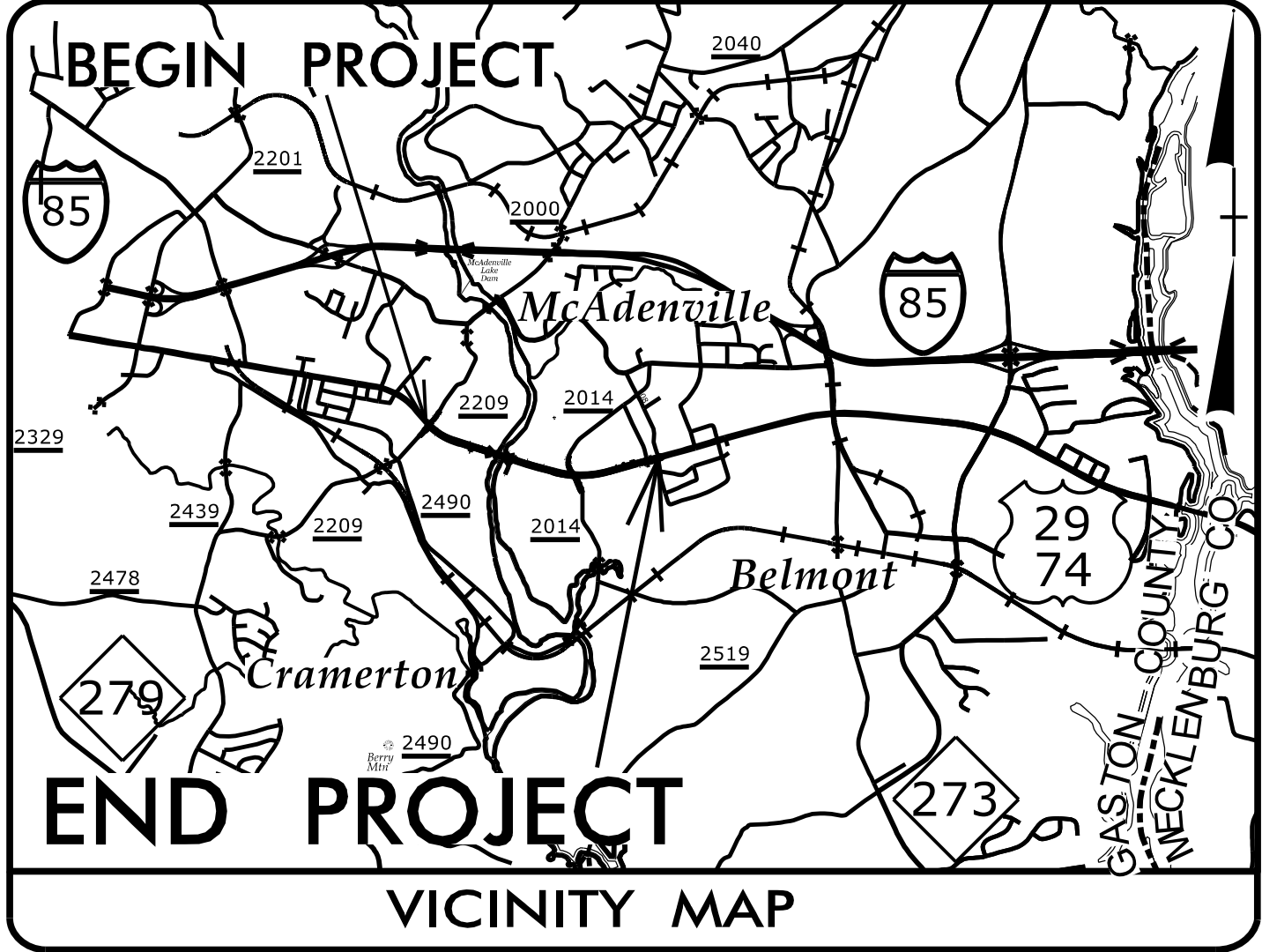


09.08/2019

TIP PROJECT: U-6146/B-5857

CONTRACT: C204481

STRUCTURE



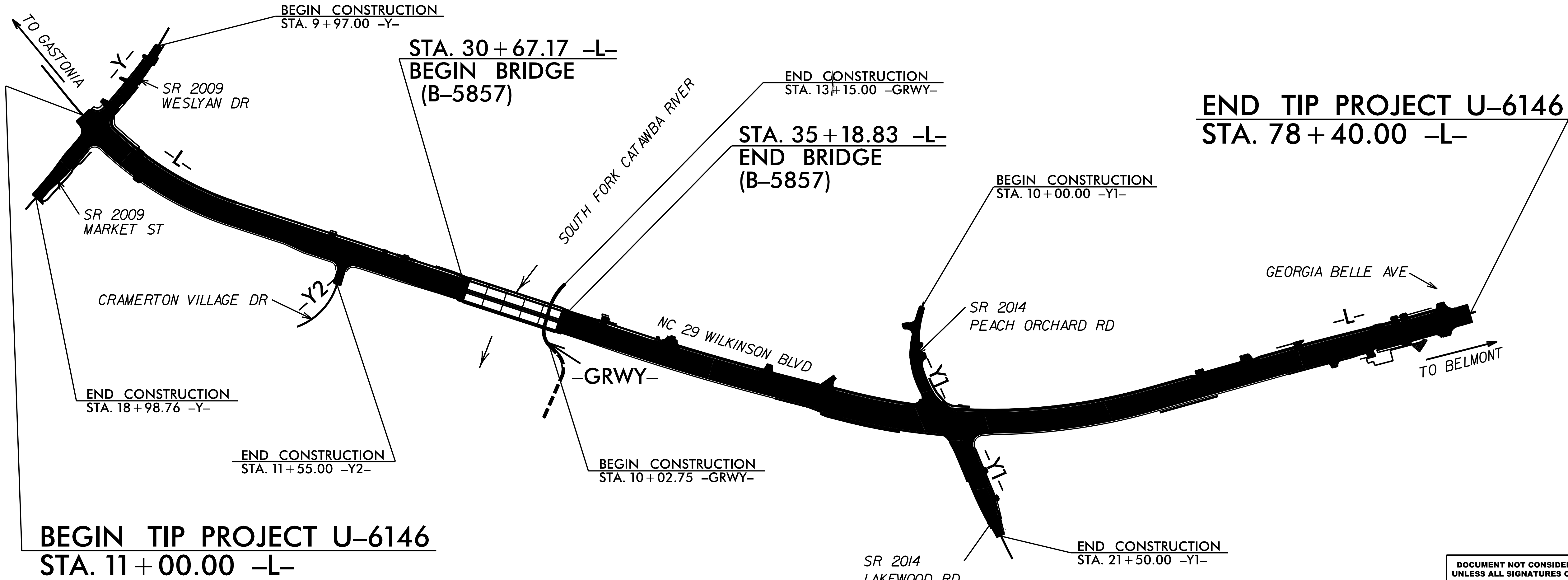
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

GASTON COUNTY

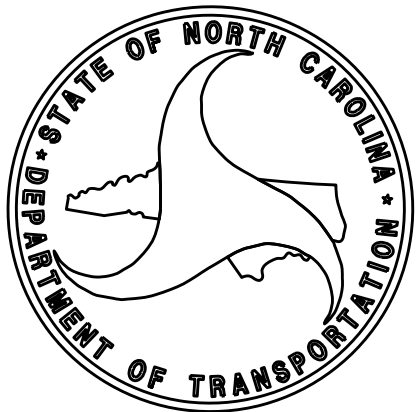
LOCATION: US 29/US 74 (WILKINSON BLVD) FROM SR 2209  
(WESLEYAN DR/MARKET ST) TO SR 2016/SR 2017  
(GEORGIA BELLE AVE/HUBBARD ST) COMBINED  
WITH B-5857.

TYPE OF WORK: GRADING, PAVING, DRAINAGE, CURB & GUTTER,  
STRUCTURE AND RETAINING WALLS

| STATE               | STATE PROJECT REFERENCE NO. | SHEET NO.   | TOTAL SHEETS |
|---------------------|-----------------------------|-------------|--------------|
| N.C.                | U-6146 /B-5857              |             |              |
| STATE PROJ. NO.     | P.A. PROJ. NO.              | DESCRIPTION |              |
| 48392.1.1/45810.1.1 | N/A                         | PE          |              |
| 48392.2.1/45810.2.1 | N/A                         | ROW         |              |
| 48392.2.2           | N/A                         | UTIL.       |              |
|                     |                             |             |              |
|                     |                             |             |              |
|                     |                             |             |              |



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



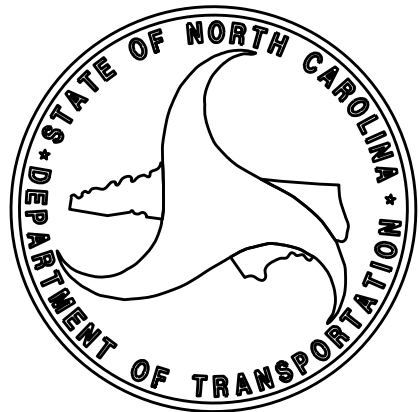
**DESIGN DATA**  
ADT 2016 = 22,600  
ADT 2040 = 26,100  
K = 12 %  
D = 70 %  
T = 4 % \*  
V = 50 MPH  
\* TTST = 1% DUAL = 3%  
FUNC CLASS =  
URBAN ARTERIAL  
REGIONAL TIER

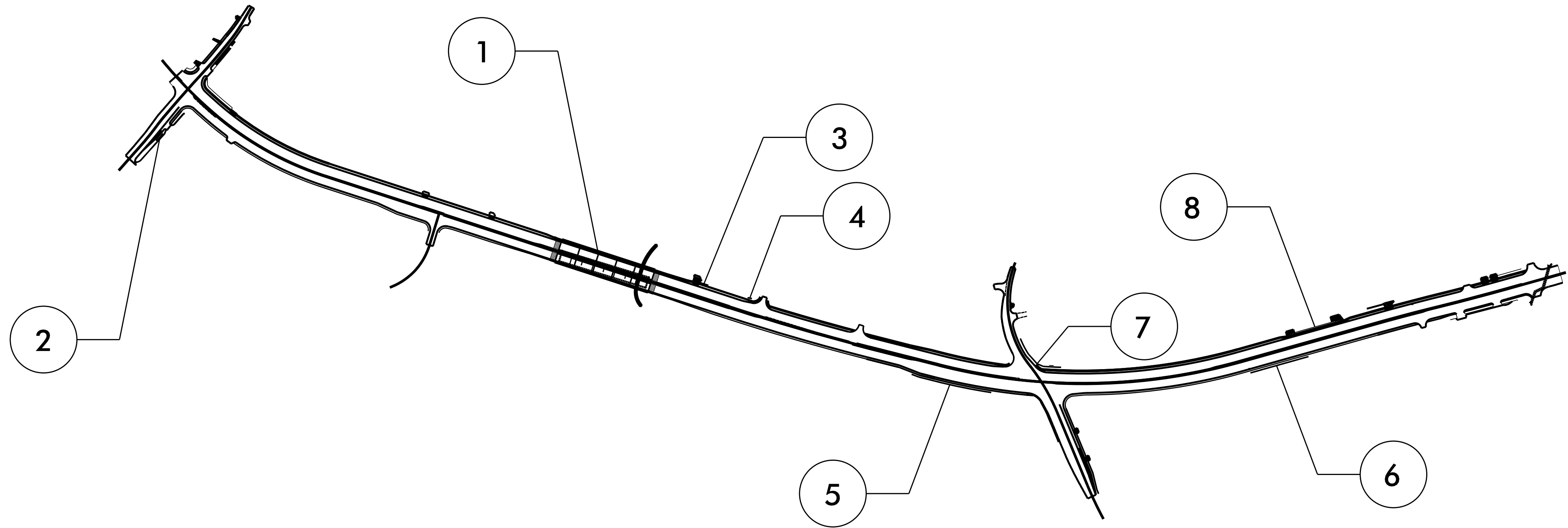
**PROJECT LENGTH**  
U-6146  
LENGTH ROADWAY TIP PROJECT U-6146 = 1.191 MILES  
TOTAL LENGTH TIP PROJECT U-6146 = 1.191 MILES  
B-5857  
LENGTH STRUCTURE TIP PROJECT B-5857 = 0.086 MILES  
TOTAL LENGTH TIP PROJECT B-5857 = 0.086 MILES  
GRAND TOTAL LENGTH OF TIP PROJECT U-6146/B-5857 = 1.277 MILES

PLANS PREPARED BY:  
TGS ENGINEERS  
201 W. MARION ST. SUITE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO. C-0275  
LETTING DATE:  
NOVEMBER 17, 2026  
2024 STANDARD SPECIFICATIONS

PLANS PREPARED FOR:  
NORTH CAROLINA DEPARTMENT  
OF TRANSPORTATION  
DIVISION 12  
1710 E. MARION ST.  
SHELBY, NC 28150  
MARC CHEEK, PE  
STRUCTURES DESIGN ENGINEER

**STRUCTURES DESIGN ENGINEER**  
NORTH CAROLINA PROFESSIONAL  
SEAL 20125  
MARSHALL G. CHEEK, JR.  
ENGINEER  
7/29/2026  
Signed by: Marshall G. Cheek, Jr.  
SIGNATURE: P.E.





| INDEX |                               |                                                                                                |                |
|-------|-------------------------------|------------------------------------------------------------------------------------------------|----------------|
| STR   | STATION                       | DESCRIPTION                                                                                    | SHEET NUMBERS  |
| 1     | 32+93.00 -L-                  | BRIDGE OVER SOUTH FORK CATAWBA RIVER ON US 29/74 (WILKINSON BLVD.) BETWEEN SR 2209 AND SR 2014 | S-1 THRU S-100 |
| W1    | 17+10.00 -Y- TO 17+55.00 -Y-  | CAST-IN-PLACE GRAVITY RETAINING WALL                                                           | W-1 THRU W-3   |
| W2    | 37+32.00 -L- TO 37+75.00 -L-  | CAST-IN-PLACE GRAVITY RETAINING WALL                                                           | W-1 THRU W-3   |
| W3    | 39+65.00 -L- TO 39+85.00 -L-  | CAST-IN-PLACE GRAVITY RETAINING WALL                                                           | W-1 THRU W-3   |
| W4    | 47+90.00 -L- TO 51+60.00 -L-  | MSE RETAINING WALL                                                                             | W4-1 THRU W4-3 |
| W5    | 63+39.00 -L- TO 66+17.00 -L-  | SMSE RETAINING WALL                                                                            | W5-1 THRU W5-6 |
| W6    | 13+44.00 -Y1- TO 54+70.00 -L- | PRECAST GRAVITY RETAINING WALL                                                                 | W-5 THRU W-6   |
| W7    | 65+84.00 -L- TO 67+82.00 -L-  | CAST-IN-PLACE GRAVITY RETAINING WALL                                                           | W-1 THRU W-3   |

PROJECT NO. U-6146/B-5857  
GASTON COUNTY

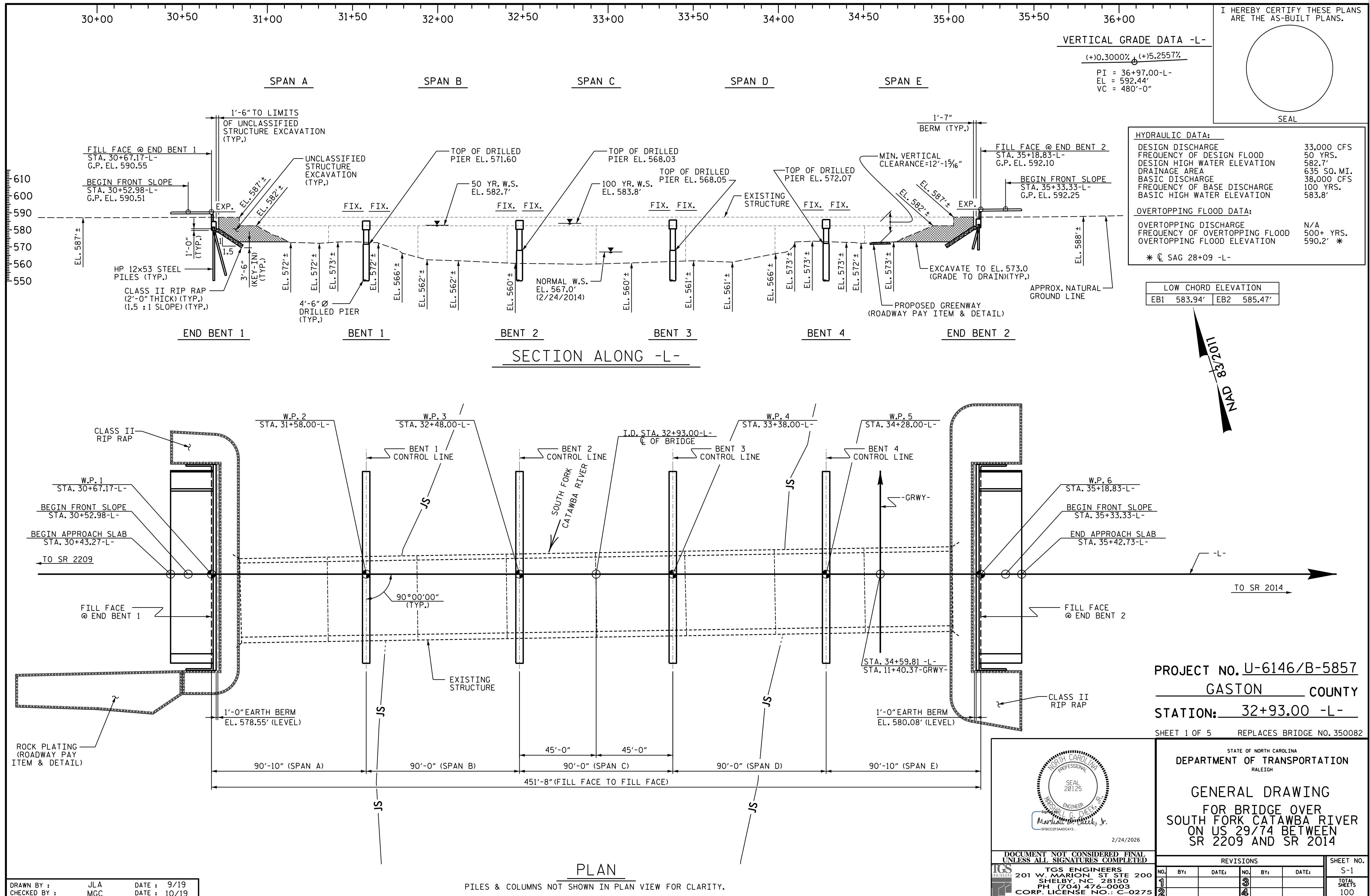
2/24/2026

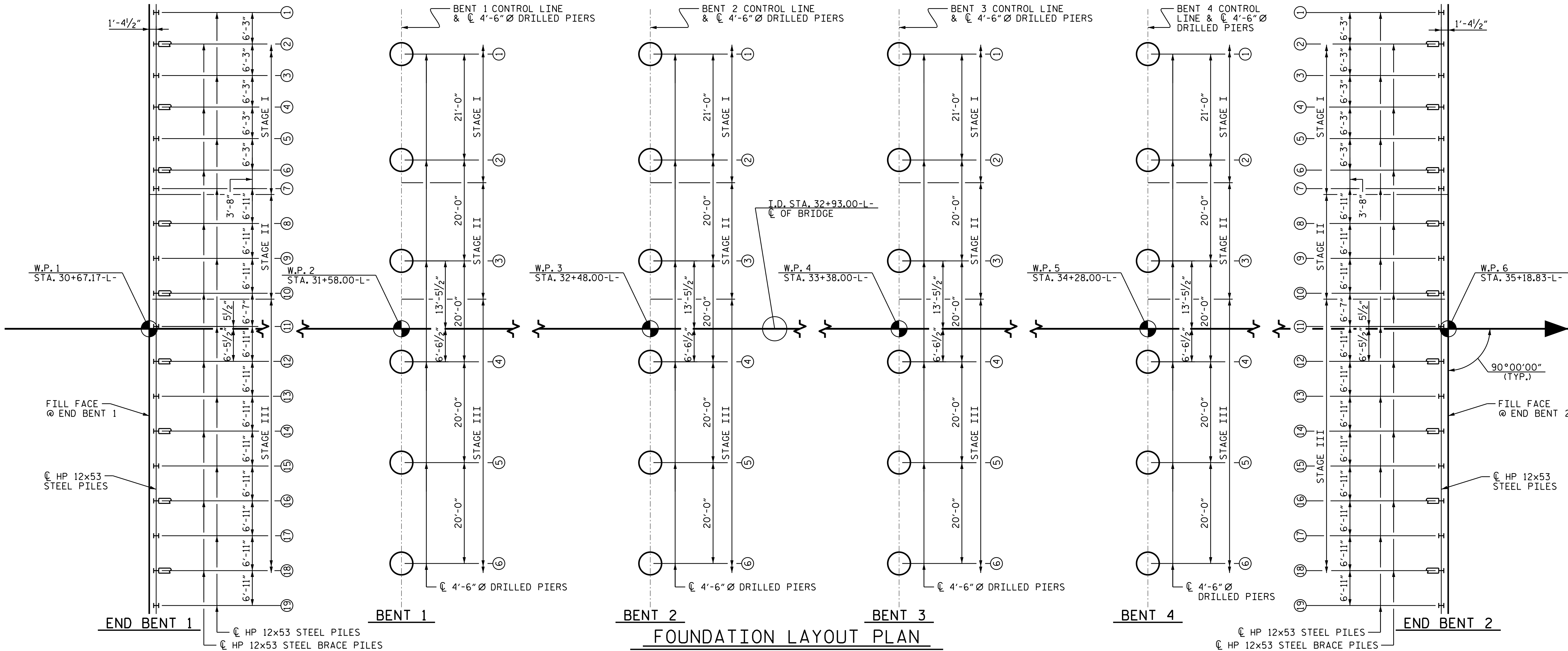
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST. STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STRUCTURES INDEX

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





ALL PILES ARE HP12x53 STEEL PILES. DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES.

## NOTES

OBSERVE A ONE MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO WITHIN 2 FEET OF FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENT 1 AND END BENT 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

DO NOT BEGIN END BENT CONSTRUCTION AT END BENT 1 AND END BENT 2 UNTIL FILL HAS BEEN PLACED AND COMPLETION OF THE WAITING PERIOD.

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

TESTING THE FIRST PRODUCTION PILES WITH THE DPT DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED AT END BENT 1 AND END BENT 2. FOR DYNAMIC PILE TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

INSTALL DRILLED PIERS DP1, DP2, DP3, AND DP4 AT BENT 1 TO A TIP ELEVATION NO HIGHER THAN 512.9 FT (DP1 AND DP2) AND 520.8 FT (DP3 AND DP4) WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 16 FT (DP1 AND DP2) AND 18 FT (DP3 AND DP4) INTO WEATHERED ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

INSTALL DRILLED PIERS DP5 AND DP6 AT BENT 1 TO A TIP ELEVATION NO HIGHER THAN 527.1 FT (DP5 AND DP6) WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 9 FT INTO CRYSTALLINE ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

INSTALL DRILLED PIERS DP1, DP2, DP3, AND DP4 AT BENT 2 TO A TIP ELEVATION NO HIGHER THAN 519.9 FT (DP1 AND DP2) AND 518.4 FT (DP3 AND DP4) WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 16 FT INTO WEATHERED ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

INSTALL DRILLED PIERS DP5 AND DP6 AT BENT 2 TO A TIP ELEVATION NO HIGHER THAN 520.7 FT WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 9 FT INTO CRYSTALLINE ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

INSTALL DRILLED PIERS AT BENT 3 TO A TIP ELEVATION NO HIGHER THAN 506.7 FT (DP1 AND DP2), 524.3 FT (DP3 AND DP4), AND 530.8 FT (DP5 AND DP6) WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 9 FT INTO CRYSTALLINE ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

INSTALL DRILLED PIERS DP1, DP2, DP5, AND DP6 AT BENT 4 TO A TIP ELEVATION NO HIGHER THAN 523.1 FT (DP1 AND DP2) AND 527.5 FT (DP5 AND DP6) WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 9 FT INTO CRYSTALLINE ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

INSTALL DRILLED PIERS DP3 AND DP4 AT BENT 4 TO A TIP ELEVATION NO HIGHER THAN 524.0 FT WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 16 FT INTO WEATHERED ROCK AS DEFINED BY ARTICLE 411-1 OF THE STANDARD SPECIFICATIONS.

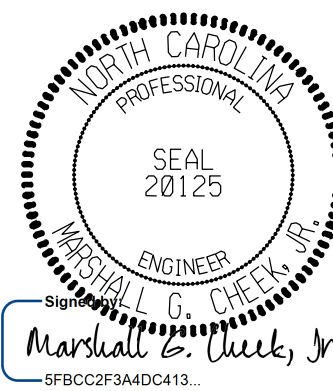
CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CSL TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00 -L-

SHEET 2 OF 5



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

GENERAL DRAWING  
FOR BRIDGE OVER  
SOUTH FORK CATAWBA RIVER  
ON US 29/74 BETWEEN  
SR 2209 AND SR 2014

| REVISIONS |    |      |     |    |      | SHEET NO.           |
|-----------|----|------|-----|----|------|---------------------|
| NO.       | BY | DATE | NO. | BY | DATE |                     |
| 1         |    |      | 3   |    |      | S-2                 |
| 2         |    |      | 4   |    |      | TOTAL SHEETS<br>100 |

DRAWN BY : JLA  
CHECKED BY : MGC  
DATE : 2/22  
DATE : 2/22

## (BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

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

\* Pre-drilling for Piles is required for end bents/bents with a pre-drilling length and at the Contractor's option for end bents/bents with pre-drilling information but no pre-drilling length.

(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

## (BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

\* Factored Dead Load is factored weight of pile above the groundline.

## (BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

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

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

1. The Pile & Drilled Pier Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Robert E. Kral, #042642) on 08-31-2021.

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.

4. The Engineer may adjust the quantity for Permanent Steel Casing, SPTs, TIPS, CSL Testing, SID Inspections and PITs when necessary.

|              |     |        |       |
|--------------|-----|--------|-------|
| DRAWN BY :   | ZCS | DATE : | 10/25 |
| CHECKED BY : | MGC | DATE : | 11/25 |

(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

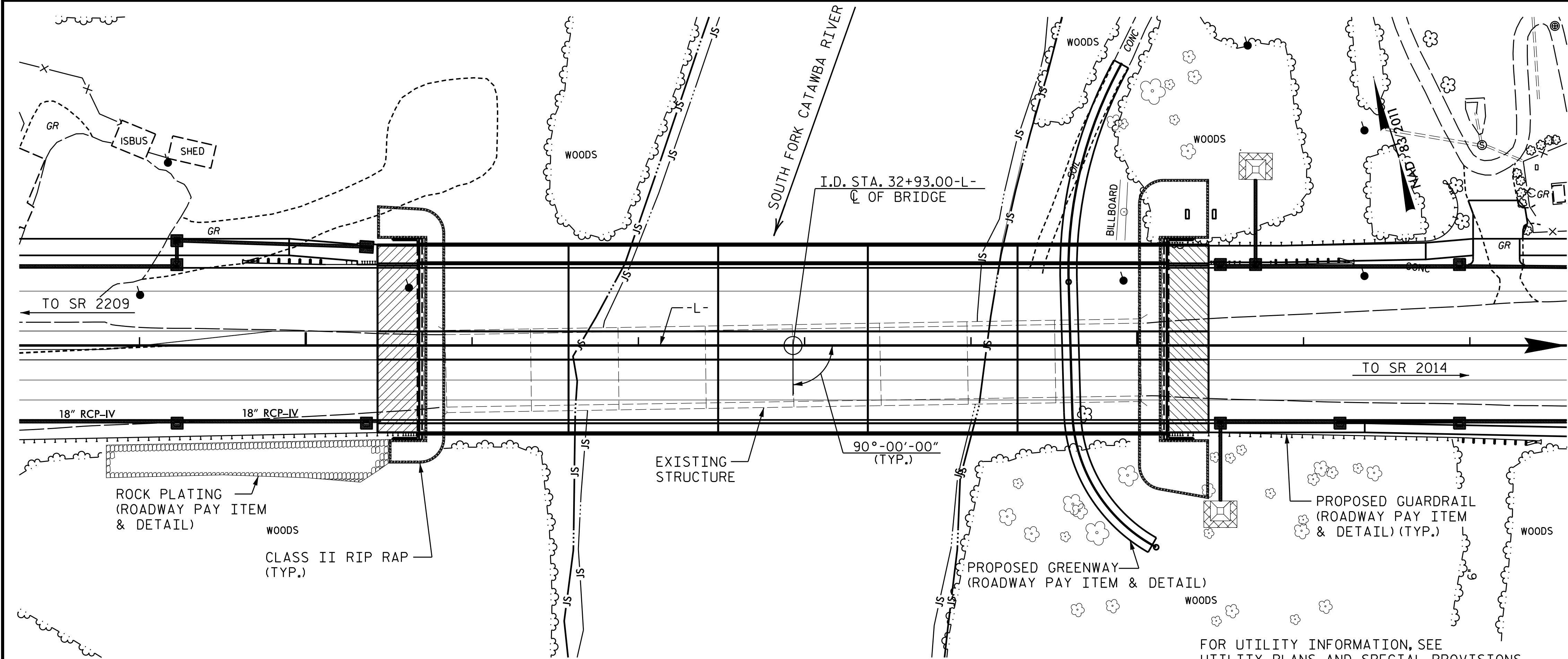
\* EST = Pile Order Lengths from estimated pile lengths; DPT = Pile order lengths based on dynamic pile testing. For groups of end bents/bents with pile order lengths based on DPT, the first end bent/bent no. listed for each group is the representative end bent/bent with the DPT.

GASTON COUNTY

SHEET 3 OF 5

---

BENCHMARK #3: RR SPIKE IN 16" TULIP POPLAR: 71 FT RIGHT OF STA 35+44.35 -L-; ELEV. 580.97



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.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGES."

AFTER SERVING AS A TEMPORARY STRUCTURE, THE EXISTING 8-SPAN BRIDGE (1 @ 52'-4", 1 @ 52'-6", 1 @ 52'-5", 1 @ 52'-3", 3 @ 52'-6", 1 @ 52'-4"), WITH A REINFORCED CONCRETE DECK GIRDER SUPERSTRUCTURE WITH A 3" ASPHALT WEARING SURFACE AND A CLEAR ROADWAY WIDTH OF 44'-0" AND WITH A SUBSTRUCTURE CONSISTING OF REINFORCED CONCRETE ABUTMENTS AT THE END BENTS AND REINFORCED CONCRETE POST AND WEB/REINFORCED CONCRETE PILES AT THE BENTS AND LOCATED AT THE SITE OF THE PROPOSED BRIDGE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING THE CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR ASBESTOS ASSESSMENT, 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 ARTICLE 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA (SHEET 1 OF 5) SHALL BE EXCAVATED FOR A DISTANCE OF 95 FT LT AND 90 FT RT OF -L- AT END BENT 1 AND 95 FT TO EACH SIDE OF -L- AT END BENT 2 AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18-EVALUATING SCOUR AT BRIDGE."

FOR STRUCTURE DRAINAGE SYSTEM, SEE SPECIAL PROVISIONS.

FOR ELECTRICAL CONDUIT SYSTEM, SEE SPECIAL PROVISIONS.

FOR SECURING OF VESSELS, SEE SPECIAL PROVISIONS.

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

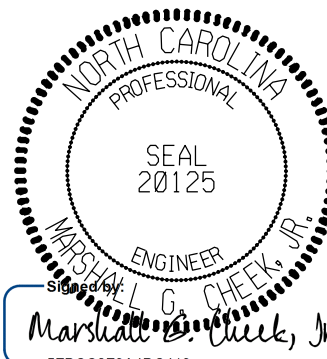
THE SCOUR CRITICAL ELEVATION FOR BENT 1 IS ELEVATION 540.00. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATION FOR BENT 2 IS ELEVATION 537.00. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATION FOR BENT 3 IS ELEVATION 540.00. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATION FOR BENT 4 IS ELEVATION 546.00. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS, SEE SPECIAL PROVISIONS.



10/7/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST. STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00 -L-

SHEET 4 OF 5

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

GENERAL DRAWING  
FOR BRIDGE OVER  
SOUTH FORK CATAWBA RIVER  
ON US 29/74 BETWEEN  
SR 2209 AND SR 2014

| REVISIONS |     |       |     |     |       | SHEET NO.        |
|-----------|-----|-------|-----|-----|-------|------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                  |
| 1         |     |       | 3   |     |       | S-4              |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 100 |

| TOTAL BILL OF MATERIAL |                                                           |                               |                     |                               |                                   |                                                  |                 |             |                                   |                               |                        |                  |                       |                   |
|------------------------|-----------------------------------------------------------|-------------------------------|---------------------|-------------------------------|-----------------------------------|--------------------------------------------------|-----------------|-------------|-----------------------------------|-------------------------------|------------------------|------------------|-----------------------|-------------------|
| ITEM                   | CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS | REMOVAL OF EXISTING STRUCTURE | ASBESTOS ASSESSMENT | 4'-6" Ø DRILLED PIERS IN SOIL | 4'-6" Ø DRILLED PIERS NOT IN SOIL | PERMANENT STEEL CASING FOR 4'-6" Ø DRILLED PIERS | SID INSPECTIONS | CSL TESTING | UNCLASSIFIED STRUCTURE EXCAVATION | REINFORCED CONCRETE DECK SLAB | GROOVING BRIDGE FLOORS | CLASS A CONCRETE | BRIDGE APPROACH SLABS | REINFORCING STEEL |
|                        | LUMP SUM                                                  | LUMP SUM                      | LUMP SUM            | LIN. FT.                      | LIN. FT.                          | LIN. FT.                                         | EA.             | EA.         | LUMP SUM                          | SQ. FT.                       | SQ. FT.                | CU. YDS.         | LUMP SUM              | LBS.              |
| SUPERSTRUCTURE         |                                                           | LUMP SUM                      | LUMP SUM            |                               |                                   |                                                  |                 |             |                                   | 51,650                        | 34,247                 |                  | LUMP SUM              |                   |
| END BENT 1             |                                                           |                               |                     |                               |                                   |                                                  |                 |             | LUMP SUM                          |                               |                        | 90.2             |                       | 12,975            |
| BENT 1                 |                                                           |                               |                     | 235.36                        | 72.80                             |                                                  | 1               | 2           |                                   |                               |                        | 128.9            |                       | 47,827            |
| BENT 2                 |                                                           |                               |                     | 218.34                        | 72.00                             | 168.18                                           | 2               | 2           |                                   |                               |                        | 139.7            |                       | 47,443            |
| BENT 3                 |                                                           |                               |                     | 222.64                        | 62.20                             | 138.30                                           | 6               | 2           |                                   |                               |                        | 140.3            |                       | 47,914            |
| BENT 4                 |                                                           |                               |                     | 210.52                        | 72.80                             |                                                  | 1               | 2           |                                   |                               |                        | 129.9            |                       | 45,362            |
| END BENT 2             |                                                           |                               |                     |                               |                                   |                                                  |                 |             | LUMP SUM                          |                               |                        | 90.2             |                       | 12,975            |
| TOTALS                 | LUMP SUM                                                  | LUMP SUM                      | LUMP SUM            | 886.86                        | 279.80                            | 306.48                                           | 10              | 8           | LUMP SUM                          | 51,650                        | 34,247                 | 719.2            | LUMP SUM              | 214,496           |

| TOTAL BILL OF MATERIAL |                                 |                                  |          |                                                         |  |                        |          |                      |                                |                                |                                |                         |                      |                           |                           |                             |                                          |                            |
|------------------------|---------------------------------|----------------------------------|----------|---------------------------------------------------------|--|------------------------|----------|----------------------|--------------------------------|--------------------------------|--------------------------------|-------------------------|----------------------|---------------------------|---------------------------|-----------------------------|------------------------------------------|----------------------------|
| ITEM                   | SPIRAL COLUMN REINFORCING STEEL | 54" PRESTRESSED CONCRETE GIRDERS |          | PILE DRIVING EQUIPMENT SETUP FOR HP 12 x 53 STEEL PILES |  | HP 12 x 53 STEEL PILES |          | DYNAMIC PILE TESTING | 1'-2" x 2'-6" CONCRETE PARAPET | 1'-4" x 2'-6" CONCRETE PARAPET | RIP RAP CLASS II (2'-0" THICK) | GEOTEXTILE FOR DRAINAGE | ELASTOMERIC BEARINGS | ELECTRICAL CONDUIT SYSTEM | STRUCTURE DRAINAGE SYSTEM | ANODIZED TWO BAR METAL RAIL | ANODIZED DOUBLE FACED TWO BAR METAL RAIL | STRIP SEAL EXPANSION JOINT |
|                        | LBS.                            | NO.                              | LIN. FT. | EA.                                                     |  | NO.                    | LIN. FT. | EA.                  | LIN. FT.                       | LIN. FT.                       | TONS                           | SQ. YDS.                | LUMP SUM             | LUMP SUM                  | LUMP SUM                  | LIN. FT.                    | LIN. FT.                                 | LUMP SUM                   |
| SUPERSTRUCTURE         |                                 | 70                               | 6,269.67 |                                                         |  |                        |          |                      | 906.42                         | 499.25                         |                                |                         | LUMP SUM             | LUMP SUM                  | LUMP SUM                  | 866.17                      | 491.75                                   | LUMP SUM                   |
| END BENT 1             |                                 |                                  |          | 19                                                      |  | 19                     | 1,075    | 1                    |                                |                                | 515                            | 575                     |                      |                           |                           |                             |                                          |                            |
| BENT 1                 | 10,304                          |                                  |          |                                                         |  |                        |          |                      |                                |                                |                                |                         |                      |                           |                           |                             |                                          |                            |
| BENT 2                 | 10,488                          |                                  |          |                                                         |  |                        |          |                      |                                |                                |                                |                         |                      |                           |                           |                             |                                          |                            |
| BENT 3                 | 10,391                          |                                  |          |                                                         |  |                        |          |                      |                                |                                |                                |                         |                      |                           |                           |                             |                                          |                            |
| BENT 4                 | 9,659                           |                                  |          |                                                         |  |                        |          |                      |                                |                                |                                |                         |                      |                           |                           |                             |                                          |                            |
| END BENT 2             |                                 |                                  |          | 19                                                      |  | 19                     | 1,015    | 1                    |                                |                                | 625                            | 695                     |                      |                           |                           |                             |                                          |                            |
| TOTALS                 | 40,842                          | 70                               | 6,269.67 | 38                                                      |  | 38                     | 2,090    | 2                    | 906.42                         | 499.25                         | 1,140                          | 1,270                   | LUMP SUM             | LUMP SUM                  | LUMP SUM                  | 866.17                      | 491.75                                   | LUMP SUM                   |

PROJECT NO. U-6146/B-5857

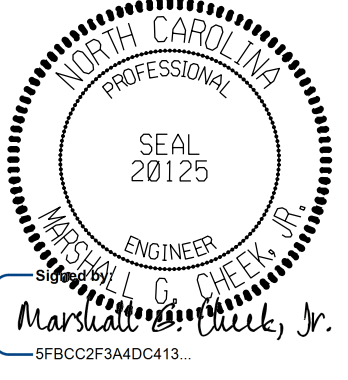
GASTON                      COUNTY

STATION:           32+93.00-L-

SHEET 5 OF 5

DRAWN BY : JLA      DATE : 2/22

CHECKED BY : MGC      DATE : 2/22



10/7/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS

201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

GENERAL DRAWING  
FOR BRIDGE OVER  
SOUTH FORK CATAWBA RIVER  
ON US 29/74 BETWEEN  
SR 2209 AND SR 2014

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-5          |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 100          |

LOAD FACTORS

| DESIGN<br>LOAD<br>RATING<br>FACTORS | LIMIT STATE | $\phi_c$ | $\phi_w$ |
|-------------------------------------|-------------|----------|----------|
|                                     | 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.

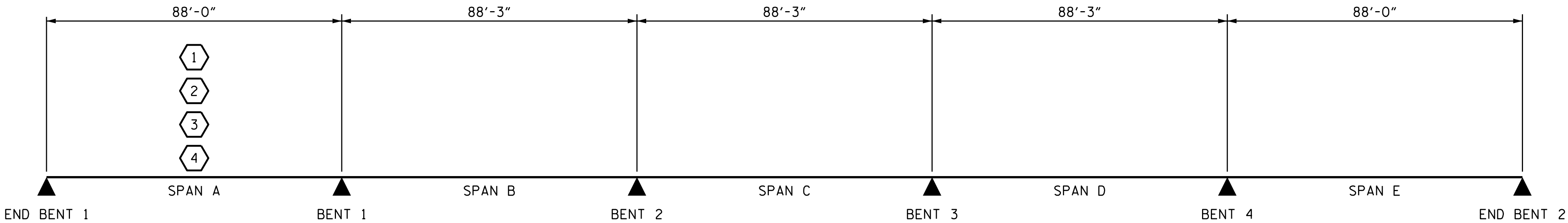
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

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<br>EL - EXTERIOR LEFT GIRDER<br>ER - EXTERIOR RIGHT GIRDER |                                  |

| LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS |                                      |                                                                                     |                                                                                     |                                   |               |                                         |                              |               |      |                 |                                           |                              |               |      |                 |                                           |                                         |                              |               |      |                 |                                           |                   |  |
|-----------------------------------------------------------------------------------|--------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-----------------------------------|---------------|-----------------------------------------|------------------------------|---------------|------|-----------------|-------------------------------------------|------------------------------|---------------|------|-----------------|-------------------------------------------|-----------------------------------------|------------------------------|---------------|------|-----------------|-------------------------------------------|-------------------|--|
| LEVEL                                                                             | VEHICLE                              | WEIGHT (W)<br>(TONS)                                                                |    | MINIMUM<br>RATING FACTORS<br>(RF) | TONS = W x RF | STRENGTH I LIMIT STATE                  |                              |               |      |                 |                                           |                              |               |      |                 |                                           | SERVICE III LIMIT STATE                 |                              |               |      |                 |                                           | COMMENT<br>NUMBER |  |
|                                                                                   |                                      |                                                                                     |                                                                                     |                                   |               | LIVE-LOAD<br>FACTORS (γ <sub>LL</sub> ) | MOMENT                       |               |      |                 |                                           | SHEAR                        |               |      |                 |                                           | LIVE-LOAD<br>FACTORS (γ <sub>LL</sub> ) | MOMENT                       |               |      |                 |                                           |                   |  |
|                                                                                   |                                      |                                                                                     |                                                                                     |                                   |               |                                         | DISTRIBUTION<br>FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM<br>LEFT END OF<br>SPAN (ft) | DISTRIBUTION<br>FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM<br>LEFT END OF<br>SPAN (ft) |                                         | DISTRIBUTION<br>FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM<br>LEFT END OF<br>SPAN (ft) |                   |  |
| DESIGN<br>LOAD<br>RATING                                                          | HL-93 (INVENTORY)                    | N/A                                                                                 |    | 1.21                              | --            | 1.75                                    | .800                         | 1.60          | A    | EL              | 44.00                                     | .896                         | 1.49          | A    | I               | 79.77                                     | 0.80                                    | .800                         | 1.21          | A    | EL              | 44.00                                     |                   |  |
|                                                                                   | HL-93 (OPERATING)                    | N/A                                                                                 |                                                                                     | 1.96                              | --            | 1.35                                    | .800                         | 2.07          | A    | EL              | 44.00                                     | .896                         | 1.96          | A    | I               | 79.77                                     | N/A                                     | --                           | --            | --   | --              | --                                        |                   |  |
|                                                                                   | HS-20 (INVENTORY)                    | 36.000                                                                              |    | 1.65                              | 59.40         | 1.75                                    | .800                         | 2.19          | A    | EL              | 44.00                                     | .896                         | 2.02          | A    | I               | 70.82                                     | 0.80                                    | .800                         | 1.65          | A    | EL              | 44.00                                     |                   |  |
|                                                                                   | HS-20 (OPERATING)                    | 36.000                                                                              |                                                                                     | 2.67                              | 96.12         | 1.35                                    | .800                         | 2.83          | A    | EL              | 44.00                                     | .896                         | 2.67          | A    | I               | 70.82                                     | N/A                                     | --                           | --            | --   | --              | --                                        |                   |  |
| LEGAL<br>LOAD<br>RATING                                                           | SINGLE VEHICLE<br>(SV)               | SN5H                                                                                | 13.500                                                                              |                                   | 3.11          | 41.99                                   | 1.40                         | .800          | 6.44 | A               | EL                                        | 44.00                        | .896          | 6.43 | A               | I                                         | 70.82                                   | 0.80                         | .800          | 3.11 | A               | EL                                        | 44.00             |  |
|                                                                                   |                                      | SNGARBS2                                                                            | 20.000                                                                              |                                   | 2.26          | 45.20                                   | 1.40                         | .800          | 4.67 | A               | EL                                        | 44.00                        | .896          | 4.50 | A               | I                                         | 70.82                                   | 0.80                         | .800          | 2.26 | A               | EL                                        | 44.00             |  |
|                                                                                   |                                      | SNAGRIS2                                                                            | 22.000                                                                              |                                   | 2.11          | 46.42                                   | 1.40                         | .800          | 4.36 | A               | EL                                        | 44.00                        | .896          | 4.15 | A               | I                                         | 70.82                                   | 0.80                         | .800          | 2.11 | A               | EL                                        | 44.00             |  |
|                                                                                   |                                      | SNCOTTS3                                                                            | 27.250                                                                              |                                   | 1.54          | 41.97                                   | 1.40                         | .800          | 3.18 | A               | EL                                        | 44.00                        | .896          | 3.12 | A               | I                                         | 79.77                                   | 0.80                         | .800          | 1.54 | A               | EL                                        | 44.00             |  |
|                                                                                   |                                      | SNAGGRS4                                                                            | 34.925                                                                              |                                   | 1.26          | 44.01                                   | 1.40                         | .800          | 2.62 | A               | EL                                        | 44.00                        | .896          | 2.47 | A               | I                                         | 79.77                                   | 0.80                         | .800          | 1.26 | A               | EL                                        | 44.00             |  |
|                                                                                   |                                      | SNS5A                                                                               | 35.550                                                                              |                                   | 1.24          | 44.08                                   | 1.40                         | .800          | 2.56 | A               | EL                                        | 44.00                        | .896          | 2.48 | A               | I                                         | 79.77                                   | 0.80                         | .800          | 1.24 | A               | EL                                        | 44.00             |  |
|                                                                                   |                                      | SNS6A                                                                               | 39.950                                                                              |                                   | 1.13          | 45.14                                   | 1.40                         | .800          | 2.34 | A               | EL                                        | 44.00                        | .896          | 2.24 | A               | I                                         | 79.77                                   | 0.80                         | .800          | 1.13 | A               | EL                                        | 44.00             |  |
|                                                                                   |                                      | SNS7B                                                                               | 42.000                                                                              |                                   | 1.07          | 44.94                                   | 1.40                         | .800          | 2.22 | A               | EL                                        | 44.00                        | .896          | 2.18 | A               | I                                         | 79.77                                   | 0.80                         | .800          | 1.07 | A               | EL                                        | 44.00             |  |
|                                                                                   | TRUCK TRACTOR SEMI-TRAILER<br>(TTST) | TNAGRIT3                                                                            | 33.000                                                                              |                                   | 1.38          | 45.54                                   | 1.40                         | .800          | 2.85 | A               | EL                                        | 44.00                        | .896          | 2.66 | A               | I                                         | 79.77                                   | 0.80                         | .800          | 1.38 | A               | EL                                        | 44.00             |  |
|                                                                                   |                                      | TNT4A                                                                               | 33.075                                                                              |                                   | 1.38          | 45.64                                   | 1.40                         | .800          | 2.86 | A               | EL                                        | 44.00                        | .896          | 2.73 | A               | I                                         | 70.82                                   | 0.80                         | .800          | 1.38 | A               | EL                                        | 44.00             |  |
|                                                                                   |                                      | TNT6A                                                                               | 41.600                                                                              |                                   | 1.12          | 46.59                                   | 1.40                         | .800          | 2.31 | A               | EL                                        | 44.00                        | .896          | 2.30 | A               | I                                         | 79.77                                   | 0.80                         | .800          | 1.12 | A               | EL                                        | 44.00             |  |
|                                                                                   |                                      | TNT7A                                                                               | 42.000                                                                              |                                   | 1.12          | 47.04                                   | 1.40                         | .800          | 2.32 | A               | EL                                        | 44.00                        | .896          | 2.26 | A               | I                                         | 79.77                                   | 0.80                         | .800          | 1.12 | A               | EL                                        | 44.00             |  |
|                                                                                   |                                      | TNT7B                                                                               | 42.000                                                                              |                                   | 1.15          | 48.30                                   | 1.40                         | .800          | 2.37 | A               | EL                                        | 44.00                        | .896          | 2.14 | A               | I                                         | 79.77                                   | 0.80                         | .800          | 1.15 | A               | EL                                        | 44.00             |  |
|                                                                                   |                                      | TNAGRIT4                                                                            | 43.000                                                                              |                                   | 1.10          | 47.30                                   | 1.40                         | .800          | 2.28 | A               | EL                                        | 44.00                        | .896          | 2.11 | A               | I                                         | 79.77                                   | 0.80                         | .800          | 1.10 | A               | EL                                        | 44.00             |  |
|                                                                                   |                                      | TNAGT5A                                                                             | 45.000                                                                              |                                   | 1.04          | 46.80                                   | 1.40                         | .800          | 2.15 | A               | EL                                        | 44.00                        | .896          | 2.01 | A               | I                                         | 79.77                                   | 0.80                         | .800          | 1.04 | A               | EL                                        | 44.00             |  |
| TNAGT5B                                                                           | 45.000                               |  | 1.03                                                                                | 46.35                             | 1.40          | .800                                    | 2.14                         | A             | EL   | 44.00           | .896                                      | 1.97                         | A             | I    | 79.77           | 0.80                                      | .800                                    | 1.03                         | A             | EL   | 44.00           |                                           |                   |  |
| EMERGENCY<br>VEHICLE (EV)                                                         | EV2                                  | 28.750                                                                              |                                                                                     | 1.99                              | 57.21         | 1.30                                    | .800                         | 3.55          | A    | EL              | 44.00                                     | .896                         | 3.35          | A    | I               | 79.77                                     | 0.80                                    | .800                         | 1.99          | A    | EL              | 44.00                                     |                   |  |
|                                                                                   | EV3                                  | 43.000                                                                              |  | 1.31                              | 56.33         | 1.30                                    | .800                         | 2.33          | A    | EL              | 44.00                                     | .896                         | 2.28          | A    | I               | 79.77                                     | 0.80                                    | .800                         | 1.31          | A    | EL              | 44.00                                     |                   |  |



LRFR SUMMARY

SPAN LENGTHS SHOWN ARE BEARING TO BEARING.

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00 -L-

|                |       |        |                 |
|----------------|-------|--------|-----------------|
| ASSEMBLED BY : | ZCS   | DATE : | 7/23            |
| CHECKED BY :   | MGC   | DATE : | 7/23            |
| DRAWN BY :     | MAA   | 1/08   | REV. 11/12/08RR |
| CHECKED BY :   | GM/DI | 2/08   | REV. 10/1/11    |
|                |       |        | MAA/GM          |
|                |       |        | BRB/AAI         |

11/11/2025  
X:\NCDOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.015.U-6146.SMU.LRFR.350082.dgn  
User:ZSmith

5FBC02F340DC413...

2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
LRFR SUMMARY  
FOR PRESTRESSED  
CONCRETE GIRDERS  
(NON-INTERSTATE TRAFFIC)

| REVISIONS |     |       |     |     |       | SHEET NO.              |
|-----------|-----|-------|-----|-----|-------|------------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-6                    |
| 1         |     |       | 3   |     |       | TOTAL<br>SHEETS<br>100 |
| 2         |     |       | 4   |     |       |                        |

STD. NO. LRFR1

NOTES

FOR TRAFFIC PHASING, SEE TRAFFIC CONTROL PLANS.

THE ANCHORED PORTABLE CONCRETE BARRIER IS A TRAFFIC CONTROL PAY ITEM.

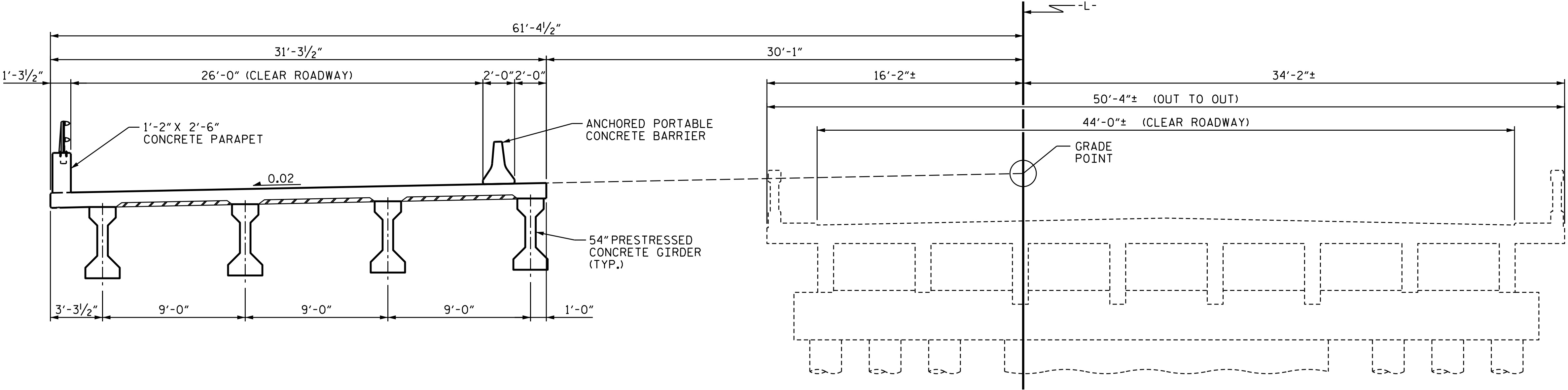
SEE TRAFFIC CONTROL PLANS FOR LOCATION AND PAY LIMITS OF THE ANCHORED PORTABLE CONCRETE BARRIER.

THE EXISTING STRUCTURE SHALL BE REMOVED IN ACCORDANCE WITH THESE PLANS, THE STANDARD SPECIFICATIONS, AND AS DIRECTED BY THE ENGINEER:

1. PARTIAL REMOVAL OF THE EXISTING SUPERSTRUCTURE SHALL BE DONE AS INDICATED BY THE CONSTRUCTION SEQUENCE SKETCH.
2. THE EXISTING SUBSTRUCTURE SHALL BE PARTIALLY REMOVED TO LIMITS SHOWN ON THE PLANS AS NECESSARY TO FACILITATE STAGE I CONSTRUCTION OR AS DIRECTED BY THE ENGINEER.
3. THE REMAINING EXISTING STRUCTURE SHALL BE REMOVED AFTER COMPLETION OF STAGE II OF THE PROPOSED STRUCTURE AND IMPLEMENTATION OF THE STAGE III TRAFFIC.

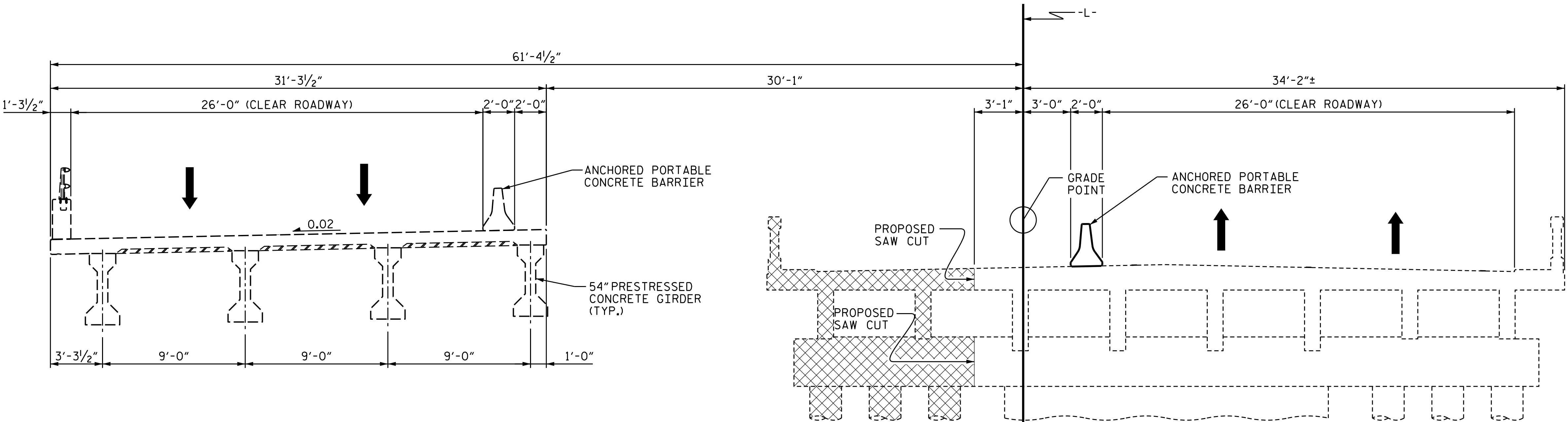
CARE SHALL BE TAKEN DURING THE PARTIAL REMOVAL TO AVOID DAMAGING THE REMAINING EXISTING STRUCTURE SERVING AS A TEMPORARY STRUCTURE. DAMAGE TO THE REMAINING STRUCTURE SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE DEPARTMENT. THE METHOD OF REPAIR SHALL BE SUBJECT TO APPROVAL BY THE ENGINEER.

ALL WORK, MATERIALS, EQUIPMENT AND INCIDENTALS REQUIRED FOR THE PARTIAL REMOVAL AND DISPOSAL OF EXISTING RAIL AND DECK AS SHOWN DURING STAGE I CONSTRUCTION SHALL BE INCLUDED IN THE UNIT CONTRACT BID FOR "REMOVAL OF EXISTING STRUCTURE".



STAGE I CONSTRUCTION

EXISTING BRIDGE



STAGE I CONSTRUCTION

EXISTING BRIDGE

STAGE I TRAFFIC

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00 -L-

SHEET 1 OF 3



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

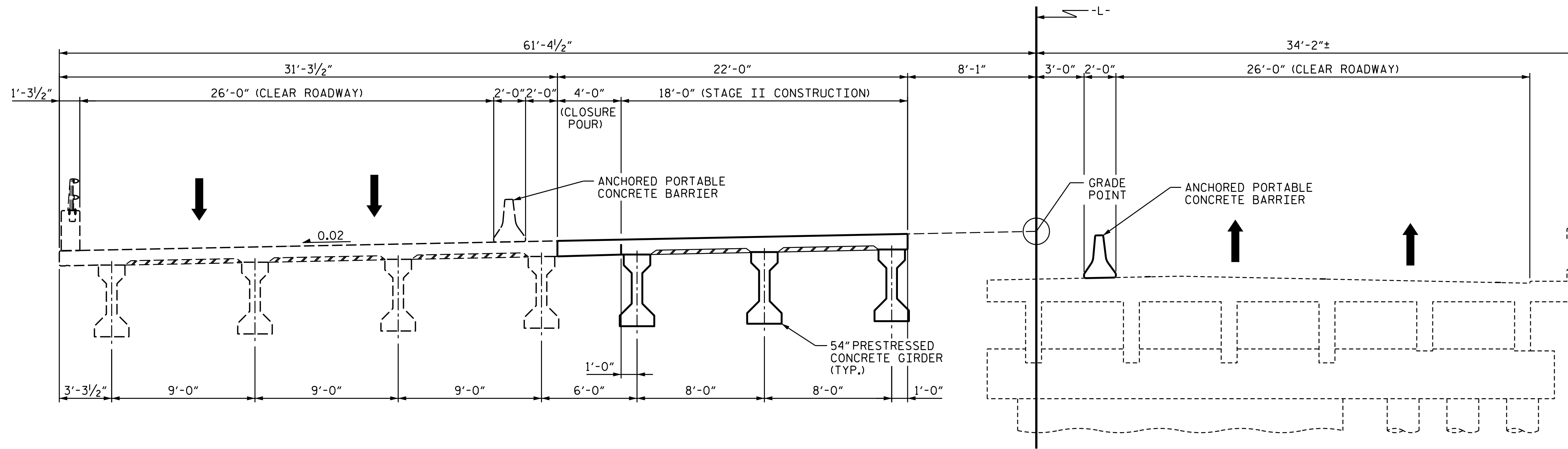
TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

CONSTRUCTION SEQUENCE

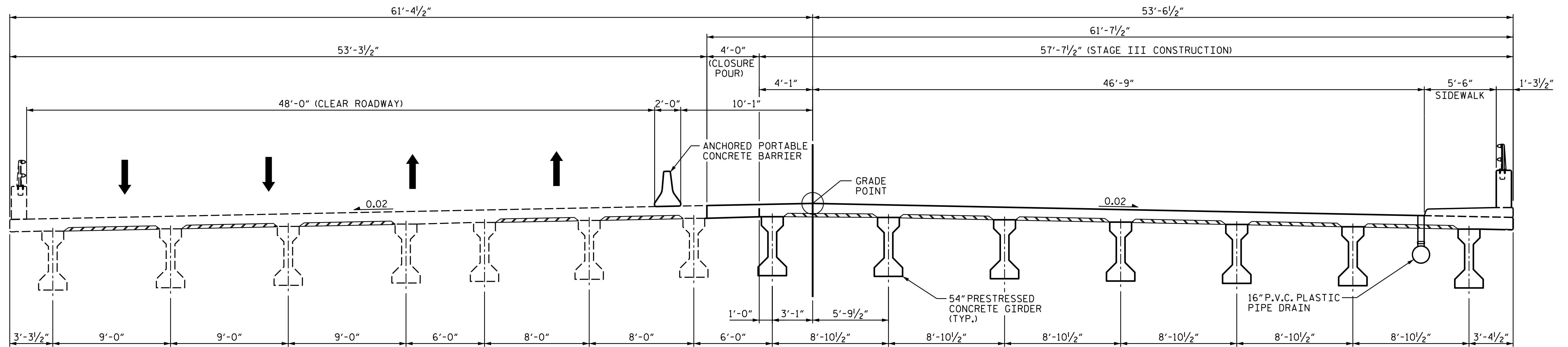
| REVISIONS |     |       |     |     |       | SHEET NO.           |
|-----------|-----|-------|-----|-----|-------|---------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                     |
| 1         |     |       | 3   |     |       | S-7                 |
| 2         |     |       | 4   |     |       | TOTAL SHEETS<br>100 |

DRAWN BY : JLA DATE : 10/19  
CHECKED BY : MGC DATE : 10/19



STAGE II CONSTRUCTION

EXISTING BRIDGE



STAGE III TRAFFIC

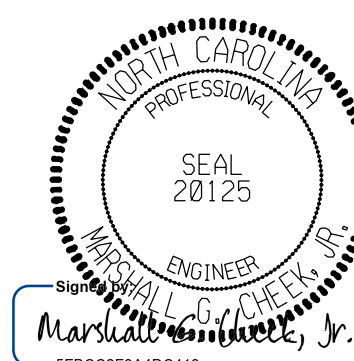
STAGE III CONSTRUCTION

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00 -L-

SHEET 2 OF 3



2/24/2026

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

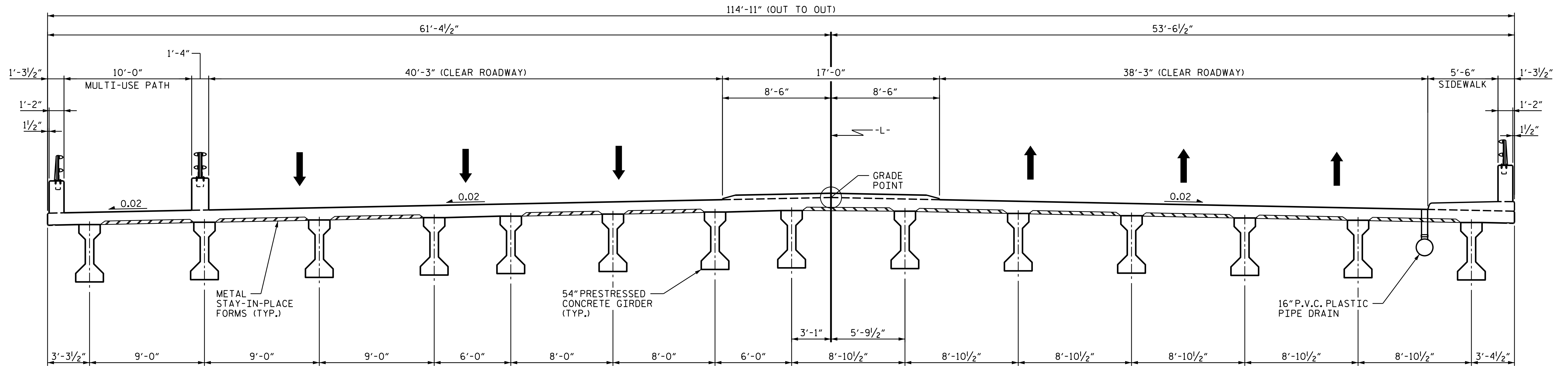
CONSTRUCTION SEQUENCE

DRAWN BY : JLA DATE : 10/19  
CHECKED BY : MGC DATE : 10/19

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

| REVISIONS |     |       |     |     |       | SHEET NO.        |
|-----------|-----|-------|-----|-----|-------|------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                  |
| 1         |     |       | 3   |     |       | S-8              |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 100 |



FINAL

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00 -L-

SHEET 3 OF 3



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

CONSTRUCTION SEQUENCE

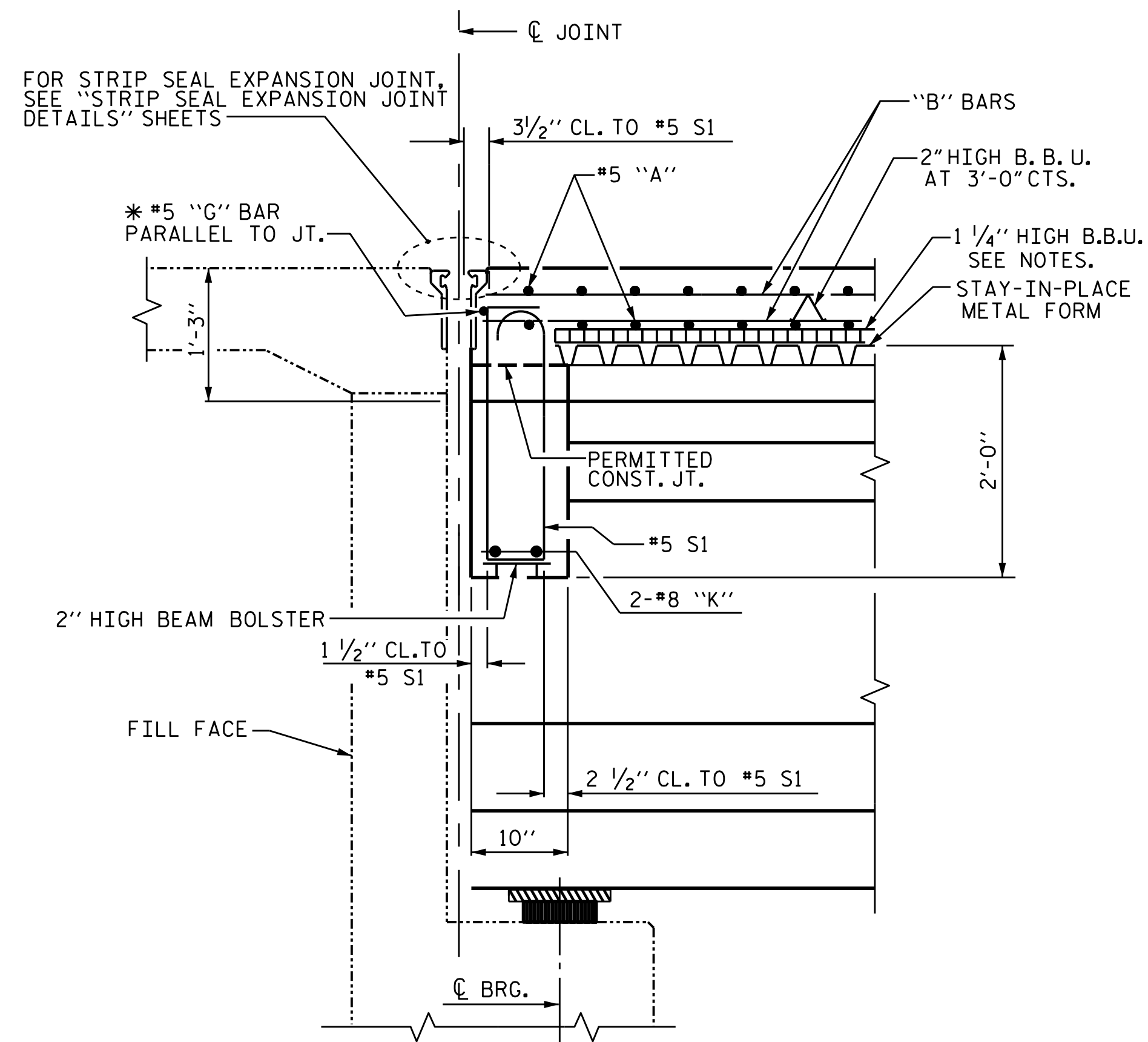
DRAWN BY : JLA DATE : 10/19  
CHECKED BY : MGC DATE : 10/19

| REVISIONS |    |      |     |    |      | SHEET NO.        |
|-----------|----|------|-----|----|------|------------------|
| NO.       | BY | DATE | NO. | BY | DATE |                  |
| 1         |    |      | 3   |    |      | S-9              |
| 2         |    |      | 4   |    |      | TOTAL SHEETS 100 |

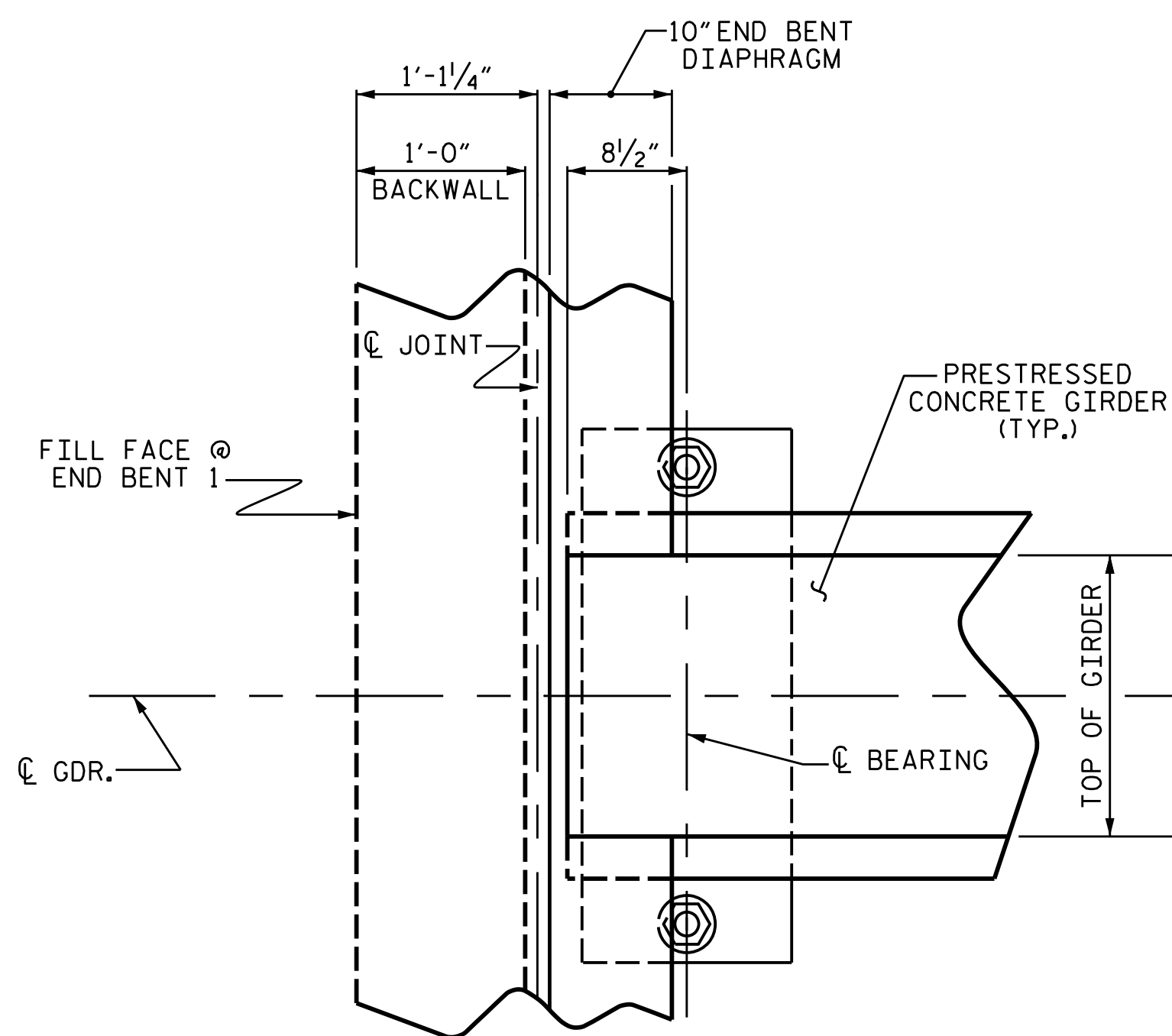






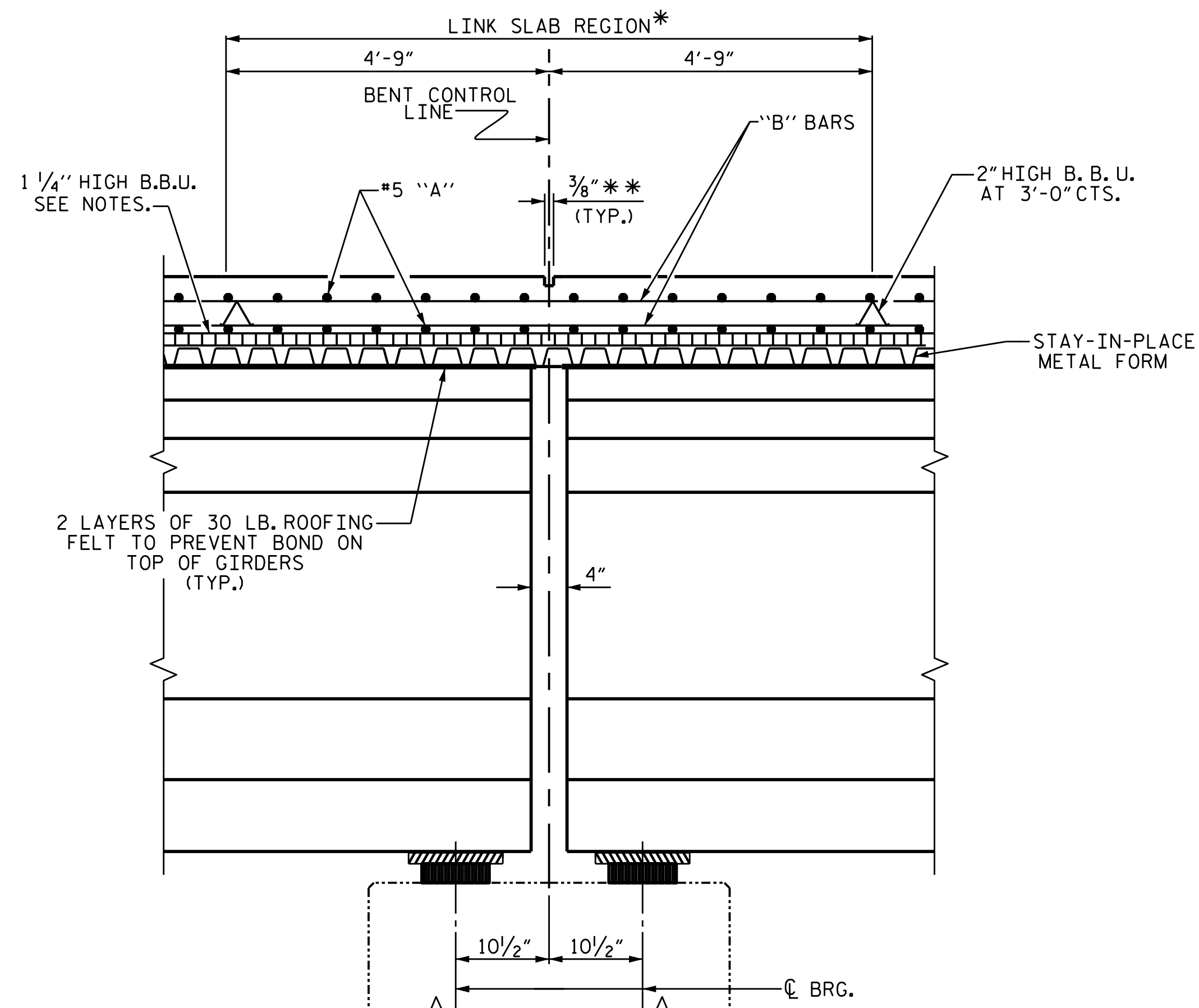


SECTION A-A



### PLAN OF GIRDER @ END BENT

(END BENT 2 SIMILAR)

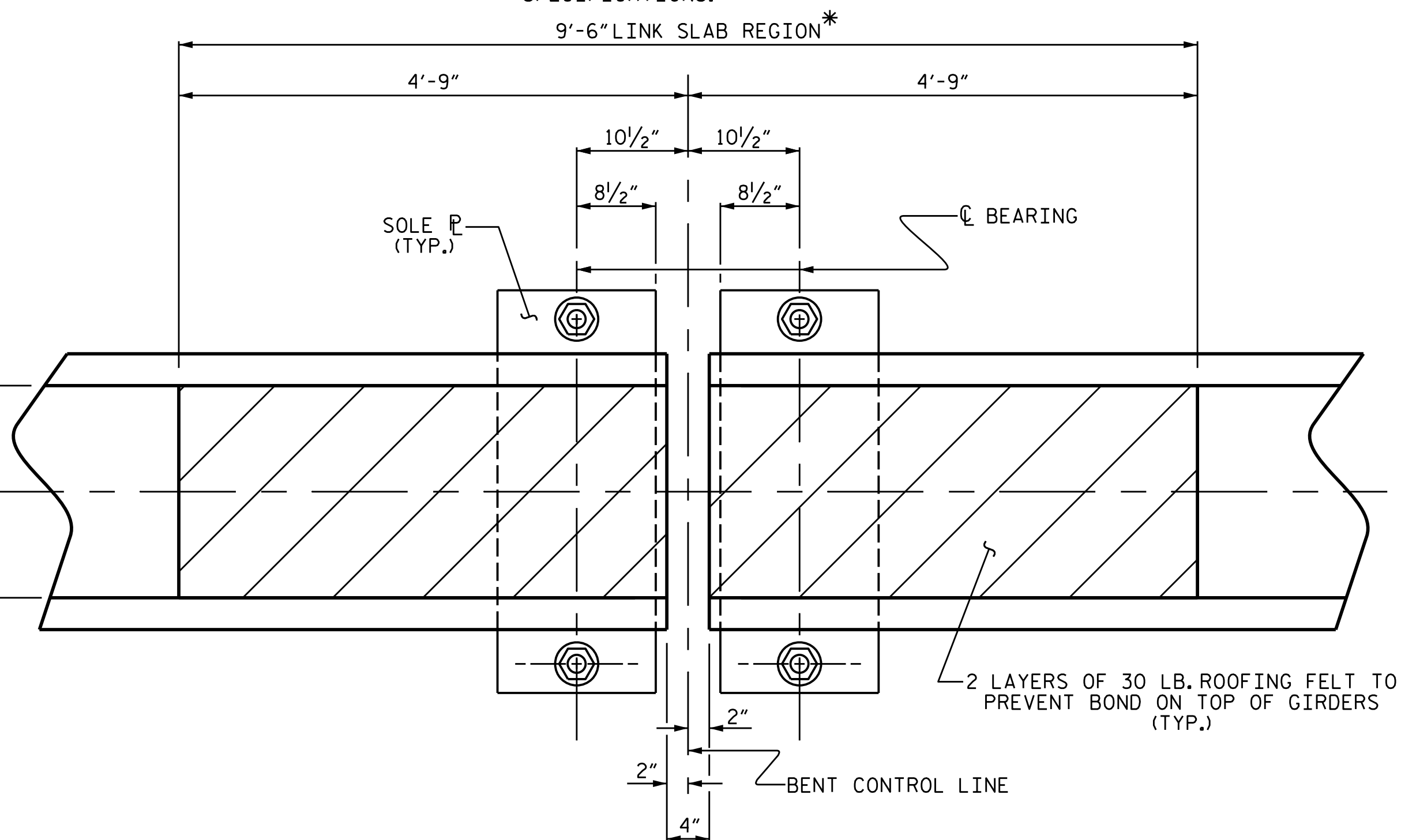


SECTION THRU LINK SLAB

(LOCATED @ BENTS 1 THRU 4 )

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

\* THE 3/8" WIDE X 1/2" DEEP CONTRACTION JOINT SHALL BE SAWED WITHIN 24 HOURS OF POURING THE DECK. THE JOINT SHALL BE FILLED WITH JOINT SEALER MATERIAL. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.



### PLAN OF LINK SLAB @ BENT

## 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 1 1/4" 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.

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

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

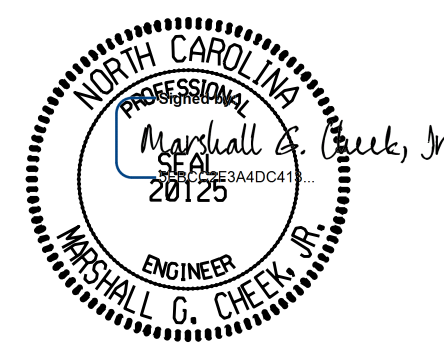
NO WELDING OF FORMS OR FALSEWORK TO THE TOP OF  
THE GIRDER WILL BE PERMITTED IN THE LINK SLAB AREA.

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00 -L-

SHEET 4 OF 4



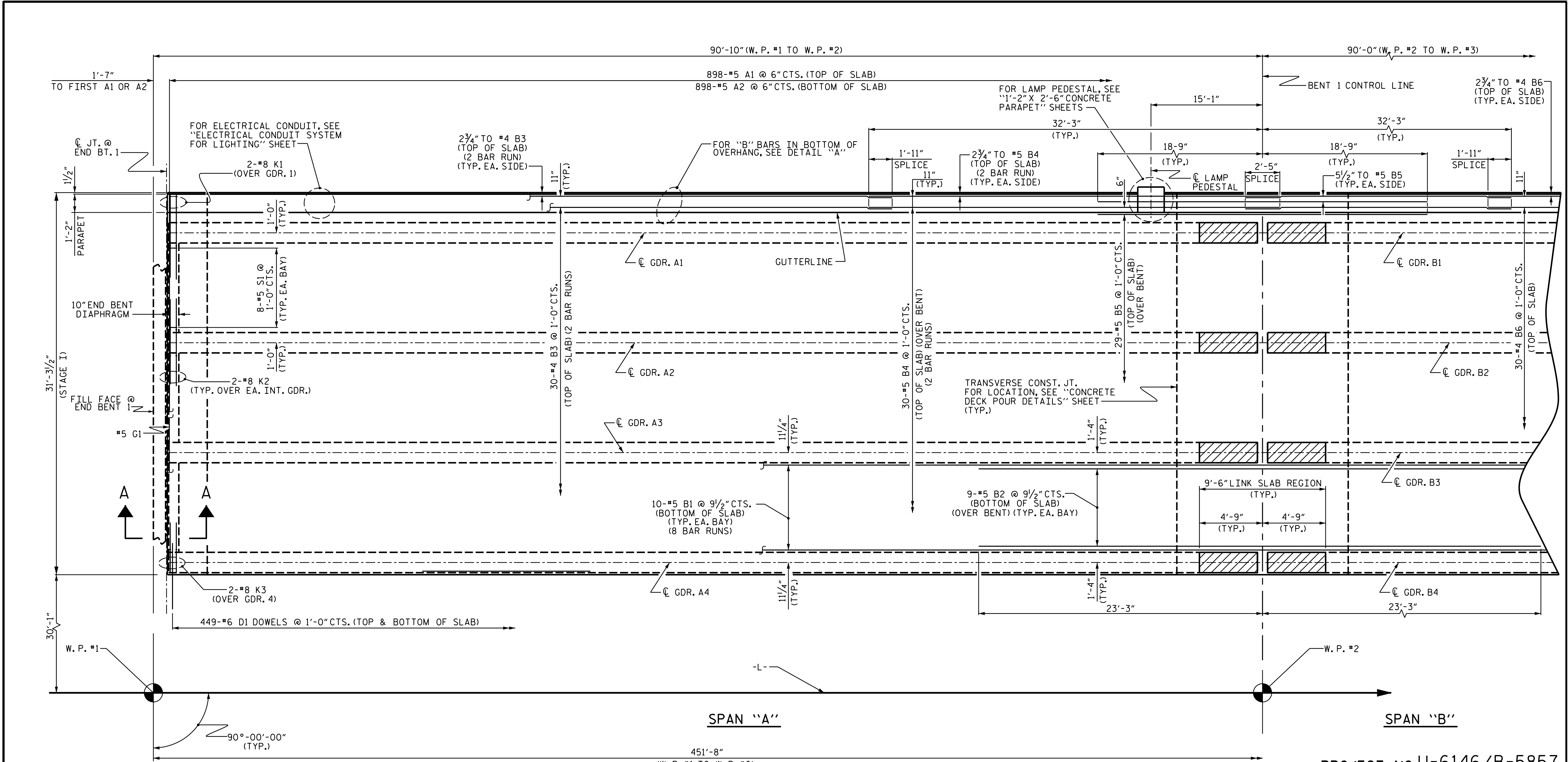
7/29/2026

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
TYPICAL SECTION

DRAWN BY : S. B. WILLIAMS DATE : 5/22  
 CHECKED BY : MGC DATE : 6/22  
 DESIGN ENGINEER OF RECORD: MGC DATE : 6/22

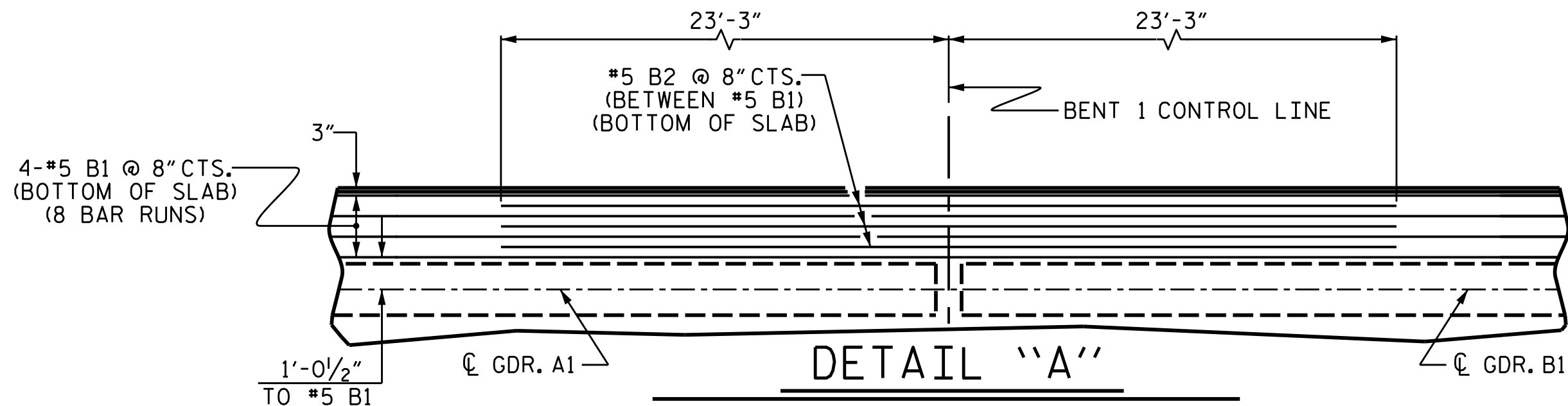
|                                                                                                                                                                                                              |     |           |       |     |     |                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------|-------|-----|-----|-----------------------------|
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                                                                                                             |     | REVISIONS |       |     |     | SHEET NO.                   |
|  <b>TGS ENGINEERS</b><br>201 W. MARION ST STE 200<br>SHELBY, NC 28150<br>PH (704) 476-0003<br>CORP. LICENSE NO.: C-0275 | NO. | BY:       | DATE: | NO. | BY: | DATE:                       |
|                                                                                                                                                                                                              | 1   |           |       | 3   |     |                             |
|                                                                                                                                                                                                              | 2   |           |       | 4   |     |                             |
|                                                                                                                                                                                                              |     |           |       |     |     | S-13<br>TOTAL SHEETS<br>100 |



### PARTIAL PLAN OF SPAN

FOR SECTION A-A, SEE "TYPICAL SECTION DETAILS", SHEET 4 OF 4.

FOR CONCRETE PARAPET REINFORCING STEEL & DETAILS, SEE "1'-2" X 2'-6" CONCRETE PARAPET DETAILS" SHEETS.



### DETAIL "A"

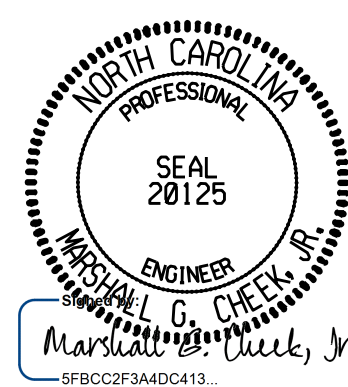
SHOWING "B" BARS IN BOTTOM OF OVERHANG

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00 -L-

SHEET 1 OF 9



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
PLAN OF SPAN  
STAGE I

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

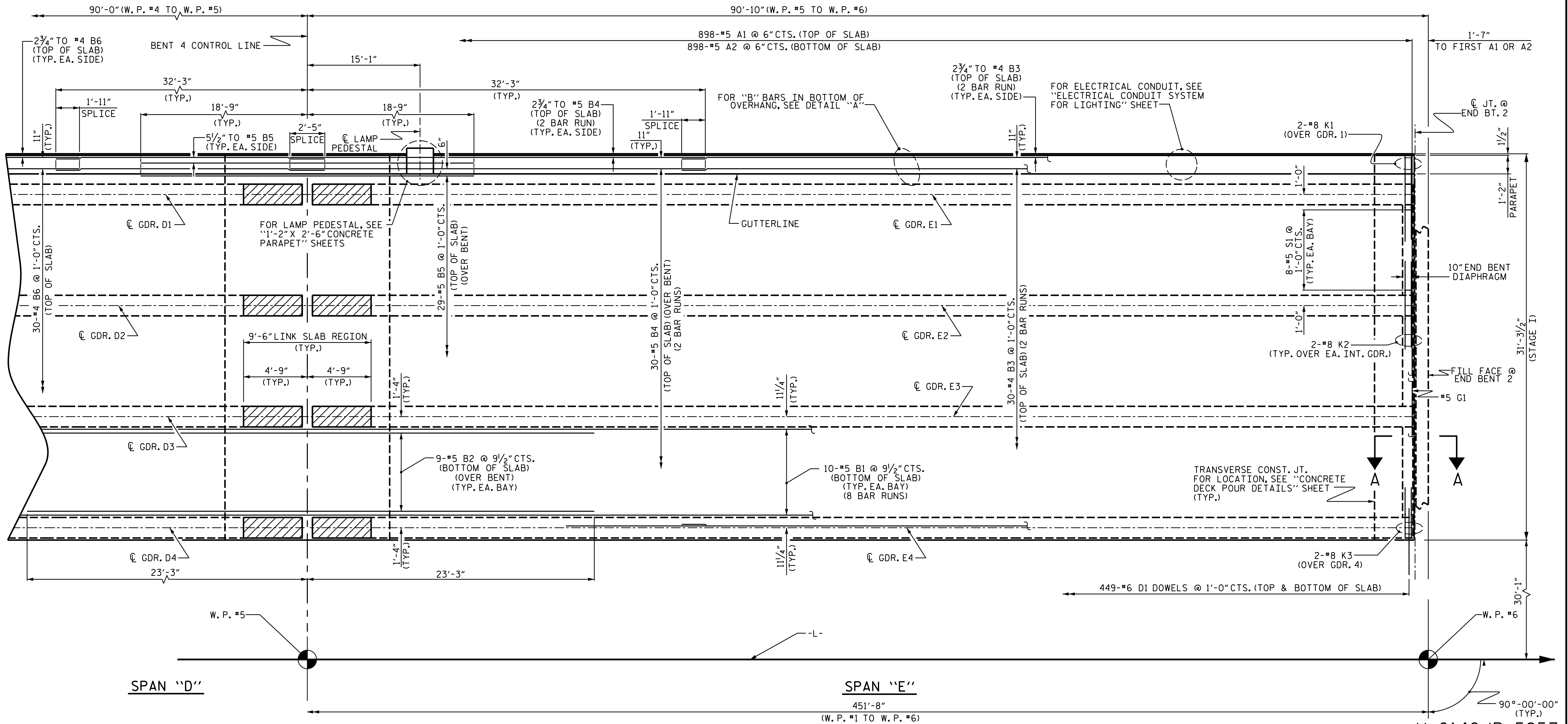
TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

| REVISIONS |     |       |     |     |       | SHEET NO.     |
|-----------|-----|-------|-----|-----|-------|---------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |               |
| 1         |     |       | 3   |     |       | S-14          |
| 2         |     |       | 4   |     |       | TOTALS<br>100 |

DRAWN BY : S.B. WILLIAMS DATE : 4/22  
CHECKED BY : MGC DATE : 6/22  
DESIGN ENGINEER OF RECORD: MGC DATE : 6/22

11/11/2025  
X:\NCDOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.031.U-6146.SMU.S01.350082.dgn  
User:ZSmith

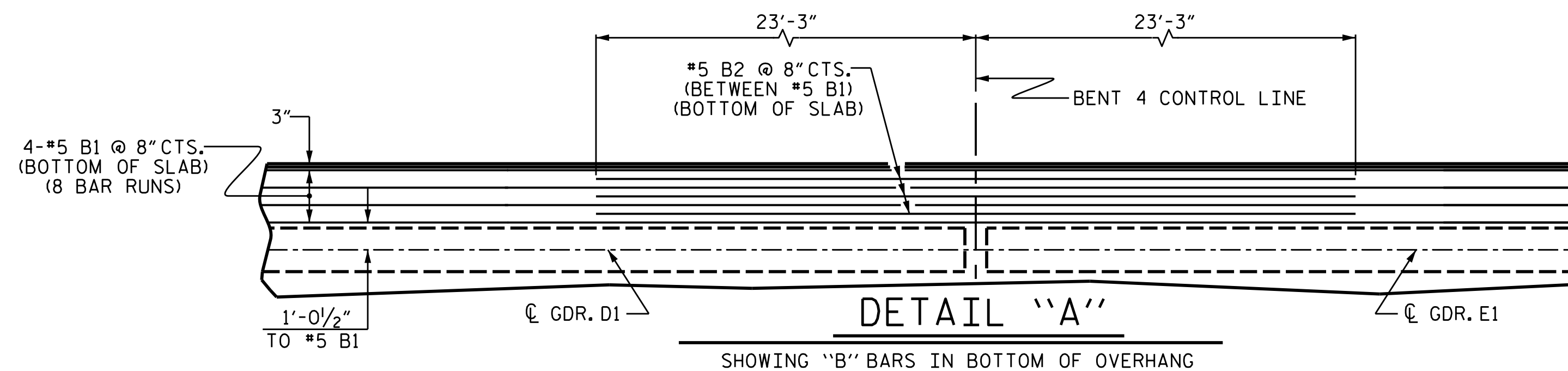




### PARTIAL PLAN OF SPAN

FOR SECTION A-A, SEE "TYPICAL SECTION DETAILS", SHEET 4 OF 4.

FOR CONCRETE PARAPET REINFORCING STEEL & DETAILS, SEE "1'-2" X 2'-6" CONCRETE PARAPET DETAILS" SHEETS.

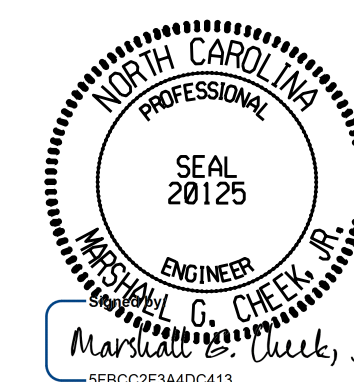


DRAWN BY : S.B. WILLIAMS DATE : 4/22  
CHECKED BY : MGC DATE : 6/22  
DESIGN ENGINEER OF RECORD: MGC DATE : 6/22

11/11/2025  
X:\NCDOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.035.U-6146.SMU.S03.350082.dgn  
User:zSmith

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00 -L-

SHEET 3 OF 9



2/24/2026

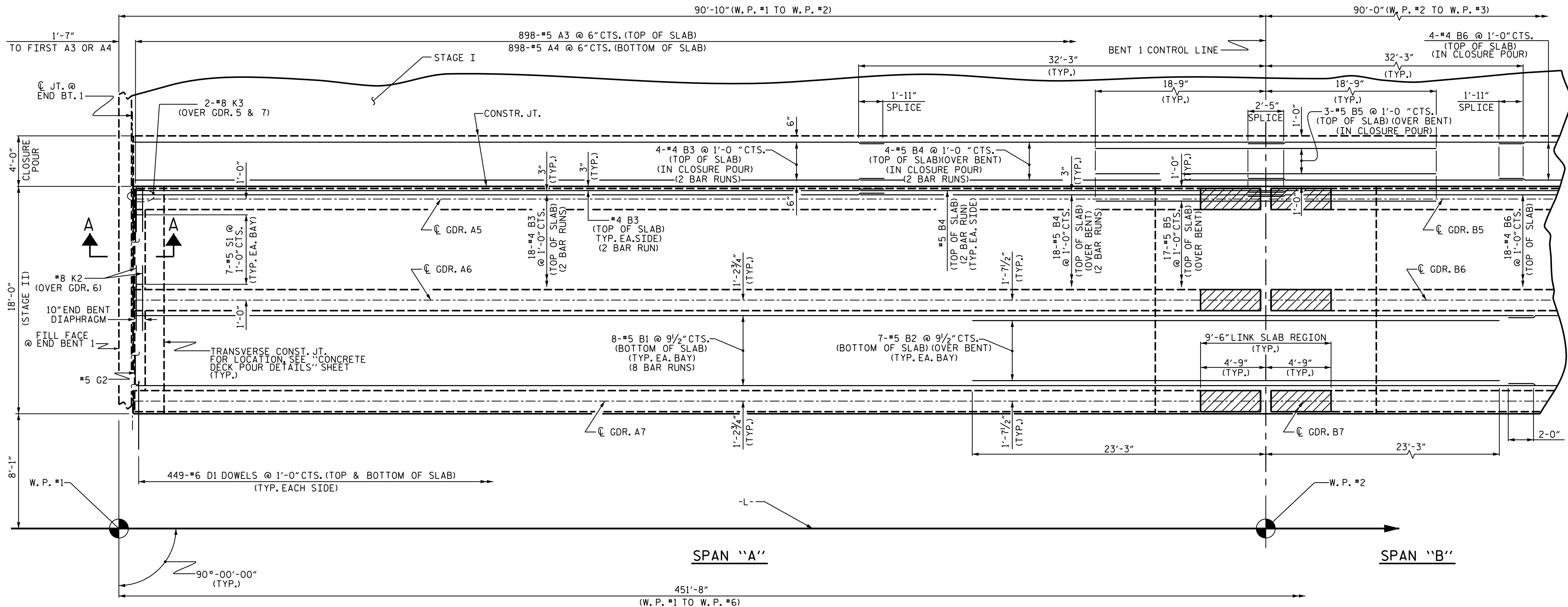
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
PLAN OF SPAN  
STAGE I

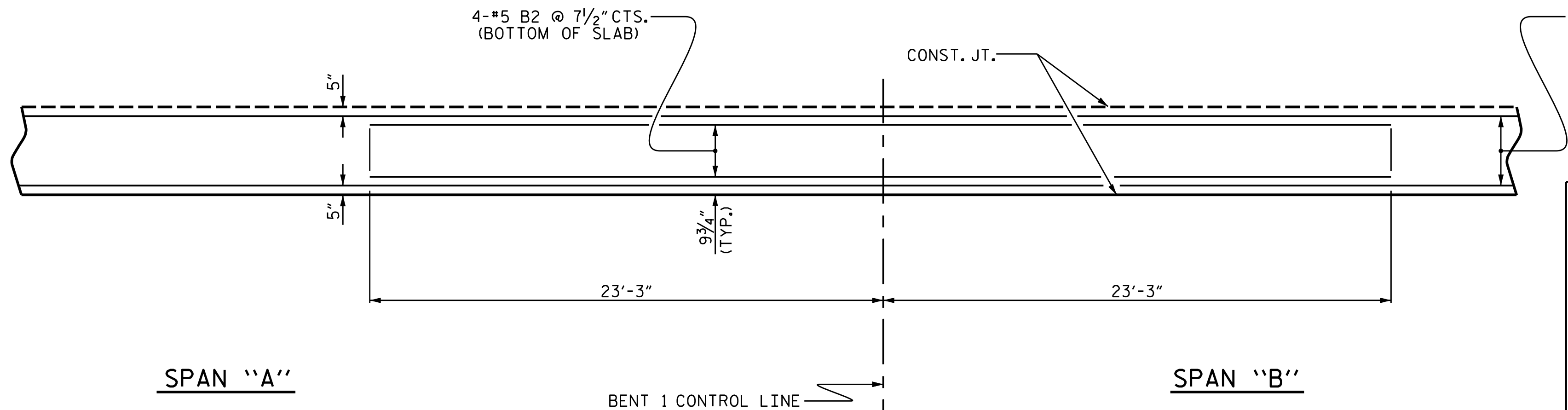
| REVISIONS |     |       |     |     |       | SHEET NO.        |
|-----------|-----|-------|-----|-----|-------|------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                  |
| 1         |     |       | 3   |     |       | S-16             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 100 |



PARTIAL PLAN OF SPAN

FOR SECTION A-A, SEE "TYPICAL SECTION DETAILS", SHEET 4 OF 4.

FOR CONCRETE PARAPET REINFORCING STEEL & DETAILS, SEE "1'-2" X 2'-6" CONCRETE PARAPET DETAILS" SHEET.



PARTIAL PLAN OF SPAN

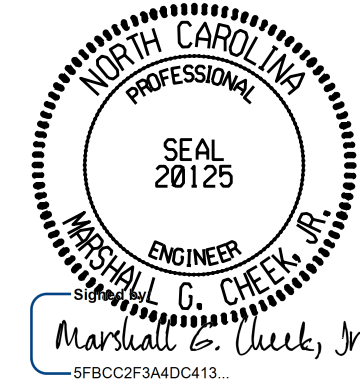
SHOWING "B" BARS IN BOTTOM SLAB IN CLOSURE POUR

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00 -L-

SHEET 4 OF 9



2/24/2026

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
PLAN OF SPAN  
STAGE II

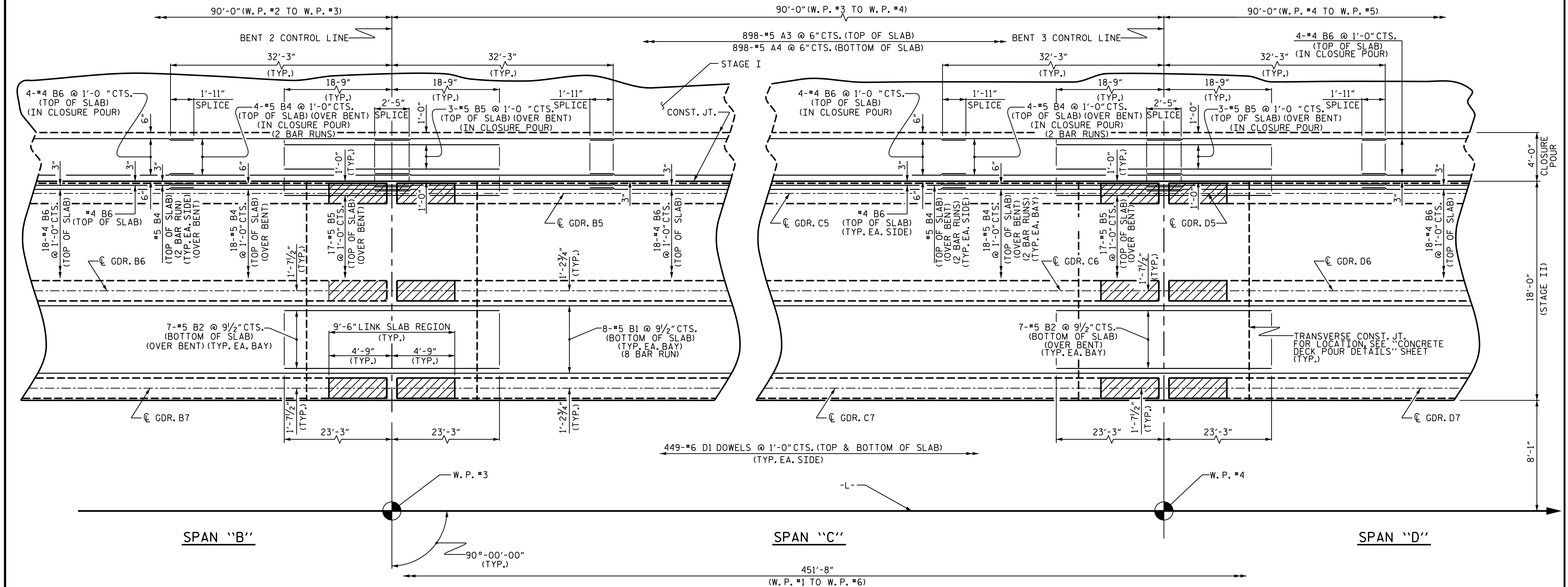
DRAWN BY : S.B. WILLIAMS DATE : 5/22  
CHECKED BY : MGC DATE : 6/22  
DESIGN ENGINEER OF RECORD: MGC DATE : 6/22

11/11/2025  
X:\NCDOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.037.U-6146.SMU.S04.350082.dgn  
User: zSmith

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

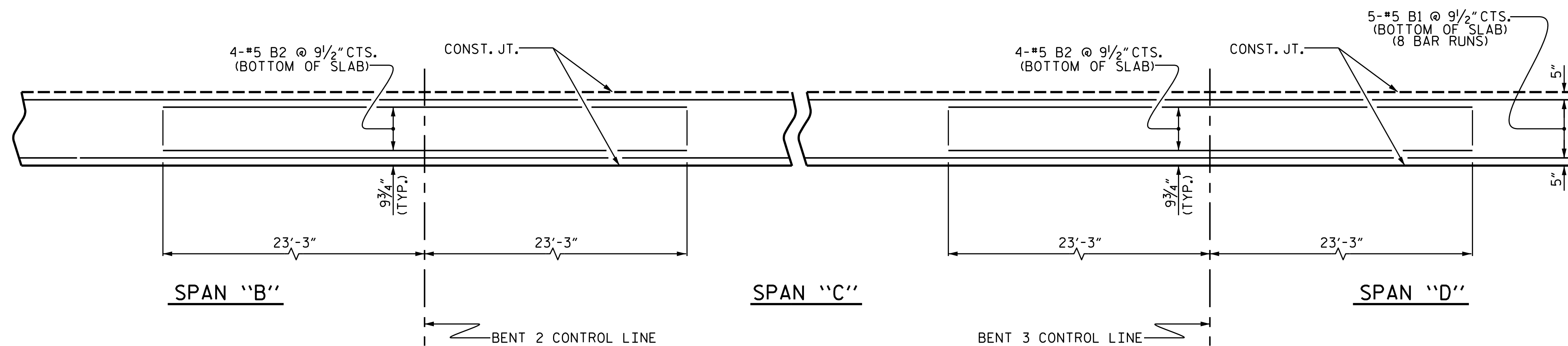
TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

| REVISIONS |     |       |     |     |       | SHEET NO.        |
|-----------|-----|-------|-----|-----|-------|------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                  |
| 1         |     |       | 3   |     |       | S-17             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 100 |



PARTIAL PLAN OF SPAN

FOR CONCRETE PARAPET REINFORCING STEEL & DETAILS, SEE "1'-2" X 2'-6" CONCRETE PARAPET DETAILS" SHEET.



PARTIAL PLAN OF SPAN

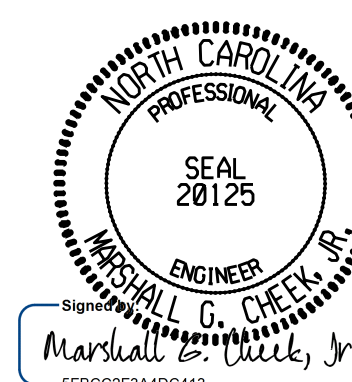
SHOWING "B" BARS IN BOTTOM SLAB IN CLOSURE POUR

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00 -L-

SHEET 5 OF 9



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
PLAN OF SPAN  
STAGE II

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

| REVISIONS |     |       |     |     |       | SHEET NO.        |
|-----------|-----|-------|-----|-----|-------|------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                  |
| 1         |     |       | 3   |     |       | S-18             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 100 |

DRAWN BY : S.B. WILLIAMS DATE : 5/22  
CHECKED BY : MGC DATE : 6/22  
DESIGN ENGINEER OF RECORD: M.G. CHEEK DATE : 6/22

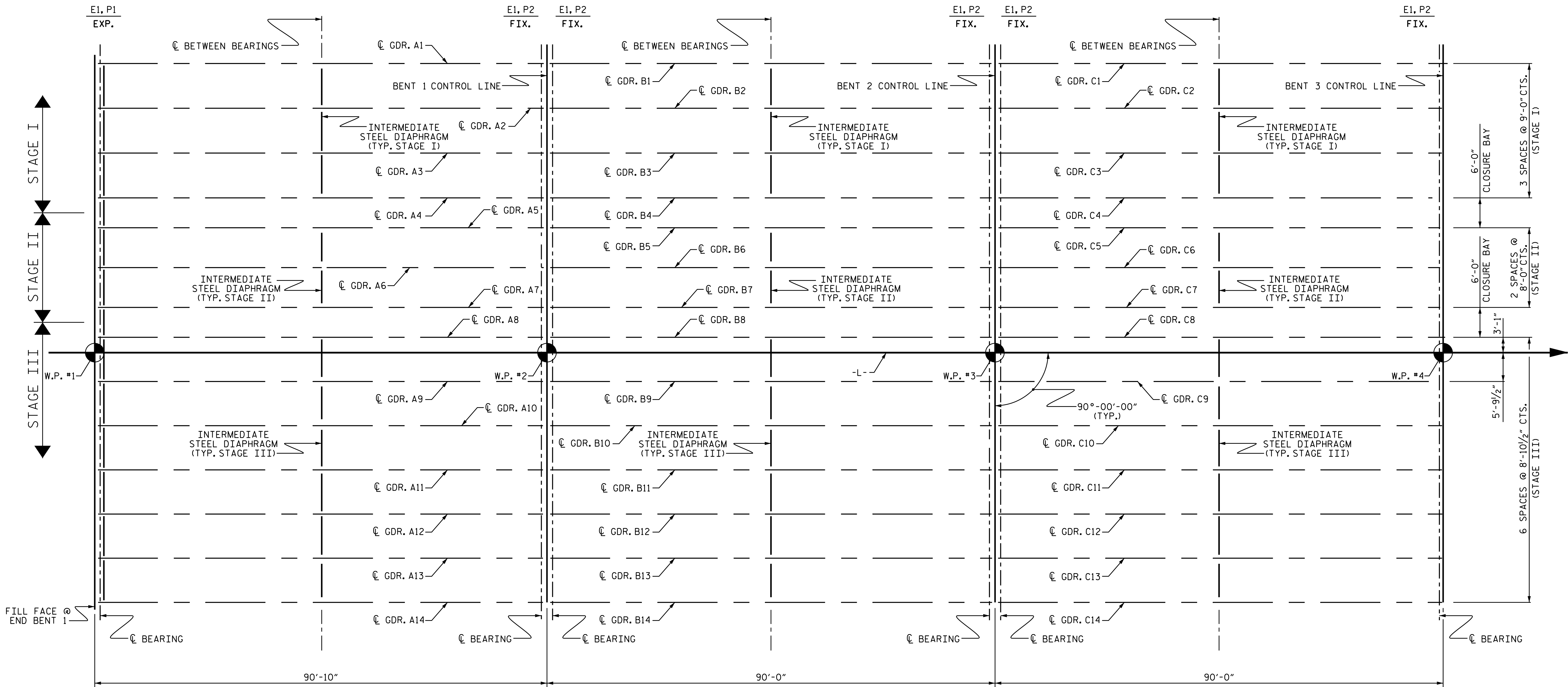
11/11/2025  
X:\NC DOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.039.U-6146.SMU.505.350082.dgn  
User:ZSmith











SPAN "A" THRU "C" GIRDER LAYOUT

NOTES

FOR LOCATION OF 1 1/2" Ø HOLES, SEE "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET.

FOR ELASTOMERIC BEARINGS AND SOLE PLATE DETAILS, SEE "ELASTOMERIC BEARING DETAILS" SHEET.

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00 -L-

SHEET 1 OF 2

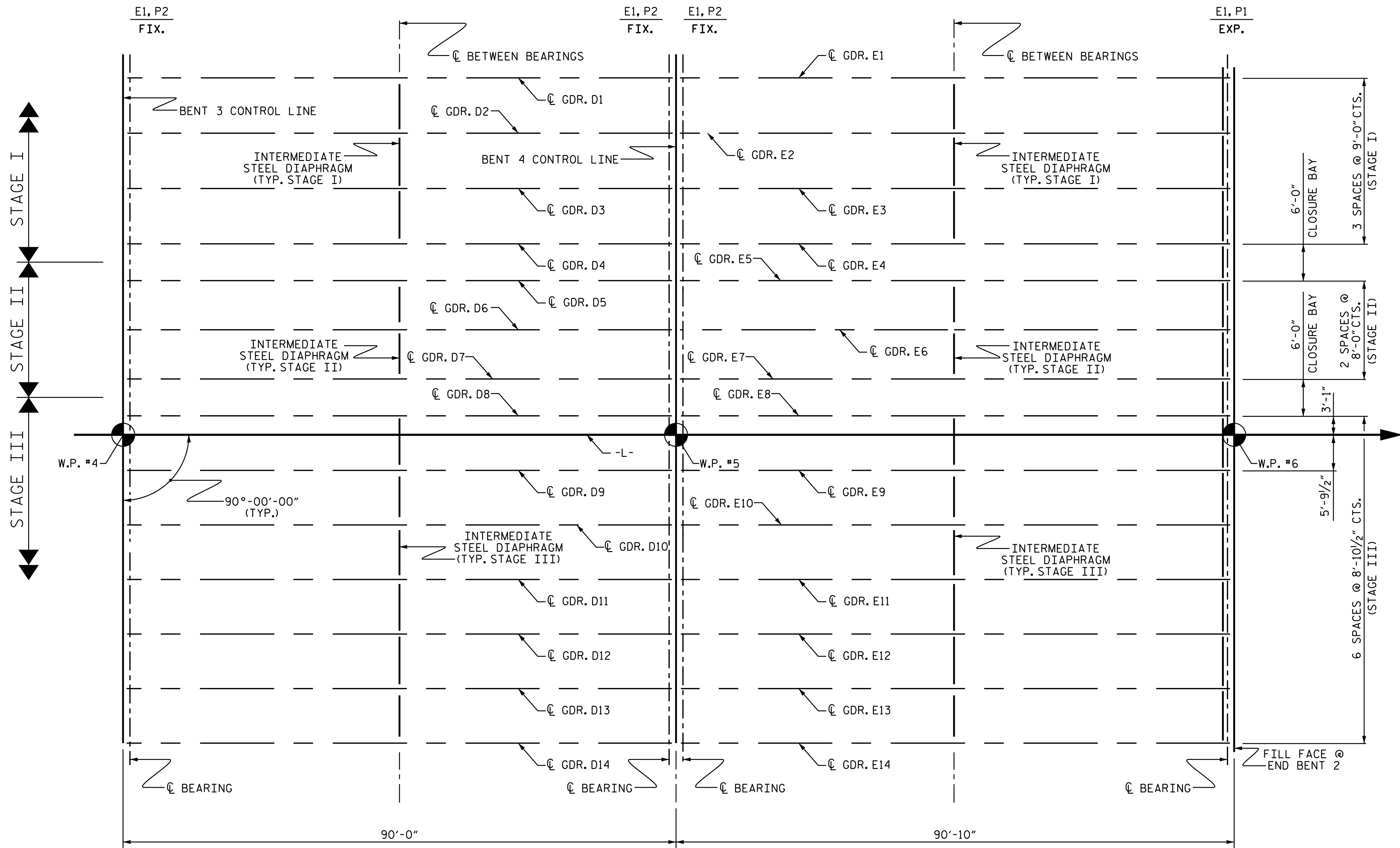
2/24/2026

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
GIRDER LAYOUT

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-23         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 100          |

DRAWN BY : S. B. WILLIAMS DATE : 10-20  
CHECKED BY : MGC DATE : 2-21  
DESIGN ENGINEER OF RECORD: MGC DATE : 10/21



## SPAN "D" THRU "E" GIRDER LAYOUT

### NOTES

FOR LOCATION OF 1 1/2" Ø HOLES, SEE "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET.

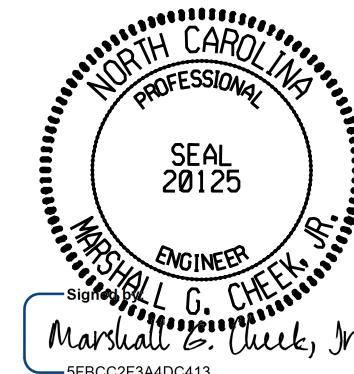
FOR ELASTOMERIC BEARINGS AND SOLE PLATE DETAILS, SEE "ELASTOMERIC BEARING DETAILS" SHEET.

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00 -L-

SHEET 2 OF 2



2/24/2026

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
GIRDER LAYOUT

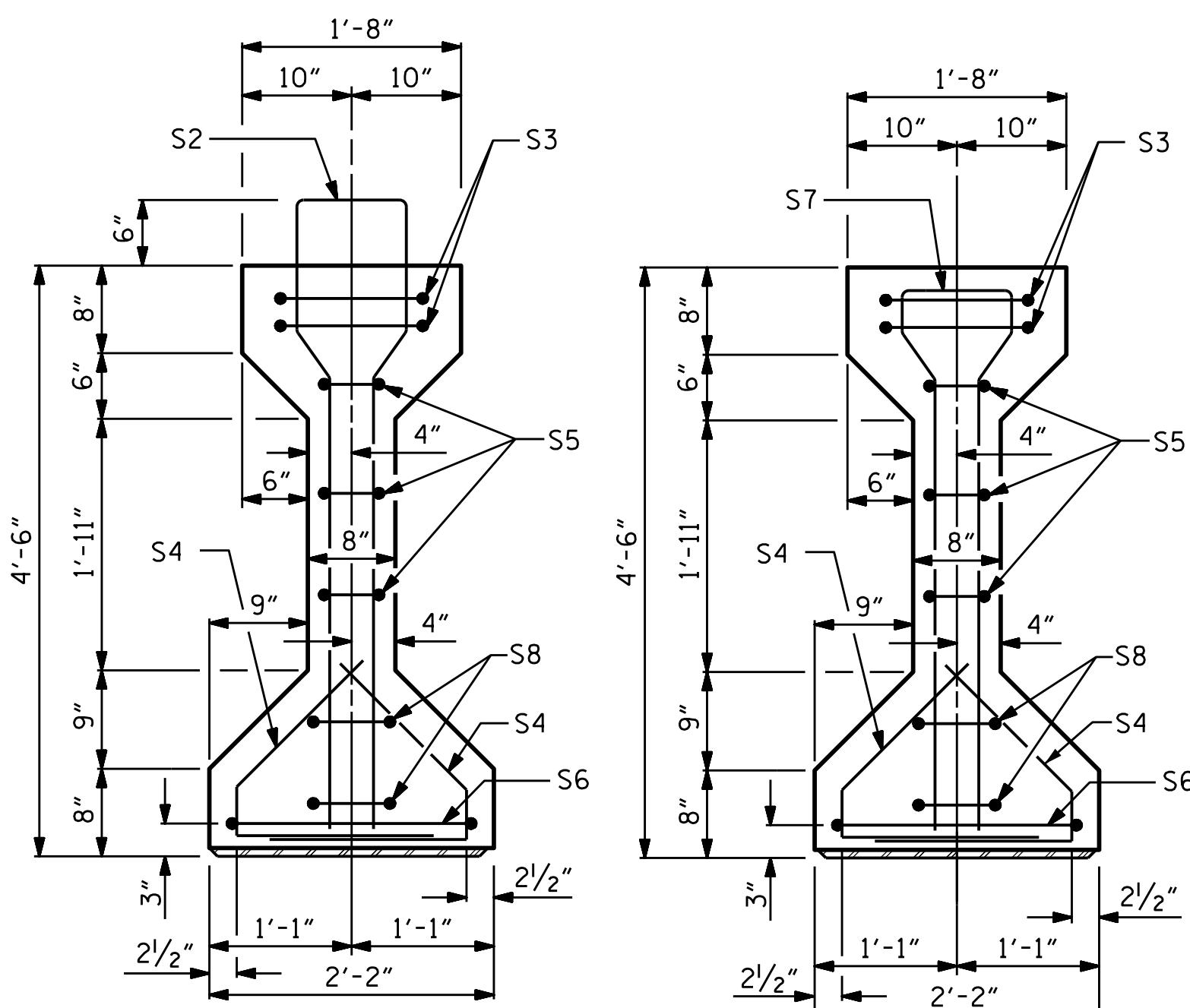
DRAWN BY : S.B. WILLIAMS DATE : 10-20  
CHECKED BY : MGC DATE : 3-21  
DESIGN ENGINEER OF RECORD: MGC DATE : 10/21

11/19/2025  
X:\NCDOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.051.U-6146.SMU.FP02.350082.dgn  
User:ZSmith

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

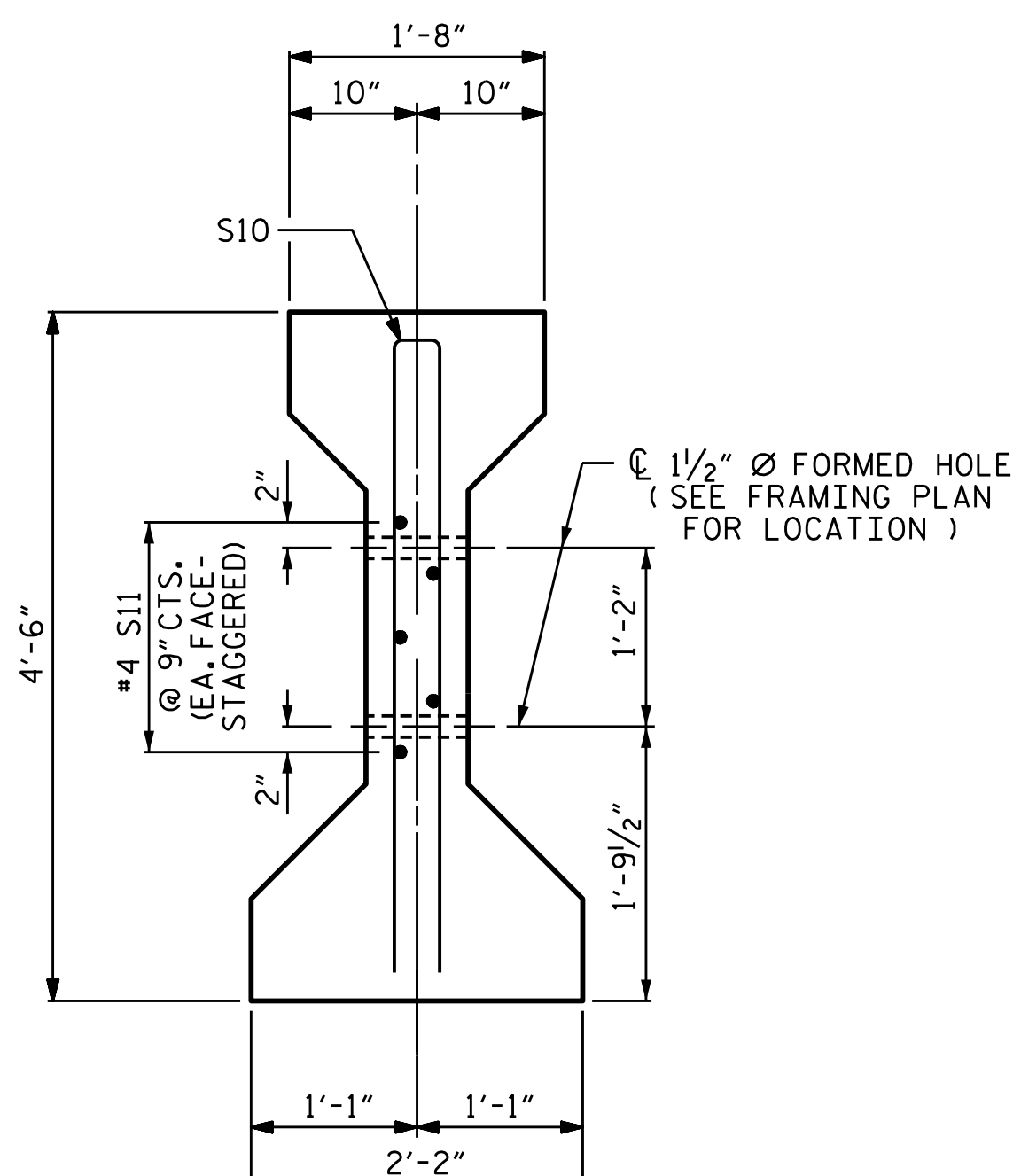
TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

| REVISIONS |     |       |     |     |       | SHEET NO.           |
|-----------|-----|-------|-----|-----|-------|---------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                     |
| 1         |     |       | 3   |     |       | S-24                |
| 2         |     |       | 4   |     |       | TOTAL SHEETS<br>100 |



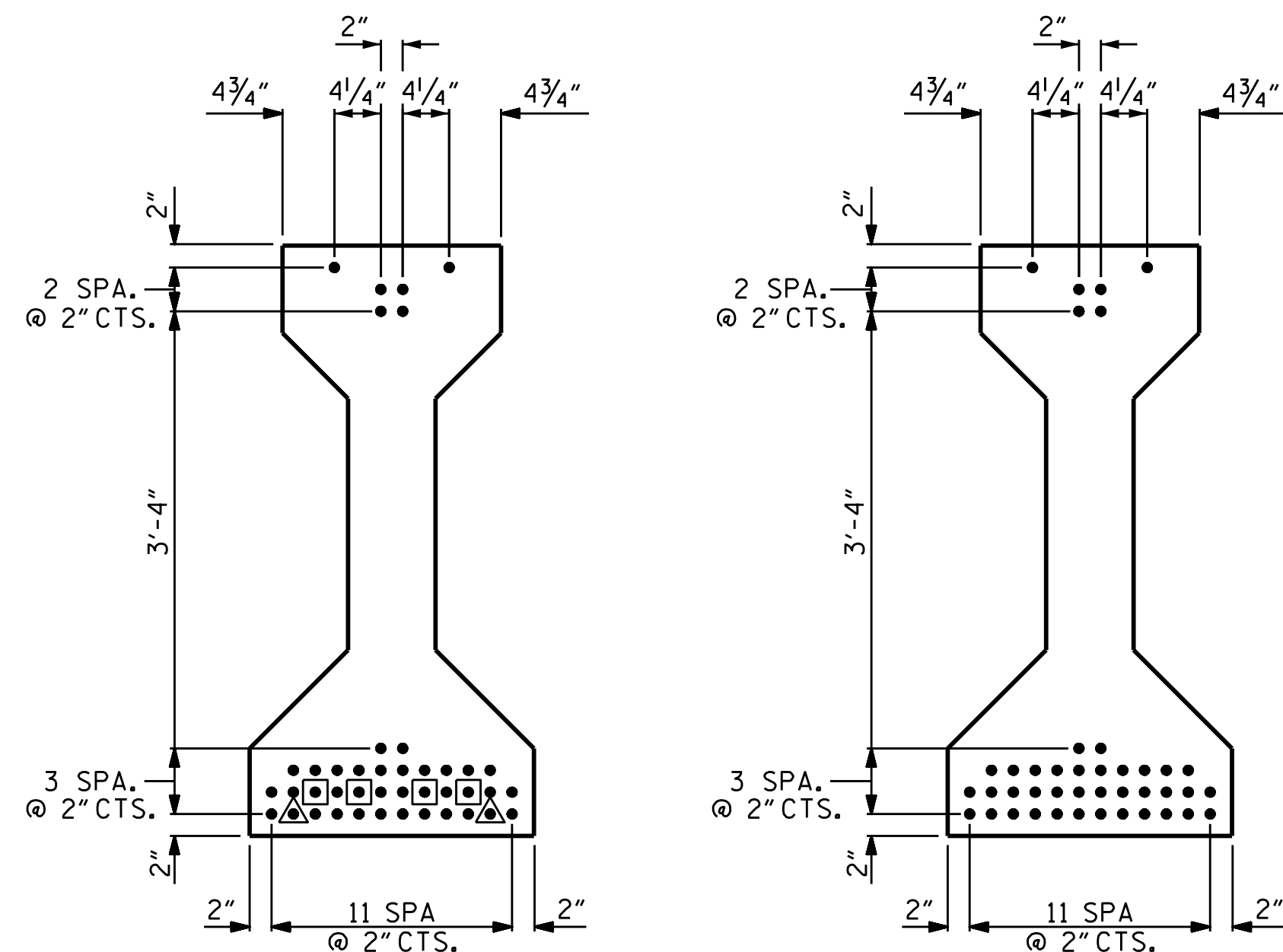
SECTION A-A

SECTION B-B



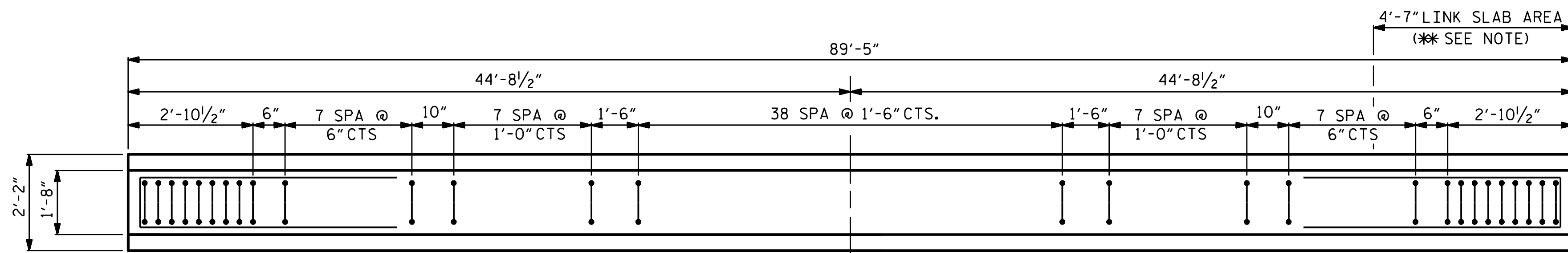
SECTION C-C

(S1 BARS NOT SHOWN)



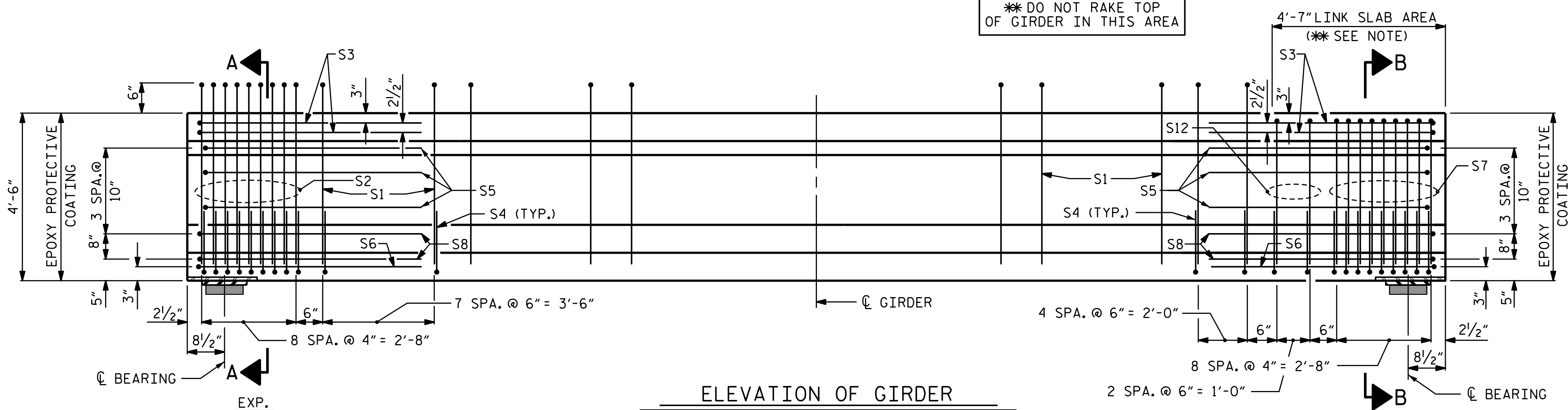
0.6" Ø LOW RELAXATION STRAND LAYOUT

- △ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 20'-0" FROM ENDS OF PRESTRESSED GIRDERS. SEE STANDARD SPECIFICATIONS, ARTICLE 1087-7.
- BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 10'-0" FROM ENDS OF PRESTRESSED GIRDERS. SEE STANDARD SPECIFICATIONS, ARTICLE 1087-7.



