

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼" HOLD DOWN PLATE AND 7 - ⅝" Ø BOLTS WITH NUTS AND WASHERS.

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

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE ⅝" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

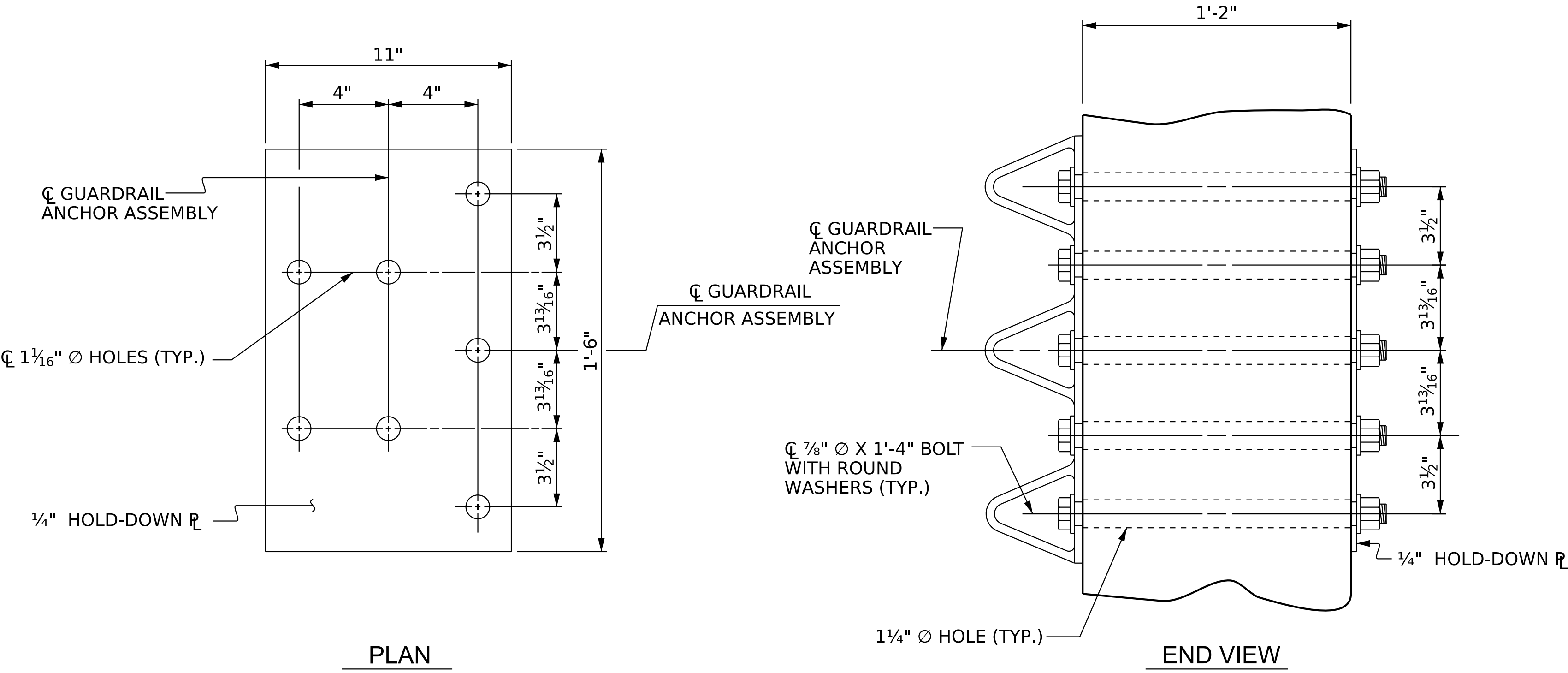
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

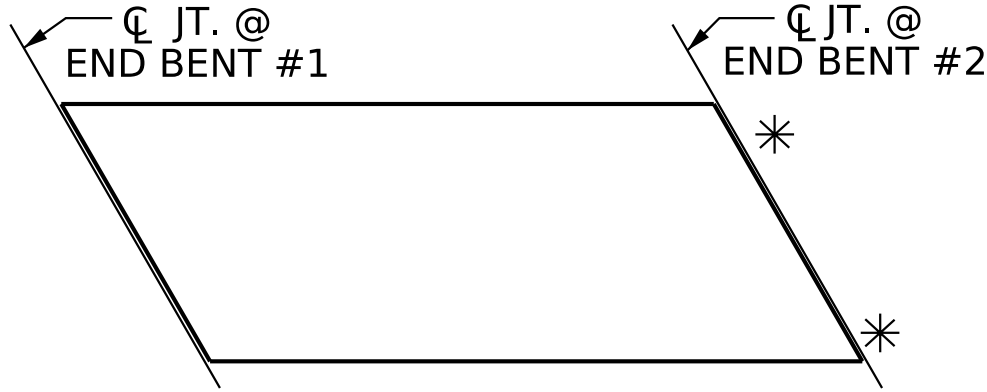
THE 1 ¼" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



PLAN

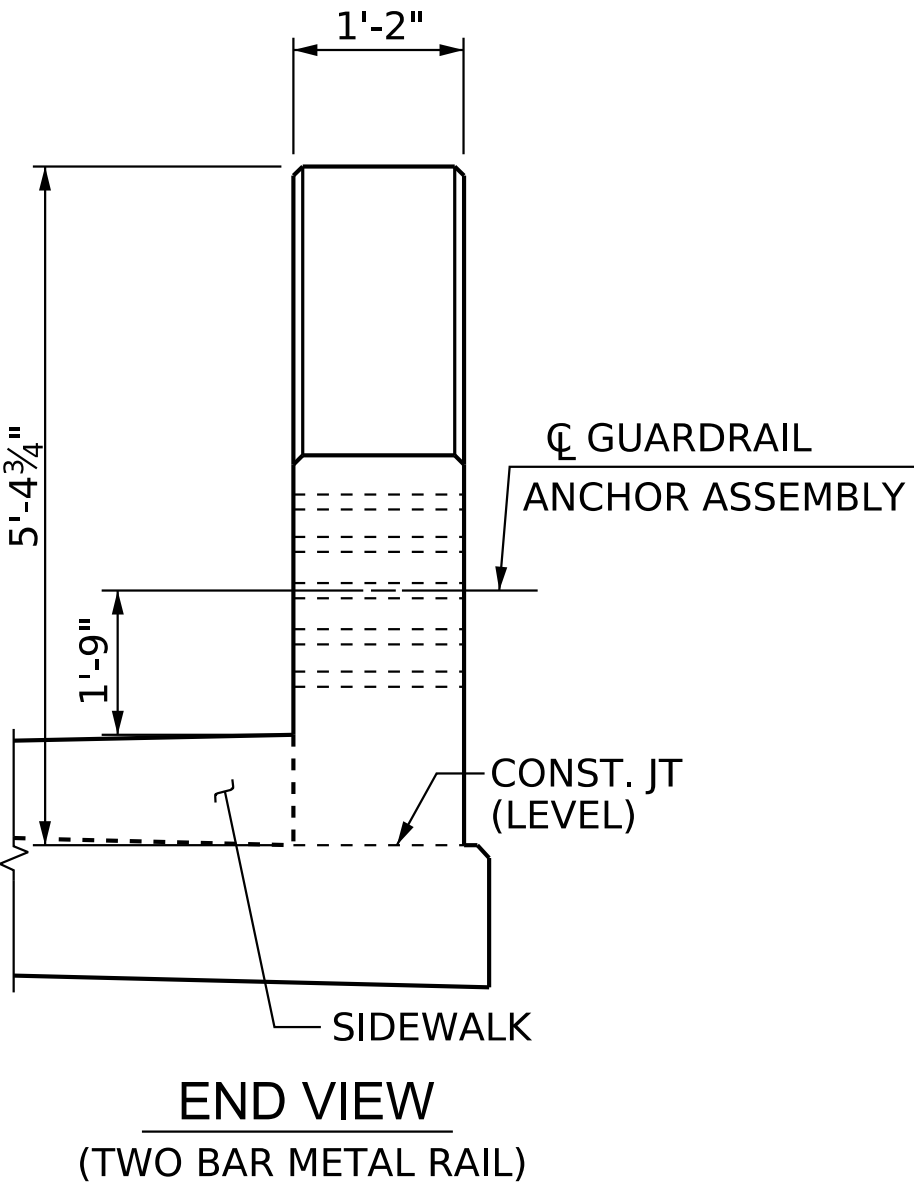
END VIEW

GUARDRAIL ANCHOR ASSEMBLY DETAILS

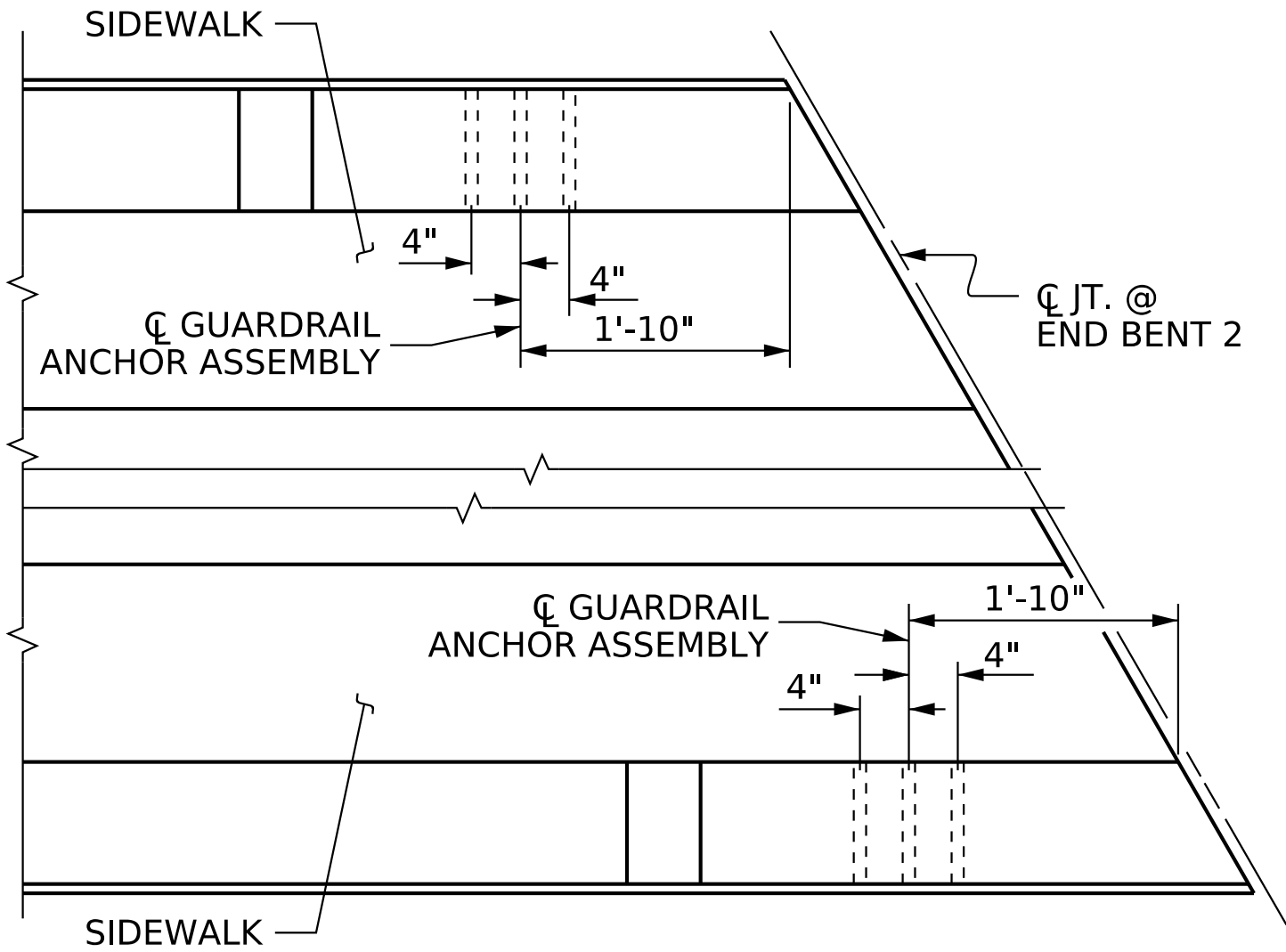


SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT



END VIEW
(TWO BAR METAL RAIL)

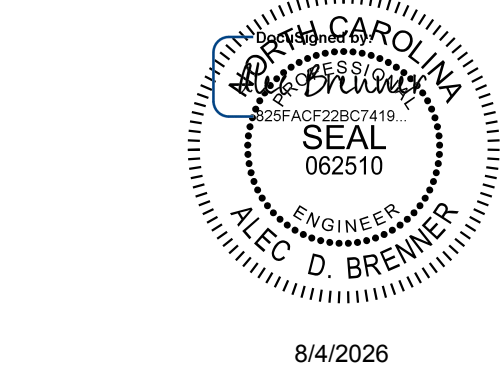


PLAN

LOCATION OF GUARDRAIL ANCHOR AT END POST

ASSEMBLED BY : T. K. BOYD	DATE : 11/25
CHECKED BY : A. L. PHILLIPS	DATE : 11/25
DRAWN BY : MAA 5/1	REV. 1/15 MAA/TMG
CHECKED BY : GM 5/1	REV. 12/17 MAA/THC
	REV. 5/18 MAA/THC

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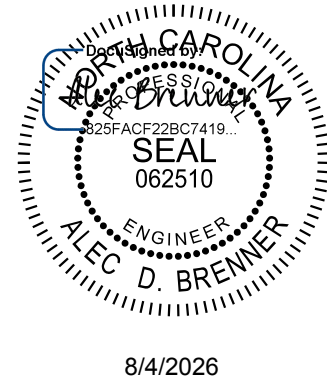
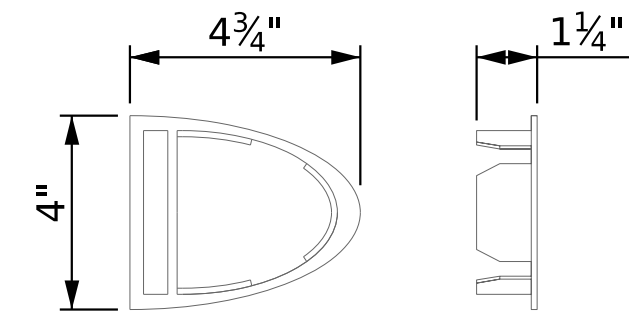
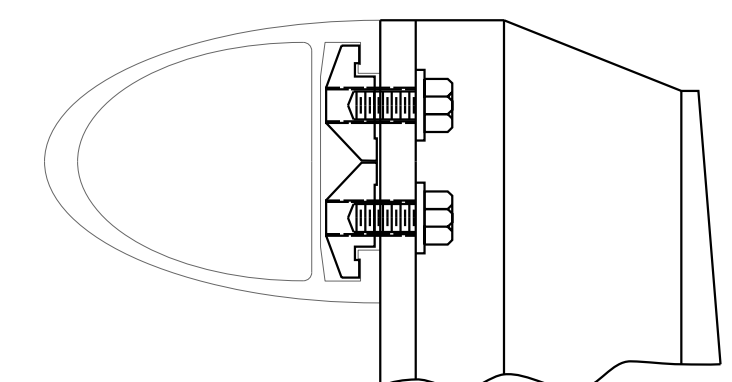
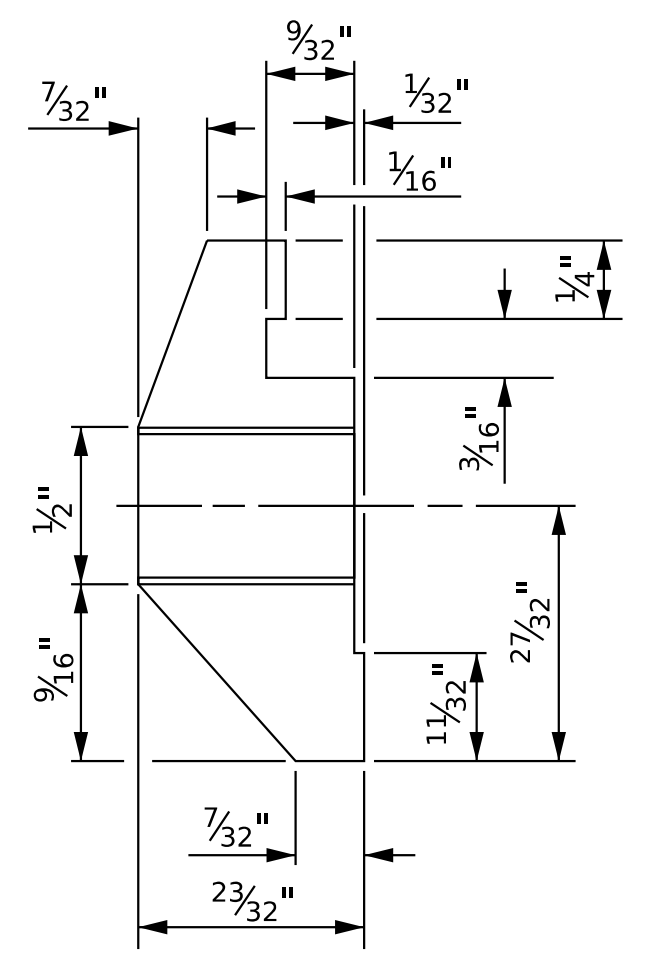
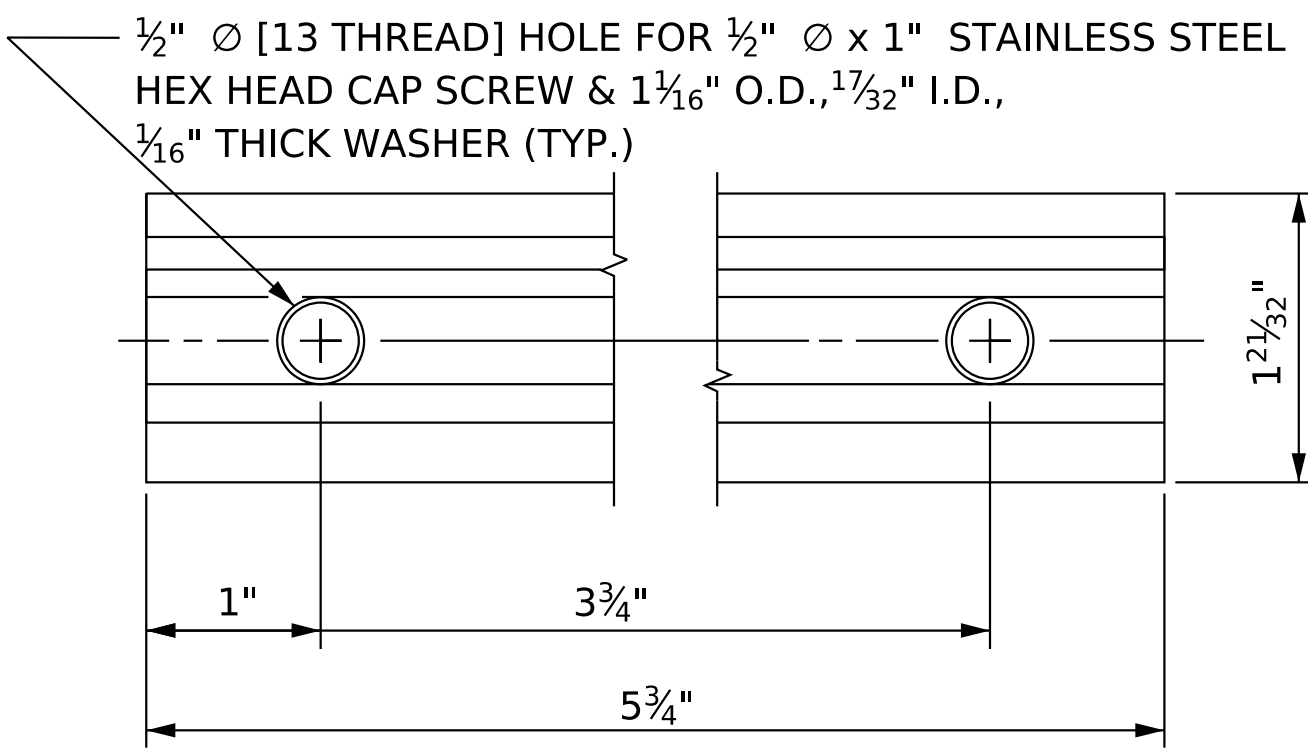
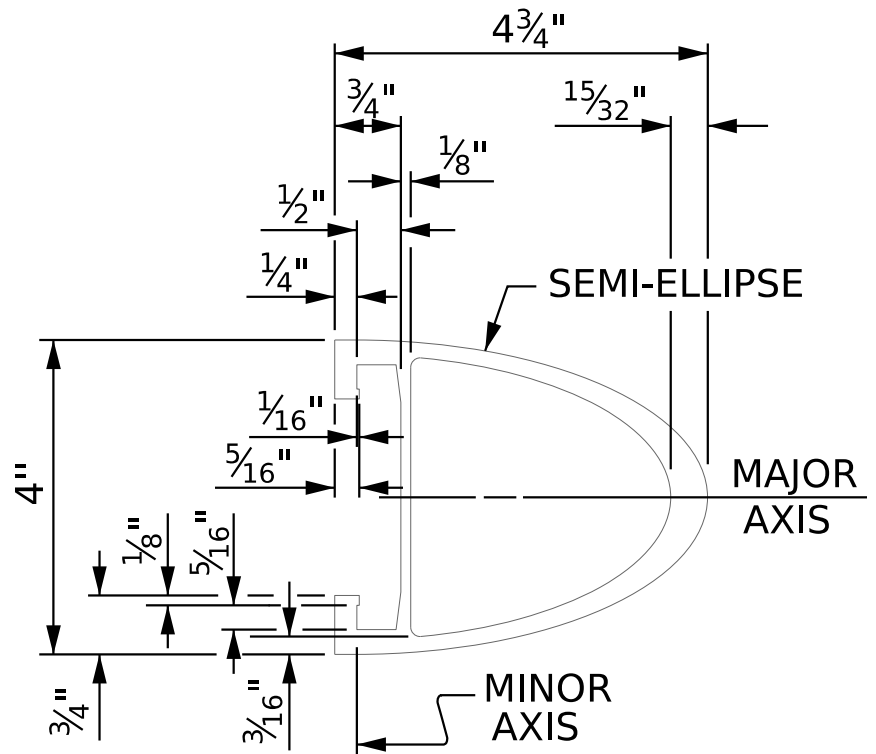
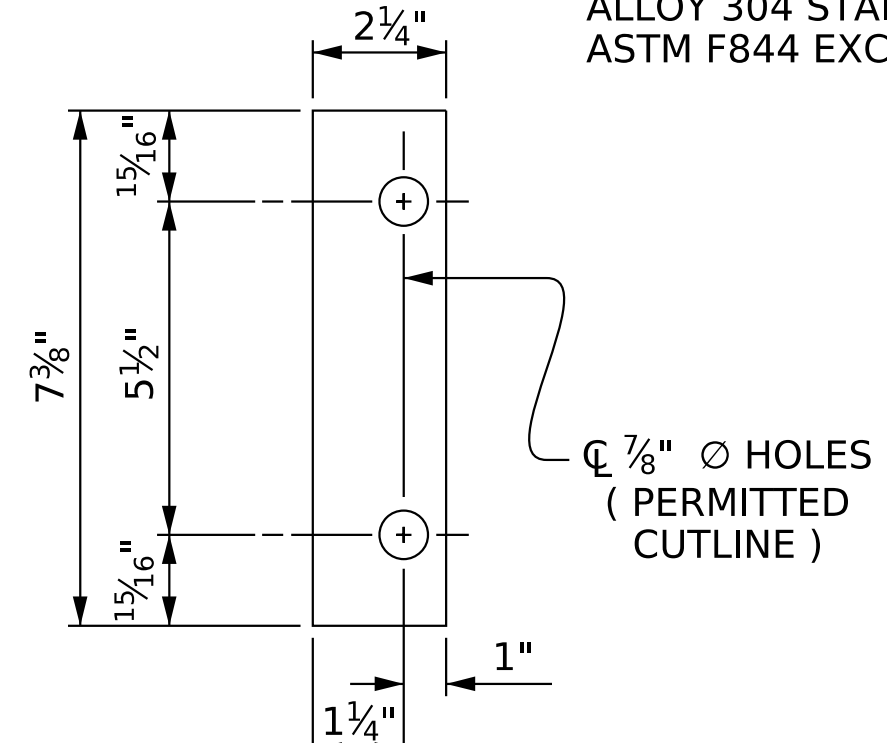
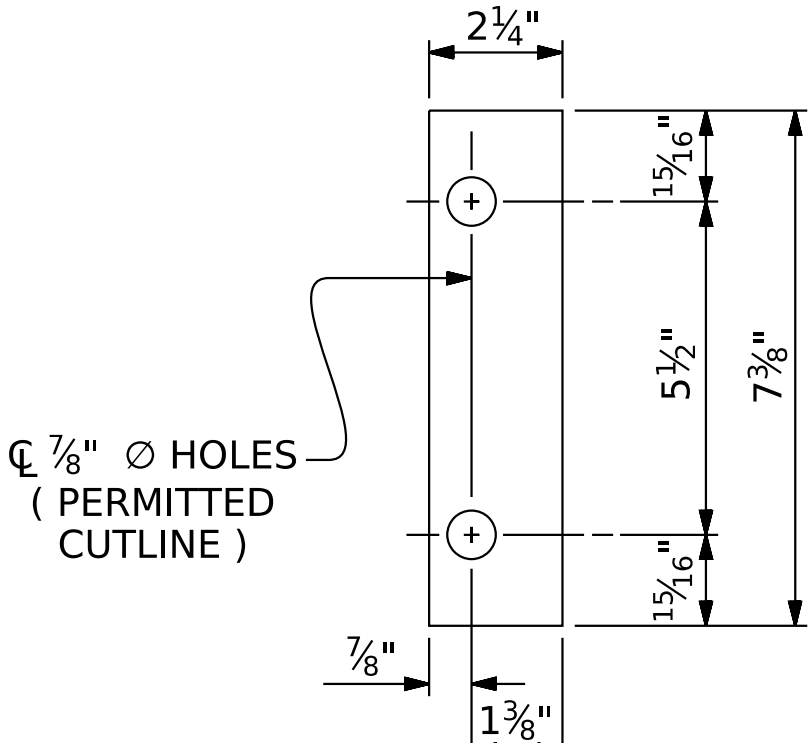
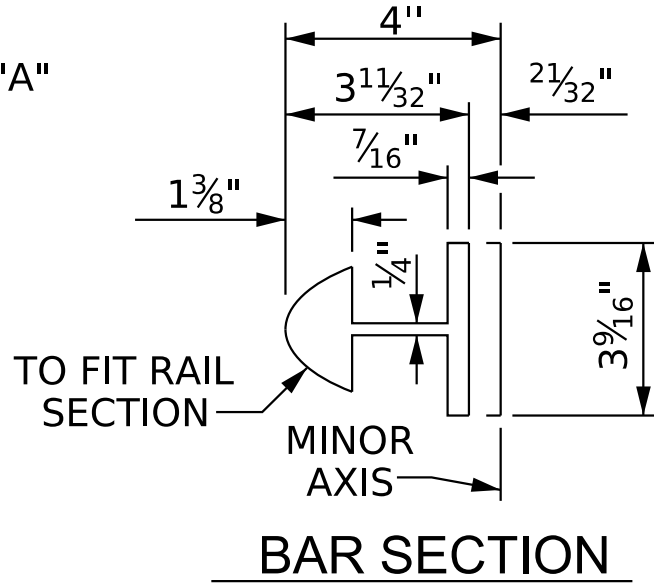
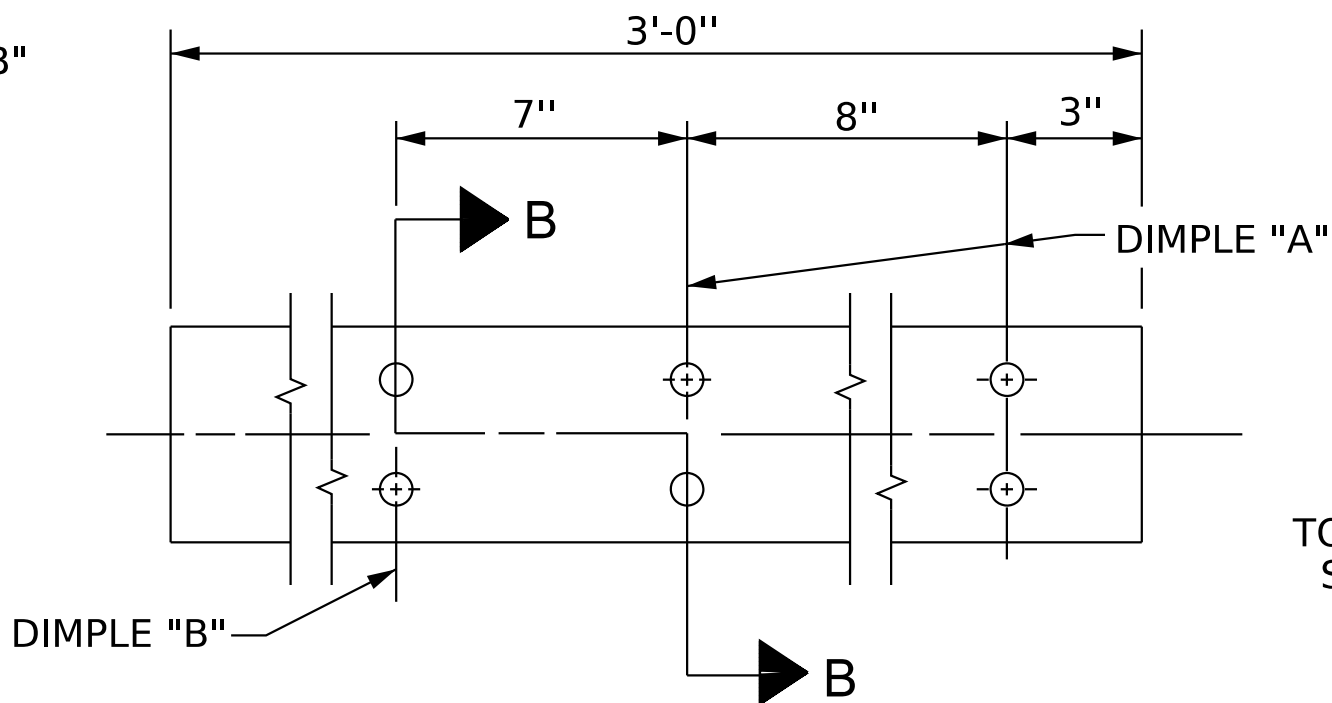
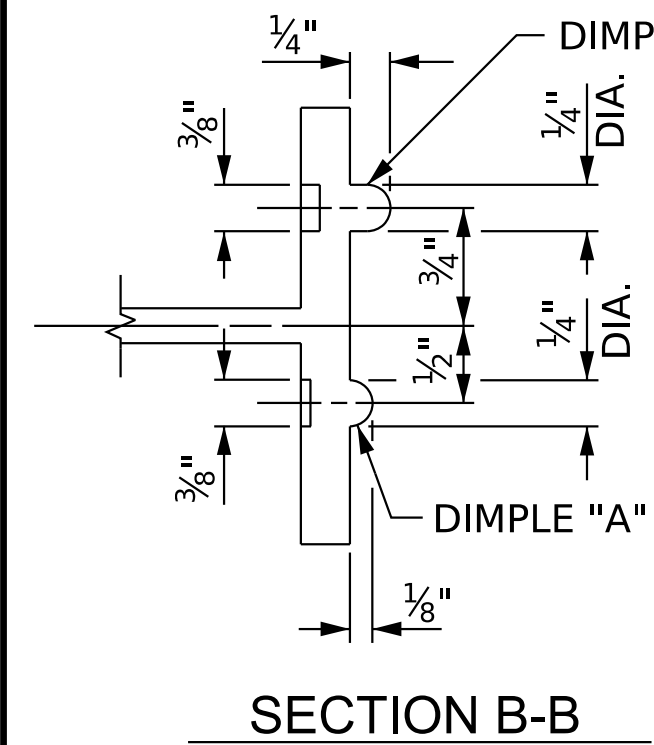
Kimley»Horn
421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000
NC LICENSE # F-0102

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 32+53.16 -Y2-

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD GUARDRAIL ANCHORAGE DETAILS FOR METAL RAILS					
REVISIONS					SHEET NO. S4-32
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
TOTAL SHEETS 63					

STR. #4 STD. NO. GRA3

K:\PDI_Structures\Bridges\N\01036524 - I-5715 Structure Design\Coord\gn\Site *2\Structure 4\Final\404_067_15175_SMU_2\M2-500358_034.dgn 8/2/2026



Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

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NOTES

STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

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

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

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

4-BOLT METAL RAIL ANCHOR ASSEMBLY

(54 ASSEMBLIES REQUIRED)

SHIM DETAILS

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

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 32+53.16 -Y2-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

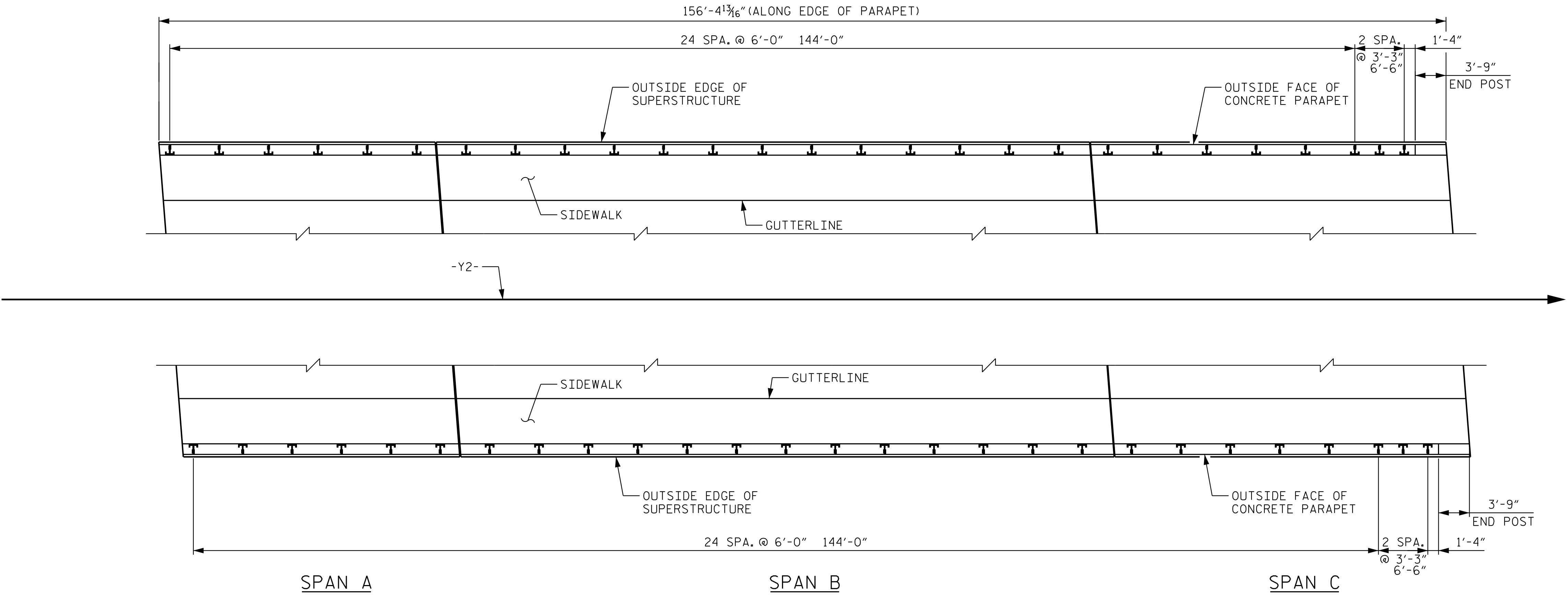
STANDARD
2 BAR METAL RAIL

REVISIONS						SHEET NO. S4-34
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 63
2			4			

ASSEMBLED BY : T. K. BOYD	DATE : 11/25
CHECKED BY : A. L. PHILLIPS	DATE : 11/25
DRAWN BY : EEM 6/9	REV. 6/13
CHECKED BY : RGW 6/9	REV. 12/17
	REV. 10/23
	MAA/GM
	MAA/THC
	BNB/SNM

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UNLESS ALL SIGNATURES COMPLETED**

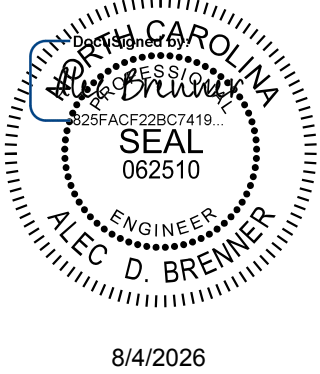
NOTES:
FOR 1/2" EXPANSION JOINT IN
CONCRETE PARAPET SPACING,
SEE "CONCRETE PARAPET
DETAILS" SHEET.



PLAN OF RAIL POST SPACING

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 32+53.16 -Y2-

SHEET 3 OF 4



Kimley»Horn
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Phone (919) 677-2000
NC LICENSE # F-0102

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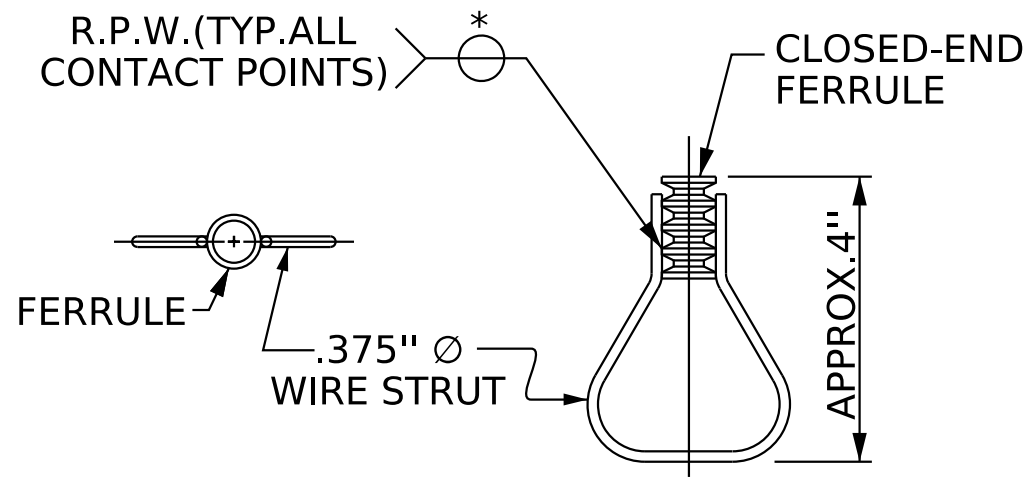
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SUPERSTRUCTURE PLAN OF RAIL POST SPACING						TOTAL SHEETS 63	
REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	TOTAL	
1			3			SHEETS	
2			4			63	

STR. #4

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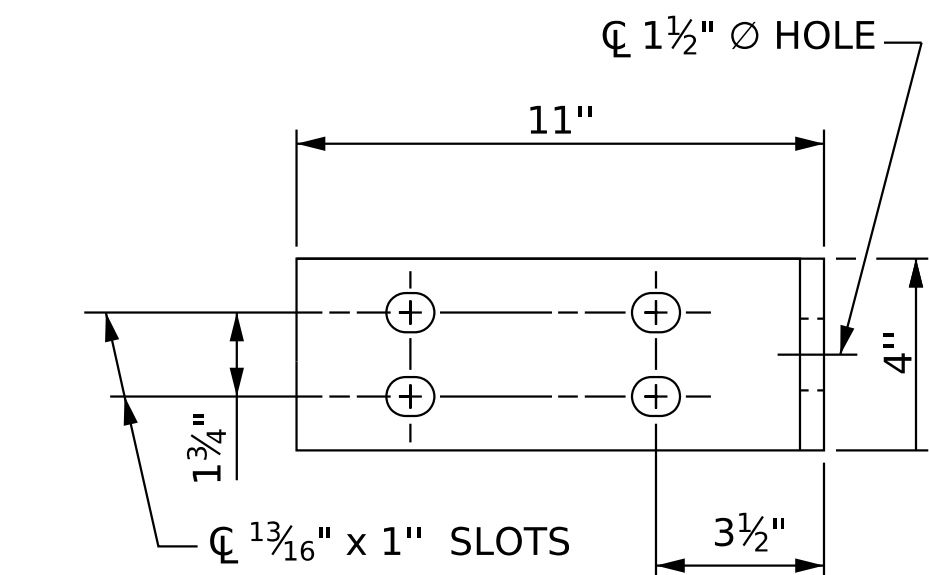
DRAWN BY: <u>T. K. BOYD</u>	DATE: <u>4/26</u>
CHECKED BY: <u>A. D. BRENNER</u>	DATE: <u>4/26</u>
DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>4/26</u>

K:\B01_Structures\Bridges\NC\01036524 - I-5715 Structure Design\Coord\gn\Site *2\Structure 4\Final\404-071-15715_SML 2\MR4-590358-036.dgn
8/2/2026

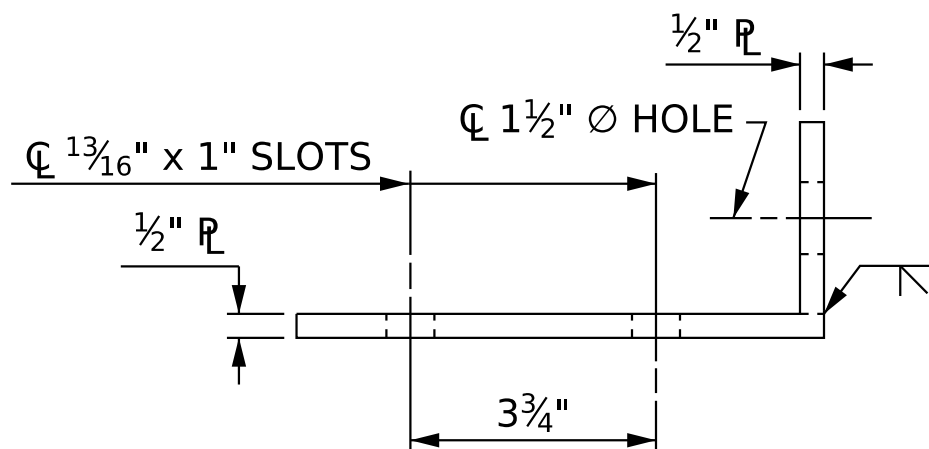


PLAN ELEVATION
STRUCTURAL CONCRETE INSERT

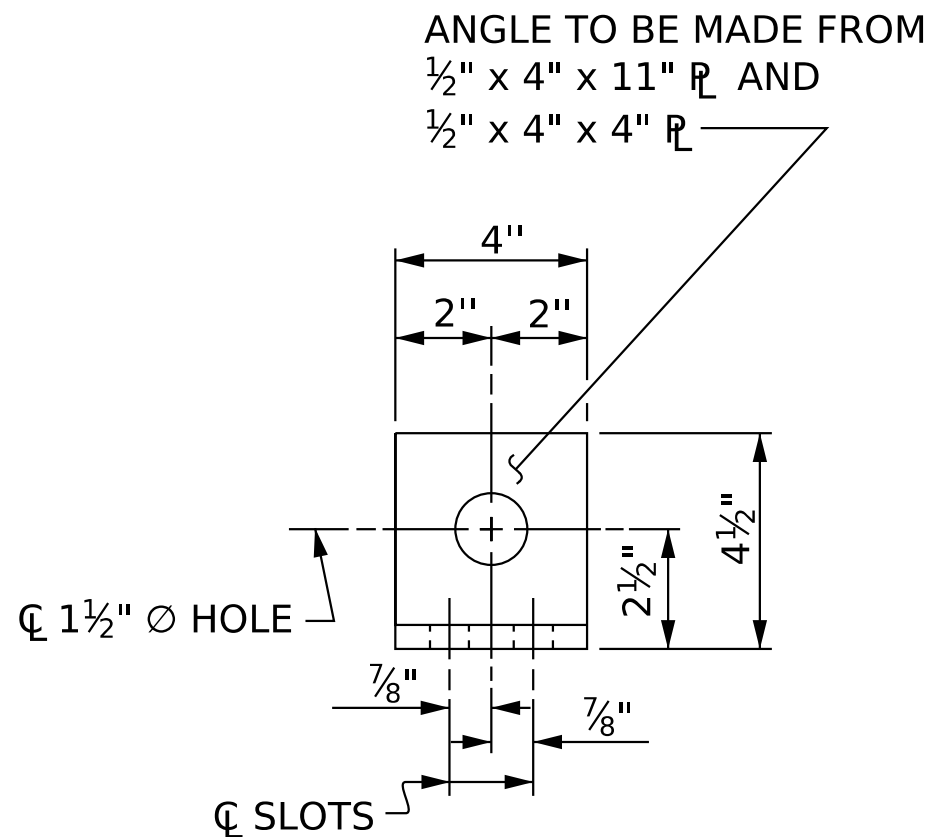
* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.



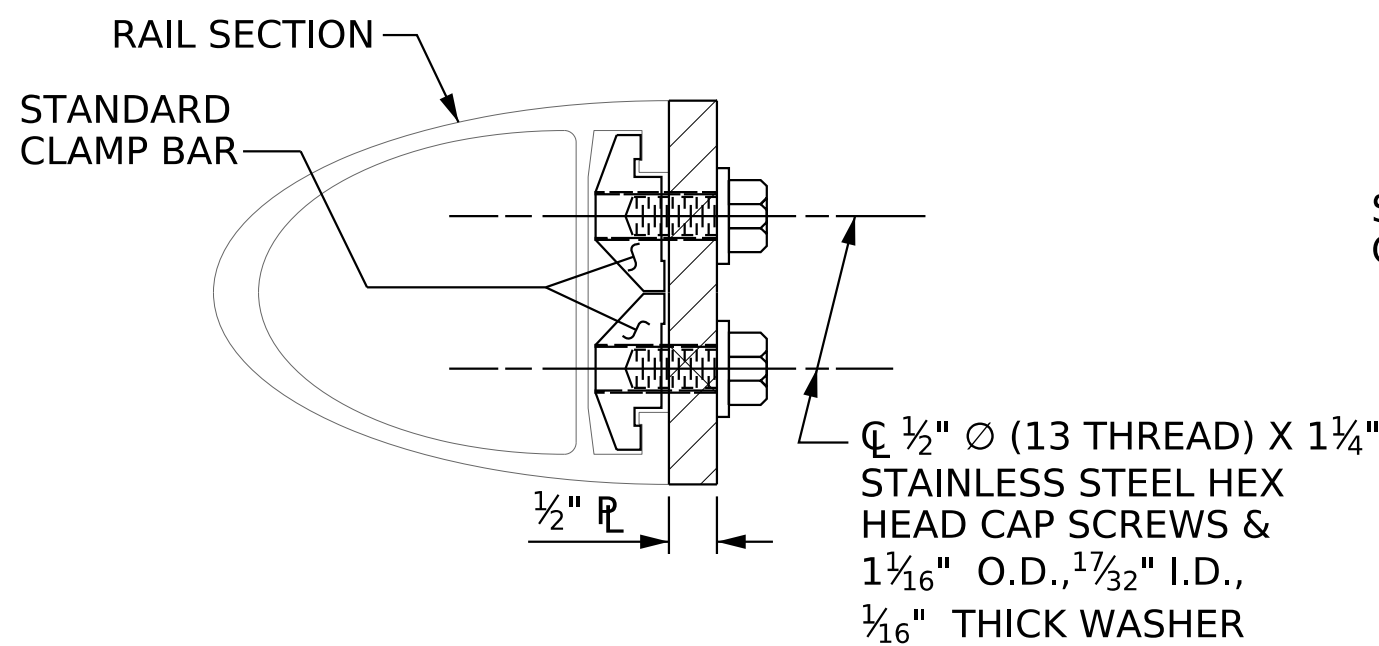
ELEVATION



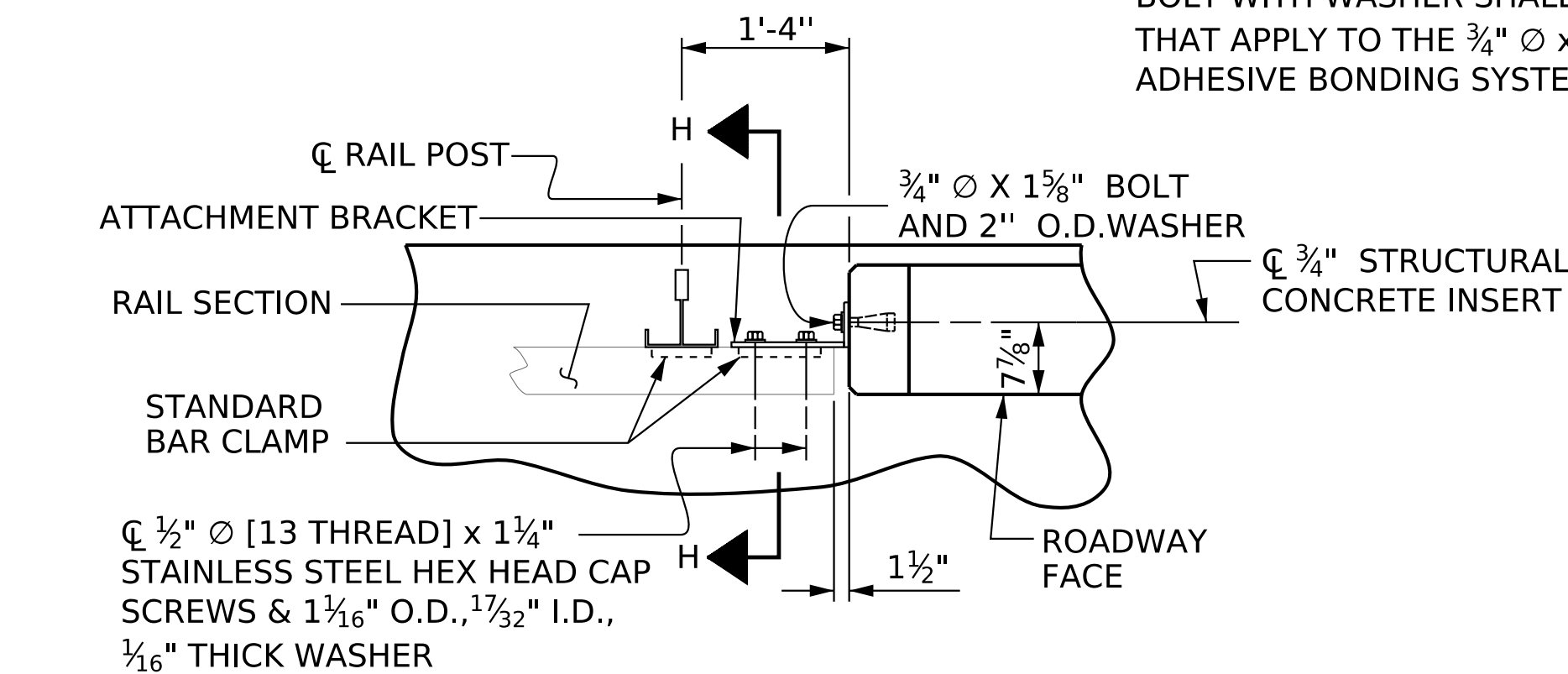
TOP VIEW



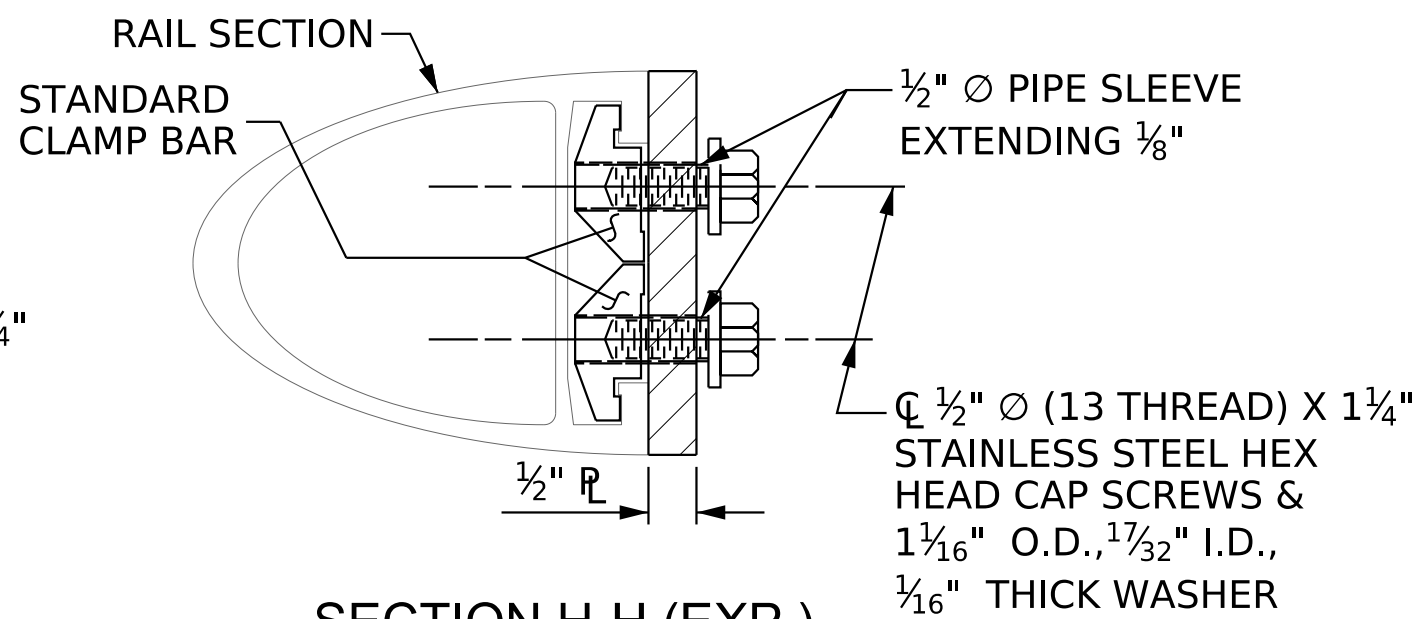
END VIEW (FIX AND EXP.)



FIXED



PLAN - RAIL AND END POST



SECTION H-H (EXP.)

EXPANSION

DETAILS FOR ATTACHING METAL RAIL TO END POST

NOTES

STRUCTURAL CONCRETE INSERT

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

- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1½".
- 1 - ¾" Ø x 1⅝" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE ¾" Ø x 1⅝" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A ⅞" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- ½" PLATES SHALL CONFORM TO ASTM A36 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- ¾" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A ¾" Ø x 1⅝" BOLT WITH 2" O.D. WASHER IN PLACE. THE ¾" Ø x 1⅝" BOLT SHALL HAVE N. C. THREADS.
- CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.
- STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
- ½" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

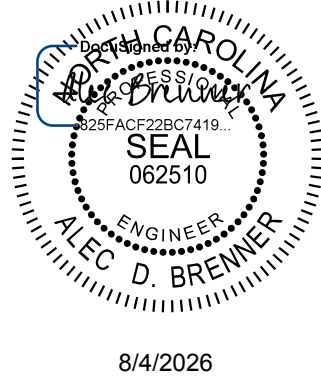
THE ¾" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE ¾" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE ½" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE ¾" Ø x 1⅝" BOLT WITH WASHER SHALL BE REPLACED WITH A ¾" Ø x 6½" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE ¾" Ø x 1⅝" BOLT SHALL APPLY TO THE ¾" Ø x 6½" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 32+53.16 -Y2-

SHEET 4 OF 4



Kimley»Horn

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Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

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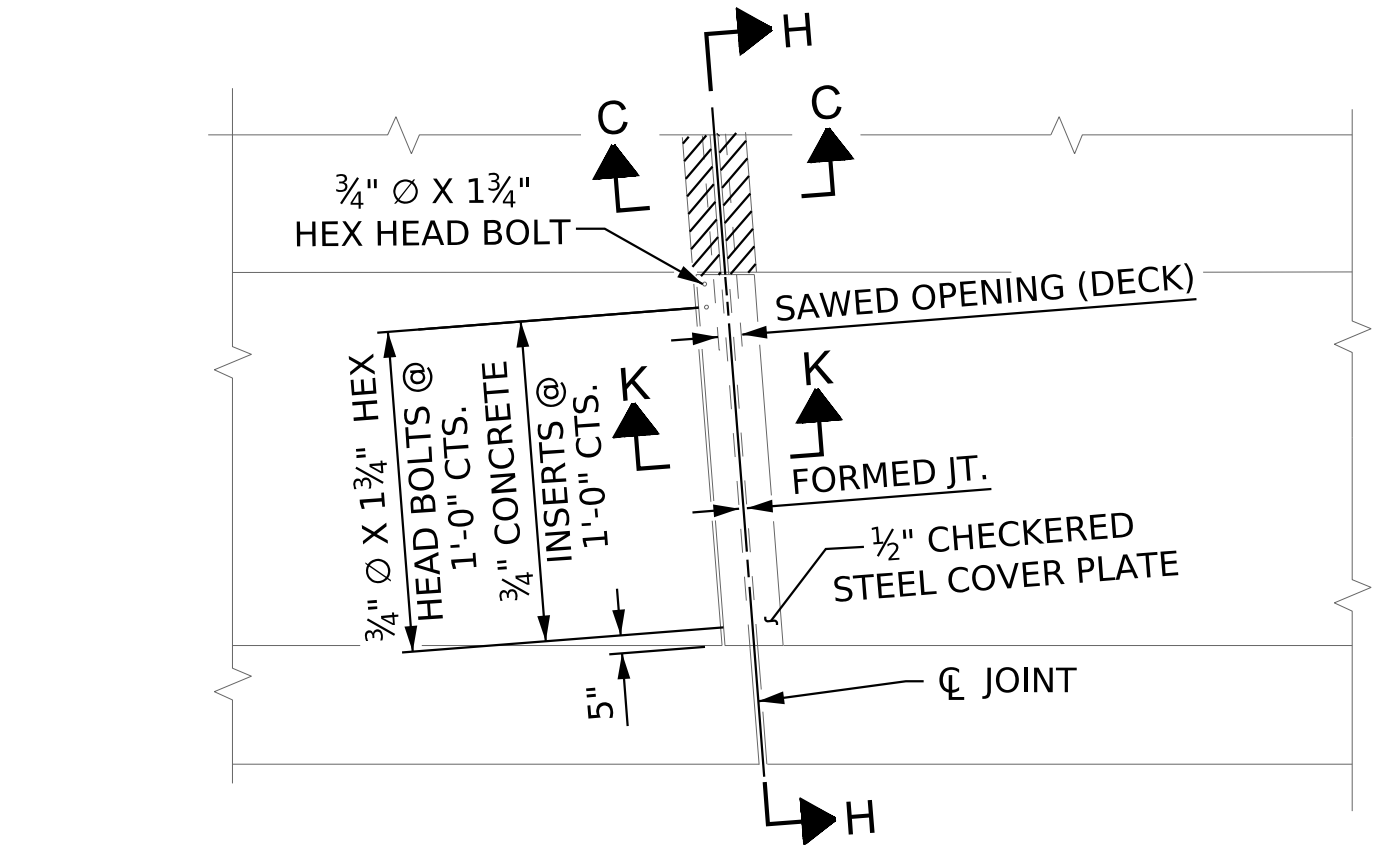
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
END OF RAIL DETAILS
FOR 2 BAR METAL RAIL

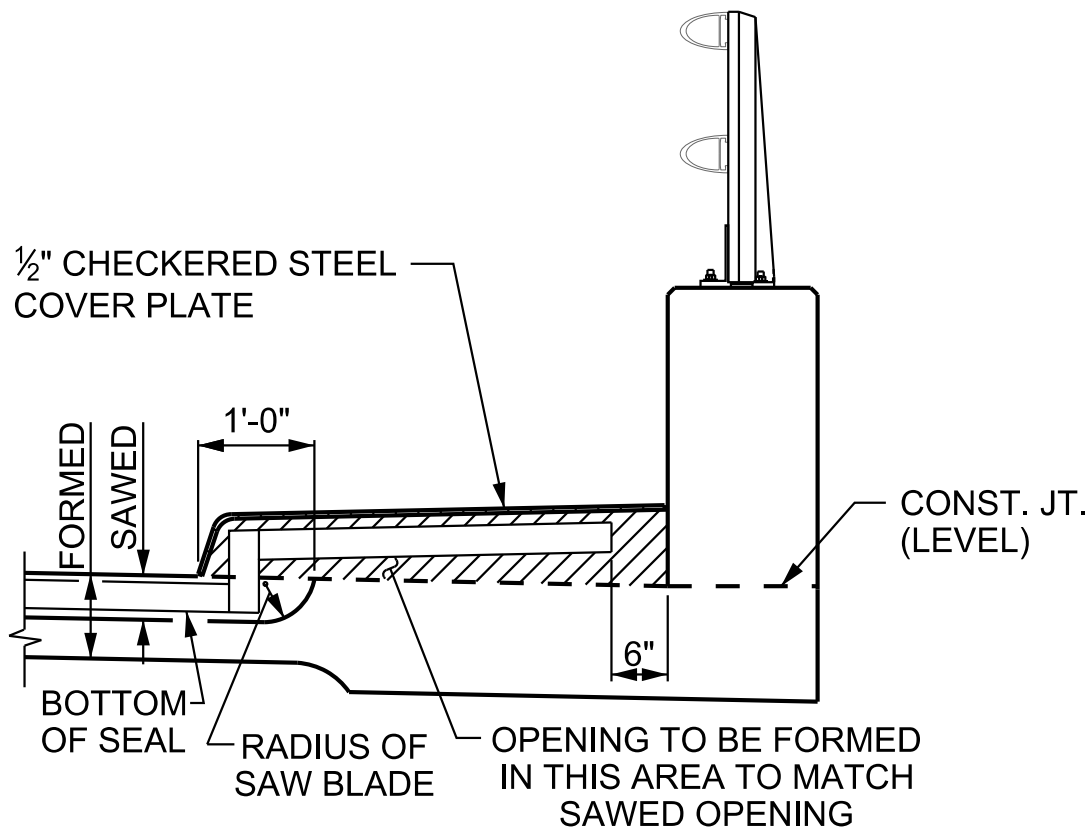
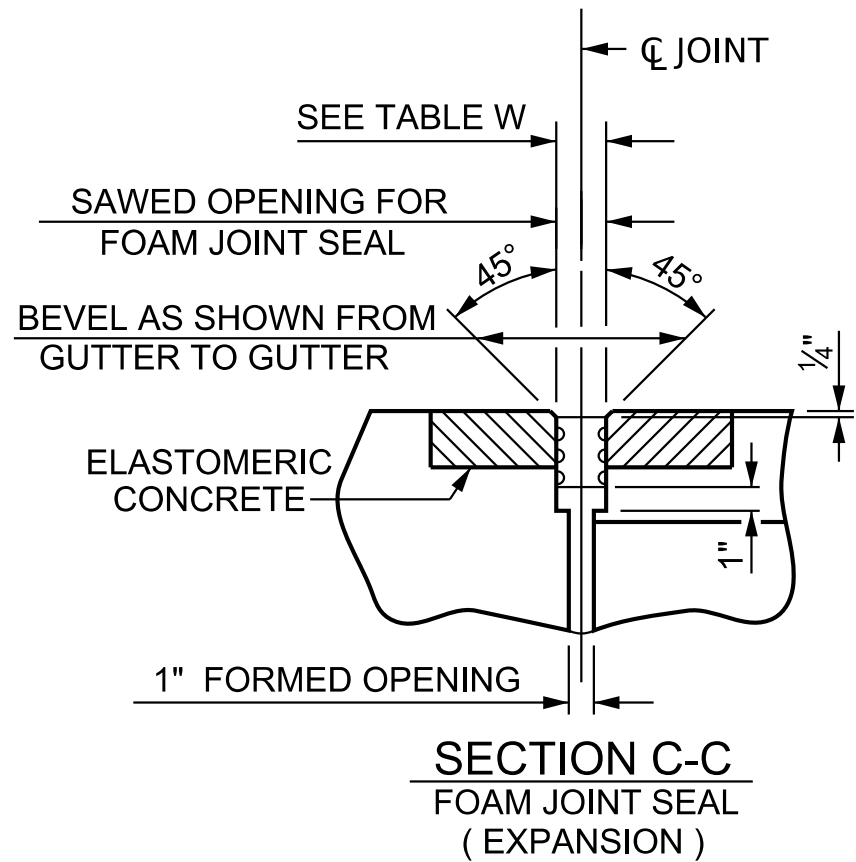
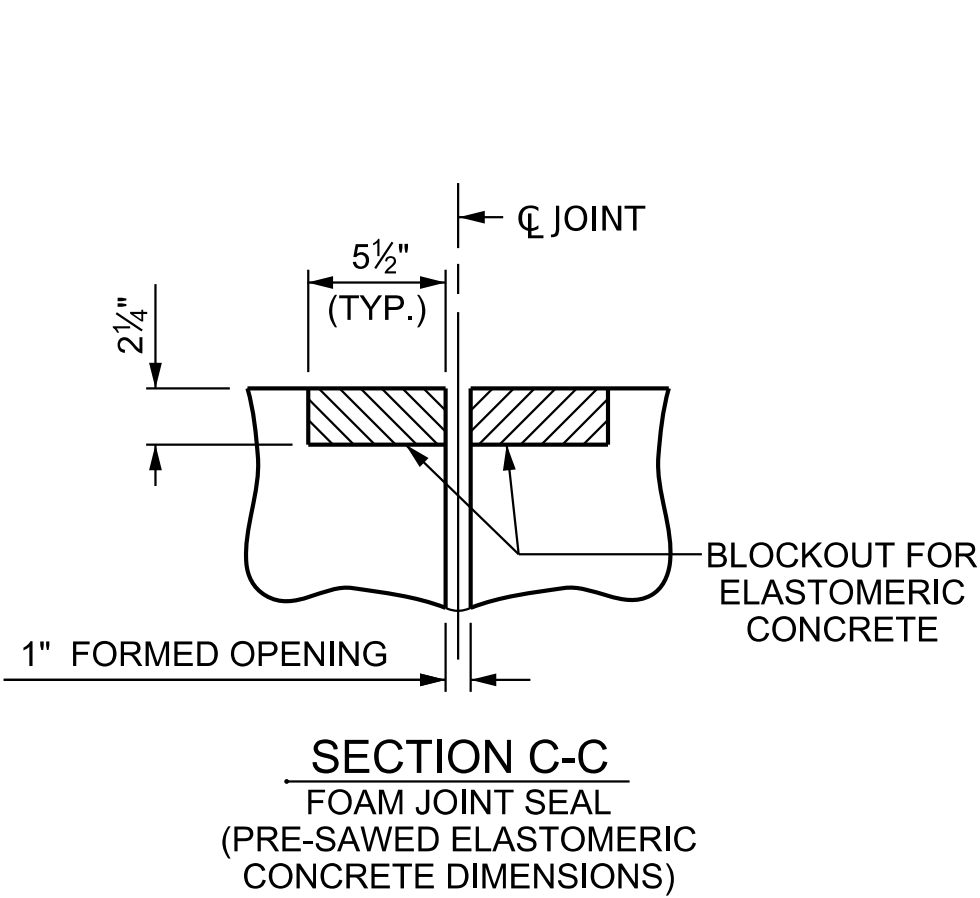
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 63
2			4			

STR. #4 STD. NO. BMR2

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PLAN OF FOAM
JOINT SEAL @ BENT



SECTION H-H

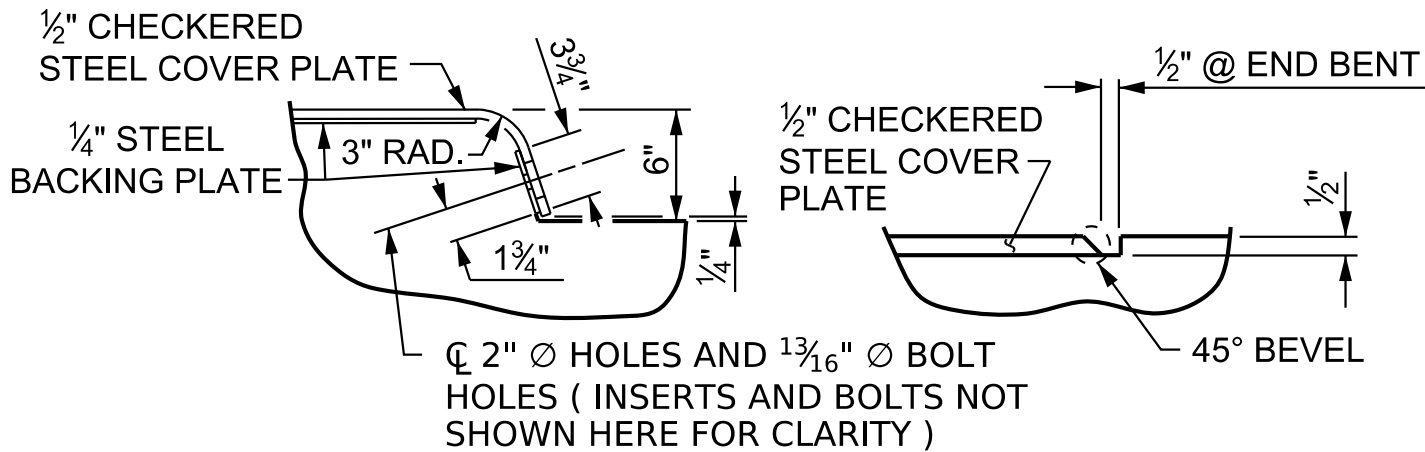
ELASTOMERIC CONCRETE

BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	5.7
2	5.7
TOTAL	11.4

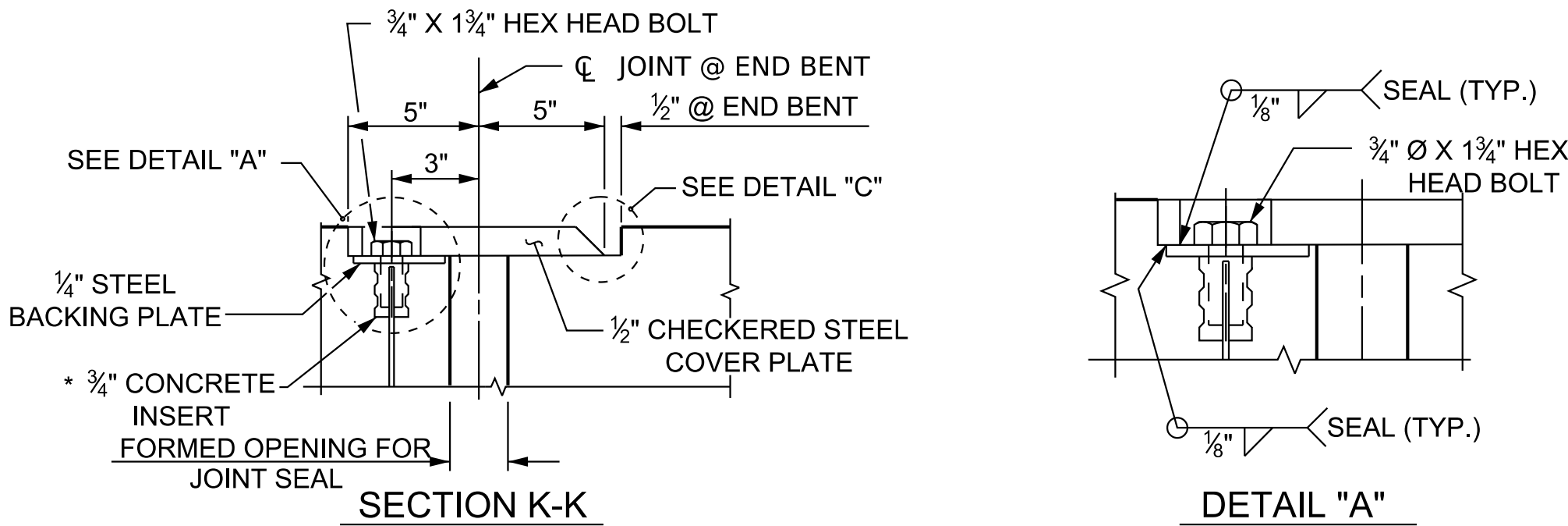
* BASED ON THE MINIMUM BLOCKOUT SHOWN.

TABLE W

JT. WIDTH @	45° F	60° F	90° F
END BENT 1	1 5/8"	1 3/16"	1 1/2"
BENT 1	1 11/16"	1 3/16"	1 3/16"
BENT 2	1 11/16"	1 3/16"	1 3/16"
END BENT 2	1 5/8"	1 3/16"	1 1/16"



DETAIL "B" DETAIL "C"
JOINT SEAL DETAILS @ END BENT



JOINT SEAL DETAILS

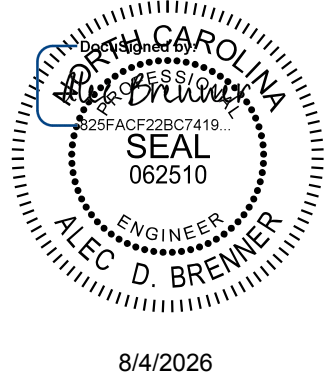
* THE 3/4" CONCRETE INSERTS SHALL BE CLOSED-END FERRULES WITH LOOPED WIRE STRUTS ATTACHED TO THEM. THE INSERTS SHALL CONFORM TO AASHTO M169, GRADE 12L14 AND SHALL HAVE A TENSILE WORKING LOAD CAPACITY OF 3000 LBS.

THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2".

THE STEEL PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR APPROVED EQUAL. AFTER FABRICATION, THE PLATES SHALL BE COMMERCIALY BLAST CLEANED AND EITHER COATED WITH A MINIMUM THICKNESS OF 4 MILS (DRY) OF ZINC-RICH PAINT, GALVANIZED OR METALLIZED TO A MINIMUM THICKNESS OF 6 MILS IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

THE 3/4" DIAMETER HEX HEAD BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL.

NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE COVER PLATE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR "FOAM JOINT SEALS".



Kimley»Horn

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PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 32+53.16 -Y2-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

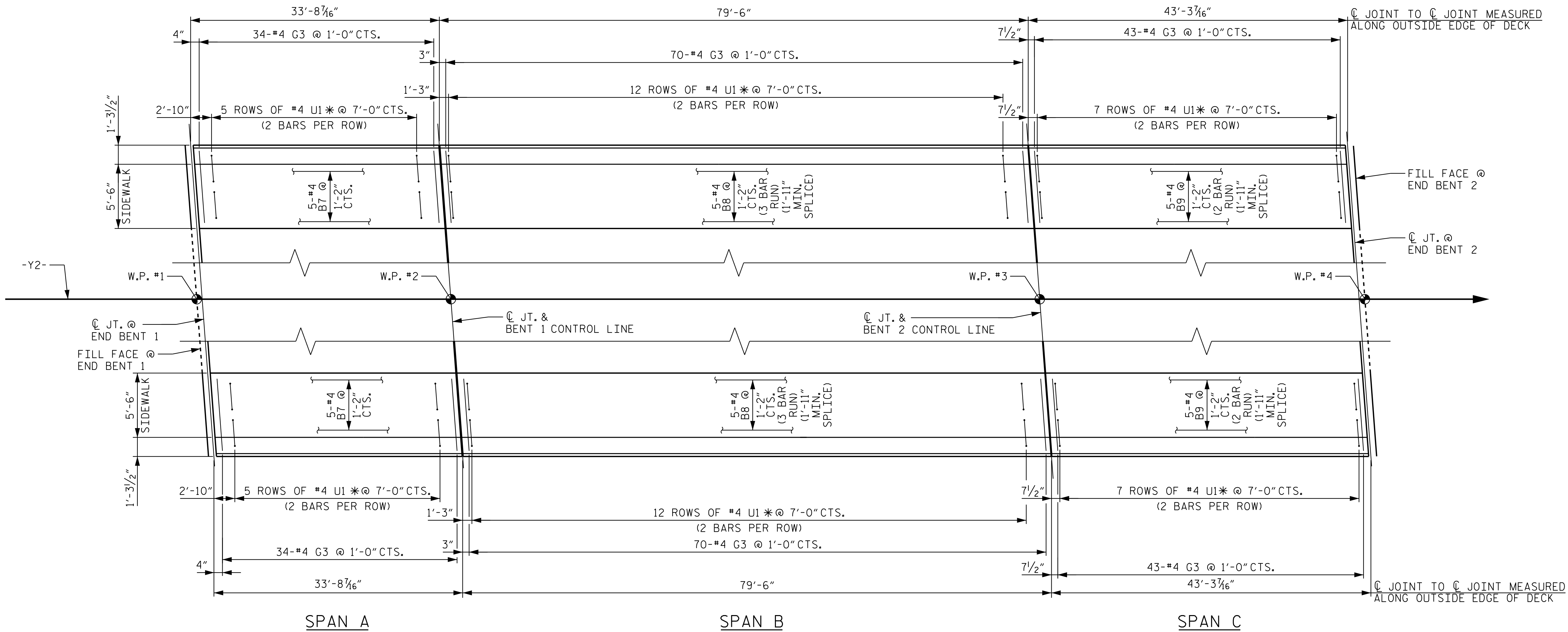
STANDARD
FOAM JOINT
SEAL DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-37
1			3			TOTAL SHEETS
2			4			63

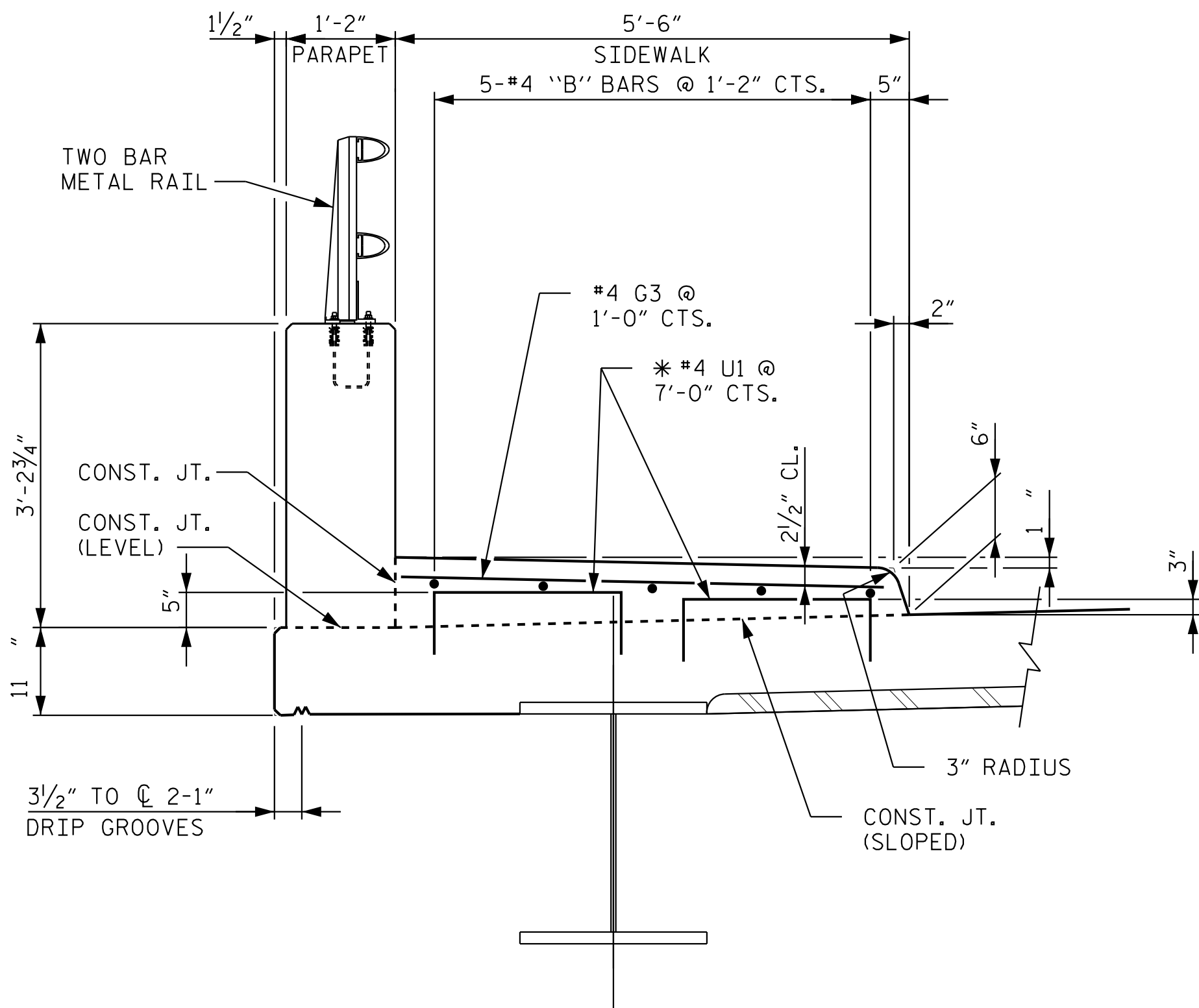
STR. #4 STD. NO. EJS1

ASSEMBLED BY : T. K. BOYD	DATE : 11/25
CHECKED BY : A. L. PHILLIPS	DATE : 11/25
DRAWN BY : REK 9/87	REV. 5/1/ 6R TLA/GM
CHECKED BY : CRK 1/87	REV. 1/1/11 MAA/GM
	REV. 12/17 MAA/THC

K:\PDI_Structures\Bridges\NC\01036524 - I-5715 Structure Design\Code\00\Site *2\Structure 4\Final\04-075-15175_SWM_SWI_590358_038.dgn 8/2/2026



PLAN OF SIDEWALK



SECTION THRU SIDEWALK
LEFT EXTENSION SHOWN, RIGHT EXTENSION SIMILAR

NOTES

ALL REINFORCING STEEL IN THE SIDEWALK SHALL BE EPOXY COATED.

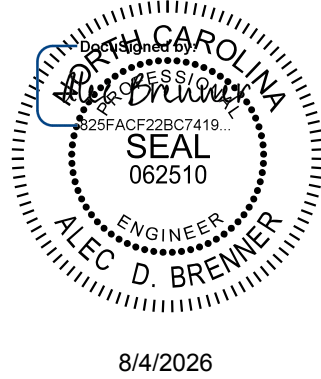
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE SIDEWALK IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 FEET TO 10 FEET BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINT WILL BE REQUIRED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

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

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

SEE APPROACH SLAB SHEETS FOR SIDEWALK ON APPROACH SLAB.

CONCRETE AND REINFORCING STEEL FOR THE SIDEWALK IS INCLUDED IN THE SUPERSTRUCTURE BILL OF MATERIAL. PAYMENT FOR THE SIDEWALK SHALL BE INCLUDED IN THE PAY ITEM "REINFORCED CONCRETE DECK SLAB."



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Phone (919) 677-2000 NC LICENSE # F-0102

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PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 32+53.16 -Y2-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
SIDEWALK DETAILS

REVISIONS						SHEET NO. S4-38
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 63
2			4			

STR. #4

DRAWN BY: T. K. BOYD DATE: 4/26
CHECKED BY: A. D. BRENNER DATE: 4/26
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 4/26

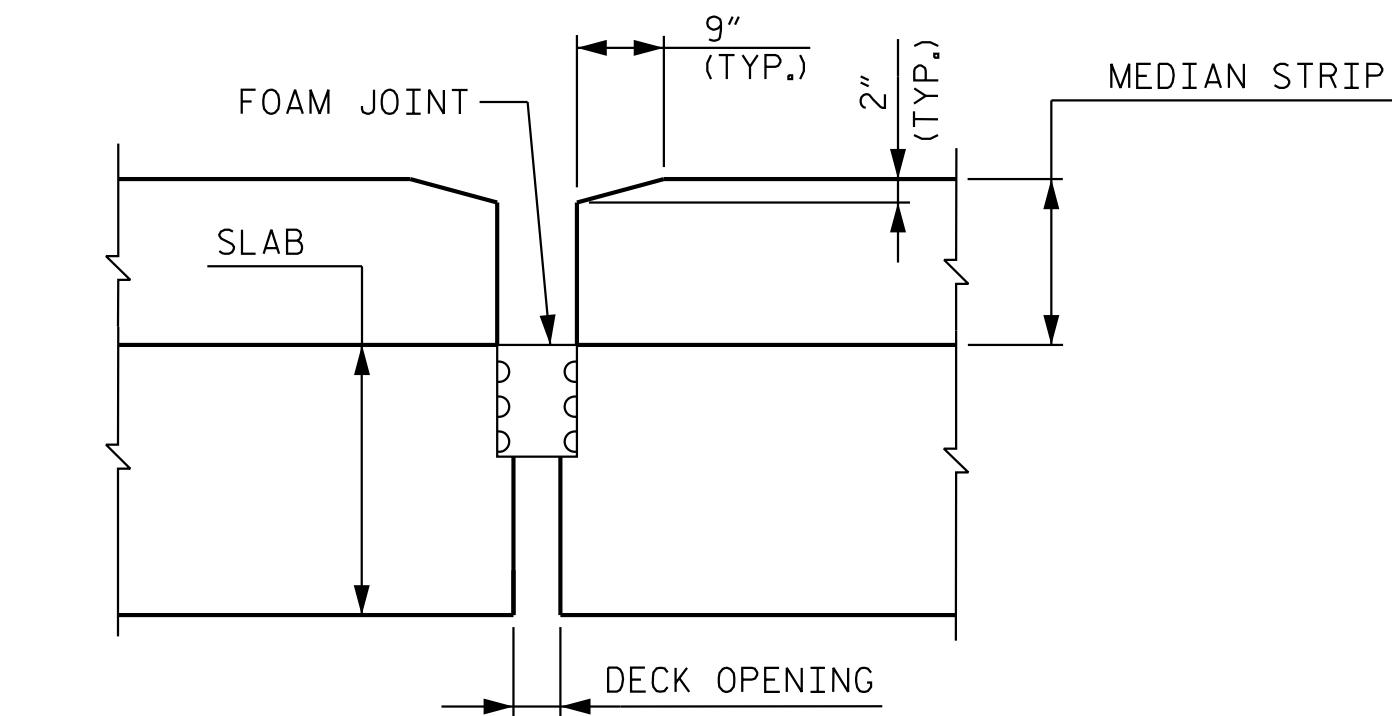
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K:\RD\I-Structures\Bridges\NC\01036524 - I-5715 Structure Design\Code\Drawn\Site *2\Structure 4\Final\404-077-15115_SWM\MDL-590358_039.dgn 8/4/2026

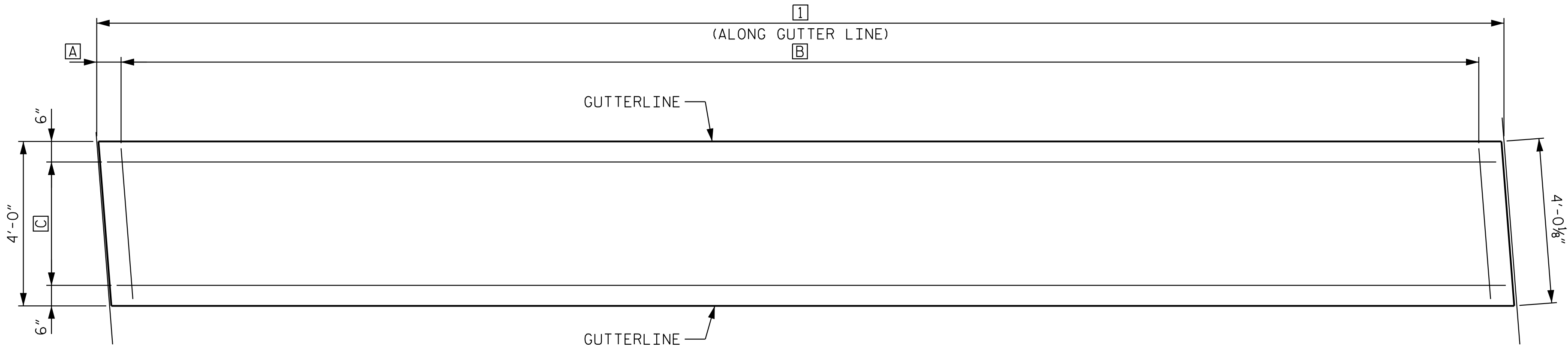
BILL OF MATERIAL					
CONCRETE MEDIAN					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	3	#4	STR	33'-4"	68
*B2	9	#4	STR	27'-8"	179
*B3	6	#4	STR	22'-6"	90
*G1	109	#4	STR	2'-8"	194
* EPOXY COATED REINFORCING STEEL					510 LBS.
TOTAL CLASS AA CONCRETE					8.5 C.Y.

NOTES

- ALL REINFORCING STEEL IN CONCERTE MEDIAN SHALL BE EPOXY COATED.
- CONSTRUCTION SEQUENCE FOR CONCRETE MEDIAN:
- REMOVE PAINT, DIRT, OIL, AND ANY OBJECT OR MATERIAL THAT WILL ADVERSELY IMPACT CONCRETE BOND TO EXISTING BRIDGE DECK.
 - CONSTRUCT MEDIAN SECTION.
 - SAW CUT CONTRACTION JOINTS.
 - SEAL JOINTS.
- SAW CUT CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE CUT IN ALL EXPOSED FACES OF THE CONCRETE MEDIAN IN ACCORDANCE WITH ARTICLE 825-10(E) OF THE STANDARD SPECIFICATION. SEAL CONTRACTION JOINT IN ACCORDANCE WITH ARTICLE 825-10(F) OF THE STANDARD SPECIFICATION. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 TO 10 FEET BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINT WILL BE REQUIRED IN SEGMENTS LESS THAN 10 FEET.
- FOR MEDIAN ON APPROACH SLAB, SEE APPROACH SLAB SHEETS.
- MEDIAN ON BRIDGE IS PAID FOR AS A PART OF THE REINFORCED CONCRETE DECK SLAB PAY ITEM.

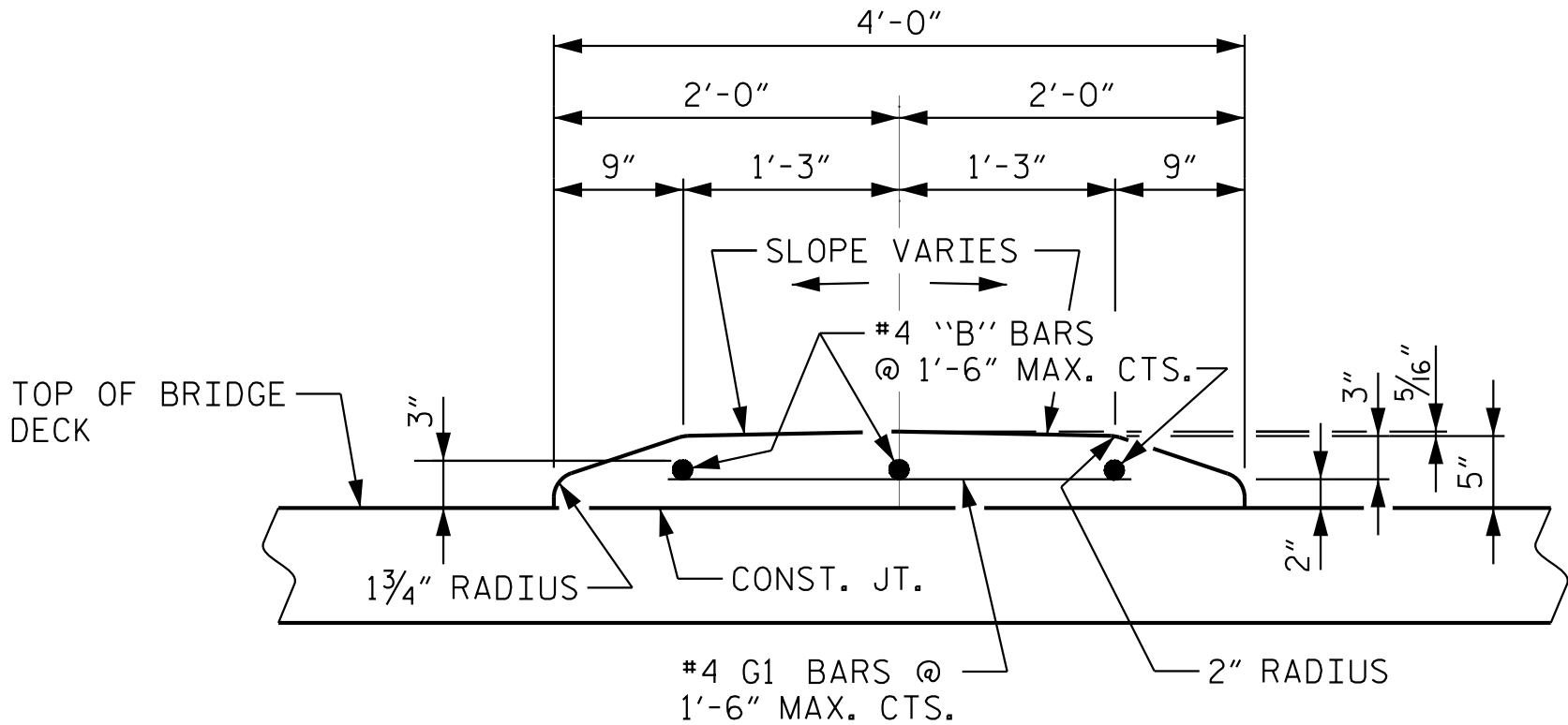


DETAILS AT EXPANSION JOINT



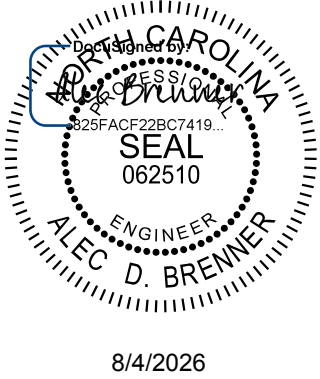
PLAN AT TYPICAL SPAN

DIMENSIONS AND REINFORCING INFORMATION			
	SPAN A	SPAN B	SPAN C
[I]	33'-8 7/16"	79'-4 "	43'-3 7/16"
[A]	4"	8 1/2"	7 1/2"
[B]	23-#4 G1 @ 1'-6"	53-#4 G1 @ 1'-6"	29-#4 G1 @ 1'-6"
[C]	3-#4 B1	3-#4 B2 (3 BAR RUN) (1'-11" MIN. SPLICE)	3-#4 B3 (2 BAR RUN) (1'-11" MIN. SPLICE)



MEDIAN TYPICAL SECTION

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MECKLENBURG COUNTY
STATION: 32+53.16 -Y2-



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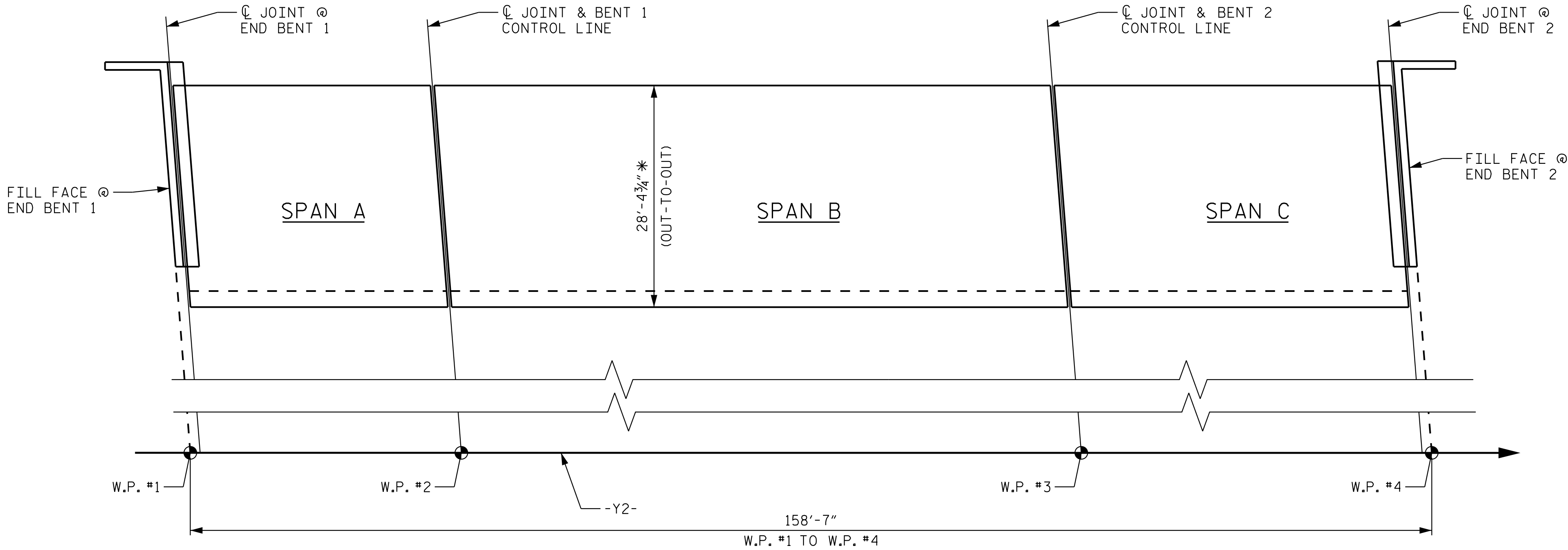
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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE CONCRETE MEDIAN DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S4-39					TOTAL SHEETS 63

DRAWN BY: <u>T. K. BOYD</u>	DATE: <u>4/26</u>
CHECKED BY: <u>A. D. BRENNER</u>	DATE: <u>4/26</u>
DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>4/26</u>

8/3/2026 K:\BRT-Structures\Bridges\NC\01036524 - I-5715 Structure Design\Coord\gn\Site *2\Structure 4\Final\404-079-15115_SLU_BM_590358_040.dgn

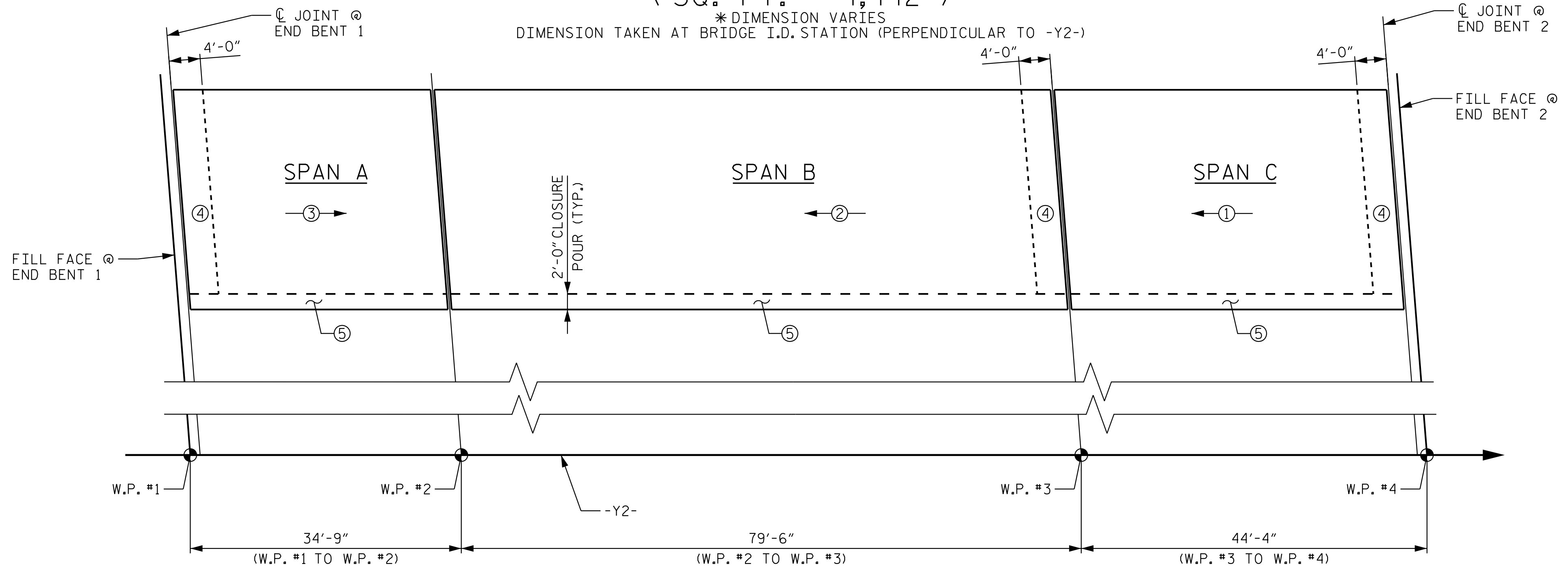


LAYOUT FOR COMPUTING AREA
OF REINFORCED CONCRETE DECK SLAB

(SQ. FT. 4,442)

* DIMENSION VARIES

DIMENSION TAKEN AT BRIDGE I.D. STATION (PERPENDICULAR TO -Y2-)



POURING SEQUENCE

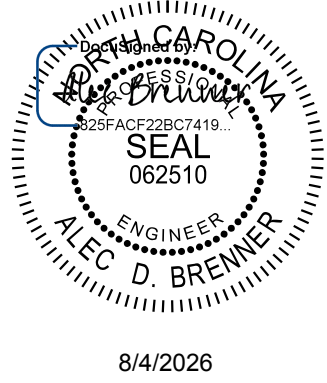
(#) DENOTES POUR NUMBER AND DIRECTION

GROOVING BRIDGE FLOORS	
LEFT SIDE	
APPROACH SLABS *	230 SQ.FT.
BRIDGE DECK **	3,206 SQ.FT.
TOTAL	3,436 SQ.FT.

* INCLUDES AN APPROXIMATE 2'-0" WIDTH OF GROOVING ON EXISTING APPROACH SLAB

** INCLUDES AN APPROXIMATE 11" WIDTH OF GROOVING ON EXISTING BRIDGE DECK

DRAWN BY: T. K. BOYD DATE: 4/26
CHECKED BY: A. D. BRENNER DATE: 4/26
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 4/26



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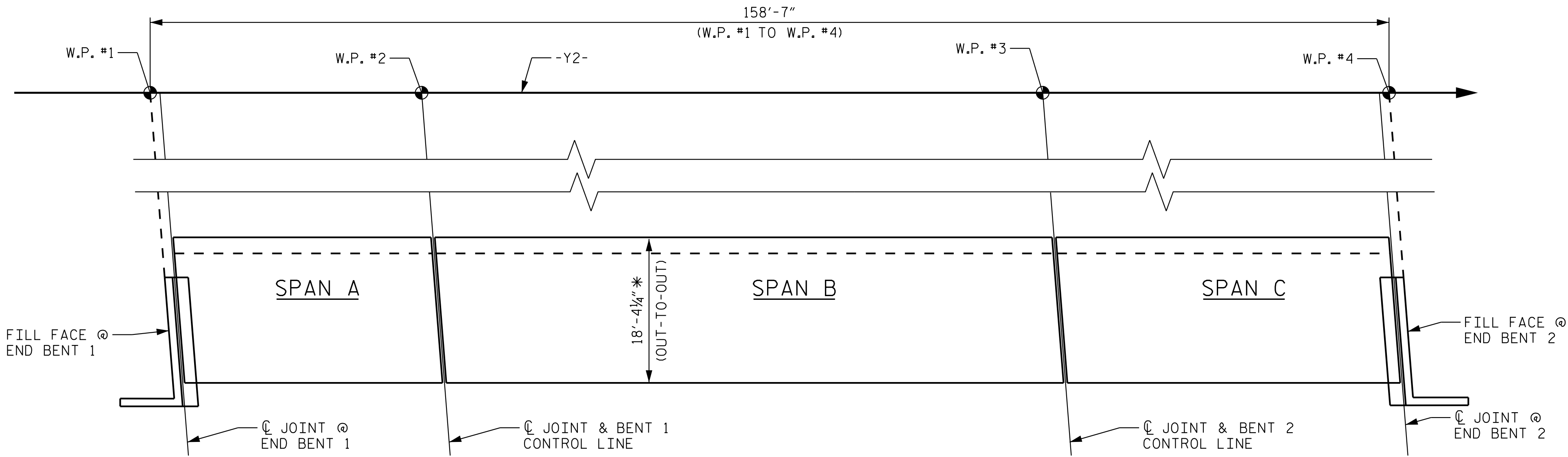
PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 32+53.16 -Y2-

SHEET 1 OF 3

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE BILL OF MATERIAL LEFT SIDE					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					63

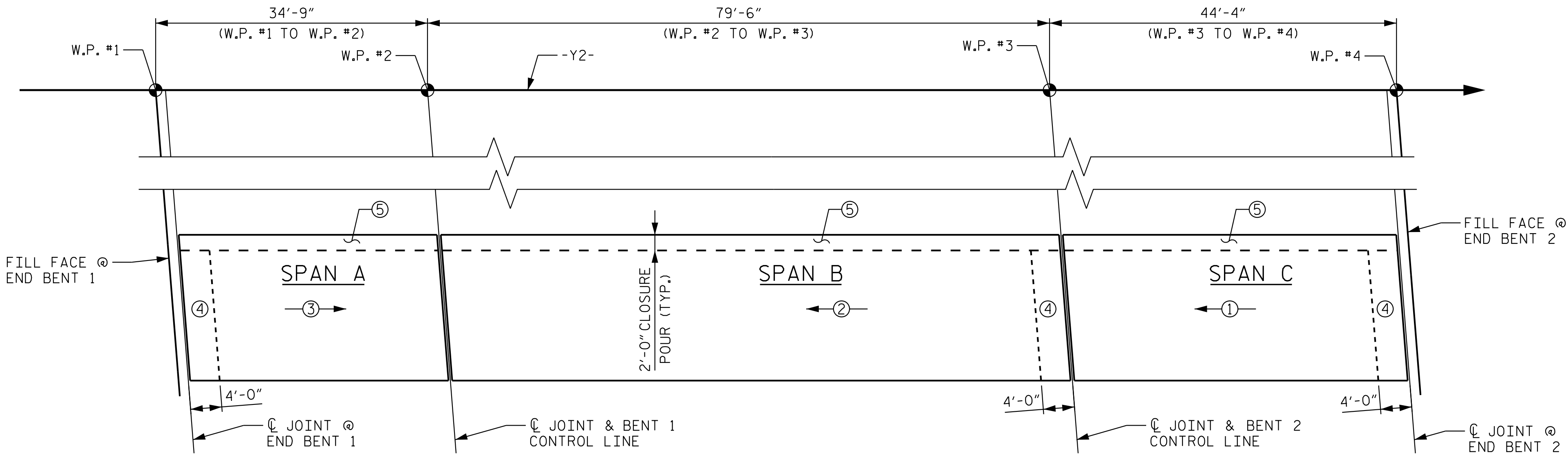
STR. #4

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LAYOUT FOR COMPUTING AREA
OF REINFORCED CONCRETE DECK SLAB
(SQ. FT. 2,870)

* DIMENSION VARIES
DIMENSION TAKEN AT BRIDGE I.D. STATION (PERPENDICULAR TO -Y2-)



POURING SEQUENCE

← (#) → DENOTES POUR NUMBER AND DIRECTION

GROOVING BRIDGE FLOORS RIGHT SIDE	
APPROACH SLABS *	119 SQ.FT.
BRIDGE DECK **	1,674 SQ.FT.
TOTAL	1,793 SQ.FT.

