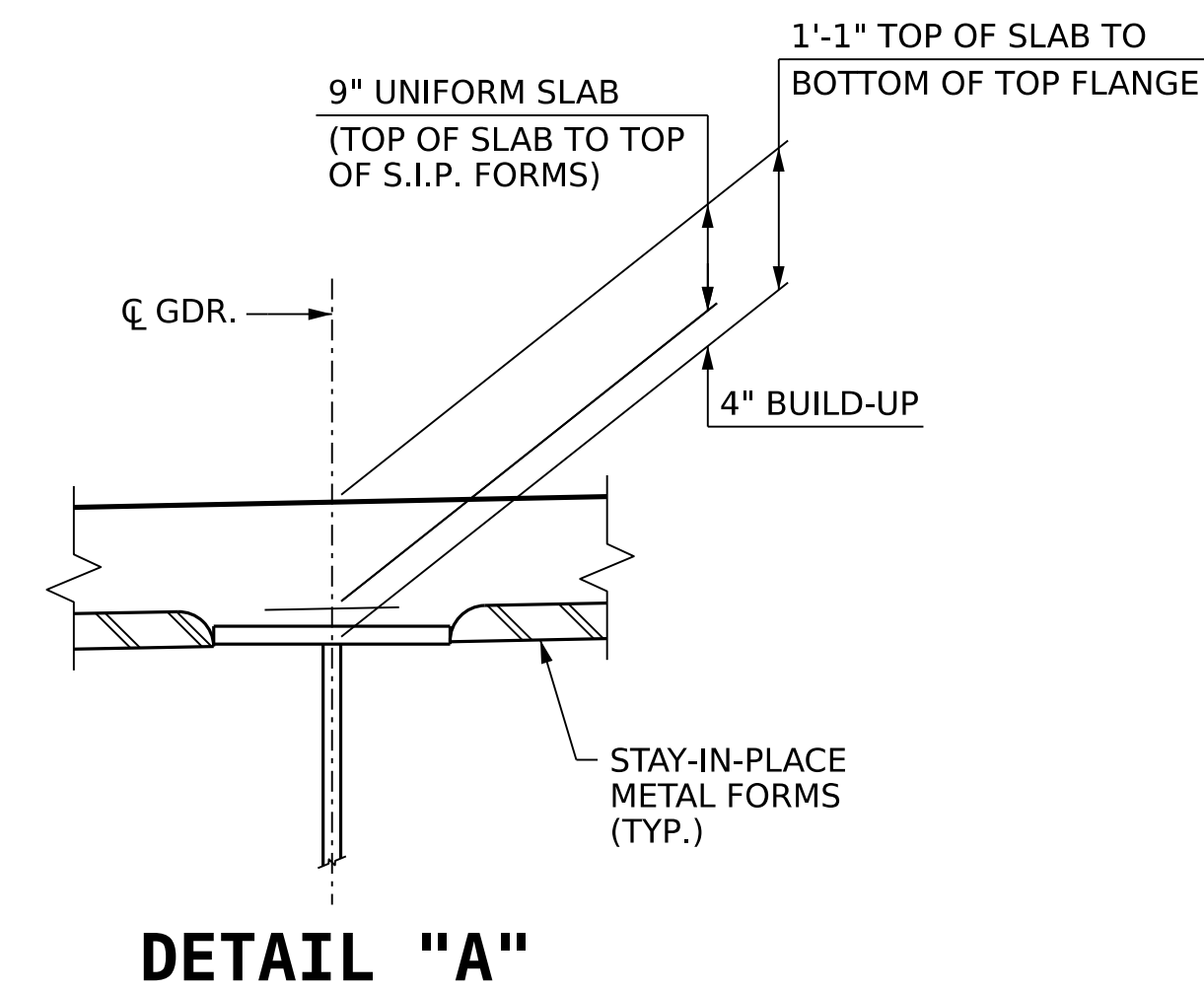




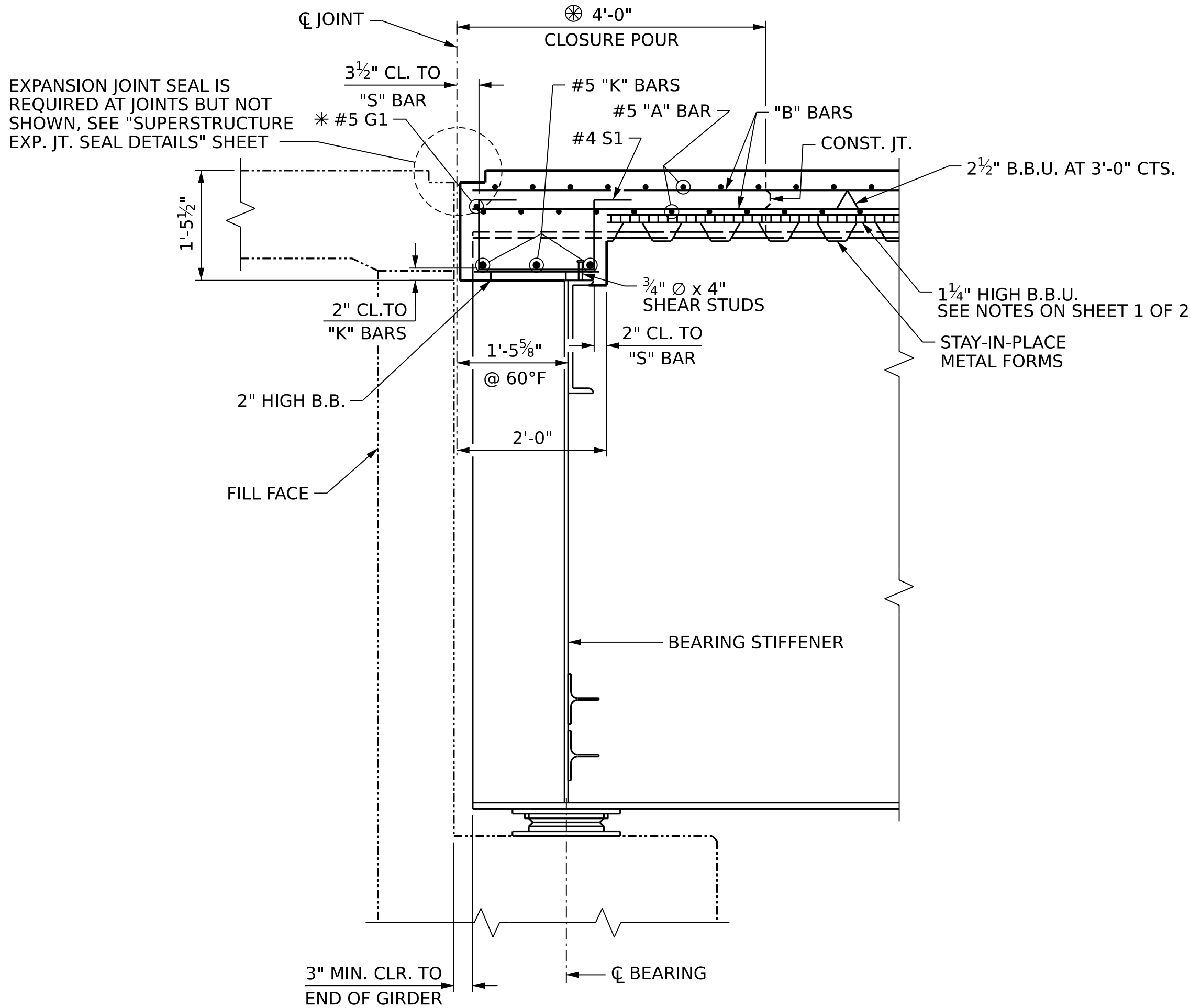
LIGHTPOST SUPPORT BLISTER NOT SHOWN, SEE "LIGHT POLE BLISTER DETAILS" SHEET.



SHEET NO	S05-8
TOTAL SHEETS	45

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User: blanning
Filename: N:\NC Bridges\W21002.I-2513A I-26 (AECOM)\I-2513AC\Structures\ITES\405_015_12513AC.SMU.TSI.S05-8.100906.dgn

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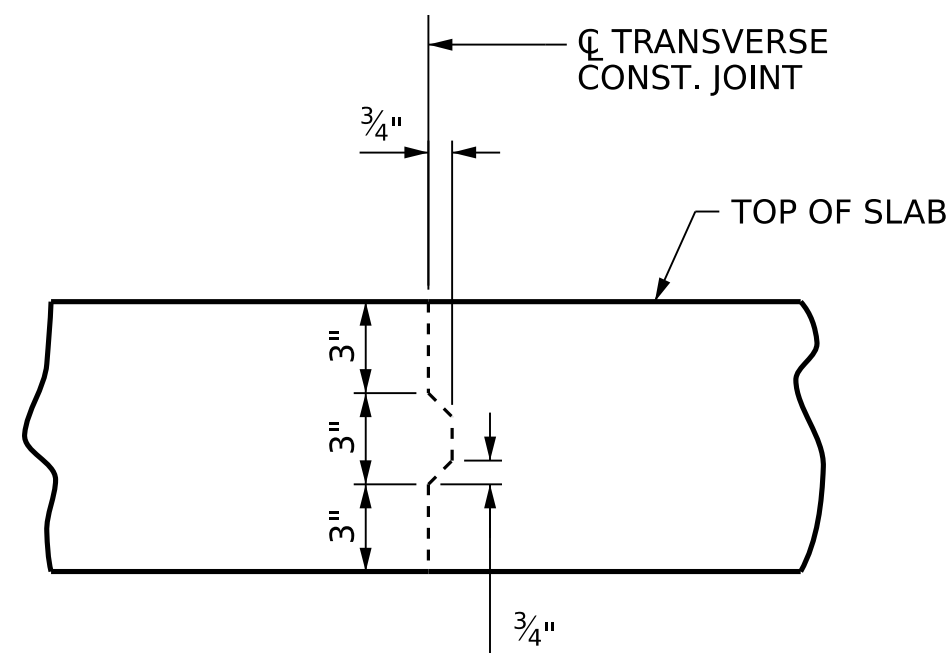


SECTION A-A

SHOWING END BENT 1,
END BENT 2 SIMILAR

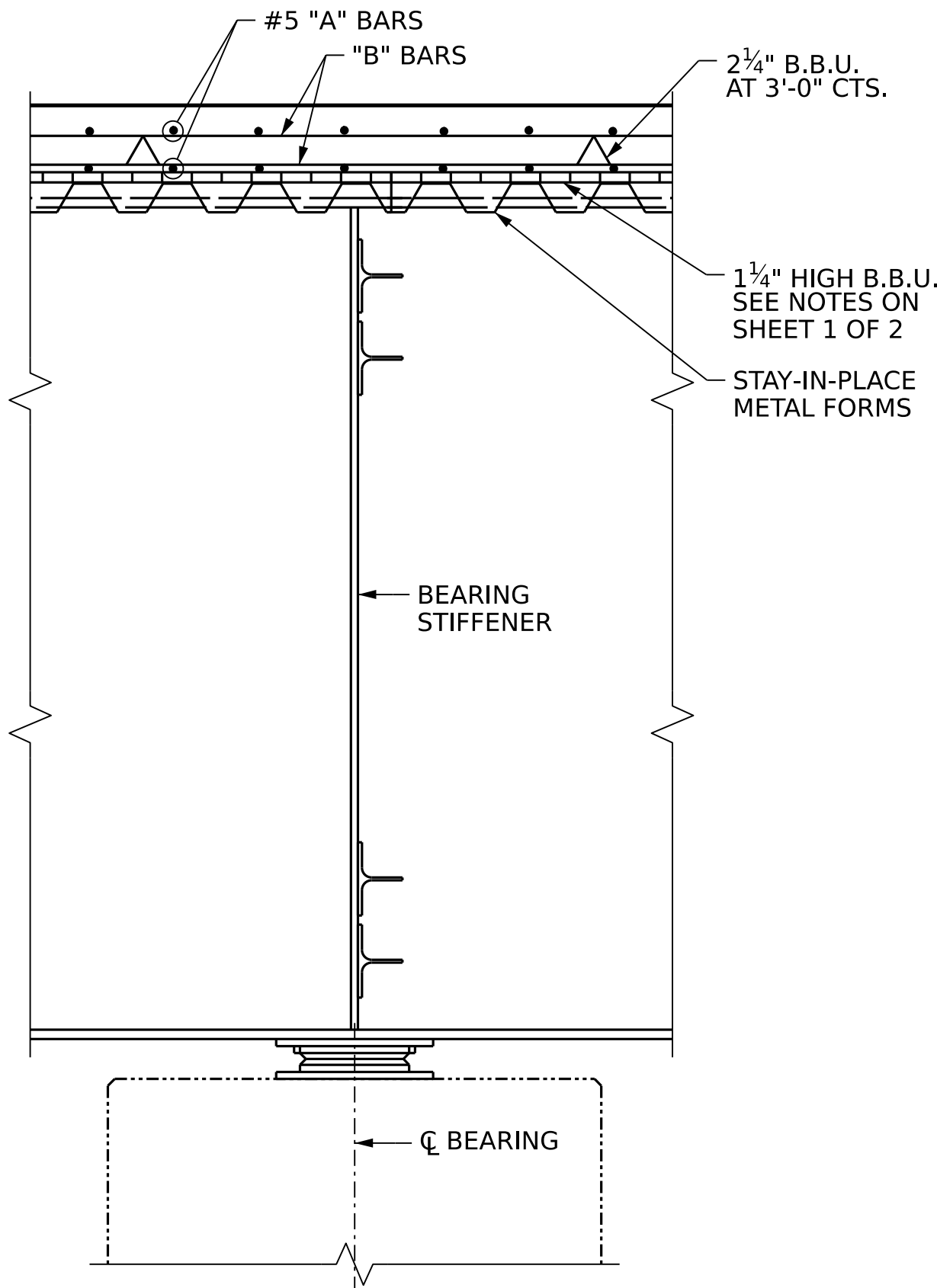
⊗ 2'-6" AT END BENT 2

* #5 G1 BAR MAY BE SHIFTED SLIGHTLY AS
NECESSARY, TO CLEAR REINFORCING STEEL.



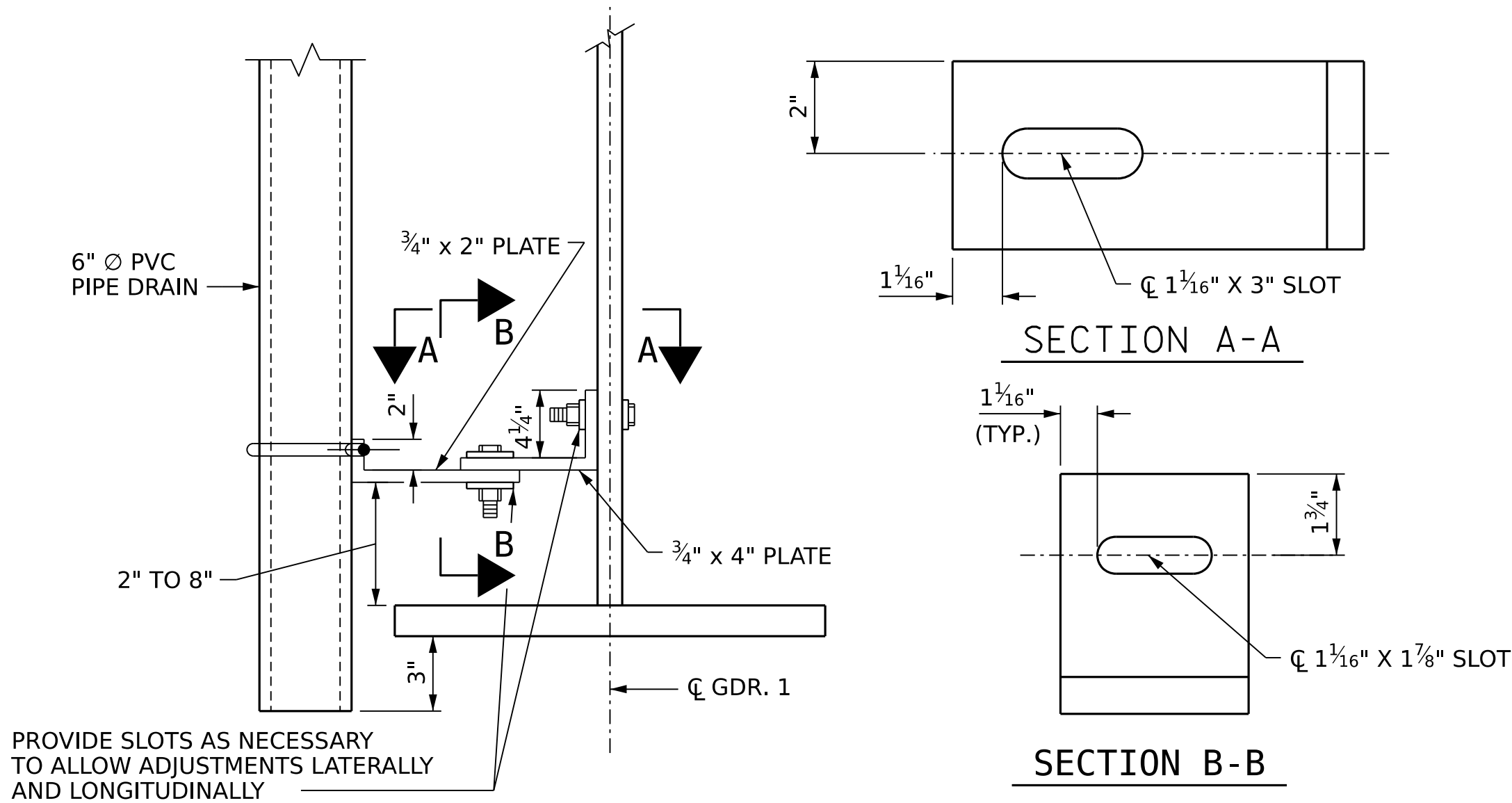
TRANSVERSE CONSTRUCTION JOINT DETAIL

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



SECTION OF BENT CROSSFRAME

AT BENT 1



DRAIN CONNECTOR DETAIL

(TOTAL ASSEMBLIES REQUIRED = 13)

DRAIN CONNECTOR NOTES:

COUPLING IN DRAIN PIPE WILL BE PERMITTED AS APPROVED BY THE ENGINEER.

TOP OF THE FLOOR DRAIN TO BE SET $\frac{3}{8}$ " BELOW SURFACE OF SLAB.

4 - $\frac{1}{2}$ " SQUARE LUGS TO BE GLUED TO THE PVC PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN APPROXIMATELY 4" FROM THE TOP OF THE PIPE.

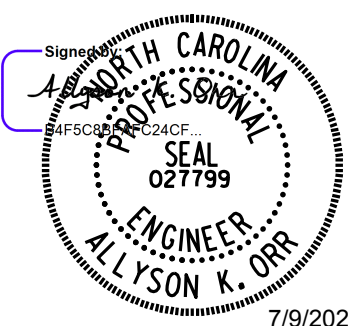
BOLT SIZE TO BE THE SAME AS DIAPHRAGMS AND CROSS FRAME CONNECTIONS. STAINLESS STEEL WORM DRIVE HOSE CLAMP SHALL BE COMMERCIAL QUALITY.

THE 6" $\varnothing$ PVC PLASTIC PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND CONFORM TO ASTM D1785.

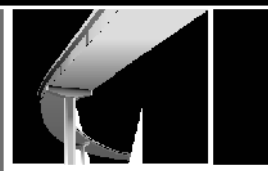
PVC DECK DRAINS SHALL BE PAINTED WITH TWO COATS OF BROWN PRIMER MEETING THE REQUIREMENTS OF ARTICLE 1080-11 OF THE STANDARD SPECIFICATIONS. EACH COAT SHALL BE 2 DRY MILS THICK. DECK DRAINS SHALL BE ROUGHENED PRIOR TO PAINTING. NO SEPARATE PAYMENT SHALL BE MADE FOR PAINTING PVC DECK DRAINS AS THIS IS CONSIDERED INCIDENTAL TO THE PAY ITEM FOR REINFORCED CONCRETE DECK SLAB.

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-

SHEET 2 OF 2



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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

SUPERSTRUCTURE
TYPICAL SECTION
DETAILS

DRAWN BY: B.E. LANNING DATE: 01/2024
CHECKED BY: A.K. ORR DATE: 01/2024
DESIGN ENGINEER OF RECORD: A.K. ORR DATE: 12/2025

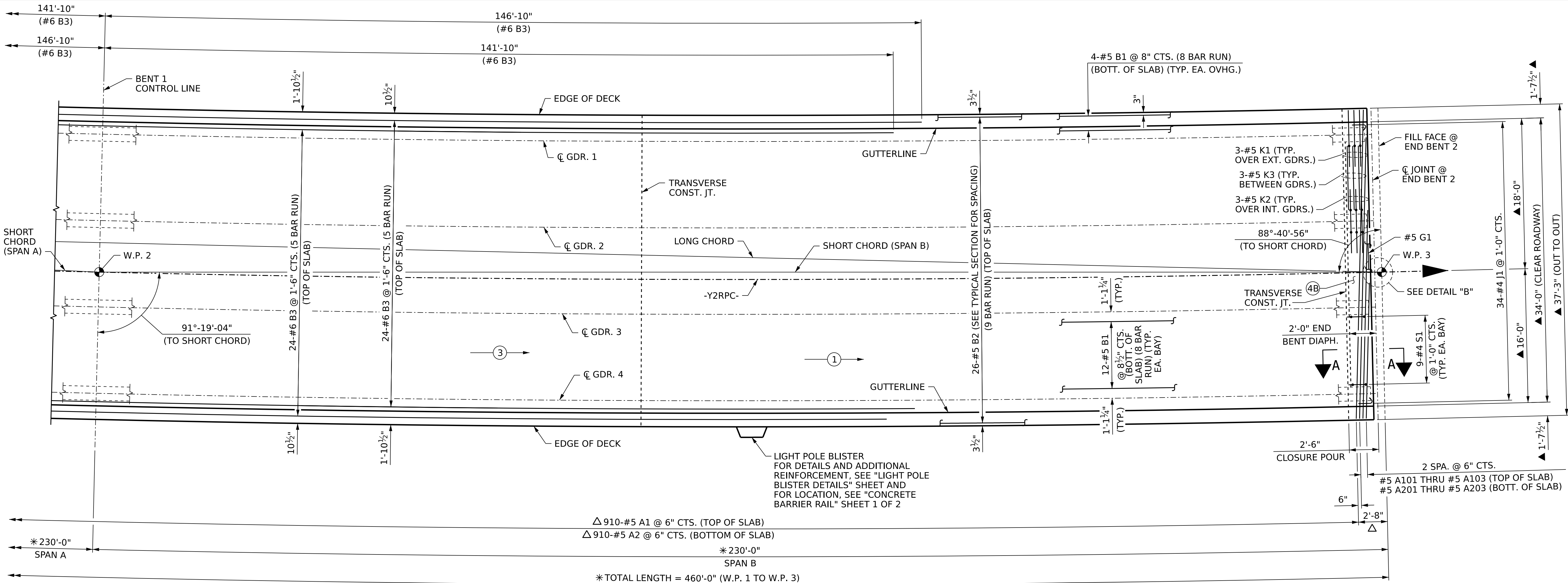
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S05-9
2			4			

TOTAL
SHEETS
45

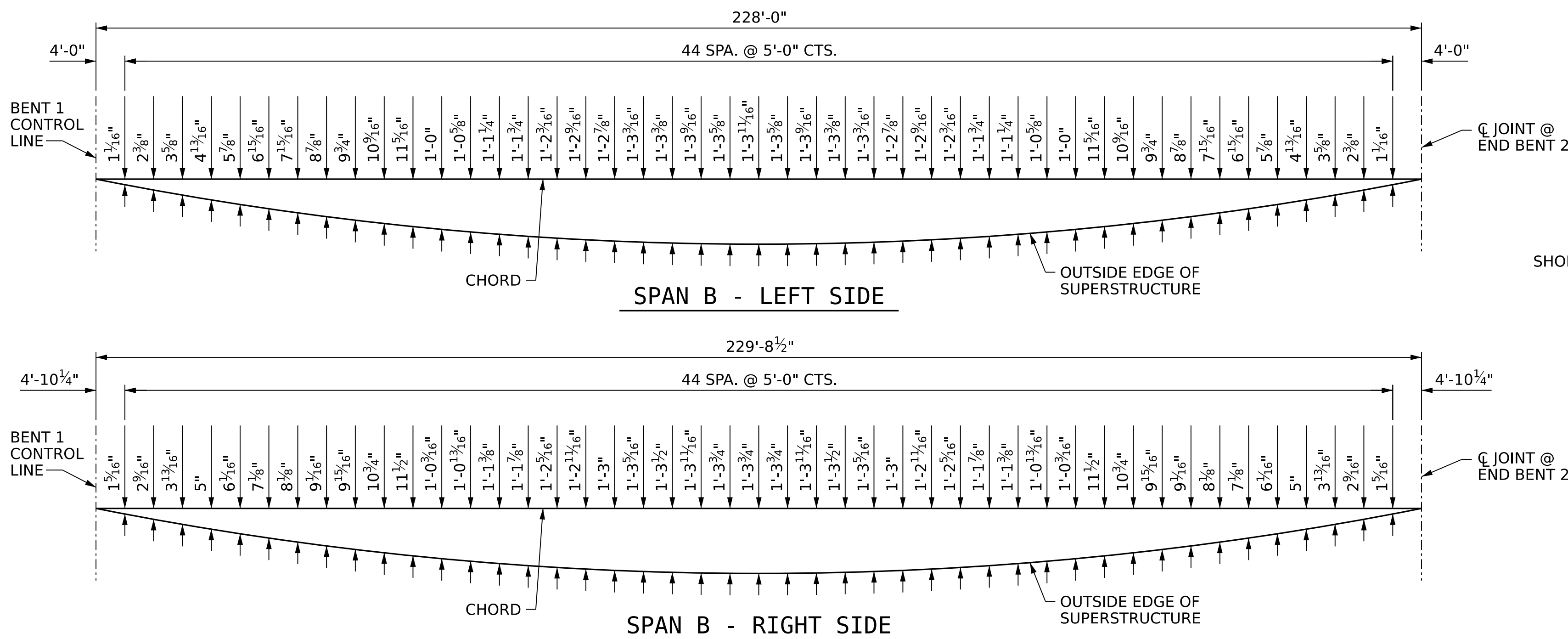
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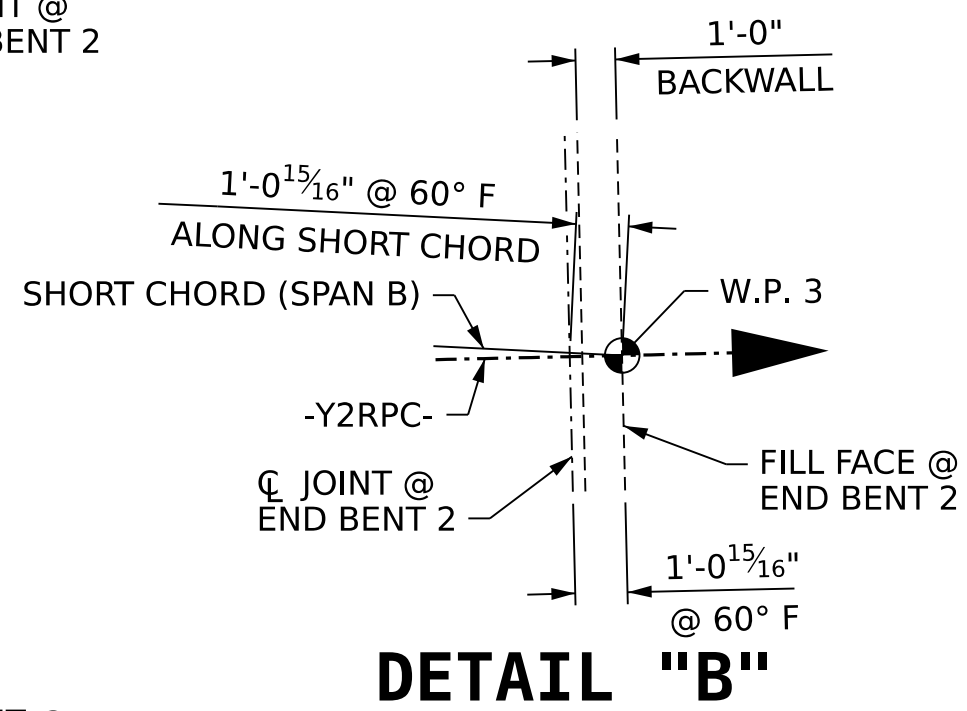
PLAN OF SPAN B



ARC OFFSETS - SPAN B

DRAWN BY: B.E. LANNING DATE: 01/2024
CHECKED BY: A.K. ORR DATE: 01/2024
DESIGN ENGINEER OF RECORD: A.K. ORR DATE: 12/2025

- ▲ RADIAL DIMENSIONS
- * MEASURED ALONG -Y2RPC-



DETAIL "B"

NOTES:

△ TRANSVERSE REINFORCING STEEL ("A" BARS) SHALL BE PLACED PERPENDICULAR AND SPACED ALONG THE LONG CHORD.

FOR REINFORCING STEEL IN BARRIER RAIL NOT SHOWN, SEE "CONCRETE BARRIER RAIL" SHEETS.

FOR TRANSVERSE CONSTRUCTION JOINT IN DECK SLAB DETAIL, SEE "TYPICAL SECTION DETAILS" SHEET 2 OF 2.

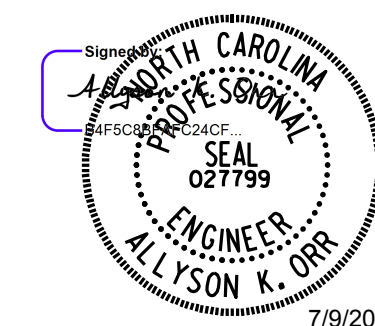
FOR SECTION A-A, SEE "TYPICAL SECTION DETAILS" SHEET 2 OF 2.

— (#) — INDICATES POUR NUMBER AND DIRECTION OF POUR.

FOR POUR DIMENSIONS AND QUANTITIES, SEE SUPERSTRUCTURE BILL OF MATERIAL.

FOR MINIMUM SPLICE LENGTHS, SEE SUPERSTRUCTURE BILL OF MATERIAL.

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-
SHEET 2 OF 2

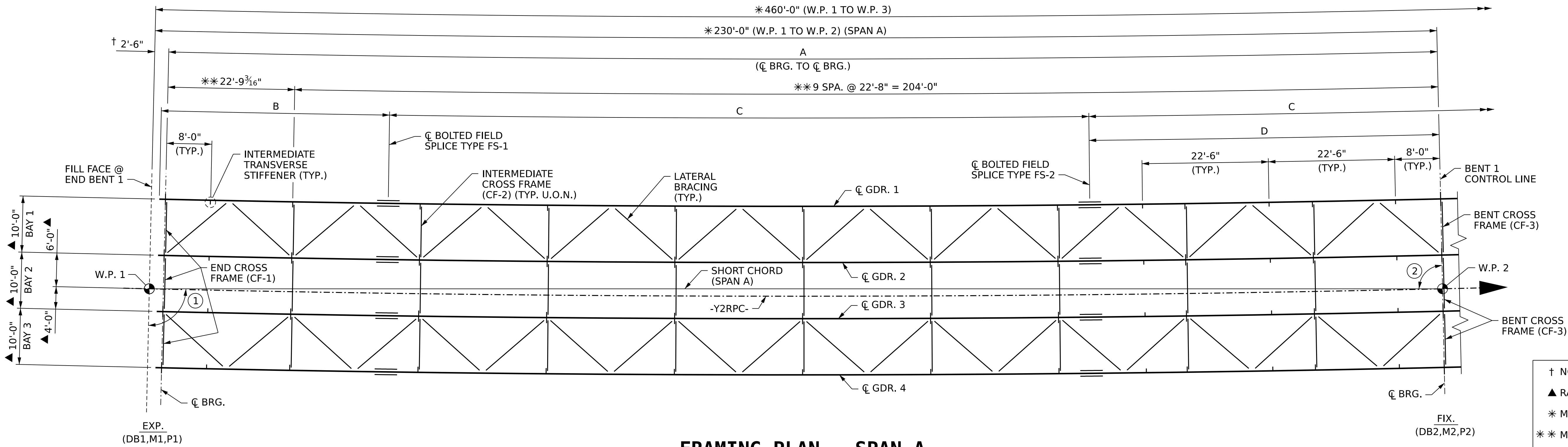


**DOCUMENT NOT CONSIDERED FINAL
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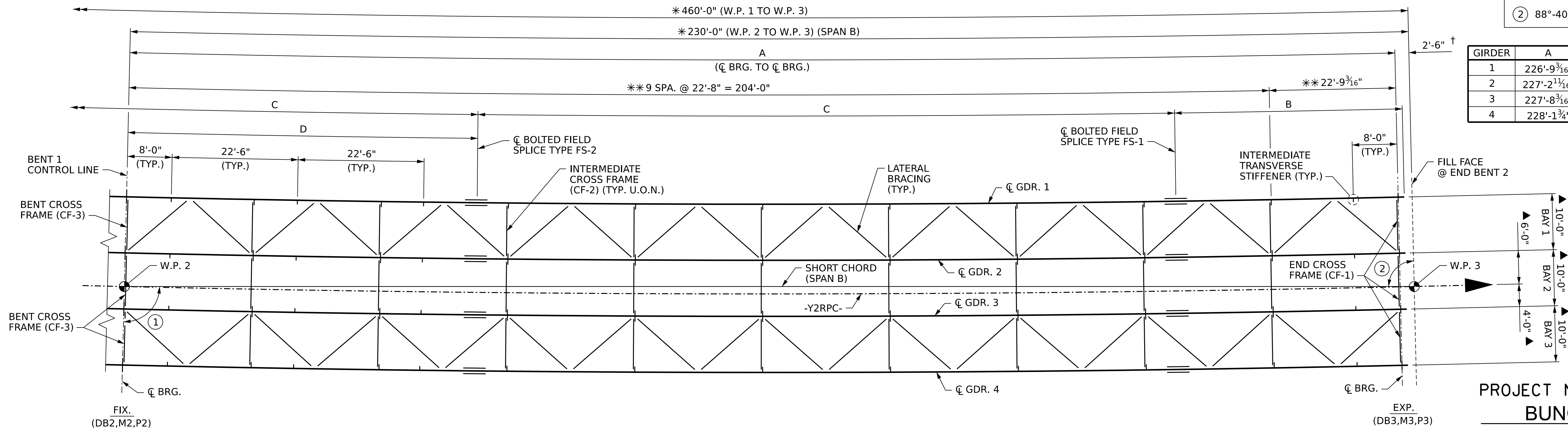
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S05-11
2			4			
TOTAL SHEETS						45

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Filename: N:\NC Bridges\W21002.I-2513A I-26 (AECOM)\I-2513AC\Structures\SITES\405.023.I2513AC.SMU.FP1.S05-12.100906.dgn



FRAMING PLAN - SPAN A



FRAMING PLAN - SPAN B

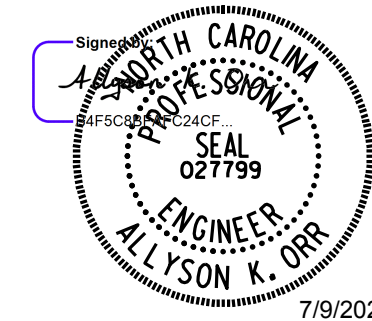
- † NORMAL TO FILL FACE
▲ RADIAL DIMENSIONS
* MEASURED ALONG CL -Y2RPC-
** MEASURED ALONG GIRDER 1
- ① 91°-19'-04" (TO SHORT CHORD)
② 88°-40'-56" (TO SHORT CHORD)

GIRDER	A	B	C	D
1	226'-9 $\frac{3}{16}$ "	40'-8 $\frac{1}{16}$ "	124'-9"	62'-4 $\frac{1}{2}$ "
2	227'-2 $\frac{11}{16}$ "	40'-9 $\frac{11}{16}$ "	125'-0"	62'-6"
3	227'-8 $\frac{3}{16}$ "	40'-10 $\frac{1}{16}$ "	125'-3"	62'-7 $\frac{1}{2}$ "
4	228'-1 $\frac{3}{4}$ "	40'-11 $\frac{3}{4}$ "	125'-6"	62'-9"

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-

NOTES:

- INTERMEDIATE CROSS FRAMES ARE RADIAL TO THE GIRDERS.
- SEE "STRUCTURAL STEEL DETAILS", SHEET 3 OF 4 FOR STRUCTURAL STEEL NOTES AND CHARPY V-NOTCH TESTING REQUIREMENTS.
- ALL FRAMING PLAN DIMENSIONS ARE HORIZONTAL UNLESS OTHERWISE NOTED.
- FOR FIELD SPLICE DETAILS, SEE "STRUCTURAL STEEL DETAILS", SHEET 4 OF 4.
- FOR BEARING STIFFENER SIZES, SEE "STRUCTURAL STEEL DETAILS", SHEET 1 OF 4.
- FOR BEARING STIFFENERS AND INTERMEDIATE STIFFENER DETAILS, SEE "STRUCTURAL STEEL DETAILS", SHEET 2 OF 4.
- FOR CROSS FRAME DETAILS, SEE "STRUCTURAL STEEL DETAILS", SHEET 2 OF 4.
- FOR LATERAL BRACING DETAILS, SEE "STANDARD LATERAL BRACING" SHEET.



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

REVISIONS						SHEET NO. S05-12
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 45
2			4			

DRAWN BY: <u>B.E. LANNING</u>	DATE: <u>01/2024</u>
CHECKED BY: <u>A.K. ORR</u>	DATE: <u>01/2024</u>
DESIGN ENGINEER OF RECORD: <u>A.K. ORR</u>	DATE: <u>12/2025</u>

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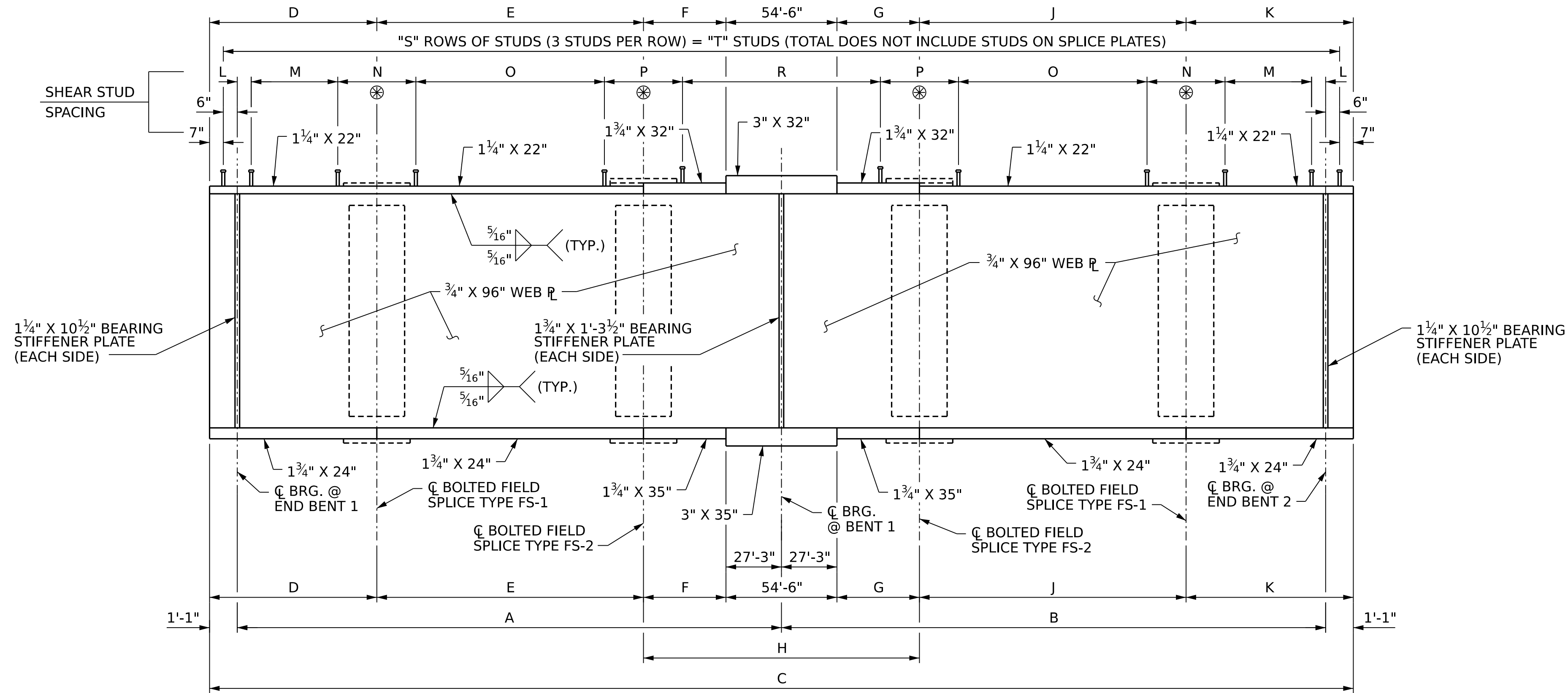
FOR SHEAR STUD DETAILS, SEE SHEET 2 OF 4.

FOR FIELD SPICE DETAILS, SEE SHEET 4 OF 4.

DIMENSIONS ARE HORIZONTAL ARC LENGTHS ALONG THE CL OF GIRDER UNLESS OTHERWISE NOTED. NO CORRECTIONS HAVE BEEN MADE TO ADJUST FOR THE DISTANCE ALONG THE GRADE, BEARING TO BEARING SLOPE LENGTHS PROVIDED FOR INFORMATION ONLY.

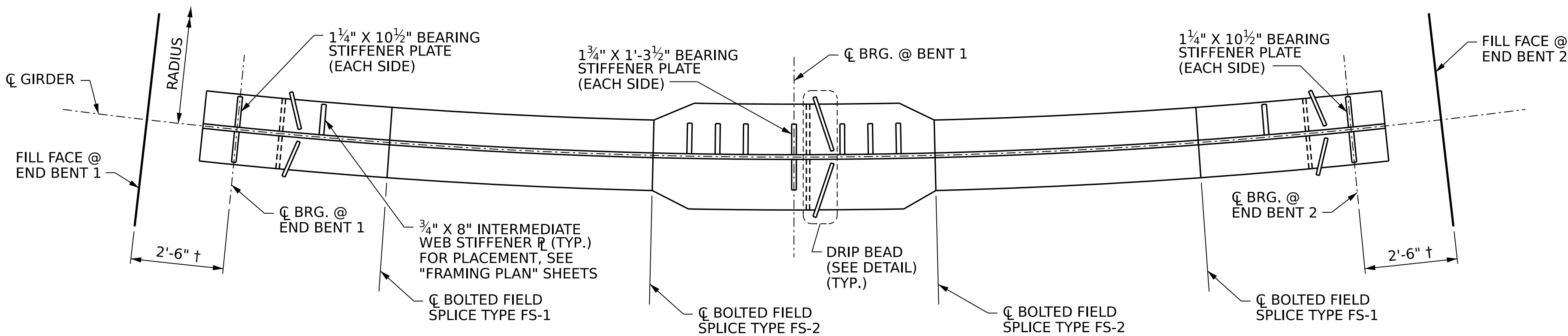
FOR CHARPY V-NOTCH TEST LIMITS, SEE SHEET 3 OF 4.

FOR STRUCTURAL STEEL NOTES, SEE SHEET 3 OF 4.



GIRDER ELEVATION

SEE SHEET 4 OF 4 FOR STUD LOCATIONS ON SPLICE PLATE



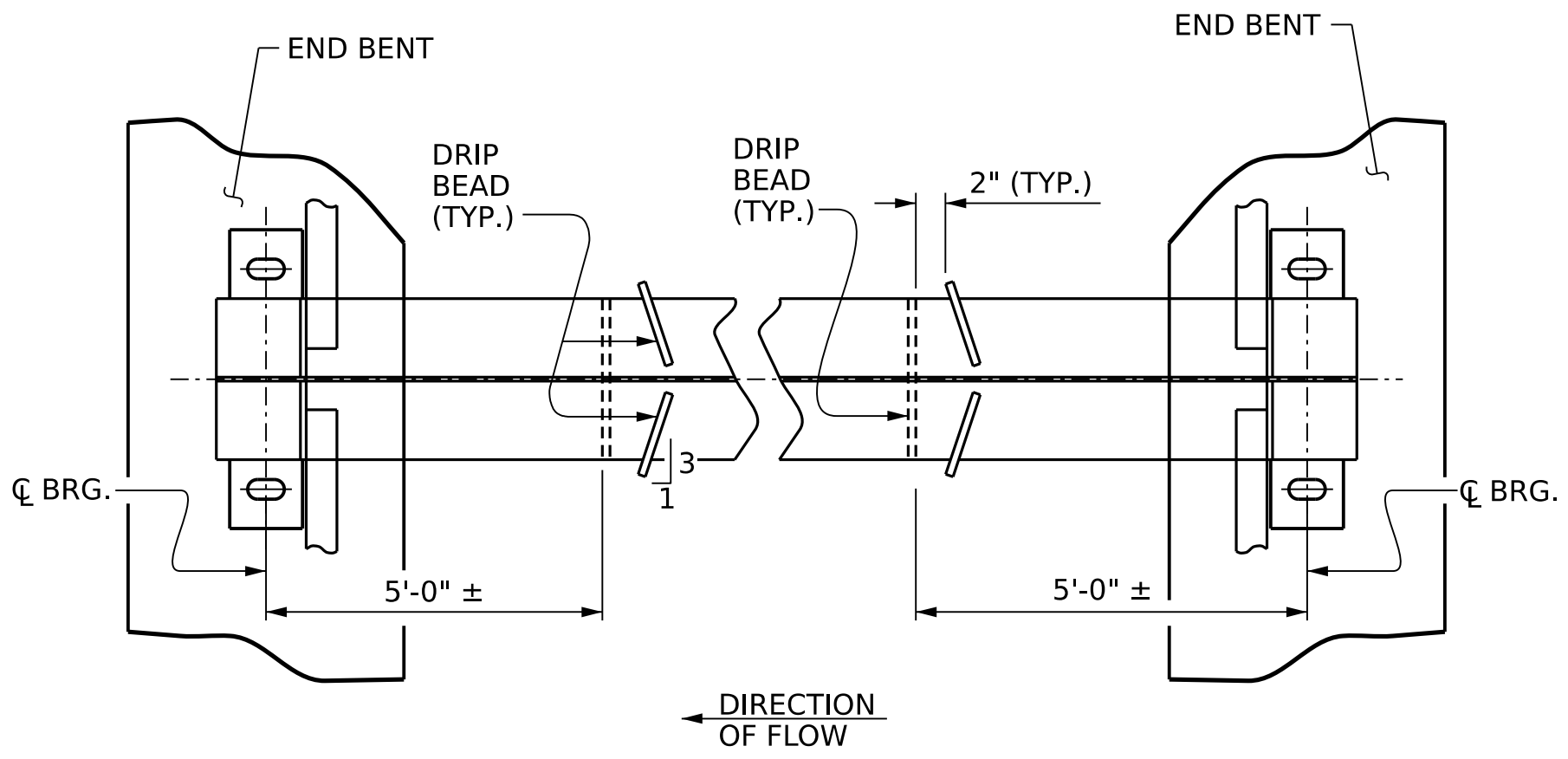
PLAN OF BOTTOM FLANGE

† NORMAL TO FILL FACE

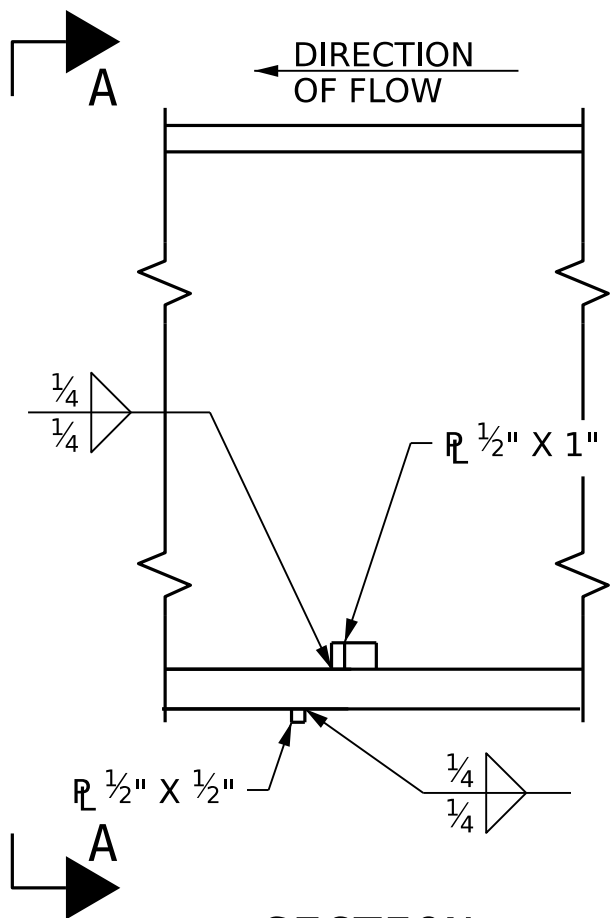
BEARING TO BEARING DIMENSIONS					
GIRDER	RADIUS	SPAN A (DIM. A)		SPAN B (DIM. B)	
		HORIZ.	SLOPED	HORIZ.	SLOPED
1	4984'-0"	226'-9 ³ / ₁₆ "	226'-9 ⁷ / ₁₆ "	226'-9 ³ / ₁₆ "	226'-11 ⁷ / ₁₆ "
2	4994'-0"	227'-2 ¹ / ₁₆ "	227'-3 ¹ / ₁₆ "	227'-2 ¹ / ₁₆ "	227'-5 ³ / ₁₆ "
3	5004'-0"	227'-8 ³ / ₁₆ "	227'-8 ¹ / ₁₆ "	227'-8 ³ / ₁₆ "	227'-10 ⁷ / ₁₆ "
4	5014'-0"	228'-1 ³ / ₄ "	228'-2 ⁷ / ₁₆ "	228'-1 ³ / ₄ "	228'-4 ⁷ / ₁₆ "

GIRDER DIMENSIONS																
GIRDER	C	D	E	F	G	H	J	K	L	M	N	O	P	R	S	T
1	455'-8 ³ / ₈ "	40'-8 ¹ / ₁₆ "	124'-9"	35'-1 ¹ / ₂ "	35'-1 ¹ / ₂ "	124'-9"	124'-9"	40'-8 ¹ / ₁₆ "	7 ¹ / ₁₆ "	37 SPA. @ 1'-0"	4'-3 ¹ / ₂ "	103 SPA. @ 1'-2"	4'-8"	90 SPA. @ 1'-4"	377	1131
2	456'-7 ³ / ₈ "	40'-9 ¹ / ₁₆ "	125'-0"	35'-3"	35'-3"	125'-0"	125'-0"	40'-9 ¹ / ₁₆ "	1 ³ / ₁₆ "	28 SPA. @ 1'-4"	4'-7"	85 SPA. @ 1'-5"	4'-7"	85 SPA. @ 1'-5"	318	954
3	457'-6 ³ / ₈ "	40'-10 ¹ / ₁₆ "	125'-3"	35'-4 ¹ / ₂ "	35'-4 ¹ / ₂ "	125'-3"	125'-3"	40'-10 ¹ / ₁₆ "	1 ¹ / ₁₆ "	28 SPA. @ 1'-4"	4'-10"	85 SPA. @ 1'-5"	4'-10"	85 SPA. @ 1'-5"	318	954
4	458'-5 ¹ / ₂ "	40'-11 ³ / ₄ "	125'-6"	35'-6"	35'-6"	125'-6"	125'-6"	40'-11 ³ / ₄ "	9 ³ / ₄ "	37 SPA. @ 1'-0"	4'-2"	104 SPA. @ 1'-2"	4'-2"	91 SPA. @ 1'-4"	380	1140

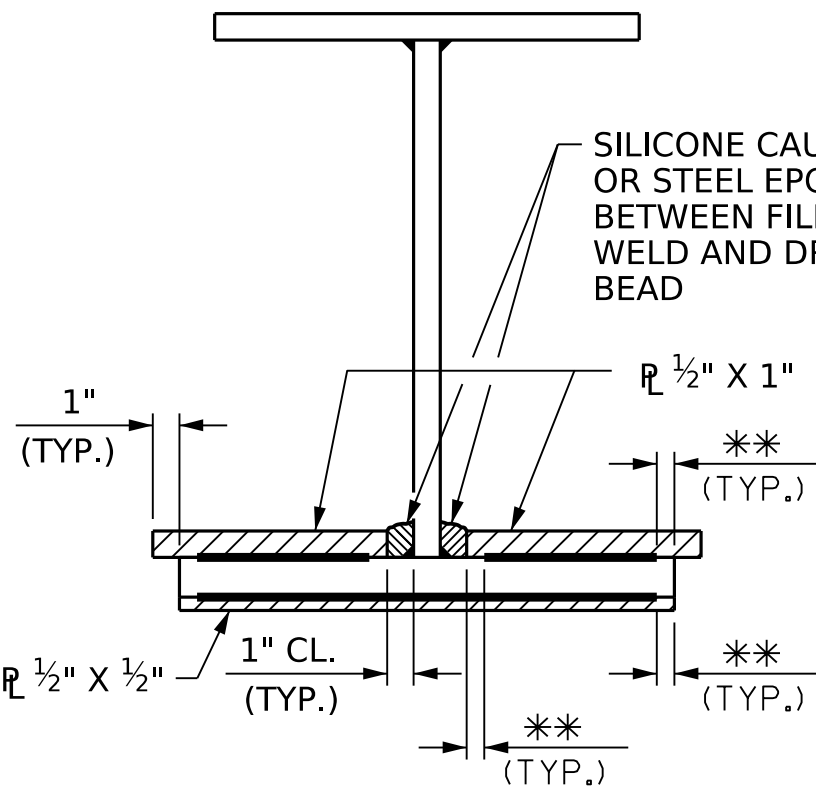
DRAWN BY: B.E. LANNING DATE: 01/2024
CHECKED BY: A.K. ORR DATE: 01/2024
DESIGN ENGINEER OF RECORD: A.K. ORR DATE: 12/2025



PART PLAN - BOTTOM FLANGE



SECTION



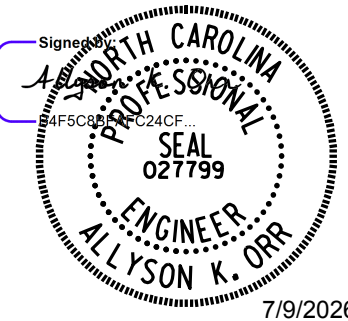
VIEW A-A

** SEE "WELD TERMINATION DETAILS" SHEET 3 OF 4.

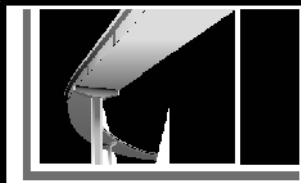
DRIP BEAD DETAILS

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-

SHEET 1 OF 4



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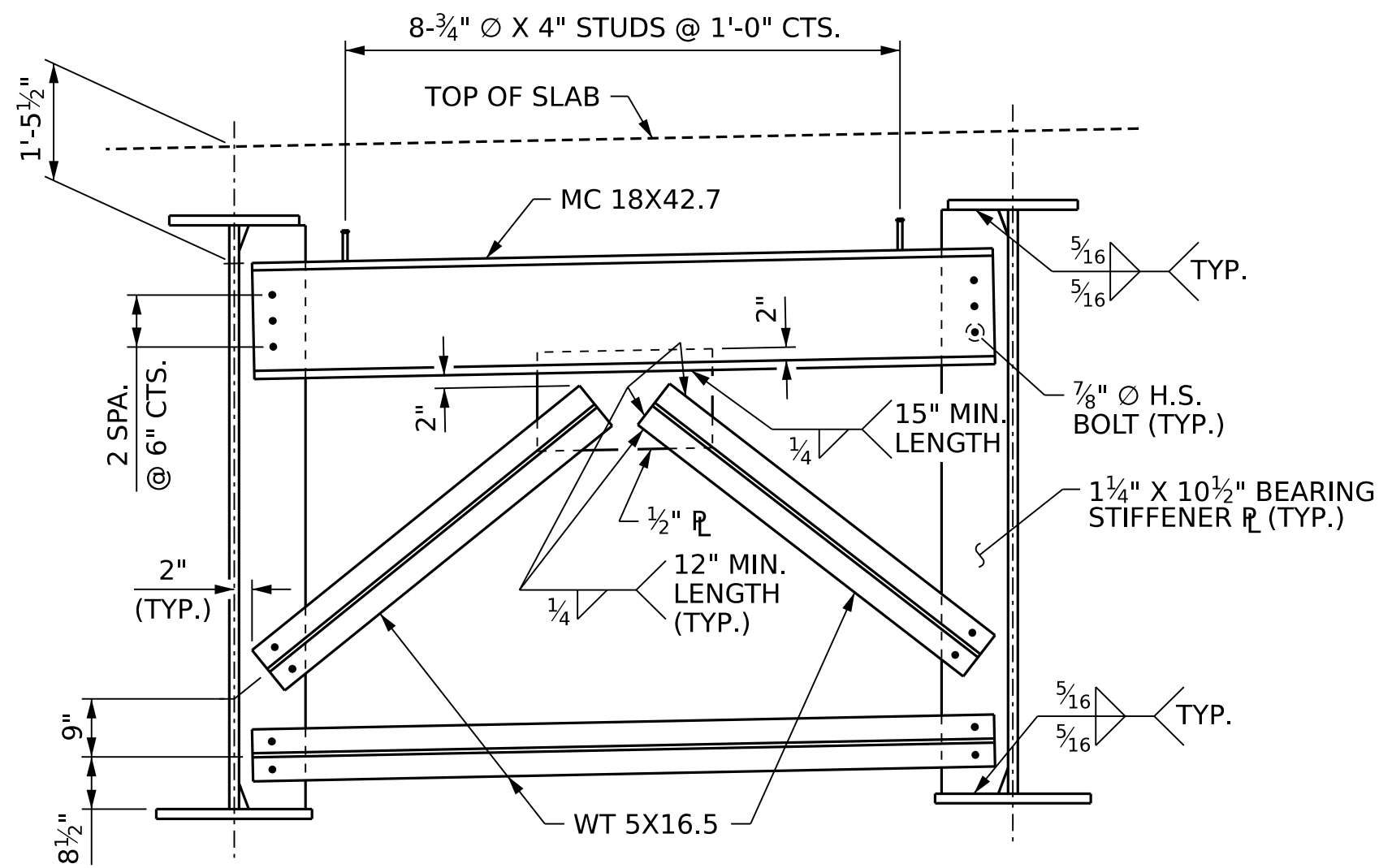
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
STRUCTURAL STEEL
DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S05-13
2			4			

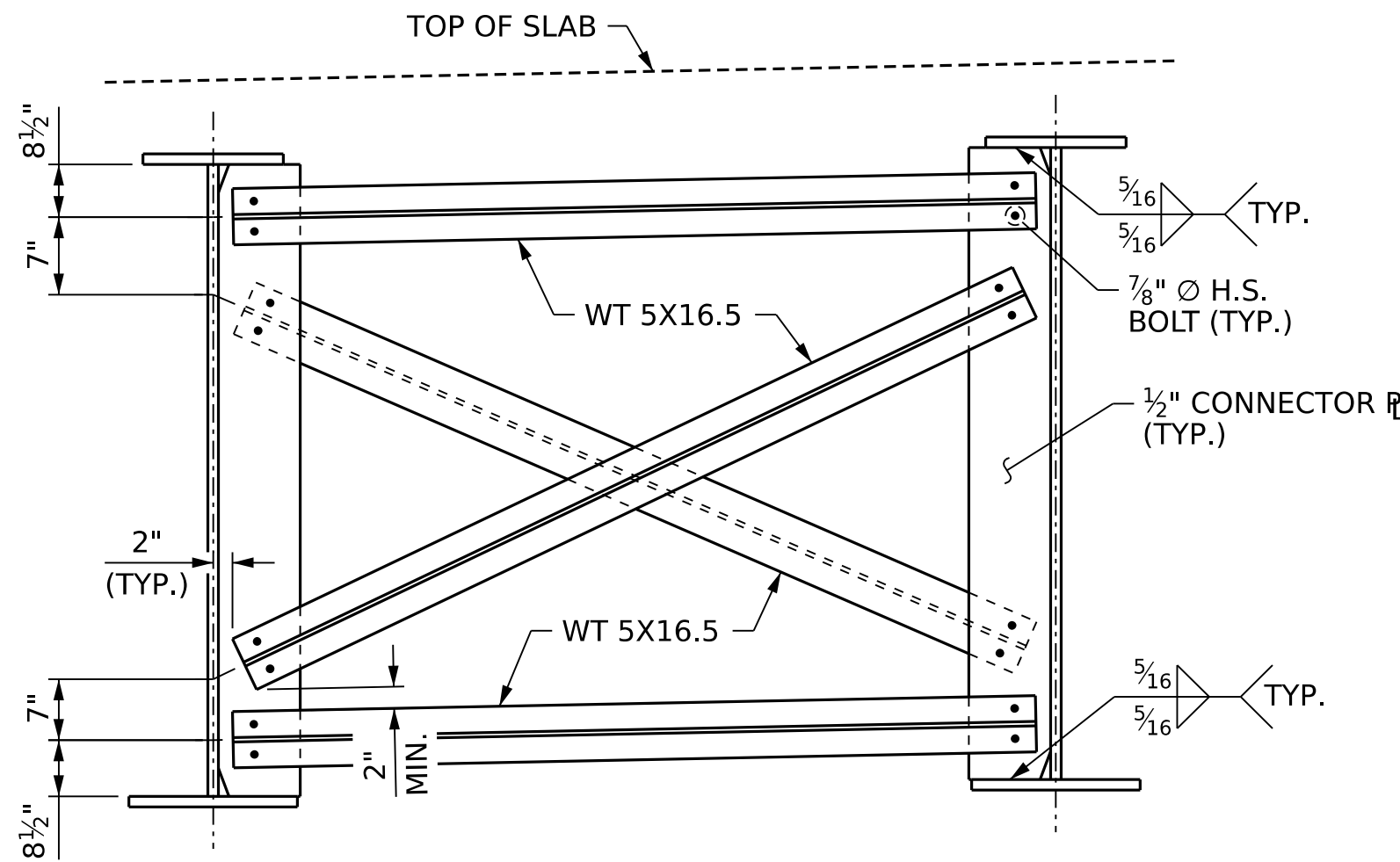
TOTAL SHEETS 45

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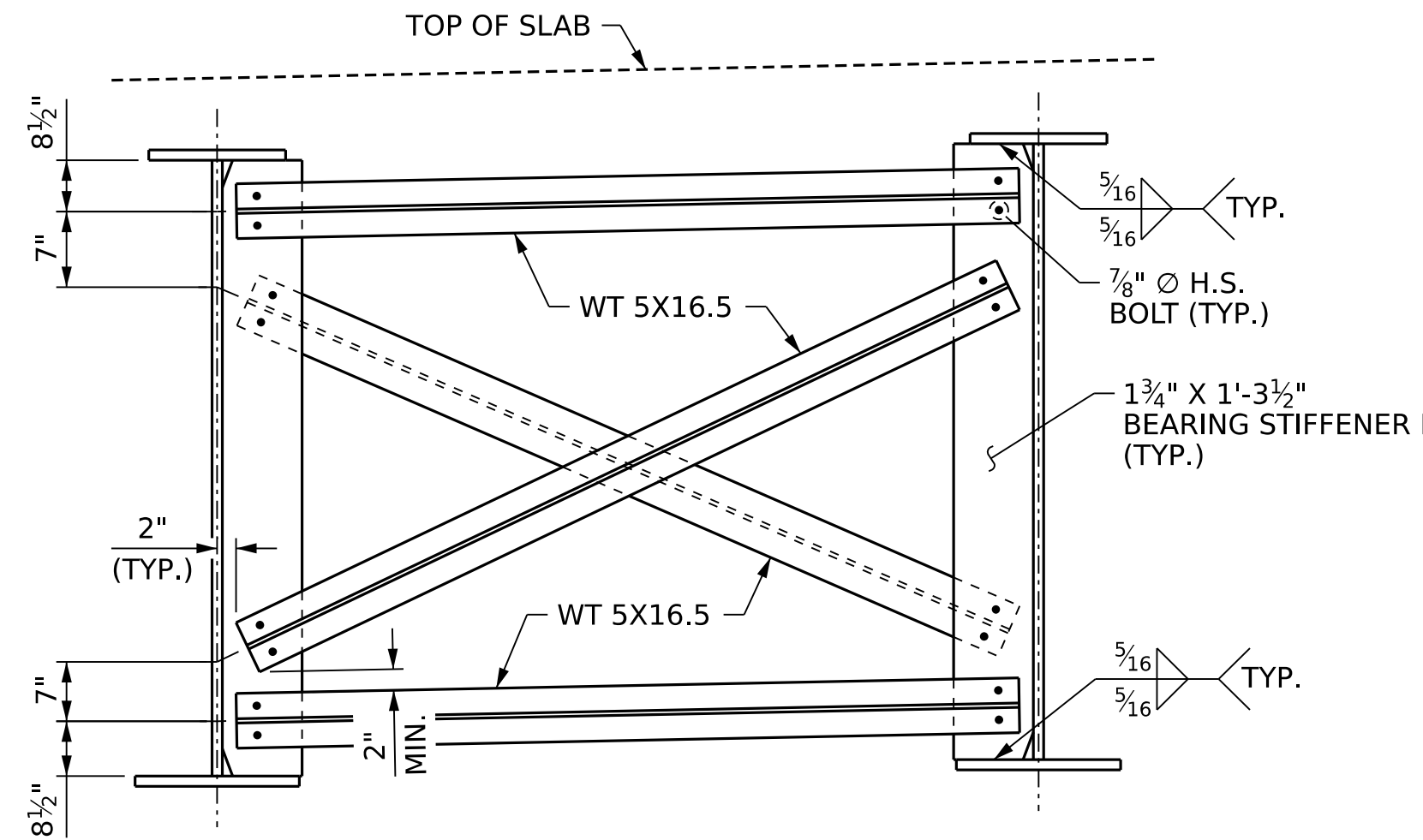
END CROSS FRAME CF-1

(AT END BENT 1 & END BENT 2)



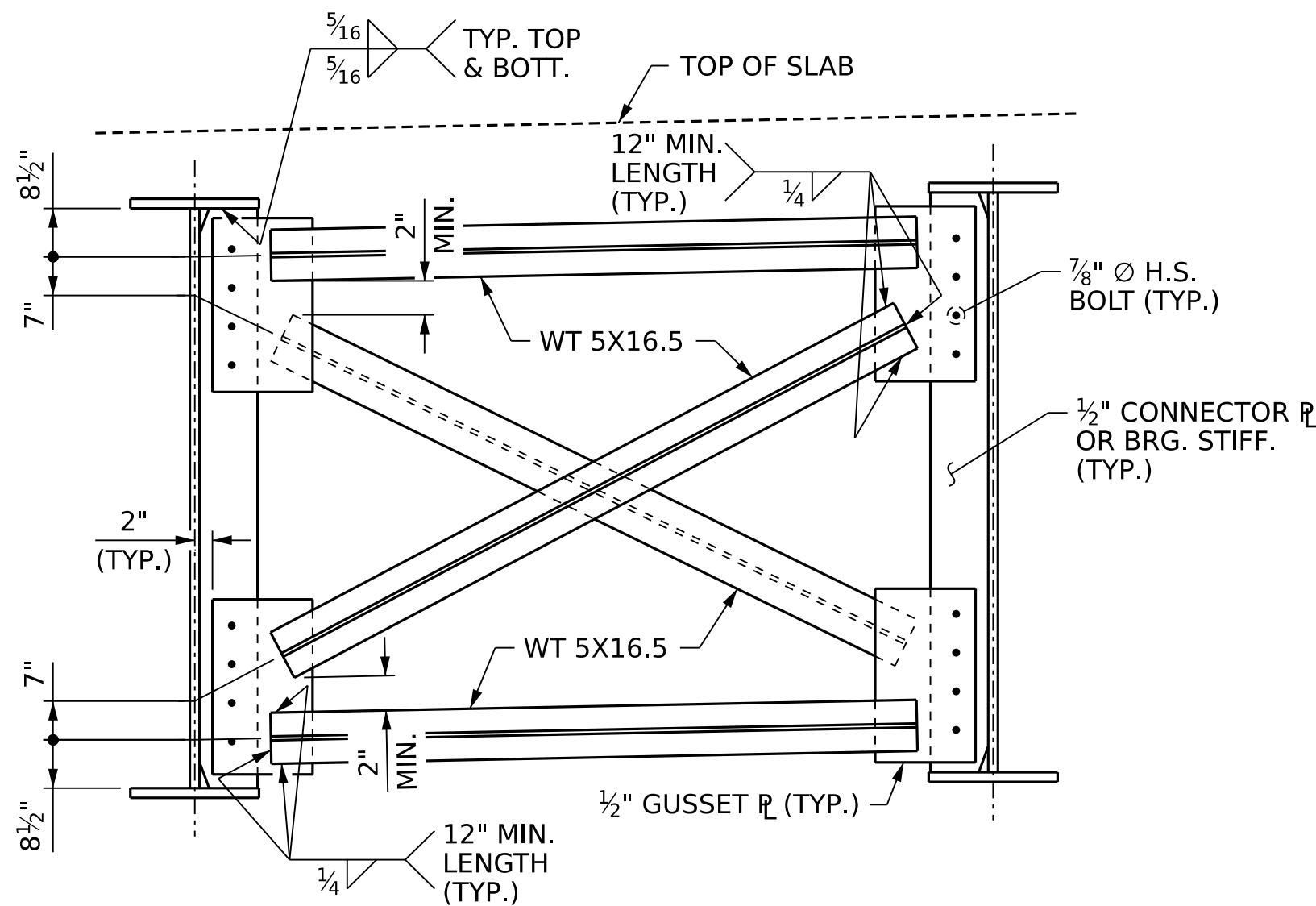
INTERMEDIATE CROSS FRAME CF-2

(SEE FRAMING PLAN FOR LOCATIONS)

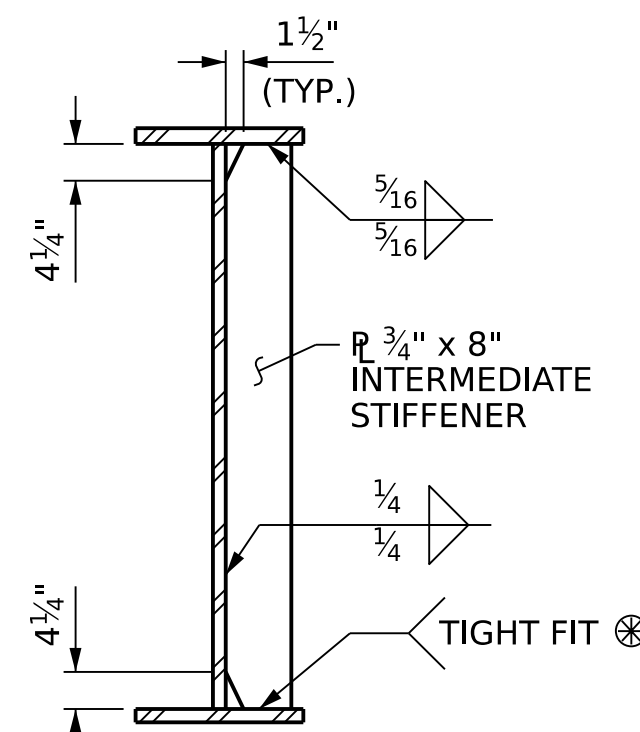


BENT CROSS FRAME CF-3

(AT BENT 1)

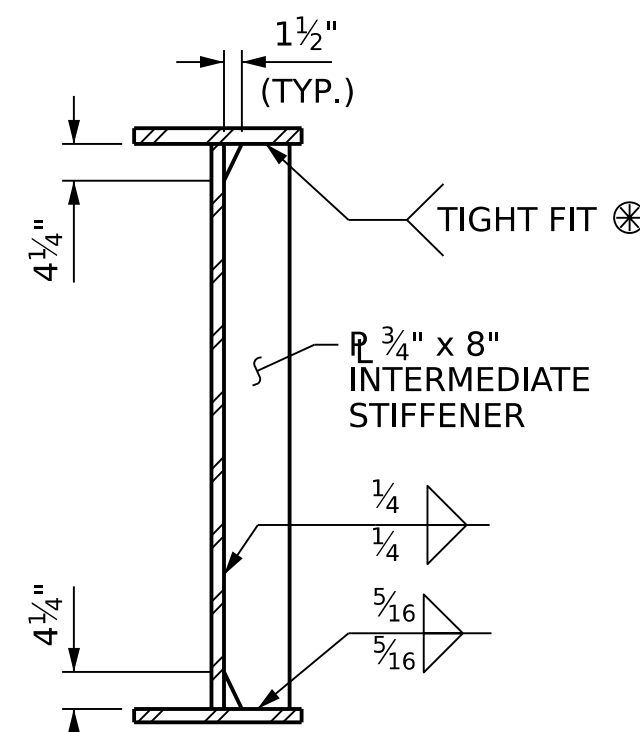


OPTIONAL INTERMEDIATE CROSS FRAME CF-2 OR CF-3



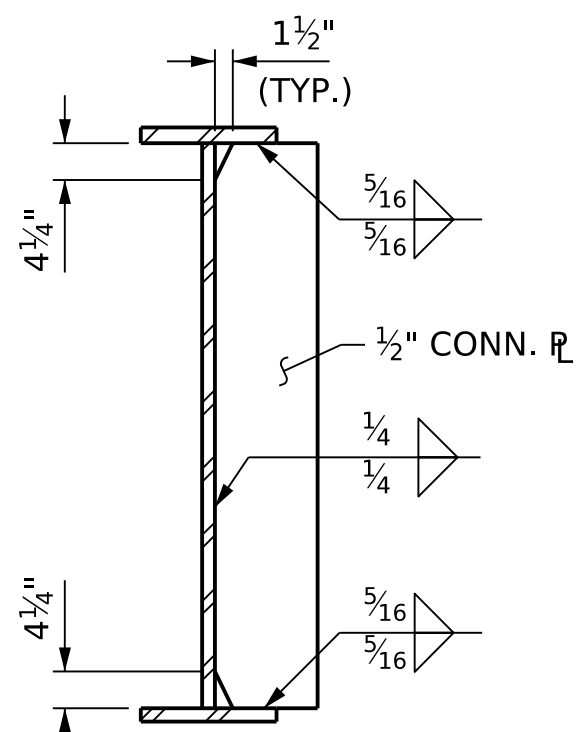
INTERMEDIATE STIFFENER NEAR END BENTS

⊗ TIGHT FIT TO FLANGE WHERE
CHARPY V-NOTCH TESTING
ON FLANGE IS REQUIRED.

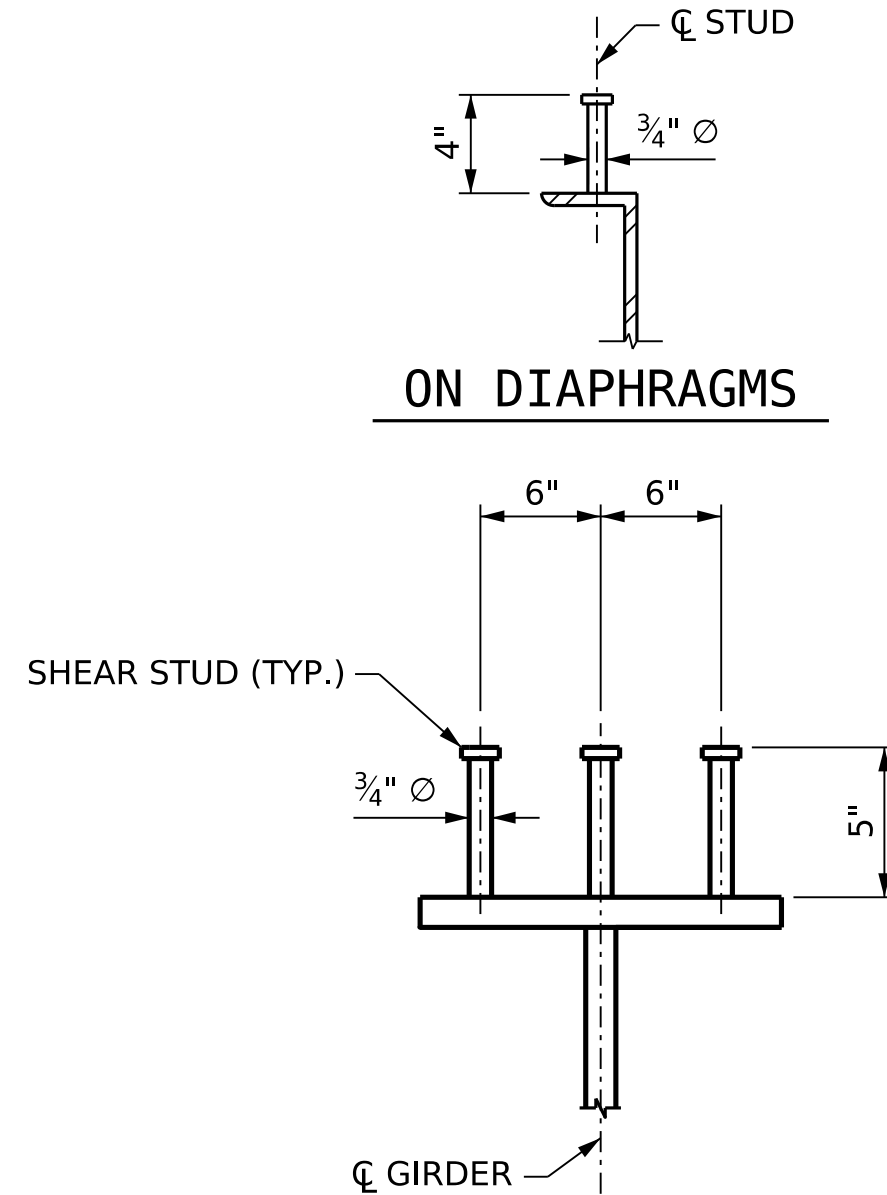


INTERMEDIATE STIFFENER NEAR BENT 1

⊗ TIGHT FIT TO FLANGE WHERE
CHARPY V-NOTCH TESTING
ON FLANGE IS REQUIRED.

