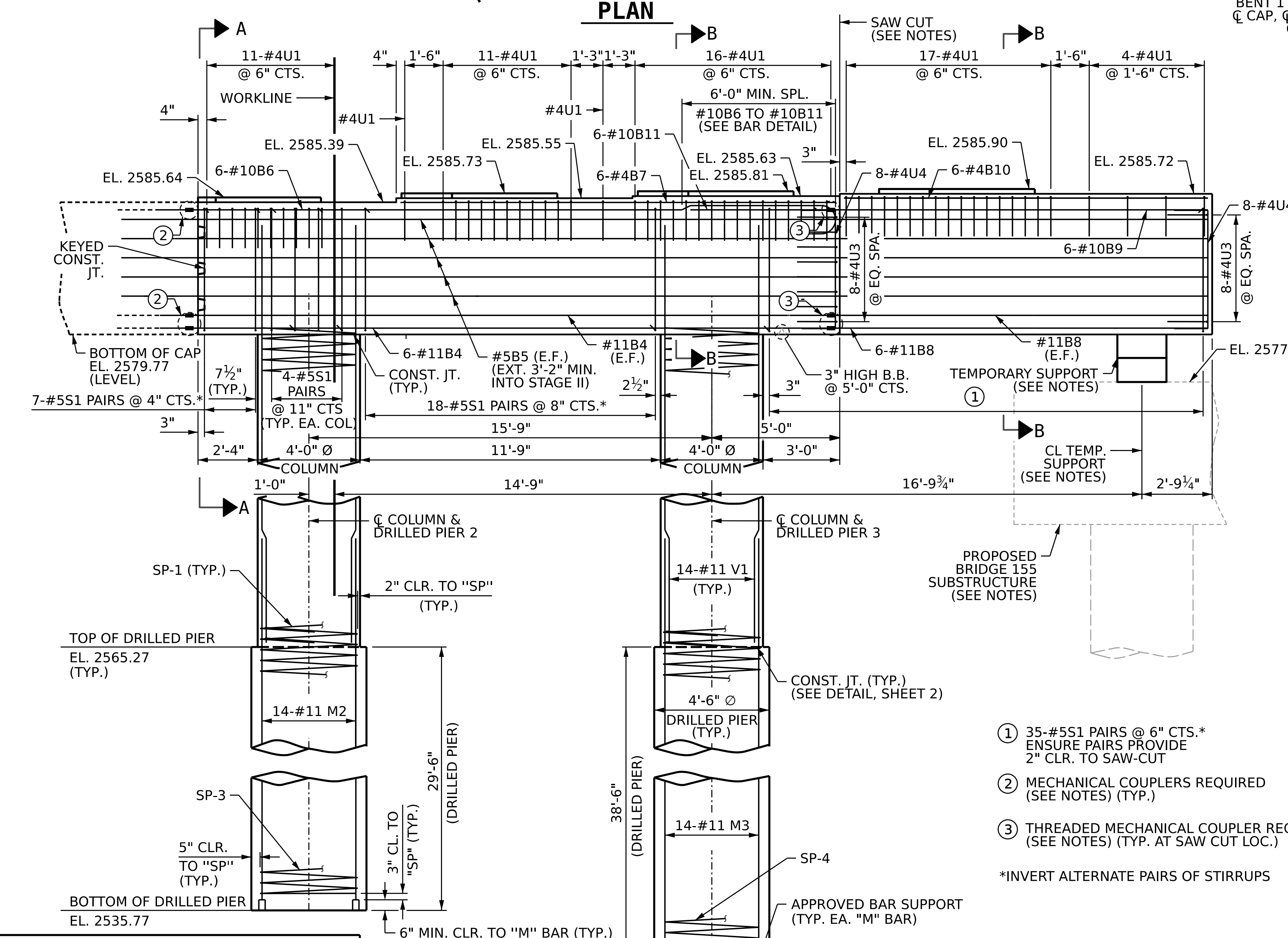


DETAIL "A"

DETAIL "B"

#10B11 BAR DETAIL

PROJECT NO. B-3186 / B-5898
HAYWOOD COUNTY
 STATION: 24+70.00 -L_LT-
 SHEET 1 OF 3



- ① 35-#5S1 PAIRS @ 6" CTS.* ENSURE PAIRS PROVIDE 2" CLR. TO SAW-CUT
 - ② MECHANICAL COUPLERS REQUIRED (SEE NOTES) (TYP.)
 - ③ THREADED MECHANICAL COUPLER REQ'D (SEE NOTES) (TYP. AT SAW CUT LOC.)
- *INVERT ALTERNATE PAIRS OF STIRRUPS

ELEVATION

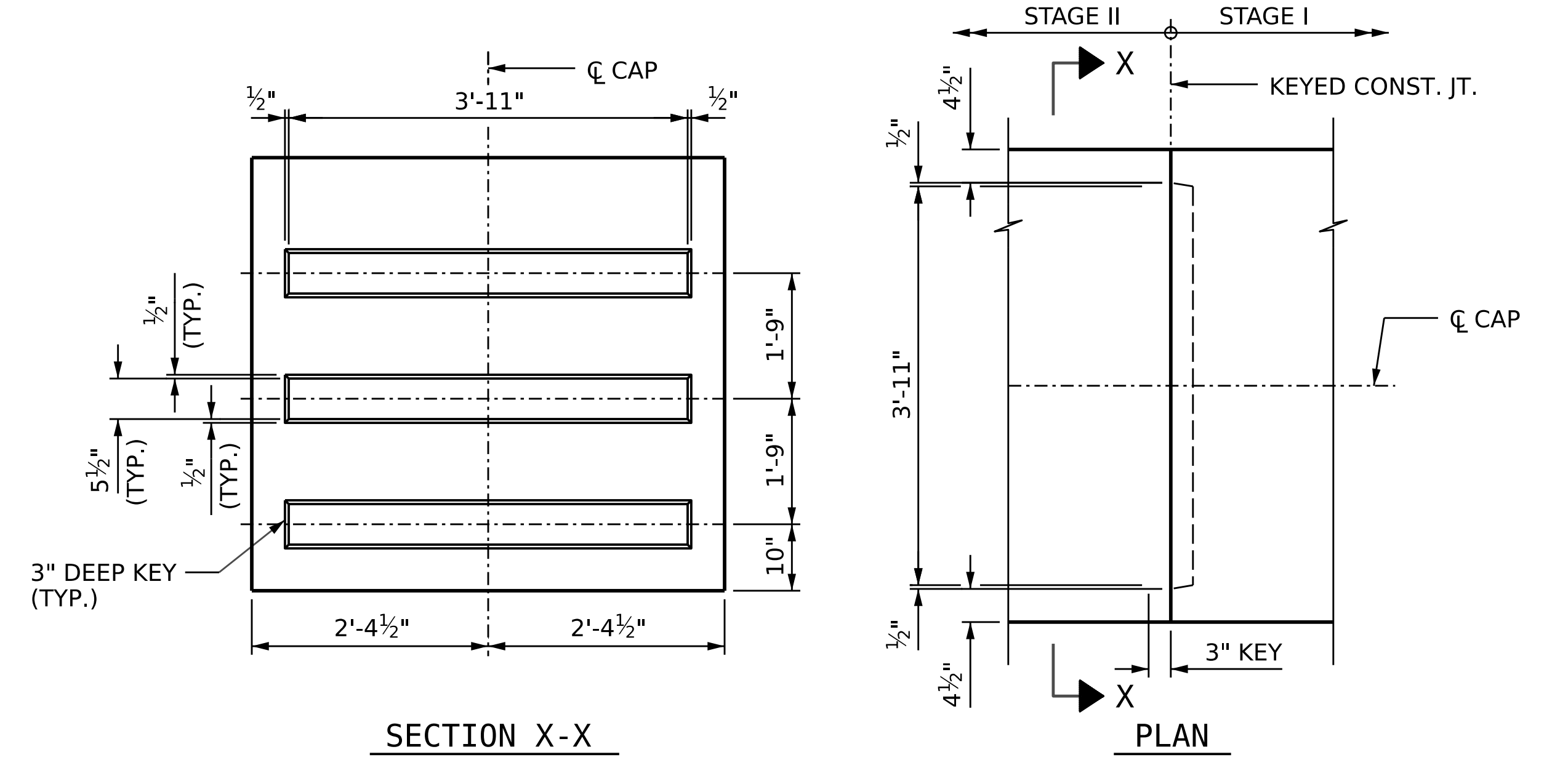
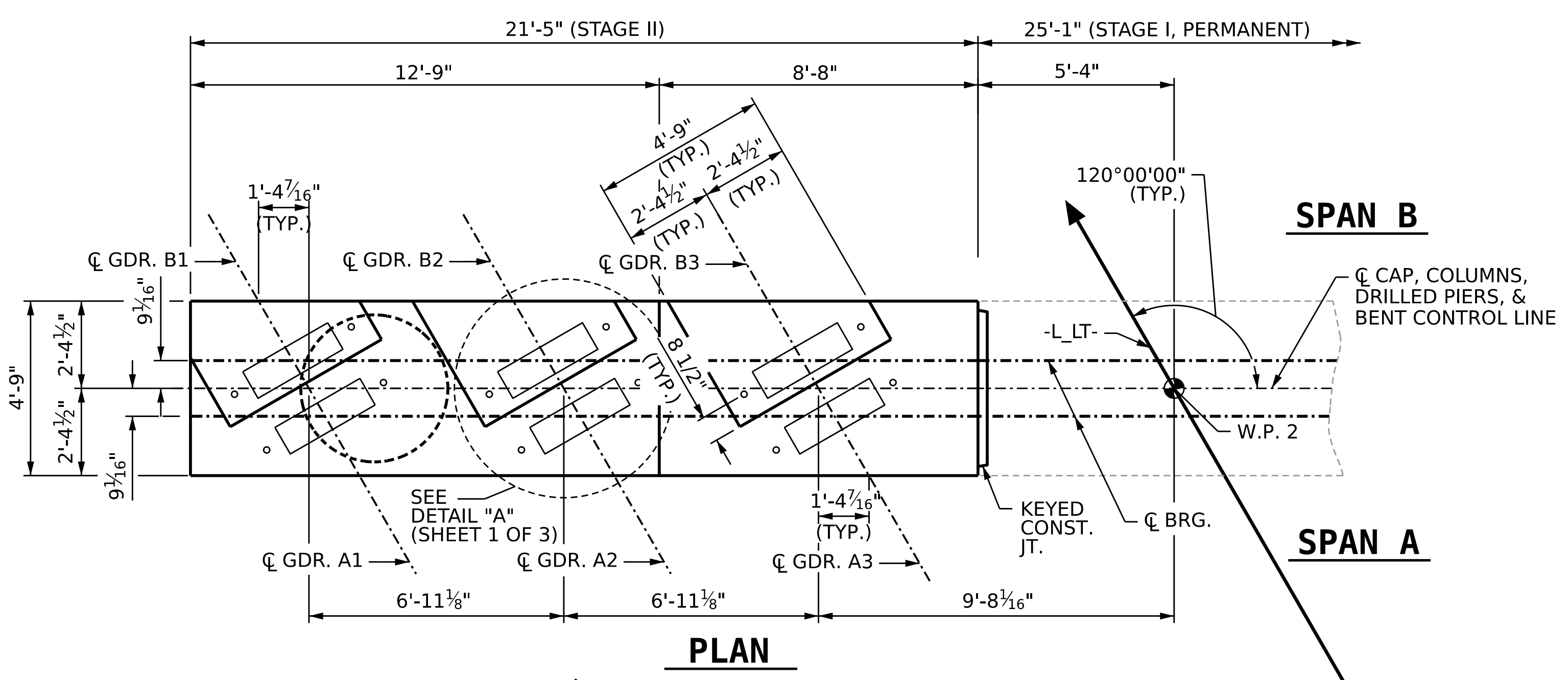
END ELEVATION

DRAWN BY: L. LEE DATE: 06/2023
 CHECKED BY: G. COLS DATE: 06/2023
 DESIGN ENGINEER OF RECORD: D. TUTTLE DATE: 06/2023

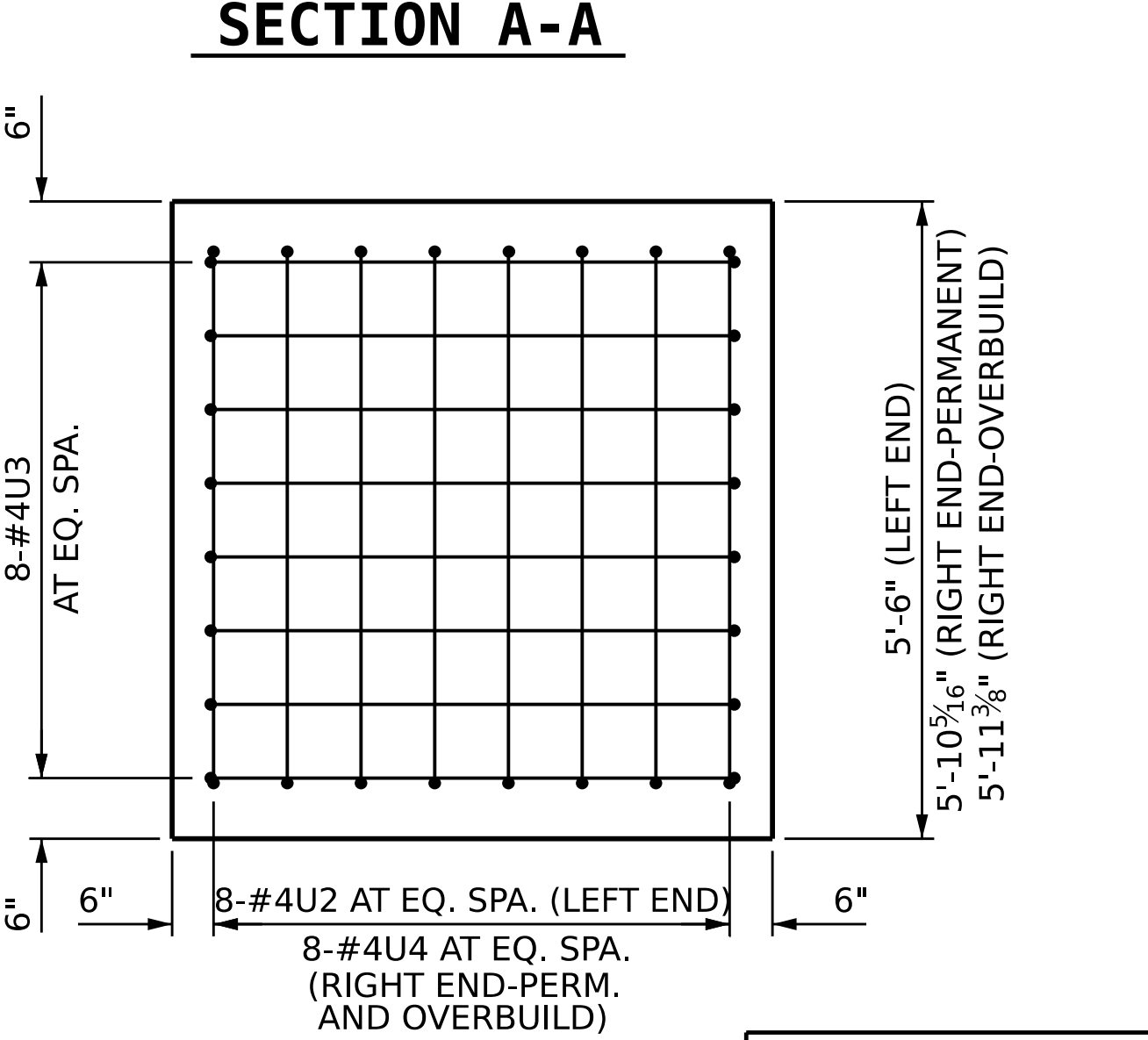
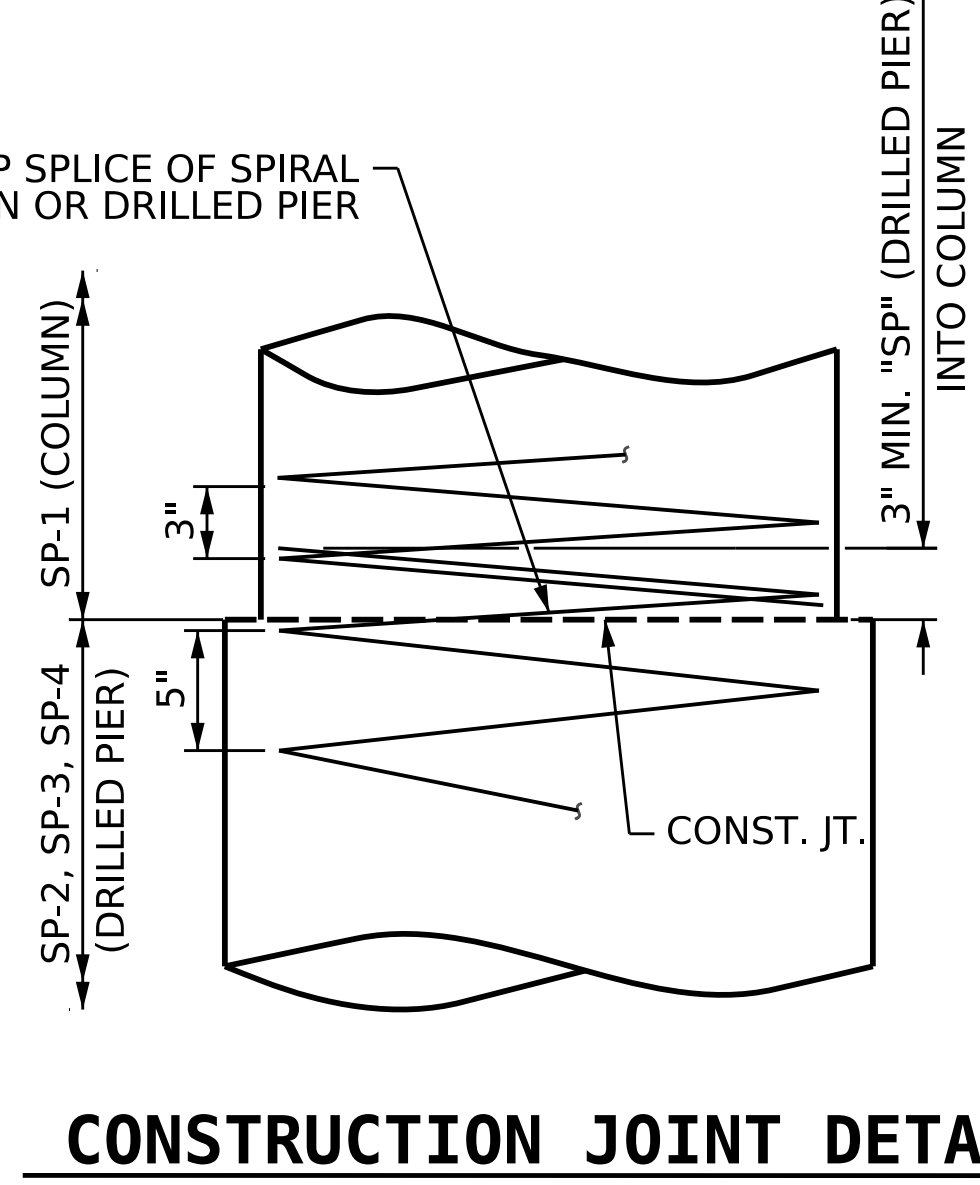
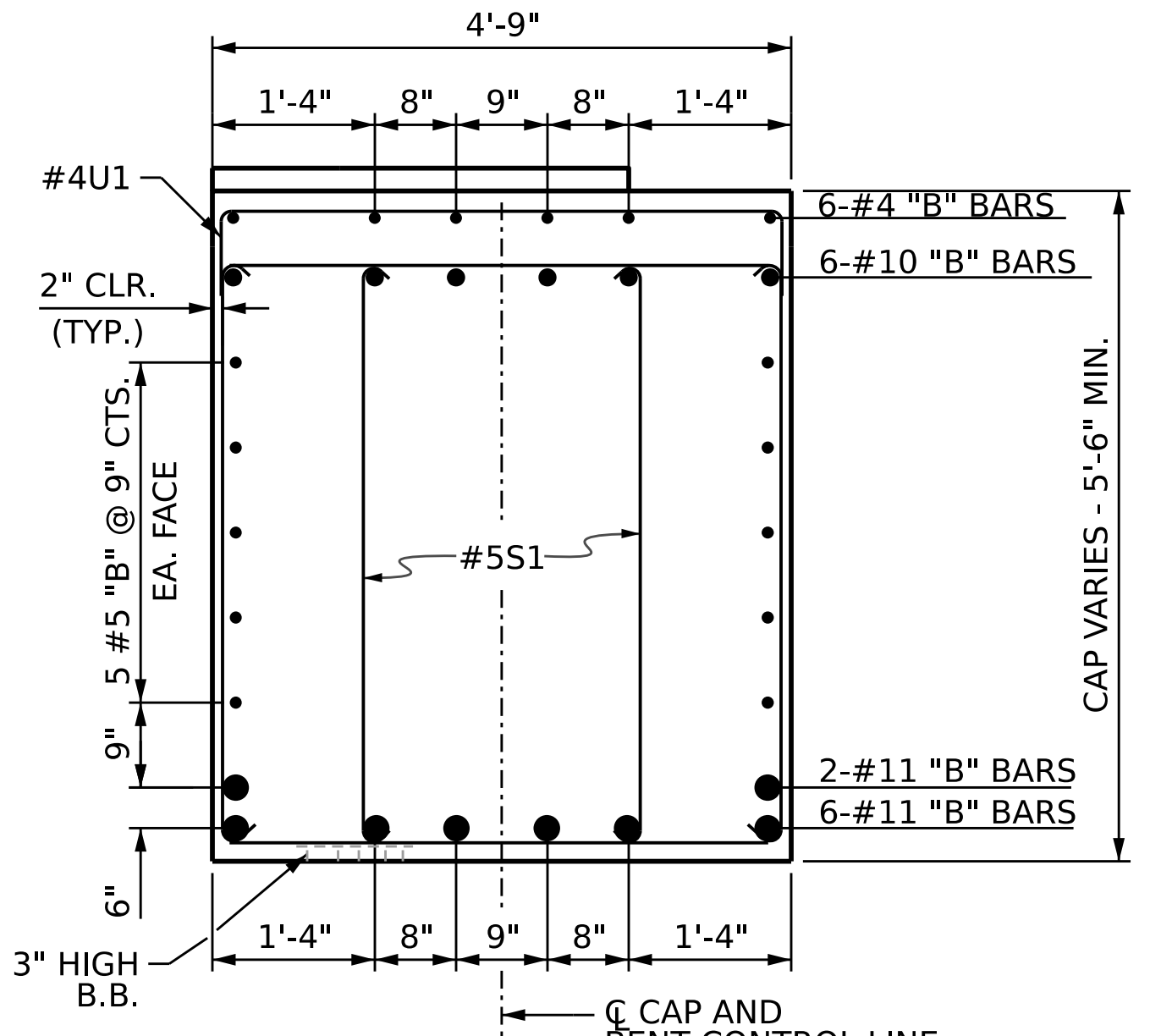
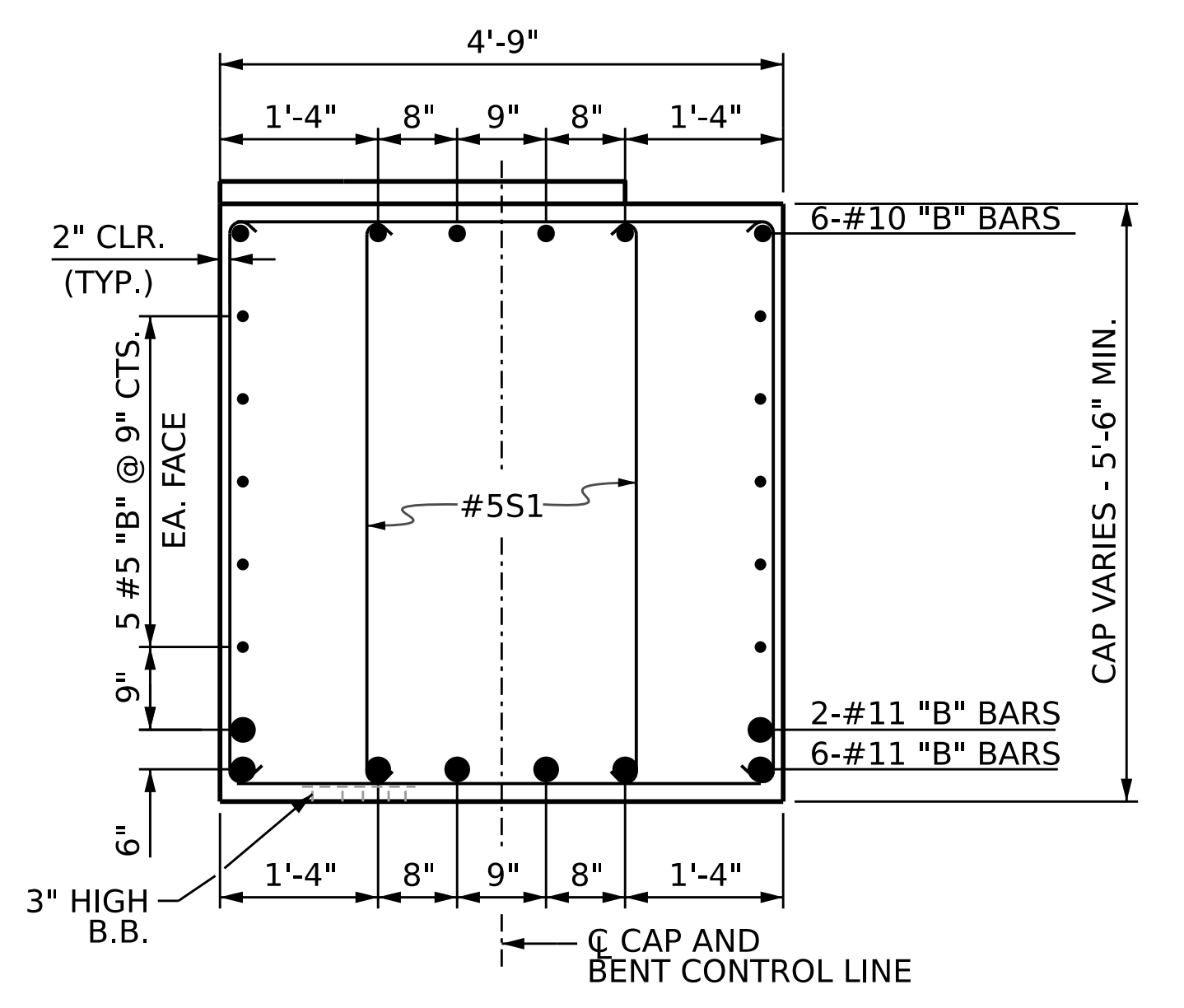
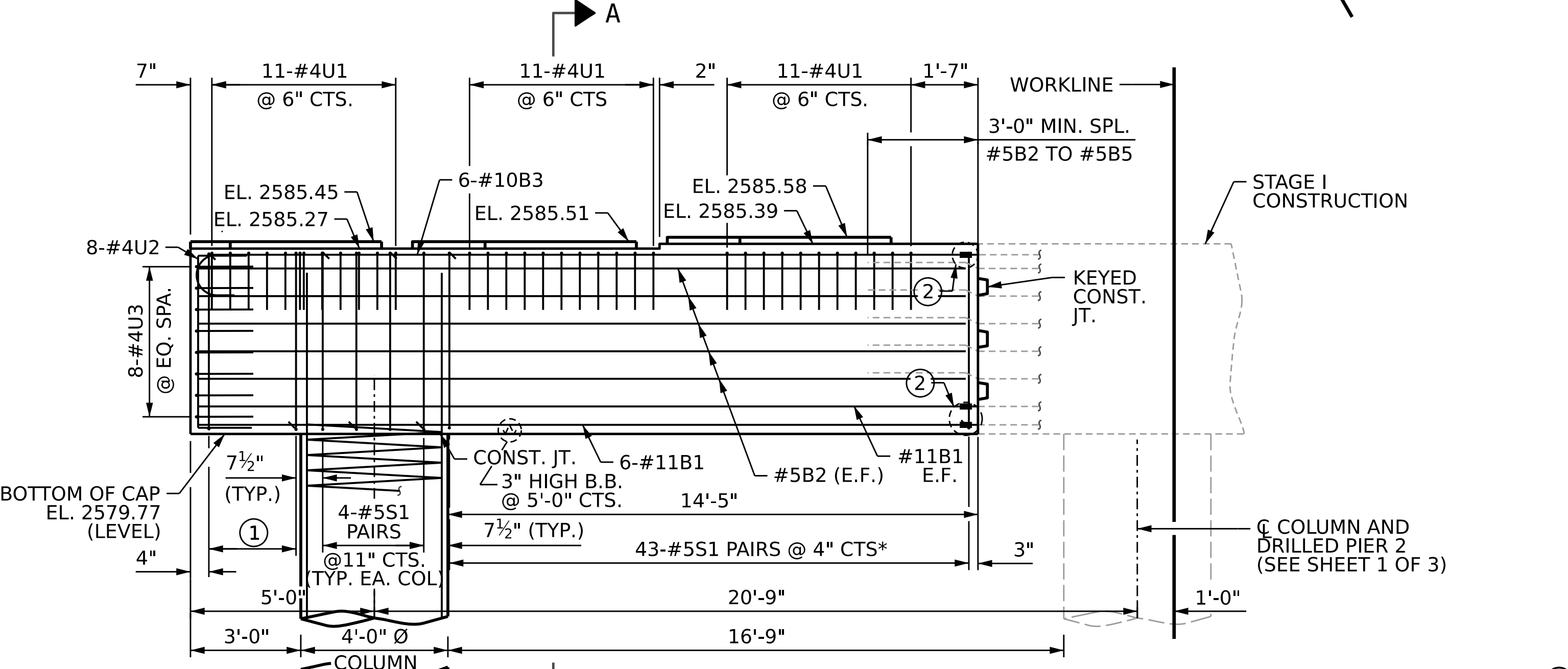


STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 1 STAGE I					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S3-37					TOTAL SHEETS 50

DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
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KEYED CONSTRUCTION JOINT DETAIL



DRAWN BY: L. LEE DATE: 06/2023

CHECKED BY: G. COLS DATE: 06/2023

DESIGN ENGINEER OF RECORD: D. TUTTLE DATE: 06/2023

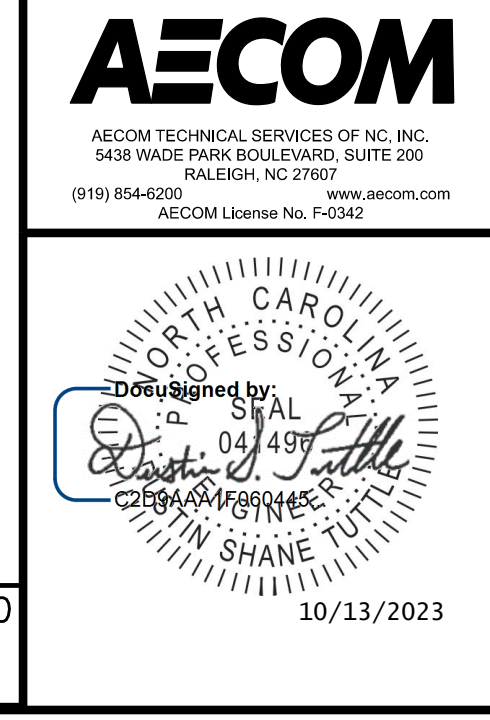
ELEVATION

CONSTRUCTION JOINT DETAIL

CAP END VIEW

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. B-3186 / B-5898
 HAYWOOD COUNTY
 STATION: 24+70.00 -L_LT-
 SHEET 2 OF 3



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE BENT 1 STAGE II AND SECTIONS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S3-38					TOTAL SHEETS 50

NOTES:

MECHANICAL COUPLERS SHALL BE USED TO JOIN THE #10 "B" OR #11 "B" BARS IN STAGE I WITH THE #10 "B" OR #11 "B" BARS, RESPECTIVELY, IN STAGE II. REINFORCING DIMENSIONS ARE PROVIDED ASSUMING A 1FT EXTENSION BEYOND THE CONSTRUCTION JOINT. THE CONTRACTOR SHALL ADJUST FABRICATED DIMENSIONS AS NECESSARY TO ACCOMMODATE THE COUPLER USED. SEE MECHANICAL BUTT SPLICES FOR REINFORCING STEEL IN STANDARD SPECIFICATIONS.

STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHORS.

ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

FOR DRILLED PIERS AND PERMANENT STEEL CASING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

SEE PILE AND DRILLED PIER FOUNDATION TABLES FOR DRILLED PIER FOUNDATION DATA. THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS ARE BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT AT A MINIMUM OF ONE FOOT BELOW THE GROUND LINE.

THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR THE DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

TEMPORARY OVERBUILD NOTES:

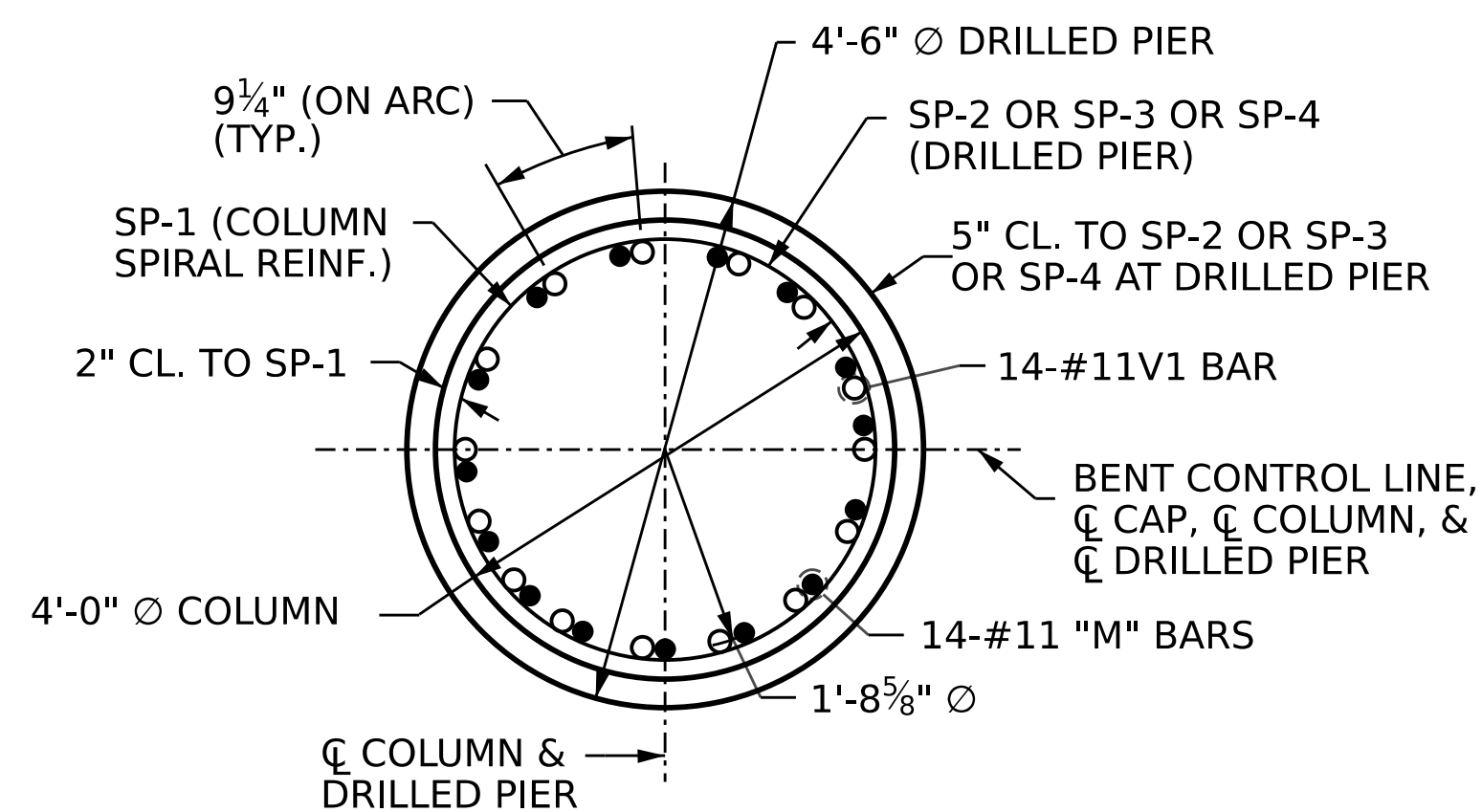
SEE BRIDGE 155 PLANS FOR COORDINATION. DURING THE CONSTRUCTION AND DEMOLITION OF BRIDGE 158 OVERBUILT PORTION OF BENT 1 OVER PROPOSED BRIDGE 155, THE CONTRACTOR SHALL ENSURE THAT NO DAMAGE SHALL OCCUR TO THE PROPOSED BENT 1 OF BRIDGE 155. THE TEMPORARY SUPPORT SHALL BE REMOVED PRIOR TO THE ERECTION OF GIRDERS. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE SPECIAL PROVISION "TEMPORARY OVERBUILD AND REMOVAL".

THE TEMPORARY SUPPORT SHALL BE CAPABLE OF TRANSFERRING A VERTICAL LOAD OF (509 KIPS STRENGTH) TO THE B155 SUBSTRUCTURE. TRANSFER OF MOMENT IS NOT REQUIRED. POSITIVE RESTRAINT SHALL BE PROVIDED. SEE "TEMPORARY OVERBUILD AND REMOVAL" SPECIAL PROVISION.

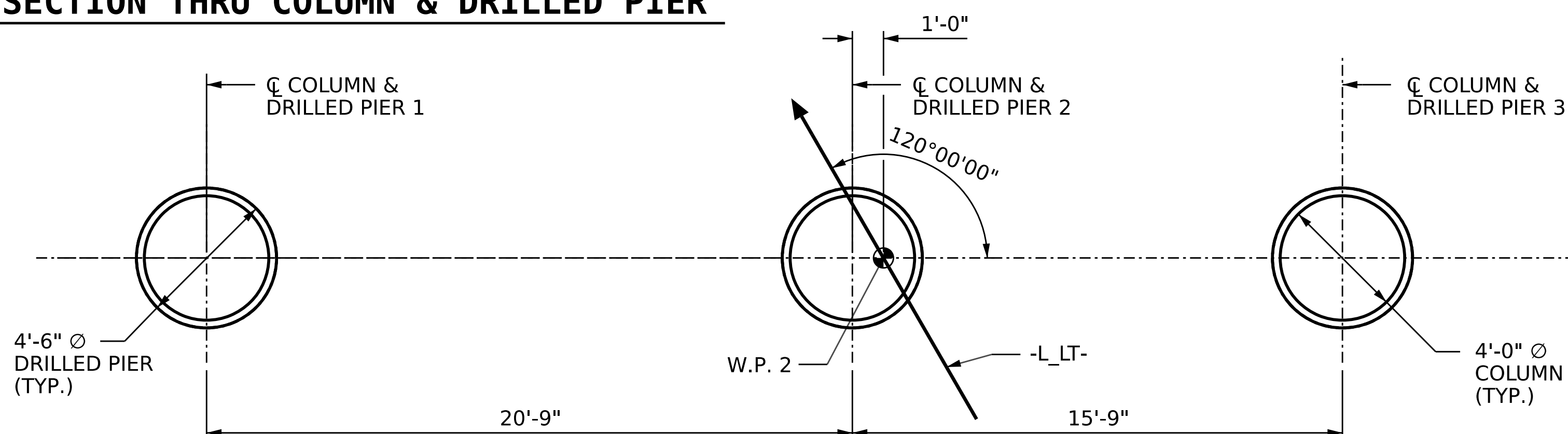
DURING STAGE I CONSTRUCTION, A 3/4" TRIANGULAR BLOCKOUT (SEE DETAIL "B" ON SHEET 1 OF 3) WILL BE PLACED IN THE SIDE AND BOTTOM FACES OF THE CAP AT THE SAW CUT LOCATION TO FACILITATE SAW-CUT AND SUCH THAT FINAL BENT FACES MAY BE CHAMFERED ACCORDING TO THE STANDARD NOTES.

THREADED MECHANICAL COUPLERS SHALL BE USED TO JOIN THE #10 "B" OR #11 "B" BARS ON EITHER SIDE OF THE SAW-CUT LINE BETWEEN THE PERMANENT AND OVERBUILT PORTIONS OF STAGE I. REINFORCING DIMENSIONS ARE PROVIDED ASSUMING A 1'-3" EXTENSION BEYOND THE SAW-CUT LINE. THE CONTRACTOR SHALL ADJUST THE FABRICATED DIMENSIONS OF THE REINFORCING SUCH THAT THE COUPLER PROVIDES AT LEAST 3" CLEAR TO THE SAW-CUT LINE. DEBOND THE BAR BETWEEN THE COUPLER AND THE SAW-CUT LINE. #5 "B" BARS SHALL EXTEND THROUGH THE SAW-CUT LINE WITHOUT DEBONDING AND SHALL BE DRILLED OUT TO A DEPTH OF 2" DURING OVERBUILD REMOVAL. SEE "TEMPORARY OVERBUILD AND REMOVAL" SPECIAL PROVISION.

QTY. "TEMPORARY OVERBUILD AND REMOVAL" = 1 L.S.



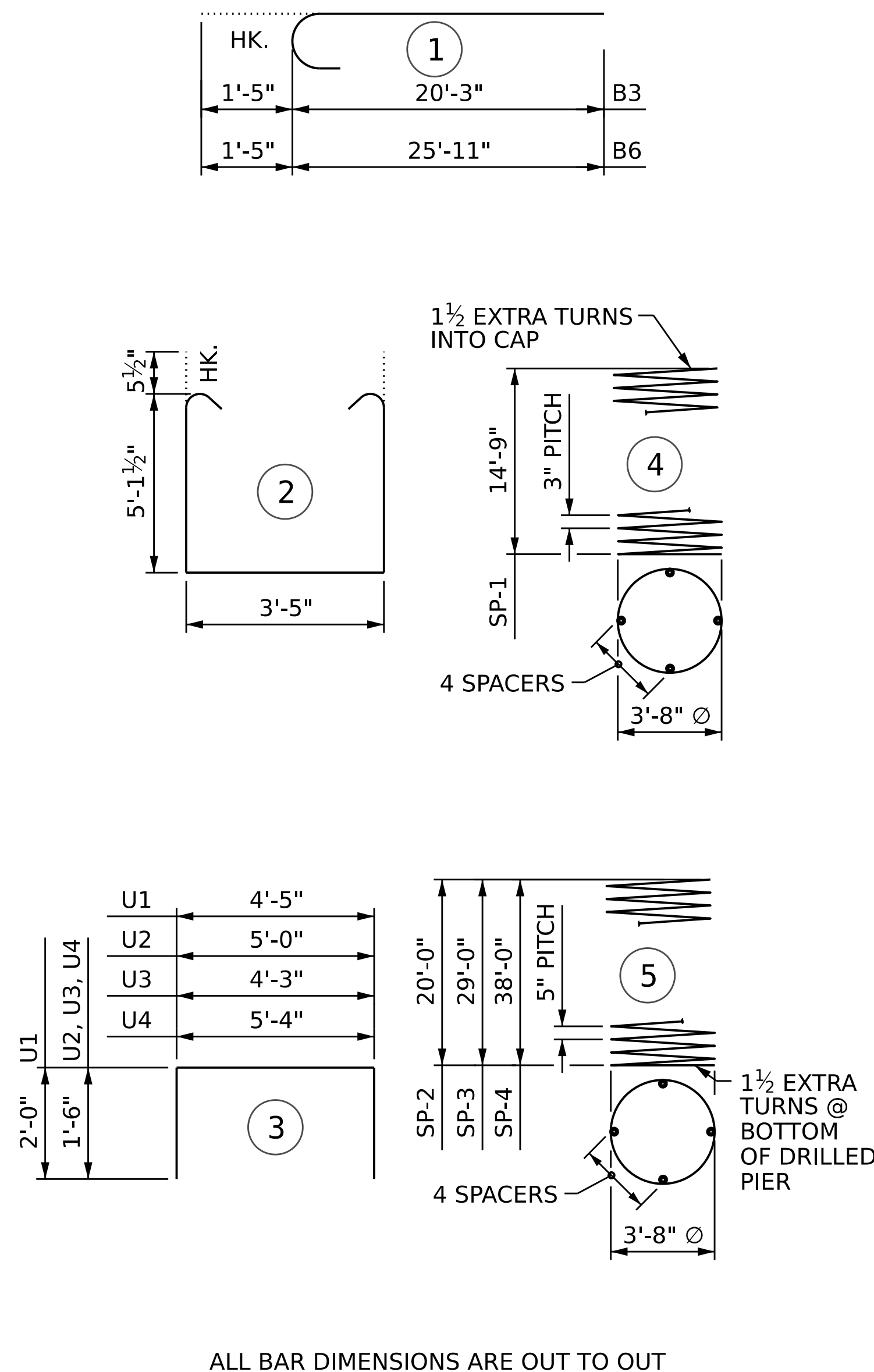
SECTION THRU COLUMN & DRILLED PIER



PLAN OF DRILLED PIERS AND COLUMNS

DRAWN BY : L. LEE DATE : 06/2023
 CHECKED BY : G. COLS DATE : 06/2023
 DESIGN ENGINEER OF RECORD: D. TUTTLE DATE : 06/2023

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 1

STAGE I AND OVERBUILD

STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B4	8	11	STR	25'-10"	1098	B1	8	11	STR	20'-3"	861
B5	10	5	STR	42'-8"	445	B2	10	5	STR	21'-1"	220
B6	6	10	1	27'-4"	706	B3	6	10	1	21'-8"	559
B7	6	4	STR	17'-0"	68						
B8	8	11	STR	15'-8"	666	M1	14	11	STR	28'-1"	2089
B9	6	10	STR	15'-8"	404						
B10	6	4	STR	14'-3"	57	V1	14	11	STR	18'-5"	1370
B11	6	10	STR	6'-0"	155						
						S1	96	5	2	14'-7"	1460
M2	14	11	STR	37'-1"	2758						
M3	14	11	STR	46'-1"	3428	U1	33	4	3	8'-5"	186
						U2	8	4	3	8'-0"	43
V1	28	11	STR	18'-5"	2740	U3	8	4	3	7'-3"	39
S1	136	5	2	14'-7"	2069						
U1	61	4	3	8'-5"	343						
U3	16	4	3	7'-3"	77						
U4	16	4	3	8'-4"	89						

REINFORCING STEEL						6,827 LBS.
SP-1	1	*	4	688'-2"	460	
SP-2	1	**	5	561'-8"	586	

REINFORCING STEEL						15,103 LBS.
SP-1	2	*	4	688'-2"	919	
SP-3	1	**	5	806'-9"	841	
SP-4	1	**	5	1051'-10"	1097	

SPIRAL COLUMN REINFORCING STEEL						2,857 LBS.
* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR						
** THE SP-2, SP-3 & SP-4 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR						

CLASS A CONCRETE BREAKDOWN						
POUR #2 (COLUMNS)						6.7 C.Y.
POUR #3 (CAP)						21.2 C.Y.