* INCLUDES AN APPROXIMATE 2'-0" WIDTH OF GROOVING ON EXISTING APPROACH SLAB

** INCLUDES AN APPROXIMATE 11" WIDTH OF GROOVING ON EXISTING BRIDGE DECK

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CHECKED BY: A. D. BRENNER	DATE: 4/26
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS	DATE: 4/26



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PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 32+53.16 -Y2-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

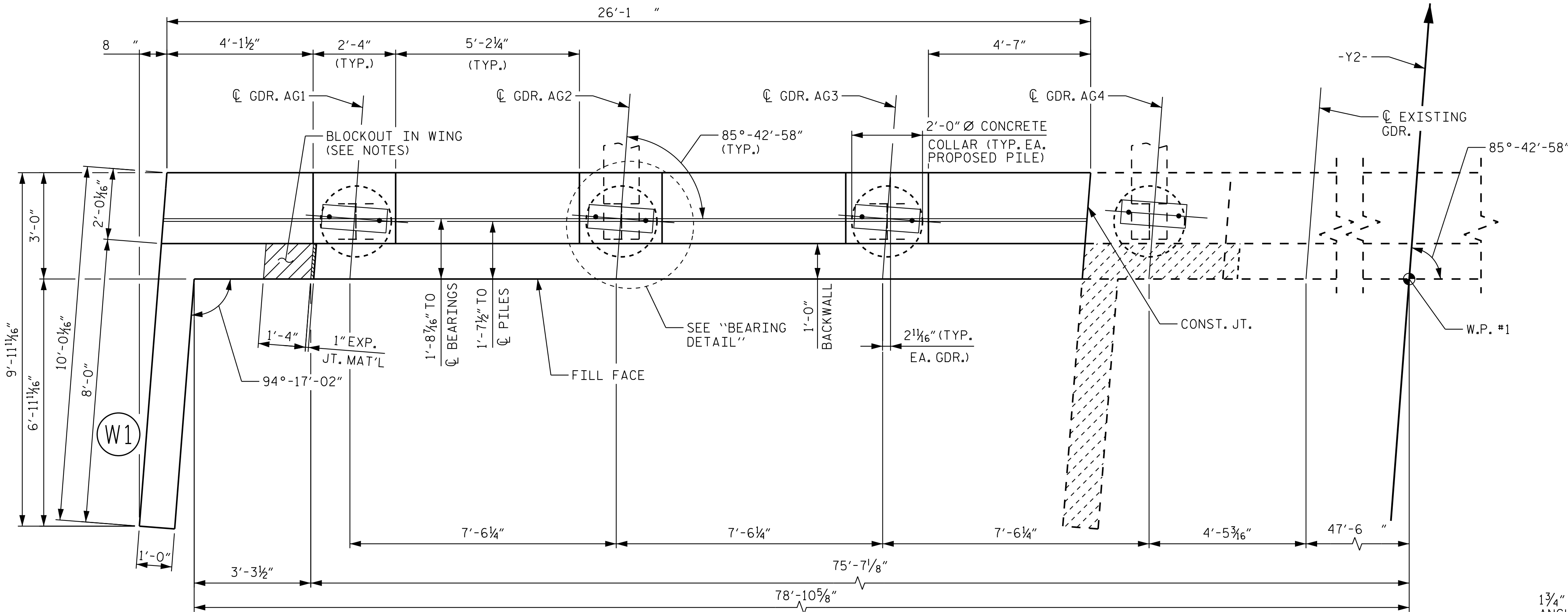
SUPERSTRUCTURE
BILL OF MATERIAL
RIGHT SIDE

REVISIONS						SHEET NO. S4-41
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 63
2			4			

STR. #4

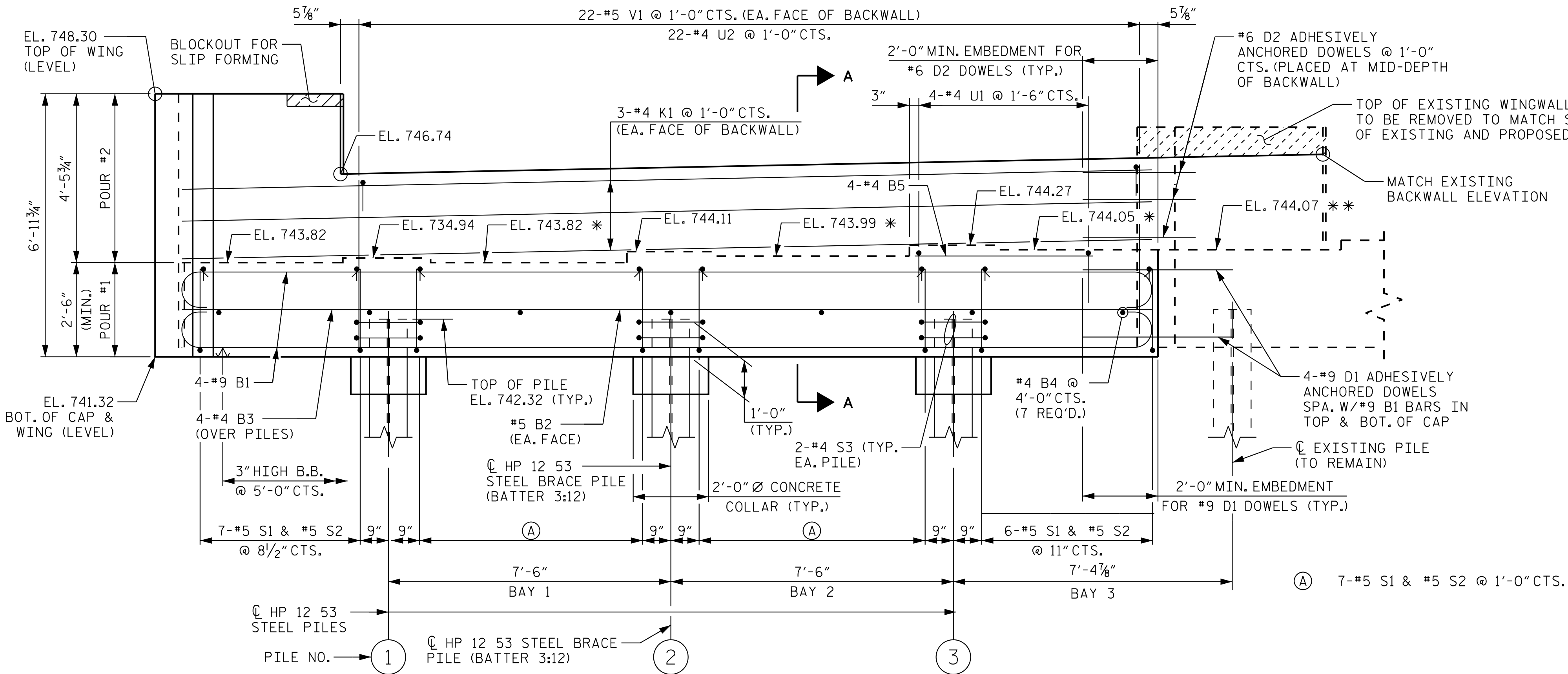
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8/2/2026



PLAN

AREA OF EXISTING WINGWALL TO BE REMOVED



ELEVATION

* FOR LOCATION OF ELEVATION BETWEEN BRIDGE SEATS, SEE "SECTION A-A" ON SHEET 4 OF 4
** BEAM SEAT ELEVATION OF NEW GIRDER ON EXISTING CAP AT CL OF BEARING

REINFORCING IN WING NOT SHOWN FOR CLARITY. FOR DETAILS SEE SHEET 3 OF 4

NOTES

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

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE 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 FRONT FACE AT THE RATE OF 2 .

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE PARAPET & END POSTS ARE CAST IF SLIP FORMING IS USED.

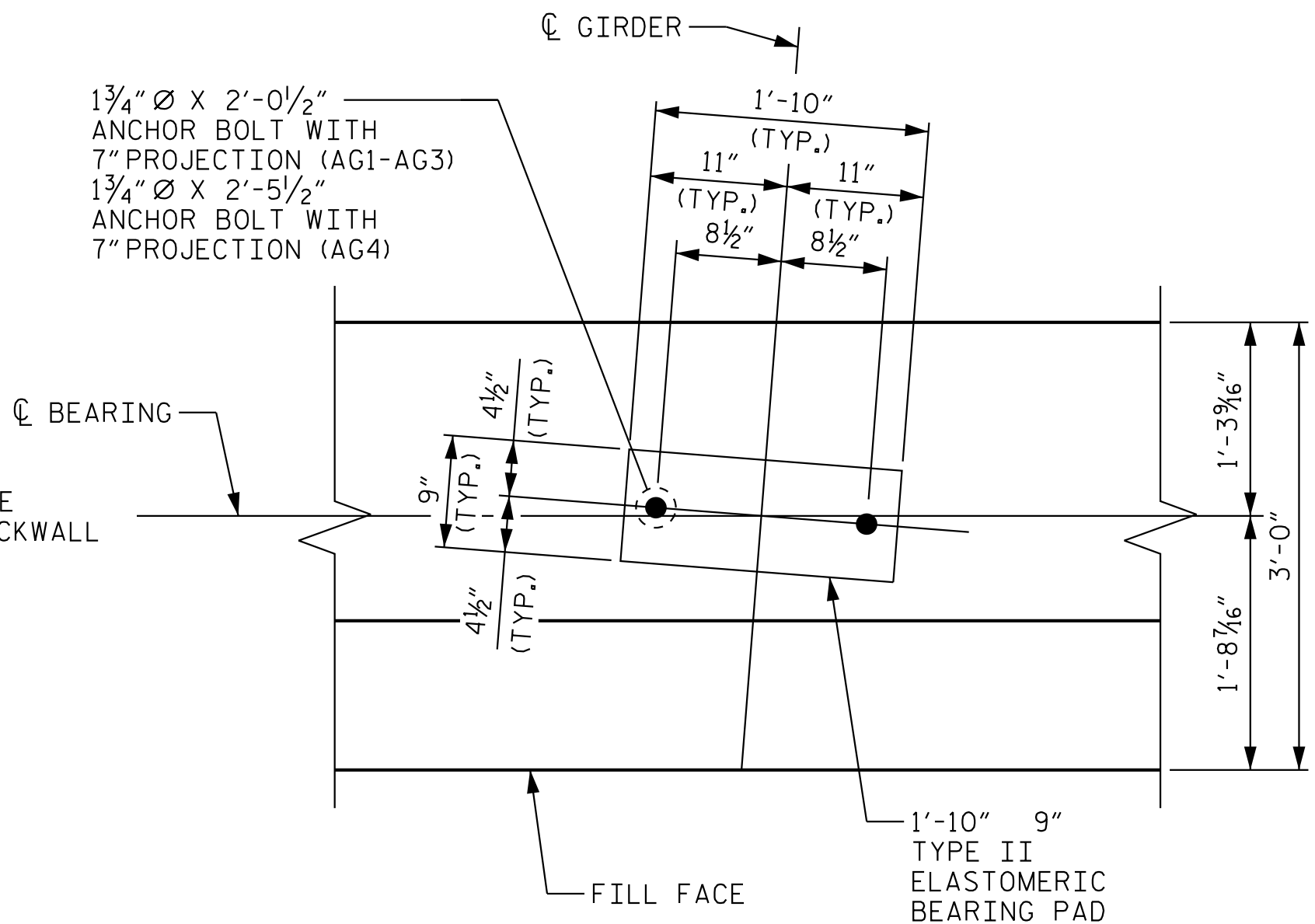
FOR "SECTION A-A", SEE "END BENT 1" SHEET 4 OF 4.

EPOXY COAT THE END BENT CAP AFTER ADJUSTMENTS ARE MADE TO BEARINGS AND ANCHOR BOLTS ARE GROUTED.

D1 AND D2 DOWELS SHALL BE INSTALLED IN THE EXISTING CONCRETE BACKWALL OR CAP USING AN ADHESIVELY ANCHORED SYSTEM. LEVEL ONE FIELD TESTING IS REQUIRED. THE YIELD LOAD OF THE D1 DOWELS IS 30.0 KIPS AND THE YIELD LOAD OF THE D2 DOWELS IS 13.2 KIPS. EMBEDMENT LENGTH TO BE DETERMINED BY THE MANUFACTURER OF THE ADHESIVELY ANCHORED DOWELS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE SPECIAL PROVISIONS.

ELEVATIONS ARE BASED ON AVAILABLE SURVEY INFORMATION AND EXISTING BRIDGE PLANS. CONTRACTOR TO FIELD VERIFY ELEVATIONS PRIOR TO CONSTRUCTION.

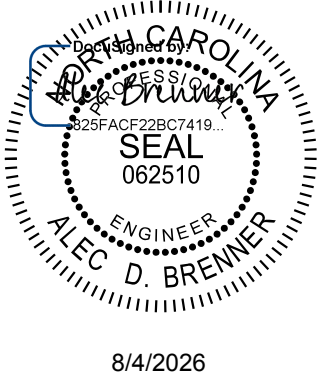
IN LIEU OF INCREASED SOLE PLATE THICKNESS FOR GIRDERS PLACED ON EXISTING END BENT CAP, THE CONTRACTOR MAY ELECT TO CONSTRUCT A BRIDGE SEAT ON THE EXISTING END BENT CAPS FOR GIRDERS AG4 AND AG16. FOR OPTIONAL BRIDGE SEAT DETAILS, SEE "END BENT 1 SECTION AND DETAILS" SHEET.



BEARING DETAIL

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 32+53.16 -Y2-

SHEET 1 OF 4



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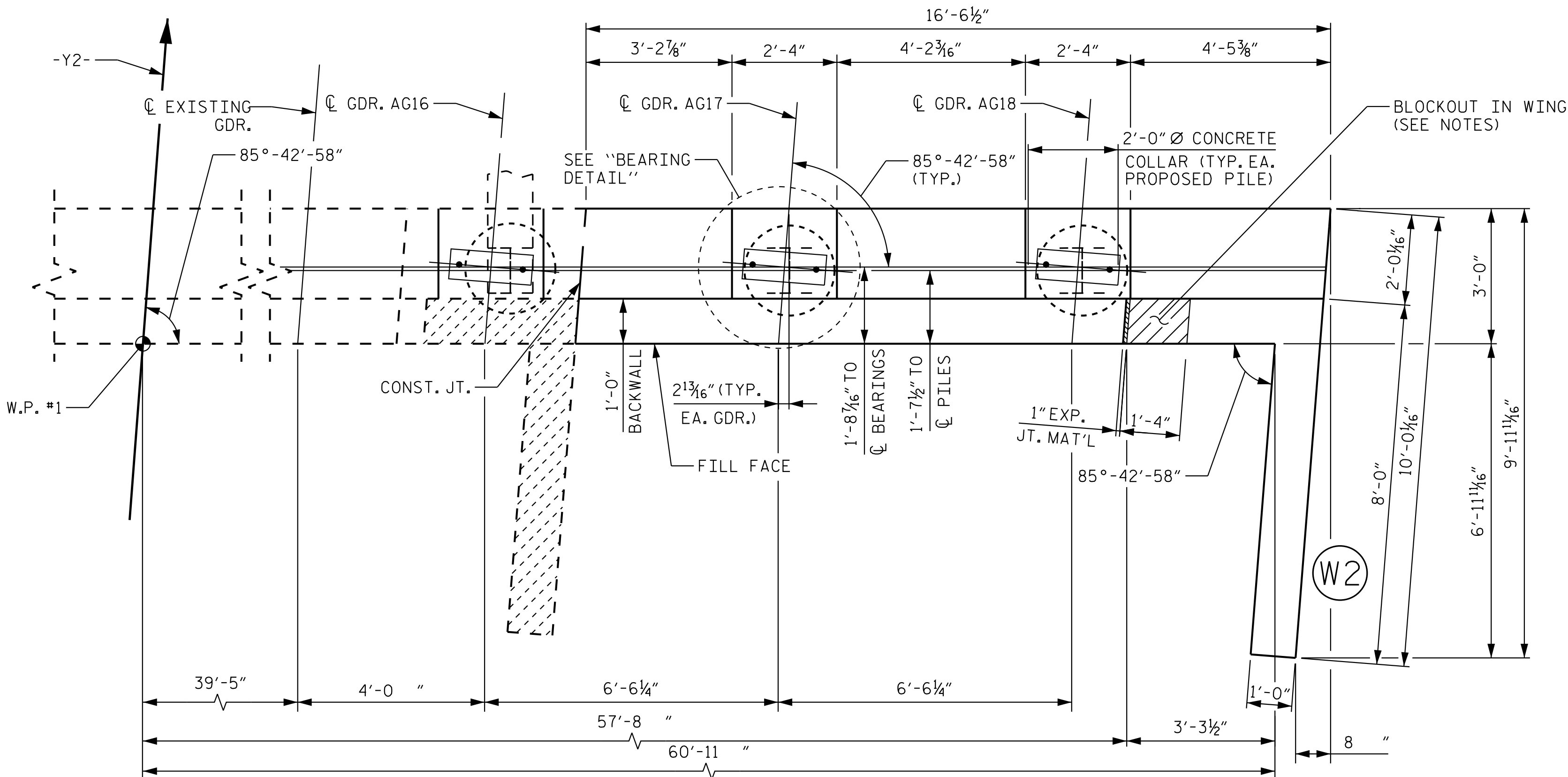
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1
LEFT EXTENSION

REVISIONS						SHEET NO. S4-43
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 63
2			4			

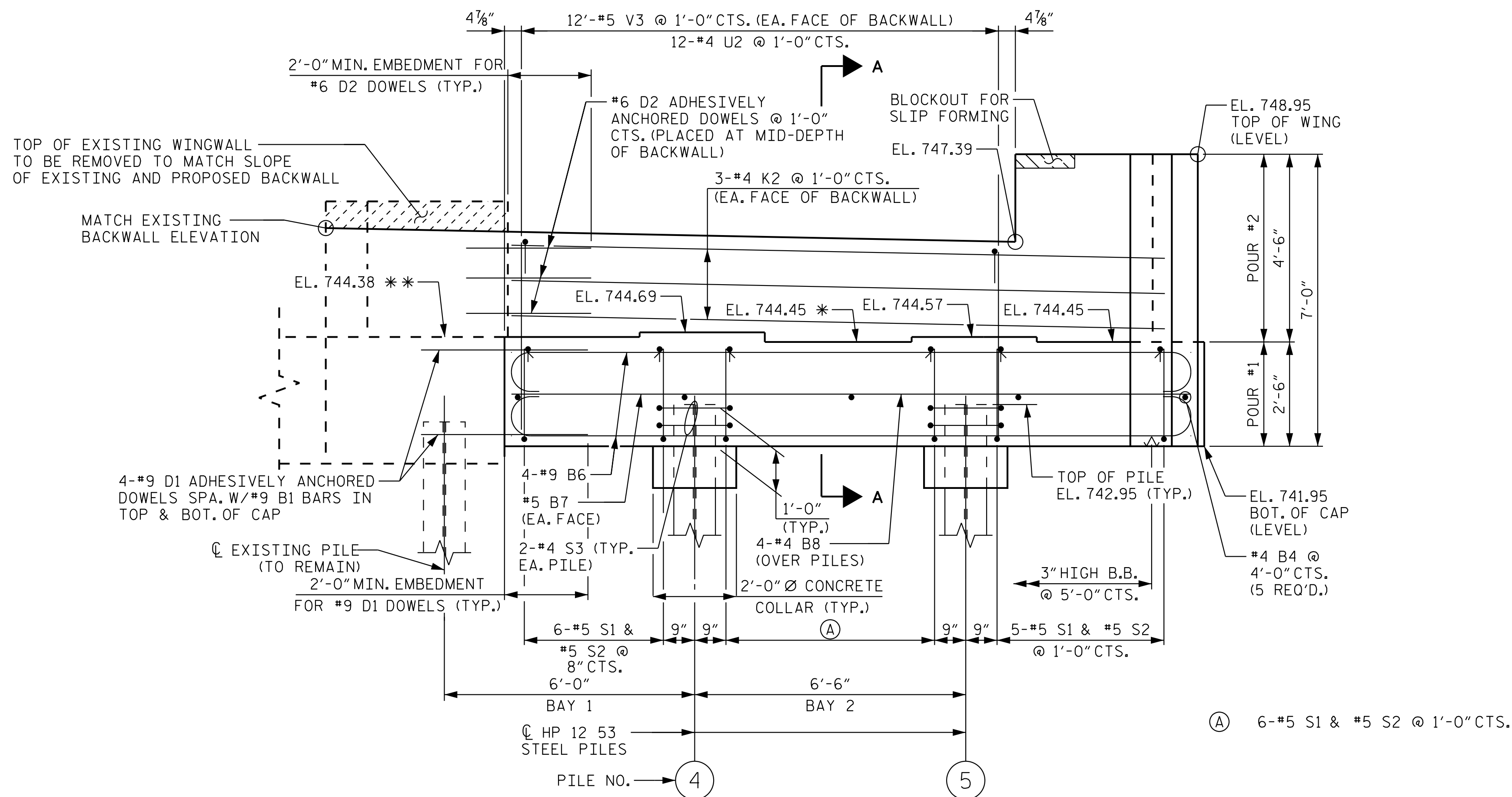
STR. #4

K:\B01_Structures\Bridges\N\01036524 - I-5715 Structure Design\Cad\Drawn\Site *2\Structure 4\Final\404-087-15175_SWU\2-590358_044.dgn 8/2/2026



PLAN

AREA OF EXISTING WINGWALL TO BE REMOVED

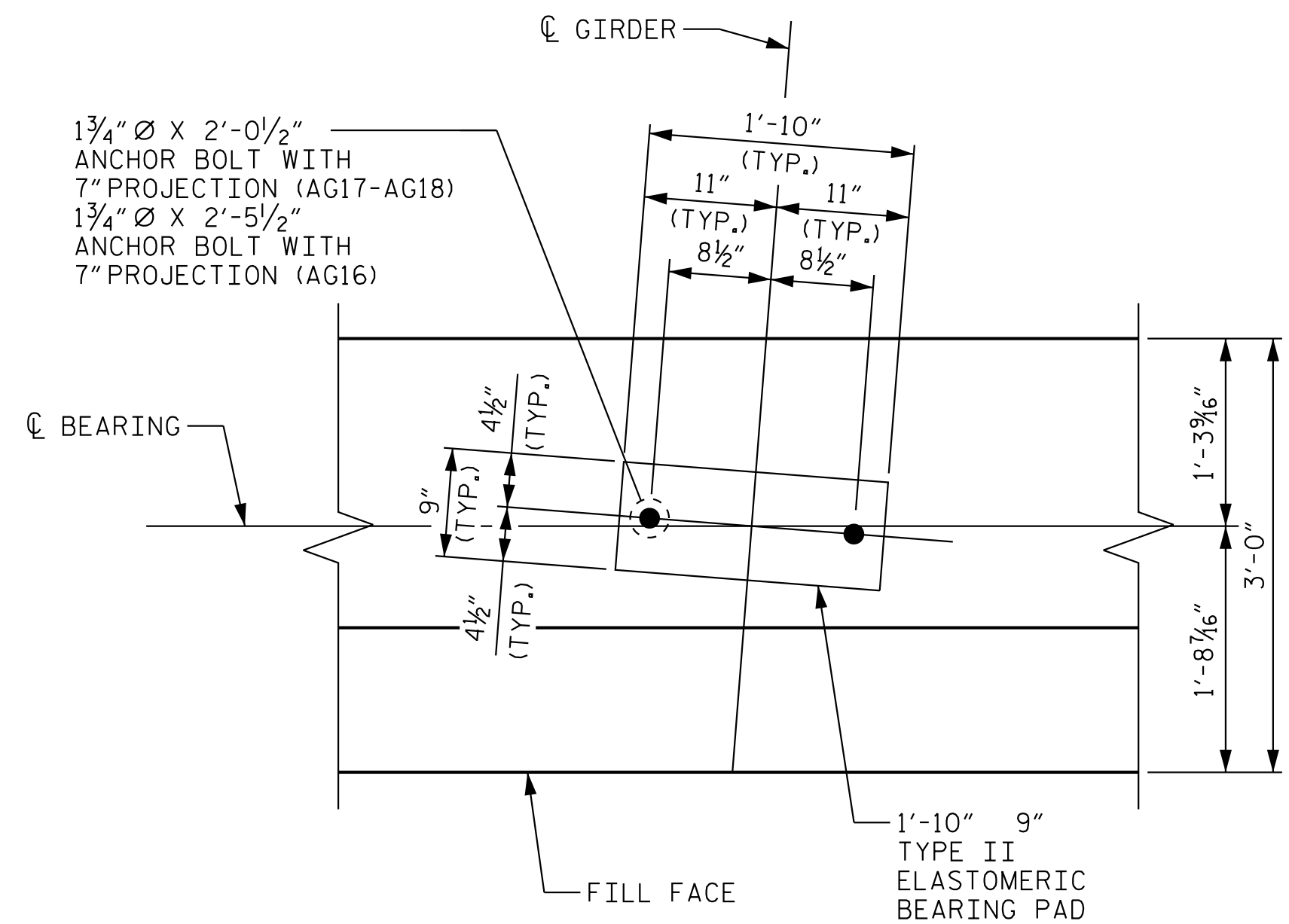


ELEVATION

* FOR LOCATION OF ELEVATION BETWEEN BRIDGE SEATS, SEE "SECTION A-A" ON SHEET 4 OF 4
** BEAM SEAT ELEVATION OF NEW GIRDER ON EXISTING CAP AT CL OF BEARING
REINFORCING IN WING NOT SHOWN FOR CLARITY, FOR DETAILS SEE SHEET 3 OF 4

NOTES

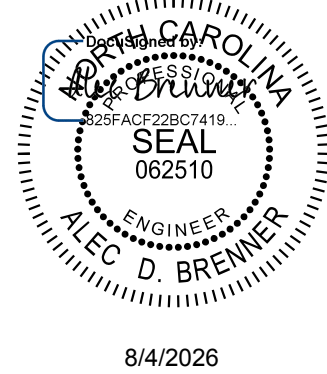
FOR NOTES, SEE SHEET 1 OF 4.



BEARING DETAIL

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 32+53.16 -Y2-

SHEET 2 OF 4



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RALEIGH

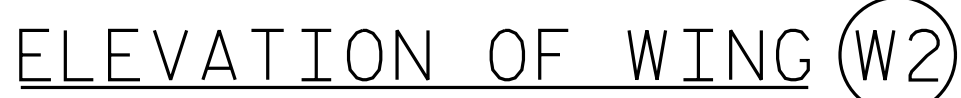
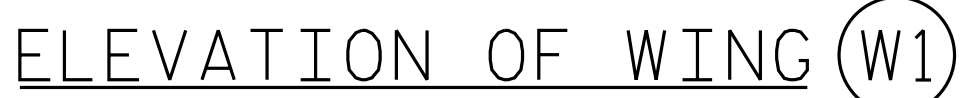
SUBSTRUCTURE
END BENT 1
RIGHT EXTENSION

REVISIONS						SHEET NO. S4-44
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 63
2			4			

STR. #4

DRAWN BY: T. K. BOYD DATE: 4/26
CHECKED BY: A. D. BRENNER DATE: 4/26
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 4/26

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SHEET 3 OF 4

REVISIONS						SHEET NO. S4-45
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1			3			TOTAL SHEETS 63
2			4			

STR. #4

Professional Engineer Seal for North Carolina, License No. 062510, Engineer ALEC D. BRENNER.

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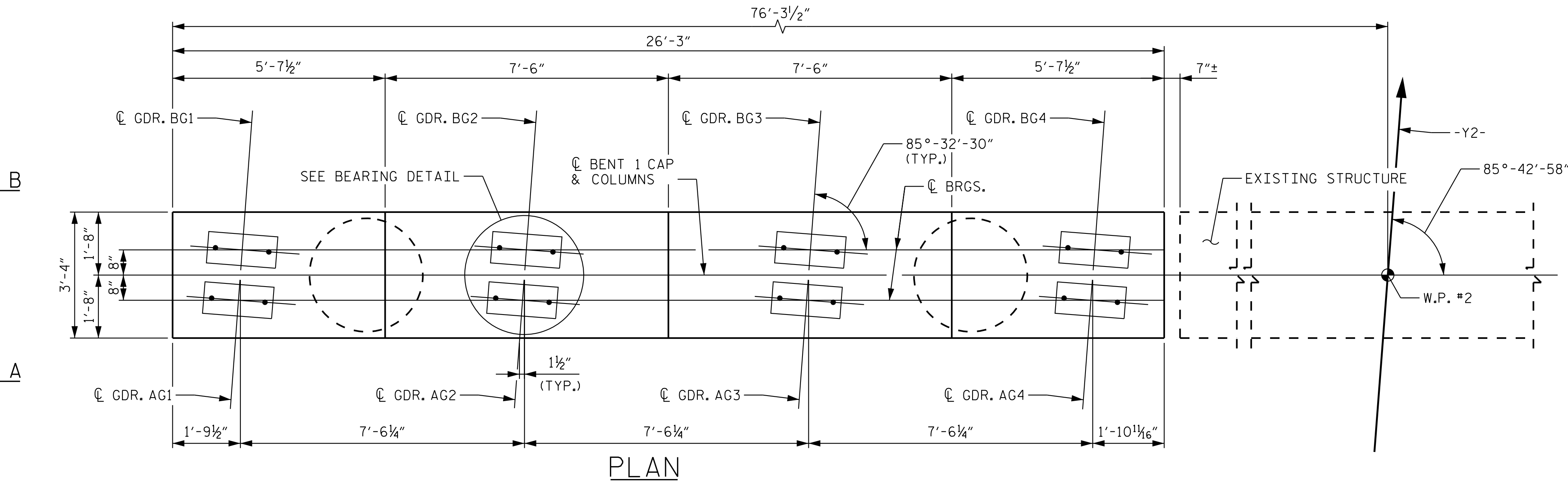
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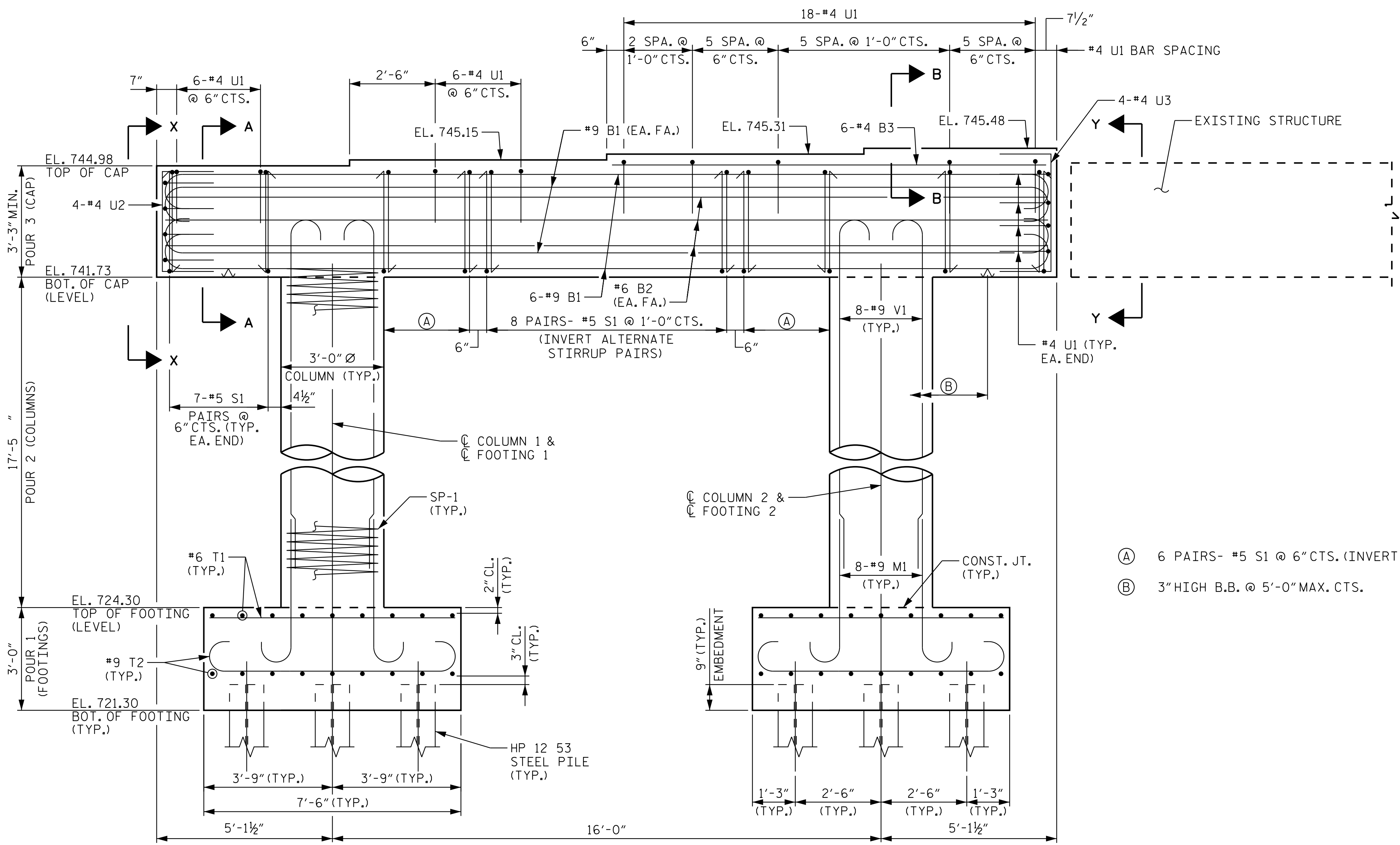
K:\BRI-Structures\Bridges\N\01036524 - I-5715 Structure Design\Cad\Drawn\Site *2\Structure 4\Final\404-093-15115.SWU.B1.590358.047.dgn 8/2/2026

SPAN B

SPAN A



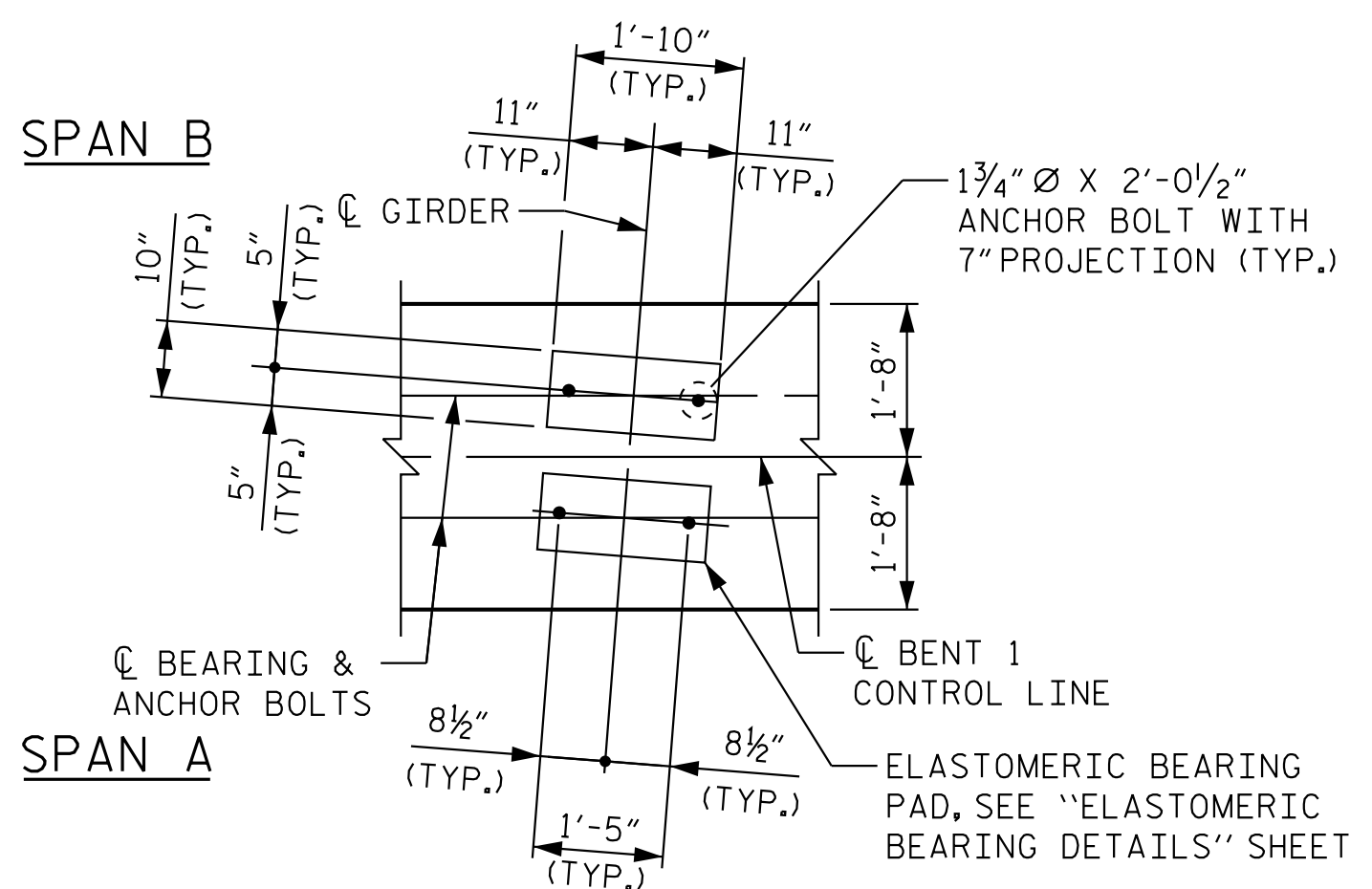
PLAN



ELEVATION

NOTES

- FOR "VIEW X-X", SEE "BENT 1" SHEET 2 OF 4.
- FOR "SECTION A-A" AND "PARTIAL SECTION B-B", SEE "BENT 1" SHEET 2 OF 4.
- FOR REINFORCING BILL OF MATERIAL, SEE "BENT 1" SHEET 2 OF 4.
- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR COLUMN STEEL AND ANCHOR BOLTS.
- HOOKS ON "V" AND "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
- FOR ADDITIONAL FOUNDATION NOTES, SEE "GENERAL DRAWING" SHEET 3 OF 4.
- THE TOP SURFACE AREAS OF THE BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.



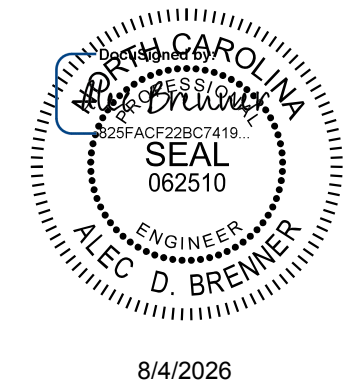
BEARING DETAIL

ALL DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS @ EACH BRIDGE SEAT LOCATION.

- (A) 6 PAIRS- #5 S1 @ 6"CTS. (INVERT ALTERNATE STIRRUP PAIRS)
- (B) 3" HIGH B.B. @ 5'-0" MAX. CTS.

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 32+53.16 -Y2-

SHEET 1 OF 4



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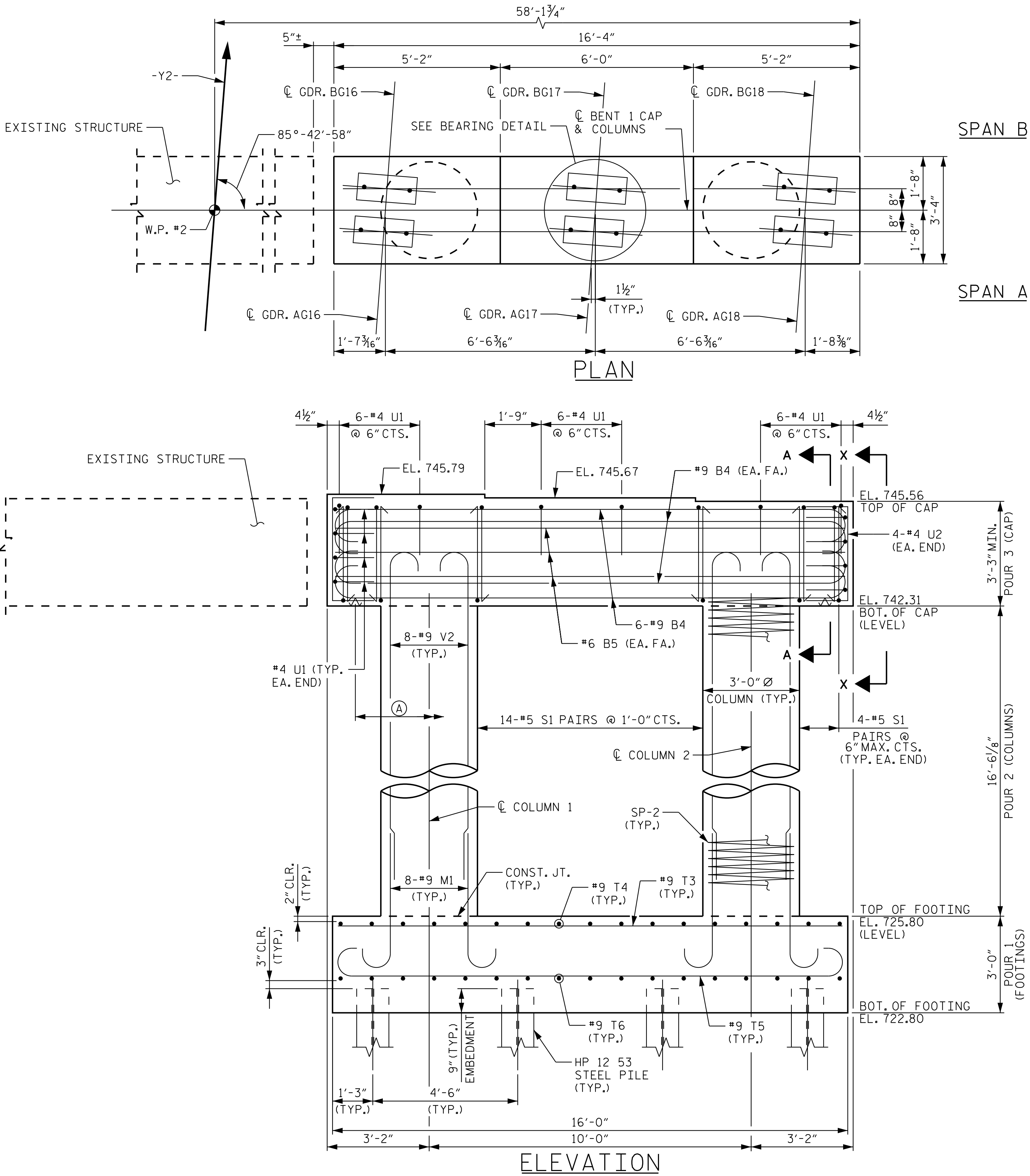
DRAWN BY: T. K. BOYD DATE: 4/26
CHECKED BY: A. D. BRENNER DATE: 4/26
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 4/26

REVISIONS						SHEET NO. S4-47
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 63
2			4			

STR. #4

K:\PDI_Structures\Bridges\NC\01036524 - I-5715 Structure Design\Cad\Drawn\Site *2\Structure 4\Final\404.097.15175.SWU.B3.590358.049.dgn 8/2/2026

DRAWN BY: T. K. BOYD DATE: 4/26
CHECKED BY: A. D. BRENNER DATE: 4/26
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 4/26



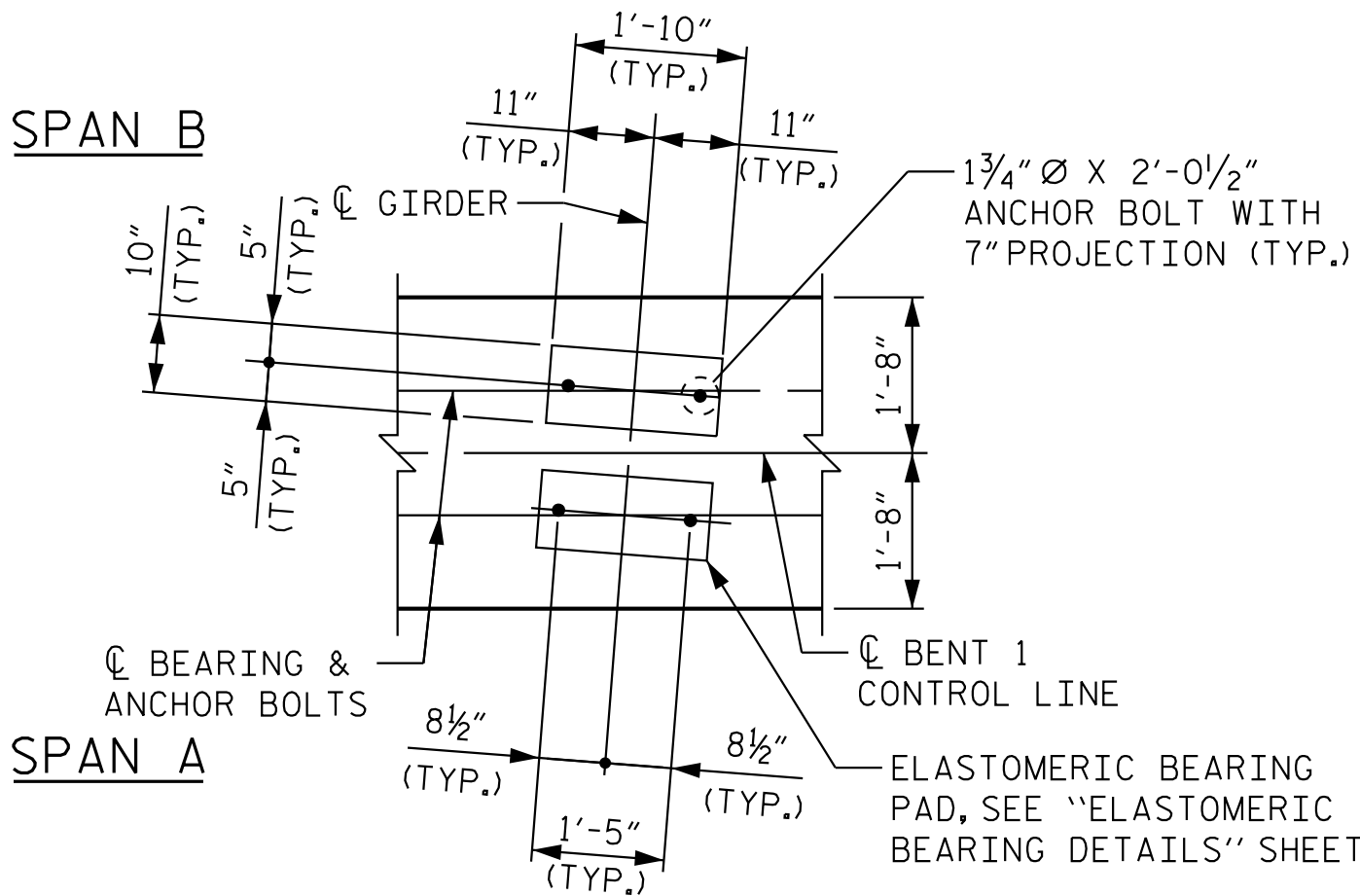
NOTES

FOR "VIEW X-X", SEE "BENT 1" SHEET 4 OF 4.

FOR "SECTION A-A" AND "PARTIAL SECTION B-B", SEE "BENT 1" SHEET 4 OF 4.

FOR REINFORCING BILL OF MATERILA, SEE "BENT 1" SHEET 4 OF 4.

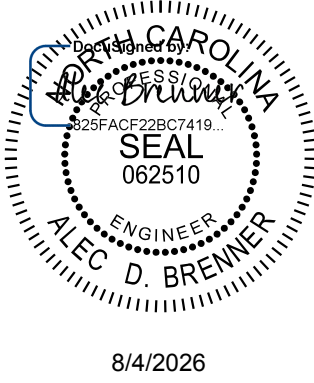
FOR ADDITIONAL NOTES, SEE "BENT 1", SHEET 1 OF 4.



BEARING DETAIL

ALL DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS @ EACH BRIDGE SEAT LOCATION.

(A) 3" HIGH B.B. @ 5'-0" CTS. MAX.



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MECKLENBURG COUNTY
STATION: 32+53.16 -Y2-

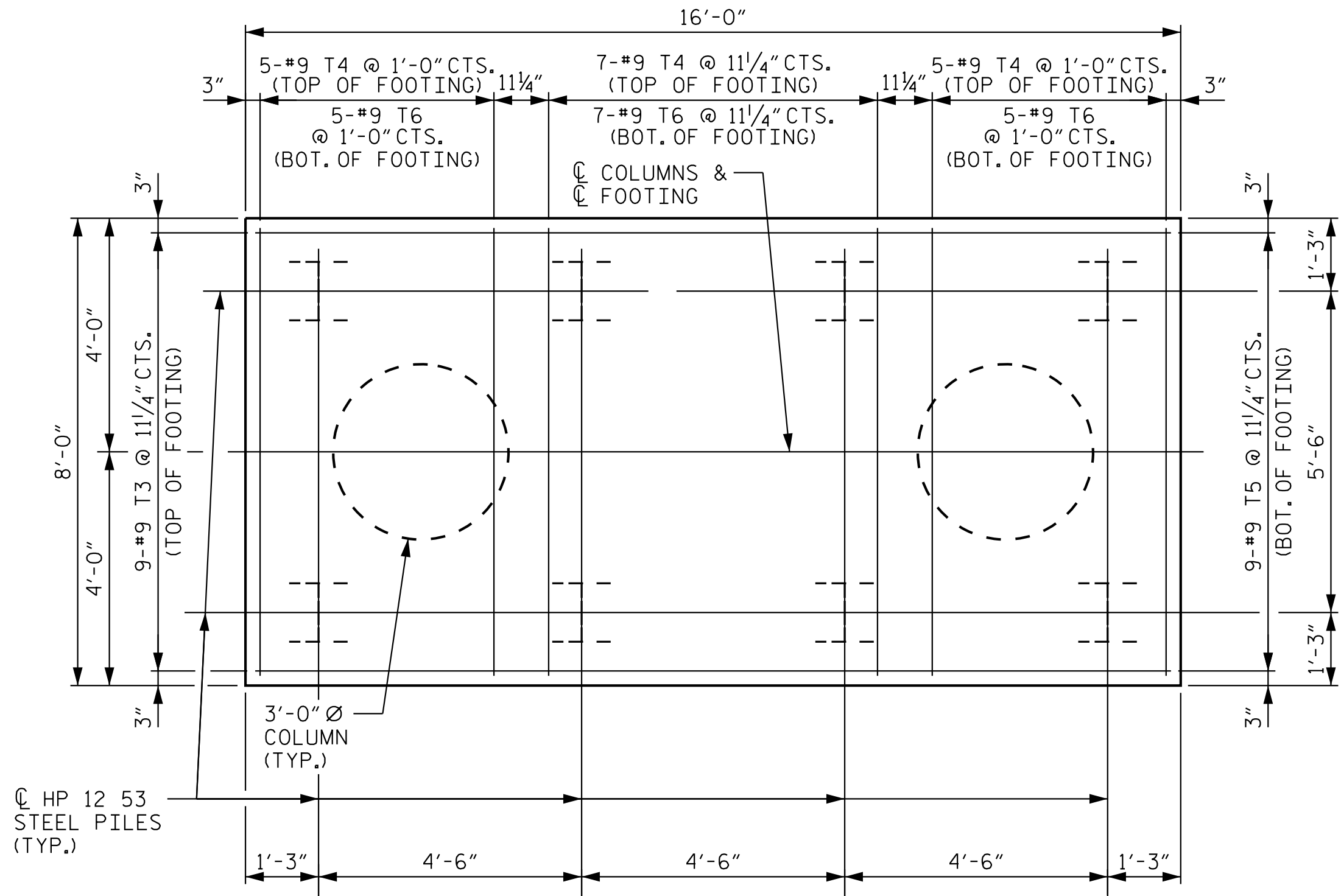
SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
SUBSTRUCTURE
BENT 1
RIGHT EXTENSION
PLAN AND ELEVATION

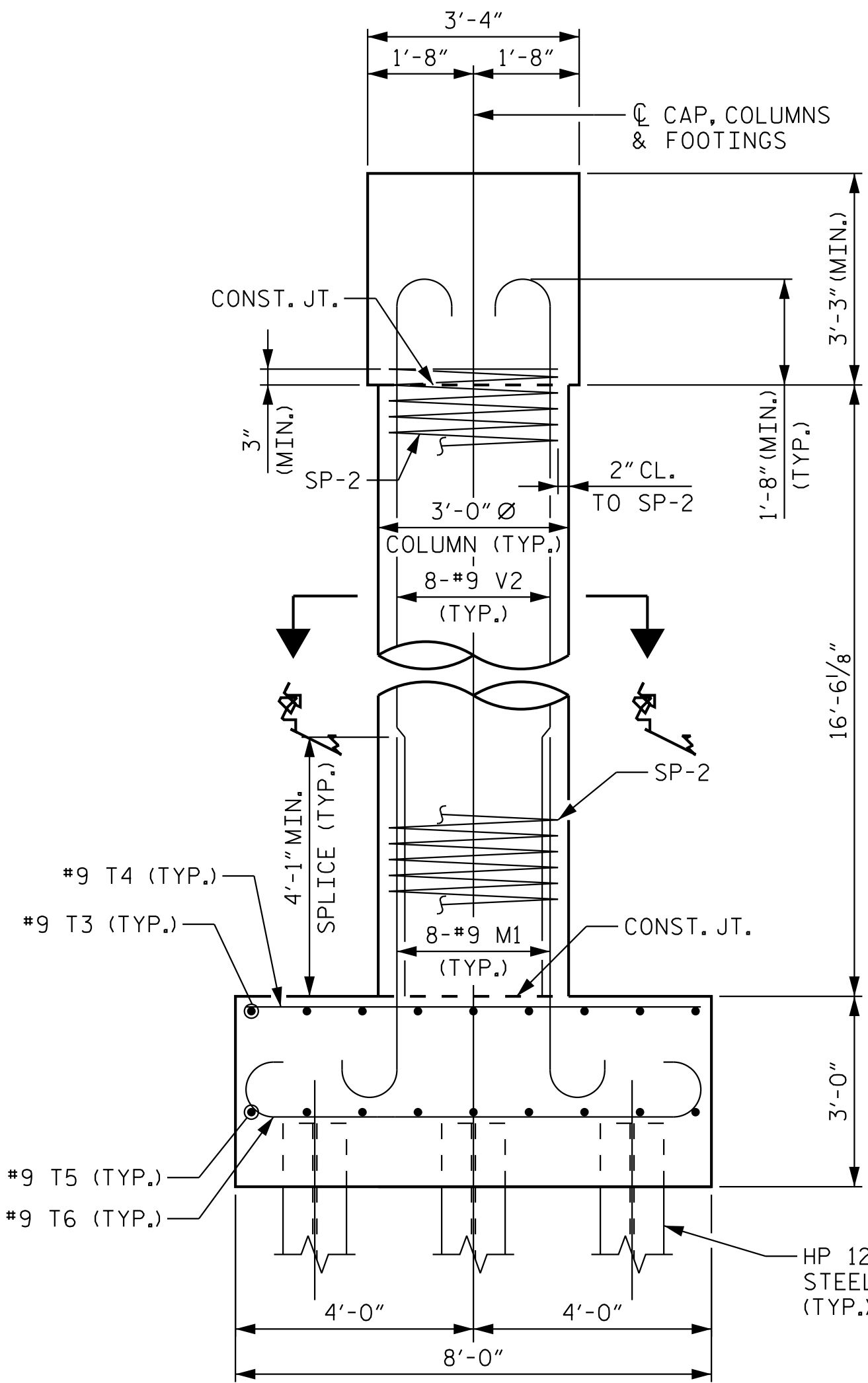
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 63
2			4			

STR. #4

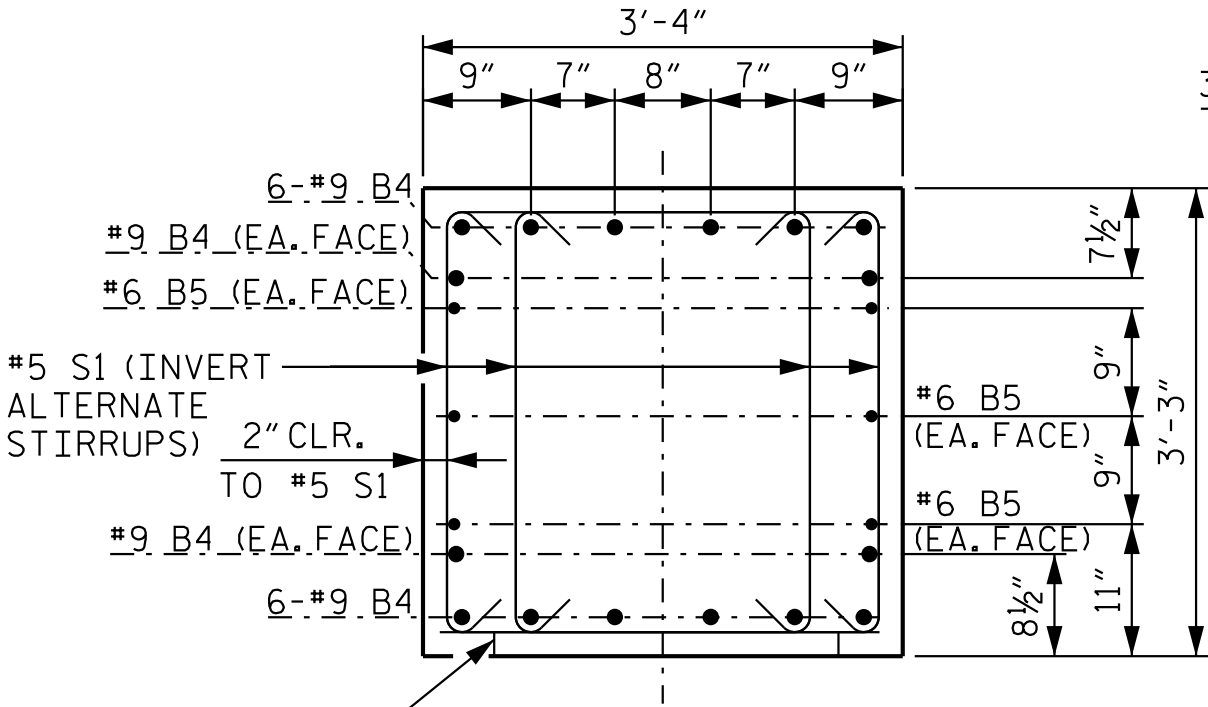
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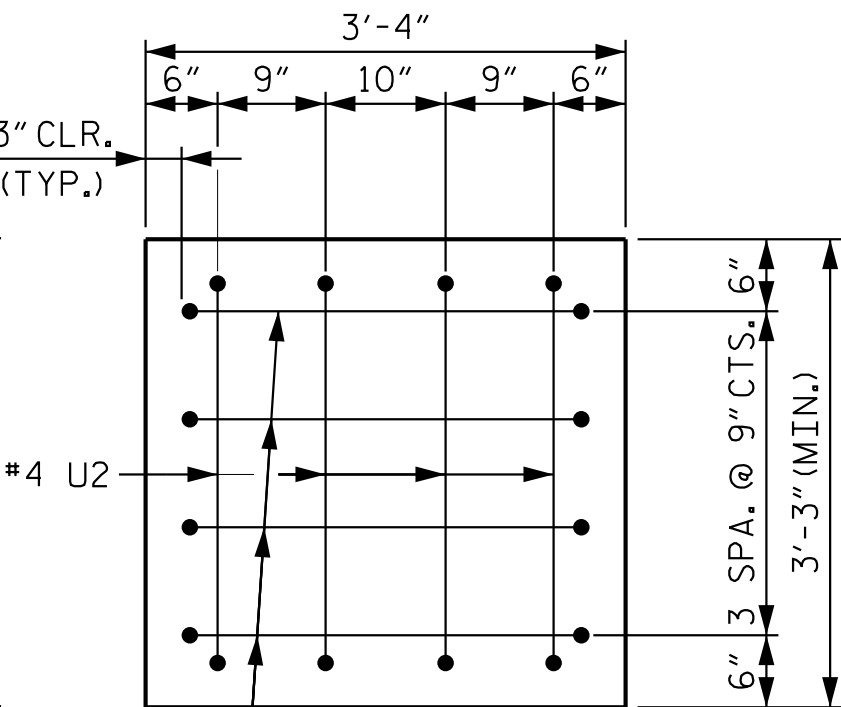
PLAN OF FOOTING



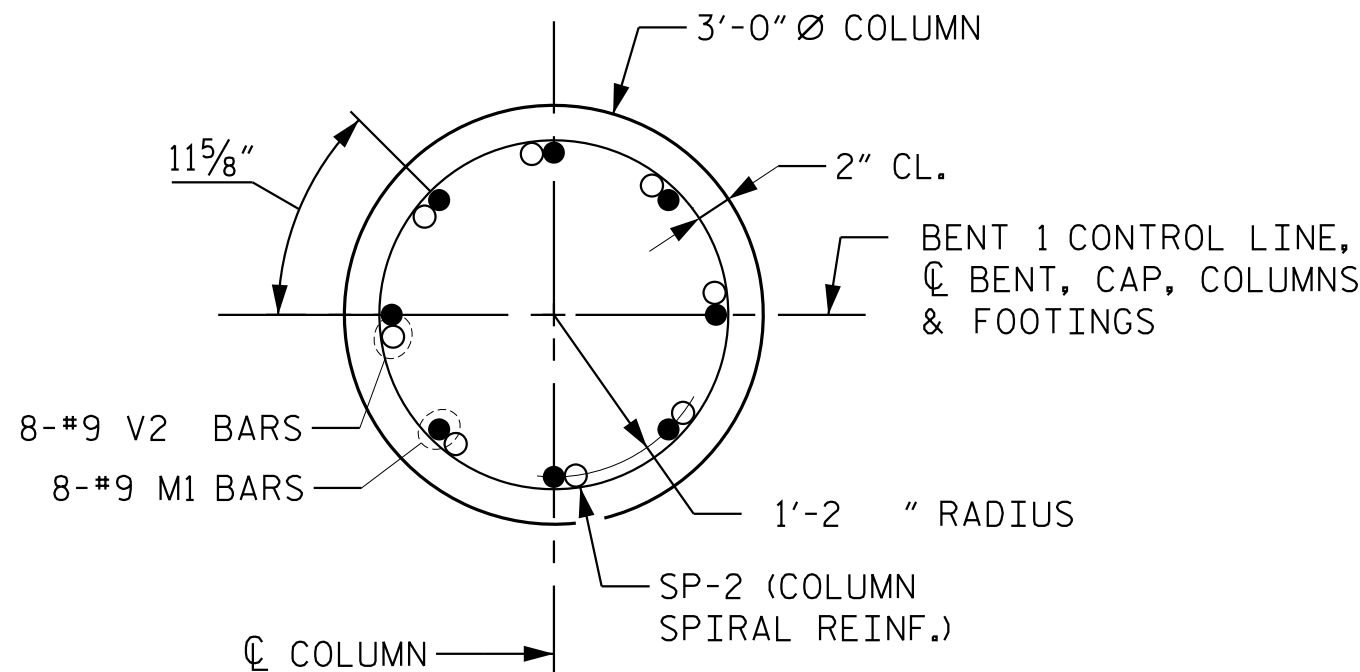
END VIEW



SECTION A-A

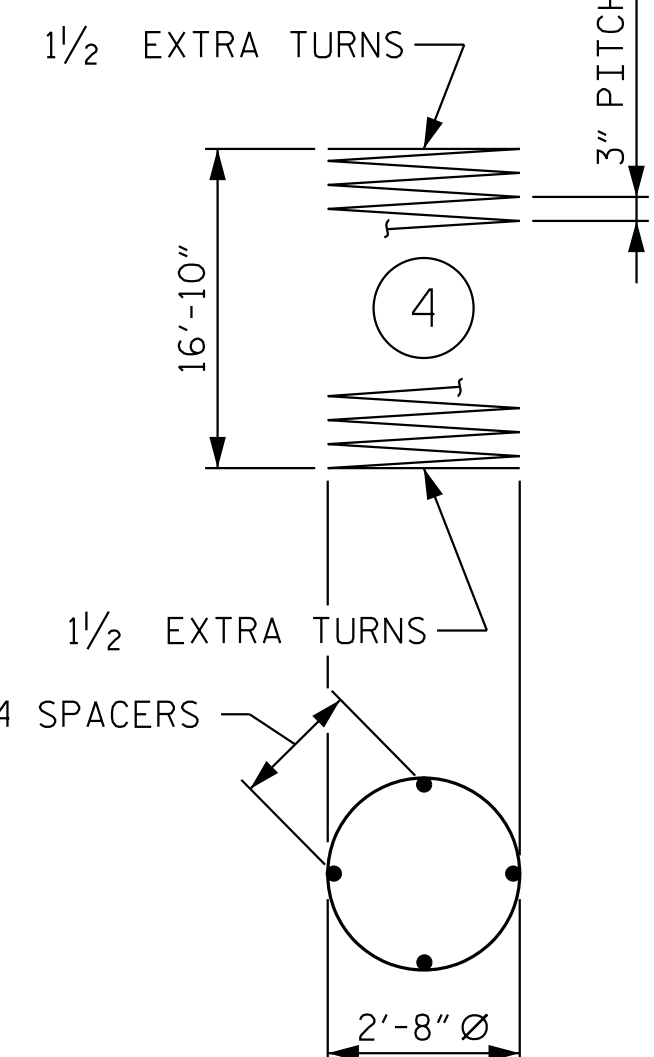
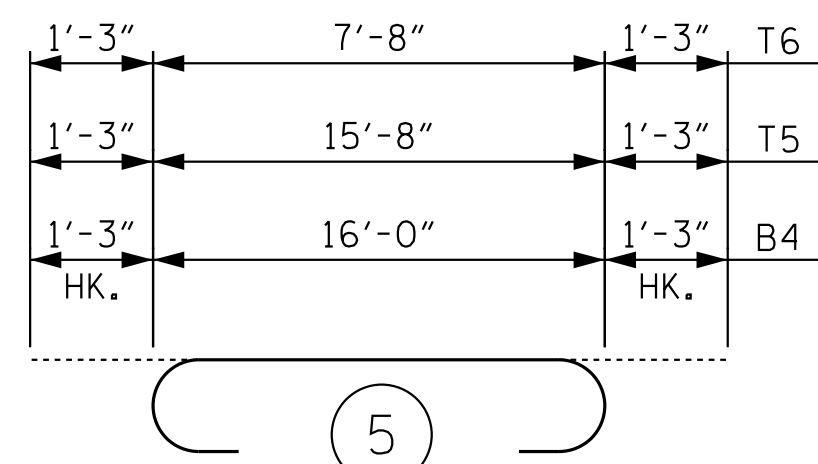
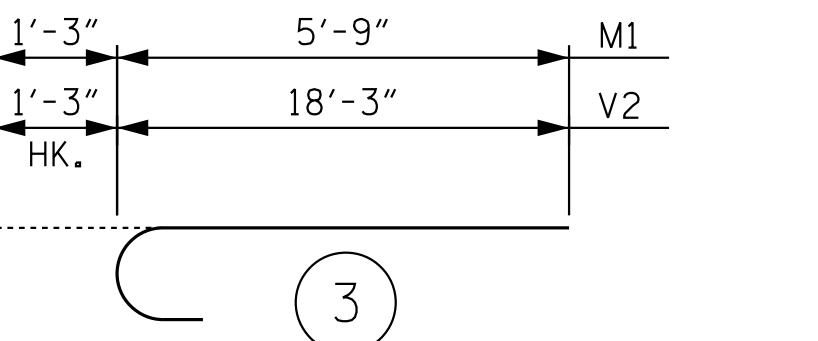
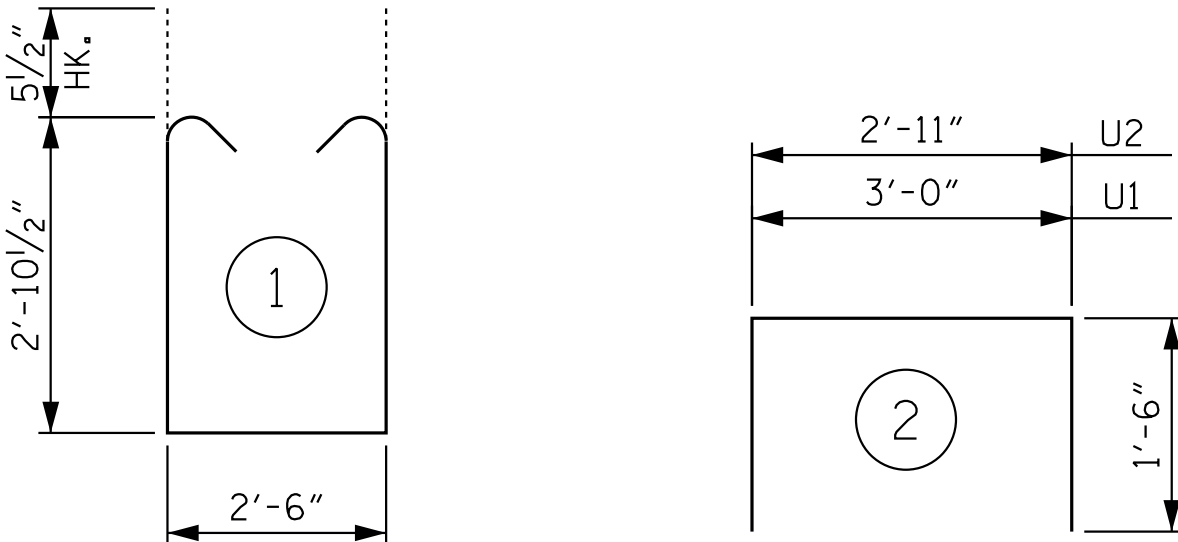


END VIEW X-X
(TYPICAL EACH END)



SECTION C-C

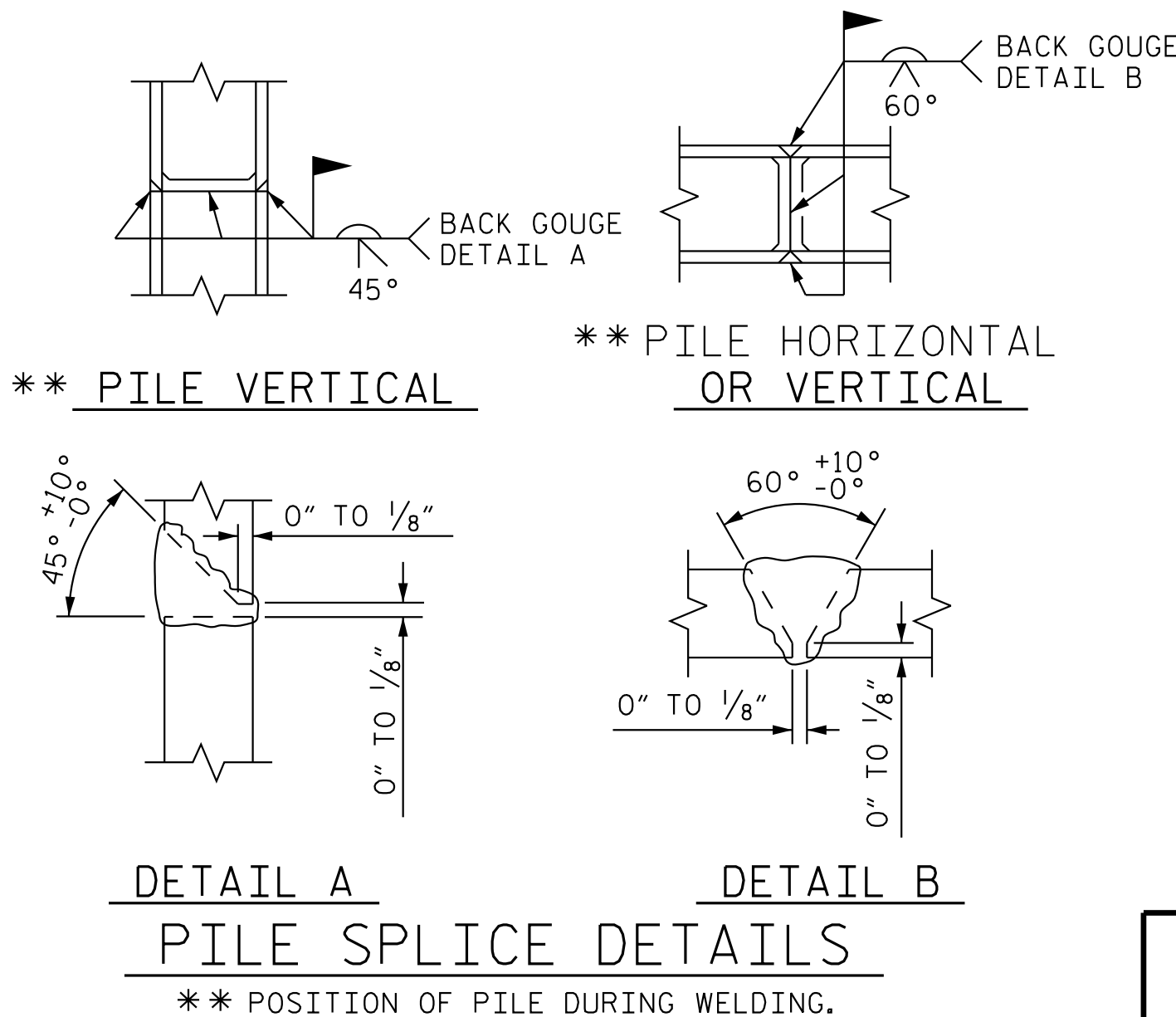
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

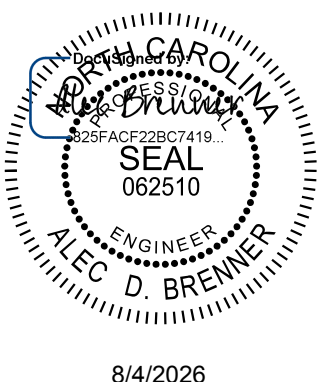
BILL OF MATERIAL

BENT 1					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B4	16	#9		18'-6"	1,006
B5	6	#6	STR	16'-0"	144
M1	16	#9	3	7'-0"	381
S1	44	#5	1	9'-2"	421
T3	9	#9	STR	15'-8"	479
T4	17	#9	STR	7'-8"	443
T5	9	#9	5	18'-2"	556
T6	17	#9	5	10'-2"	588
U1	26	#4	2	6'-0"	104
U2	8	#4	2	5'-11"	32
V2	16	#9	3	19'-6"	1,061
REINFORCING STEEL					5,215 LBS.
SP-2	2	**	4	577'-10"	772
SPIRAL COLUMN REINFORCING STEEL					772 LBS.
** THE "SP" SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.					
BENT 1 TOTAL QUANTITIES					
CLASS A CONCRETE					
POUR 1 (FOOTINGS)				14.2 C.Y.	
POUR 2 (COLUMNS)				8.6 C.Y.	
POUR 3 (CAP)				6.8 C.Y.	
TOTAL CLASS A CONCRETE				29.6 C.Y.	



DETAIL A
PILE SPLICE DETAILS
** POSITION OF PILE DURING WELDING.

DETAIL B



8/4/2026

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PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 32+53.16 -Y2-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 1
RIGHT EXTENSION
SECTIONS & DETAILS

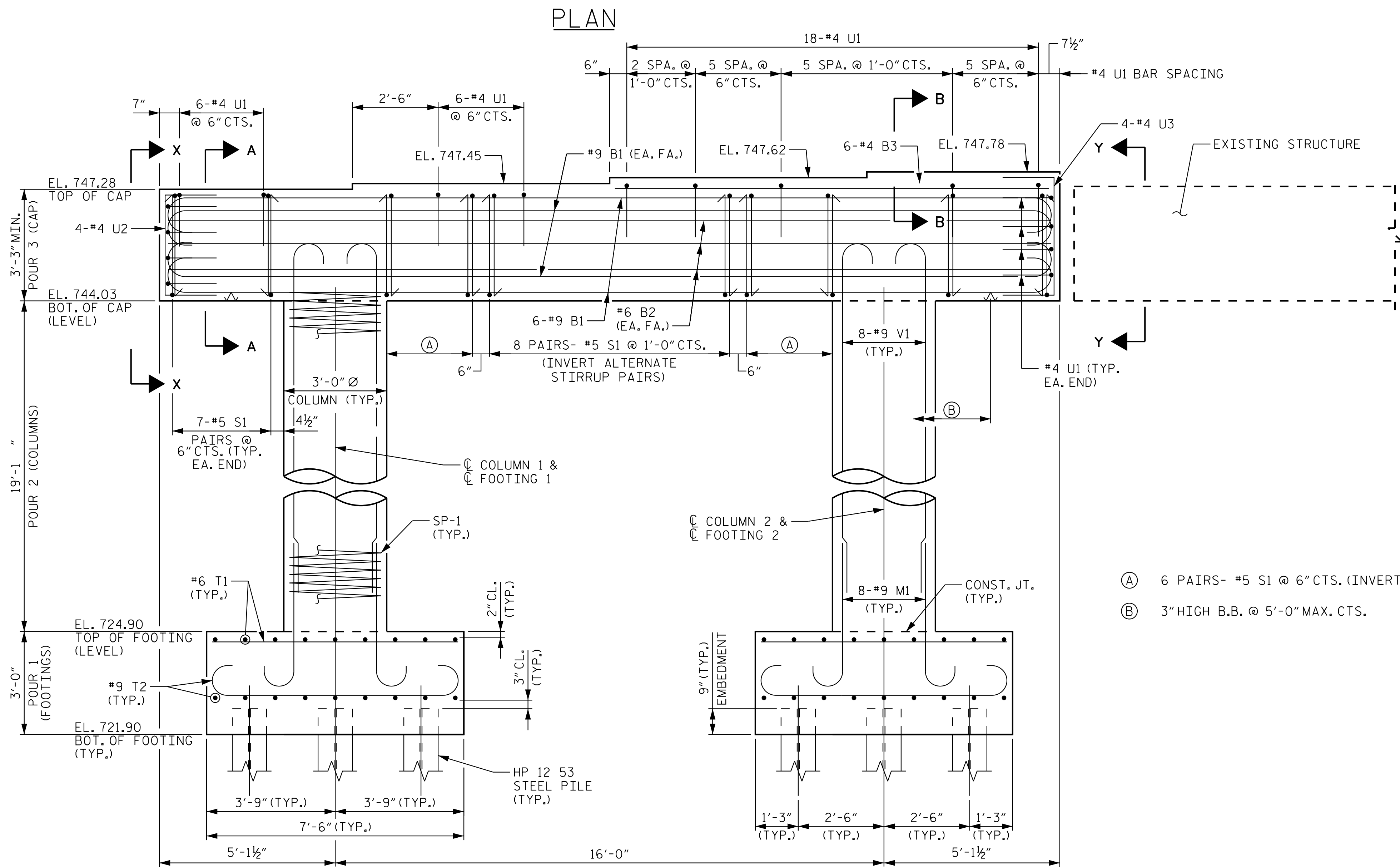
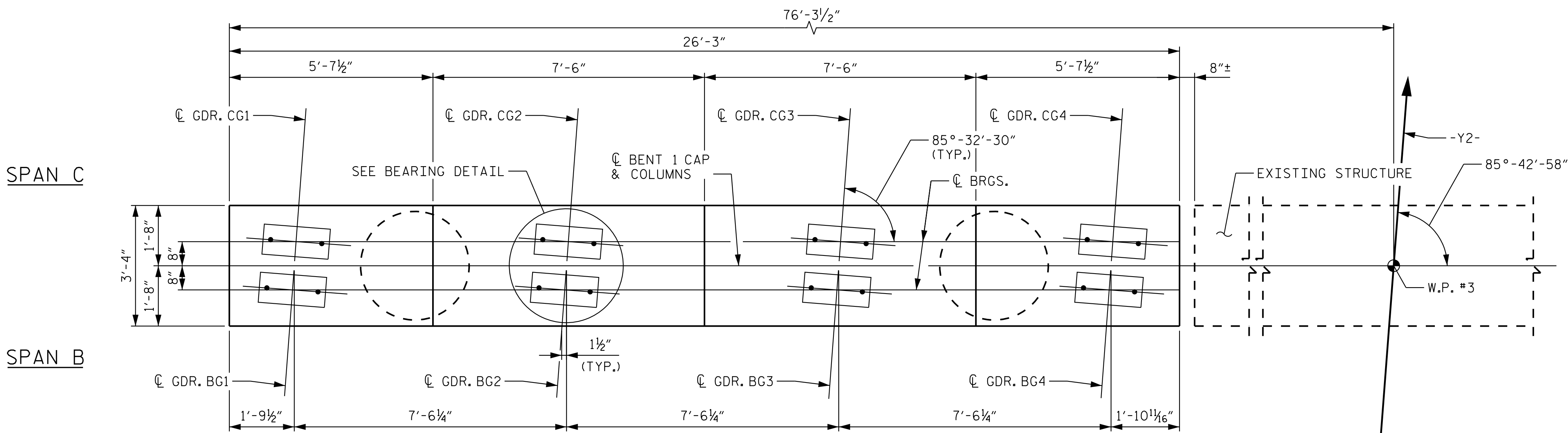
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 63
2			4			

STR. #4

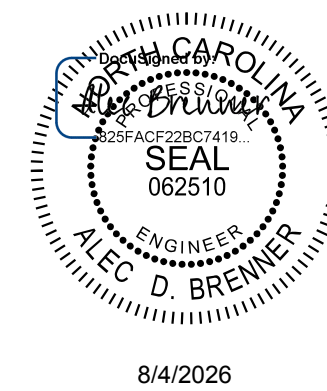
DRAWN BY: T. K. BOYD DATE: 4/26
CHECKED BY: A. D. BRENNER DATE: 4/26
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 4/26

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K:\BRI-Structures\Bridges\NC\01036524 - I-5715 Structure Design\Coord\gn\Site *2\Structure 4\Final\404-101-15715-SMU.B5-590358-051.dgn 8/2/2026



- Ⓐ 6 PAIRS- #5 S1 @ 6" CTS. (INVERT ALTERNATE STIRRUP PAIRS)
- Ⓑ 3" HIGH B.B. @ 5'-0" MAX. CTS.



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NOTES

FOR "VIEW X-X", SEE "BENT 2" SHEET 2 OF 4.

FOR "SECTION A-A" AND "PARTIAL SECTION B-B", SEE "BENT 2" SHEET 2 OF 4.

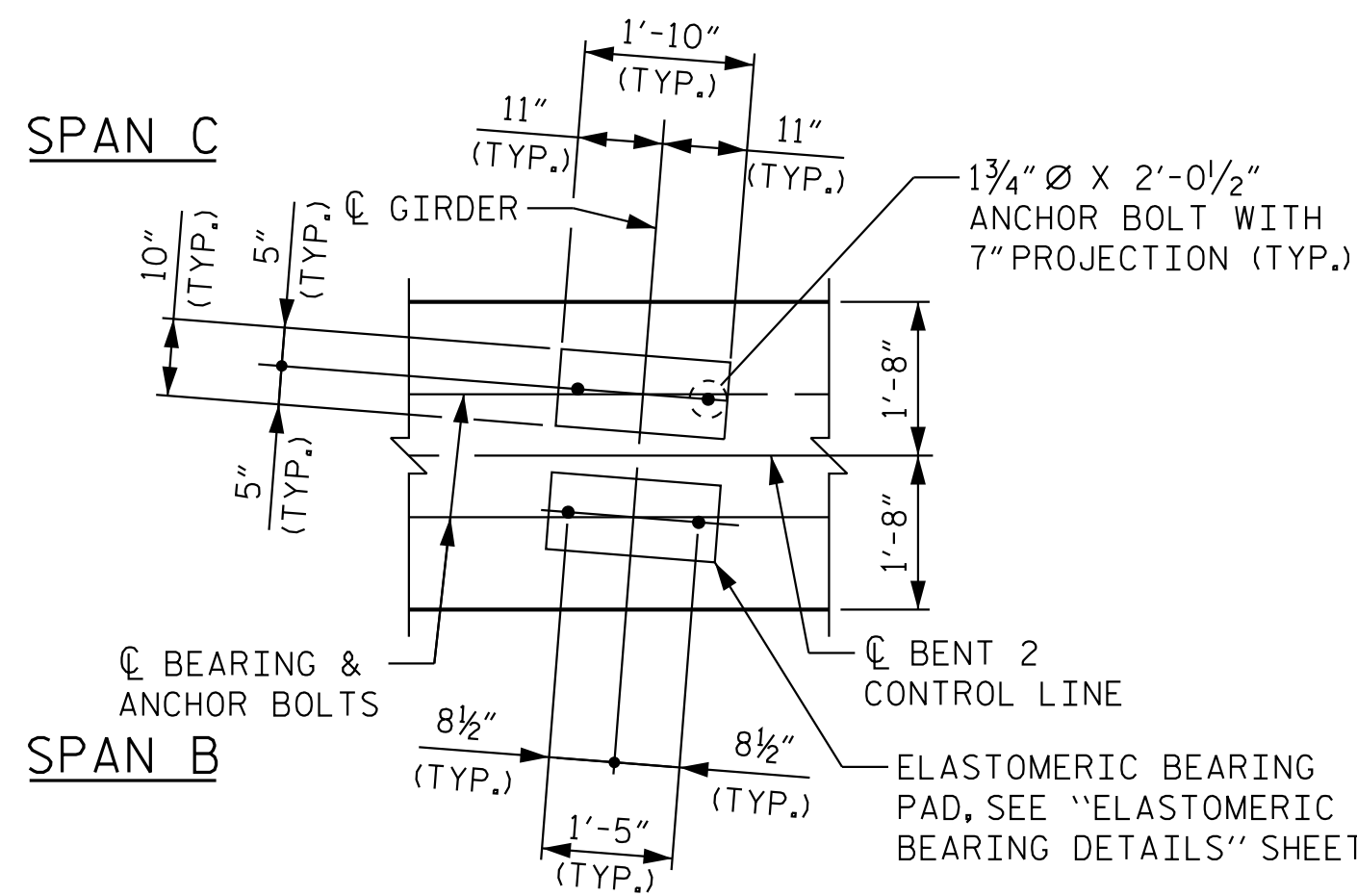
FOR REINFORCING BILL OF MATERIAL, SEE "BENT 2" SHEET 2 OF 4.

STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR COLUMN STEEL AND ANCHOR BOLTS.

HOOKS ON "V" AND "M" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

FOR ADDITIONAL FOUNDATION NOTES, SEE "GENERAL DRAWING" SHEET 3 OF 4.

THE TOP SURFACE OF THE BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.



BEARING DETAIL

ALL DIMENSIONS AND DETAILS SHOWN ARE TYPICAL FOR ALL BEARINGS @ EACH BRIDGE SEAT LOCATION.

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 32+53.16 -Y2-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

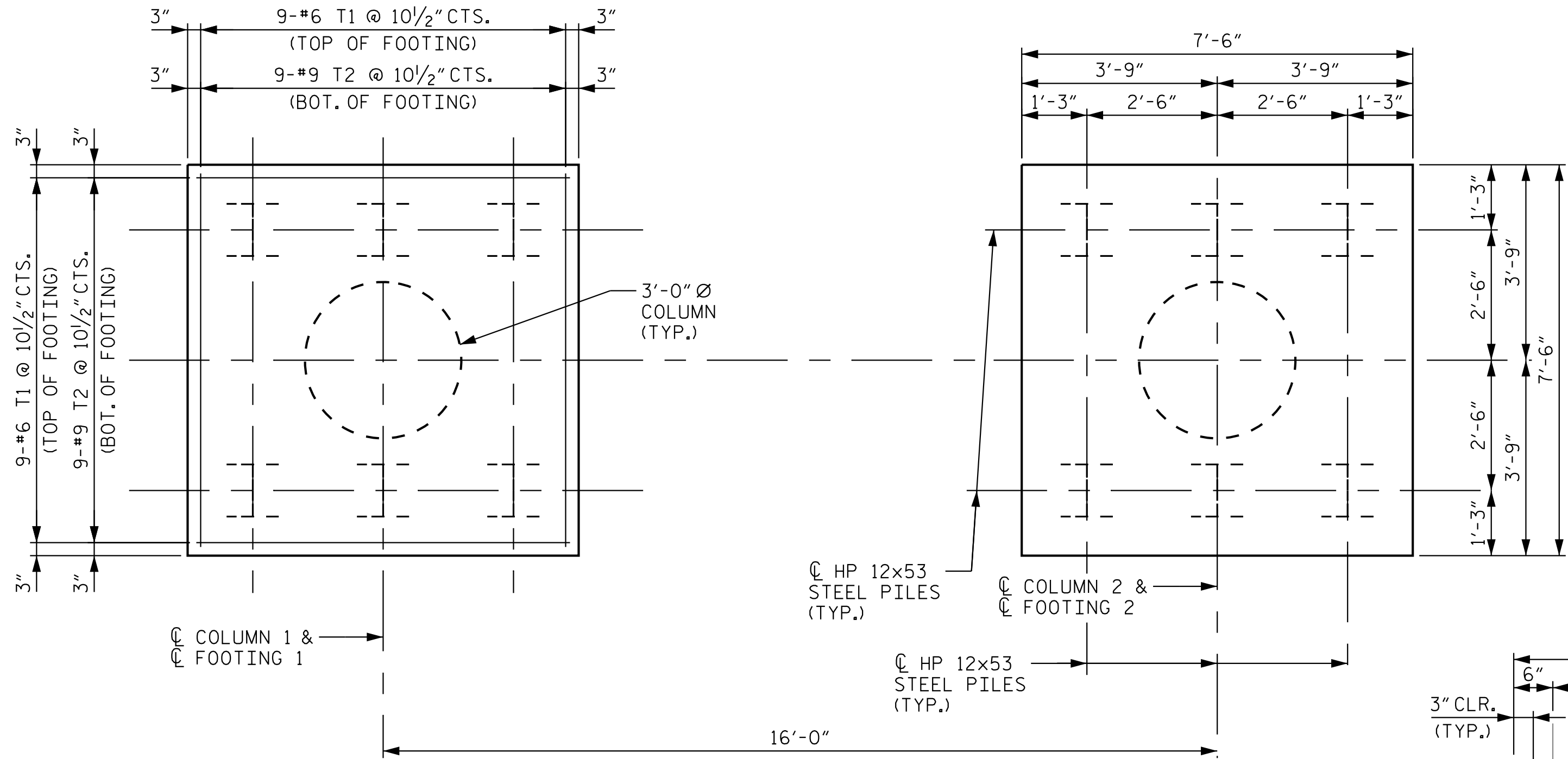
SUBSTRUCTURE
BENT 2
LEFT EXTENSION
PLAN AND ELEVATION

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

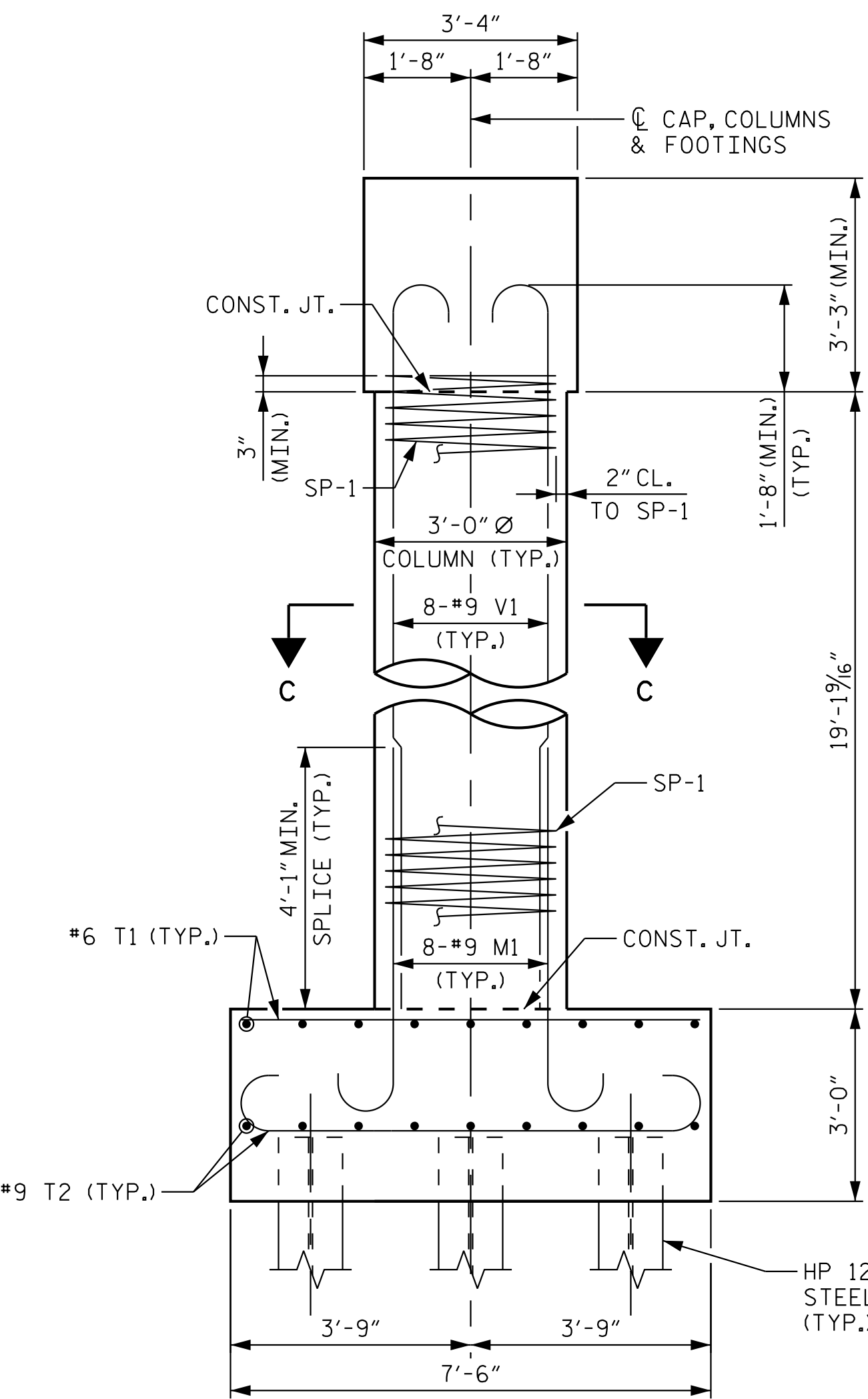
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CHECKED BY: A. D. BRENNER DATE: 4/26
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 4/26

STR. #4

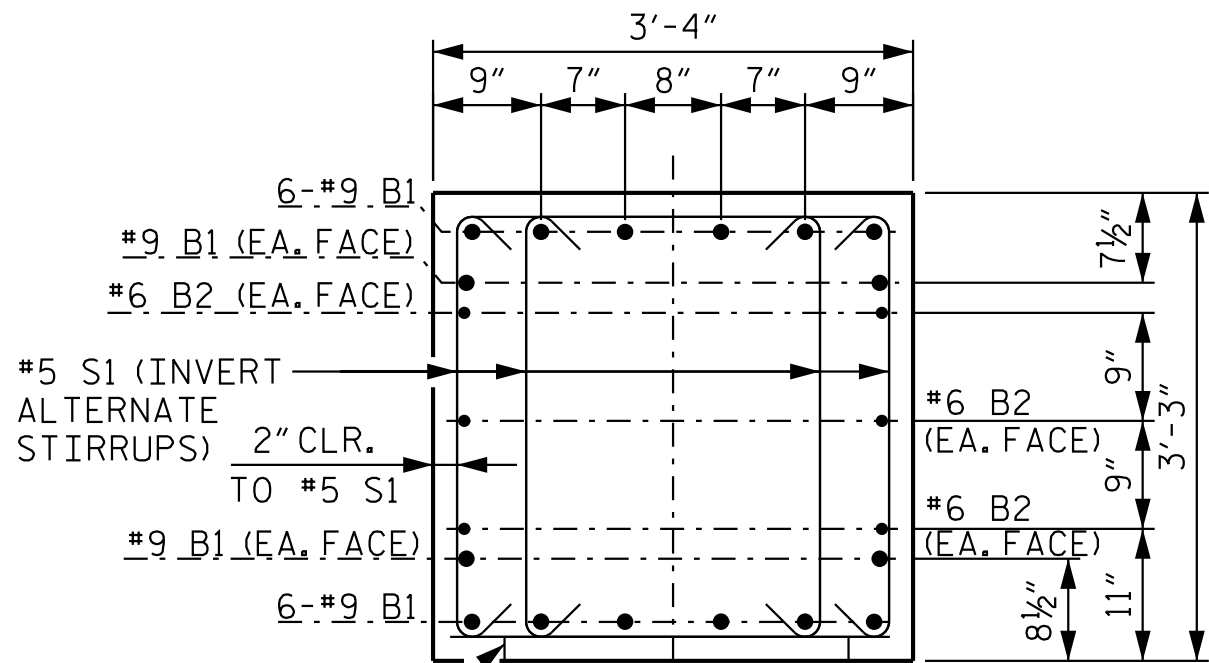
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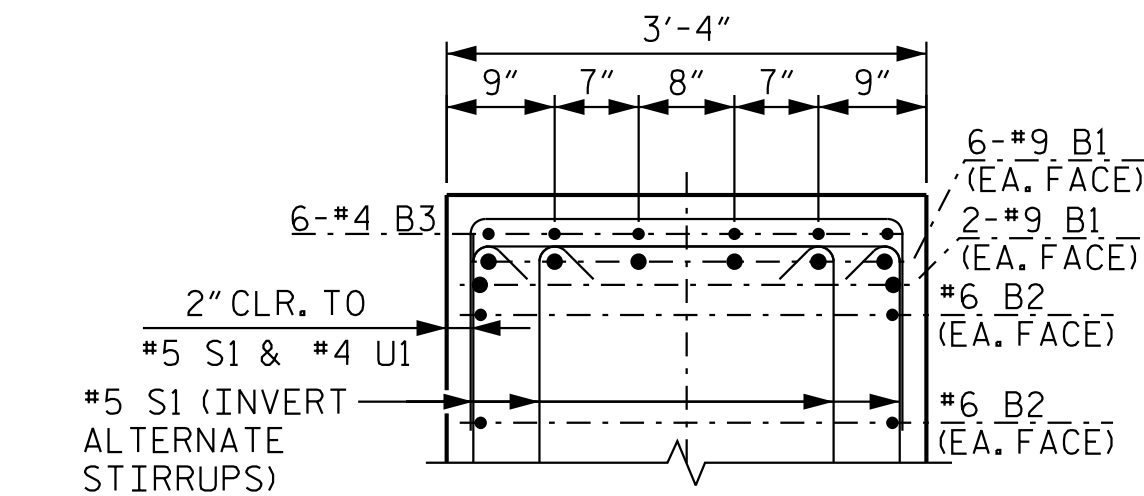
PLAN OF FOOTINGS



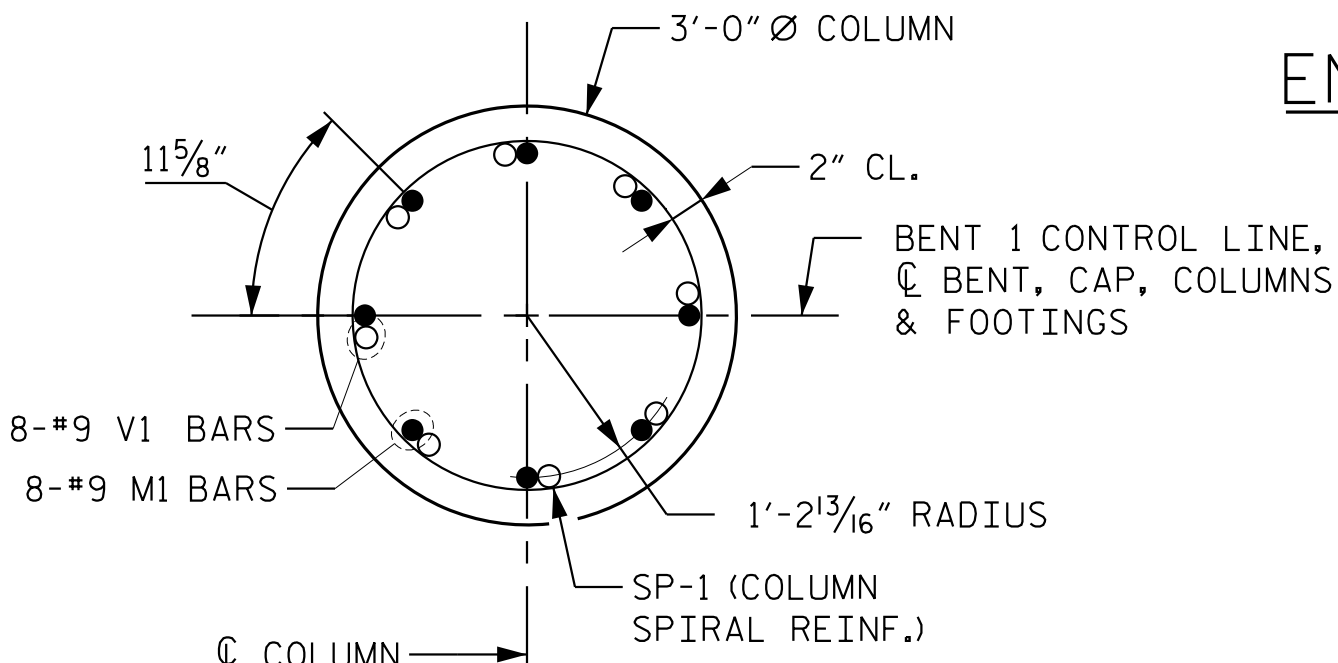
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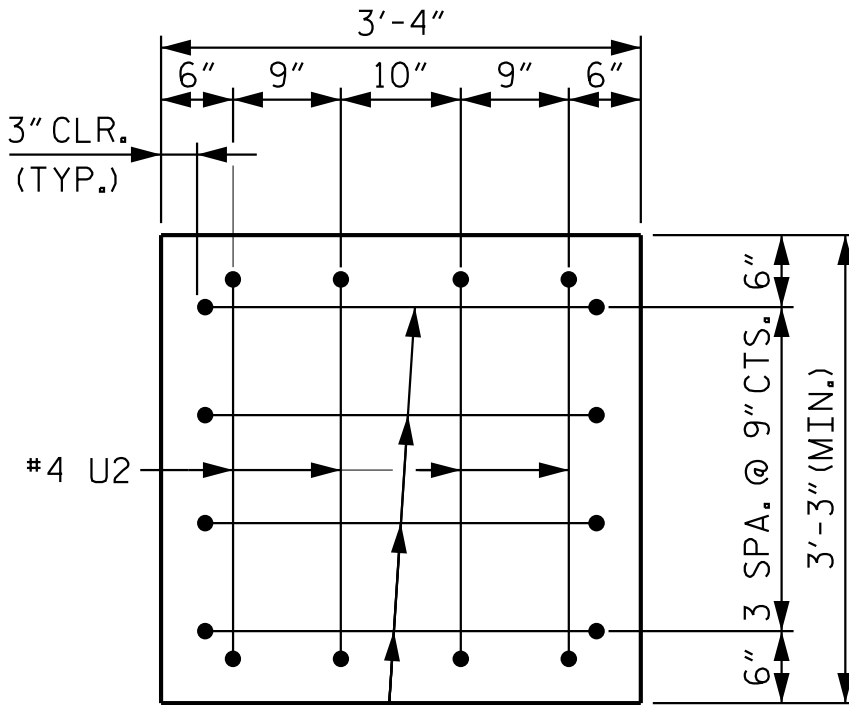
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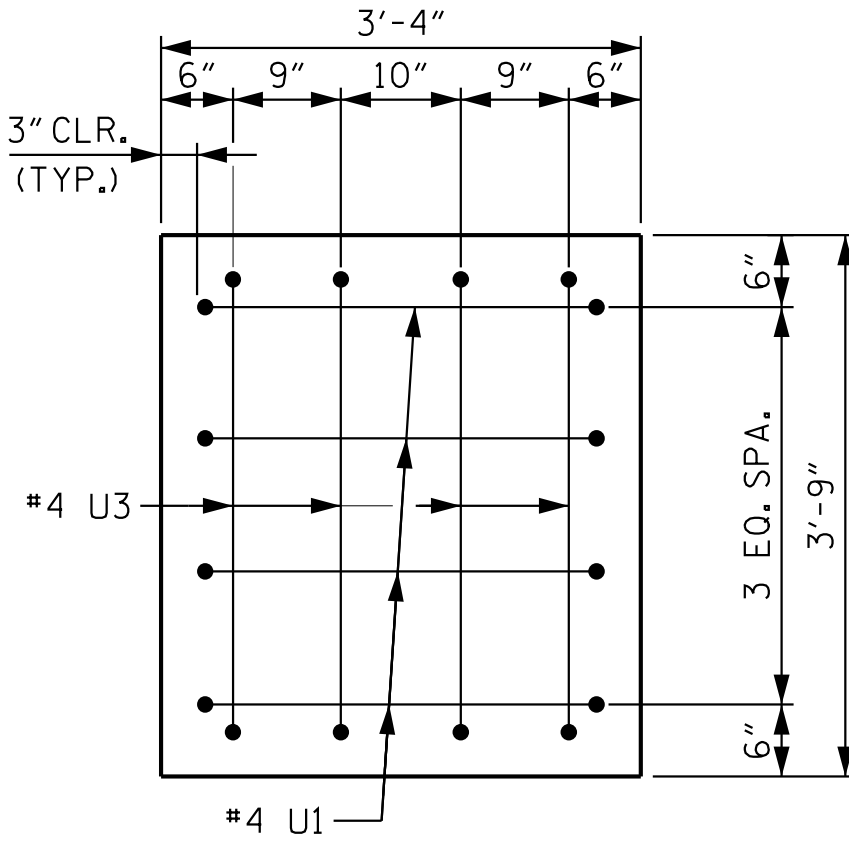
PARTIAL SECTION B-B



SECTION C-C

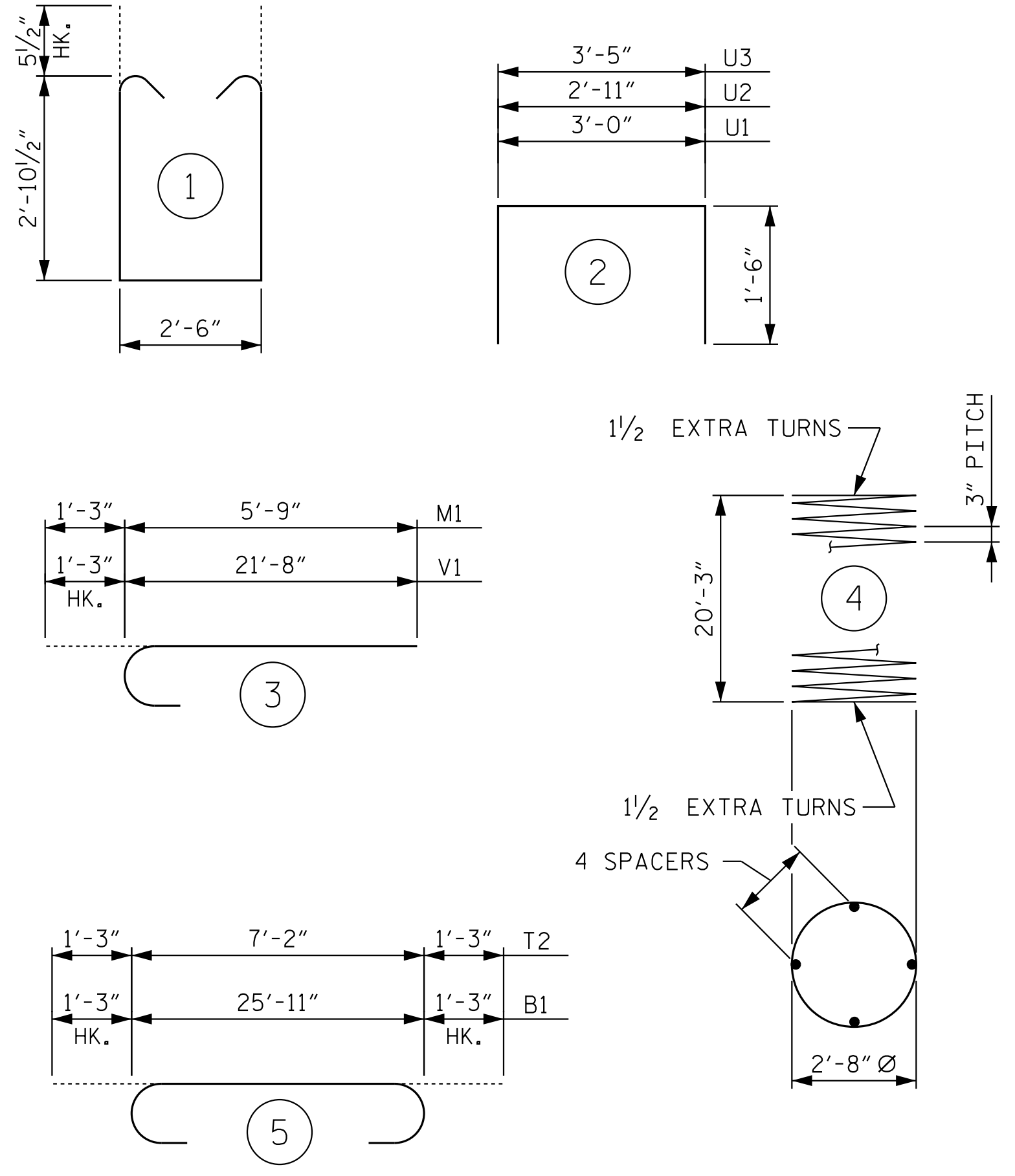


END VIEW X-X

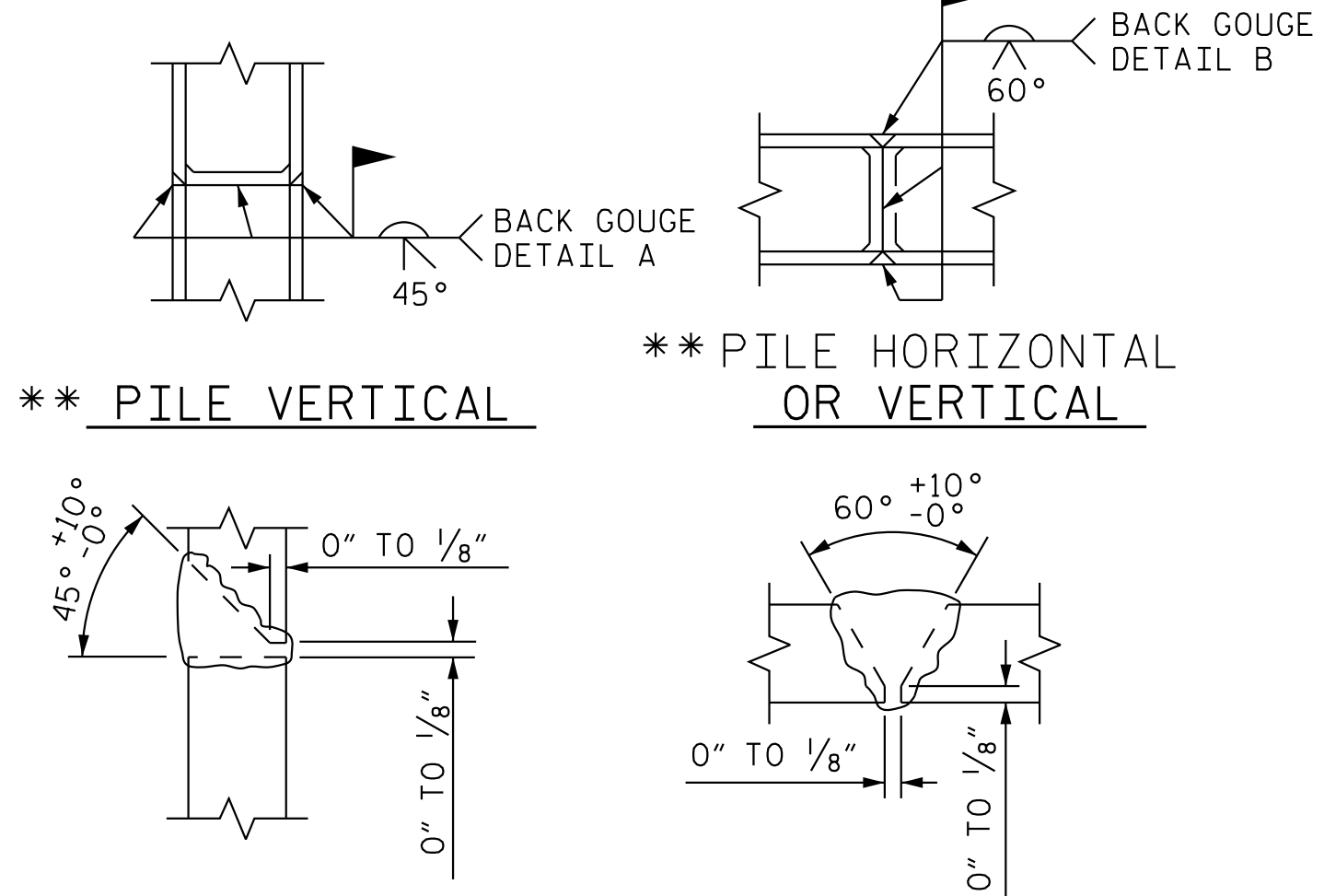


END VIEW Y-Y

BAR TYPES

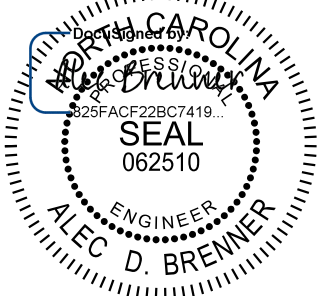


ALL BAR DIMENSIONS ARE OUT TO OUT



DETAIL A
PILE SPLICE DETAILS

** POSITION OF PILE DURING WELDING.



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BILL OF MATERIAL

BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	16	#9	5	28'-5"	1,546
B2	6	#6	STR	25'-11"	234
B3	6	#4	STR	12'-9"	51
M1	16	#9	3	7'-0"	381
S1	68	#5	1	9'-2"	650
T1	36	#6	STR	7'-2"	388
T2	36	#9	5	9'-8"	1,183
U1	38	#4	2	6'-0"	152
U2	4	#4	2	5'-11"	16
U3	4	#4	2	6'-5"	17
V1	16	#9	3	22'-1"	1,201

REINFORCING STEEL 5,819 LBS.

