

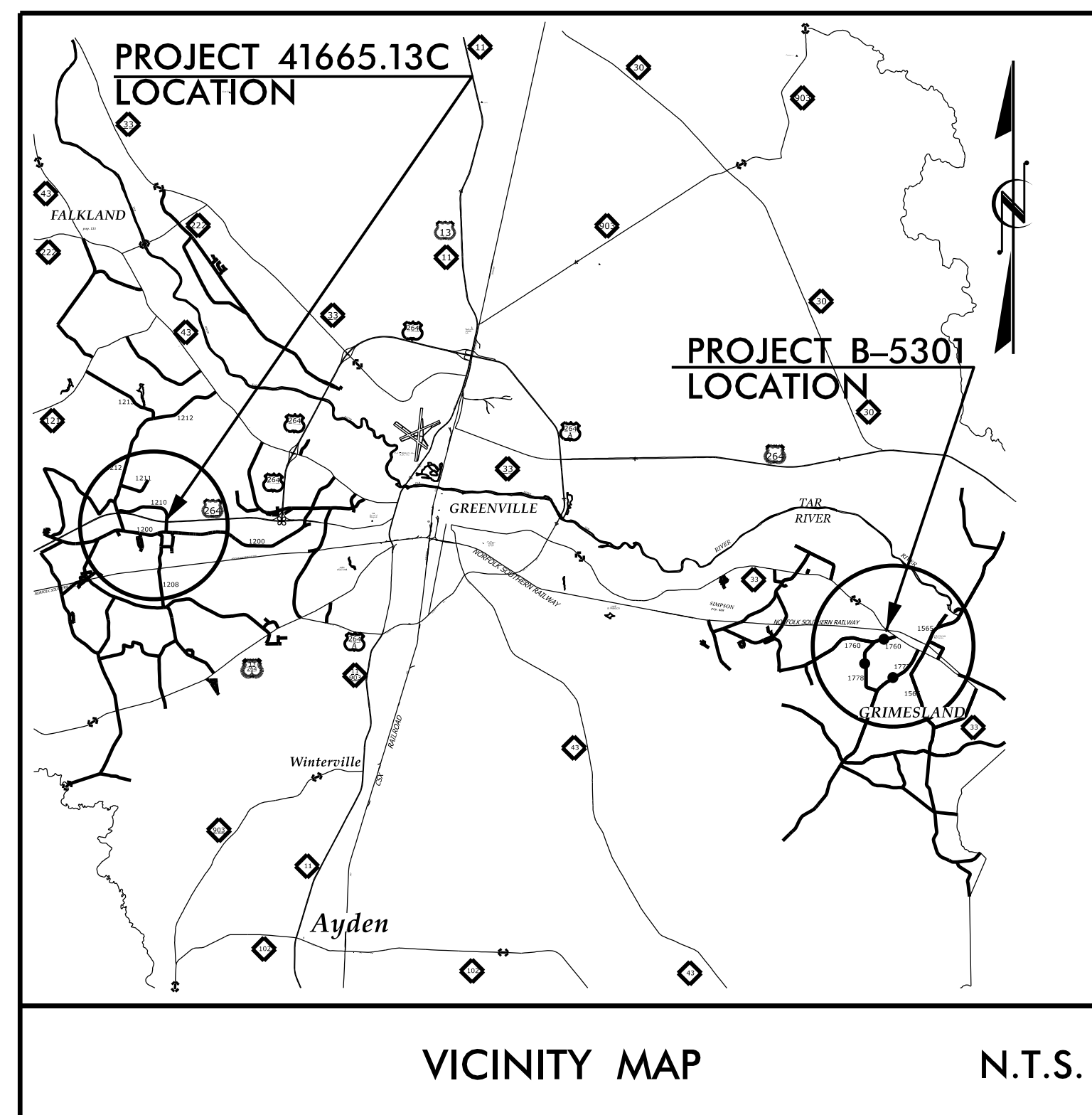
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**TIP PROJECT: B-5301 / 41665.13C**

**CONTRACT: C204414**



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
**PITT COUNTY**

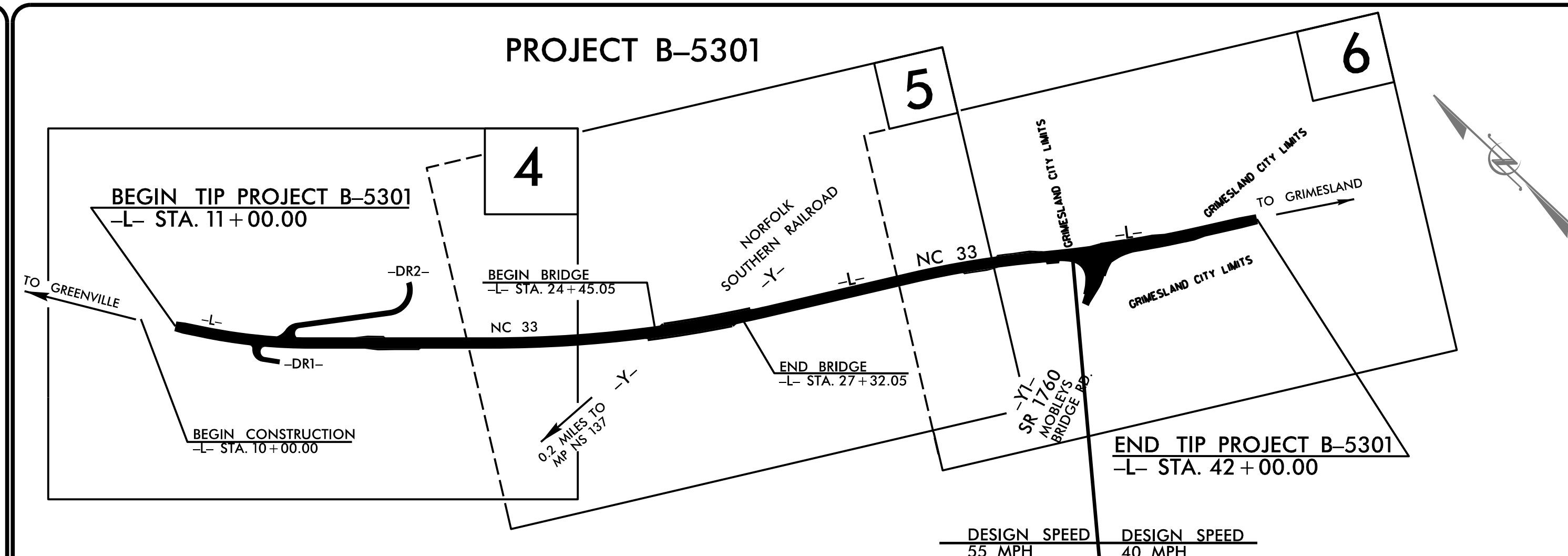
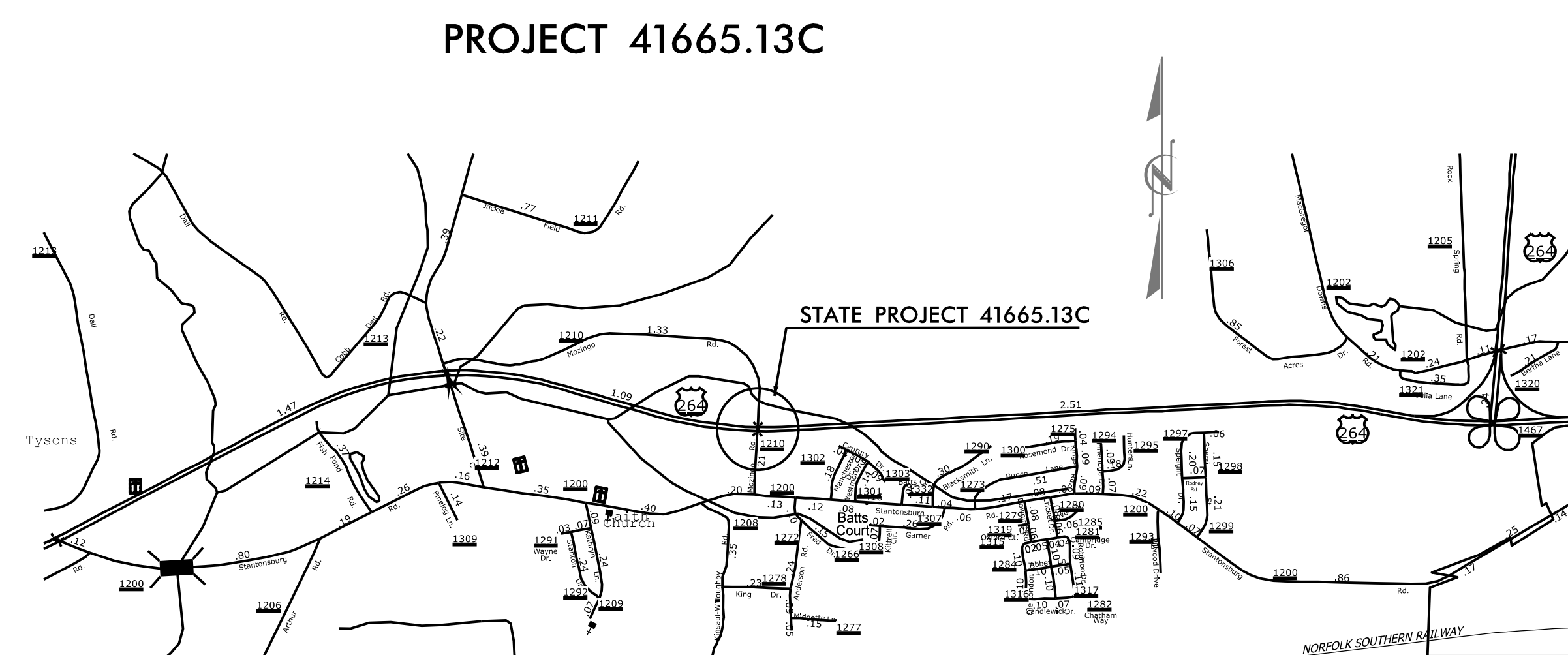
**B-5301 LOCATION: BRIDGE NO. 87 OVER NORFOLK SOUTHERN RAILROAD ON NC 33**

**TYPE OF WORK: GRADING, DRAINAGE, STRUCTURE & PAVING**

**41665.13C LOCATION: BRIDGE 730422 ON MOZINGO ROAD OVER US 264 IN PITT COUNTY**

**TYPE OF WORK: CONCRETE BRIDGE REPAIR**

| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.   | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C.            | B-5301 / 41665.13C          | 1           |              |
| STATE PROJ. NO. | P.A. PROJ. NO.              | DESCRIPTION |              |
| 46015.1.1       | BRSTP-033(13)               | PE          |              |
| 46015.2.1       |                             | RW & UTIL.  |              |
| 46015.3.1       |                             | CONST.      |              |
| 41665.13C       |                             | PE & CONST. |              |



**STRUCTURES**



**DESIGN DATA - B-5301**

ADT 2020 = 9,300  
ADT 2040 = 13,200  
K = 11%  
D = 60%  
T = 8% \*\*  
\* V = 40/55 MPH  
\*\* (TTST 3%, DUAL 5%)  
FUNC CLASS=MAJOR COLLECTOR  
REGIONAL TIER

**PROJECT B-5301 LENGTH**

LENGTH ROADWAY TIP PROJECT B-5031 = 0.533 MILES  
LENGTH STRUCTURE TIP PROJECT B-5031 = 0.054 MILES  
TOTAL LENGTH TIP PROJECT B-5031 = 0.587 MILES

**PROJECT 41665.13C LENGTH**

STATE PROJECT LENGTH = 0.019 MILES

Prepared In the Office of:  
**DIVISION OF HIGHWAYS**  
STRUCTURES MANAGEMENT UNIT  
1000 BIRCH RIDGE DR.  
RALEIGH, N.C. 27610

2018 STANDARD SPECIFICATIONS

**LETTING DATE :**  
JUNE 21, 2022

**KRISTY W. ALFORD, P.E.**  
PROJECT ENGINEER

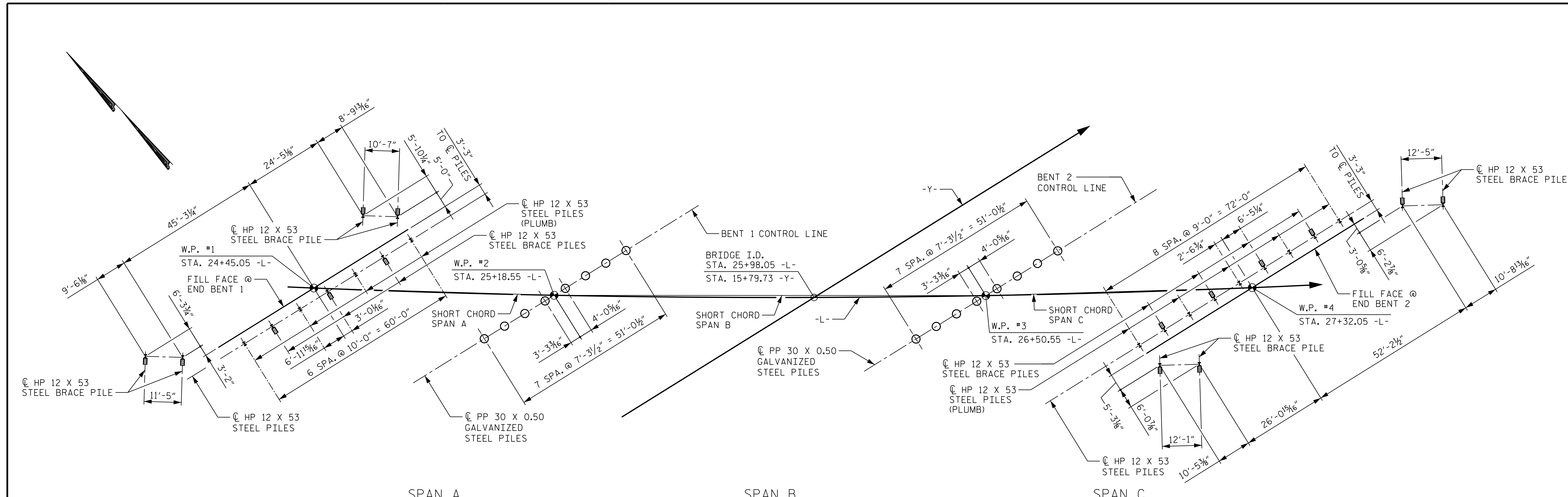
**P. KOREY NEWTON, P.E.**  
PROJECT DESIGN ENGINEER

**ANDREW L. PHILLIPS, P.E.**  
PROJECT ENGINEER - KIMLEY-HORN









SPAN A

SPAN B

SPAN C

### FOUNDATION LAYOUT

DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES  
 BRACE PILES AT END BENTS ARE BATTERED 3:12  
 HP 12 X 53 STEEL BRACE PILES IN END BENT WING WALLS ARE ORIENTED PARALLEL TO SHORT CHORD.  
 FOR SUBSTRUCTURE ANGLES, SEE SHEET 3 OF 4.

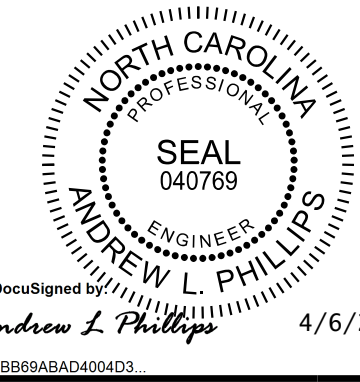
### FOUNDATION NOTES:

- FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- PILES AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 100 TONS PER PILE.
- DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 170 TONS PER PILE.
- IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 55 TO 85 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO.1. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.
- PILES AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 215 TONS PER PILE.
- DRIVE PILES AT BENT NO.1 TO REQUIRED DRIVING RESISTANCE OF 290 TONS PER PILE.
- INSTALL PILES AT BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN 8 FT.
- IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 55 TO 125 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT NO.1. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.
- PILES AT BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 225 TONS PER PILE.
- DRIVE PILES AT BENT NO.2 TO REQUIRED DRIVING RESISTANCE OF 300 TONS PER PILE.

- INSTALL PILES AT BENT NO.2 TO A TIP ELEVATION NO HIGHER THAN 4 FT.
- IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 55 TO 125 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT BENT NO.2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.
- PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 90 TONS PER PILE.
- DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE.
- IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 55 TO 85 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO.2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.
- TESTING THE FIRST PRODUCTION PIPE PILE WITH THE PDA DURING DRIVING, RESTRIKING, OR REDRIVING IS REQUIRED AT BENT NO.2. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
- OBSERVE A 1 MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT TO FINISHED GRADE BEFORE BEGINNING END BENT CONSTRUCTION AT END BENTS NO.1 AND 2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 435 OF THE STANDARD SPECIFICATIONS.
- DO NOT BEGIN WORK AT BENTS NO.1 AND 2 UNTIL FILL HAS BEEN PLACED AND WAITING PERIOD HAS BEEN RELEASED.