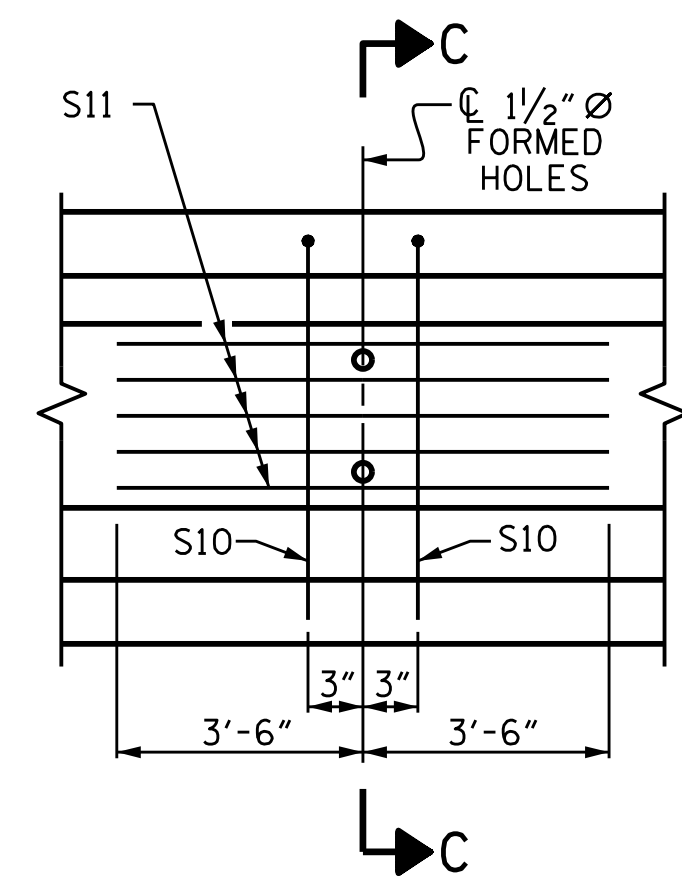
PLAN OF GIRDER

\*\* DO NOT RAKE TOP OF GIRDER IN THIS AREA



ELEVATION OF GIRDER

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



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS.

0.6" Ø L. R. GRADE 270 STRANDS

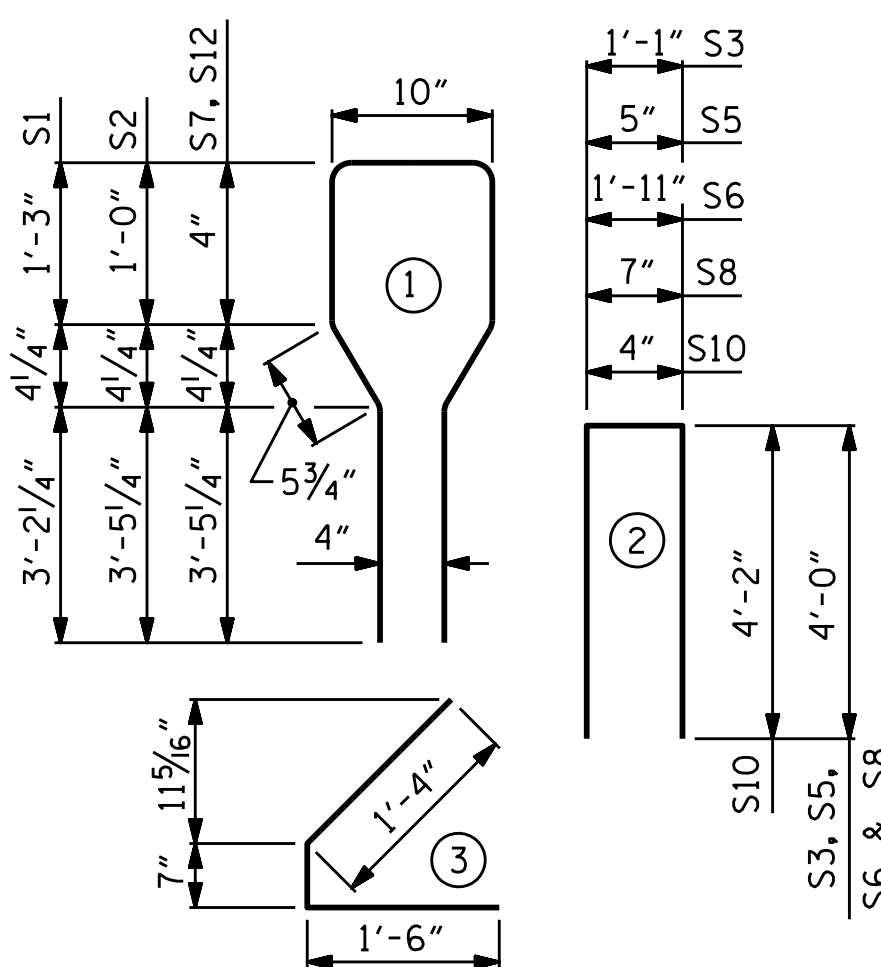
| AREA<br>(SQUARE INCHES) | ULTIMATE STRENGTH<br>(LBS. PER STRAND) | APPLIED PRESTRESS<br>(LBS. PER STRAND) |
|-------------------------|----------------------------------------|----------------------------------------|
| 0.217                   | 58,600                                 | 43,950                                 |

REINFORCING STEEL FOR ONE GIRDER

| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
|-----|--------|------|------|--------|--------|
| S1  | 68     | #4   | 1    | 10'-8" | 485    |
| S2  | 9      | #6   | 1    | 10'-8" | 144    |
| S3  | 4      | #4   | 2    | 9'-1"  | 24     |
| S4  | 68     | #4   | 3    | 3'-5"  | 155    |
| S5  | 6      | #4   | 2    | 8'-5"  | 34     |
| S6  | 2      | #4   | 2    | 9'-11" | 13     |
| S7  | 9      | #6   | 1    | 9'-4"  | 126    |
| S8  | 4      | #4   | 2    | 8'-7"  | 23     |
| S10 | 2      | #5   | 2    | 8'-8"  | 18     |
| S11 | 5      | #4   | STR  | 7'-0"  | 23     |
| S12 | 3      | #4   | 1    | 9'-4"  | 19     |

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

|  | REINFORCING STEEL<br>LB. | 8000 PSI CONCRETE<br>C.Y. | 0.6" Ø L. R. STRANDS<br>No. |
|--|--------------------------|---------------------------|-----------------------------|
|  | 1064                     | 18.1                      | 42                          |

GIRDERS REQUIRED

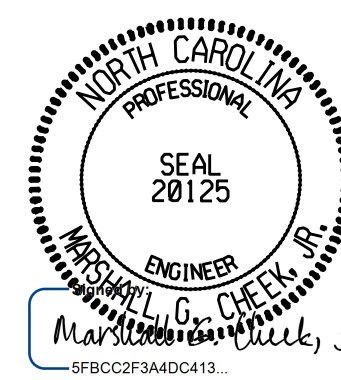
| NUMBER | LENGTH | TOTAL LENGTH |
|--------|--------|--------------|
| 28     | 89'-5" | 2503'-8"     |

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00 -L-

SHEET 1 OF 6



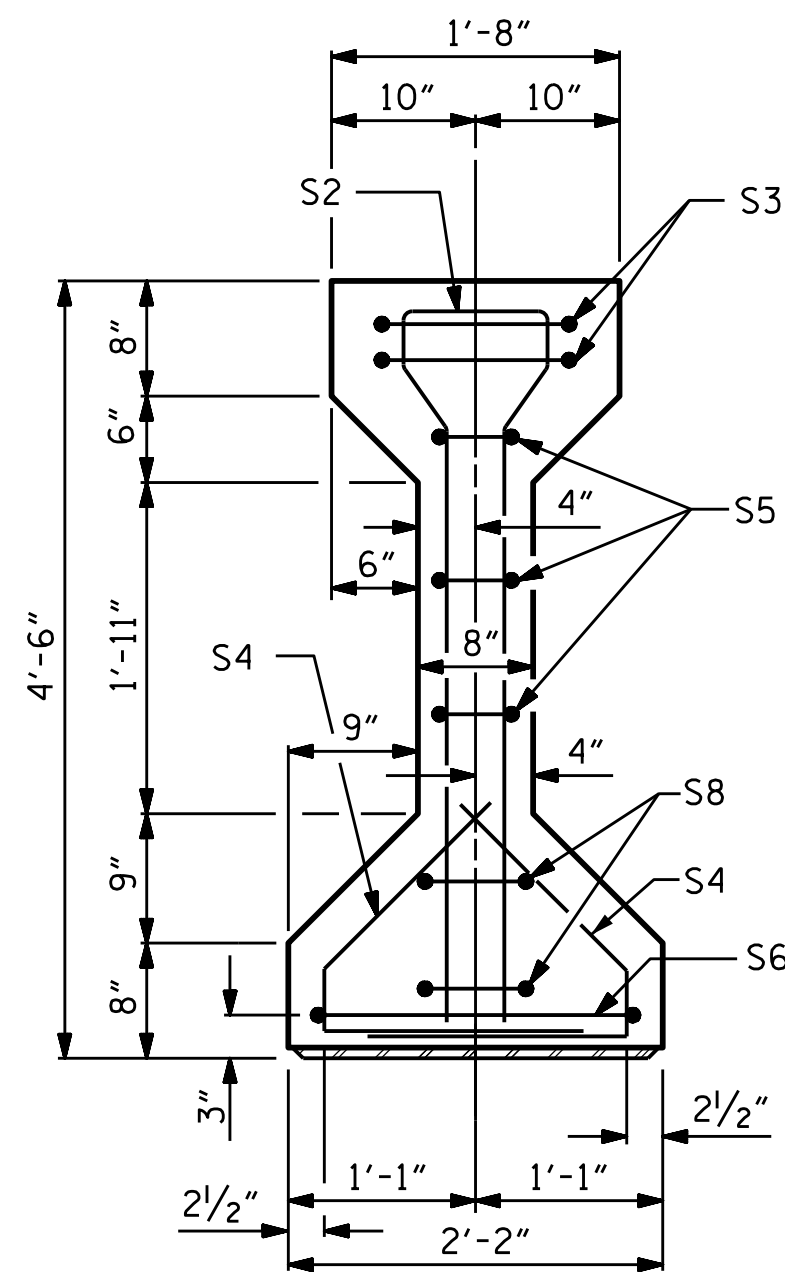
2/24/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

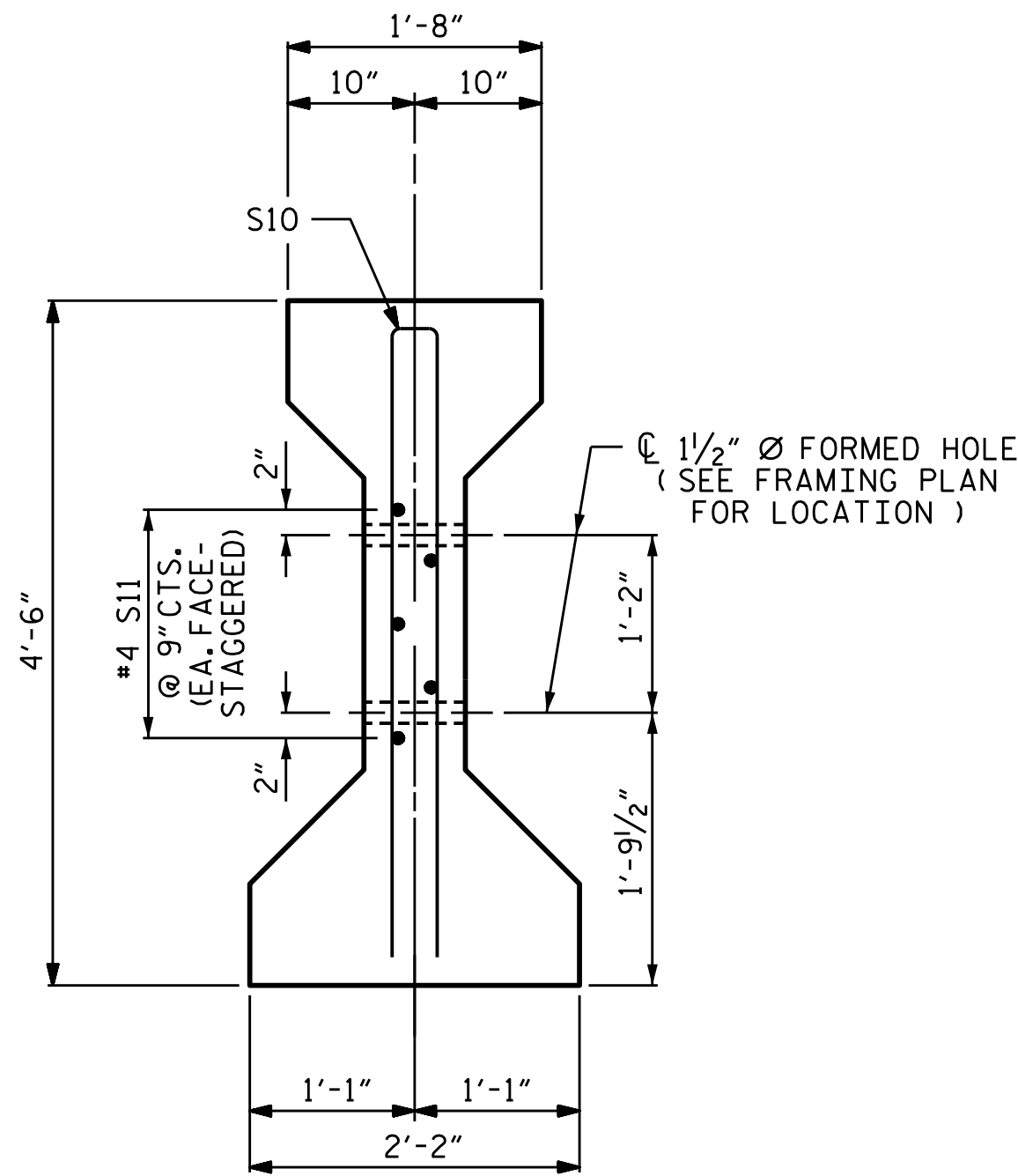
TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

| REVISIONS |     |       |     |     |       | SHEET NO.<br>S-25   |
|-----------|-----|-------|-----|-----|-------|---------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                     |
| 1         |     |       | 3   |     |       | TOTAL SHEETS<br>100 |
| 2         |     |       | 4   |     |       |                     |

|                                |                    |
|--------------------------------|--------------------|
| ASSEMBLED BY : STM             | DATE : 06/22       |
| CHECKED BY : MGC               | DATE : 06/22       |
| DESIGN ENGINEER OF RECORD: STM | DATE : 06/22       |
| DRAWN BY : ELR 8/91            | REV. 1/15 MAA/TMG  |
| CHECKED BY : GRP 8/91          | REV. 12/17 MAA/THC |
|                                | REV. 10/23 BNB/AKP |

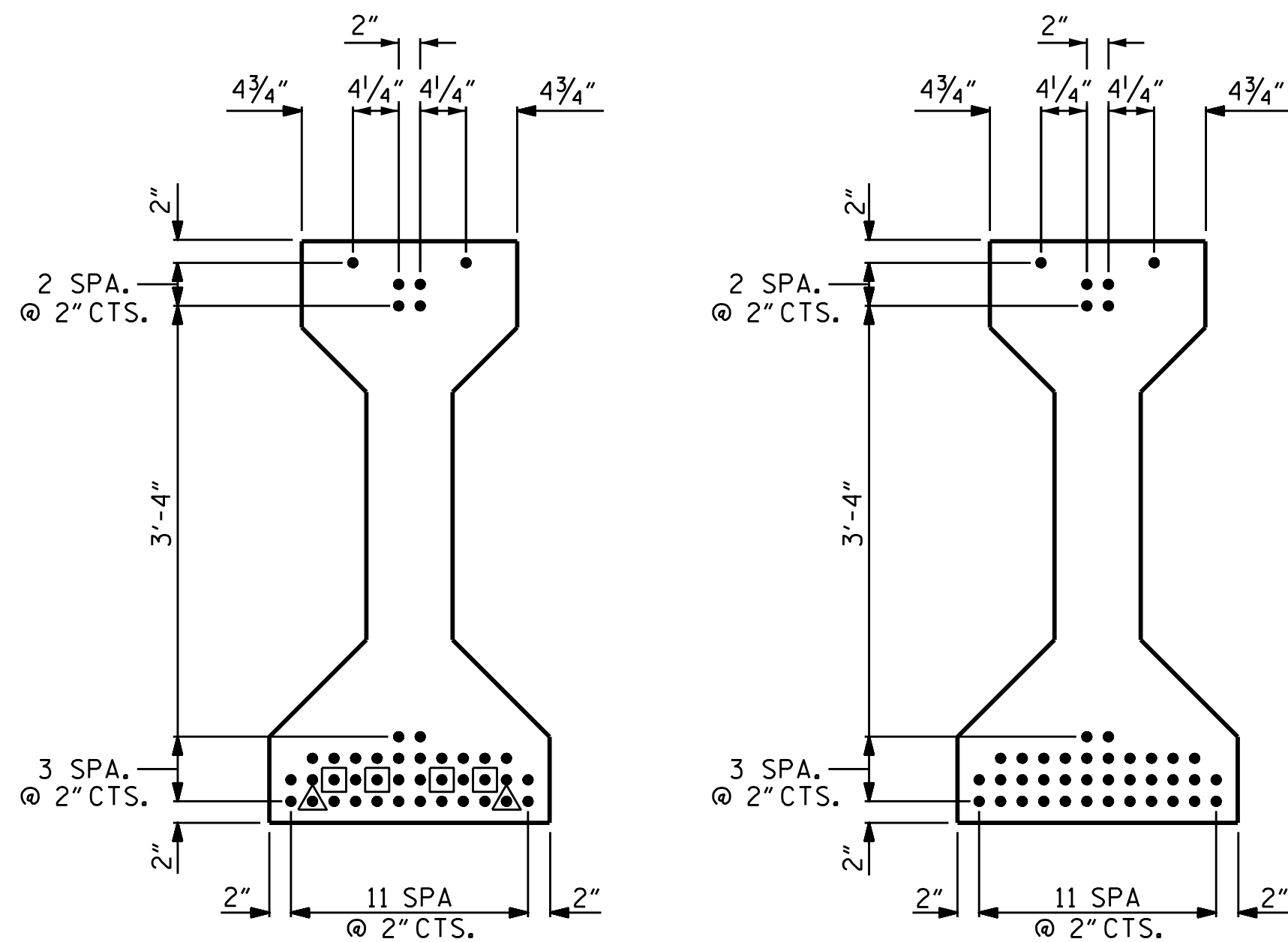


SECTION A-A



SECTION C-C

(S1 BARS NOT SHOWN)



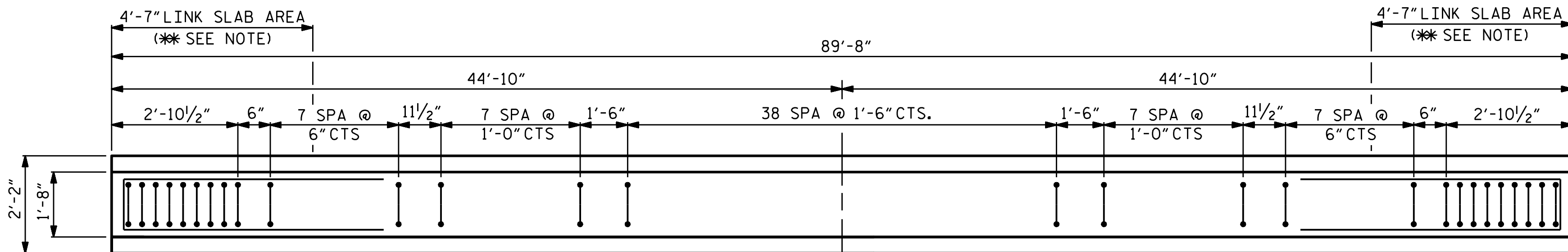
AT END OF GIRDER

AT C OF GIRDER

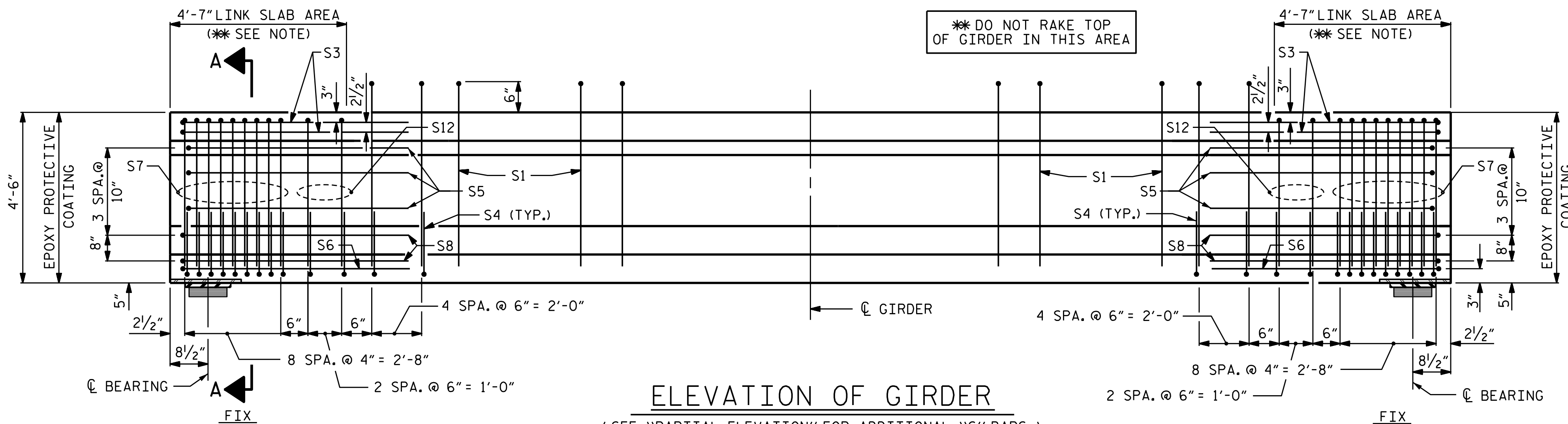
0.6" Ø LOW RELAXATION STRAND LAYOUT

△ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 20'-0" FROM ENDS OF PRESTRESSED GIRDERS. SEE STANDARD SPECIFICATIONS, ARTICLE 1087-7.

□ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 10'-0" FROM ENDS OF PRESTRESSED GIRDERS. SEE STANDARD SPECIFICATIONS, ARTICLE 1087-7.

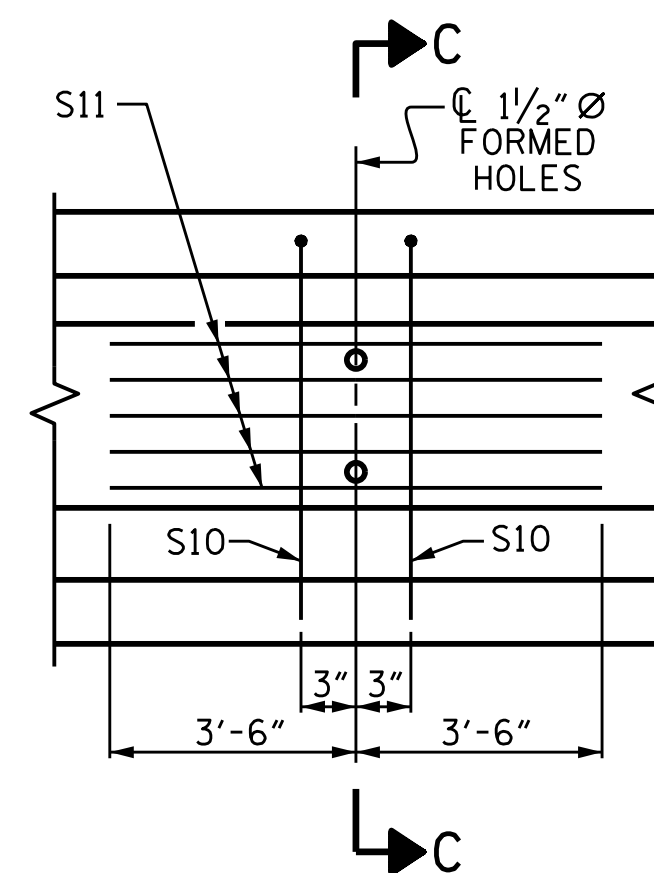


PLAN OF GIRDER



ELEVATION OF GIRDER

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



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM REINFORCING STEEL FOR ALL GIRDERS.

0.6" Ø L. R. GRADE 270 STRANDS

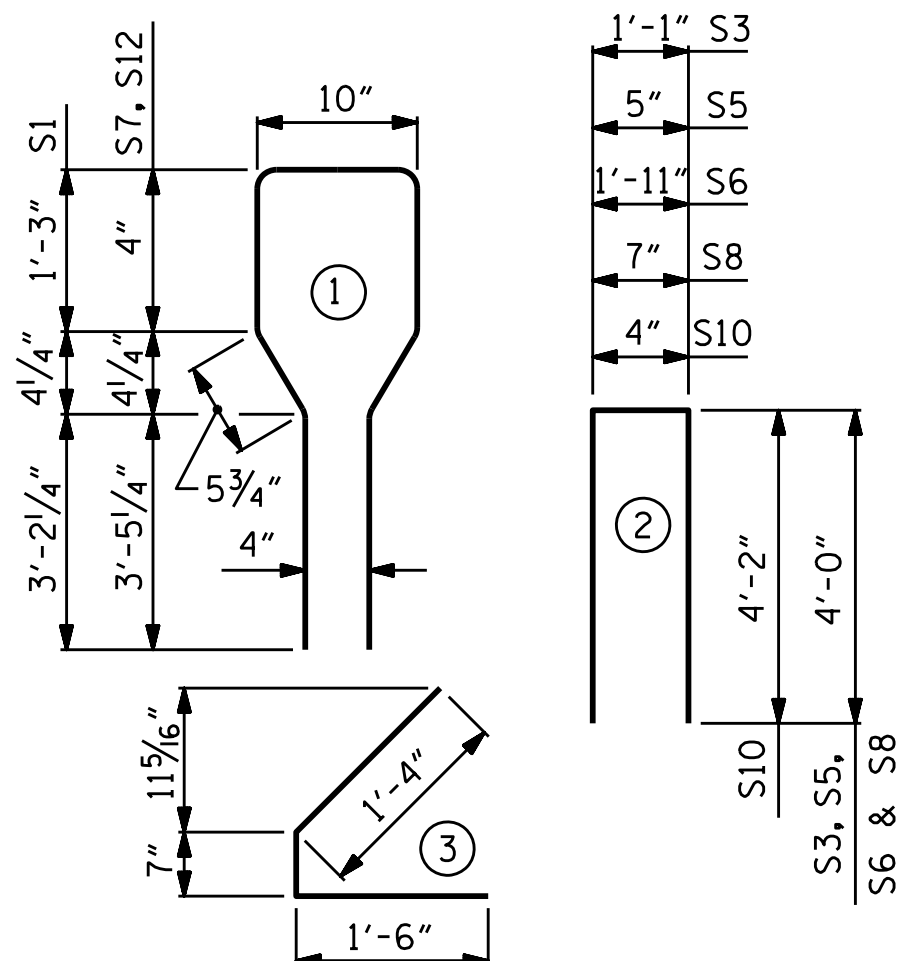
| AREA<br>(SQUARE INCHES) | ULTIMATE<br>STRENGTH<br>(LBS. PER STRAND) | APPLIED<br>PRESTRESS<br>(LBS. PER STRAND) |
|-------------------------|-------------------------------------------|-------------------------------------------|
| 0.217                   | 58,600                                    | 43,950                                    |

REINFORCING STEEL FOR ONE GIRDER

| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
|-----|--------|------|------|--------|--------|
| S1  | 65     | #4   | 1    | 10'-8" | 463    |
| S3  | 4      | #4   | 2    | 9'-1"  | 24     |
| S4  | 68     | #4   | 3    | 3'-5"  | 155    |
| S5  | 6      | #4   | 2    | 8'-5"  | 34     |
| S6  | 2      | #4   | 2    | 9'-11" | 13     |
| S7  | 18     | #6   | 1    | 9'-4"  | 252    |
| S8  | 4      | #4   | 2    | 8'-7"  | 23     |
| S10 | 2      | #5   | 2    | 8'-8"  | 18     |
| S11 | 5      | #4   | STR  | 7'-0"  | 23     |
| S12 | 6      | #4   | 1    | 9'-4"  | 37     |

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

|  | REINFORCING<br>STEEL<br>LB. | 8000 PSI<br>CONCRETE<br>C.Y. | 0.6" Ø L. R.<br>STRANDS<br>No. |
|--|-----------------------------|------------------------------|--------------------------------|
|  | 1042                        | 18.2                         | 42                             |

GIRDERS REQUIRED

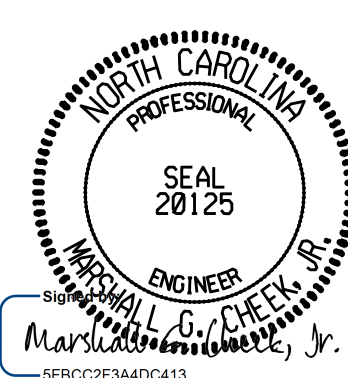
| NUMBER | LENGTH | TOTAL LENGTH |
|--------|--------|--------------|
| 42     | 89'-8" | 3766'-0"     |

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00 -L-

SHEET 2 OF 6



2/24/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

| REVISIONS |     |       |     |     |       | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |           |
| 1         |     |       | 3   |     |       | S-26      |
| 2         |     |       | 4   |     |       |           |

TOTAL SHEETS 100

STD. NO. PCG6 (Sht. 1)

ASSEMBLED BY : STM DATE : 06/22  
CHECKED BY : MGC DATE : 06/22  
DESIGN ENGINEER OF RECORD: STM DATE : 06/22

DRAWN BY : ELR 8/9/1  
CHECKED BY : GRP 8/9/1  
REV. 1/15 MAA/TMG  
REV. 12/17 MAA/THC  
REV. 10/23 BNB/AKP

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

ALL REINFORCING STEEL SHALL BE GRADE 60.

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

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

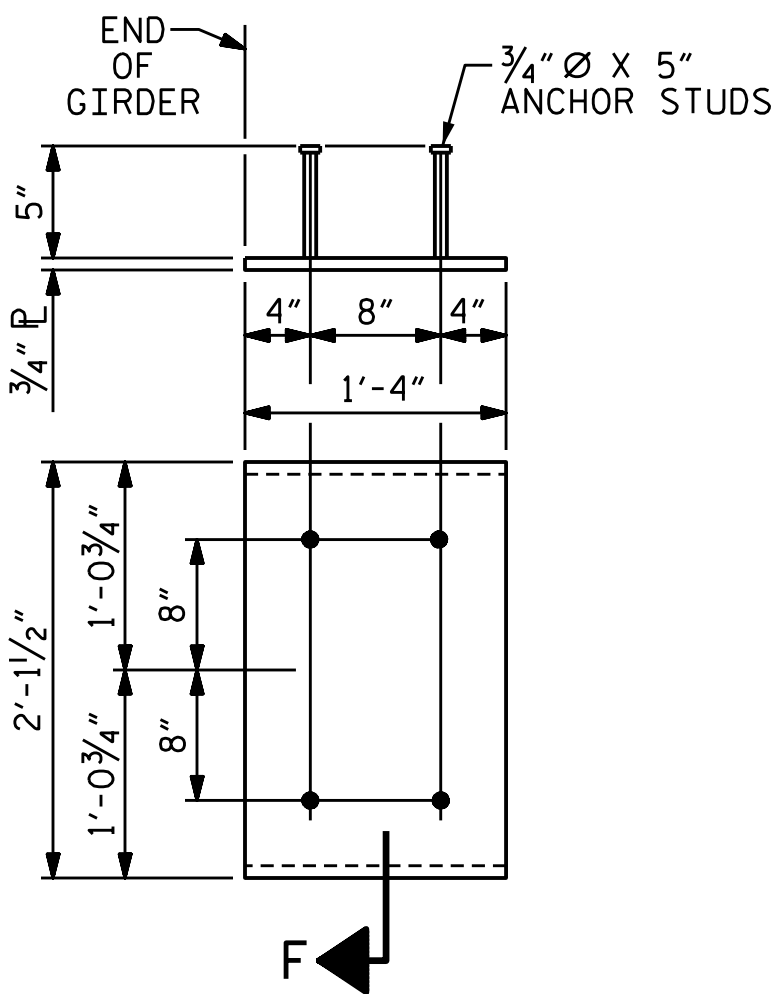
ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED  
EQUALLY, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE  
ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

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.

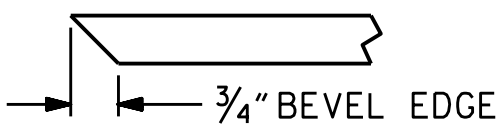
THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6000 PSI.

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

THE TOP SURFACE OF THE GIRDER, EXCLUDING THE OUTSIDE 4", SHALL BE RAKED TO A DEPTH OF 1/4", EXCEPT AS NOTED IN THE LINK SLAB AREAS.



(2 REQ'D PER GIRDER)



(SEE NOTES)

STATION: 32+93.00 -L-

SHEET 3 OF 6



2/24/2026

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

STANDARD  
PRESTRESSED CONCRETE GIRDER  
CONTINUOUS FOR LIVE LOAD  
DETAILS

|                |           |            |         |
|----------------|-----------|------------|---------|
| ASSEMBLED BY : | STM       | DATE :     | 10/20   |
| CHECKED BY :   | MGC       | DATE :     | 03/21   |
| DRAWN BY :     | ELR 11/91 | REV. 1/15  | MAA/TMG |
| CHECKED BY :   | GRP 11/91 | REV. 12/17 | MAA/TMG |
|                |           | REV. 10/23 | BNB/AKP |

|                                                                                                                                                                                                              |  |           |     |       |     |     |       |                 |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------|-----|-------|-----|-----|-------|-----------------|--|
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                                                                                                             |  | REVISIONS |     |       |     |     |       | SHEET NO.       |  |
|  <b>TGS ENGINEERS</b><br>201 W. MARION ST STE 200<br>SHELBY, NC 28150<br>PH (704) 476-0003<br>CORP. LICENSE NO.: C-0275 |  | NO.       | BY: | DATE: | NO. | BY: | DATE: | S-27            |  |
|                                                                                                                                                                                                              |  | 1         |     |       | 3   |     |       | TOTAL<br>SHEETS |  |
|                                                                                                                                                                                                              |  | 2         |     |       | 4   |     |       | 100             |  |

11/12/2025  
X:\NCDDOT\B-5857 Cramer\ton\Structures\Final Plans\Final DGN\401\_057\_U-6146\_SMU-G03\_350082.dgn  
User:ZSmith

STD. NO. PCG9 (Sht. 3)

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS |                           |       |       |       |       |       |        |        |       |        |       |       |       |        |       |        |        |       |       |       |        |       |
|----------------------------------------|---------------------------|-------|-------|-------|-------|-------|--------|--------|-------|--------|-------|-------|-------|--------|-------|--------|--------|-------|-------|-------|--------|-------|
| 0.6"Ø LOW RELAXATION STRANDS           | SPANS A - E      GIRDER 1 |       |       |       |       |       |        |        |       |        |       |       |       |        |       |        |        |       |       |       |        |       |
|                                        | ℄ BRG.                    | .05   | .10   | .15   | .20   | .25   | .30    | .35    | .40   | .45    | .50   | .55   | .60   | .65    | .70   | .75    | .80    | .85   | .90   | .95   | ℄ BRG. |       |
| CAMBER ( GIRDER ALONE IN PLACE )       | ↑                         | 0.000 | 0.030 | 0.059 | 0.086 | 0.111 | 0.130  | 0.152  | 0.167 | 0.178  | 0.185 | 0.187 | 0.185 | 0.178  | 0.167 | 0.152  | 0.130  | 0.111 | 0.086 | 0.059 | 0.030  | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L.  | ↓                         | 0.000 | 0.016 | 0.032 | 0.047 | 0.061 | 0.073  | 0.085  | 0.092 | 0.100  | 0.102 | 0.105 | 0.102 | 0.099  | 0.092 | 0.085  | 0.073  | 0.061 | 0.046 | 0.031 | 0.016  | 0.000 |
| FINAL CAMBER                           | ↑                         | 0     | 3⁄16" | 5⁄16" | 1⁄2"  | 5⁄8"  | 11⁄16" | 13⁄16" | 7⁄8"  | 15⁄16" | 1"    | 1"    | 1"    | 15⁄16" | 7⁄8"  | 13⁄16" | 11⁄16" | 5⁄8"  | 1⁄2"  | 5⁄16" | 3⁄16"  | 0     |

\* INCLUDES FUTURE WEARING SURFACE  
ALL VALUES ARE SHOWN IN FEET, EXCEPT "FINAL CAMBER",  
WHICH IS SHOWN IN INCHES.

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS |                                |       |       |       |       |       |       |       |        |       |       |       |       |       |        |       |       |       |       |       |        |       |
|----------------------------------------|--------------------------------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|--------|-------|
| 0.6"Ø LOW RELAXATION STRANDS           | SPANS A - E      GIRDERS 2 & 3 |       |       |       |       |       |       |       |        |       |       |       |       |       |        |       |       |       |       |       |        |       |
|                                        | ℄ BRG.                         | .05   | .10   | .15   | .20   | .25   | .30   | .35   | .40    | .45   | .50   | .55   | .60   | .65   | .70    | .75   | .80   | .85   | .90   | .95   | ℄ BRG. |       |
| CAMBER ( GIRDER ALONE IN PLACE )       | ↑                              | 0.000 | 0.030 | 0.059 | 0.086 | 0.111 | 0.130 | 0.152 | 0.167  | 0.178 | 0.185 | 0.187 | 0.185 | 0.178 | 0.167  | 0.152 | 0.130 | 0.111 | 0.086 | 0.059 | 0.030  | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L.  | ↓                              | 0.000 | 0.017 | 0.034 | 0.050 | 0.066 | 0.078 | 0.091 | 0.099  | 0.107 | 0.109 | 0.112 | 0.109 | 0.107 | 0.099  | 0.091 | 0.078 | 0.065 | 0.049 | 0.033 | 0.017  | 0.000 |
| FINAL CAMBER                           | ↑                              | 0     | 1⁄8"  | 5⁄16" | 7⁄16" | 9⁄16" | 5⁄8"  | 3⁄4"  | 13⁄16" | 7⁄8"  | 7⁄8"  | 7⁄8"  | 7⁄8"  | 7⁄8"  | 13⁄16" | 3⁄4"  | 5⁄8"  | 9⁄16" | 7⁄16" | 5⁄16" | 1⁄8"   | 0     |

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS |                           |       |       |       |       |        |       |        |        |       |        |        |        |       |        |        |       |        |       |       |        |       |
|----------------------------------------|---------------------------|-------|-------|-------|-------|--------|-------|--------|--------|-------|--------|--------|--------|-------|--------|--------|-------|--------|-------|-------|--------|-------|
| 0.6"Ø LOW RELAXATION STRANDS           | SPANS A - E      GIRDER 4 |       |       |       |       |        |       |        |        |       |        |        |        |       |        |        |       |        |       |       |        |       |
|                                        | ℄ BRG.                    | .05   | .10   | .15   | .20   | .25    | .30   | .35    | .40    | .45   | .50    | .55    | .60    | .65   | .70    | .75    | .80   | .85    | .90   | .95   | ℄ BRG. |       |
| CAMBER ( GIRDER ALONE IN PLACE )       | ↑                         | 0.000 | 0.030 | 0.059 | 0.086 | 0.111  | 0.130 | 0.152  | 0.167  | 0.178 | 0.185  | 0.187  | 0.185  | 0.178 | 0.167  | 0.152  | 0.130 | 0.111  | 0.086 | 0.059 | 0.030  | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L.  | ↓                         | 0.000 | 0.012 | 0.024 | 0.035 | 0.046  | 0.054 | 0.063  | 0.068  | 0.074 | 0.076  | 0.078  | 0.076  | 0.074 | 0.068  | 0.063  | 0.054 | 0.045  | 0.034 | 0.023 | 0.012  | 0.000 |
| FINAL CAMBER                           | ↑                         | 0     | 3⁄16" | 7⁄16" | 5⁄8"  | 13⁄16" | 7⁄8"  | 11⁄16" | 13⁄16" | 1⁄4"  | 15⁄16" | 15⁄16" | 15⁄16" | 1⁄4"  | 13⁄16" | 11⁄16" | 7⁄8"  | 13⁄16" | 5⁄8"  | 7⁄16" | 3⁄16"  | 0     |

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS |                           |       |       |       |       |        |        |        |        |       |        |        |        |       |        |        |        |        |       |       |        |       |
|----------------------------------------|---------------------------|-------|-------|-------|-------|--------|--------|--------|--------|-------|--------|--------|--------|-------|--------|--------|--------|--------|-------|-------|--------|-------|
| 0.6"Ø LOW RELAXATION STRANDS           | SPANS A - E      GIRDER 5 |       |       |       |       |        |        |        |        |       |        |        |        |       |        |        |        |        |       |       |        |       |
|                                        | ℄ BRG.                    | .05   | .10   | .15   | .20   | .25    | .30    | .35    | .40    | .45   | .50    | .55    | .60    | .65   | .70    | .75    | .80    | .85    | .90   | .95   | ℄ BRG. |       |
| CAMBER ( GIRDER ALONE IN PLACE )       | ↑                         | 0.000 | 0.030 | 0.059 | 0.086 | 0.111  | 0.130  | 0.152  | 0.167  | 0.178 | 0.185  | 0.187  | 0.185  | 0.178 | 0.167  | 0.152  | 0.130  | 0.111  | 0.086 | 0.059 | 0.030  | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L.  | ↓                         | 0.000 | 0.013 | 0.026 | 0.039 | 0.052  | 0.062  | 0.072  | 0.078  | 0.084 | 0.086  | 0.089  | 0.086  | 0.084 | 0.078  | 0.072  | 0.062  | 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" | 11⁄16" | 11⁄8" | 13⁄16" | 13⁄16" | 13⁄16" | 11⁄8" | 11⁄16" | 15⁄16" | 13⁄16" | 11⁄16" | 9⁄16" | 3⁄8"  | 3⁄16"  | 0     |

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS |                           |       |       |       |       |        |       |       |       |        |        |        |        |        |       |       |       |        |       |       |        |       |
|----------------------------------------|---------------------------|-------|-------|-------|-------|--------|-------|-------|-------|--------|--------|--------|--------|--------|-------|-------|-------|--------|-------|-------|--------|-------|
| 0.6"Ø LOW RELAXATION STRANDS           | SPANS A - E      GIRDER 6 |       |       |       |       |        |       |       |       |        |        |        |        |        |       |       |       |        |       |       |        |       |
|                                        | ℄ BRG.                    | .05   | .10   | .15   | .20   | .25    | .30   | .35   | .40   | .45    | .50    | .55    | .60    | .65    | .70   | .75   | .80   | .85    | .90   | .95   | ℄ BRG. |       |
| CAMBER ( GIRDER ALONE IN PLACE )       | ↑                         | 0.000 | 0.030 | 0.059 | 0.086 | 0.111  | 0.130 | 0.152 | 0.167 | 0.178  | 0.185  | 0.187  | 0.185  | 0.178  | 0.167 | 0.152 | 0.130 | 0.111  | 0.086 | 0.059 | 0.030  | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L.  | ↓                         | 0.000 | 0.014 | 0.029 | 0.043 | 0.056  | 0.067 | 0.078 | 0.085 | 0.092  | 0.094  | 0.096  | 0.094  | 0.092  | 0.085 | 0.078 | 0.067 | 0.056  | 0.042 | 0.029 | 0.014  | 0.000 |
| FINAL CAMBER                           | ↑                         | 0     | 3⁄16" | 3⁄8"  | 1⁄2"  | 11⁄16" | 3⁄4"  | 7⁄8"  | 1"    | 11⁄16" | 11⁄16" | 11⁄16" | 11⁄16" | 11⁄16" | 1"    | 7⁄8"  | 3⁄4"  | 11⁄16" | 1⁄2"  | 3⁄8"  | 3⁄16"  | 0     |

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS |                           |       |       |       |       |        |        |        |        |       |        |        |        |       |        |        |        |        |       |       |        |       |
|----------------------------------------|---------------------------|-------|-------|-------|-------|--------|--------|--------|--------|-------|--------|--------|--------|-------|--------|--------|--------|--------|-------|-------|--------|-------|
| 0.6"Ø LOW RELAXATION STRANDS           | SPANS A - E      GIRDER 7 |       |       |       |       |        |        |        |        |       |        |        |        |       |        |        |        |        |       |       |        |       |
|                                        | ℄ BRG.                    | .05   | .10   | .15   | .20   | .25    | .30    | .35    | .40    | .45   | .50    | .55    | .60    | .65   | .70    | .75    | .80    | .85    | .90   | .95   | ℄ BRG. |       |
| CAMBER ( GIRDER ALONE IN PLACE )       | ↑                         | 0.000 | 0.030 | 0.059 | 0.086 | 0.111  | 0.130  | 0.152  | 0.167  | 0.178 | 0.185  | 0.187  | 0.185  | 0.178 | 0.167  | 0.152  | 0.130  | 0.111  | 0.086 | 0.059 | 0.030  | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L.  | ↓                         | 0.000 | 0.011 | 0.023 | 0.034 | 0.045  | 0.053  | 0.061  | 0.067  | 0.072 | 0.074  | 0.076  | 0.074  | 0.072 | 0.066  | 0.061  | 0.053  | 0.044  | 0.033 | 0.023 | 0.011  | 0.000 |
| FINAL CAMBER                           | ↑                         | 0     | 1⁄4"  | 7⁄16" | 5⁄8"  | 13⁄16" | 15⁄16" | 11⁄16" | 13⁄16" | 1⁄4"  | 15⁄16" | 15⁄16" | 15⁄16" | 1⁄4"  | 13⁄16" | 11⁄16" | 15⁄16" | 13⁄16" | 5⁄8"  | 7⁄16" | 1⁄4"   | 0     |

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00-L -

SHEET 4 OF 6

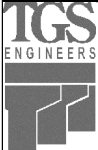


STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

DEAD LOAD  
DEFLECTIONS

2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

REVISIONS

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

SHEET NO.

S-28

TOTAL  
SHEETS

100

DRAWN BY : ZCS      DATE : 2/21  
CHECKED BY : MGC      DATE : 3/21  
DESIGN ENGINEER OF RECORD : STM      DATE : 3/21

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS |                            |       |       |       |       |       |       |       |        |       |        |        |        |       |        |       |       |       |       |       |        |       |
|----------------------------------------|----------------------------|-------|-------|-------|-------|-------|-------|-------|--------|-------|--------|--------|--------|-------|--------|-------|-------|-------|-------|-------|--------|-------|
| 0.6"Ø LOW RELAXATION STRANDS           | SPANS A - E      GIRDERS 8 |       |       |       |       |       |       |       |        |       |        |        |        |       |        |       |       |       |       |       |        |       |
|                                        | ℄ BRG.                     | .05   | .10   | .15   | .20   | .25   | .30   | .35   | .40    | .45   | .50    | .55    | .60    | .65   | .70    | .75   | .80   | .85   | .90   | .95   | ℄ BRG. |       |
| CAMBER ( GIRDER ALONE IN PLACE )       | ↑                          | 0.000 | 0.030 | 0.059 | 0.086 | 0.111 | 0.130 | 0.152 | 0.167  | 0.178 | 0.185  | 0.187  | 0.185  | 0.178 | 0.167  | 0.152 | 0.130 | 0.111 | 0.086 | 0.059 | 0.030  | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L.  | ↓                          | 0.000 | 0.017 | 0.033 | 0.049 | 0.065 | 0.077 | 0.090 | 0.097  | 0.105 | 0.108  | 0.111  | 0.108  | 0.105 | 0.097  | 0.090 | 0.078 | 0.065 | 0.049 | 0.033 | 0.017  | 0.000 |
| FINAL CAMBER                           | ↑                          | 0     | 3⁄16" | 5⁄16" | 7⁄16" | 9⁄16" | 5⁄8"  | 3⁄4"  | 13⁄16" | 7⁄8"  | 15⁄16" | 15⁄16" | 15⁄16" | 7⁄8"  | 13⁄16" | 3⁄4"  | 5⁄8"  | 9⁄16" | 7⁄16" | 5⁄16" | 3⁄16"  | 0     |

\* INCLUDES FUTURE WEARING SURFACE  
ALL VALUES ARE SHOWN IN FEET, EXCEPT "FINAL CAMBER",  
WHICH IS SHOWN IN INCHES.

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS |                           |       |       |       |       |       |       |       |        |       |       |       |       |       |        |       |       |       |       |       |        |       |
|----------------------------------------|---------------------------|-------|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|--------|-------|
| 0.6"Ø LOW RELAXATION STRANDS           | SPANS A - E      GIRDER 9 |       |       |       |       |       |       |       |        |       |       |       |       |       |        |       |       |       |       |       |        |       |
|                                        | ℄ BRG.                    | .05   | .10   | .15   | .20   | .25   | .30   | .35   | .40    | .45   | .50   | .55   | .60   | .65   | .70    | .75   | .80   | .85   | .90   | .95   | ℄ BRG. |       |
| CAMBER ( GIRDER ALONE IN PLACE )       | ↑                         | 0.000 | 0.030 | 0.059 | 0.086 | 0.111 | 0.130 | 0.152 | 0.167  | 0.178 | 0.185 | 0.187 | 0.185 | 0.178 | 0.167  | 0.152 | 0.130 | 0.111 | 0.086 | 0.059 | 0.030  | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L.  | ↓                         | 0.000 | 0.019 | 0.037 | 0.054 | 0.072 | 0.086 | 0.099 | 0.108  | 0.117 | 0.120 | 0.123 | 0.120 | 0.117 | 0.108  | 0.099 | 0.086 | 0.072 | 0.054 | 0.037 | 0.019  | 0.000 |
| FINAL CAMBER                           | ↑                         | 0     | 1⁄8"  | 1⁄4"  | 3⁄8"  | 1⁄2"  | 9⁄16" | 5⁄8"  | 11⁄16" | 3⁄4"  | 3⁄4"  | 3⁄4"  | 3⁄4"  | 3⁄4"  | 11⁄16" | 5⁄8"  | 9⁄16" | 1⁄2"  | 3⁄8"  | 1⁄4"  | 1⁄8"   | 0     |

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS |                                 |       |       |       |       |       |        |        |       |        |       |       |       |        |       |        |        |       |       |       |        |       |
|----------------------------------------|---------------------------------|-------|-------|-------|-------|-------|--------|--------|-------|--------|-------|-------|-------|--------|-------|--------|--------|-------|-------|-------|--------|-------|
| 0.6"Ø LOW RELAXATION STRANDS           | SPANS A - E      GIRDER 10 & 11 |       |       |       |       |       |        |        |       |        |       |       |       |        |       |        |        |       |       |       |        |       |
|                                        | ℄ BRG.                          | .05   | .10   | .15   | .20   | .25   | .30    | .35    | .40   | .45    | .50   | .55   | .60   | .65    | .70   | .75    | .80    | .85   | .90   | .95   | ℄ BRG. |       |
| CAMBER ( GIRDER ALONE IN PLACE )       | ↑                               | 0.000 | 0.030 | 0.059 | 0.086 | 0.111 | 0.130  | 0.152  | 0.167 | 0.178  | 0.185 | 0.187 | 0.185 | 0.178  | 0.167 | 0.152  | 0.130  | 0.111 | 0.086 | 0.059 | 0.030  | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L.  | ↓                               | 0.000 | 0.016 | 0.031 | 0.046 | 0.061 | 0.073  | 0.084  | 0.092 | 0.100  | 0.102 | 0.105 | 0.102 | 0.100  | 0.092 | 0.084  | 0.073  | 0.061 | 0.046 | 0.031 | 0.016  | 0.000 |
| FINAL CAMBER                           | ↑                               | 0     | 3⁄16" | 5⁄16" | 1⁄2"  | 5⁄8"  | 11⁄16" | 13⁄16" | 7⁄8"  | 15⁄16" | 1"    | 1"    | 1"    | 15⁄16" | 7⁄8"  | 13⁄16" | 11⁄16" | 5⁄8"  | 1⁄2"  | 5⁄16" | 3⁄16"  | 0     |

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS |                            |       |       |       |       |       |       |        |       |       |        |        |        |       |       |        |       |       |       |       |        |       |
|----------------------------------------|----------------------------|-------|-------|-------|-------|-------|-------|--------|-------|-------|--------|--------|--------|-------|-------|--------|-------|-------|-------|-------|--------|-------|
| 0.6"Ø LOW RELAXATION STRANDS           | SPANS A - E      GIRDER 12 |       |       |       |       |       |       |        |       |       |        |        |        |       |       |        |       |       |       |       |        |       |
|                                        | ℄ BRG.                     | .05   | .10   | .15   | .20   | .25   | .30   | .35    | .40   | .45   | .50    | .55    | .60    | .65   | .70   | .75    | .80   | .85   | .90   | .95   | ℄ BRG. |       |
| CAMBER ( GIRDER ALONE IN PLACE )       | ↑                          | 0.000 | 0.030 | 0.059 | 0.086 | 0.111 | 0.130 | 0.152  | 0.167 | 0.178 | 0.185  | 0.187  | 0.185  | 0.178 | 0.167 | 0.152  | 0.130 | 0.111 | 0.086 | 0.059 | 0.030  | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L.  | ↓                          | 0.000 | 0.018 | 0.036 | 0.053 | 0.070 | 0.083 | 0.097  | 0.105 | 0.114 | 0.117  | 0.120  | 0.117  | 0.114 | 0.105 | 0.097  | 0.083 | 0.070 | 0.053 | 0.036 | 0.018  | 0.000 |
| FINAL CAMBER                           | ↑                          | 0     | 1⁄8"  | 1⁄4"  | 3⁄8"  | 1⁄2"  | 9⁄16" | 11⁄16" | 3⁄4"  | 3⁄4"  | 13⁄16" | 13⁄16" | 13⁄16" | 3⁄4"  | 3⁄4"  | 11⁄16" | 9⁄16" | 1⁄2"  | 3⁄8"  | 1⁄4"  | 1⁄8"   | 0     |

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS |                            |       |       |       |       |       |       |       |        |        |       |       |       |        |        |       |       |       |       |       |        |       |
|----------------------------------------|----------------------------|-------|-------|-------|-------|-------|-------|-------|--------|--------|-------|-------|-------|--------|--------|-------|-------|-------|-------|-------|--------|-------|
| 0.6"Ø LOW RELAXATION STRANDS           | SPANS A - E      GIRDER 13 |       |       |       |       |       |       |       |        |        |       |       |       |        |        |       |       |       |       |       |        |       |
|                                        | ℄ BRG.                     | .05   | .10   | .15   | .20   | .25   | .30   | .35   | .40    | .45    | .50   | .55   | .60   | .65    | .70    | .75   | .80   | .85   | .90   | .95   | ℄ BRG. |       |
| CAMBER ( GIRDER ALONE IN PLACE )       | ↑                          | 0.000 | 0.030 | 0.059 | 0.086 | 0.111 | 0.130 | 0.152 | 0.167  | 0.178  | 0.185 | 0.187 | 0.185 | 0.178  | 0.167  | 0.152 | 0.130 | 0.111 | 0.086 | 0.059 | 0.030  | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L.  | ↓                          | 0.000 | 0.019 | 0.038 | 0.056 | 0.073 | 0.087 | 0.101 | 0.110  | 0.119  | 0.122 | 0.125 | 0.122 | 0.119  | 0.110  | 0.101 | 0.087 | 0.073 | 0.056 | 0.038 | 0.019  | 0.000 |
| FINAL CAMBER                           | ↑                          | 0     | 1⁄8"  | 1⁄4"  | 3⁄8"  | 7⁄16" | 1⁄2"  | 5⁄8"  | 11⁄16" | 11⁄16" | 3⁄4"  | 3⁄4"  | 3⁄4"  | 11⁄16" | 11⁄16" | 5⁄8"  | 1⁄2"  | 7⁄16" | 3⁄8"  | 1⁄4"  | 1⁄8"   | 0     |

| —————DEAD LOAD DEFLECTION TABLE FOR GIRDERS————— |                             |       |       |       |       |       |       |       |        |        |       |       |       |        |        |       |       |       |       |       |        |       |
|--------------------------------------------------|-----------------------------|-------|-------|-------|-------|-------|-------|-------|--------|--------|-------|-------|-------|--------|--------|-------|-------|-------|-------|-------|--------|-------|
| 0.6"Ø LOW RELAXATION STRANDS                     | SPANS A - E      GIRDERS 14 |       |       |       |       |       |       |       |        |        |       |       |       |        |        |       |       |       |       |       |        |       |
|                                                  | ℄ BRG.                      | .05   | .10   | .15   | .20   | .25   | .30   | .35   | .40    | .45    | .50   | .55   | .60   | .65    | .70    | .75   | .80   | .85   | .90   | .95   | ℄ BRG. |       |
| CAMBER ( GIRDER ALONE IN PLACE )                 | ↑                           | 0.000 | 0.030 | 0.059 | 0.086 | 0.111 | 0.130 | 0.152 | 0.167  | 0.178  | 0.185 | 0.187 | 0.185 | 0.178  | 0.167  | 0.152 | 0.130 | 0.111 | 0.086 | 0.059 | 0.030  | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L.            | ↓                           | 0.000 | 0.019 | 0.039 | 0.057 | 0.074 | 0.089 | 0.103 | 0.112  | 0.121  | 0.124 | 0.127 | 0.124 | 0.121  | 0.112  | 0.103 | 0.089 | 0.075 | 0.057 | 0.039 | 0.019  | 0.000 |
| FINAL CAMBER                                     | ↑                           | 0     | 1⁄8"  | 1⁄4"  | 3⁄8"  | 7⁄16" | 1⁄2"  | 9⁄16" | 11⁄16" | 11⁄16" | 3⁄4"  | 3⁄4"  | 3⁄4"  | 11⁄16" | 11⁄16" | 9⁄16" | 1⁄2"  | 7⁄16" | 3⁄8"  | 1⁄4"  | 1⁄8"   | 0     |

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00-L -

SHEET 5 OF 6



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

DEAD LOAD  
DEFLECTIONS

REVISIONS

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

SHEET NO.

S-29

TOTAL

SHEETS

100

DRAWN BY : ZCS     DATE : 2/21  
CHECKED BY : MGC     DATE : 3/21  
DESIGN ENGINEER OF RECORD : STM     DATE : 3/21

## STRUCTURAL STEEL NOTES

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

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

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

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

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

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

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

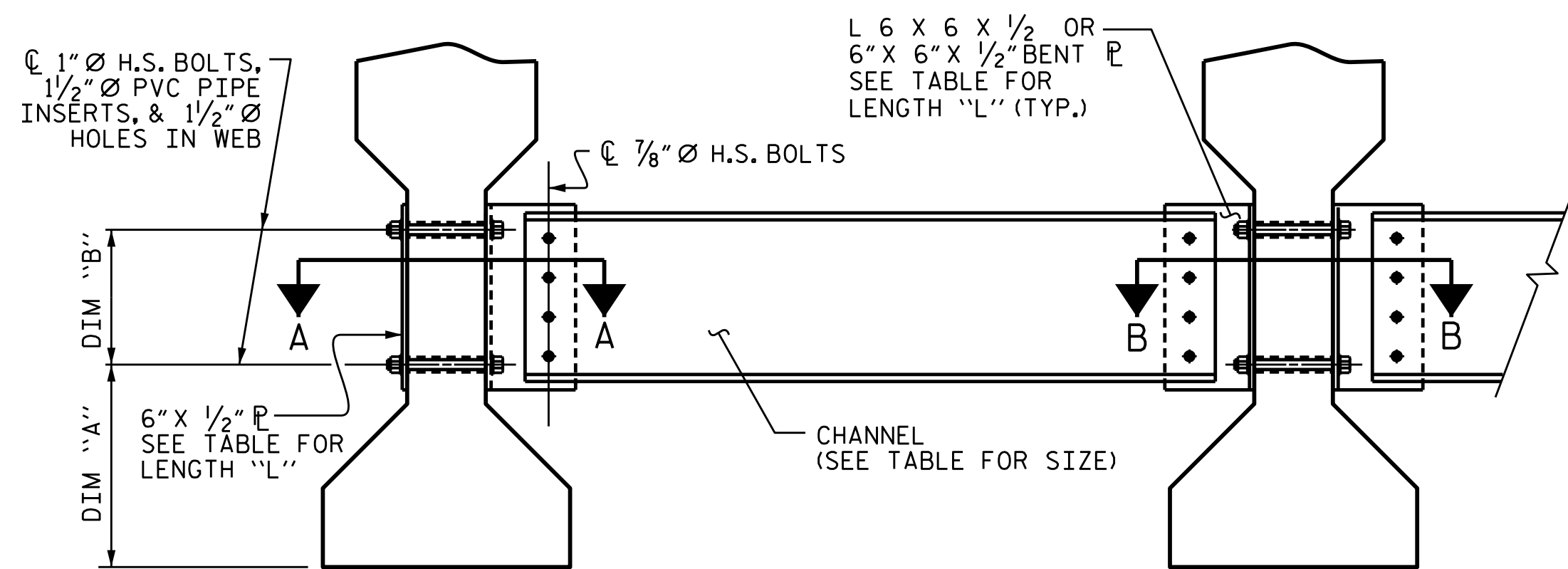
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF  
THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS  
OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

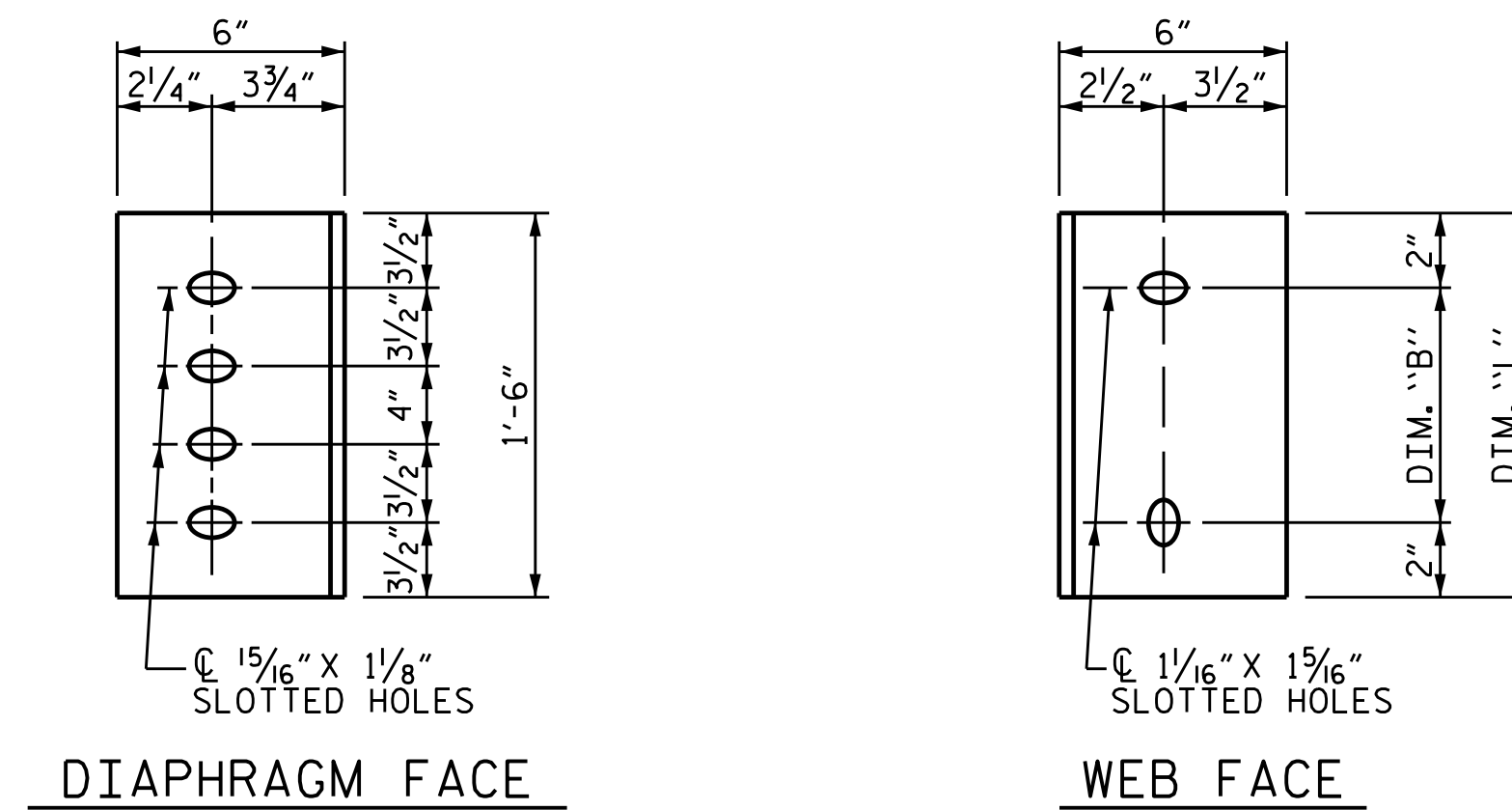
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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

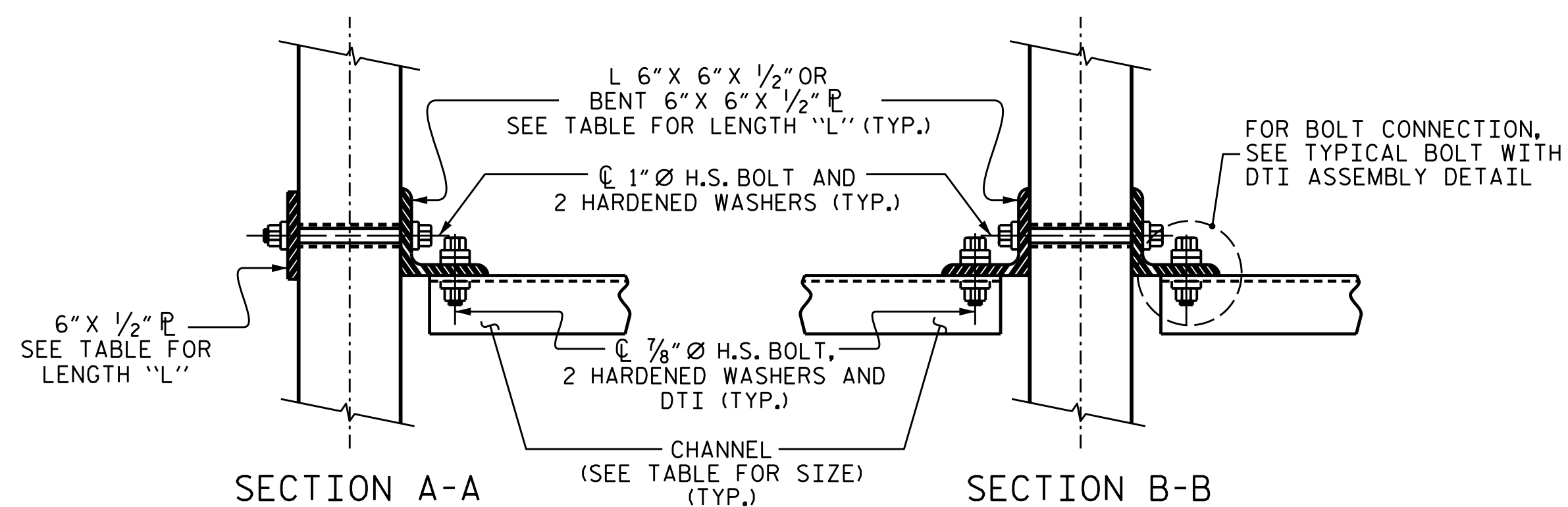
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.



EXTERIOR GIRDER
INTERIOR GIRDER  
 PART SECTION AT INTERMEDIATE DIAPHRAGM  
 ( TYPE IV GIRDER SHOWN )



## CONNECTOR PLATE DETAILS



## CONNECTION DETAILS

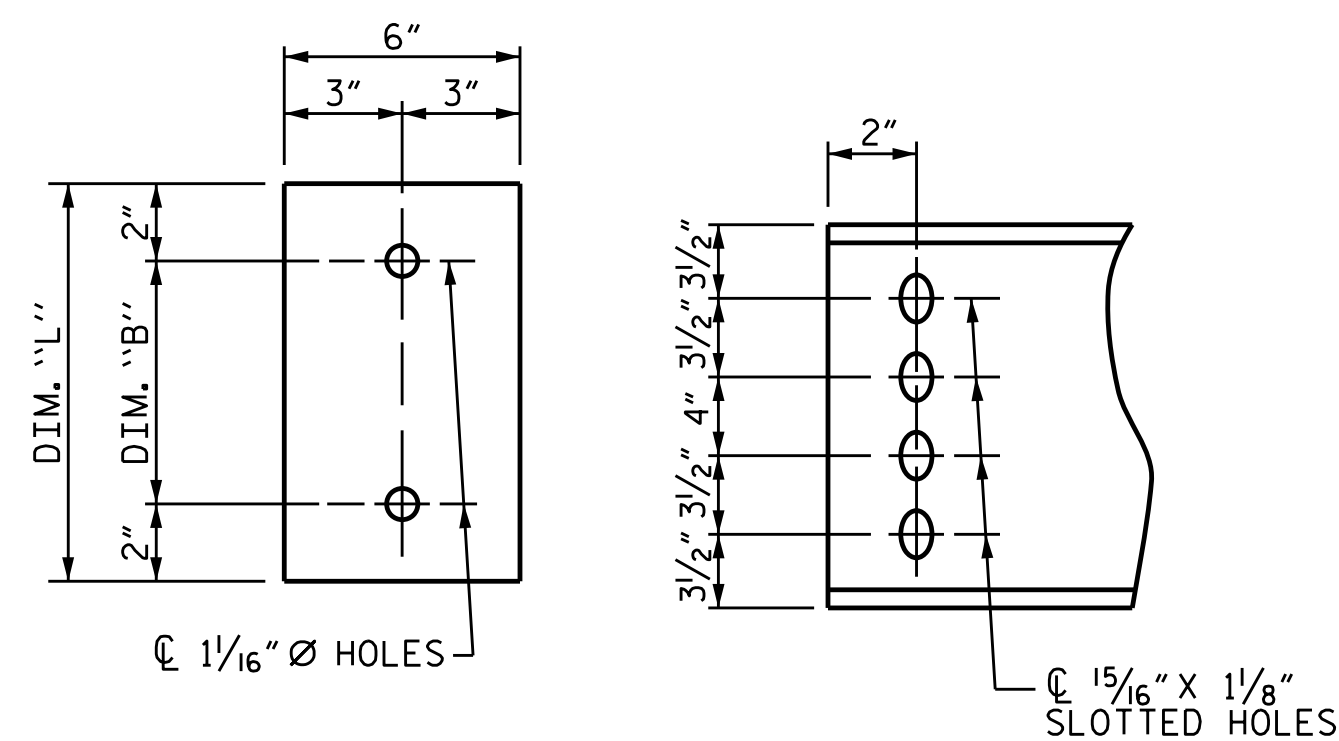
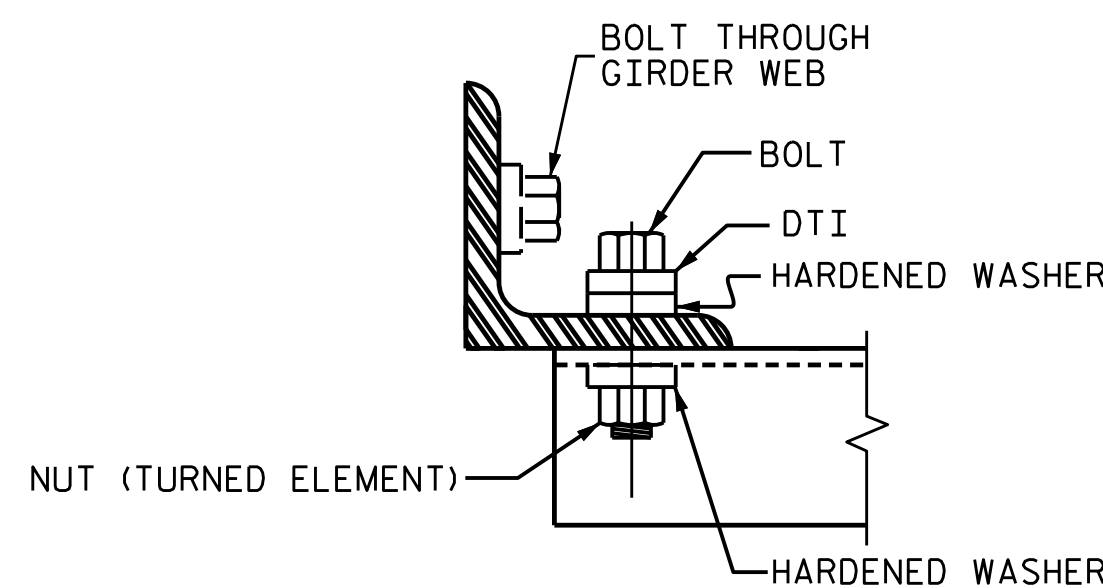


PLATE DETAILS      CHANNEL END  
( TYPE IV GDR. )



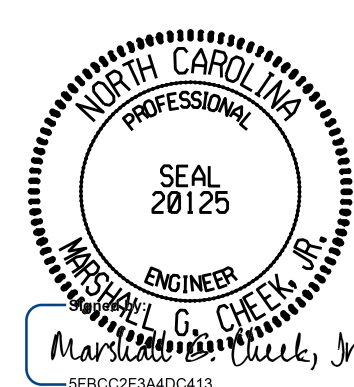
BOLT WITH DTI ASSEMBLY DETAIL

TABLE

| GIRDER<br>TYPE | CHANNEL<br>SIZE | DIM "A"              | DIM "B" | DIM "L" |
|----------------|-----------------|----------------------|---------|---------|
| IV             | MC 18 x 42.7    | 1'-9 $\frac{1}{2}$ " | 1'-2"   | 1'-6"   |

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
 STATION: 32+93.00 -L-

SHEET 6 OF 6



2/24/2026

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
INTERMEDIATE  
STEEL DIAPHRAGMS  
FOR TYPE IV  
PRESTRESSED CONCRETE  
GIRDERS

|                      |  |                |         |
|----------------------|--|----------------|---------|
| ASSEMBLED BY : STM   |  | DATE : 10/20   |         |
| CHECKED BY : MGC     |  | DATE : 03/21   |         |
| DRAWN BY : TLA 6/05  |  | REV. 5/1/06RRR | KMM/GM  |
| CHECKED BY : VC 6/05 |  | REV. 10/1/11   | MAA/GM  |
|                      |  | REV. 12/17     | MAA/THC |

|                                                                                                                   |                                 |                         |            |            |              |            |            |                         |                            |
|-------------------------------------------------------------------------------------------------------------------|---------------------------------|-------------------------|------------|------------|--------------|------------|------------|-------------------------|----------------------------|
| <p><b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b></p>                                   |                                 | <p><b>REVISIONS</b></p> |            |            |              |            |            | <p><b>SHEET NO.</b></p> |                            |
|  <p><b>TGS ENGINEERS</b></p> | <p><b>TGS ENGINEERS</b></p>     |                         | <b>NO.</b> | <b>BY:</b> | <b>DATE:</b> | <b>NO.</b> | <b>BY:</b> | <b>DATE:</b>            | <p><b>S-30</b></p>         |
|                                                                                                                   | <p>201 W. MARION ST STE 200</p> |                         | <b>1</b>   |            |              | <b>3</b>   |            |                         |                            |
|                                                                                                                   | <p>SHELBY, NC 28150</p>         |                         | <b>2</b>   |            |              | <b>4</b>   |            |                         |                            |
| <p>PH (704) 476-0003</p>                                                                                          |                                 |                         |            |            |              |            |            |                         | <p><b>TOTAL SHEETS</b></p> |
| <p>CORP. LICENSE NO.: C-0275</p>                                                                                  |                                 |                         |            |            |              |            |            | <p><b>100</b></p>       |                            |

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

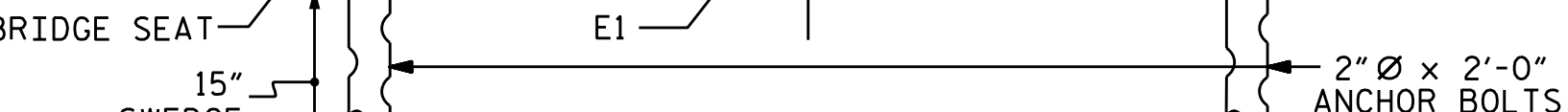
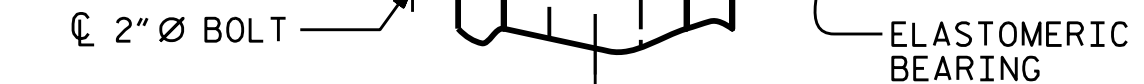
STEEL SOLE PLATES, ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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.

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

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

ALL SOLE PLATES SHALL BE AASHTO M270 GRADE 36.

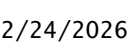


## TYPE IV



|                               |  |             |         |
|-------------------------------|--|-------------|---------|
| ASSEMBLED BY : S. B. WILLIAMS |  | DATE : 2/24 |         |
| CHECKED BY : MGC              |  | DATE : 2/24 |         |
| DRAWN BY : WJH 8/89           |  | REV. 12/17  | MAA/THC |
| CHECKED BY : CRK 8/89         |  | REV. 10/21  | BNB/AAI |
|                               |  | REV. 10/23  | BNB/SNM |

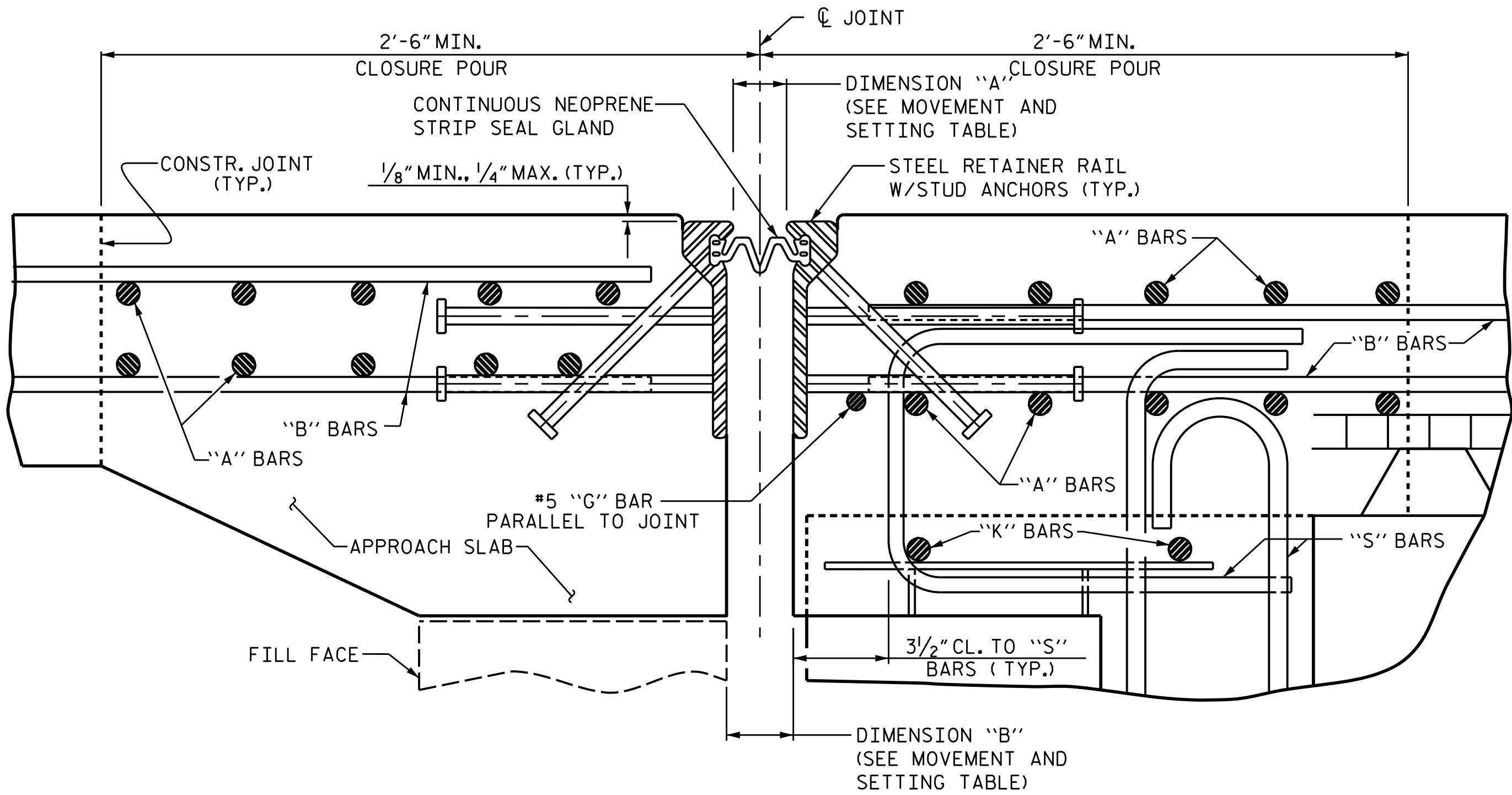
PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
 STATION: 32+93.00 -L-



**TGS ENGINEERS**

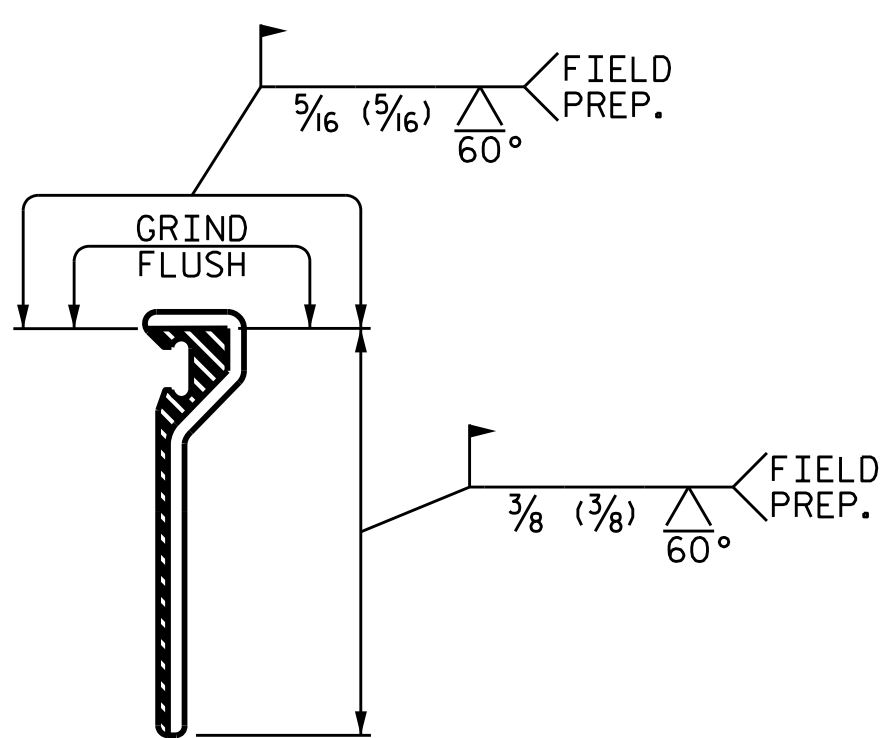
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
ELASTOMERIC BEARING  
DETAILS  
PRESTRESSED CONCRETE GIRDER  
SUPERSTRUCTURE

SHEET NO.  
S-31

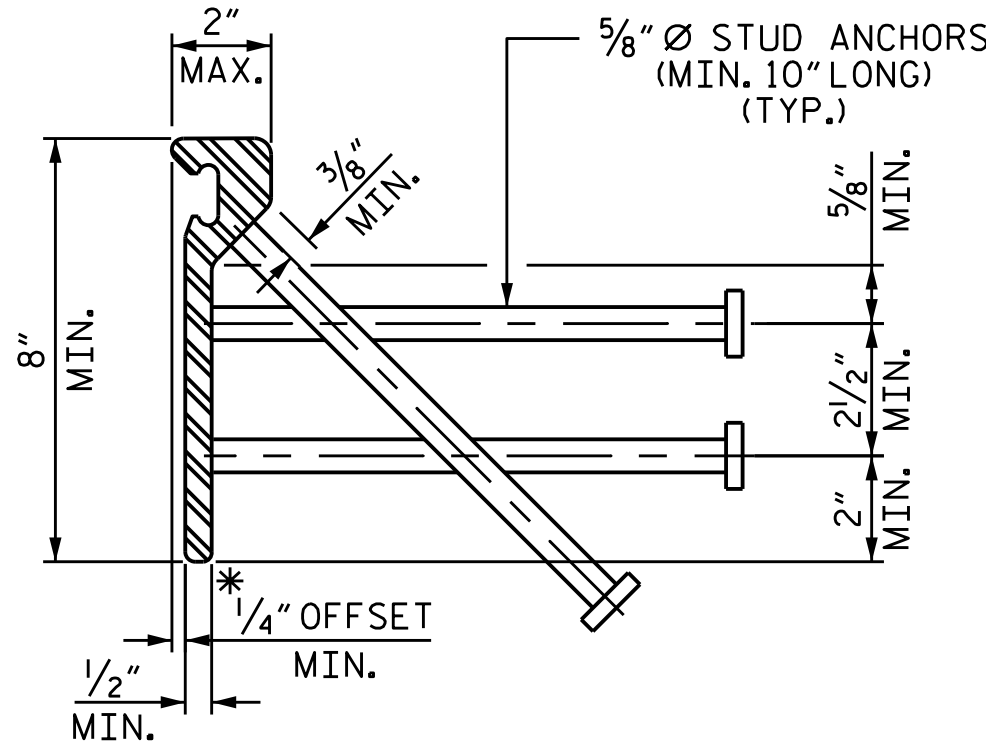


### STRIP SEAL EXPANSION JOINT DETAILS

SECTION NORMAL TO JOINT



### STEEL RETAINER RAIL (FIELD SPLICE DETAIL)

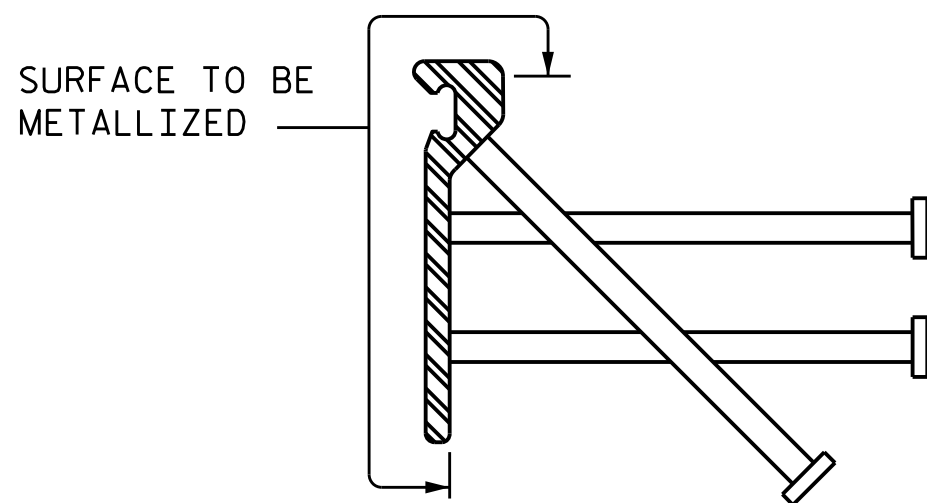


### TYPICAL SECTION STEEL RETAINER RAIL

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

### JOINT INSTALLATION PROCEDURE:

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



### METALLIZING DETAIL

### GENERAL NOTES

FOR STRIP SEAL EXPANSION JOINTS, SEE SPECIAL PROVISIONS.

STEEL RETAINER RAILS AND COVER PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 OR GRADE 50 STEEL. ALL STUD ANCHORS SHALL CONFORM TO AASHTO M169, GRADES 1010 THRU 1020 OR APPROVED EQUAL. ALL CONCRETE INSERTS SHALL BE CLOSED END AND SHALL CONFORM TO AASHTO M169, GRADE 12L14. TENSILE CAPACITY SHALL BE 3000 LBS. MIN.

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

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

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

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

INSTALLED STEEL RETAINER RAILS SHALL FOLLOW THE ROADWAY SLOPE.

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

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

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

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

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

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00 -L-

SHEET 1 OF 4



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

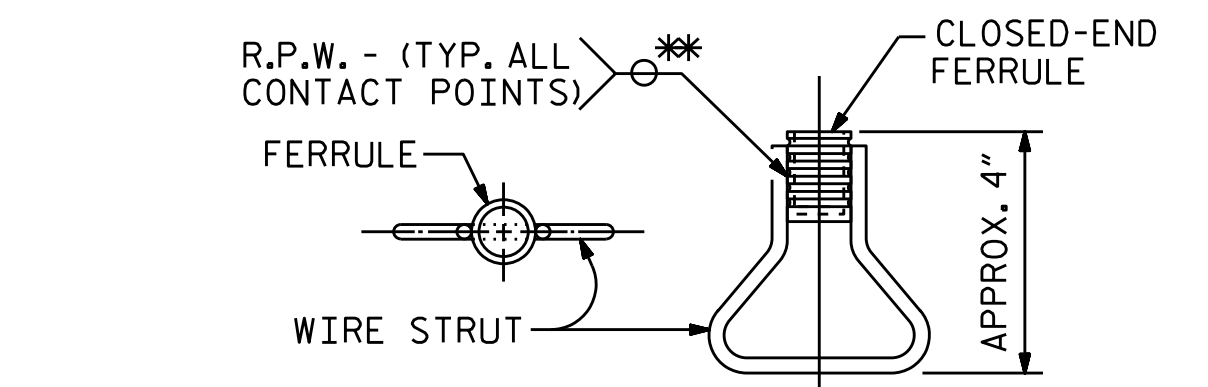
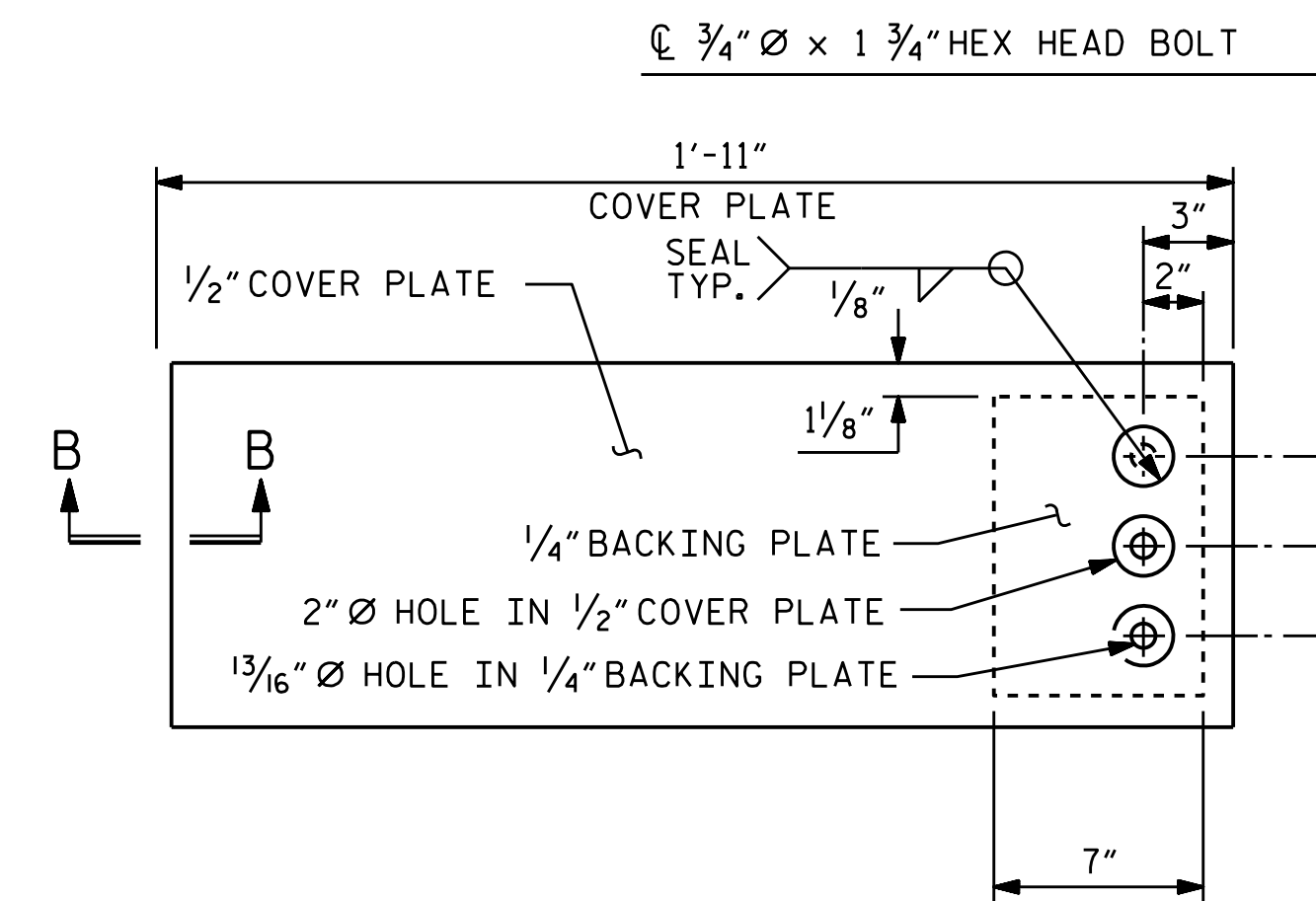
TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
STANDARD  
STRIP SEAL EXPANSION  
JOINT DETAILS

| REVISIONS |     |       |     |     |       | SHEET NO.        |
|-----------|-----|-------|-----|-----|-------|------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                  |
| 1         |     |       | 3   |     |       | S-32             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 100 |

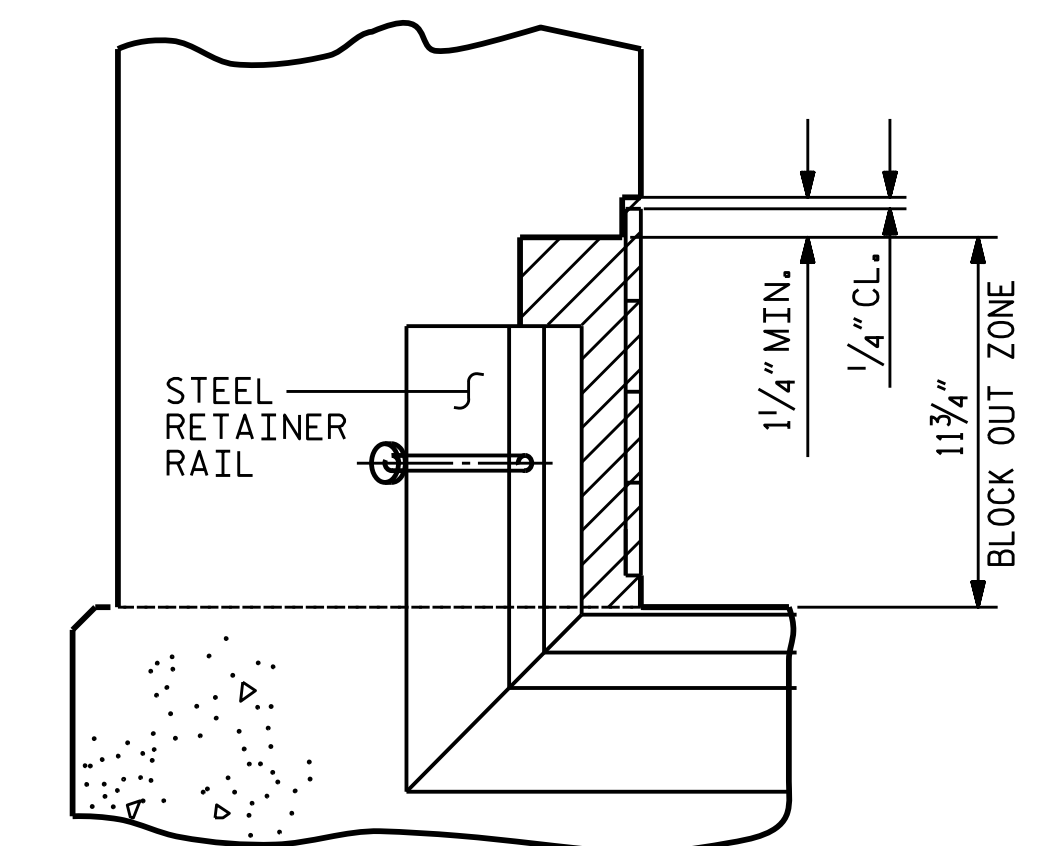
|                               |              |
|-------------------------------|--------------|
| ASSEMBLED BY : S. B. WILLIAMS | DATE : 10-20 |
| CHECKED BY : MOC              | DATE : 11-20 |
| DRAWN BY : MAA                | 6/20         |
| CHECKED BY : BNB              | 6/20         |



PLAN      ELEVATION

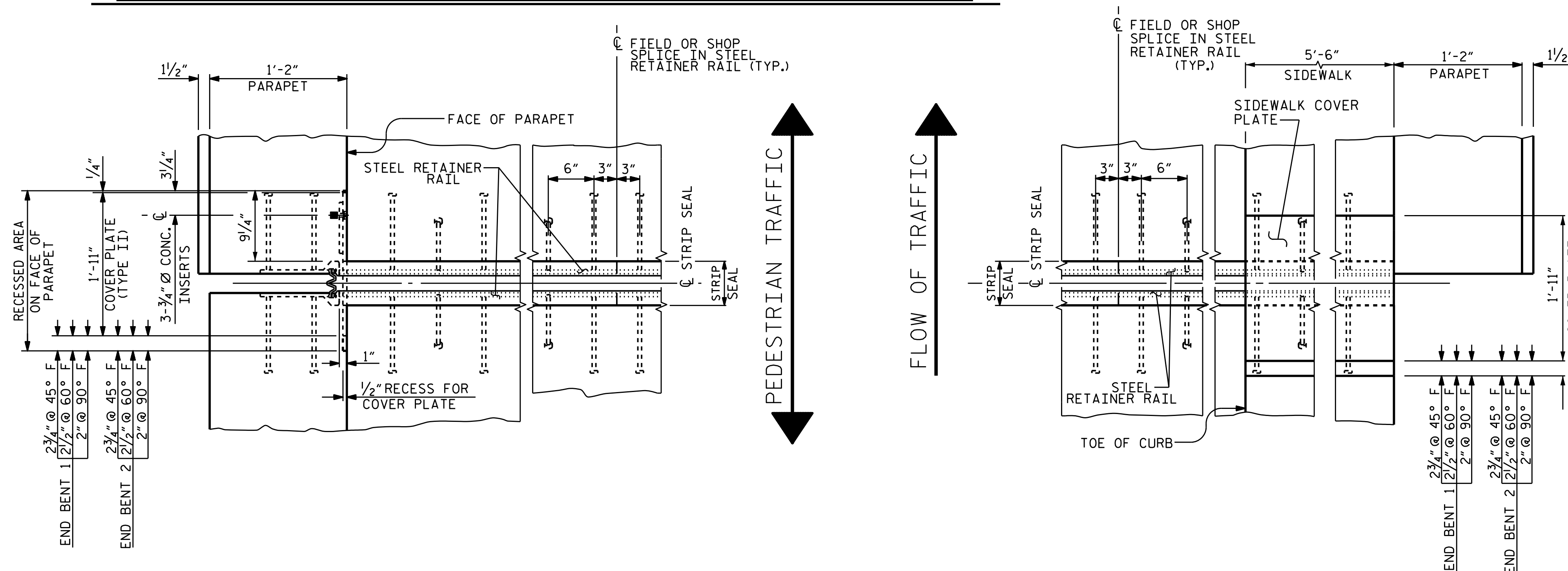
### CONCRETE INSERT

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



BLOCK OUT DETAIL

SECTION THRU 1'-2" X 2'-6" PARAPET NORMAL TO JOINT



### PLAN OF STRIP SEAL EXPANSION JOINT

STRIP SEAL @ END BENT 1 SHOWN; END BENT 2 SIMILAR

|                |                |        |       |
|----------------|----------------|--------|-------|
| ASSEMBLED BY : | S. B. WILLIAMS | DATE : | 10-20 |
| CHECKED BY :   | MGC            | DATE : | 11-20 |

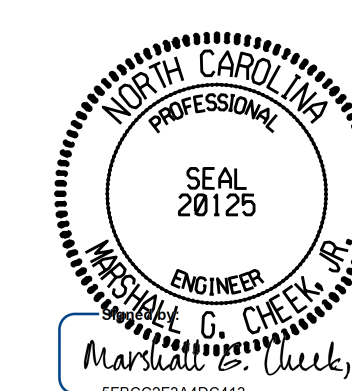
11/11/2025  
X:\NCDOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401\_069\_U-6146\_SMU\_SSJ02\_350082.dgn  
User:ZSmith

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00 -L-

SHEET 2 OF 4



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

**TGS ENGINEERS**  
201 W MARION ST STE 200

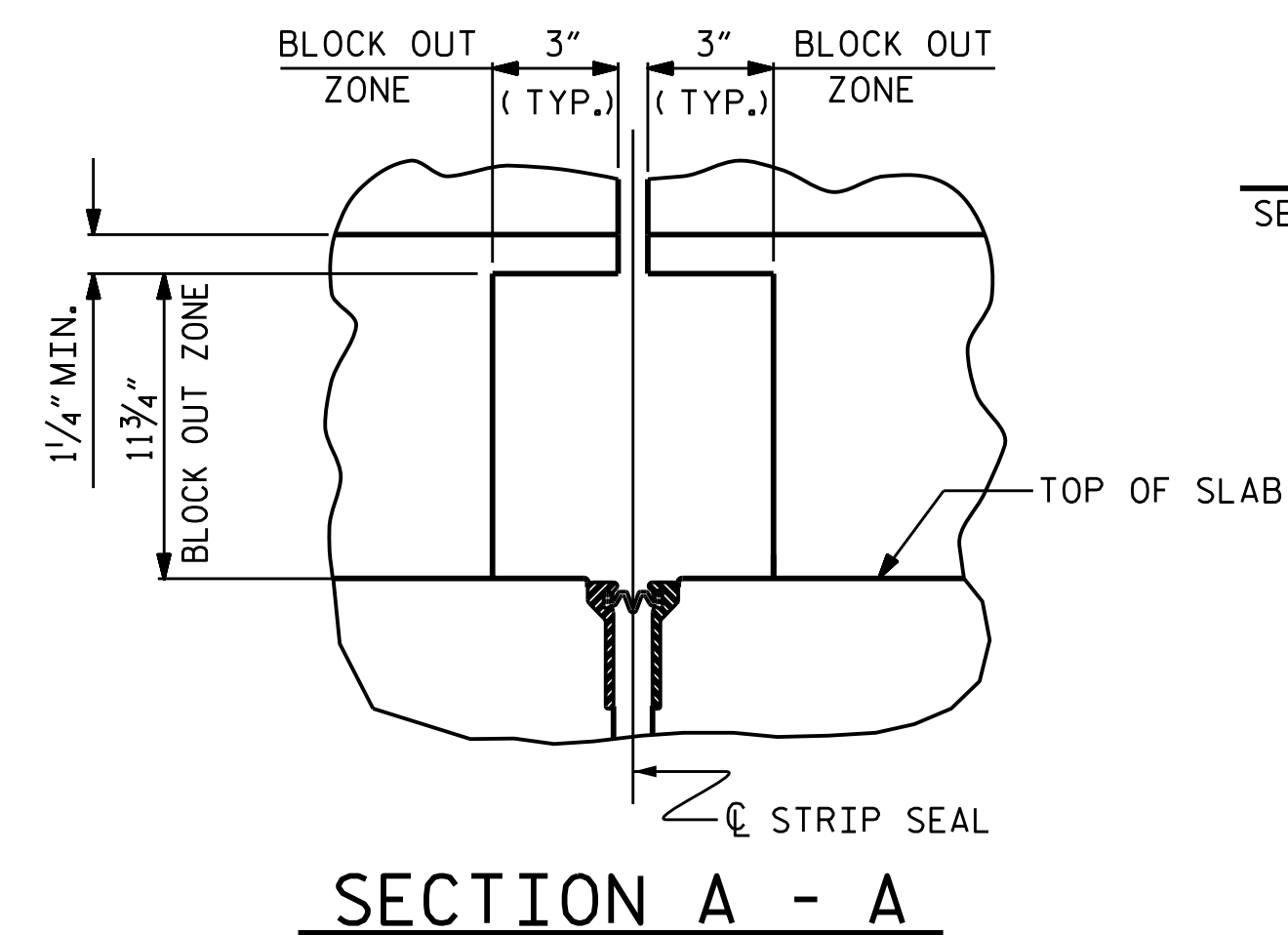
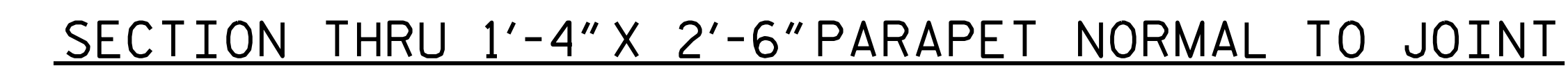
**SHELBY, NC 28150**  
**PH (704) 476-0003**  
**CORP. LICENSE NO.: C-0275**

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
 STRIP SEAL EXPANSION  
 JOINT DETAILS FOR  
 1'-2" X 2'-6"  
 CONCRETE PARAPET

| REVISIONS |     |       |     |     |       | SHEET NO.<br><br>S-33  |
|-----------|-----|-------|-----|-----|-------|------------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                        |
| 1         |     |       | 3   |     |       | TOTAL<br>SHEETS<br>100 |
| 2         |     |       | 4   |     |       |                        |

STD. NO. SSEJ2 SHT 1



| <div style="border: 1px solid black; border-radius: 50%; padding: 10px; display: inline-block;"><p style="margin: 0;">NORTH CAROLINA<br/>PROFESSIONAL<br/>ENGINEER</p><p style="margin: 0;">SEAL<br/>20125</p><p style="margin: 0;">MARSHALL G. CHECK, JR.</p></div> <p style="margin-top: 10px;">Signature: <u>Marshall G. Check, Jr.</u></p> <p style="margin-top: 5px;">SFBCE02CF34ADAC413</p> | <p>STATE OF NORTH CAROLINA</p> <p><b>DEPARTMENT OF TRANSPORTATION</b></p> <p>RALEIGH</p> <p><b>SUPERSTRUCTURE</b></p> <p><b>STRIP SEAL EXPANSION</b></p> <p><b>JOINT DETAILS FOR</b></p> <p><b>1'-4" X 2'-6" PARAPET</b></p>                                                                                                                                                                                                                                              |           |     |     |       |  |  |     |     |       |     |     |       |   |  |  |   |  |  |   |  |  |   |  |  |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----|-----|-------|--|--|-----|-----|-------|-----|-----|-------|---|--|--|---|--|--|---|--|--|---|--|--|
| <p>5/24/2016</p>                                                                                                                                                                                                                                                                                                                                                                                  | <p>3/24/2016</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |     |     |       |  |  |     |     |       |     |     |       |   |  |  |   |  |  |   |  |  |   |  |  |
| <p><b>DOCUMENT NOT CONSIDERED FINAL</b></p> <p><b>UNLESS ALL SIGNATURES COMPLETED</b></p>                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |     |     |       |  |  |     |     |       |     |     |       |   |  |  |   |  |  |   |  |  |   |  |  |
| <p><b>TGS ENGINEERS</b></p> <p>201 W. MARION ST STE 200</p> <p>SHELBY NC 28150</p> <p>PH (704) 476-0003</p> <p>CORP. LICENSE NO.: C-0275</p>                                                                                                                                                                                                                                                      | <table style="width: 100%; border-collapse: collapse;"><tr><th colspan="6" style="text-align: center;">REVISIONS</th></tr><tr><th>NO.</th><th>BY:</th><th>DATE:</th><th>NO.</th><th>BY:</th><th>DATE:</th></tr><tr><td style="text-align: center;">1</td><td></td><td></td><td style="text-align: center;">3</td><td></td><td></td></tr><tr><td style="text-align: center;">2</td><td></td><td></td><td style="text-align: center;">4</td><td></td><td></td></tr></table> | REVISIONS |     |     |       |  |  | NO. | BY: | DATE: | NO. | BY: | DATE: | 1 |  |  | 3 |  |  | 2 |  |  | 4 |  |  |
| REVISIONS                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |     |     |       |  |  |     |     |       |     |     |       |   |  |  |   |  |  |   |  |  |   |  |  |
| NO.                                                                                                                                                                                                                                                                                                                                                                                               | BY:                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | DATE:     | NO. | BY: | DATE: |  |  |     |     |       |     |     |       |   |  |  |   |  |  |   |  |  |   |  |  |
| 1                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           | 3   |     |       |  |  |     |     |       |     |     |       |   |  |  |   |  |  |   |  |  |   |  |  |
| 2                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           | 4   |     |       |  |  |     |     |       |     |     |       |   |  |  |   |  |  |   |  |  |   |  |  |
| <p><b>SHEET NO.</b></p> <p><b>S-34</b></p> <p><b>TOTAL SHEETS</b></p> <p><b>100</b></p>                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |     |     |       |  |  |     |     |       |     |     |       |   |  |  |   |  |  |   |  |  |   |  |  |

CL CONCRETE INSERTS

CL 2" Ø HOLES AND 13/16" Ø BOLT HOLES (INSERTS AND BOLTS NOT SHOWN HERE FOR CLARITY)

TOP OF SLAB

1/2" CHECKERED STEEL COVER PLATE

FACE OF PARAPET

\* VARIES

SEAL TYP.

CL CONCRETE INSERTS  
CL 2" Ø HOLES AND 13/16" Ø BOLT HOLES

1/4" STEEL BACKING PLATE

\* VARIES

END VIEW

(NORMAL TO SIDEWALK)

R.P.W. - (TYPICAL ALL CONTACT POINTS)

CLOSED-END FERRULE

FERRULE

WIRE STRUT

PLAN

ELEVATION

CONCRETE INSERT

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

45° BEVEL

SECTION B-B

COVER PLATE DETAILS

1'-11" COVER PLATE - TYPE II

1/4" STEEL BACKING PLATE

13/16" Ø HOLE IN 1/4" BACKING PLATE

1/2" CHECKERED STEEL COVER PLATE

2" Ø HOLE IN 1/2" COVER PLATE

SEAL (TYP.)

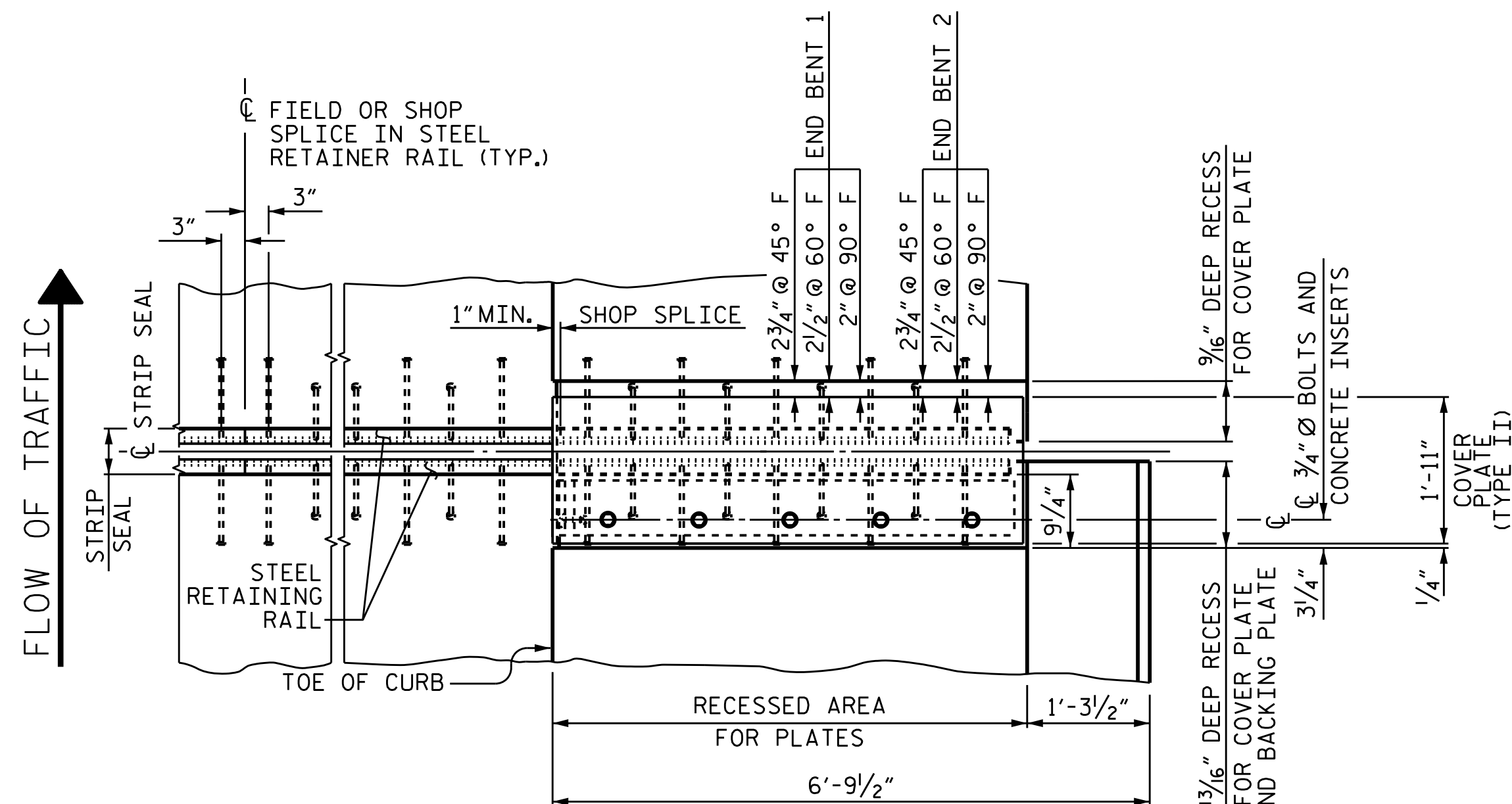
CL 3/4" Ø x 1 3/4" HEX HEAD BOLT

END VIEW

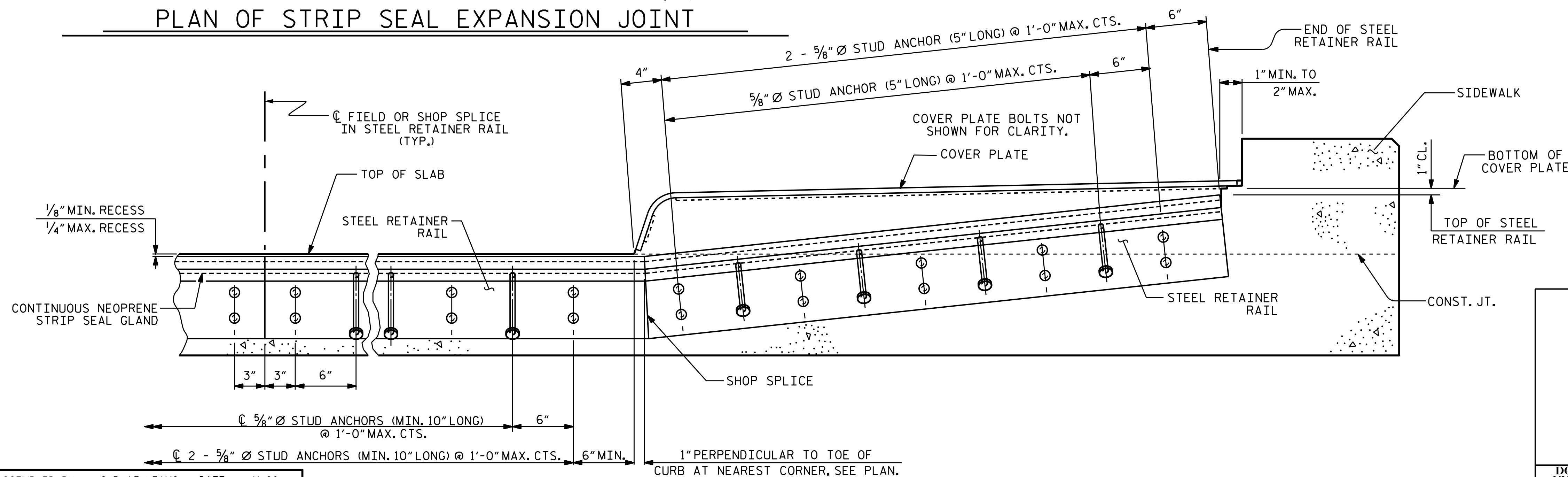
\* CONCRETE RECESS DIMENSIONS:

13/16" FOR THE SIDE OF THE JOINT HAVING THE 1/2" COVER PLATE WITH A 1/4" BACKING PLATE.

9/16" FOR THE SIDE OF THE JOINT HAVING ONLY THE 1/2" COVER PLATE.



PLAN OF STRIP SEAL EXPANSION JOINT



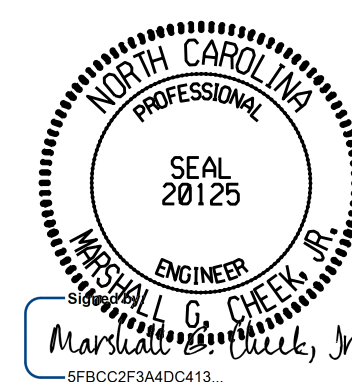
SECTION THRU SIDEWALK NORMAL TO JOINT

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00 -L-

SHEET 4 OF 4



2/24/2026

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
STANDARD  
STRIP SEAL EXPANSION  
JOINT DETAILS  
FOR SIDEWALK

ASSEMBLED BY : S. B. WILLIAMS DATE : 11-20  
CHECKED BY : MGC DATE : 11-20

DRAWN BY : MAA 6/20  
CHECKED BY : BNB 6/20

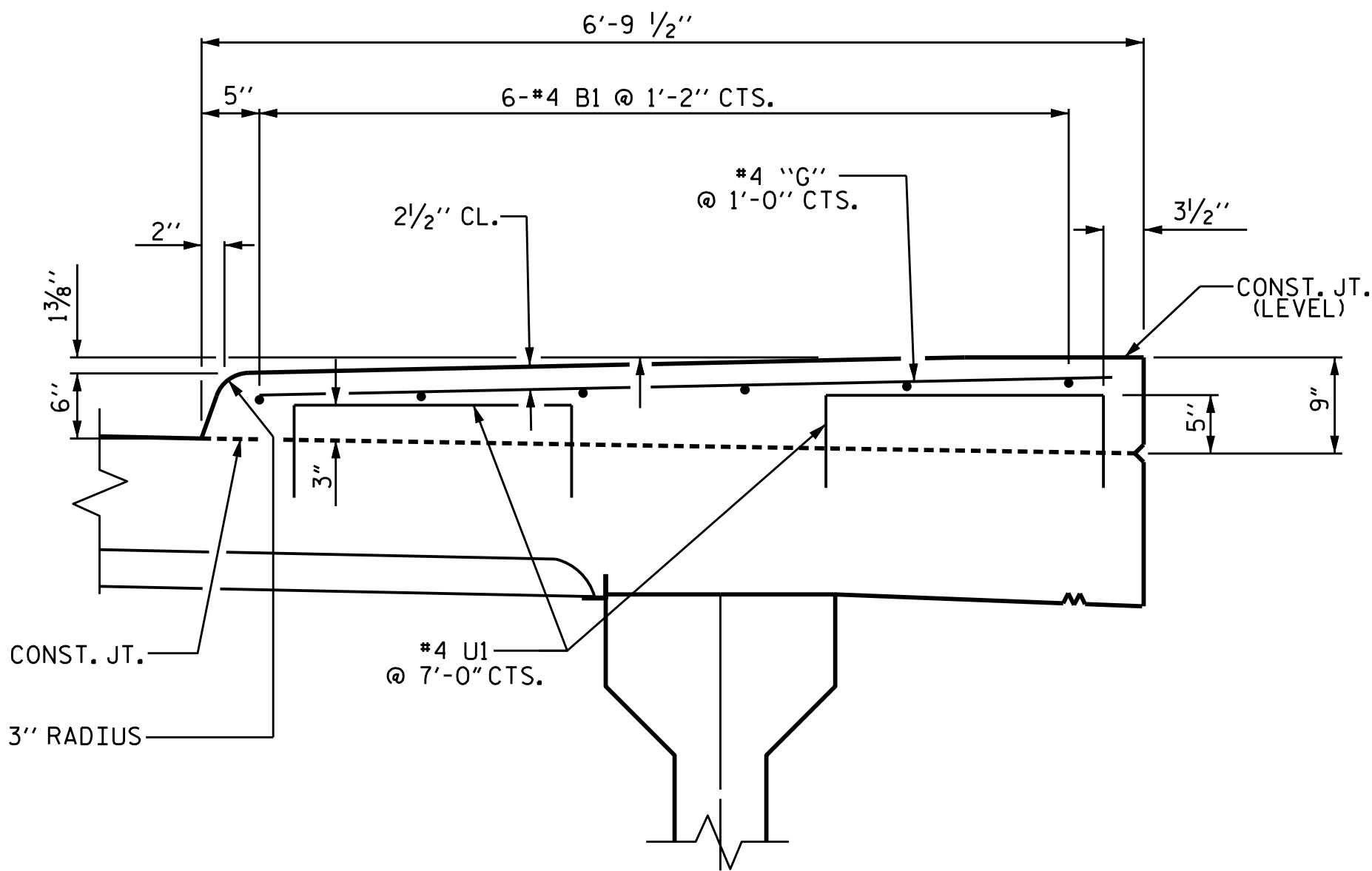
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

| REVISIONS |     |       |     |     |       | SHEET NO.           |
|-----------|-----|-------|-----|-----|-------|---------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                     |
| 1         |     |       | 3   |     |       | S-35                |
| 2         |     |       | 4   |     |       | TOTAL SHEETS<br>100 |

STD. NO. SSEJ3 SHT 1b

11/11/2025  
X:\NC DOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.073.U-6146.SMU.SSJO4.350082.dgn  
User: z2smith



SECTION THRU SIDEWALK

\* \* U1 BARS MAY BE PUSHED INTO GREEN CONCRETE AFTER SPAN HAS BEEN SCREEDED OFF.

| BILL OF MATERIAL                       |     |      |      |         |               |
|----------------------------------------|-----|------|------|---------|---------------|
| BAR                                    | No. | SIZE | TYPE | LENGTH  | WEIGHT        |
| * B1                                   | 72  | #4   | STR. | 39'- 2" | 1,884         |
| * G1                                   | 449 | #4   | STR. | 6'- 0"  | 1,800         |
| * U1                                   | 128 | #4   |      | 3'- 4"  | 285           |
| * TOTAL EPOXY COATED REINFORCING STEEL |     |      |      |         | 3,969 LBS.    |
| CLASS AA CONCRETE                      |     |      |      |         | 71.1 CU. YDS. |
| BAR TYPE                               |     |      |      |         |               |
|                                        |     |      |      |         |               |

NOTES

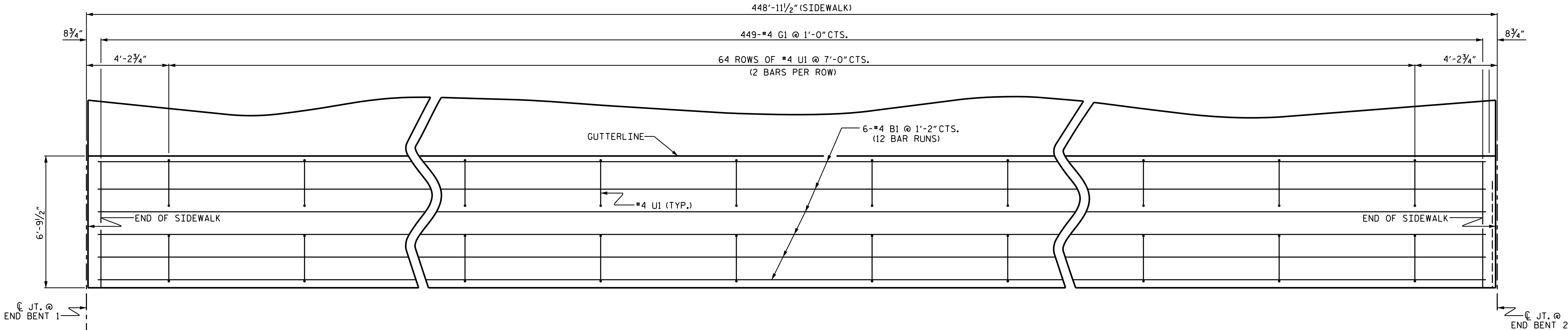
SIDEWALK IN A CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

GROOVED CONTRACTION JOINT, 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 JOINT SHALL BE LOCATED AT A SPACING OF 8 FT. TO 10 FT. BETWEEN EXPANSION JOINTS. NO CONTRACTION JOINTS WILL BE REQUIRED FOR SEGMENTS LESS THAN 10 FT. IN LENGTH.

ALL REINFORCING STEEL IN THE SIDEWALK SHALL BE EPOXY COATED.

FOR COVER PLATE DETAILS, SEE "STRIP SEAL EXPANSION JOINT DETAILS FOR SIDEWALK" SHEET.

PAYMENT FOR CLASS AA CONCRETE AND REINFORCING STEEL USED IN SIDEWALK SHALL BE INCLUDED IN THE SQUARE FOOT COST OF REINFORCED CONCRETE DECK SLAB.



