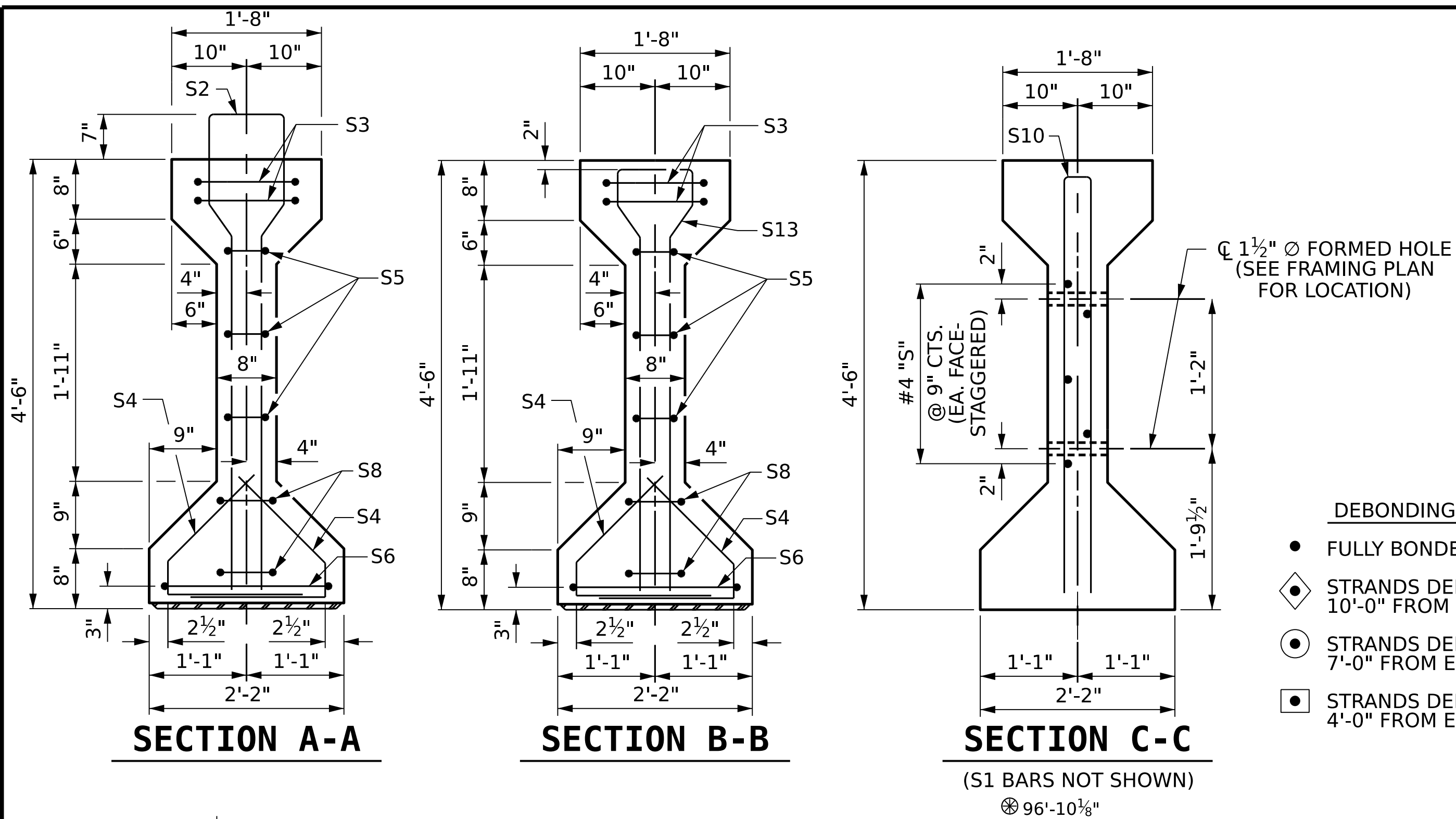
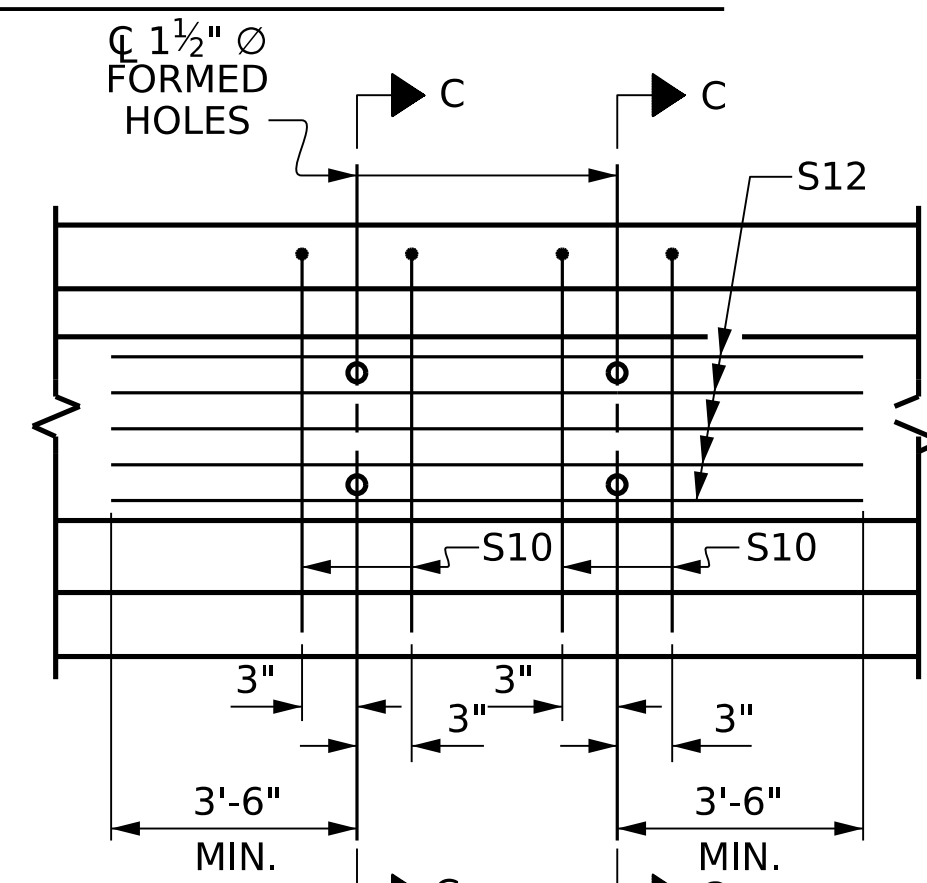
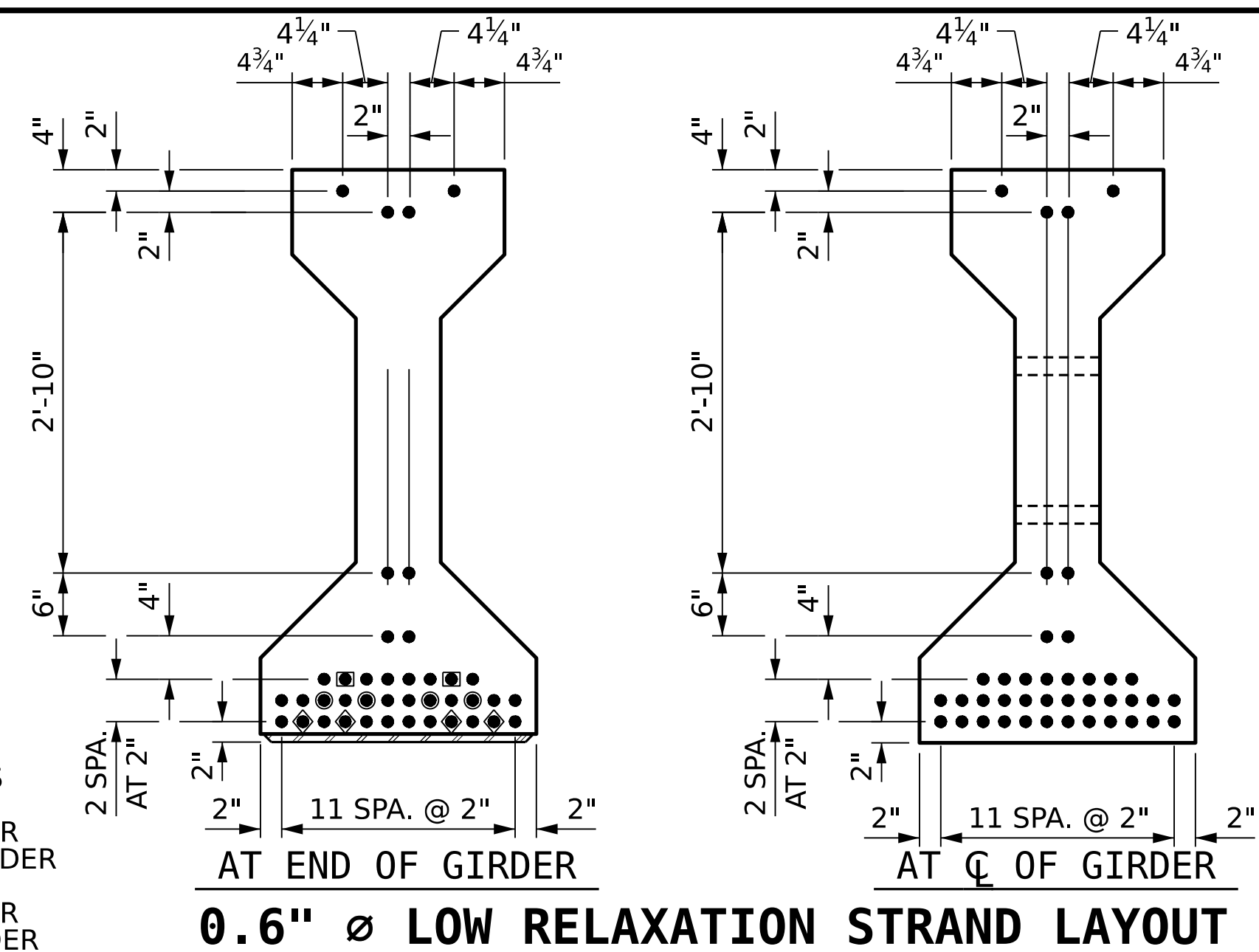
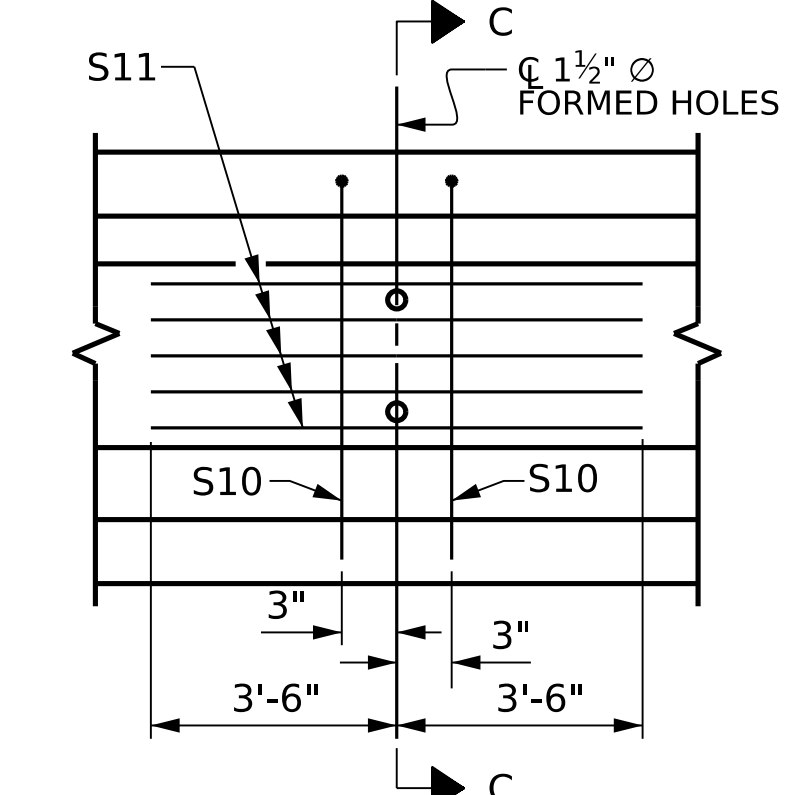




- DEBONDING LEGEND
- FULLY BONDED STRANDS
 - ◊ STRANDS DEBONDED FOR 10'-0" FROM END OF GIRDER
 - ⊙ STRANDS DEBONDED FOR 7'-0" FROM END OF GIRDER
 - ◻ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER

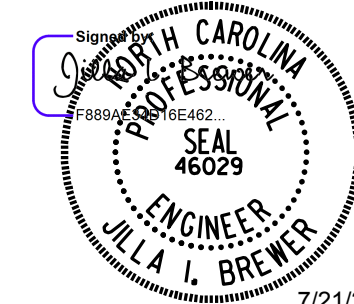


SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR GDRS. B2-B5, B8, B9

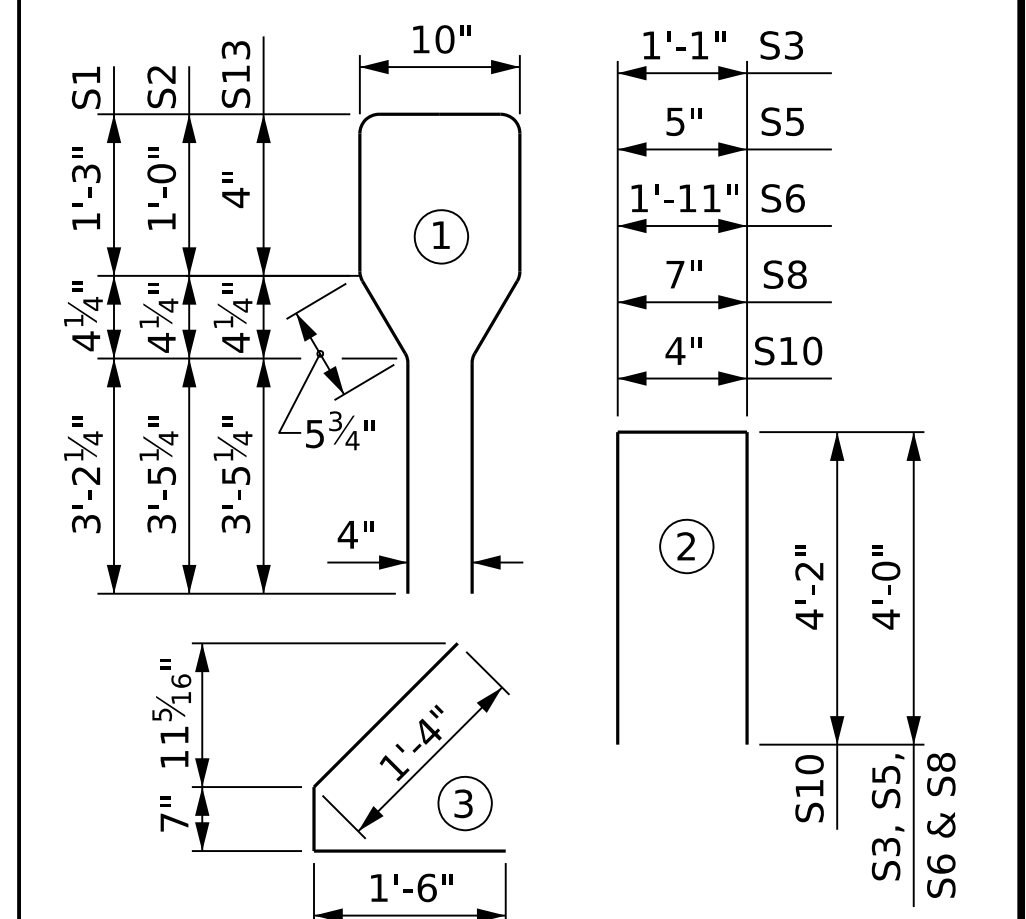


PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM
REINFORCING STEEL FOR GDRS. B1, B6, B7, B10



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	76	#4	1	10'-8"	542
S2	15	#6	1	10'-8"	240
S3	4	#4	2	9'-1"	24
S4	104	#4	3	3'-5"	237
S5	6	#4	2	8'-5"	34
S6	2	#4	2	9'-11"	13
S8	4	#4	2	8'-7"	23
S10	2	#5	2	8'-8"	18
S10	4	#5	2	8'-8"	36
S11	5	#4	STR	7'-0"	23
S12	5	#4	STR	12'-3"	41
S13	15	#6	1	9'-4"	210



ALL BAR DIMENSIONS ARE OUT-TO-OUT.

QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	8000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
GDRS. B1, B6, B7, B10	1364	19.7	40
GDRS. B2-B5, B8, B9	1400	19.7	40

GIRDERS REQUIRED		
NUMBER	LENGTH	TOTAL LENGTH
10	96.84	968.41

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
 STATION: 22+70.15 -Y2-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
AASHTO TYPE IV
PRESTRESSED CONCRETE
GIRDER - LINK SLAB
SPAN B

00	REVISIONS						SHEET NO.
	NO.	BY:	DATE:	NO.	BY:	DATE:	S06-20
	1			3			
	2			4			
							TOTAL SHEETS
						60	

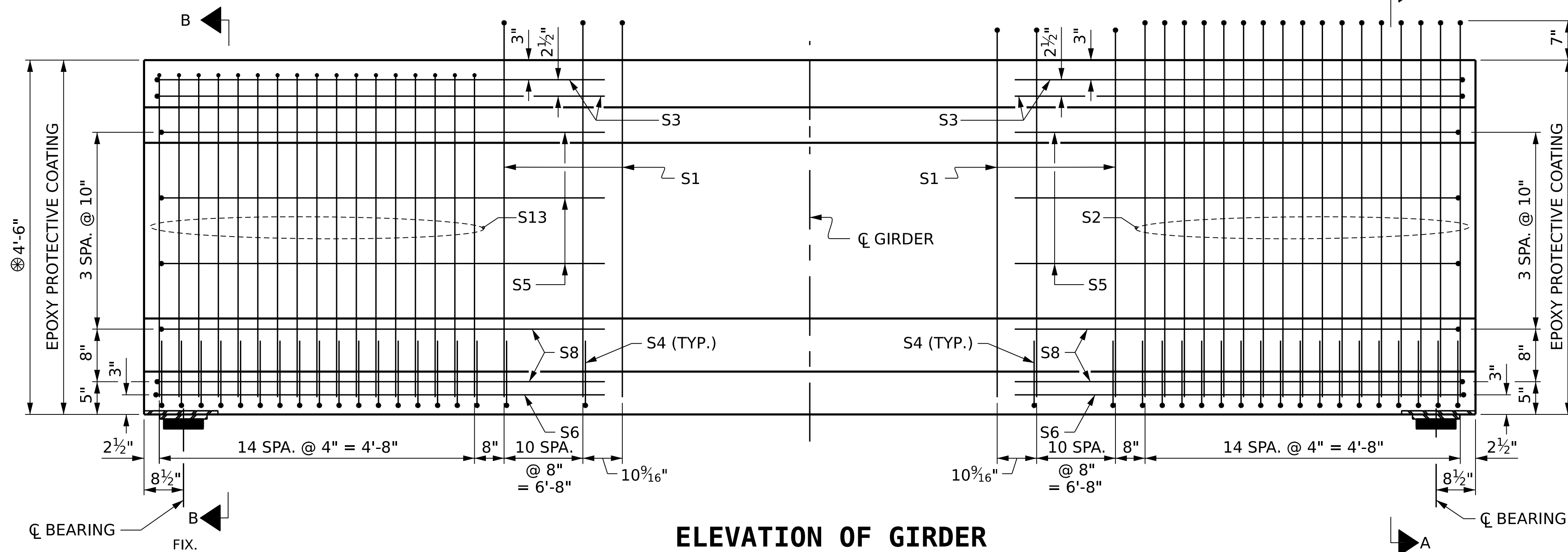
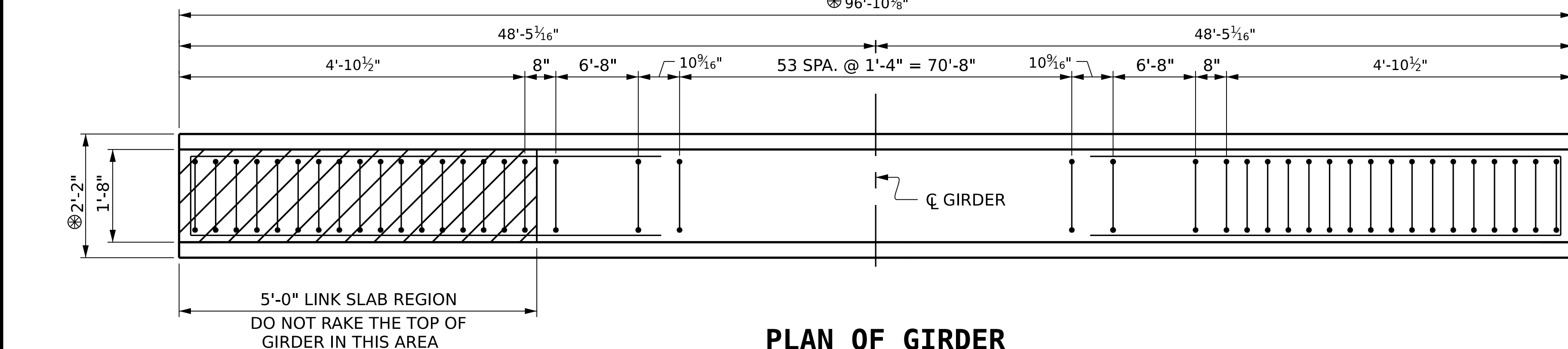
STD. NO. PCG6 (SHT. 1)



**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM # P-0671

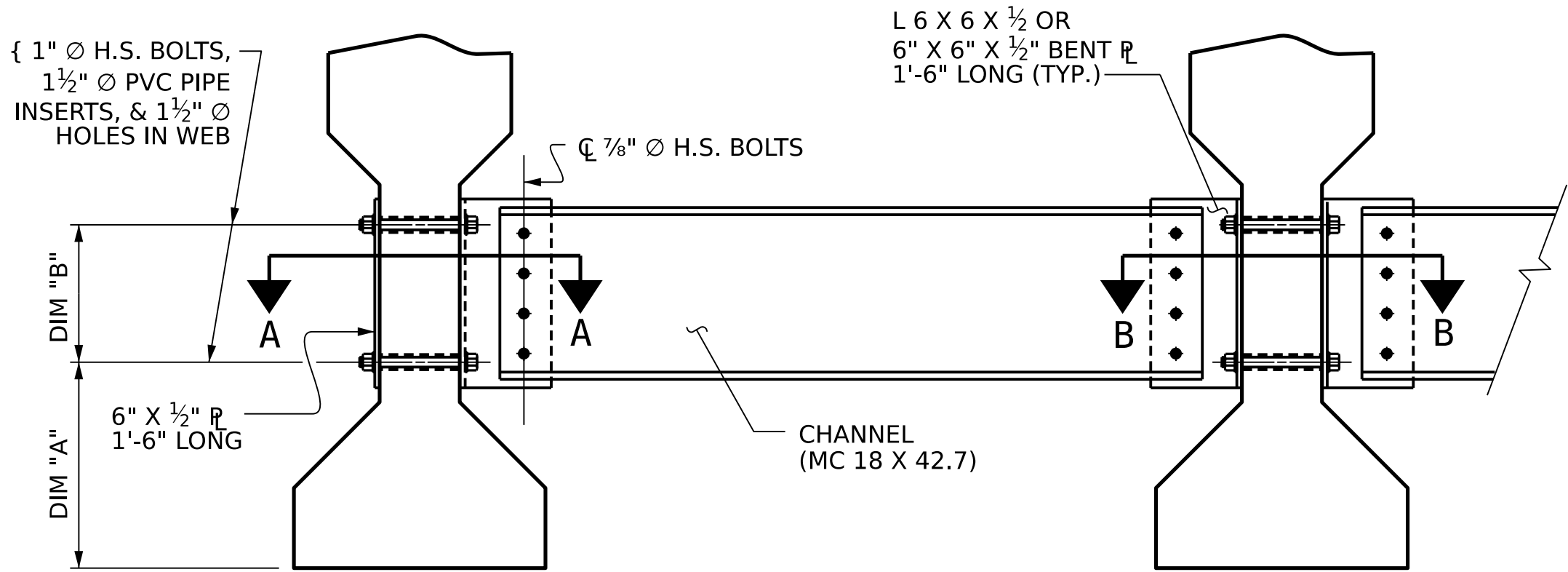


ELEVATION OF GIRDER
(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)

ASSEMBLED BY:	B.E. LANNING	DATE:	01/2024
CHECKED BY :	J.I. BREWER	DATE:	01/2024
DESIGN ENGINEER OF RECORD:	J.I. BREWER	DATE:	01/2026
DRAWN BY :	BNB 09/21		
CHECKED BY :	AAI 09/21		

7/21/2026 +
9:26:57 AM
%USERNAME\$
Filename: N:\NC Bridges\W21002_I-25\3A_I-26 (AECOM)\I-25\3A\Structures\SITE\406_039_T25\3AC_SMU_G2_S06-20_100242.dgn

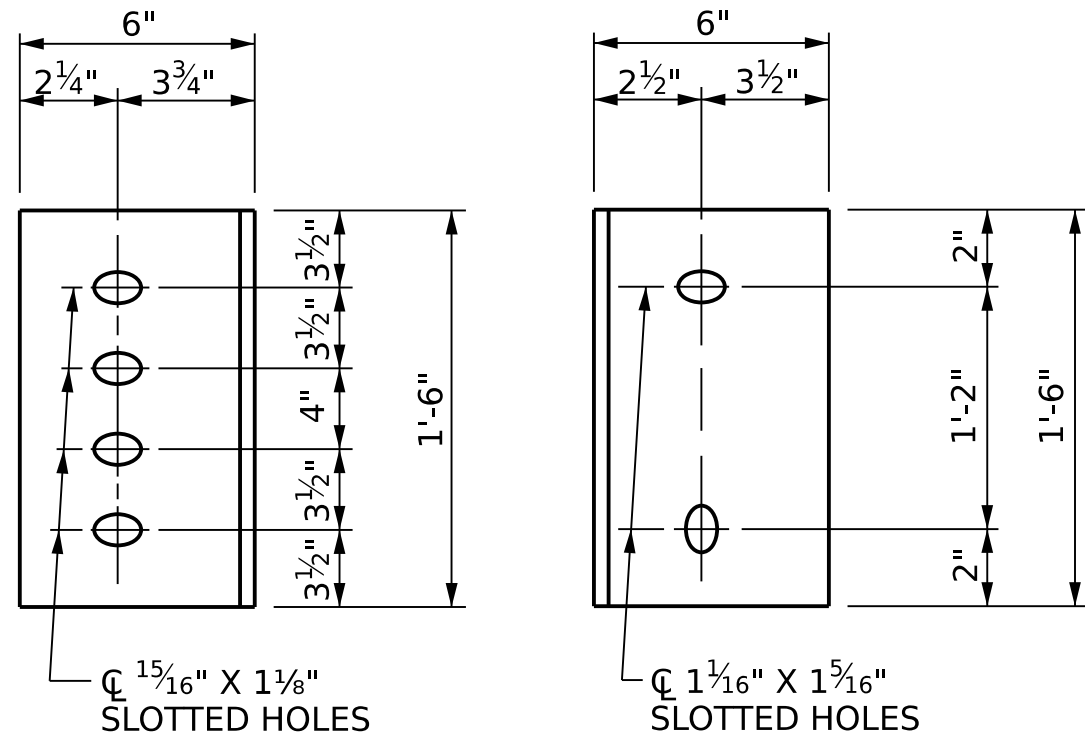
7/21/2026 8:58:45 AM User: blanning
Filename: N:\NC Bridges\W21002-I-2513A I-26 (AECOM)\I-2513AC\Structures\SITE\406.045.I2513AC.SMU.05.S06-23.100242.dgn



EXTERIOR GIRDER

INTERIOR GIRDER

PART SECTION AT INTERMEDIATE DIAPHRAGM



DIAPHRAGM FACE

WEB FACE

CONNECTOR PLATE DETAILS

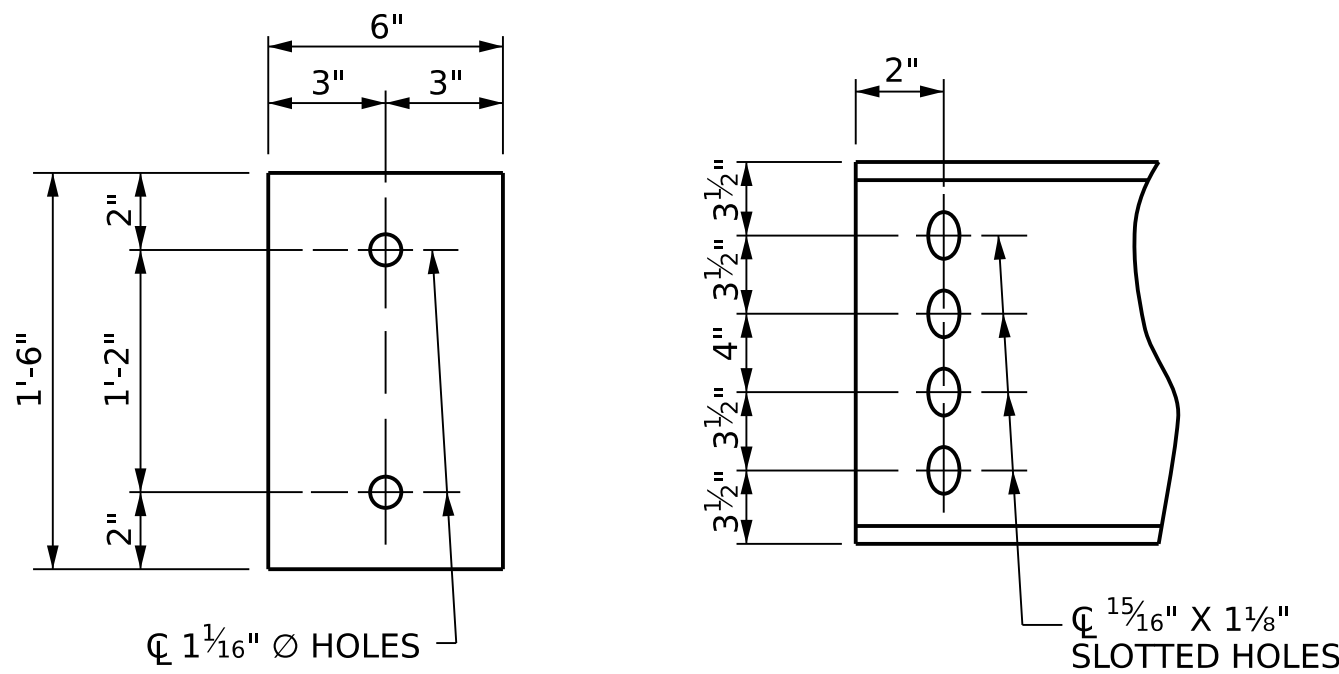
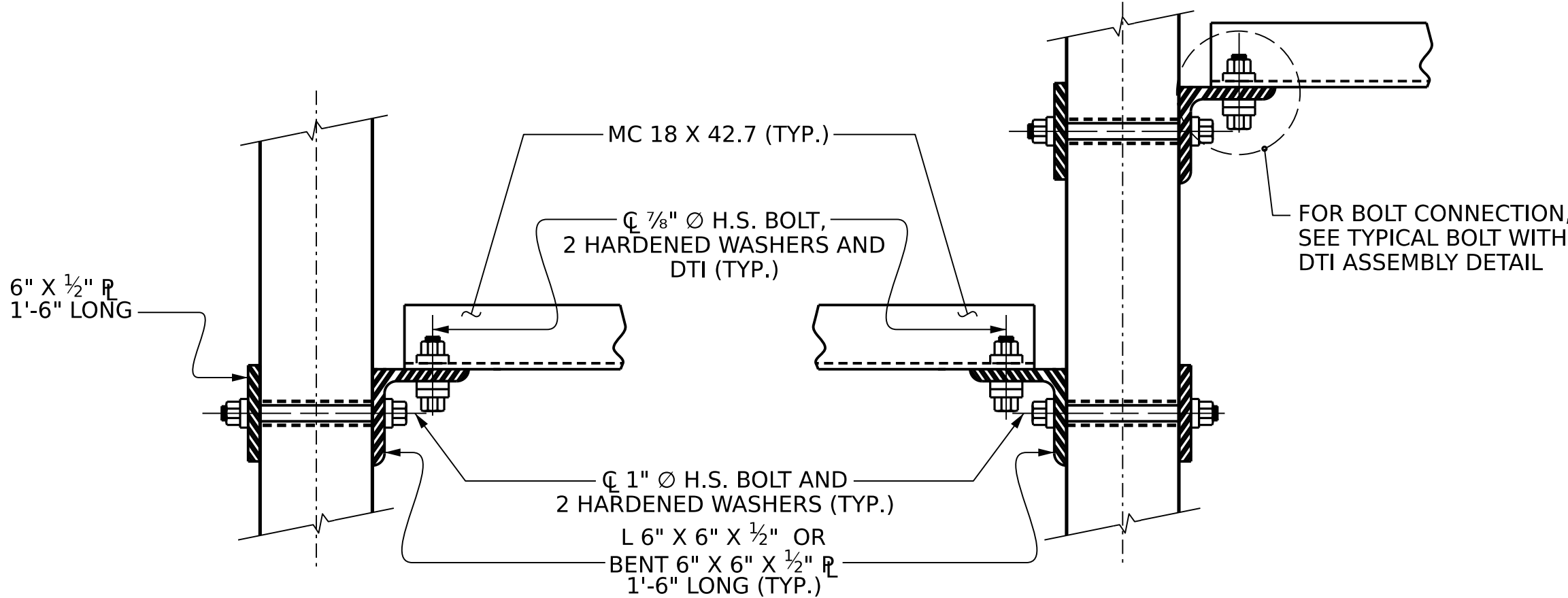


PLATE DETAILS

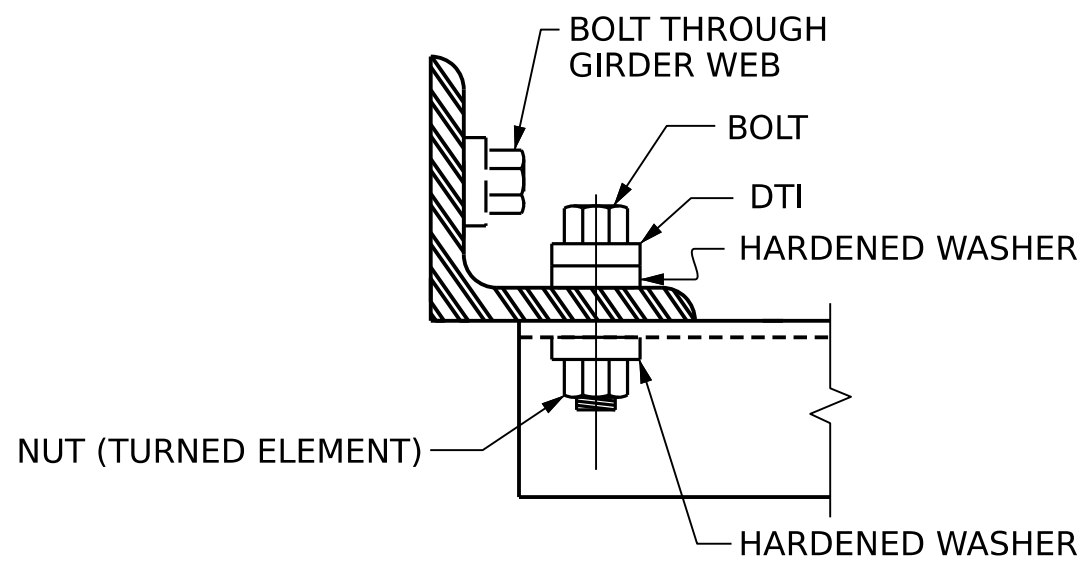
CHANNEL END



SECTION A-A

SECTION B-B

CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

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, AND ANGLES SHALL BE GALVANIZED OR 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.

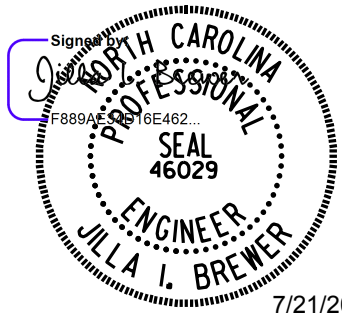
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

TABLE

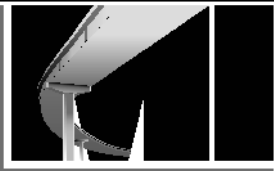
GIRDER TYPE	CHANNEL SIZE	DIM "A"	DIM "B"	DIM "L"
IV	MC 18 x 42.7	1'-9 1/2"	1'-2"	1'-6"

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-

SHEET 5 OF 5



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
INTERMEDIATE STEEL
DIAPHRAGMS FOR TYPE IV
PRESTRESSED
CONCRETE GIRDERS

REVISIONS						SHEET NO. S06-23
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 60
2			4			

NOTES

AT ALL FIXED POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS ARE TO BE TIGHTENED FINGER TIGHT AND THEN BACKED OFF ½ TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

THE 2" Ø PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

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, WASHERS, AND PIPE SLEEVE SHALL BE INCLUDED IN THE PAY ITEM FOR PRESTRESSED CONCRETE GIRDERS.

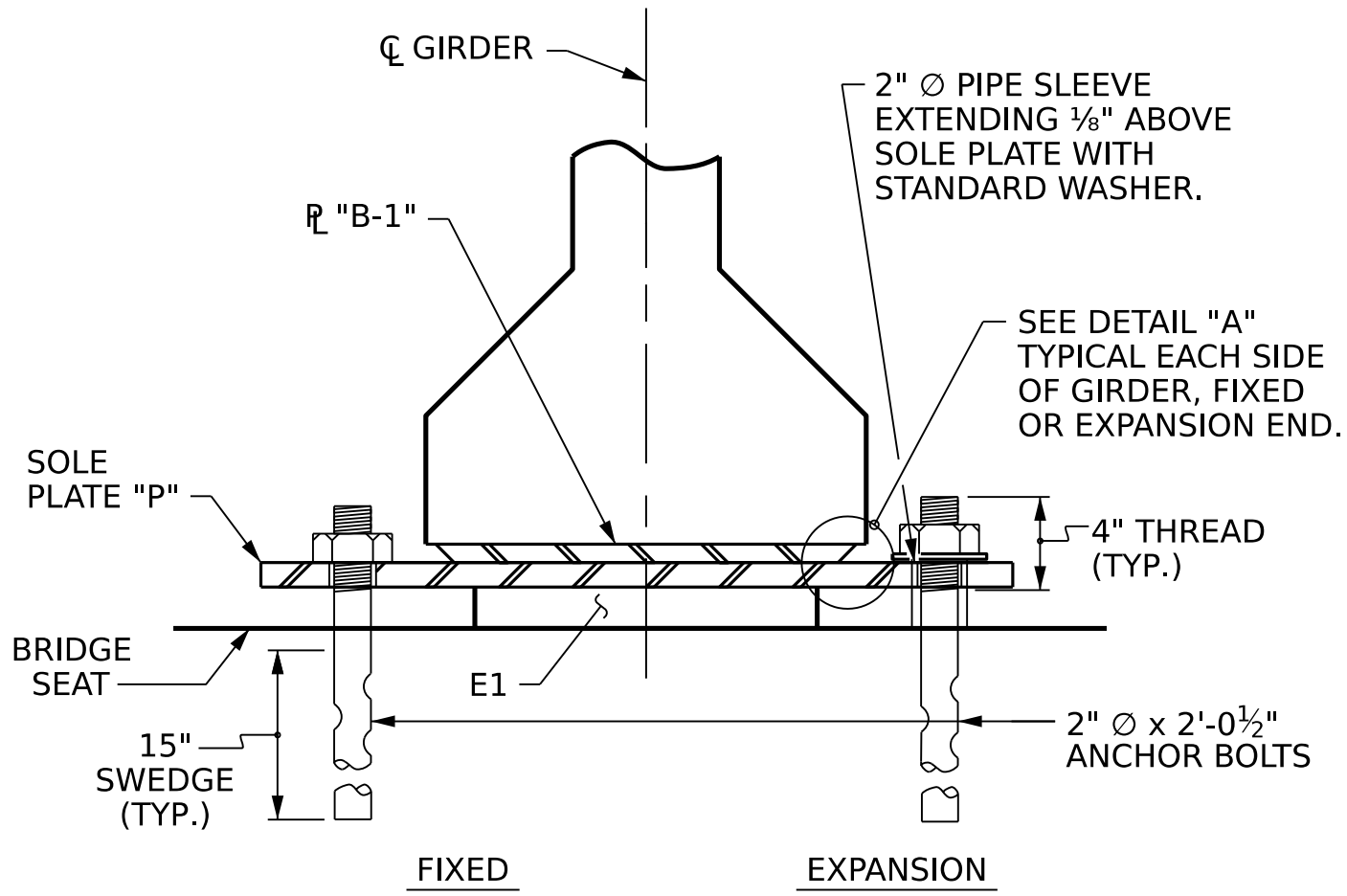
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

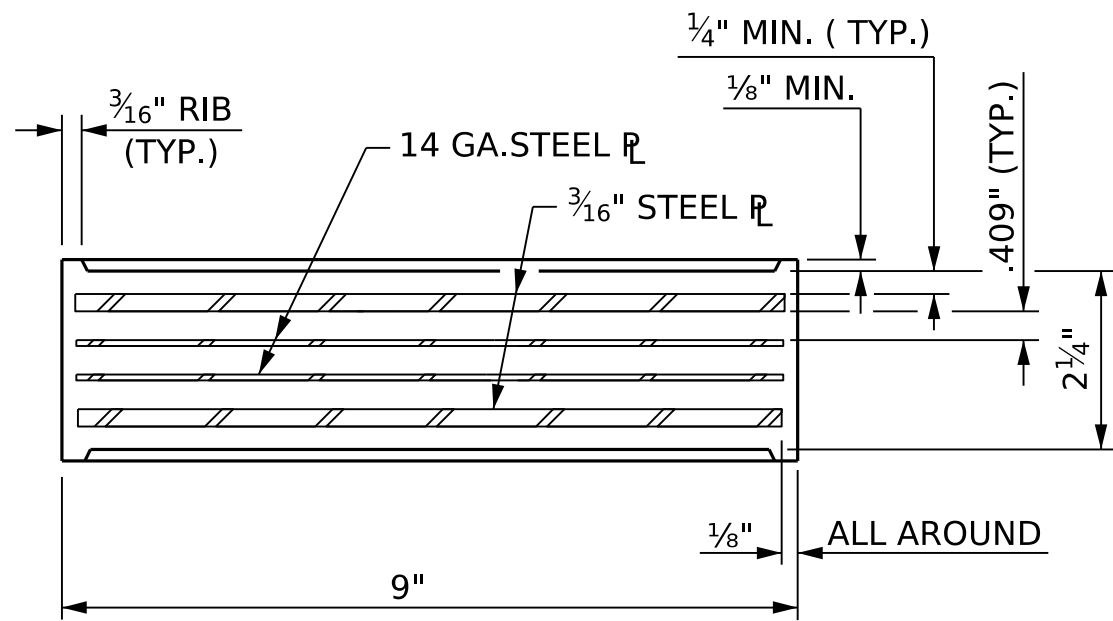
THE ELASTOMER IN THE STEEL REINFORCED BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.160 KSI, IN ACCORDANCE WITH AASHTO M251.

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE STANDARD SPECIFICATIONS.

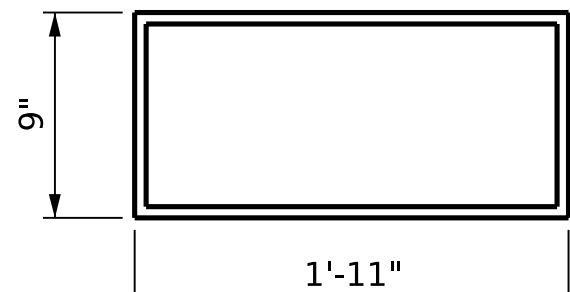
ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.



SECTION E-E

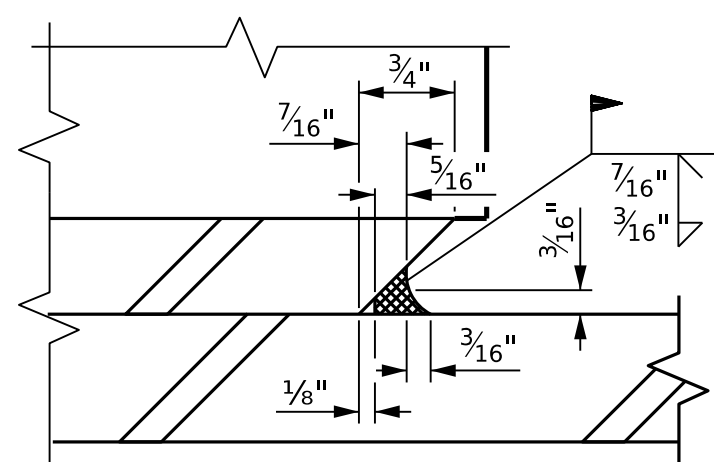


TYPICAL SECTION OF ELASTOMERIC BEARINGS

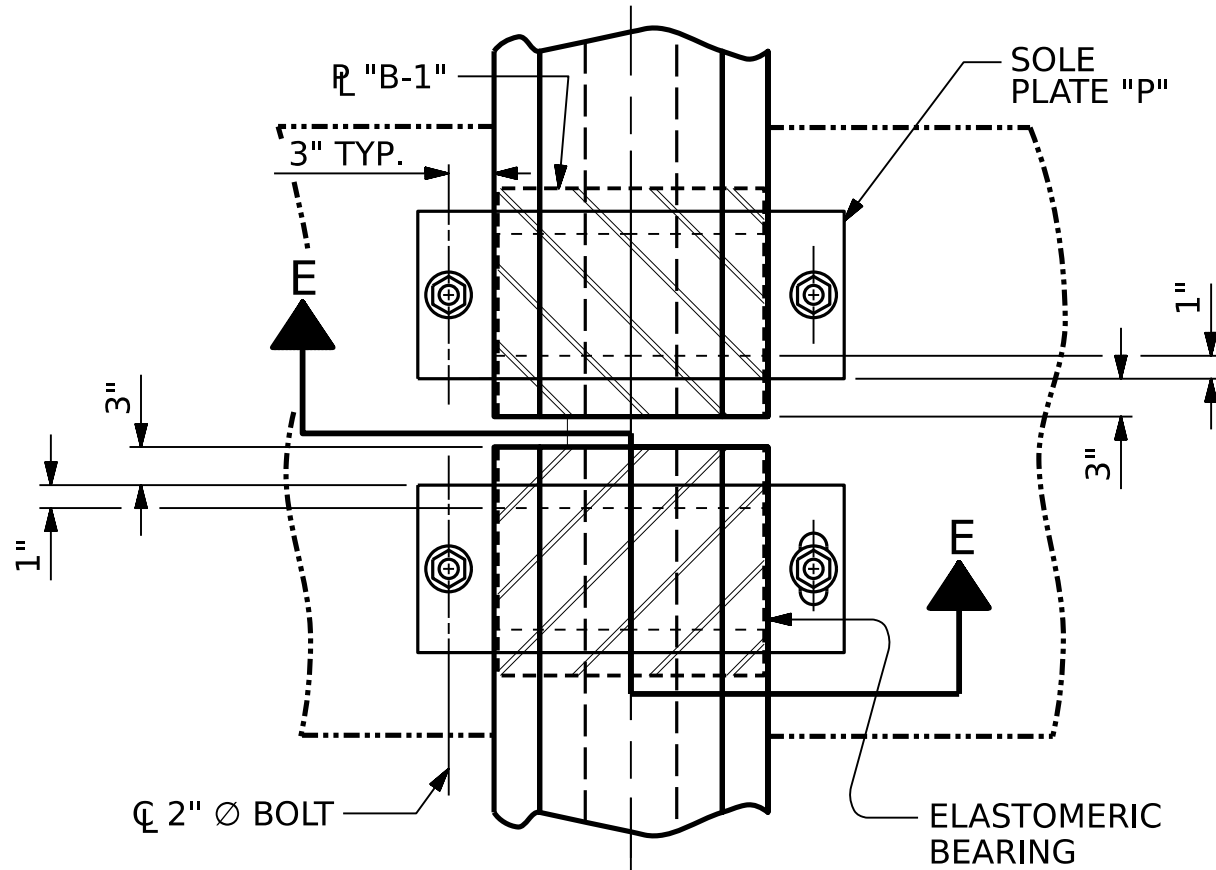


PLAN VIEW OF ELASTOMERIC BEARING

TYPE V

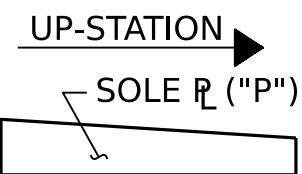


DETAIL "A"



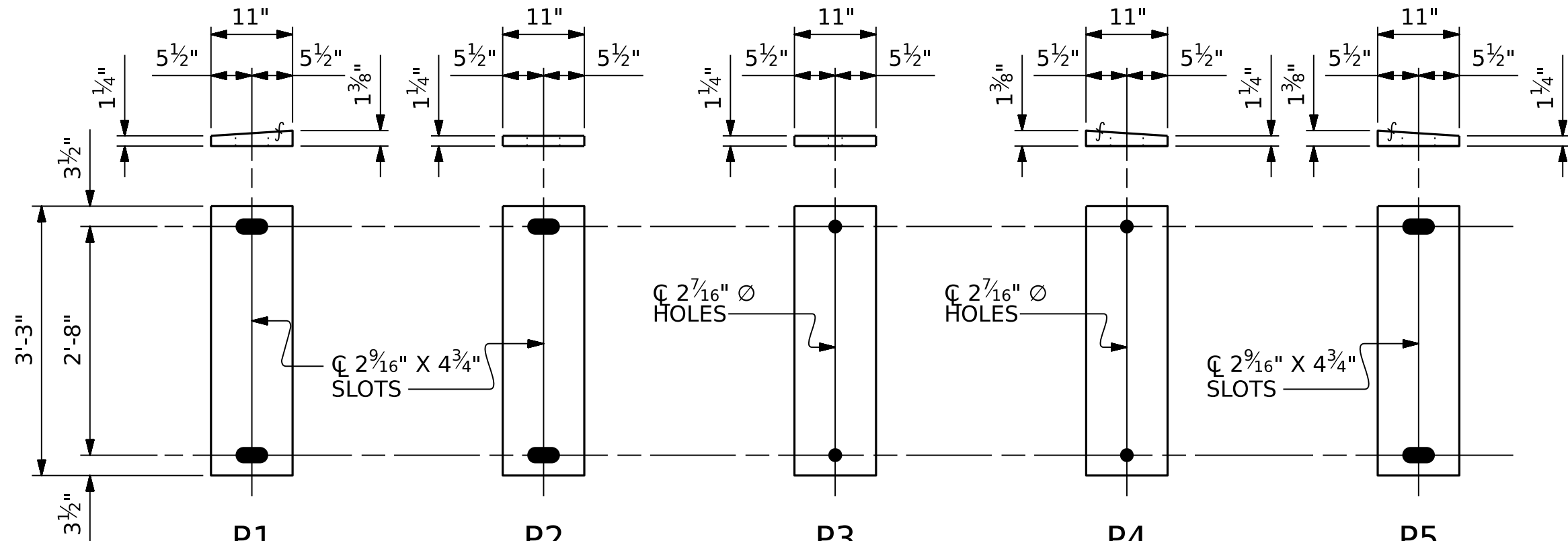
TYPICAL HALF-PLAN (SHOWING FIXED BENT)

TYPICAL HALF-PLAN (SHOWING EXPANSION BENT)



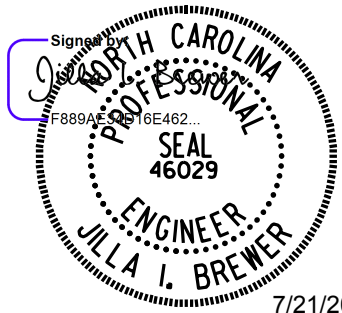
SOLE PLACEMENT DETAIL

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



SOLE PLATE DETAILS ("P")

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-



**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD ELASTOMERIC BEARING DETAILS PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 60

ASSEMBLED BY:	B.E. LANNING	DATE:	01/2024
CHECKED BY:	J.J. BREWER	DATE:	01/2024
DESIGN ENGINEER OF RECORD:	J.J. BREWER	DATE:	01/2026
DRAWN BY:	W.J.H. 8/89	REV. 12/17	MAA/THC
CHECKED BY:	CRK 8/89	REV. 10/21	BNB/AAI
		REV. 10/23	BNB/SNM



(RIGHT SIDE END BENT 1 SHOWN, RIGHT SIDE END BENT 2 SIMILAR)



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

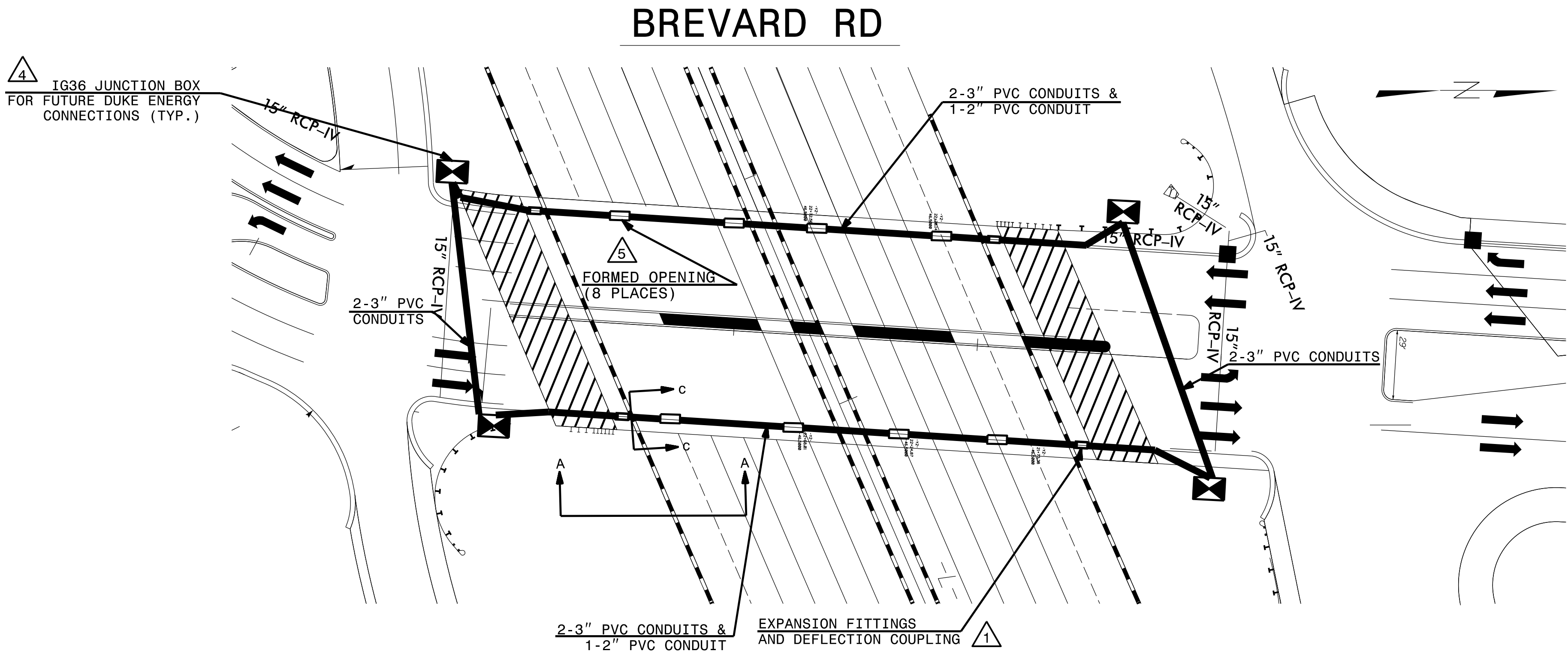
PARAPET DETAILS

DRAWN BY :	<u>B.E. LANNING</u>	DATE :	<u>10/2023</u>
CHECKED BY :	<u>J.I. BREWER</u>	DATE :	<u>11/2023</u>
DESIGN ENGINEER OF RECORD :	<u>J.I. BREWER</u>	DATE :	<u>01/2026</u>

USE FOR LIGHTING CONSTRUCTION ONLY

NOTES

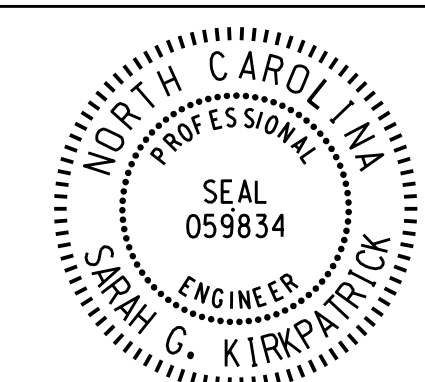
- 1 PROVIDE EXPANSION FITTINGS AT ALL BRIDGE EXPANSION JOINTS AND WHERE APPROACH SLAB MEETS INTEGRAL END BENT. BARREL OF THE EXPANSION COUPLING SHALL BE FULLY EMBEDDED IN CONCRETE. ONE HALF OF THE LENGTH OF THE DEFLECTION FITTING SHALL BE EMBEDDED IN CONCRETE.
- 2 COORDINATE ELECTRICAL CONNECTION WORK WITH DUKE ENERGY.
- 3 SEE SHEET S06-25 FOR LOCATION OF LIGHT SUPPORTS. (8 PLACES)
- 4 JUNCTION BOXES ARE POLYMER CONCRETE, SIZED 36" L X 24" W X 18" H. SEE ARTICLE 1411 OF THE STANDARD SPECIFICATIONS.
- 5 SEE SHEET S06-29 FOR FORMED OPENING INSTALLATION SPECIFICATIONS.
- 6 NCDOT LIGHT POLES NOT SHOWN ON THIS SHEET.



PROJECT NO. I-2513 AC
BUNCOMBE COUNTY

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
ELECTRICAL CONDUIT SYSTEM
BRIDGES ON BREVARD RD (NC 191),
ASHEVILLE

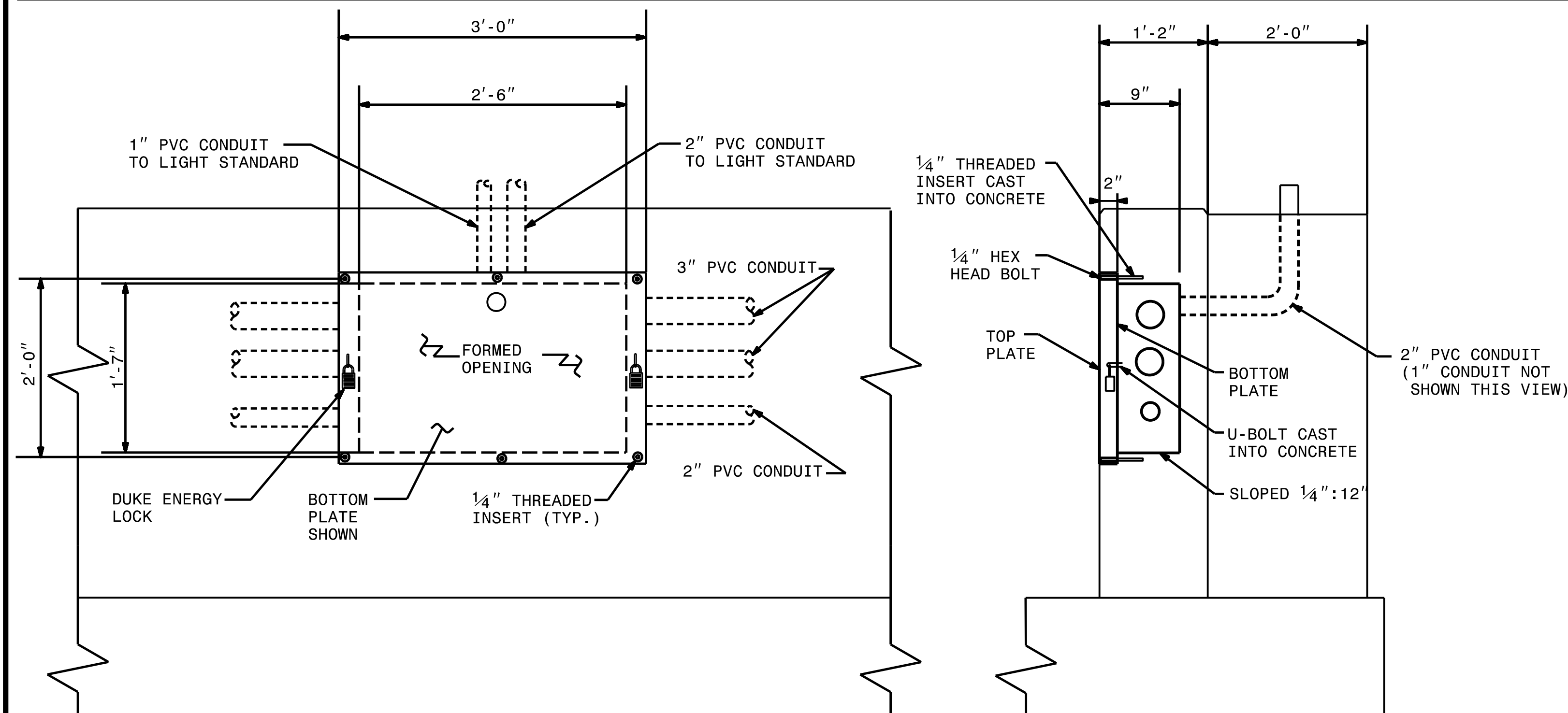
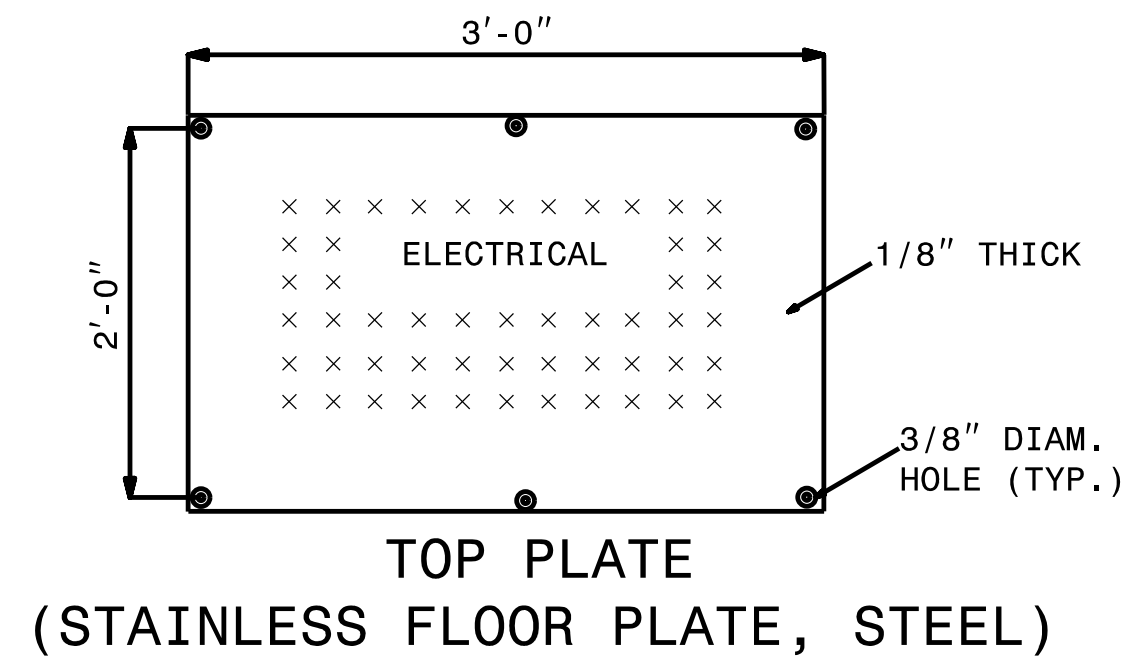
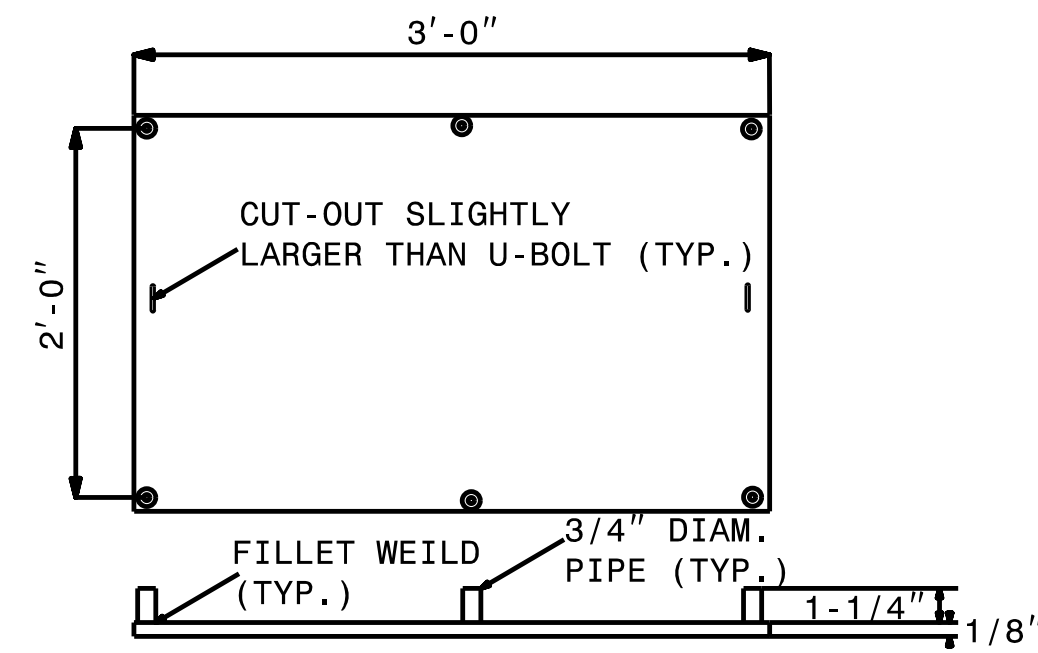


DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

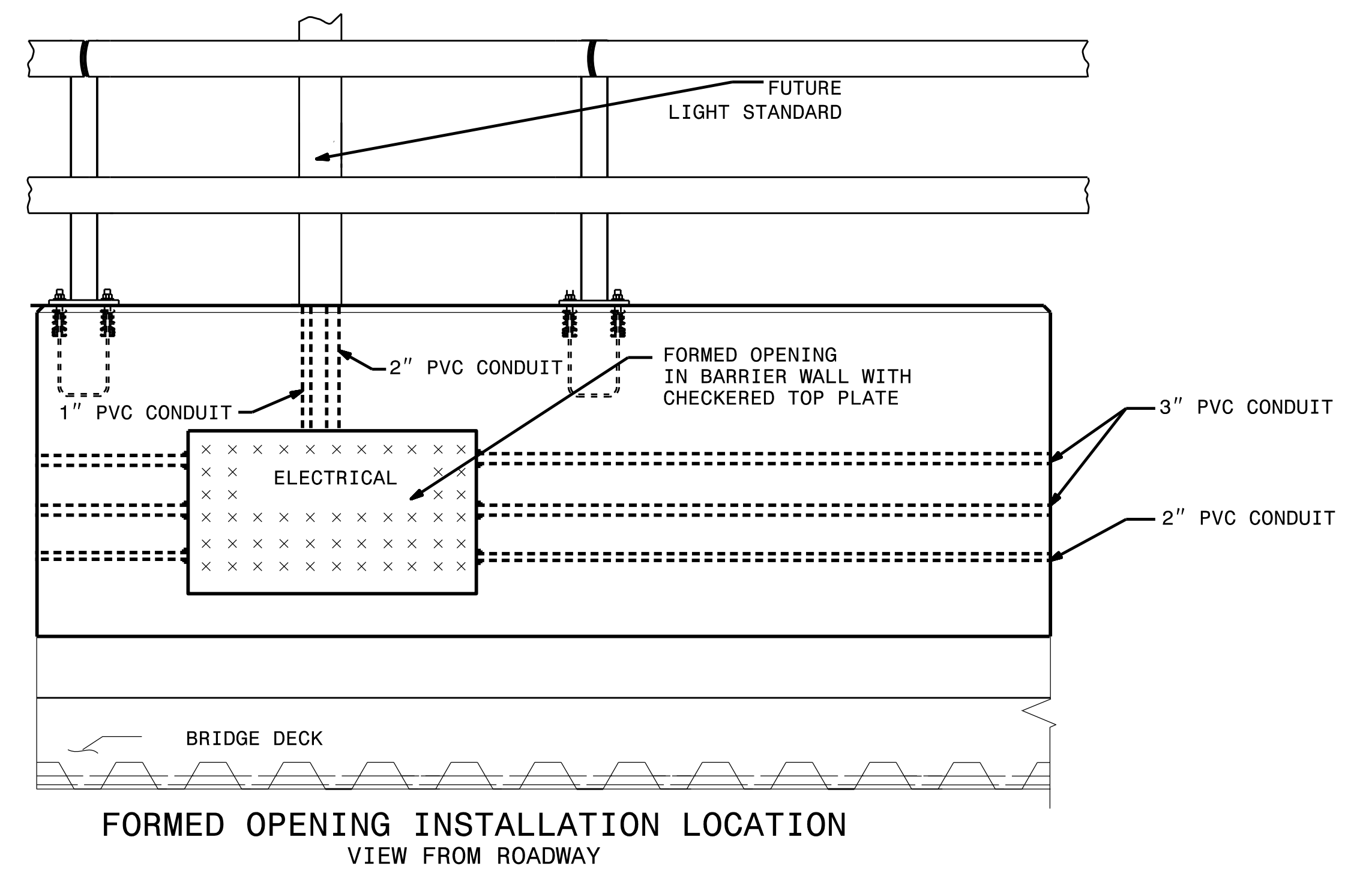
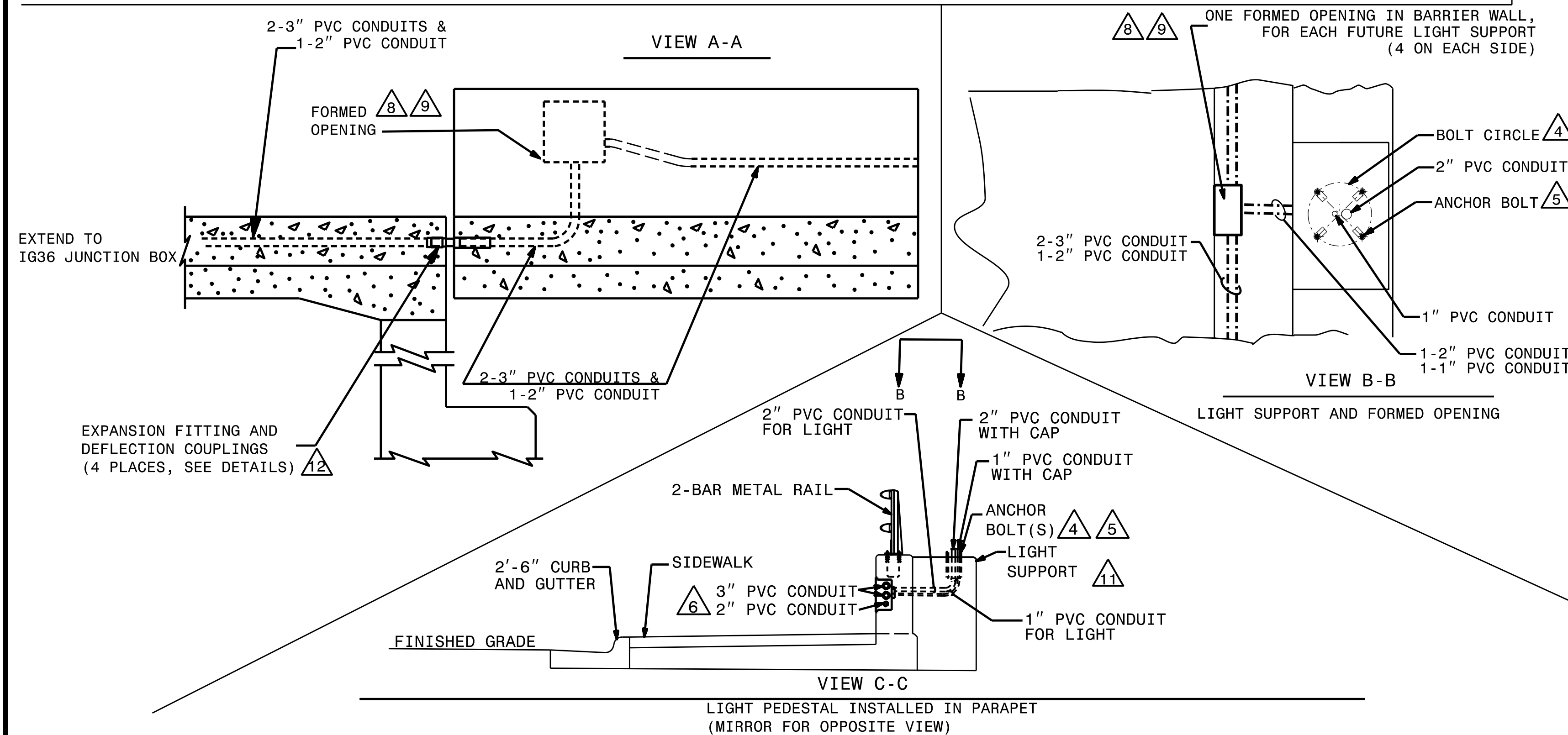
DocuSigned by:
Sarah G. Kirkpatrick
08/12/2026

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S06-28
2			4			SHEETS 60

BOTTOM PLATE (STAINLESS STEEL) USE FOR LIGHTING CONSTRUCTION ONLY



FORMED OPENING INSTALLATION DETAILS



△ NOTES

- 1 NCDOT LIGHT POLES NOT SHOWN ON THIS SHEET.
- 2 COORDINATE ELECTRICAL CONNECTION WORK WITH DUKE ENERGY.
- 3 SEE SHEET S06-25 FOR LOCATION OF LIGHT SUPPORTS. (8 PLACES)
- 4 INSTALL ANCHOR BOLTS ACCORDING TO BOLT TEMPLATE AS PROVIDED BY DUKE ENERGY.
- 5 ANCHOR BOLTS SHALL BE SUPPLIED BY DUKE ENERGY.
UNLESS OTHERWISE NOTED, CONDUIT FOR LIGHTING CIRCUITRY INSTALLED IN THE BARRIER RAIL SHALL CONSIST OF 2-3" PVC CONDUITS AND 1-2" PVC CONDUIT.
- 6 SHOWN FOR INFORMATION ONLY. 8 LIGHT POLES TO BE INSTALLED BY DUKE ENERGY. NOT PART OF THIS CONTRACT.
- 7 FORMED OPENING, SIZED 30"W X 19"H X 9"D.
- 8 2-BAR METAL RAIL NOT SHOWN.
- 9 GUARDRAIL NOT SHOWN. POSITION FORMED OPENING AND CONDUIT TO AVOID GUARDRAIL ATTACHMENT POINTS. SEE SHEET E-12 FOR FORMED OPENING PLACEMENT, RELATIVE TO GUARDRAIL ATTACHMENT POINTS.
- 10 REFER TO STRUCTURE PLANS FOR LIGHT SUPPORT DETAILS.
- 11 SEE SHEET E-12 FOR EXPANSION-COUPLING DETAILS.
- 12

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
ELECTRICAL CONDUIT SYSTEM
BRIDGES ON BREVARD RD (NC 191),
ASHEVILLE

REVISIONS						SHEET NO. S06-29
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			SHEETS 60
2			4			

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



DocuSigned by:
Sarah G. Kirpatrick 08/12/22

SYTIME\$\$\$\$\$
DGN\$\$\$\$\$
USERNAME\$\$\$\$\$

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST SEE STANDARD NO. BMR2.



—ANCHOR ASSEMBLY

CONST.JT.
(LEVEL)

Technical drawing of the front view of a rectangular plate. The overall dimensions are 6 ¹³/₁₆" in width and 7 ¹/₂" in height. The plate features four vertical slots and four circular holes. The holes are arranged in two vertical columns, with two holes per column. The horizontal distance from the left edge to the first hole in the left column is 1 ⁵/₁₆". The horizontal distance between the two columns of holes is 4 ⁵/₈". The vertical distance from the bottom edge to the first hole in the left column is 5 ¹/₂". The vertical distance between the two rows of holes is 1". The diameter of the holes is 7/8" $\varnothing$. A note indicates: "DRILL & COUNTER BORE FOR 3/8" $\varnothing$ [16 THREAD] CAP SCREW".