CLASS A CONCRETE BREAKDOWN						
TOTAL CLASS A CONCRETE						27.9 C.Y.
DRILLED PIERS:						
POUR #2 (COLUMNS)						13.5 C.Y.
POUR #3 (CAP)						41.1 C.Y.
TOTAL CLASS A CONCRETE						54.6 C.Y.

DRILLED PIERS:						
DRILLED PIER CONCRETE POUR #1 (DRILLED PIERS)						40.1 C.Y.

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+70.00 -L LT-

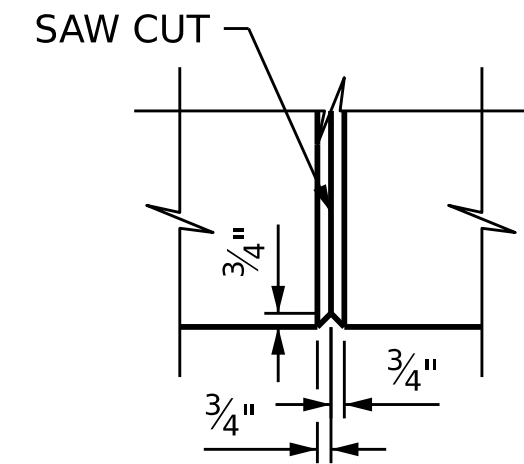
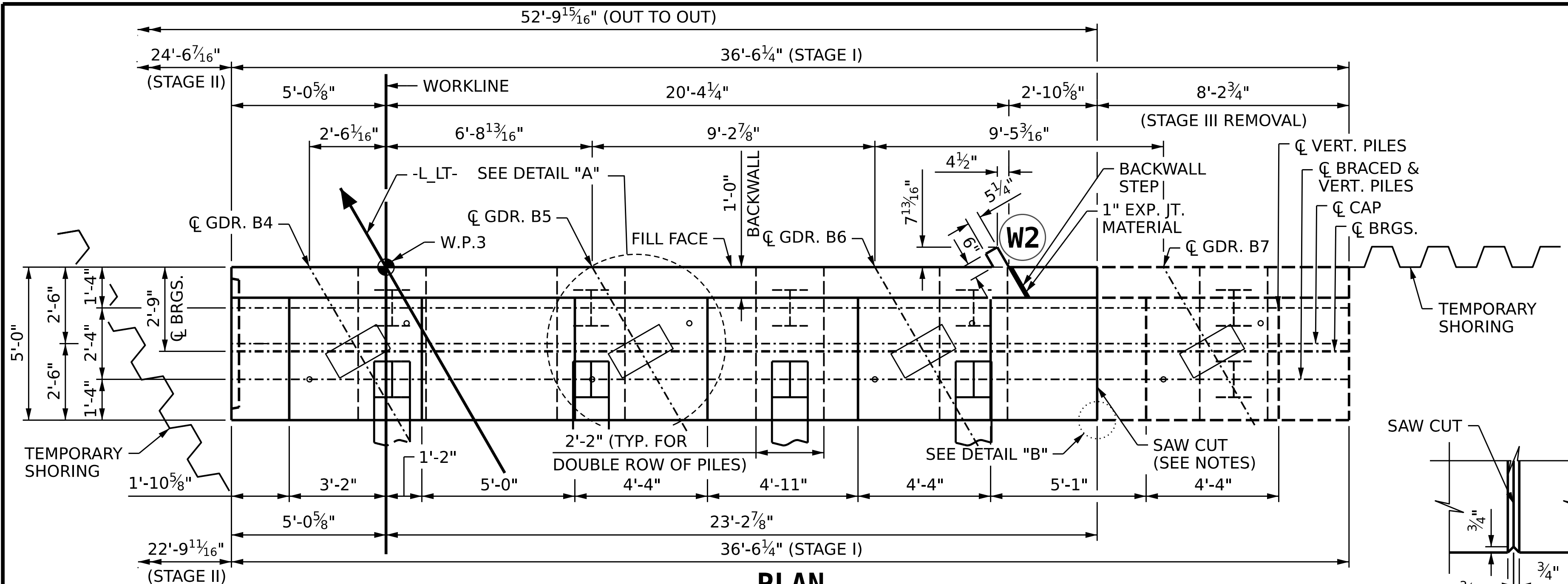
SHEET 3 OF 3

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-39
1			3			TOTAL SHEETS 50
2			4			

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10/13/2023



NOTES:
 MECHANICAL COUPLERS SHALL BE USED TO JOIN THE #9 "B" BARS IN STAGE I WITH THE #9 "B" BARS IN STAGE II. REINFORCING DIMENSIONS ARE PROVIDED ASSUMING A 1FT EXTENSION BEYOND THE CONSTRUCTION JOINT. THE CONTRACTOR SHALL ADJUST FABRICATED DIMENSIONS AS NECESSARY TO ACCOMMODATE THE COUPLER USED. SEE MECHANICAL BUTT SPLICES FOR REINFORCING STEEL IN STANDARD SPECIFICATIONS. NO ADDITIONAL PAYMENT WILL BE MADE FOR ANY ADJUSTMENTS.

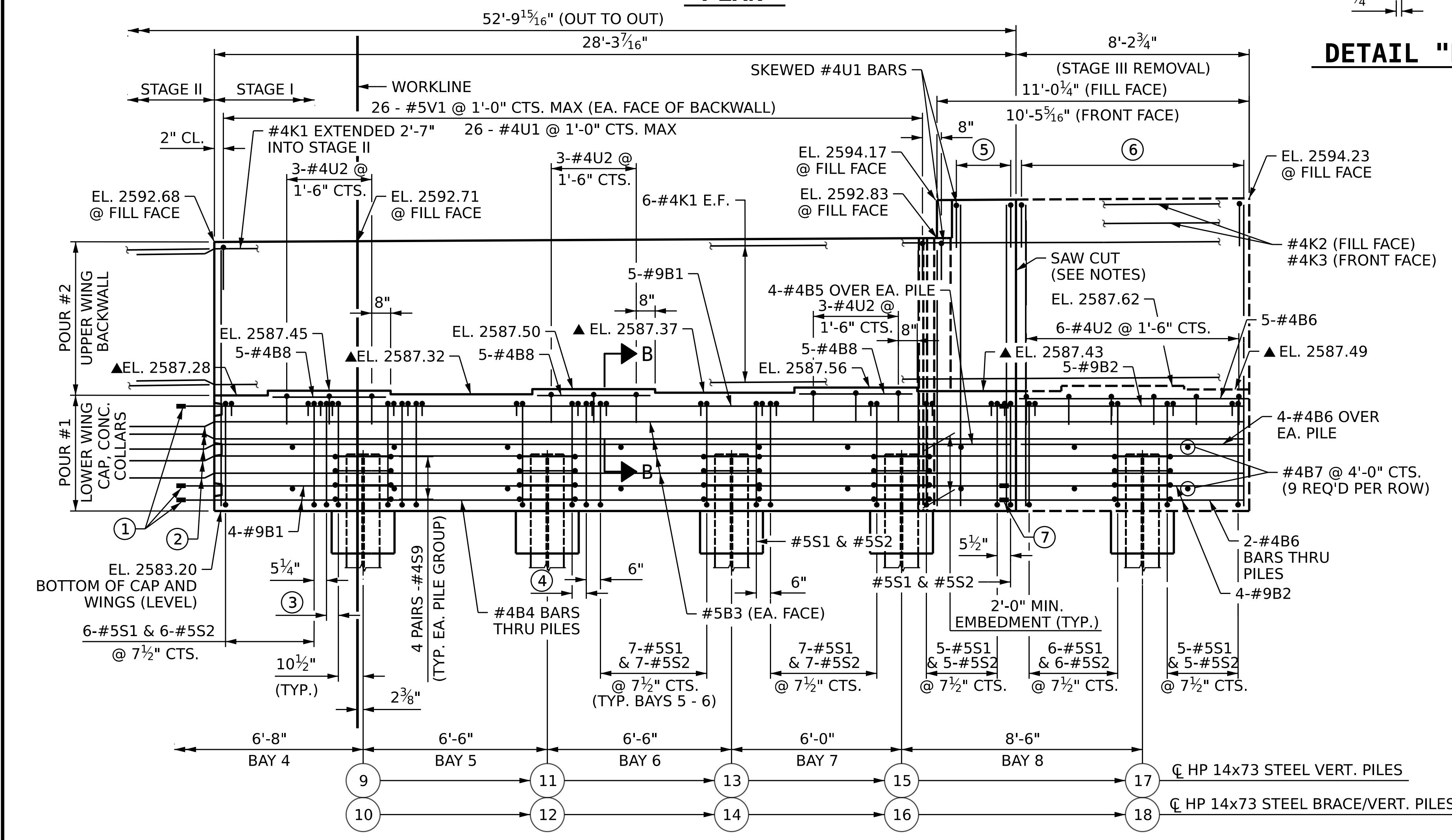
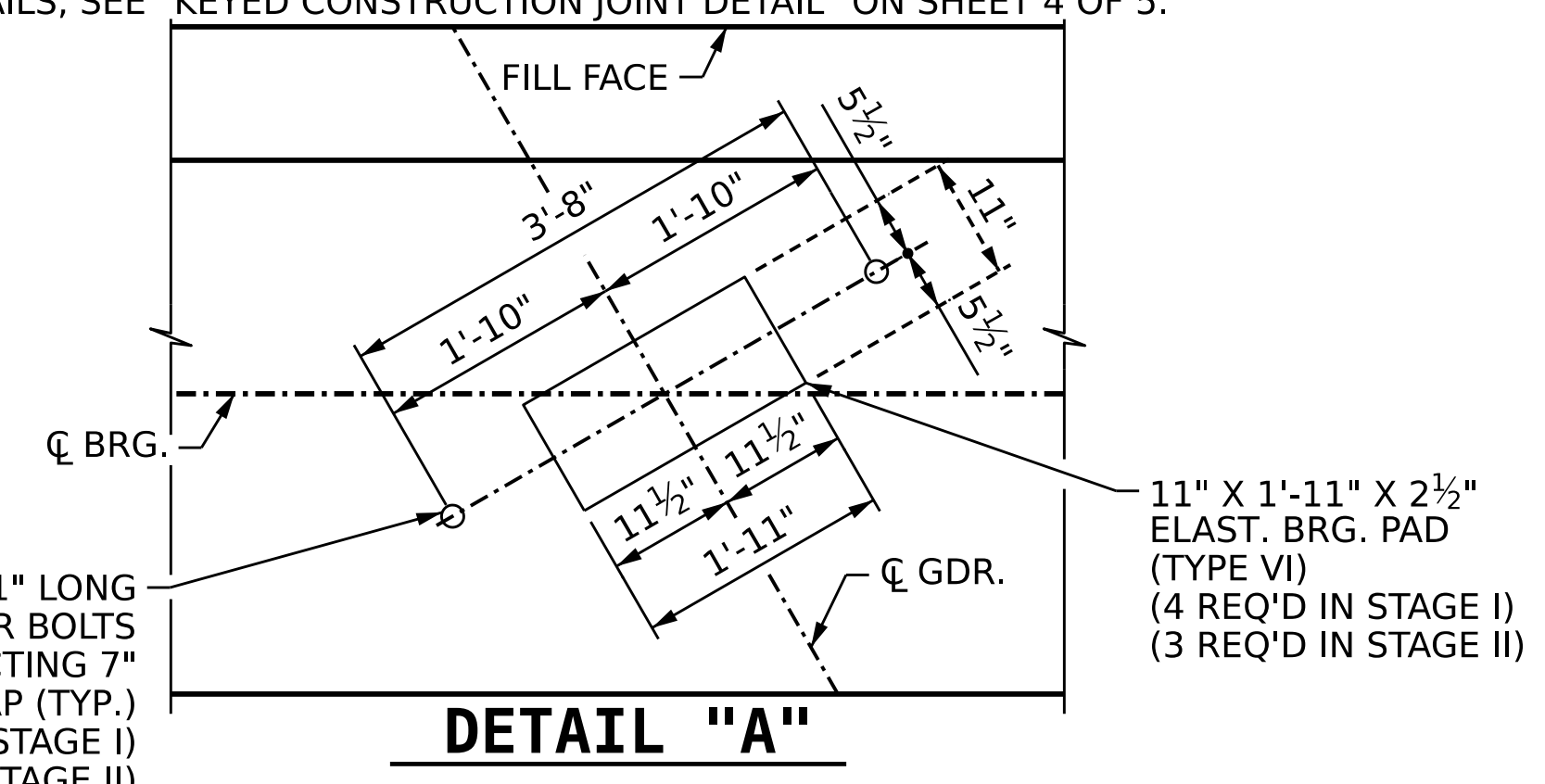
STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHORS.
 BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
 THE TOP SURFACE OF THE END BENT CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE FRONT FACE AT THE RATE OF 2%.
 THE TOP SURFACE AREAS OF THE END BENT CAPS SHALL BE CURED IN ACCORDANCE WITH THE STANDARD, EXCEPT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
 THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE JOINT BETWEEN THE DECK AND THE APPROACH SLAB HAS BEEN SAWED AND THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

DURING STAGE I CONSTRUCTION, A 3/4" TRIANGULAR BLOCKOUT (SEE DETAIL "B") WILL BE PLACED IN THE FRONT FACE OF THE BACKWALL AND FRONT AND TOP FACES OF THE CAP AT THE SAW CUT LOCATION TO FACILITATE SAW CUT AND SUCH THAT FINAL END BENT FACES MAY BE CHAMFERED ACCORDING TO THE STANDARD NOTES.
 THREADED MECHANICAL COUPLERS SHALL BE USED TO JOIN THE #9 "B" BARS ON EITHER SIDE OF THE SAW-CUT LINE BETWEEN THE PERMANENT AND OVERBUILT PORTIONS OF STAGE I. THE CONTRACTOR SHALL ADJUST THE FABRICATED DIMENSIONS OF THE REINFORCING AS NECESSARY TO ACCOMMODATE FOR THE COUPLER USED WHILE PROVIDING AT LEAST 3" CLEAR FROM COUPLER TO THE SAW-CUT LINE. REINFORCING DIMENSIONS ARE PROVIDED ASSUMING A 3" EXTENSION BEYOND THE SAW-CUT LINE TO FACE OF COUPLER. DEBOND THE BAR BETWEEN THE COUPLER AND THE SAW-CUT LINE. #5 "B" BARS SHALL EXTEND THROUGH THE SAW-CUT LINE WITHOUT DEBONDING AND SHALL BE DRILLED OUT TO A DEPTH OF 2" DURING OVERBUILD REMOVAL. SEE "TEMPORARY OVERBUILD AND REMOVAL" SPECIAL PROVISION.

DURING STAGE III CONSTRUCTION, THE CONTRACTOR SHALL SAW CUT THE CAP AND BACKWALL. THE CAP AND THE BACKWALL SHALL BE CUT NORMAL TO THE FILL FACE AS SHOWN ON THE PLANS. AFTER SAW CUTTING THE CAP AND BACKWALL, THE CONTRACTOR SHALL REMOVE THE OVERBUILD PORTION, UNTHREAD AND REMOVE OVERBUILD REINFORCEMENT FROM MECHANICAL COUPLERS IN STAGE I, DRILL OUT #5B3, AND #4K1, #4K2, AND #4K3 TO A DEPTH OF 2", AND PATCH EXTERIOR FACE WITH AN APPROVED GROUT. FOR DETAILS OF STAGE III REMOVAL, SEE SPECIAL PROVISIONS.

CONTRACTOR SHALL DRILL 1" DIAMETER HOLE IN THE PILES TO PERMIT #4B4, #4B6, #4B9 & #4B10 BARS TO PASS THROUGH AT THE LOCATIONS SHOWN ON SECTION A-A. THE HOLE SHALL BE DRILLED AFTER PILE IS INSTALLED AND CUT-OFF. FLAME CUTTING SHALL NOT BE PERMITTED.

FOR WING DETAILS, SEE SHEET 3 OF 5.
 FOR SECTION A-A, SEE SHEET 4 OF 5.
 FOR SECTION B-B, SEE SHEET 4 OF 5.
 FOR PILE SPLICE DETAILS SEE SHEET 5 OF 5.
 FOR TEMPORARY DRAINAGE DETAILS, SEE SHEET 5 OF 5.
 FOR CONSTRUCTION JOINT DETAILS, SEE "KEYED CONSTRUCTION JOINT DETAIL" ON SHEET 4 OF 5.



- ① #9 "B" BARS MECHANICAL COUPLER LOCATED 1'-0" FROM CONST. JT.
- ② #5B3 AND #4B5 EXTENDED 3'-2" INTO STAGE II.
- ③ 2-#5S1 & 2-#5S2 @ 5" CTS.
- ④ 2-#5S1 & 2-#5S2 @ 6" CTS.
- ⑤ 3-#4V2 @ 11 1/2" C.T.S. (E.F.)
3-#4U1 @ 11 1/2" C.T.S.
- ⑥ 9-#5V2 @ 1'-0" CTS. MAX (E.F.)
9-#5U1 @ 1'-0" CTS. MAX
- ⑦ THREADED MECHANICAL COUPLER REQ'D (SEE NOTES) (TYP. AT SAW CUT LOCATION)

▲ FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILDUPS, SEE SECTION A-A ON SHEET 4 OF 5.

PROJECT NO. **B-3186 / B-5898**
HAYWOOD COUNTY
 STATION: **24+70.00 -L_LT-**
 SHEET 1 OF 5

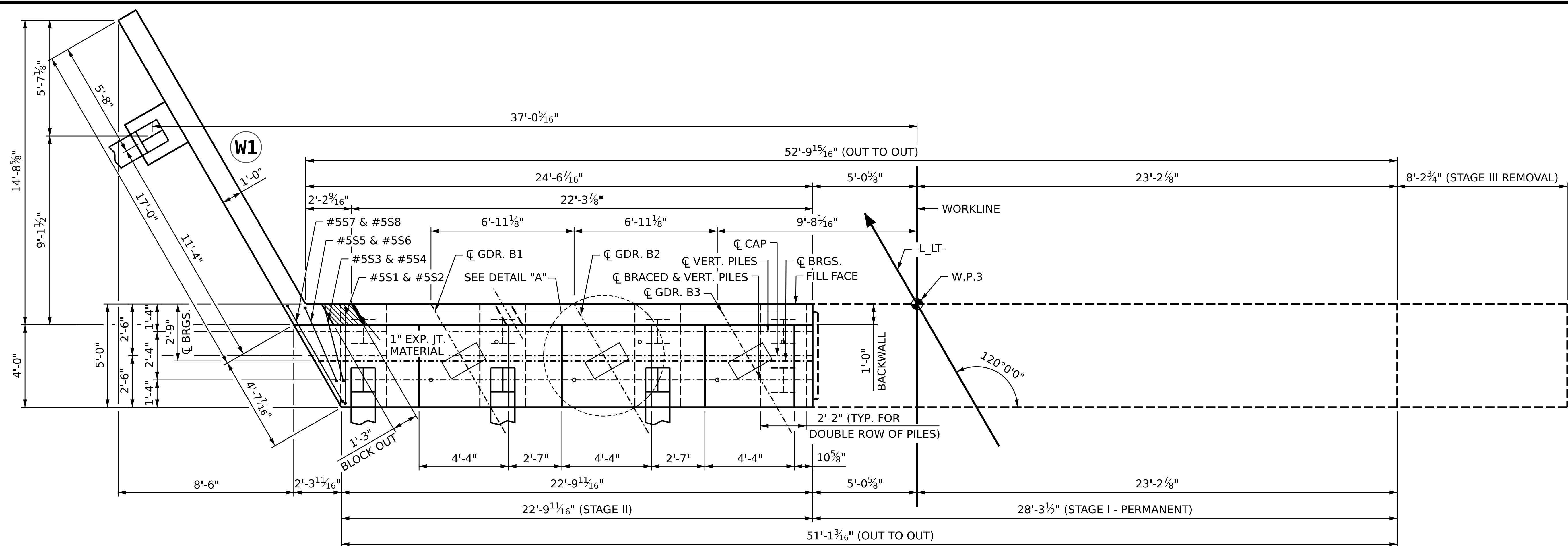
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 (919) 854-6200
 www.aecom.com
 AECOM License No. F05242

DESIGNED BY: *[Signature]*
 DATE: 04/19/23
 CHECKED BY: *[Signature]*
 DATE: 06/06/23

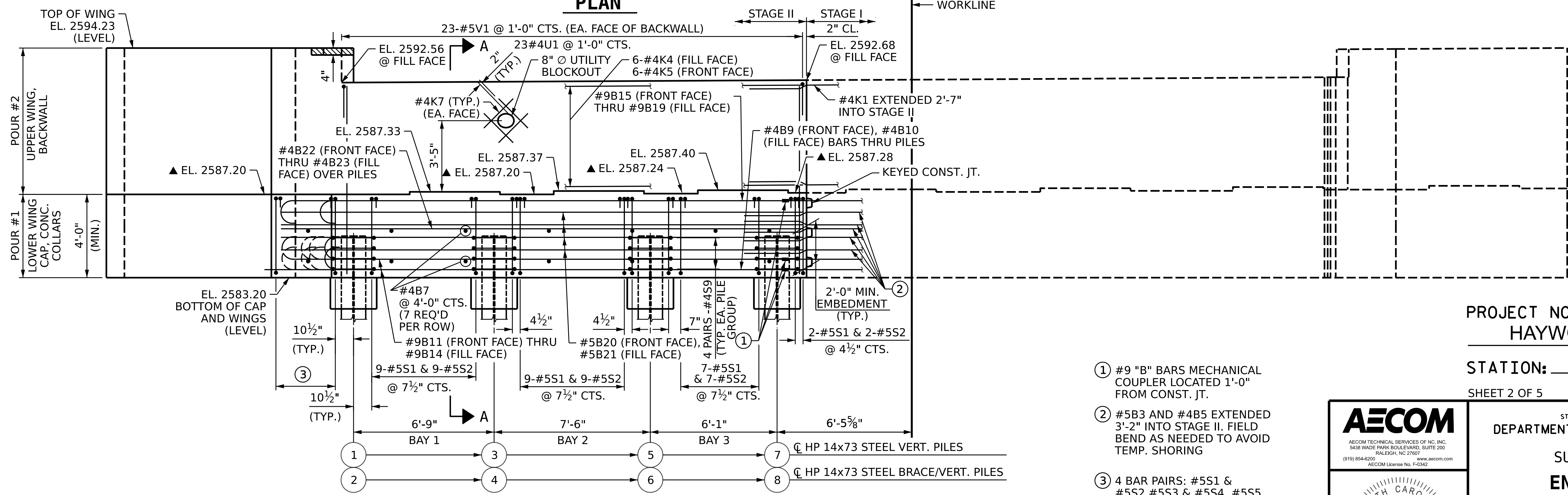
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 2 STAGE I					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S3-40
TOTAL SHEETS					50

DRAWN BY: D. RITACCO DATE: 06/2023
 CHECKED BY: D. TUTTLE DATE: 06/2023
 DESIGN ENGINEER OF RECORD: D. TUTTLE DATE: 06/2023