PLAN OF SIDEWALK

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00 -L-



2/24/2026

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

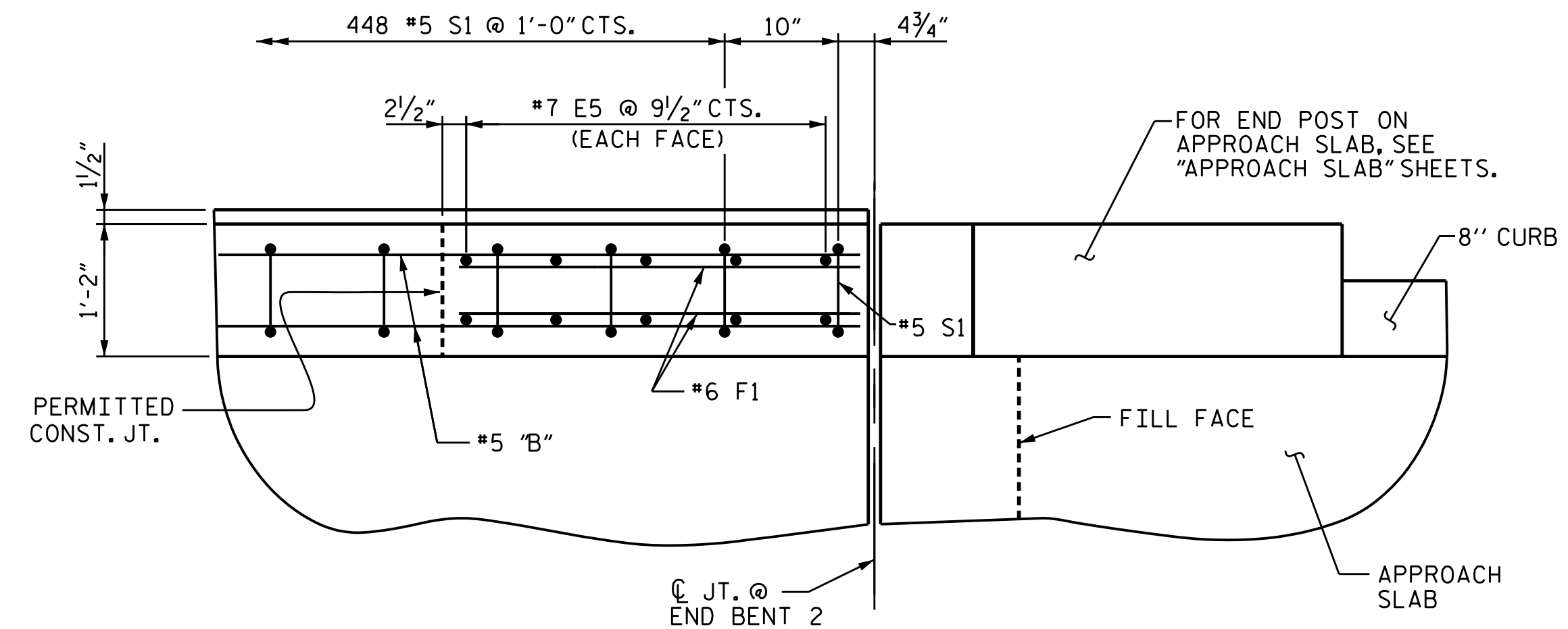
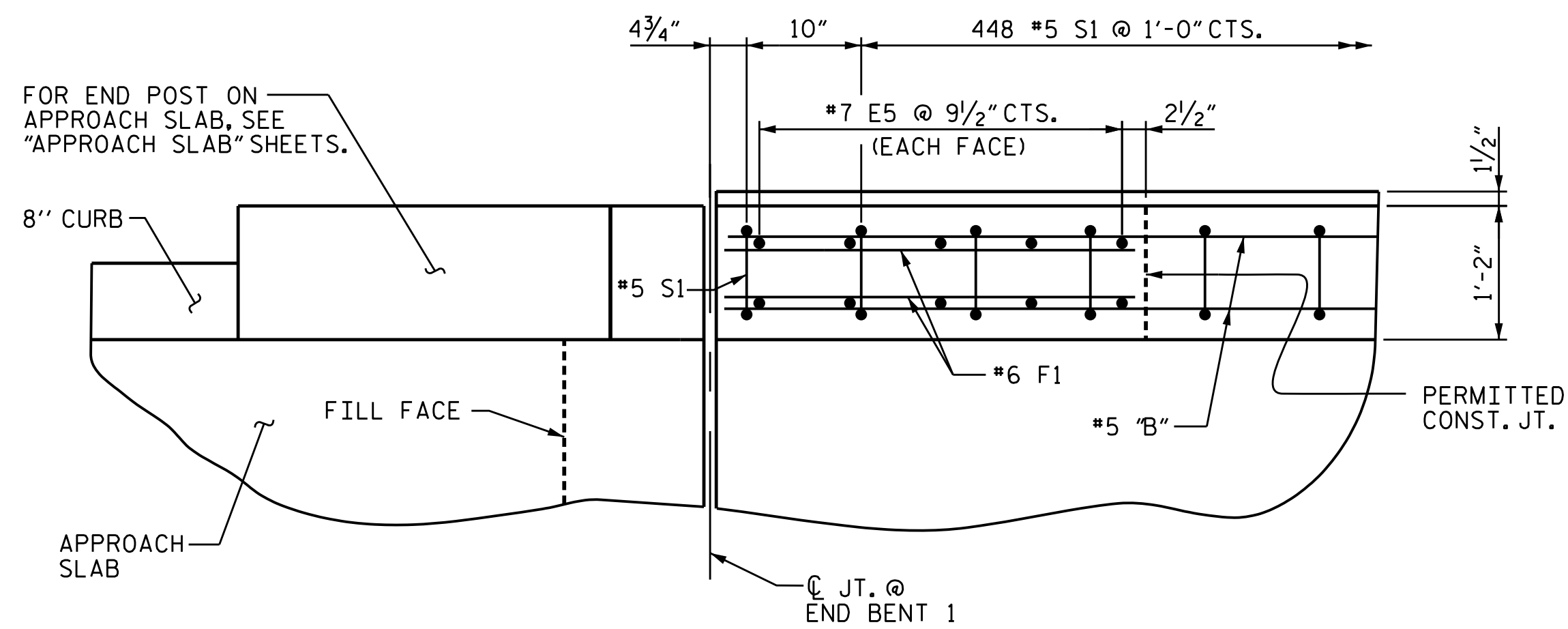
SUPERSTRUCTURE  
SIDEWALK DETAILS

|                            |                |        |       |
|----------------------------|----------------|--------|-------|
| DRAWN BY :                 | S. B. WILLIAMS | DATE : | 11-20 |
| CHECKED BY :               | MGC            | DATE : | 3-21  |
| DESIGN ENGINEER OF RECORD: | MGC            | DATE : | 10/21 |

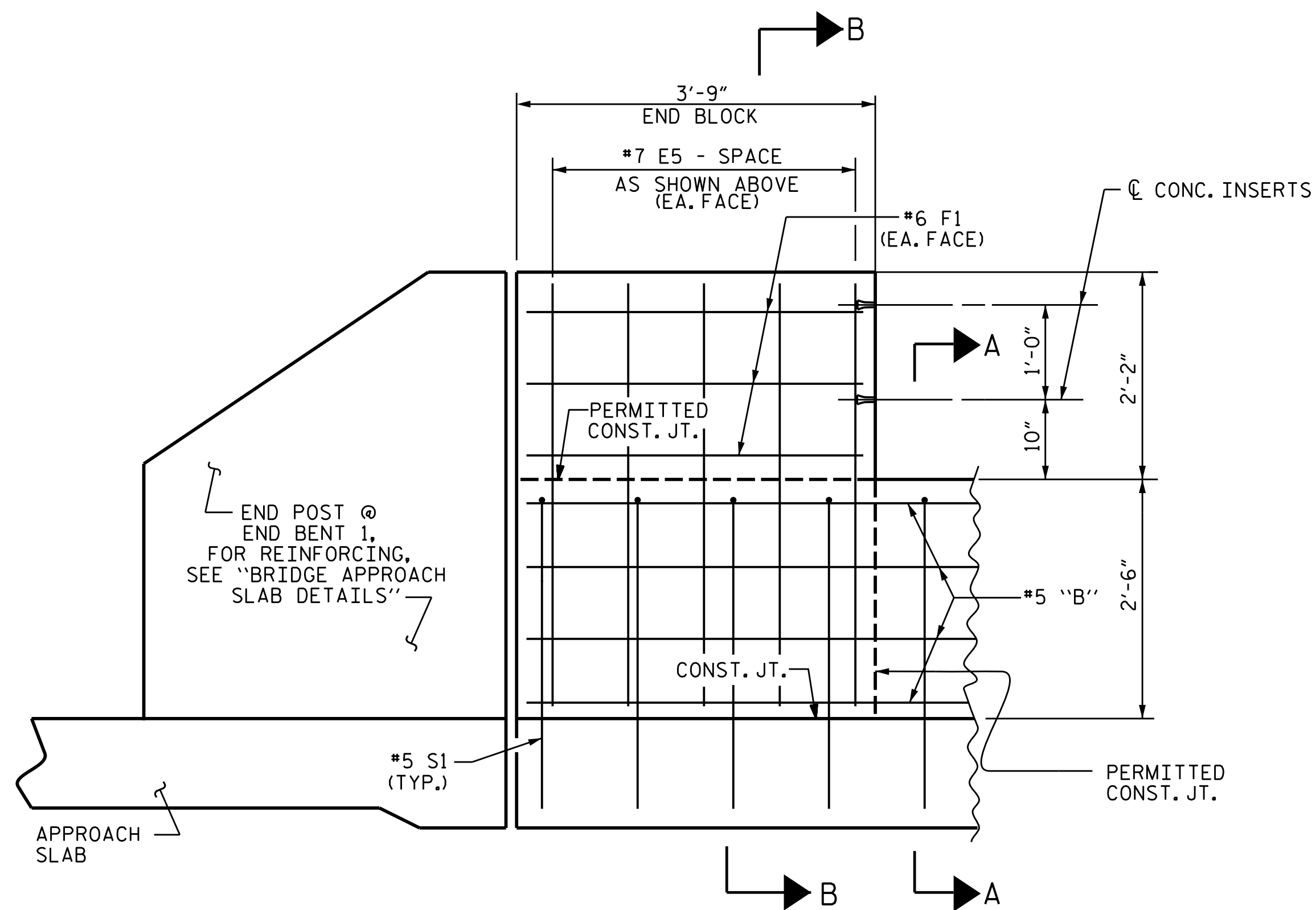
11/11/2025  
X:\NCDOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.075.U-6146.SMU.SW\_350082.dgn  
User:zSmith

| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                |  |  |  |  |  | REVISIONS |     |       | SHEET NO.    |
|-----------------------------------------------------------------------------------------------------------------|--|--|--|--|--|-----------|-----|-------|--------------|
| TGS ENGINEERS<br>201 W. MARION ST STE 200<br>SHELBY, NC 28150<br>PH (704) 476-0003<br>CORP. LICENSE NO.: C-0275 |  |  |  |  |  | NO.       | BY: | DATE: | TOTAL SHEETS |
|                                                                                                                 |  |  |  |  |  | 1         |     |       | 100          |
|                                                                                                                 |  |  |  |  |  | 2         |     |       |              |
|                                                                                                                 |  |  |  |  |  | 3         |     |       |              |
|                                                                                                                 |  |  |  |  |  | 4         |     |       |              |

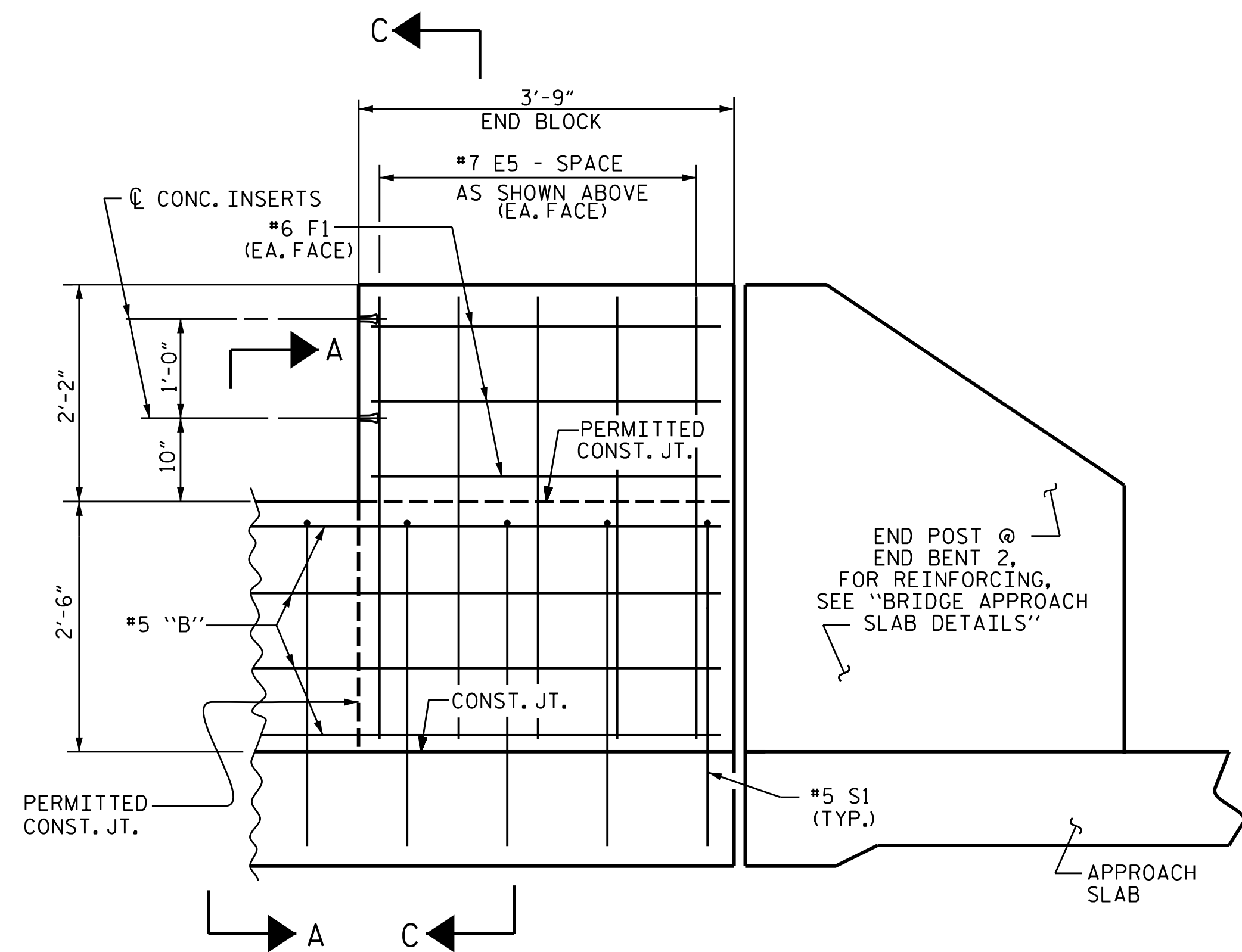




PLAN OF LEFT SIDE 1'-2" x 2'-6" PARAPET & END BLOCK



ELEVATION



ELEVATION

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00-L-

SHEET 1 OF 4



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

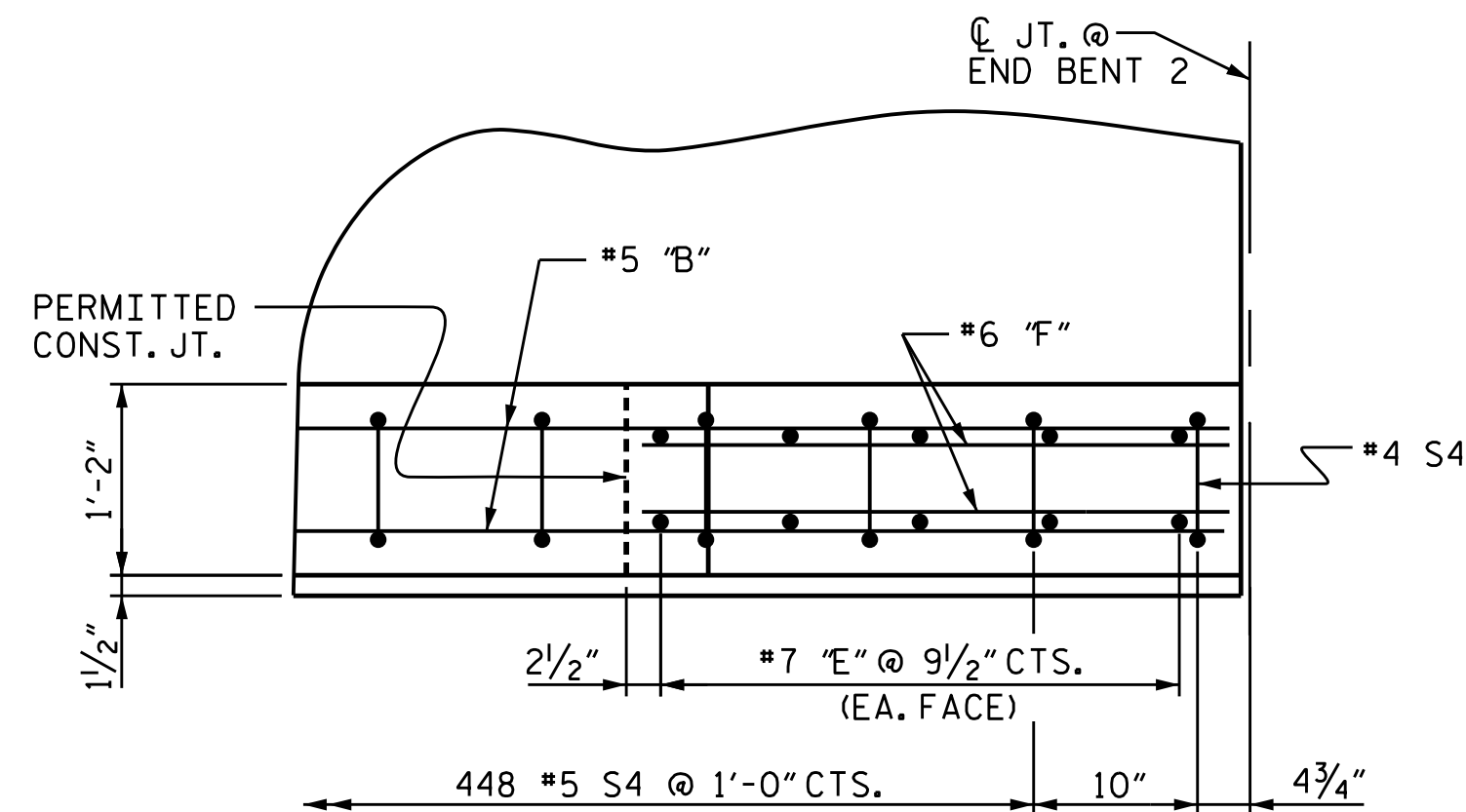
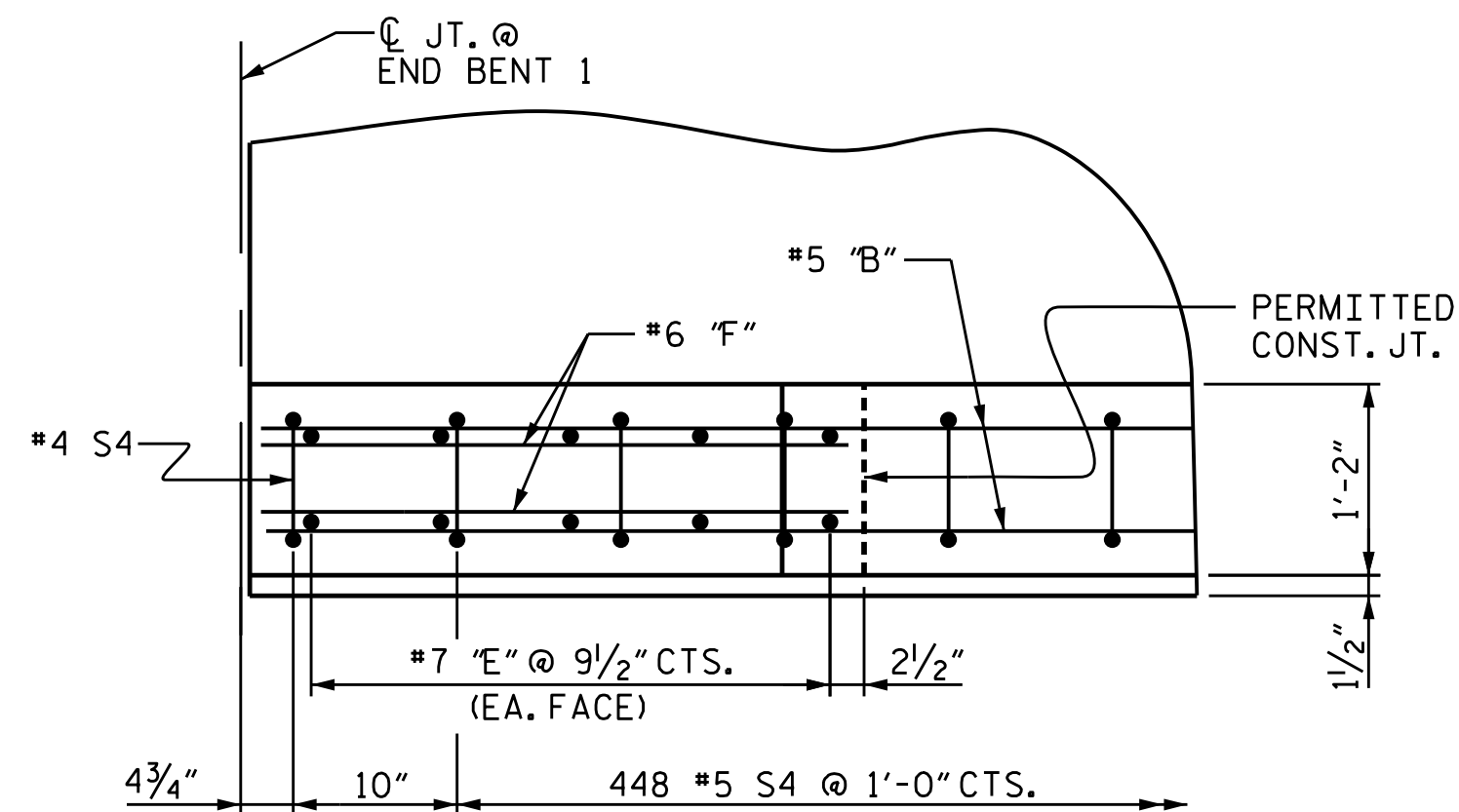
SUPERSTRUCTURE  
1'-2" X 2'-6"  
CONCRETE PARAPET  
DETAILS

| REVISIONS |     |       |     |     |       | SHEET NO.        |
|-----------|-----|-------|-----|-----|-------|------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                  |
| 1         |     |       | 3   |     |       | S-38             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 100 |

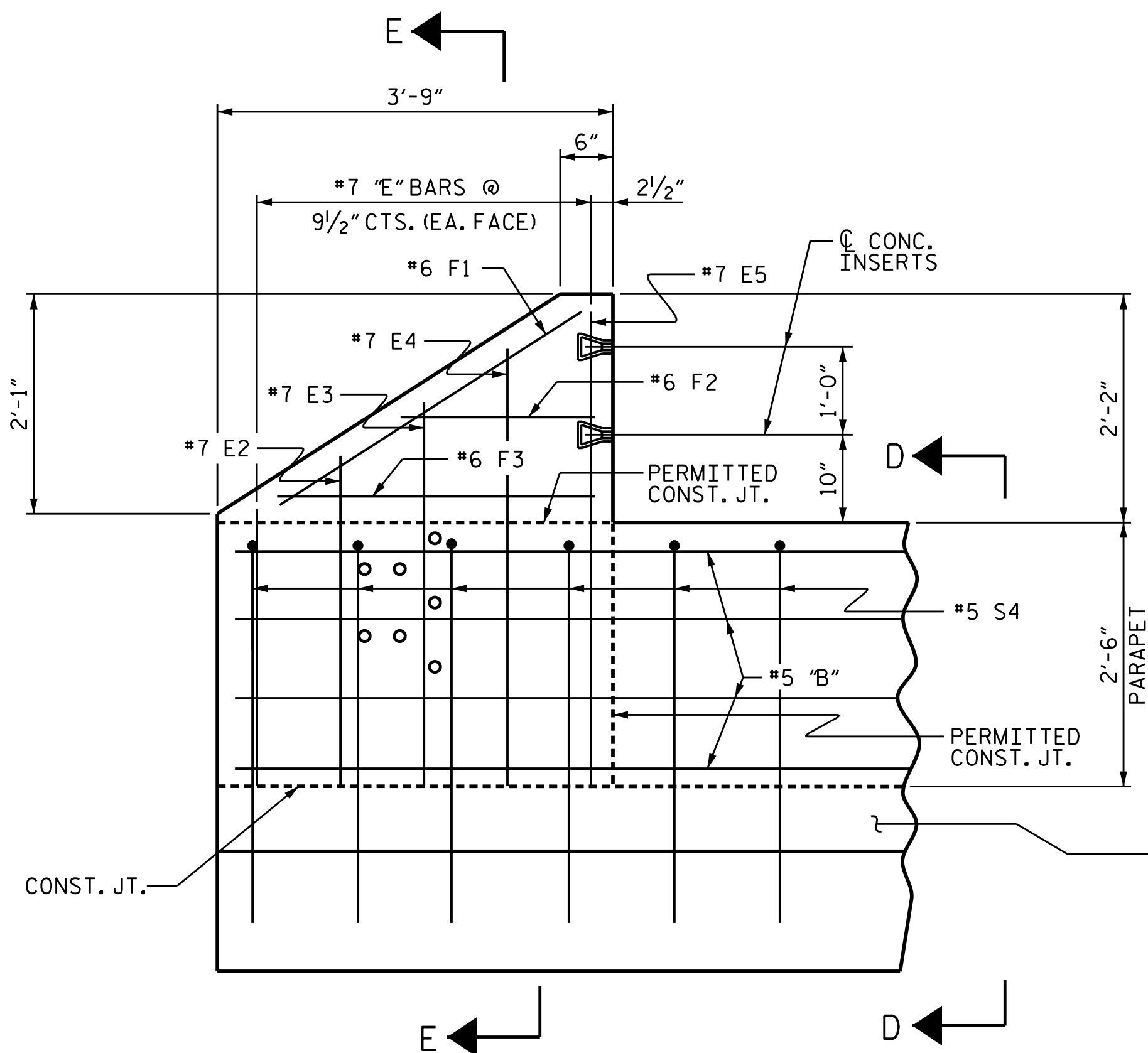
DRAWN BY : NMW  
CHECKED BY : MGC

DATE : 8/20  
DATE : 2/21

11/11/2025  
X:\NC001\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.079.U-6146.SMU.2BMR02.350082.dgn  
User:zSmith

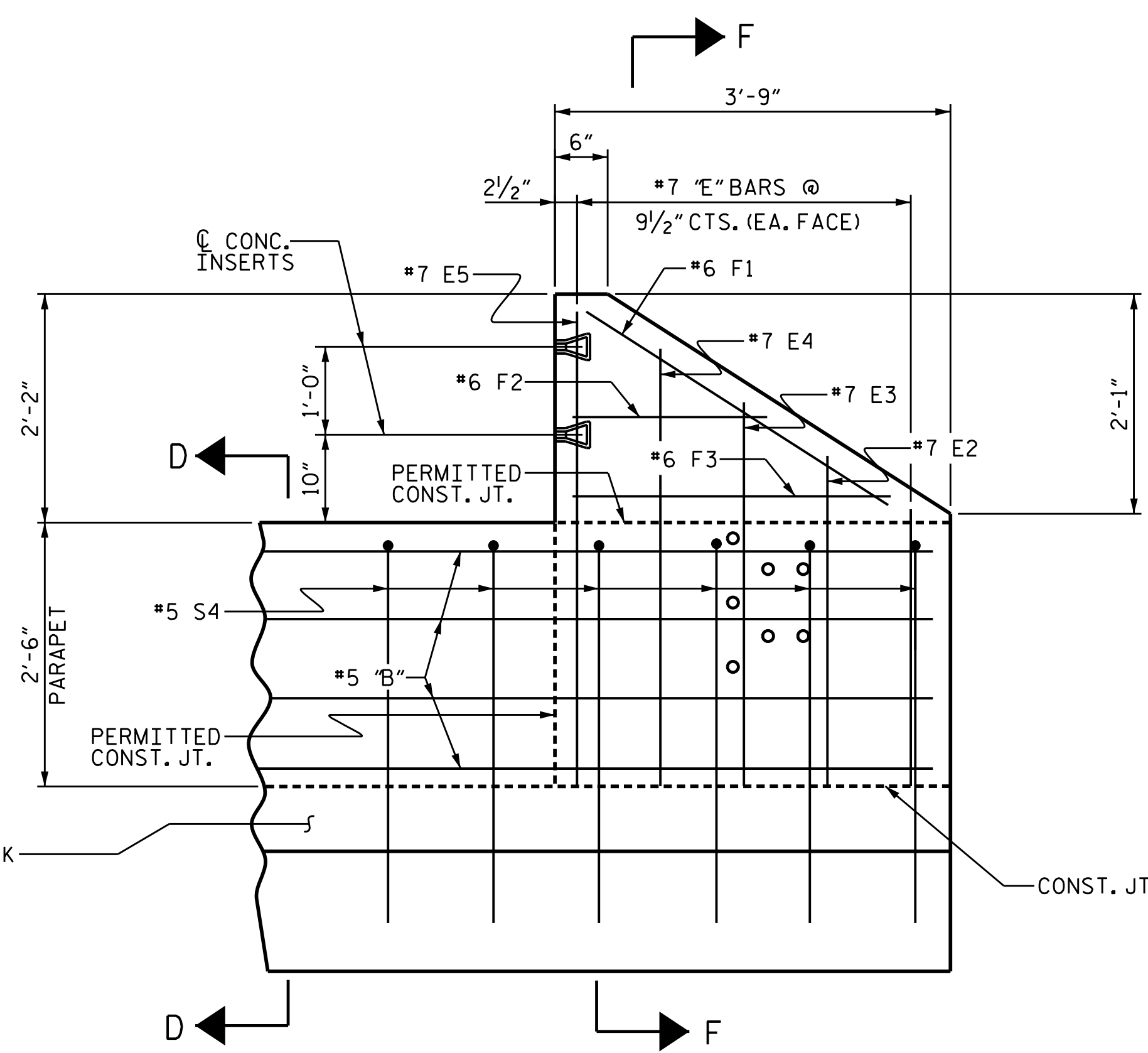


PLAN OF RIGHT SIDE 1'-2" x 2'-6" PARAPET & END POST



ELEVATION

FOR SECTION D-D & E-E, SEE SHEET 3 OF 3.



ELEVATION

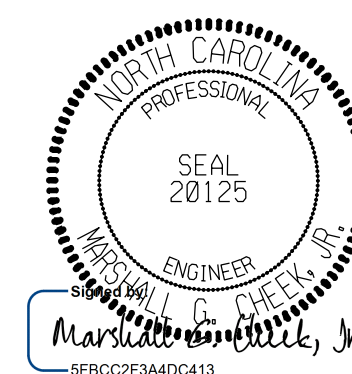
FOR SECTION D-D & F-F, SEE SHEET 3 OF 3.

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00-L-

SHEET 2 OF 4



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

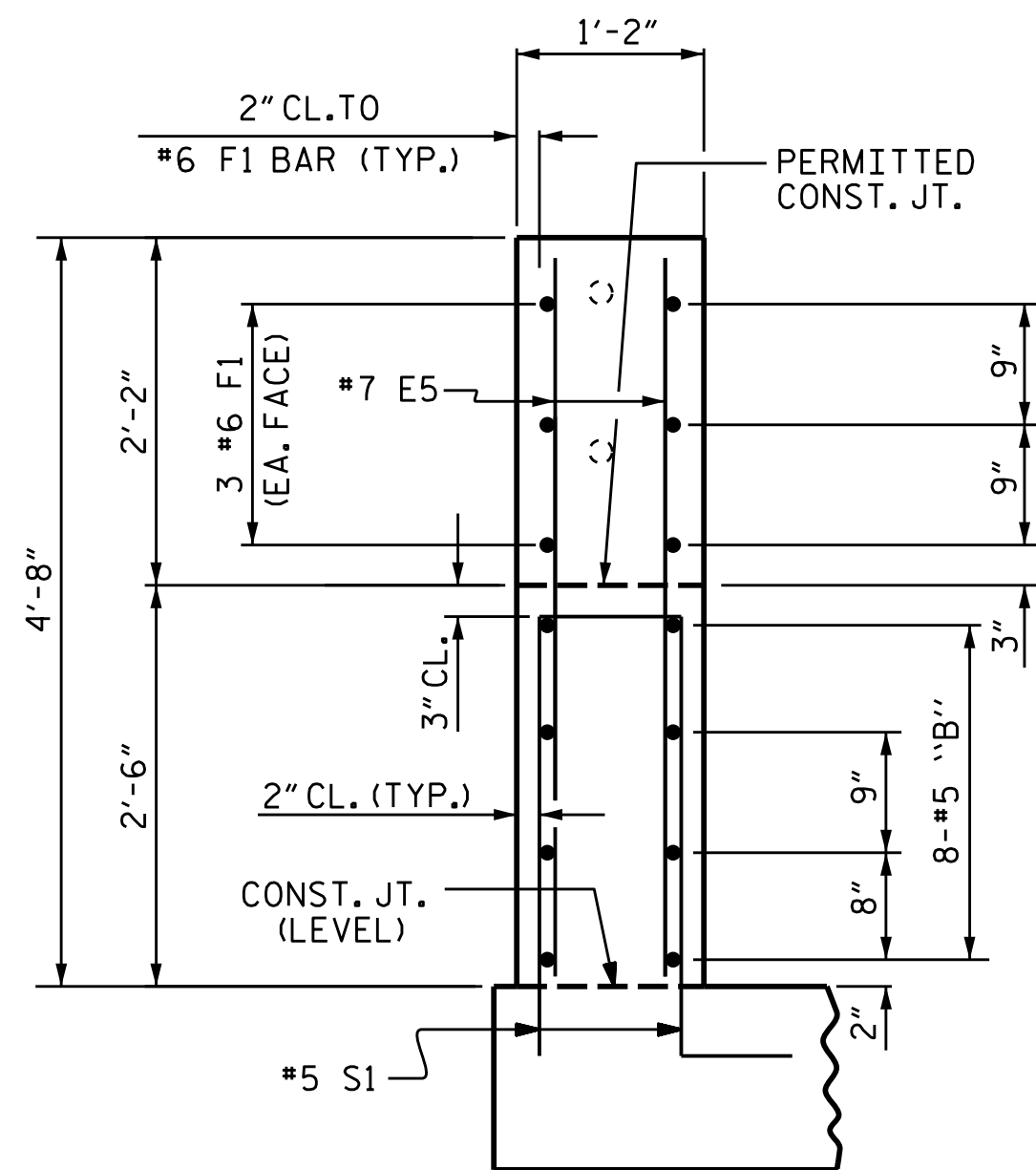
SUPERSTRUCTURE

1'-2" X 2'-6"  
CONCRETE PARAPET  
DETAILS

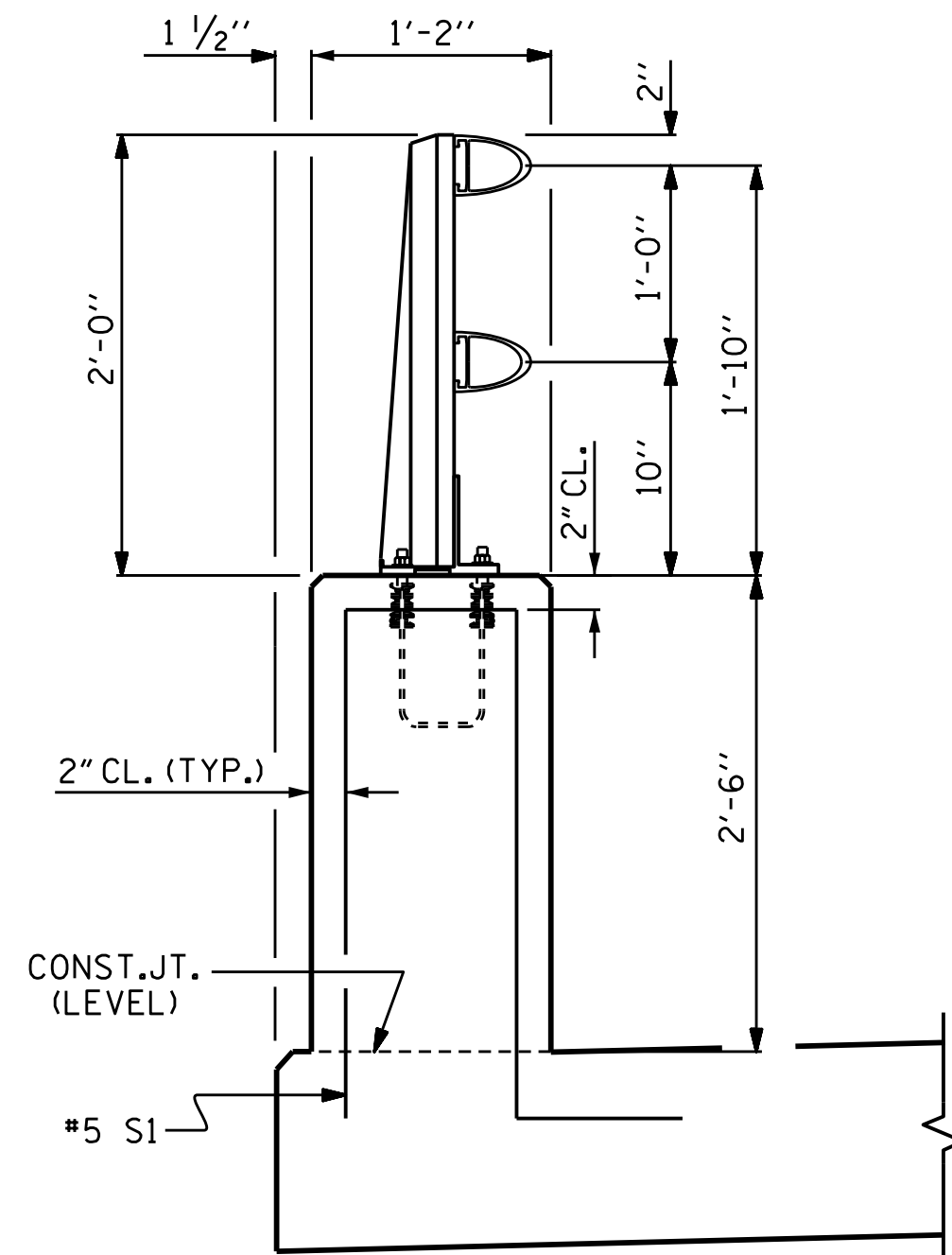
| REVISIONS |     |       |     |     |       | SHEET NO.        |
|-----------|-----|-------|-----|-----|-------|------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                  |
| 1         |     |       | 3   |     |       | S-39             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 100 |

DRAWN BY : NMW  
CHECKED BY : MGC  
DATE : 8/20  
DATE : 2/21

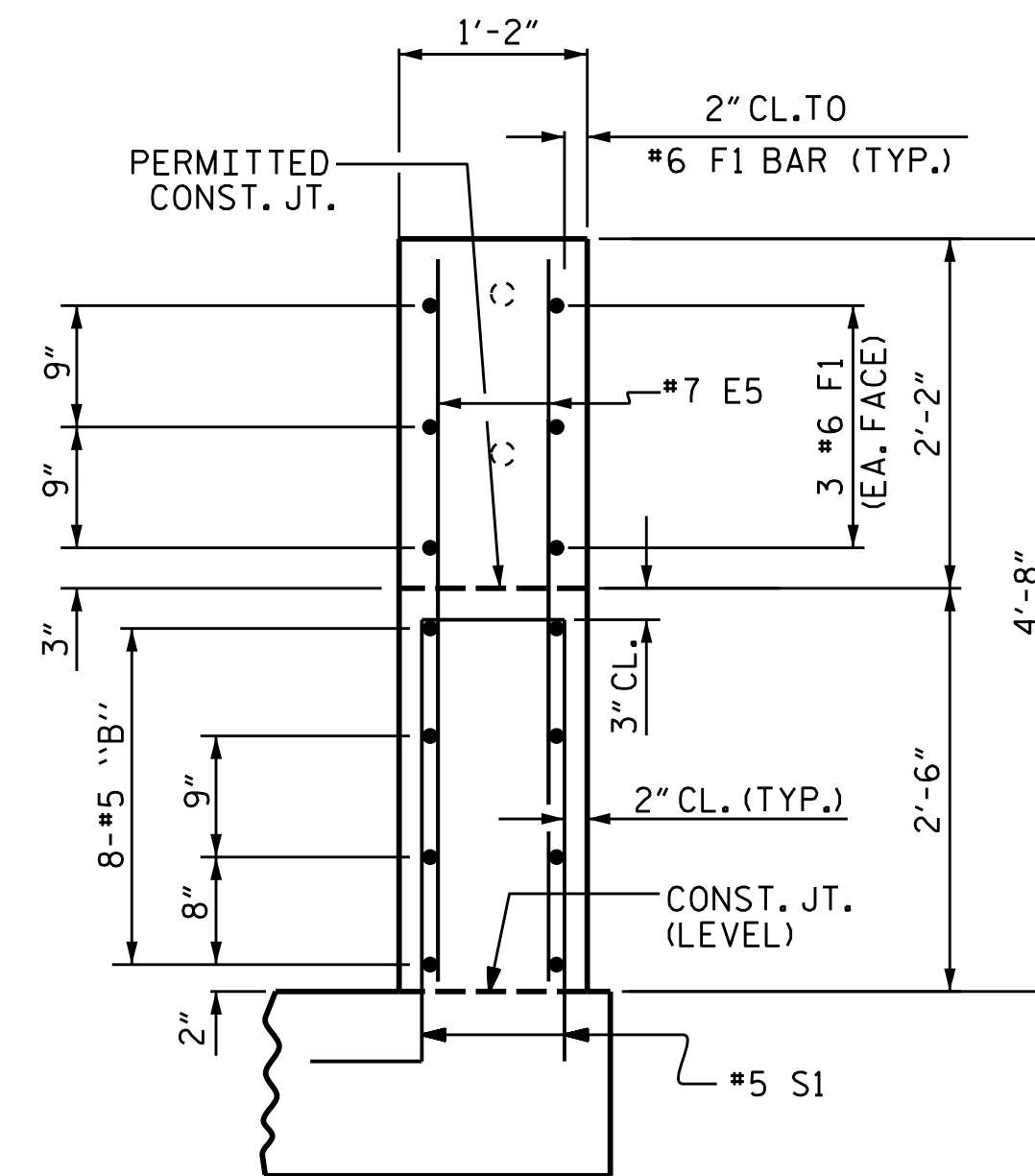
11/21/2025  
X:\NCDOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.081-U-6146.SMU.2BMR03.350082.dgn  
User:ZSmith



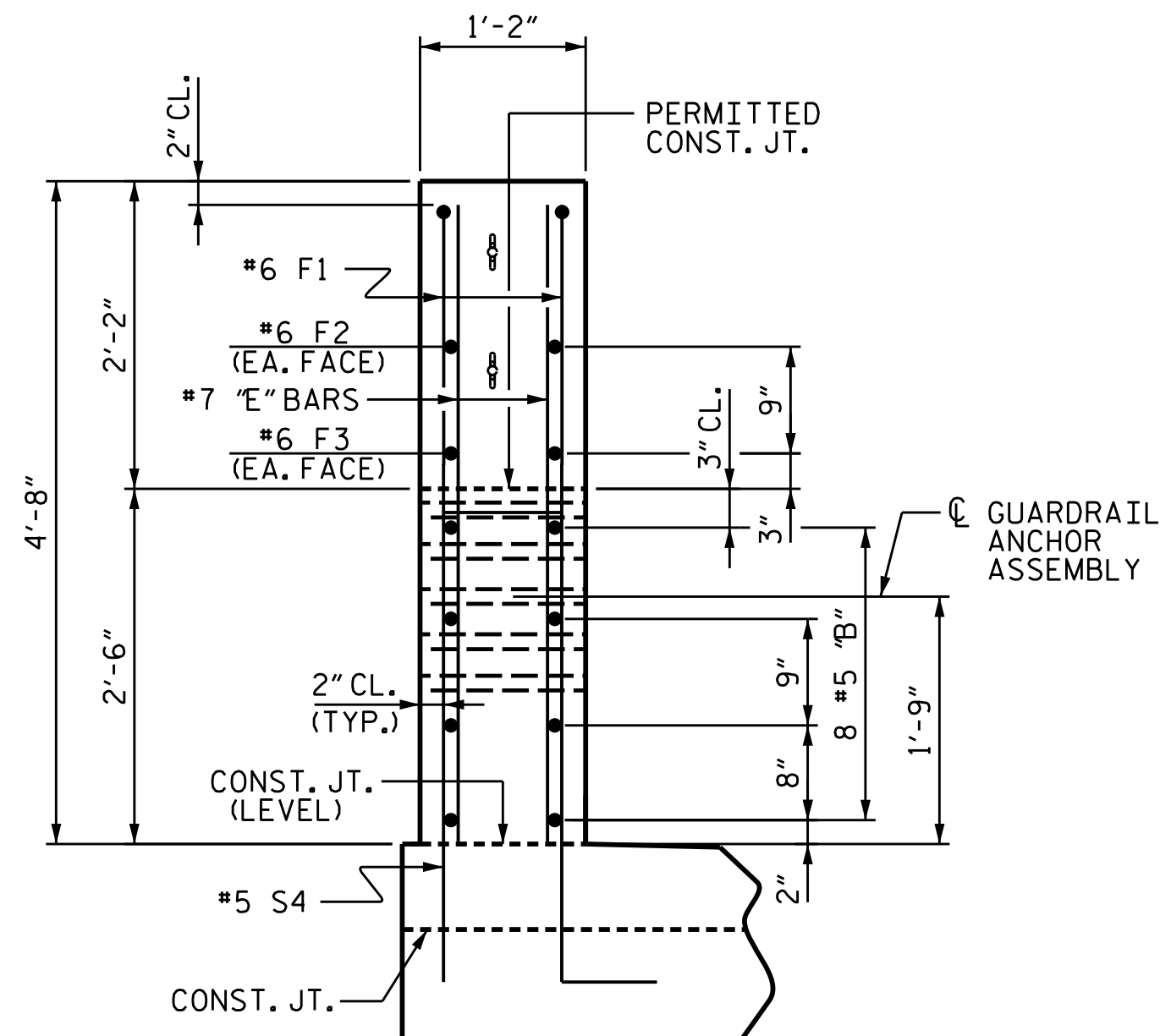
SECTION B-B



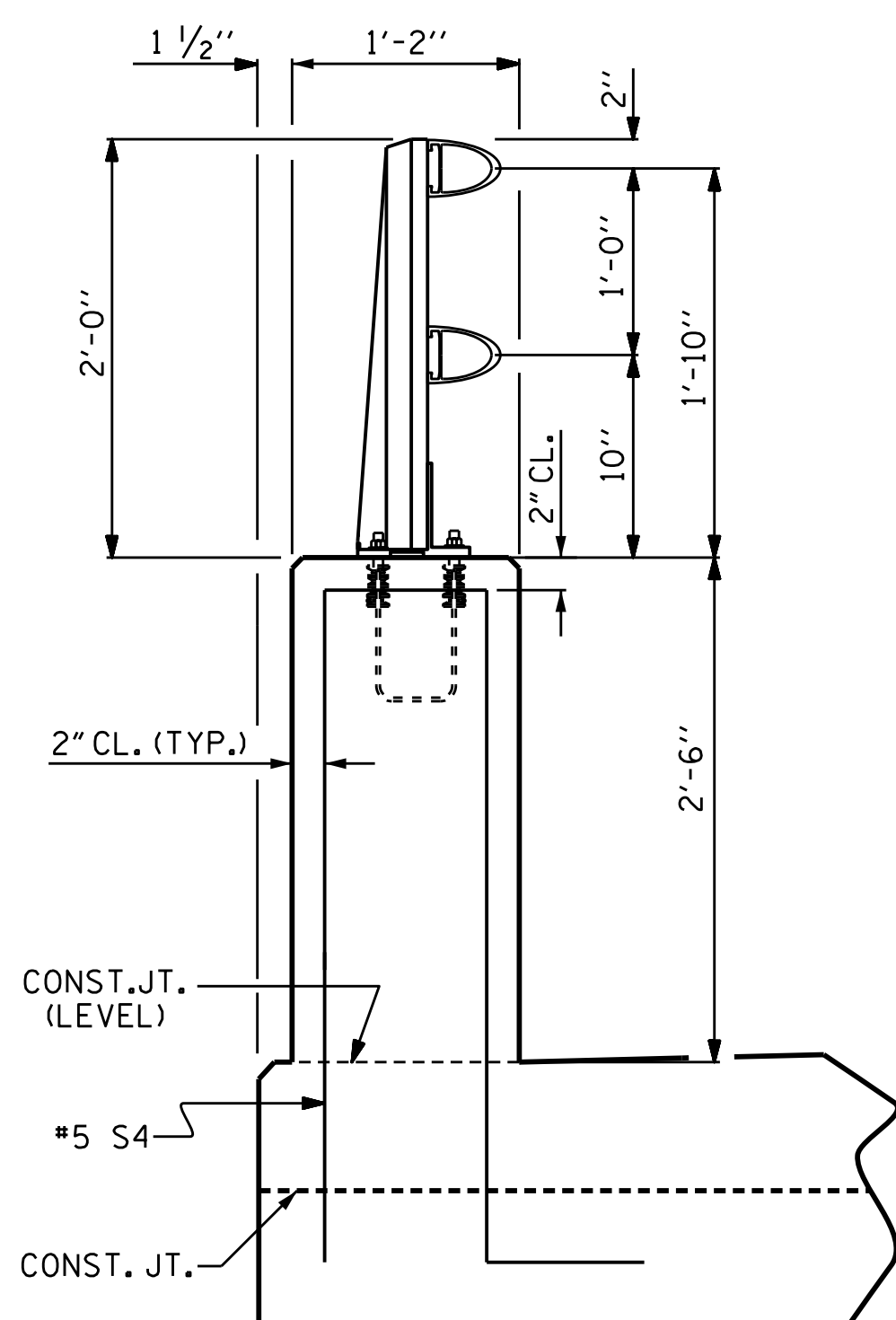
SECTION A-A



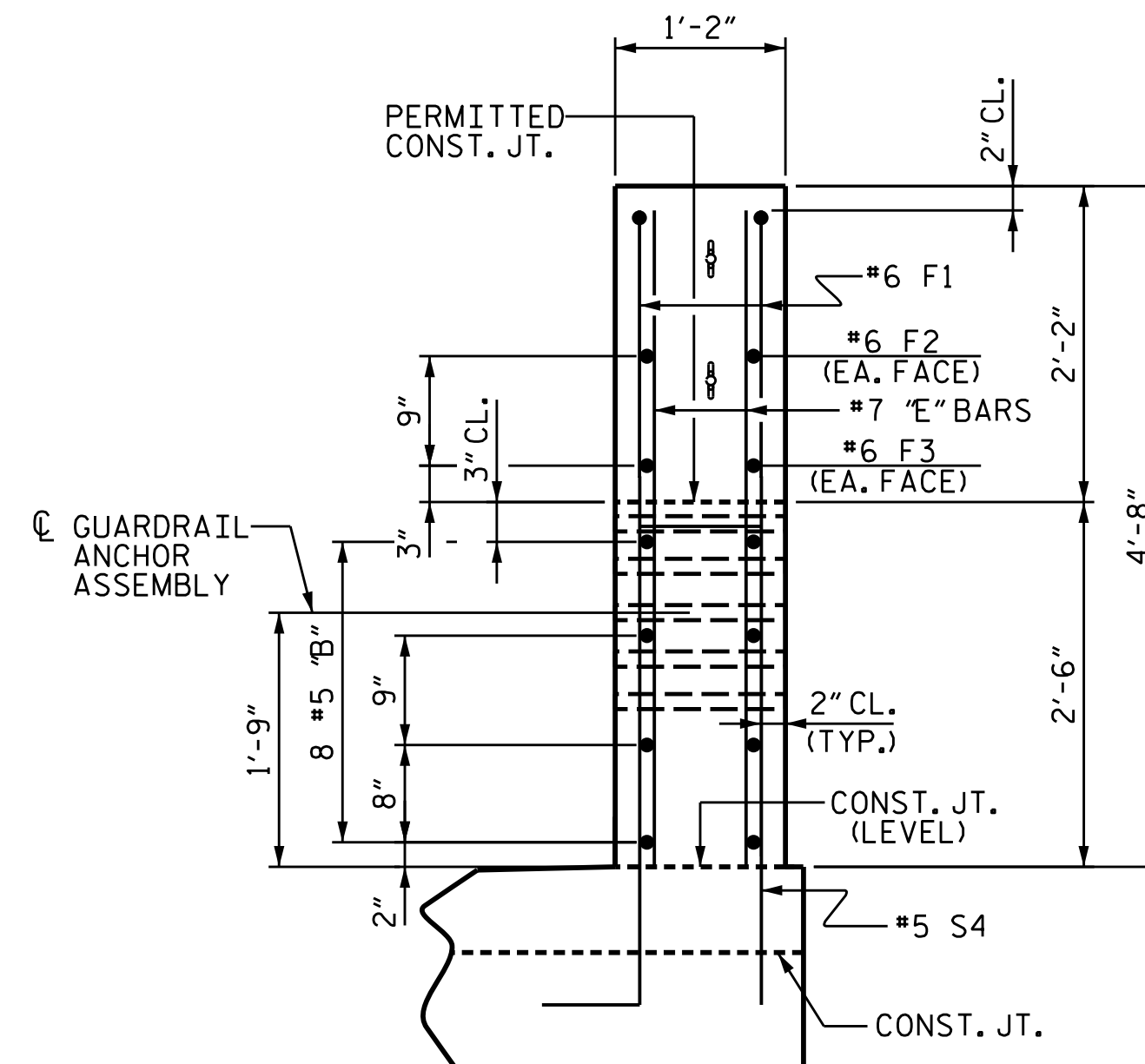
SECTION C-C



SECTION E-E



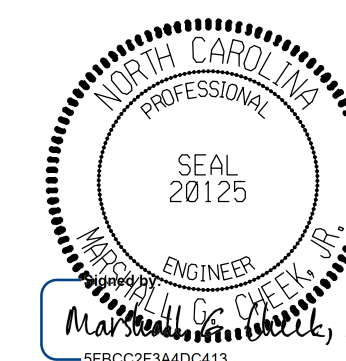
SECTION D-D



SECTION F-F

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
 STATION: 32+93.00-L-

SHEET 3 OF 4



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 1'-2" X 2'-6"  
 CONCRETE PARAPET  
 DETAILS

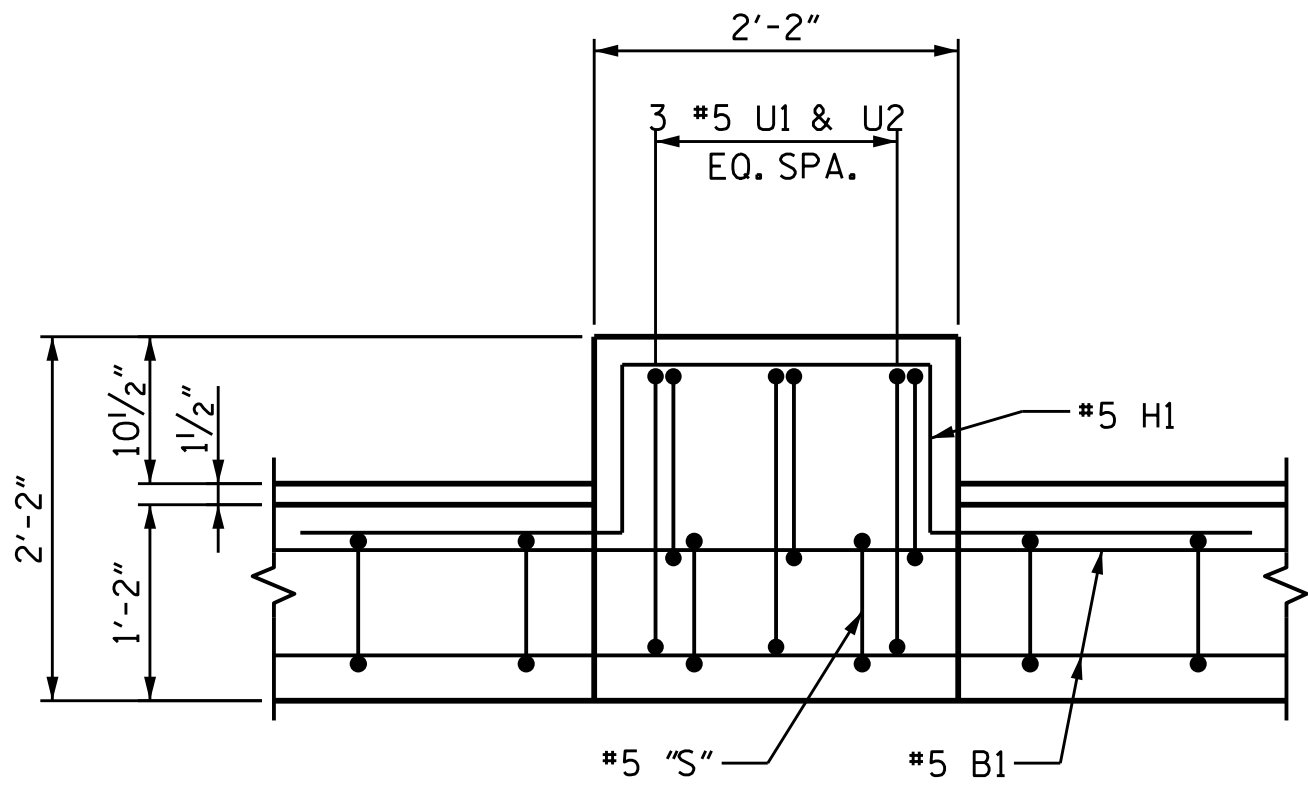
DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
 201 W. MARION ST STE 200  
 SHELBY, NC 28150  
 PH (704) 476-0003  
 CORP. LICENSE NO.: C-0275

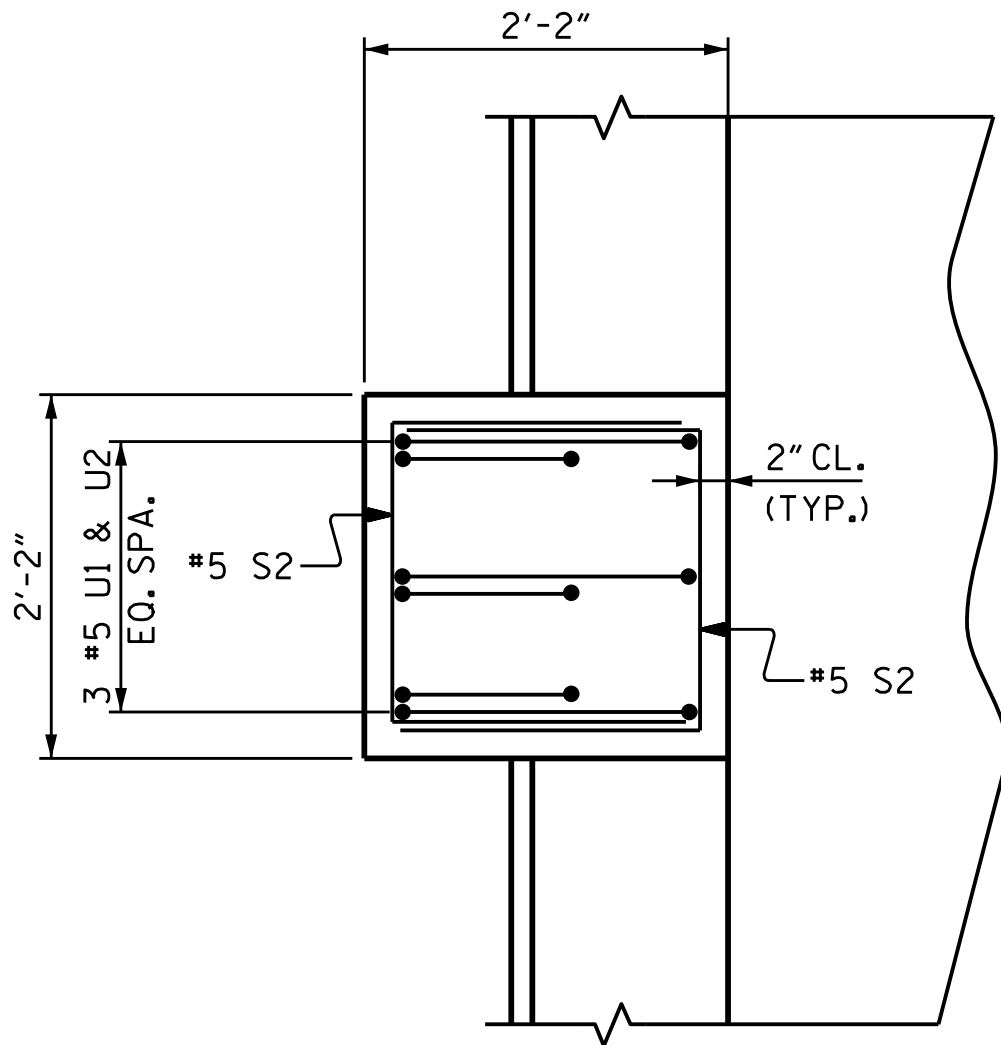
| REVISIONS |     |       |     |     |       | SHEET NO.        |
|-----------|-----|-------|-----|-----|-------|------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                  |
| 1         |     |       | 3   |     |       | S-40             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 100 |

DRAWN BY : NMW  
 CHECKED BY : MGC  
 DATE : 8/20  
 DATE : 2/21

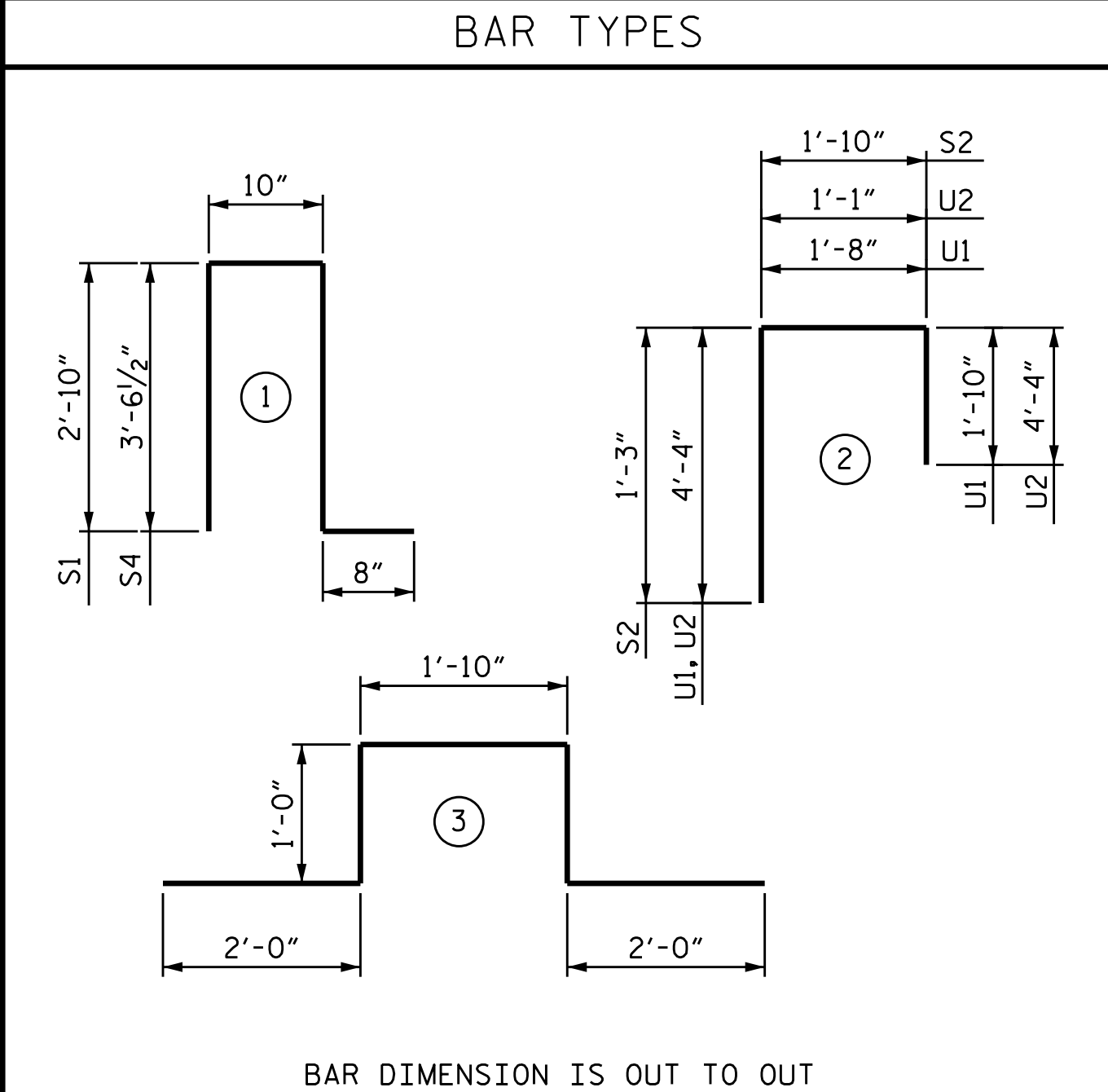
11/11/2025  
 X:\NC001\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.083\_U-6146\_SMU.2BMR04\_350082.dgn  
 User:zSmith



PLAN OF LAMP PEDESTAL



SECTION E-E



BAR DIMENSION IS OUT TO OUT

BILL OF MATERIAL FOR  
1'-2" x 2'-6" PARAPET  
2 END BLOCKS, 2 END POSTS &  
8 LAMP PEDESTALS

| BAR  | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|------|-----|------|------|--------|--------|
| * B1 | 208 | #5   | STR  | 29'-7" | 6,418  |
| * B2 | 32  | #5   | STR  | 29'-3" | 976    |
| * 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 | 24  | #7   | STR  | 4'-4"  | 213    |
| * F1 | 16  | #6   | STR  | 3'-5"  | 82     |
| * F2 | 4   | #6   | STR  | 1'-10" | 11     |
| * F3 | 4   | #6   | STR  | 3'-0"  | 18     |
| * H1 | 32  | #5   | 3    | 7'-10" | 261    |
| * S1 | 450 | #5   | 1    | 7'-2"  | 3,364  |
| * S2 | 48  | #5   | 2    | 4'-4"  | 217    |
| * S4 | 450 | #5   | 1    | 8'-7"  | 4,029  |
| * U1 | 24  | #5   | 2    | 7'-10" | 196    |
| * U2 | 24  | #5   | 2    | 9'-9"  | 244    |

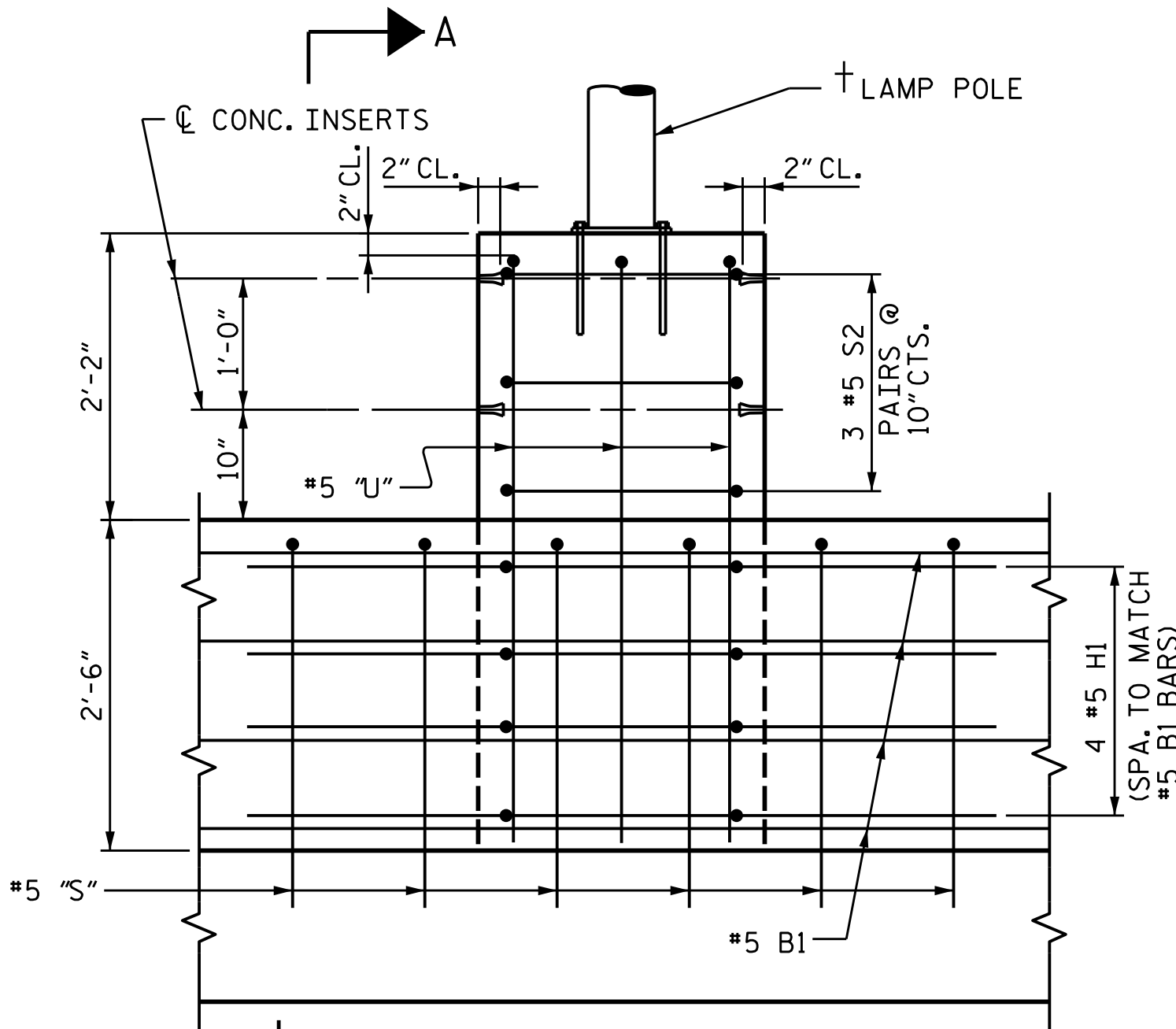
|                                  |       |        |
|----------------------------------|-------|--------|
| * EPOXY COATED REINFORCING STEEL | LBS.  | 16,136 |
| CLASS "AA" CONCRETE              | C. Y. | 102.8  |
| 1'-2" x 2'-6" CONCRETE PARAPET   | L.F.  | 906.42 |

NOTES

PAYMENT FOR THE END POST ON THE APPROACH SLABS SHALL BE PAID FOR UNDER THE UNIT PRICE BID FOR LINEAR FEET OF 1'-2" x 2'-6" CONCRETE PARAPET. REINFORCING STEEL AND CONCRETE QUANTITIES ARE INCLUDED WITH THE APPROACH SLAB BILL OF MATERIAL.

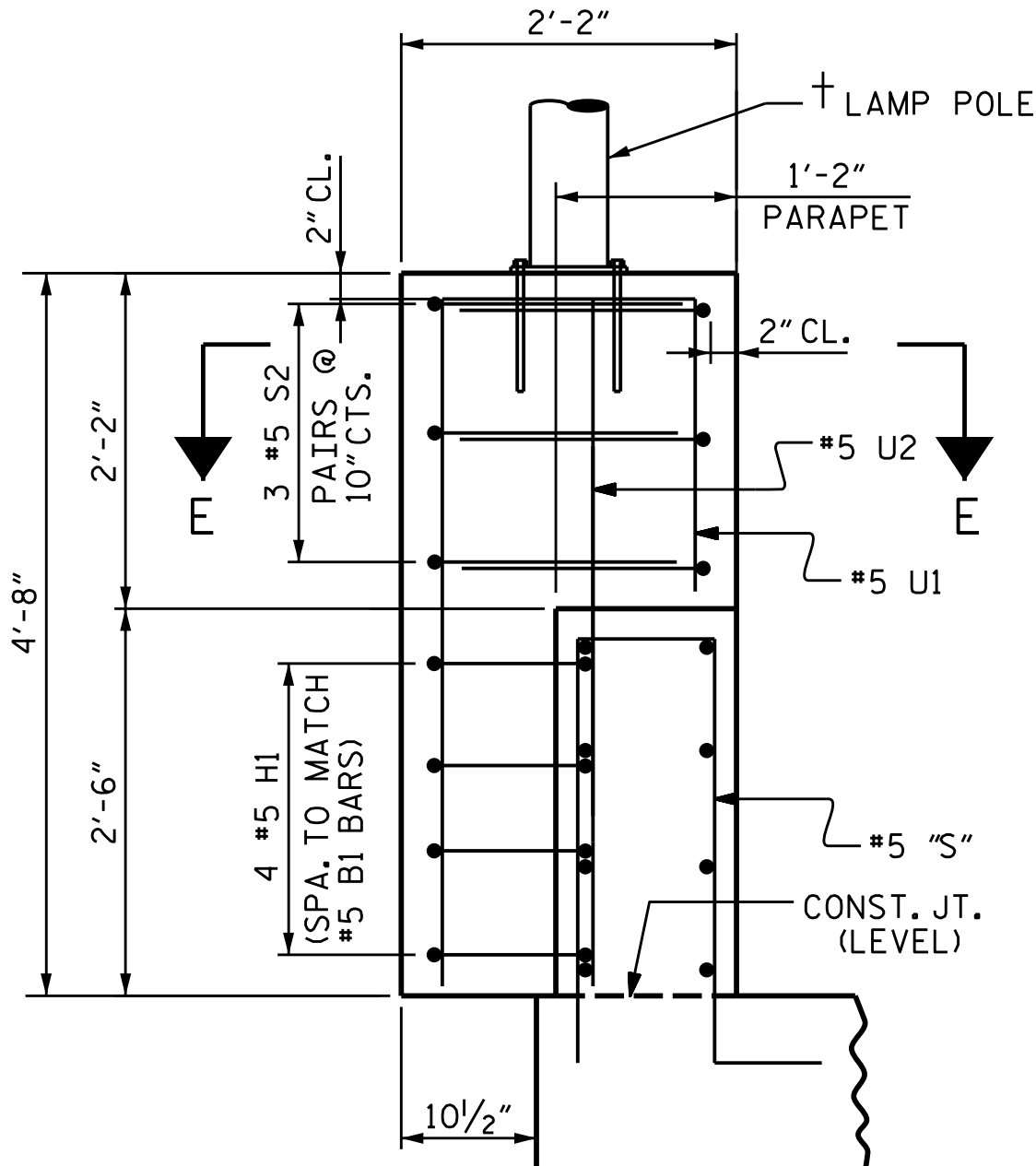
NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE FOR MATERIALS OR LABOR REQUIRED TO CONSTRUCT THE LAMP PEDESTALS. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR 1'-2" x 2'-6" CONCRETE PARAPET.

FOR FORMED OPENING FOR ELECTRICAL CONDUIT, SEE "ELECTRICAL CONDUIT FORMED OPENING" SHEET.



ELEVATION

(FRONT VIEW)



SECTION A-A

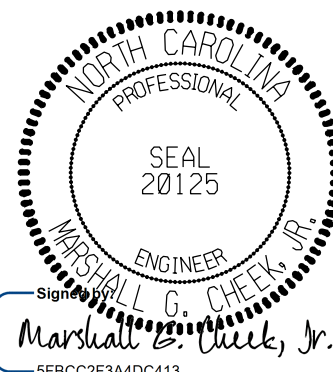
LAMP PEDESTAL DETAILS

(† LAMP POLE & ANCHORAGE TO BE PROVIDED BY OTHERS)  
ELECTRICAL CONDUIT FOR LIGHTING NOT SHOWN.  
FOR ELECTRICAL CONDUIT, SEE "ELECTRICAL CONDUIT FOR LIGHTING" SHEETS.

LEFT SIDE SHOWN, RIGHT SIDE SIMILAR

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00-L-

SHEET 4 OF 4



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

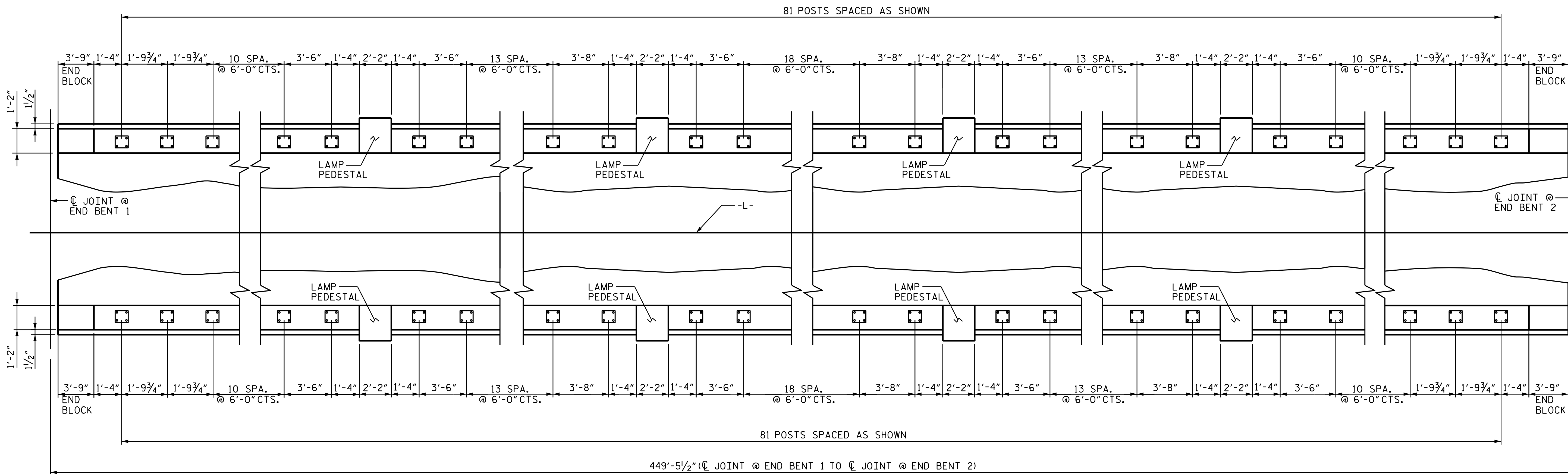
TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
1'-2" X 2'-6"  
CONCRETE PARAPET  
DETAILS

| REVISIONS    |     |       |     |     |       | SHEET NO. |
|--------------|-----|-------|-----|-----|-------|-----------|
| NO.          | BY: | DATE: | NO. | BY: | DATE: |           |
| 1            |     |       | 3   |     |       | S-41      |
| 2            |     |       | 4   |     |       |           |
| TOTAL SHEETS |     |       |     |     |       | 100       |

DRAWN BY : NMW  
CHECKED BY : MGC  
DATE : 4/22  
DATE : 4/22



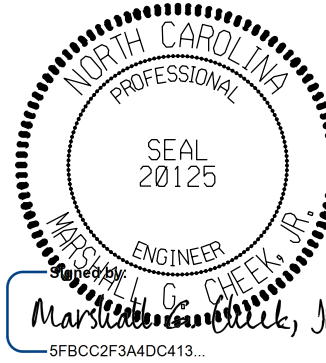
PLAN OF RAIL POST SPACINGS

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00-L-

SHEET 1 OF 4



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUPERSTRUCTURE  
STANDARD  
RAIL POST SPACINGS  
AND  
END OF RAIL DETAILS  
FOR TWO BAR METAL RAILS

| REVISIONS    |     |       |     |     |       | SHEET NO. |
|--------------|-----|-------|-----|-----|-------|-----------|
| NO.          | BY: | DATE: | NO. | BY: | DATE: |           |
| 1            |     |       | 3   |     |       | S-42      |
| 2            |     |       | 4   |     |       |           |
| TOTAL SHEETS |     |       |     |     |       | 100       |

ASSEMBLED BY : NMW  
CHECKED BY : MGC

DATE : 4/22  
DATE : 6/22

## NOTES

## STRUCTURAL CONCRETE INSERT

THE STRUCTURAL CONCRETE INSERT 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 1½".
- B. 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.)
- C. 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 BLOCK OR LAMP PEDESTAL CONNECTION

THE METAL RAIL TO END BLOCK OR LAMP PEDESTAL CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:

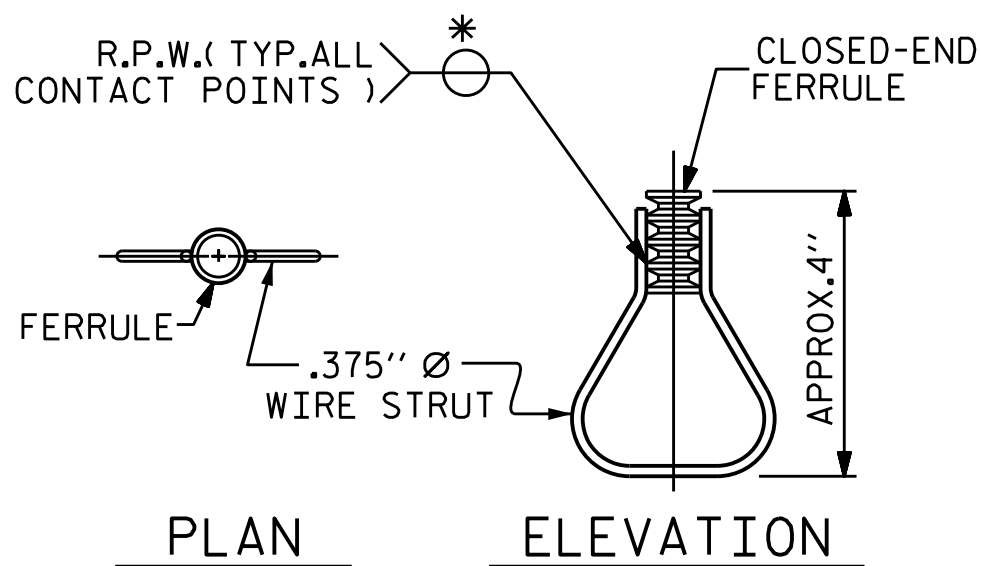
- A. ½" PLATES SHALL CONFORM TO ASTM A36 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- B. ¾" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A ¾" Ø X 1⅝" BOLT WITH 2" O.D. WASHER IN PLACE. THE ¾" Ø X 1⅝" BOLT SHALL HAVE N.C. THREADS.
- C. 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.
- D. STANDARD CLAMP BARS (SEE SHEET 4 OF 4).
- E. 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 BLOCK OR LAMP PEDESTAL CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 2 BAR METAL RAIL.

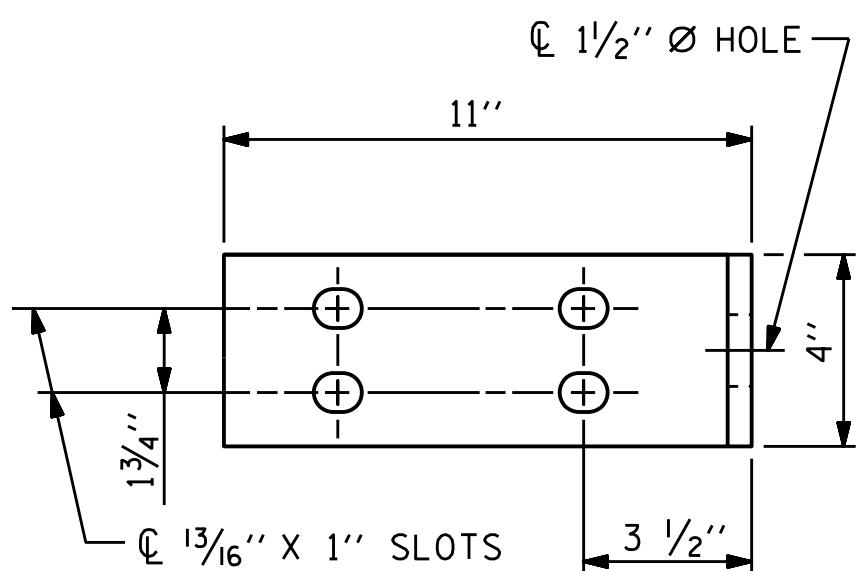
THE ¾" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

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

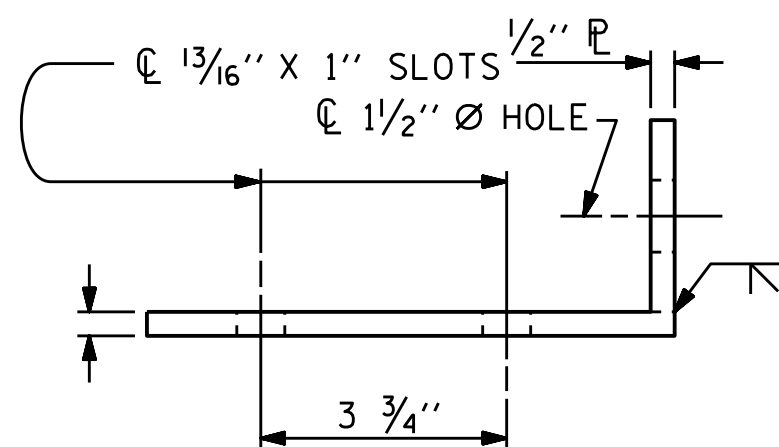
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END BLOCK OR LAMP PEDESTAL. IF THE ADHESIVE BONDING SYSTEM IS USED, THE ¾" Ø X 1⅝" BOLT WITH WASHER SHALL BE REPLACED WITH A ¾" Ø X 6½" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS 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.

STRUCTURAL CONCRETE  
INSERT

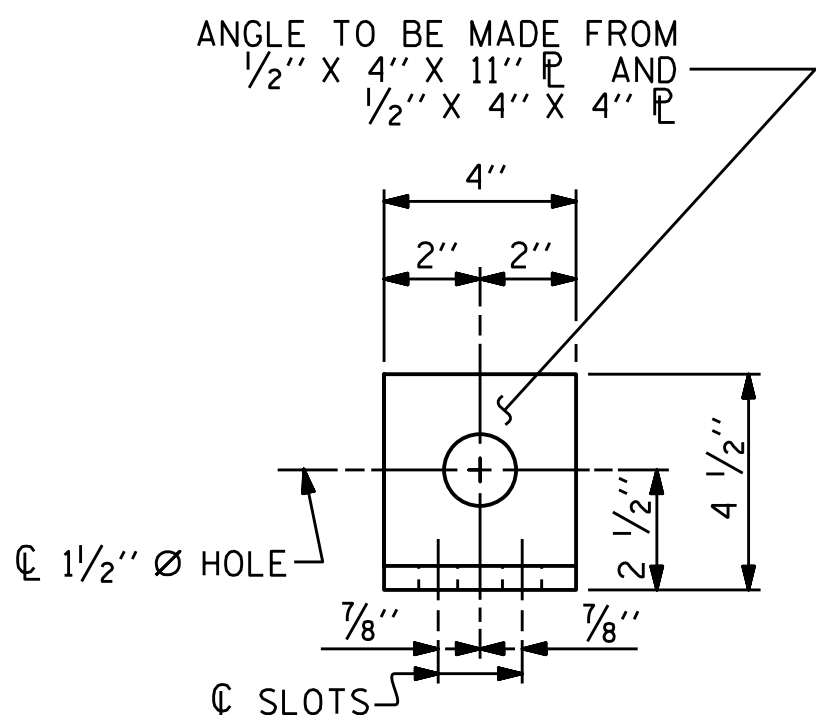
\* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.



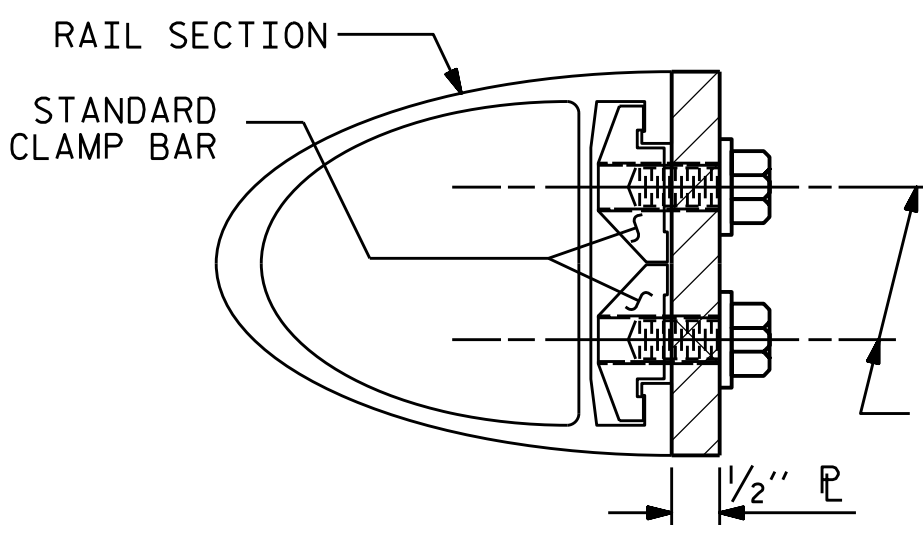
## ELEVATION



## TOP VIEW

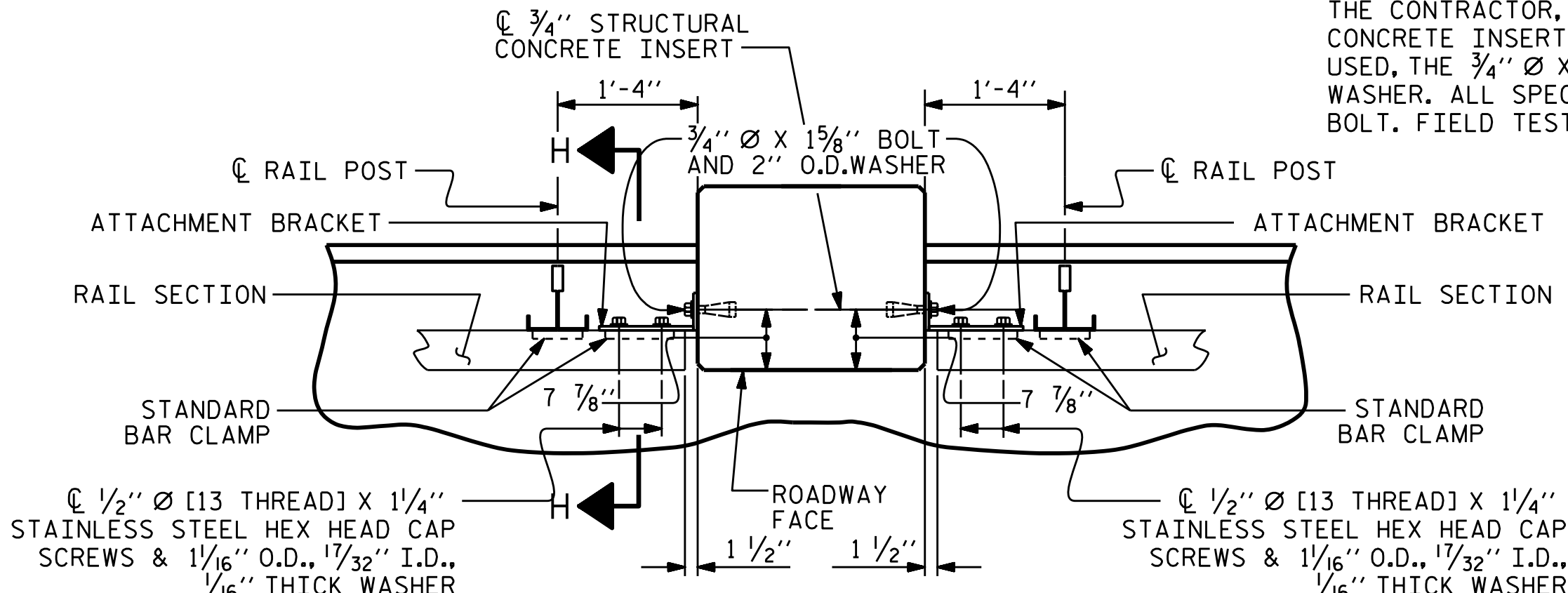


## END VIEW (FIX AND EXP.)

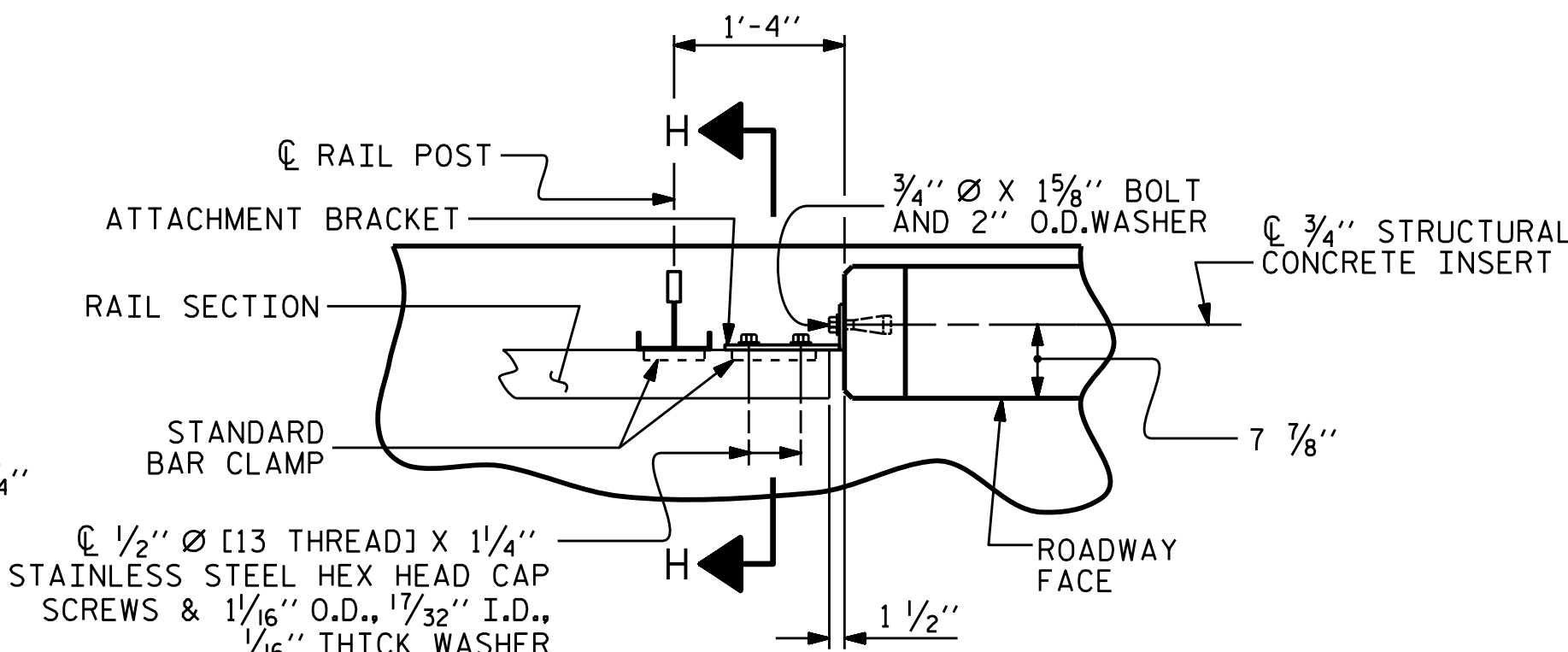


## SECTION H-H (FIX)

## FIXED



## PLAN - RAIL AND LAMP PEDESTAL



## PLAN - RAIL AND END BLOCK

## DETAILS FOR ATTACHING METAL RAIL TO END BLOCK

|                       |                     |
|-----------------------|---------------------|
| ASSEMBLED BY : NMW    | DATE : 8/20         |
| CHECKED BY : MGC      | DATE : 2/21         |
| DRAWN BY : FCJ 1/88   | REV. 10/1/11 MAA/GM |
| CHECKED BY : CRK 3/89 | REV. 12/17 MAA/THC  |
|                       | REV. 10/23 BNB/SNM  |

11/12/2025  
K:\NODOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.089.U-6146.SMU.2BMR07.350082.dgn  
User: z5m1th



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00-L-

SHEET 2 OF 4

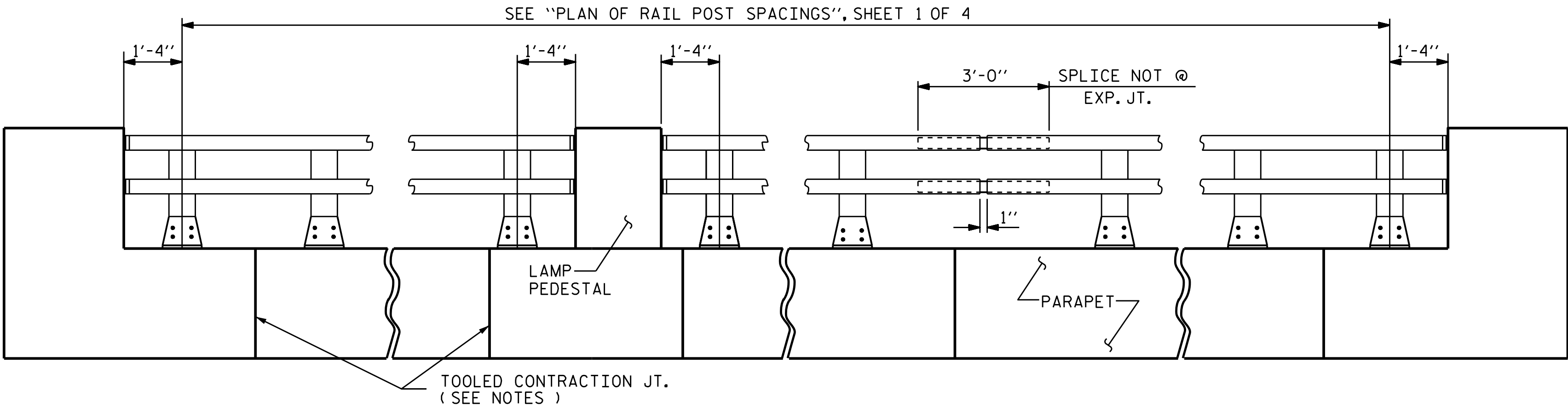
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
STANDARD  
RAIL POST SPACINGS  
AND

END OF RAIL DETAILS  
FOR TWO BAR METAL RAILS

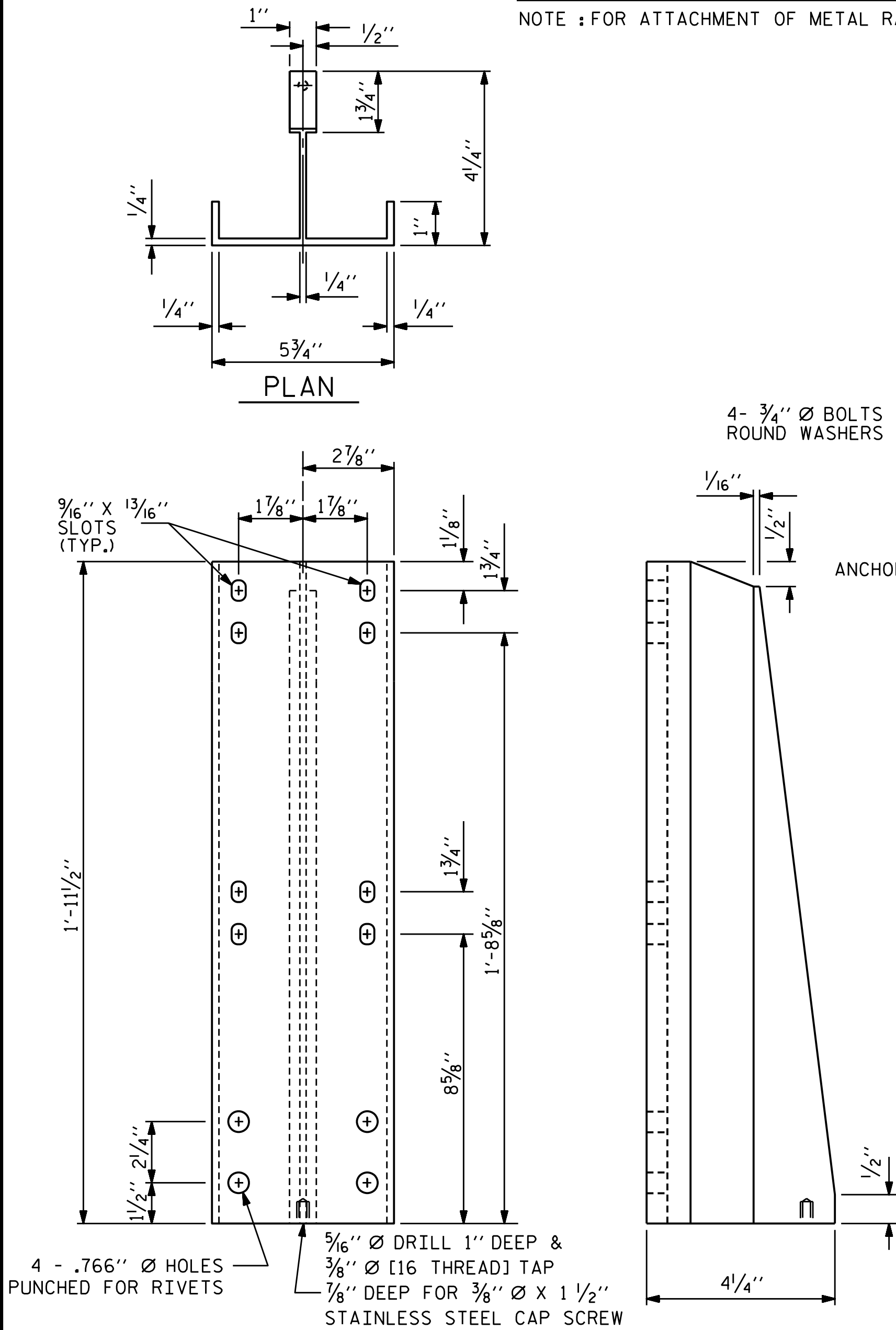
| REVISIONS |     |       |     |     |       | SHEET NO.        |
|-----------|-----|-------|-----|-----|-------|------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                  |
| 1         |     |       | 3   |     |       | S-43             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 100 |

STD. NO. BMR2



## ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END BLOCK OR LAMP PEDESTAL, SEE SHEET 2 OF 4.



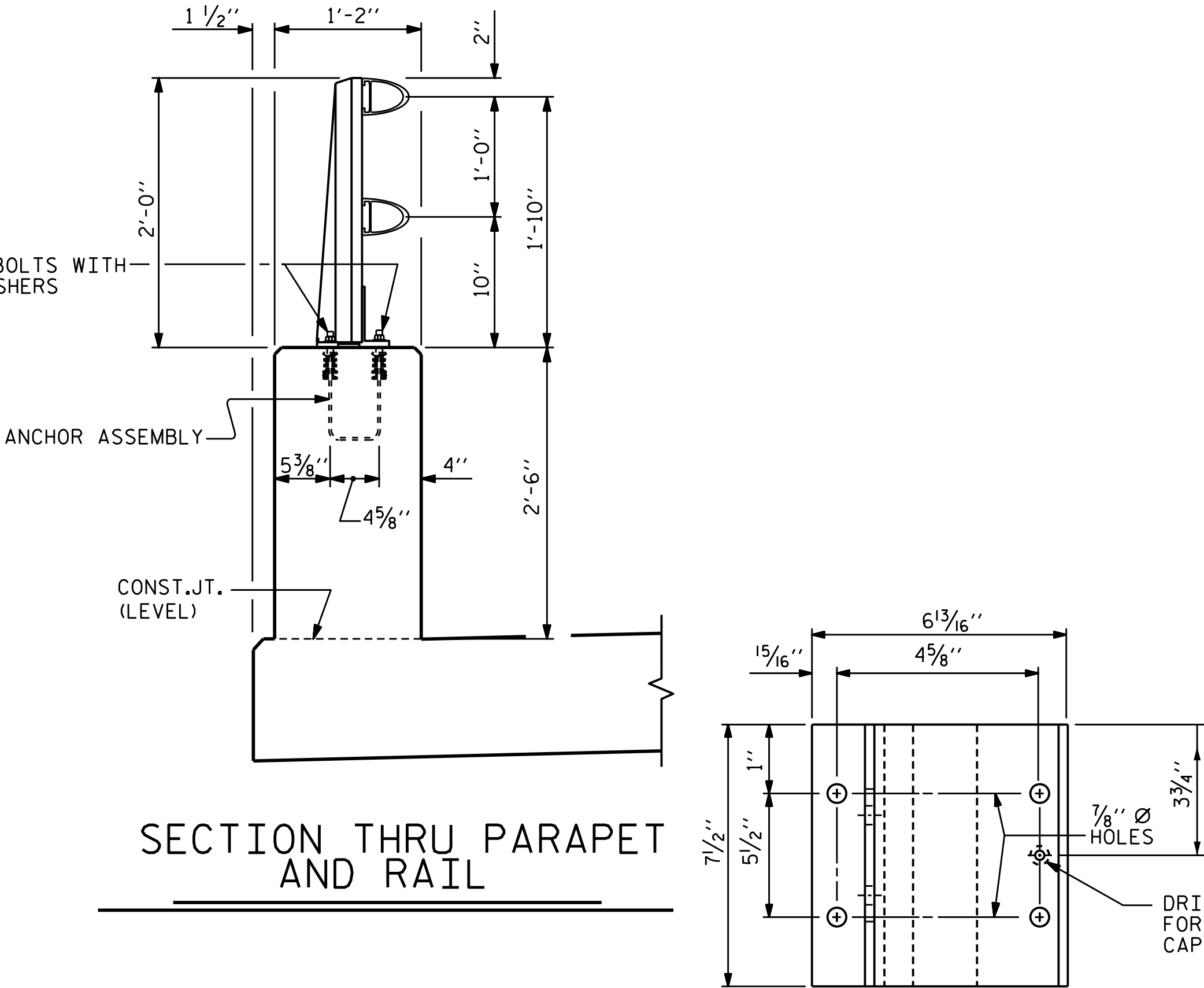
FRONT ELEVATION

SIDE ELEVATION

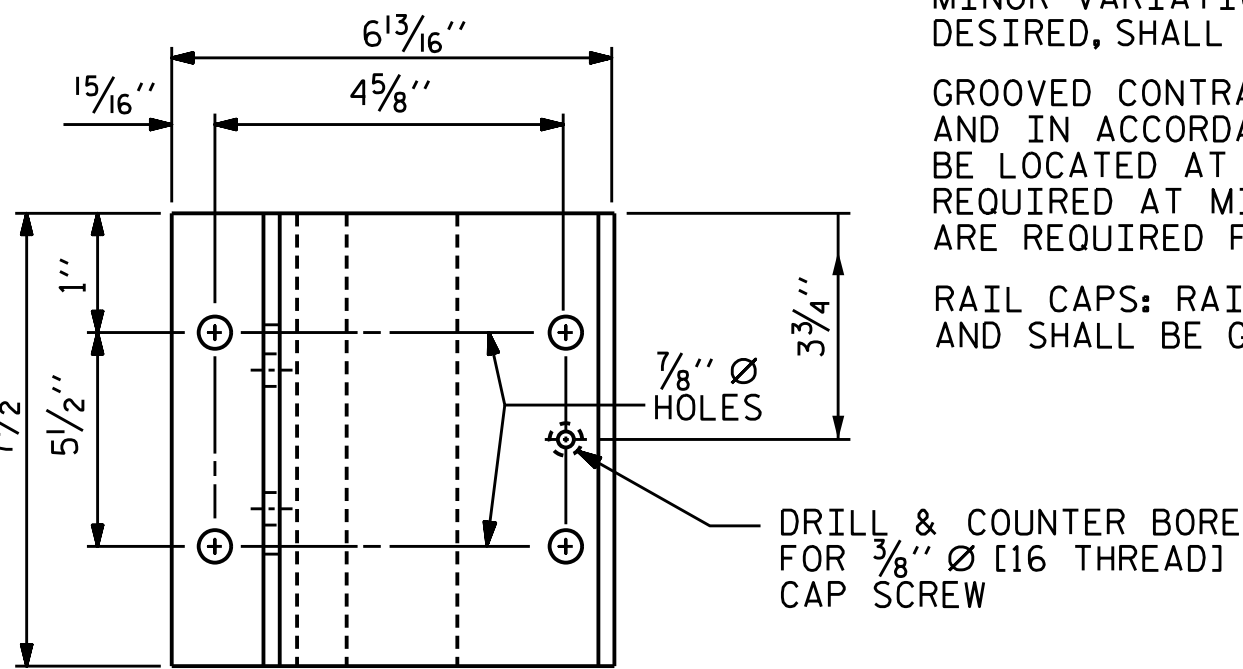
## DETAILS OF POST

ASSEMBLED BY : NMW  
CHECKED BY : MGC  
DATE : 2/24  
DATE : 2/24  
DRAWN BY : EEM 6/94  
CHECKED BY : RGW 6/94  
REV. 6/13  
REV. 12/17  
REV. 10/23  
MAA/GM  
MAA/THC  
BNB/SNM

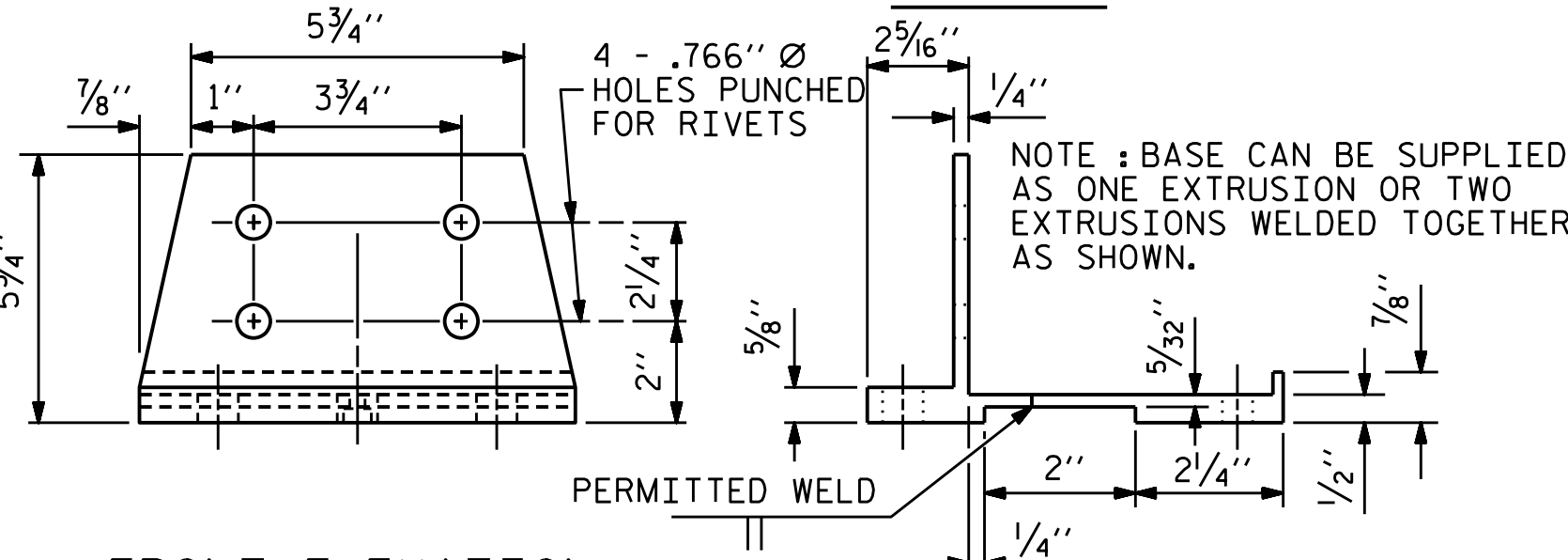
11/13/2025  
X:\NCDDOT\B-5857 Cramer\ton\Structures\Final Plans\Final DGN\401.091.U-6146.SMU.2BMR08.350082.dgn  
User:z5mth



## SECTION THRU PARAPET AND RAIL



PLAN



FRONT ELEVATION

SIDE ELEVATION

## POST BASE DETAILS

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.

THE METAL RAIL SHALL BE ALUMINUM AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS.

## 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 CONE POINT COLD DRIVEN AS PER DRAWING.

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

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

## ANODIZING

ALUMINUM FOR END POSTS, BASES, RAILS, EXPANSION BARS, CLAMP BARS, RIVETS, AND SHIMS SHALL BE ANODIZED BLACK. FOR ANODIZED 2 BAR METAL RAIL, SEE SPECIAL PROVISIONS.

ANY DAMAGE TO THE ANODIZED SURFACE OF THE RAIL OR COMPONENTS DURING THE CONSTRUCTION SHALL BE REPAIRED ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS AT THE DIRECTION OF THE ENGINEER AND AT THE CONTRACTOR'S EXPENSE.

AFTER A SHADE OF BLACK HAS BEEN SELECTED FOR THE RAILING, THE CONTRACTOR SHALL SUBMIT A SAMPLE OF COMPATIBLE EXTERIOR ACRYLIC HOUSE PAINT TO THE ENGINEER. THIS PAINT SHALL MATCH THE ANODIZED RAIL COLOR AS CLOSELY AS POSSIBLE. AFTER ERECTION OF THE ANODIZED ALUMINUM RAILING, ALL EXPOSED ANCHOR BOLTS, NUTS, WASHERS, MACHINE SCREWS, CAP SCREWS, BOLTS, ATTACHMENT BRACKETS, HOLD DOWN PLATES, RAIL CAPS AND BUILT UP ANGLES SHALL BE COATED WITH TWO COATS OF THIS PAINT.

## GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END BLOCK TO LAMP PEDESTAL OR FROM LAMP PEDESTAL TO LAMP PEDESTAL 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 BLOCK DIMENSION, SEE SHEET 2 OF 4.

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.

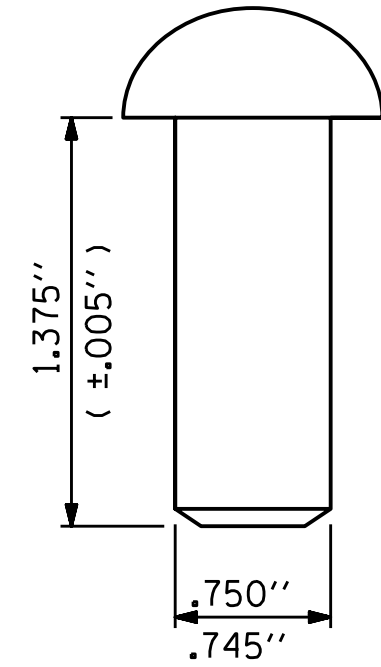
ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

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.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

PAY LENGTH = 866.17 LIN. FT.



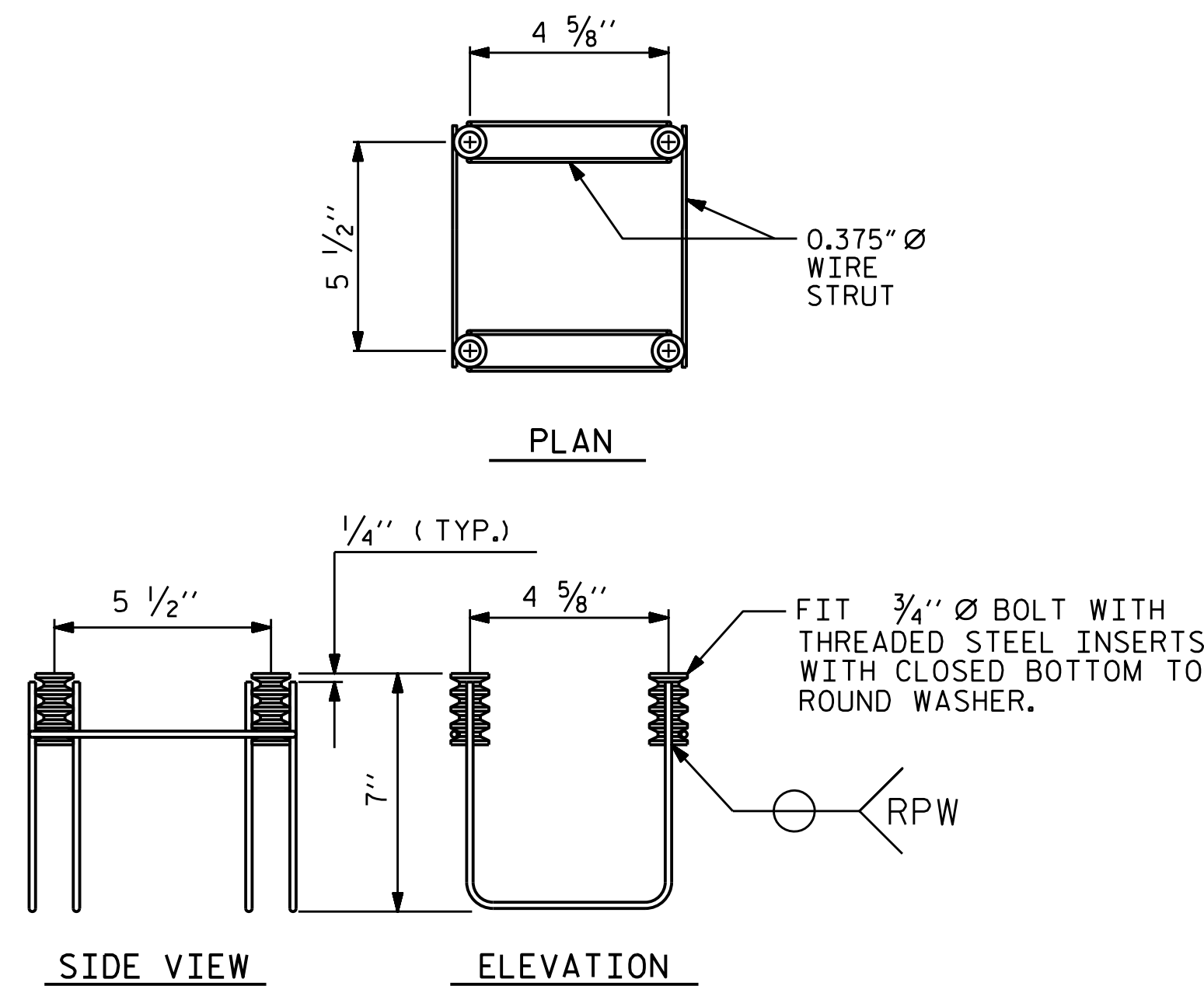
## RIVET DETAIL

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00-L-

SHEET 3 OF 4

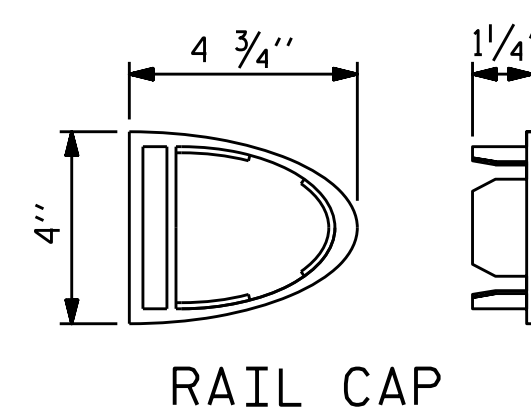
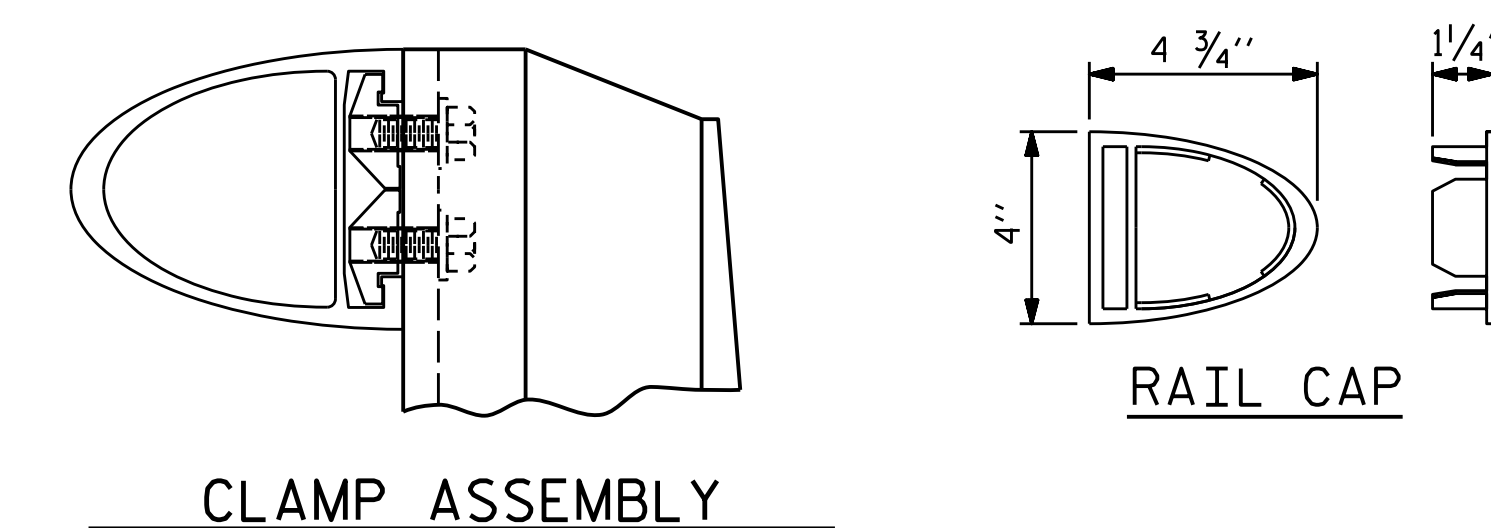
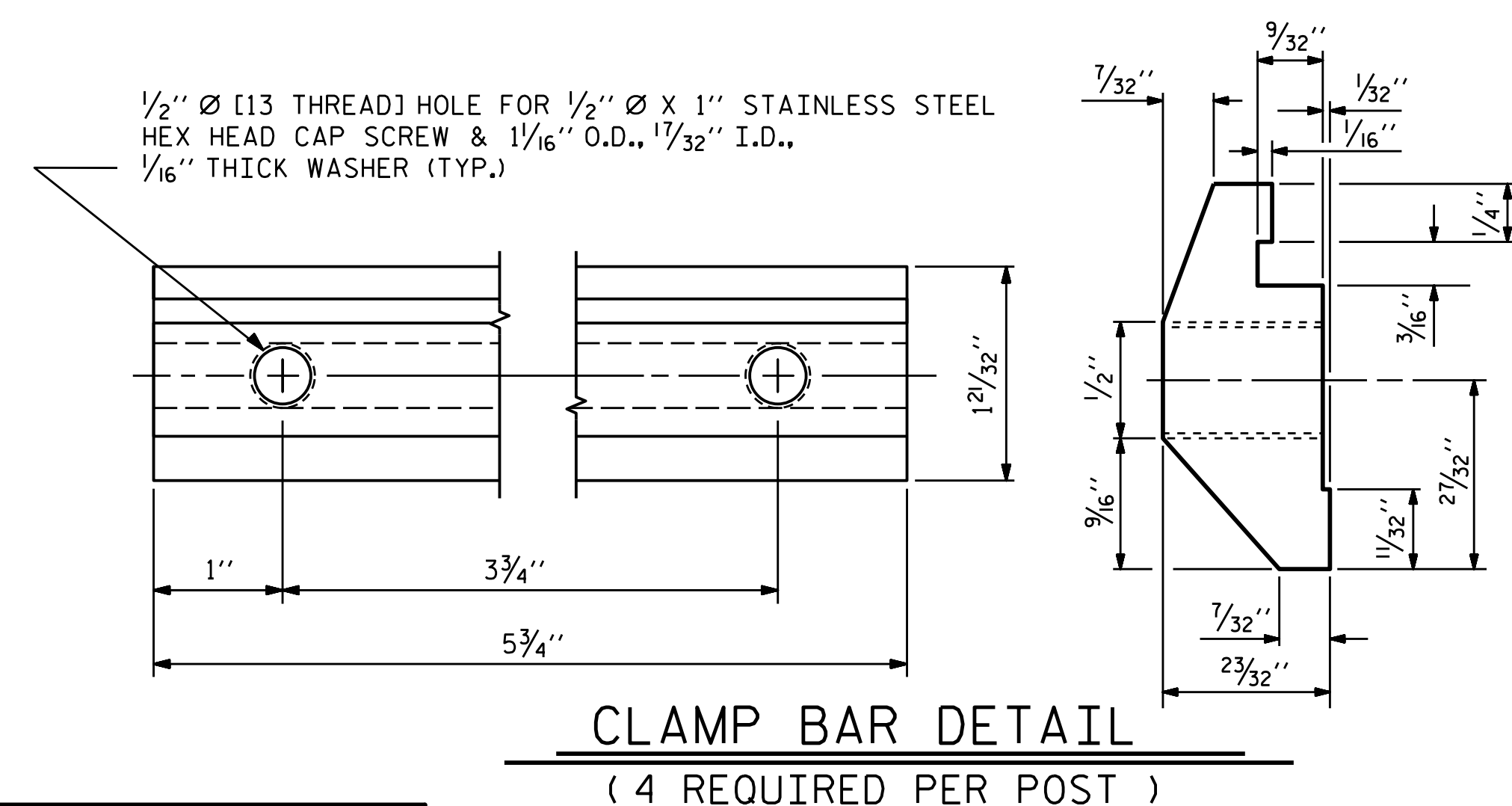
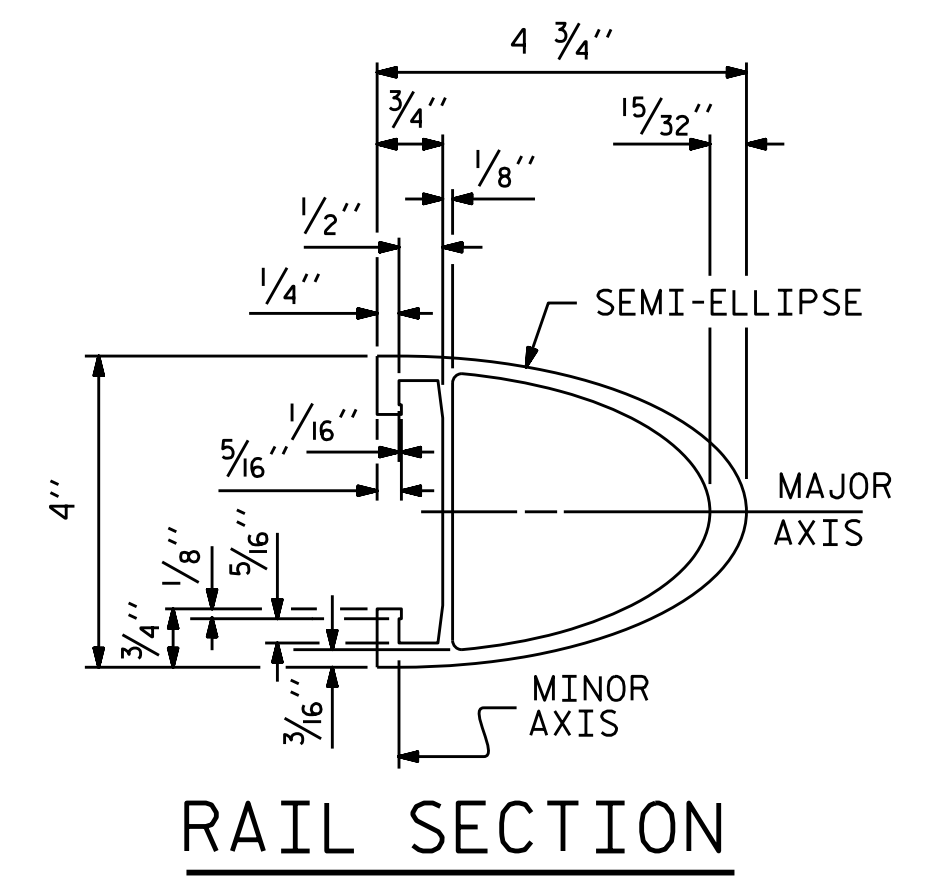
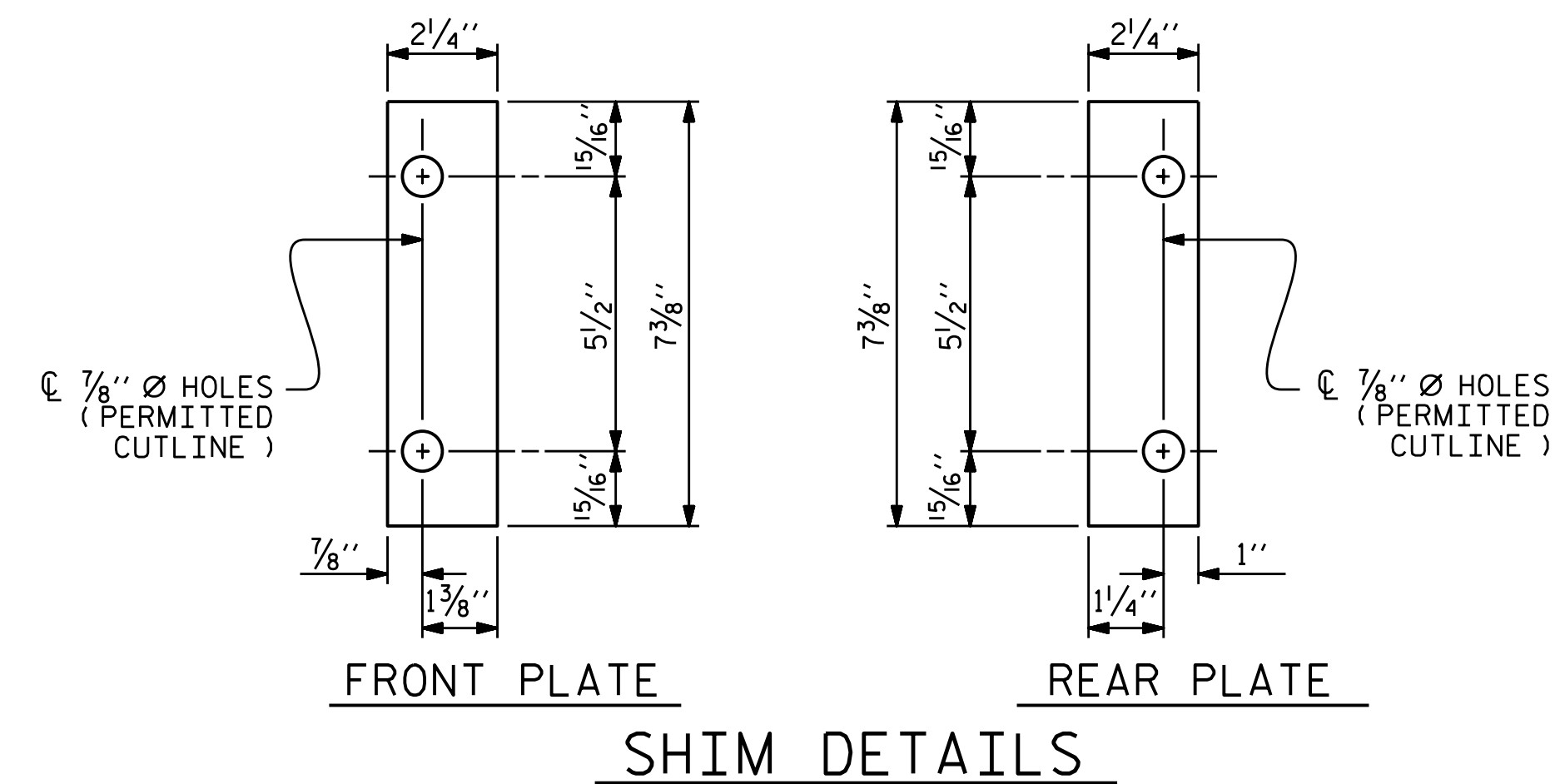
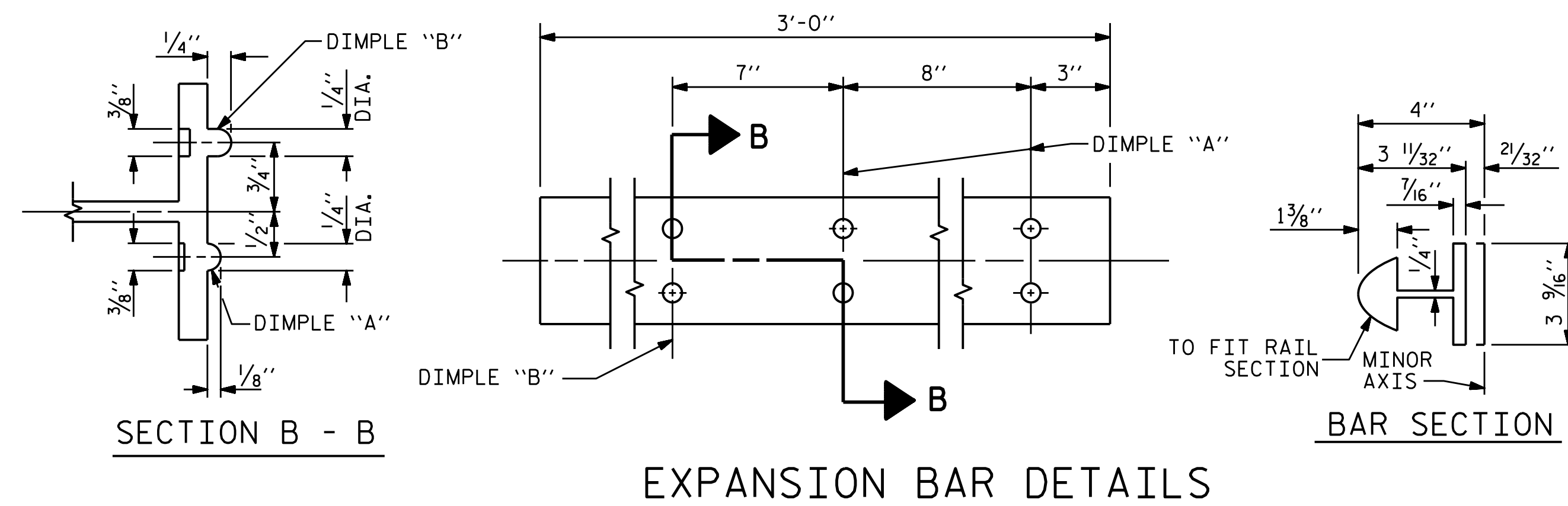
|                                                                                                                 |     |                                                                                                                      |     |      |       |
|-----------------------------------------------------------------------------------------------------------------|-----|----------------------------------------------------------------------------------------------------------------------|-----|------|-------|
|                                                                                                                 |     | STATE OF NORTH CAROLINA<br>DEPARTMENT OF TRANSPORTATION<br>RALEIGH<br>SUPERSTRUCTURE<br>ANODIZED<br>2 BAR METAL RAIL |     |      |       |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                |     |                                                                                                                      |     |      |       |
| TGS ENGINEERS<br>201 W. MARION ST STE 200<br>SHELBY, NC 28150<br>PH (704) 476-0003<br>CORP. LICENSE NO.: C-0275 |     |                                                                                                                      |     |      |       |
| REVISIONS                                                                                                       |     |                                                                                                                      |     |      |       |
| NO.                                                                                                             | BY: | DATE:                                                                                                                | NO. | BY:  | DATE: |
| 1                                                                                                               |     |                                                                                                                      | 3   |      |       |
| 2                                                                                                               |     |                                                                                                                      | 4   |      |       |
| SHEET NO.                                                                                                       |     |                                                                                                                      |     | S-44 |       |
| TOTAL SHEETS                                                                                                    |     |                                                                                                                      |     | 100  |       |

STD. NO. BMR3



## 4-BOLT METAL RAIL ANCHOR ASSEMBLY

( 162 ASSEMBLIES REQUIRED )



- ## 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 1/6" 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  $\frac{3}{4}$ " 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.