PLAN



NOTE : BASE CAN BE SUPPLIED
AS ONE EXTRUSION OR TWO
EXTRUSIONS WELDED TOGETHER
AS SHOWN.

PERMITTED WELD

POST BASE DETAILS



MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

ALUMINUM FOR POSTS, BASES, RAILS, EXPANSION BARS CLAMP BARS, CAPS WASHERS, RIVETS AND SHIMS SHALL BE ANODIZED TO MATCH WITH AMS-STD-595 COLOR 20095.

AFTER ERECTION OF THE ANODIZED ALUMINUM RAILING, ALL EXPOSED ANCHOR BOLTS, NUTS, WASHERS, MACHINE SCREWS, CAP SCREWS, BOLTS AND BUILT UP ANGLES SHALL BE COATED WITH TWO COATS OF EXTERIOR ACRYLIC LATEX PAINT THAT MATCHES THE COLOR OF THE ANODIZED ALUMINUM.

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR4

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

GROOVED CONTRACTION JOINTS $\frac{1}{4}$ " IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

THE COST OF ANODIZING THE ALUMINUM RAIL AND PAINTING SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE TWO BAR METAL RAIL AND NOT PAID FOR DIRECTLY.

FOR ANODIZED TWO BAR METAL RAIL, SEE SPECIAL PROVISION.

PAY LENGTH	
STAGE I (BRIDGE)	187.22 LIN. FT.
STAGE II (BRIDGE)	187.22 LIN. FT.
TOTAL PAY LENGTH	374.44 LIN. FT.

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
 STATION: 22+70.15 -Y2-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
2 BAR METAL RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S06-30
1			3			TOTAL SHEETS 60
2			4			

STD. NO. BMR3 (SHT 1)

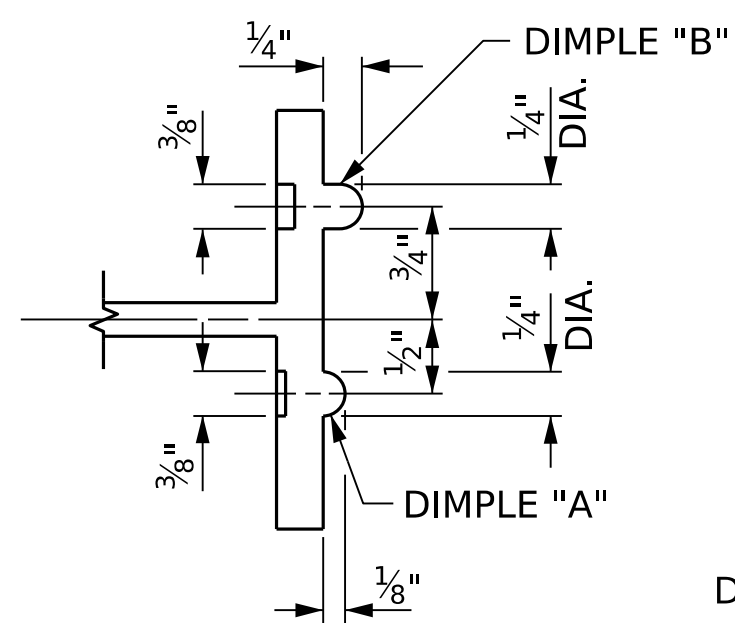
7/21/2026
8:59:28 AM
User: blanning
+
Filename: N:\NC Bridges\W21002.I-25I3A.I-26 (AECON)\I-25I3AC\Structures\SITE6\406_059_I25I3AC_SMU.BMWI.S06-30.100242.dgn

ASSEMBLED BY:	B.E. LANNING	DATE:	01/2024
CHECKED BY :	J.I. BREWER	DATE:	01/2024
DESIGN ENGINEER OF RECORD:	J.I. BREWER	DATE:	01/2026
DRAWN BY :	EEM 6/94	REV. 6/13	MAA/GM
CHECKED BY :	RGW 6/94	REV. 12/17	MAA/THC
		REV. 10/23	BNB/SNM

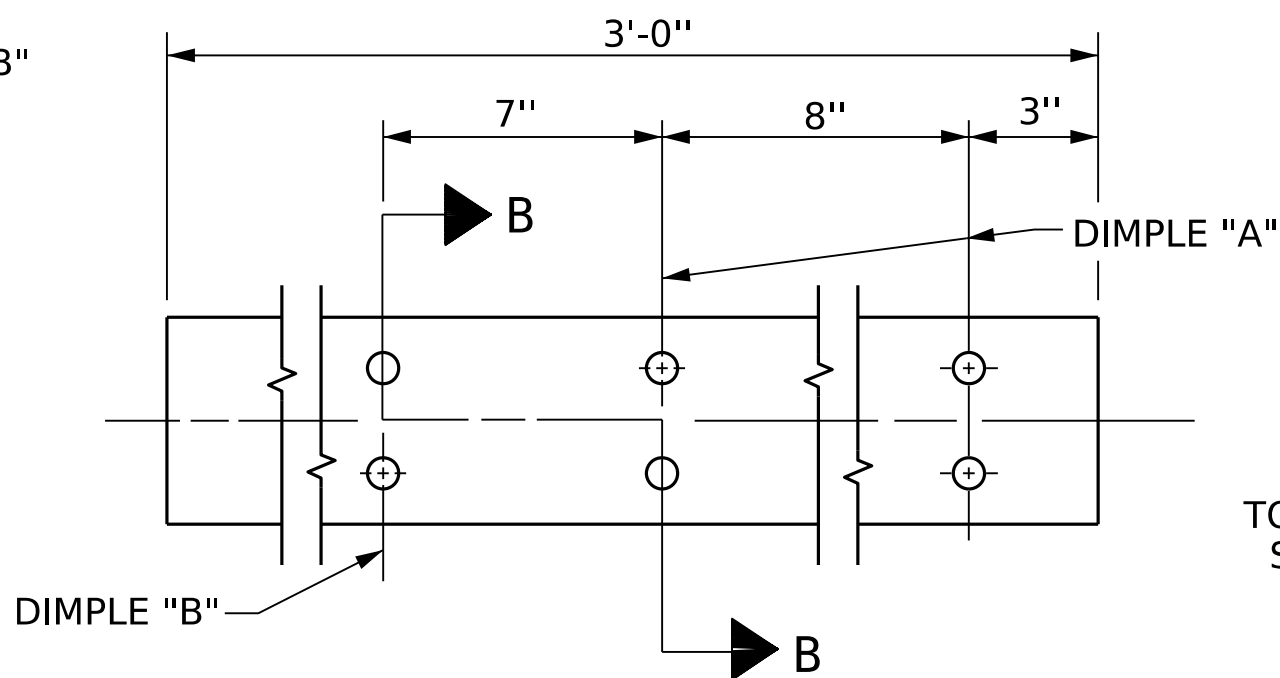
7/21/2026
8:59:41 AM

User: blanning

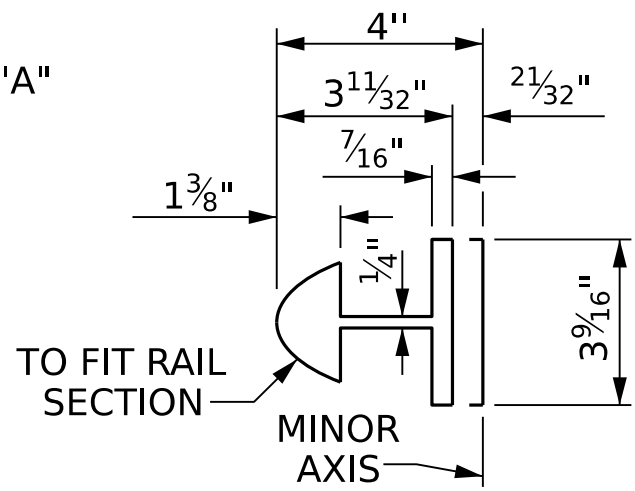
Filename: N:\NC Bridges\W21002-I-2513A I-26 (AECOM)\I-2513AC\Structures\SITE\406.061.12513AC.SMU.BMR2_S06-31.100242.dgn



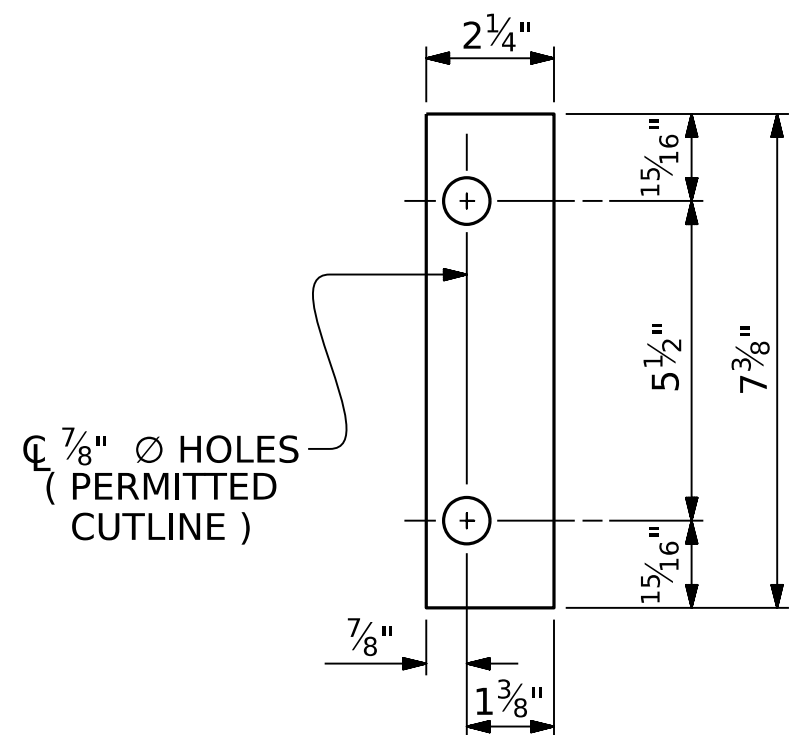
SECTION B-B



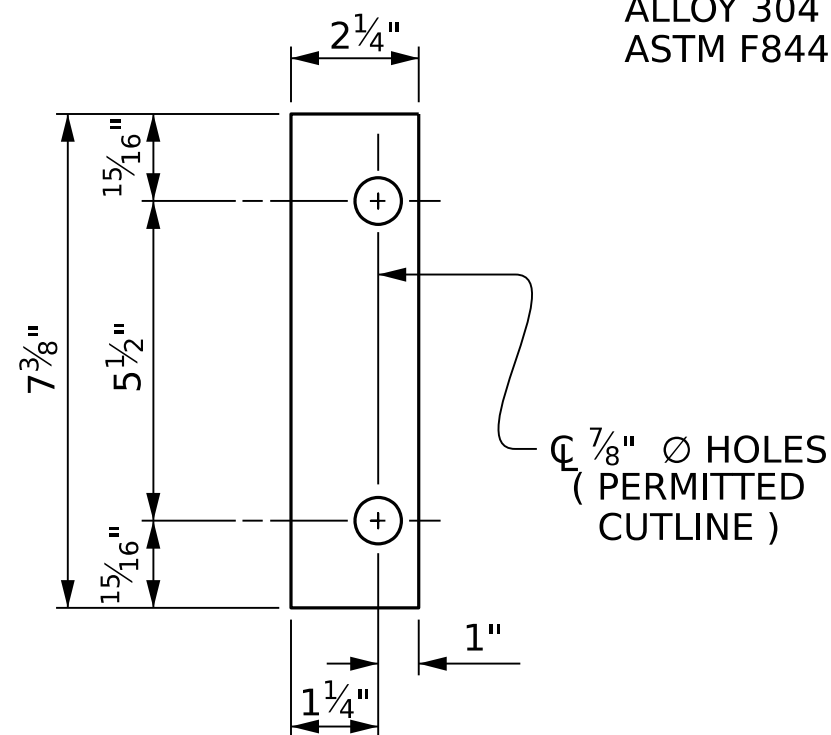
EXPANSION BAR DETAILS



BAR SECTION



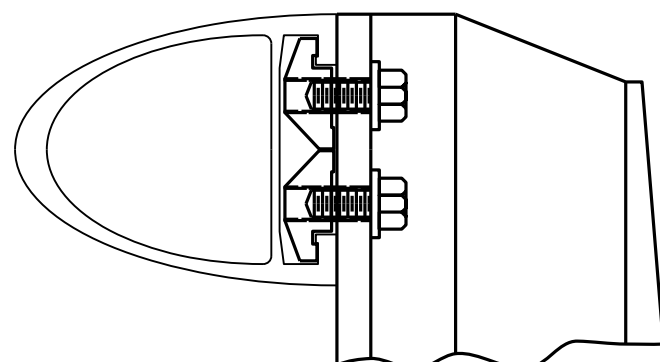
FRONT PLATE



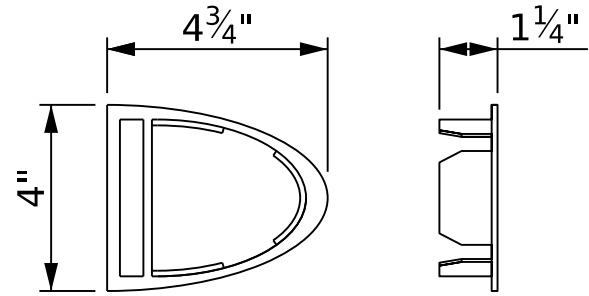
REAR PLATE

SHIM DETAILS

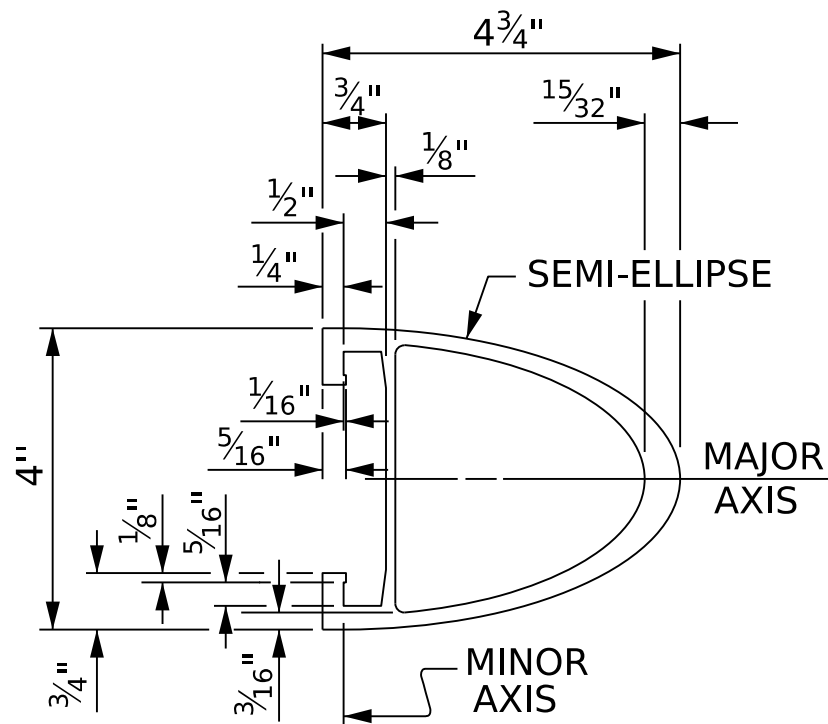
NOTE :
SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR
SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



CLAMP ASSEMBLY



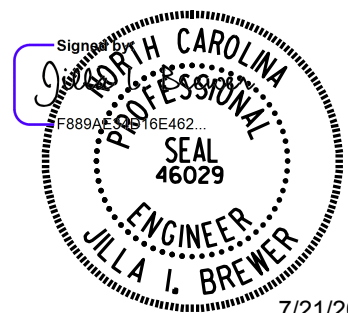
RAIL CAP



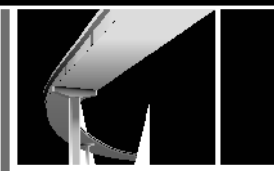
RAIL SECTION

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-

SHEET 2 OF 3



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
2 BAR METAL RAIL

REVISIONS						SHEET NO. S06-31
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 60
2			4			

STD. NO. BMR4

NOTES

STRUCTURAL CONCRETE ANCHOR ASSEMBLY

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :

- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- 4 - 3/4" ϕ x 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" ϕ x 2 1/2" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" ϕ WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF ASTM A123.
- THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

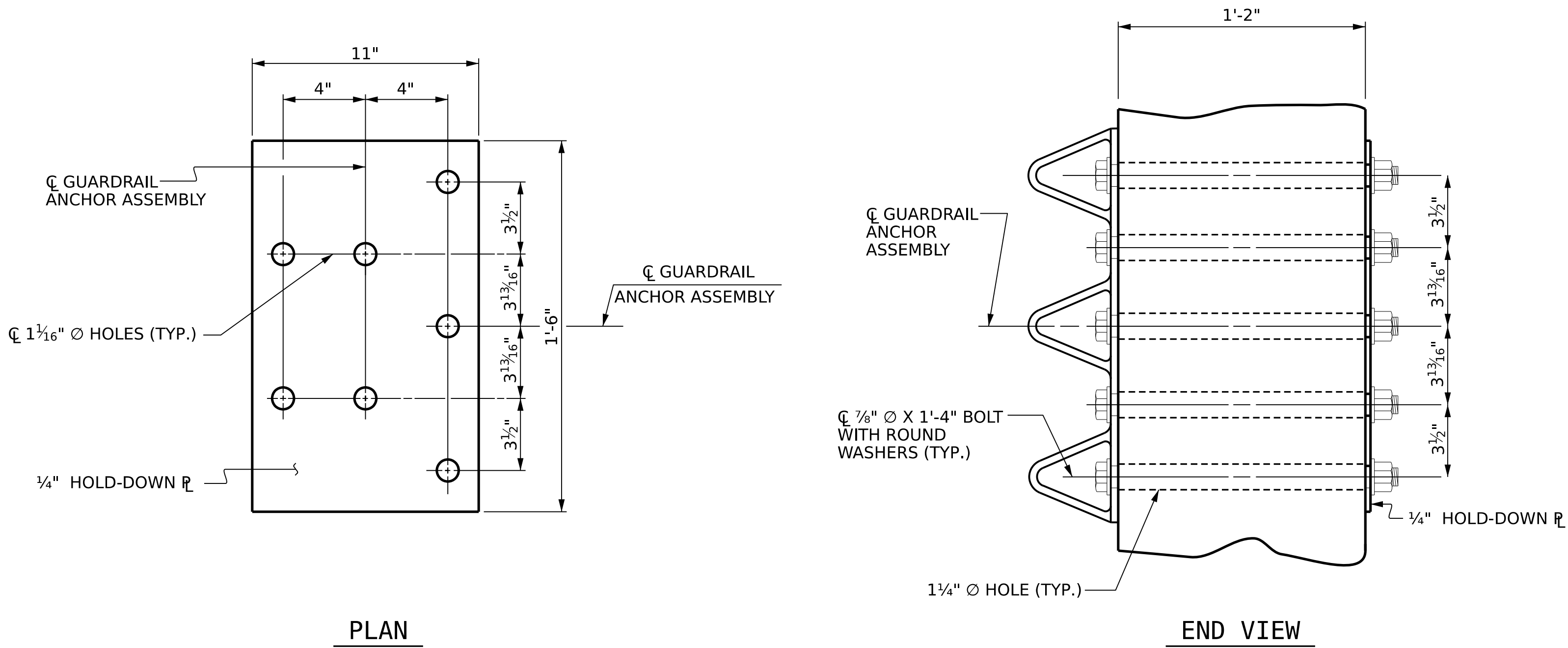
THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" ϕ BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

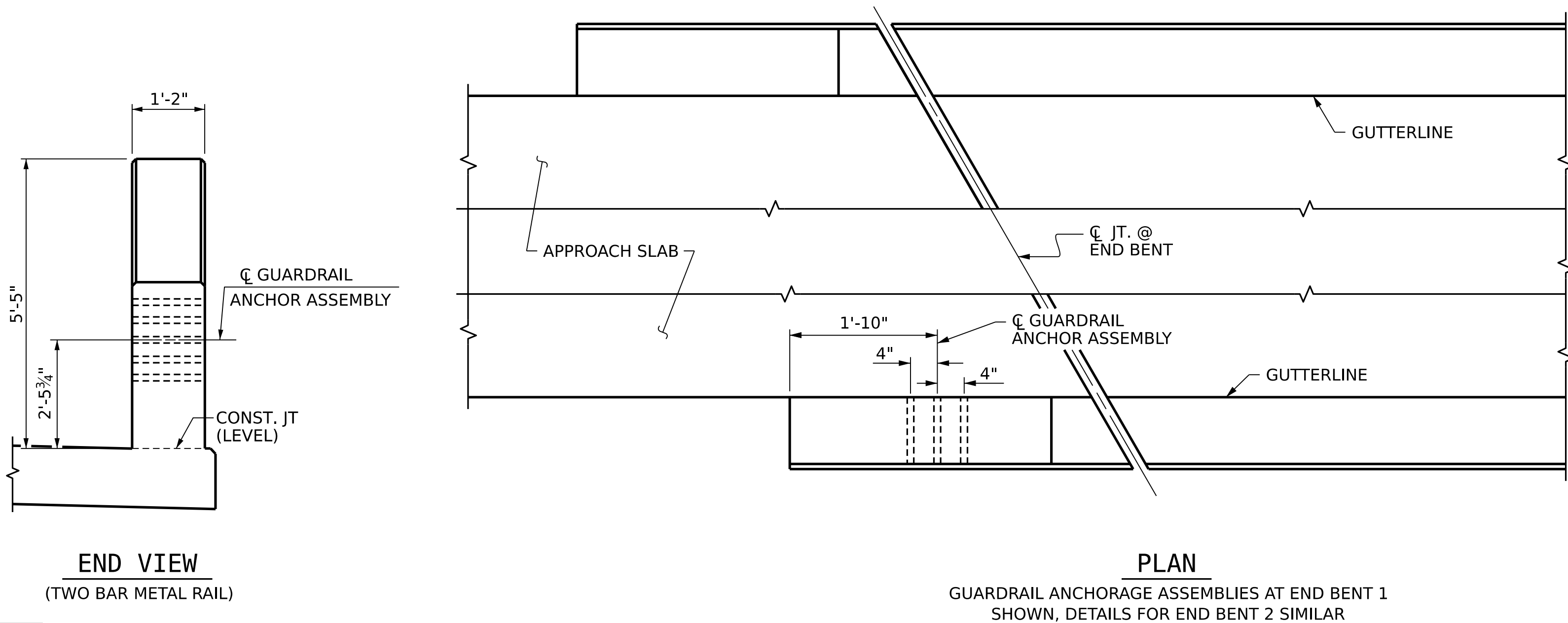
4-BOLT METAL RAIL ANCHOR ASSEMBLY

ASSEMBLIES REQUIRED

STAGE I (BRIDGE)	-----36
STAGE II (BRIDGE)	-----36
TOTAL	-----72



GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF GUARDRAIL ANCHOR AT END POST

NOTES

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

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

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

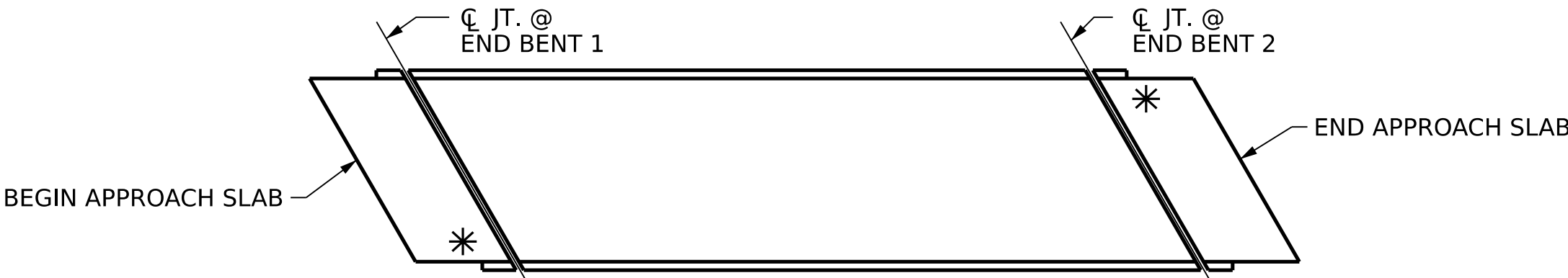
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

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

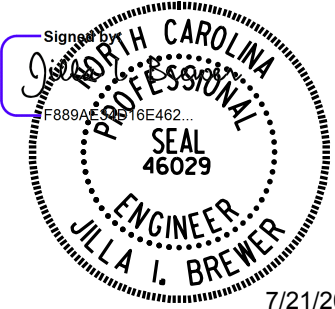


SKETCH SHOWING POINTS OF ATTACHMENT

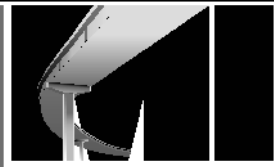
* LOCATION OF GUARDRAIL ATTACHMENT

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
GUARDRAIL ANCHORAGE
DETAILS
FOR METAL RAILS



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

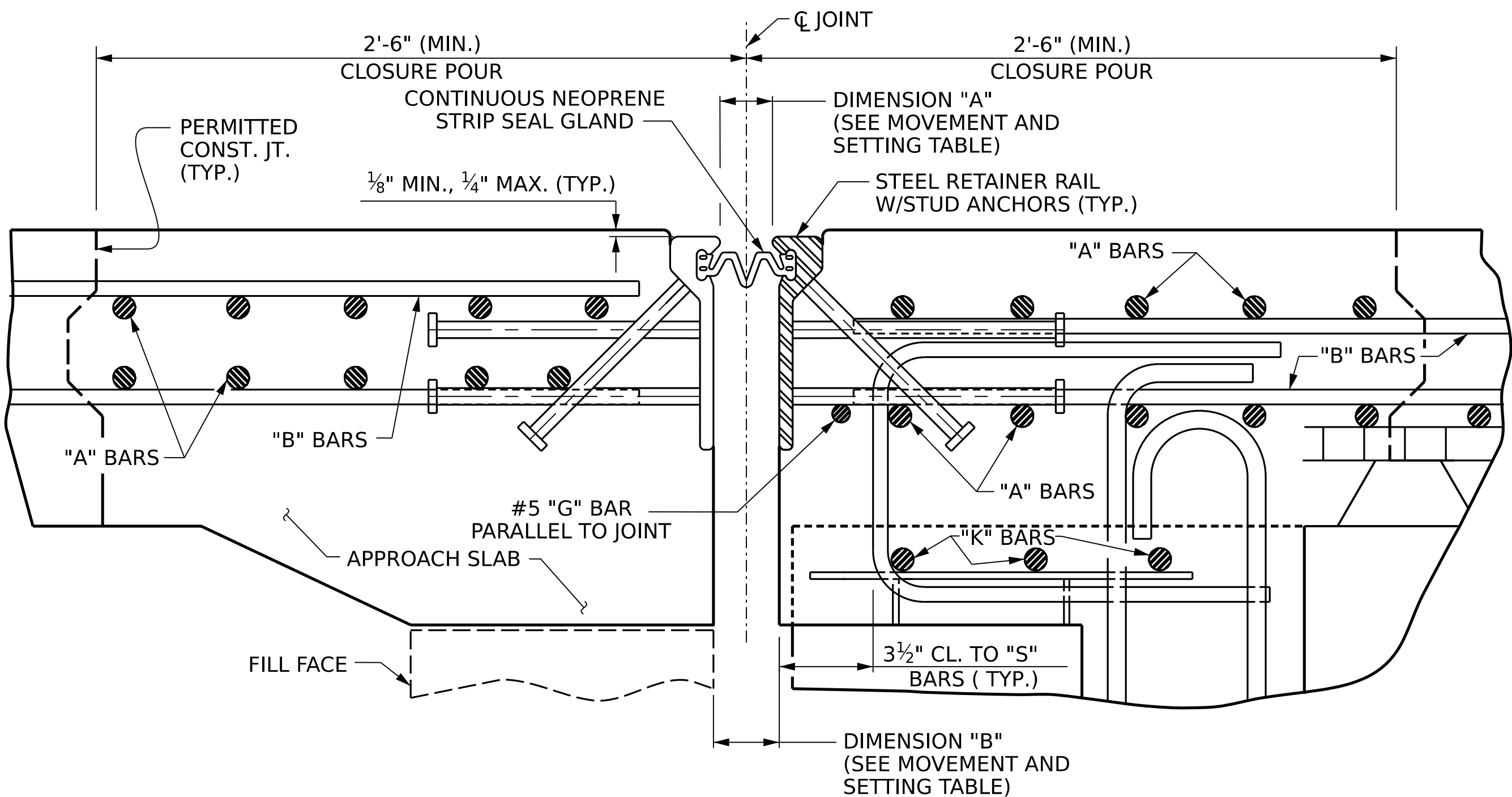
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S06-33
TOTAL SHEETS
60

(SHT 2b) STD. NO. GRA3

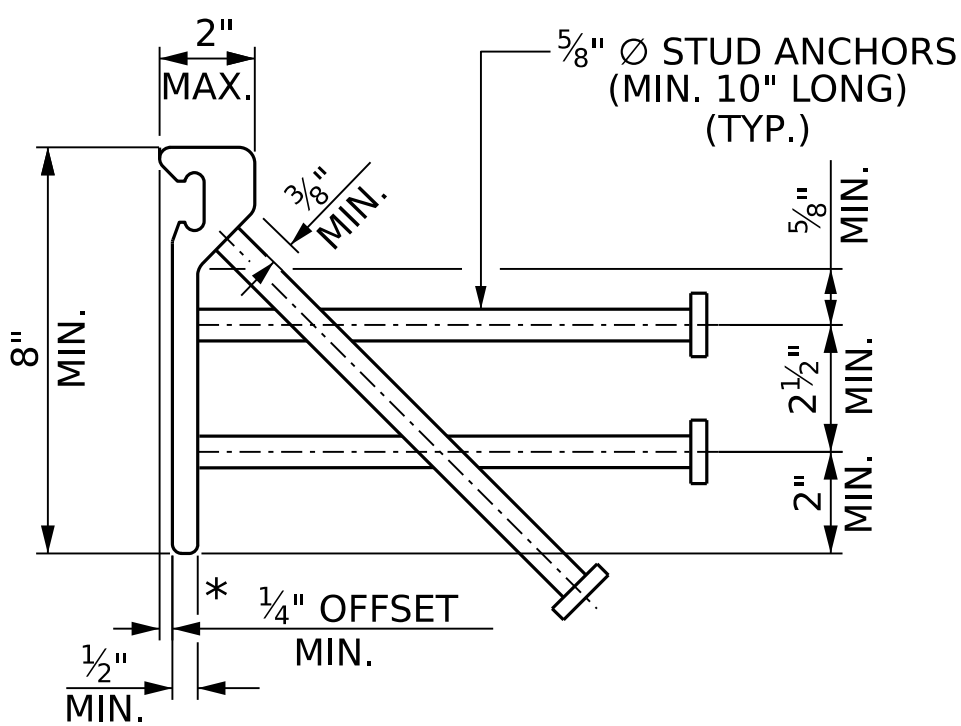
7/21/2026 9:00:36 AM User: jblanning Filename: N:\NC Bridges\W21002-I-2513A I-26 (AECOM)\I-2513AC\Structures\SITE6\06_065_12513AC_SMU_GRA1_S06-33_100242.dgn

ASSEMBLED BY:	B.E. LANNING	DATE:	01/2024
CHECKED BY:	J.J. BREWER	DATE:	01/2024
DESIGN ENGINEER OF RECORD:	J.J. BREWER	DATE:	01/2026
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



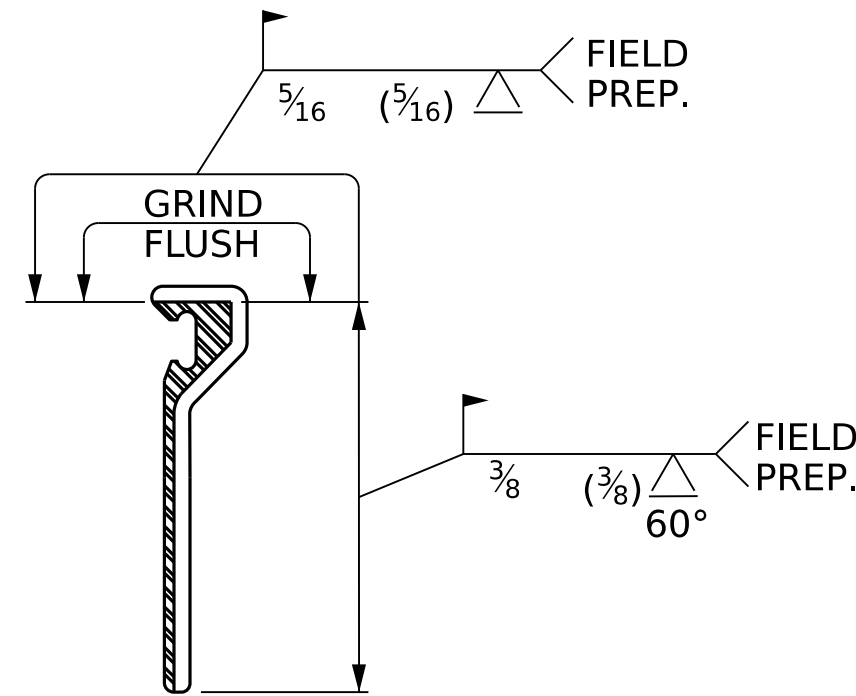
STRIP SEAL EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT -- PRESTRESSED GIRDER SUPERSTRUCTURE

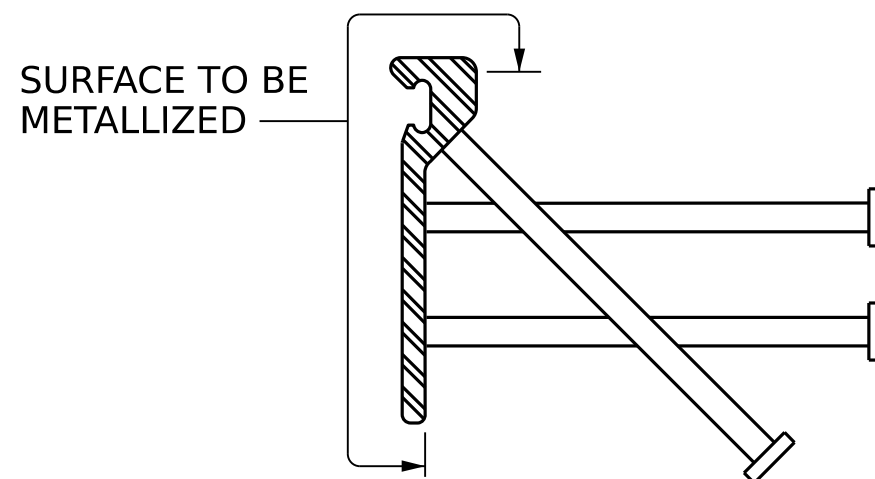


TYPICAL SECTION STEEL RETAINER RAIL

* DIMENSION "B" BASED ON STEEL RETAINER RAIL
TOP OFFSET TO FACE OF RAIL OF 1/4" MINIMUM.
IF ACTUAL OFFSET IS GREATER ADJUST
DIMENSION "B" AS REQUIRED.



STEEL RETAINER RAIL (FIELD SPLICE DETAIL)



METALLIZING DETAIL

JOINT INSTALLATION PROCEDURE:

1. INSTALL THE STRIP SEAL EXPANSION JOINT AS RECOMMENDED BY THE MANUFACTURER.
2. A MANUFACTURER'S REPRESENTATIVE SHALL BE PRESENT DURING INSTALLATION OF THE JOINT.
3. PLACE STEEL RETAINER RAILS IN JOINT OPENING. PROPERLY ALIGN THE RAILS BOTH HORIZONTALLY AND VERTICALLY. DO NOT WELD SUPPORT SYSTEM TO THE METALLIZED SURFACES OF THE STEEL RETAINER RAILS.
4. CONFLICTING REINFORCING STEEL MAY BE SHIFTED SLIGHTLY WHEN NECESSARY.
5. DECK SLAB CONCRETE PLACEMENT OPERATIONS SHALL COMMENCE PER THE POURING SEQUENCE AFTER FINAL JOINT ALIGNMENT IS SET.
6. PROTECT THE STEEL RETAINER RAILS FROM BEING FOULED BY CONCRETE SPILLOVER DURING THE DECK POUR.
7. LOOSEN THE STEEL RETAINER RAIL SUPPORT SYSTEM TO ALLOW MOVEMENT WHILE CONCRETE CURES.
8. RE-LEVEL AND RE-ALIGN STEEL RETAINER RAIL AS REQUIRED ON OPPOSITE SIDE OF JOINT.
9. PLACE APPROACH/DECK SLAB CONCRETE.
10. ONCE THE CONCRETE HAS HARDENED SUFFICIENTLY ON BOTH SIDES OF JOINT, STEEL RETAINER RAILS SHALL BE CLEANED THOROUGHLY AND SEAL CHANNELS SHALL BE INSPECTED TO ASCERTAIN THE ABSENCE OF CONCRETE AND DEBRIS.
11. COAT THE STRIP SEAL LUGS WITH LUBRICANT-ADHESIVE AND INSTALL THE NEOPRENE STRIP SEAL GLAND AS RECOMMENDED BY THE STRIP SEAL EXPANSION JOINT MANUFACTURER.

GENERAL NOTES

FOR STRIP SEAL EXPANSION JOINTS, SEE SPECIAL PROVISIONS.

STEEL RETAINER RAILS AND COVER PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR GRADE 50 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. MIN.

ONLY STEEL RETAINER RAILS OF ONE-PIECE CONSTRUCTION ARE PERMITTED. STEEL RETAINER RAILS CONSISTING OF TWO OR MORE COMPONENTS WELDED TOGETHER TO OBTAIN THEIR FINAL CROSS-SECTIONAL SHAPE ARE NOT PERMITTED.

STUD ANCHORS SHALL BE SHOP WELDED AND SHALL BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION.

SURFACES COMING IN CONTACT WITH STRIP SEAL GLAND SHALL BE GROUND SMOOTH PRIOR TO METALLIZING.

UPON COMPLETION OF SHOP FABRICATION, THE STEEL RETAINER RAILS SHALL BE METALLIZED AS SHOWN IN THE "METALLIZING DETAIL". SEE SPECIAL PROVISIONS FOR THERMAL SPRAYED COATINGS (METALLIZATION).

INSTALLED STEEL RETAINER RAILS SHALL FOLLOW THE ROADWAY SLOPE.

FIELD SPLICES OF THE RETAINER RAILS SHALL BE KEPT TO A MINIMUM. CONTRACTOR SHALL FURNISH DETAILED PLANS SHOWING PROPOSED SPLICE LOCATIONS FOR APPROVAL. FINISHED WELDS SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).

NEOPRENE STRIP SEAL GLAND SHALL BE CONTINUOUS THROUGHOUT THE JOINT AND SHALL BE COMPATIBLE WITH THE STEEL RETAINER RAILS. FIELD SPLICING THE GLAND IS NOT PERMITTED.

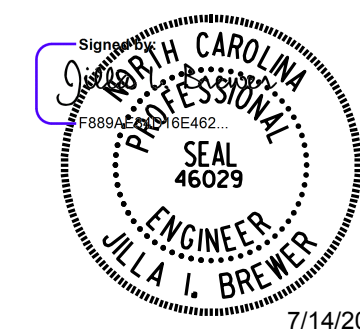
NO ALTERNATE JOINT DETAILS SHALL BE PERMITTED IN LIEU OF THOSE SHOWN ON THESE PLANS.

THE COVER PLATES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

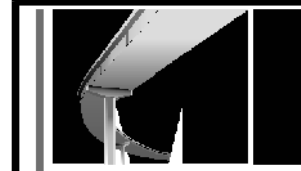
THE CONTRACTOR MAY, AT HIS OPTION, USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF CONCRETE INSERTS FOR COVER PLATES. THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-

SHEET 1 OF 4



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

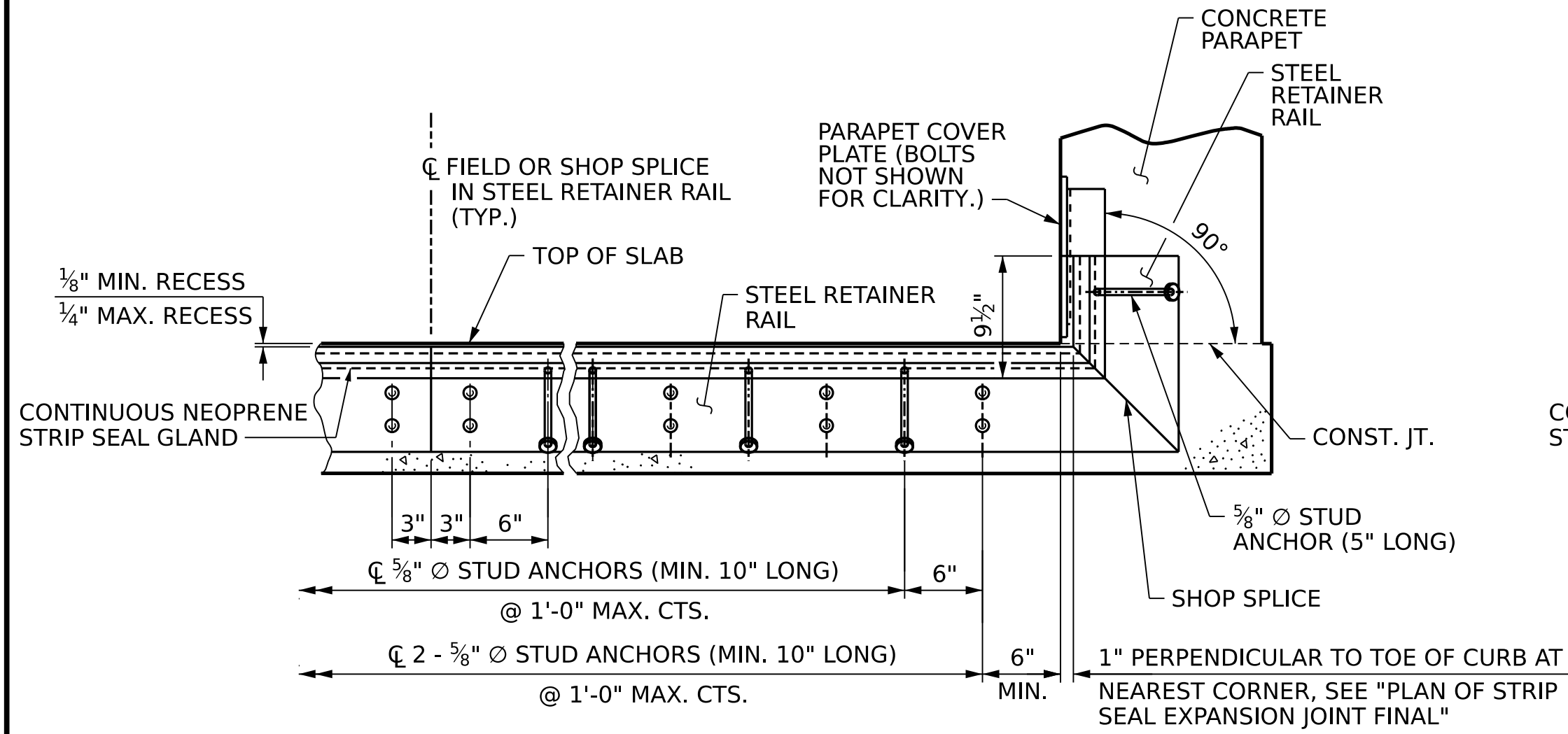
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD STRIP SEAL EXPANSION JOINT DETAILS

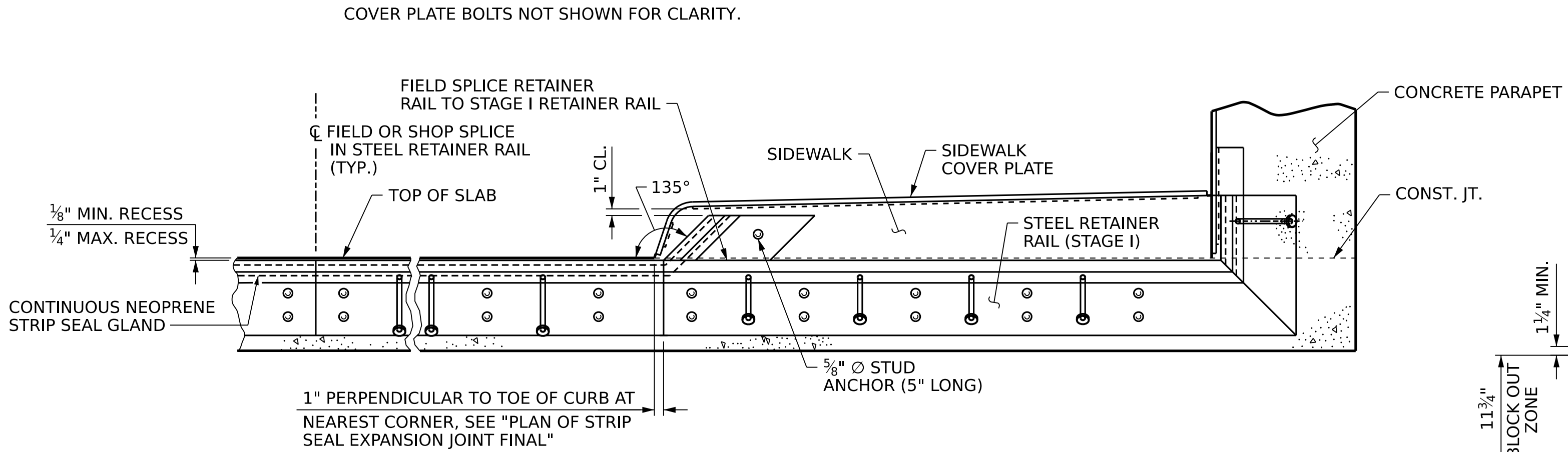
DRAWN BY: B.E. LANNING DATE: 01/2024
CHECKED BY: J.I. BREWER DATE: 01/2024
DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 01/2026

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S06-34
2			4			
TOTAL SHEETS						60

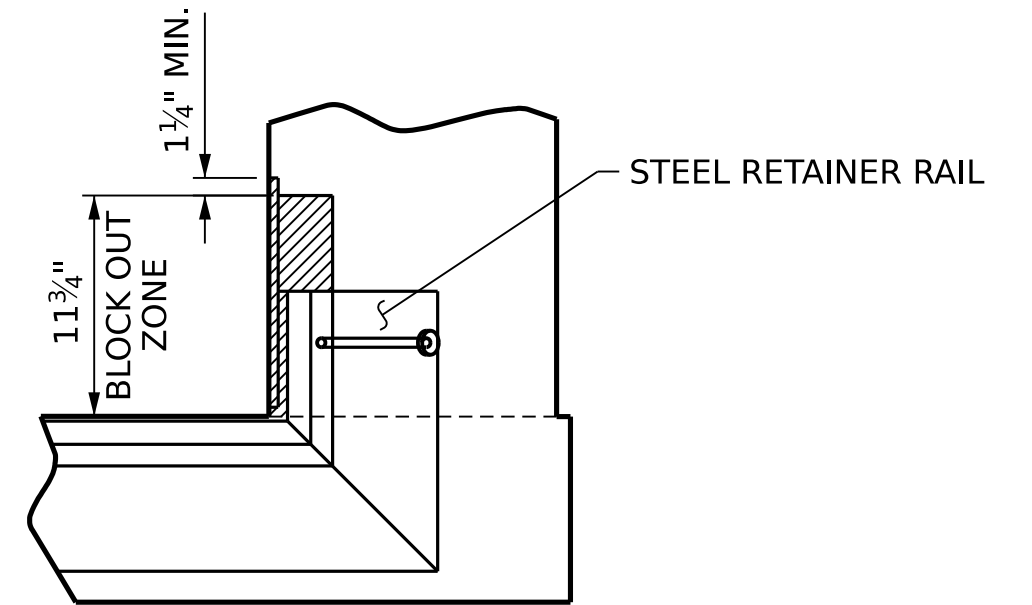
7/14/2026 2:31:08 PM User: blanning Filename: N:\NC Bridges\21002-I-2513A I-26 (4ECOM\I-2513A\Structures\SITE\406.069.12513AC.SMU.SSE.I2.S06-35.100242.dgn



DURING CONSTRUCTION - STAGE I

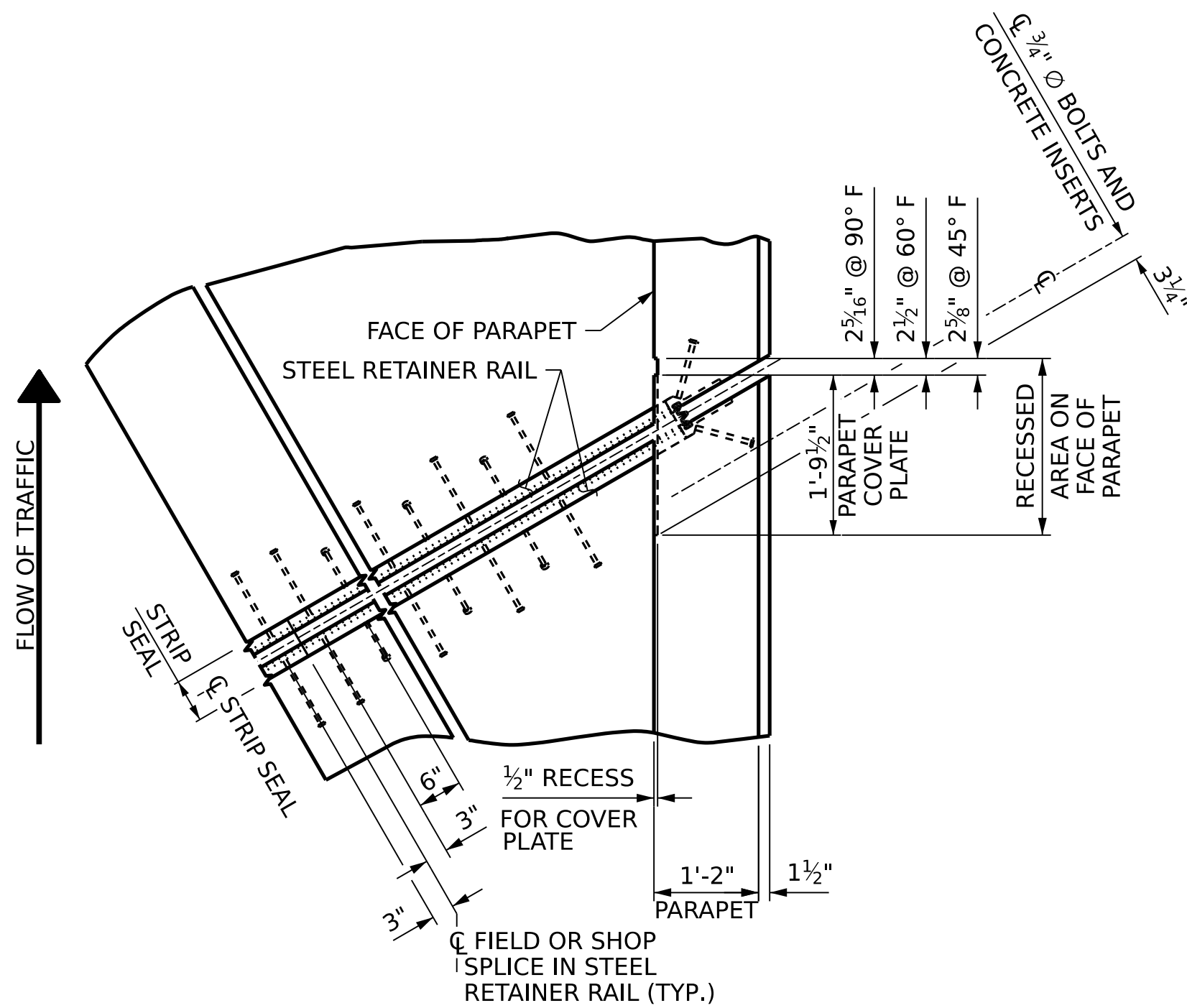


FINAL CONDITION - STAGE II

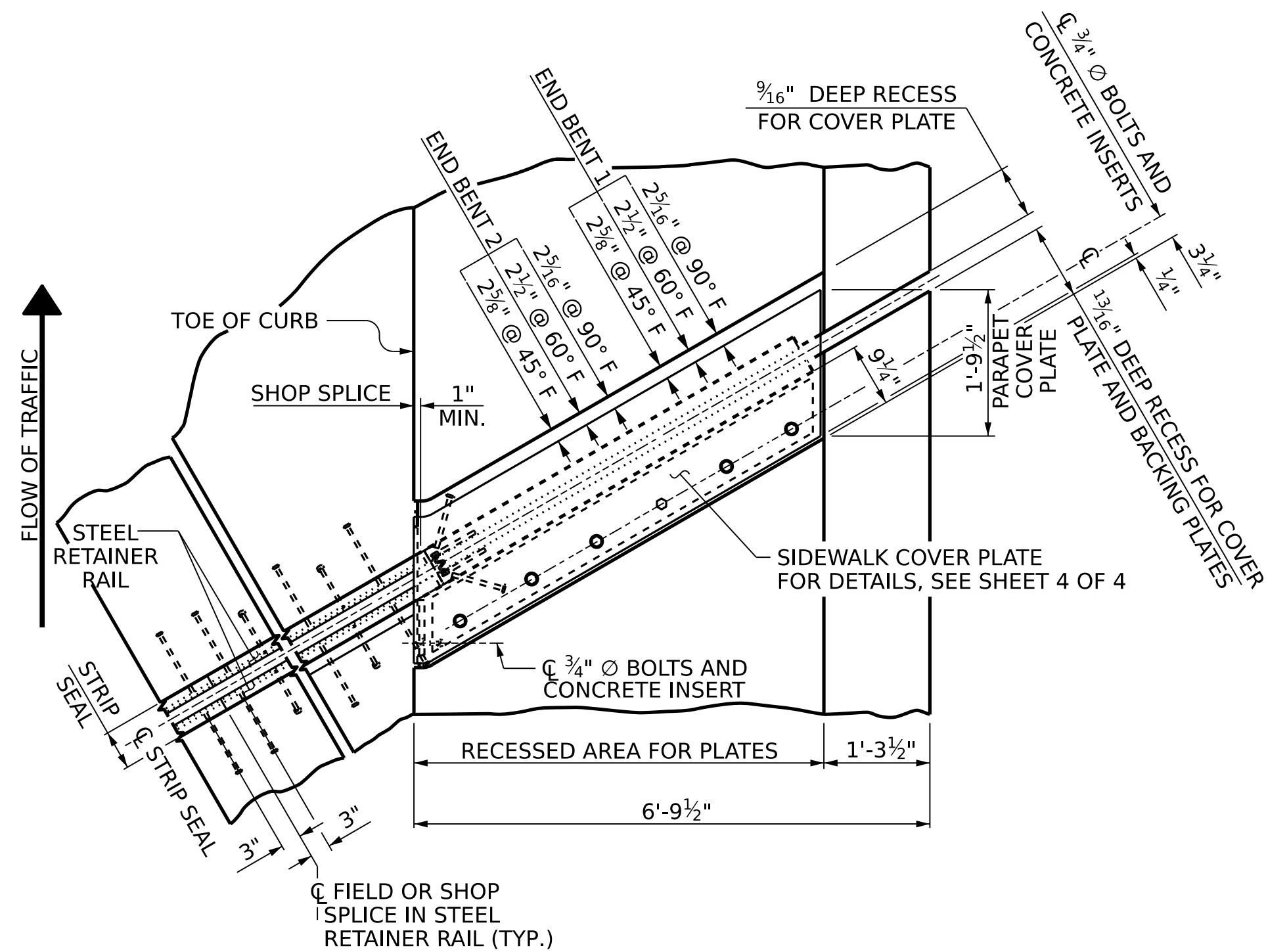


BLOCK OUT DETAIL STAGE I

SECTION THRU SIDEWALK NORMAL TO JOINT



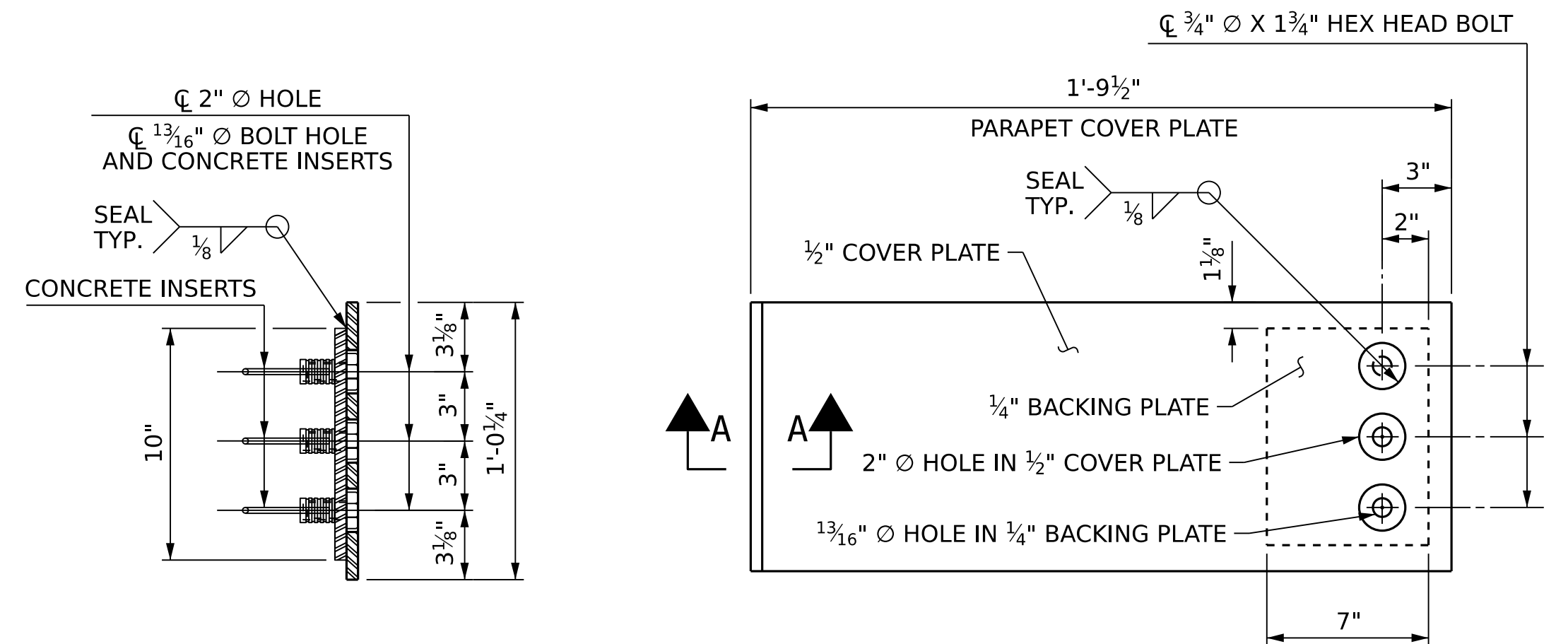
DURING CONSTRUCTION - STAGE I



FINAL CONDITION - STAGE II

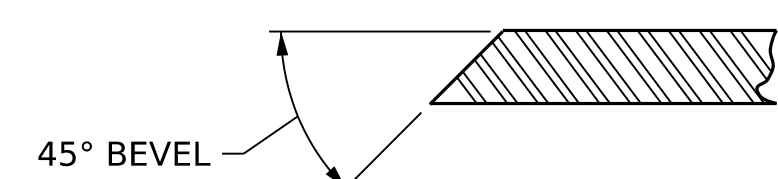
PARAPET COVER PLATE AND RETAINER RAILS FROM STAGE I NOT SHOWN FOR CLARITY

PLAN OF STRIP SEAL EXPANSION JOINT



END VIEW

ELEVATION VIEW



SECTION A-A

PARAPET COVER PLATE DETAILS

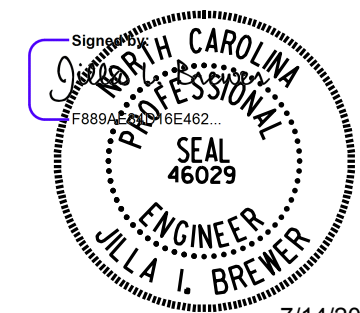
FOR CONCRETE INSERT DETAILS, SEE SHEET 4 OF 4

PROJECT NO. I-2513 AC

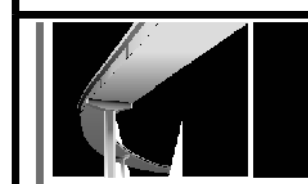
BUNCOMBE COUNTY

STATION: 22+70.15 -Y2-

SHEET 2 OF 4



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



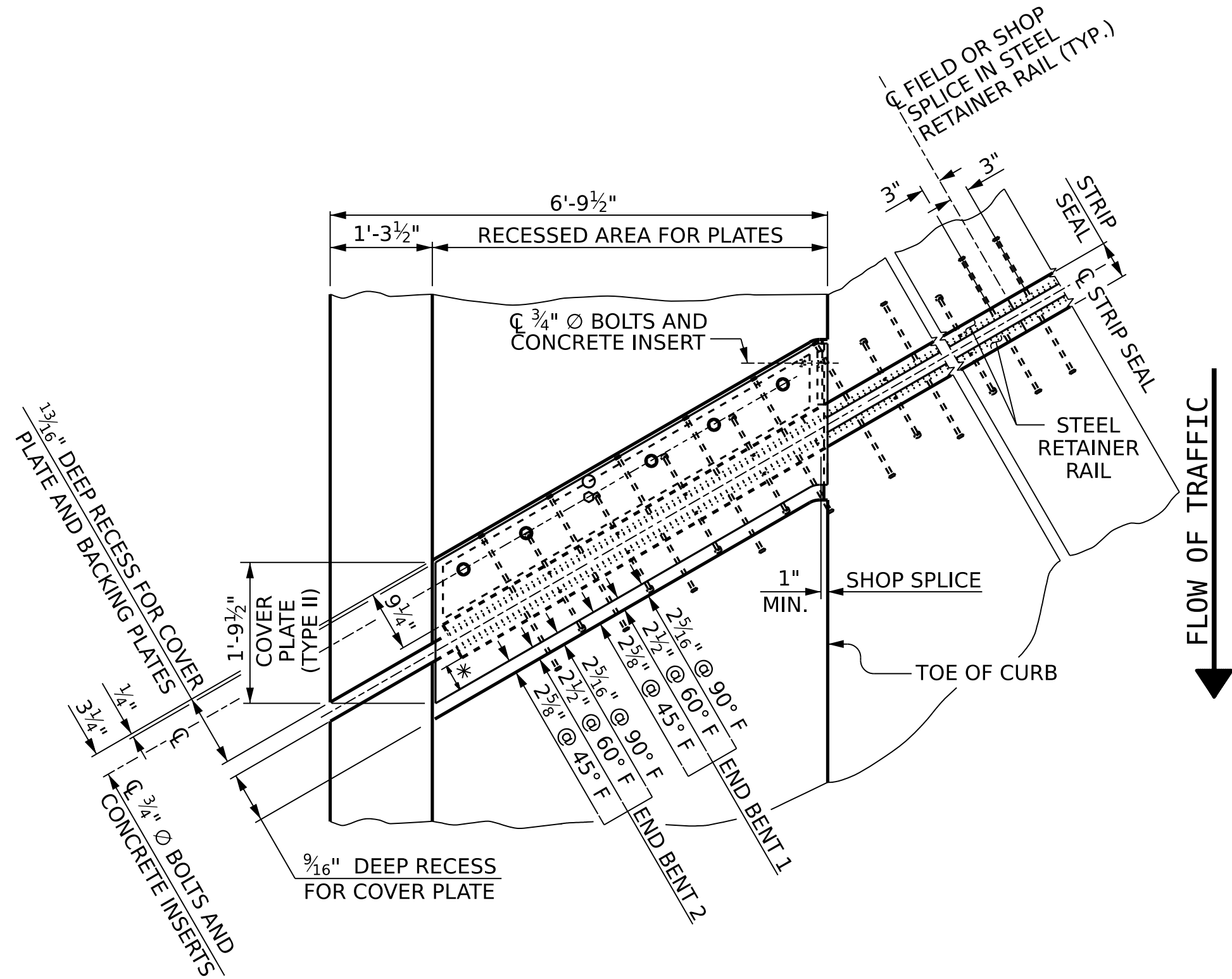
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

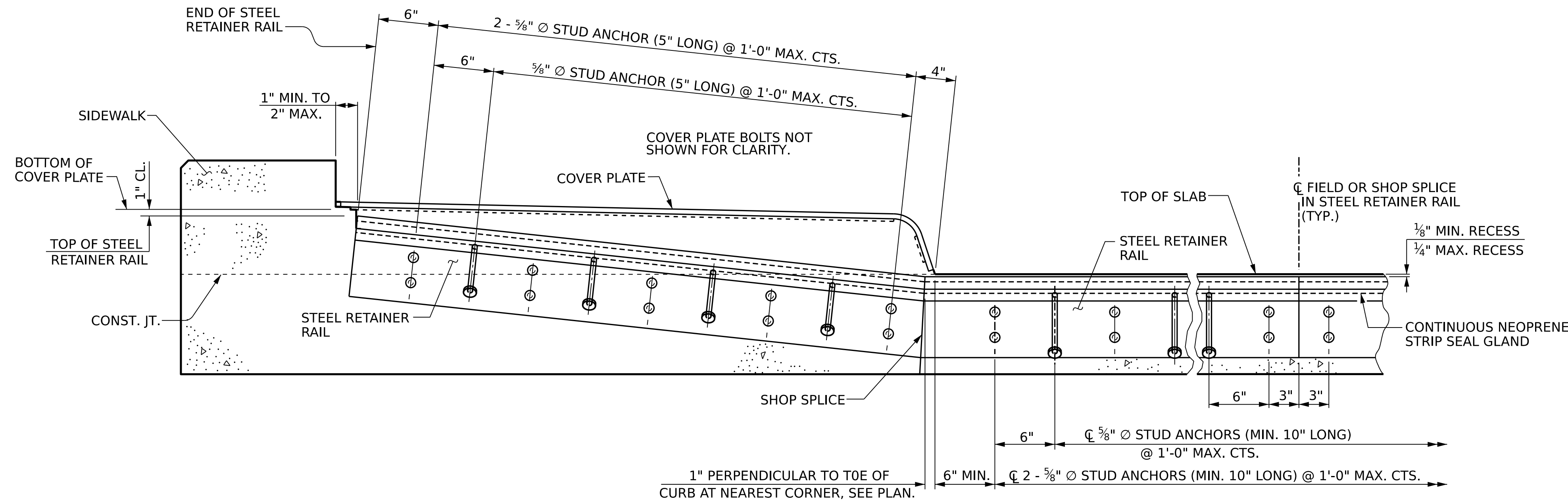
STRIP SEAL EXPANSION
JOINT DETAILS
FOR RIGHT SIDEWALK

DRAWN BY: B.E. LANNING	DATE: 01/2024
CHECKED BY: J.I. BREWER	DATE: 03/2024
DESIGN ENGINEER OF RECORD: J.I. BREWER	DATE: 01/2026

REVISIONS						SHEET NO. S06-35 TOTAL SHEETS 60
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



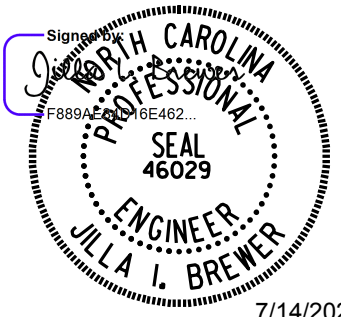
PLAN OF STRIP SEAL EXPANSION JOINT



SECTION THRU SIDEWALK NORMAL TO JOINT

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-

SHEET 3 OF 4



**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

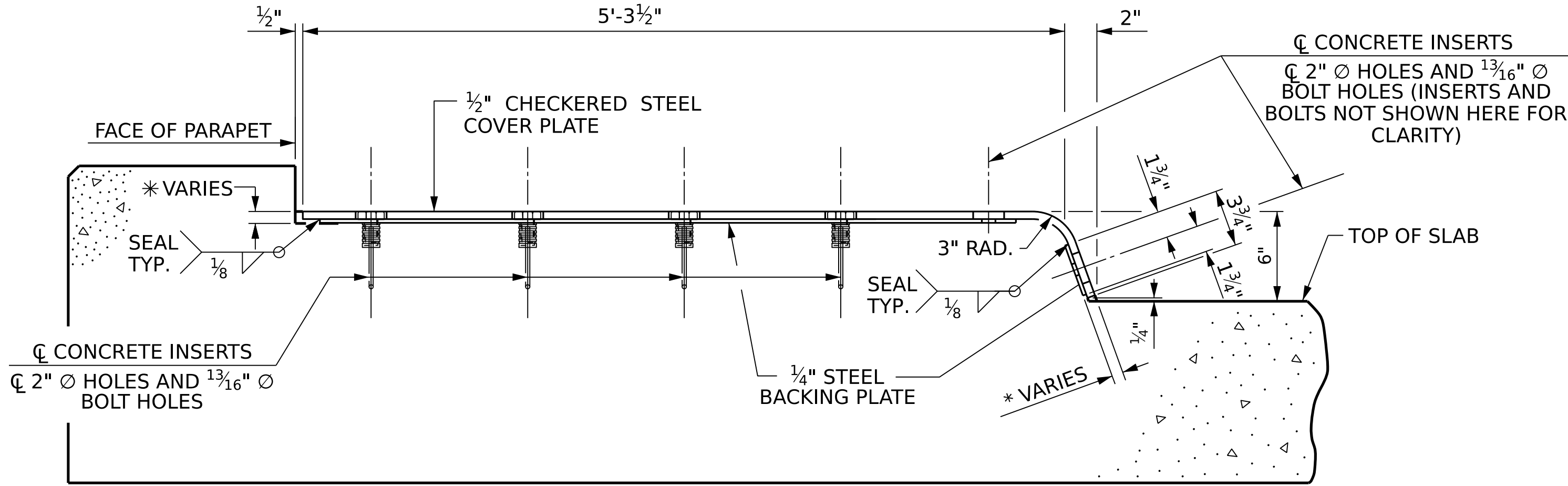
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO. S06-36
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 60
2			4			

DRAWN BY :	B.E. LANNING	DATE :	01/2024
CHECKED BY :	J.I. BREWER	DATE :	03/2024
DESIGN ENGINEER OF RECORD :	J.I. BREWER	DATE :	01/2026

7/14/2026 2:31:11 PM User: blanning
Filename: N:\NC Bridges\W21002.I-2513A I-26 I4ECOM\I-2513AC\Structures\SITE\406.071.I2513AC.SMU.SSE.U3.S06-36.100242.dgn

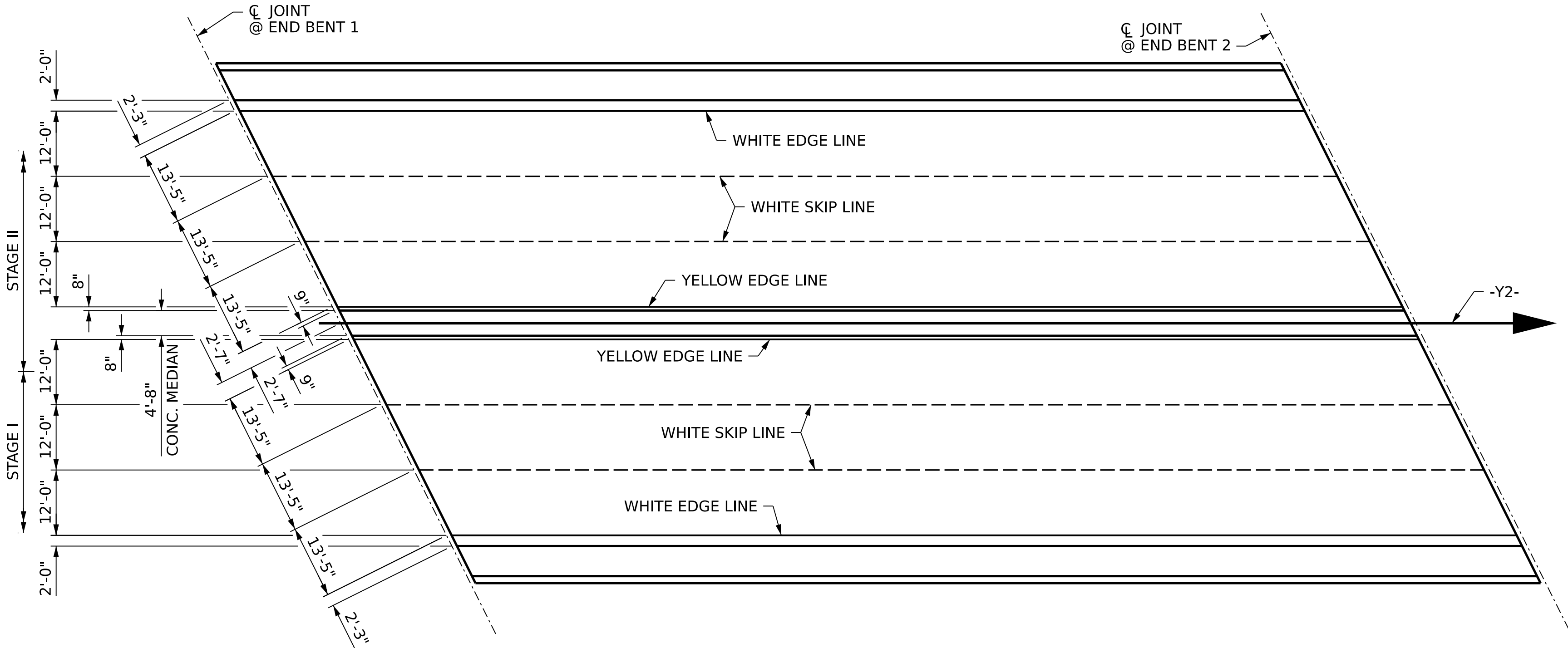
7/21/2026 9:02:10 AM User: blanning File: N:\\NC Bridges\\21002.I-2513A I-26 \\4ECOM\\I-2513AC\\Structures\\SITE\\406.073.I2513AC.SMU.SSE.4.S06-37.100242.dgn



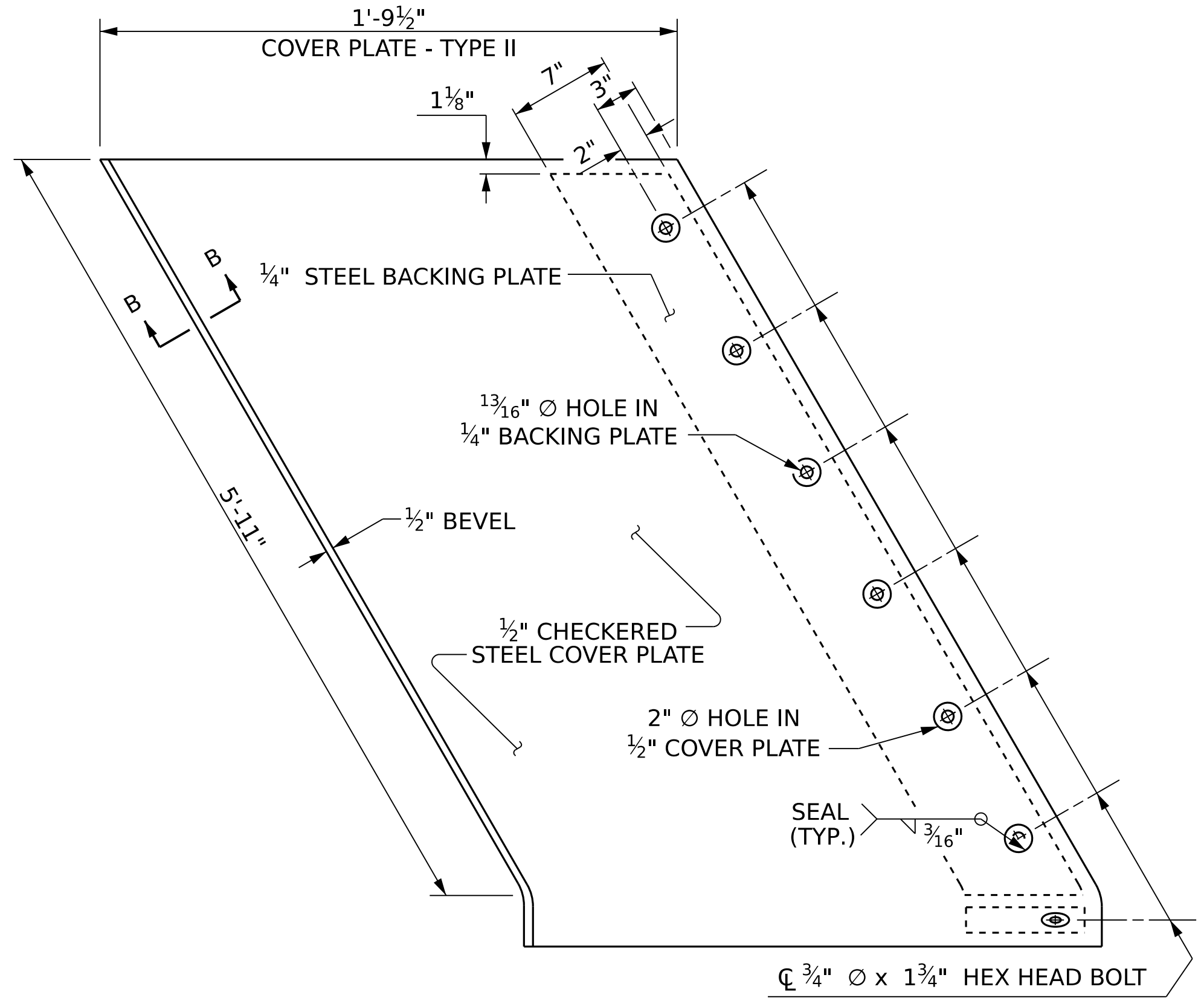
END VIEW

(NORMAL TO SIDEWALK)

* CONCRETE RECESS DIMENSIONS:
1 3/16" FOR THE SIDE OF THE JOINT HAVING THE 1/2" COVER PLATE WITH A 1/4" BACKING PLATE.
9/16" FOR THE SIDE OF THE JOINT HAVING ONLY THE 1/2" COVER PLATE.