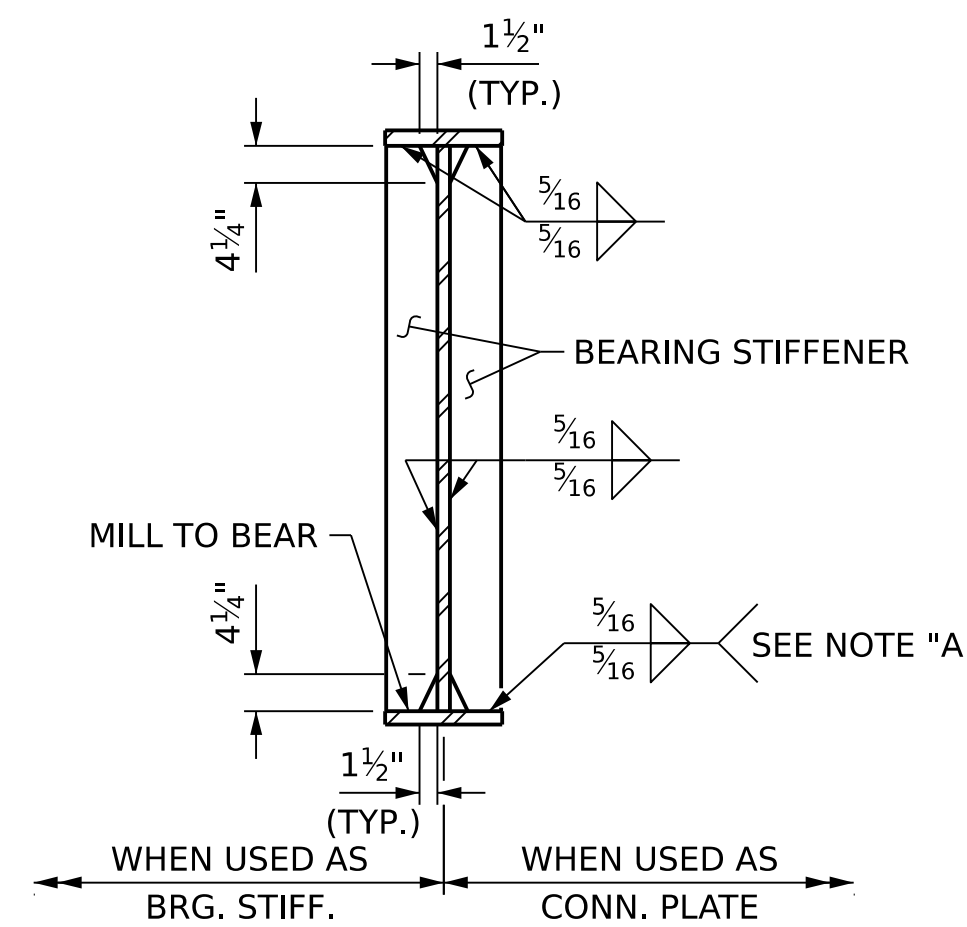


CONNECTOR PLATE WELD DETAIL



SHEAR STUD DETAILS

STUDS ON GIRDERS MAY BE SHIFTED SLIGHTLY, IF
NECESSARY, TO CLEAR FLANGE SPLICE WELD.



BEARING STIFFENER

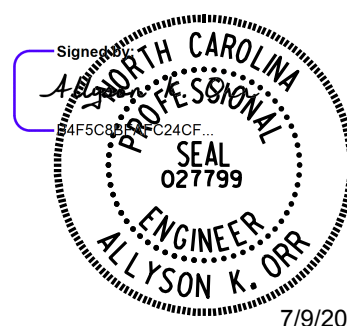
NOTE A:
ONLY WELD BEARING STIFFENER TO BOTTOM FLANGE IF CROSS FRAME
IS ATTACHED TO BEARING STIFFENER.

BEARING STIFFENER MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE.

INCREASE BEARING STIFFENER WIDTH AS REQUIRED WHEN USED AS A
CONNECTOR PLATE. INCREASE BEARING STIFFENER THICKNESS AS REQUIRED
TO MAINTAIN WIDTH TO THICKNESS RATIO NO LARGER THAN 10.5.

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-

SHEET 2 OF 4



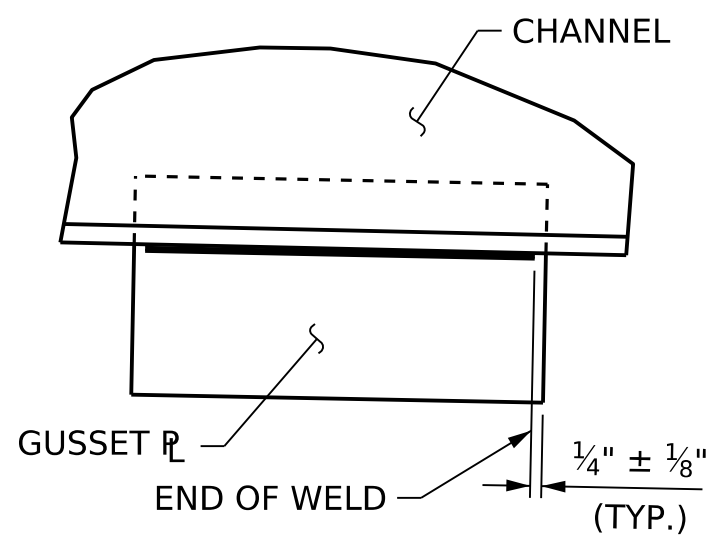
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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

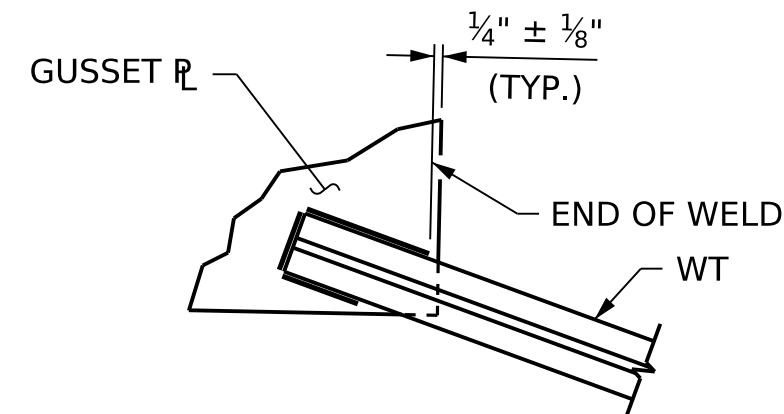
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
STRUCTURAL
STEEL DETAILS

REVISIONS						SHEET NO. S05-14 TOTAL SHEETS 45
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

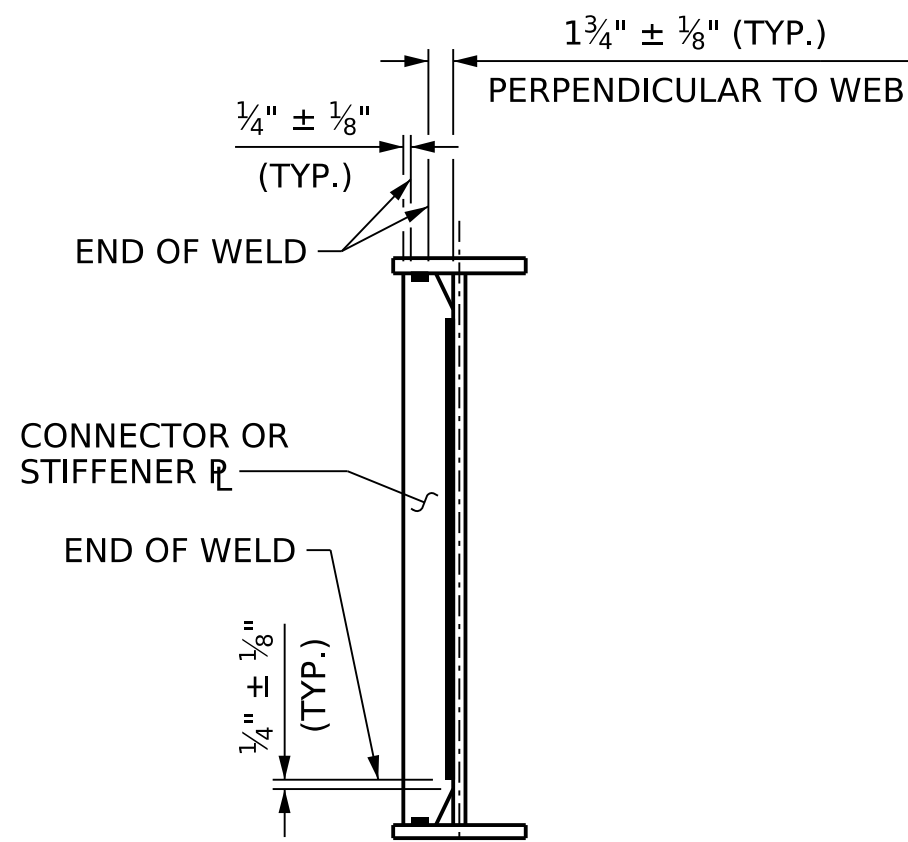
DRAWN BY:	B.E. LANNING	DATE:	01/2024
CHECKED BY:	A.K. ORR	DATE:	01/2024
DESIGN ENGINEER OF RECORD:	A.K. ORR	DATE:	12/2025



TYPICAL GUSSET PLATE CONNECTION



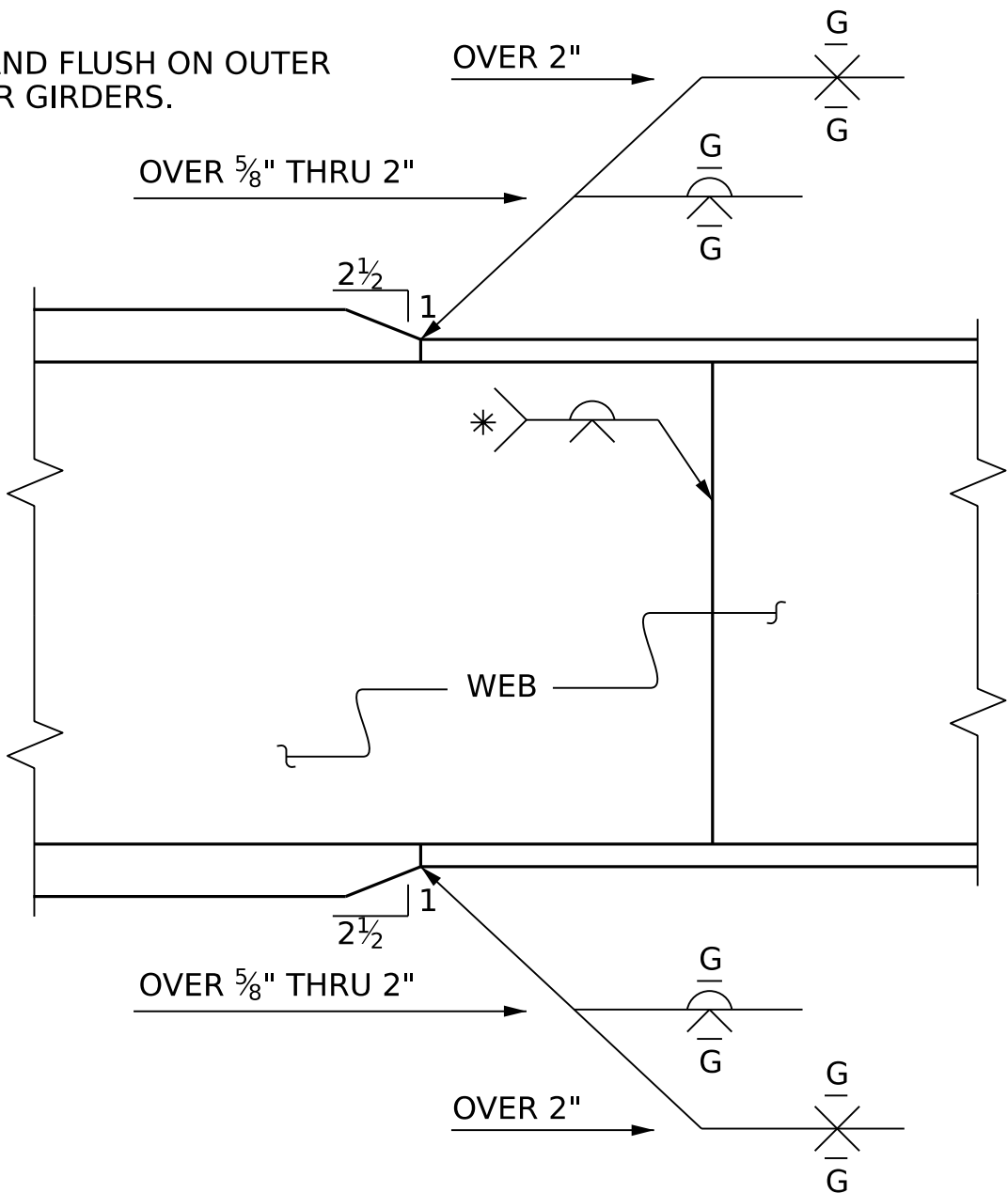
TYPICAL "TEE" TO GUSSET PLATE CONNECTION



TYPICAL STIFFENER OR CONNECTOR PLATE CONNECTIONS

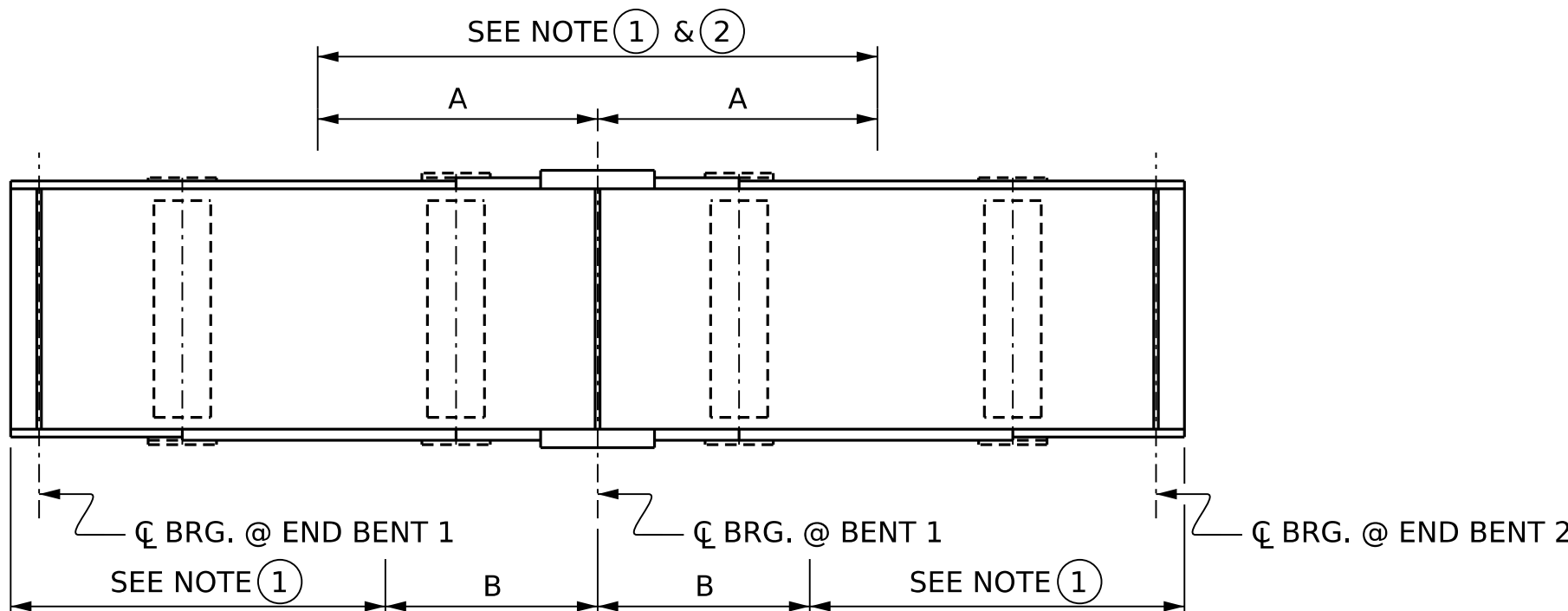
WELD TERMINATION DETAILS

* GRIND SMOOTH AND FLUSH ON OUTER FACE OF EXTERIOR GIRDERS.



ELEVATION

TYPICAL FLANGE AND WEB BUTT JOINT



CHARPY V-NOTCH TESTS FOR GIRDERS

NOTE ①: CHARPY V-NOTCH TESTS ARE REQUIRED FOR ALL TOP OR BOTTOM FLANGE PLATES WHICH FALL WITHIN THESE LIMITS, ALL WEB PLATES AND ALL SPLICE PLATES. IF A PERMITTED SHOP FLANGE SPLICE IS NOT USED, CHARPY V-NOTCH TESTS WILL BE REQUIRED FOR THE ENTIRE FLANGE PLATE. FOR CHARPY V-NOTCH TESTS, SEE ARTICLE 1072-9 OF THE STANDARD SPECIFICATIONS.

NOTE ②: NO WELDING OF FORMS OR FALSEWORK TO THE TOP FLANGE WILL BE PERMITTED IN THIS REGION.

CHARPY V-NOTCH TESTS DIMENSIONS		
GIRDER	A	B
1	97'-0"	51'-0"
2	90'-11"	53'-0"
3	91'-1"	53'-2"
4	100'-11"	51'-11"

STRUCTURAL STEEL NOTES:

ALL STRUCTURAL STEEL SHALL BE AASHTO M270 GRADE 50W AND PAINTED IN ACCORDANCE WITH SYSTEM 5 OR SYSTEM 6 OF THE STRUCTURAL STEEL SHOP COATINGS PROGRAM AND SECTION 442-8 OF THE STANDARD SPECIFICATIONS, UNLESS OTHERWISE NOTED ON THE PLANS.

ALL DIMENSIONS SHOWN ARE HORIZONTAL OR VERTICAL, UNLESS OTHERWISE NOTED.

ALL FIELD CONNECTIONS TO BE 7/8" DIA. HIGH STRENGTH BOLTS, UNLESS OTHERWISE NOTED.

BEARING STIFFENERS ARE TO BE PLACED NORMAL TO THE WEB OF THE GIRDER AND SHALL BE PLUMB.

PERMITTED FLANGE AND WEB SHOP SPLICES SHALL NOT BE LOCATED WITHIN 15 FEET OF MAXIMUM DEAD LOAD DEFLECTION (NOR WITHIN 15 FEET OF INTERMEDIATE BEARINGS OF CONTINUOUS UNITS). KEEP 2 FEET MINIMUM BETWEEN WEB AND FLANGE SHOP SPLICES. KEEP 6" MINIMUM BETWEEN CONNECTOR PLATE OR TRANSVERSE STIFFENER WELDS AND WEB OR FLANGE SHOP SPLICES.

STUDS ON GIRDERS MAY BE SHIFTED UP TO 1" IF NECESSARY TO CLEAR FLANGE SPLICE WELD.

TENSION ON THE ASTM A325 BOLTS SHALL BE CALIBRATED USING DIRECT TENSION INDICATOR WASHERS IN ACCORDANCE WITH ARTICLE 440-8 OF THE STANDARD SPECIFICATIONS.

ENDS OF GIRDERS SHALL BE PLUMB.

STRUCTURAL STEEL ERECTION IN A CONTINUOUS UNIT SHALL BE COMPLETE BEFORE FALSEWORK OR FORMS ARE PLACED ON THE UNIT.

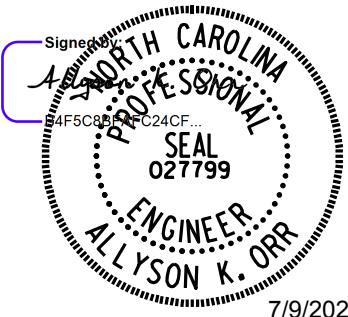
AT THE CONTRACTOR'S OPTION, THE CROSS FRAME WITH THE WELDED GUSSET PLATES MAY BE USED IN LIEU OF THE CROSS FRAME WITH BOLTED TEES AT NO ADDITIONAL COST TO THE DEPARTMENT.

FABRICATORS SHALL DETAIL DIAPHRAGM MEMBERS AND CONNECTIONS FOR NO-LOAD FIT UP.

BEARING STIFFENER MAY REQUIRE COPING IF WIDER THAN BOTTOM FLANGE.

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-

SHEET 3 OF 4



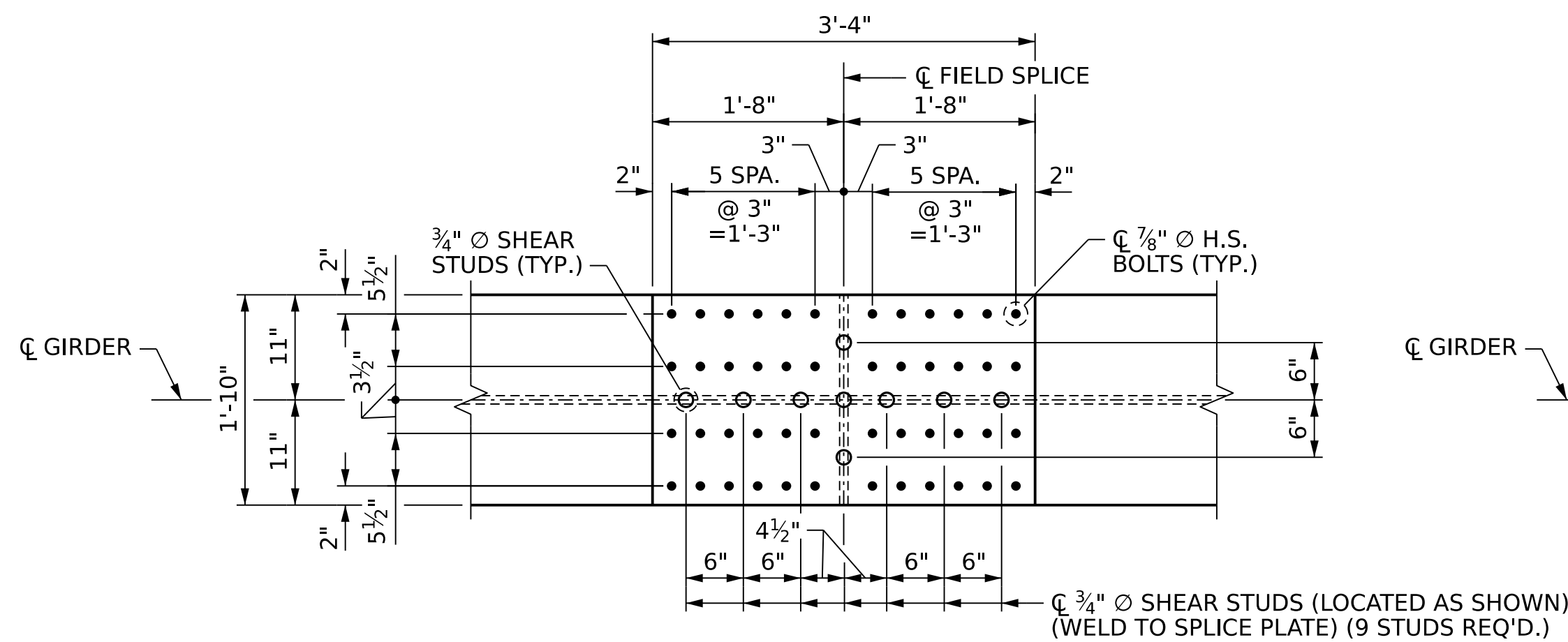
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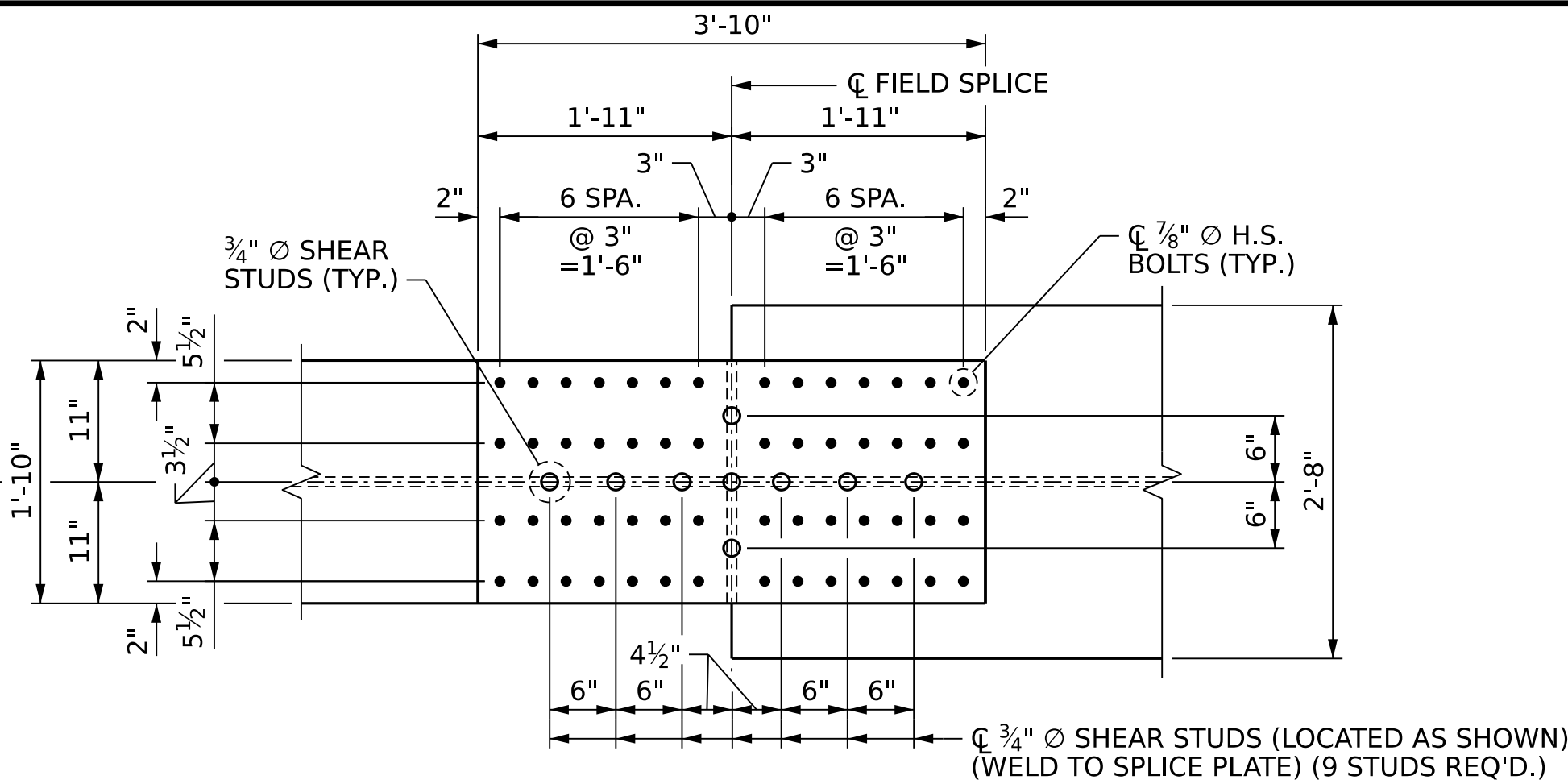
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S05-15
2			4			
TOTAL SHEETS						45

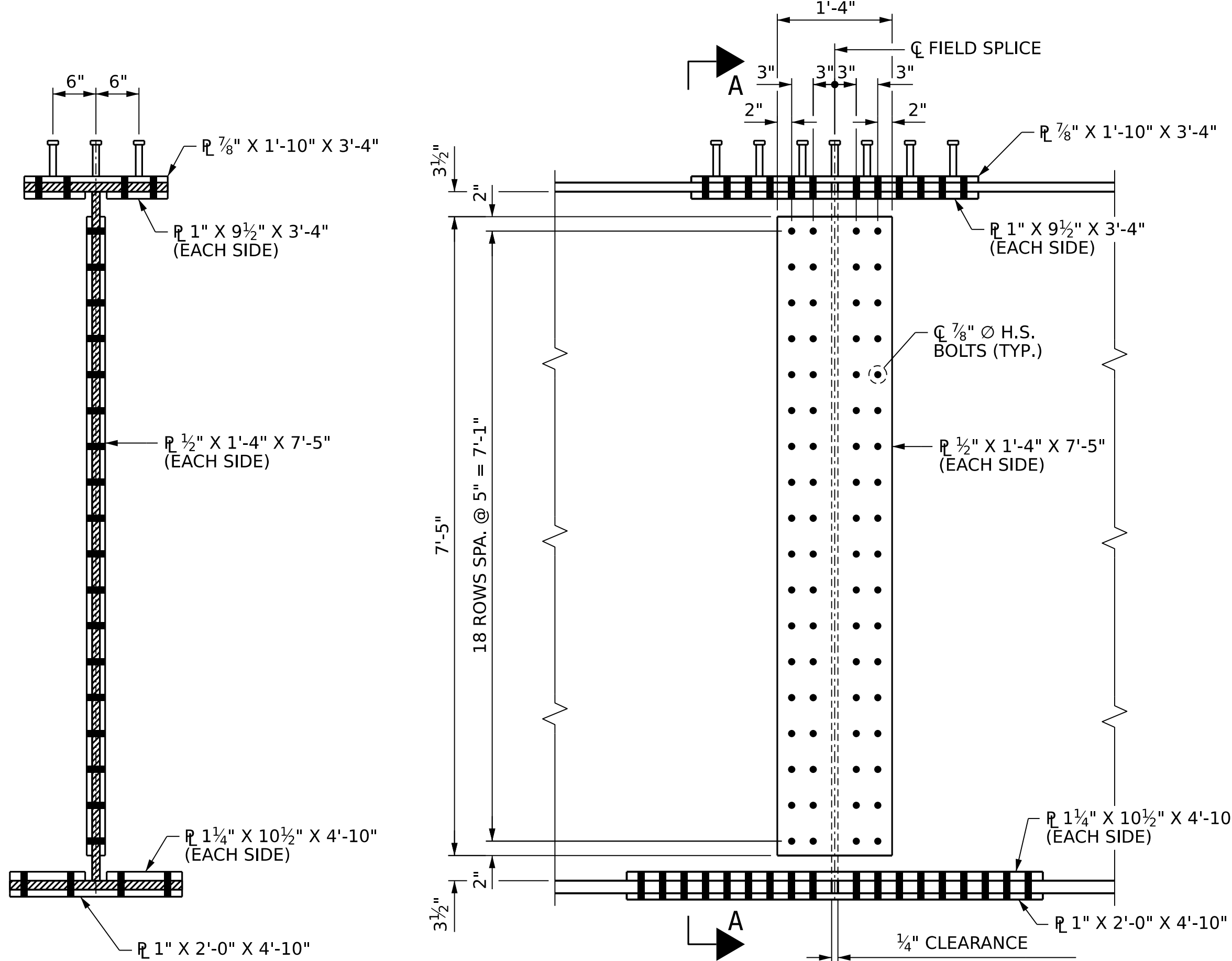
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CHECKED BY :	A.K. ORR	DATE :	01/2024
DESIGN ENGINEER OF RECORD :	A.K. ORR	DATE :	12/2025



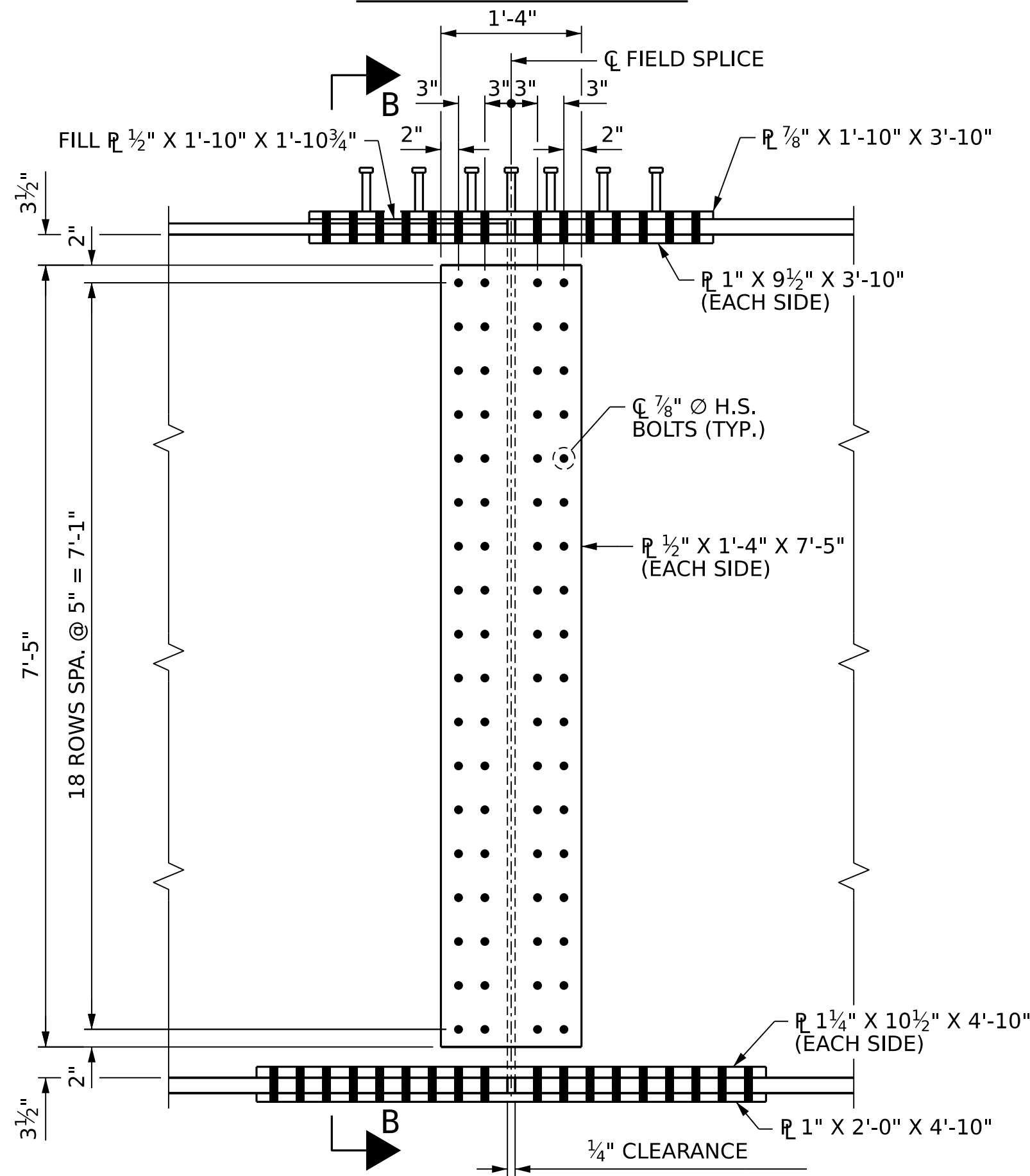
TOP FLANGE PLAN



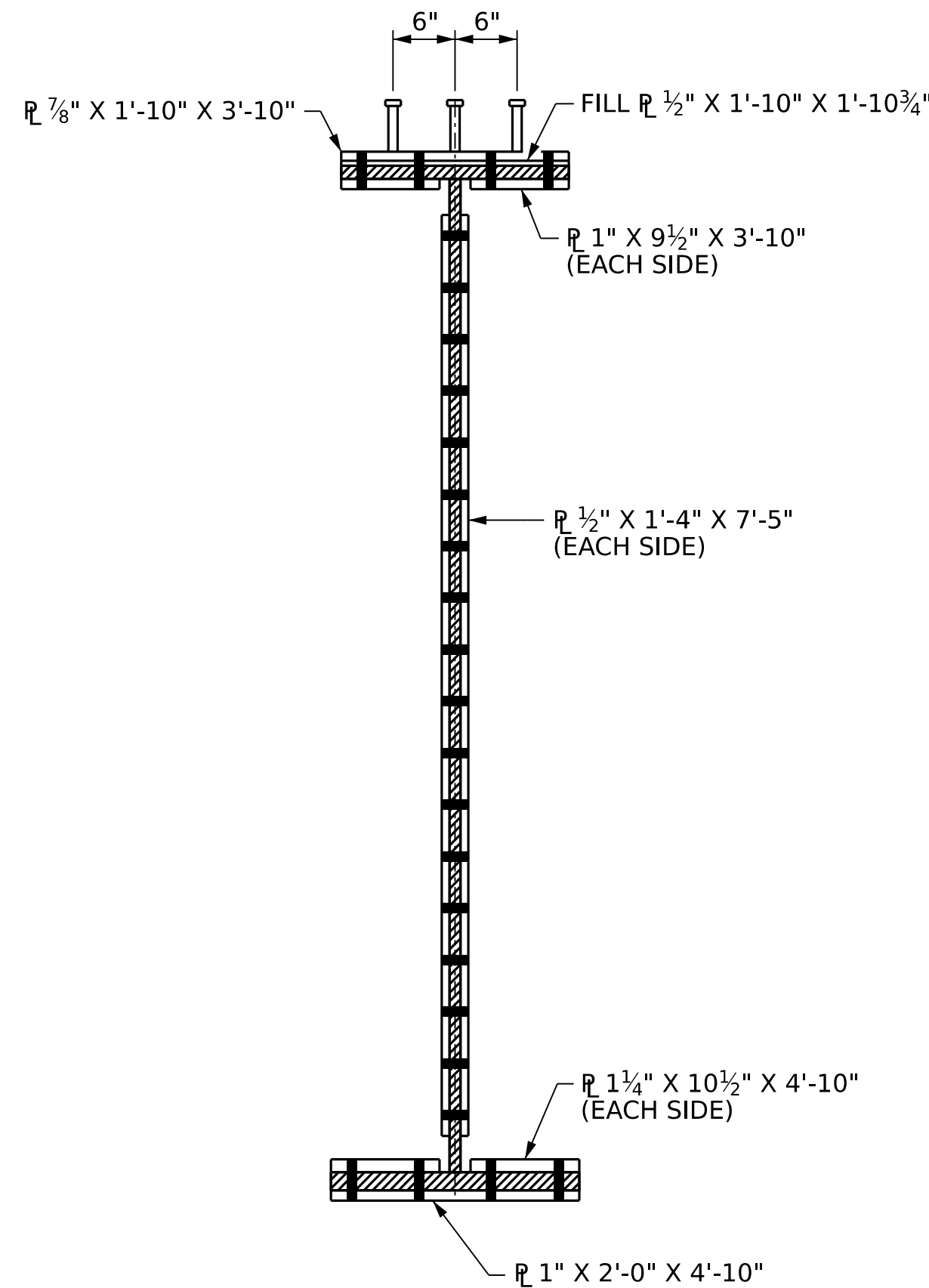
TOP FLANGE PLAN



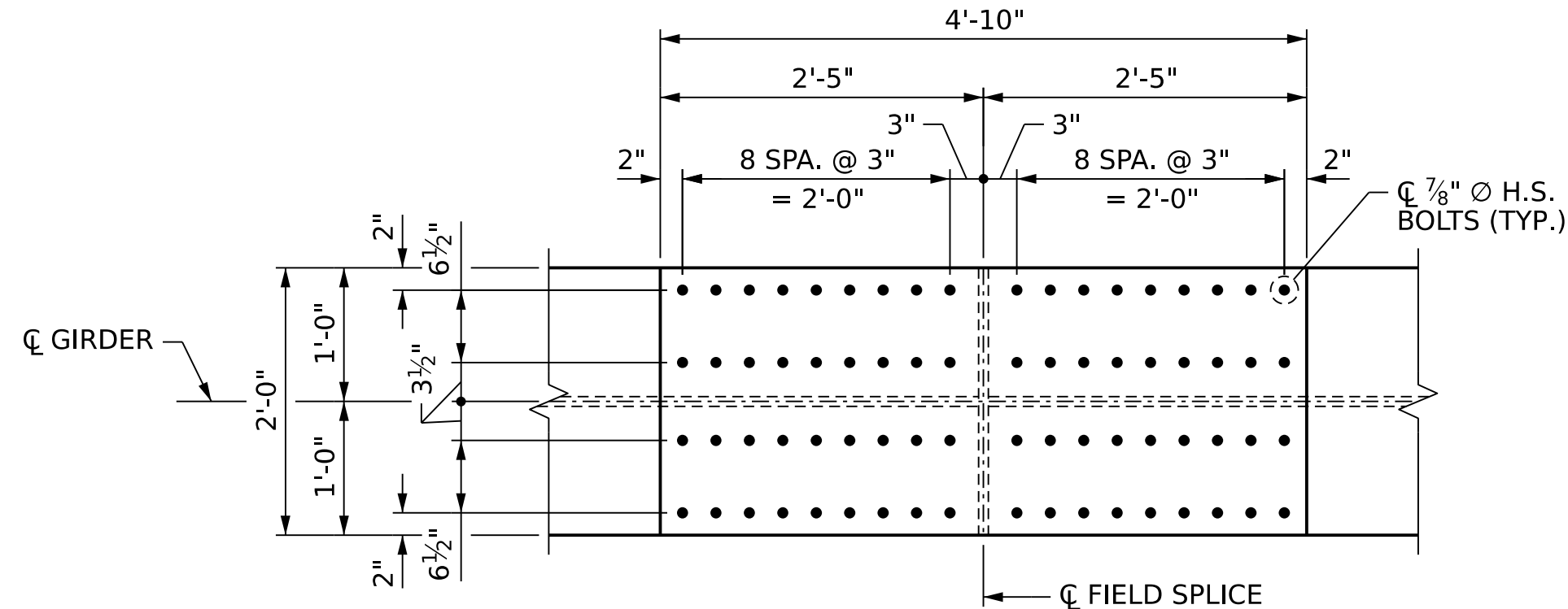
ELEVATION



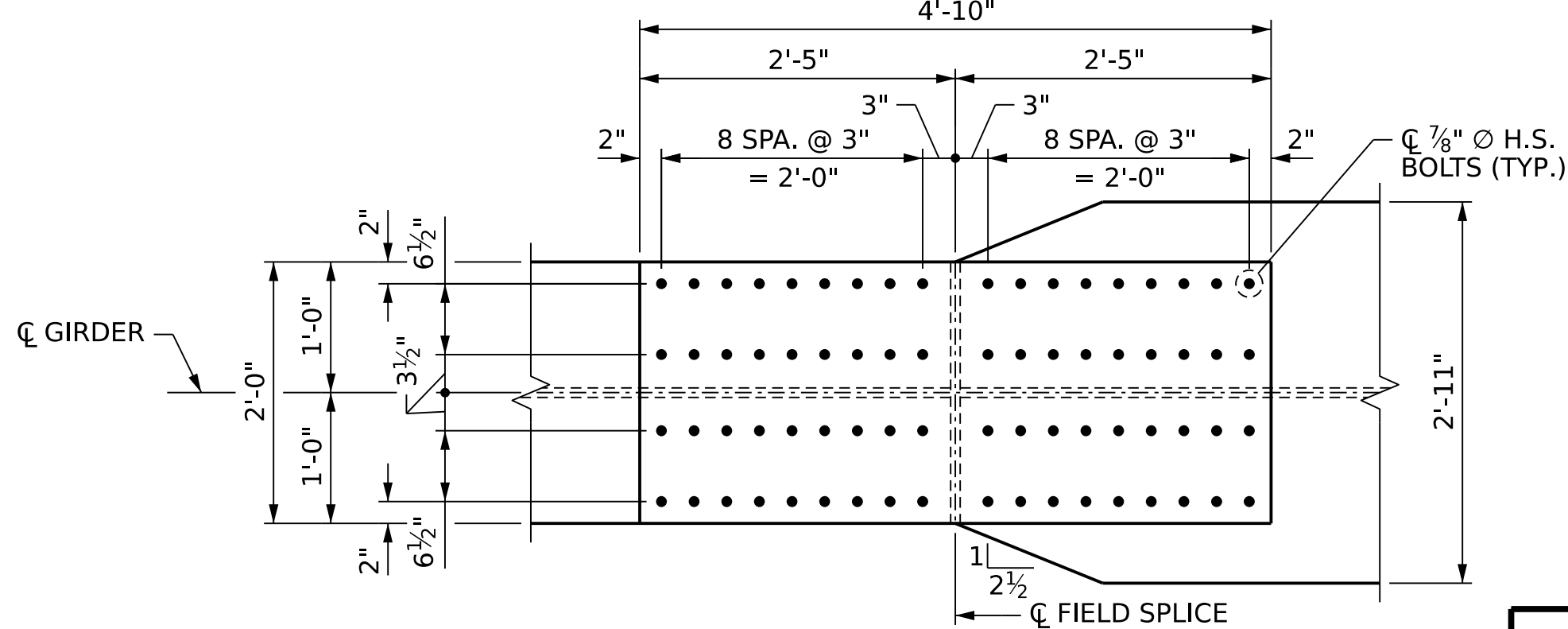
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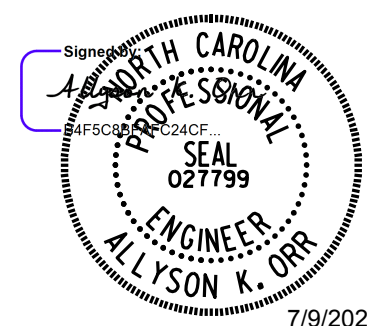
SECTION B-B



BOTTOM FLANGE PLAN
BOLTED FIELD
SPLICE DETAILS FS-1



BOTTOM FLANGE PLAN
BOLTED FIELD
SPLICE DETAILS FS-2



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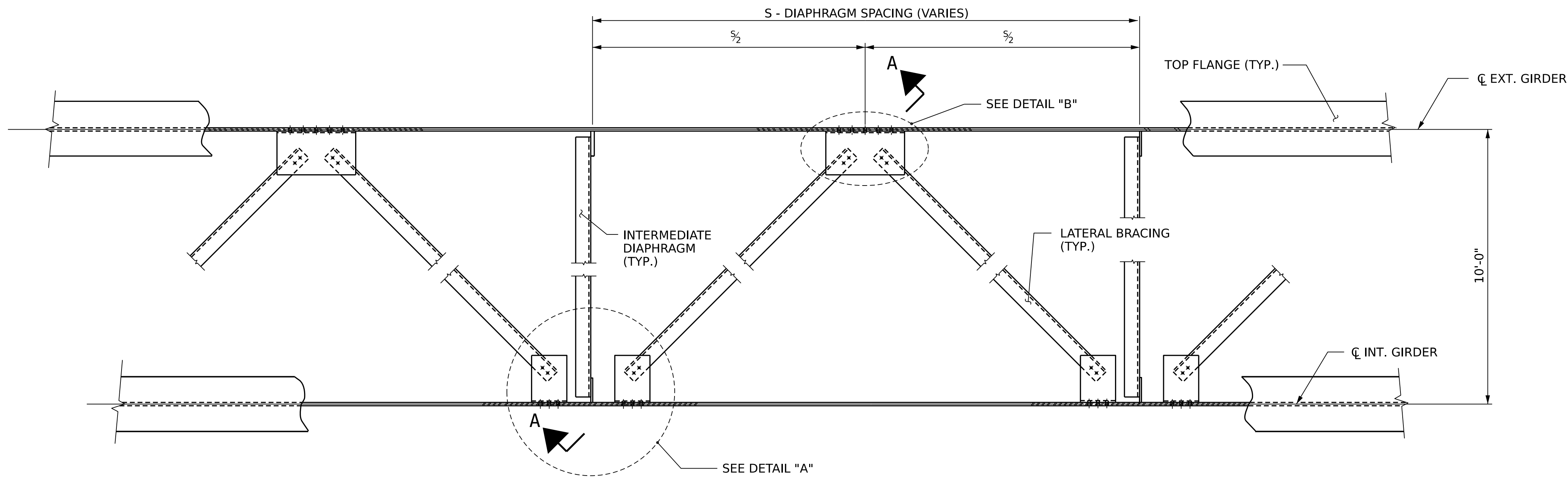
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-
SHEET 4 OF 4

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			
TOTAL SHEETS						45

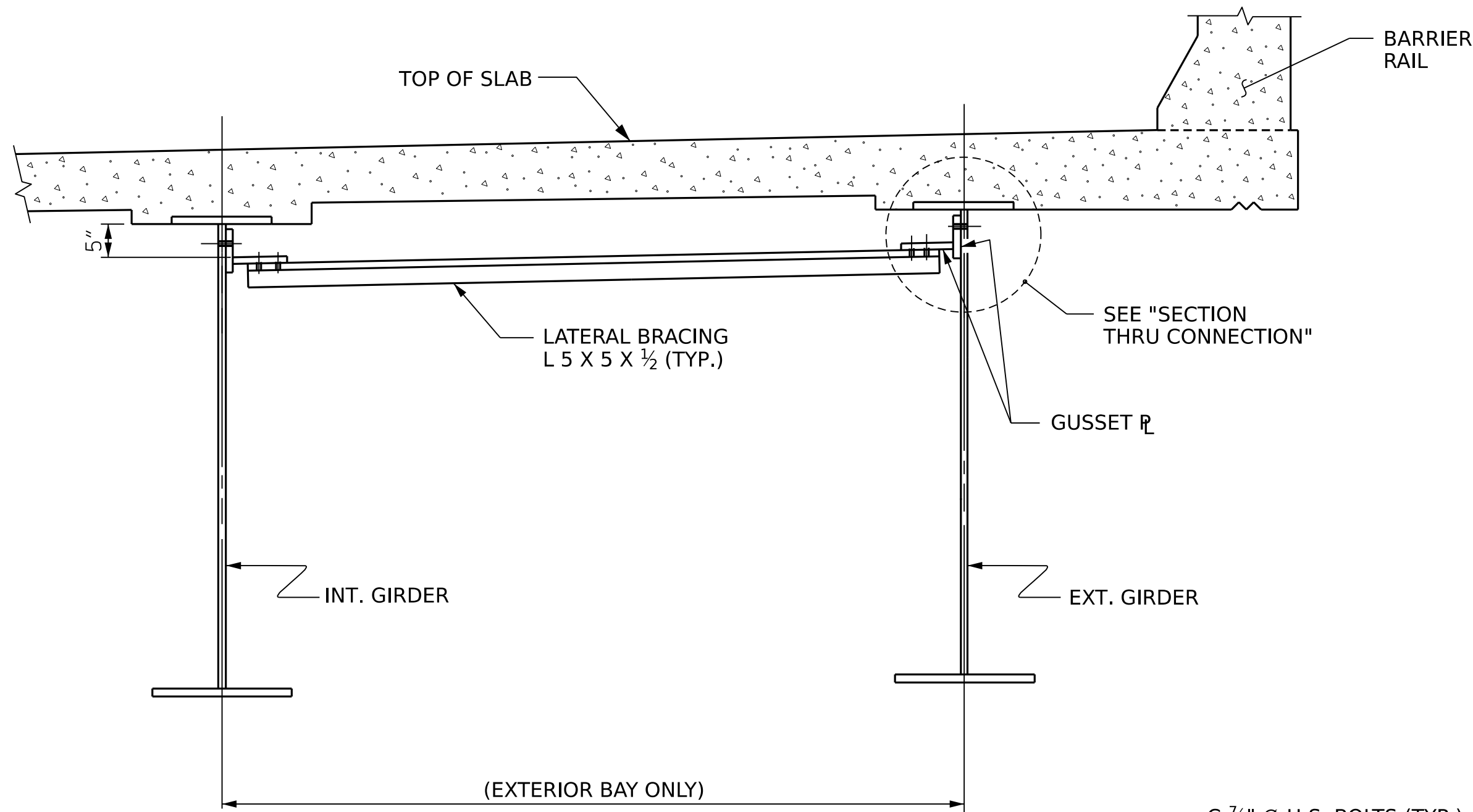
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CHECKED BY: A.K. ORR DATE: 01/2024
DESIGN ENGINEER OF RECORD: A.K. ORR DATE: 12/2025

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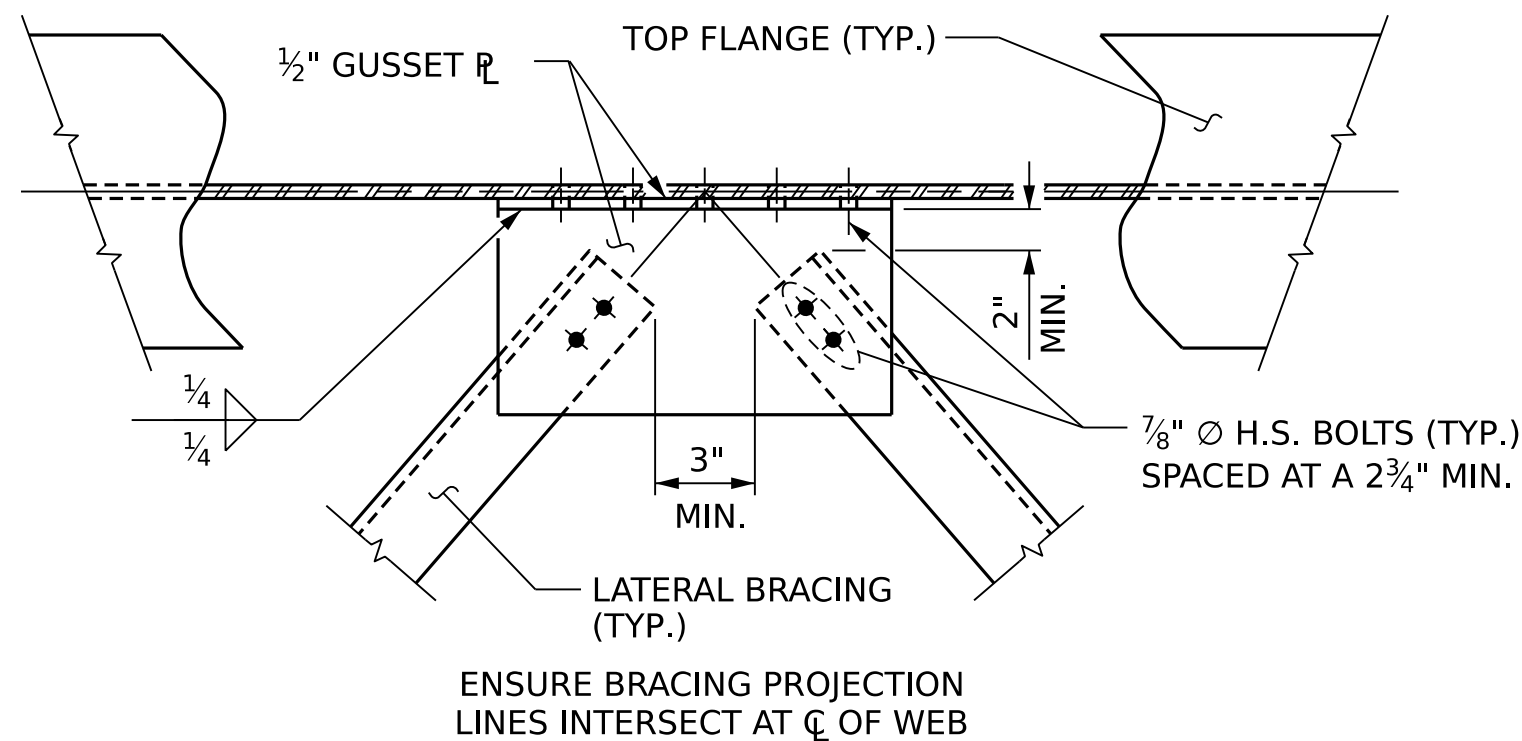


PART PLAN - NEAR TOP FLANGE LATERAL BRACING

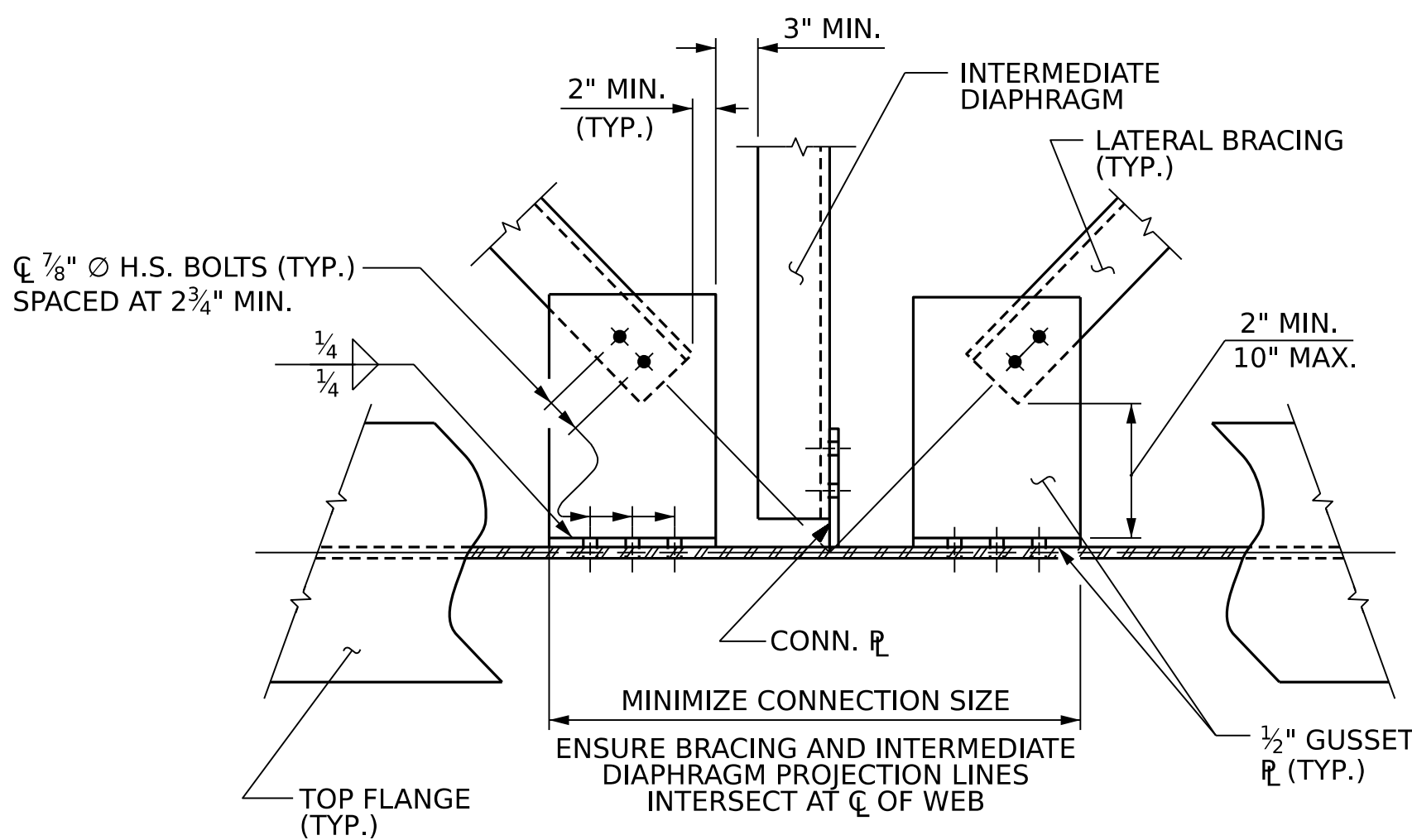
(THROUGHOUT EXTERIOR BAYS ONLY)



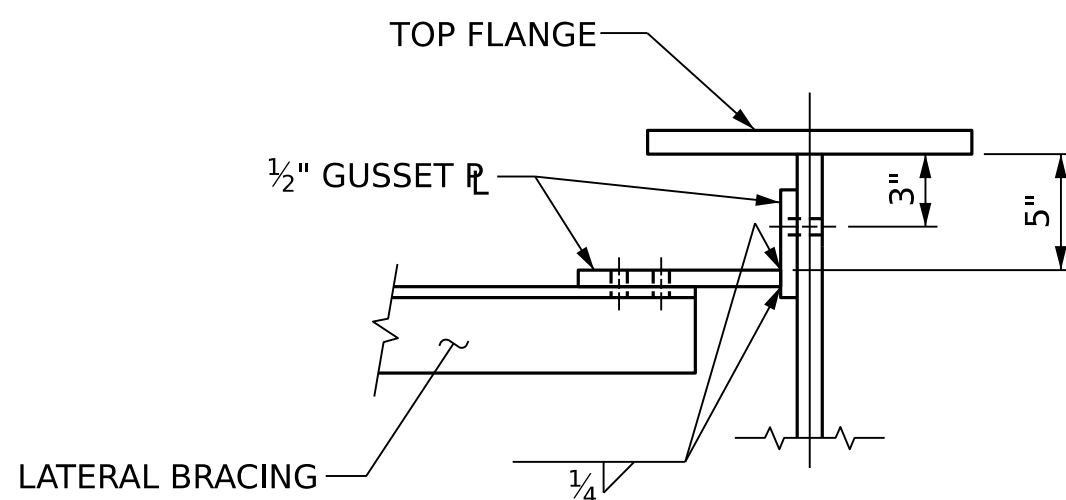
SECTION A-A



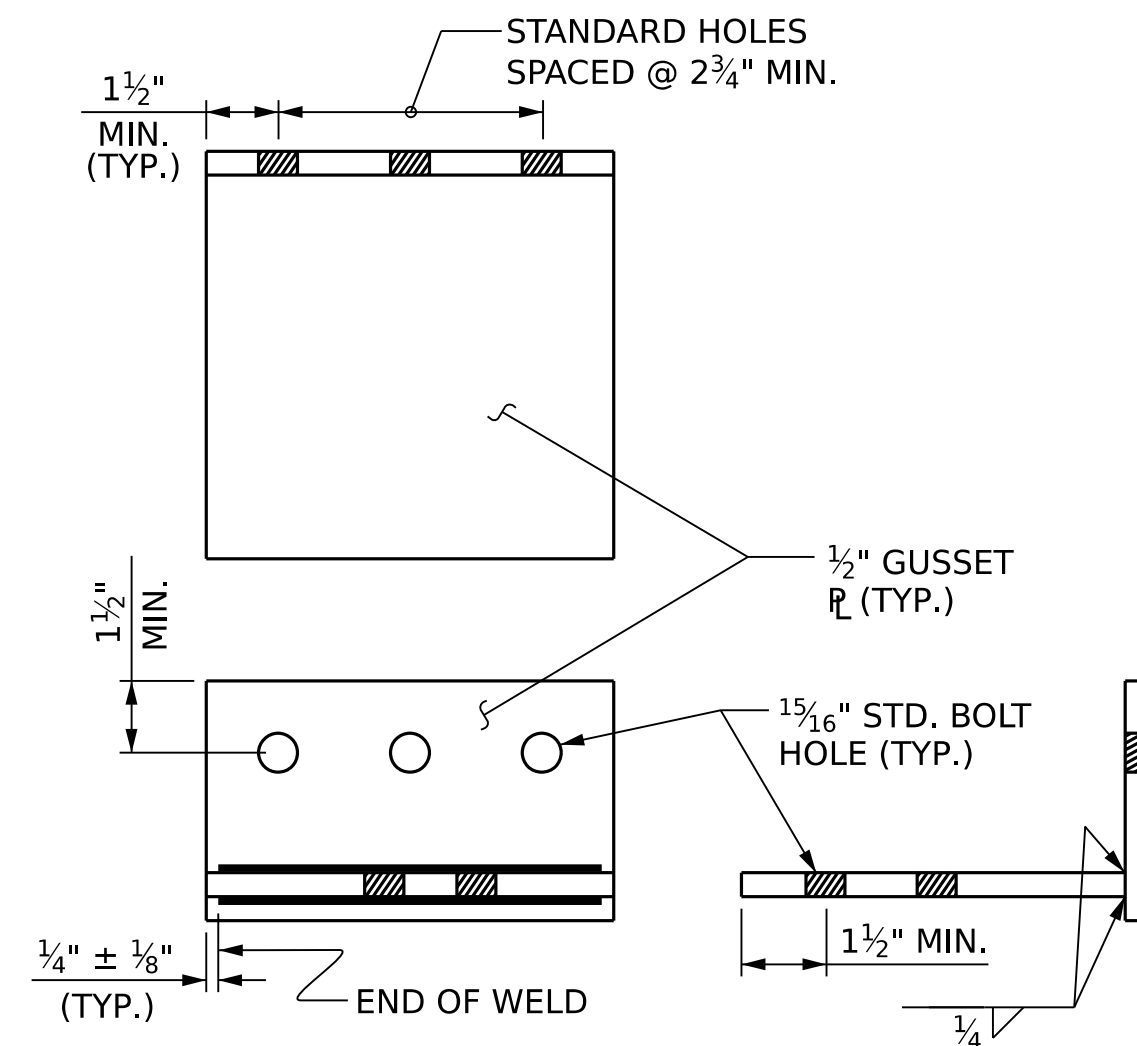
DETAIL "B"



DETAIL "A"

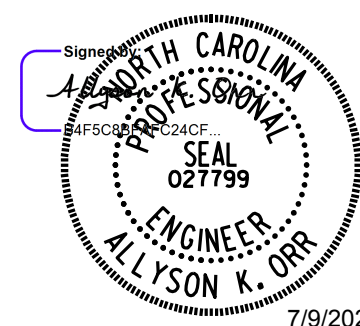


SECTION THRU CONNECTION

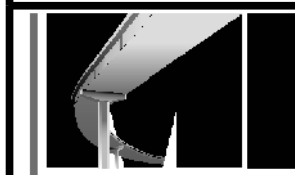


CONNECTION DETAIL

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-



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

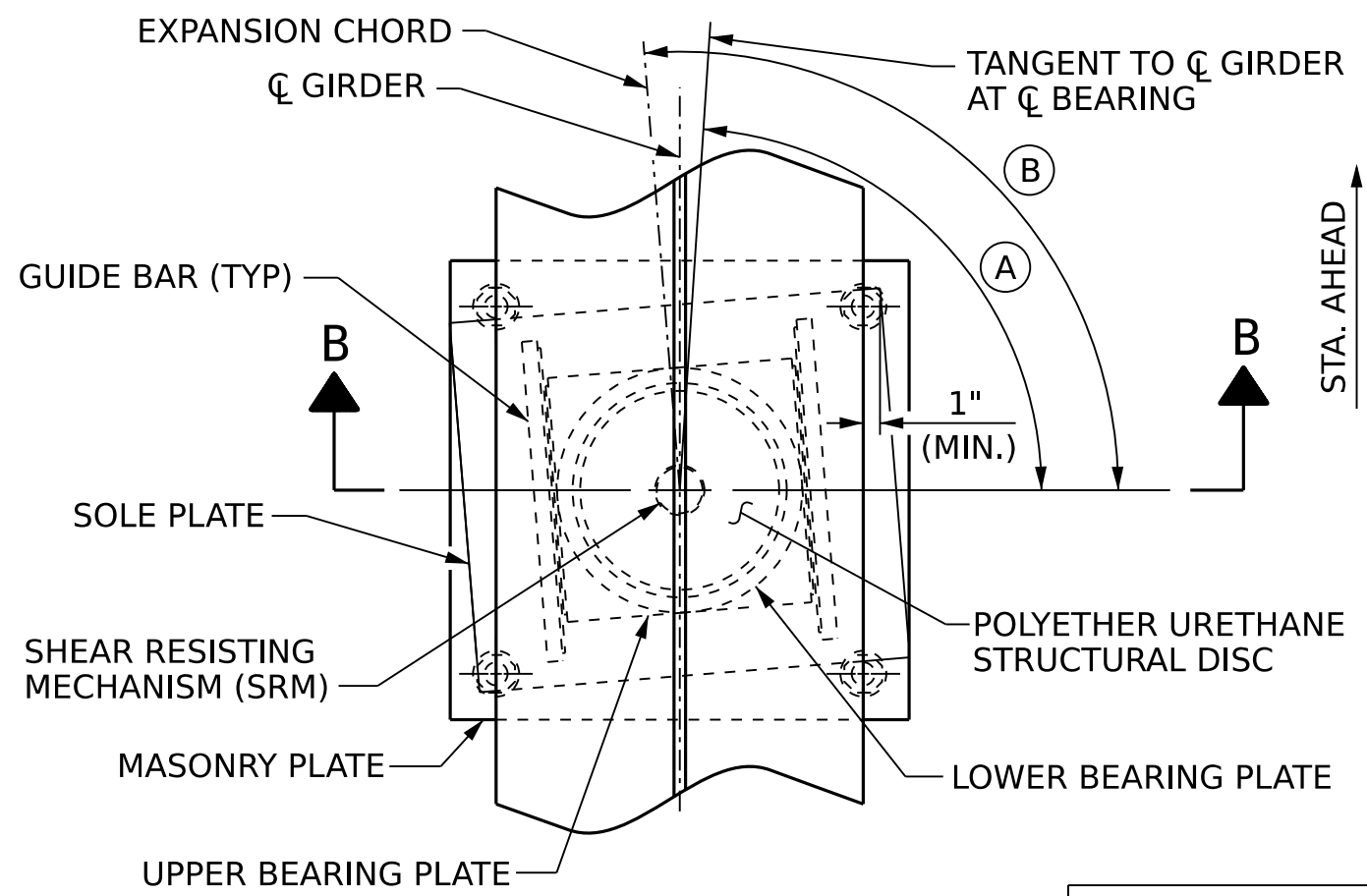
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD LATERAL BRACING

REVISIONS						SHEET NO. S05-17
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 45
2			4			

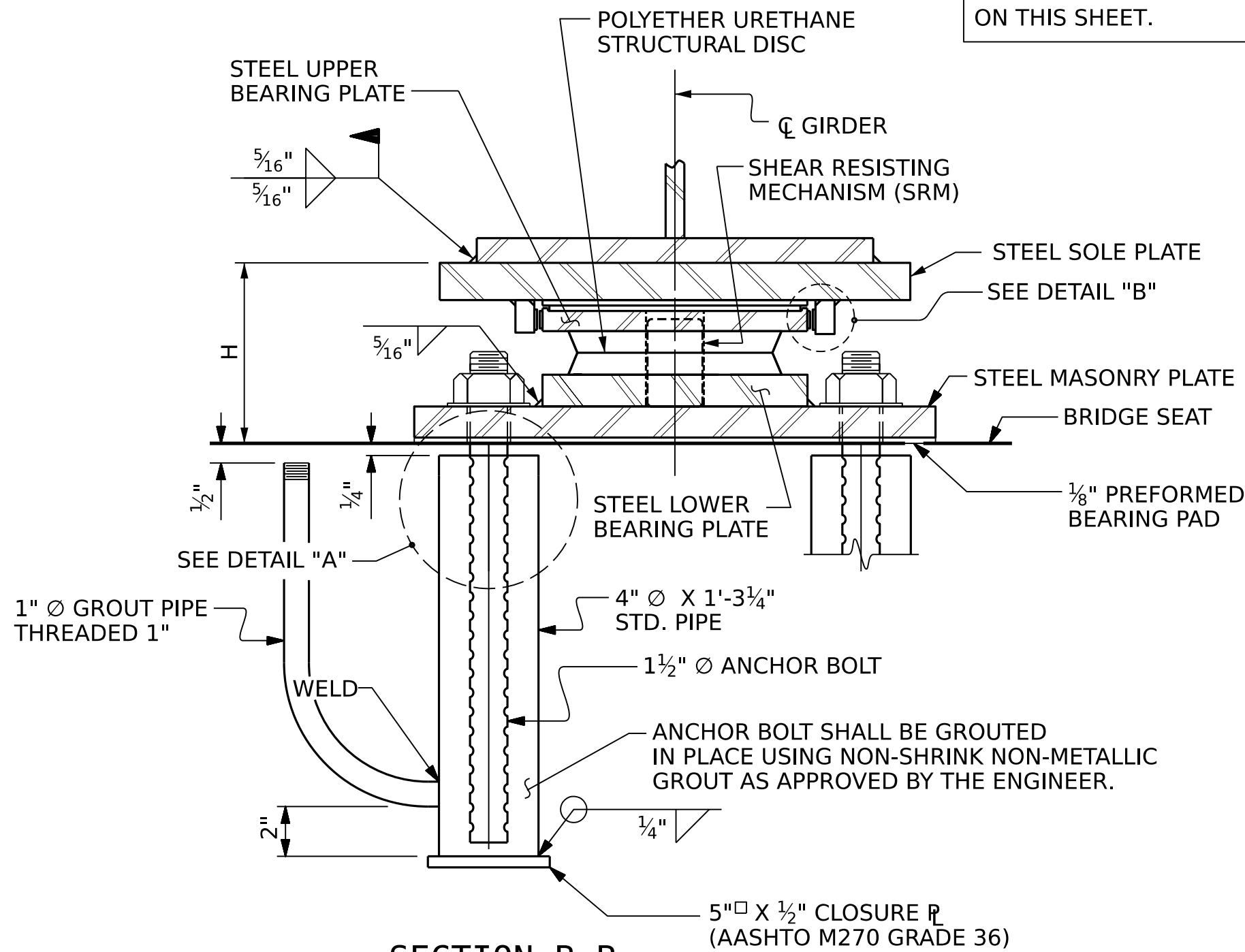
STD. NO. LB1

ASSEMBLED BY:	B.E. LANNING	DATE:	01/2024
CHECKED BY:	A.K. ORR	DATE:	01/2024
DESIGN ENGINEER OF RECORD:	A.K. ORR	DATE:	03/2024
DRAWN BY :	WMC 6/11	MAA/THC	
CHECKED BY :	GM 6/11		



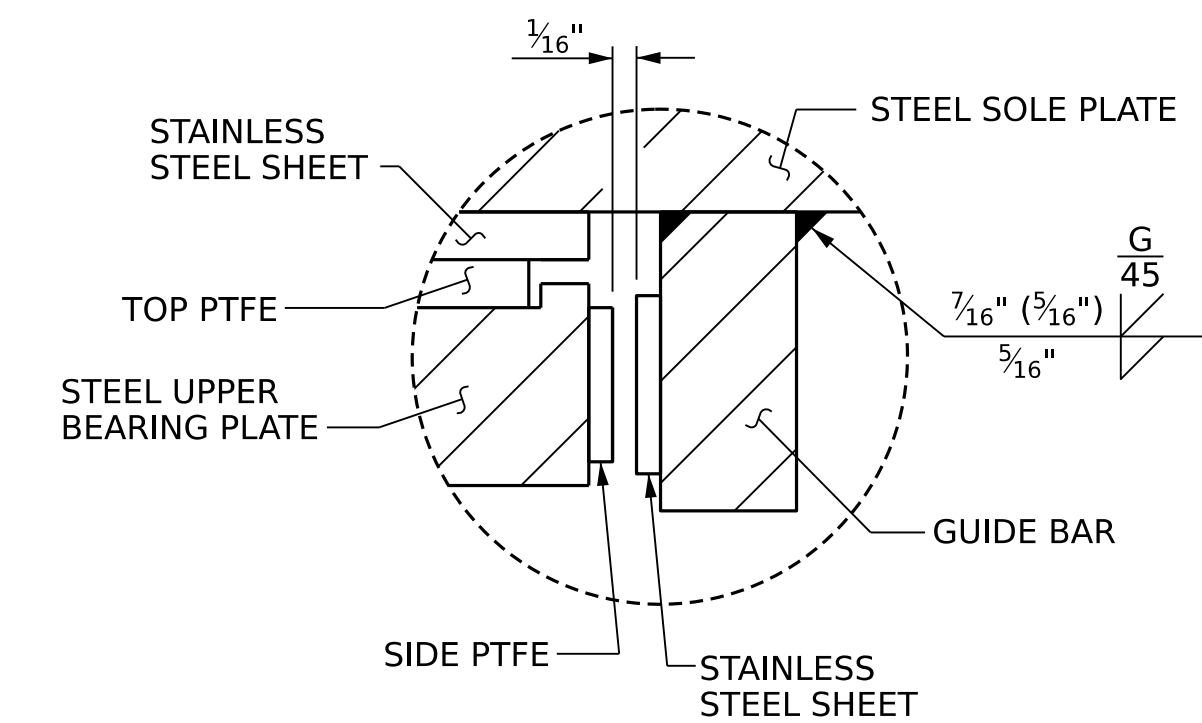
PLAN

FOR ANGLES (A) AND (B)
SEE TABLE AND SKETCHES
ON THIS SHEET.