PROJECT NO. B-5301  
PITT COUNTY  
 STATION: 25+98.05 -L-

SHEET 2 OF 4



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

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 FOR BRIDGE OVER  
 NORFOLK SOUTHERN  
 RAILROAD ON NC 33  
 BETWEEN SR 1762 & SR 1760

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

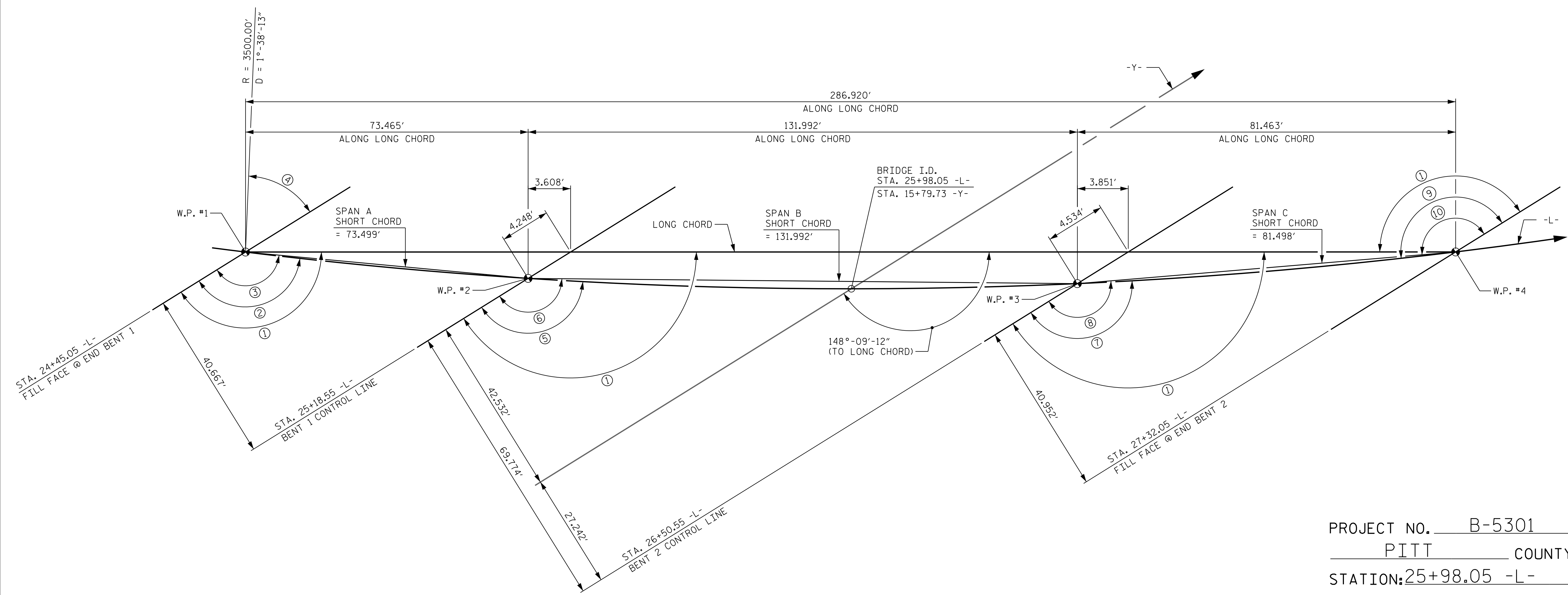
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4/7/2020  
 DRAWN BY: D. D. LOWERY DATE: 2/20  
 CHECKED BY: C. I. POOLE DATE: 2/20  
 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 2/20

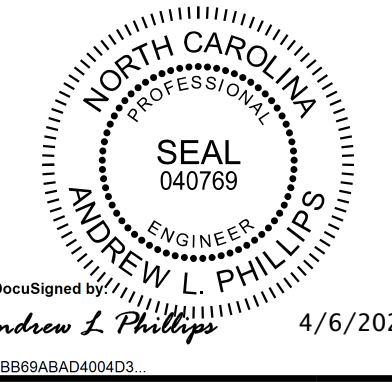
| TABLE OF ANGLES |                                    |     |                                    |
|-----------------|------------------------------------|-----|------------------------------------|
| No.             | ANGLES                             | No. | ANGLES                             |
| 1               | 148°-09'-12"                       | 6   | 148°-05'-16"                       |
| 2               | 145°-48'-15"<br>(TANGENT TO CURVE) | 7   | 149°-10'-06"<br>(TANGENT TO CURVE) |
| 3               | 146°-24'-21"                       | 8   | 149°-50'-07"                       |
| 4               | 55°-48'-15"                        | 9   | 150°-30'-09"<br>(TANGENT TO CURVE) |
| 5               | 147°-00'-26"<br>(TANGENT TO CURVE) | 10  | 149°-50'-07"                       |



**LONG CHORD LAYOUT**  
ALL BENTS ARE PARALLEL

PROJECT NO. B-5301  
PITT COUNTY  
 STATION: 25+98.05 -L-

SHEET 3 OF 4



**Kimley»Horn**  
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 NC LICENSE # F-0102

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**  
 FOR BRIDGE OVER  
 NORFOLK SOUTHERN  
 RAILROAD ON NC 33  
 BETWEEN SR 1762 & SR 1760

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-3          |
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| 2         |     |       | 4   |     |       | 55           |

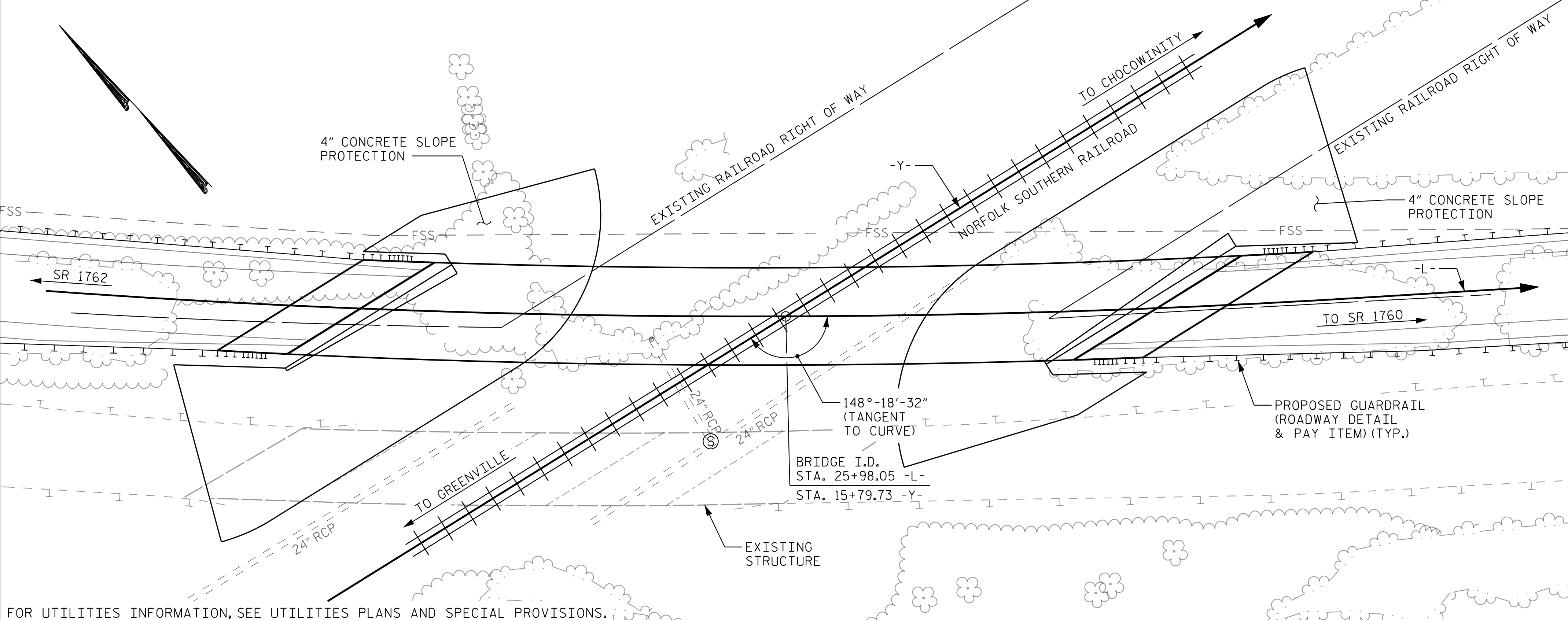
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 DRAWN BY: D. D. LOWERY DATE: 2/20  
 CHECKED BY: C. I. POOLE DATE: 2/20  
 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 2/20

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BM #1: RR SPIKE SET IN BASE OF 36" TWIN OAK TREE, 284.24' RIGHT OF STATION 30+33.22 -L-, EL. 41.36' (N 666673 E 2534380)



FOR UTILITIES INFORMATION, SEE UTILITIES PLANS AND SPECIAL PROVISIONS.

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.

FOR MODIFIED 74" PRESTRESSED CONCRETE GIRDERS, SEE SPECIAL PROVISIONS.

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

THE RAILROAD TRACK TOP OF RAIL ELEVATIONS ON THE PLANS ARE FROM THE BEST INFORMATION AVAILABLE. PRIOR TO BEGINNING BRIDGE CONSTRUCTION, VERIFY THE TOP OF RAIL ELEVATIONS AND REPORT ANY VARIATIONS TO THE ENGINEER. ANY PLAN REVISIONS NECESSARY TO ACHIEVE THE REQUIRED MINIMUM CLEARANCE WILL BE PROVIDED BY THE DEPARTMENT.

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

THE EXISTING STRUCTURE CONSISTING OF 5 SPANS (1 @ 41.9', 1 @ 42.5', 1 @ 45.0', 1 @ 42.8', 1 @ 43.9') OF REINFORCED CONCRETE DECK GIRDERS WITH A CLEAR ROADWAY WIDTH OF 25'-11" ON REINFORCED CONCRETE CAPS AND CONCRETE (PPC) PILES AND LOCATED APPROXIMATELY 60 FEET SOUTHWEST OF THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING 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.

FOR INTERIOR BENTS 1 AND 2, ONLY PARTIAL GALVANIZING OF THE PILES IS REQUIRED. SEE INTERIOR BENT SHEETS FOR REQUIRED GALVANIZED LENGTHS. PAYMENT FOR PARTIALLY GALVANIZED PILES WILL BE MADE UNDER THE CONTRACT UNIT PRICE FOR GALVANIZED STEEL PILES.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

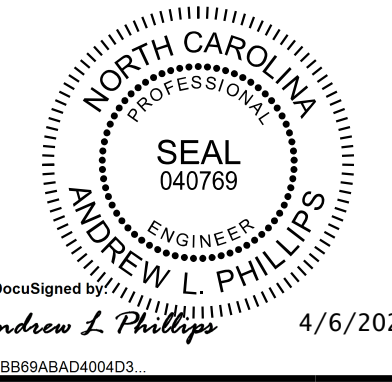
|                | REMOVAL OF EXISTING STRUCTURE AT STATION 25+98.05 -L- | ASBESTOS ASSESSMENT | PDA TESTING | REINFORCED CONCRETE DECK SLAB | GROOVING BRIDGE FLOORS | CLASS A CONCRETE | BRIDGE APPROACH SLABS @ STA. 25+98.05 -L- | REINFORCING STEEL | PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES | PILE DRIVING EQUIPMENT SETUP FOR PP 30 X 0.50 GALVANIZED STEEL PILES | HP 12 X 53 STEEL PILES |          |
|----------------|---|---------------------|-------------|-------------------------------|------------------------|------------------|---|-------------------|---|--|------------------------|----------|
|                | LUMP SUM  | LUMP SUM            | EA.         | SO. FT.                       | SO. FT.                | CU. YDS.         | LUMP SUM                                  | LBS.              | EA.   | EA.  | NO.                    | LIN. FT. |
| SUPERSTRUCTURE |   |                     |             | 9,781                         | 9,627                  |                  | LUMP SUM                                  |                   |   |  |                        |          |
| END BENT 1     |   |                     |             |                               |                        | 136.8            |   | 31,897            | 11  |  | 11                     | 825      |
| BENT 1         |   |                     |             |                               |                        | 40.3             |   | 8,548             |   | 8  |                        |          |
| BENT 2         |   |                     |             |                               |                        | 41.7             |   | 8,573             |   | 8  |                        |          |
| END BENT 2     |   |                     |             |                               |                        | 154.4            |   | 35,434            | 13  |  | 13                     | 975      |
| TOTAL          | LUMP SUM  | LUMP SUM            | 2           | 9,781                         | 9,627                  | 373.2            | LUMP SUM                                  | 84,452            | 24  | 16   | 24                     | 1800     |

TOTAL BILL OF MATERIAL

| PP 30 X 0.50 GALVANIZED STEEL PILES |          | PILE REDRIVES | TWO BAR METAL RAIL | 1'-2" X 2'-6" CONCRETE PARAPET | 4" SLOPE PROTECTION | ELASTOMERIC BEARINGS | EXPANSION JOINT SEALS | MODIFIED 74" PRESTRESSED CONCRETE GIRDERS |          |
|-------------------------------------|----------|---------------|--------------------|--------------------------------|---------------------|----------------------|-----------------------|---|----------|
| NO.                                 | LIN. FT. | EA.           | LIN. FT.           | LIN. FT.                       | SO. YDS.            | LUMP SUM             | LUMP SUM              | NO.                                       | LIN. FT. |
|                                     |          |               | 546.8              | 584.4                          |                     | LUMP SUM             | LUMP SUM              | 12  | 1,097.58 |
|                                     |          | 4             |                    |                                | 1,030               |                      |                       |   |          |
| 8                                   | 600      | 4             |                    |                                |                     |                      |                       |   |          |
| 8                                   | 680      | 4             |                    |                                |                     |                      |                       |   |          |
|                                     |          | 5             |                    |                                | 1,122               |                      |                       |   |          |
| 16                                  | 1280     | 17            | 546.8              | 584.4                          | 2,152               | LUMP SUM             | LUMP SUM              | 12  | 1,097.58 |

PROJECT NO. B-5301  
PITT COUNTY  
 STATION: 25+98.05 -L-

SHEET 4 OF 4



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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

GENERAL DRAWING  
 FOR BRIDGE OVER  
 NORFOLK SOUTHERN  
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| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-4          |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 55           |

DRAWN BY: D. D. LOWERY DATE: 2/20  
 CHECKED BY: C. I. POOLE DATE: 2/20  
 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 2/20