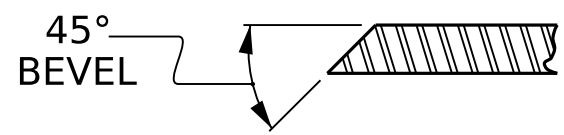


PAVEMENT MARKING ALIGNMENT

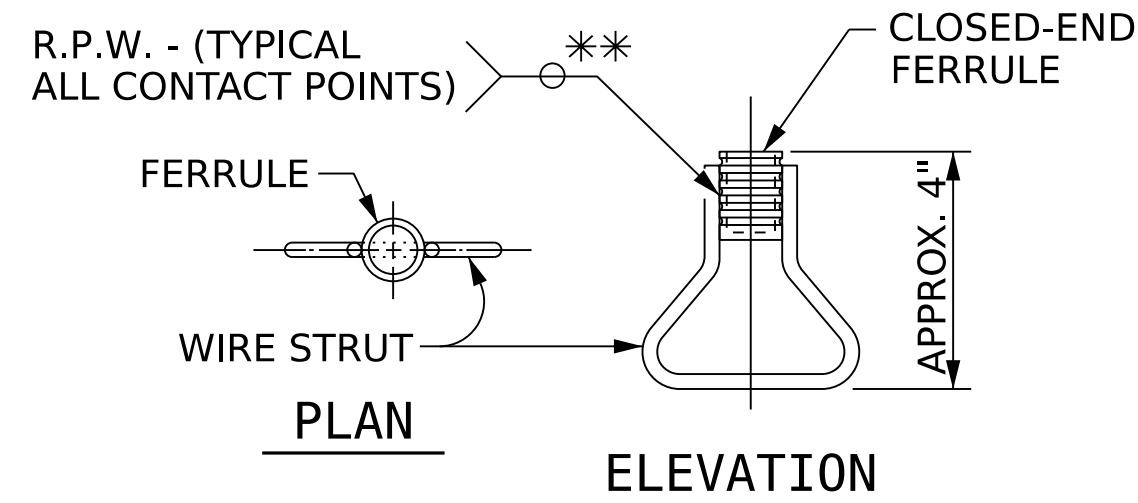


TYPE II - PLAN VIEW

COVER PLATE DETAILS



SECTION B-B

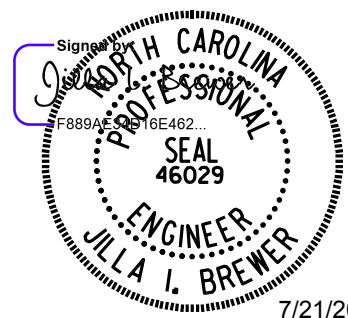


CONCRETE INSERT

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

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-

SHEET 4 OF 4



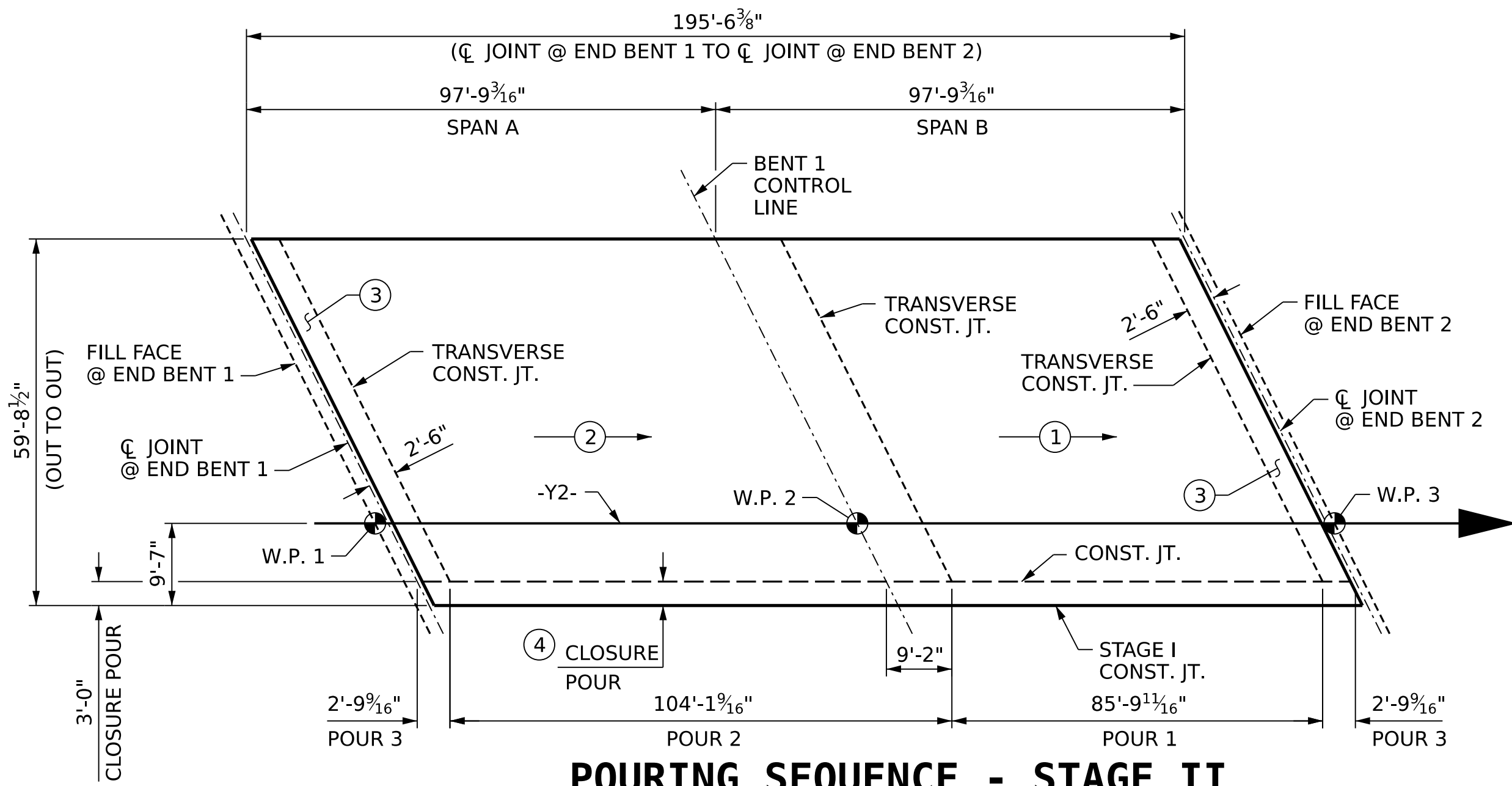
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD STRIP SEAL EXPANSION JOINT DETAILS FOR LEFT SIDEWALK					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S06-37					TOTAL SHEETS 60

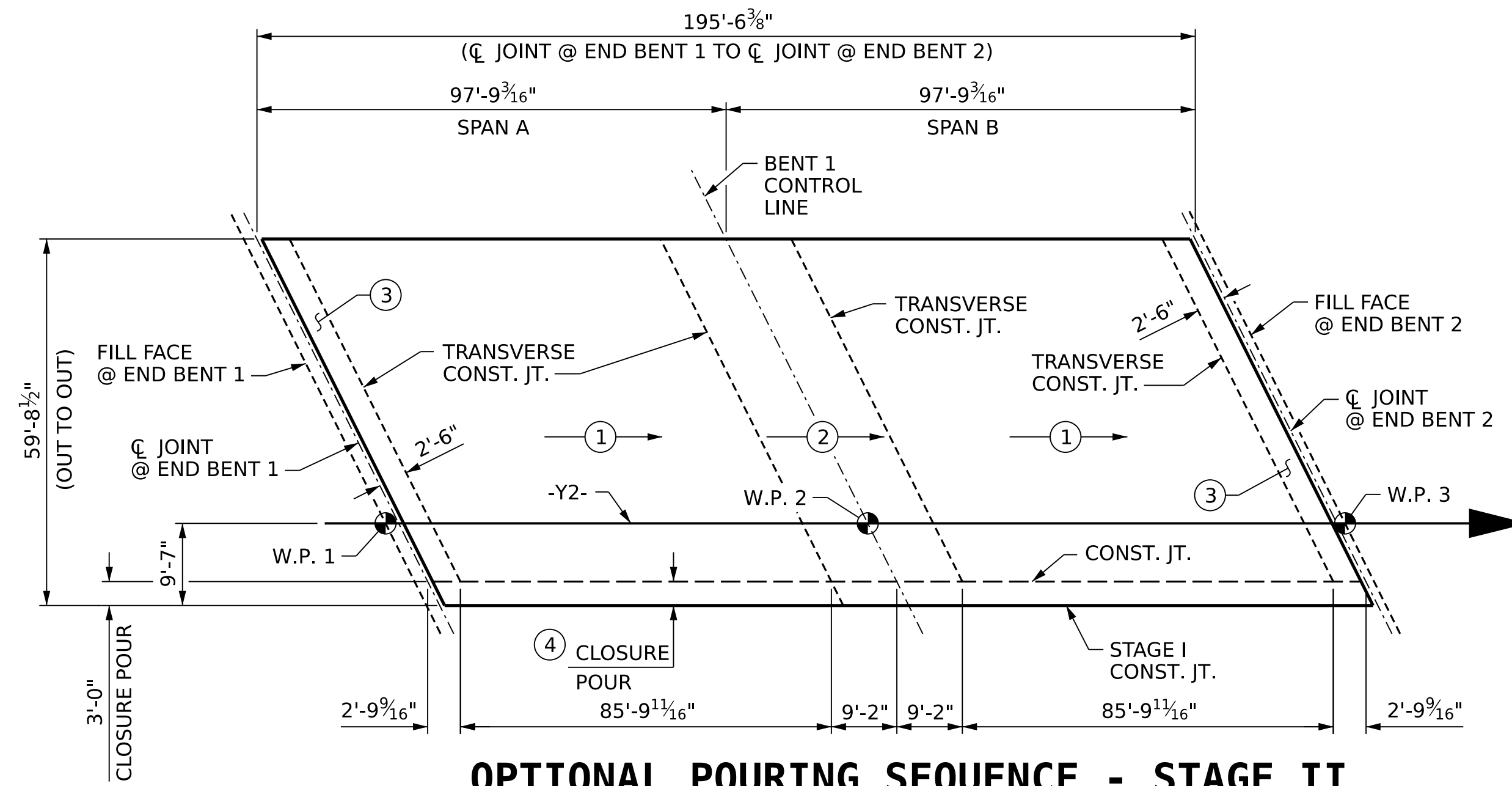
STD. NO. SSEJ4 SHT 3

7/14/2026
3:05:31 PM
\$USERNAME:
Filename: N



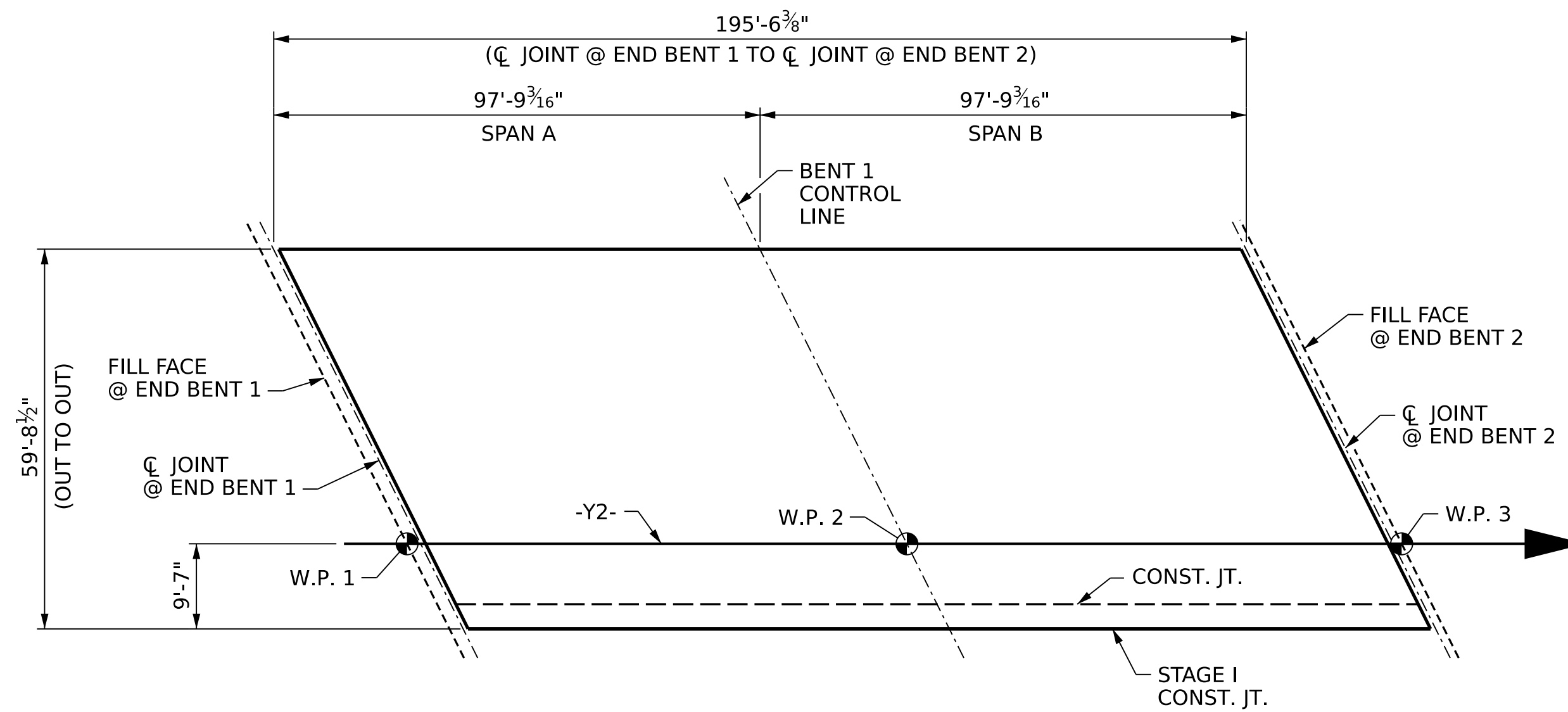
POURING SEQUENCE - STAGE II

— (#) — INDICATES POUR NUMBER AND POUR DIRECTION



OPTIONAL POURING SEQUENCE - STAGE II

— (#) — INDICATES POUR NUMBER AND POUR DIRECTION



**LAYOUT FOR COMPUTING AREA
OF REINFORCED CONCRETE DECK SLAB
STAGE II (SQ. FT. = 11,675)
TOTAL STAGES I AND II (SQ. FT. = 18,690)**

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-

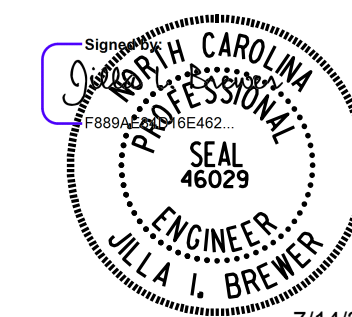
SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

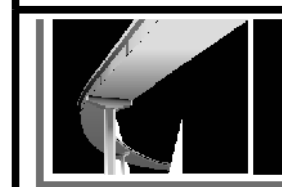
**SUPERSTRUCTURE
BILL OF MATERIAL**

STAGE II

REVISIONS						SHEET NO. S06-39
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 60
2			4			



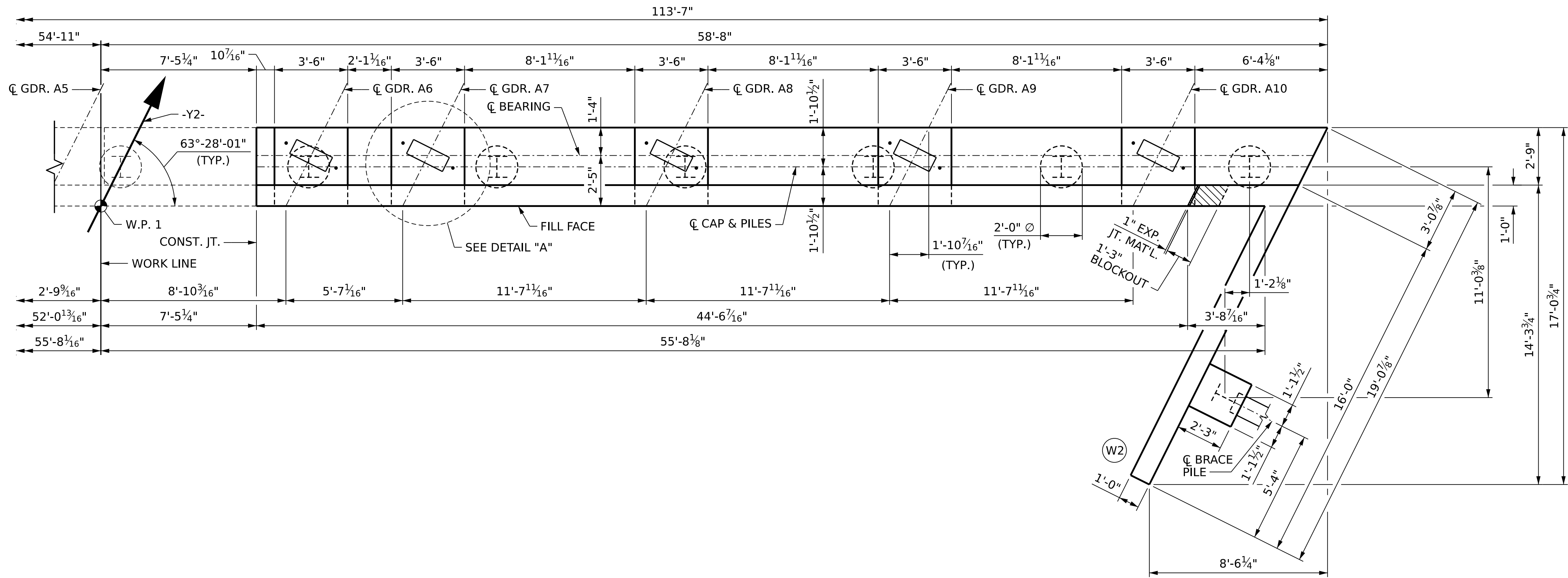
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



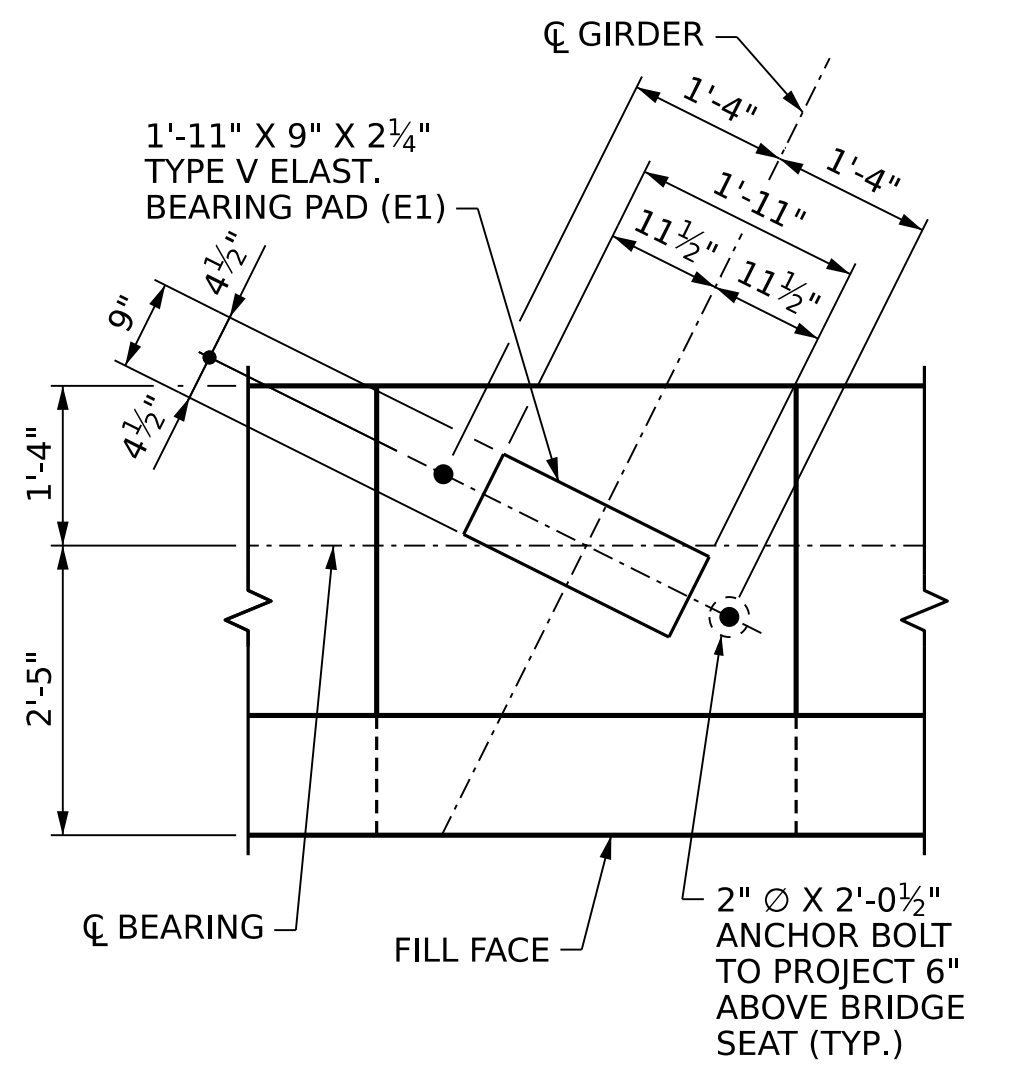
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

DRAWN BY : B.E. LANNING DATE : 06/2023
CHECKED BY : J.I. BREWER DATE : 11/2023
DESIGN ENGINEER OF RECORD : J.I. BREWER DATE : 01/2026

7/14/2026 3:06:37 PM \$USER\$
Filename: N:\NC Bridges\W21002.I-2513A I-26 I4ECOM\I-2513AC\Structures\SITE\406.077.I2513AC.SMU.BOM2.S06-39.I00242.dgn

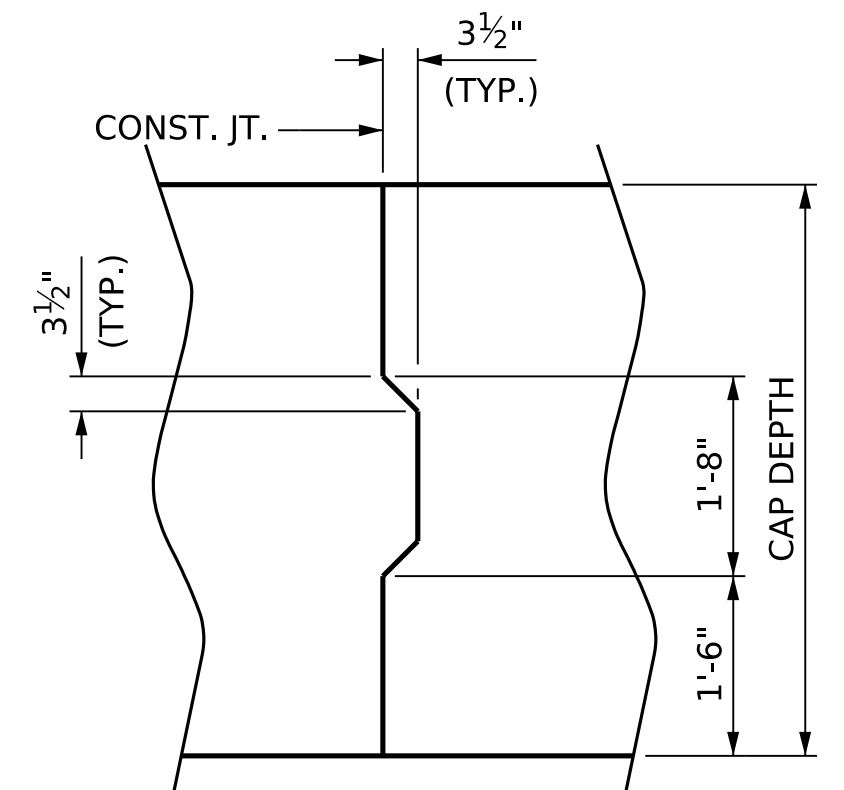


PLAN



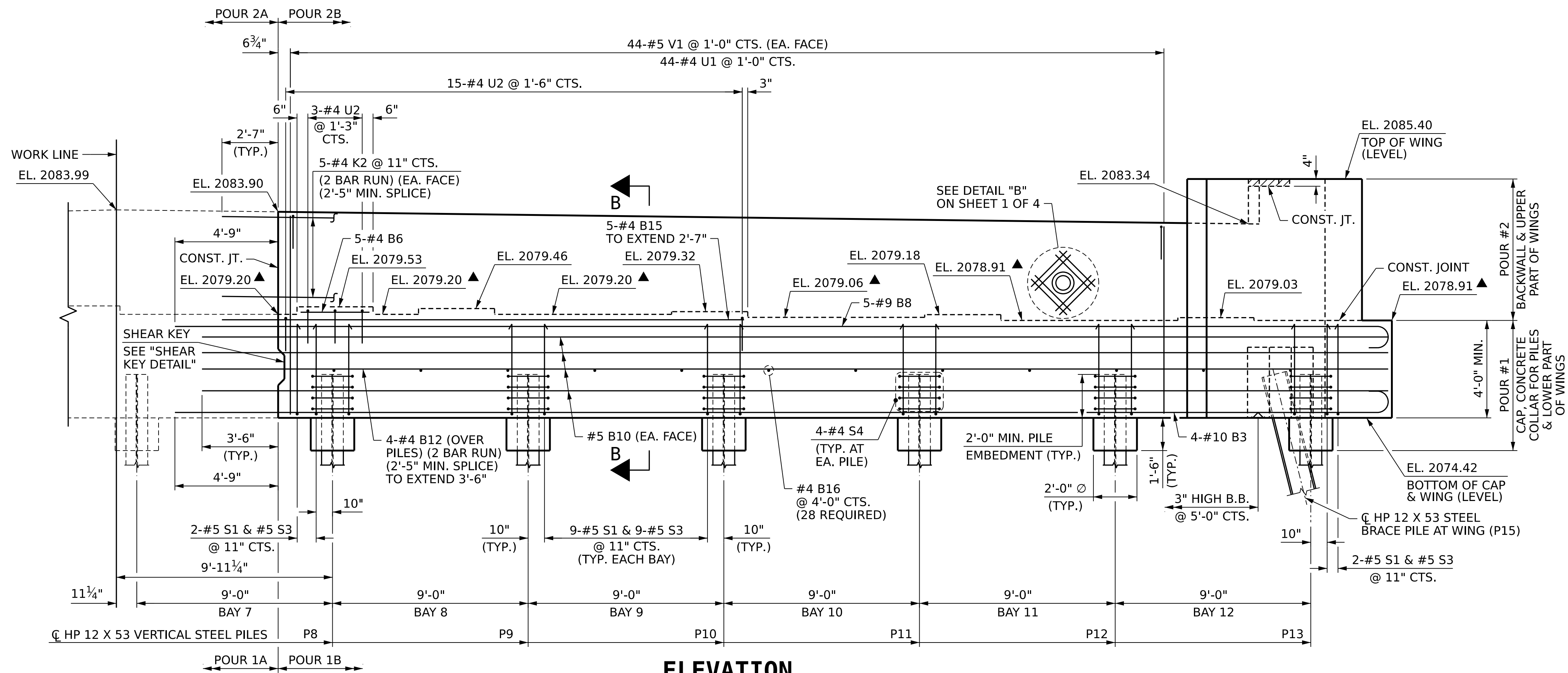
DETAIL "A"

TYPICAL EACH BEARING



SHEAR KEY DETAIL

ELEVATION VIEW OF CAP



ELEVATION

NOTES

FOR NOTES, SEE SHEET 1 OF 4.

▲ FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS, SEE SECTION B-B ON SHEET 4 OF 4.

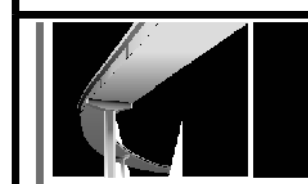
PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-
SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1
PLAN AND ELEVATION



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



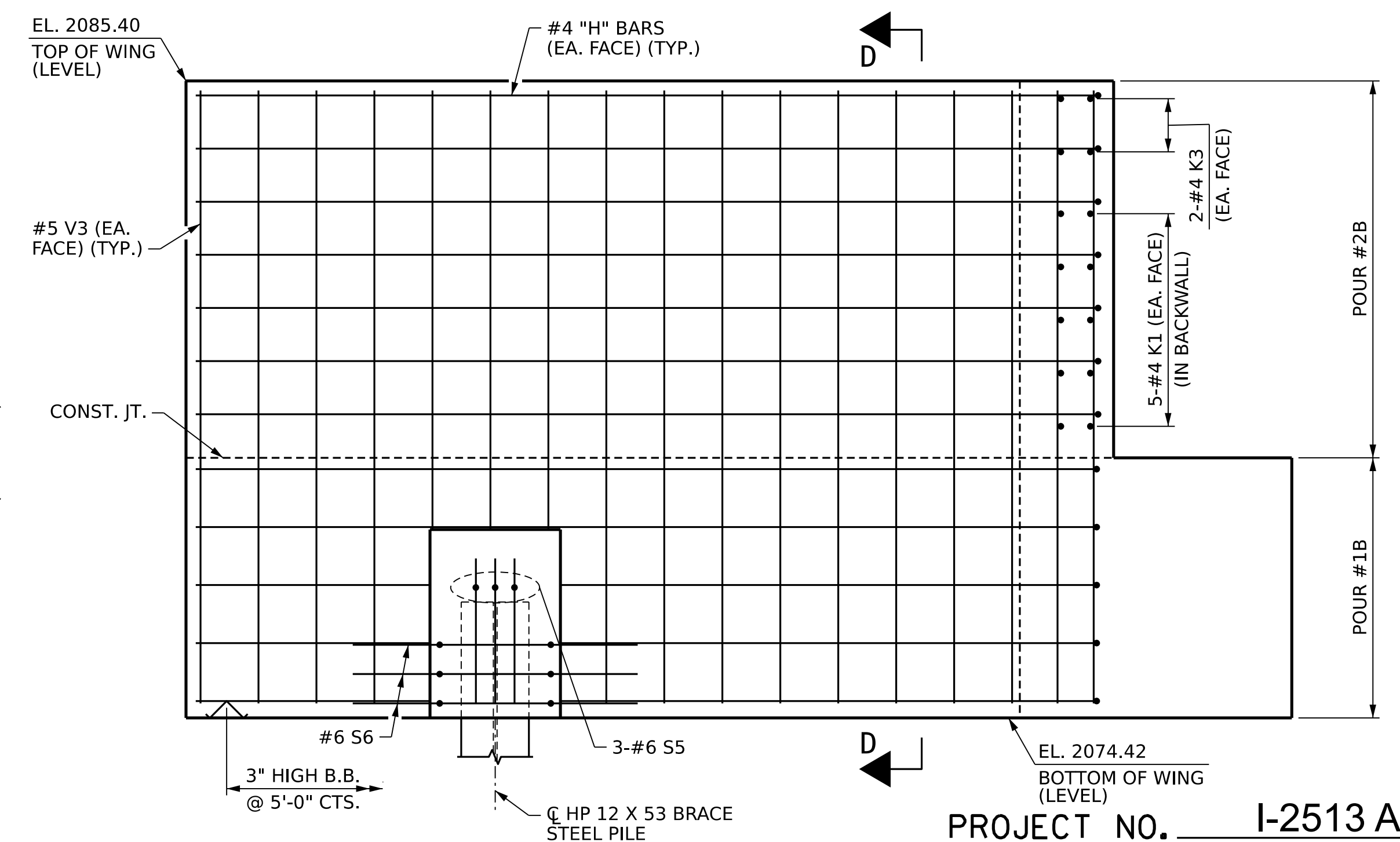
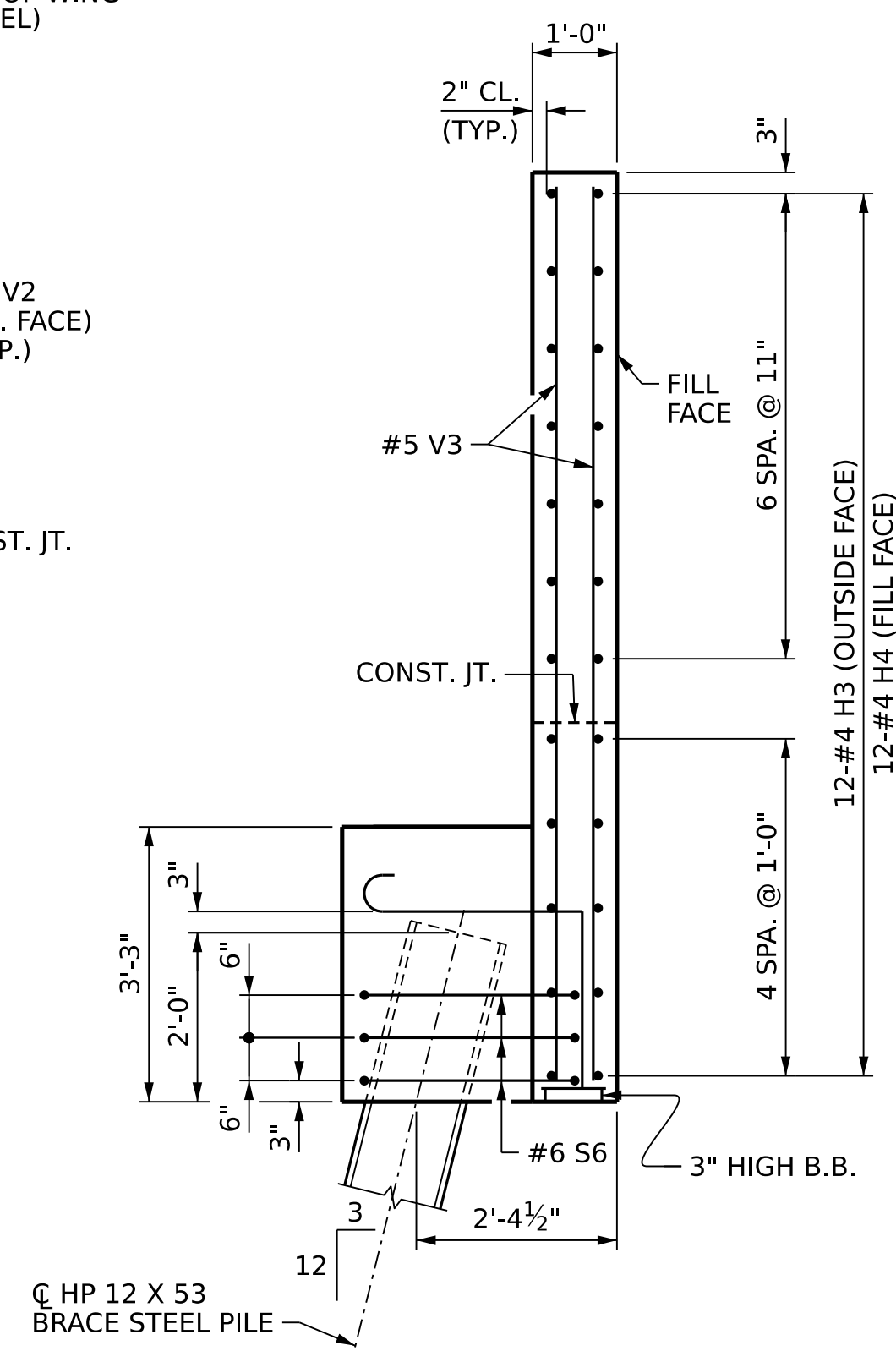
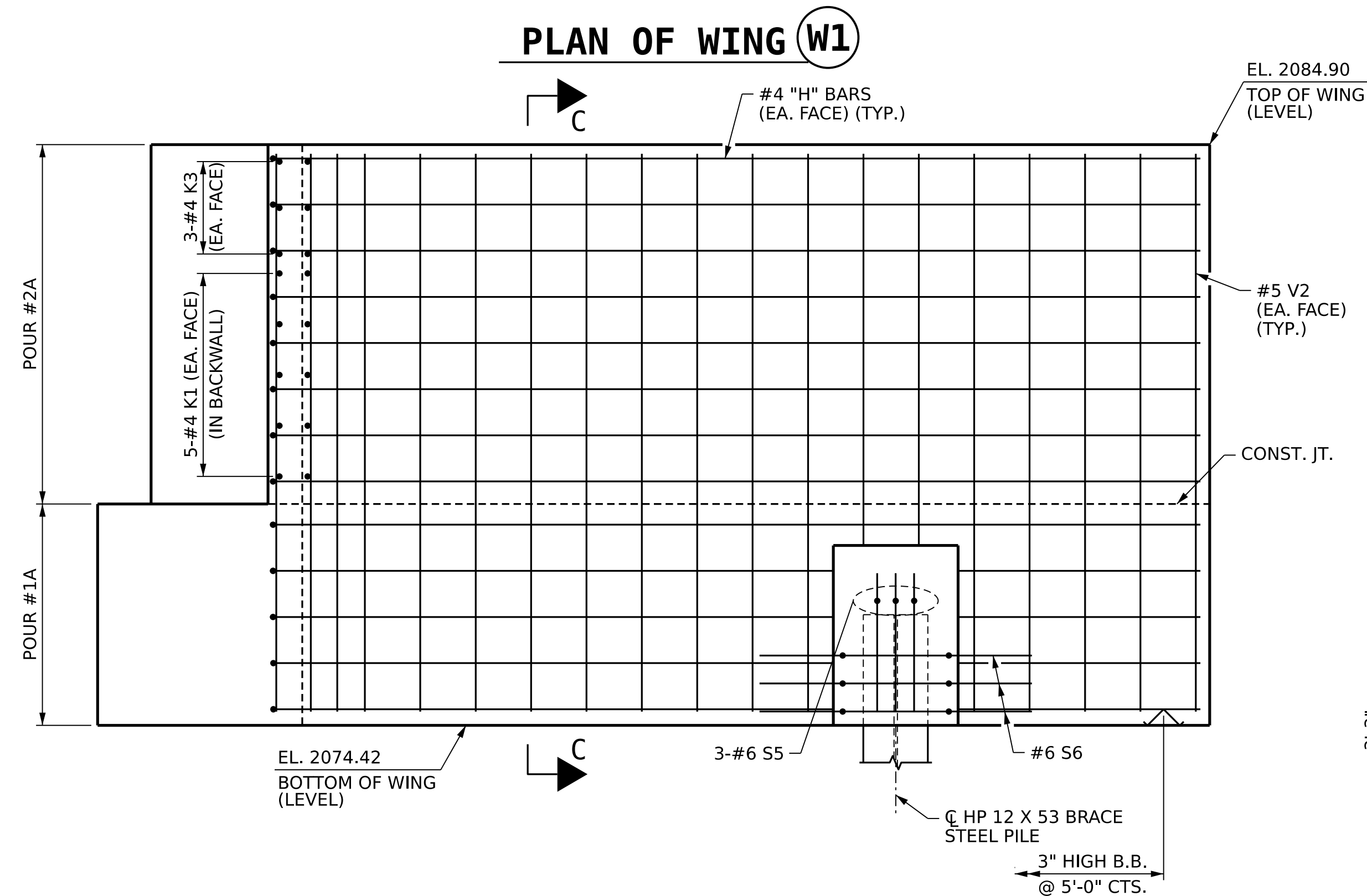
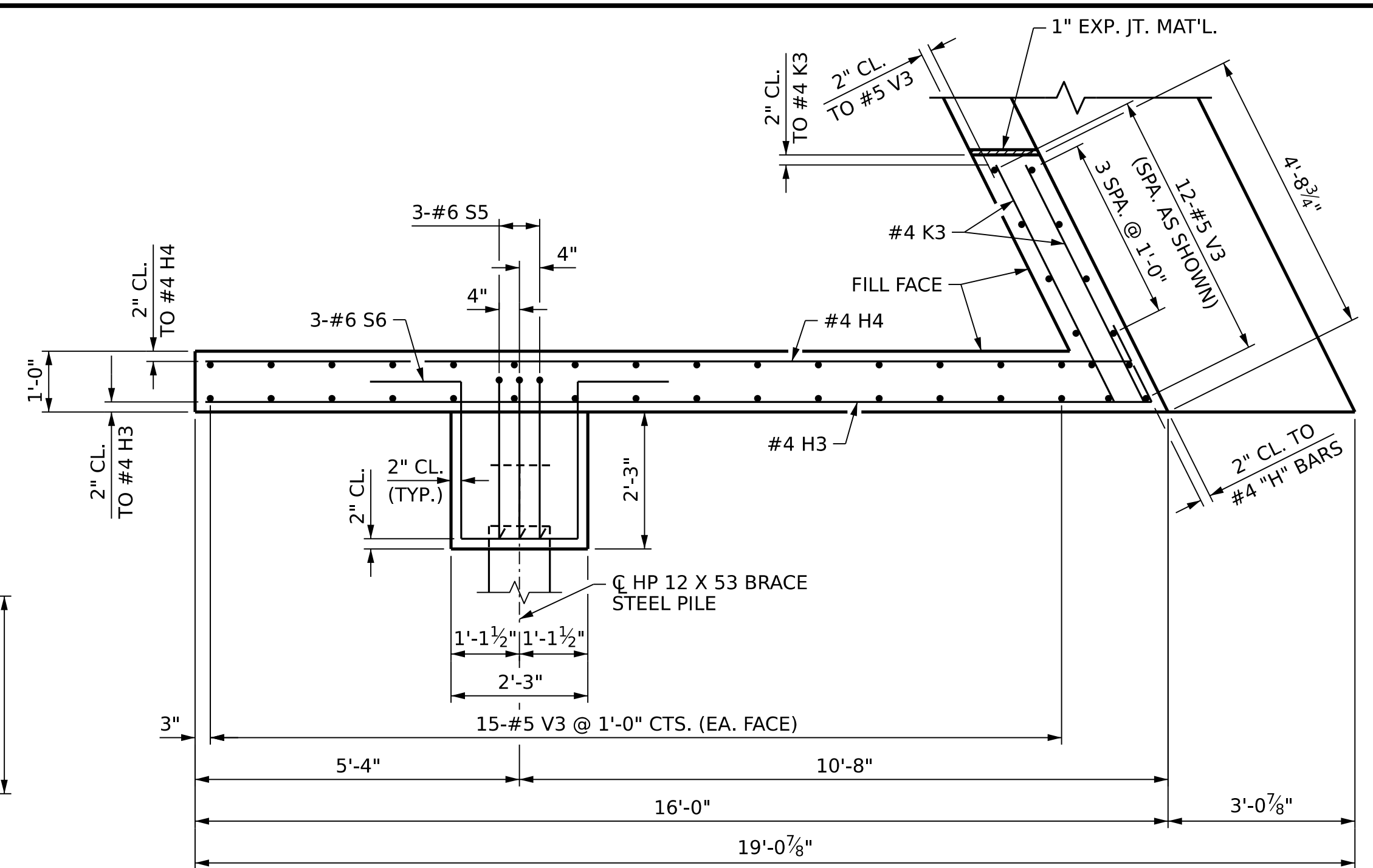
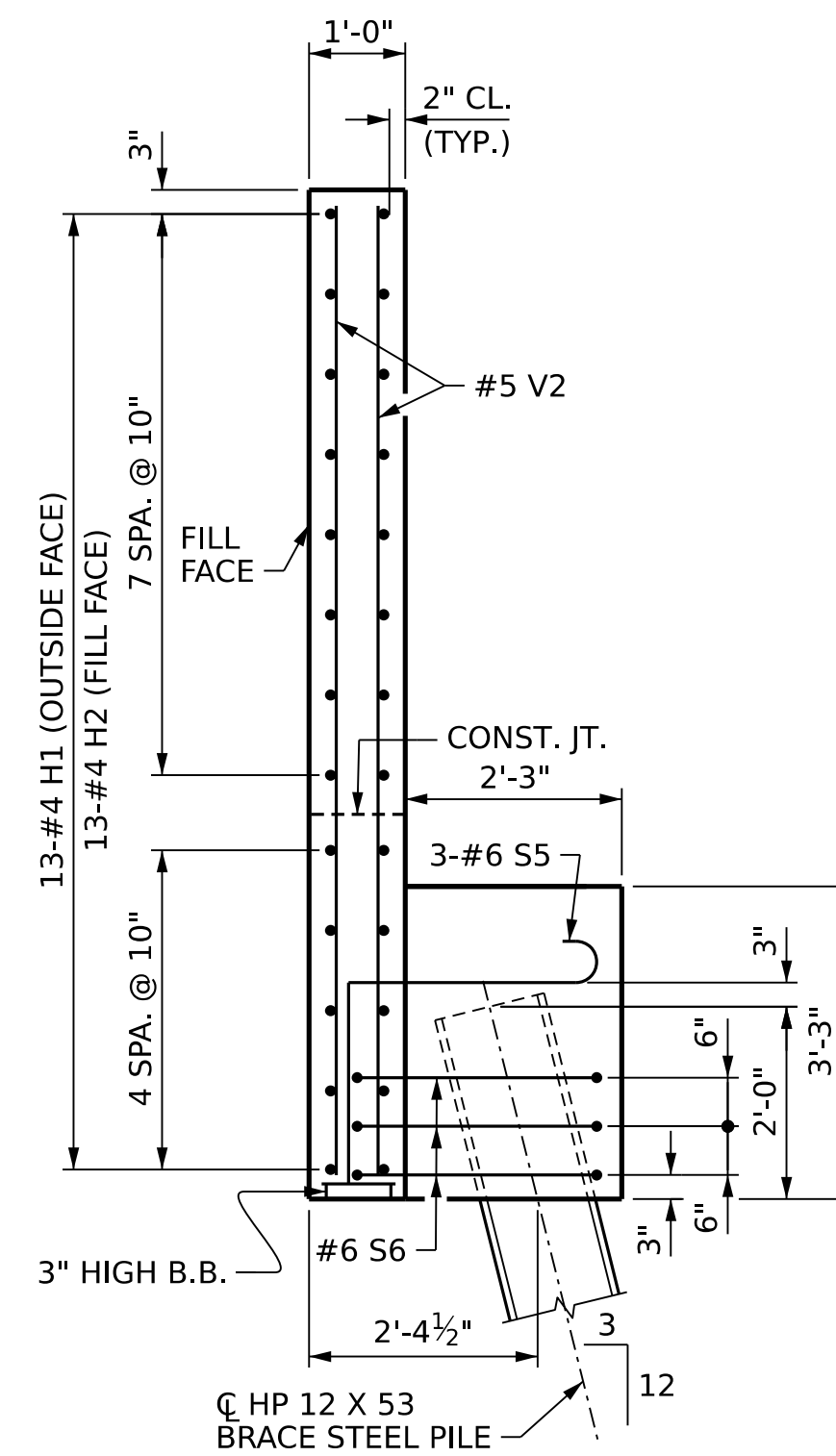
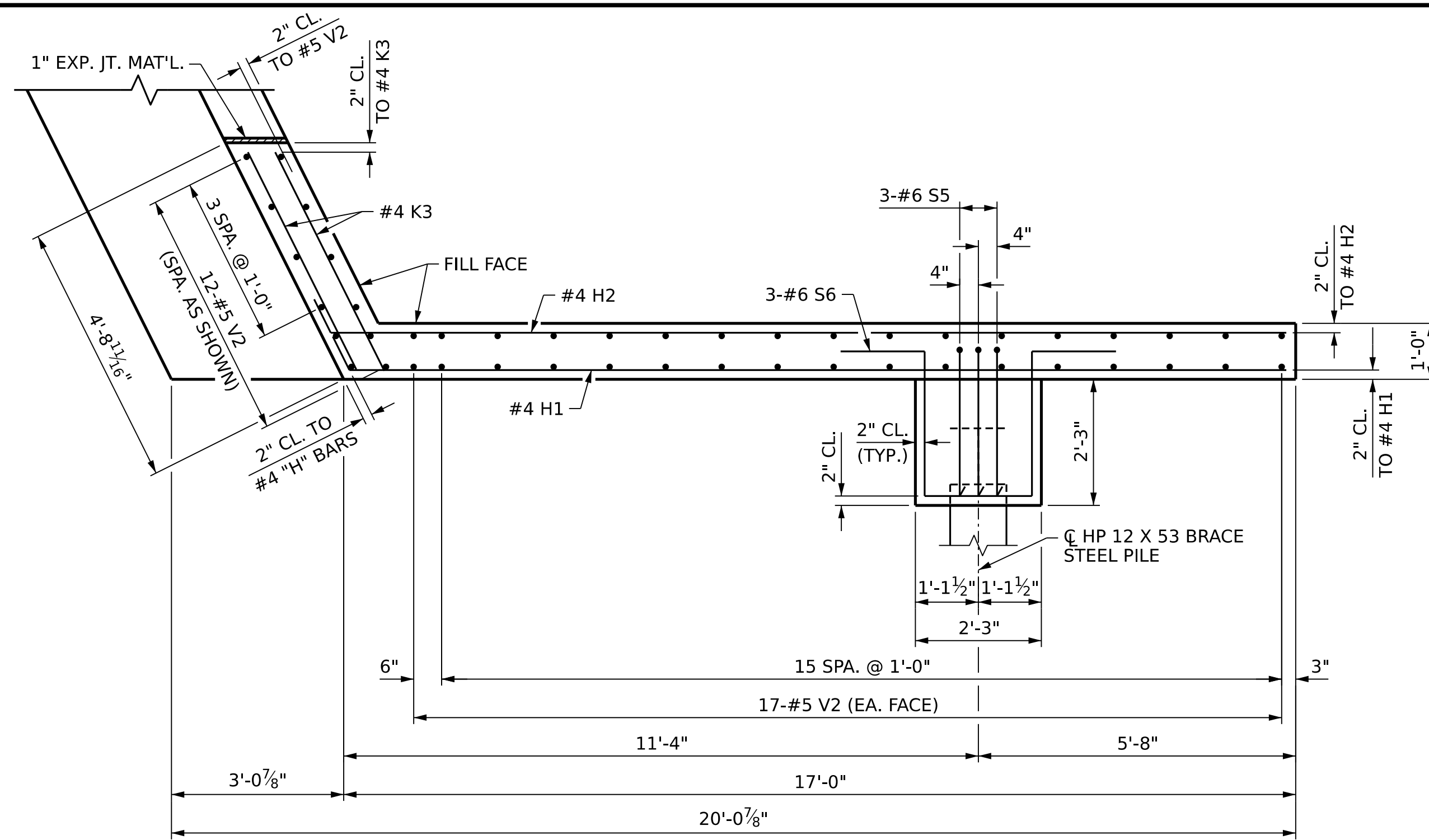
MI ENGINEERING
1011 SCHAUH DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S06-42
2			4			

TOTAL SHEETS: 60

DRAWN BY: B.E. LANNING DATE: 10/2023
CHECKED BY: J.I. BREWER DATE: 12/2023
DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 01/2026

7/14/2026 2:34:24 PM User: jblanning
Filename: N:\NC Bridges\W21002-I-2513A I-26 (AECOM)\I-2513AC\Structures\SITE\406.083.12513AC.SMU.EIB.S06-42.100242.dgn



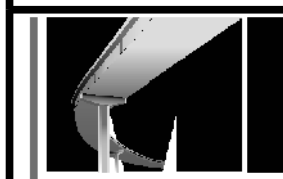
PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
 STATION: 22+70.15 -Y2-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1
WINGWALL DETAILS

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

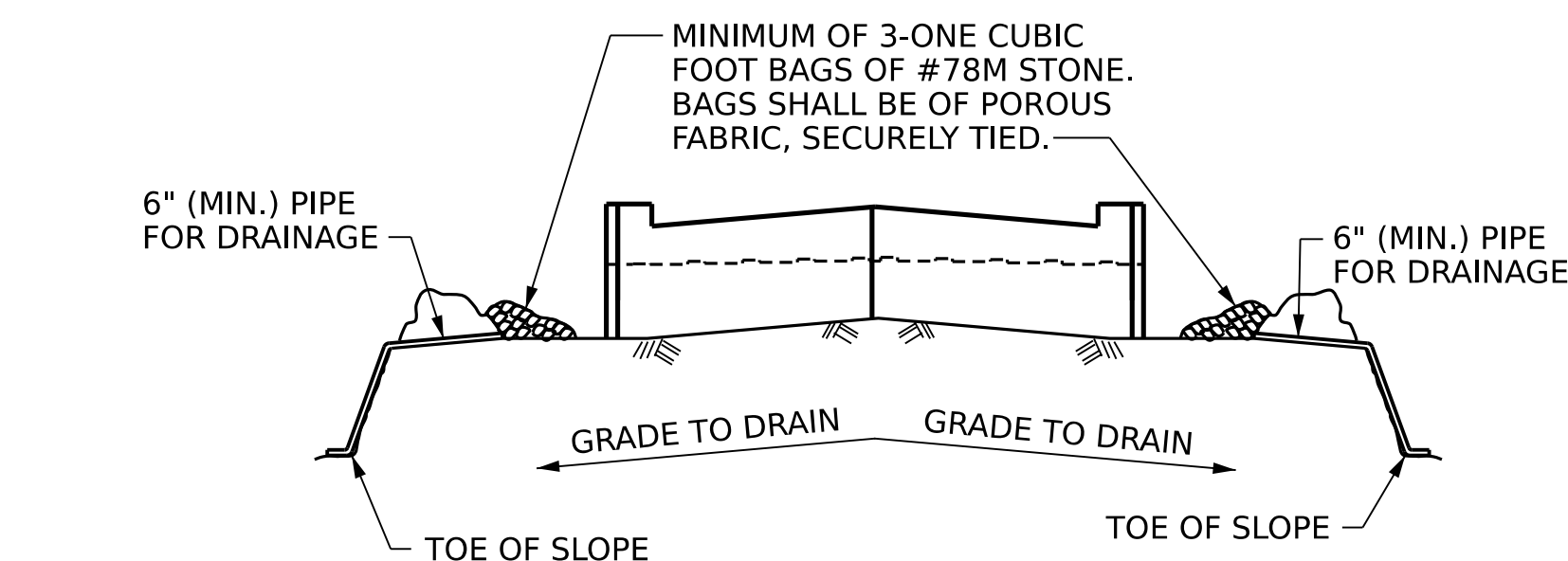


MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 10
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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

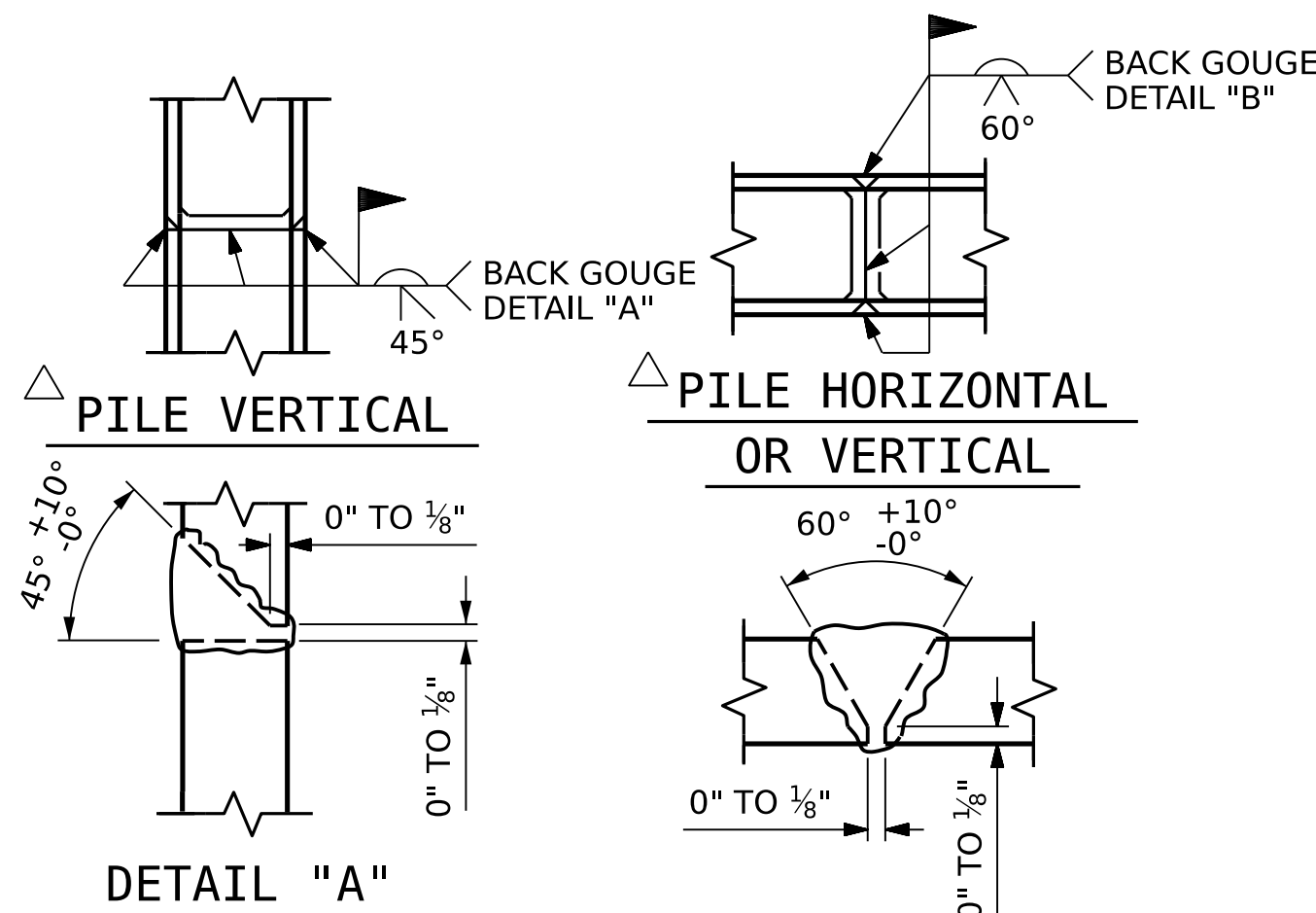
SHEET NO.	S06-43
TOTAL SHEETS	60

7/14/2026
2:34:30 PM
User: blanning
Filename: N:\NC Bridges\W21002_I-25\3A_I-26 (AECOM)\I-25\3A\Structures\SITE6\406_085_I25\3A\SMU.EIC.506-43_100242.dgn

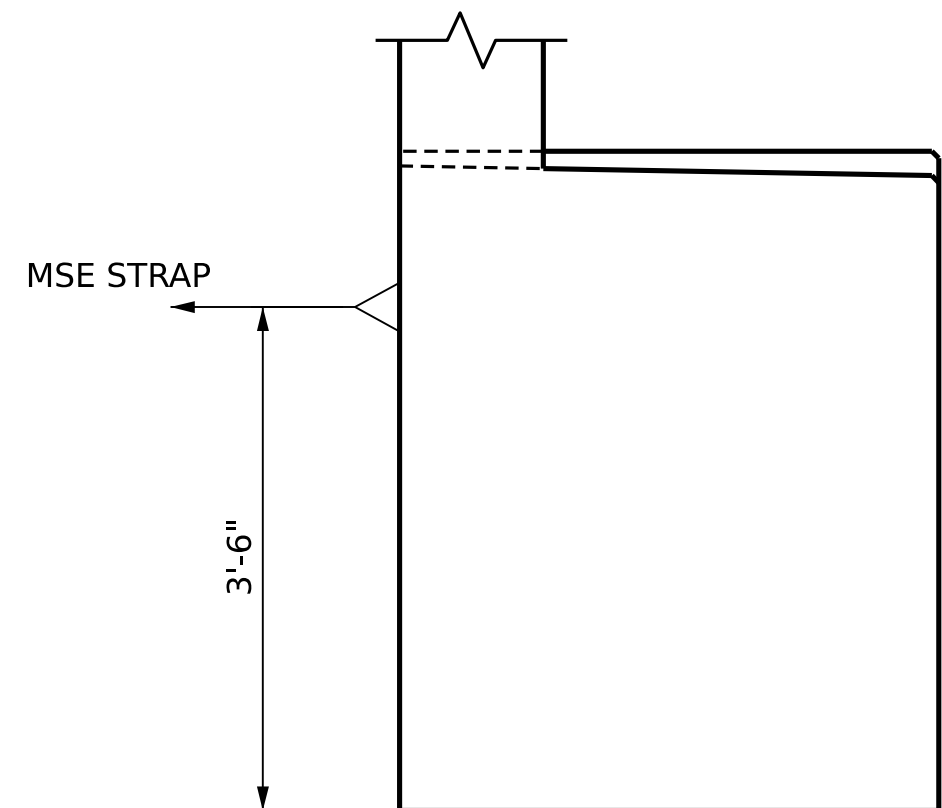


NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

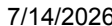
DRAWN BY :	<u>B.E. LANNING</u>	DATE :	<u>10/2023</u>
CHECKED BY :	<u>J.I. BREWER</u>	DATE :	<u>01/2024</u>
DESIGN ENGINEER OF RECORD :	<u>J.I. BREWER</u>	DATE :	<u>01/2026</u>



PILE SPLICE DETAILS



MSE STRAPS (BY OTHERS) TO RESIST 5.61 KIPS/FT.
TOTAL FACTORED LOAD NORMAL TO THE END BENT CAP.



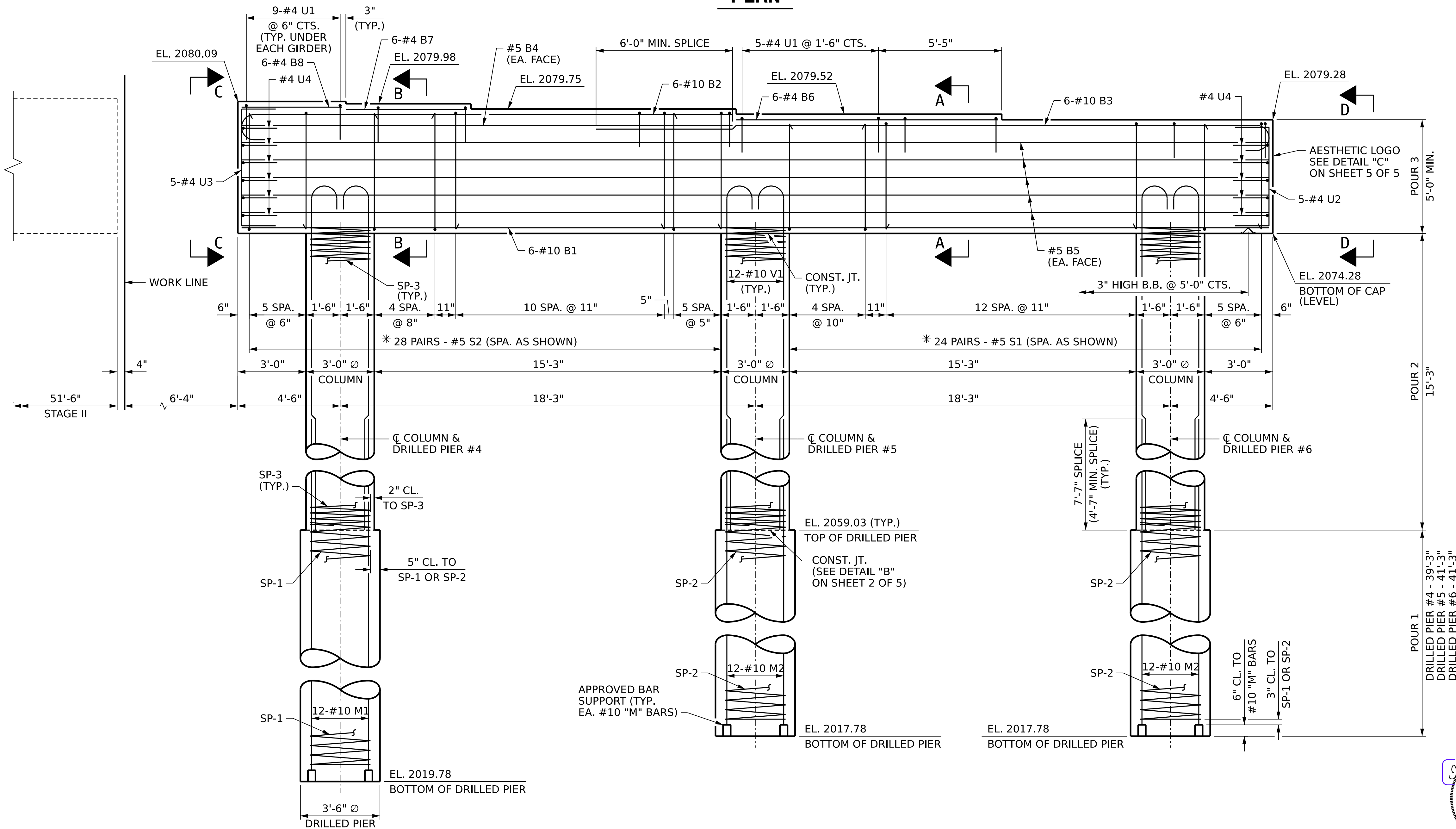
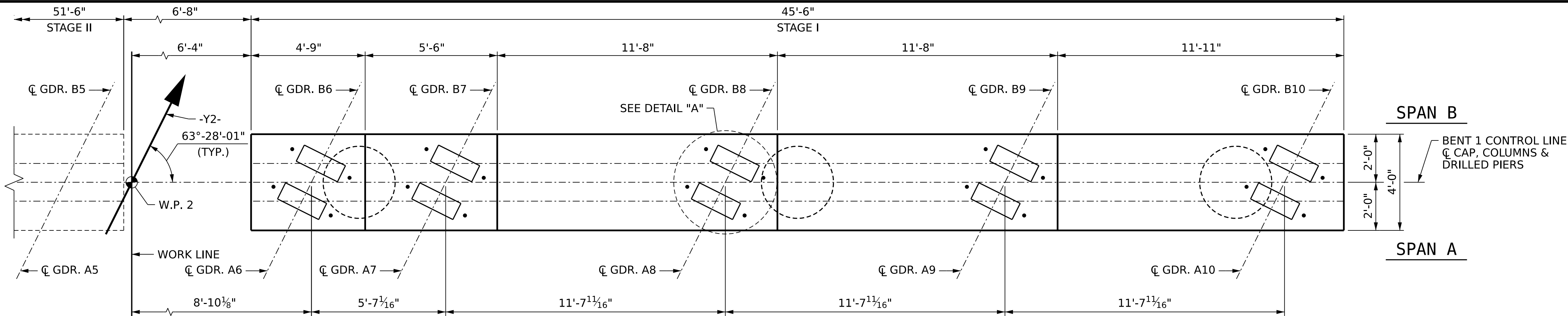
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 1
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
 STATION: 22+70.15 -Y2-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	506-44 TOTAL SHEETS 60
1			3			
2			4			

7/14/2026 2:34:44 PM User: planning
Filename: N:\NC Bridges\21002.I-2513A I-26 (AECOM)\I-2513AC\Structures\SITE\406.089.12513AC.SMU.BIA.S06-45.100242.dgn



NOTES:

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

HOOKE ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR SECTION A-A, SECTION B-B, VIEW C-C, VIEW D-D AND END ELEVATION, SEE SHEET 2 OF 5.

* INVERT ALTERNATE PAIRS OF STIRRUPS.

FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

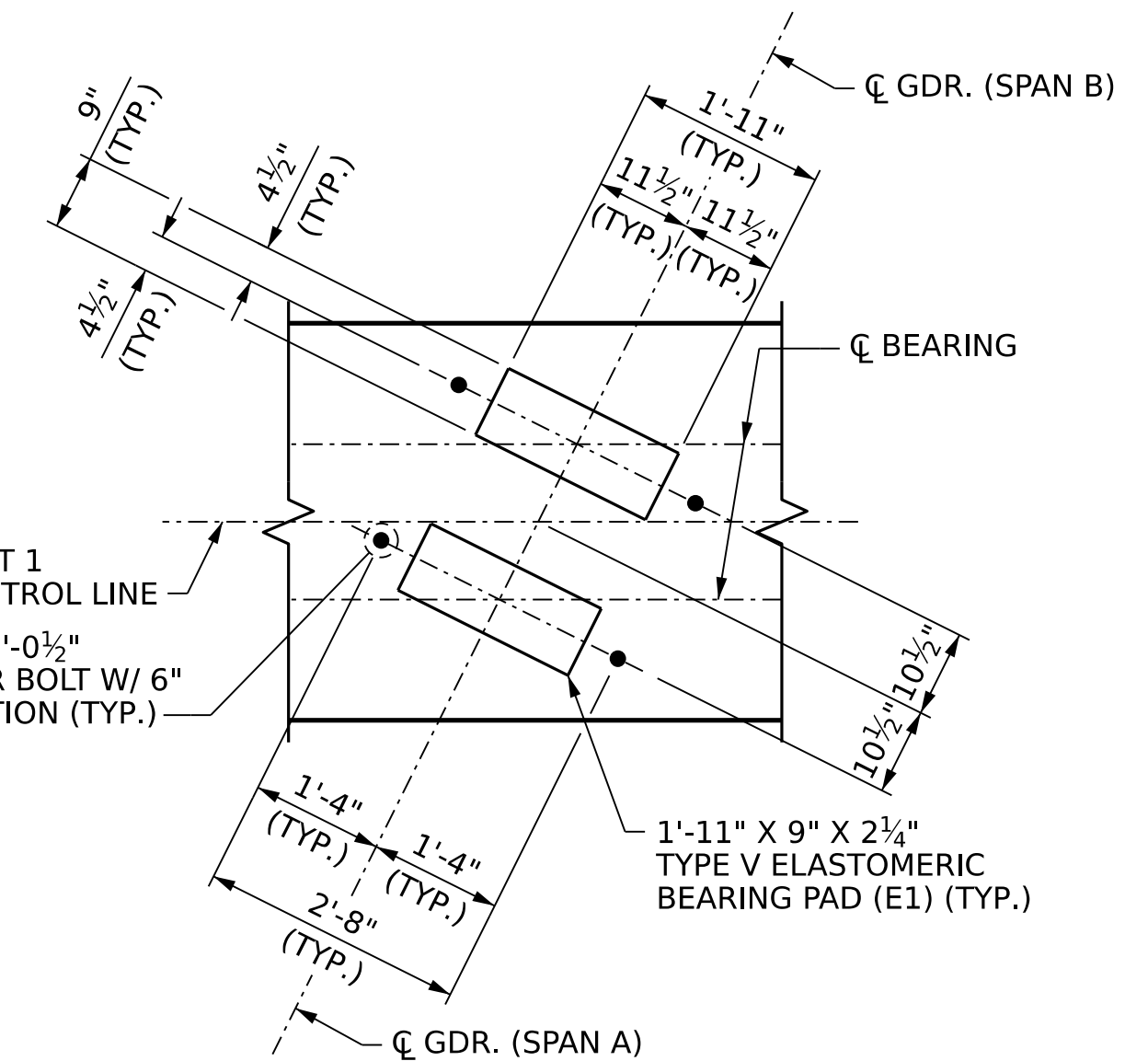
ALL STEEL IN THE DRILLED PIER IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

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

THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

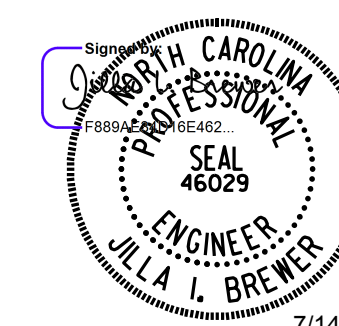
STAIN EXPOSED PART OF COLUMNS AS WELL AS BOTTOM AND SIDES OF BENT CAP. COLOR SHALL BE FS 30372. SEE SPECIAL PROVISION FOR APPLICATION OF BRIDGE COATING.

FOR AESTHETICS ON END OF BENT CAP, SEE AESTHETIC DETAILS, SHEET 5 OF 5.