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
 STATION: 32+93.00-L-

GASTON COUNTY

STATION: 32+93.00-L-

SHEET 4 OF 4



2/24/2026

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

**TGS ENGINEERS**  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0274

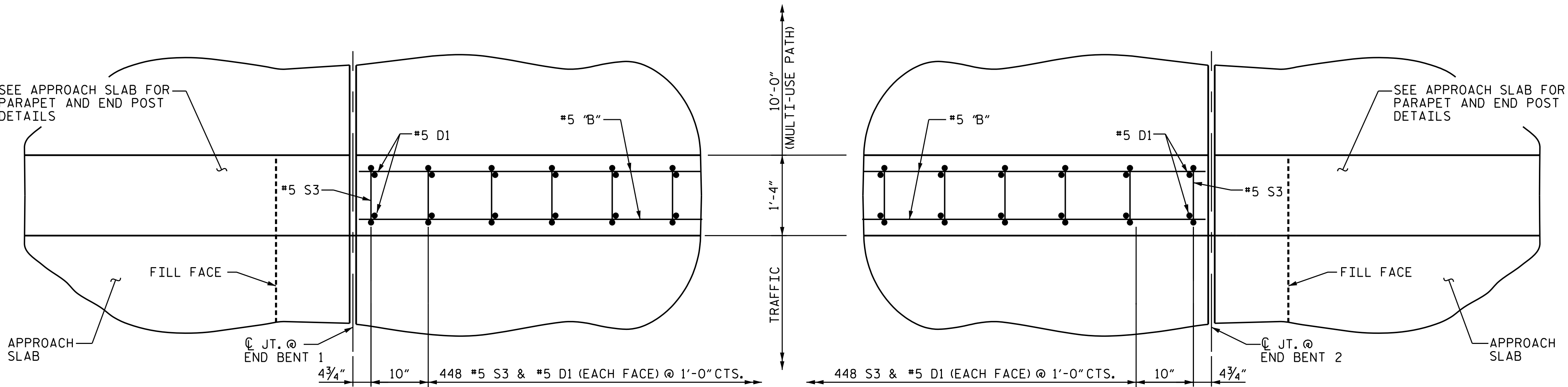
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
STANDARD

2 BAR METAL RAIL

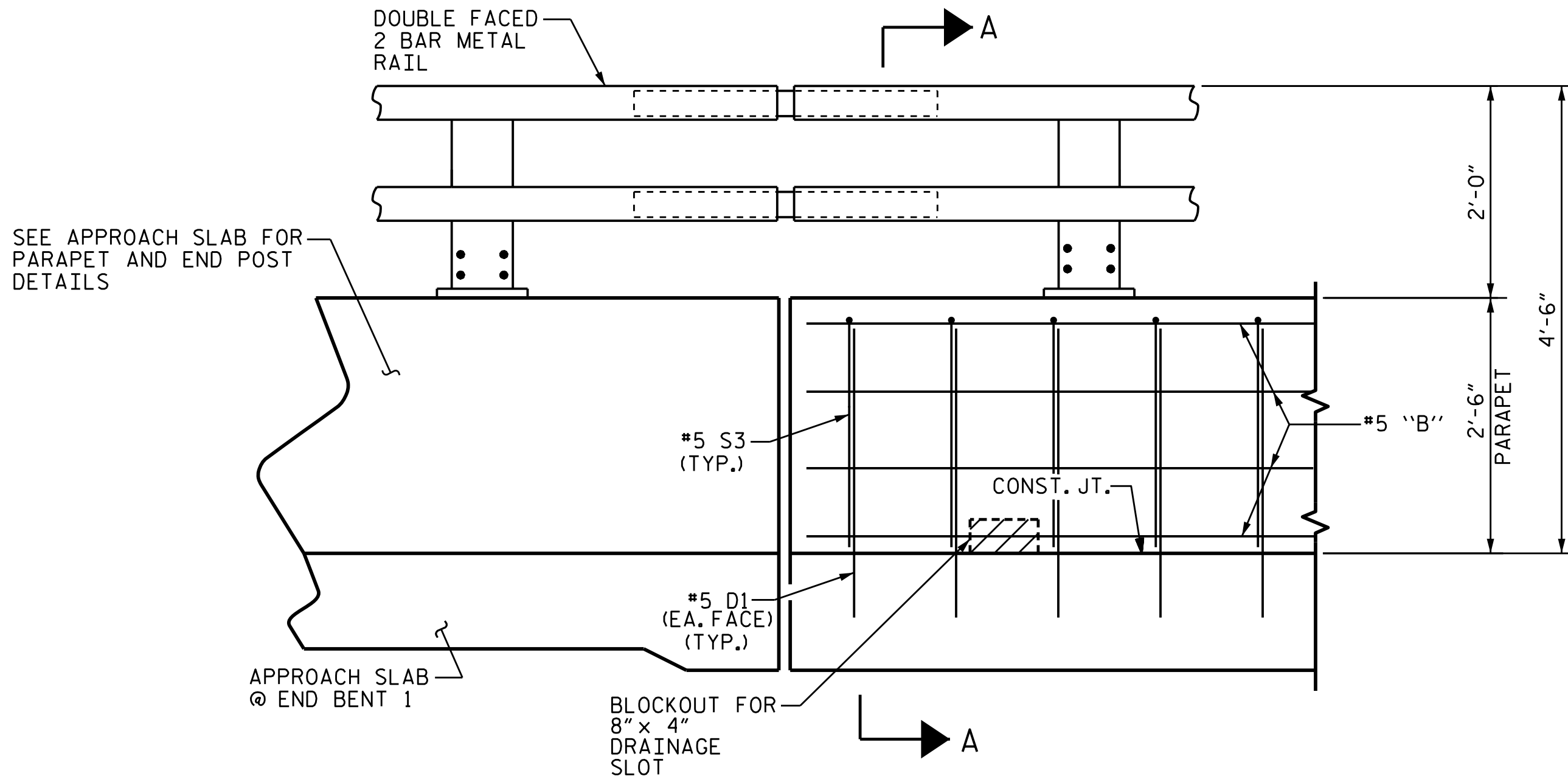
|           |     |       |     |     |       |                        |                   |
|-----------|-----|-------|-----|-----|-------|------------------------|-------------------|
| REVISIONS |     |       |     |     |       |                        | SHEET NO.<br>S-45 |
| NO.       | BY: | DATE: | NO. | BY: | DATE: | TOTAL<br>SHEETS<br>100 |                   |
| 1         |     |       | 3   |     |       |                        |                   |
| 2         |     |       | 4   |     |       |                        |                   |

STD. NO. BMR4

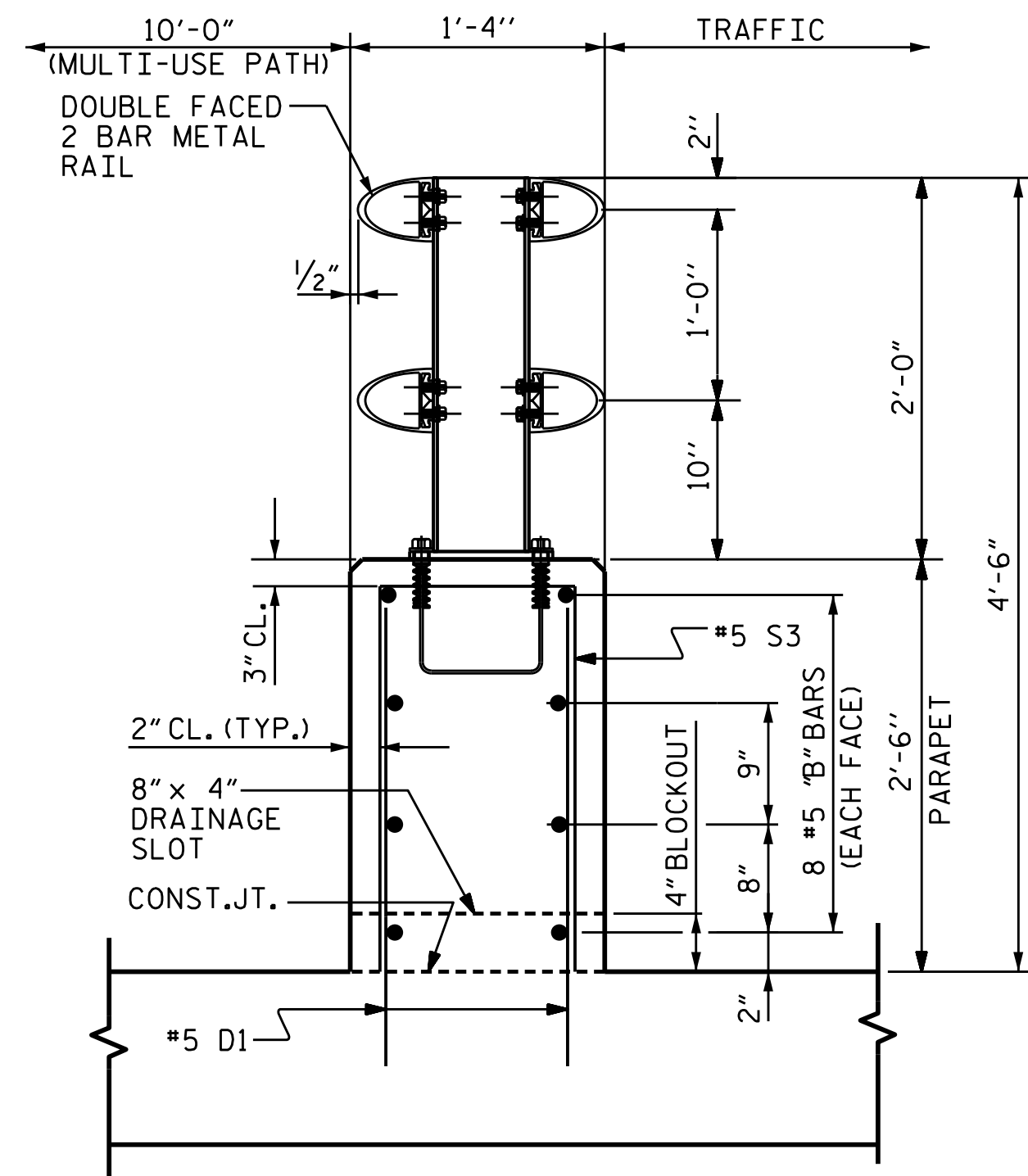


PLAN OF 1'-4" x 2'-6" PARAPET

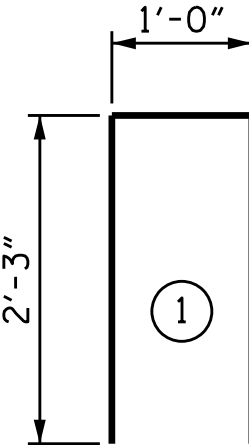
SEE "PLAN OF PARAPET" FOR 8" x 6 DRAIN LOCATIONS.  
FOR #5 B BARS, SEE "PLAN OF PARAPET FOR 2 BAR METAL RAIL" SHEET.



ELEVATION



SECTION A-A

| BILL OF MATERIAL FOR<br>1'-4" x 2'-6" PARAPET                                       |     |      |      |        |        |  |
|-------------------------------------------------------------------------------------|-----|------|------|--------|--------|--|
| BAR                                                                                 | NO. | SIZE | TYPE | LENGTH | WEIGHT |  |
| * B1                                                                                | 104 | #5   | STR  | 29'-7" | 3,209  |  |
| * B2                                                                                | 16  | #5   | STR  | 29'-3" | 488    |  |
|                                                                                     |     |      |      |        |        |  |
| * D1                                                                                | 900 | #5   | STR  | 2'-10" | 2,660  |  |
| * S3                                                                                | 450 | #5   | 1    | 5'-6"  | 2,581  |  |
|                                                                                     |     |      |      |        |        |  |
| * EPOXY COATED<br>REINFORCING STEEL                                                 |     |      |      | LBS.   | 8,938  |  |
| CLASS "AA" CONCRETE                                                                 |     |      |      | C. Y.  | 55.5   |  |
| 1'-4" x 2'-6"<br>CONCRETE PARAPET                                                   |     |      |      | L.F.   | 499.25 |  |
| BAR TYPE                                                                            |     |      |      |        |        |  |
|  |     |      |      |        |        |  |
| BAR DIMENSION IS OUT TO OUT                                                         |     |      |      |        |        |  |

NOTES

PAYMENT FOR THE END POST ON THE APPROACH SLABS SHALL BE PAID FOR UNDER THE UNIT PRICE BID FOR LINEAR FEET OF 1'-4" x 2'-6" CONCRETE PARAPET. REINFORCING STEEL AND CONCRETE QUANTITIES ARE INCLUDED WITH THE APPROACH SLAB BILL OF MATERIAL.

THE CONTRACTOR SHALL USE ADHESIVELY ANCHORED DOWELS. LEVEL 2 FIELD TESTING IS REQUIRED, AND THE YIELD LOAD IS 18.7 KIPS. FOR ADHESIVELY ANCHORED BOLTS AND DOWELS, SEE SPECIAL PROVISIONS.

CONCRETE 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.

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00-L

2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

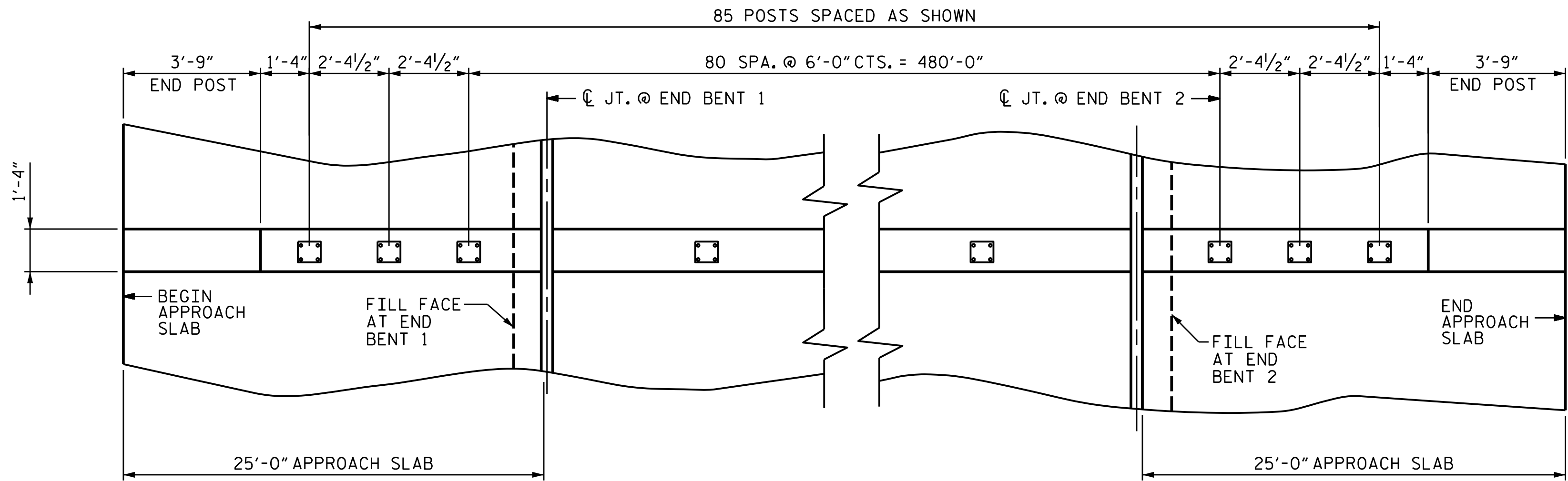
TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

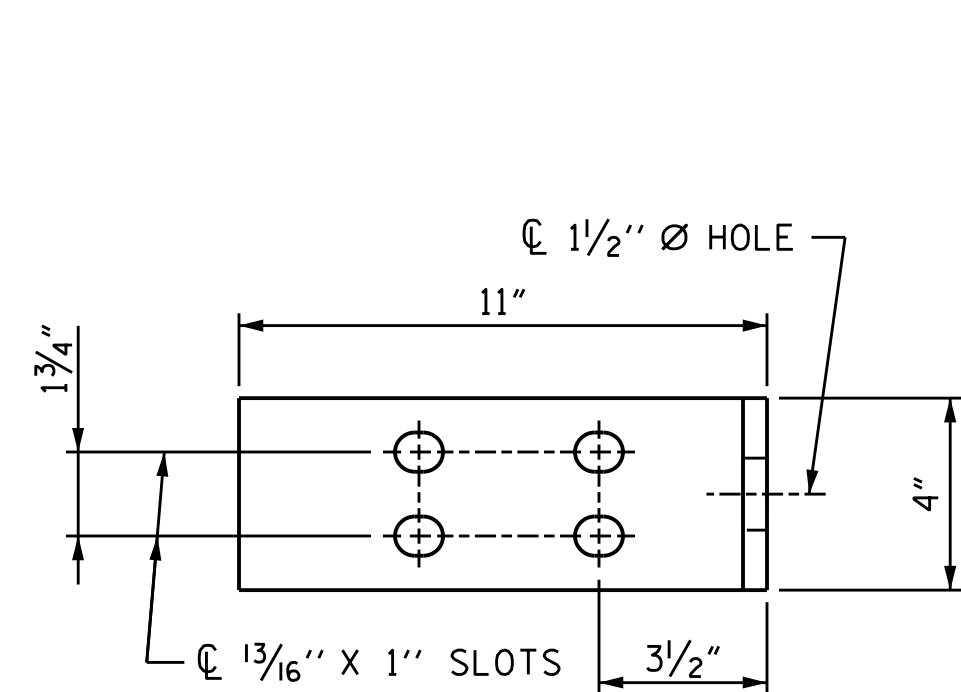
SUPERSTRUCTURE  
1'-4" X 2'-6"  
CONCRETE PARAPET  
DETAILS

| REVISIONS |     |       |     |     |       | SHEET NO.        |
|-----------|-----|-------|-----|-----|-------|------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                  |
| 1         |     |       | 3   |     |       | S-46             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 100 |

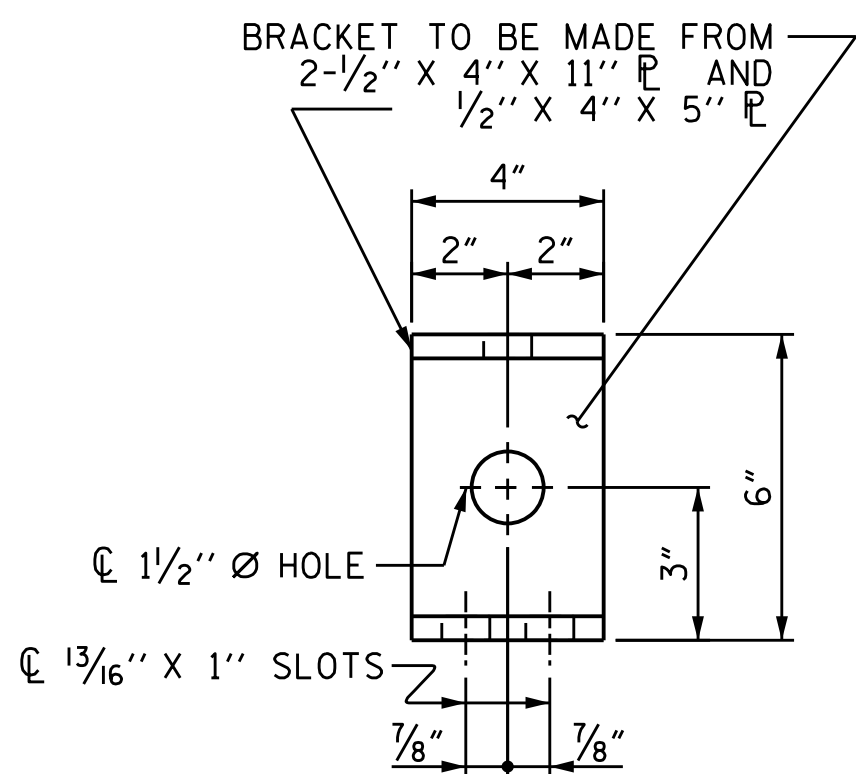
DRAWN BY : NMW  
CHECKED BY : MGC  
DATE : 8/20  
DATE : 2/21



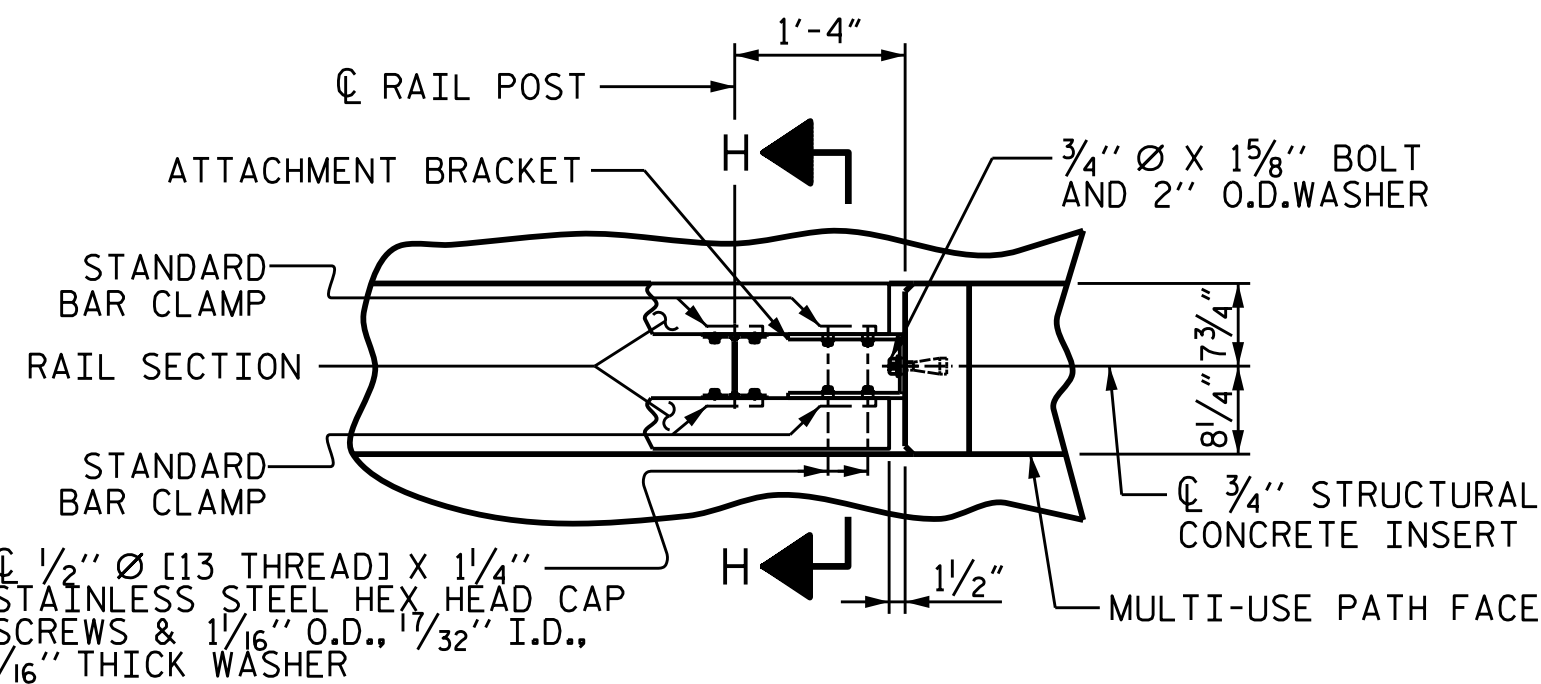
PLAN OF RAIL POST SPACINGS



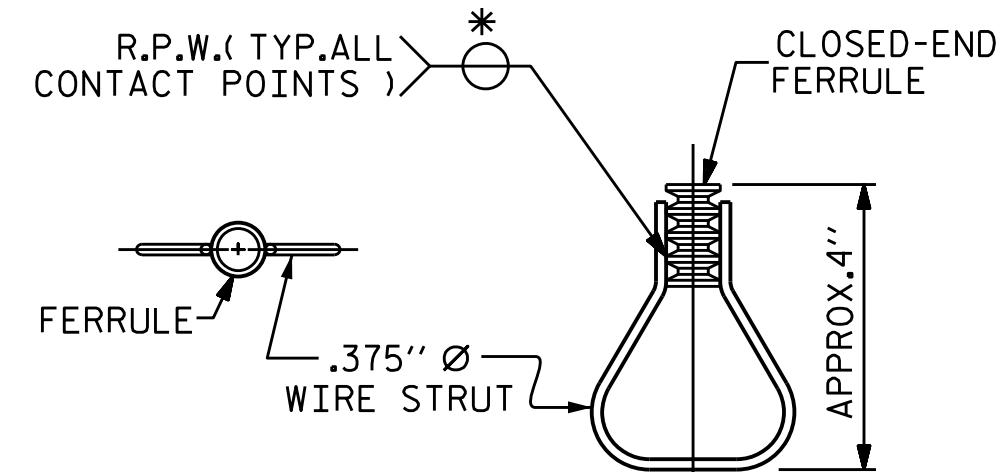
ELEVATION



END VIEW (FIX AND EXP.)



PLAN - RAIL AND END POST

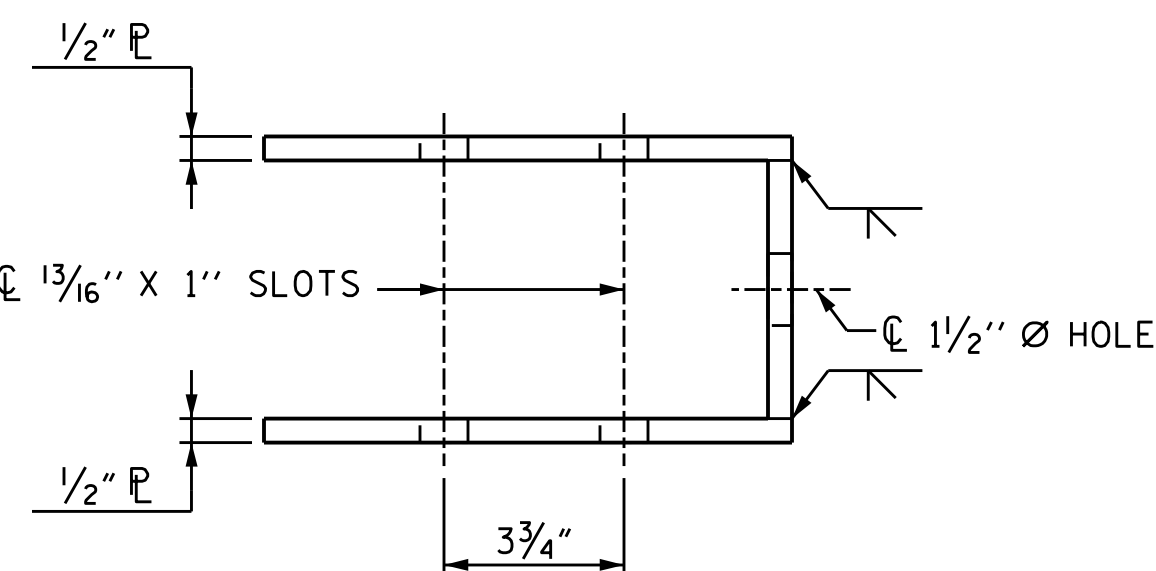


PLAN

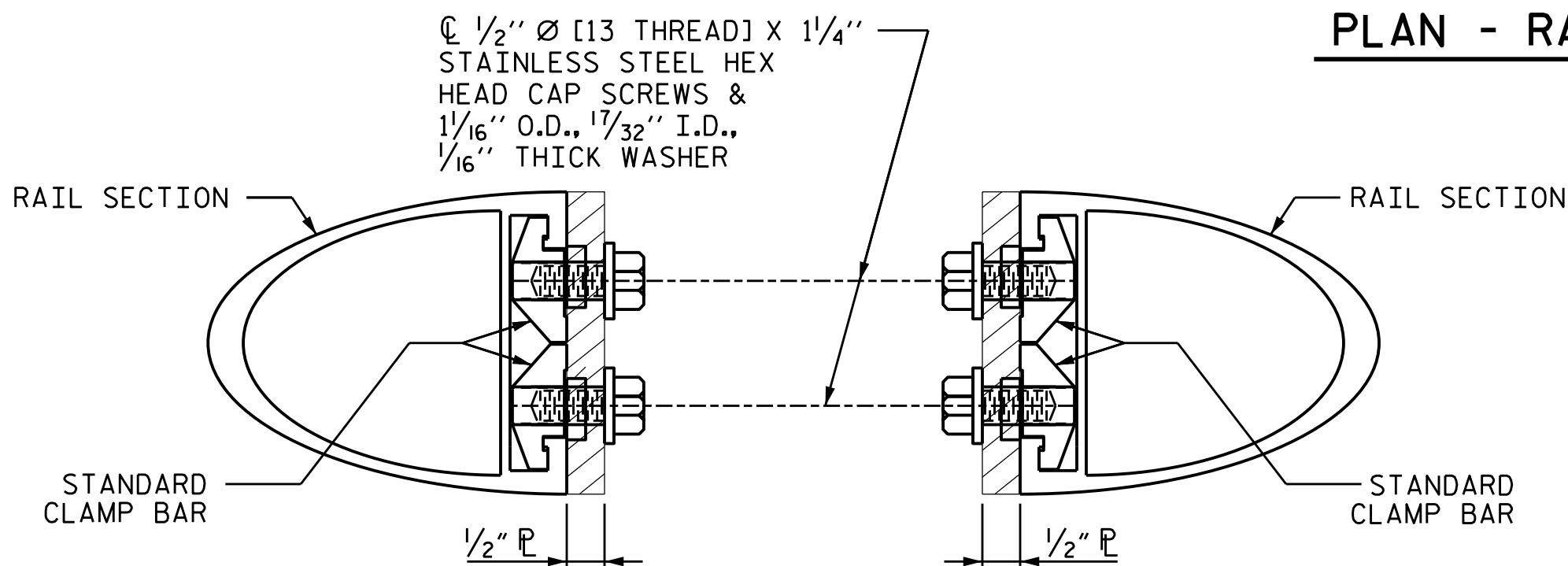
ELEVATION

STRUCTURAL CONCRETE INSERT

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



TOP VIEW



SECTION H-H (FIX)

FIXED DETAILS FOR ATTACHING METAL RAIL TO END POST

ASSEMBLED BY : NMW  
CHECKED BY : MGC

DATE : 8/20  
DATE : 2/21

11/12/2025  
X:\NCDOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.097.U-6146.SMU.02BMR02.350082.dgn  
User:ZSmith

NOTES

STRUCTURAL CONCRETE INSERT

THE STRUCTURAL CONCRETE INSERT 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 1 1/2".
- B. 1 - 3/4" Ø X 1 5/8" 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 3/4" Ø X 1 5/8" 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.)
- C. 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 7/16" 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:

- A. 1/2" PLATES SHALL CONFORM TO ASTM A36 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
- B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N.C. THREADS.
- C. 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°.
- D. STANDARD CLAMP BARS (SEE DOUBLE FACED METAL RAIL SHEET 3 OF 3).
- E. 1/2" 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 DOUBLE FACED 2 BAR METAL RAIL.

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

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

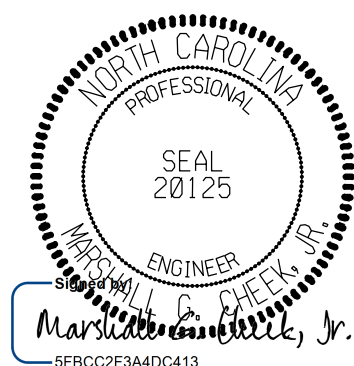
THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00-L-

SHEET 1 OF 3



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
RAIL POST SPACINGS  
AND  
END OF RAIL DETAILS

FOR DOUBLE FACED TWO BAR METAL RAILS

REVISIONS

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

SHEET NO.

S-47

TOTAL SHEETS

100

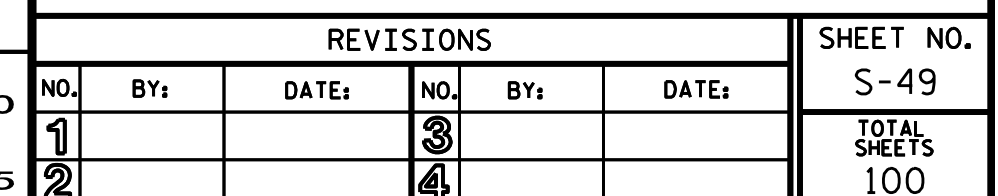


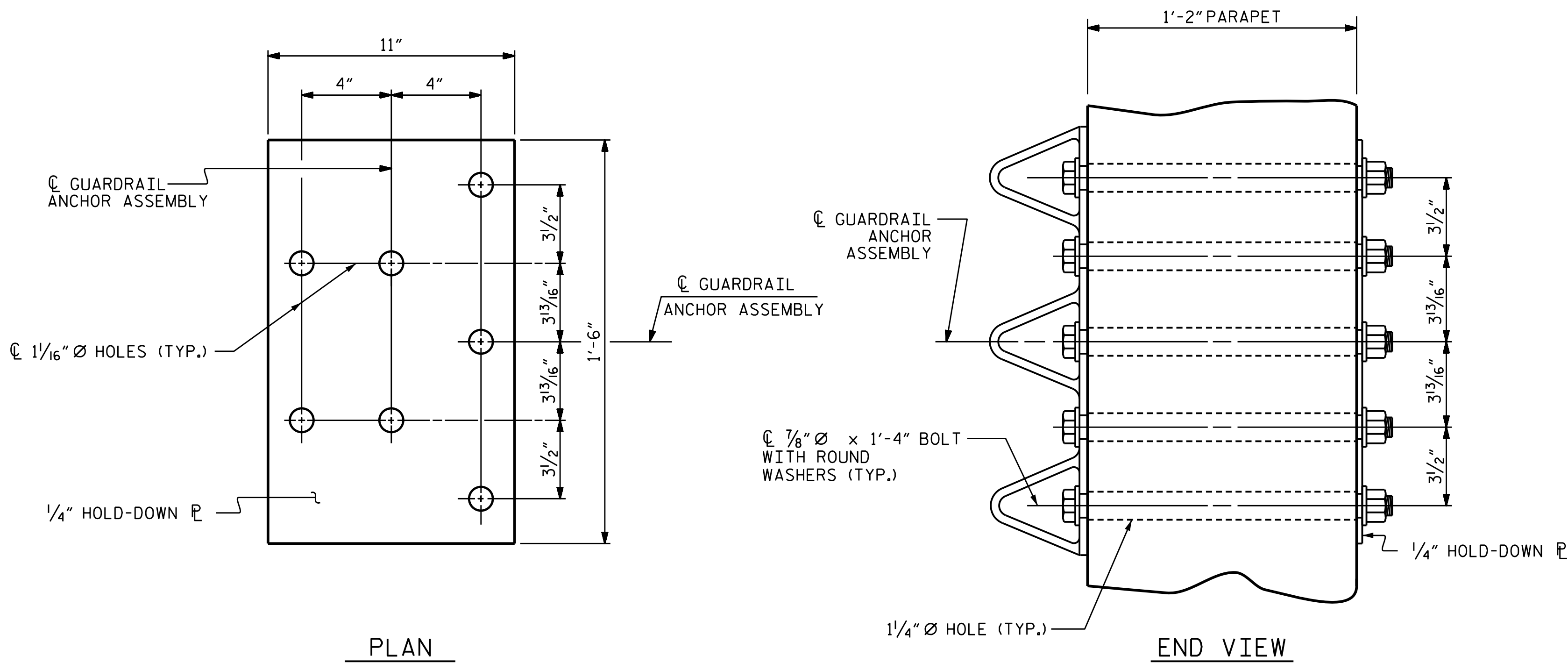
A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.

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  $\frac{1}{16}$ "  $\varnothing$  WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

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.

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F933 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.

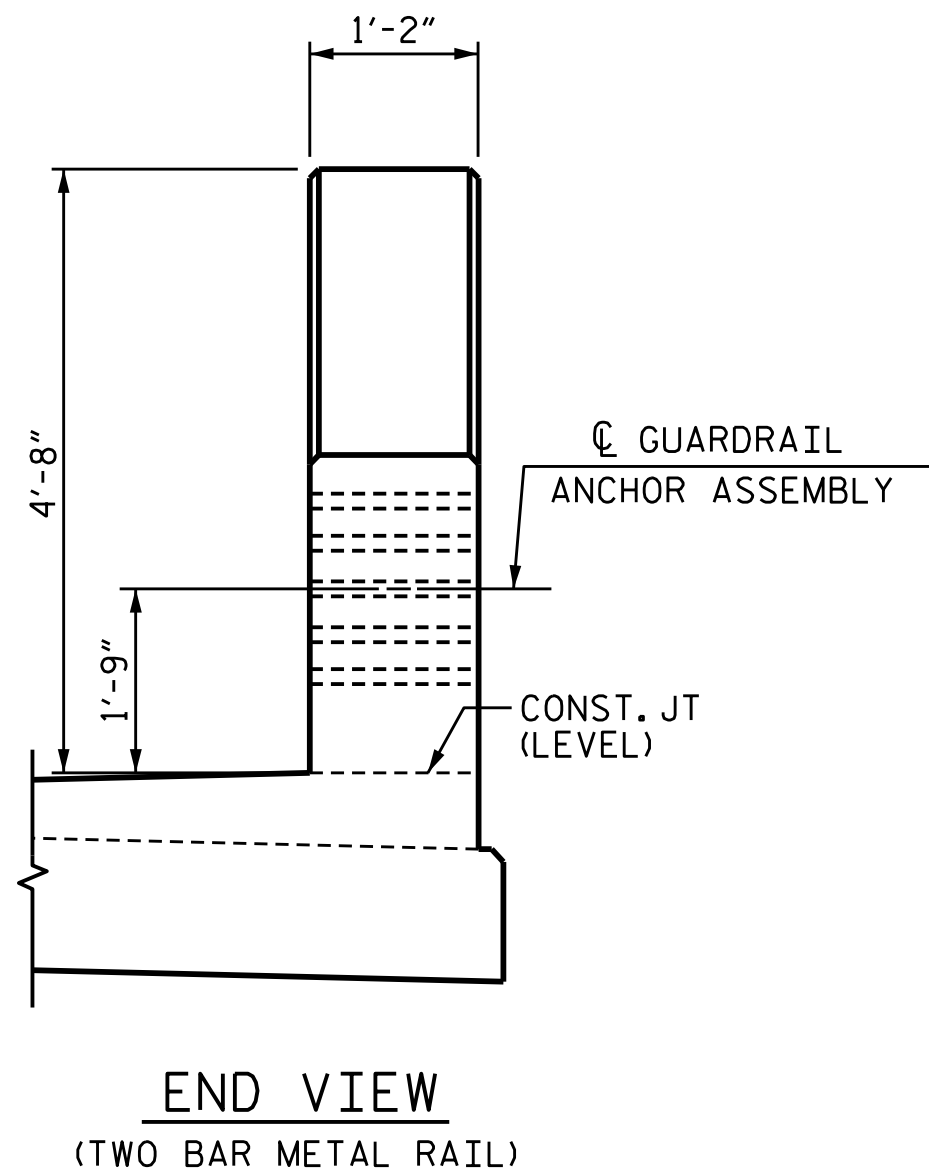




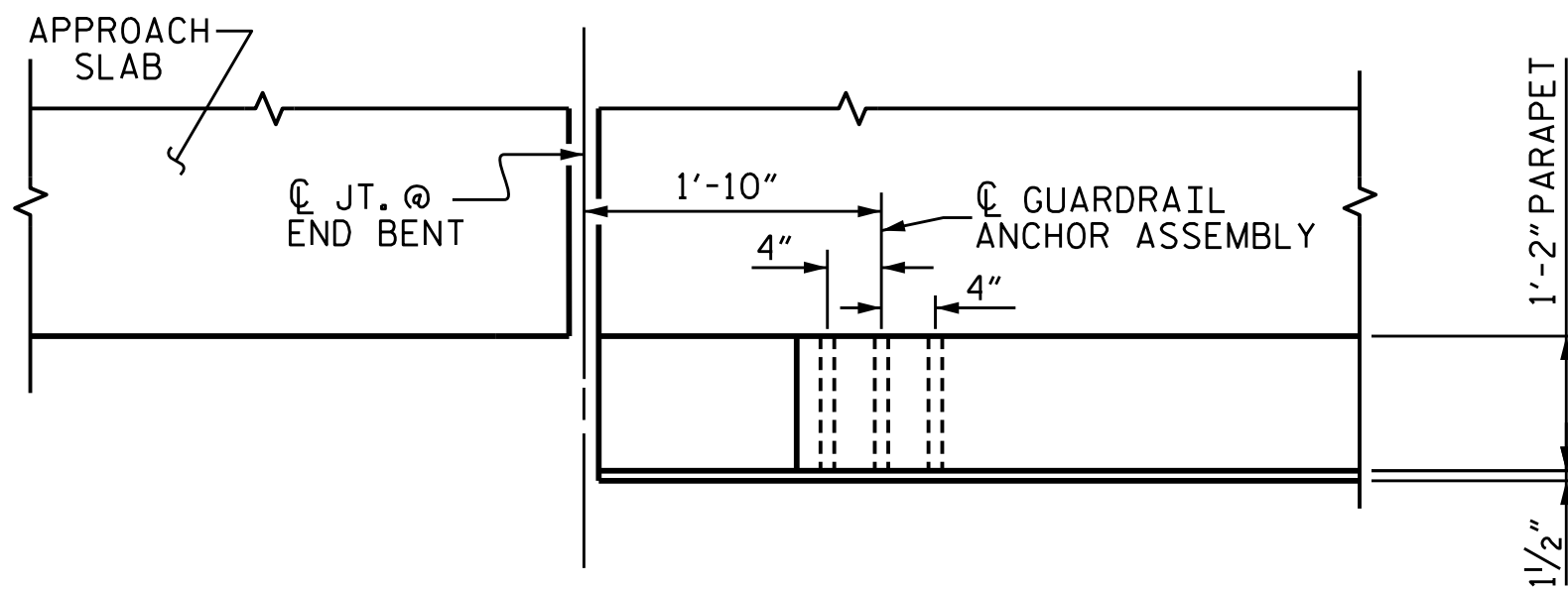
PLAN

END VIEW

## GUARDRAIL ANCHOR ASSEMBLY DETAILS



END VIEW  
(TWO BAR METAL RAIL)



PLAN FOR 1'-2" X 2'-6" CONCRETE PARAPET W/ 2-BAR METAL RAIL

## 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 - 1/8" 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 M11.

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 1/8" 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.

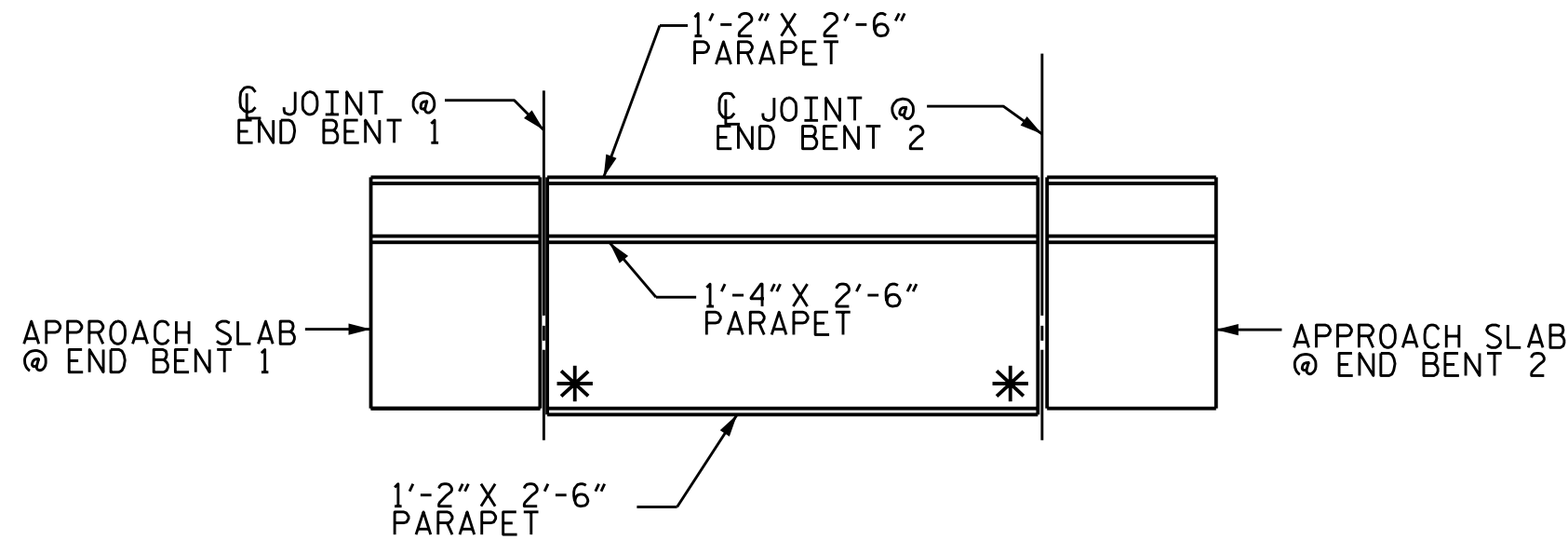
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00-L-



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

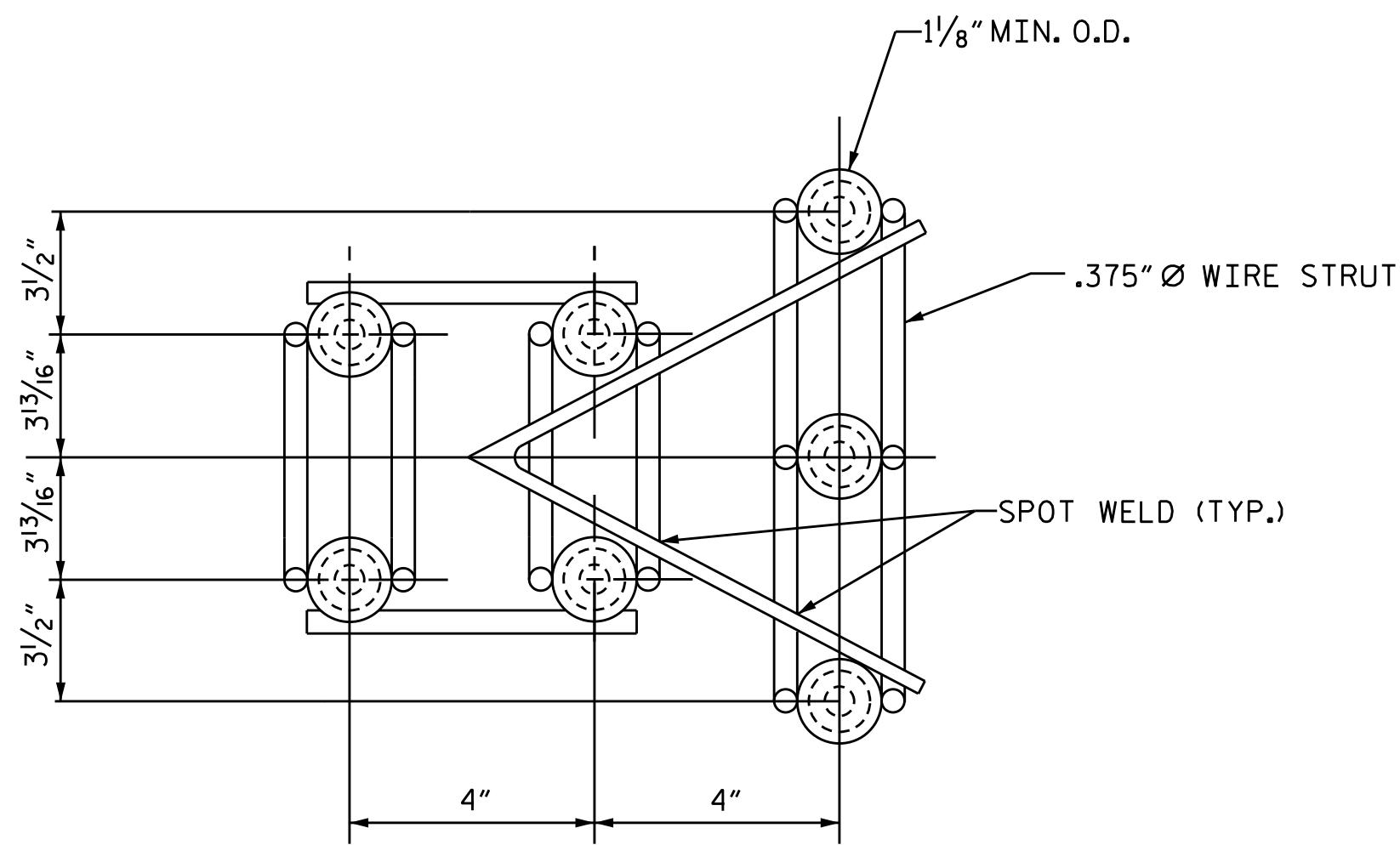
TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

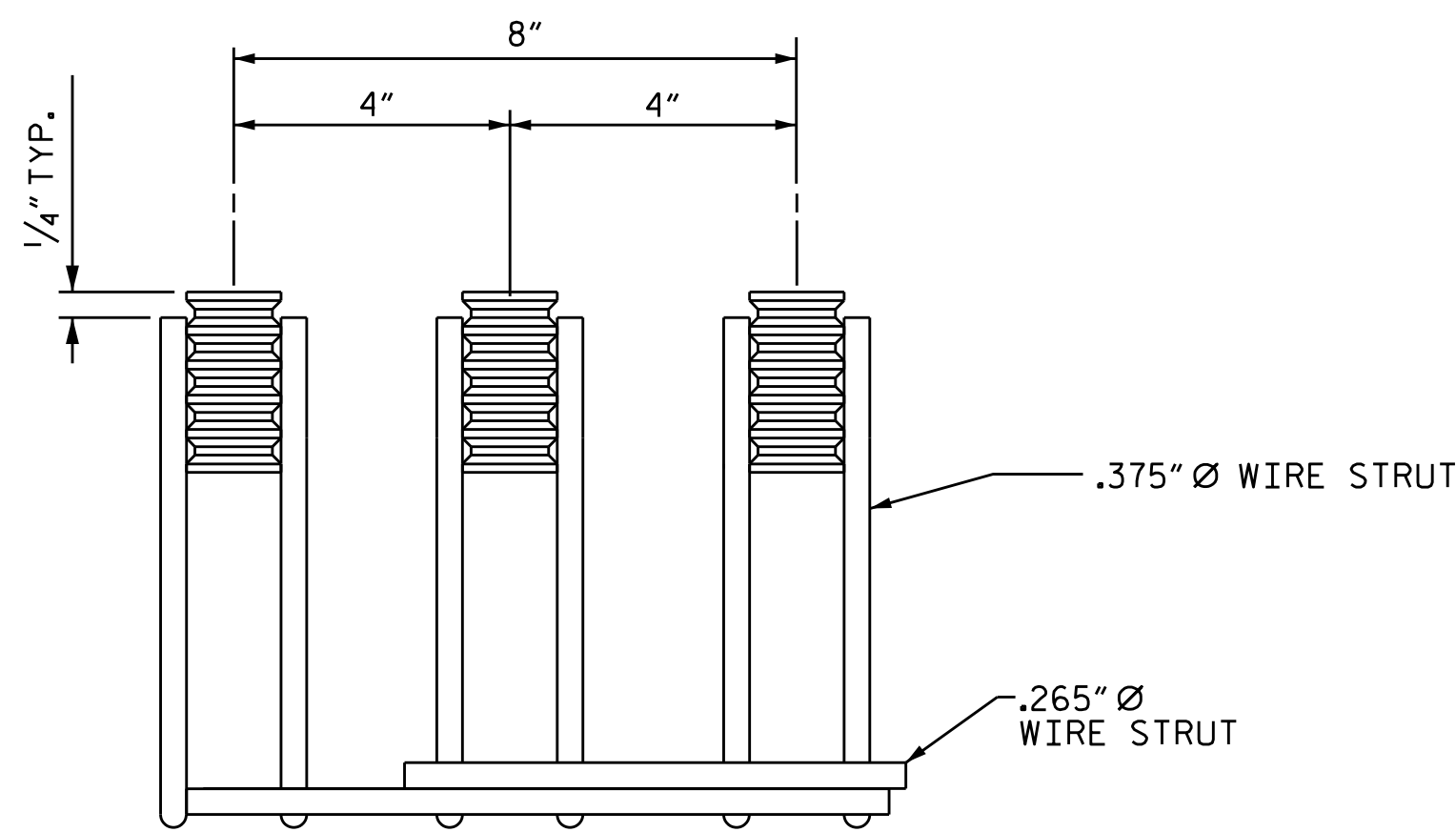
SUPERSTRUCTURE  
STANDARD  
GUARDRAIL ANCHORAGE  
DETAILS FOR  
1'-2" x 2'-6" PARAPET

| REVISIONS |    |      |     |    |      | SHEET NO.        |
|-----------|----|------|-----|----|------|------------------|
| NO.       | BY | DATE | NO. | BY | DATE |                  |
| 1         |    |      | 3   |    |      | S-50             |
| 2         |    |      | 4   |    |      | TOTAL SHEETS 100 |

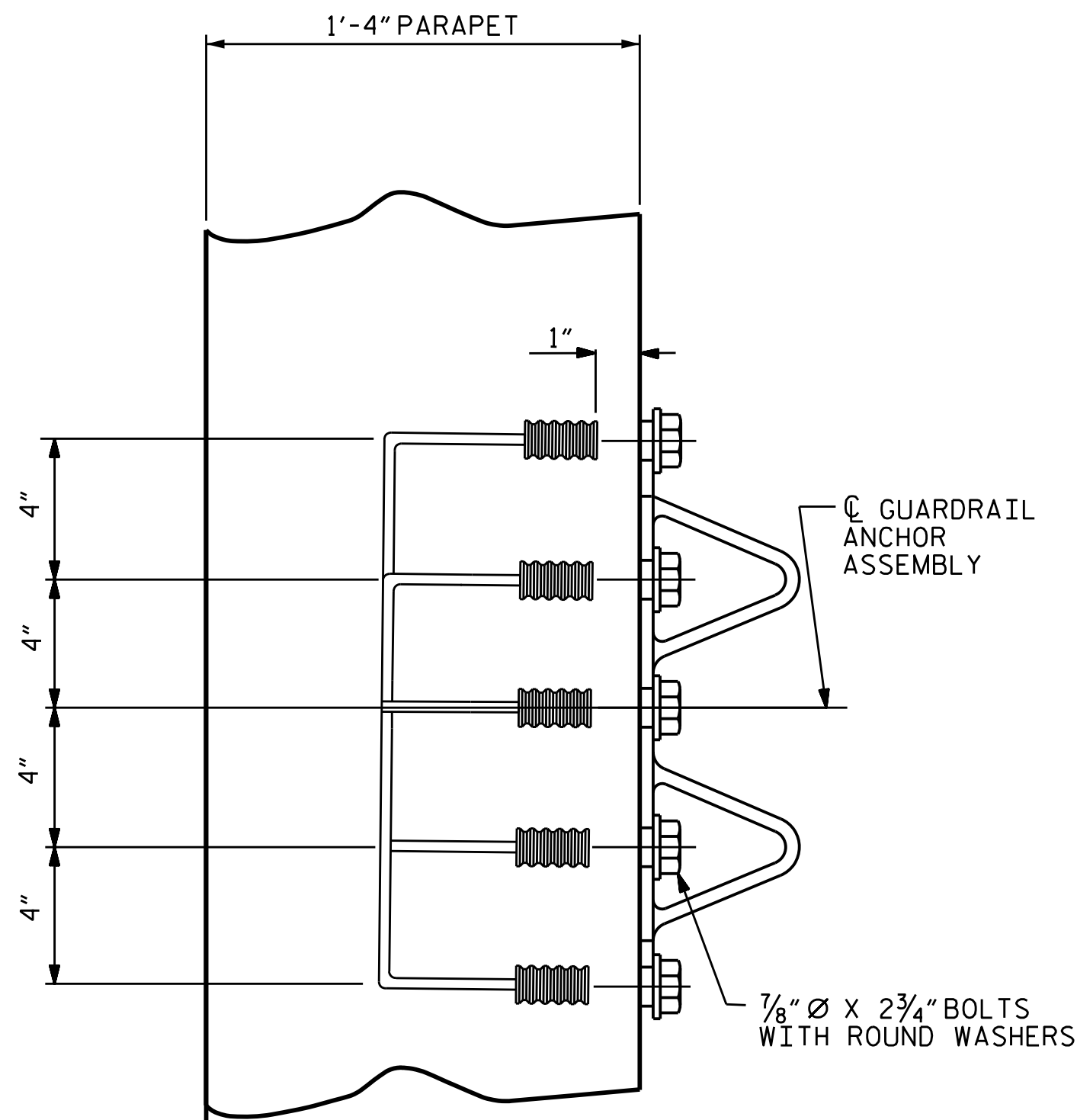
|                      |                    |
|----------------------|--------------------|
| ASSEMBLED BY : ZCS   | DATE : 11/20       |
| CHECKED BY : MGC     | DATE : 03/21       |
| DRAWN BY : MAA 5/10  | REV. 1/15 MAA/TMG  |
| CHECKED BY : CM 5/10 | REV. 12/17 MAA/THC |
|                      | REV. 5/18 MAA/THC  |



PLAN



SIDE VIEW



SECTION A-A

## GUARDRAIL ANCHOR ASSEMBLY FOR 1'-4" X 2'-6" CONCRETE PARAPET

## NOTES

THE GUARDRAIL ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:

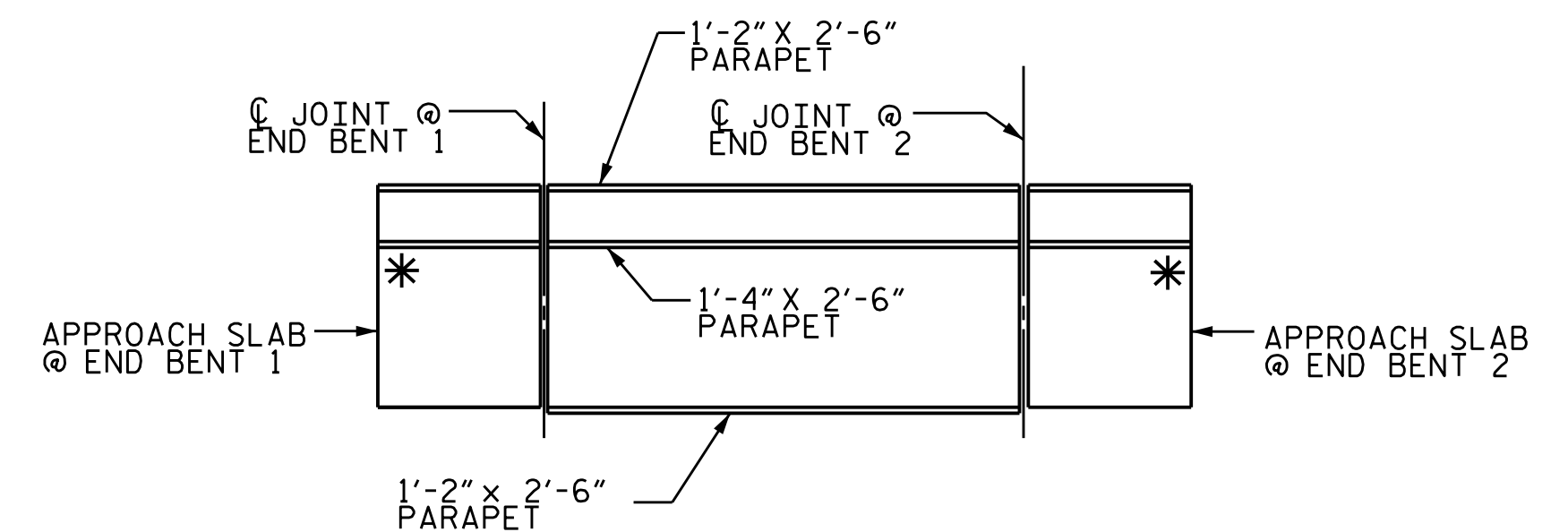
- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 1 1/2".
- 4-7/8" Ø X 2 3/4" BOLTS WITH WASHERS FOR GUARDRAIL ANCHOR ASSEMBLY SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS WITH WASHERS MAY BE USED AS AN ALTERNATIVE FOR THE 7/8" Ø X 2 3/4" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATIVE SHALL BE APPROVED BY THE OWNER.)
- WIRE STRUTS SHOWN IN THE ANCHOR ASSEMBLY ARE THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI.

THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR 1'-4" X 4'-0" CONCRETE PARAPET.

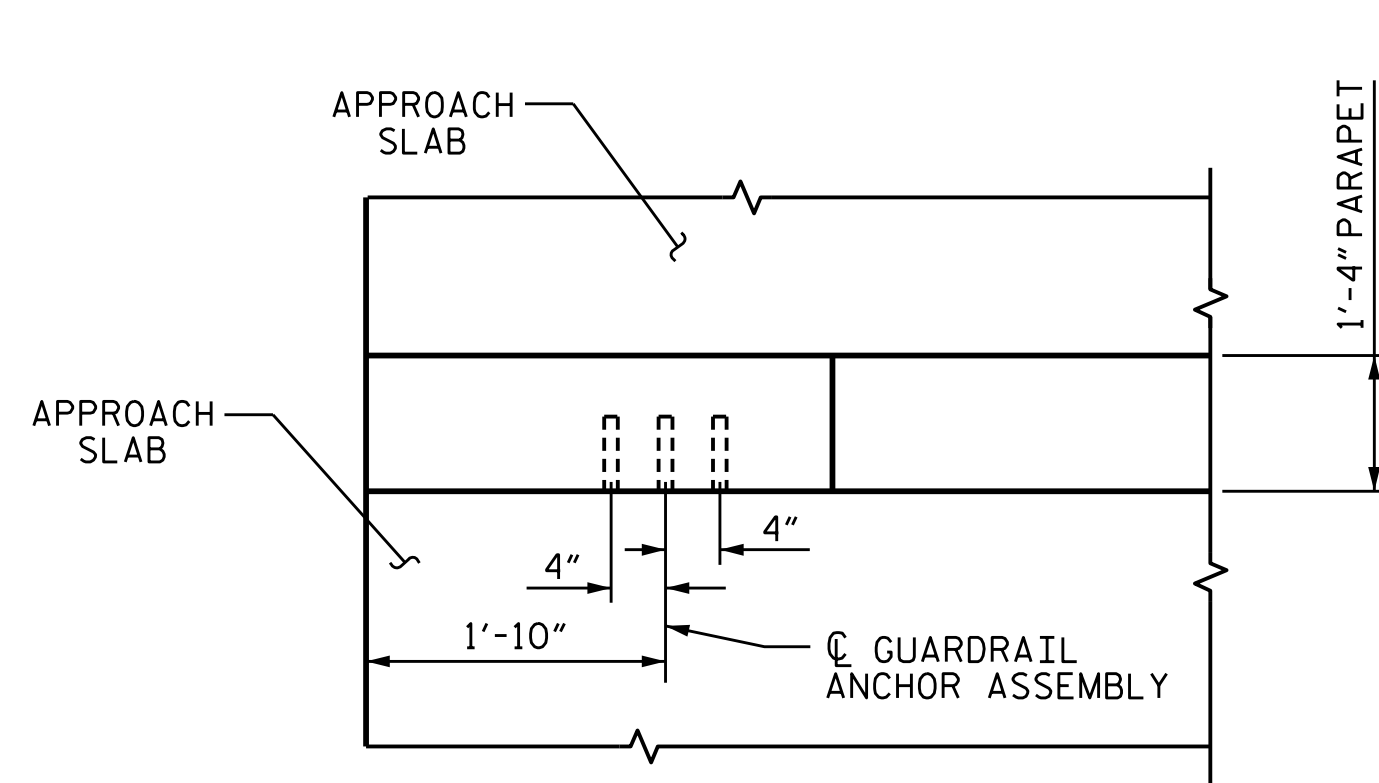
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END POST. FOR POINTS OF ATTACHMENT, SEE SKETCH.

THE CONTRACTOR MAY, AT HIS OPTION, USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF GUARDRAIL ANCHOR ASSEMBLY. SEE SECTION 552.17 OF THE STANDARD SPECIFICATIONS. THE YIELD LOAD OF THE 7/8" Ø BOLT IS 16.6 KIPS. TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.



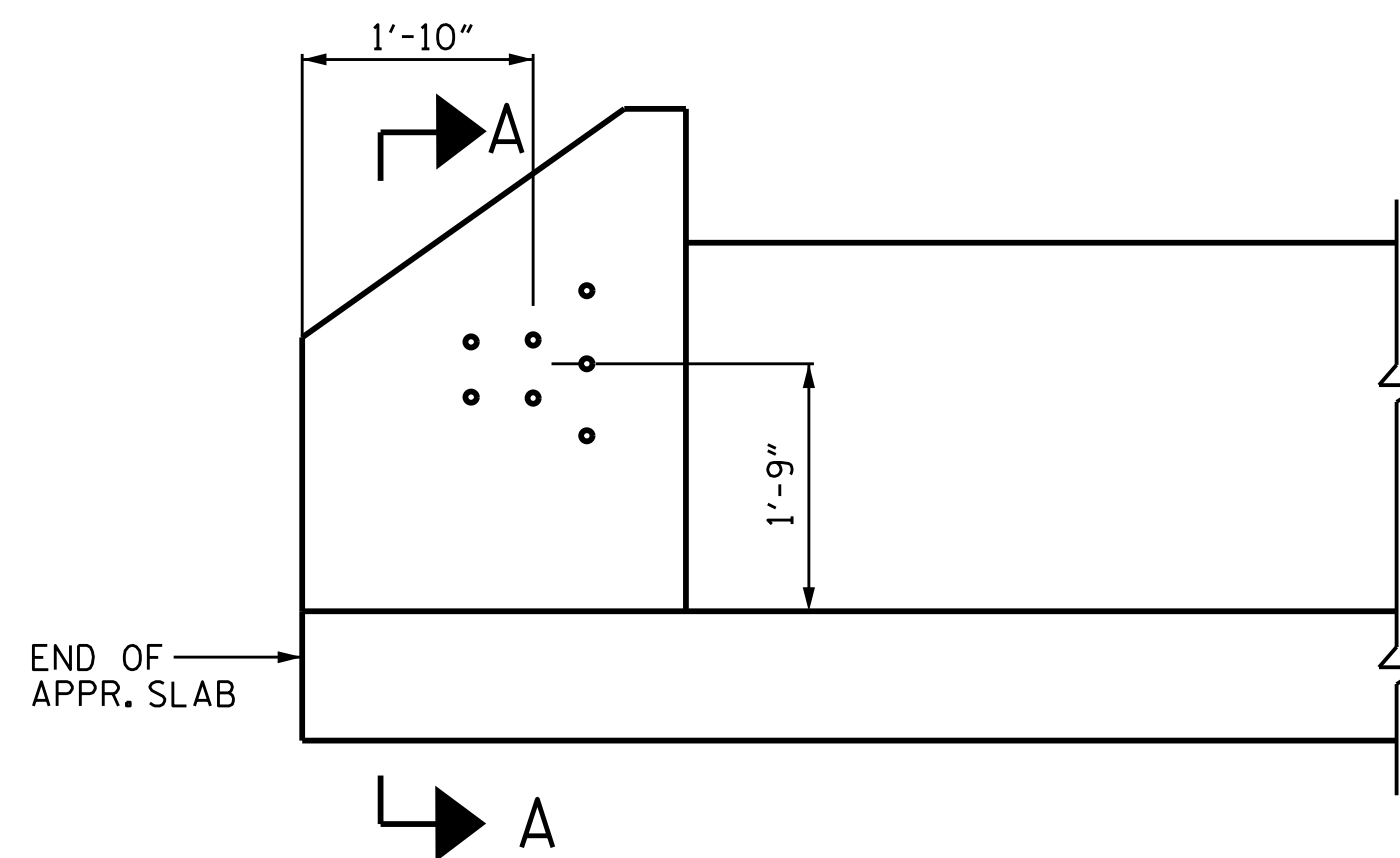
## SKETCH SHOWING POINTS OF ATTACHMENT

\* LOCATION OF GUARDRAIL ATTACHMENT



PLAN

APP. SLAB @ EB 1 SHOWN,  
APP. SLAB @ EB 2 SIMILAR

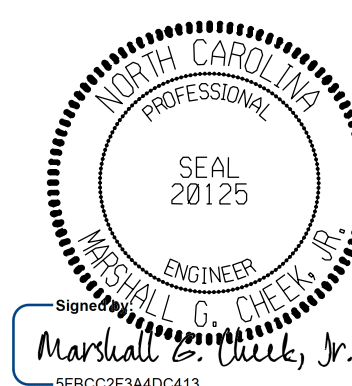


ELEVATION

APPROACH SLAB 1 SHOWN,  
APPROACH SLAB 2 SIMILAR

## LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00-L



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

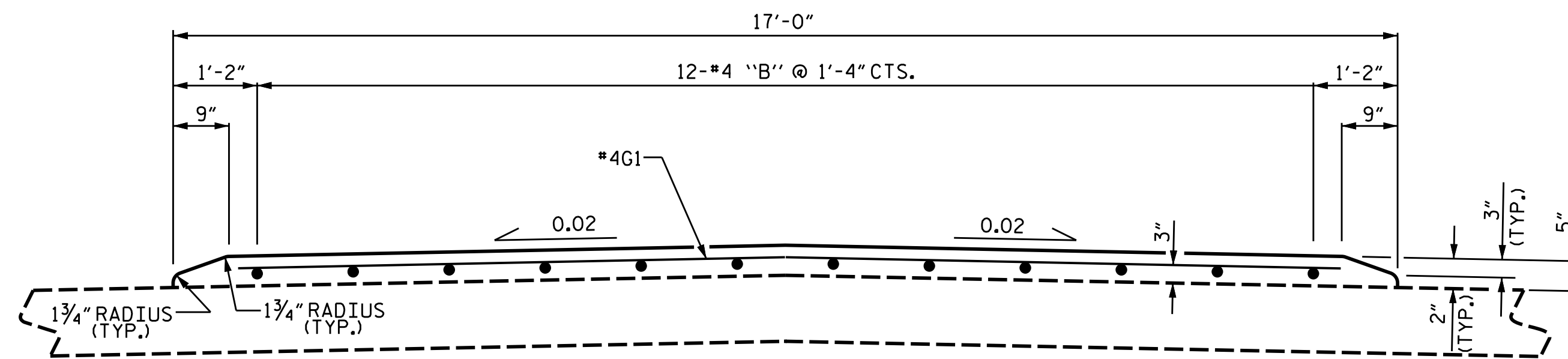
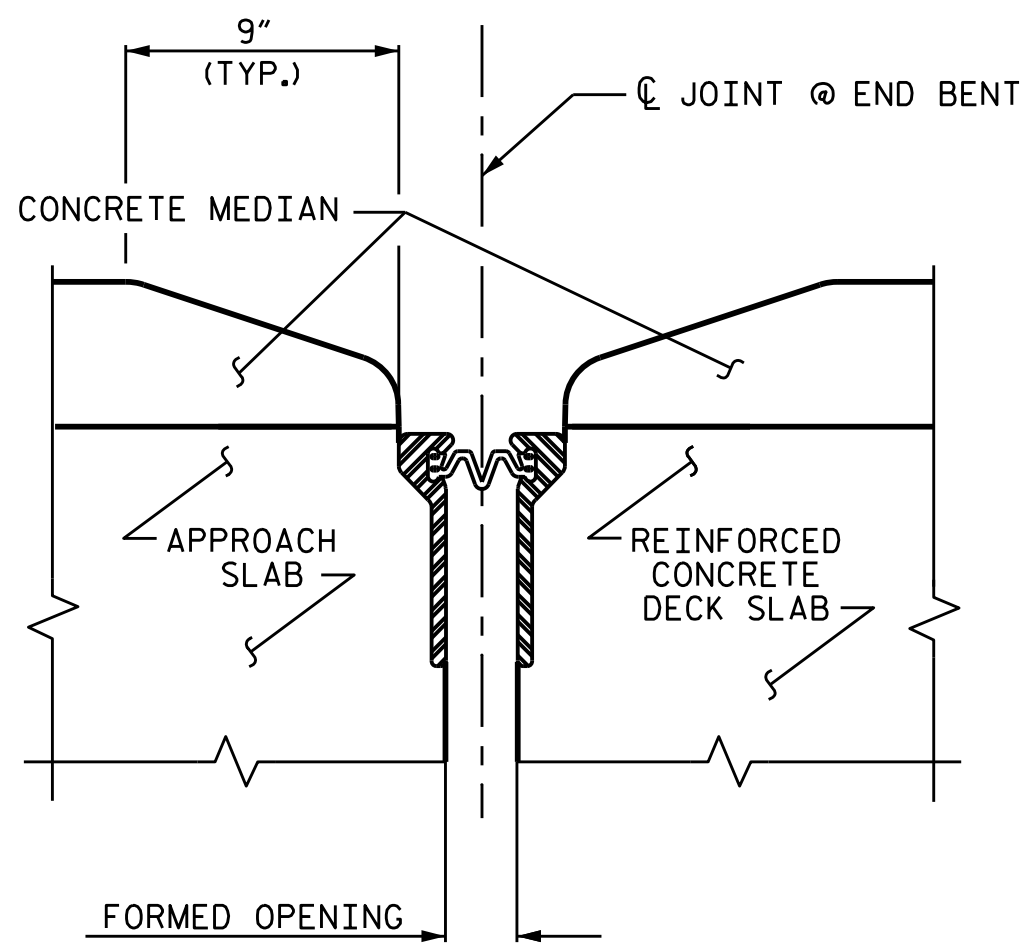
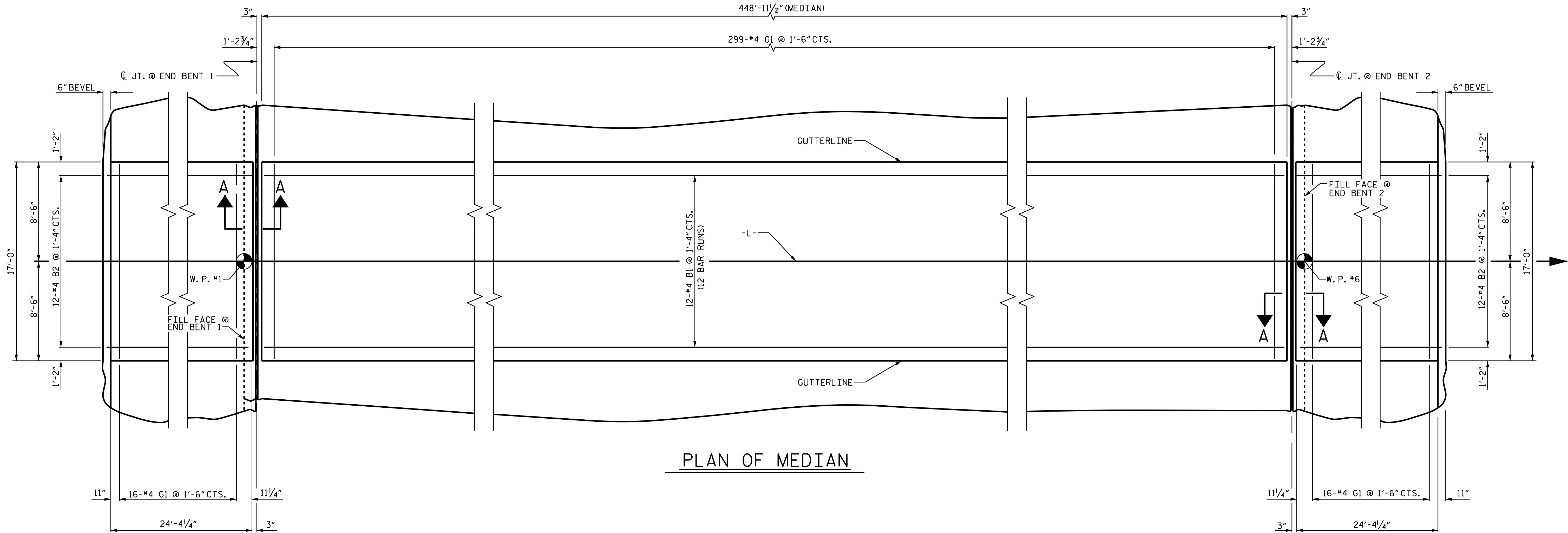
SUPERSTRUCTURE  
GUARDRAIL ANCHORAGE  
DETAILS FOR  
1'-4" X 2'-6" PARAPET

| REVISIONS |    |      |     |    |      | SHEET NO.        |
|-----------|----|------|-----|----|------|------------------|
| NO.       | BY | DATE | NO. | BY | DATE |                  |
| 1         |    |      | 3   |    |      | S-51             |
| 2         |    |      | 4   |    |      | TOTAL SHEETS 100 |

ASSEMBLED BY : ZCS  
CHECKED BY : MGC

DATE : 11/20  
DATE : 03/21

11/11/2025  
X:\NC001\B-5857 Cramer ton\Structures\Final Plans\Final DGN\401.105.U-6146.SMU.GRA02.350082.dgn  
User:z5mfrh



| BILL OF MATERIAL                       |     |      |      |         |                |
|----------------------------------------|-----|------|------|---------|----------------|
| BAR                                    | No. | SIZE | TYPE | LENGTH  | WEIGHT         |
| * B1                                   | 144 | #4   | STR. | 39'- 2" | 3,768          |
| * B2                                   | 24  | #4   | STR. | 23'- 3" | 373            |
| * G1                                   | 331 | #4   | STR. | 15'- 6" | 3,427          |
| * TOTAL EPOXY COATED REINFORCING STEEL |     |      |      |         | 7,568 LBS.     |
| CLASS AA CONCRETE                      |     |      |      |         | 127.1 CU. YDS. |

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00 -L-

#### NOTES

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

ALL REINFORCING IN THE CONCRETE MEDIAN SHALL BE EPOXY COATED.

NO SEPARATE MEASUREMENT OR PAYMENT WILL BE MADE FOR MATERIALS OR LABOR REQUIRED TO CONSTRUCT THE CONCRETE MEDIAN. THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT PRICE BID FOR REINFORCED CONCRETE DECK SLAB.

2/24/2026

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
CONCRETE  
MEDIAN DETAILS

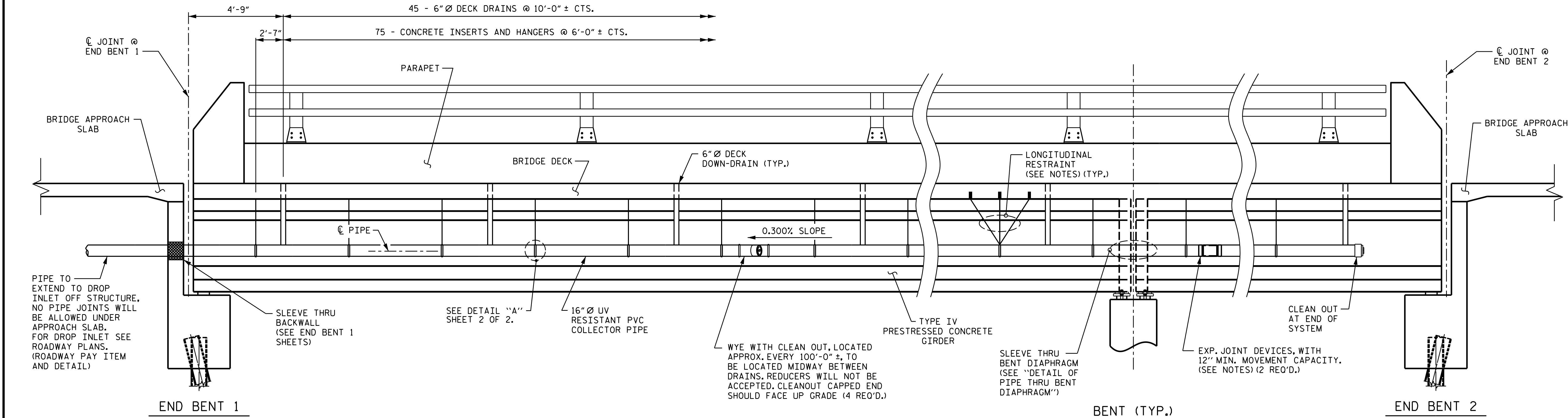
| REVISIONS |     |       |     |     |       | SHEET NO.        |
|-----------|-----|-------|-----|-----|-------|------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                  |
| 1         |     |       | 3   |     |       | S-52             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 100 |

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

DRAWN BY : S. B. WILLIAMS DATE : 12-20  
CHECKED BY : MGC DATE : 3-21

11/11/2025  
X:\NC DOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.107.U-6146.SMU. MD01.350085.dgn  
User:ZSmith



ELEVATION OF DRAINAGE SYSTEM

NOTES

FOR STRUCTURE DRAINAGE SYSTEM, SEE SPECIAL PROVISIONS.

THE CONTRACTOR SHALL SUBMIT A LAYOUT PLAN FOR THE DRAINAGE SYSTEM, INCLUDING, BUT NOT LIMITED TO, ATTACHMENTS TO THE BRIDGE, PIPE ALIGNMENT AND PIPE LENGTHS, AND ALL NECESSARY FITTINGS, ELBOWS, WYES, ADAPTERS, GUIDES, RESTRAINTS, AND JOINTS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE HORIZONTAL AND VERTICAL ALIGNMENT OF THE DRAINAGE SYSTEM USING NECESSARY FITTINGS, TEES, AND WYES TO PROVIDE A CONTINUOUS DRAINAGE SYSTEM.

DRAINAGE SYSTEM WILL BE PAID FOR UNDER THE PAY ITEM "STRUCTURE DRAINAGE SYSTEM".

BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

CONCRETE INSERTS SHALL HAVE A MINIMUM WORKING LOAD TENSION CAPACITY OF 2.5 KIPS.

COLLECTOR PIPES SHALL BE ASTM D2241, SDR 26 OR ASTM D3034, SDR 35 WITH A BELL GASKET JOINT MEETING THE REQUIREMENTS OF ASTM D3139, AND SHALL BE FURNISHED IN LAYING LENGTHS OF 20 FEET.

GASKET MATERIALS SHALL BE ELASTOMERIC SEALS AND SHALL COMPLY WITH THE PHYSICAL REQUIREMENTS OF ASTM F477.

DECK DOWN-DRAIN PIPE SHALL BE ASTM D1785, SCHEDULE 40 OR ASTM D2665, SCHEDULE 40.

PIPES SUPPLIED FOR SOLVENT CEMENT JOINTS SHALL MEET ASTM D2672.

COLLECTOR PIPE SADDLE WYE CLEANOUT FITTINGS AND COLLECTOR PIPE END FITTINGS SHALL BE SOLVENT CEMENT TYPE.

SOLVENT CEMENT SHALL CONFORM TO ASTM D2235, PRIMER SHALL CONFORM TO ASTM F656.

THE ASSEMBLY OF SOLVENT CEMENT JOINTS SHALL BE IN ACCORDANCE WITH ASTM D2855.

MATERIAL SAFETY DATA SHEETS (MSDS) FOR SOLVENT CEMENT AND PRIMER SHALL BE FURNISHED.

ALL FITTINGS SHALL BE ASTM D2665, SCHEDULE 40 OR THICKER.

EXPANSION JOINT DEVICES SHALL BE LOCATED WITHIN THE FIRST 100 FEET OF THE BEGINNING AND ENDING OF ANY CONTINUOUS SECTION OF DRAINAGE SYSTEM THAT IS FIXED, IE. BACKWALL, THEN SPACED A MAXIMUM OF 200 FEET APART FOR THE FULL LENGTH OF EACH HORIZONTAL PIPE.

EXPANSION JOINT DEVICES IN THE COLLECTOR PIPE SHALL HAVE A MINIMUM EXPANSION CAPACITY OF 12 INCHES.

GASKETED JOINTS SHALL BE POSITIONED TO OCCUR APPROXIMATELY 12" FROM PIPE SUPPORTS. SEE DETAIL "A".

A LONGITUDINAL RESTRAINT SHALL BE LOCATED WITHIN THE FIRST 100 FEET OF THE BEGINNING AND ENDING OF ANY CONTINUOUS SECTION OF DRAINAGE SYSTEM THAT IS NOT FIXED, THEN SPACED AT MIDPOINTS BETWEEN THE EXPANSION JOINTS.

AN OPTIONAL DETAIL FOR THE LONGITUDINAL RESTRAINTS AND THE LATERAL GUIDE MAY BE SUBMITTED FOR APPROVAL.

COLLECTOR PIPE SUPPORTS SHALL BE LOCATED WITHIN 12 INCHES, ±4 INCHES OF A COLLECTOR PIPE JOINT.

DECK DOWN-DRAIN PIPES SHALL BE CENTERED IN SLOTTED OPENINGS IN COLLECTOR PIPE REGARDLESS OF TEMPERATURE AT TIME OF INSTALLATION.

THREADED RODS SHALL BE ASTM A193, GRADE B7 OR CARBON STEEL ALL-THREAD HANGER RODS.

NUTS SHALL BE ASTM A194, GRADE 2H, HEAVY HEX NUTS.

ALL METALLIC COMPONENTS IN THE DRAINAGE SYSTEM, EXCEPT STAINLESS STEEL AND MALLEABLE IRON PARTS, ARE REQUIRED TO BE HOT-DIPPED GALVANIZED. ELECTRO-PLATE COATING ON STEEL RODS, STEEL YOKE TYPE PIPE ROLLS, BRACKETS, OTHER STEEL HARDWARE IS CONSIDERED BY NCDOT AS TOO THIN FOR OUTDOOR APPLICATIONS.

THE DETAILS OF ALL PIPING, HARDWARE, OR OTHER MATERIAL SHALL BE PROVIDED BY THE CONTRACTOR AND IS SUBJECT TO THE APPROVAL OF THE ENGINEER.

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00 -L-

SHEET 1 OF 2

2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

1

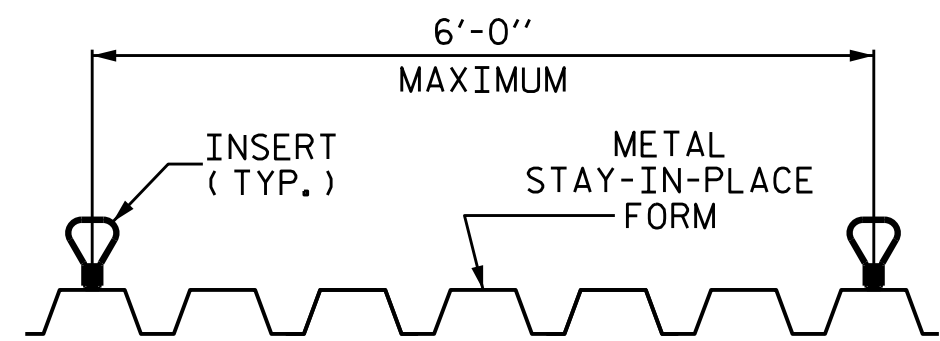
2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

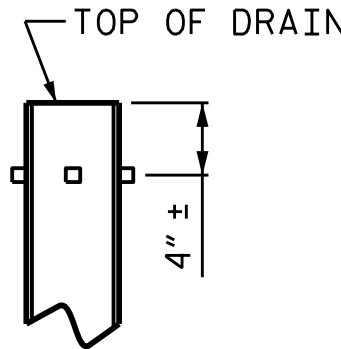
SUPERSTRUCTURE  
STRUCTURE  
DRAINAGE SYSTEM

| REVISIONS |     |       |     |     |       | SHEET NO.           |
|-----------|-----|-------|-----|-----|-------|---------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                     |
| 1         |     |       | 3   |     |       | S-53                |
| 2         |     |       | 4   |     |       | TOTAL SHEETS<br>100 |

DRAWN BY : STM DATE : 11/20  
CHECKED BY : MGC DATE : 3/21

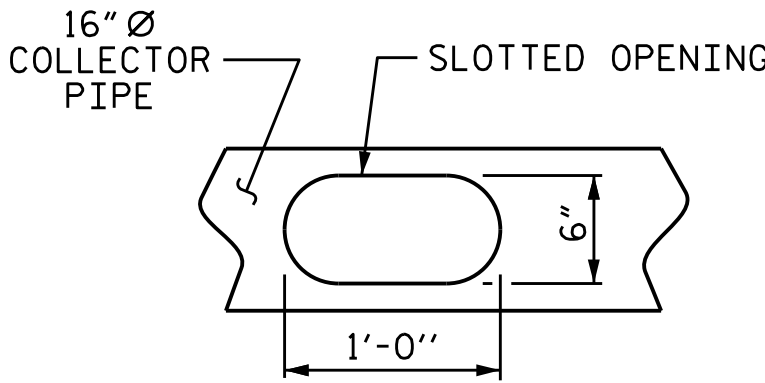


LOCATION OF INSERTS  
IN STAY-IN-PLACE FORMS  
EXACT SPACING MAY VARY SLIGHTLY TO ENSURE  
THAT INSERTS ARE LOCATED ON PEAKS OF FORMS

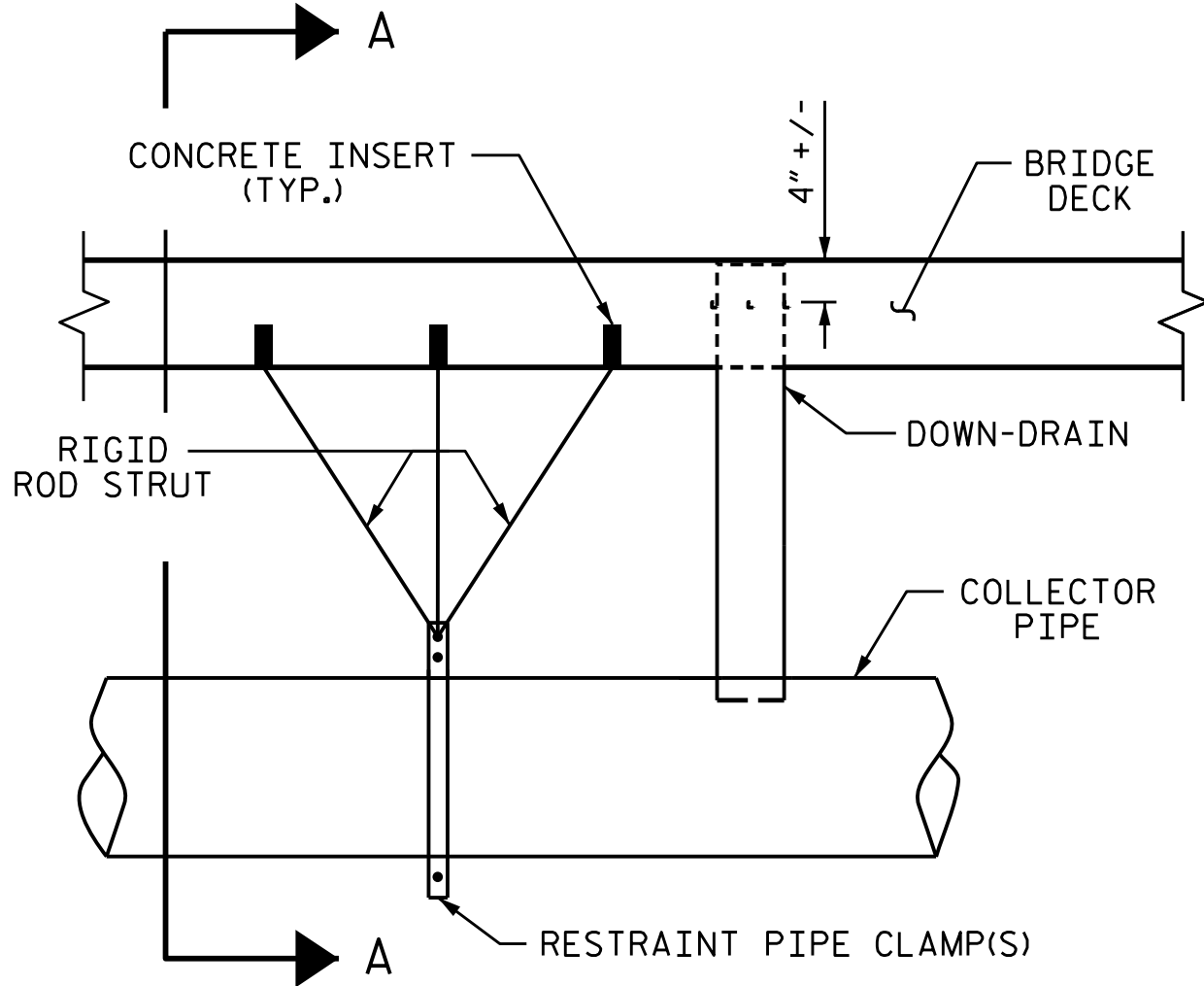


PIPE DETAIL  
(45 DRAINS REQ'D)

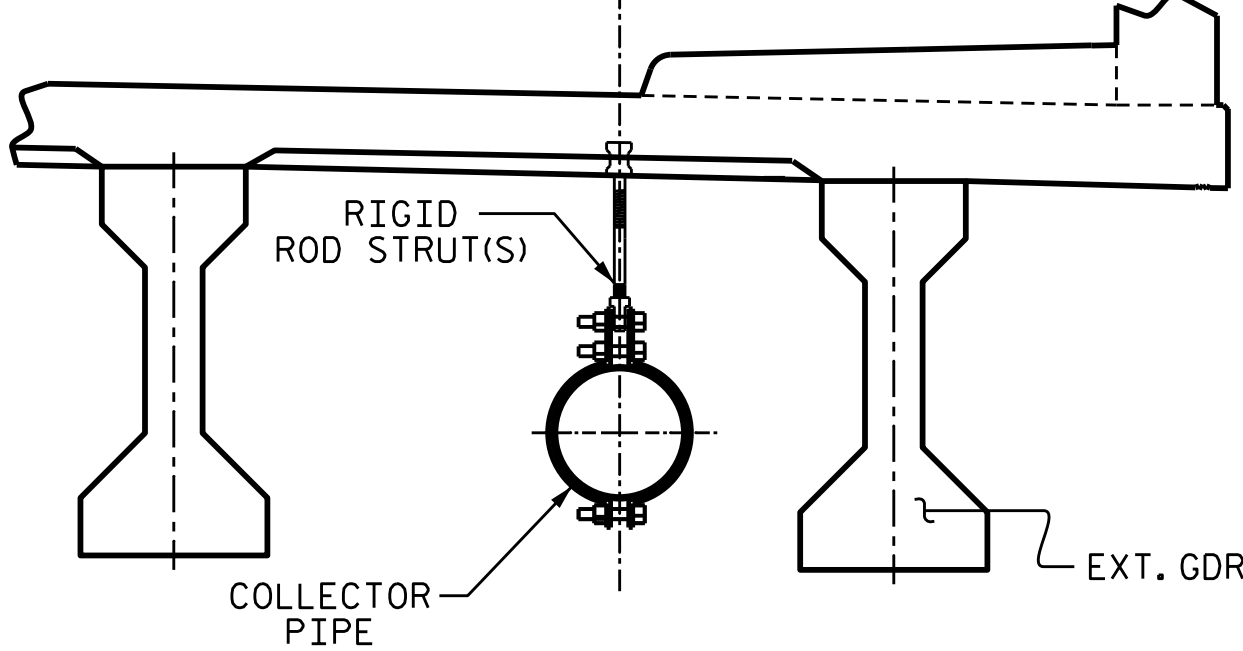
TOP OF DECK DRAINS TO BE SET  $\frac{3}{8}$ "  
BELOW SURFACE OF SLAB.  
4 -  $\frac{1}{2}$ " SQUARE LUGS TO BE GLUED TO  
THE DRAIN PIPE AT EQUAL SPACES  
AROUND THE DRAIN PIPE APPROXIMATELY  
4" FROM THE TOP OF THE PIPE.



SLOT DETAIL

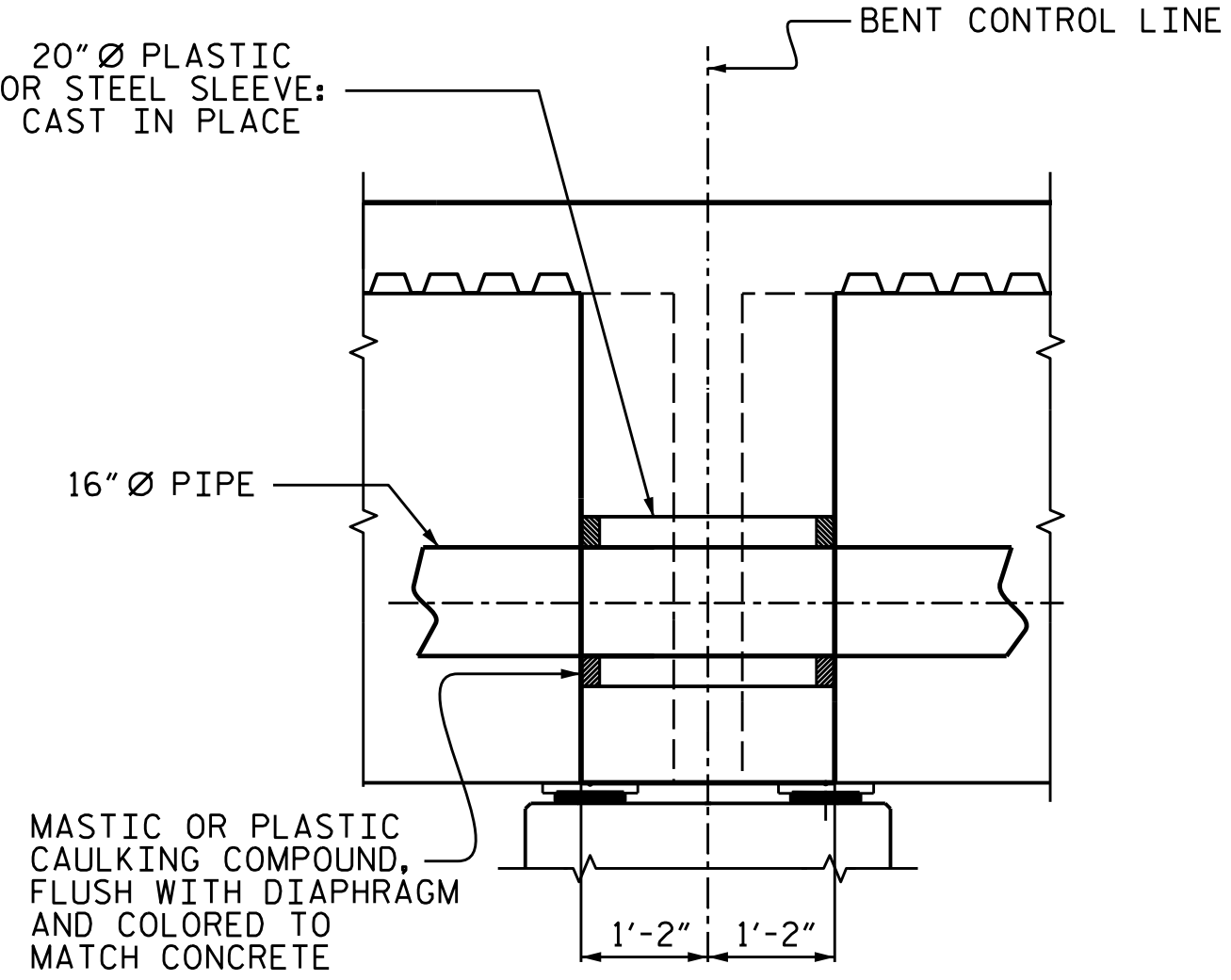


ELEVATION VIEW

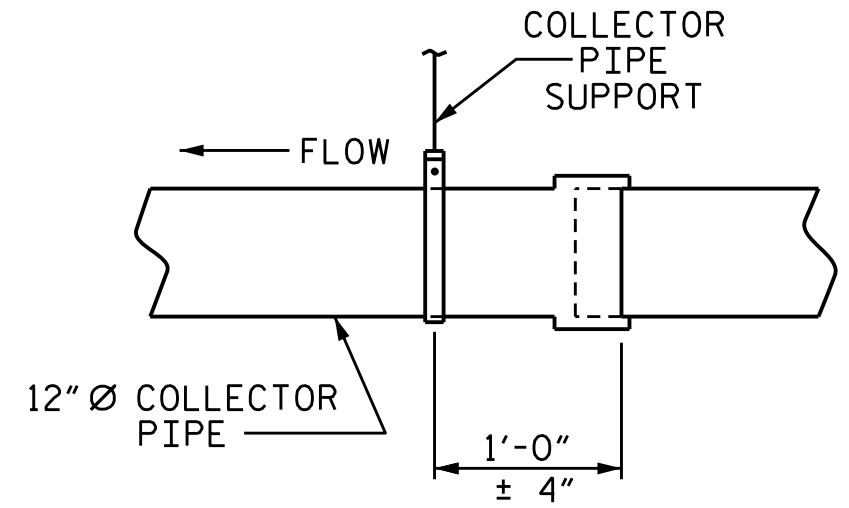


SECTION A-A

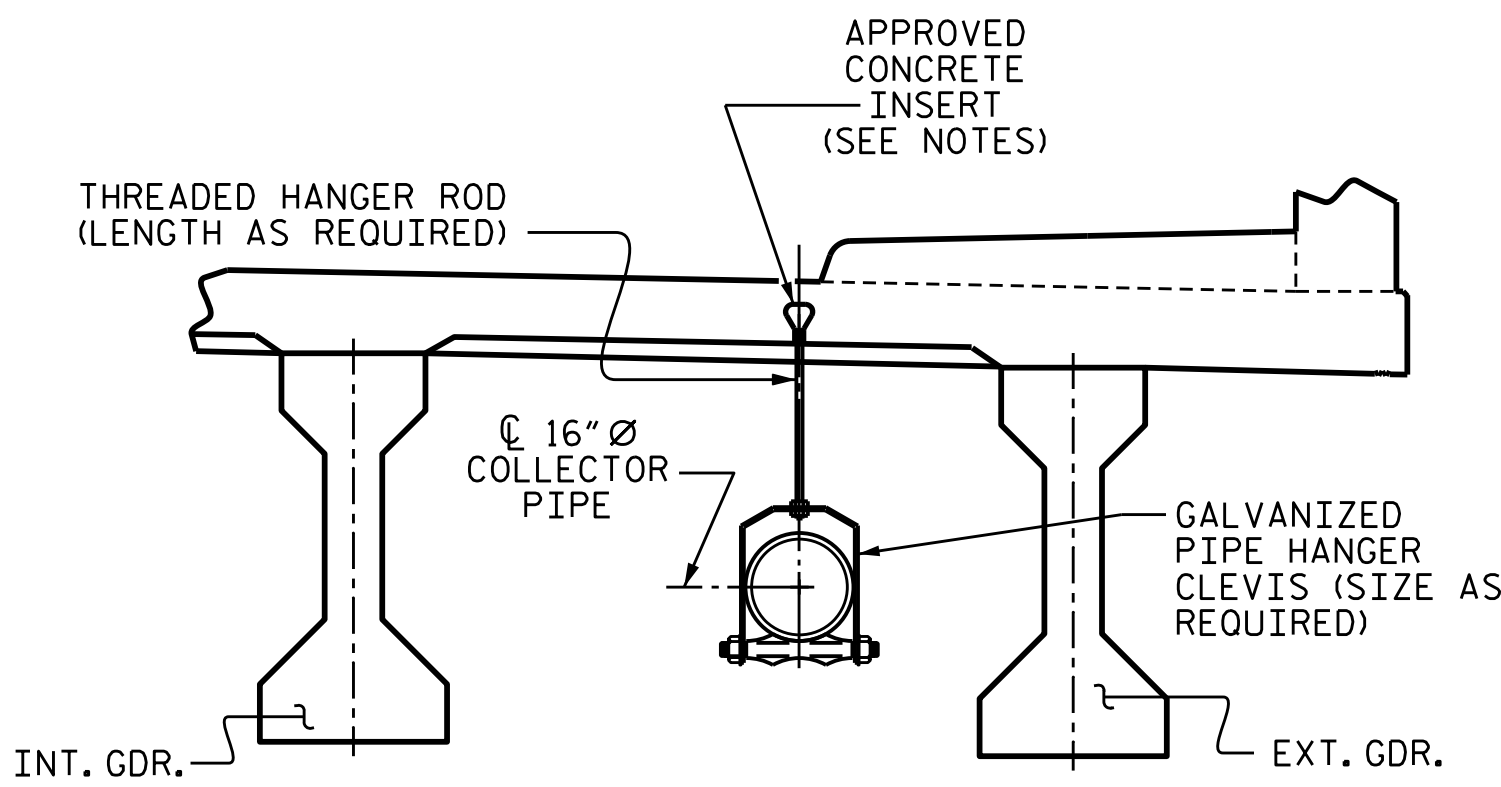
LONGITUDINAL RESTRAINT



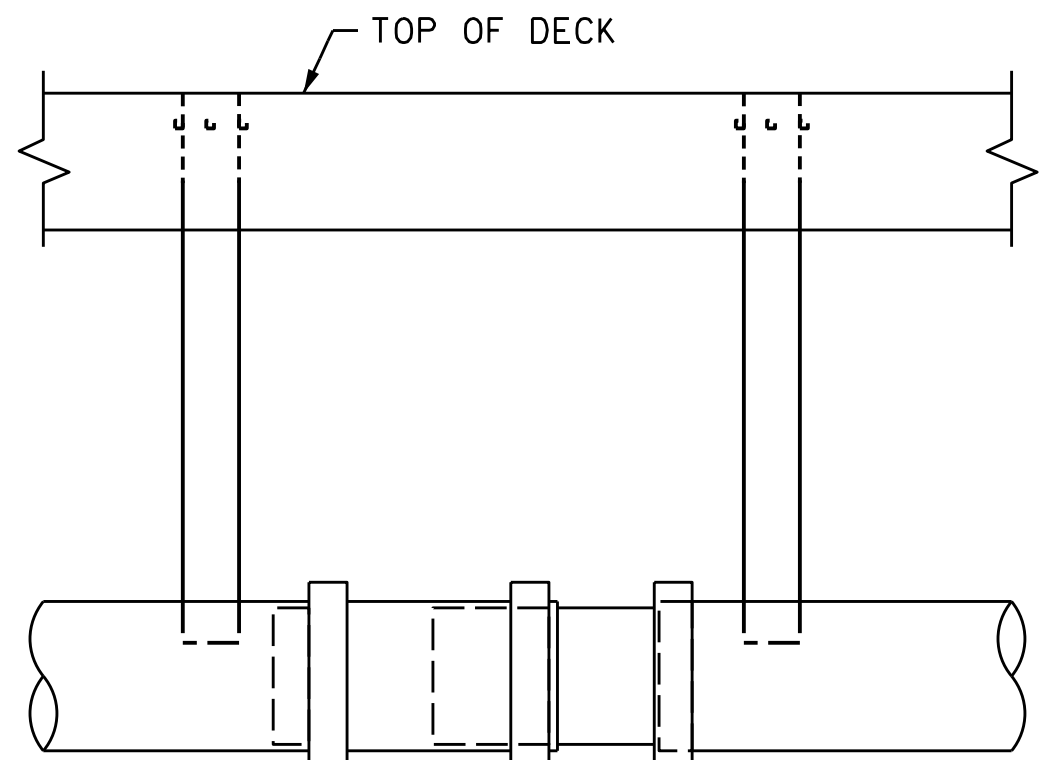
DETAIL OF PIPE  
THRU BENT DIAPHRAGM  
SEE SECTION VIEW FOR HORIZONTAL ORIENTATION



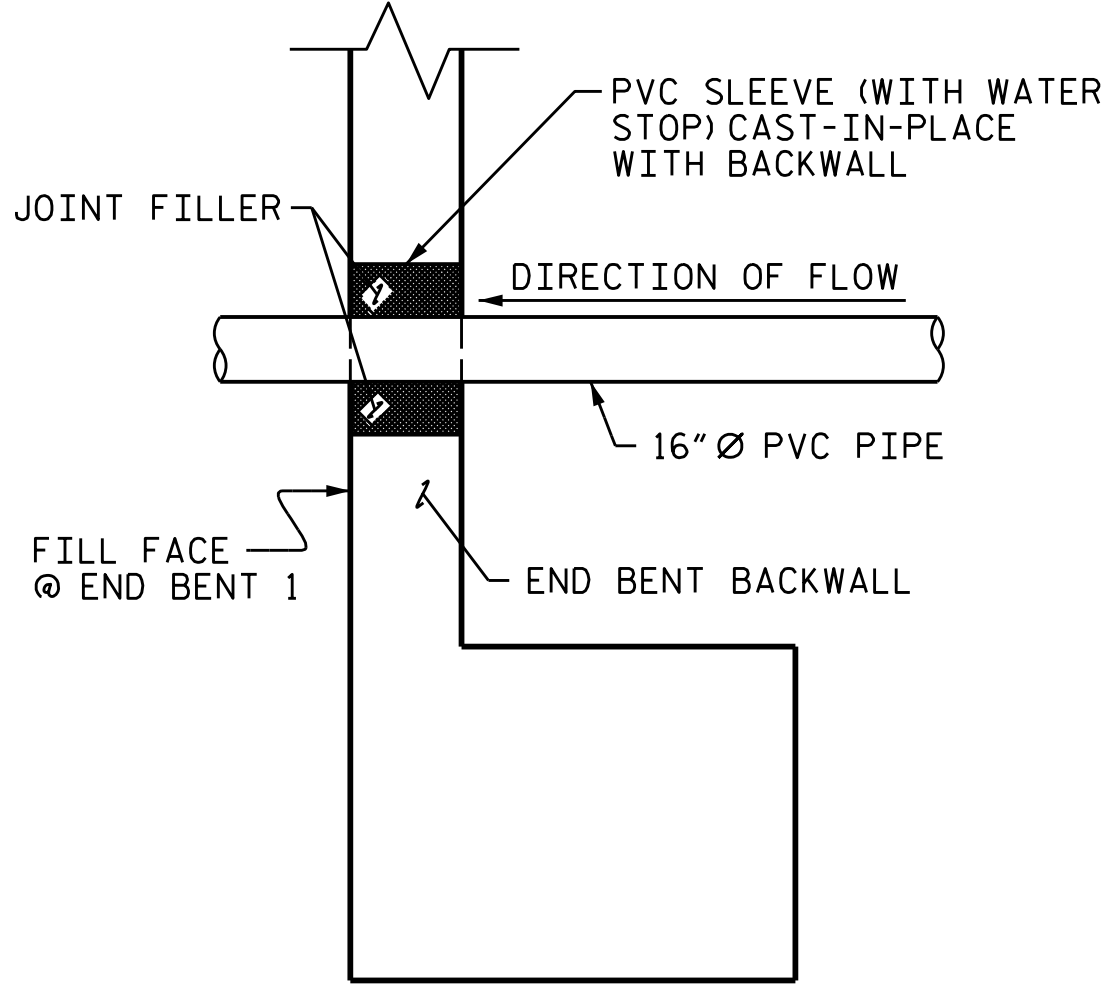
DETAIL "A"



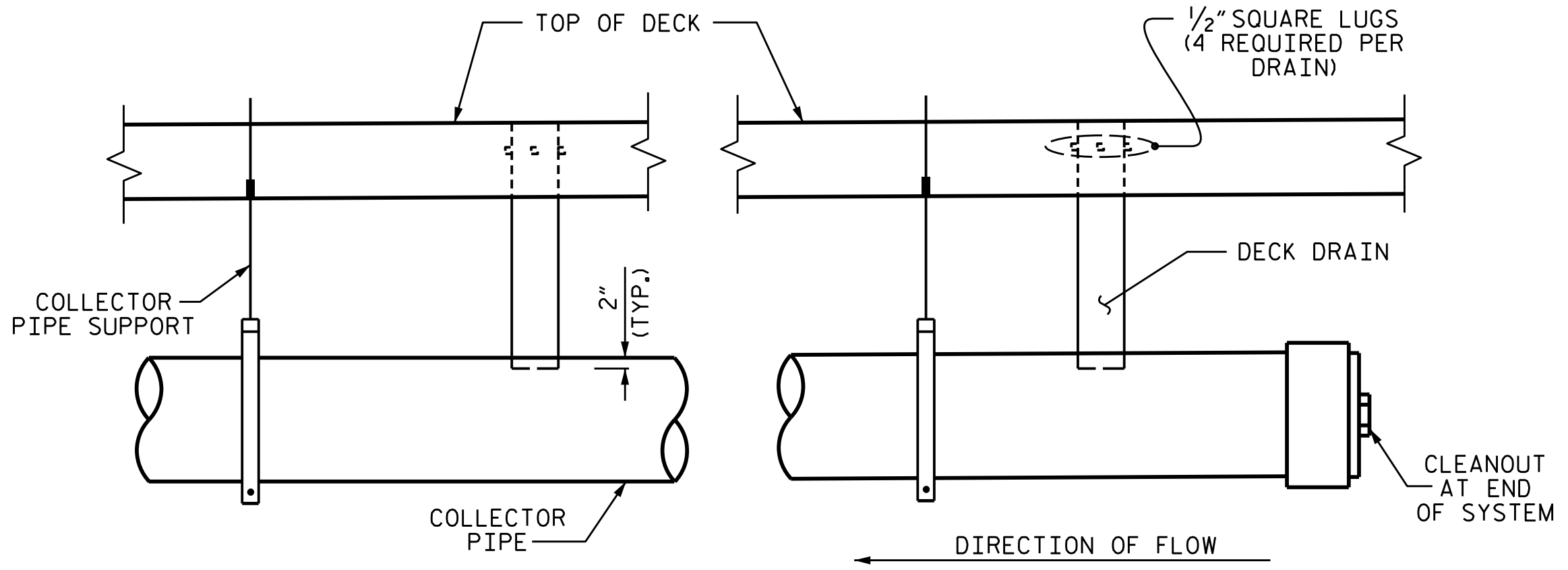
SECTION THRU DRAINAGE SYSTEM  
AT TYPICAL COLLECTOR PIPE SUPPORT



EXPANSION DETAIL

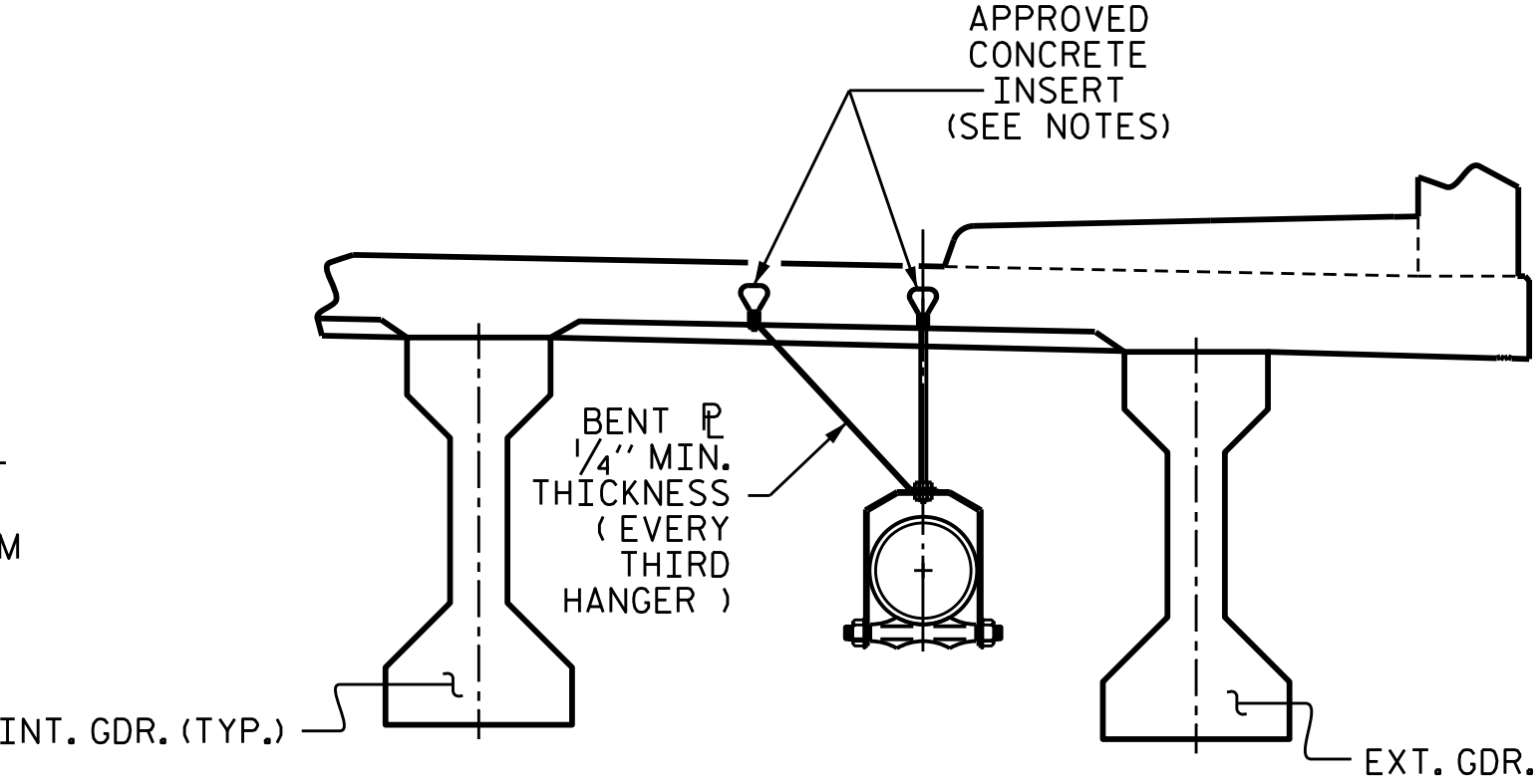


DETAIL OF THRU  
END BENT 1 BACKWALL  
CENTER PIPE IN BLOCKOUT AND FILL ANNULAR  
SPACE AROUND PIPE WITH JOINT FILLER IN  
ACCORDANCE WITH STANDARD SPECIFICATION  
ARTICLE 1028-1.



AT 6" Ø DECK DRAINS  
AT END OF SYSTEM

ELEVATION THRU DRAINAGE SYSTEM



LATERAL GUIDE

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00 -L-

SHEET 2 OF 2

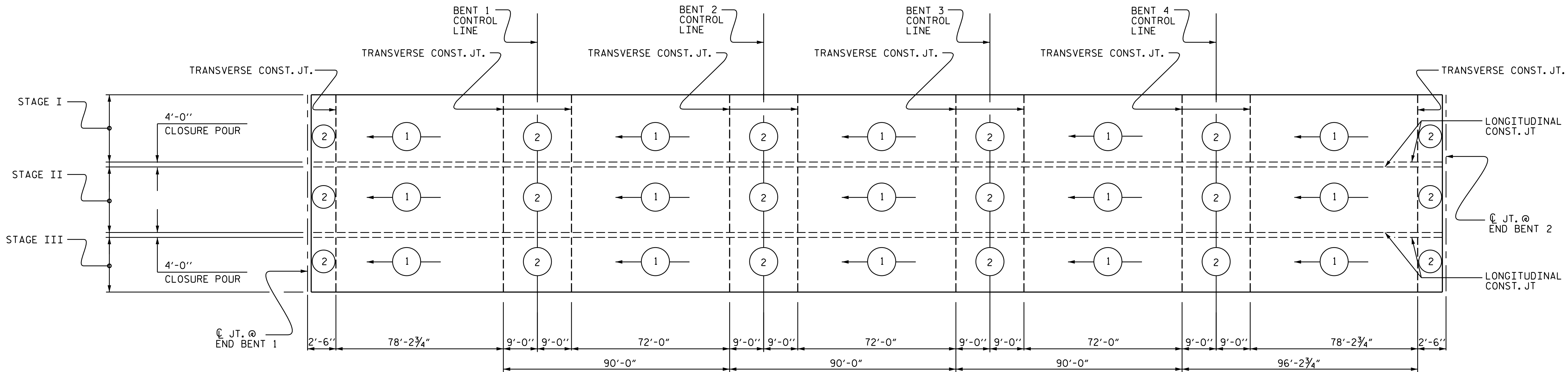
2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

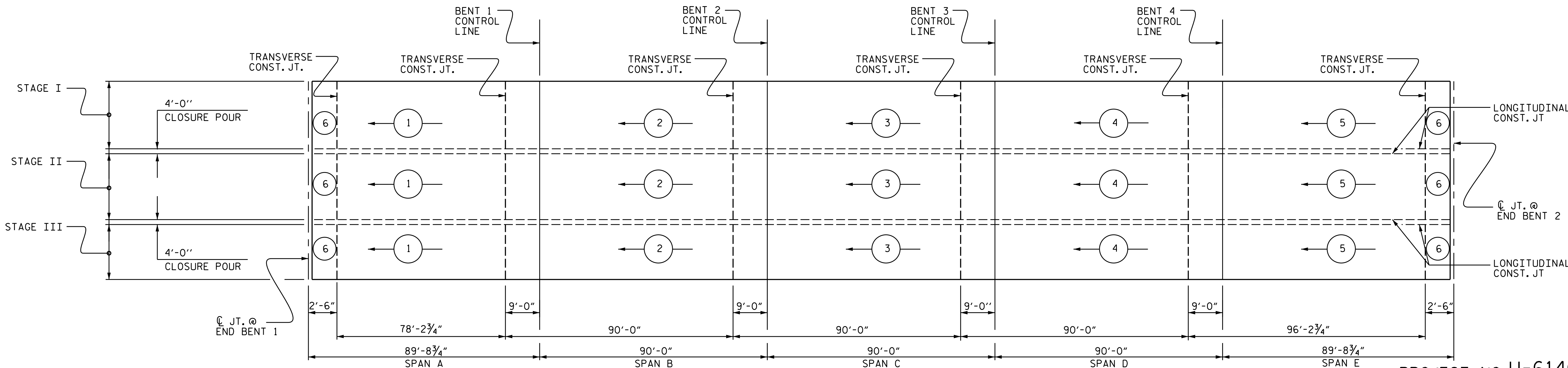
| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | TOTAL SHEETS |
| 1         |     |       | 3   |     |       | 54           |
| 2         |     |       | 4   |     |       | 100          |

DRAWN BY : STM DATE : 11/20  
CHECKED BY : MGC DATE : 3/21

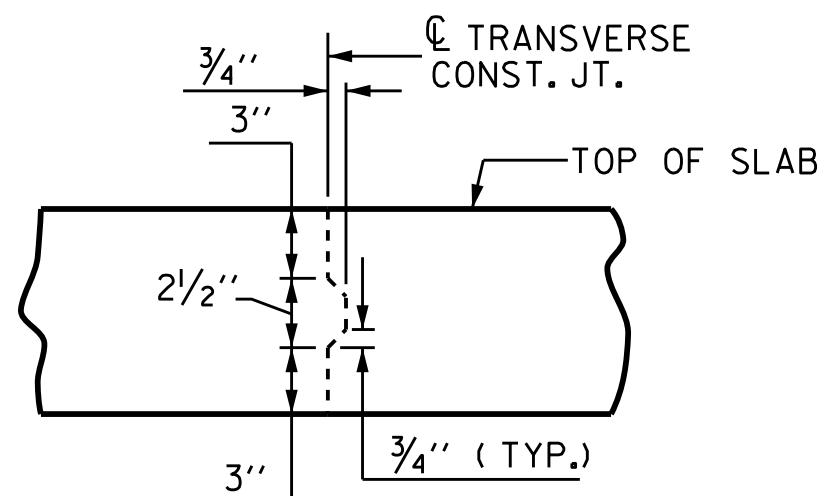


OPTIONAL POURING SEQUENCE

POUR ② SHALL NOT BE STARTED UNTIL  
BOTH ADJACENT ① POURS REACH A  
MINIMUM OF 3000 PSI



POURING SEQUENCE



TRANSVERSE CONSTRUCTION JOINT DETAIL

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

DRAWN BY : ZCS DATE : 11/25  
CHECKED BY : MGC DATE : 11/25

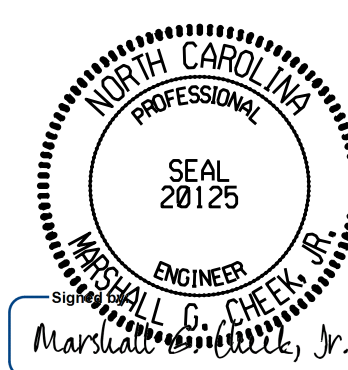
11/24/2025  
X:\NCDOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.113.U-6146.SMU.BM01.350082.dgn  
User:ZSmith

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00 -L-

SHEET 1 OF 2



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE

CONCRETE DECK  
POUR DETAILS

| REVISIONS |     |       |     |     |       | SHEET NO.        |
|-----------|-----|-------|-----|-----|-------|------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                  |
| 1         |     |       | 3   |     |       | S-55             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 100 |

| CLASS AA CONCRETE BREAKDOWN |                |  |
|-----------------------------|----------------|--|
| STAGE I                     |                |  |
| POUR 1                      | 77.6 CU. YDS.  |  |
| POUR 2                      | 89.3 CU. YDS.  |  |
| POUR 3                      | 89.3 CU. YDS.  |  |
| POUR 4                      | 89.3 CU. YDS.  |  |
| POUR 5                      | 95.9 CU. YDS.  |  |
| POUR 6                      | 7.9 CU. YDS.   |  |
| TOTAL STAGE I               | 449.3 CU. YDS. |  |
| STAGE II                    |                |  |
| POUR 1                      | 44.8 CU. YDS.  |  |
| POUR 2                      | 51.5 CU. YDS.  |  |
| POUR 3                      | 51.5 CU. YDS.  |  |
| POUR 4                      | 51.5 CU. YDS.  |  |
| POUR 5                      | 55.4 CU. YDS.  |  |
| POUR 6                      | 2.9 CU. YDS.   |  |
| CLOSURE POUR                | 65.2 CU. YDS.  |  |
| TOTAL STAGE II              | 322.8 CU. YDS. |  |
| STAGE III                   |                |  |
| POUR 1                      | 141.8 CU. YDS. |  |
| POUR 2                      | 163.1 CU. YDS. |  |
| POUR 3                      | 163.1 CU. YDS. |  |
| POUR 4                      | 163.1 CU. YDS. |  |
| POUR 5                      | 175.3 CU. YDS. |  |
| POUR 6                      | 14.6 CU. YDS.  |  |
| CLOSURE POUR                | 65.2 CU. YDS.  |  |
| TOTAL STAGE III             | 886.2 CU. YDS. |  |

FOR LOCATION OF POURS, SEE  
"CONCRETE DECK POUR DETAILS" SHEET

| REINFORCING BAR SCHEDULE         |     |      |      |         |             |                                  |      |      |      |         |             |                                  |     |      |      |         |             |
|----------------------------------|-----|------|------|---------|-------------|----------------------------------|------|------|------|---------|-------------|----------------------------------|-----|------|------|---------|-------------|
| STAGE I                          |     |      |      |         |             | STAGE II & CLOSURE POUR          |      |      |      |         |             | STAGE III & CLOSURE POUR         |     |      |      |         |             |
| BAR                              | No. | SIZE | TYPE | LENGTH  | WEIGHT      | BAR                              | No.  | SIZE | TYPE | LENGTH  | WEIGHT      | BAR                              | No. | SIZE | TYPE | LENGTH  | WEIGHT      |
| * A1                             | 898 | #5   | STR. | 30'-11" | 28957       | * A3                             | 898  | #5   | STR. | 17'-8"  | 16547       | * A5                             | 898 | #5   | STR. | 57'-3"  | 53621       |
| A2                               | 898 | #5   | STR. | 30'-11" | 28957       | A4                               | 898  | #5   | STR. | 17'-8"  | 16547       | A6                               | 898 | #5   | STR. | 57'-3"  | 53621       |
| B1                               | 272 | #5   | STR. | 57'-11" | 16431       | B1                               | 168  | #5   | STR. | 57'-11" | 10148       | B1                               | 552 | #5   | STR. | 57'-11" | 33345       |
| B2                               | 120 | #5   | STR. | 46'-6"  | 5820        | B2                               | 72   | #5   | STR. | 46'-6"  | 3492        | B2                               | 244 | #5   | STR. | 46'-6"  | 11834       |
| * B3                             | 128 | #4   | STR. | 30'-7"  | 2615        | * B3                             | 96   | #4   | STR. | 30'-7"  | 1961        | * B3                             | 248 | #4   | STR. | 30'-7"  | 5067        |
| * B4                             | 256 | #5   | STR. | 33'-6"  | 8945        | * B4                             | 192  | #5   | STR. | 33'-6"  | 6709        | * B4                             | 496 | #5   | STR. | 33'-6"  | 17330       |
| * B5                             | 124 | #5   | STR. | 37'-6"  | 4850        | * B5                             | 80   | #5   | STR. | 37'-6"  | 3129        | * B5                             | 240 | #5   | STR. | 37'-6"  | 9387        |
| * B6                             | 128 | #4   | STR. | 29'-6"  | 2522        | * B6                             | 72   | #4   | STR. | 29'-6"  | 1419        | * B6                             | 186 | #4   | STR. | 29'-6"  | 3665        |
| * D1                             | 898 | #6   | STR. | 5'-11"  | 7980        | * D1                             | 1796 | #6   | STR. | 5'-11"  | 15961       | * D1                             | 898 | #6   | STR. | 5'-11"  | 7980        |
| * G1                             | 2   | #5   | STR  | 30'-11" | 64          | * G2                             | 2    | #5   | STR  | 17'-8"  |             | * G3                             | 2   | #5   | STR  | 57'-3"  | 119         |
| * K1                             | 4   | #8   | 1    | 12'-2"  | 130         | * K2                             | 4    | #8   | 2    | 18'-4"  | 196         | * K1                             | 4   | #8   | 1    | 12'-2"  | 130         |
| * K2                             | 8   | #8   | 2    | 18'-4"  | 392         | * K3                             | 8    | #8   | 1    | 9'-11"  | 212         | * K2                             | 20  | #8   | 2    | 18'-4"  | 979         |
| * K3                             | 4   | #8   | 1    | 9'-11"  | 106         | * S1                             | 28   | #5   | 3    | 5'-11"  | 173         | * K3                             | 4   | #8   | 1    | 9'-11"  | 106         |
| * S1                             | 48  | #5   | 3    | 5'-11"  | 296         |                                  |      |      |      |         |             | * S1                             | 96  | #5   | 3    | 5'-11"  | 592         |
| REINFORCING STEEL                |     |      |      |         | 51,208 LBS. | REINFORCING STEEL                |      |      |      |         | 30,187 LBS. | REINFORCING STEEL                |     |      |      |         | 98,800 LBS. |
| * EPOXY COATED REINFORCING STEEL |     |      |      |         | 56,857 LBS. | * EPOXY COATED REINFORCING STEEL |      |      |      |         | 46,344 LBS. | * EPOXY COATED REINFORCING STEEL |     |      |      |         | 98,976 LBS. |

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

| BAR<br>SIZE | SUPERSTRUCTURE<br>EXCEPT APPROACH<br>SLABS, PARAPETS,<br>AND BARRIER RAILS |          | APPROACH SLABS  |          | PARAPETS<br>AND<br>BARRIER<br>RAILS |
|-------------|----------------------------------------------------------------------------|----------|-----------------|----------|-------------------------------------|
|             | EPOXY<br>COATED                                                            | UNCOATED | EPOXY<br>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"    |                 |          |                                     |

SUPERSTRUCTURE BILL OF MATERIAL

|           | CLASS AA<br>CONCRETE | REINFORCING<br>STEEL | EPOXY COATED<br>REINFORCING STEEL |
|-----------|----------------------|----------------------|-----------------------------------|
|           | (CU. YDS.)           | (LBS.)               | (LBS.)                            |
| STAGE I   | 449.3                | 51,208               | 56,857                            |
| STAGE II  | 322.8                | 30,187               | 46,344                            |
| STAGE III | 886.2                | 98,800               | 98,976                            |
|           |                      |                      |                                   |
| TOTAL     | 1,658.3              | 180,195              | 202,177                           |

GROOVING BRIDGE FLOORS

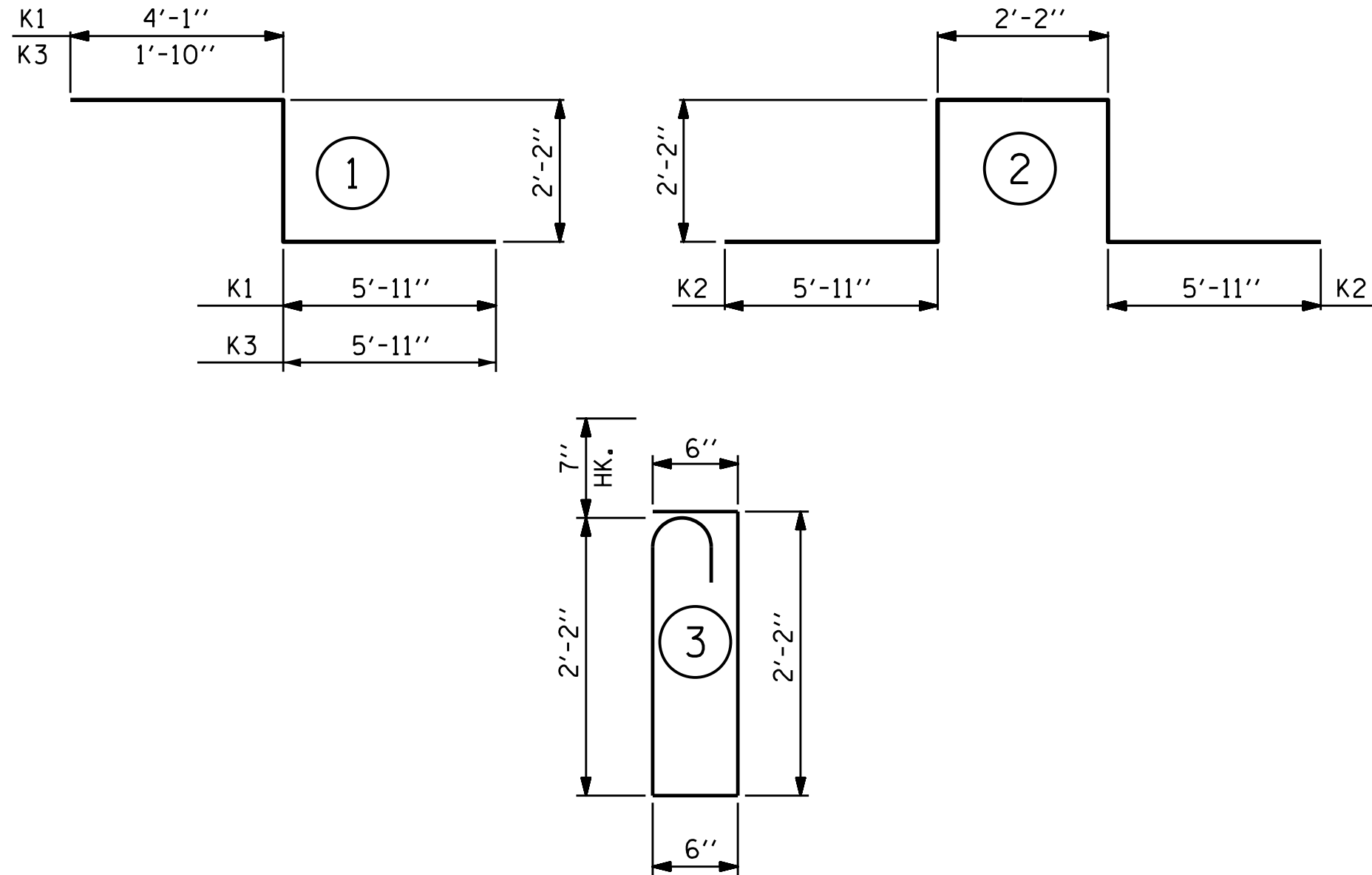
|                |        |        |
|----------------|--------|--------|
| APPROACH SLABS | 1,722  | SQ.FT. |
| BRIDGE DECK    | 32,525 | SQ.FT. |
| TOTAL          | 34,247 | SQ.FT. |

NOTE: THE ROADWAY TRAVEL SURFACES SHALL BE GROOVED  
IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.  
THE MULTI-USE PATH SHALL BE HAND FINISHED BY  
BROOMING OR OTHER ACCEPTABLE METHODS TO PRODUCE  
A UNIFORM SURFACE TREATMENT.