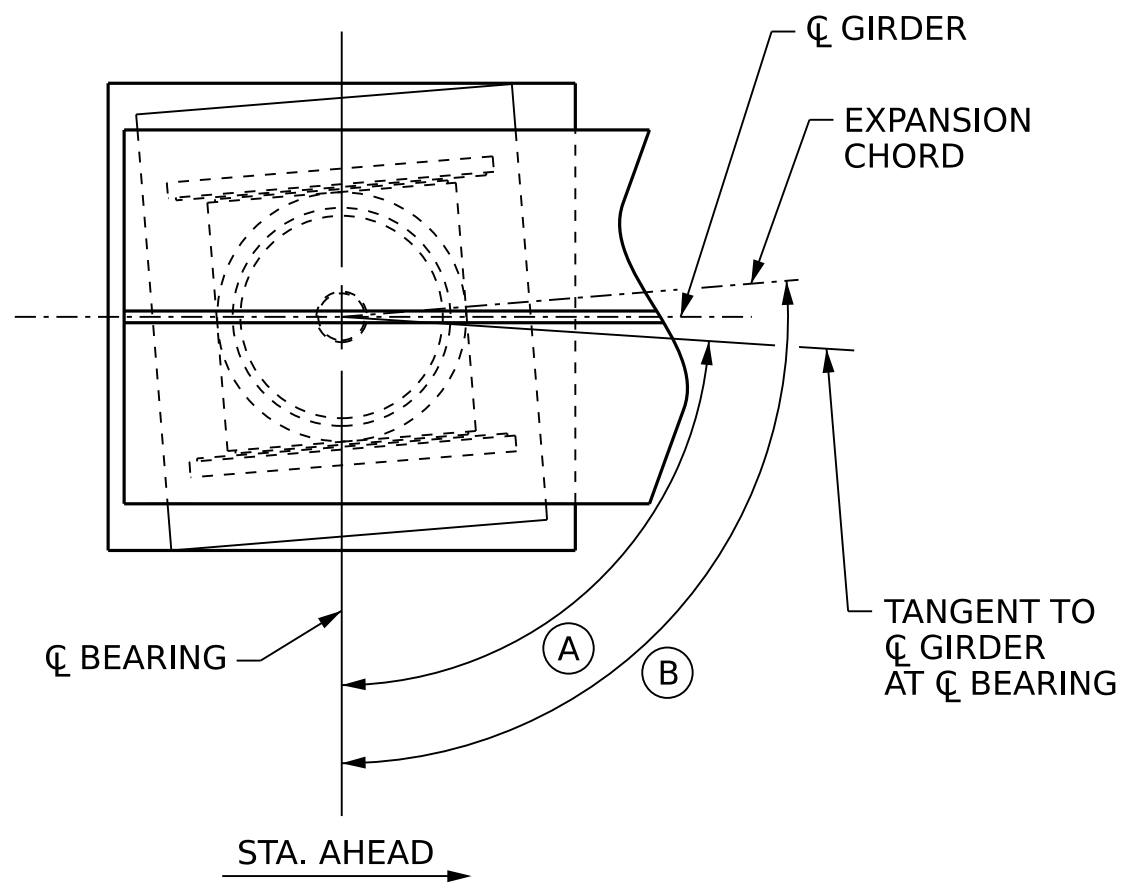


SECTION B-B
EXPANSION BEARING

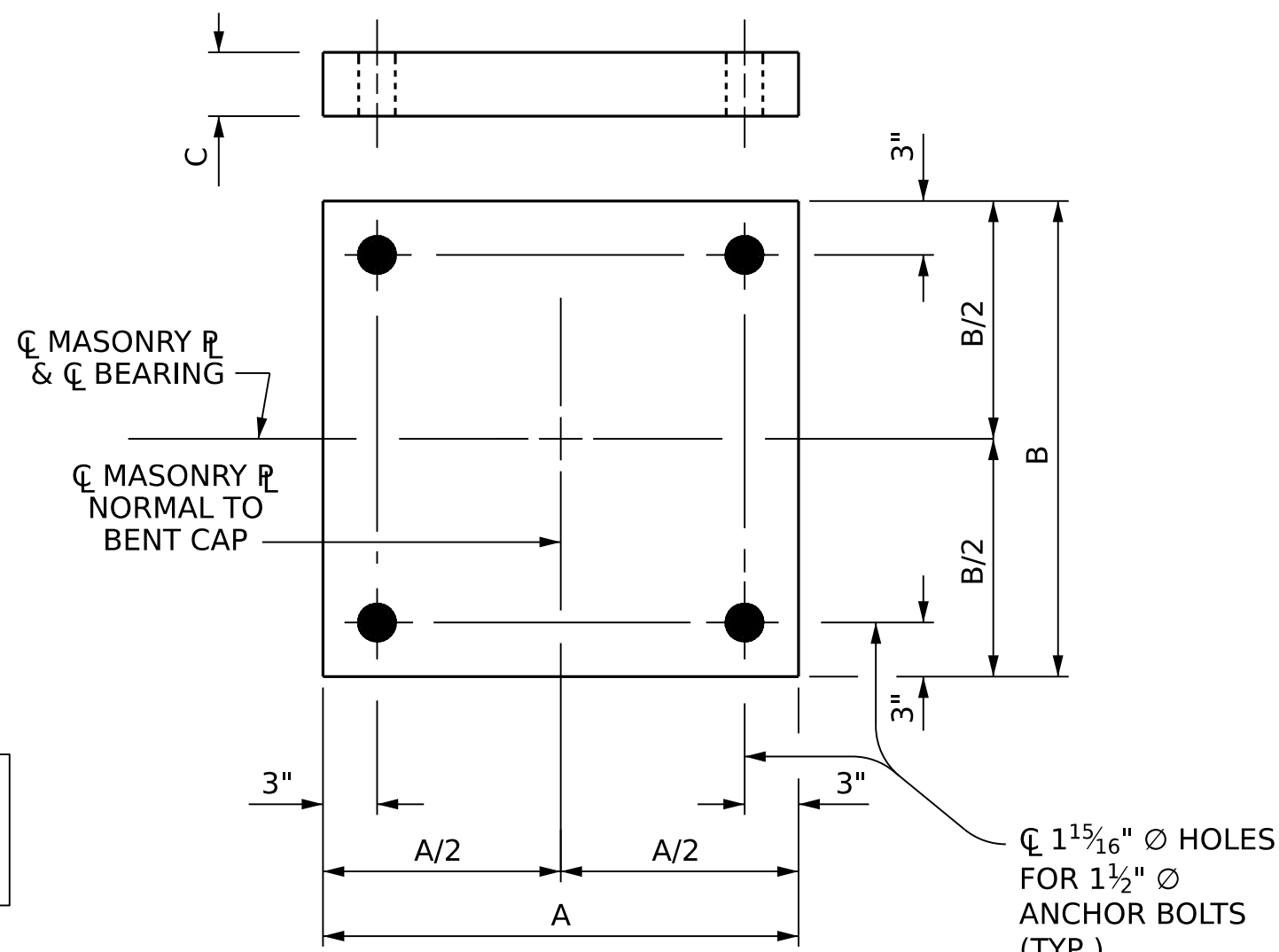
DB1 & DB3



DETAIL "B"

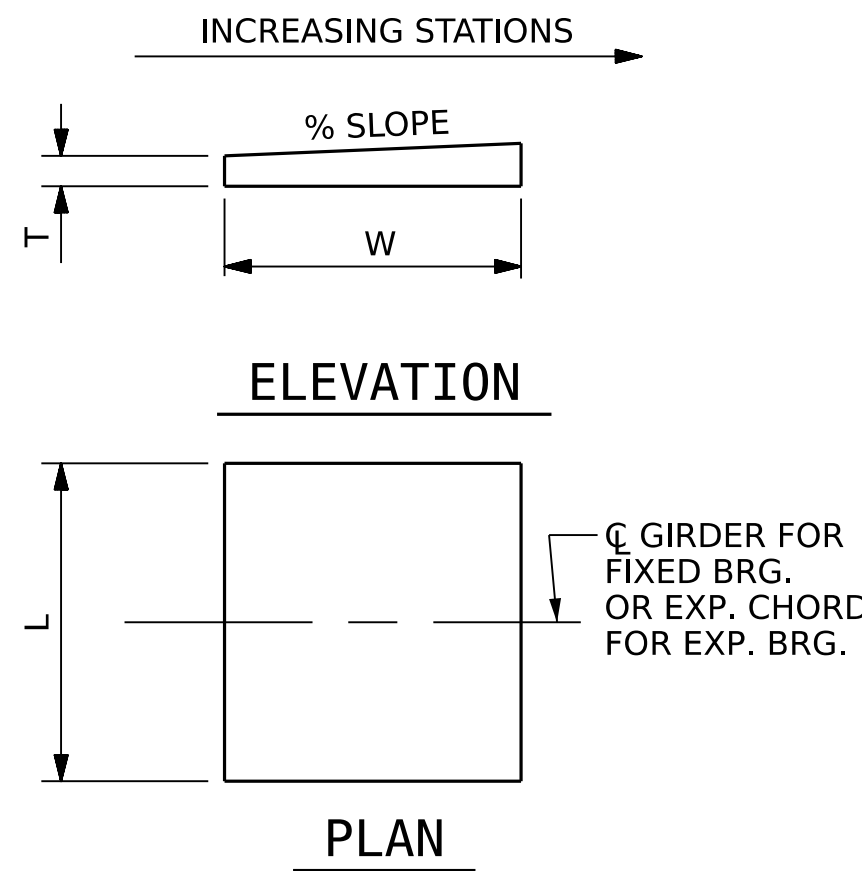


PLAN VIEW AT END BENT 1



PLAN
MASONRY PLATE DETAILS

M1 & M3

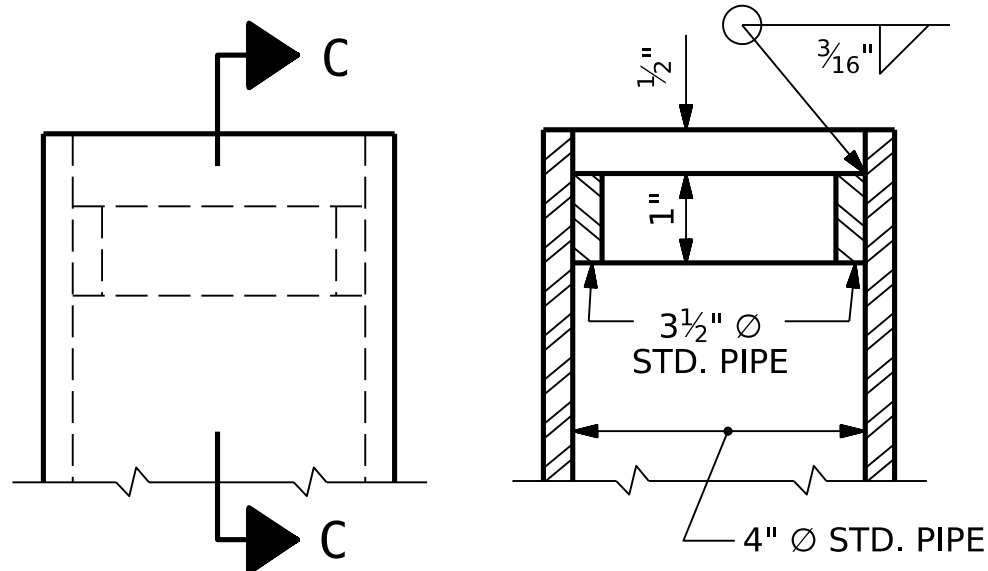


NOTE:
DIMENSIONS "L", "W", AND "T" SHALL BE DETERMINED
BY THE BEARING MANUFACTURER. SET DIMENSION "L"
SUCH THAT THE MINIMUM EDGE DISTANCE TO THE
GIRDER FLANGE IS 1".

SOLE PLATE DETAILS

P1 & P3

					DIMENSIONS					LOADS AND MOVEMENT				
LOCATION	DESIGNATIONS			NUMBER OF BEARINGS	BEARING	MASONRY PLATE			SOLE PLATE	UNFACTORED VERTICAL LOAD (KIPS)			FACTORED HORIZONTAL LOAD (KIPS)	ONE-WAY MOVEMENT (IN.)
	BEARINGS	MASONRY P	SOLE P		H (IN.)	A (IN.)	B (IN.)	C (IN.)	TOP SLOPE (%)	DEAD		LIVE		
					DC	DW	LL+LM							
END BENT 1	DB1	M1	P1	4	6	27	27	¾	1.110	175	25	135	70	1¾
END BENT 2	DB3	M3	P3	4	6½	27	27	¾	4.848	175	25	135	70	1¾



SECTION C-C

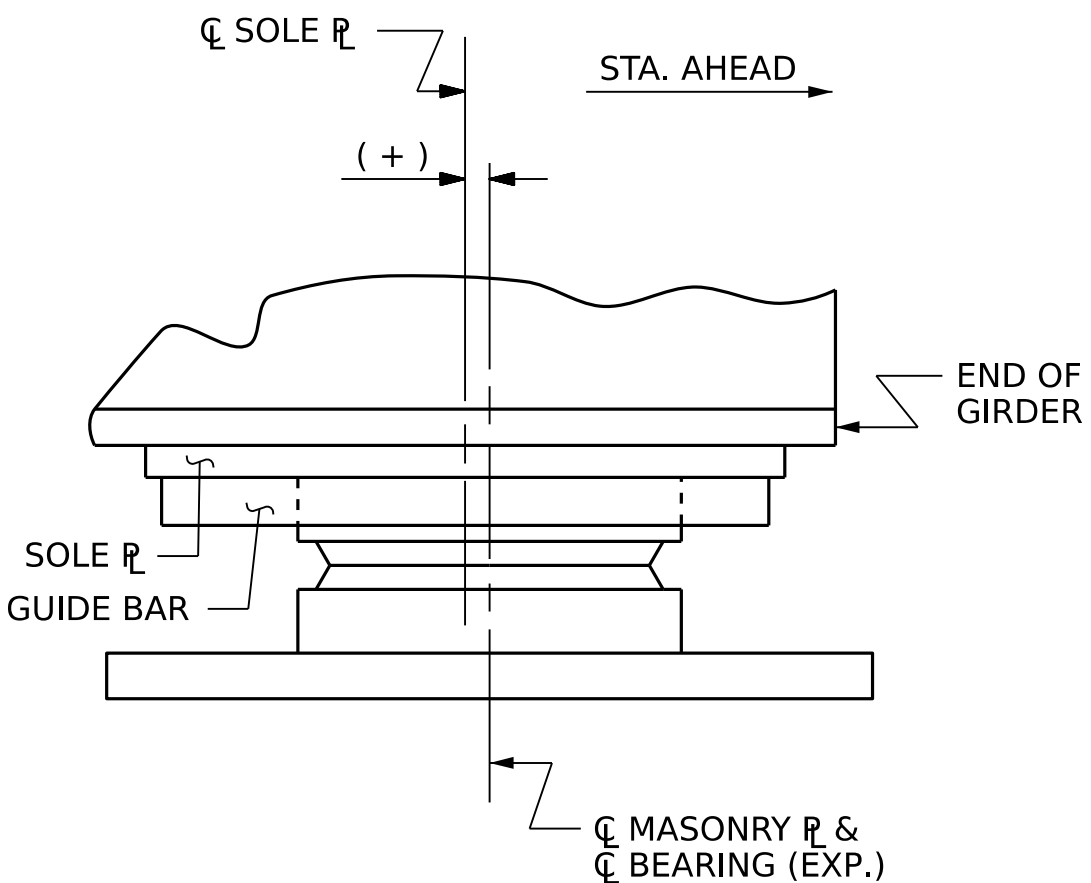
DETAIL "A"

PLATE SETTING DATA (EXPANSION DISC BEARINGS)				
LOCATION	TEMPERATURE AT TIME OF SETTING			*
	45° F	60° F	90° F	
END BENT 1	-1/4"	0"	9/16"	-7/16"
END BENT 2	1/4"	0"	-3/16"	7/16"

* CORRECTION FOR END ROTATION DUE TO WEIGHT OF SLAB AND
COMPOSITE DEAD LOAD.

TEMPERATURE SETTING DETAIL

TABLE OF ANGLES		
VALUES FOR GIRDERS 1 - 4 ARE EQUAL		
ANGLE	LOCATION	
	END BENT 1	END BENT 2
(A)	90°-01'-43"	89°-58'-17"
(B)	91°-19'-56"	88°-40'-04"



NOTES

FOR DISC BEARINGS, SEE SPECIAL PROVISIONS.

ALL BEARING PLATES SHALL BE AASHTO M270 GRADE 50W OR GRADE 50.

AT ALL POINTS OF SUPPORT, NUTS FOR ANCHOR BOLTS SHALL BE
FINGER-TIGHTENED PLUS AN ADDITIONAL 1/4 TURN. THE THREAD OF THE
NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

WHEN WELDING THE SOLE PLATE TO THE GIRDER, USE TEMPERATURE
INDICATING WAX PENS, OR OTHER SUITABLE MEANS, TO ENSURE THAT THE
TEMPERATURE OF THE BEARING DOES NOT EXCEED 250°F. TEMPERATURES
ABOVE THIS MAY DAMAGE THE TFE OR URETHANE DISC.

AFTER BEARING ASSEMBLY IS IN PLACE AND ANCHOR BOLTS HAVE BEEN
FINALLY POSITIONED, THEY SHALL BE GROUTED IN PLACE AS SHOWN.

THE CLOSURE PLATE, GROUT PIPE, AND STANDARD PIPE FOR THIS
ASSEMBLY NEED NOT BE GALVANIZED.

SOLE PLATES SHOULD BE WELDED TO GIRDER FLANGES AND ANCHOR BOLTS
SHOULD BE GROUTED BEFORE FALSEWORK IS PLACED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

FOR ATTACHMENT OF THE STAINLESS STEEL SHEETS TO THE STEEL SOLE
PLATE AND GUIDE BARS, AS WELL AS THE TOP AND SIDE PTFE SHEETS
TO THE STEEL UPPER BEARING PLATE, SEE SPECIAL PROVISIONS.

FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL
PROVISIONS.

THE MINIMUM ROTATIONAL CAPACITY FOR ALL BEARINGS SHALL BE 0.02
RADIAN.

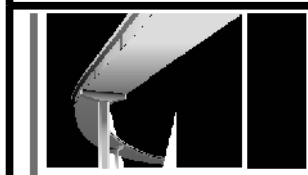
PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE DISC BEARINGS EXPANSION

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

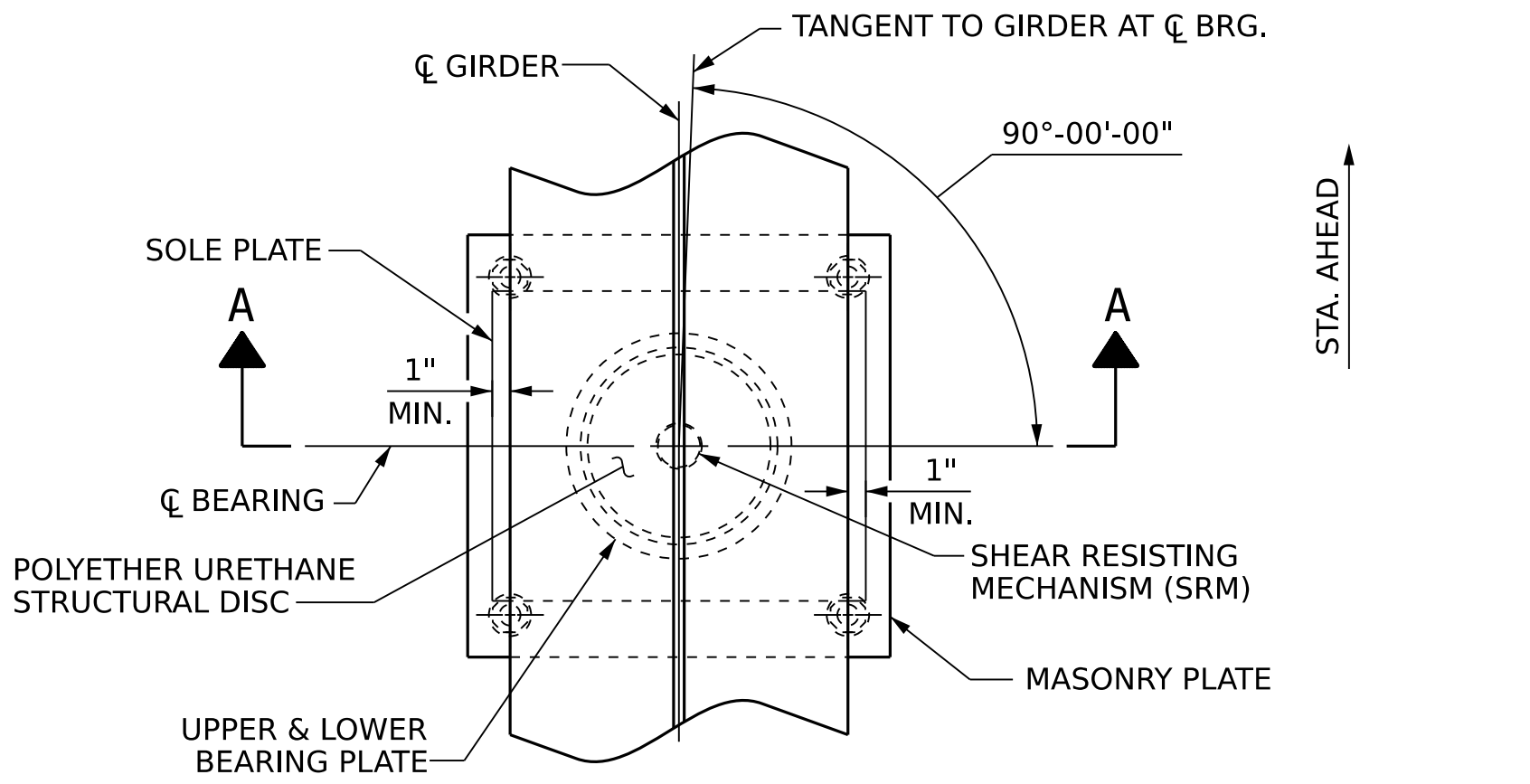
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NO.	BY:	DATE:	NO.	BY:	DATE:
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2			4		

SHEET NO.
S05-18
TOTAL
SHEETS
45

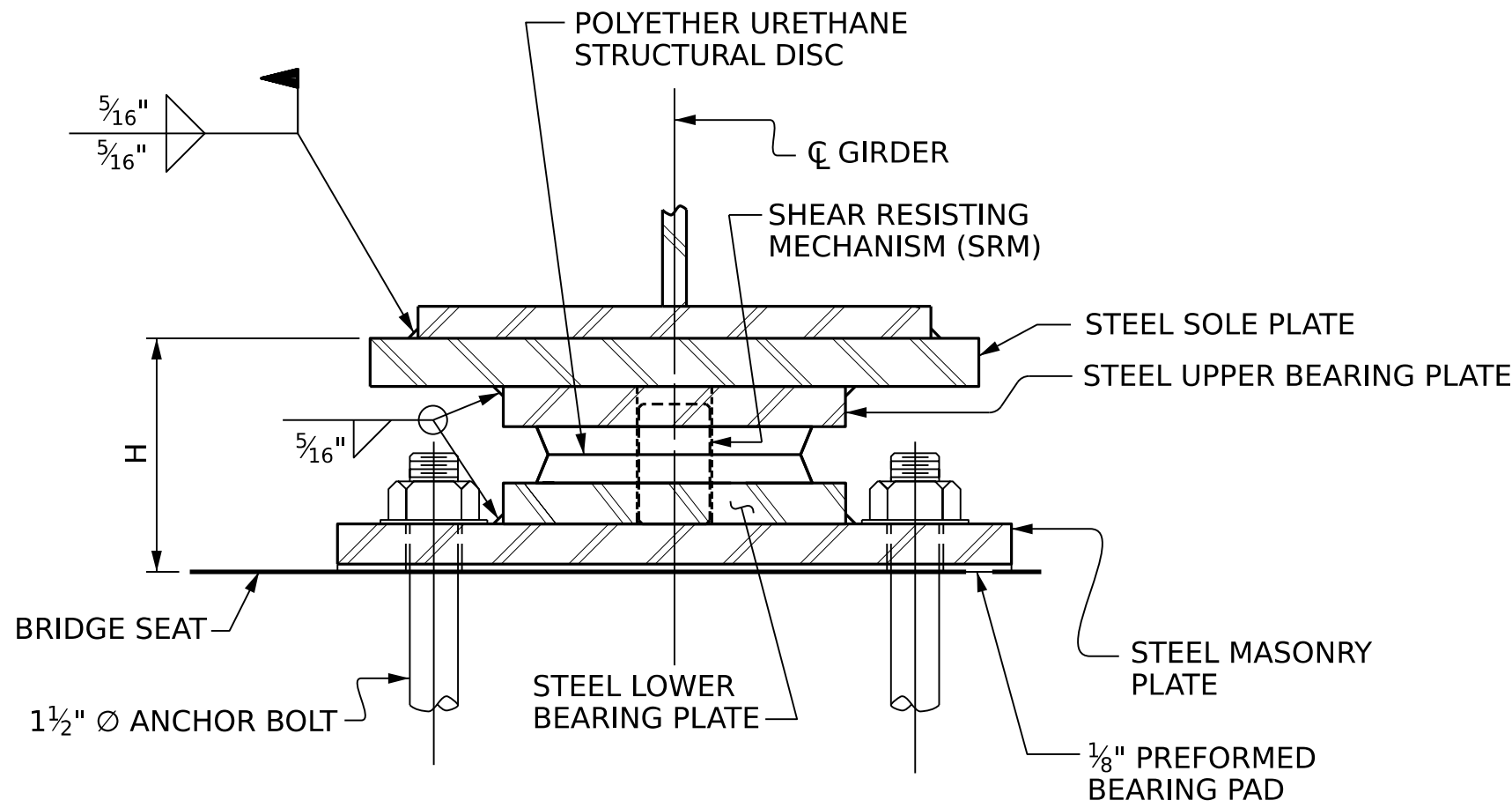
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DESIGN ENGINEER OF RECORD: <u>A.K. ORR</u>	DATE: <u>12/2025</u>

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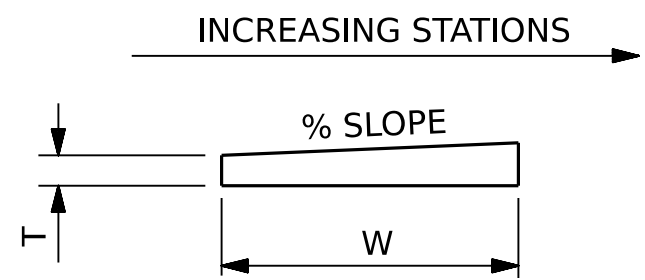
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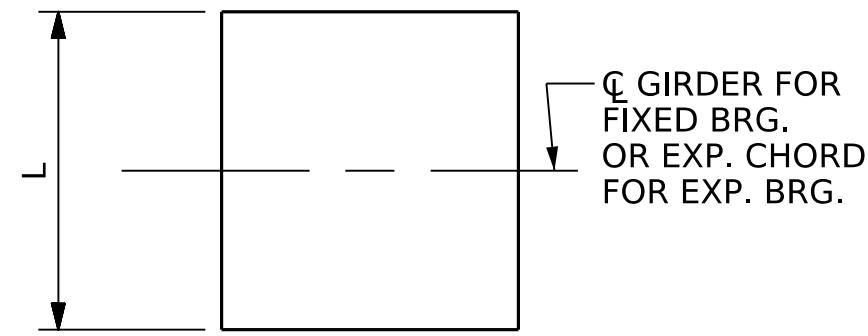
SECTION A-A

FIXED BEARING

DB2



ELEVATION

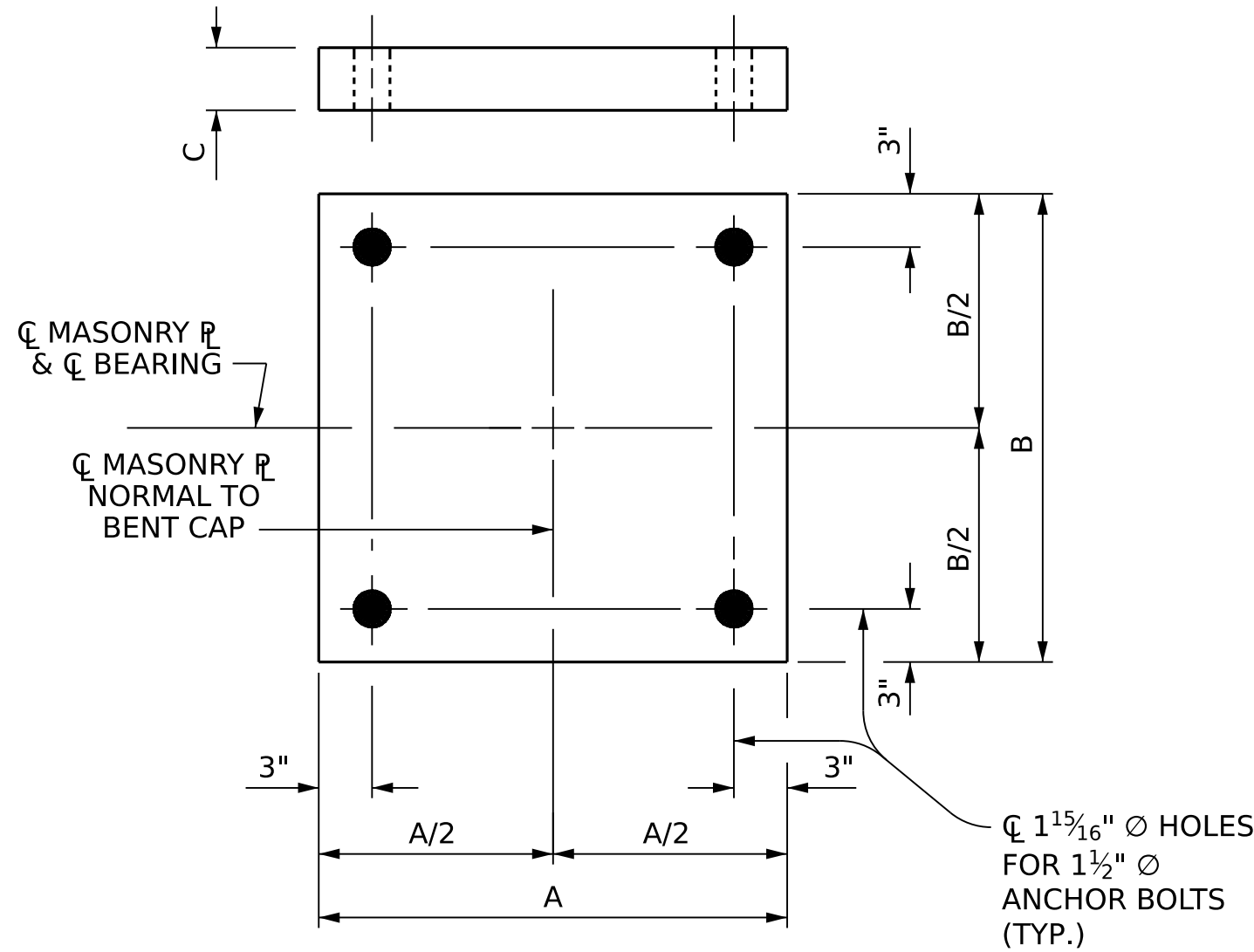


PLAN

NOTE:
DIMENSIONS "L", "W", AND "T" SHALL BE DETERMINED
BY THE BEARING MANUFACTURER. SET DIMENSION "L"
SUCH THAT THE MINIMUM EDGE DISTANCE TO THE
GIRDER FLANGE IS 1".

SOLE PLATE DETAILS

P2



PLAN

MASONRY PLATE DETAILS

M2

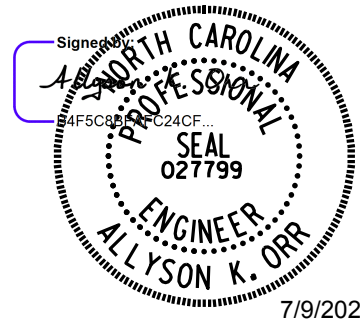
NOTES

FOR NOTES, SEE SHEET 1 OF 2.

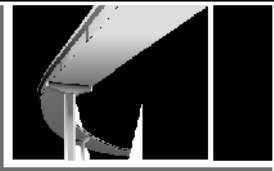
					DIMENSIONS				LOADS AND MOVEMENT					
LOCATION	DESIGNATIONS			NUMBER OF BEARINGS	BEARING	MASONRY PLATE			SOLE PLATE	UNFACTORED VERTICAL LOAD (KIPS)			FACTORED HORIZONTAL LOAD (KIPS)	ONE-WAY MOVEMENT (IN.)
	BEARINGS	MASONRY P	SOLE P		H (IN.)	A (IN.)	B (IN.)	C (IN.)	TOP SLOPE (%)	DEAD		LIVE		
					DC	DW	LL+IM							
BENT 1	DB2	M2	P2	4	9¾	34	34	1¾	3.472	675	80	285	225	-

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-

SHEET 2 OF 2



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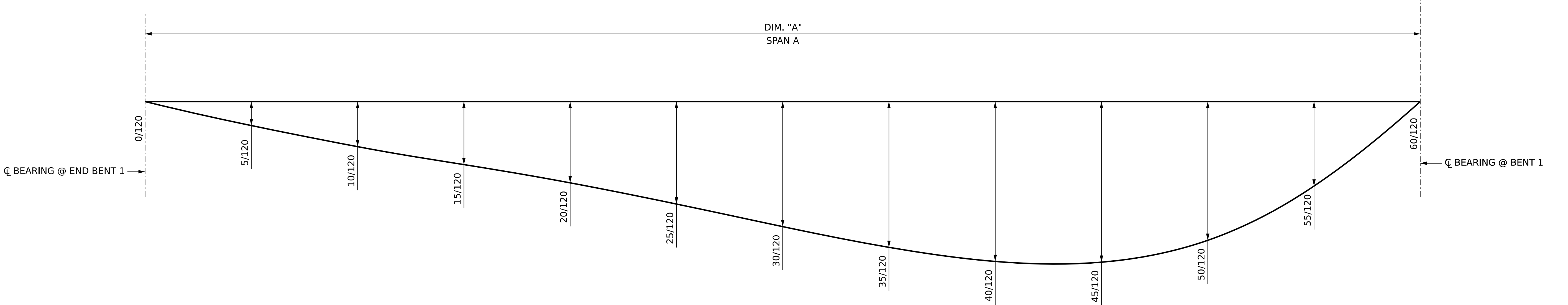
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
DISC BEARINGS
FIXED

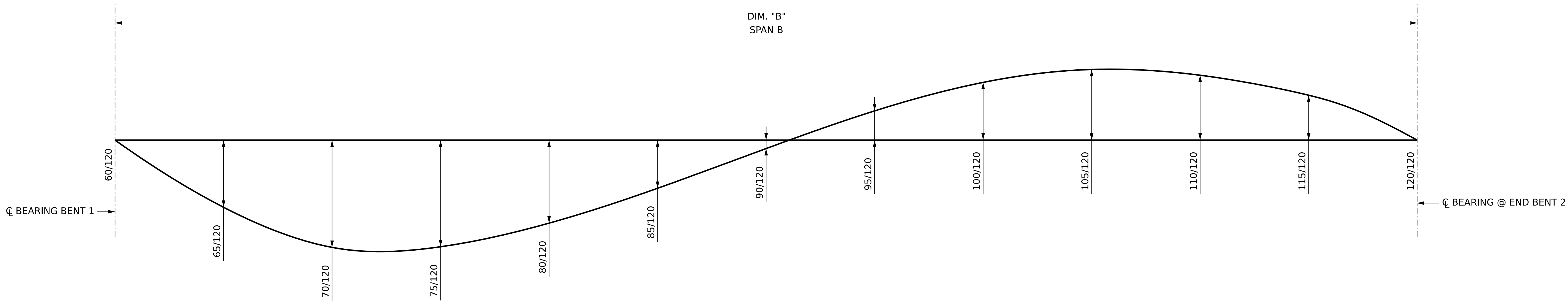
REVISIONS						SHEET NO. S05-19
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 45
2			4			

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CHECKED BY :	A.K. ORR	DATE :	01/2024
DESIGN ENGINEER OF RECORD :	A.K. ORR	DATE :	12/2025

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SPAN A



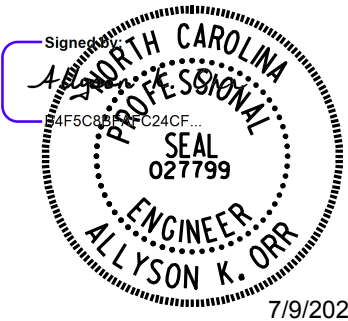
SPAN B

SCHEMATIC OF CAMBER ORDINATES

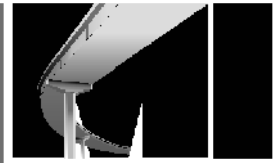
FOR CAMBER VALUES AT SIXTIETH POINTS, SEE TABLES ON SHEETS 1-4.
SLOPE FOR THE ZERO CAMBER BASE LINE VARIES.

HORIZONTAL BEARING TO BEARING DISTANCES		
SPAN	GIRDER	DIM. "A"
A	1	226'-9 ³ / ₁₆ "
A	2	227'-2 ¹¹ / ₁₆ "
A	3	227'-8 ³ / ₁₆ "
A	4	228'-1 ³ / ₄ "

HORIZONTAL BEARING TO BEARING DISTANCES		
SPAN	GIRDER	DIM. "B"
B	1	226'-9 ³ / ₁₆ "
B	2	227'-2 ¹¹ / ₁₆ "
B	3	227'-8 ³ / ₁₆ "
B	4	228'-1 ³ / ₄ "



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RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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DESIGN ENGINEER OF RECORD :	A.K. ORR	DATE :	12/2025

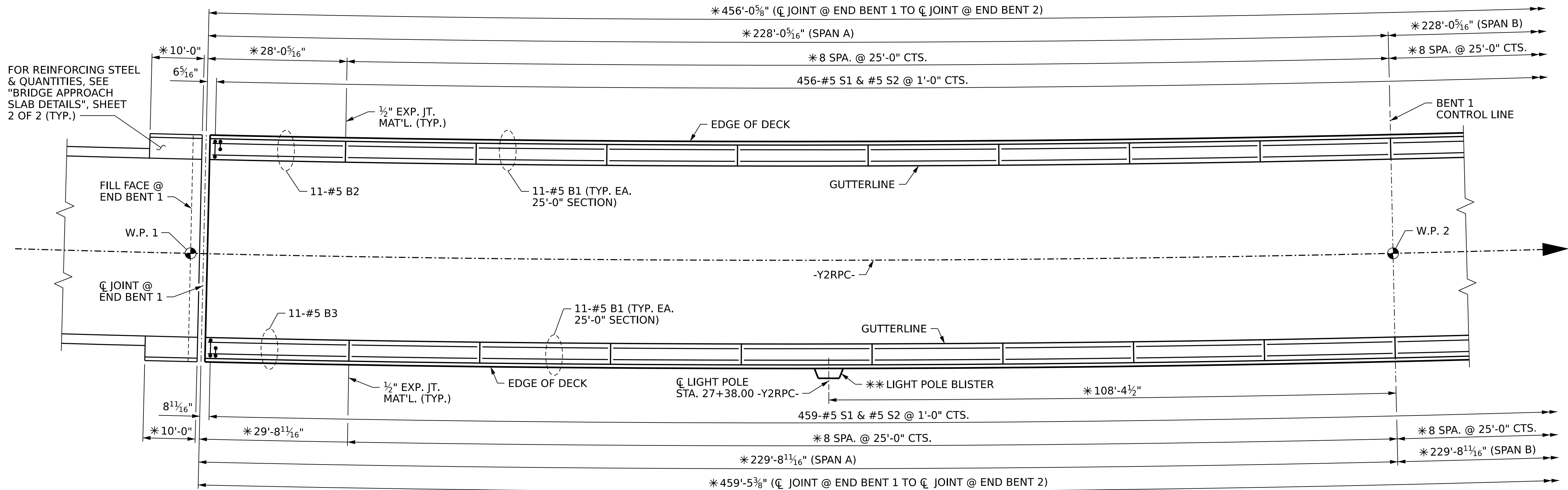
PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-

SHEET 5 OF 5

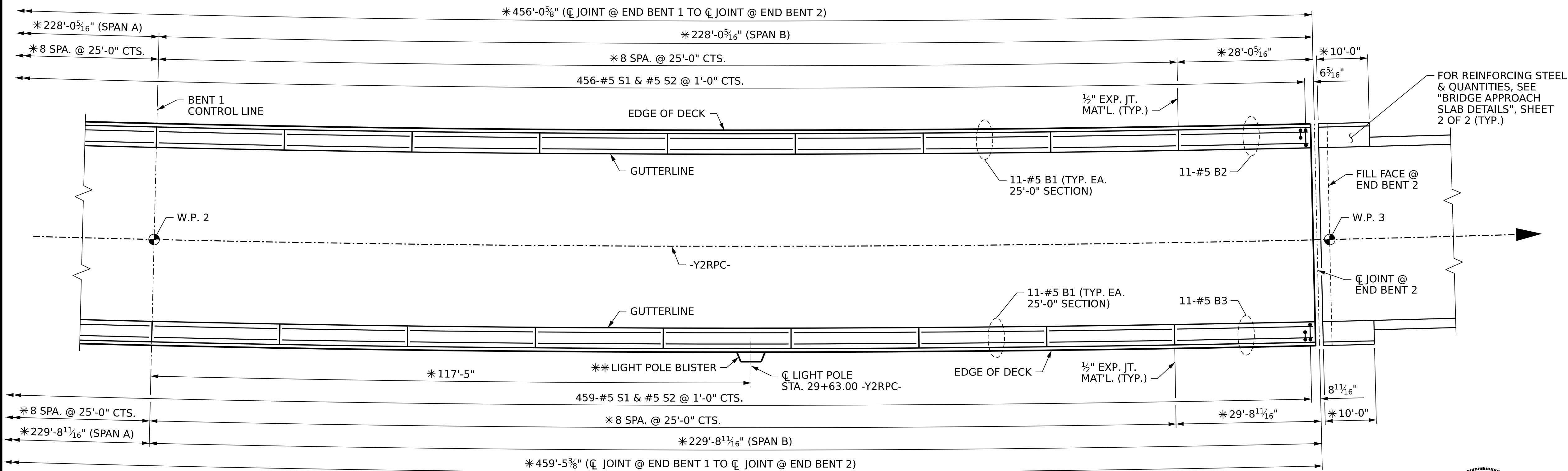
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUPERSTRUCTURE
GIRDER DEFLECTIONS
AND CAMBER SCHEDULES

REVISIONS						SHEET NO. S05-24
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

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PLAN AT SPAN A

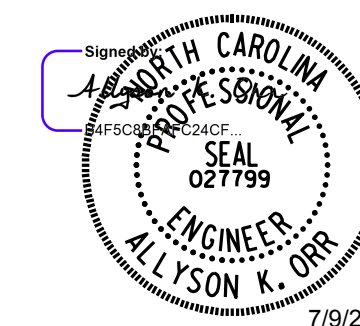


PLAN AT SPAN B

PLAN OF BARRIER RAIL

** MEASURED ALONG BACK SIDE OF BARRIER RAIL

** FOR DETAILS, SEE SHEET "LIGHT POLE BLISTER DETAILS" SHEET



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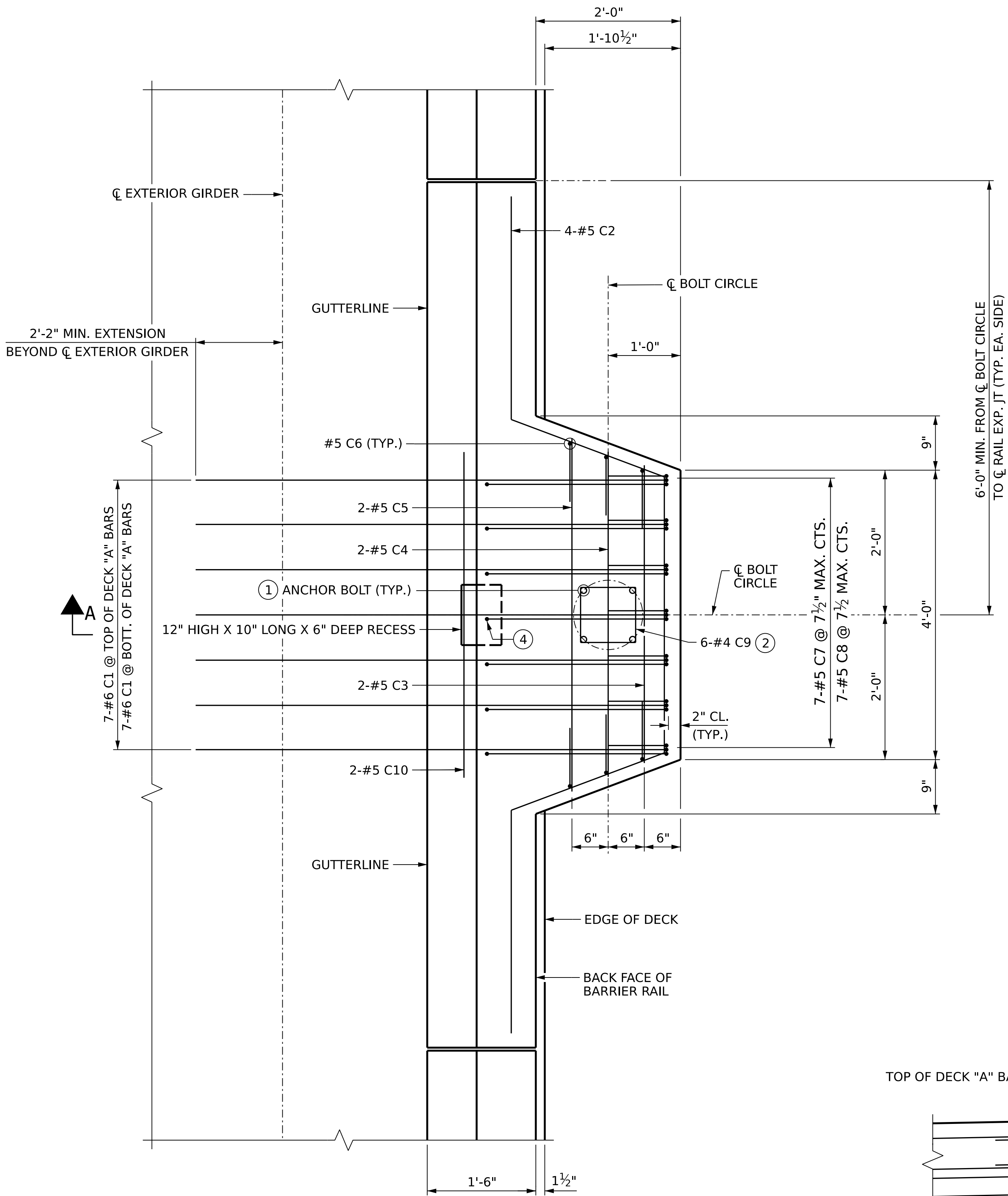
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

DRAWN BY :	B.E. LANNING	DATE :	01/2024
CHECKED BY :	J.I. BREWER	DATE :	01/2024
DESIGN ENGINEER OF RECORD :	A.K. ORR	DATE :	12/2025

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-
SHEET 1 OF 2

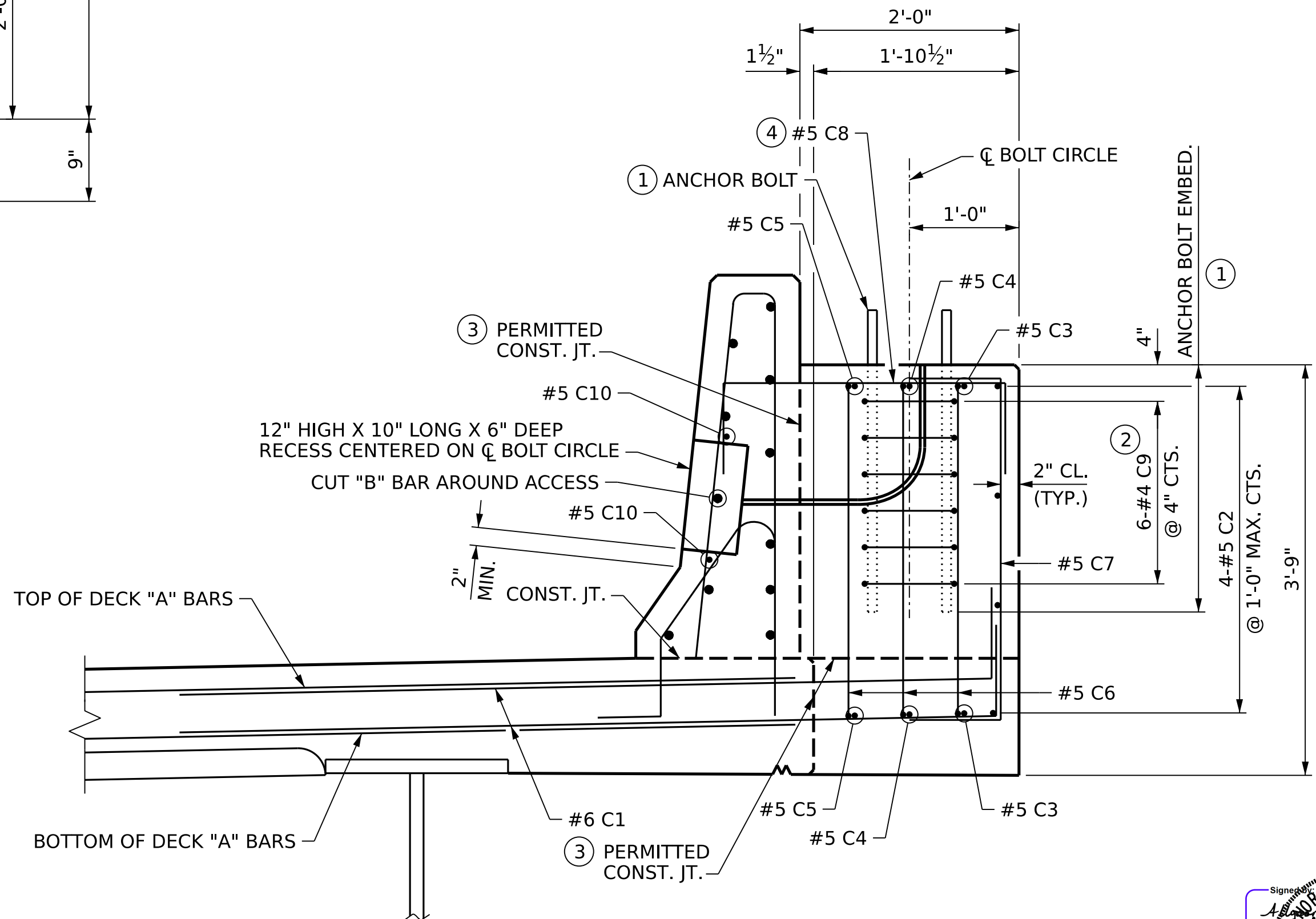
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH SUPERSTRUCTURE CONCRETE BARRIER RAIL					
REVISIONS					
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1			3		
2			4		
SHEET NO. S05-25					TOTAL SHEETS 45

7/9/2026
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Filename: N:\NC Bridges\W21002.I-2513A I-26 (AECOM)\I-2513AC\Structures\SITES\405.053.I2513AC.SMU.LP1.S05-27.100906.dgn



PLAN

DECK SLAB REINFORCING AND BARRIER RAIL
REINFORCING BARS NOT SHOWN FOR CLARITY



SECTION A-A

NOTES:

THE CONTRACTOR SHALL NOTIFY THE ENGINEER PRIOR TO CASTING THE DECK IF THE ANCHOR BOLT EMBEDMENT LENGTH IS LESS THAN 30".

REINFORCING STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH ANCHOR BOLTS AND RECESS.

ALL REINFORCING STEEL FOR LIGHT POLE BLISTER SHALL BE EPOXY COATED.

FOR LOCATION OF LIGHT POLE BLISTERS, SEE "CONCRETE BARRIER RAIL" SHEET 1 OF 2.

FOR LIGHTING DETAILS NOT SHOWN, SEE LIGHTING PLANS.

NO ADDITIONAL PAYMENT WILL BE MADE FOR LIGHT POLE BLISTERS. THE COST SHALL BE CONSIDERED INCIDENTAL TO THE CONCRETE BARRIER RAIL PAY ITEM.

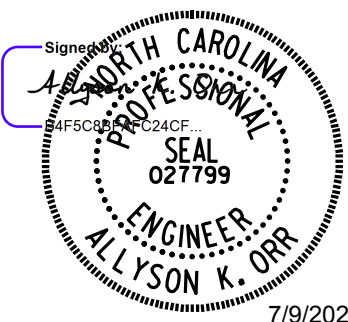
- ANCHOR BOLTS, NUTS, WASHERS, EMBEDDED PLATE AND ANCHOR BOLT EMBEDMENT, PROJECTION, AND BOLT CIRCLE DIMENSIONS TO BE PROVIDED BY OTHERS.
- #4 C9 BARS SHALL TIE DIRECTLY TO THE EMBEDDED ANCHOR BOLTS AND BE SPACED VERTICALLY FOR THE ENTIRE EMBEDDED ANCHOR BOLT LENGTH. THE CONTRACTOR MAY ADJUST THE DIMENSION AND NUMBER OF C9 BARS TO FIT THE ANCHOR BOLTS PROVIDED BY OTHERS.
- EITHER THE VERTICAL PERMITTED CONSTRUCTION JOINT(S) OR THE HORIZONTAL PERMITTED CONSTRUCTION JOINT MAY BE USED. THE USE OF BOTH VERTICAL AND HORIZONTAL PERMITTED CONSTRUCTION JOINTS IS NOT PERMITTED.
- VERTICAL LEG OF #5 C8 BAR AT RECESS MAY BE CUT TO MAINTAIN 2" CLEAR TO RECESS.

BILL OF MATERIAL					
FOR ONE LIGHT POLE CONCRETE BLISTER (2 REQUIRED)					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*C1	14	#6	1	8'-10"	186
*C2	4	#5	2	14'-5"	60
*C3	2	#5	STR	4'-0"	8
*C4	2	#5	STR	4'-4"	9
*C5	2	#5	STR	4'-9"	10
*C6	6	#5	3	4'-9"	30
*C7	7	#5	3	4'-10"	35
*C8	7	#5	3	4'-2"	30
*C9	6	#4	4	3'-9"	15
*C10	2	#5	STR	7'-4"	15
* EPOXY COATED REINFORCING STEEL					398 LBS.
CLASS AA CONCRETE					1.3 C.Y.
BAR TYPES					
1 7'-10" 1'-0" 2 9" 3'-9" 2'-3" 2'-1 1/2" 3'-1" 3'-1" 3'-2" 2'-6" 10" 9" 4 1/2" 3 4					
ALL BAR DIMENSIONS ARE OUT TO OUT.					

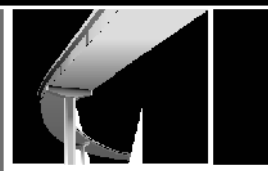
PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE LIGHT POLE BLISTER DETAILS



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

DRAWN BY: B.E. LANNING DATE: 03/2024
CHECKED BY: A.K. ORR DATE: 03/2024
DESIGN ENGINEER OF RECORD: A.K. ORR DATE: 12/2025

REVISIONS						SHEET NO. S05-27
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 45
2			4			

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Filename: N:\NC Bridges\W21002-I-2513A I-26 (AECOM)\I-2513AC\Structures\SITES\05.12513AC.SMU.GRA1.S05-28.100906.dgn

ADHESIVELY ANCHORED
 $\frac{3}{4}$ " $\varnothing$ X 6" BOLTS FOR
ATTACHING RUBRAIL TO
BARRIER RAIL (TYP.)
SEE ROADWAY STD. 862.03

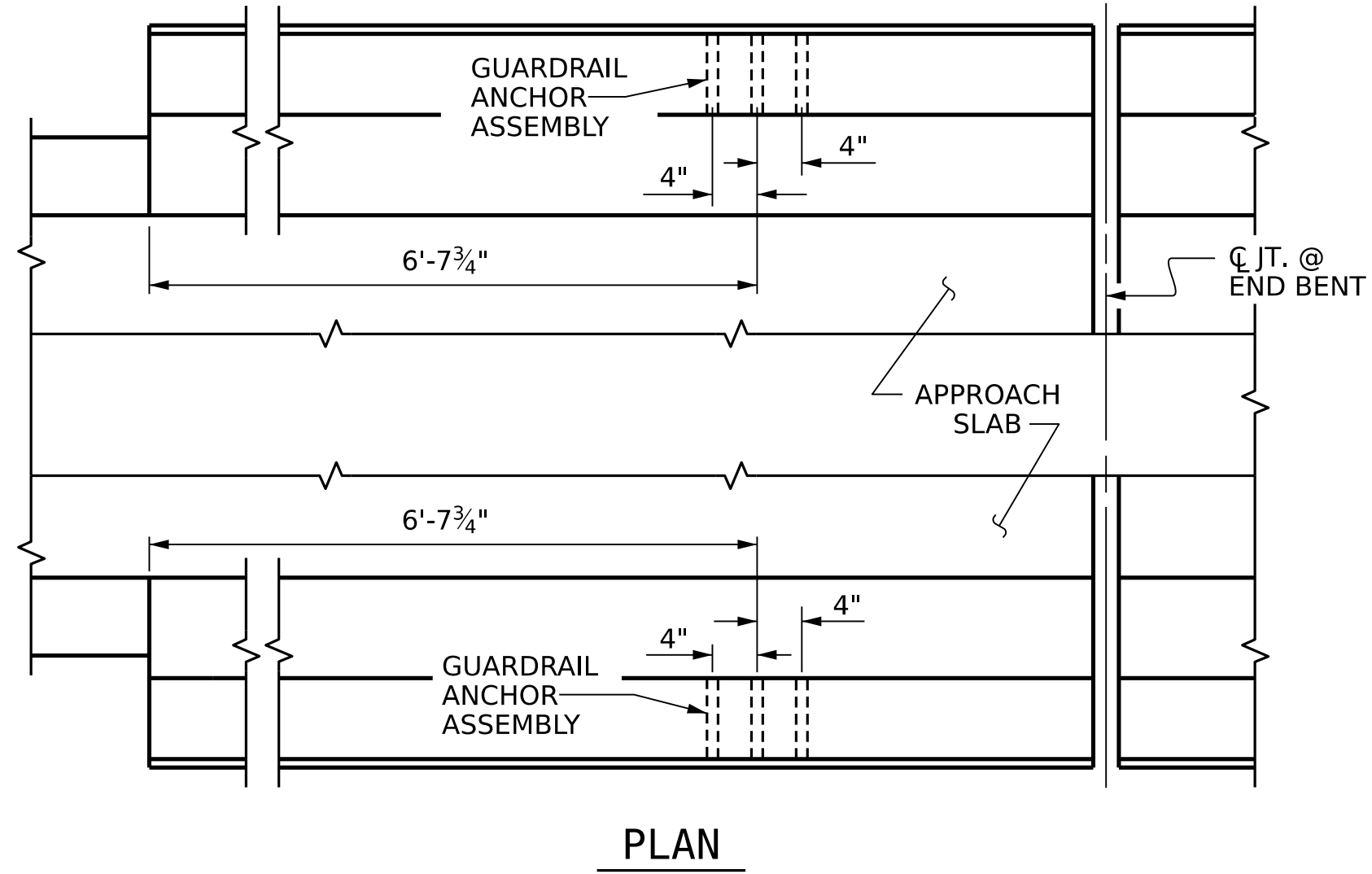
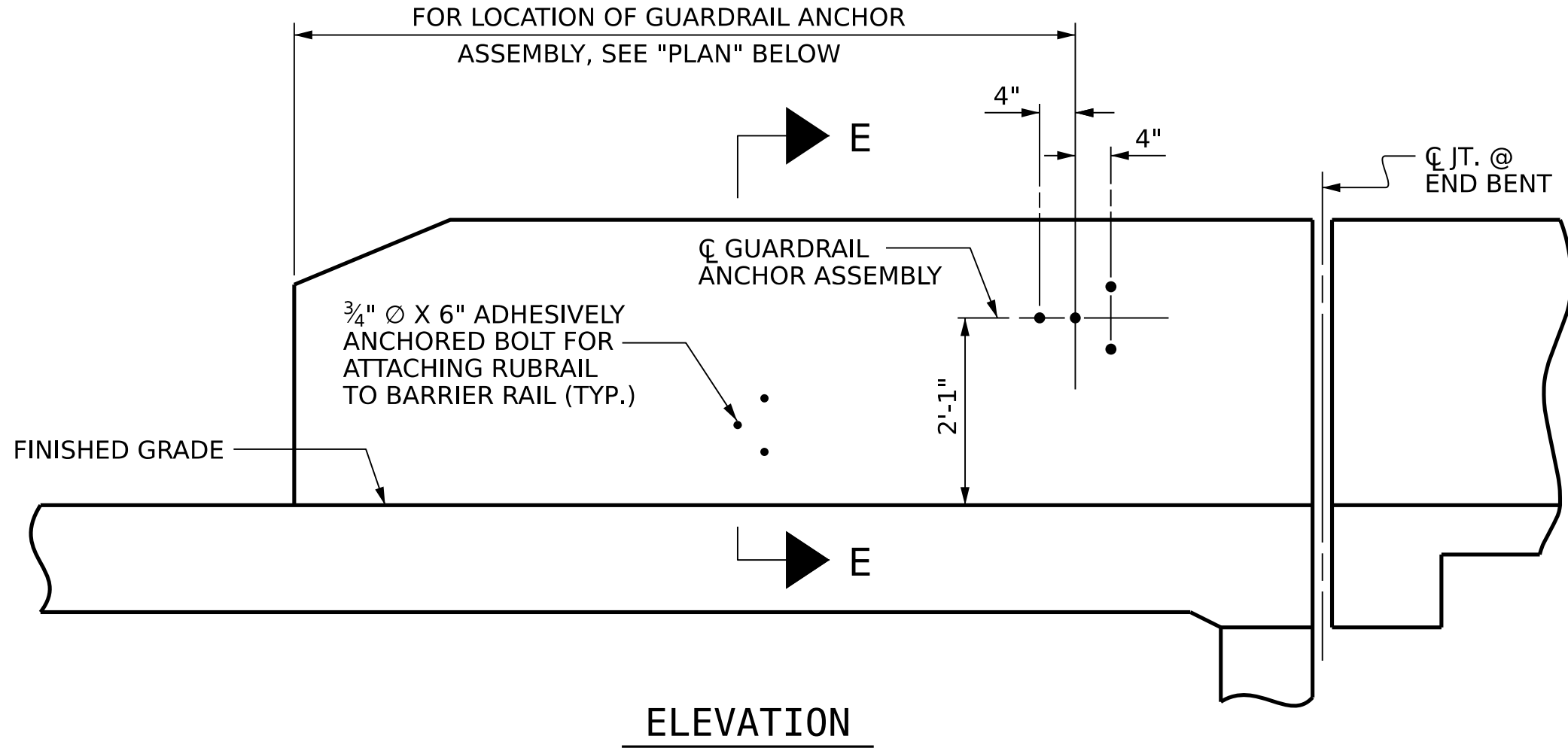
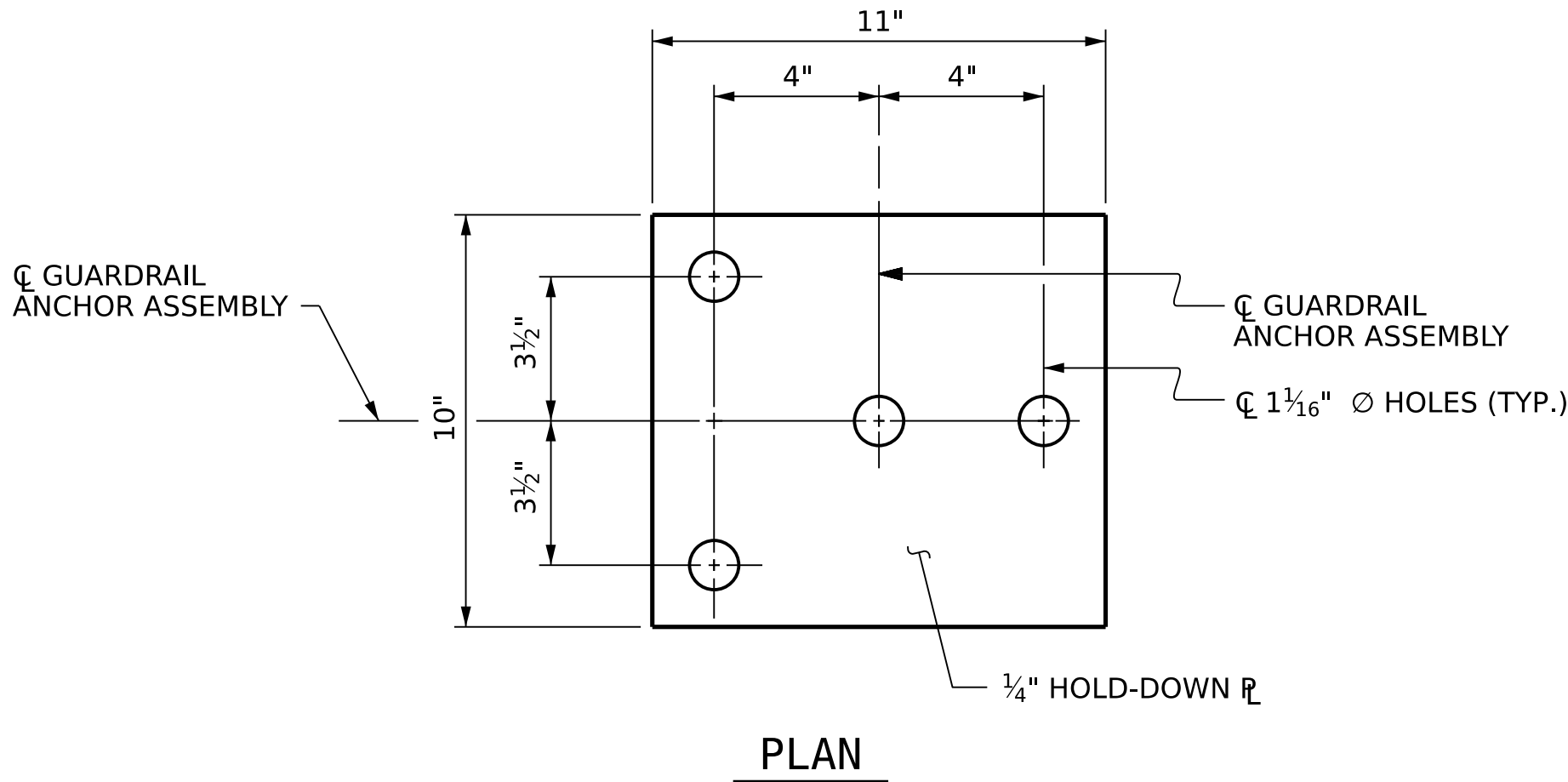
$\frac{1}{4}$ " HOLD-DOWN PLATE
1 $\frac{1}{4}$ " $\varnothing$ DRILLED OR
FORMED HOLE (TYP.)

$\frac{7}{8}$ " $\varnothing$ X 1'-3 $\frac{1}{2}$ "
BOLT WITH ROUND
WASHERS (TYP.)
GUARDRAIL
ANCHOR ASSEMBLY
C6 X 8.2 RUBRAIL
FINISHED GRADE
7 $\frac{1}{2}$ "

SECTION E-E

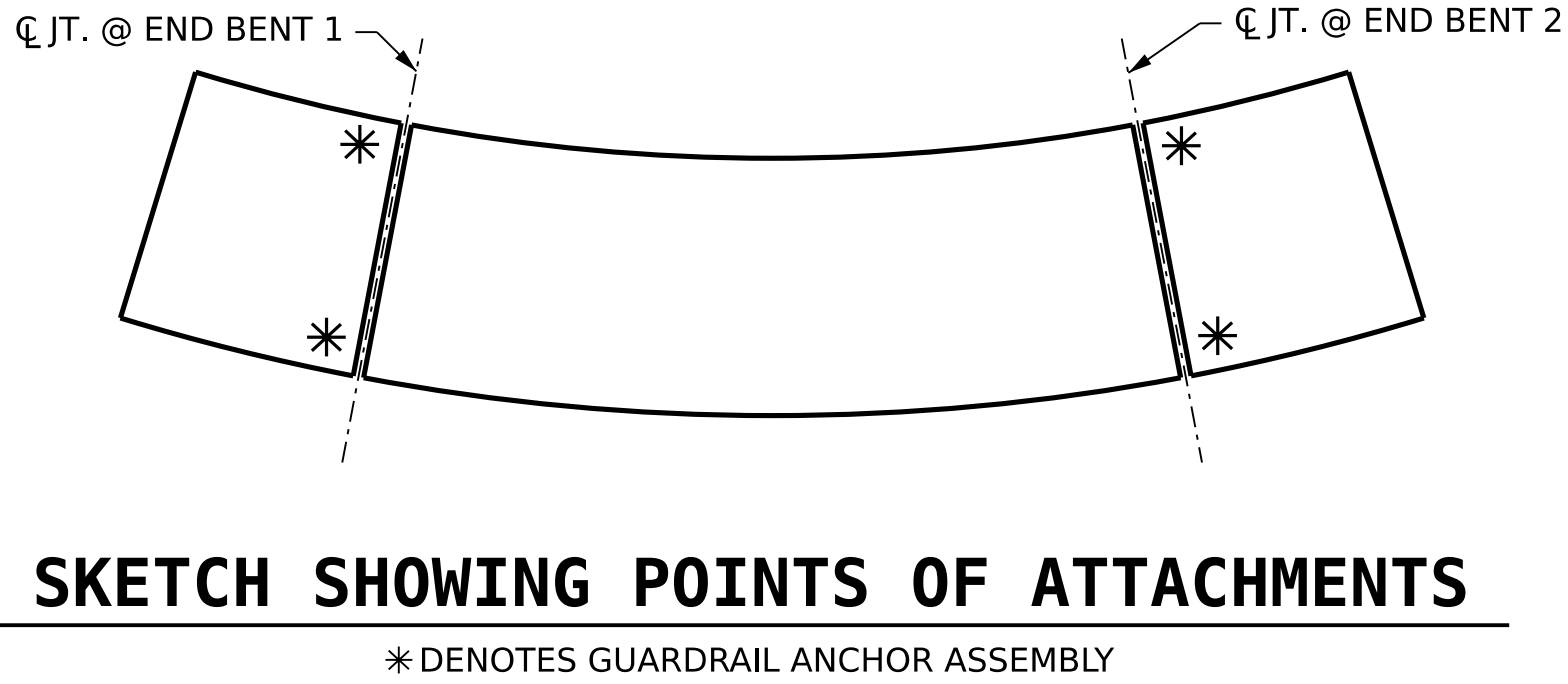
GUARDRAIL ANCHOR ASSEMBLY DETAILS

ASSEMBLED BY:	B.E. LANNING	DATE:	01/2024
CHECKED BY :	J.I. BREWER	DATE:	01/2024
DESIGN ENGINEER OF RECORD:	A.K. ORR	DATE:	04/2024
DRAWN BY :	TLA 5/06	REV. 6/13	MAA/GM
CHECKED BY :	GM 5/06	REV. 12/17	MAA/THC
		REV. 6/22	BNB/AAI



LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENTS

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A $\frac{1}{4}$ " HOLD-DOWN PLATE AND 4 $\frac{7}{8}$ " $\varnothing$ BOLTS WITH NUTS AND WASHERS, RUBRAIL, AND ADHESIVELY ANCHORED BOLTS.

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

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

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

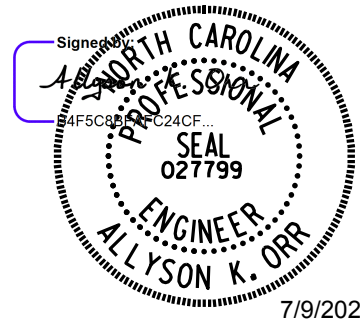
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

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

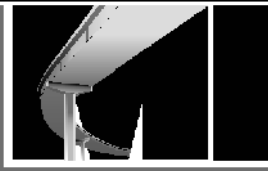
THE 1 $\frac{1}{4}$ " $\varnothing$ HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.

THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE $\frac{3}{8}$ " $\varnothing$ X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE $\frac{3}{4}$ " $\varnothing$ BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR DETAILS AND LOCATION OF THE RUBRAIL.

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-



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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 GUARDRAIL ANCHORAGE FOR BARRIER RAIL

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

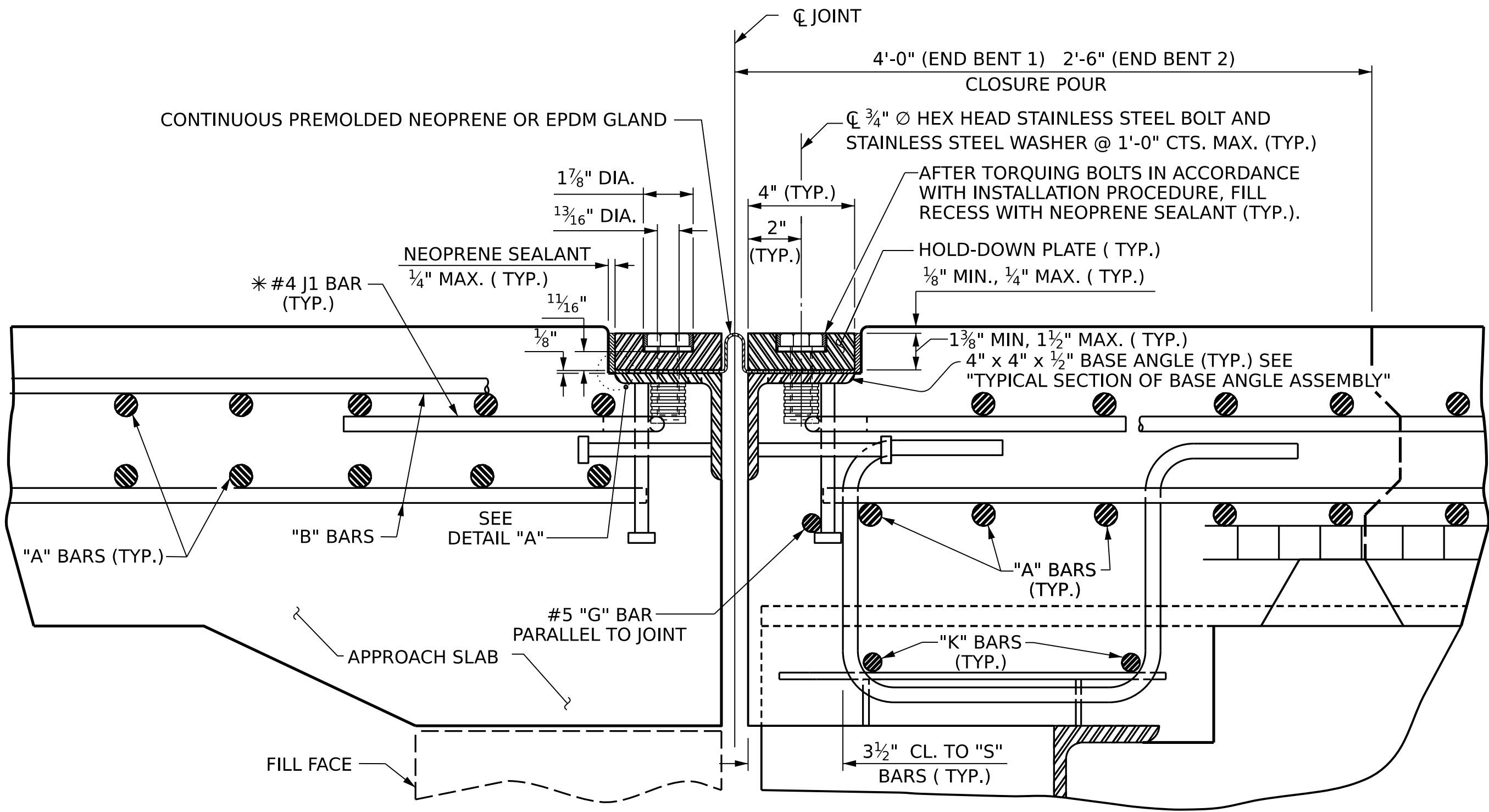
SHEET NO. S05-28
TOTAL SHEETS 45

STD. NO. GRA2 (SHT 1)

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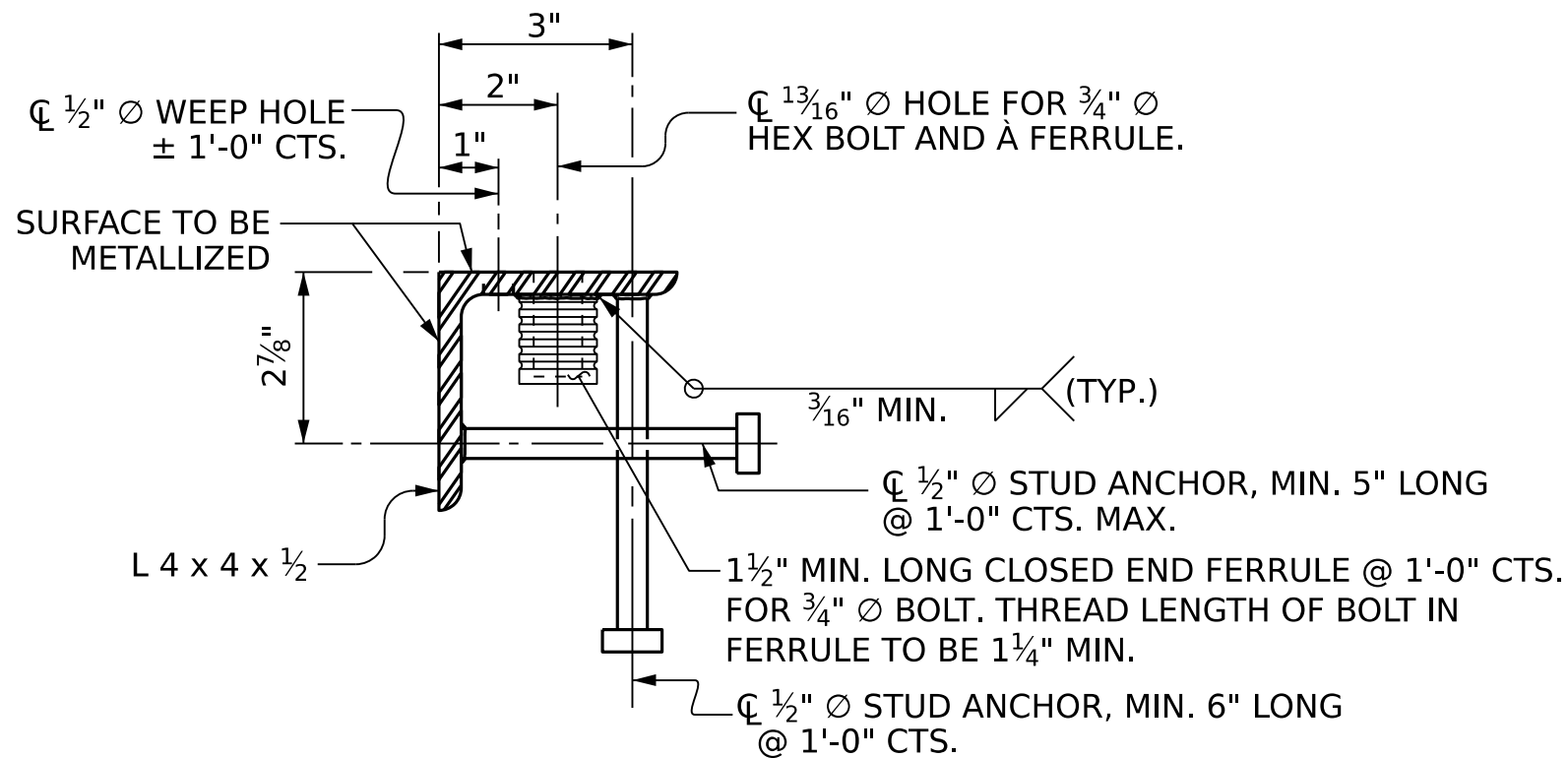
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EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT -- STEEL SUPERSTRUCTURE

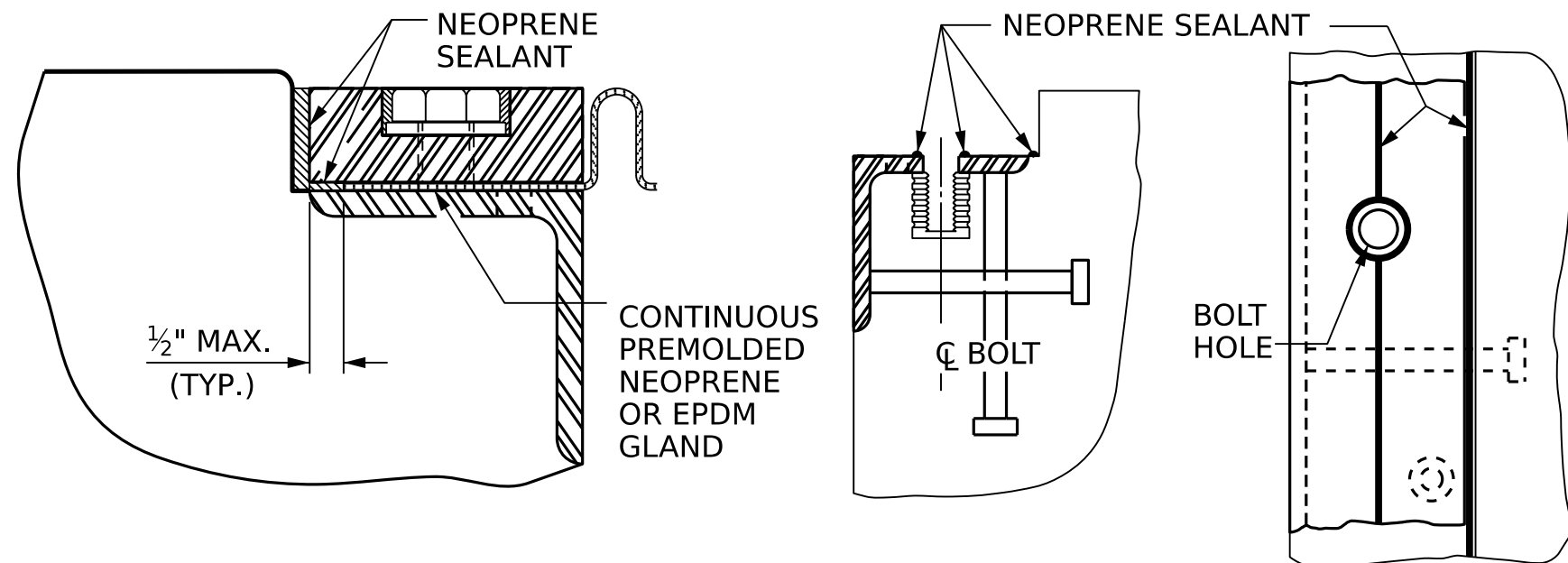
* THE QUANTITY OF #4 J1 BARS ON THE BILL OF MATERIAL IS BASED ON 1'-0" CENTERS. J1 BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF J1 BARS SPECIFIED, ADDITIONAL J1 BARS WILL NOT BE REQUIRED.