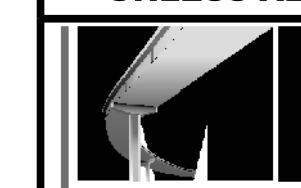


PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-

SHEET 1 OF 5



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 1
PLAN AND ELEVATION

STAGE I

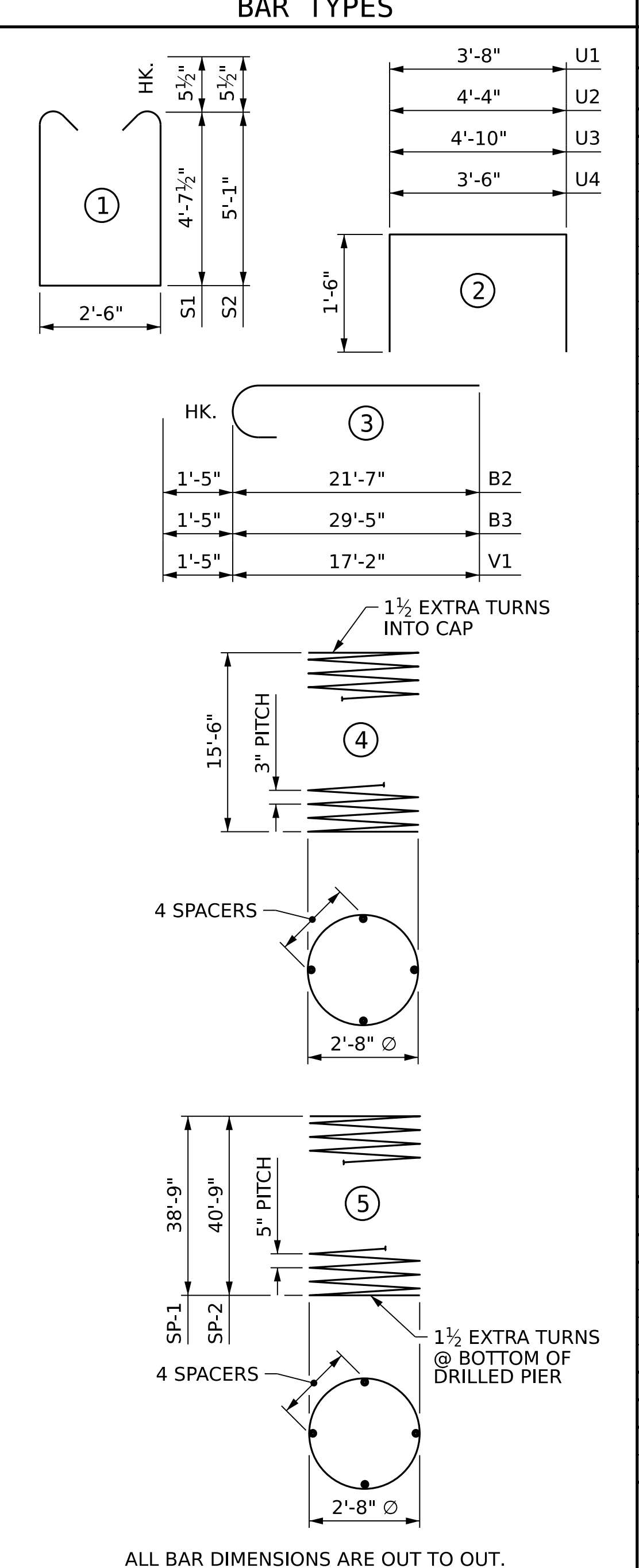
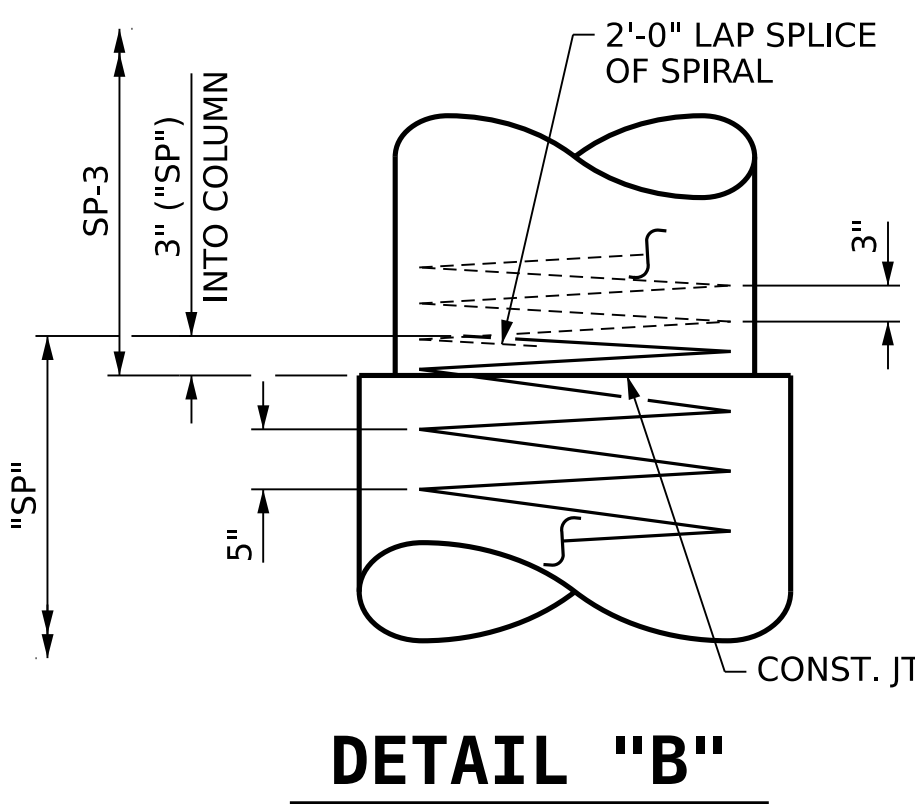
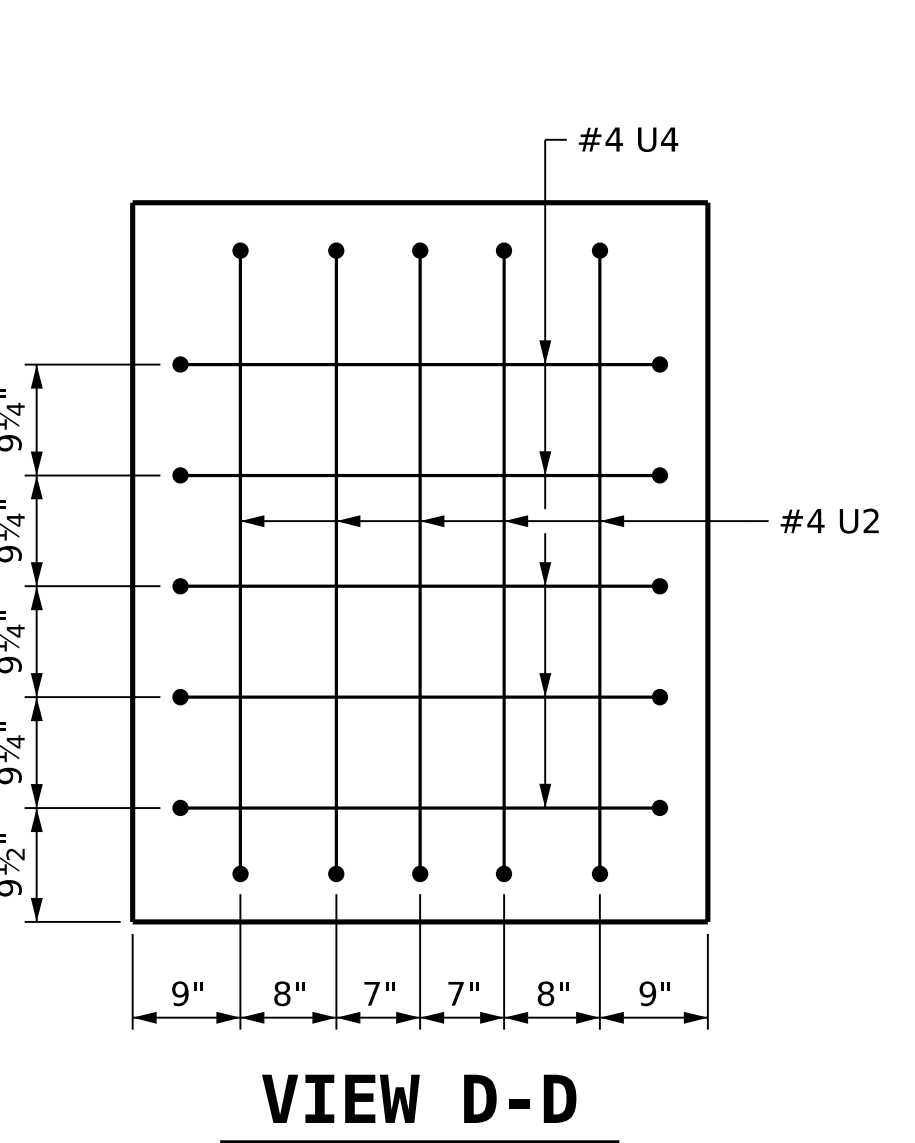
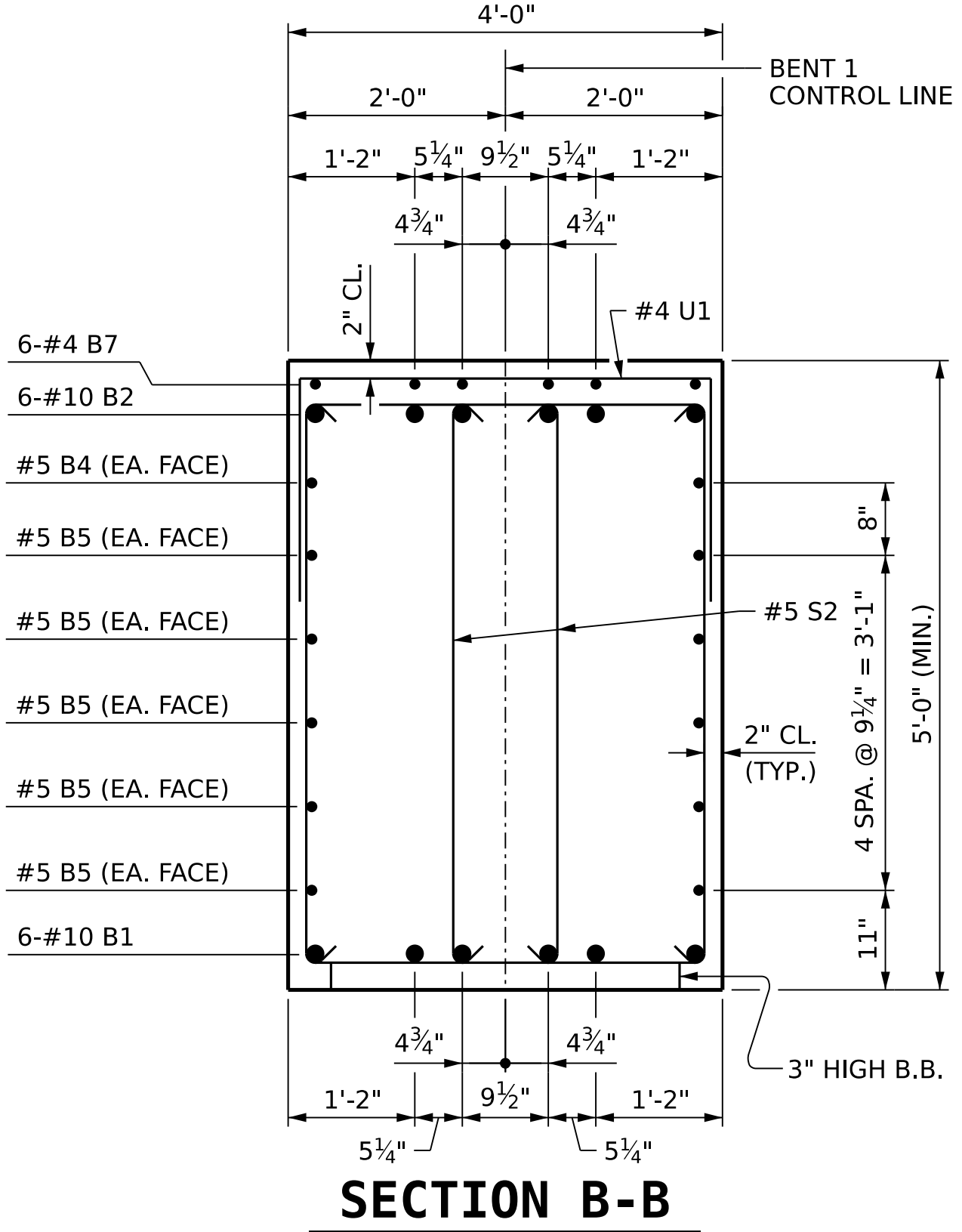
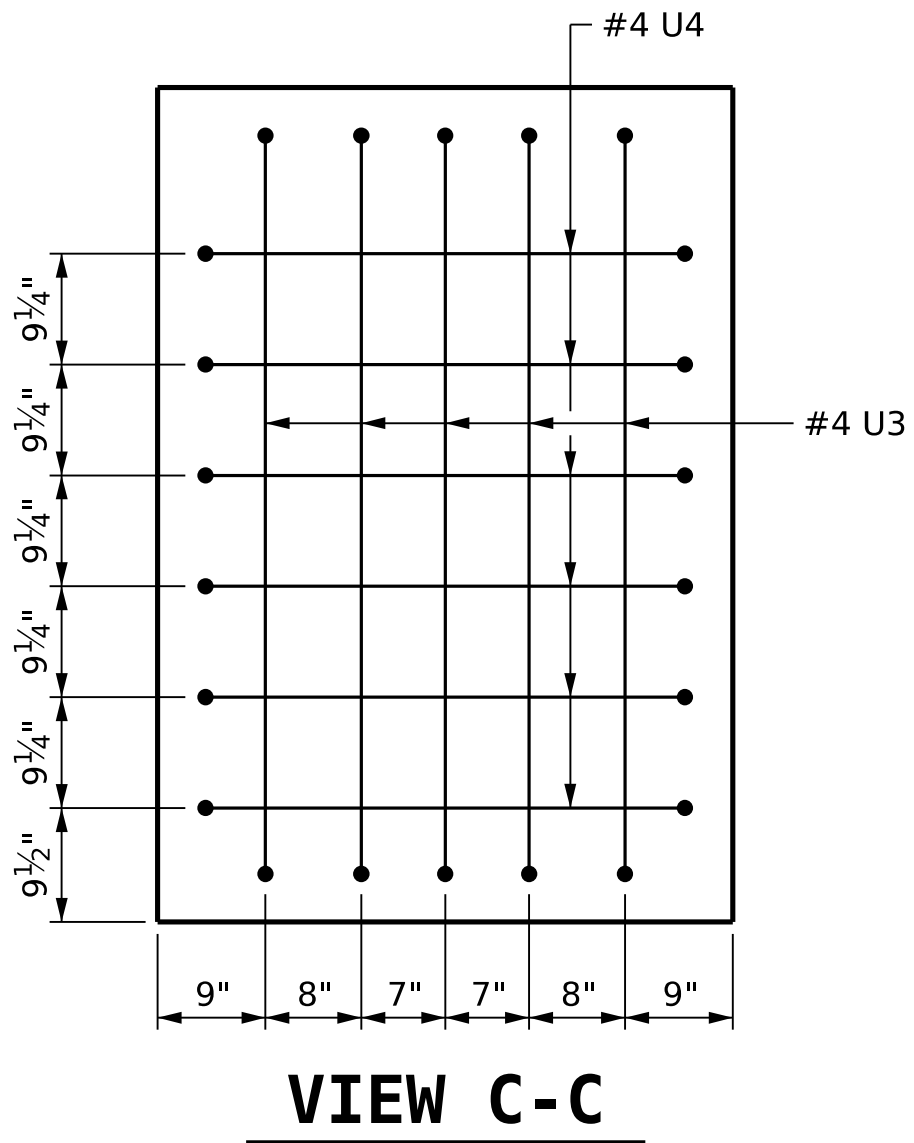
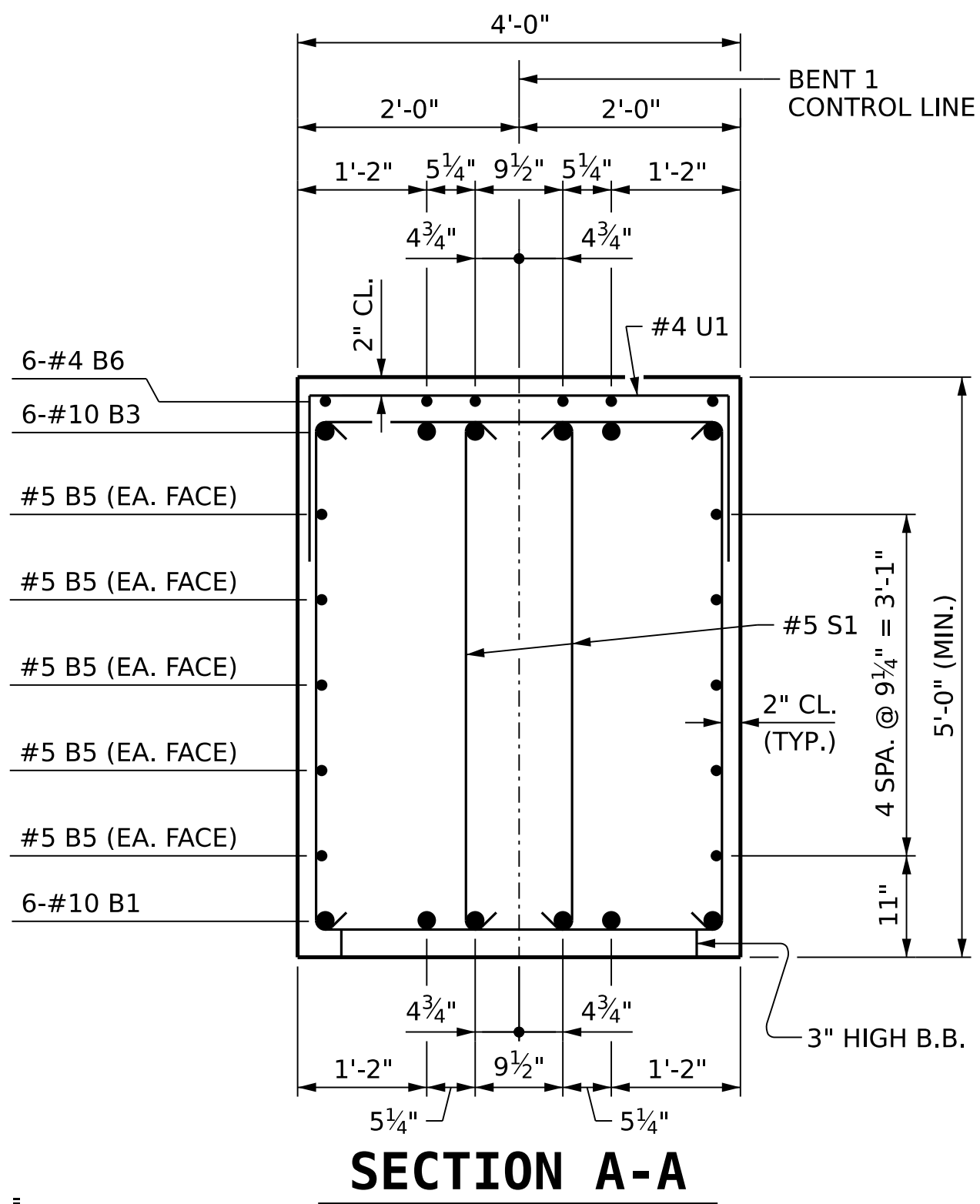
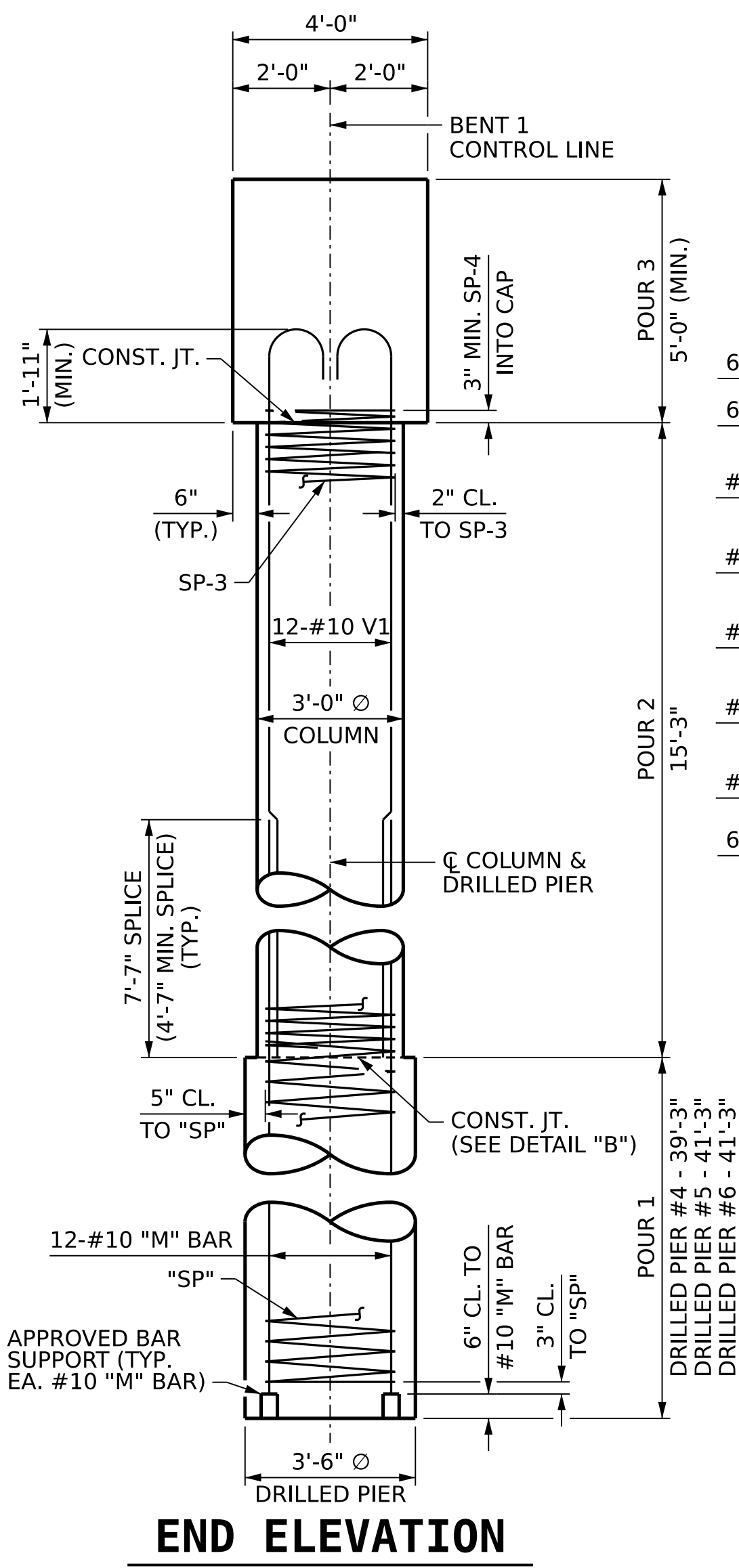
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S06-45
2			4			

TOTAL SHEETS: 60

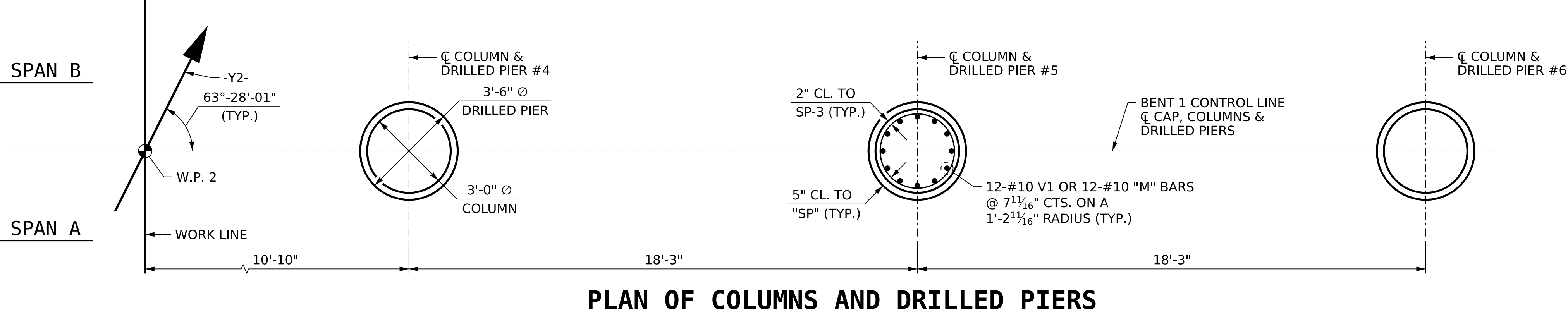
DRAWN BY: B.E. LANNING DATE: 12/2023
CHECKED BY: J.I. BREWER DATE: 03/2024
DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 01/2026

REINFORCING STEEL, DIMENSIONS AND DETAILS ARE TYPICAL
FOR EACH COLUMN AND DRILLED PIER UNLESS OTHERWISE NOTED (U.O.N.)

7/14/2026 2:34:46 PM User: jblanning
Filename: N:\NC Bridges\W21002-I-2513A I-26 (AECOM)\I-2513A\Structures\SITE\406.081.12513AC.SWU.BIB.S06-46-100242.dgn



BILL OF MATERIAL					
BENT 1					
STAGE I					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	#10	STR	45'-2"	1166
B2	6	#10	3	23'-0"	594
B3	6	#10	3	30'-10"	796
B4	2	#5	STR	21'-9"	45
B5	10	#5	STR	45'-2"	471
B6	6	#4	STR	11'-6"	46
B7	6	#4	STR	5'-4"	21
B8	6	#4	STR	4'-5"	18
M1	12	#10	STR	46'-4"	2392
M2	24	#10	STR	48'-4"	4991
S1	48	#5	1	12'-8"	634
S2	56	#5	1	13'-7"	793
U1	50	#4	2	6'-8"	223
U2	5	#4	2	7'-4"	24
U3	5	#4	2	7'-10"	26
U4	13	#4	2	6'-6"	56
V1	36	#10	3	18'-7"	2879
REINFORCING STEEL					15,175 LBS.
SPIRAL COLUMN REINFORCING STEEL					
					3,557 LBS.
* THE SP-3 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.					
** THE SP-1 & SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.					
APPLICATION OF BRIDGE COATING					1150 SF
CLASS A CONCRETE BREAKDOWN					
POUR #2 (COLUMNS)				12.0	C.Y.
POUR #3 (CAP)				36.1	C.Y.
TOTAL				48.1	C.Y.
DRILLED PIERS					
DRILLED PIER CONCRETE					
POUR #1 (DRILLED PIERS)				43.4	C.Y.



PLAN OF COLUMNS AND DRILLED PIERS
(DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER)

DRAWN BY:	B.E. LANNING	DATE:	12/2023
CHECKED BY:	J.I. BREWER	DATE:	03/2024
DESIGN ENGINEER OF RECORD:	J.I. BREWER	DATE:	01/2026

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-
SHEET 2 OF 5

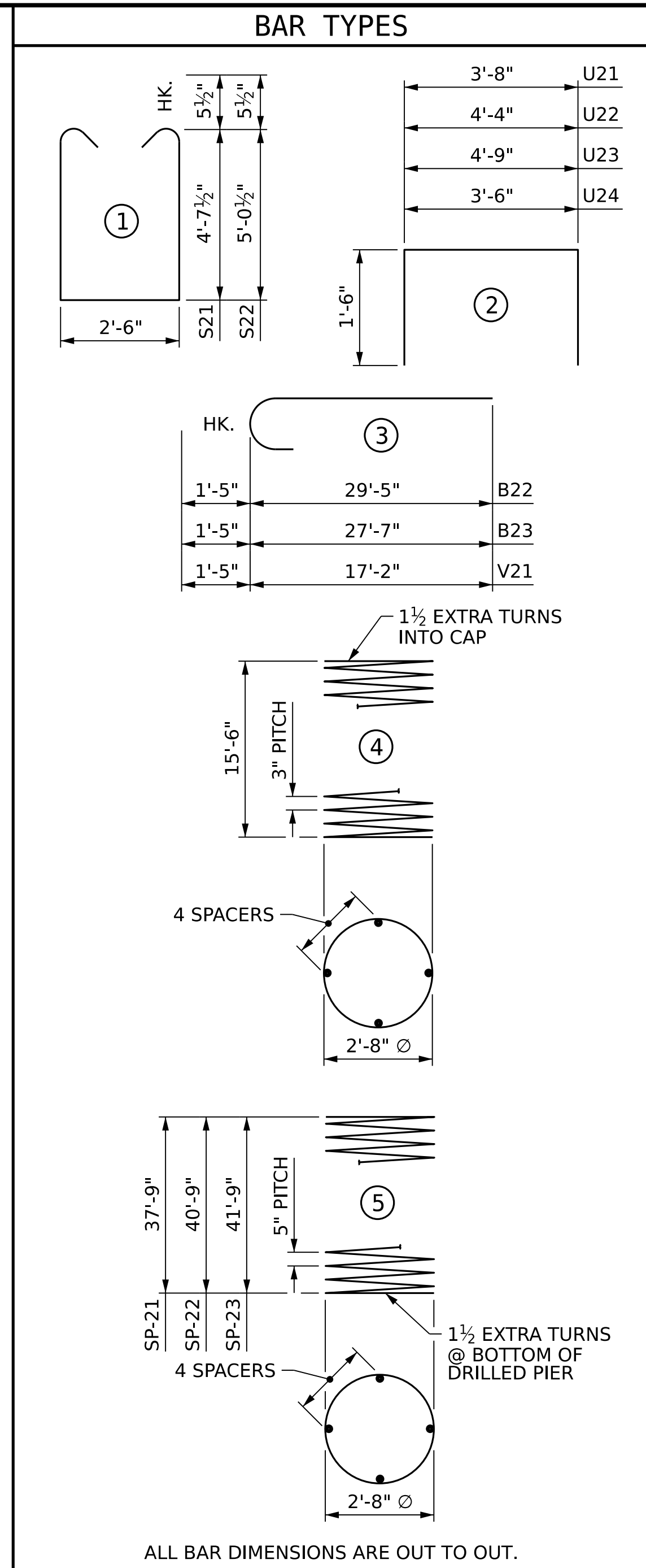
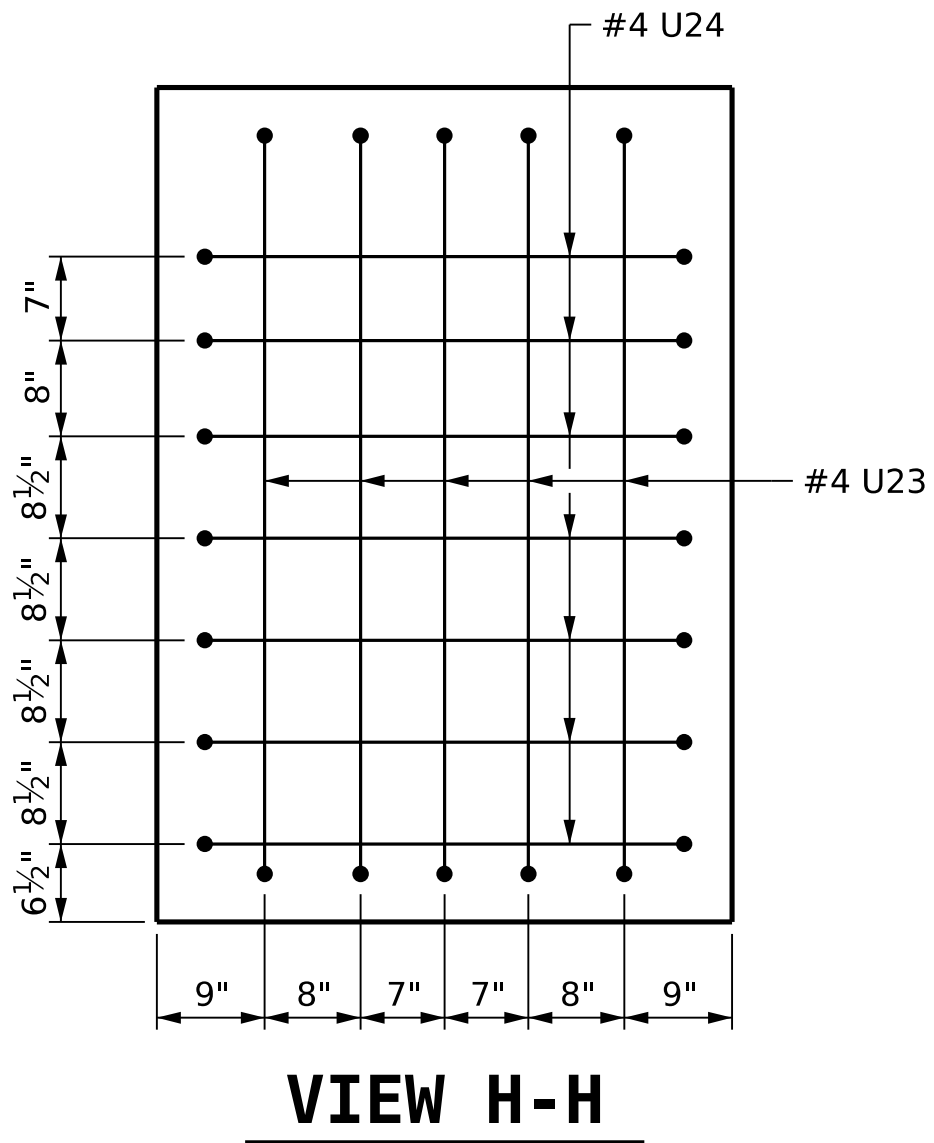
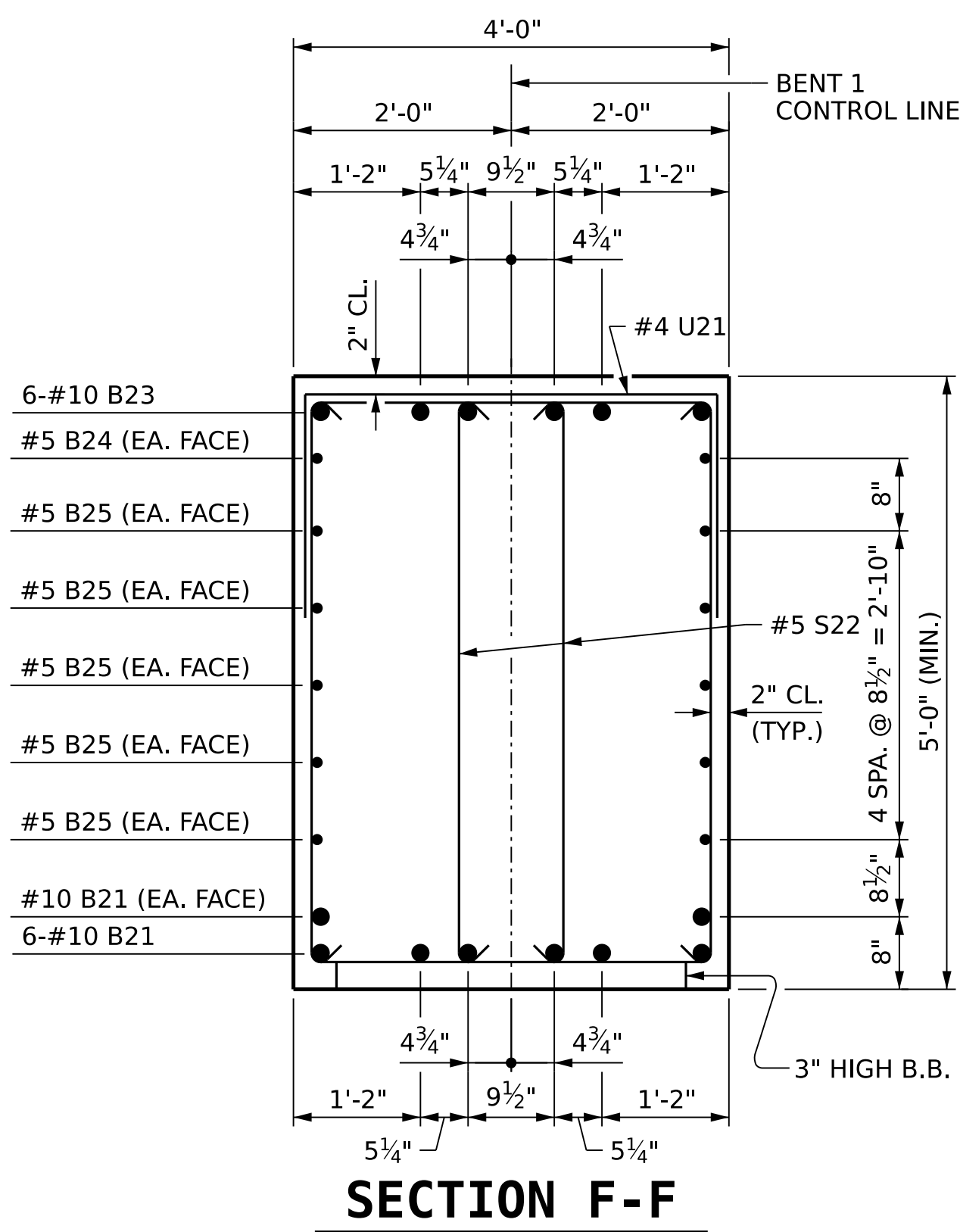
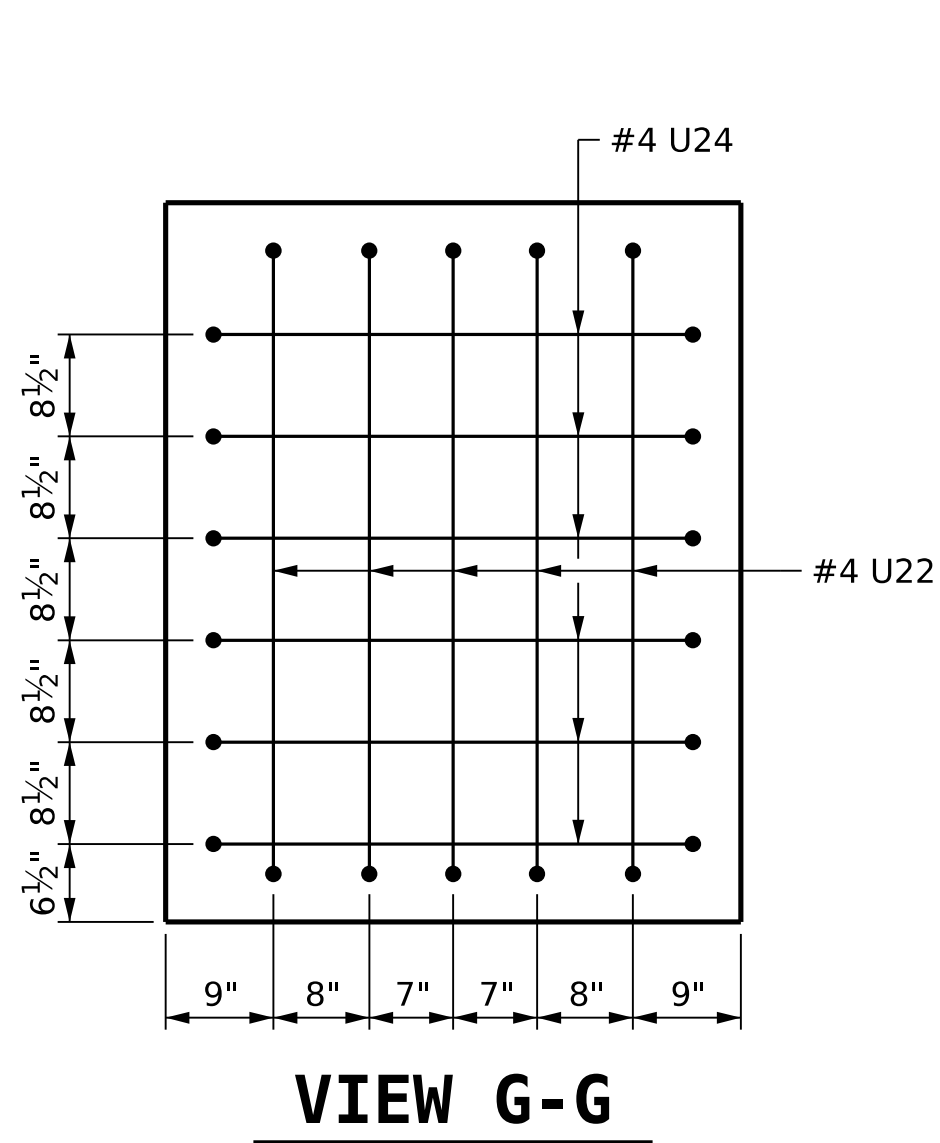
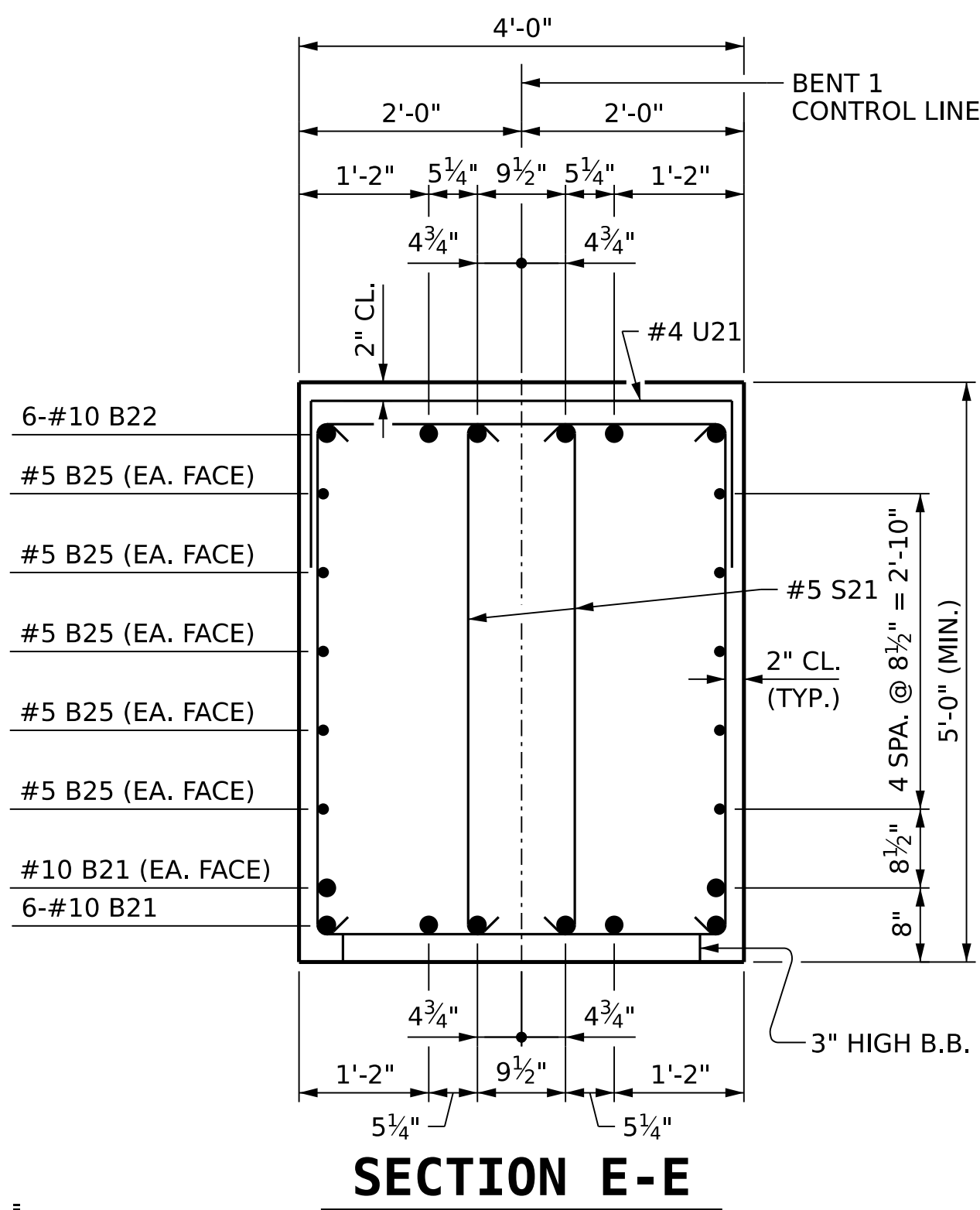
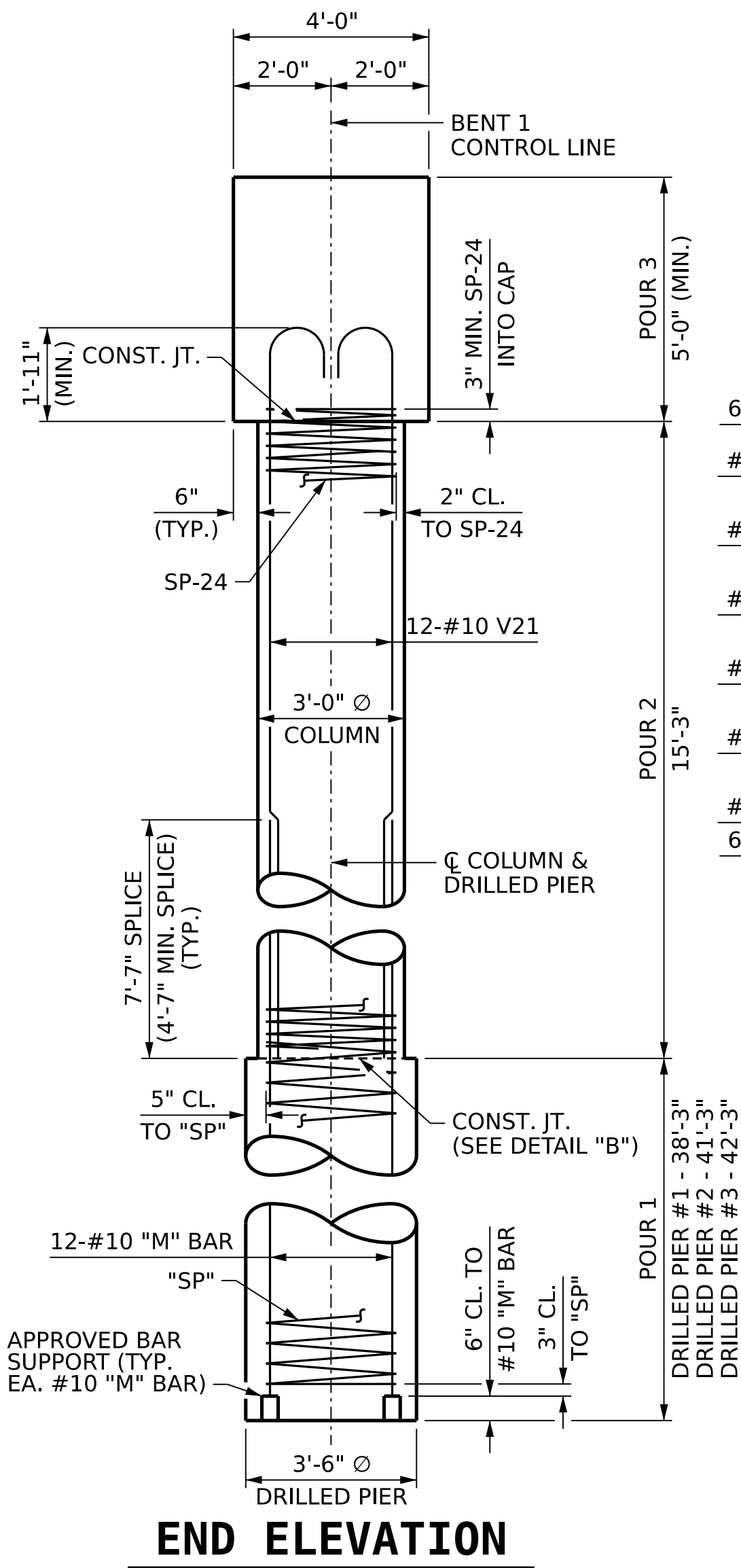
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 1
DETAILS AND
BILL OF MATERIAL
STAGE I

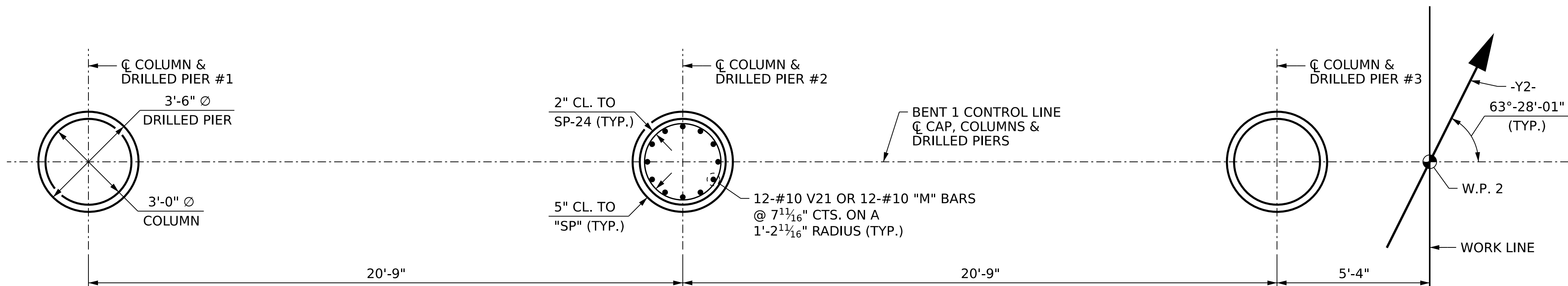
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S06-46
TOTAL SHEETS 60

7/14/2026 2:34:51 PM User: planning
Filename: N:\NC Bridges\W21002.I-2513A I-26 (4ECOM\I-2513A\Structures\SITE\406.095.12513AC.SMU.BID.S06-48.100242.dgn



BILL OF MATERIAL					
BENT 1					
STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B21	8	#10	STR	51'-2"	1761
B22	6	#10	3	30'-10"	796
B23	6	#10	3	29'-0"	749
B24	2	#5	STR	27'-9"	58
B25	10	#5	STR	51'-2"	534
B26	6	#4	STR	4'-3"	17
M21	12	#10	STR	45'-4"	2341
M22	12	#10	STR	48'-4"	2496
M23	12	#10	STR	49'-4"	2547
S21	52	#5	1	12'-8"	687
S22	56	#5	1	13'-6"	789
U21	45	#4	2	6'-8"	200
U22	5	#4	2	7'-4"	24
U23	5	#4	2	7'-9"	26
U24	13	#4	2	6'-6"	56
V21	36	#10	3	18'-7"	2879
REINFORCING STEEL				15,960	LBS.
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
SP-21	1	***	5	755'-11"	788
SP-22	1	***	5	815'-0"	850
SP-23	1	***	5	834'-9"	871
SP-24	3	*	4	522'-10"	1048
SPIRAL COLUMN REINFORCING STEEL				3,557	LBS.
* THE SP-24 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.					
** THE SP-21, SP-22 & SP-23 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR.					
APPLICATION OF BRIDGE COATING				1240	SF
CLASS A CONCRETE BREAKDOWN					
POUR #2 (COLUMNS)				12.0	C.Y.
POUR #3 (CAP)				41.0	C.Y.
TOTAL				53.0	C.Y.
DRILLED PIERS					
DRILLED PIER CONCRETE					
POUR #1 (DRILLED PIERS)				43.4	C.Y.



PLAN OF COLUMNS AND DRILLED PIERS
(DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER)

DRAWN BY:	B.E. LANNING	DATE:	12/2023
CHECKED BY:	J.I. BREWER	DATE:	03/2024
DESIGN ENGINEER OF RECORD:	J.I. BREWER	DATE:	01/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED					
MI ENGINEERING 1011 SCHAUB DRIVE, SUITE 100 RALEIGH, NC 27606 (919) 851-6606 FIRM PE NUMBER : P-0671					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

PROJECT NO. I-2513 AC					
BUNCOMBE COUNTY					
STATION: 22+70.15 -Y2-					
SHEET 4 OF 5					
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE					
BENT 1					
DETAILS AND					
BILL OF MATERIAL					
STAGE II					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO.					S06-48
TOTAL SHEETS					60

1/2" FORMLINER RELIEF (STAINED)



END VIEW

DETAIL "C"

PROVIDE ON RIGHT END OF CAP AT STAGE I
AND LEFT END OF CAP AT STAGE II

QTY. "CAP END AESTHETIC" - 2 EA.

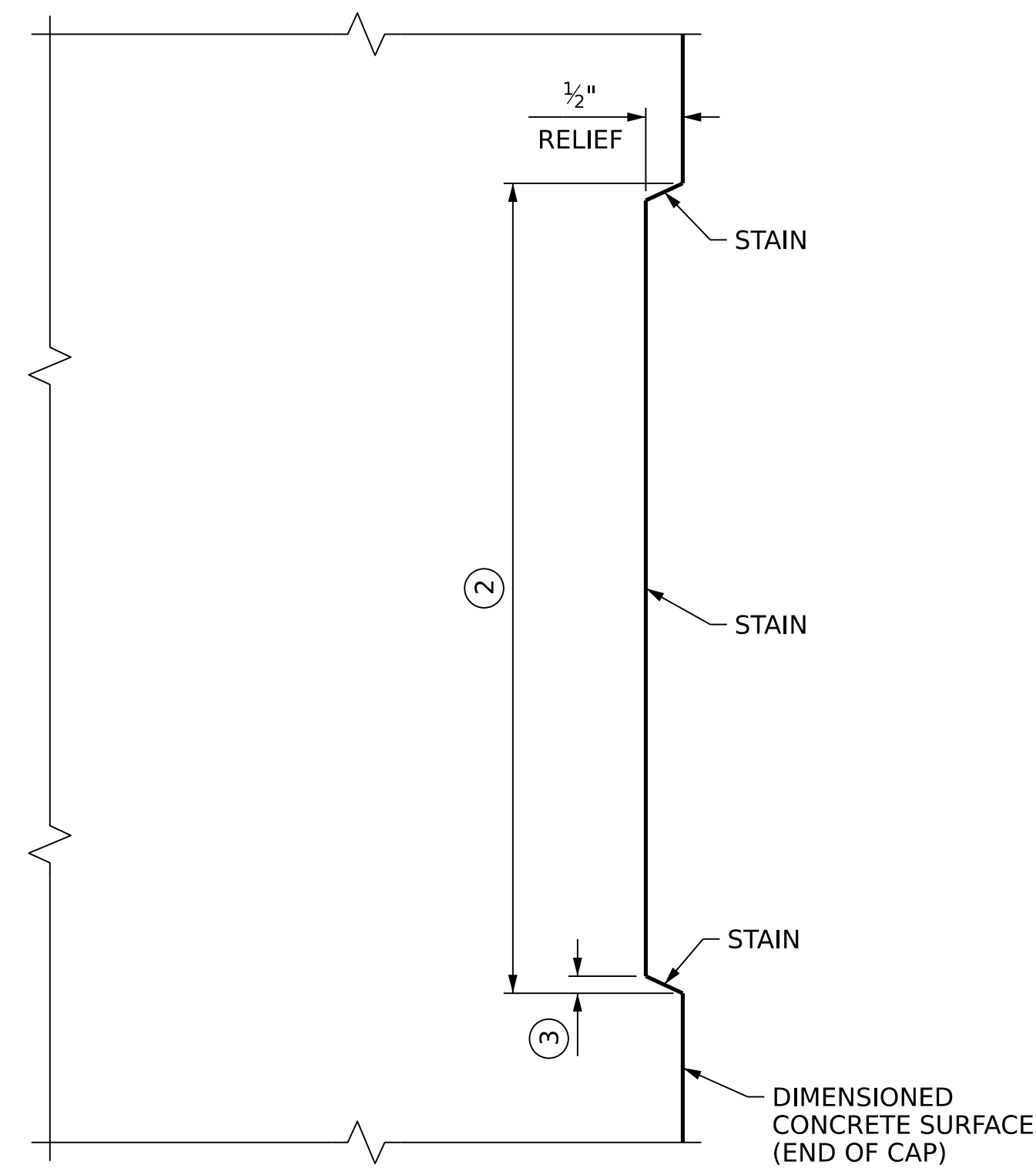
NOTES:

THE CONTRACTOR SHALL PROVIDE A FORMLINER TO ACHIEVE THE CAP END AESTHETIC AS SHOWN IN THE DETAILS AS A RELIEF AREA ON THE END OF THE CAP. THE ENTIRE AREA THAT IS RECESSED SHALL BE STAINED.

THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER THE METHOD FOR ACHIEVING THE FORMLINER RELIEF, INCLUDING DIMENSIONS, AND PAINT SYSTEM AND COLOR TO BE USED, FOR APPROVAL PRIOR TO CONSTRUCTING THE CAP.

AT THE CONTRACTOR'S REQUEST, THE ENGINEER MAY PROVIDE A DIGITAL FILE OF THE ARTWORK SHAPE.

FOR CAP END AESTHETIC, SEE SPECIAL PROVISIONS.



SECTION A-A THRU FORMLINER RELIEF

- ② DETAILED FORMLINER RELIEF AREA
③ $\frac{3}{4}$ " FORM DRAFT (TYP. ALL EDGES)

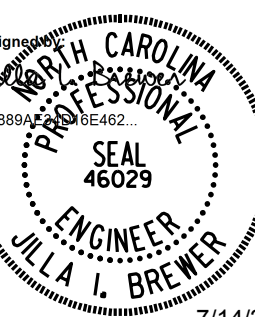
PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
 STATION: 22+70.15 -Y2-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 1
AESTHETIC DETAILS

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



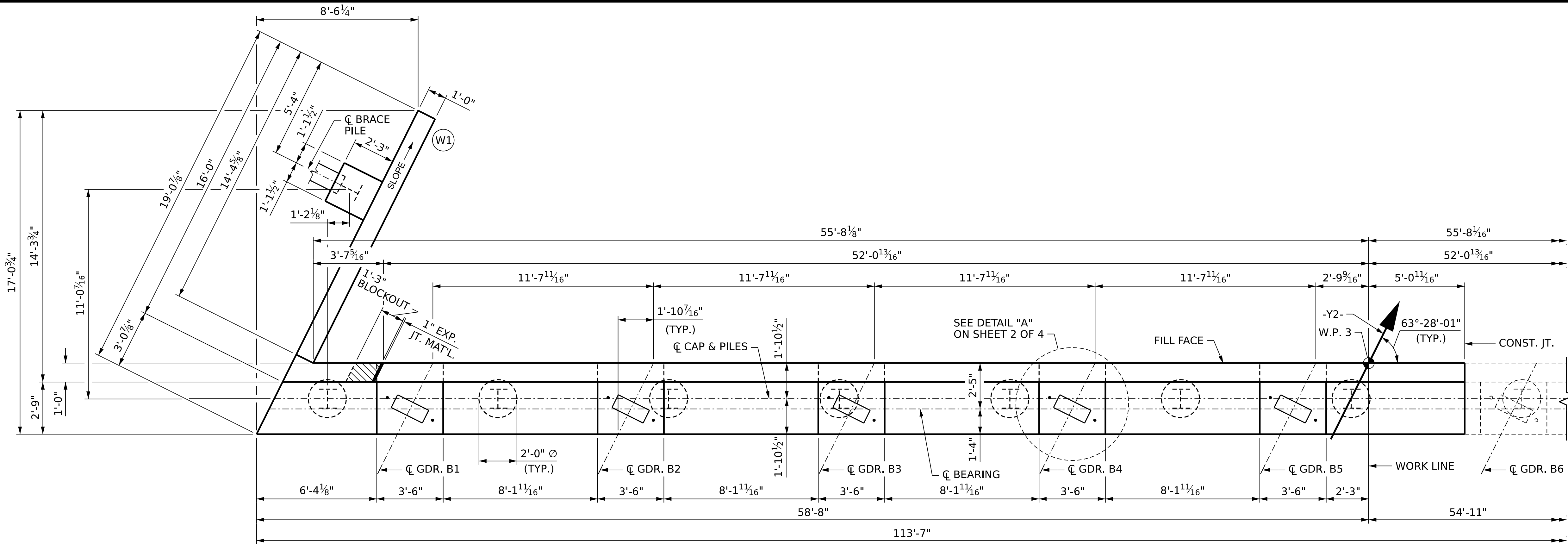
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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

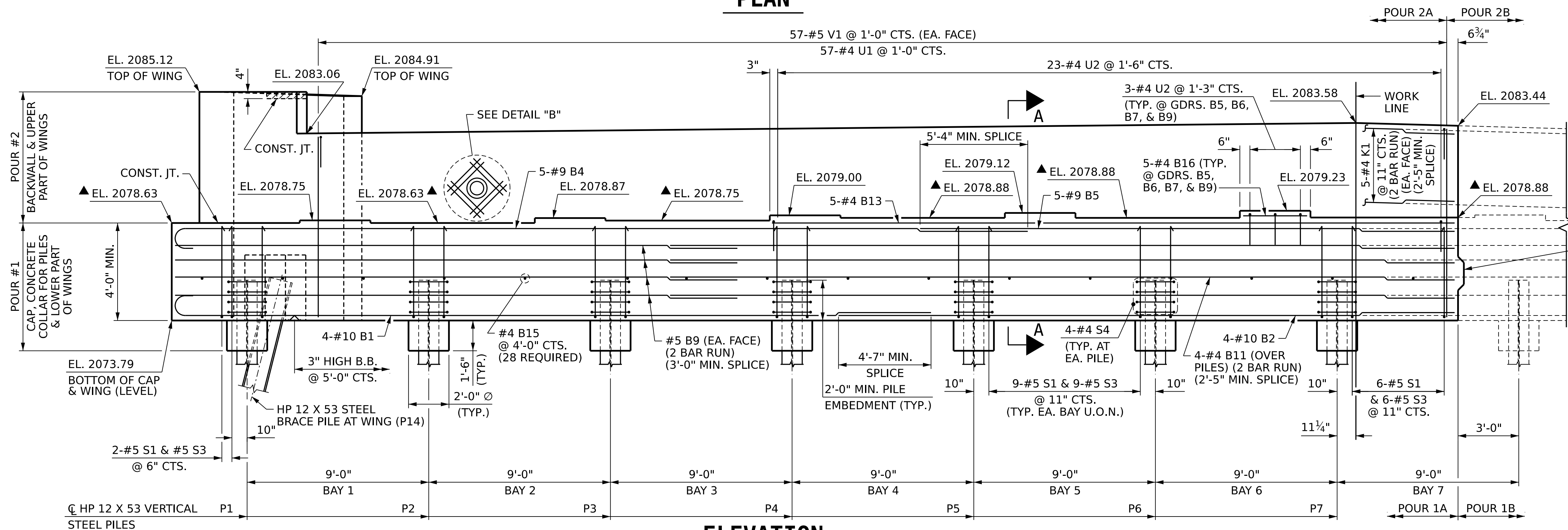
SHEET NO.	S06-49
TOTAL SHEETS	60

DRAWN BY :	<u>B.E. LANNING</u>	DATE :	<u>02/2024</u>
CHECKED BY :	<u>J.I. BREWER</u>	DATE :	<u>03/2024</u>
DESIGN ENGINEER OF RECORD :	<u>J.I. BREWER</u>	DATE :	<u>01/2026</u>

7/14/2026
2:35:12 PM
User: blanning
Filename: N:\NC Bridges\W21002.I-2513A I-26 (AECOM)\I-2513A\Structures\SITE\406.099.12513AC.SMU.E2A.S06-50.100242.dgn



PLAN

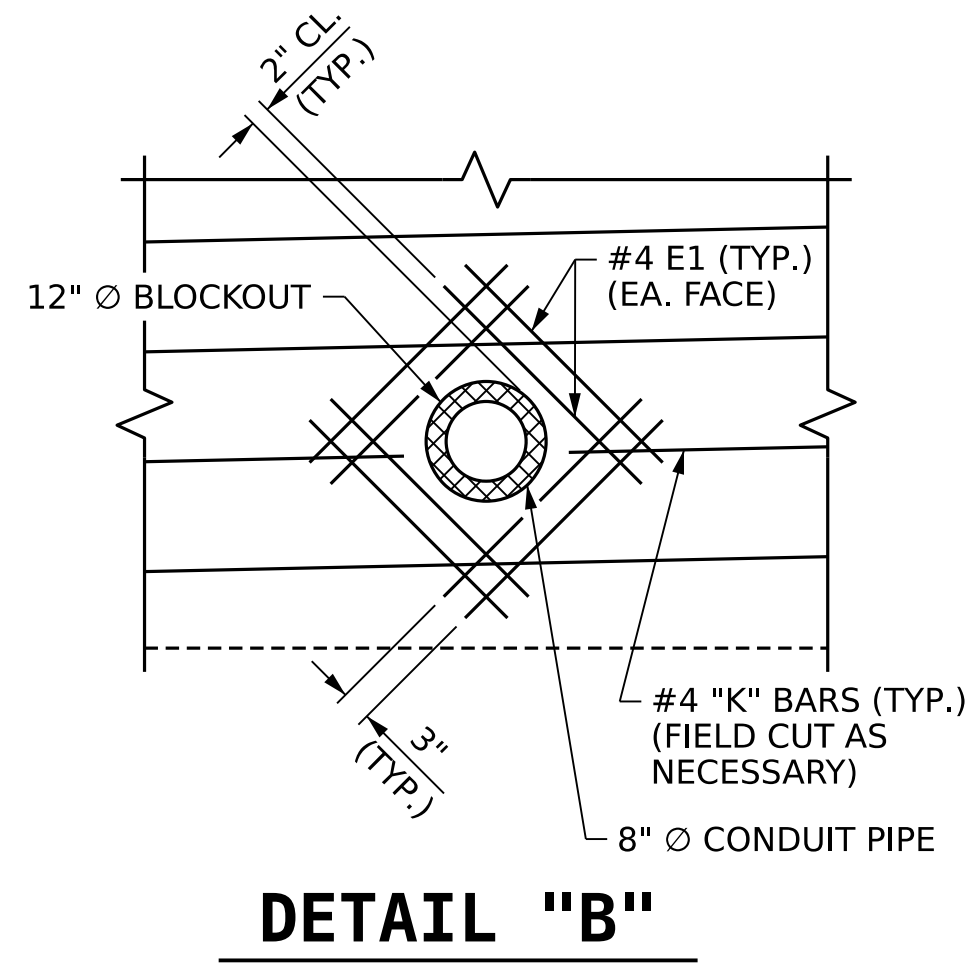


ELEVATION

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- #5 V1 BARS IN BACKWALL SHALL BE PLACED 2" CLEAR FROM THE TOP OF BACKWALL.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.
- THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS, EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.
- ▲ FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS, SEE SECTION A-A AND SECTION B-B ON SHEET 4 OF 4.

- FOR SECTION A-A, SECTION B-B, PILE SPLICE DETAILS, AND TEMPORARY DRAINAGE DETAILS, SEE SHEET 4 OF 4.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE CONCRETE PARAPET IS CAST IF SLIP FORMING IS USED.
- STAIN EXPOSED ENDS, FACE OF END BENT CAPS, AND EXPOSED EXTERIOR FACE OF WINGWALL. COLOR SHALL BE FS 30372. SEE SPECIAL PROVISION FOR APPLICATION OF BRIDGE COATING.
- INSTALL THE 4" DIA. DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.
- CONCRETE COLLARS MAY BE OMITTED IF SELECT BACKFILL IS USED.



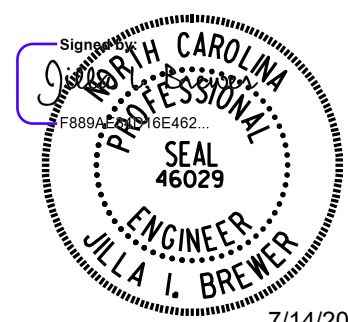
DETAIL "B"

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-

SHEET 1 OF 4

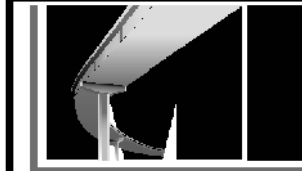
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2
PLAN AND ELEVATION



7/14/2026

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

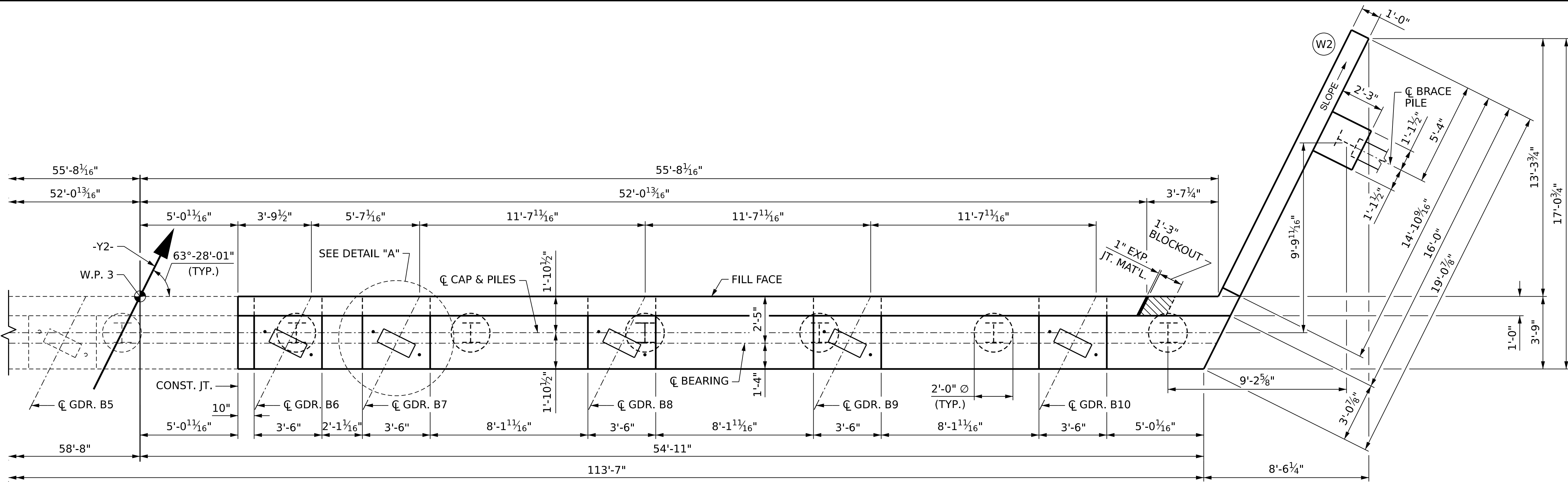


MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

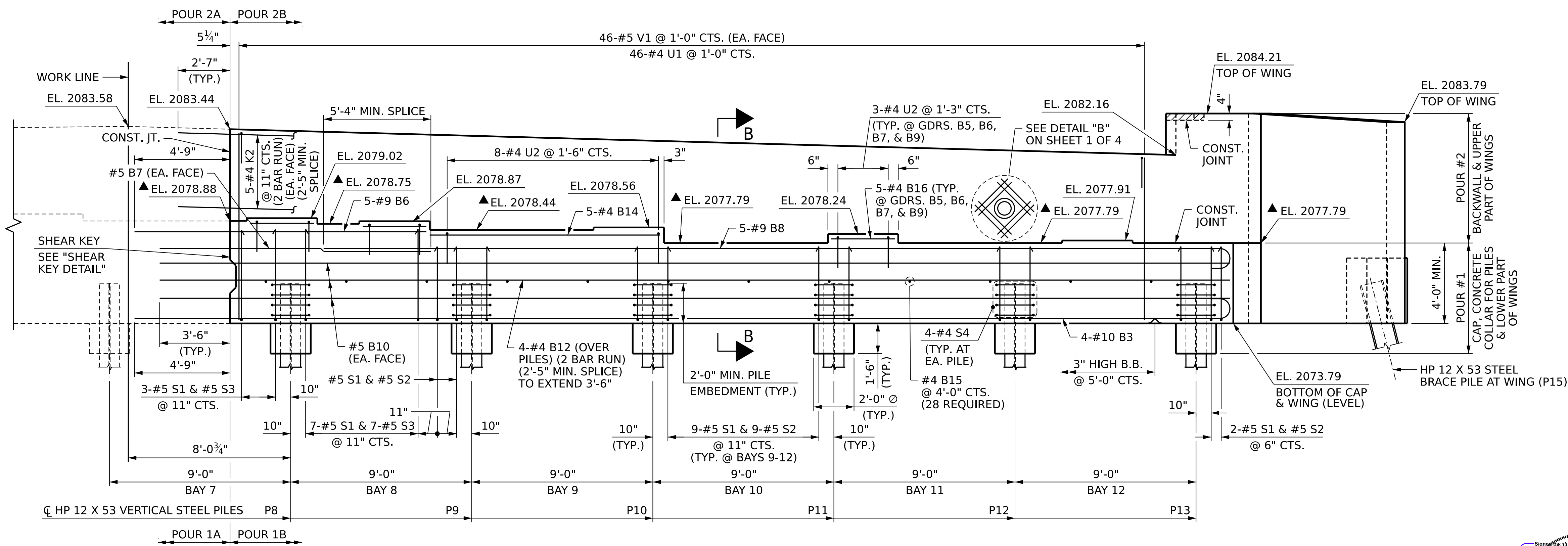
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S06-50
2			4			

TOTAL SHEETS: 60

DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>10/2023</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>12/2023</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>01/2026</u>



PLAN

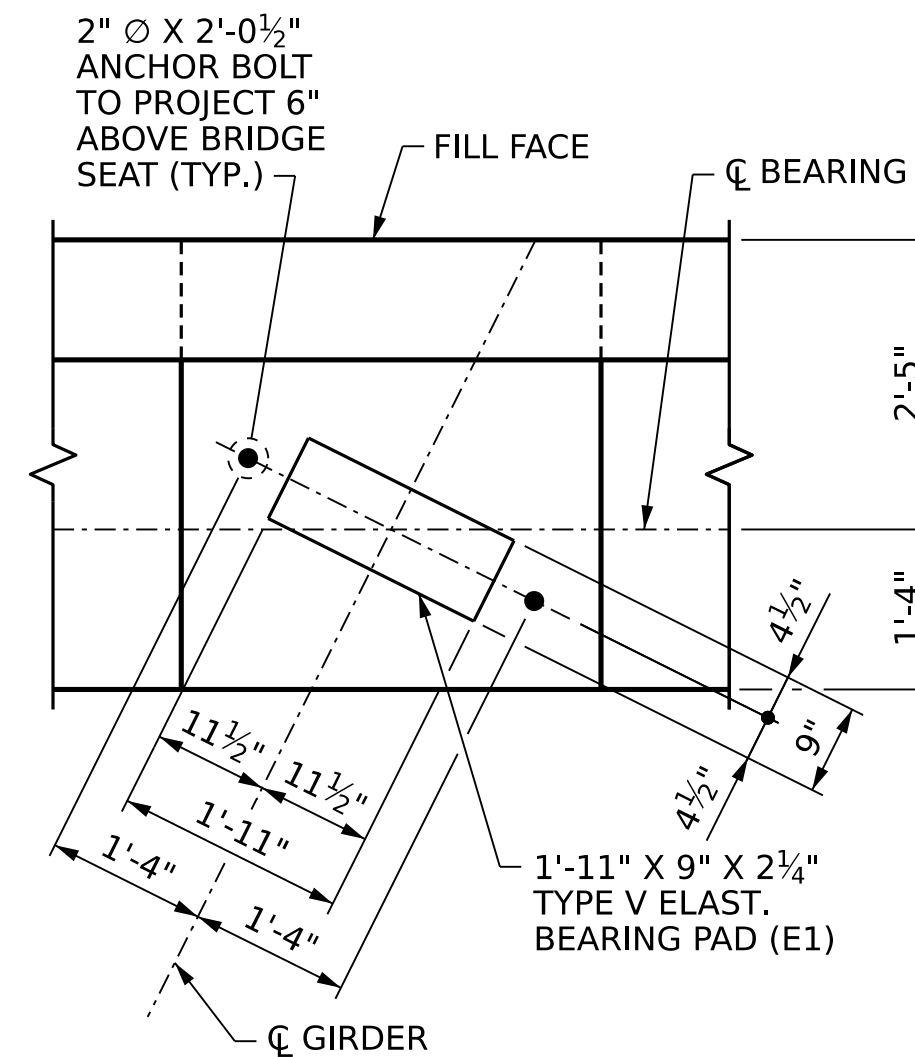


ELEVATION

NOTES

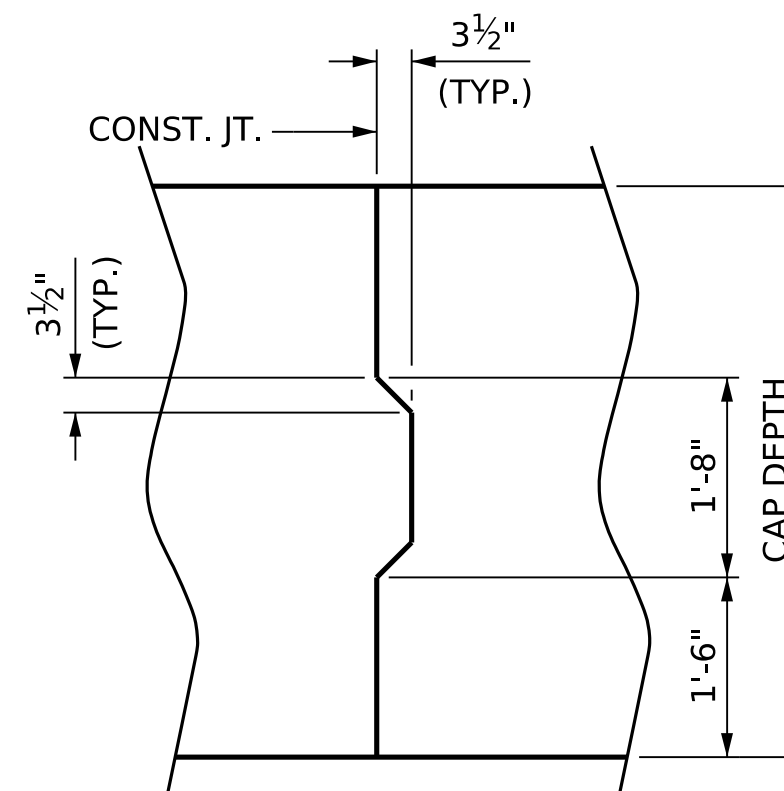
FOR NOTES, SEE SHEET 1 OF 4.

▲ FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS, SEE SECTION B-B ON SHEET 4 OF 4.