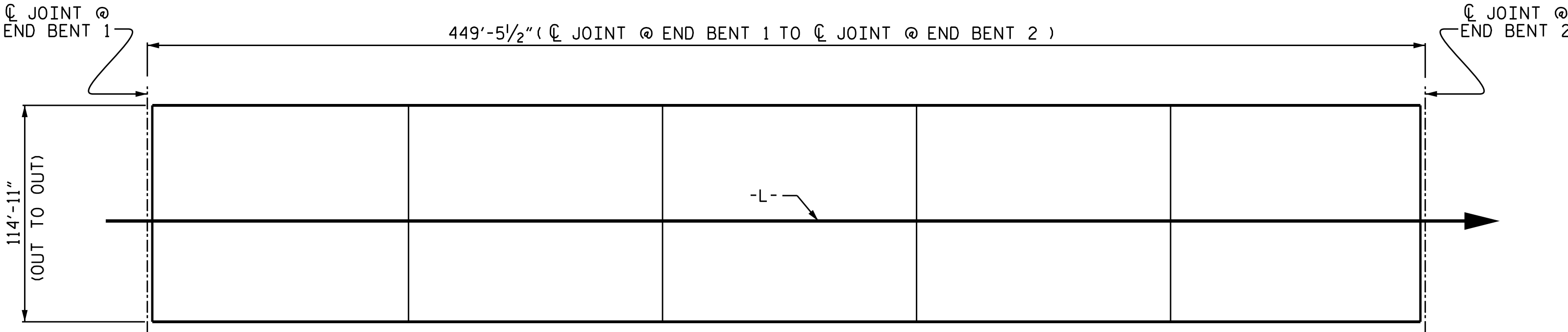
DRAWN BY : ZCS DATE : 11/25  
CHECKED BY : MGC DATE : 11/25  
DESIGN ENGINEER OF RECORD: MGC DATE : 11/25

11/24/2025  
X:\NCDOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.115.U-6146.SMU.BM02.350082.dgn  
User:JSmith

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB  
( SQ. FT. = 51,650 )

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00 -L-

SHEET 2 OF 2

|                  |                                                                                                                 |     |       |     |  |     |       |                   |  |
|------------------|-----------------------------------------------------------------------------------------------------------------|-----|-------|-----|--|-----|-------|-------------------|--|
| <p>2/24/2026</p> | STATE OF NORTH CAROLINA<br>DEPARTMENT OF TRANSPORTATION<br>RALEIGH                                              |     |       |     |  |     |       |                   |  |
|                  | SUPERSTRUCTURE<br>BILL OF MATERIAL                                                                              |     |       |     |  |     |       |                   |  |
|                  | DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                |     |       |     |  |     |       |                   |  |
|                  | TGS ENGINEERS<br>201 W. MARION ST STE 200<br>SHELBY, NC 28150<br>PH (704) 476-0003<br>CORP. LICENSE NO.: C-0275 |     |       |     |  |     |       |                   |  |
| NO.              |                                                                                                                 | BY: | DATE: | NO. |  | BY: | DATE: | SHEET NO.         |  |
| 1                |                                                                                                                 |     |       | 3   |  |     |       | S-56              |  |
| 2                |                                                                                                                 |     |       | 4   |  |     |       | TOTAL SHEETS: 100 |  |

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

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

FOR PILE SPLICE DETAILS, SEE SHEET 6 OF 6.

FOR WING DETAILS, SEE SHEET 4 OF 6.

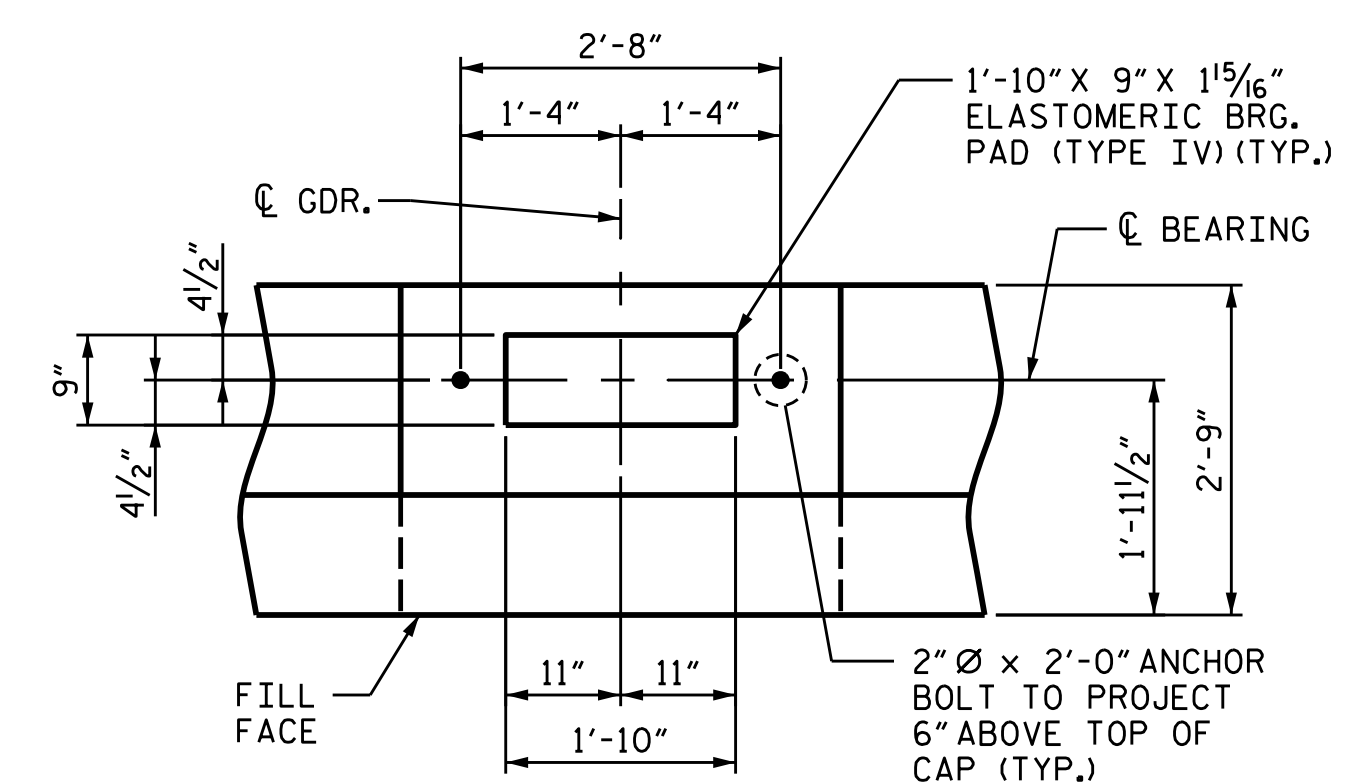
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

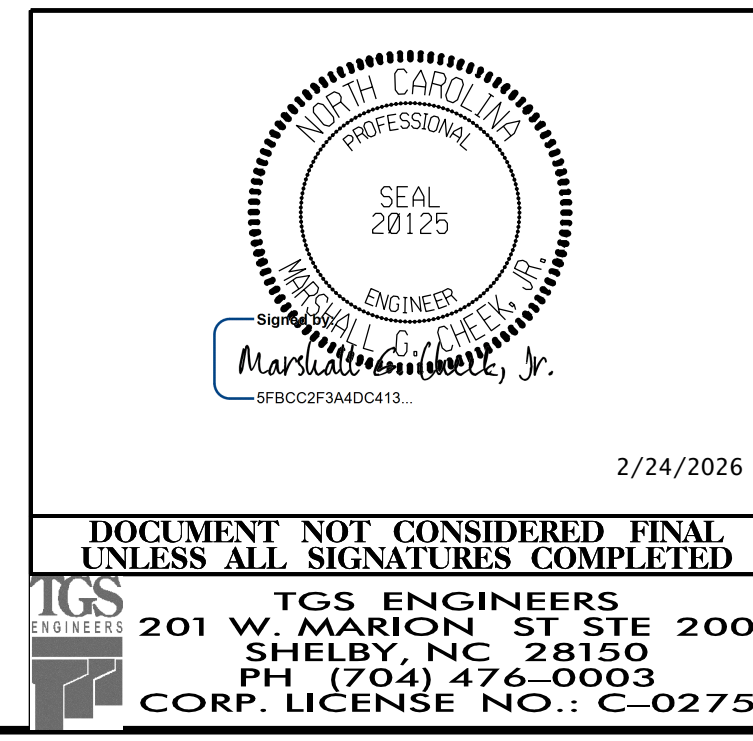
▲ THIS ELEVATION TAKEN AT FILL FACE OF BACKWALL.

\* FOR LOCATION OF ELEVATION BETWEEN BRIDGE SEATS. SEE "SECTION A-A & B-B"; SHEET 5 OF 6.

INSTALL THE 6"Ø DRAIN PIPE THROUGH THE WINGWALL AS REQUIRED FOR BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WINGWALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



DIMENSIONS ARE TYPICAL  
FOR EACH BEARING.



SHEET 1 OF 6

## SUBSTRUCTURE

2/24/2026

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

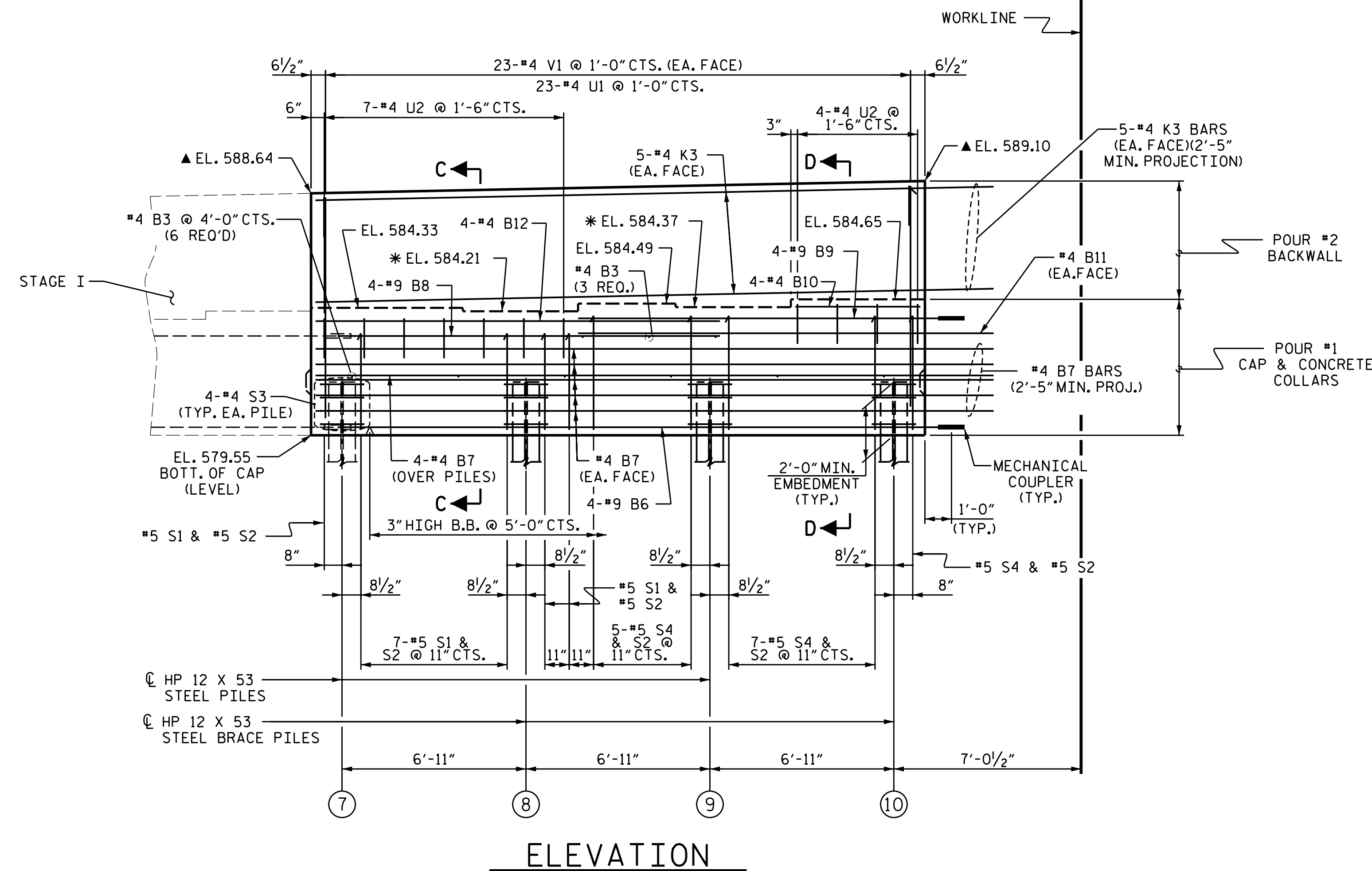
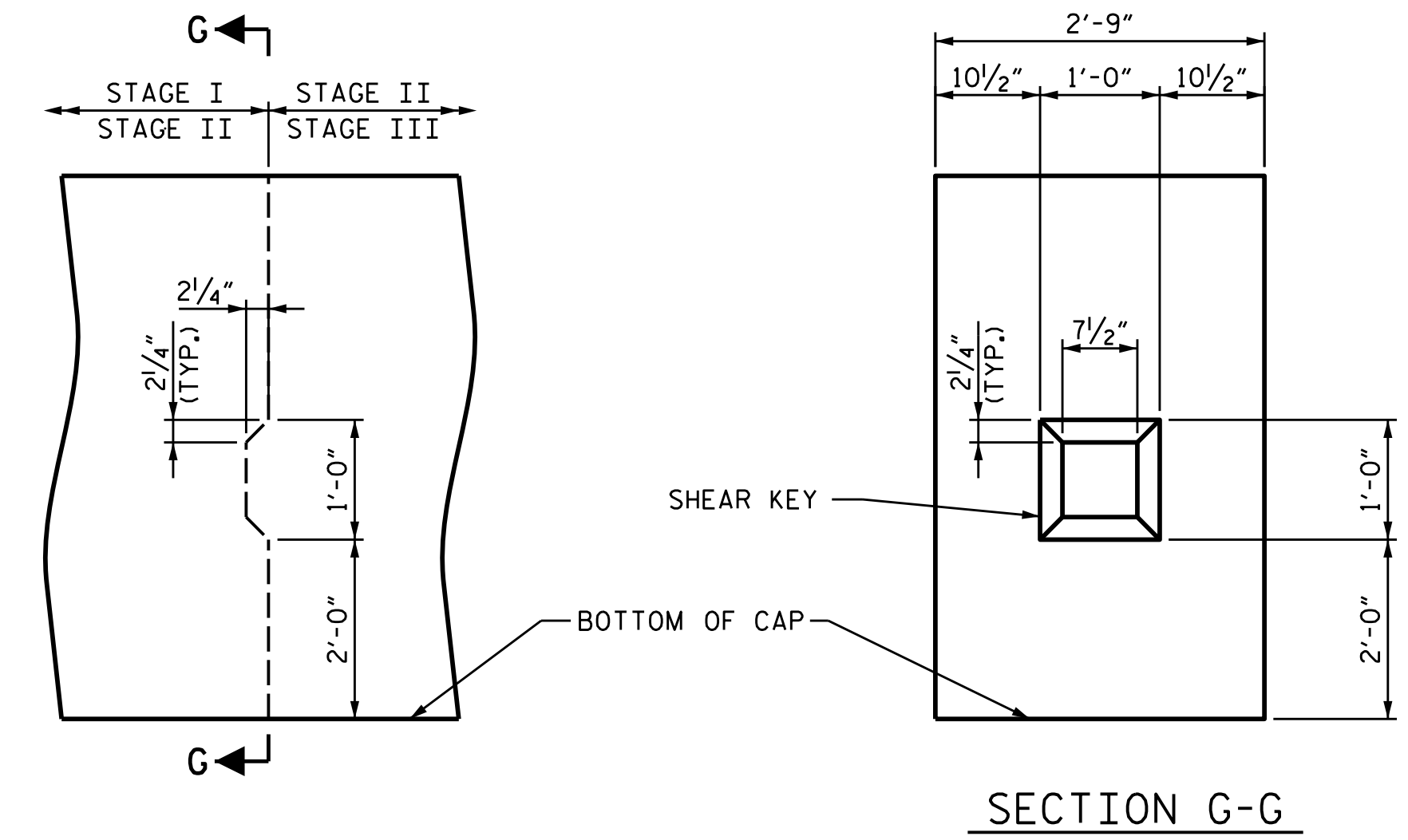
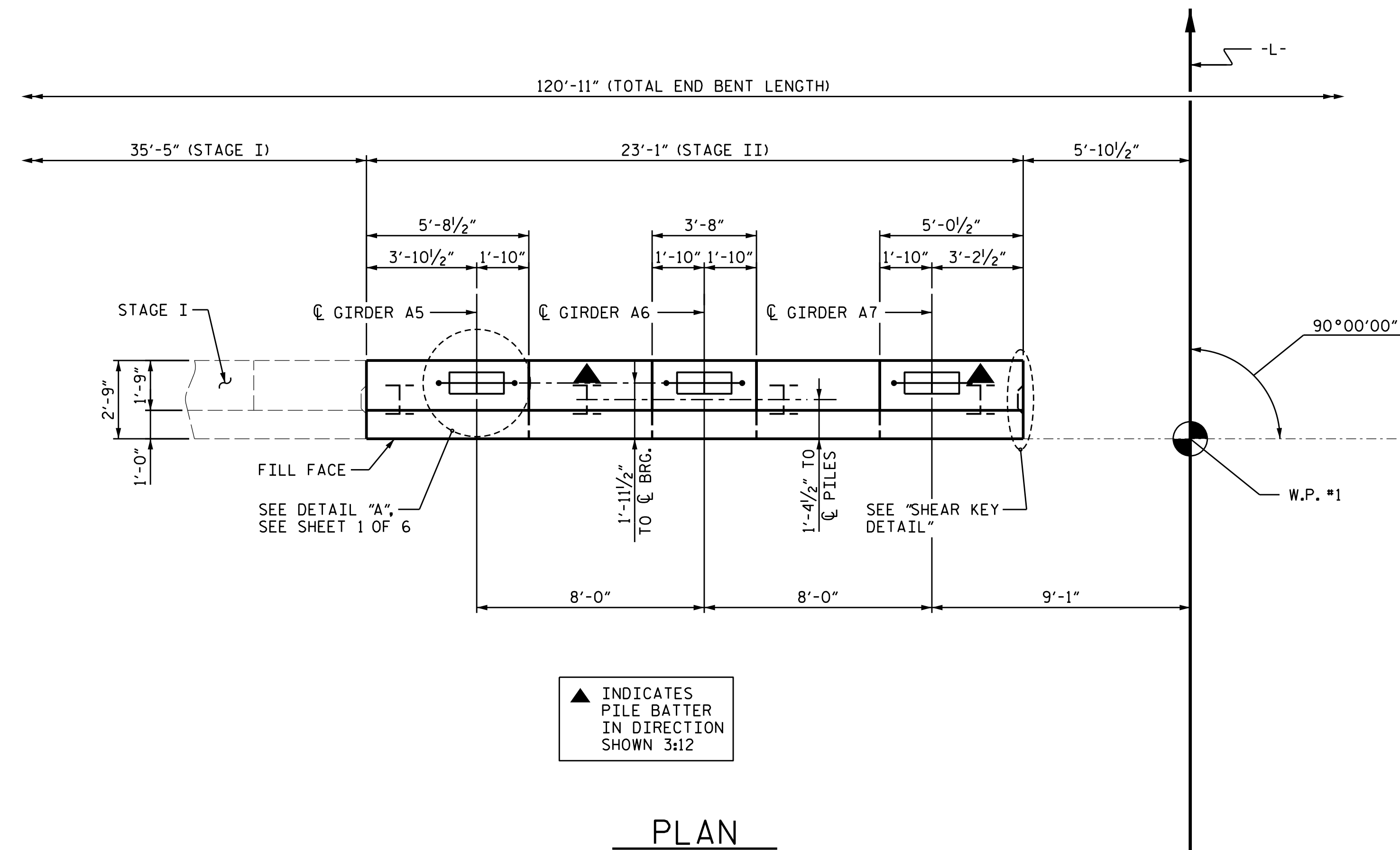
**TGS ENGINEERS**  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

| REVISIONS |     |       |     |     |       | SHEET NO.              |
|-----------|-----|-------|-----|-----|-------|------------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-57                   |
| 1         |     |       | 3   |     |       | TOTAL<br>SHEETS<br>100 |
| 2         |     |       | 4   |     |       |                        |

|                             |               |        |      |
|-----------------------------|---------------|--------|------|
| DRAWN BY :                  | JLA           | DATE : | 8/20 |
| CHECKED BY :                | S.B. WILLIAMS | DATE : | 3/21 |
| DESIGN ENGINEER OF RECORD : | RDE           | DATE : | 3/21 |

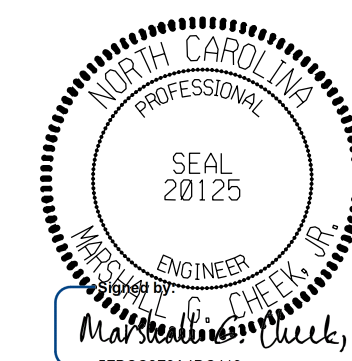
FOR SECTION A-A AND B-B, SEE SHEET 5 OF 6.  
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
FOR "CORROSION PROTECTION FOR STEEL PILES DETAIL", SEE SHEET 6 OF 6.

### ELEVATION



PROJECT NO. U-6146/B-5857  
 GASTON COUNTY  
 STATION: 32+93.00 -L-

SHEET 2 OF 6



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
 201 W. MARION ST STE 200  
 SHELBY, NC 28150  
 PH (704) 476-0003  
 CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE

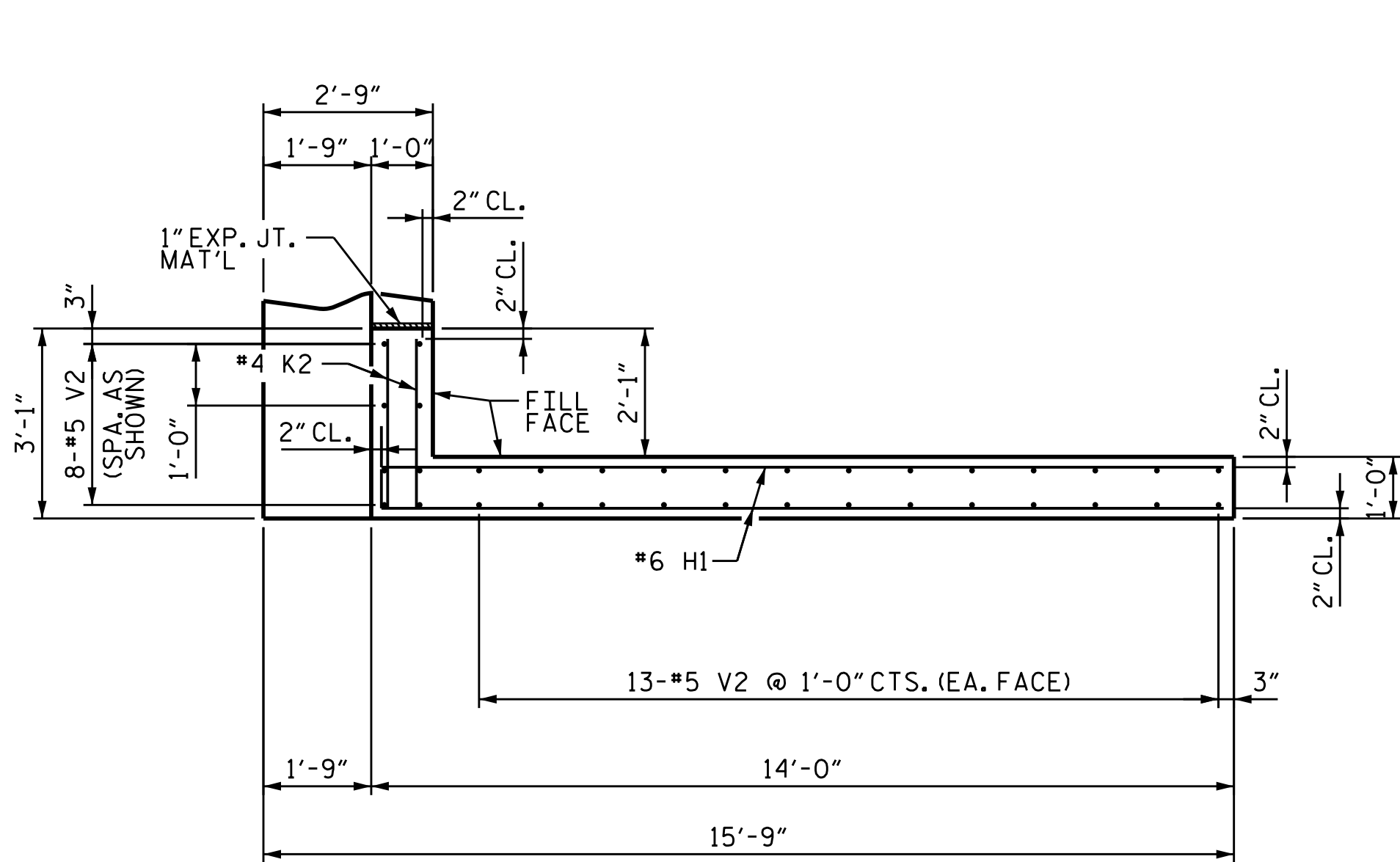
END BENT 1  
 STAGE II

| REVISIONS |    |      |     |    |      | SHEET NO.        |
|-----------|----|------|-----|----|------|------------------|
| NO.       | BY | DATE | NO. | BY | DATE |                  |
| 1         |    |      | 3   |    |      | S-58             |
| 2         |    |      | 4   |    |      | TOTAL SHEETS 100 |

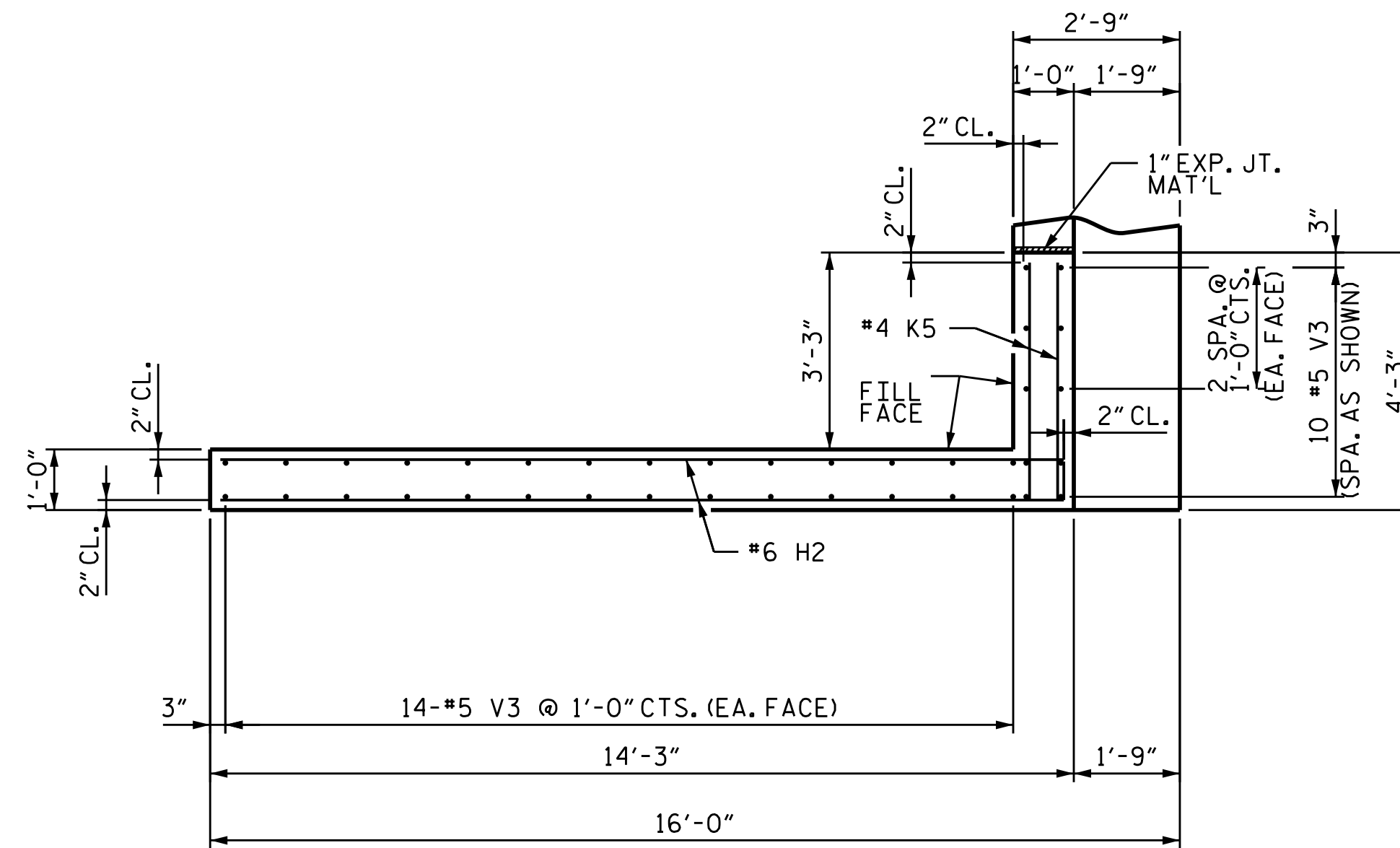
DRAWN BY : JLA DATE : 8/20  
 CHECKED BY : S.B. WILLIAMS DATE : 3/21  
 DESIGN ENGINEER OF RECORD : RDE DATE : 3/21

FOR SECTION C-C AND D-D, SEE SHEET 5 OF 6.  
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
 FOR "CORROSION PROTECTION FOR STEEL PILES DETAIL", SEE SHEET 6 OF 6.

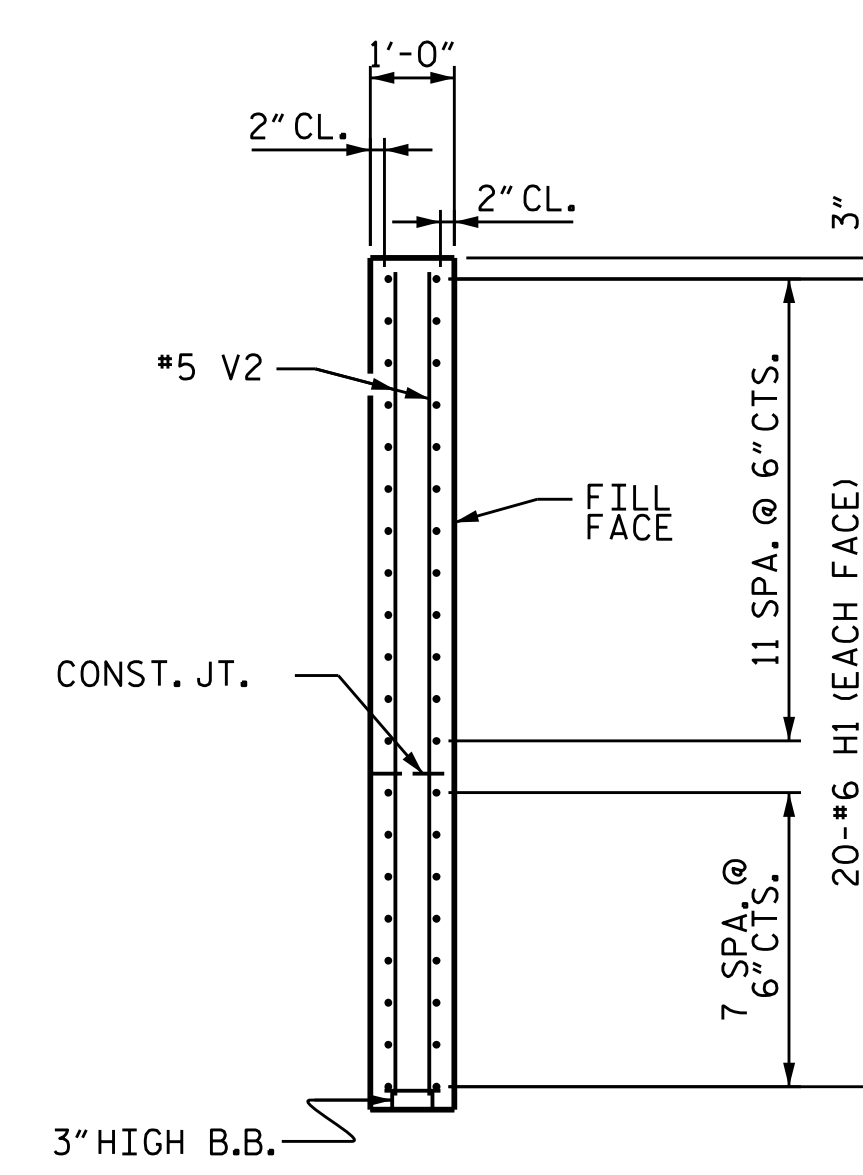




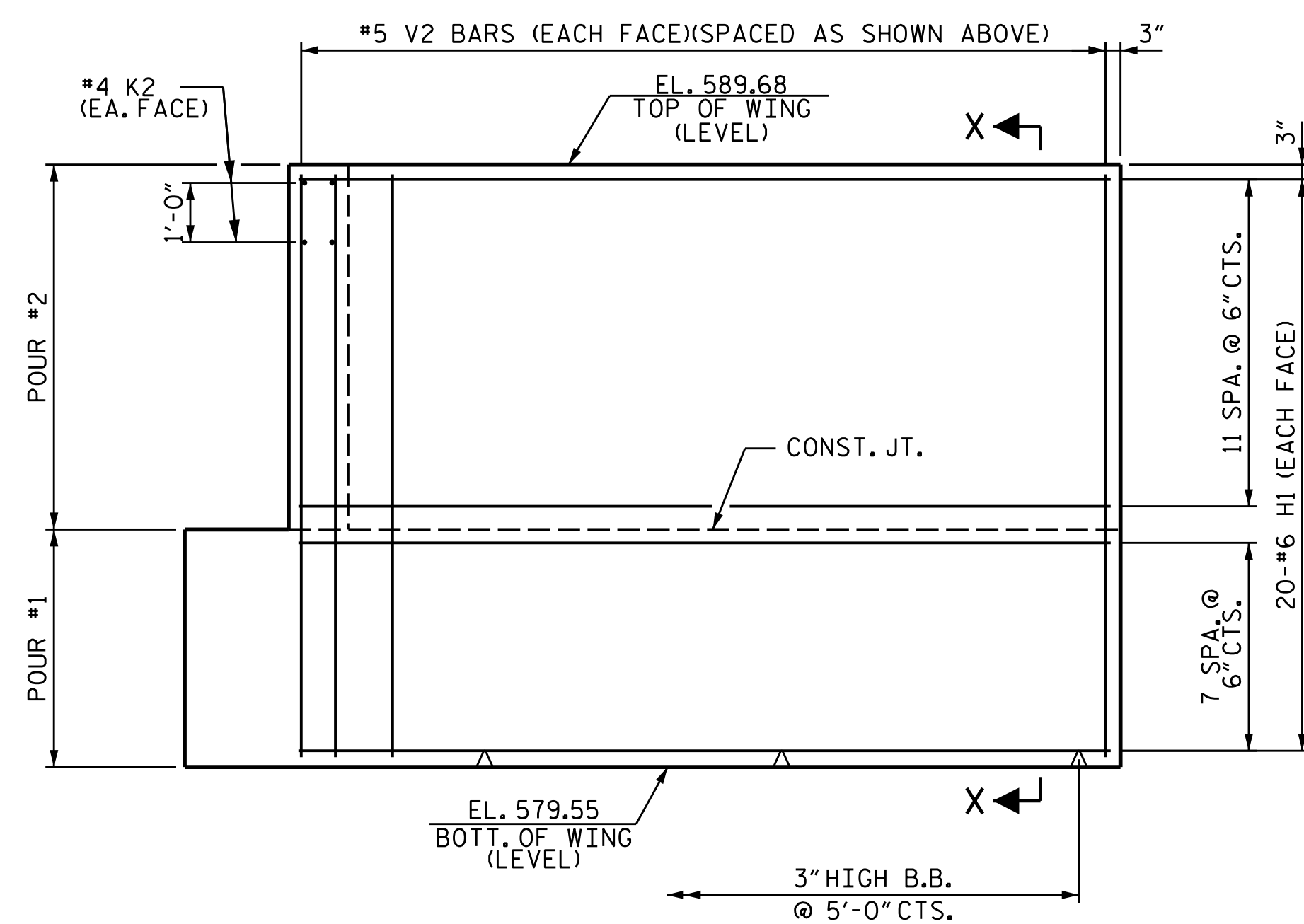
PLAN OF WING (W1)  
STAGE I



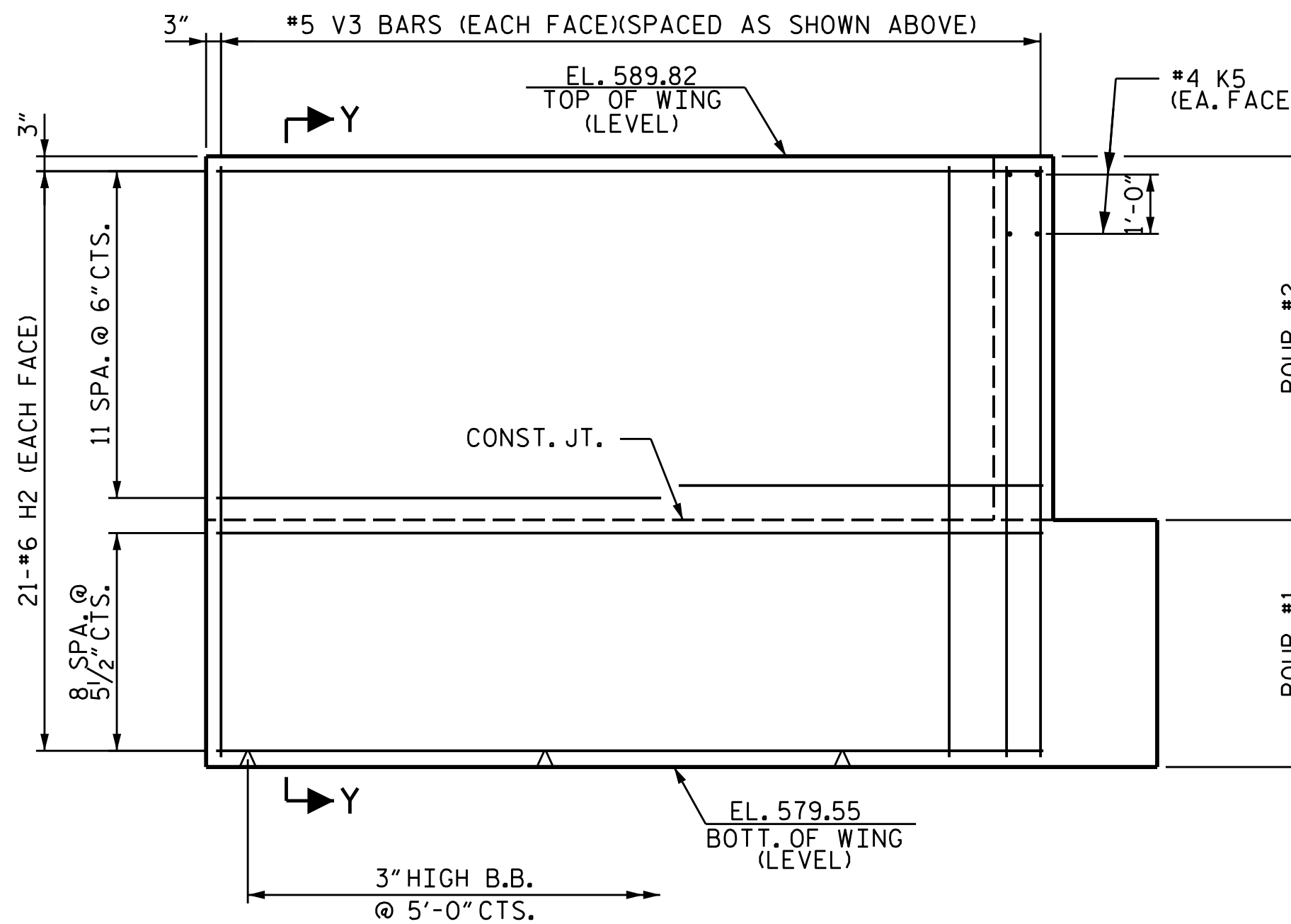
PLAN OF WING (W2)  
STAGE III



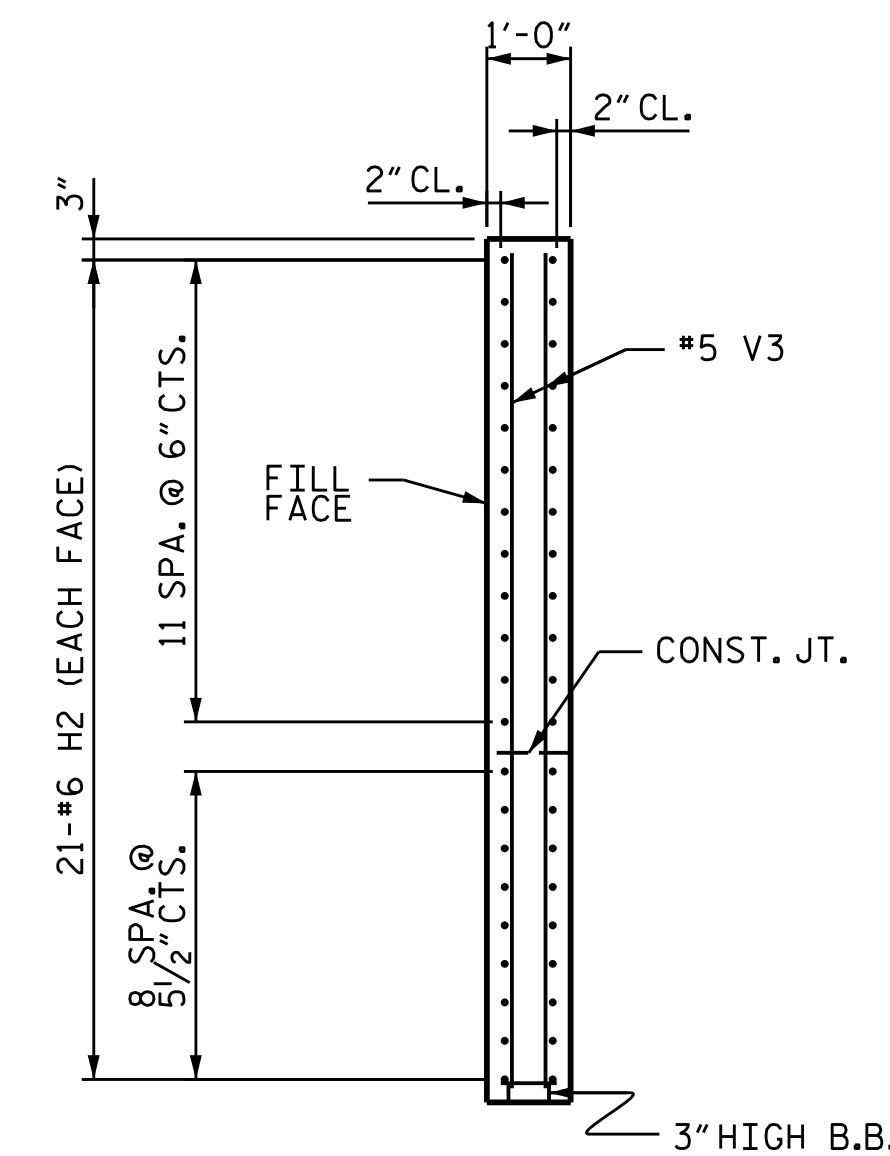
SECTION X-X



ELEVATION OF WING (W1)  
STAGE I



ELEVATION OF WING (W2)  
STAGE III



SECTION Y-Y

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00 -L-

SHEET 4 OF 6



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

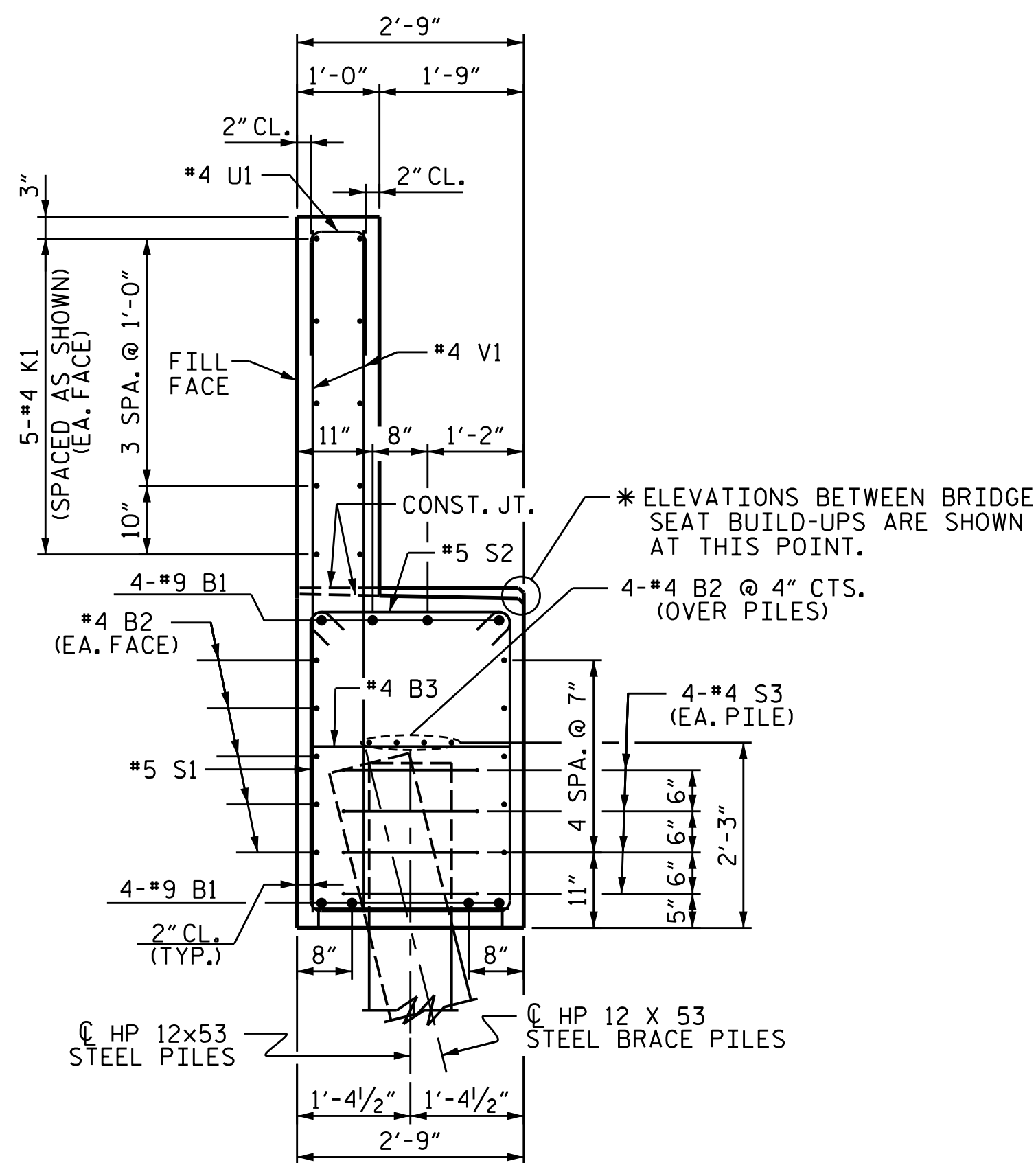
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE

END BENT 1

| REVISIONS |    |      |     |    |      | SHEET NO.        |
|-----------|----|------|-----|----|------|------------------|
| NO.       | BY | DATE | NO. | BY | DATE |                  |
| 1         |    |      | 3   |    |      | S-60             |
| 2         |    |      | 4   |    |      | TOTAL SHEETS 100 |

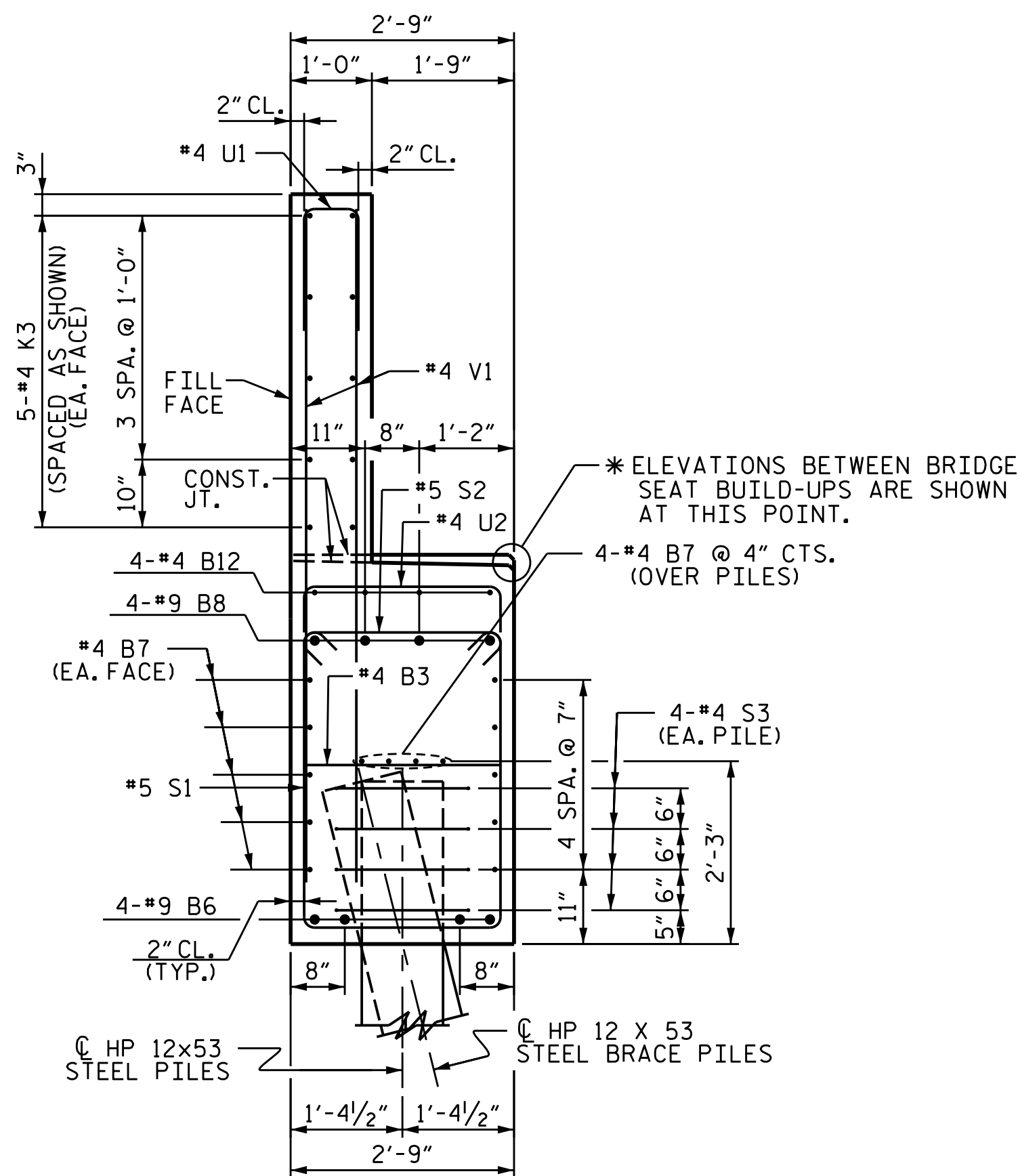
DRAWN BY : JLA DATE : 8/20  
CHECKED BY : S.B. WILLIAMS DATE : 3/21  
DESIGN ENGINEER OF RECORD : RDE DATE : 3/21

WING DETAILS



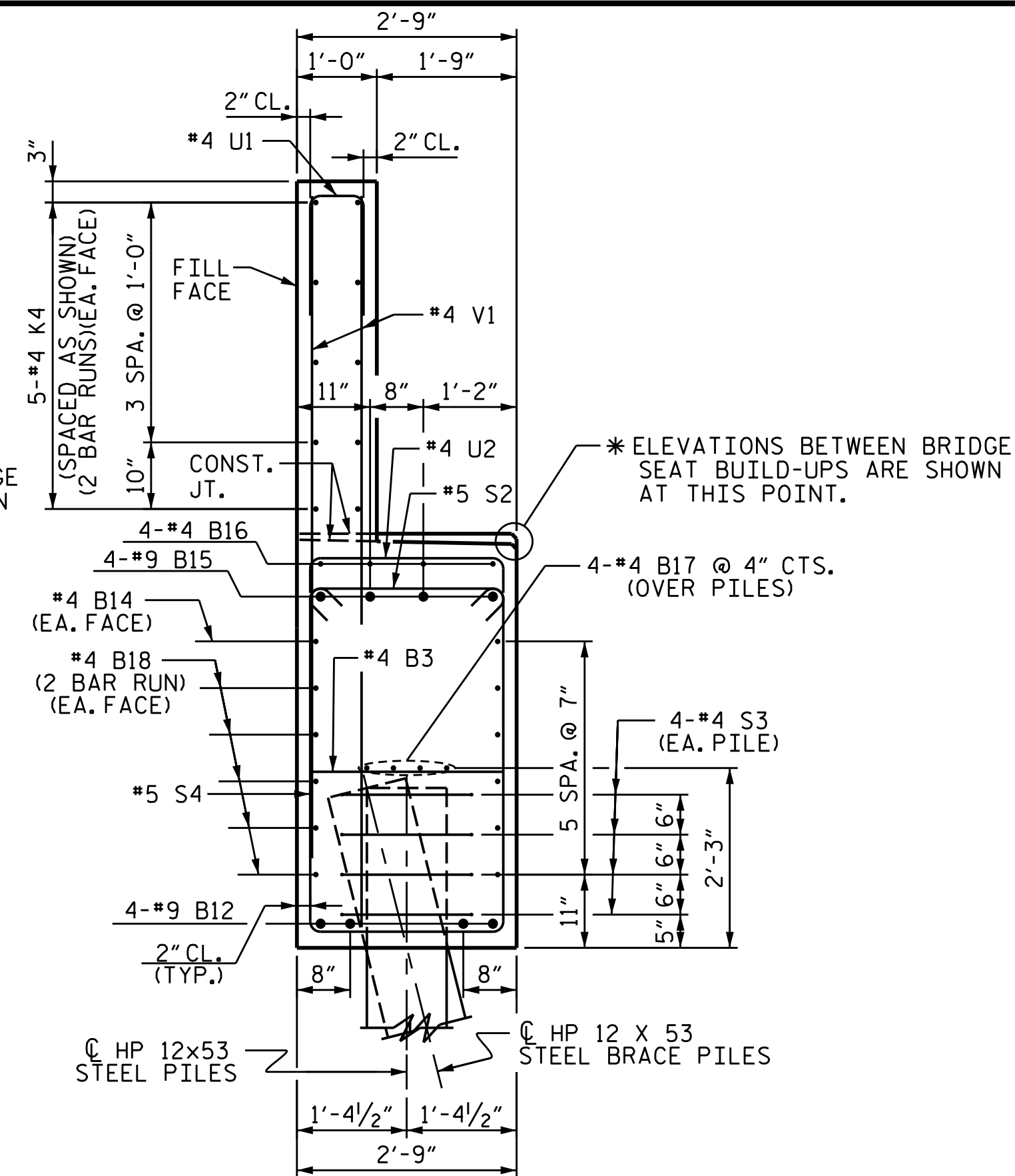
SECTION A-A

CONCRETE COLLAR NOT SHOWN FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL".



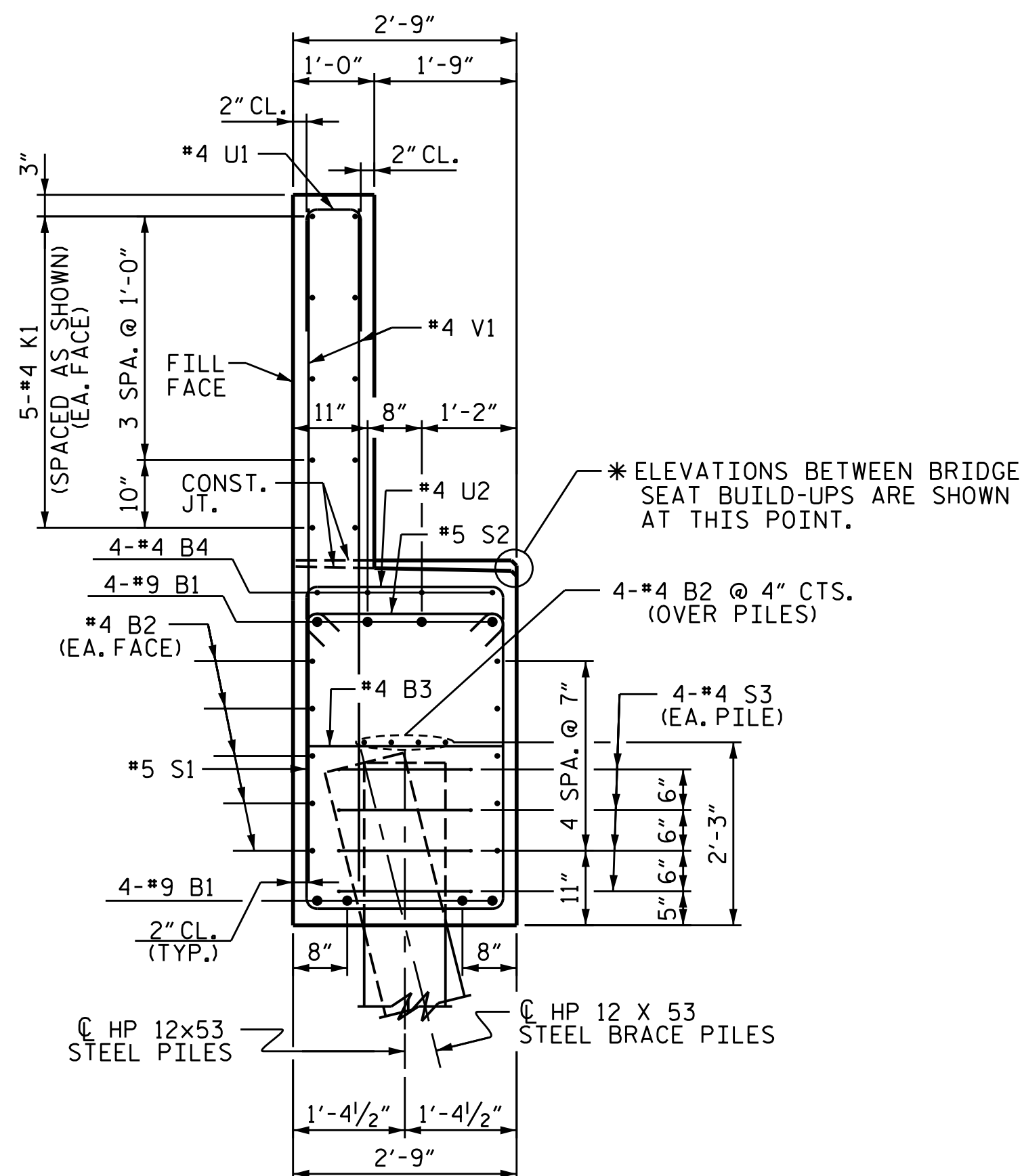
SECTION C-C

CONCRETE COLLAR NOT SHOWN FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL".



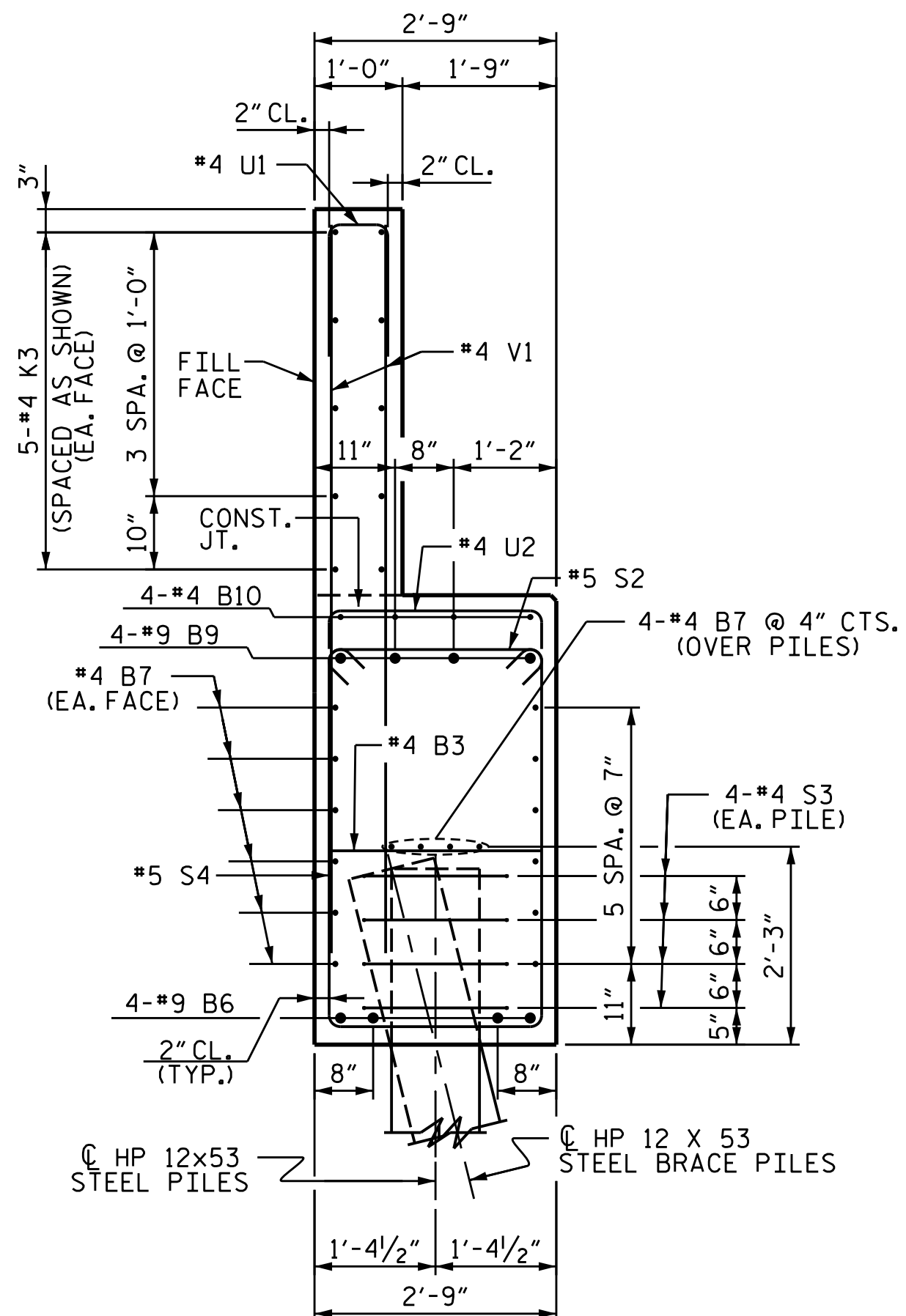
SECTION E-E

CONCRETE COLLAR NOT SHOWN FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL".



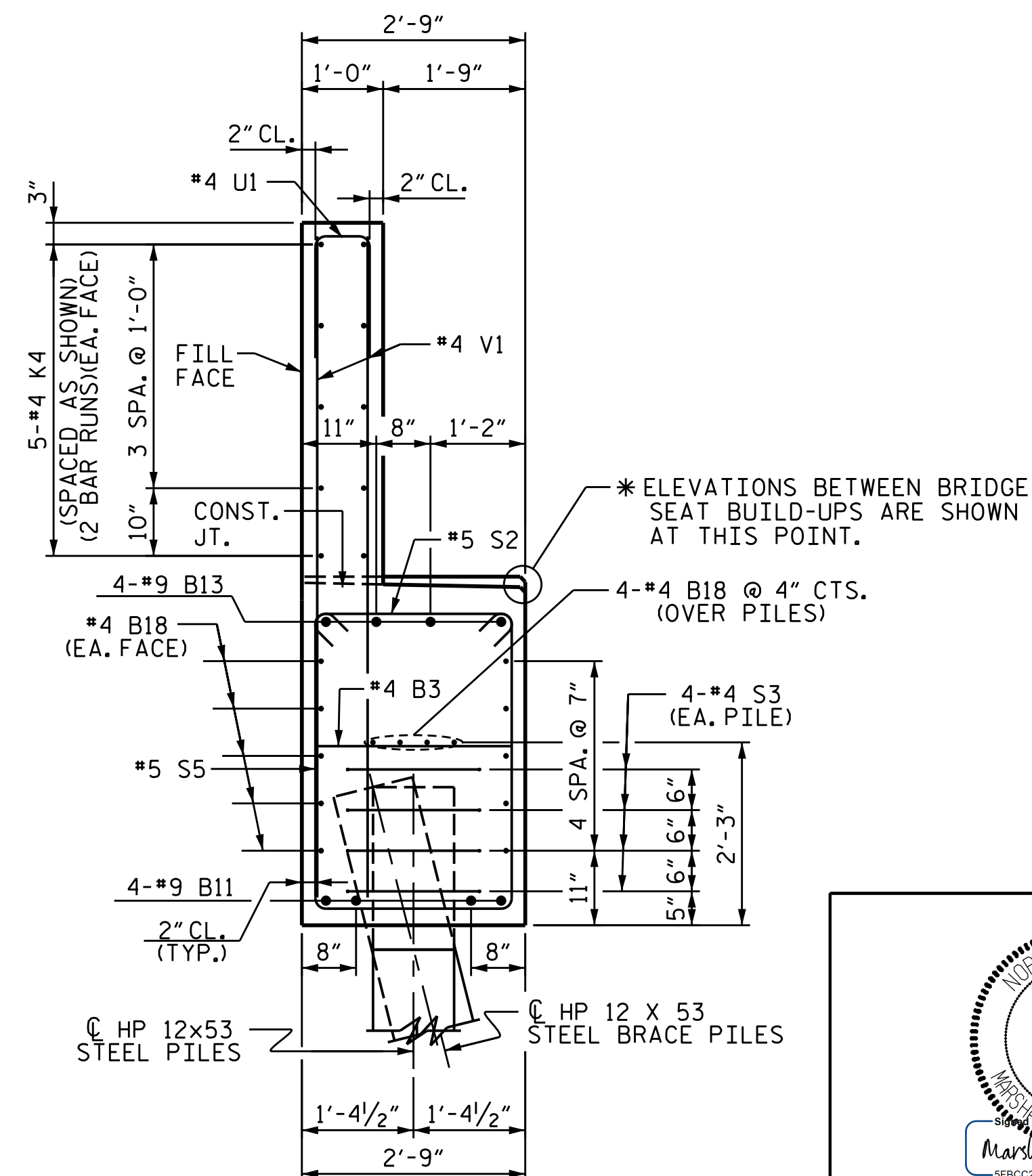
SECTION B-B

CONCRETE COLLAR NOT SHOWN FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL".



SECTION D-D

CONCRETE COLLAR NOT SHOWN FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL".



SECTION F-F

CONCRETE COLLAR NOT SHOWN FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL".

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00 -L-

SHEET 5 OF 6



2/24/2026

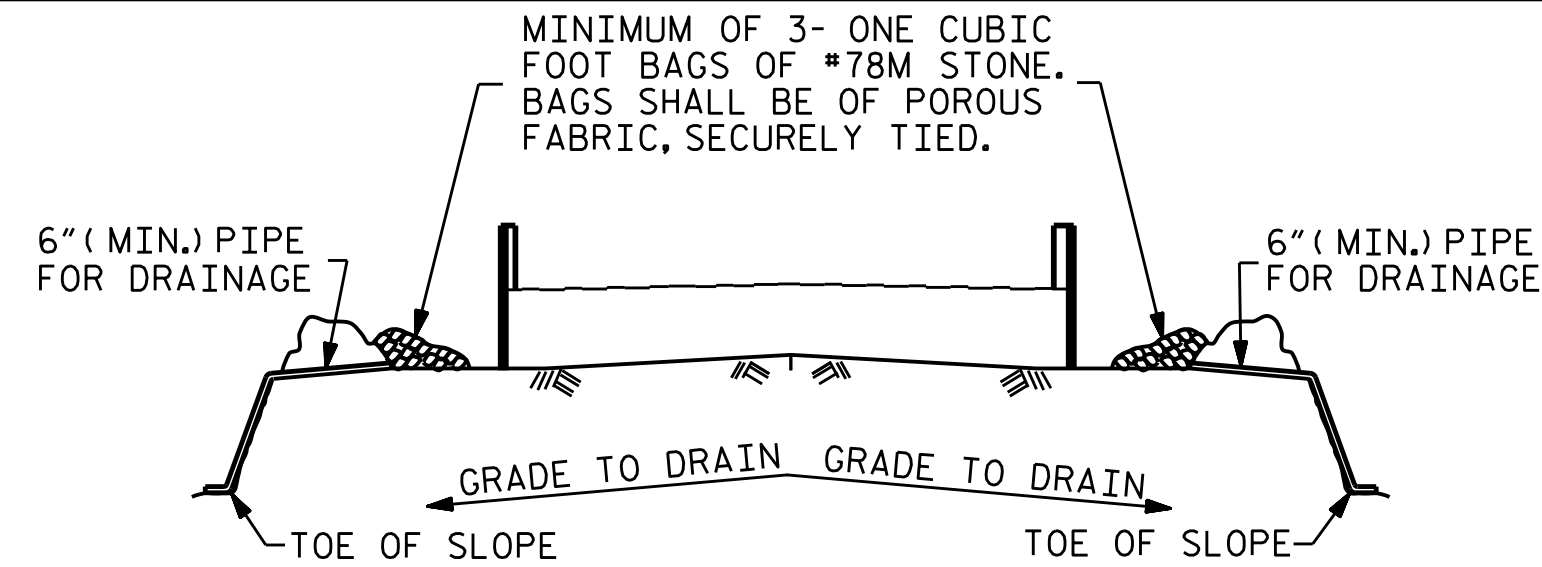
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE  
END BENT 1  
DETAILS

| REVISIONS |    |      |     |    |      | SHEET NO.        |
|-----------|----|------|-----|----|------|------------------|
| NO.       | BY | DATE | NO. | BY | DATE |                  |
| 1         |    |      | 3   |    |      | S-61             |
| 2         |    |      | 4   |    |      | TOTAL SHEETS 100 |

DRAWN BY : JLA DATE : 8/20  
CHECKED BY : S.B. WILLIAMS DATE : 3/21  
DESIGN ENGINEER OF RECORD : RDE DATE : 3/21

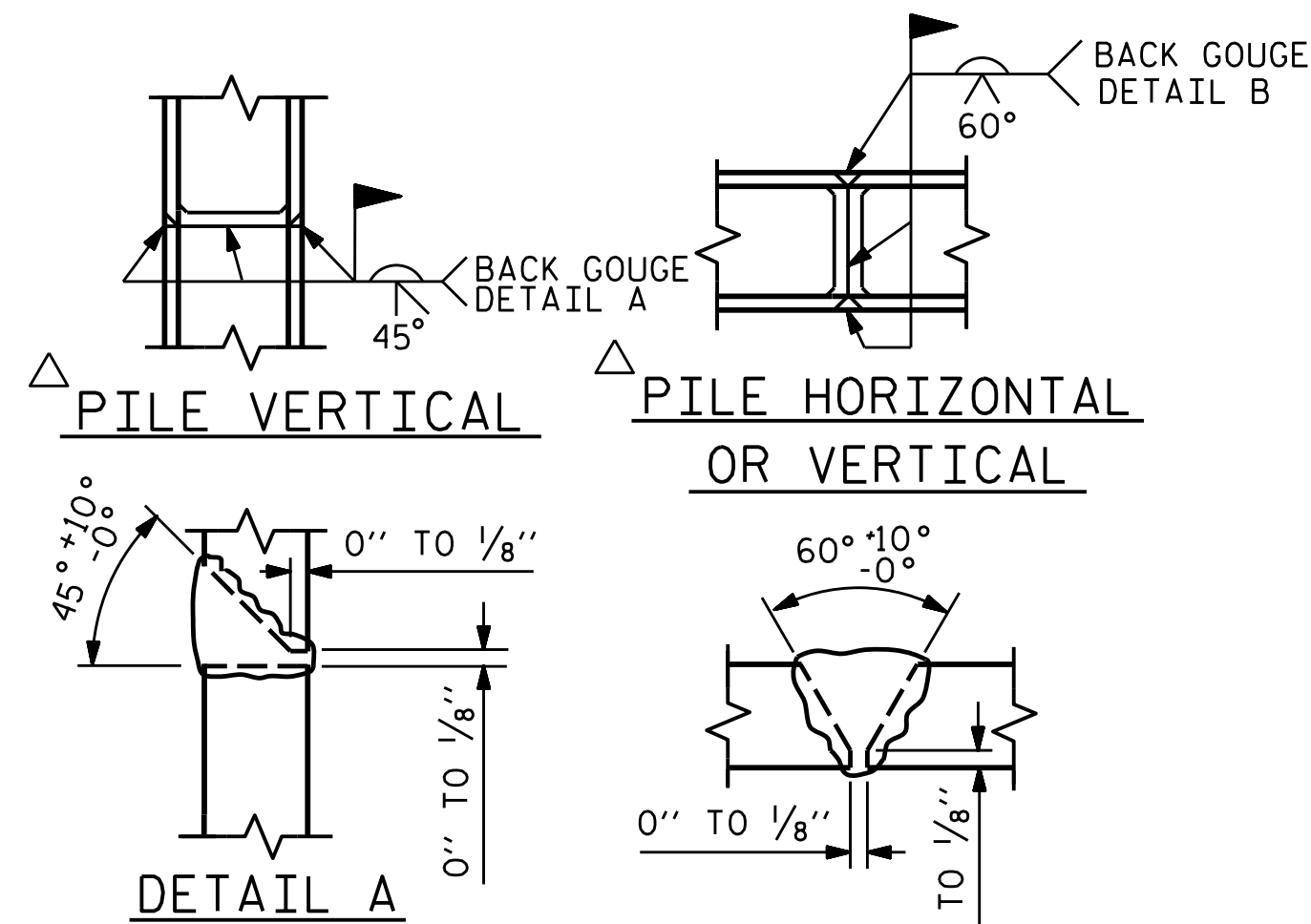


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

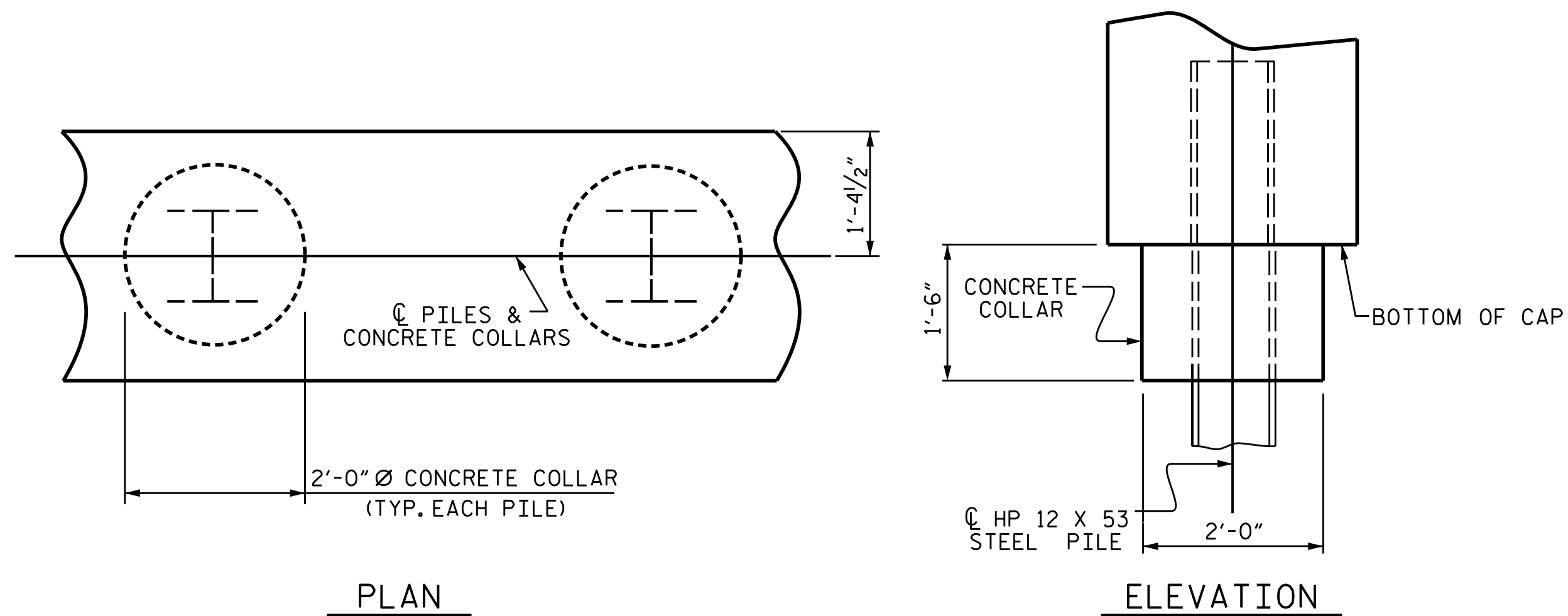
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

## TEMPORARY DRAINAGE AT END BENT



POSITION OF PILE DURING WELDING.

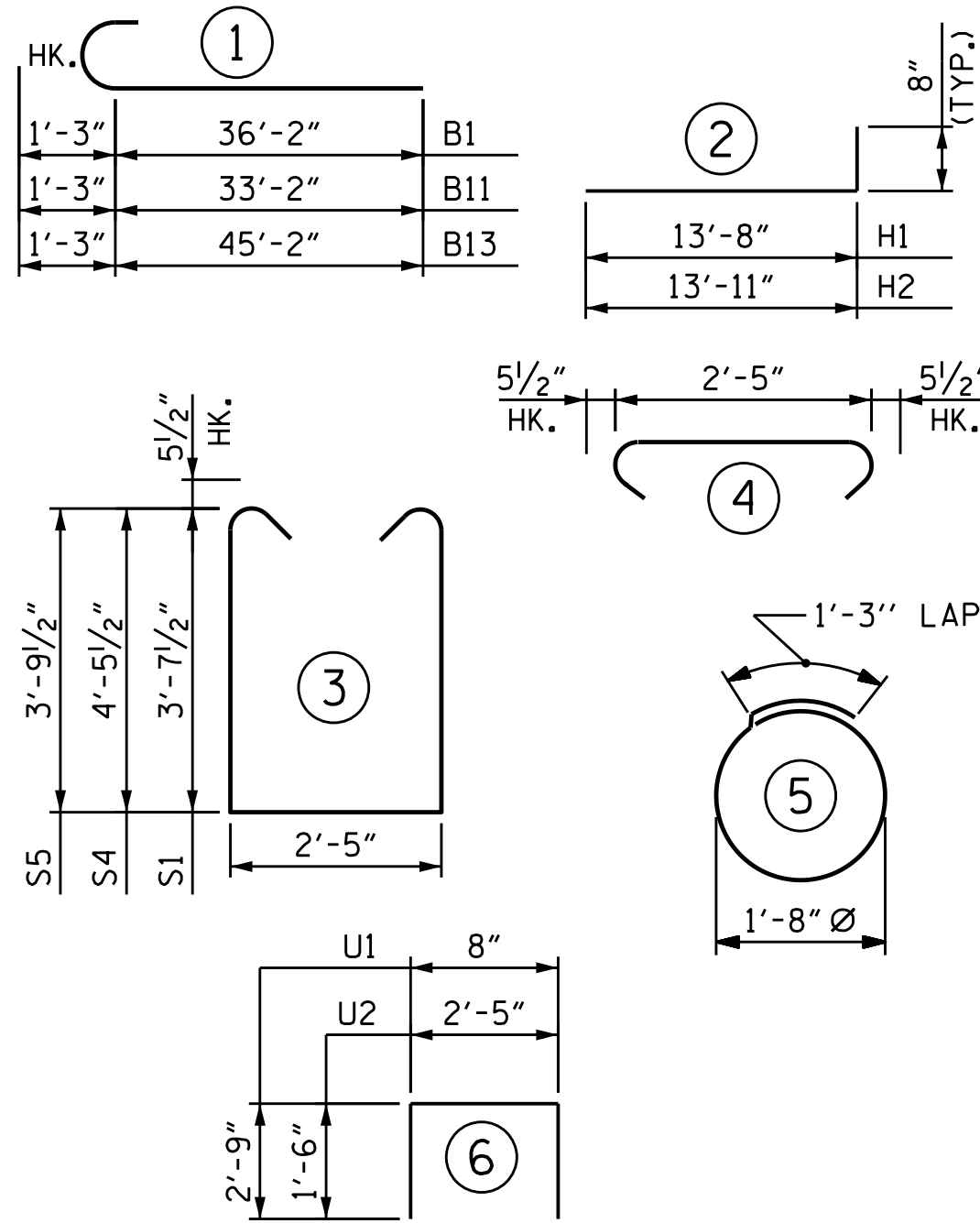
## PILE SPLICE DETAILS



## CORROSION PROTECTION FOR STEEL PILES DETAIL

DRAWN BY : JLA DATE : 8/20  
CHECKED BY : S.B. WILLIAMS DATE : 3/21  
DESIGN ENGINEER OF RECORD : RDE DATE : 3/21

### BAR TYPES



### TOTAL END BENT 1 QUANTITIES

REINFORCING STEEL 12,975 LBS.  
CLASS A CONCRETE 90.2 C.Y.

### BILL OF MATERIAL - END BENT 1

| STAGE I |     |      |      |         |        | STAGE II |     |      |      |         |        | STAGE III |     |      |      |         |        |
|---------|-----|------|------|---------|--------|----------|-----|------|------|---------|--------|-----------|-----|------|------|---------|--------|
| BAR     | NO. | SIZE | TYPE | LENGTH  | WEIGHT | BAR      | NO. | SIZE | TYPE | LENGTH  | WEIGHT | BAR       | NO. | SIZE | TYPE | LENGTH  | WEIGHT |
| B1      | 8   | #9   | 1    | 37'-5"  | 1018   | B3       | 9   | #4   | STR  | 2'-5"   | 15     | B3        | 19  | #4   | STR  | 2'-5"   | 31     |
| B2      | 14  | #4   | STR  | 37'-10" | 354    | B6       | 4   | #9   | STR  | 23'-1"  | 314    | B11       | 4   | #9   | 1    | 34'-5"  | 468    |
| B3      | 9   | #4   | STR  | 2'-5"   | 15     | B7       | 14  | #4   | STR  | 25'-6"  | 238    | B12       | 4   | #9   | STR  | 32'-2"  | 437    |
| B4      | 4   | #4   | STR  | 12'-7"  | 34     | B8       | 4   | #9   | STR  | 14'-5"  | 196    | B13       | 4   | #9   | 1    | 46'-5"  | 631    |
| B5      | 4   | #4   | STR  | 3'-4"   | 9      | B9       | 4   | #9   | STR  | 13'-10" | 188    | B14       | 2   | #4   | STR  | 23'-3"  | 31     |
|         |     |      |      |         |        | B10      | 4   | #4   | STR  | 4'-8"   | 12     | B15       | 4   | #9   | STR  | 21'-2"  | 288    |
| H1      | 40  | #6   | 2    | 14'-4"  | 861    | B11      | 2   | #4   | STR  | 15'-8"  | 21     | B16       | 8   | #4   | STR  | 3'-4"   | 18     |
|         |     |      |      |         |        | B12      | 4   | #4   | STR  | 12'-4"  | 33     | B17       | 4   | #4   | STR  | 4'-3"   | 11     |
| K1      | 10  | #4   | STR  | 37'-10" | 253    |          |     |      |      |         |        | B18       | 28  | #4   | STR  | 32'-4"  | 605    |
| K2      | 4   | #4   | STR  | 2'-8"   | 7      | K3       | 10  | #4   | STR  | 25'-6"  | 170    | B19       | 4   | #4   | STR  | 17'-7"  | 47     |
|         |     |      |      |         |        |          |     |      |      |         |        |           |     |      |      |         |        |
| S1      | 47  | #5   | 3    | 10'-7"  | 519    | S1       | 10  | #5   | 3    | 10'-7"  | 110    | H2        | 42  | #6   | 2    | 14'-7"  | 920    |
| S2      | 47  | #5   | 4    | 3'-4"   | 163    | S2       | 23  | #5   | 4    | 3'-4"   | 80     |           |     |      |      |         |        |
| S3      | 24  | #4   | 5    | 6'-6"   | 104    | S3       | 16  | #4   | 5    | 6'-6"   | 69     | K4        | 20  | #4   | STR  | 32'-4"  | 432    |
|         |     |      |      |         |        | S4       | 13  | #5   | 3    | 12'-3"  | 166    | K5        | 4   | #4   | STR  | 3'-11"  | 10     |
| U1      | 33  | #4   | 6    | 6'-2"   | 136    |          |     |      |      |         |        |           |     |      |      |         |        |
| U2      | 12  | #4   | 6    | 5'-5"   | 43     | U1       | 23  | #4   | 6    | 6'-2"   | 95     | S2        | 87  | #5   | 4    | 3'-4"   | 302    |
|         |     |      |      |         |        | U2       | 11  | #4   | 6    | 5'-5"   | 40     | S3        | 36  | #4   | 5    | 6'-6"   | 156    |
| V1      | 66  | #4   | STR  | 8'-1"   | 356    |          |     |      |      |         |        | S4        | 34  | #5   | 3    | 12'-3"  | 434    |
| V2      | 34  | #5   | STR  | 9'-9"   | 346    | V1       | 46  | #4   | STR  | 8'-1"   | 248    | S5        | 53  | #5   | 3    | 10'-11" | 603    |
|         |     |      |      |         |        |          |     |      |      |         |        |           |     |      |      |         |        |
|         |     |      |      |         |        |          |     |      |      |         |        | U1        | 58  | #4   | 6    | 6'-2"   | 239    |
|         |     |      |      |         |        |          |     |      |      |         |        | U2        | 22  | #4   | 6    | 5'-5"   | 80     |
|         |     |      |      |         |        |          |     |      |      |         |        |           |     |      |      |         |        |
|         |     |      |      |         |        |          |     |      |      |         |        | V1        | 116 | #4   | STR  | 8'-1"   | 626    |
|         |     |      |      |         |        |          |     |      |      |         |        | V3        | 38  | #5   | STR  | 9'-11"  | 393    |
|         |     |      |      |         |        |          |     |      |      |         |        |           |     |      |      |         |        |

|                                           |            |                            |            |                                           |            |
|-------------------------------------------|------------|----------------------------|------------|-------------------------------------------|------------|
| REINFORCING STEEL                         | 4,218 LBS. | REINFORCING STEEL          | 1,995 LBS. | REINFORCING STEEL                         | 6,762 LBS. |
| CLASS A CONCRETE BREAKDOWN                |            | CLASS A CONCRETE BREAKDOWN |            | CLASS A CONCRETE BREAKDOWN                |            |
| POUR #1 CAP, LOWER PART OF WING & COLLARS | 18.3 C.Y.  | POUR #1 CAP & COLLARS      | 12.1 C.Y.  | POUR #1 CAP, LOWER PART OF WING & COLLARS | 33.3 C.Y.  |
| POUR #2 BACKWALL & UPPER PART OF WING     | 9.1 C.Y.   | POUR #2 BACKWALL           | 3.8 C.Y.   | POUR #2 BACKWALL & UPPER PART OF WING     | 13.6 C.Y.  |
| TOTAL CLASS A CONCRETE                    | 27.4 C.Y.  | TOTAL CLASS A CONCRETE     | 15.9 C.Y.  | TOTAL CLASS A CONCRETE                    | 46.9 C.Y.  |

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00 -L-

SHEET 6 OF 6



2/24/2026

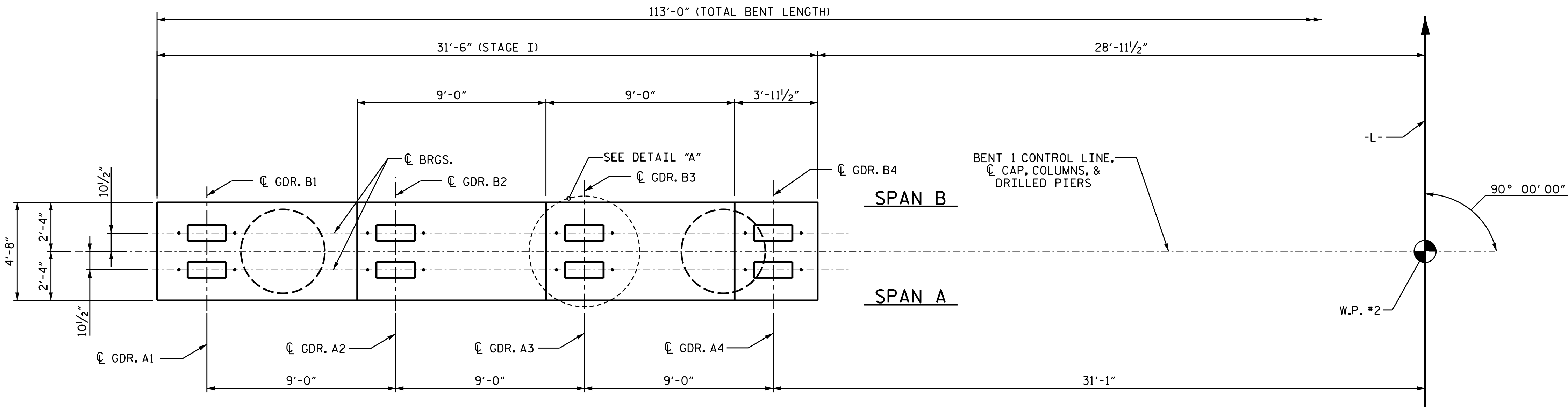
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

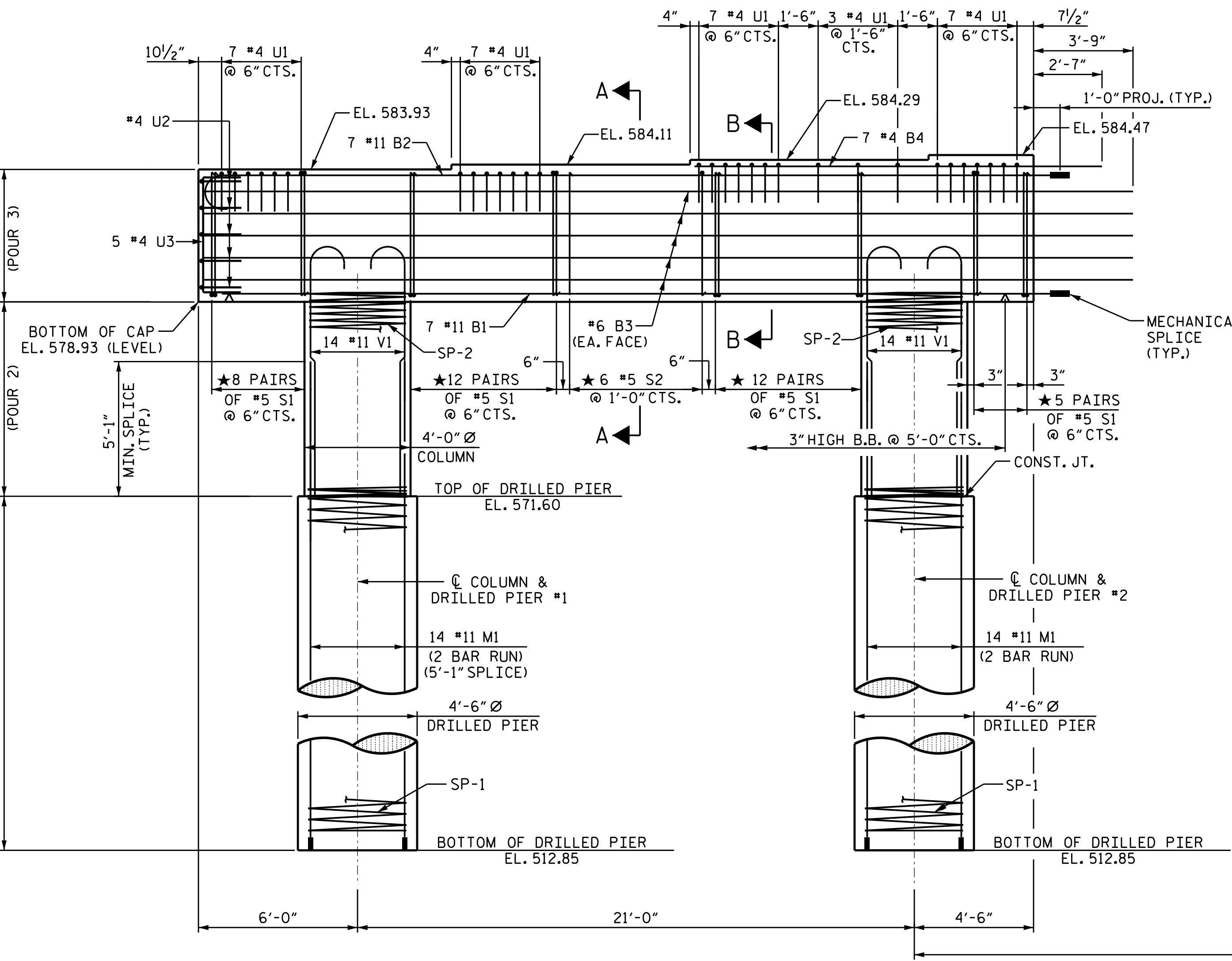
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE

END BENT 1  
DETAILS

| REVISIONS |    |      |     |    |      | SHEET NO.        |
|-----------|----|------|-----|----|------|------------------|
| NO.       | BY | DATE | NO. | BY | DATE |                  |
| 1         |    |      | 3   |    |      | S-62             |
| 2         |    |      | 4   |    |      | TOTAL SHEETS 100 |



PLAN



ELEVATION

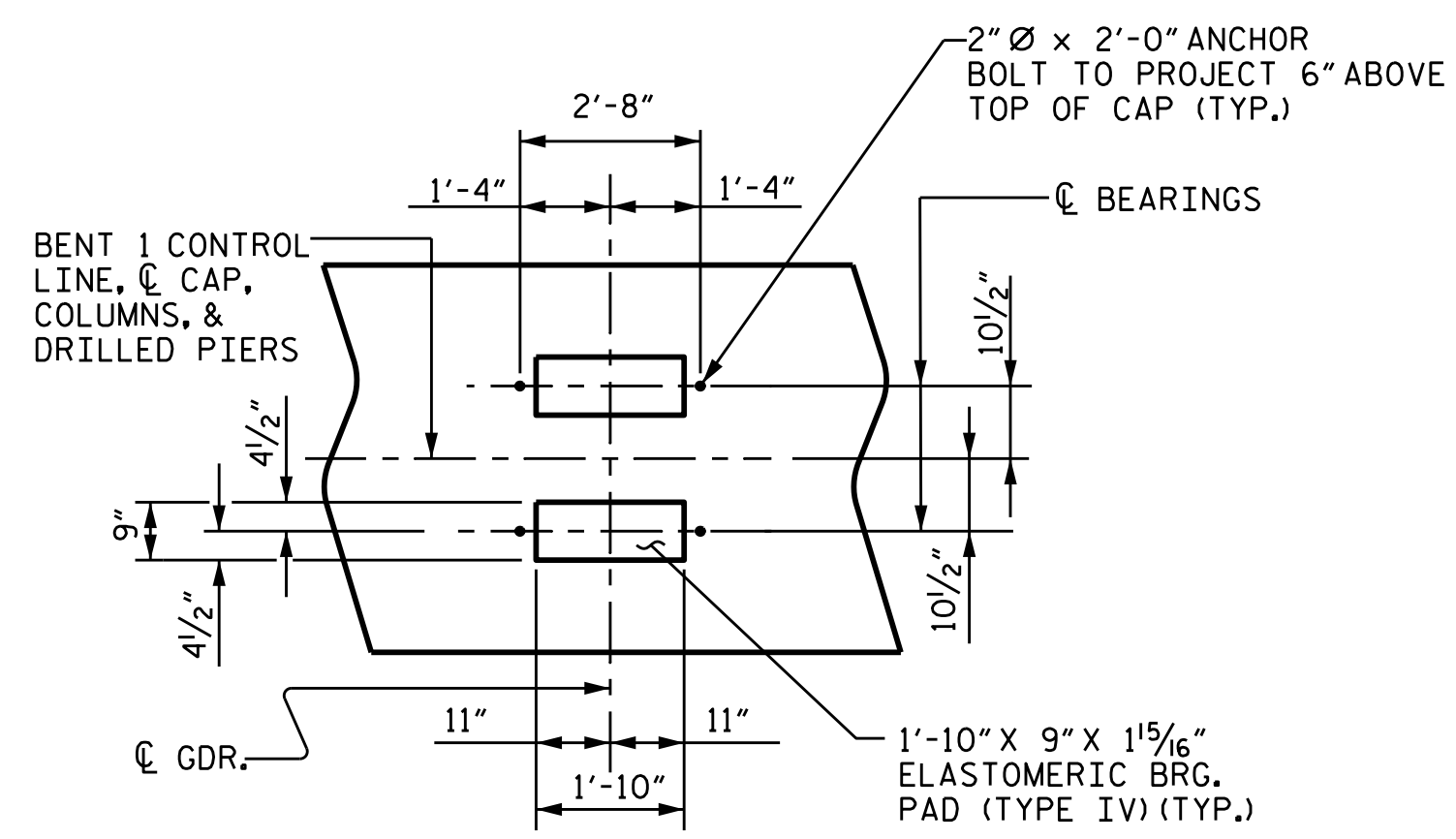
DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER EXCEPT AS NOTED

|                            |     |        |      |
|----------------------------|-----|--------|------|
| DRAWN BY :                 | NMW | DATE : | 7/20 |
| CHECKED BY :               | MGC | DATE : | 7/21 |
| DESIGN ENGINEER OF RECORD: | RDE | DATE : | 7/21 |

11/20/2025  
X:\NCDOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.129.U-6146.SMU.B101.350082.dgn  
User:ZSmith

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
- FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."
- ★ INVERT ALTERNATE STIRRUPS.
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.
- THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FOOT BELOW THE GROUND LINE.
- FOR SECTION A-A & B-B, SEE SHEET 2 OF 6.



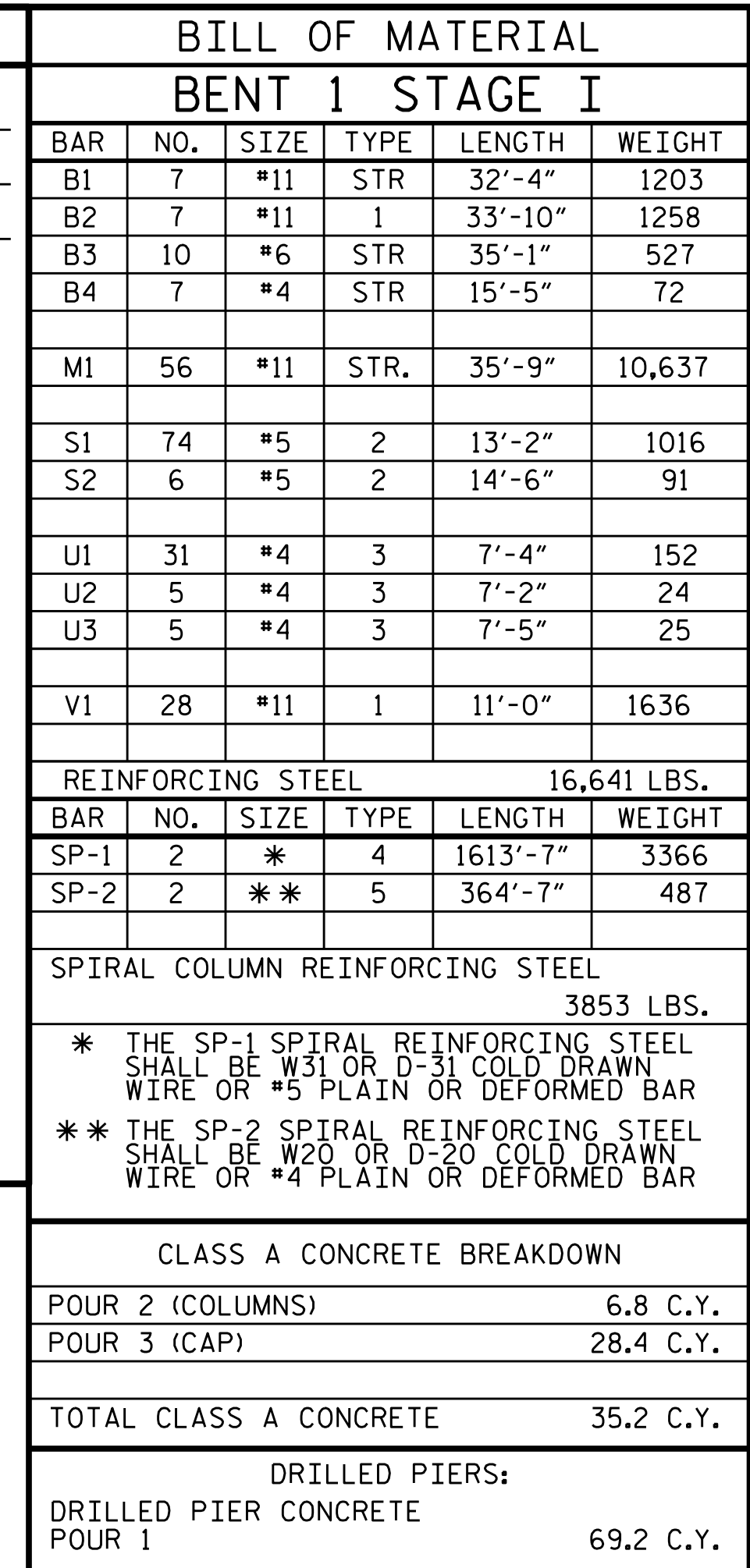
DETAIL "A"

DIMENSIONS ARE TYPICAL FOR EACH BEARING.

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00-L-

SHEET 1 OF 6

|                                                                                                                 |                                                                    |       |     |     |       |  |
|-----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|-------|-----|-----|-------|--|
| <p>2/24/2026</p>                                                                                                | STATE OF NORTH CAROLINA<br>DEPARTMENT OF TRANSPORTATION<br>RALEIGH |       |     |     |       |  |
|                                                                                                                 | SUBSTRUCTURE                                                       |       |     |     |       |  |
|                                                                                                                 | BENT 1<br>STAGE I                                                  |       |     |     |       |  |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                |                                                                    |       |     |     |       |  |
| TGS ENGINEERS<br>201 W. MARION ST STE 200<br>SHELBY, NC 28150<br>PH (704) 476-0003<br>CORP. LICENSE NO.: C-0275 |                                                                    |       |     |     |       |  |
| REVISIONS                                                                                                       |                                                                    |       |     |     |       |  |
| NO.                                                                                                             | BY:                                                                | DATE: | NO. | BY: | DATE: |  |
| 1                                                                                                               |                                                                    |       | 3   |     |       |  |
| 2                                                                                                               |                                                                    |       | 4   |     |       |  |
| SHEET NO.                                                                                                       |                                                                    |       |     |     |       |  |
| S-63                                                                                                            |                                                                    |       |     |     |       |  |
| TOTAL SHEETS                                                                                                    |                                                                    |       |     |     |       |  |
| 100                                                                                                             |                                                                    |       |     |     |       |  |



PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
 STATION: 32+93.00-L-

SHEET 2 OF 6

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

## SUBSTRUCTURE

BENT 1  
STAGE I

2/24/2026

A circular professional engineer seal for the State of North Carolina. The outer ring contains the text "NORTH CAROLINA" at the top and "PROFESSIONAL" at the bottom. In the center, it says "SEAL" and "20125". Below the seal, the name "MARSHALL G. CHEEK, JR." is written in a stylized font. To the left of the name is a blue bracketed area containing the word "Signed" and a signature. Below the name is the text "REGISTERED IN:".

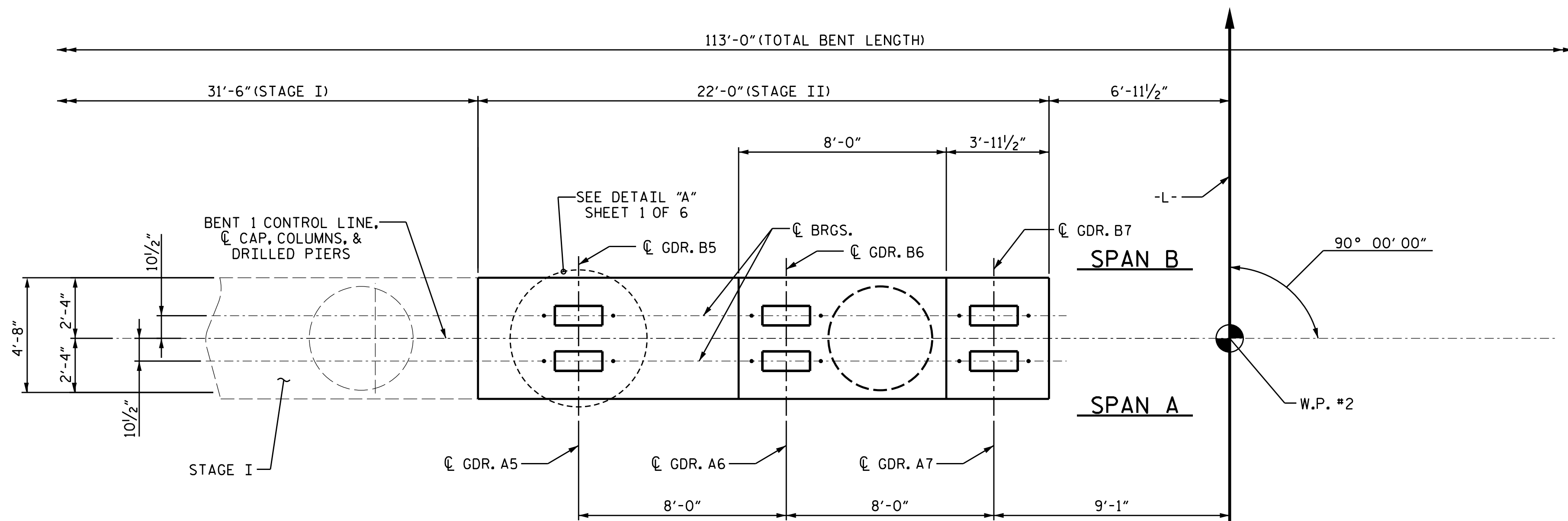
**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

**TGS ENGINEERS**  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

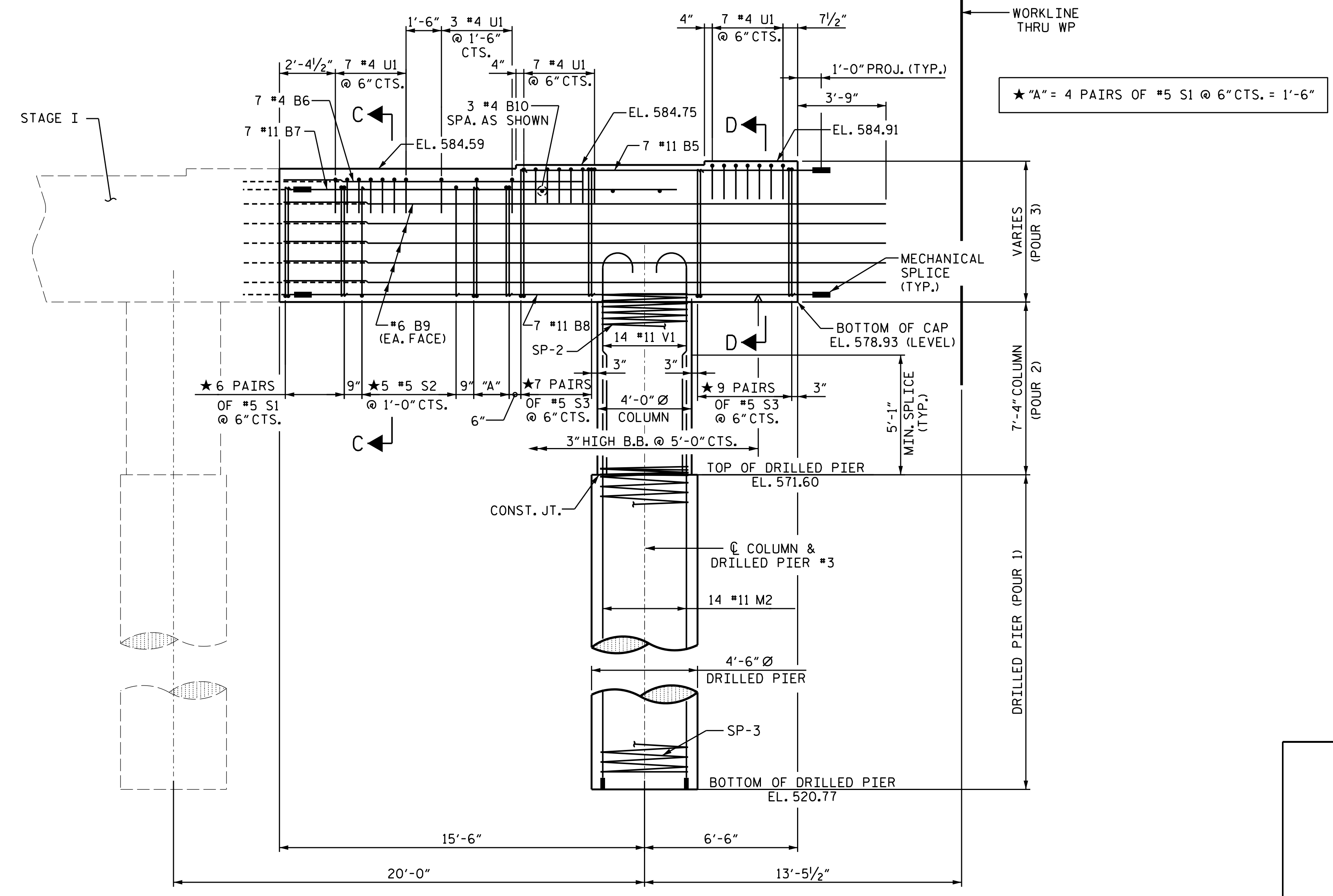
| REVISIONS |     |       |     |     |       | SHEET NO.<br><br>S-64  |
|-----------|-----|-------|-----|-----|-------|------------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                        |
| 1         |     |       | 3   |     |       | TOTAL<br>SHEETS<br>100 |
| 2         |     |       | 4   |     |       |                        |

DRAWN BY : \_\_\_\_\_ NMW \_\_\_\_\_ DATE : 7/20  
 CHECKED BY : \_\_\_\_\_ MGC \_\_\_\_\_ DATE : 7/21  
 DESIGN ENGINEER OF RECORD: \_\_\_\_\_ RDE \_\_\_\_\_ DATE : 7/21

11/12/2025  
X:\NCDOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.131.U-6146-SMU.B102.350082.dgn  
User:smassinople



PLAN



ELEVATION

NOTES

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

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

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

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

★ INVERT ALTERNATE STIRRUPS.

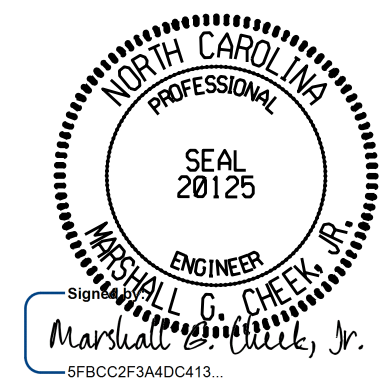
THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.

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

FOR SECTION C-C & D-D, SEE SHEET 4 OF 6.