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## LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

| LEVEL                    | VEHICLE                              | WEIGHT (W)<br>(TONS) | CONTROLLING<br>LOAD RATING<br># | MINIMUM<br>RATING FACTORS<br>(RF) | TONS = W x RF | STRENGTH I LIMIT STATE                  |                              |               |      |                 |   |                              |               |      |                 | SERVICE III LIMIT STATE                   |   |                              |               |      | COMMENT NUMBER |                 |   |  |
|--------------------------|--------------------------------------|----------------------|---------------------------------|-----------------------------------|---------------|---|------------------------------|---------------|------|-----------------|---|------------------------------|---------------|------|-----------------|---|---|------------------------------|---------------|------|----------------|-----------------|---|--|
|                          |                                      |                      |                                 |                                   |               | MOMENT                                  |                              |               |      |                 | SHEAR                                     |                              |               |      |                 | MOMENT                                    |   |                              |               |      |                |                 |   |  |
|                          |                                      |                      |                                 |                                   |               | LIVE-LOAD<br>FACTORS (γ <sub>LL</sub> ) | 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) | LIVE-LOAD<br>FACTORS (γ <sub>LL</sub> ) | 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                               | 1.04                              | --            | 1.75                                    | 0.748                        | 1.25          | B    | EL              | 64.900                                    | 1.124                        | 1.43          | B    | EL              | 25.500                                    | 0.80                                    | 0.748                        | 1.04          | B    | EL             | 64.900          |   |  |
|                          | HL-93 (OPERATING)                    | N/A                  |                                 | 1.62                              | --            | 1.35                                    | 0.748                        | 1.62          | B    | EL              | 64.900                                    | 1.124                        | 1.95          | B    | EL              | 12.400                                    | N/A                                     | --                           | --            | --   | --             | --              |   |  |
|                          | HS-20 (INVENTORY)                    | 36.000               | ②                               | 1.57                              | 56.52         | 1.75                                    | 0.748                        | 1.88          | B    | EL              | 64.900                                    | 1.124                        | 2.21          | B    | EL              | 12.400                                    | 0.80                                    | 0.748                        | 1.57          | B    | EL             | 64.900          |   |  |
|                          | HS-20 (OPERATING)                    | 36.000               |                                 | 2.43                              | 87.48         | 1.35                                    | 0.748                        | 2.43          | B    | EL              | 64.900                                    | 1.124                        | 2.90          | B    | EL              | 12.400                                    | N/A                                     | --                           | --            | --   | -              | --              |   |  |
| LEGAL<br>LOAD<br>RATING  | SINGLE VEHICLE<br>(SV)               | SNSH                 | 13.500                          |                                   | 3.83          | 51.71                                   | 1.40                         | 0.748         | 5.75 | B               | EL  | 64.900                       | 1.124         | 7.54 | B               | EL  | 12.400                                  | 0.80                         | 0.748         | 3.83 | B              | EL              | 64.900                                    |  |
|                          |                                      | SNGARBS2             | 20.000                          |                                   | 2.73          | 54.60                                   | 1.40                         | 0.748         | 4.08 | B               | EL  | 64.900                       | 1.124         | 5.21 | B               | EL  | 12.400                                  | 0.80                         | 0.748         | 2.73 | B              | EL              | 64.900                                    |  |
|                          |                                      | SNAGRIS2             | 22.000                          |                                   | 2.53          | 55.66                                   | 1.40                         | 0.748         | 3.79 | B               | EL  | 64.900                       | 1.124         | 4.79 | B               | EL  | 12.400                                  | 0.80                         | 0.748         | 2.53 | B              | EL              | 64.900                                    |  |
|                          |                                      | SNCOTTS3             | 27.250                          |                                   | 1.90          | 51.78                                   | 1.40                         | 0.748         | 2.85 | B               | EL  | 64.900                       | 1.124         | 3.58 | B               | EL  | 12.400                                  | 0.80                         | 0.748         | 1.90 | B              | EL              | 64.900                                    |  |
|                          |                                      | SNAGGRS4             | 34.925                          |                                   | 1.54          | 53.78                                   | 1.40                         | 0.748         | 2.31 | B               | EL  | 64.900                       | 1.124         | 2.76 | B               | EL  | 12.400                                  | 0.80                         | 0.748         | 1.54 | B              | EL              | 64.900                                    |  |
|                          |                                      | SNS5A                | 35.550                          |                                   | 1.51          | 53.68                                   | 1.40                         | 0.748         | 2.26 | B               | EL  | 64.900                       | 1.124         | 2.65 | B               | EL  | 12.400                                  | 0.80                         | 0.748         | 1.51 | B              | EL              | 64.900                                    |  |
|                          |                                      | SNS6A                | 39.950                          |                                   | 1.36          | 54.33                                   | 1.40                         | 0.748         | 2.04 | B               | EL  | 64.900                       | 1.124         | 2.38 | B               | EL  | 12.400                                  | 0.80                         | 0.748         | 1.36 | B              | EL              | 64.900                                    |  |
|                          | SNS7B                                | 42.000               |                                 | 1.30                              | 54.60         | 1.40                                    | 0.748                        | 1.95          | B    | EL              | 64.900                                    | 1.124                        | 2.29          | B    | EL              | 12.400                                    | 0.80                                    | 0.748                        | 1.30          | B    | EL             | 64.900          |   |  |
|                          | TRUCK TRACTOR SEMI-TRAILER<br>(TTST) | TNAGRIT3             | 33.000                          |                                   | 1.66          | 54.78                                   | 1.40                         | 0.748         | 2.48 | B               | EL  | 64.900                       | 1.124         | 2.96 | B               | EL  | 12.400                                  | 0.80                         | 0.748         | 1.66 | B              | EL              | 64.900                                    |  |
|                          |                                      | TNT4A                | 33.075                          |                                   | 1.66          | 54.90                                   | 1.40                         | 0.748         | 2.49 | B               | EL  | 64.900                       | 1.124         | 2.92 | B               | EL  | 12.400                                  | 0.80                         | 0.748         | 1.66 | B              | EL              | 64.900                                    |  |
|                          |                                      | TNT6A                | 41.600                          |                                   | 1.34          | 55.74                                   | 1.40                         | 0.748         | 2.01 | B               | EL  | 64.900                       | 1.124         | 2.39 | B               | EL  | 12.400                                  | 0.80                         | 0.748         | 1.34 | B              | EL              | 64.900                                    |  |
|                          |                                      | TNT7A                | 42.000                          |                                   | 1.33          | 55.86                                   | 1.40                         | 0.748         | 2.00 | B               | EL  | 64.900                       | 1.124         | 2.35 | B               | EL  | 12.400                                  | 0.80                         | 0.748         | 1.33 | B              | EL              | 64.900                                    |  |
|                          |                                      | TNT7B                | 42.000                          |                                   | 1.36          | 57.12                                   | 1.40                         | 0.748         | 2.03 | B               | EL  | 64.900                       | 1.124         | 2.26 | B               | EL  | 12.400                                  | 0.80                         | 0.748         | 1.36 | B              | EL              | 64.900                                    |  |
|                          |                                      | TNAGRIT4             | 43.000                          |                                   | 1.31          | 56.33                                   | 1.40                         | 0.748         | 1.96 | B               | EL  | 64.900                       | 1.124         | 2.27 | B               | EL  | 12.400                                  | 0.80                         | 0.748         | 1.31 | B              | EL              | 64.900                                    |  |
| TNAGT5A                  |                                      | 45.000               |                                 | 1.24                              | 55.80         | 1.40                                    | 0.748                        | 1.86          | B    | EL              | 64.900                                    | 1.124                        | 2.12          | B    | EL              | 12.400                                    | 0.80                                    | 0.748                        | 1.24          | B    | EL             | 64.900          |   |  |
| TNAGT5B                  | 45.000                               |                      | ③                               | 1.23                              | 55.35         | 1.40                                    | 0.748                        | 1.85          | B    | EL              | 64.900                                    | 1.124                        | 2.07          | B    | EL              | 12.400                                    | 0.80                                    | 0.748                        | 1.23          | B    | EL             | 64.900          |   |  |

LOAD FACTORS:

| DESIGN<br>LOAD<br>RATING<br>FACTORS | LIMIT STATE | γ <sub>DC</sub> | γ <sub>DW</sub> |
|-------------------------------------|-------------|-----------------|-----------------|
|                                     | STRENGTH I  | 1.25            | 1.50            |
|                                     | SERVICE III | 1.00            | 1.00            |

**NOTES:**

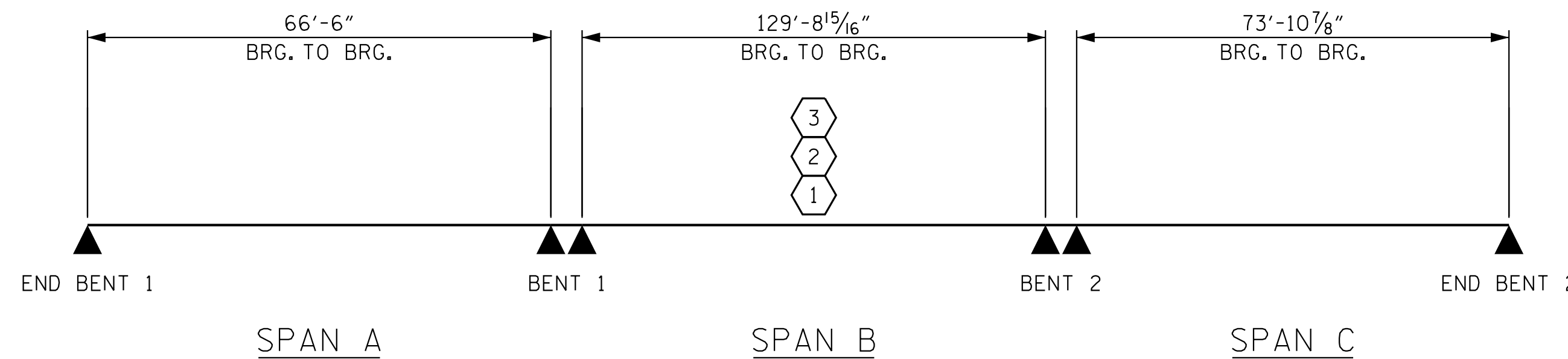
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

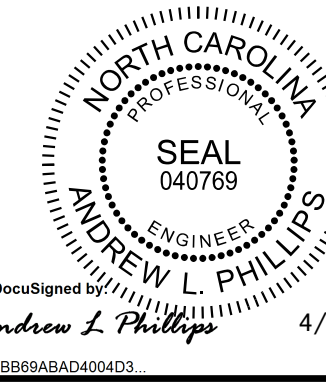
**COMMENTS:**

- 1.
- 2.
- 3.
- 4.

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



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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD  
 LRFR SUMMARY FOR  
 PRESTRESSED  
 CONCRETE GIRDERS  
 (NON-INTERSTATE TRAFFIC)

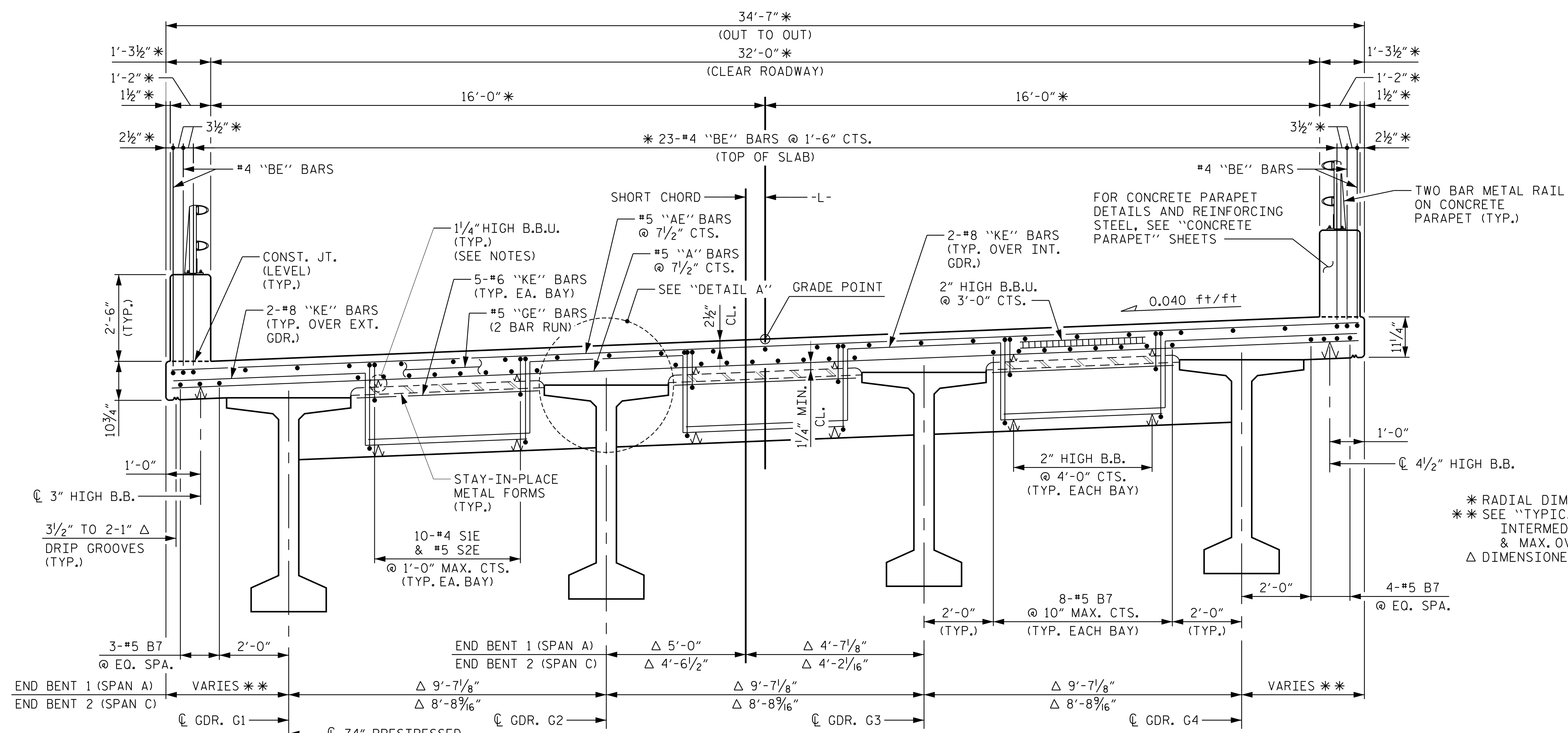
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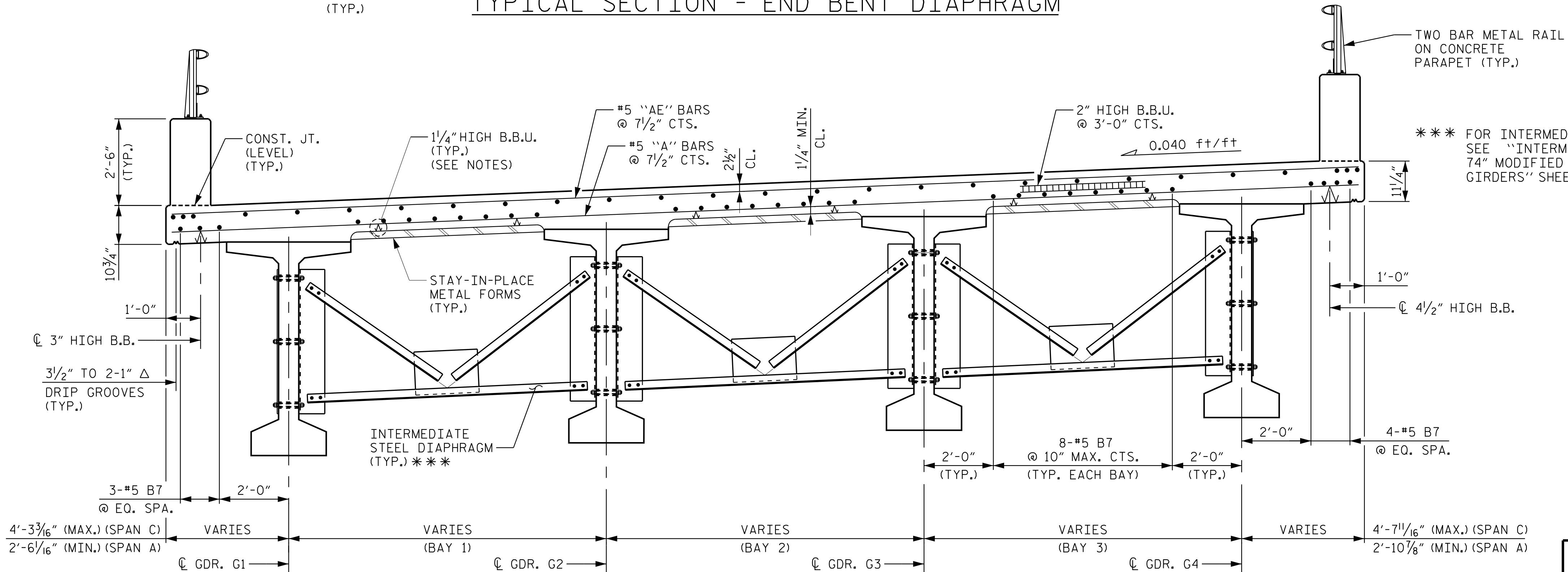
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|                             |                        |
|-----------------------------|------------------------|
| ASSEMBLED BY : D. D. LOWERY | DATE : 02/20           |
| CHECKED BY : C. T. POOLE    | DATE : 02/20           |
| DRAWN BY : MAA 1/08         | REV. 11/12/08RR MAA/GM |
| CHECKED BY : GM/DI 2/08     | REV. 10/1/11 MAA/GM    |
|                             | REV. 12/17 MAA/THC     |