SP-1	2	**	4	664'-3"	887
------	---	----	---	---------	-----

SPIRAL COLUMN REINFORCING STEEL 887 LBS.

** THE "SP" SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.

BENT 1 TOTAL QUANTITIES

CLASS A CONCRETE	
POUR 1 (FOOTINGS)	12.5 C.Y.
POUR 2 (COLUMNS)	10.0 C.Y.
POUR 3 (CAP)	11.3 C.Y.
TOTAL CLASS A CONCRETE	33.9 C.Y.

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 32+53.16 -Y2-

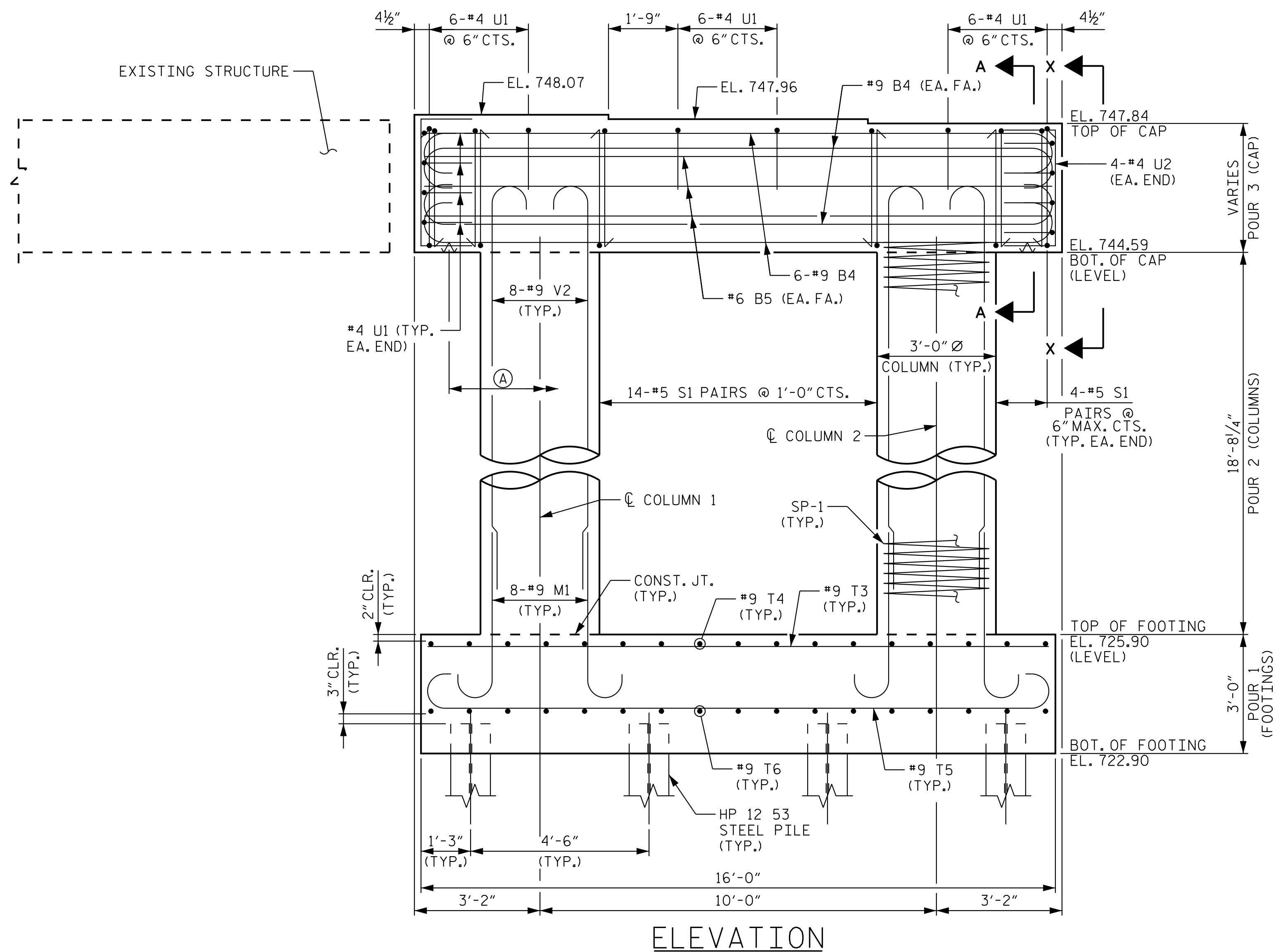
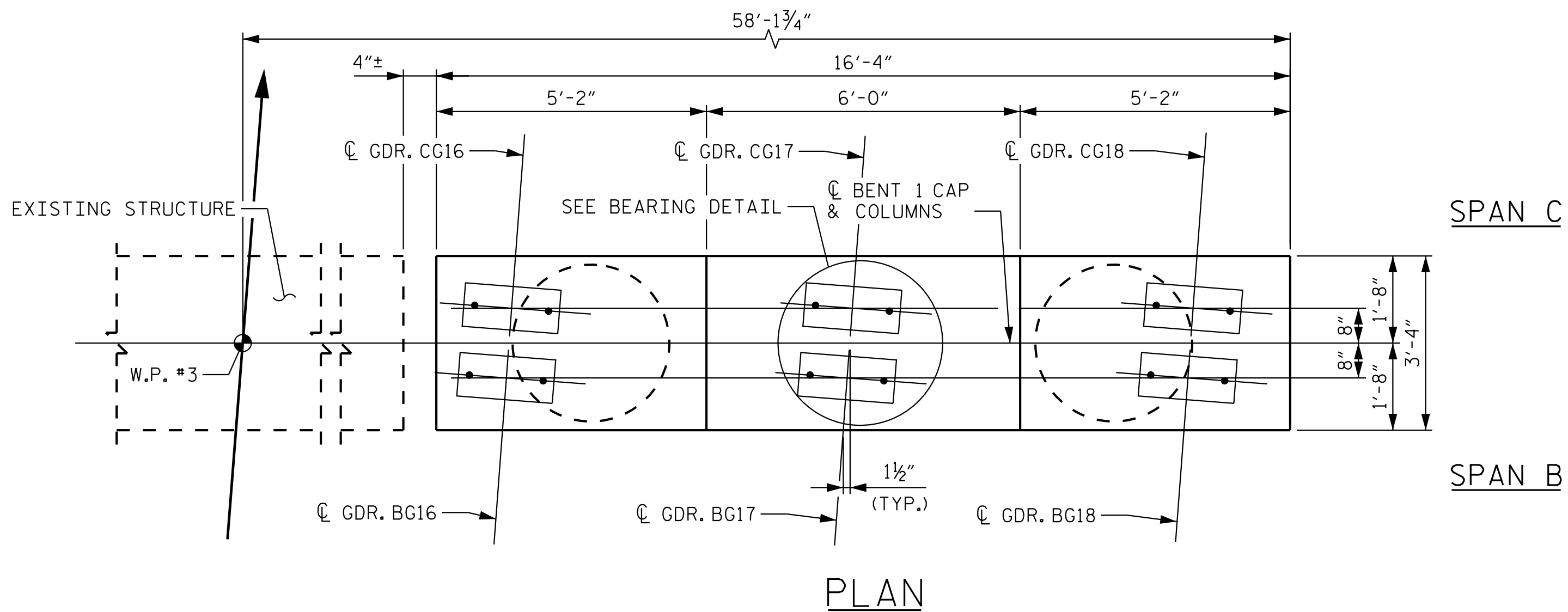
SHEET 2 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

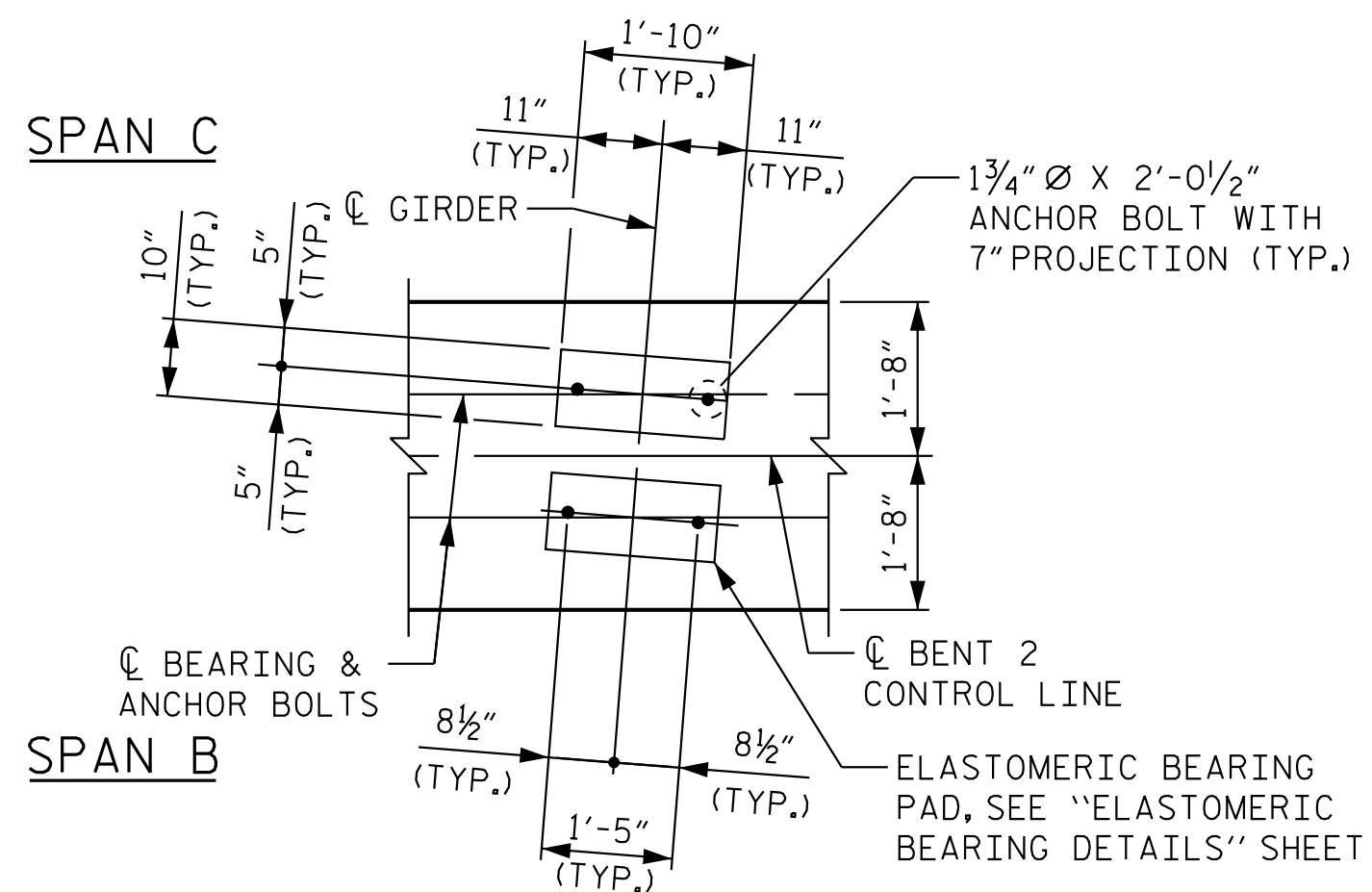
SUBSTRUCTURE
BENT 2
LEFT EXTENSION
SECTIONS & DETAILS

REVISIONS						SHEET NO. S4-52
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 63
2			4			

STR. #4



① 3" HIGH B.B. @ 5'-0" CTS. MAX.



BEARING DETAIL

ALL DIMENSIONS AND DETAILS SHOWN
ARE TYPICAL FOR ALL BEARINGS @
EACH BRIDGE SEAT LOCATION.

NOTES

FOR "VIEW X-X", SEE "BENT 2" SHEET 4 OF 4.

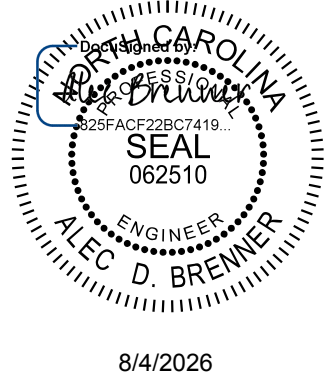
FOR "SECTION A-A" AND "PARTIAL SECTION B-B", SEE
"BENT 2" SHEET 4 OF 4.

FOR REINFORCING BILL OF MATERILA, SEE "BENT 2"
SHEET 4 OF 4.

FOR ADDITIONAL NOTES, SEE "BENT 2", SHEET 1 OF 4.

PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 32+53.16 -Y2-

SHEET 3 OF 4



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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 2
RIGHT EXTENSION
PLAN AND ELEVATION

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S4-53
1			3			TOTAL SHEETS 63
2			4			

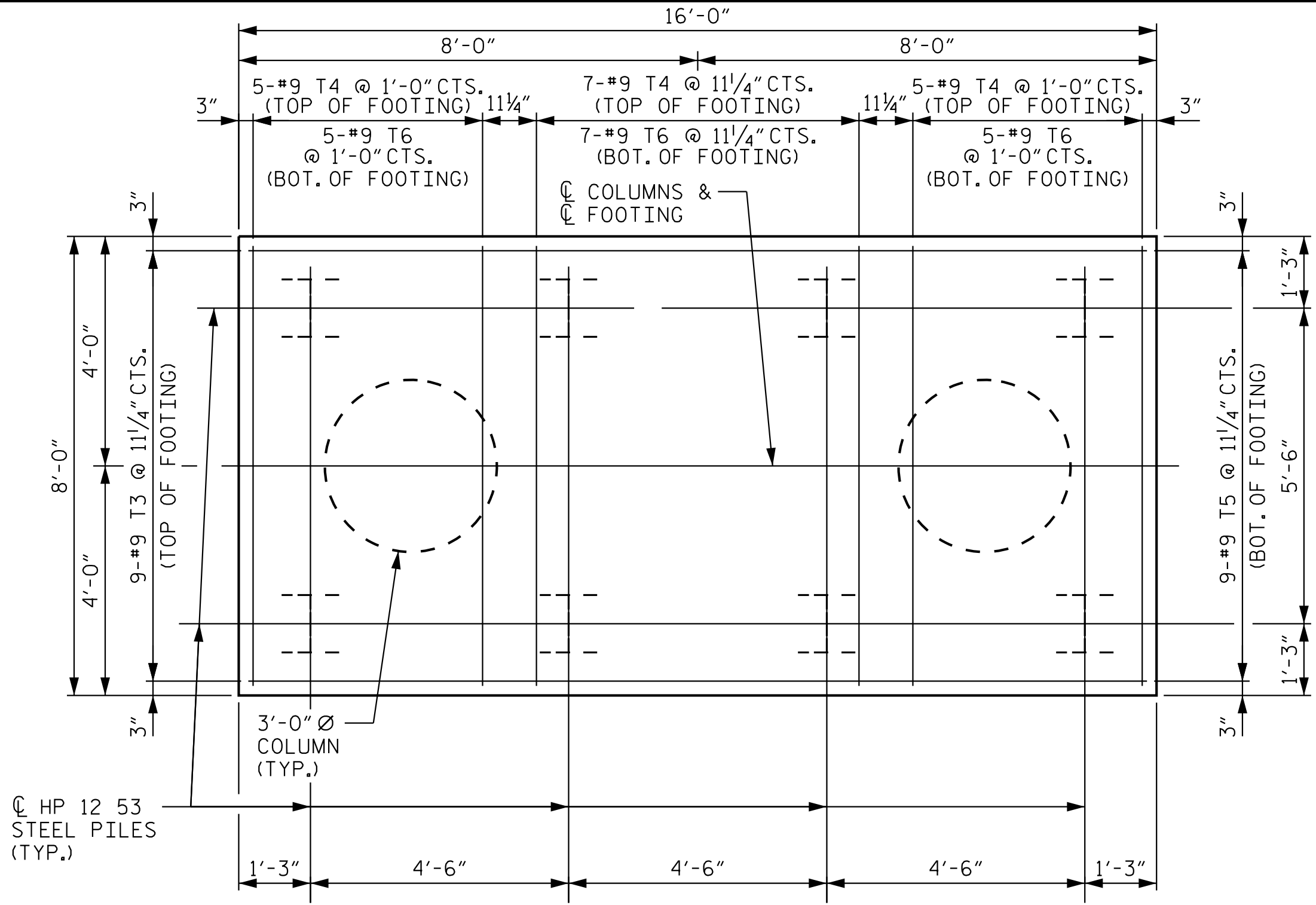
STR. #4

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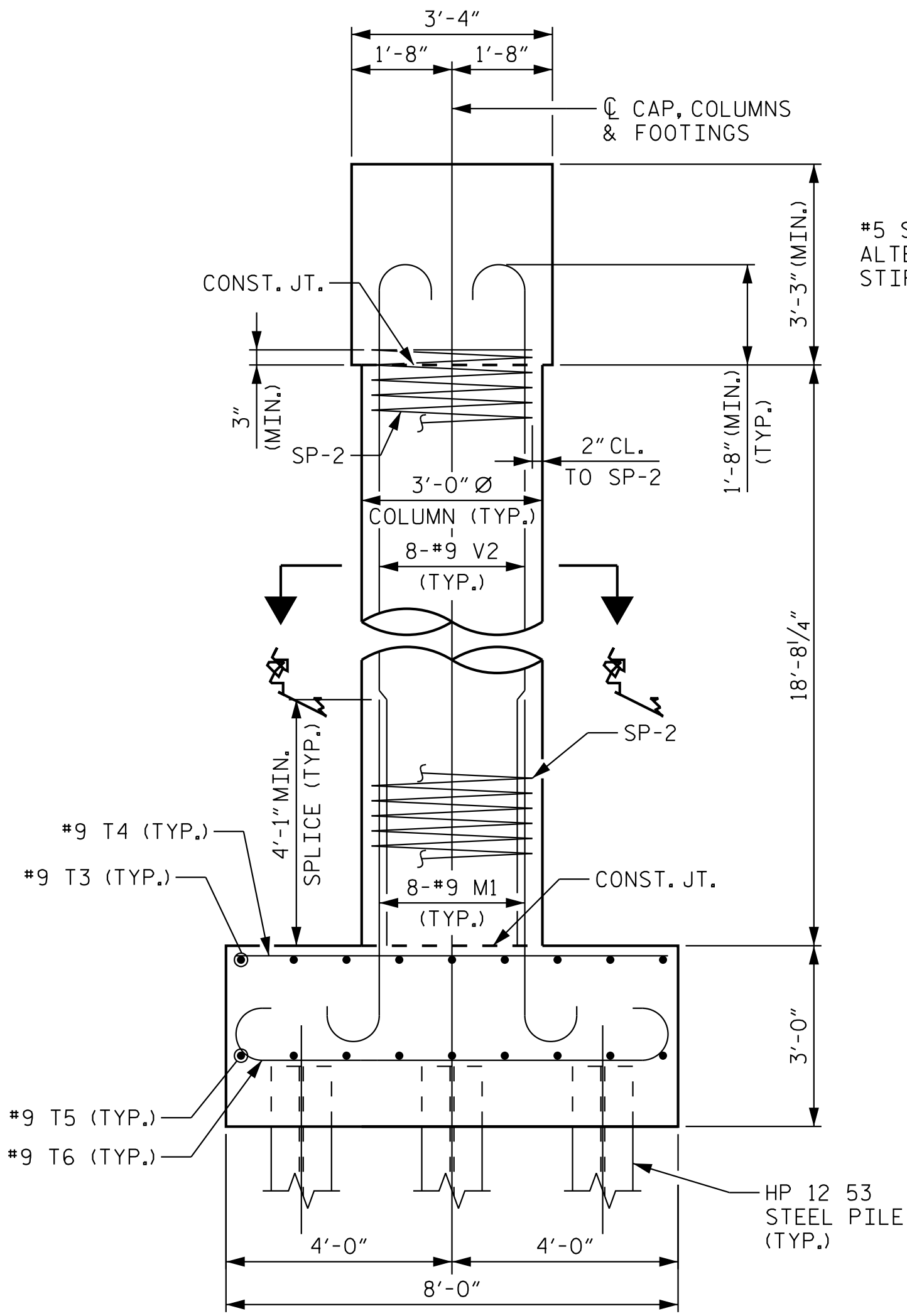
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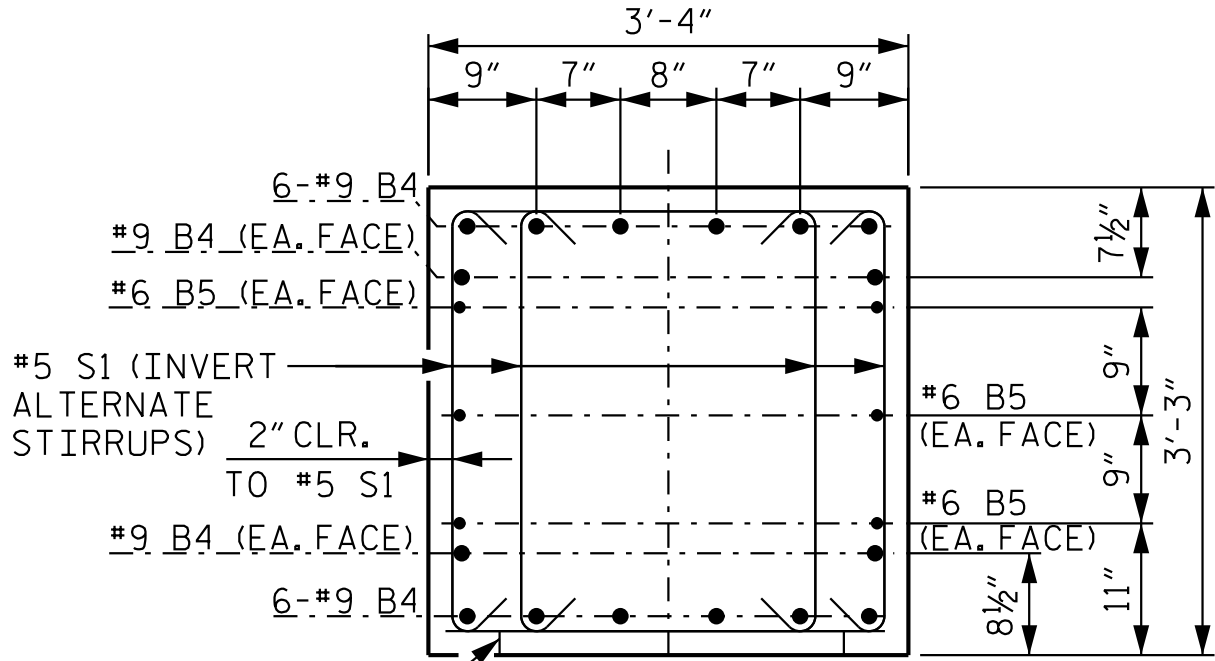
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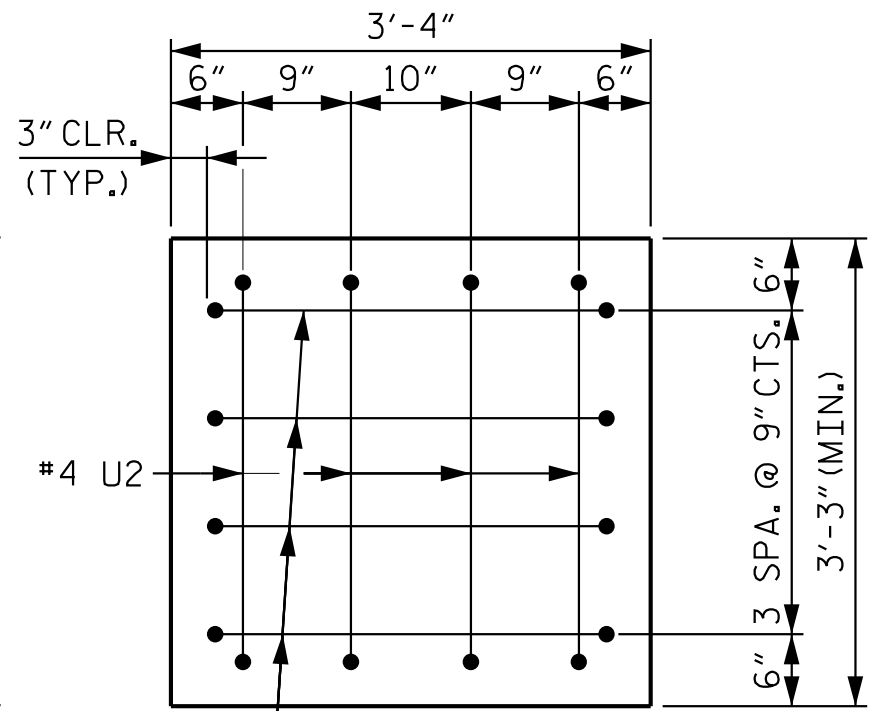
PLAN OF FOOTING



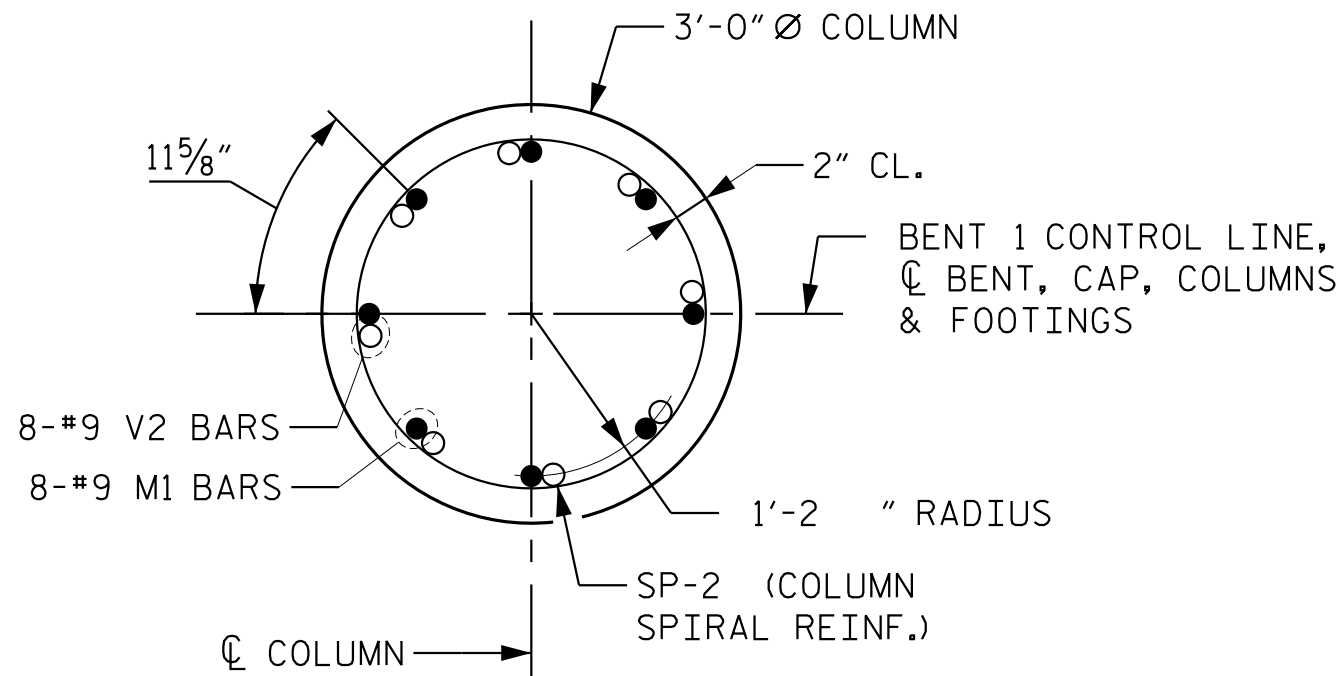
END VIEW



SECTION A-A

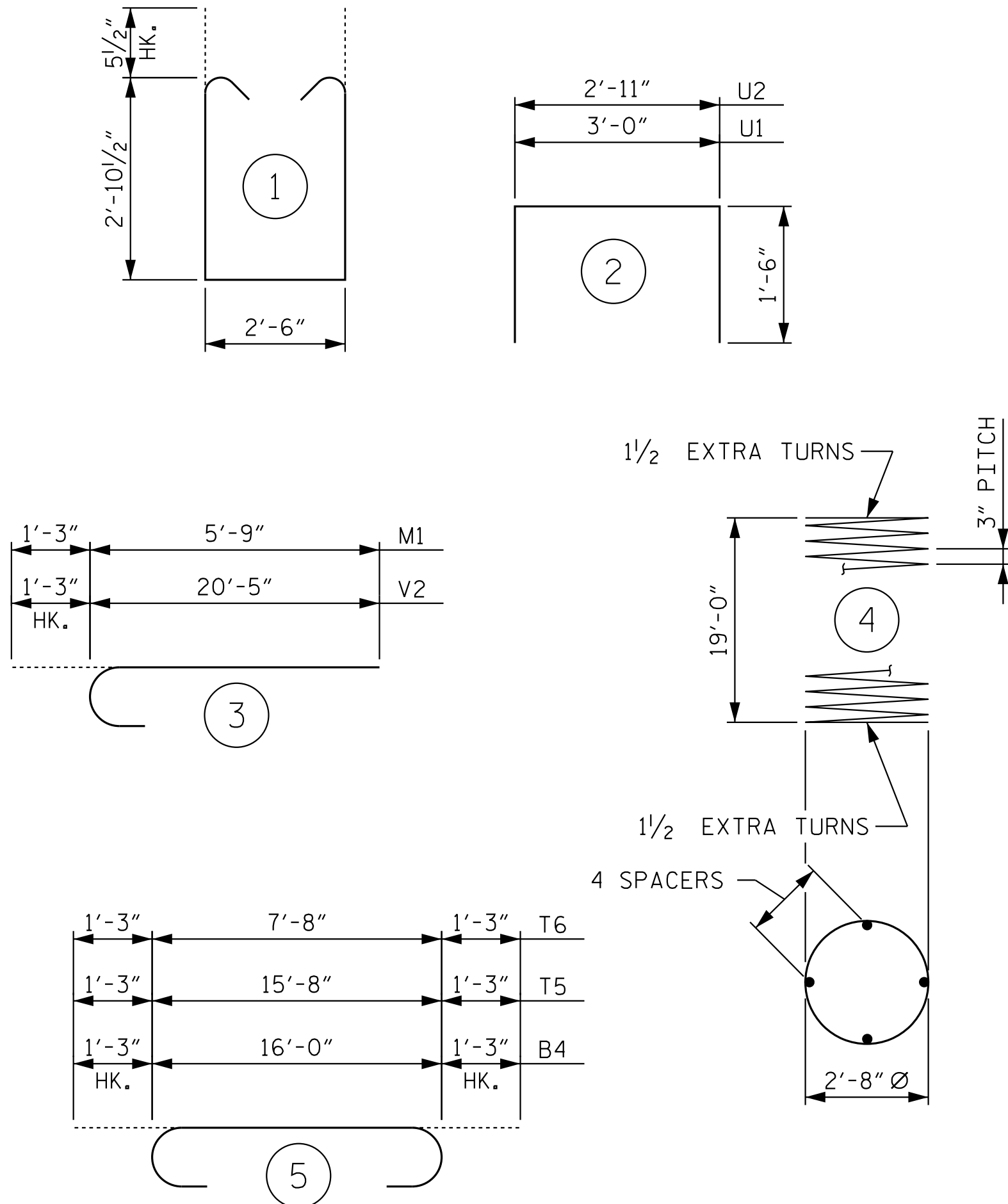


END VIEW X-X
(TYPICAL EACH END)



SECTION C-C

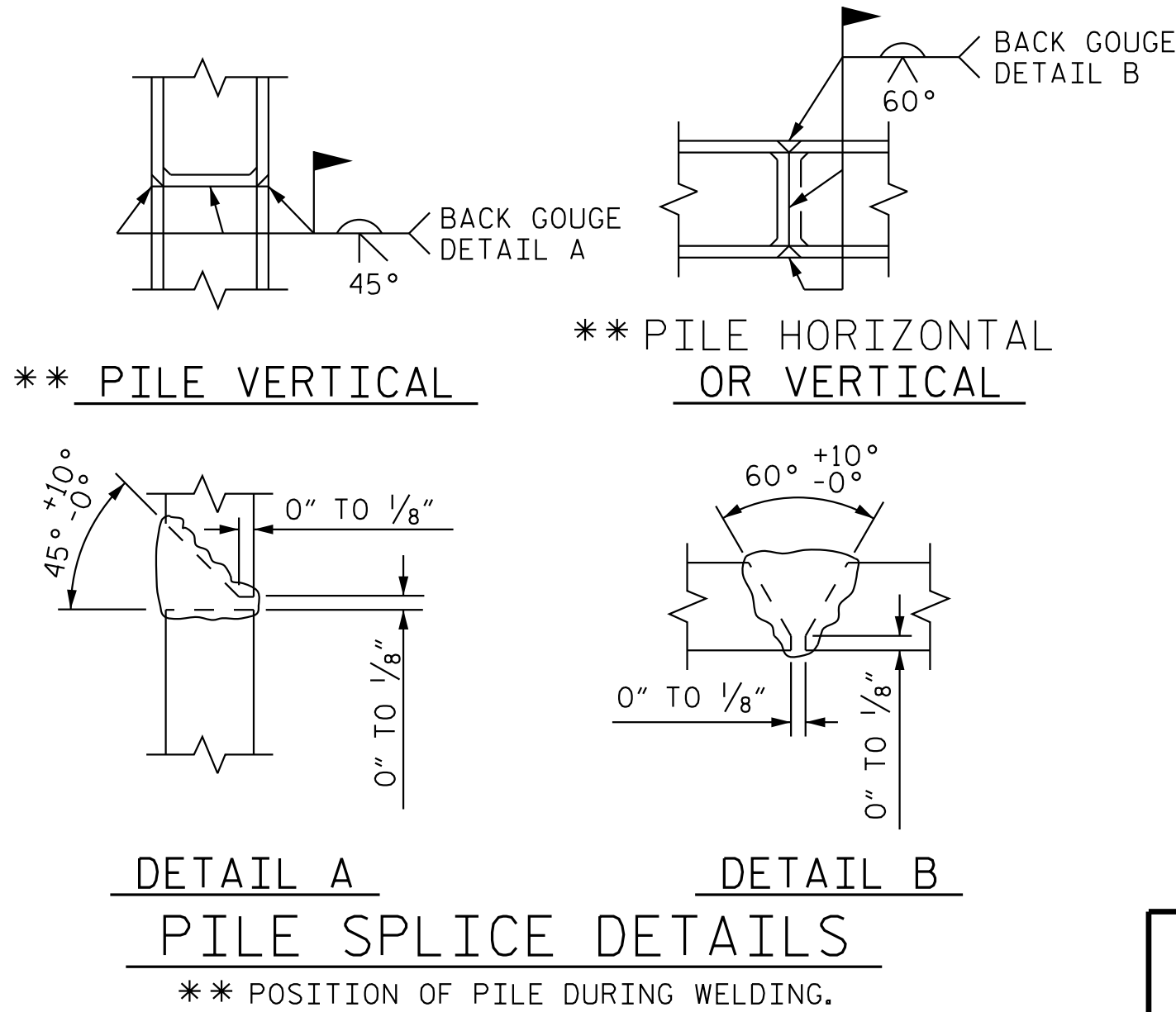
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B4	16	#9	5	18'-6"	1,006
B5	6	#6	STR	16'-0"	144
M1	16	#9	3	7'-0"	381
S1	44	#5	1	9'-2"	421
T3	9	#9	STR	15'-8"	479
T4	17	#9	STR	7'-8"	443
T5	9	#9	5	18'-2"	556
T6	17	#9	5	10'-2"	588
U1	26	#4	2	6'-0"	104
U2	8	#4	2	5'-11"	32
V2	16	#9	3	21'-8"	1,179
REINFORCING STEEL				5,333 LBS.	
SP-2	2	**	4	649'-9"	868
SPIRAL COLUMN REINFORCING STEEL				868 LBS.	
** THE "SP" SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR.					
BENT 2 TOTAL QUANTITIES					
CLASS A CONCRETE					
POUR 1 (FOOTINGS)				14.2 C.Y.	
POUR 2 (COLUMNS)				9.8 C.Y.	
POUR 3 (CAP)				6.7 C.Y.	
TOTAL CLASS A CONCRETE				30.7 C.Y.	

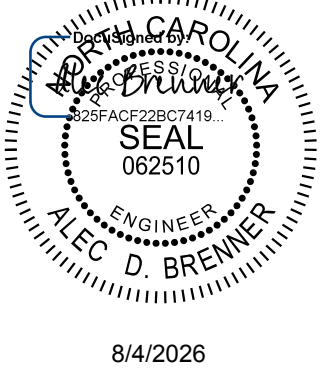


DETAIL A

PILE SPLICE DETAILS

** POSITION OF PILE DURING WELDING.

DETAIL B



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PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 32+53.16 -Y2-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
BENT 2
RIGHT EXTENSION
SECTIONS & DETAILS

REVISIONS						SHEET NO. S4-54
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 63
2			4			

STR. #4

DRAWN BY: T.K. BOYD DATE: 4/26
CHECKED BY: A.D. BRENNER DATE: 4/26
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS DATE: 4/26

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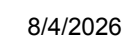


REINFORCING IN WING NOT SHOWN FOR CLARITY.FOR DETAILS SEE SHEET 4 OF 4

BEARING DETAIL

- PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 32+53.16 -Y2-

SUBSTRUCTURE
END BENT 2
LEFT EXTENSION

STR. #4

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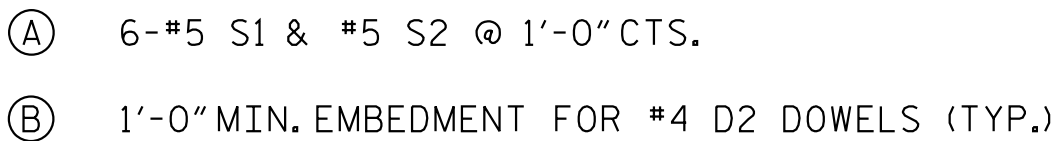
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D
C
D



PLAN

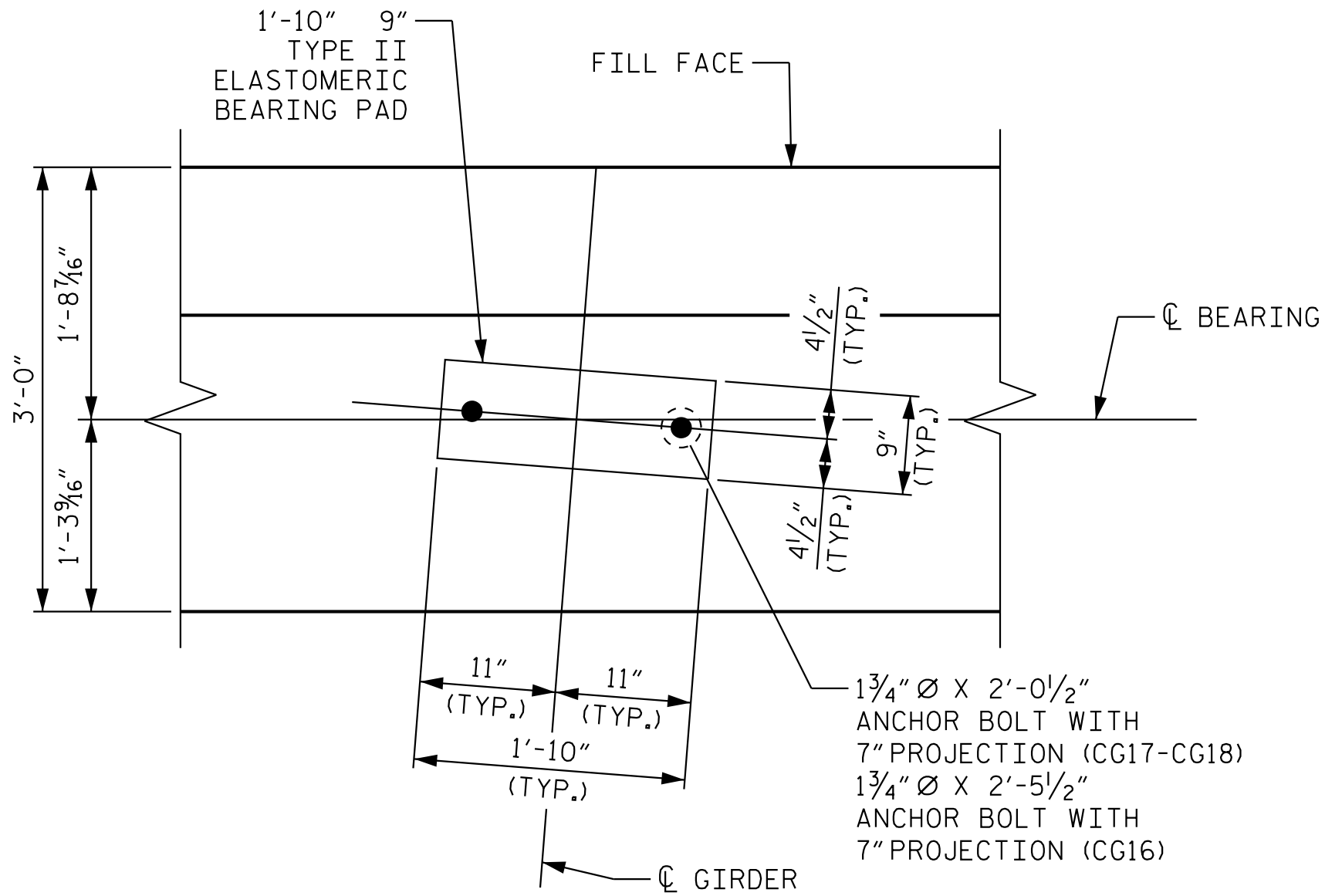


ELEVATION

REINFORCING IN WING NOT SHOWN FOR CLARITY.FOR DETAILS SEE SHEET 3 OF 4

NOTES

FOR NOTES, SEE SHEET 1 OF 4.



BEARING DETAIL

PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 32+53.16 -Y2-

SHEET 2 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2
RIGHT EXTENSION

REVISIONS						SHEET NO. S4-56
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2			4			

STR. #4

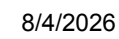
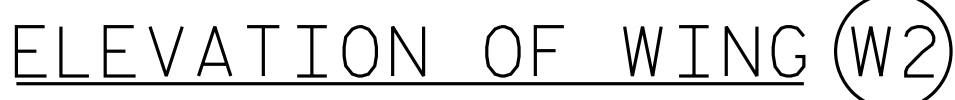
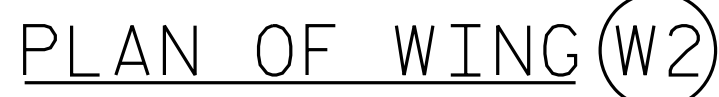
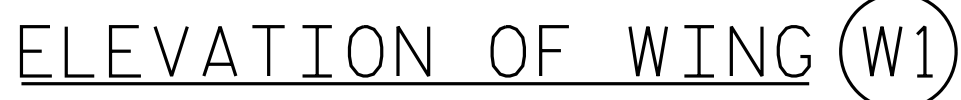
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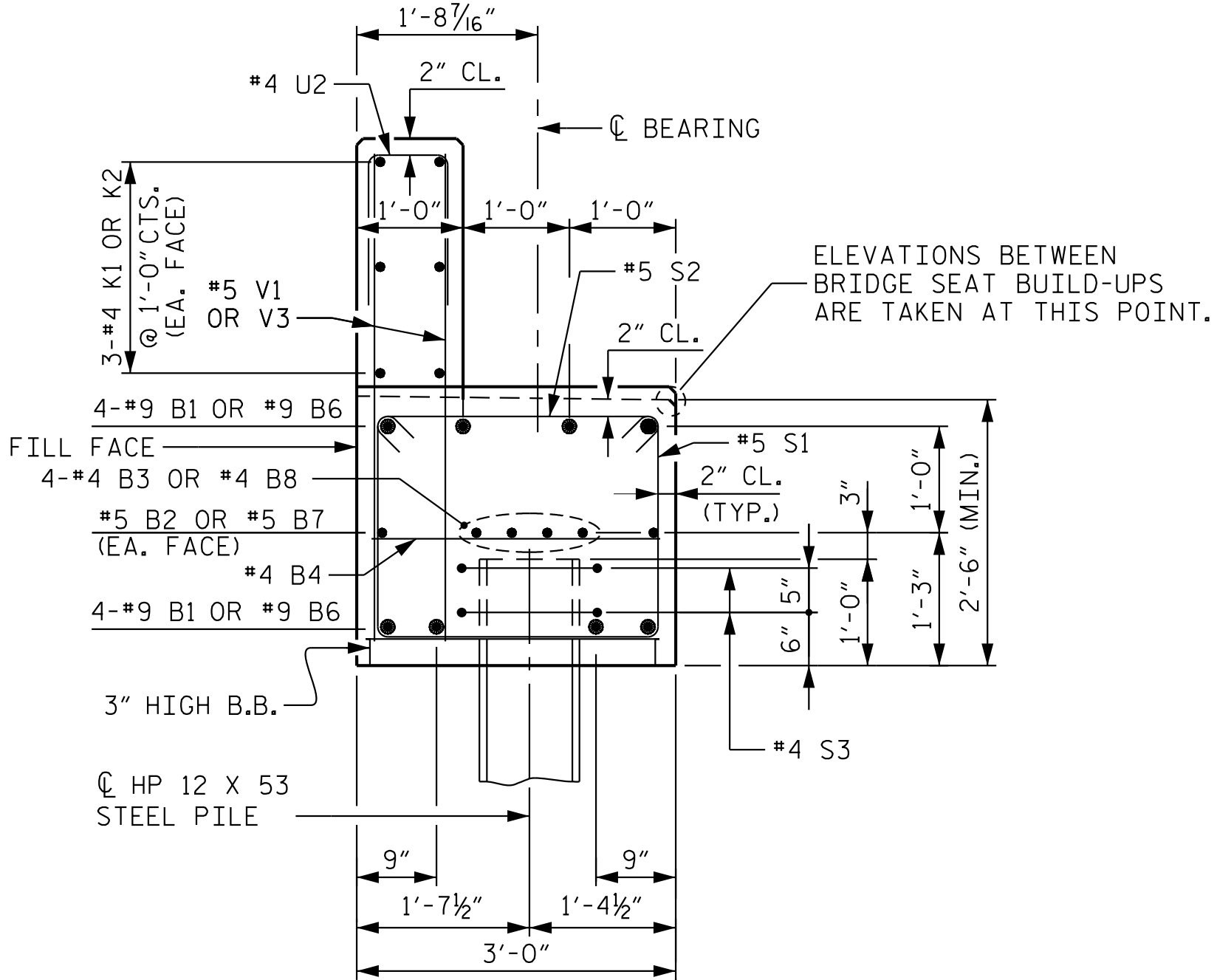
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DEPARTMENT OF TRANSPORTATION
RALEIGH

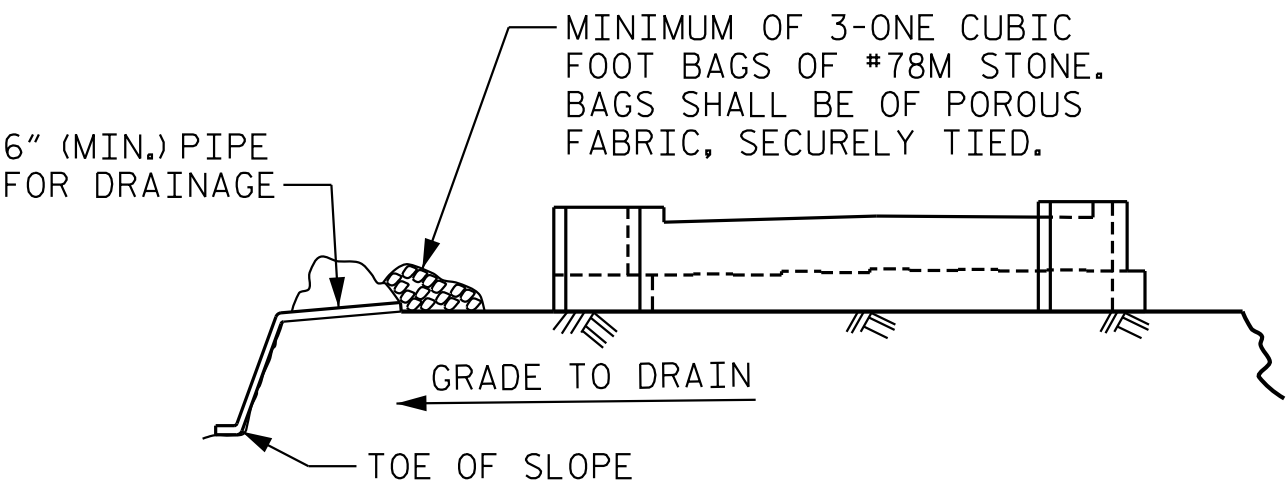
SUBSTRUCTURE
END BENT 2
WING WALL DETAILS

STR. #4

K:\BRI-Structures\Bridge\NC\01036524 - I-5715 Structure Design\cadd\04\Site *2\Structure 4\Final\404-115-15715-SMU.E8-590358-058.dgn 8/2/2026



SECTION A-A

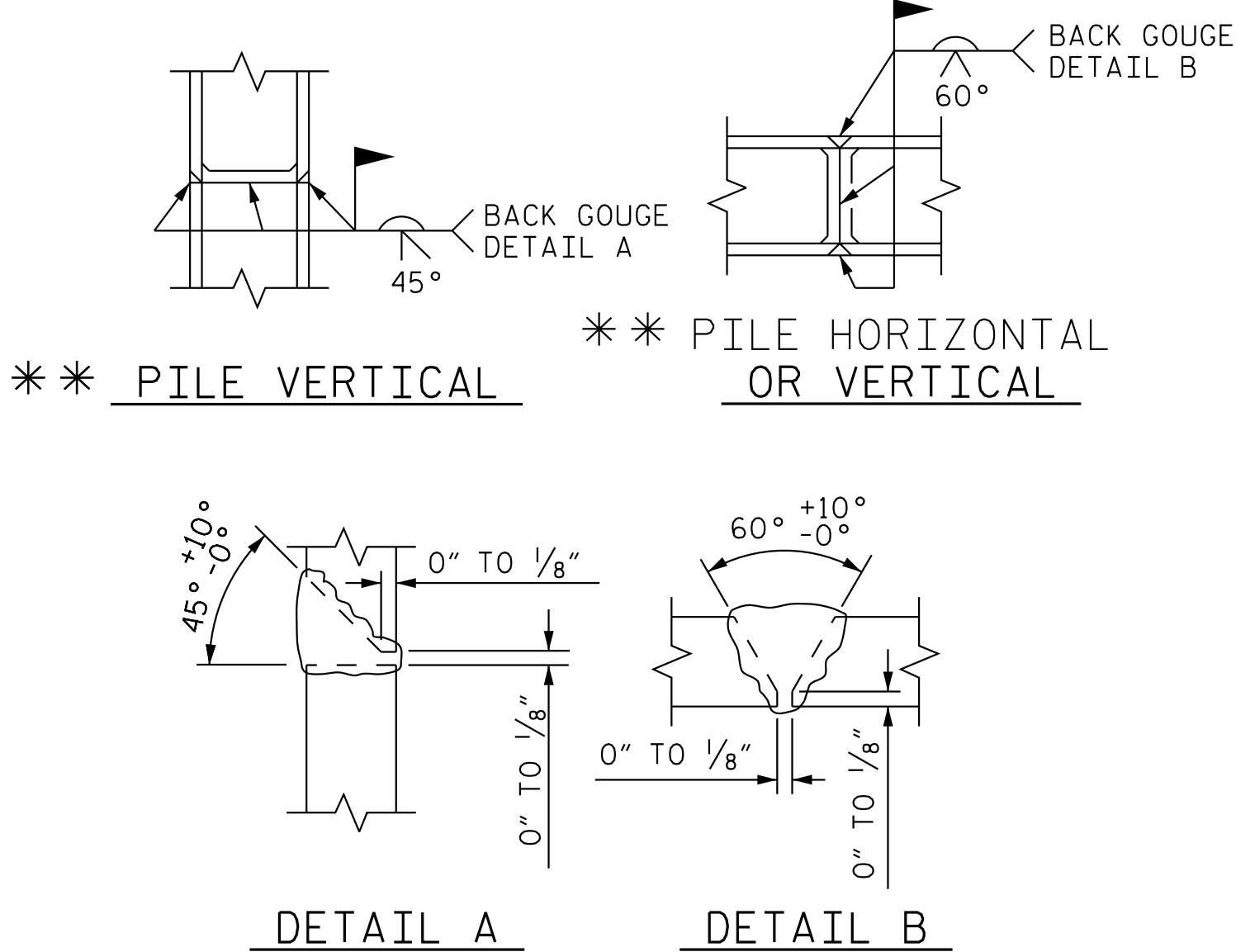


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT



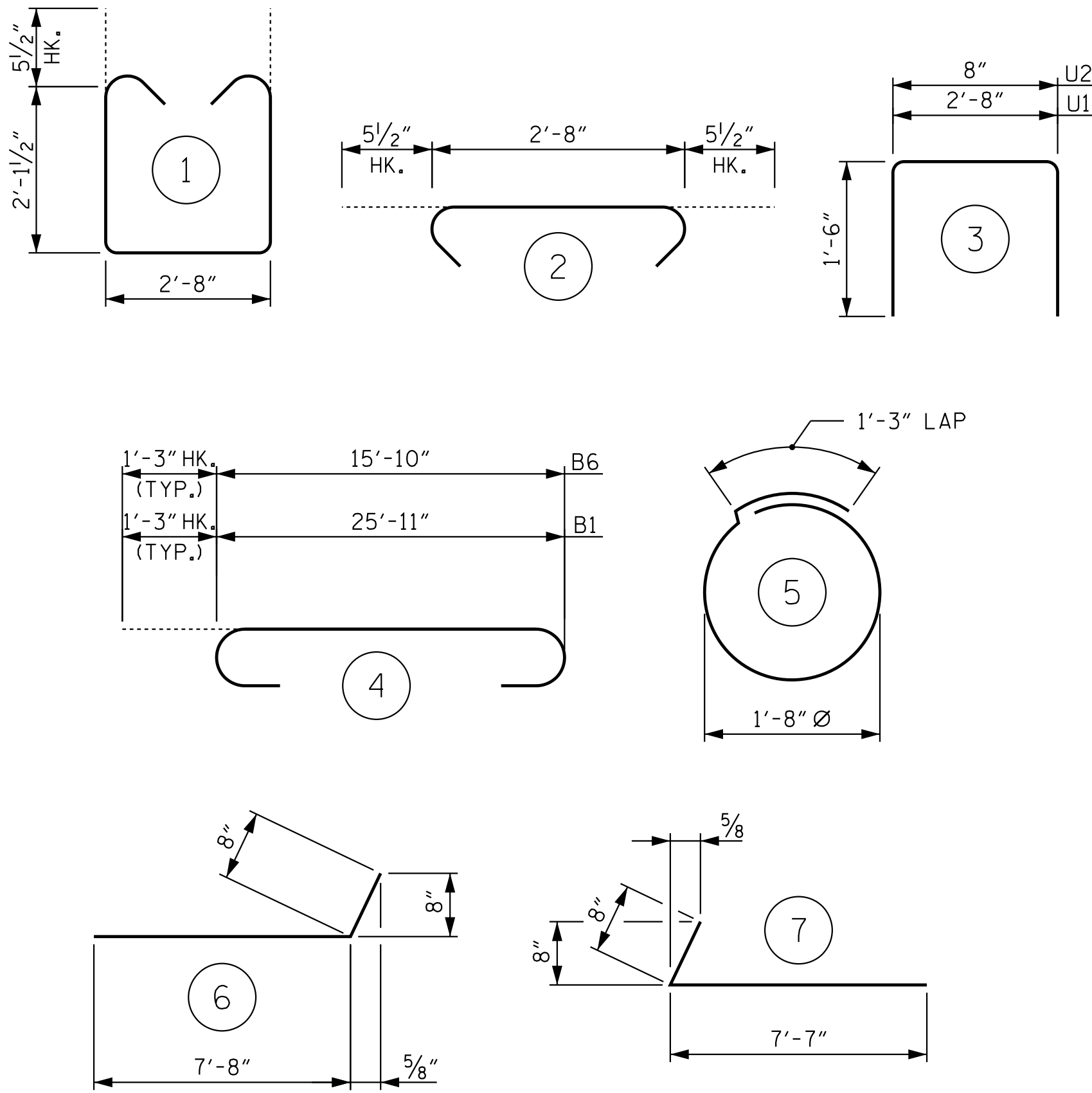
DETAIL A

DETAIL B

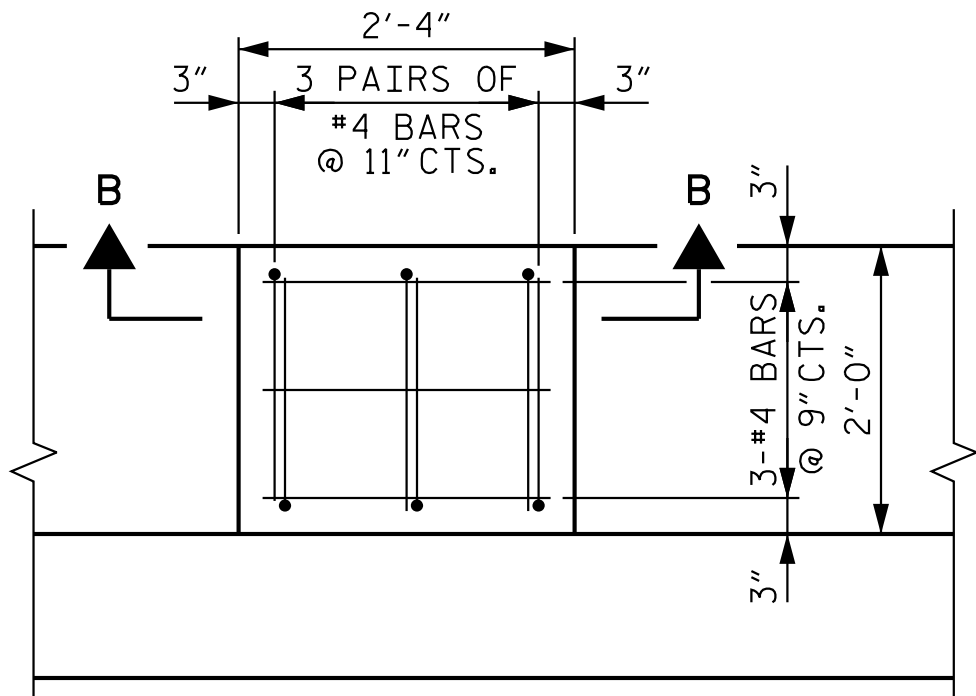
PILE SPLICE DETAILS

** POSITION OF PILE DURING WELDING.

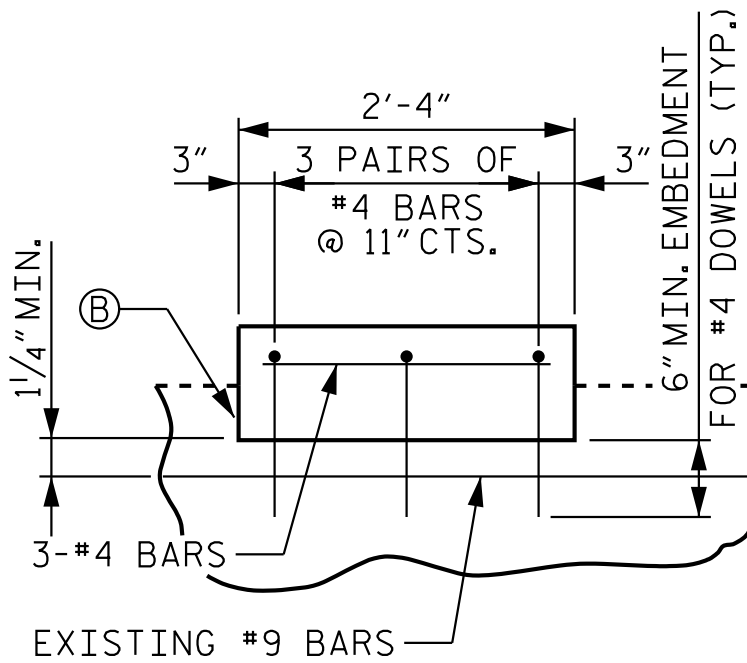
BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.



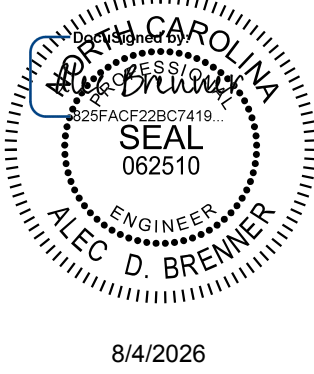
PLAN



SECTION B-B

OPTIONAL BRIDGE SEAT DETAILS

- Ⓐ CONCRETE AND REINFORCING STEEL FOR OPTIONAL BRIDGE SEAT DETAIL ARE NOT INCLUDED IN THE BILL OF MATERIAL.
- Ⓑ REMOVE THE CONCRETE ON TOP OF THE EXISTING CAP AND CAST THE NEW CONCRETE TO BEAM SEAT. REVISED BEAM SEAT ELEVATION TO BE DETERMINED BY THE CONTRACTOR.



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BILL OF MATERIAL

END BENT 2 - LEFT EXTENSION

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	4	28'-5"	773
B2	2	#5	STR	25'-11"	54
B3	4	#4	STR	25'-11"	69
B4	7	#4	STR	2'-8"	12
B5	4	#4	5	7'-8"	20
H1	24	#4	7	8'-3"	132
K1	6	#4	STR	25'-11"	104
K3	4	#4	STR	3'-11"	10
S1	27	#5	1	7'-10"	221
S2	27	#5	2	3'-7"	101
S3	4	#4	5	7'-1"	28
U1	4	#4	3	5'-8"	15
U2	22	#4	3	3'-8"	54
D1	8	#9	STR	4'-0"	109
D2	3	#6	STR	4'-0"	18
V1	44	#5	STR	5'-1"	233
V2	26	#5	STR	6'-7"	179

REINFORCING STEEL 2,132 LBS.

CLASS A CONCRETE BREAKDOWN
POUR 1 (CAP, LOWER WINGS, & COLLARS) 8.9 C.Y.

POUR 2 (BACKWALL & UPPER PORTION OF WING) 4.0 C.Y.

TOTAL CLASS A CONCRETE 12.8 C.Y.

BILL OF MATERIAL

END BENT 2 - RIGHT EXTENSION

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B4	5	#4	3	2'-8"	9
B6	8	#9	4	18'-4"	499
B7	2	#5	STR	15'-10"	33
B8	4	#4	STR	15'-10"	42
H2	24	#4	6	8'-4"	134
K2	6	#4	6	16'-2"	65
K3	4	#4	6	3'-11"	10
S1	17	#5	1	7'-10"	139
S2	17	#5	7	3'-7"	64
S3	4	#4	7	7'-1"	19
U1	4	#4	3	5'-8"	15
U2	12	#4	8	3'-8"	29
D1	8	#9	STR	4'-0"	109
D2	3	#6	STR	4'-0"	18
V3	24	#5	9	5'-1"	127
V4	26	#5	STR	6'-8"	181

REINFORCING STEEL 1,484 LBS.

CLASS A CONCRETE BREAKDOWN
POUR 1 (CAP, LOWER WINGS, & COLLARS) 5.5 C.Y.

POUR 2 (BACKWALL & UPPER PORTION OF WING) 3.1 C.Y.

TOTAL CLASS A CONCRETE 8.6 C.Y.

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 32+53.16 -Y2-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2
SECTION AND DETAILS

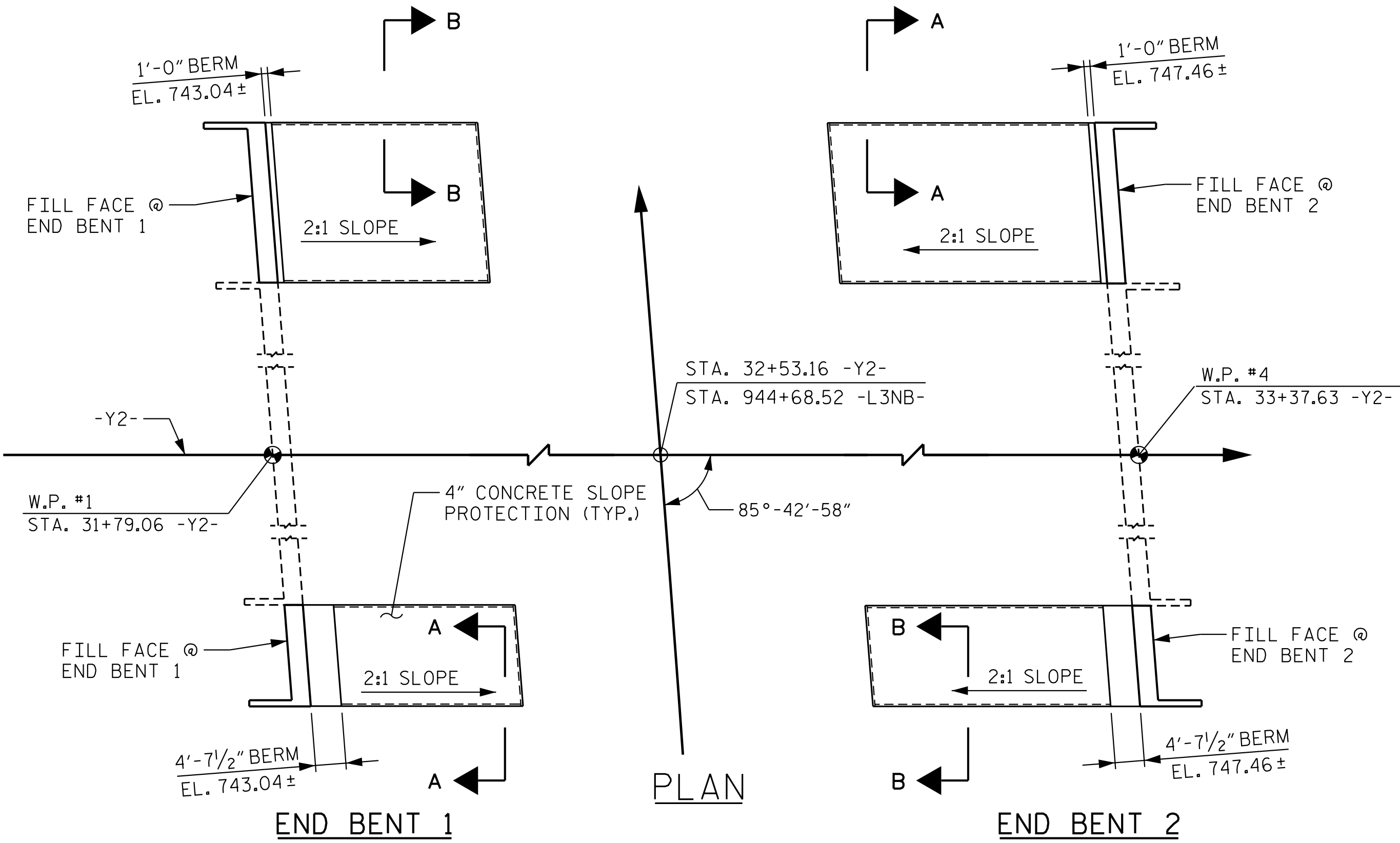
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 63
2			4			

STR. #4

DRAWN BY: T.K. BOYD DATE: 4/26
CHECKED BY: A.D. BRENNER DATE: 4/26
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS DATE: 4/26

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K:\RD1_Structures\Bridges\NC\01036524 - I-5715 Structure Design\cadd\00\Site *2\Structure 4\Final\404-117-15715.SMU.SPL590358.069.dgn 8/2/2026



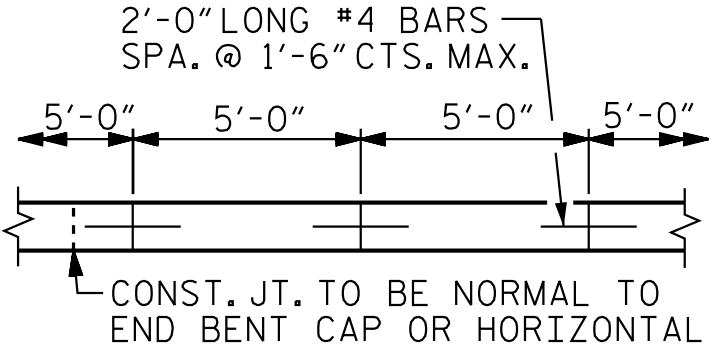
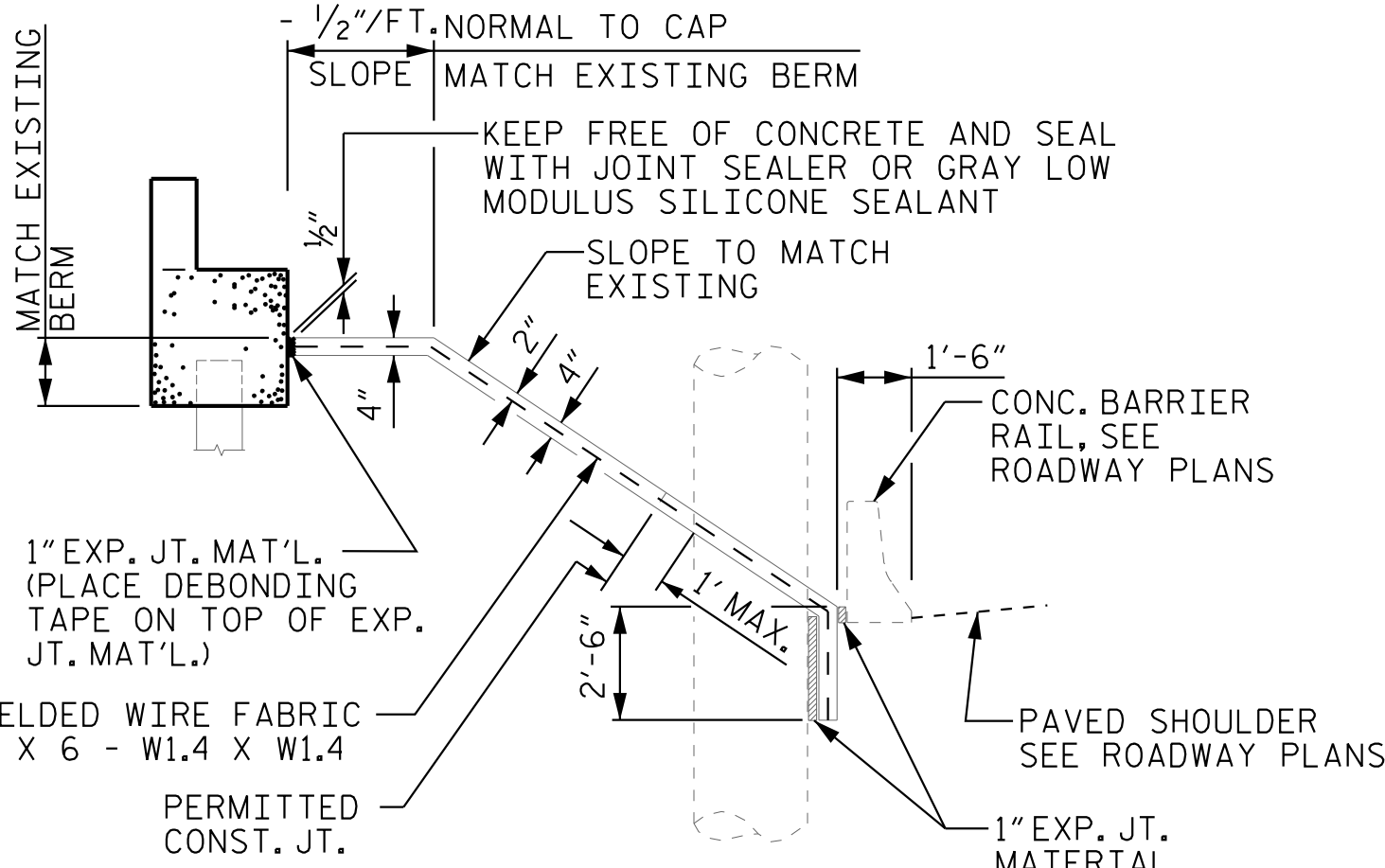
GENERAL NOTES

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.

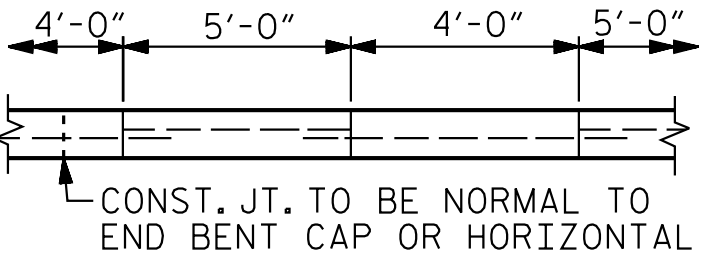
SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

BRIDGE @ STA. 33+80.20 -L-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	191	343
END BENT 2	240	432

* QUANTITY SHOWN IS BASED ON 5' POURS.

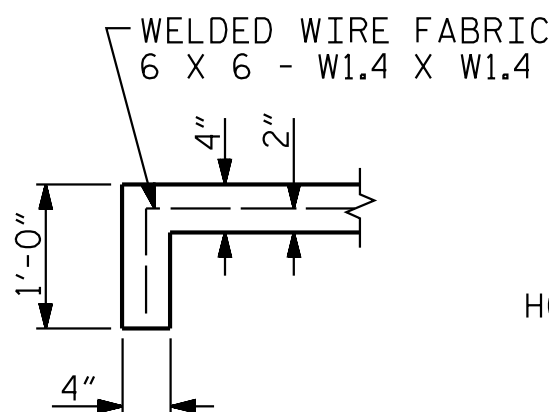


POURING DETAIL

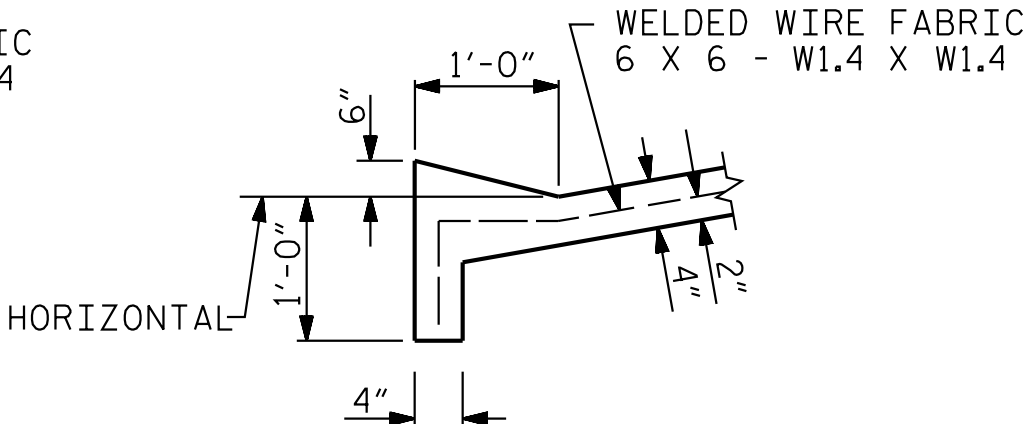


POUR A 4'-0" STRIP FIRST. STRIP WIDTHS MAY VARY IN CURVED PORTION.

OPTIONAL POURING DETAIL



SECTION A-A



SECTION B-B

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 32+53.16 -Y2-



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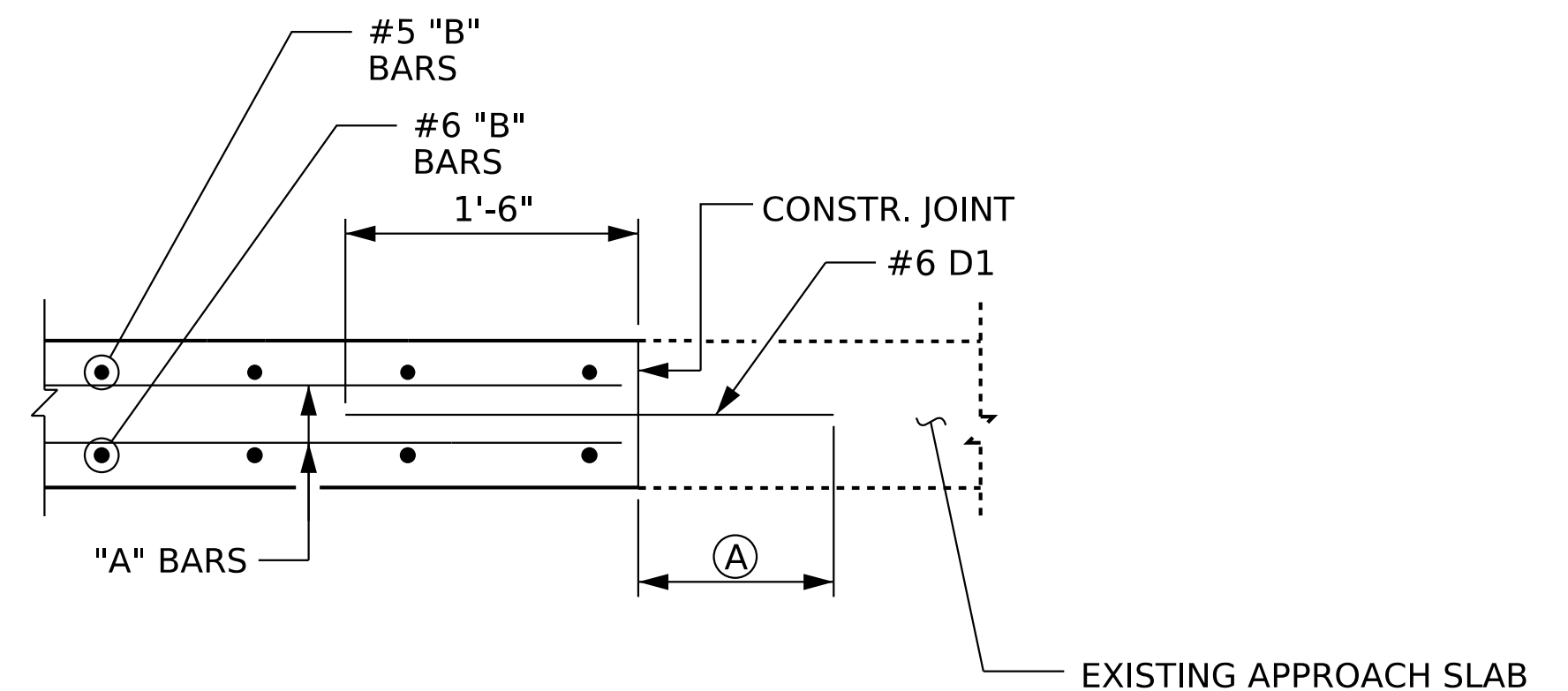
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD SLOPE PROTECTION DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					63

STR. #4 STD. NO. SP1



SECTION THRU SLAB

SECTION A-A



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

PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 32+53.16 -Y2-

Designated by
 PROFESSIONAL
 SEAL
 062510
 ENGINEER
 ALEC D. BRENNER
 8/4/2026

STANDARD BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

REVISIONS						SHEET NO. S4-60
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 63
2			4			

STD. NO. BAS2

DRAWN BY: <u>T. K. BOYD</u>	DATE: <u>4/26</u>
CHECKED BY: <u>A. D. BRENNER</u>	DATE: <u>4/26</u>
DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>4/26</u>

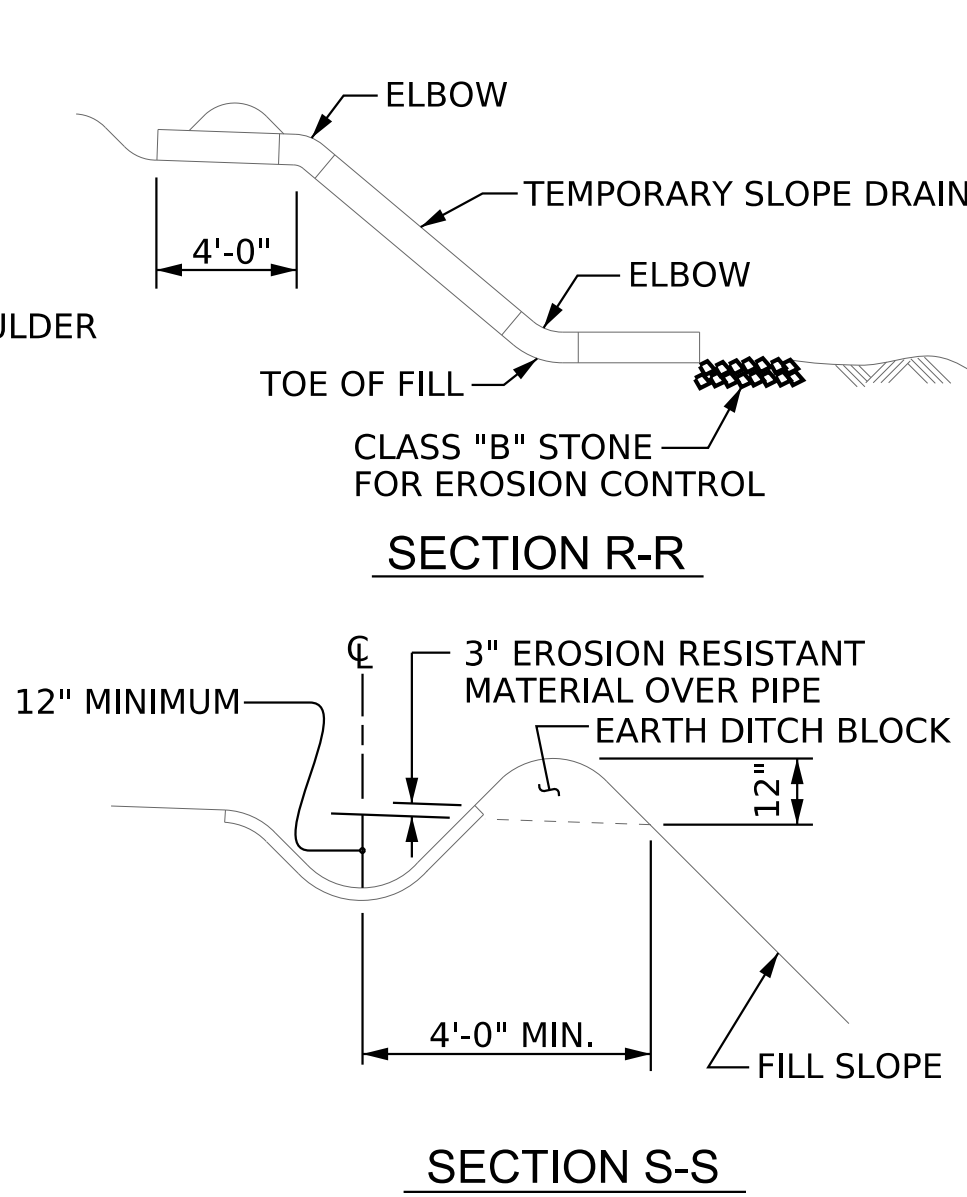
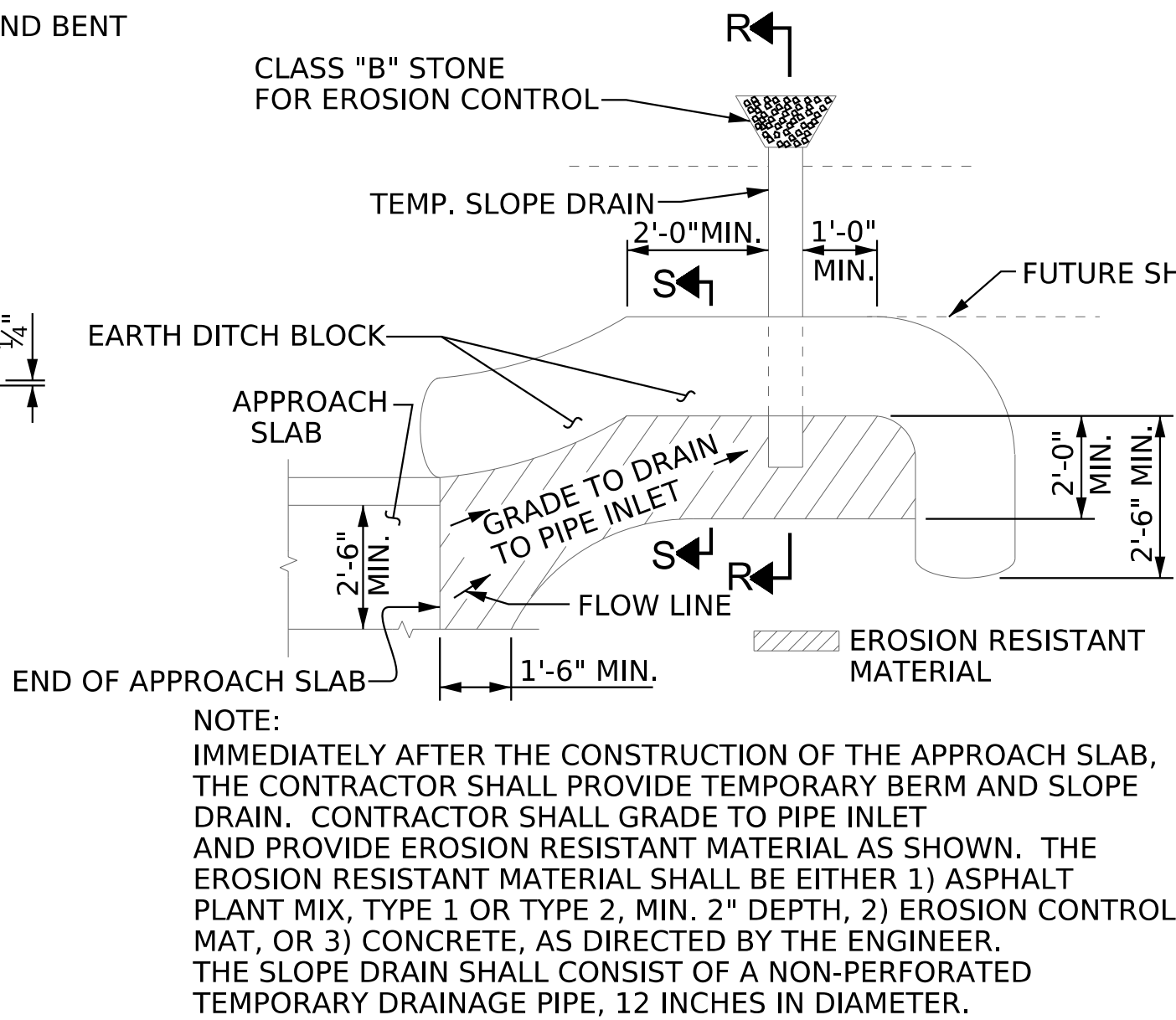
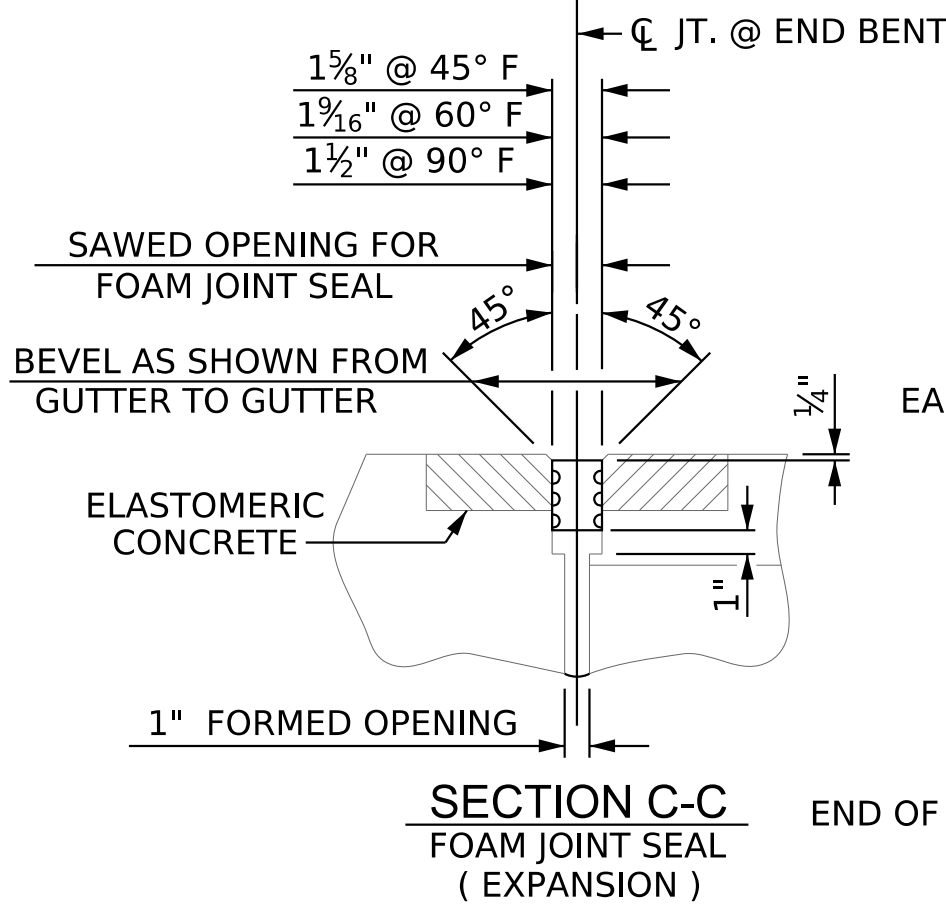
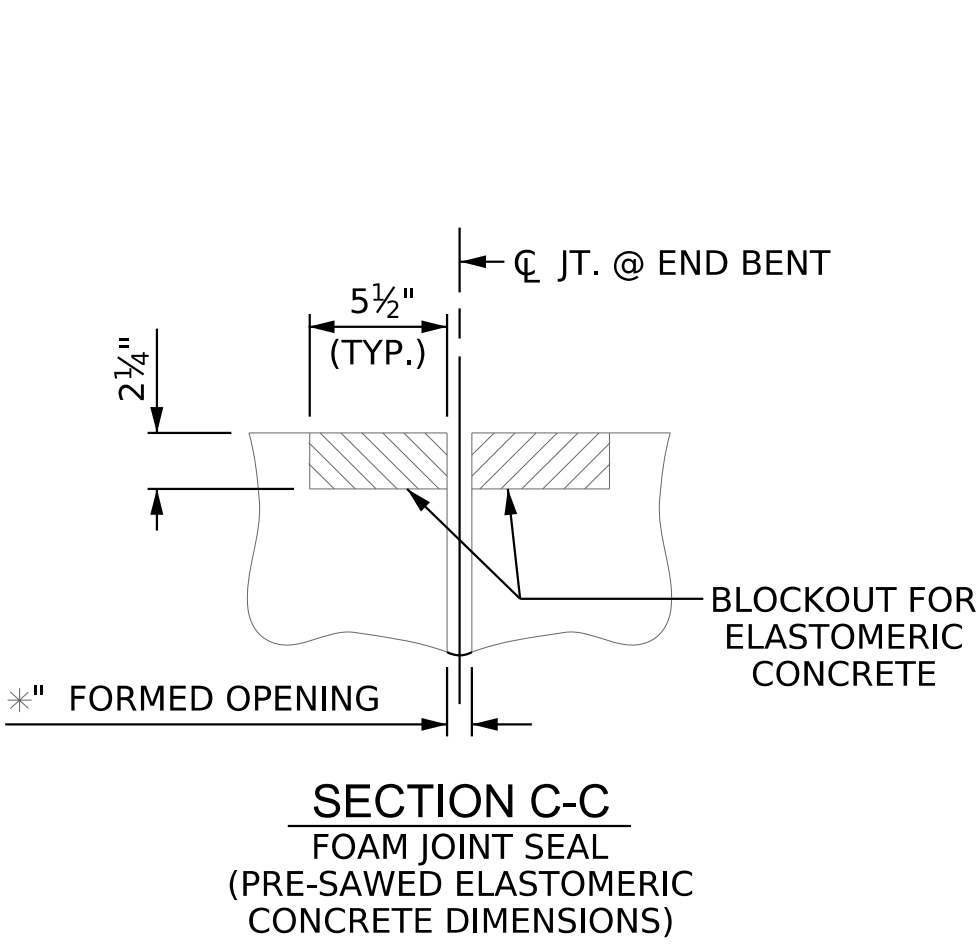
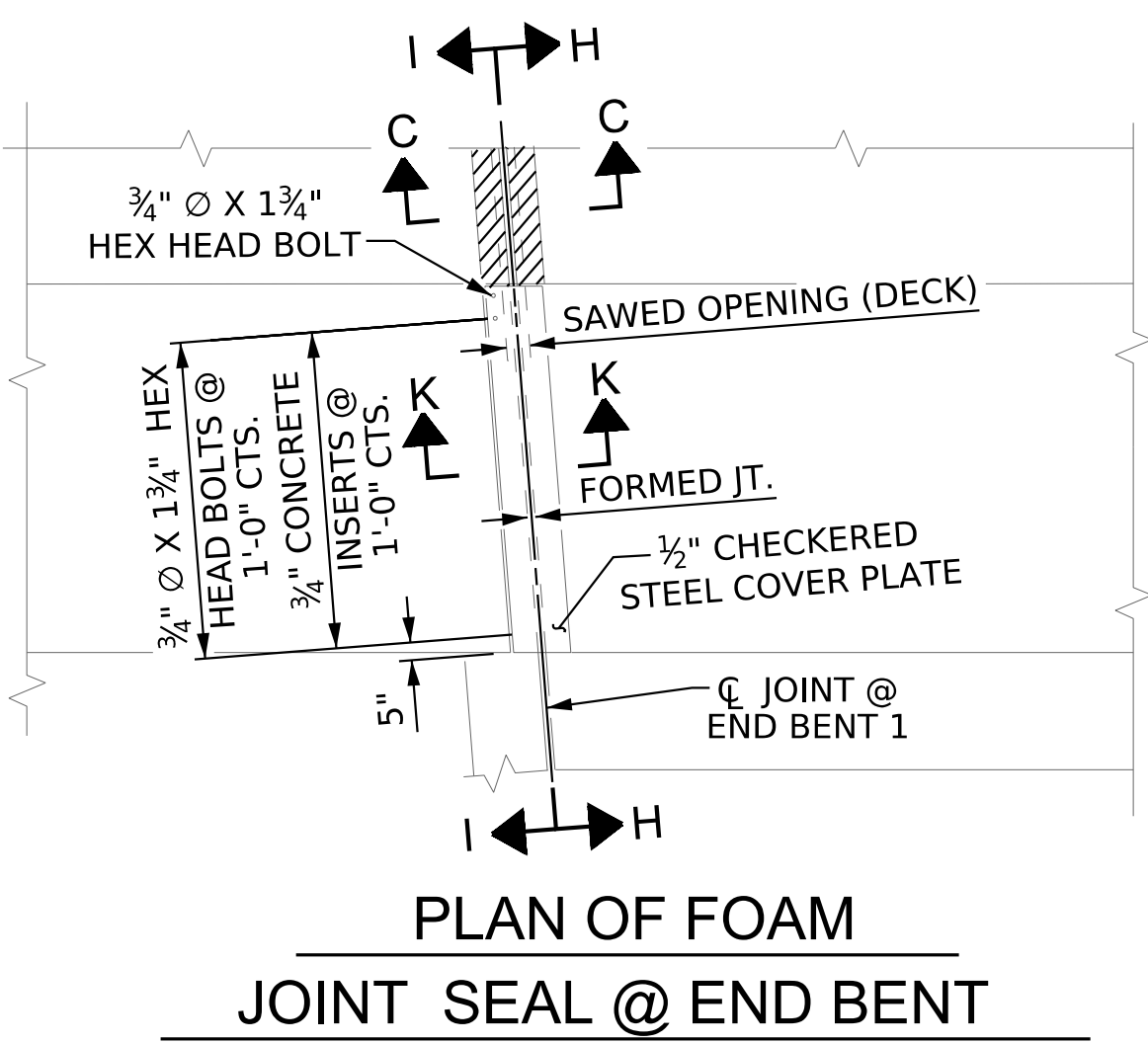
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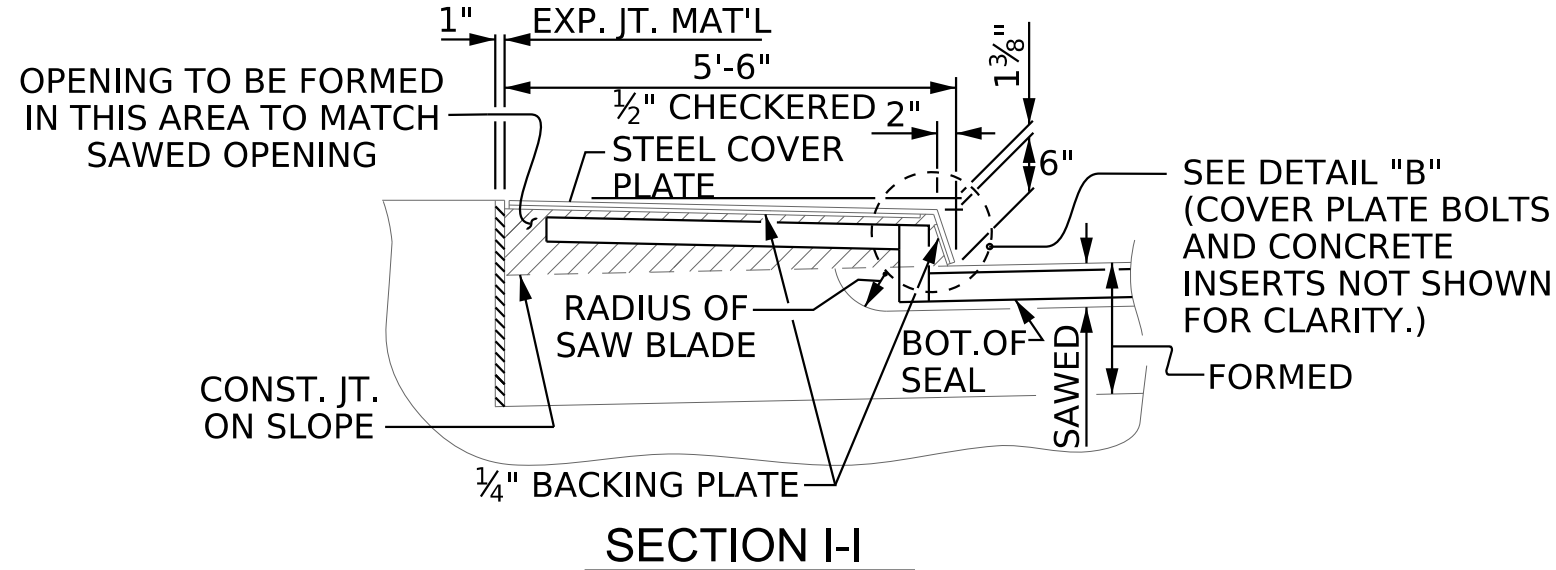
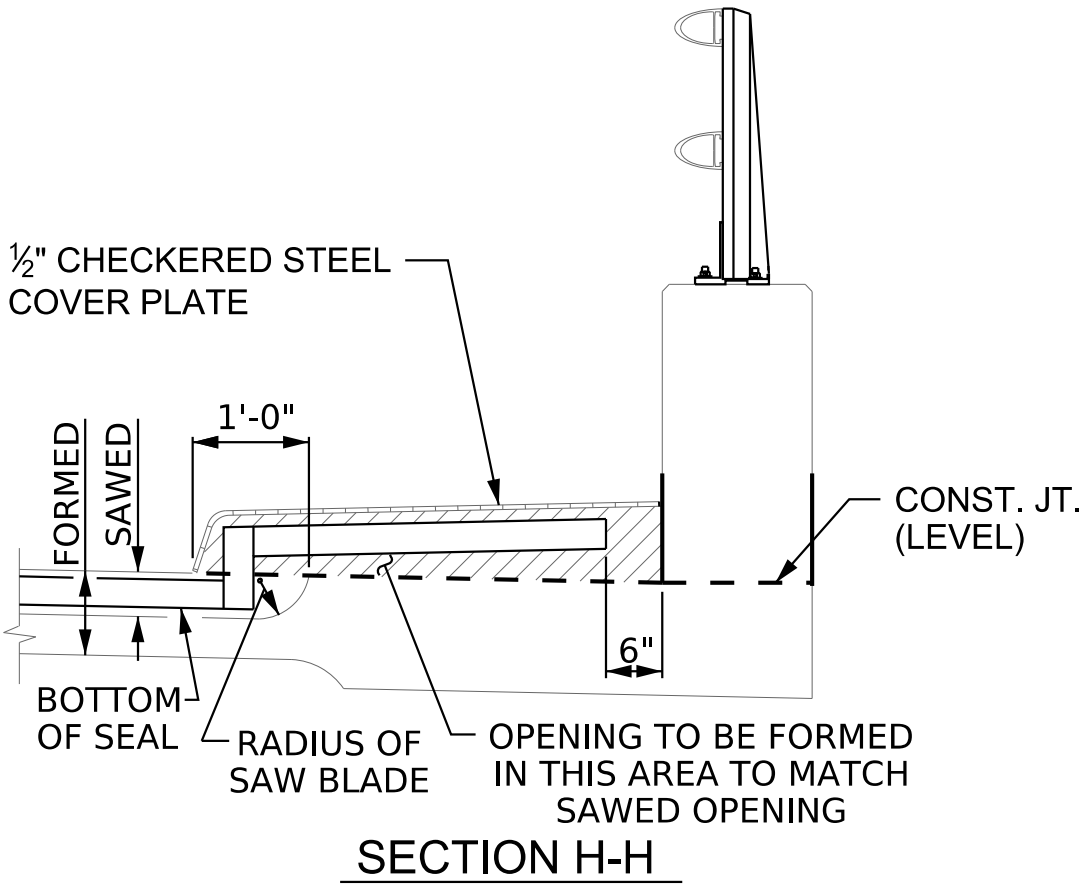
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PLAN VIEW

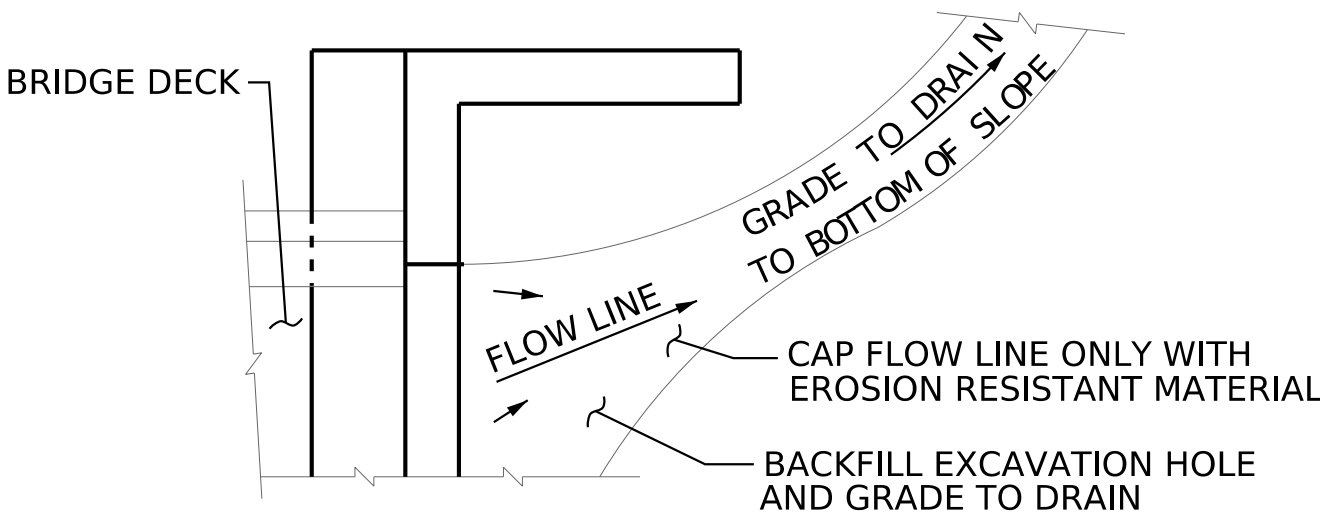
TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	5.7
2	5.7
TOTAL	11.4

* BASED ON THE MINIMUM BLOCKOUT SHOWN.