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00-L-

SHEET 3 OF 6



2/24/2026

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE

BENT 1  
STAGE II

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

| REVISIONS |     |       |     |     |       | SHEET NO.        |
|-----------|-----|-------|-----|-----|-------|------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                  |
| 1         |     |       | 3   |     |       | S-65             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 100 |

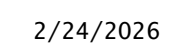
DRAWN BY : NMW DATE : 7/20  
CHECKED BY : MGC DATE : 7/21  
DESIGN ENGINEER OF RECORD: RDE DATE : 7/21



PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
 STATION: 32+93.00-L-

BENT 1  
STAGE II

|           |     |       |     |     |       |              |
|-----------|-----|-------|-----|-----|-------|--------------|
| REVISIONS |     |       |     |     |       | SHEET NO.    |
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-66         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 100          |



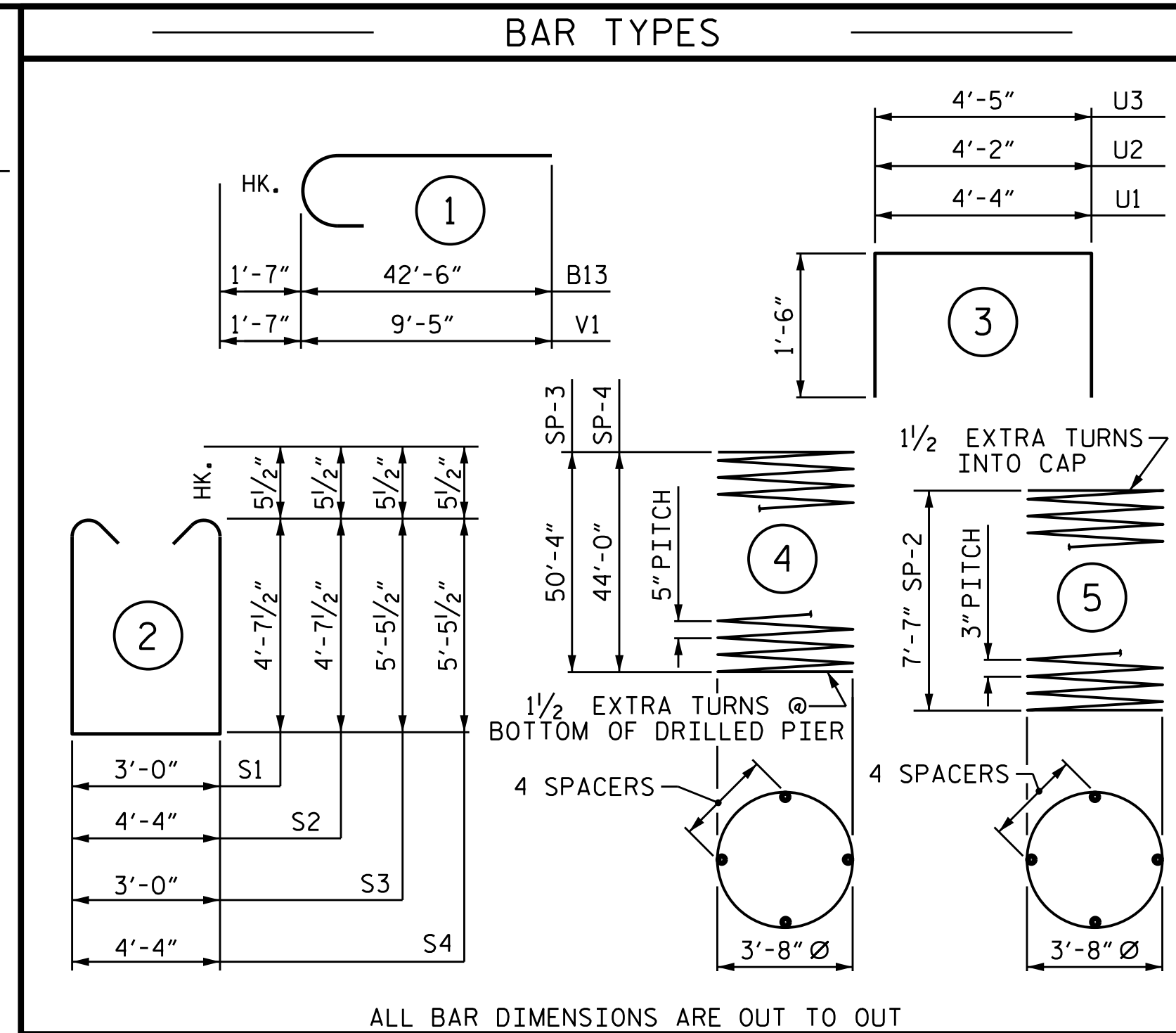
**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

**TGS ENGINEERS**  
201 W. MARION ST STE 20  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-027

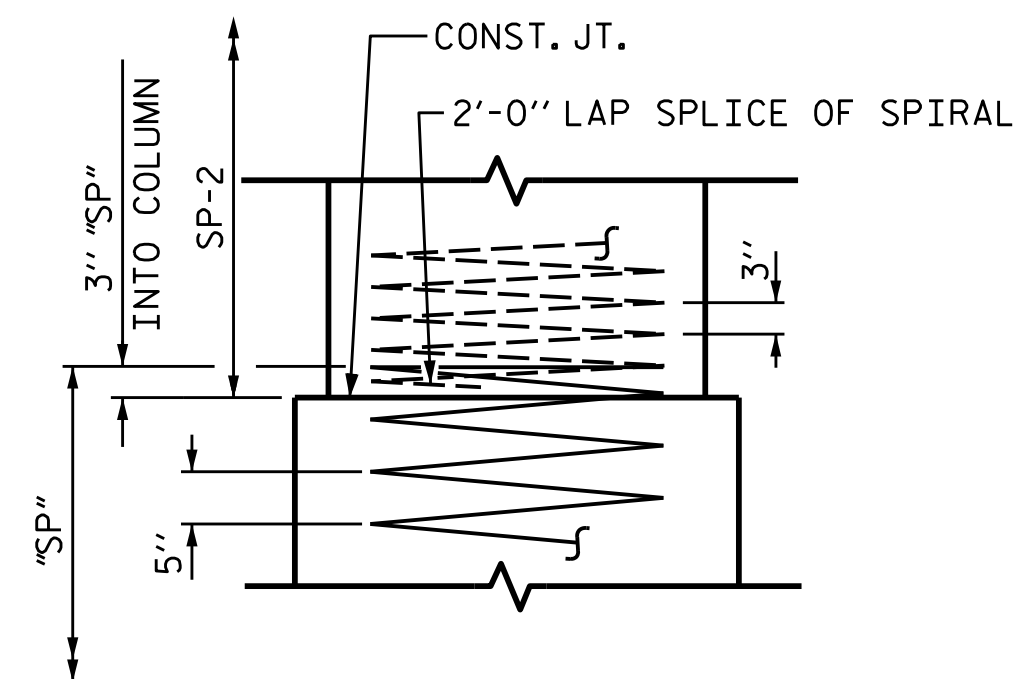
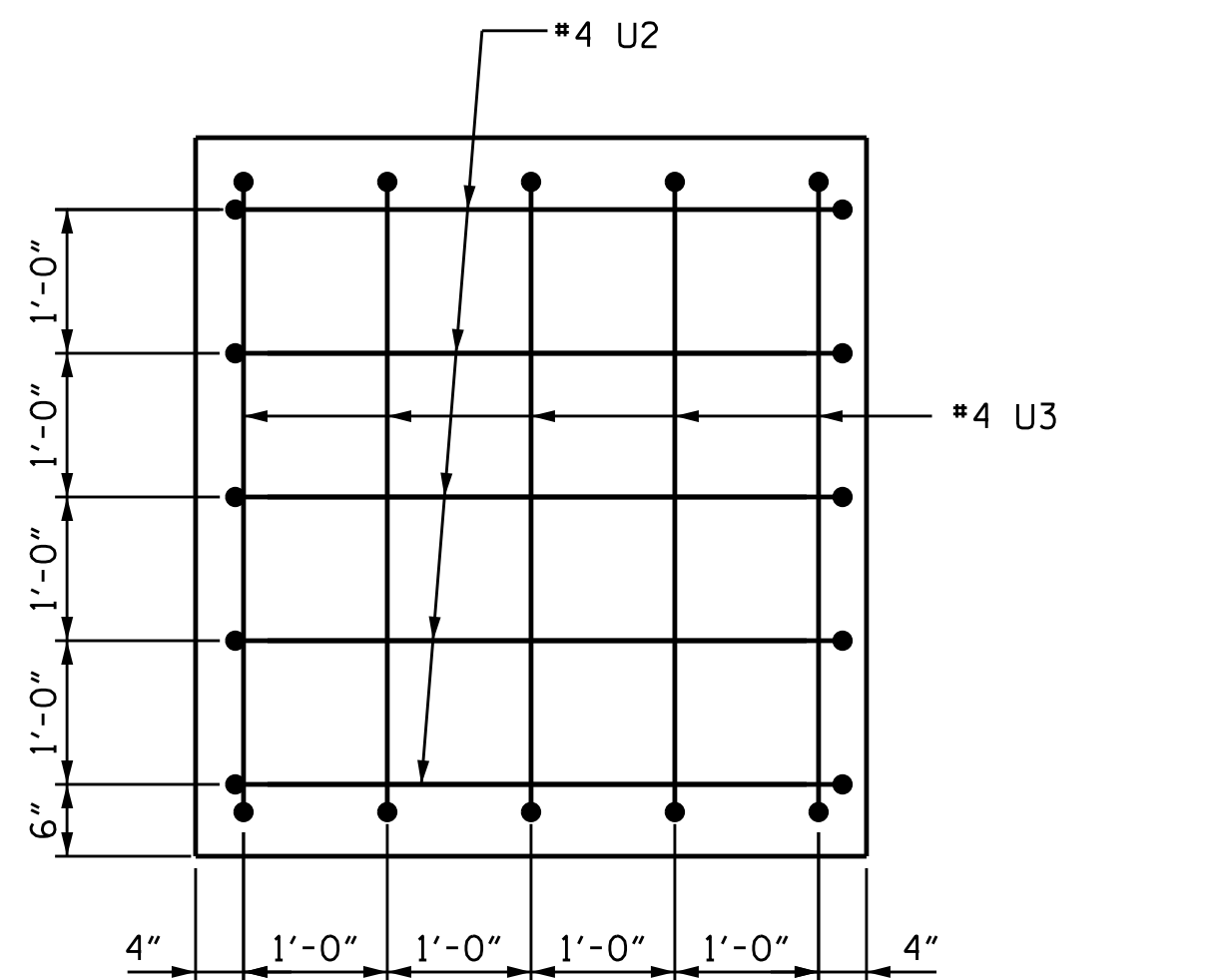
DRAWN BY : \_\_\_\_\_ NMW \_\_\_\_\_ DATE : 7/20  
CHECKED BY : \_\_\_\_\_ MGC \_\_\_\_\_ DATE : 7/21  
DESIGN ENGINEER OF RECORD: \_\_\_\_\_ RDE \_\_\_\_\_ DATE : 7/21

11/12/2025  
X:\NCDOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.135.U-6146-SMU-B104\_350082.dgn  
User: smassinople

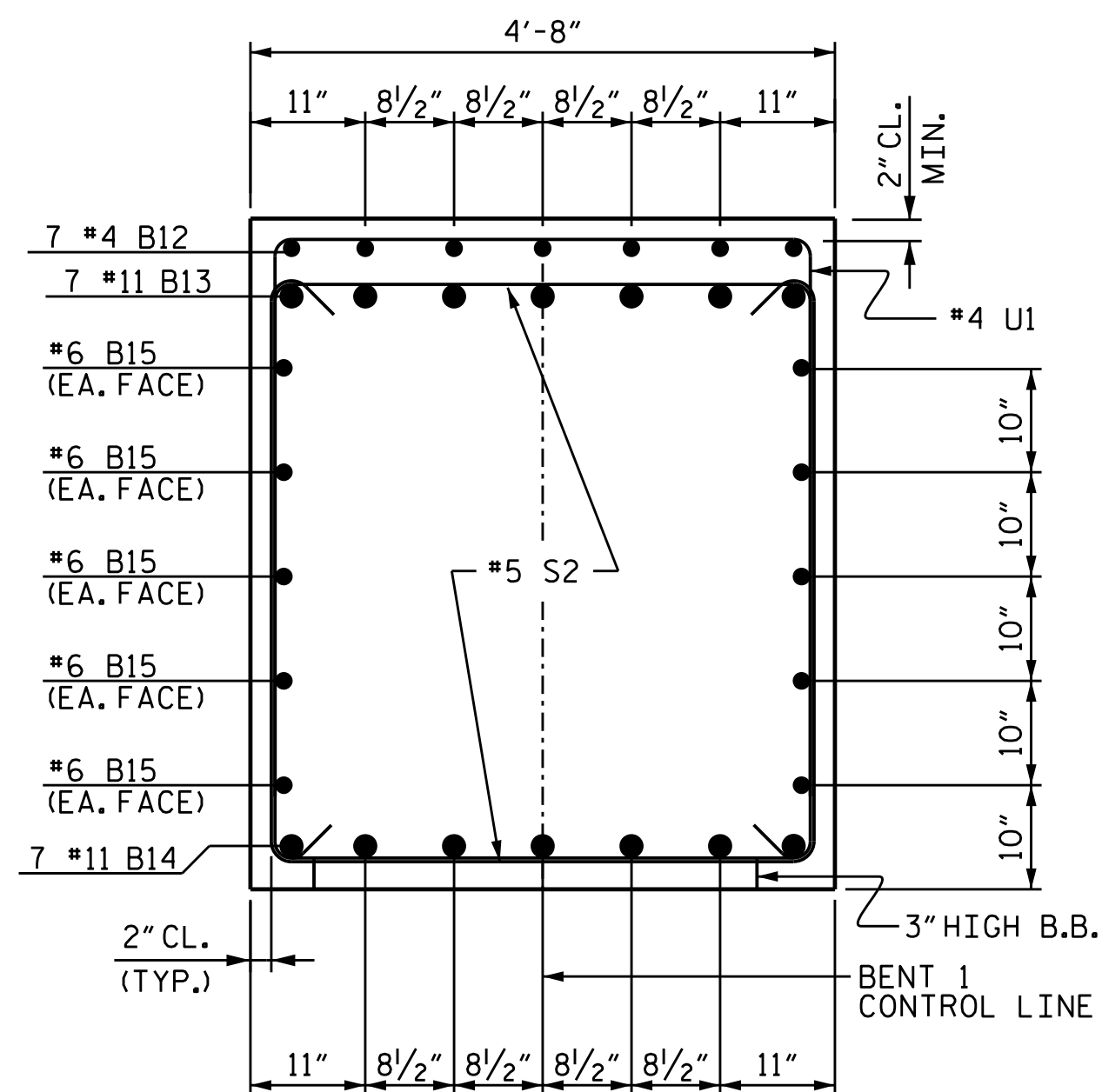
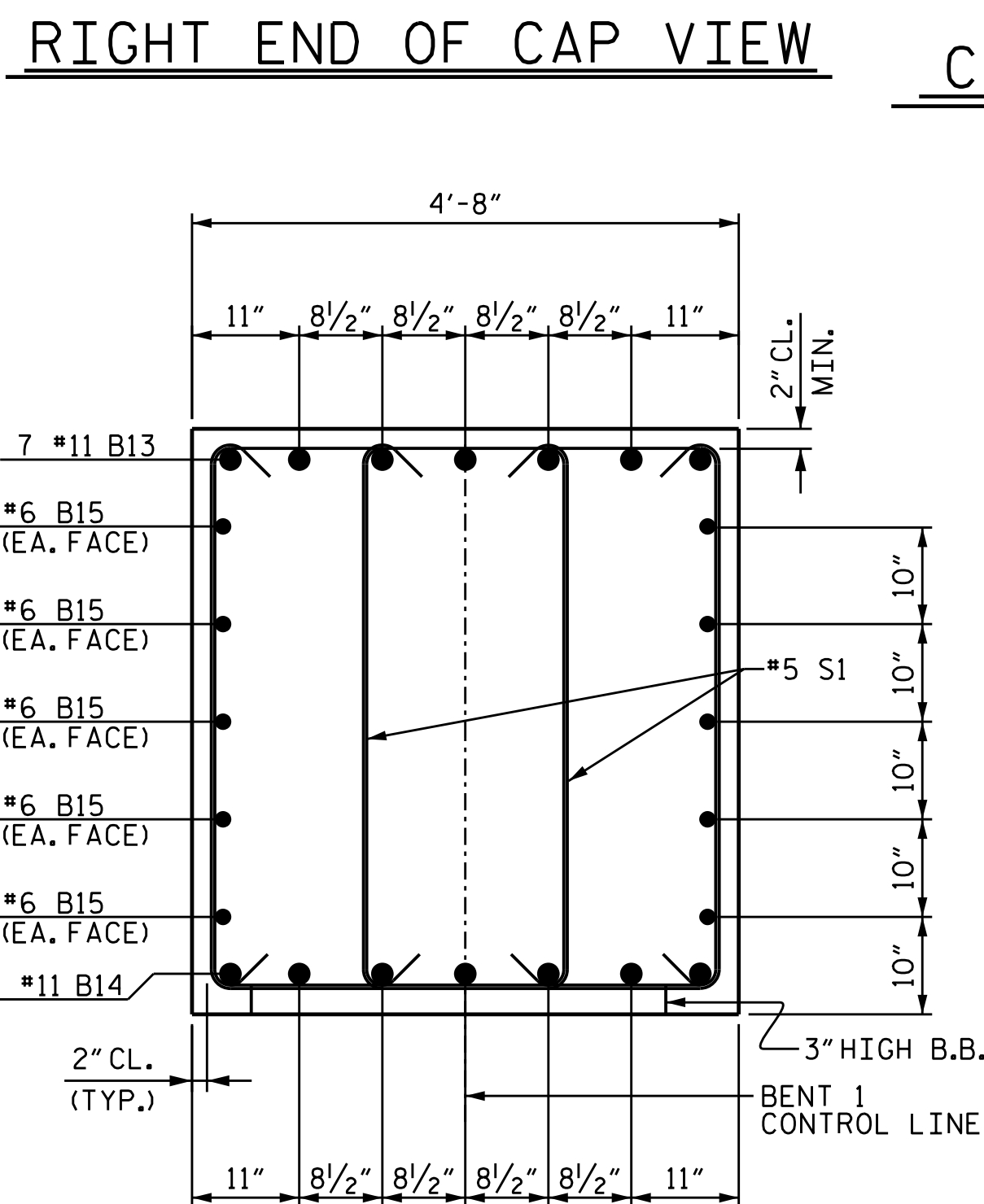




| BILL OF MATERIAL                                                                                                                                                                                                    |     |      |      |             |        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------|------|-------------|--------|
| BENT 1 STAGE III                                                                                                                                                                                                    |     |      |      |             |        |
| BAR                                                                                                                                                                                                                 | NO. | SIZE | TYPE | LENGTH      | WEIGHT |
| B10                                                                                                                                                                                                                 | 3   | #4   | STR. | 4'-4"       | 9      |
| B11                                                                                                                                                                                                                 | 7   | #11  | STR  | 22'-3"      | 827    |
| B12                                                                                                                                                                                                                 | 7   | #4   | STR  | 26'-6"      | 124    |
| B13                                                                                                                                                                                                                 | 7   | #11  | 1    | 44'-1"      | 1640   |
| B14                                                                                                                                                                                                                 | 7   | #11  | STR  | 58'-3"      | 2166   |
| B15                                                                                                                                                                                                                 | 10  | #6   | STR  | 59'-2"      | 889    |
|                                                                                                                                                                                                                     |     |      |      |             |        |
| M2                                                                                                                                                                                                                  | 14  | #11  | STR. | 58'-5"      | 4345   |
| M3                                                                                                                                                                                                                  | 28  | #11  | STR. | 52'-1"      | 7748   |
|                                                                                                                                                                                                                     |     |      |      |             |        |
| S1                                                                                                                                                                                                                  | 88  | #5   | 2    | 13'-2"      | 1208   |
| S2                                                                                                                                                                                                                  | 8   | #5   | 2    | 14'-6"      | 121    |
| S3                                                                                                                                                                                                                  | 52  | #5   | 2    | 14'-10"     | 804    |
| S4                                                                                                                                                                                                                  | 7   | #5   | 2    | 16'-2"      | 118    |
|                                                                                                                                                                                                                     |     |      |      |             |        |
| U1                                                                                                                                                                                                                  | 58  | #4   | 3    | 7'-4"       | 284    |
| U2                                                                                                                                                                                                                  | 5   | #4   | 3    | 7'-2"       | 24     |
| U3                                                                                                                                                                                                                  | 5   | #4   | 3    | 7'-5"       | 25     |
|                                                                                                                                                                                                                     |     |      |      |             |        |
| V1                                                                                                                                                                                                                  | 42  | #11  | 1    | 11'-0"      | 2455   |
|                                                                                                                                                                                                                     |     |      |      |             |        |
| REINFORCING STEEL                                                                                                                                                                                                   |     |      |      | 22,787 LBS. |        |
| BAR                                                                                                                                                                                                                 | NO. | SIZE | TYPE | LENGTH      | WEIGHT |
| SP-3                                                                                                                                                                                                                | 1   | *    | 4    | 1397'-9"    | 1458   |
| SP-4                                                                                                                                                                                                                | 2   | *    | 4    | 1227'-3"    | 2560   |
| SP-2                                                                                                                                                                                                                | 3   | **   | 5    | 364'-7"     | 731    |
| SPIRAL COLUMN REINFORCING STEEL                                                                                                                                                                                     |     |      |      | 4749 LBS.   |        |
| * THE SP-3, SP-4 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR<br>** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR |     |      |      |             |        |
| CLASS A CONCRETE BREAKDOWN                                                                                                                                                                                          |     |      |      |             |        |
| POUR 2 (COLUMNS)                                                                                                                                                                                                    |     |      |      | 10.2 C.Y.   |        |
| POUR 3 (CAP)                                                                                                                                                                                                        |     |      |      | 58.1 C.Y.   |        |
| TOTAL CLASS A CONCRETE                                                                                                                                                                                              |     |      |      | 68.3 C.Y.   |        |
| DRILLED PIERS:<br>DRILLED PIER CONCRETE<br>POUR 1                                                                                                                                                                   |     |      |      |             |        |
|                                                                                                                                                                                                                     |     |      |      | 82.4 C.Y.   |        |



| TOTAL BENT 1 QUANTITIES         |            |
|---------------------------------|------------|
| REINFORCING STEEL               | 47,827 LBS |
| SPIRAL COLUMN REINFORCING STEEL | 10,304 LBS |
| CLASS A CONCRETE                | 128.9 CY   |



PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
 STATION: 32+93.00-L-

SHEET 6 OF 6



2/24/2026

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

## SUBSTRUCTURE

BENT 1  
STAGE III

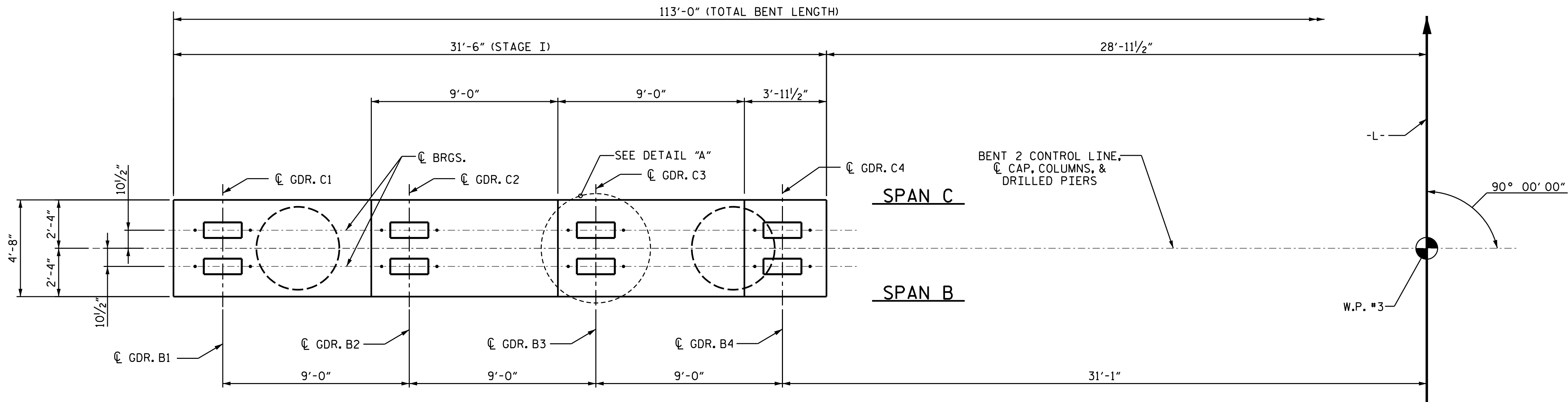
| REVISIONS |     |       |     |     |       | SHEET NO.<br><br>S-68<br><br>TOTAL<br>SHEETS<br>100 |
|-----------|-----|-------|-----|-----|-------|-----------------------------------------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                                                     |
| 1         |     |       | 3   |     |       |                                                     |
| 2         |     |       | 4   |     |       |                                                     |

DRAWN BY :                     NMW                     DATE :     7/20      
 CHECKED BY :                     MGC                     DATE :     7/21      
 DESIGN ENGINEER OF RECORD:                     RDE                     DATE :     7/21    

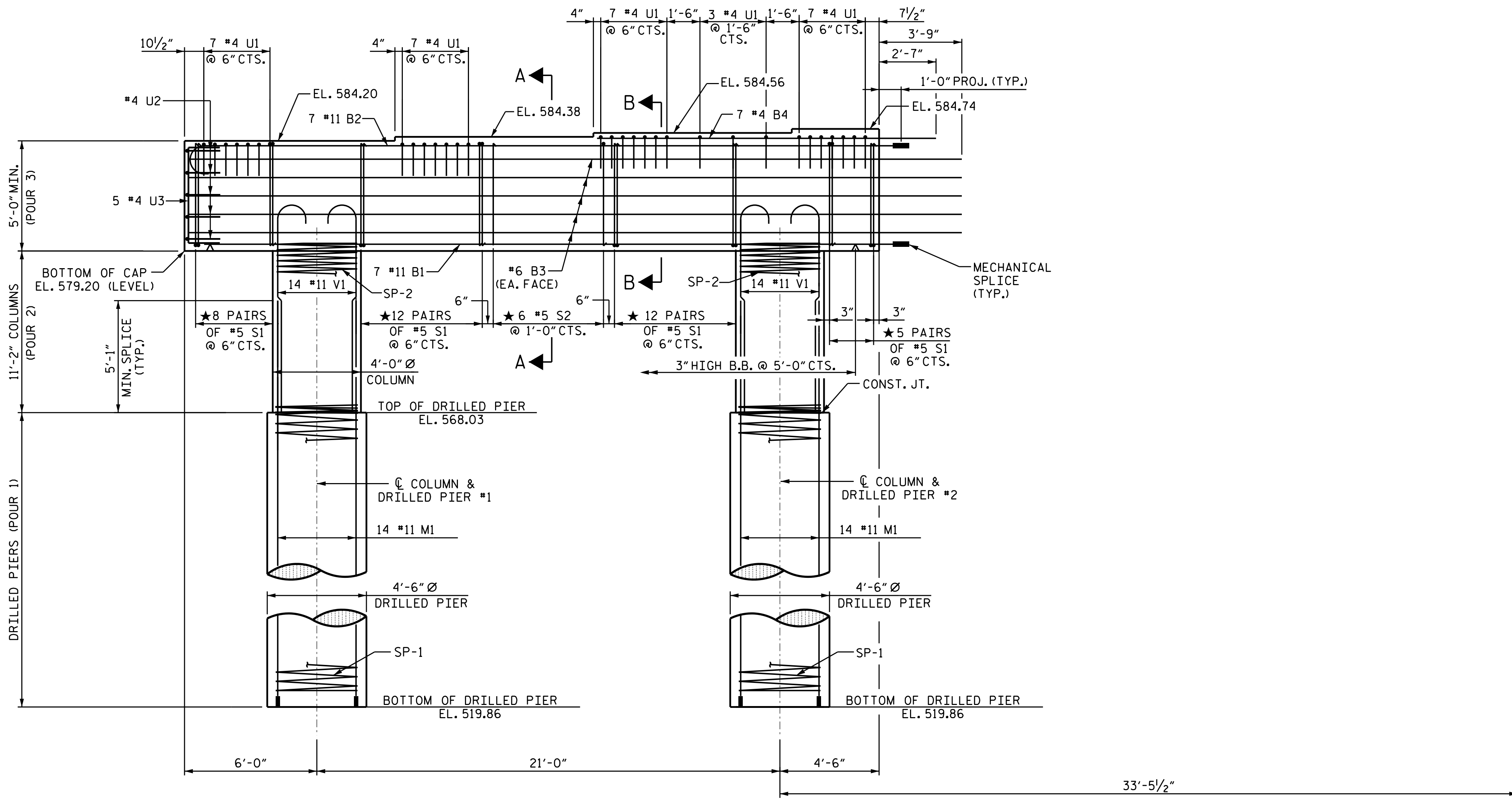
11/20/2025  
X:\NCDOT\B-5857 Cramer ton\Structures\Final DGN\Final DGN\401\_139\_U-6146\_SMU.B106\_350082.dgn  
User:ZSmith

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

**TGS ENGINEERS**  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0279



PLAN

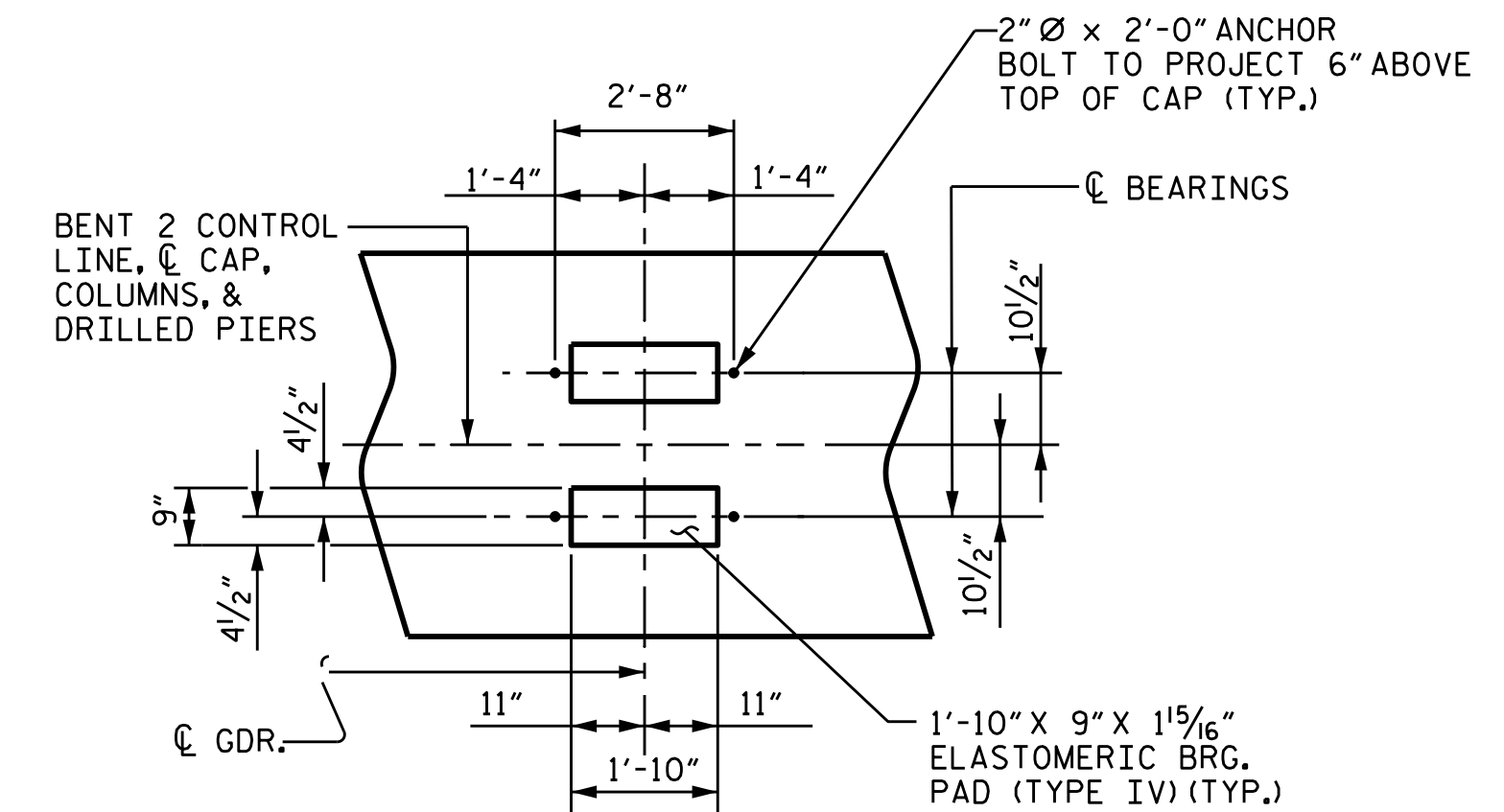


ELEVATION

DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER EXCEPT AS NOTED

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
- FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."
- ★ INVERT ALTERNATE STIRRUPS.
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.
- FOR SECTION A-A & B-B SEE, SHEET 2 OF 6.



DETAIL "A"

DIMENSIONS ARE TYPICAL FOR EACH BEARING.

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00-L-

SHEET 1 OF 6



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

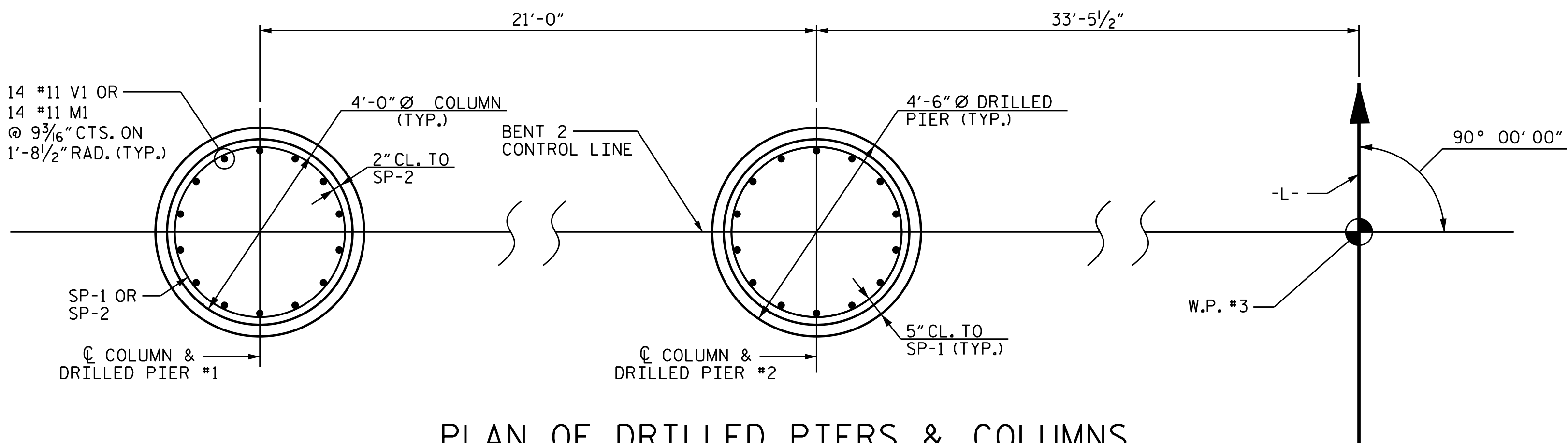
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE

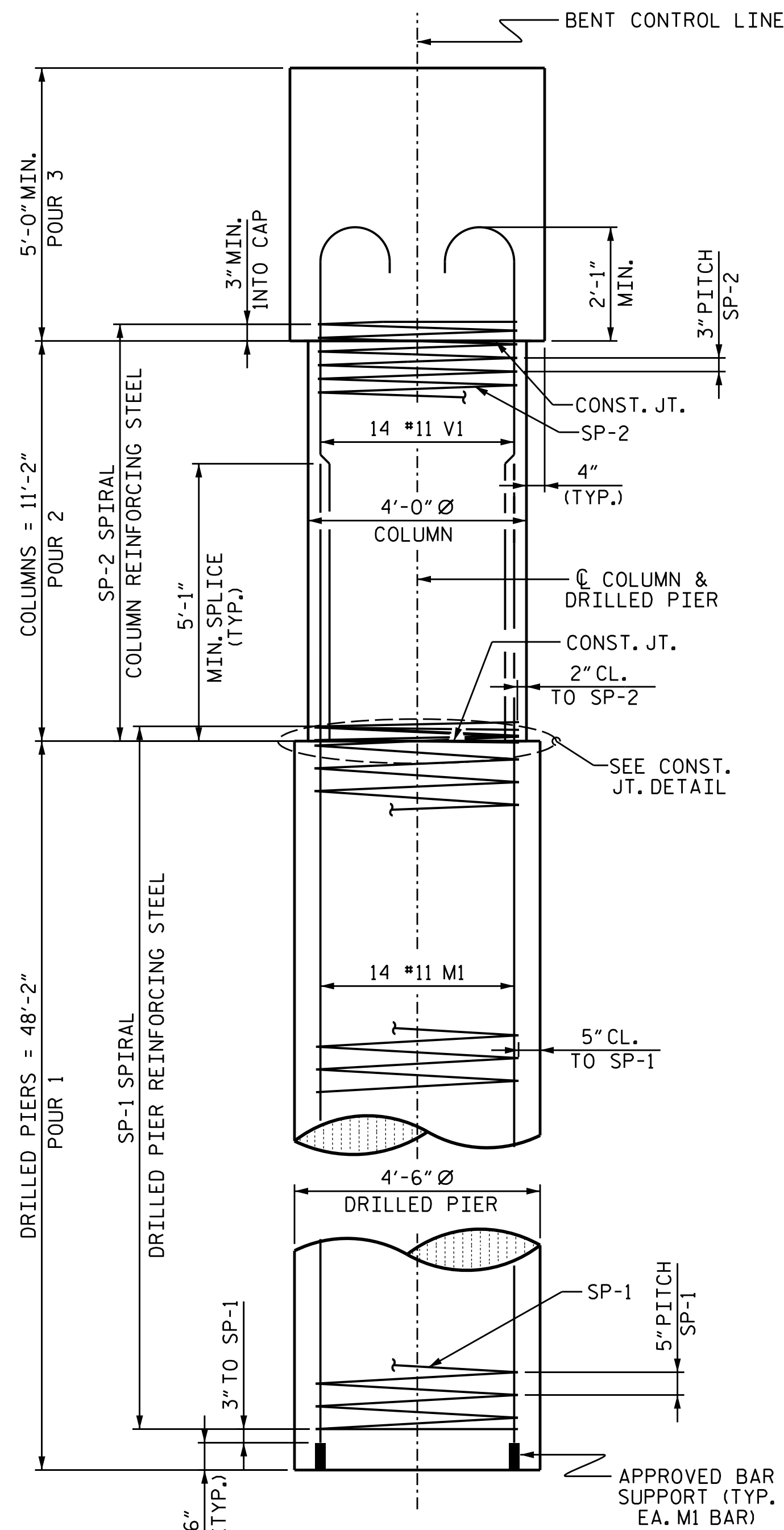
BENT 2  
STAGE I

| REVISIONS |     |       |     |     |       | SHEET NO.        |
|-----------|-----|-------|-----|-----|-------|------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                  |
| 1         |     |       | 3   |     |       | S-69             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 100 |

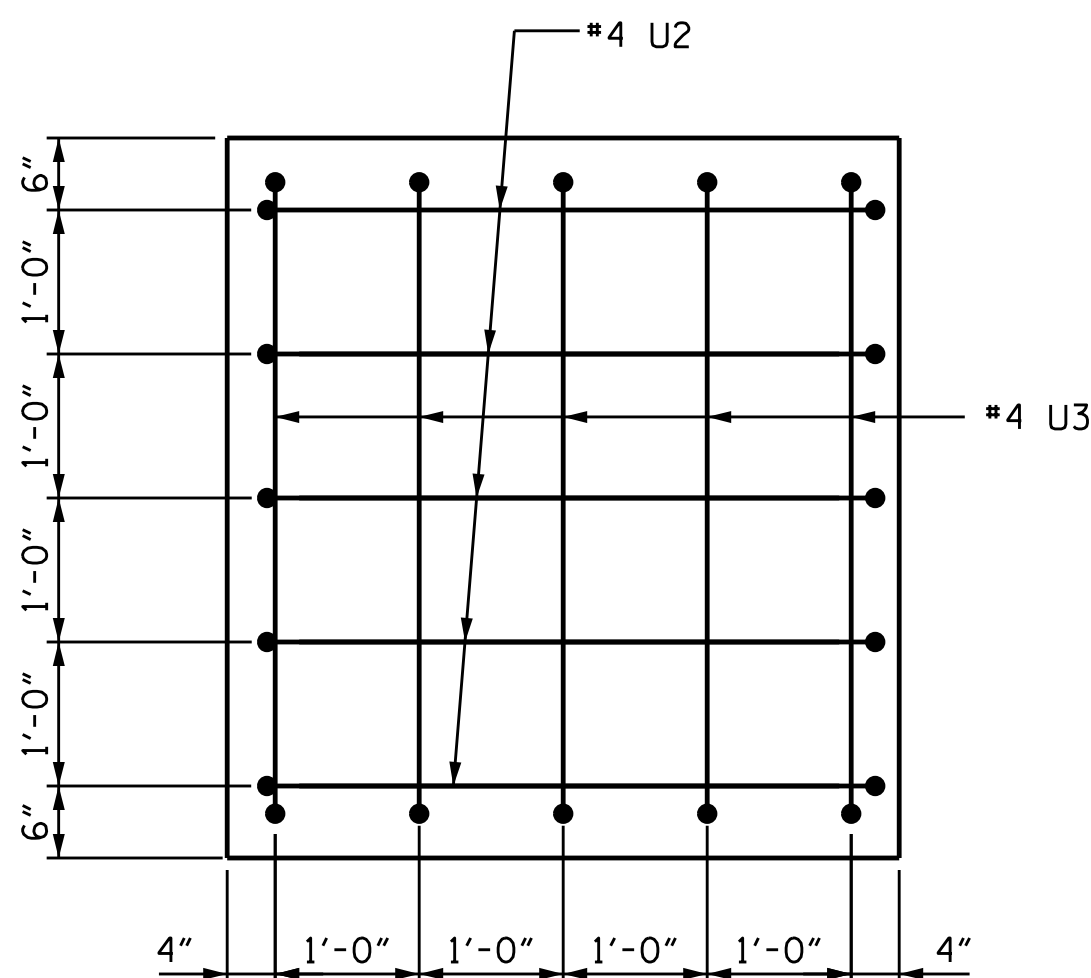
DRAWN BY : NMW DATE : 7/20  
CHECKED BY : MGC DATE : 7/21  
DESIGN ENGINEER OF RECORD: RDE DATE : 7/21



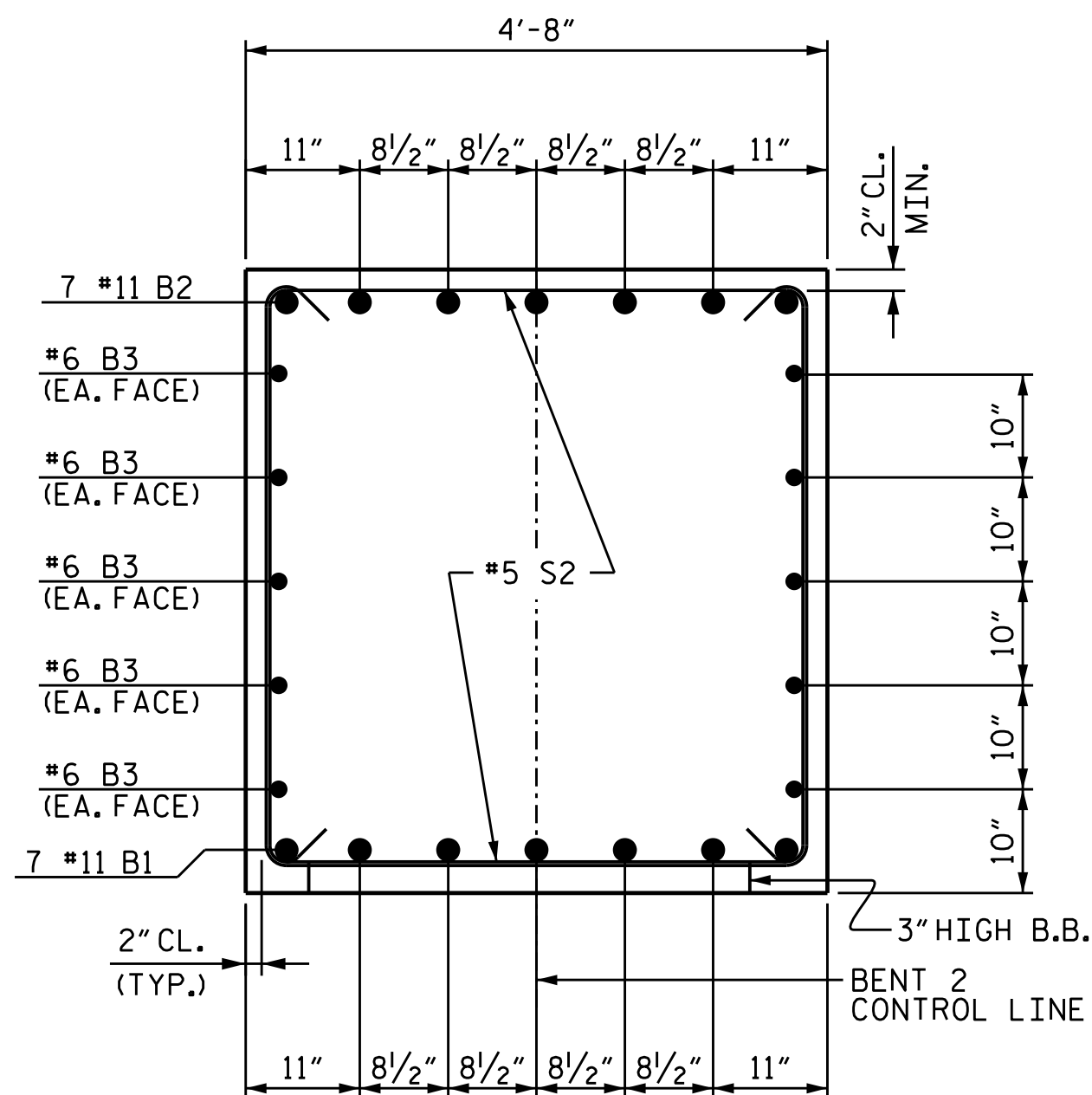
PLAN OF DRILLED PIERS & COLUMNS



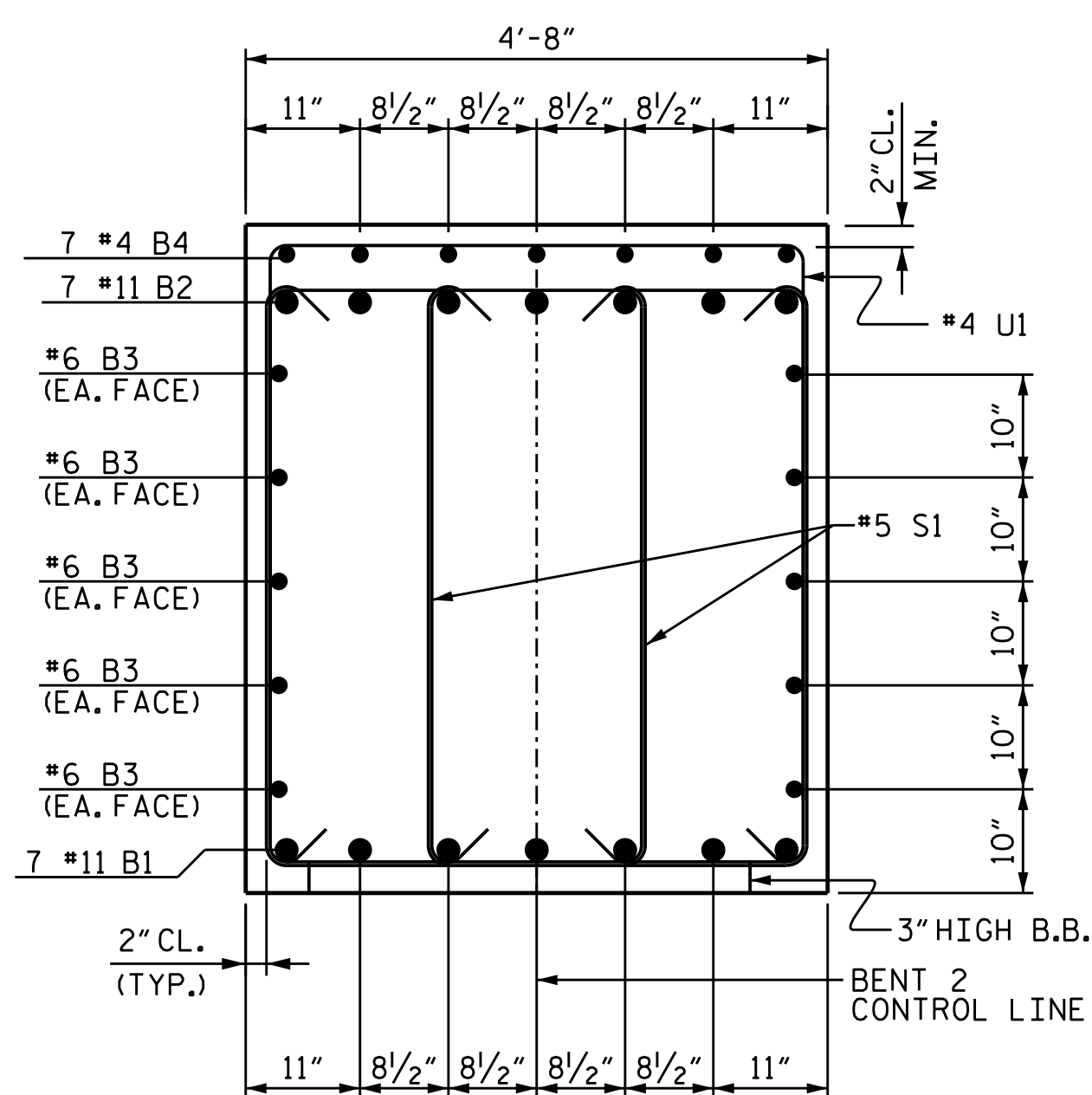
END ELEVATION



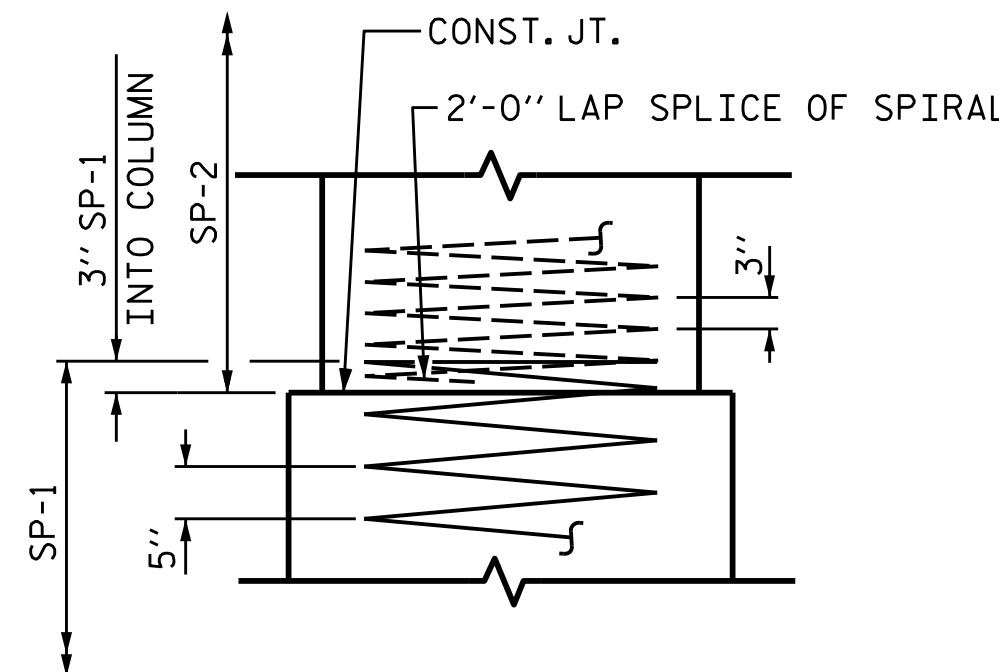
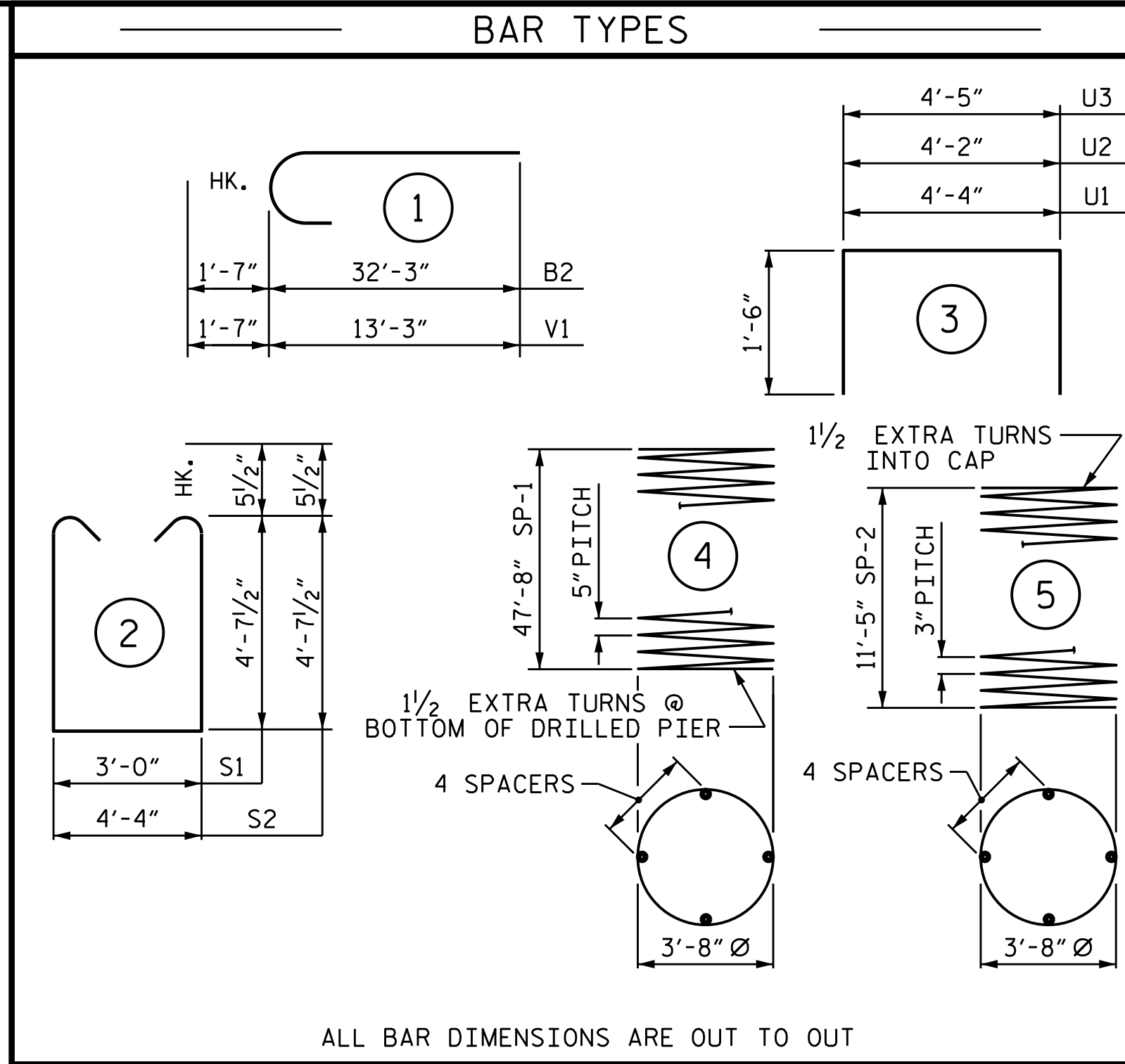
LEFT END OF CAP VIEW



SECTION A-A



SECTION B-B

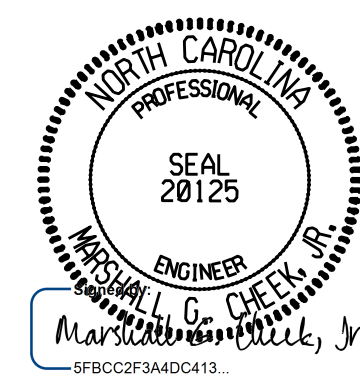


CONSTRUCTION JOINT DETAIL

| BILL OF MATERIAL                                                                                      |     |      |      |             |        |
|-------------------------------------------------------------------------------------------------------|-----|------|------|-------------|--------|
| BENT 2 STAGE I                                                                                        |     |      |      |             |        |
| BAR                                                                                                   | NO. | SIZE | TYPE | LENGTH      | WEIGHT |
| B1                                                                                                    | 7   | #11  | STR  | 32'-4"      | 1203   |
| B2                                                                                                    | 7   | #11  | 1    | 33'-10"     | 1258   |
| B3                                                                                                    | 10  | #6   | STR  | 35'-1"      | 527    |
| B4                                                                                                    | 7   | #4   | STR  | 15'-5"      | 72     |
|                                                                                                       |     |      |      |             |        |
| M1                                                                                                    | 28  | #11  | STR. | 55'-9"      | 8294   |
|                                                                                                       |     |      |      |             |        |
| S1                                                                                                    | 74  | #5   | 2    | 13'-2"      | 1016   |
| S2                                                                                                    | 6   | #5   | 2    | 14'-6"      | 91     |
|                                                                                                       |     |      |      |             |        |
| U1                                                                                                    | 31  | #4   | 3    | 7'-4"       | 152    |
| U2                                                                                                    | 5   | #4   | 3    | 7'-2"       | 24     |
| U3                                                                                                    | 5   | #4   | 3    | 7'-5"       | 25     |
|                                                                                                       |     |      |      |             |        |
| V1                                                                                                    | 28  | #11  | 1    | 14'-10"     | 2207   |
|                                                                                                       |     |      |      |             |        |
| REINFORCING STEEL                                                                                     |     |      |      | 14,869 LBS. |        |
| BAR                                                                                                   | NO. | SIZE | TYPE | LENGTH      | WEIGHT |
| SP-1                                                                                                  | 2   | *    | 4    | 1318'-2"    | 2750   |
| SP-2                                                                                                  | 2   | **   | 5    | 546'-10"    | 731    |
|                                                                                                       |     |      |      |             |        |
| SPIRAL COLUMN REINFORCING STEEL                                                                       |     |      |      | 3481 LBS.   |        |
| * THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR  |     |      |      |             |        |
| ** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR |     |      |      |             |        |
|                                                                                                       |     |      |      |             |        |
| CLASS A CONCRETE BREAKDOWN                                                                            |     |      |      |             |        |
| POUR 2 (COLUMNS)                                                                                      |     |      |      | 10.4 C.Y.   |        |
| POUR 3 (CAP)                                                                                          |     |      |      | 28.4 C.Y.   |        |
| TOTAL CLASS A CONCRETE                                                                                |     |      |      | 38.8 C.Y.   |        |
| DRILLED PIERS:                                                                                        |     |      |      |             |        |
| DRILLED PIER CONCRETE POUR 1                                                                          |     |      |      | 56.7 C.Y.   |        |

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00-L-

SHEET 2 OF 6



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

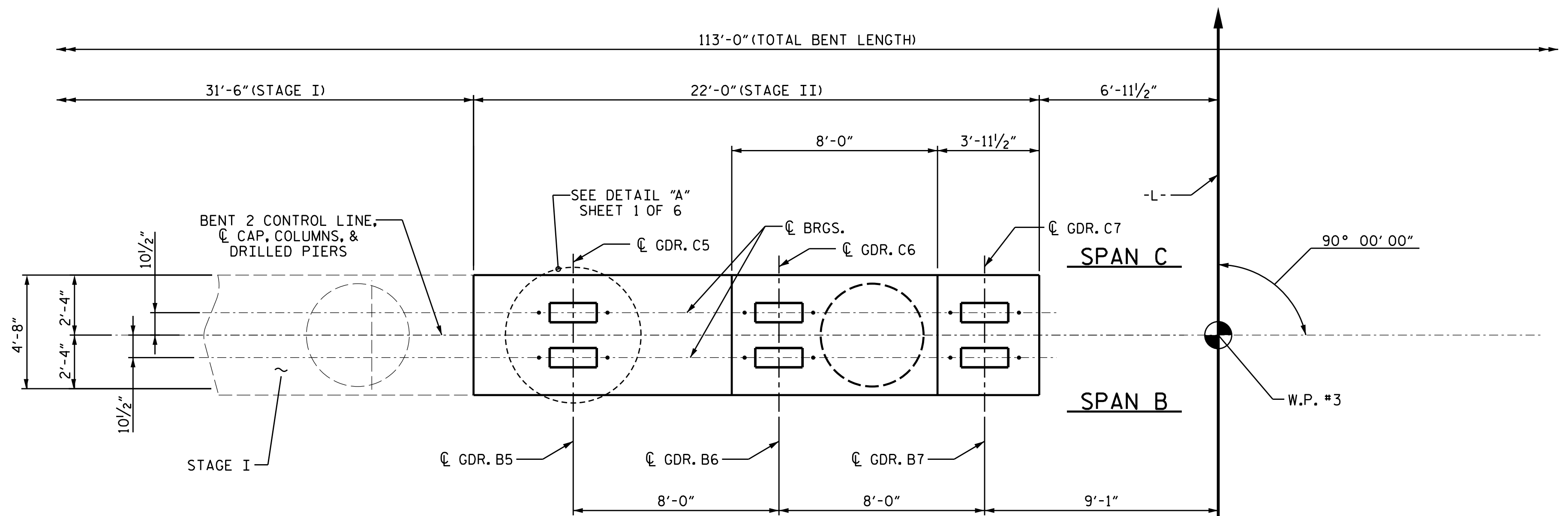
SUBSTRUCTURE

BENT 2  
STAGE I

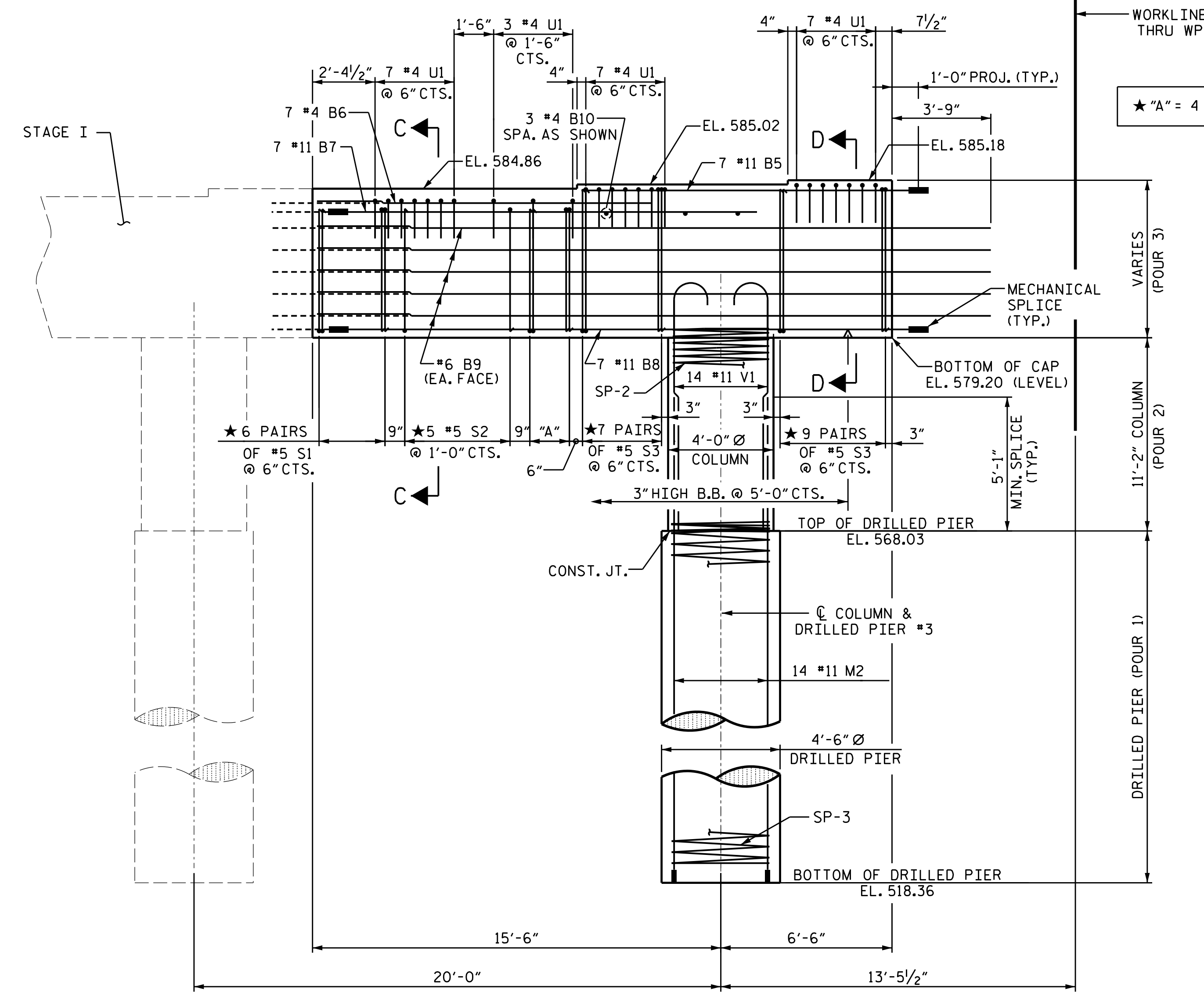
| REVISIONS |     |       |     |     |       | SHEET NO.        |
|-----------|-----|-------|-----|-----|-------|------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                  |
| 1         |     |       | 3   |     |       | S-70             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 100 |

DRAWN BY : NMW DATE : 7/20  
CHECKED BY : MGC DATE : 7/21  
DESIGN ENGINEER OF RECORD: RDE DATE : 7/21

11/12/2025  
X:\NCDOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.143.U-6146.SMU.B202.350082.dgn  
User:smasinnople



PLAN



ELEVATION

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
- FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."
- ★ INVERT ALTERNATE STIRRUPS.
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.
- FOR SECTION C-C & D-D SEE, SHEET 4 OF 6.

★ "A" = 4 PAIRS OF #5 S1 @ 6" CTS. = 1'-6"

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00-L-

SHEET 3 OF 6



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE  
BENT 2  
STAGE II

| REVISIONS |     |       |     |     |       | SHEET NO.        |
|-----------|-----|-------|-----|-----|-------|------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                  |
| 1         |     |       | 3   |     |       | S-71             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 100 |

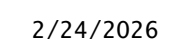
|                            |     |        |      |
|----------------------------|-----|--------|------|
| DRAWN BY :                 | NMW | DATE : | 7/20 |
| CHECKED BY :               | MGC | DATE : | 7/21 |
| DESIGN ENGINEER OF RECORD: | RDE | DATE : | 7/21 |



PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
 STATION: 32+93.00-L-

BENT 2  
STAGE II

|           |     |       |     |     |       |                        |
|-----------|-----|-------|-----|-----|-------|------------------------|
| REVISIONS |     |       |     |     |       | SHEET NO.<br><br>S-72  |
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                        |
| 1         |     |       | 3   |     |       | TOTAL<br>SHEETS<br>100 |
| 2         |     |       | 4   |     |       |                        |



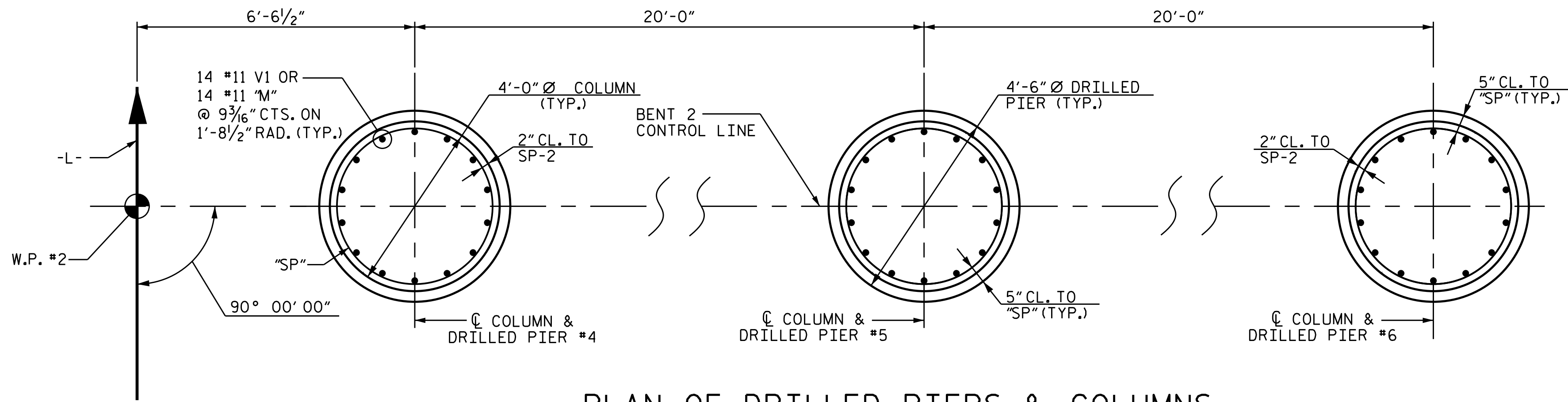
**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

**TGS ENGINEERS**  
201 W. MARION ST STE 20  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-027

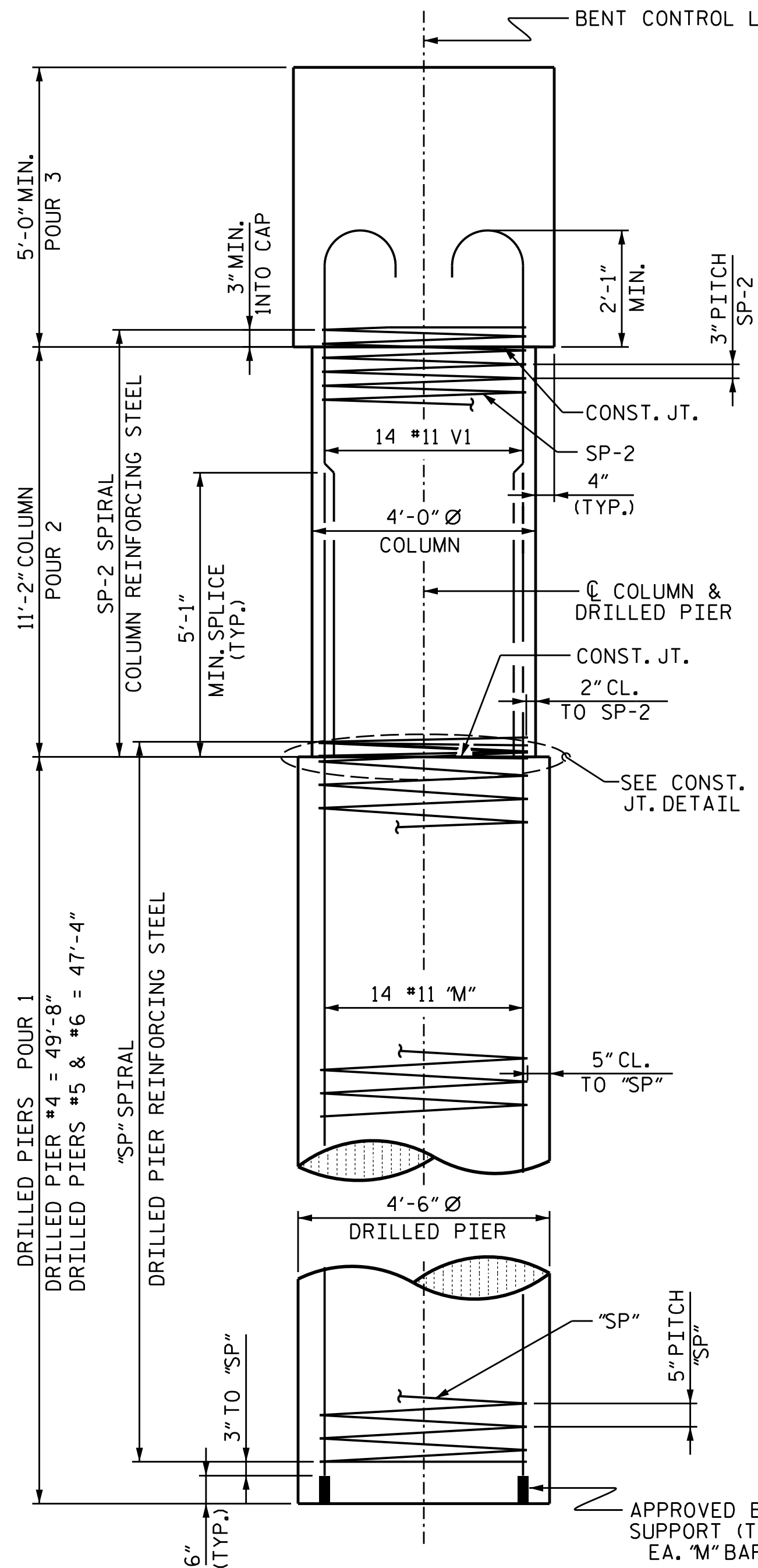
DRAWN BY : \_\_\_\_\_ NMW \_\_\_\_\_ DATE : 7/20  
CHECKED BY : \_\_\_\_\_ MGC \_\_\_\_\_ DATE : 7/21  
DESIGN ENGINEER OF RECORD: \_\_\_\_\_ RDE \_\_\_\_\_ DATE : 7/21

11/12/2025  
X:\NCDOT\B-5857 Cramer ton\Structures\Final Plans\Final DGN\401-147-U-6146-SMU-B204-350082.dgn  
User:smassinople

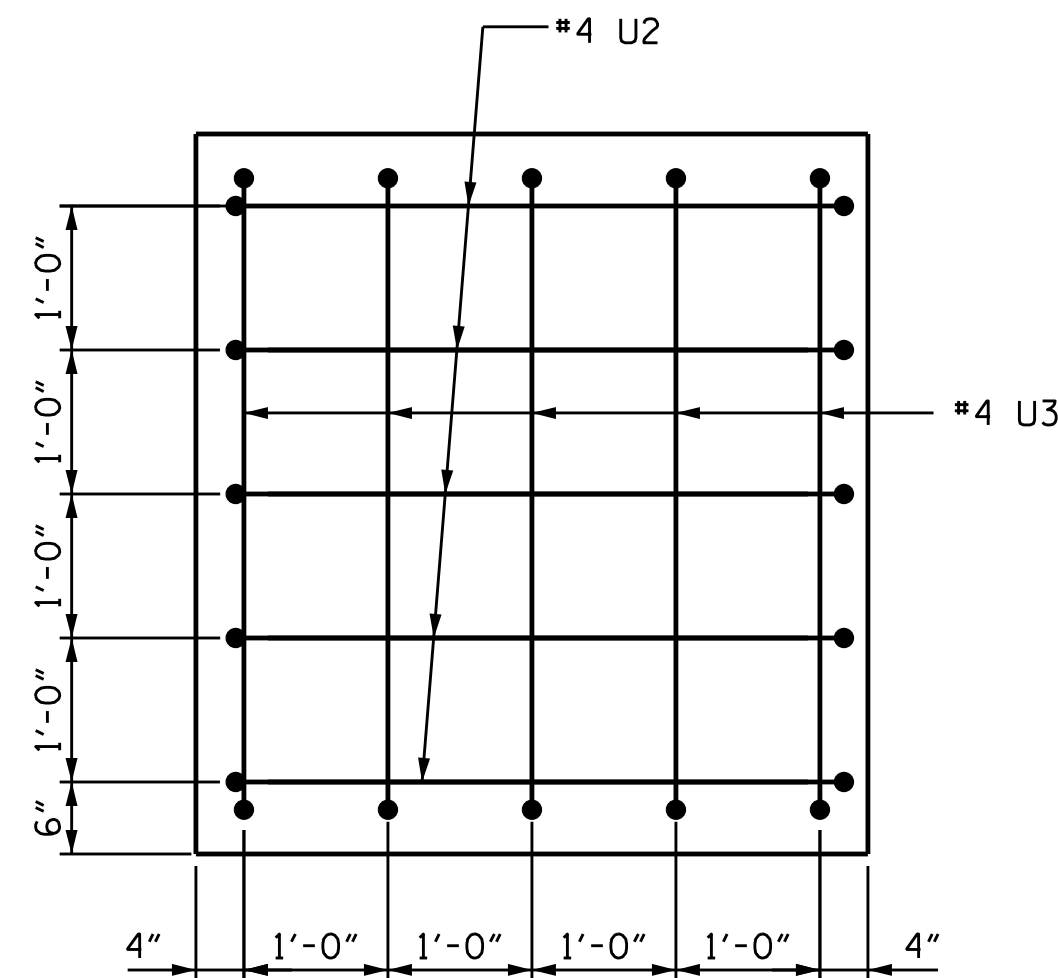




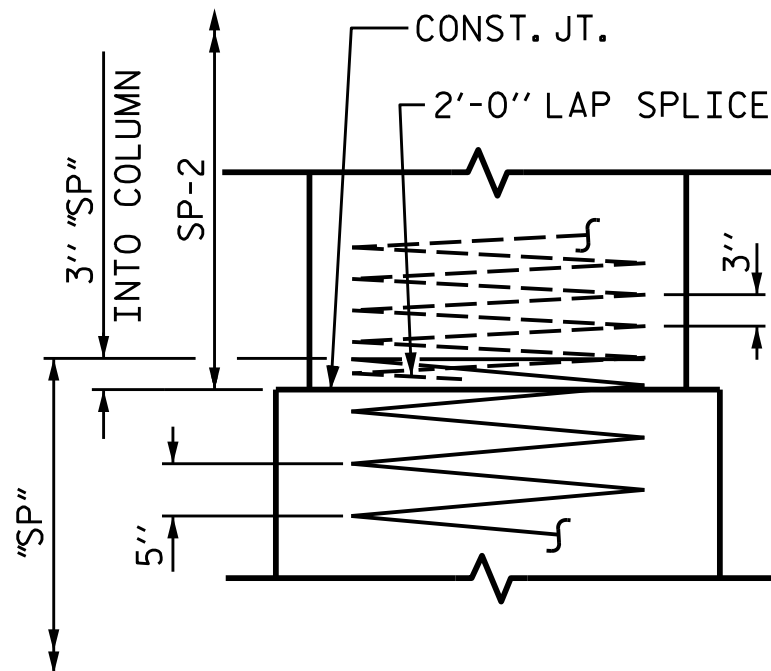
PLAN OF DRILLED PIERS & COLUMNS



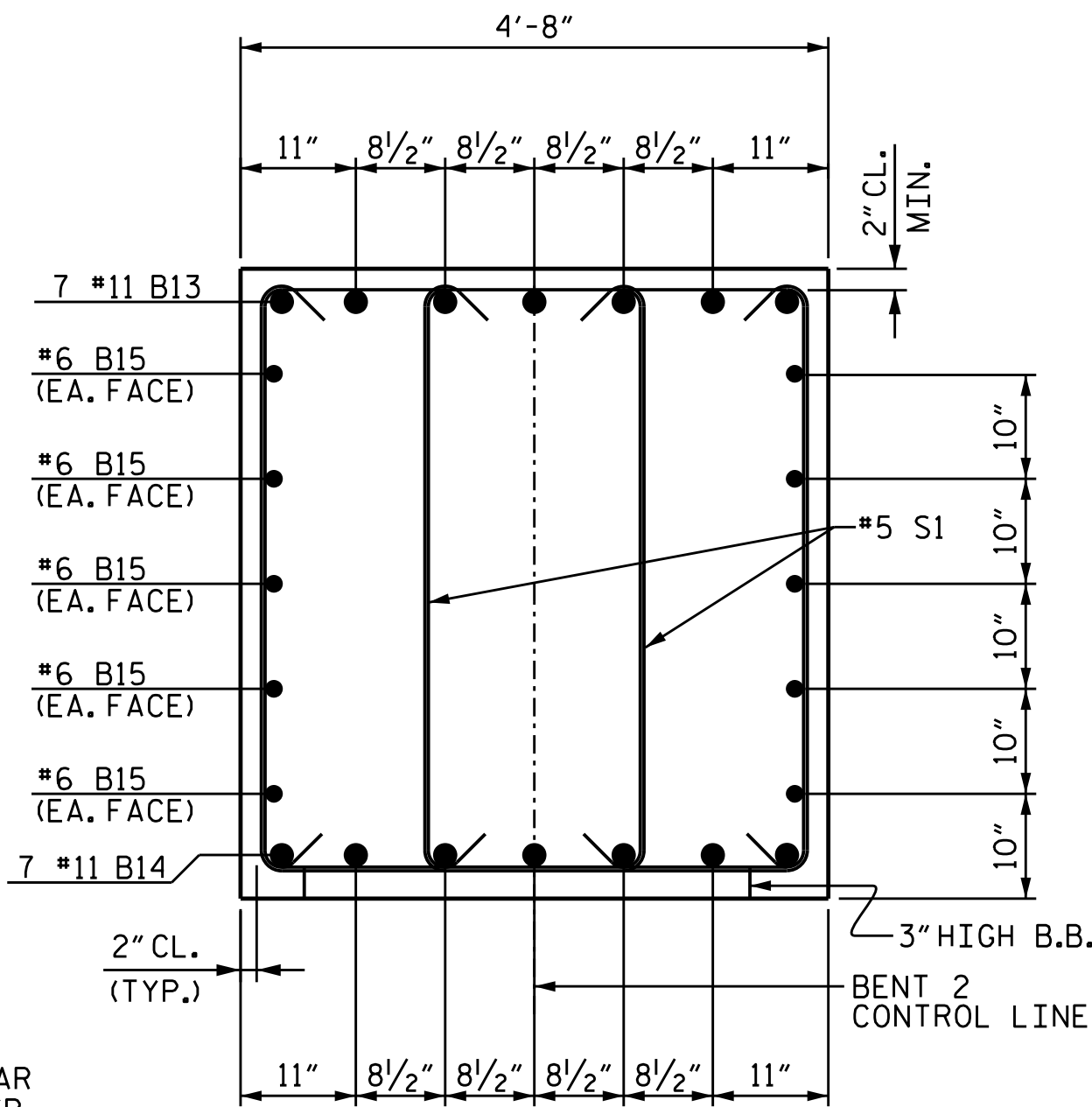
END ELEVATION



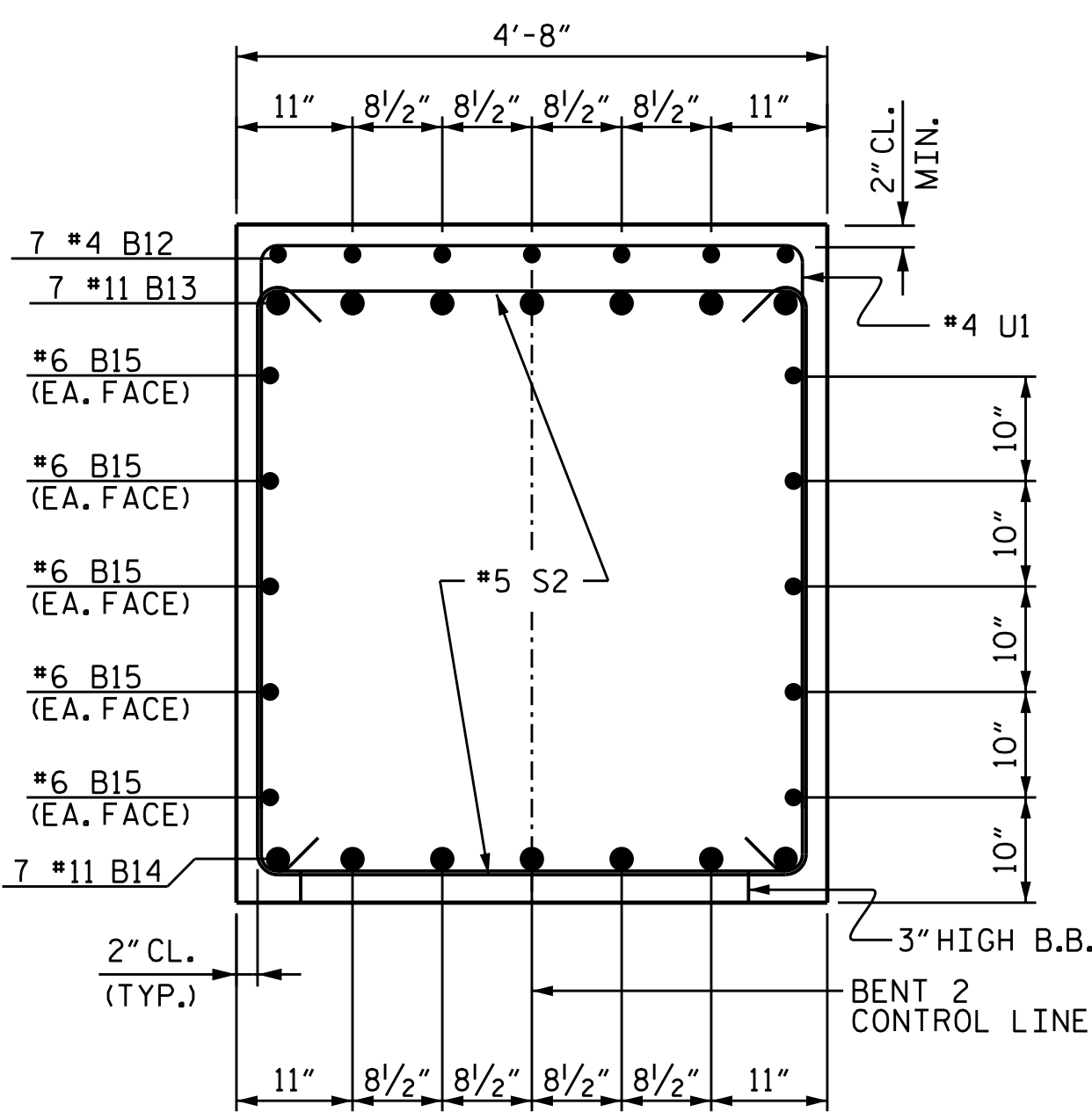
RIGHT END OF CAP VIEW



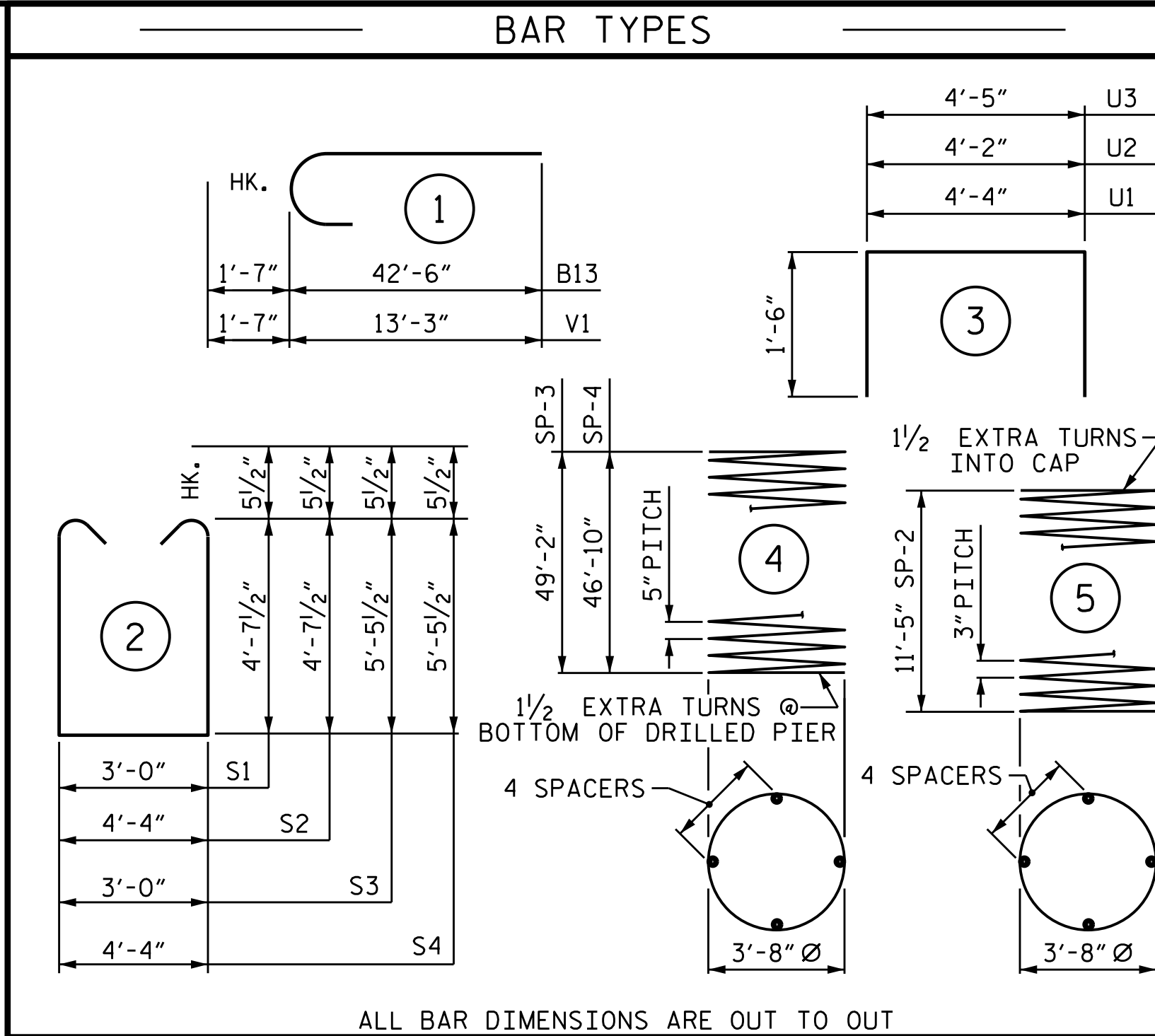
CONSTRUCTION JOINT DETAIL



SECTION E-E



SECTION F-F



TOTAL BENT 2 QUANTITIES

|                                 |            |
|---------------------------------|------------|
| REINFORCING STEEL               | 47,443 LBS |
| SPIRAL COLUMN REINFORCING STEEL | 10,488 LBS |
| CLASS A CONCRETE                | 139.7 CY   |

| BILL OF MATERIAL                                                                                           |     |      |      |             |        |
|------------------------------------------------------------------------------------------------------------|-----|------|------|-------------|--------|
| BENT 2 STAGE III                                                                                           |     |      |      |             |        |
| BAR                                                                                                        | NO. | SIZE | TYPE | LENGTH      | WEIGHT |
| B10                                                                                                        | 3   | #4   | STR. | 4'-4"       | 9      |
| B11                                                                                                        | 7   | #11  | STR. | 22'-3"      | 827    |
| B12                                                                                                        | 7   | #4   | STR. | 26'-6"      | 124    |
| B13                                                                                                        | 7   | #11  | 1    | 44'-1"      | 1640   |
| B14                                                                                                        | 7   | #11  | STR. | 58'-3"      | 2166   |
| B15                                                                                                        | 10  | #6   | STR. | 59'-2"      | 889    |
| M2                                                                                                         | 14  | #11  | STR. | 57'-3"      | 4258   |
| M3                                                                                                         | 28  | #11  | STR. | 54'-11"     | 8170   |
| S1                                                                                                         | 88  | #5   | 2    | 13'-2"      | 1208   |
| S2                                                                                                         | 8   | #5   | 2    | 14'-6"      | 121    |
| S3                                                                                                         | 52  | #5   | 2    | 14'-10"     | 804    |
| S4                                                                                                         | 7   | #5   | 2    | 16'-2"      | 118    |
| U1                                                                                                         | 58  | #4   | 3    | 7'-4"       | 284    |
| U2                                                                                                         | 5   | #4   | 3    | 7'-2"       | 24     |
| U3                                                                                                         | 5   | #4   | 3    | 7'-5"       | 25     |
| V1                                                                                                         | 42  | #11  | 1    | 14'-10"     | 3310   |
| REINFORCING STEEL                                                                                          |     |      |      | 23,977 LBS. |        |
| BAR                                                                                                        | NO. | SIZE | TYPE | LENGTH      | WEIGHT |
| SP-3                                                                                                       | 1   | *    | 4    | 1363'-7"    | 1422   |
| SP-4                                                                                                       | 2   | *    | 4    | 1295'-5"    | 2702   |
| SP-2                                                                                                       | 3   | **   | 5    | 546'-10"    | 1096   |
| SPIRAL COLUMN REINFORCING STEEL                                                                            |     |      |      | 5220 LBS.   |        |
| * THE SP-3, SP-4 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR |     |      |      |             |        |
| ** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR      |     |      |      |             |        |
| CLASS A CONCRETE BREAKDOWN                                                                                 |     |      |      |             |        |
| POUR 2 (COLUMNS)                                                                                           |     |      |      | 15.6 C.Y.   |        |
| POUR 3 (CAP)                                                                                               |     |      |      | 58.1 C.Y.   |        |
| TOTAL CLASS A CONCRETE                                                                                     |     |      |      | 73.7 C.Y.   |        |
| DRILLED PIERS:                                                                                             |     |      |      |             |        |
| DRILLED PIER CONCRETE POUR 1                                                                               |     |      |      | 85.0 C.Y.   |        |

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00-L-

SHEET 6 OF 6

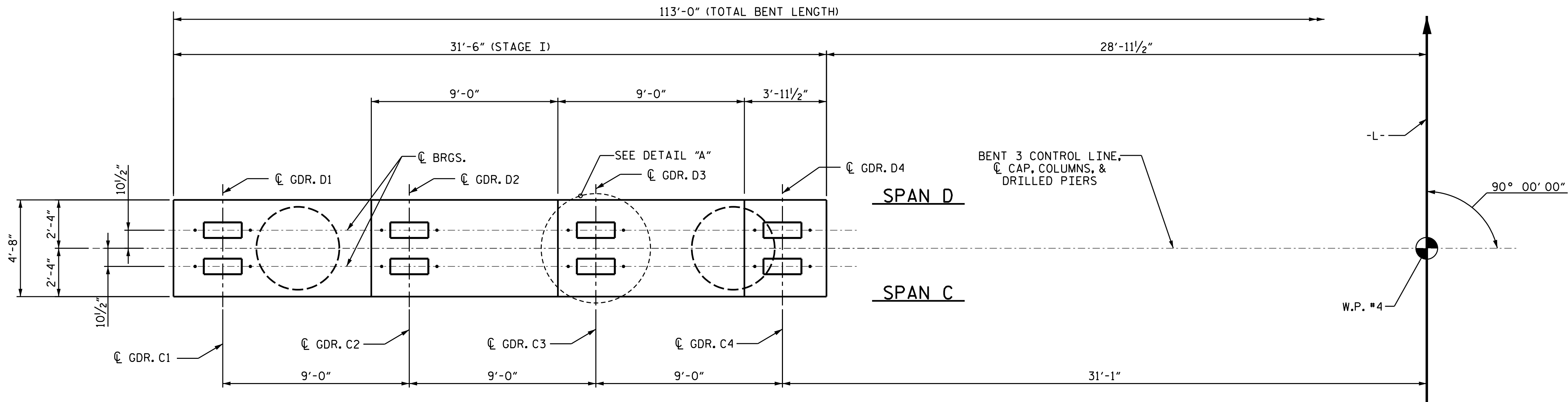
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

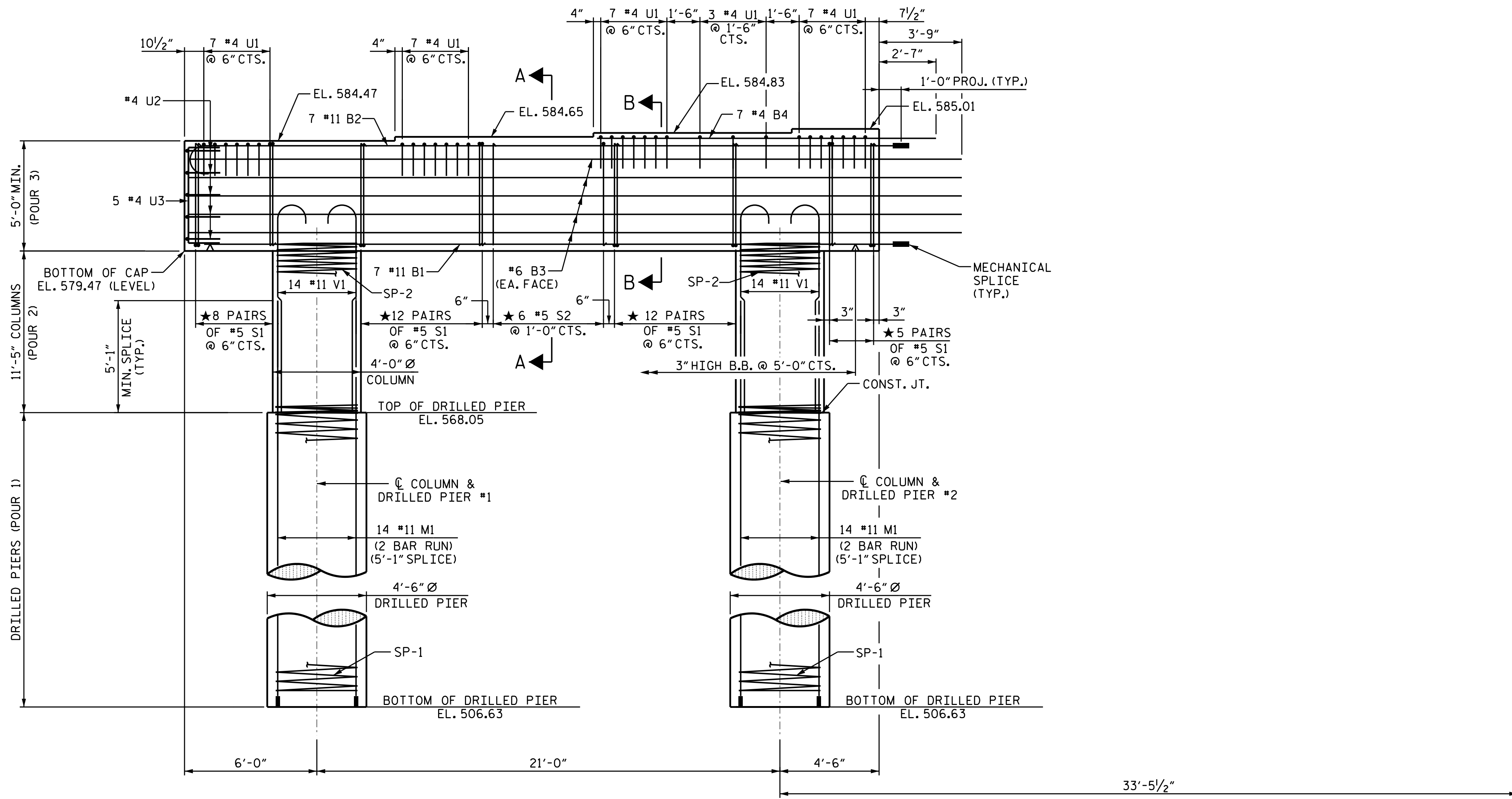
2/24/2026

| DEPARTMENT OF TRANSPORTATION<br>RALEIGH |     |       |     |     |           |
|-----------------------------------------|-----|-------|-----|-----|-----------|
| SUBSTRUCTURE                            |     |       |     |     |           |
| BENT 2<br>STAGE III                     |     |       |     |     |           |
| REVISIONS                               |     |       |     |     | SHEET NO. |
| NO.                                     | BY: | DATE: | NO. | BY: | DATE:     |
| 1                                       |     |       | 3   |     |           |
| 2                                       |     |       | 4   |     |           |
| TOTAL SHEETS                            |     |       |     |     | 100       |

|                            |     |        |      |
|----------------------------|-----|--------|------|
| DRAWN BY :                 | NMW | DATE : | 7/20 |
| CHECKED BY :               | MGC | DATE : | 7/21 |
| DESIGN ENGINEER OF RECORD: | RDE | DATE : | 7/21 |



PLAN

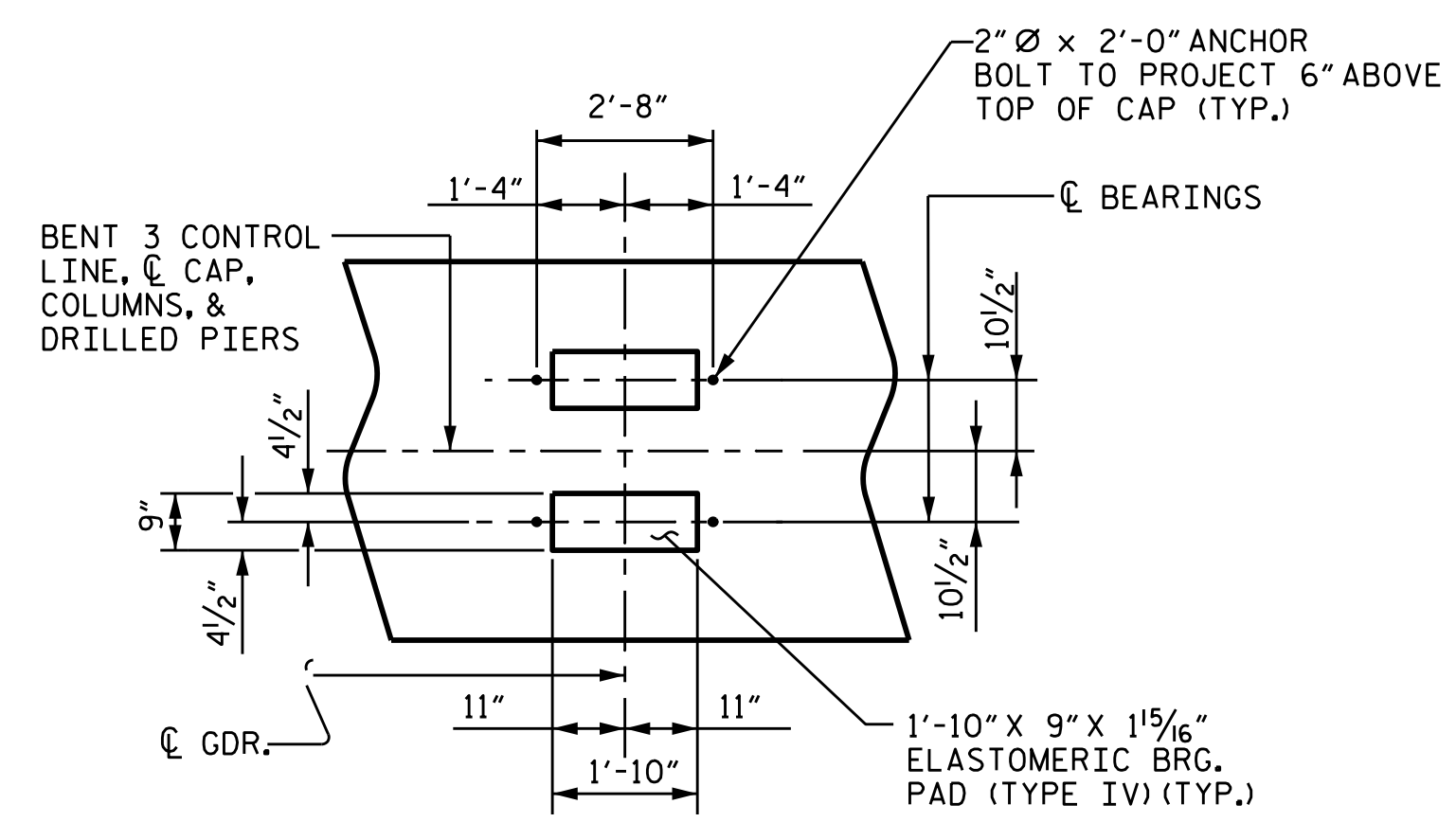


ELEVATION

DIMENSIONS AND REINFORCING STEEL ARE TYPICAL FOR EACH COLUMN AND DRILLED PIER EXCEPT AS NOTED

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
- FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."
- ★ INVERT ALTERNATE STIRRUPS.
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.
- FOR SECTION A-A & B-B SEE, SHEET 2 OF 6.



DETAIL "A"

DIMENSIONS ARE TYPICAL FOR EACH BEARING.

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00-L-

SHEET 1 OF 6



2/24/2026

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE

BENT 3  
STAGE I

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

| REVISIONS |     |       |     |     |       | SHEET NO.        |
|-----------|-----|-------|-----|-----|-------|------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                  |
| 1         |     |       | 3   |     |       | S-75             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 100 |

|                            |     |        |      |
|----------------------------|-----|--------|------|
| DRAWN BY :                 | NMW | DATE : | 7/20 |
| CHECKED BY :               | MGC | DATE : | 7/21 |
| DESIGN ENGINEER OF RECORD: | RDE | DATE : | 7/21 |

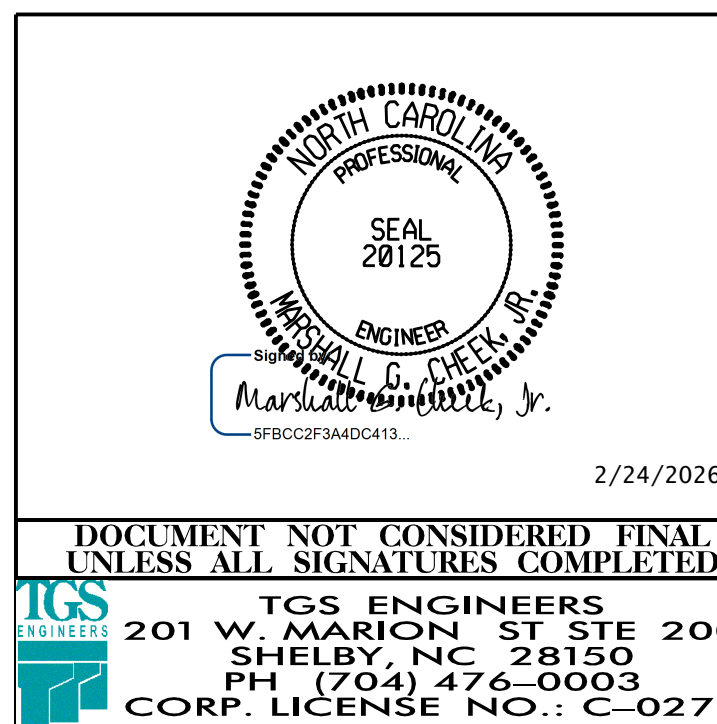


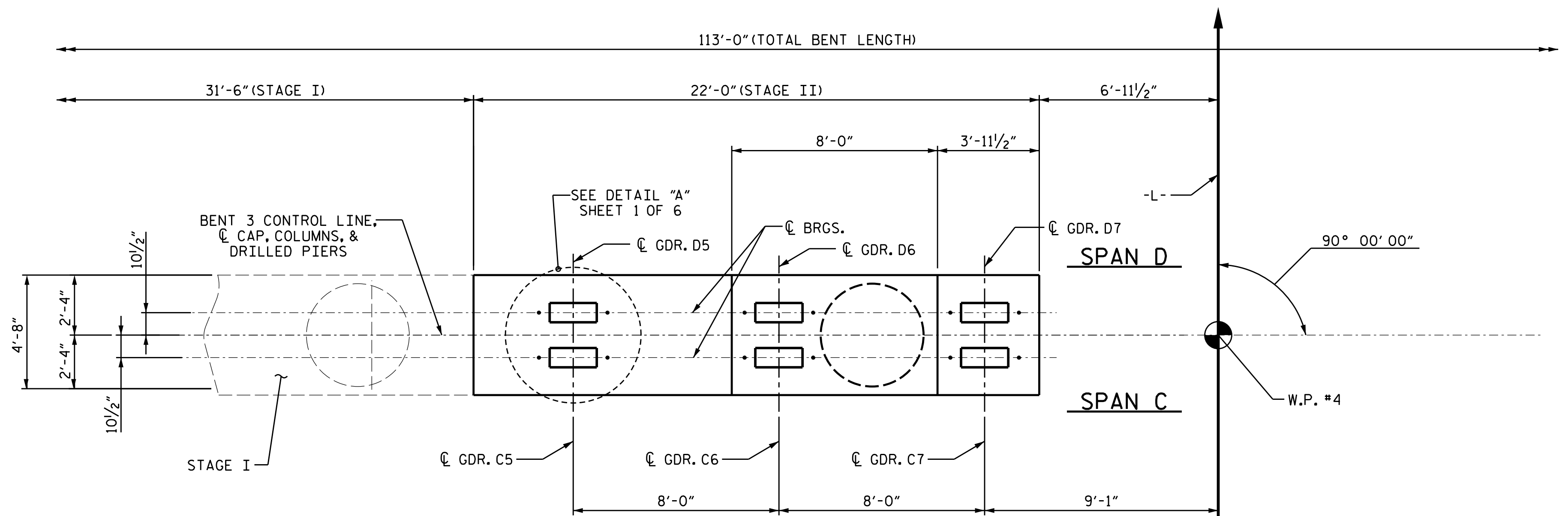
PROJECT NO. U-6146/B-5857  
          GASTON           COUNTY  
 STATION: 32+93.00-L-

|     |     |       |     |     |       |                                |
|-----|-----|-------|-----|-----|-------|--------------------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-76<br>TOTAL<br>SHEETS<br>100 |
| 1   |     |       | 3   |     |       |                                |
| 2   |     |       | 4   |     |       |                                |

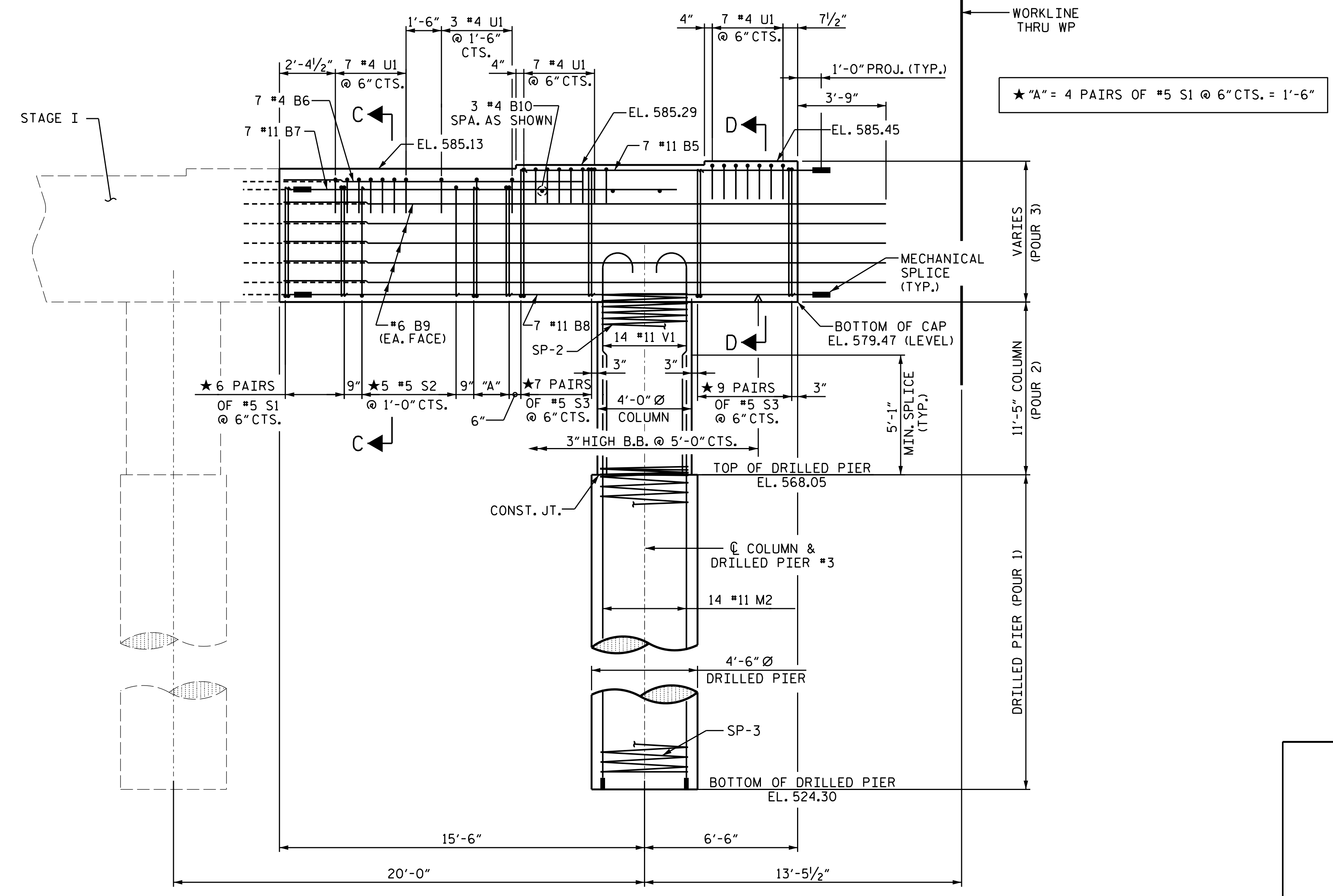


11/12/2025  
X:\NCDOT\B-5857 Cramer ton\Structures\Final Plans\Final DGN\401.155.U-6146.SMU.B302.350082.dgn  
User:smassinople





PLAN



ELEVATION

NOTES

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.
- FOR DRILLED PIERS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.
- ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."
- ★ INVERT ALTERNATE STIRRUPS.
- THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT THE LONGITUDINAL REINFORCEMENT FOR DRILLED PIERS IS DETAILED WITH 3 FEET OF EXTRA LENGTH.
- FOR SECTION C-C & D-D SEE, SHEET 4 OF 6.

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00-L-

SHEET 3 OF 6



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

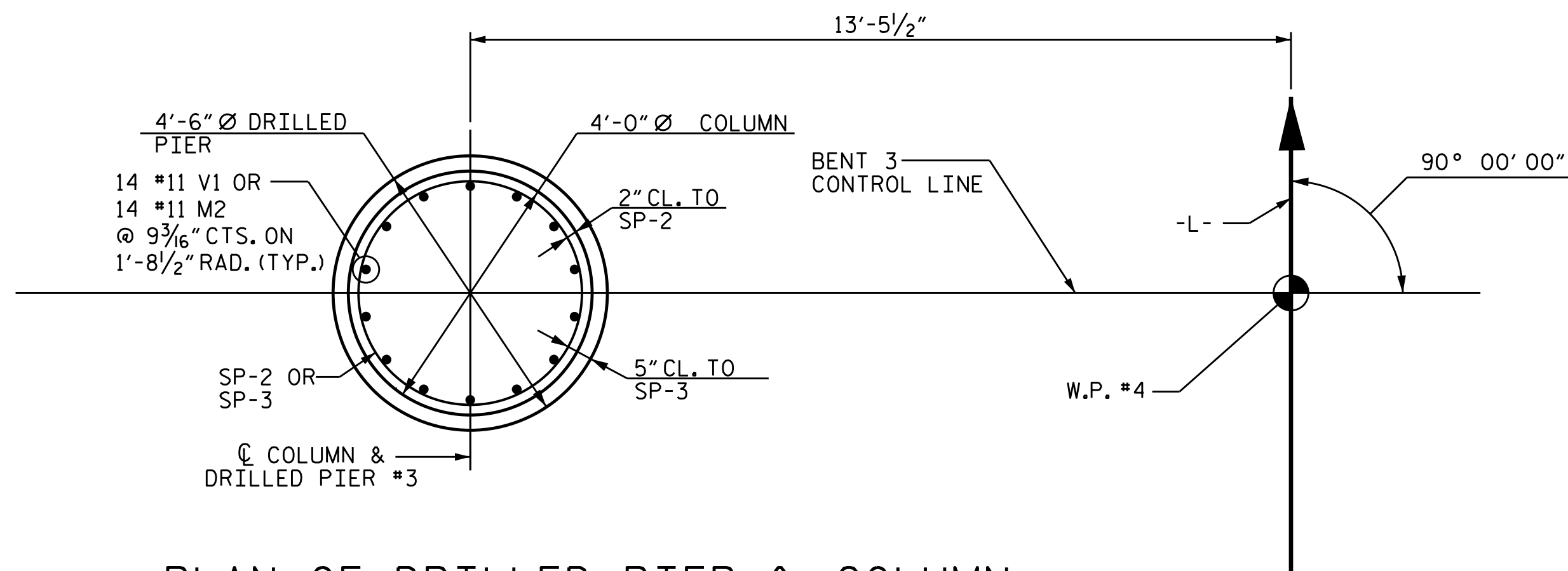
SUBSTRUCTURE

BENT 3

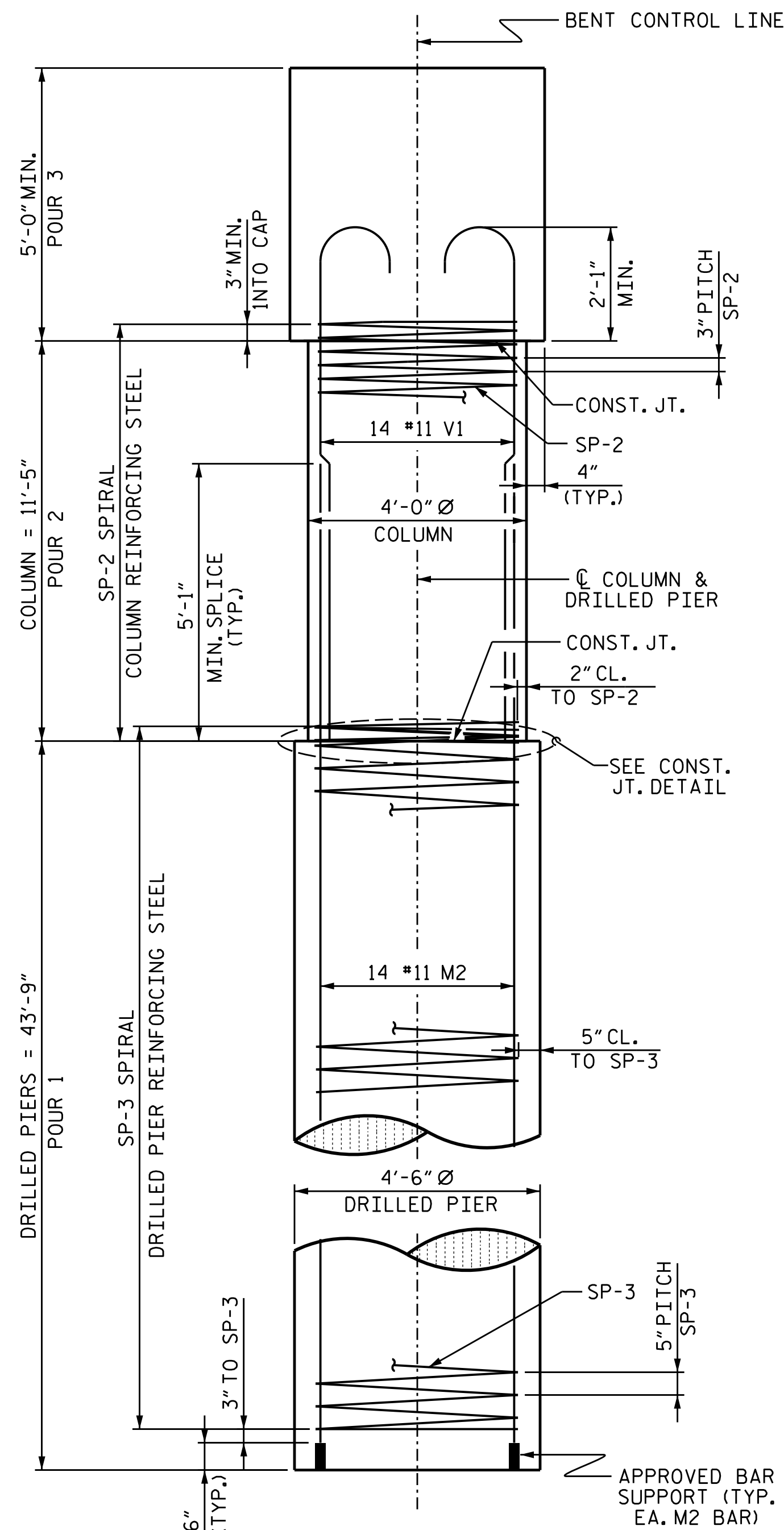
STAGE II

| REVISIONS |       |     |     |       |  | SHEET NO.    |  |
|-----------|-------|-----|-----|-------|--|--------------|--|
| BY:       | DATE: | NO. | BY: | DATE: |  | S-77         |  |
|           |       | ③   |     |       |  | TOTAL SHEETS |  |
|           |       | ④   |     |       |  | 100          |  |

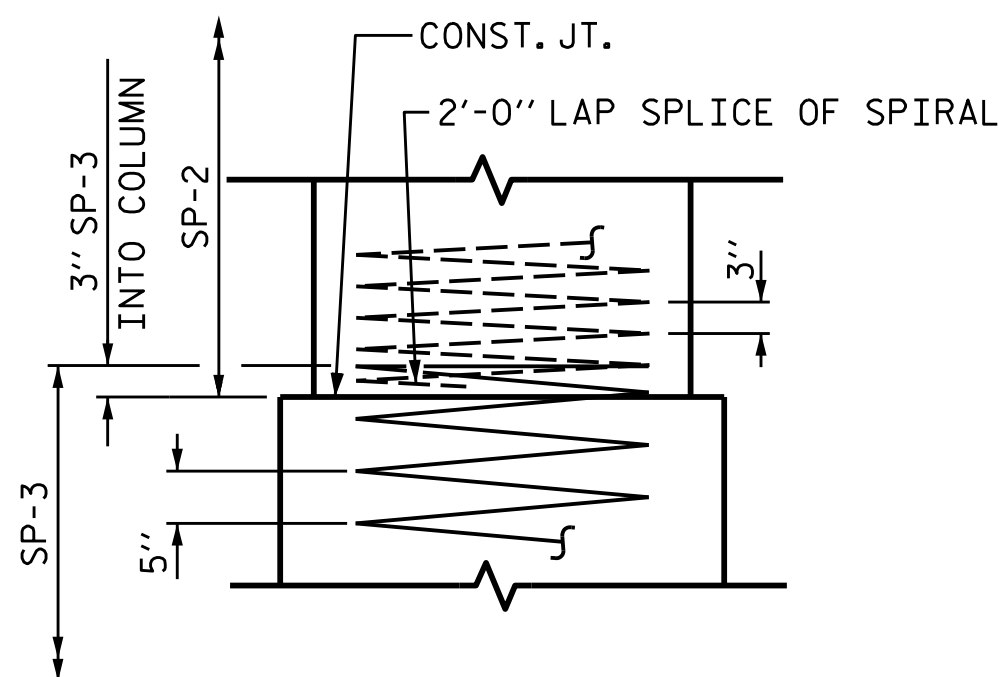
|                            |     |        |      |
|----------------------------|-----|--------|------|
| DRAWN BY :                 | NMW | DATE : | 7/20 |
| CHECKED BY :               | MGC | DATE : | 7/21 |
| DESIGN ENGINEER OF RECORD: | RDE | DATE : | 7/21 |



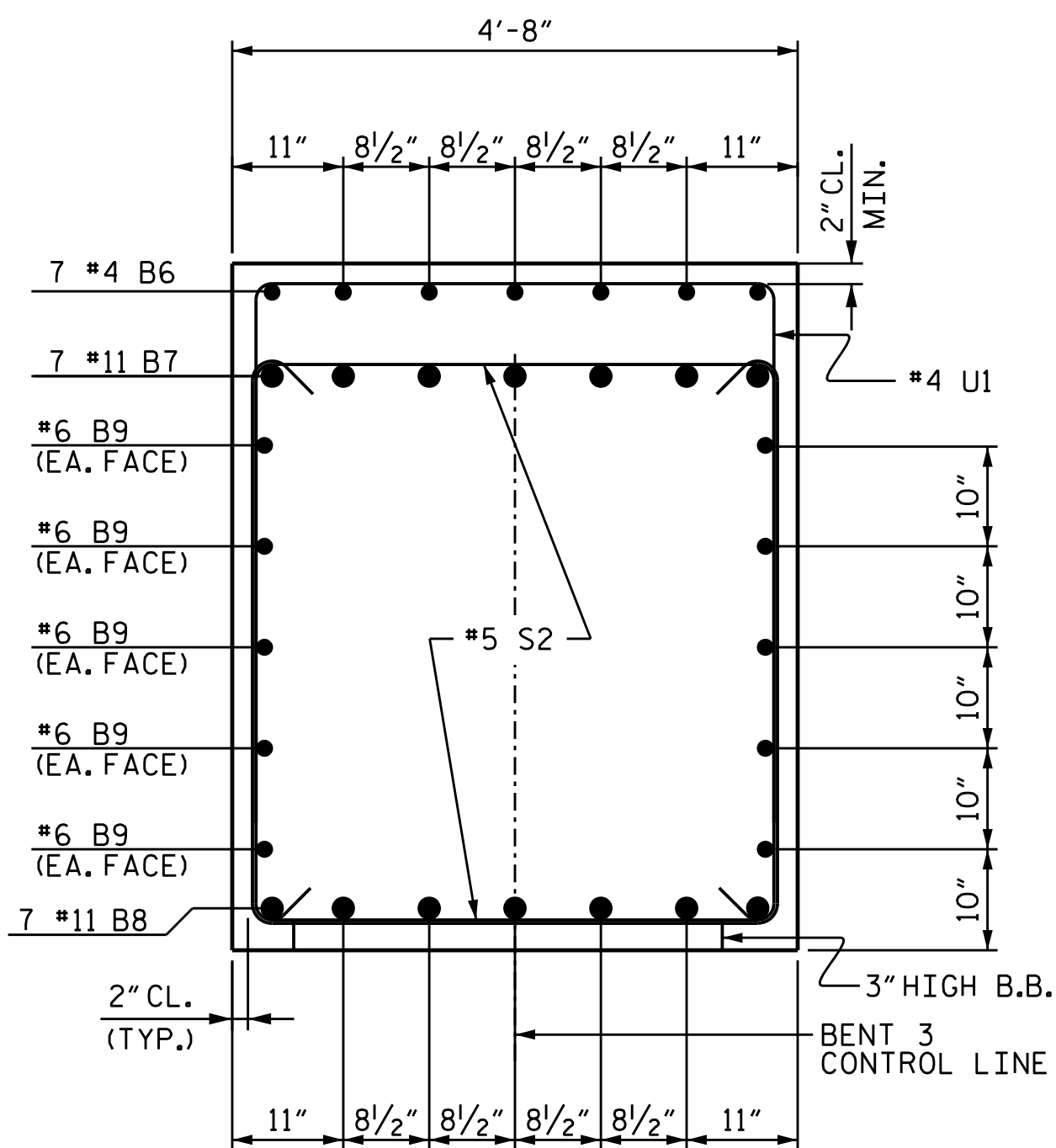
PLAN OF DRILLED PIER & COLUMN



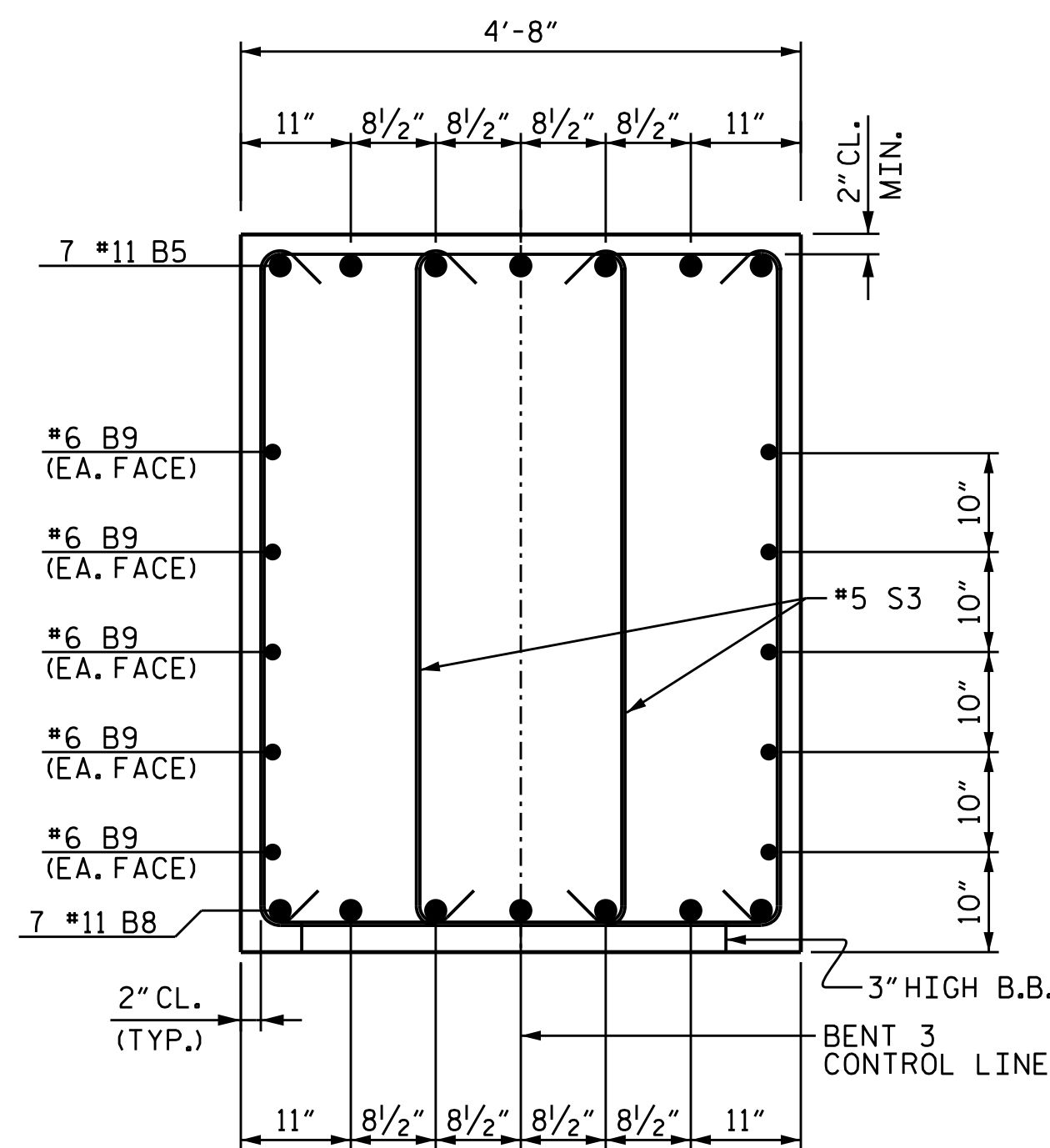
END ELEVATION



CONSTRUCTION JOINT DETAIL

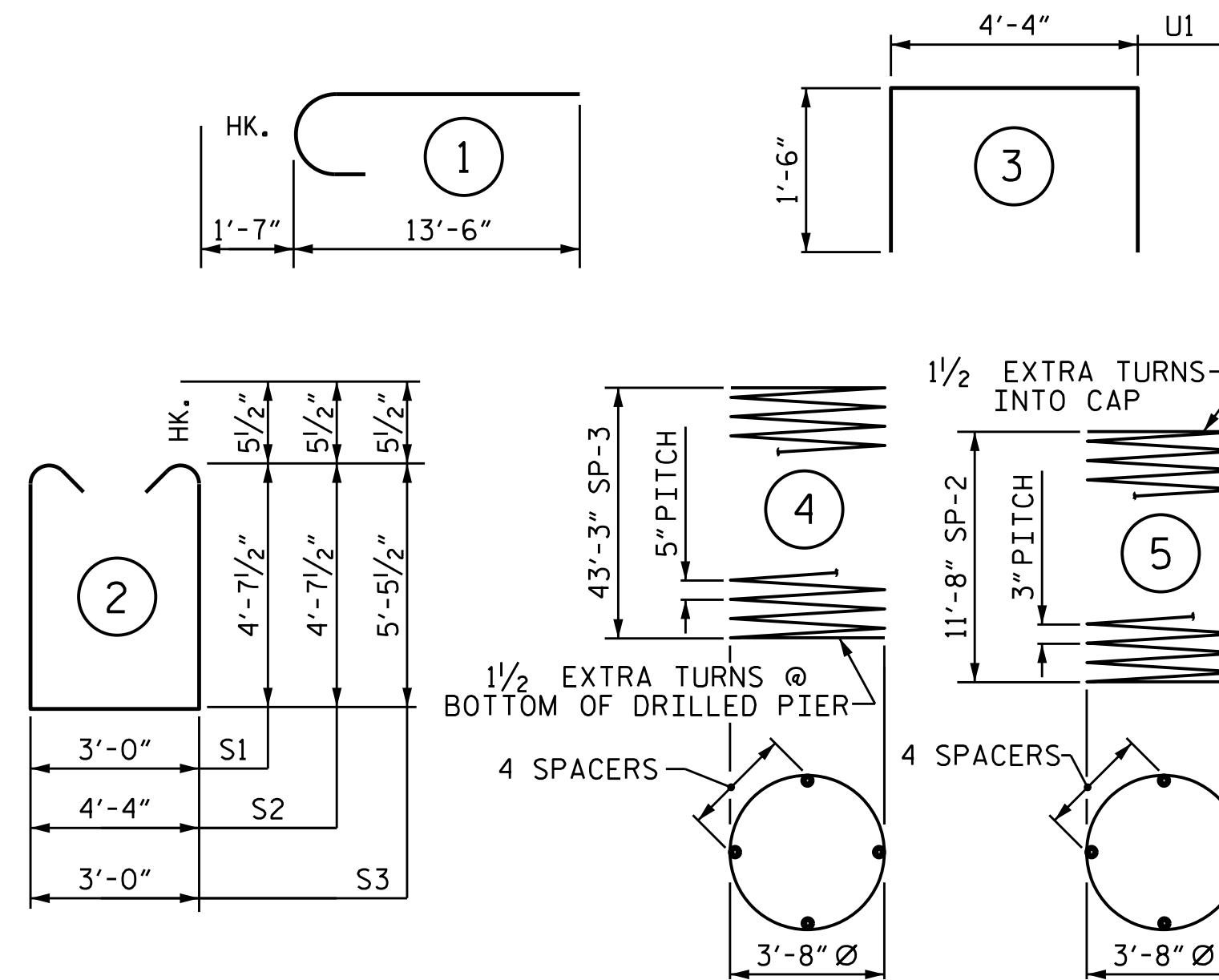


SECTION C-C



SECTION D-D

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 3 STAGE II

| BAR | NO. | SIZE | TYPE | LENGTH  | WEIGHT |
|-----|-----|------|------|---------|--------|
| B5  | 7   | #11  | STR. | 12'-10" | 477    |
| B6  | 7   | #4   | STR. | 12'-3"  | 57     |
| B7  | 7   | #11  | STR. | 14'-2"  | 527    |
| B8  | 7   | #11  | STR. | 22'-0"  | 818    |
| B9  | 10  | #6   | STR. | 25'-7"  | 384    |
| B10 | 3   | #4   | STR. | 4'-4"   | 9      |

|    |    |     |      |         |      |
|----|----|-----|------|---------|------|
| M2 | 14 | #11 | STR. | 51'-4"  | 3818 |
| S1 | 20 | #5  | 2    | 13'-2"  | 275  |
| S2 | 5  | #5  | 2    | 14'-6"  | 76   |
| S3 | 32 | #5  | 2    | 14'-10" | 495  |
| U1 | 24 | #4  | 3    | 7'-4"   | 118  |
| V1 | 14 | #11 | 1    | 15'-1"  | 1122 |

REINFORCING STEEL 8176 LBS.

| BAR  | NO. | SIZE | TYPE | LENGTH   | WEIGHT |
|------|-----|------|------|----------|--------|
| SP-3 | 1   | *    | 4    | 1204'-6" | 1256   |
| SP-2 | 1   | **   | 5    | 558'-2"  | 373    |

SPIRAL COLUMN REINFORCING STEEL 1629 LBS.

\* THE SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR  
\*\* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN

|                 |           |
|-----------------|-----------|
| POUR 2 (COLUMN) | 5.3 C.Y.  |
| POUR 3 (CAP)    | 22.0 C.Y. |

TOTAL CLASS A CONCRETE 27.3 C.Y.

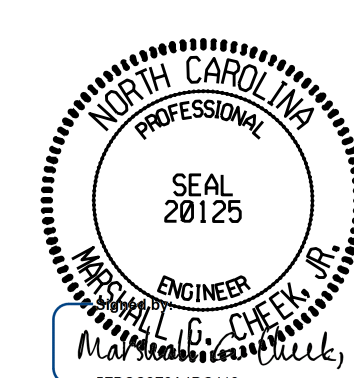
DRILLED PIERS:  
DRILLED PIER CONCRETE POUR 1 25.8 C.Y.

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00-L-

SHEET 4 OF 6



2/24/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

| REVISIONS |     |       |     |     |       | SHEET NO.        |
|-----------|-----|-------|-----|-----|-------|------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                  |
| 1         |     |       | 3   |     |       | S-78             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 100 |

DRAWN BY : NMW DATE : 7/20  
CHECKED BY : MGC DATE : 7/21  
DESIGN ENGINEER OF RECORD: RDE DATE : 7/21

11/12/2025  
X:\NCDOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.159.U-6146.SMU.B304.350082.dgn  
User:smasinnople

113'-0" (TOTAL BENT LENGTH)

59'-6"

6'-11 1/2"

52'-6 1/2"

-L-

90° 00' 00"

BENT 3 CONTROL LINE,  
CL CAP, COLUMNS, &  
DRILLED PIERS

SEE DETAIL "A"  
SHEET 1 OF 6

SPAN D

SPAN C

PLAN

## NOTES

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

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

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

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

★ INVERT ALTERNATE STIRRUPS.

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

FOR SECTION E-E & F-F SEE, SHEET 6 OF 6.