DETAIL "A"

TYPICAL EACH BEARING



SHEAR KEY DETAIL

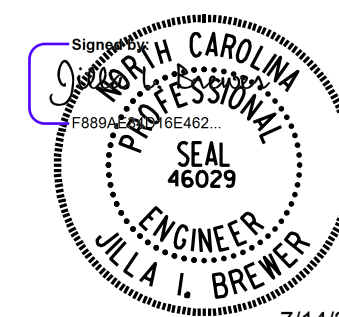
ELEVATION VIEW OF CAP

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-

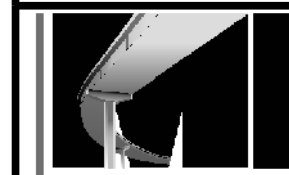
SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2
PLAN AND ELEVATION



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



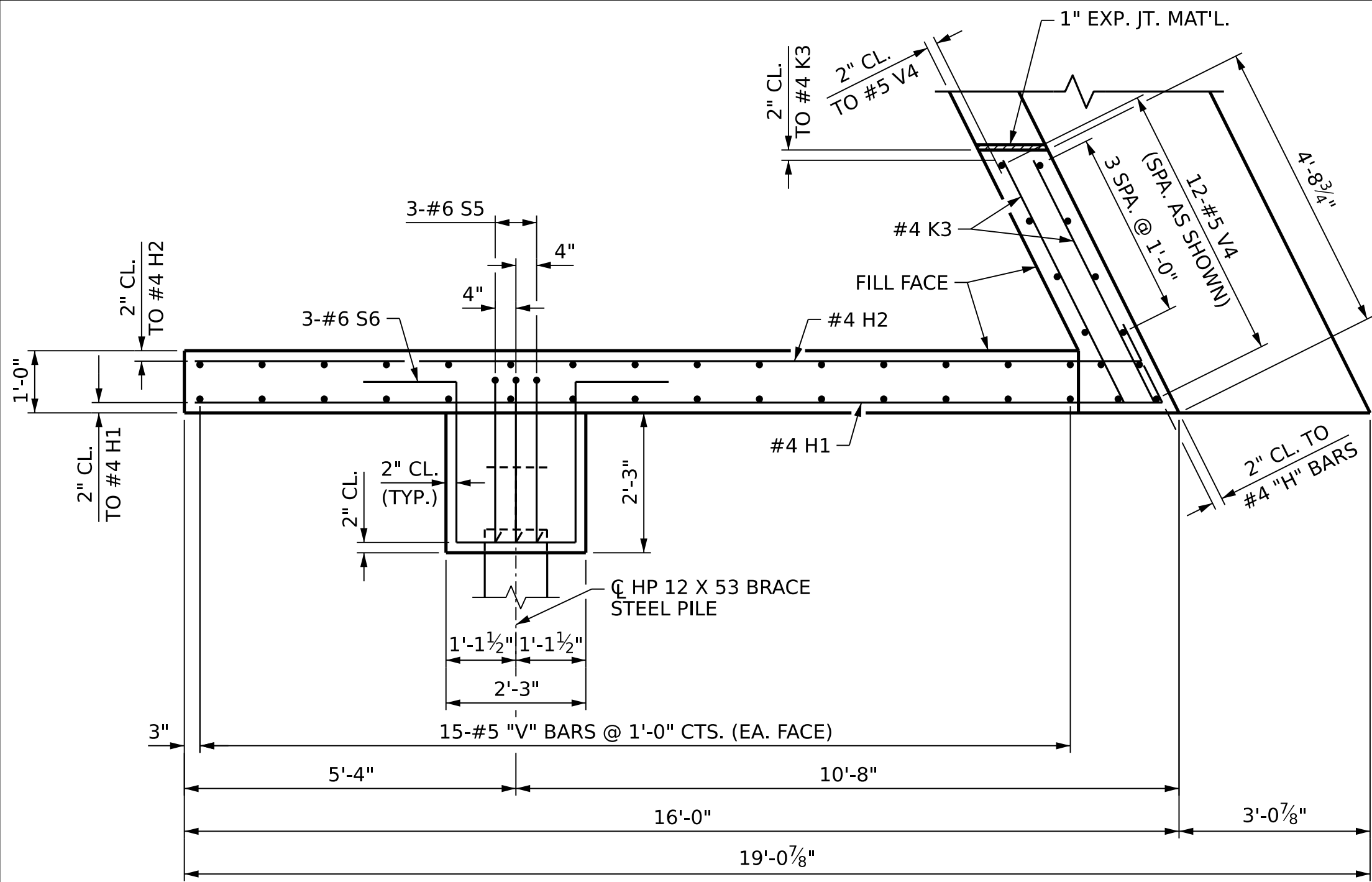
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S06-51
2			4			

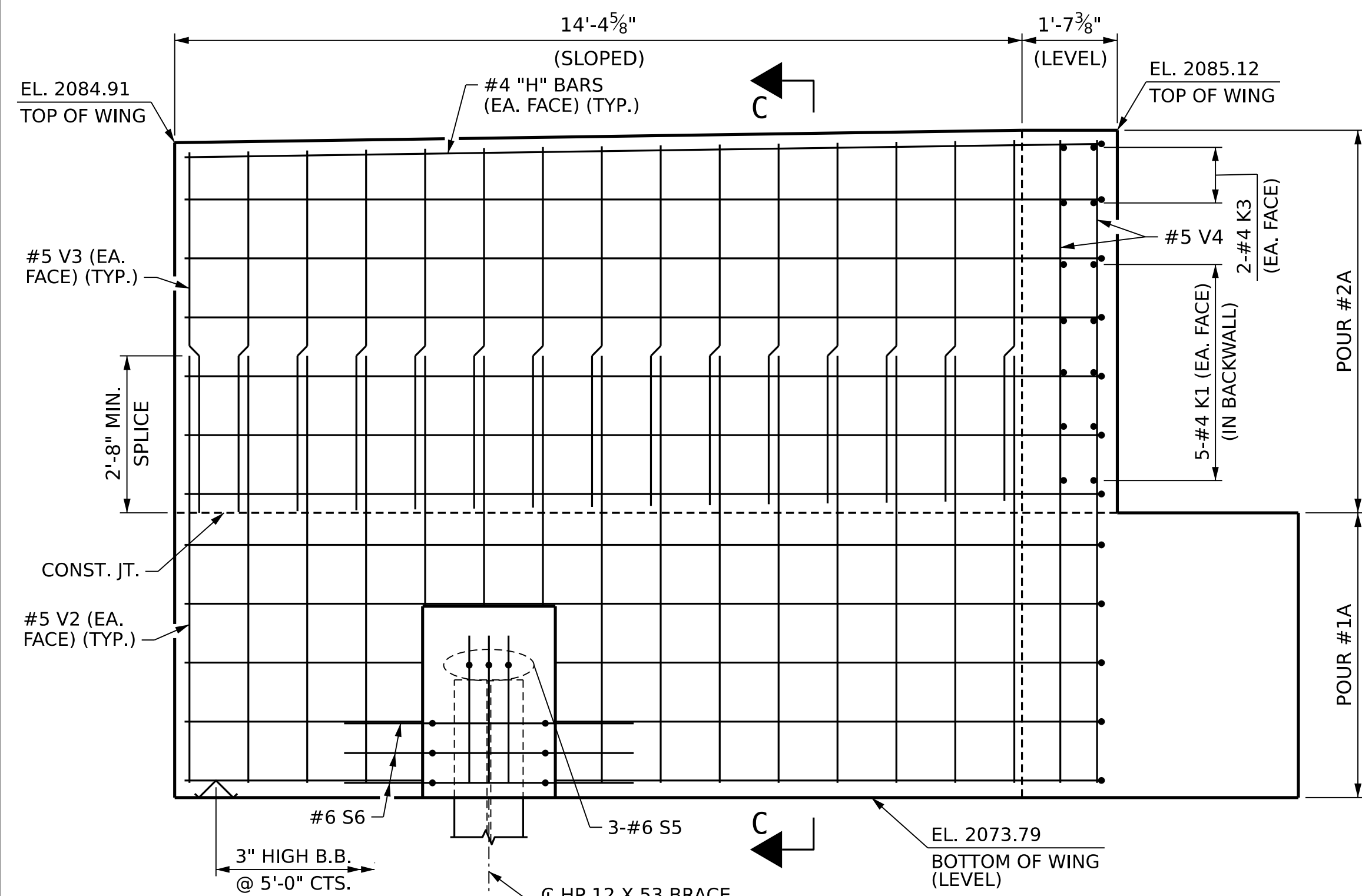
TOTAL SHEETS
60

DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>10/2023</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>12/2023</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>01/2026</u>

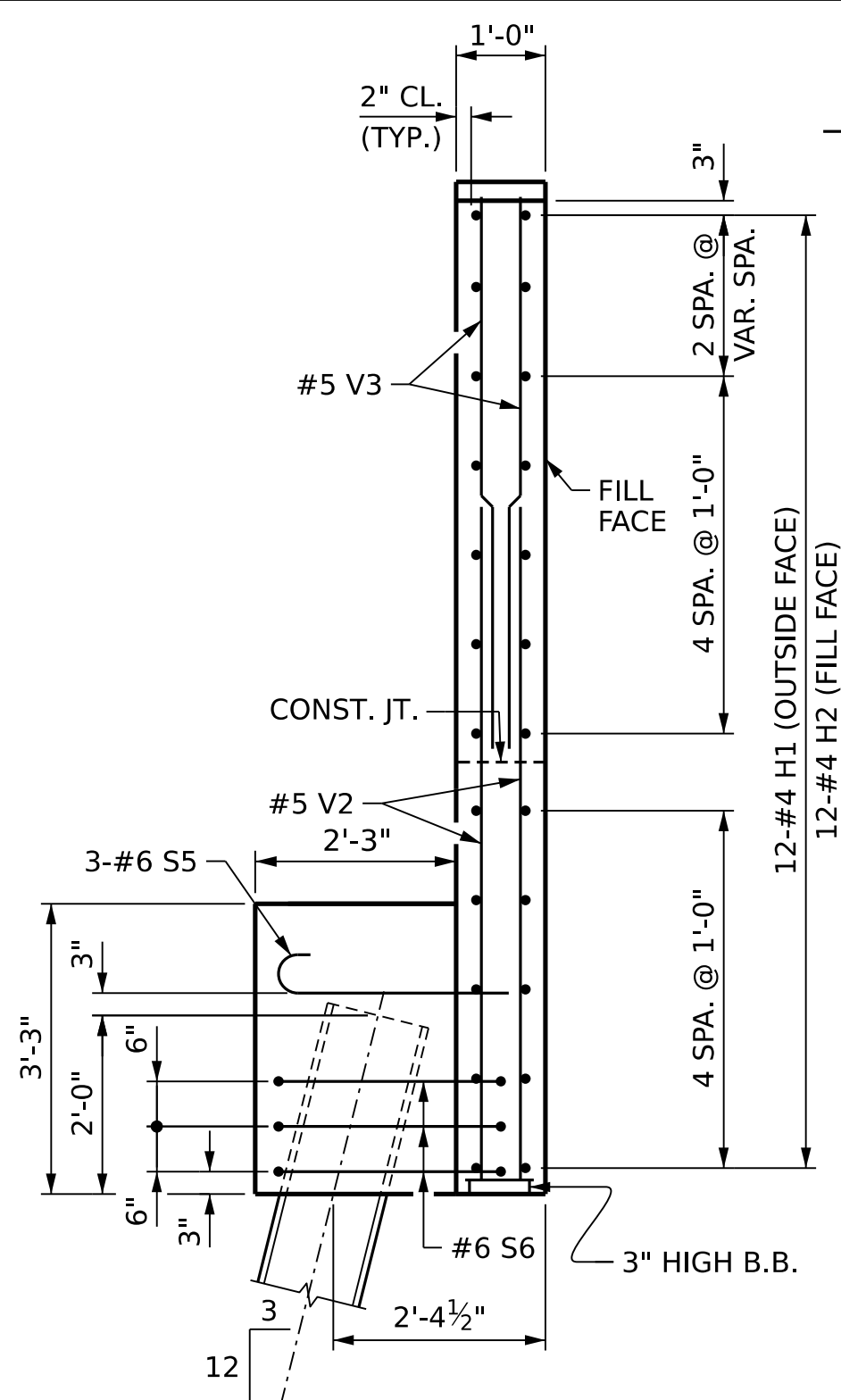
7/14/2026 2:35:15 PM User: blanning
Filename: N:\NC Bridges\W21002-I-2513A I-26 (4ECOM)\I-2513AC\Structures\SITE\6406.101.12513AC.SMJ.E2B.S06-51.100242.dgn



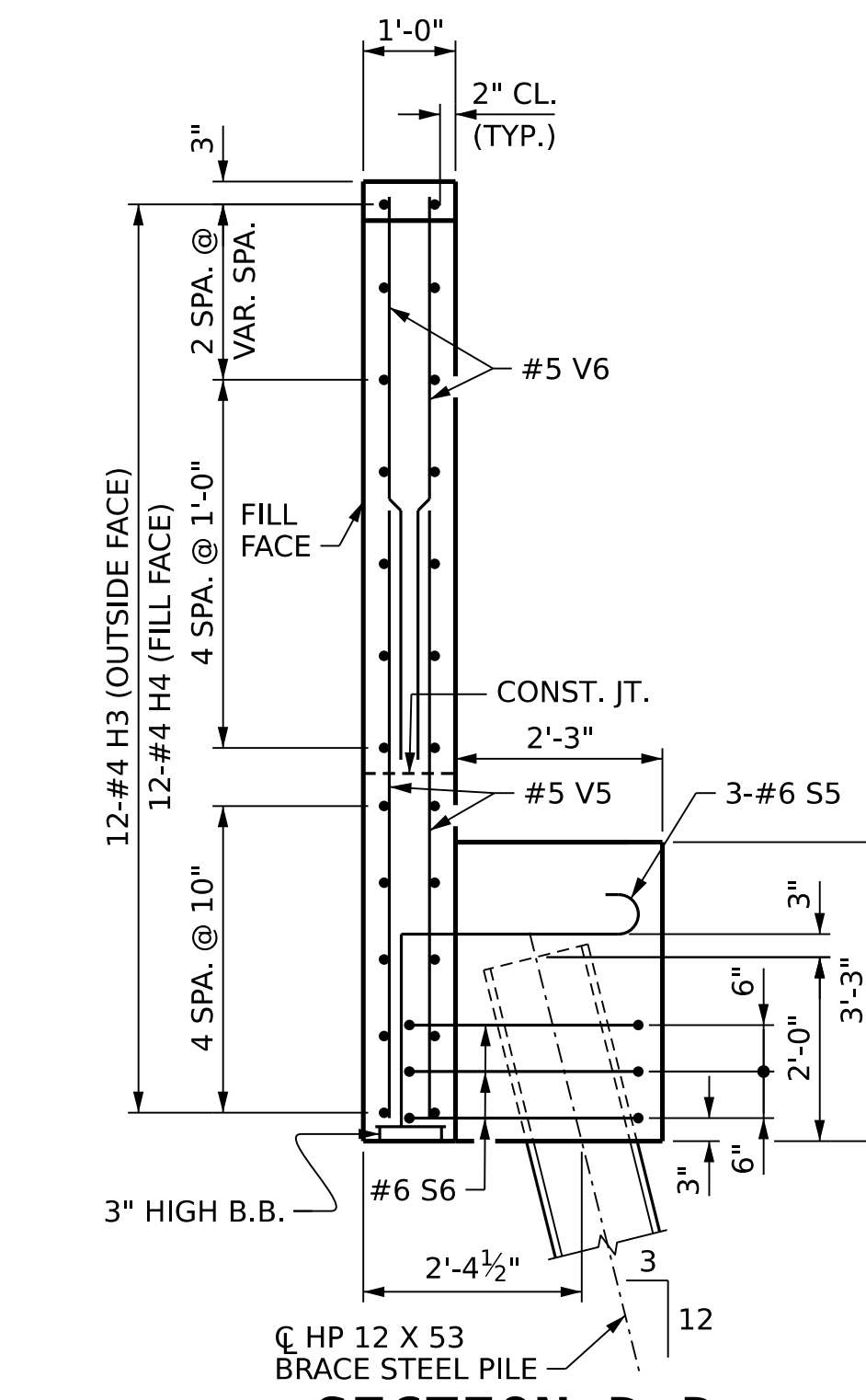
PLAN OF WING (W1)



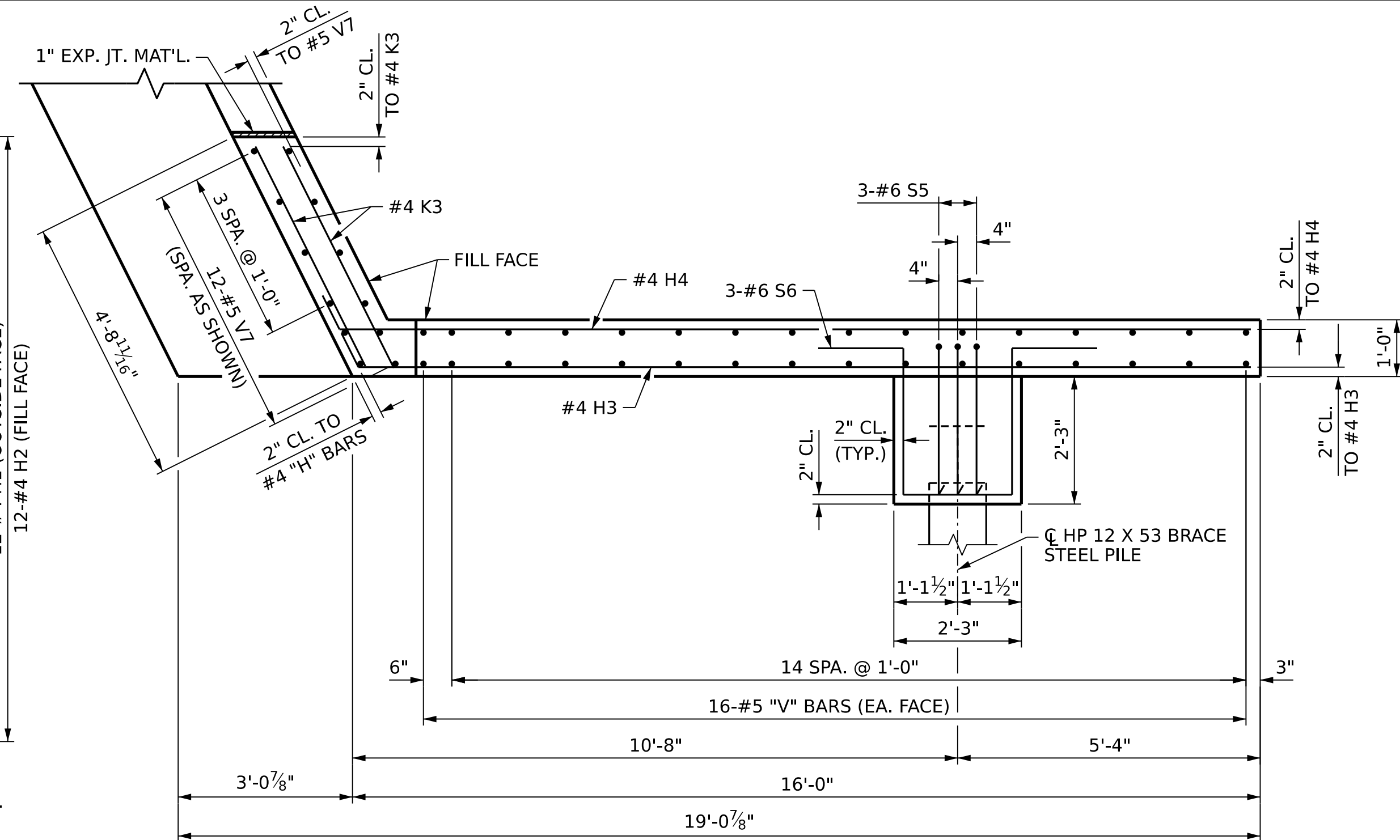
ELEVATION OF WING (W1)



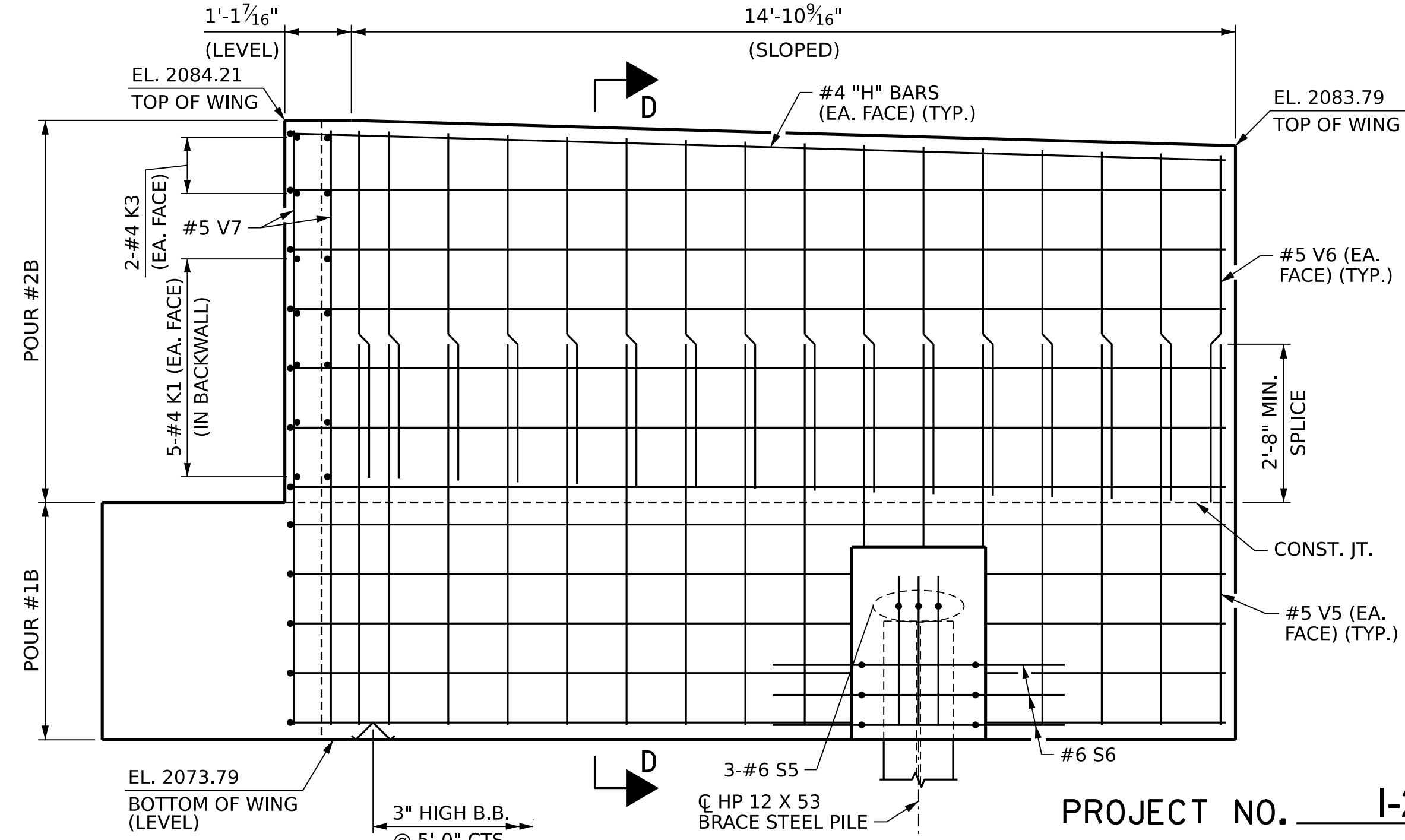
SECTION C-C



SECTION D-D



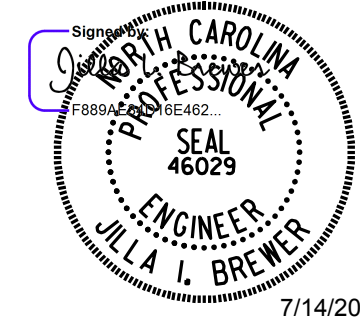
PLAN OF WING (W2)



ELEVATION OF WING (W2)

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-

SHEET 3 OF 4



**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

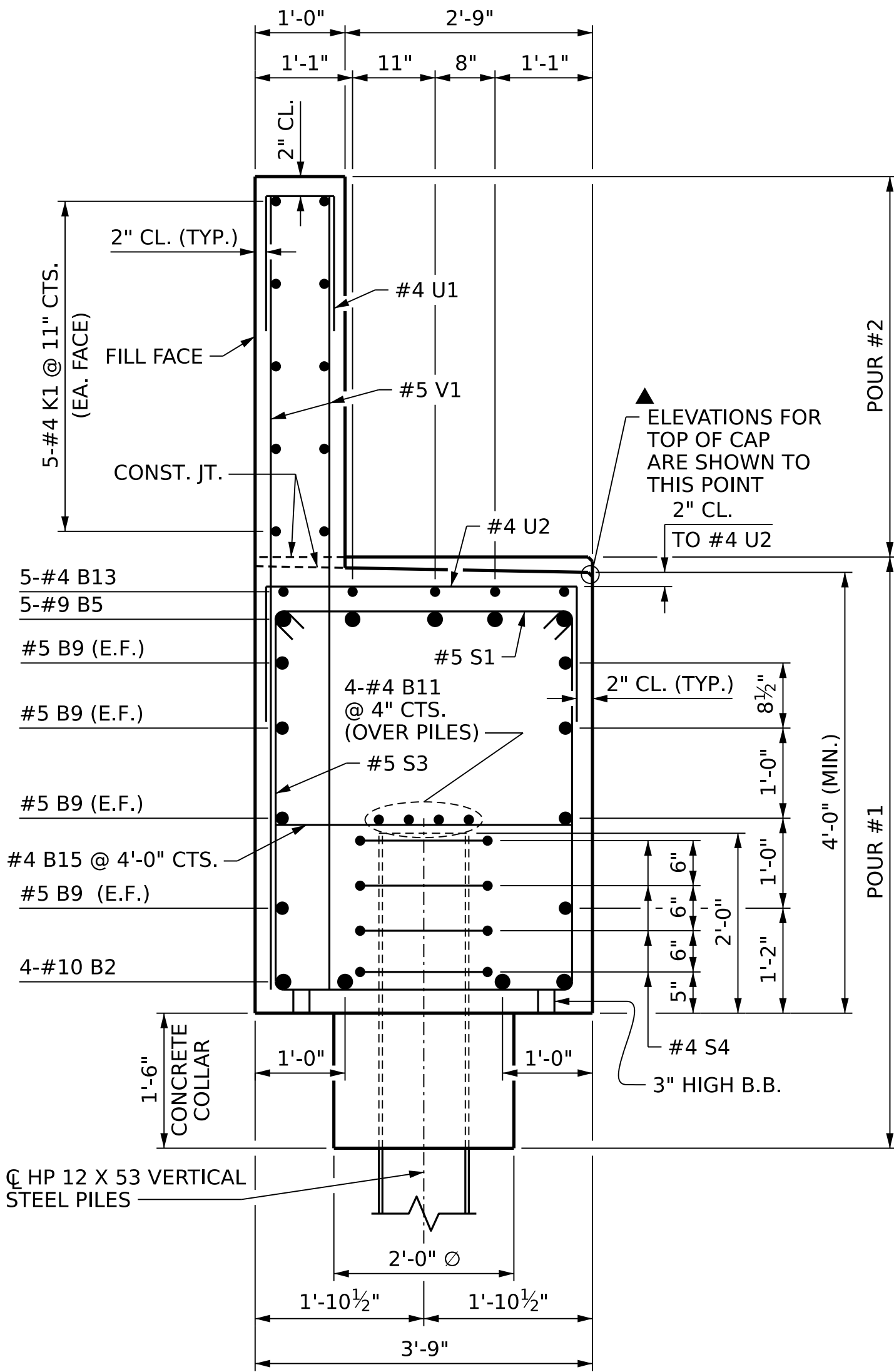
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S06-52
2			4			

TOTAL SHEETS 60

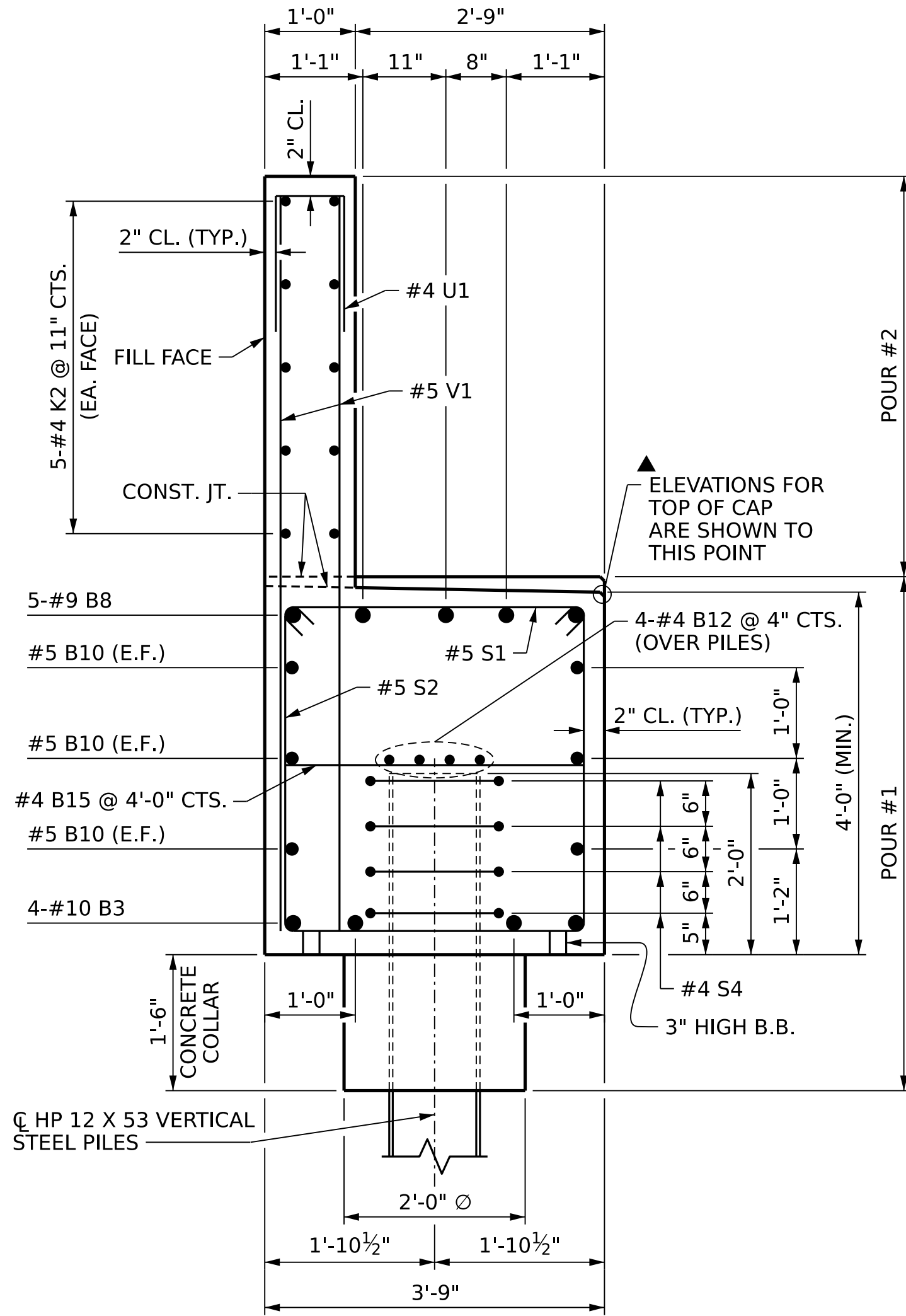
7/14/2026 2:35:22 PM User: blanning
Filename: N:\NC Bridges\W21002-I-2513A I-26 (AECOM)\I-2513AC\Structures\SITE\406_103_12513AC.SWJ.E2C.S06-52_100242.dgn

DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>10/2023</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>12/2023</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>01/2026</u>

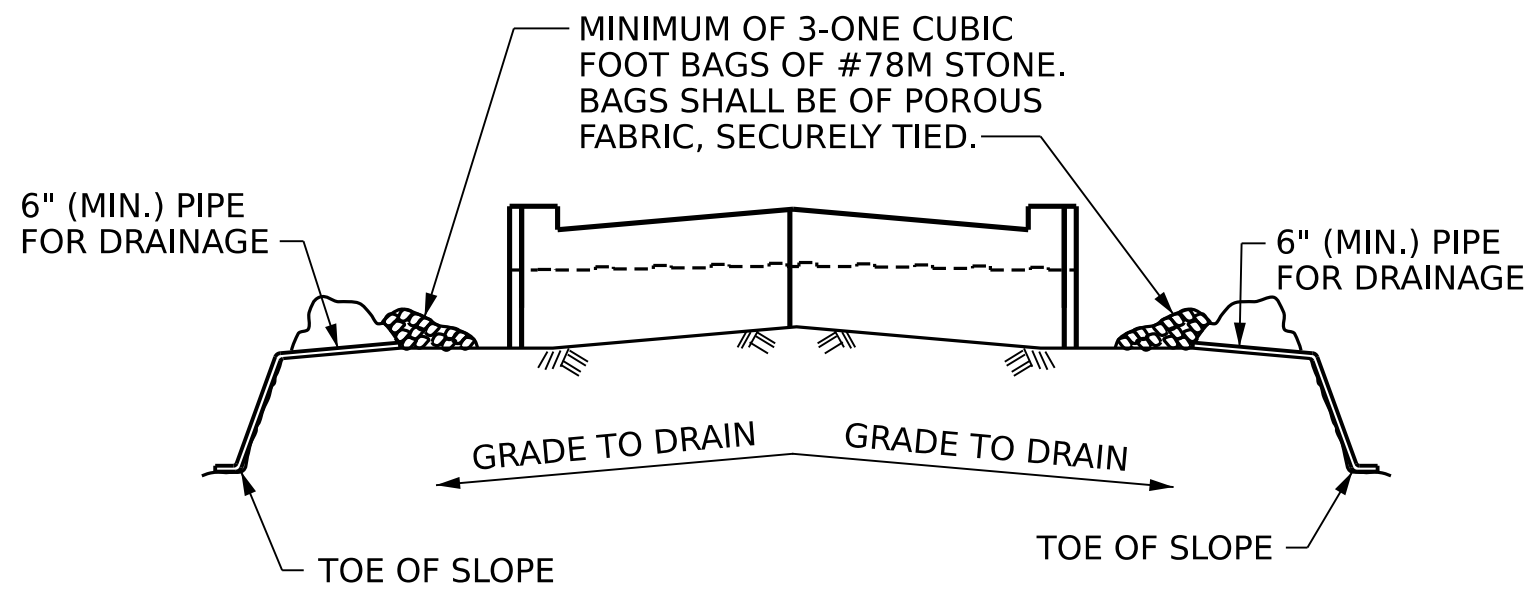
7/14/2026 2:35:28 PM User: blanning
Filename: N:\NC Bridges\W21002-I-2513A I-26 (AECOM)\I-2513A\Structures\SITE\406_105_12513AC.SWJ.E2D.S06-53.100242.dgn



SECTION A-A



SECTION B-B

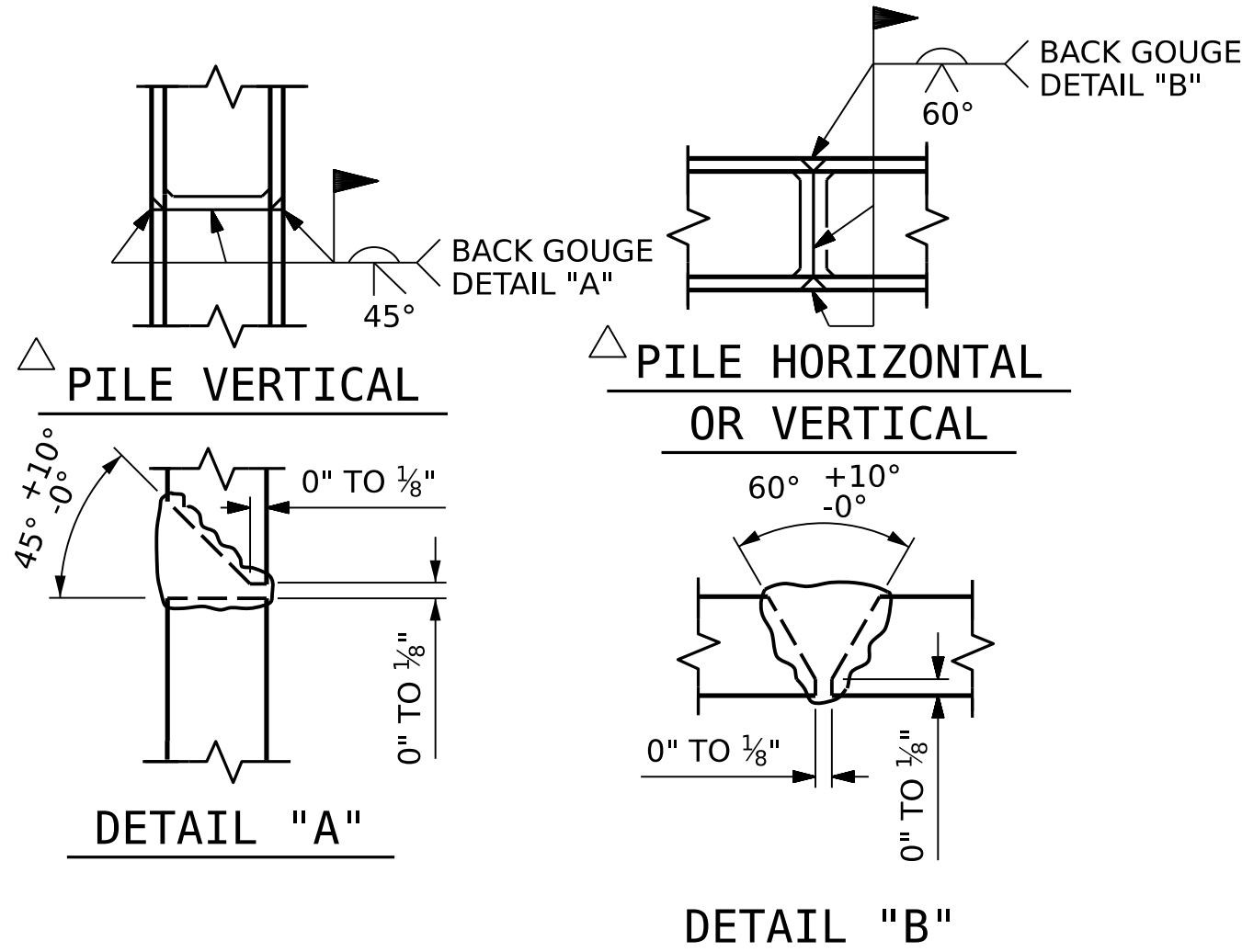


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

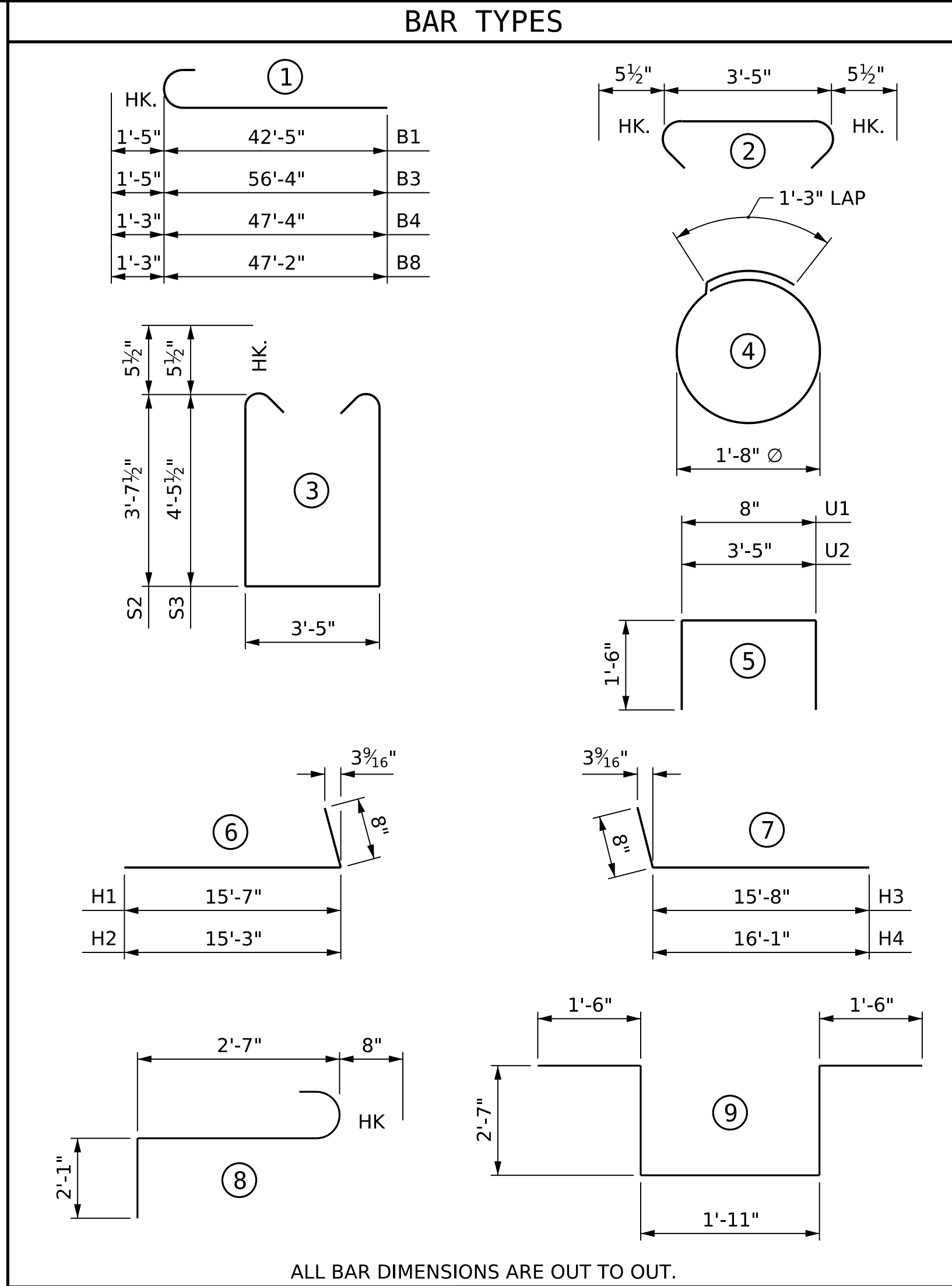
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

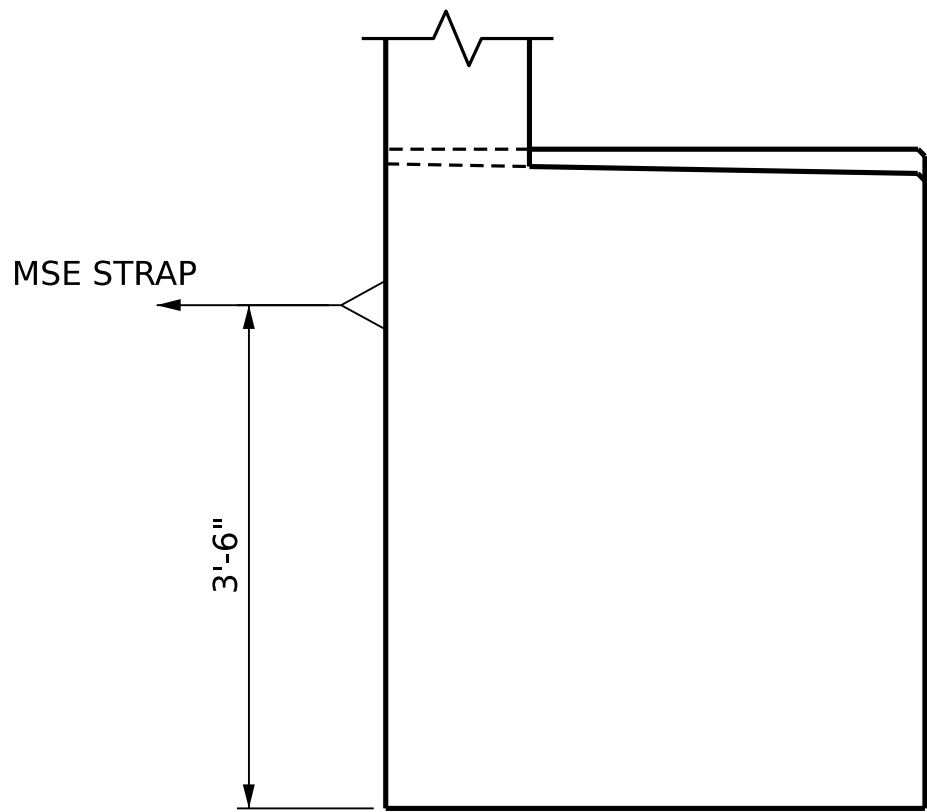
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS



ALL BAR DIMENSIONS ARE OUT TO OUT.



STRAP FORCE

MSE STRAPS (BY OTHERS) TO RESIST 5.61 KIPS/FT. TOTAL FACTORED LOAD NORMAL TO THE END BENT CAP.

CLASS A CONCRETE BREAKDOWN			
POUR #1A (CAP, CONCRETE COLLAR FOR PILES & LOWER PART OF WING W1)	48.9	C.Y.	
POUR #1B (CAP, CONCRETE COLLAR FOR PILES & LOWER PART OF WING W2)	35.3	C.Y.	
POUR #2A (BACKWALL & UPPER PART OF WING W1)	13.9	C.Y.	
POUR #2B (BACKWALL & UPPER PART OF WING W2)	11.7	C.Y.	
TOTAL	109.8	C.Y.	

BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	43'-10"	754
B2	4	#10	STR	30'-8"	528
B3	4	#10	1	57'-9"	994
B4	5	#9	1	48'-7"	826
B5	5	#9	STR	26'-6"	451
B6	5	#9	STR	14'-6"	247
B7	2	#5	STR	13'-3"	28
B8	5	#9	1	48'-5"	823
B9	8	#5	STR	33'-3"	277
B10	6	#5	STR	55'-1"	345
B11	8	#4	STR	32'-11"	176
B12	8	#4	STR	28'-9"	154
B13	5	#4	STR	33'-9"	113
B14	5	#4	STR	11'-5"	38
B15	28	#4	STR	3'-5"	64
B16	20	#4	STR	3'-2"	42

E1	32	#4	STR	2'-4"	50
H1	12	#4	6	16'-3"	130
H2	12	#4	6	15'-11"	128
H3	12	#4	7	16'-4"	131
H4	12	#4	7	16'-9"	134

K1	20	#4	STR	32'-11"	440
K2	20	#4	STR	28'-4"	379
K3	8	#4	STR	4'-4"	23

S1	112	#5	2	4'-4"	506
S2	40	#5	3	11'-7"	483
S3	72	#5	3	13'-3"	995
S4	52	#4	4	6'-6"	226
S5	6	#6	8	5'-4"	48
S6	6	#6	9	10'-1"	91

U1	103	#4	5	3'-8"	252
U2	43	#4	5	6'-5"	184

V1	206	#5	STR	7'-11"	1701
V2	30	#5	STR	7'-4"	229
V3	30	#5	STR	6'-1"	190
V4	12	#5	STR	10'-10"	136
V5	32	#5	STR	6'-6"	217
V6	32	#5	STR	5'-10"	195
V7	12	#5	STR	10'-0"	125

REINFORCING STEEL				12,853	LBS.
APPLICATION OF BRIDGE COATING				865	SF

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-

SHEET 4 OF 4



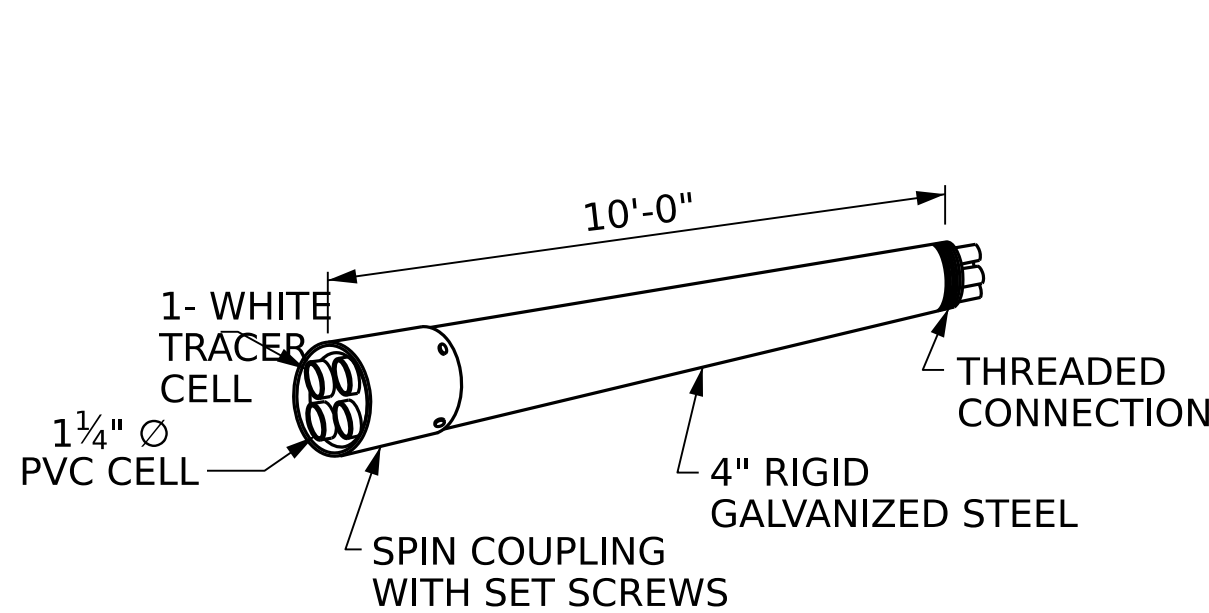
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED					
MI ENGINEERING 1011 SCHAUB DRIVE, SUITE 100 RALEIGH, NC 27606 (919) 851-6606 FIRM PE NUMBER : P-0671					

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT 2
DETAILS AND
BILL OF MATERIAL

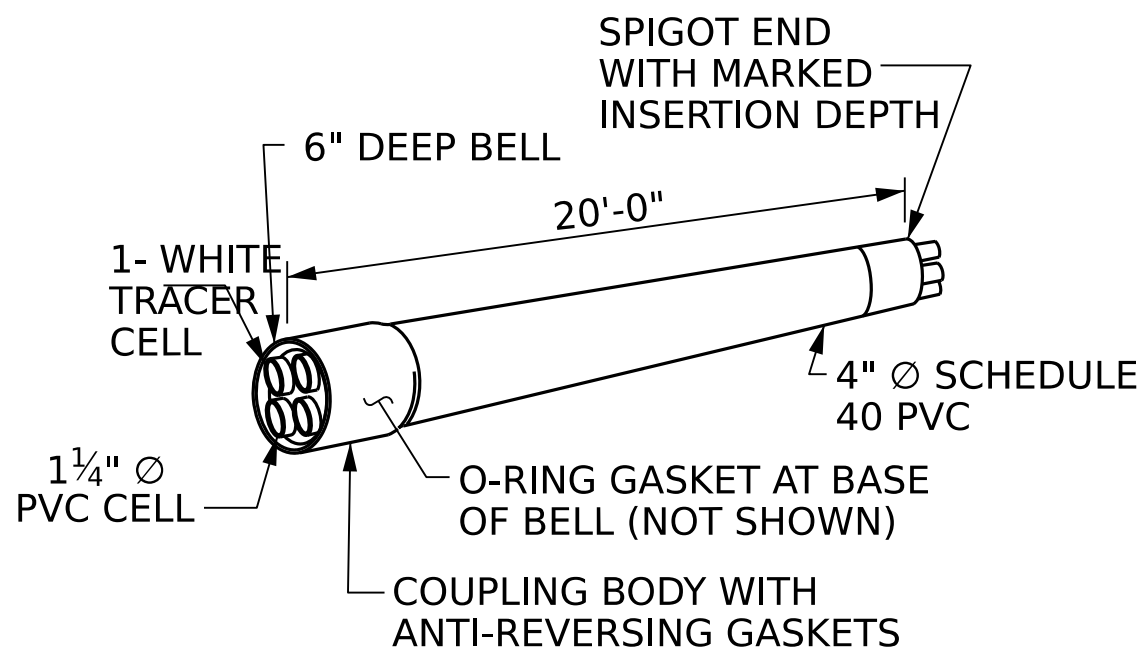
DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>10/2023</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>12/2023</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>01/2026</u>

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

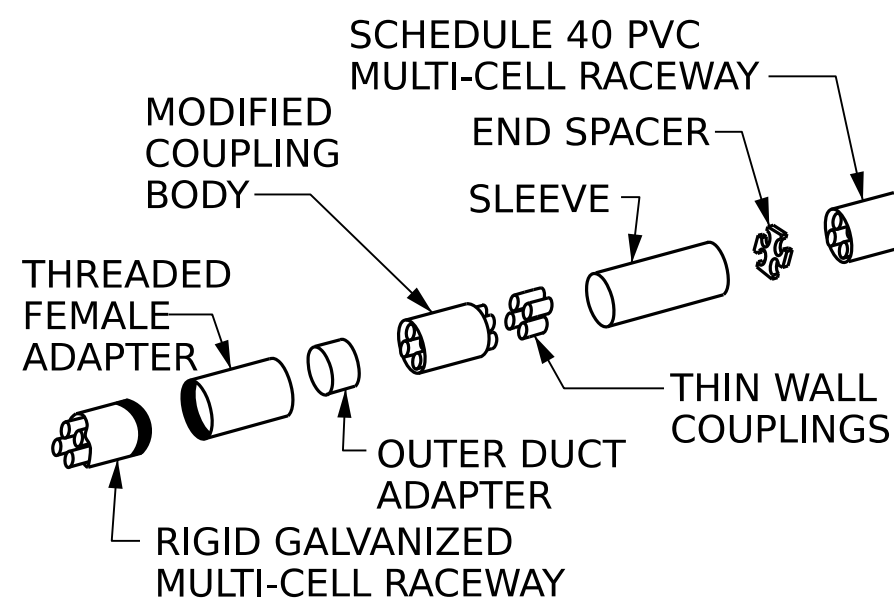
SHEET NO. S06-53
TOTAL SHEETS 60



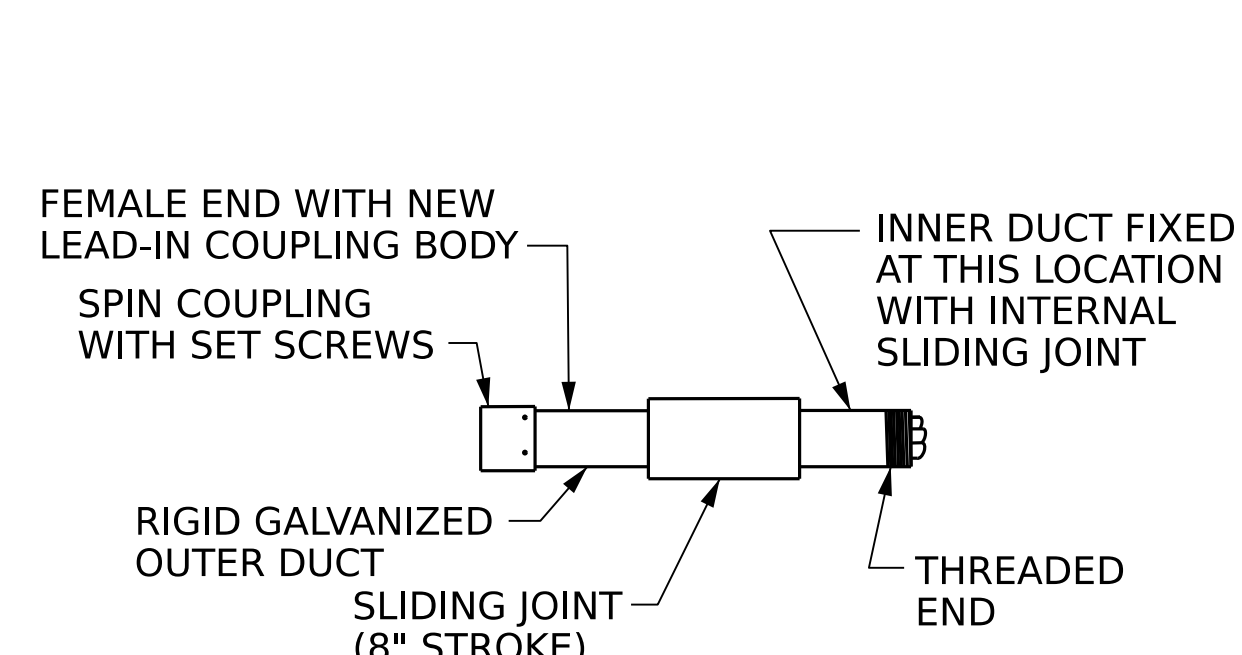
RIGID GALVANIZED (RGC)
MULTI-CELL RACEWAY



SCHEDULE 40 PVC
MULTI-CELL RACEWAY



TRANSITION ADAPTER



EXPANSION JOINT FITTING

NOTES:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE TOTAL QUANTITY OF CONDUIT NEEDED TO COMPLETE THE WORK AND THAT THE CONDUIT(S) ARE PLACED AT THE NOTED DIMENSION AND ABOVE THE BOTTOM OF THE GIRDER.

THE INSTALLATION OF THE CONDUIT SYSTEM SHALL BE PAID FOR AS LUMP SUM. THE PRICE SHALL INCLUDE ALL CONDUIT, HANGERS, STABILIZERS, EXPANSION JOINTS, CONCRETE INSERTS, PVC SLEEVES AND ALL NECESSARY HARDWARE TO COMPLETE THE WORK.

THE CONTRACTOR SHALL FIELD VERIFY THAT THE CONDUIT SYSTEM IS NOT IN CONFLICT WITH THE GUARDRAIL POSTS.

SEE DETAIL "C" FOR HANGER ASSEMBLY INSTALLATION.

INSTALL SLEEVES PARALLEL TO GIRDERS. SEE DETAIL "B" FOR SLEEVE INSTALLATION.

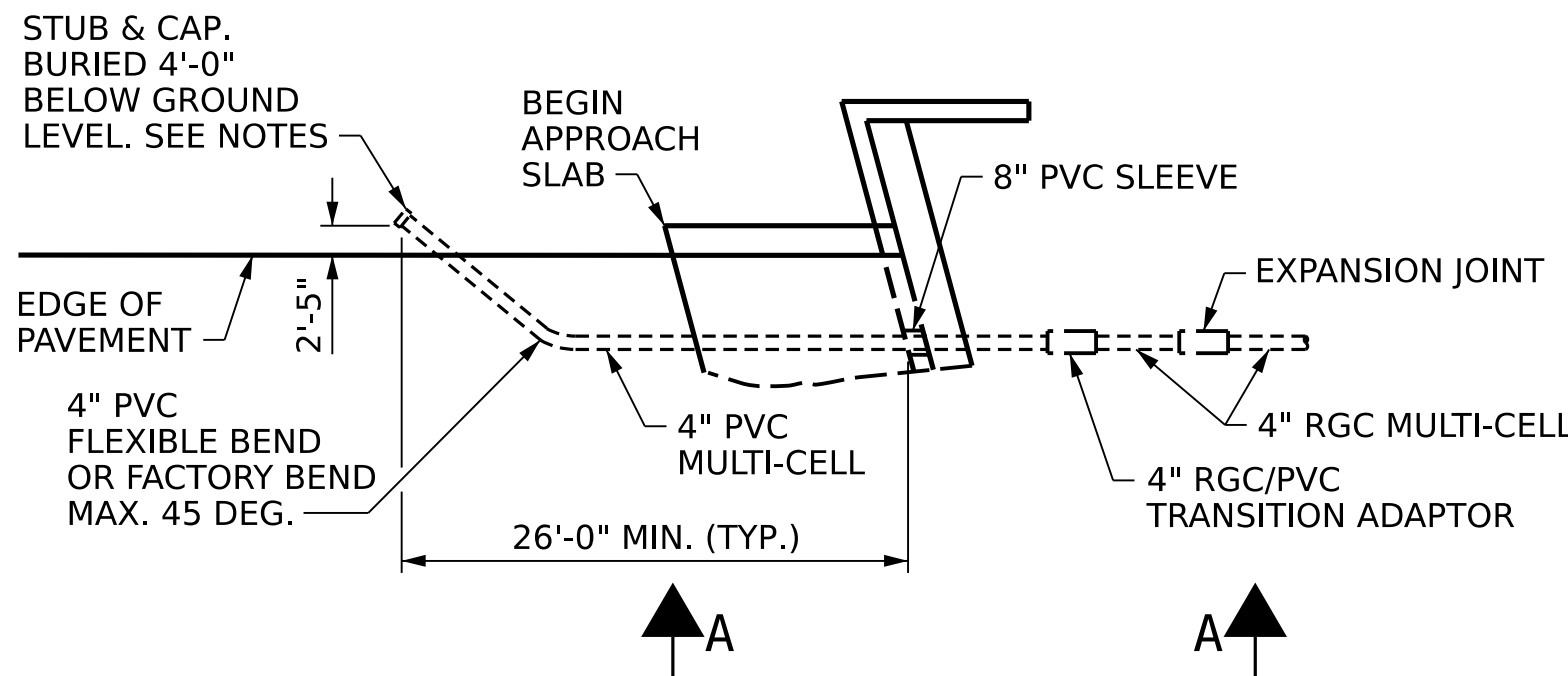
PROVIDE TRANSITION ADAPTOR (AND EXPANSION JOINT) FOR CONDUIT AT END BENT 1 (AND END BENT 2).

INSTALL STABILIZER'S MIDWAY BETWEEN DECK EXPANSION JOINTS. STABILIZER CAN NOT BE USED INSTEAD OF A HANGER ASSEMBLY.

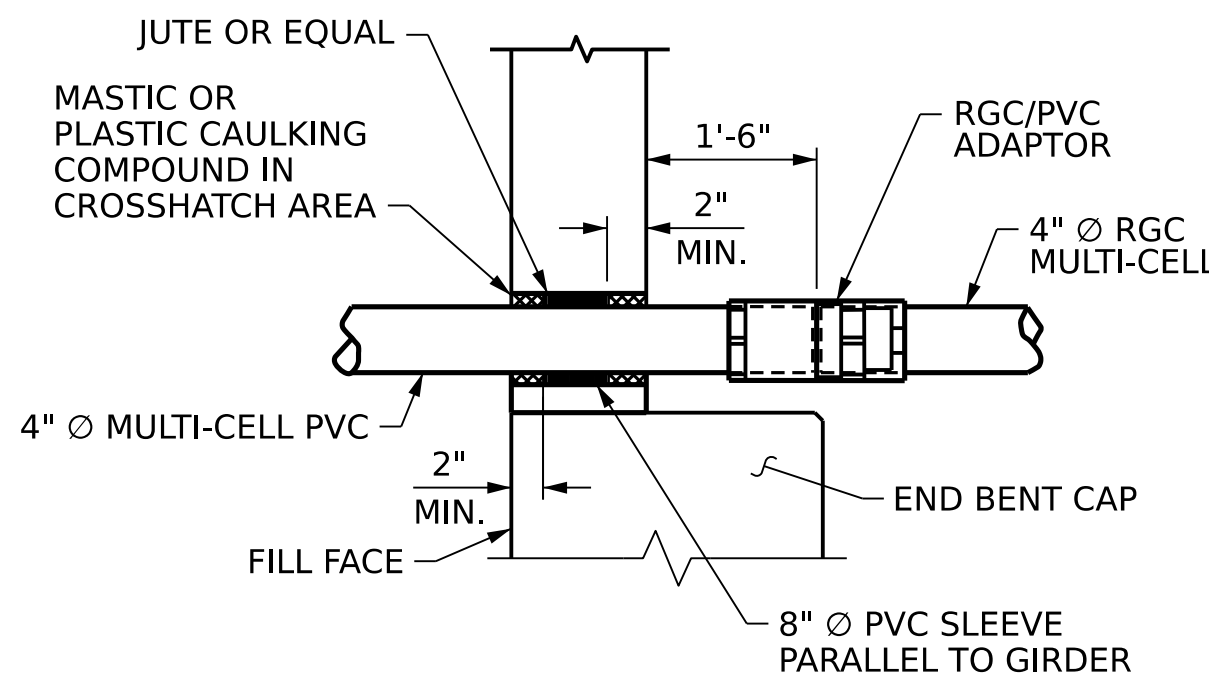
INSTALL EXPANSION JOINTS AT BENT 1.

THE CONCRETE SCREW INSERT SHALL HAVE A ROD SIZE OF 5/8" AND A PULL FORCE OF 1260 lbs.

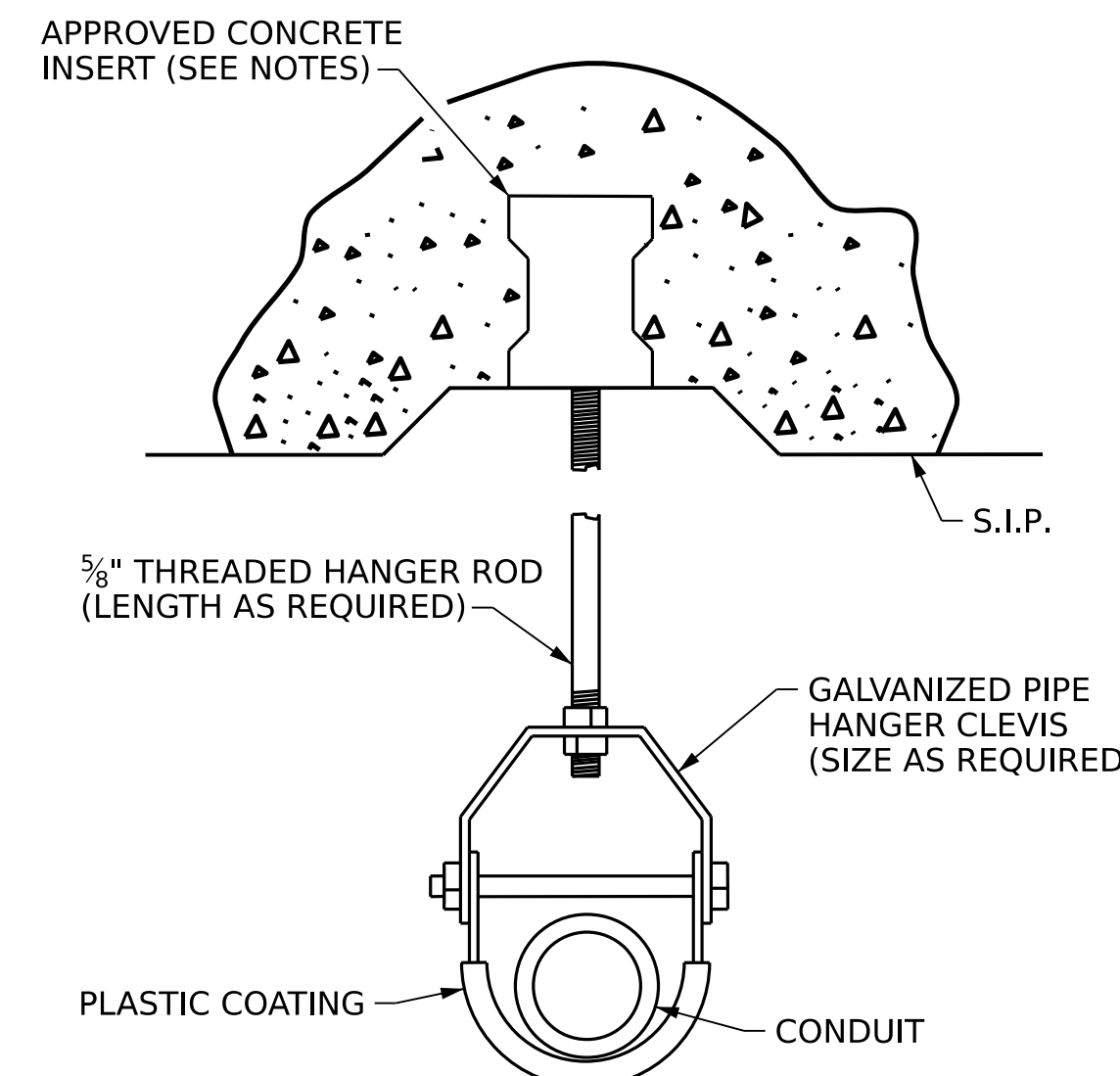
FOR ELECTRICAL CONDUIT SYSTEM FOR SIGNALS, SEE SPECIAL PROVISIONS.