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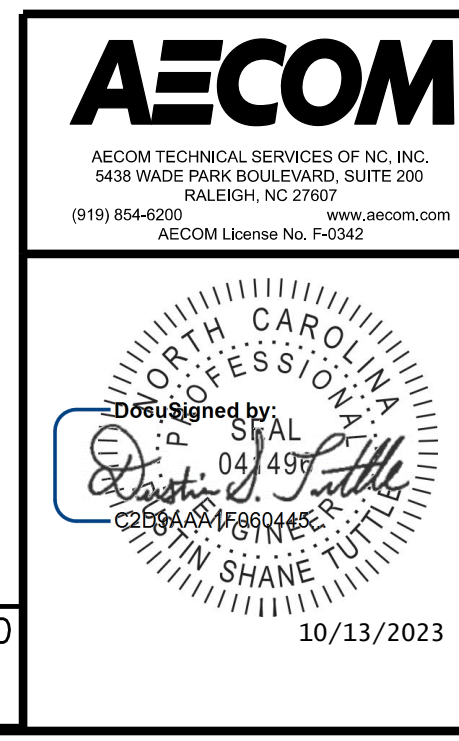
PLAN



ELEVATION

PROJECT NO. B-3186 / B-5898
HAYWOOD COUNTY
 STATION: 24+70.00 -L_LT-
 SHEET 2 OF 5

- ① #9 "B" BARS MECHANICAL COUPLER LOCATED 1'-0" FROM CONST. JT.
- ② #5B3 AND #4B5 EXTENDED 3'-2" INTO STAGE II. FIELD BEND AS NEEDED TO AVOID TEMP. SHORING
- ③ 4 BAR PAIRS: #5S1 & #5S2, #5S3 & #5S4, #5S5 & #5S6 AND #5S7 & #5S8 @ 12" MAX (AS SHOWN ABOVE IN PLAN)

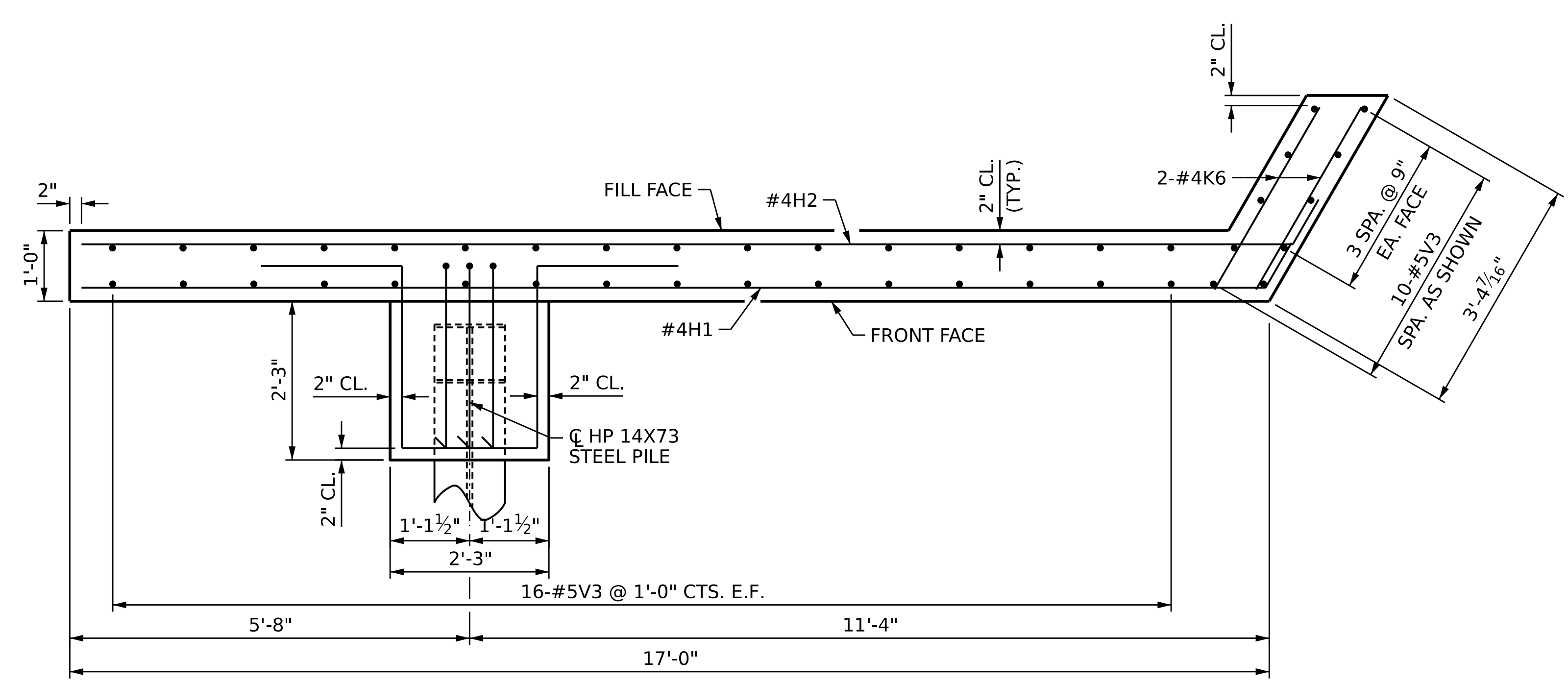


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-41
1			3			TOTAL SHEETS
2			4			50

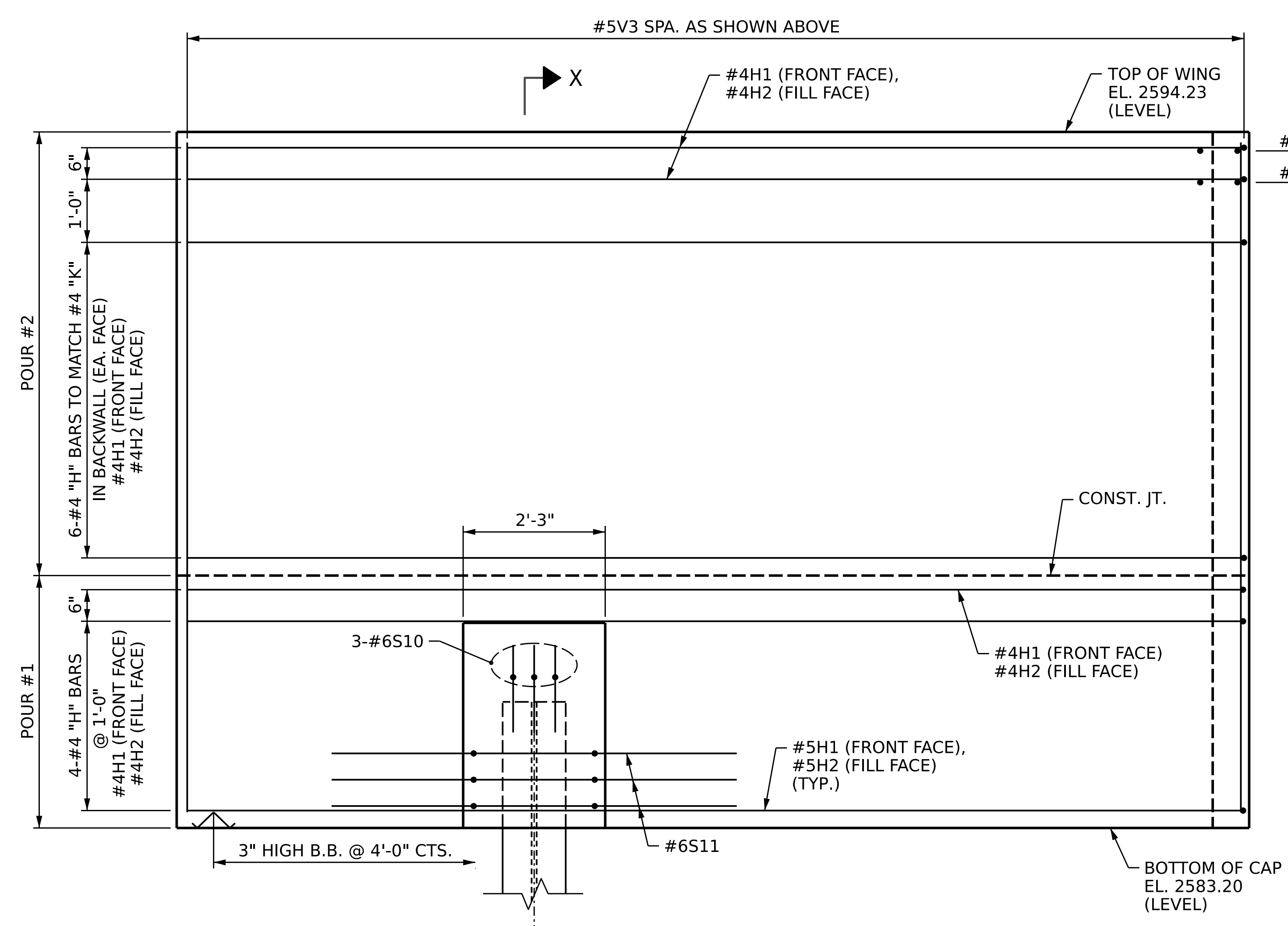
DRAWN BY: D. RITACCO DATE: 06/2023
 CHECKED BY: D. TUTTLE DATE: 06/2023
 DESIGN ENGINEER OF RECORD: D. TUTTLE DATE: 06/2023

▲ FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILDUPS, SEE SECTION A-A ON SHEET 4 OF 5.

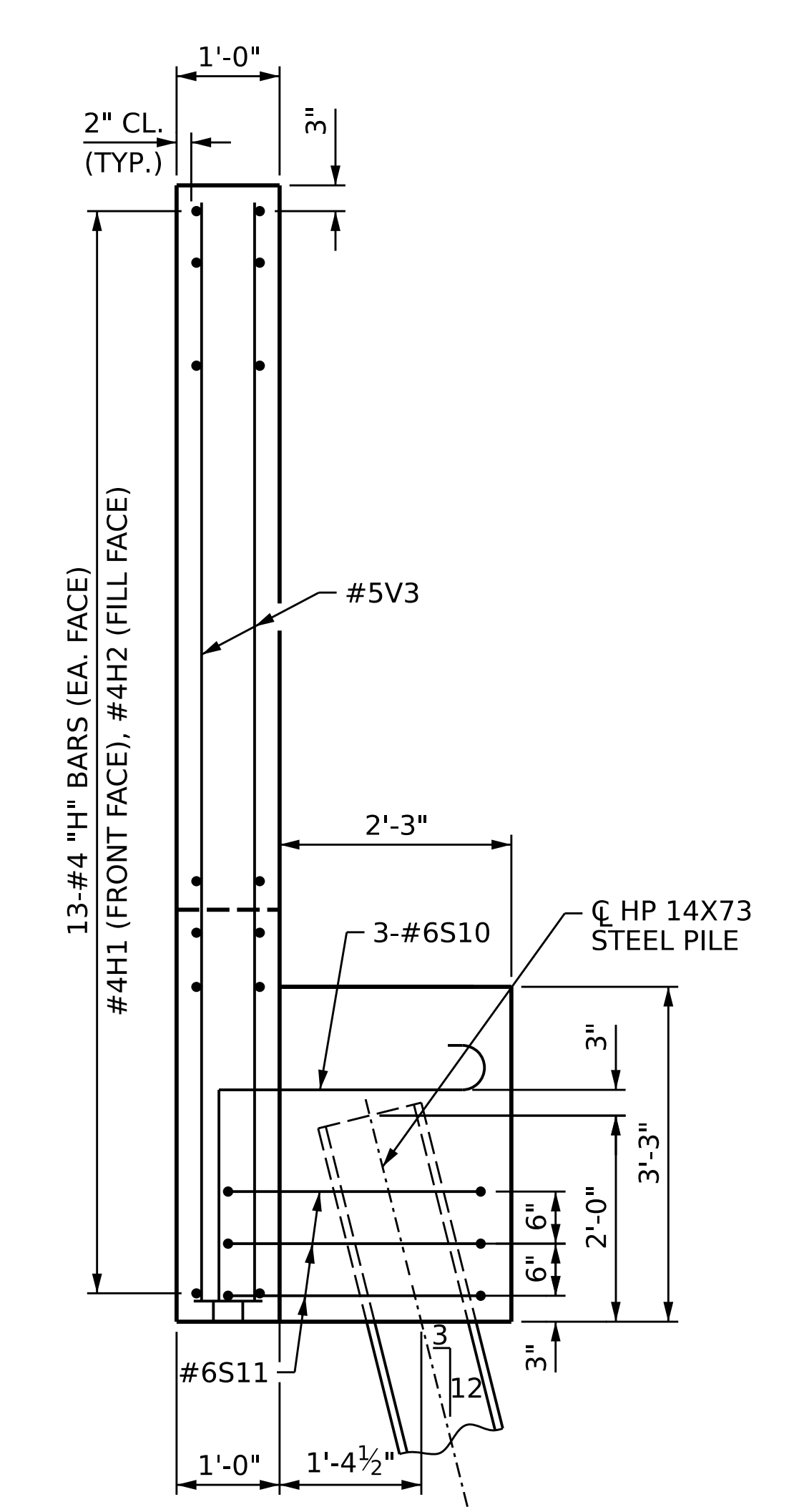
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



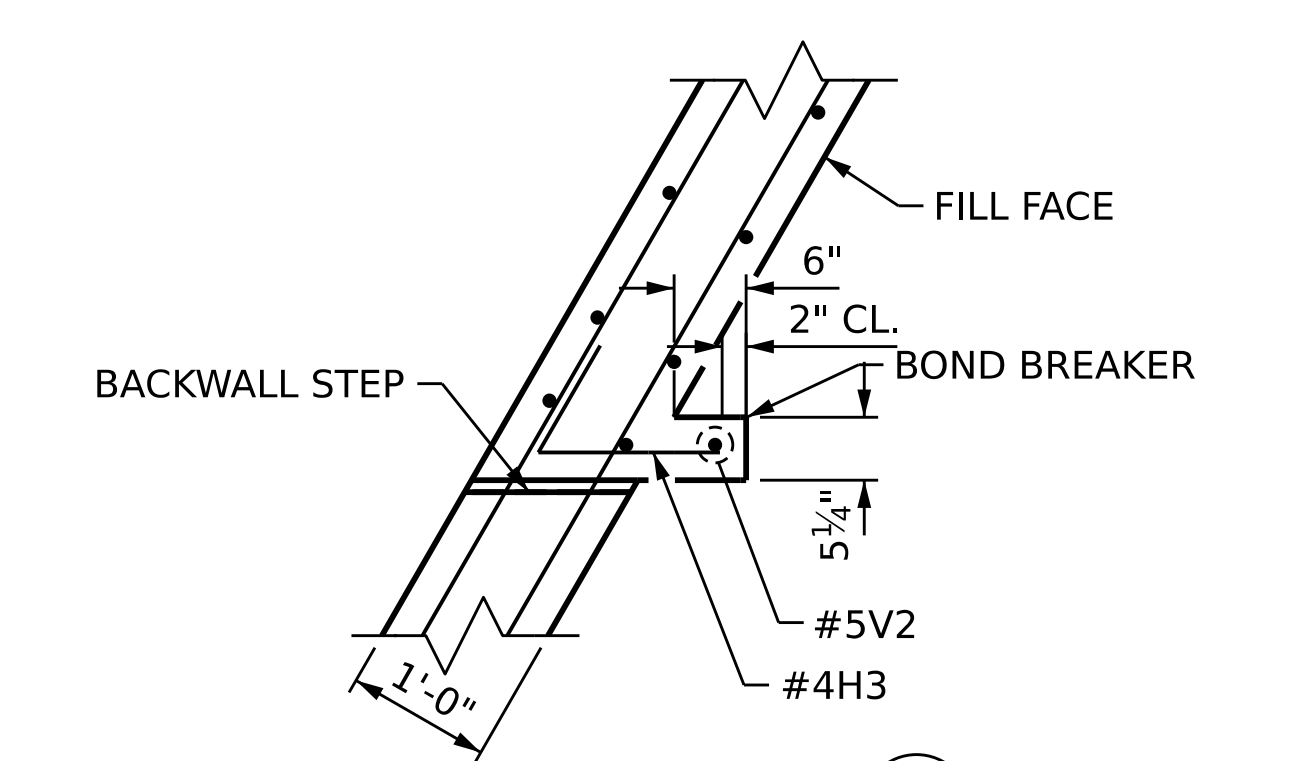
PLAN OF WING (W1)



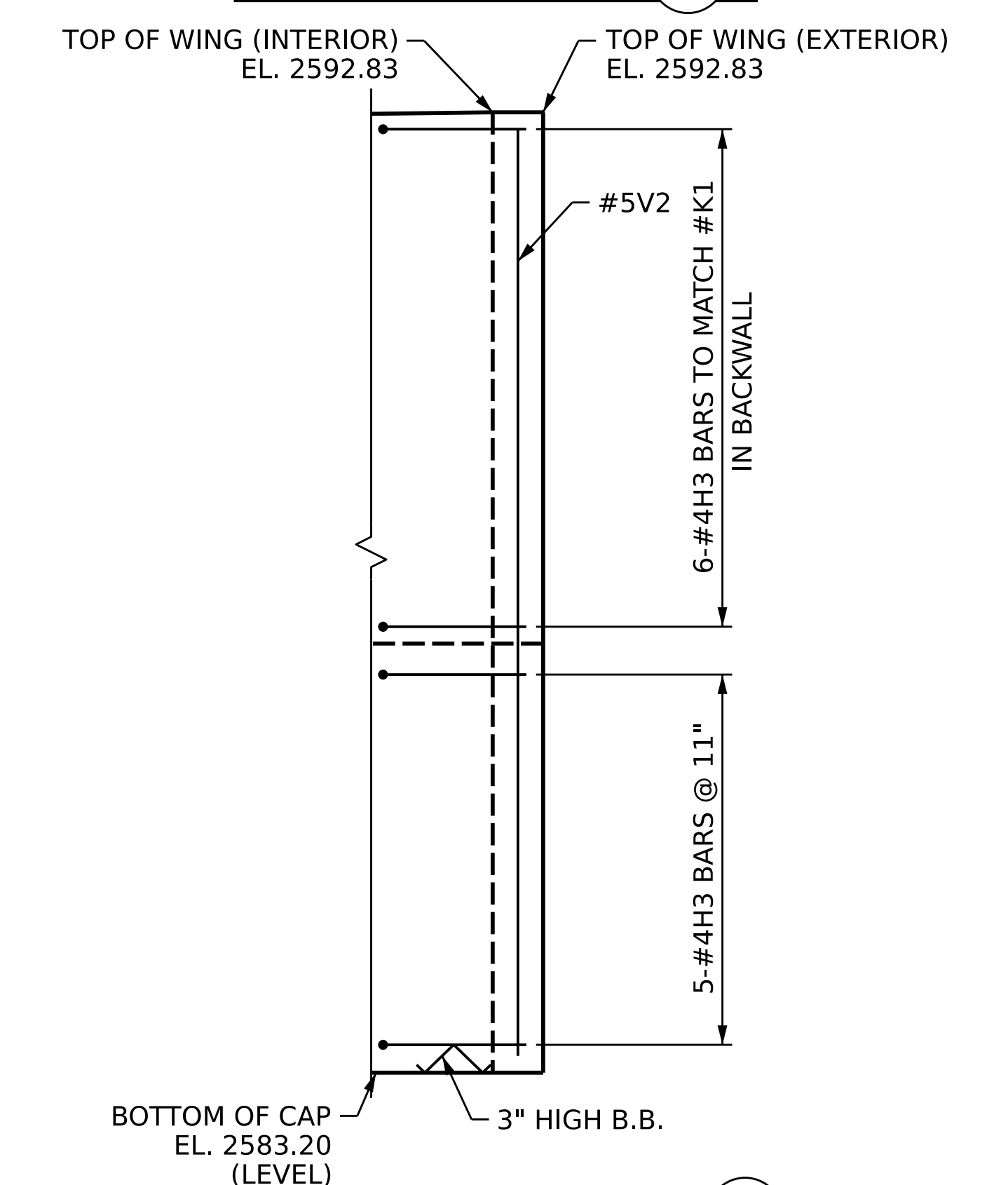
ELEVATION OF WING (W1)



SECTION X-X



PLAN OF WING (W2)



ELEVATION OF WING (W2)

PROJECT NO. B-3186 / B-5898
HAYWOOD COUNTY
 STATION: 24+70.00 -L_LT-
 SHEET 3 OF 5

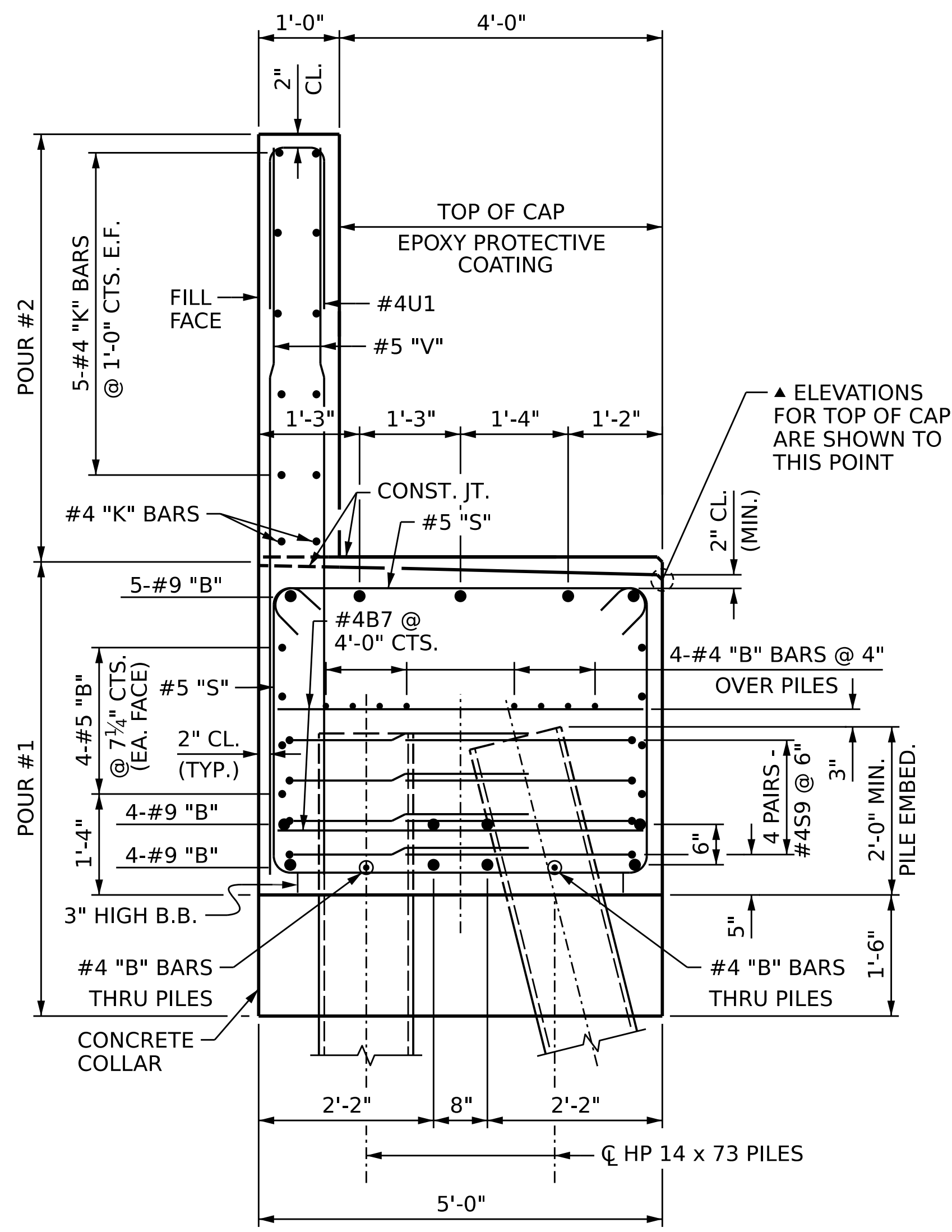
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 (919) 854-6200 www.aecom.com
 AECOM License No. F6242