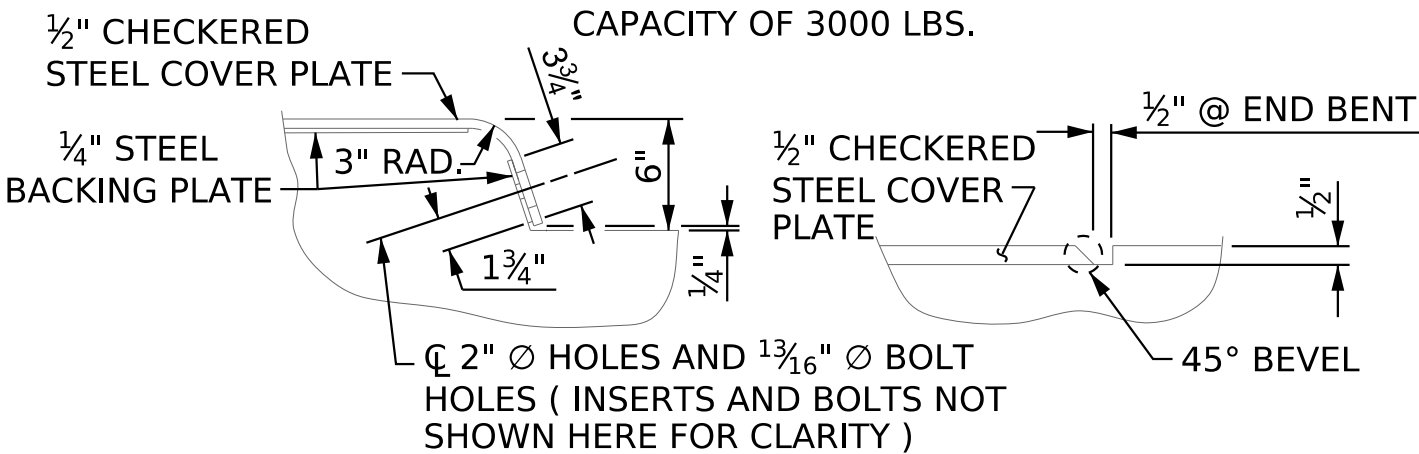
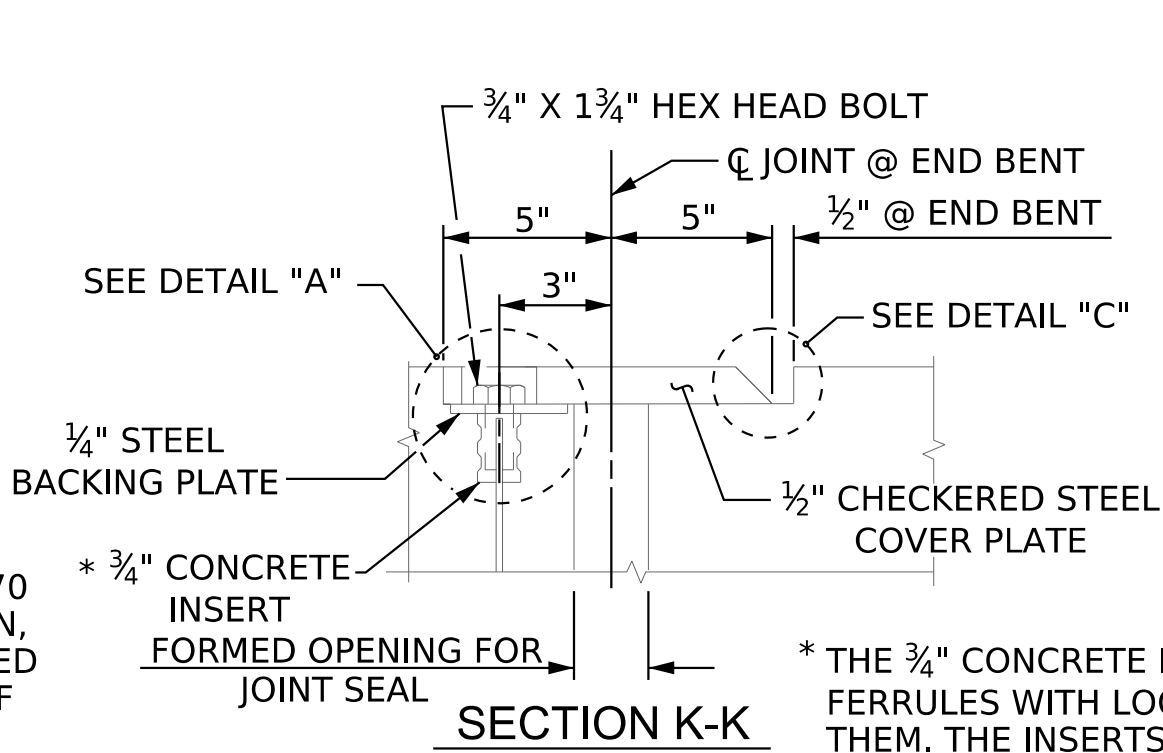
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL

THE STEEL PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR APPROVED EQUAL. AFTER FABRICATION, THE PLATES SHALL BE COMMERCIALY BLAST CLEANED AND EITHER COATED WITH A MINIMUM THICKNESS OF 4 MILS (DRY) OF ZINC-RICH PAINT, GALVANIZED OR METALLIZED TO A MINIMUM THICKNESS OF 6 MILS INACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION), SEE SPECIAL PROVISIONS.

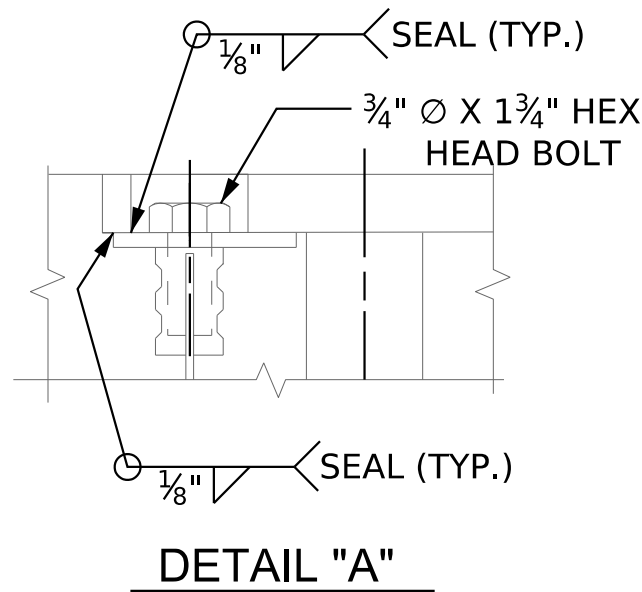
THE 3/4" DIAMETER HEX HEAD BOLTS SHALL CONFORM TO ASTM F593 ALLOY 304 STAINLESS STEEL.

NO SEPARATE PAYMENT WILL BE MADE FOR FURNISHING AND INSTALLING THE COVER PLATE. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE LUMP SUM PRICE FOR "FOAM JOINT SEALS".

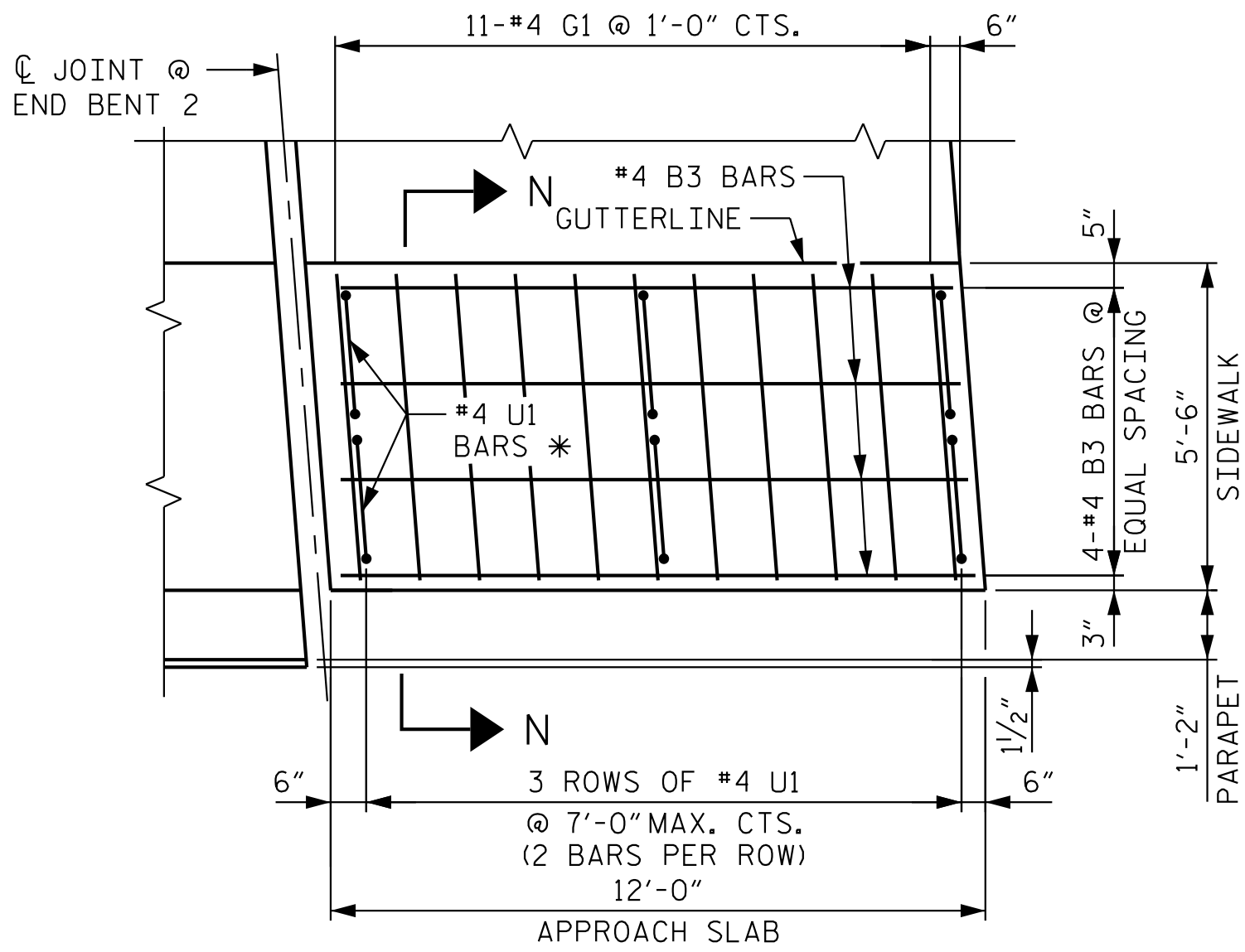
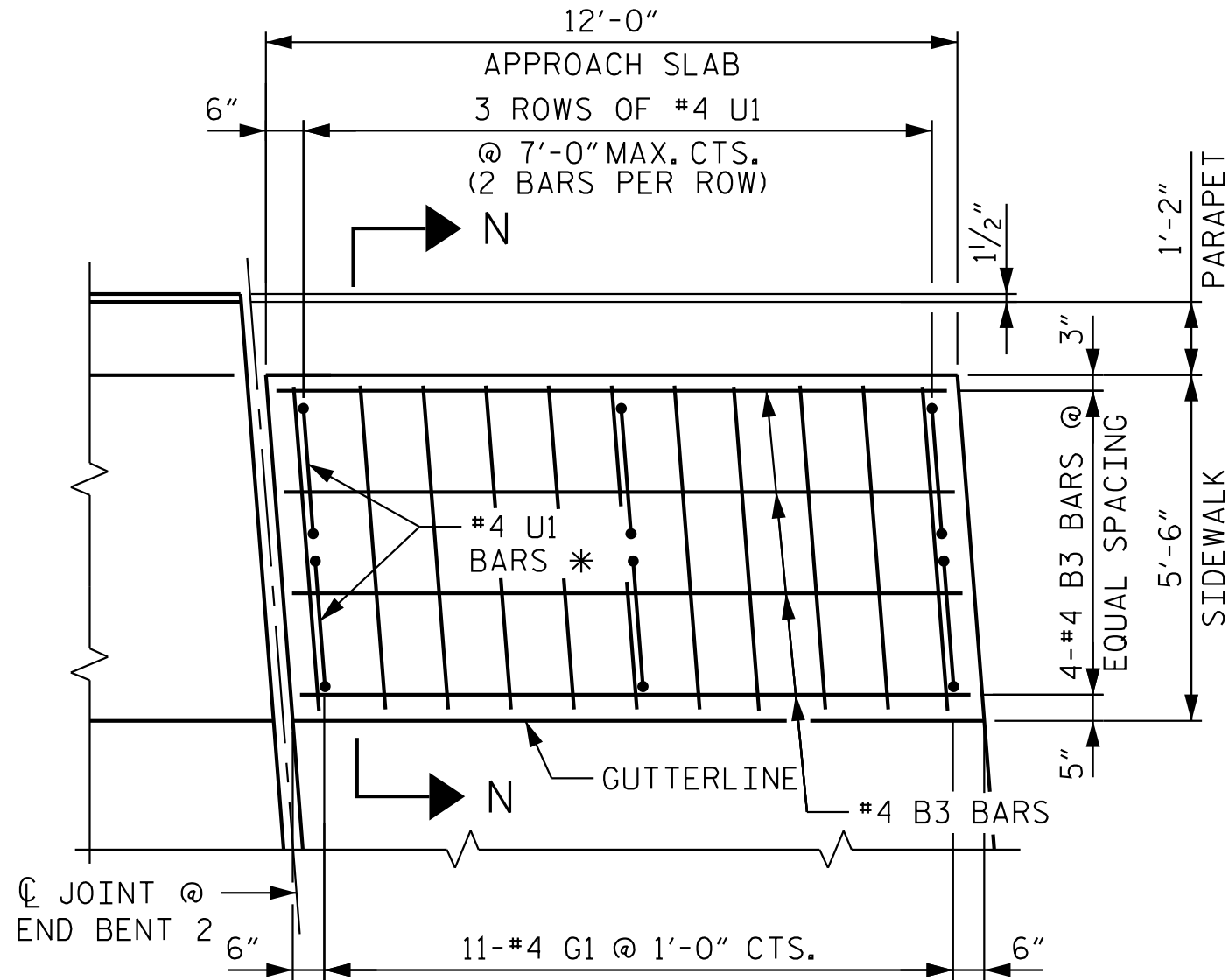


JOINT SEAL DETAILS @ END BENT

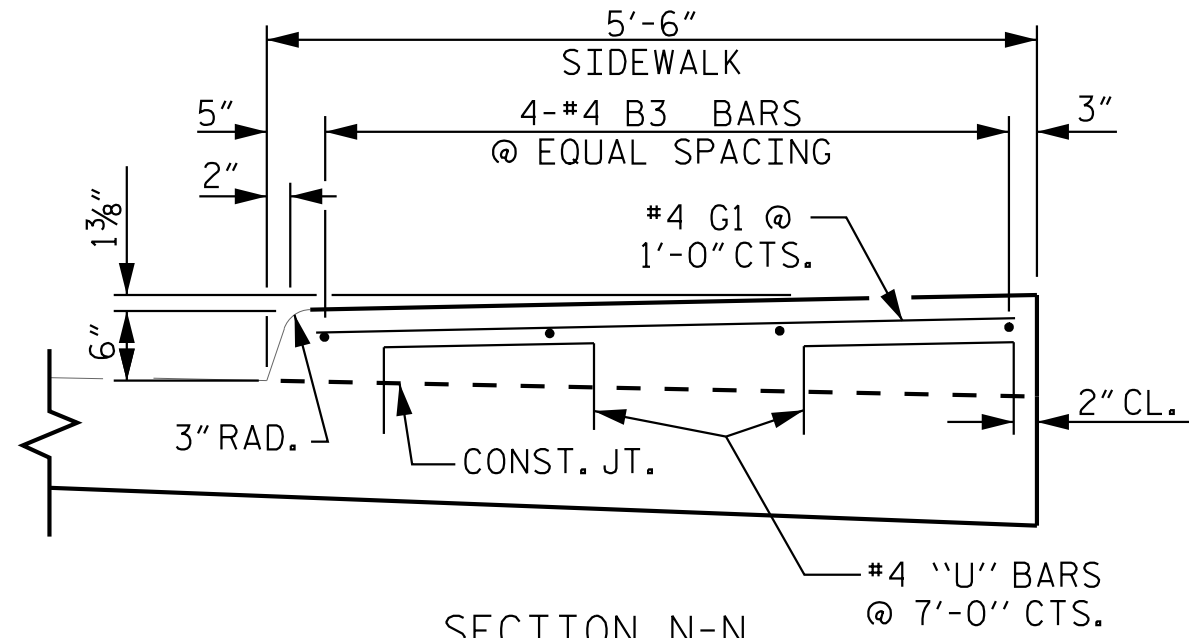
THE NOMINAL UNCOMPRESSED SEAL WIDTH OF THE FOAM JOINT SEAL SHALL BE 2".



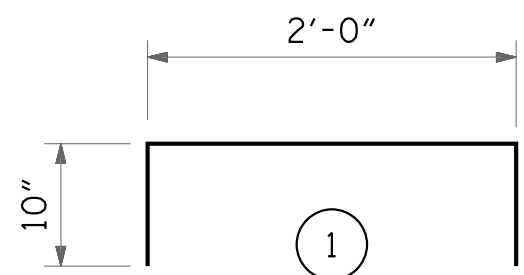
* THE 3/4" CONCRETE INSERTS SHALL BE CLOSED-END FERRULES WITH LOOPED WIRE STRUTS ATTACHED TO THEM. THE INSERTS SHALL CONFORM TO AASHTO M169, GRADE 12L14 AND SHALL HAVE A TENSILE WORKING LOAD CAPACITY OF 3000 LBS.



PLAN OF SIDEWALKS

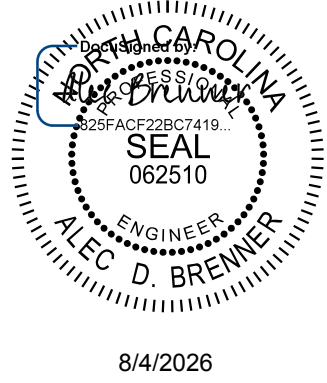


SIDEWALK DETAILS

BAR TYPE		BILL OF MATERIAL					
		APPROACH SLAB AT EB #1					
		BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
		* A1	12	#4	STR	25'-9"	206
		A2	13	#4	STR	25'-9"	224
		* A3	12	#4	STR	15'-7"	125
		A4	13	#4	STR	15'-7"	135
ALL BAR DIMENSIONS ARE OUT TO OUT		* B1	83	#5	STR	11'-8"	1,010
		B2	83	#6	STR	11'-8"	1,454
		* B3	8	#4	STR	11'-8"	62
		* G1	22	#4	STR	5'-0"	73
		* U1	12	#4	1	3'-8"	29
REINFORCING STEEL				LBS.	1,813		
* EPOXY COATED REINFORCING STEEL				LBS.	1,505		
CLASS AA CONCRETE BREAKDOWN							
POUR 1 (SLAB)				C. Y.	16.1		
POUR 2 (SIDEWALK)				C. Y.	2.9		
TOTAL				C. Y.	19.0		

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 32+53.16 -Y2-

SHEET 3 OF 3



8/4/2026

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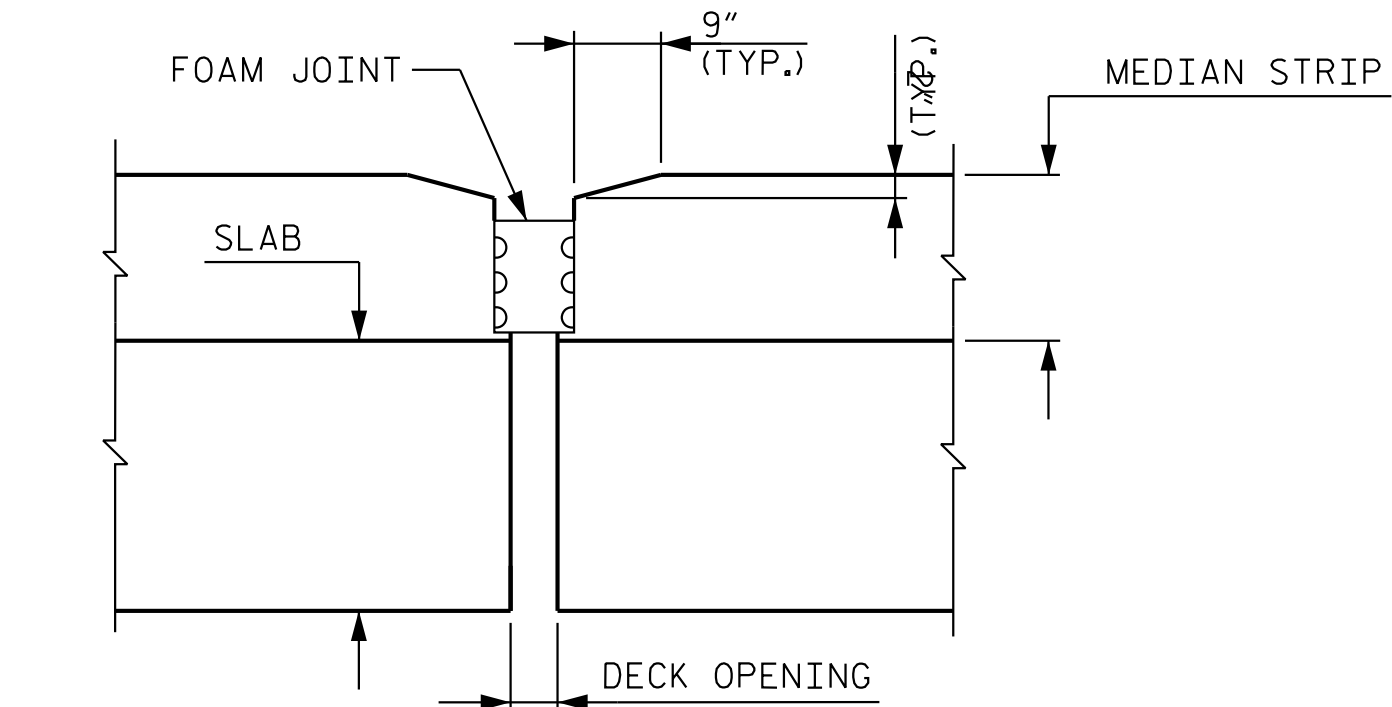
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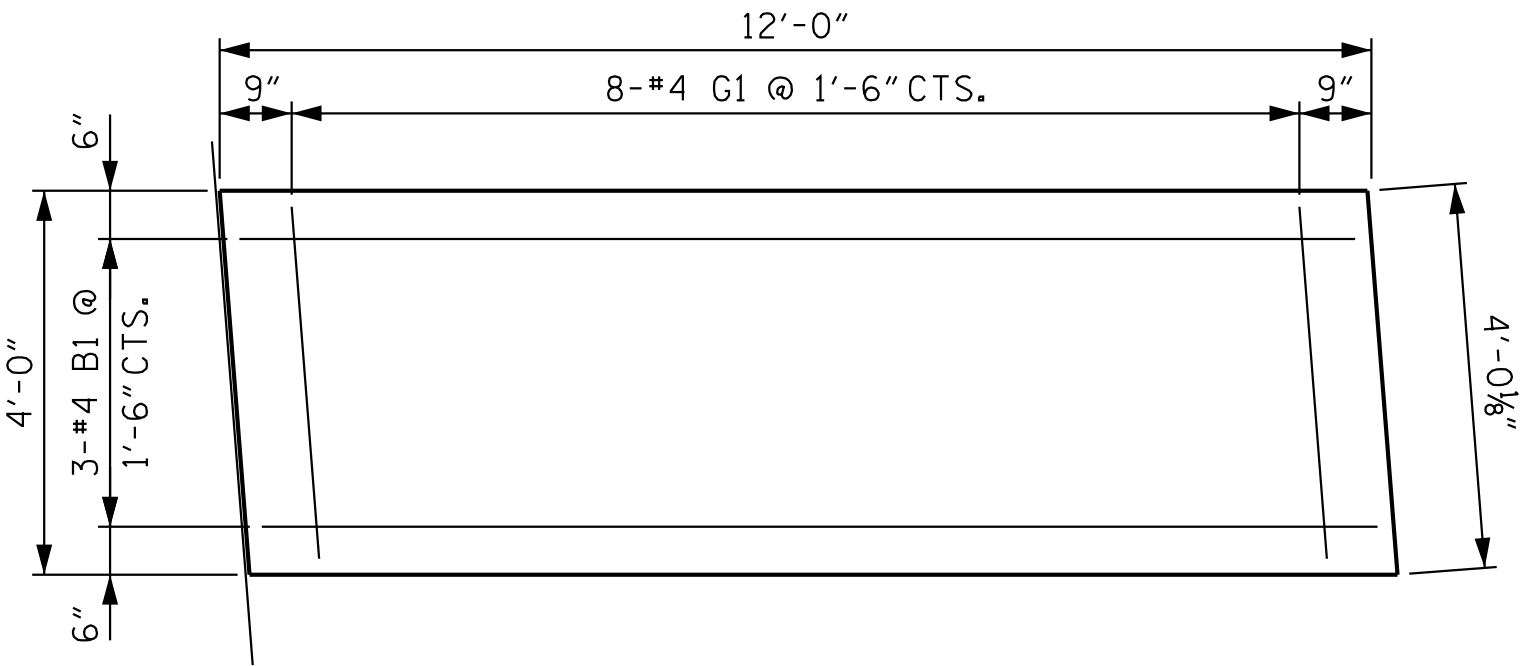
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NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

STR. #4 STD. NO. BAS4 (SHT 2)

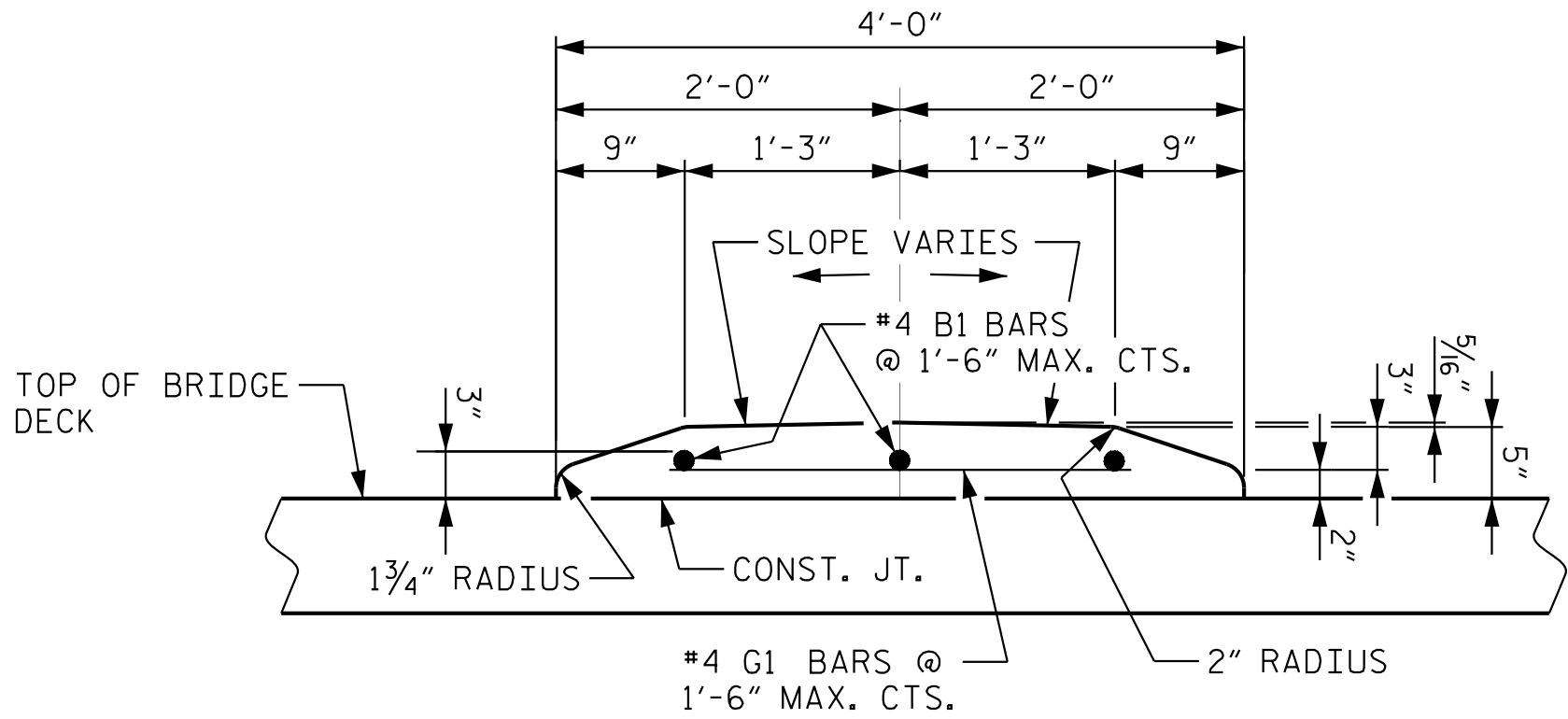
DRAWN BY: T.K. BOYD DATE: 4/26
CHECKED BY: A.D. BRENNER DATE: 4/26
DESIGN ENGINEER OF RECORD: A.L. PHILLIPS DATE: 4/26



DETAILS AT EXPANSION JOINT



PLAN AT APPROACH SLAB



MEDIAN TYPICAL SECTION

BILL OF MATERIAL					
CONCRETE MEDIAN					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*B1	3	#4	STR	11'-8"	23
*G1	8	#4	STR	2'-8"	14
*EPOXY COATED REINFORCING STEEL					37 LBS.
TOTAL CLASS AA CONCRETE					0.7 C.Y.

NOTES

ALL REINFORCING STEEL IN MEDIAN SHALL BE EPOXY COATED.

SEE ROADWAY PLANS FOR CONCRETE MEDIAN OUTSIDE THE BRIDGE LIMITS.

CONSTRUCTION SEQUENCE FOR CONCRETE MEDIAN

- 1-REMOVE PAINT,DIRT,OIL,AND ANY OBJECT OR MATERIAL THAT WILL ADVERSELY IMPACT CONCRETE BOND TO EXISTING BRIDGE DECK.
- 2-CONSTRUCT MEDIAN SECTION.
- 3-SAW CUT CONTRACTION JOINTS.
- 4-SEAL JOINTS.

SAW CUT CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE CUT IN ALL EXPOSED FACES OF THE CONCRETE MEDIAN IN ACCORDANCE WITH ARTICLE 825-10(E) OF THE STANDARD SPECIFICATION. SEAL CONTRACTION JOINT IN ACCORDANCE WITH ARTICLE 825-10(F) OF THE STANDARD SPECIFICATION. THE CONTRACTION JOINTS SHALL BE LOCATED AT A SPACING OF 8 TO 10 FEET BETWEEN EXPANSION JOINTS.NO CONTRACTION JOINT WILL BE REQUIRED IN SEGMENTS LESS THAN 10 FEET.

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 32+53.16 -Y2-



STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
MEDIAN APPROACH SLAB DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 63

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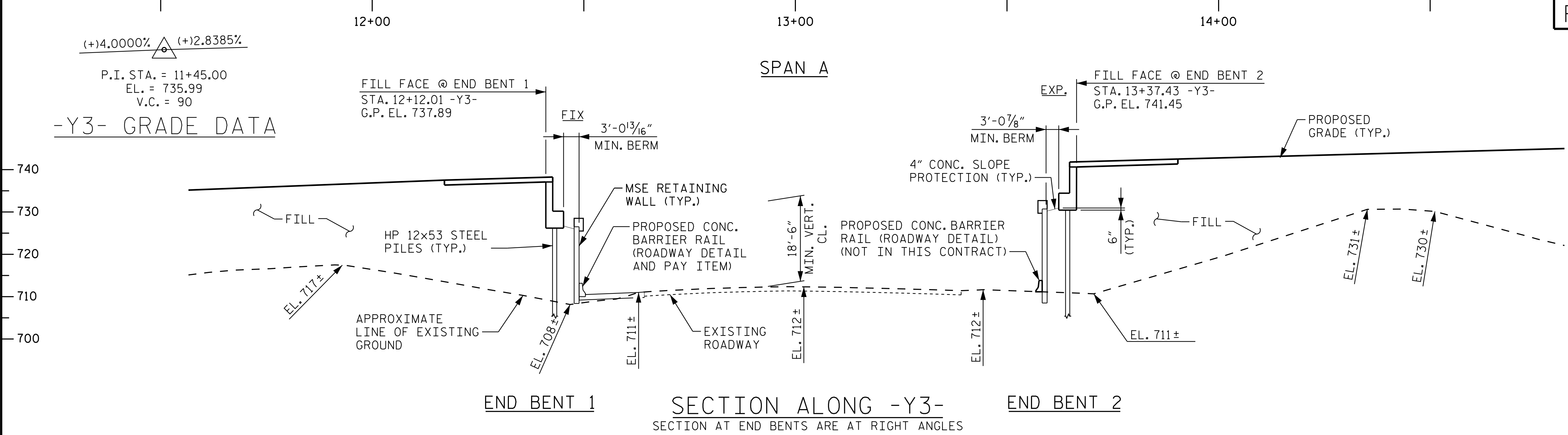
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K:\PDI-Structures\Bridges\N\01036524 - I-5715 Structure Design\Code\Sign\Site *2\Structure 4\Final\404-125-15715-SMU-MD2-590358-063.dgn 8/3/2026

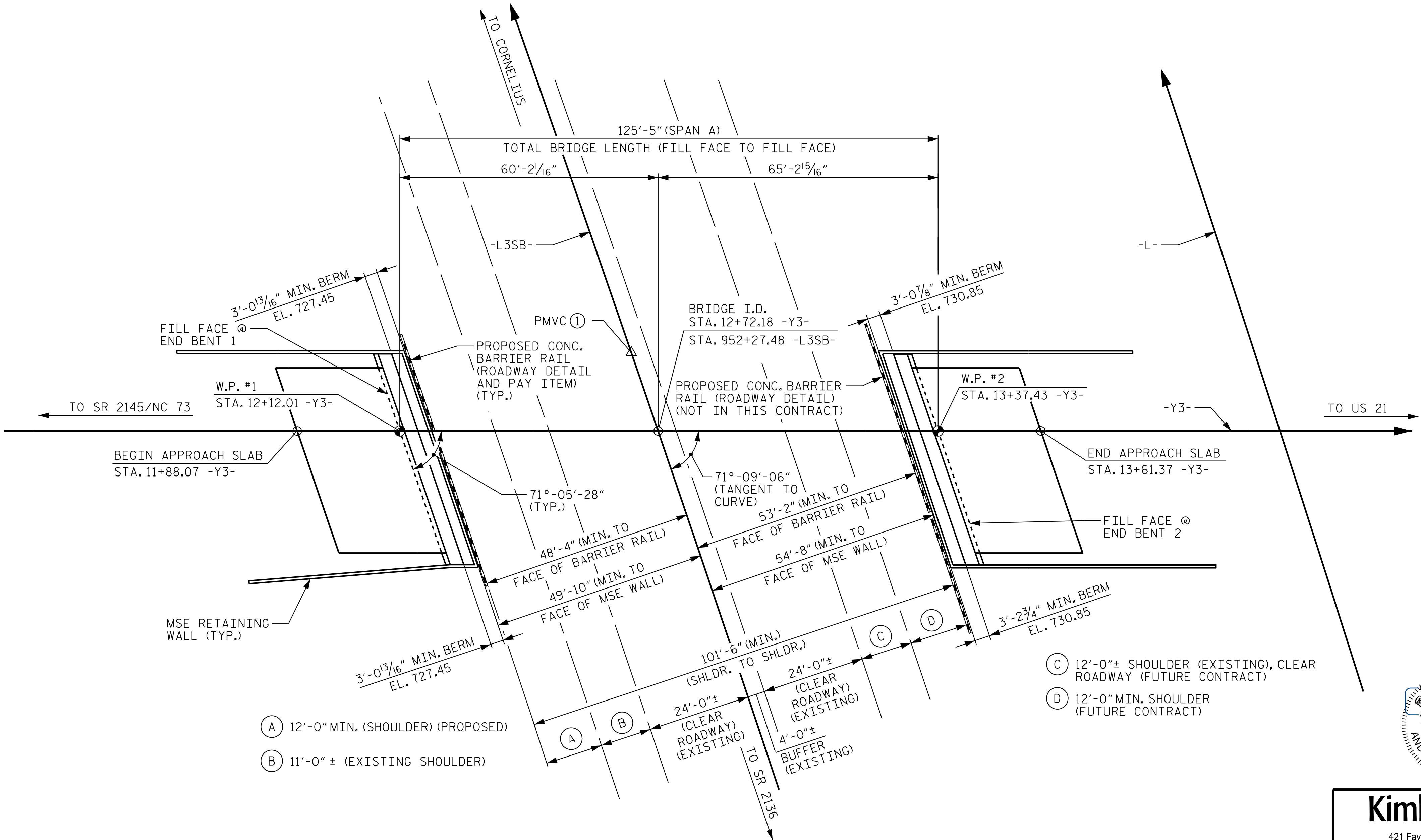
DRAWN BY: <u>T. K. BOYD</u>	DATE: <u>4/26</u>
CHECKED BY: <u>A. D. BRENNER</u>	DATE: <u>4/26</u>
DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>4/26</u>

(+)4.0000% (+)2.8385%
P.I. STA. = 11+45.00
EL. = 735.99
V.C. = 90
-Y3- GRADE DATA



HORIZONTAL CURVE DATA -L3SB-

P.I. STA. 969+88.43
Δ = 26°12'46.8" (LT)
D = 0°29'53.6"
L = 5,261.28'
T = 2,677.51'
R = 11,500.00'



* MINIMUM HORIZONTAL CLEARANCE TO CONCRETE BARRIER RAIL

① STA. 12+68.11 -Y3- OFFSET 11.92' LT. = STA. 952+40.08 -L3SB- OFFSET 0.00' EL. 714.42

PROJECT NO. I-5715

MECKLENBURG COUNTY

STATION: 12+72.18 -Y3-

952+27.48 -L3SB-

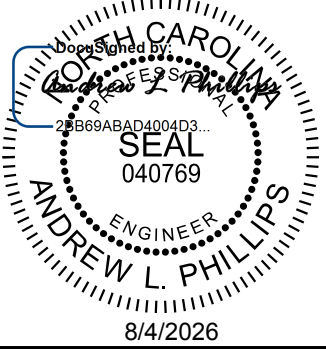
SHEET 1 OF 4 BRIDGE NO. 591417

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER
SOUTHBOUND I-77 ON
I-77 NORTH CROSSING BETWEEN
SR 2145/NC 73 & US 21

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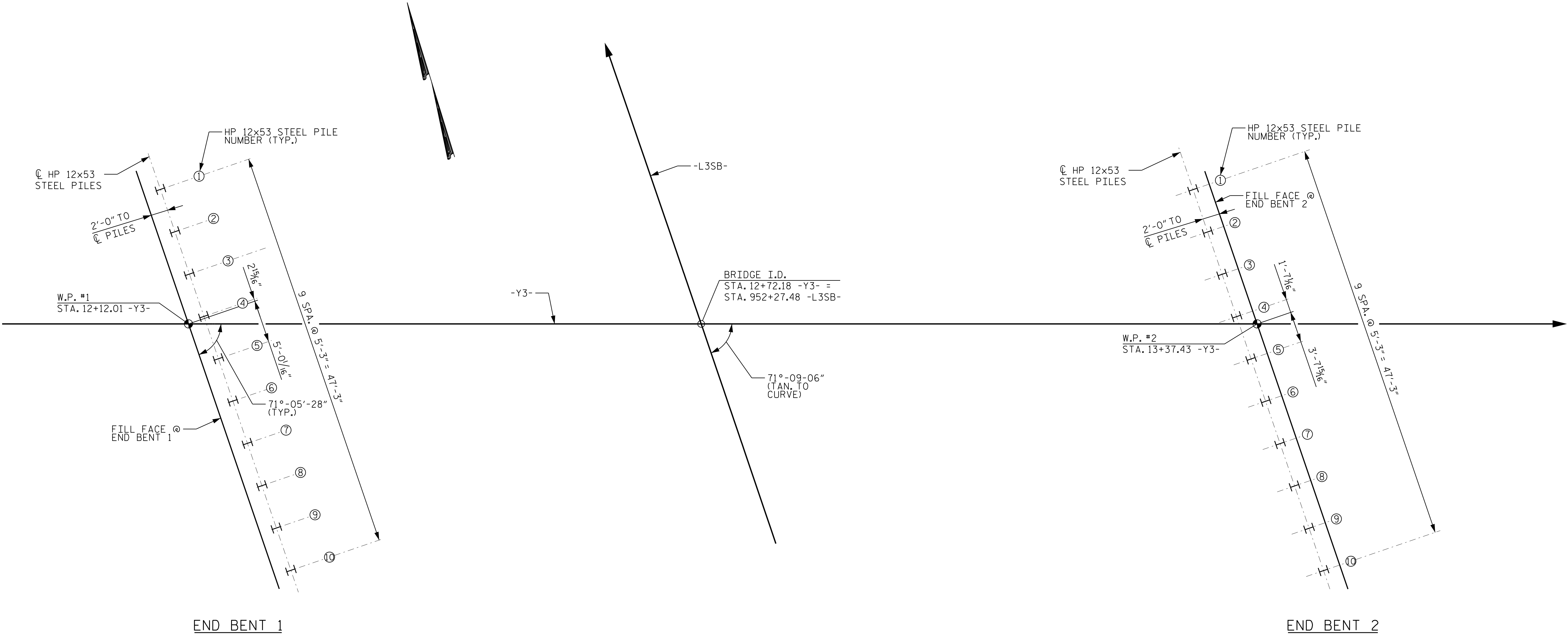
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PILES NOT SHOWN IN PLAN VIEW FOR CLARITY.
PMVC - DENOTES POINT OF MINIMUM VERTICAL CLEARANCE

DRAWN BY: T. K. BOYD DATE: 03/2026
CHECKED BY: E. W. SPRABERRY DATE: 03/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 03/2026

K:\PDT_Structures\Bridges\N\01036524 - I-5715 Structure Design\Cad\Drawn\Site #3\Structure 5\Final\405-003-15115_SMU-FL-591417_002.dgn 8/2/2026



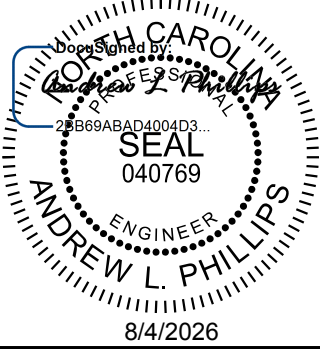
FOUNDATION LAYOUT
(DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES AT BOTTOM OF CAP)

FOUNDATION NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
INSTALL PILES AT END BENT NO.1 AND END BENT NO.2 PRIOR TO MSE WALL CONSTRUCTION.

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 12+72.18 -Y3-

SHEET 2 OF 4



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2			4			35

STR. #5

(Blank entries indicate item is not applicable to structure)

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

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)

* EST = Pile order lengths from estimated pile lengths; DPT = Pile order lengths based on Dynamic Pile Testing. For groups of end bents/bents with pile order lengths based on DPT testing, the first end bent/bent no. listed for each group is the representative end bent/bent with the DPT.

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Thomas R. Wells, #037998) on 02-04-2026.
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 the quantity for DPT Testing and Pipe Pile Plates when necessary.

SHEET 3 OF 4

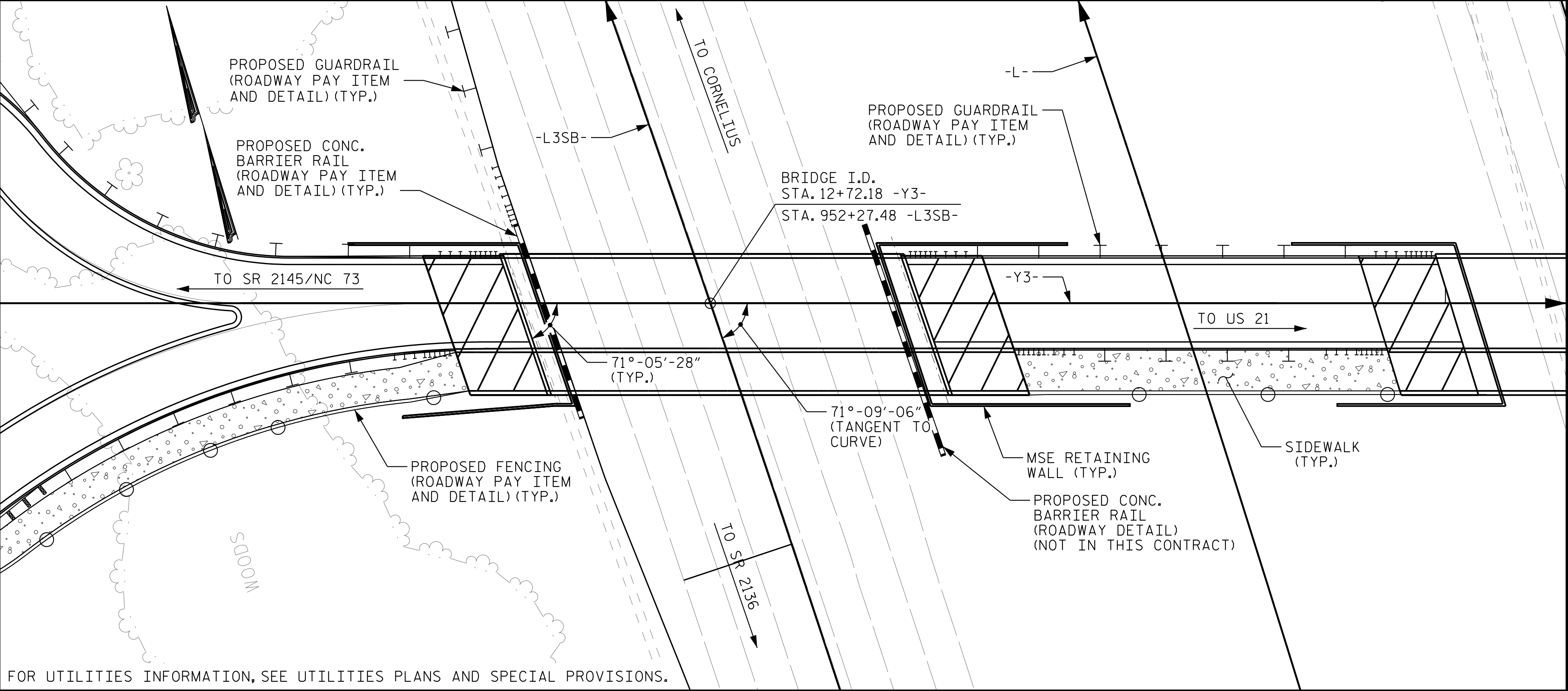


FOR BRIDGE OVER
SOUTHBOUND I-77 ON
I-77 NORTH CROSSING BETWEEN
SR 2145/NC 73 & US 21

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STR. #5

BM #26: TIE SPIKE SET IN 18" OAK TREE, 348.27' RIGHT OF STATION 10+91.79 -Y3-, EL. 725.60'



LOCATION SKETCH

NOTES

- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR 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.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

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

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

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

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

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

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

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

TOTAL BILL OF MATERIAL

	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS STA. 12+72.18 -Y3-	REINFORCING STEEL	FIB 63" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	HP 12x53 STEEL PILES		TWO BAR METAL RAIL	1'-2" X 2'-6" CONCRETE PARAPET	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	FOAM JOINT SEALS	MODIFIED TWO BAR METAL RAIL
	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	EA.	NO.	LIN. FT.	LIN. FT.	LIN. FT.	SQ. YDS.	LUMP SUM	LUMP SUM	LIN. FT.
SUPERSTRUCTURE	5,387	5,862		LUMP SUM		5	605.11				230.46	419.55		LUMP SUM	LUMP SUM	165.40
END BENT 1			42.6		5,846			10	10	500			14.5			
END BENT 2			42.6		5,846			10	10	575			14.5			
TOTAL	5,387	5,862	85.2	LUMP SUM	11,692	5	605.11	20	20	1,075	230.46	419.55	29.0	LUMP SUM	LUMP SUM	165.40

SAMPLE BAR REPLACEMENT	
SIZE	LENGTH
#3	6'-2"
#4	7'-4"
#5	8'-6"
#6	9'-8"
#7	10'-10"
#8	12'-0"
#9	13'-2"
#10	14'-6"
#11	15'-10"

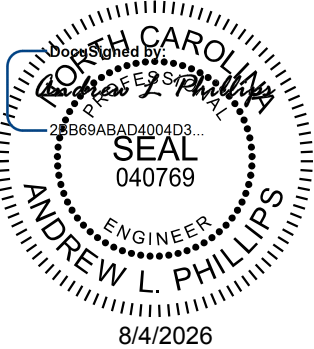
NOTE:
SAMPLE BAR REPLACEMENT LENGTHS
BASED ON 30" (SAMPLE LENGTH) PLUS
TWO SPLICE LENGTHS AND $f_y = 60\text{ksi}$.

DRAWN BY: T. K. BOYD
 DATE: 03/2026

CHECKED BY: E. W. SPRABERRY
 DATE: 03/2026

DESIGN ENGINEER OF RECORD: A. L. PHILLIPS
 DATE: 03/2026

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PROJECT NO. I-5715

MECKLENBURG COUNTY

STATION: 12+72.18 -Y3-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
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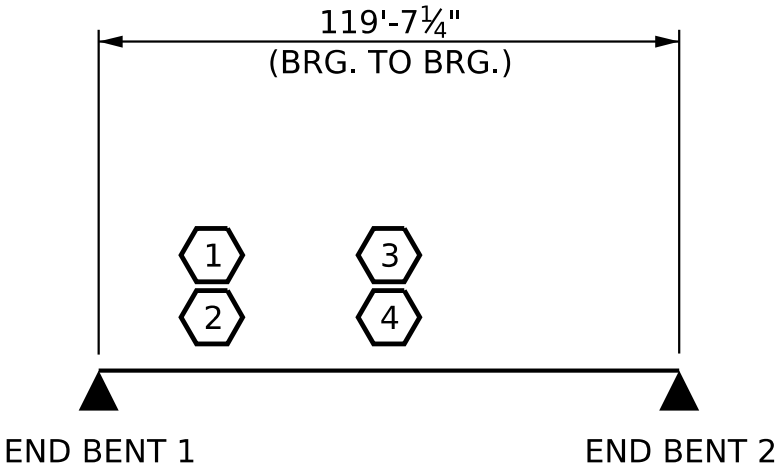
GENERAL DRAWING
 FOR BRIDGE OVER
 SOUTHBOUND I-77 ON
 I-77 NORTH CROSSING BETWEEN
 SR 2145/NC 73 & US 21

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1			3			TOTAL SHEETS 35
2			4			

STR. #5

K:\RD1_Structures\Bridges\N\01036524 - I-5715 Structure Design\Cad\00gn\Site *3\Structure \$VFinal\405-009-15115_SML_GD3_591417_005.dgn 8/2/2026

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)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	SHEAR		LIVE-LOAD FACTORS (γ LL)	MOMENT									
												DISTRIBUTION FACTORS (DF)	RATING FACTOR		DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)					
DESIGN LOAD	HL-93 (INVENTORY)	N/A	Ⓔ	1.10	--	1.75	0.820	1.56	A	E	58.400	0.960	1.10	A	I	11.100	0.80	0.750	1.16	A	I	58.400		
	HL-93 (OPERATING)	N/A		1.46	--	1.35	0.820	2.28	A	E	58.400	0.960	1.46	A	I	11.100	N/A	--	--	--	--	--		
	HS-20 (INVENTORY)	36.000	Ⓔ	1.58	56.88	1.75	0.820	2.02	A	E	58.400	0.960	1.58	A	I	11.100	0.80	0.750	1.69	A	I	58.400		
	HS-20 (OPERATING)	36.000		2.08	74.88	1.35	0.820	2.95	A	E	58.400	0.960	2.08	A	I	11.100	N/A	--	--	--	--	--		
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		4.10	55.35	1.40	0.820	6.90	A	E	58.400	0.960	5.15	A	I	11.100	0.80	0.750	4.10	A	I	58.400	
		SNGARBS2	20.000		2.93	58.60	1.40	0.820	4.94	A	E	58.400	0.960	3.55	A	I	11.100	0.80	0.750	2.93	A	I	58.400	
		SNAGRIS2	22.000		2.73	60.06	1.40	0.820	4.59	A	E	58.400	0.960	3.26	A	I	11.100	0.80	0.750	2.73	A	I	58.400	
		SNCOTTS3	27.250		2.04	55.59	1.40	0.820	3.43	A	E	58.400	0.960	2.51	A	I	11.100	0.80	0.750	2.04	A	I	58.400	
		SNAGGRS4	34.925		1.66	57.98	1.40	0.820	2.78	A	E	58.400	0.960	2.01	A	I	11.100	0.80	0.750	1.66	A	E	58.400	
		SNS5A	35.550		1.62	57.59	1.40	0.820	2.73	A	E	58.400	0.960	2.01	A	I	11.100	0.80	0.750	1.62	A	I	58.400	
		SNS6A	39.950		1.47	58.73	1.40	0.820	2.47	A	E	58.400	0.960	1.80	A	I	11.100	0.80	0.750	1.47	A	I	58.400	
		SNS7B	42.000		1.40	58.80	1.40	0.820	2.35	A	E	58.400	0.960	1.74	A	I	11.100	0.80	0.750	1.40	A	I	58.400	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.79	59.07	1.40	0.820	3.00	A	E	58.400	0.960	2.18	A	I	11.100	0.80	0.750	1.79	A	E	58.400	
		TNT4A	33.075		1.79	59.20	1.40	0.820	3.01	A	E	58.400	0.960	2.15	A	I	11.100	0.80	0.750	1.79	A	I	58.400	
		TNT6A	41.600		1.44	59.90	1.40	0.820	2.43	A	E	58.400	0.960	1.82	A	I	11.100	0.80	0.750	1.44	A	I	58.400	
		TNT7A	42.000		1.44	60.48	1.40	0.820	2.43	A	E	58.400	0.960	1.79	A	I	11.100	0.80	0.750	1.44	A	I	58.400	
		TNT7B	42.000		1.47	61.74	1.40	0.820	2.47	A	E	58.400	0.960	1.72	A	I	11.100	0.80	0.750	1.47	A	I	58.400	
		TNAGRIT4	43.000		1.41	60.63	1.40	0.820	2.38	A	E	58.400	0.960	1.67	A	I	11.100	0.80	0.750	1.41	A	I	58.400	
		TNAGT5A	45.000		1.34	60.30	1.40	0.820	2.26	A	E	58.400	0.960	1.63	A	I	11.100	0.80	0.750	1.34	A	I	58.400	
		TNAGT5B	45.000	Ⓔ	1.33	59.85	1.40	0.820	2.24	A	E	58.400	0.960	1.58	A	I	11.100	0.80	0.750	1.33	A	I	58.400	
EMERGENCY VEHICLE (EV)	EV2	28.750		2.06	59.23	1.30	0.820	3.73	A	E	58.400	0.960	2.65	A	I	11.100	0.80	0.750	2.06	A	I	58.400		
	EV3	43.000	Ⓔ	1.36	58.48	1.30	0.820	2.47	A	E	58.400	0.960	1.74	A	I	11.100	0.80	0.750	1.36	A	I	58.400		



LRFR SUMMARY

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γDC	γDW
	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.

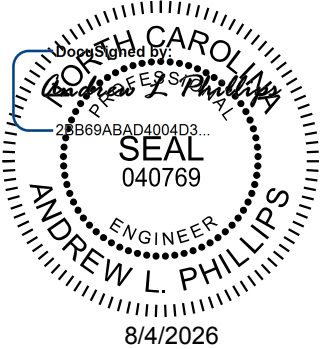
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

-
-
-
-

#	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-5715
MECKLENBURG COUNTY
STATION: 12+72.18 -Y3-



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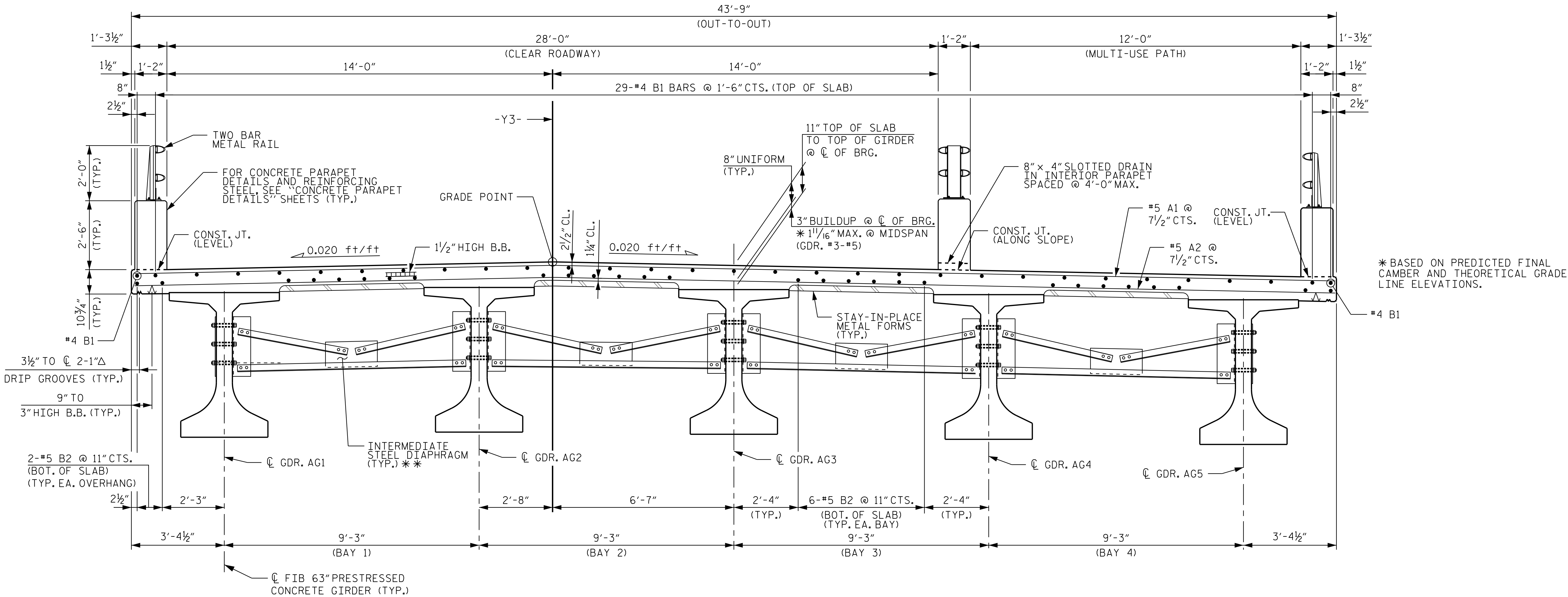
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DRAWN BY: T. K. BOYD DATE: 03/2026
CHECKED BY: E. W. SPRABERRY DATE: 03/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 03/2026

REVISIONS						SHEET NO. S5-5
NO.	BY:	DATE:	NO.	BY:	DATE:	
①			③			TOTAL SHEETS
②			④			35

STR. #5

STD. LRFR1



TYPICAL SECTION
(SHOWING INTERMEDIATE DIAPHRAGM)

NOTES

PROVIDE 1 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.

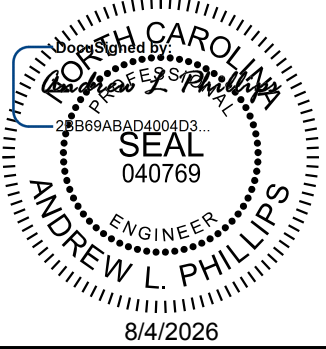
LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

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

* FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS, SEE "INTERMEIATE STEEL DIAPHRAGMS FOR 63" FIB" SHEET.

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 12+72.18 -Y3-

SHEET 1 OF 2



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STATE OF NORTH CAROLINA
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RALEIGH

SUPERSTRUCTURE
TYPICAL SECTIONS

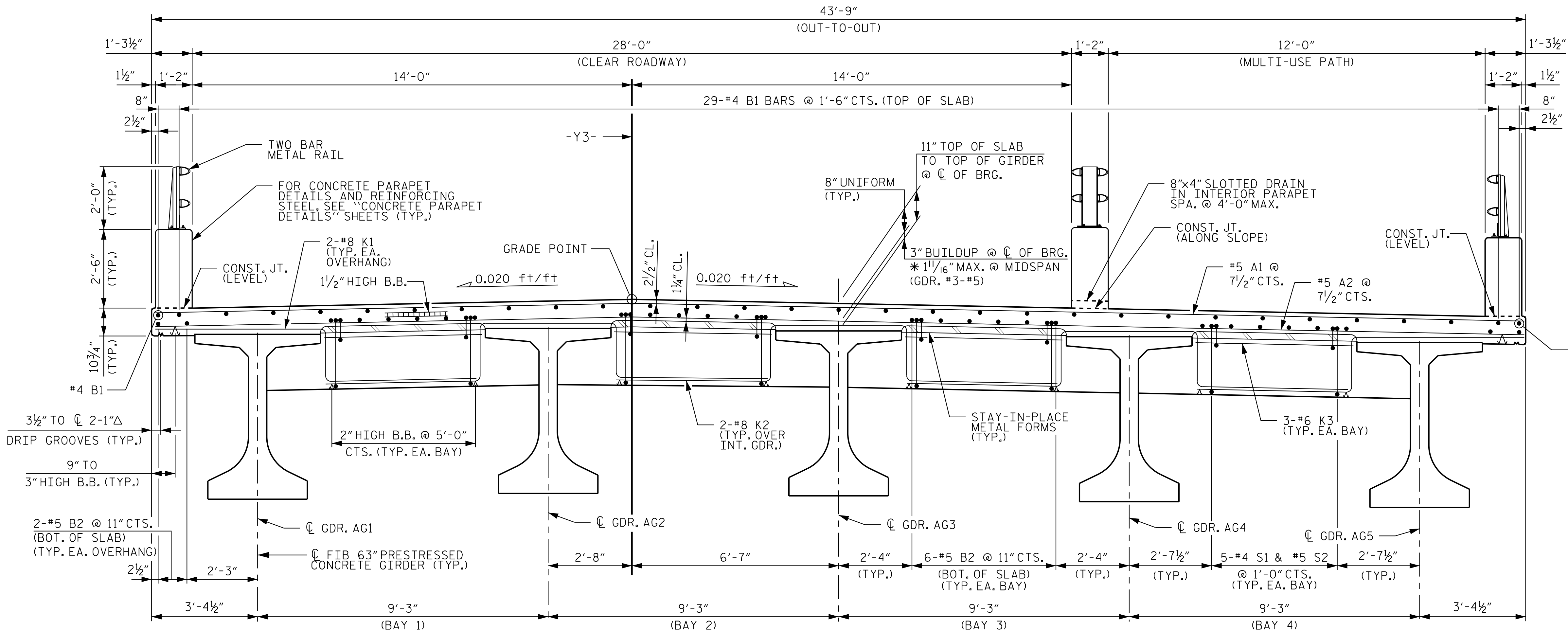
REVISIONS						SHEET NO. S5-6
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

STR. #5

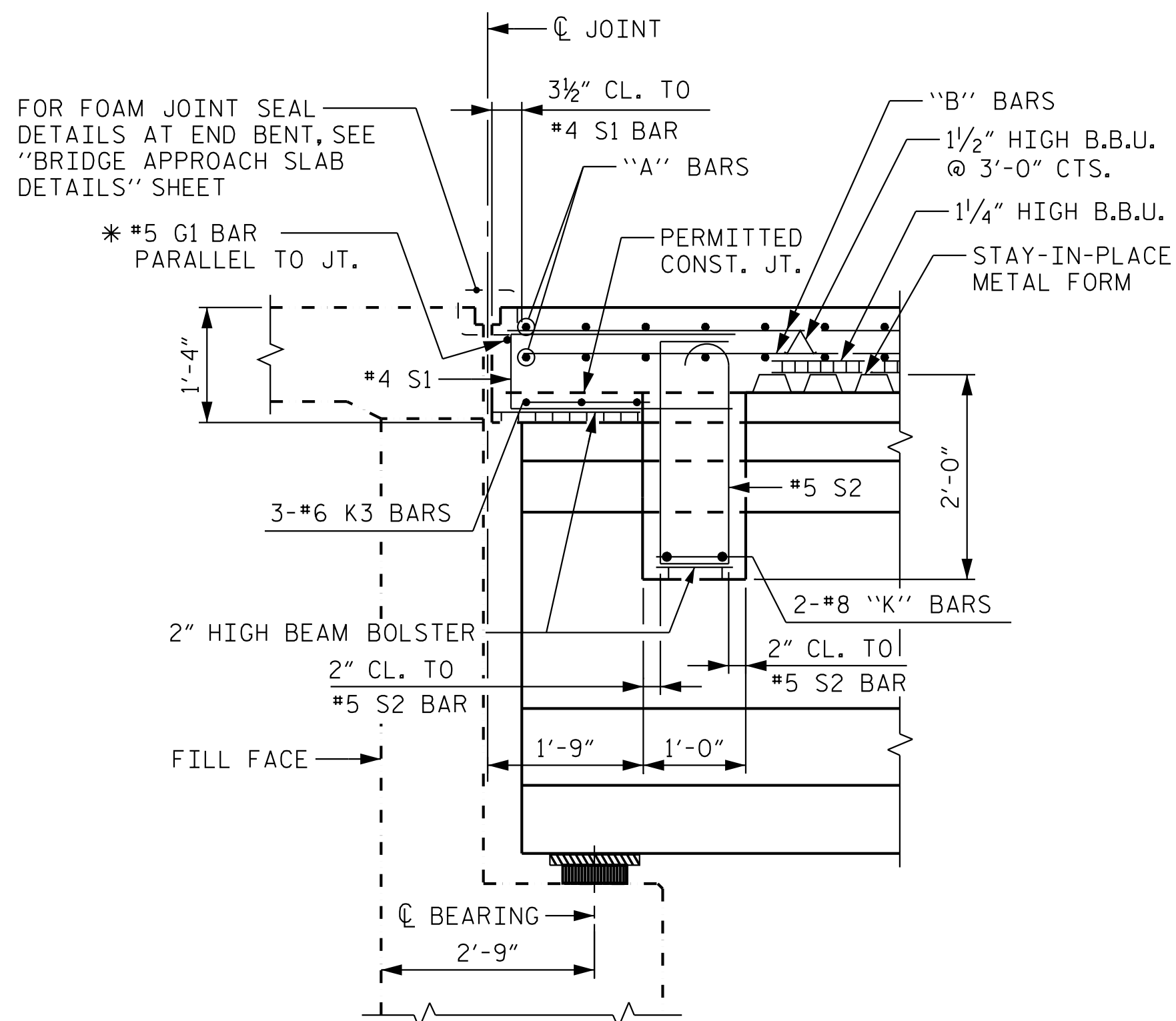
K:\PDI_Structures\Bridge\NC\01036524 - I-5715 Structure Design\Cad\Drawn\Site *3\Structure 5\Final\405-01-I5715-SMU-TSL59147-006.dgn 8/2/2026

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DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 03/2026

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8/2/2026

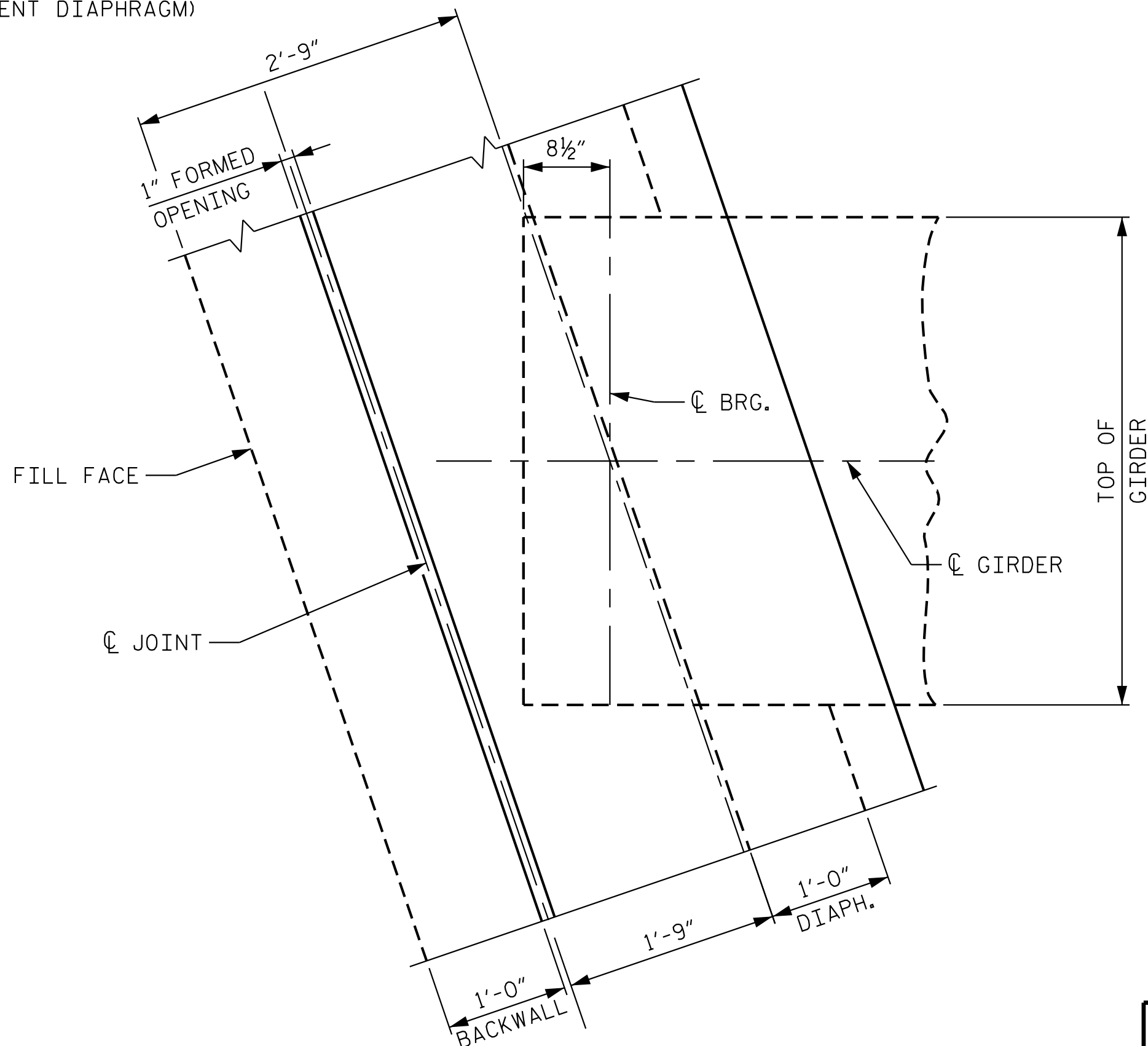


TYPICAL SECTION
(SHOWING END BENT DIAPHRAGM)



SECTION THRU END BENT DIAPHRAGM

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



END BENT DIAPHRAGM PLAN

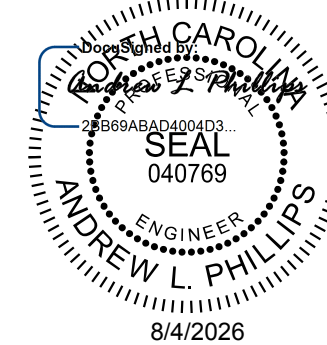
NOTES

FOR NOTES, SEE SHEET 1 OF 2.

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

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 12+72.18 -Y3-

SHEET 2 OF 2



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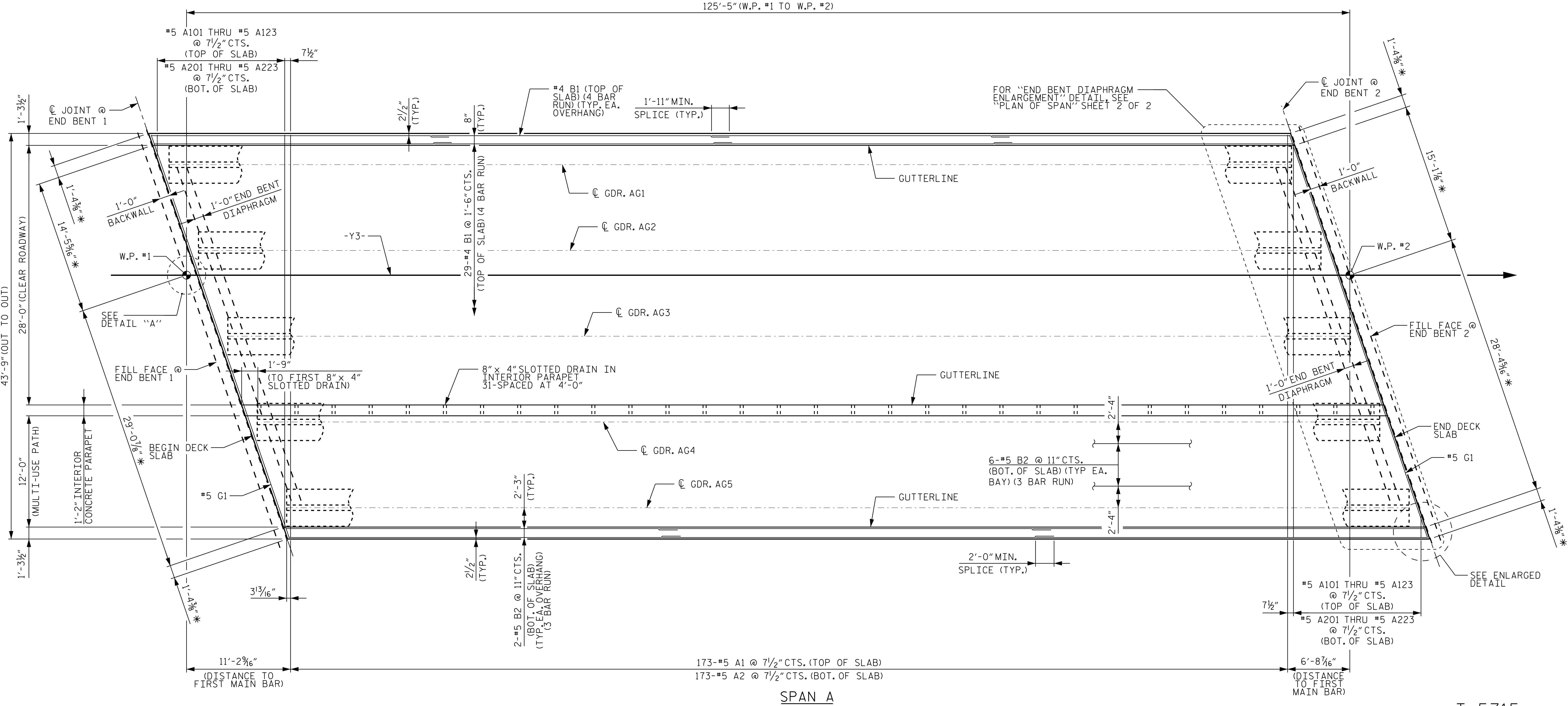
SUPERSTRUCTURE
TYPICAL SECTIONS

REVISIONS						SHEET NO. S5-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

STR. #5

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NOTES:

FOR POUR SEQUENCE AND LOCATION OF CONSTRUCTION JOINTS, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.

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

FOR CONCRETE PARAPET REINFORCING STEEL SEE "CONCRETE PARAPET DETAILS" SHEET.

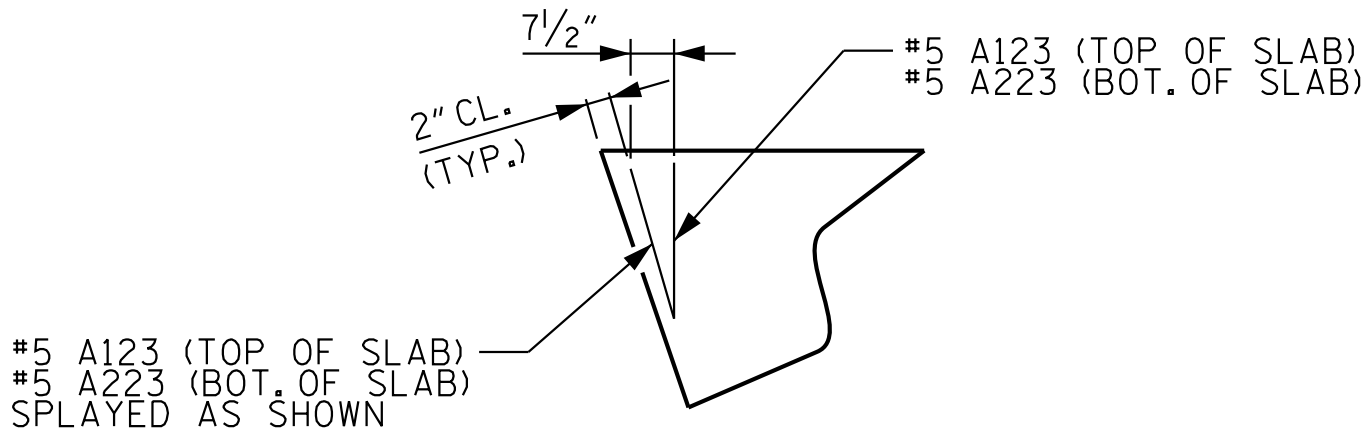
INTERMEDIATE DIAPHRAGMS NOT SHOWN FOR CLARITY. SEE "FRAMING PLAN" SHEET.

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

SEE PLAN OF SPAN SHEET 2 OF 2 FOR "DETAIL A".

PLAN OF SPAN

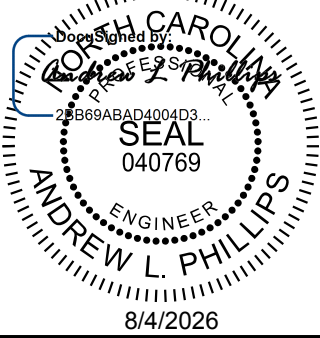
* DENOTES MEASURED ALONG CL OF JOINT



ENLARGED DETAIL

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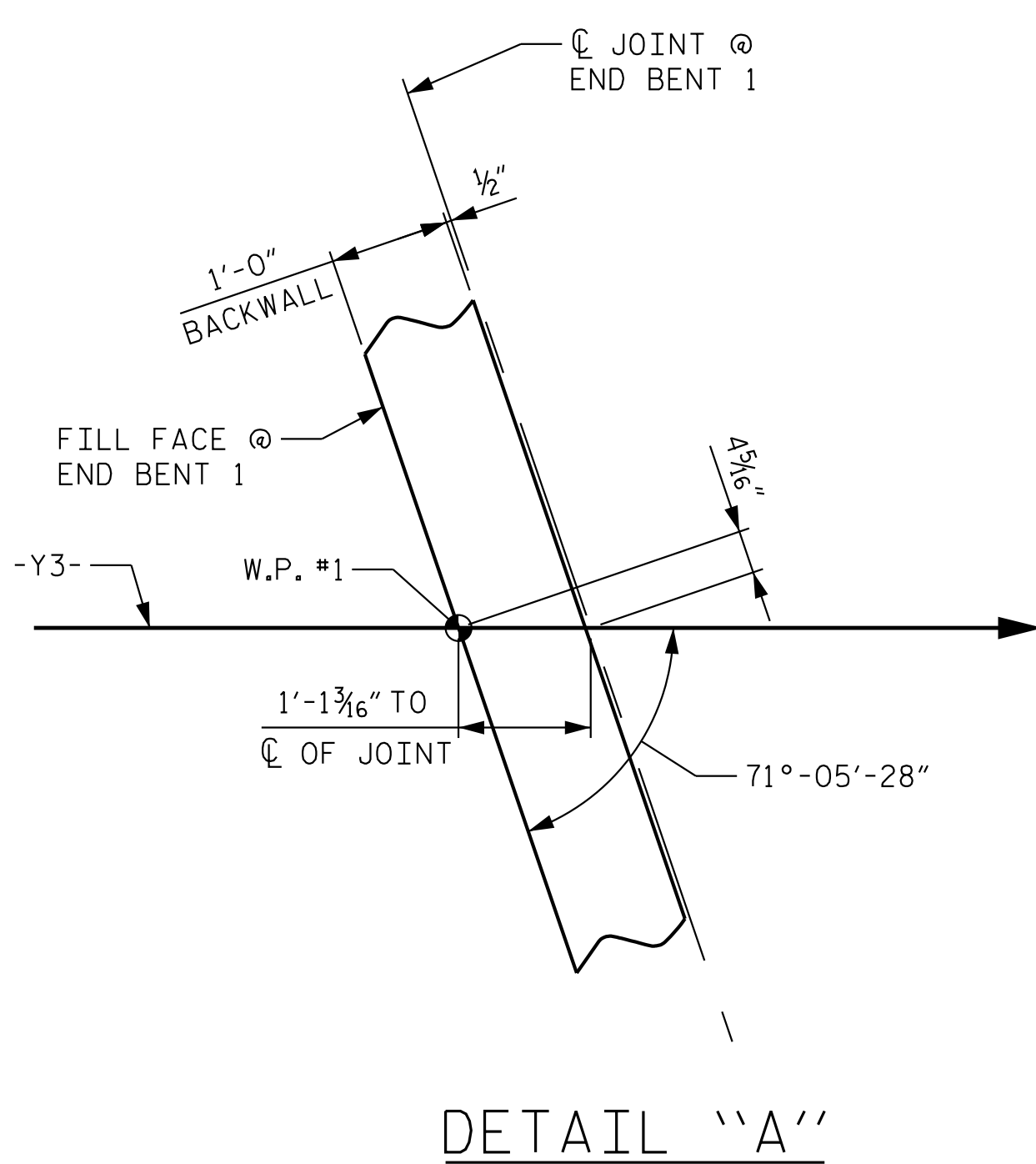
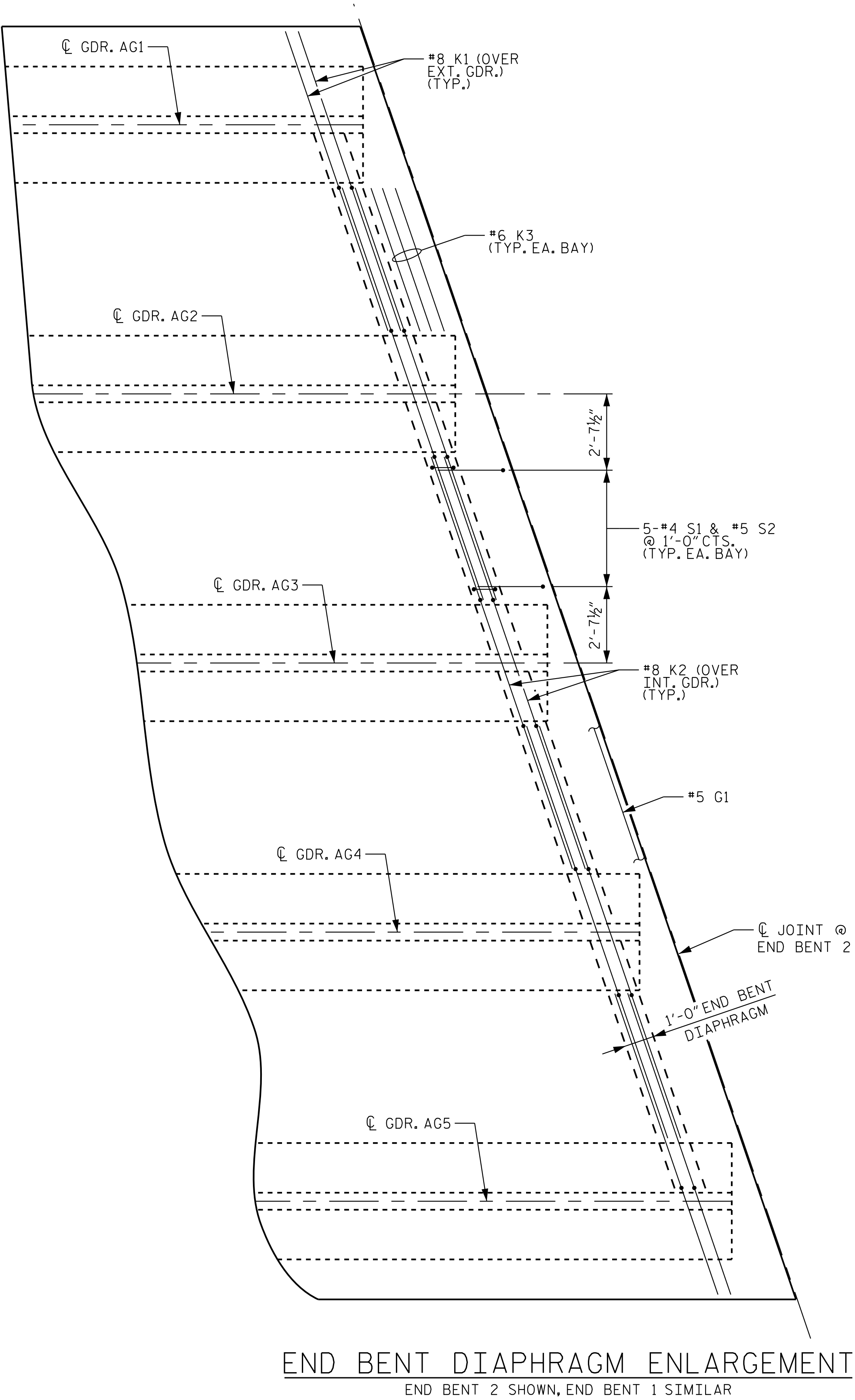
PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 12+72.18 -Y3-

SHEET 1 OF 2

REVISIONS						SHEET NO. S5-8
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1			3			TOTAL SHEETS 35
2			4			

STR. #5

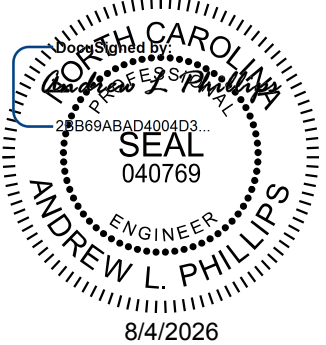
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NOTES:
FOR NOTES, SEE SHEET 1 OF 2.

PROJECT NO. I-5715
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SHEET 2 OF 2



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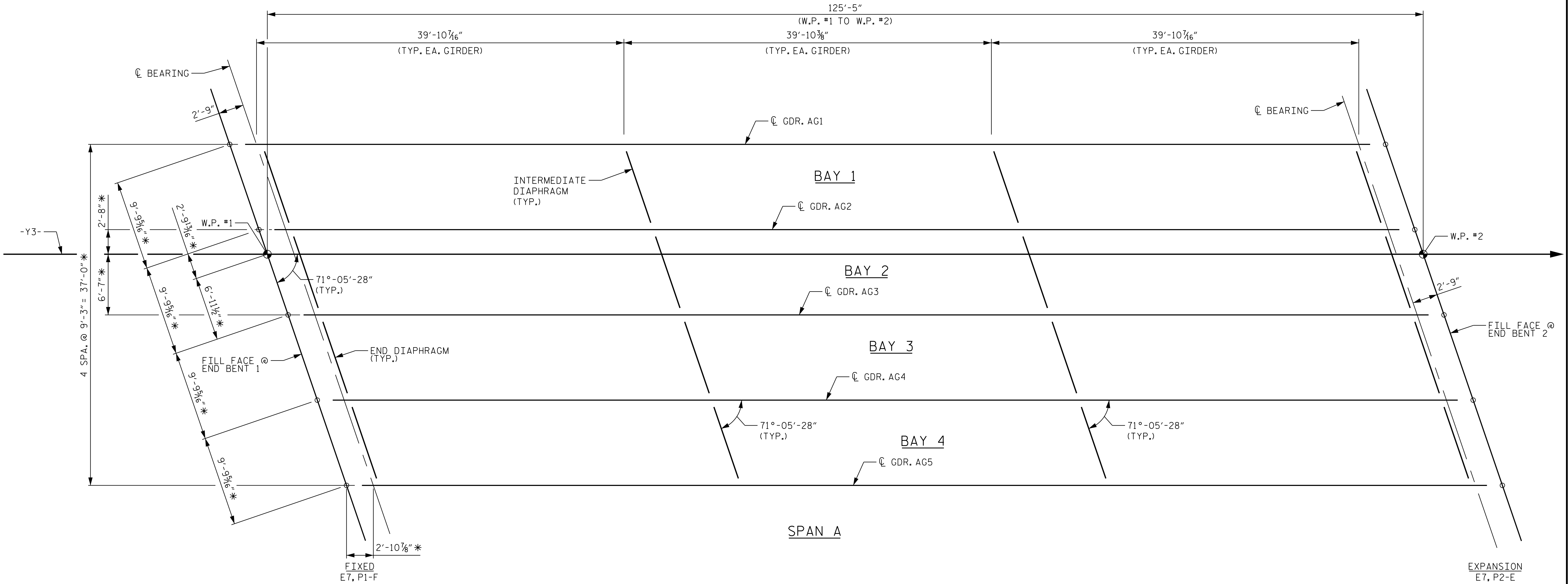
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2			4			

STR. #5

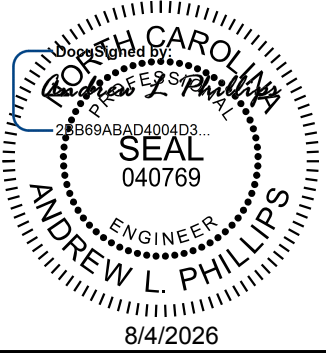
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NOTES:
FOR STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE
STEEL DIAPHRAGMS FOR 63" FIB" SHEET.



FRAMING PLAN
* DIMENSIONS ARE TYPICAL FOR BOTH END BENTS

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 12+72.18 -Y3-



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SUPERSTRUCTURE FRAMING PLAN					
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2			4		
					TOTAL SHEETS
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— C 1½" Ø FORMED
HOLE. SEE ELEVATION
FOR LOCATION.
FOR DIM. "A", "B" & "C"
SEE "INTERMEDIATE
STEEL DIAPHRAGMS"
SHEET.)

- FULLY BONDED STRANDS



AT C OF
GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT



SHOWING INTERMEDIATE STEEL DIAPHRAGM
REINFORCING STEEL FOR GIRDER Nos. 1-5

BAR TYPES



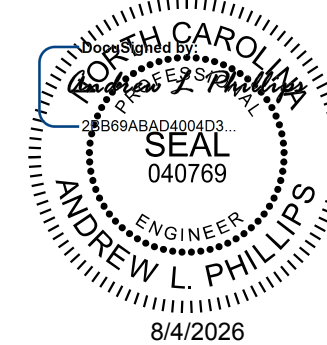
QUANTITIES FOR ONE GIRDER

GIRDERS REQUIRED

NUMBER	LENGTH	TOTAL LENGTH
5	121'-0 $\frac{1}{4}$ "	605'-1 $\frac{1}{4}$ "

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SHEET 1 OF 3



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2			4			

STR. #5

STD. NO. FIB63

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

APPLY EPOXY PROTECTIVE COATING TO BOTH SIDES AND BOTTOM OF END 2 FEET OF GIRDER AND END OF GIRDER SURFACES AS INDICATED IN ELEVATION VIEW.

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

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

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

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

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

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF $\frac{1}{4}$ ".

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

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

THE UPLIFT FORCE DUE TO DRAPED STRANDS IS 23.75 KIPS.



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SHEET 2 OF 3

STATE OF NORTH CAROLINA
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RALEIGH

STANDARD

PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS

REVISIONS						SHEET NO. S5-12
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1			3			TOTAL SHEETS 35
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STR. #5

STD. NO. PCG9



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

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

TENSION ON THE ASTM A449 BOLTS THROUGH THE GIRDER WEB SHALL BE SNUG TIGHTENED FOLLOWED BY AN ADDITIONAL $\frac{1}{4}$ TURN.

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

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

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

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

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

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

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

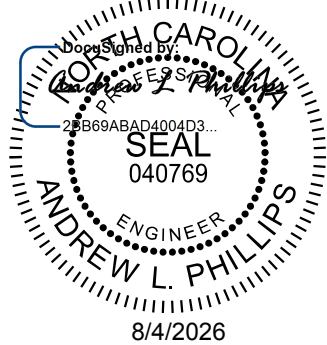
IN THE EXTERIOR BAYS, PLACE TEMPORARY STRUTS BETWEEN PRESTRESSED GIRDERS ADJACENT TO THE STEEL DIAPHRAGMS. STRUTS SHALL REMAIN IN PLACE 3 DAYS AFTER CONCRETE IS PLACED.