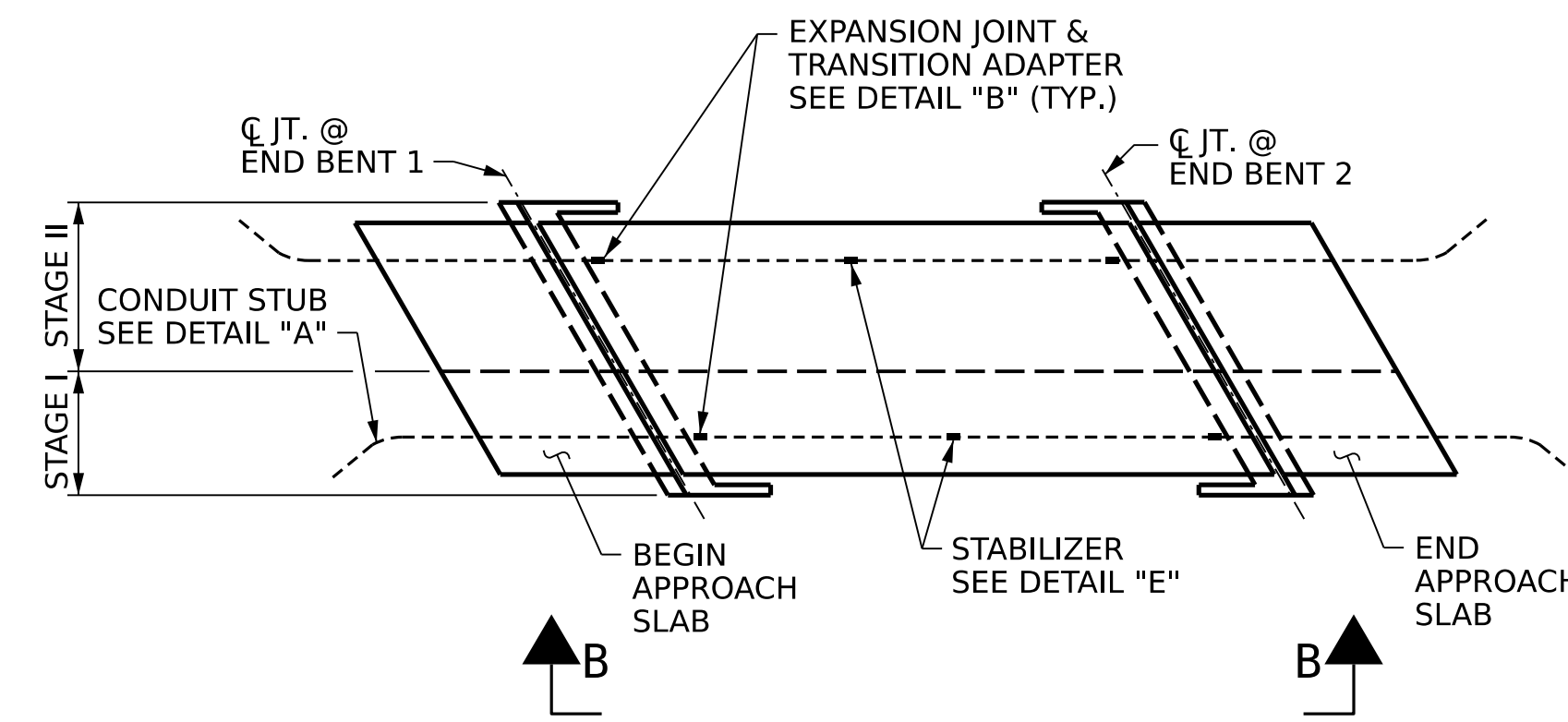
DETAIL "A"
TERMINATION OF CONDUIT AT END BENT 1
(END BENT 2 SIMILAR)



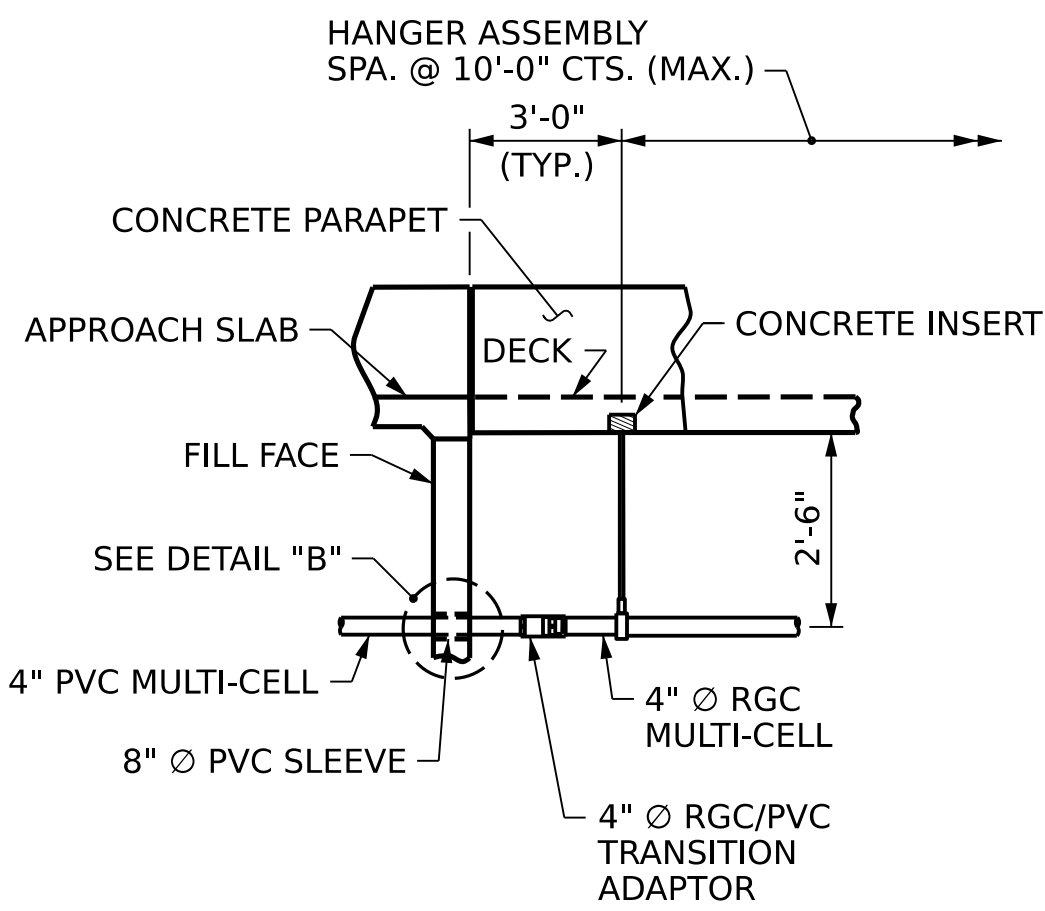
DETAIL "B"
PVC SLEEVE INSTALLATION & RGC/PVC
ADAPTOR AT BACKWALL



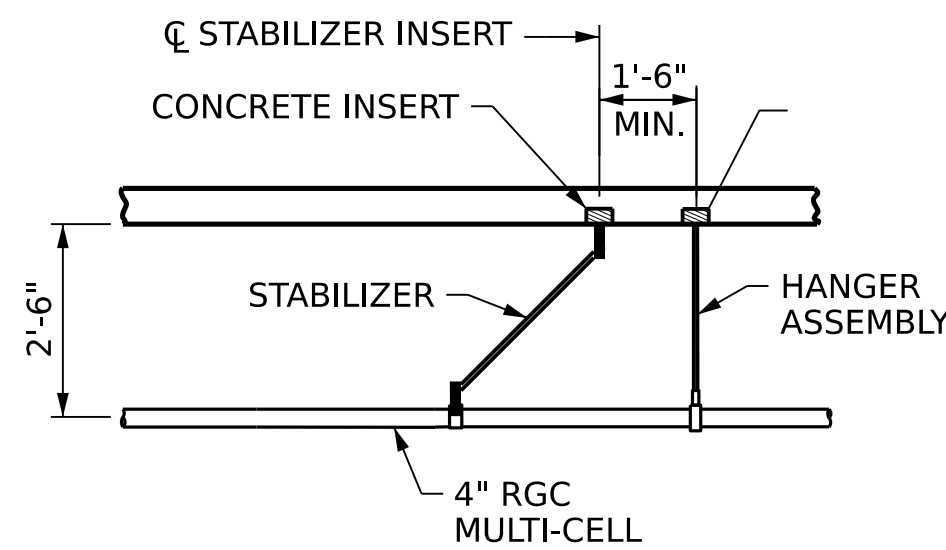
DETAIL "C"
HANGER ASSEMBLY



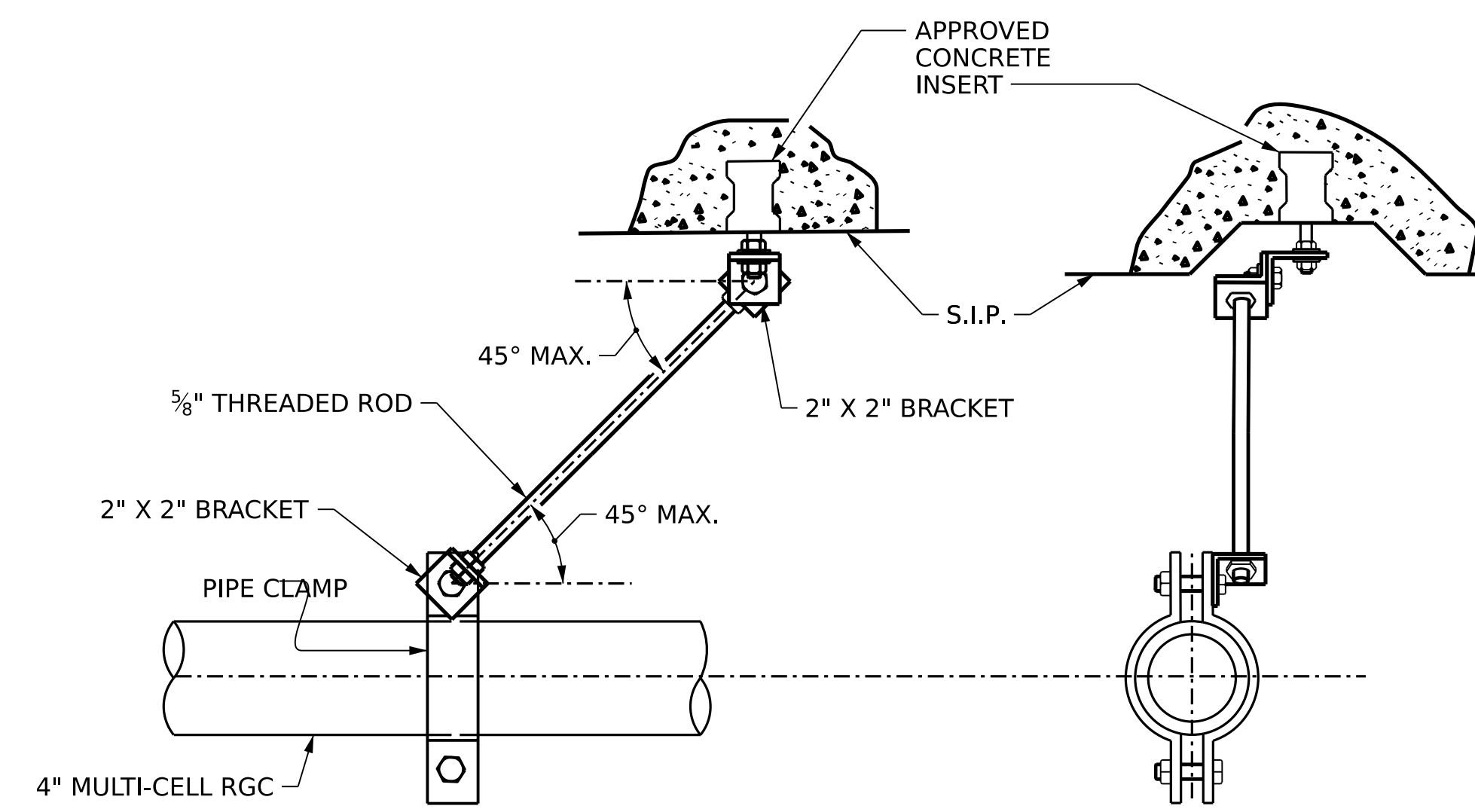
CONDUIT LAYOUT



VIEW A-A

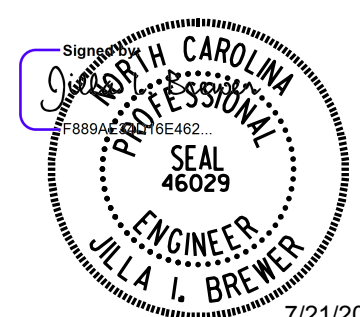


VIEW B-B



DETAIL "E"
STABILIZER

ELECTRICAL CONDUIT DETAILS



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

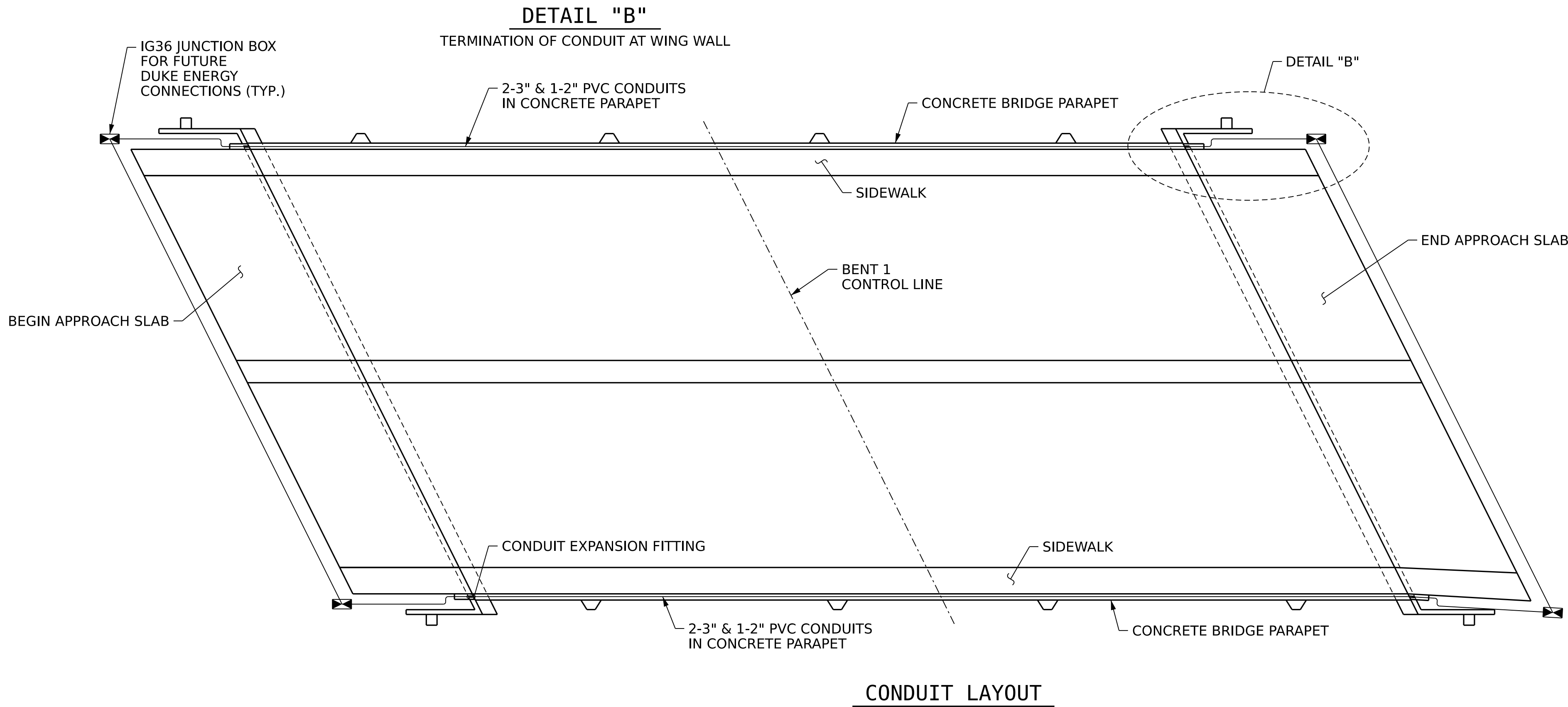
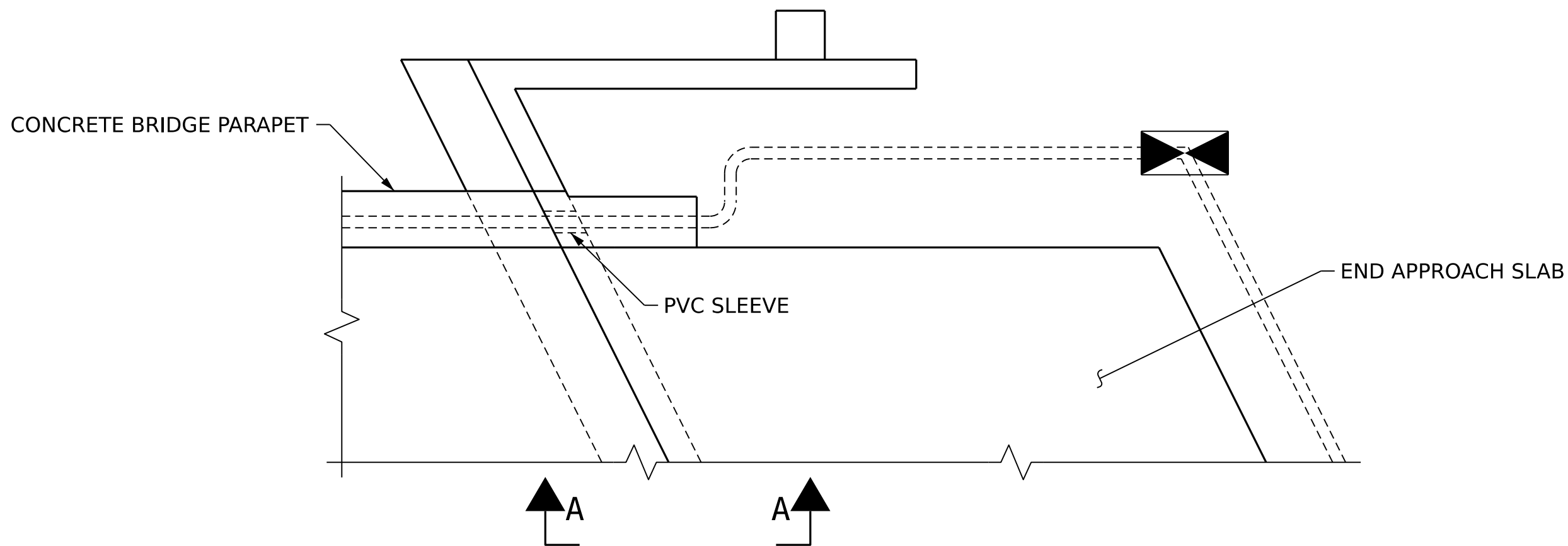
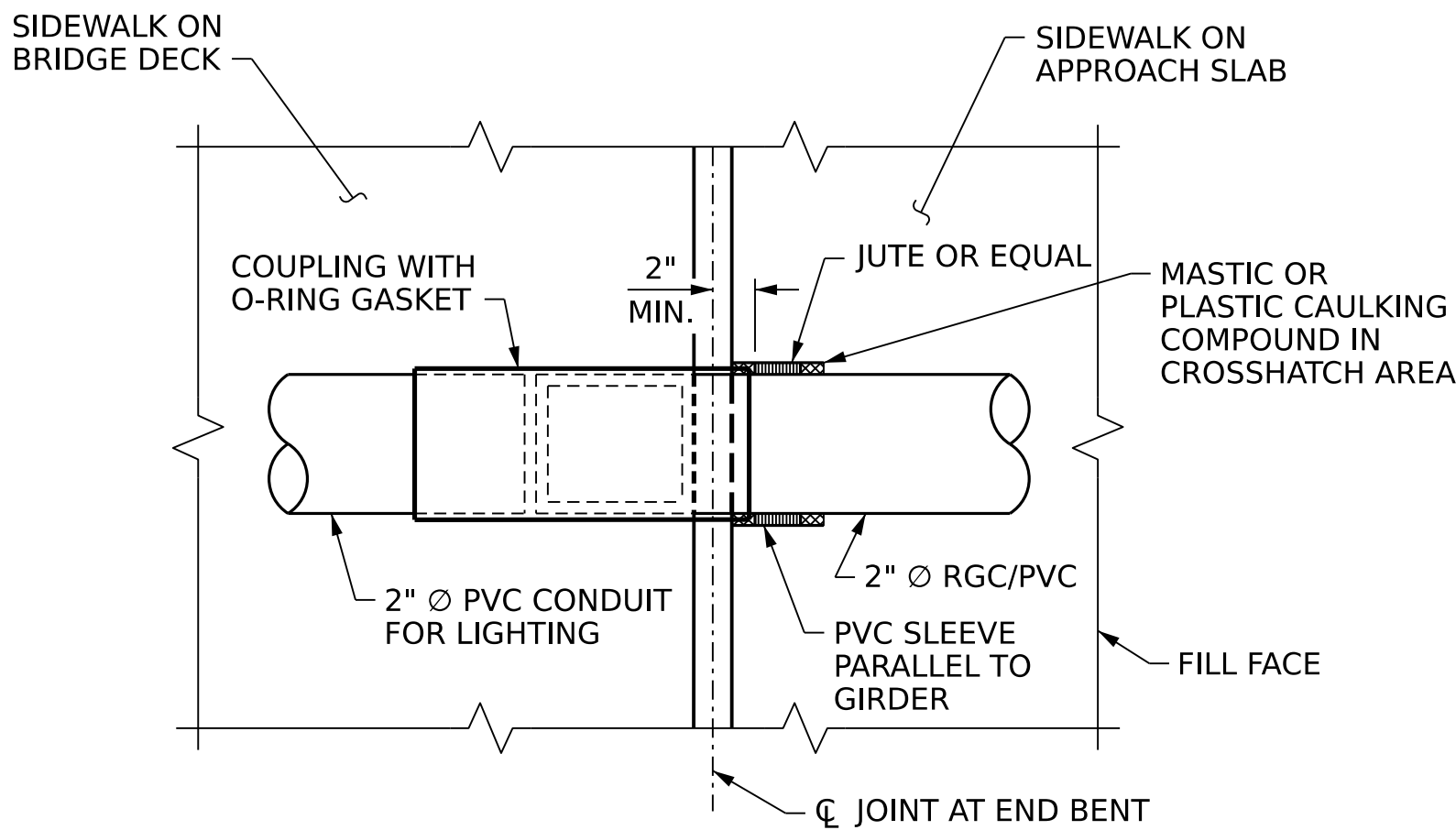
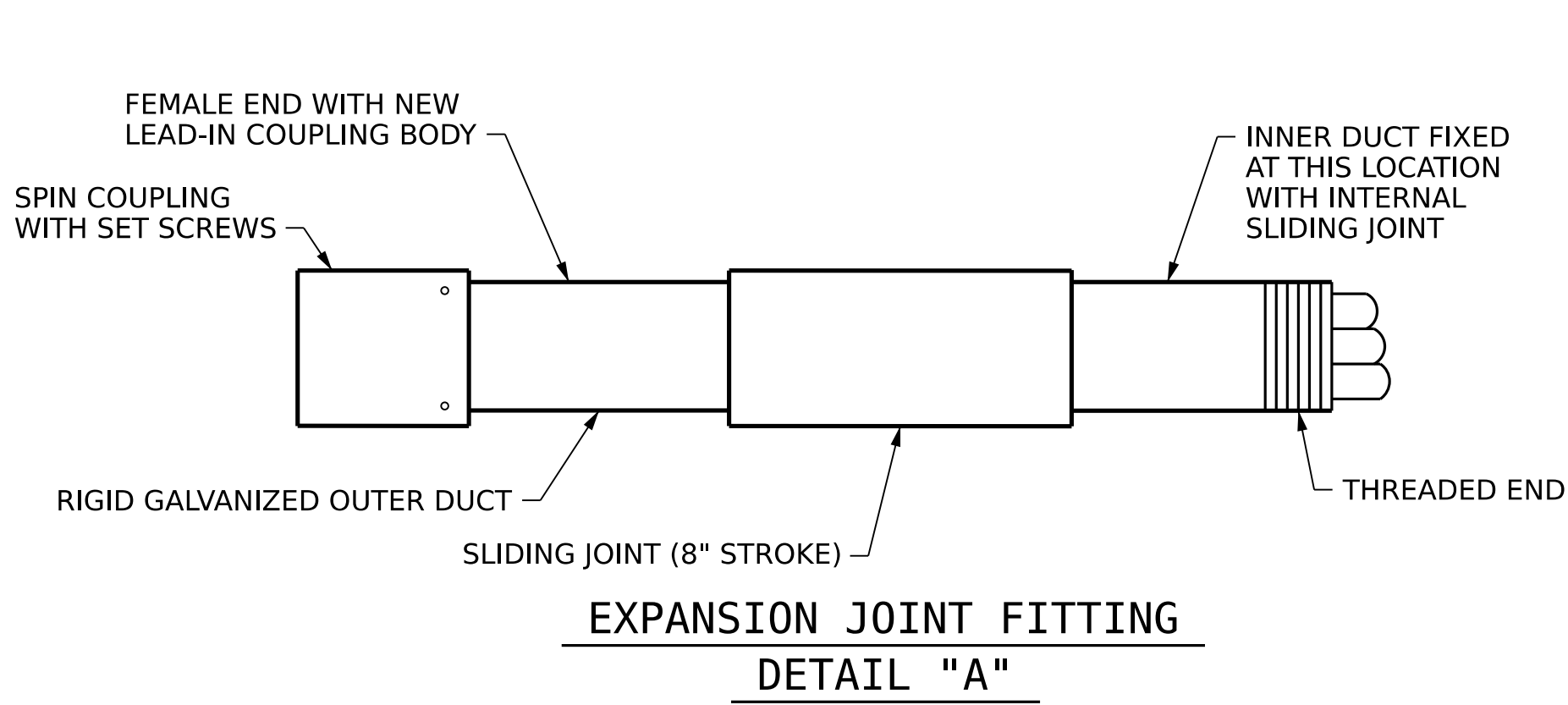
PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-

SHEET 1 OF 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S06-54
2			4			
TOTAL SHEETS						60

7/21/2026 9:02:32 AM User: blanning
Filename: N:\NC Bridges\W21002-I-2513A I-26 I4ECOM\I-2513AC\Structures\SITE\406.107.12513AC.SWJ.EC1.S06-54-100242.dgn

ASSEMBLED BY:	B.E. LANNING	DATE:	03/2024
CHECKED BY :	J.I. BREWER	DATE:	03/2024
DESIGN ENGINEER OF RECORD:	J.I. BREWER	DATE:	01/2026
DRAWN BY :	RWW	4/03	REV. 5/1/06 TLA/GM
CHECKED BY :	DBM	4/03	REV. 10/1/11 MAA/GM
			REV. 12/17 MAA/THC



NOTES:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE TOTAL] QUANTITY OF CONDUIT NEEDED TO COMPLETE THE WORK AND THAT THE CONDUIT(S) ARE PLACED AT THE NOTED DIMENSION AND ABOVE THE BOTTOM OF THE GIRDER.

THE INSTALLATION OF THE CONDUIT SYSTEM SHALL BE PAID FOR AS LUMP SUM. THE PRICE SHALL INCLUDE ALL CONDUIT, EXPANSION JOINTS, CONCRETE INSERTS, PVC SLEEVES AND ALL NECESSARY HARDWARE TO COMPLETE THE WORK.

THE CONTRACTOR SHALL FIELD VERIFY THAT THE CONDUIT SYSTEM IS NOT IN CONFLICT WITH THE GUARDRAIL POSTS.

INSTALL SLEEVES PARALLEL TO GIRDERS. SEE DETAIL "B" FOR SLEEVE INSTALLATION.

PROVIDE TRANSITION ADAPTOR 9AND EXPANSION JOINT) FOR CONDUIT AT END BENT 1 AND END BENT 2.

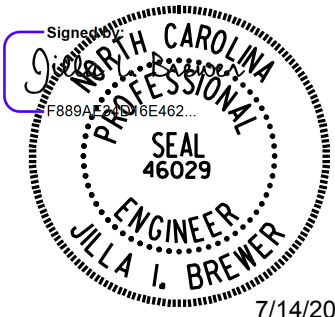
INSTALL EXPANSION JOINTS AT END BENT 1 AND END BENT 2.

THE CONCRETE SCREW INSERT SHALL HAVE A ROD SIZE OF 5/8" AND A PULL FORCE OF 1260 LBS.

SEE LIGHTING PLANS FOR ADDITIONAL INFORMATION.

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-

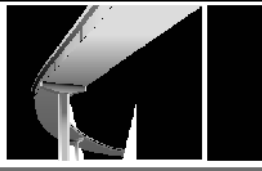
SHEET 2 OF 2



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ELECTRICAL CONDUIT
SYSTEM FOR LIGHTING

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

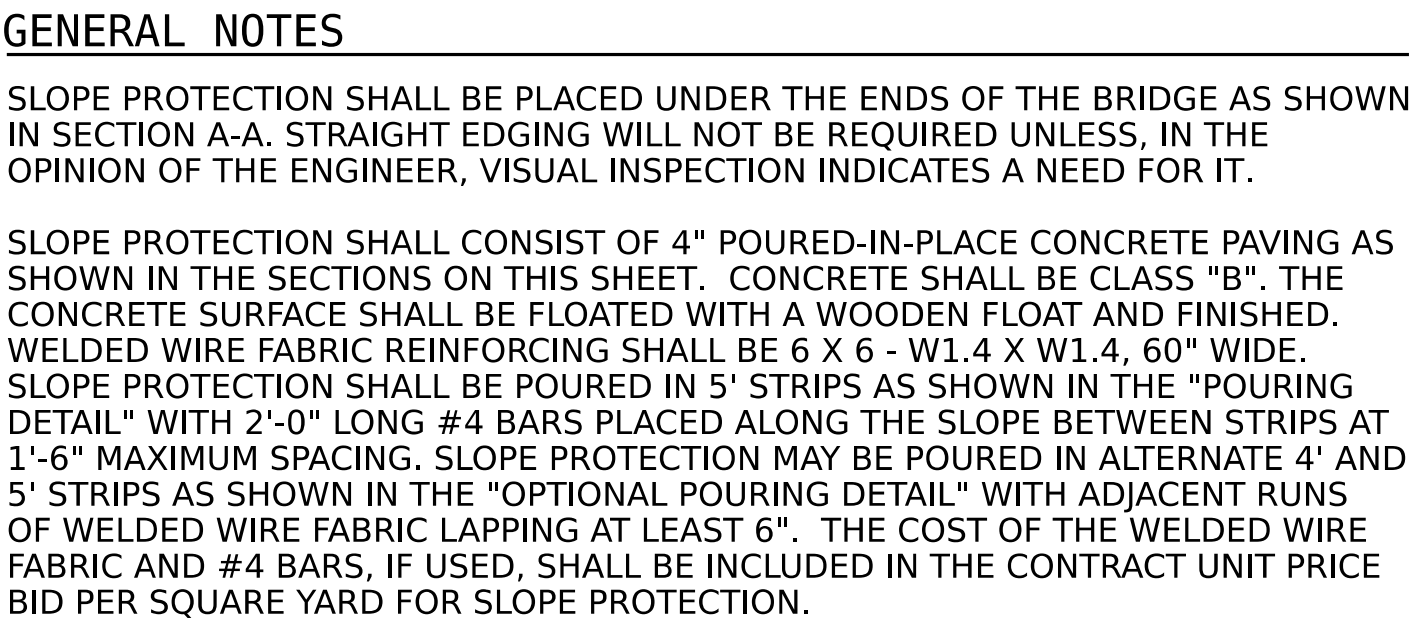
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S06-55
TOTAL
SHEETS
60

DRAWN BY: B.E. LANNING DATE: 11/2025
CHECKED BY: J.I. BREWER DATE: 11/2025
DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 01/2026

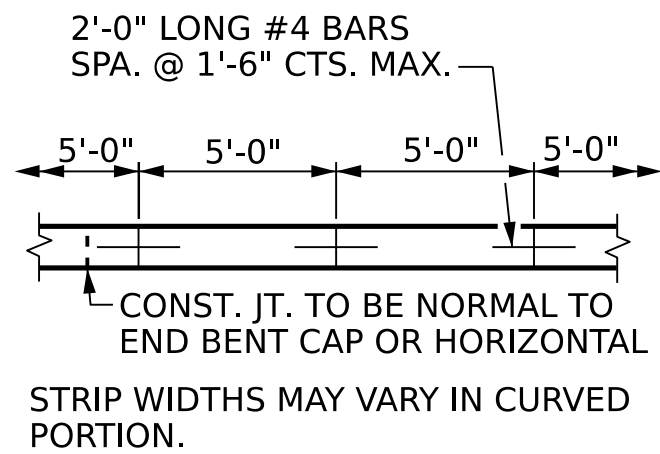
ELECTRICAL CONDUIT DETAILS

7/14/2026 2:38:15 PM User: blanning
Filename: N:\NC Bridges\W21002-I-2513A I-26 I4ECOM\I-2513AC\Structures\SITE\406.109.12513AC.SMU.EC2.S06-55-100242.dgn

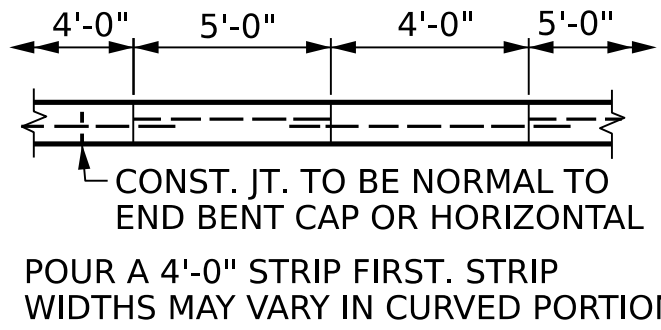


BRIDGE @ STA. 22+70.15 -Y2-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	125	225
END BENT 2	258	465

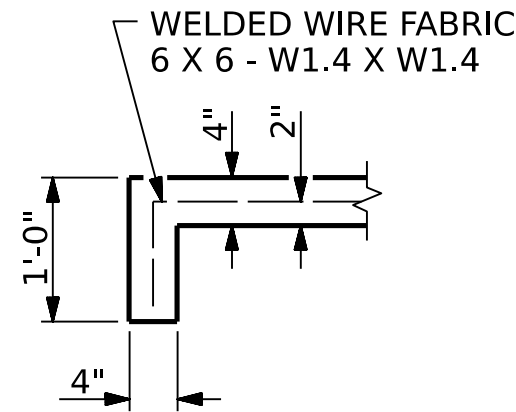
* QUANTITY SHOWN IS BASED ON 5' POURS.



POURING DETAIL



OPTIONAL POURING DETAIL



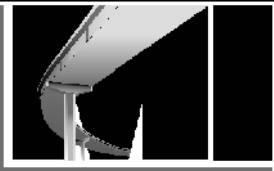
SECTION B-B

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
 STATION: 22+70.15 -Y2-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SLOPE PROTECTION DETAILS

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

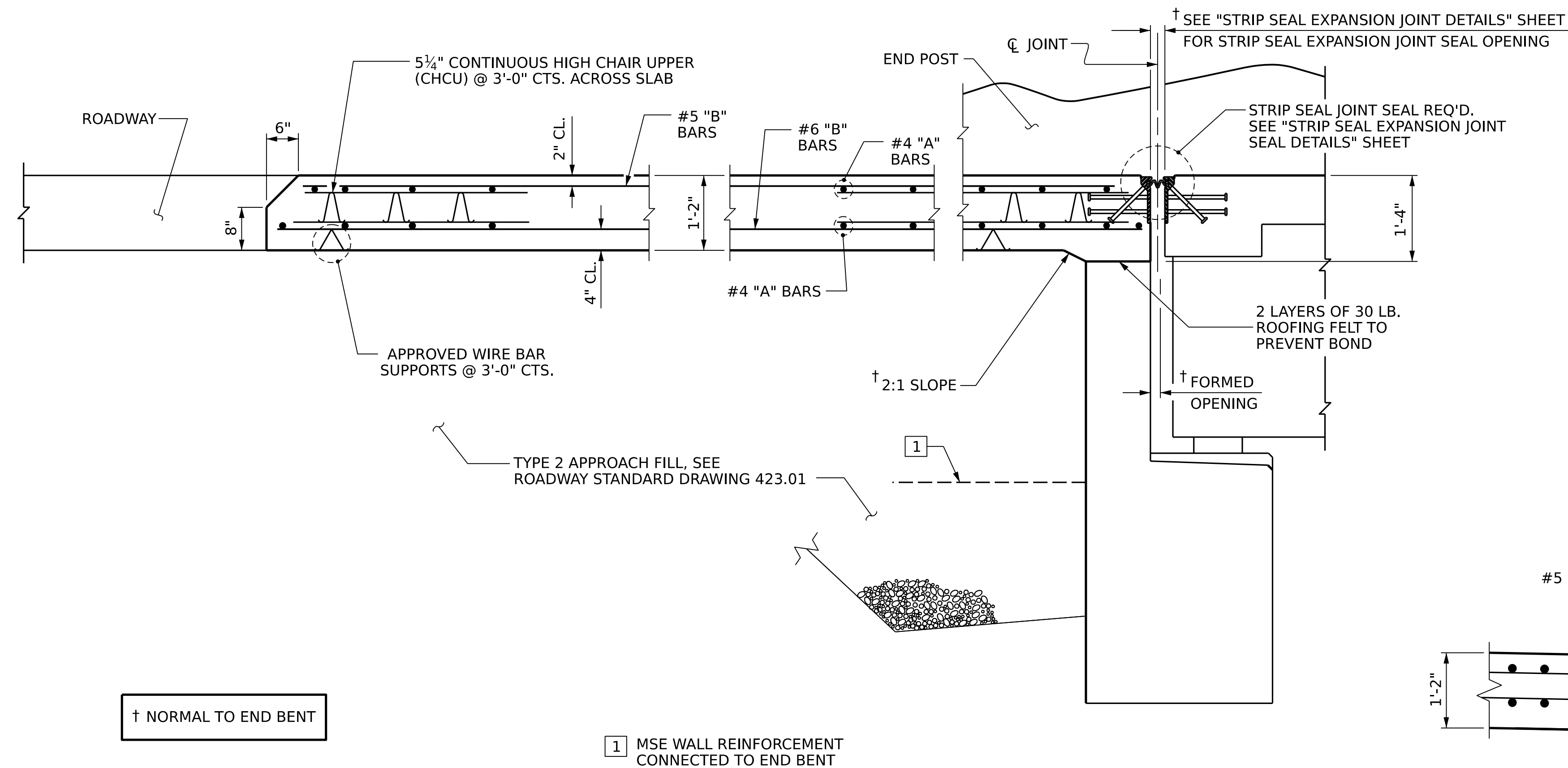
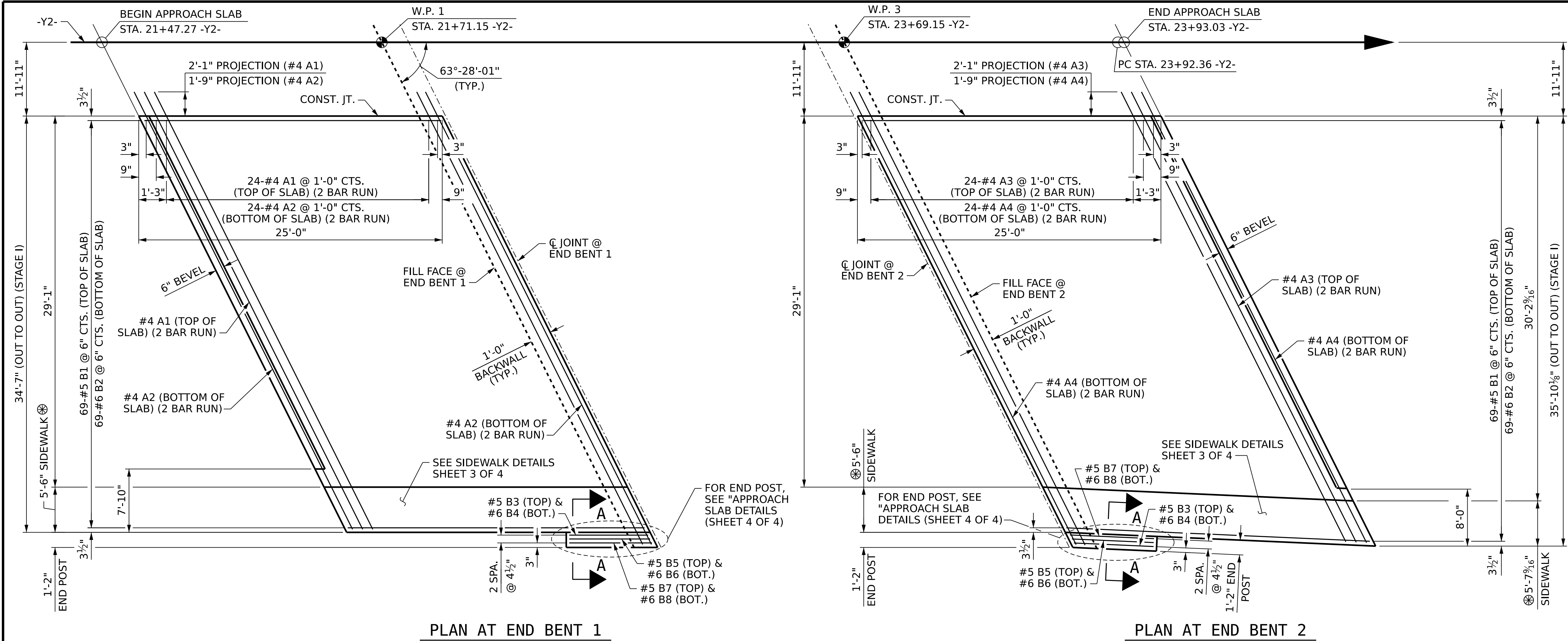
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO
S06-56

TOTAL
SHEETS
60

DRAWN BY : B.E. LANNING DATE : 03/2024
 CHECKED BY : J.I. BREWER DATE : 03/2024
 DESIGN ENGINEER OF RECORD : J.I. BREWER DATE : 01/2026

7/14/2026 2:38:41 PM User: jblanning
Filename: N:\NC Bridges\W21002.I-2513A I-26 (AECOM)\I-2513AC\Structures\SITE\406.113.I2513AC.SMU.AS1.S06-57.100242.dgn



NOTES:

- FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, MSE WALL REINFORCEMENT AND BACKFILL MATERIAL, SEE ROADWAY PLANS.
- GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.
- BACKFILL MATERIAL SHALL BE THE SAME MATERIAL USED IN THE MSE REINFORCED ZONE.
- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
- THE CONTRACTOR HAS THE OPTION TO BUILD THE APPROACH SLAB ALL AT ONCE RATHER THAN IN STAGES.
- 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.
- ⊗ SIDEWALK TO BE BUILT AFTER STAGE II CONSTRUCTION.
- FOR STRIP SEAL EXPANSION JOINT, SEE SPECIAL PROVISIONS.
- FOR SIDEWALK DETAILS (STAGE II), SEE "BRIDGE APPROACH SLAB DETAILS (SHEET 3 OF 4)".

BILL OF MATERIAL						
APPROACH SLAB AT END BENT 1						
STAGE I						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	50	#4	STR	21'-11"	732	
A2	50	#4	STR	21'-7"	721	
*B1	69	#5	STR	23'-11"	1,721	
B2	69	#6	STR	24'-7"	2,548	
*B3	1	#5	STR	3'-5"	4	
B4	1	#6	STR	3'-5"	5	
*B5	1	#5	STR	3'-8"	4	
B6	1	#6	STR	3'-8"	6	
*B7	1	#5	STR	3'-10"	4	
B8	1	#6	STR	3'-10"	6	
REINFORCING STEEL **					LBS.	3,286
* EPOXY COATED REINFORCING STEEL **					LBS.	2,465
CLASS AA CONCRETE **					C. Y.	37.8
APPROACH SLAB AT END BENT 2						
STAGE I						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A3	50	#4	STR	21'-11"	732	
A4	50	#4	STR	21'-8"	724	
*B1	69	#5	STR	23'-11"	1,721	
B2	69	#6	STR	24'-7"	2,548	
*B3	1	#5	STR	3'-6"	4	
B4	1	#6	STR	3'-6"	5	
*B5	1	#5	STR	3'-8"	4	
B6	1	#6	STR	3'-8"	6	
*B7	1	#5	STR	3'-11"	4	
B8	1	#6	STR	3'-11"	6	
REINFORCING STEEL **					LBS.	3,289
* EPOXY COATED REINFORCING STEEL **					LBS.	2,465
CLASS AA CONCRETE **					C. Y.	38.5

** QUANTITIES FOR CONCRETE END POST AND SIDEWALK ARE NOT INCLUDED.

SPLICE LENGTHS

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

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

STAGE I

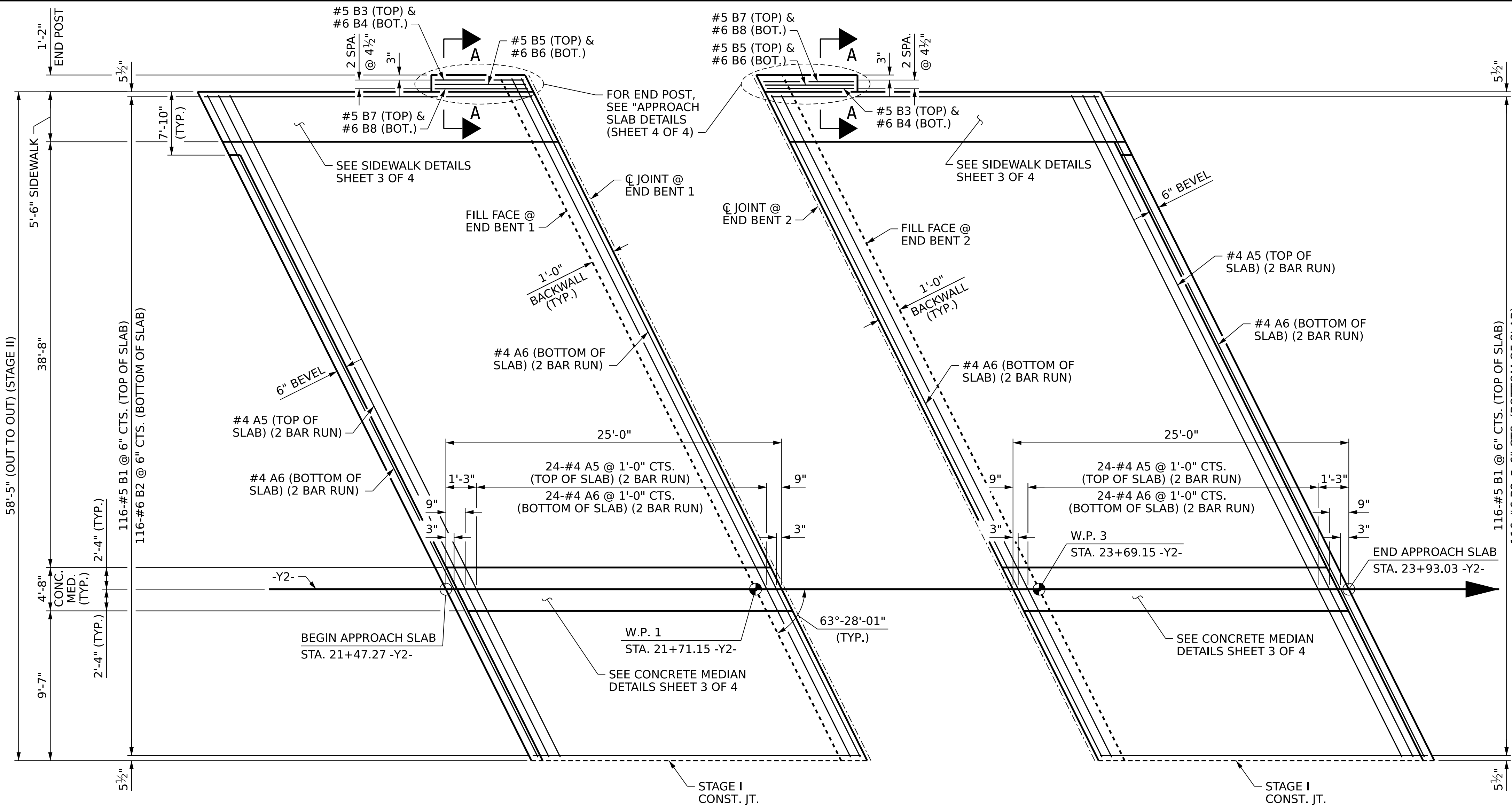
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S06-57
2			4			

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

7/14/2026

7/14/2026 2:38:57 PM User: blanning
Filename: N:\NC Bridges\W21002.I-2513A I-26 (AECOM)\I-2513AC\Structures\SITE\406.115.I2513AC.SMJ.AS2.S06-58.100242.dgn



PLAN AT END BENT 1

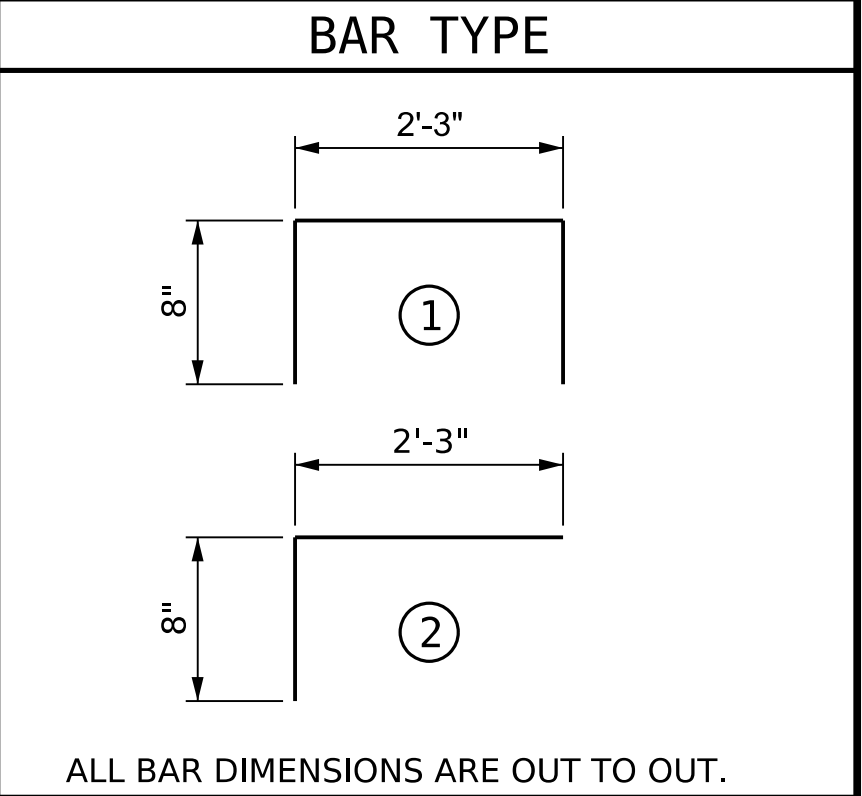
PLAN AT END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

FOR SECTION THRU SLAB, SEE SHEET 1 OF 4.

BILL OF MATERIAL									
APPROACH SLAB AT END BENT 1					APPROACH SLAB AT END BENT 2				
STAGE II					STAGE II				
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE
*A5	50	#4	STR	33'-6"	1,119	*A5	50	#4	STR
A6	50	#4	STR	33'-5"	1,116	A6	50	#4	STR
*B1	116	#5	STR	23'-11"	2,894	*B1	116	#5	STR
B2	116	#6	STR	24'-7"	4,283	B2	116	#6	STR
*B3	1	#5	STR	3'-5"	4	*B3	1	#5	STR
B4	1	#6	STR	3'-5"	5	B4	1	#6	STR
*B5	1	#5	STR	3'-8"	4	*B5	1	#5	STR
B6	1	#6	STR	3'-8"	6	B6	1	#6	STR
*B7	1	#5	STR	3'-10"	4	*B7	1	#5	STR
B8	1	#6	STR	3'-10"	6	B8	1	#6	STR
*B11	10	#4	STR	24'-7"	164	*B11	5	#4	STR
*B13	4	#4	STR	24'-0"	64	*B12	5	#4	STR
						*B13	4	#4	STR
*G1	50	#4	STR	4'-7"	153	*G1	50	#4	STR
*G2	16	#4	STR	4'-0"	43	*G2	16	#4	STR
*U1	10	#4	1	3'-7"	24	*U1	10	#4	1
*J1	20	#4	2	2'-11"	39	*J1	20	#4	2
REINFORCING STEEL **					LBS. 5,416.	REINFORCING STEEL **			
* EPOXY COATED REINFORCING STEEL **					LBS. 4,512.	* EPOXY COATED REINFORCING STEEL **			
CLASS AA CONCRETE						CLASS AA CONCRETE			
POUR 1 APPROACH SLAB					C. Y. 63.7.	POUR 1 APPROACH SLAB			
POUR 2 SIDEWALK & MEDIAN					C. Y. 14.1	POUR 2 SIDEWALK & MEDIAN			
TOTAL **					C. Y. 77.8	TOTAL **			

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

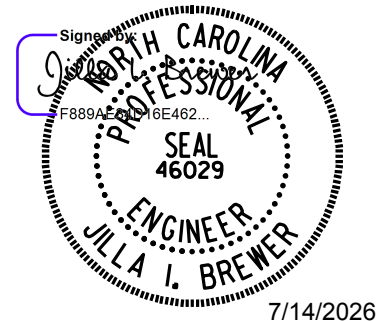


** QUANTITIES FOR CONCRETE END POST ARE NOT INCLUDED.

NOTES:
FOR NOTES AND SECTION A-A, SEE SHEET 1 OF 4.
FOR SIDEWALK AND CONCRETE MEDIAN DETAILS, SEE SHEET 3 OF 4.

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-

SHEET 2 OF 4



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB
FOR FLEXIBLE PAVEMENT

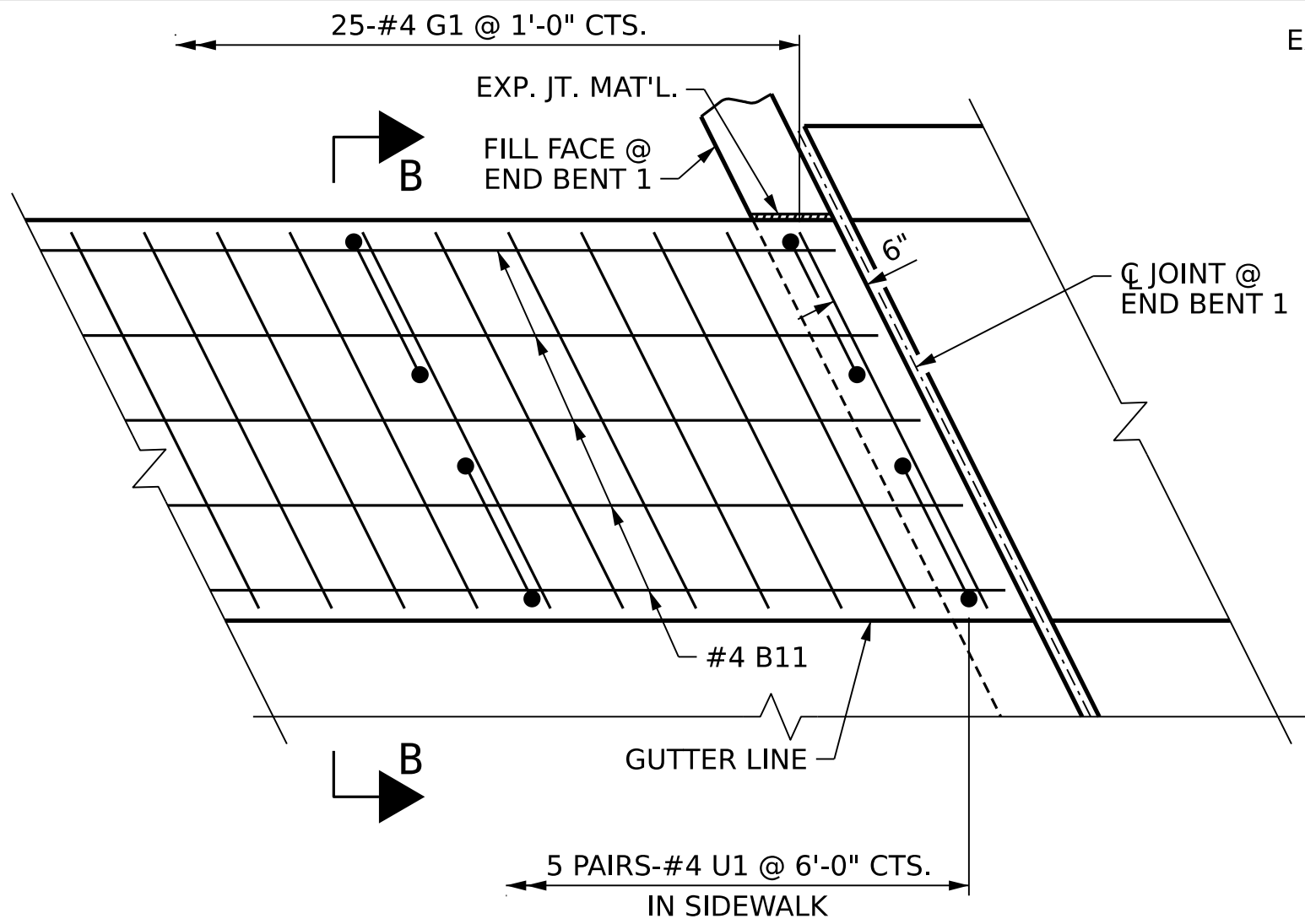
STAGE II

REVISIONS

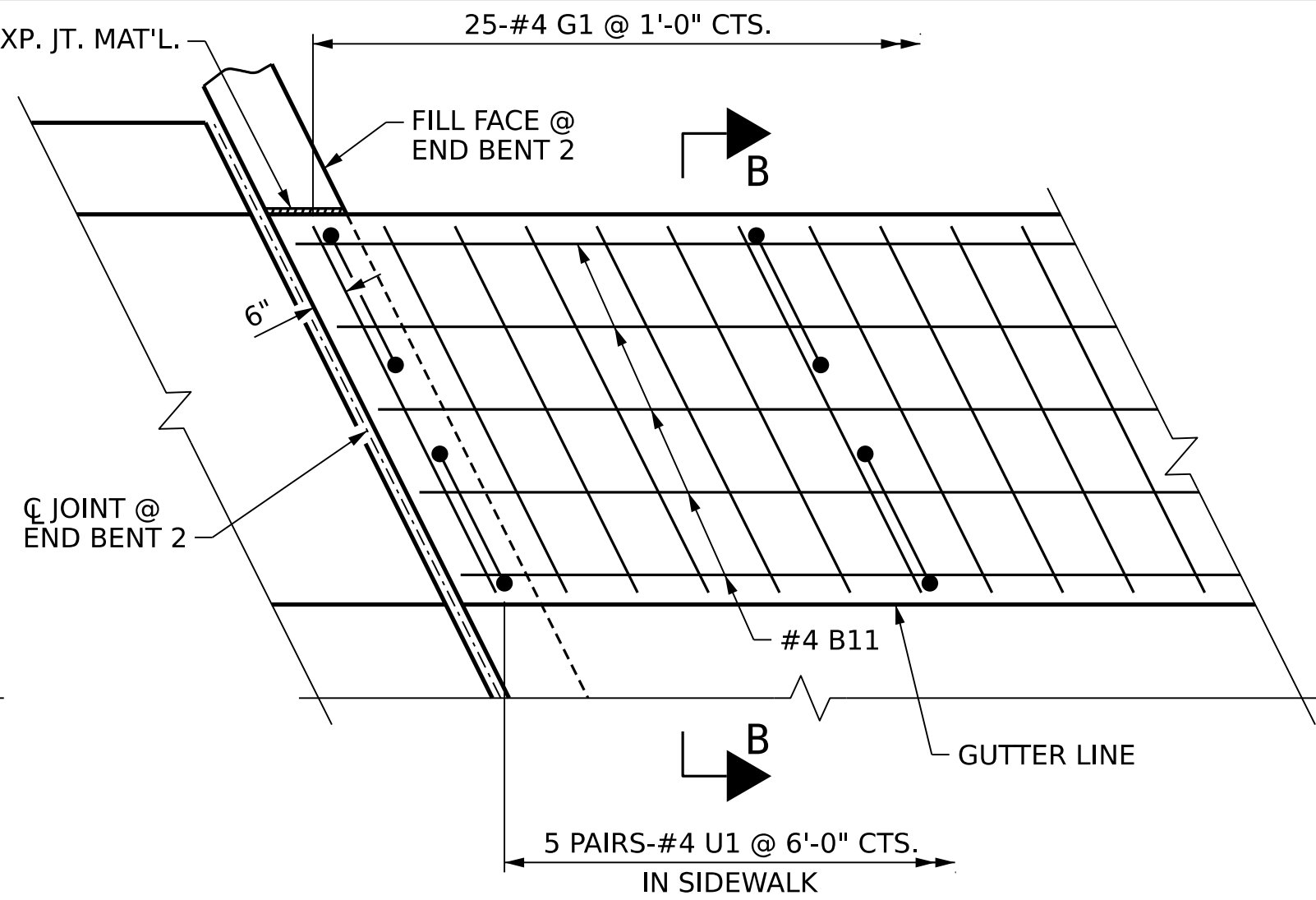
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
S06-58
TOTAL SHEETS
60

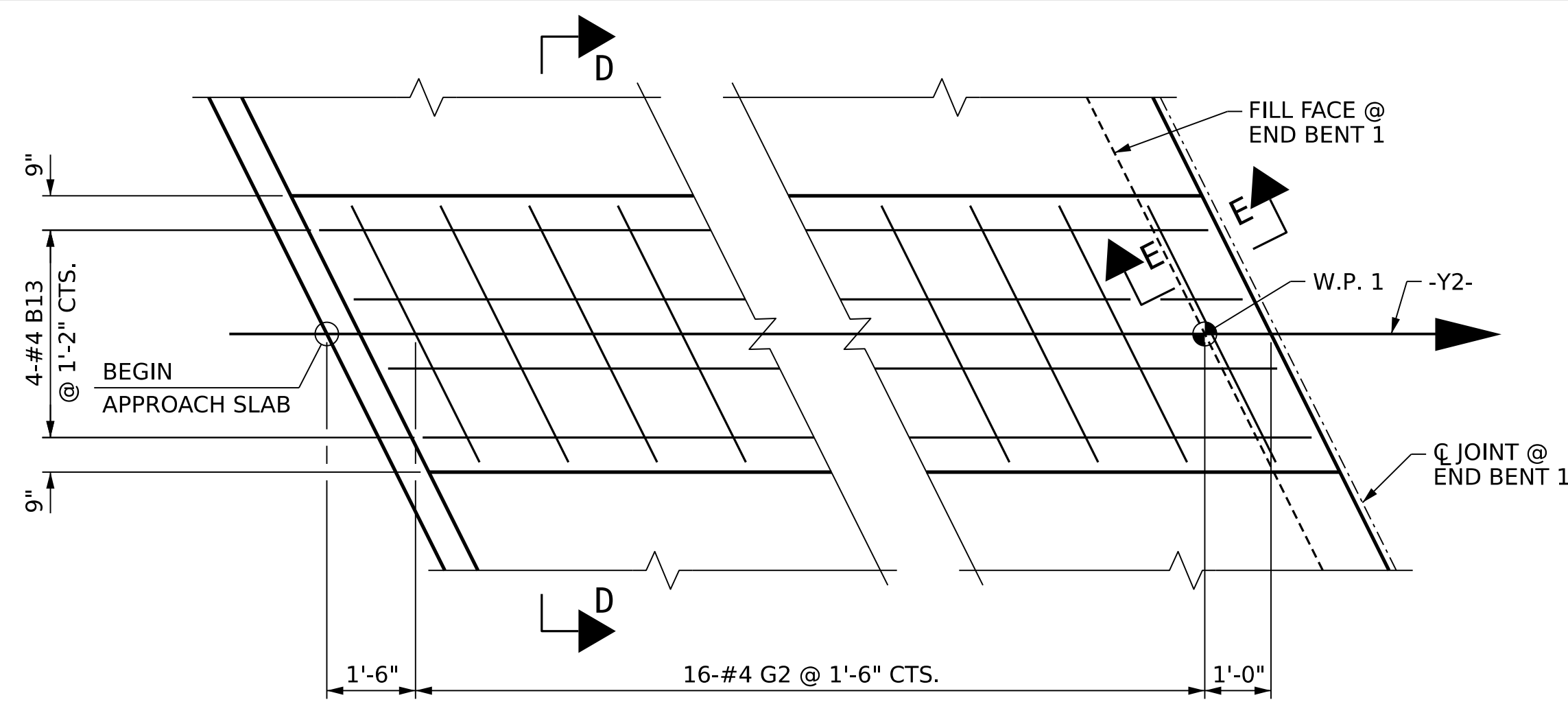
DRAWN BY :	B.E. LANNING	DATE :	10/2023
CHECKED BY :	J.I. BREWER	DATE :	12/2023
DESIGN ENGINEER OF RECORD :	J.I. BREWER	DATE :	01/2026



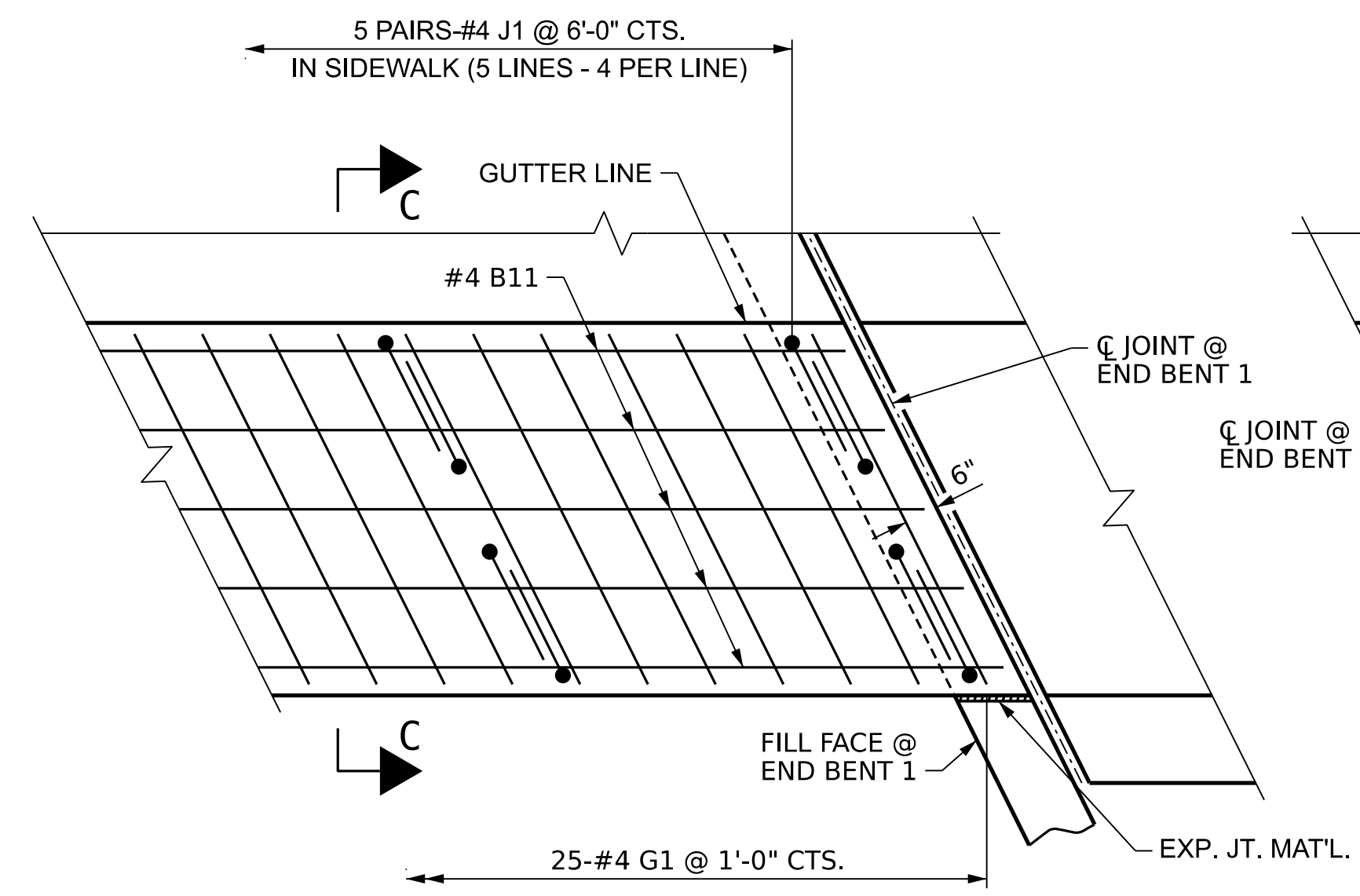
PLAN AT END BENT 1 LEFT SIDE



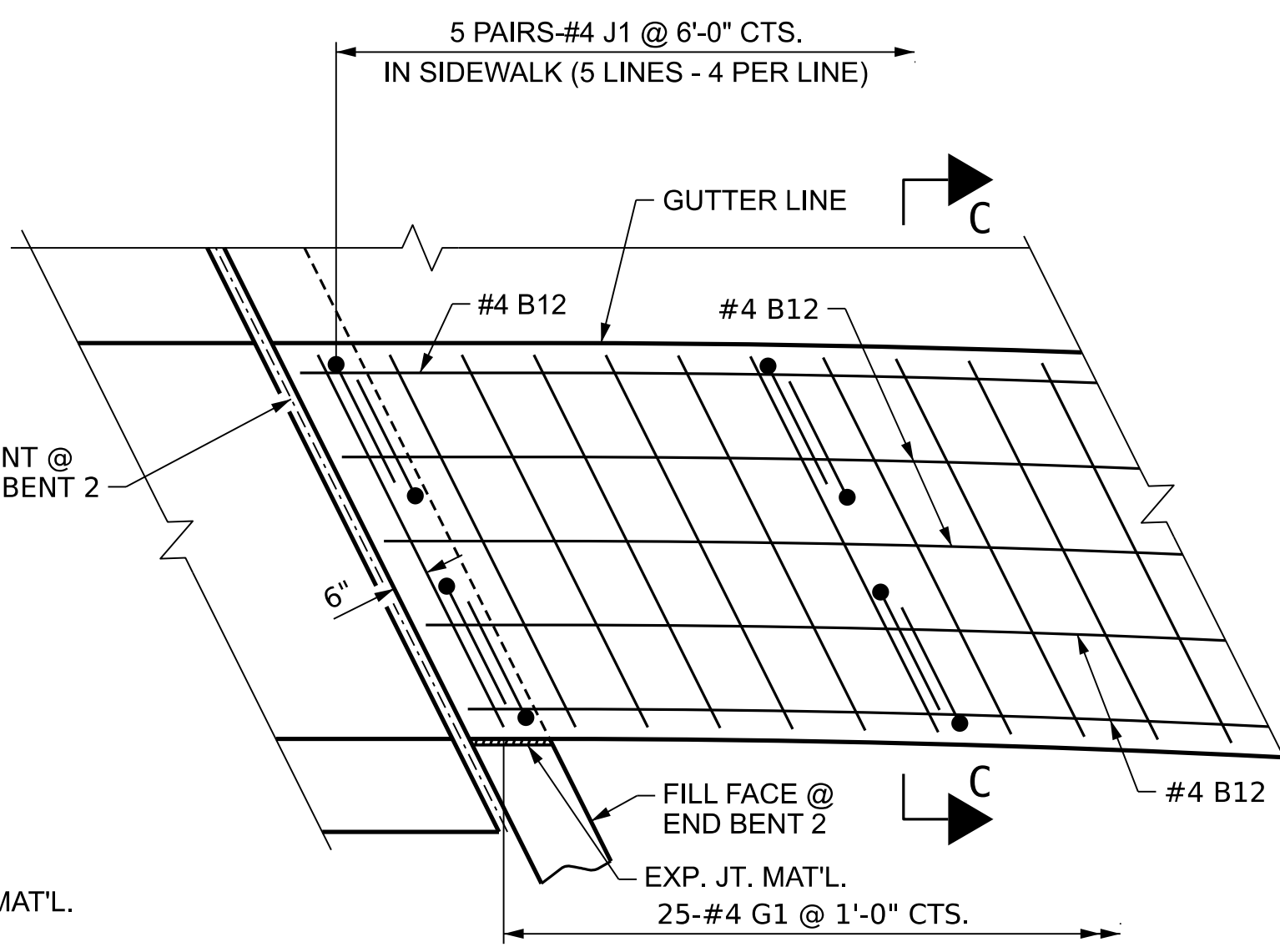
PLAN AT END BENT 2 LEFT SIDE



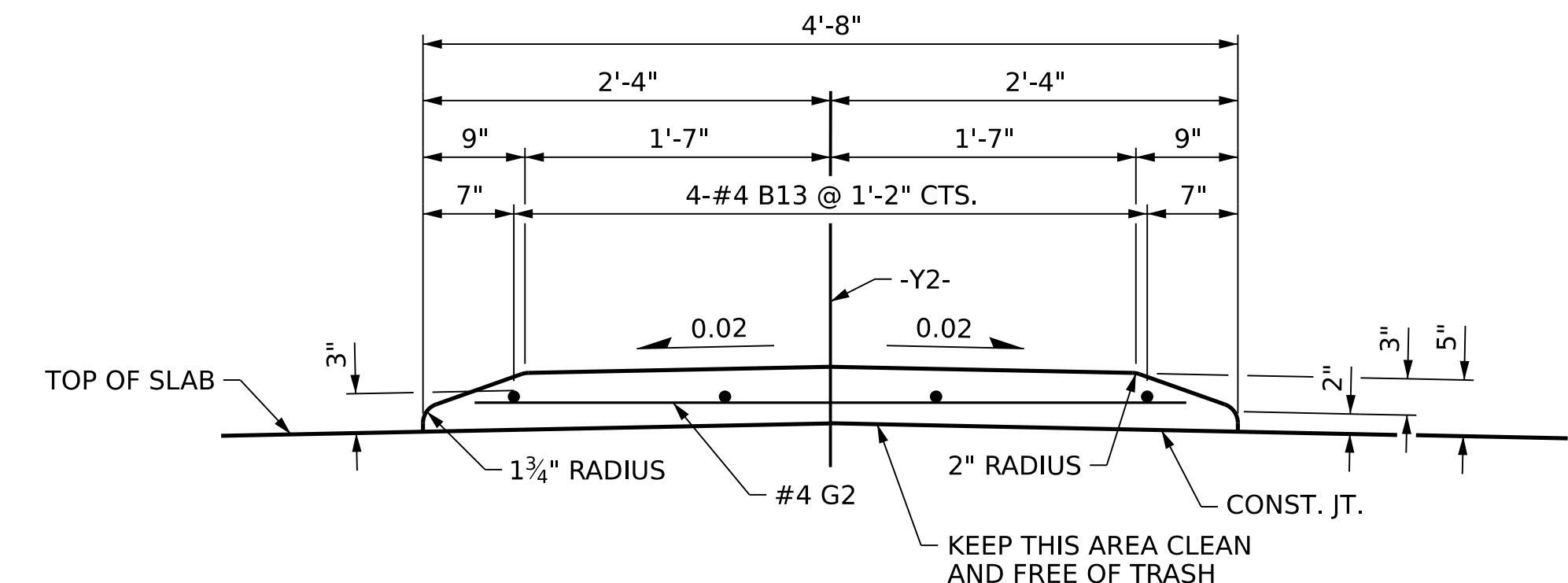
PLAN



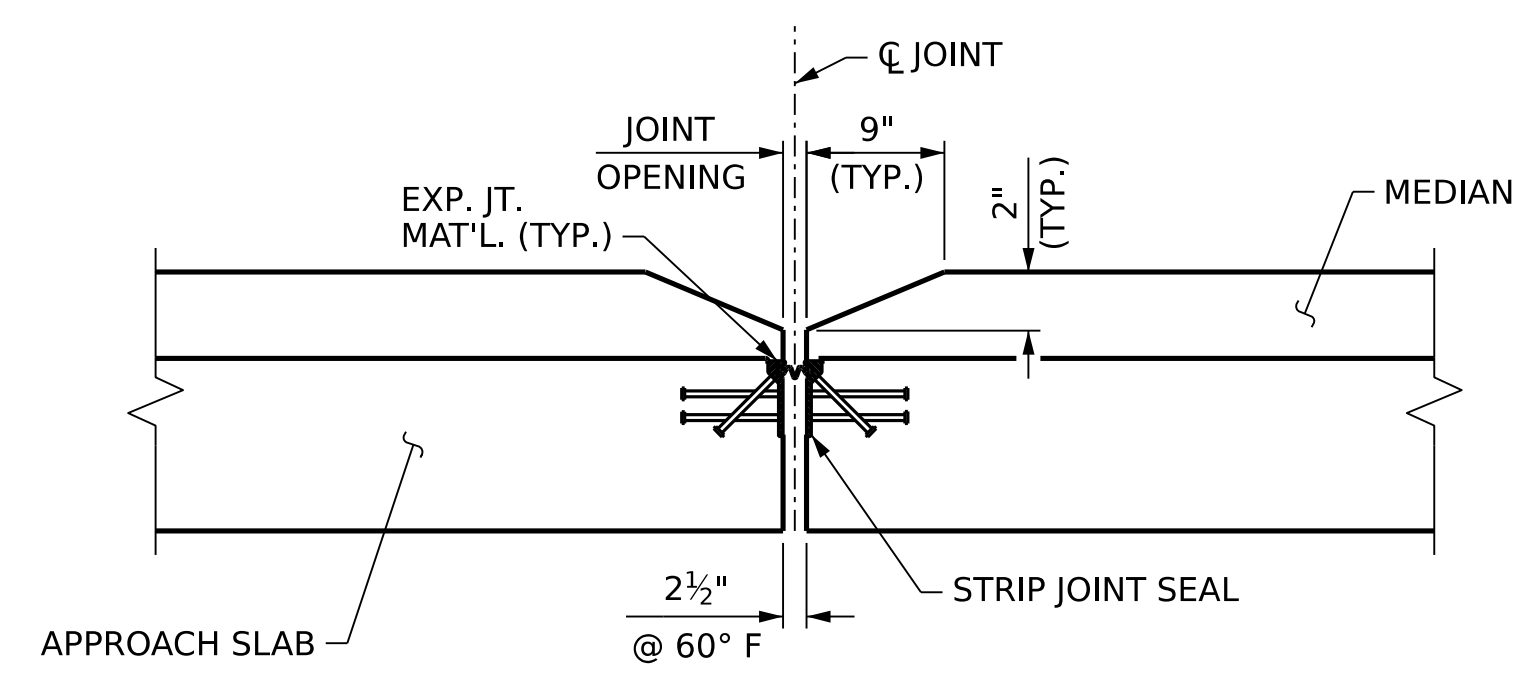
PLAN AT END BENT 1 RIGHT SIDE
TO BE BUILT AFTER STAGE II CONSTRUCTION



PLAN AT END BENT 2 RIGHT SIDE
TO BE BUILT AFTER STAGE II CONSTRUCTION



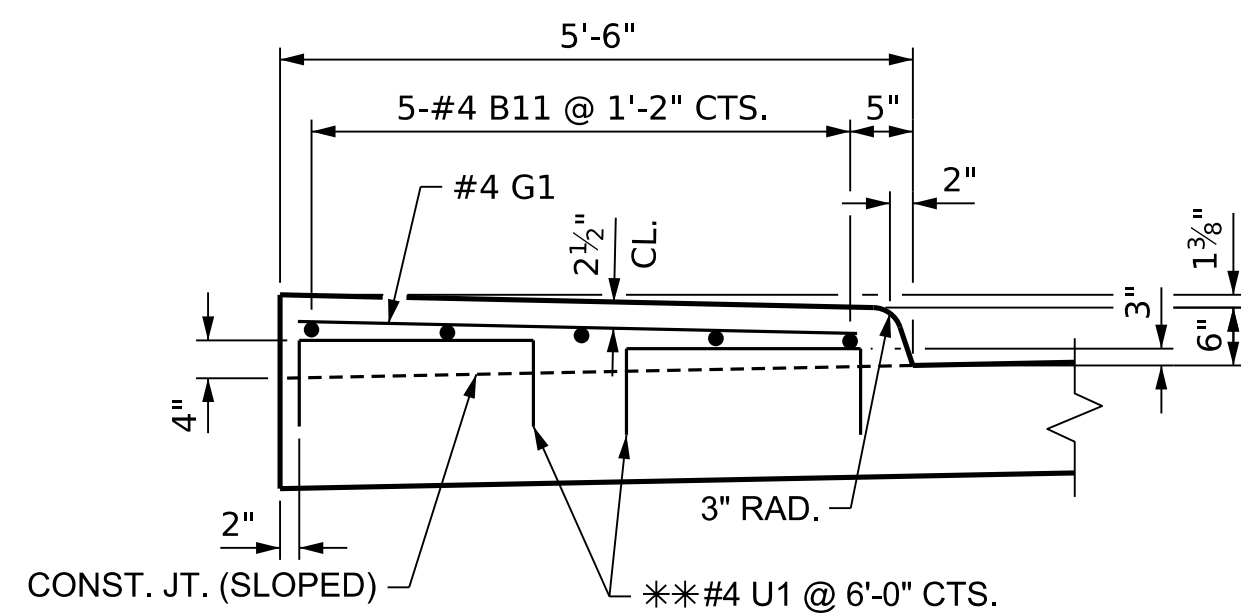
SECTION D-D



SECTION E-E

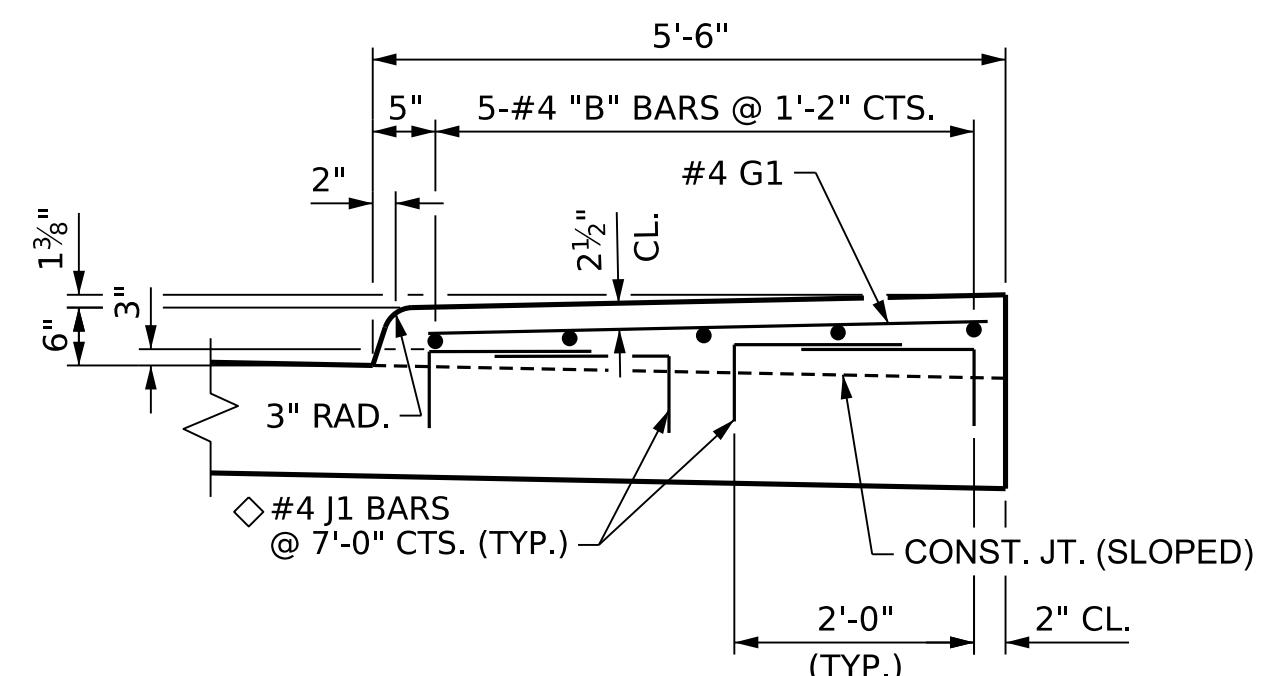
CONCRETE MEDIAN DETAILS ON APPROACH SLAB

(END BENT 1 SHOWN END BENT 2 SIMILAR)