TYPICAL SECTION OF BASE ANGLE ASSEMBLY

INSTALLATION PROCEDURE

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



DETAIL "A"

CROSS SECTION

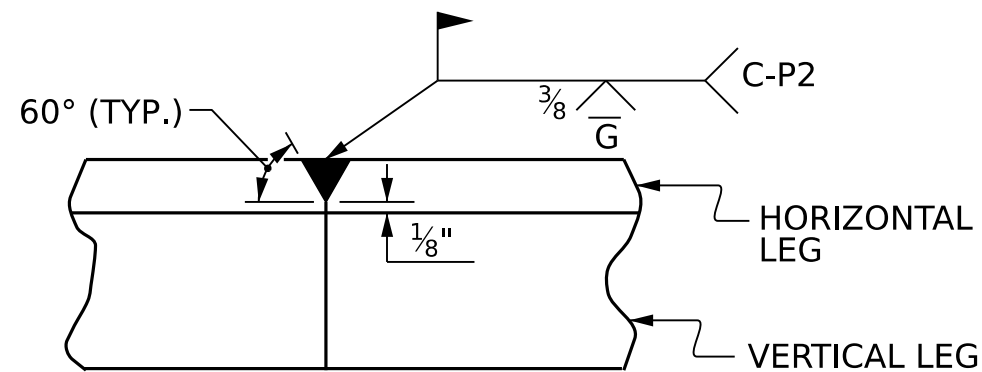
PLAN VIEW

INSTALLATION SKETCH

MOVEMENT AND SETTING AT JOINT					
END BENT OR BENT NO.	SKIEW ANGLE	TOTAL MOVEMENT (ALONG C RDWY)	PERPENDICULAR JOINT OPENING AT 45° F	PERPENDICULAR JOINT OPENING AT 60° F	PERPENDICULAR JOINT OPENING AT 90° F
END BENT 1	91°-19'-04"	$1\frac{13}{16}$ "	$2\frac{3}{16}$ "	$1\frac{7}{8}$ "	$1\frac{3}{8}$ "
END BENT 2	88°-40'-56"	$1\frac{13}{16}$ "	$2\frac{3}{16}$ "	$1\frac{7}{8}$ "	$1\frac{3}{8}$ "

GENERAL NOTES

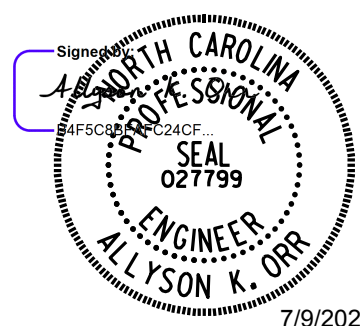
1. FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.
2. ALL PLATES AND ANGLES SHALL CONFORM TO AASHTO M270 GRADE 36 STEEL OR APPROVED EQUAL. ALL HOLD-DOWN BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL CONFORM TO ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL. ALL STUD ANCHORS SHALL CONFORM TO AASHTO M169, GRADES 1010 THRU 1020 OR APPROVED EQUAL. ALL CONCRETE INSERTS SHALL BE CLOSED END AND SHALL CONFORM TO AASHTO M169, GRADE 12L14. TENSILE CAPACITY SHALL BE 3000 LBS. MINIMUM.
3. A PREMOLDED CORRUGATED OR NON-CORRUGATED GLAND SHALL BE USED FOR JOINTS SKEWED BETWEEN 50° THRU 130°. FOR JOINTS SKEWED LESS THAN 50° OR MORE THAN 130°, ONLY A CORRUGATED GLAND SHALL BE USED.
4. CLOSED END FERRULES AND STUD ANCHORS SHALL BE SHOP WELDED AND ALL HOLES SHALL BE SHOP DRILLED AS SHOWN ON PLANS. STUD ANCHORS SHALL BE ELECTRIC ARC END WELDED WITH COMPLETE FUSION.
5. SURFACES COMING IN CONTACT WITH NEOPRENE SHALL BE GROUND SMOOTH PRIOR TO METALLIZING.
6. UPON COMPLETION OF SHOP FABRICATION, THE HOLD-DOWN PLATE AND BASE ANGLE ASSEMBLY, AS SHOWN IN THE "TYPICAL SECTION OF BASE ANGLE ASSEMBLY", SHALL BE METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
7. THE COVER PLATES SHALL BE GALVANIZED OR METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.
8. BASE ANGLE ASSEMBLY SHALL BE CONTINUOUS FOR THE LENGTH OF THE JOINT. AT CROWN BREAKS, THE ENDS OF THE BASE ANGLE ASSEMBLY SHALL BE CUT PARALLEL TO THE BRIDGE CENTERLINE FOR SKEWS LESS THAN 80° AND GREATER THAN 100°. FINISHED WELD SHALL BE REPAIRED IN ACCORDANCE WITH THE SPECIAL PROVISION FOR THERMAL SPRAYED COATINGS (METALLIZATION).
9. FIELD SPLICES OF HOLD-DOWN PLATES SHALL BE KEPT TO A MINIMUM. CONTRACTOR SHALL FURNISH DETAILED PLANS SHOWING PROPOSED SPLICE LOCATIONS FOR APPROVAL. HOLD-DOWN PLATES SHALL NOT EXCEED 20' LENGTHS UNLESS APPROVED BY THE ENGINEER.
10. NO ALTERNATE JOINT DETAILS SHALL BE PERMITTED IN LIEU OF THOSE SHOWN ON THESE PLANS.
11. THE CONTRACTOR MAY, AT HIS OPTION, USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF CONCRETE INSERTS FOR COVER PLATES. THE YIELD LOAD OF THE $\frac{3}{4}$ " ϕ BOLT IS 10 KIPS. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.
12. THE FABRICATOR SHALL PROVIDE $\frac{1}{2}$ " ϕ THREADED HOLES IN THE HOLD-DOWN PLATES TO ASSIST IN LIFTING AND PLACING. THE HOLES SHALL BE $\frac{3}{4}$ " DEEP AT 6'-0" MAXIMUM SPACING AND A MINIMUM OF TWO HOLES PER PLATE.



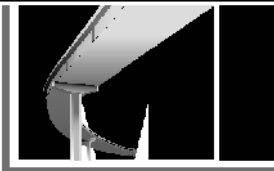
DETAIL- FIELD WELD SPlice OF BASE ANGLE

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-

SHEET 1 OF 2



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FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD EXPANSION JOINT SEAL DETAILS

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

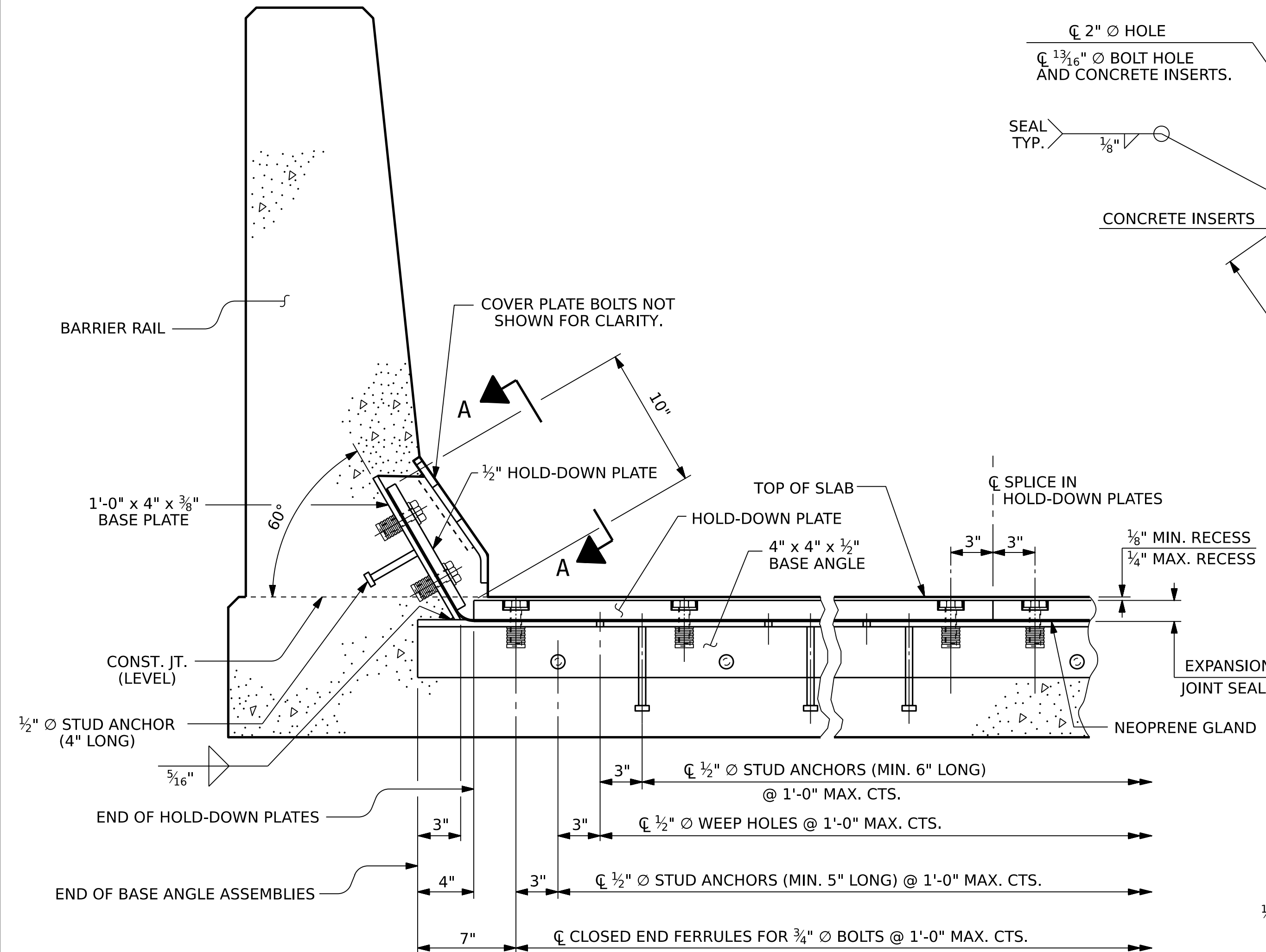
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S05-29
TOTAL SHEETS
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STD. NO. EJS1

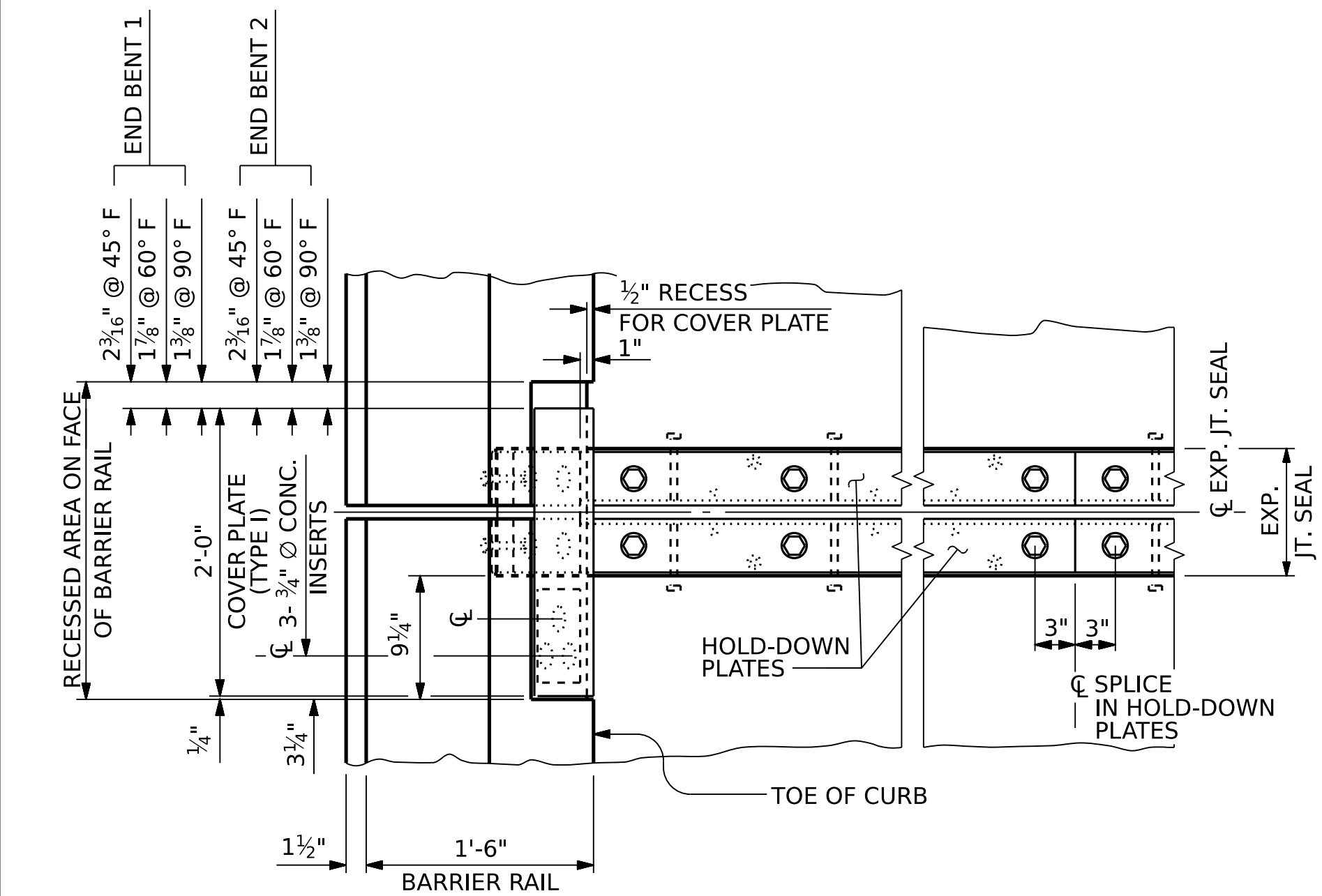
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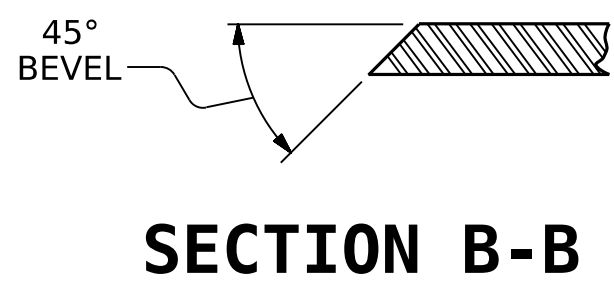
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SECTION THRU RAIL NORMAL TO JOINT

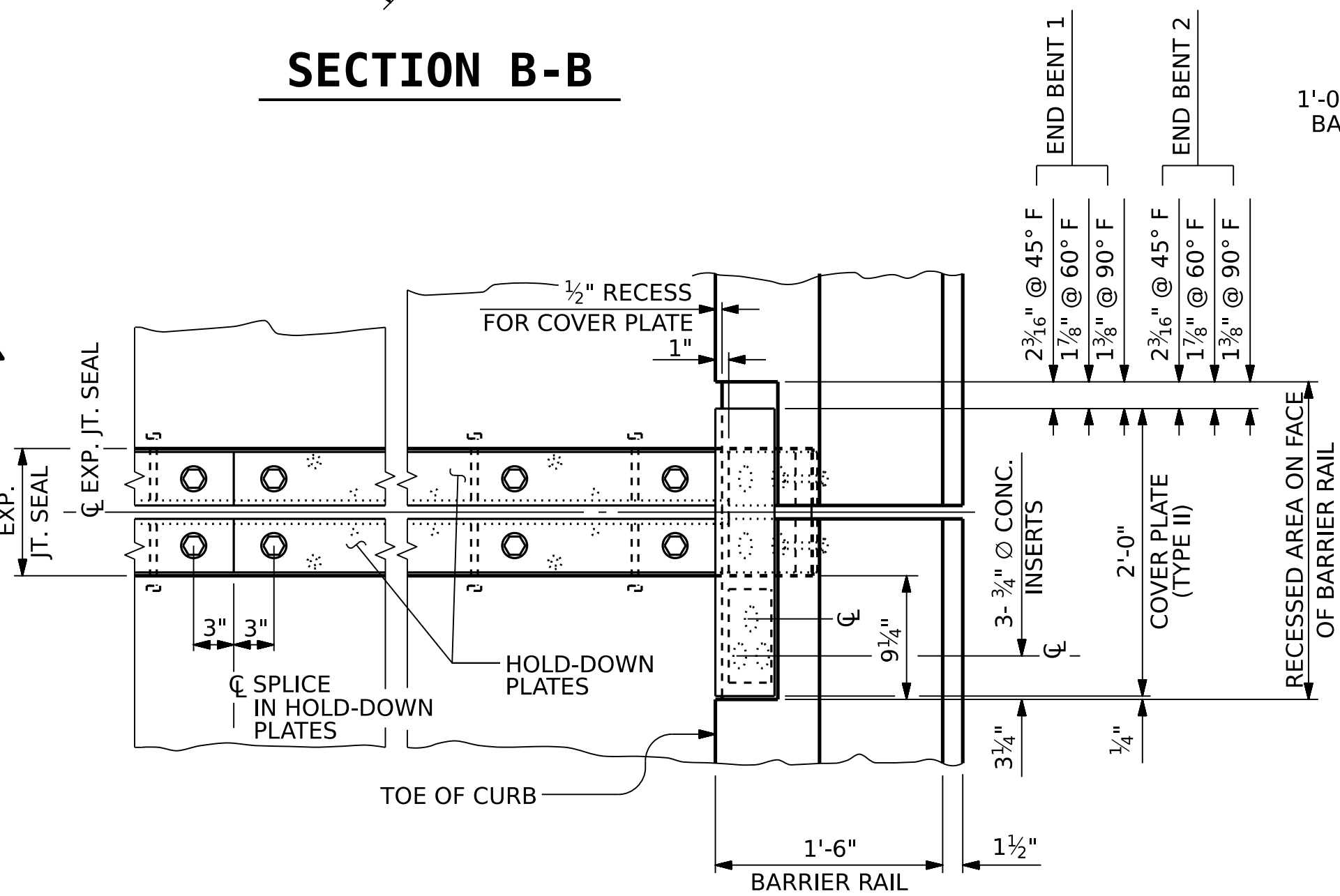


PLAN OF EXPANSION JOINT SEAL

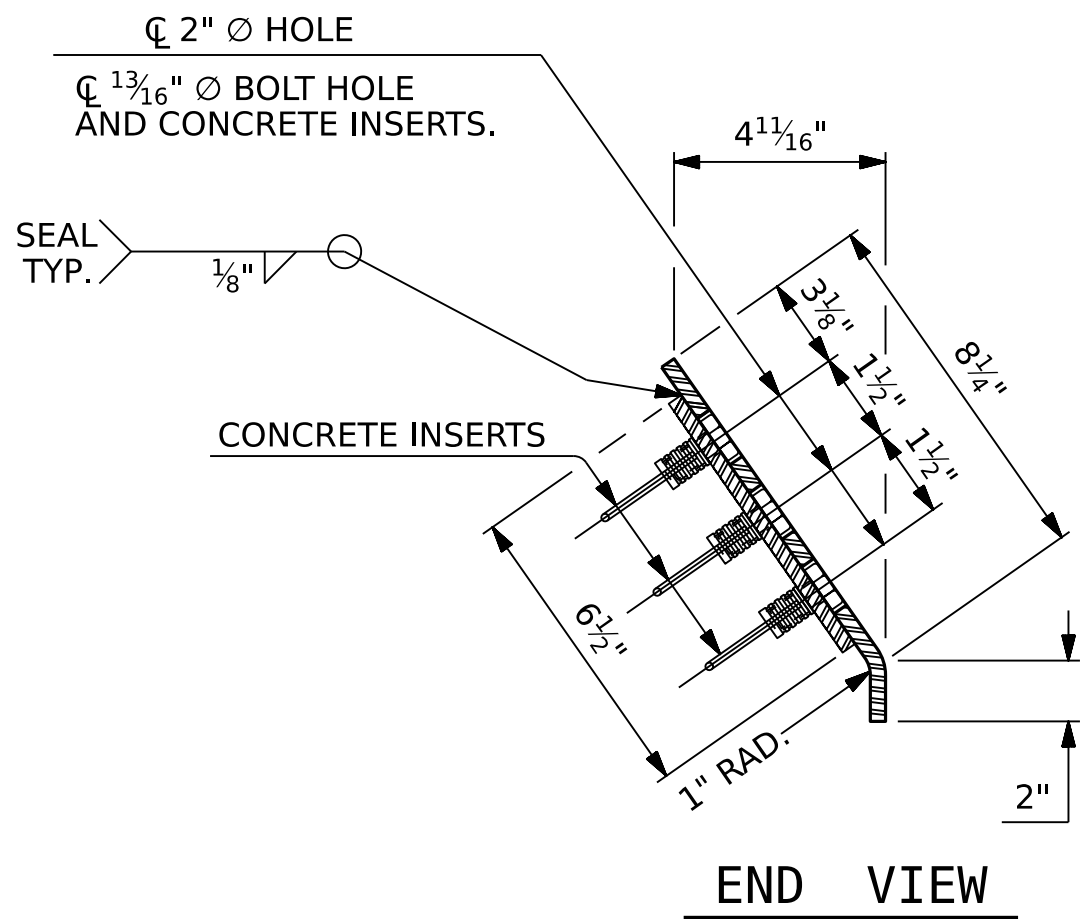


SECTION B-B

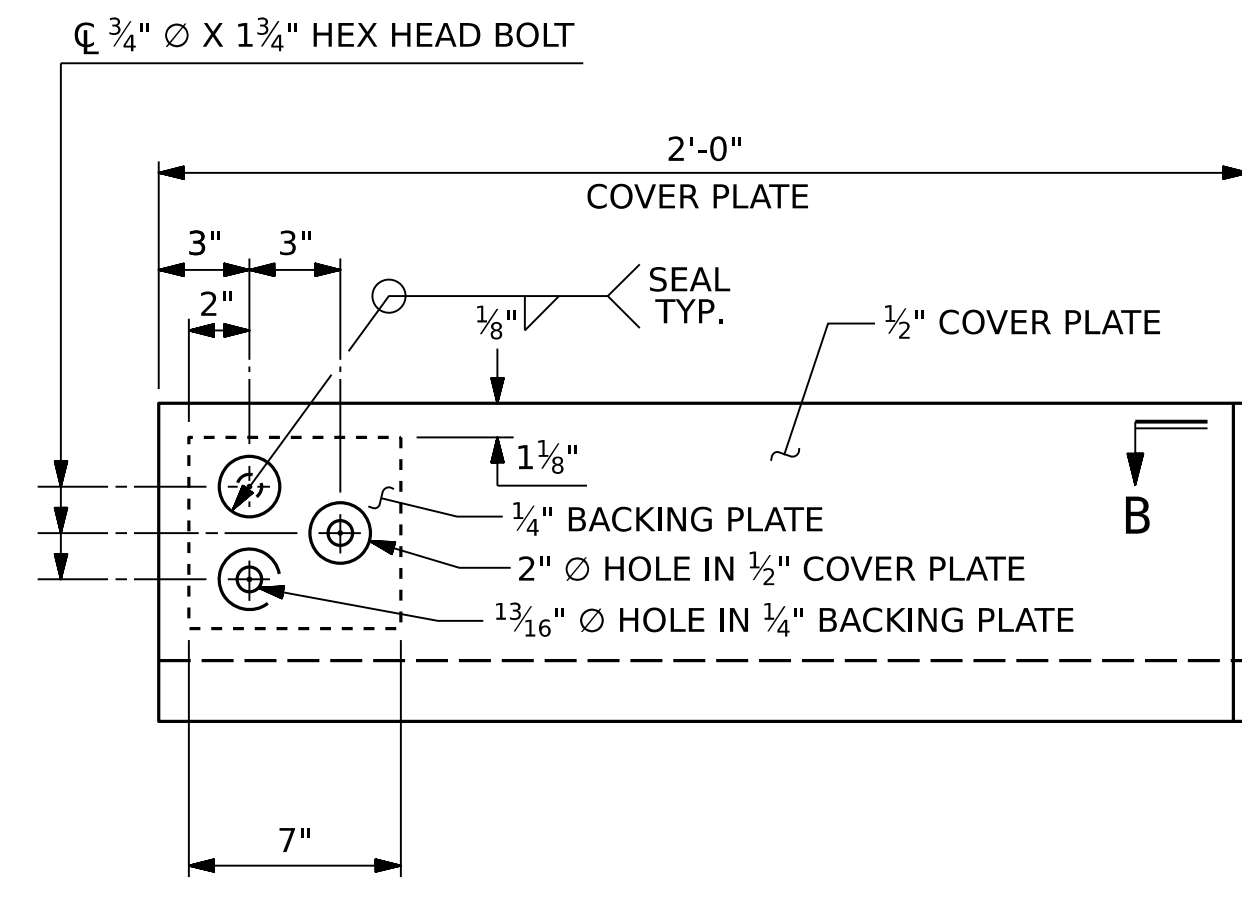
FLOW OF TRAFFIC



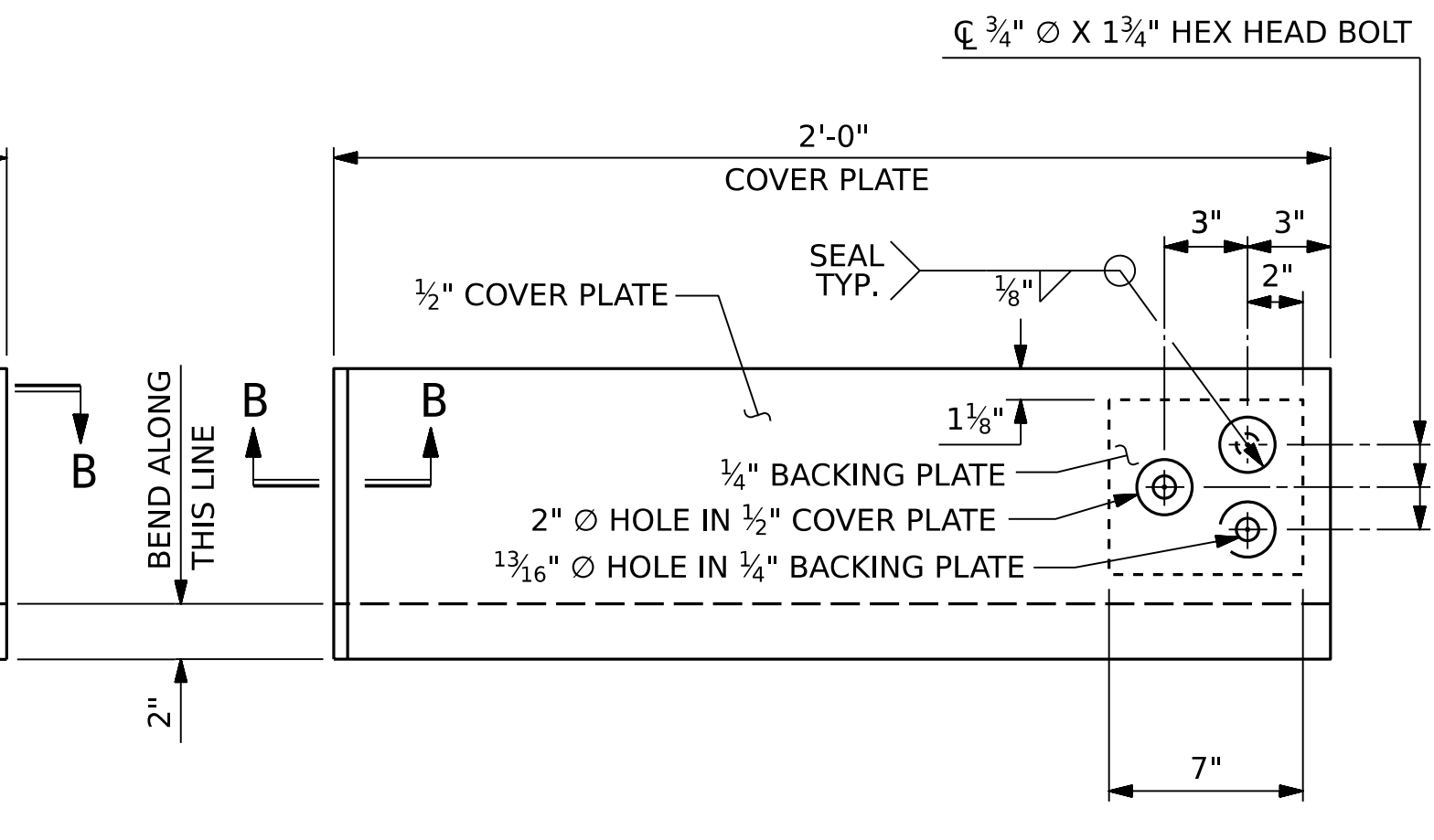
SECTION A-A



END VIEW

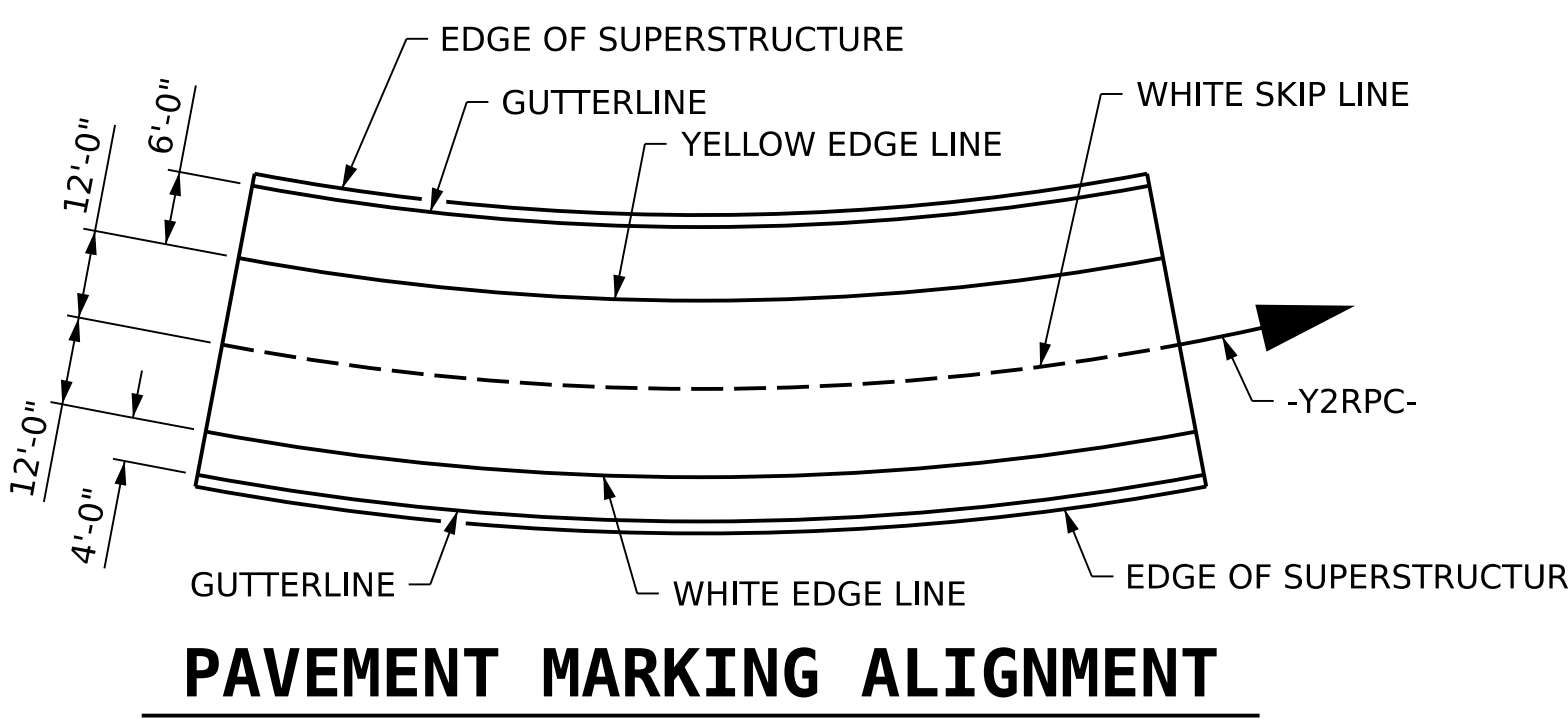


TYPE I - ELEVATION VIEW

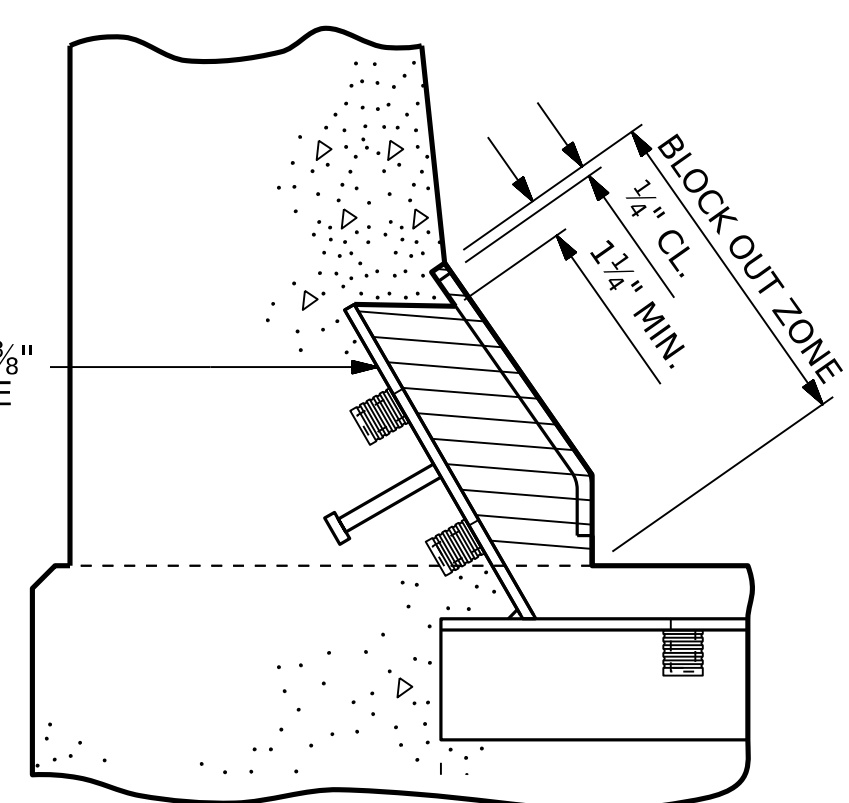


TYPE II - ELEVATION VIEW

COVER PLATE DETAILS

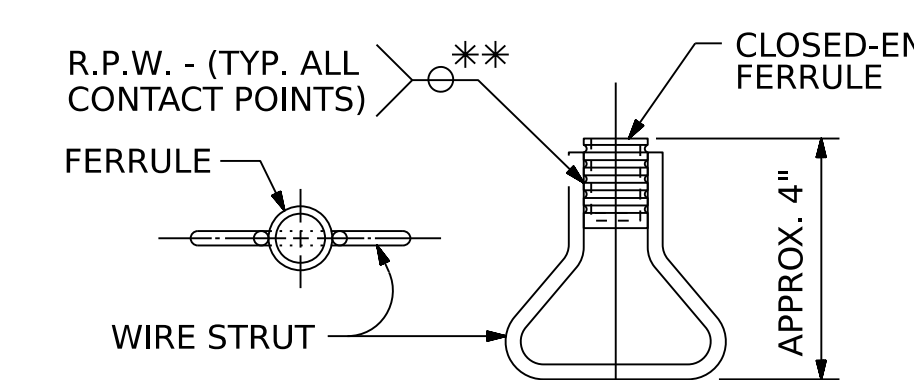


PAVEMENT MARKING ALIGNMENT



BLOCK OUT DETAIL

SEE "SECTION A-A" FOR OTHER DETAILS.



PLAN ELEVATION

CONCRETE INSERT

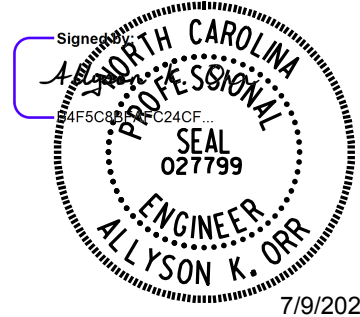
** EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. I-2513 AC

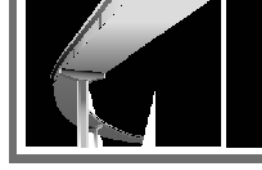
BUNCOMBE COUNTY

STATION: 28+46.00 -Y2RPC-

SHEET 2 OF 2



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UNLESS ALL SIGNATURES COMPLETED



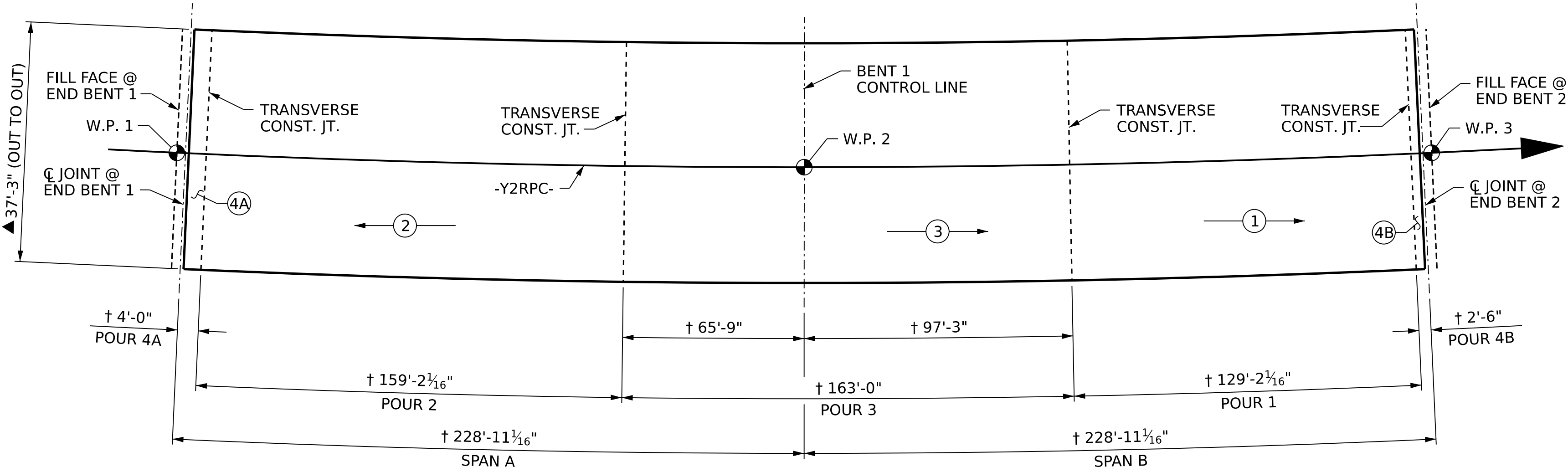
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S05-30
2			4			
TOTAL SHEETS						45

STD. NO. EJS2

ASSEMBLED BY:	B.E. LANNING	DATE:	01/2024
CHECKED BY:	J.I. BREWER	DATE:	01/2024
DESIGN ENGINEER OF RECORD:	A.K. ORR	DATE:	04/2024
DRAWN BY :	REK 9/87	REV. 7/12	MAA/GM
CHECKED BY :	CRK 10/87	REV. 6/13	MAA/GM
		REV. 12/17	MAA/THC

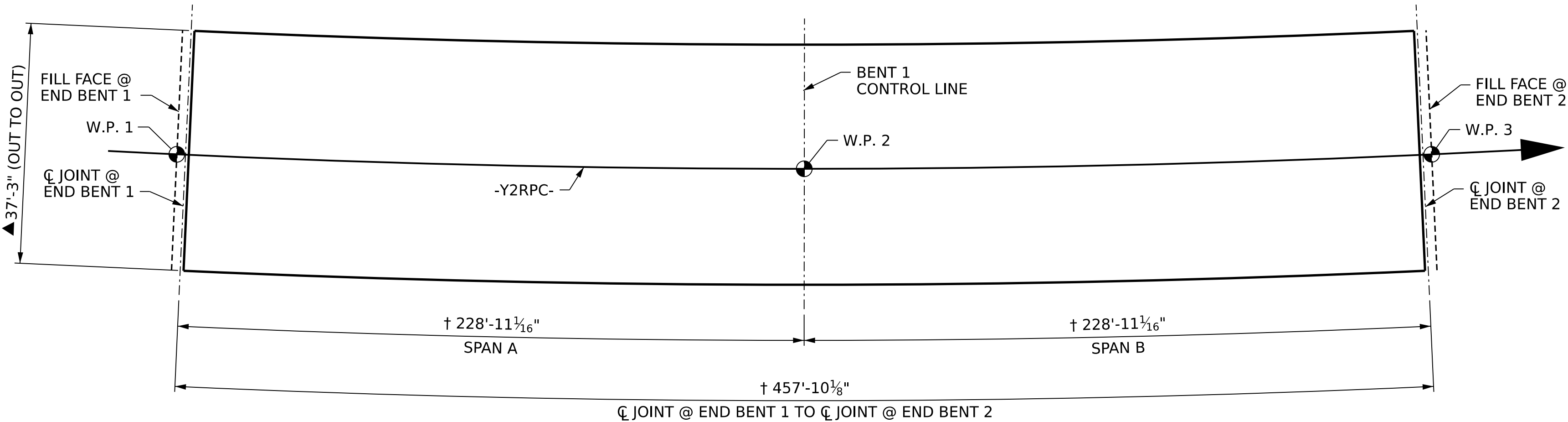
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POURING SEQUENCE

② → INDICATES POUR NUMBER AND POUR DIRECTION

▲ RADIAL DIMENSIONS
† MEASURED ALONG -Y2RPC-



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 17,052)

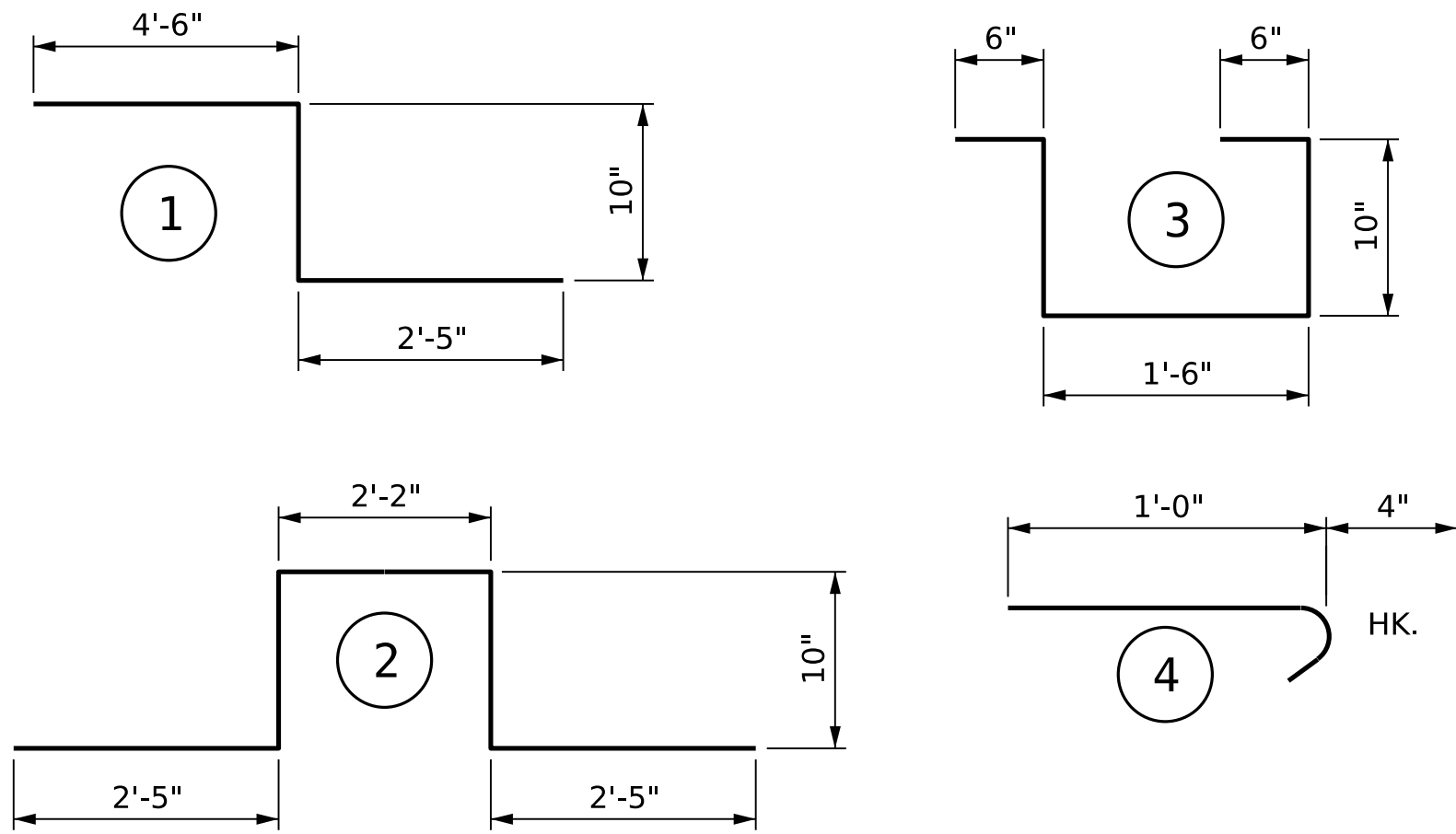
SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS					
BAR SIZE	SUPERSTRUCTURE EXCEPT APPROACH SLABS, PARAPET, AND BARRIER RAIL		APPROACH SLABS		PARAPET AND BARRIER RAIL
	EPOXY COATED	UNCOATED	EPOXY COATED	UNCOATED	
#4	1' - 11"	1' - 7"	1' - 11"	1' - 7"	2' - 6"
#5	2' - 5"	2' - 0"	2' - 5"	2' - 0"	3' - 1"
#6	2' - 10"	2' - 5"	3' - 7"	2' - 5"	3' - 8"
#7	4' - 2"	2' - 9"			
#8	4' - 9"	3' - 2"			

ASSEMBLED BY:	B.E. LANNING	DATE:	01/2024
CHECKED BY :	A.K. ORR	DATE:	01/2024
DESIGN ENGINEER OF RECORD:	A.K. ORR	DATE:	04/2024
DRAWN BY :	JMB 5/87	REV. 10/1/11	MAA/GM
CHECKED BY :	SJD 9/87	REV. 12/17	MAA/THC
		REV. 06/19	BNB/THC

REINFORCING BAR SCHEDULE

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*A1	910	#5	STR	36'-11"	35,039
A2	910	#5	STR	36'-11"	35,039
*A101	2	#5	STR	28'-0"	58
*A102	2	#5	STR	17'-1"	36
*A103	2	#5	STR	6'-3"	13
A201	2	#5	STR	35'-3"	74
A202	2	#5	STR	24'-4"	51
A203	2	#5	STR	13'-6"	28
B1	352	#5	STR	59'-2"	21,722
*B2	234	#5	STR	53'-1"	12,956
*B3	240	#6	STR	60'-0"	21,629
*G1	2	#5	STR	36'-11"	77
*J1	68	#4	4	1'-5"	64
*K1	12	#5	1	7'-9"	97
*K2	12	#5	2	8'-8"	108
*K3	18	#5	STR	7'-10"	147
*S1	54	#4	3	4'-2"	150

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

SUPERSTRUCTURE BILL OF MATERIAL

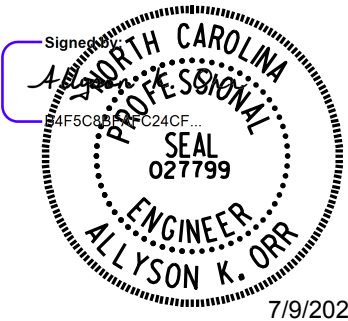
	CLASS AA CONCRETE (CU. YDS.)	REINFORCING STEEL (LBS.)	*EPOXY COATED REINFORCING STEEL (LBS.)
POUR #1	160.1	-	-
POUR #2	197.3	-	-
POUR #3	202.0	-	-
POUR #4A	6.3	-	-
POUR #4B	4.5	-	-
TOTALS⊗	570.2	56,914	70,374

⊗ QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

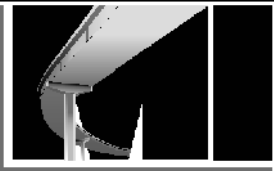
GROOVING BRIDGE FLOORS

APPROACH SLABS	1,478 SQ.FT.
BRIDGE DECK	14,155 SQ.FT.
TOTAL	15,633 SQ.FT.

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-



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

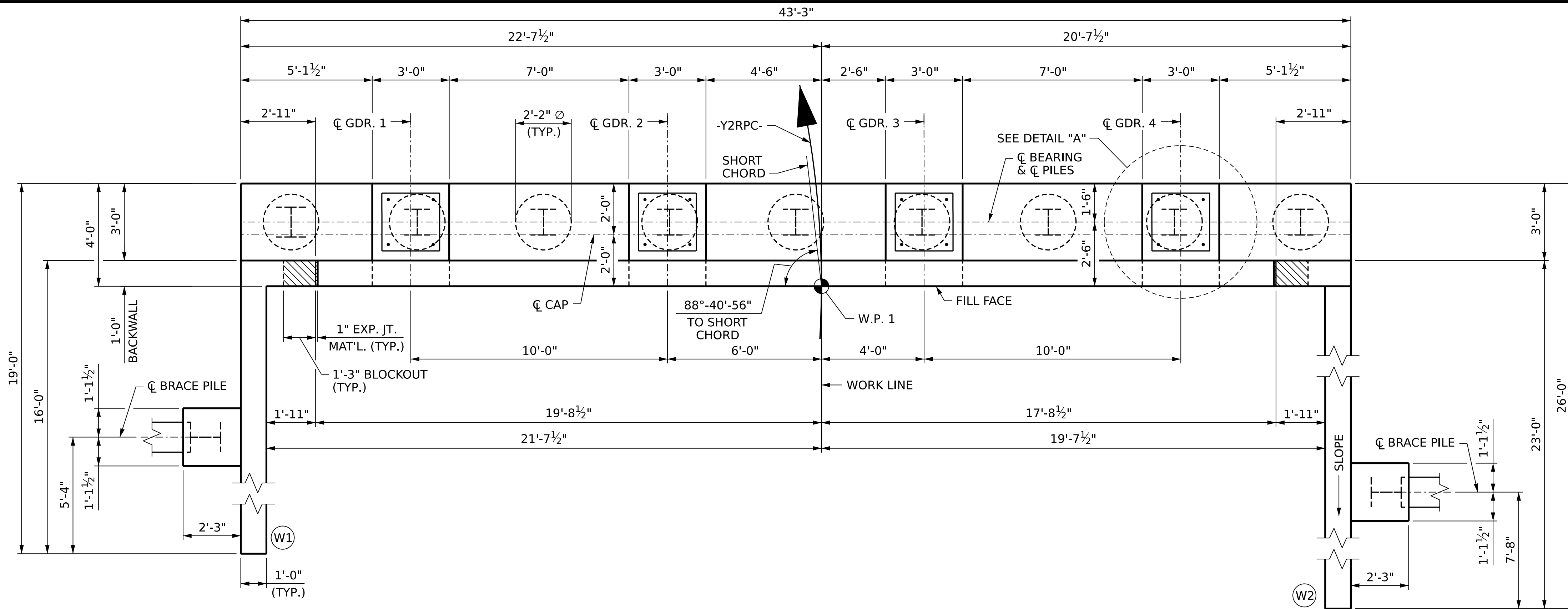
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
SUPERSTRUCTURE
BILL OF MATERIAL

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

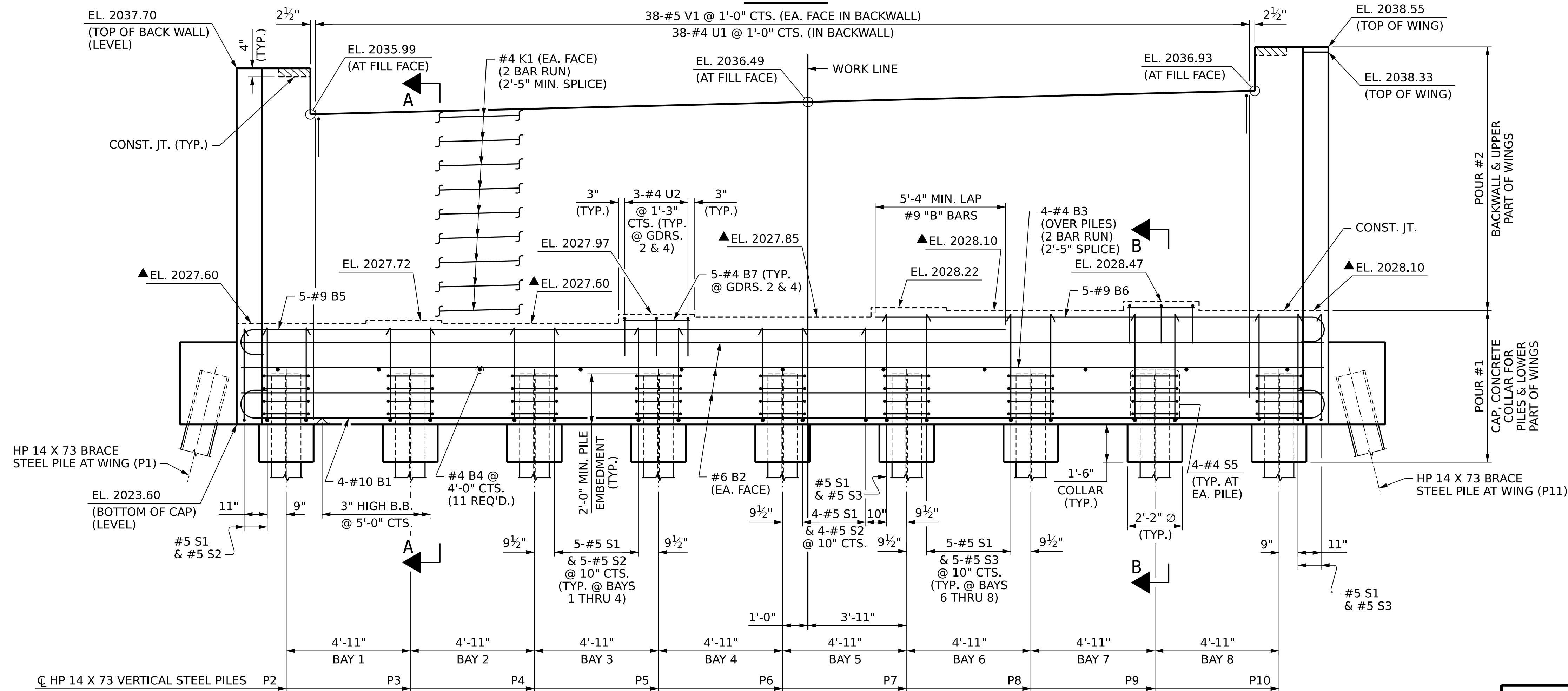
SHEET NO. S05-31
TOTAL SHEETS 45

STD. NO. BOM1

7/9/2026
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Filename: N:\NC Bridges\W21002-I-2513A I-26 (AECOM)\I-2513AC\Structures\SITES\05.063.I2513AC.SMU.EIA.S05-32-100906.dgn



PLAN



ELEVATION

NOTES:

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS AND PIPE INSERTS.

#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%.

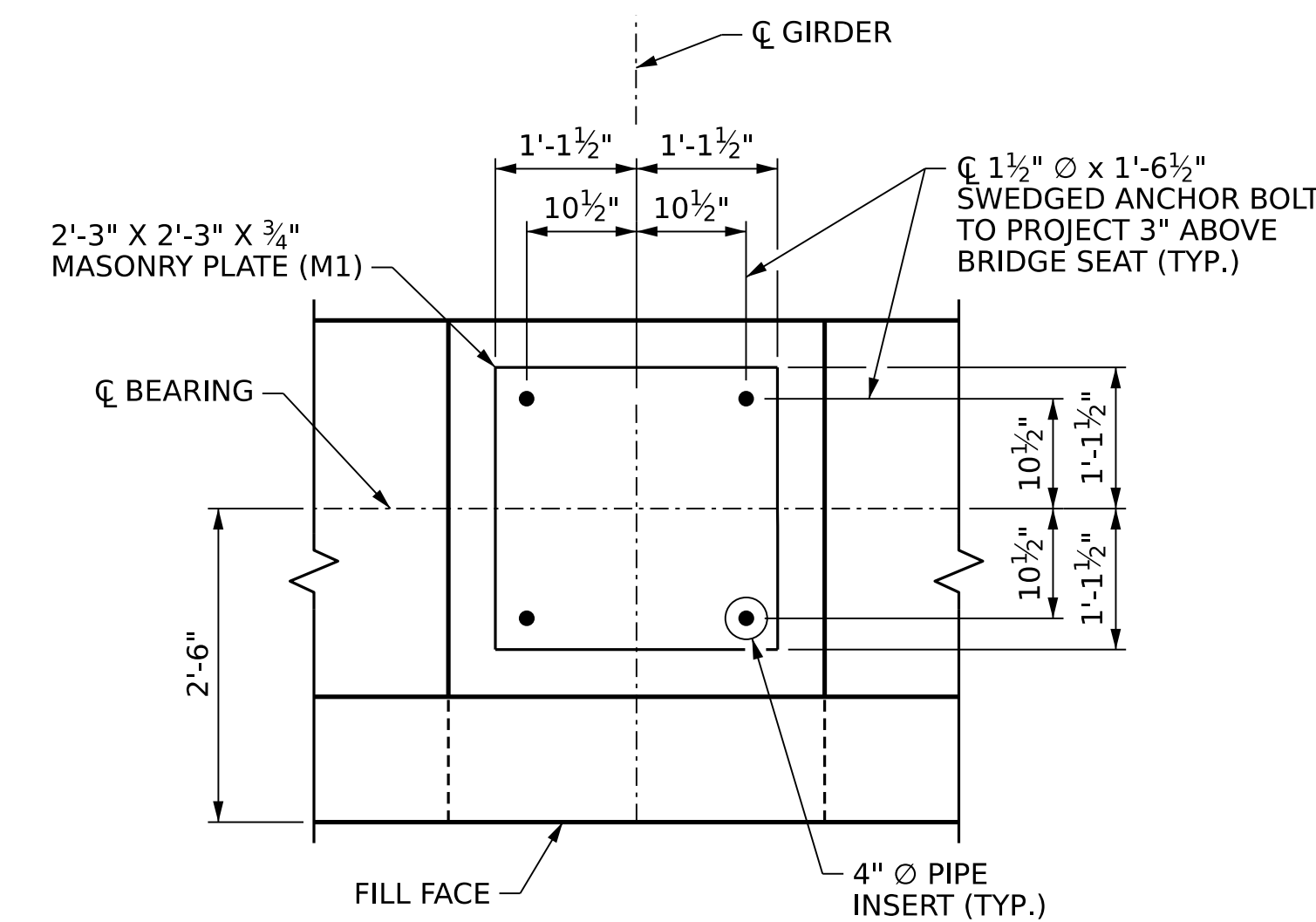
▲ FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS, SEE SECTION A-A ON SHEET 3 OF 3.

FOR SECTION A-A, SECTION B-B, PILE SPLICE DETAILS, AND TEMPORARY DRAINAGE DETAILS, SEE SHEET 3 OF 3.

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

FOR PIPE INSERT DETAILS, SEE BEARINGS SHEETS.

THE CONTRACTOR HAS THE OPTION TO INSTALL THE WING PILES VERTICALLY IF PILE EXCAVATION IS NEEDED.



DETAIL "A"

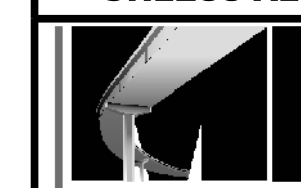
PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1
PLAN AND ELEVATION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

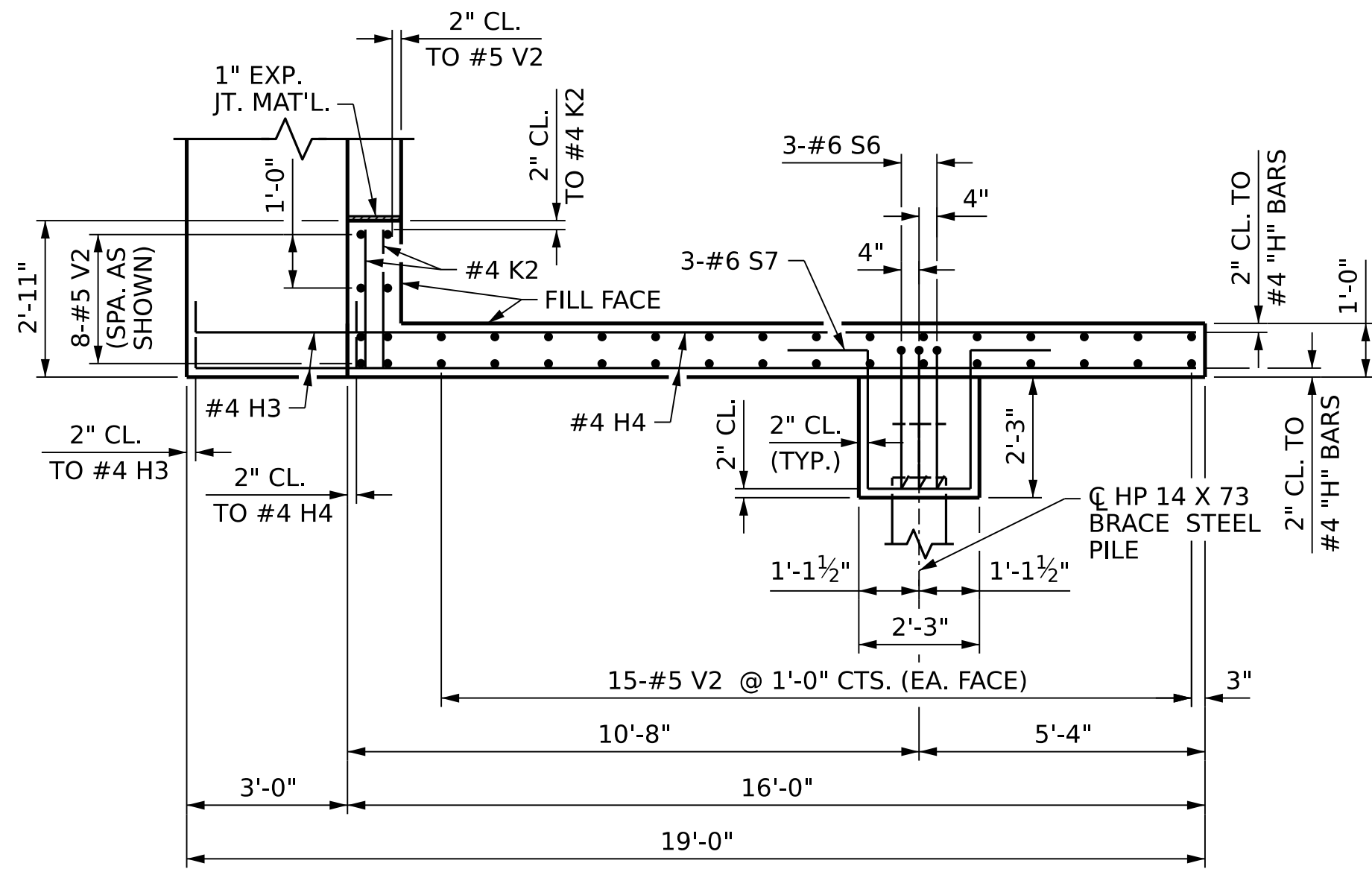


MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

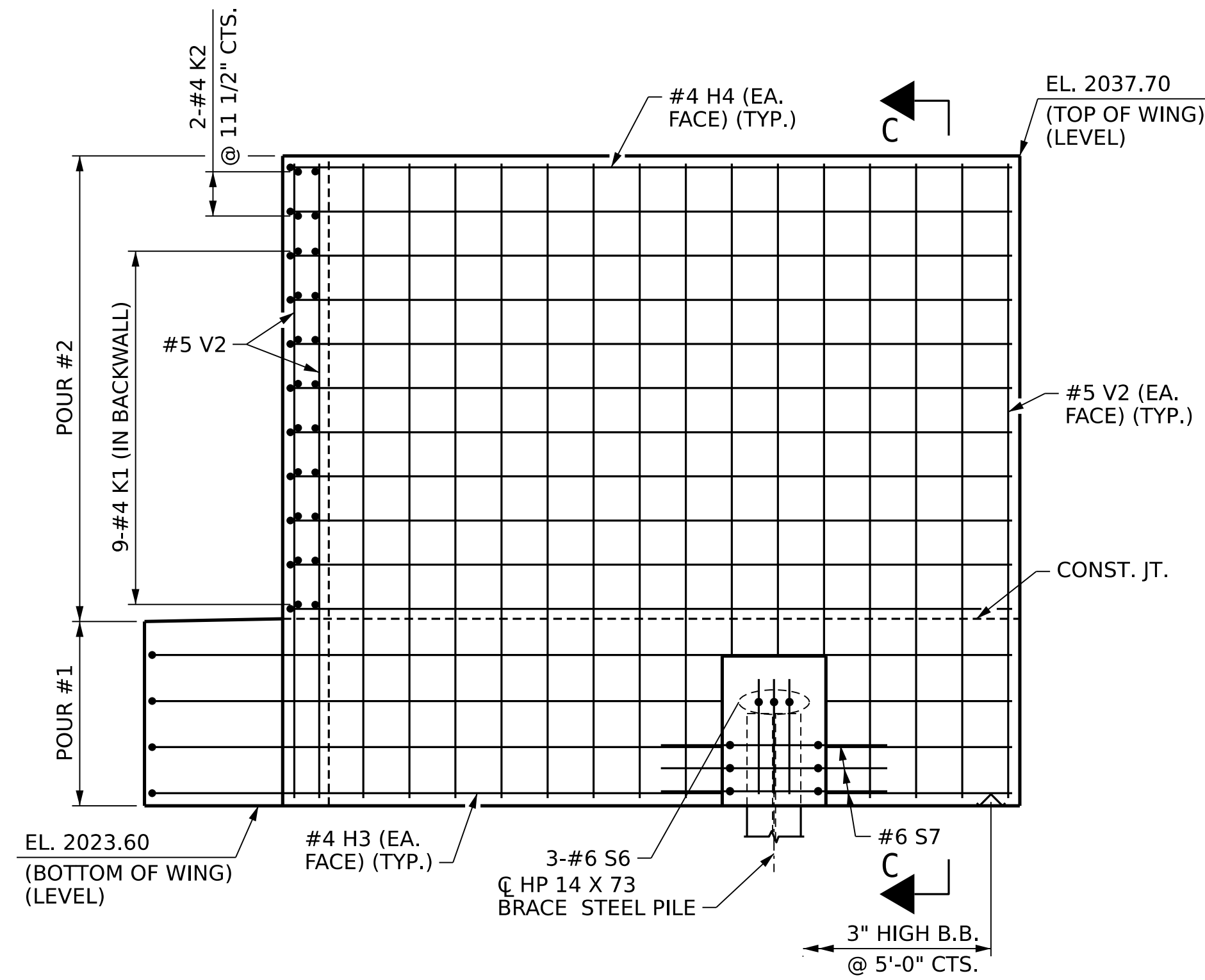
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S05-32
2			4			

TOTAL
SHEETS
45

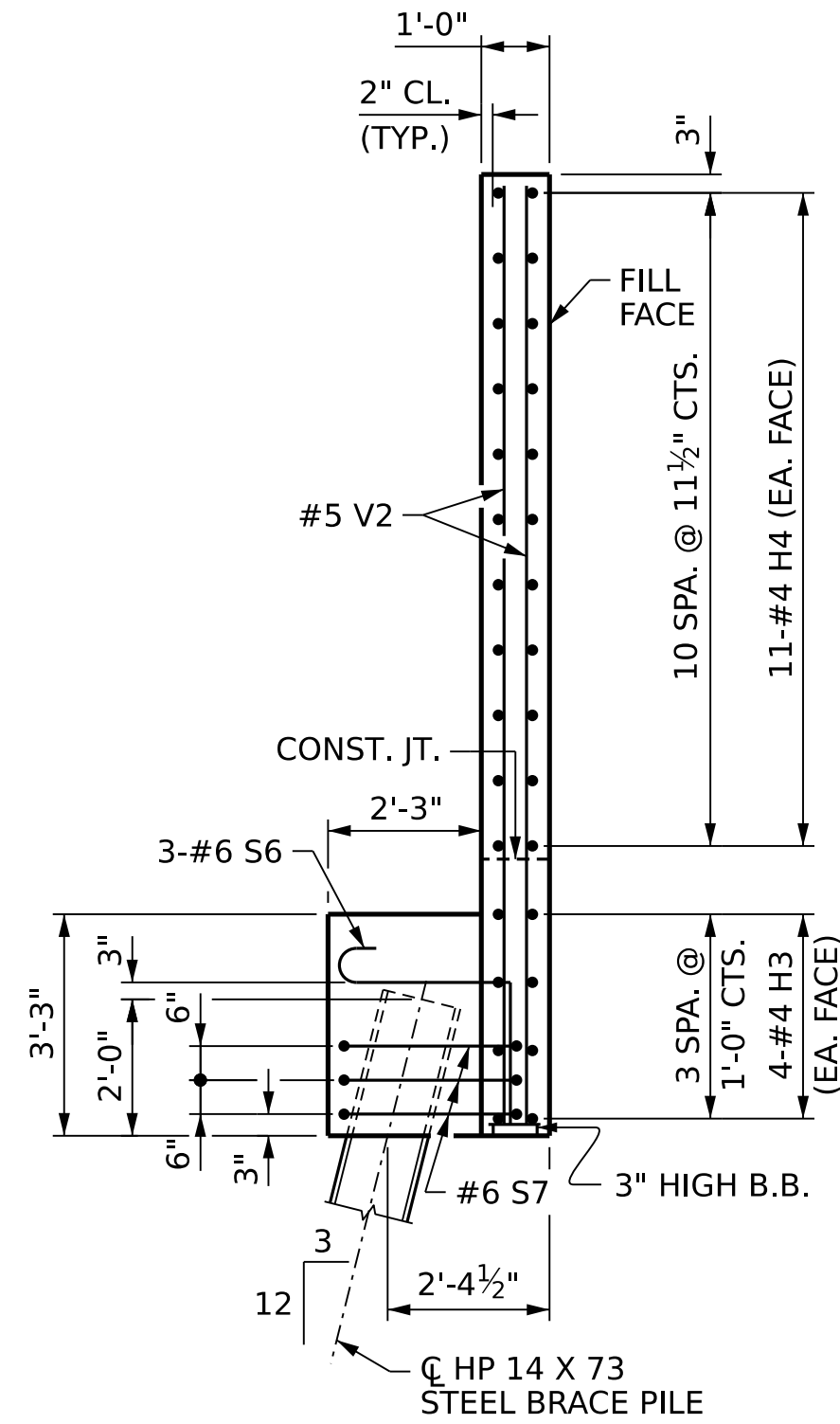
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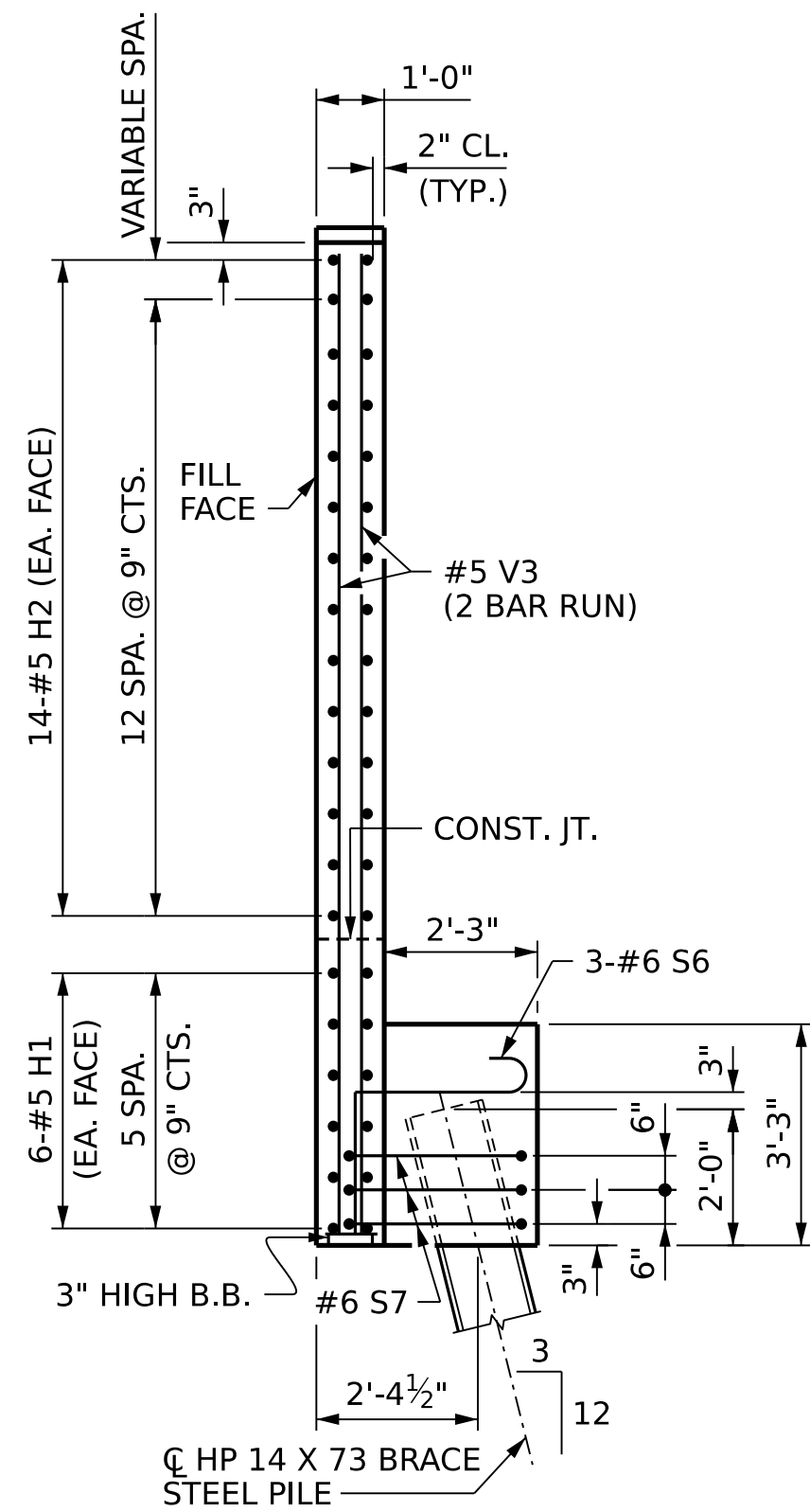
PLAN OF WING W1



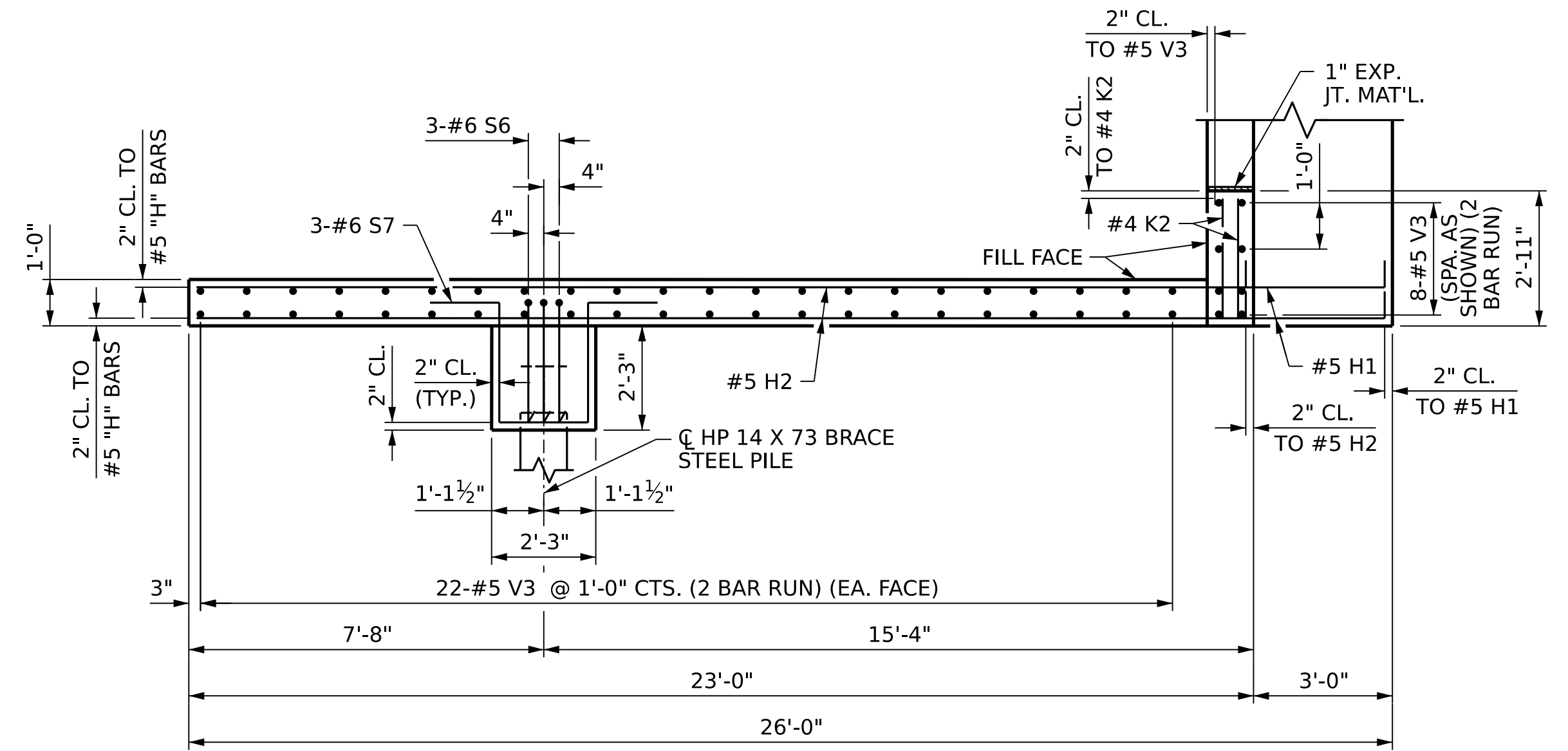
ELEVATION OF WING W1



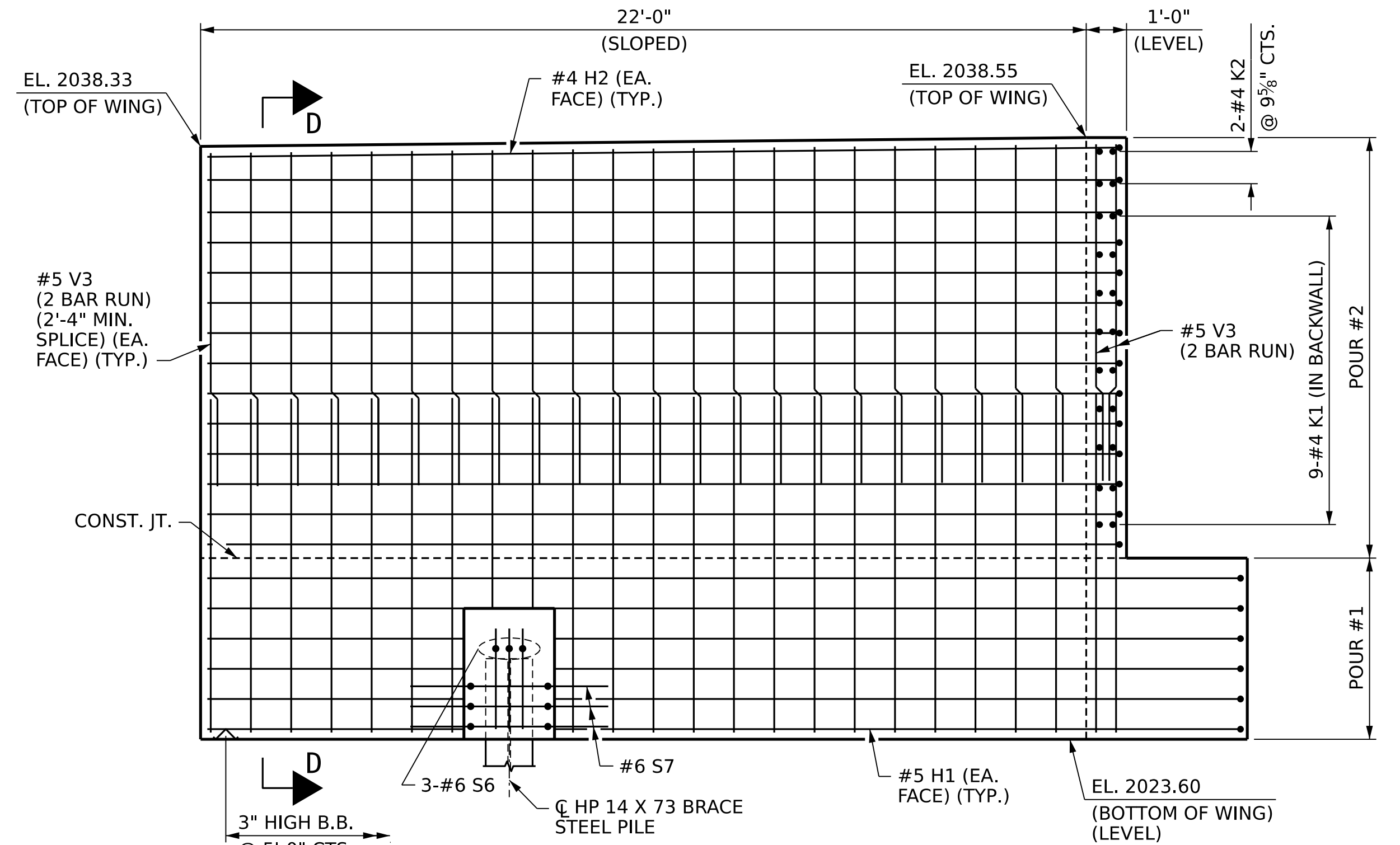
SECTION C-C



SECTION D-D



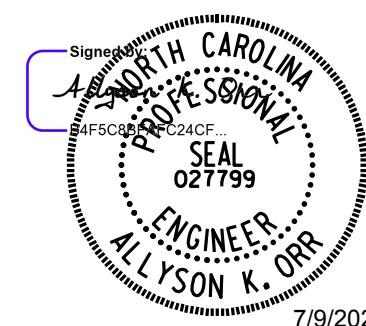
PLAN OF WING W2



ELEVATION OF WING W2

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-

SHEET 2 OF 3



DOCUMENT NOT CONSIDERED FINAL
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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			S05-33
2			4			

TOTAL SHEETS 45

DRAWN BY: B.E. LANNING DATE: 01/2024
CHECKED BY: A.K. ORR DATE: 01/2024
DESIGN ENGINEER OF RECORD: A.K. ORR DATE: 12/2025



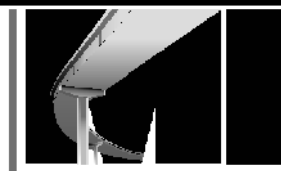
CLASS A CONCRETE BREAKDOWN		
POUR #1 (CAP & LOWER PART OF WINGS)	37.0	C.Y.
POUR #2 (BACKWALL & UPPER PART OF WINGS)	28.0	C.Y.
TOTAL	65.0	C.Y.