"A" = 3 #4 U1 @ 1'-6" CTS. = 3'-0"  
★ "C" = 3 #5 S2 @ 1'-0" CTS. = 2'-0"

ELEVATION

DIMENSIONS AND REINFORCING STEEL ARE TYPICAL  
FOR EACH COLUMN AND DRILLED PIER EXCEPT AS NOTED

DRAWN BY : NMW DATE : 7/20  
CHECKED BY : MGC DATE : 7/21  
DESIGN ENGINEER OF RECORD: RDE DATE : 7/21

11/20/2025  
X:\NCDOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.161.U-6146.SMU.B305.350082.dgn  
User:ZSmith

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00-L-

SHEET 5 OF 6



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE

BENT 3  
STAGE III

REVISIONS

| NO. | BY: | DATE: | NO. | BY: | DATE: | SHEET NO.        |
|-----|-----|-------|-----|-----|-------|------------------|
| 1   |     |       | 3   |     |       | S-79             |
| 2   |     |       | 4   |     |       | TOTAL SHEETS 100 |



PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
 STATION: 32+93.00-L-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

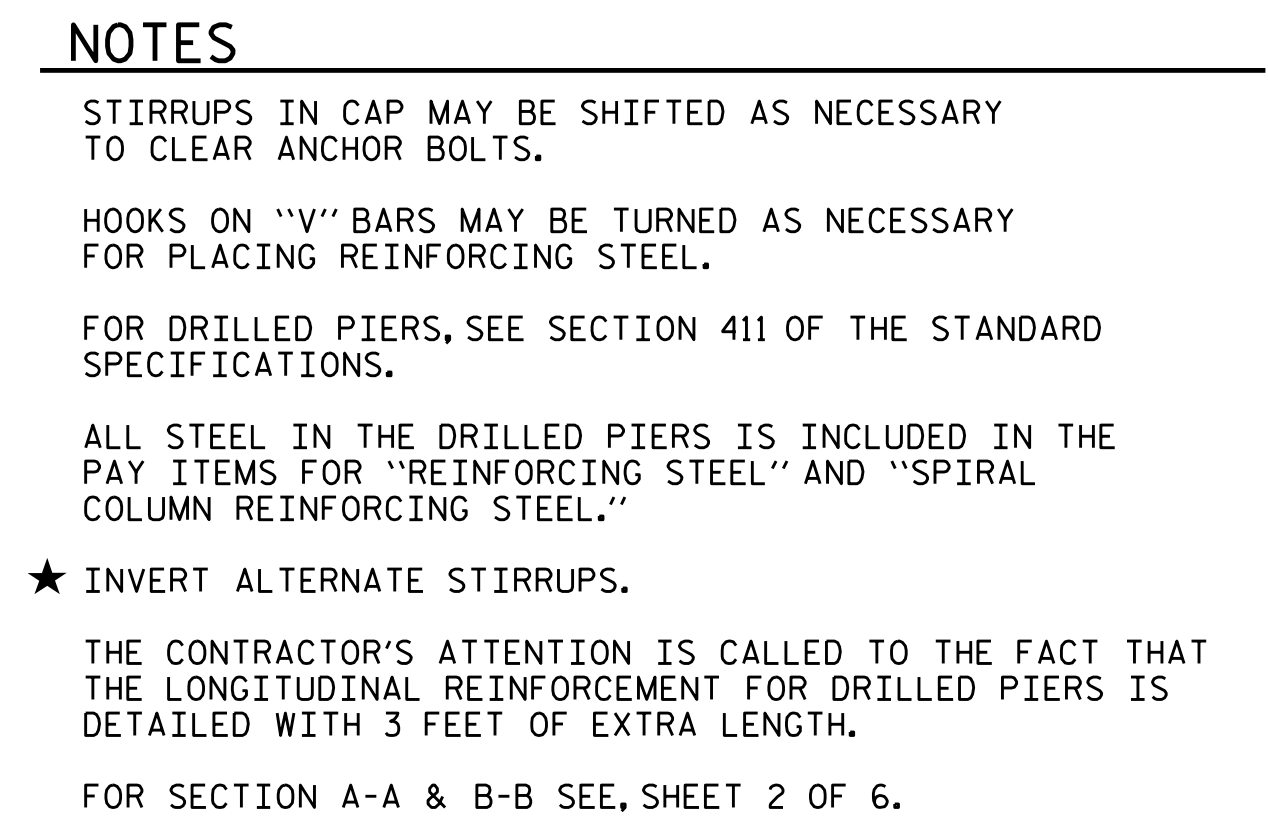
SUBSTRUCTURE

BENT 3  
STAGE III

| REVISIONS |     |       |     |     |       | SHEET NO.<br><br>S-80<br><br>TOTAL<br>SHEETS<br>100 |
|-----------|-----|-------|-----|-----|-------|-----------------------------------------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                                                     |
| 1         |     |       | 3   |     |       |                                                     |
| 2         |     |       | 4   |     |       |                                                     |



11/20/2025  
X:\NCDOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.163.U-6146-SMU.B306.350082.dgn  
User:ZSmith



BENT 4 CONTROL LINE, C<sub>L</sub> CAP, COLUMNS, & DRILLED PIERS

2" Ø × 2'-0" ANCHOR BOLT TO PROJECT 6" ABOVE TOP OF CAP (TYP.)

C BEARINGS

9"

4 1/2"

4 1/2"

11"

11"

1'-10"

1'-10" X 9" X 1 5/16" ELASTOMERIC BRG. PAD (TYPE IV) (TYP.)

1'-8"

1'-4"

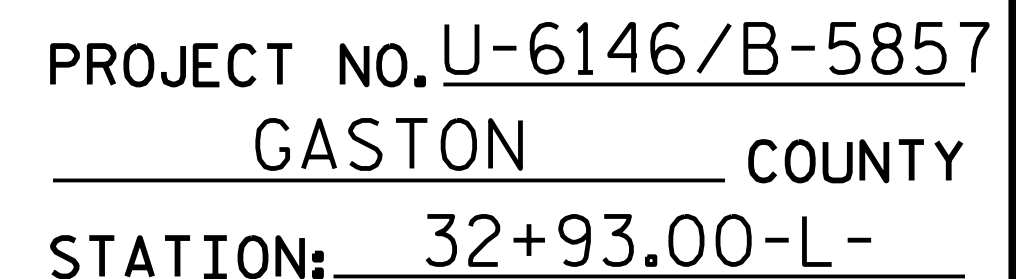
1'-4"

10 1/2"

10 1/2"

DETAIL "A"

DIMENSIONS ARE TYPICAL  
FOR EACH BEARING.



SHEET 1 OF 6



2/24/2026

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

## SUBSTRUCTURE

BENT 4  
STAGE I

|                                                                                                                                                                                                              |            |                  |              |            |            |                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------|--------------|------------|------------|--------------------------------------------------|
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>                                                                                                                                     |            | <b>REVISIONS</b> |              |            |            | <b>SHEET NO.</b>                                 |
|  <b>TGS ENGINEERS</b><br>201 W. MARION ST STE 200<br>SHELBY, NC 28150<br>PH (704) 476-0003<br>CORP. LICENSE NO.: C-0275 | <b>NO.</b> | <b>BY:</b>       | <b>DATE:</b> | <b>NO.</b> | <b>BY:</b> | <b>DATE:</b>                                     |
|                                                                                                                                                                                                              | <b>1</b>   |                  |              | <b>3</b>   |            |                                                  |
|                                                                                                                                                                                                              | <b>2</b>   |                  |              | <b>4</b>   |            |                                                  |
|                                                                                                                                                                                                              |            |                  |              |            |            | <b>S-81</b><br><b>TOTAL SHEETS</b><br><b>100</b> |

|                            |     |        |      |
|----------------------------|-----|--------|------|
| DRAWN BY :                 | NMW | DATE : | 7/20 |
| CHECKED BY :               | MGC | DATE : | 7/21 |
| DESIGN ENGINEER OF RECORD: | RDE | DATE : | 7/21 |

DIMENSIONS AND REINFORCING STEEL ARE TYPICAL  
FOR EACH COLUMN AND DRILLED PIER EXCEPT AS NOTED

11/20/2025  
X:\NCDDOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.165.U-6146.SMU.B401.350082.dgn  
User:ZSmith



PROJECT NO. U-6146/B-5857  
          GASTON           COUNTY  
 STATION: 32+93.00-L-



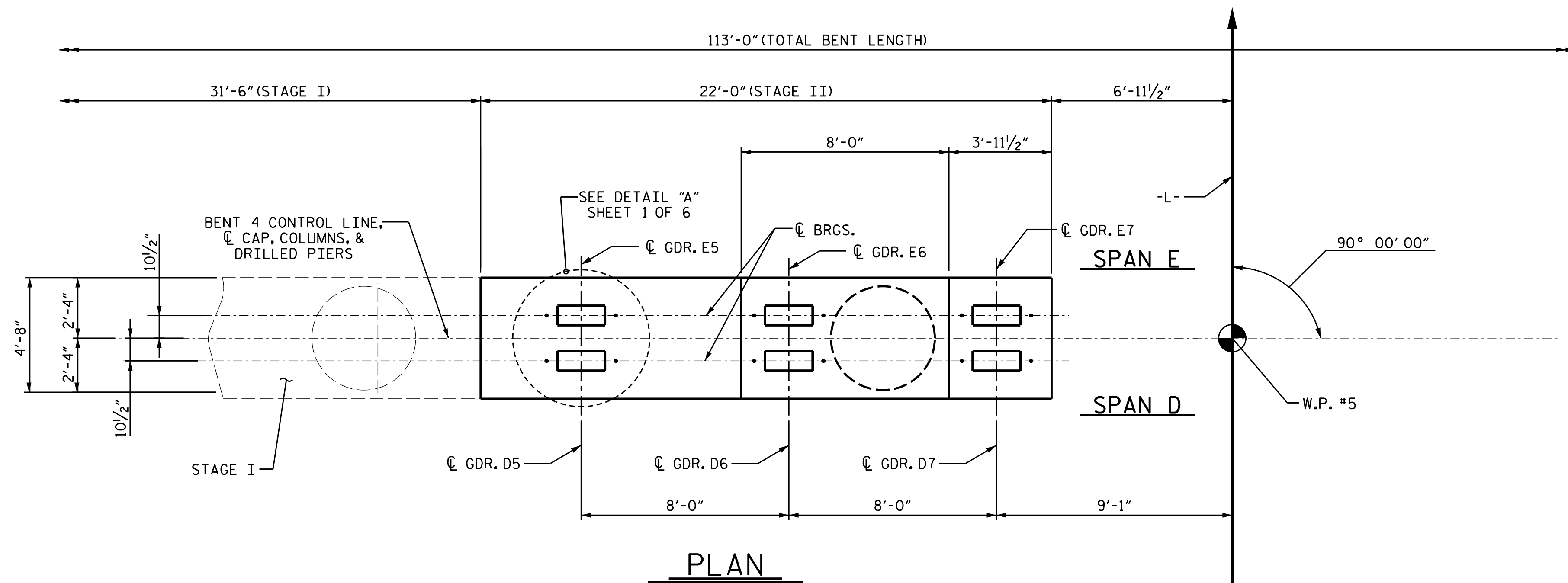
DRAWN BY : NMW DATE : 7/20  
 CHECKED BY : MGC DATE : 7/21  
 DESIGN ENGINEER OF RECORD: RDE DATE : 7/21



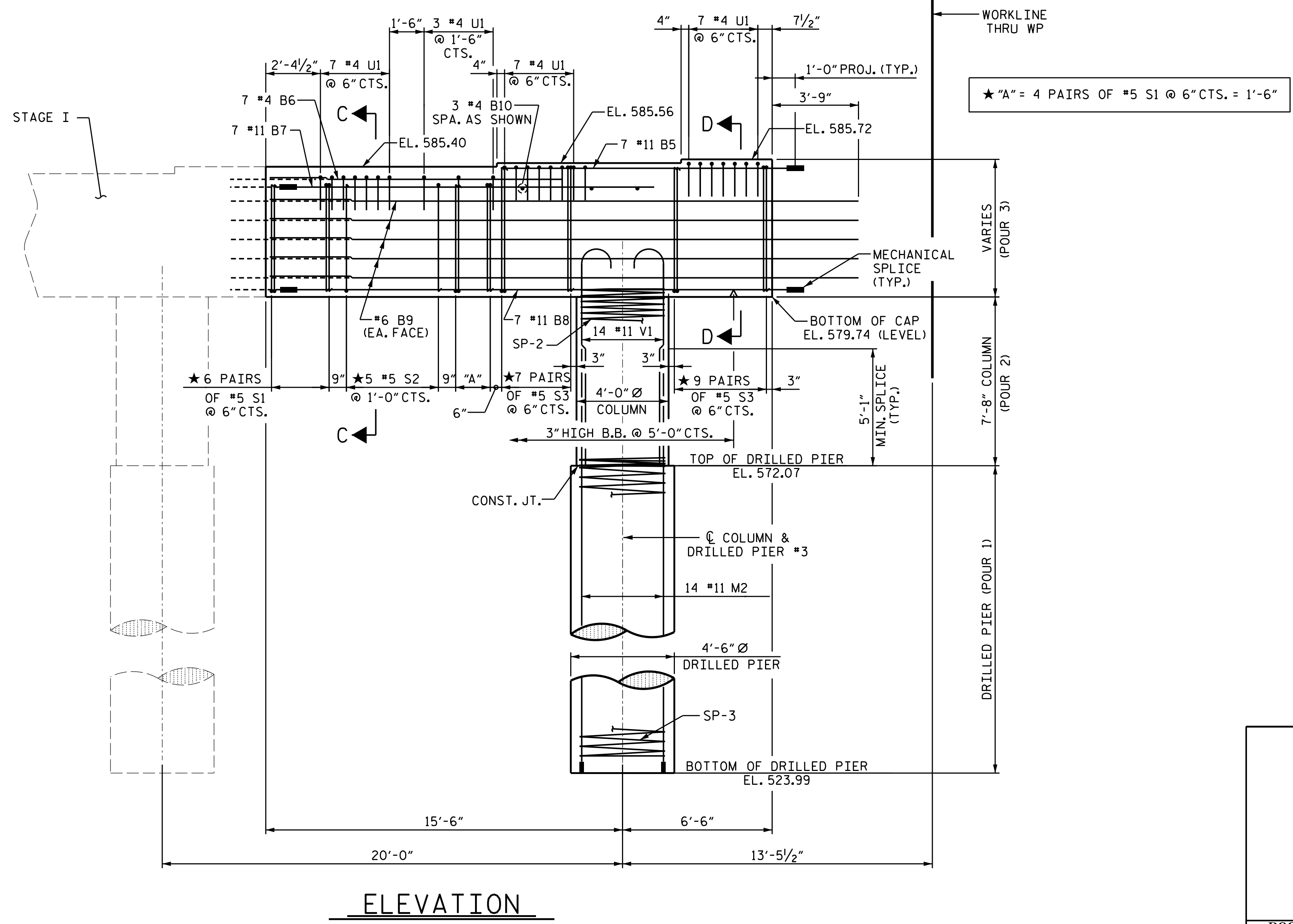
2/24/2026

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

**TGS ENGINEERS**  
201 W. MARION ST STE 20  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-027



PLAN



ELEVATION

## NOTES

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

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

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

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

★ INVERT ALTERNATE STIRRUPS.

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

FOR SECTION C-C & D-D SEE, SHEET 4 OF 6.

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00-L-

SHEET 3 OF 6



2/24/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

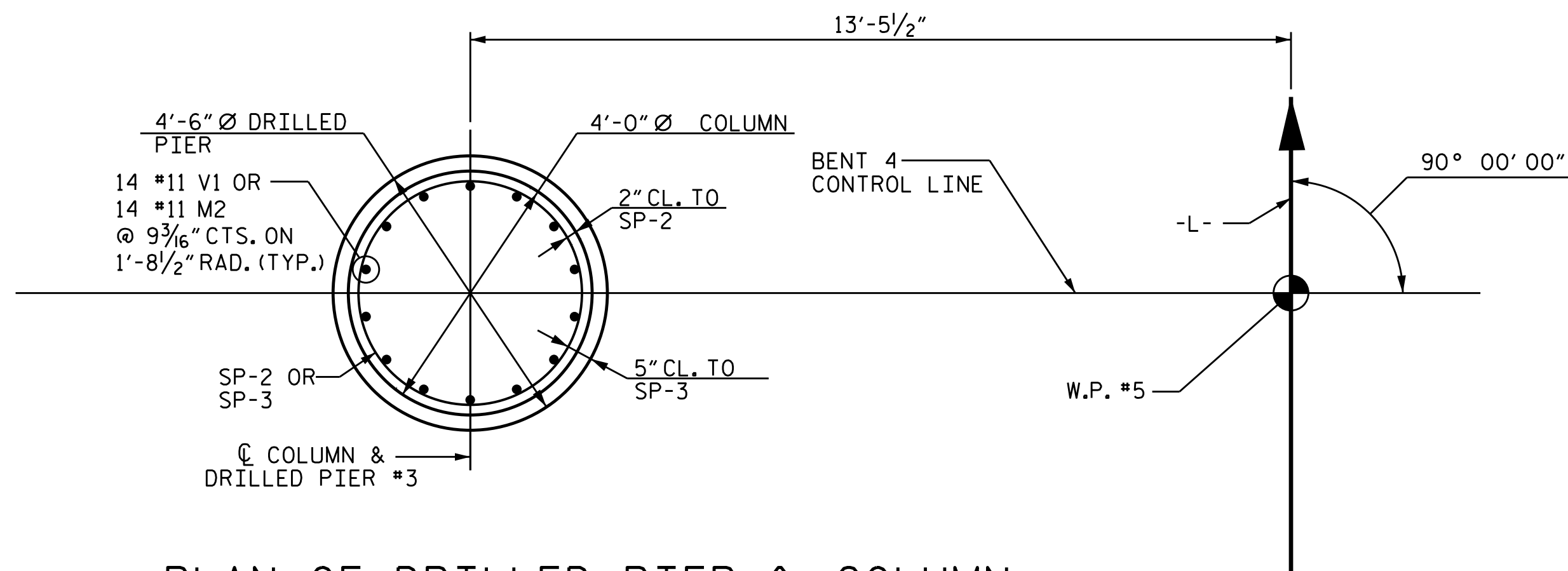
SUBSTRUCTURE

BENT 4  
STAGE II

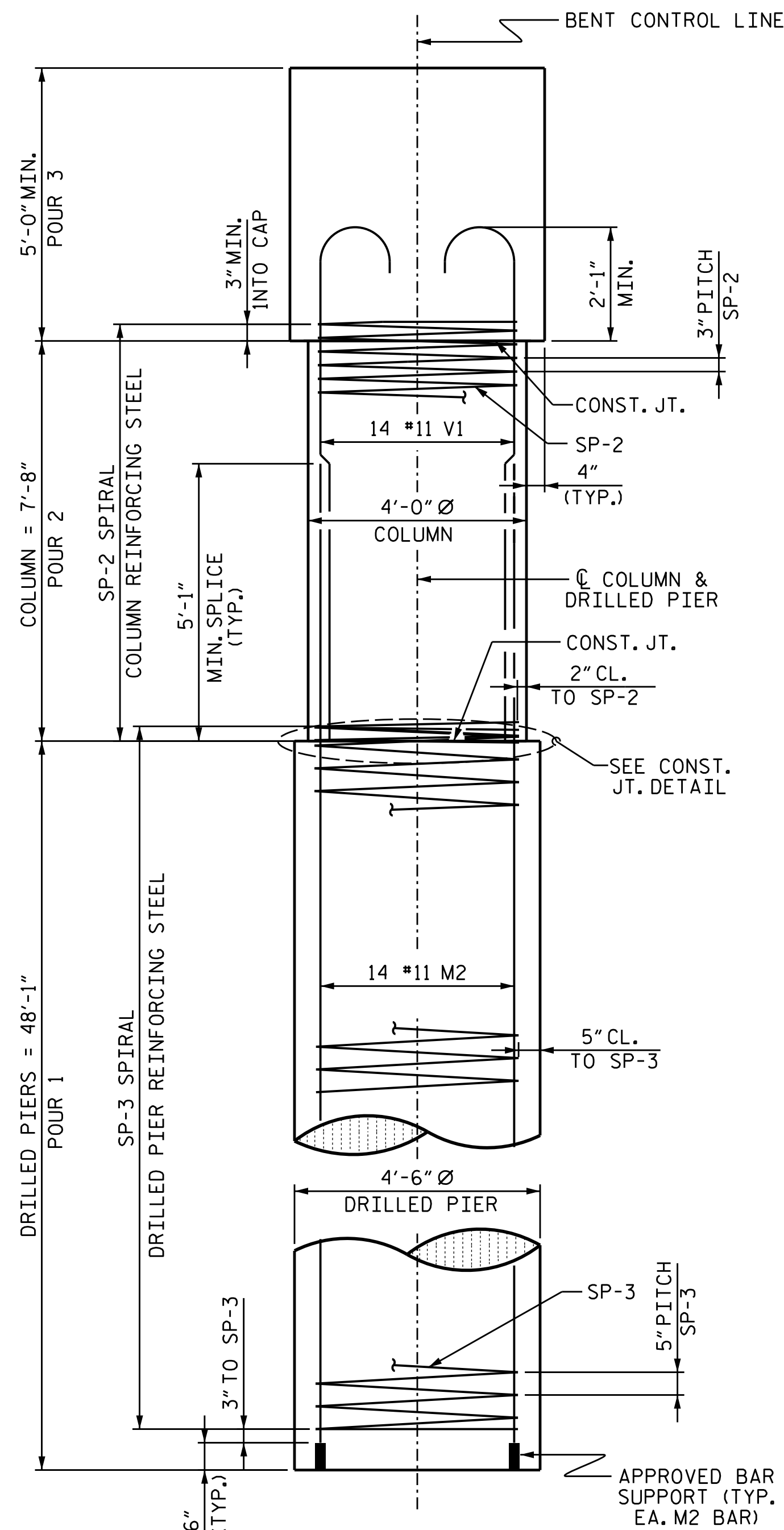
| REVISIONS |     |       |     |     |       | SHEET NO.        |
|-----------|-----|-------|-----|-----|-------|------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                  |
| 1         |     |       | 3   |     |       | S-83             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 100 |

DRAWN BY : NMW DATE : 7/20  
CHECKED BY : MGC DATE : 7/21  
DESIGN ENGINEER OF RECORD: RDE DATE : 7/21

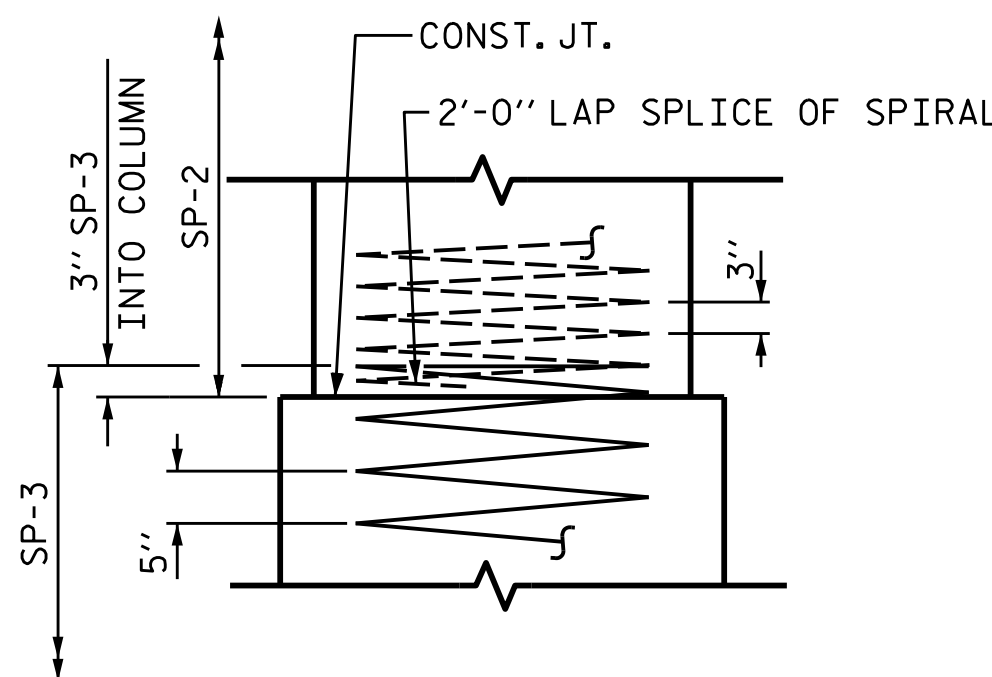
11/20/2025  
X:\NCDOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.169.U-6146.SMU.B403.350082.dgn  
User:ZSmith



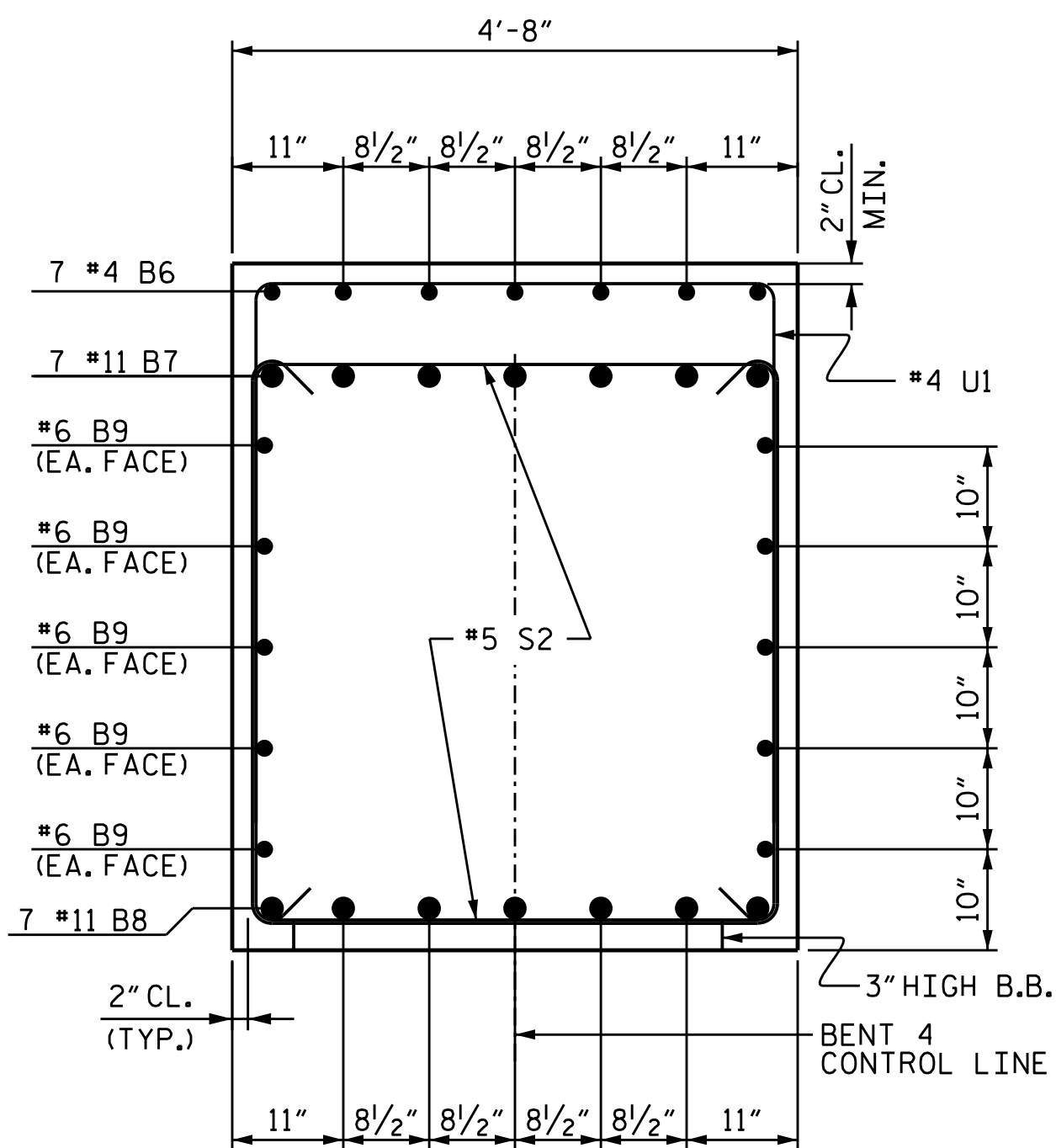
PLAN OF DRILLED PIER & COLUMN



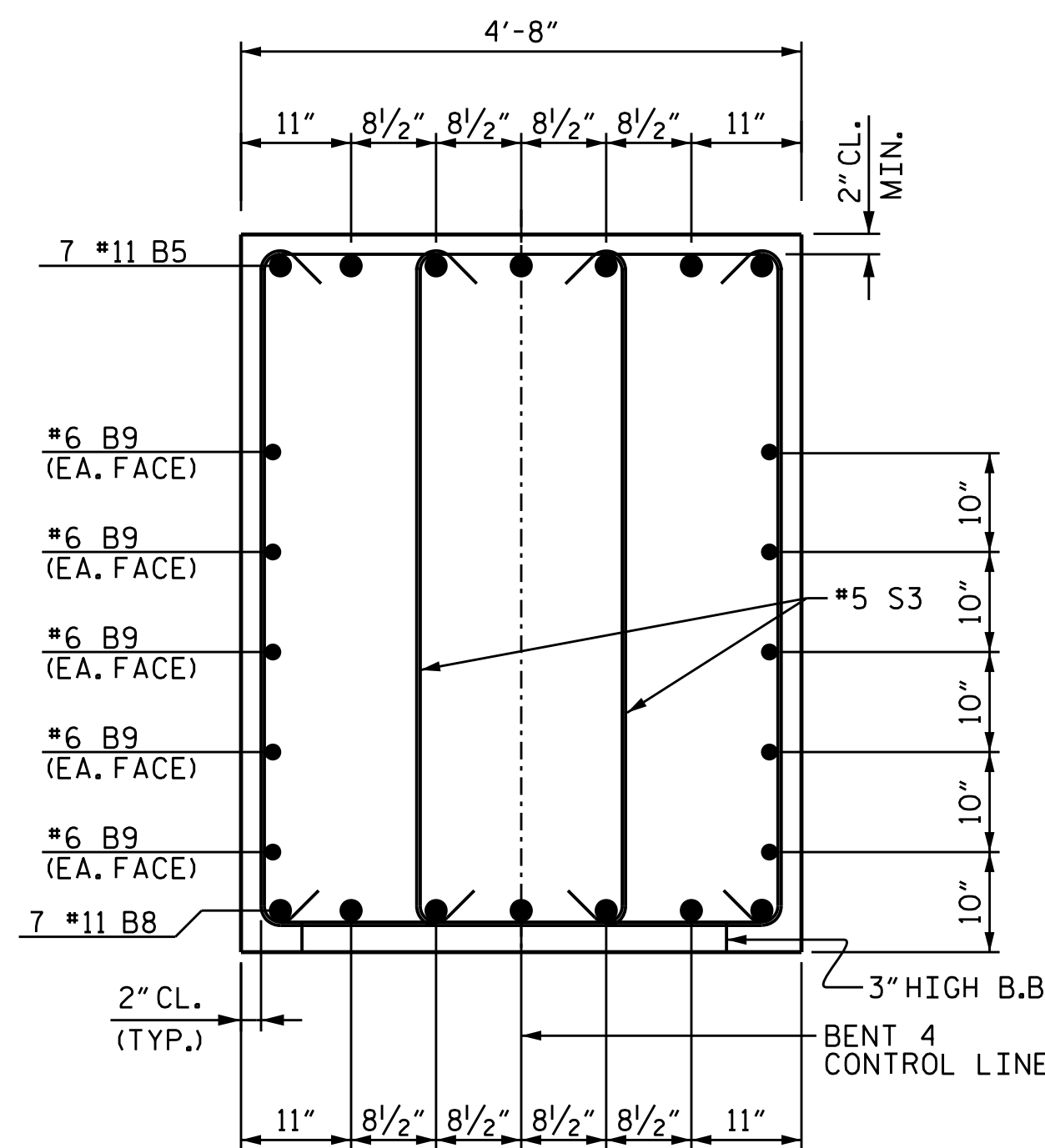
END ELEVATION



CONSTRUCTION JOINT DETAIL

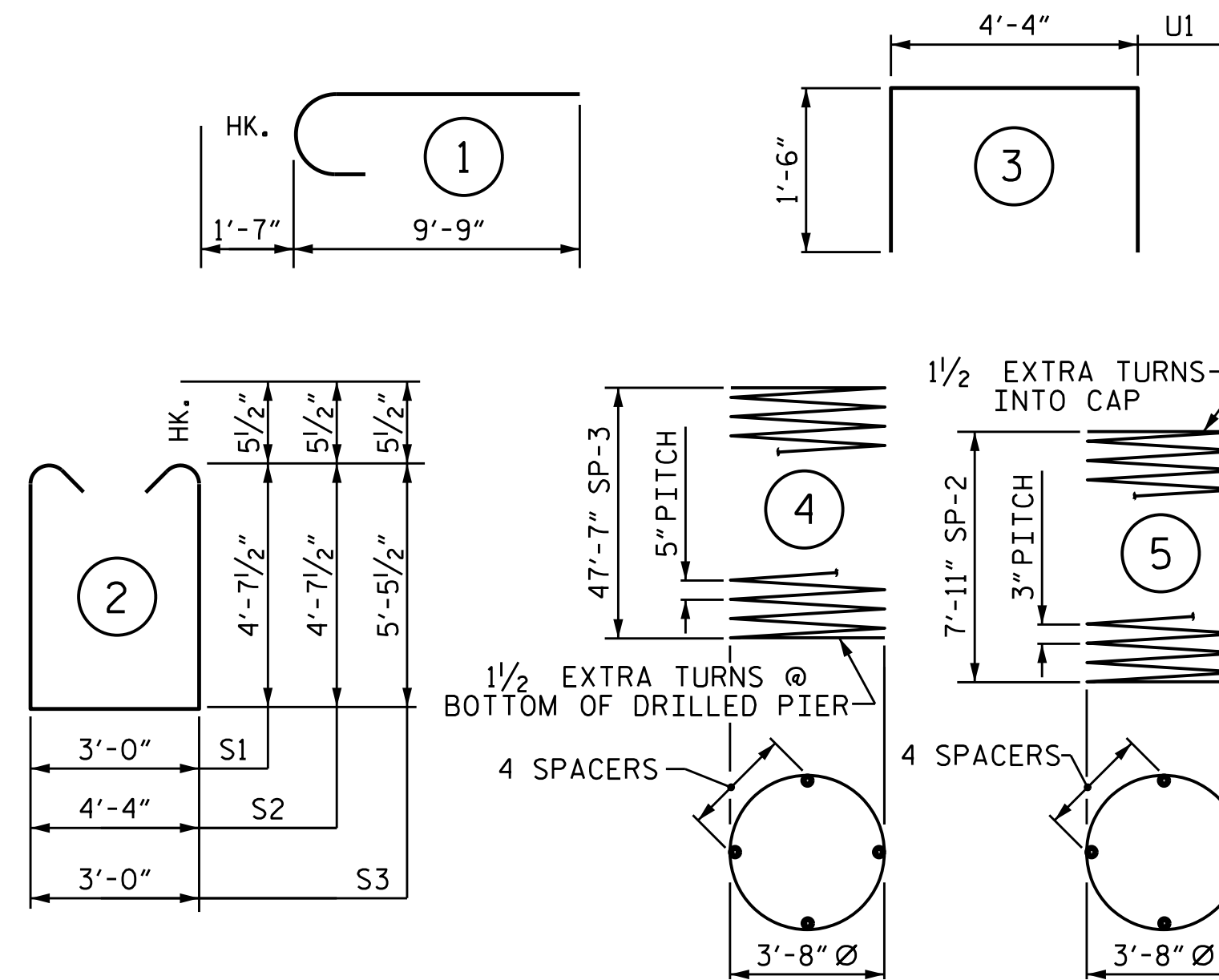


SECTION C-C



SECTION D-D

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

BENT 4 STAGE II

| BAR | NO. | SIZE | TYPE | LENGTH  | WEIGHT |
|-----|-----|------|------|---------|--------|
| B5  | 7   | #11  | STR. | 12'-10" | 477    |
| B6  | 7   | #4   | STR. | 12'-3"  | 57     |
| B7  | 7   | #11  | STR. | 14'-2"  | 527    |
| B8  | 7   | #11  | STR. | 22'-0"  | 818    |
| B9  | 10  | #6   | STR. | 25'-7"  | 384    |
| B10 | 3   | #4   | STR. | 4'-4"   | 9      |

|    |    |     |      |         |      |
|----|----|-----|------|---------|------|
| M2 | 14 | #11 | STR. | 55'-8"  | 4141 |
| S1 | 20 | #5  | 2    | 13'-2"  | 275  |
| S2 | 5  | #5  | 2    | 14'-6"  | 76   |
| S3 | 32 | #5  | 2    | 14'-10" | 495  |

|    |    |     |   |        |     |
|----|----|-----|---|--------|-----|
| U1 | 24 | #4  | 3 | 7'-4"  | 118 |
| V1 | 14 | #11 | 1 | 11'-4" | 843 |

REINFORCING STEEL 8220 LBS.

| BAR  | NO. | SIZE | TYPE | LENGTH   | WEIGHT |
|------|-----|------|------|----------|--------|
| SP-3 | 1   | *    | 4    | 1318'-2" | 1375   |
| SP-2 | 1   | **   | 5    | 387'-4"  | 259    |

SPIRAL COLUMN REINFORCING STEEL 1634 LBS.

\* THE SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR  
\*\* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR

CLASS A CONCRETE BREAKDOWN

|                 |           |
|-----------------|-----------|
| POUR 2 (COLUMN) | 3.6 C.Y.  |
| POUR 3 (CAP)    | 22.0 C.Y. |

TOTAL CLASS A CONCRETE 25.6 C.Y.

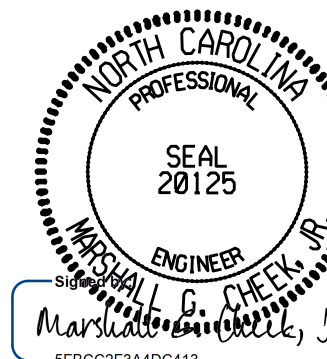
DRILLED PIERS:  
DRILLED PIER CONCRETE POUR 1 PIERS) 28.3 C.Y.

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00-L-

SHEET 4 OF 6



2/24/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

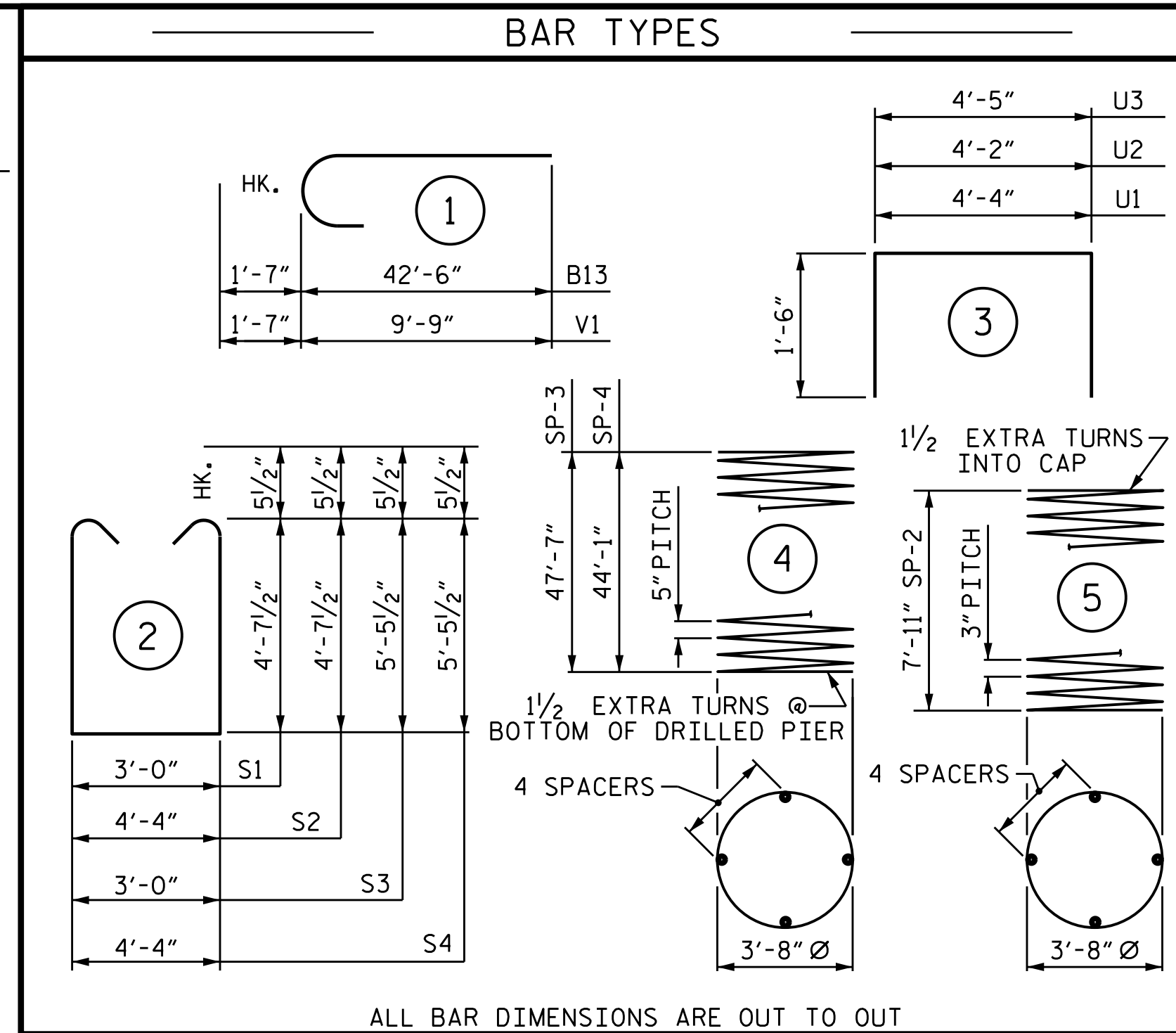
| REVISIONS |     |       |     |     |       | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |           |
| 1         |     |       | 3   |     |       | S-84      |
| 2         |     |       | 4   |     |       |           |

TOTAL SHEETS 100

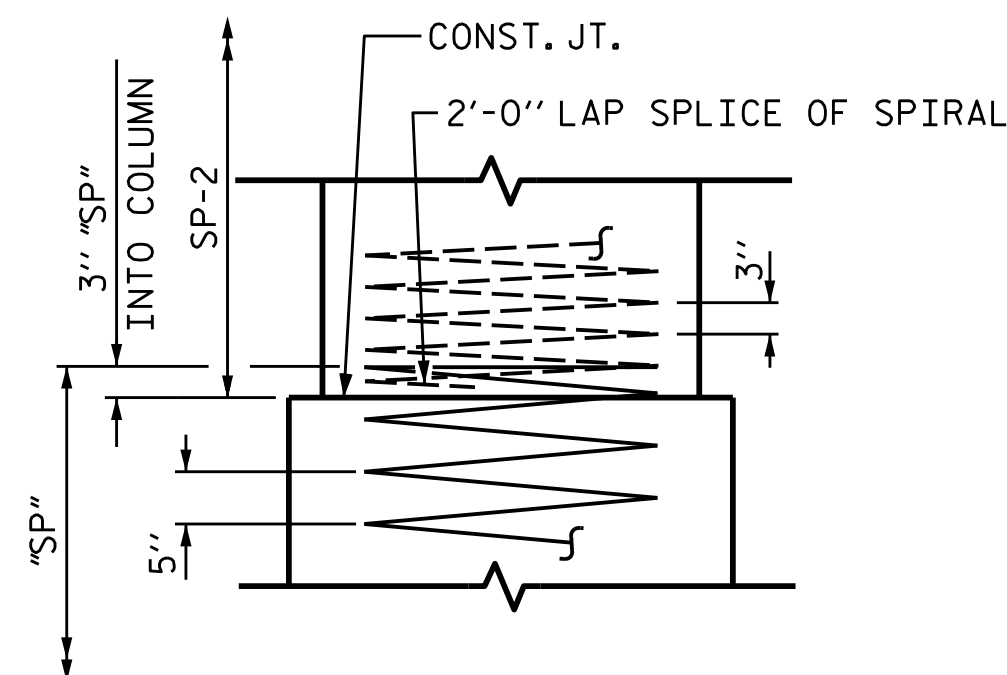
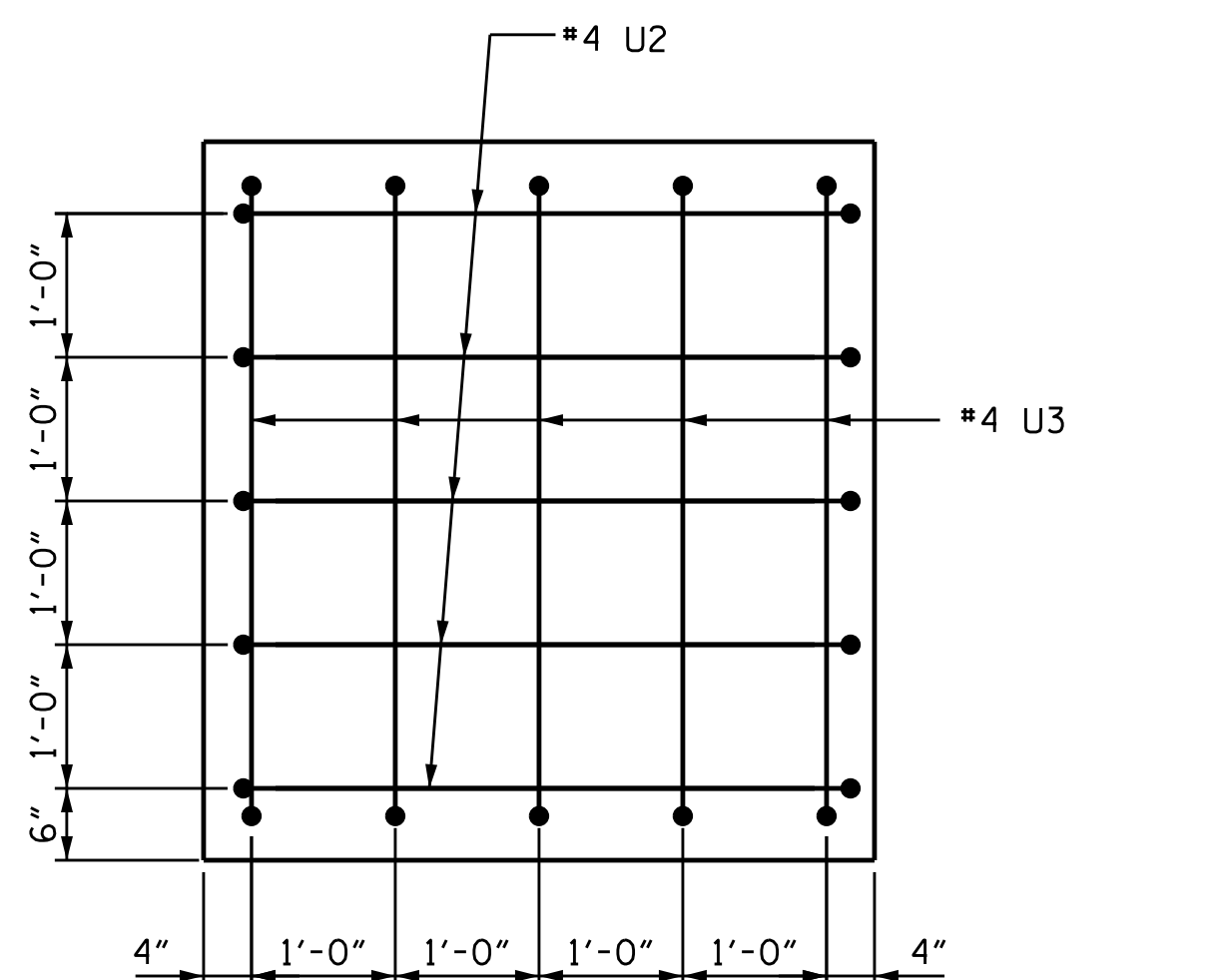
DRAWN BY : NMW DATE : 7/20  
CHECKED BY : MGC DATE : 7/21  
DESIGN ENGINEER OF RECORD: RDE DATE : 7/21

11/12/2025  
X:\NCDOT\B-5857 Cramerton\Structures\Final Plans\Final DGN\401.171.U-6146.SMU.B404.350082.dgn  
User:smassinople

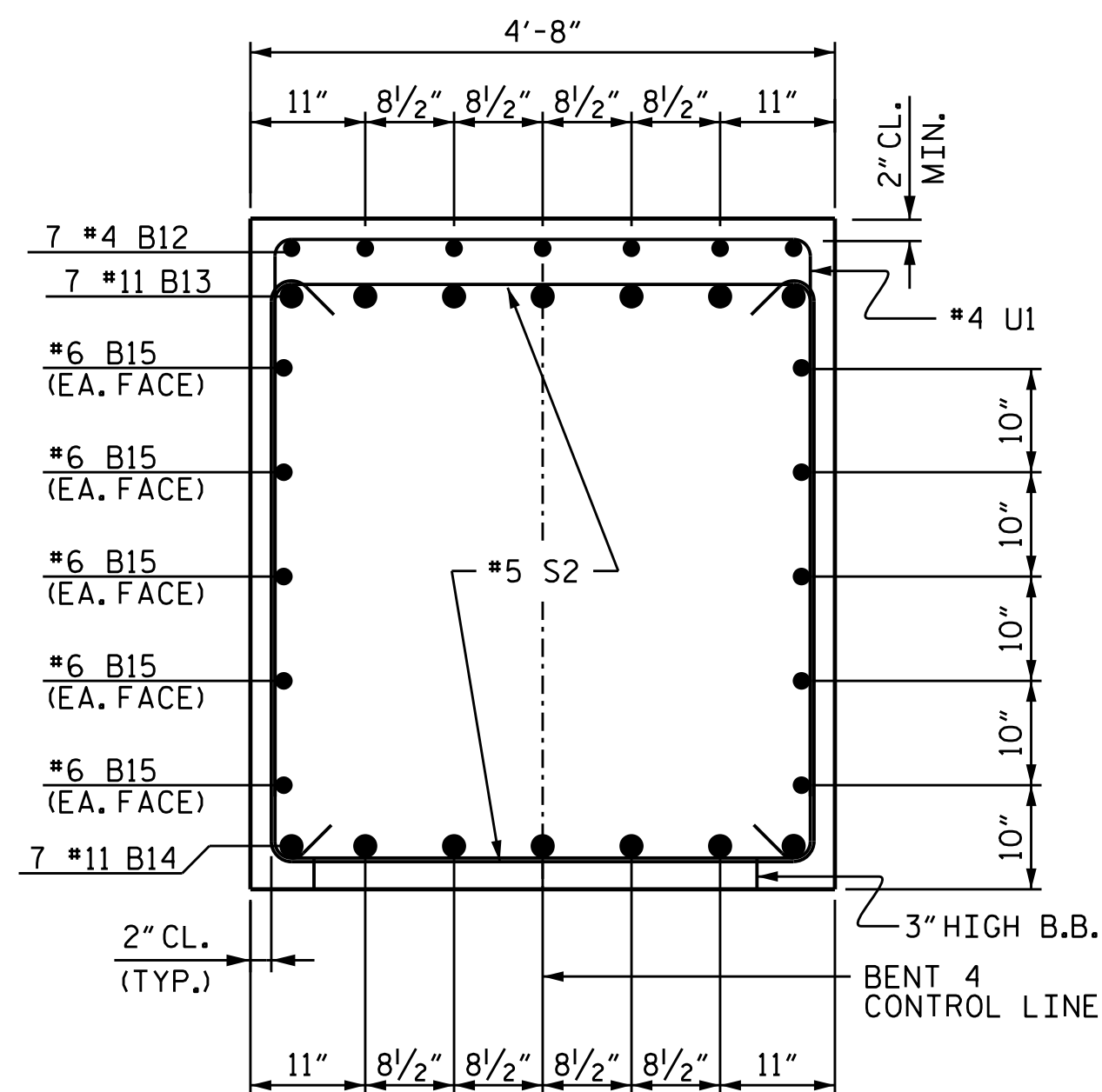
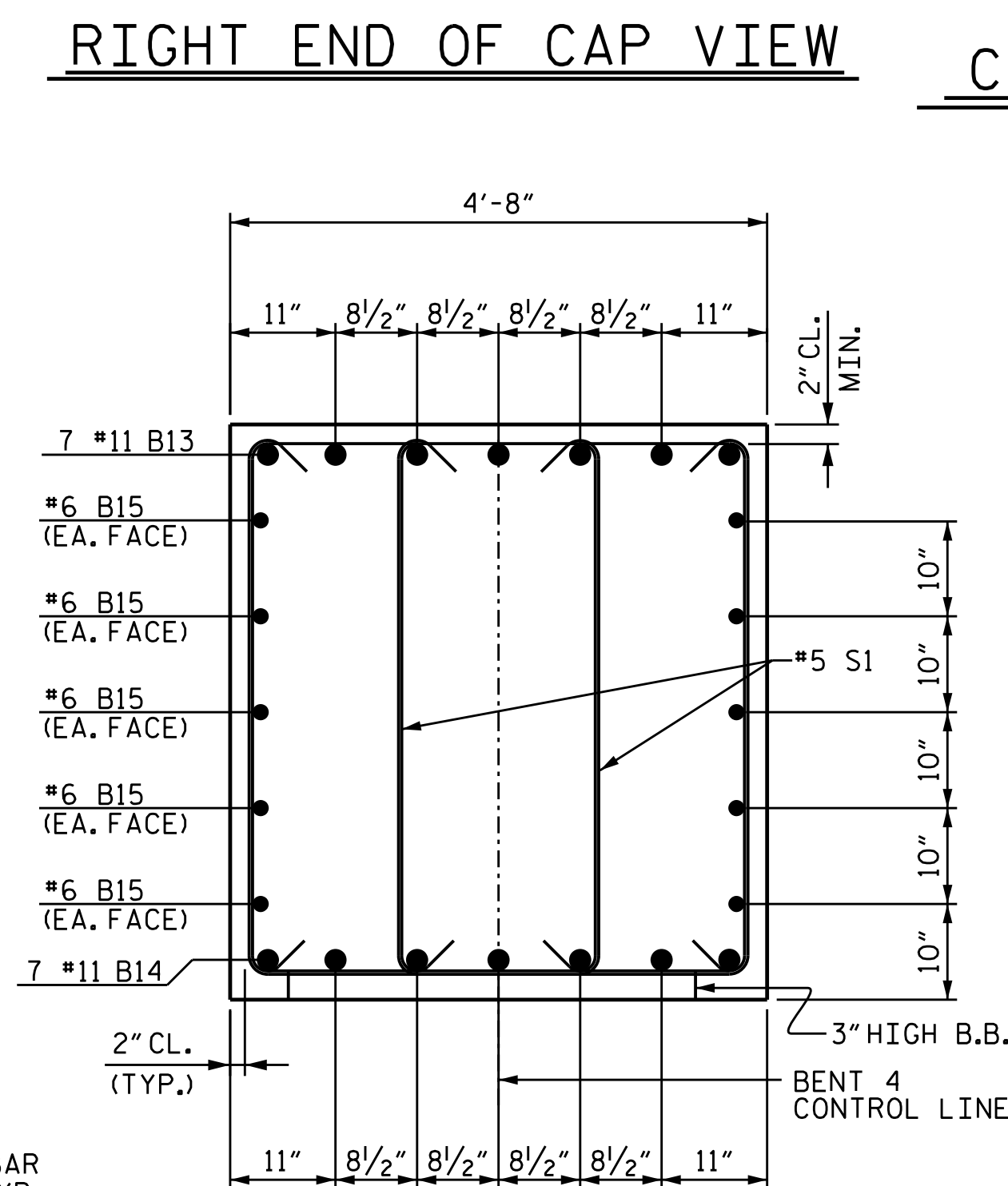




| BILL OF MATERIAL                                                                                                                                                                                                    |     |      |      |             |        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------|------|-------------|--------|
| BENT 4 STAGE III                                                                                                                                                                                                    |     |      |      |             |        |
| BAR                                                                                                                                                                                                                 | NO. | SIZE | TYPE | LENGTH      | WEIGHT |
| B10                                                                                                                                                                                                                 | 3   | #4   | STR. | 4'-4"       | 9      |
| B11                                                                                                                                                                                                                 | 7   | #11  | STR  | 22'-3"      | 827    |
| B12                                                                                                                                                                                                                 | 7   | #4   | STR  | 26'-6"      | 124    |
| B13                                                                                                                                                                                                                 | 7   | #11  | 1    | 44'-1"      | 1640   |
| B14                                                                                                                                                                                                                 | 7   | #11  | STR  | 58'-3"      | 2166   |
| B15                                                                                                                                                                                                                 | 10  | #6   | STR  | 59'-2"      | 889    |
|                                                                                                                                                                                                                     |     |      |      |             |        |
| M2                                                                                                                                                                                                                  | 14  | #11  | STR. | 55'-8"      | 4141   |
| M3                                                                                                                                                                                                                  | 28  | #11  | STR. | 52'-2"      | 7761   |
|                                                                                                                                                                                                                     |     |      |      |             |        |
| S1                                                                                                                                                                                                                  | 88  | #5   | 2    | 13'-2"      | 1208   |
| S2                                                                                                                                                                                                                  | 8   | #5   | 2    | 14'-6"      | 121    |
| S3                                                                                                                                                                                                                  | 52  | #5   | 2    | 14'-10"     | 804    |
| S4                                                                                                                                                                                                                  | 7   | #5   | 2    | 16'-2"      | 118    |
|                                                                                                                                                                                                                     |     |      |      |             |        |
| U1                                                                                                                                                                                                                  | 58  | #4   | 3    | 7'-4"       | 284    |
| U2                                                                                                                                                                                                                  | 5   | #4   | 3    | 7'-2"       | 24     |
| U3                                                                                                                                                                                                                  | 5   | #4   | 3    | 7'-5"       | 25     |
|                                                                                                                                                                                                                     |     |      |      |             |        |
| V1                                                                                                                                                                                                                  | 42  | #11  | 1    | 11'-4"      | 2529   |
|                                                                                                                                                                                                                     |     |      |      |             |        |
| REINFORCING STEEL                                                                                                                                                                                                   |     |      |      | 22,670 LBS. |        |
| BAR                                                                                                                                                                                                                 | NO. | SIZE | TYPE | LENGTH      | WEIGHT |
| SP-3                                                                                                                                                                                                                | 1   | *    | 4    | 1318'-2"    | 1375   |
| SP-4                                                                                                                                                                                                                | 2   | *    | 4    | 1227'-3"    | 2560   |
| SP-2                                                                                                                                                                                                                | 3   | **   | 5    | 387'-4"     | 776    |
| SPIRAL COLUMN REINFORCING STEEL                                                                                                                                                                                     |     |      |      | 4711 LBS.   |        |
| * THE SP-3, SP-4 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR<br>** THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BAR |     |      |      |             |        |
| CLASS A CONCRETE BREAKDOWN                                                                                                                                                                                          |     |      |      |             |        |
| POUR 2 (COLUMNS)                                                                                                                                                                                                    |     |      |      | 10.7 C.Y.   |        |
| POUR 3 (CAP)                                                                                                                                                                                                        |     |      |      | 58.1 C.Y.   |        |
| TOTAL CLASS A CONCRETE                                                                                                                                                                                              |     |      |      | 68.8 C.Y.   |        |
| DRILLED PIERS:                                                                                                                                                                                                      |     |      |      |             |        |
| DRILLED PIER CONCRETE<br>POUR 1                                                                                                                                                                                     |     |      |      | 80.8 C.Y.   |        |

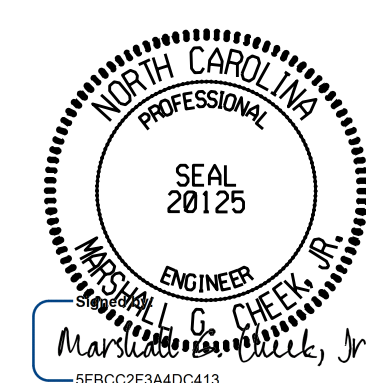


| TOTAL BENT 4 QUANTITIES         |            |
|---------------------------------|------------|
| REINFORCING STEEL               | 45,362 LBS |
| SPIRAL COLUMN REINFORCING STEEL | 9659 LBS   |
| CLASS A CONCRETE                | 129.9 CY   |



PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
 STATION: 32+93.00-L-

SHEET 6 OF 6



2/24/2026

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

**TGS ENGINEERS**  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0274

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-86         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 100          |

DRAWN BY : \_\_\_\_\_ NMW DATE : 7/20  
CHECKED BY : \_\_\_\_\_ MGC DATE : 7/21  
DESIGN ENGINEER OF RECORD: \_\_\_\_\_ RDE DATE : 7/21

11/20/2025  
X:\NCDOT\B-5857 Cramer ton\Structures\Final Plans\Final DGN\401.175.U-6146.SMU.B406.350082.dgn  
User:ZSmith

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

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

FOR PILE SPLICE DETAILS, SEE SHEET 6 OF 6.

FOR WING DETAILS, SEE SHEET 4 OF 6.

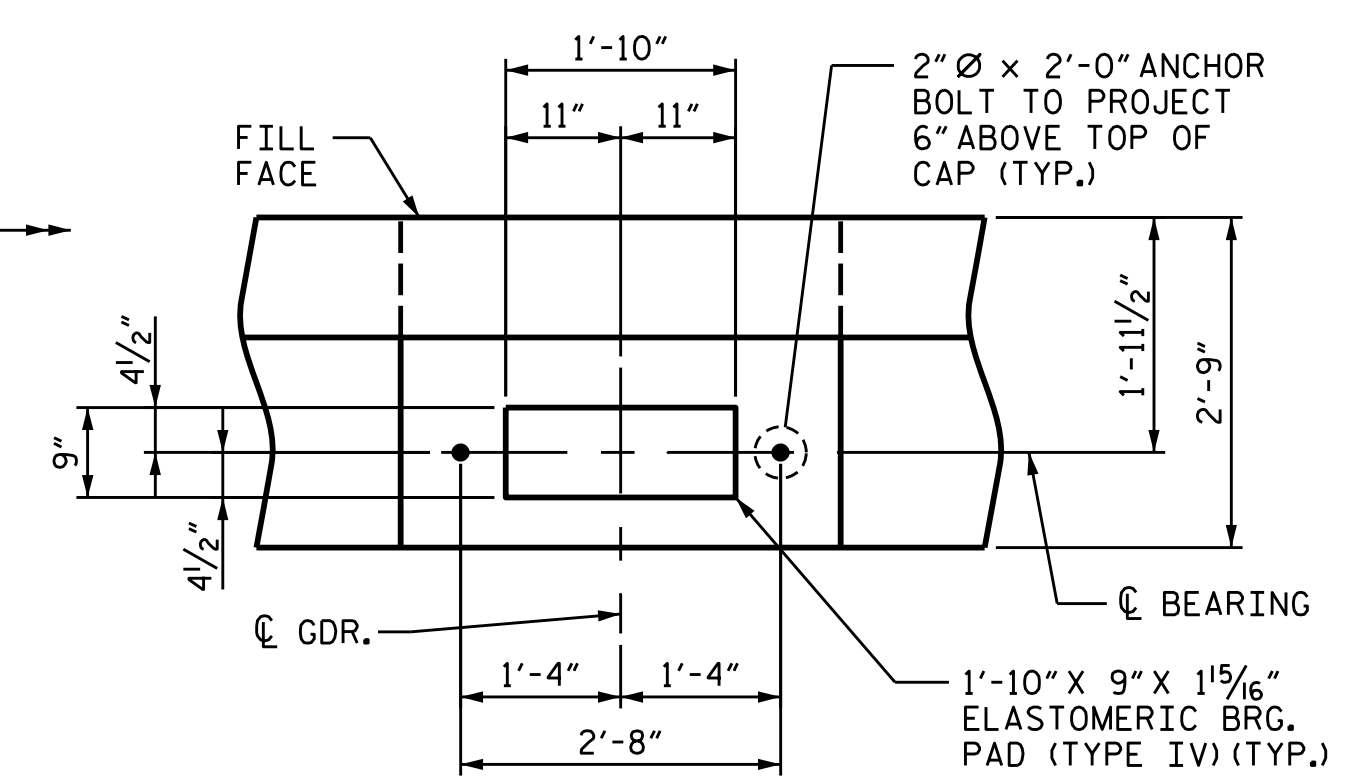
BACKWALL SHALL BE PLACED BEFORE APPLYING THE EPOXY PROTECTIVE COATING.

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

▲ THIS ELEVATION TAKEN AT FILL FACE OF BACKWALL.

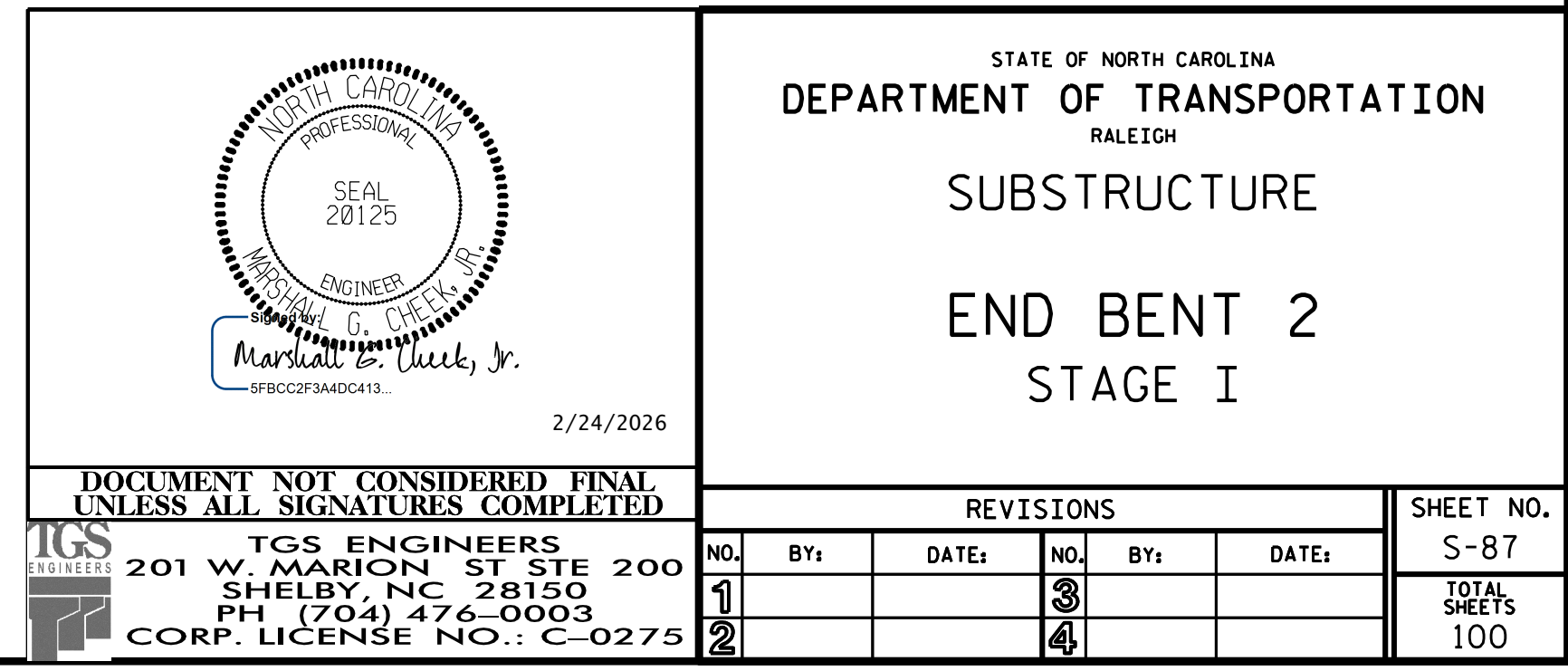
\* FOR LOCATION OF ELEVATION BETWEEN BRIDGE SEATS. SEE "SECTION A-A & B-B"; SHEET 5 OF 6.

INSTALL THE 6"Ø DRAIN PIPE THROUGH THE WINGWALL AS REQUIRED FOR BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WINGWALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.



### DETAIL "A"

DIMENSIONS ARE TYPICAL  
FOR EACH BEARING.



|                             |               |        |      |
|-----------------------------|---------------|--------|------|
| DRAWN BY :                  | JLA           | DATE : | 8/20 |
| CHECKED BY :                | S.B. WILLIAMS | DATE : | 3/21 |
| DESIGN ENGINEER OF RECORD : | RDE           | DATE : | 3/21 |

FOR SECTION A-A AND B-B, SEE SHEET 5 OF 6.  
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
FOR "CORROSION PROTECTION FOR STEEL PILES DETAIL", SEE SHEET 6 OF 6.

Plan view of the end bent showing girders E5, E6, and E7. The diagram includes dimensions for the total end bent length (120'-11") and the distance from the fill face to the centerline of girder E5 (35'-5" STAGE I). Key dimensions include 8'-0" and 8'-0" spans between girders, and 9'-1" from the last girder to the centerline. The diagram also shows the location of the centerline of girder E5 (CL GIRDER E5), CL GIRDER E6, and CL GIRDER E7. Dimensions for the girders are provided: 3'-10 1/2" and 1'-10" for girder E5, 1'-10" and 1'-10" for girder E6, and 1'-10" and 3'-2 1/2" for girder E7. The total length of the end bent is 120'-11". The diagram also shows the location of the centerline of girder E5 (CL GIRDER E5), CL GIRDER E6, and CL GIRDER E7. Dimensions for the girders are provided: 3'-10 1/2" and 1'-10" for girder E5, 1'-10" and 1'-10" for girder E6, and 1'-10" and 3'-2 1/2" for girder E7. The total length of the end bent is 120'-11".

STAGE I

6 1/2"

23-#4 V1 @ 1'-0" CTS. (EA. FACE)

23-#4 U1 @ 1'-0" CTS.

6 1/2"

6"

7-#4 U2 @ 1'-6" CTS.

3"

4-#4 U2 @ 1'-6" CTS.

5-#4 K3 (EA. FACE)

▲ EL. 590.19

▲ EL. 590.65

5-#4 K3 BARS (EA. FACE) (2'-5" MIN. PROJECTION)

#4 B3 @ 4'-0" CTS. (6 REQ'D)

EL. 585.86

4-#4 B12

\* EL. 585.90

EL. 586.02

\* EL. 585.74

4-#9 B8

4-#4 B9

4-#4 B10

EL. 586.18

#4 B11 (EA. FACE)

POUR #2 BACKWALL

POUR #1 CAP & CONCRETE COLLARS

#4 B7 BARS (2'-5" MIN. PROJ.)

4 #4 S3 (TYP. EA. PILE)

EL. 581.08 BOTT. OF CAP (LEVEL)

4-#4 B7 (OVER PILES)

#4 B7 (EA. FACE)

4-#9 B6

2'-0" MIN. EMBEDMENT (TYP.)

MECHANICAL COUPLER (TYP.)

1'-0" (TYP.)

#5 S1 & #5 S2

3" HIGH B.B. @ 5'-0" CTS.

8"

8 1/2"

8 1/2"

8 1/2"

8 1/2"

8"

#5 S4 & #5 S2

7-#5 S1 & S2 @ 11" CTS.

11" 11"

5-#5 S4 & S2 @ 11" CTS.

7-#5 S4 & S2 @ 11" CTS.

HP 12 X 53 STEEL PILES

HP 12 X 53 STEEL BRACE PILES

6'-11"

6'-11"

6'-11"

7'-0 1/2"

7

8

9

10

FOR SECTION C-C AND D-D, SEE SHEET 5 OF 6.  
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
FOR "CORROSION PROTECTION FOR STEEL PILES DETAIL", SEE SHEET 6 OF 6.

[illegible]

PROJECT NO. U-6146/B-5857  
                    GASTON                     COUNTY  
STATION:           32+93.00  -L-          

A circular professional engineer seal for the State of North Carolina. The outer ring contains the text "NORTH CAROLINA" at the top and "MARSHALL L. G. CHEEK, JR." at the bottom. Inside the ring, the word "PROFESSIONAL" is at the top, "SEAL" is in the center, and "20125" is below it. The word "ENGINEER" is at the bottom. A blue ink signature "Marshall L. G. Cheek, Jr." is written across the bottom of the seal.

END BENT 2  
STAGE II

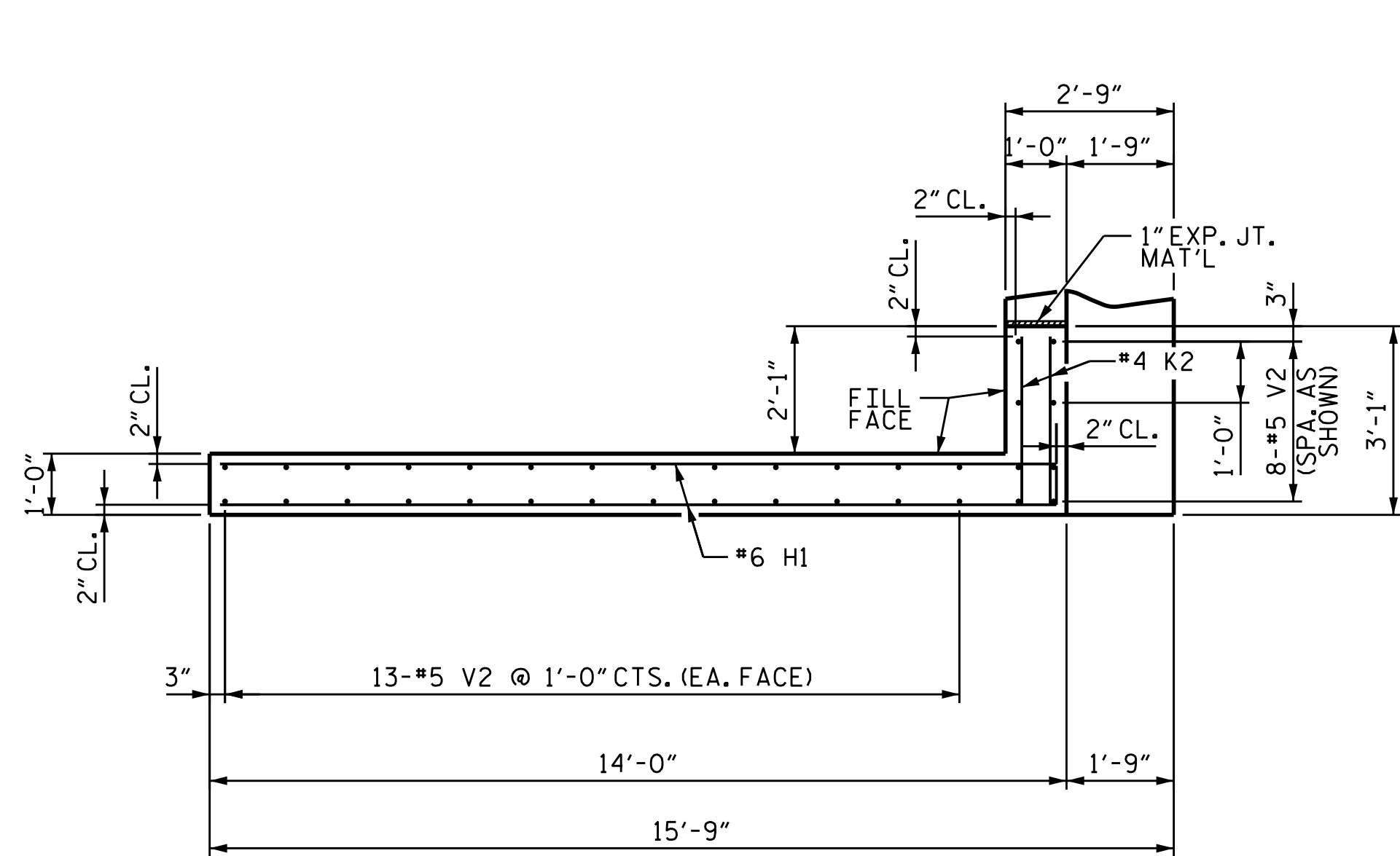
**DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED**

**TGS ENGINEERS**  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0279

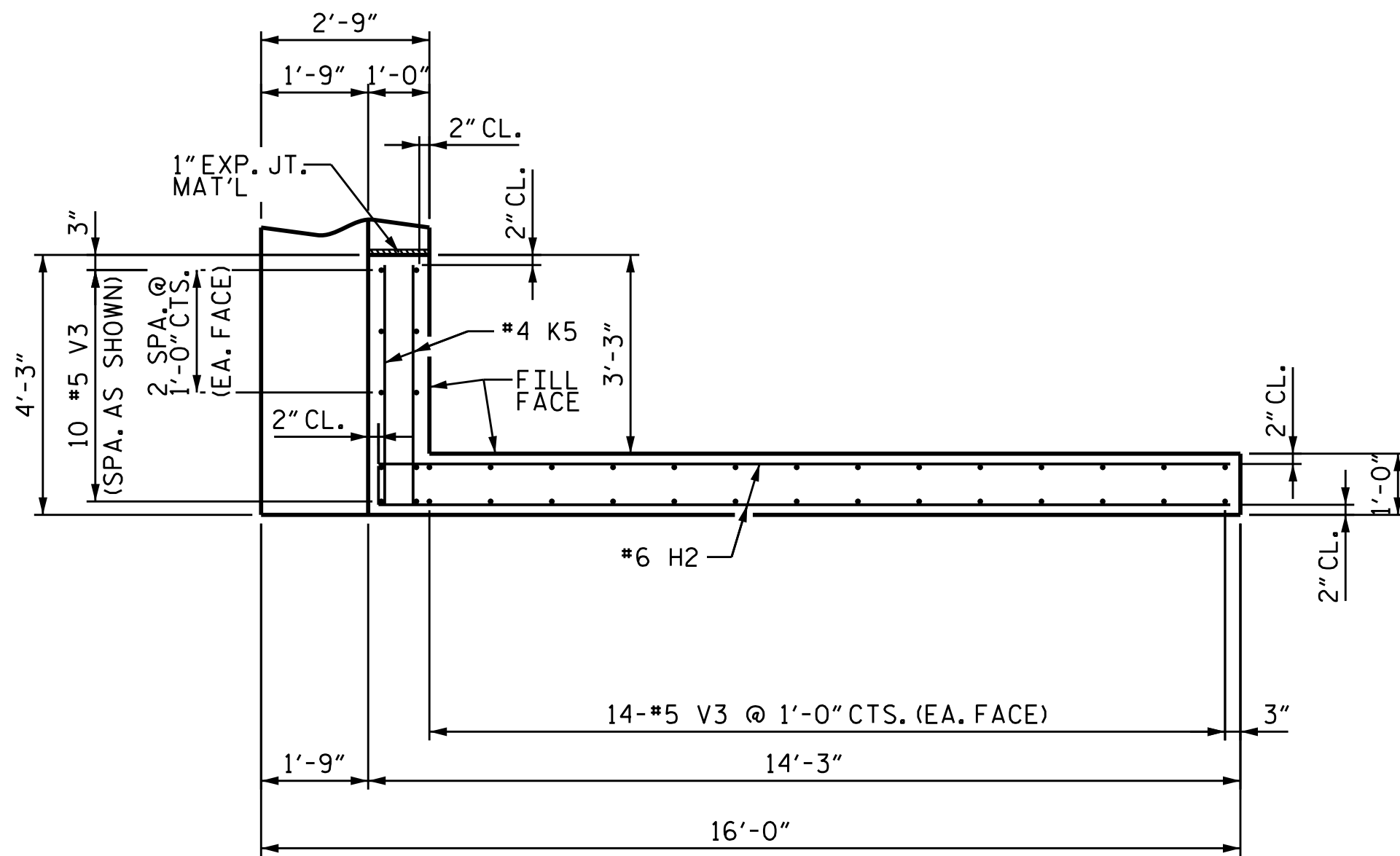
| NO. | BY: | DATE: | NO. | BY: | DATE: |
|-----|-----|-------|-----|-----|-------|
| 1   |     |       | 3   |     |       |
| 2   |     |       | 4   |     |       |

|              |      |
|--------------|------|
| SHEET NO.    | S-88 |
| TOTAL SHEETS | 100  |

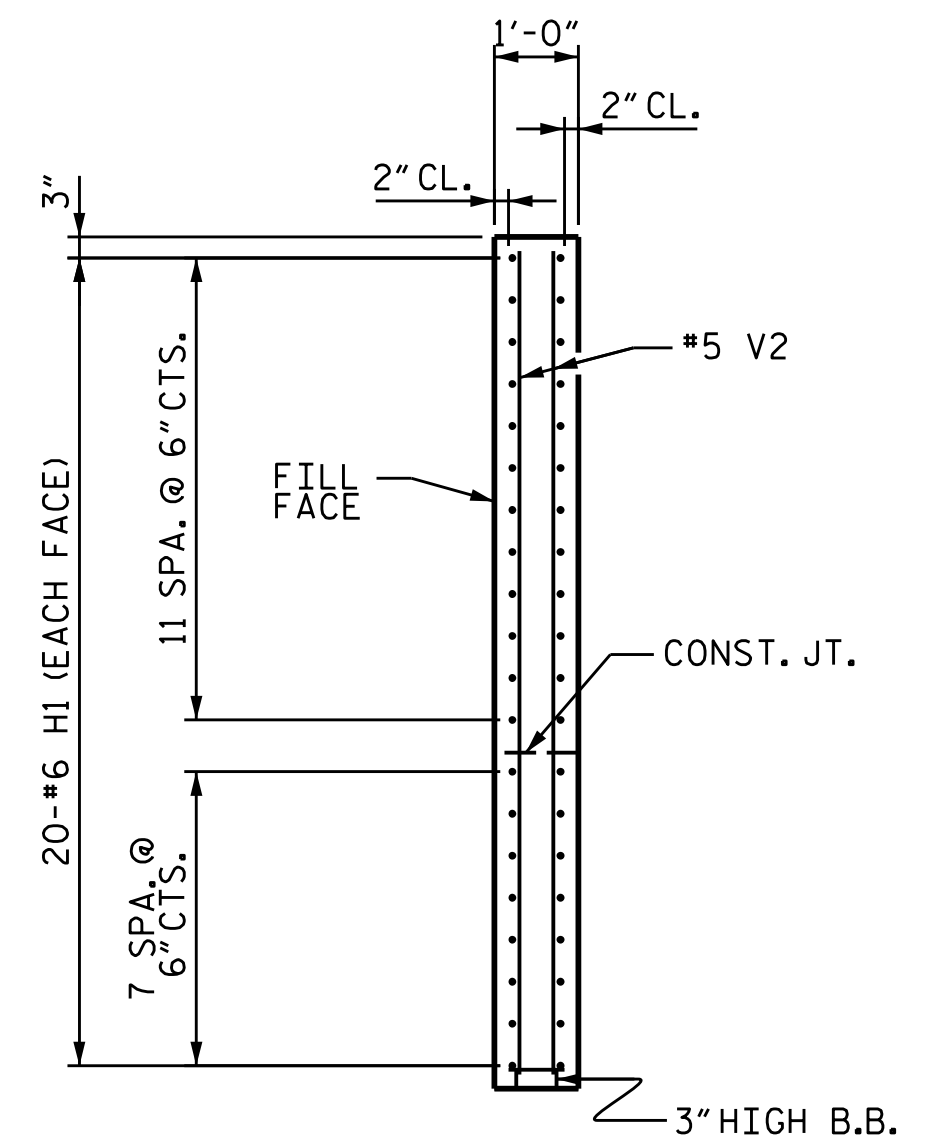




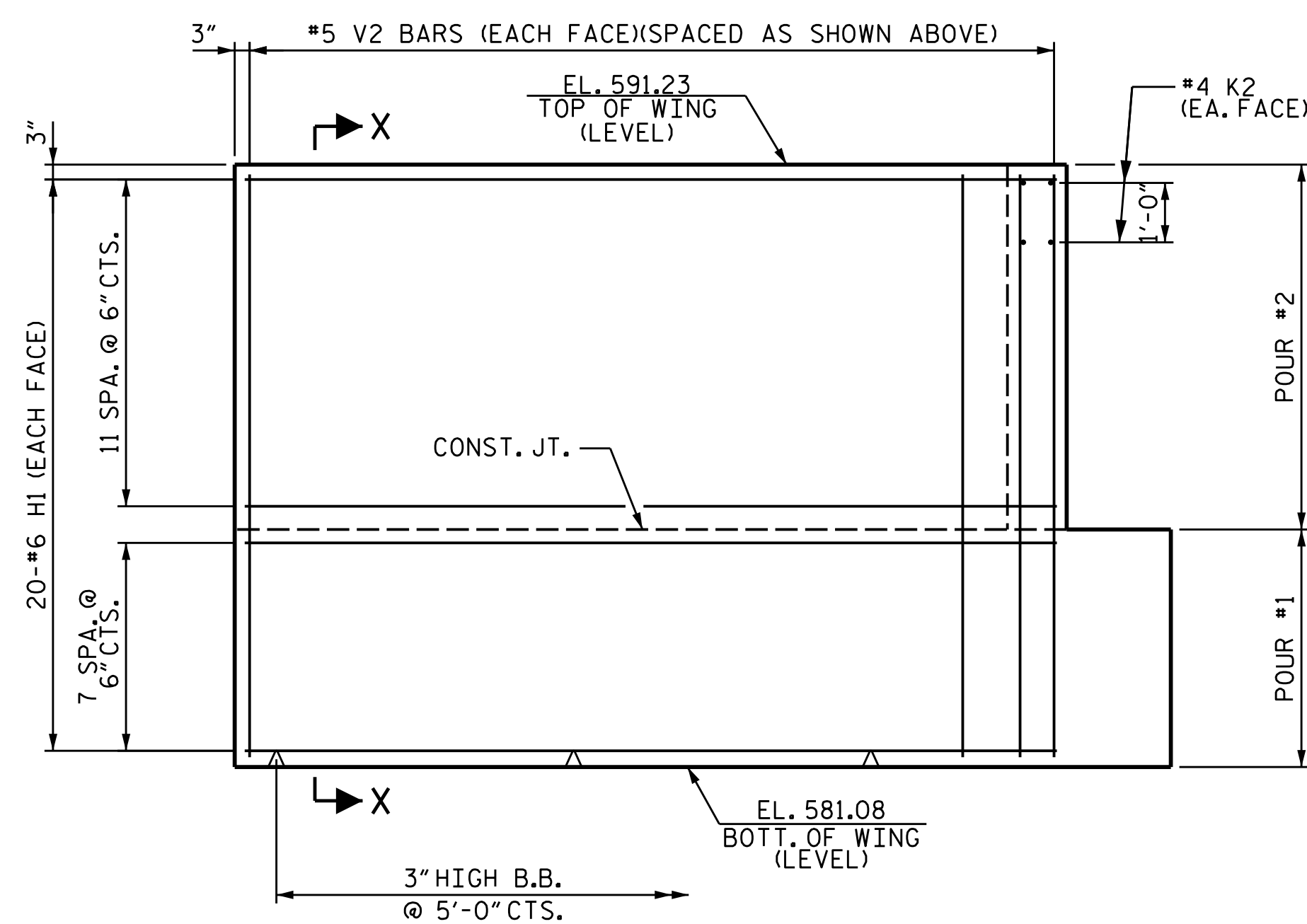
PLAN OF WING (W3)  
STAGE I



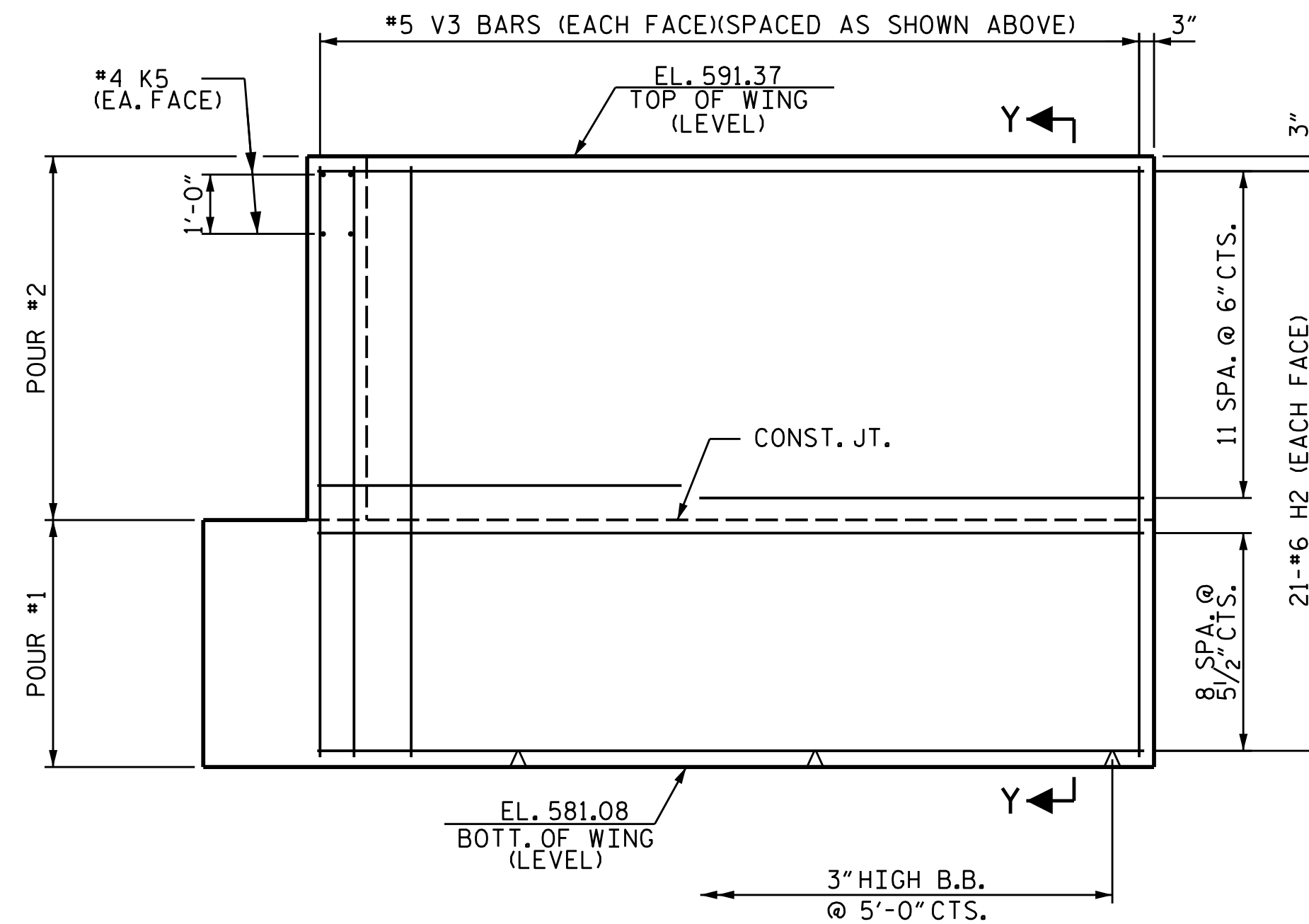
PLAN OF WING (W4)  
STAGE III



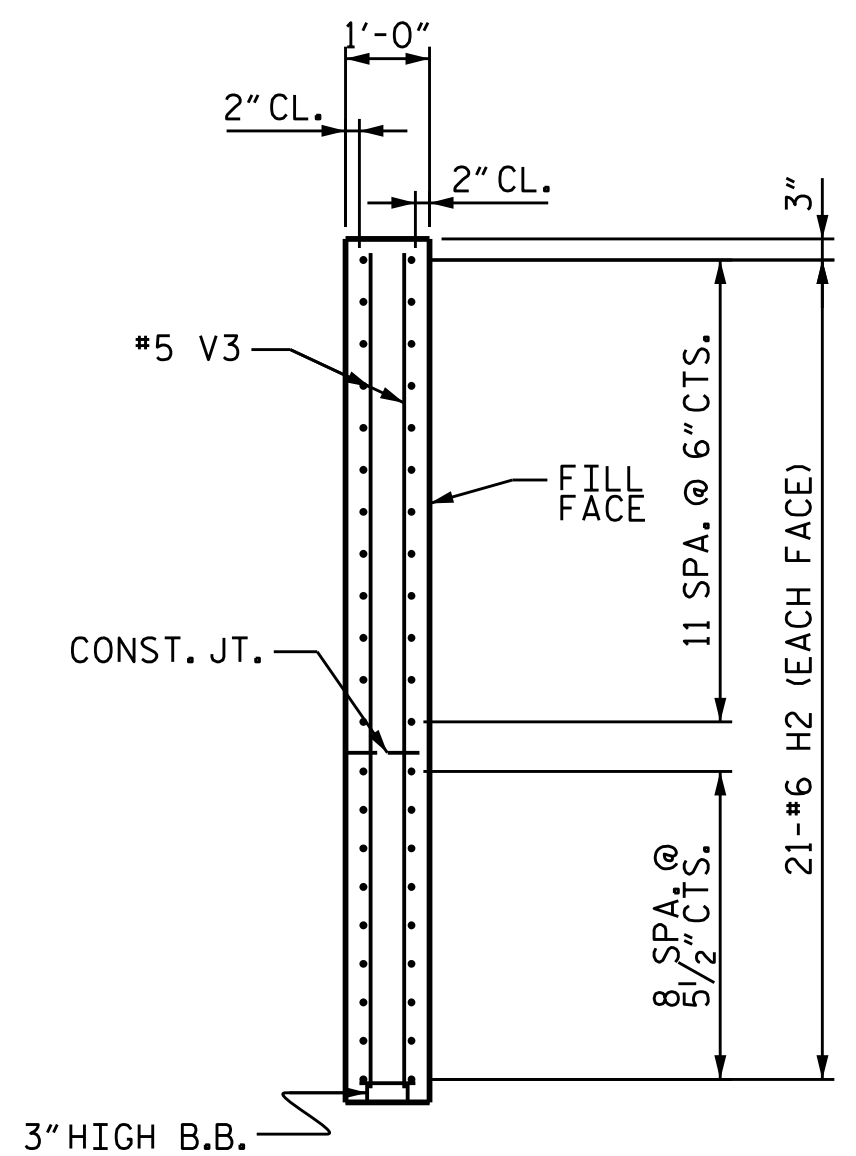
SECTION X-X



ELEVATION OF WING (W3)  
STAGE I



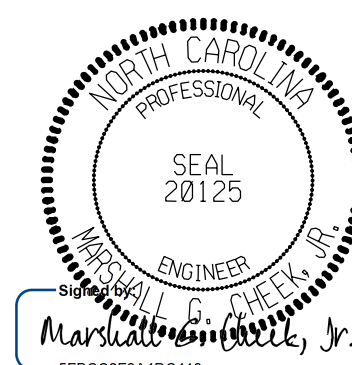
ELEVATION OF WING (W4)  
STAGE III



SECTION Y-Y

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00 -L-

SHEET 4 OF 6



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

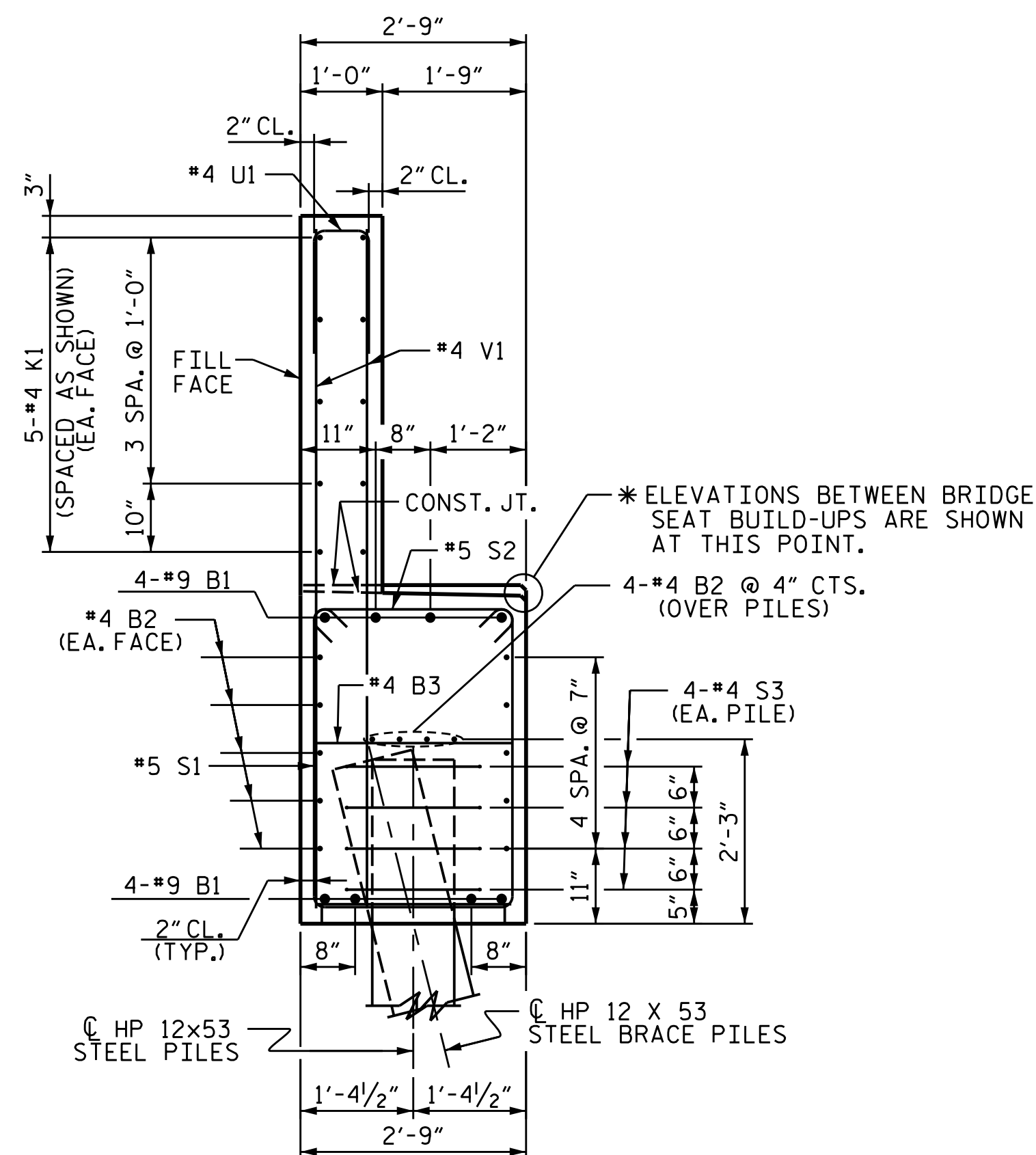
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE

END BENT 2

| REVISIONS |    |      |     |    |      | SHEET NO.        |
|-----------|----|------|-----|----|------|------------------|
| NO.       | BY | DATE | NO. | BY | DATE |                  |
| 1         |    |      | 3   |    |      | S-90             |
| 2         |    |      | 4   |    |      | TOTAL SHEETS 100 |

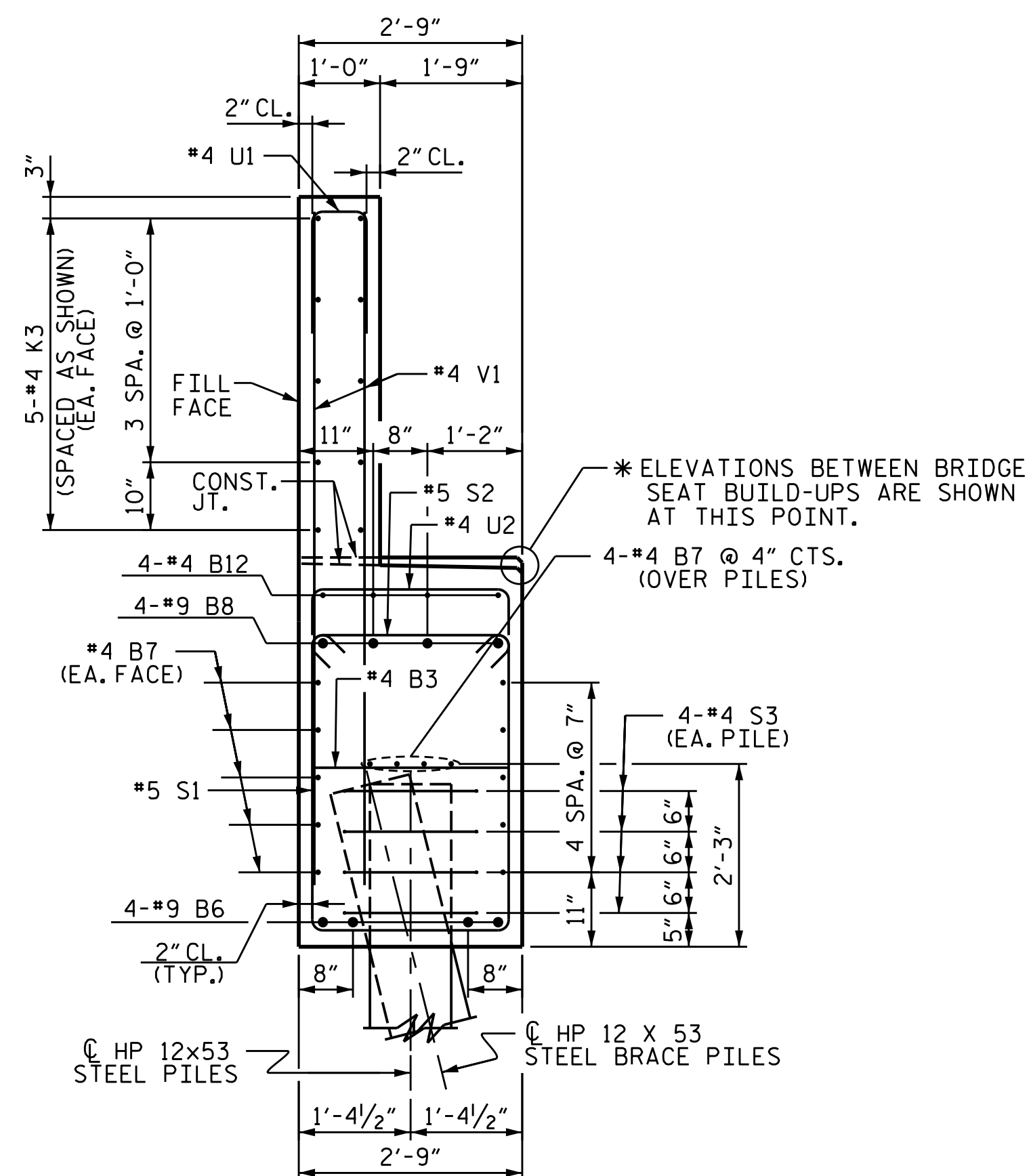
DRAWN BY : JLA DATE : 8/20  
CHECKED BY : S.B. WILLIAMS DATE : 3/21  
DESIGN ENGINEER OF RECORD : RDE DATE : 3/21

WING DETAILS



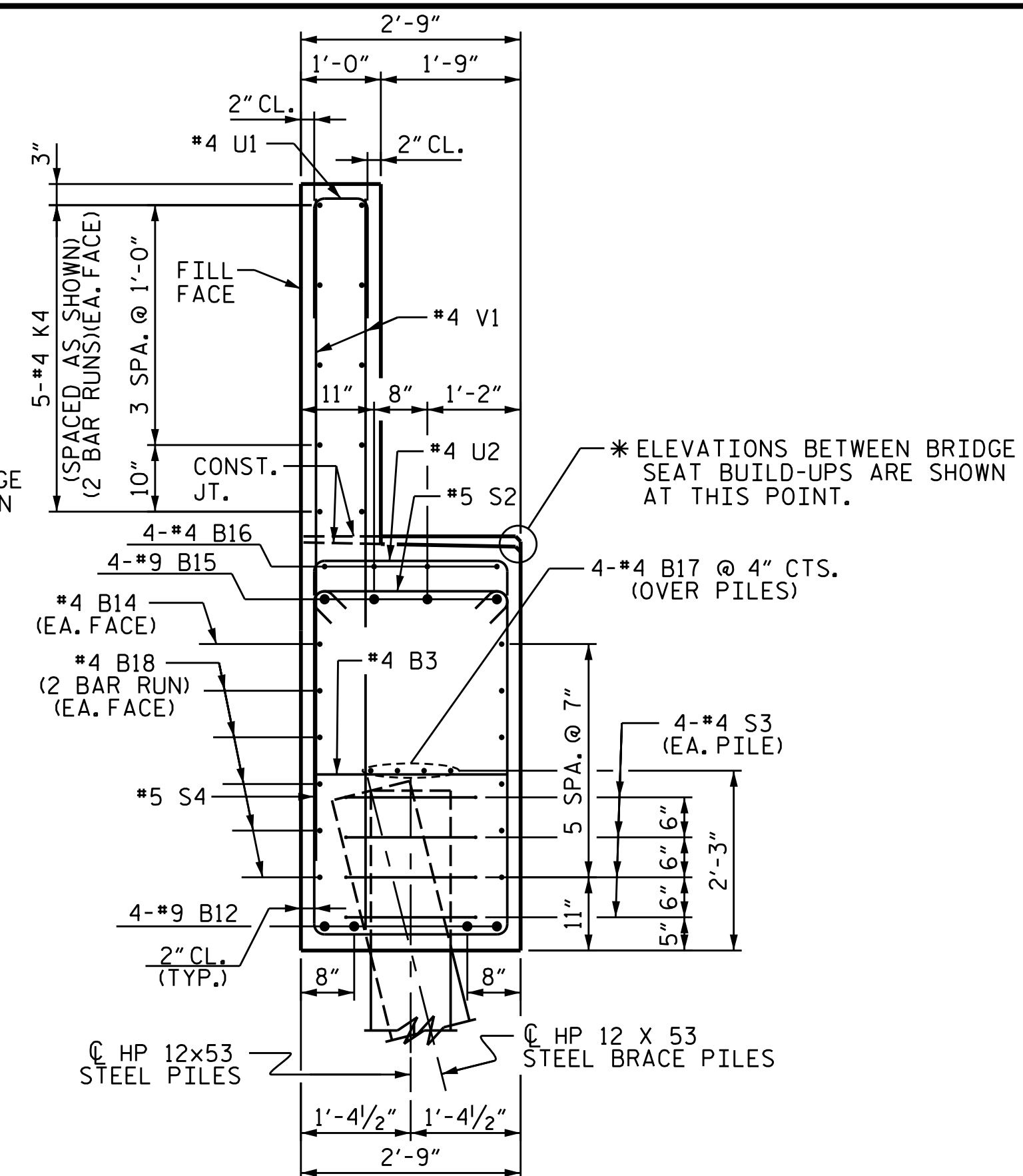
SECTION A-A

CONCRETE COLLAR NOT SHOWN FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL".



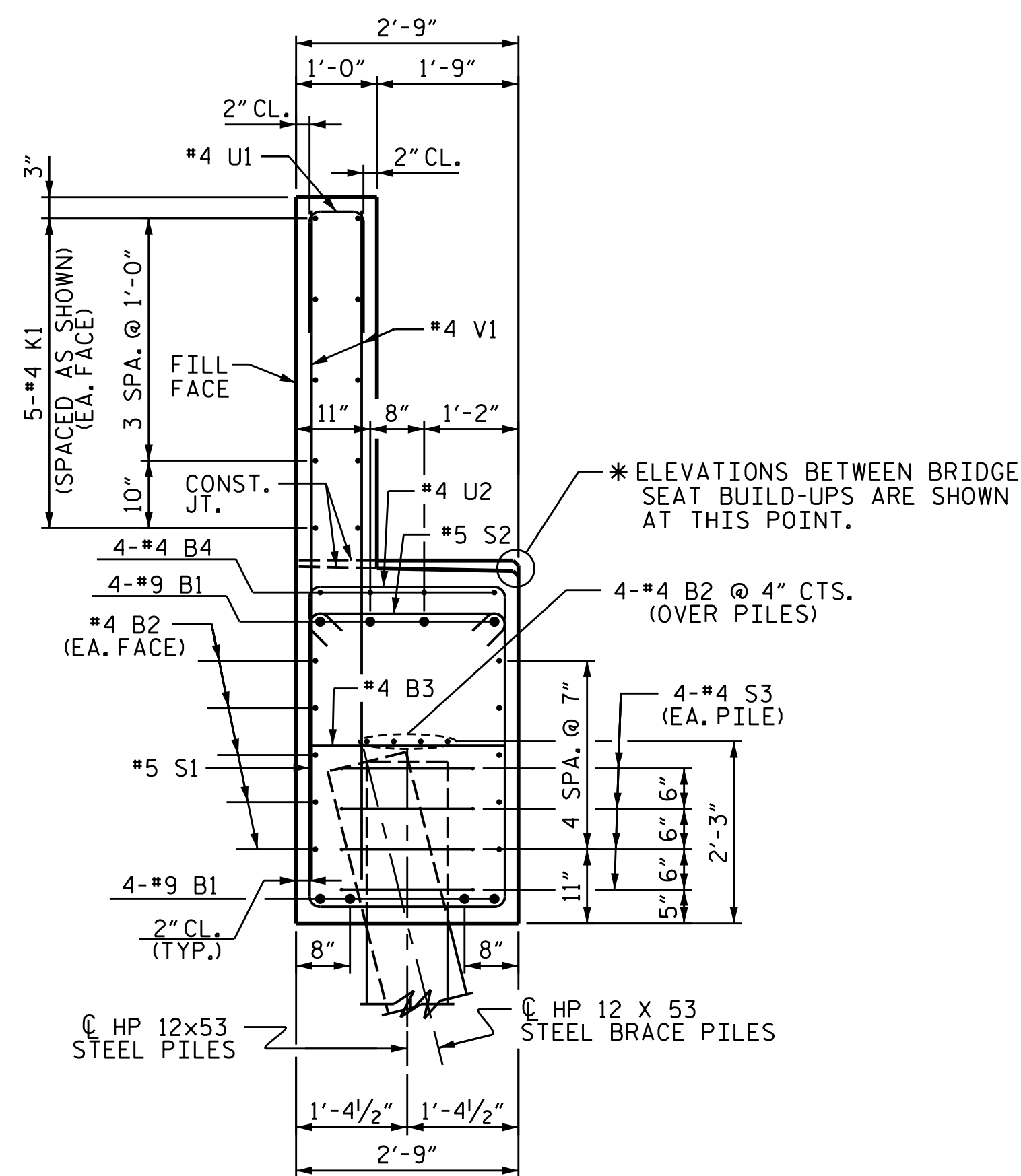
SECTION C-C

CONCRETE COLLAR NOT SHOWN FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL".



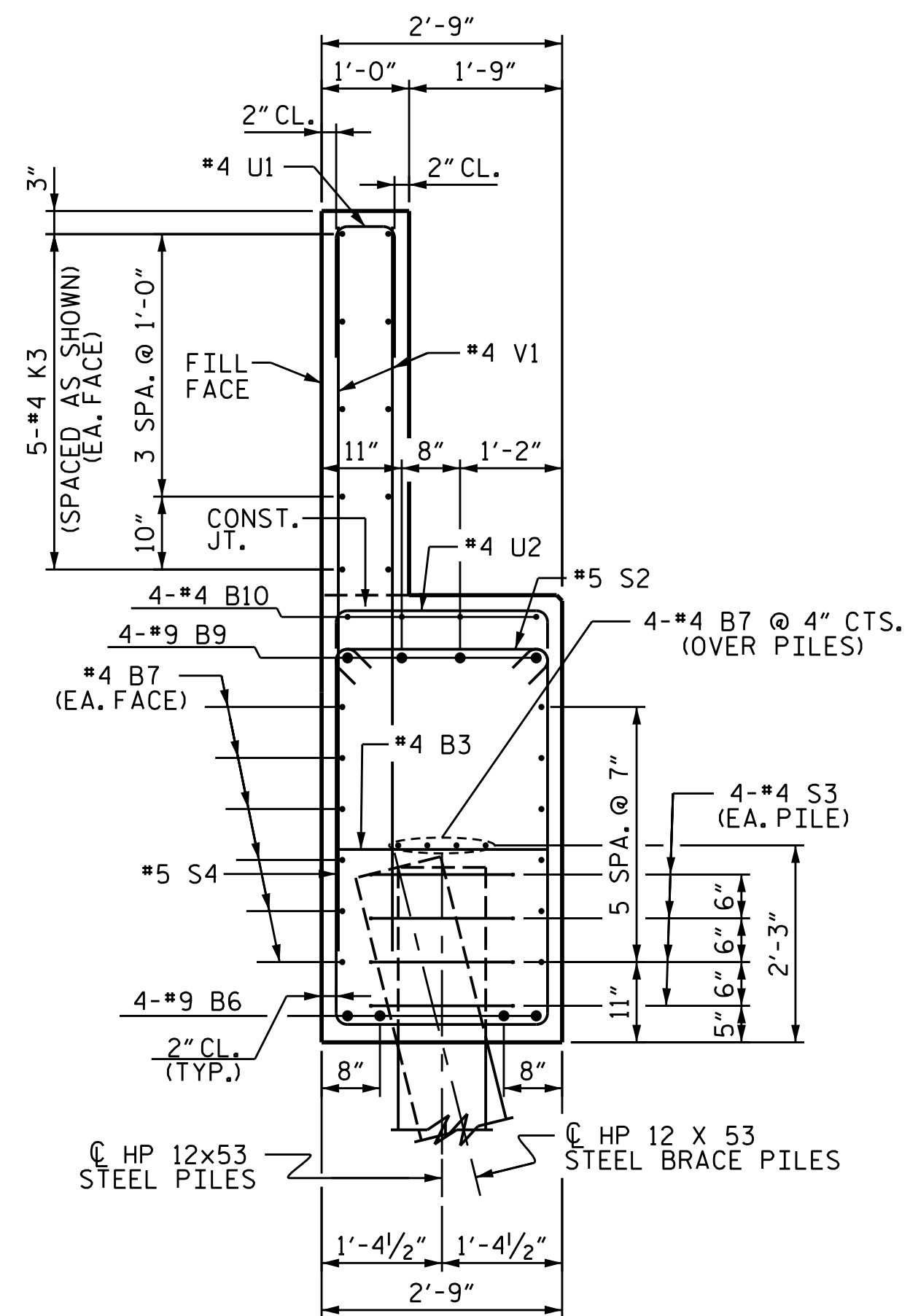
## SECTION E-E

CONCRETE COLLAR NOT SHOWN FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL".



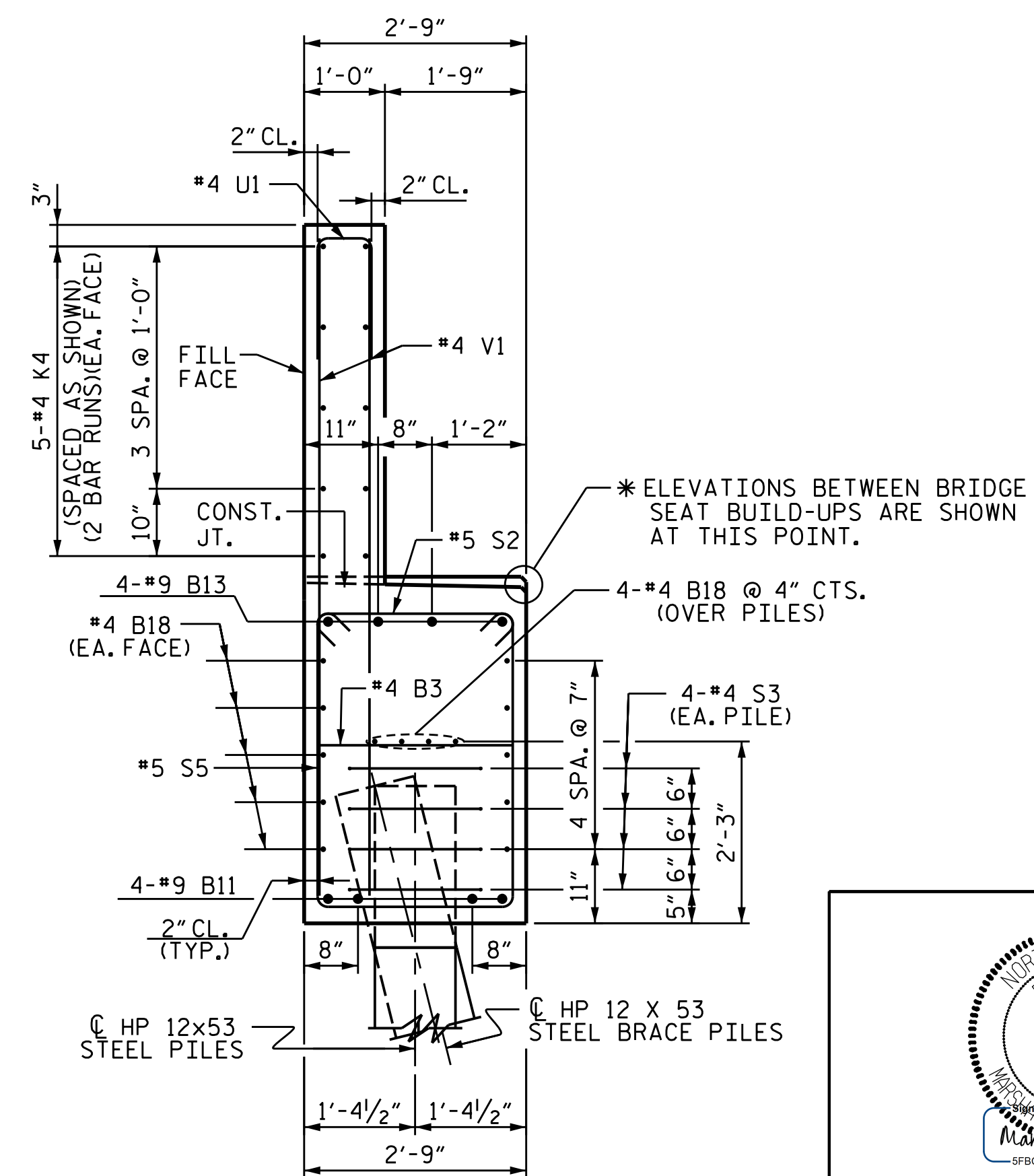
SECTION B-B

CONCRETE COLLAR NOT SHOWN FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL".



SECTION D-D

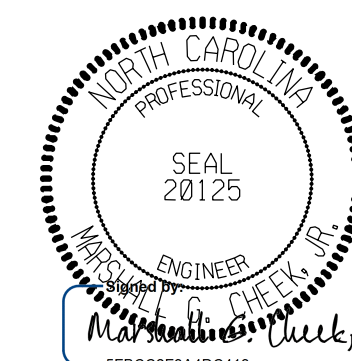
CONCRETE COLLAR NOT SHOWN FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL".



## SECTION F-F

CONCRETE COLLAR NOT SHOWN FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL".

|                             |               |        |      |
|-----------------------------|---------------|--------|------|
| DRAWN BY :                  | JLA           | DATE : | 8/20 |
| CHECKED BY :                | S.B. WILLIAMS | DATE : | 3/21 |
| DESIGN ENGINEER OF RECORD : | RDE           | DATE : | 3/21 |



2/24/2026

PROJECT NO. U-6146/B-5857

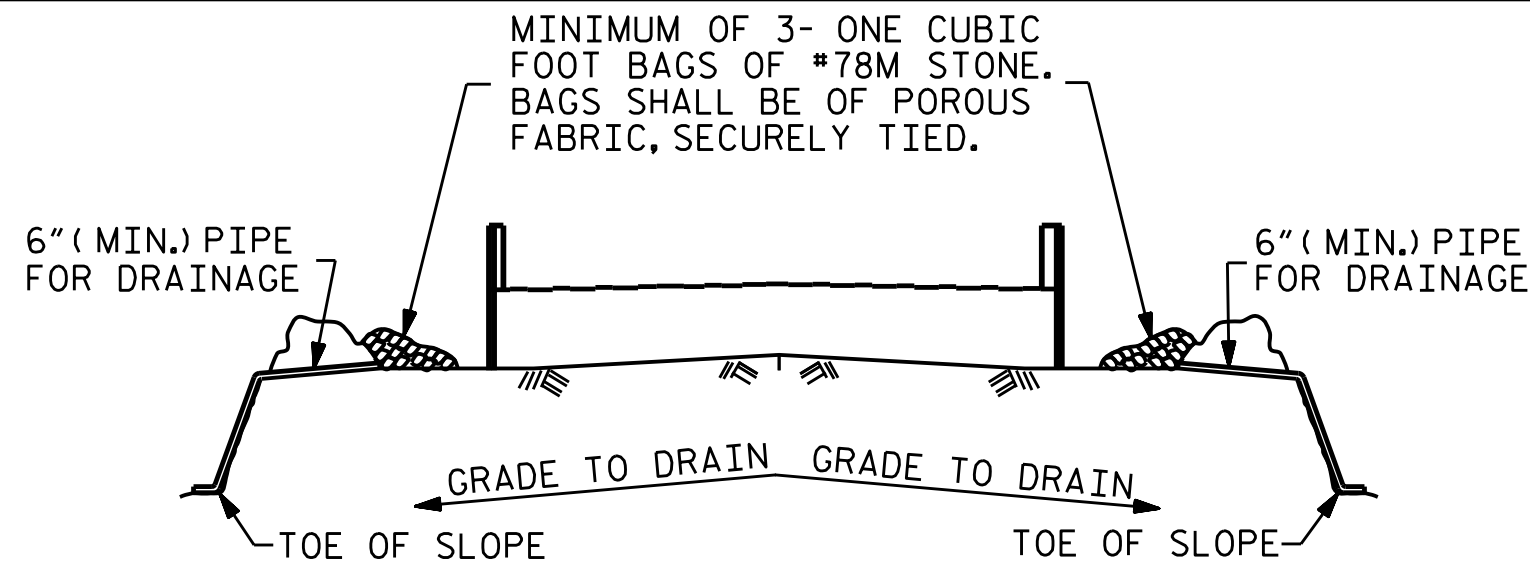
GASTON COUNTY

STATION: 32+93.00 -L-

SHEET 5 OF 6

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

|                                                                                                            |                                                                                                                        |                  |            |              |            |            |              |                                |
|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|------------------|------------|--------------|------------|------------|--------------|--------------------------------|
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>                                   |                                                                                                                        | <b>REVISIONS</b> |            |              |            |            |              | <b>SHEET NO.</b><br>S-91       |
|  <b>TGS ENGINEERS</b> | <b>TGS ENGINEERS</b><br>201 W. MARION ST STE 200<br>SHELBY, NC 28150<br>PH (704) 476-0003<br>CORP. LICENSE NO.: C-0275 | <b>NO.</b>       | <b>BY:</b> | <b>DATE:</b> | <b>NO.</b> | <b>BY:</b> | <b>DATE:</b> | <b>TOTAL<br/>SHEETS</b><br>100 |
|                                                                                                            |                                                                                                                        | <b>1</b>         |            |              | <b>3</b>   |            |              |                                |
|                                                                                                            |                                                                                                                        |                  |            |              | <b>4</b>   |            |              |                                |
|                                                                                                            |                                                                                                                        | <b>2</b>         |            |              | <b>4</b>   |            |              |                                |

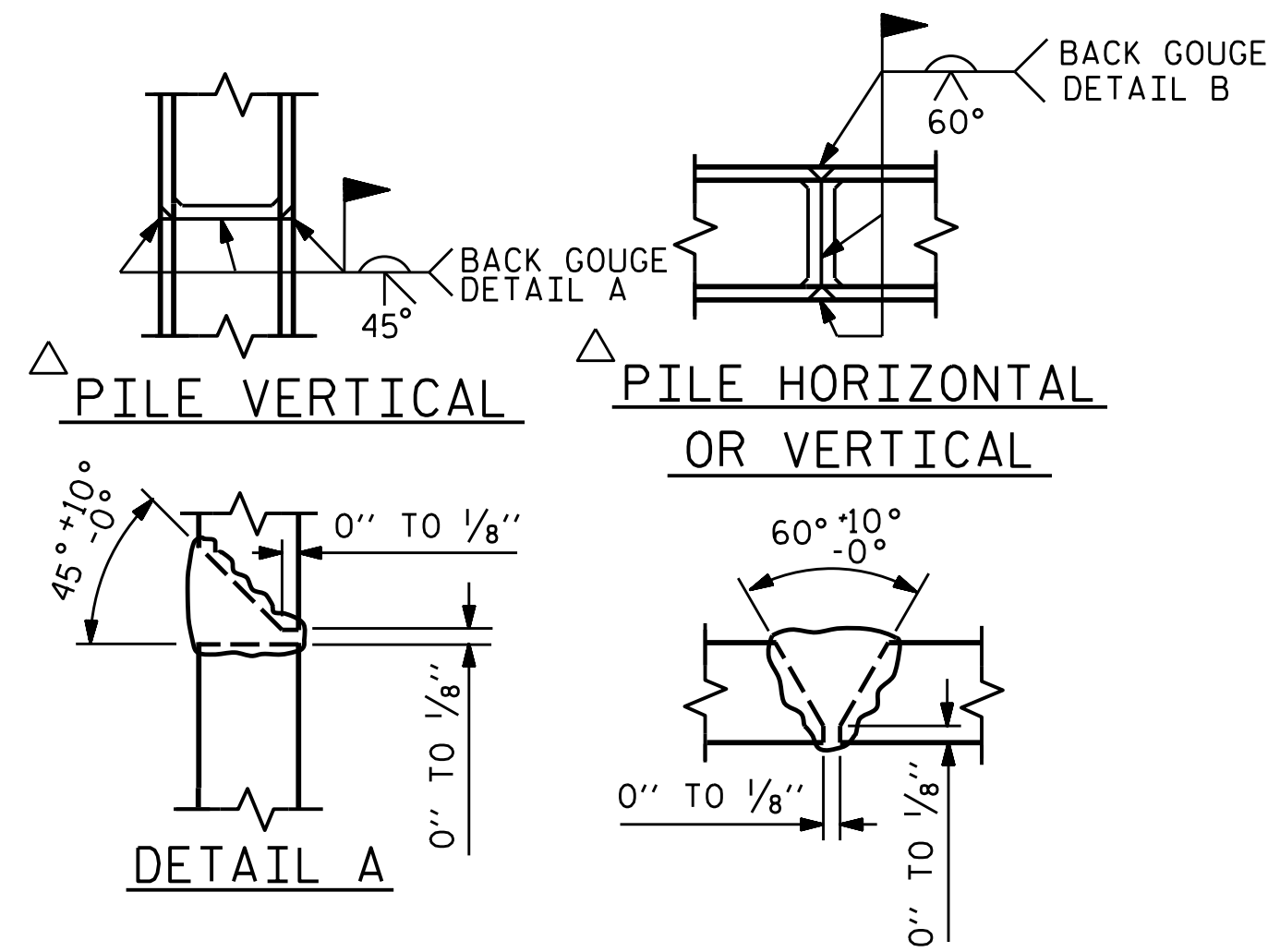


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

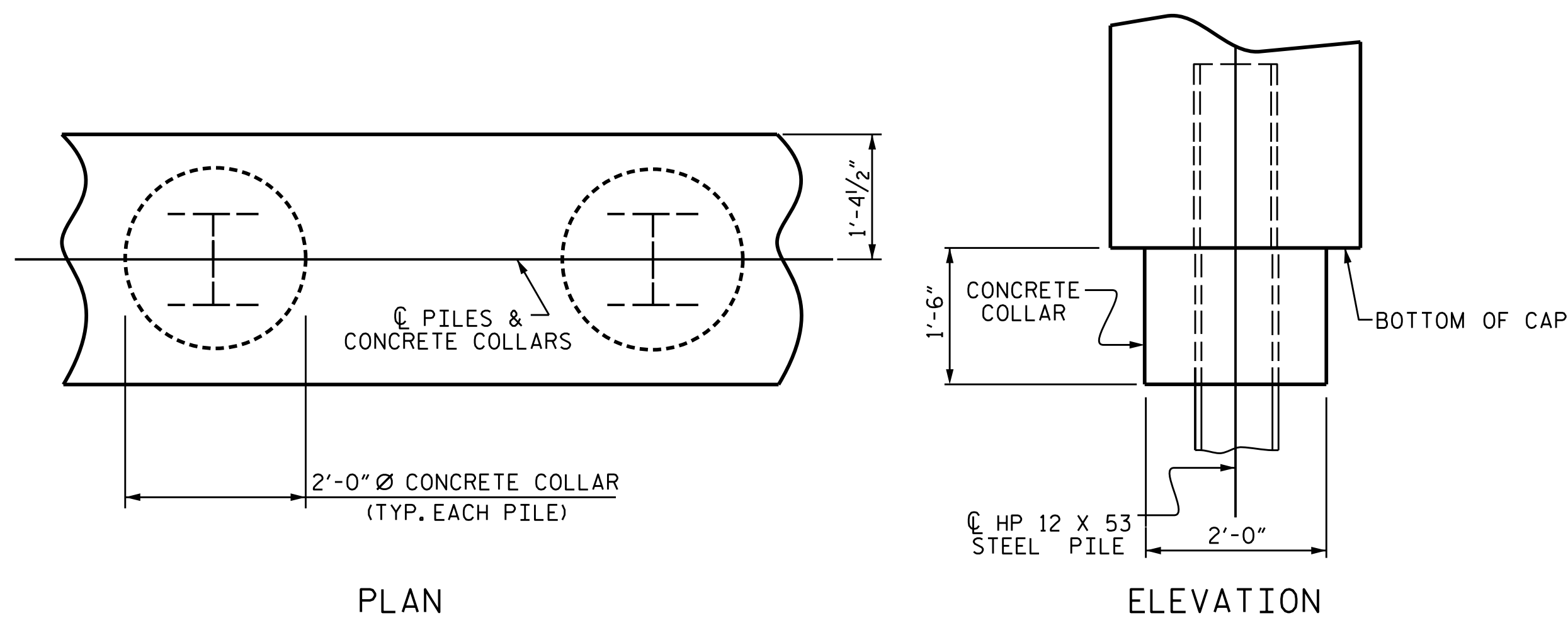
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

## TEMPORARY DRAINAGE AT END BENT



POSITION OF PILE DURING WELDING.

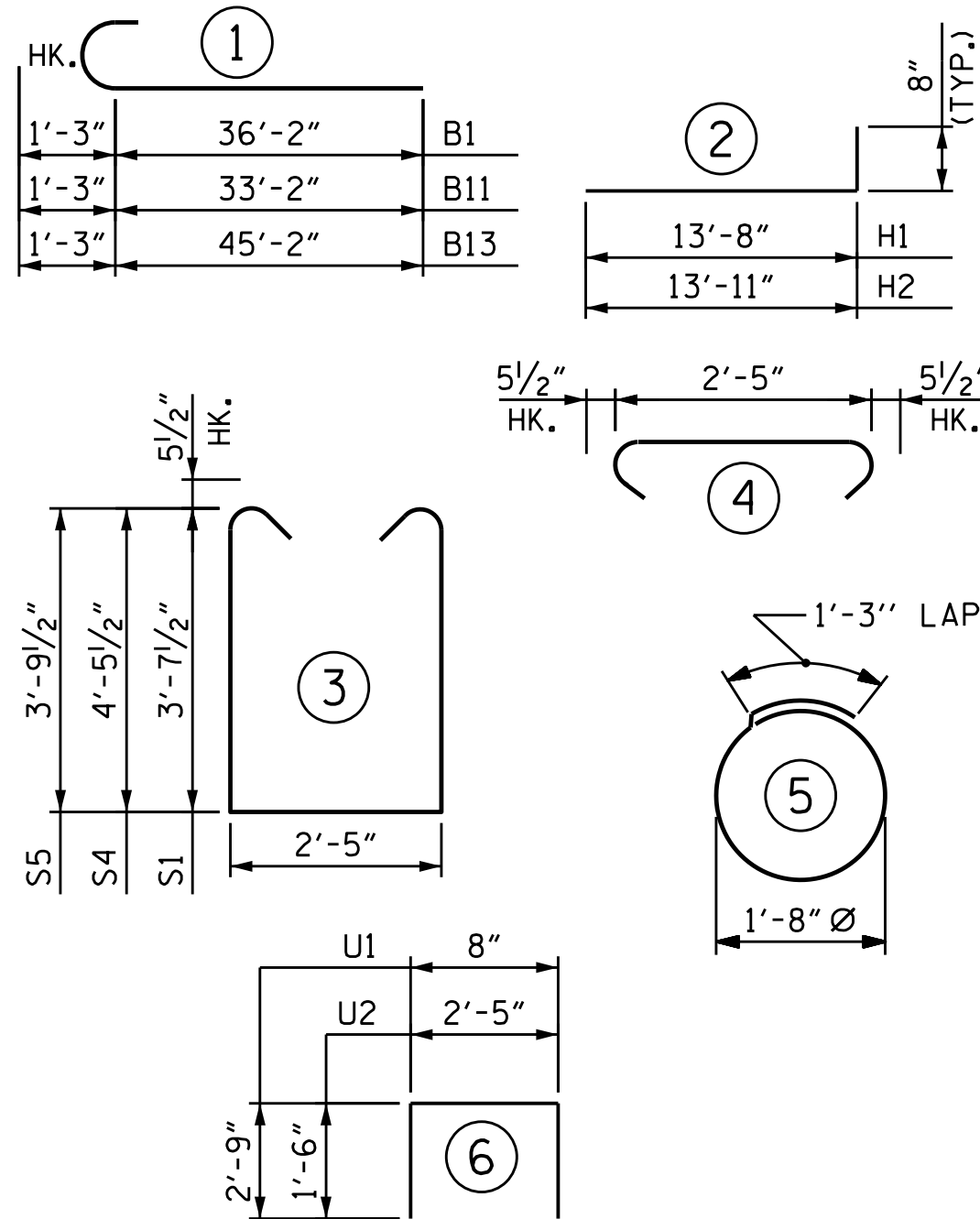
## PILE SPLICE DETAILS



## CORROSION PROTECTION FOR STEEL PILES DETAIL

DRAWN BY : JLA DATE : 8/20  
CHECKED BY : S.B. WILLIAMS DATE : 3/21  
DESIGN ENGINEER OF RECORD : RDE DATE : 3/21

### BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

### TOTAL END BENT 2 QUANTITIES

REINFORCING STEEL 12,975 LBS.  
CLASS A CONCRETE 90.2 C.Y.