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

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
63" FIB	2'-5½"	9"	9"	2'-2"

PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 12+72.18 -Y3-

SHEET 3 OF 3



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STR. #5

STD. NO. FIB DIAPH

K:\RDT_Structures\Bridge\NC\01036524 - I-5715 Structure Design\Cad\Drawn\Site *3\Structure 5\Final\05-027-15115_SWU.DLL.591417.014.dgn 8/3/2026

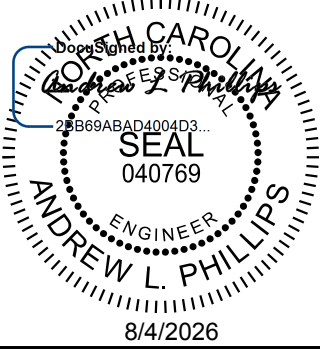
————— DEAD LOAD DEFLECTION TABLE FOR GIRDERS —————																																									
0.6" Ø LOW RELAXATION STRANDS	SPAN A																																								
	GIRDERS AG1 & AG5																																								
FORTIETH POINTS	BRG.	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	BRG.
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.028	0.056	0.083	0.111	0.132	0.153	0.173	0.194	0.208	0.223	0.237	0.252	0.261	0.269	0.278	0.287	0.290	0.292	0.295	0.298	0.295	0.292	0.290	0.287	0.278	0.269	0.261	0.252	0.237	0.223	0.208	0.194	0.173	0.153	0.132	0.111	0.083	0.056	0.028	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.013	0.026	0.039	0.052	0.064	0.076	0.088	0.100	0.109	0.119	0.128	0.138	0.144	0.150	0.156	0.162	0.164	0.166	0.168	0.171	0.168	0.166	0.164	0.162	0.156	0.150	0.144	0.138	0.128	0.119	0.109	0.100	0.088	0.076	0.064	0.052	0.039	0.026	0.013	0.000
FINAL CAMBER ↑	0	3⁄16"	3⁄8"	9⁄16"	11⁄16"	13⁄16"	15⁄16"	1"	11⁄8"	13⁄16"	11⁄4"	15⁄16"	13⁄8"	13⁄8"	17⁄16"	17⁄16"	11⁄2"	11⁄2"	11⁄2"	11⁄2"	11⁄2"	11⁄2"	11⁄2"	11⁄2"	11⁄2"	17⁄16"	17⁄16"	13⁄8"	13⁄8"	15⁄16"	11⁄4"	13⁄16"	11⁄8"	1"	15⁄16"	13⁄16"	11⁄16"	9⁄16"	3⁄8"	3⁄16"	0

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

————— DEAD LOAD DEFLECTION TABLE FOR GIRDERS —————																																										
0.6"Ø LOW RELAXATION STRANDS	SPAN A																																									
	GIRDERS AG2, AG3, & AG4																																									
FORTIETH POINTS	BRG.	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	BRG.	
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.028	0.056	0.083	0.111	0.132	0.153	0.173	0.194	0.208	0.223	0.237	0.252	0.261	0.269	0.278	0.287	0.290	0.292	0.295	0.298	0.295	0.292	0.290	0.287	0.278	0.269	0.261	0.252	0.237	0.223	0.208	0.194	0.173	0.153	0.132	0.111	0.083	0.056	0.028	0.000	
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.014	0.028	0.042	0.056	0.069	0.083	0.096	0.109	0.120	0.130	0.140	0.151	0.157	0.164	0.171	0.177	0.179	0.182	0.184	0.186	0.184	0.182	0.179	0.177	0.171	0.164	0.157	0.151	0.140	0.130	0.120	0.109	0.096	0.083	0.069	0.056	0.042	0.028	0.014	0.000	
FINAL CAMBER ↑	0	3⁄16"	5⁄16"	1⁄2"	11⁄16"	3⁄4"	13⁄16"	15⁄16"	1"	1 1⁄16"	1 1⁄8"	1 3⁄16"	1 3⁄16"	1 1⁄4"	1 1⁄4"	1 5⁄16"	1 5⁄16"	1 5⁄16"	1 5⁄16"	1 5⁄16"	1 5⁄16"	1 5⁄16"	1 5⁄16"	1 5⁄16"	1 5⁄16"	1 5⁄16"	1 5⁄16"	1 1⁄4"	1 1⁄4"	1 3⁄16"	1 3⁄16"	1 1⁄8"	1 1⁄16"	1"	15⁄16"	13⁄16"	3⁄4"	11⁄16"	1⁄2"	5⁄16"	3⁄16"	0

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

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 12+72.18 -Y3-



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CHECKED BY: E. W. SPRABERRY DATE: 03/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 03/2026

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
GIRDER DEFLECTION
AND CAMBER TABLES

REVISIONS						SHEET NO. S5-14
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1			3			TOTAL SHEETS 35
2			4			

NOTES

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

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

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

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

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

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

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

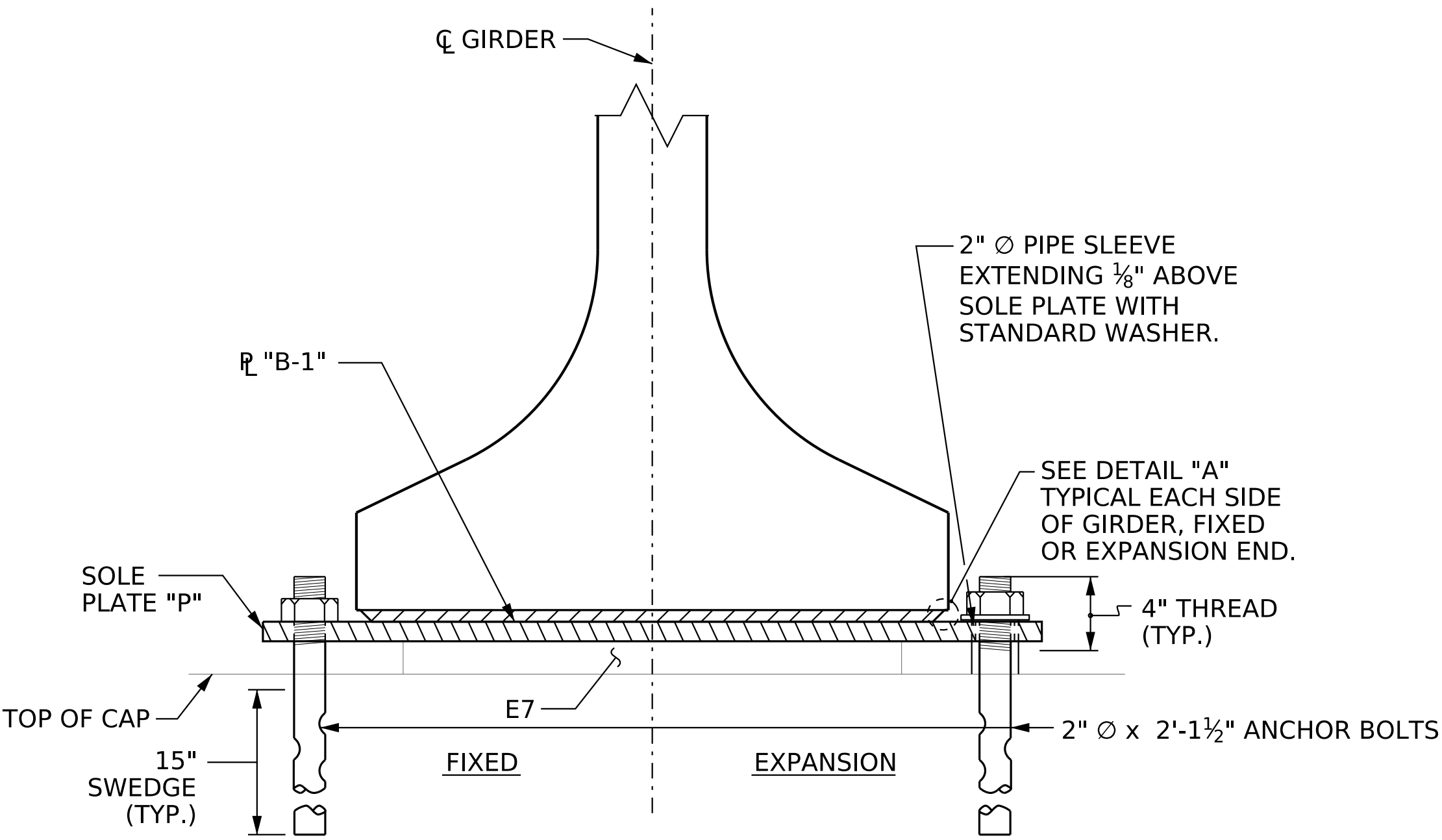
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

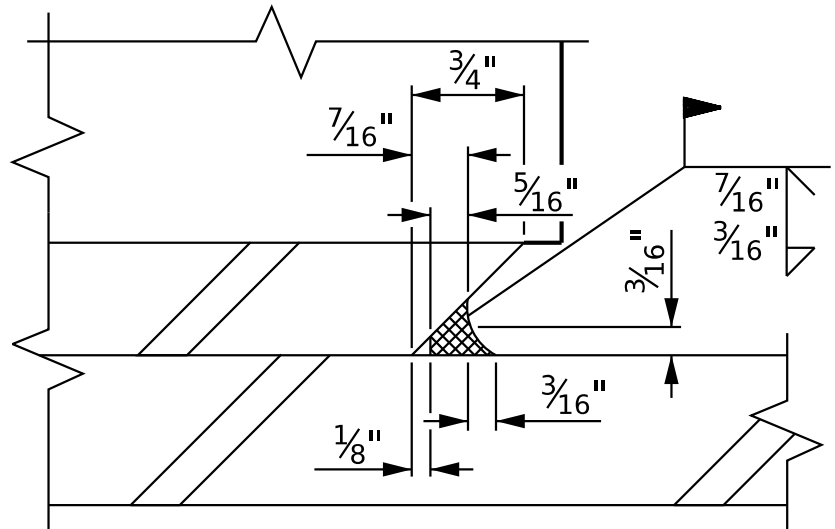
FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE STANDARD SPECIFICATIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

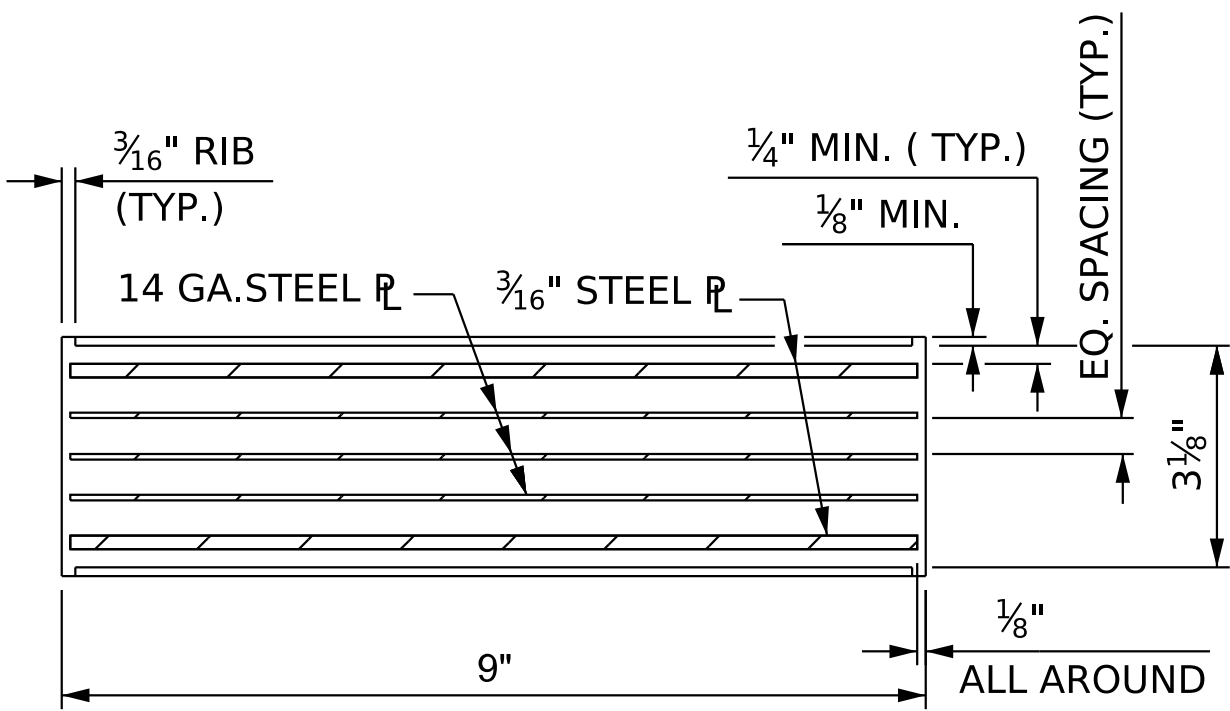


SECTION E-E

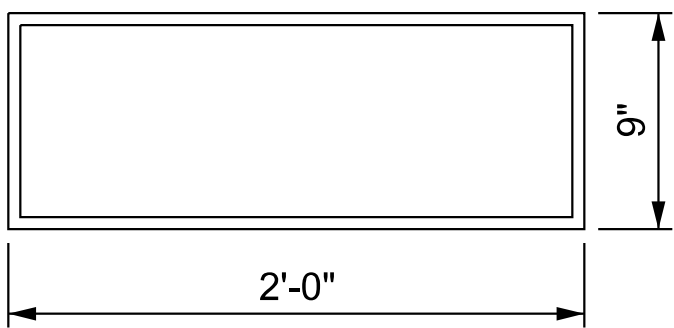


DETAIL "A"

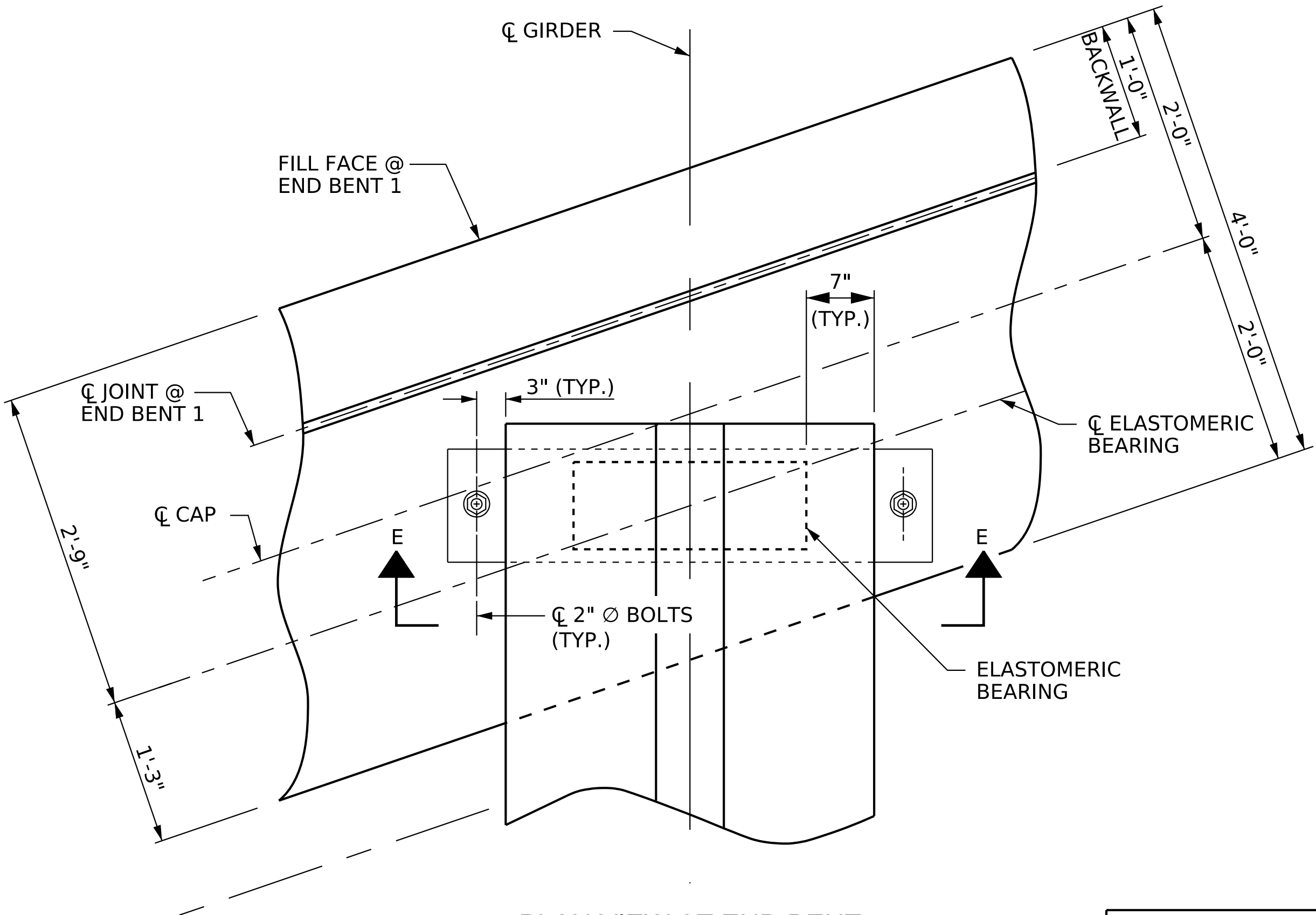
MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE VIII	390 K



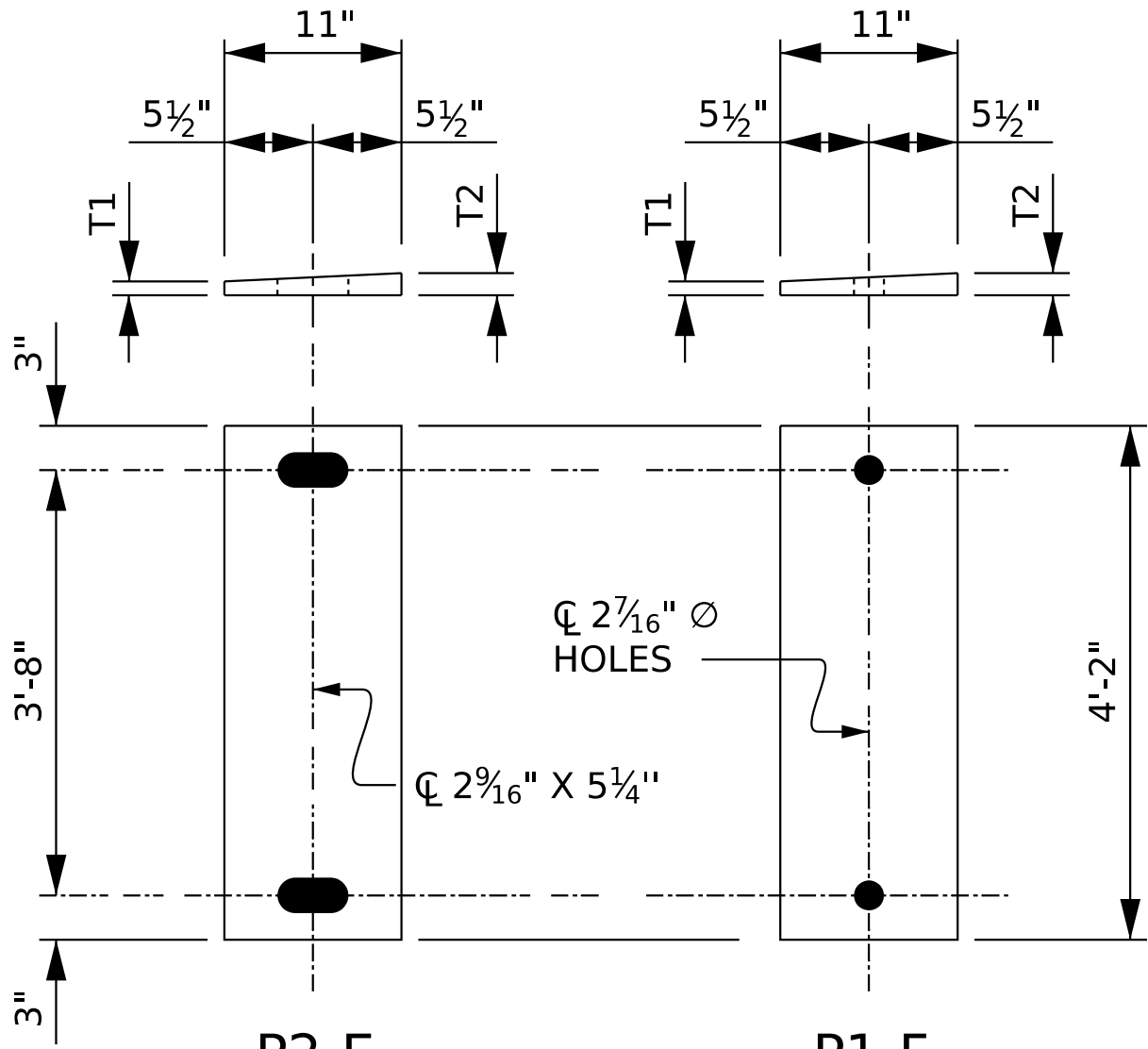
TYPICAL SECTION OF ELASTOMERIC BEARINGS



E7 (10 REQ'D)
PLAN VIEW OF ELASTOMERIC BEARING
TYPE VIII

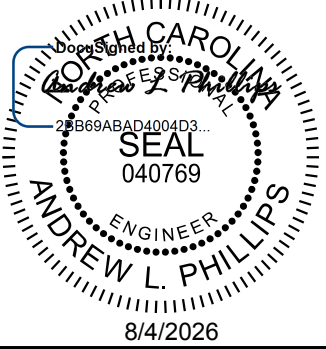


PLAN VIEW AT END BENT
(END BENT 1 SHOWN, END BENT 2 SIMILAR)



P2-E (EXPANSION) (5 REQ'D)
P1-F (FIXED) (5 REQ'D)
SOLE PLATE DETAILS ("P")

SOLE PLATE SCHEDULE			
MARK	T1	T2	# OF LOCATIONS
P1-F	1 1/4"	1 9/16"	1
P2-E	1 1/4"	1 9/16"	1



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PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 12+72.18 -Y3-

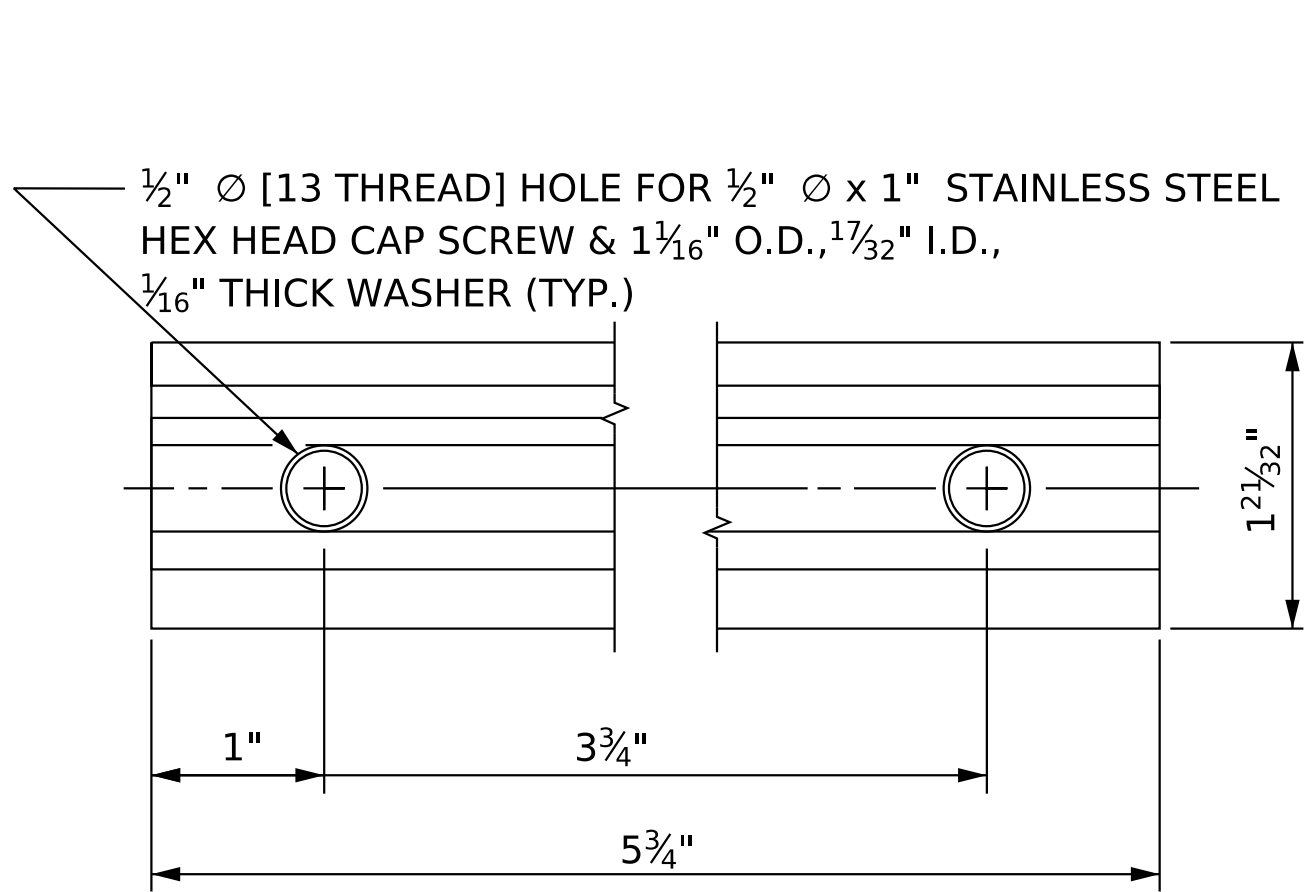
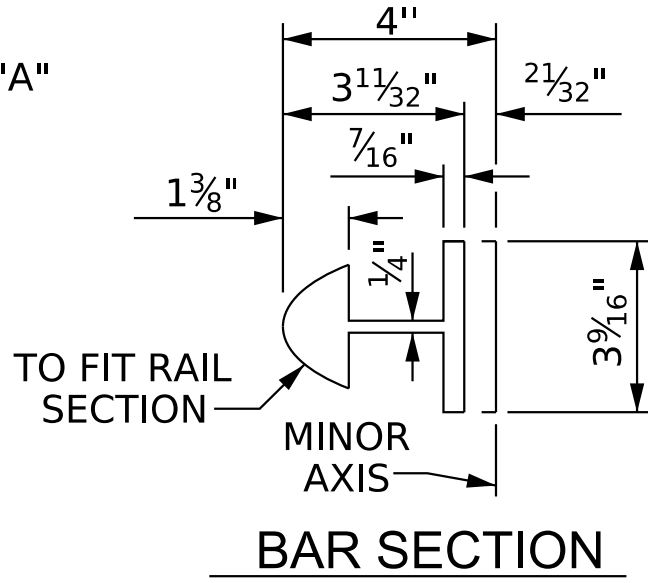
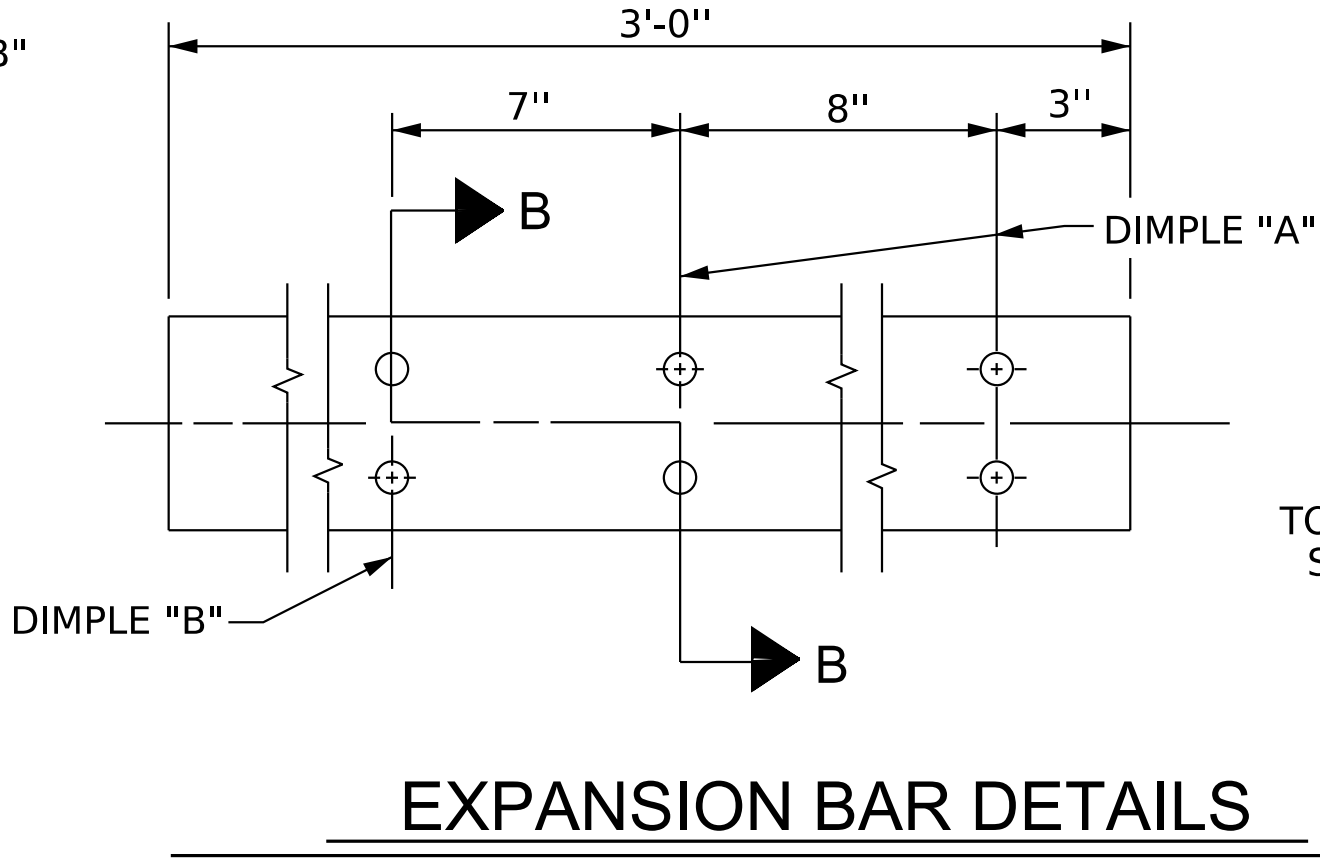
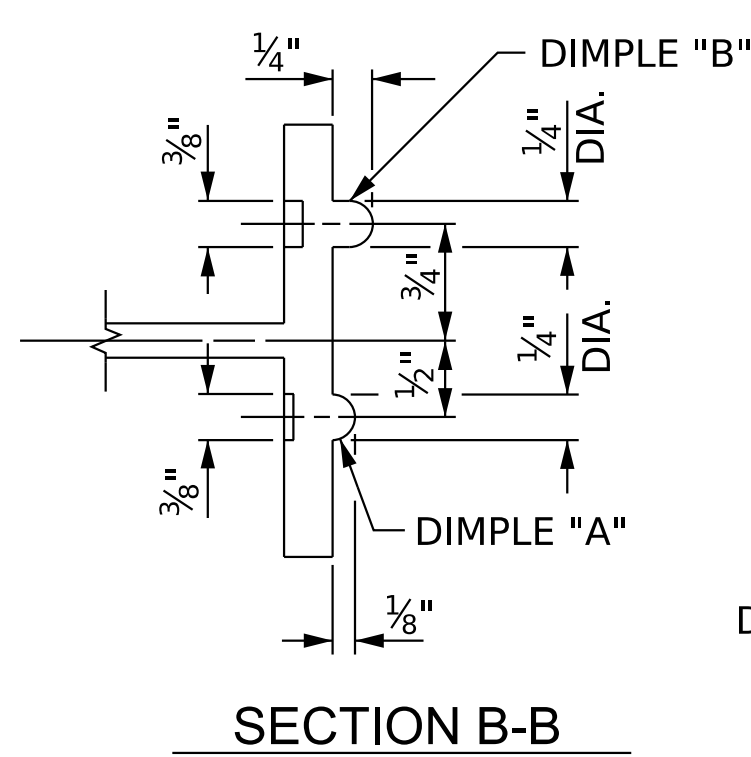
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
ELASTOMERIC BEARING
DETAILS

REVISIONS						SHEET NO. S5-15
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

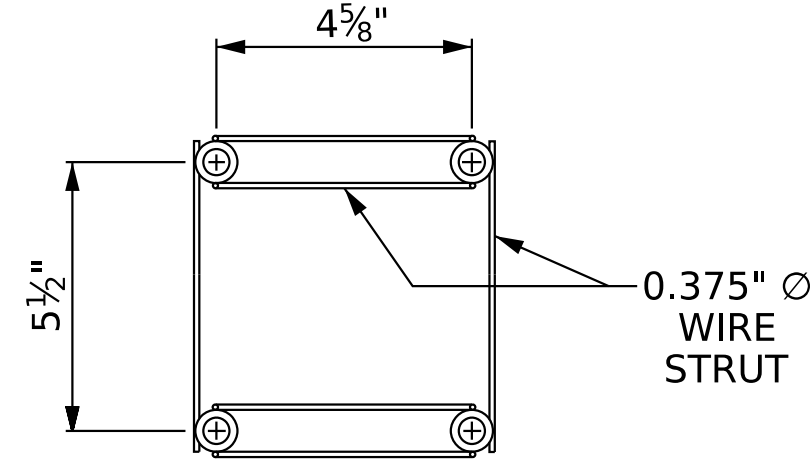
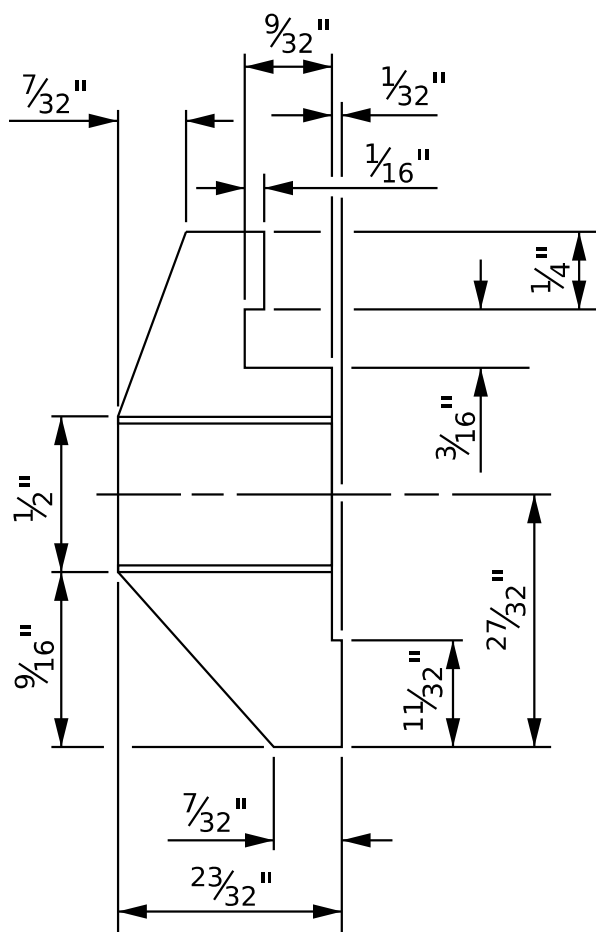
STR. #5 STD. NO. EB5

K:\B01_Structures\Bridges\NC\01036524 - I-5715 Structure Design\Coord\gn\Site *3\Structure 5\Final\405-033-15115_SMU_2\MR2-59\417-017.dgn 8/2/2026

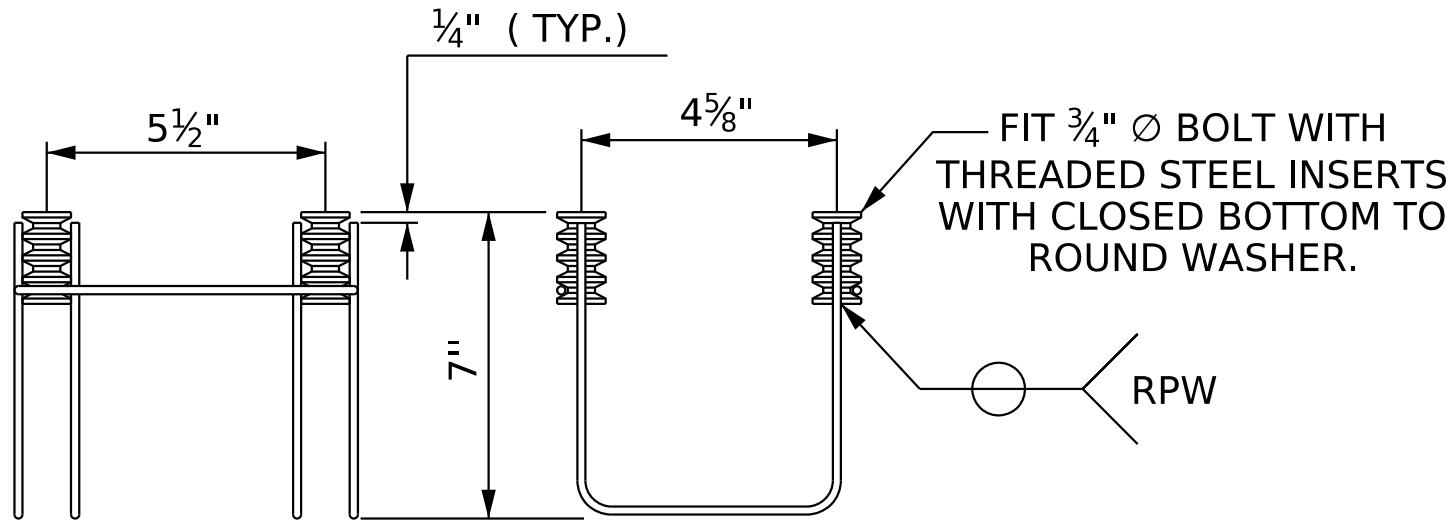
DRAWN BY: T. K. BOYD DATE: 03/2026
CHECKED BY: E. W. SPRABERRY DATE: 03/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 03/2026



CLAMP BAR DETAIL
(4 REQUIRED PER POST)



PLAN

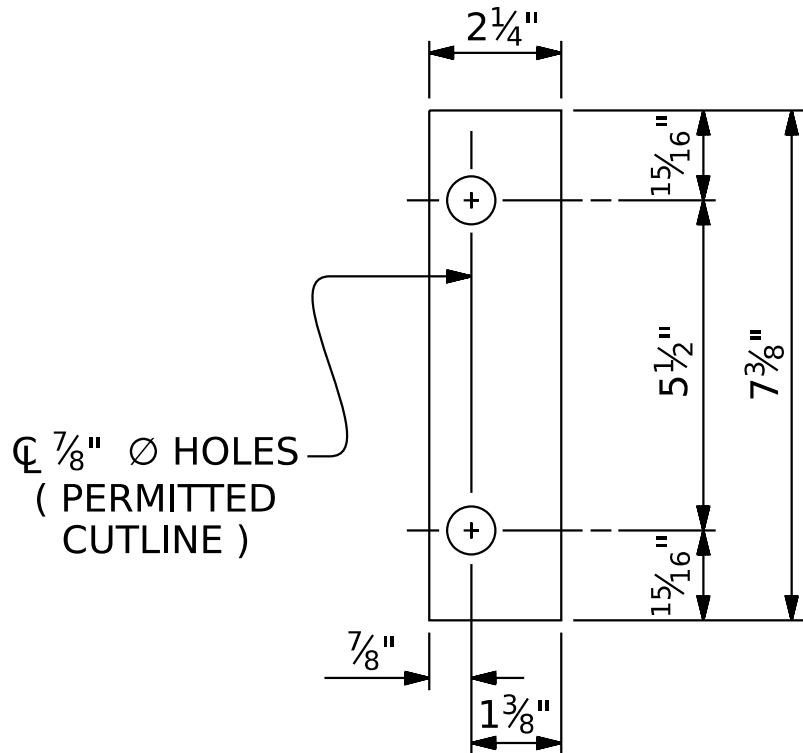


SIDE VIEW

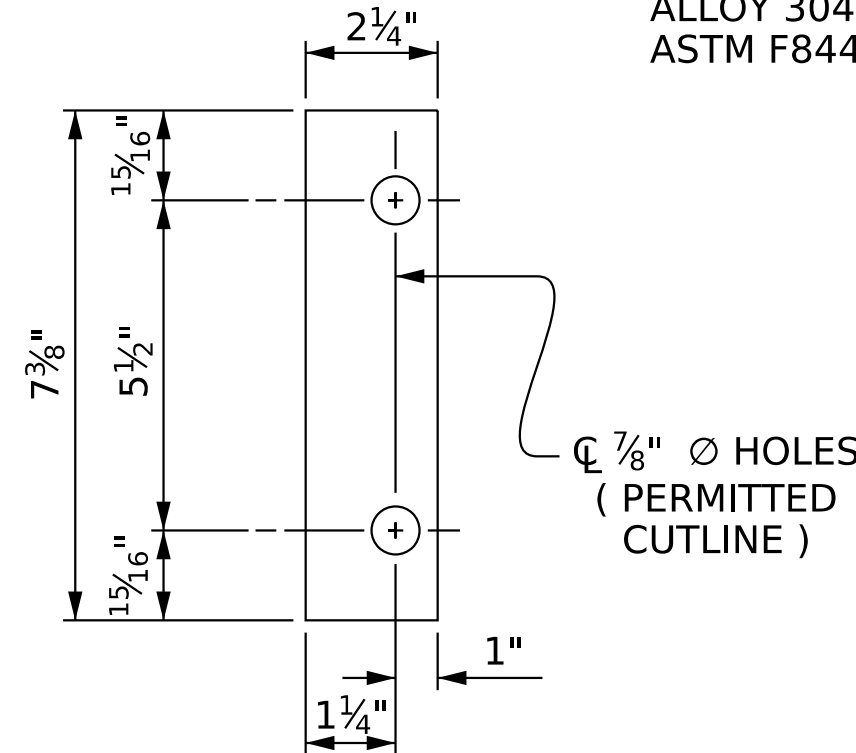
ELEVATION

4-BOLT METAL RAIL ANCHOR ASSEMBLY

(42 ASSEMBLIES REQUIRED)



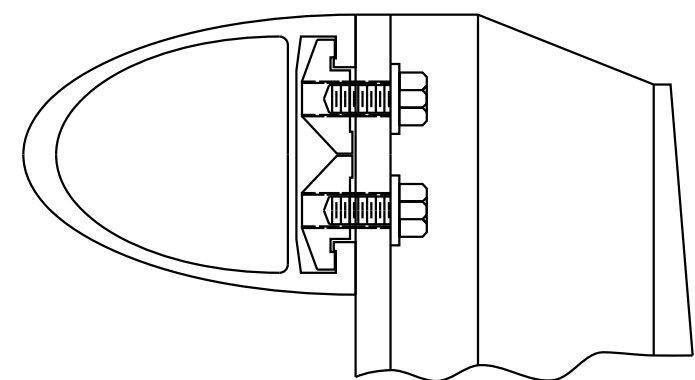
FRONT PLATE



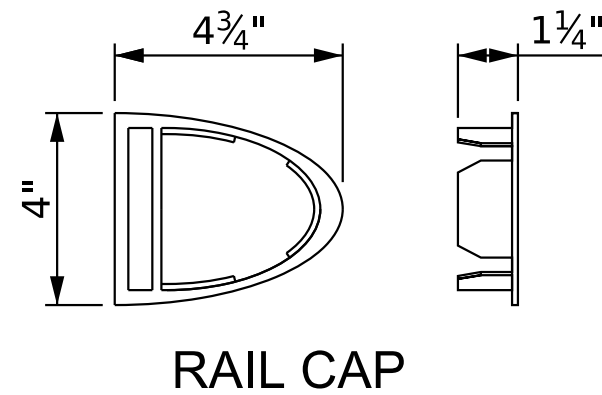
REAR PLATE

SHIM DETAILS

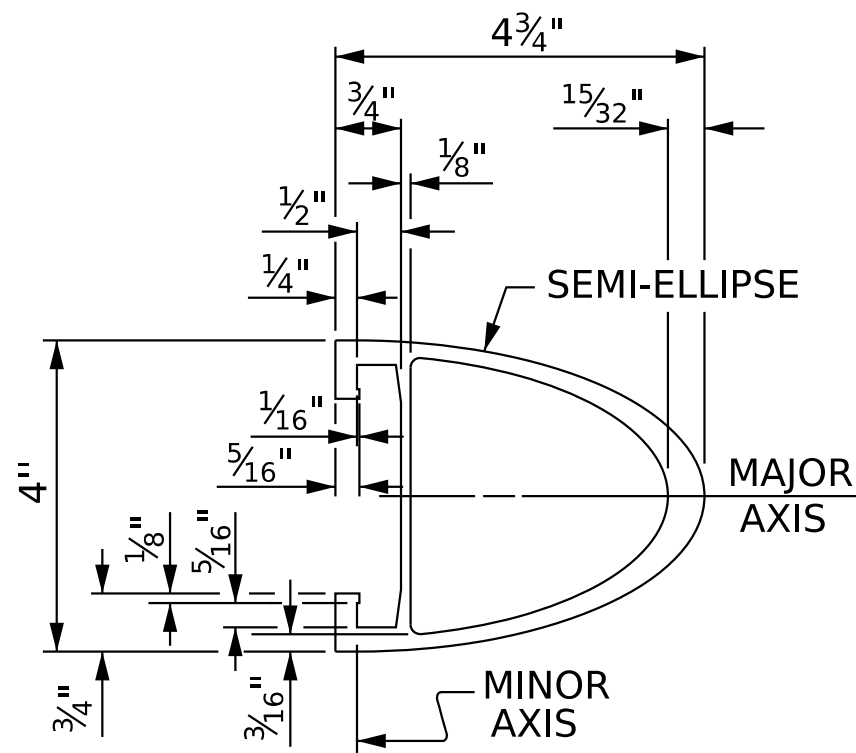
NOTE :
SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR
SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



CLAMP ASSEMBLY



RAIL CAP



RAIL SECTION

NOTES

STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

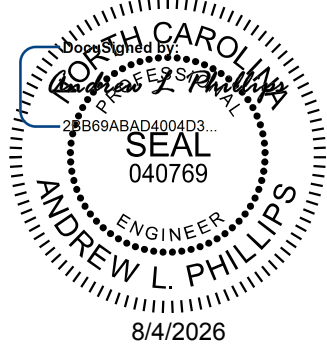
- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- 4 - 3/4" x 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S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

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" x 7/16" BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

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

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 12+72.18 -Y3-

SHEET 2 OF 2



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RALEIGH

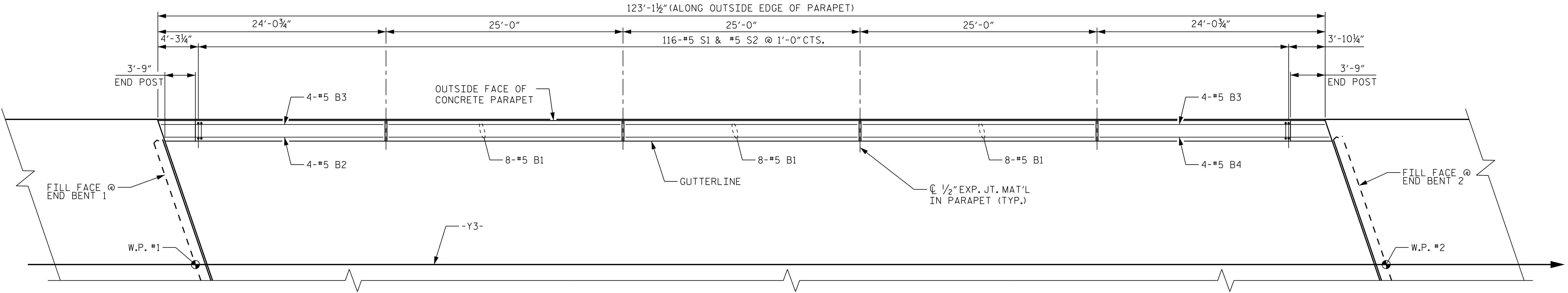
STANDARD
2 BAR METAL RAIL

REVISIONS						SHEET NO. S5-17
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

STR. #5

STD. NO. BMR4

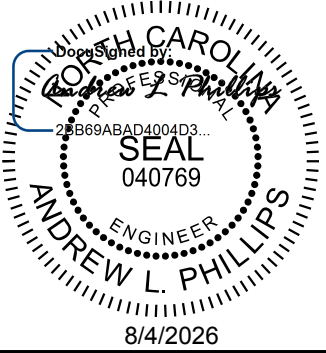
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EXTERIOR CONCRETE PARAPET LAYOUT
(LEFT SIDE SHOWN, RIGHT SIDE SIMILAR)

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 12+72.18 -Y3-

SHEET 1 OF 4



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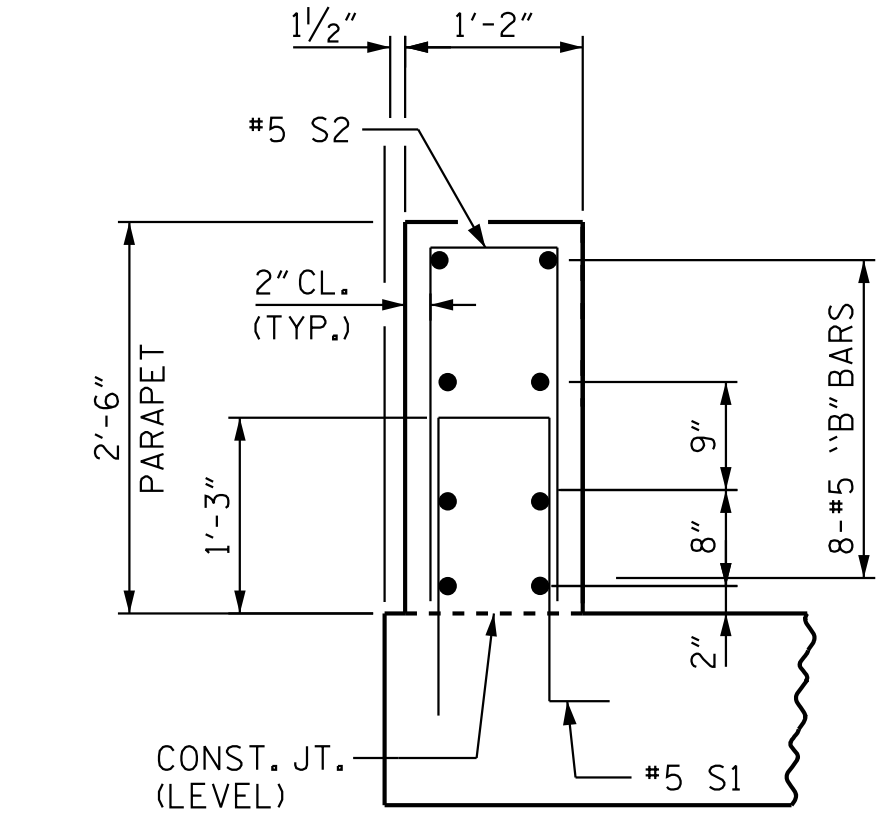
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REVISIONS						SHEET NO. S5-18
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

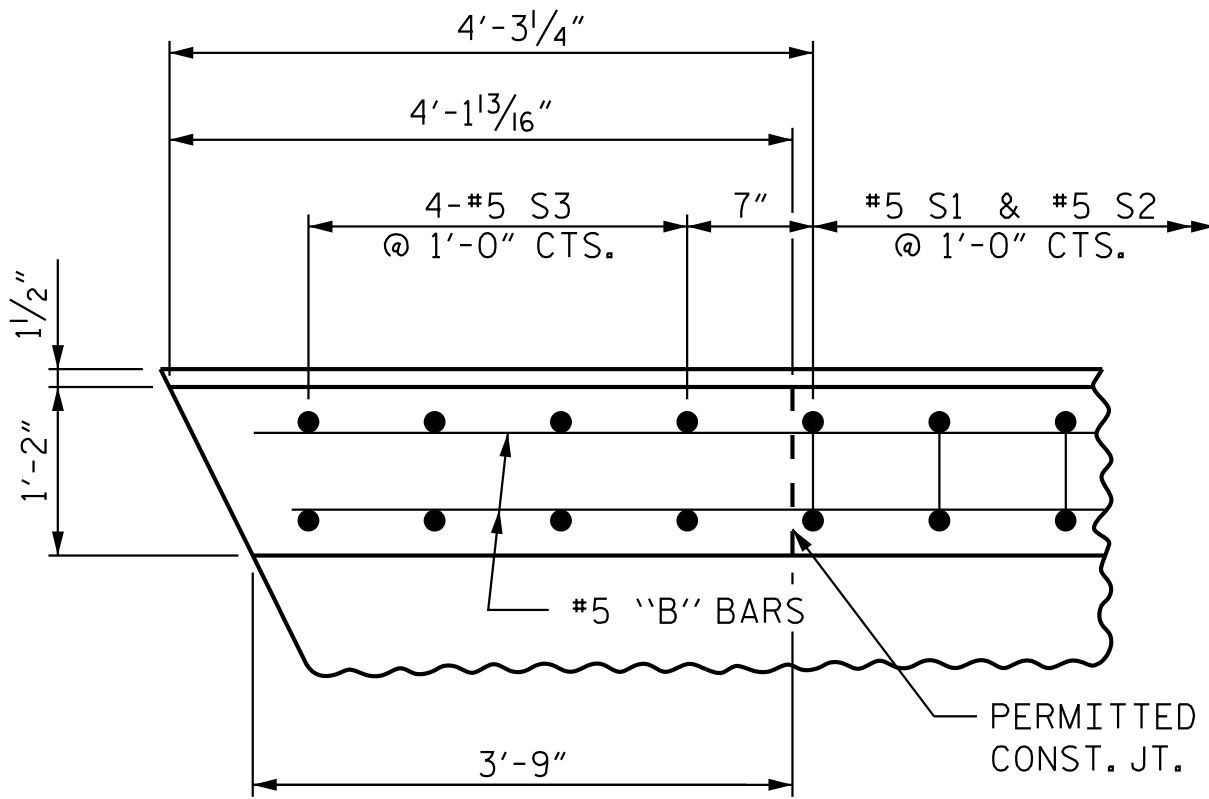
DRAWN BY: <u>T. K. BOYD</u>	DATE: <u>03/2026</u>
CHECKED BY: <u>E. W. SPRABERRY</u>	DATE: <u>03/2026</u>
DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>03/2026</u>

STR. #5

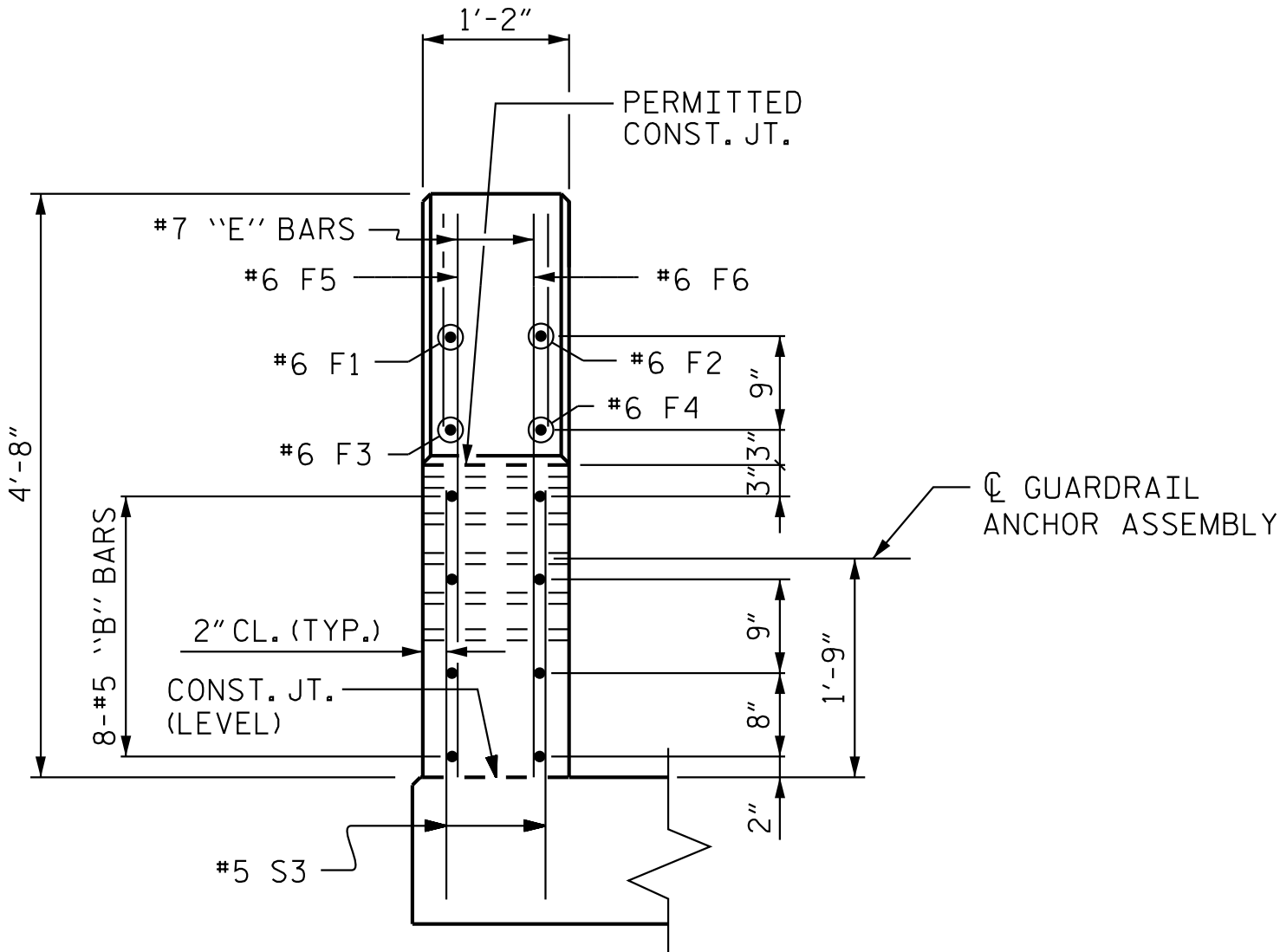
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8/2/2026



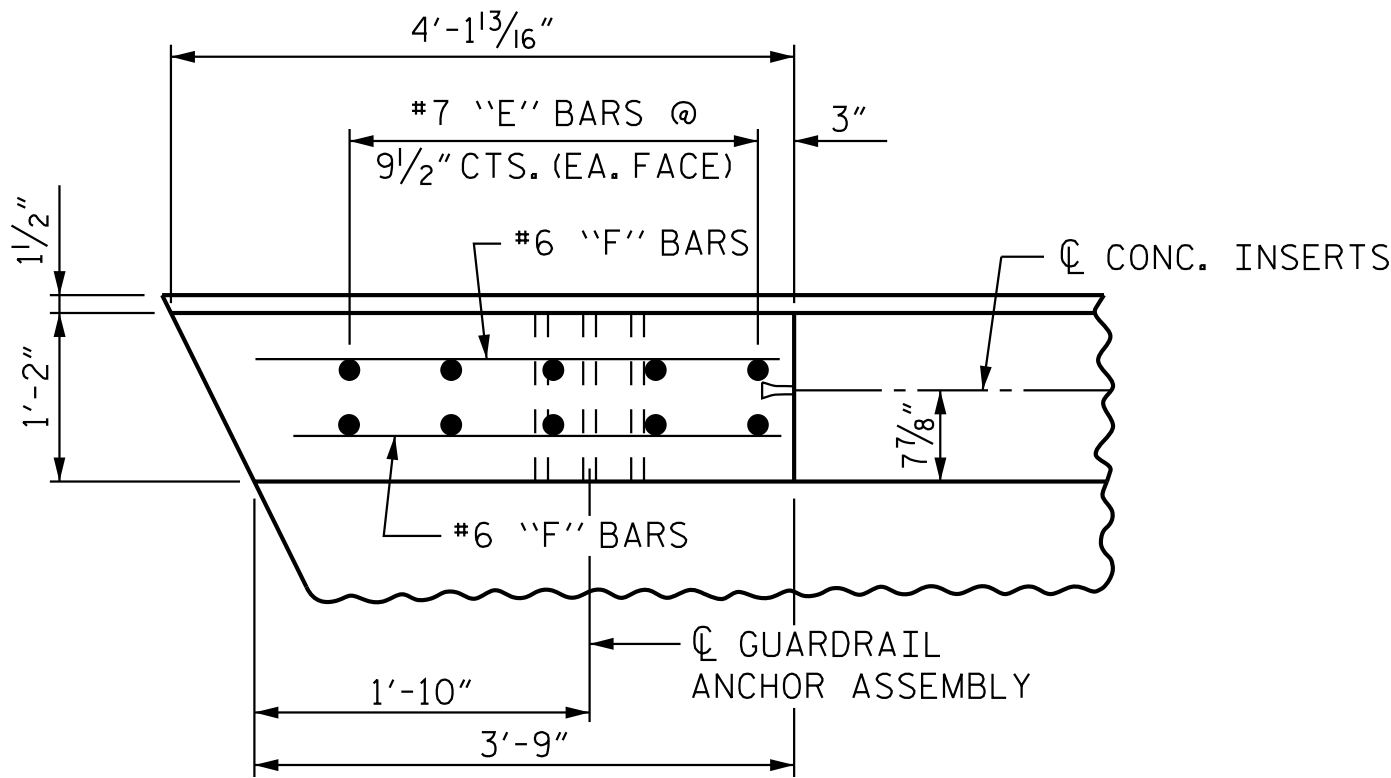
SECTION THRU PARAPET



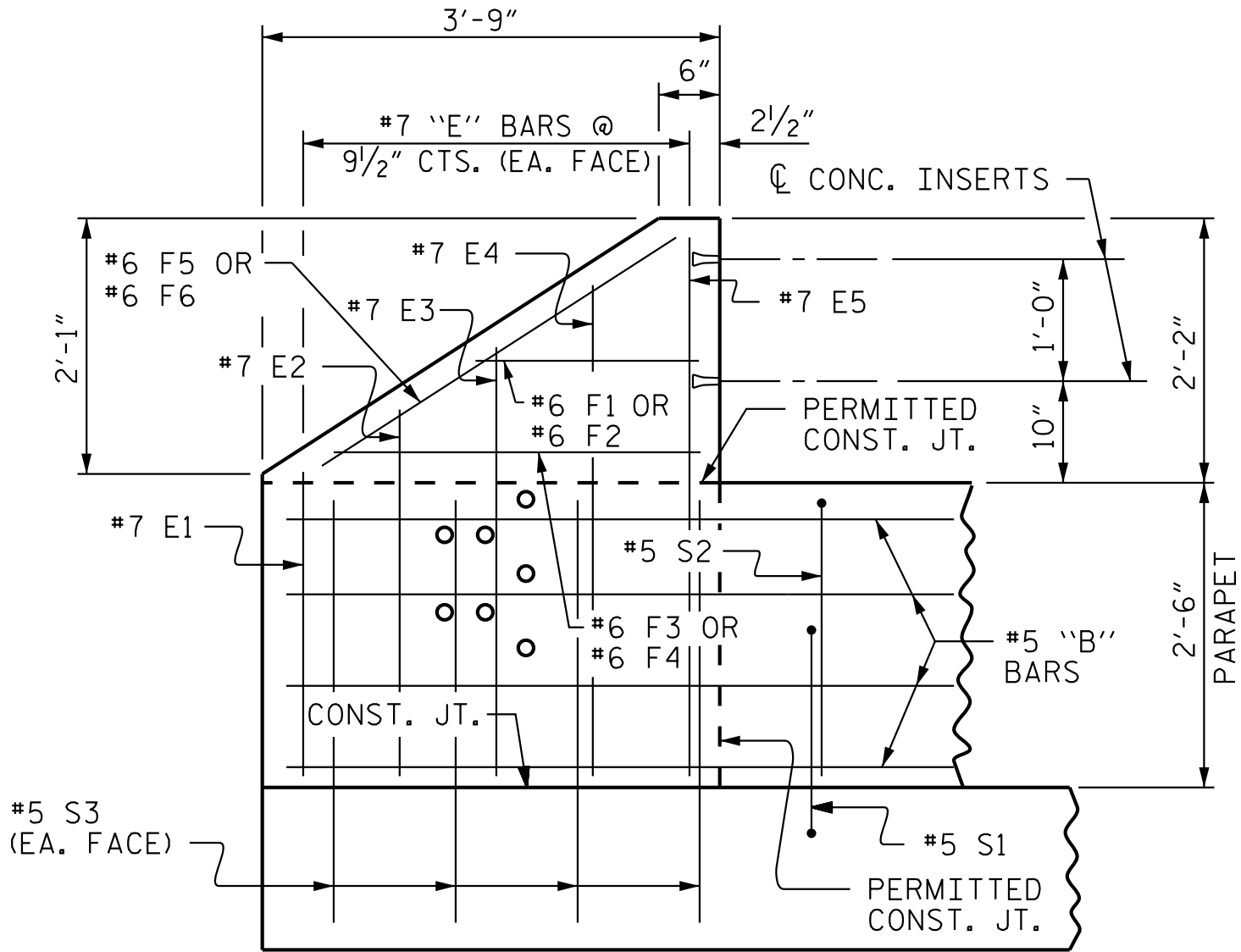
PLAN OF PARAPET



END VIEW



PLAN OF END POST



ELEVATION

NOTES

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

ALL REINFORCING STEEL IN PARAPET AND END POSTS SHALL BE EPOXY COATED.

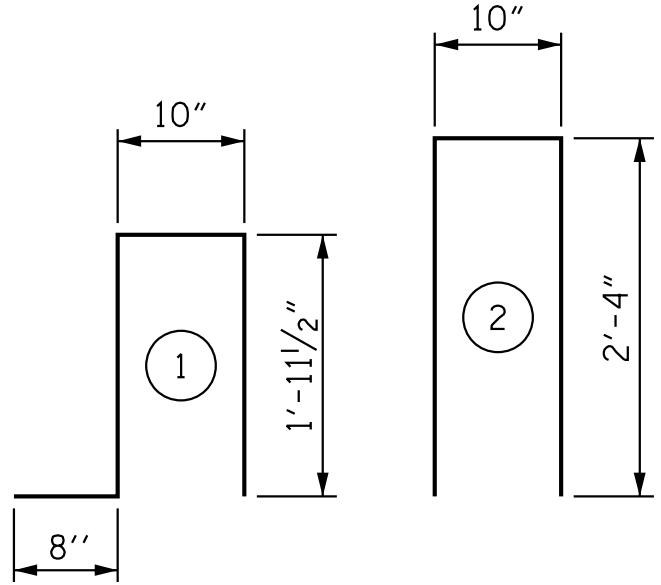
THE #5 S1 AND #5 S2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN PARAPET.

FOR DETAILS OF CONCRETE INSERTS IN END POSTS, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET.

FOR DETAILS OF GUARDRAIL ANCHOR ASSEMBLIES, SEE "GUARDRAIL ANCHORAGE DETAILS FOR METAL RAIL" SHEET.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

BAR TYPES

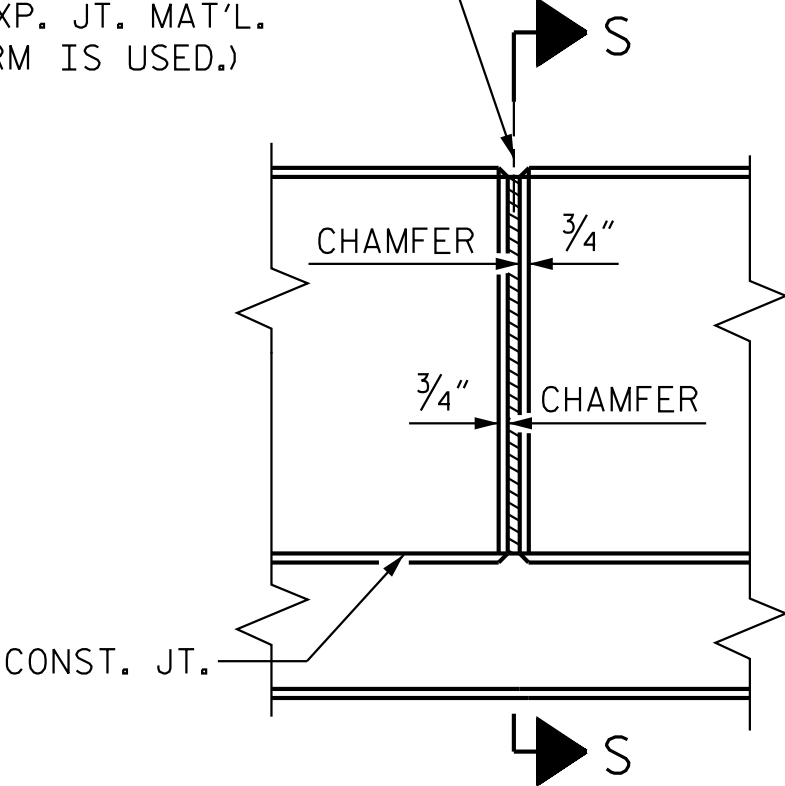


ALL BAR DIMENSIONS ARE OUT TO OUT

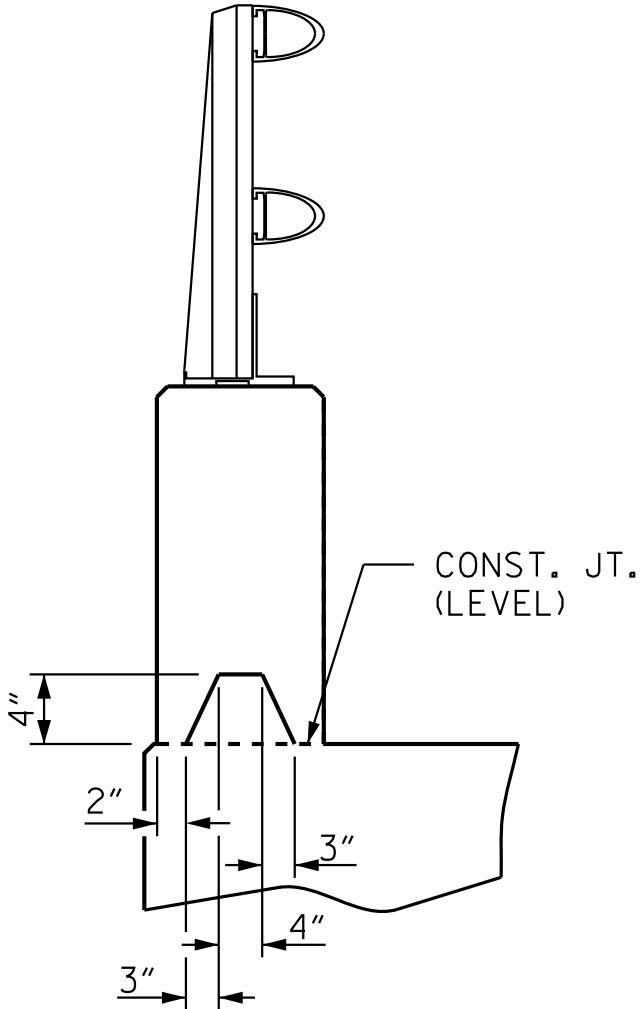
BILL OF MATERIAL

2 CONCRETE PARAPETS AND 4 END POSTS					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B1	48	#5	STR	24'-8"	1,235
* B2	8	#5	STR	23'-4"	195
* B3	16	#5	STR	23'-7"	394
* B4	8	#5	STR	24'-0"	200
* E1	8	#7	STR	2'-6"	41
* E2	8	#7	STR	3'-0"	49
* E3	8	#7	STR	3'-6"	57
* E4	8	#7	STR	4'-0"	65
* E5	8	#7	STR	4'-4"	71
* F1	4	#6	STR	1'-9"	11
* F2	4	#6	STR	1'-11"	12
* F3	4	#6	STR	2'-11"	18
* F4	4	#6	STR	3'-2"	19
* F5	4	#6	STR	3'-8"	22
* F6	4	#6	STR	3'-10"	23
* S1	232	#5	1	5'-5"	1,311
* S2	232	#5	2	5'-6"	1,331
* S3	32	#5	STR	2'-10"	95
* EPOXY COATED REINFORCING STEEL				5,149 LBS.	
CLASS AA CONCRETE				27.5 C.Y.	
1'-2" X 2'-6" CONCRETE PARAPET				246.3 LIN. FT.	

CL. 1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS. (NOTE: OMIT EXP. JT. MAT'L. WHEN SLIP FORM IS USED.)



ELEVATION AT EXPANSION JOINTS

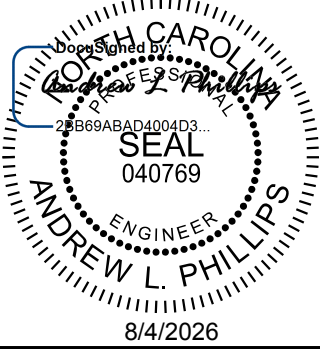


SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY
WHEN SLIP FORM IS USED)

ELEVATION AT EXPANSION JOINTS

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 12+72.18 -Y3-

SHEET 2 OF 4



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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE EXTERIOR CONCRETE PARAPET DETAILS					
REVISIONS					SHEET NO. S5-19
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 35

STR. #5



SHEET 3 OF 4

REVISIONS						SHEET NO. S5-20
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

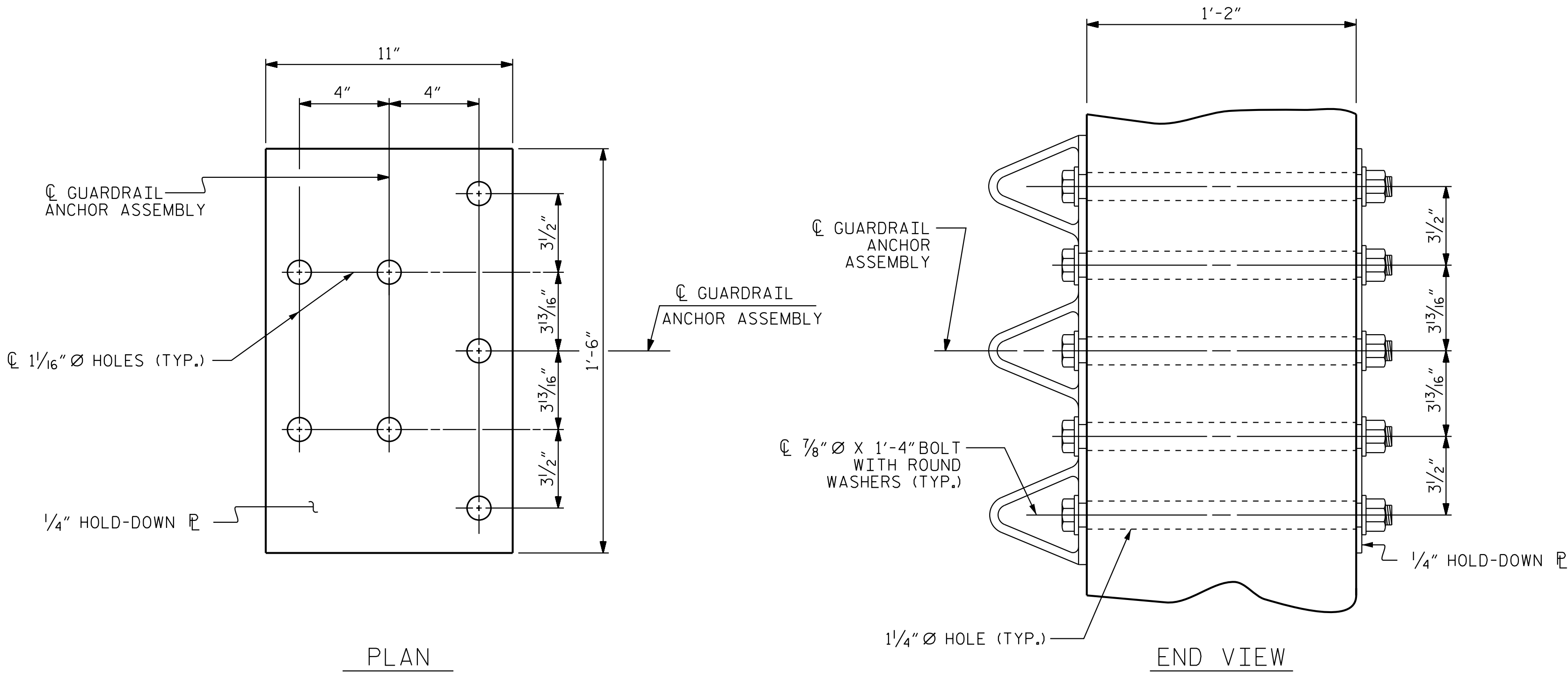
STD. NO. BMR2

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE $\frac{3}{4}$ " $\times$ $1\frac{1}{8}$ " BOLT WITH WASHER SHALL BE REPLACED WITH A $\frac{3}{4}$ " $\times$ $6\frac{1}{2}$ " BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE $\frac{3}{4}$ " $\times$ $1\frac{1}{8}$ " BOLT SHALL APPLY TO THE $\frac{3}{4}$ " $\times$ $6\frac{1}{2}$ " BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

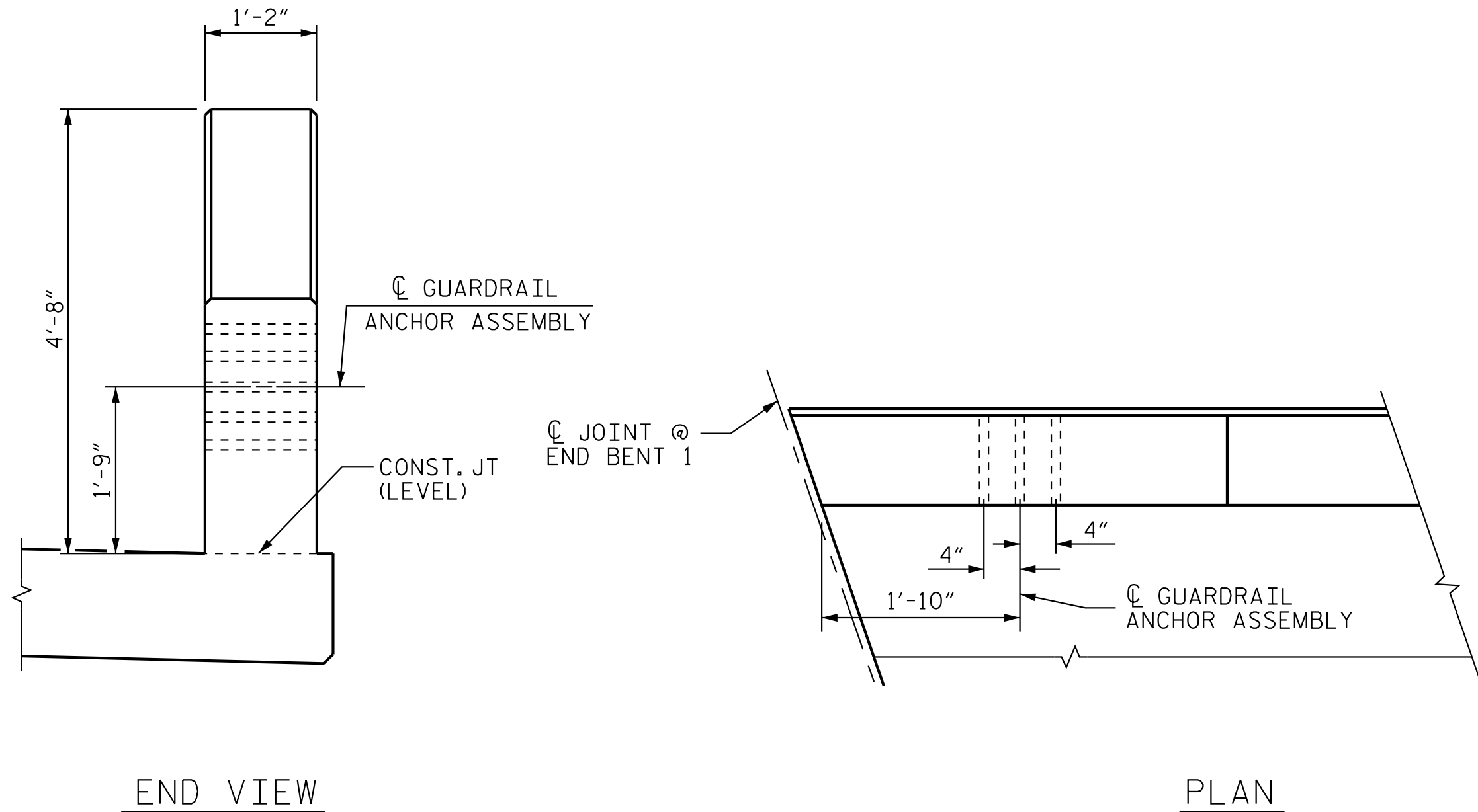
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GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF GUARDRAIL ANCHOR AT END POST

END BENT 1 SHOWN, END BENT 2 SIMILAR

NOTES

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

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

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

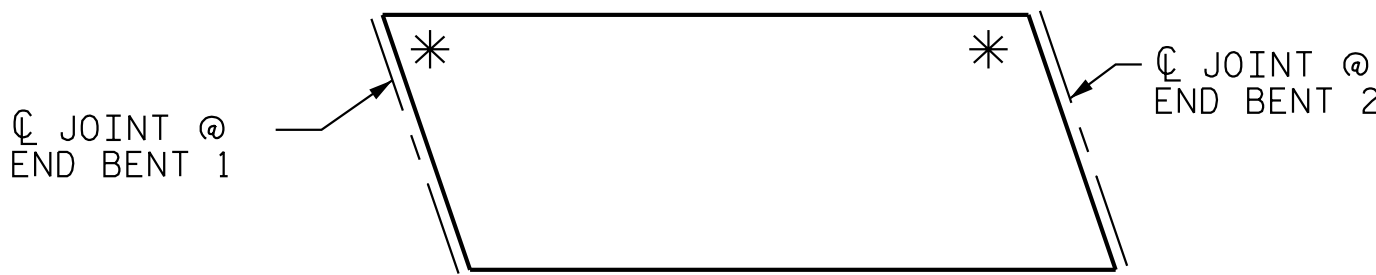
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

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

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

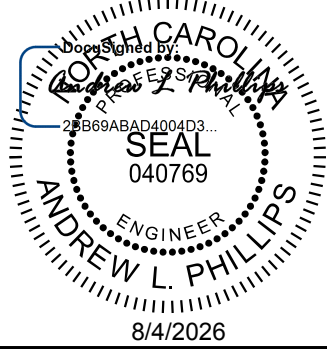


SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 12+72.18 -Y3-

SHEET 4 OF 4



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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE
DETAILS FOR
METAL RAIL

REVISIONS						SHEET NO. S5-21
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

STR. #5

DRAWN BY: T. K. BOYD DATE: 03/2026
CHECKED BY: E. W. SPRABERRY DATE: 03/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 03/2026



NOTES

GENERAL NOTES

FOR MODIFIED TWO BAR METAL RAIL, SEE SPECIAL PROVISIONS.

SHEET 1 OF 2

STR. #5

NOTES

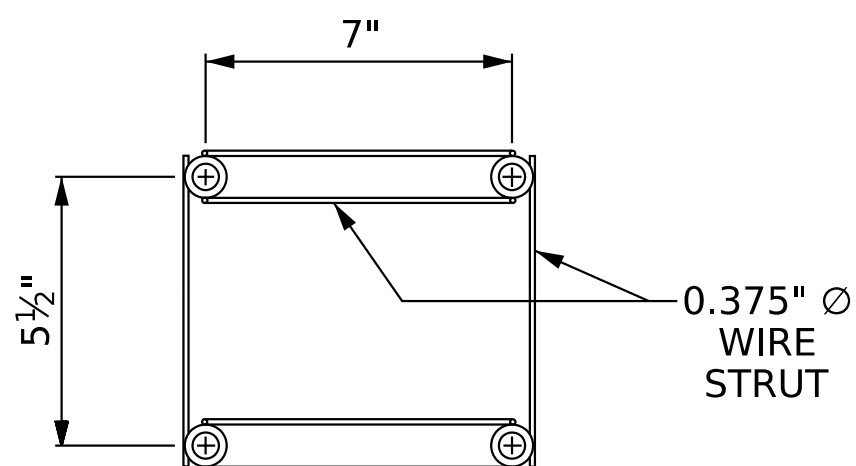
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

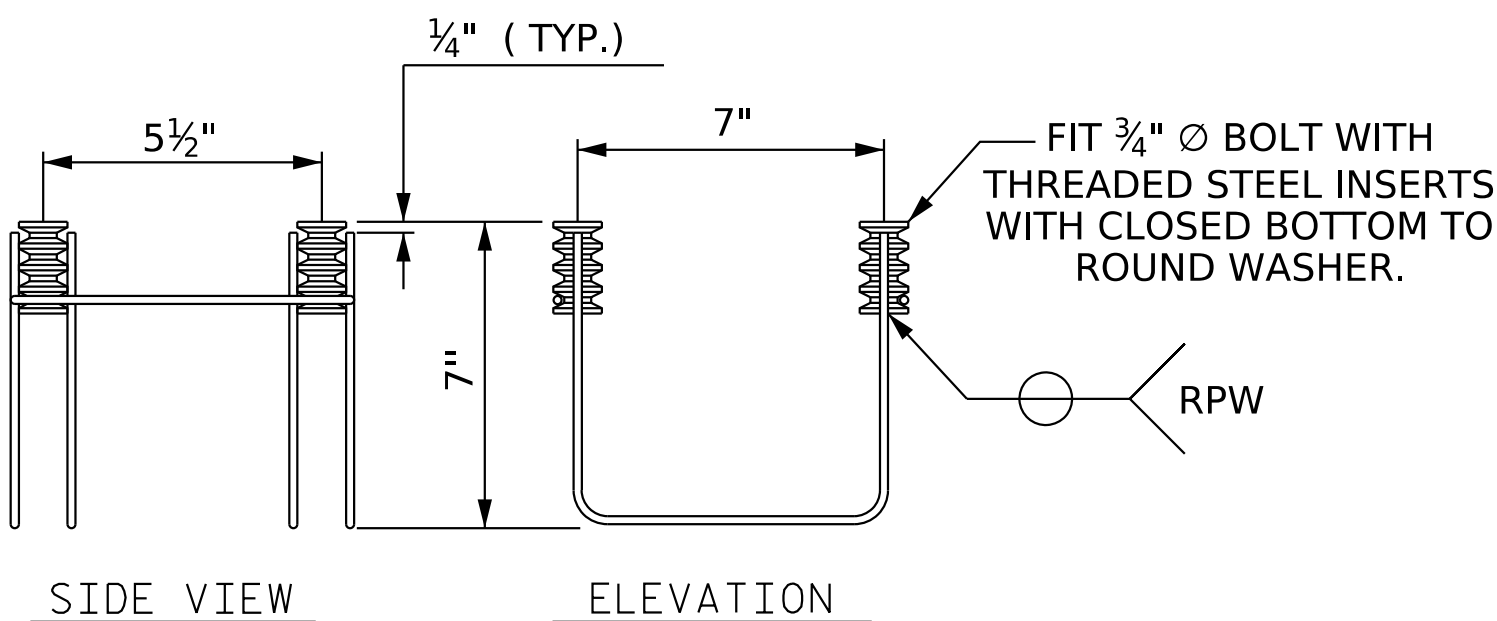
- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR $\frac{3}{4}$ " FERRULES.
- B. 4 - $\frac{3}{4}$ " $\times$ 2 $\frac{1}{2}$ " BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS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

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

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

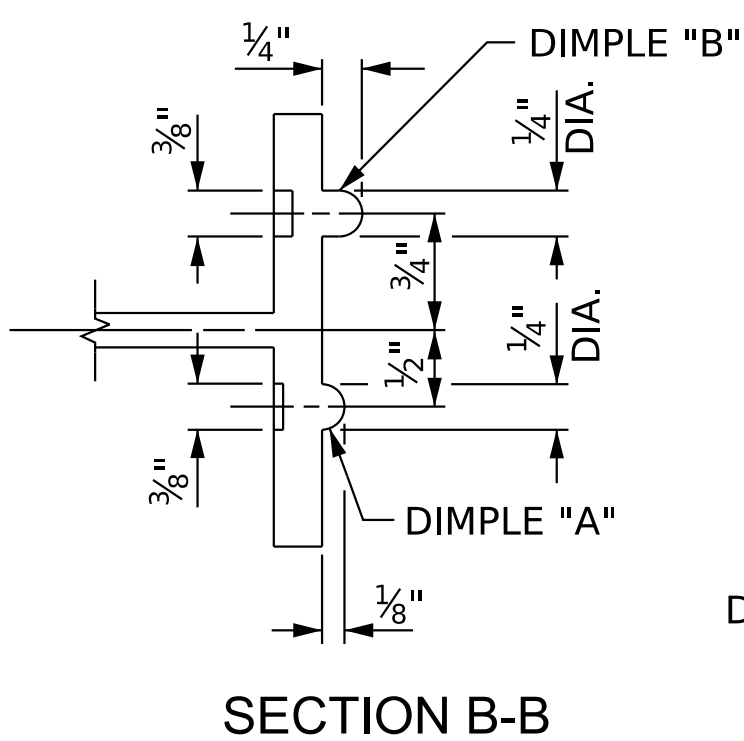


PLAN

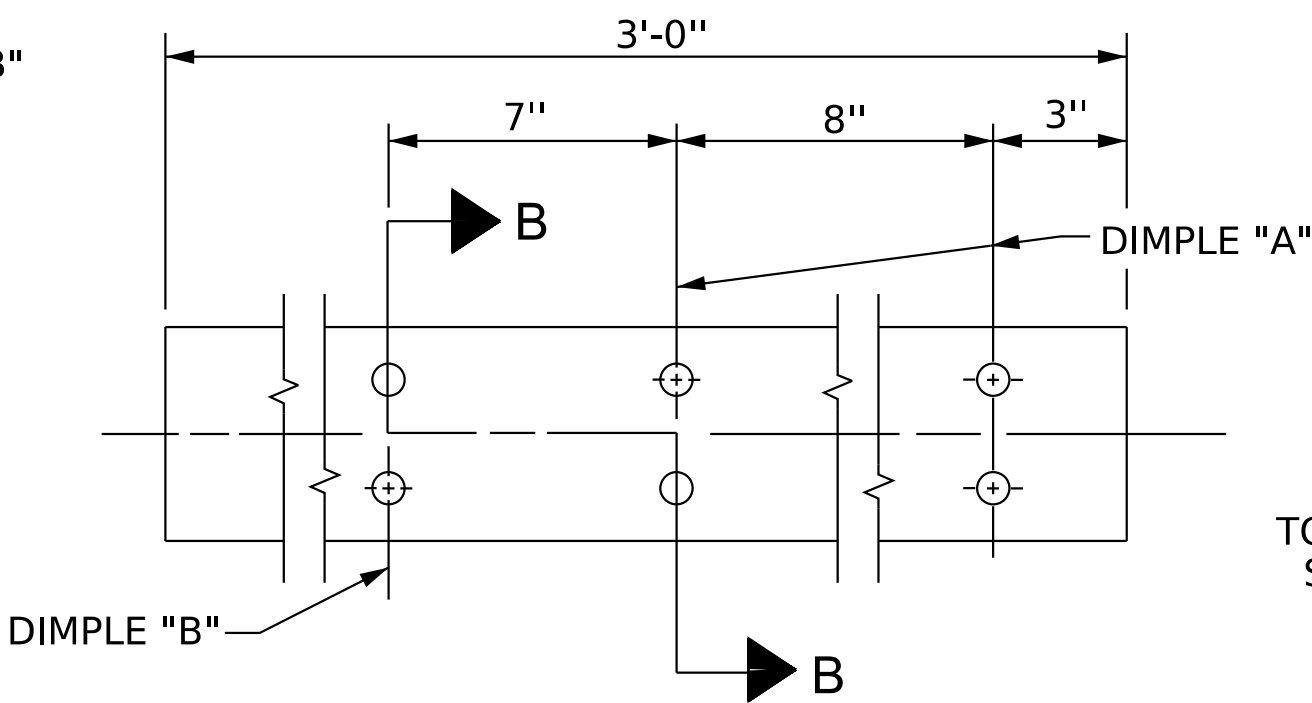


4-BOLT METAL RAIL ANCHOR ASSEMBLY

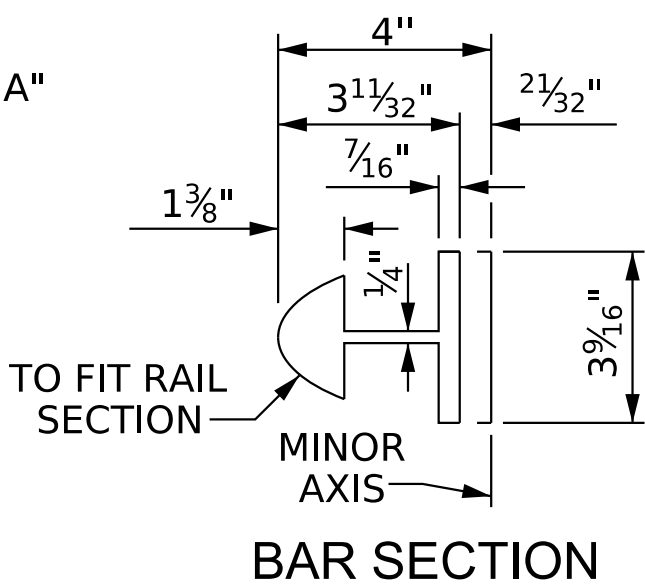
(29 ASSEMBLIES REQUIRED)



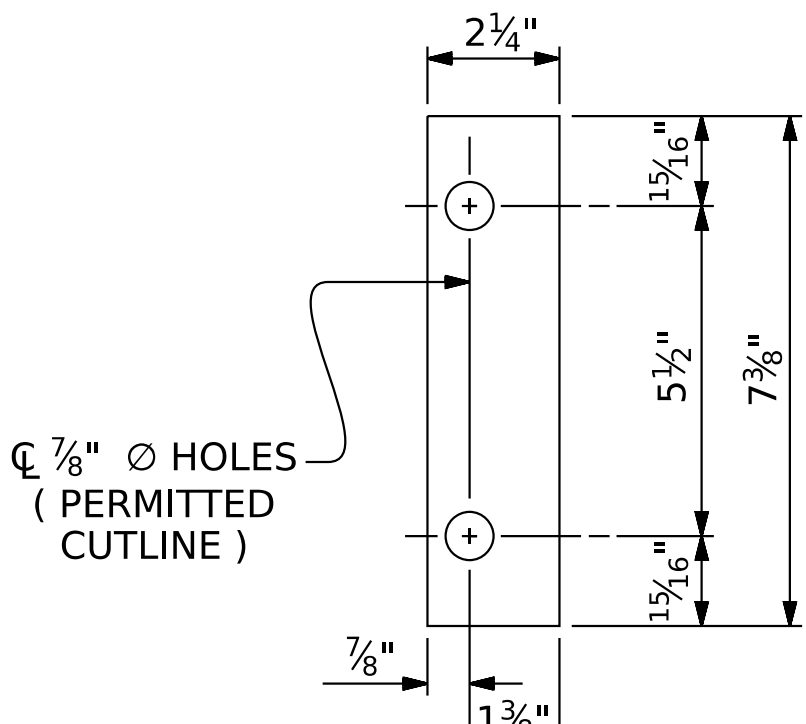
SECTION B-B



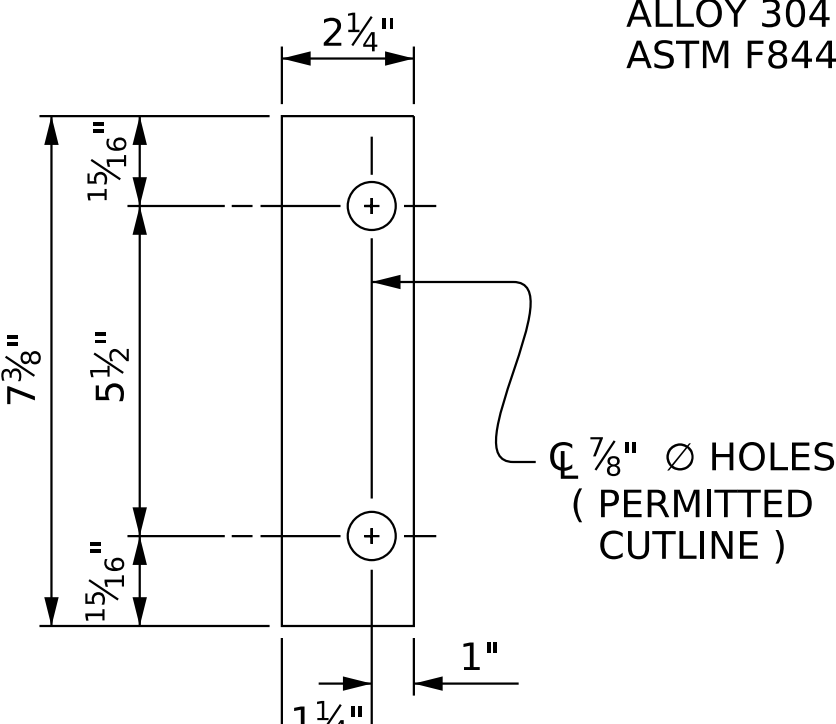
EXPANSION BAR DETAILS



BAR SECTION



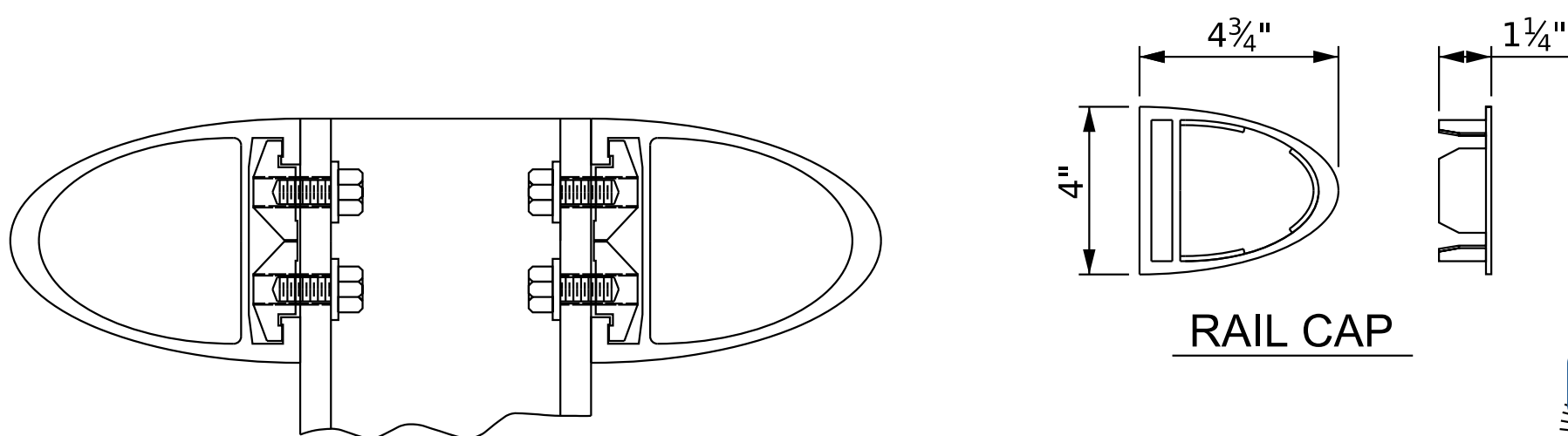
FRONT PLATE



REAR PLATE

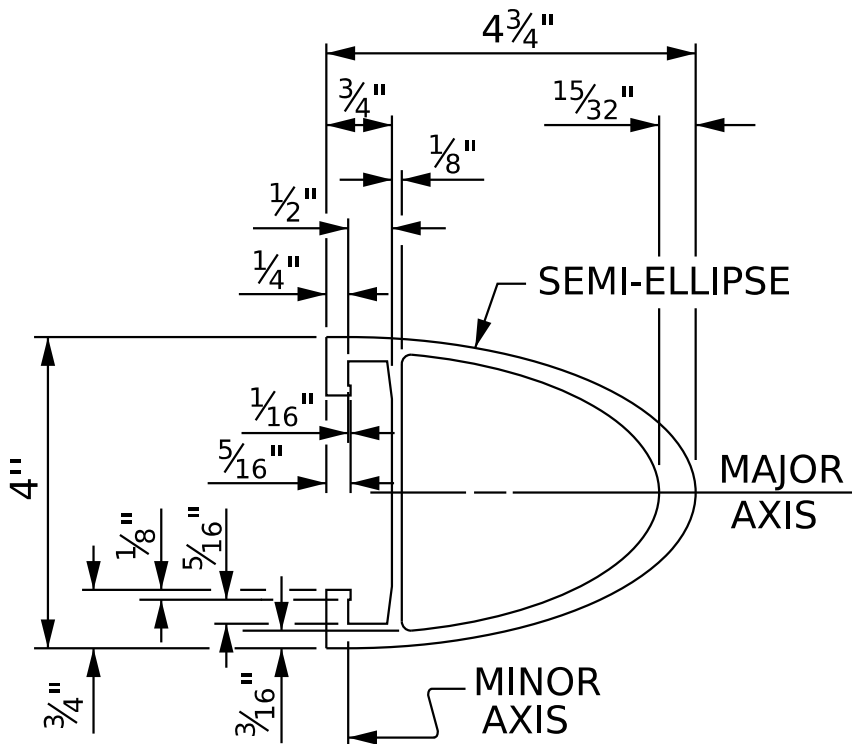
SHIM DETAILS

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



CLAMP ASSEMBLY

RAIL CAP



RAIL SECTION

PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 12+72.18 -Y3-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
MODIFIED 2 BAR
METAL RAIL
(INTERIOR)

REVISIONS						SHEET NO. S5-23
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

STR. #5

DRAWN BY: T. K. BOYD DATE: 03/2026
 CHECKED BY: E. W. SPRABERRY DATE: 03/2026
 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 03/2026

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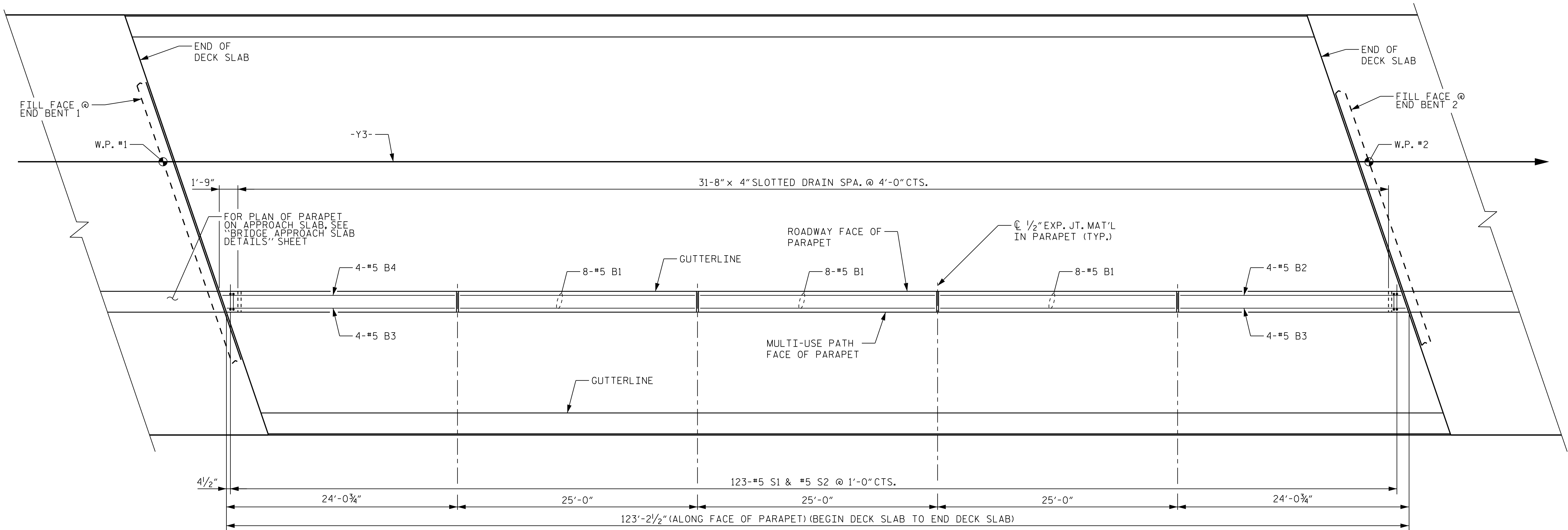
Kimley»Horn

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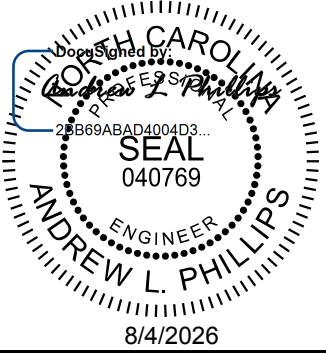
NOTES:
8" x 4" SLOTTED DRAIN HOLES MAY BE SHIFTED
SLIGHTLY TO AVOID CONFLICTS WITH #5 S1 & #5 S2.



INTERIOR CONCRETE PARAPET LAYOUT

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 12+72.18 -Y3-

SHEET 1 OF 3



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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE INTERIOR CONCRETE PARAPET LAYOUT AND DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S5-24					TOTAL SHEETS 35

K:\BRI-Structures\Bridges\NC\01036524 - I-5715 Structure Design\cadd\Bgn\Site *3\Structure 5\Final\405-047-15175-SWU-CP3-591417-024.dgn 8/3/2026

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

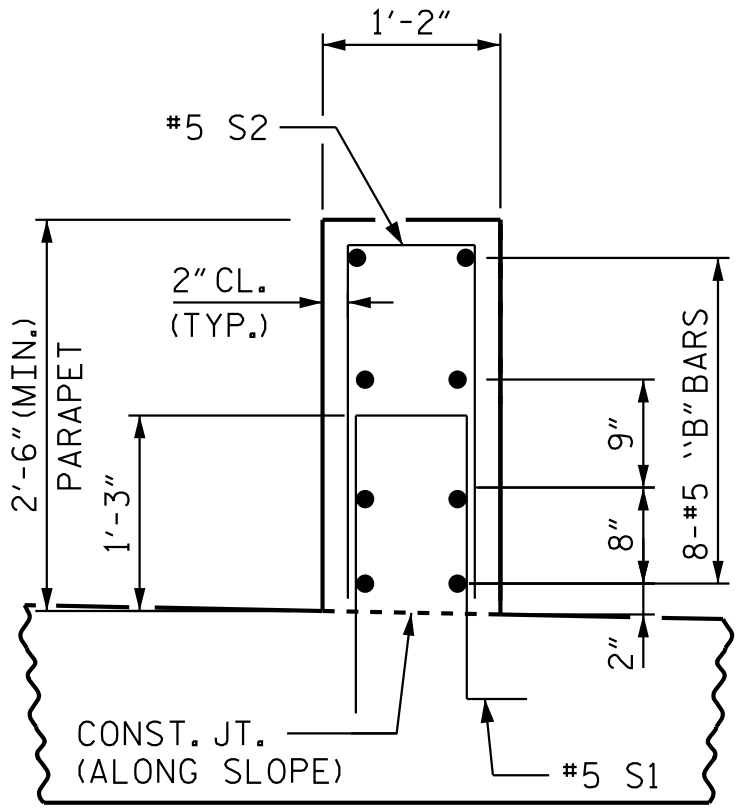
THE #5 S1 AND #5 S2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN PARAPET.