SECTION B-B

** #4 U1 MAY BE PUSHED INTO GREEN CONCRETE AFTER SPAN HAS BEEN SCREEDED OFF.



SECTION C-C

◇ #4 J1 SHALL BE ADHESIVELY ANCHORED INTO DECK. (RIGHT SIDE ONLY)

STAGE II SIDEWALK DETAILS

PROJECT NO. I-2513 AC

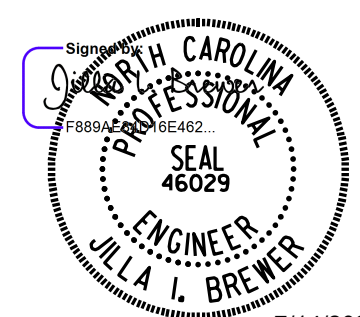
BUNCOMBE COUNTY

STATION: 22+70.15 -Y2-

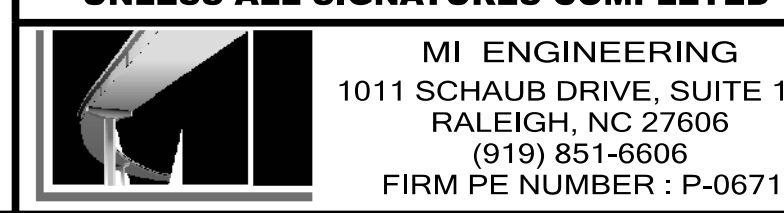
SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH SLAB DETAILS



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

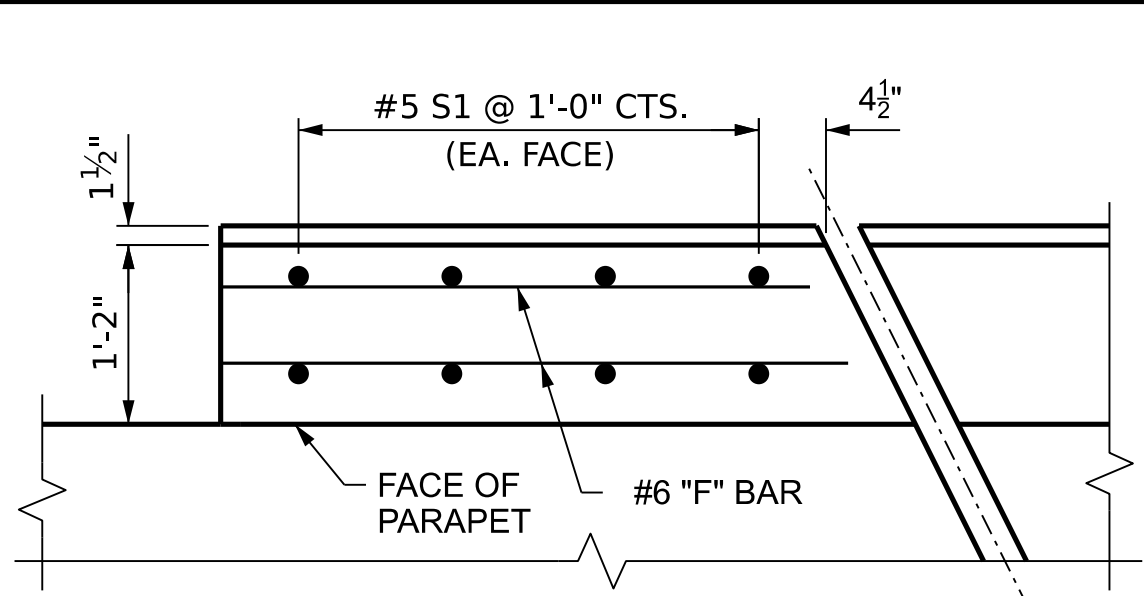


REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S06-59
2			4			

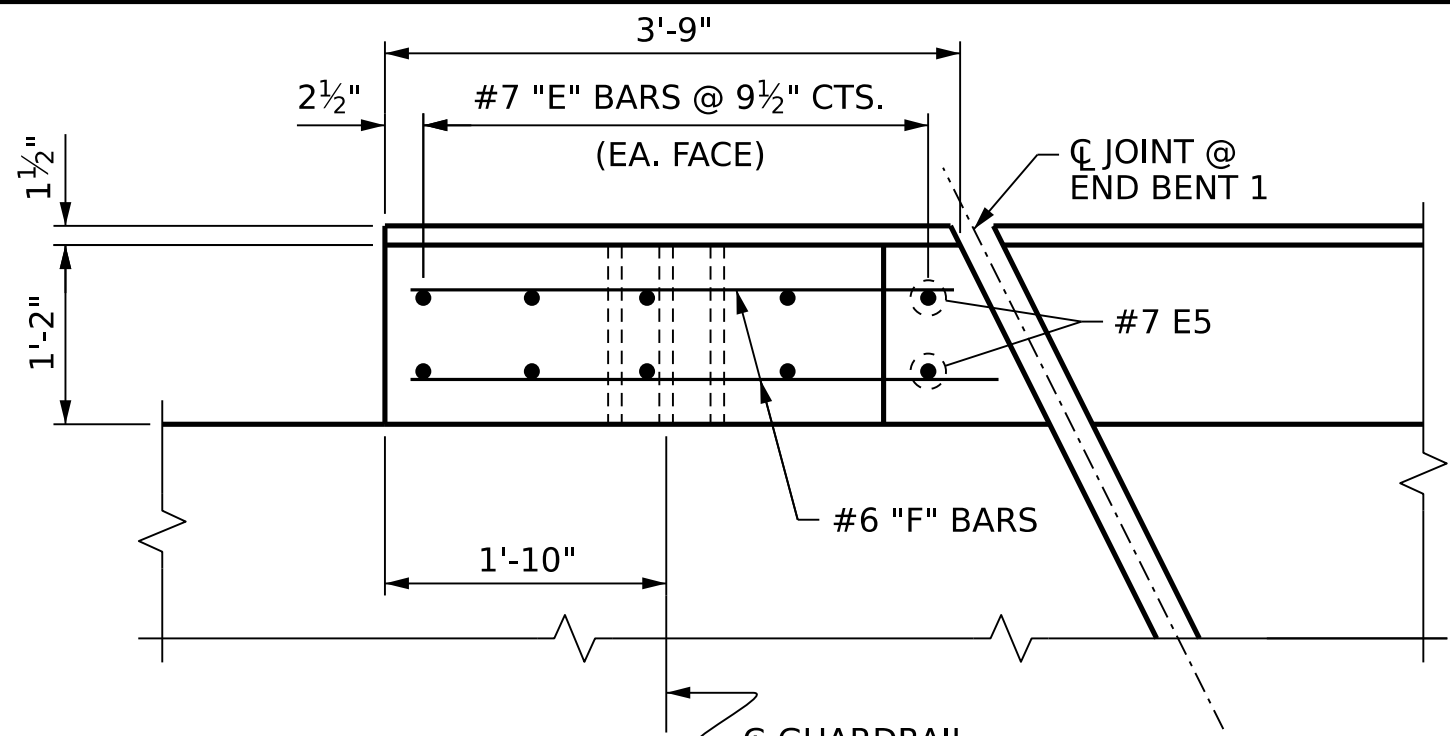
TOTAL SHEETS
60

DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>10/2023</u>
CHECKED BY: <u>J.I. BREWER</u>	DATE: <u>12/2023</u>
DESIGN ENGINEER OF RECORD: <u>J.I. BREWER</u>	DATE: <u>01/2026</u>

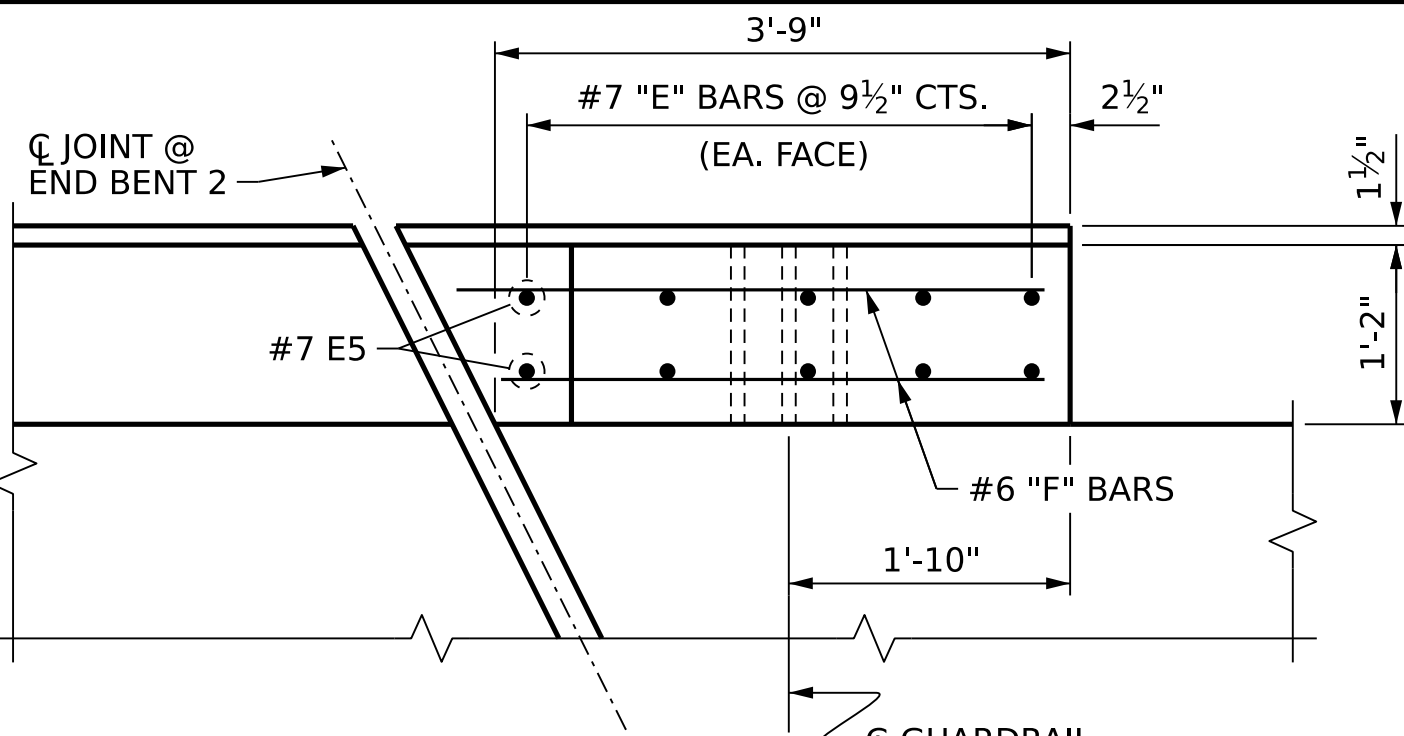
7/14/2026 2:39:01 PM User: jblanning
Filename: N:\NC Bridges\21002-I-2513A I-26 (AECOM)\I-2513AC\Structures\SITE\406.117-I2513AC_SMU.AS3.S06-59-100242.dgn



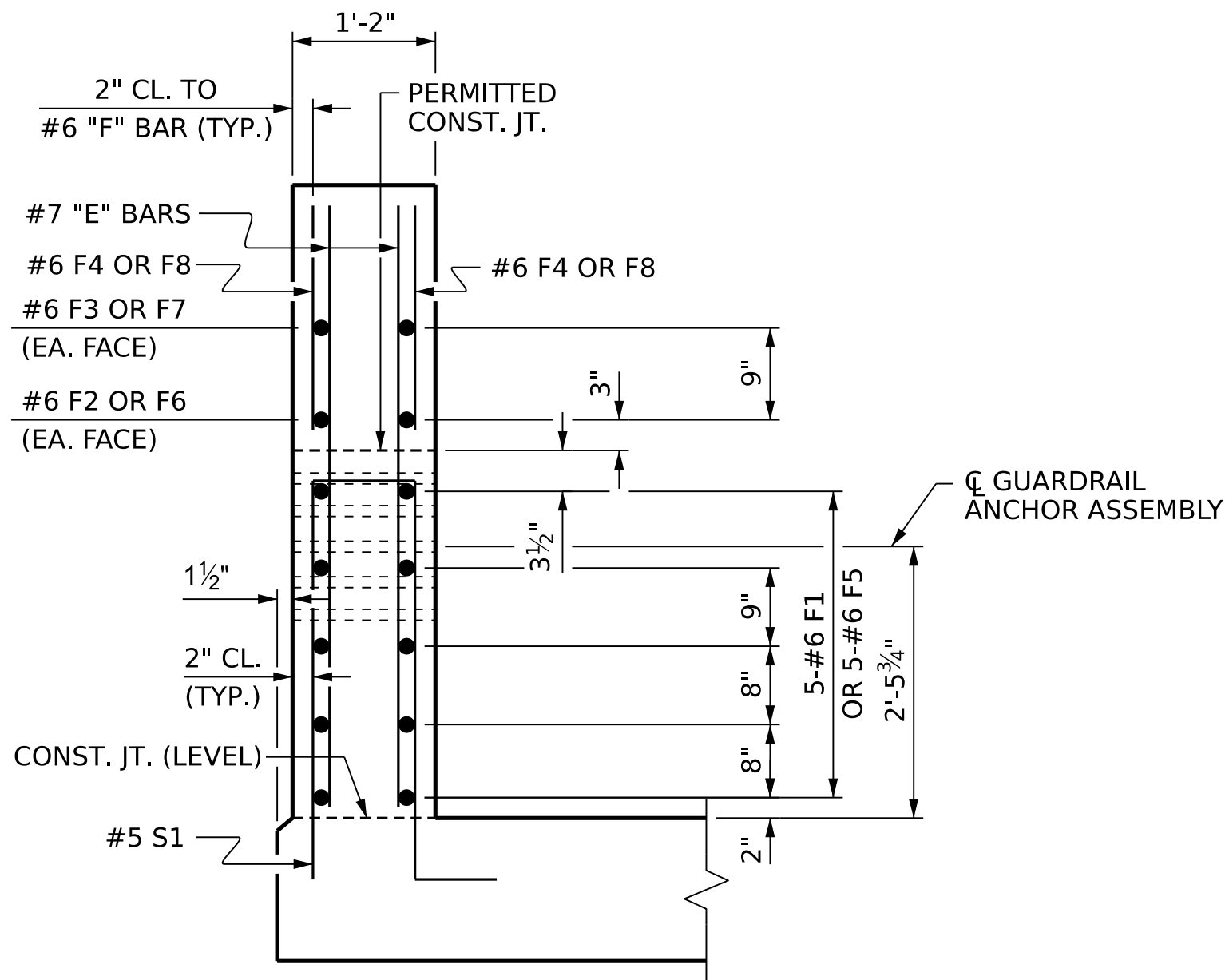
PLAN OF PARAPET



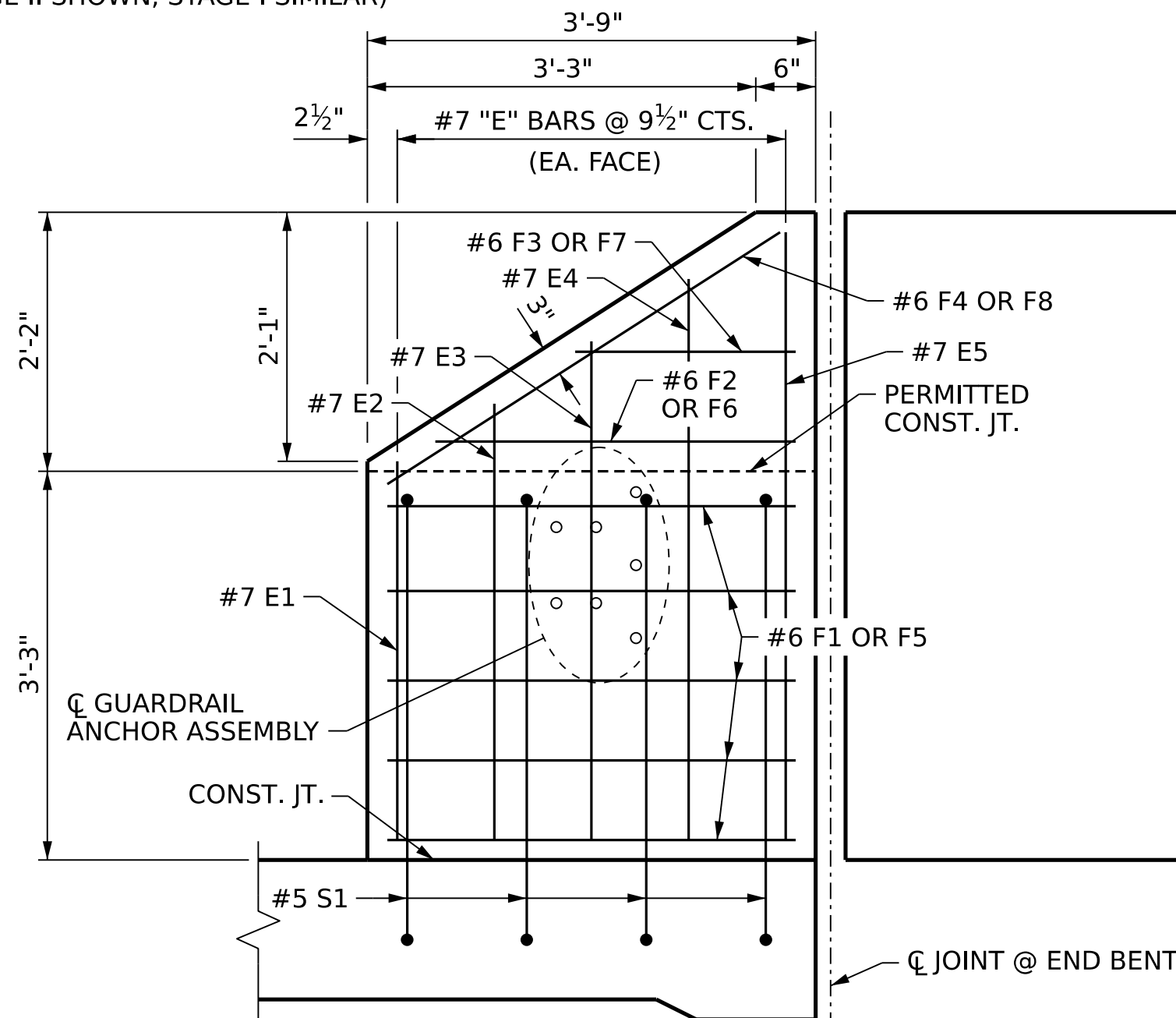
POST AT END BENT 1



POST AT END BENT 2

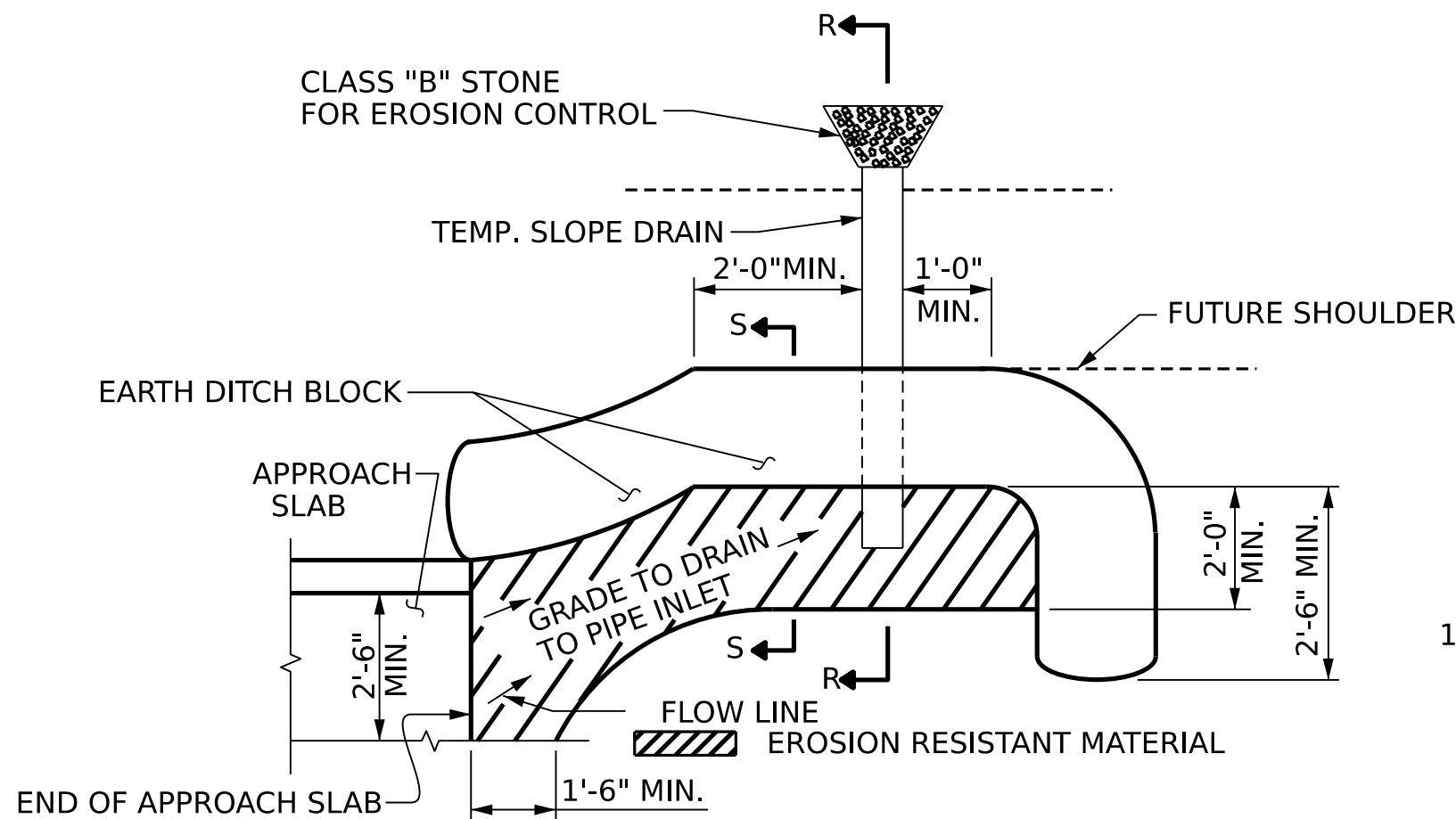


END VIEW

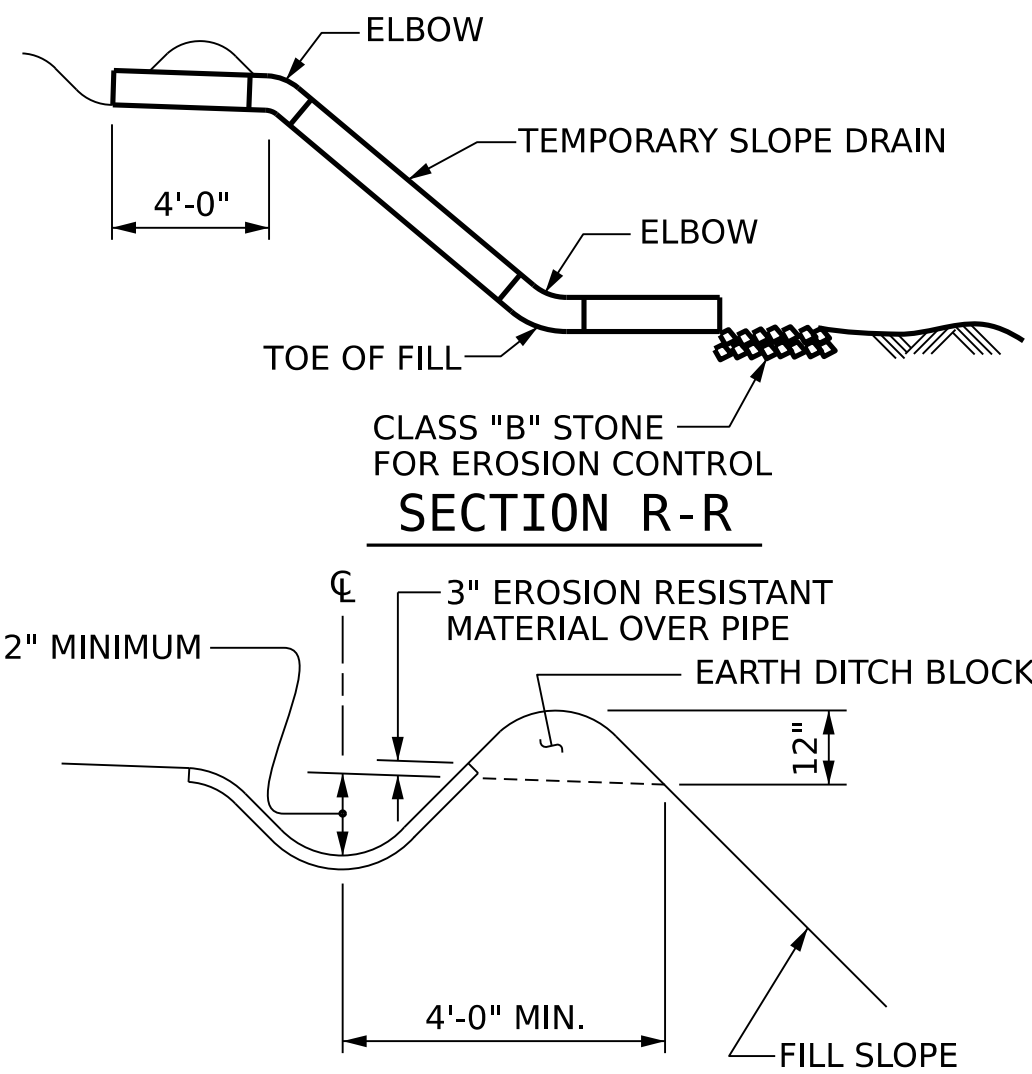


ELEVATION

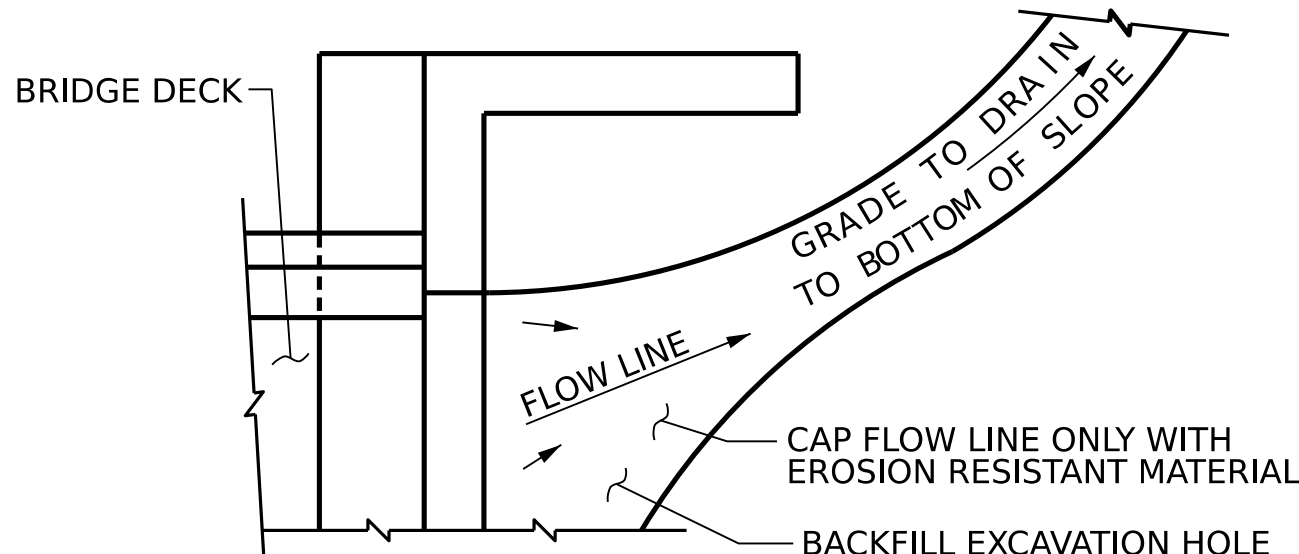
END POST FOR TWO BAR METAL RAIL



PLAN VIEW



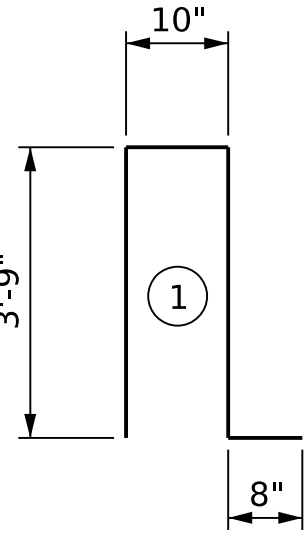
SECTION S-S



TEMPORARY DRAINAGE DETAIL

BILL OF MATERIAL						BILL OF MATERIAL					
STAGE I FOR 2 END POSTS						STAGE II FOR 2 END POSTS					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*E1	4	#7	STR	3'-1"	25	*E1	4	#7	STR	3'-1"	25
*E2	4	#7	STR	3'-7"	29	*E2	4	#7	STR	3'-7"	29
*E3	4	#7	STR	4'-1"	33	*E3	4	#7	STR	4'-1"	33
*E4	4	#7	STR	4'-7"	37	*E4	4	#7	STR	4'-7"	37
*E5	4	#7	STR	5'-1"	42	*E5	4	#7	STR	5'-1"	42
*F1	10	#6	STR	3'-5"	51	*F1	10	#6	STR	3'-5"	51
*F2	2	#6	STR	3'-0"	9	*F2	2	#6	STR	3'-0"	9
*F3	2	#6	STR	1'-10"	6	*F3	2	#6	STR	1'-10"	6
*F4	2	#6	STR	3'-10"	12	*F4	2	#6	STR	3'-10"	12
*F5	10	#6	STR	3'-9"	56	*F5	10	#6	STR	3'-9"	56
*F6	2	#6	STR	3'-4"	10	*F6	2	#6	STR	3'-4"	10
*F7	2	#6	STR	2'-2"	7	*F7	2	#6	STR	2'-2"	7
*F8	2	#6	STR	4'-2"	13	*F8	2	#6	STR	4'-2"	13
*S1	8	#4	1	9'-0"	48	*S1	8	#4	1	9'-0"	48
*EPOXY COATED REINFORCING STEEL						378	LBS.		*EPOXY COATED REINFORCING STEEL		
CLASS AA CONCRETE						1.6	C. Y.		CLASS AA CONCRETE		
1'-2" X 3'-3" CONCRETE PARAPET						8.08	LIN. FT.		1'-2" X 3'-3" CONCRETE PARAPET		

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

NOTES:

THE COST OF THE END POST ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LINEAR FOOT CONTRACT PRICE BID FOR "1'-2" X 3'-3" CONCRETE PARAPET".

THE END POST 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 END POSTS SHALL BE EPOXY COATED.

FOR DETAILS AND LOCATION OF THE GUARDRAIL ANCHOR ASSEMBLIES, SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS" SHEET.

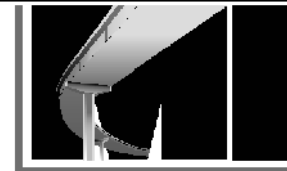
PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BRIDGE APPROACH
SLAB DETAILS

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

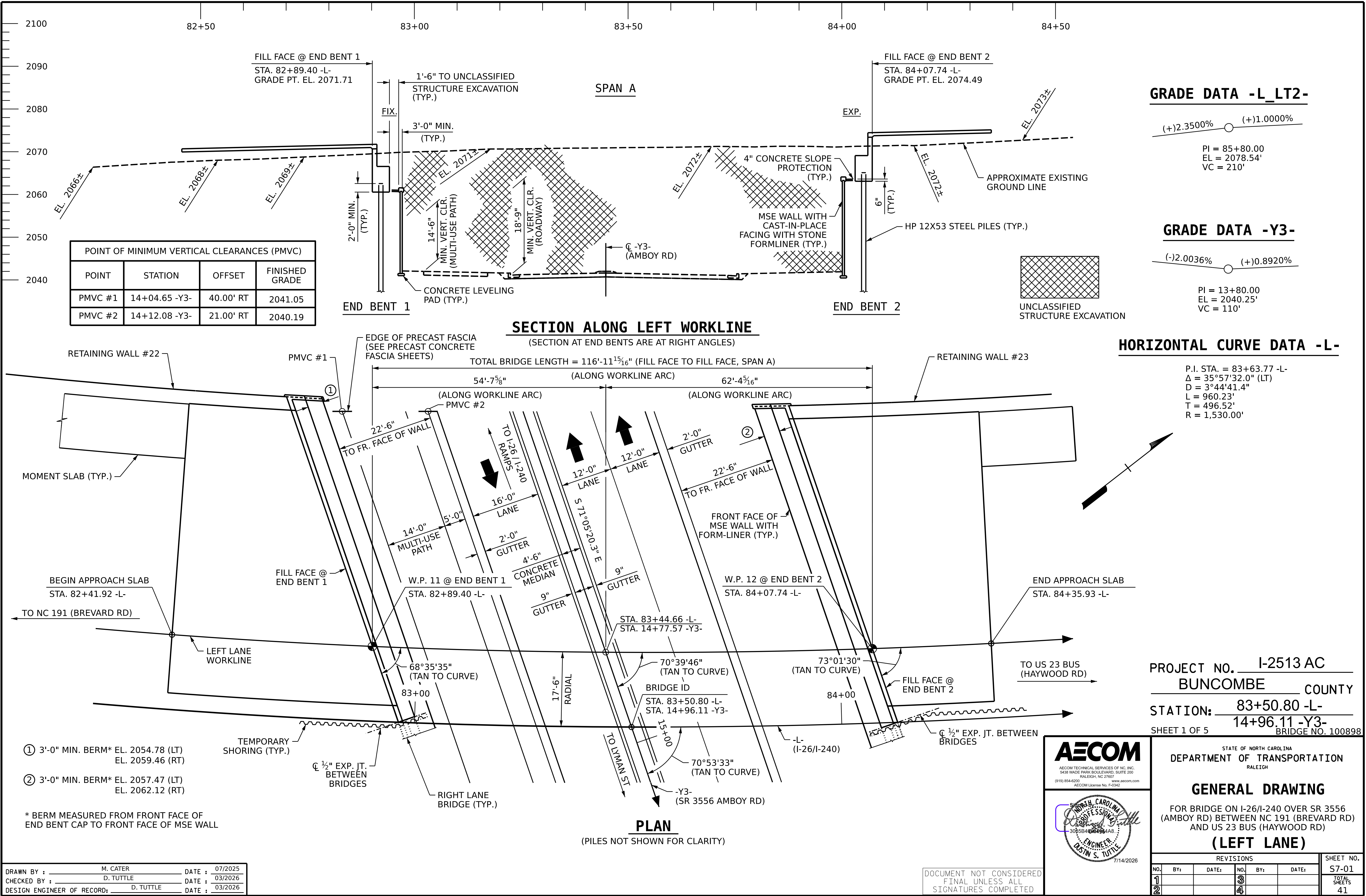
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
1			3			60	
2			4				

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

DRAWN BY :	B.E. LANNING	DATE :	10/2023
CHECKED BY :	J.I. BREWER	DATE :	12/2023
DESIGN ENGINEER OF RECORD :	J.I. BREWER	DATE :	01/2026

7/14/2026 2:39:12 PM User: blanning
Filename: N:\NC Bridges\W21002-I-2513A I-26 (AECOM)\I-2513AC\Structures\SITE\406.119.I2513AC_SMJ.AS4_S06-60-100242.dgn



DRAWN BY :	M. CATER	DATE :	07/2025
CHECKED BY :	D. TUTTLE	DATE :	03/2026
DESIGN ENGINEER OF RECORD:	D. TUTTLE	DATE :	03/2026

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. F02342

7/14/2026

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY

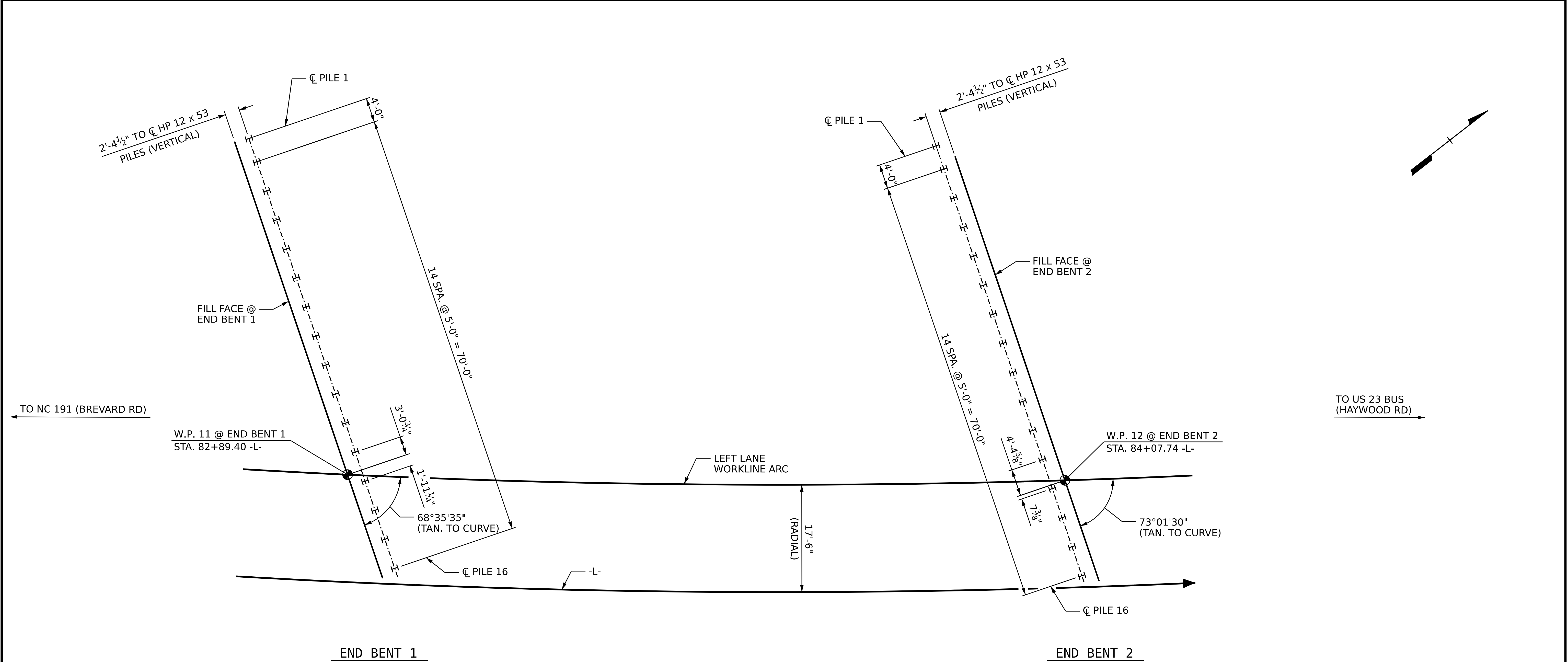
STATION: 83+50.80 -L-
14+96.11 -Y3- BRIDGE NO. 100898

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON I-26/I-240 OVER SR 3556
(AMBOY RD) BETWEEN NC 191 (BREVARD RD)
AND US 23 BUS (HAYWOOD RD)
(LEFT LANE)

REVISIONS						SHEET NO. S7-01 TOTAL SHEETS 41
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			



FOUNDATION LAYOUT
DIMENSIONS LOCATING PILES ARE TO CENTERLINES OF PILES

NOTES

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATE ENERGY IN THE RANGE OF 42,440 TO 51,220 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 1 AND 2. THIS ESTIMATED ENERGY DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

OBSERVE A ONE MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT, END BENT AND BRIDGE APPROACH FILL BEFORE BEGINNING APPROACH SLAB CONSTRUCTION AT END BENT NO. 1 & 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS. BEFORE BEGINNING THE WAITING PERIOD, INSTALL HUBS IN THE SUBGRADE AT LOCATIONS CORRESPONDING TO THE CENTER OF THE APPROACH SLAB AND AT EACH CORNER OF THE END OF THE APPROACH SLAB. SURVEY THE HUBS INITIALLY AND EVERY 3 TO 4 DAYS THEREAFTER FOR RELATIVE MOVEMENT AND SUBMIT THE DATA TO THE ENGINEER WEEKLY. THE ENGINEER WILL DETERMINE WHEN THE WAITING PERIOD ENDS AND BRIDGE APPROACH SLAB CONSTRUCTION CAN BEGIN.

DRIVE PILES AT END BENT NO. 1 AND 2 PRIOR TO MSE ABUTMENT WALL CONSTRUCTION.

DRAWN BY :	T. NEAL	DATE :	08/2025
CHECKED BY :	D. TUTTLE	DATE :	08/2025
DESIGN ENGINEER OF RECORD:	D. TUTTLE	DATE :	08/2025

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 83+50.80 -L-

SHEET 2 OF 5

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. F02342

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON I-26/I-240 OVER SR 3556
(AMBOY RD) BETWEEN NC 191 (BREVARD RD)
AND US 23 BUS (HAYWOOD RD)

(LEFT LANE)

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

(Blank entries indicate item is not applicable to structure)

$$*RDR = \frac{\text{Factored Resistance} + \text{Factored Drag Load} + \text{Factored Dead Load}}{\text{Dynamic Resistance Factor}} + \text{Nominal Drag Load Resistance} + \text{Nominal Resistance from Scourable Material}$$

**** Predrilling for Piles is required for end bents/bents with a predrilling length and at the Contractor's option for end bents/bents with predrilling information but no predrilling length.**

(Blank entries indicate item is not applicable to structure)

* Factored Dead Load is factored weight of pile above the ground line.

SHEET 3 OF 5

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Mohammed Mulla, #018979) on 09-9-2025.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number of piles with a Required Driving Resistance.
3. The Engineer may adjust the quantity for DPT Testing and Pipe Pile Plates when necessary.

DocuSigned by:
Mohammed B. Mulla

MOHAMMED B. MULLA
SIGNATURE

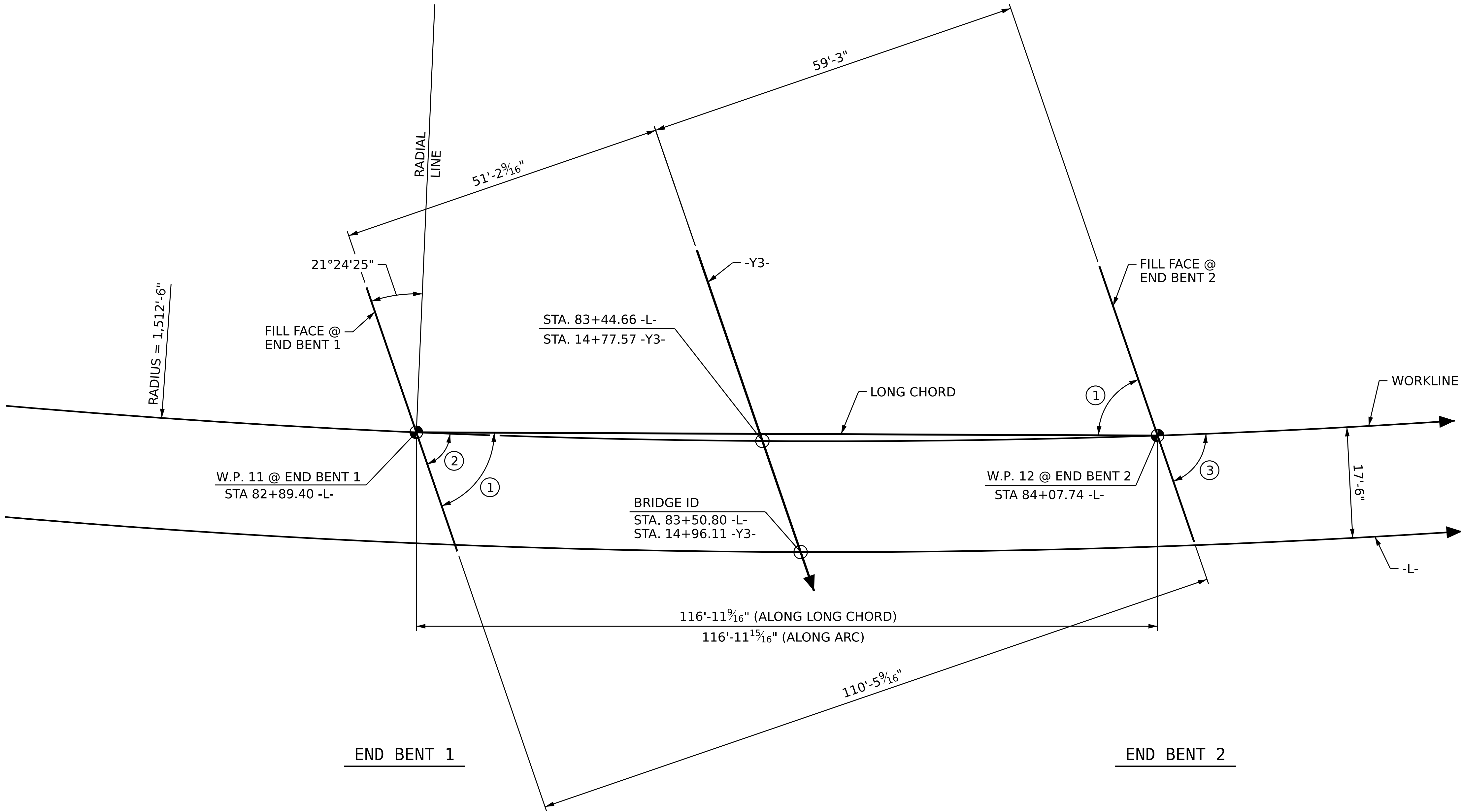
DATE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE
FOUNDATION
TABLES

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

REVISIONS						SHEET NO. S7-03
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS 41
1			3			
2			4			



LONG CHORD LAYOUT

END BENTS ARE PARALLEL

ANGLES

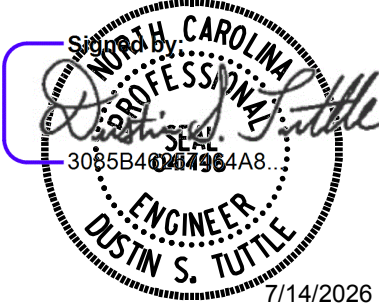
- ① 70°48'33"
- ② 68°35'35" (TAN TO CURVE)
- ③ 73°1'30" (TAN TO CURVE)

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 83+50.80 -L-

SHEET 4 OF 5

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. F02342



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON I-26/I-240 OVER SR 3556
(AMBOY RD) BETWEEN NC 191 (BREVARD RD)
AND US 23 BUS (HAYWOOD RD)

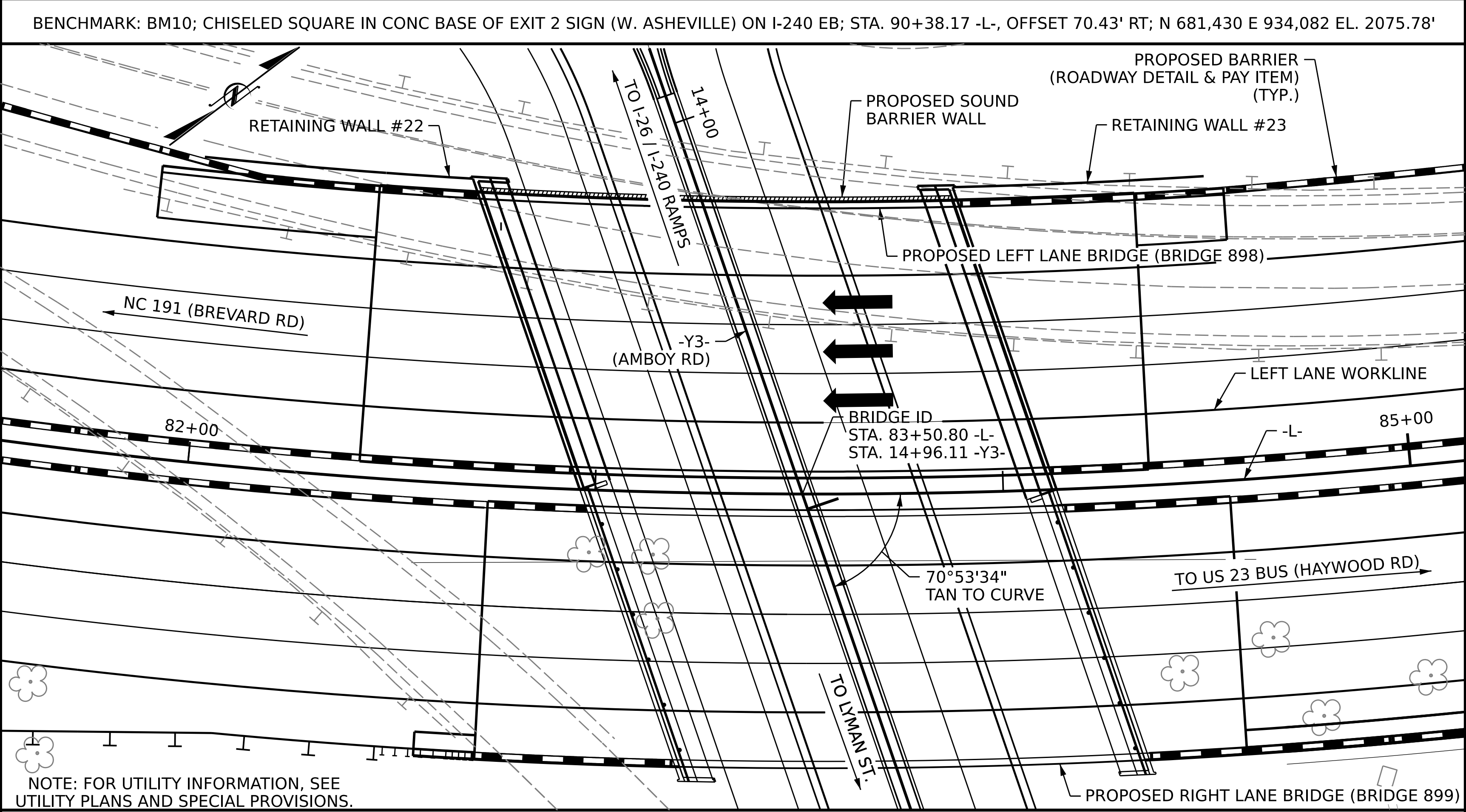
(LEFT LANE)

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

SHEET NO.
S7-04
TOTAL SHEETS
41

DRAWN BY : L. LEE DATE : 09/2023
CHECKED BY : D. TUTTLE DATE : 10/2023
DESIGN ENGINEER OF RECORD: D. TUTTLE DATE : 03/2026

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



LOCATION SKETCH

TOTAL BILL OF MATERIAL

	UNCLASSIFIED STRUCTURE EXCAVATION AT STA. 83+50.80 -L- (LT)	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL
	LUMP SUM	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.
SUPERSTRUCTURE		7,791	11,463			
END BENT 1				98.1		11,476
END BENT 2				95.8		11,340
TOTAL	LUMP SUM	7,791	11,463	193.9	LUMP SUM	22,816

TOTAL BILL OF MATERIAL

	MODIFIED 72" PRESTRESSED CONC GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12X53 STEEL PILES	HP 12X53 STEEL PILES		CONCRETE BARRIER RAIL	CONCRETE BARRIER RAIL WITH MOMENT SLAB AT SOUND BARRIER WALL	72" CHAIN LINK FENCE	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	EXPANSION JOINT SEALS	PRECAST CONCRETE FASCIA AT STA. 83+50.80 -L- (LT)	APPLICATION OF BRIDGE COATING	SOUND BARRIER WALL (BRIDGE MOUNTED)
	NO.	LIN. FT.	EACH	NO.	LIN. FT.	LIN. FT.	LIN. FT.	LIN. FT.	SQ. YDS.	LUMP SUM	LUMP SUM	LUMP SUM	SQ. FT	LUMP SUM
SUPERSTRUCTURE	7	793.5				378.2		113.0						
END BENT 1			16	16	1000		53.4		32.1				163.7	
END BENT 2			16	16	840		21.9		33.2				159.5	
TOTAL	7	793.5	32	32	1840	378.2	75.3	113.0	65.3	LUMP SUM	LUMP SUM	LUMP SUM	323.2	LUMP SUM

DRAWN BY : M. CATER DATE : 07/2025
CHECKED BY : D. TUTTLE DATE : 08/2025
DESIGN ENGINEER OF RECORD: D. TUTTLE DATE : 03/2026

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

GENERAL NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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.

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR MSE WALLS, SEE GEOTECHNICAL SPECIAL PROVISIONS.

FOR PRECAST CONCRETE FASCIA, SEE SPECIAL PROVISIONS.

FOR INTEGRATION OF ABUTMENT MSE WALLS' AESTHETIC SCHEME WITH BRIDGE, SEE WALL PLANS.

THE ELEVATIONS AND CLEARANCES SHOWN ON THE PLANS AT THE POINTS OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATIONS ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM VERTICAL CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 54'-3" LEFT AND 17'-6" RIGHT OF THE WORKLINE AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

WORK SHALL NOT BE STARTED ON THIS BRIDGE (OR SPECIFIC PARTS OF BRIDGE) UNTIL ROADWAY SECTION HAS BEEN EXCAVATED.

FOR CONCRETE BARRIER RAIL WITH MOMENT SLAB AT SOUND BARRIER WALL, SEE SPECIAL PROVISIONS.

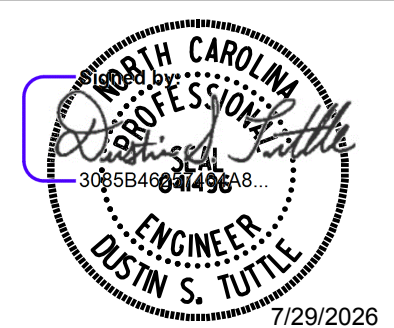
FOR APPLICATION OF BRIDGE COATING, SEE SPECIAL PROVISIONS.

THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

FOR SOUND BARRIER WALL (BRIDGE MOUNTED), SEE SPECIAL PROVISIONS.

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 83+50.80 -L-

SHEET 5 OF 5



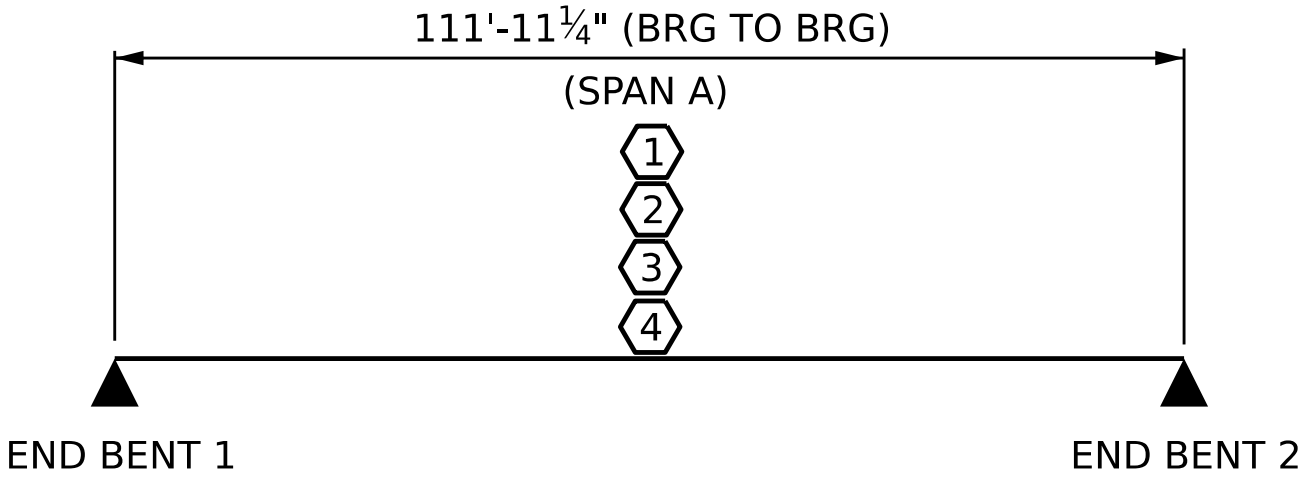
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE ON I-26/I-240 OVER SR 3556
(AMBOY RD) BETWEEN NC 191 (BREVARD RD)
AND US 23 BUS (HAYWOOD RD)

(LEFT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-05
1			3			TOTAL SHEETS 41
2			4			

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS																								
LOAD TYPE		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		HL-93 (INVENTORY)	N/A	Ⓛ1	1.13	--	1.75	0.830	1.45	A	EL	56.0	1.030	1.48	A	I	78.7	0.80	0.830	1.13	A	EL	56.0	
		HL-93 (OPERATING)	N/A		1.88	--	1.35	0.830	1.88	A	EL	56.0	0.880	2.71	A	EL	78.7	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	Ⓛ2	1.62	58.32	1.75	0.930	2.08	A	ER	56.0	0.880	2.72	A	EL	78.7	0.80	0.830	1.62	A	EL	56.0	
		HS-20 (OPERATING)	36.000		2.70	97.20	1.35	0.830	2.70	A	EL	56.0	1.030	3.86	A	I	78.7	N/A	--	--	--	--	--	
LEGAL LOAD	SINGLE VEHICLE (SV)	SH	12.500		4.23	52.88	1.40	0.930	6.79	A	ER	56.0	1.030	10.09	A	I	78.7	0.80	0.830	4.23	A	EL	56.0	
		S3C	21.500		2.47	53.11	1.40	0.930	3.97	A	ER	56.0	1.030	5.84	A	I	78.7	0.80	0.830	2.47	A	EL	56.0	
		S3A	22.750		2.34	53.24	1.40	0.830	3.76	A	EL	56.0	1.030	5.53	A	I	78.7	0.80	0.830	2.34	A	EL	56.0	
		S4A	26.750		2.04	54.57	1.40	0.930	3.28	A	ER	56.0	1.030	4.80	A	I	78.7	0.80	0.830	2.04	A	EL	56.0	
		S5A	30.500		1.80	54.90	1.40	0.930	2.89	A	ER	56.0	1.030	4.38	A	I	78.7	0.80	0.830	1.80	A	EL	56.0	
		S6A	34.500		1.62	55.89	1.40	0.830	2.61	A	EL	56.0	1.030	3.93	A	I	78.7	0.80	0.830	1.62	A	EL	56.0	
		S7B	38.500		1.47	56.60	1.40	0.930	2.36	A	ER	56.0	1.030	3.65	A	I	78.7	0.80	0.830	1.47	A	EL	56.0	
		S7A	40.000	Ⓛ3	1.45	58.00	1.40	0.830	2.32	A	EL	56.0	1.030	3.73	A	I	78.7	0.80	0.830	1.45	A	EL	56.0	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	T4A	28.250		2.00	56.50	1.40	0.930	3.20	A	ER	56.0	1.030	4.65	A	I	78.7	0.80	0.830	2.00	A	EL	56.0	
		T5B	32.000		1.76	56.32	1.40	0.830	2.82	A	EL	56.0	1.030	4.39	A	I	78.7	0.80	0.830	1.76	A	EL	56.0	
		T6A	36.000		1.60	57.60	1.40	0.930	2.56	A	ER	56.0	1.030	4.01	A	I	78.7	0.80	0.830	1.60	A	EL	56.0	
		T7A	40.000		1.47	58.80	1.40	0.830	2.36	A	EL	56.0	1.030	3.72	A	I	78.7	0.80	0.830	1.47	A	EL	56.0	
T7B		40.000		1.54	61.60	1.40	0.930	2.47	A	ER	56.0	1.030	3.50	A	I	78.7	0.80	0.830	1.54	A	EL	56.0		
EMERGENCY VEHICLE (EV)		EV2	28.750		1.97	56.64	1.30	0.930	3.40	A	ER	56.0	1.030	4.85	A	I	78.7	0.80	0.830	1.97	A	EL	56.0	
		EV3	43.000	Ⓛ4	1.30	55.90	1.30	0.830	2.25	A	EL	56.0	1.030	3.21	A	I	78.7	0.80	0.830	1.30	A	EL	56.0	



LRFR SUMMARY

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ DC	γ DW
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

1.
2.
3.
4.

Ⓝ

CONTROLLING LOAD RATING

Ⓛ1

DESIGN LOAD RATING (HL-93)

Ⓛ2

DESIGN LOAD RATING (HS-20)

Ⓛ3

LEGAL LOAD RATING * *

Ⓛ4

EMERGENCY VEHICLE LOAD RATING **

* *

SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER

EL - EXTERIOR LEFT GIRDER

ER - EXTERIOR RIGHT GIRDER

PROJECT NO. I-2513 AC

BUNCOMBE COUNTY

STATION: 83+50.80 -L-

SHEET 1 OF 1

ASSEMBLED BY : J. MARROU	DATE : 11/5/25
CHECKED BY : D. TUTTLE	DATE : 11/5/25
DRAWN BY : MAA 1/08	REV. 11/12/08RR MAA/GM
CHECKED BY : GM/DI 2/08	REV. 10/1/11 MAA/GM
	REV. 04/23 BNB/AAI

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

AECOM License No. F02342

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

STANDARD

LRFR SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

(INTERSTATE TRAFFIC)

NO. 1

BY:

DATE:

NO. 2

BY:

DATE:

NO. 3

BY:

DATE:

NO. 4

BY:

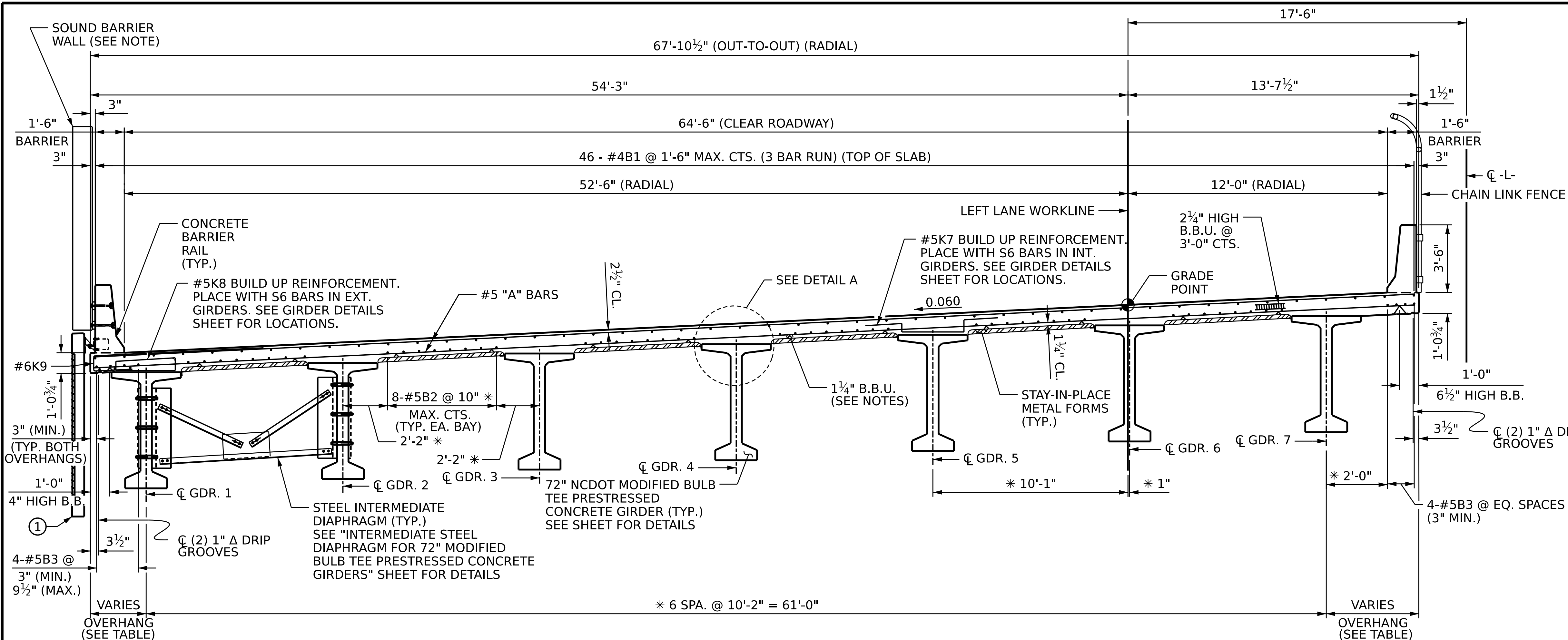
DATE:

SHEET NO. S7-06

TOTAL SHEETS 41

7/13/2026
c:\pwworking\aoecom_ds21_na_2020\d0131526\407_011_I2513AC_SMU_LRFR_S7-06_100898.dgn
caterm

STD.NO.LRFR2



TYPICAL SECTION AT INTERIOR DIAPHRAGM

NOTES:

PROVIDE 1 1/4" HIGH BEAM BOLSTERS UPPER AT 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 (CHCM) AT 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.

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

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

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

BUILD-UP BARS #5K7 AND #5K8 MAY BE PLACED DIAGONALLY IF NEEDED TO CLEAR THE REINFORCEMENT AT THE TOP OF BRIDGE DECK.

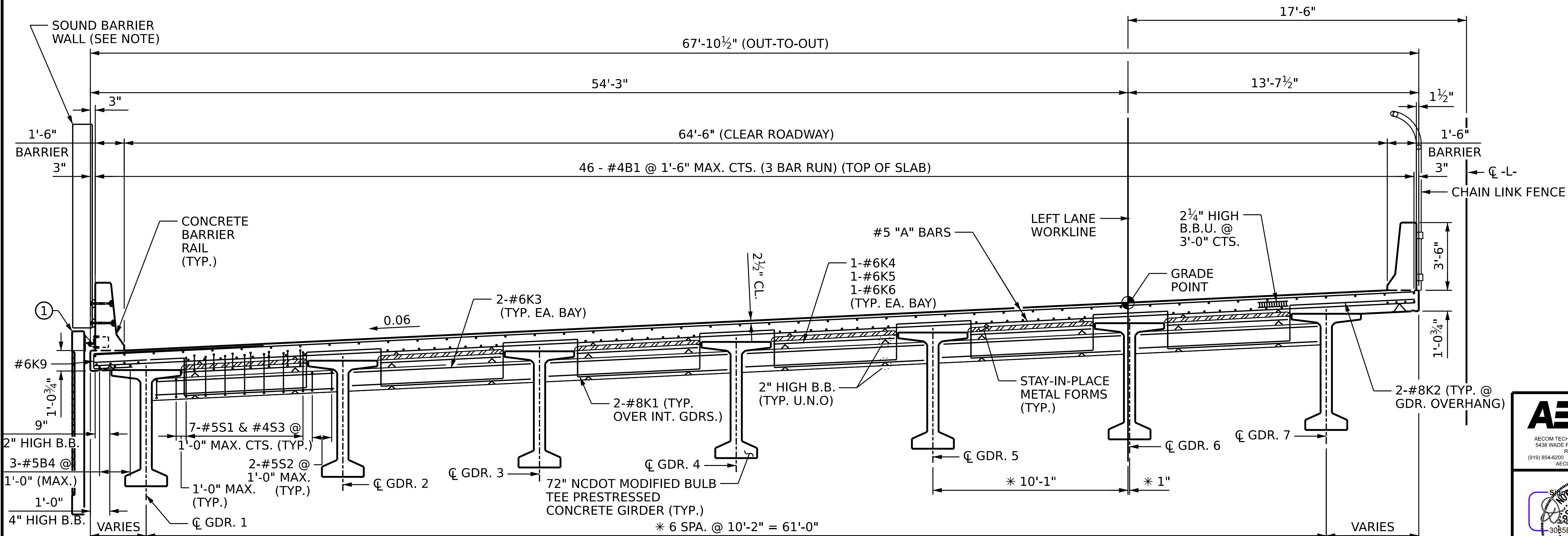
ALL DIMENSIONS MEASURED RADIALLY FROM WORKLINE UNLESS NOTED OTHERWISE.

FOR SOUND BARRIER WALL LOCATION AND CONNECTION DETAILS, SEE "SOUND BARRIER WALL DETAILS" SHEETS.

FOR PRECAST CONCRETE FASCIA LOCATION AND CONNECTION DETAILS, SEE "PRECAST CONCRETE FASCIA DETAILS" SHEETS.

OVERHANG DIMENSIONS

OVERHANG	AT END OF GIRDER	AT MIDSPAN
LEFT	4'-3 1/8 (MAX.)	2'-4 7/16" (MIN.)
RIGHT	3'-6 15/16" (MIN.)	4'-6 1/16" (MAX.)



TYPICAL SECTION AT END DIAPHRAGM

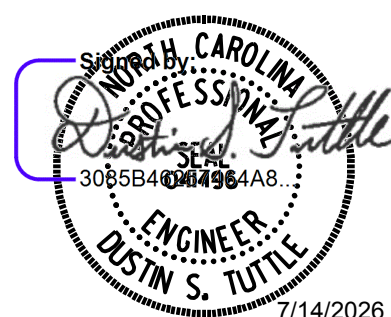
END BENT 1 SHOWN, END BENT 2 SIMILAR

① PRECAST CONCRETE FASCIA (SEE NOTES)

* = MEASURED PERPENDICULAR TO LONG CHORD

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 83+50.80 -L-

SHEET 1 OF 2



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

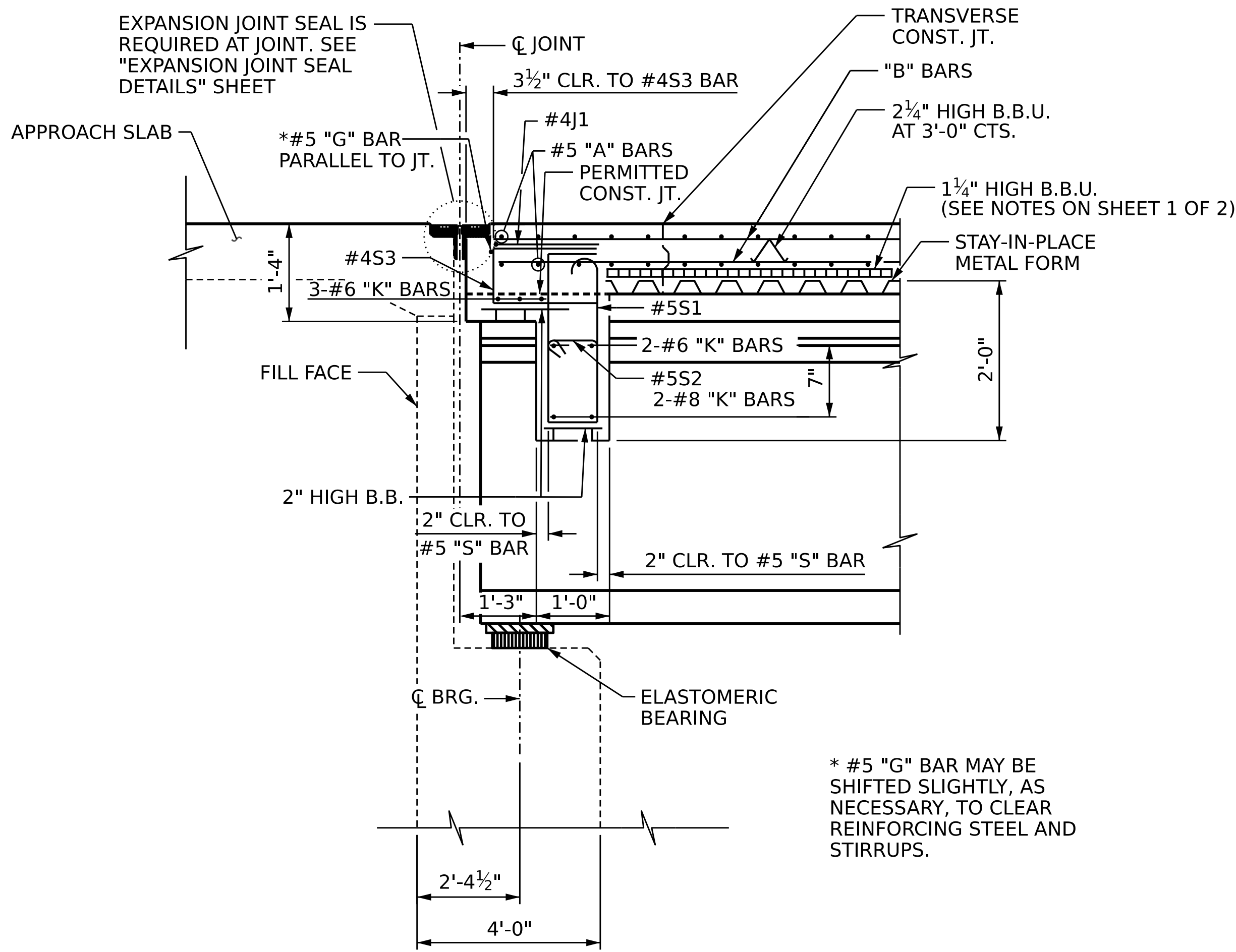
SUPERSTRUCTURE

TYPICAL SECTION
& DETAILS
(LEFT LANE)

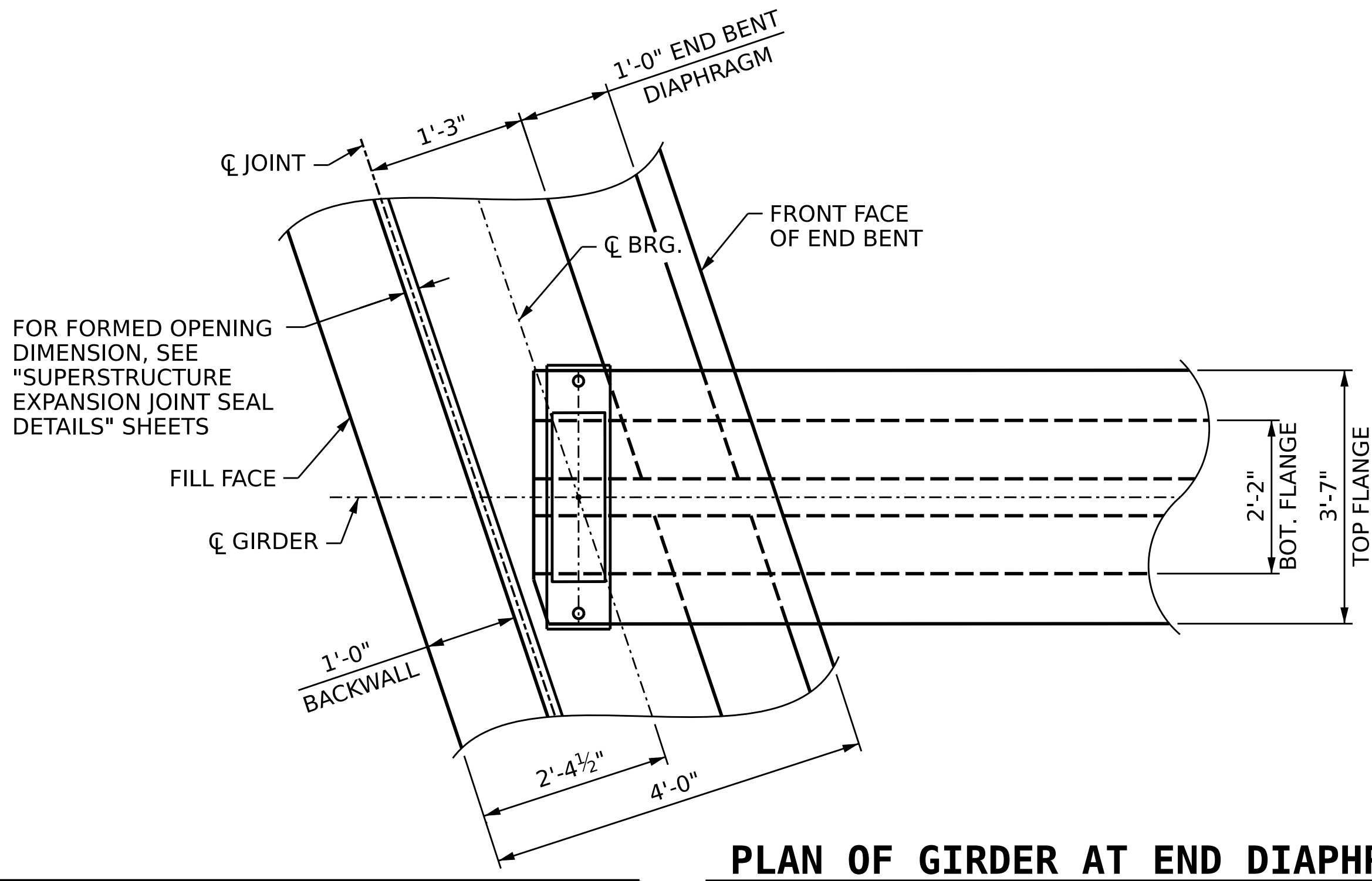
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S7-07
2			4			

DRAWN BY :	M. CATER	DATE :	11/2025
CHECKED BY :	D. TUTTLE	DATE :	11/2025
DESIGN ENGINEER OF RECORD:	D. TUTTLE	DATE :	03/2026

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



SECTION @ END BENT



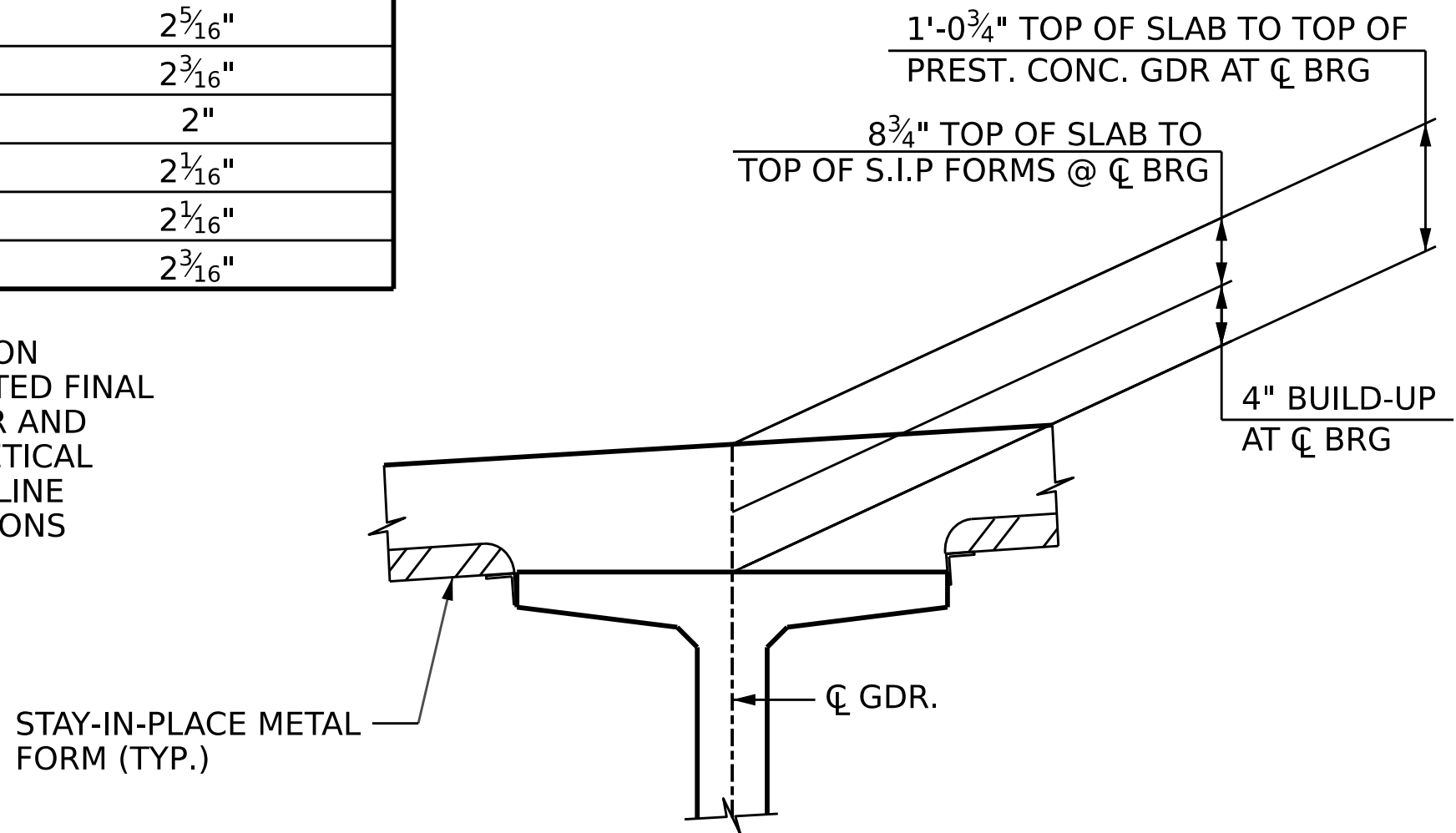
PLAN OF GIRDER AT END DIAPHRAGM

DRAWN BY :	M. CATER	DATE :	10/2025
CHECKED BY :	D. TUTTLE	DATE :	10/2025
DESIGN ENGINEER OF RECORD:	D. TUTTLE	DATE :	03/2026

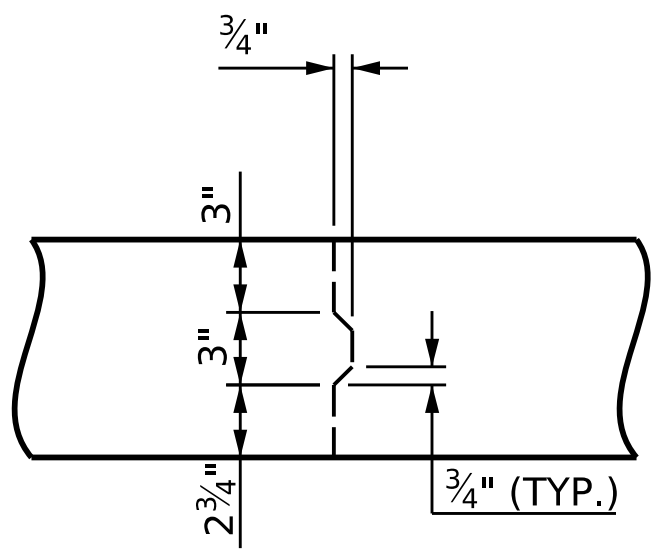
7/13/2026
c:\pwworking\oecom.ds21-na.2020\d0131526\407_015_12513AC.SMU.TS2.S7-08.100898.dgn
caterm

GIRDER	MAX. MIDSPAN BUILD-UP (INCHES)**
1	2 ⁵ / ₁₆ "
2	2 ⁵ / ₁₆ "
3	2 ³ / ₁₆ "
4	2"
5	2 ¹ / ₁₆ "
6	2 ¹ / ₁₆ "
7	2 ³ / ₁₆ "

** BASED ON
PREDICTED FINAL
CAMBER AND
THEORETICAL
GRADE LINE
ELEVATIONS



DETAIL "A"



TRANSVERSE CONSTRUCTION JOINT IN DECK SLAB

NOTE: REINFORCING STEEL IN
SLAB NOT SHOWN. REINFORCING
STEEL SHALL BE CONTINUOUS
THROUGH JOINT.