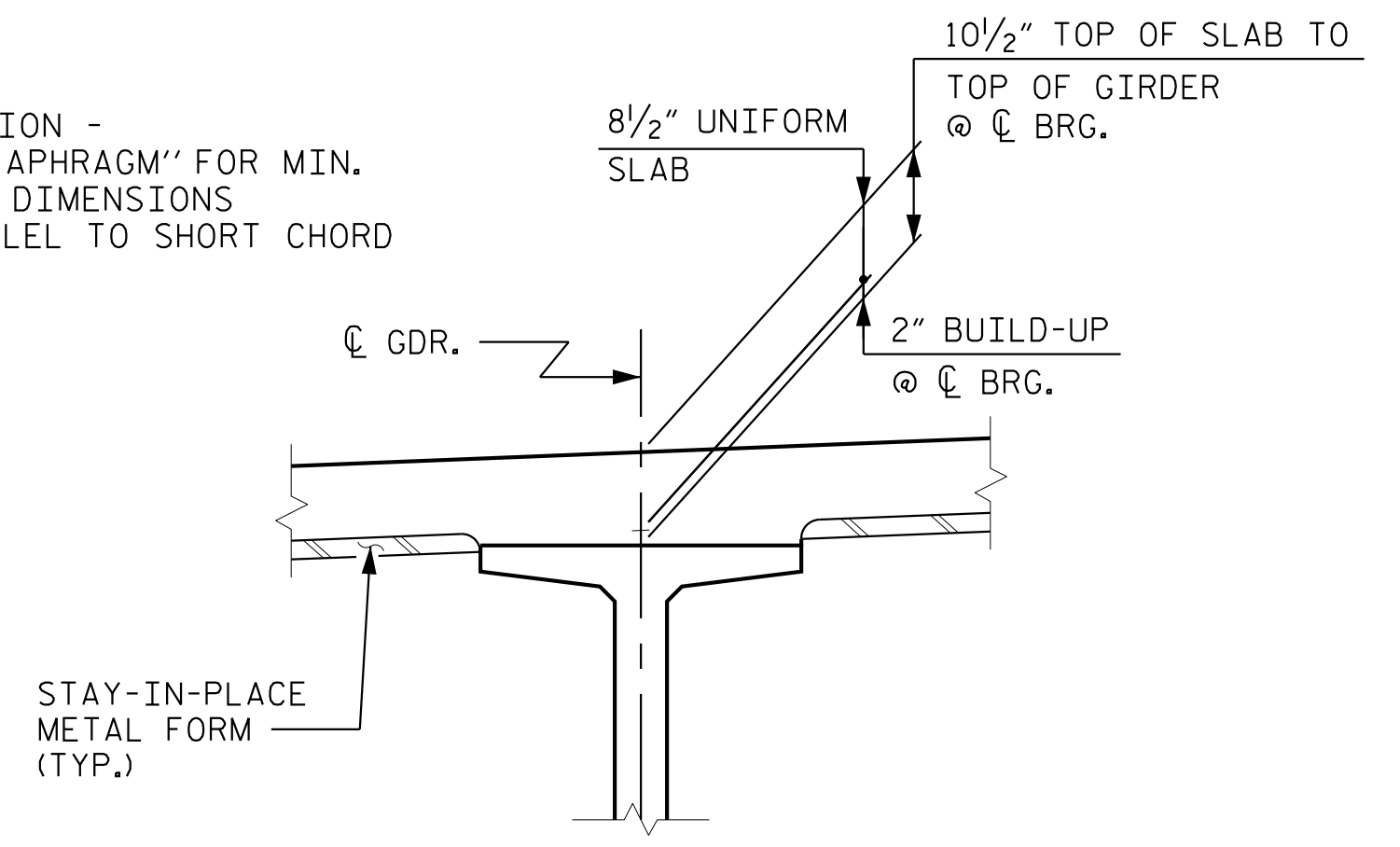
TYPICAL SECTION - END BENT DIAPHRAGM



TYPICAL SECTION - INTERMEDIATE DIAPHRAGM

NOTES:

- PROVIDE 1/4" HIGH BEAM BOLSTERS UPPER AT 4'-0" CTS. ATOP THE METAL STAY-IN-PLACE FORMS TO SUPPORT THE BOTTOM MAT OF "A" BARS. WHEN USING REMOVABLE FORMS, PROVIDE CONTINUOUS HIGH CHAIRS FOR METAL DECK (C.H.C.M.) @ 4'-0" CTS. WITH A HEIGHT TO SUPPORT THE BOTTOM MAT OF "A" BARS A CLEAR DISTANCE OF 2 1/2" ABOVE THE TOP OF THE REMOVABLE FORM.
- LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.
- PREVIOUSLY CAST CONCRETE IN A CONTINUOUS UNIT SHALL HAVE ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI BEFORE ADDITIONAL CONCRETE IS CAST IN THE UNIT.
- FOR "SECTION THRU END BENT DIAPHRAGM", SEE "TYPICAL SECTION" SHEET 3 OF 3.
- CONCRETE PARAPET IN CONTINUOUS UNIT SHALL NOT BE CAST UNTIL ALL SLAB CONCRETE IN THE UNIT HAS BEEN CAST AND HAS REACHED A COMPRESSIVE STRENGTH OF 3,000 PSI.
- #5 "GE" BARS MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO CLEAR REINFORCING STEEL AND STIRRUPS.
- THE HEIGHT OF BEAM BOLSTER IS CALCULATED AT CENTERLINE OF BEARING. THE CONTRACTOR SHALL ADJUST HEIGHTS, AS NECESSARY, TO MAINTAIN PROPER CLEARANCE, DUE TO GIRDER CAMBER AND VARYING OVERHANG WIDTHS.



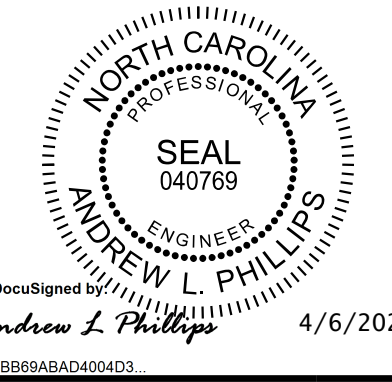
DETAIL "A"  
(TYP. EA. GDR. @ EA. BENT)

\* RADIAL DIMENSION  
\*\* SEE "TYPICAL SECTION - INTERMEDIATE DIAPHRAGM" FOR MIN. & MAX. OVERHANG DIMENSIONS  
Δ DIMENSIONED PARALLEL TO SHORT CHORD

\*\*\* FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGM FOR 74" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET

PROJECT NO. B-5301  
PITT COUNTY  
STATION: 25+98.05 -L-

SHEET 1 OF 3



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| SUPERSTRUCTURE<br>TYPICAL SECTION                                  |     |       |     |     |       |                    |
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| 1  |     |       | 3   |     |       |                    |
| 2  |     |       | 4   |     |       |                    |

4/2/2020  
DRAWN BY: D. D. LOWERY DATE: 2/20  
CHECKED BY: C. I. POOLE DATE: 2/20  
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 2/20

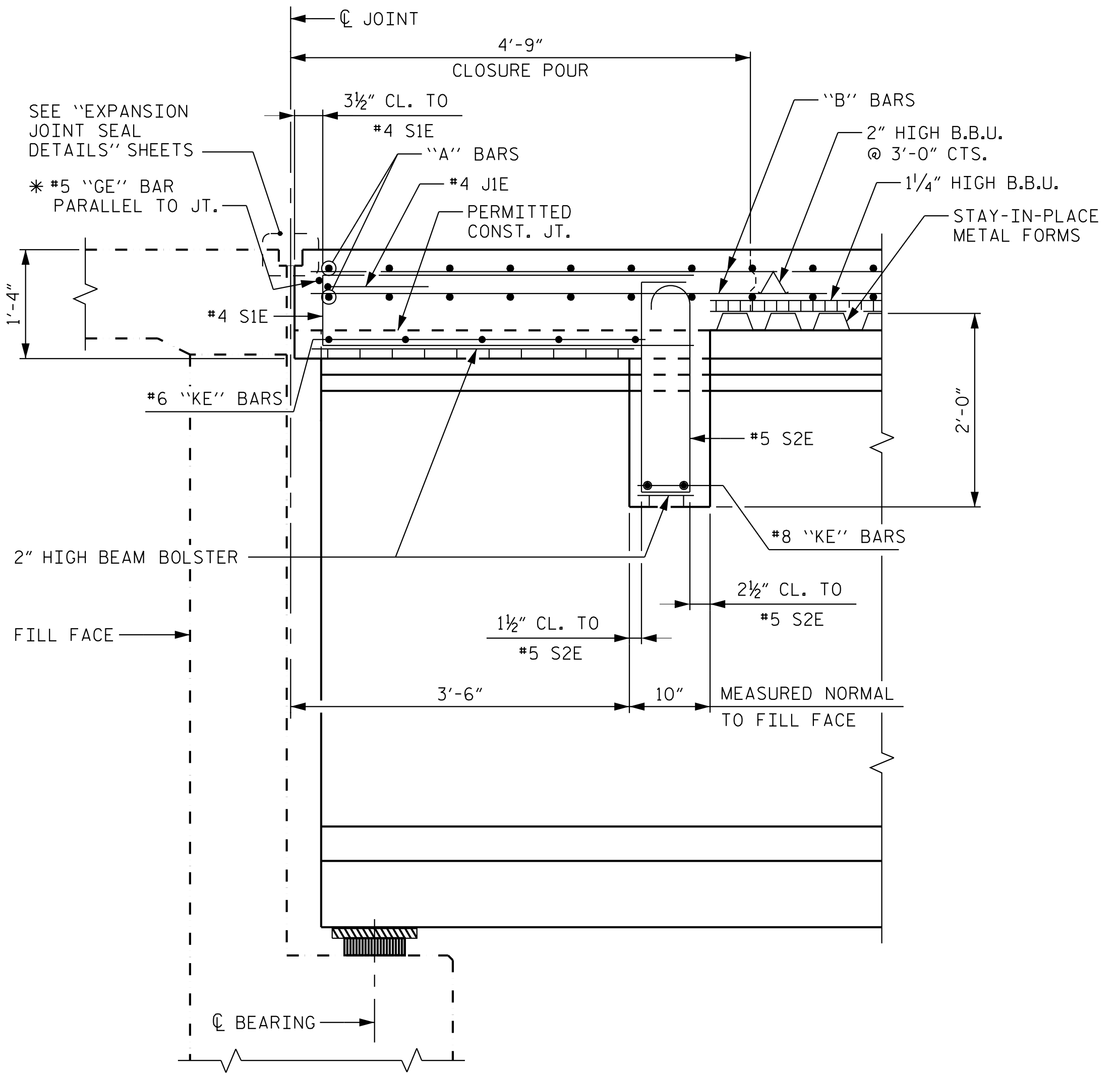
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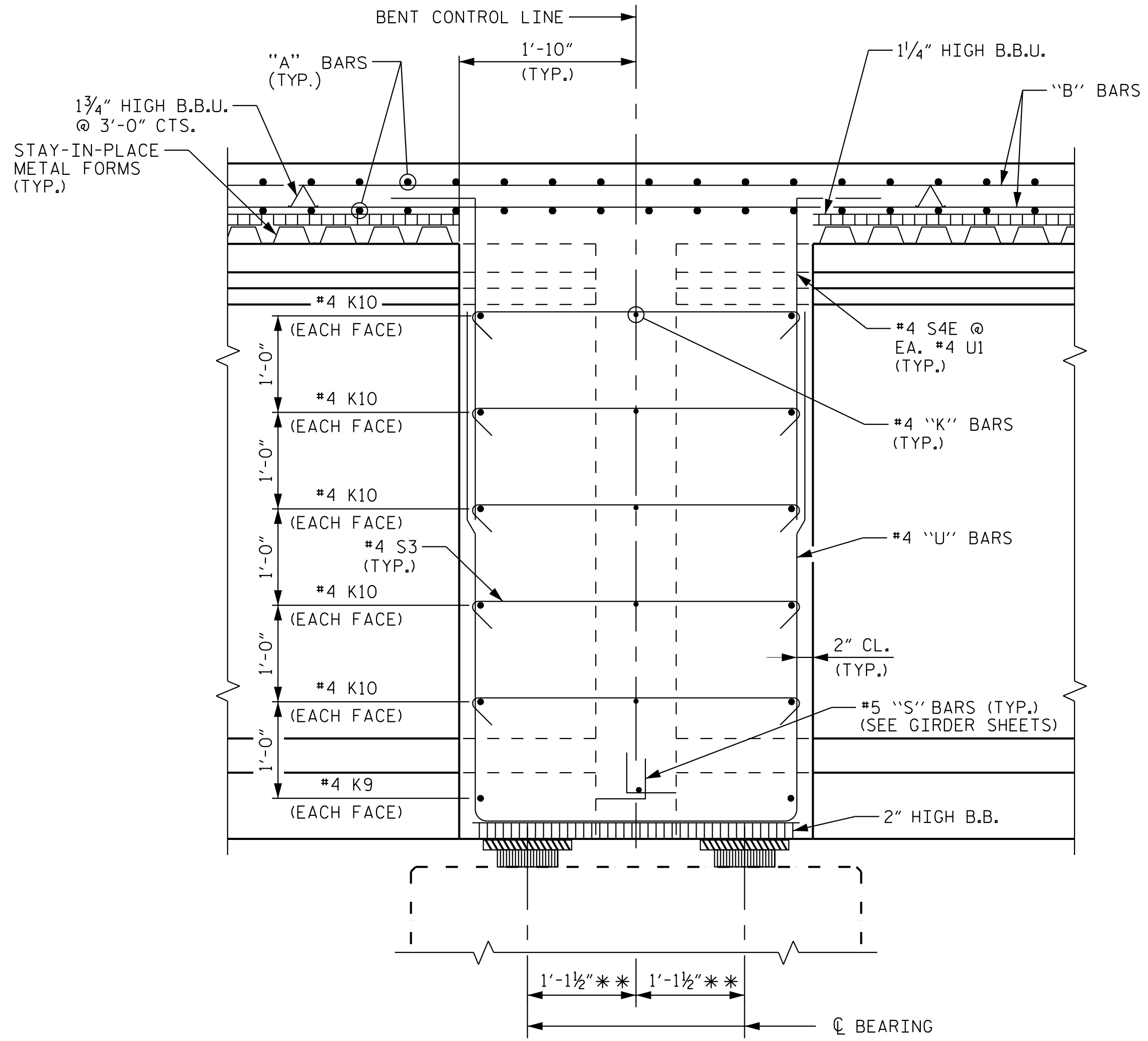


NOTES:  
FOR SUPERSTRUCTURE NOTES, SEE "TYPICAL SECTION" SHEET 1 OF 3.