SHEET 3 OF 3

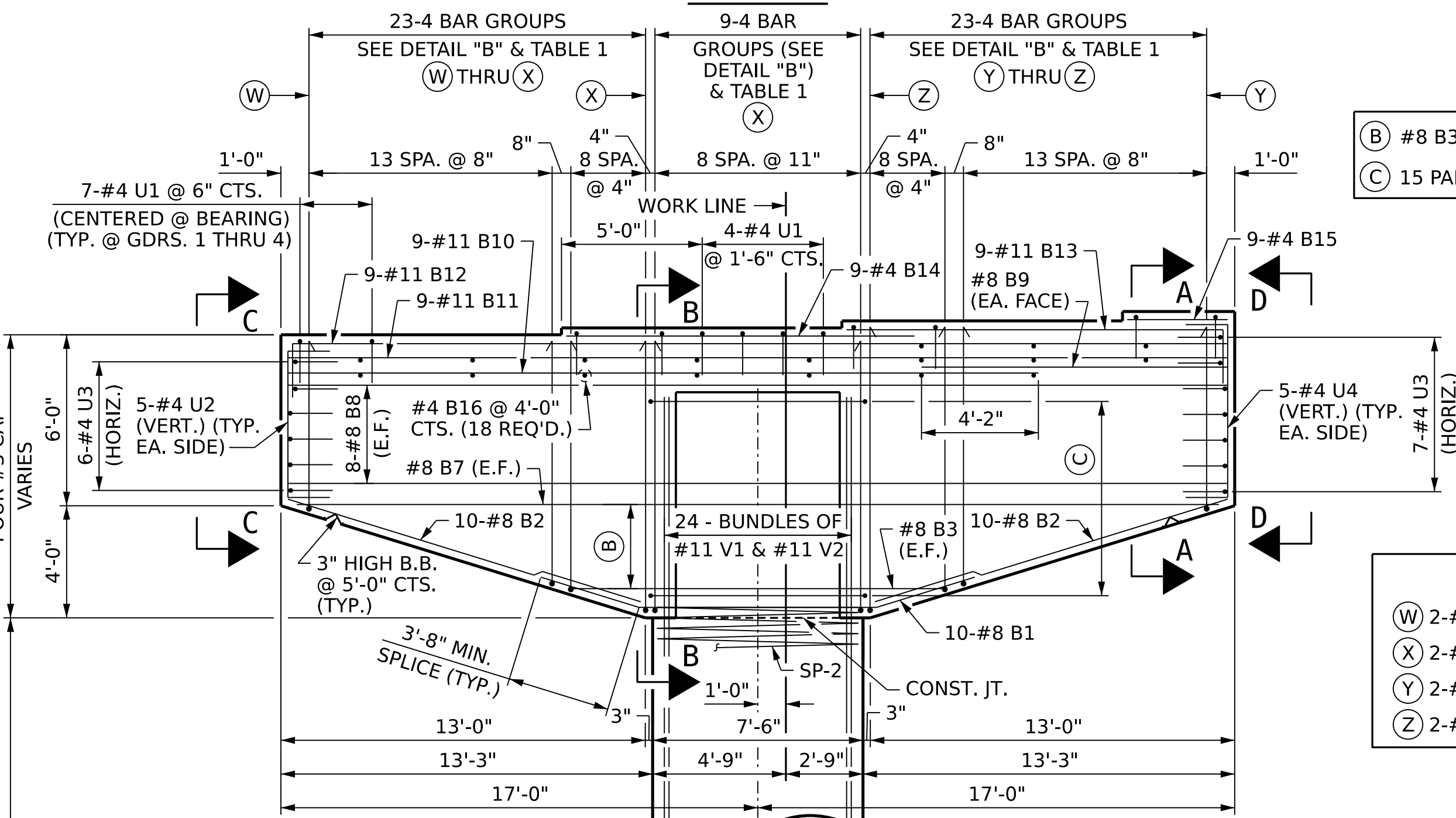
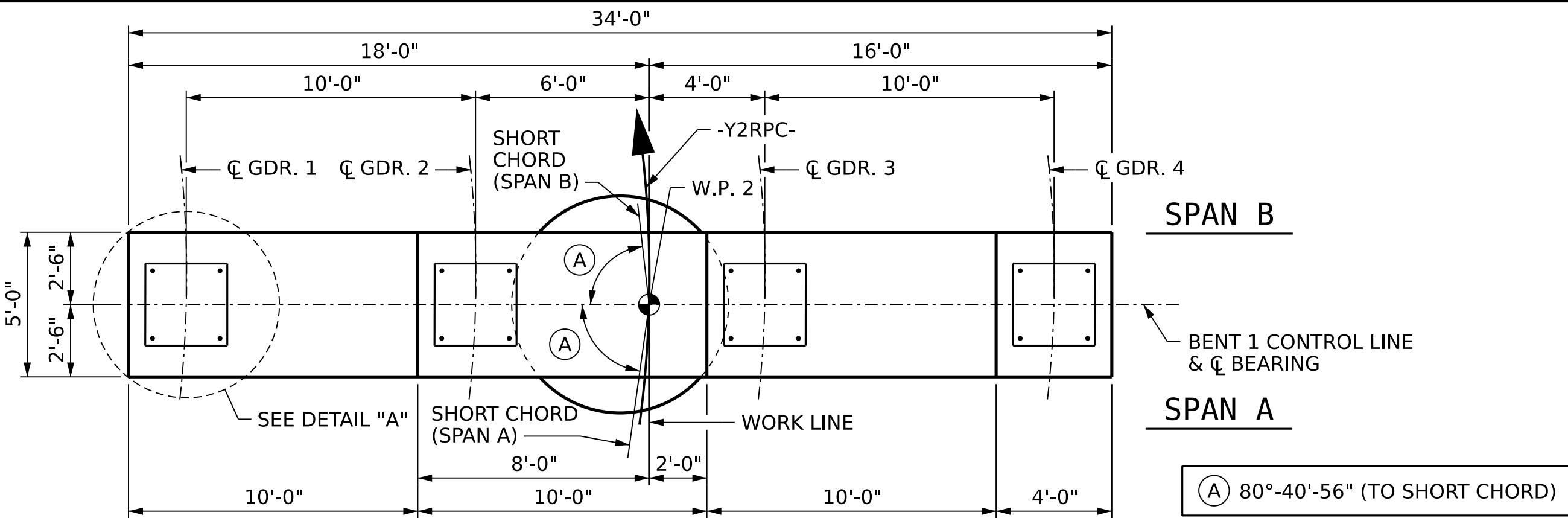
SUBSTRUCTURE
END BENT 1
DETAILS AND
BILL OF MATERIAL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-34
1			3			TOTAL SHEETS 45
2			4			

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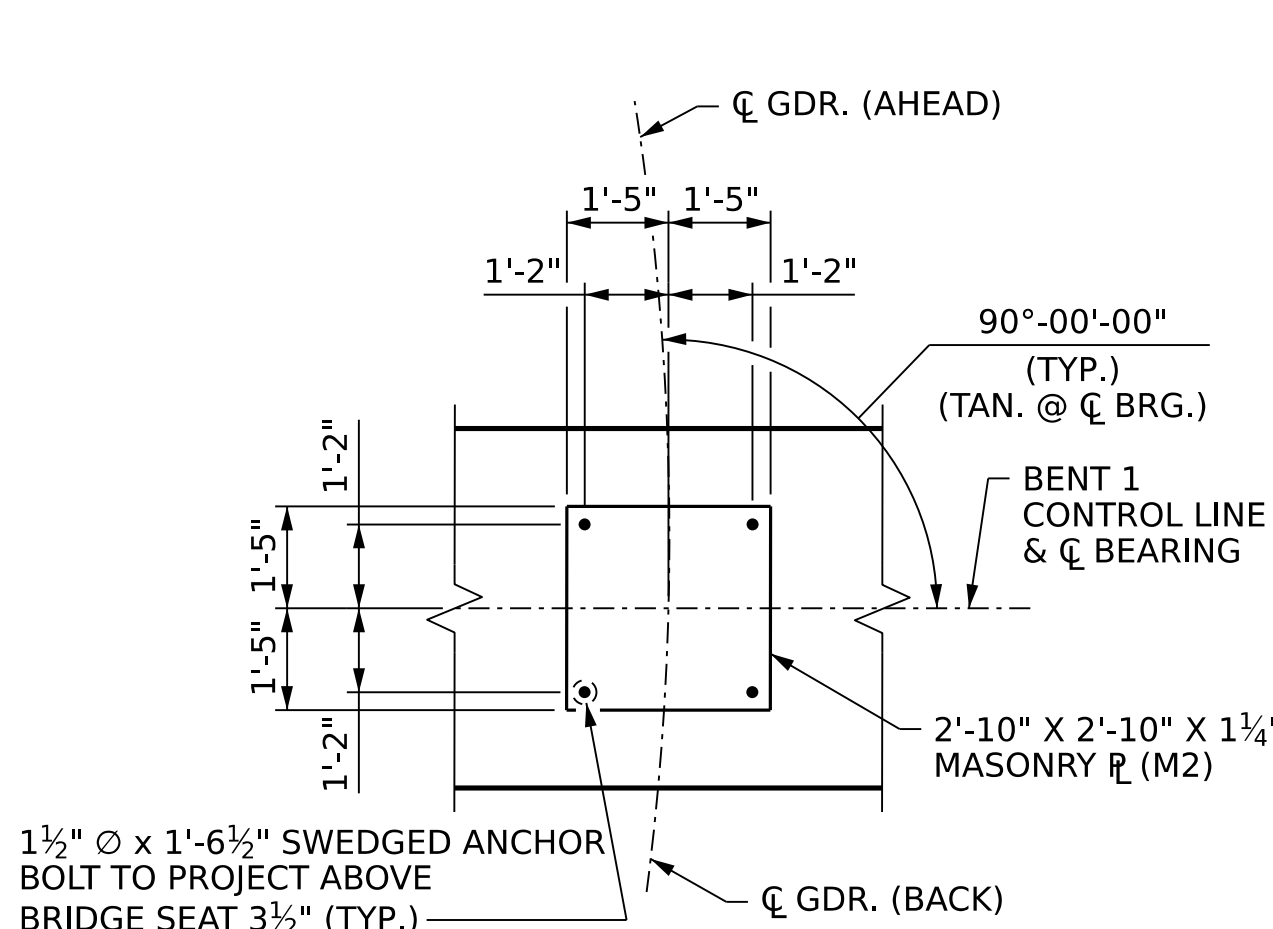
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 1
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671



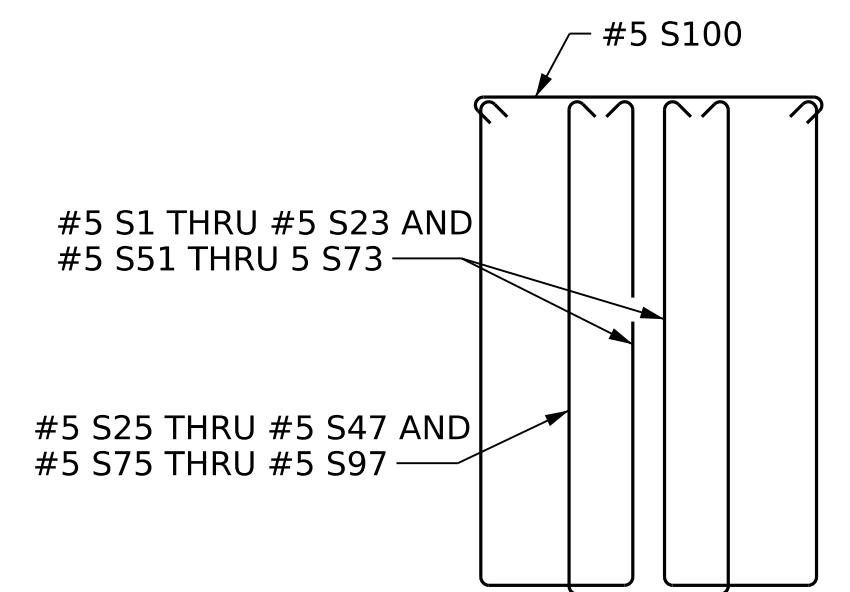
- (B) #8 B3 THRU #8 B7 @ 9" CTS. (EA. FACE)
(C) 15 PAIRS-#4 S101 @ 6" CTS.

TABLE 1	
(W)	2-#5 S1, #5 S25, #5 S100
(X)	2-#5 S23, #5 S47, #5 S100
(Y)	2-#5 S51, #5 S75, #5 S100
(Z)	2-#5 S73, #5 S97, #5 S100

PERMITTED CONSTRUCTION JOINT
IN THE COLUMN SHALL BE LOCATED
16'-0" ABOVE THE DRILLED PIER.

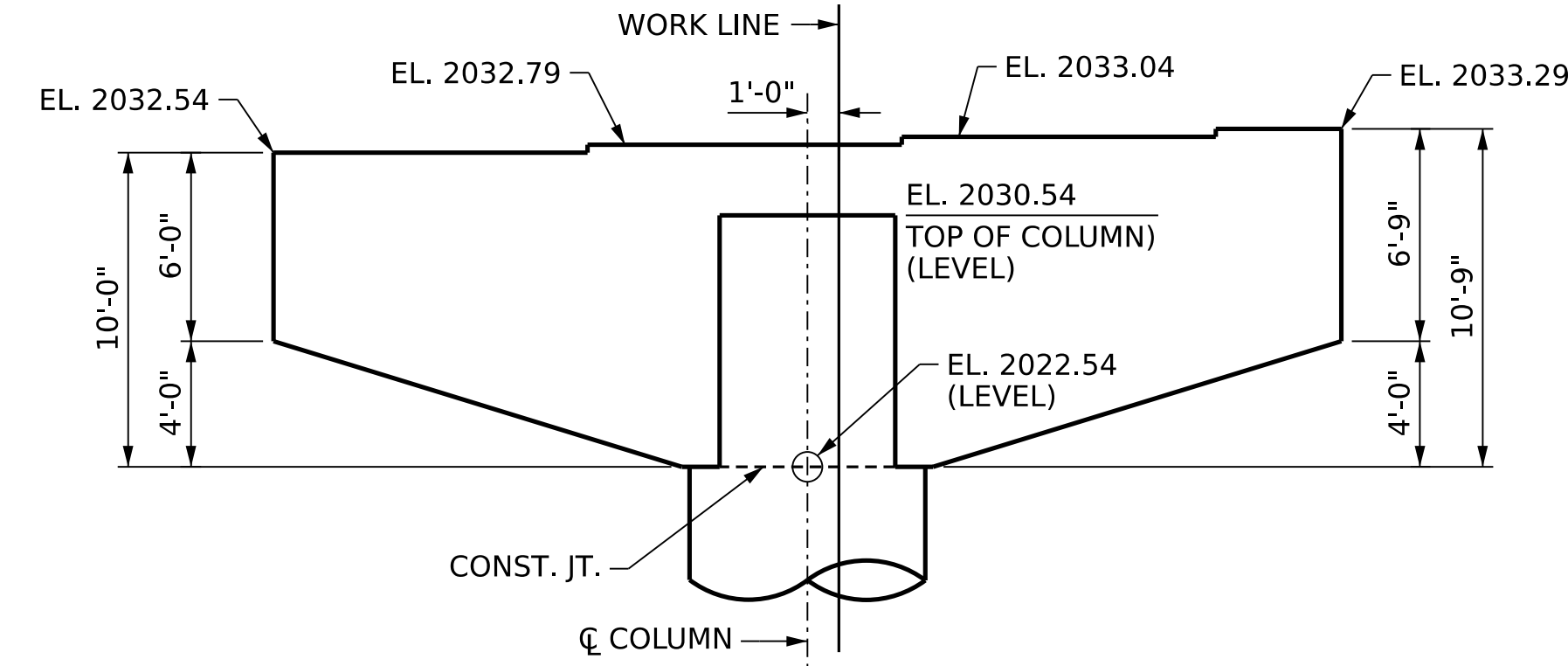


DETAIL "A"



DETAIL "B"

(BARS OFFSET FOR CLARITY)



BENT CAP LAYOUT

NOTES:

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

DETAILED DRAWINGS FOR FALSEWORK AND FORMS FOR THIS HAMMERHEAD BENT CAP SHALL BE SUBMITTED. SEE SHEET SN.

FOR SECTIONS A-A AND B-B, SEE SHEET 2 OF 4.

FOR VIEWS C-C AND D-D, SEE SHEET 2 OF 4.

FOR END ELEVATION, SEE SHEET 2 OF 4.

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 EXTRA LENGTH.

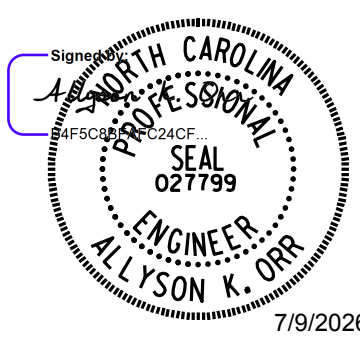
THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIER IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.

FOR 1½" Ø ANCHOR BOLTS, SEE "DISC BEARING DETAILS" SHEET.

THE COLUMN SHALL BE CONSIDERED MASS CONCRETE. SEE SPECIAL PROVISIONS.

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-

SHEET 1 OF 4



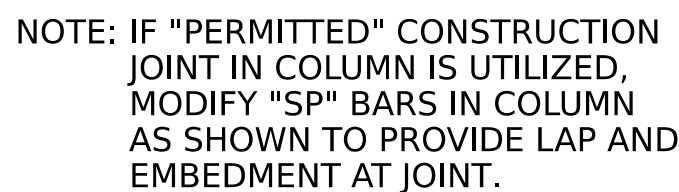
**DOCUMENT NOT CONSIDERED FINAL
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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S05-35
2			4			
TOTAL SHEETS						45

DRAWN BY: B.E. LANNING DATE: 03/2024
CHECKED BY: A.K. ORR DATE: 03/2024
DESIGN ENGINEER OF RECORD: A.K. ORR DATE: 12/2025

ELEVATION

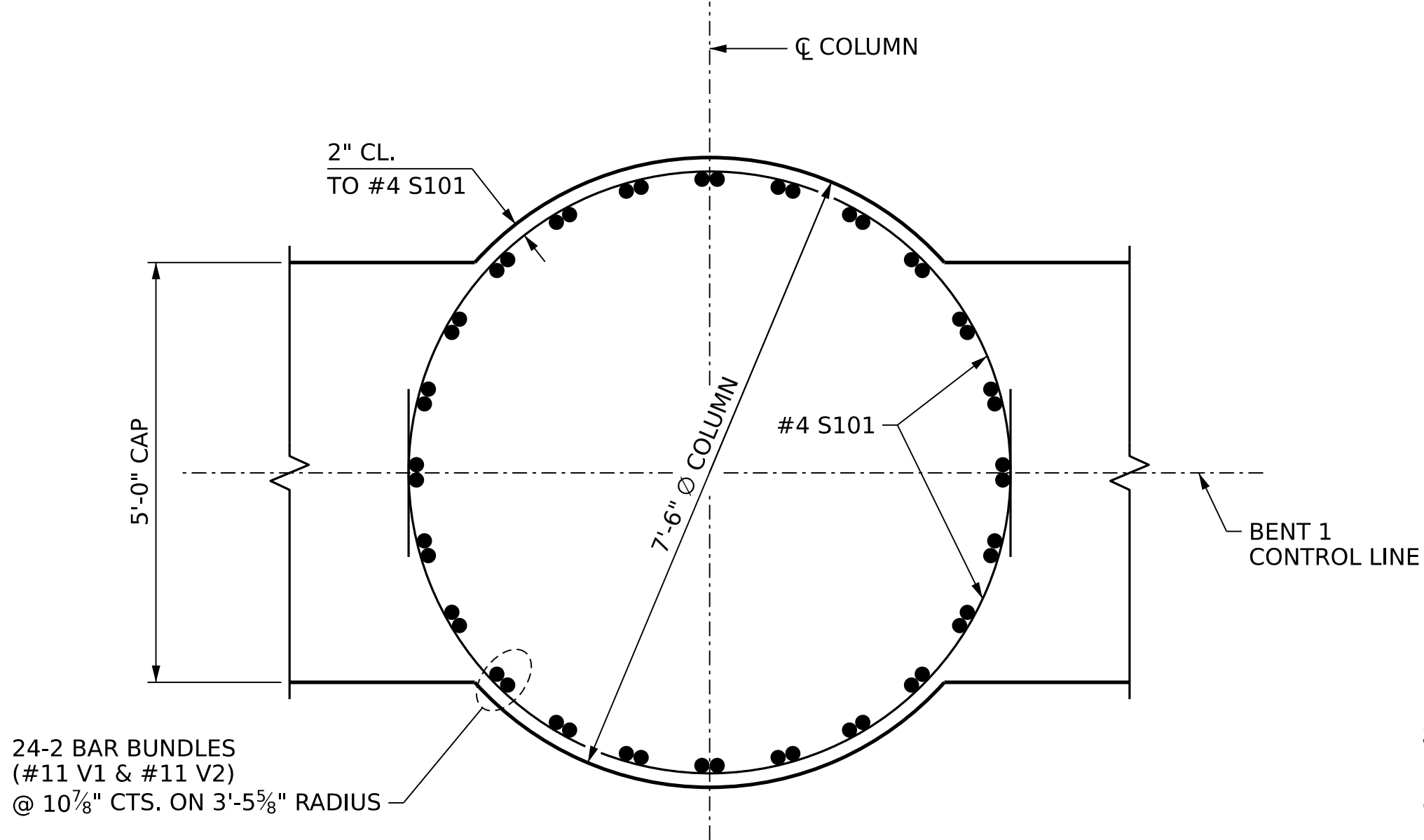


PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
 STATION: 28+46.00 -Y2RPC-

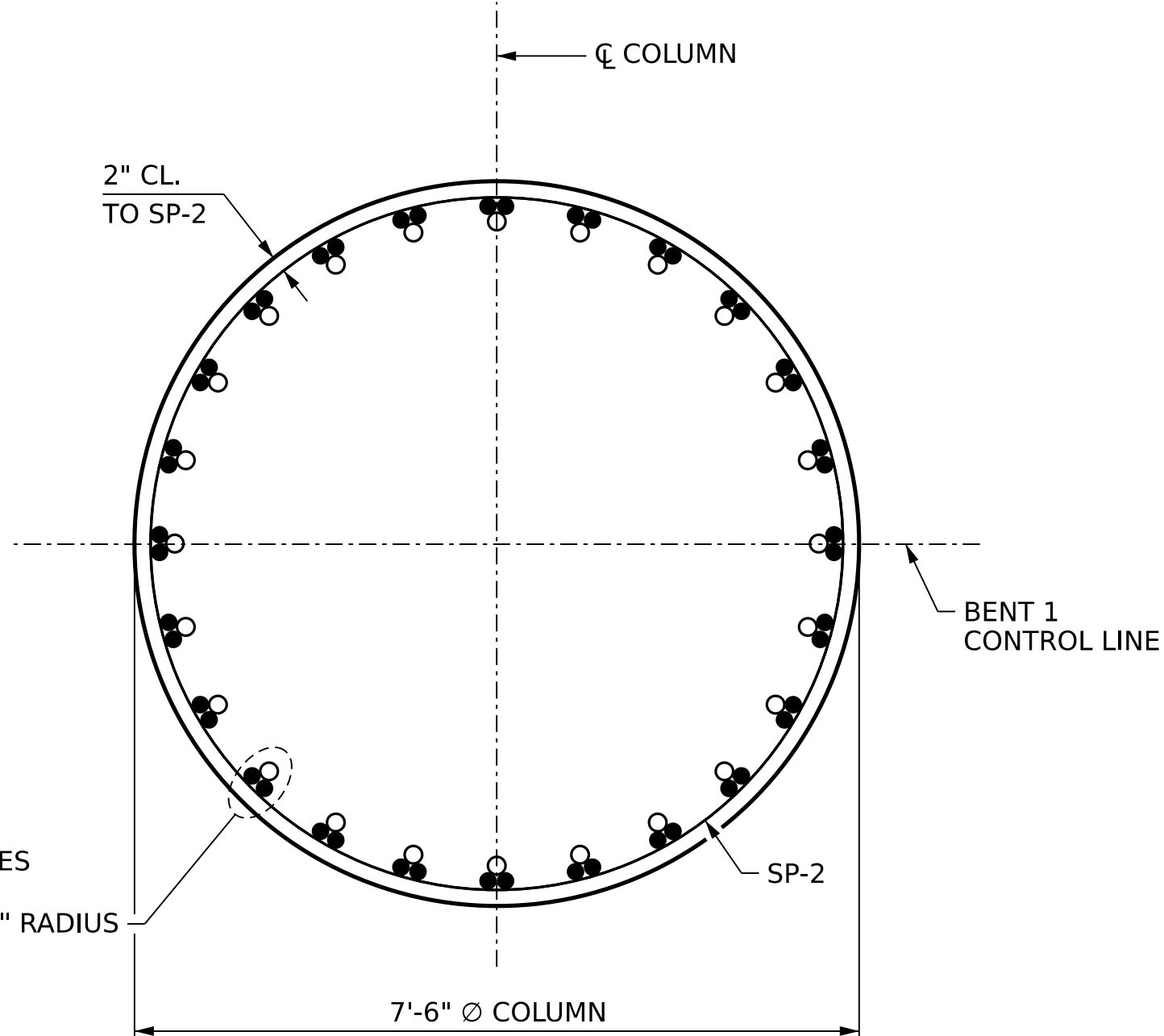
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 1
SECTIONS AND DETAILS

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:		S05-36	
		1						3						TOTAL SHEETS 45	
		2						4							

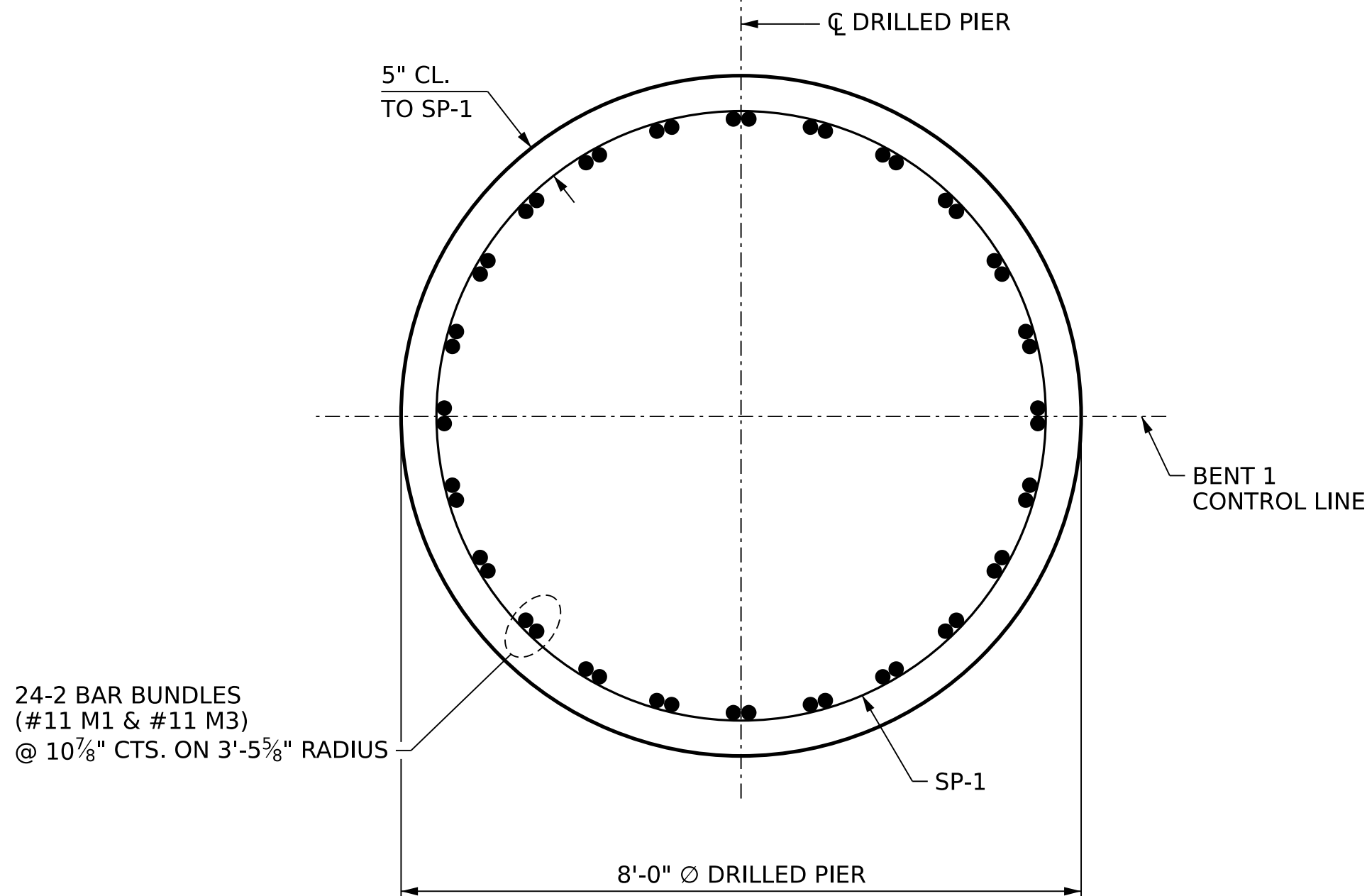
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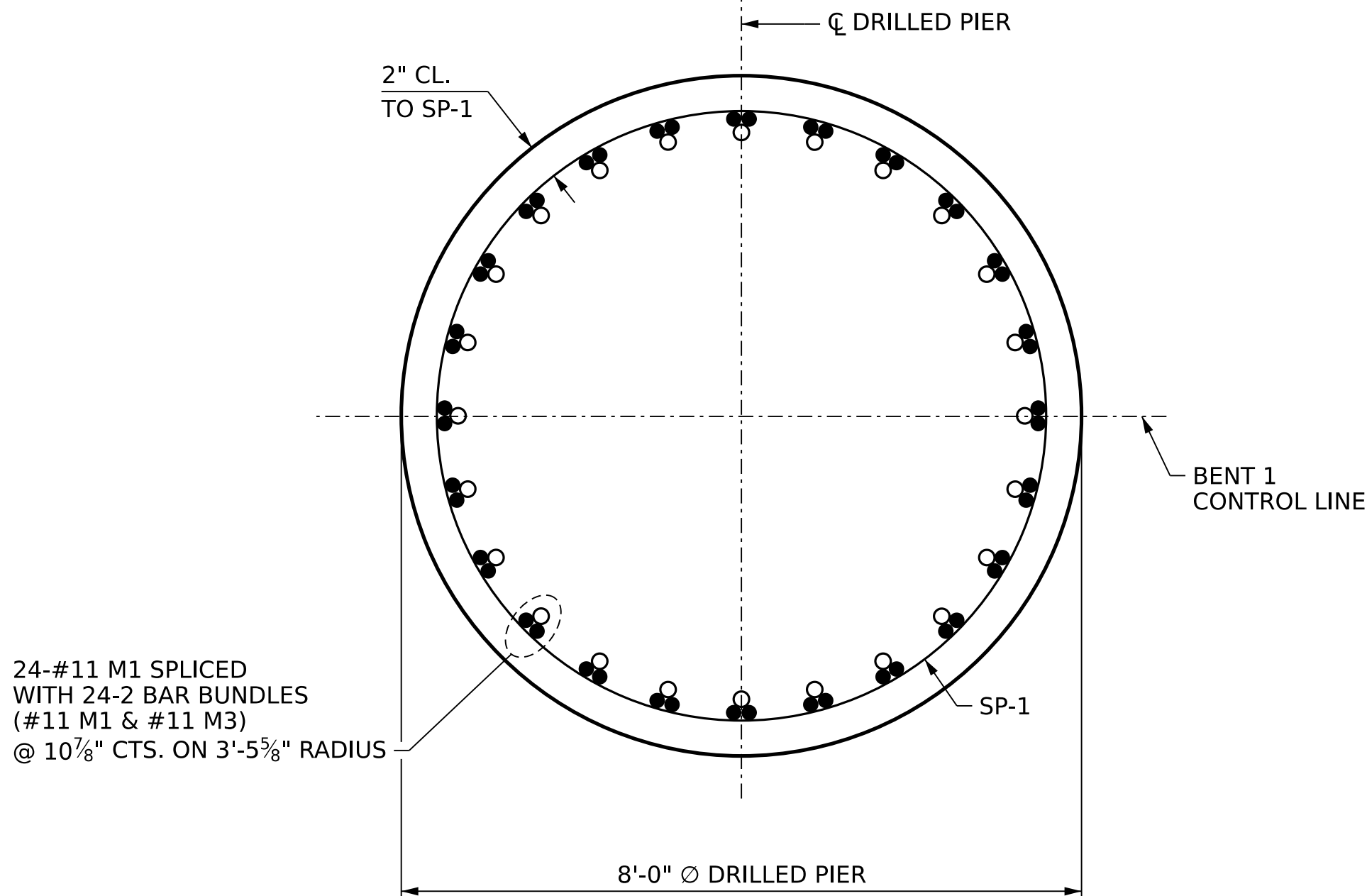
SECTION E-E
(CAP REINFORCING NOT SHOWN FOR CLARITY)



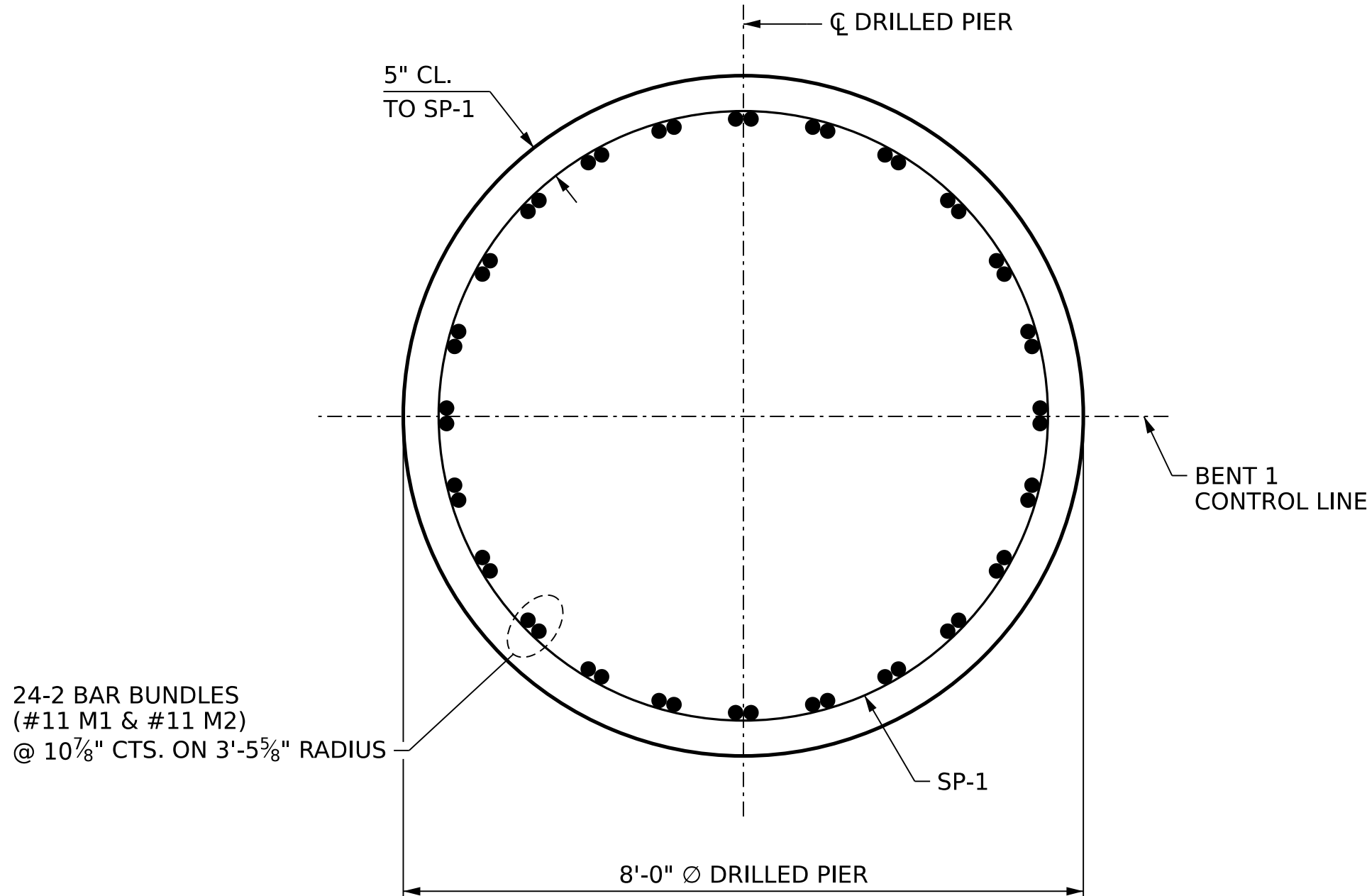
SECTION F-F



SECTION G-G



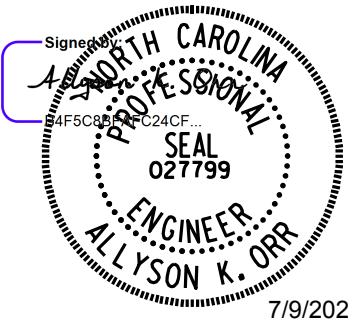
SECTION H-H



SECTION I-I

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-

SHEET 3 OF 4



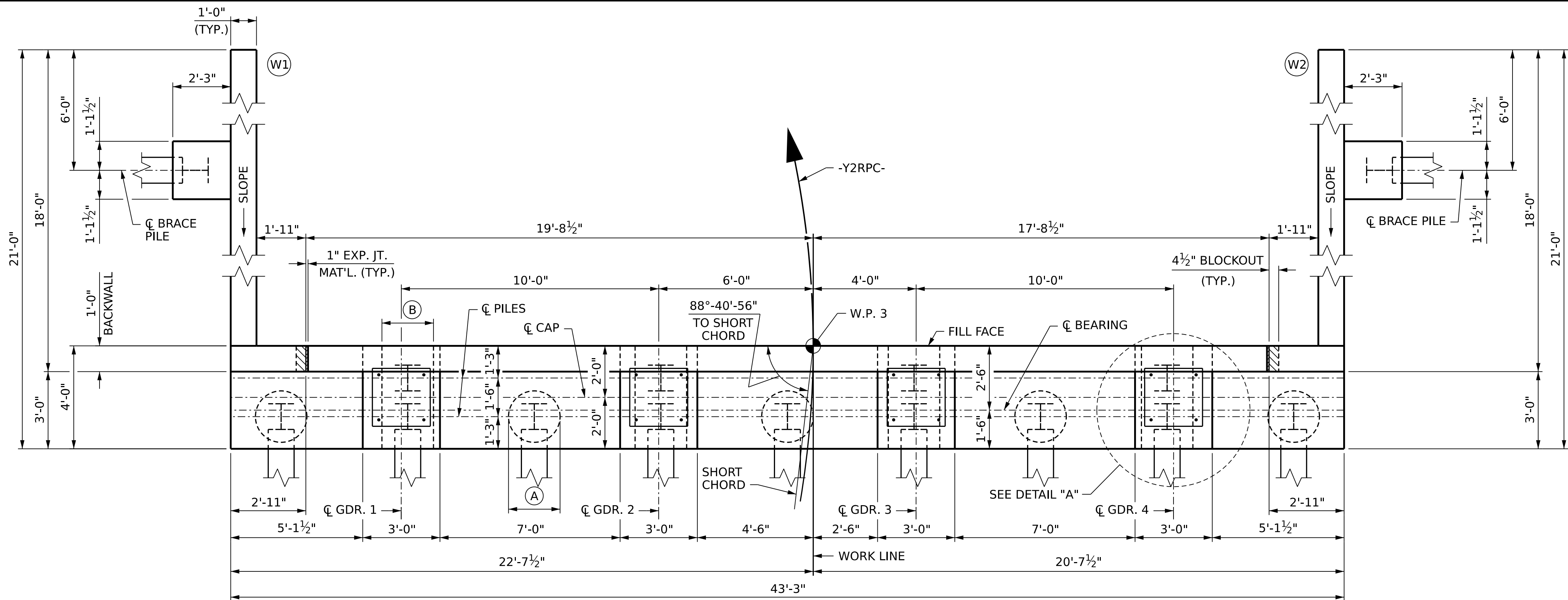
**DOCUMENT NOT CONSIDERED FINAL
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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

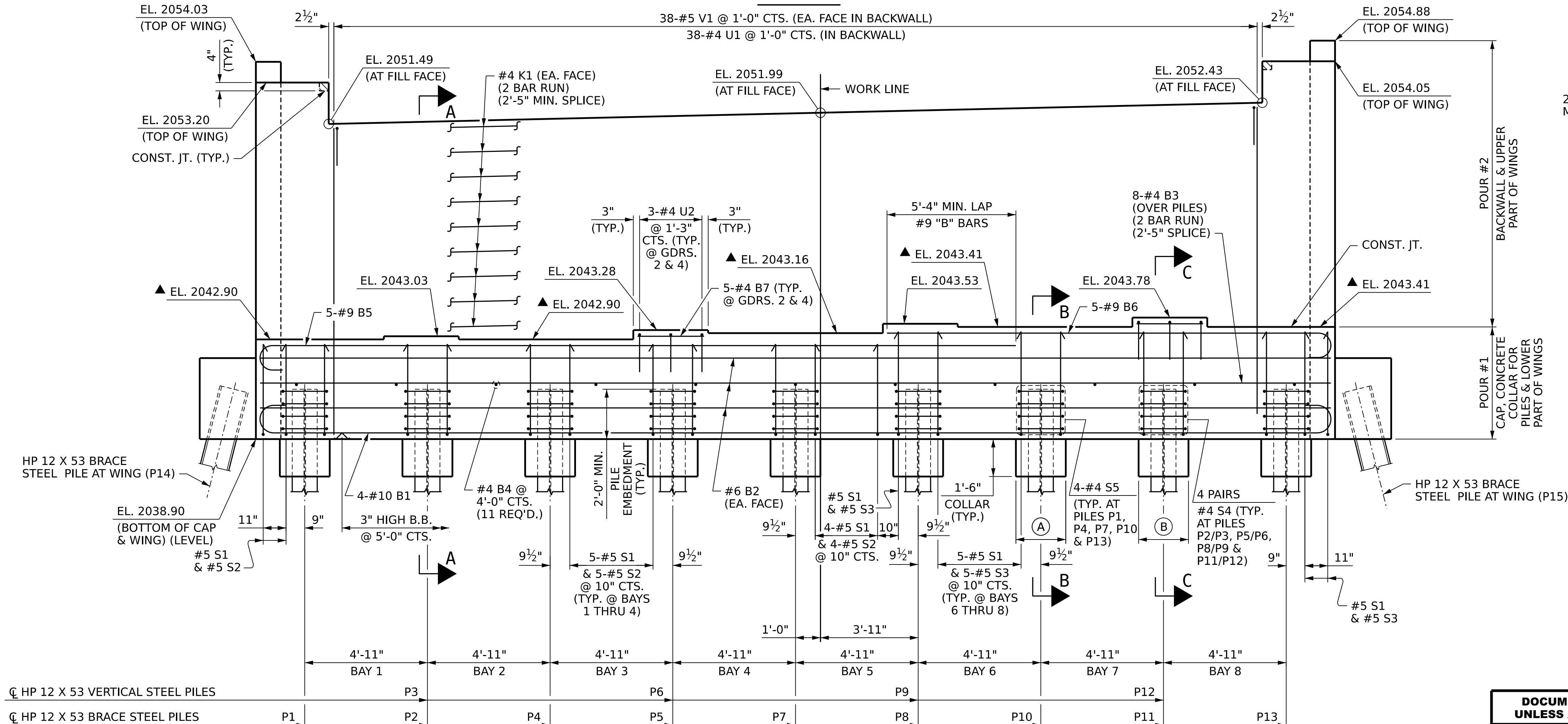
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-37	
1			3			TOTAL SHEETS 45	
2			4				

DRAWN BY :	B.E. LANNING	DATE :	03/2024
CHECKED BY :	A.K. ORR	DATE :	03/2024
DESIGN ENGINEER OF RECORD :	A.K. ORR	DATE :	12/2025

7/9/2026
1:48:26 PM
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PLAN



ELEVATION

NOTES:

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS AND PIPE INSERTS.

#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.

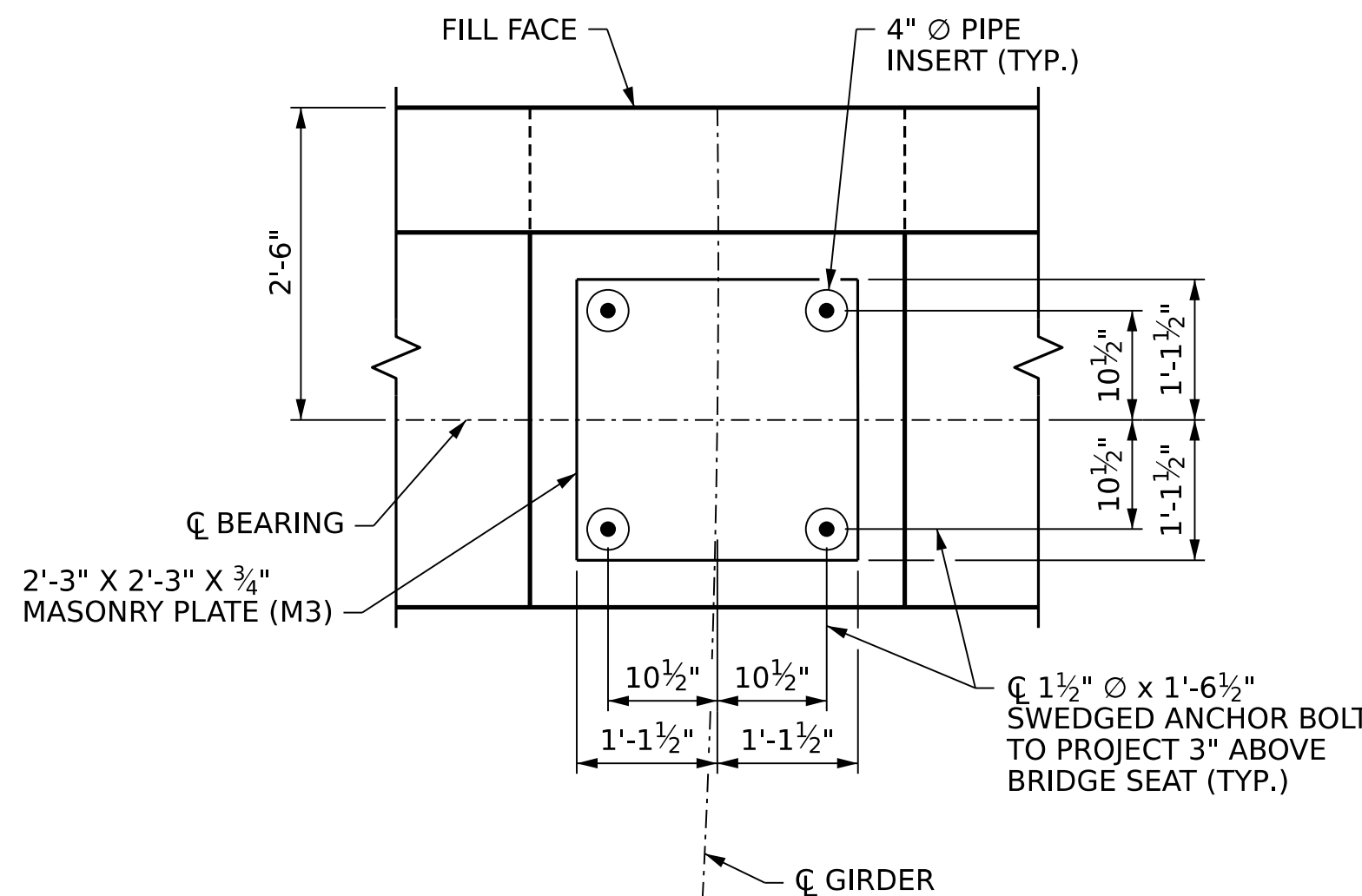
THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE BACK FACE AT THE RATE OF 2%.

▲ FOR LOCATION OF ELEVATIONS BETWEEN BRIDGE SEAT BUILD-UPS, SEE SECTION A-A ON SHEET 3 OF 3.

FOR SECTION A-A, SECTION B-B, SECTION C-C, PILE SPLICE DETAILS AND TEMPORARY DRAINAGE DETAILS, SEE SHEET 3 OF 3.

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

FOR PIPE INSERT DETAILS, SEE BEARINGS SHEETS.

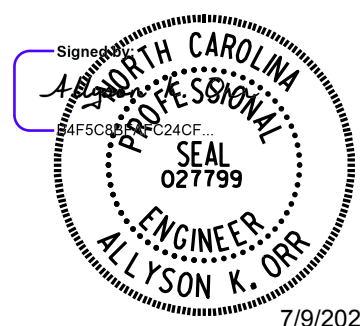


DETAIL "A"

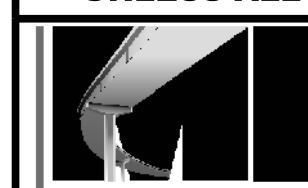
- (A) 2'-0" Ø (TYP. AT PILES P1, P4, P7, P10 & P13)
- (B) 2'-0" (TYP. AT PILES P2/P3, P5/P6, P8/P9 & P11/P12)

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-

SHEET 1 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

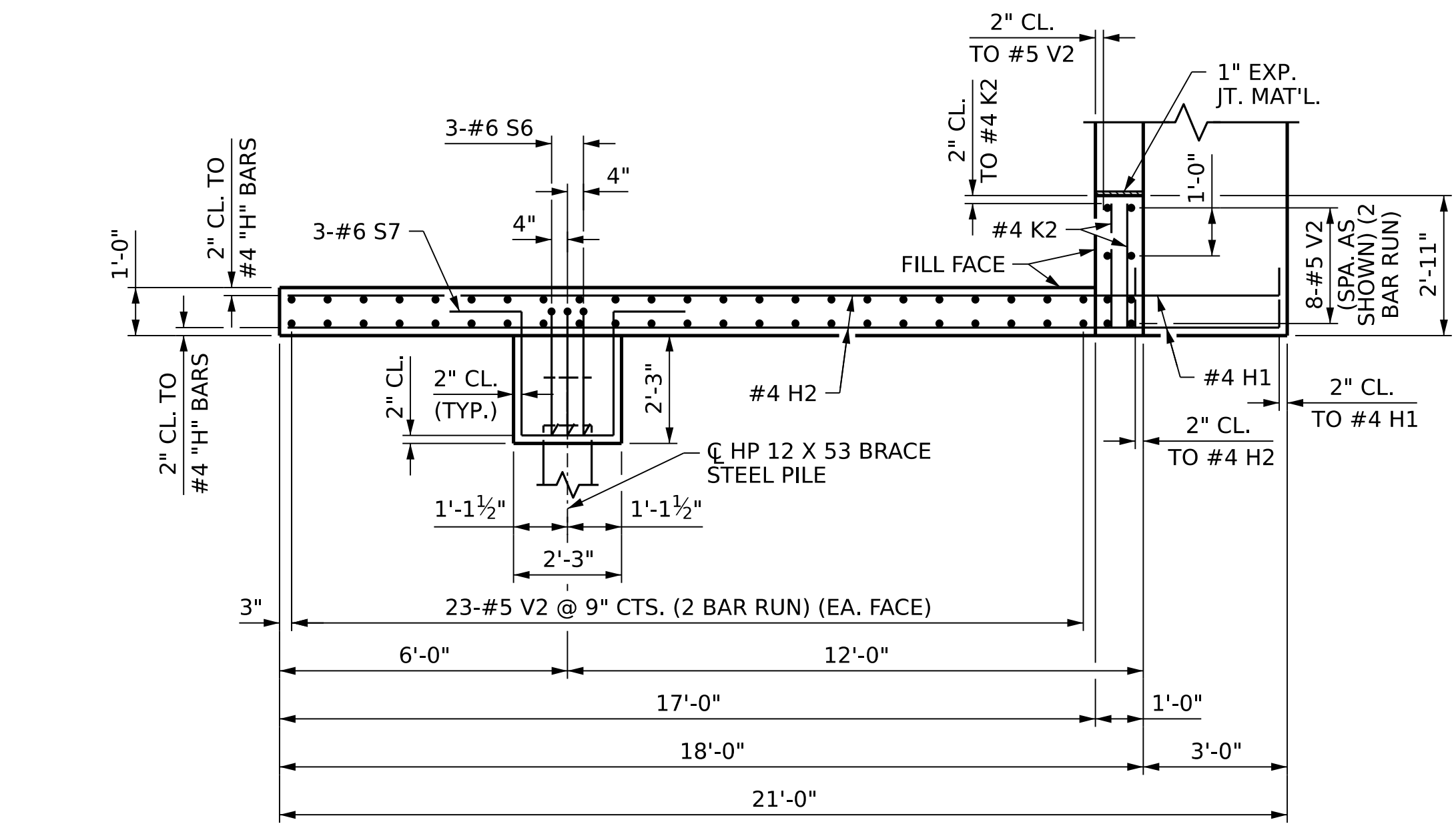
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
END BENT 2
PLAN AND ELEVATION

DRAWN BY: B.E. LANNING DATE: 01/2024
CHECKED BY: A.K. ORR DATE: 01/2024
DESIGN ENGINEER OF RECORD: A.K. ORR DATE: 12/2025

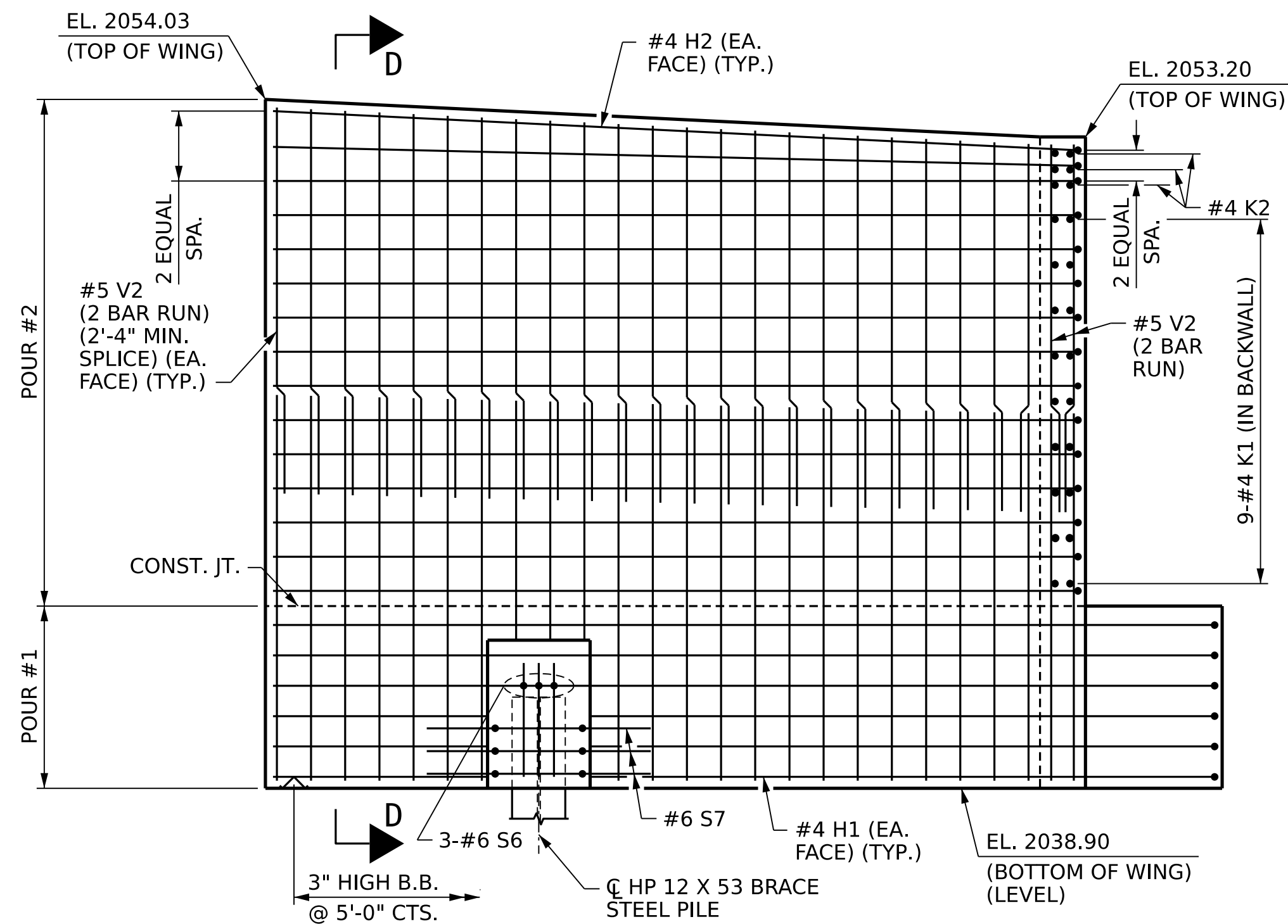
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S05-39
2			4			

TOTAL SHEETS: 45

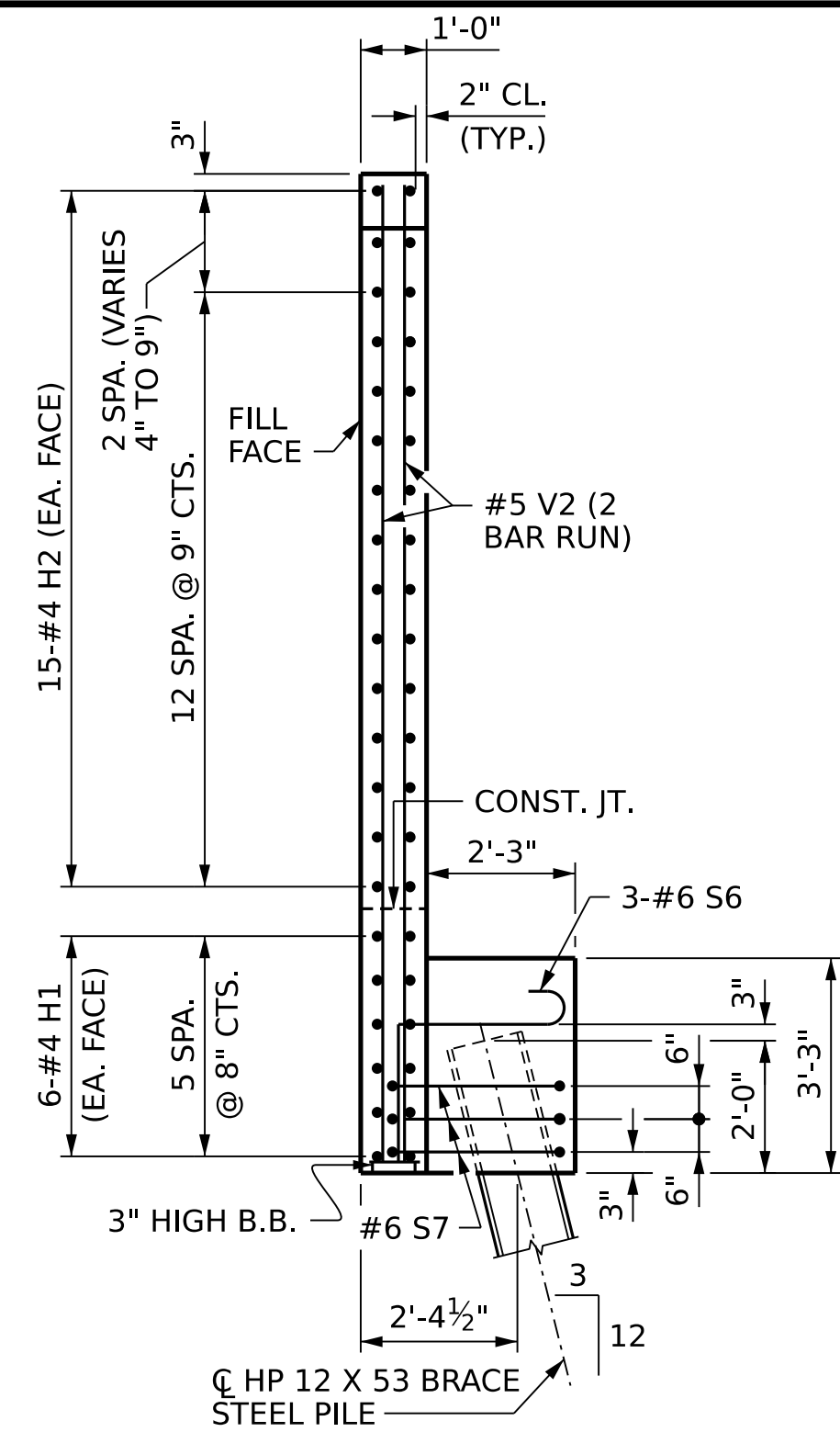
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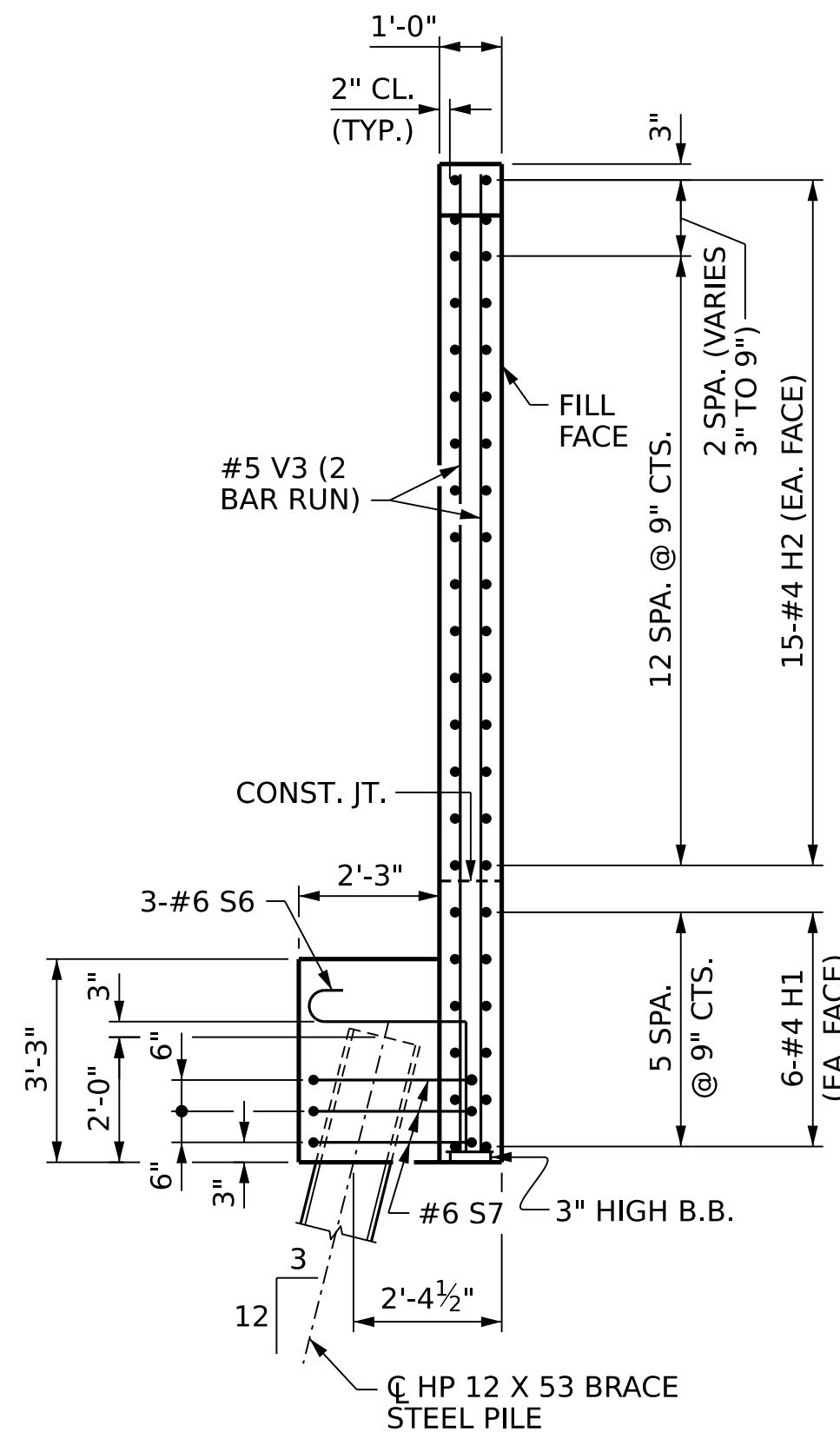
PLAN OF WING W1