FOR GUARDRAIL ANCHORAGE ASSEMBLY, SEE "GUARDRAIL ANCHORAGE
DETAILS FOR INTERIOR PARAPET METAL RAILS ON APPROACH SLAB"
SHEET.

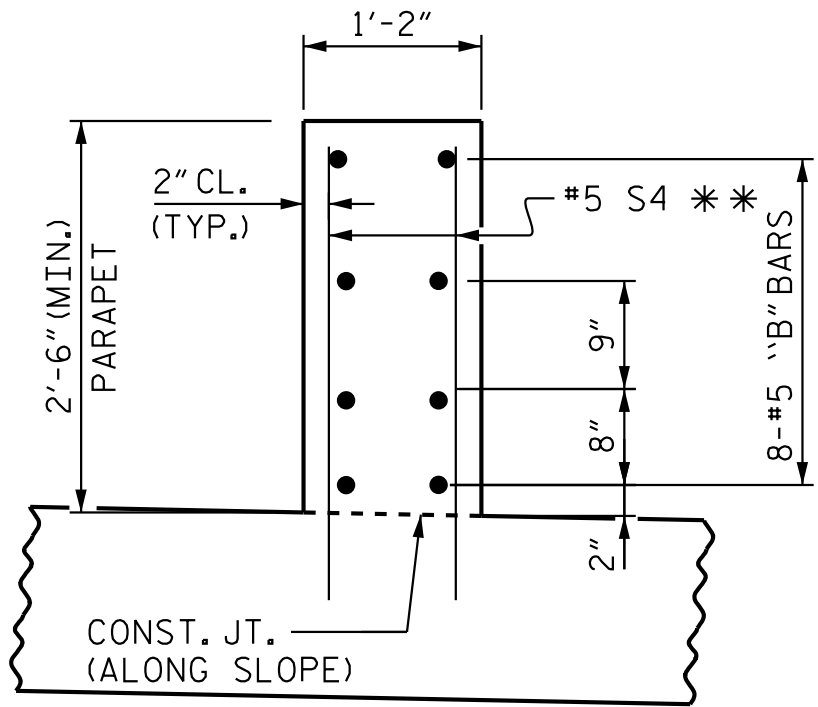
GROOVED CONTRACTION JOINTS, $\frac{1}{2}$ " IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR SEGMENTS LESS THAN 10 FEET IN LENGTH.

* * THE CONTRACTOR MAY USE ADHESIVELY ANCHORED #5 S4 BARS. LEVEL 2 FIELD TESTING IS REQUIRED AND THE YIELD LOAD OF THE #5 S4 BARS IS 18.6 KIPS. FOR ADHESIVELY ANCHORED BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS.

INTERIOR CONCRETE PARAPET SHALL BE PAID FOR BY LINEAR FOOT
OF 1'-2" X 2'-6" CONCRETE PARAPET.

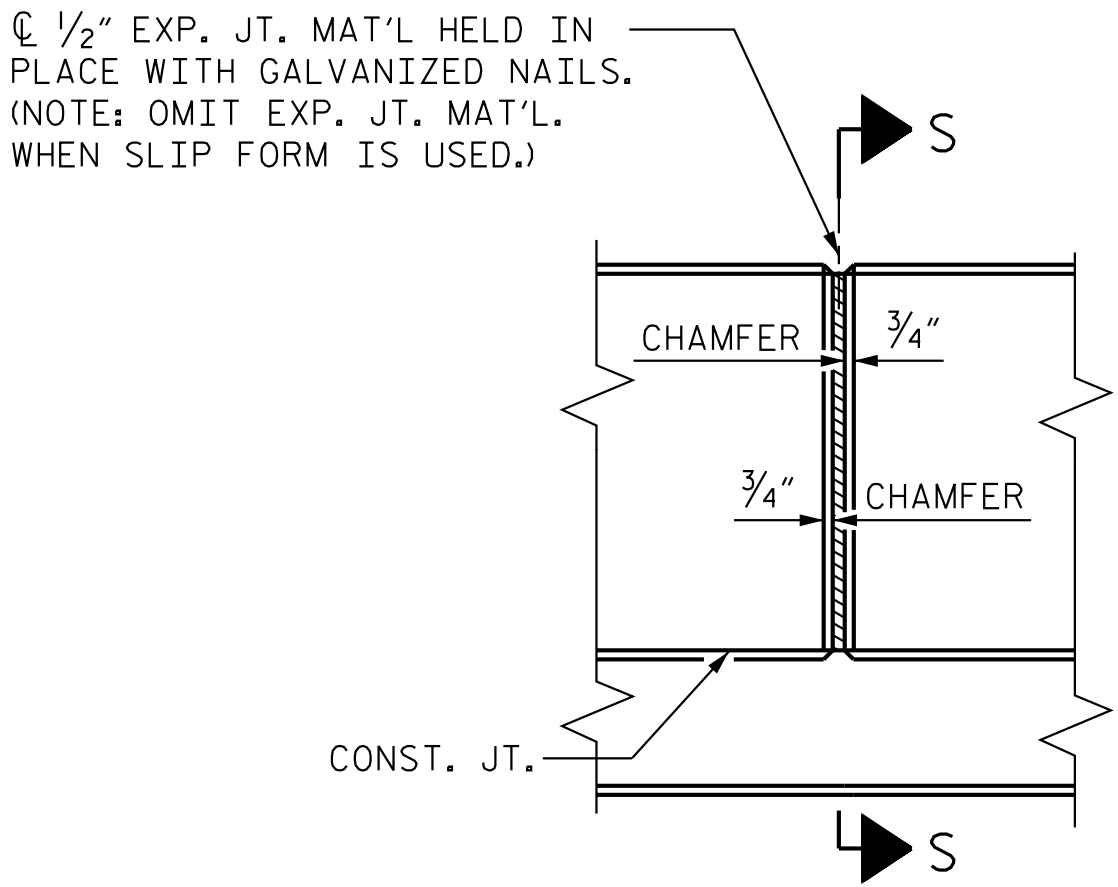


SECTION THRU PARAPET

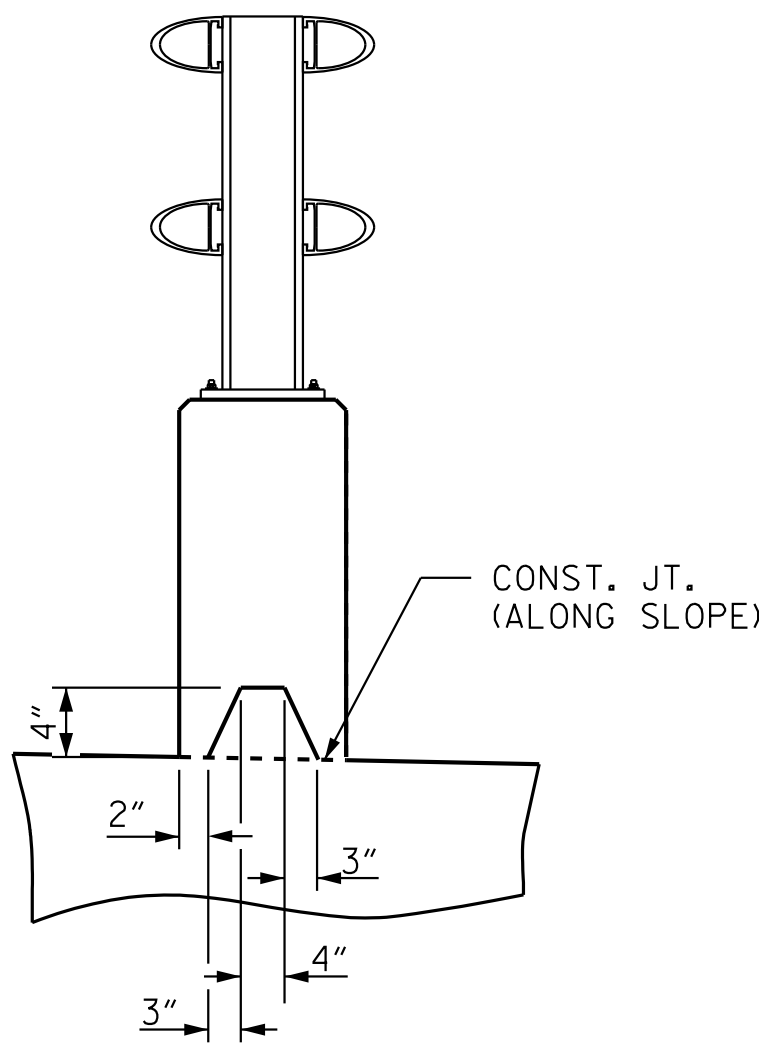


OPTIONAL SECTION
THRU PARAPET

* FOR OPTIONAL ADHESIVE ANCHORING
(NOT INCLUDED IN TOTAL QUANTITY)



ELEVATION AT EXPANSION JOINTS



SECTION S-S

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

BAR TYPES

BILL OF MATERIAL

CONCRETE PARAPET						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* B1	24	#5	STR	24'-8"	617	
* B2	4	#5	STR	23'-4"	97	
* B3	8	#5	STR	23'-7"	197	
* B4	4	#5	STR	24'-0"	100	
* S1	123	#5	1	5'-5"	695	
* S2	123	#5	2	5'-6"	706	
* EPOXY COATED REINFORCING STEEL					2,412 LBS.	
CLASS AA CONCRETE					19.2 C.Y.	
INTERIOR CONCRETE PARAPET **					173.3 LIN. FT.	
** INCLUDES INTERIOR CONCRETE PARAPET AND END POSTS ON APPROACH SLABS						

ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 12+72.18 -Y3-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
INTERIOR CONCRETE
PARAPET DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S5-25
1			3			TOTAL SHEETS 35
2			4			

STR. #5

DRAWN BY: T. K. BOYD DATE: 03/2026
 CHECKED BY: E. W. SPRABERRY DATE: 03/2026
 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 03/2026

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DETAILS FOR ATTACHING METAL RAIL TO END POST

NOTES

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

- ## NOTES

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE ¾" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE ½" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

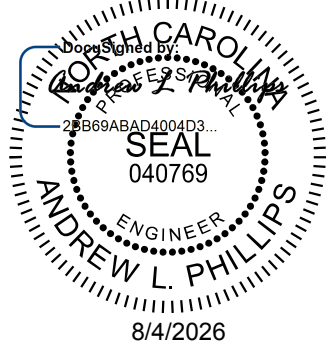
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE $\frac{3}{4}$ " $\times$ $1\frac{1}{8}$ " BOLT WITH WASHER SHALL BE REPLACED WITH A $\frac{3}{4}$ " $\times$ $6\frac{1}{2}$ " BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE $\frac{3}{4}$ " $\times$ $1\frac{1}{8}$ " BOLT SHALL APPLY TO THE $\frac{3}{4}$ " $\times$ $6\frac{1}{2}$ " BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



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

PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 12+72.18 -Y3-

SHEET 3 OF 3



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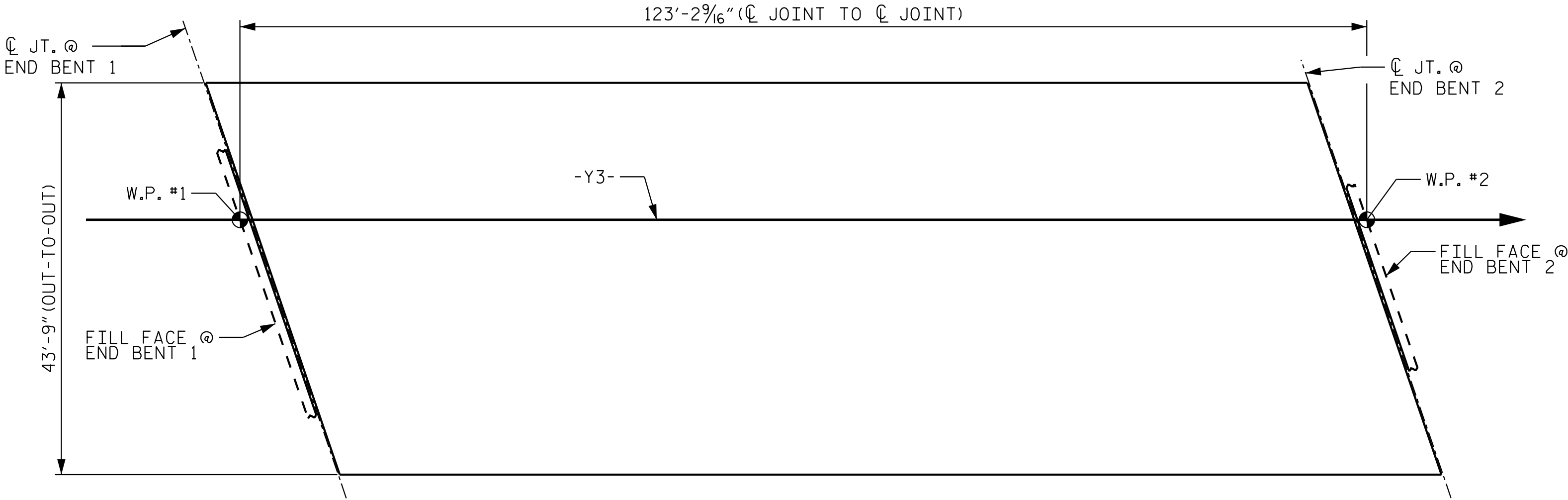
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NO.	BY:	DATE:	NO.	BY:	DATE:	S5-26
1			3			TOTAL SHEETS 35
2			4			

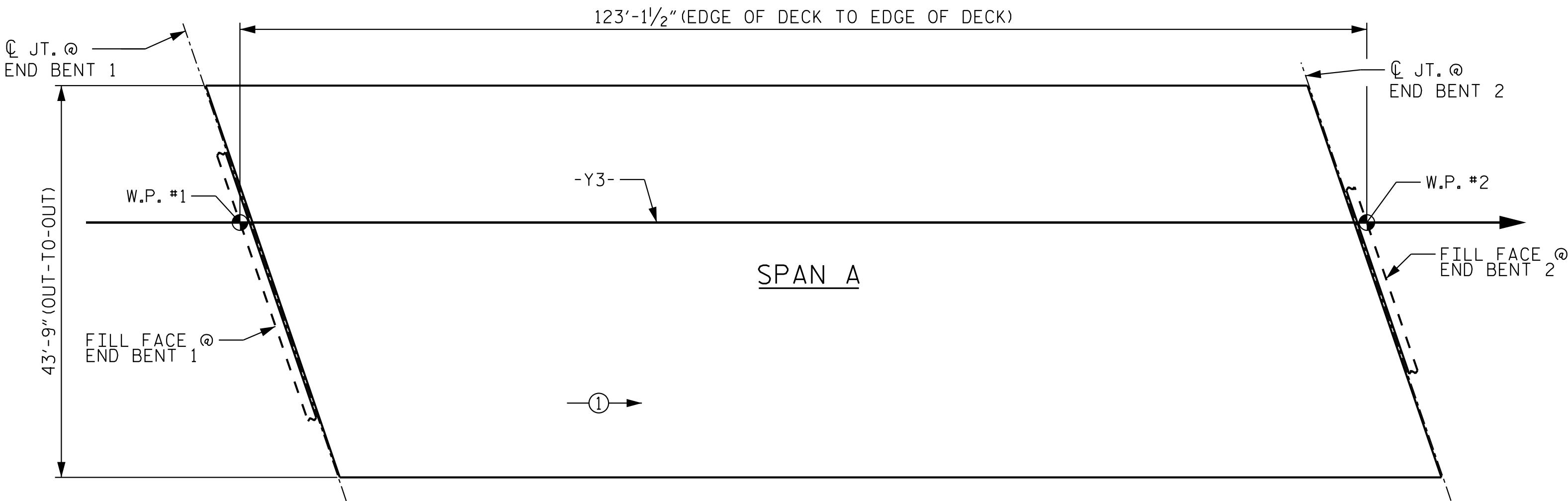
STR. #5

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 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 03/2026

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8/3/2026



LAYOUT FOR COMPUTING AREA
OF REINFORCED CONCRETE DECK SLAB
(SQ. FT. = 5,387)

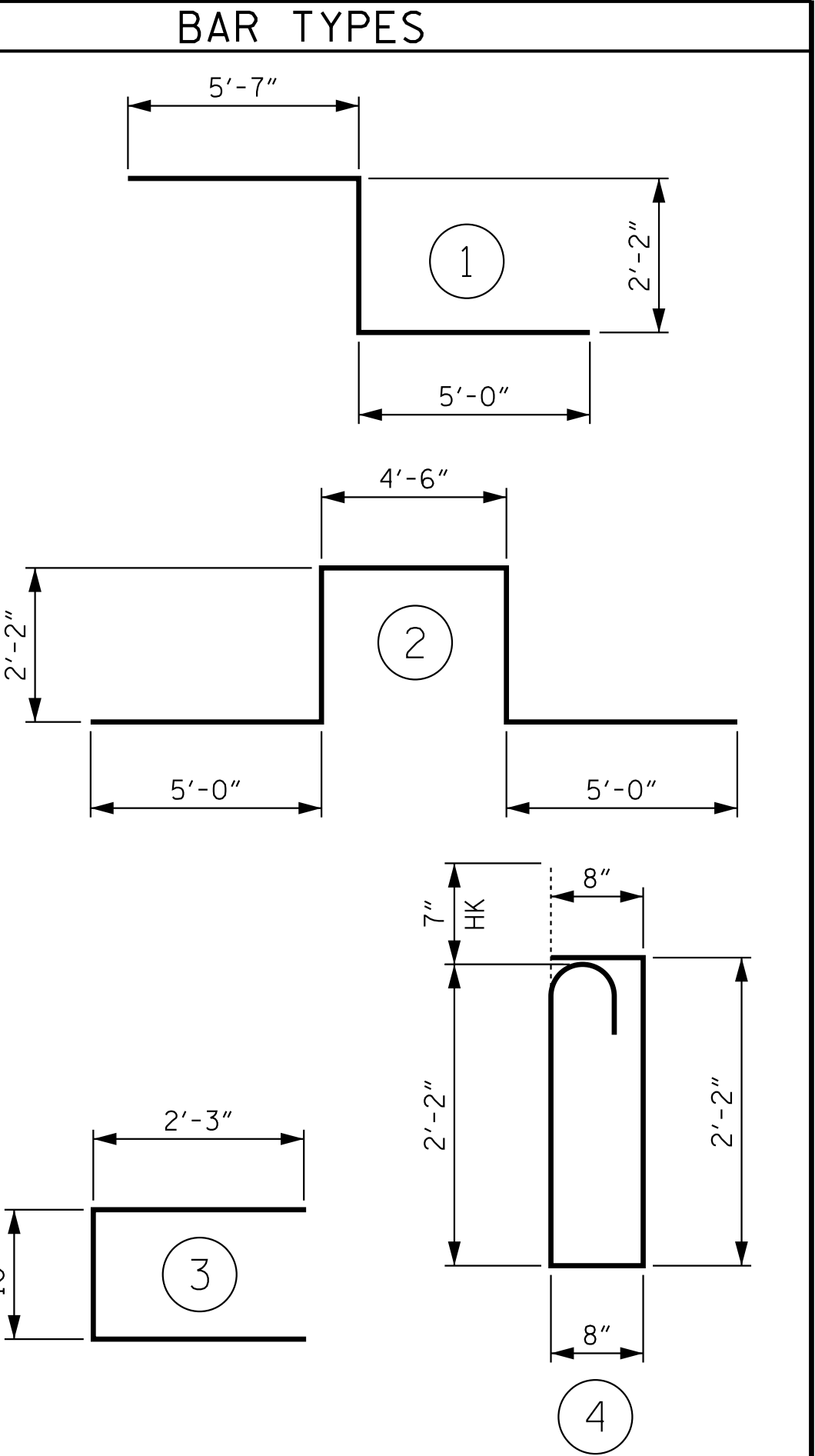


POUR SEQUENCE

GROOVING BRIDGE FLOORS	
APPROACH SLABS	1,688 SQ.FT.
BRIDGE DECK	4,174 SQ.FT.
TOTAL	5,862 SQ.FT.

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"			

BILL OF MATERIAL						
SUPERSTRUCTURE						
	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
*	A1	173	#5	STR	43'-5"	7,834
	A2	173	#5	STR	43'-5"	7,834
*	A101	2	#5	STR	42'-2"	88
*	A102	2	#5	STR	40'-4"	84
*	A103	2	#5	STR	38'-6"	80
*	A104	2	#5	STR	36'-8"	76
*	A105	2	#5	STR	34'-10"	73
*	A106	2	#5	STR	33'-0"	69
*	A107	2	#5	STR	31'-2"	65
*	A108	2	#5	STR	29'-4"	61
*	A109	2	#5	STR	27'-6"	57
*	A110	2	#5	STR	25'-9"	54
*	A111	2	#5	STR	23'-11"	50
*	A112	2	#5	STR	22'-1"	46
*	A113	2	#5	STR	20'-3"	42
*	A114	2	#5	STR	18'-5"	38
*	A115	2	#5	STR	16'-7"	35
*	A116	2	#5	STR	14'-9"	31
*	A117	2	#5	STR	12'-11"	27
*	A118	2	#5	STR	11'-1"	23
*	A119	2	#5	STR	9'-3"	19
*	A120	2	#5	STR	7'-6"	16
*	A121	2	#5	STR	5'-8"	12
*	A122	2	#5	STR	3'-10"	8
*	A123	4	#5	STR	2'-0"	8
	A201	2	#5	STR	42'-2"	88
	A202	2	#5	STR	40'-4"	84
	A203	2	#5	STR	38'-6"	80
	A204	2	#5	STR	36'-8"	76
	A205	2	#5	STR	34'-10"	73
	A206	2	#5	STR	33'-0"	69
	A207	2	#5	STR	31'-2"	65
	A208	2	#5	STR	29'-4"	61
	A209	2	#5	STR	27'-6"	57
	A210	2	#5	STR	25'-9"	54
	A211	2	#5	STR	23'-11"	50
	A212	2	#5	STR	22'-1"	46
	A213	2	#5	STR	20'-3"	42
	A214	2	#5	STR	18'-5"	38
	A215	2	#5	STR	16'-7"	35
	A216	2	#5	STR	14'-9"	31
	A217	2	#5	STR	12'-11"	27
	A218	2	#5	STR	11'-1"	23
	A219	2	#5	STR	9'-3"	19
	A220	2	#5	STR	7'-6"	16
	A221	2	#5	STR	5'-8"	12
	A222	2	#5	STR	3'-10"	8
	A223	4	#5	STR	2'-0"	8
*	B1	124	#4	STR	32'-3"	2,671
	B2	84	#5	STR	42'-3"	3,702
*	G1	2	#5	STR	45'-10"	96
*	K1	8	#8	1	12'-10"	237
*	K2	12	#8	2	18'-10"	603
*	K3	24	#6	STR	5'-0"	180
*	S1	40	#4	3	5'-4"	143
*	S2	40	#5	4	6'-3"	261



ALL BAR DIMENSIONS ARE OUT TO OUT

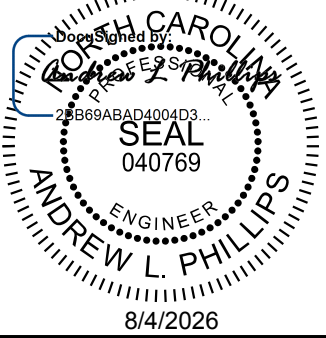
SUPERSTRUCTURE BILL OF MATERIAL

	CLASS AA CONCRETE	REINFORCING STEEL	EPOXY COATED REINFORCING STEEL
	(CU. YDS.)	(LBS.)	(LBS.)
SPAN A		12,598	13,124
POUR #1	160.0		
TOTALS * *	160.0	12,598	13,124

** QUANTITIES FOR CONCRETE PARAPETS AND END
POSTS ARE NOT INCLUDED

* DENOTES EPOXY COATED REINFORCING

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 12+72.18 -Y3-



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REVISIONS						SHEET NO. S5-27
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

STR. #5

DRAWN BY: <u>T.K. BOYD</u>	DATE: <u>03/2026</u>
CHECKED BY: <u>E.W. SPRABERRY</u>	DATE: <u>03/2026</u>
DESIGN ENGINEER OF RECORD: <u>A.L. PHILLIPS</u>	DATE: <u>03/2026</u>

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NOTES

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

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

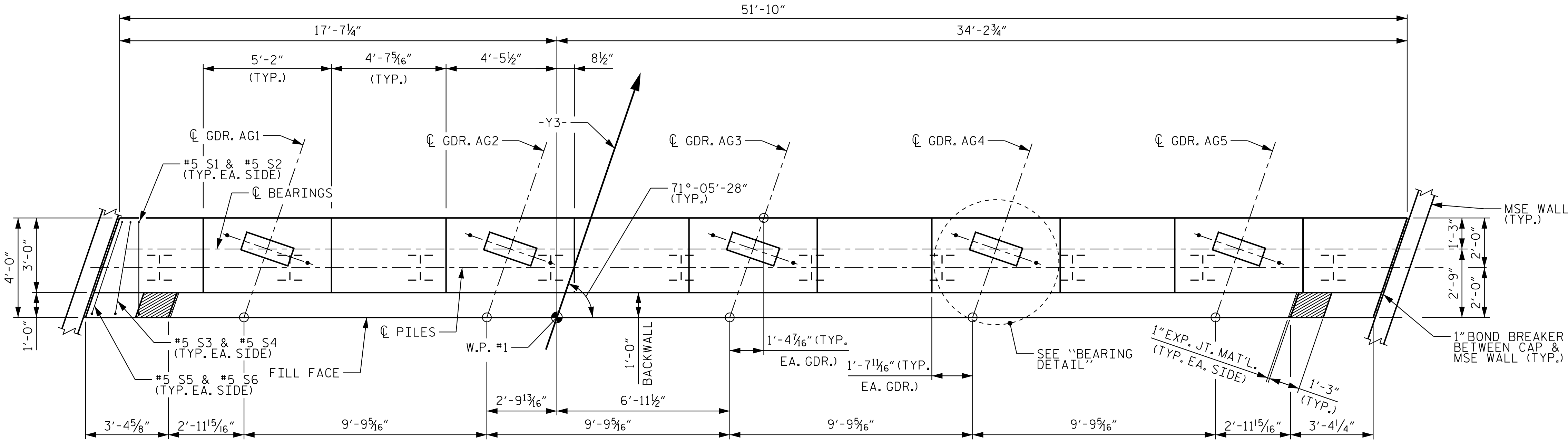
FOR PILE SPlice DETAILS, SEE SHEET 2 OF 2.

BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

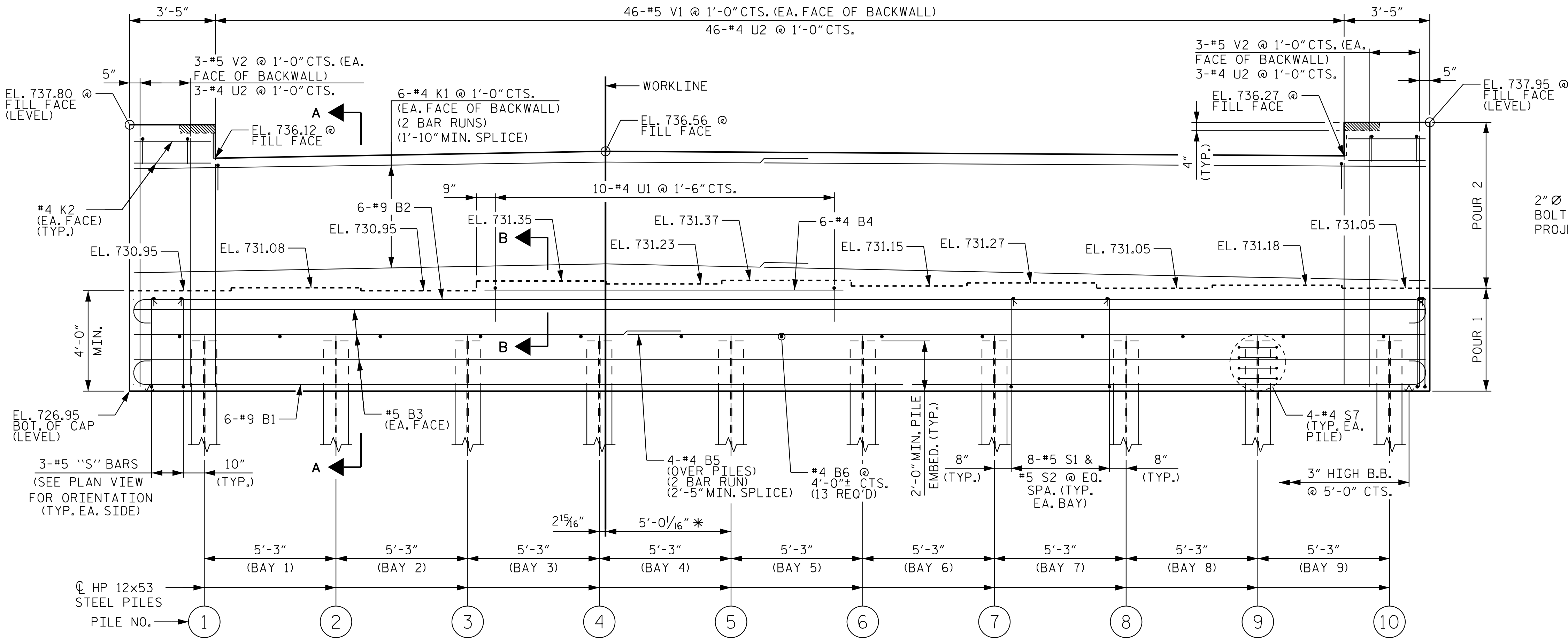
THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.

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

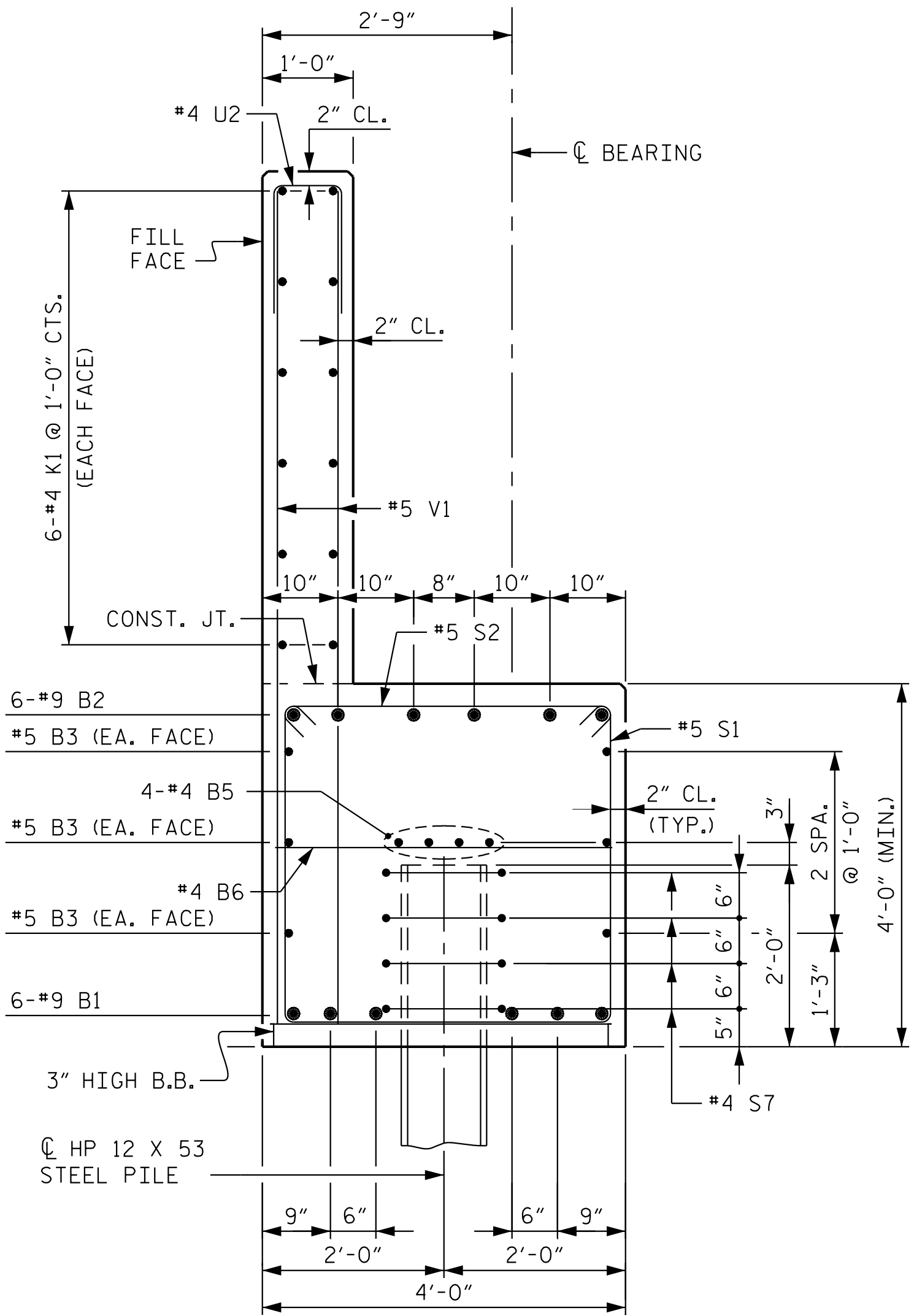
THE CONCRETE IN THE SHADED AREAS OF THE BACKWALL SHALL BE POURED AFTER THE PARAPETS ARE CAST IF SLIP FORMING IS USED.



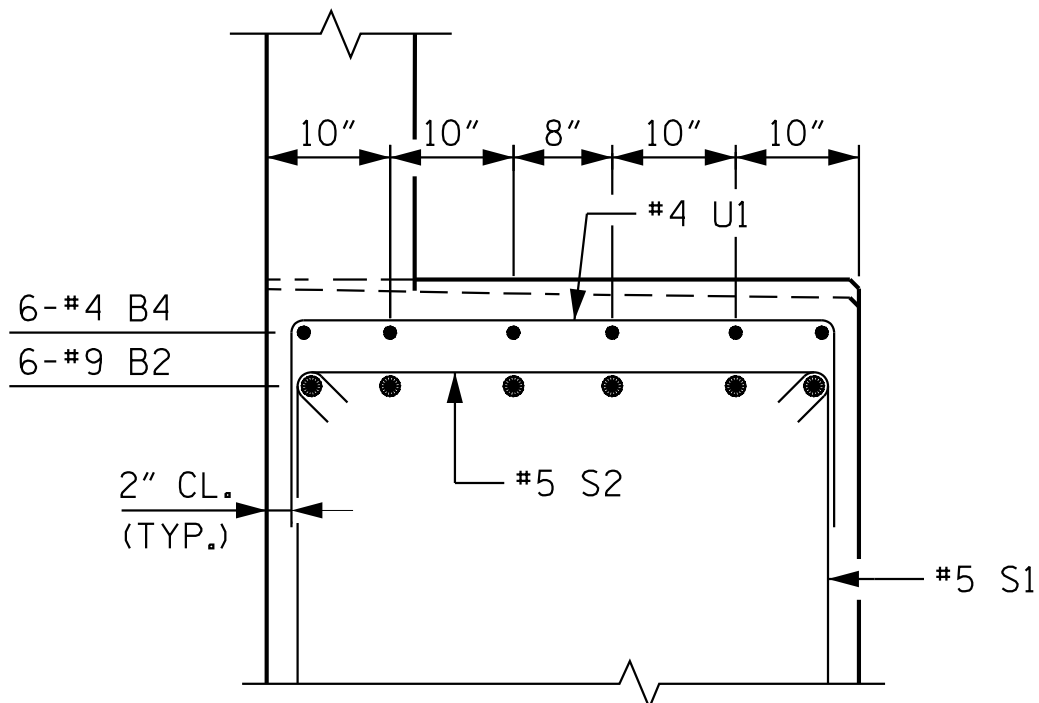
PLAN



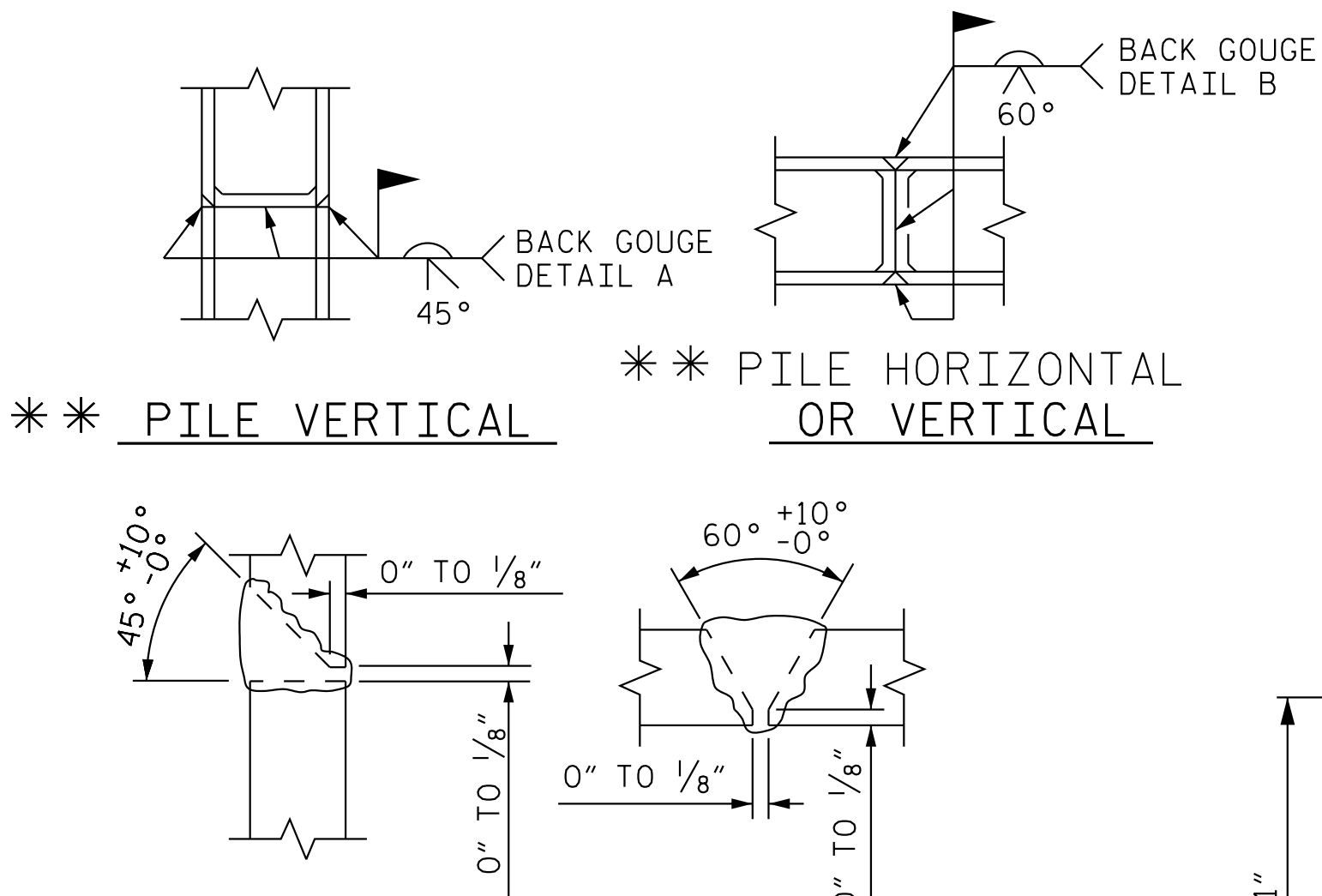
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SECTION A-A



PARTIAL SECTION B-B



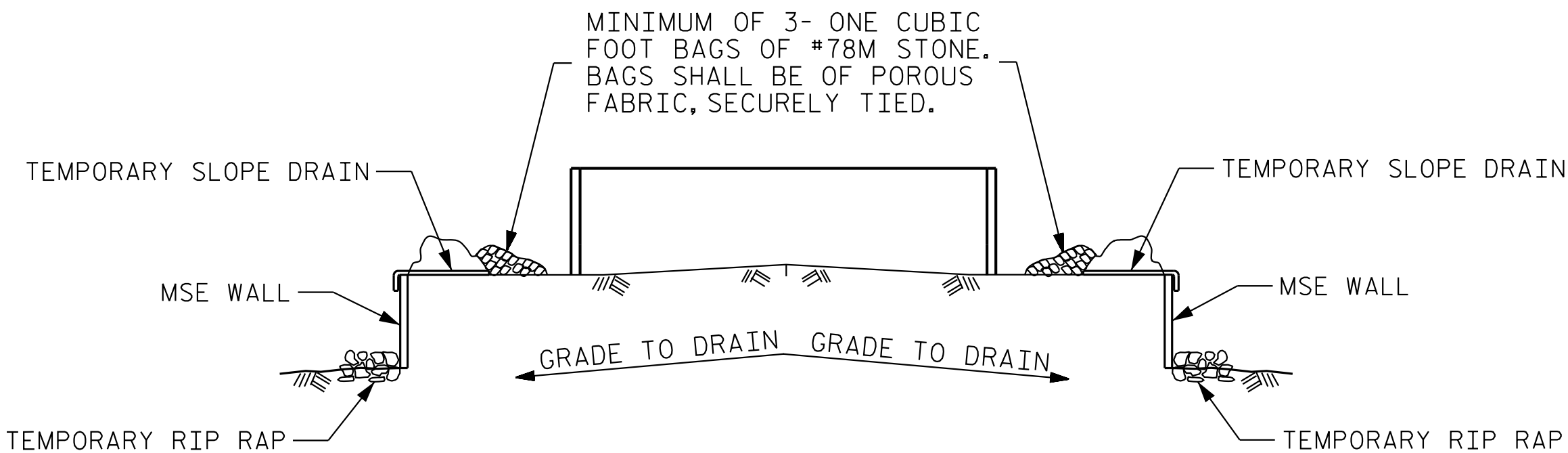
DETAIL A DETAIL B

PILE SPLICE DETAILS

** POSITION OF PILE DURING WELDING.

** PILE VERTICAL

** PILE HORIZONTAL OR VERTICAL

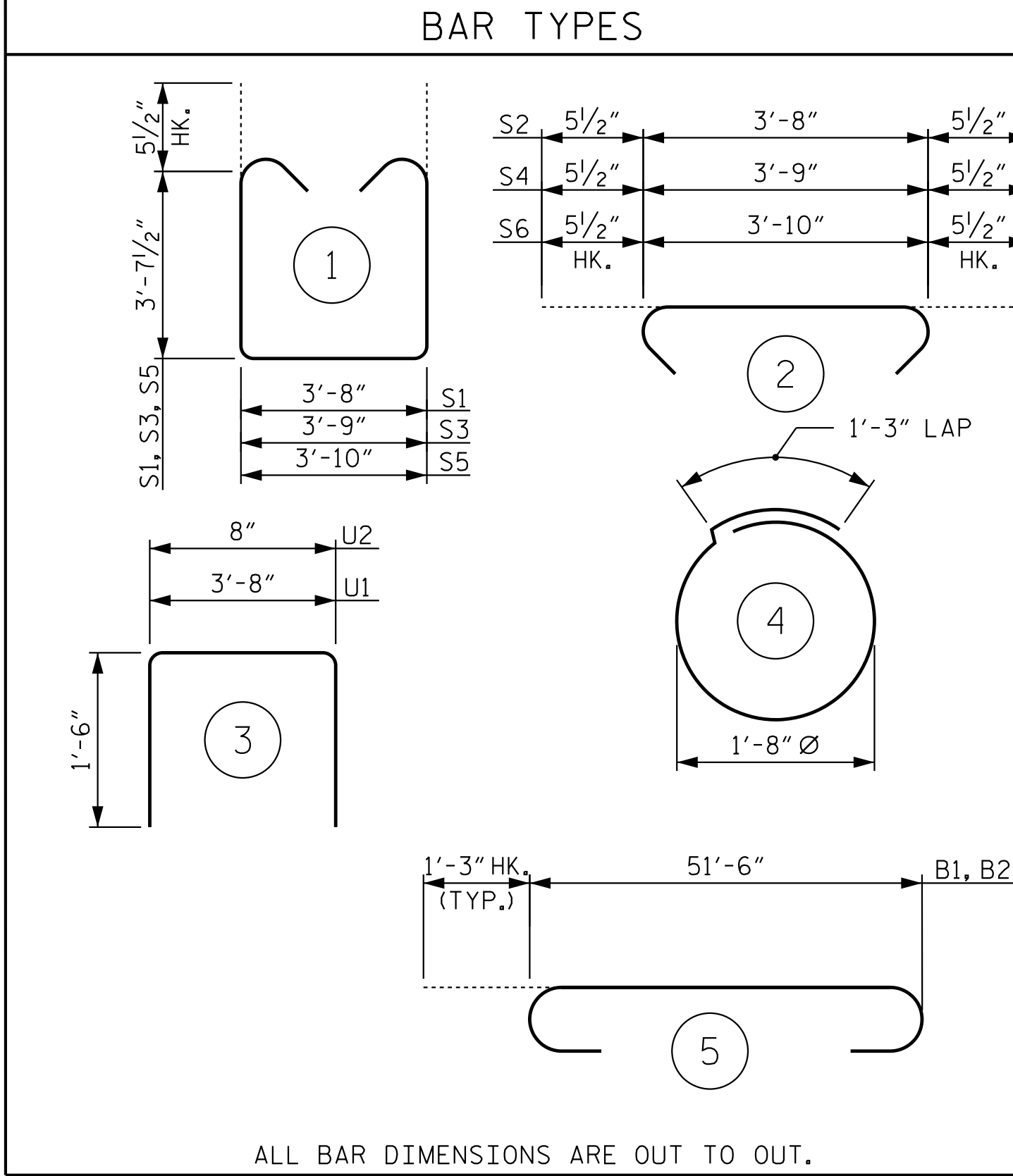


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

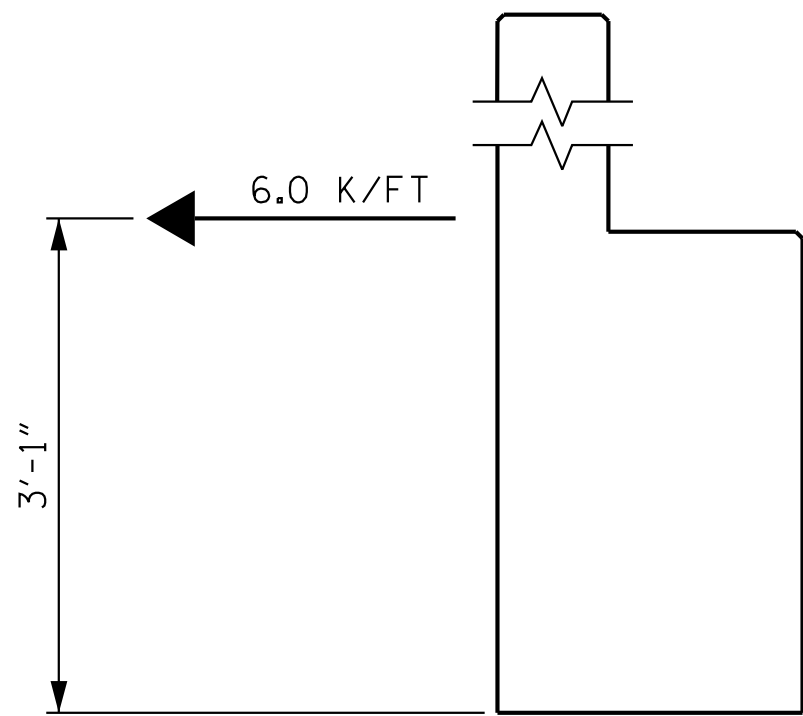
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

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

TEMPORARY DRAINAGE AT END BENT



ALL BAR DIMENSIONS ARE OUT TO OUT.



MSE REINFORCING STRAP

LOAD DETAIL

MSE REINFORCING STRAP NOTES

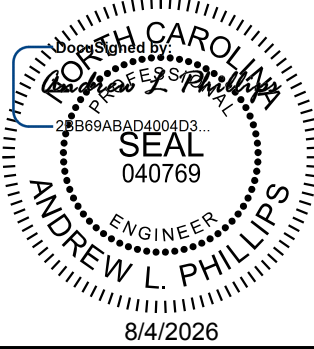
MSE REINFORCING STRAPS SHALL BE ATTACHED TO THE END BENT CAP AND/OR BACKWALL. FOR DESIGN CRITERIA AND DETAILS, SEE MSE WALL SHEETS AND SPECIAL PROVISIONS.

PLANS, WORKING DRAWINGS, AND DESIGN CALCULATIONS SHALL BE SUBMITTED BY THE CONTRACTOR TO THE ENGINEER FOR REVIEW AND APPROVAL, SEE SPECIAL PROVISIONS.

PLANS SUBMITTED FOR REVIEW SHALL INCLUDE THE FOLLOWING: PLAN VIEW, ELEVATION VIEW, TYPICAL SECTIONS, AND STRAP DETAILS.

THE MSE REINFORCING STRAPS SHALL BE DESIGNED TO CARRY THE LOADS FROM THE BRIDGE SUPERSTRUCTURE AS INDICATED IN THE "MSE REINFORCING STRAP LOAD DETAIL". IN ADDITION, THE MSE REINFORCING STRAPS SHALL ALSO BE DESIGNED TO CARRY LOADS FROM SOIL PRESSURE AS OUTLINED IN THE SPECIAL PROVISION.

THE LOADS IN THE DETAIL ABOVE ARE FACTORED LOADS.



Kimley»Horn

421 Fayetteville Street, Suite 600
Raleigh, NC 27601-1772
Phone (919) 677-2000 NC LICENSE # F-0102

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BILL OF MATERIAL

END BENT 1

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	9	5	54'-0"	1,102
B2	6	9	5	54'-0"	1,102
B3	6	5	STR	51'-6"	322
B4	6	4	STR	14'-3"	57
B5	8	4	STR	27'-0"	144
B6	13	4	STR	3'-8"	32
S1	74	5	1	11'-10"	913
S2	74	5	2	4'-7"	354
S3	2	5	1	11'-11"	25
S4	2	5	2	4'-8"	10
S5	2	5	1	12'-0"	25
S6	2	5	2	4'-9"	10
S7	40	4	4	6'-6"	174
U1	10	4	3	6'-8"	45
U2	52	4	3	3'-8"	127
V1	92	5	STR	8'-8"	832
V2	12	5	STR	10'-1"	126
K1	24	4	STR	26'-10"	430
K2	8	4	STR	3'-1"	16

REINFORCING STEEL 5,846 LBS.

CLASS A CONCRETE BREAKDOWN
POUR 1 (CAP) 31.9 C.Y.

POUR 2 (BACKWALL) 10.7 C.Y.

TOTAL CLASS A CONCRETE 42.6 C.Y.

PROJECT NO. I-5715

MECKLENBURG COUNTY

STATION: 12+72.18 -Y3-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1 DETAILS
& BILL OF MATERIAL

REVISIONS						SHEET NO. S5-29
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

STR. #5

DRAWN BY: T. K. BOYD DATE: 03/2026
CHECKED BY: E. W. SPRABERRY DATE: 03/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 03/2026

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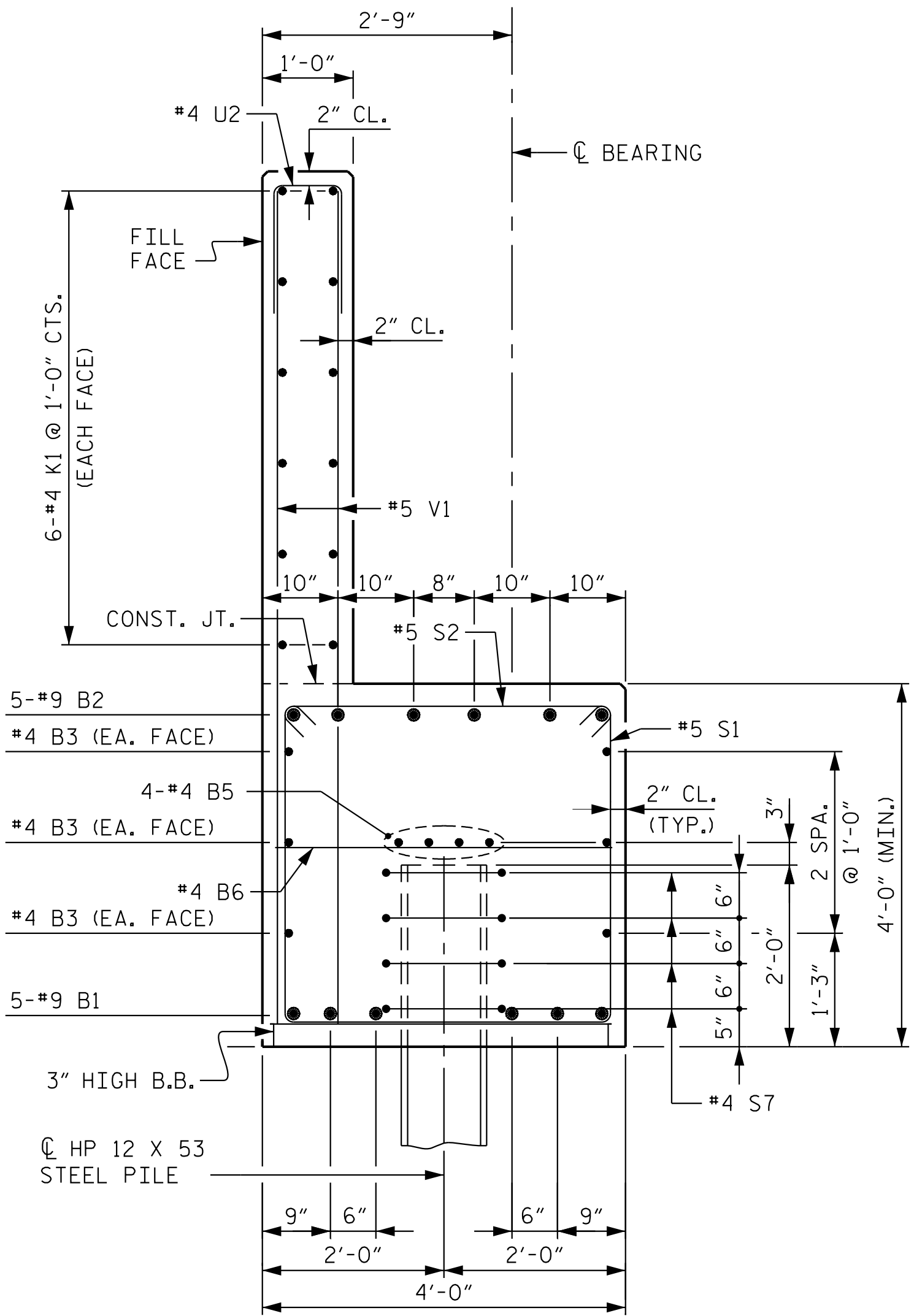
THE CONCRETE IN THE SHADED AREAS OF THE BACKWALL SHALL BE POURED AFTER THE PARAPETS ARE CAST IF SLIP FORMING IS USED.

STR. #5

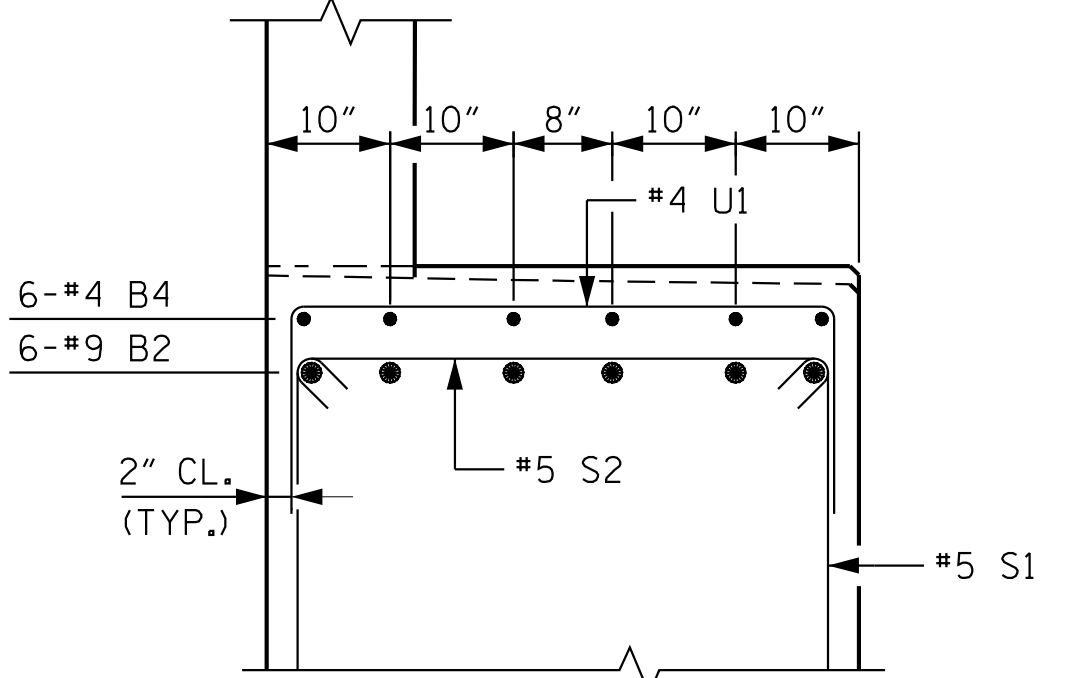
**DOCUMENT NOT CONSIDERED FINAL
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DRAWN BY: <u>T. K. BOYD</u>	DATE: <u>03/2026</u>
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DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>03/2026</u>

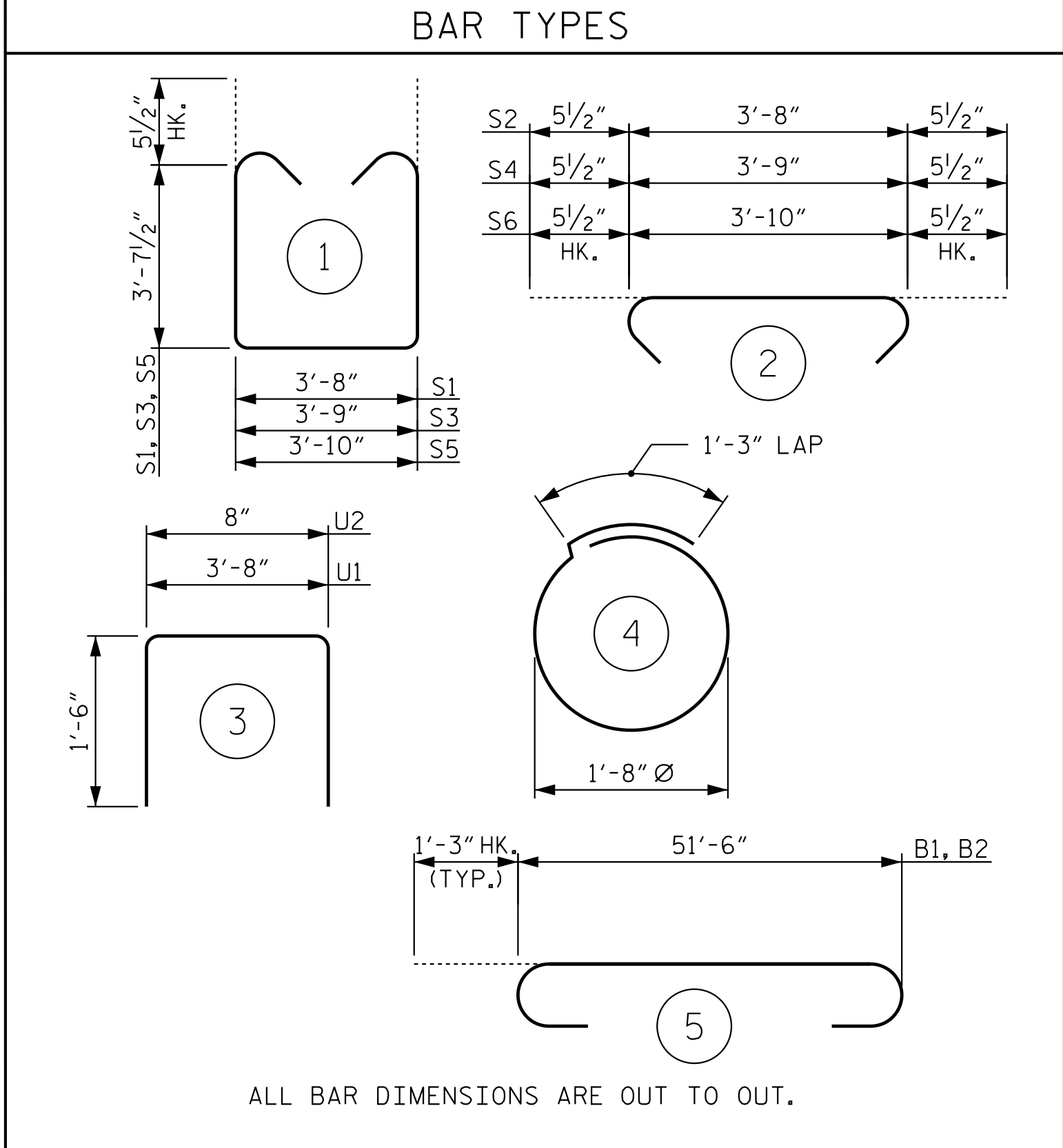
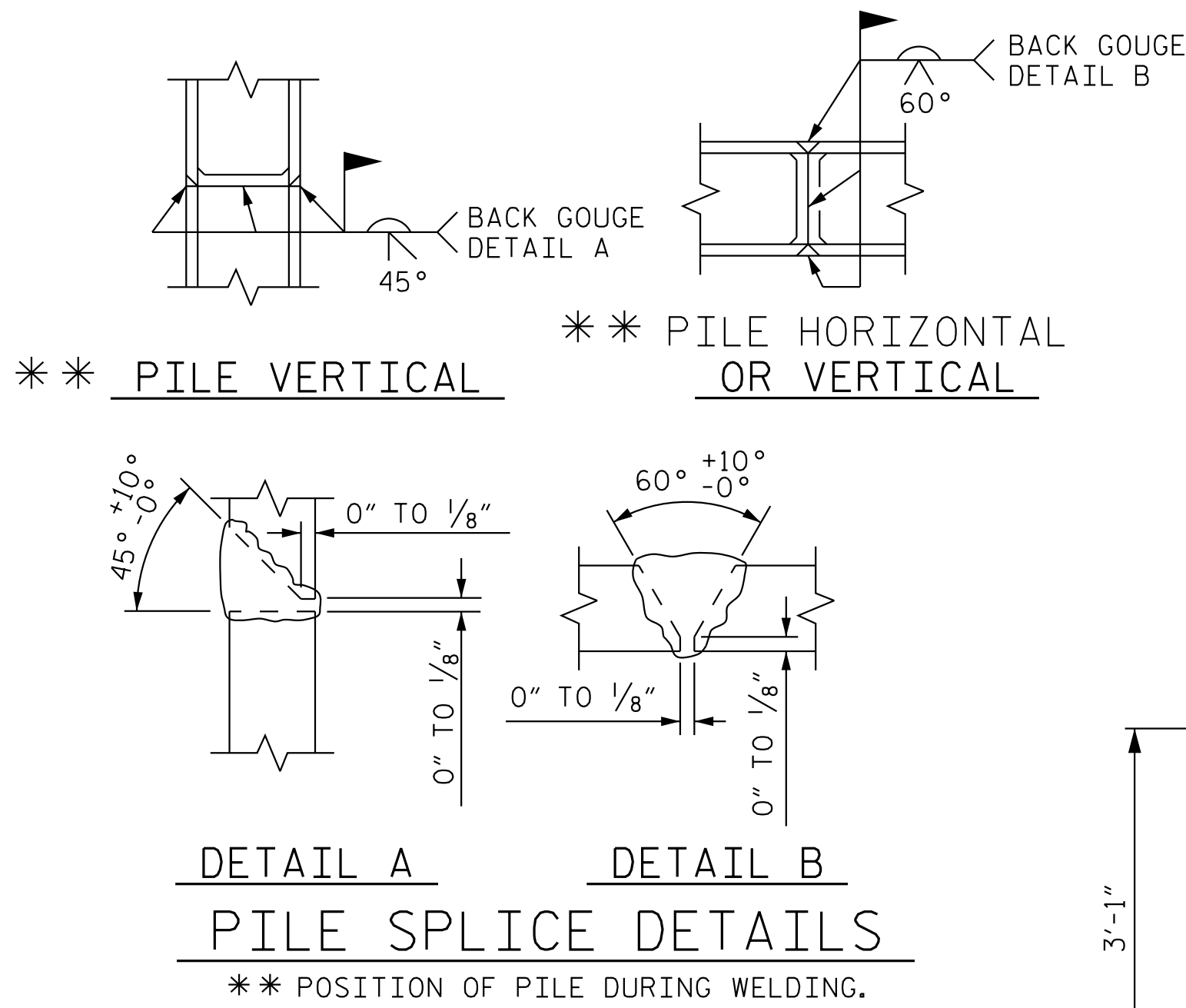
K:\PDI_Structures\Bridges\NC\01036524 - I-5715 Structure Design\Coord\gn\Site *3\Structure 5\Final\405.06.1.15715.SWL\F4.591417.031.dgn
8/4/2026



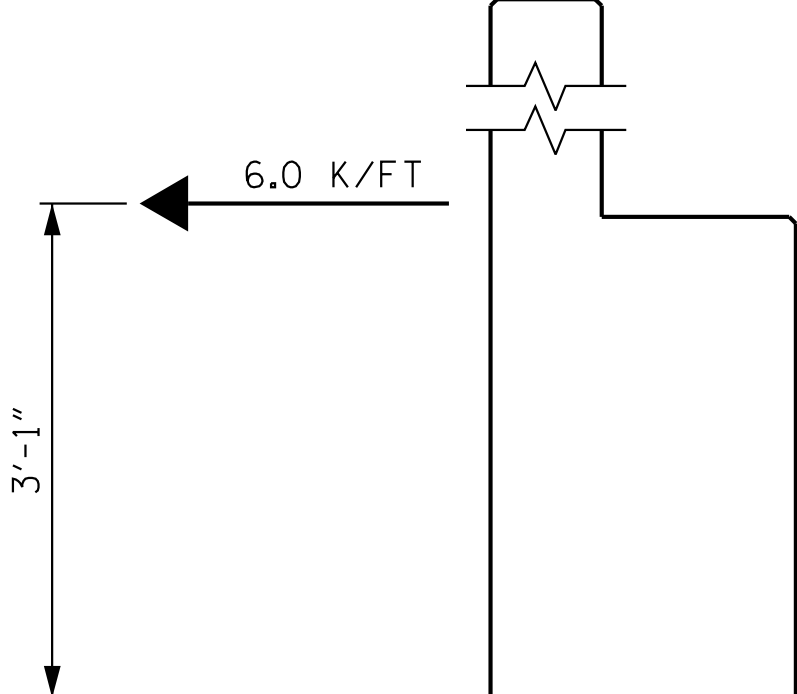
SECTION A-A



PARTIAL SECTION B-B



BILL OF MATERIAL					
END BENT 2					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	6	9	5	54'-0"	1,102
B2	6	9	5	54'-0"	1,102
B3	6	5	STR	51'-6"	322
B4	6	4	STR	14'-3"	57
B5	8	4	STR	27'-0"	144
B6	13	4	STR	3'-8"	32
S1	74	5	1	11'-10"	913
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V2	12	5	STR	10'-1"	126
K1	24	4	STR	26'-10"	430
K2	8	4	STR	3'-1"	16
REINFORCING STEEL					5,846 LBS.
CLASS A CONCRETE BREAKDOWN					
POUR 1 (CAP)					31.9 C.Y.
POUR 2 (BACKWALL)					10.7 C.Y.
TOTAL CLASS A CONCRETE					42.6 C.Y.



MSE REINFORCING STRAP

LOAD DETAIL

MSE REINFORCING STRAP NOTES

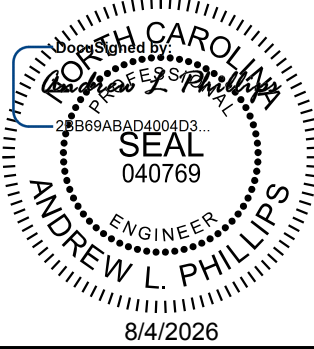
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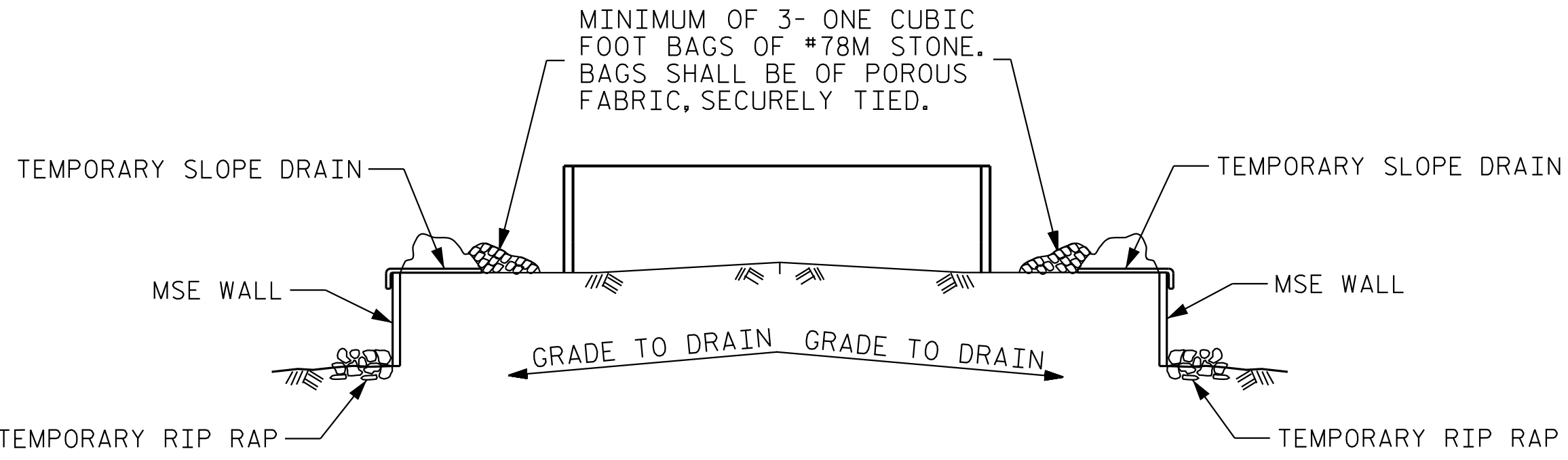
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BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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TEMPORARY DRAINAGE AT END BENT

DRAWN BY: T. K. BOYD	DATE: 03/2026
CHECKED BY: E. W. SPRABERRY	DATE: 03/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS	DATE: 03/2026

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 12+72.18 -Y3-

SHEET 2 OF 2

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

STR. #5

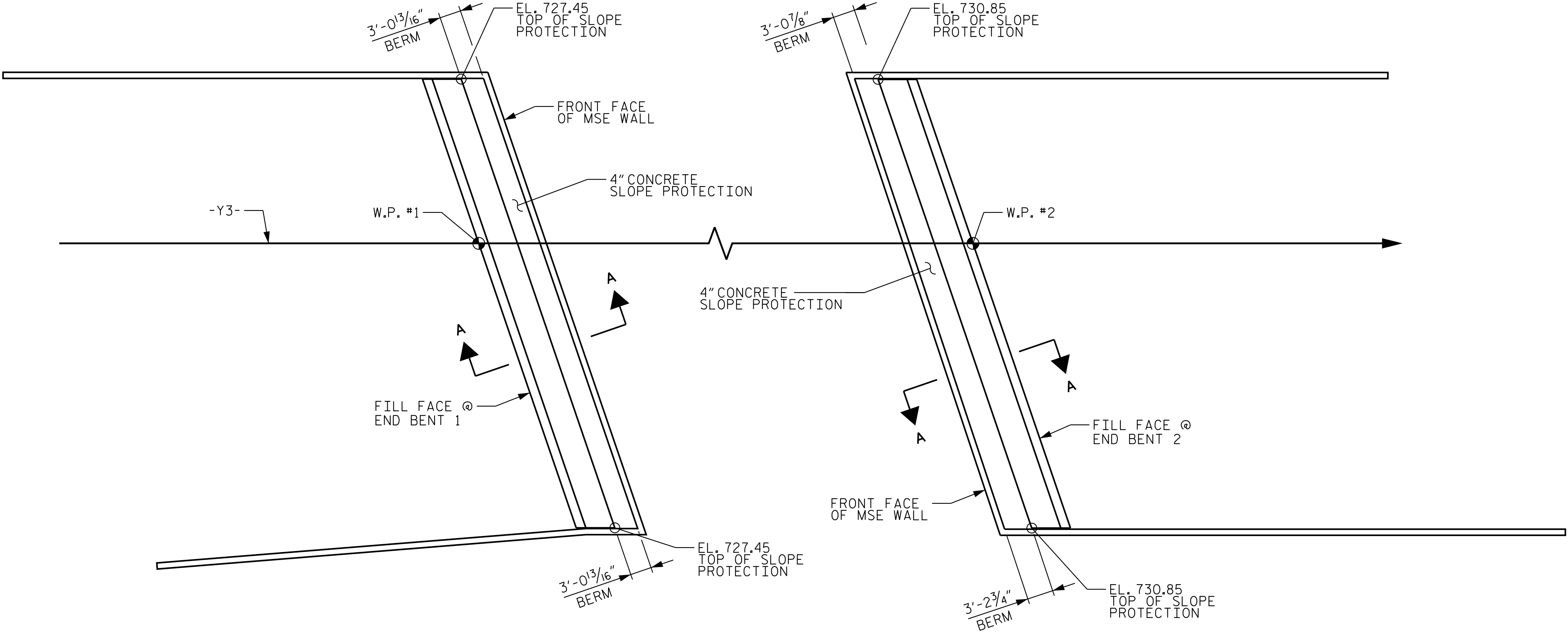
NOTES

SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS. FOR BERM WIDTH, SEE GENERAL DRAWING.

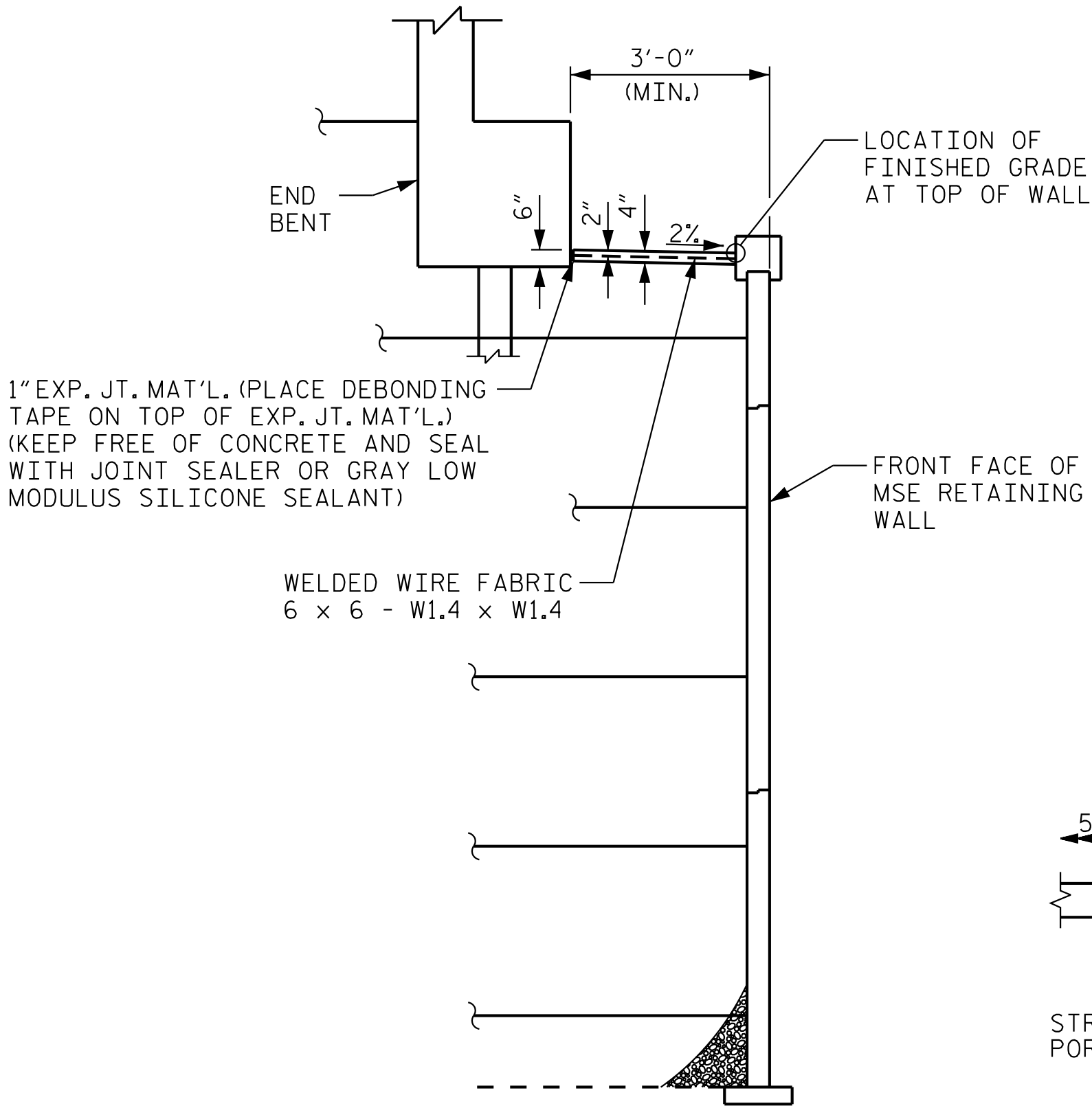
SLOPE PROTECTION SHALL CONSIST OF 4" POURED-IN-PLACE CONCRETE PAVING AS SHOWN IN THE DETAILS ON THIS SHEET. CONCRETE SHALL BE CLASS "B". THE CONCRETE SURFACE SHALL BE FLOATED WITH A WOODEN FLOAT AND FINISHED. WELDED WIRE FABRIC REINFORCING SHALL BE 6 X 6 - W1.4 X W1.4, 60" WIDE. SLOPE PROTECTION SHALL BE POURED IN 5' STRIPS AS SHOWN IN THE "POURING DETAIL" WITH 2'-0" LONG #4 BARS PLACED ALONG THE SLOPE BETWEEN STRIPS AT 1'-6" MAXIMUM SPACING. SLOPE PROTECTION MAY BE POURED IN ALTERNATE 4' AND 5' STRIPS AS SHOWN IN THE "OPTIONAL POURING DETAIL" WITH ADJACENT RUNS OF WELDED WIRE FABRIC LAPPING AT LEAST 6". THE COST OF THE WELDED WIRE FABRIC AND #4 BARS, IF USED, SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID PER SQUARE YARD FOR SLOPE PROTECTION.

BRIDGE @ STA. 12+72.18 -Y3-	4 INCH SLOPE PROTECTION	* WELDED WIRE FABRIC 60 INCHES WIDE
	SQUARE YARDS	APPROX. L.F.
END BENT 1	14.5	28
END BENT 2	14.5	28

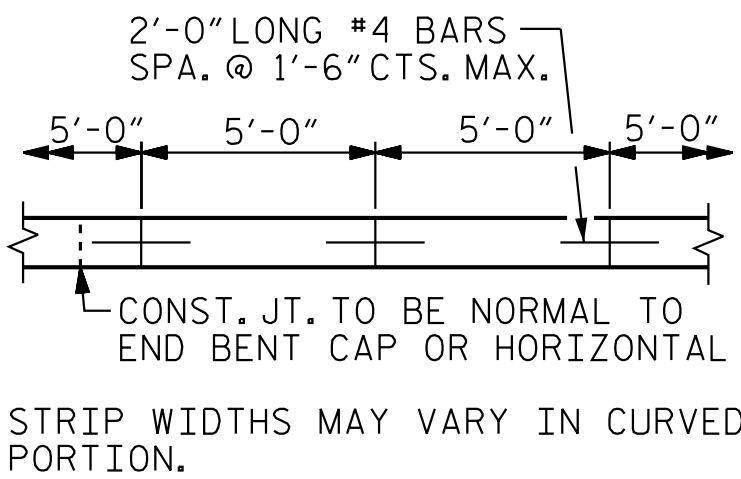
* QUANTITY SHOWN IS BASED ON 5' POURS.



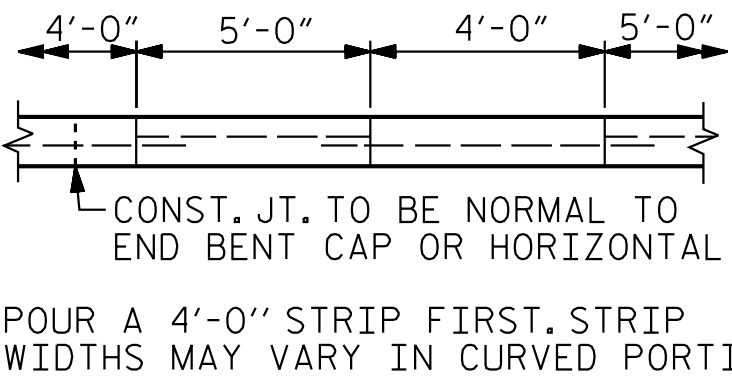
PLAN



SECTION A-A

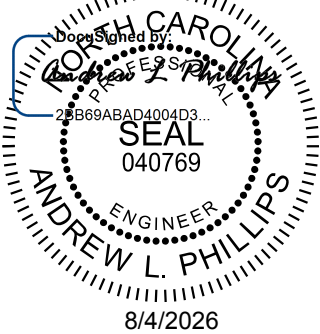


POURING DETAIL



OPTIONAL POURING DETAIL

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 12+72.18 -Y3-



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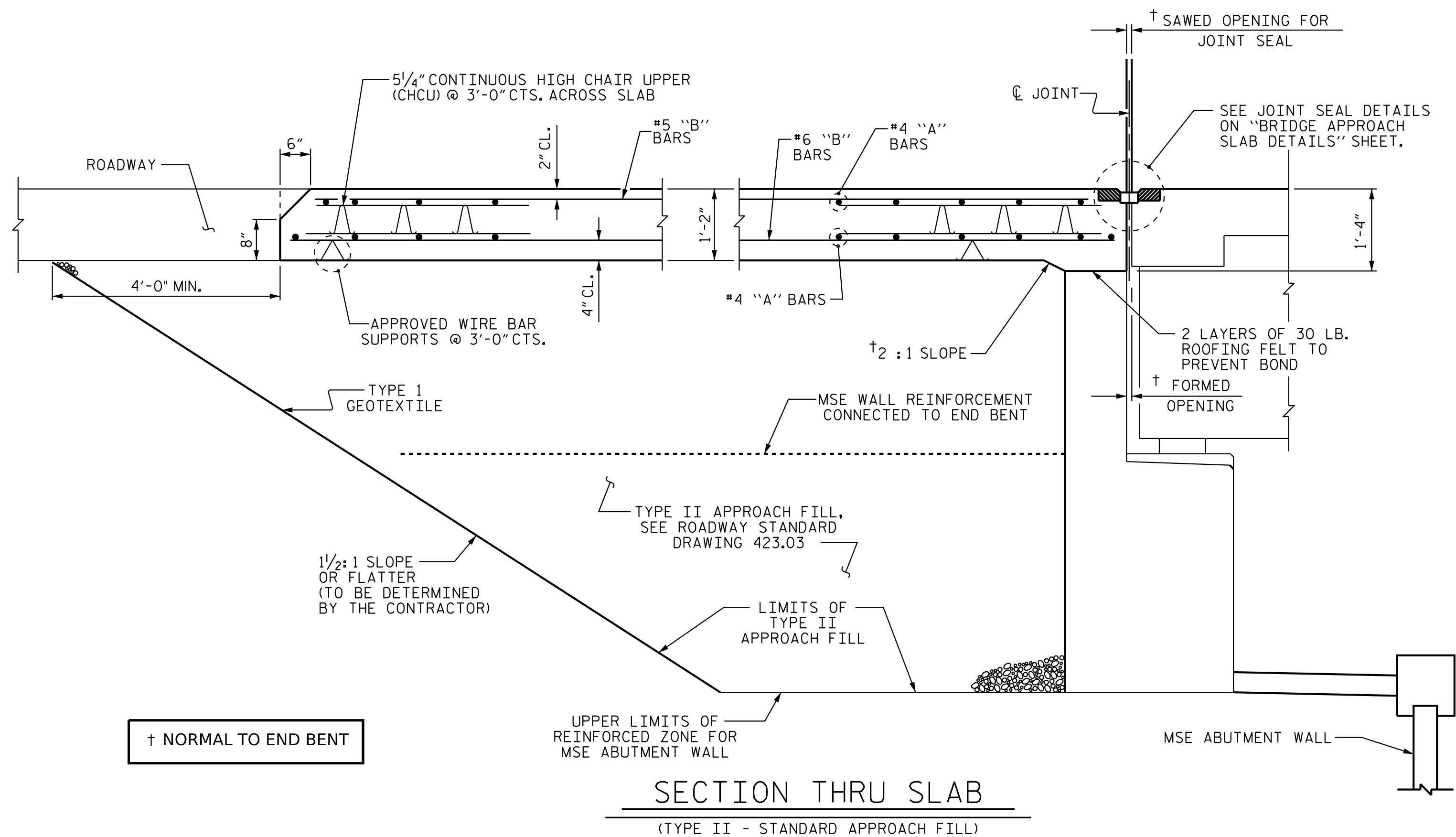
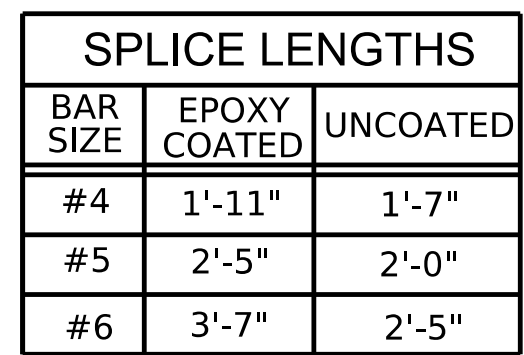
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD SLOPE PROTECTION DETAILS					
REVISIONS					SHEET NO. S5-32
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 35

STR. #5 STD. NO. SP1

K:\PDI_Structures\Bridges\NC\01036524 - I-5715 Structure Design\CD\00\gn\Site *3\Structure 5\Final\05_063_15175_SML_SP1_591417_032.dgn 8/3/2026

DRAWN BY: <u>T. K. BOYD</u>	DATE: <u>03/2026</u>
CHECKED BY: <u>E. W. SPRABERRY</u>	DATE: <u>03/2026</u>
DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>03/2026</u>

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UNLESS ALL SIGNATURES COMPLETED



FOR ELASTOMERIC CONCRETE, SEE SPECIAL PROVISIONS.

* * QUANTITIES FOR PARAPET AND
END POST ARE NOT INCLUDED.
SEE SHEET 2 OF 2.

SHEET 1 OF 2

BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT

REVISIONS						SHEET NO. S5-33
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

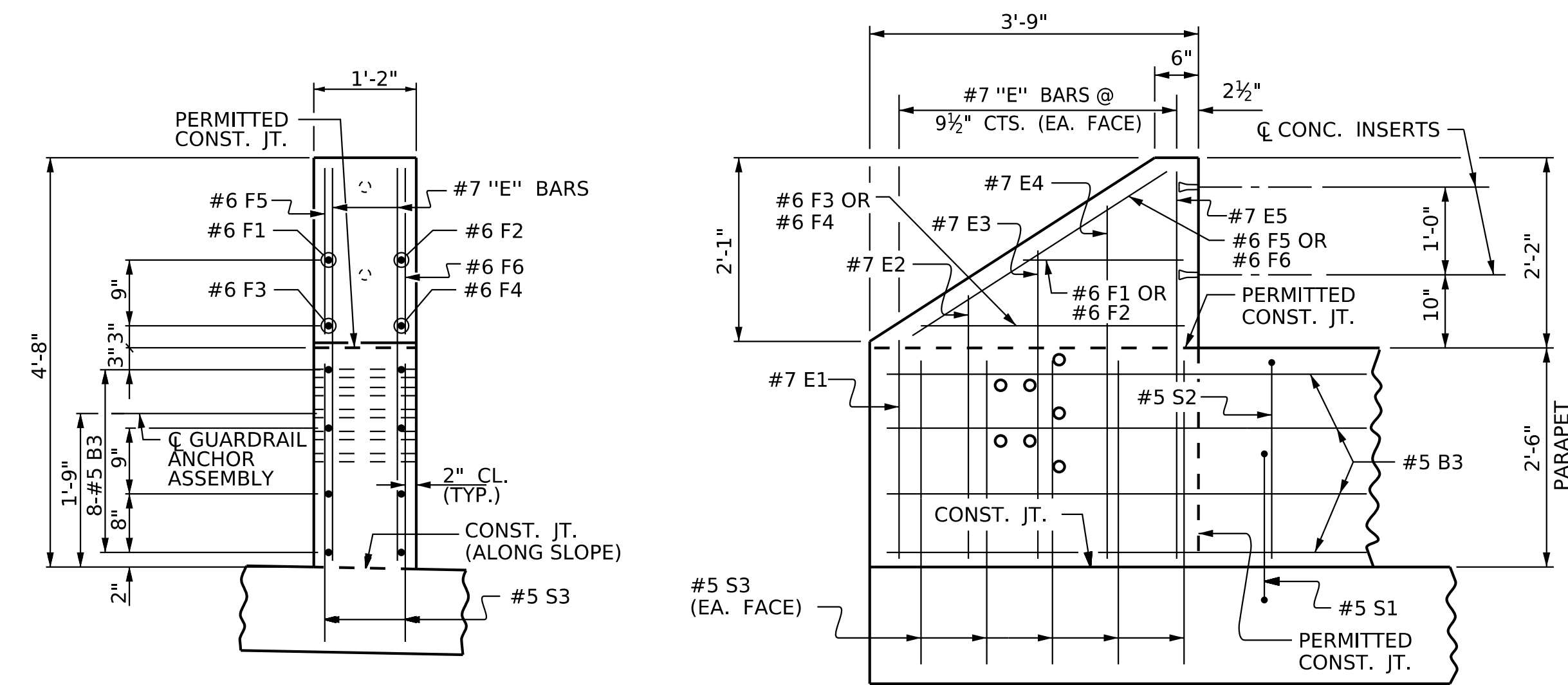
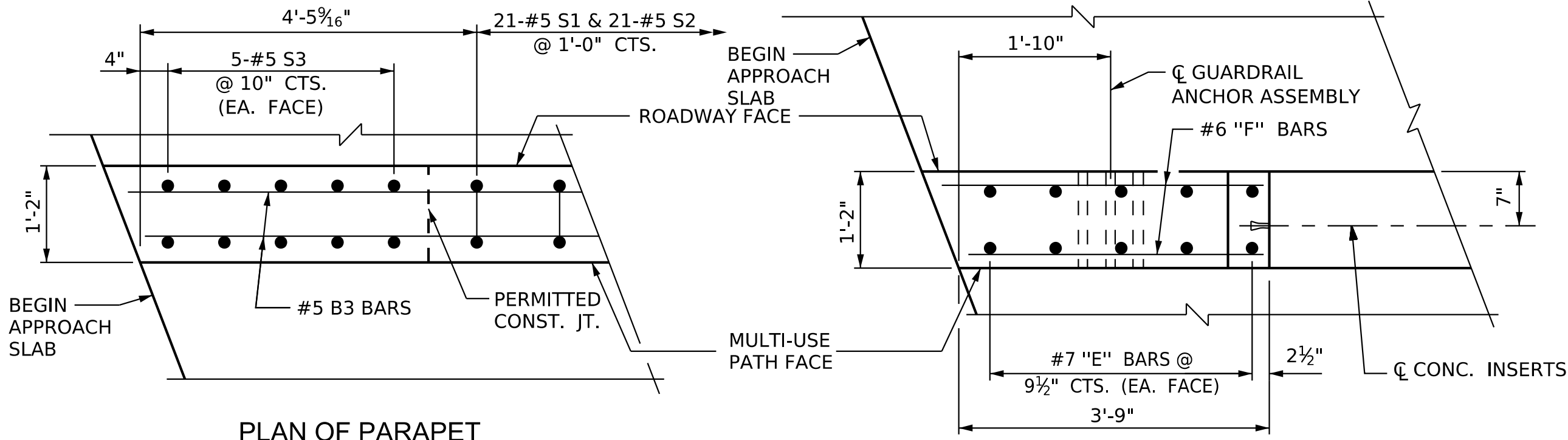
STD. NO. BAS2

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K:\BRI_Structures\Bridges\NC\01036524 - I-5715 Structure Design\Coord\gn\Site *3\Structure \$Final\405.067.15175_SML\AS2.591417.034.dgn 8/2/2026



PARAPET AND END POST FOR INTERIOR TWO BAR RAIL

ELASTOMERIC CONCRETE	
END BENT NO.	ELASTOMERIC CONCRETE * (CU. FT.)
1	7.5
2	7.5
TOTAL	15.0

* BASED ON THE MINIMUM BLOCKOUT SHOWN.

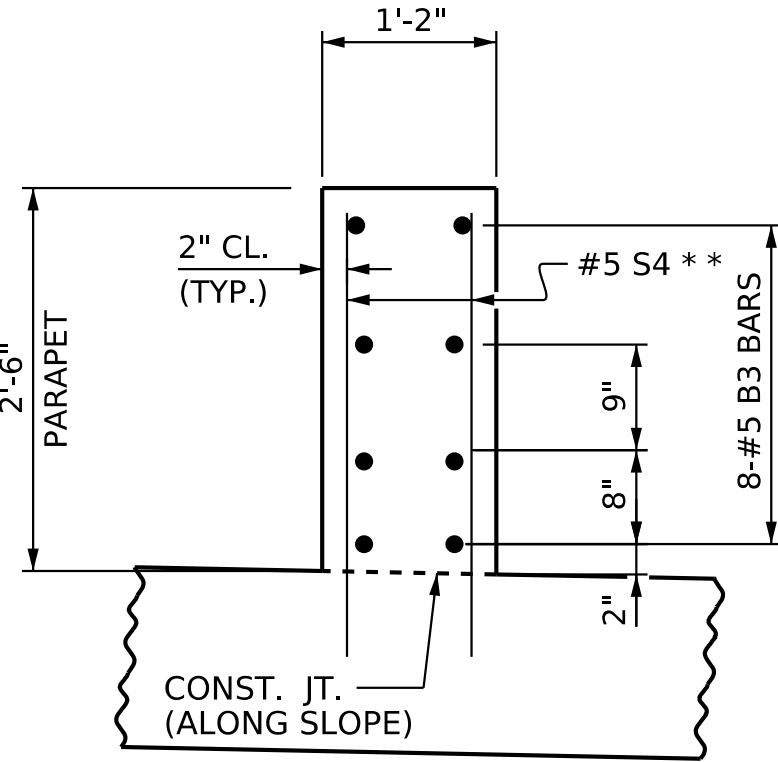
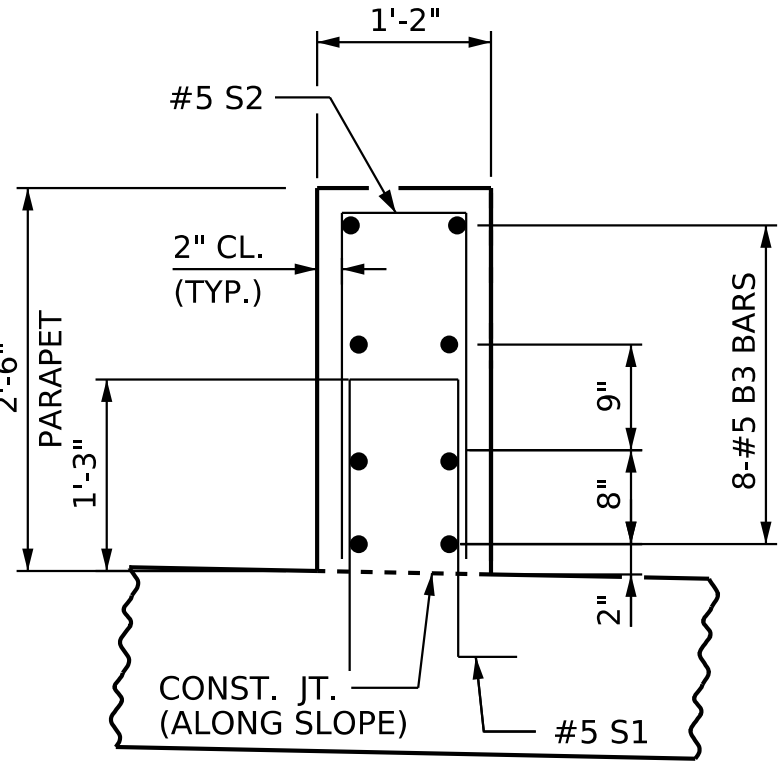
NOTES

ALL REINFORCING STEEL IN CONCRETE PARAPETS SHALL BE EPOXY COATED.

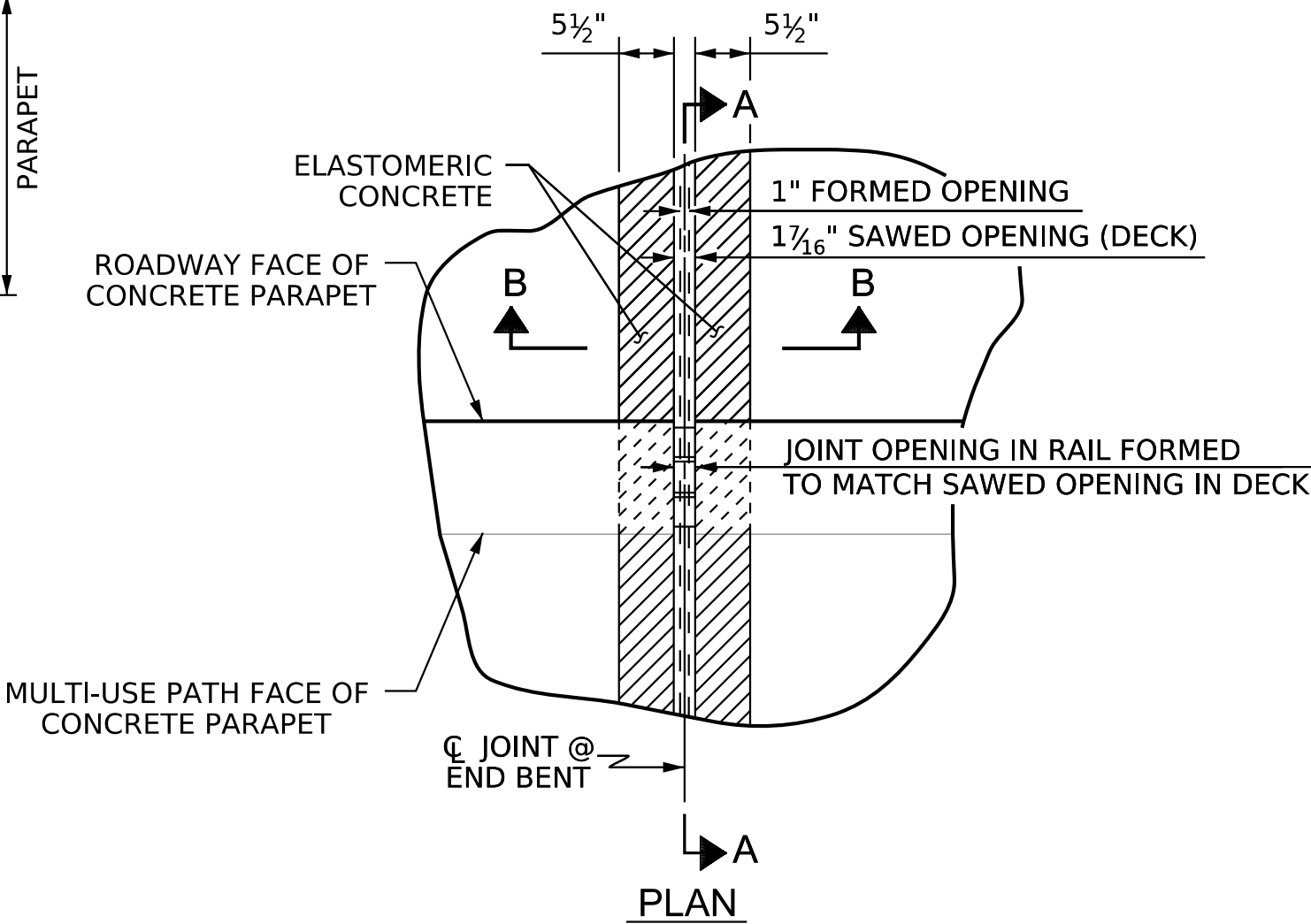
THE #5 S3 BARS SHALL BE INSTALLED USING AN ADHESIVE ANCHORING SYSTEM, AFTER SAWING THE JOINT. THE YIELD LOAD FOR THE #5 S3 BARS IS 18.6 KIPS. FIELD TESTING FOR THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

** THE CONTRACTOR MAY USE ADHESIVELY ANCHORED #5 S4 BARS. LEVEL 2 FIELD TESTING IS REQUIRED AND THE YIELD LOAD OF THE #5 S4 BARS IS 18.6 KIPS. FOR ADHESIVELY ANCHORED BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS.