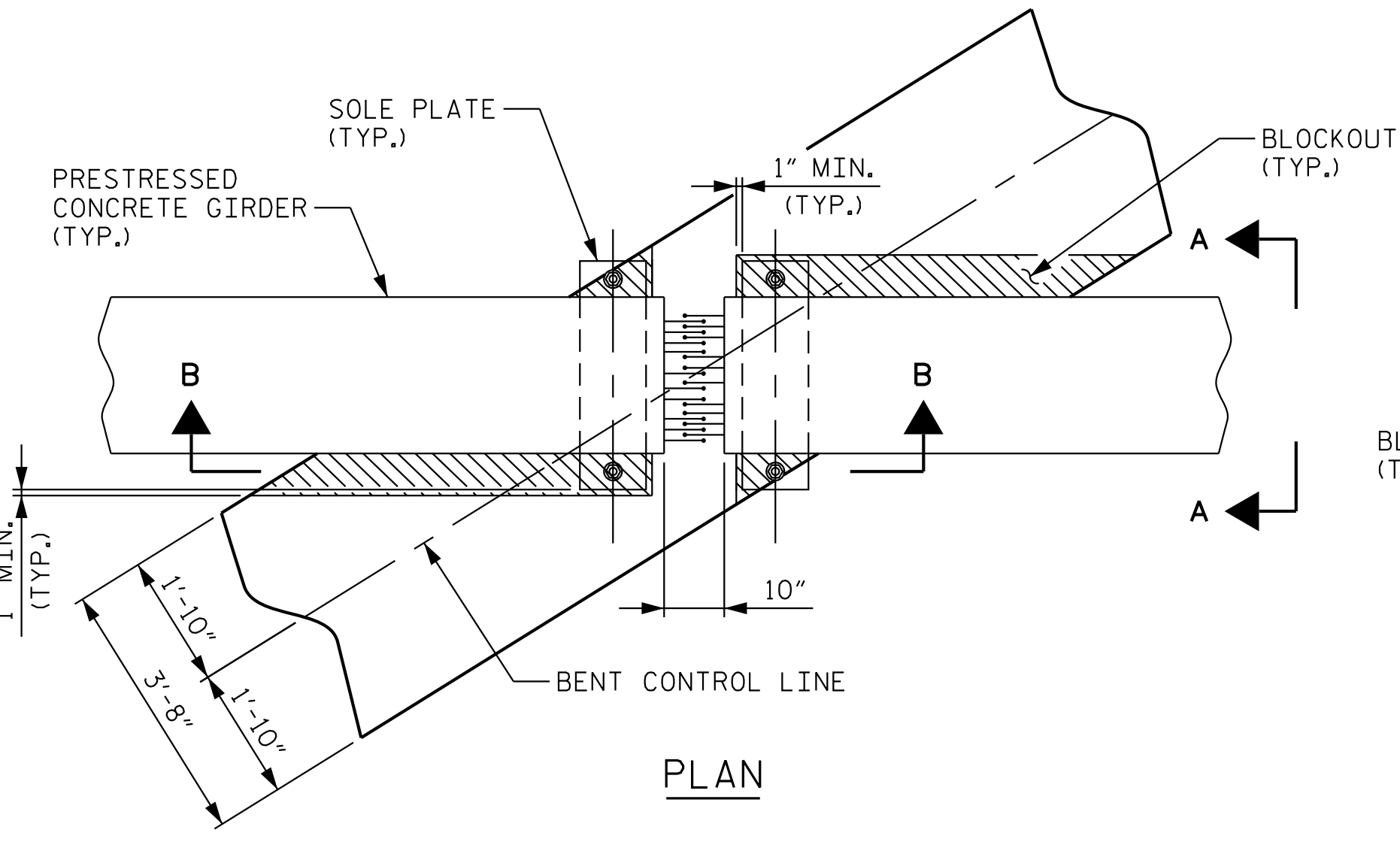
SECTION THRU END BENT DIAPHRAGM

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

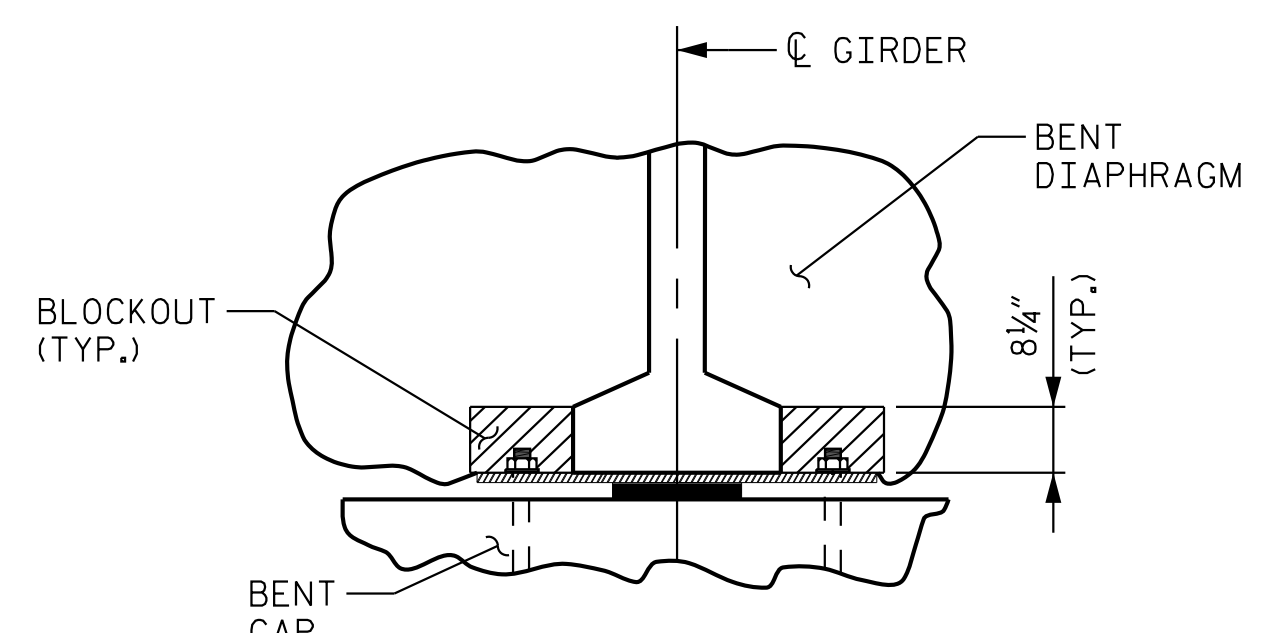


SECTION THRU BENT DIAPHRAGM

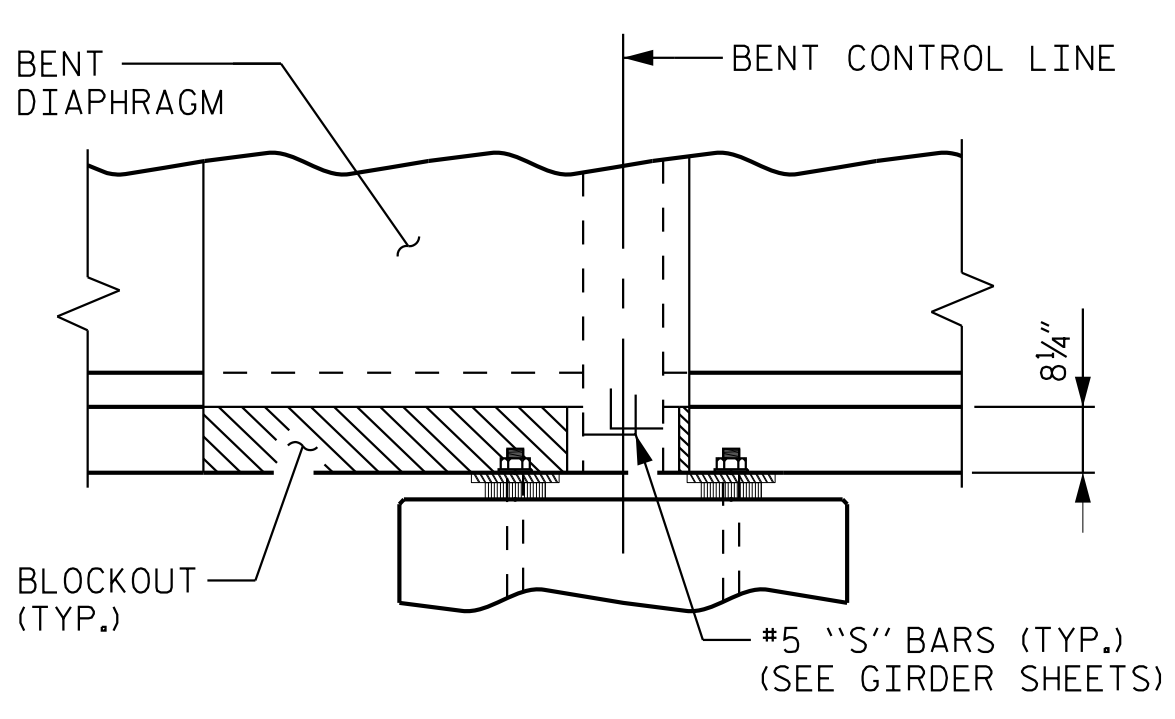
\*\* DIMENSION ALONG CL GIRDER



PLAN



SECTION A-A



SECTION B-B

BENT DIAPHRAGM BLOCKOUT DETAIL

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PITT COUNTY  
STATION: 25+98.05 -L-

SHEET 3 OF 3



Andrew L. Phillips 4/6/2020

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SUPERSTRUCTURE  
TYPICAL SECTION

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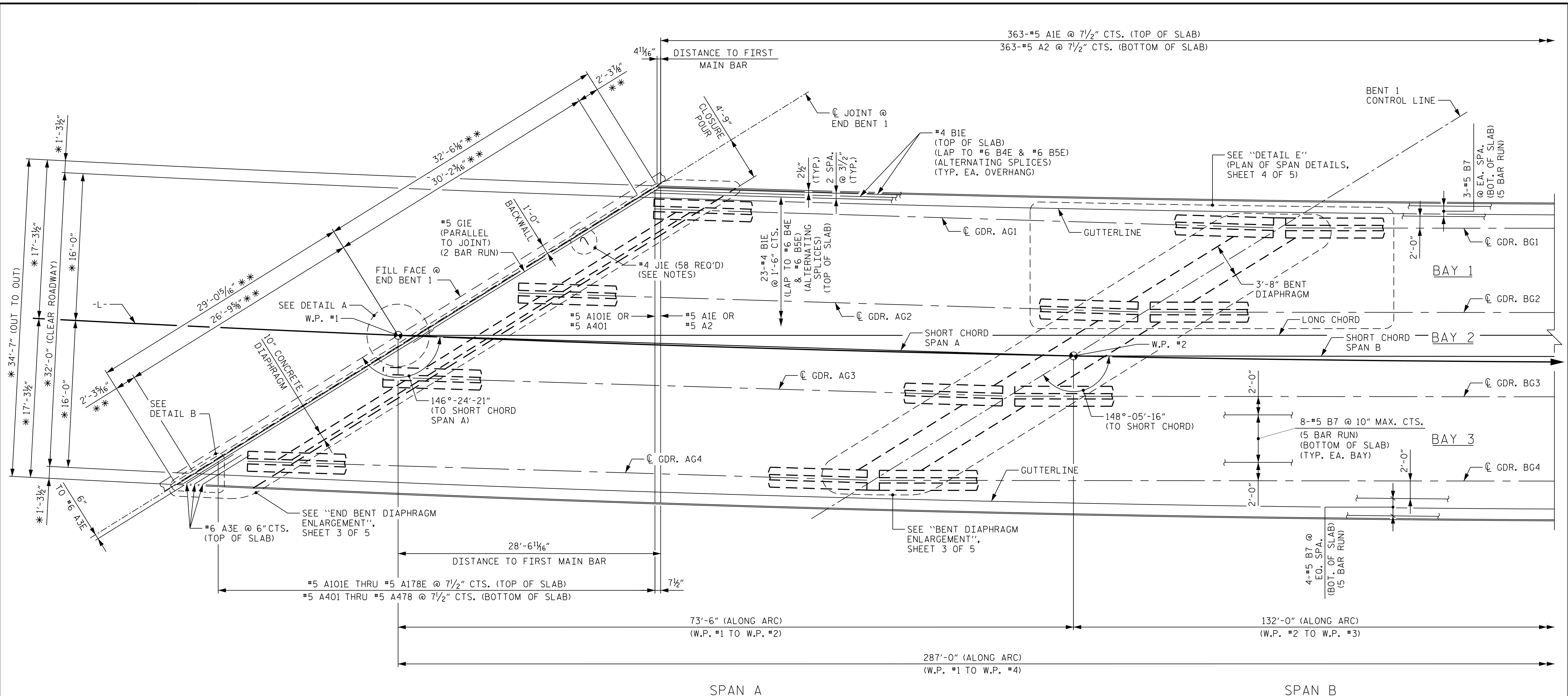
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**NOTES:**

FOR POUR SEQUENCE AND LOCATION OF CONSTRUCTION JOINT, SEE SUPERSTRUCTURE "BILL OF MATERIAL" SHEETS.

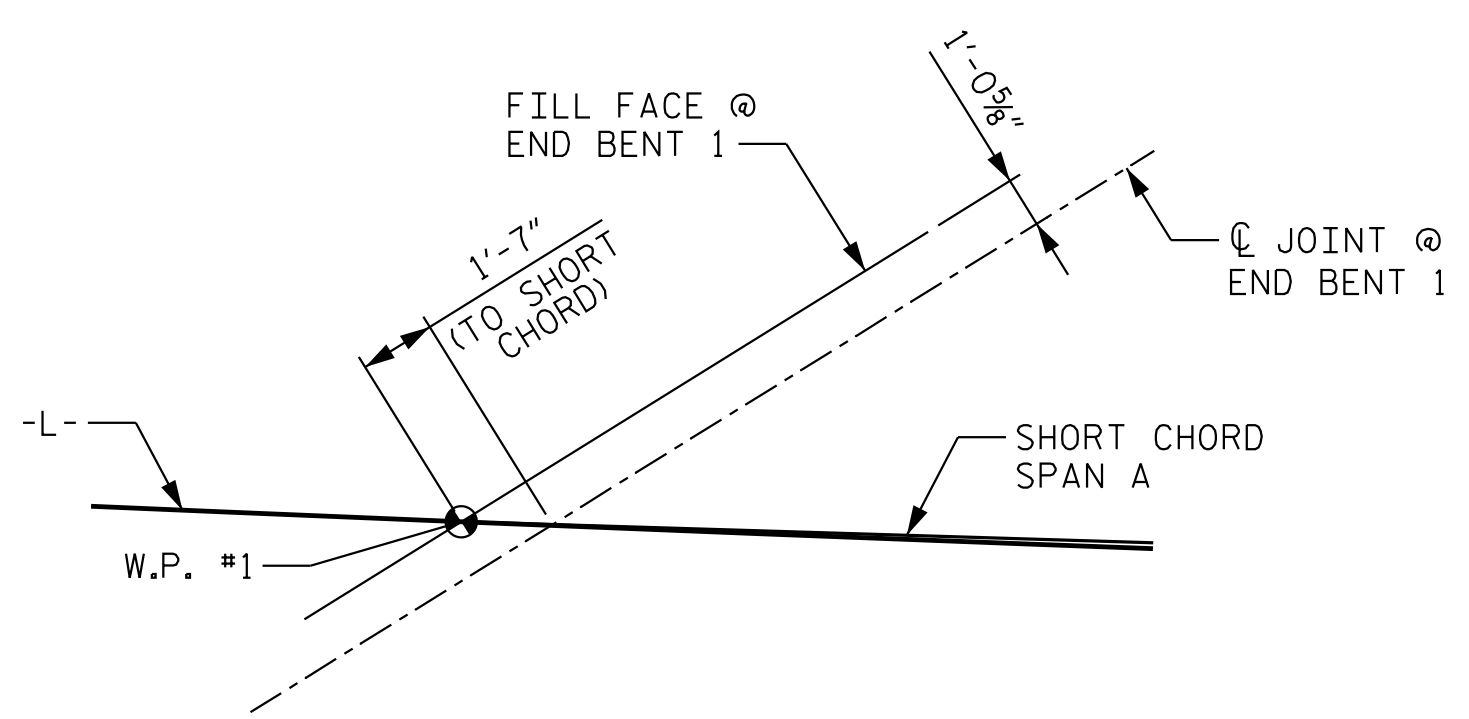
#5 "A" AND #5 "AE" BARS TO BE PLACED PERPENDICULAR TO LONG CHORD.

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

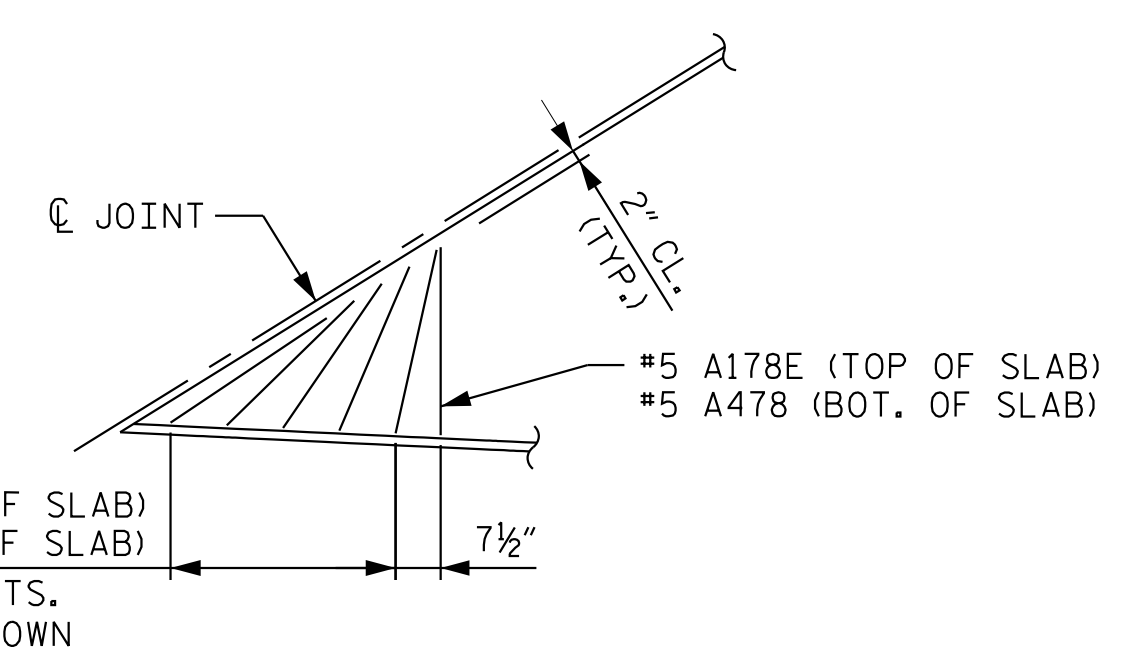
FOR CONCRETE PARAPET AND END POST DIMENSIONS, REINFORCING AND JOINT SPACING, SEE "CONCRETE PARAPET" SHEETS.