DESIGNED BY: SPAL
 DATE: 04/49/23
 DRAWN BY: SHANE TUTTLE
 DATE: 10/13/2023

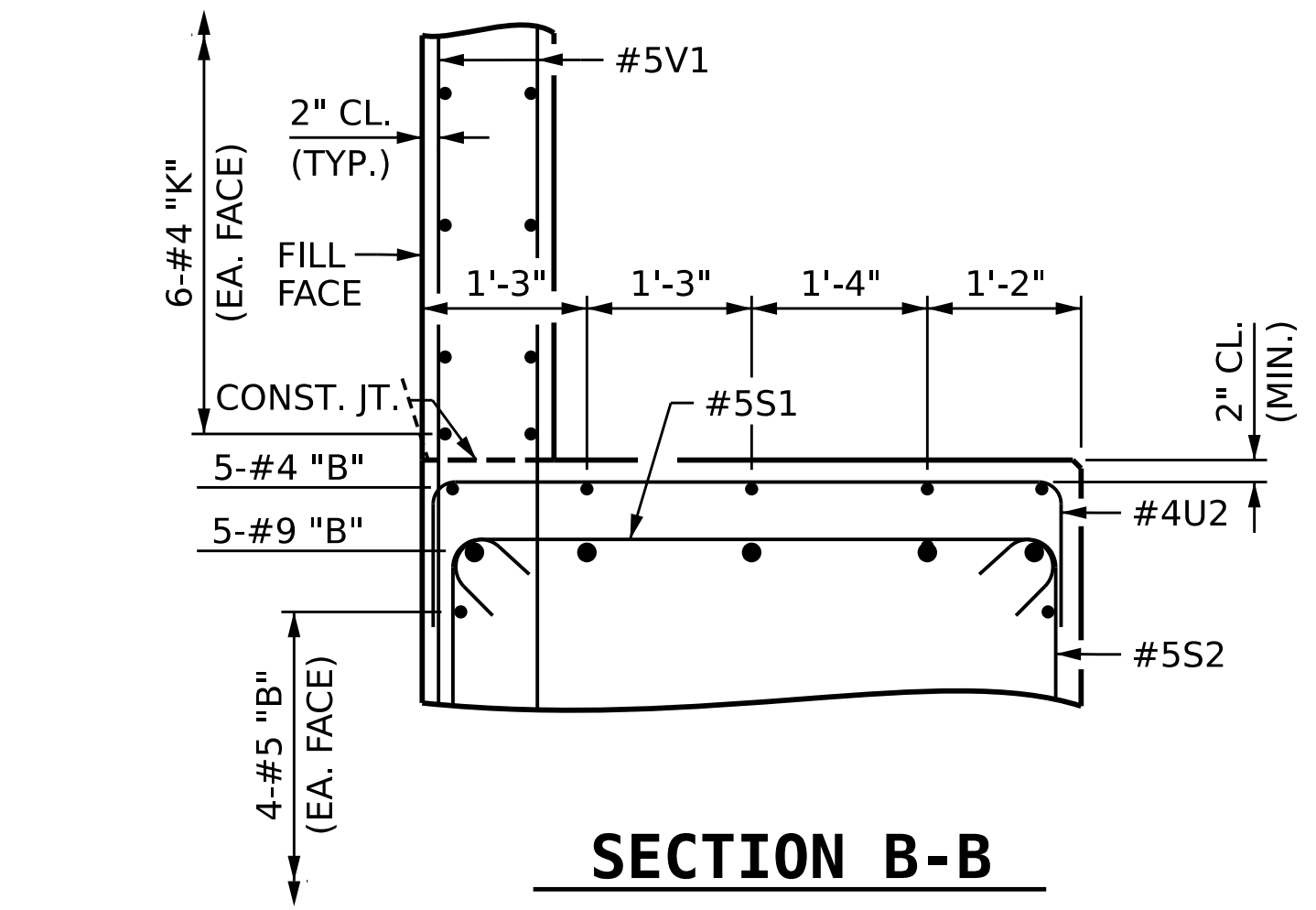
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT 2 WINGWALLS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S3-42
					TOTAL SHEETS 50

DRAWN BY: D. RITACCO DATE: 05/2023
 CHECKED BY: D. TUTTLE DATE: 06/2023
 DESIGN ENGINEER OF RECORD: D. TUTTLE DATE: 06/2023

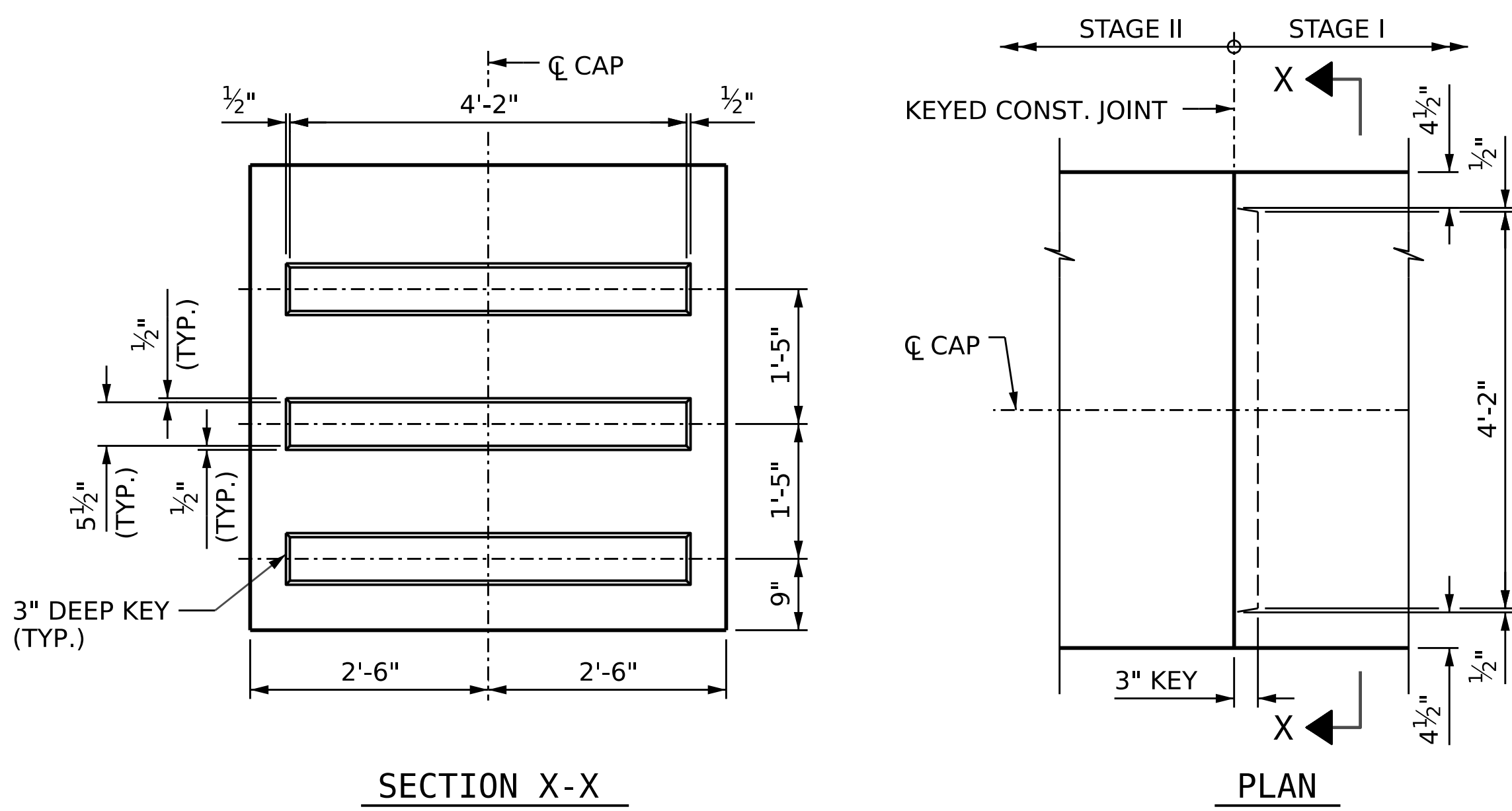
DOCUMENT NOT CONSIDERED
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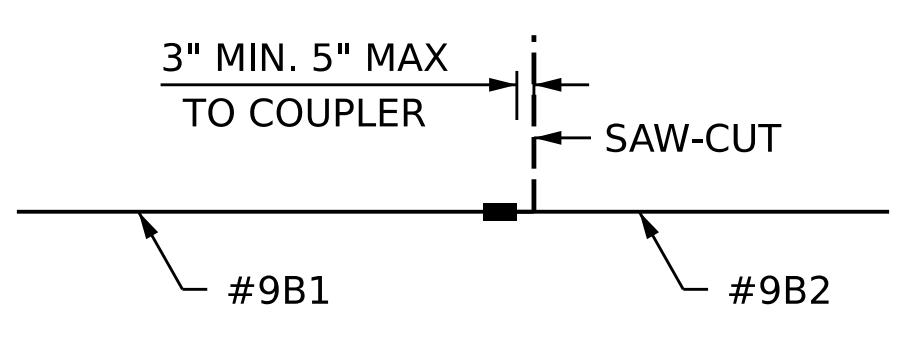
SECTION A-A



SECTION B-B



KEYED CONSTRUCTION JOINT DETAIL



THREADED BAR DETAIL

PROJECT NO. B-3186 / B-5898
HAYWOOD COUNTY
 STATION: 24+70.00 -L_LT-
 SHEET 4 OF 5

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Professional Engineer Seal
 State of North Carolina
 No. 04,497
 Date: 10/13/2023
 Name: SHANE TUTTLE

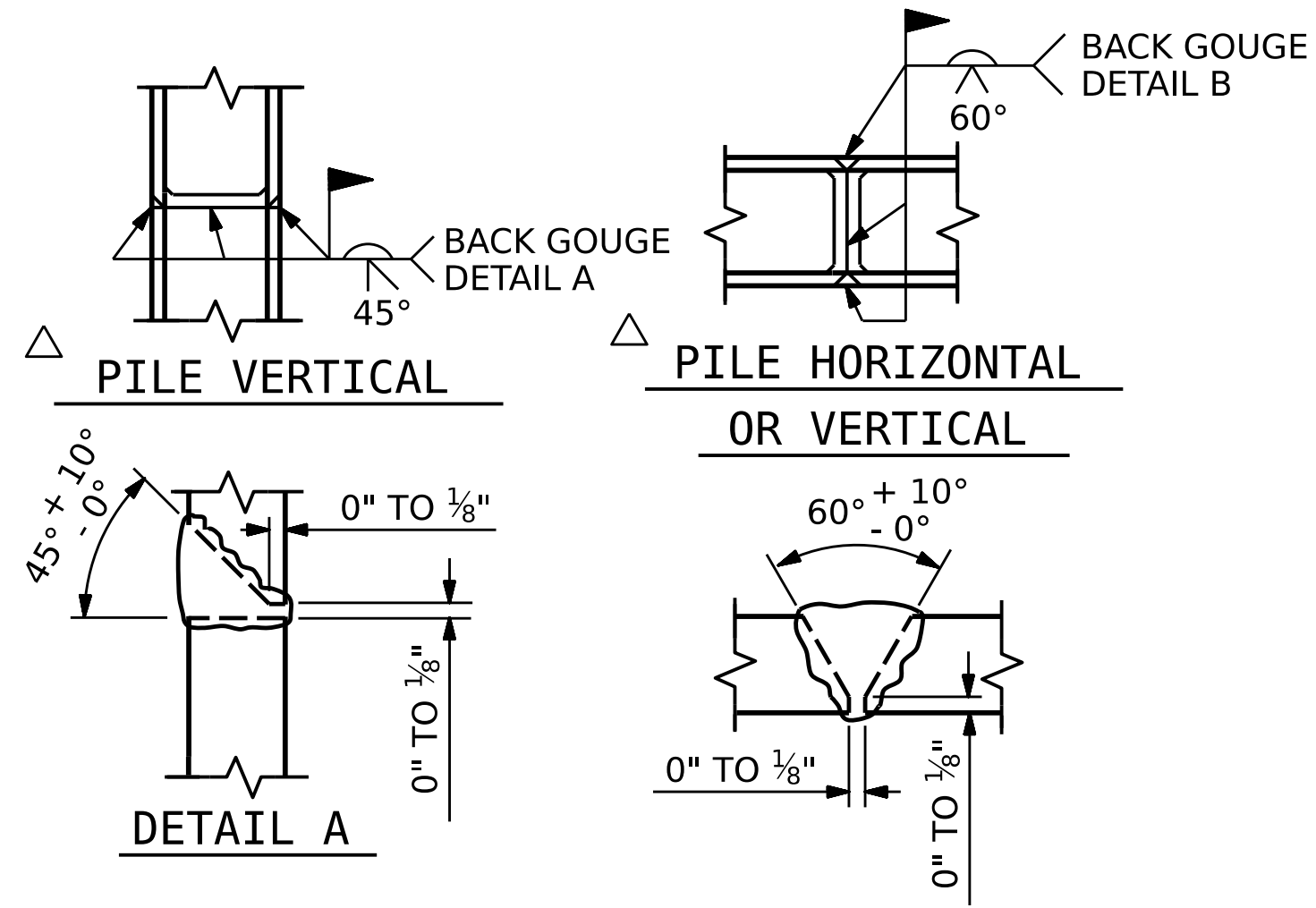
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT 2
 SECTIONS & DETAILS**

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-43
1			3			TOTAL SHEETS
2			4			50

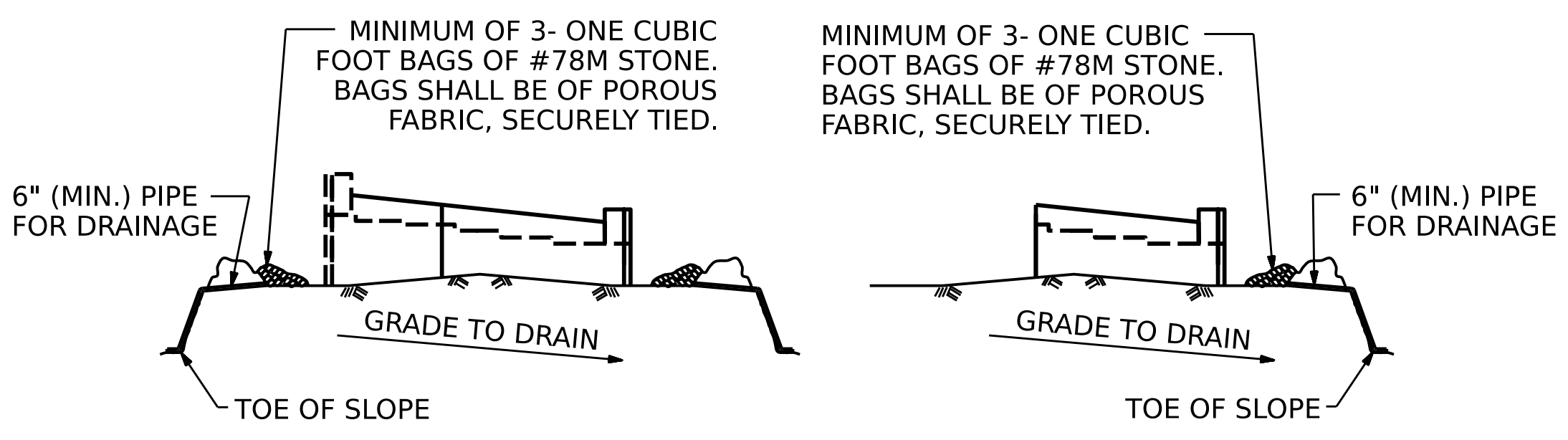
DRAWN BY: D. RITACCO DATE: 05/2023
 CHECKED BY: D. TUTTLE DATE: 06/2023
 DESIGN ENGINEER OF RECORD: D. TUTTLE DATE: 06/2023

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POSITION OF PILE DURING WELDING.

PILE SPLICE DETAILS



TEMPORARY DRAINAGE AT END BENT

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.

DRAWN BY :	D. RITACCO	DATE :	05/2023
CHECKED BY :	D. TUTTLE	DATE :	06/2023
DESIGN ENGINEER OF RECORD :	D. TUTTLE	DATE :	06/2023

BILL OF MATERIAL

END BENT 2

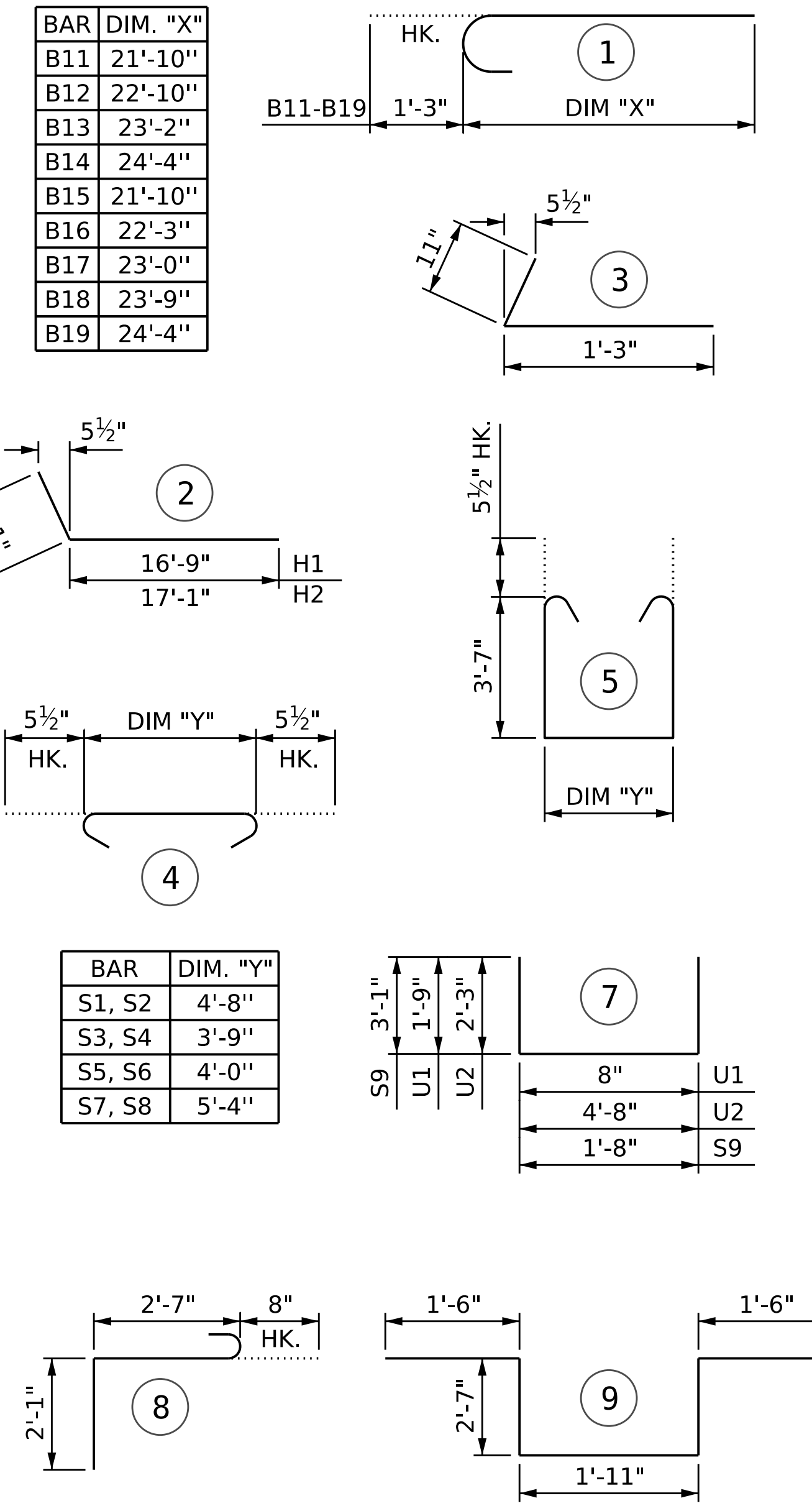
STAGE I						STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	13	9	STR	29'-1"	1285	B7	14	4	STR	4'-8"	44
B2	13	9	STR	8'-4"	368	B9	1	4	STR	23'-2"	15
B3	8	5	STR	39'-7"	330	B10	1	4	STR	24'-6"	16
B4	2	5	STR	28'-0"	58	B11	2	9	1	23'-1"	157
B5	8	4	STR	31'-4"	167	B12	2	9	1	24'-1"	164
B6	15	4	STR	7'-11"	79	B13	2	9	1	24'-5"	166
B7	18	4	STR	4'-8"	56	B14	2	9	1	25'-7"	174
B8	15	4	STR	4'-0"	40	B15	1	9	1	23'-1"	78
						B16	1	9	1	23'-6"	80
K1	12	4	STR	39'-0"	313	B17	1	9	1	24'-3"	82
K2	2	4	STR	10'-6"	14	B18	1	9	1	25'-0"	85
K3	2	4	STR	10'-1"	13	B19	1	9	1	25'-7"	87
						B20	4	5	STR	22'-7"	94
H3	11	4	3	2'-2"	16	B21	4	5	STR	25'-2"	105
						B22	4	4	STR	22'-11"	61
S1	51	5	4	5'-7"	297	B23	4	4	STR	24'-3"	65
S2	51	5	5	12'-9"	678						
S9	40	4	7	7'-10"	209	K4	6	5	STR	24'-10"	155
						K5	6	5	STR	25'-2"	157
U1	39	4	7	4'-2"	109	K6	4	4	STR	2'-11"	8
U2	15	4	7	9'-2"	92	K7	8	4	STR	2'-0"	11
V1	54	5	STR	8'-11"	502	H1	13	5	2	17'-8"	240
V2	25	5	STR	10'-6"	274	H2	13	5	2	18'-0"	244
						S1	31	5	4	5'-7"	181
						S2	31	5	5	12'-9"	412
						S3	1	5	4	4'-8"	5
						S4	1	5	5	11'-10"	12
						S5	1	5	4	4'-11"	5
						S6	1	5	5	12'-1"	13
						S7	1	5	4	6'-3"	7
						S8	1	5	5	13'-5"	14
						S9	32	4	7	7'-10"	167
						S10	3	6	8	5'-4"	24
						S11	3	6	9	10'-1"	45
						U1	23	4	7	4'-2"	64
						V1	46	5	STR	8'-11"	428
						V3	42	5	STR	10'-7"	464

REINFORCING STEEL	4,900 LBS.	REINFORCING STEEL	4129 LBS.
-------------------	------------	-------------------	-----------

CLASS A CONCRETE		CLASS A CONCRETE	
POUR #1 (CAP, COLLARS & LOWER WINGWALL)	31.8 C.Y.	POUR #1 (CAP, COLLARS & LOWER WINGWALL)	23.7 C.Y.
POUR #2 (BACKWALL & UPPER WINGWALL)	7.8 C.Y.	POUR #2 (BACKWALL & UPPER WINGWALL)	9.4 C.Y.
TOTAL = 39.6 C.Y.		TOTAL = 33.1 C.Y.	

NOTE: SEE GEOTECHNICAL FOUNDATION TABLES FOR ADDITIONAL PILE INFORMATION

BAR TYPES



BAR	DIM. "Y"
S1, S2	4'-8"
S3, S4	3'-9"
S5, S6	4'-0"
S7, S8	5'-4"

ALL BAR DIMENSIONS ARE OUT TO OUT.