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 83+50.80 -L-

SHEET 2 OF 2



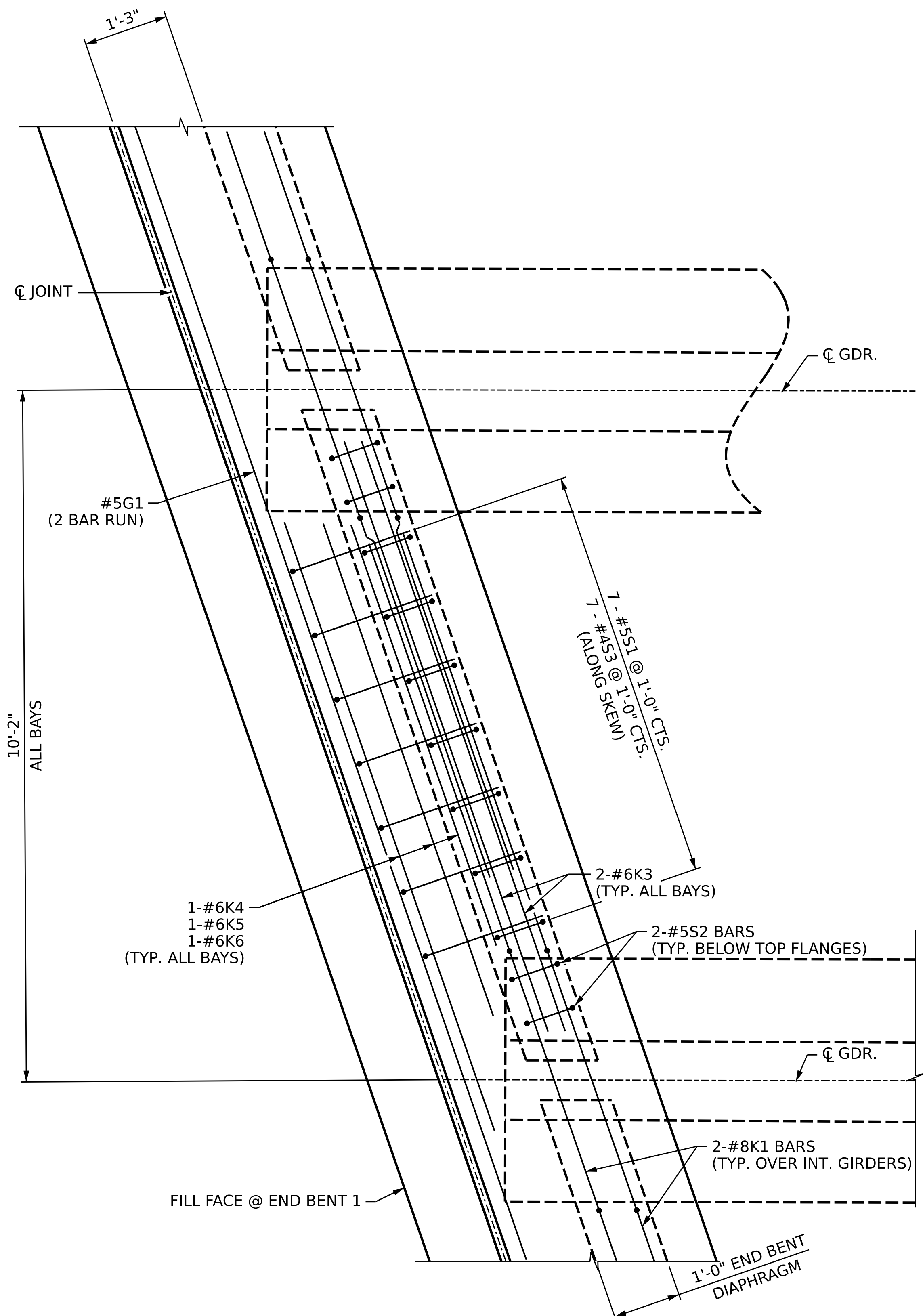
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

TYPICAL SECTION & DETAILS (LEFT LANE)

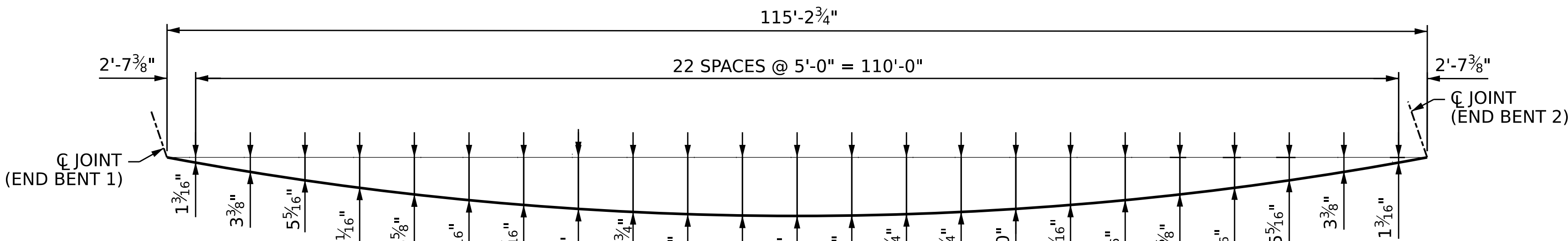
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-08
1			3			TOTAL SHEETS 41
2			4			

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

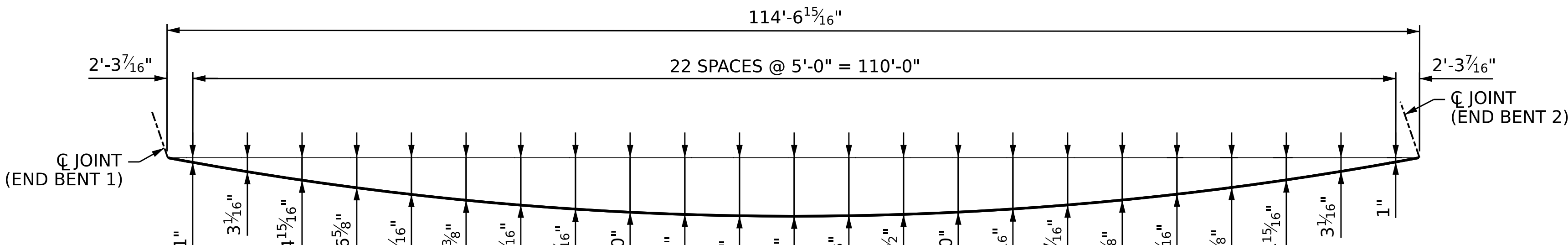


DETAIL "C"

END BENT 1 SHOWN, END BENT 2 SIMILAR



ARC OFFSETS AT LEFT EDGE OF DECK



ARC OFFSETS AT RIGHT EDGE OF DECK

PROJECT NO. I-2513 AC

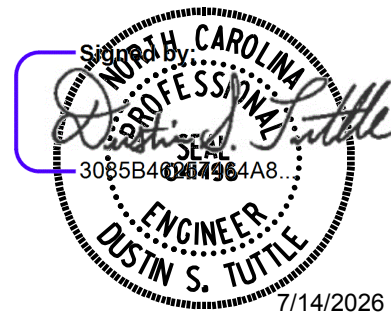
BUNCOMBE COUNTY

STATION: 83+50.80 -L-

SHEET 2 OF 2

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. F02342



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN

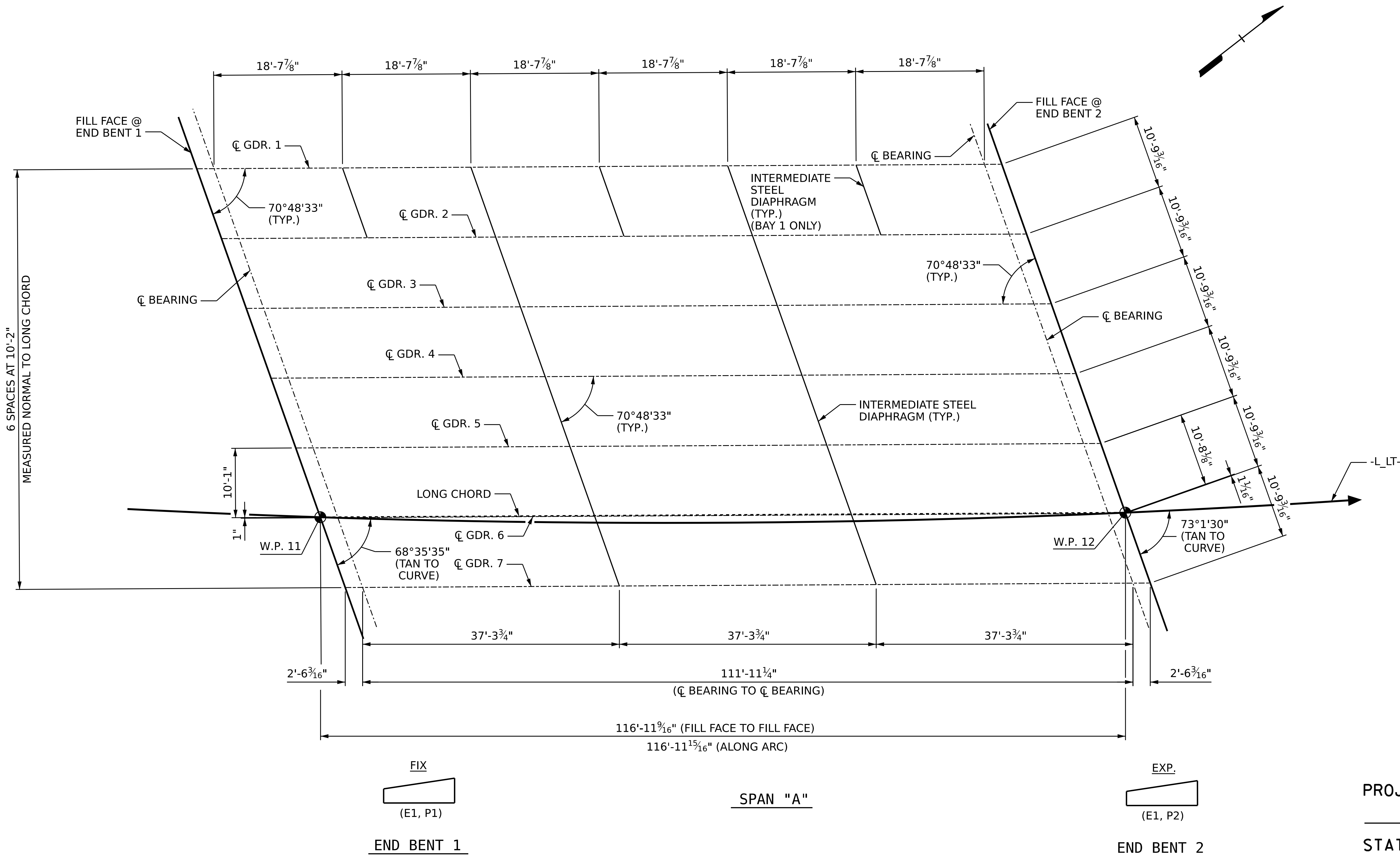
DETAILS

(LEFT LANE)

REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-10	
1			3			TOTAL SHEETS 41	
2			4				

DRAWN BY : M. CATER DATE : 09/2025
CHECKED BY : D. TUTTLE DATE : 10/2025
DESIGN ENGINEER OF RECORD: D. TUTTLE DATE : 03/2026

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



FRAMING PLAN
GIRDERS ARE PARALLEL TO LONG CHORD

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 83+50.80 -L-
SHEET 1 OF 1

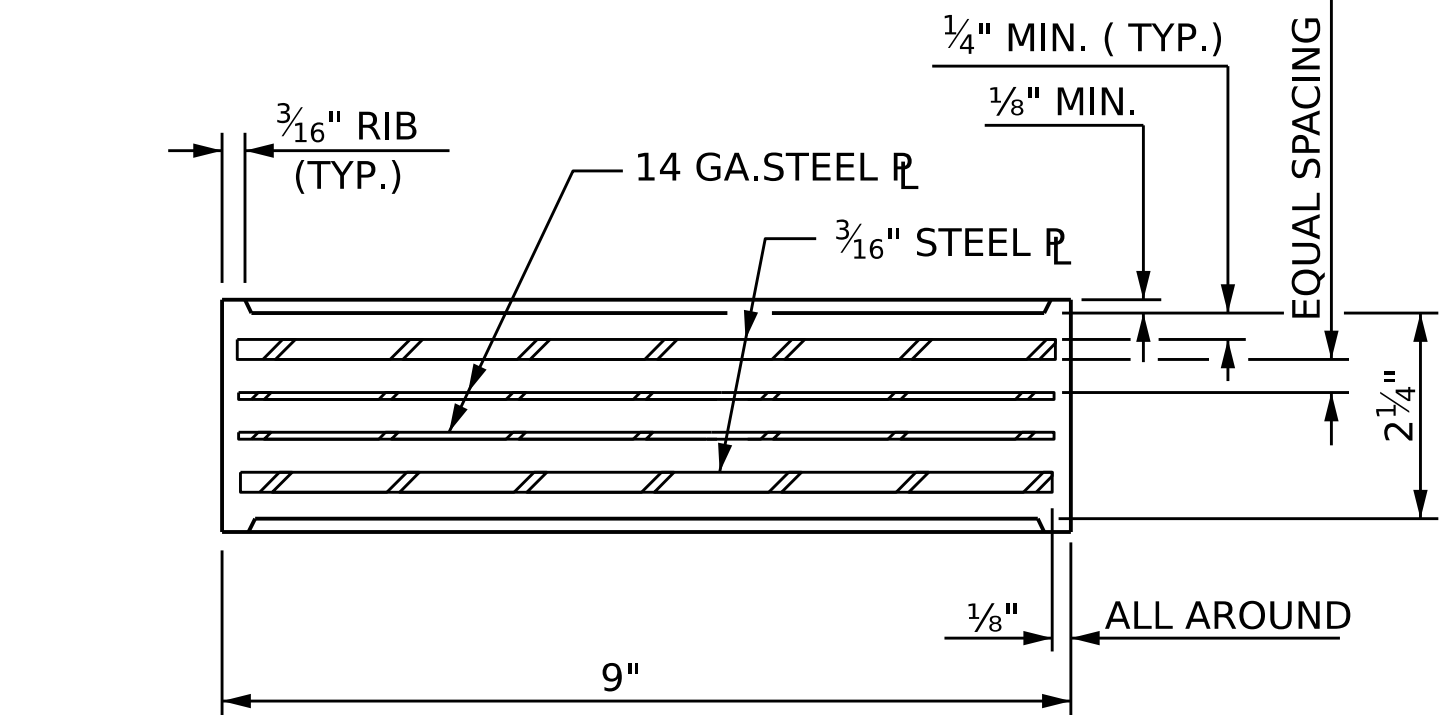
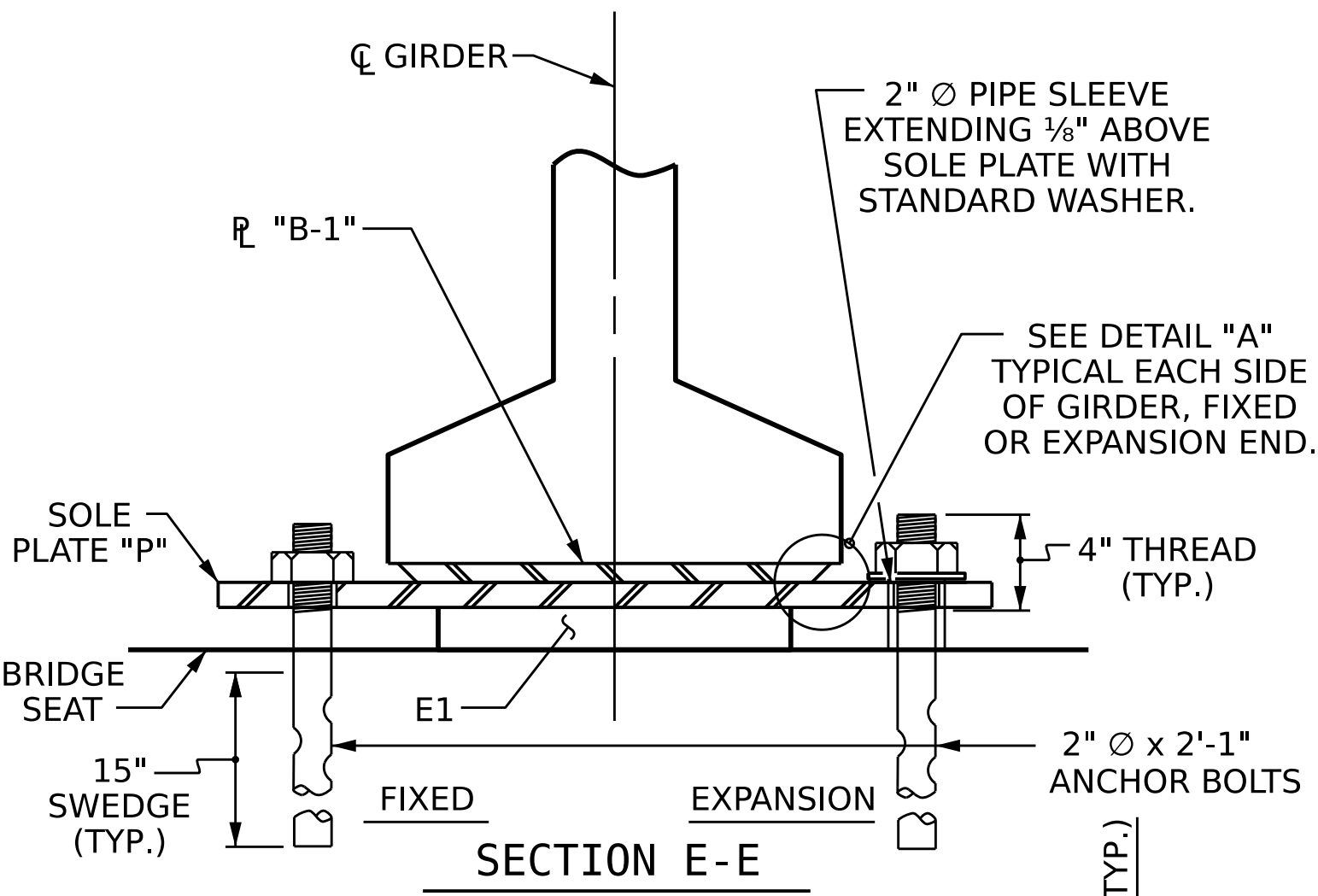
DRAWN BY :	M. CATER	DATE :	09/2025
CHECKED BY :	D. TUTTLE	DATE :	10/2025
DESIGN ENGINEER OF RECORD:	D. TUTTLE	DATE :	10/2025

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

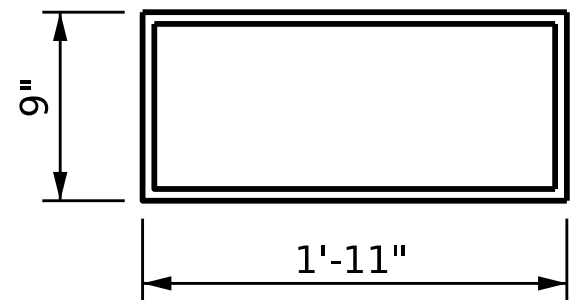
AECOM
AECOM TECHNICAL SERVICES OF NC, INC.
5438 WADE PARK BOULEVARD, SUITE 200
RALEIGH, NC 27607
(919) 854-6200
www.aecom.com
AECOM License No. F02342

7/14/2026

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S7-11
2			4			TOTAL SHEETS 41

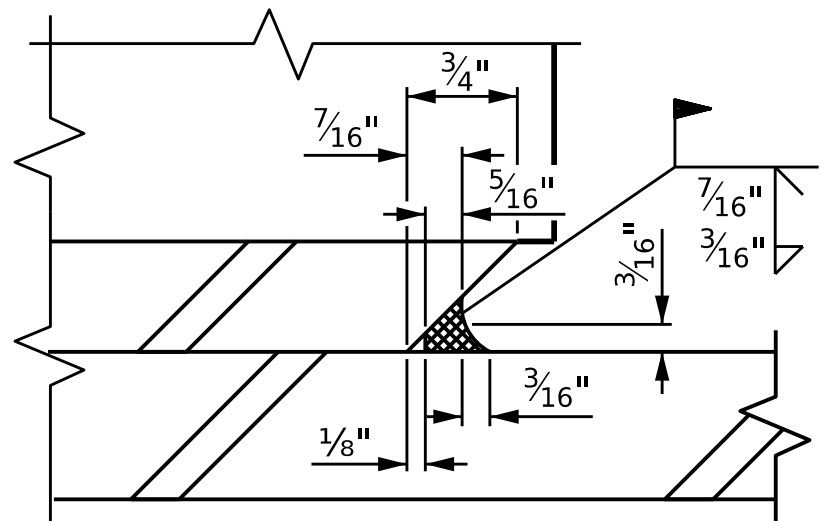


TYPICAL SECTION OF ELASTOMERIC BEARINGS

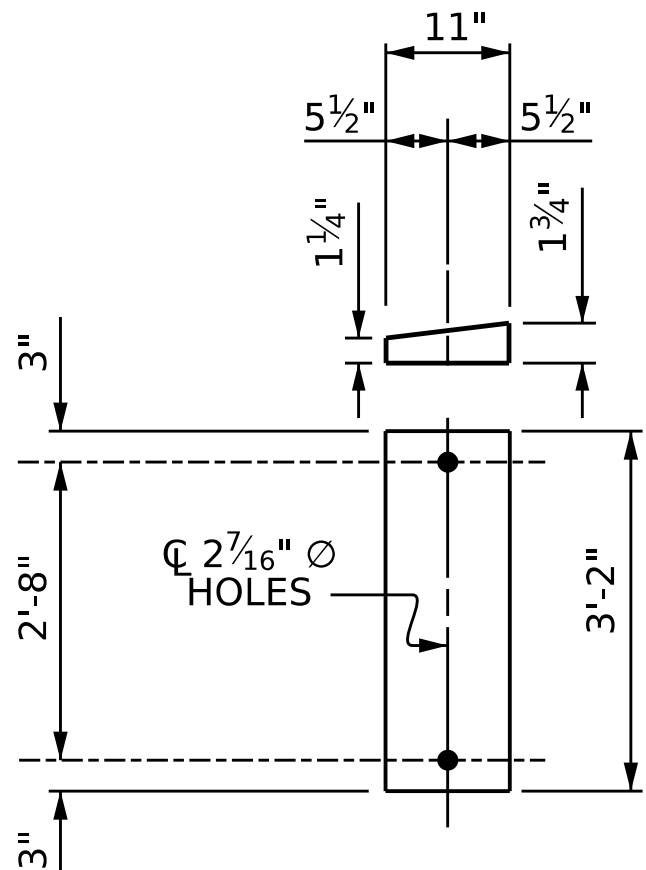


PLAN VIEW OF ELASTOMERIC BEARING

TYPE V

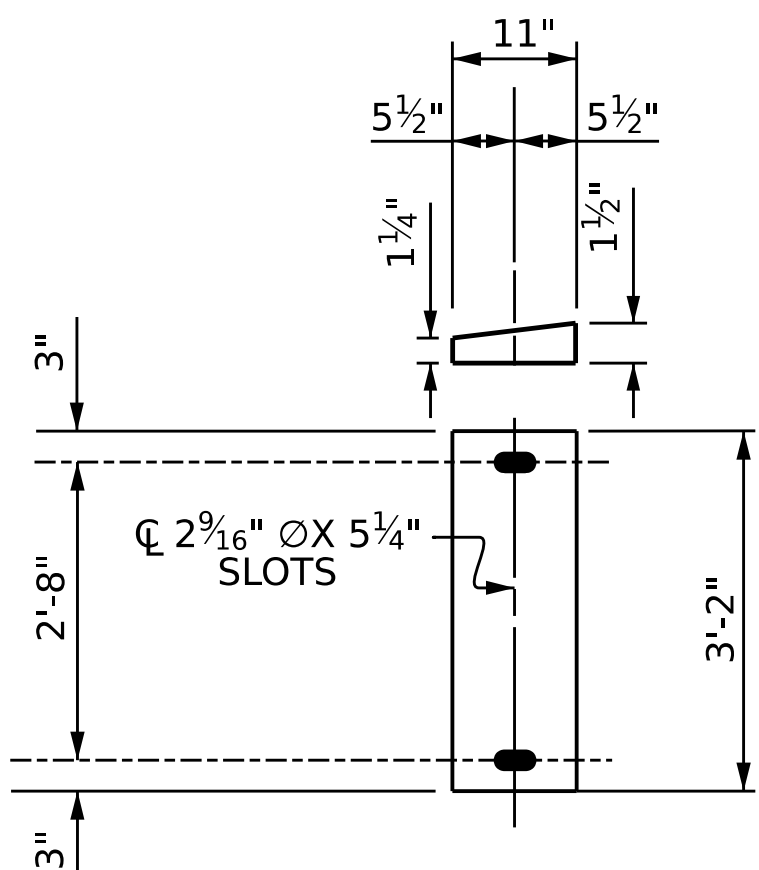


DETAIL "A"



P 1
(FIXED)
P1 (7 REQ'D)

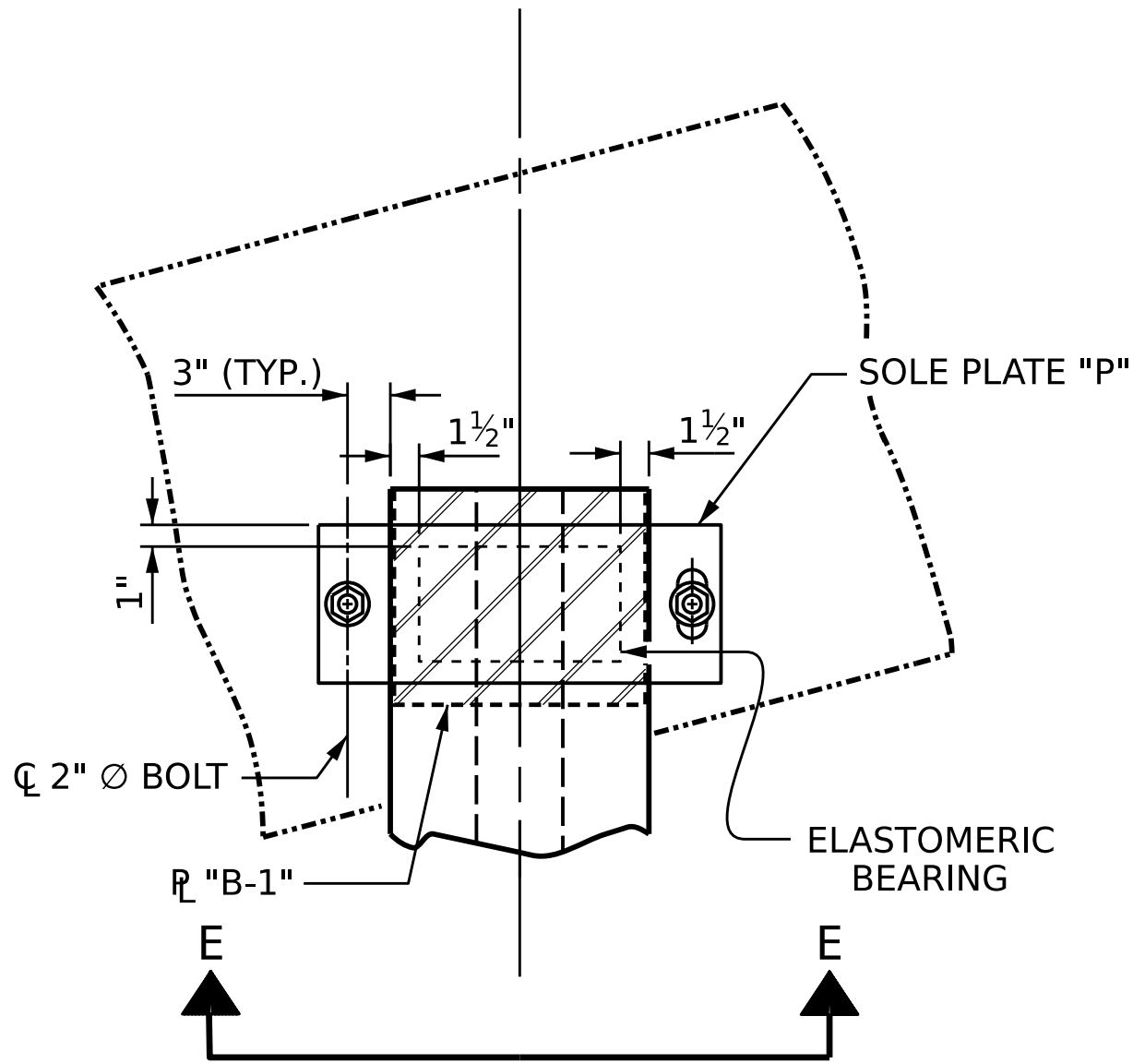
SOLE PLATE DETAILS ("P1")



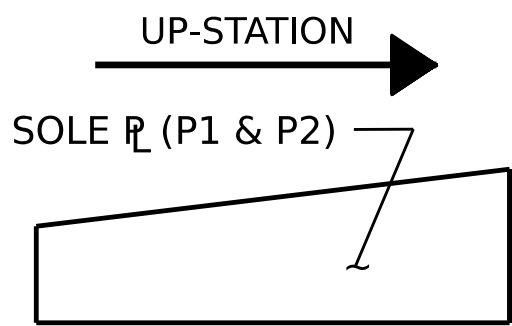
P 2
(EXPANSION)
P2 (7 REQ'D)

SOLE PLATE DETAILS ("P2")

SOLE PLATE DETAILS ("P")



TYPICAL HALF-PLAN
(SHOWING SIMPLE SPAN END BENT)



SOLE PLACEMENT DETAIL

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.

THE 2" Ø PIPE SLEEVE SHALL BE CUT FROM SCHEDULE 40 PVC PLASTIC PIPE. THE PVC PLASTIC PIPE SHALL MEET THE REQUIREMENTS OF ASTM D1785.

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, WASHERS, AND PIPE SLEEVE 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. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, 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.

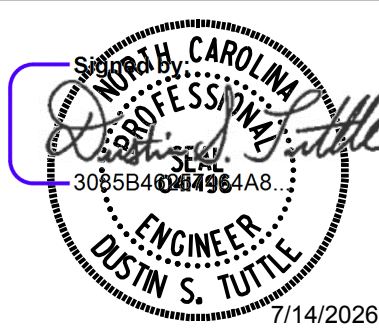
FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE STANDARD SPECIFICATIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.

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

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 83+50.80 -L-

SHEET 1 OF 1

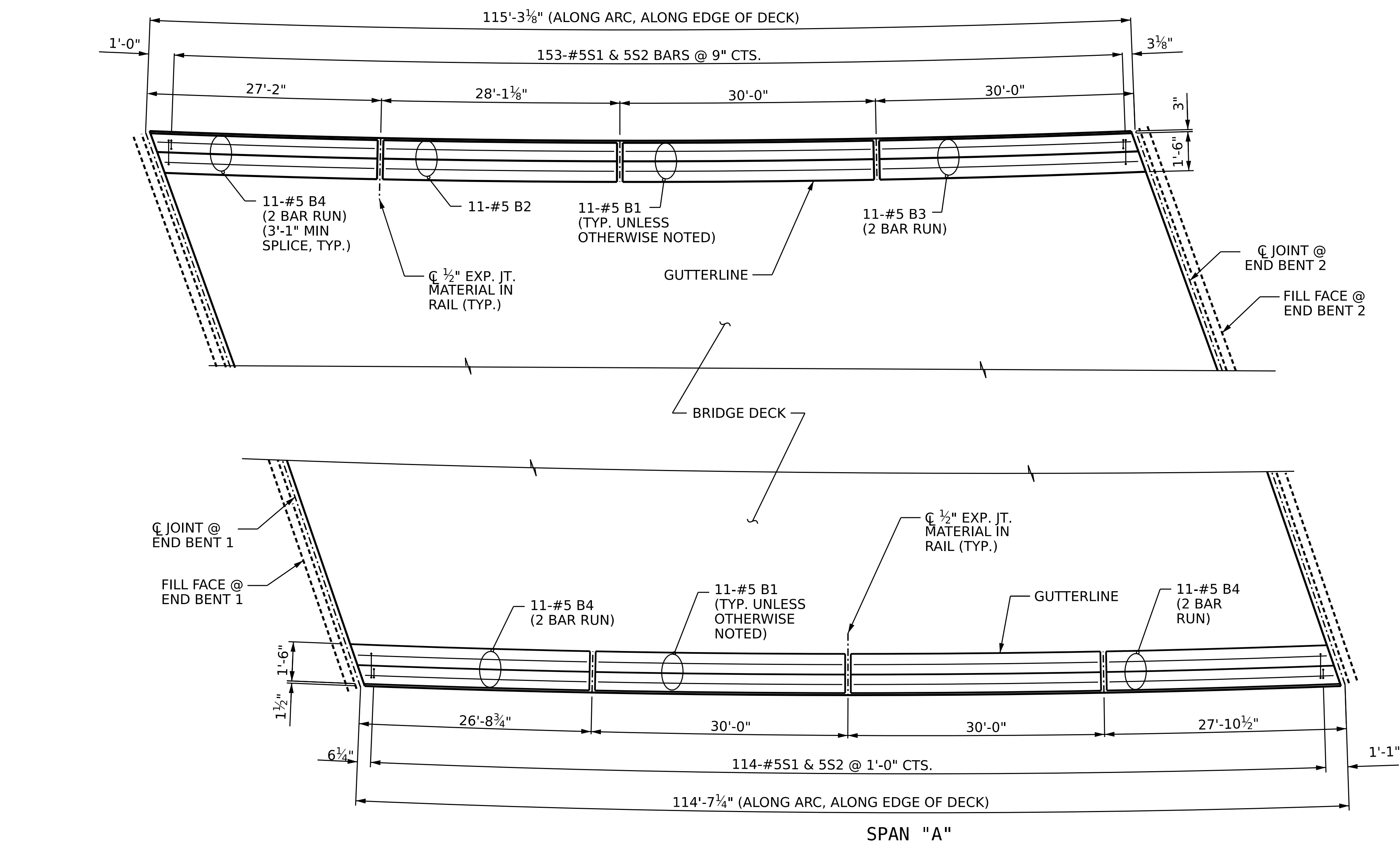


STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
ELASTOMERIC BEARING
DETAILS
PRESTRESSED CONCRETE GIRDER
SUPERSTRUCTURE

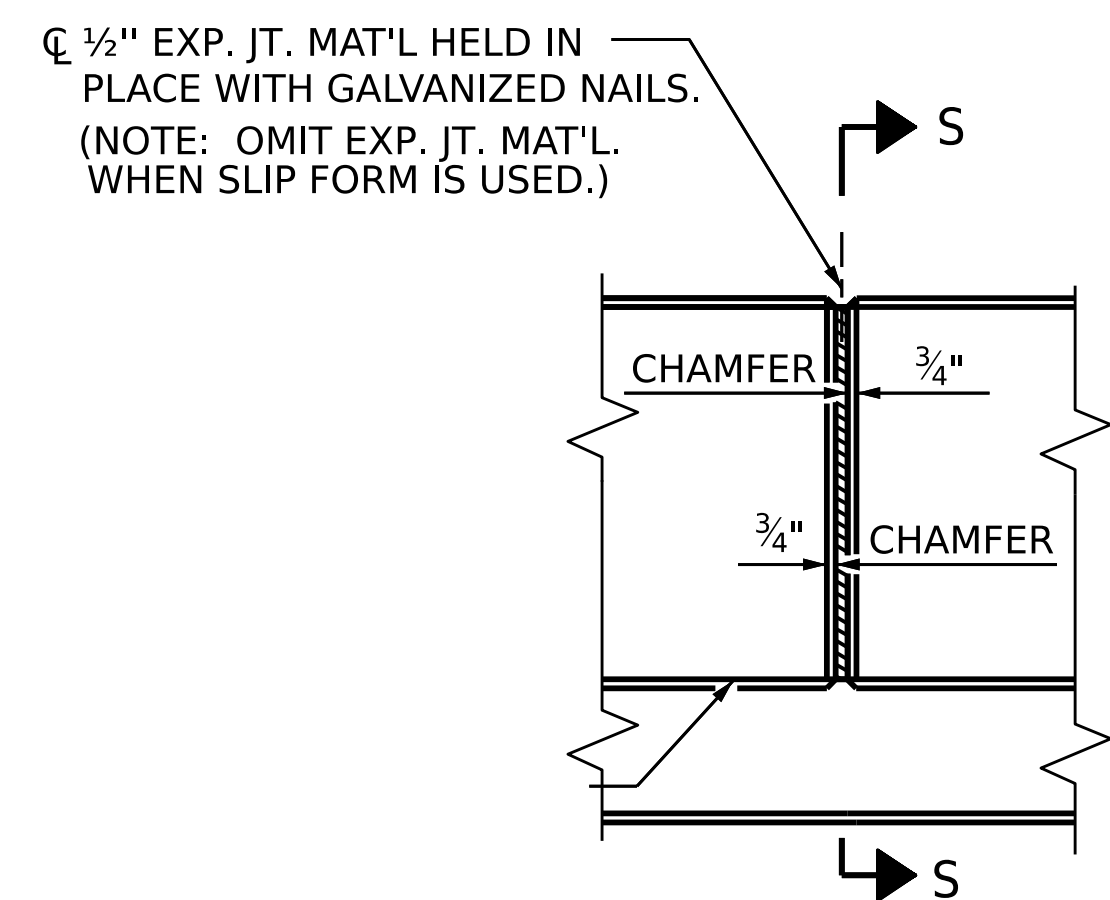
REVISIONS						SHEET NO. S7-15 TOTAL SHEETS 41
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

ASSEMBLED BY : T. NEAL		DATE : 11/2023	
CHECKED BY : D. TUTTLE		DATE : 12/2023	
DRAWN BY : WJH	8/89	REV. 1/15	MAA/TMG
CHECKED BY : CRK	8/89	REV. 12/17	MAA/THC
		REV. 10/21	BNB/AAI

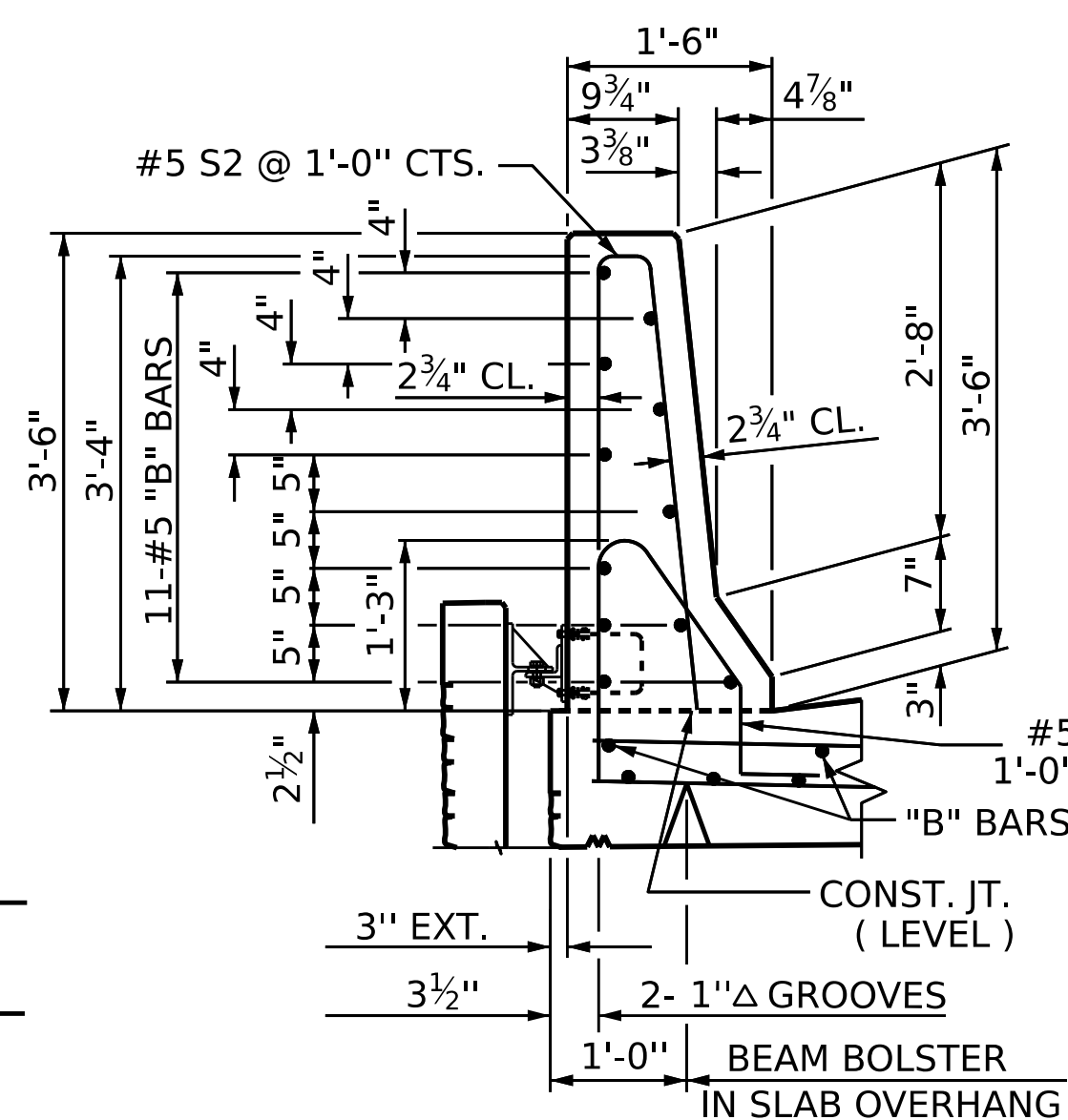
DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

$+$ $+$ 

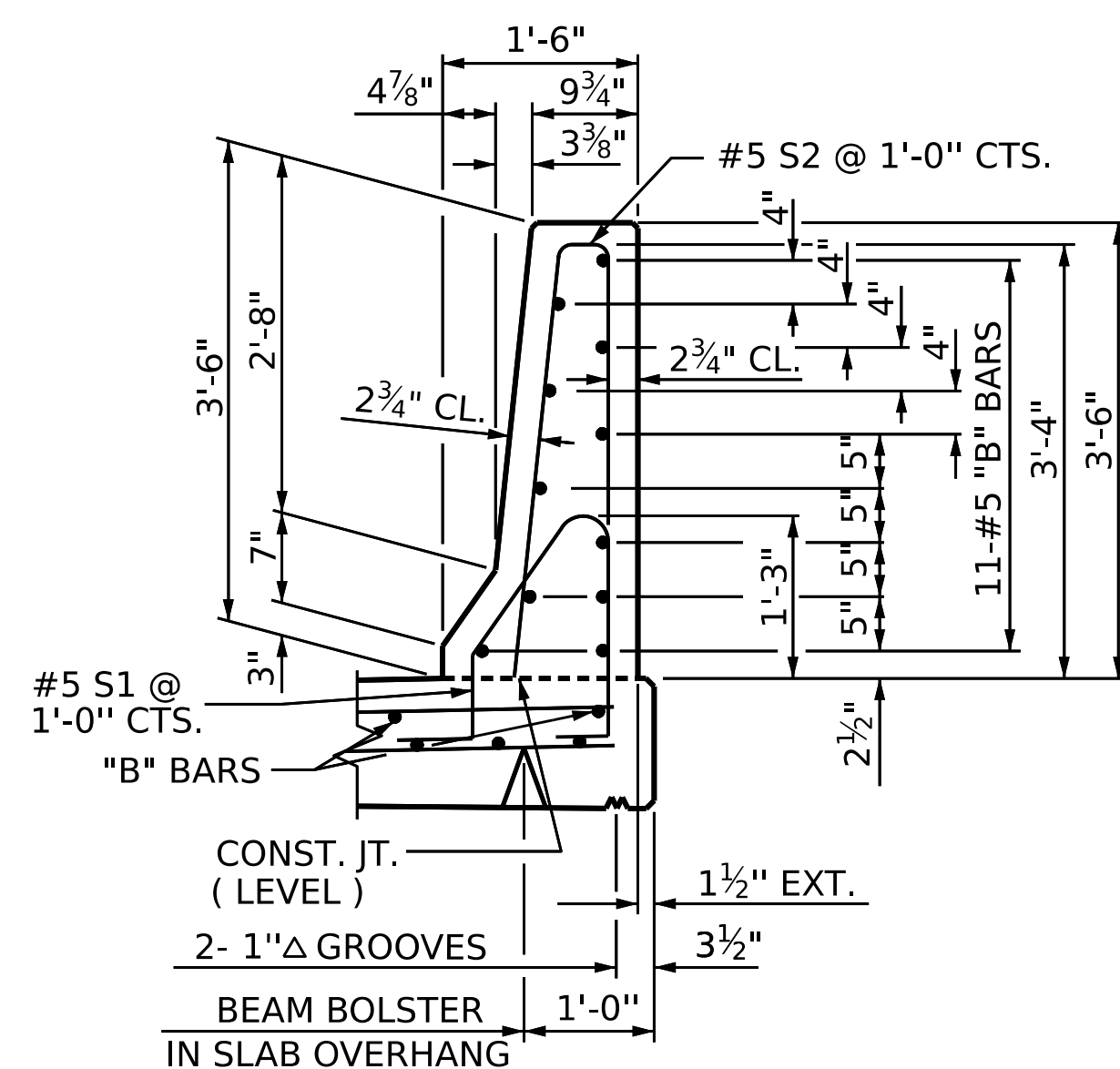
PLAN OF CONCRETE BARRIER RAIL



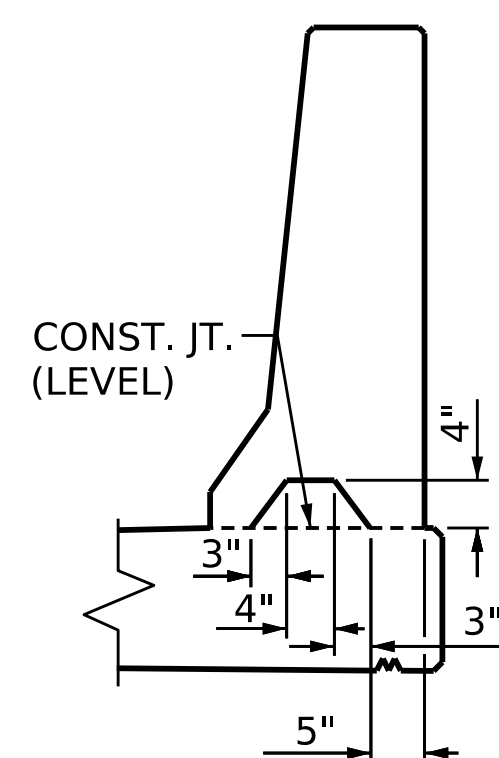
ELEVATION AT EXPANSION JOINTS



SECTION THRU LEFT RAIL



SECTION THRU RIGHT RAIL



SECTION S-S

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

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

NOTES:

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

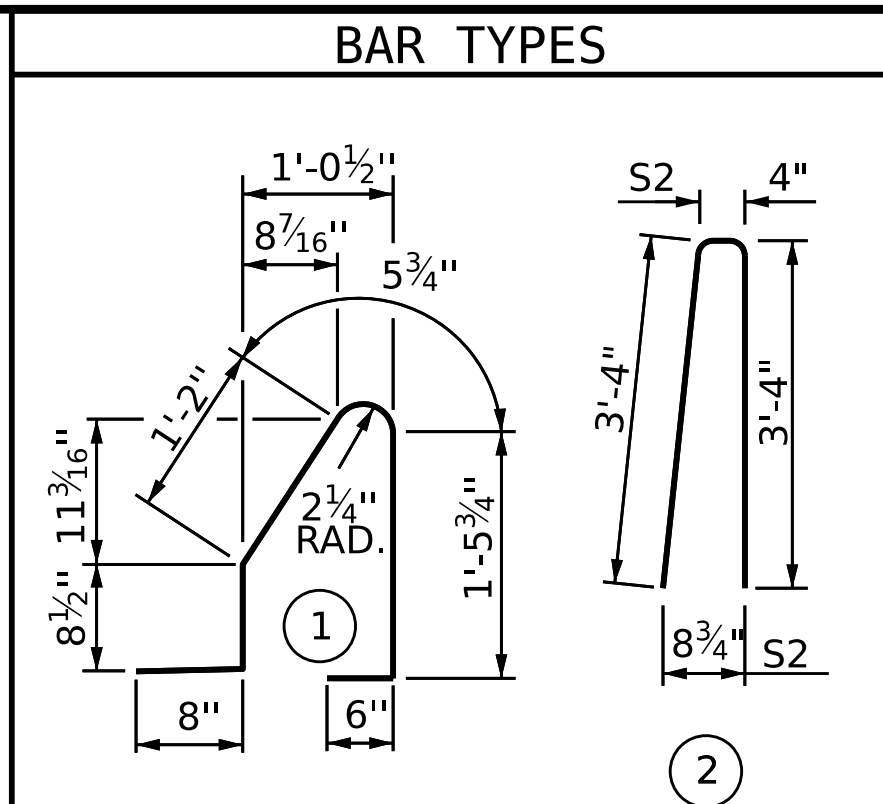
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS 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.

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

FOR SOUND BARRIER POST AND PANEL LOCATIONS AND
BARRIER CONNECTION DETAILS NOT SHOWN, SEE SOUND
BARRIER LAYOUT AND DETAIL SHEETS.

FOR PRECAST CONCRETE FASCIA ATTACHMENT LOCATIONS
AND DETAILS NOT SHOWN, SEE PRECAST CONCRETE
FASCIA SHEETS.

THE #5 S1 AND #5 S2 BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO PROVIDE 2" CLEARANCE TO THE 1/2" EXPANSION JOINT OR TO THE SOUND BARRIER OR PRECAST CONCRETE FASCIA ANCHOR HOLES.



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

FOR CONCRETE BARRIER RAIL ONLY

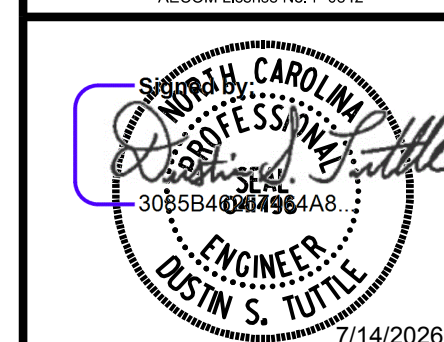
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	33	#5	STR	29'-7"	1018
* B2	11	#5	STR	27'-8"	317
* B3	22	#5	STR	16'-8"	382
* B4	66	#5	STR	15'-5"	1061
* S1	267	#5	1	5'-0"	1392
* S2	267	#5	2	7'-0"	1949

* EPOXY COATED REINFORCING STEEL	6,119 LBS.
CLASS AA CONCRETE	31.3 CU. YDS.
CONCRETE BARRIER RAIL	229.9 LIN. FT.

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY

STATION: 83+50.80 -L-

SHEET 1 OF 1



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

CONCRETE BARRIER RAIL

(LEFT LANE)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S7-16
1			3			TOTAL SHEETS 41
2			4			

NOTES:

FOR VIEW A-A AND OTHER SOUND BARRIER WALL DETAILS, SEE "SOUND BARRIER WALLS DETAILS" SHEET.

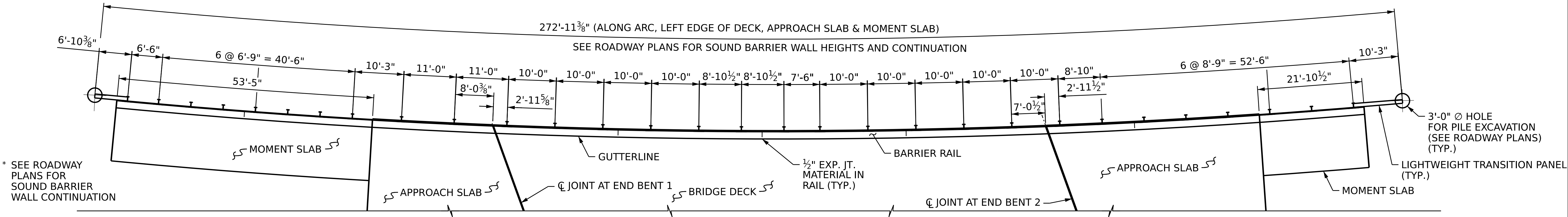
FOR SOUND BARRIER WALL ON CONCRETE PILES AND TYPICAL WALL TURN DETAILS, SEE "SOUND BARRIER WALL PLANS".

FOR SOUND BARRIER WALL CONNECTION DETAILS AT TRANSITION PANEL, SEE "SOUND BARRIER WALL PLANS".

FOR CONCRETE BARRIER DETAILS NOT SHOWN, SEE "CONCRETE BARRIER DETAILS" SHEET.

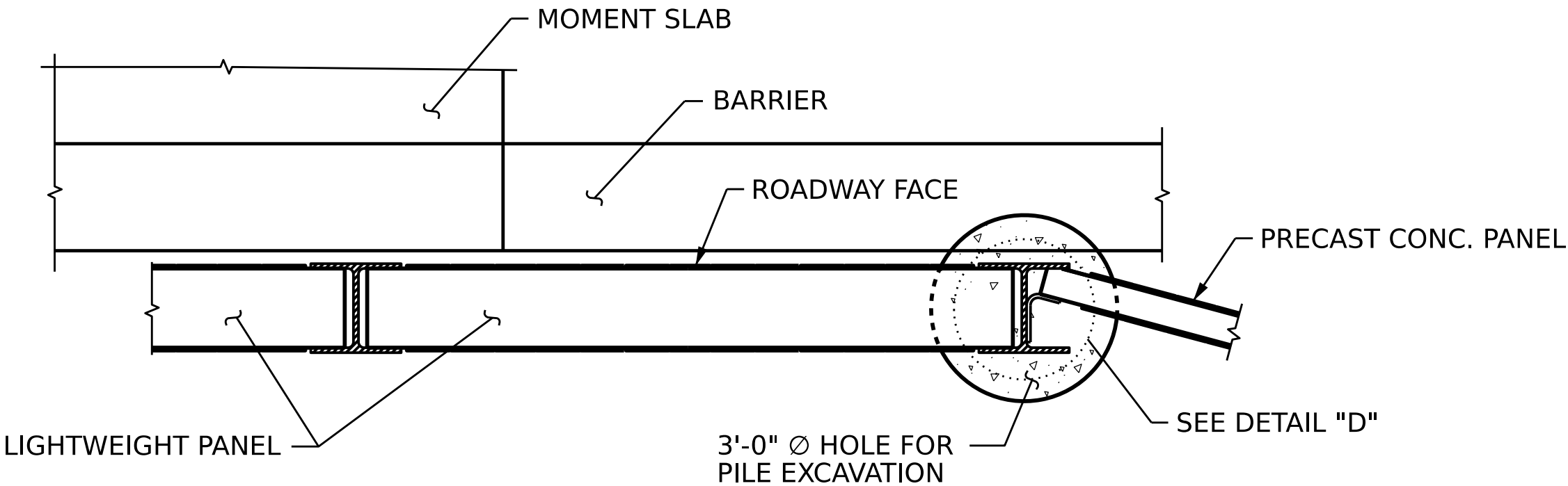
FOR MOMENT SLAB DETAILS NOT SHOWN, SEE "MOMENT SLAB DETAILS" SHEETS.

FOR AESTHETIC DETAILS NOT SHOWN, SEE "PRECAST CONCRETE FASCIA DETAILS" SHEETS.



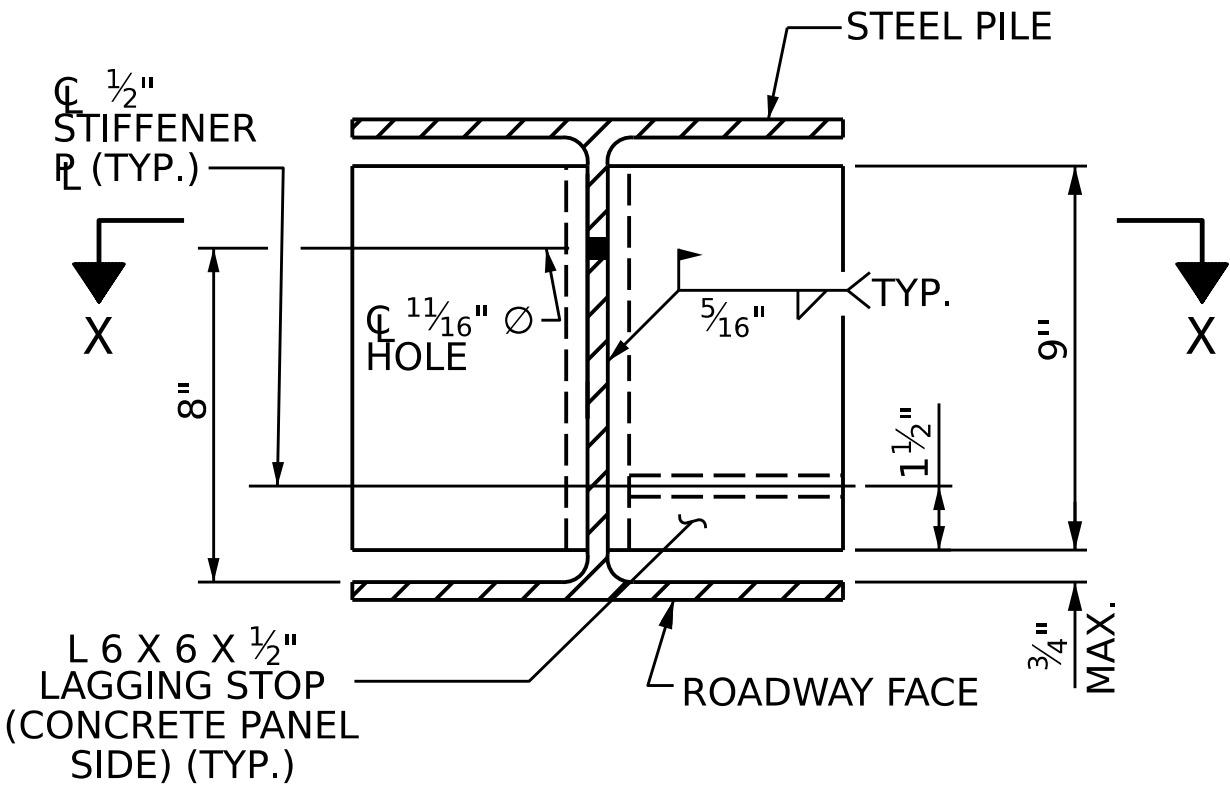
PLAN OF SOUND BARRIER WALL

(PANELS NOT SHOWN FOR CLARITY)

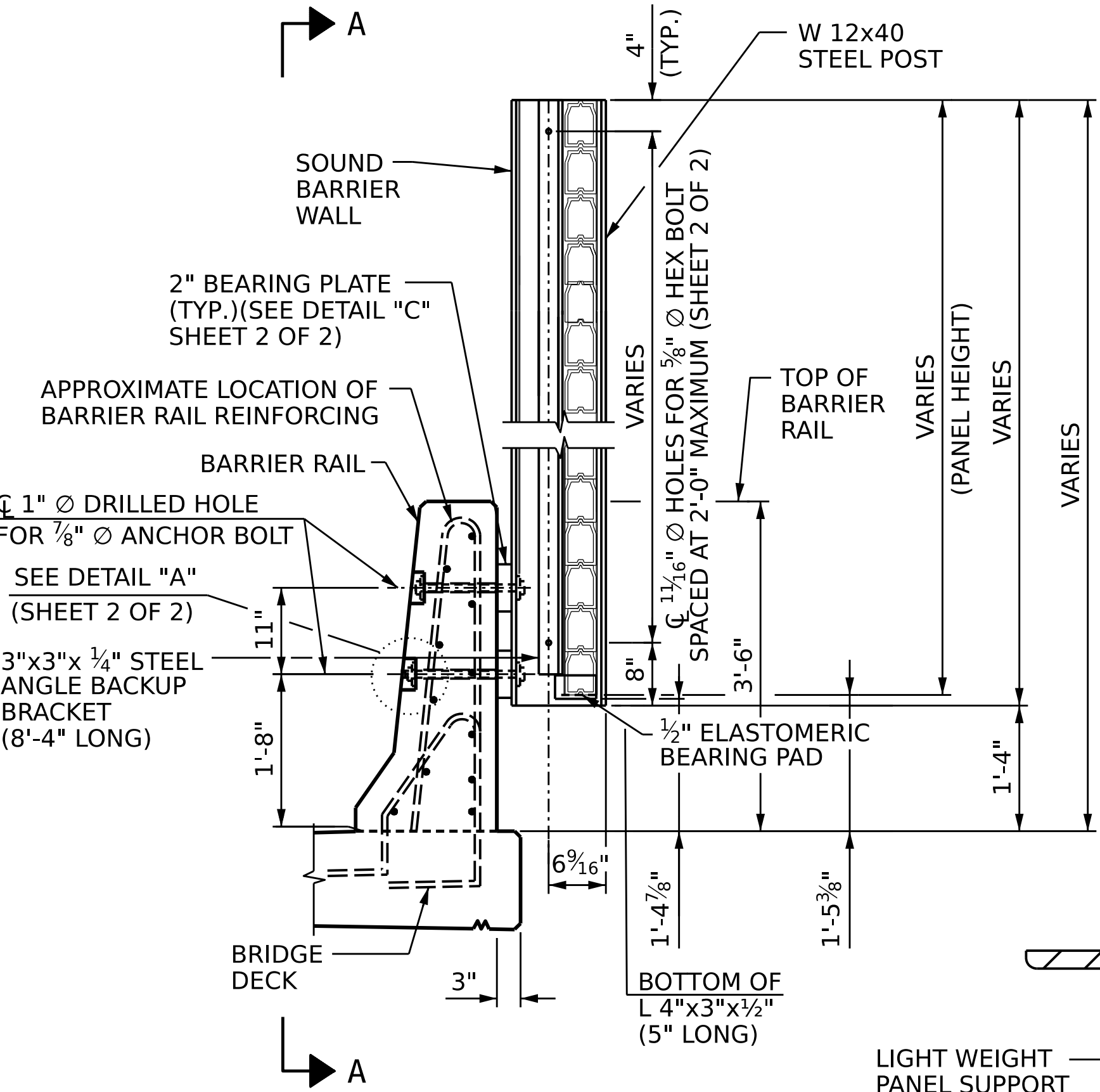


PLAN AT MOMENT SLAB TRANSITION PANEL

(BOTH ENDS SIMILAR)

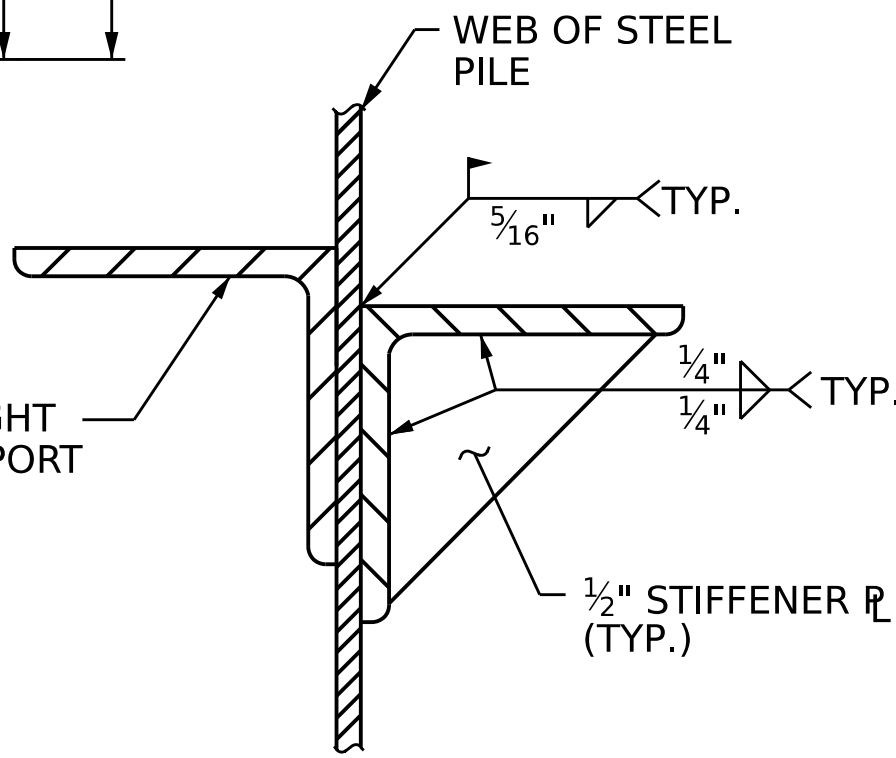


DETAIL "D"

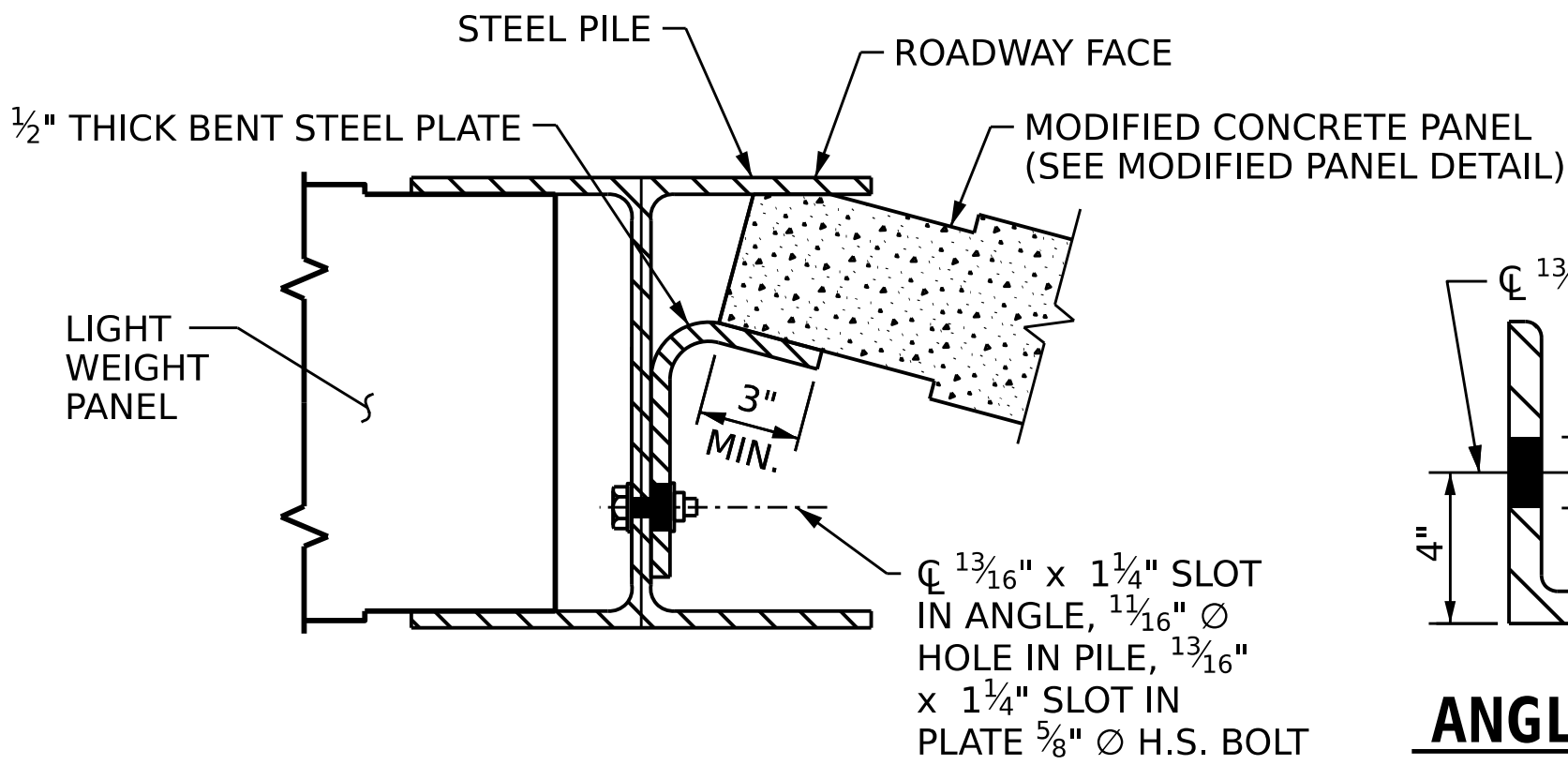


POST ELEVATION

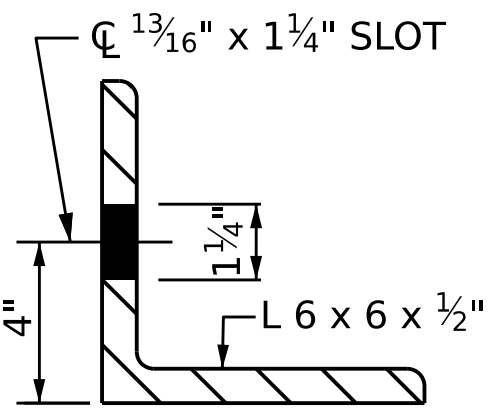
AESTHETIC PANELS NOT SHOWN



SECTION X-X



CONNECTION DETAIL



ANGLE DETAIL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 83+50.80 -L-

SHEET 1 OF 2

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. F02342

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
SOUND BARRIER WALL
(LEFT LANE)

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

SEAL

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
SOUND BARRIER WALL
(LEFT LANE)
DUSTIN S. TUTTLE
7/14/2026

SHEET NO.
S7-17
TOTAL SHEETS
41

DRAWN BY : M. CATER DATE : 03/2026
CHECKED BY : A.VASUDEVAN DATE : 03/2026
DESIGN ENGINEER OF RECORD: D. TUTTLE DATE : 03/2026

7/13/2026
c:\pwworking\aeocom.ds21.na.2020\d0131526\407_033_I2513AC_SMU.NW1_S7-17.100898.dgn
caterm