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

FOR PLACEMENT OF #4 JIE BARS, SEE "EXPANSION JOINT SEAL DETAILS" SHEET 1 OF 2.



**DETAIL A**



**DETAIL B**

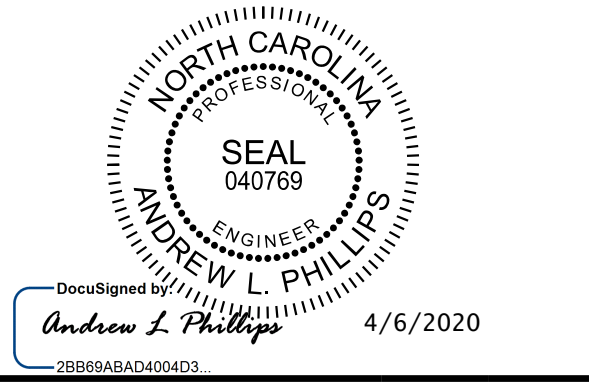
GIE NOT SHOWN FOR CLARITY

**PARTIAL PLAN OF SPANS**

\* RADIAL DIMENSION  
 \*\* MEASURED ALONG  $\phi$  JOINT

PROJECT NO. B-5301  
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 STATION: 25+98.05 -L-

SHEET 1 OF 5



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STATE OF NORTH CAROLINA  
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 RALEIGH  
 SUPERSTRUCTURE  
 PARTIAL  
 PLAN OF SPANS  
 SPANS A AND B

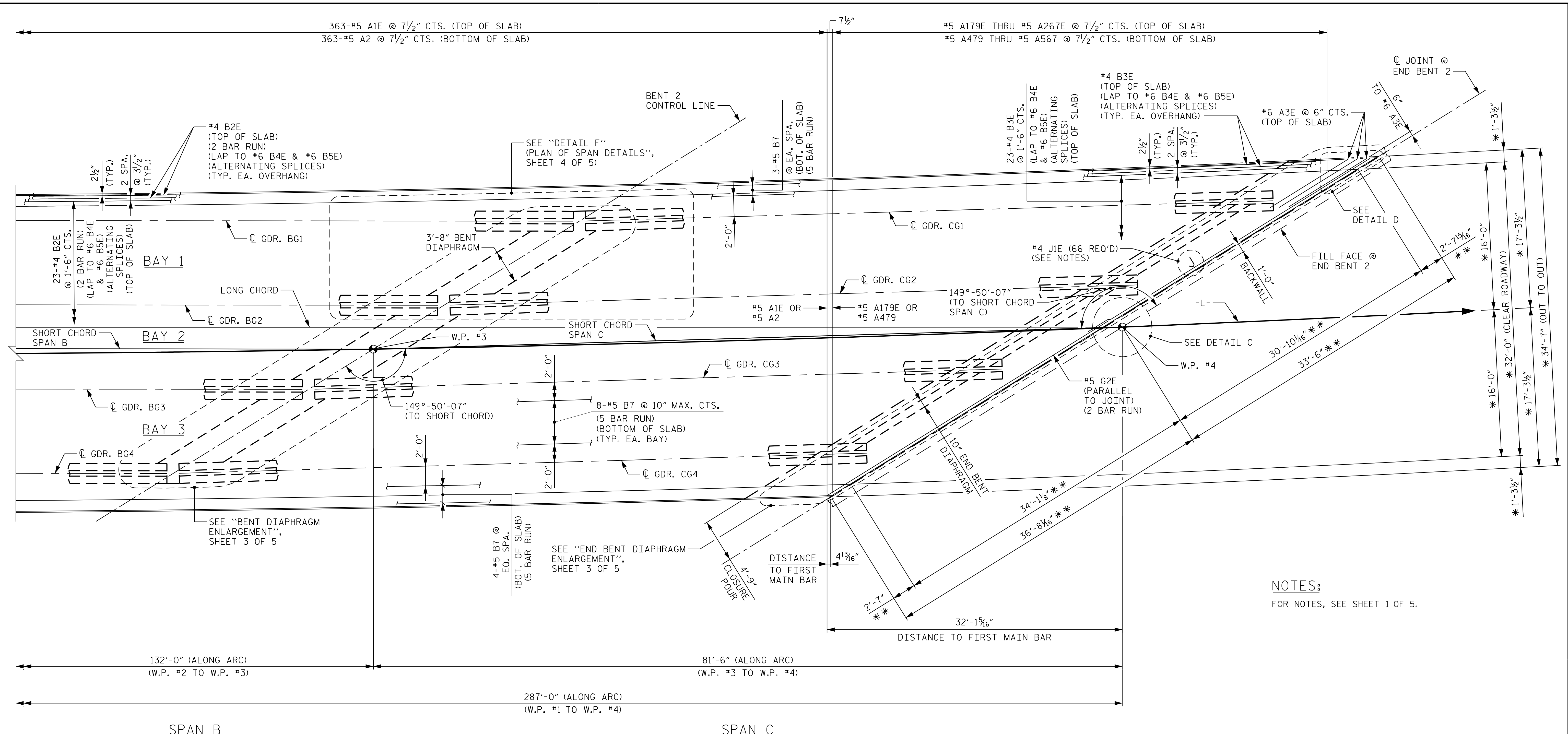
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| CHECKED BY: <u>C. I. POOLE</u>                   | DATE: <u>2/20</u> |
| DESIGN ENGINEER OF RECORD: <u>A. L. PHILLIPS</u> | DATE: <u>2/20</u> |

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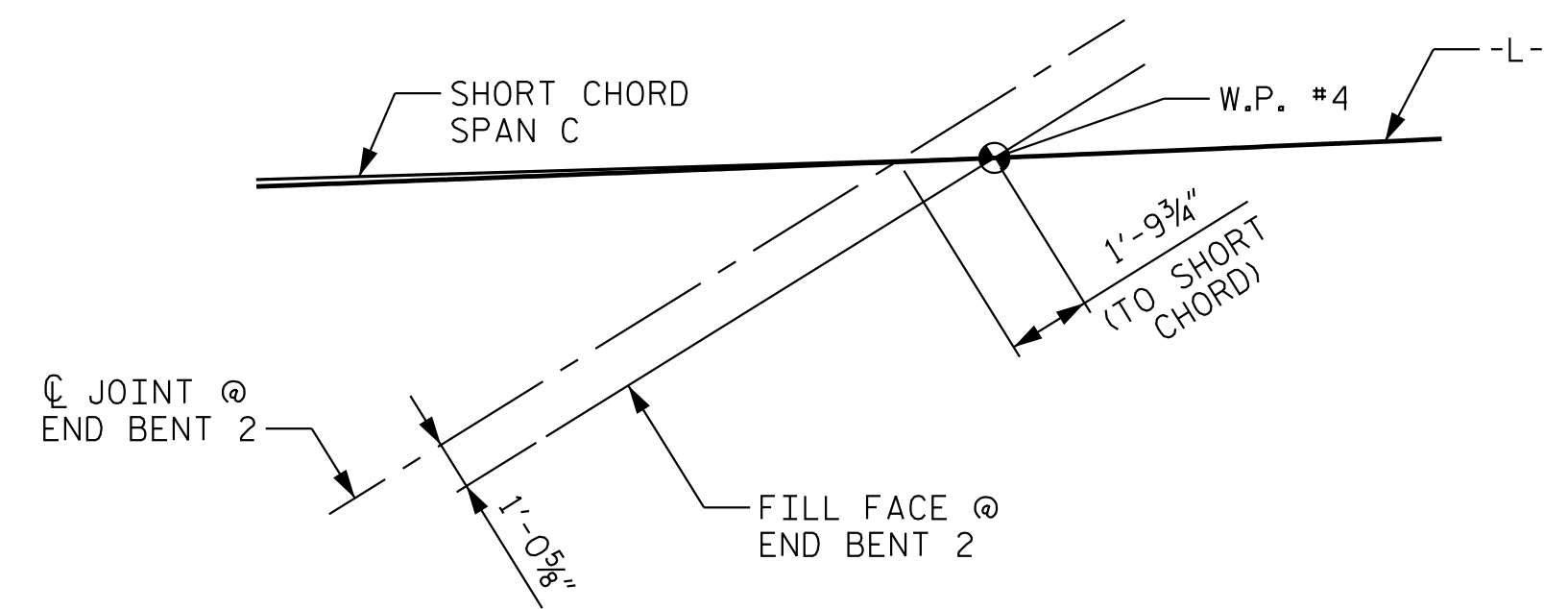




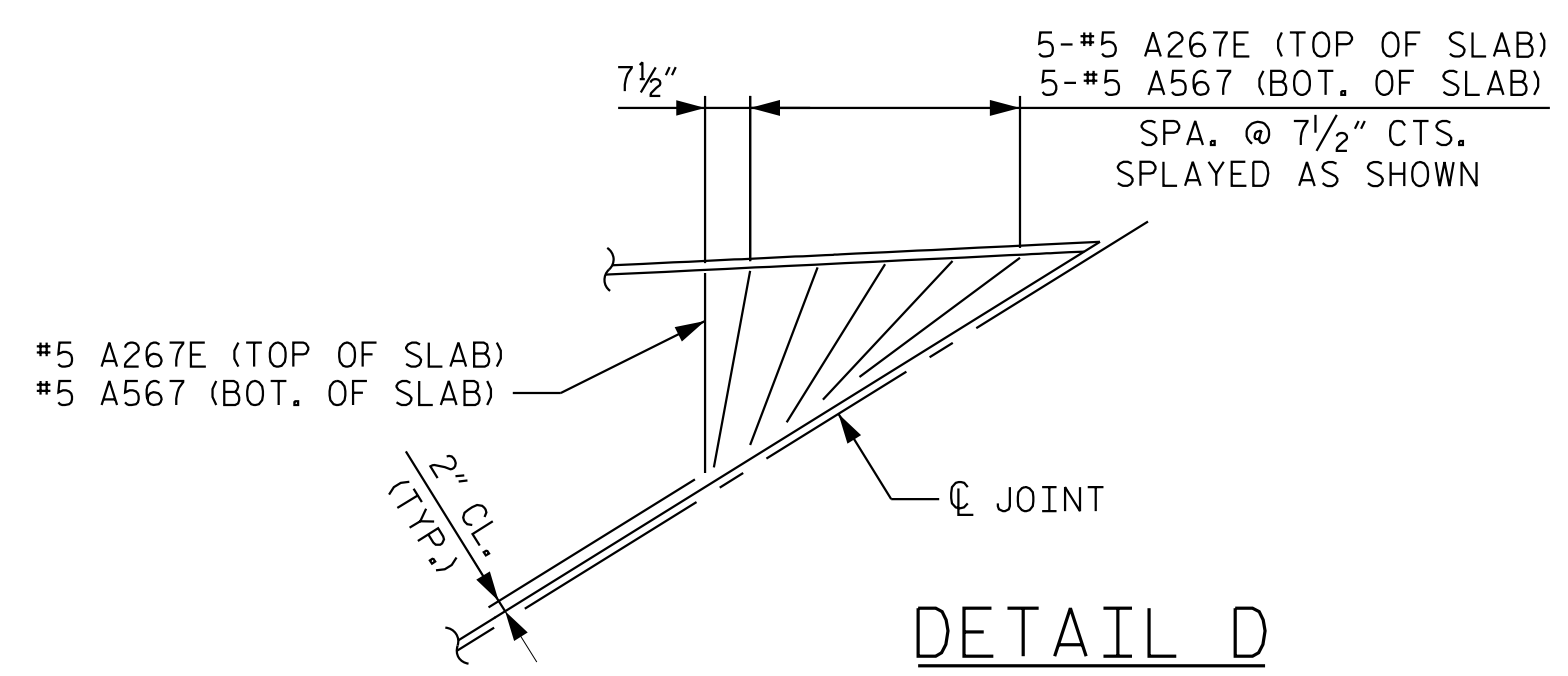
**NOTES:**  
 FOR NOTES, SEE SHEET 1 OF 5.

**PARTIAL PLAN OF SPANS**

\* RADIAL DIMENSION  
 \*\* MEASURED ALONG  $\bar{C}$  JOINT



**DETAIL C**



**DETAIL D**

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**Andrew L. Phillips** 4/6/2020  
 28869ABAD00403

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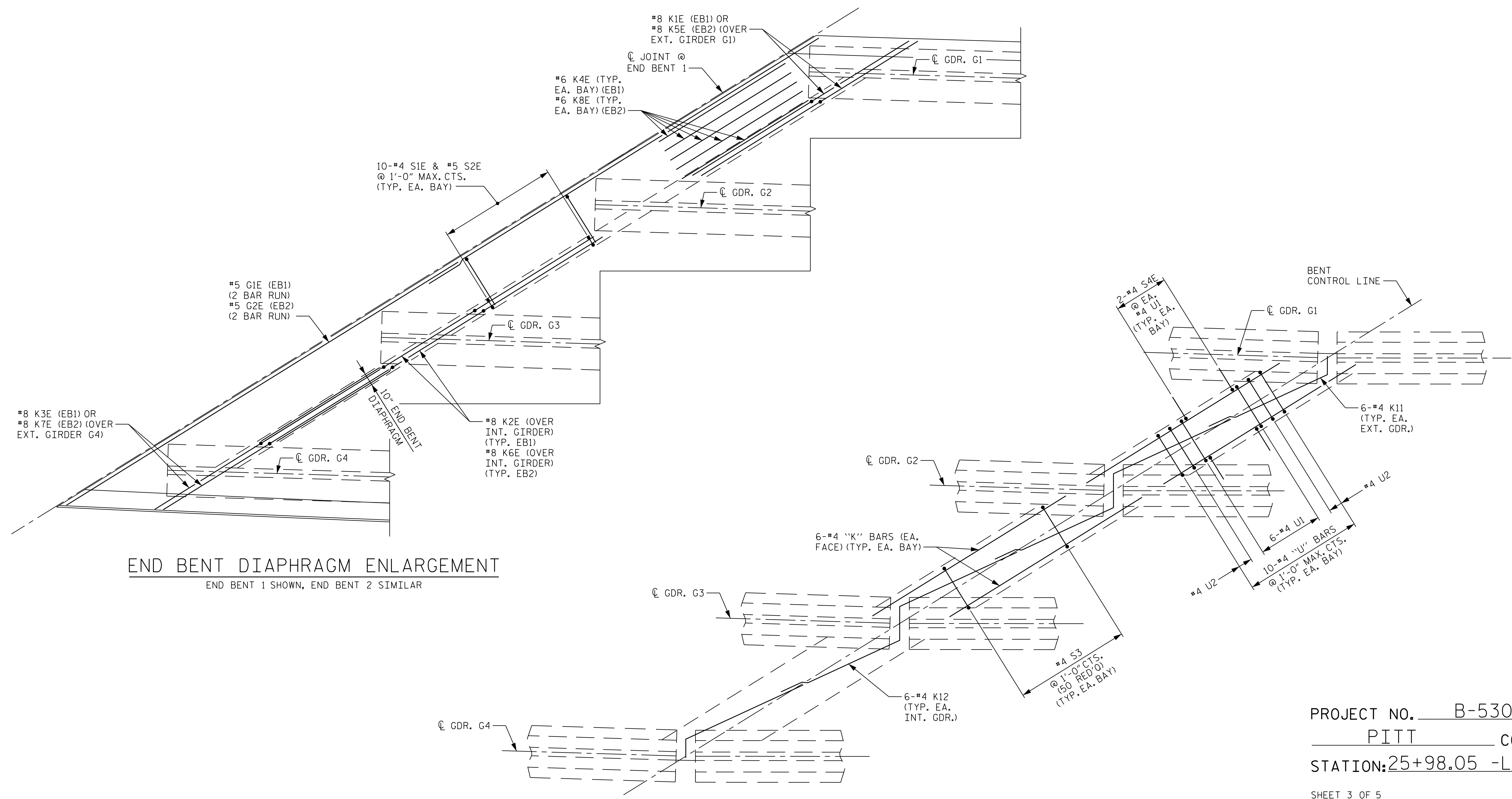
SHEET 2 OF 5

|  |     |       |     |     |       |                   |
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| STATE OF NORTH CAROLINA<br>DEPARTMENT OF TRANSPORTATION<br>RALEIGH |     |       |     |     |       | SHEET NO.<br>S-10 |
| SUPERSTRUCTURE   |     |       |     |     |       |                   |
| PARTIAL<br>PLAN OF SPANS   |     |       |     |     |       |                   |
| SPANS B AND C  |     |       |     |     |       |                   |
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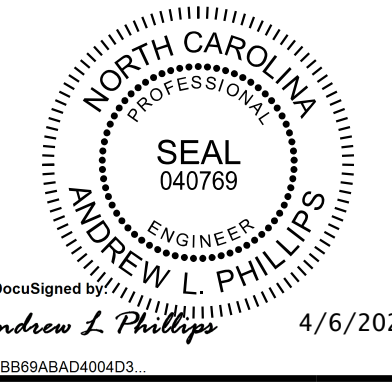