PROJECT NO. **B-3186 / B-5898**
HAYWOOD COUNTY
 STATION: **24+70.00 -L_ LT-**

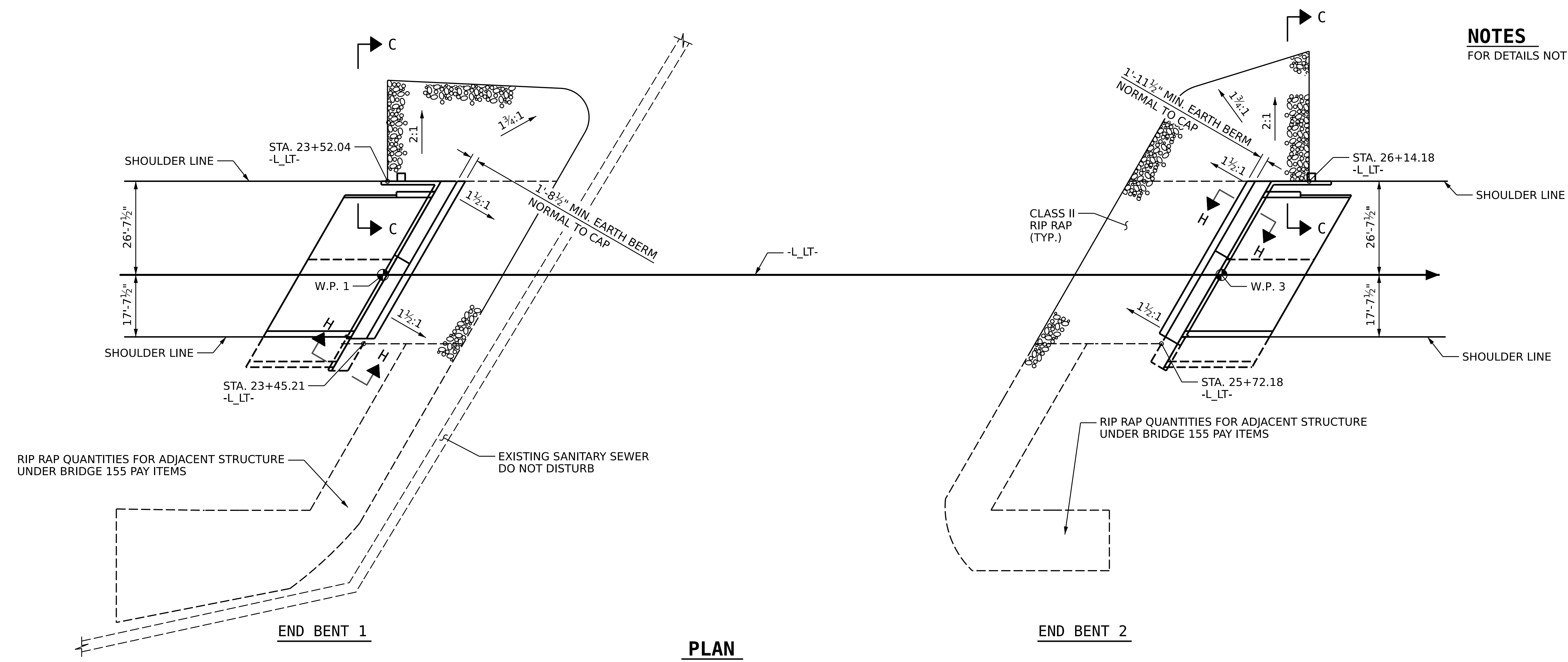
SHEET 5 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
SUBSTRUCTURE
END BENT 2
BILL OF MATERIALS & DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-44
1			3			TOTAL SHEETS
2			4			50

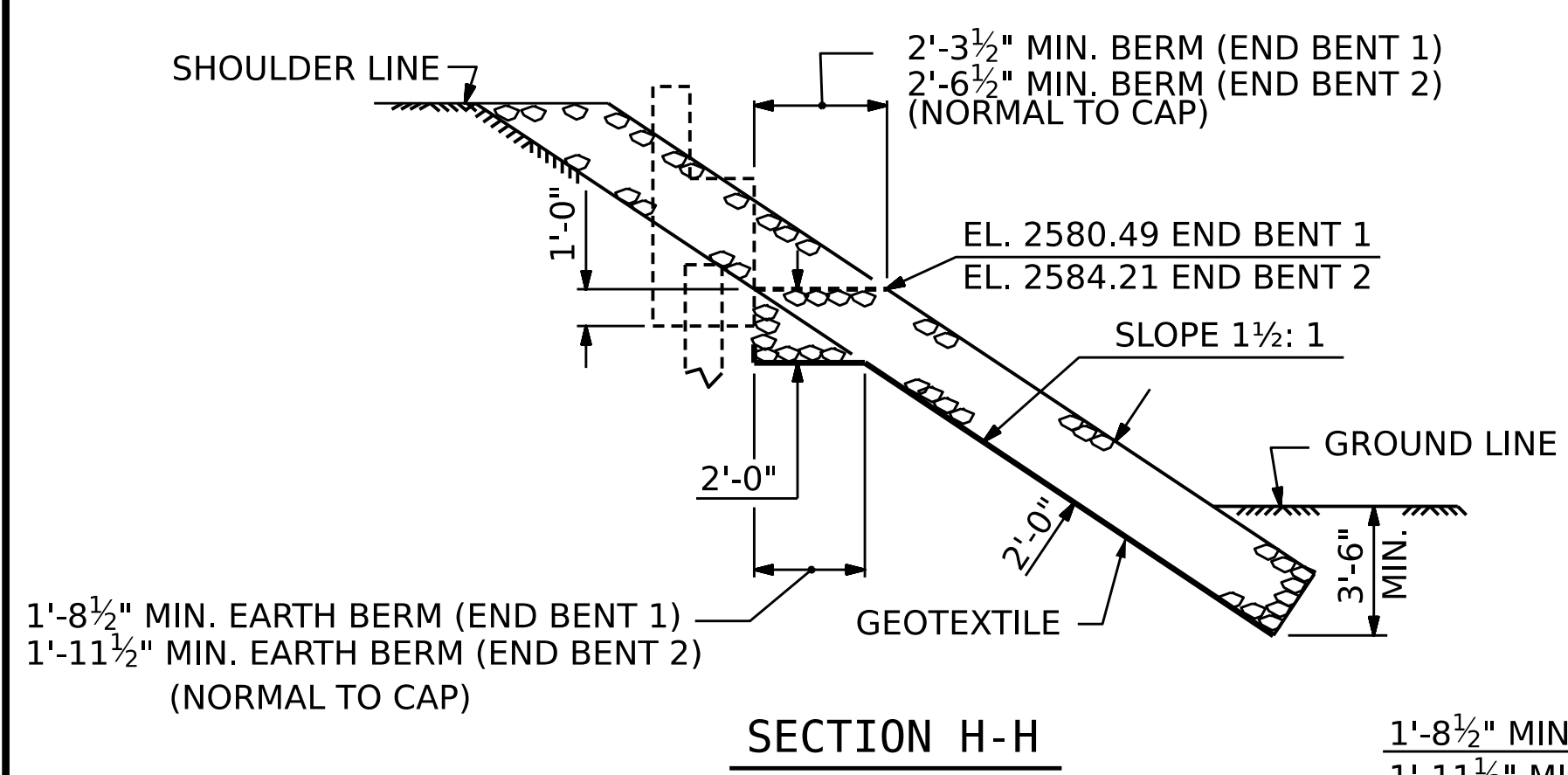
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NOTES
FOR DETAILS NOT SHOWN, SEE GENERAL DRAWING.

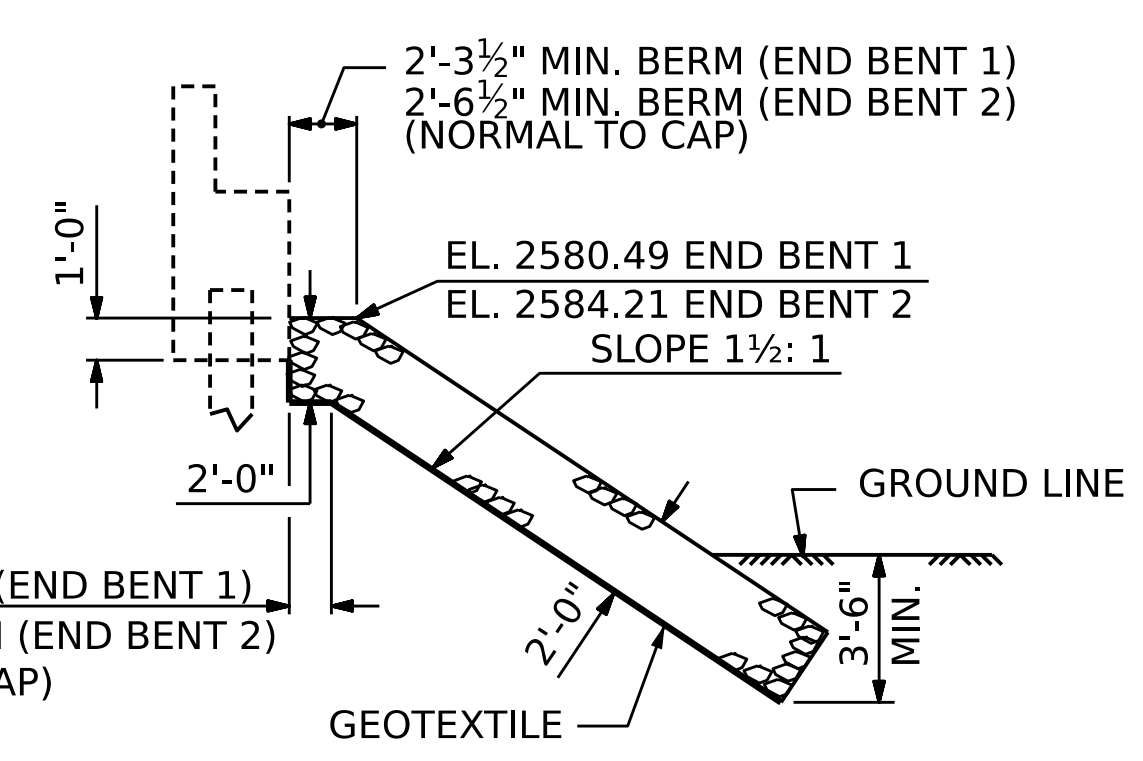


PLAN

ESTIMATED QUANTITIES		
BRIDGE @ STA. 24+70.00 -L_LT-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	489	543
END BENT 2	460	511



SECTION H-H



SECTION C-C

SECTION C-C
BERM RIP RAPPED

PROJECT NO. **B-3186 / B-5898**
HAYWOOD COUNTY
STATION: **24+70.00 -L_LT-**
SHEET 1 OF 1

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AECOM License No. F0242

DESIGNED BY: SPAL
DATE: 04/49
CHECKED BY: SHANE TULL
DATE: 10/13/2023

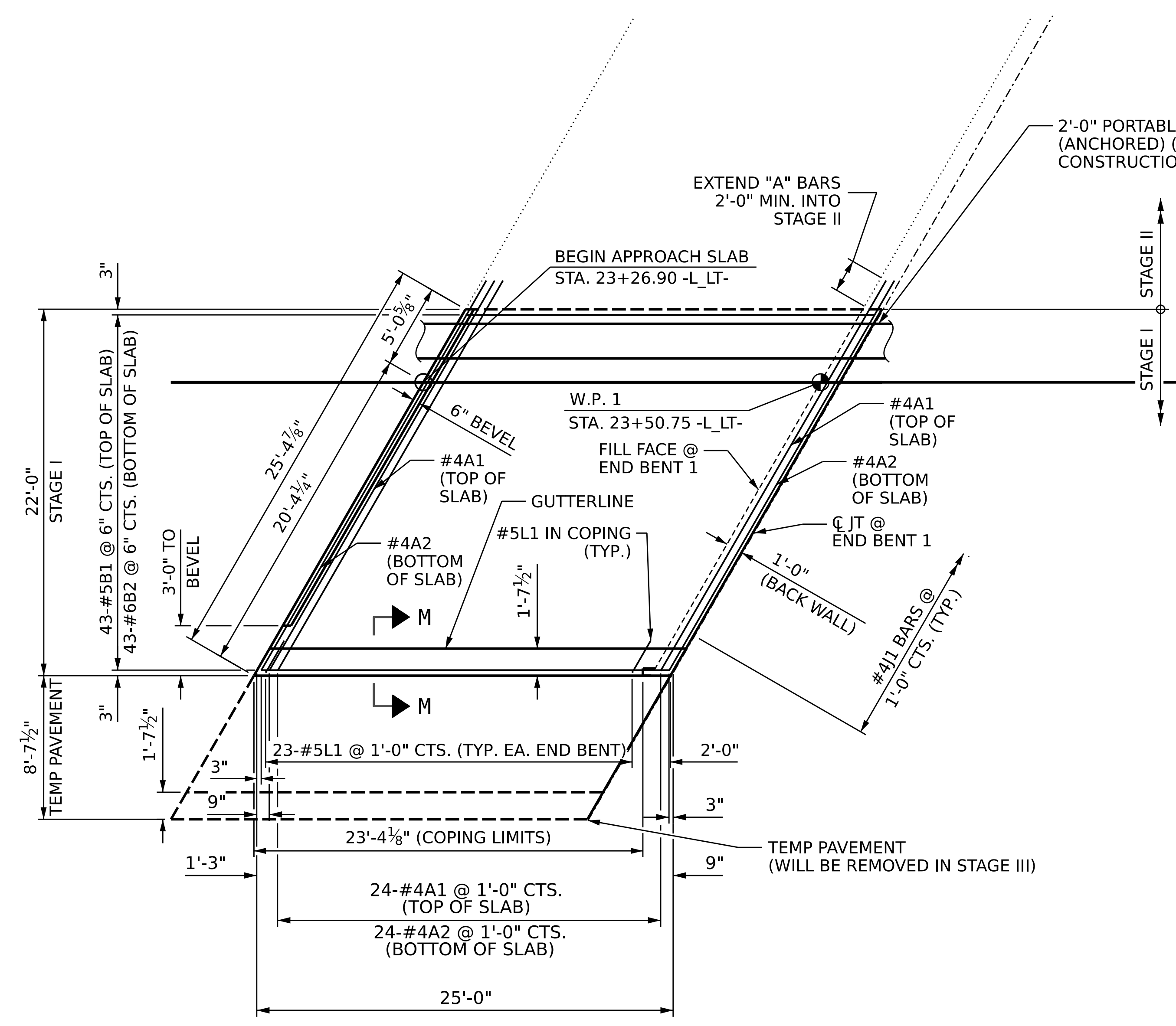
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO. S3-45
STANDARD RIP RAP DETAILS						
REVISIONS						TOTAL SHEETS 50
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

ASSEMBLED BY : L. LEE	DATE : 06/2023
CHECKED BY : S. NATARAJAN	DATE : 06/2023
DRAWN BY : REK 1/84	REV. 10/1/11 MAA/GM
CHECKED BY : RDU 1/84	REV. 12/21/11 MAA/GM
	REV. 12/17 MAA/THC

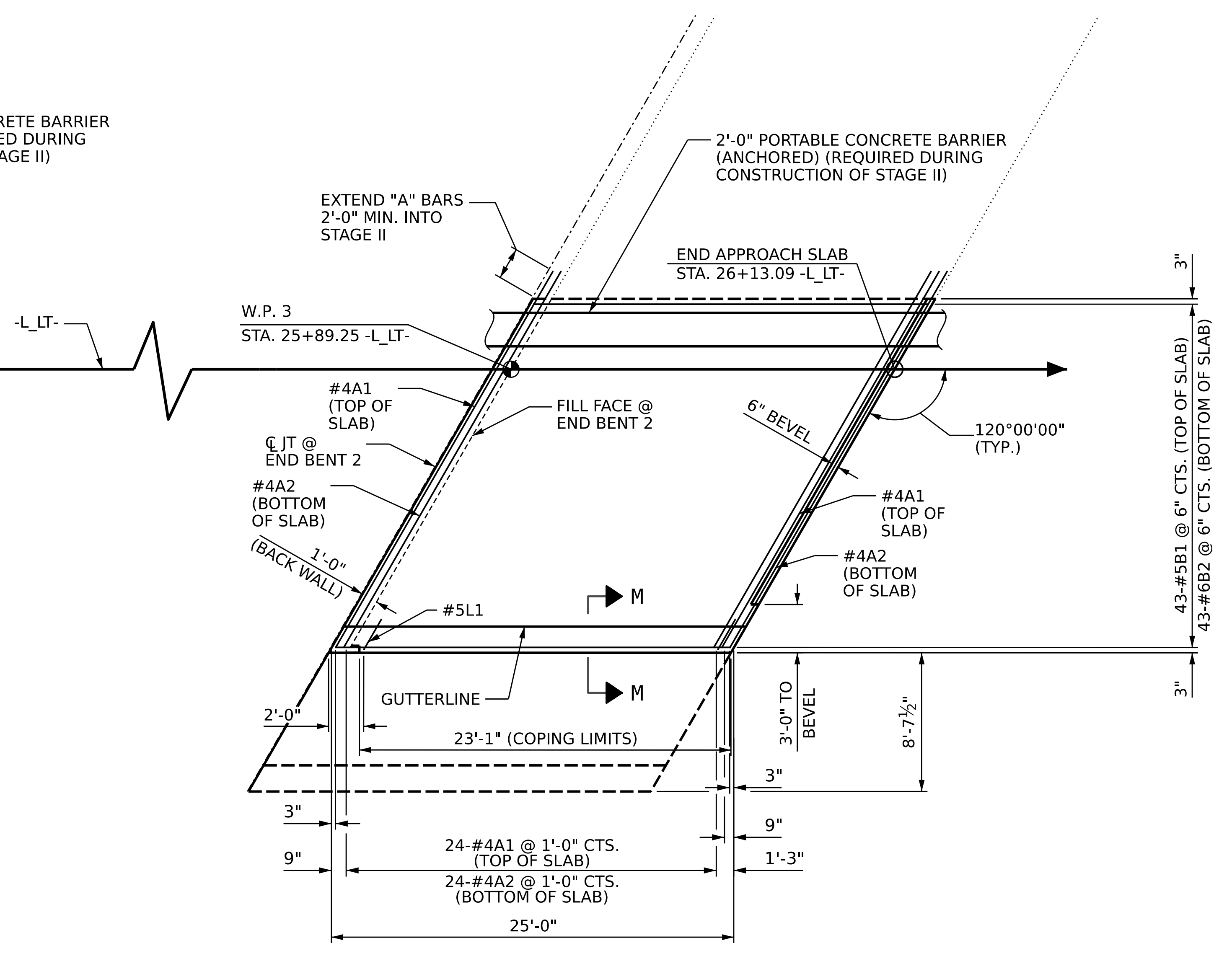
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NOTES

FOR NOTES, SEE SHEET 4 OF 4.
 FOR SECTION M-M, SEE SHEET 4 OF 4.



PLAN @ END BENT 1



PLAN @ END BENT 2

STAGE I CONSTRUCTION

PROJECT NO. B-3186 / B-5898
HAYWOOD COUNTY
 STATION: 24+70.00 -L_LT-
 SHEET 1 OF 4

DRAWN BY :	L. LEE	DATE :	06/2023
CHECKED BY :	S. NATARAJAN	DATE :	06/2023
DESIGN ENGINEER OF RECORD:	D. TUTTLE	DATE :	06/2023

DOCUMENT NOT CONSIDERED
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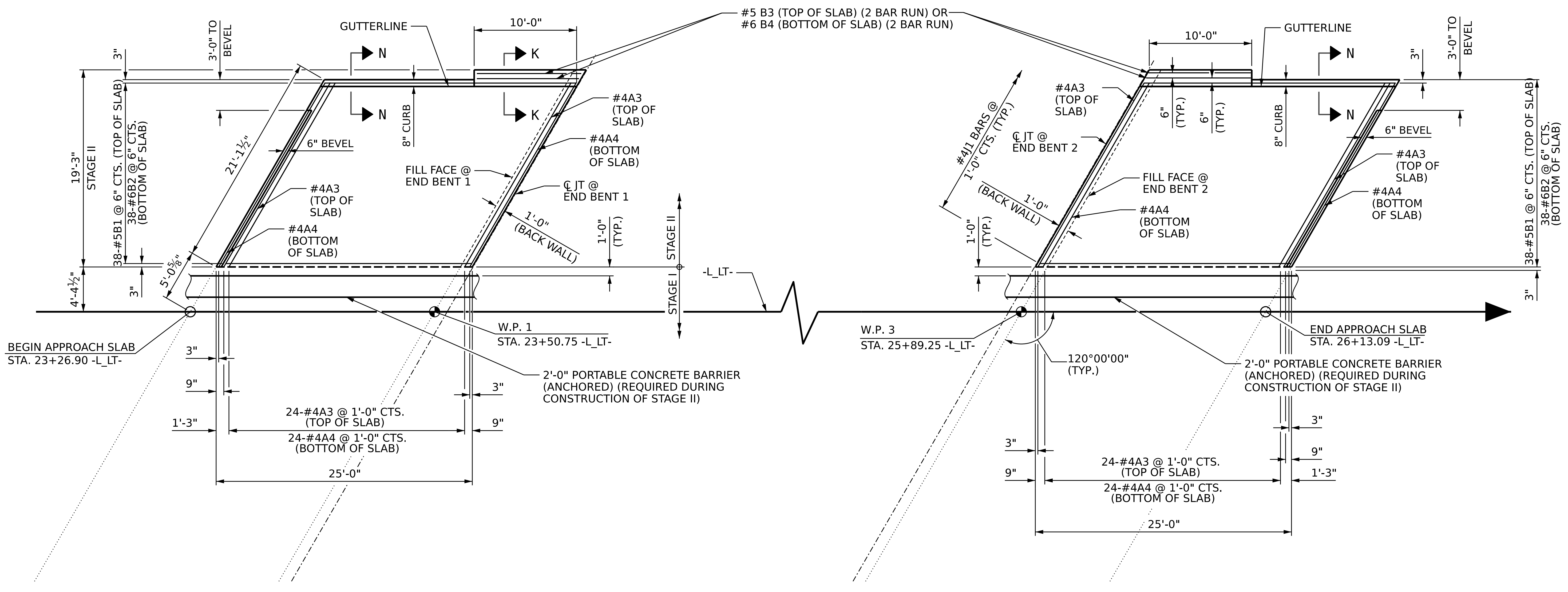
DESIGNED BY: *[Signature]*
 DATE: 04/2023
 10/13/2023

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
APPROACH SLAB					
STAGE I					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S3-46
					TOTAL SHEETS 50

NOTES

FOR NOTES, SEE SHEET 4 OF 4.

FOR SECTION N-N AND K-K, SEE SHEET 3 OF 4.