### BILL OF MATERIAL - END BENT 2

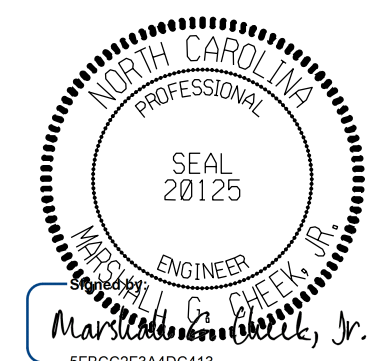
| STAGE I                                             |     |      |      |         |        | STAGE II                                            |     |      |      |         |        | STAGE III                                           |     |      |      |         |        |
|-----------------------------------------------------|-----|------|------|---------|--------|-----------------------------------------------------|-----|------|------|---------|--------|-----------------------------------------------------|-----|------|------|---------|--------|
| BAR                                                 | NO. | SIZE | TYPE | LENGTH  | WEIGHT | BAR                                                 | NO. | SIZE | TYPE | LENGTH  | WEIGHT | BAR                                                 | NO. | SIZE | TYPE | LENGTH  | WEIGHT |
| B1                                                  | 8   | #9   | 1    | 37'-5"  | 1018   | B3                                                  | 9   | #4   | STR  | 2'-5"   | 15     | B3                                                  | 19  | #4   | STR  | 2'-5"   | 31     |
| B2                                                  | 14  | #4   | STR  | 37'-10" | 354    | B6                                                  | 4   | #9   | STR  | 23'-1"  | 314    | B11                                                 | 4   | #9   | 1    | 34'-5"  | 468    |
| B3                                                  | 9   | #4   | STR  | 2'-5"   | 15     | B7                                                  | 14  | #4   | STR  | 25'-6"  | 238    | B12                                                 | 4   | #9   | STR  | 32'-2"  | 437    |
| B4                                                  | 4   | #4   | STR  | 12'-7"  | 34     | B8                                                  | 4   | #9   | STR  | 14'-5"  | 196    | B13                                                 | 4   | #9   | 1    | 46'-5"  | 631    |
| B5                                                  | 4   | #4   | STR  | 3'-4"   | 9      | B9                                                  | 4   | #9   | STR  | 13'-10" | 188    | B14                                                 | 2   | #4   | STR  | 23'-3"  | 31     |
|                                                     |     |      |      |         |        | B10                                                 | 4   | #4   | STR  | 4'-8"   | 12     | B15                                                 | 4   | #9   | STR  | 21'-2"  | 288    |
| H1                                                  | 40  | #6   | 2    | 14'-4"  | 861    | B11                                                 | 2   | #4   | STR  | 15'-8"  | 21     | B16                                                 | 8   | #4   | STR  | 3'-4"   | 18     |
|                                                     |     |      |      |         |        | B12                                                 | 4   | #4   | STR  | 12'-4"  | 33     | B17                                                 | 4   | #4   | STR  | 4'-3"   | 11     |
| K1                                                  | 10  | #4   | STR  | 37'-10" | 253    |                                                     |     |      |      |         |        | B18                                                 | 28  | #4   | STR  | 32'-4"  | 605    |
| K2                                                  | 4   | #4   | STR  | 2'-8"   | 7      | K3                                                  | 10  | #4   | STR  | 25'-6"  | 170    | B19                                                 | 4   | #4   | STR  | 17'-7"  | 47     |
|                                                     |     |      |      |         |        |                                                     |     |      |      |         |        |                                                     |     |      |      |         |        |
| S1                                                  | 47  | #5   | 3    | 10'-7"  | 519    | S1                                                  | 10  | #5   | 3    | 10'-7"  | 110    | H2                                                  | 42  | #6   | 2    | 14'-7"  | 920    |
| S2                                                  | 47  | #5   | 4    | 3'-4"   | 163    | S2                                                  | 23  | #5   | 4    | 3'-4"   | 80     |                                                     |     |      |      |         |        |
| S3                                                  | 24  | #4   | 5    | 6'-6"   | 104    | S3                                                  | 16  | #4   | 5    | 6'-6"   | 69     | K4                                                  | 20  | #4   | STR  | 32'-4"  | 432    |
|                                                     |     |      |      |         |        | S4                                                  | 13  | #5   | 3    | 12'-3"  | 166    | K5                                                  | 4   | #4   | STR  | 3'-11"  | 10     |
| U1                                                  | 33  | #4   | 6    | 6'-2"   | 136    |                                                     |     |      |      |         |        |                                                     |     |      |      |         |        |
| U2                                                  | 12  | #4   | 6    | 5'-5"   | 43     | U1                                                  | 23  | #4   | 6    | 6'-2"   | 95     | S2                                                  | 87  | #5   | 4    | 3'-4"   | 302    |
|                                                     |     |      |      |         |        | U2                                                  | 11  | #4   | 6    | 5'-5"   | 40     | S3                                                  | 36  | #4   | 5    | 6'-6"   | 156    |
| V1                                                  | 66  | #4   | STR  | 8'-1"   | 356    |                                                     |     |      |      |         |        | S4                                                  | 34  | #5   | 3    | 12'-3"  | 434    |
| V2                                                  | 34  | #5   | STR  | 9'-9"   | 346    | V1                                                  | 46  | #4   | STR  | 8'-1"   | 248    | S5                                                  | 53  | #5   | 3    | 10'-11" | 603    |
|                                                     |     |      |      |         |        |                                                     |     |      |      |         |        |                                                     |     |      |      |         |        |
|                                                     |     |      |      |         |        |                                                     |     |      |      |         |        | U1                                                  | 58  | #4   | 6    | 6'-2"   | 239    |
|                                                     |     |      |      |         |        |                                                     |     |      |      |         |        | U2                                                  | 22  | #4   | 6    | 5'-5"   | 80     |
|                                                     |     |      |      |         |        |                                                     |     |      |      |         |        |                                                     |     |      |      |         |        |
|                                                     |     |      |      |         |        |                                                     |     |      |      |         |        | V1                                                  | 116 | #4   | STR  | 8'-1"   | 626    |
|                                                     |     |      |      |         |        |                                                     |     |      |      |         |        | V3                                                  | 38  | #5   | STR  | 9'-11"  | 393    |
|                                                     |     |      |      |         |        |                                                     |     |      |      |         |        |                                                     |     |      |      |         |        |
| REINFORCING STEEL 4,218 LBS.                        |     |      |      |         |        | REINFORCING STEEL 1,995 LBS.                        |     |      |      |         |        | REINFORCING STEEL 6,762 LBS.                        |     |      |      |         |        |
| CLASS A CONCRETE BREAKDOWN                          |     |      |      |         |        | CLASS A CONCRETE BREAKDOWN                          |     |      |      |         |        | CLASS A CONCRETE BREAKDOWN                          |     |      |      |         |        |
| POUR #1 CAP, LOWER PART OF WING & COLLARS 18.3 C.Y. |     |      |      |         |        | POUR #1 CAP, LOWER PART OF WING & COLLARS 12.1 C.Y. |     |      |      |         |        | POUR #1 CAP, LOWER PART OF WING & COLLARS 33.3 C.Y. |     |      |      |         |        |
| POUR #2 UPPER PART OF BACKWALL & WING 9.1 C.Y.      |     |      |      |         |        | POUR #2 UPPER PART OF BACKWALL & WING 3.8 C.Y.      |     |      |      |         |        | POUR #2 UPPER PART OF BACKWALL & WING 13.6 C.Y.     |     |      |      |         |        |
| TOTAL CLASS A CONCRETE 27.4 C.Y.                    |     |      |      |         |        | TOTAL CLASS A CONCRETE 15.9 C.Y.                    |     |      |      |         |        | TOTAL CLASS A CONCRETE 46.9 C.Y.                    |     |      |      |         |        |

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00-L-

SHEET 6 OF 6



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

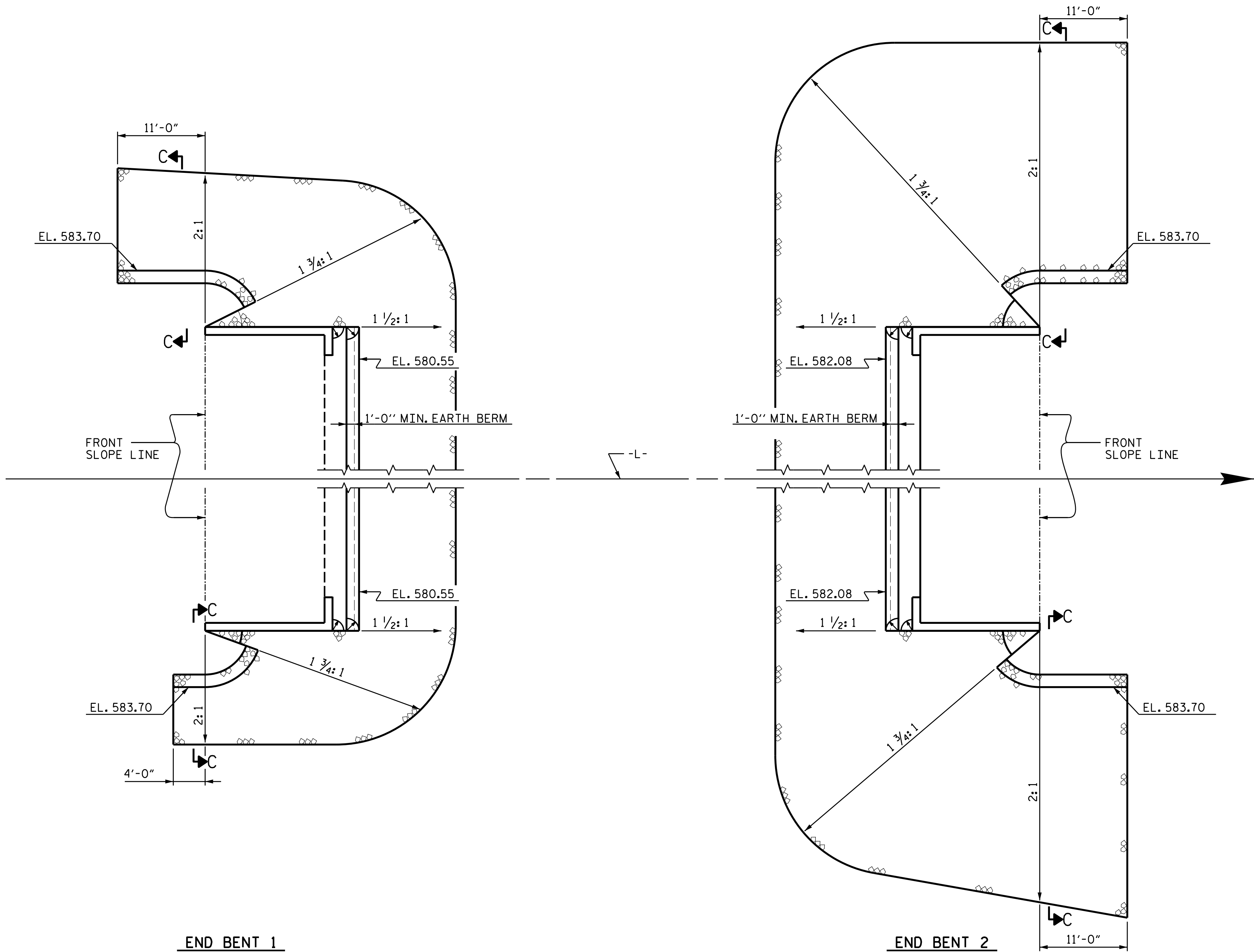
TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUBSTRUCTURE

END BENT 2  
DETAILS

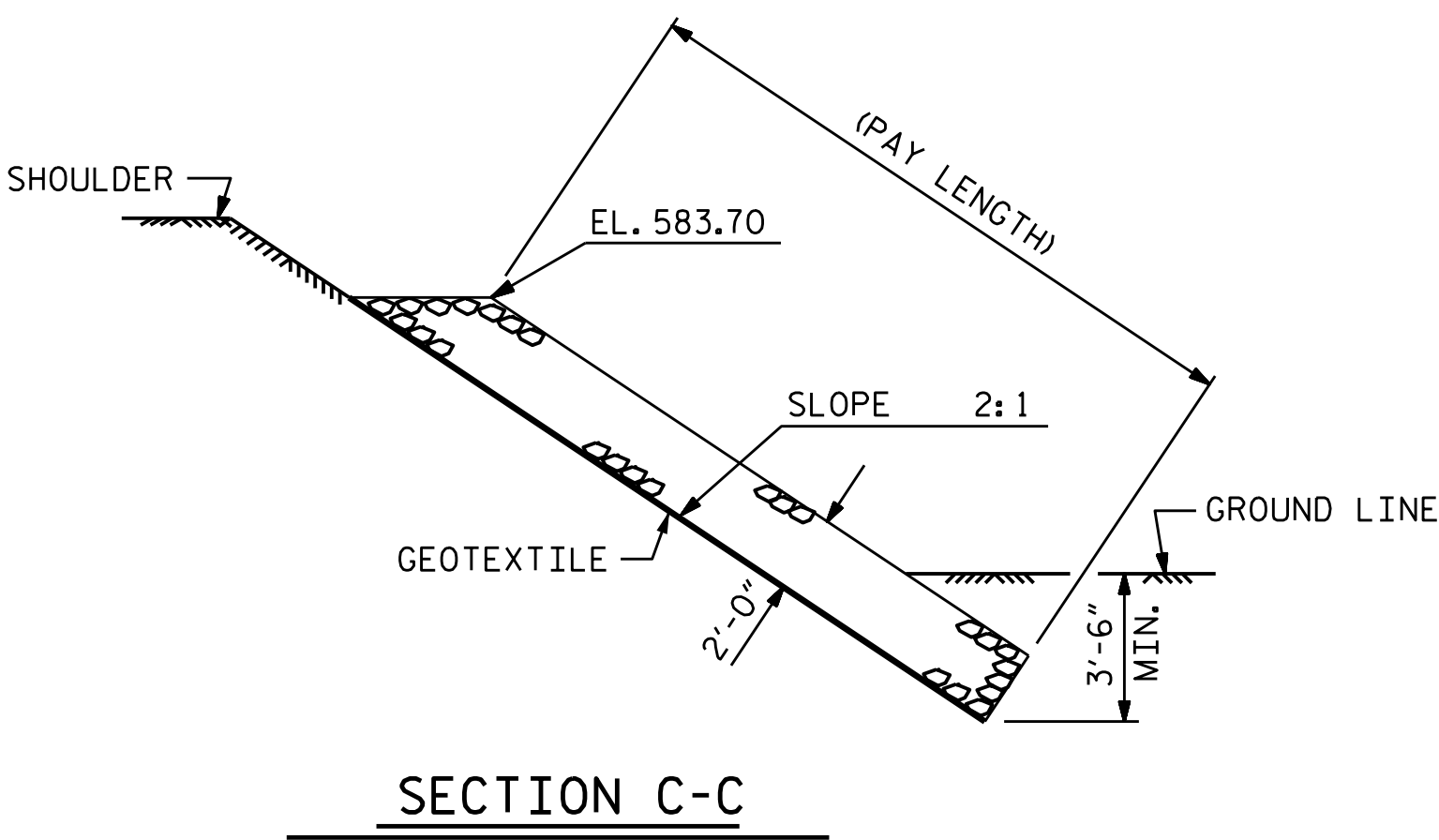
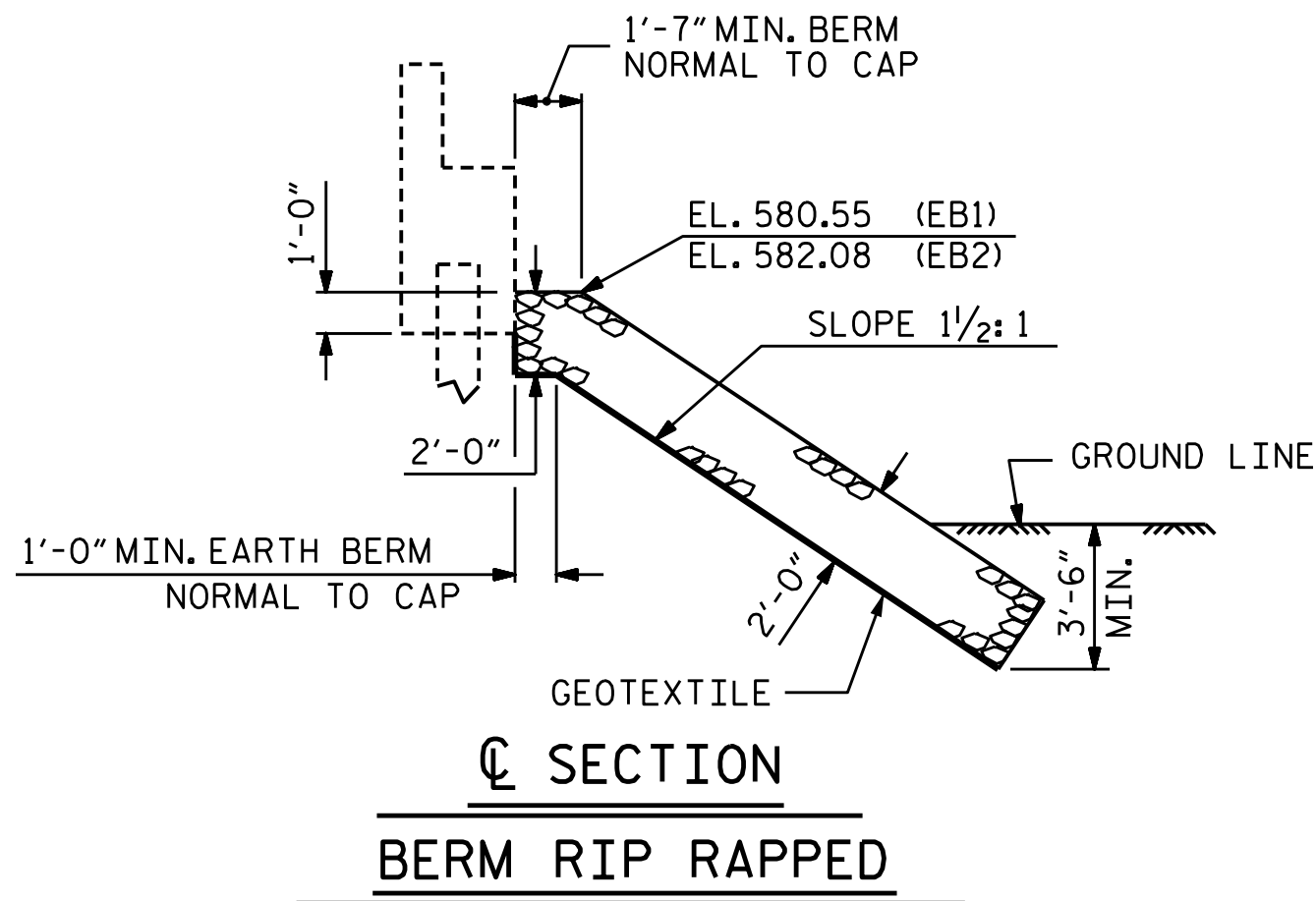
| REVISIONS |    |      |     |    |      | SHEET NO.        |
|-----------|----|------|-----|----|------|------------------|
| NO.       | BY | DATE | NO. | BY | DATE |                  |
| 1         |    |      | 3   |    |      | S-92             |
| 2         |    |      | 4   |    |      | TOTAL SHEETS 100 |

NOTES :  
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.



| ESTIMATED QUANTITIES         |                                      |                            |
|------------------------------|--------------------------------------|----------------------------|
| BRIDGE @<br>STA. 32+93.00-L- | RIP RAP<br>CLASS II<br>(2'-0" THICK) | GEOTEXTILE<br>FOR DRAINAGE |
|                              | TONS                                 | SQUARE YARDS               |
| END BENT 1                   | 515                                  | 575                        |
| END BENT 2                   | 625                                  | 695                        |

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00 -L-



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

STANDARD  
RIP RAP DETAILS

2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

IGS ENGINEERS

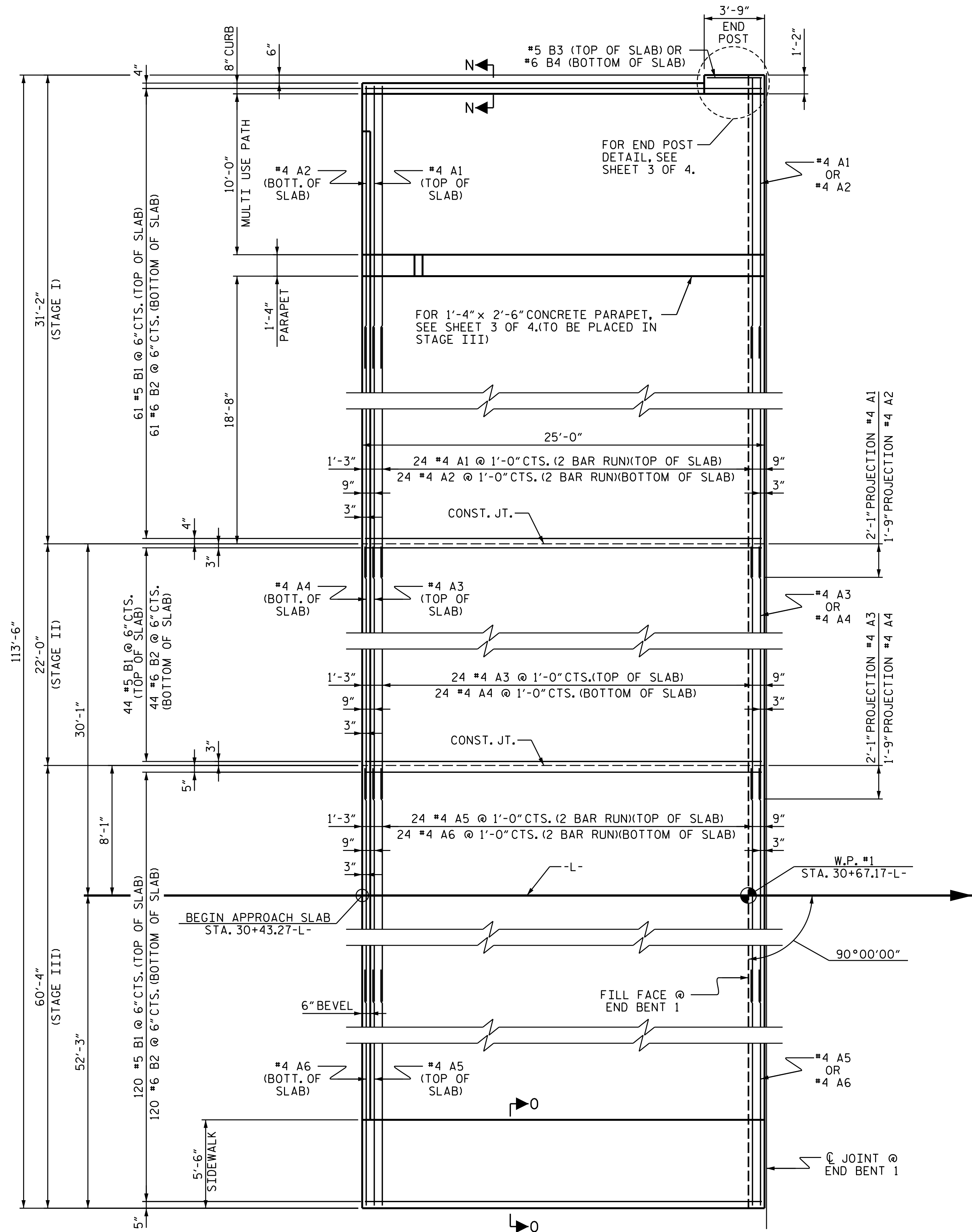
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

SEAL  
20125

ENGINEER  
MARSHALL G. CHECK, JR.  
5878022P04W00418...

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-93         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 100          |

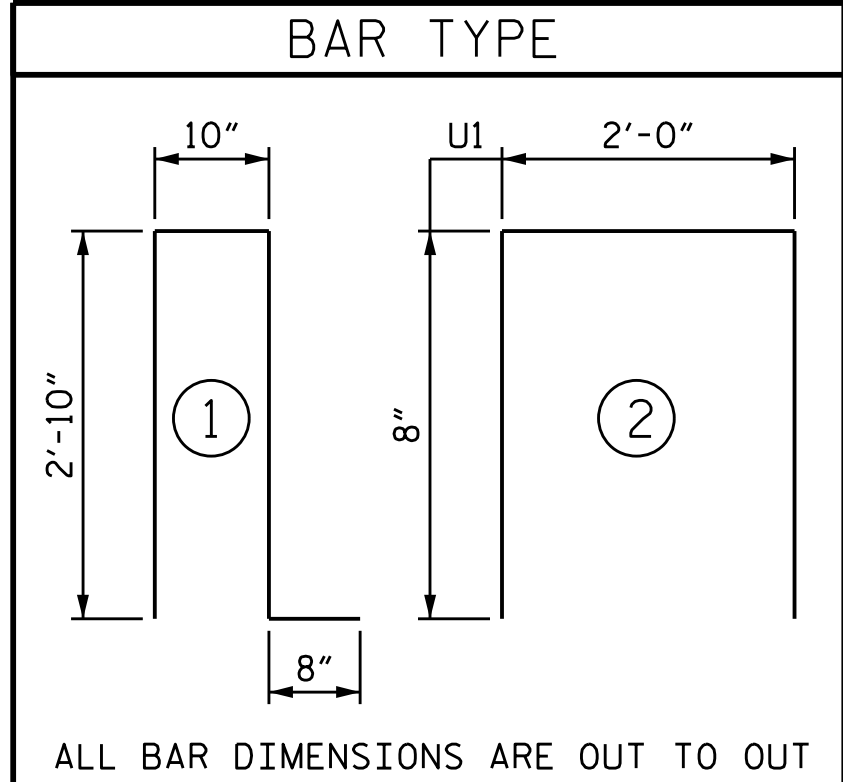
|                |     |               |         |
|----------------|-----|---------------|---------|
| ASSEMBLED BY : | JLA | DATE :        | 9/20    |
| CHECKED BY :   | MGC | DATE :        | 10/21   |
| DRAWN BY :     | REK | REV. 10/1/11  | MAA/GM  |
| CHECKED BY :   | RDU | REV. 12/21/11 | MAA/GM  |
|                |     | REV. 12/17    | MAA/THC |



PLAN OF APPROACH SLAB @ END BENT 1

DRAWN BY : JLA DATE : 10/20  
CHECKED BY : MGC DATE : 2/21

| BILL OF MATERIAL FOR APPROACH SLAB AT END BENT 1 |     |      |      |        |        |                                            |     |      |      |         |        |                                            |     |      |      |
|--------------------------------------------------|-----|------|------|--------|--------|--------------------------------------------|-----|------|------|---------|--------|--------------------------------------------|-----|------|------|
| STAGE I                                          |     |      |      |        |        | STAGE II                                   |     |      |      |         |        | STAGE III                                  |     |      |      |
| BAR                                              | No. | SIZE | TYPE | LENGTH | WEIGHT | BAR                                        | No. | SIZE | TYPE | LENGTH  | WEIGHT | BAR                                        | No. | SIZE | TYPE |
| * A1                                             | 52  | #4   | STR  | 17'-7" | 611    | * A3                                       | 26  | #4   | STR  | 23'-11" | 415    | * A5                                       | 52  | #4   | STR  |
| A2                                               | 52  | #4   | STR  | 17'-3" | 599    | A4                                         | 26  | #4   | STR  | 23'-7"  | 410    | A6                                         | 52  | #4   | STR  |
|                                                  |     |      |      |        |        |                                            |     |      |      |         |        |                                            |     |      |      |
| * B1                                             | 61  | #5   | STR  | 24'-3" | 1543   | * B1                                       | 44  | #5   | STR  | 24'-3"  | 1113   | * B1                                       | 120 | #5   | STR  |
| B2                                               | 61  | #6   | STR  | 24'-8" | 2260   | B2                                         | 44  | #6   | STR  | 24'-8"  | 1630   | B2                                         | 120 | #6   | STR  |
| * B3                                             | 1   | #5   | STR  | 3'-4"  | 3      |                                            |     |      |      |         |        | * B5                                       | 5   | #4   | STR  |
| B4                                               | 1   | #6   | STR  | 3'-4"  | 5      | REINFORCING STEEL 2040 LBS.                |     |      |      |         |        |                                            |     |      |      |
|                                                  |     |      |      |        |        | * EPOXY COATED REINFORCING STEEL 1528 LBS. |     |      |      |         |        | * G1                                       | 25  | #4   | STR  |
| * S3                                             | 4   | #5   | 1    | 7'-2"  | 30     | CLASS AA CONCRETE 23.8 C.Y.                |     |      |      |         |        | * U1                                       | 8   | #4   | 2    |
| REINFORCING STEEL 2864 LBS.                      |     |      |      |        |        |                                            |     |      |      |         |        | REINFORCING STEEL 5517 LBS.                |     |      |      |
| * EPOXY COATED REINFORCING STEEL 2187 LBS.       |     |      |      |        |        |                                            |     |      |      |         |        | * EPOXY COATED REINFORCING STEEL 4296 LBS. |     |      |      |
| CLASS AA CONCRETE 33.4 C.Y.                      |     |      |      |        |        |                                            |     |      |      |         |        | CLASS AA CONCRETE                          |     |      |      |
|                                                  |     |      |      |        |        |                                            |     |      |      |         |        | POUR #1 (APPROACH SLAB) 65.3 C.Y.          |     |      |      |
|                                                  |     |      |      |        |        |                                            |     |      |      |         |        | POUR #2 (SIDEWALK) 3.1 C.Y.                |     |      |      |
|                                                  |     |      |      |        |        |                                            |     |      |      |         |        | CONCRETE TOTAL 68.4 C.Y.                   |     |      |      |



PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00-L-

SHEET 1 OF 4

2/24/2026

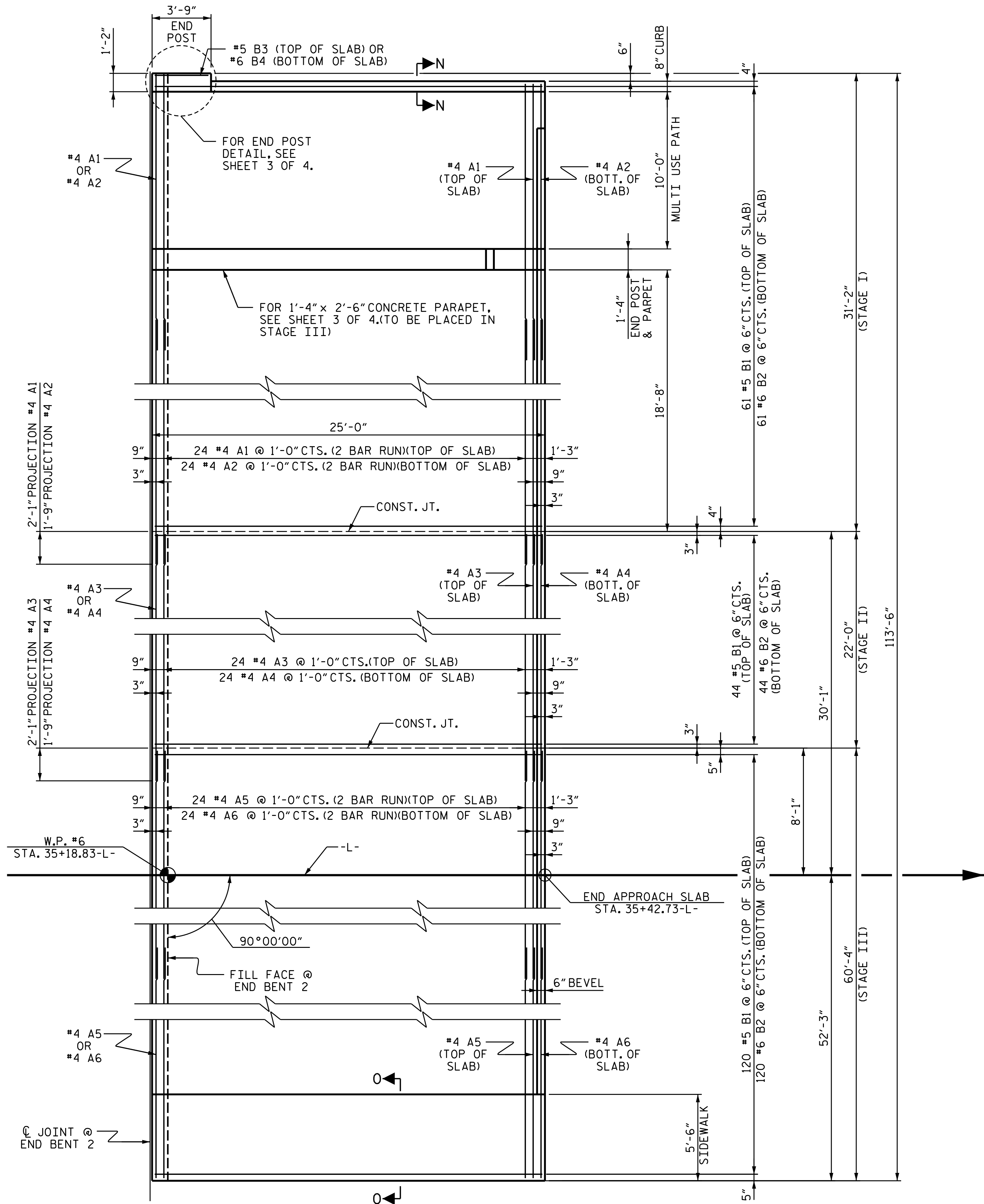
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

BRIDGE APPROACH SLAB  
FOR FLEXIBLE PAVEMENT

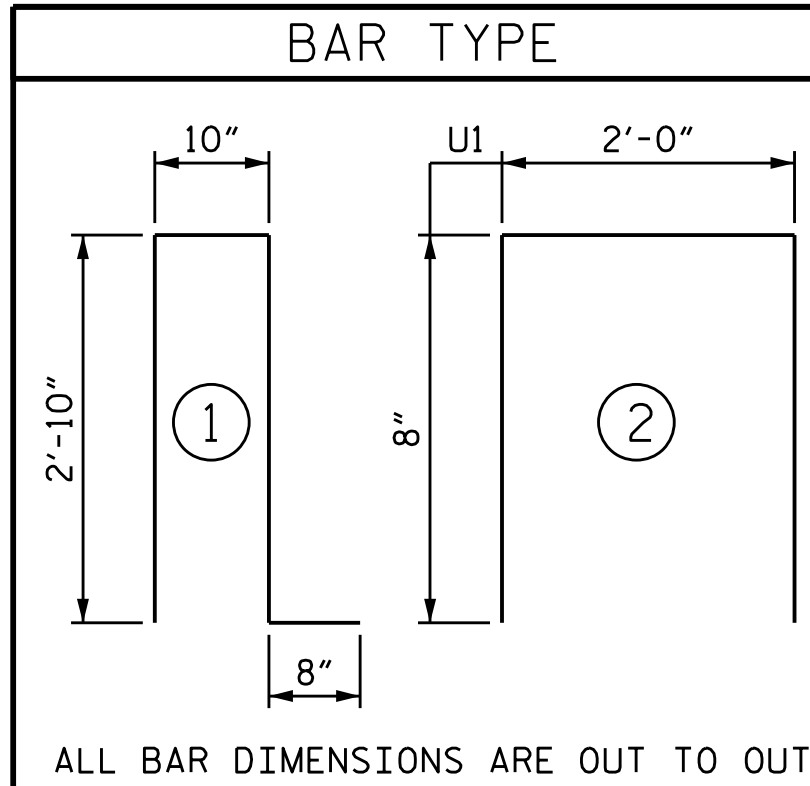
| REVISIONS |     |       |     |     | SHEET NO.<br>S-94 |
|-----------|-----|-------|-----|-----|-------------------|
| NO.       | BY: | DATE: | NO. | BY: |                   |
| 1         |     |       | 3   |     | TOTAL SHEETS      |
| 2         |     |       | 4   |     | 100               |



PLAN OF APPROACH SLAB @ END BENT 2

DRAWN BY : JLA DATE : 10/20  
CHECKED BY : MGC DATE : 2/21

| BILL OF MATERIAL FOR APPROACH SLAB AT END BENT 2 |     |      |      |        |        |                                            |     |      |      |         |        |                                            |     |      |      |
|--------------------------------------------------|-----|------|------|--------|--------|--------------------------------------------|-----|------|------|---------|--------|--------------------------------------------|-----|------|------|
| STAGE I                                          |     |      |      |        |        | STAGE II                                   |     |      |      |         |        | STAGE III                                  |     |      |      |
| BAR                                              | No. | SIZE | TYPE | LENGTH | WEIGHT | BAR                                        | No. | SIZE | TYPE | LENGTH  | WEIGHT | BAR                                        | No. | SIZE | TYPE |
| * A1                                             | 52  | #4   | STR  | 17'-7" | 611    | * A3                                       | 26  | #4   | STR  | 23'-11" | 415    | * A5                                       | 52  | #4   | STR  |
| A2                                               | 52  | #4   | STR  | 17'-3" | 599    | A4                                         | 26  | #4   | STR  | 23'-7"  | 410    | A6                                         | 52  | #4   | STR  |
|                                                  |     |      |      |        |        |                                            |     |      |      |         |        |                                            |     |      |      |
| * B1                                             | 61  | #5   | STR  | 24'-3" | 1543   | * B1                                       | 44  | #5   | STR  | 24'-3"  | 1113   | * B1                                       | 120 | #5   | STR  |
| B2                                               | 61  | #6   | STR  | 24'-8" | 2260   | B2                                         | 44  | #6   | STR  | 24'-8"  | 1630   | B2                                         | 120 | #6   | STR  |
| * B3                                             | 1   | #5   | STR  | 3'-4"  | 3      |                                            |     |      |      |         |        | * B5                                       | 5   | #4   | STR  |
| B4                                               | 1   | #6   | STR  | 3'-4"  | 5      | REINFORCING STEEL 2040 LBS.                |     |      |      |         |        |                                            |     |      |      |
|                                                  |     |      |      |        |        | * EPOXY COATED REINFORCING STEEL 1528 LBS. |     |      |      |         |        | * G1                                       | 25  | #4   | STR  |
| * S3                                             | 4   | #5   | 1    | 7'-2"  | 30     |                                            |     |      |      |         |        | * U1                                       | 8   | #4   | 2    |
| REINFORCING STEEL 2864 LBS.                      |     |      |      |        |        | CLASS AA CONCRETE 23.8 C.Y.                |     |      |      |         |        | REINFORCING STEEL 5517 LBS.                |     |      |      |
| * EPOXY COATED REINFORCING STEEL 2187 LBS.       |     |      |      |        |        |                                            |     |      |      |         |        | * EPOXY COATED REINFORCING STEEL 4296 LBS. |     |      |      |
| CLASS AA CONCRETE 33.4 C.Y.                      |     |      |      |        |        |                                            |     |      |      |         |        | CLASS AA CONCRETE                          |     |      |      |
|                                                  |     |      |      |        |        |                                            |     |      |      |         |        | POUR #1 (APPROACH SLAB) 65.3 C.Y.          |     |      |      |
|                                                  |     |      |      |        |        |                                            |     |      |      |         |        | POUR #2 (SIDEWALK) 3.1 C.Y.                |     |      |      |
|                                                  |     |      |      |        |        |                                            |     |      |      |         |        | CONCRETE TOTAL 68.4 C.Y.                   |     |      |      |



PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00-L-

SHEET 2 OF 4



2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

| REVISIONS |     |       |     |     |       | SHEET NO.        |
|-----------|-----|-------|-----|-----|-------|------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                  |
| 1         |     |       | 3   |     |       | S-95             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 100 |

NOTES

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.

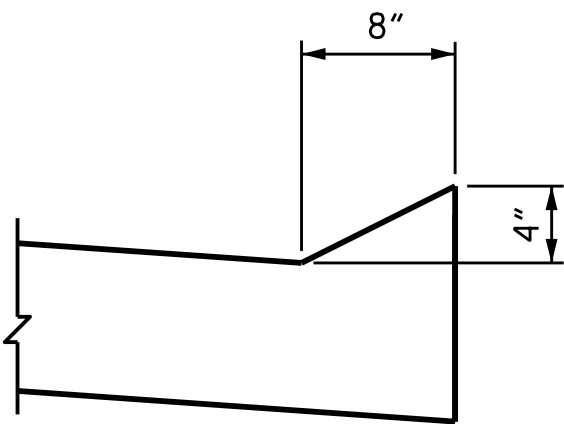
APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.

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

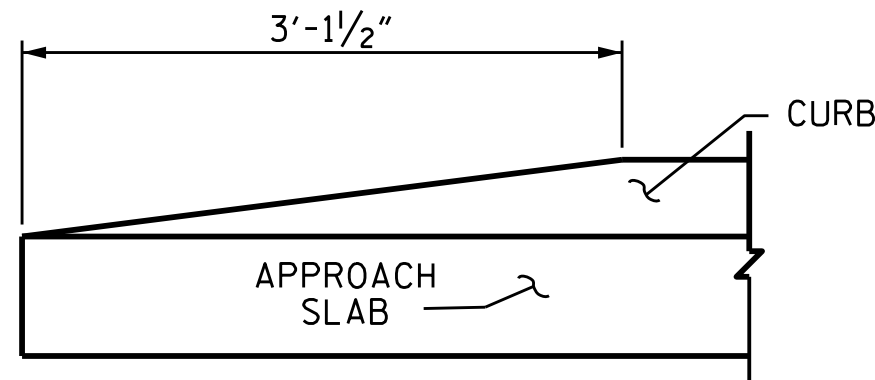
THE JOINT OPENING AT THE APPROACH SLAB/DECK INTERFACE SHALL BE SAWED NO MORE THAN 12 HOURS AFTER THE APPROACH SLAB IS CAST. THE JOINT SHALL BE CLEANED OF ALL DEBRIS BEFORE THE SEALANT IS APPLIED. THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF SECTION 1028-3 OF THE STANDARD SPECIFICATIONS.

FOR STRIP SEAL EXPANSION JOINTS, SEE SPECIAL PROVISIONS.

FOR CONCRETE MEDIAN ON APPROACH SLAB, SEE "CONCRETE MEDIAN" SHEETS.

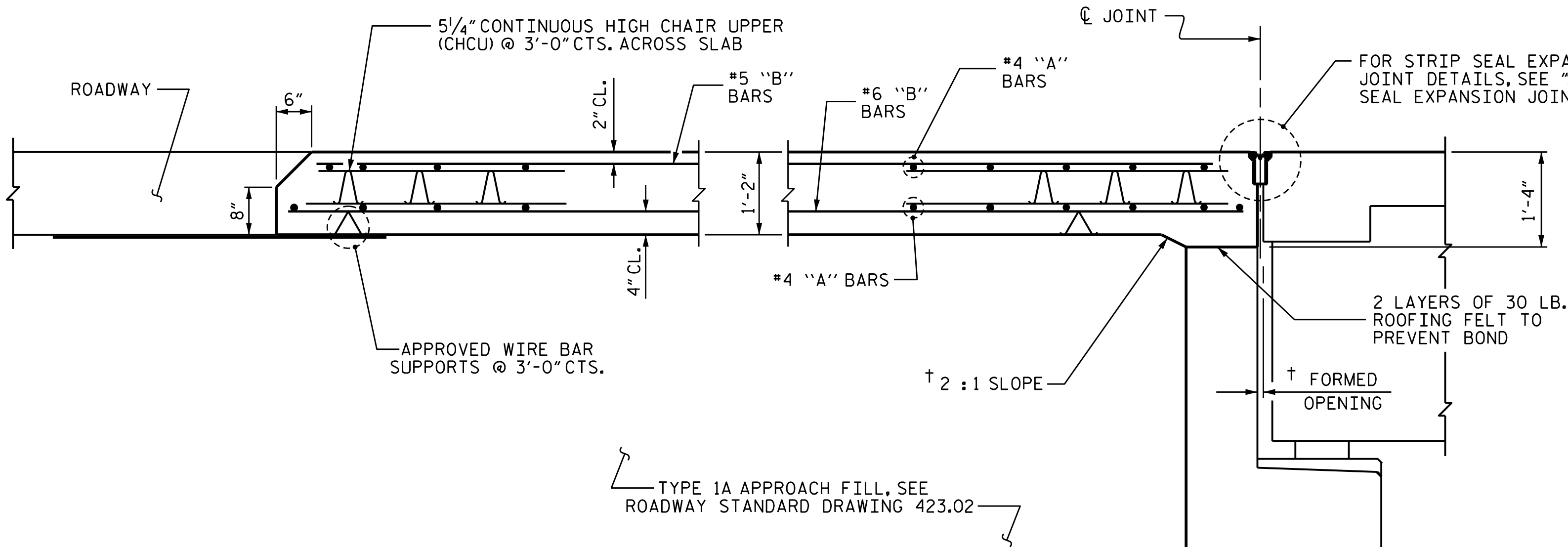


SECTION N-N



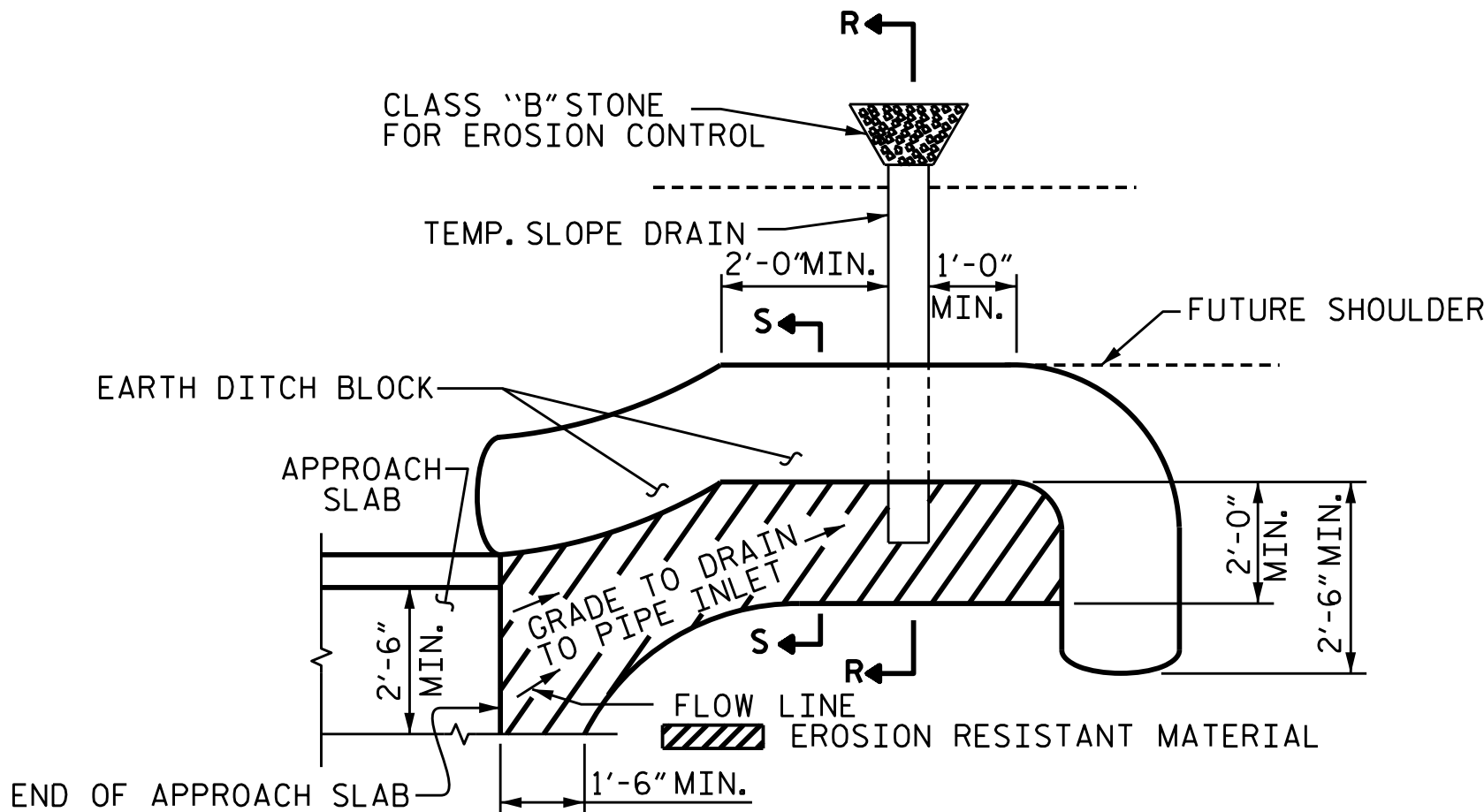
END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS



† NORMAL TO END BENT

SECTION THRU SLAB

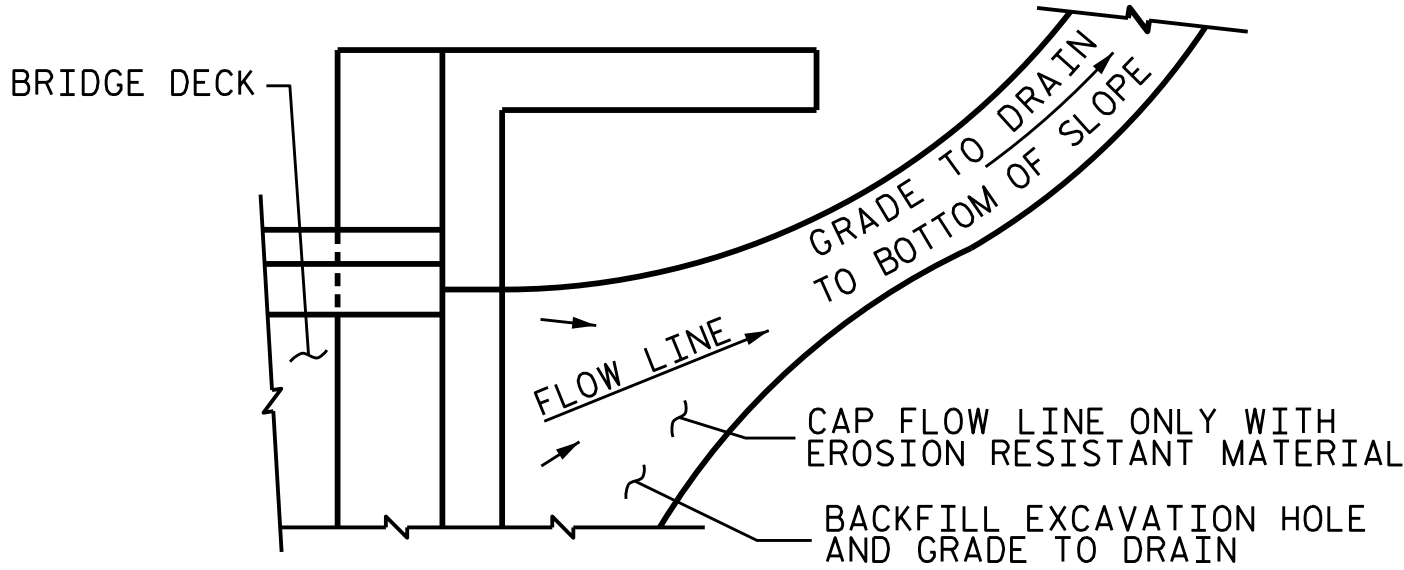
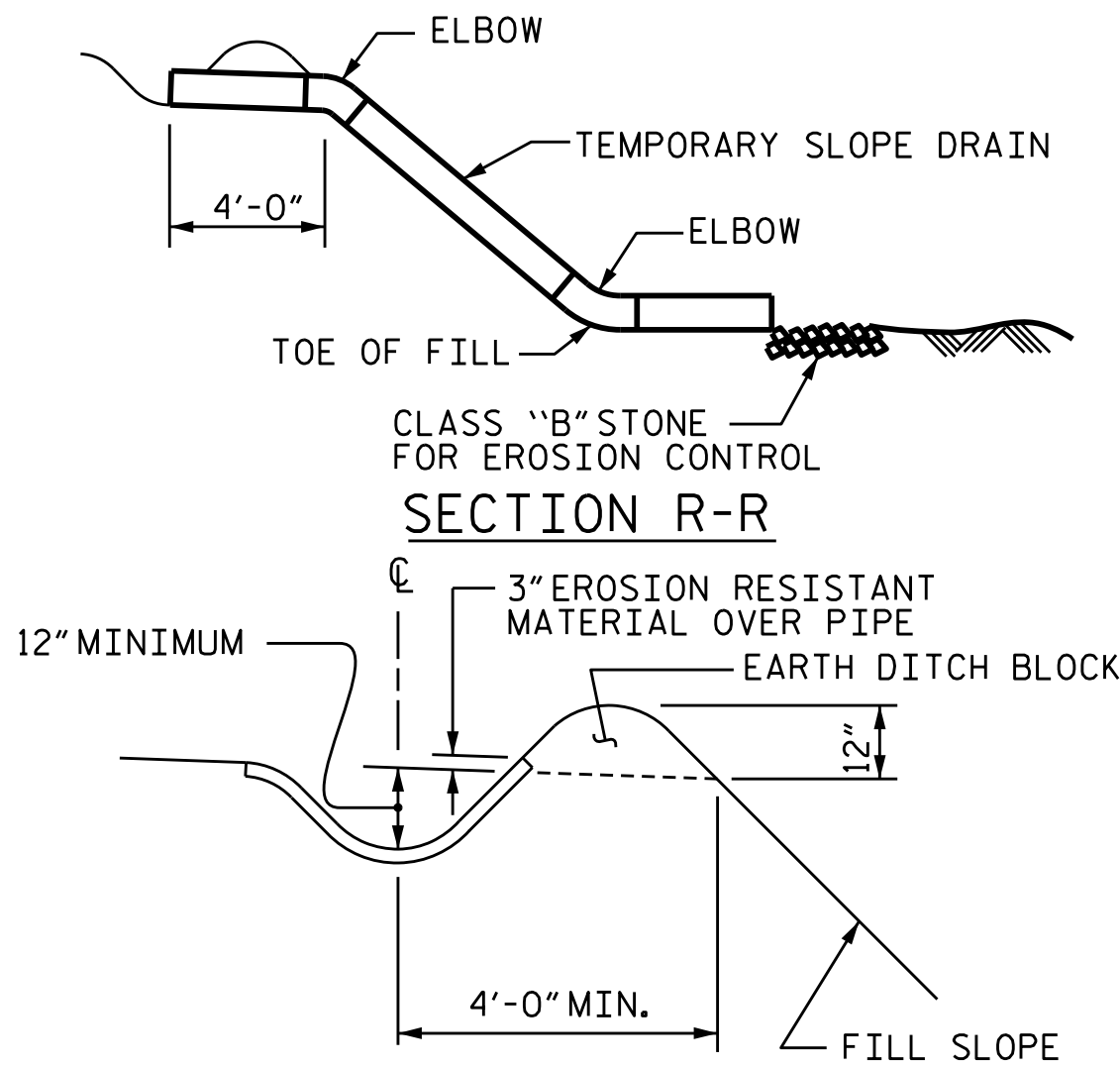


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 2" DEPTH, 2) EROSION CONTROL MAT, OR 3) CONCRETE, AS DIRECTED BY THE ENGINEER. THE SLOPE DRAIN SHALL CONSIST OF A NON-PERFORATED TEMPORARY DRAINAGE PIPE, 12 INCHES IN DIAMETER.

PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



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

TEMPORARY DRAINAGE DETAIL

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

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00-L-

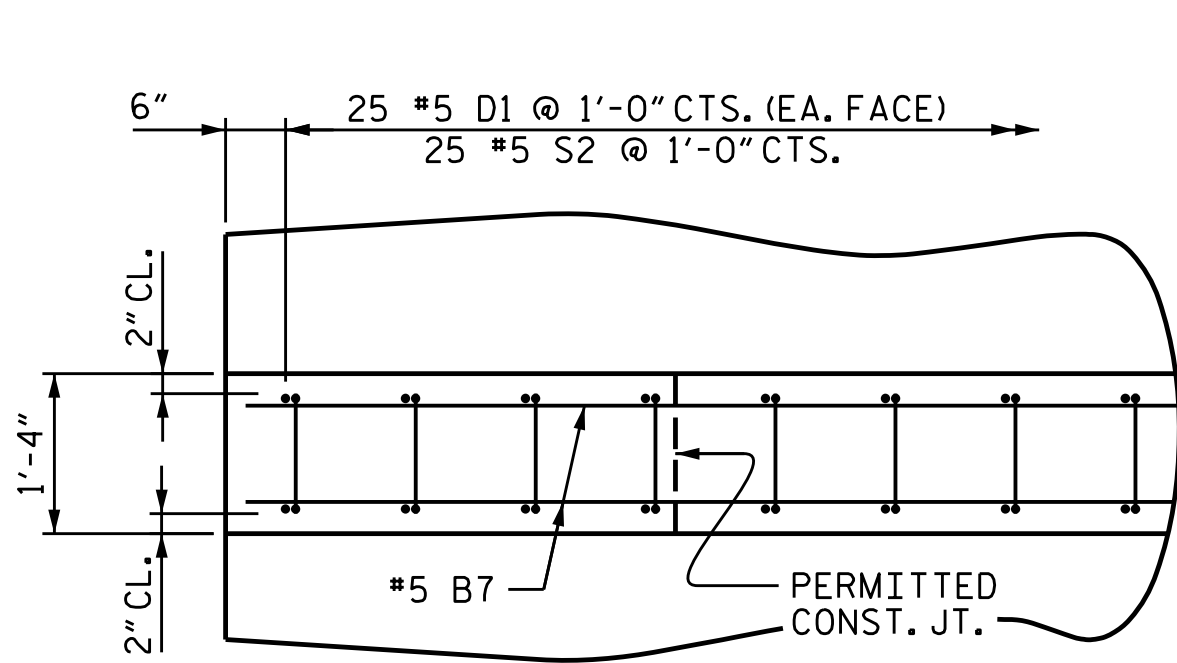
SHEET 3 OF 4

|                      |                    |
|----------------------|--------------------|
| ASSEMBLED BY : STM   | DATE : 09/23       |
| CHECKED BY : MGC     | DATE : 09/23       |
| DRAWN BY : TLA 10/05 | REV. 12/17 MAA/THC |
| CHECKED BY : GM 5/06 | REV. 6/19 BNB/THC  |
|                      | REV. 7/23 BNB/SNM  |

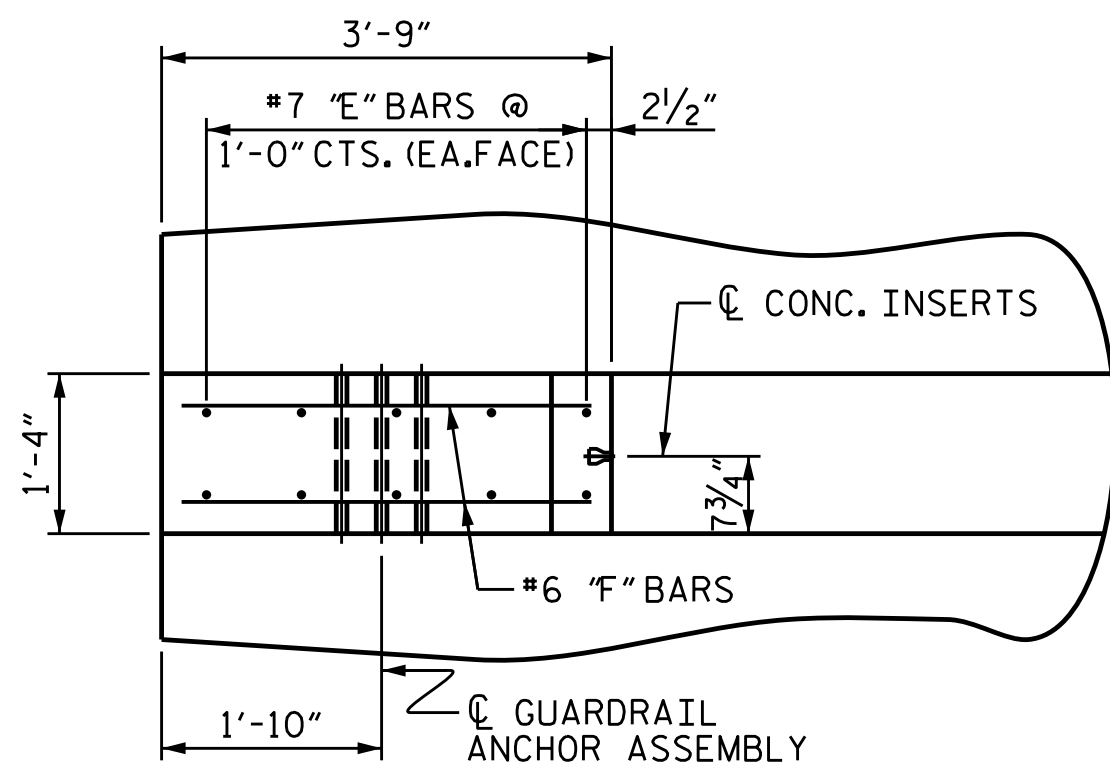
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH: (704) 476-0003  
CORP. LICENSE NO.: C-0275

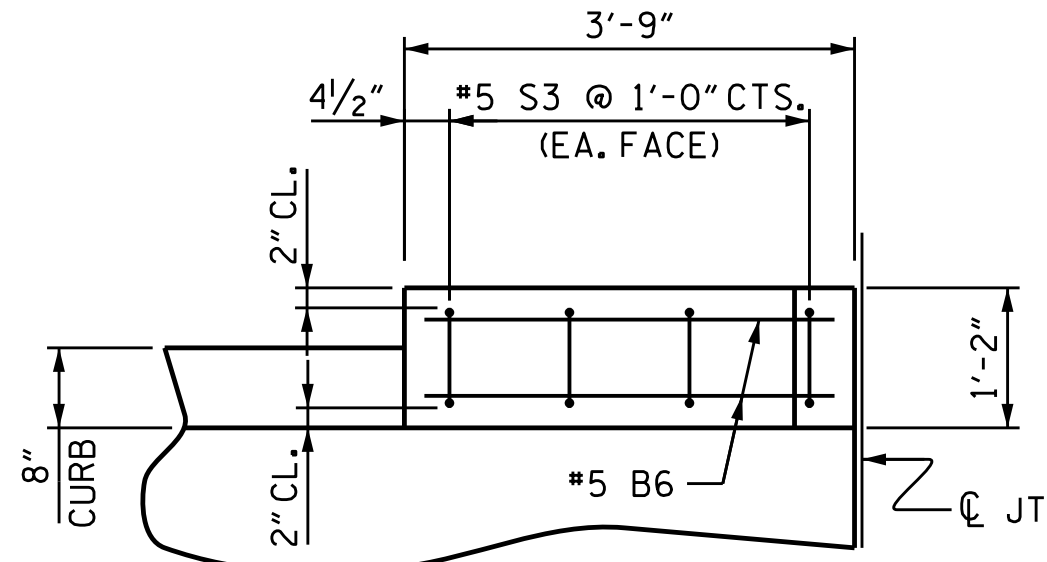
| REVISIONS |     |       |     |     | SHEET NO.<br>S-96<br>TOTAL SHEETS<br>100 |
|-----------|-----|-------|-----|-----|------------------------------------------|
| NO.       | BY: | DATE: | NO. | BY: |                                          |
| 1         |     |       | 3   |     |                                          |
| 2         |     |       | 4   |     |                                          |



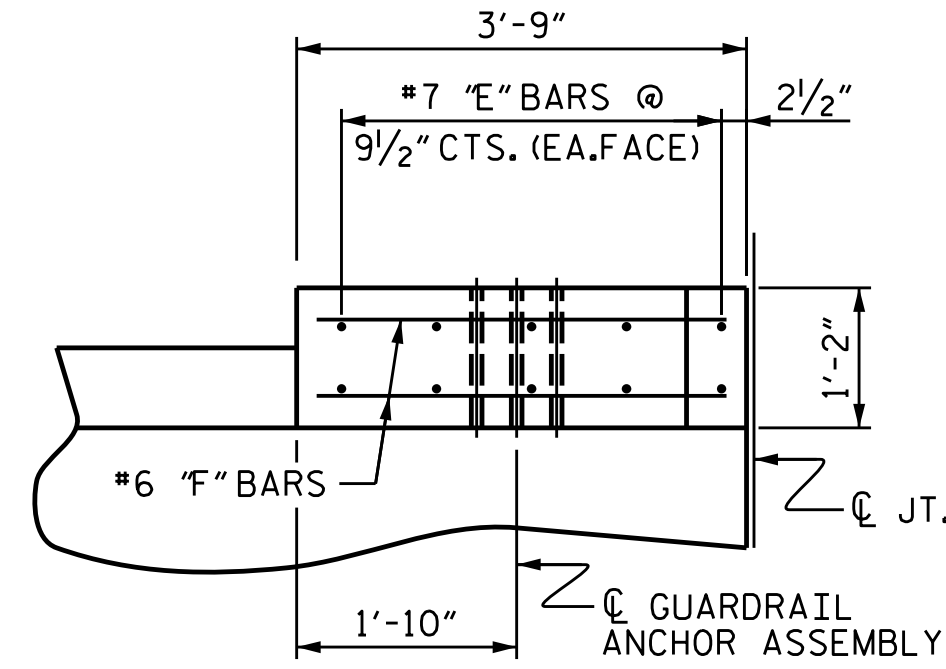
PLAN OF PARAPET



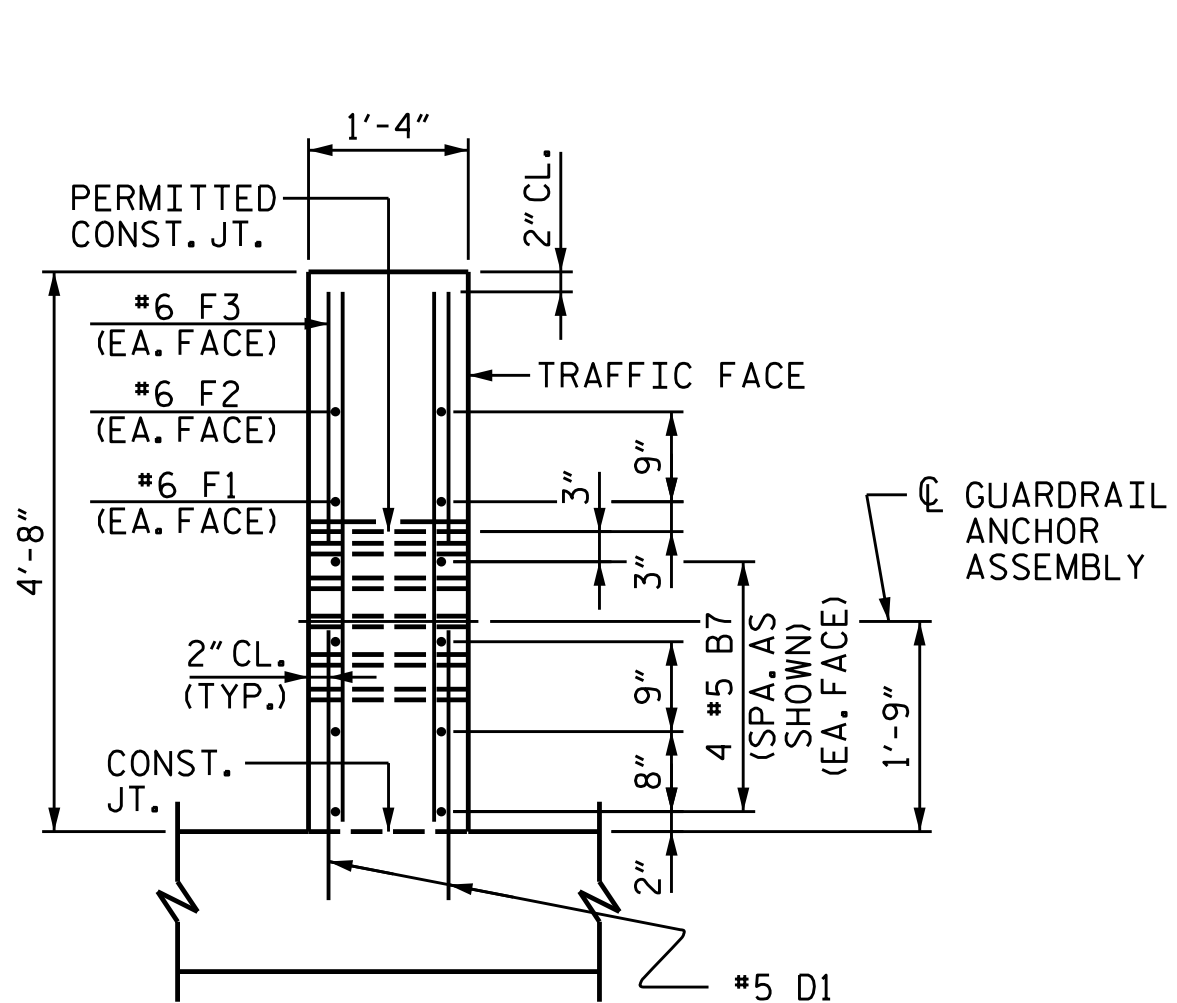
PLAN OF END POST



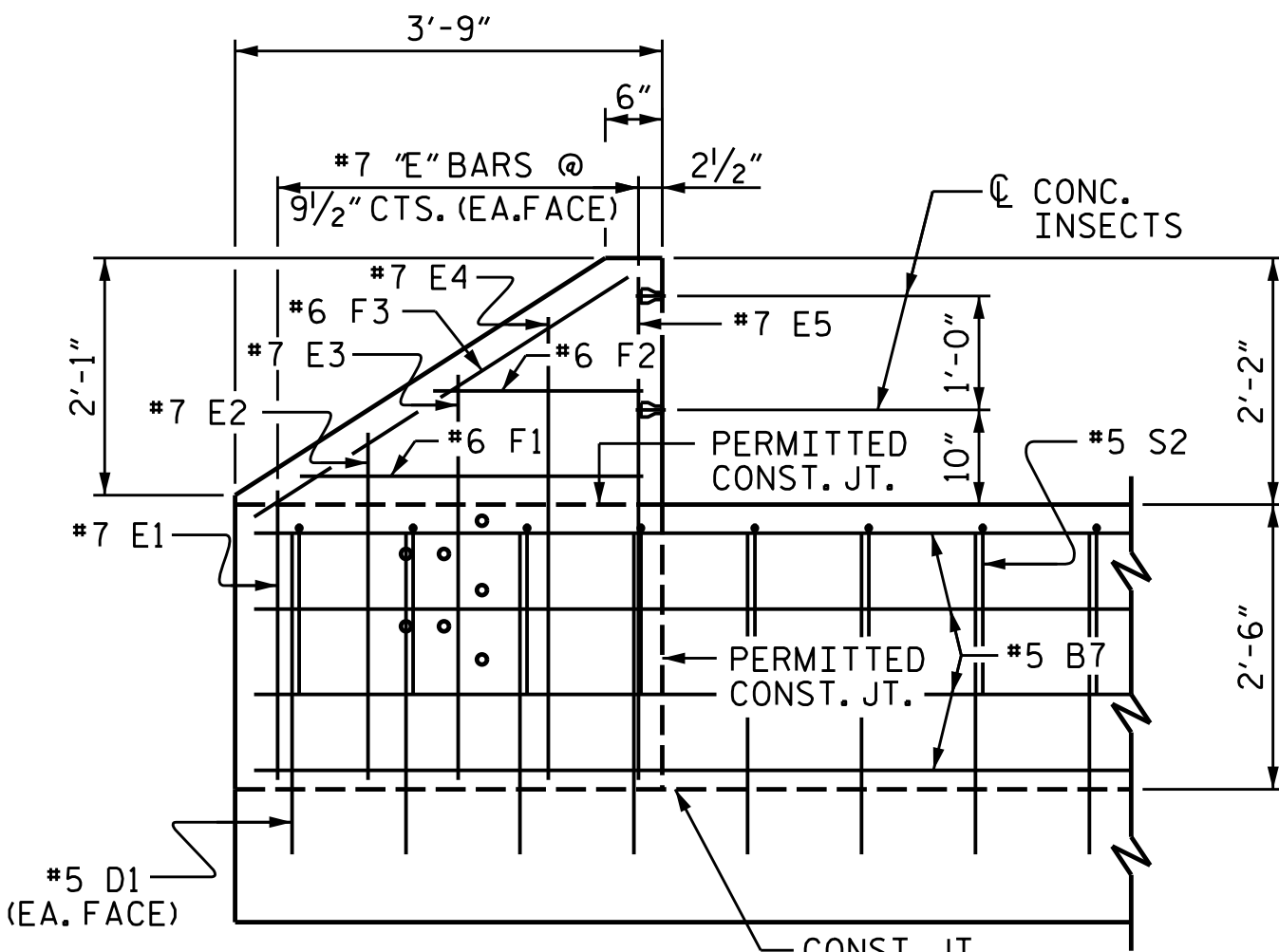
PLAN OF PARAPET



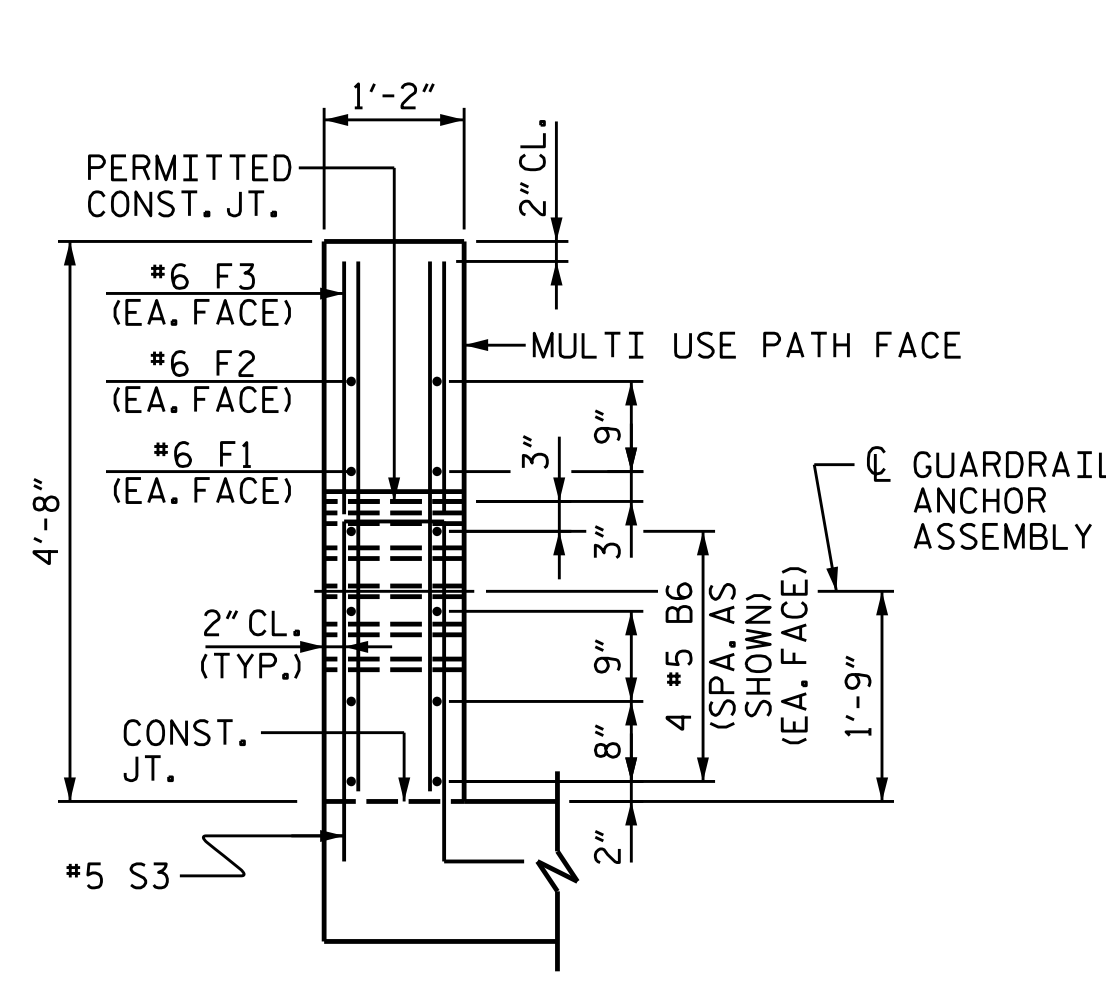
PLAN OF END POST



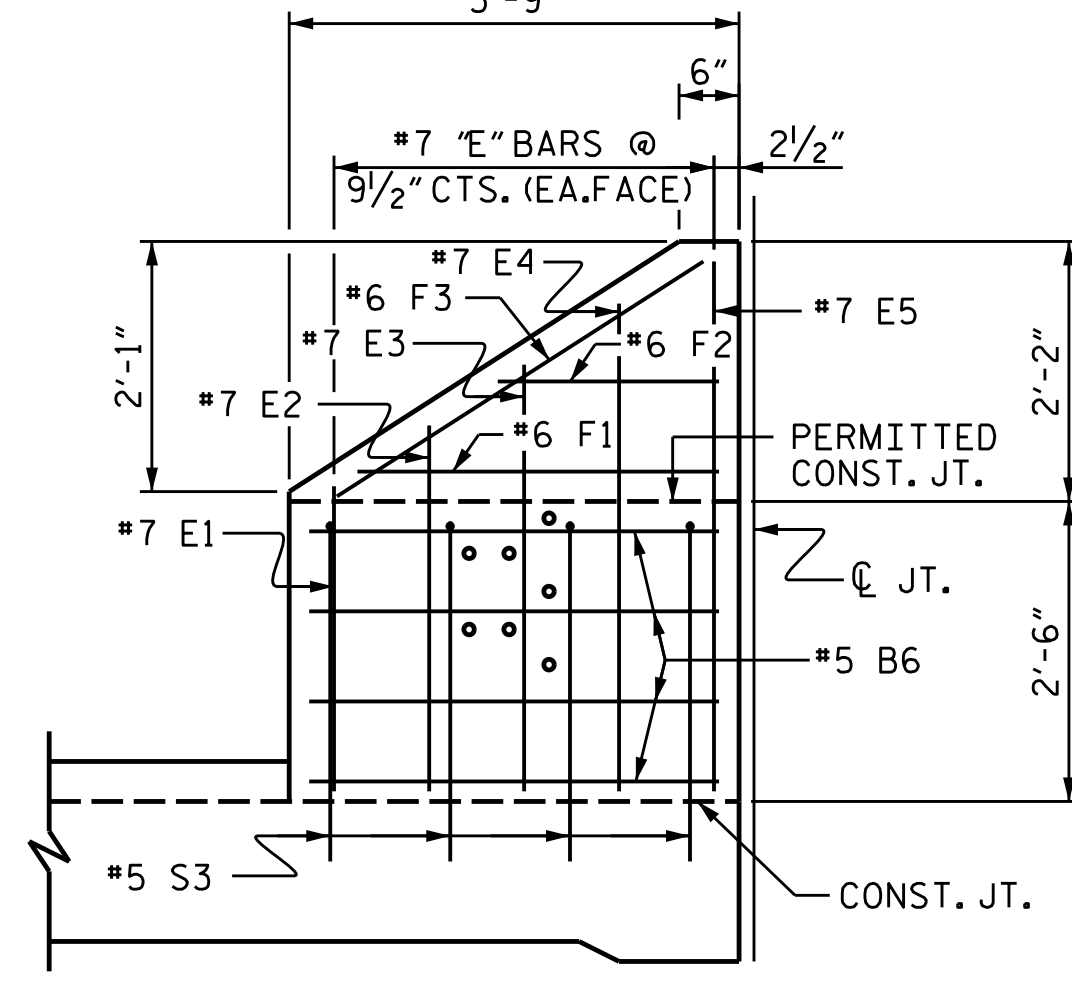
END VIEW



ELEVATION



END VIEW



ELEVATION

### PARAPET AND END POST FOR DOUBLE FACED 2-BAR METAL RAIL

THE #5 D1 BARS SHALL BE ADHESIVELY ANCHORED. LEVEL 2 FIELD TESTING IS REQUIRED.  
THE YIELD LOAD IS 18.7 KIPS. FOR ADHESIVELY ANCHORED BOLTS AND DOWELS,  
SEE SPECIAL PROVISIONS.

### END POST FOR 2-BAR METAL RAIL

#### NOTES

THE COST OF THE END POST ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LINEAR FOOT CONTRACT PRICE BID FOR "1'-2" X 2'-6" CONCRETE PARAPET".

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

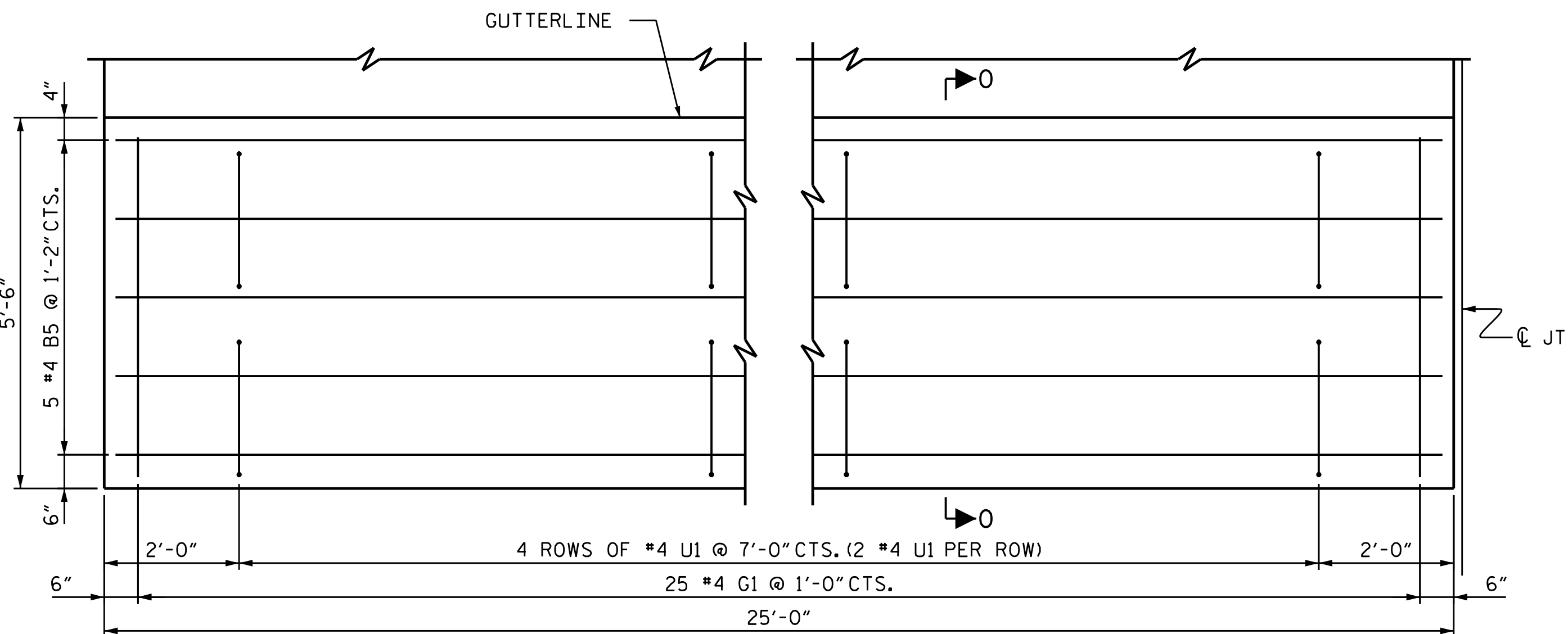
ALL REINFORCING STEEL IN END POSTS SHALL BE EPOXY COATED.

THE COST OF THE 1'-4" X 2'-6" CONCRETE PARAPET & END POST ON THE APPROACH SLAB SHALL BE INCLUDED IN THE LINEAR FOOT CONTRACT PRICE BID FOR "1'-4" X 2'-6" CONCRETE PARAPET".

THE 1'-4" X 2'-6" CONCRETE PARAPET & END POST ON EACH APPROACH SLAB SHALL NOT BE CAST UNTIL ALL APPROACH SLAB CONCRETE HAS BEEN CAST AND HAS REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.

ALL REINFORCING STEEL IN 1'-4" X 2'-6" CONCRETE PARAPET & END POSTS SHALL BE EPOXY COATED.

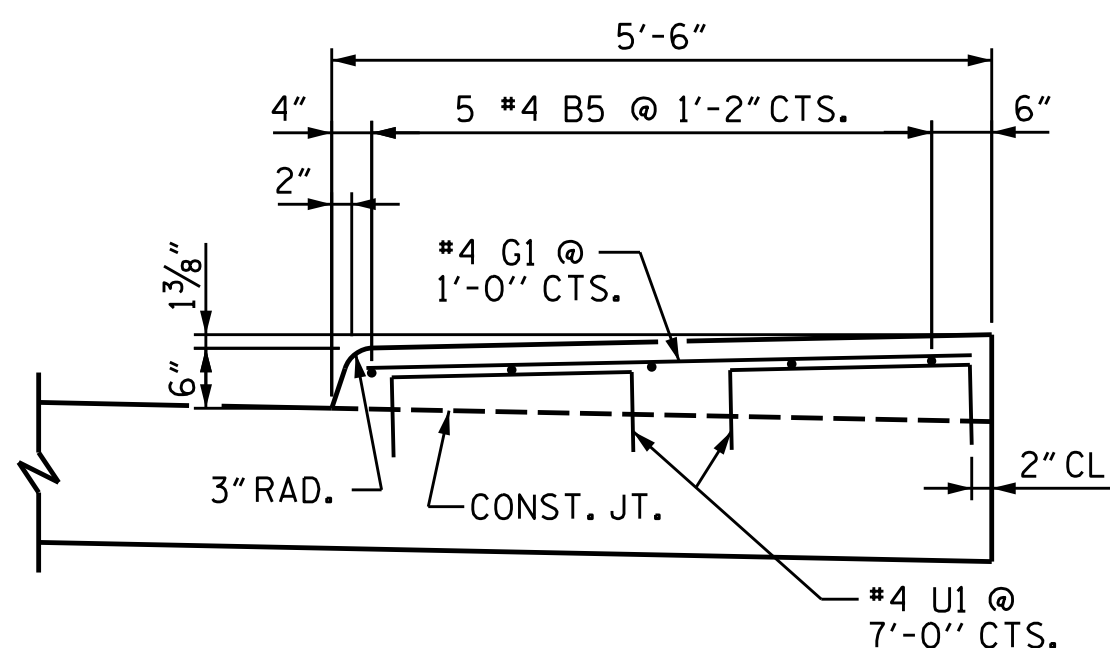
SIDEWALK ON THE APPROACH SLAB SHALL NOT BE CAST UNTIL ALL APPROACH SLAB CONCRETE HAS BEEN CAST AND REACHED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI.



PLAN OF SIDEWALK

SIDEWALK @ APPROACH SLAB 1 SHOWN,  
SIDEWALK @ APPROACH SLAB 2 SIMILAR.

SIDEWALK DETAILS



SECTION 0-0

### BILL OF MATERIAL FOR 2 END POSTS

| STAGE I |     |      |      |        |        |
|---------|-----|------|------|--------|--------|
| BAR     | No. | SIZE | TYPE | LENGTH | WEIGHT |
| *B6     | 16  | #5   | STR  | 3'-5"  | 57     |
| *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'-5"  | 36     |
| *F1     | 4   | #6   | STR  | 3'-0"  | 18     |
| *F2     | 4   | #6   | STR  | 1'-10" | 11     |
| *F3     | 4   | #6   | STR  | 3'-8"  | 22     |

\*EPOXY COATED REINFORCING STEEL 251 LBS.

CLASS AA CONCRETE 1.2 C.Y.

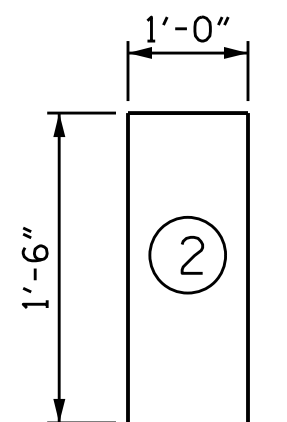
### BILL OF MATERIAL FOR 2 END POSTS & 1'-4" X 2'-6" PARAPET

| STAGE III |     |      |      |        |        |
|-----------|-----|------|------|--------|--------|
| BAR       | No. | SIZE | TYPE | LENGTH | WEIGHT |
| *B7       | 16  | #5   | STR  | 24'-8" | 412    |
| *D1       | 100 | #5   | STR  | 2'-10" | 296    |
| *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'-5"  | 36     |
| *F1       | 4   | #6   | STR  | 3'-0"  | 18     |
| *F2       | 4   | #6   | STR  | 1'-10" | 11     |
| *F3       | 4   | #6   | STR  | 3'-8"  | 22     |
| *S2       | 50  | #5   | 2    | 4'-0"  | 209    |

\*EPOXY COATED REINFORCING STEEL 1111 LBS.

CLASS AA CONCRETE 6.6 C.Y.

#### BAR TYPE



ALL BAR DIMENSIONS ARE OUT TO OUT

PROJECT NO. U-6146/B-5857

GASTON COUNTY

STATION: 32+93.00-L-

SHEET 4 OF 4



2/24/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

### BRIDGE APPROACH SLAB FOR FLEXIBLE PAVEMENT DETAILS

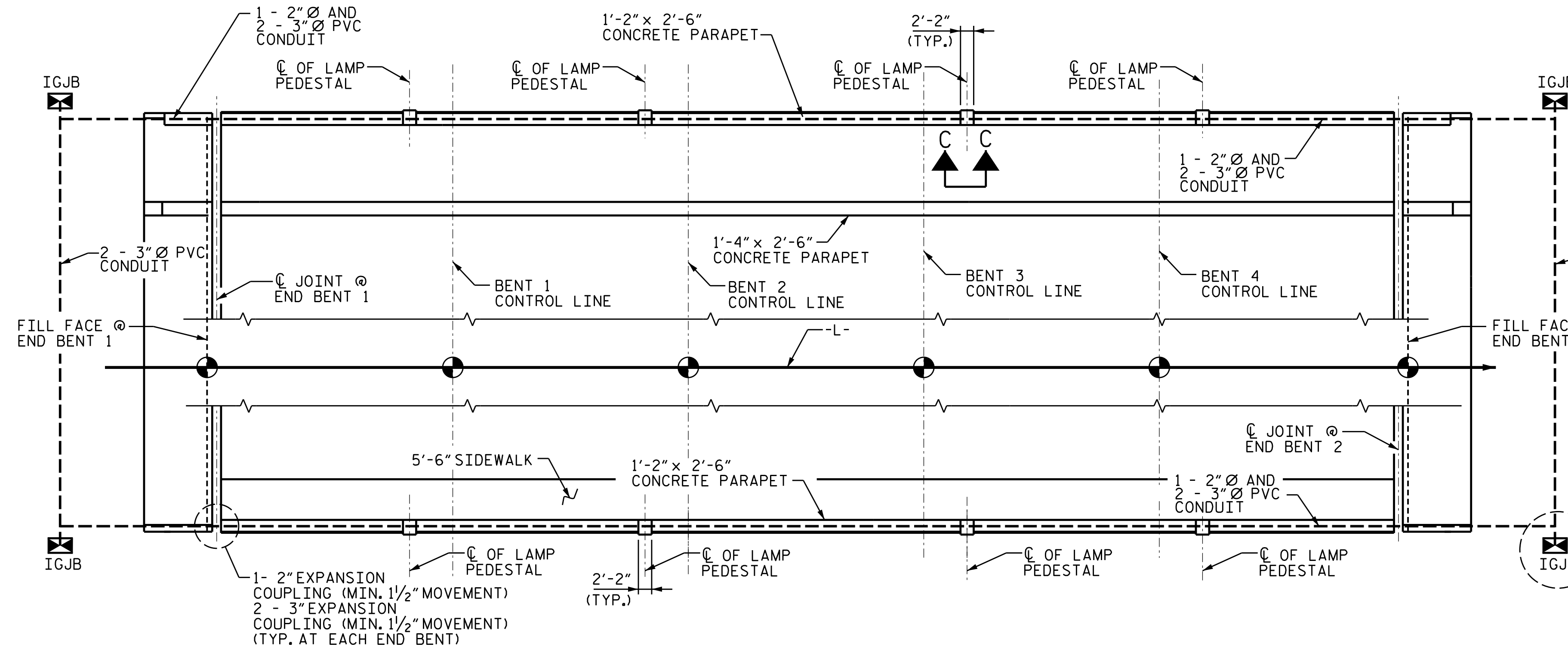
| REVISIONS |     |       |     |     | SHEET NO.        |
|-----------|-----|-------|-----|-----|------------------|
| NO.       | BY: | DATE: | NO. | BY: |                  |
| 1         |     |       | 3   |     | S-97             |
| 2         |     |       | 4   |     | TOTAL SHEETS 100 |

DRAWN BY : JLA  
CHECKED BY : MGC  
DATE : 10/20  
DATE : 2/21

Diagram illustrating the cross-section of a lighting fixture assembly, showing the internal wiring and structural components. The diagram includes the following labels and dimensions:

- IGJB** (Intermediate Junction Box) at the left end.
- 1 - 2" Ø AND 2 - 3" Ø PVC CONDUIT** (top section).
- LAMP PEDESTAL** (center section).
- 1 - 1" Ø AND 1 - 2" Ø PVC CONDUIT** (middle section).
- 1 - 2" Ø AND 2 - 3" Ø PVC CONDUIT** (bottom section).
- 5 1/2" (TYP.)** (dimension for the middle section).
- 9" (TYP.) TO CL TO CONDUIT** (dimension for the bottom section).
- ROADWAY SURFACE** (bottom section).
- END POST ON APPR. SLAB (TYP.)** (right end).

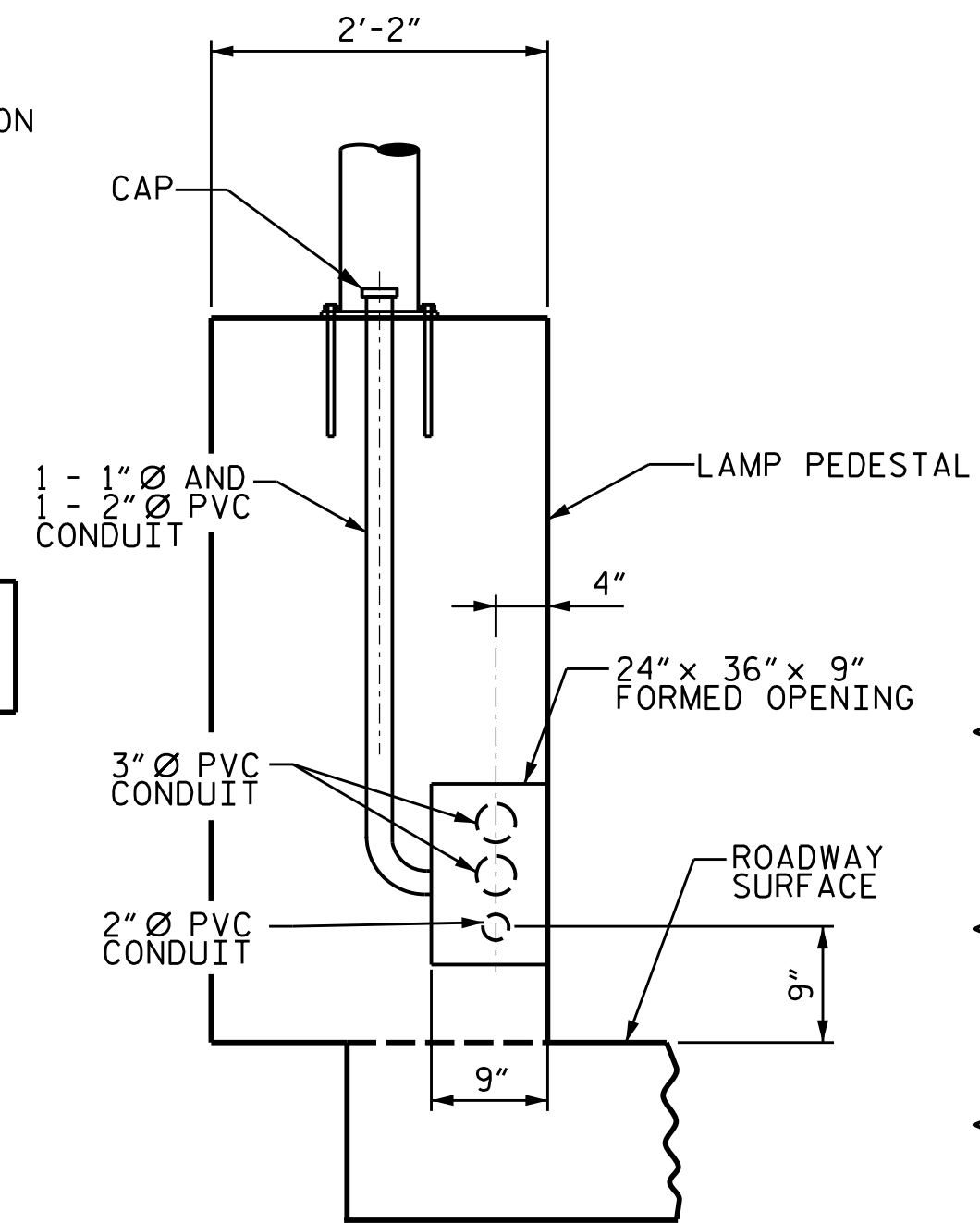
(FROM INSIDE BRIDGE LOOKING @ LEFT RAIL)  
(ONE PEDESTAL SHOWN, SEE "CONDUIT LAYOUT" FOR TOTAL NO. OF PEDESTALS)



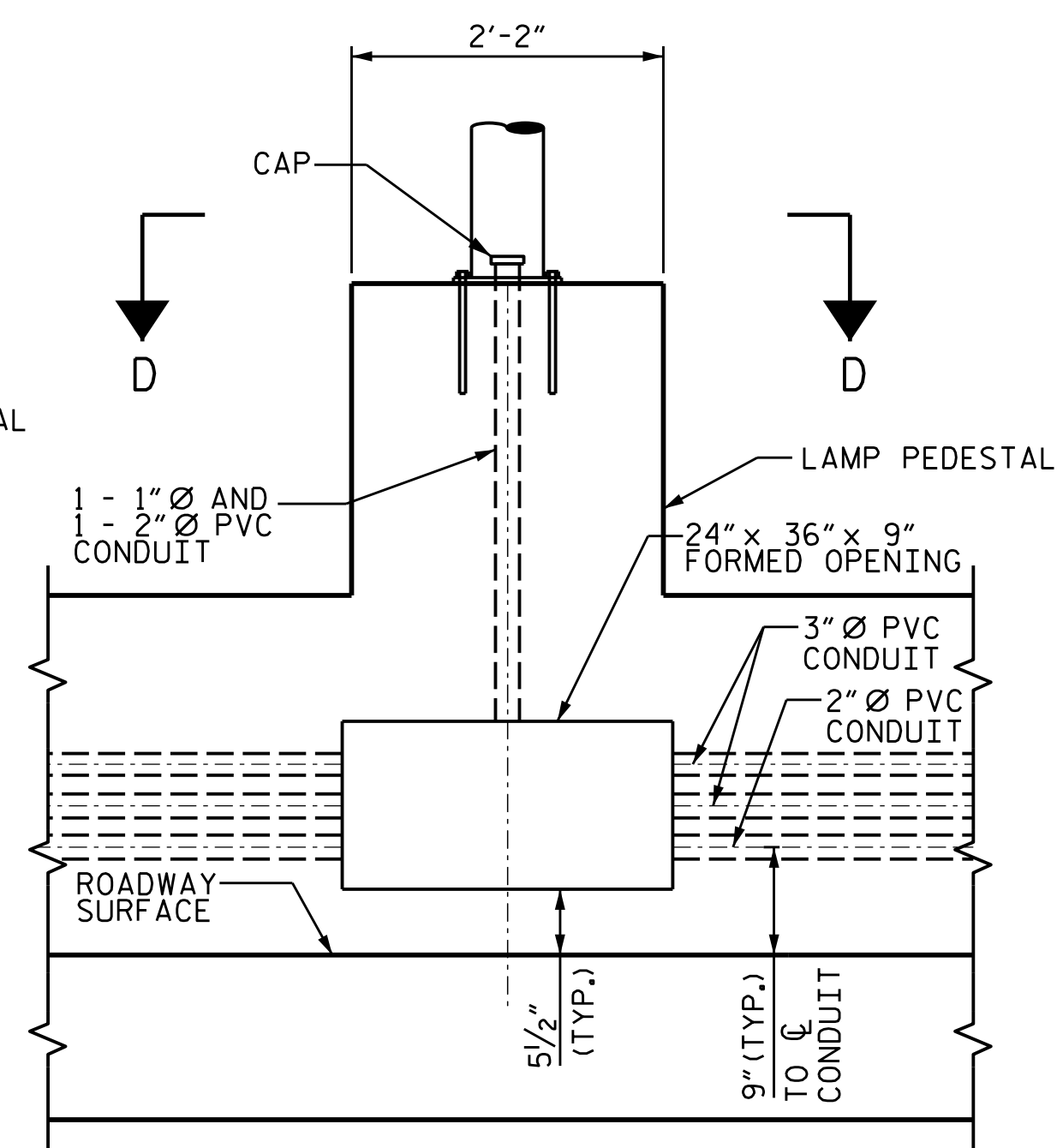
NOTES:

|              |         |        |      |
|--------------|---------|--------|------|
| DRAWN BY :   | NMW/ZCS | DATE : | 8/25 |
| CHECKED BY : | MGC     | DATE : | 8/25 |

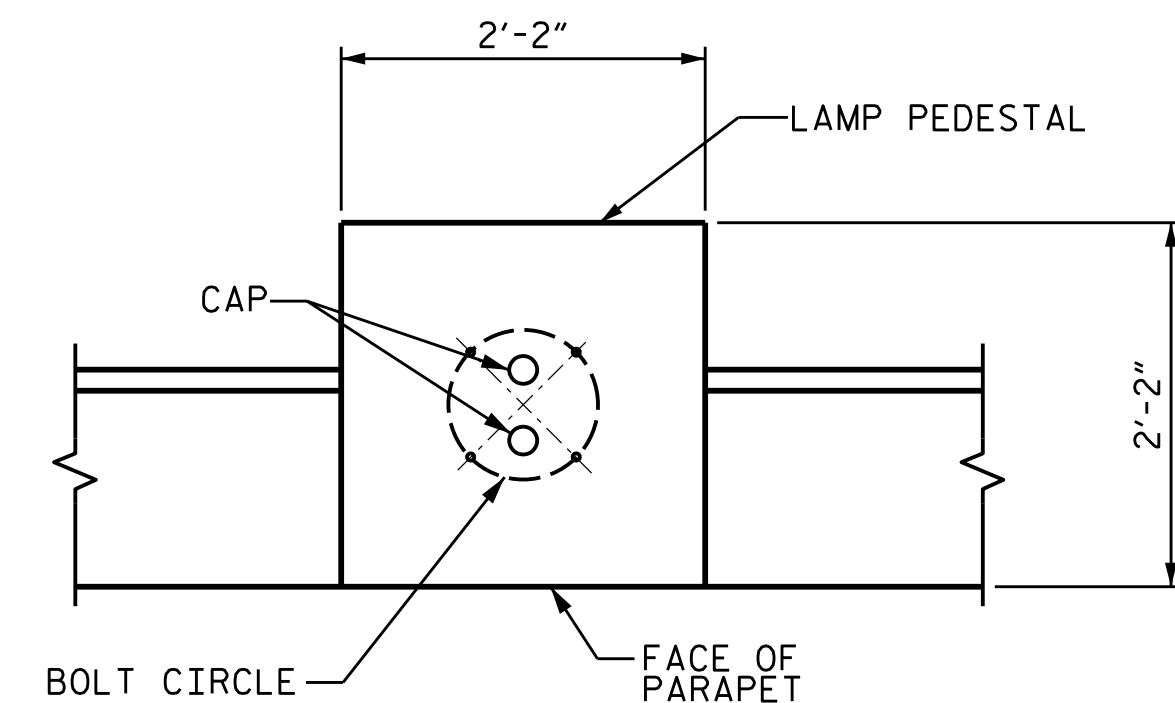
PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
 STATION: 32+93.00-L-



SECTION B-B  
LAMP PEDESTAL

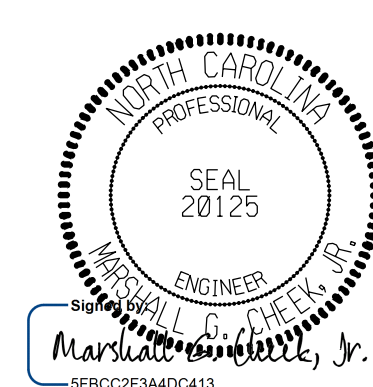


VIEW C-C



VIEW D-D

LAMP POLE TO BE PROVIDED BY OTHERS.



2/24/2026

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

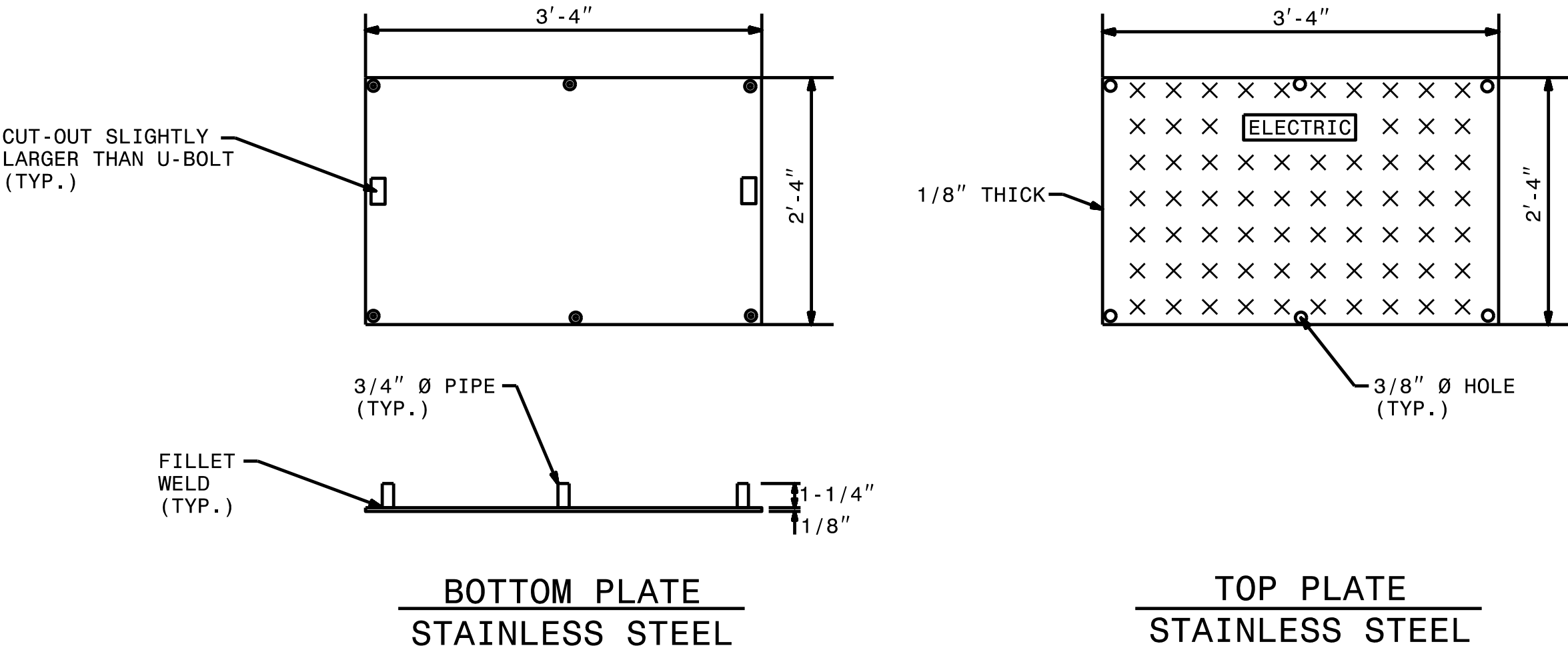
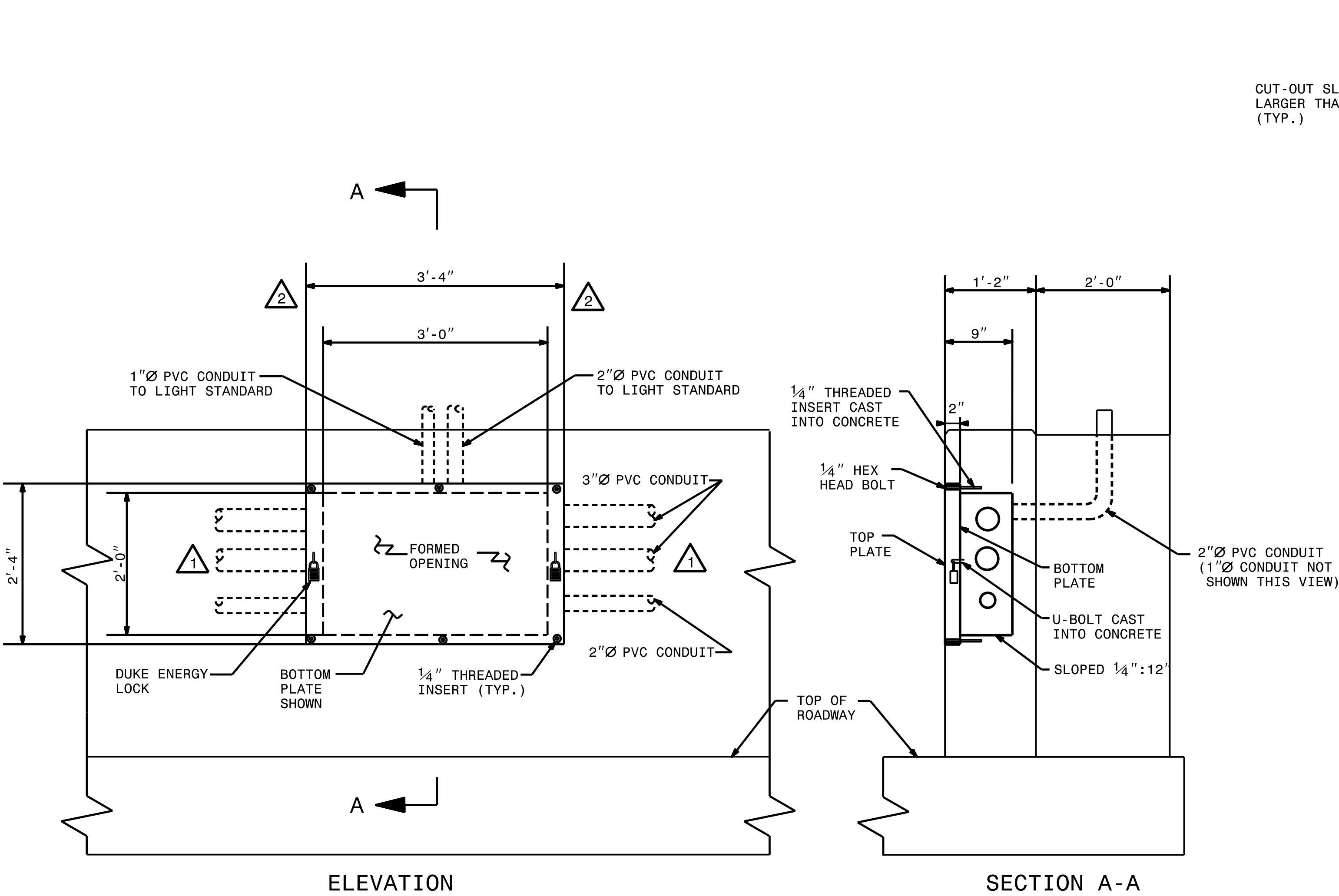
**TGS ENGINEERS**  
201 W. MARION ST STE 20  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-027

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

# ELECTRICAL CONDUIT SYSTEM FOR LIGHTING

| REVISIONS |     |       |     |     |       | SHEET NO.<br>S-98      |
|-----------|-----|-------|-----|-----|-------|------------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                        |
| 1         |     |       | 3   |     |       | TOTAL<br>SHEETS<br>100 |
| 2         |     |       | 4   |     |       |                        |

USE FOR LIGHTING CONSTRUCTION ONLY



ELEVATION

SECTION A-A

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00-L-

DELTA NOTES

- 1 PROVIDE 3" OF SEPARATION BETWEEN CONDUITS TO ALLOW FOR CONCRETE AND AGGREGATE FLOW DURING CONSTRUCTION OF BRIDGE PARAPET.
- 2 #5 S1 OR #5 S4 BARS MAY BE SHIFTED AS NECESSARY TO CLEAR FORMED OPENING & THREADED INSERTS.

DRAWN BY : ZCS DATE : 8/25  
CHECKED BY : MGC DATE : 8/25

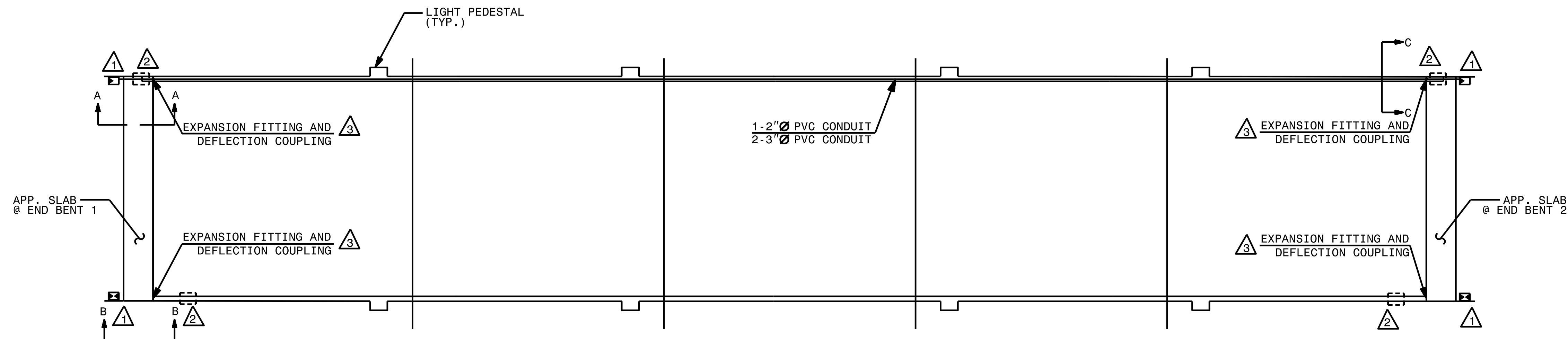
2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

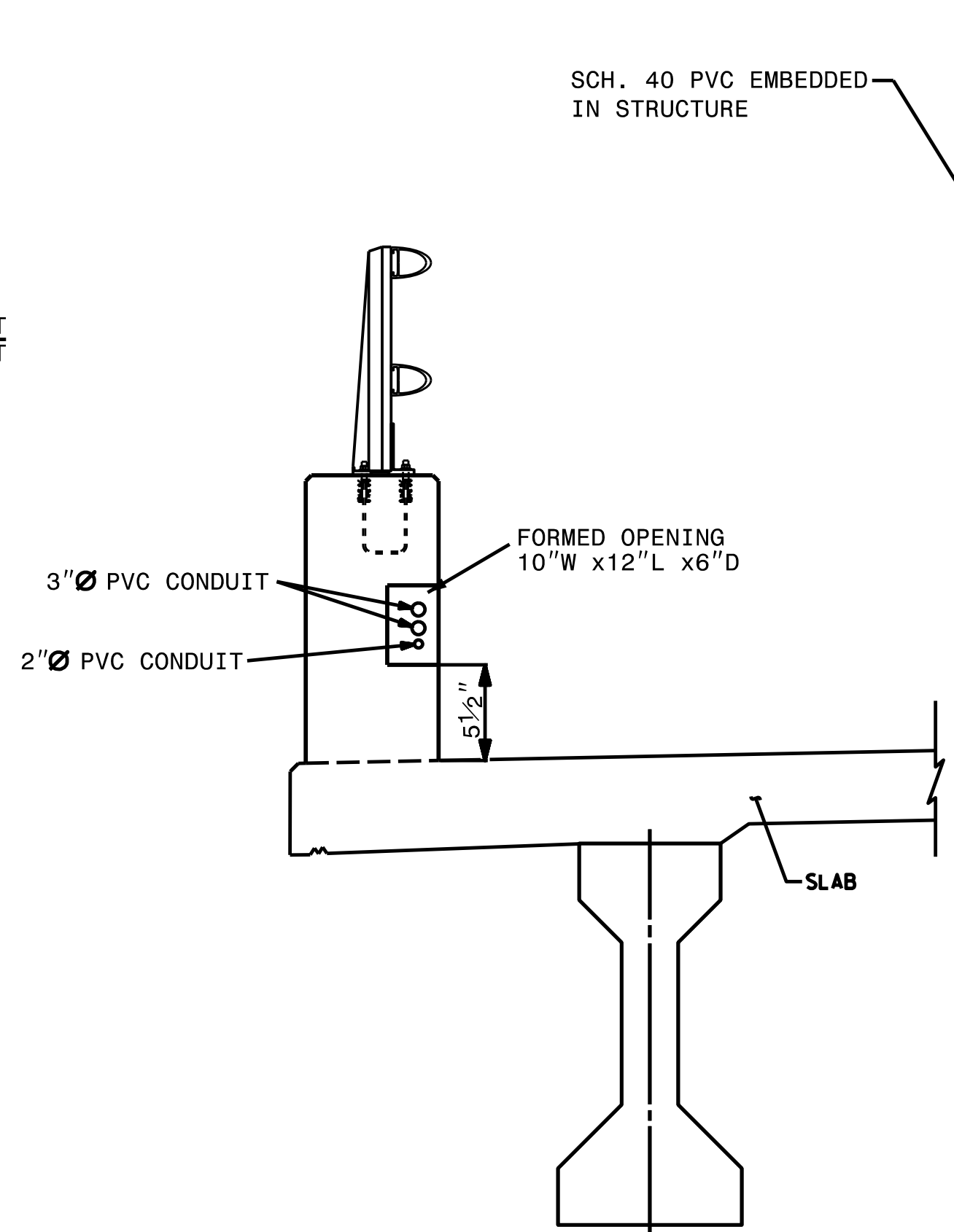
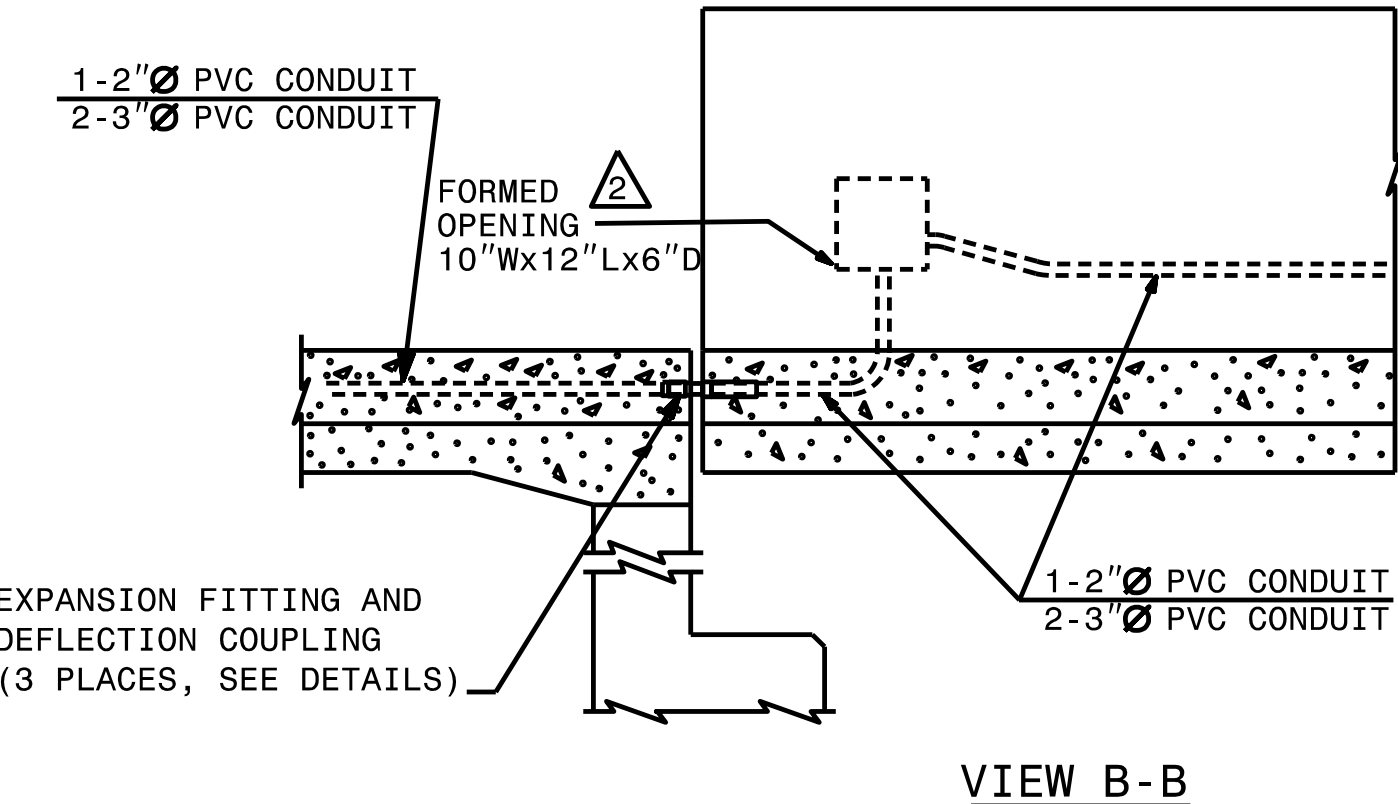
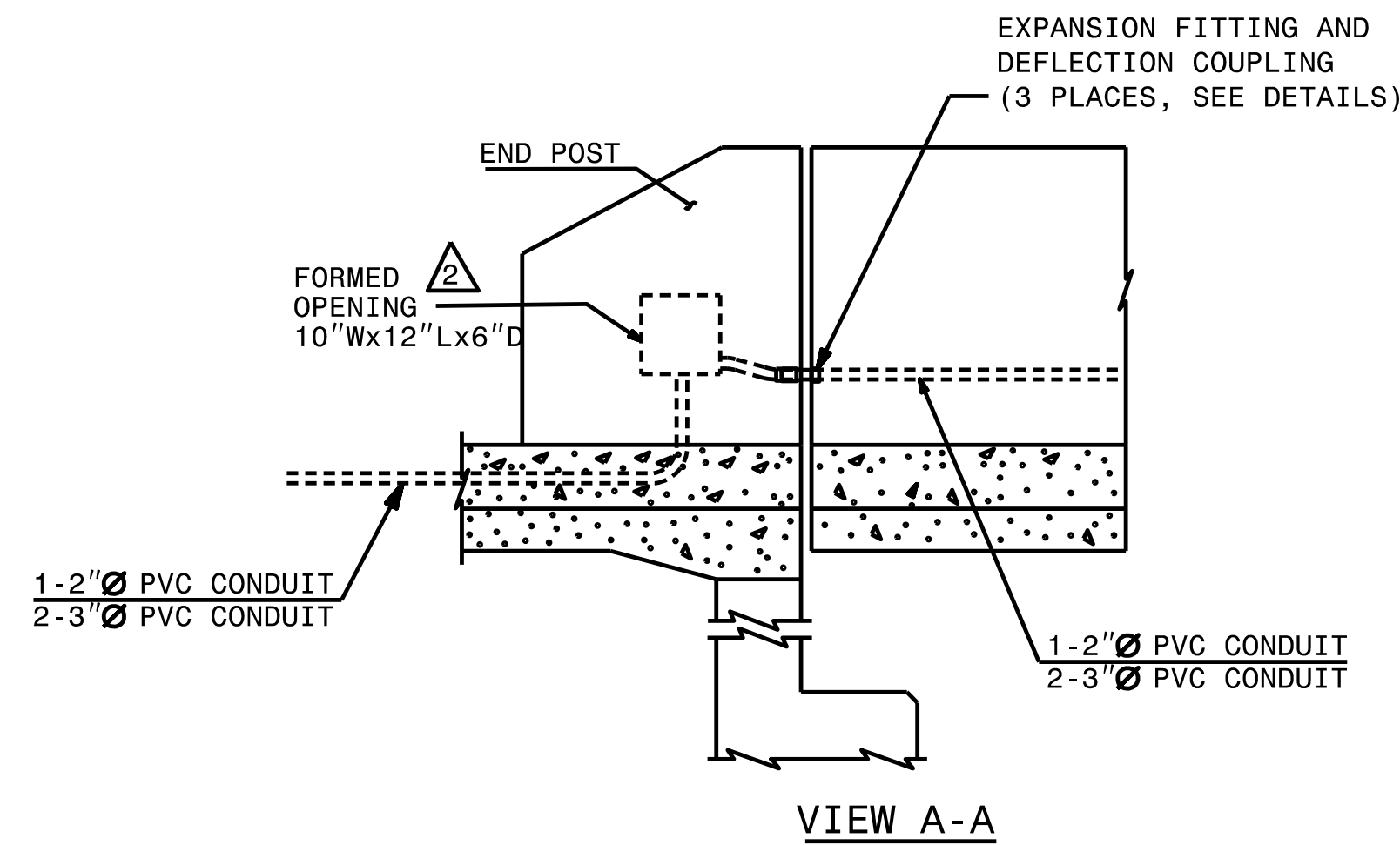
| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |              |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 100          |

USE FOR LIGHTING CONSTRUCTION ONLY

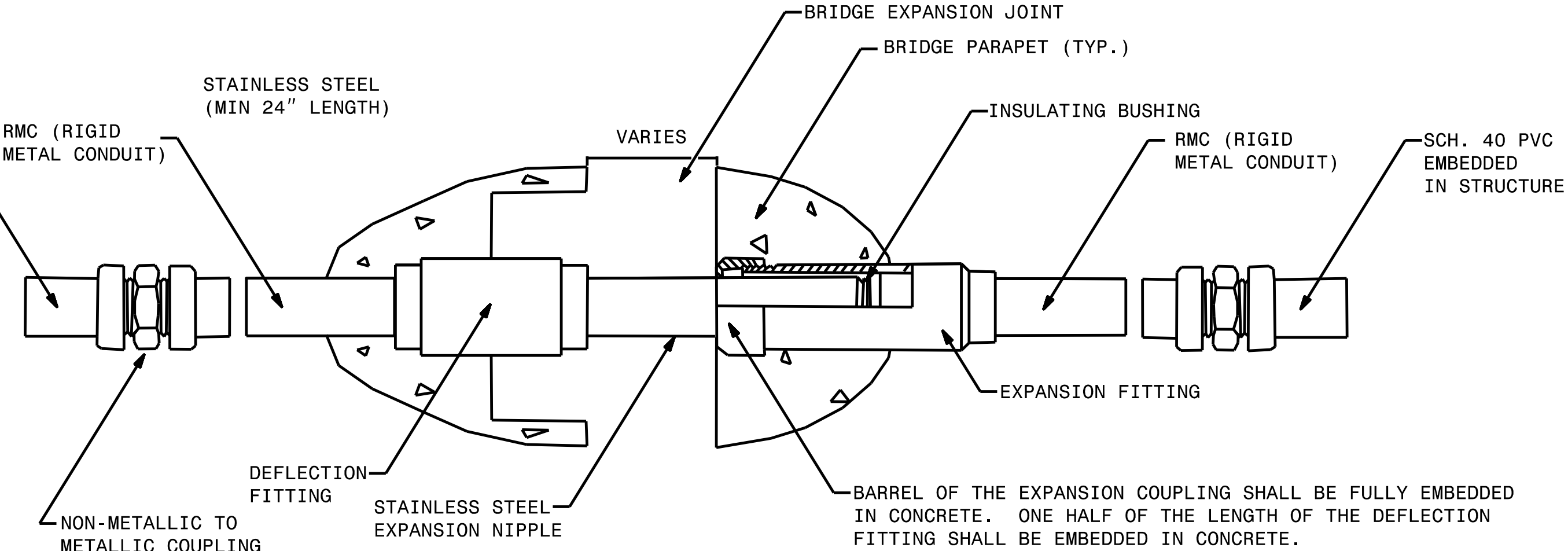


CONDUIT SYSTEM LAYOUT

- △ NOTES
- △ 1 30" L X 24" W X 18" H POLYMER CONCRETE JUNCTION BOX
  - △ 2 FORMED OPENINGS ARE 10" W X 12" L X 6" H.
  - △ 3 PROVIDE EXPANSION FITTINGS AT ALL BRIDGE EXPANSION JOINTS.



SECTION C-C



EXPANSION/DEFLECTION COUPLINGS DETAIL

PROJECT NO. U-6146/B-5857  
GASTON COUNTY  
STATION: 32+93.00-L-

DRAWN BY : ZCS DATE : 8/25  
CHECKED BY : MGC DATE : 8/25

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

ELECTRICAL CONDUIT  
FORMED OPENING

2/24/2026

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

IGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

TGS ENGINEERS  
201 W. MARION ST STE 200  
SHELBY, NC 28150  
PH (704) 476-0003  
CORP. LICENSE NO.: C-0275

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-100        |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 100          |