**END BENT DIAPHRAGM ENLARGEMENT**  
END BENT 1 SHOWN, END BENT 2 SIMILAR

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

PROJECT NO. B-5301  
PITT COUNTY  
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SHEET 3 OF 5



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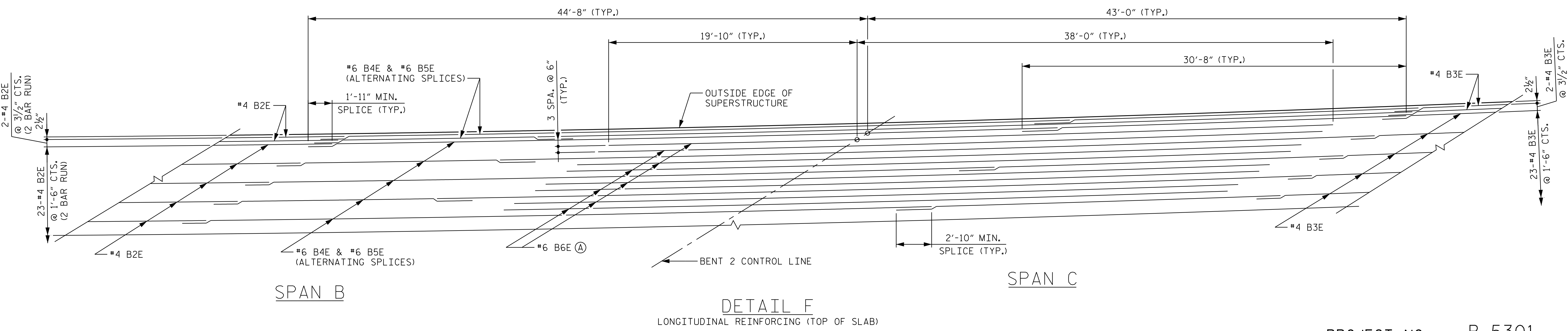
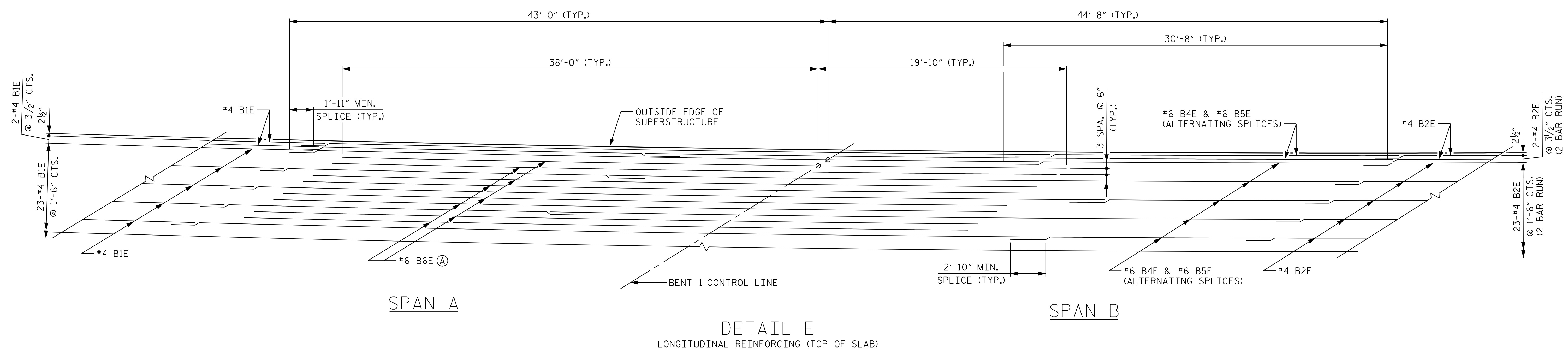
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 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PLAN OF SPAN  
 DETAILS

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 CHECKED BY: C. I. POOLE DATE: 2/20  
 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 2/20

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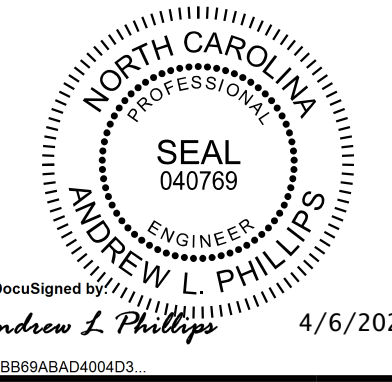


(A) #6 B6E NON-CONTINUOUS REINFORCING BARS BETWEEN CONTINUOUS REINFORCING OVER INTERIOR BENTS.

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SHEET 4 OF 5

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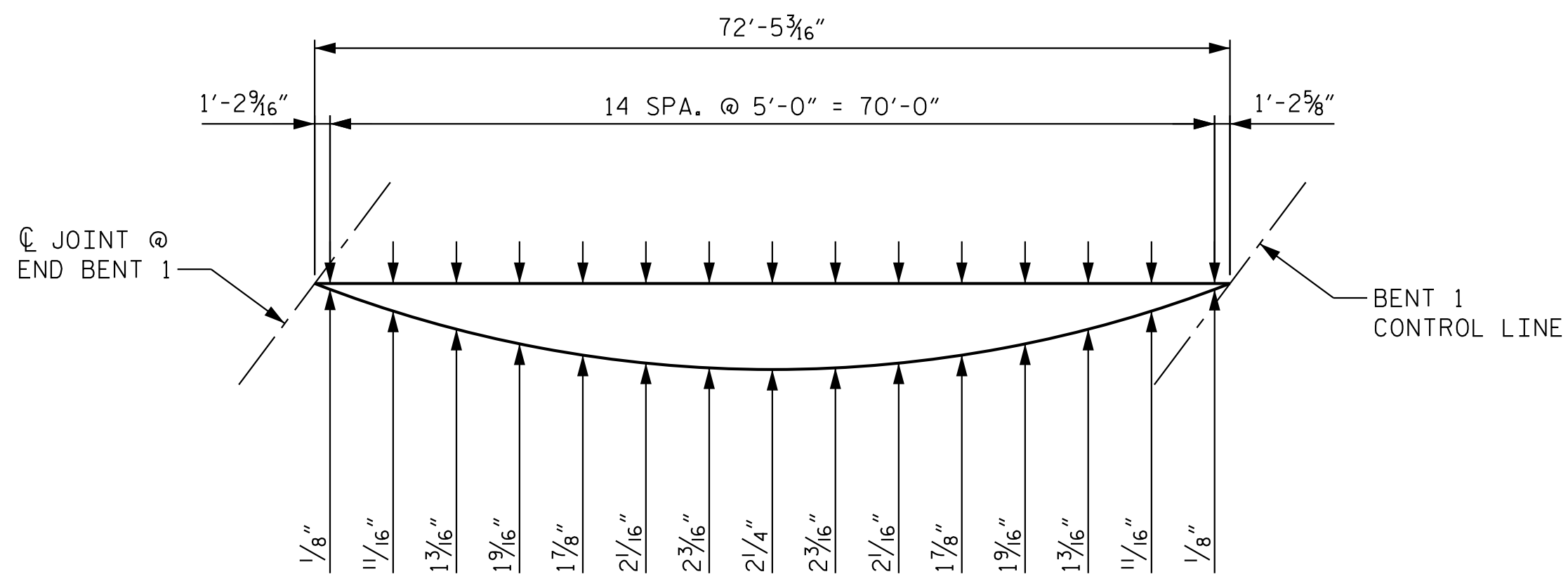
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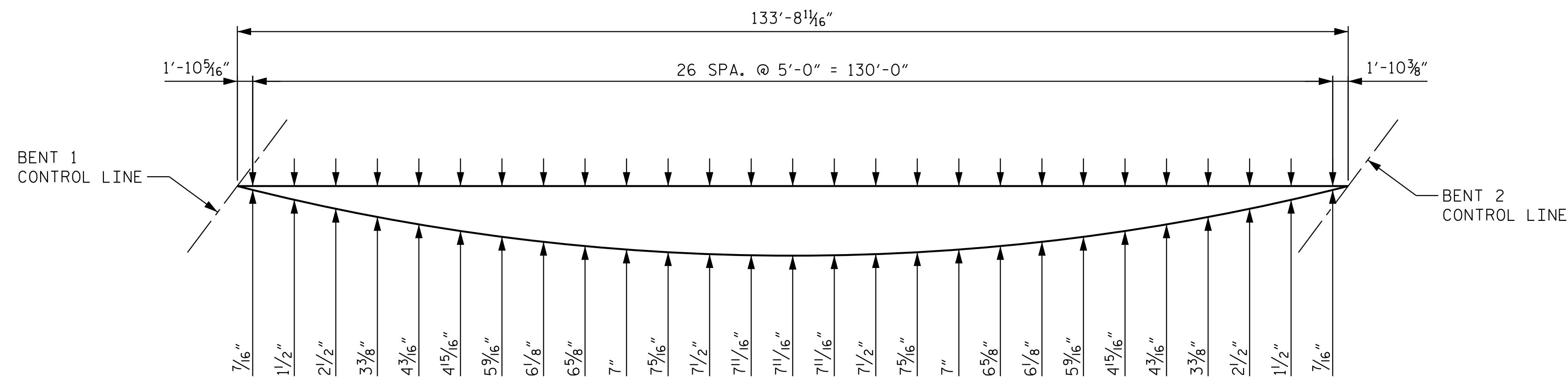
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 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 2/20

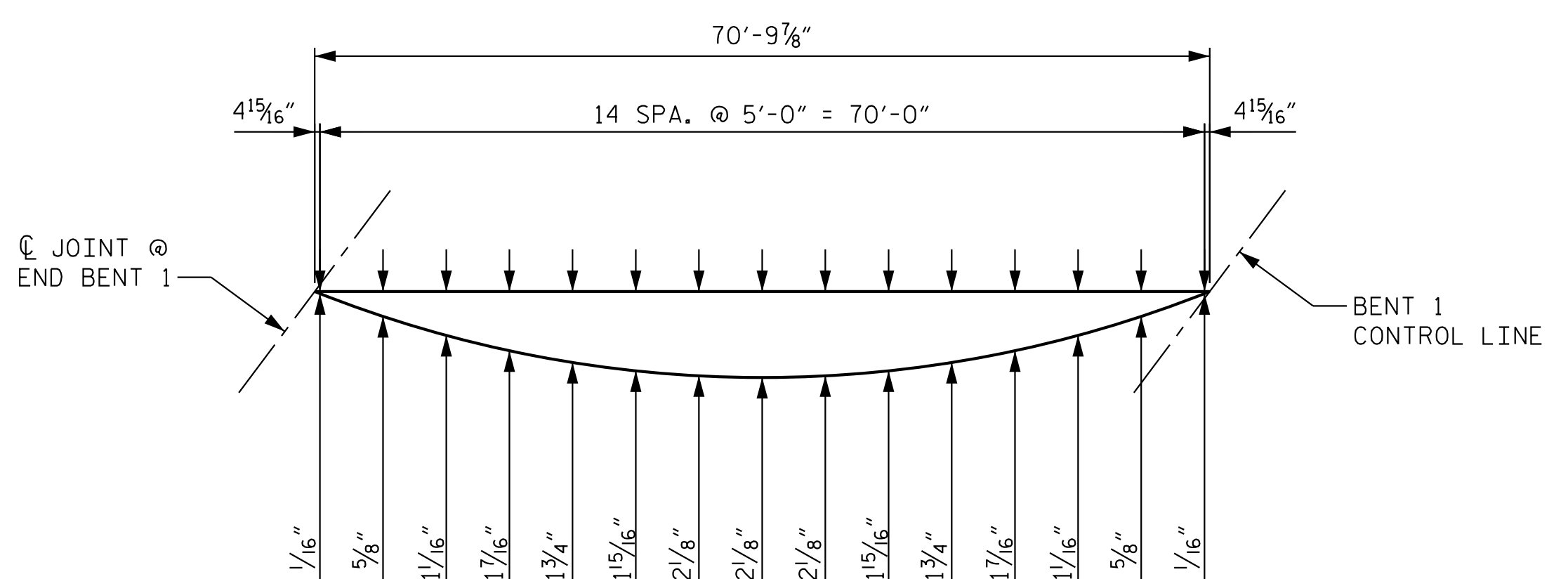




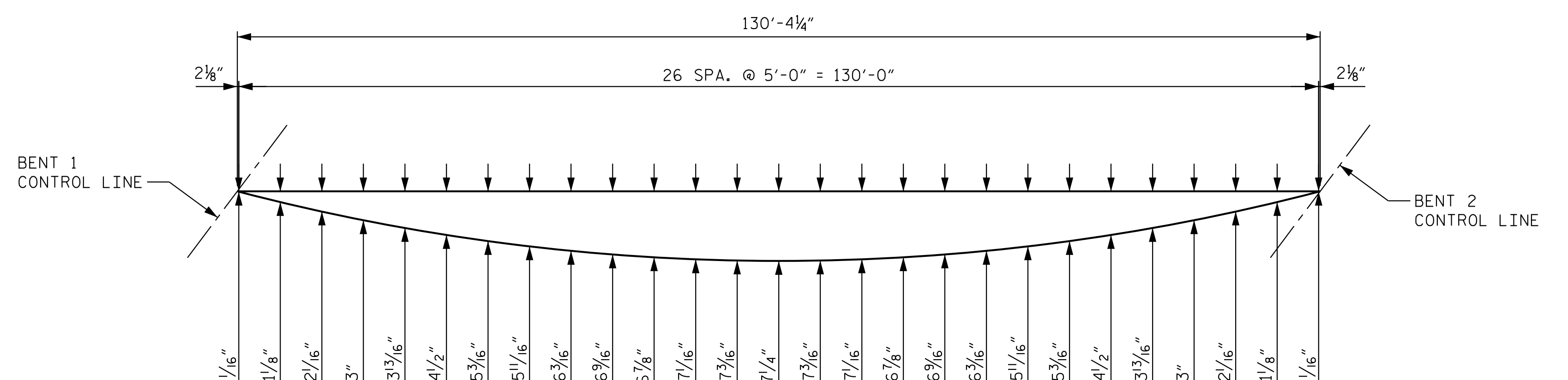
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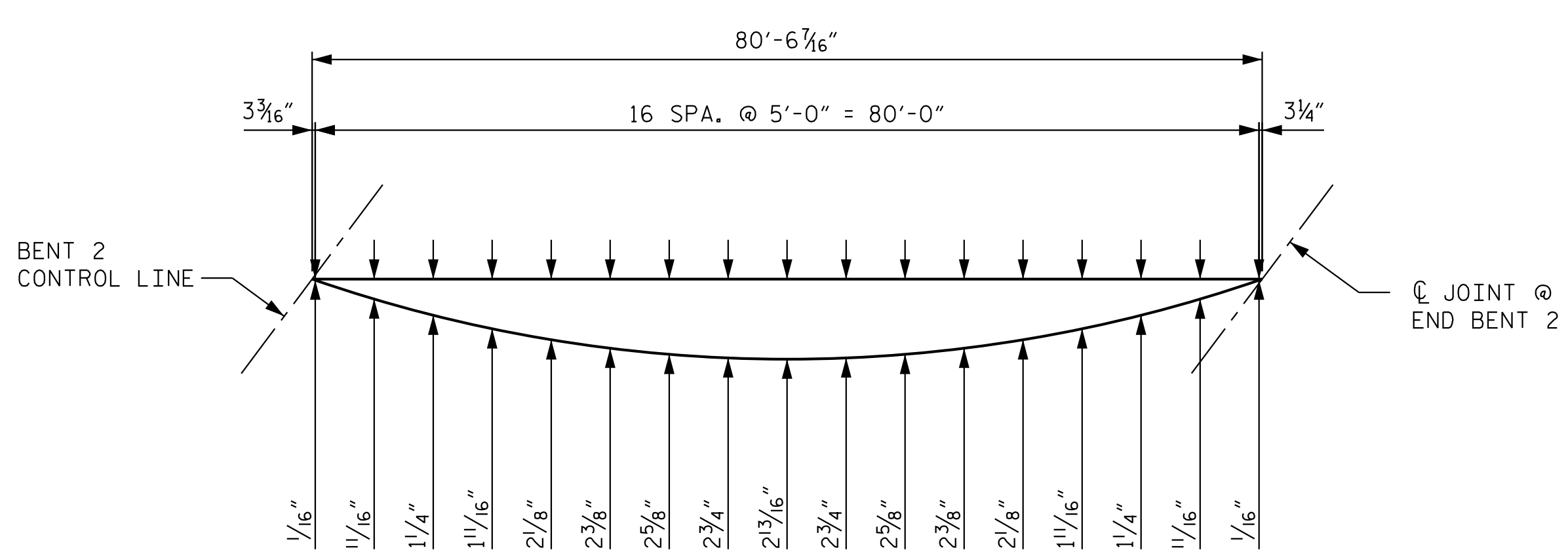
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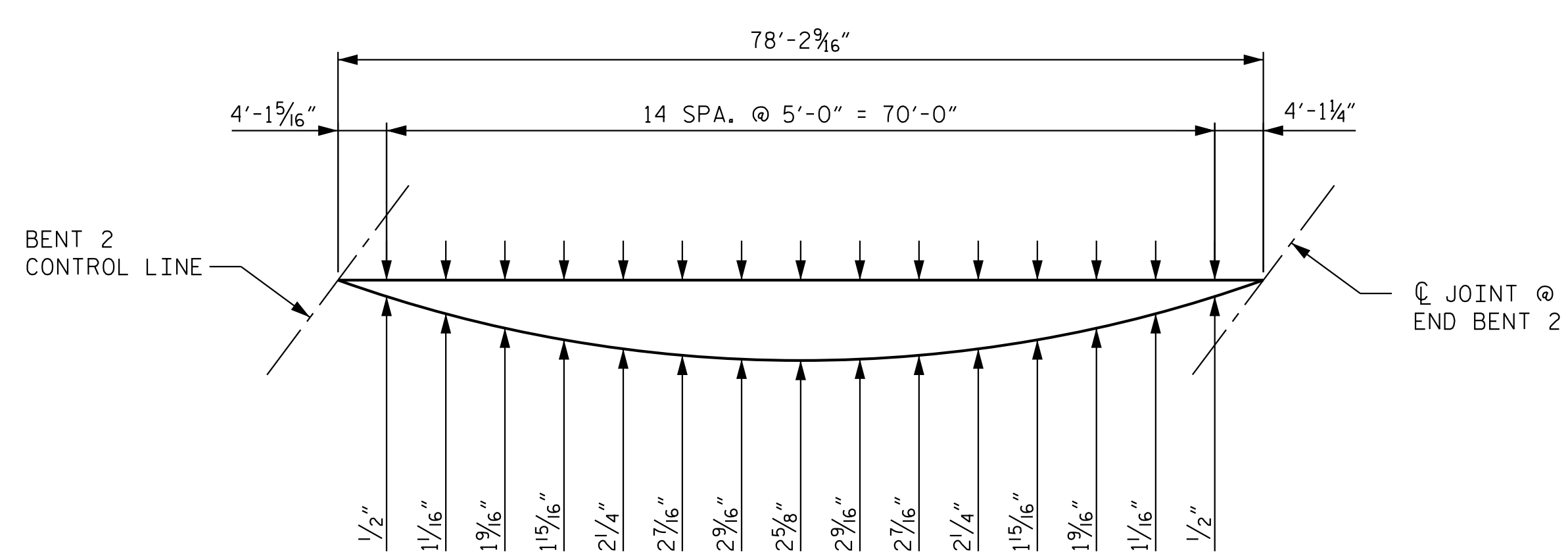
SPAN A ARC OFFSETS - RIGHT SLAB EDGE