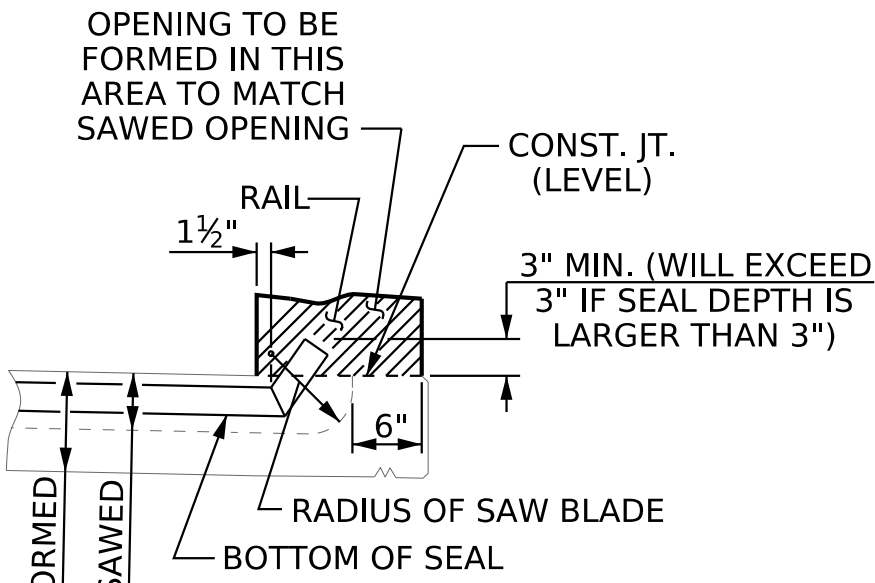
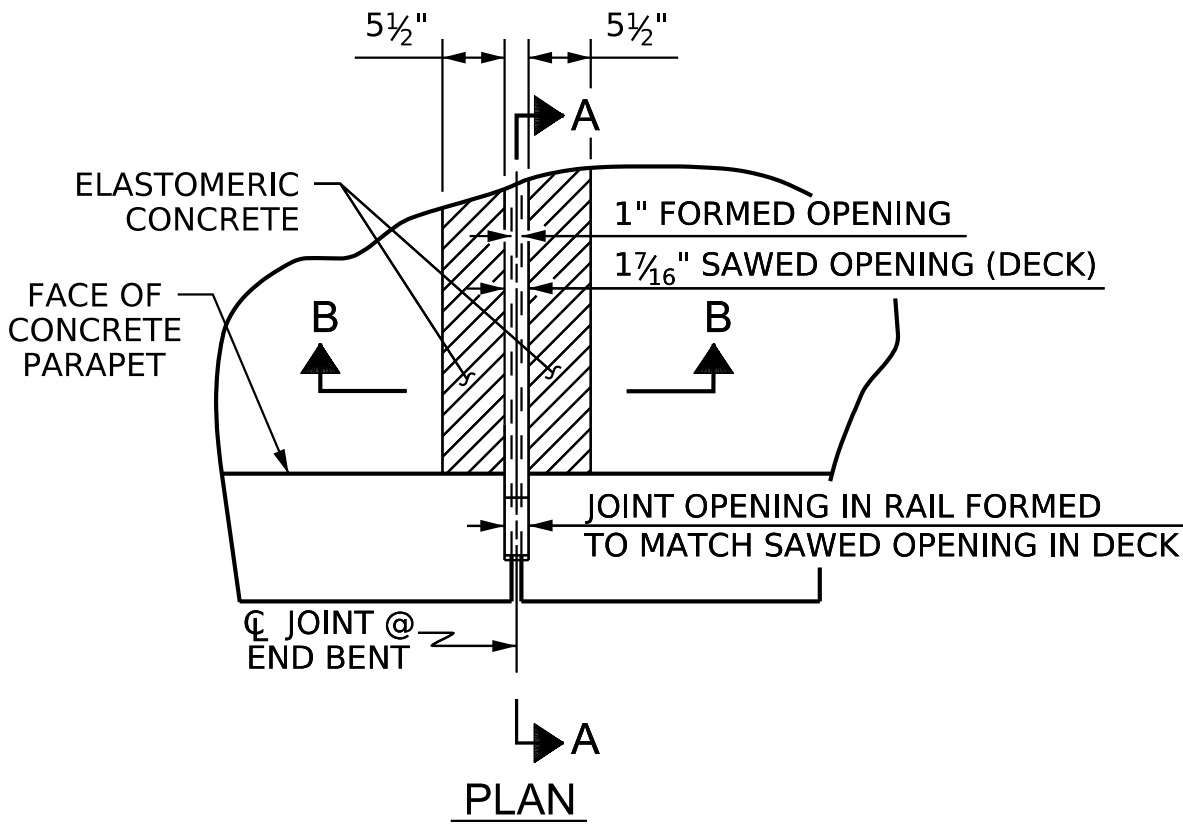
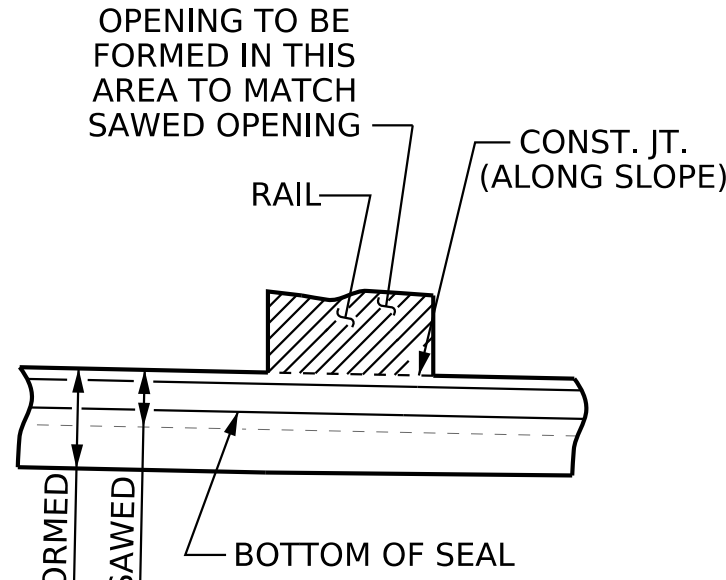
INTERIOR CONCRETE PARAPET ON APPROACH SLAB SHALL BE PAID FOR BY LINEAR FOOT OF 1'-2" X 2'-6" CONCRETE PARAPET.



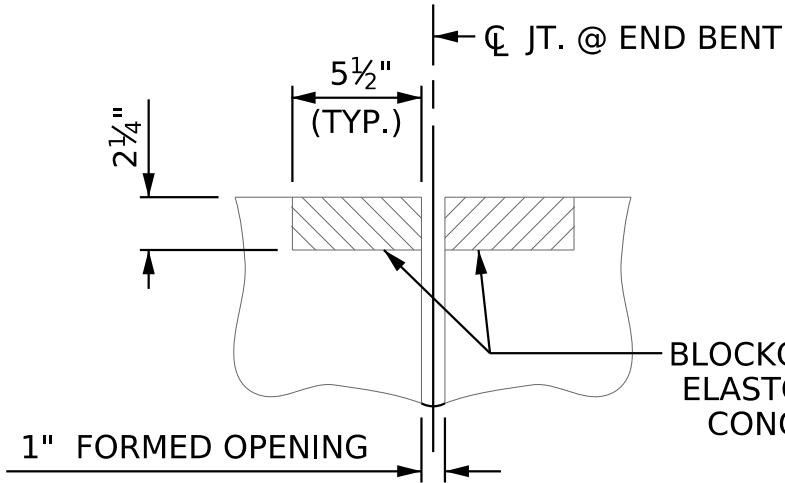
* FOR OPTIONAL ADHESIVE ANCHORING (NOT INCLUDED IN TOTAL QUANTITY)



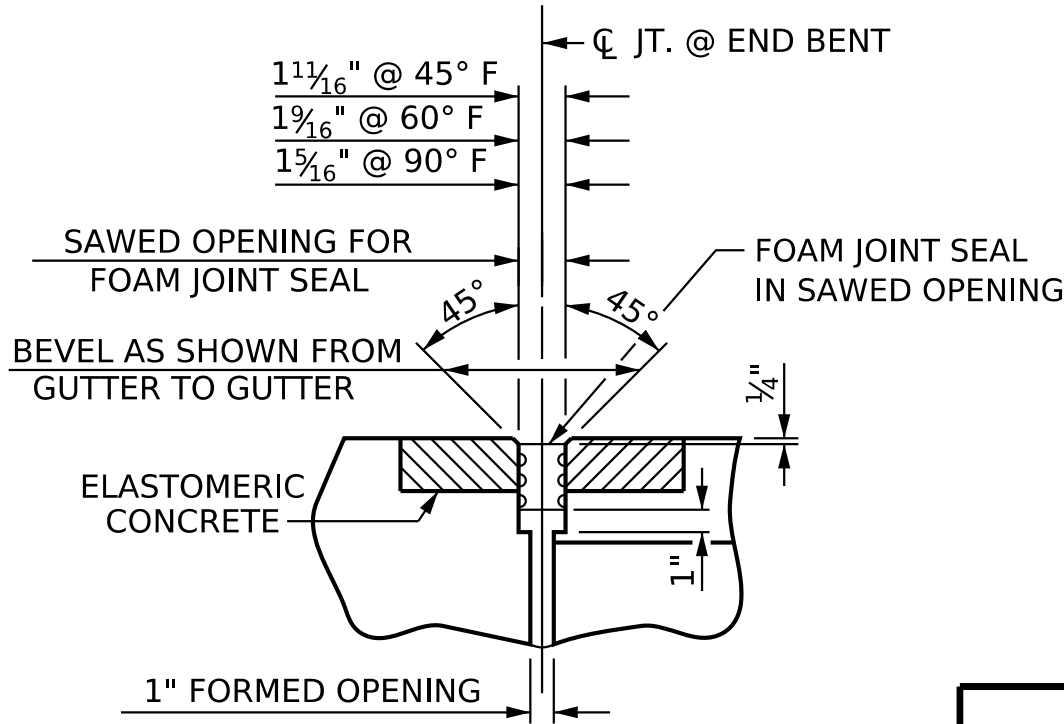
FOAM JOINT SEAL DETAILS FOR INTERIOR PARAPET



FOAM JOINT SEAL DETAILS FOR EXTERIOR PARAPET



FOAM JOINT SEAL (PRE-SAWED ELASTOMERIC CONCRETE DIMENSIONS)

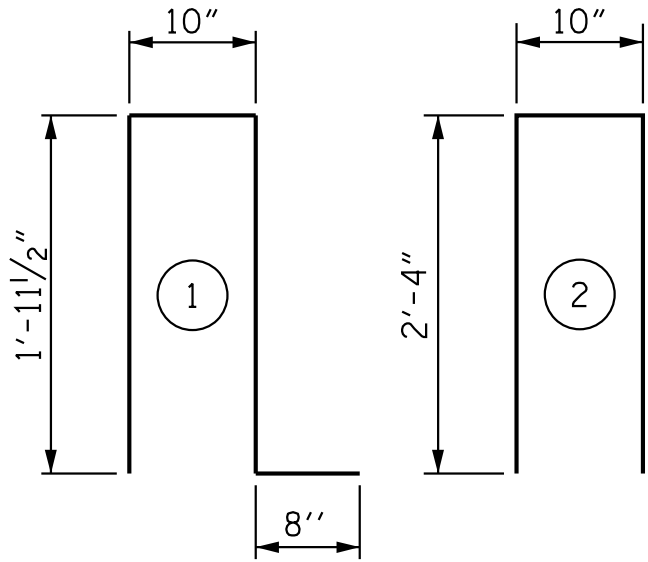


FOAM JOINT SEAL (EXPANSION)

BILL OF MATERIAL					
2 CONCRETE PARAPETS AND 2 END POSTS					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B3	16	#5	STR	24'-7"	410
* E1	4	#7	STR	2'-6"	20
* E2	4	#7	STR	3'-0"	25
* E3	4	#7	STR	3'-6"	29
* E4	4	#7	STR	4'-0"	33
* E5	4	#7	STR	4'-4"	35
* F1	2	#6	STR	1'-9"	5
* F2	2	#6	STR	1'-11"	6
* F3	2	#6	STR	2'-11"	9
* F4	2	#6	STR	3'-2"	10
* F5	2	#6	STR	3'-8"	11
* F6	2	#6	STR	3'-10"	12
* S1	42	#5	1	5'-10"	237
* S2	42	#5	2	5'-6"	241
* S3	20	#5	STR	3'-0"	63

* EPOXY COATED REINFORCING STEEL 1,146 LBS.

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

NOTE: FOR PARAPET LENGTHS AND OTHER QUANTITIES, SEE INTERIOR CONCRETE PARAPET DETAILS SHEET 2 OF 3.

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 12+72.18 -Y3-

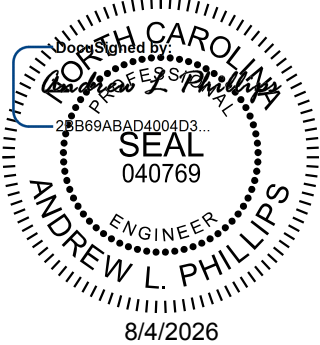
SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

BRIDGE APPROACH
SLAB DETAILS

REVISIONS						SHEET NO. S5-34
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS
2			4			35



Kimley»Horn

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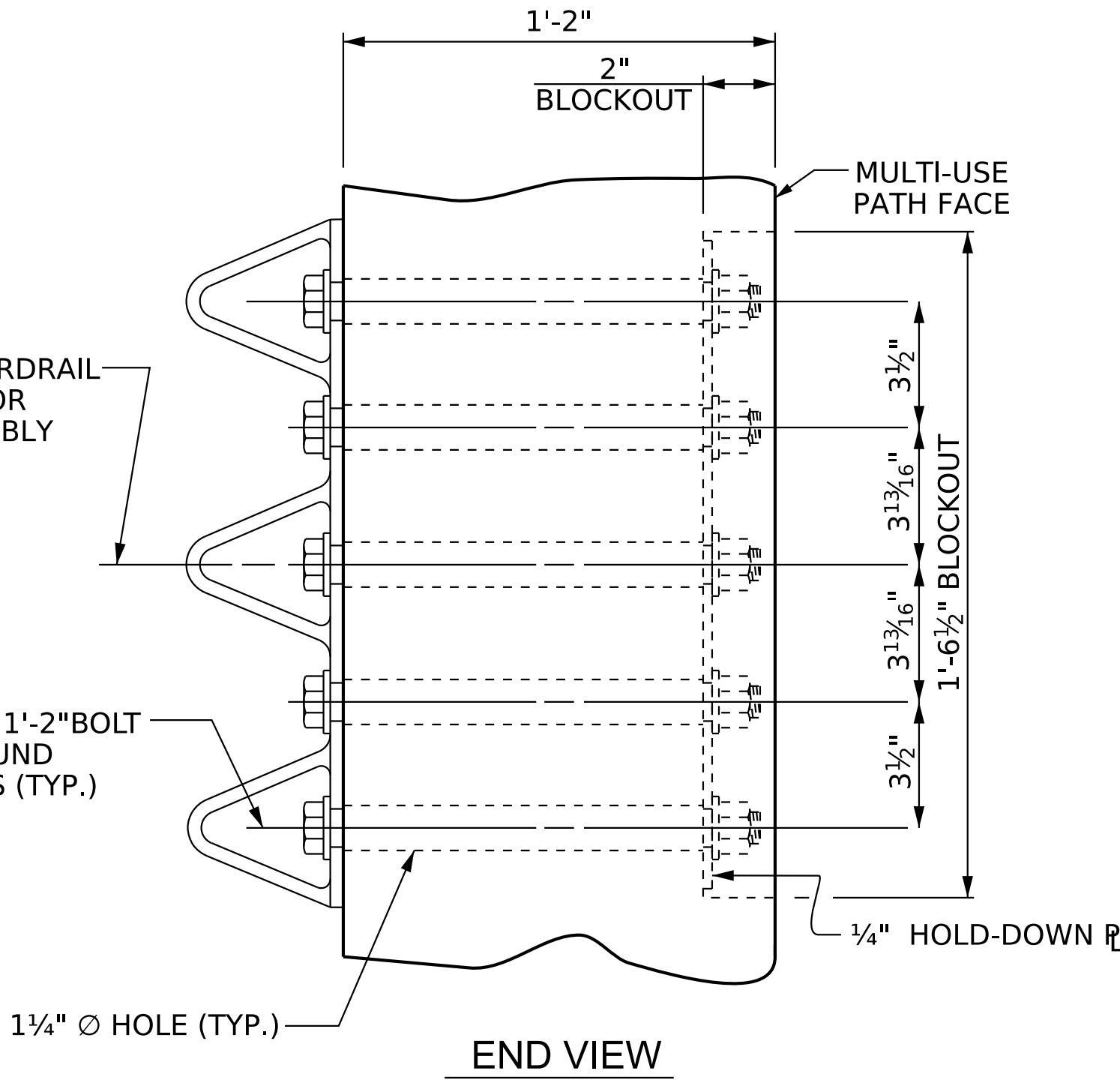
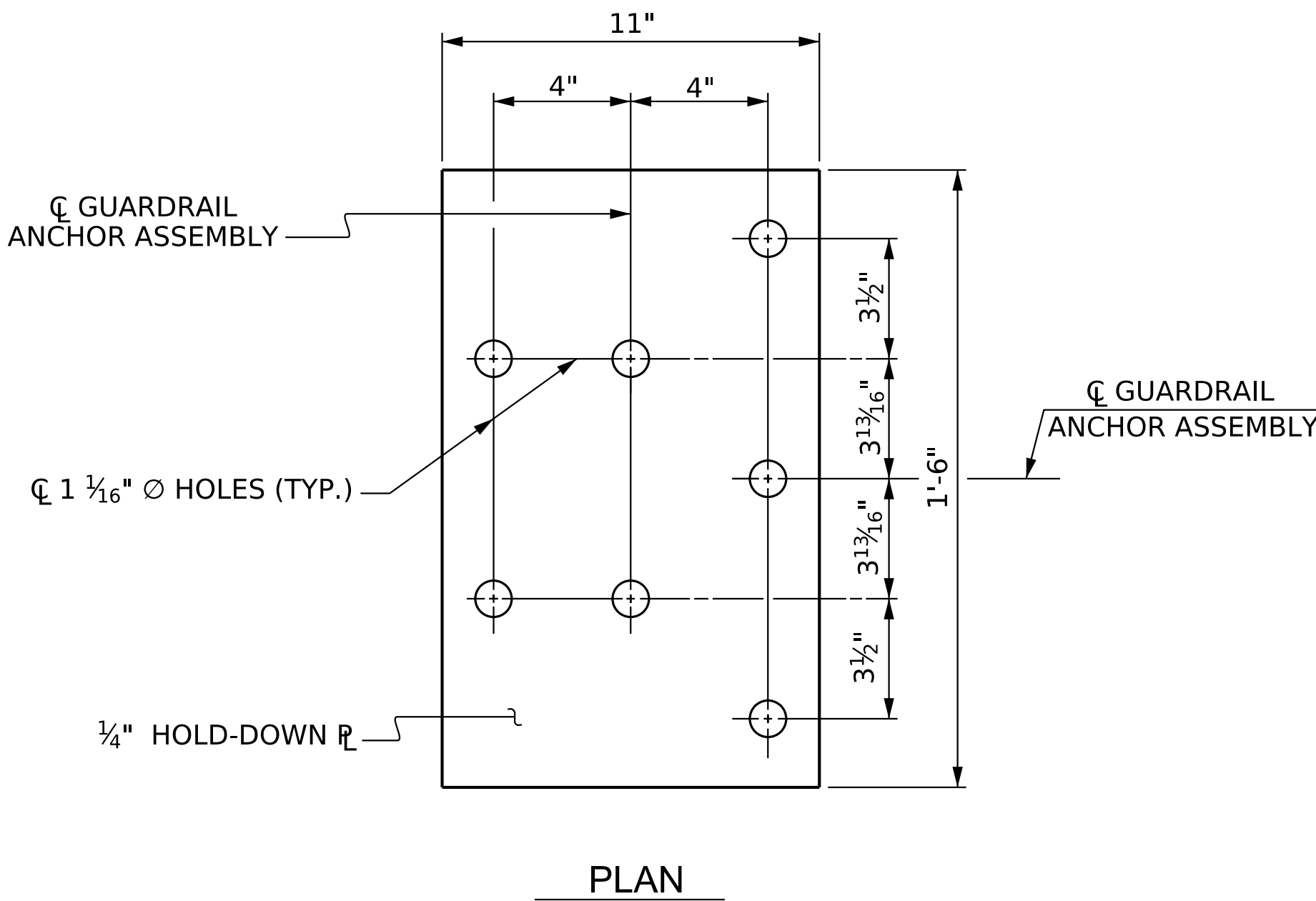
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DRAWN BY: T. K. BOYD DATE: 03/2026
CHECKED BY: E. W. SPRABERRY DATE: 03/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 03/2026

STR. #5 STD. BAS4

K:\BRI-Structures\Bridges\NC\01036524 - I-5715 Structure Design\Coord\gn\Site *3\Structure 5\Final\405-069-151715_SML\052-591417_035.dgn

8/2/2026



NOTES

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

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

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

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

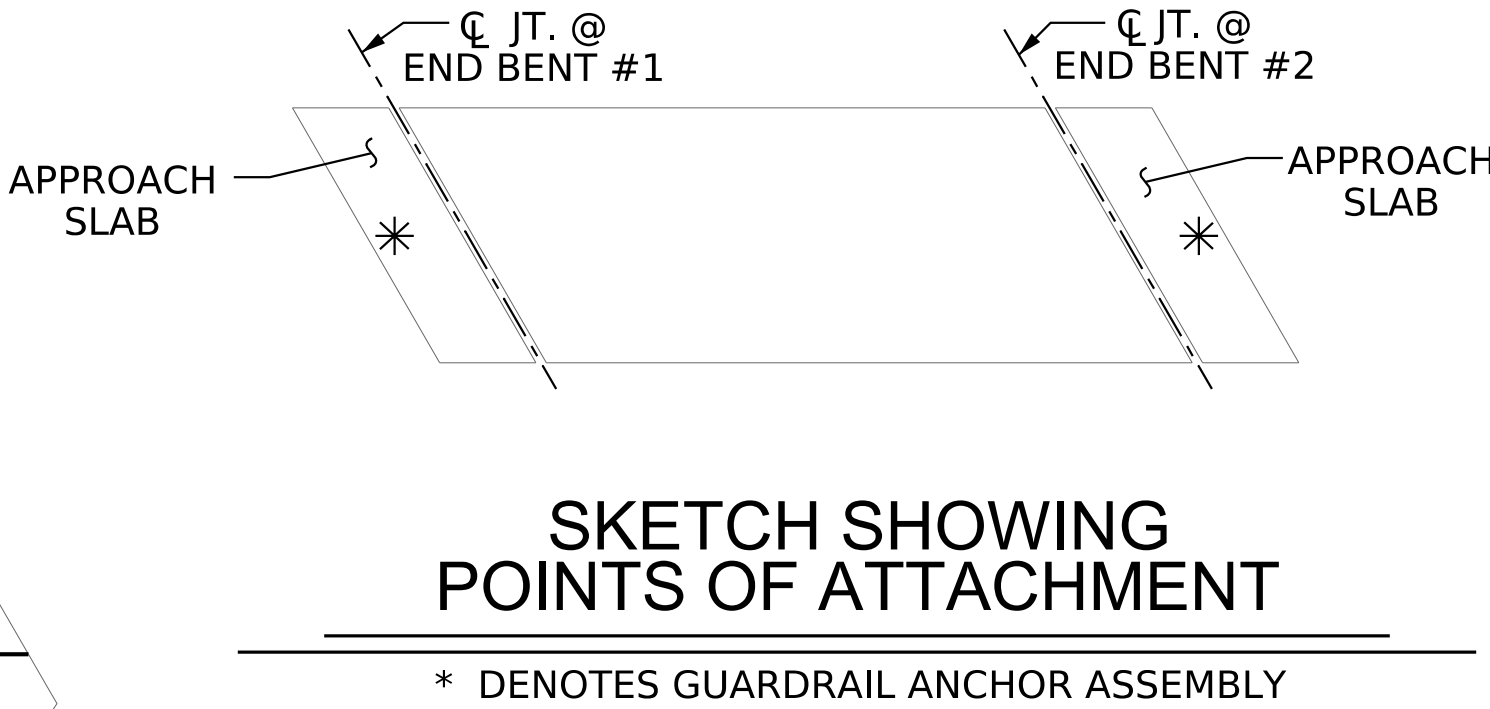
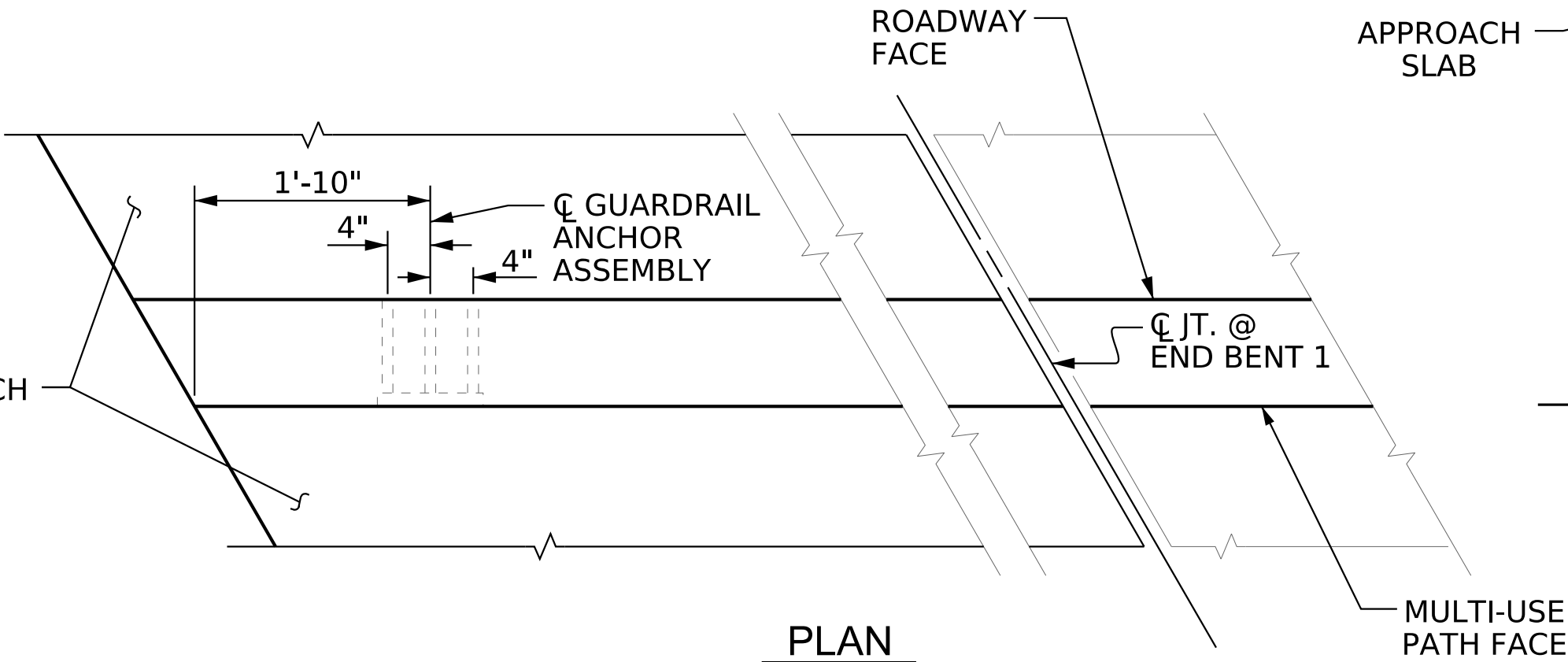
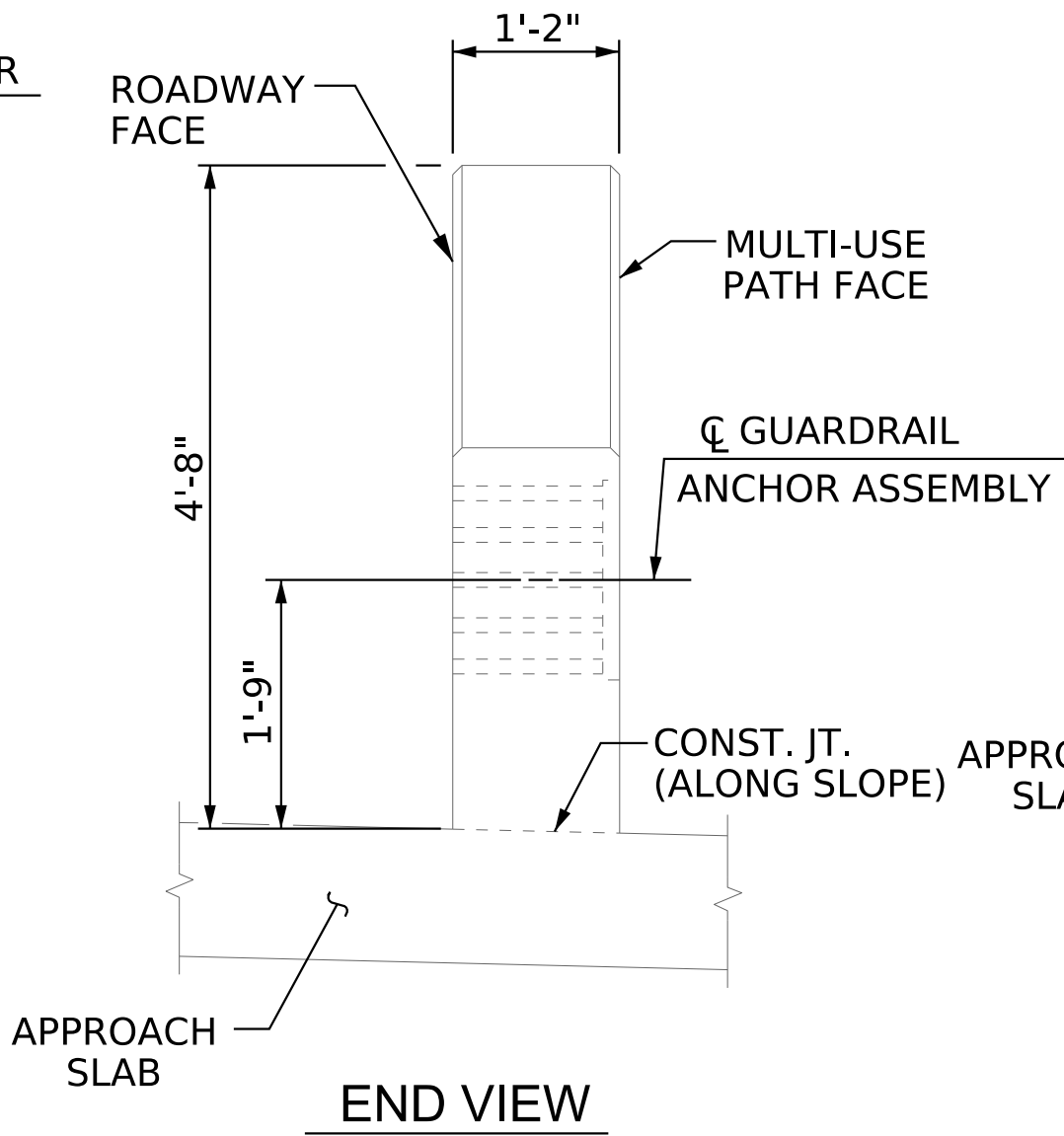
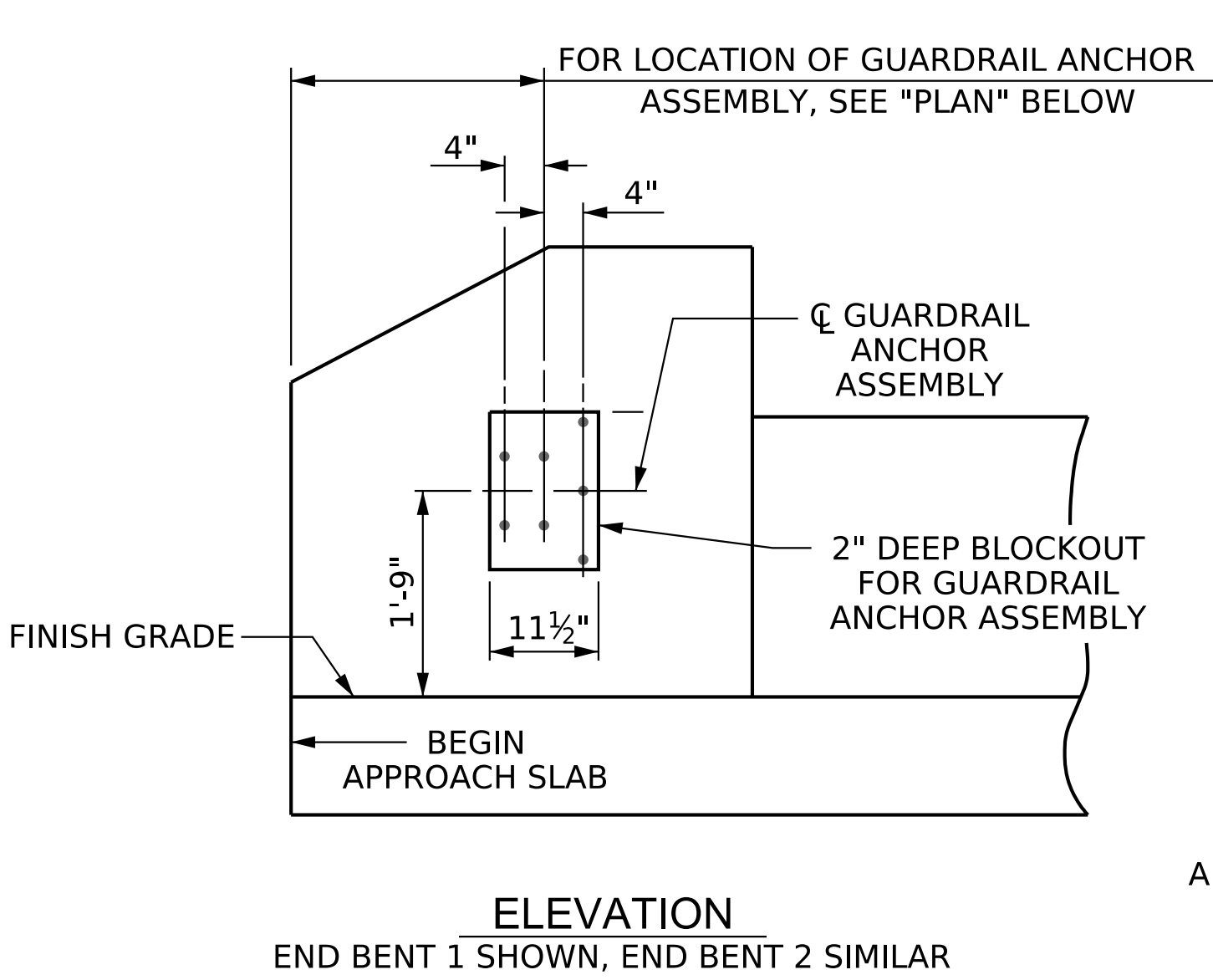
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

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

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

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

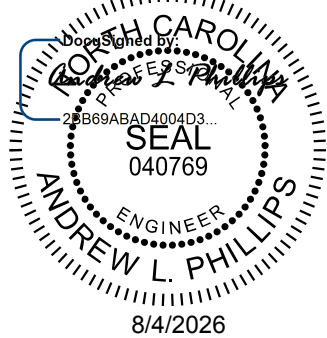
REINFORCING SHALL BE SHIFTED SLIGHTLY AS NECESSARY TO AVOID BLOCKOUT FOR GUARDRAIL ANCHORAGE ASSEMBLY ON MULTI-USE PATH FACE.



LOCATION OF ANCHORS FOR GUARDRAIL

BEGINNING OF APPROACH SLAB SHOWN, END APPROACH SLAB SIMILAR

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 12+72.18 -Y3-



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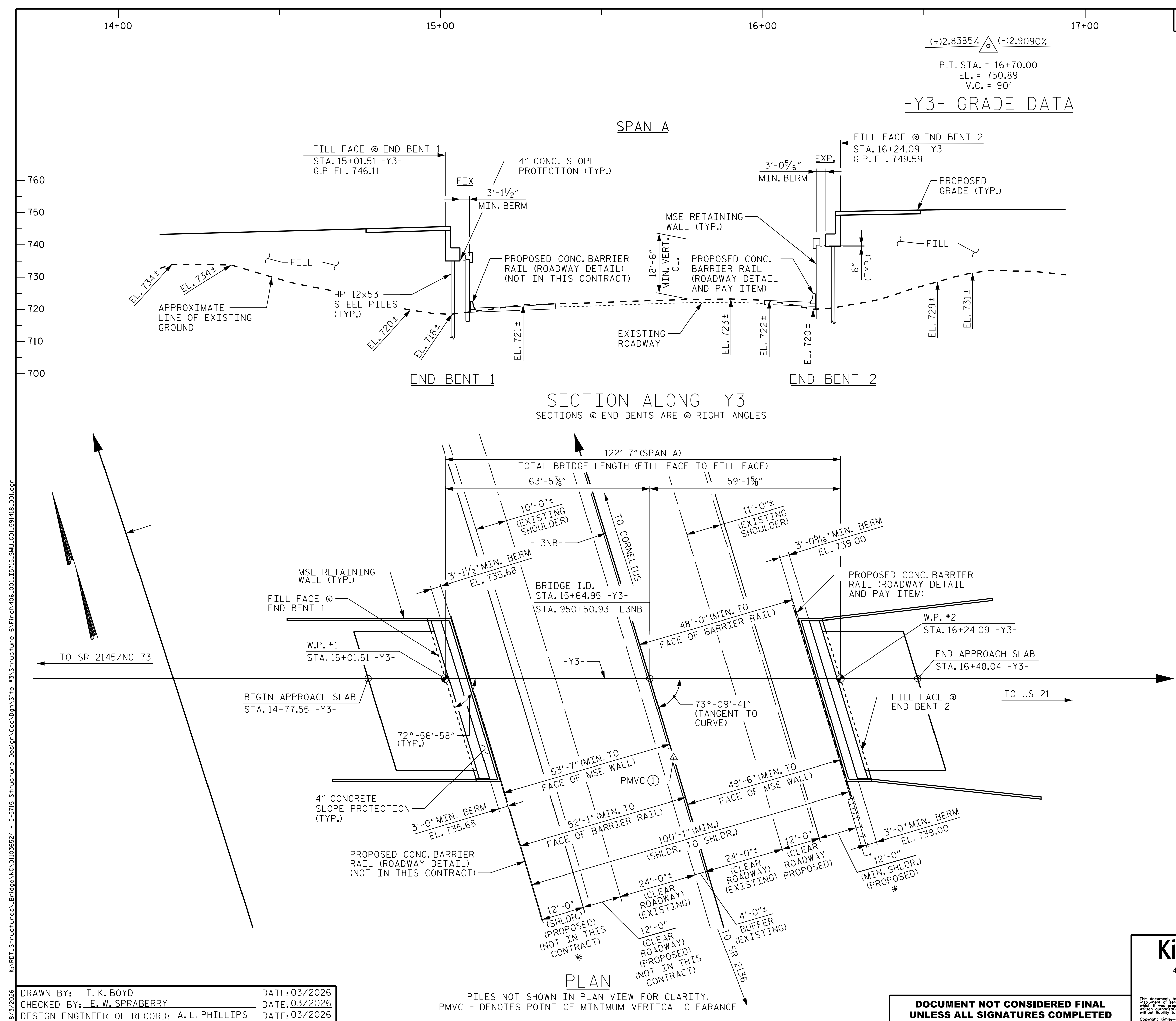
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
GUARDRAIL ANCHORAGE
DETAILS FOR
INTERIOR PARAPET
METAL RAILS ON
APPROACH SLAB

REVISIONS						SHEET NO. S5-35
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

STR. #5

STD. NO. GRA3



HORIZONTAL CURVE DATA -L3NB-

Pis STA. 949+24.11	P.I. STA. 963+92.44
Theta(s) = 1°18'30.9"	Δ = 20°02'34.5" (LT)
Ls = 349.44'	D = 0°44'56.3"
LT = 232.97'	L = 2,676.08'
ST = 116.49'	T = 1,351.85'
	R = 7,650.00'

* MINIMUM HORIZONTAL
CLEARANCE TO CONCRETE
BARRIER RAIL

① STA. 15+72.50 -Y3-
OFFSET 25.08' RT.
STA. 950+82.60 -L3NB-
OFFSET 0.00'
EL. 722.81

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 15+64.95 -Y3-
950+50.93 -L3NB-
SHEET 1 OF 4 BRIDGE NO. 591418

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER
NORTHBOUND I-77 ON
I-77 NORTH CROSSING BETWEEN
SR 2145/NC 73 & US 21

REVISIONS

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

SHEET NO.

S6-1

TOTAL
SHEETS

35

Seal of the State of North Carolina
Professional Engineer
Andrew L. Phillips
28B609RAD6004D3
SEAL
040769
ENGINEER
ANDREW L. PHILLIPS
8/4/2026

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FOUNDATION NOTES:

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

SHEET 2 OF 4

GENERAL DRAWING

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE OVER
NORTHBOUND I-77 ON
I-77 NORTH CROSSING BETWEEN
SR 2145/NC 73 & US 21

DRAWN BY: T. K. BOYD DATE: 03/2026
 CHECKED BY: E. W. SPRABERRY DATE: 03/2026
 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 03/2026

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STR. #6

SUMMARY OF PILE INFORMATION/INSTALLATION
(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Number of Piles per Line	Factored Resistance per Pile KIPS	Pile Cut-Off (Top of Pile) Elevation FT	Estimated Pile Length per Pile FT	Scour Critical Elevation FT	Driven Piles			Predrilling for Piles **			Drilled-In Piles		
						Minimum Pile Tip (Tip No Higher Than) Elevation FT	Required Driving Resistance (RDR)* per pile KIPS	Pile Redrives Quantity EACH	Predrilling Length per Pile LIN FT	Predrilling Elevation (Elevation Not To Predrill Below) FT	Maximum Predrilling Diameter INCHES	Pile Excavation (Bottom of Hole) Elevation FT	Pile Excavation Not In Soil per Pile LIN FT	Pile Excavation In Soil per Pile LIN FT
End Bent No. 1, Piles 1-5	5	235	737.21	70			395							
End Bent No. 1, Piles 6-10	5	235	737.21	75			395							
End Bent No. 2, Piles 1-10	10	235	740.53	40			395							
TOTAL QUANTITY:														

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

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

PILE DESIGN INFORMATION
(Blank entries indicate item is not applicable to structure)

End Bent / Bent No, Pile(s) #(-#) (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS	Nominal Scour Resistance per Pile KIPS
End Bent No. 1, Piles 1-10	235	190		0.60		
End Bent No. 2, Piles 1-10	235	60		0.60		

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

SUMMARY OF DPT/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

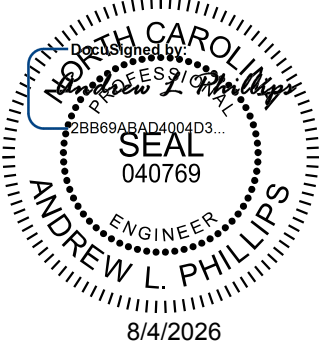
Dynamic Pile Testing (DPT)		
End Bent / Bent No (e.g., "Bent 1 - Bent 3")	DPT Test Pile Length FT	DPT Testing Quantity EACH
TOTAL QUANTITY:		

Pile Order Lengths for Concrete Piles	
End Bent / Bent No (e.g., "Bent 1 - Bent 3")	Pile Order Length Basis* EST or DPT

* EST = Pile order lengths from estimated pile lengths; DPT = Pile order lengths based on Dynamic Pile Testing. For groups of end bents/bents with pile order lengths based on DPT testing, the first end bent/bent no. listed for each group is the representative end bent/bent with the DPT.

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Pete Tomos, #051623) on 02-04-2026.
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 the quantity for DPT Testing and Pipe Pile Plates when necessary.



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MECKLENBURG COUNTY
STATION: 15+64.95 -Y3-

SHEET 3 OF 4

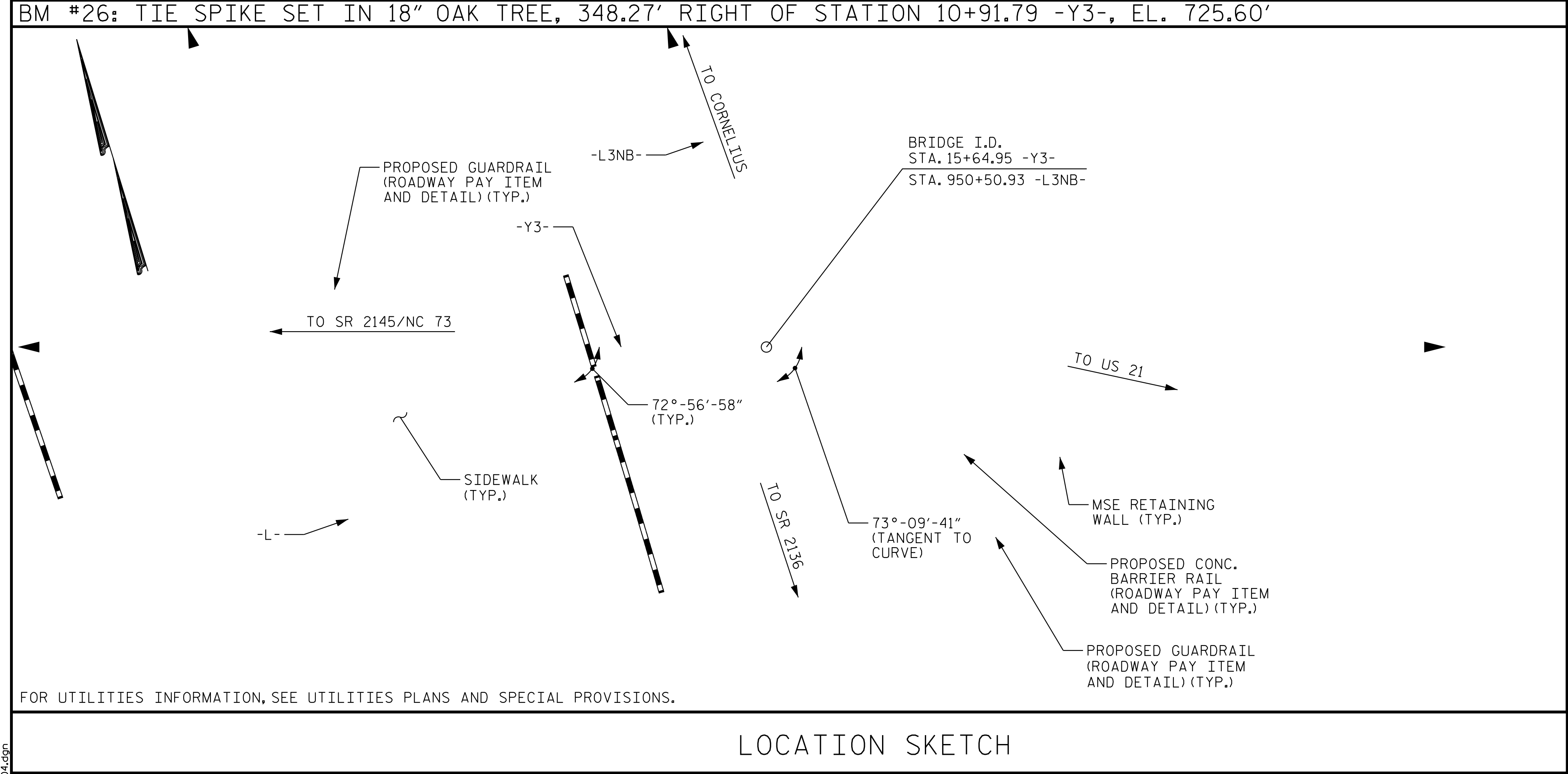
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER
NORTHBOUND I-77 ON
I-77 NORTH CROSSING BETWEEN
SR 2145/NC 73 & US 21

REVISIONS						SHEET NO. S6-3
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

STR. #6

K:\RD1_Structures\Bridge\N\01036524 - I-5715 Structure Design\Cad\Obj\Site *3\Structure 6\Final\406_005_15115_SML\FT1-591418_003.dgn 8/3/2026



NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR 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.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE SAMPLE BARS SHOULD COME FROM STEEL ACTUALLY USED IN THE PROJECT AND THE SAMPLE BARS SHOULD BE REPLACED BY SPLICED BARS AS SPECIFIED IN THE SAMPLE BAR REPLACEMENT CHART. PAYMENT FOR THE SAMPLE BARS AND REPLACEMENT REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

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

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

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

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

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

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

FOR FOAM JOINT SEALS, SEE SPECIAL PROVISIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

TOTAL BILL OF MATERIAL																
	REINFORCED CONCRETE DECK SLAB	GROOVING BRIDGE FLOORS	CLASS A CONCRETE	BRIDGE APPROACH SLABS STA. 15+64.95 -Y3-	REINFORCING STEEL	FIB 63" PRESTRESSED CONCRETE GIRDERS		PILE DRIVING EQUIPMENT SETUP FOR HP 12x53 STEEL PILES	HP 12x53 STEEL PILES		TWO BAR METAL RAIL	1'-2" X 2'-6" CONCRETE PARAPET	4" SLOPE PROTECTION	ELASTOMERIC BEARINGS	FOAM JOINT SEALS	MODIFIED TWO BAR METAL RAIL
	SQ. FT.	SQ. FT.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	EA.	NO.	LIN. FT.	LIN. FT.	LIN. FT.	SQ. YDS.	LUMP SUM	LUMP SUM	LIN. FT.
SUPERSTRUCTURE	5,264	5,767		LUMP SUM		5	591.3				224.92	411.0		LUMP SUM	LUMP SUM	162.64
END BENT 1			42.3		5,886			10	10	725			14.4			
END BENT 2			42.3		5,886			10	10	400			14.4			
TOTAL	5,264	5,767	84.6	LUMP SUM	11,772	5	591.3	20	20	1,125	224.92	411.0	28.8	LUMP SUM	LUMP SUM	162.64

SAMPLE BAR REPLACEMENT	
SIZE	LENGTH
#3	6'-2"
#4	7'-4"
#5	8'-6"
#6	9'-8"
#7	10'-10"
#8	12'-0"
#9	13'-2"
#10	14'-6"
#11	15'-10"

NOTE:
SAMPLE BAR REPLACEMENT LENGTHS
BASED ON 30" (SAMPLE LENGTH) PLUS
TWO SPLICE LENGTHS AND $f_y = 60\text{ksi}$.

DRAWN BY: T. K. BOYD DATE: 03/2026
CHECKED BY: E. W. SPRABERRY DATE: 03/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 03/2026

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ANDREW L. PHILLIPS
ENGINEER
8/4/2026

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PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 15+64.95 -Y3-

SHEET 4 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER
NORTHBOUND I-77 ON
I-77 NORTH CROSSING BETWEEN
SR 2145/NC 73 & US 21

REVISIONS						SHEET NO. S6-4
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

STR. #6

LOAD FACTORS:

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

NOTES:

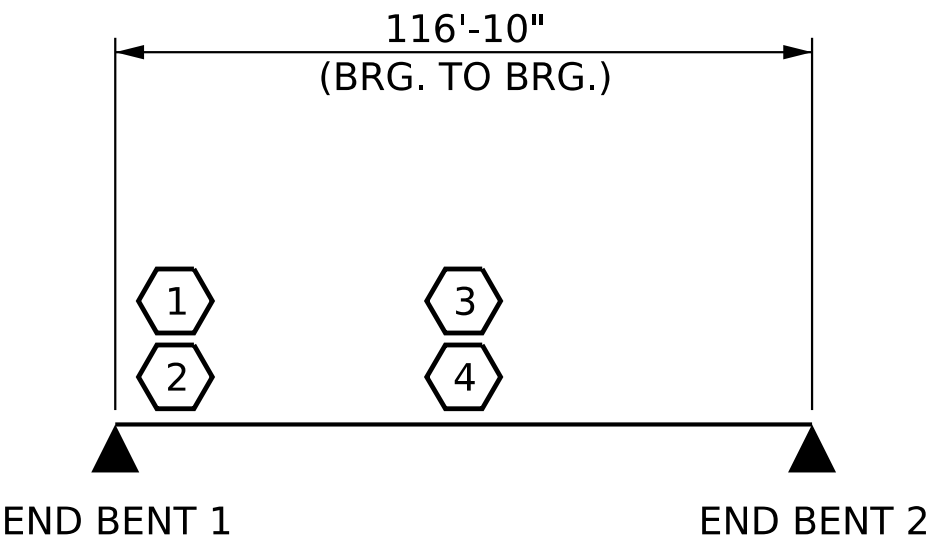
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

COMMENTS:

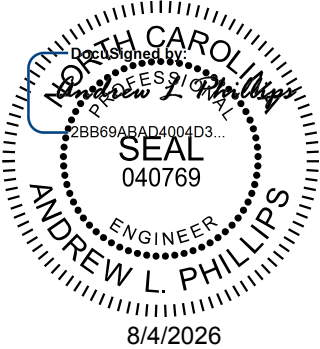
1.
2.
3.
4.

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



LRFR SUMMARY

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 15+64.95 -Y3-



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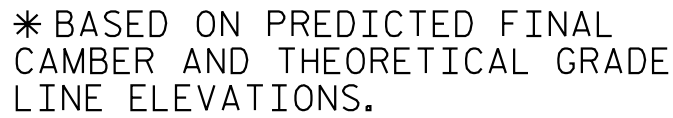
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STANDARD LRFR SUMMARY					
REVISIONS					SHEET NO. S6-5
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS 35

STR. #6 STD. LRFR1

K:\B01_Structures\Bridges\N\01036524 - I-5715 Structure Design\Cadd\Opp\Site *3\Structure 6\Final\406_009-15115_SWM_003_591416_005.dgn 8/2/2026

DRAWN BY: <u>T. K. BOYD</u>	DATE: <u>03/2026</u>
CHECKED BY: <u>E. W. SPRABERRY</u>	DATE: <u>03/2026</u>
DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>03/2026</u>



PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS.
 ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE
 BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE
 FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL
 DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT
 THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2"
 ABOVE THE TOP OF THE REMOVABLE FORM.

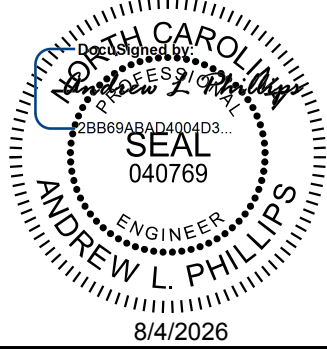
LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

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

**FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS, SEE
"INTERMEIATE STEEL DIAPHRAGMS FOR 63" FIB" SHEET.

PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 15+64.95 -Y3-

SHEET 1 OF 2



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
TYPICAL SECTIONS

REVISIONS						SHEET NO. S6-6
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

STR. #6

DRAWN BY: T. K. BOYD DATE: 03/2026
 CHECKED BY: E. W. SPRABERRY DATE: 03/2026
 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 03/2026

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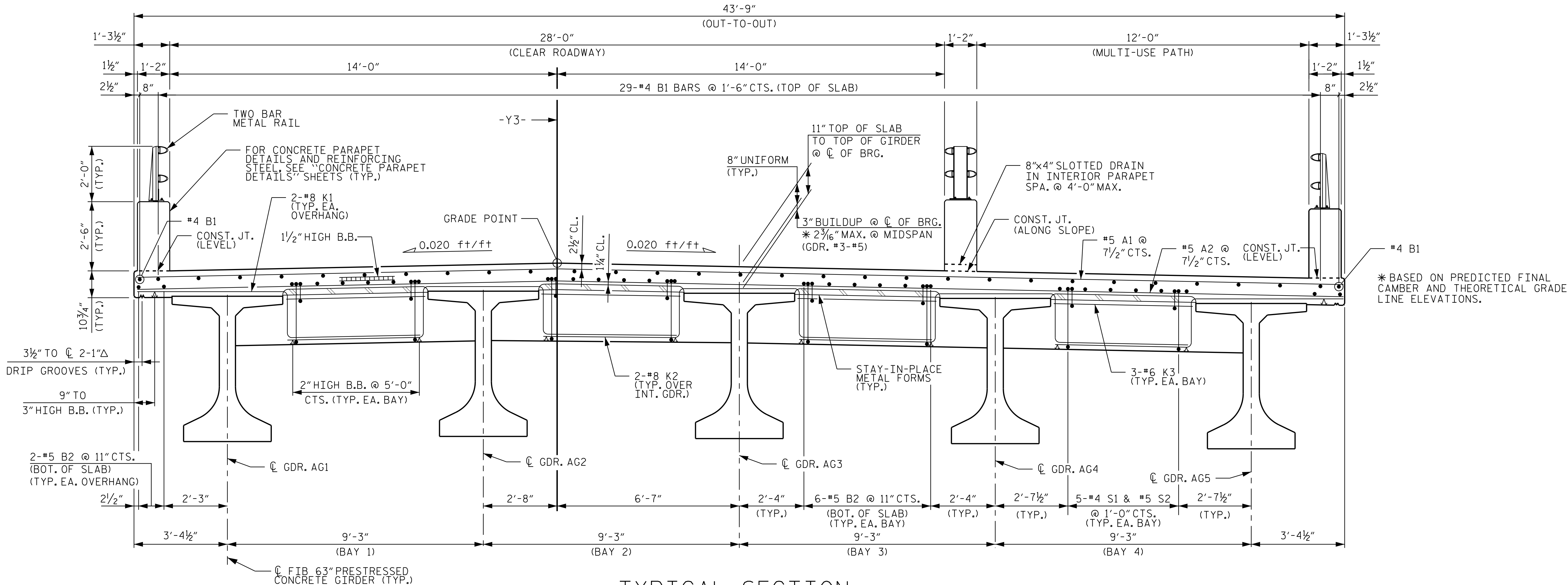
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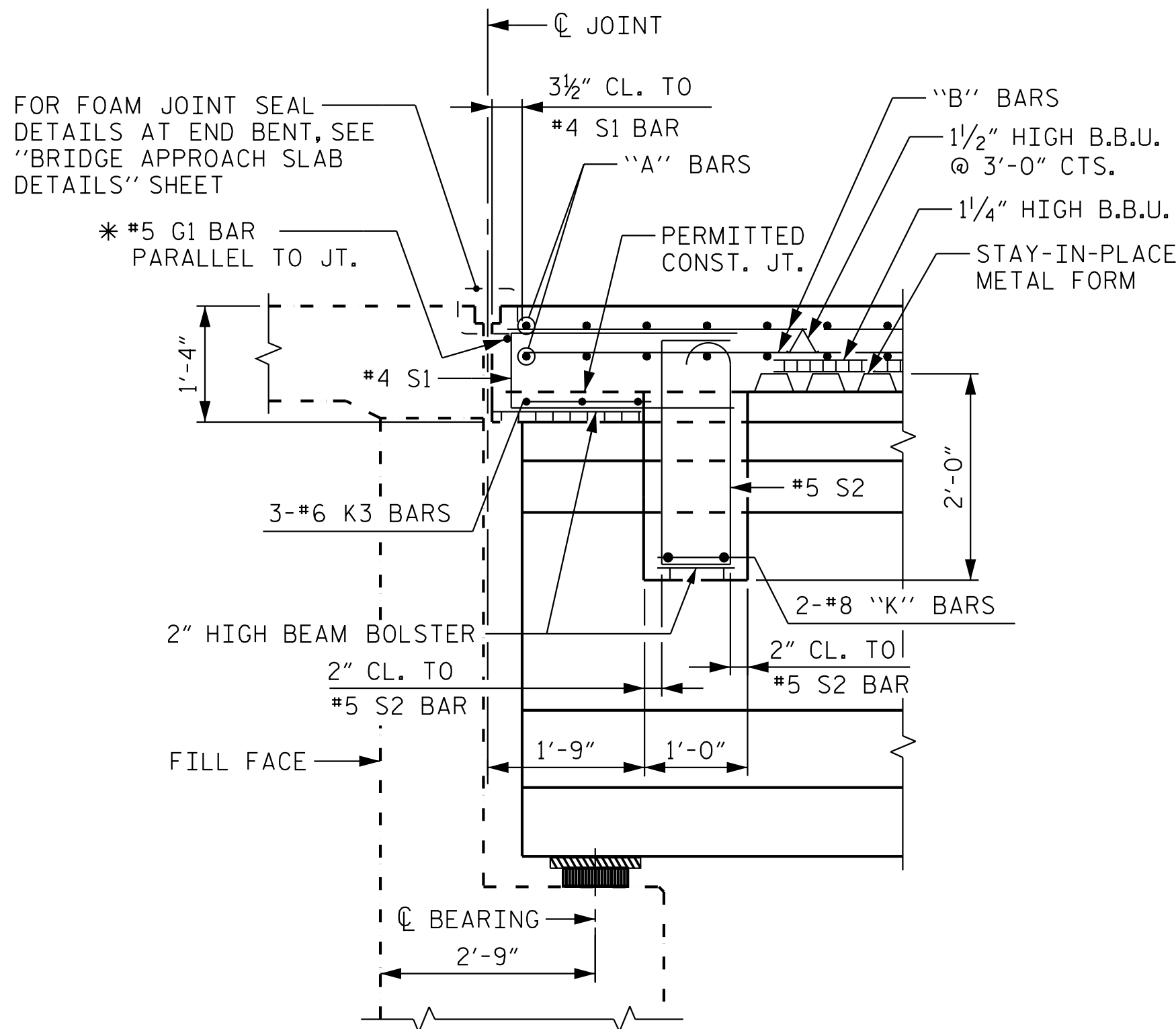
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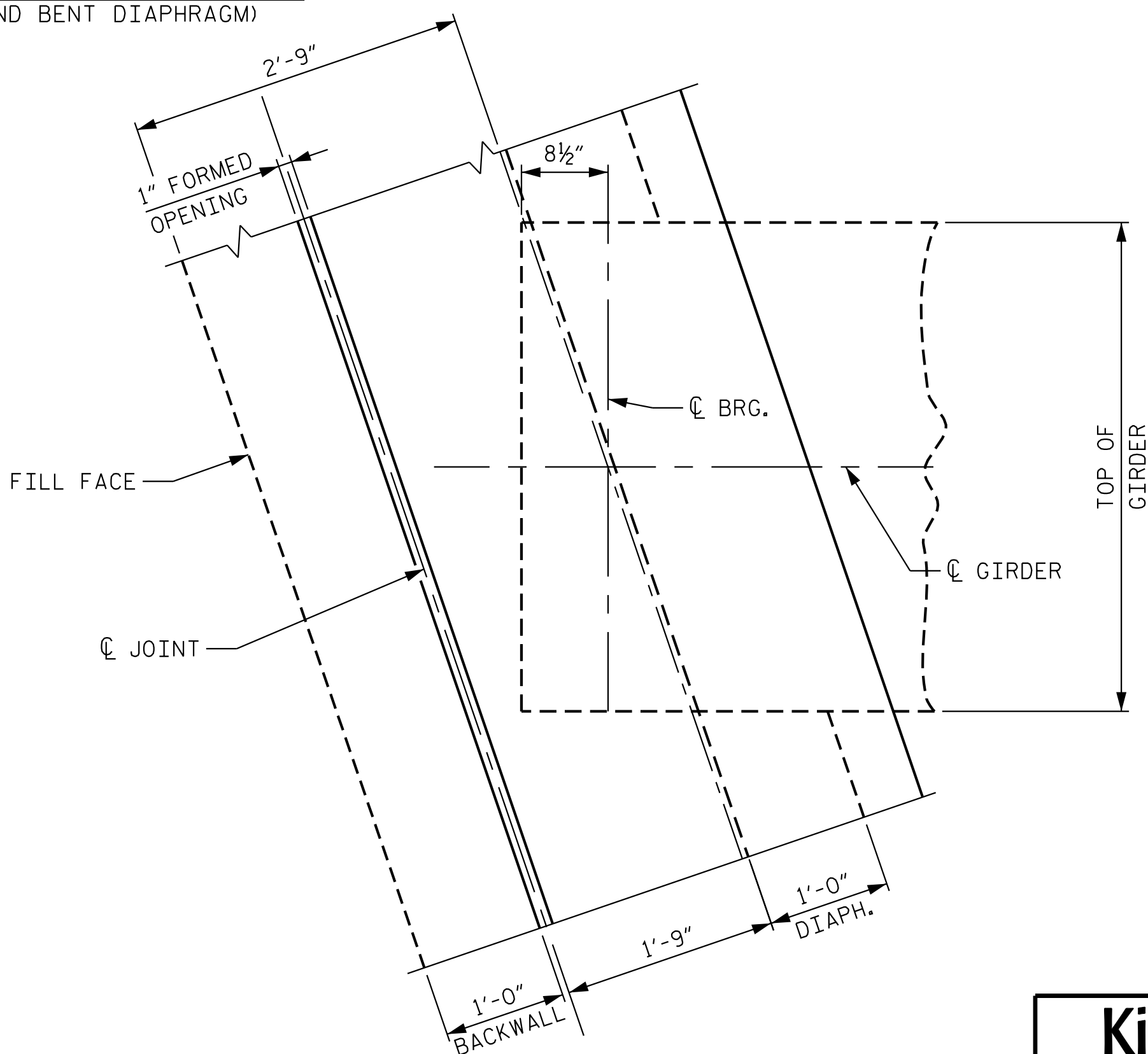


TYPICAL SECTION
(SHOWING END BENT DIAPHRAGM)

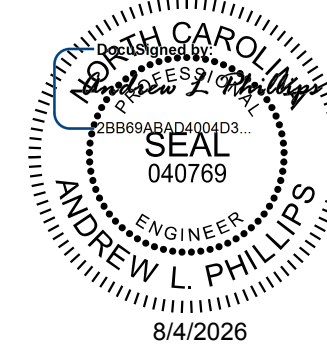


SECTION THRU END BENT DIAPHRAGM

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



END BENT DIAPHRAGM PLAN



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MECKLENBURG COUNTY
STATION: 15+64.95 -Y3-

SHEET 2 OF 2

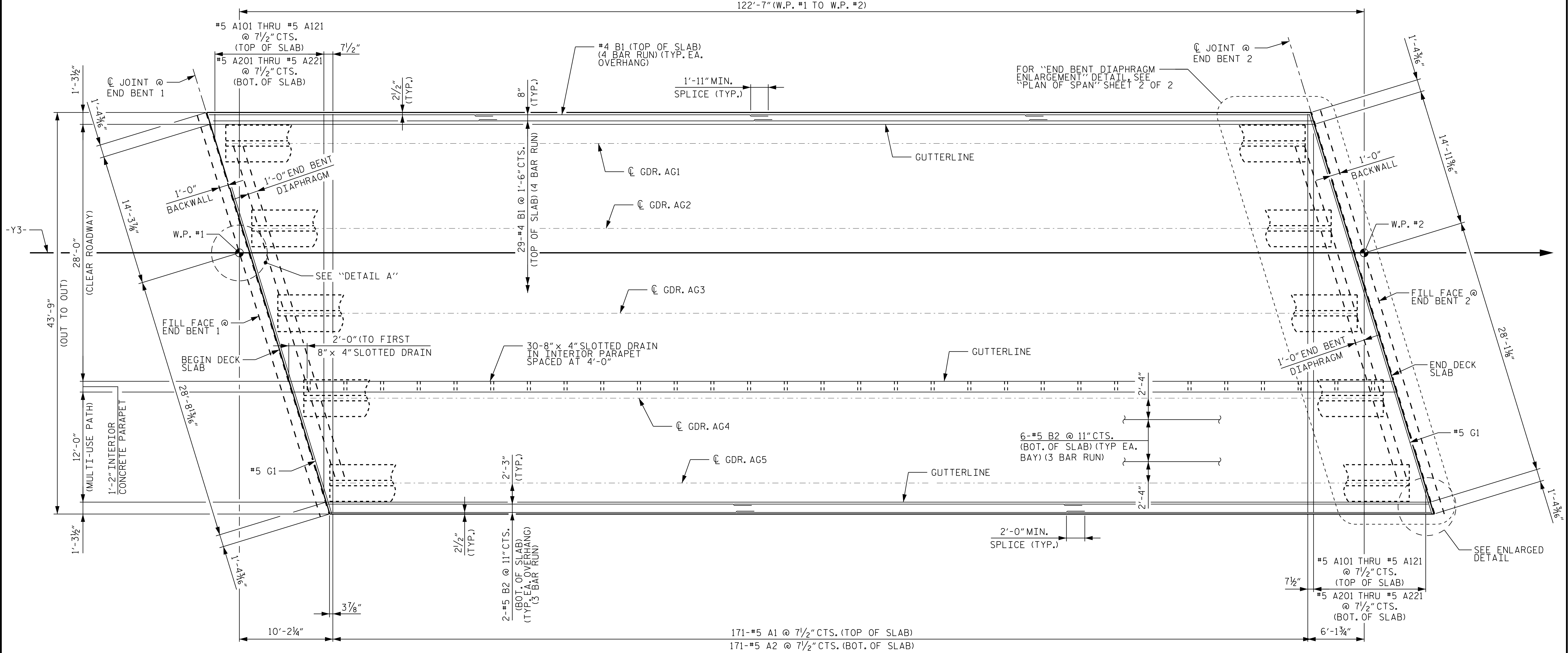
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RALEIGH

SUPERSTRUCTURE
TYPICAL SECTIONS

REVISIONS						SHEET NO. S6-7
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

STR. #6

K:\PDT_Structures\Bridges\N\01036524 - I-5715 Structure Design\Code\gn\Site *3\Structure 6\Final\406.015.151515.SWL\51-591418.008.dgn 8/2/2026



NOTES

FOR POUR SEQUENCE AND LOCATION OF CONSTRUCTION JOINTS, SEE "SUPERSTRUCTURE BILL OF MATERIAL" SHEET.

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

FOR CONCRETE PARAPETE REINFORCING STEEL, SEE "CONCRETE PARAPETE DETAILS" SHEET.

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

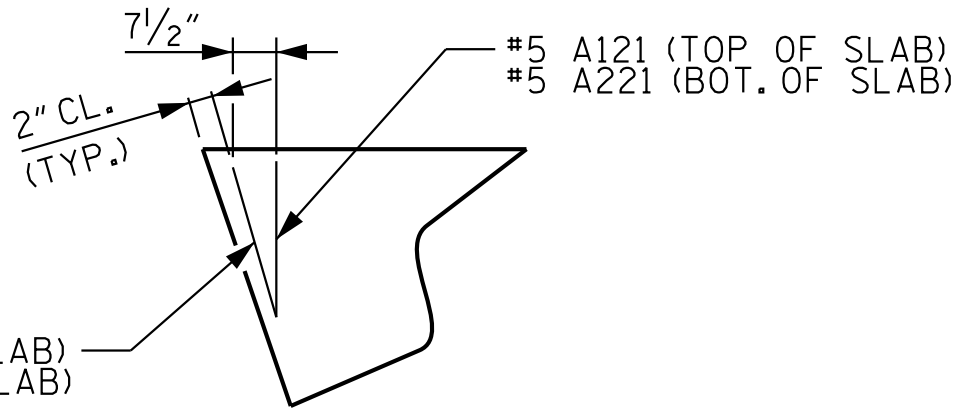
#5 G1 BAR MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.

SEE PLAN OF SPAN SHEET 2 OF 2 FOR "DETAIL A".

SPAN A

PLAN OF SPAN

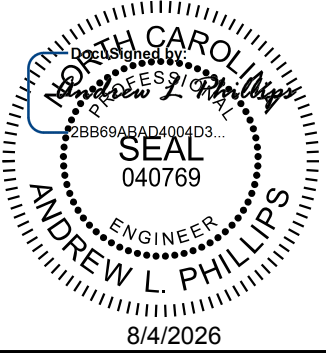
* DENOTES MEASURED ALONG ϕ JOINT



ENLARGED DETAIL

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SHEET 1 OF 2



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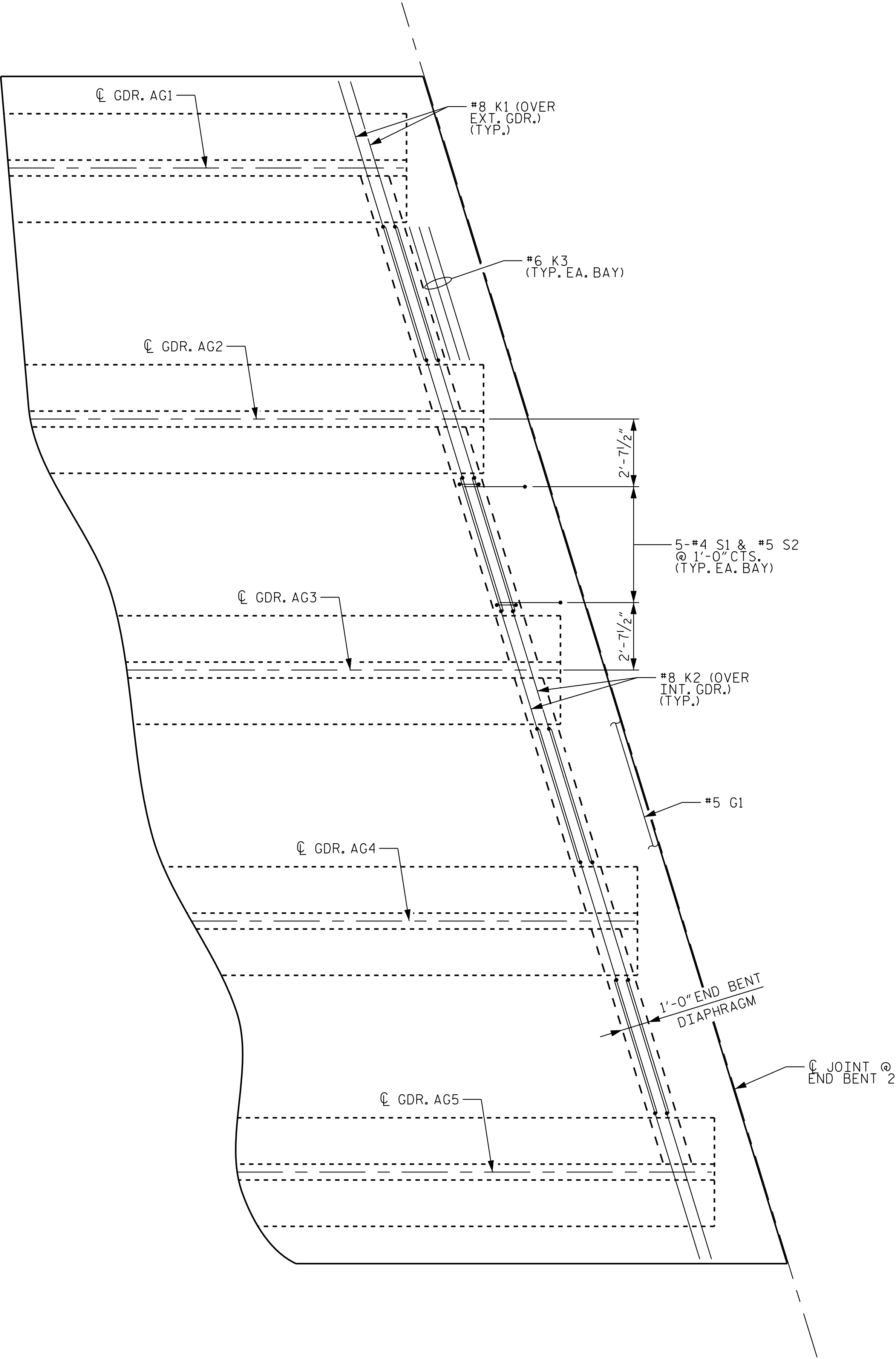
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DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 03/2026

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2			4			

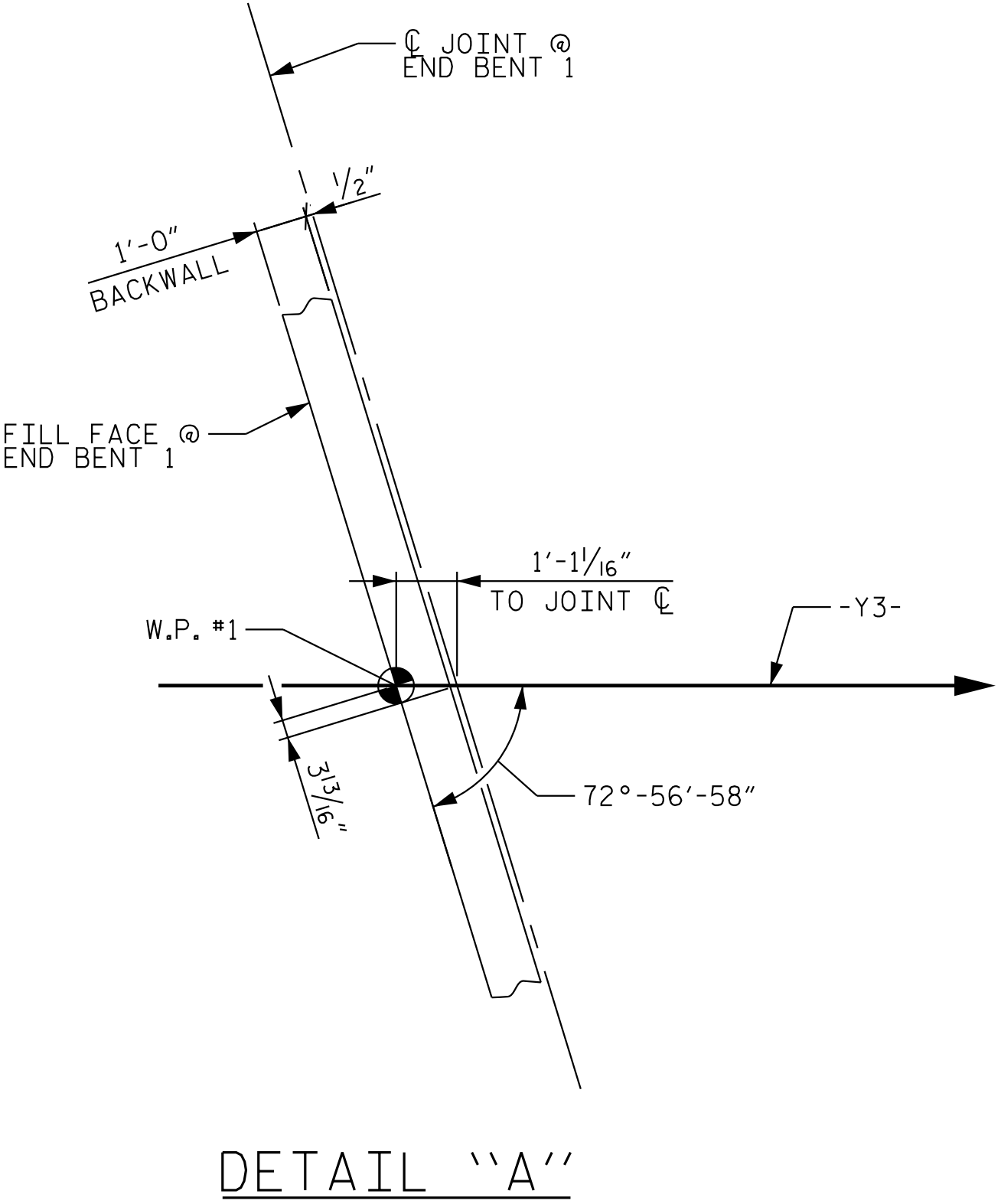
STR. #6

K:\RD1_Structures\Bridge\N\01036524 - I-5715 Structure Design\Cad\Drawn\Site *3\Structure 6\Final\406.017.15115.SWL\2-591418-009.dgn 8/2/2026



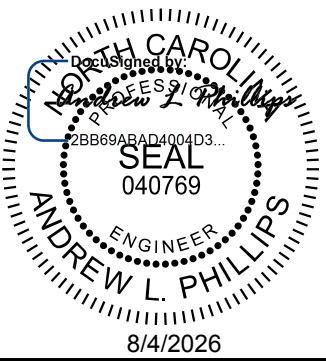
END BENT DIAPHRAGM ENLARGEMENT
END BENT 2 SHOWN, END BENT 1 SIMILAR

NOTES:
FOR NOTES, SEE SHEET 1 OF 2.



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SHEET 2 OF 2



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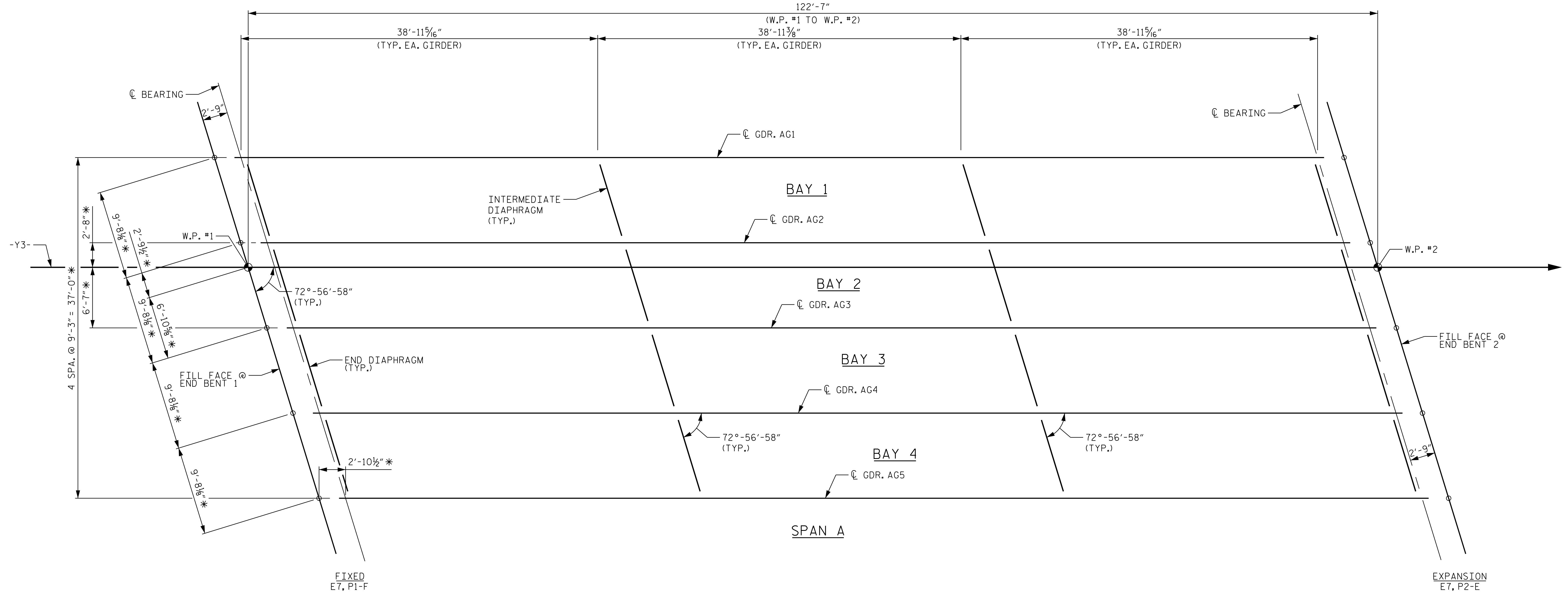
REVISIONS						SHEET NO. S6-9
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STR. #6

NOTES

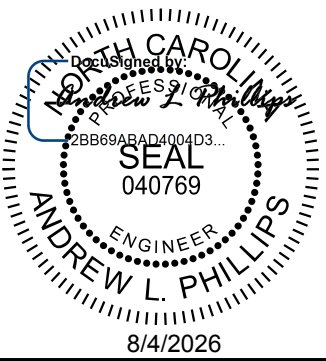
FOR STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 63" FIB" SHEET.



FRAMING PLAN

* DIMENSIONS ARE TYPICAL FOR BOTH END BENTS

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REVISIONS					
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1			3		
2			4		
SHEET NO. S6-10					TOTAL SHEETS 35

STR. #6

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DESIGN ENGINEER OF RECORD: A. L. PHILLIPS	DATE: 03/2026

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

APPLY EPOXY PROTECTIVE COATING TO BOTH SIDES AND BOTTOM OF END 2 FEET OF GIRDER AND END OF GIRDER SURFACES AS INDICATED IN ELEVATION VIEW.

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

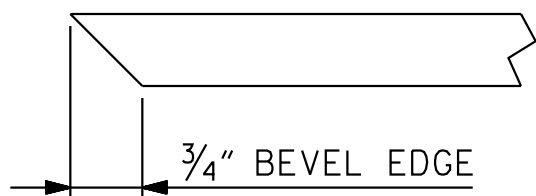
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,000 PSI.

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

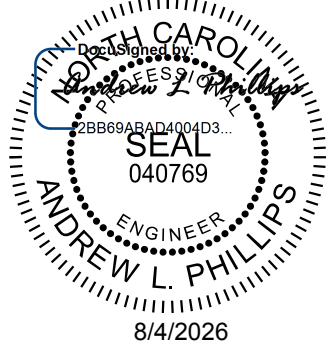
THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4500 lbs.

[illegible]

(2 REQ'D PER GIRDER)



(SEE NOTES)



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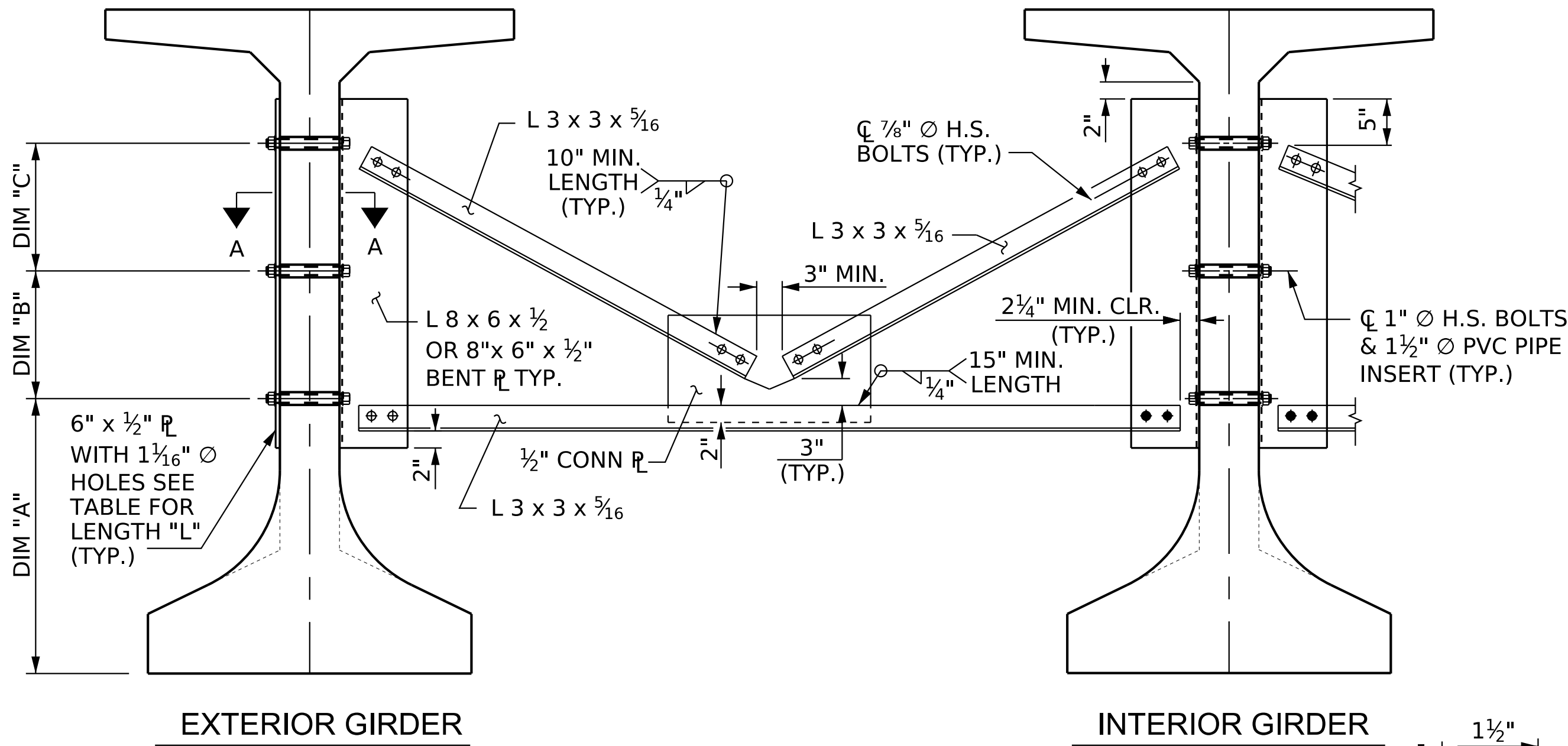
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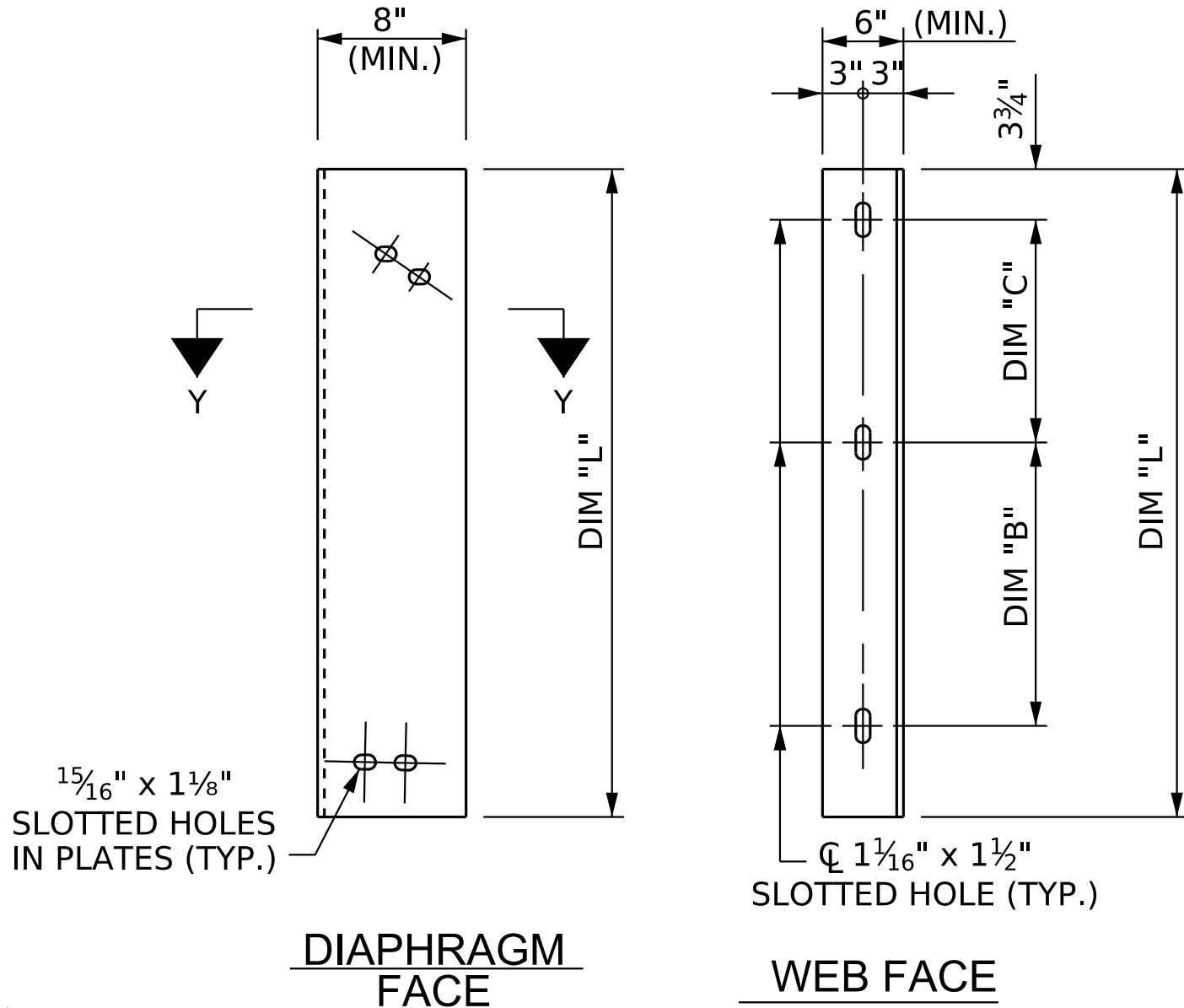
SHEET 2 OF 3

STR. #6 STD. NO. PCG9

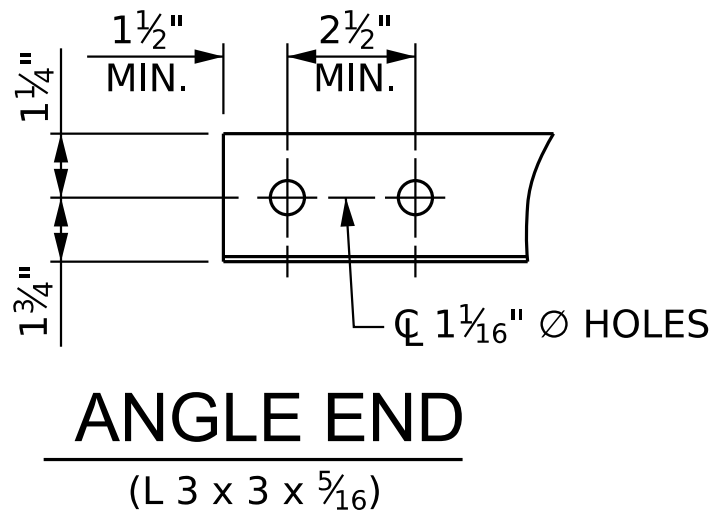
K:\B01_Structures\Bridges\N\01036524 - I-5715 Structure Design\Code\00n\Site *3\Structure Design\406-025-151715_SMU_03-591418-013.dgn 8/2/2026



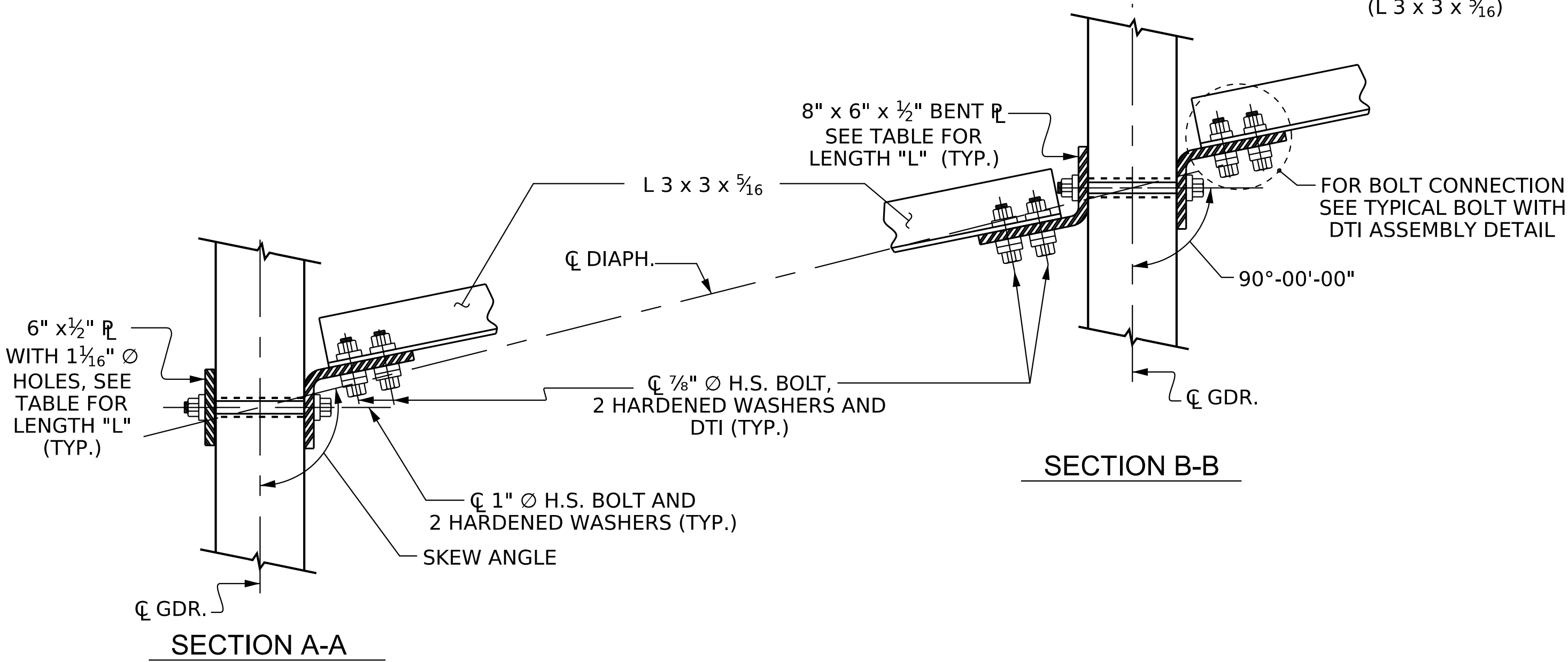
PART SECTION AT INTERMEDIATE DIAPHRAGM



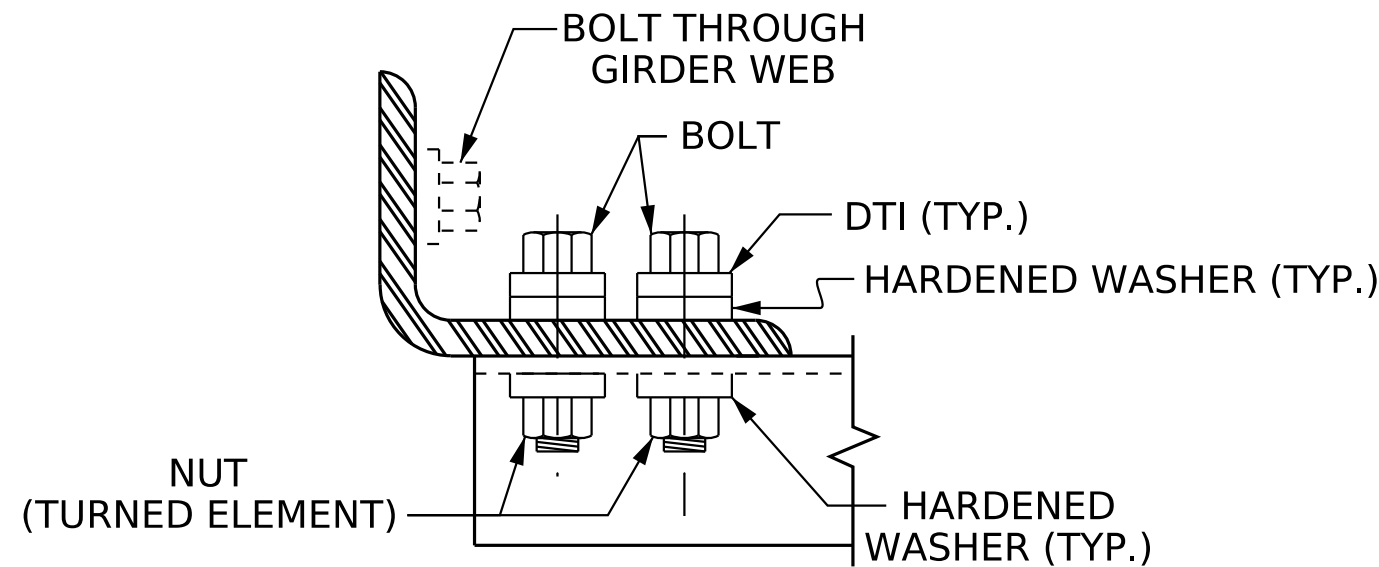
CONNECTOR PLATE DETAIL



ANGLE END



CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL

STRUCTURAL STEEL NOTES

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

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

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

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

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

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

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

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

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

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

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

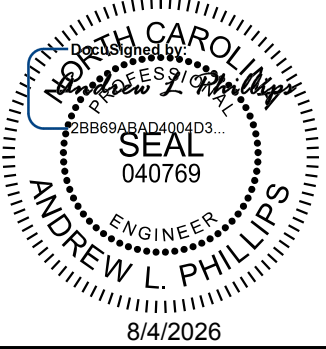
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

TABLE

GIRDER TYPE	DIM "A"	DIM "B"	DIM "C"	DIM "L"
63" FIB	2'-5 1/2"	9"	9"	2'-2"

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SHEET 3 OF 3



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2			4			

STR. #6

STD. NO. FIB DIAPH

————— DEAD LOAD DEFLECTION TABLE FOR GIRDERS —————																																									
0.6" Ø LOW RELAXATION STRANDS	SPAN A																																								
	GIRDERS AG1 & AG5																																								
FORTIETH POINTS	BRG.	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975	BRG.
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.026	0.053	0.079	0.106	0.125	0.145	0.164	0.184	0.198	0.212	0.225	0.239	0.248	0.256	0.264	0.273	0.275	0.278	0.281	0.284	0.281	0.278	0.275	0.273	0.264	0.256	0.248	0.239	0.225	0.212	0.198	0.184	0.164	0.145	0.125	0.106	0.079	0.053	0.026	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.012	0.024	0.035	0.047	0.058	0.069	0.080	0.092	0.100	0.109	0.118	0.126	0.132	0.137	0.143	0.149	0.150	0.152	0.154	0.156	0.154	0.152	0.150	0.149	0.143	0.137	0.132	0.126	0.118	0.109	0.100	0.092	0.080	0.069	0.058	0.047	0.035	0.024	0.012	0.000
FINAL CAMBER ↑	0	3⁄16"	3⁄8"	1⁄2"	11⁄16"	13⁄16"	7⁄8"	1"	11⁄8"	13⁄16"	11⁄4"	15⁄16"	13⁄8"	13⁄16"	17⁄16"	17⁄16"	11⁄2"	11⁄2"	11⁄2"	11⁄2"	19⁄16"	11⁄2"	11⁄2"	11⁄2"	11⁄2"	17⁄16"	17⁄16"	13⁄8"	13⁄8"	15⁄16"	11⁄4"	13⁄16"	11⁄8"	1"	7⁄8"	13⁄16"	11⁄16"	1⁄2"	3⁄8"	3⁄16"	0

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

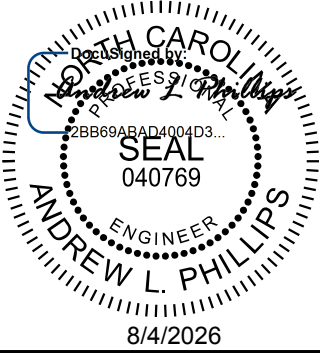
————— DEAD LOAD DEFLECTION TABLE FOR GIRDERS —————																																									
0.6" Ø LOW RELAXATION STRANDS	SPAN A																																								
	GIRDERS AG2, AG3, & AG4																																								
	FORTIETH POINTS	BRG.	0.025	0.050	0.075	0.100	0.125	0.150	0.175	0.200	0.225	0.250	0.275	0.300	0.325	0.350	0.375	0.400	0.425	0.450	0.475	0.500	0.525	0.550	0.575	0.600	0.625	0.650	0.675	0.700	0.725	0.750	0.775	0.800	0.825	0.850	0.875	0.900	0.925	0.950	0.975
CAMBER (GIRDER ALONE IN PLACE) ↑	0.000	0.026	0.053	0.079	0.106	0.125	0.145	0.164	0.184	0.198	0.212	0.225	0.239	0.248	0.256	0.264	0.273	0.275	0.278	0.281	0.284	0.281	0.278	0.275	0.273	0.264	0.256	0.248	0.239	0.225	0.212	0.198	0.184	0.164	0.145	0.125	0.106	0.079	0.053	0.026	0.000
* DEFLECTION DUE TO SUPERIMPOSED D.L. ↓	0.000	0.013	0.026	0.038	0.051	0.063	0.075	0.088	0.100	0.109	0.119	0.128	0.138	0.144	0.150	0.156	0.162	0.164	0.166	0.168	0.170	0.168	0.166	0.164	0.162	0.156	0.150	0.144	0.138	0.128	0.119	0.109	0.100	0.088	0.076	0.063	0.051	0.039	0.026	0.013	0.000
FINAL CAMBER ↑	0	3⁄16"	5⁄16"	1⁄2"	5⁄8"	3⁄4"	13⁄16"	15⁄16"	1"	11⁄16"	11⁄8"	13⁄16"	11⁄4"	11⁄4"	11⁄4"	15⁄16"	15⁄16"	15⁄16"	13⁄8"	13⁄8"	13⁄8"	13⁄8"	13⁄8"	15⁄16"	15⁄16"	15⁄16"	11⁄4"	11⁄4"	13⁄16"	13⁄16"	11⁄8"	11⁄16"	1"	15⁄16"	13⁄16"	3⁄4"	5⁄8"	1⁄2"	5⁄16"	3⁄16"	0

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

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STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUPERSTRUCTURE GIRDER DEFLECTION AND CAMBER TABLES					
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1			3		
2			4		
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DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>03/2026</u>

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NOTES

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

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

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

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

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

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

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

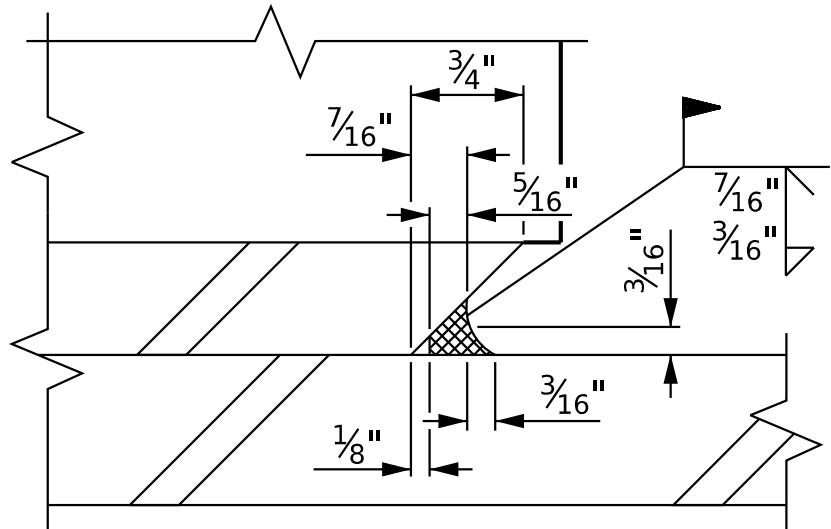
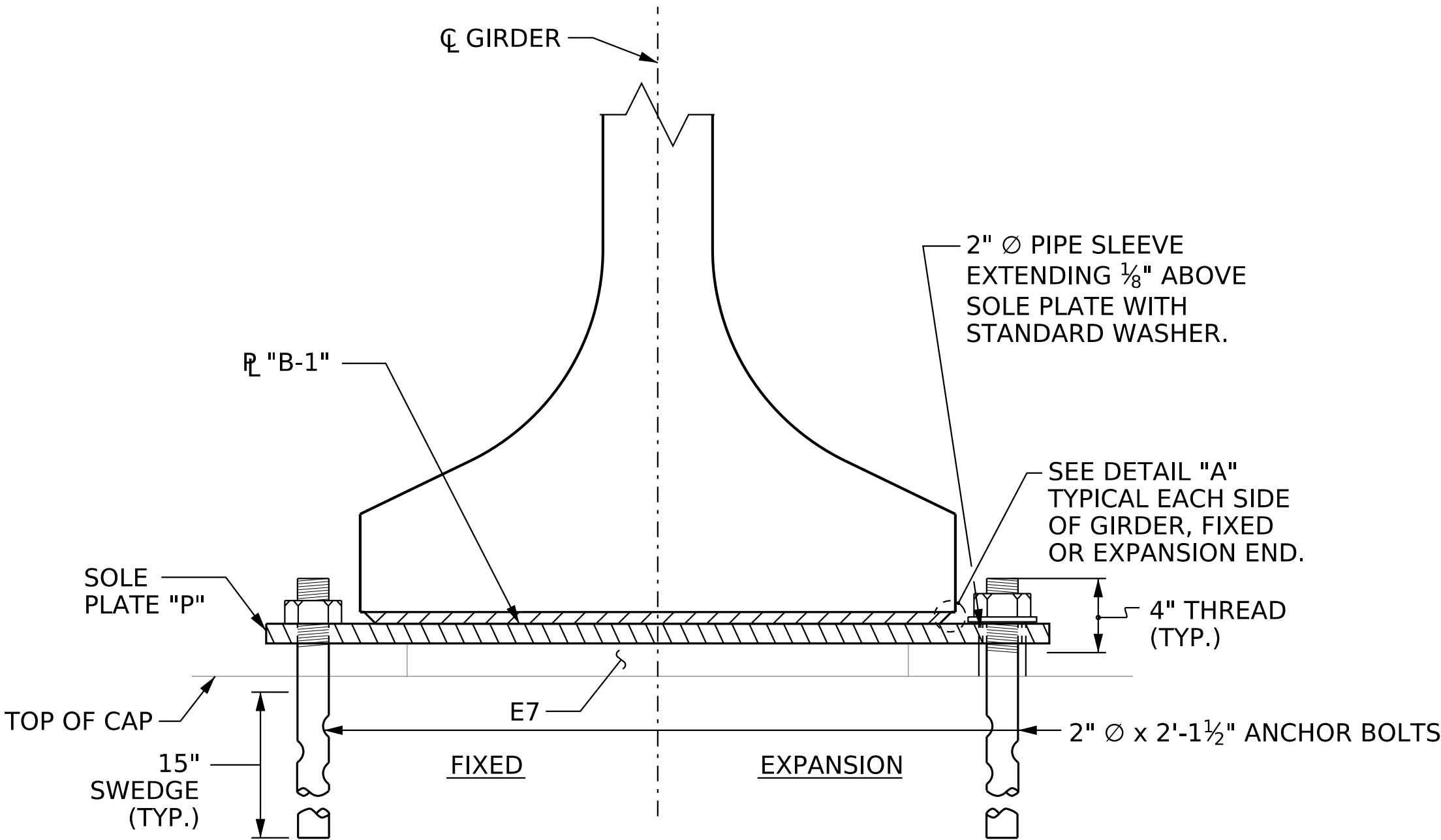
ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

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

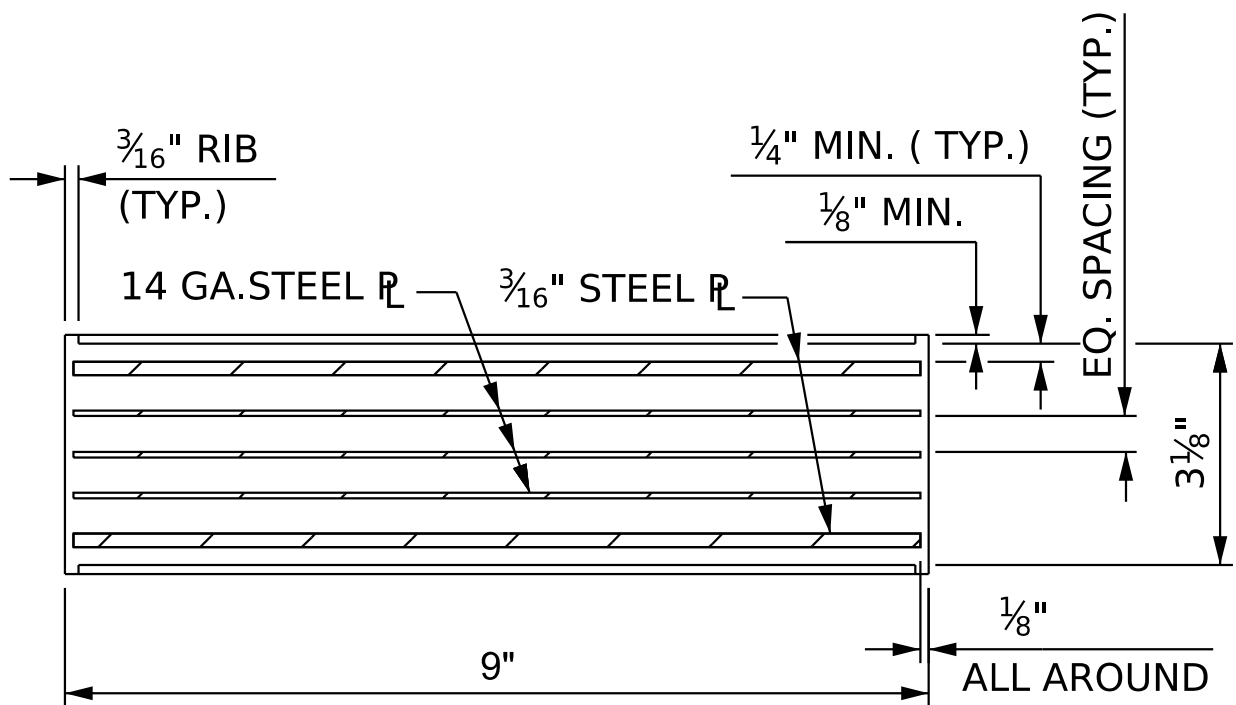
FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE STANDARD SPECIFICATIONS.