PLAN @ END BENT 1

PLAN @ END BENT 2

STAGE II CONSTRUCTION

PROJECT NO. B-3186 / B-5898

HAYWOOD COUNTY

STATION: 24+70.00 -L_LT-

SHEET 2 OF 4

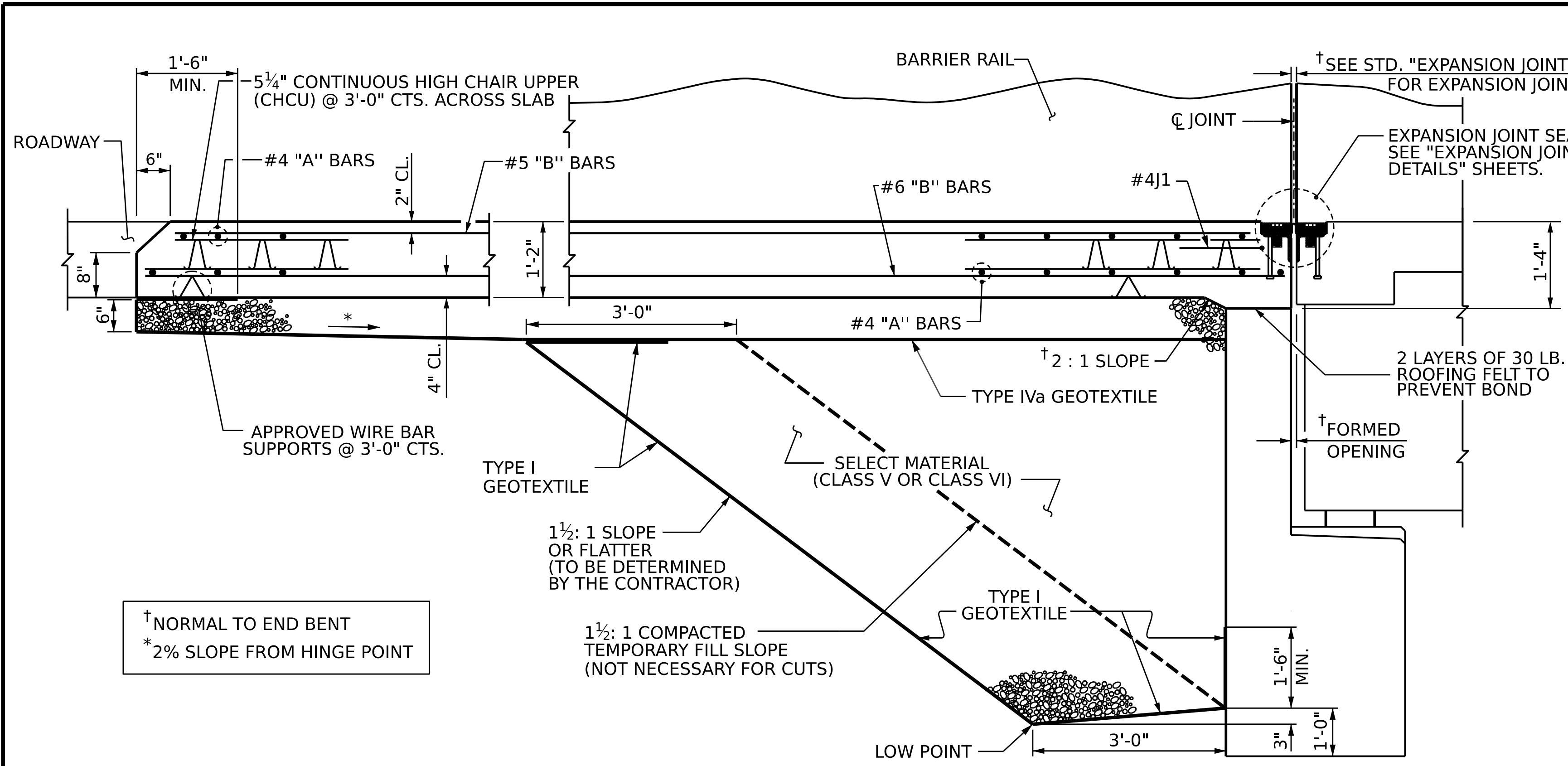
DRAWN BY :	L. LEE	DATE :	06/2023
CHECKED BY :	S. NATARAJAN	DATE :	06/2023
DESIGN ENGINEER OF RECORD:	D. TUTTLE	DATE :	06/2023

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AECOM License No. F0242

DESIGNED BY: *[Signature]*
DATE: 04/4/23
CHECKED BY: *[Signature]*
DATE: 10/13/2023

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
APPROACH SLAB					
STAGE II					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					SHEET NO. S3-47
					TOTAL SHEETS 50



NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE AND SELECT MATERIAL, SEE ROADWAY PLANS.

GEOTEXTILE (TYPE 1 OR TYPE 4a) 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.

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

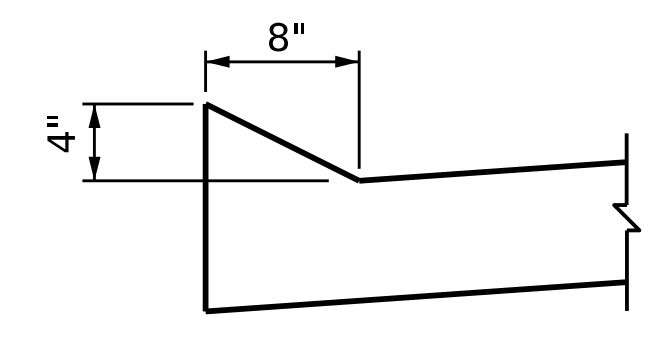
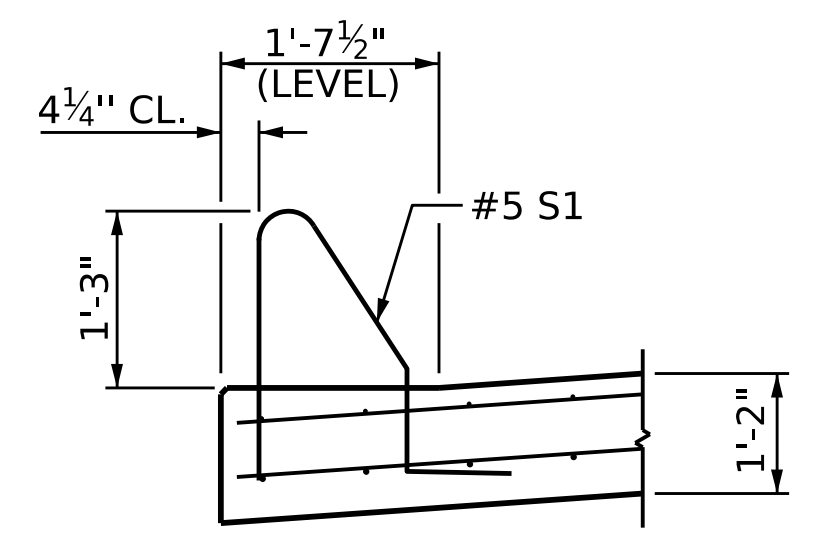
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

BILL OF MATERIAL					
FOR ONE APPROACH SLAB (2 REQ'D)					
STAGE I					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	50	#4	STR	27'-0"	902
A2	52	#4	STR	27'-0"	938
*B1	43	#5	STR	24'-1"	1080
B2	43	#6	STR	24'-8"	1593
*J1	24	#4	5	1'-5"	23
L1	23	#5	6	3'-10"	92
REINFORCING STEEL					2623 LBS.
* EPOXY COATED REINFORCING STEEL					2005 LBS.
CLASS AA CONCRETE					24.1 C. Y.
STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A3	50	#4	STR	20'-11"	699
A4	52	#4	STR	20'-11"	727
*B1	38	#5	STR	24'-1"	955
B2	38	#6	STR	24'-8"	1408
*B3	4	#5	STR	6'-6"	27
B4	4	#6	STR	6'-6"	39
*J1	20	#4	5	1'-5"	19
REINFORCING STEEL					2174 LBS.
* EPOXY COATED REINFORCING STEEL					1700 LBS.
CLASS AA CONCRETE					21.3 C. Y.

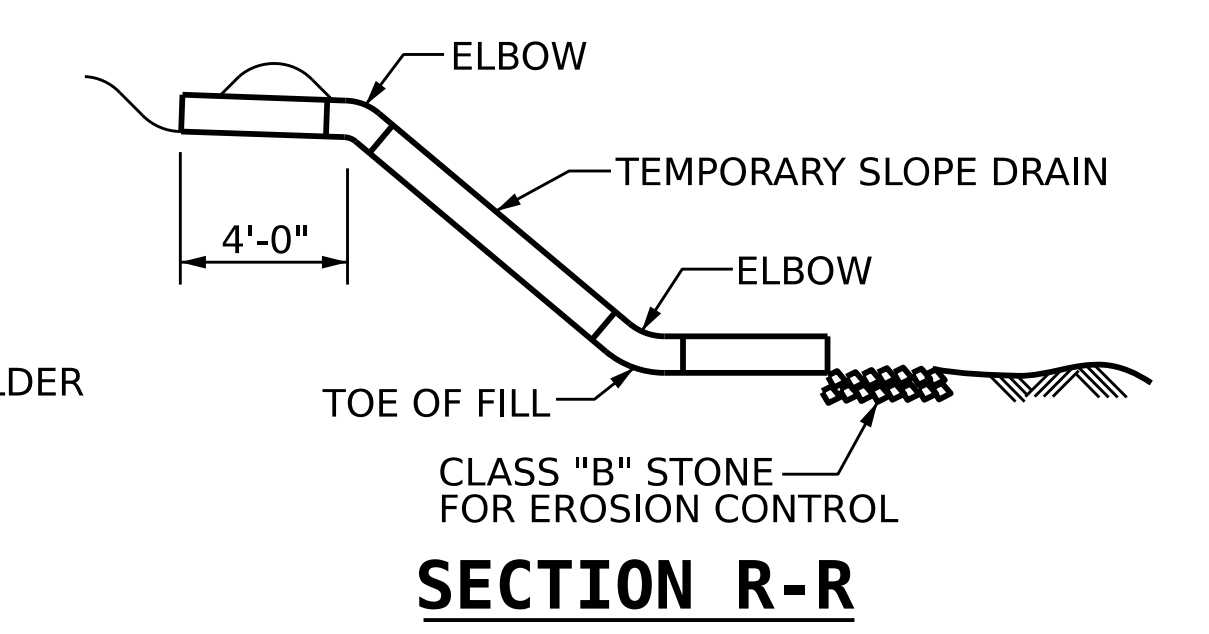
†NORMAL TO END BENT
*2% SLOPE FROM HINGE POINT

SECTION THRU SLAB
(TYPE I APPROACH FILL - SEE ROADWAY PLANS SHEET 2C-4)

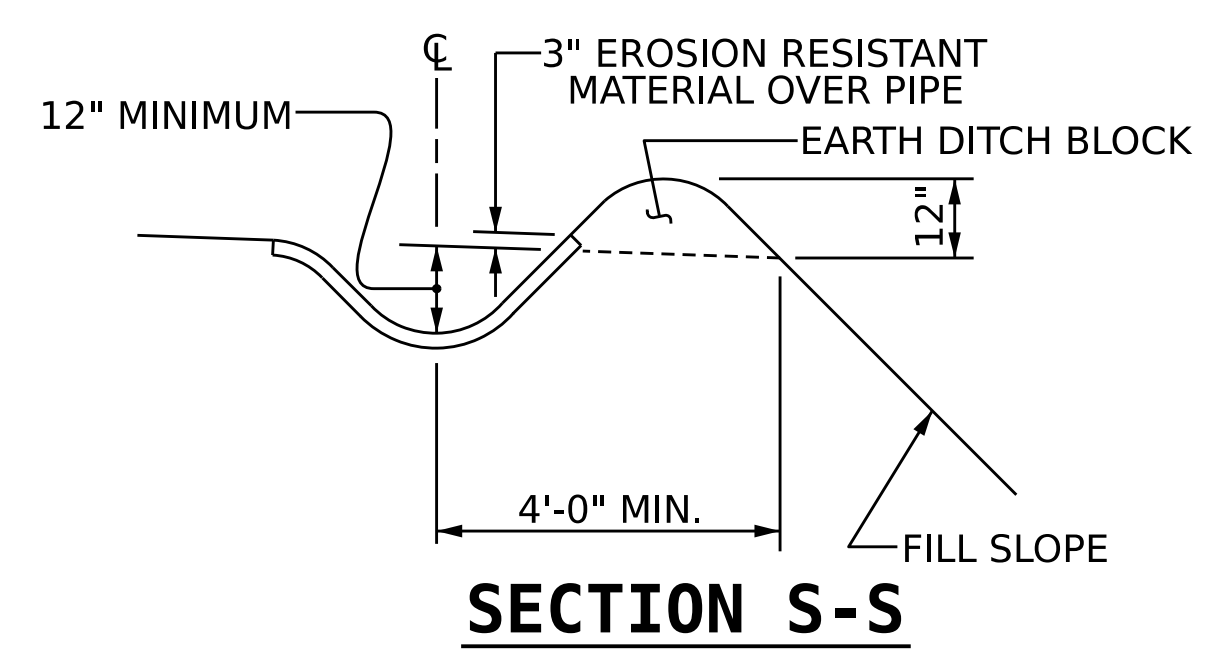


SECTION K-K

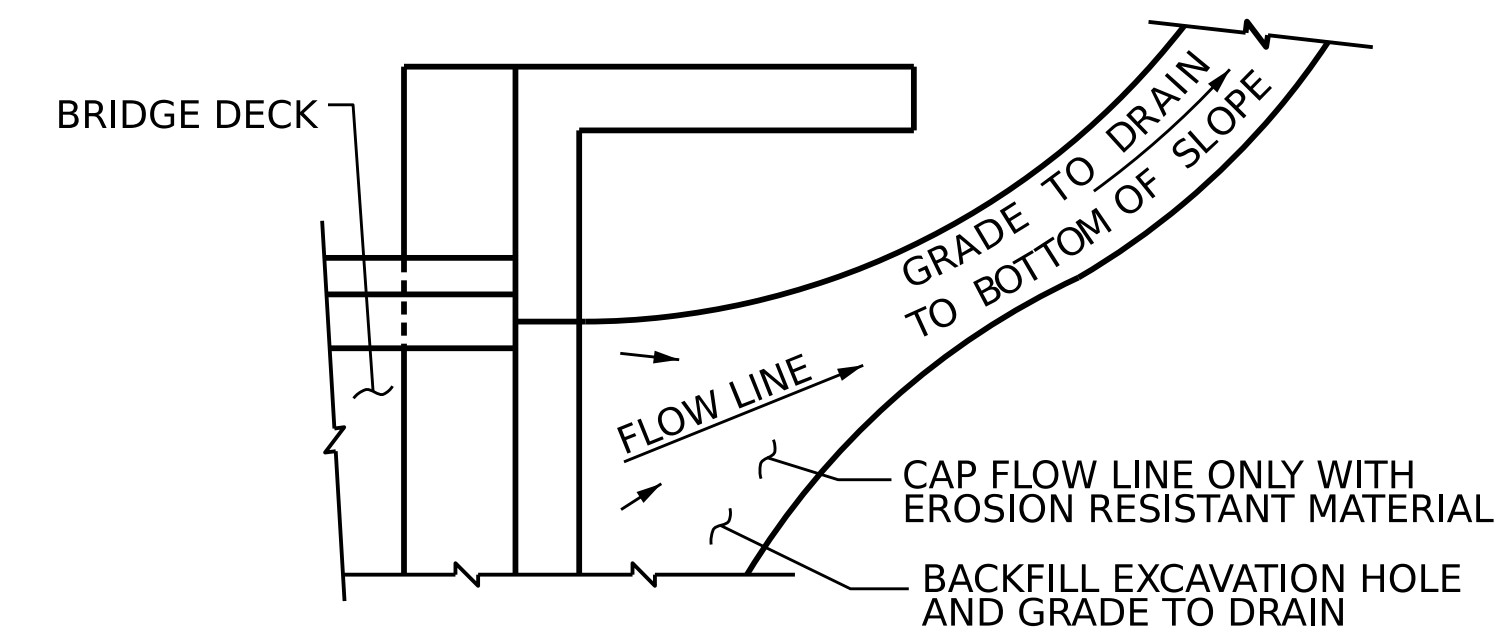
SECTION N-N



SECTION R-R

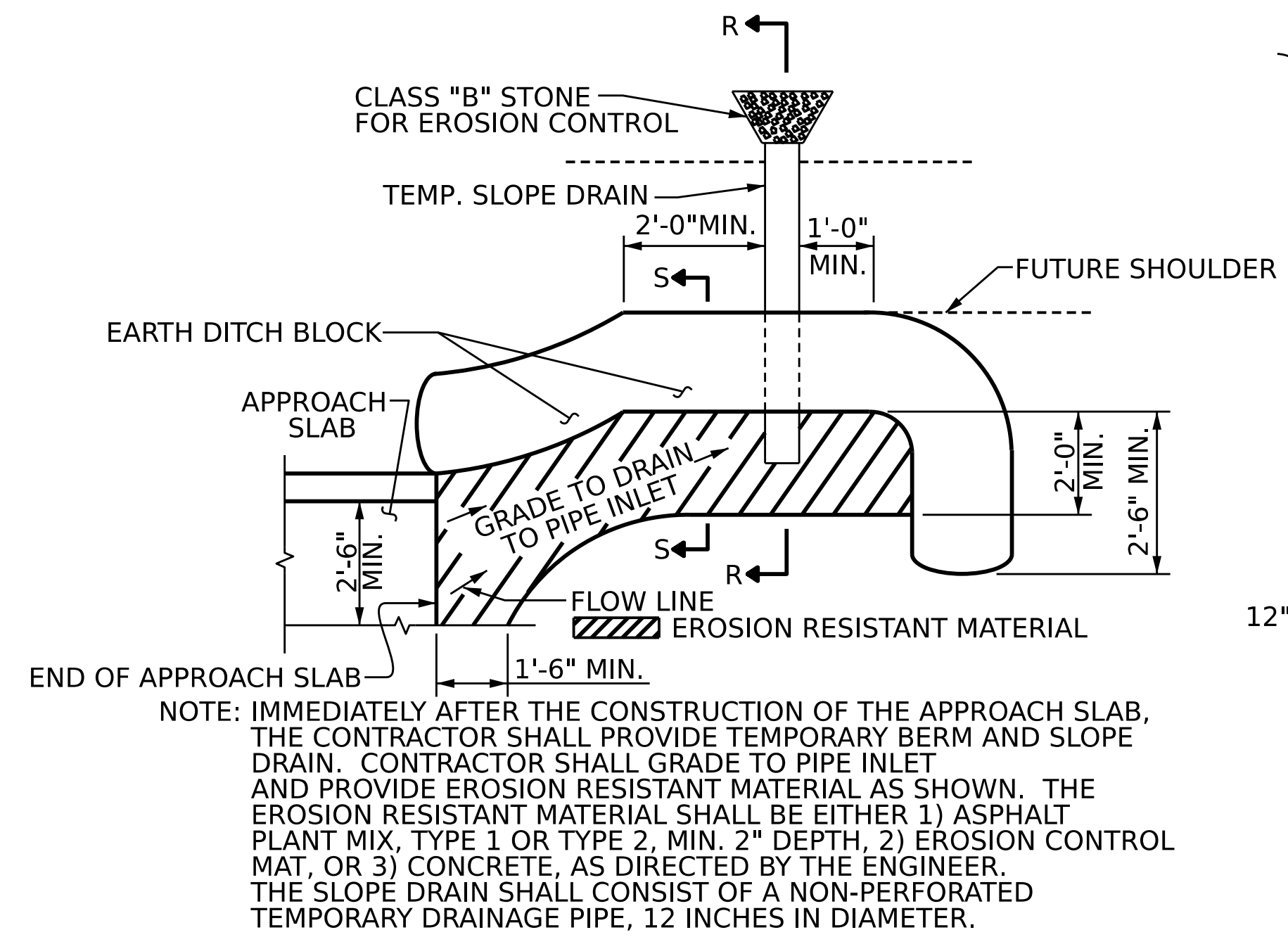


SECTION S-S



TEMPORARY DRAINAGE DETAIL

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



PLAN VIEW

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

DRAWN BY : L. LEE	DATE : 06/2023
CHECKED BY : S. NATARAJAN	DATE : 06/2023
DESIGN ENGINEER OF RECORD : D. TUTTLE	DATE : 06/2023