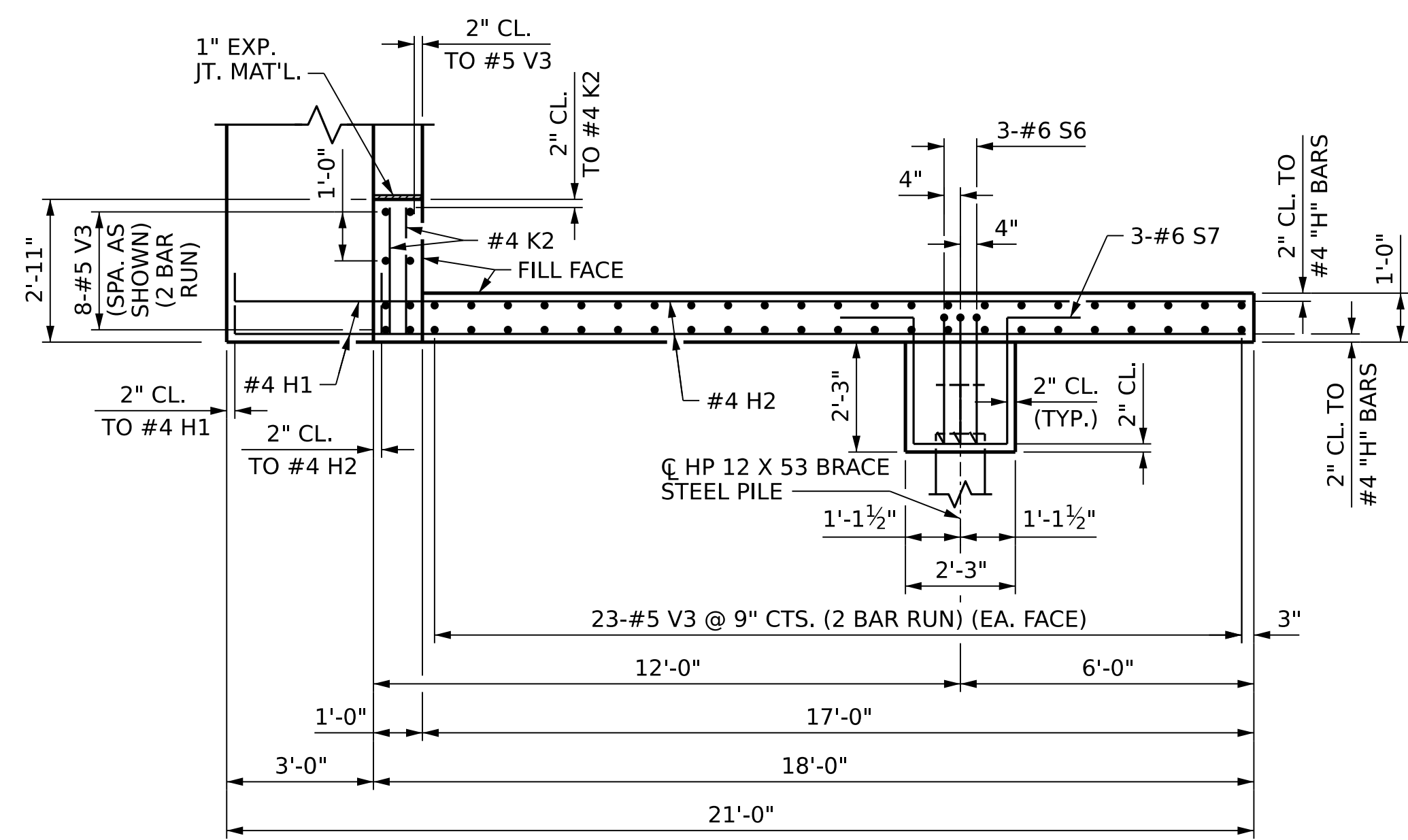
ELEVATION OF WING W1



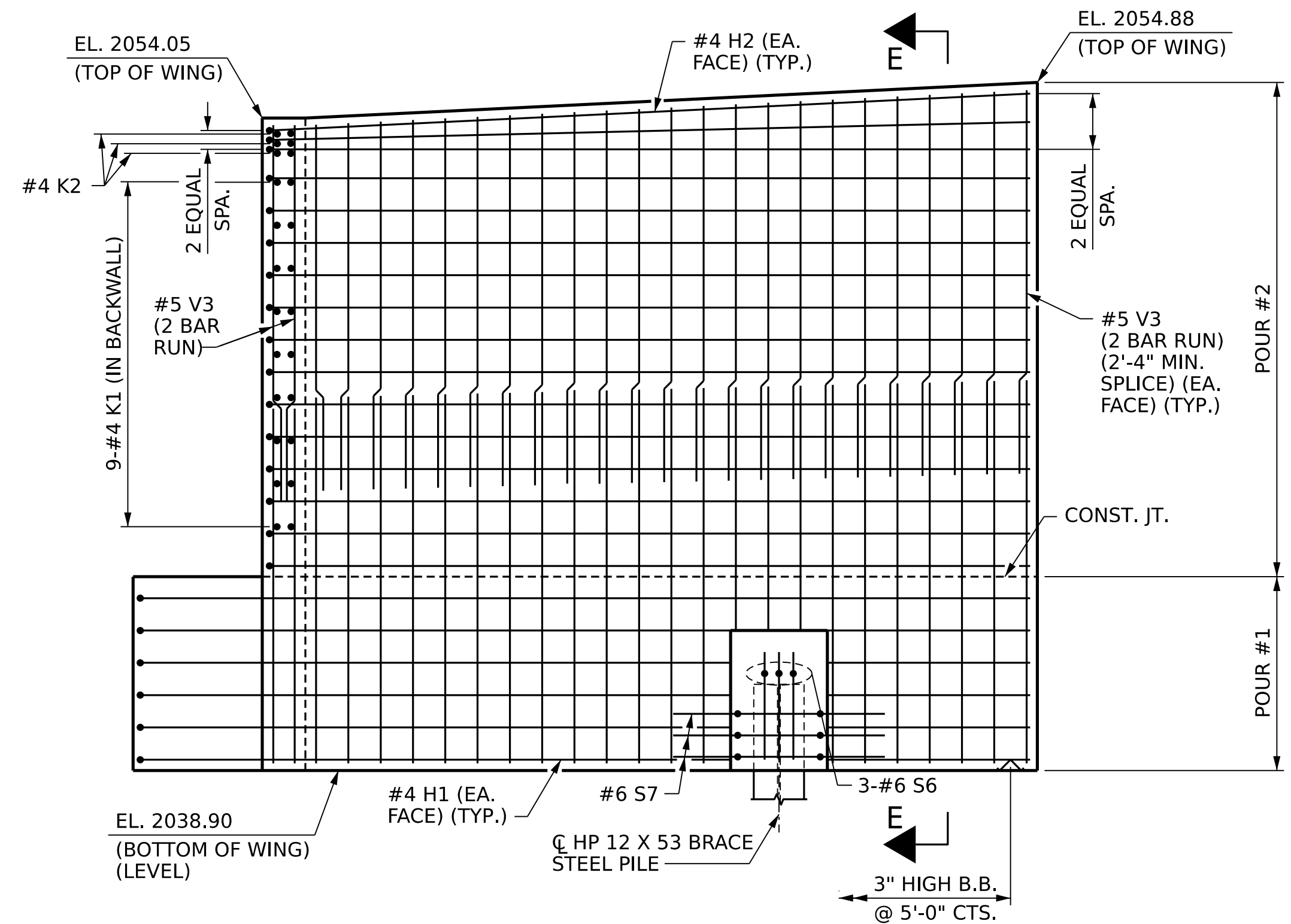
SECTION D-D



SECTION E-E

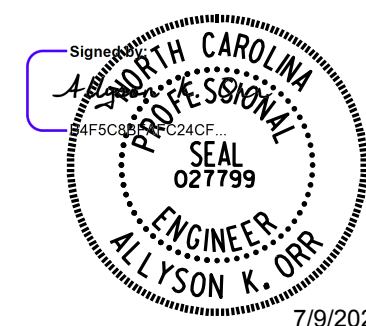


PLAN OF WING W2



ELEVATION OF WING W2

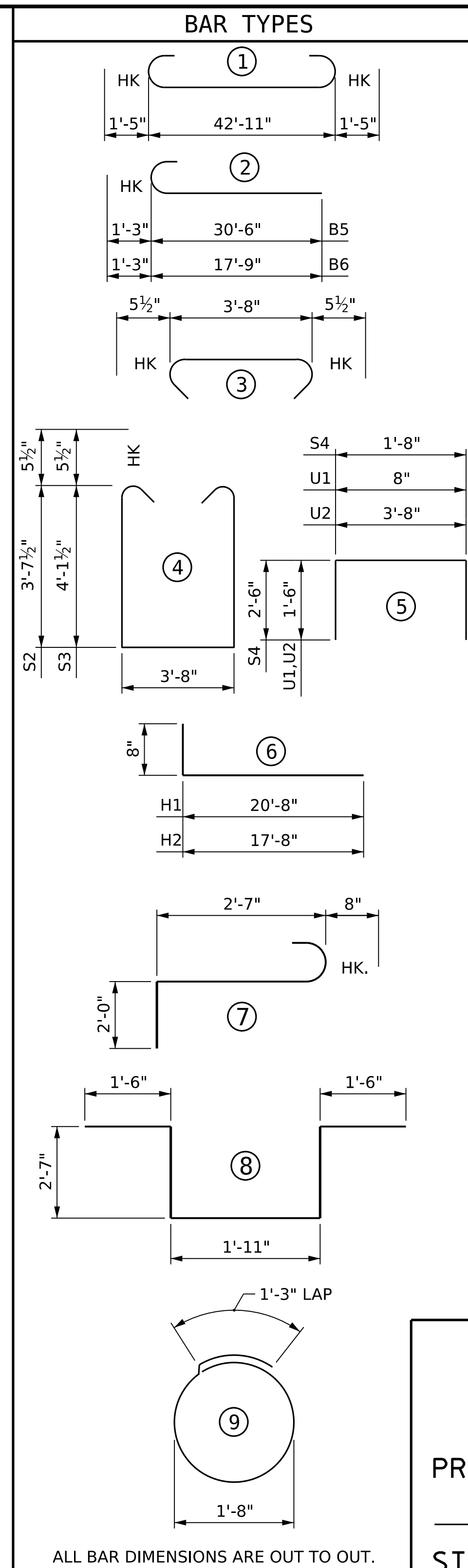
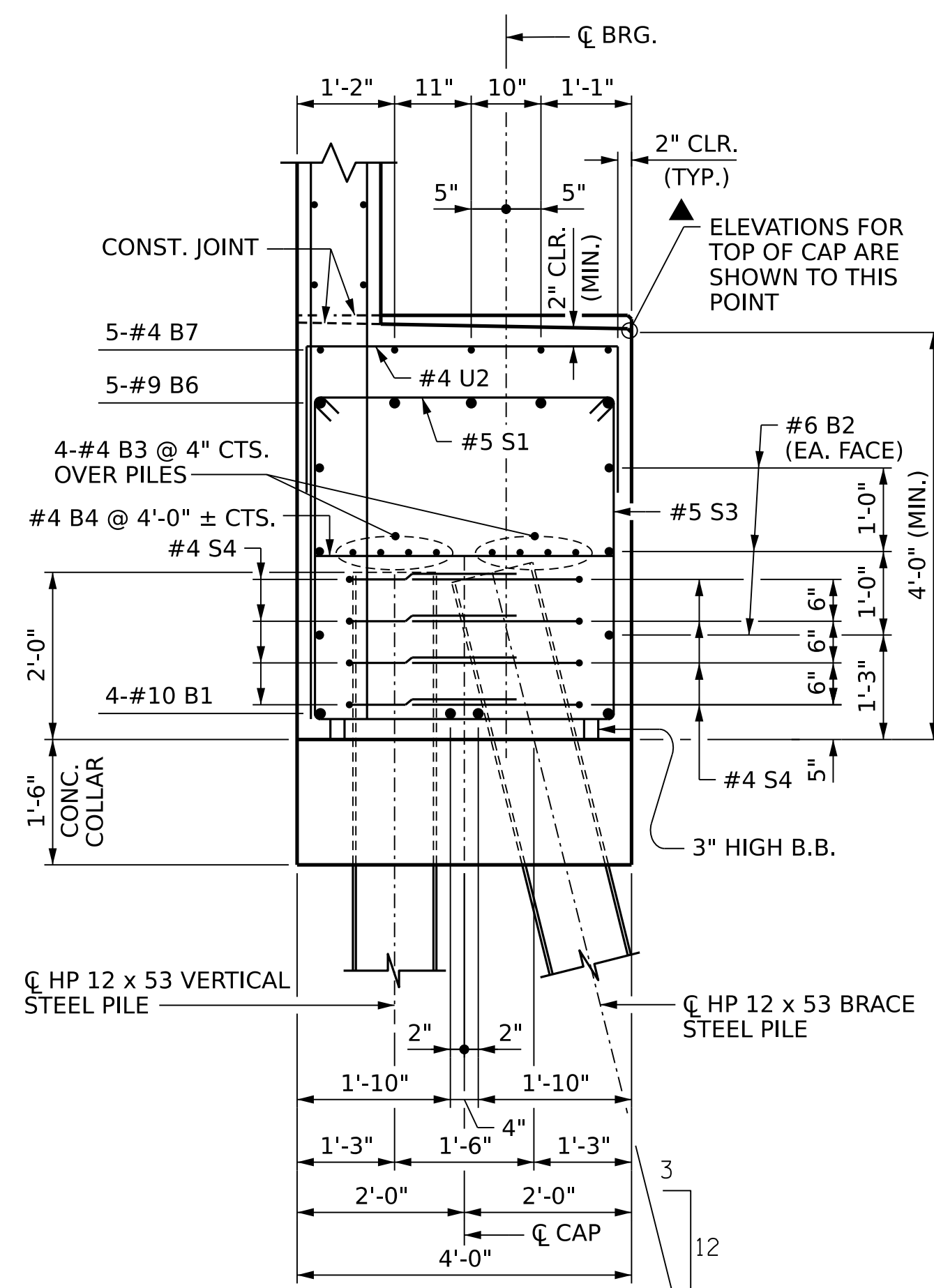
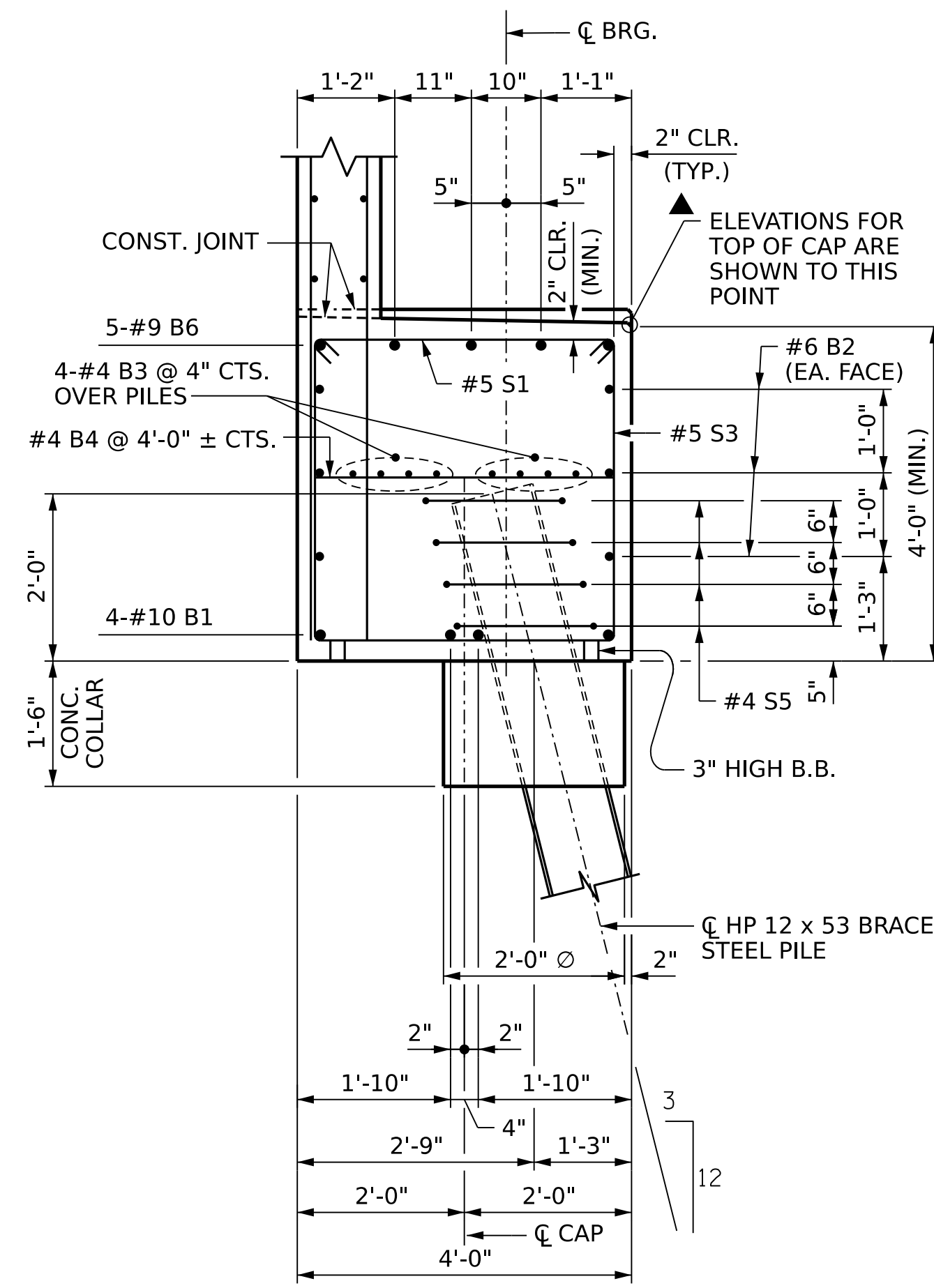
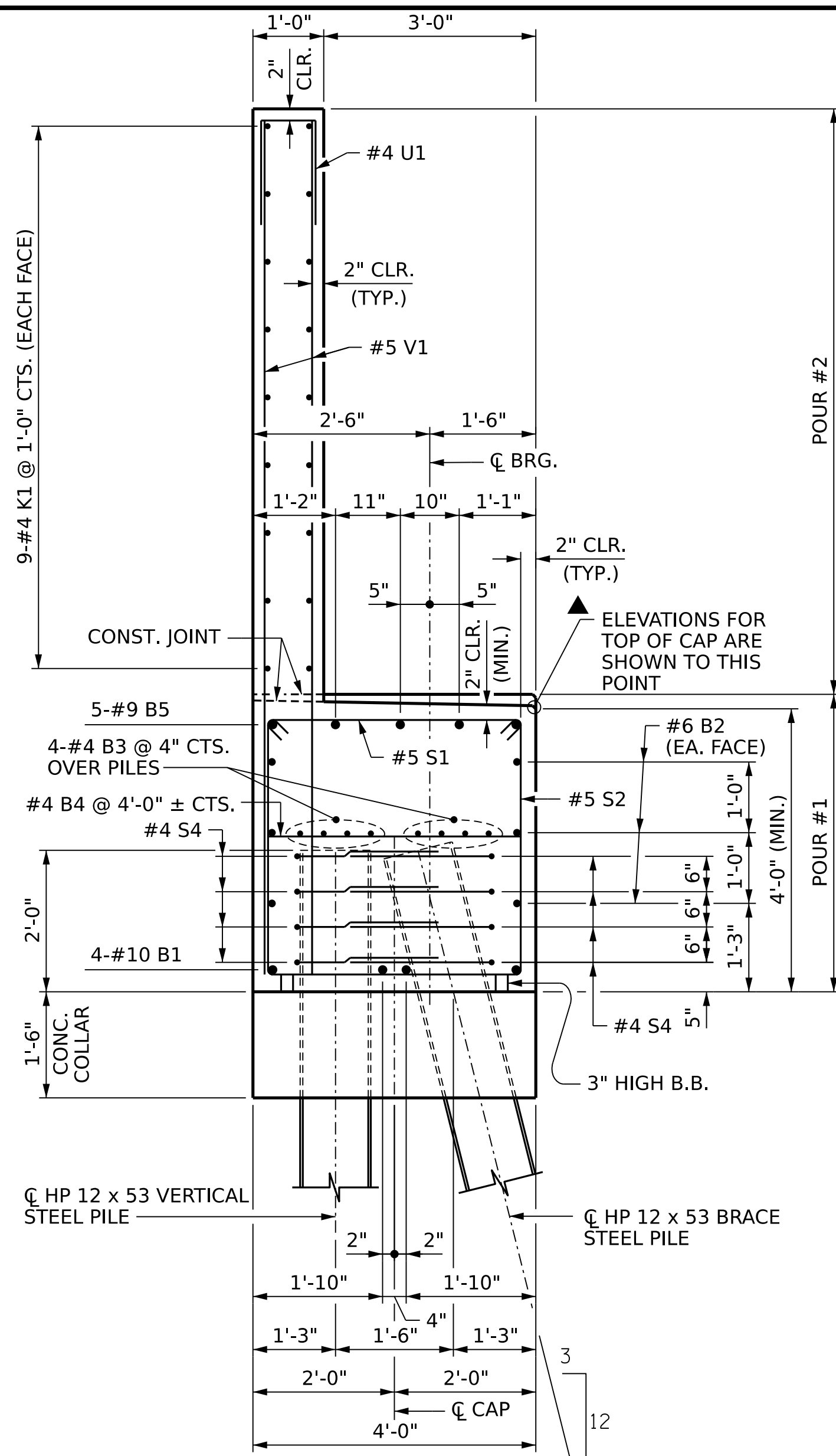
PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-
SHEET 2 OF 3



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

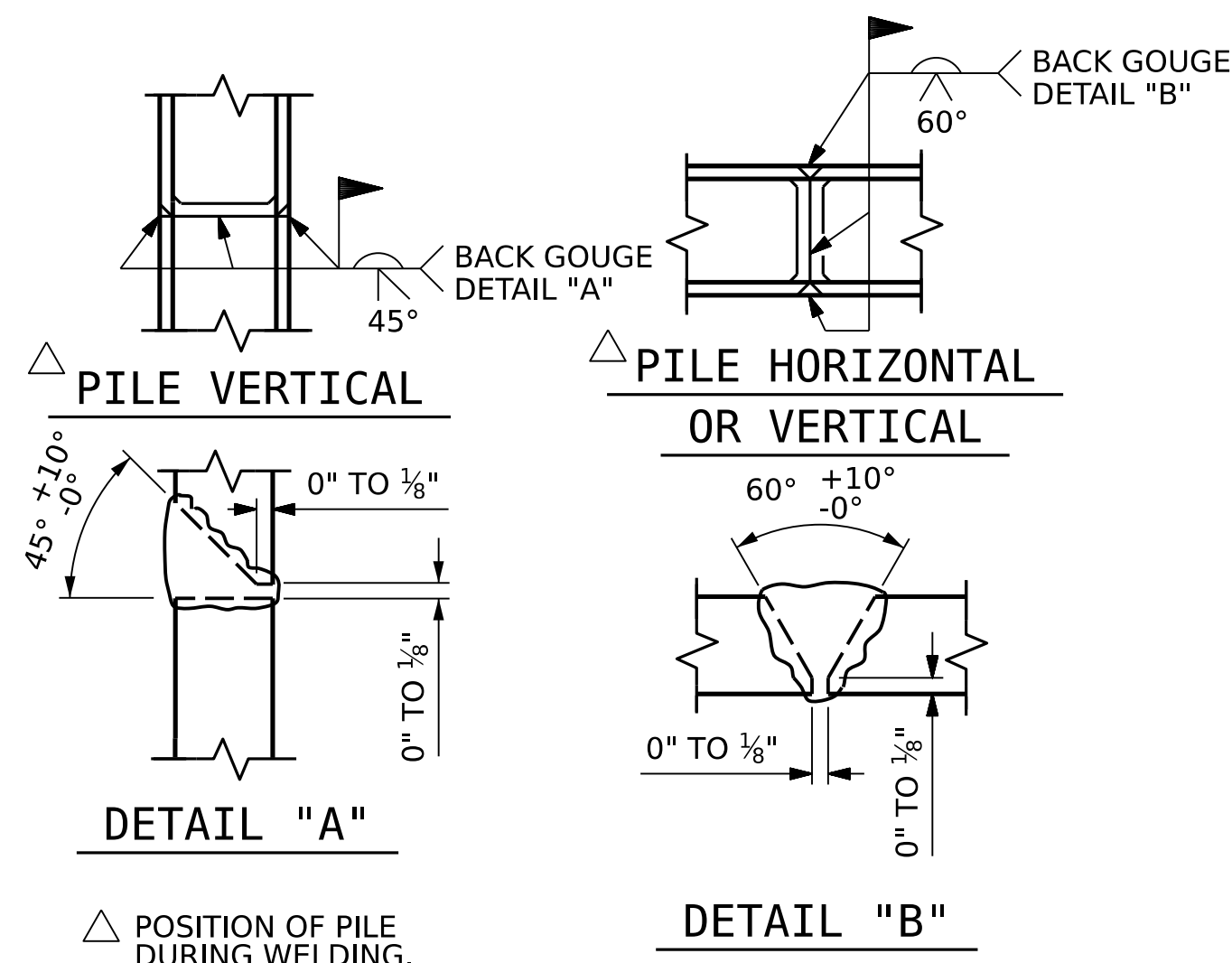
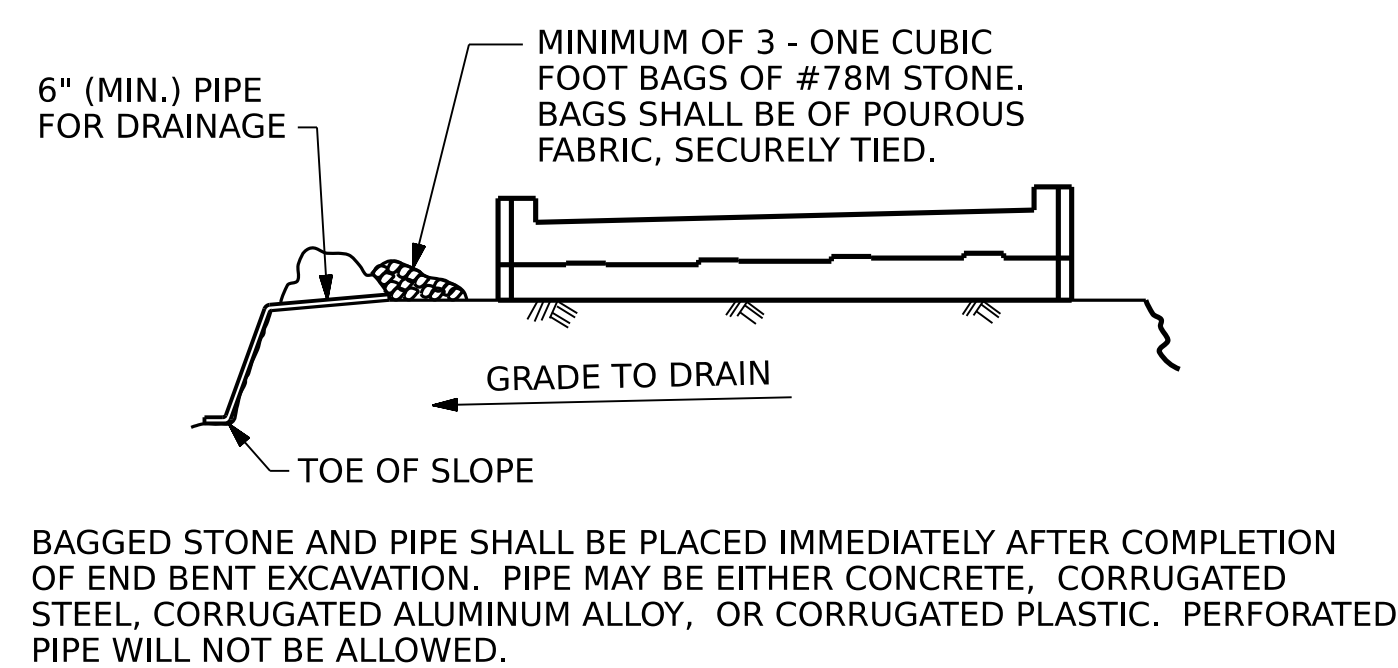
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO. S05-40
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 45
2			4			



BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	4	#10	1	45'-9"	787
B2	6	#6	STR	42'-11"	387
B3	16	#4	STR	22'-8"	242
B4	11	#4	STR	3'-8"	27
B5	5	#9	2	31'-9"	540
B6	5	#9	2	19'-0"	323
B7	10	#4	STR	2'-8"	18
H1	24	#4	6	21'-4"	342
H2	60	#4	6	18'-4"	735
K1	36	#4	STR	22'-8"	545
K2	12	#4	STR	2'-7"	21
S1	44	#5	3	4'-7"	210
S2	26	#5	4	11'-10"	321
S3	18	#5	4	12'-10"	241
S4	32	#4	5	6'-8"	143
S5	20	#4	9	6'-6"	87
S6	6	#6	7	5'-3"	47
S7	6	#6	8	10'-1"	91
U1	38	#4	5	3'-8"	93
U2	6	#4	5	6'-8"	27
V1	76	#5	STR	12'-2"	964
V2	108	#5	STR	8'-7"	967
V3	108	#5	STR	9'-0"	1,014
REINFORCING STEEL				8,172 LBS.	

CLASS A CONCRETE BREAKDOWN		
POUR #1 (CAP & LOWER PART OF WINGS)	37.3	C.Y.
POUR #2 (BACKWALL & UPPER PART OF WINGS)	25.8	C.Y.
TOTAL	63.1	C.Y.



TEMPORARY DRAINAGE AT END BENT

PILE SPLICE DETAILS

DRAWN BY :	<u>B. E. LANNING</u>	DATE :	<u>01/2024</u>
CHECKED BY :	<u>A.K. ORR</u>	DATE :	<u>01/2024</u>
DESIGN ENGINEER OF RECORD :	<u>A.K. ORR</u>	DATE :	<u>12/2025</u>

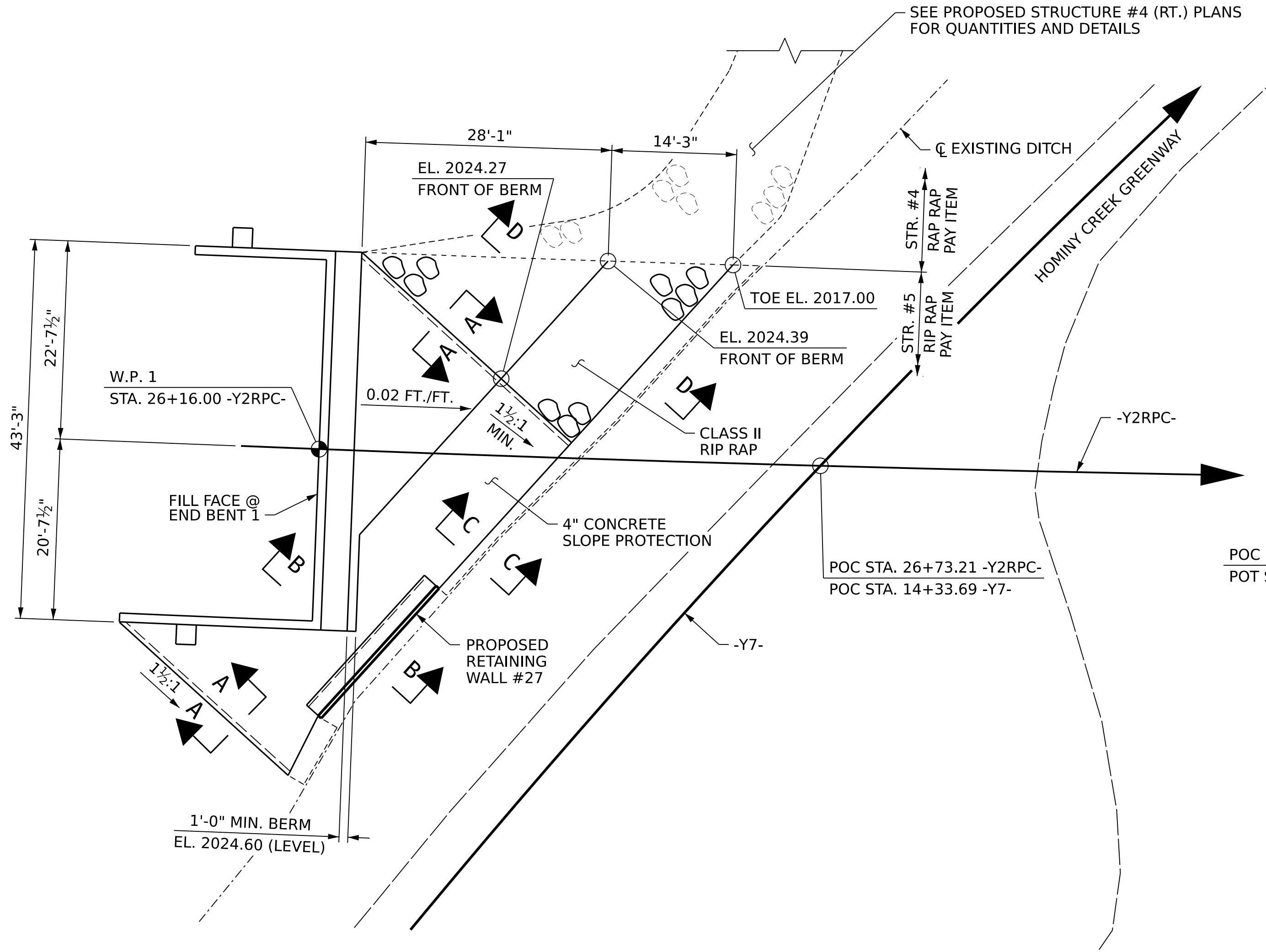
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



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							SHEET NO. S05-41	
NO. 00							TOTAL SHEETS 45	
REVISIONS								
NO.	BY:	DATE:	NO.	BY:	DATE:			
1			3					
2			4					

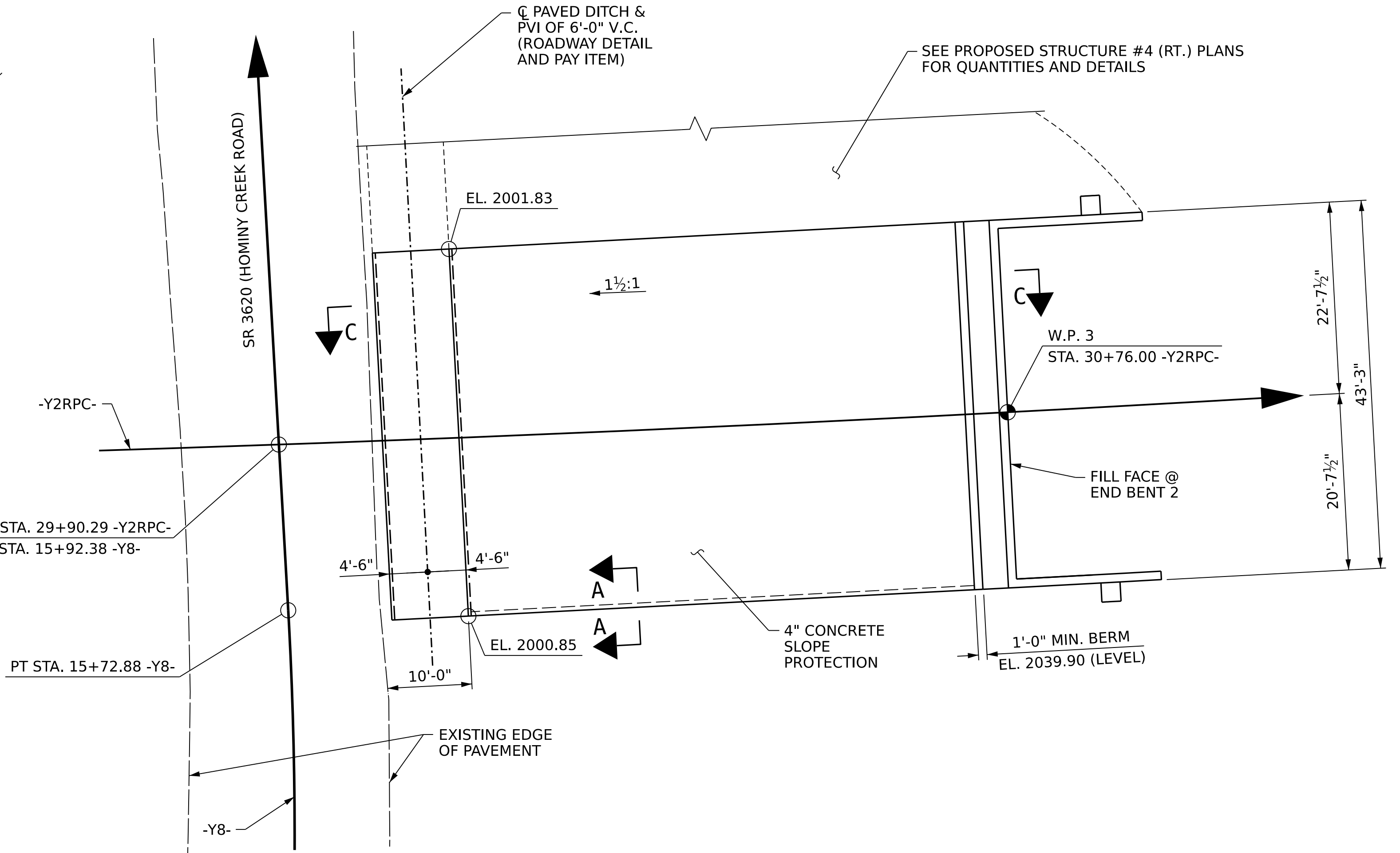
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AT END BENT 1

SLOPE PROTECTION PLAN VIEW

FOR SECTIONS A-A, B-B, C-C, AND D-D, SEE SHEET 2 OF 2



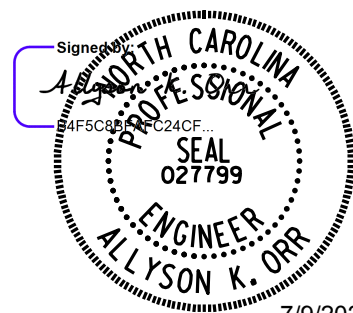
AT END BENT 2

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-

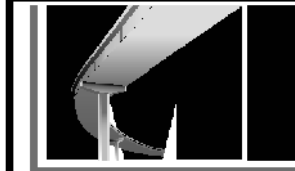
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SLOPE PROTECTION DETAILS



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

REVISIONS						SHEET NO. S05-42
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 45
2			4			

DRAWN BY: B.E. LANNING DATE: 01/2024
CHECKED BY: A.K. ORR DATE: 01/2024
DESIGN ENGINEER OF RECORD: A.K. ORR DATE: 12/2025



CLASS II RIP RAP DETAIL



POURING DETAIL

OPTIONAL POURING DETAIL

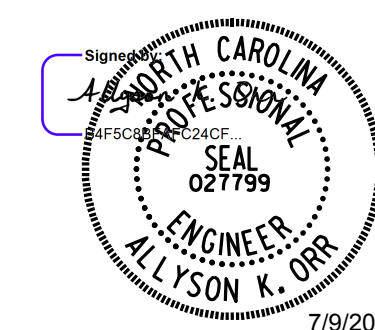
CONCRETE SLOPE PROTECTION DETAILS

NOTE: THE "POURING DETAIL" SHALL BE USED TO CONNECT SLOPE PROTECTION PORTIONS BETWEEN BRIDGES 4 AND 5. THE #4 BAR DOWELS SHALL BE INSTALLED WITH THE PORTION OF THE SLOPE PROTECTION CAST FIRST.

FOR DITCH AND WALL DETAILS, SEE MSE WALL SHEETS.

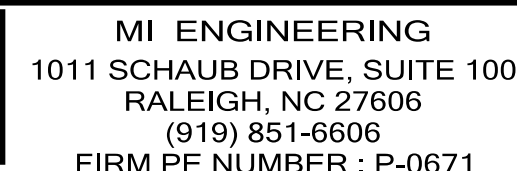
* QUANTITY SHOWN IS BASED ON 5' POURS.

ESTIMATED QUANTITIES		
BRIDGE @ STA. 28+46.00 -Y2RPC-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	55	61



7/9/2026

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FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S05-43
1			3			TOTAL SHEETS 45
2			4			

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
 STATION: 28+46.00 -Y2RPC-

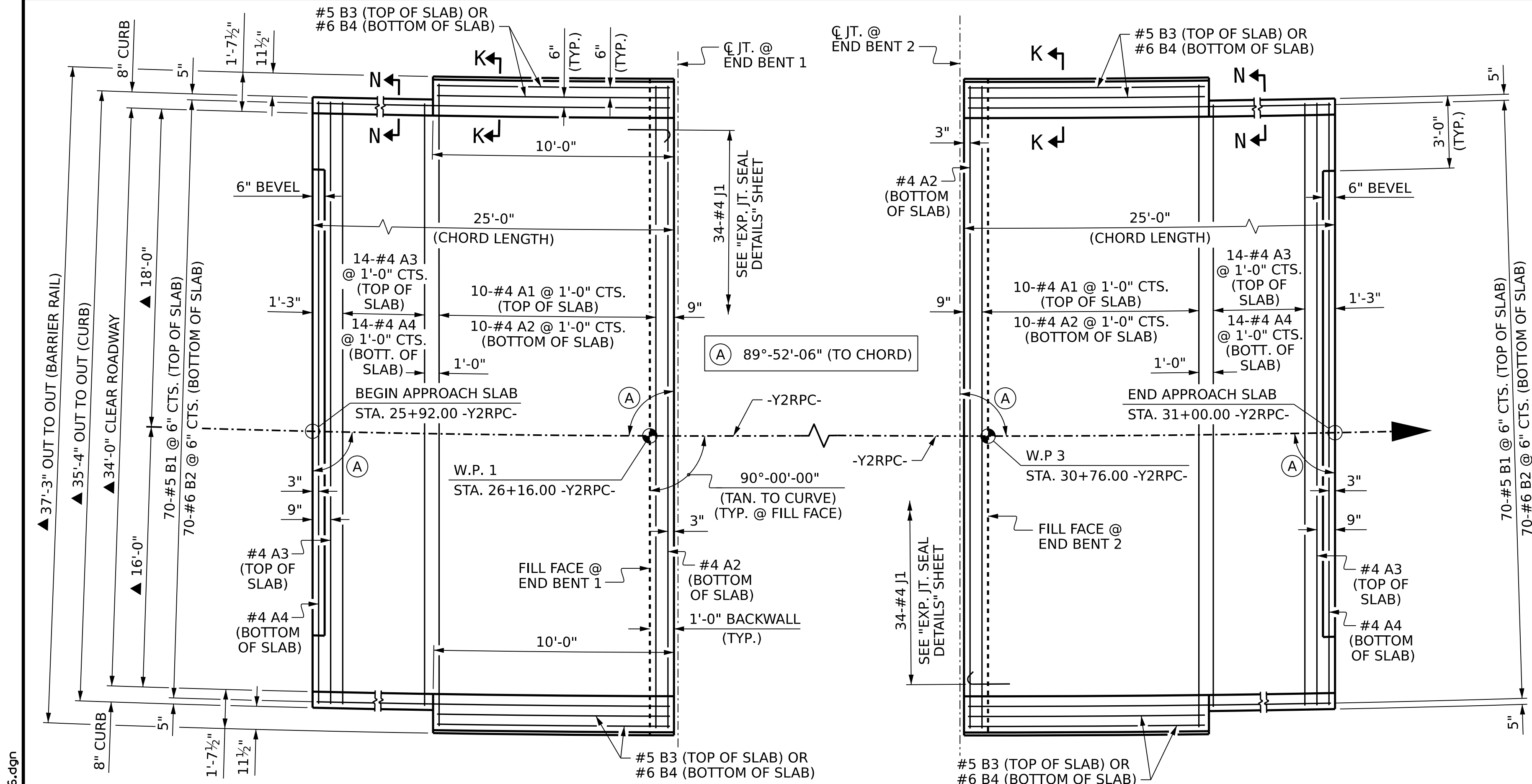
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SLOPE PROTECTION DETAILS

DRAWN BY :	<u>B.E. LANNING</u>	DATE :	<u>03/2024</u>
CHECKED BY :	<u>A.K. ORR</u>	DATE :	<u>03/2024</u>
DESIGN ENGINEER OF RECORD :	<u>A.K. ORR</u>	DATE :	<u>12/2025</u>

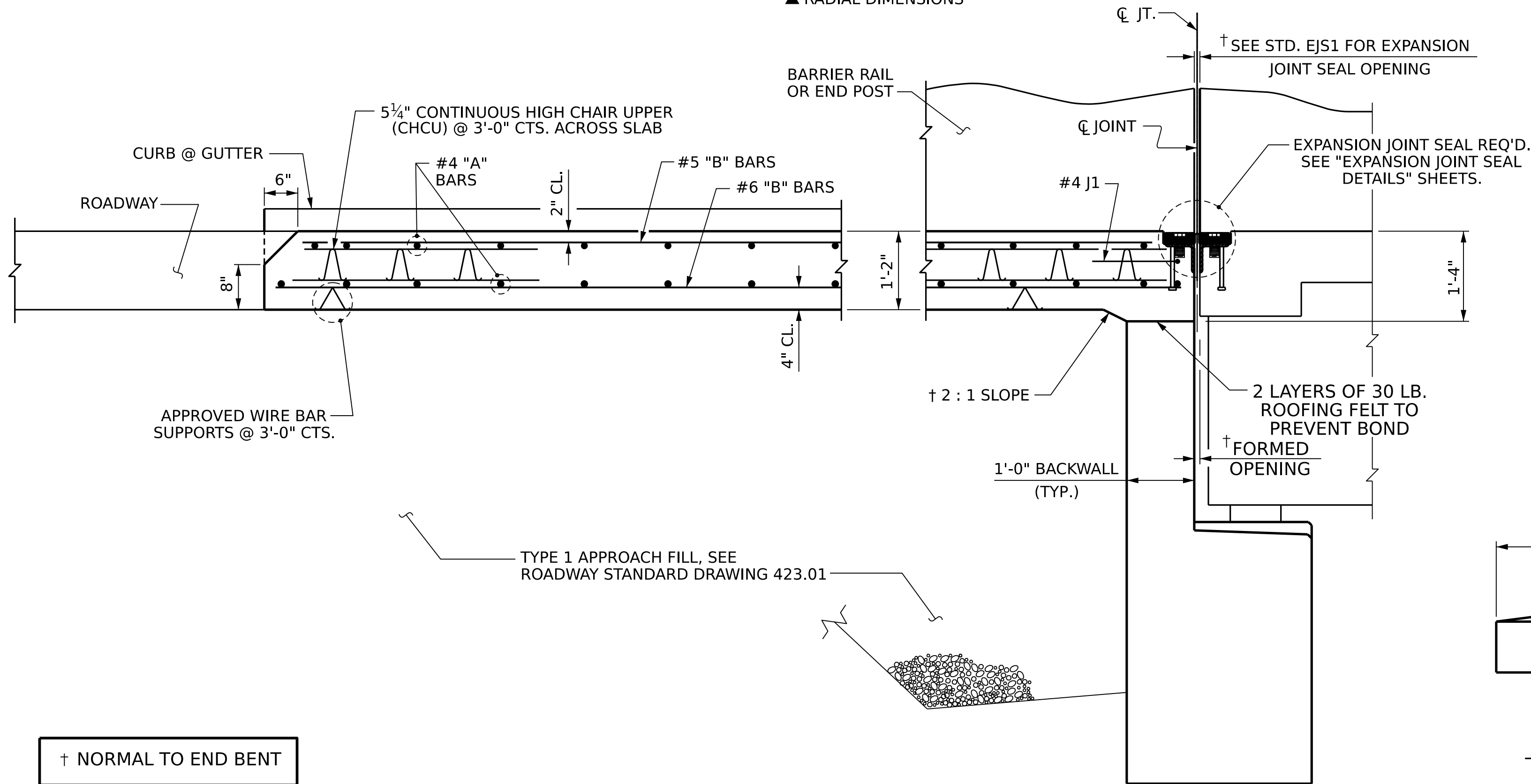
A



PLAN AT END BENT 1

PLAN AT END BENT 2

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS
▲ RADIAL DIMENSIONS



SECTION THRU SLAB

NOTES

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.

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

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

FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

SPLICE LENGTHS

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

BILL OF MATERIAL

APPROACH SLAB AT EB 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	10	#4	STR	36'-11"	247
A2	11	#4	STR	36'-11"	271
* A3	15	#4	STR	34'-11"	350
A4	15	#4	STR	34'-11"	350

* B1	70	#5	STR	24'-2"	1,764
B2	70	#6	STR	24'-8"	2,593
* B3	4	#5	STR	9'-7"	40
B4	4	#6	STR	9'-7"	58

* J1	34	#4	1	1'-5"	32
------	----	----	---	-------	----

REINFORCING STEEL ** 3,272 LBS.

* EPOXY COATED REINFORCING STEEL ** 2,433 LBS.

CLASS AA CONCRETE ** 39.2 C.Y.

APPROACH SLAB AT EB 2

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* A1	10	#4	STR	36'-11"	247
A2	11	#4	STR	36'-11"	271
* A3	15	#4	STR	34'-11"	350
A4	15	#4	STR	34'-11"	350

* B1	70	#5	STR	24'-2"	1,764
B2	70	#6	STR	24'-8"	2,593
* B3	4	#5	STR	9'-7"	40
B4	4	#6	STR	9'-7"	58

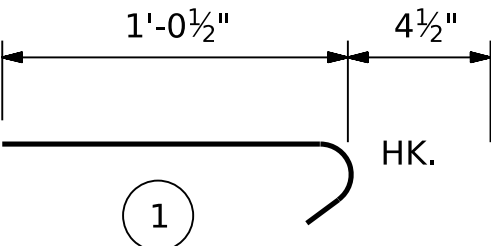
* J1	34	#4	1	1'-5"	32
------	----	----	---	-------	----

REINFORCING STEEL ** 3,272 LBS.

* EPOXY COATED REINFORCING STEEL ** 2,433 LBS.

CLASS AA CONCRETE ** 39.2 C.Y.

BAR TYPE



ALL BAR DIMENSIONS ARE OUT TO OUT.

** QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED. SEE SHEET 2 OF 2.

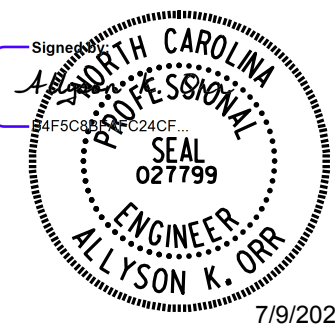
THE QUANTITY OF #4 J1 BARS ON THE BILL OF MATERIAL IS BASED ON 1'-0" CENTERS. J1 BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF J1 BARS SPECIFIED, ADDITIONAL J1 BARS WILL NOT BE REQUIRED.

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-

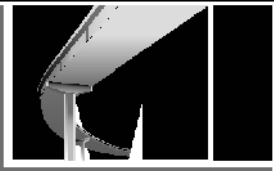
SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH SLAB
FOR FLEXIBLE PAVEMENT



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.
S05-44
TOTAL SHEETS
45

STD. NO. BAS2 (SHT 3)

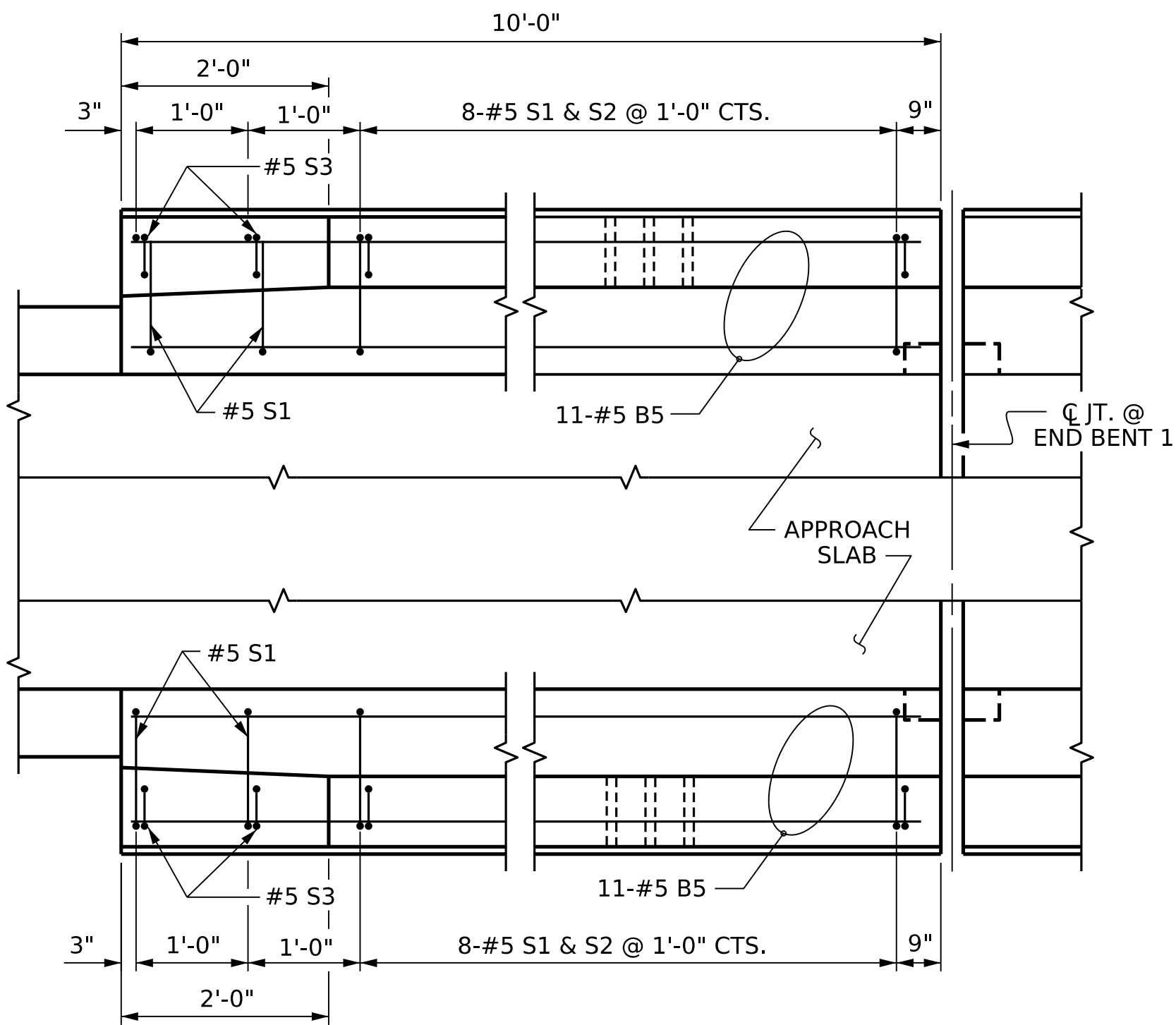
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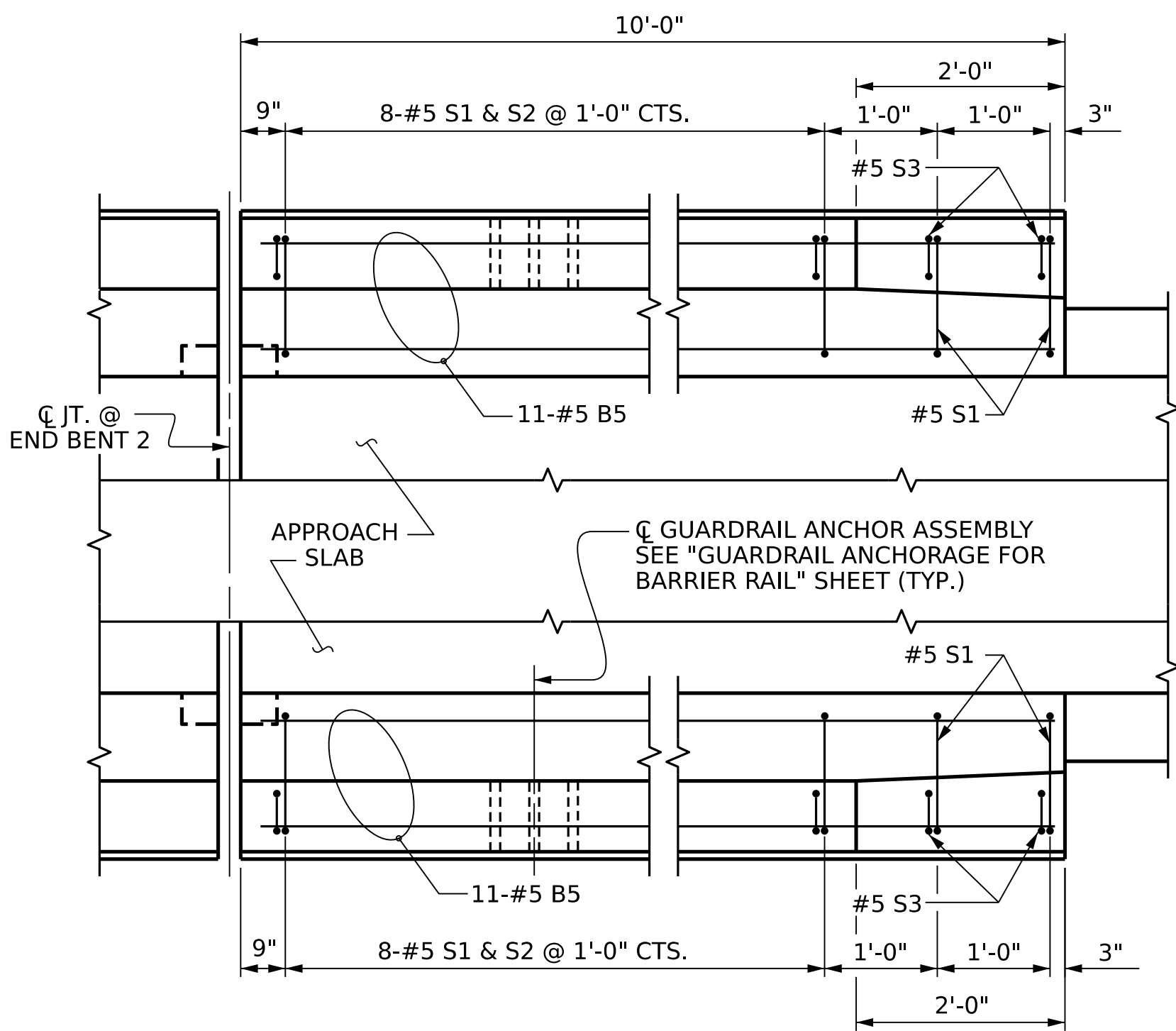
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ASSEMBLED BY:	B.E. LANNING	DATE:	01/2024
CHECKED BY :	A.K. ORR	DATE:	01/2024
DESIGN ENGINEER OF RECORD:	A.K. ORR	DATE:	04/2024
DRAWN BY :	EEM 3/95	REV. 6/13	MAA/GM
CHECKED BY :	VAP 3/95	REV. 12/17	MAA/THC
		REV. 07/23	BNB/SNM

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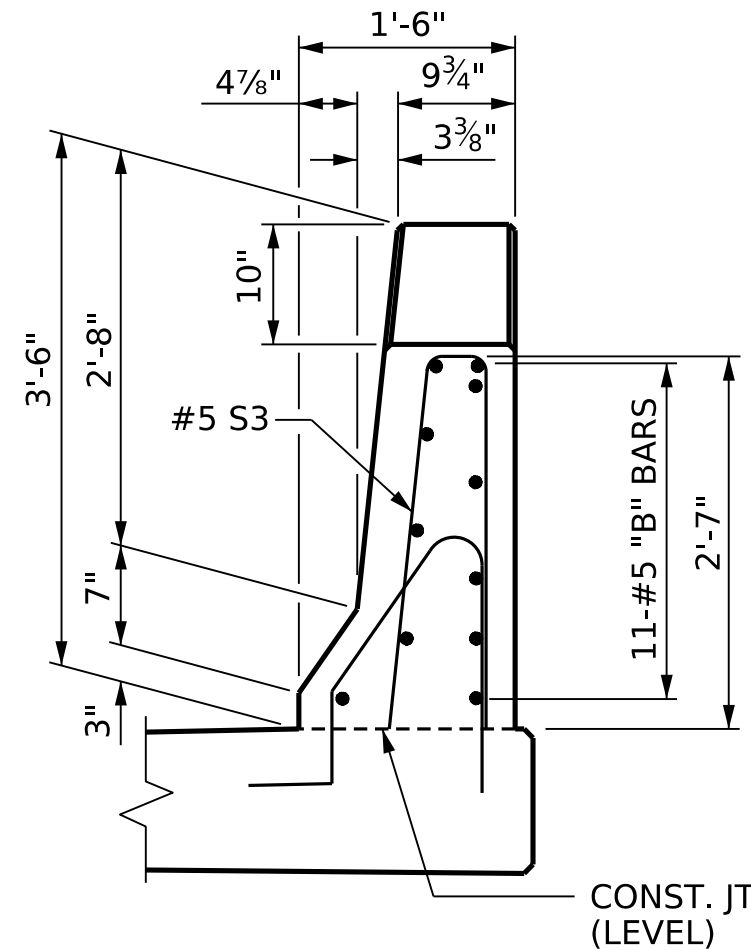


END BENT 1

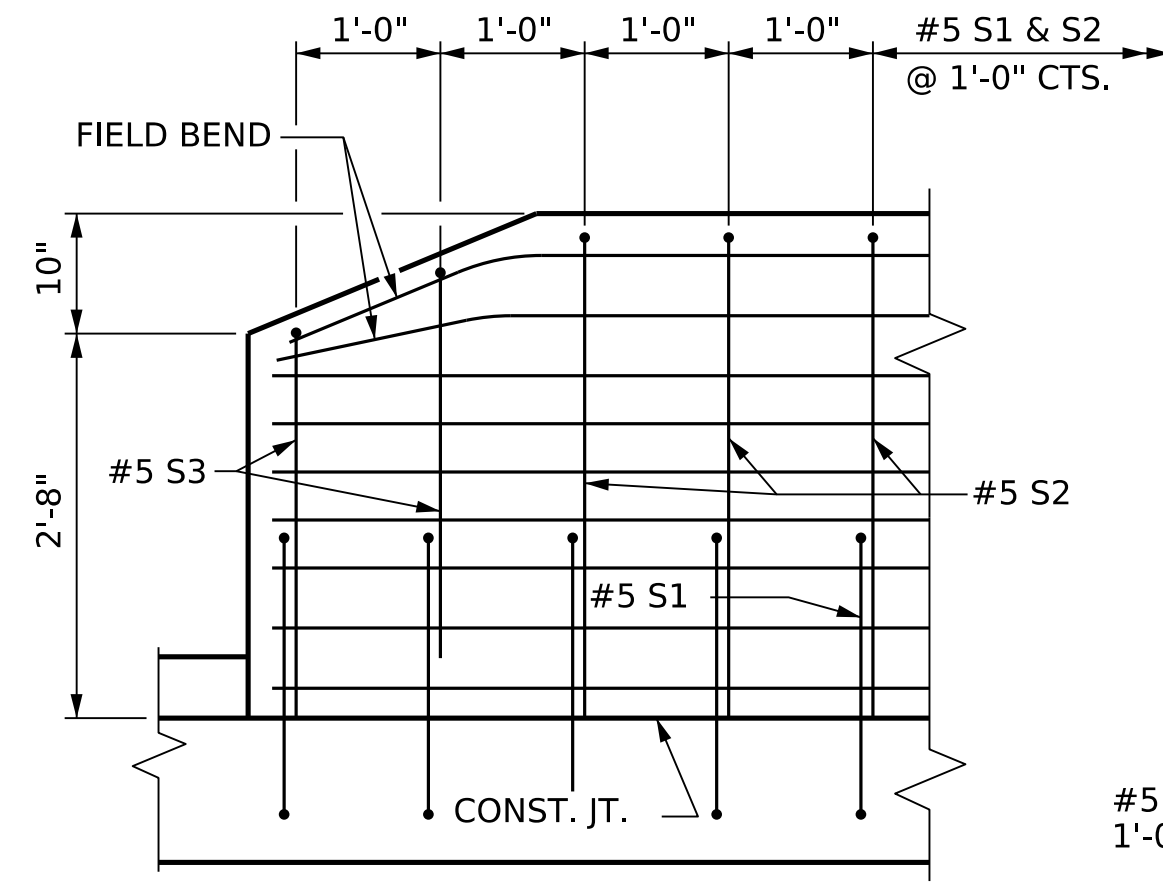


END BENT 2

PLAN OF BARRIER RAIL

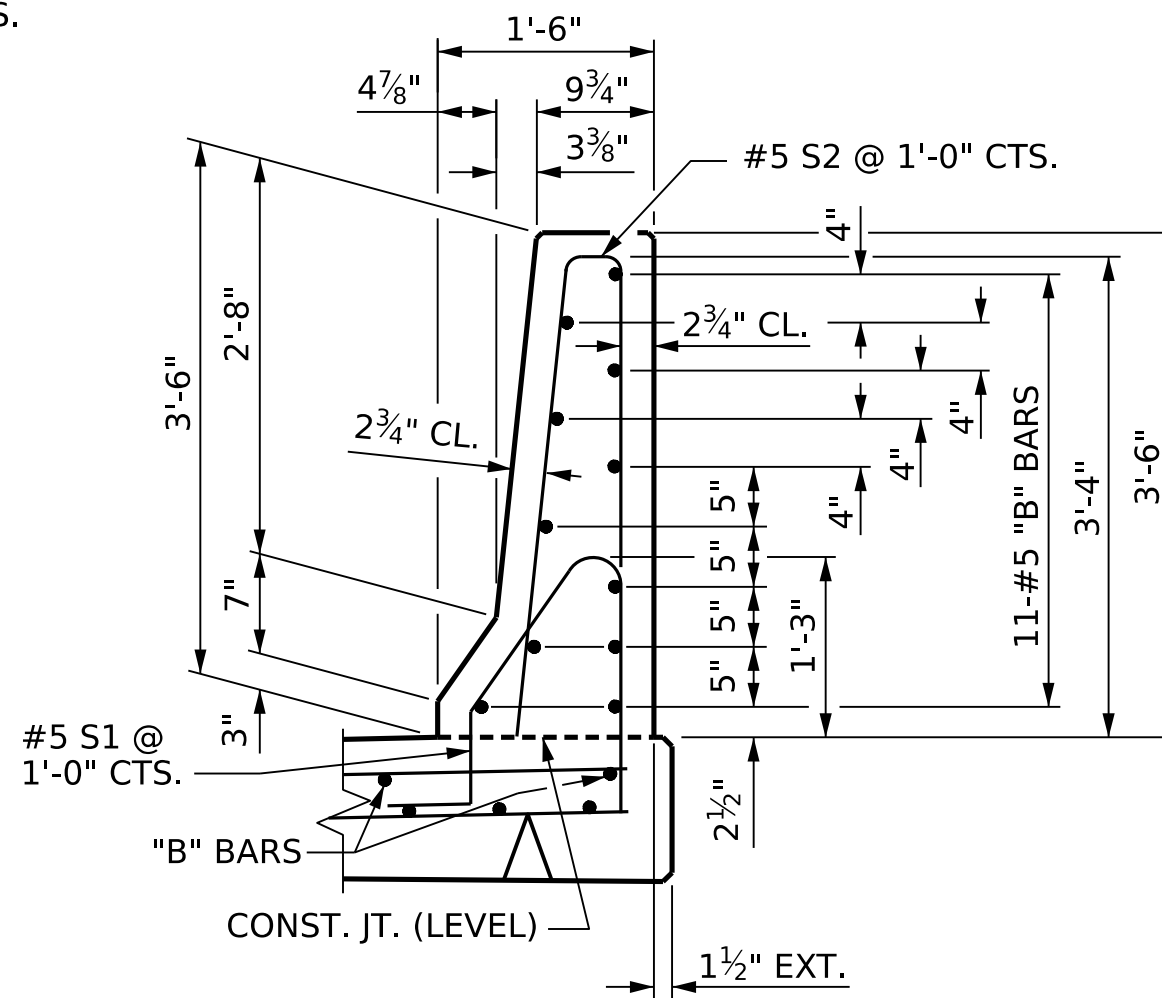


END VIEW

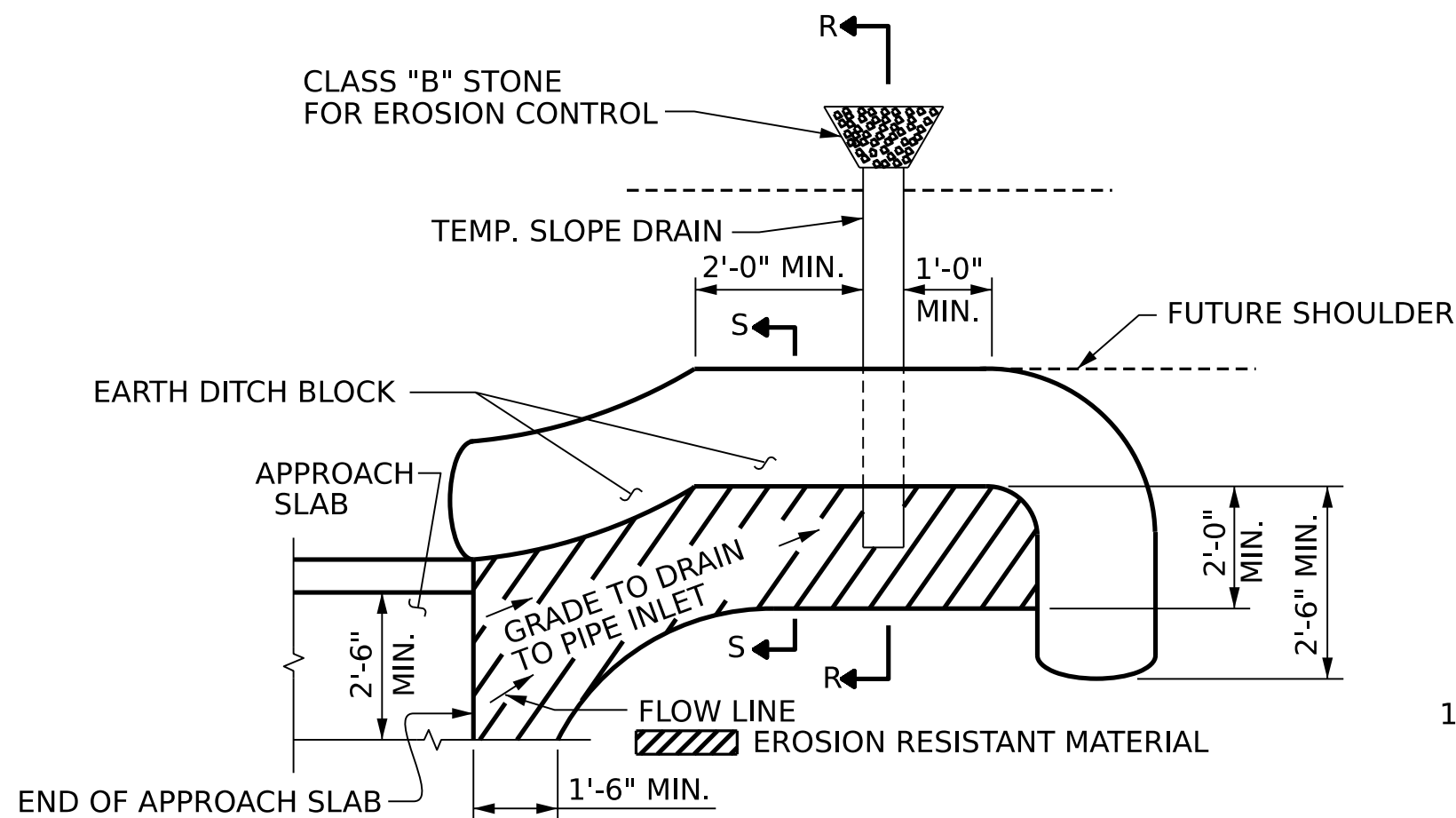


SIDE VIEW

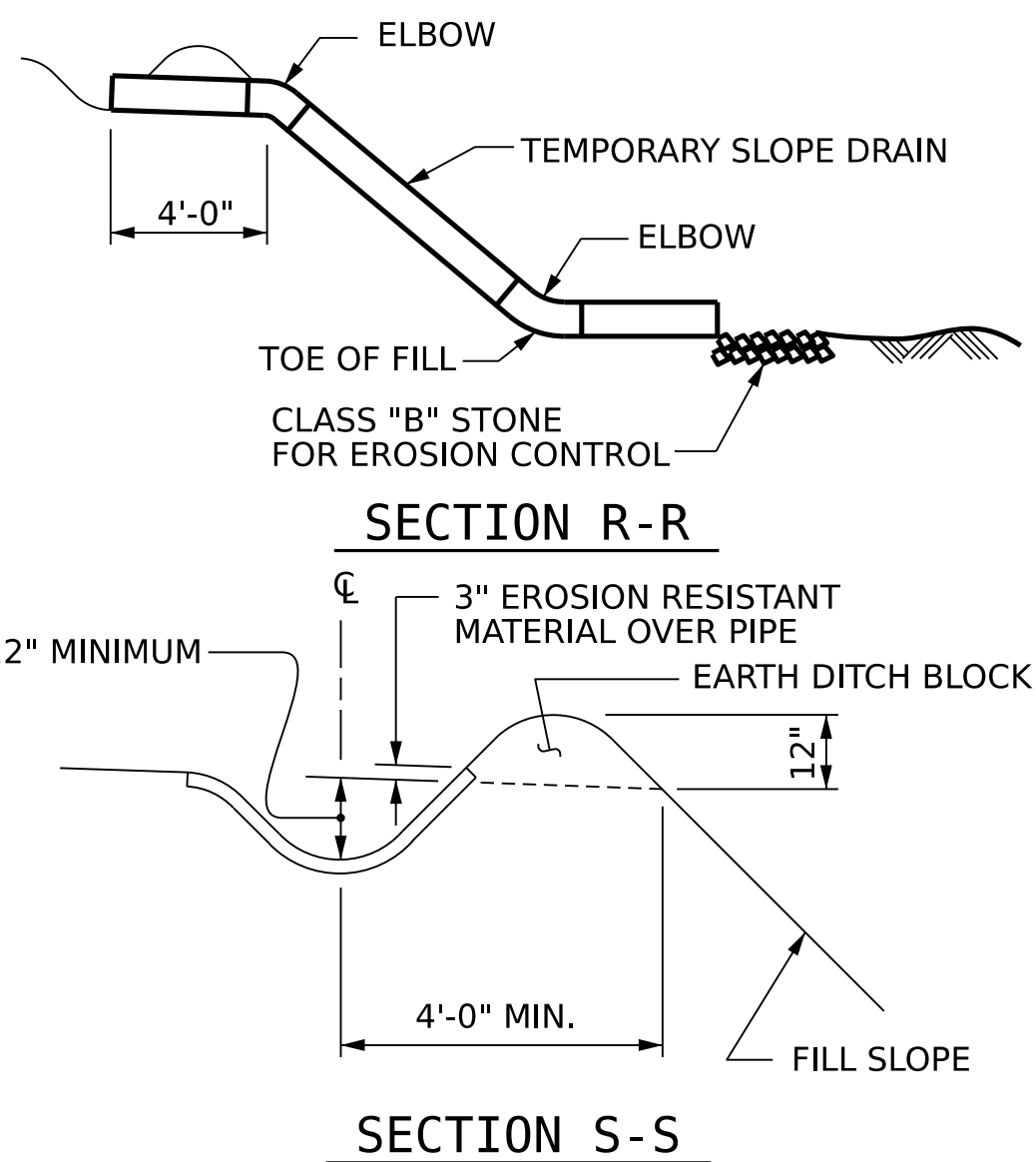
END OF RAIL DETAILS



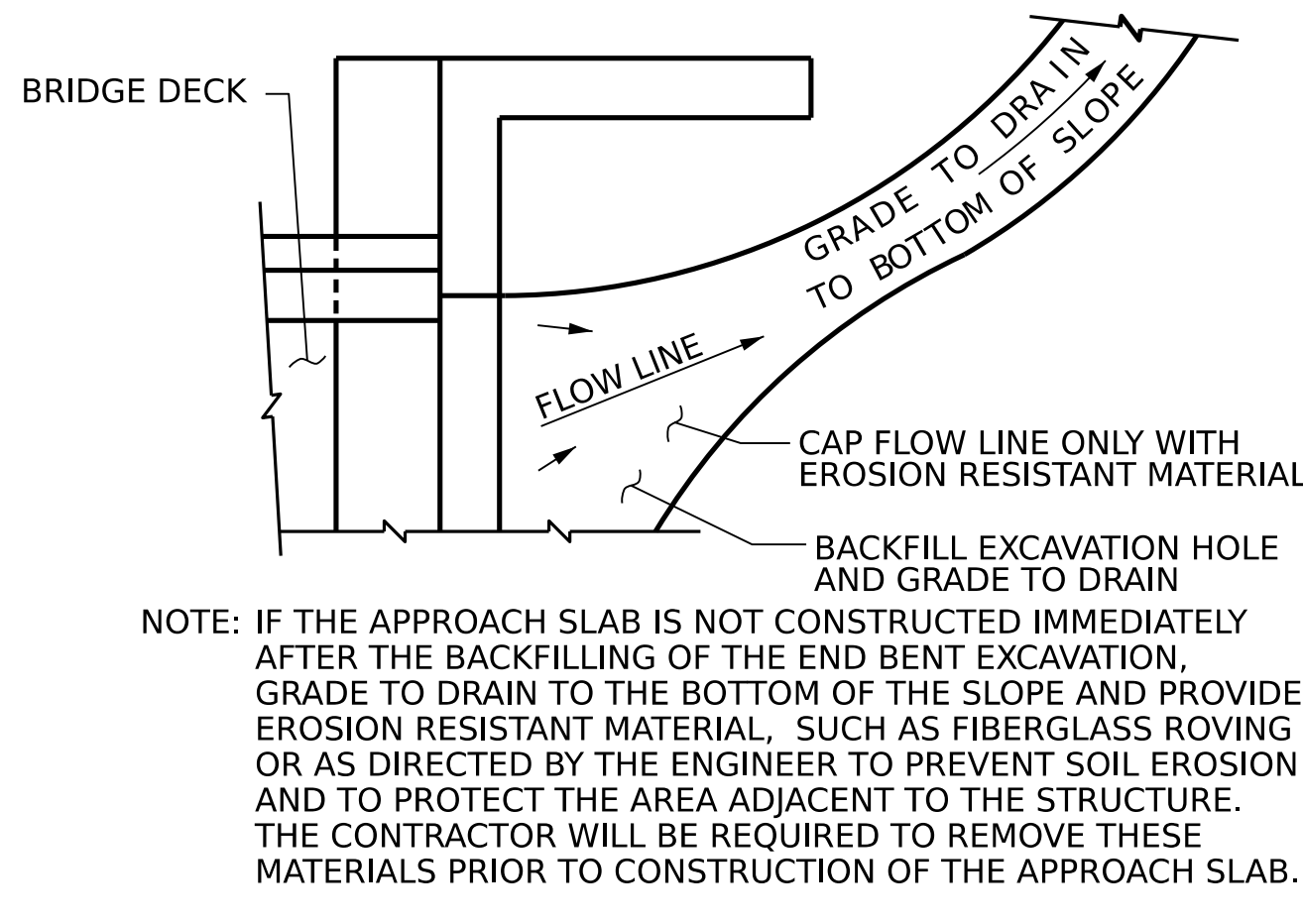
SECTION THRU RAIL



PLAN VIEW



SECTION S-S



TEMPORARY DRAINAGE DETAIL

NOTES

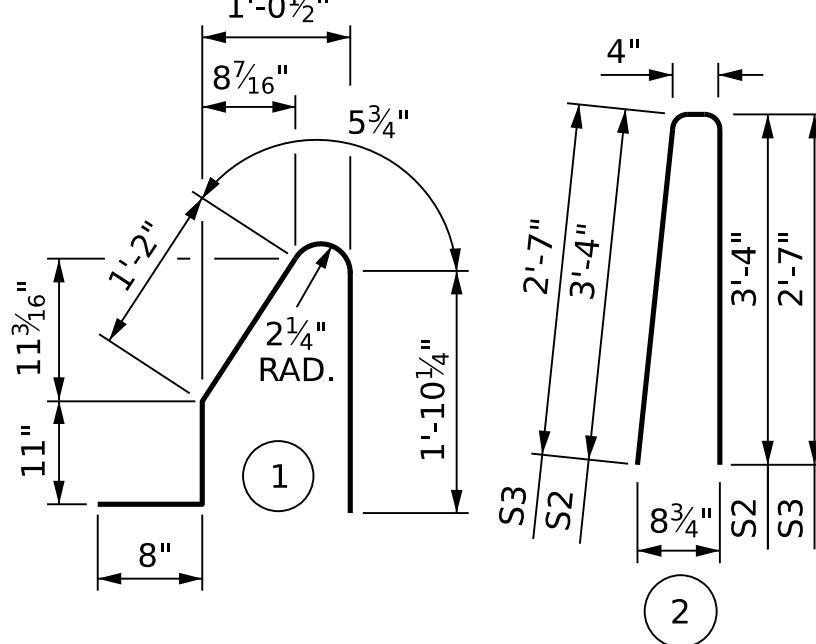
THE COST OF THE BARRIER RAIL ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LINEAR FOOT CONTRACT PRICE BID FOR "CONCRETE BARRIER RAIL".

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

SEE LIGHTING PLANS FOR ELECTRICAL CONDUIT AND SIZE AND LOCATION OF FORMED OPENING IN BARRIER RAIL.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

BARRIER RAIL ONLY					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B5	44	#5	STR	9'-7"	440
* S1	40	#5	1	5'-1"	212
* S2	32	#5	2	7'-0"	234
* S3	8	#5	2	5'-6"	46

* EPOXY COATED REINFORCING STEEL	932	LBS.
CLASS AA CONCRETE	5.4	C.Y.
CONCRETE BARRIER RAIL	40.00	LIN. FT.