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.

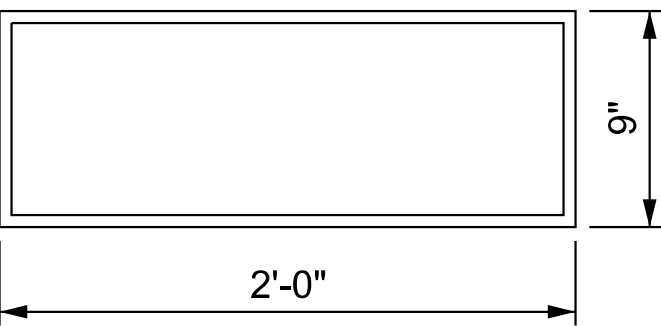
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



MAXIMUM ALLOWABLE SERVICE LOADS	
D.L.+L.L. (NO IMPACT)	
TYPE VIII	390 K



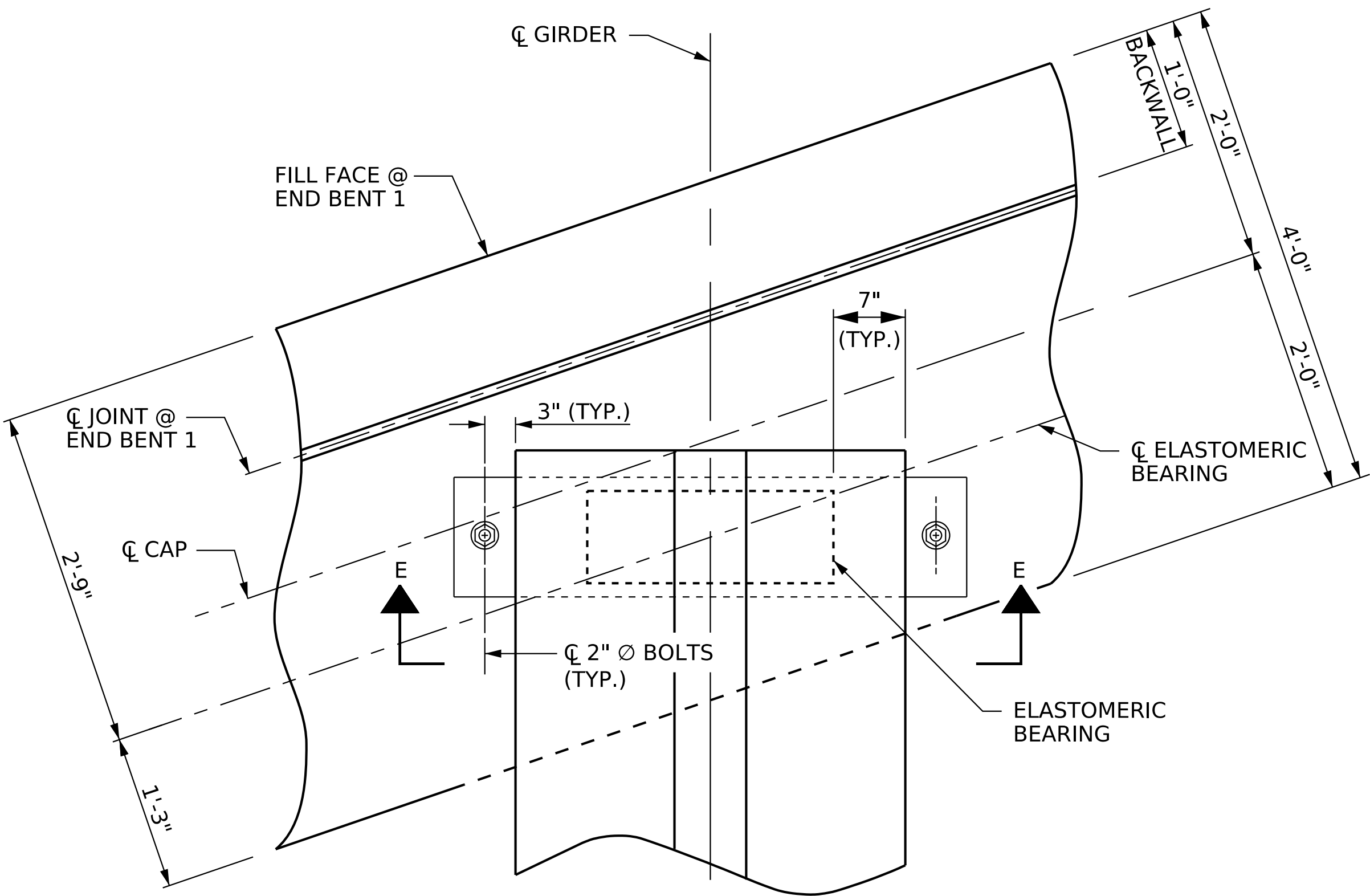
TYPICAL SECTION OF ELASTOMERIC BEARINGS



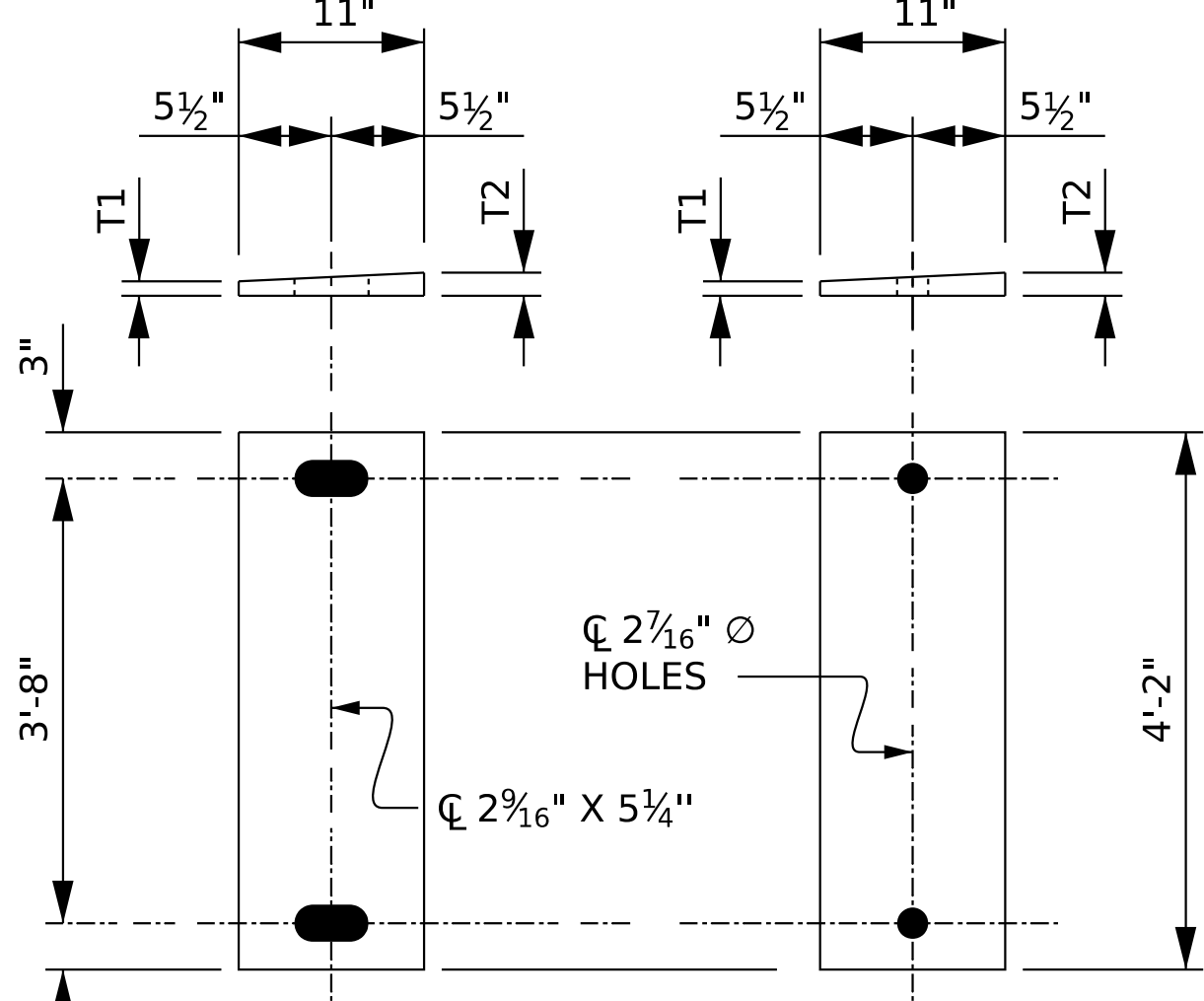
E7 (10 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING

TYPE VIII

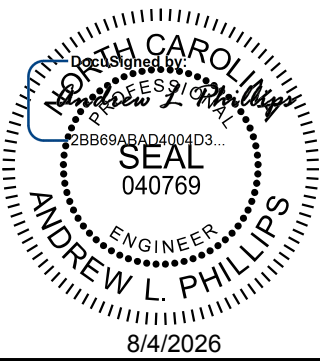


PLAN VIEW AT END BENT
(END BENT 1 SHOWN, END BENT 2 SIMILAR)



P2-E (EXPANSION) (5 REQ'D)
P1-F (FIXED) (5 REQ'D)
SOLE PLATE DETAILS ("P")

SOLE PLATE SCHEDULE			
MARK	T1	T2	# OF LOCATIONS
P1-F	1 1/4"	1 9/16"	5
P2-E	1 1/4"	1 9/16"	5



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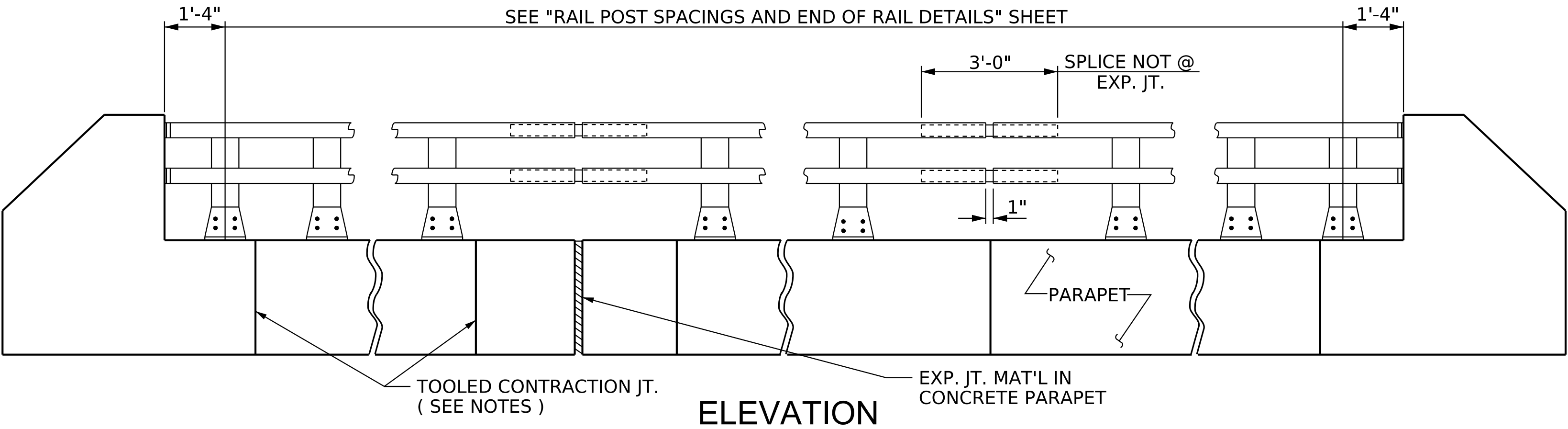
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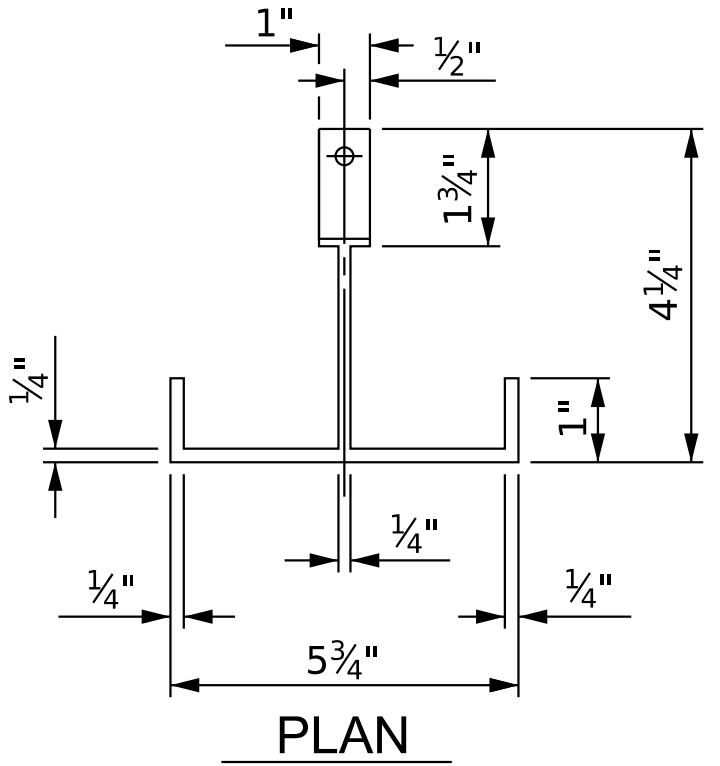
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
STANDARD					
ELASTOMERIC BEARING DETAILS					
REVISIONS					SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
					TOTAL SHEETS
					35

STR. #6 STD. NO. EB5

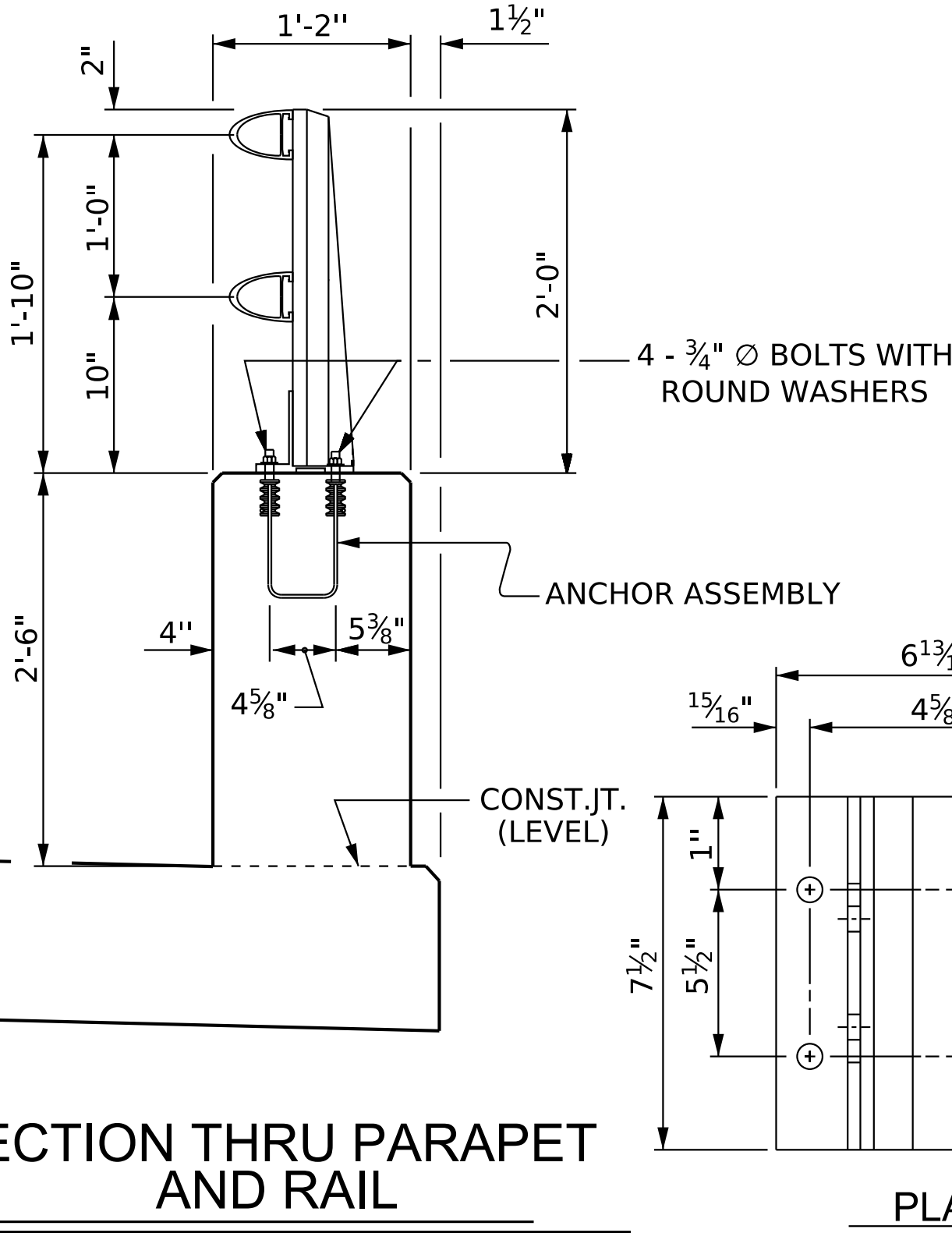


ELEVATION

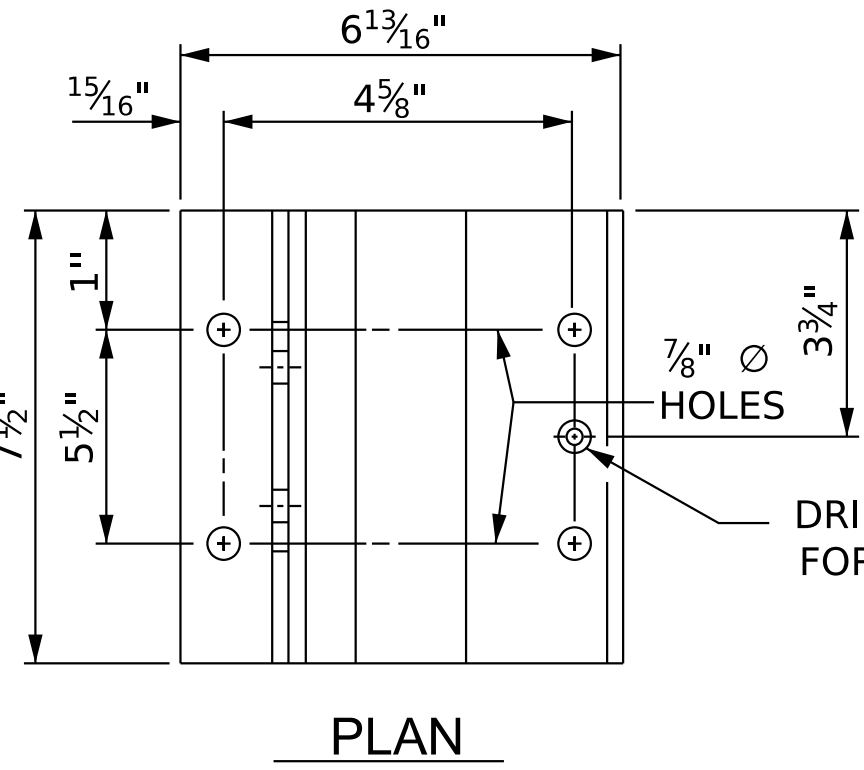
NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE ``RAIL POST SPACINGS AND END OF RAIL DETAILS'' SHEET.



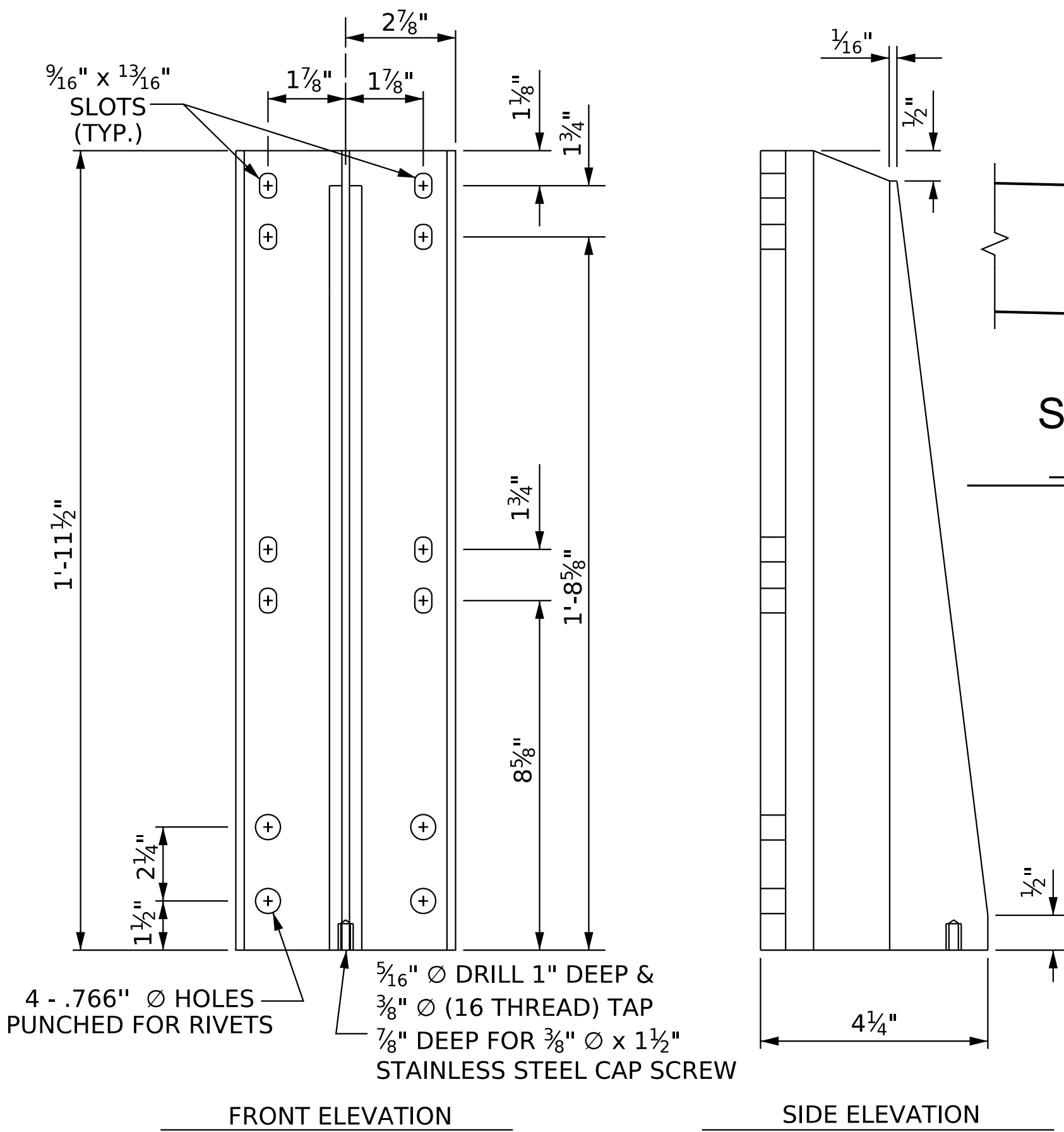
PLAN



SECTION THRU PARAPET AND RAIL



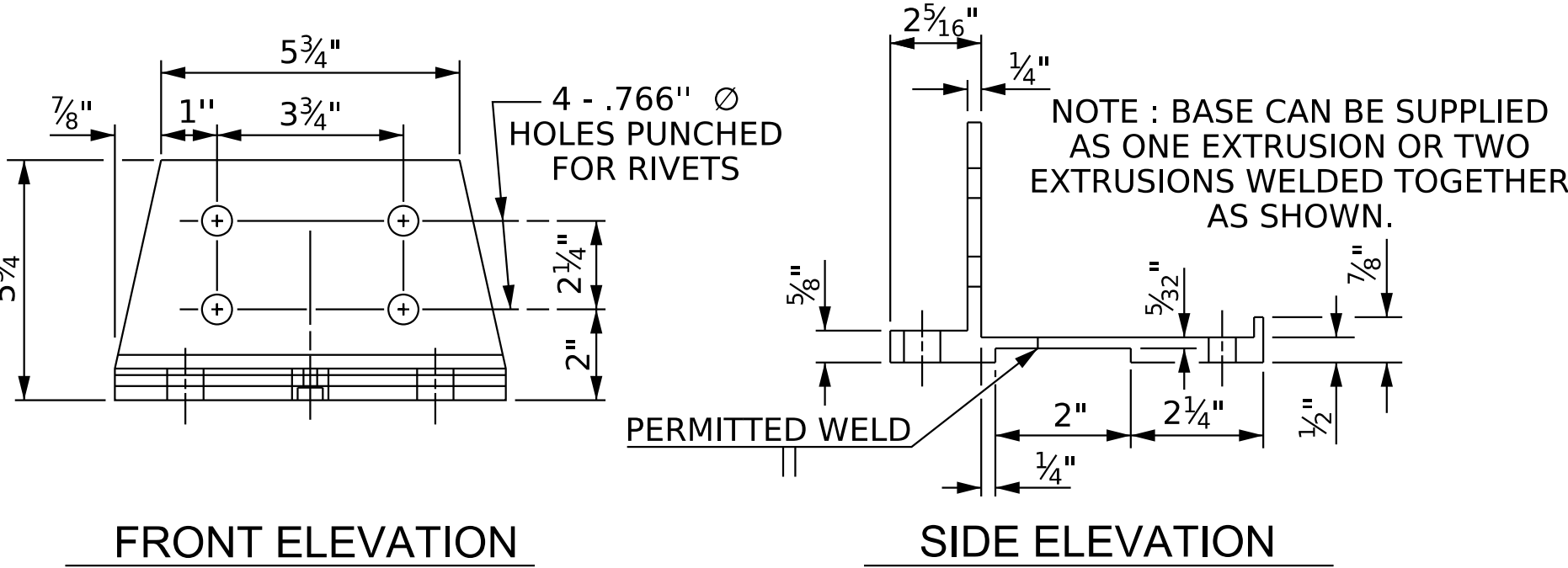
PLAN



FRONT ELEVATION

SIDE ELEVATION

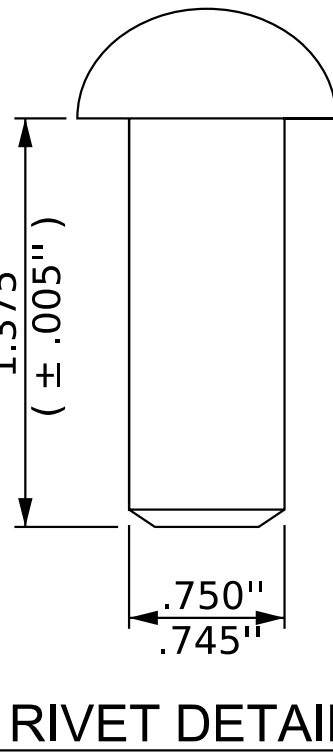
DETAILS OF POST



FRONT ELEVATION

SIDE ELEVATION

POST BASE DETAILS



RIVET DETAIL

NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

UNLESS OTHERWISE REQUIRED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR HAS THE OPTION TO USE AN ALTERNATE TO THE 2 BAR METAL RAIL. THE ALTERNATE RAIL SHALL MEET THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) UNDER ``2 BAR METAL RAIL ALTERNATE''. ADJUSTMENTS TO THE CONCRETE PARAPET WILL NOT BE ALLOWED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6.

MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND COLD POINT COLD DRIVEN AS PER DRAWING.

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

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

GALVANIZED STEEL RAILS

MATERIALS AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: ASTM A36 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO ASTM A123.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A1011 FOR GRADE 36, 40, 45 OR ASTM A1008 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A1011 FOR GRADE 36, 40, 45 OR ASTM A1008 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A123.

GENERAL NOTES

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

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

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

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

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

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

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

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

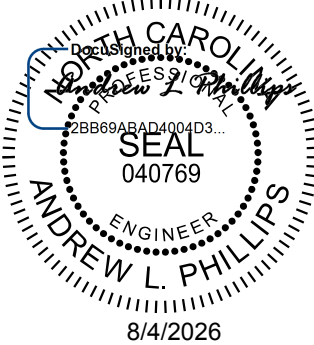
MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

PAY LENGTH = 224.92 LIN. FT.

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 15+64.95 -Y3-

SHEET 1 OF 2



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Phone (919) 677-2000 NC LICENSE # F-0102

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REVISIONS						SHEET NO. S6-16
NO.	BY:	DATE:	NO.	BY:	DATE:	
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2			4			

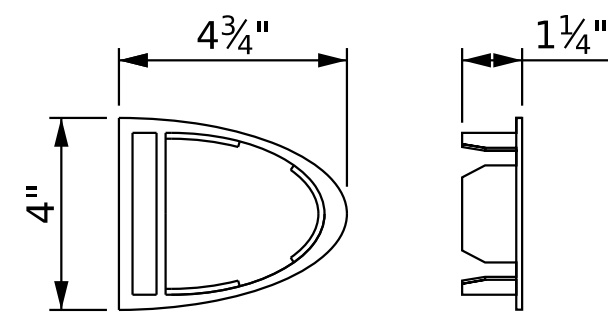
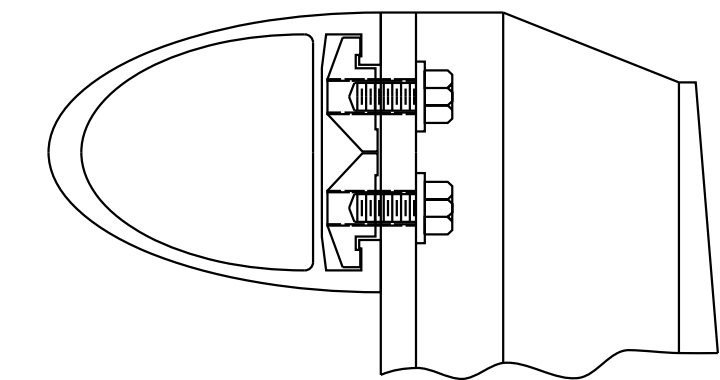
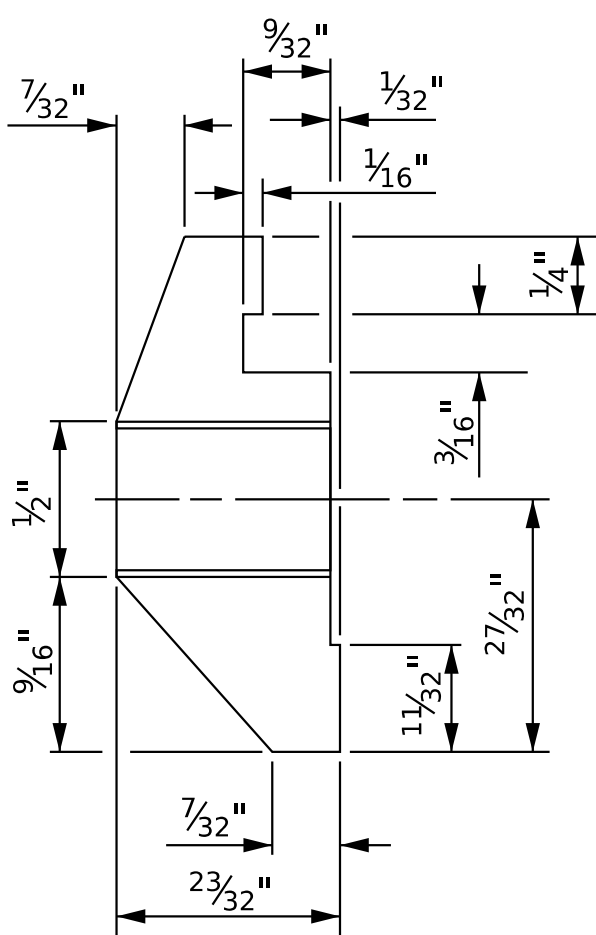
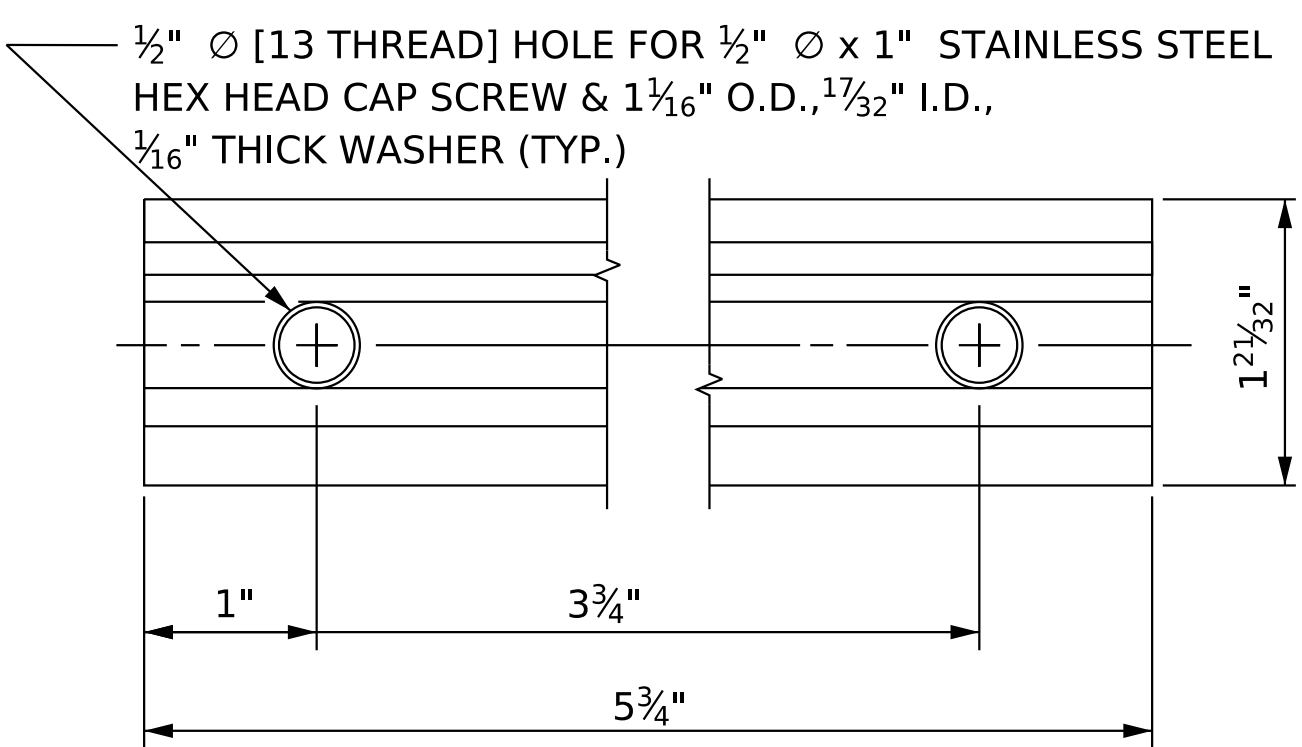
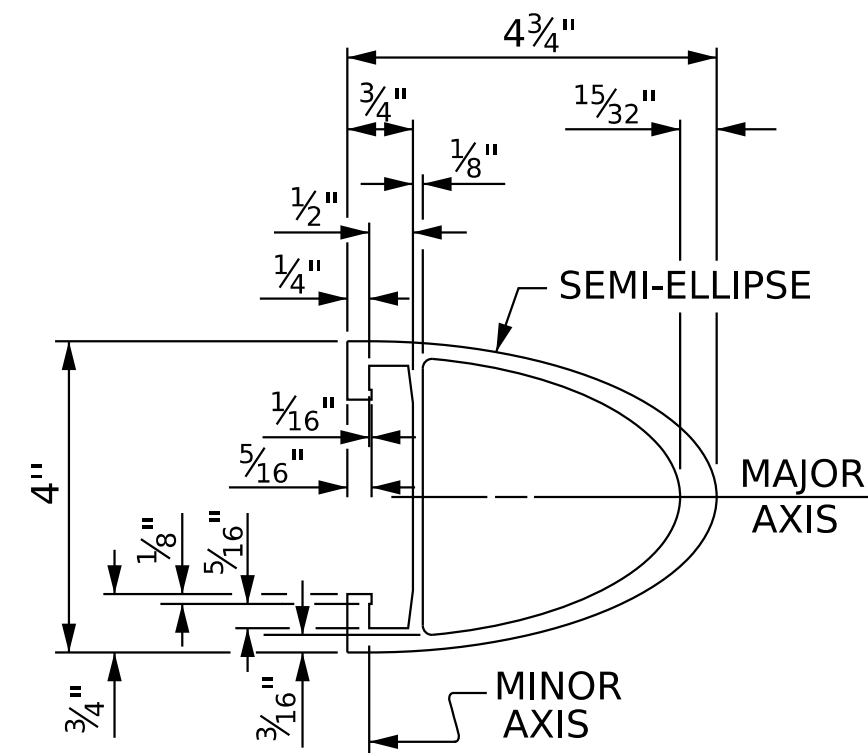
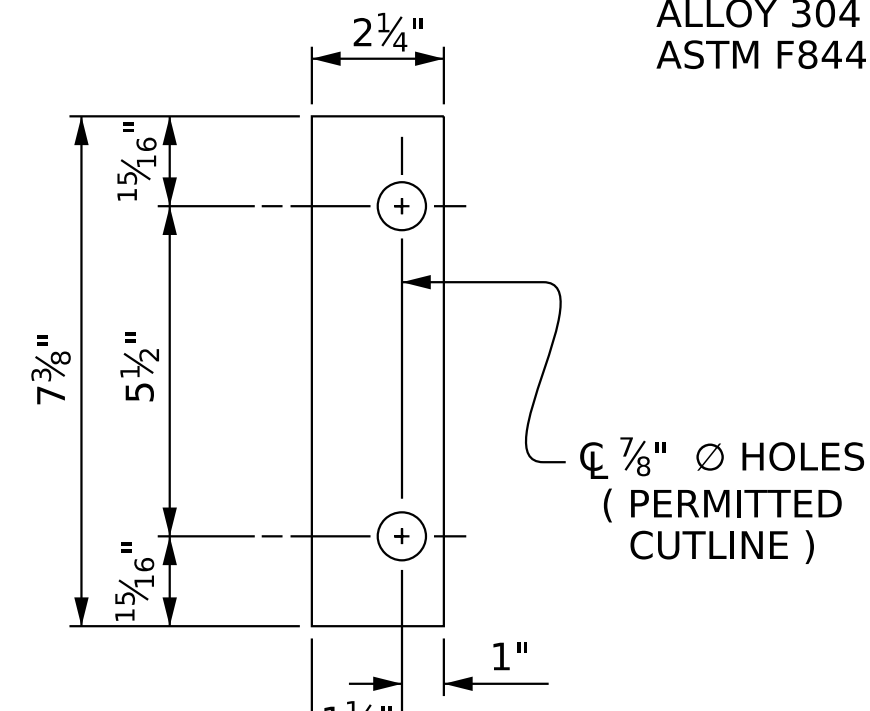
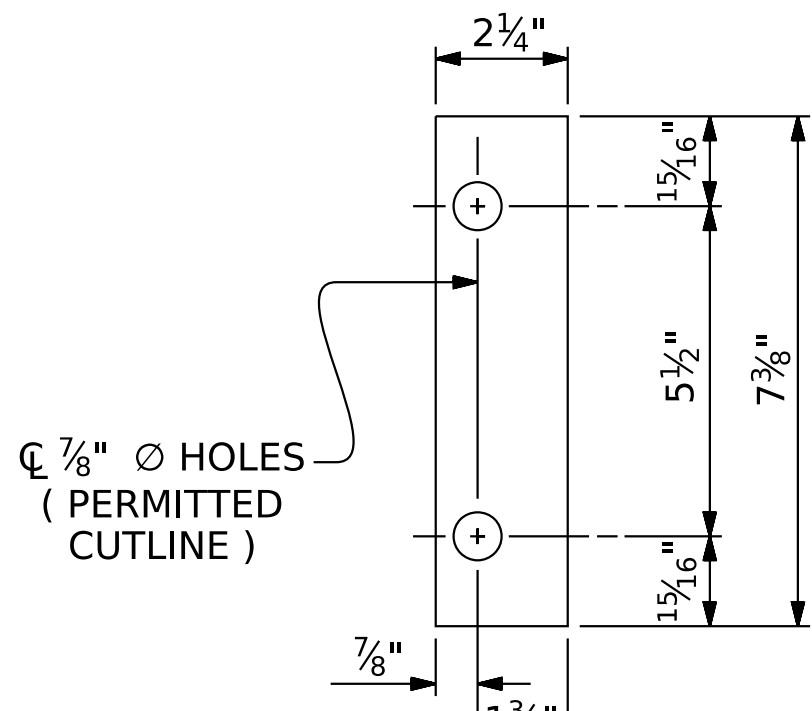
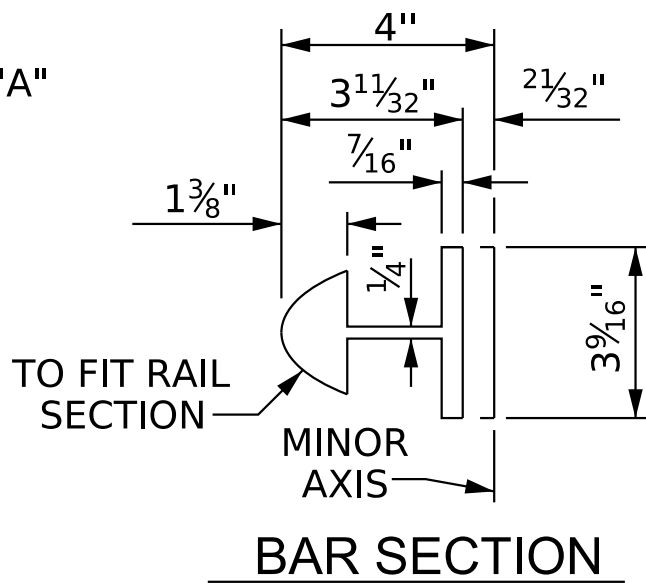
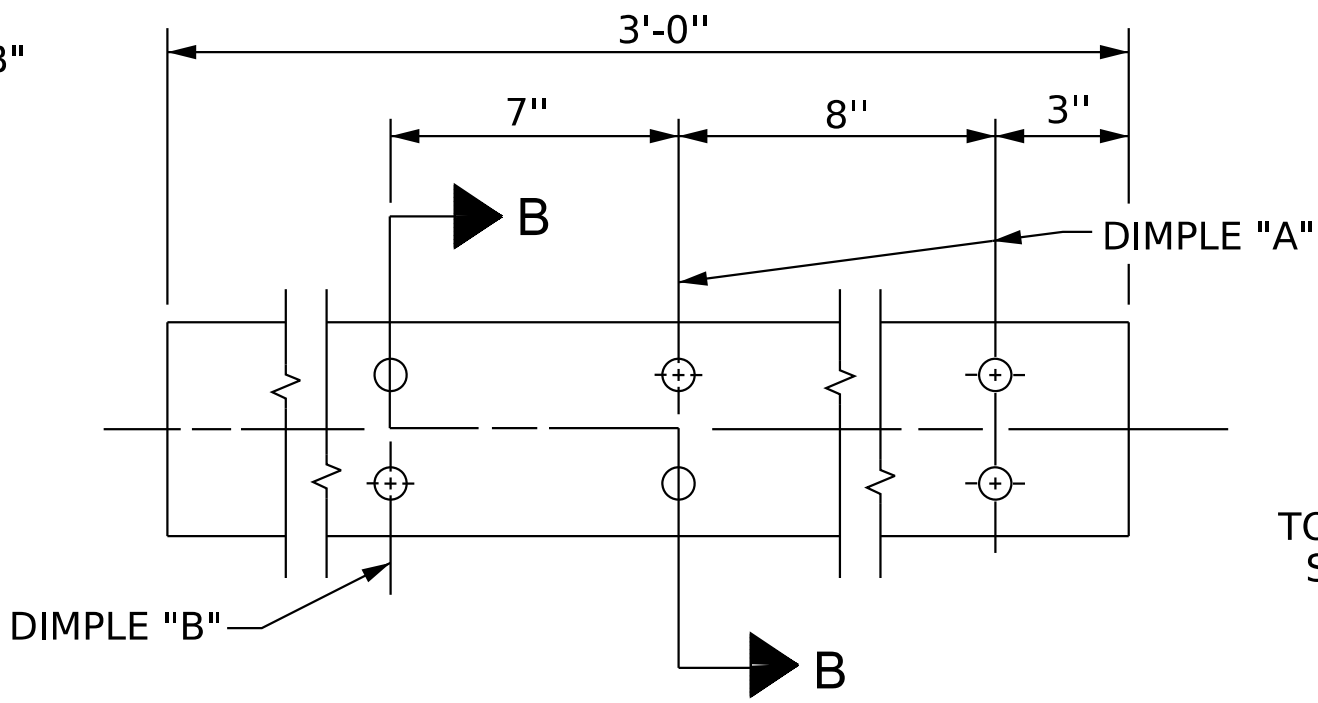
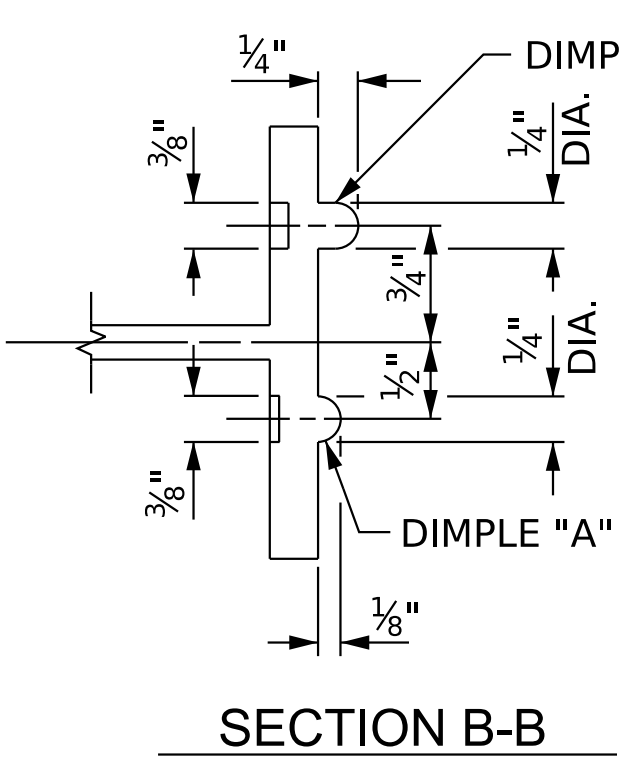
STR. #6

STD. NO. BMR3

DRAWN BY: T. K. BOYD DATE: 03/2026
CHECKED BY: E. W. SPRABERRY DATE: 03/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 03/2026

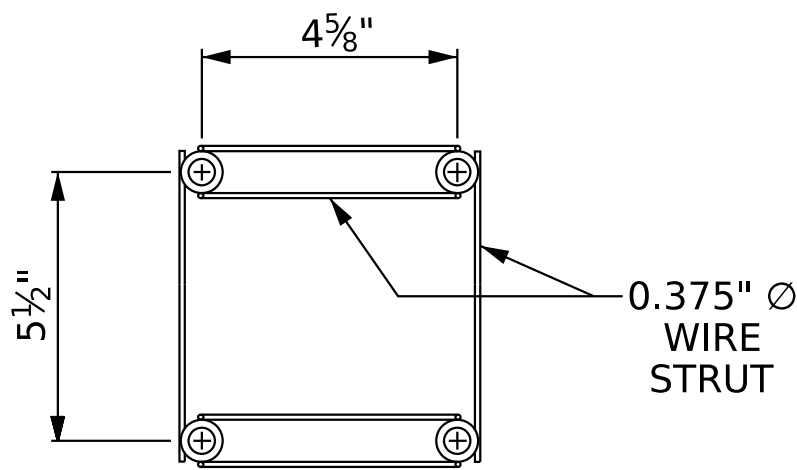
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UNLESS ALL SIGNATURES COMPLETED**

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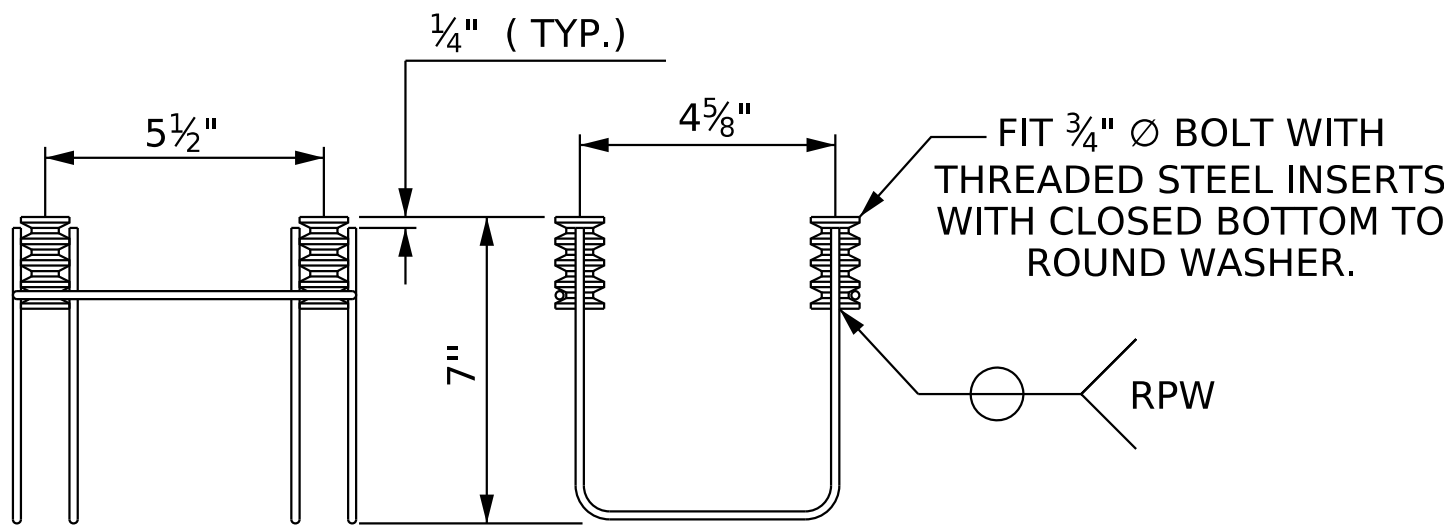


4-BOLT METAL RAIL ANCHOR ASSEMBLY

(40 ASSEMBLIES REQUIRED)



PLAN



SIDE VIEW

ELEVATION

NOTES

STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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

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

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

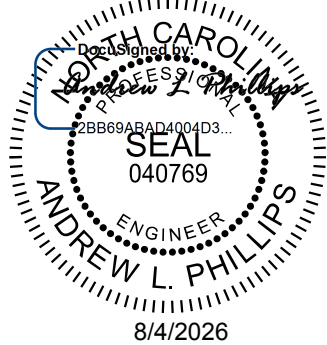
WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY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

SHIM DETAILS

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

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 15+64.95 -Y3-

SHEET 2 OF 2



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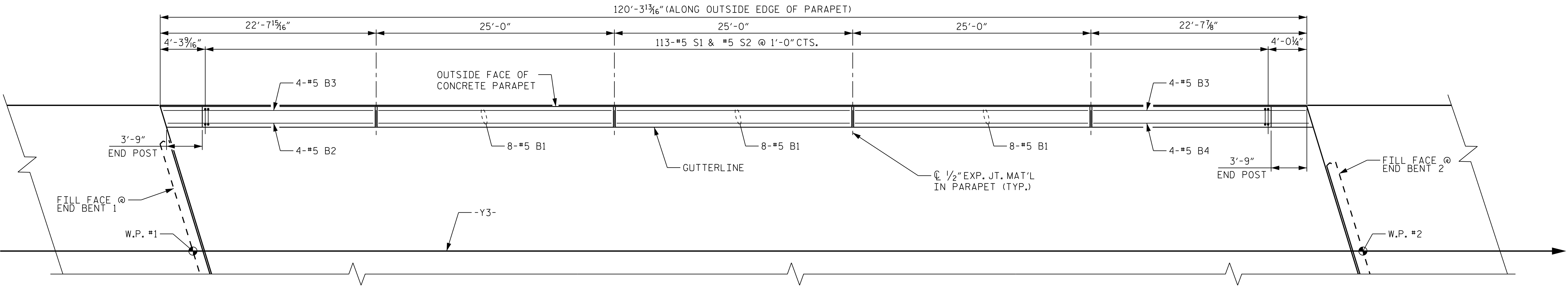
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NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

STR. #6

STD. NO. BMR4

DRAWN BY: T. K. BOYD DATE: 03/2026
CHECKED BY: E. W. SPRABERRY DATE: 03/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 03/2026

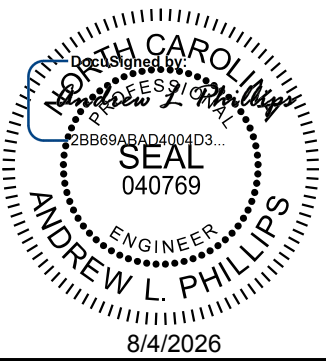
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EXTERIOR CONCRETE PARAPET LAYOUT
(LEFT SIDE SHOWN, RIGHT SIDE SIMILAR)

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 15+64.95 -Y3-

SHEET 1 OF 4



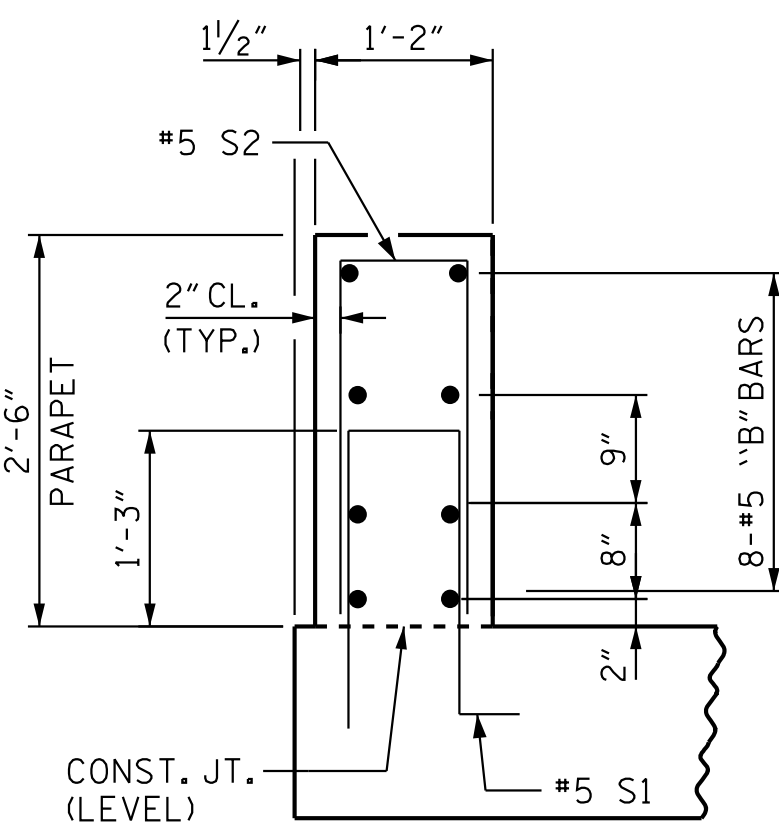
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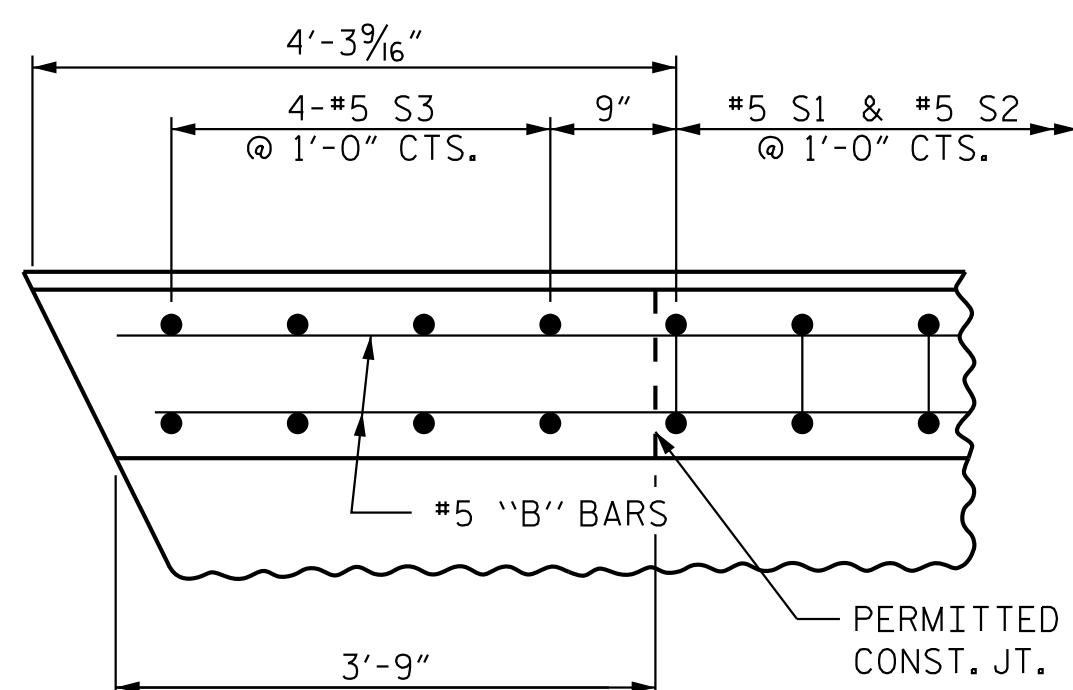
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2			4			

DRAWN BY: <u>T. K. BOYD</u>	DATE: <u>03/2026</u>
CHECKED BY: <u>E. W. SPRABERRY</u>	DATE: <u>03/2026</u>
DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u>	DATE: <u>03/2026</u>

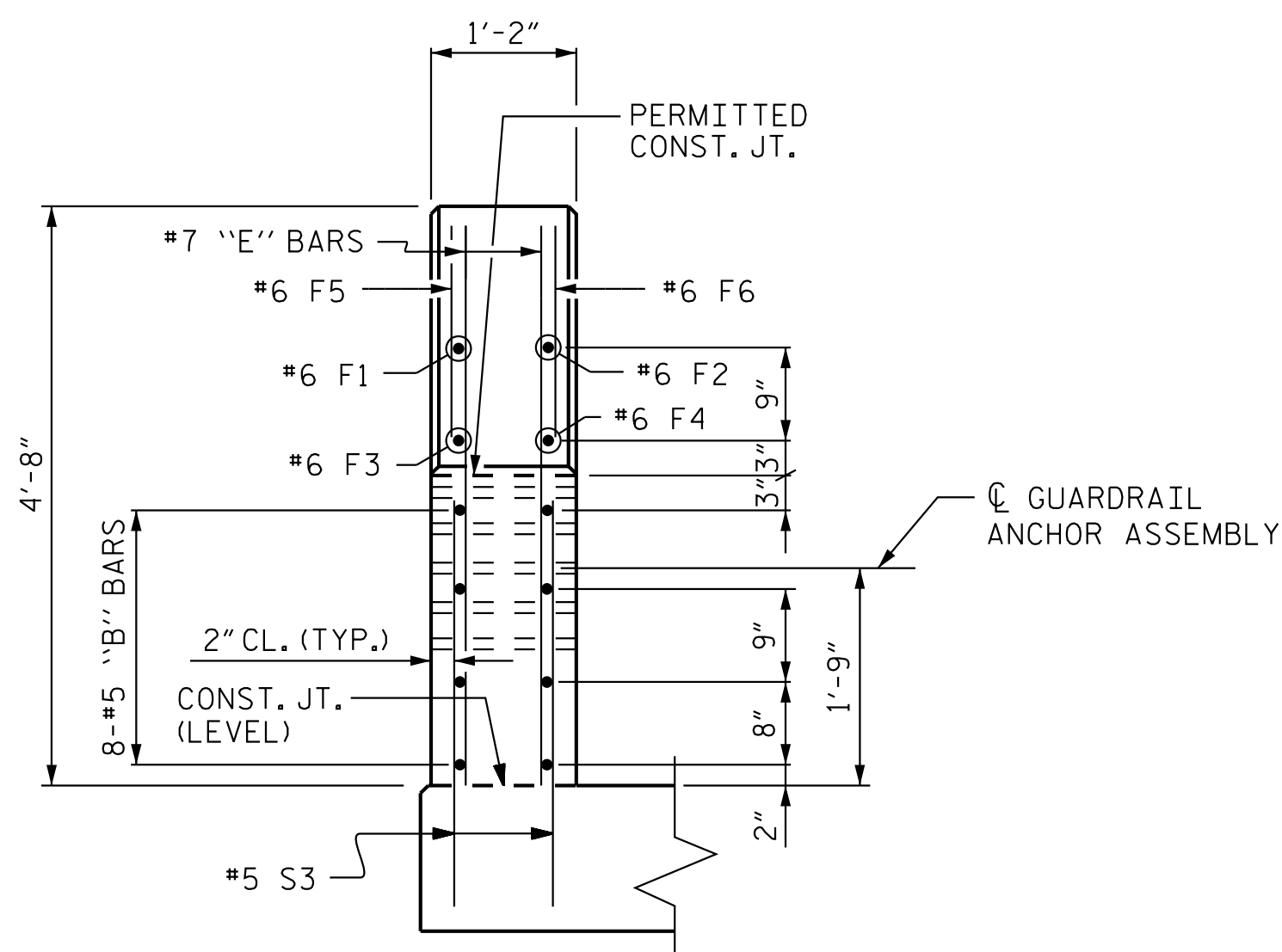
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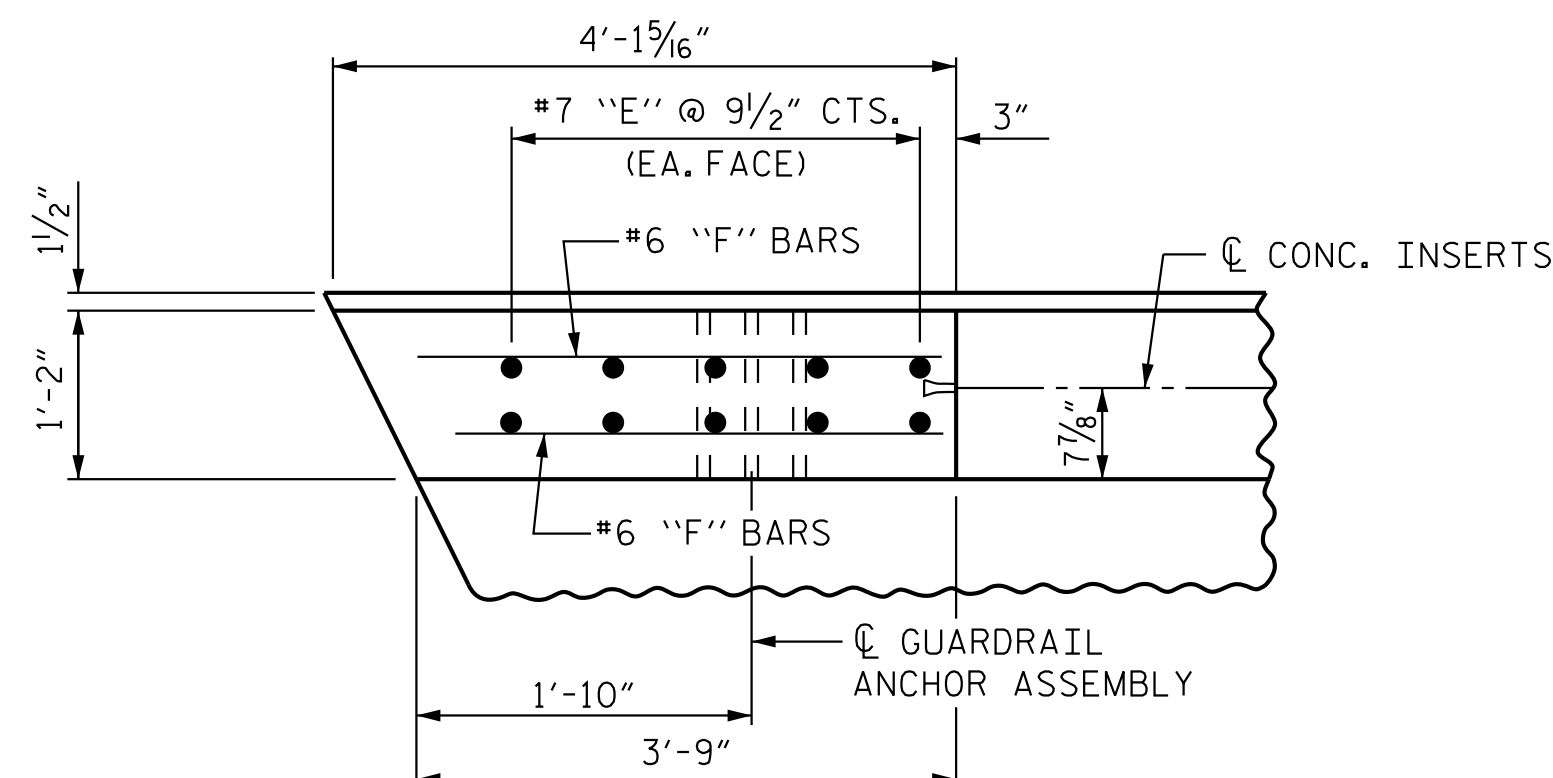
SECTION THRU PARAPET



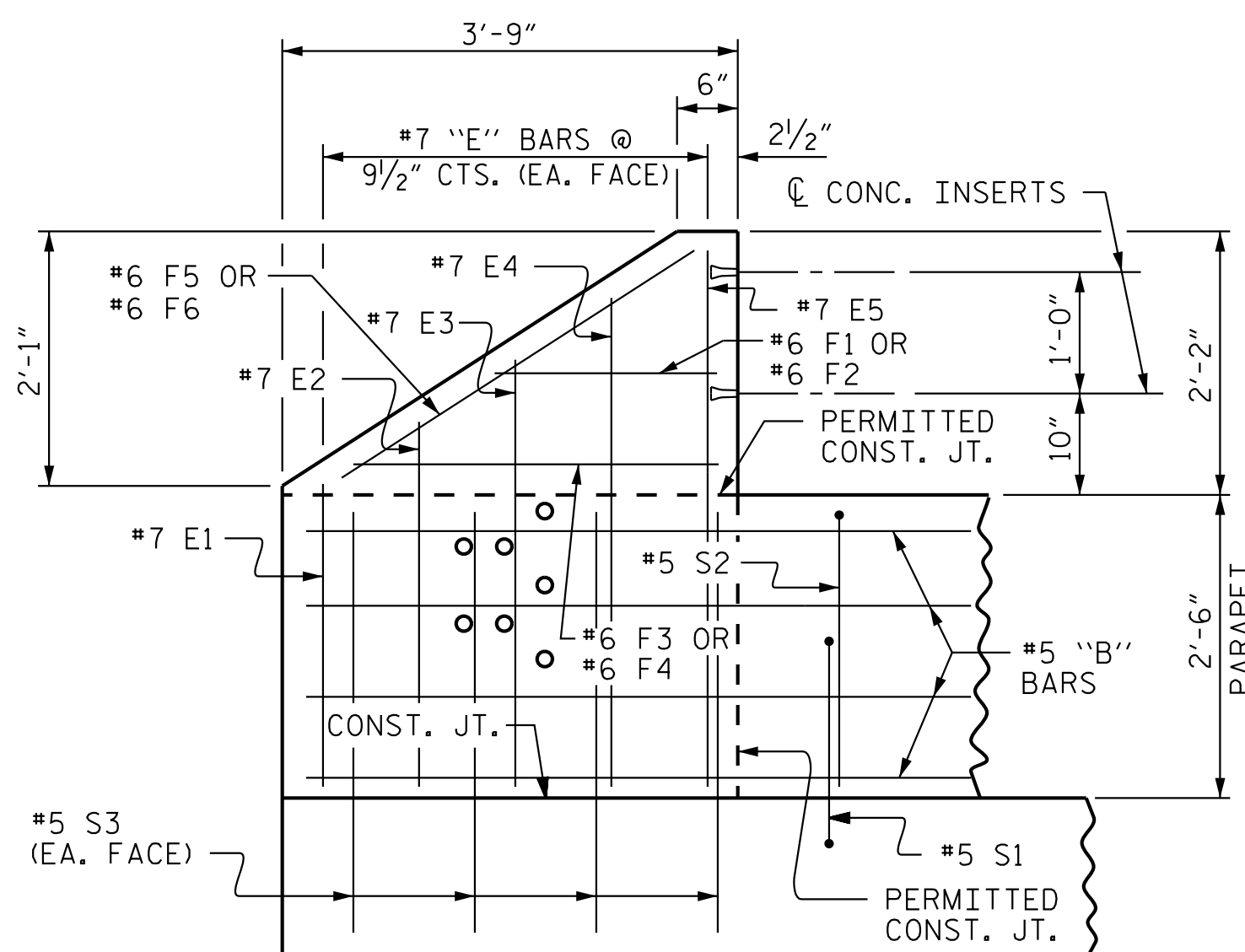
PLAN OF PARAPET



END VIEW



PLAN OF END POST



ELEVATION

NOTES

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

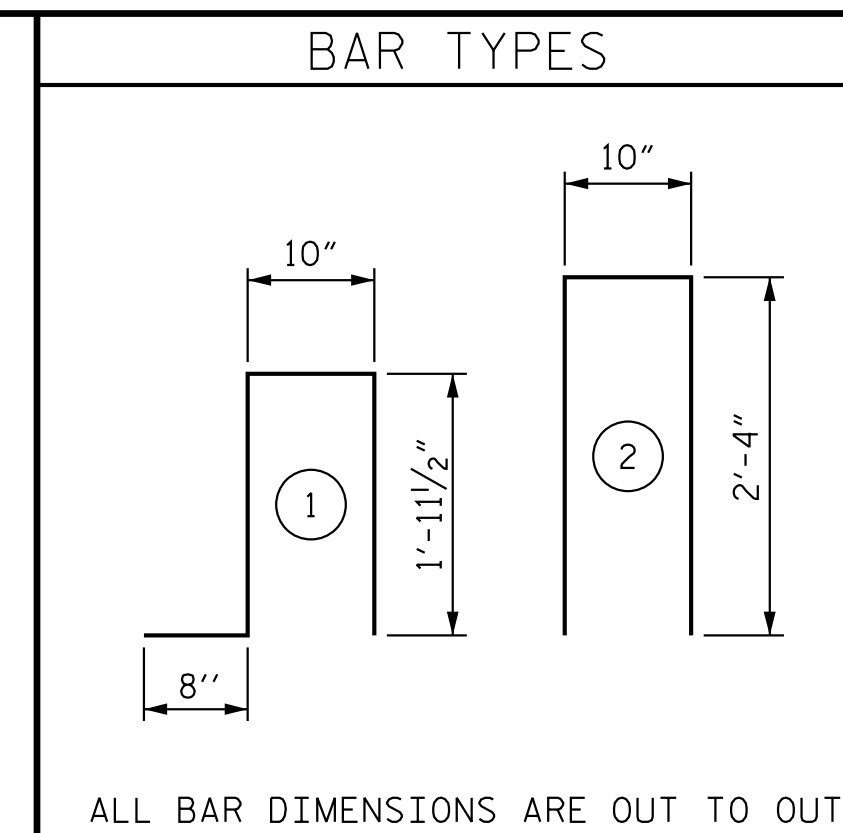
ALL REINFORCING STEEL IN PARAPET AND END POSTS SHALL BE EPOXY COATED.

THE #5 S1 AND #5 S2 BARS MAY BE SHIFTED SLIGHTLY IN ORDER TO MAINTAIN A 2" MINIMUM CLEARANCE TO THE 1/2" EXPANSION JOINT MATERIAL IN PARAPET.

FOR DETAILS OF CONCRETE INSERTS IN END POSTS, SEE "RAIL
POST SPACINGS AND END OF RAIL DETAILS" SHEET.

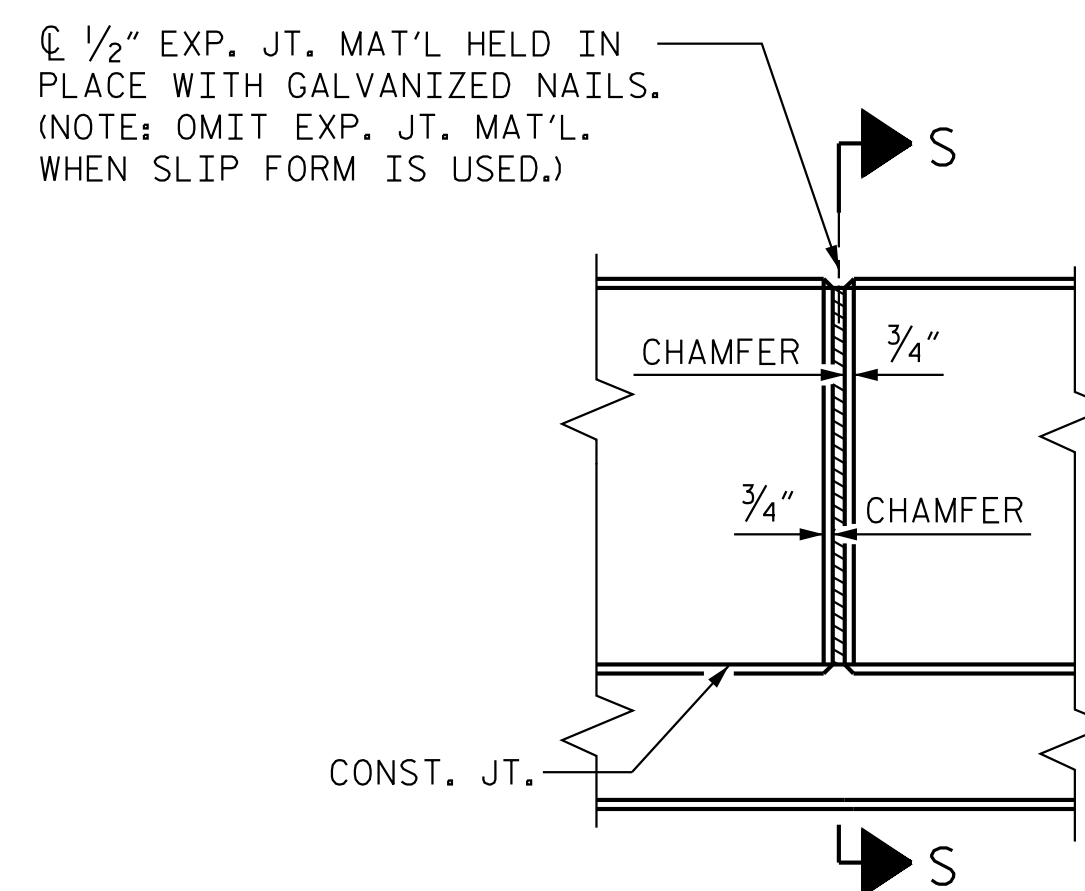
FOR DETAILS OF GUARDRAIL ANCHOR ASSEMBLIES, SEE
"GUARDRAIL ANCHORAGE DETAILS FOR METAL RAIL" SHEET.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(C) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

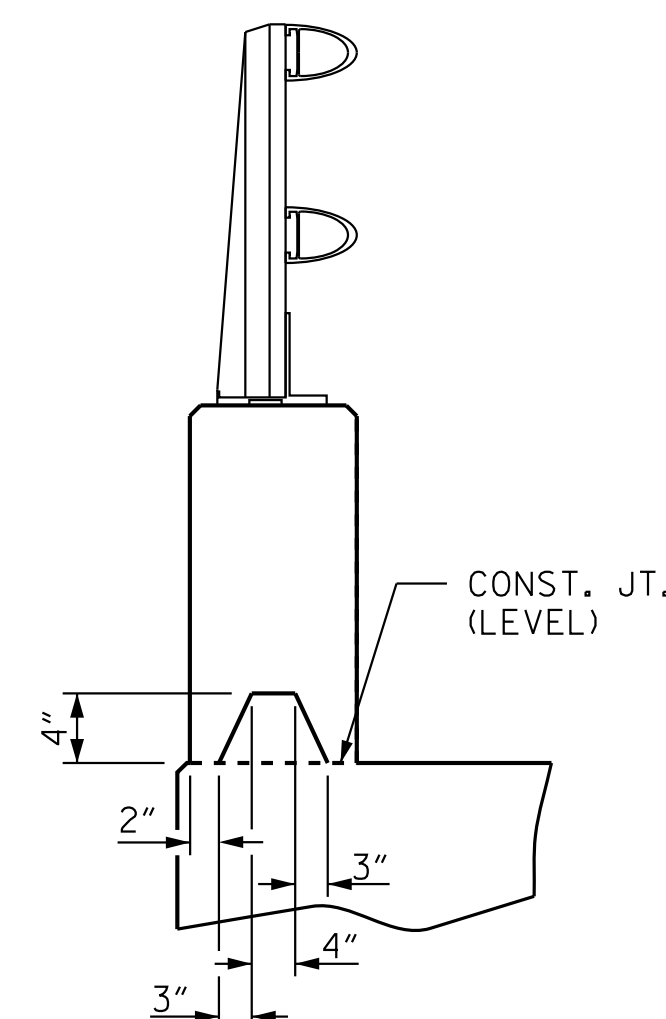


ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL						
2 CONCRETE PARAPETS AND 4 END POSTS						
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	
* B1	48	#5	STR	24'-8"	1,235	
* B2	8	#5	STR	22'-0"	184	
* B3	16	#5	STR	22'-3"	371	
* B4	8	#5	STR	22'-7"	188	
* E1	8	#7	STR	2'-6"	41	
* E2	8	#7	STR	3'-0"	49	
* E3	8	#7	STR	3'-6"	57	
* E4	8	#7	STR	4'-0"	65	
* E5	8	#7	STR	4'-4"	71	
* F1	4	#6	STR	1'-9"	11	
* F2	4	#6	STR	1'-11"	12	
* F3	4	#6	STR	2'-11"	18	
* F4	4	#6	STR	3'-2"	19	
* F5	4	#6	STR	3'-8"	22	
* F6	4	#6	STR	3'-10"	23	
* S1	226	#5	1	5'-5"	1,277	
* S2	226	#5	2	5'-6"	1,296	
* S3	32	#5	STR	2'-10"	95	
* EPOXY COATED REINFORCING STEEL 5,034 LBS.						
CLASS AA CONCRETE					26.9 C.Y.	
1'-2" X 2'-6" CONCRETE PARAPET				240.5 LIN. FT.		



ELEVATION AT EXPANSION JOINTS



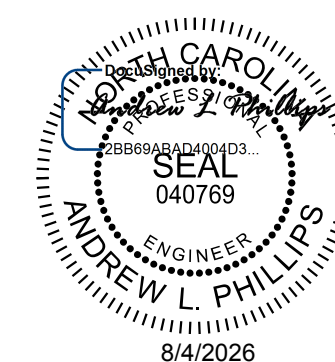
SECTION S-S

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

ELEVATION AT EXPANSION JOINTS

PROJECT NO. I-5715
MECKLENBURG COUNTY
 STATION: 15+64.95 -Y3-

SHEET 2 OF 4



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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE
EXTERIOR CONCRETE
PARAPET DETAILS

REVISIONS						SHEET NO. S6-19
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

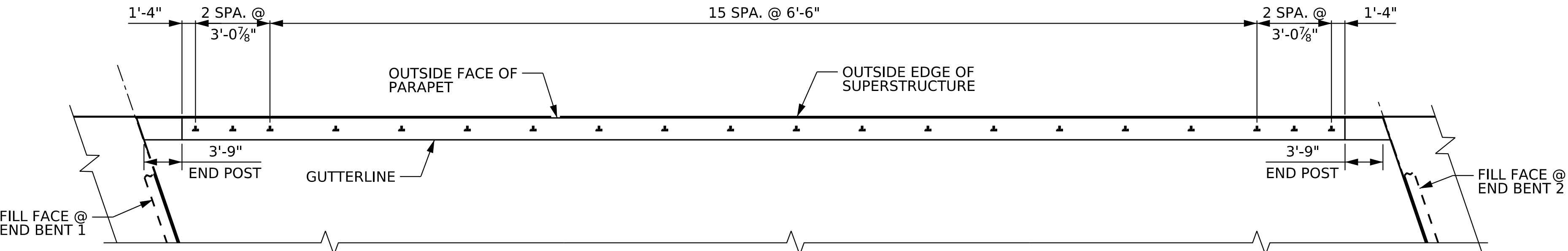
STR. #6

DRAWN BY: T. K. BOYD	DATE: 03/2026
CHECKED BY: E. W. SPRABERRY	DATE: 03/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS	DATE: 03/2026

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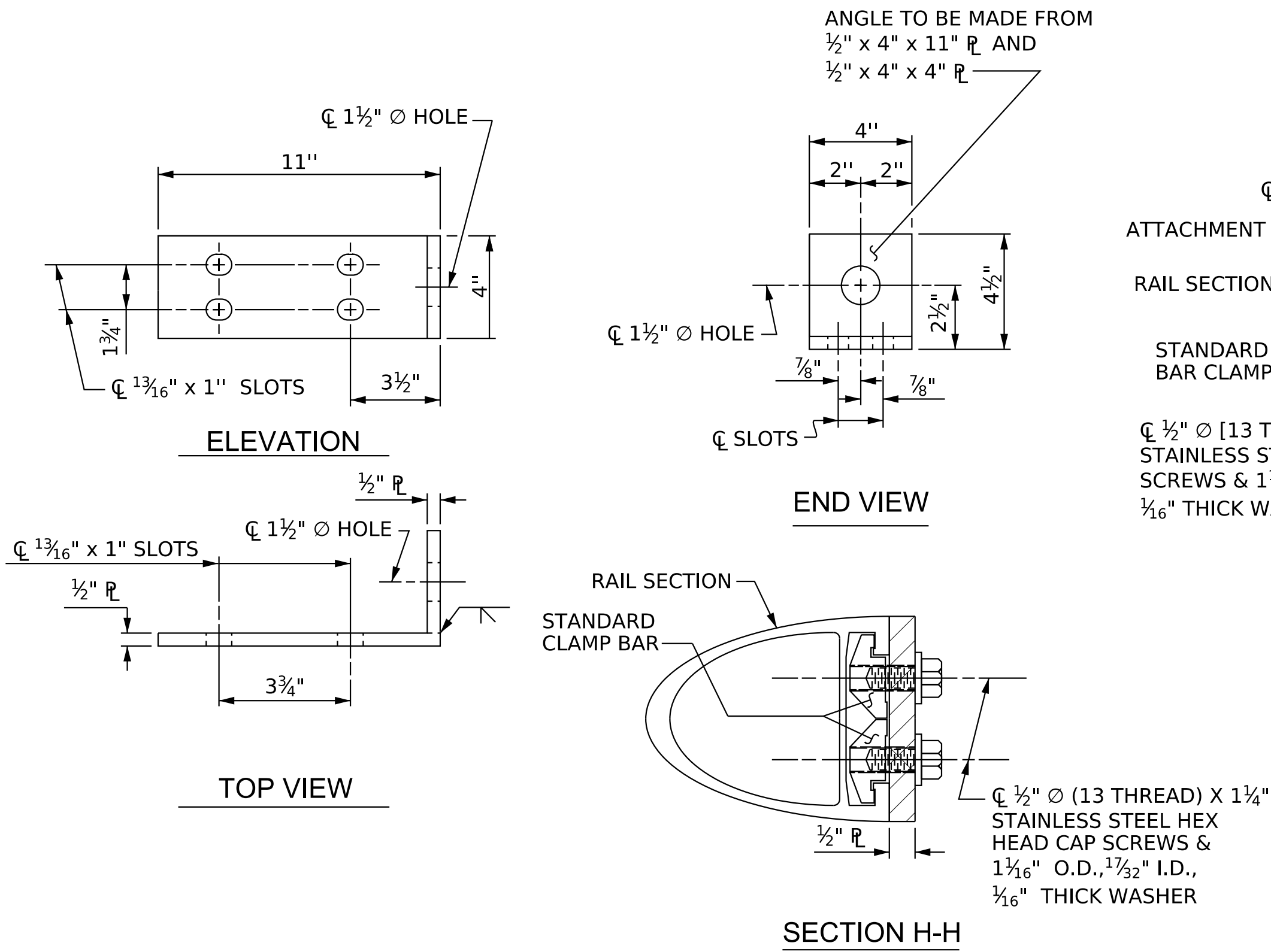
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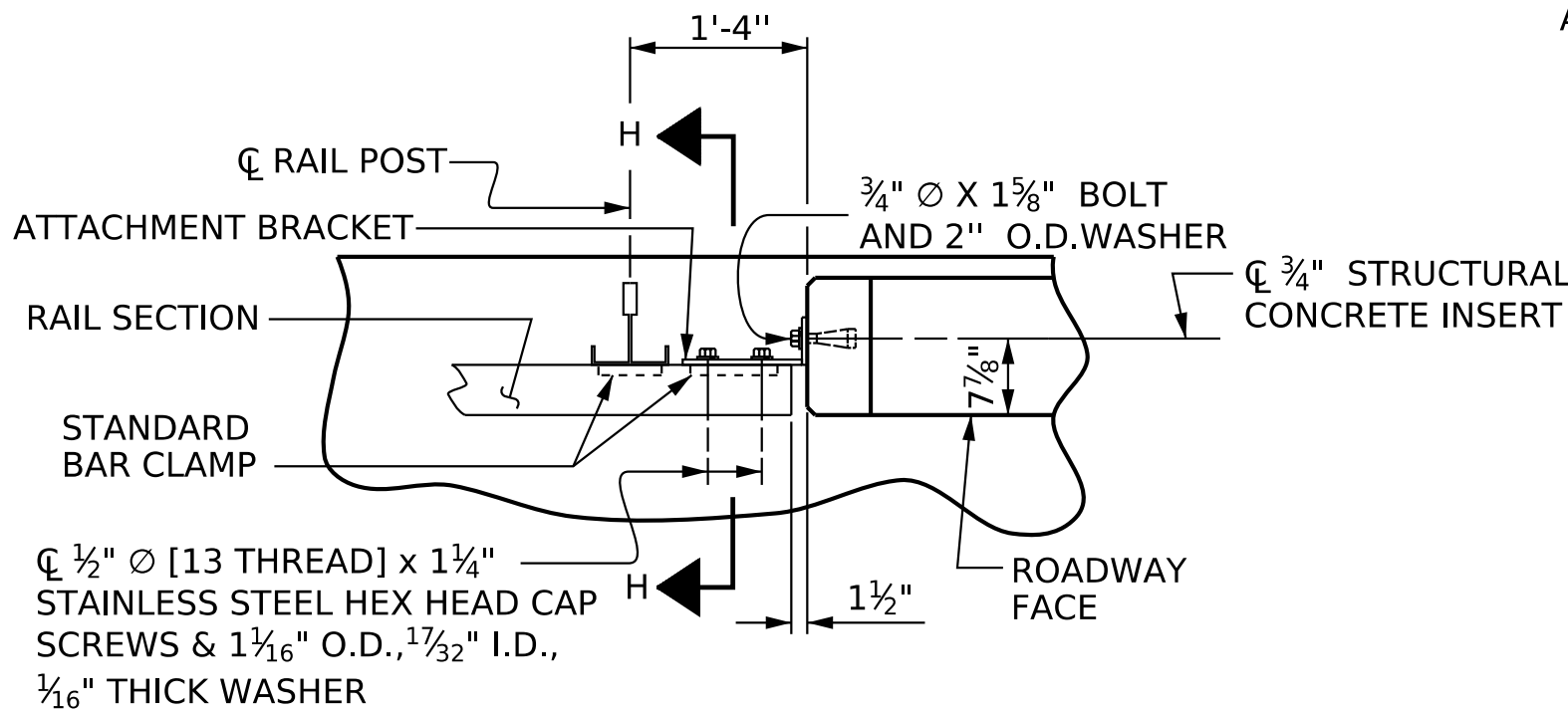
PLAN OF RAIL POST SPACINGS

(LEFT SIDE SHOWN, RIGHT SIDE SIMILAR)

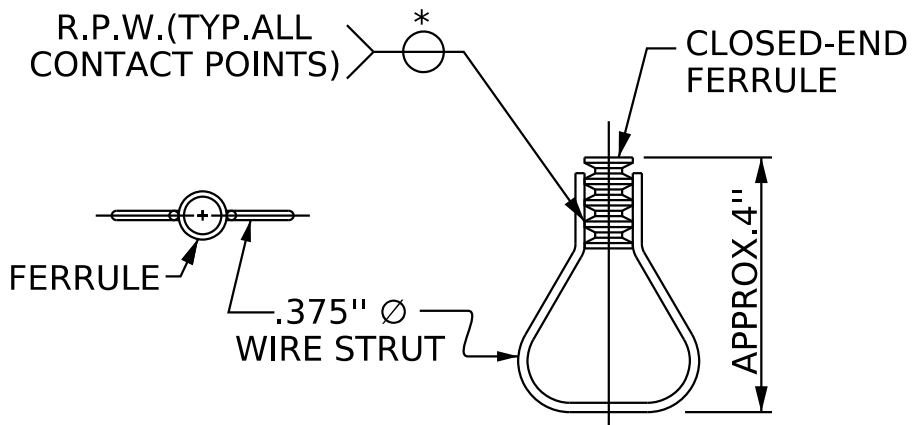


FIXED

DETAILS FOR ATTACHING METAL RAIL TO END POST

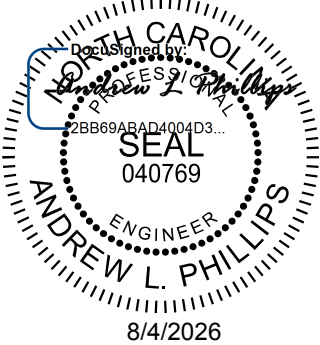


PLAN - RAIL AND END POST



STRUCTURAL CONCRETE INSERT

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



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NOTES

STRUCTURAL CONCRETE INSERT

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

- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1¹/₂".
- 1 - 3³/₄" Ø x 1¹/₈" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3³/₄" Ø x 1¹/₈" GALVANIZED BOLT AND WASHER, THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7¹/₁₆" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

METAL RAIL TO END POST CONNECTION

THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

- 1¹/₂" PLATES SHALL CONFORM TO ASTM A36 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- 3³/₄" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3³/₄" Ø x 1¹/₈" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3³/₄" Ø x 1¹/₈" BOLT SHALL HAVE N. C. THREADS.
- CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.
- STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
- 1¹/₂" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

THE 3³/₄" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3³/₄" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1¹/₂" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3³/₄" Ø x 1¹/₈" BOLT WITH WASHER SHALL BE REPLACED WITH A 3³/₄" Ø x 6¹/₂" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3³/₄" Ø x 1¹/₈" BOLT SHALL APPLY TO THE 3³/₄" Ø x 6¹/₂" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

PROJECT NO. I-5715
MECKLENBURG COUNTY
STATION: 15+64.95 -Y3-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
RAIL POST SPACINGS
AND END OF RAIL
DETAILS

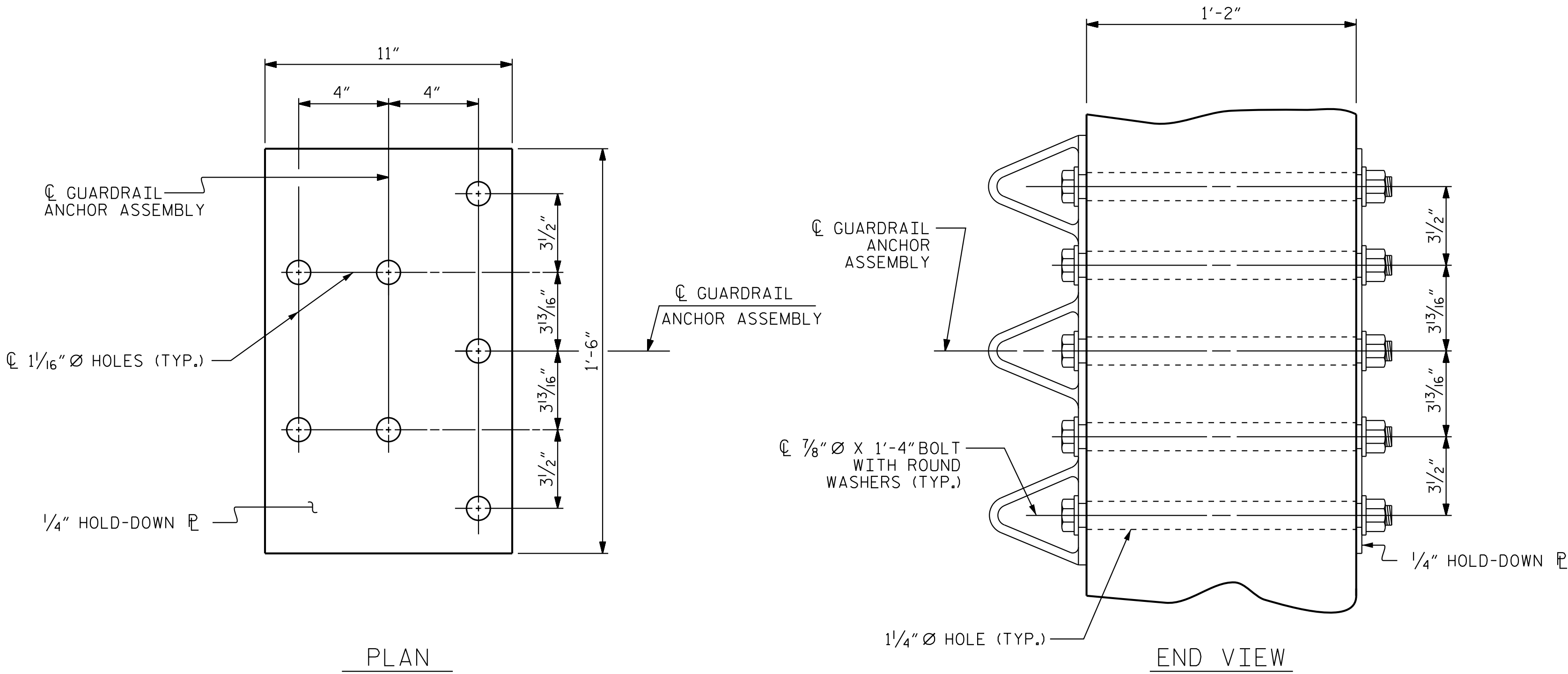
REVISIONS						SHEET NO. S6-20
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

STR. #6

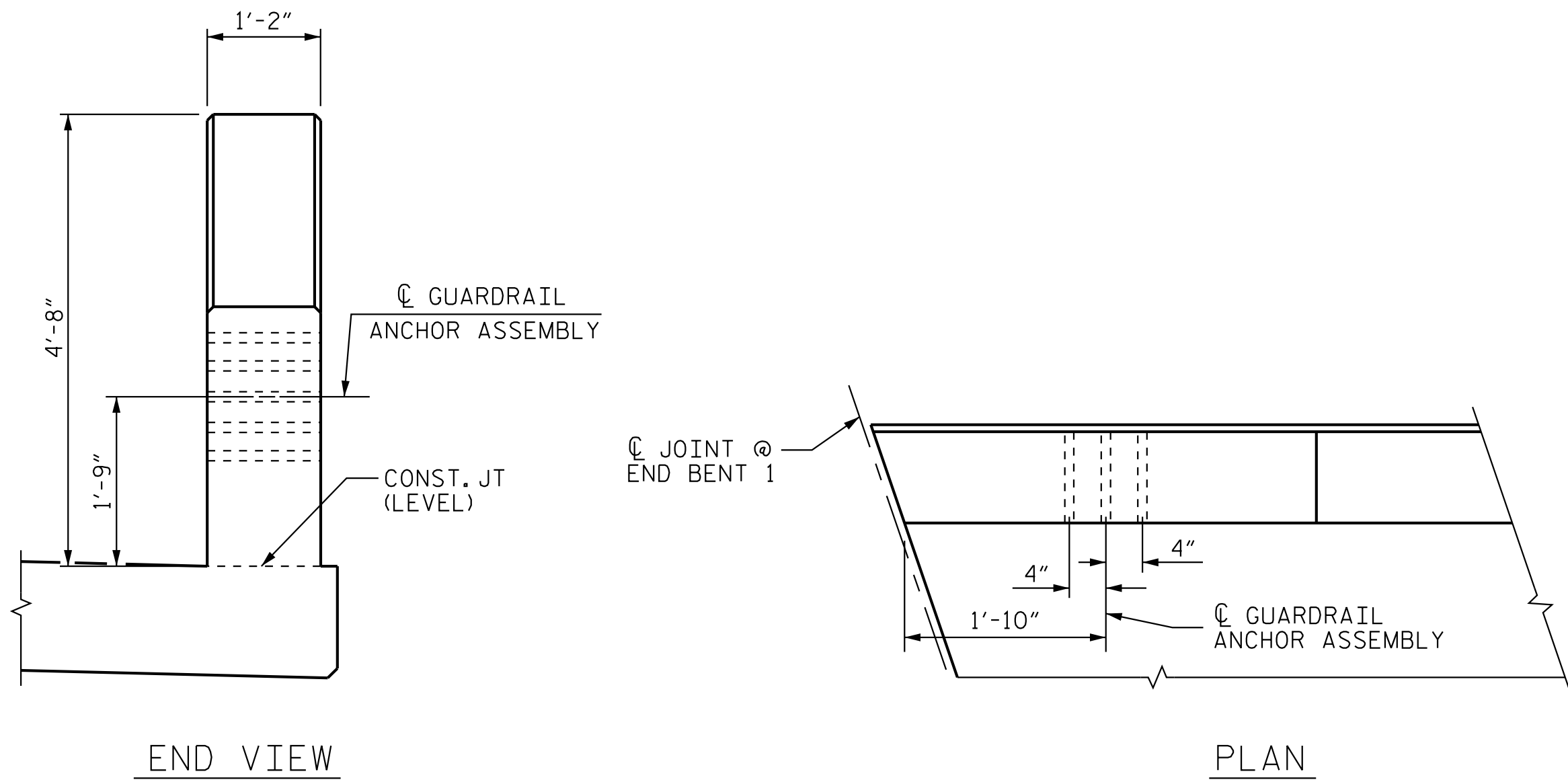
STD. NO. BMR2

DRAWN BY: T. K. BOYD DATE: 03/2026
CHECKED BY: E. W. SPRABERRY DATE: 03/2026
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 03/2026

K:\B01_Structures\Bridges\N\01036524 - I-5715 Structure Design\Coord\gn\Site *3\Structure 6\Final\406_041_15115_SWL_GRI_59148_021.dgn 8/3/2026



GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF GUARDRAIL ANCHOR AT END POST

END BENT 1 SHOWN, END BENT 2 SIMILAR

NOTES

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

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

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

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

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

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

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

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

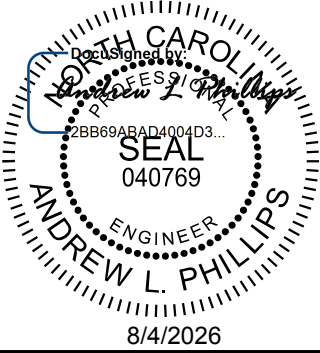


SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT

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MECKLENBURG COUNTY
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SHEET 4 OF 4



Kimley»Horn

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

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE
DETAILS FOR
METAL RAIL

REVISIONS						SHEET NO. S6-21
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 35
2			4			

STR. #6