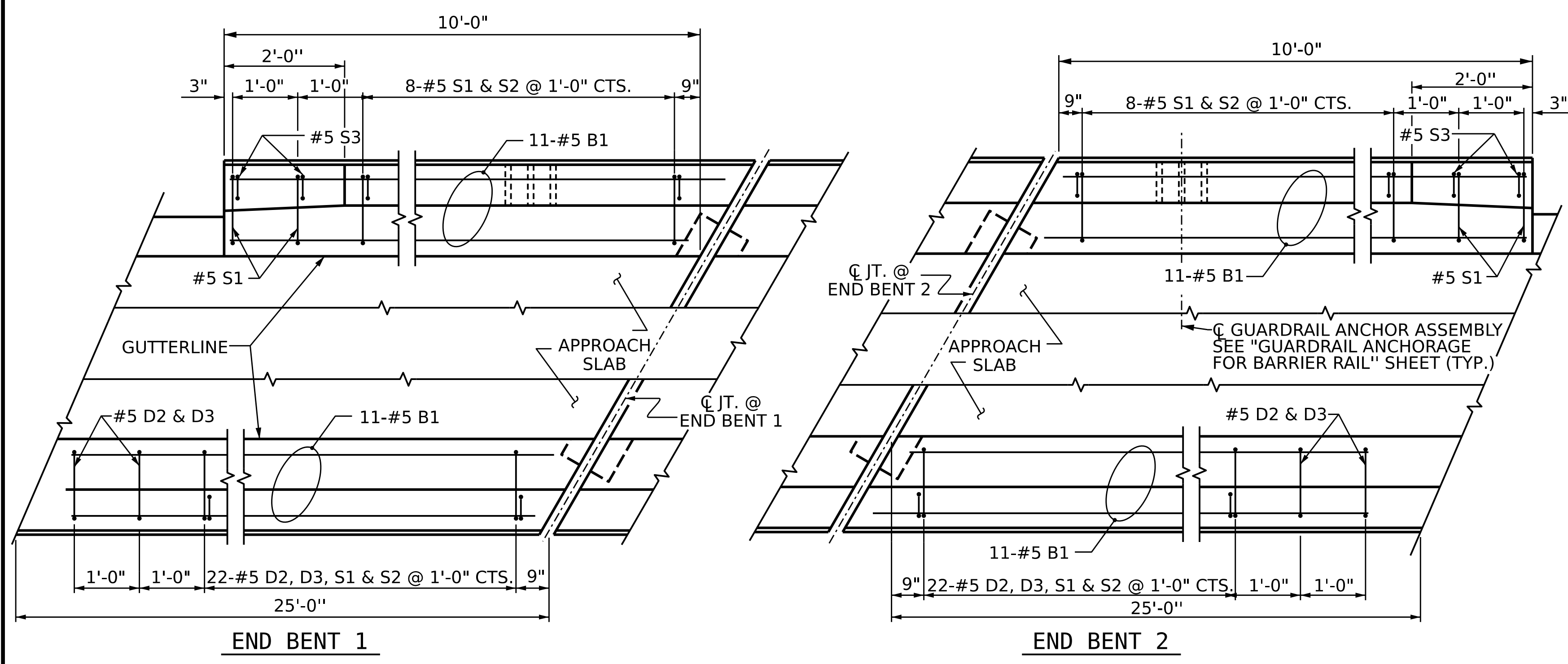
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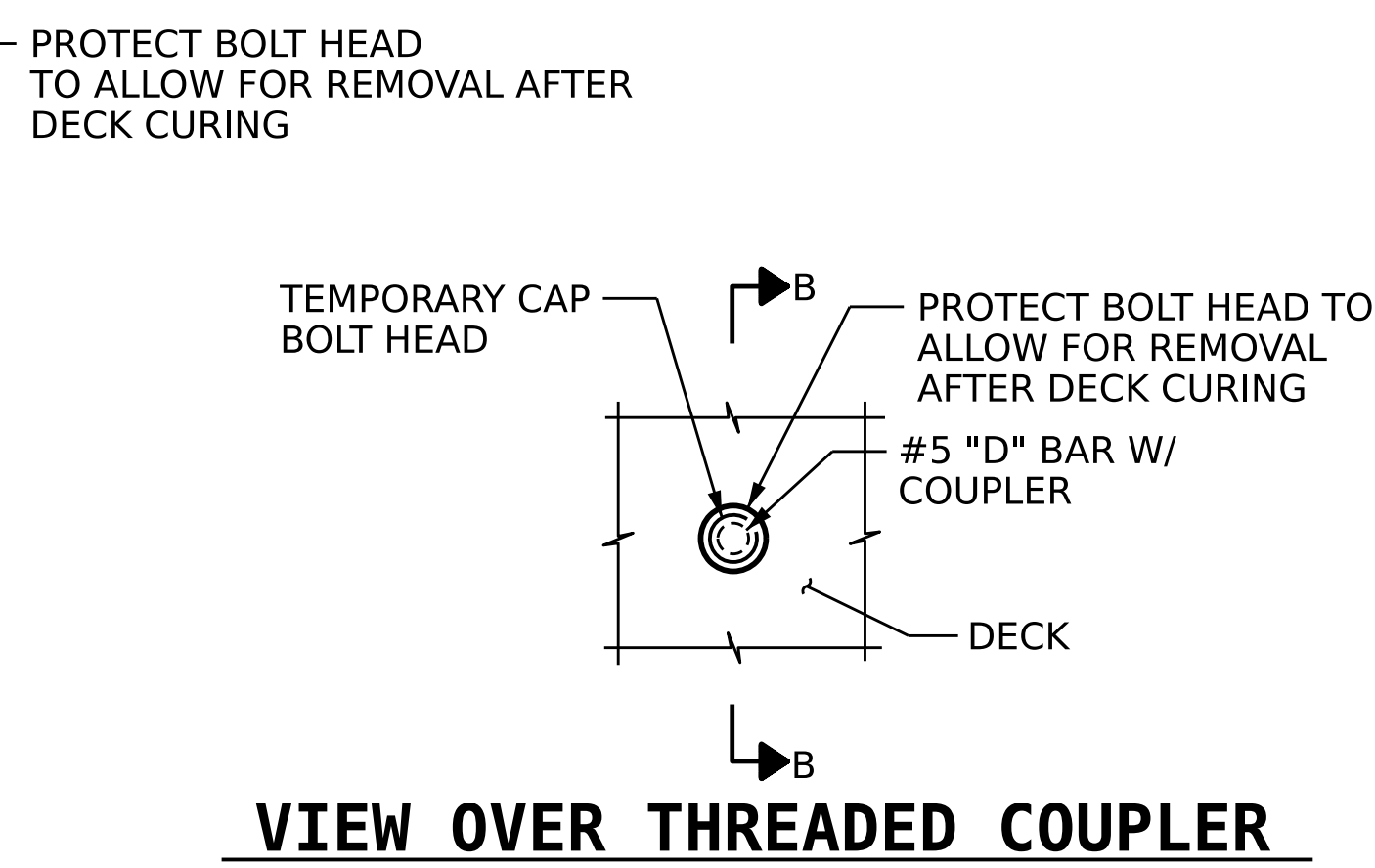
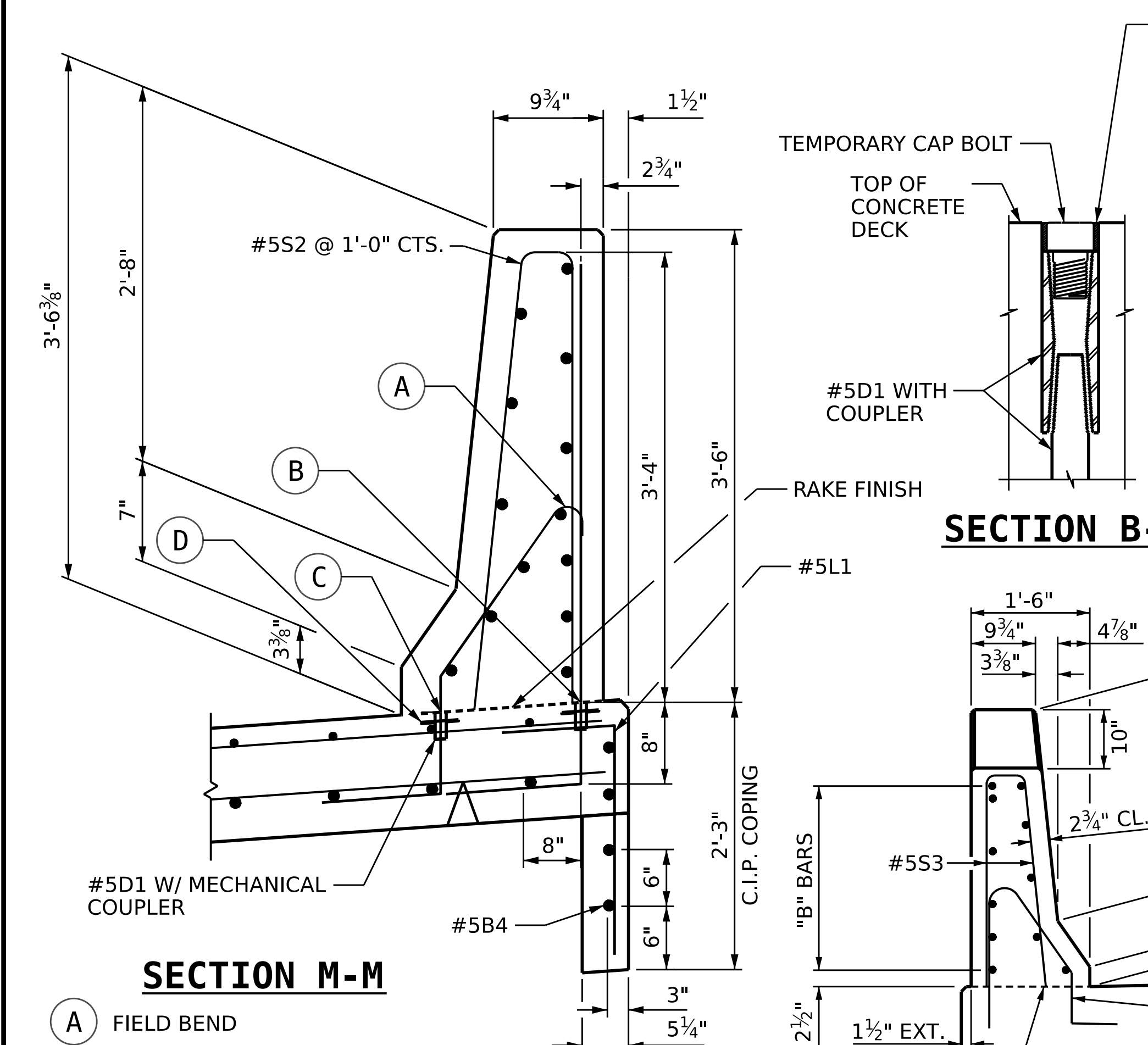
Professional Seal:
Signed by: Shane Tuttle
Date: 04/14/23
Professional Engineer
No. 22034A-07000245
State of North Carolina

PROJECT NO. B-3186 / B-5898
HAYWOOD COUNTY
STATION: 24+70.00 -L_ LT-
SHEET 3 OF 4

REVISIONS						SHEET NO. S3-48
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 50
2			4			



PLAN OF BARRIER RAIL



VIEW OVER THREADED COUPLER

- SECTION M-M**
- (A) FIELD BEND
 - (B) #5D3 @ 1'-0" CTS. (THREADED INTO COUPLER)
 - (C) #5D2 @ 1'-0" CTS. (THREADED INTO COUPLER)
 - (D) COUPLER HEAD SHALL BE RECESSED 3/16" BELOW FINISHED SURFACE.

DRAWN BY :	L. LEE	DATE :	06/2023
CHECKED BY :	S. NATARAJAN	DATE :	06/2023
DESIGN ENGINEER OF RECORD :	D. TUTTLE	DATE :	06/2023

END OF RAIL DETAILS
APPLIES TO LEFT SIDE PERMANENT BARRIER ONLY

NOTES

THE COST OF THE BARRIER RAIL ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LINEAR FOOT CONTRACT PRICE BID FOR "CONCRETE BARRIER RAIL".

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

SHIFT, BEND, OR CUT REINFORCING STEEL AS NECESSARY TO CLEAR JOINT BLOCKOUT.

#5D1 AND #5D2 SHALL BE MACHINE THREADED TO FIT TO COUPLER AND DELIVERED CONNECTED. THREADS SHALL BE GREASED TO PERMIT EASY SEPARATION AFTER INSTALLATION.

THE #5D1 COUPLED TO #5D2 OR #5D3 SHALL BE PUSHED INTO GREEN CONCRETE AFTER POURING AND SCREEDING THE DECK. THE COUPLER SHALL BE INSTALLED TO BE 3/16" BELOW THE TOP OF THE FINISHED CONCRETE DECK. ONCE DECK HAS CURED, #5D2 AND #5D3 SHALL BE UNTHREADED AND SET ASIDE. A TEMPORARY BOLT SHALL BE INSTALLED IN THE COUPLER AND SEALED TO PREVENT DEBRIS INTRUSION AND PROTECT THE THREADS. WHEN CONSTRUCTING THE STAGE III CONCRETE BARRIER, REMOVE SEALER AND TEMPORARY BOLT AND THREAD #5D2 AND #5D3 IN TO COUPLER.

PRIOR TO CURING, THE AREA UNDERNEATH THE STAGE III RIGHT CONCRETE BARRIER SHALL BE RAKE FINISHED TO A SURFACE ROUGHNESS OF 3/16"

THE CONTRACTOR MAY SUBMIT ALTERNATIVE DETAILS FOR ANCHORING THE MEDIAN BARRIER INTO THE DECK TO THE ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION OF THE DECK. ANY ALTERNATIVE METHODS APPROVED FOR CONSTRUCTION SHALL BE AT NO ADD'L COST TO THE DEPARTMENT.

S1, S2, D1, D2 AND D3 BARS IN THE BARRIER AND DECK SHALL BE SHIFTED SLIGHTLY, AS NECESSARY, TO PROVIDE 2" MIN. CLEARANCE TO ALL OPEN JOINTS IN THE BARRIER.

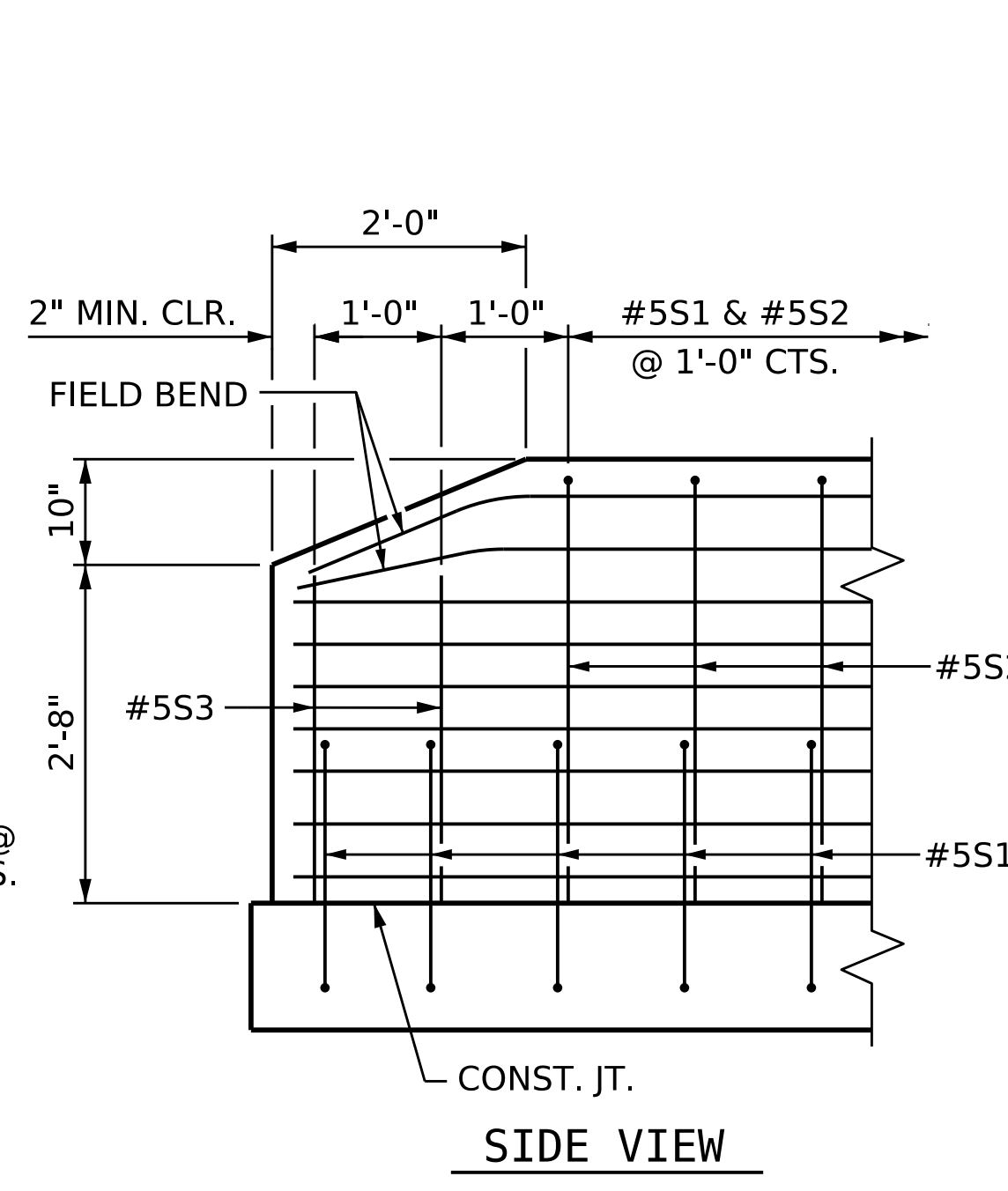
THE CONTRACTOR SHALL SUBMIT WORKING DRAWINGS FOR THE D1, D2, D3 AND COUPLER PRIOR TO FABRICATION TO ENSURE PROPER FIT.

DO NOT GROOVE WITHIN 6" OF EXPOSED BARRIER COUPLERS IN DECK SURFACE.

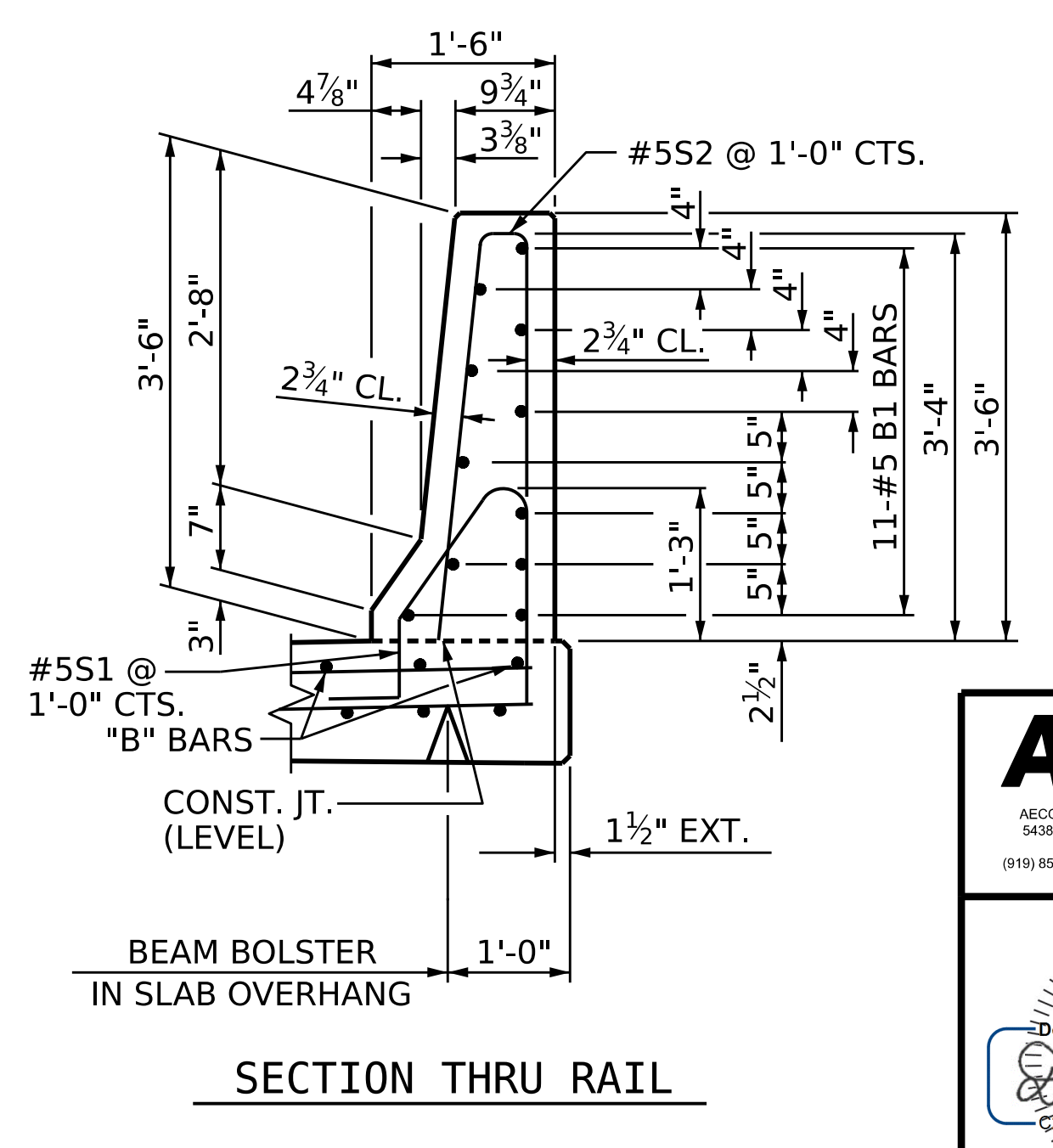
FOR MECHANICAL COUPLERS, SEE SPECIAL PROVISIONS.

FINAL STAGE BARRIER COUPLER NOTES

1. INSTALL #5 "D" BARS (WITH FEMALE COUPLER END) IN DECK AT LOCATIONS SHOWN ON "CONCRETE BARRIER RAIL" SHEET.
 2. INSTALL TEMPORARY BOLT INTO COUPLER. BOLT SHALL NOT PROJECT ABOVE THE TOP OF THE DECK.
 3. BOLT HEAD SHALL BE PROTECTED TO ALLOW FOR REMOVAL AFTER CURING OF DECK. ENGINEER SHALL APPROVE METHOD.
 4. POUR AND SCREED DECK.
 5. AT FINAL STAGE, REMOVE BOLT TO INSTALL #5 "D" BAR (WITH THREADED END) FOR FINAL STAGE BARRIER.
- COST OF THE TEMPORARY BOLT AND SEALING THE BOLT ARE INCIDENTAL.



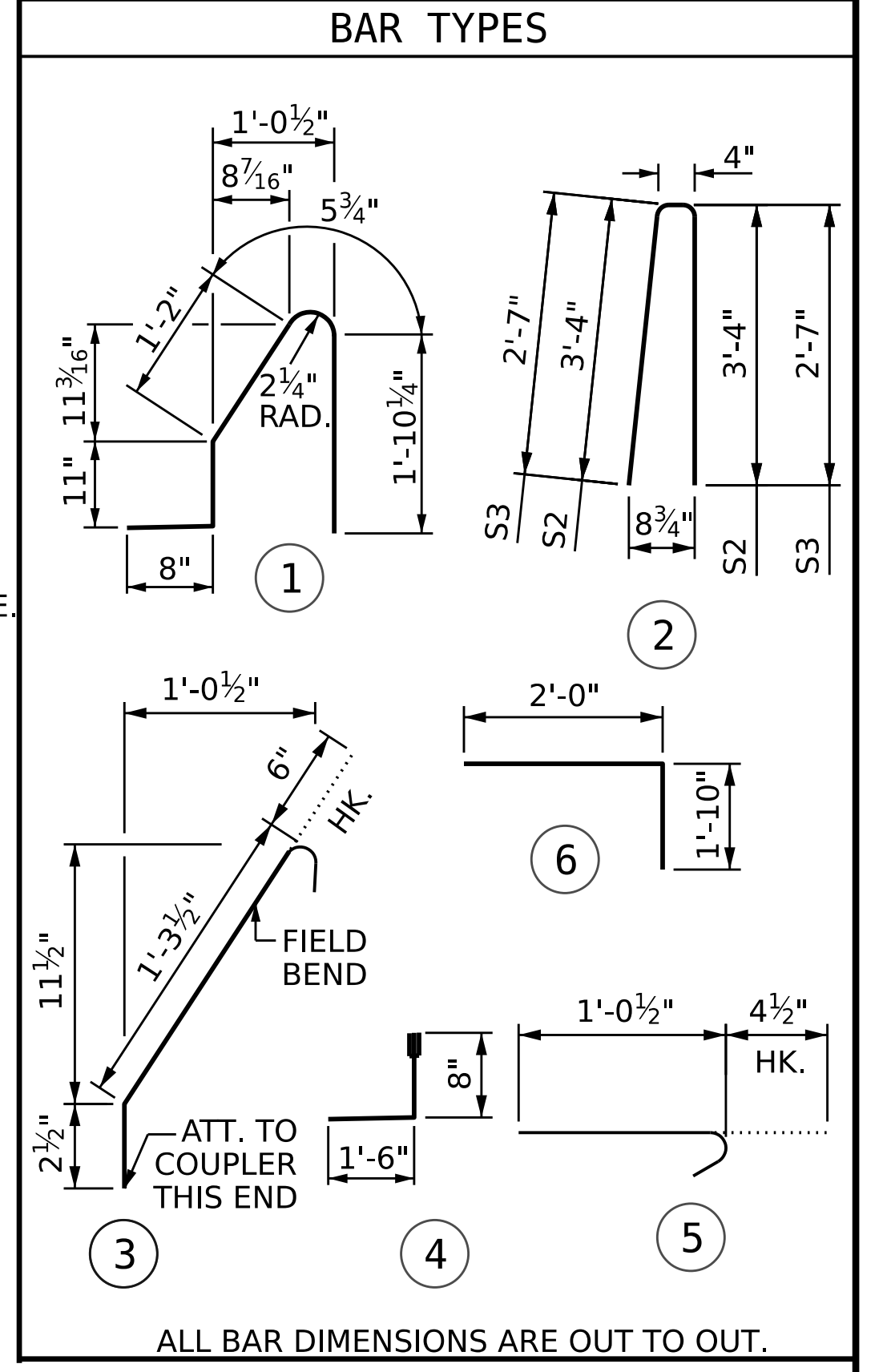
SIDE VIEW



SECTION THRU RAIL

BILL OF MATERIAL

CONCRETE BARRIER RAIL					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	44	5	STR	9'-8"	444
* S1	66	5	1	5'-1"	350
* S2	62	5	2	7'-0"	453
* S3	4	5	2	5'-6"	23
* D1	96	5	4	2'-2"	217
* D2	48	5	3	2'-0"	100
* D3	48	5	STR	3'-3"	163
* EPOXY COATED REINFORCING STEEL					1750 LBS.
CLASS AA CONCRETE					19.0 C.Y.
CONCRETE BARRIER RAIL					70.0 L.F.



PROJECT NO. B-3186 / B-5898
HAYWOOD COUNTY
 STATION: 24+70.00 -L LT-
 SHEET 4 OF 4

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DESIGNED BY: SHAL
 DATE: 04/19/23
 CHECKED BY: SHANE TUTTLE
 DATE: 10/13/2023

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

APPROACH SLAB DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S3-49
1			3			TOTAL SHEETS 50
2			4			

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