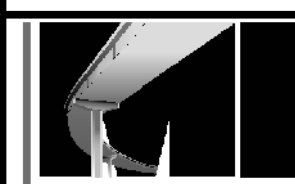
PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 28+46.00 -Y2RPC-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
BRIDGE APPROACH
SLAB DETAILS

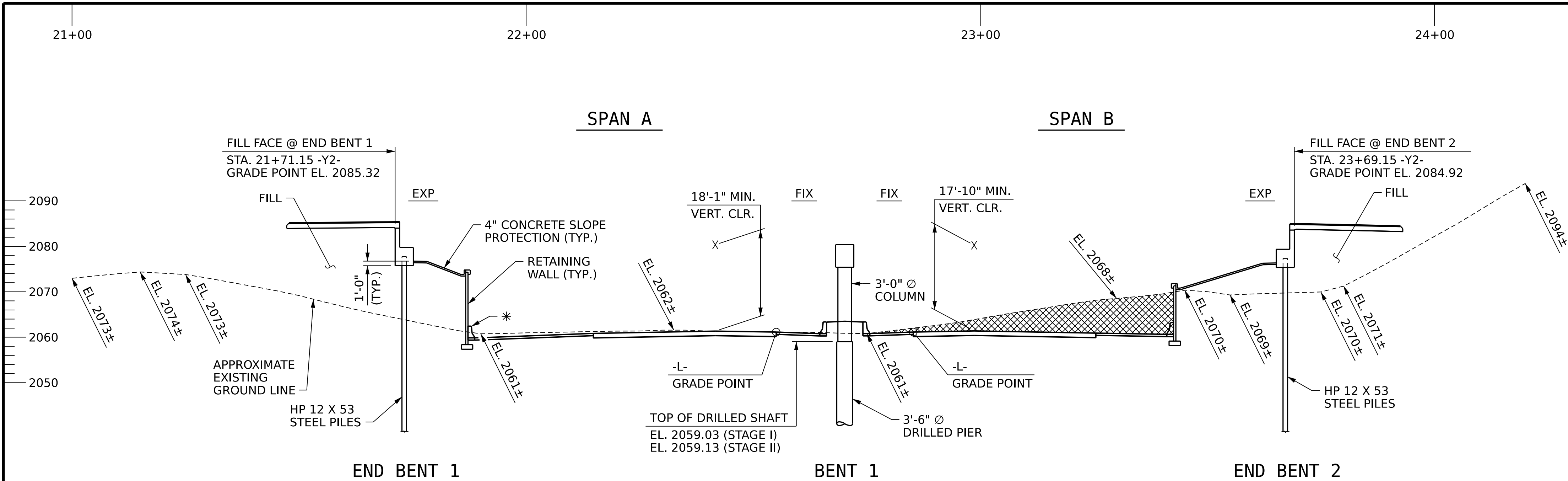
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



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

REVISIONS						SHEET NO. S05-45
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 45
2			4			

STD. NO. BAS4



-5.6640%	+1.3162%
PVI = 19+60.00 -Y2-	
EL. = 2082.53	
V.C. = 450.00'	
GRADE DATA -Y2-	
+1.3162%	-3.8103%
PVI = 23+30.00 -Y2-	
EL. = 2087.40	
V.C. = 290.00'	
GRADE DATA -Y2-	
+3.1300%	-3.1017%
PVI = 54+40.00 -L-	
EL. = 2068.56	
V.C. = 950.00'	
GRADE DATA -L-	

* 1'-5" WIDE, 41" SINGLE FACED PRECAST CONCRETE BARRIER RAIL WITH 1" EXP. JT. MAT'L. (ROADWAY PAY ITEM AND DETAIL) (TYP.)

UNCLASSIFIED STRUCTURE EXCAVATION

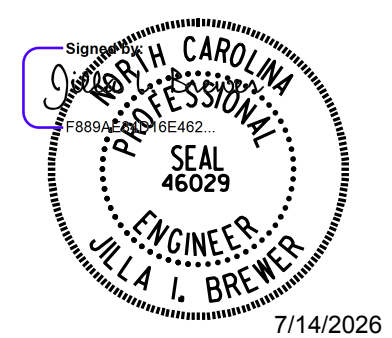
HORIZ. CURVE DATA -Y2-	
PI STA. 25+58.31 -Y2-	
Δ = 67°-09'-15.1" (RT.)	
D = 22°-55'-05.9"	
L = 293.02'	
T = 165.96'	
R = 250.00'	

HORIZ. CURVE DATA -L-	
PI STA. 52+29.12 -L-	
Δ = 11°-08'-02.2" (LT.)	
D = 0°-28'-38.9"	
L = 2331.89'	
T = 1169.63'	
R = 12,000.00'	

PMVC1	PMVC2
STA. 54+29.43 -L-	STA. 54+04.23 -L-
OFFSET 25.50' LT.	OFFSET 25.50' RT.
EL. 2061.39	EL. 2061.35
PMVC = POINT OF MINIMUM VERTICAL CLEARANCE	

PROJECT NO. I-2513 AC
BUNCOMBE COUNTY
STATION: 22+70.15 -Y2-
54+66.11 -L-
SHEET 1 OF 4 REPLACES BRIDGE NO. 100242

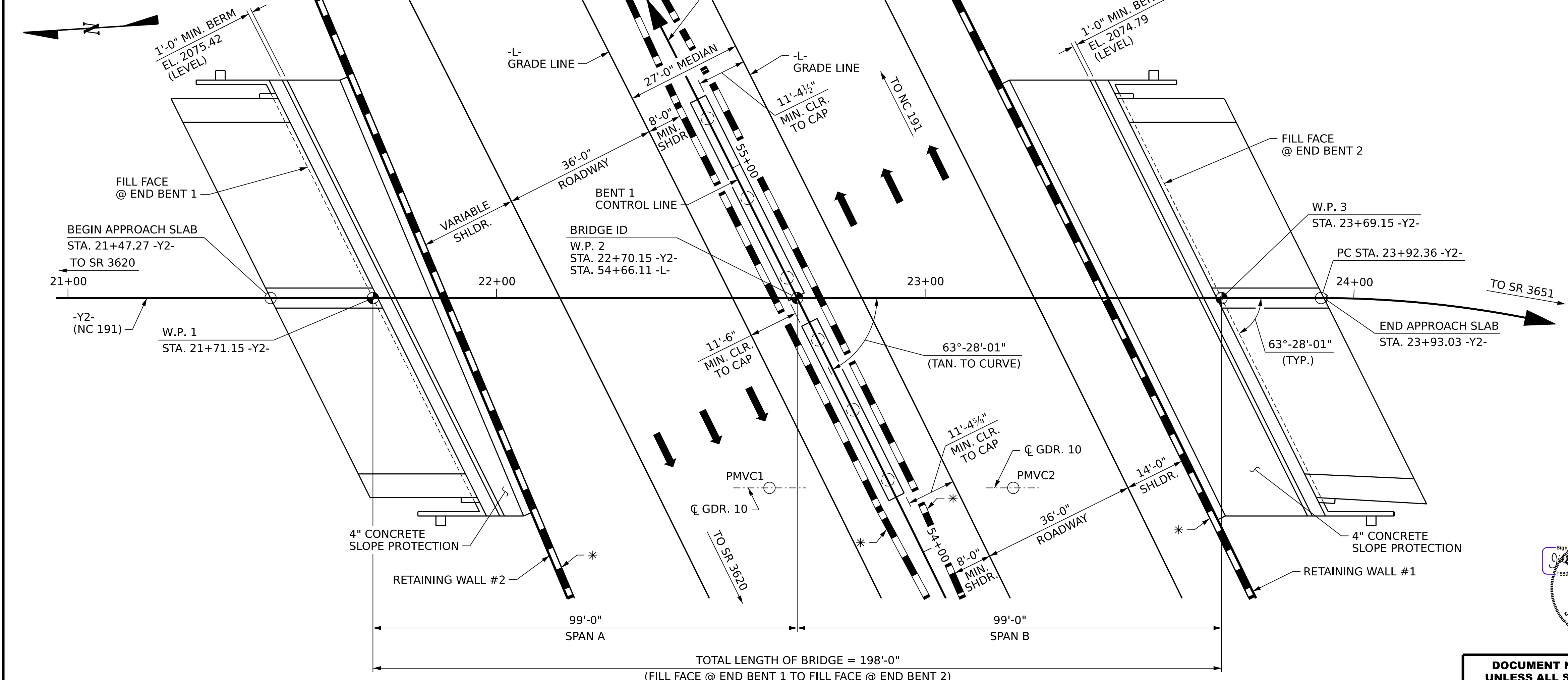
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GENERAL DRAWING
FOR BRIDGE ON NC 191
(BREVARD ROAD)
OVER I-26/I-240 BETWEEN
SR 3620 & SR 3651



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			S06-1
2			4			
TOTAL SHEETS						60

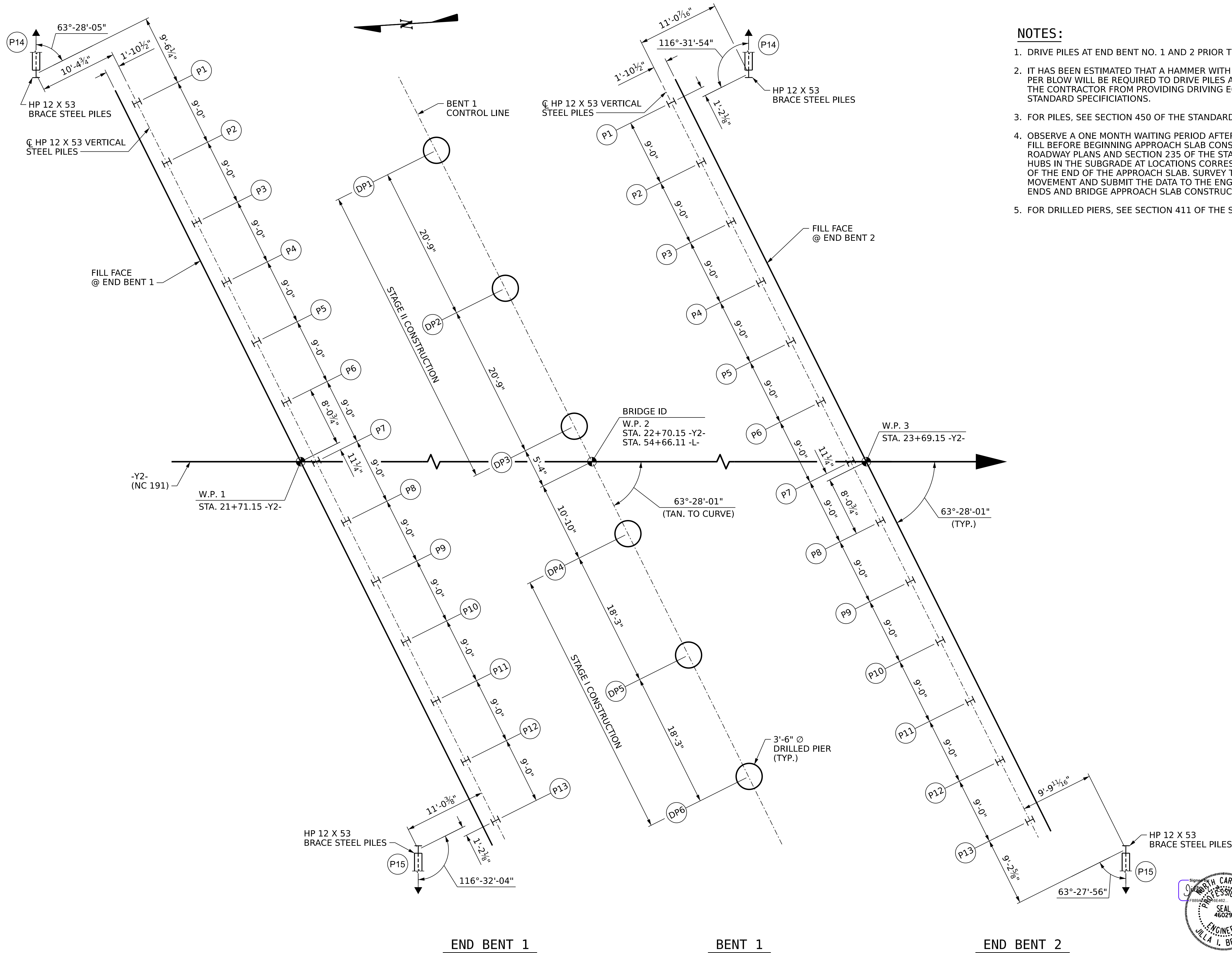


DRAWN BY : <u>B.E. LANNING</u>	DATE : <u>01/2024</u>
CHECKED BY : <u>J.I. BREWER</u>	DATE : <u>01/2024</u>
DESIGN ENGINEER OF RECORD : <u>J.I. BREWER</u>	DATE : <u>01/2026</u>

PLAN
(PILES NOT SHOWN FOR CLARITY)

7/14/2026 2:26:02 PM User: blanning
Filename: N:\NC Bridges\W21002-I-2513A I-26 (AECOM)\I-2513AC\Structures\SITE\406.001.I2513AC.SMU.GD01.S06-1-I.100242.dgn

7/14/2026 2:26:22 PM User: blanning
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NOTES:

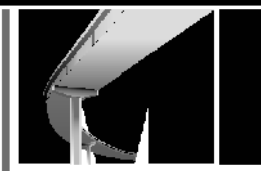
1. DRIVE PILES AT END BENT NO. 1 AND 2 PRIOR TO MSE ABUTMENT WALL CONSTRUCTION.
2. IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATE ENERGY IN THE RANGE OF 42,440 TO 51,220 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 1 AND 2. THIS ESTIMATED ENERGY DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.
3. FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
4. 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 AND 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.
5. FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

FOUNDATION LAYOUT

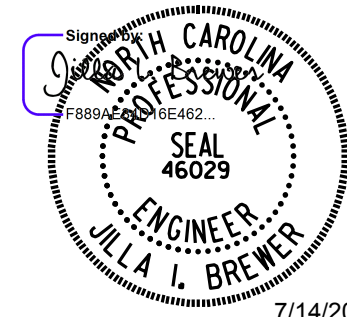
DIMENSIONS LOCATING END BENT PILES AND BENT DRILLED PIERS ARE SHOWN TO THE CENTERLINE OF PILES AND DRILLED PIERS.

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

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 4

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						SHEET NO.	
GENERAL DRAWING						S06-2	
FOR BRIDGE ON NC 191 (BREVARD ROAD) OVER I-26/I-240 BETWEEN SR 3620 & SR 3651						TOTAL SHEETS	
REVISIONS						60	
NO.	BY:	DATE:	NO.	BY:	DATE:		
1			3				
2			4				

(Blank entries indicate item is not applicable to structure)

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

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

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

(Blank entries indicate item is not applicable to structure)

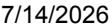
Drilled Pier Length, Drilled Pier Length Not in Soil and Drilled Pier Length in Soil represent estimated drilled pier quantities and are measured and paid for as either "____ Dia. Drilled Piers" or "____ Dia. Drilled Piers Not in Soil" and "____ Dia. Drilled Piers in Soil" in accordance with Article 411-7 of the NCDOT Standard Specifications. For bents with a not in soil pay item, drilled piers through air or water will be paid at the contract unit price for "____ Dia. Drilled Piers in Soil."

** Permanent Steel Casing Length equals the difference between the ground line or top of drilled pier elevation, whichever is higher, and the permanent casing tip elevation and is measured and paid for as "Permanent Steel Casing for ____ Dia. Drilled Pier" in accordance with Article 411-7 of the NCDOT Standard Specifications.

(Blank entries indicate item is not applicable to structure)

1. THE PILE AND DRILLED PIER FOUNDATION TABLES ARE BASED ON THE BRIDGE SUBSTRUCTURE DESIGN AND FOUNDATION RECOMMENDATIONS SEALED BY A NORTH CAROLINA PROFESSIONAL ENGINEER (MOHAMMED MULLA, P.E. NO. 018979) ON 03-19-2026.
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 QUANTITY FOR DPT TESTING, PIPE PILE PLATES, PERMANENT STEEL CASING, SPTs, TIPS, CSL TESTING, SID INSPECTIONS AND PITs WHEN NECESSARY.
4. FOR ADDITIONAL FOUNDATION NOTES, SEE GENERAL DRAWING SHEET 2 OF 4.

SHEET 3 OF 4



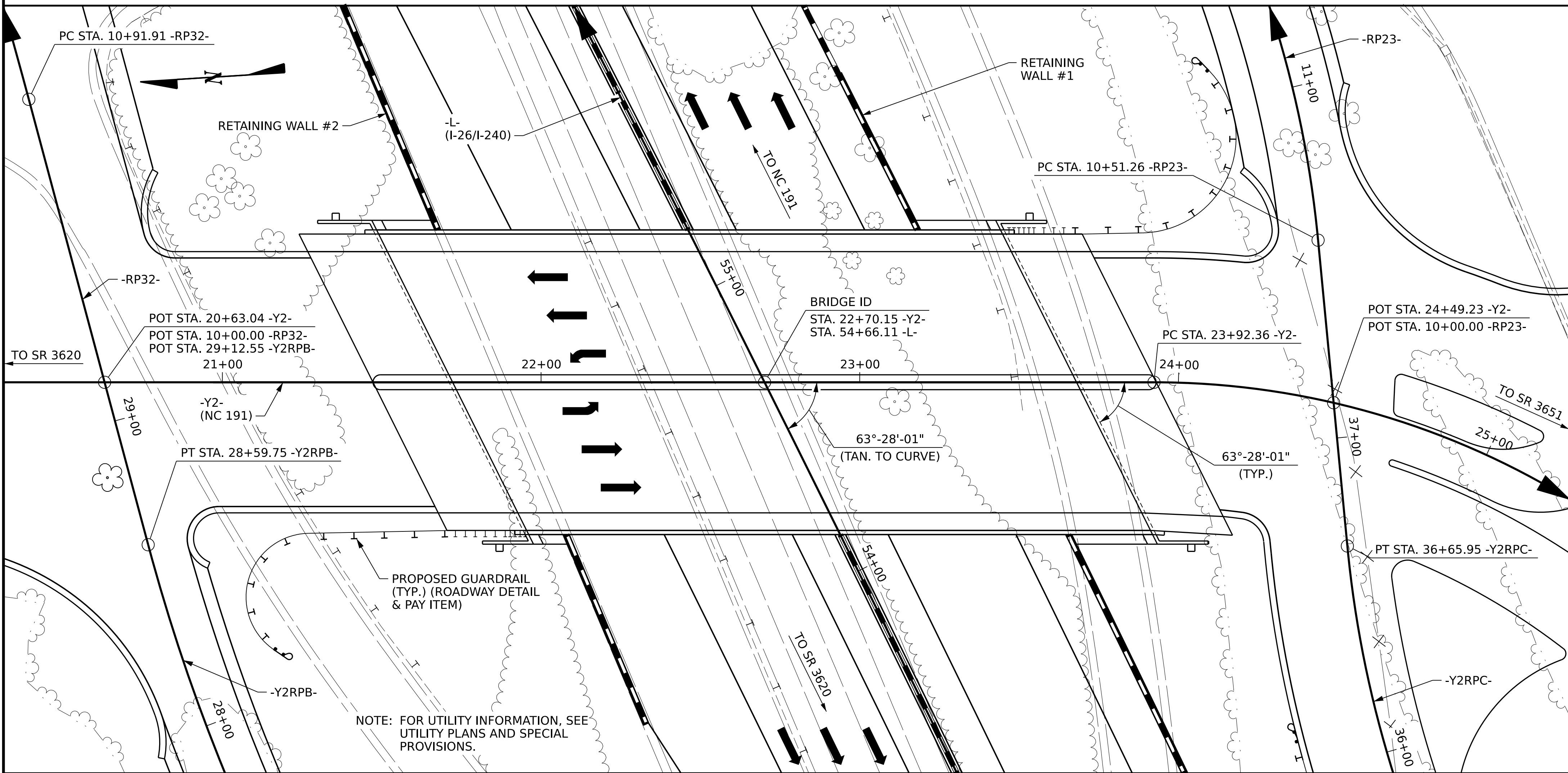
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 1
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

SHEET NO.
S06-3

TOTAL
SHEETS
60

7/14/2026
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B.M. #8: CHISELED SQUARE IN CONCRETE ON SE CORNER OF EXIT 1B (BREVARD RD) SIGN AT RAMP EXIT; 28.53' RIGHT OF STA. 51+74.57 -L-, EL. 2058.72



LOCATION SKETCH

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE AT STA. 22+70.15 -Y2-	ASBESTOS ASSESSMENT	3'-6" Ø DRILLED PIER	SID INSPECTIONS	CSL TESTING	UNCLASSIFIED STRUCTURE EXCAVATION	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	SPIRAL COLUMN REINFORCING STEEL	54" PRESTRESSED CONCRETE GIRDERS
	LUMP SUM	LUMP SUM	LIN. FT.	EACH	EACH	LUMP SUM	SQ. FEET	SQ. FEET	CU. YDS.	LUMP SUM	LBS.	LBS.	LIN. FT.
SUPERSTRUCTURE	LUMP SUM						18,690	19,397		LUMP SUM			1936.82
END BENT 1						LUMP SUM			108.2		12,833		
BENT 1			243.5						101.1		31,135	7,114	
END BENT 2						LUMP SUM			109.8		12,853		
TOTAL	LUMP SUM	LUMP SUM	243.5	1	1	LUMP SUM	18,690	19,397	319.1	LUMP SUM	56,821	7,114	1936.82

TOTAL BILL OF MATERIAL

	PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES	HP 12 X 53 STEEL PILES		ANODIZED 2-BAR METAL RAIL	1'-2" X 3'-3" CONCRETE PARAPET	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	STRIP SEAL EXPANSION JOINT	ELECTRICAL CONDUIT SYSTEM FOR SIGNALS AT STA. 22+70.15 -Y2-	ELECTRICAL CONDUIT SYSTEM FOR LIGHTING AT STA. 22+70.15 -Y2-	CAP END AESTHETIC	APPLICATION OF BRIDGE COATING
	EACH	NO.	LIN. FT.	LIN. FT.	LIN. FT.	SQ. YDS.	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	EACH	SF
SUPERSTRUCTURE				374.44	407.22		LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM		11,500
END BENT 1	15	15	855			125						865
BENT 1											2	2,390
END BENT 2	15	15	555			258						865
TOTAL	30	30	1,410	374.44	407.22	383	LUMP SUM	LUMP SUM	LUMP SUM	LUMP SUM	2	15,620

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

NOTES:

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING STRUCTURE CONSISTING OF 4 SPANS (1 @ 29'-9", 2 @ 46'-1", AND 1 @ 27'-6" WITH REINFORCED CONCRETE DECK ON STEEL I-BEAMS WITH A CLEAR ROADWAY WIDTH OF 28'-0" ON REINFORCED CONCRETE CAPS AT END BENTS AND INTERIOR BENTS AND LOCATED NEAR THE PROPOSED STRUCTURE SHALL BE REMOVED.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH THE APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STA. 22+70.15 -Y2-."

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR. THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS ON THE PROJECT SITE.

REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.

FOR MAINTENANCE AND PROTECTION OF TRAFFIC BENEATH PROPOSED STRUCTURE, SEE SPECIAL PROVISIONS.

NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

FOR MSE WALLS, SEE GEOTECHNICAL SPECIAL PROVISIONS.

FOR STRIP SEAL EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.

FOR CAP END AESTHETIC, 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.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 37 FT. EACH SIDE OF THE CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR THE UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

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

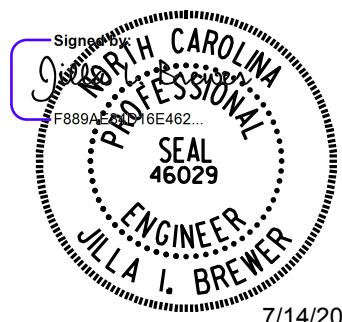
THE ELEVATIONS AND CLEARANCES SHOWN ON THE PLANS AT THE POINTS OF MINIMUM VERTICAL CLEARANCE ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE ELEVATIONS ON THE EXISTING PAVEMENT AND CHECK THE CLEARANCE. REPORT ANY VARIATIONS TO ENGINEER. ANY PLAN REVISIONS NECESSARY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

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

FOR LIGHTING DETAILS, SEE LIGHTING PLANS.

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

SHEET 4 OF 4



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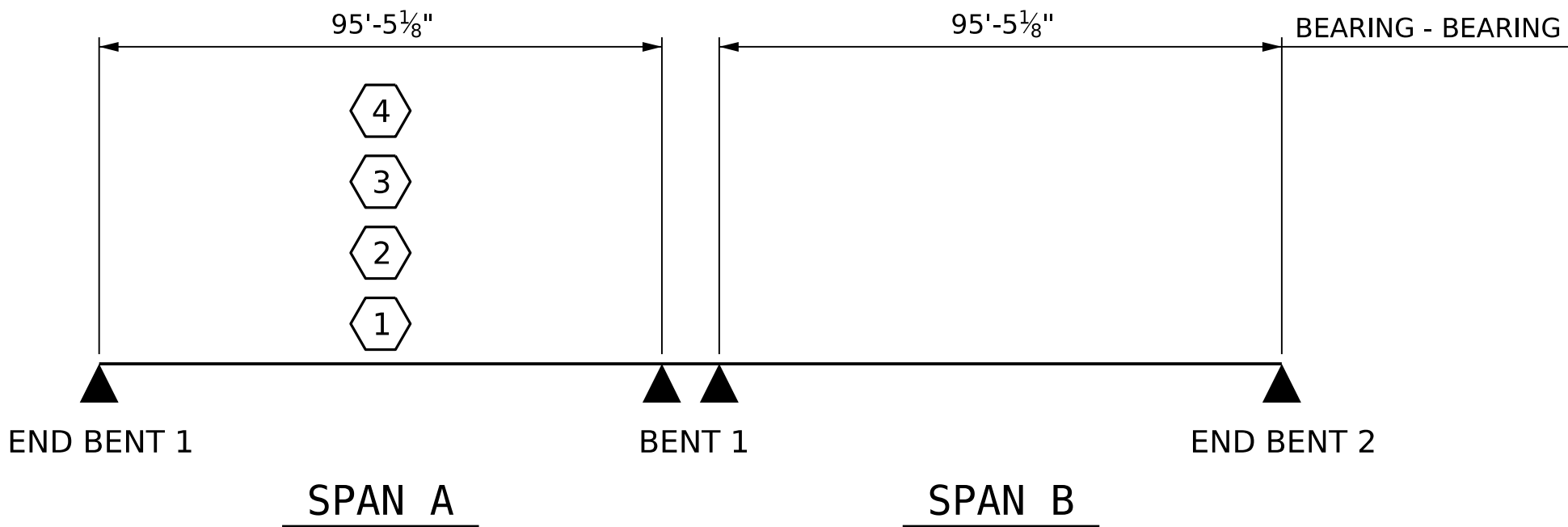
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER: P-0671

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH						GENERAL DRAWING					
FOR BRIDGE ON NC 191 (BREVARD ROAD) OVER I-26/I-240 BETWEEN SR 3620 & SR 3651											
REVISIONS						SHEET NO.					
NO.	BY:	DATE:	NO.	BY:	DATE:	S06-4					
1			3			TOTAL SHEETS 60					
2			4								

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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	1.17	--	1.75	0.893	1.49	A	ER	47.7	1.076	1.35	A	I	19.1	0.80	0.893	1.17	A	ER	47.7	
		HL-93 (OPERATING)	N/A		1.79	--	1.35	0.893	1.93	A	ER	47.7	1.076	1.79	A	I	19.1	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	⬢2	1.61	57.96	1.75	0.893	2.05	A	ER	47.7	1.076	1.78	A	I	19.1	0.80	0.893	1.61	A	ER	47.7	
		HS-20 (OPERATING)	36.000		2.34	84.24	1.35	0.893	2.66	A	ER	47.7	1.076	2.34	A	I	19.1	N/A	--	--	--	--	--	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		3.81	51.44	1.40	0.893	6.04	A	ER	47.7	1.076	5.68	A	I	19.1	0.80	0.893	3.81	A	ER	47.7	
		SNGARBS2	20.000		2.77	55.40	1.40	0.893	4.39	A	ER	47.7	1.076	3.96	A	I	19.1	0.80	0.893	2.77	A	ER	47.7	
		SNAGRIS2	22.000		2.59	56.98	1.40	0.893	4.11	A	ER	47.7	1.076	3.65	A	I	19.1	0.80	0.893	2.59	A	ER	47.7	
		SNCOTTS3	27.250		1.89	51.50	1.40	0.893	3.00	A	ER	47.7	1.076	2.76	A	I	19.1	0.80	0.893	1.89	A	ER	47.7	
		SNAGGRS4	34.925		1.55	54.14	1.40	0.893	2.47	A	ER	47.7	1.076	2.24	A	I	19.1	0.80	0.893	1.55	A	ER	47.7	
		SNS5A	35.550		1.52	54.04	1.40	0.893	2.41	A	ER	47.7	1.076	2.26	A	I	19.1	0.80	0.893	1.52	A	ER	47.7	
		SNS6A	39.950		1.38	55.13	1.40	0.893	2.20	A	ER	47.7	1.076	2.04	A	I	19.1	0.80	0.893	1.38	A	ER	47.7	
		SNS7B	42.000		1.32	55.44	1.40	0.893	2.09	A	ER	47.7	1.076	1.99	A	I	19.1	0.80	0.893	1.32	A	ER	47.7	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.68	55.44	1.40	0.893	2.67	A	ER	47.7	1.076	2.46	A	I	19.1	0.80	0.893	1.68	A	ER	47.7	
		TNT4A	33.075		1.69	55.91	1.40	0.893	2.68	A	ER	47.7	1.076	2.40	A	I	19.1	0.80	0.893	1.69	A	ER	47.7	
		TNT6A	41.600		1.37	56.99	1.40	0.893	2.18	A	ER	47.7	1.076	2.11	A	I	19.1	0.80	0.893	1.37	A	ER	47.7	
		TNT7A	42.000		1.37	57.54	1.40	0.893	2.18	A	ER	47.7	1.076	2.07	A	I	19.1	0.80	0.893	1.37	A	ER	47.7	
		TNT7B	42.000		1.41	59.22	1.40	0.893	2.23	A	ER	47.7	1.076	1.95	A	I	19.1	0.80	0.893	1.41	A	ER	47.7	
		TNAGRIT4	43.000		1.35	58.05	1.40	0.893	2.14	A	ER	47.7	1.076	1.88	A	I	19.1	0.80	0.893	1.35	A	ER	47.7	
		TNAGT5A	45.000		1.28	57.60	1.40	0.893	2.02	A	ER	47.7	1.076	1.86	A	I	19.1	0.80	0.893	1.28	A	ER	47.7	
		TNAGT5B	45.000	⬢3	1.26	56.70	1.40	0.893	2.01	A	ER	47.7	1.076	1.79	A	I	19.1	0.80	0.893	1.26	A	ER	47.7	
EMERGENCY VEHICLE (EV)		EV2	28.750		1.95	56.06	1.30	0.893	3.33	A	ER	47.7	1.076	2.95	A	I	19.1	0.80	0.893	1.95	A	ER	47.7	
		EV3	43.000	⬢4	1.28	55.04	1.30	0.893	2.19	A	ER	47.7	1.076	1.94	A	I	19.1	0.80	0.893	1.28	A	ER	47.7	



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.

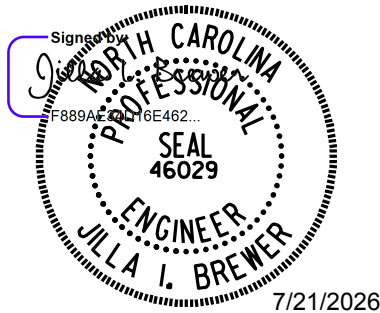
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

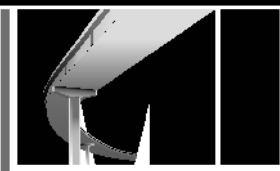
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⬡	CONTROLLING LOAD RATING
⬡1	DESIGN LOAD RATING (HL-93)
⬡2	DESIGN LOAD RATING (HS-20)
⬡3	LEGAL LOAD RATING * *
⬡4	EMERGENCY VEHICLE LOAD RATING * *
* * SEE CHART FOR VEHICLE TYPE	
GIRDER LOCATION	
I - INTERIOR GIRDER EL - EXTERIOR LEFT GIRDER ER - EXTERIOR RIGHT GIRDER	

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



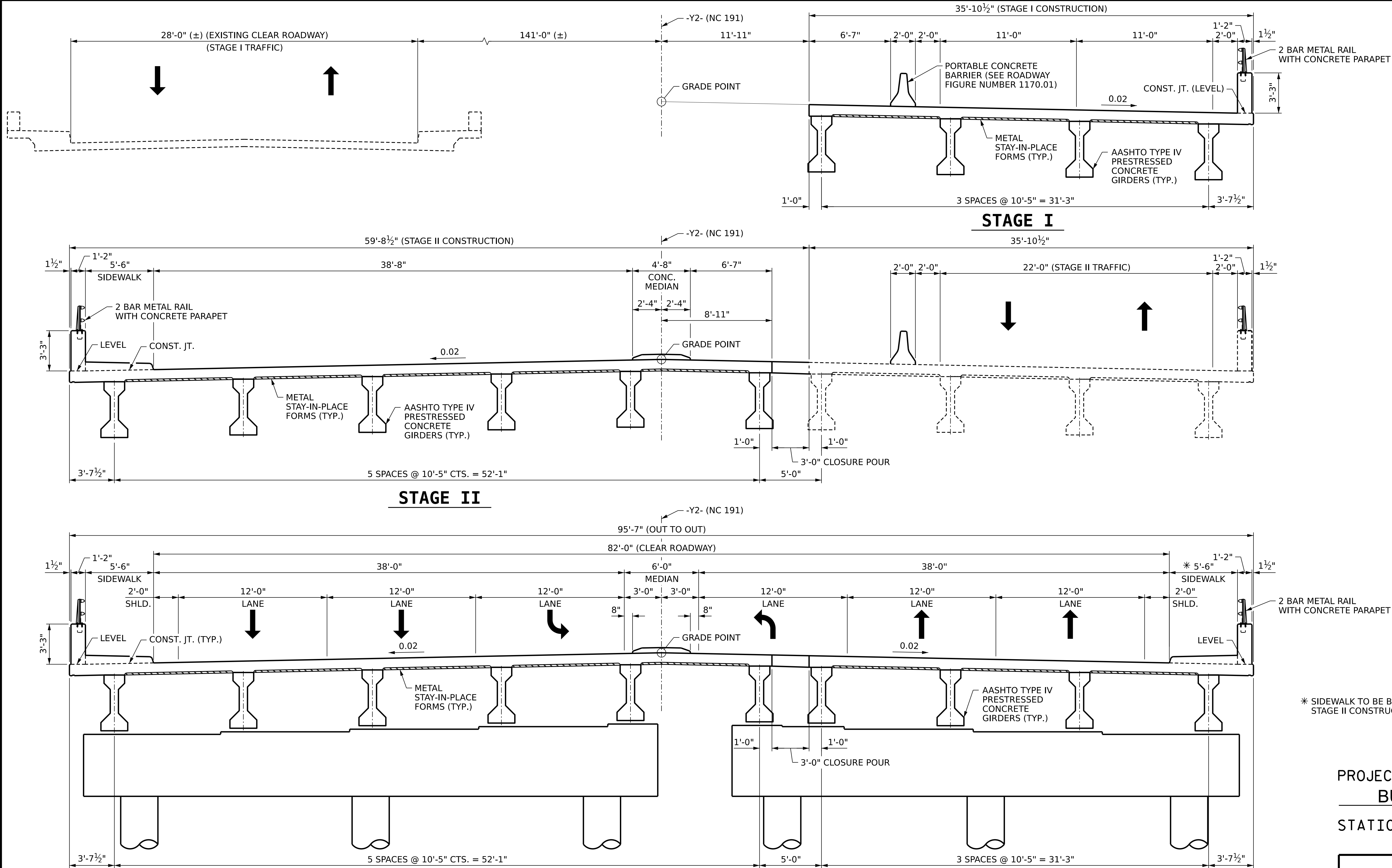
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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA						
DEPARTMENT OF TRANSPORTATION						
RALEIGH						
STANDARD						
LRFR SUMMARY FOR						
PRESTRESSED						
CONCRETE GIRDERS						
(NON-INTERSTATE TRAFFIC)						
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S06-5
1			3			TOTAL SHEETS
2			4			60

ASSEMBLED BY: B.E. LANNING	DATE: 02/2024
CHECKED BY: J.I. BREWER	DATE: 03/2024
DESIGN ENGINEER OF RECORD: J.I. BREWER	DATE: 01/2026
DRAWN BY: MAA I/08	REV. 11/2/08RR MAA/GM
CHECKED BY: GM/DI 2/08	REV. 10/1/11 MAA/GM
	REV. 04/23 BNB/AAI



FINAL TYPICAL SECTION

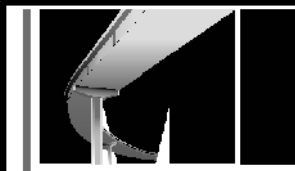
* SIDEWALK TO BE BUILT AFTER
STAGE II CONSTRUCTION.

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

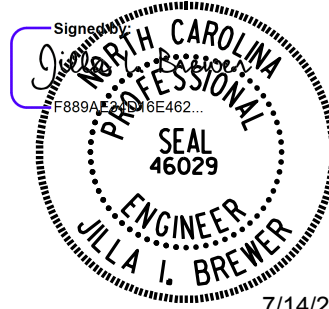
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION
SEQUENCE

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



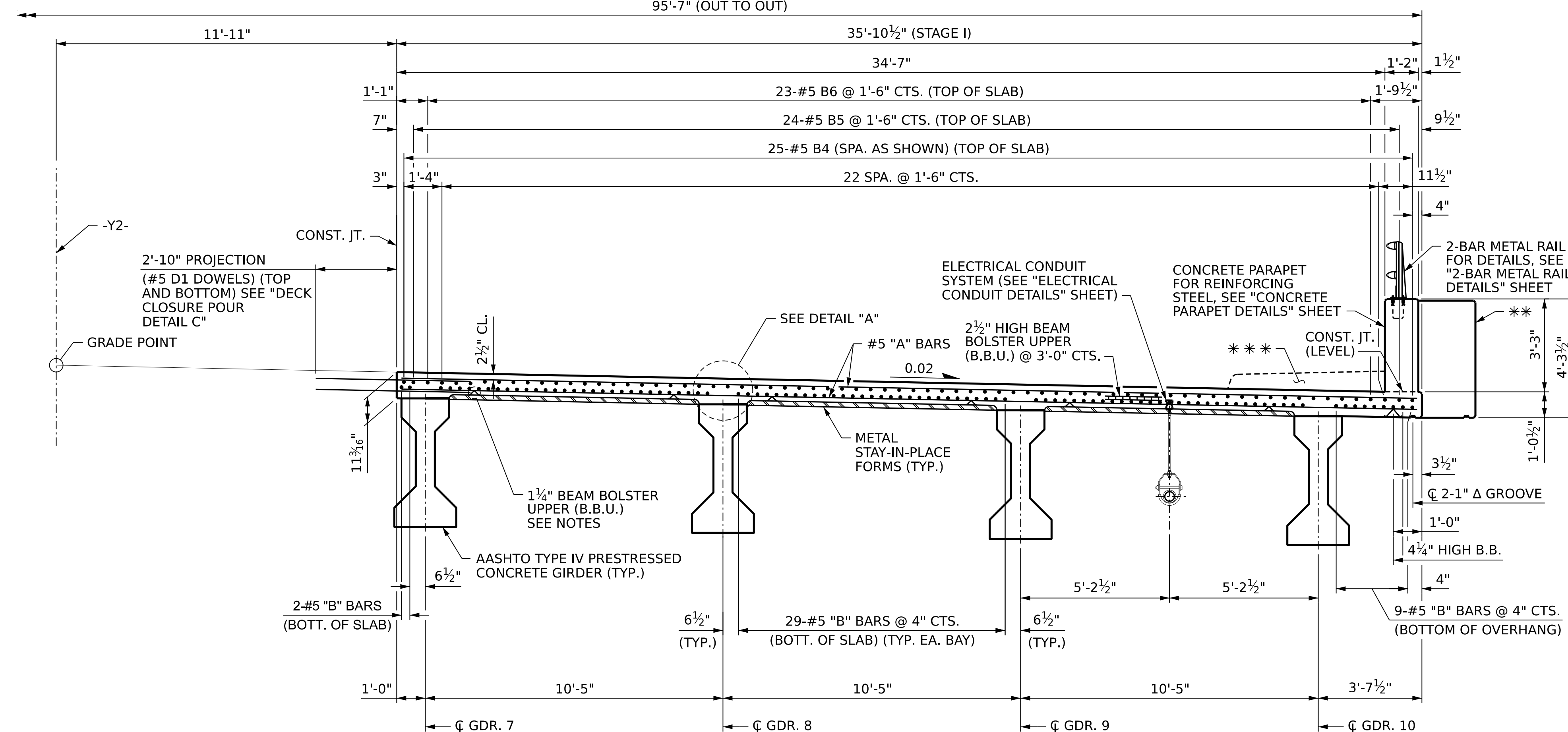
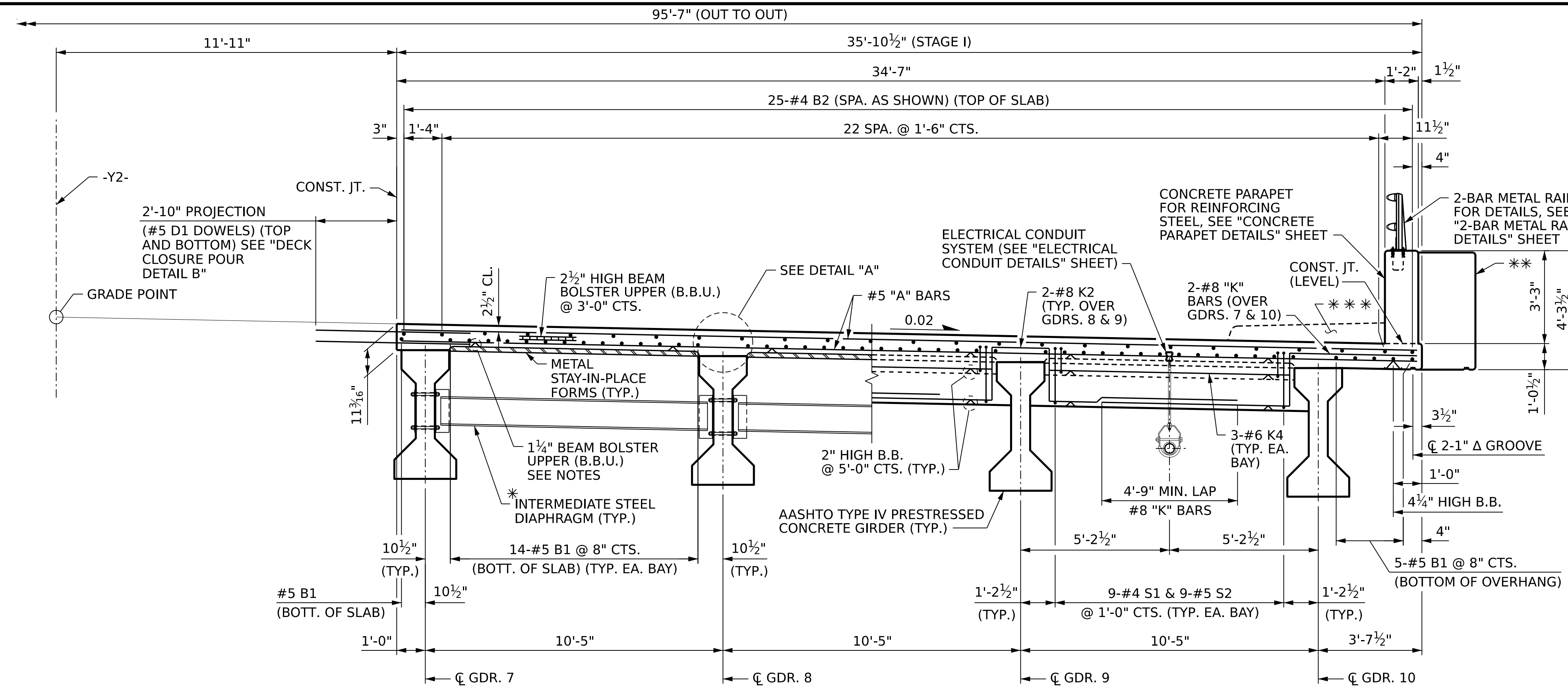
7/14/2026

REVISIONS

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

SHEET NO.
S06-6
TOTAL
SHEETS
60

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



NOTES:

PROVIDE 1¼" 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 (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2½" 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 A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.

CONCRETE PARAPET, SIDEWALK AND CONCRETE MEDIAN IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL UNLESS OTHERWISE NOTED.

NO WELDING OF FORMS OR FALSEWORK TO THE TOP OF THE GIRDER
WILL BE PERMITTED IN THE LINK SLAB AREA.

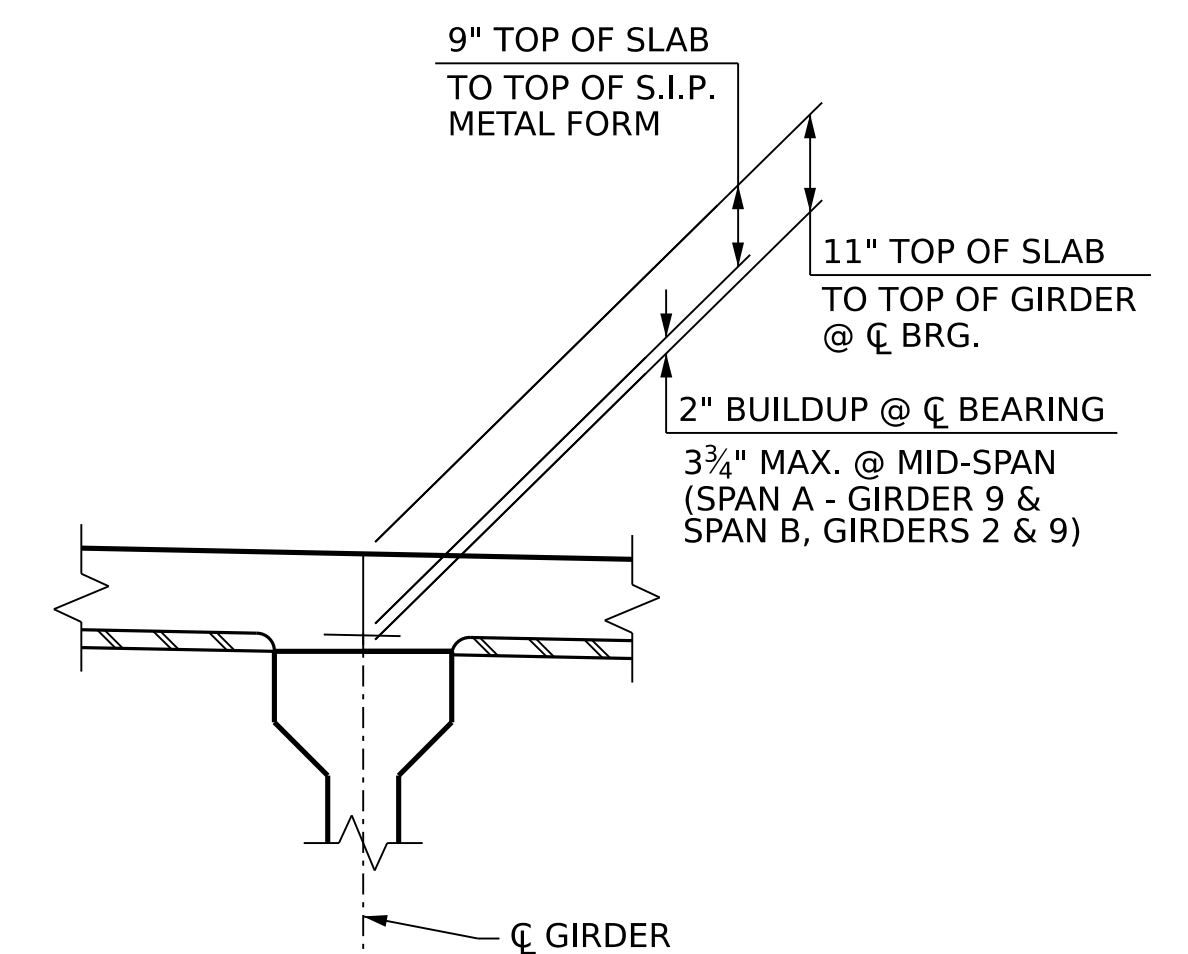
* FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS" SHEET.

FOR DETAIL "B" AND DETAIL "C", SEE SHEET 2 OF 3.

* * FOR CONCRETE LIGHT PEDESTAL DETAILS, SEE "CONCRETE PARAPET PLAN" SHEET.

* * * SIDEWALK TO BE BUILT AFTER STAGE II CONSTRUCTION. SEE "SIDEWALK DETAILS - STAGE II" SHEET FOR DETAILS.

FOR LIMITS OF AESTHETICS TREATMENT, SEE "SUPERSTRUCTURE
BILL OF MATERIAL" SHEET 3 OF 3.



DETAIL "A"

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

SHEET 1 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTION

STAGE I

DRAWN BY :	<u>B.E. LANNING</u>	DATE :	<u>06/2023</u>
CHECKED BY :	<u>J.I. BREWER</u>	DATE :	<u>08/2023</u>
DESIGN ENGINEER OF RECORD :	<u>J.I. BREWER</u>	DATE :	<u>01/2026</u>

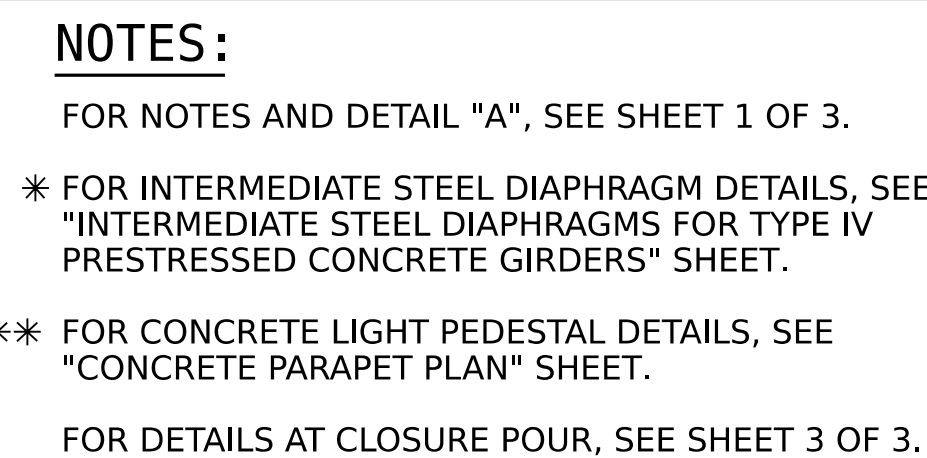
TYPICAL SECTION AT LINK SLAB OVER INTERIOR BENTS

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

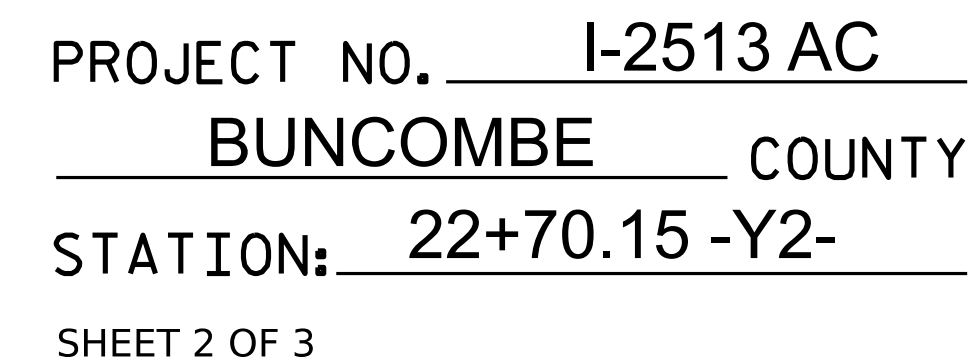


MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PF NUMBER : P-0671

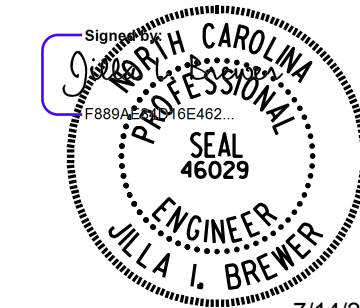
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NO.	BY:	DATE:	NO.	BY:	DATE:	S06-7
1			3			TOTAL SHEETS
2			4			60



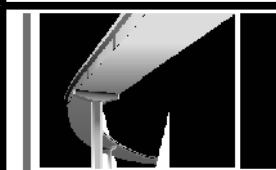
PARTIAL TYPICAL SECTION



(FOR ADDITIONAL DIMENSIONS AND CALLOUTS, SEE TYPICAL SECTION ABOVE)



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

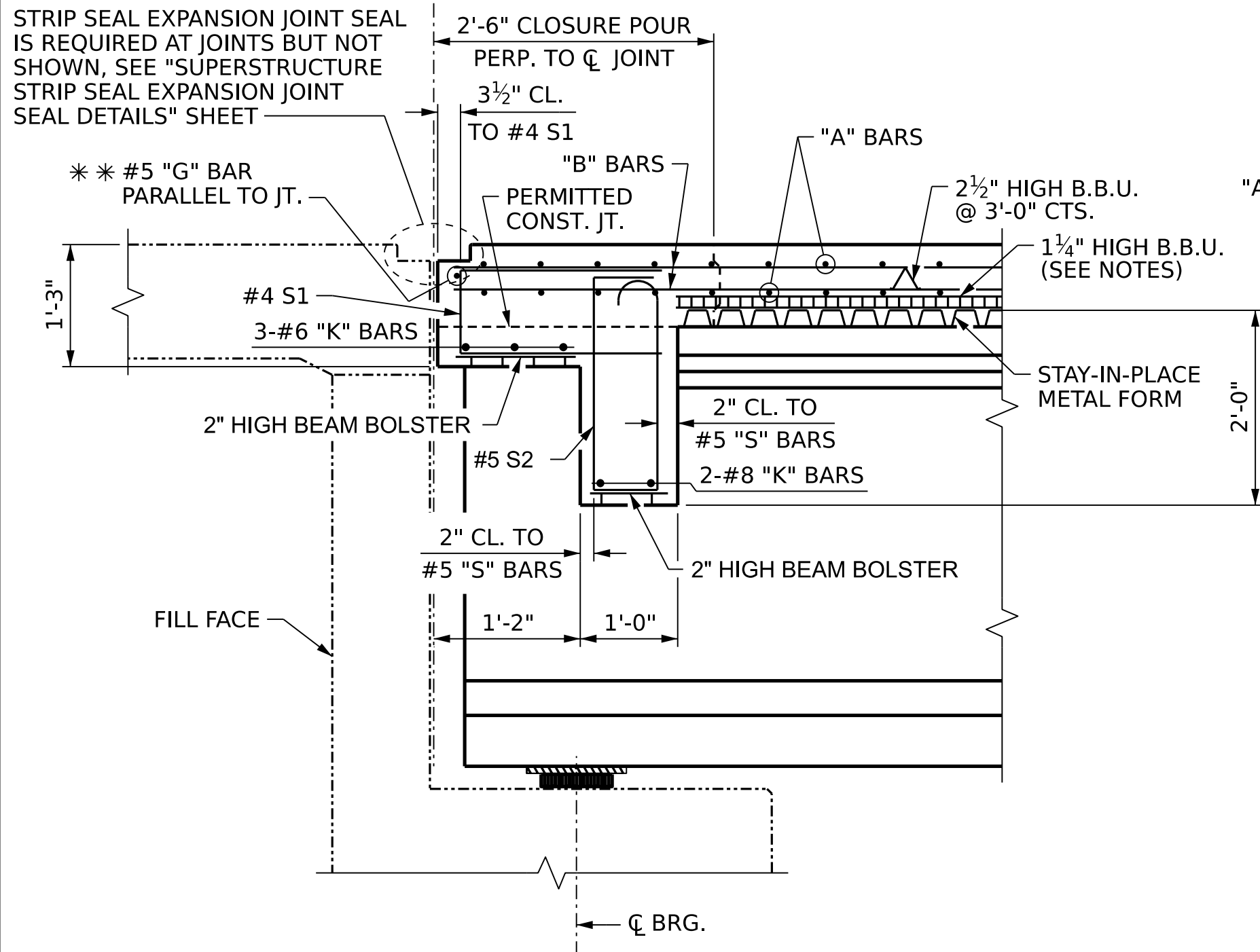


MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 10
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STAGE II

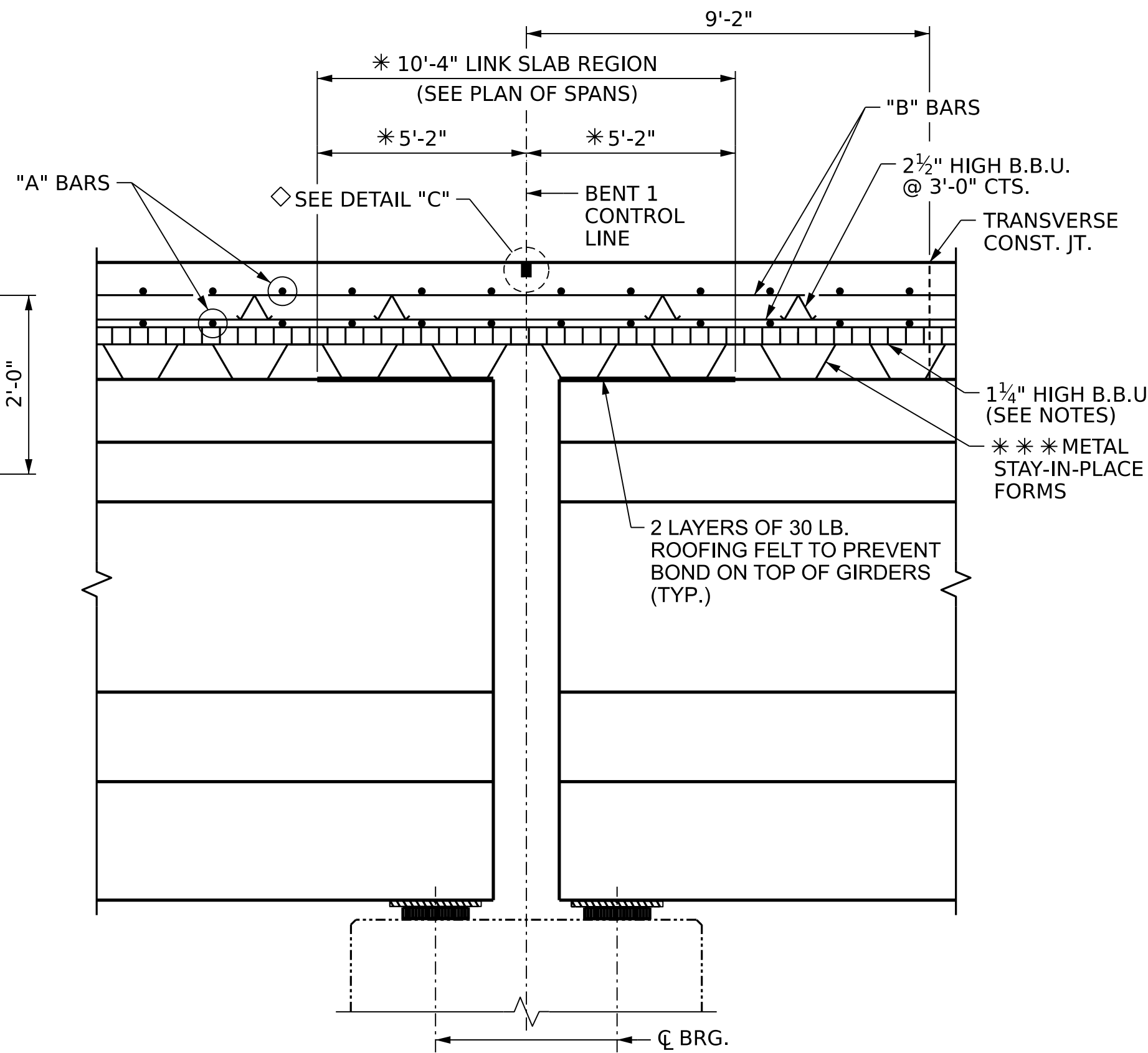
REVISIONS						SHEET NO. S06-8
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 60
2			4			

DRAWN BY :	<u>B.E. LANNING</u>	DATE :	<u>06/2023</u>
CHECKED BY :	<u>J.I. BREWER</u>	DATE :	<u>08/2023</u>
DESIGN ENGINEER OF RECORD :	<u>J.I. BREWER</u>	DATE :	<u>01/2026</u>



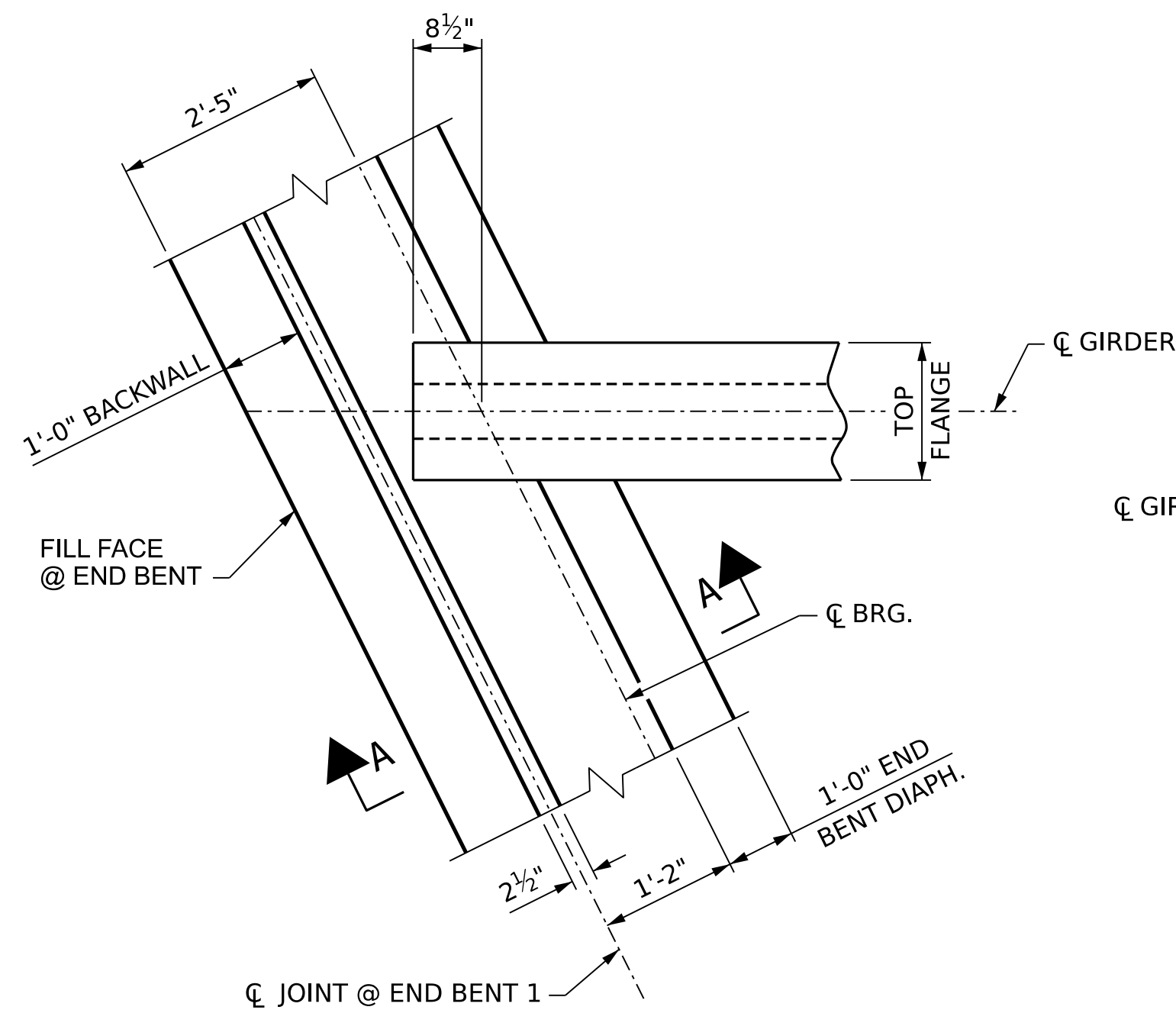
SECTION A-A

- * MEASURED ALONG CL GIRDER
- ** #5 "G" BARS MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.



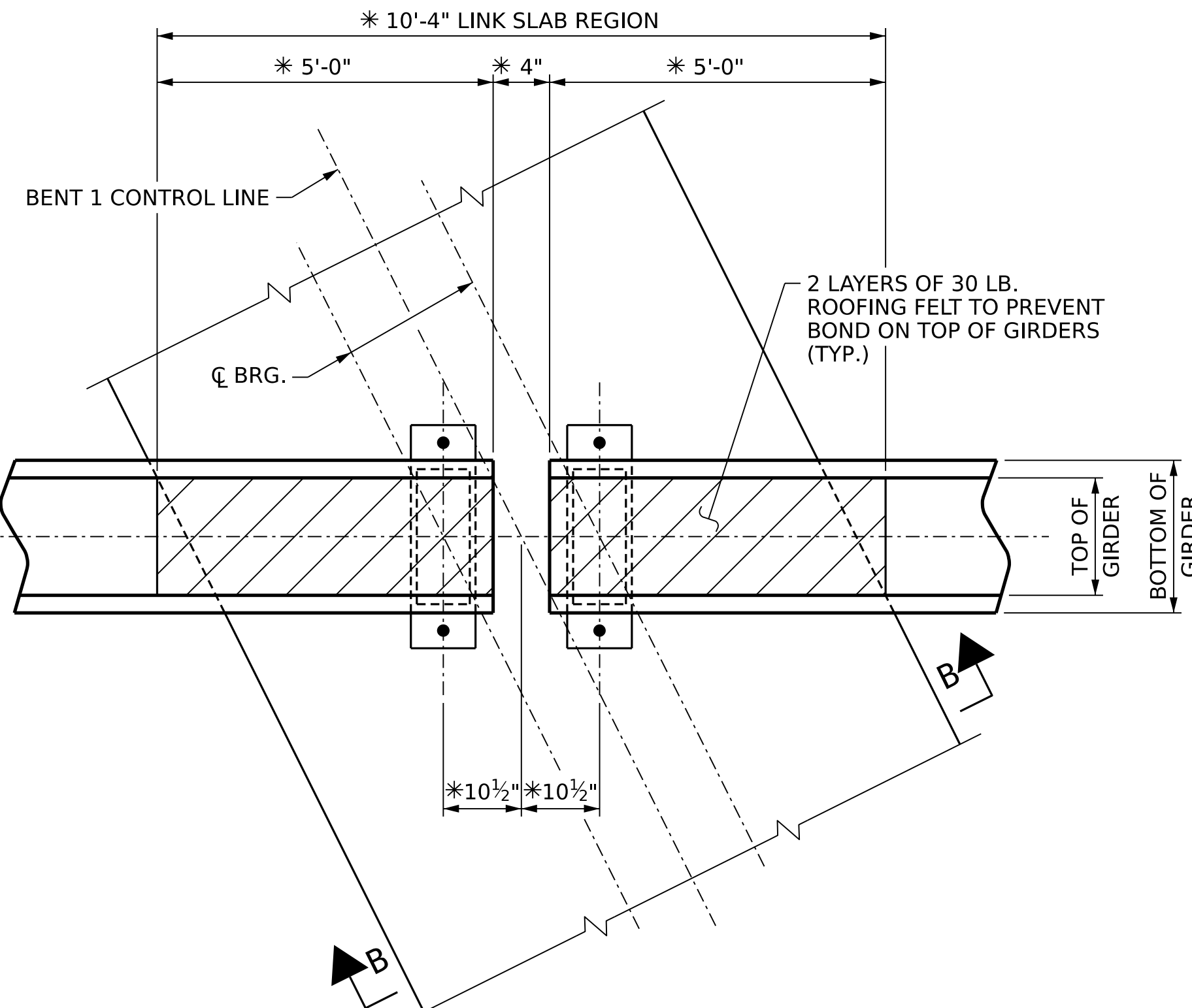
SECTION B-B

SECTION SHOWN ALONG GIRDER



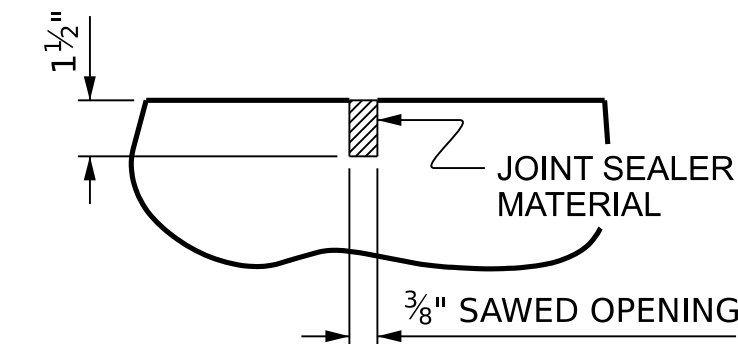
PLAN OF GIRDER AT END BENT

(END BENT 1 SHOWN, END BENT 2 SIMILAR)



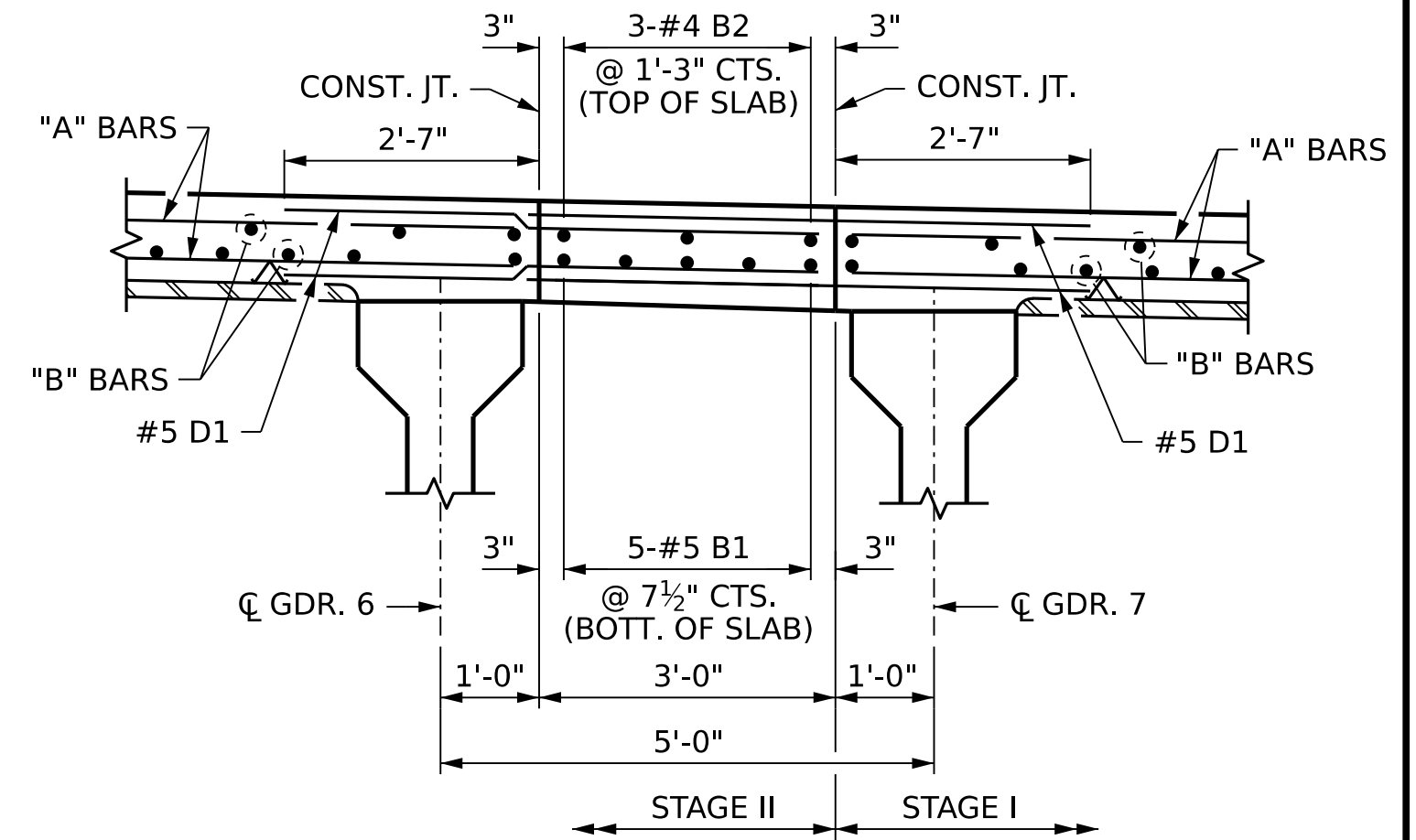
PLAN OF GIRDER AT INTERIOR BENT

THE TOP OF GIRDER IN THE REGION OF THE LINK SLAB SHALL BE SMOOTH (NOT RAKED) AND FREE OF STIRRUPS, ANCHOR STUDS, DECK FORMWORK ATTACHMENTS, AND OVERHANG FALSEWORK/FORMWORK ATTACHMENTS.



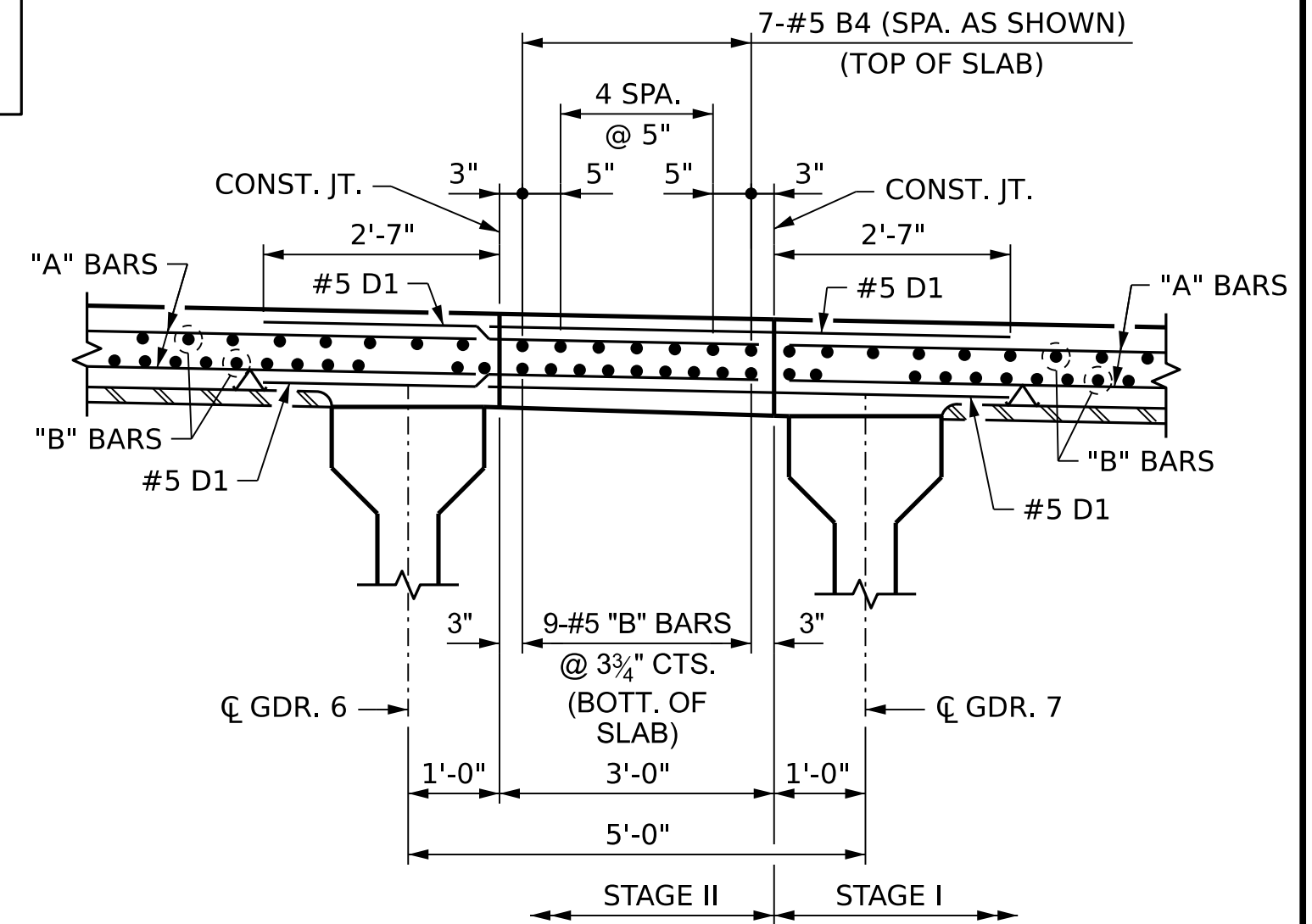
DETAIL "C"

- *** METAL STAY-IN-PLACE FORMS SHALL NOT BE WELDED TO THE GIRDER FLANGES IN THE REGION OF THE LINK SLAB
- ◇ A 1½" DEEP, ⅜" WIDE CONTRACTION JOINT AT BENT CONTROL LINE SHALL BE SAWN WITHIN 24 HOURS OF POURING THE DECK. THE JOINT SHALL BE FILLED WITH JOINT SEALER MATERIAL. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.



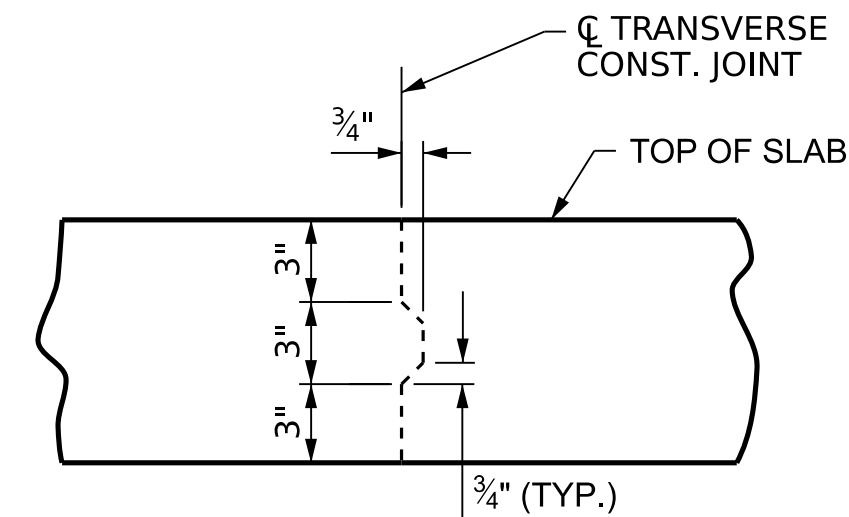
DECK CLOSURE POUR DETAIL "B"

#5 D1 DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AT TOP & BOTTOM SLAB REINFORCING STEEL.



DECK CLOSURE POUR DETAIL "C"

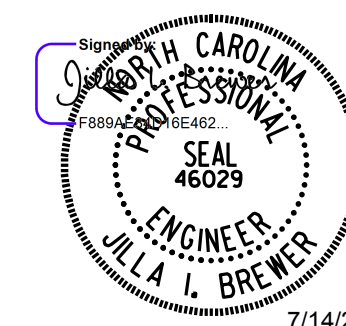
#5 D1 DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AT TOP & BOTTOM SLAB REINFORCING STEEL.



TRANSVERSE CONSTRUCTION

JOINT DETAIL

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



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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 3 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE TYPICAL SECTION DETAILS

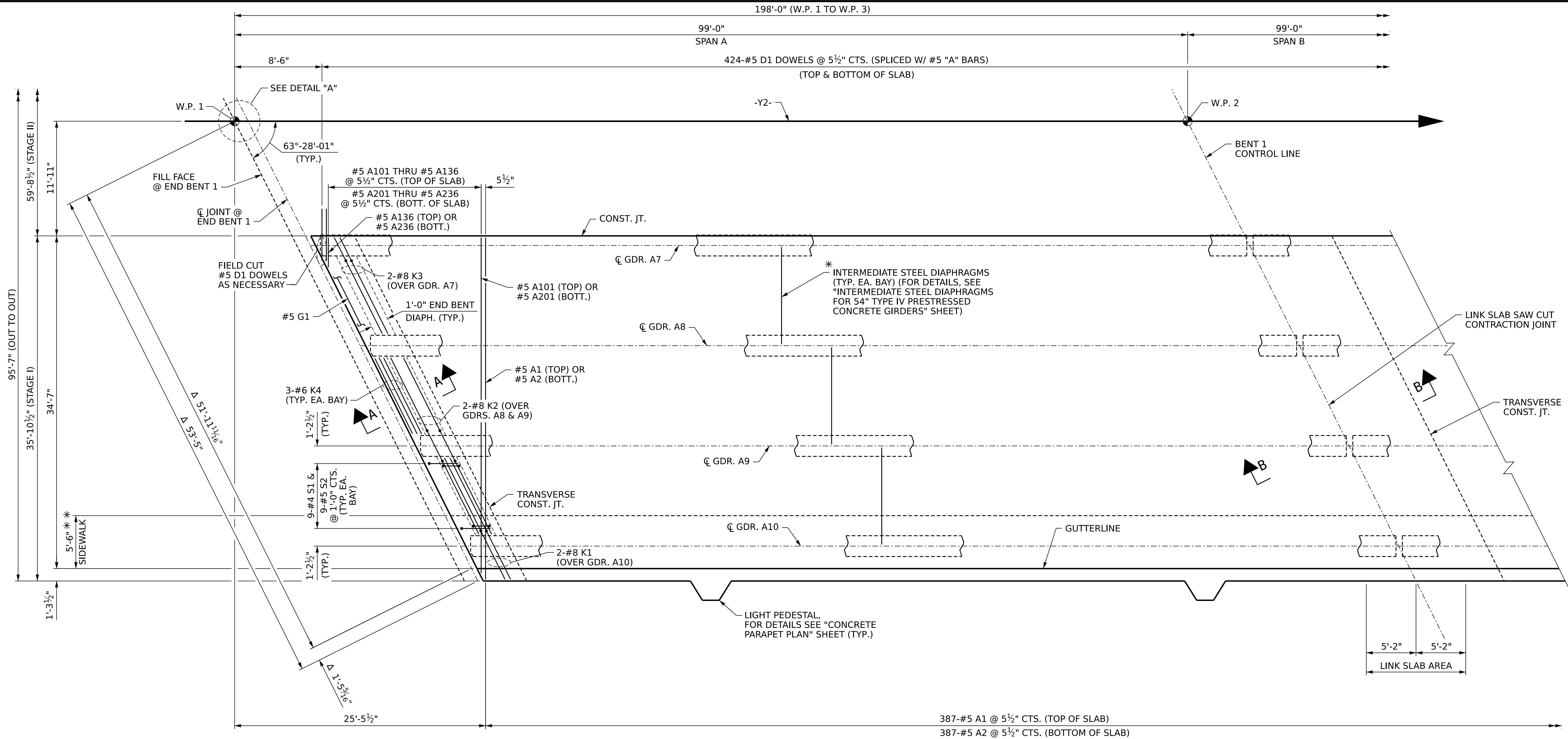
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S06-9
2			4			

TOTAL
SHEETS
60

DRAWN BY: B.E. LANNING DATE: 06/2023
CHECKED BY: J.I. BREWER DATE: 08/2023
DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 01/2026

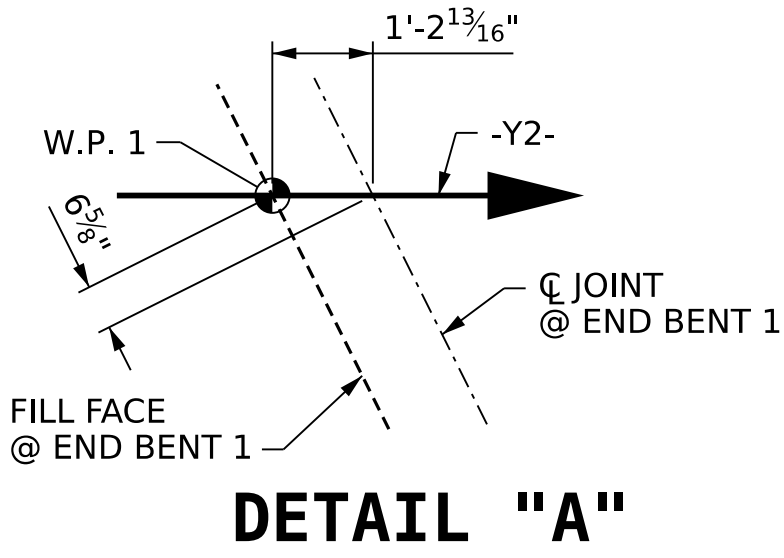
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Filename: N:\NC Bridges\W21002-I-2513A I-26 (AECOM)\I-2513AC\Structures\SITE\406.019.12513AC.SWJ.PS1.S06-10.100242.dgn



- NOTES:**
- FOR REINFORCING STEEL IN CONCRETE PARAPET, SEE "CONCRETE PARAPET" SHEETS.
- FOR TOP & BOTTOM "B" BARS NOT SHOWN, SEE "B" BAR LAYOUT STAGE I SHEET 5 OF 6.
- FOR SECTIONS A-A AND B-B, SEE "SUPERSTRUCTURE TYPICAL SECTION DETAILS" SHEET 3 OF 3.
- FOR LOCATION OF INTERMEDIATE STEEL DIAPHRAGMS, SEE "FRAMING PLAN" SHEET.
- * FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS" SHEET.
- SEE "SUPERSTRUCTURE BILL OF MATERIAL STAGE I" FOR POUR SEQUENCE AND LOCATION OF TRANSVERSE CONSTRUCTION JOINT.
- DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE TOP AND BOTTOM SLAB REINFORCING STEEL.
- LINK SLAB SAW CUT CONTRACTION JOINT EXTEND TO THE EDGE OF DECK ON BOTH SIDES.
- * * SIDEWALK TO BE BUILT AFTER STAGE II CONSTRUCTION, SEE "SIDEWALK DETAILS - STAGE II" SHEET FOR DETAILS.
- Δ DIMENSION LOCATED ALONG CENTERLINE OF JOINT.

PLAN OF SPAN A - STAGE I



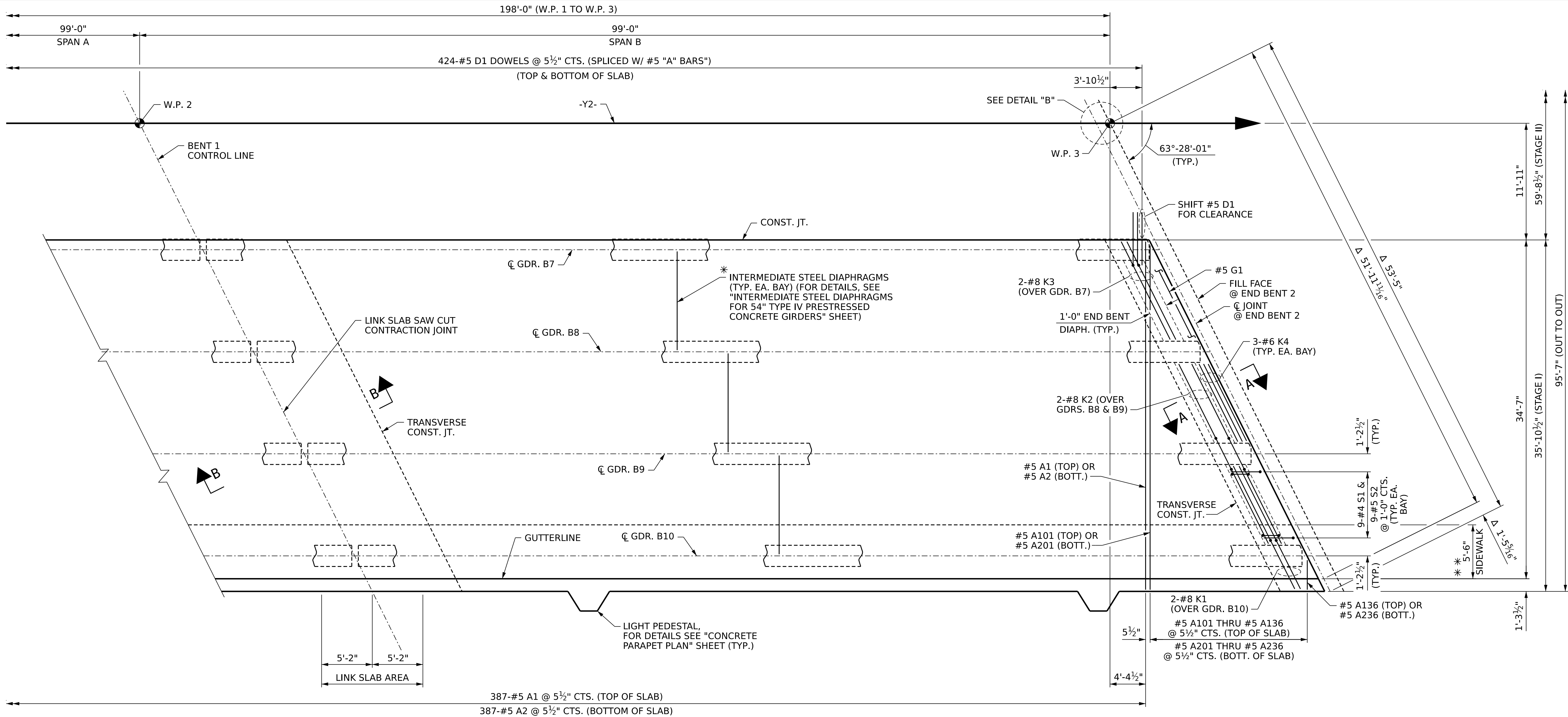
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

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 6

REVISIONS						SHEET NO. S06-10
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 60
2			4			

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PLAN OF SPAN B - STAGE I

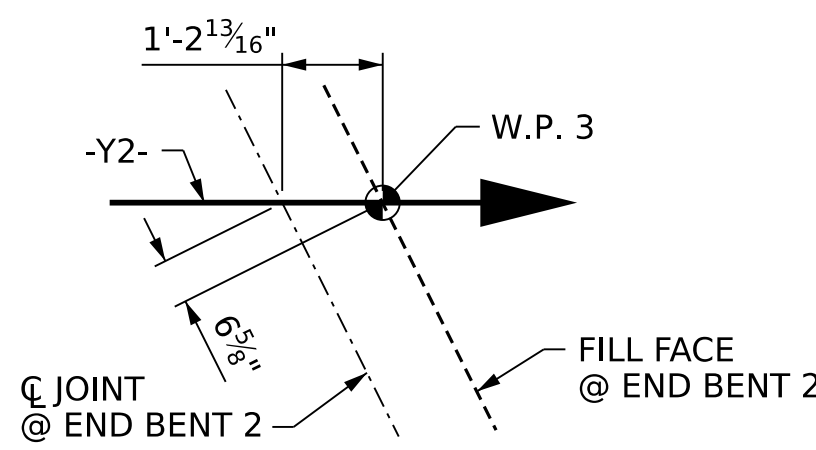
NOTES:

FOR NOTES, SEE SHEET 1 OF 6.

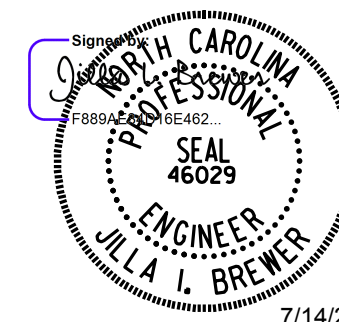
* FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS" SHEET.

* * SIDEWALK TO BE BUILT AFTER STAGE II CONSTRUCTION, SEE "SIDEWALK DETAILS - STAGE II" SHEET FOR DETAILS.

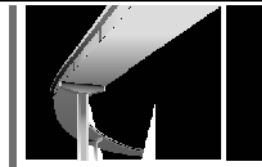
Δ DIMENSION LOCATED ALONG CENTERLINE OF JOINT.



DETAIL "B"



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 6

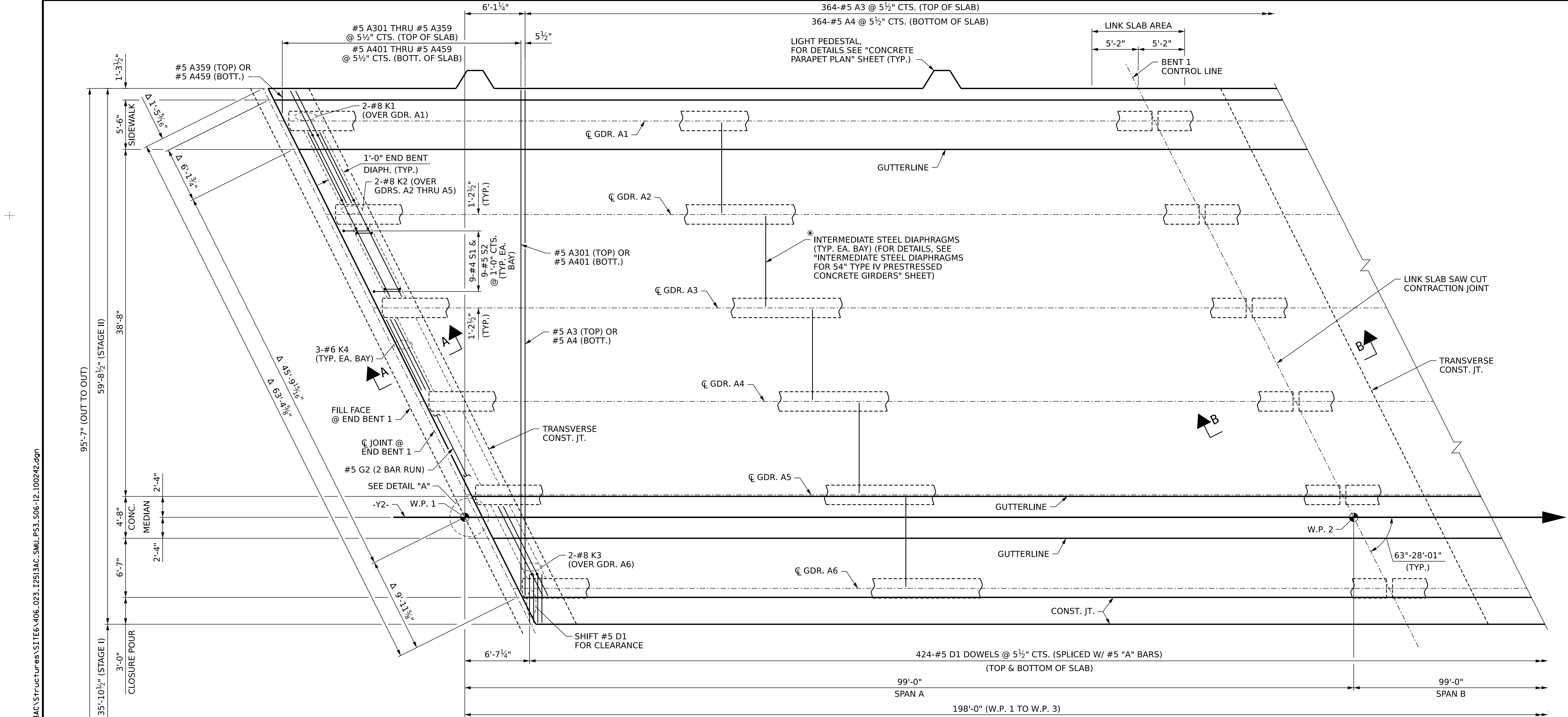
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
PLAN OF SPANS
SPAN B

STAGE I

DRAWN BY: B.E. LANNING DATE: 06/2023
CHECKED BY: J.I. BREWER DATE: 08/2023
DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 01/2026

REVISIONS						SHEET NO. S06-11
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 60
2			4			



NOTES:

- FOR REINFORCING STEEL IN CONCRETE PARAPET, SEE "CONCRETE PARAPET" SHEETS.
- FOR REINFORCING STEEL IN SIDEWALK, SEE "SIDEWALK DETAILS - STAGE II" SHEET.
- FOR REINFORCING STEEL IN CONCRETE MEDIAN, SEE "CONCRETE MEDIAN DETAILS - STAGE II" SHEET.
- FOR TOP & BOTTOM "B" BARS NOT SHOWN, SEE "B" BAR LAYOUT STAGE II SHEET 6 OF 6.
- FOR SECTIONS A-A AND B-B, SEE "SUPERSTRUCTURE TYPICAL SECTION DETAILS" SHEET 3 OF 3.
- FOR LOCATION OF INTERMEDIATE STEEL DIAPHRAGMS, SEE "FRAMING PLAN" SHEET.

* FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS" SHEET.

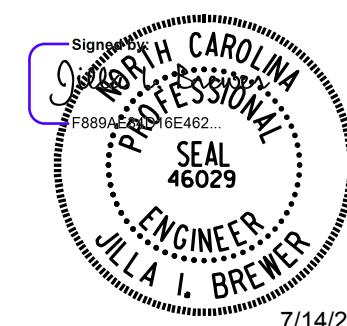
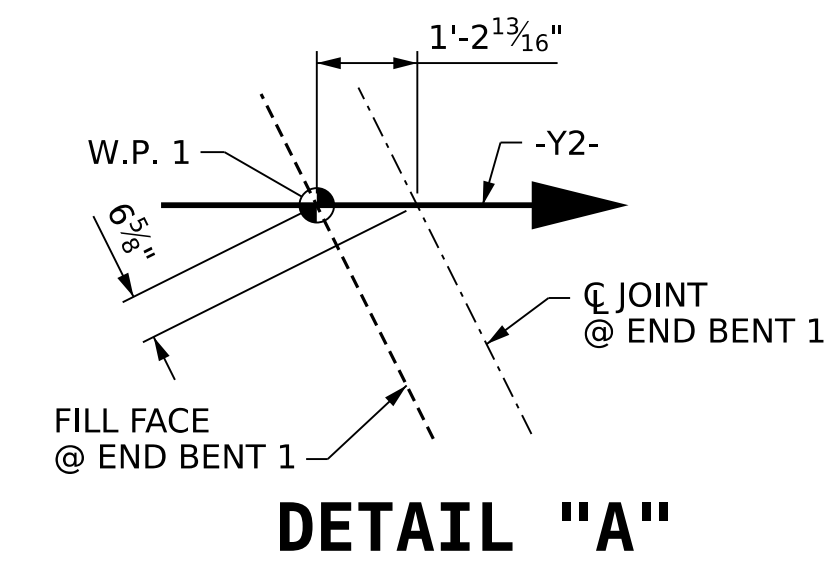
SEE "SUPERSTRUCTURE BILL OF MATERIAL STAGE II" FOR POUR SEQUENCE AND LOCATION OF TRANSVERSE CONSTRUCTION JOINT.

DOWELS SHALL BE PLACED IN THE SAME HORIZONTAL PLANE AS THE TOP AND BOTTOM SLAB REINFORCING STEEL.

LINK SLAB SAW CUT CONTRACTION JOINT EXTEND TO THE EDGE OF DECK ON BOTH SIDES.

Δ DIMENSION LOCATED ALONG CENTERLINE OF JOINT.

PLAN OF SPAN A - STAGE II



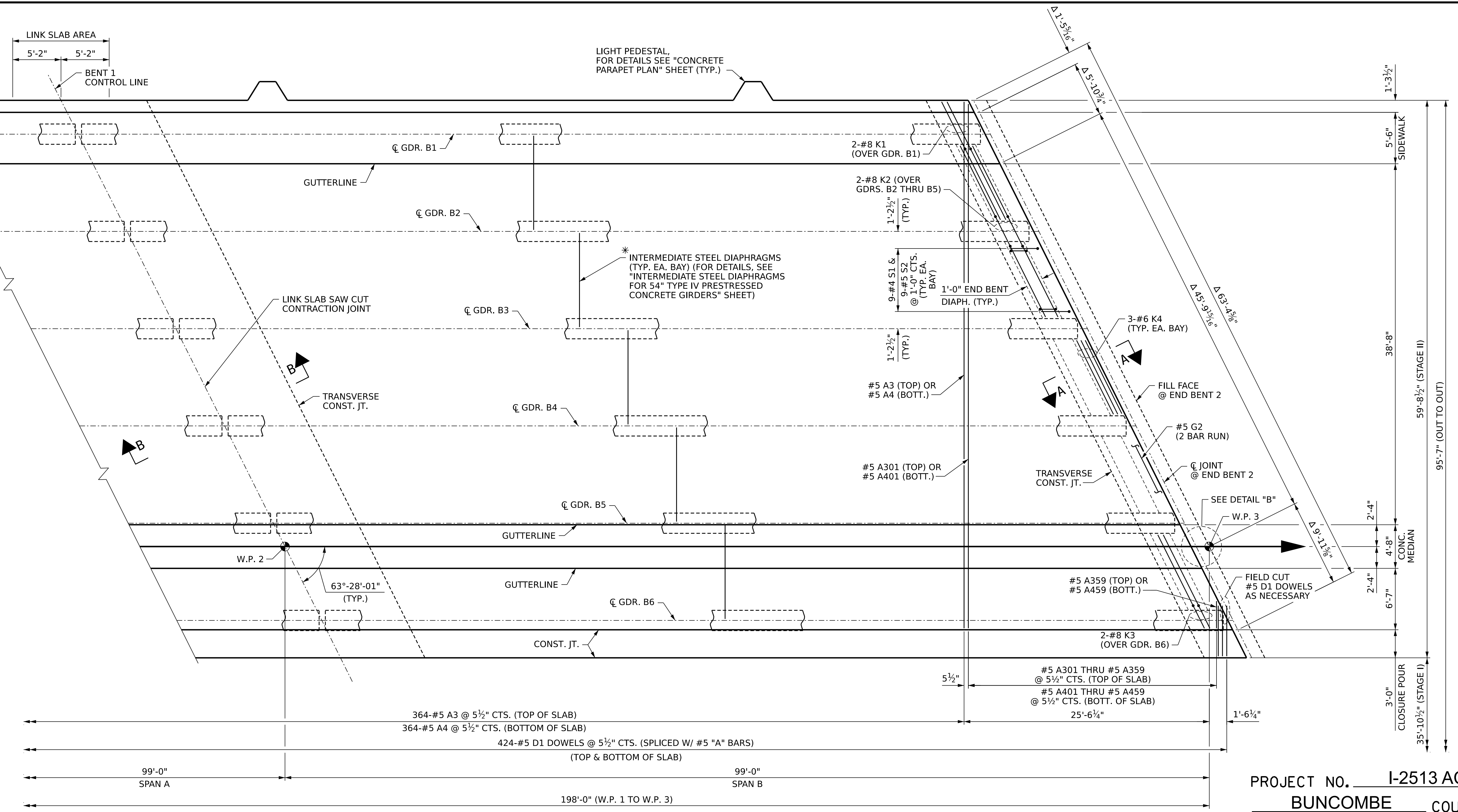
**DOCUMENT NOT CONSIDERED FINAL
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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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

SHEET 3 OF 6

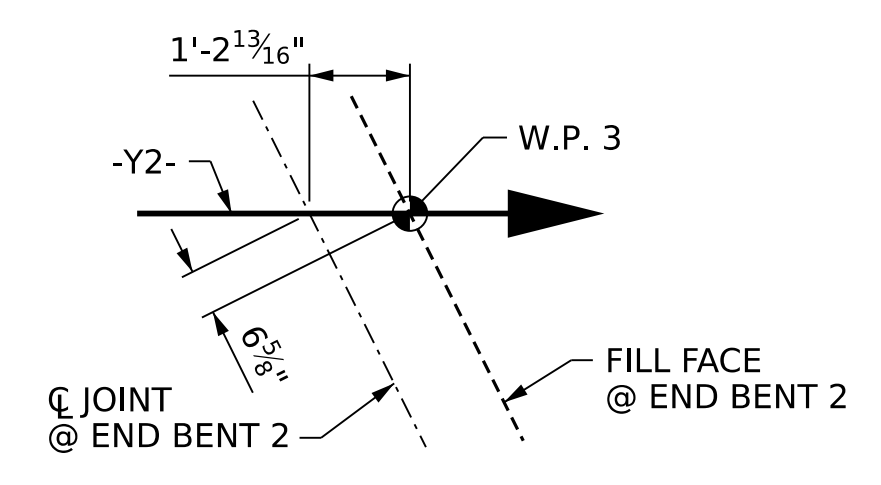
DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE PLAN OF SPANS SPAN A					
STAGE II					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S06-12					TOTAL SHEETS 60



PLAN OF SPAN B - STAGE II

NOTES:

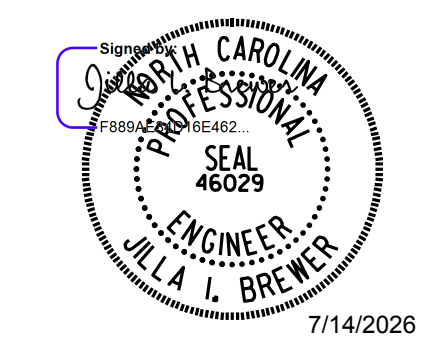
- FOR NOTES, SEE SHEET 3 OF 6.
- * FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE IV PRESTRESSED CONCRETE GIRDERS" SHEET.
- Δ DIMENSION LOCATED ALONG CENTERLINE OF JOINT.



DETAIL "B"

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

SHEET 4 OF 6



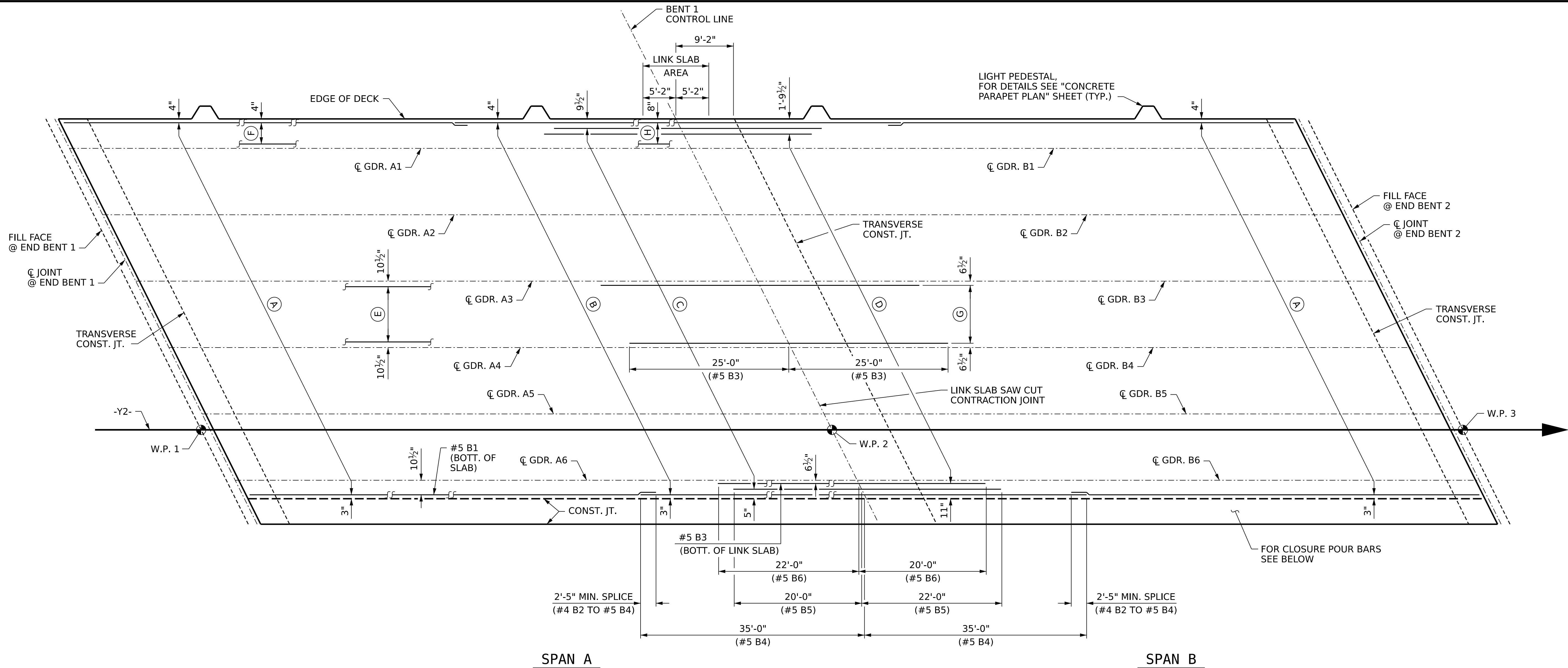
**DOCUMENT NOT CONSIDERED FINAL
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MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S06-13
2			4			
TOTAL SHEETS						60

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PLAN OF SPANS "B" BAR LAYOUT - STAGE II

(GUTTERLINE NOT SHOWN FOR CLARITY)

TOP BARS

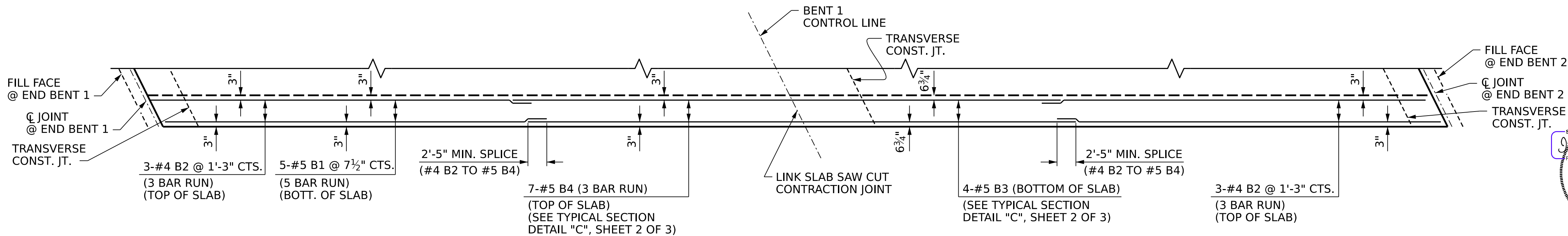
- (A) 39-#4 B2 (3 BAR RUN) (1'-11" MIN. SPLICE) (TOP OF SLAB) (SEE TYPICAL SECTION SHEET 2 OF 3 FOR SPACING)
- (B) 39-#5 B4 (3 BAR RUN) (TOP OF LINK SLAB) (2'-5" MIN. SPLICE) (SEE TYPICAL SECTION SHEET 2 OF 3 FOR SPACING)

- (C) 38-#5 B5 (TOP OF LINK SLAB) (SEE TYPICAL SECTION SHEET 2 OF 3 FOR SPACING)
- (D) 37-#5 B6 (TOP OF LINK SLAB) (SEE TYPICAL SECTION SHEET 2 OF 3 FOR SPACING)

- (E) 14-#5 B1 (5 BAR RUN) (2'-0" MIN. SPLICE) (BOTTOM OF SLAB) (TYP. EACH BAY) (SEE TYPICAL SECTION SHEET 2 OF 3 FOR SPACING)
- (F) 5-#5 B1 (5 BAR RUN) (2'-0" MIN. SPLICE) (BOTTOM OF SLAB IN OVERHANG) (SEE TYPICAL SECTION SHEET 2 OF 3 FOR SPACING)

BOTTOM BARS

- (G) 15-#5 B3 (BOTTOM OF LINK SLAB) (TYP. EACH BAY) (SEE TYPICAL SECTION SHEET 2 OF 3 FOR SPACING)
- (H) 4-#5 B3 (BOTTOM OF LINK SLAB IN OVERHANG) (SEE TYPICAL SECTION SHEET 2 OF 3 FOR SPACING)

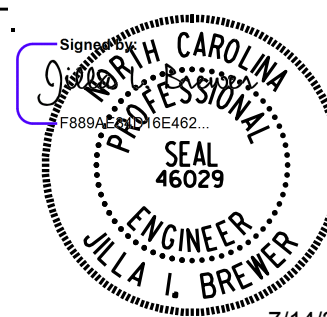


PLAN OF SPANS "B" BAR LAYOUT - CLOSURE POUR

DRAWN BY: B.E. LANNING DATE: 06/2023
CHECKED BY: J.I. BREWER DATE: 08/2023
DESIGN ENGINEER OF RECORD: J.I. BREWER DATE: 01/2026

**DOCUMENT NOT CONSIDERED FINAL
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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 6 OF 6

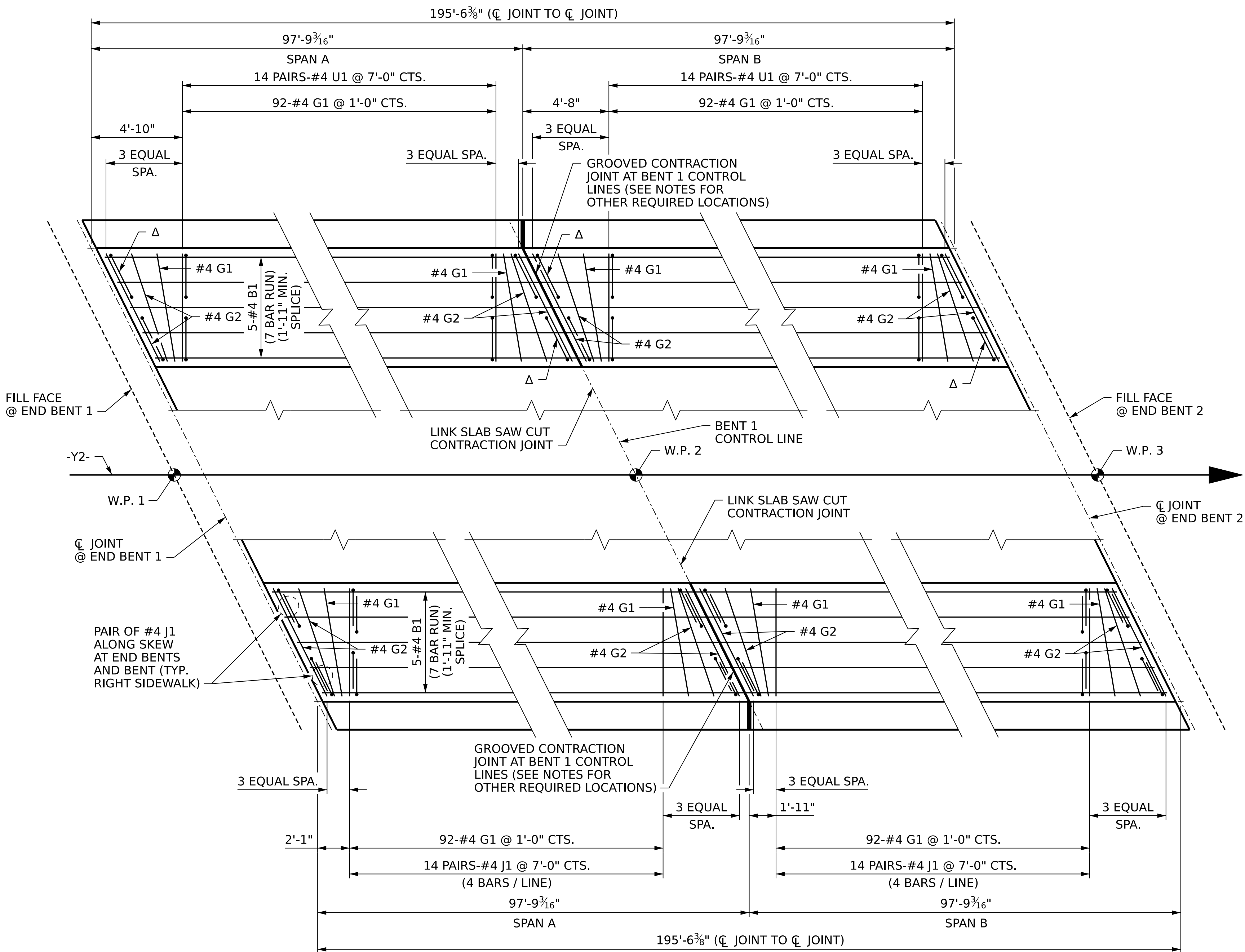
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE PLAN OF SPANS "B" BAR LAYOUT

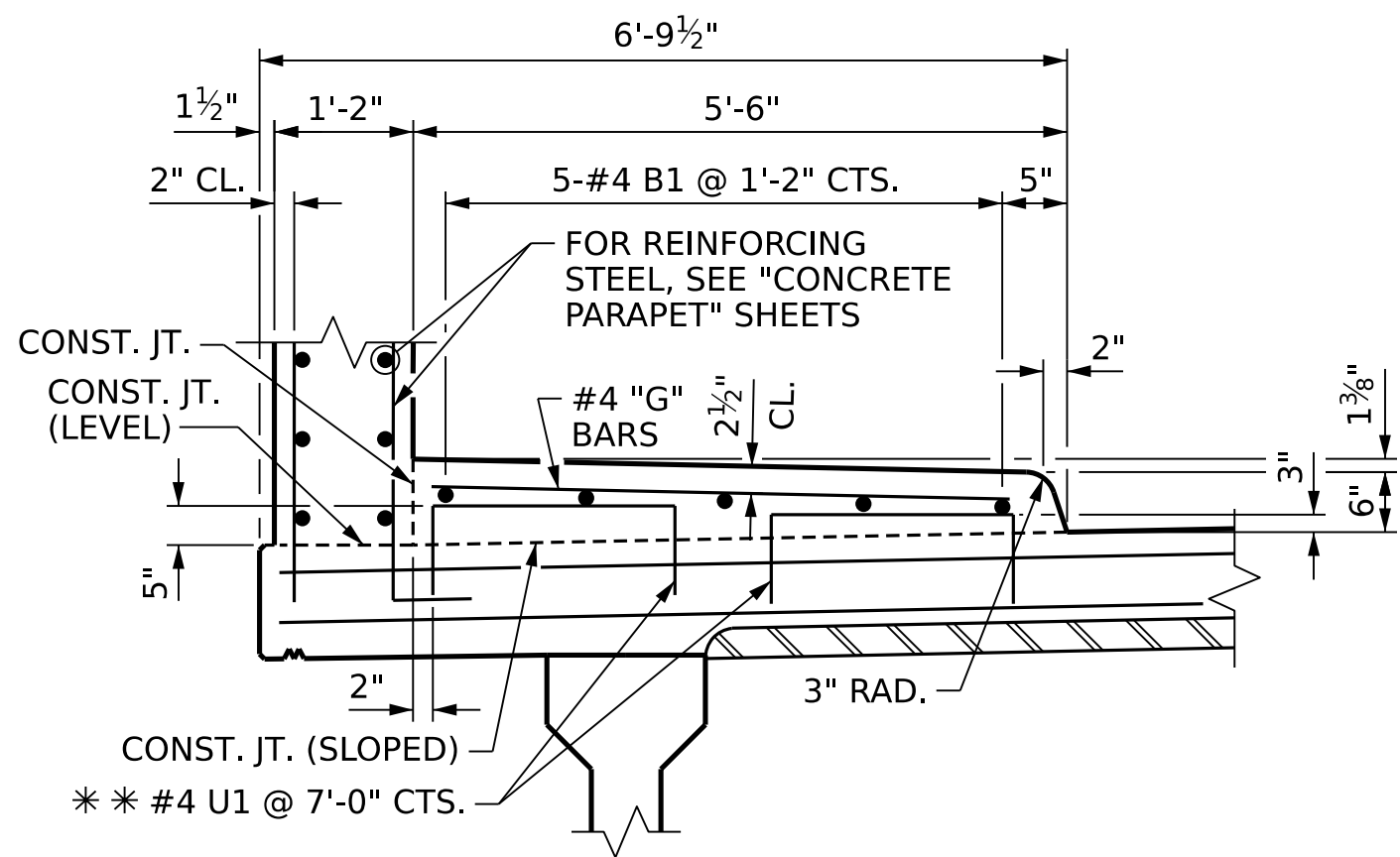
STAGE II

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			S06-15
2			4			
TOTAL SHEETS						60

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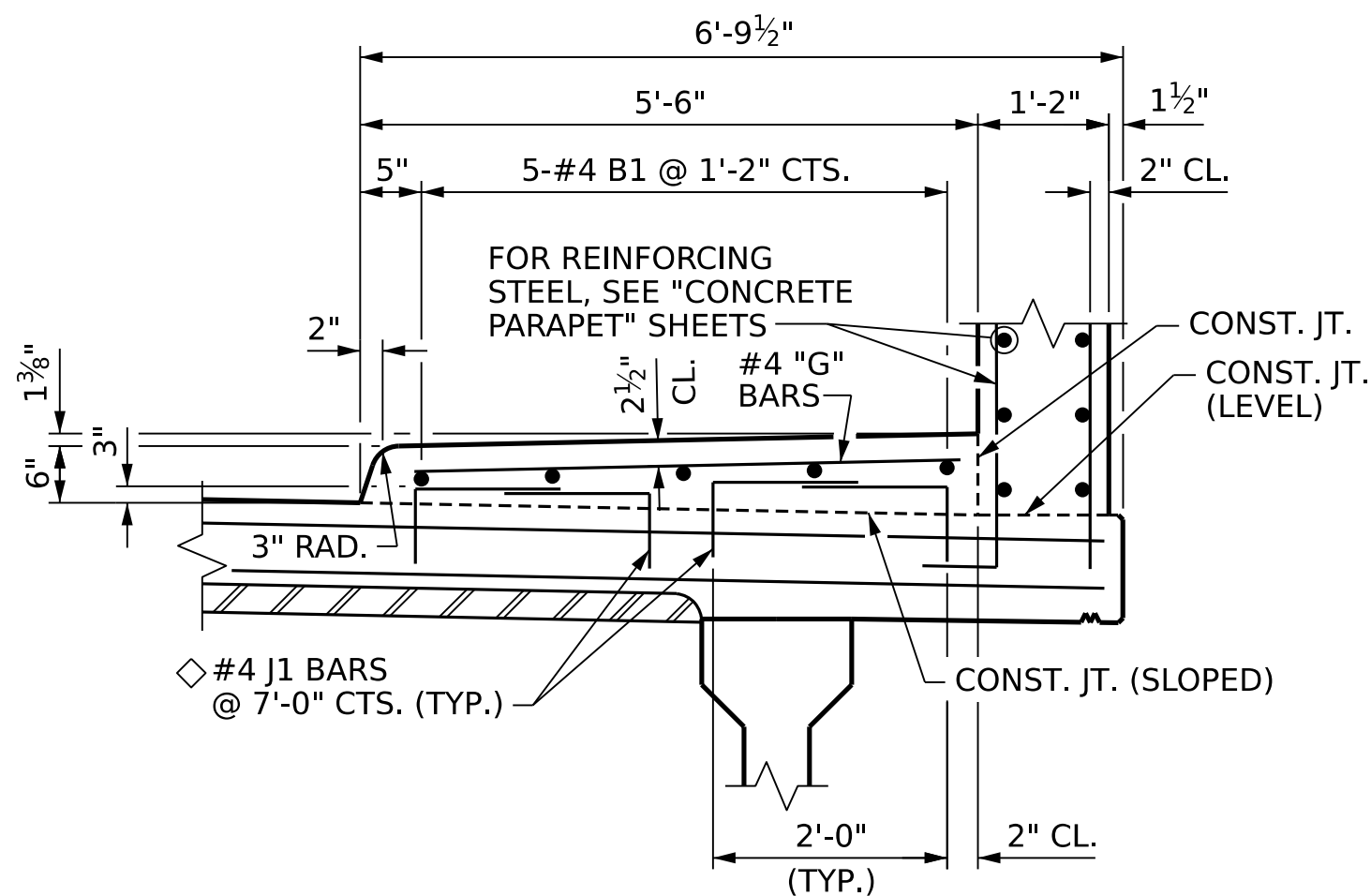


PLAN OF SIDEWALK



SECTION THRU LEFT SIDEWALK

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



SECTION THRU RIGHT SIDEWALK

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

BAR TYPES		BILL OF MATERIAL					
		STAGE II					
		LEFT SIDEWALK					
		BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
		*B1	35	#4	STR	29'-7"	692
		*G1	188	#4	STR	5'-0"	628
		*G2	8	#4	STR	5'-7"	30
		*U1	64	#4	1	3'-4"	143
		* EPOXY COATED REINFORCING STEEL					
		1,493 LBS.					
		CLASS AA CONCRETE					
		24.4 C.Y.					
		RIGHT SIDEWALK					
		BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
		*B1	35	#4	STR	29'-7"	692
		*G1	188	#4	STR	5'-0"	628
		*G2	8	#4	STR	5'-7"	30
		*J1	128	#4	2	2'-8"	228
		* EPOXY COATED REINFORCING STEEL					
		1,578 LBS.					
		CLASS AA CONCRETE					
		24.4 C.Y.					

NOTES:

FOR CONCRETE PARAPET RAIL REINFORCING STEEL AND DETAILS, SEE "CONCRETE PARAPET" SHEETS.

GROOVED CONTRACTION JOINTS 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FEET TO 10 FEET BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

THE SIDEWALK IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.

SIDEWALK ON THE BRIDGE IS PAID FOR AS PART OF THE REINFORCED CONCRETE DECK SLAB PAY ITEM.

ALL REINFORCING STEEL IN SIDEWALK SHALL BE EPOXY COATED.

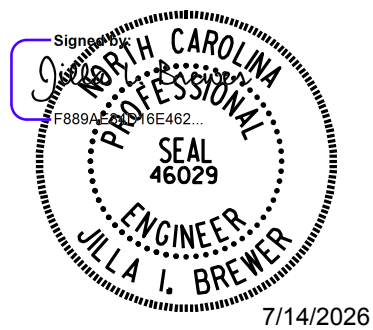
△ THE #4 U1 BARS WITHIN A DISTANCE OF 4'-0" OF THE JOINT AT BENTS ARE TO BE PLACED AFTER SAWING OF THE JOINT. THE HOLES SHALL BE DRILLED AND THE BARS GROUTED IN PLACE.

RIGHT SIDEWALK TO BE BUILT AFTER STAGE II CONSTRUCTION.

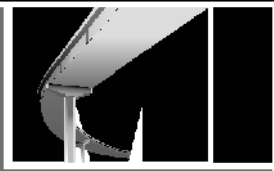
FIELD TESTING OF THE ADHESIVELY ANCHORED DOWELS IS NOT REQUIRED.

FOR SIDEWALK ON APPROACH SLAB, SEE APPROACH SLAB SHEETS.

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



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED				STAGE II							
 MI ENGINEERING 1011 SCHAUB DRIVE, SUITE 100 RALEIGH, NC 27606 (919) 851-6606 FIRM PE NUMBER: P-0671				REVISIONS						SHEET NO.	
										S06-16	
				NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL SHEETS	
				1			3			60	
				2			4				



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

7/14/2020

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RALEIGH

STAGE II

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



The diagram illustrates the cross-section of a bridge deck with the following specifications:

- Overall Width:** 4'-8"
- Top Flange Dimensions:**
 - Left flange width: 2'-4"
 - Right flange width: 2'-4"
 - Left flange thickness: 9"
 - Right flange thickness: 9"
- Web Dimensions:**
 - Web thickness: 7"
 - Web height: 1'-7"
- Reinforcement:**
 - Top reinforcement: 4-#4 B1 @ 1'-2" CTS.
 - Bottom reinforcement: #4 "G" BARS
- Deck Profile:**
 - Top of deck: 3"
 - Radius at the bottom: 1 3/4" RADIUS
 - Radius at the top: 2" RADIUS
 - Constant joint (CONST. JT.)
- Other Details:**
 - 0.02 slope indicated on the deck surface.
 - Dimensions 3" and 5" are shown for the bottom reinforcement area.

EXP. JT. MAT'L. (TYP.)

JOINT OPENING

9" (TYP.)

2" (TYP.)

MEDIAN STRIP

DECK SLAB OR APPROACH SLAB

STRIP JOINT SEAL

2 1/2"

@ 60° F

#4 "G" BARS (TYP.)

#4 B1

BENT 1 CONTROL LINE

1/2" EXP. JT. MAT'L.

CONCRETE MEDIAN

DECK SLAB

LINK SLAB SAW CUT CONTRACTION JOINT

5'-2"

5'-2"

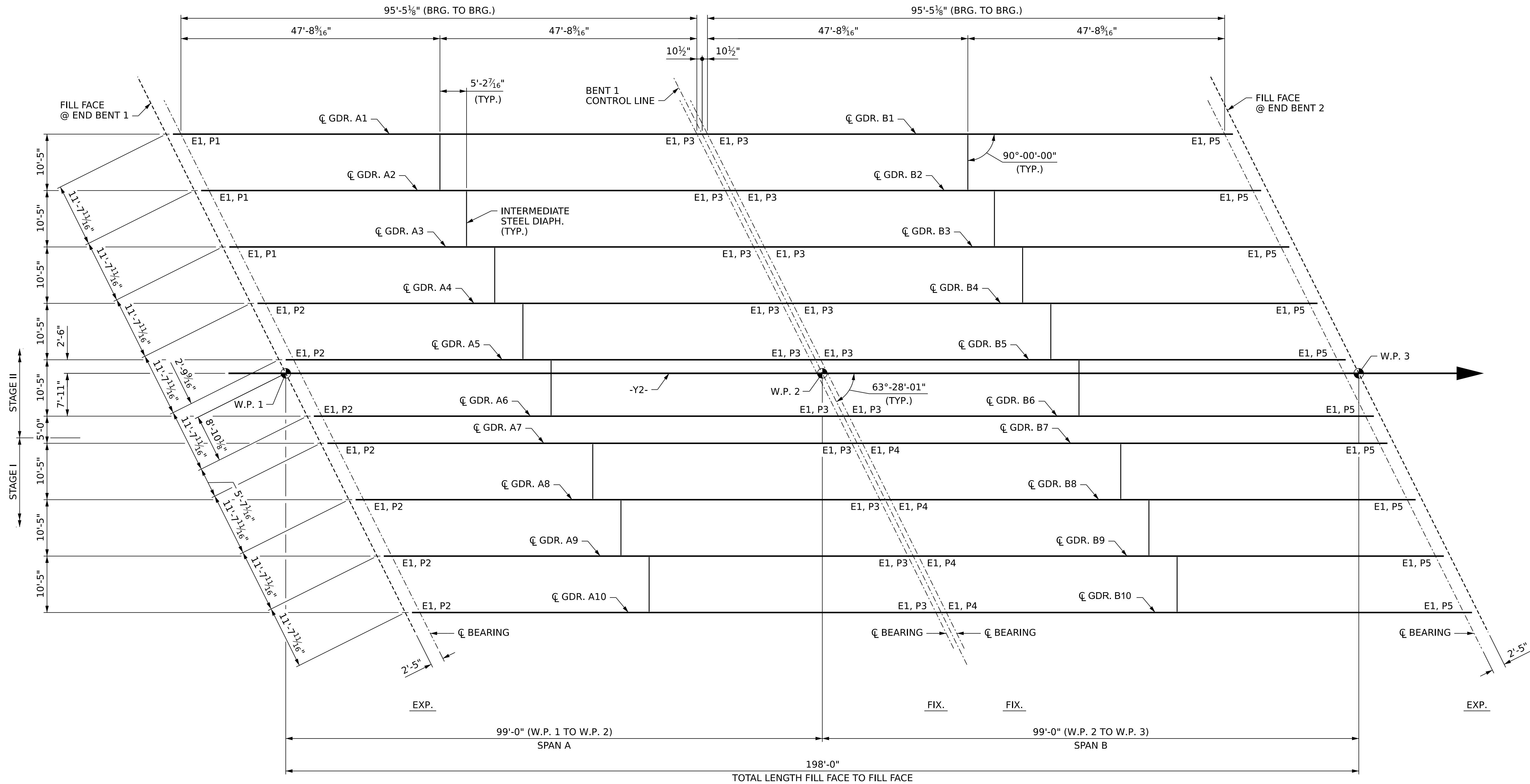
10'-4" LINK SLAB

2 LAYERS OF 30 LB. ROOFING FELT

SECTION B-B

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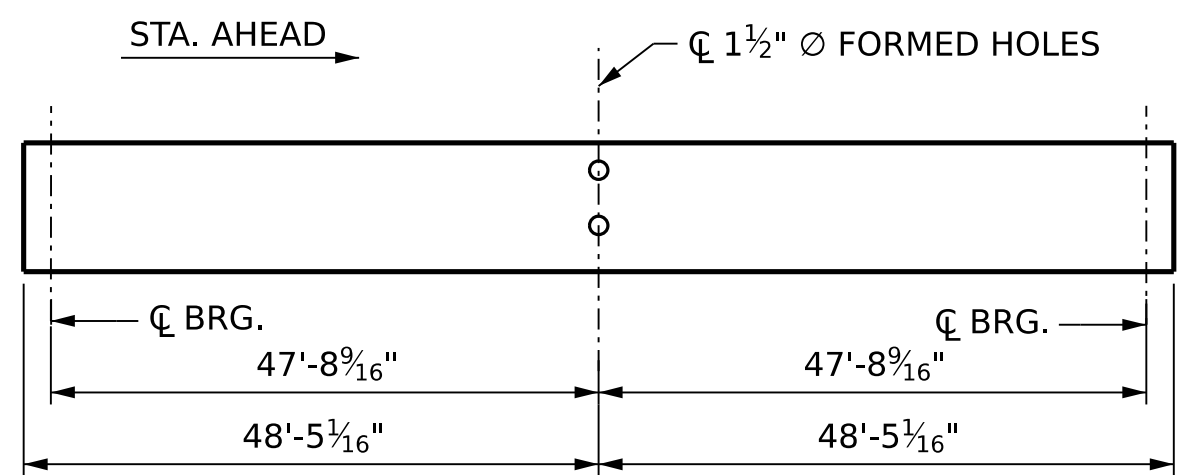


SPAN A

SPAN B

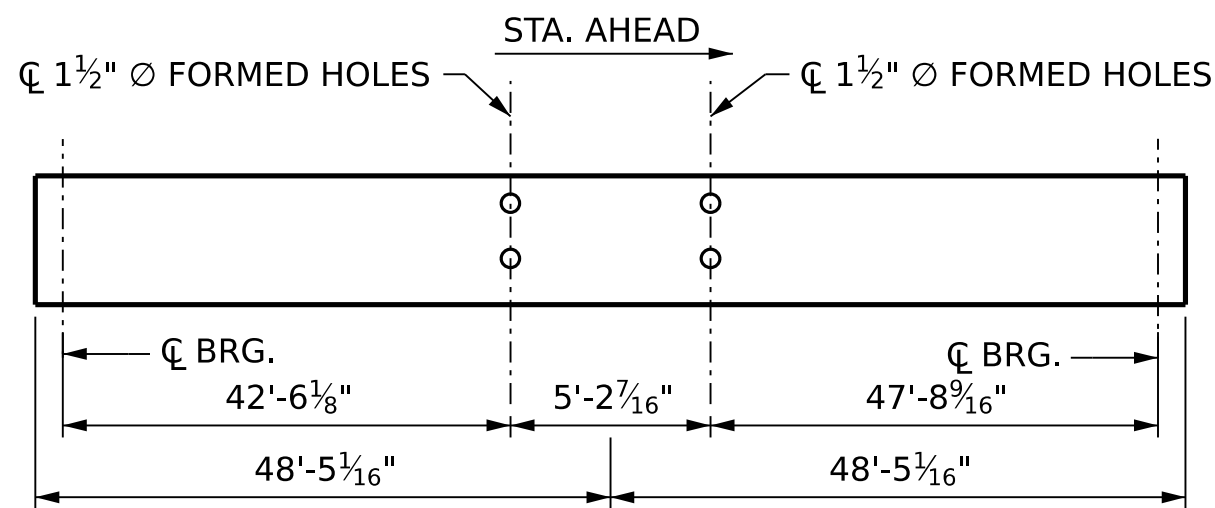
FRAMING PLAN

ALL DIMENSIONS ARE HORIZONTAL U.O.N.



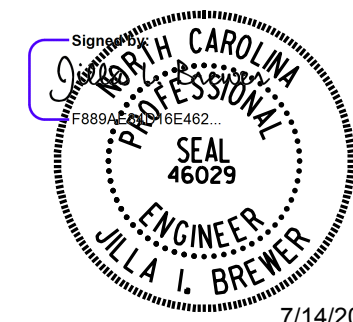
GIRDER ELEVATION

FOR GIRDERS A1, A6, A7, A10, B1, B6, B7, & B10
MEASUREMENTS GIVEN ALONG BOTTOM OF GIRDER



GIRDER ELEVATION

FOR GIRDERS A2, A3, A4, A5, A8, A9, B2, B3, B4, B5, B8, & B9
MEASUREMENTS GIVEN ALONG BOTTOM OF GIRDER

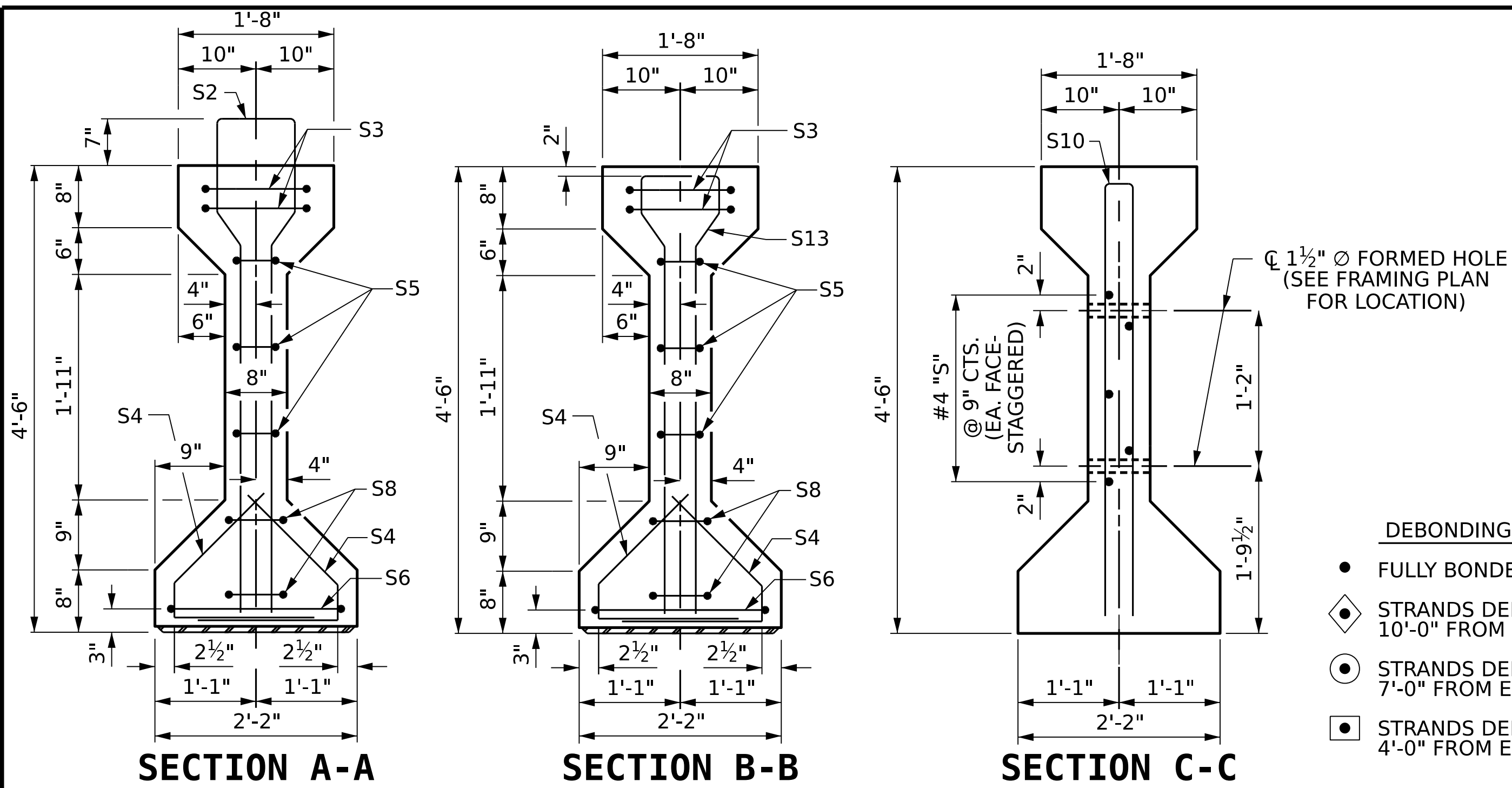


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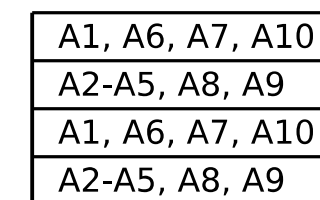
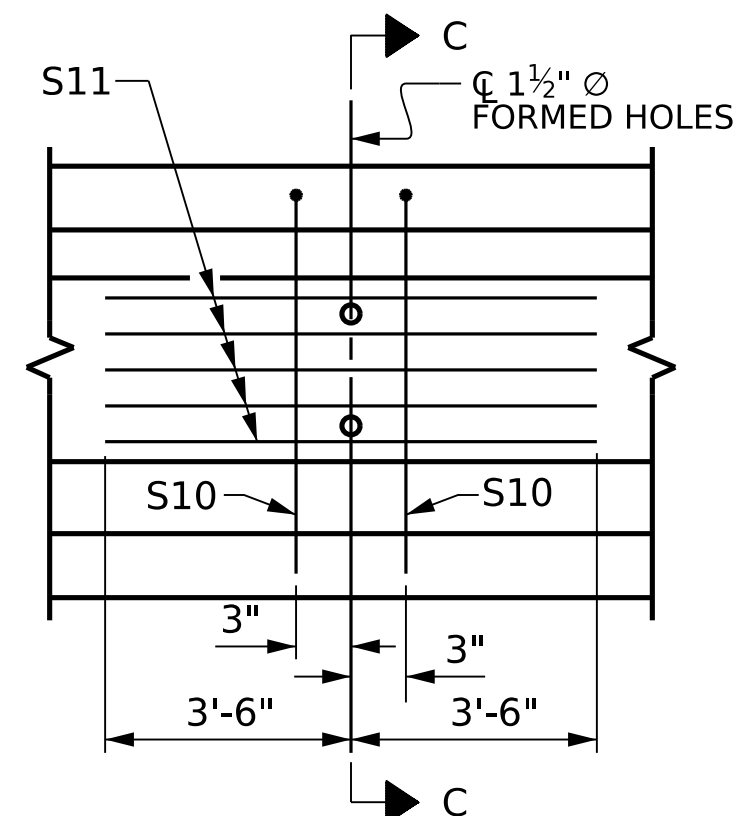
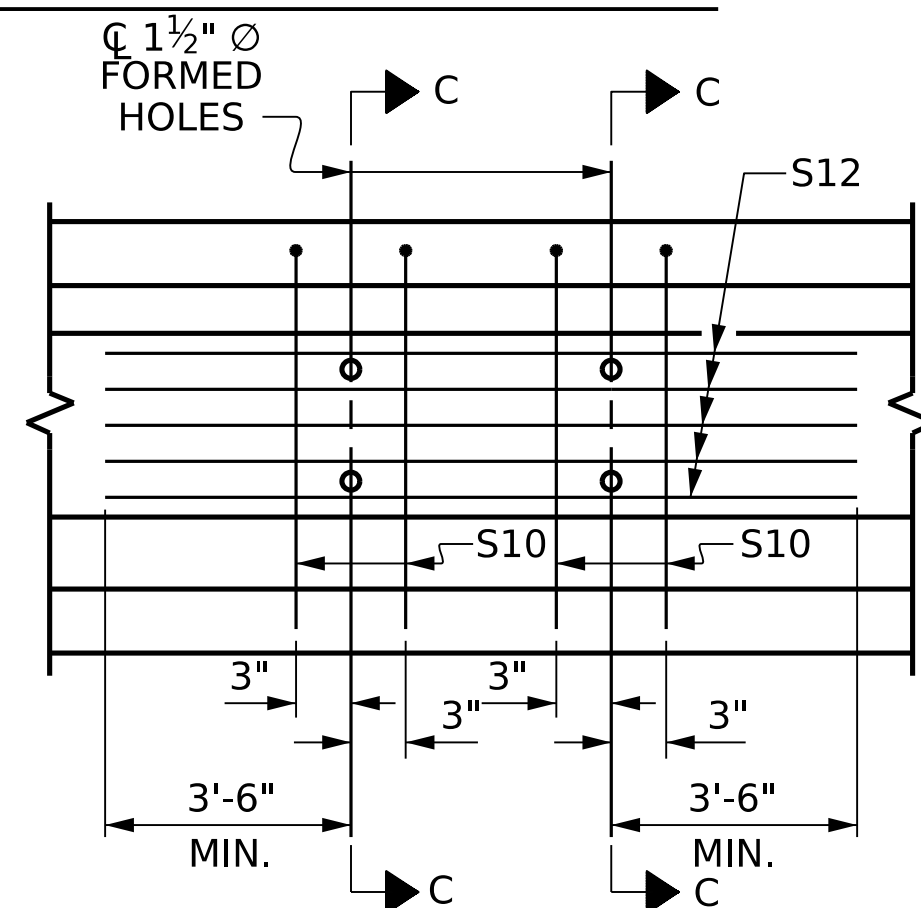
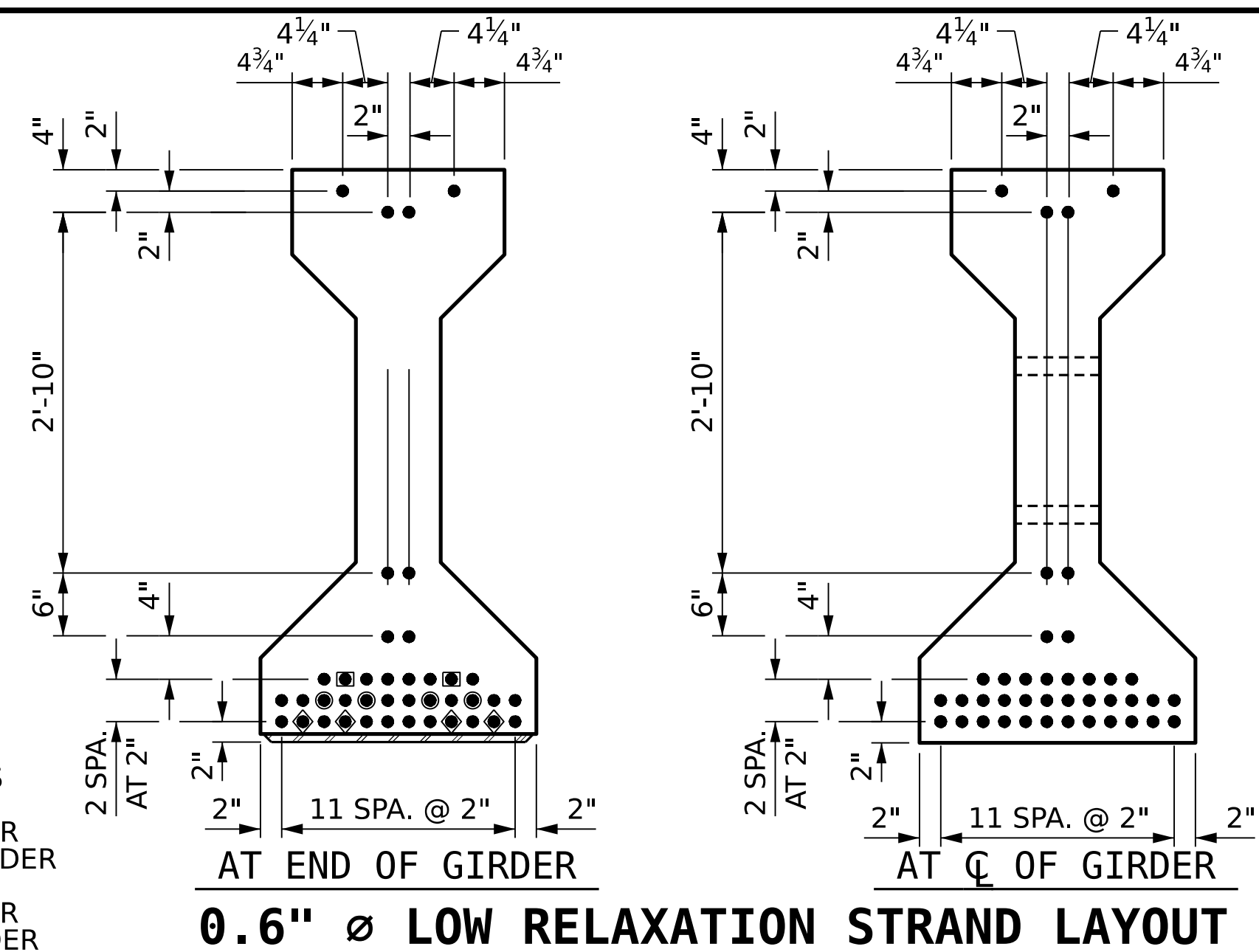
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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

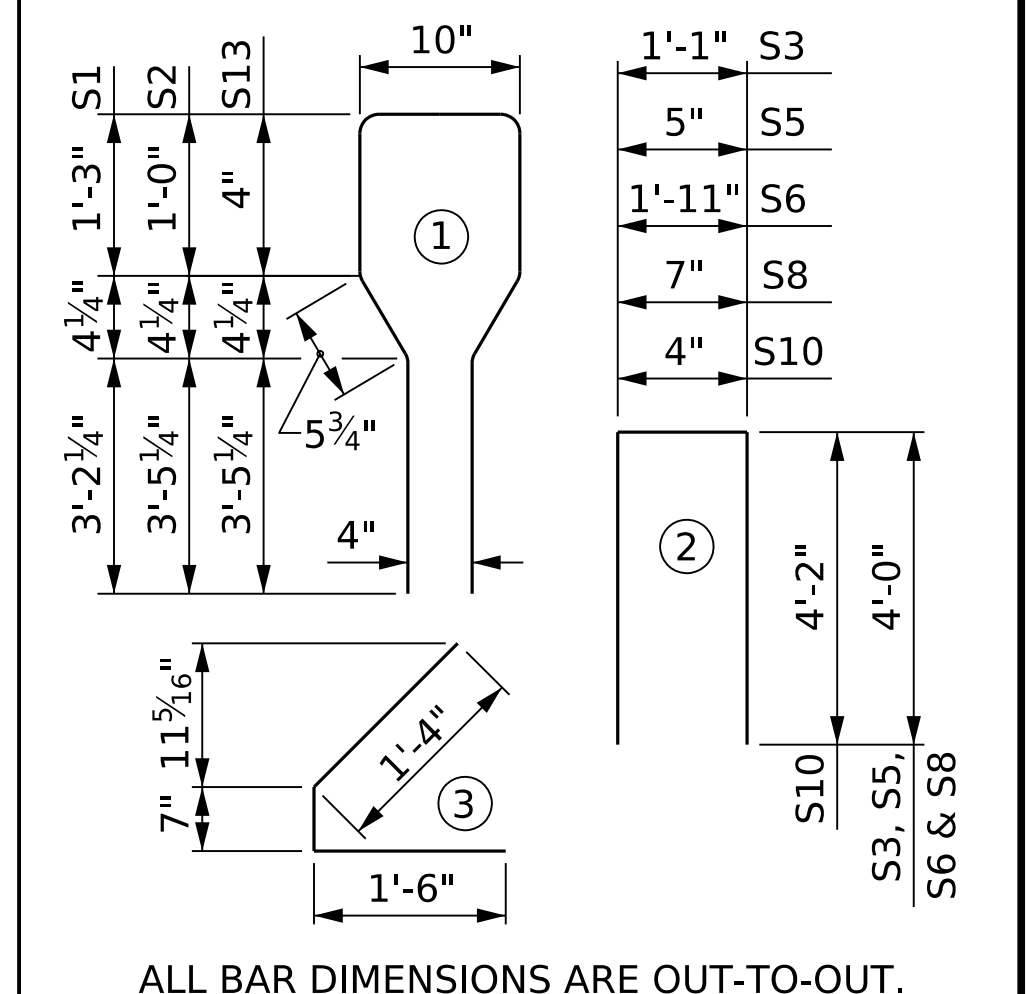
REVISIONS						SHEET NO. S06-18
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 60
2			4			



- ### 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



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	



QUANTITIES FOR ONE GIRDER			
	REINFORCING STEEL	8000 PSI CONCRETE	0.6" Ø L.R. STRANDS
	LB.	C.Y.	No.
GDRS. A1, A6, A7, A10	1364	19.7	40
GDRS. A2-A5, A8, A9	1400	19.7	40

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

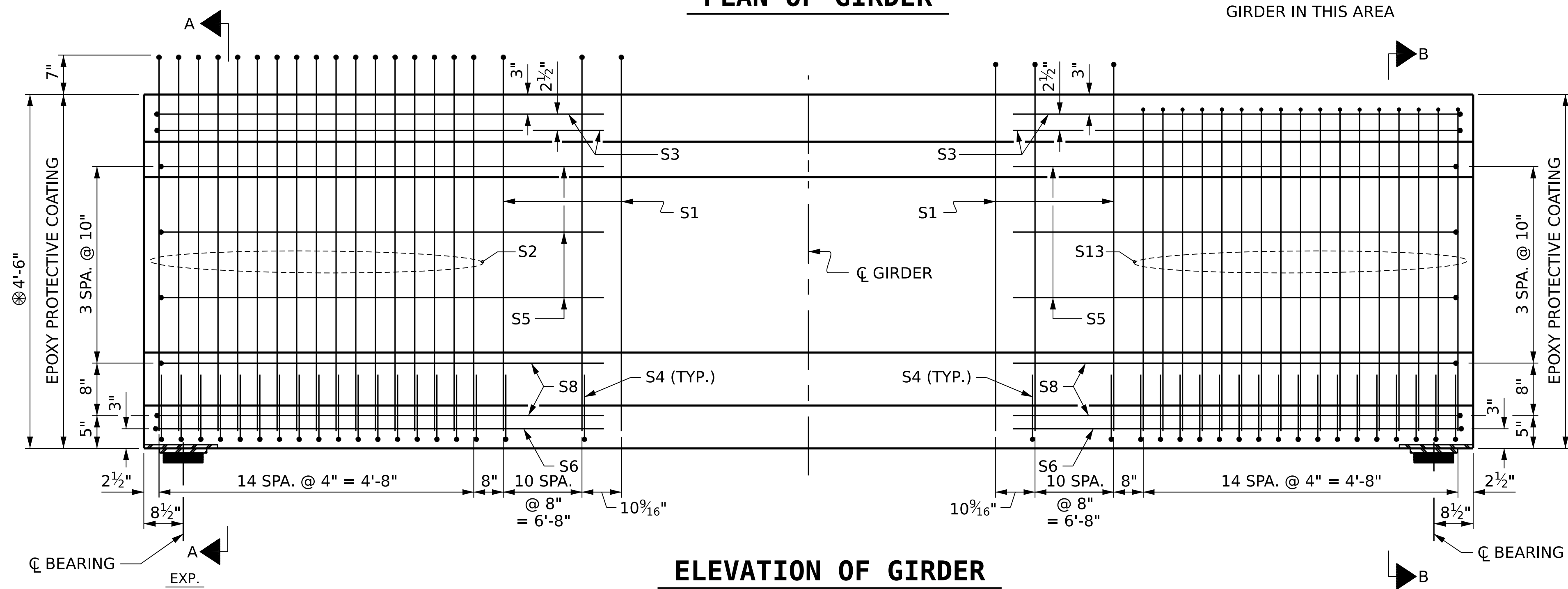
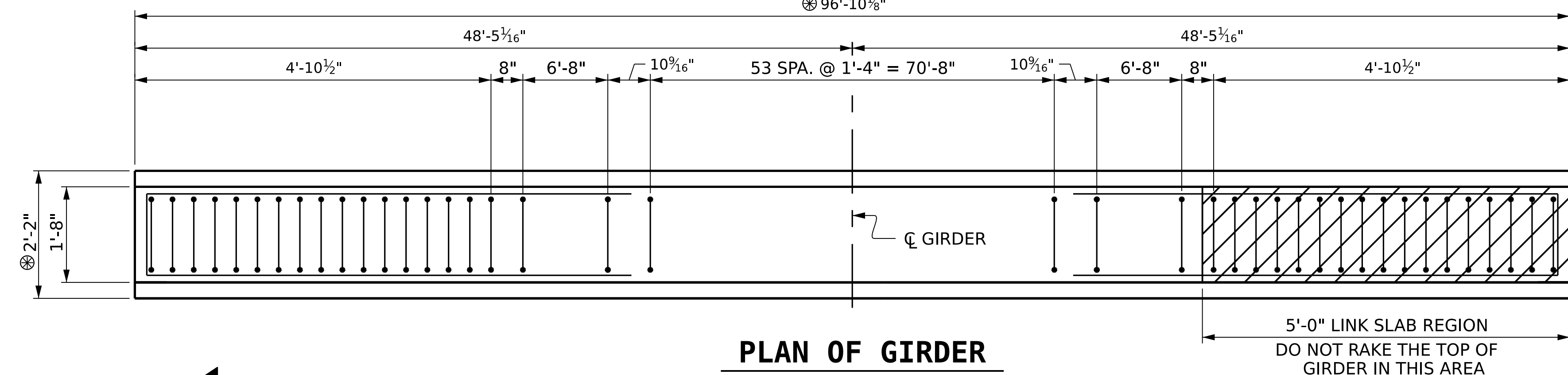
SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
AASHTO TYPE IV
PRESTRESSED CONCRETE
GIRDER - LINK SLAB
SPAN A

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S06-19
1			3			TOTAL SHEETS 60
2			4			

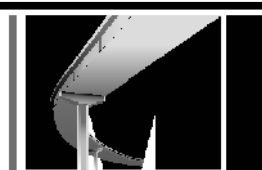
STD. NO. PCG6 (SHT. 1)



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

⊗ SEE SPECIAL PROVISIONS
FOR APPLICATION OF
BRIDGE COATING.

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

7/21/2020

7/21/2026
9:57:05 AM
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