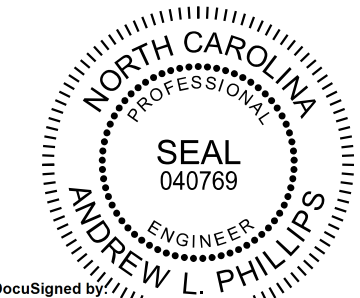
SPAN B ARC OFFSETS - RIGHT SLAB EDGE



SPAN C ARC OFFSETS - LEFT SLAB EDGE



SPAN C ARC OFFSETS - RIGHT SLAB EDGE



Andrew L. Phillips 4/6/2020

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PROJECT NO. B-5301  
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STATION: 25+98.05 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUPERSTRUCTURE  
PLAN OF SPAN  
ARC OFFSETS

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-13         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 55           |

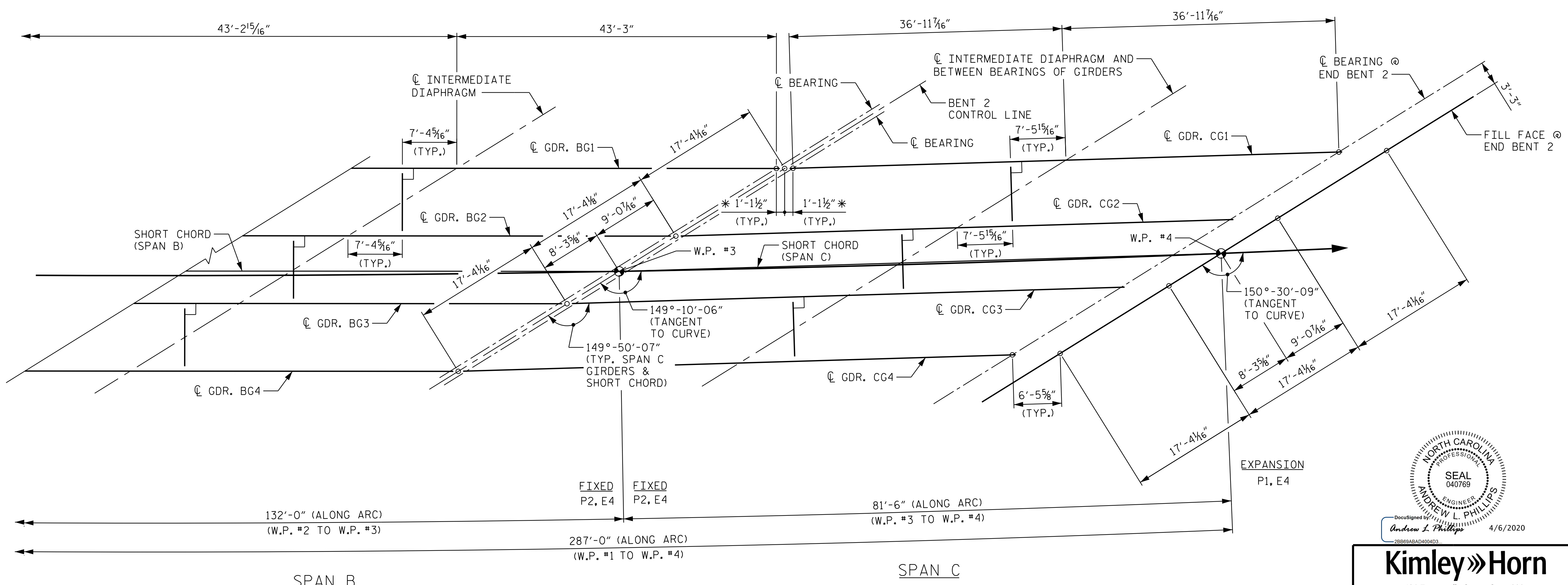
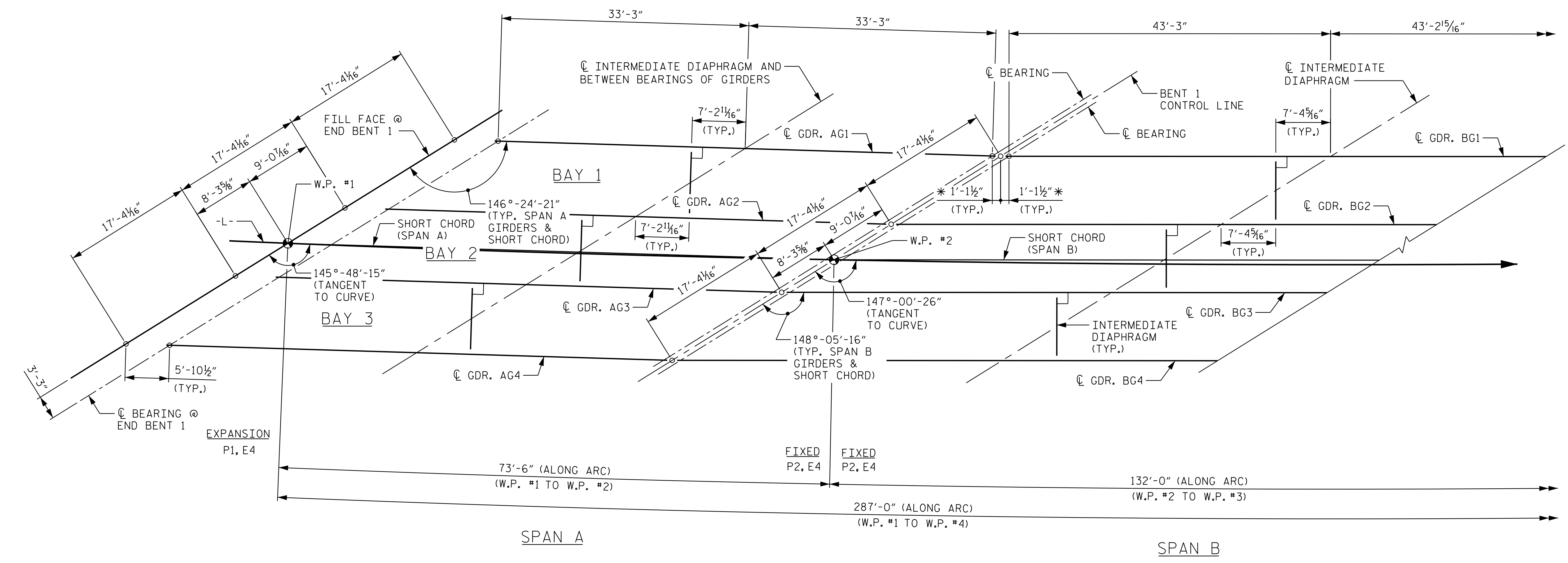
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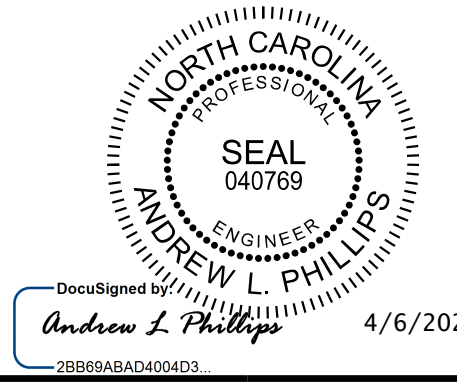
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**NOTES:**  
 FOR STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR 74" MODIFIED BULB TEE PRESTRESSED CONCRETE GIRDERS" SHEET.  
 \* MEASURED ALONG C GIRDER.



**FRAMING PLAN**

PROJECT NO. B-5301  
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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 FRAMING PLAN

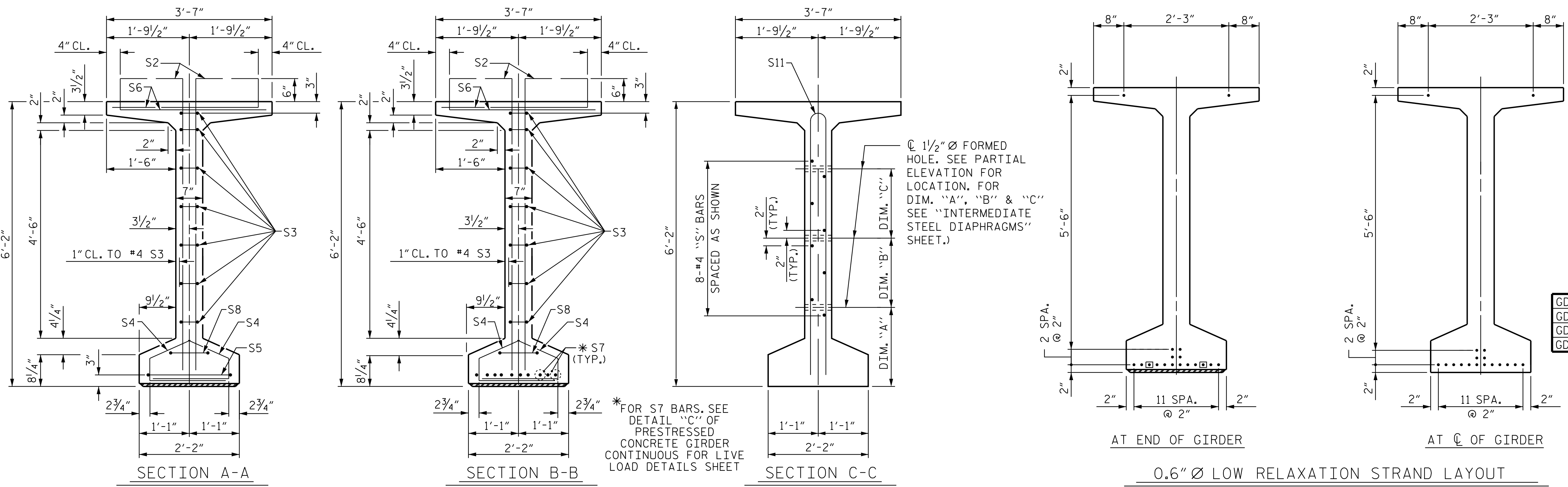
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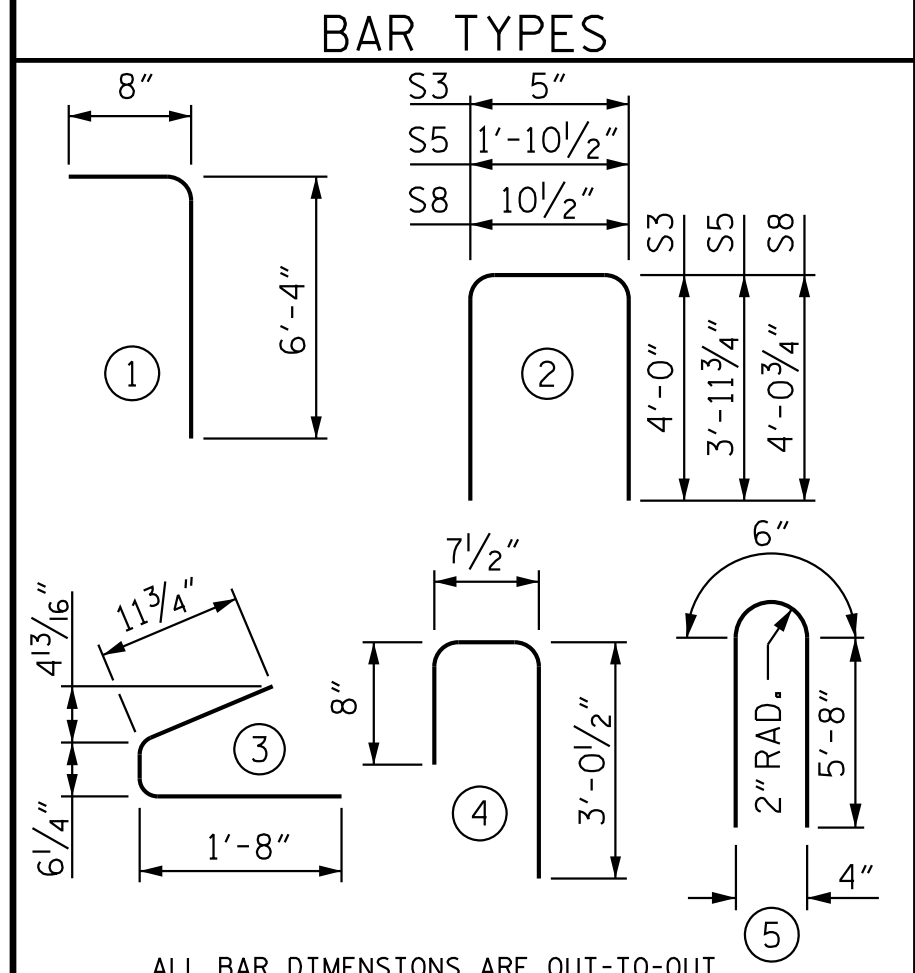




| 0.6" Ø L. R. GRADE 270 STRANDS |  |  |
|--------------------------------|--|--|
| AREA<br>(SQUARE INCHES)        | ULTIMATE STRENGTH<br>(LBS. PER STRAND) | APPLIED PRESTRESS<br>(LBS. PER STRAND) |
| 0.217                          | 58,600                                 | 43,950                                 |

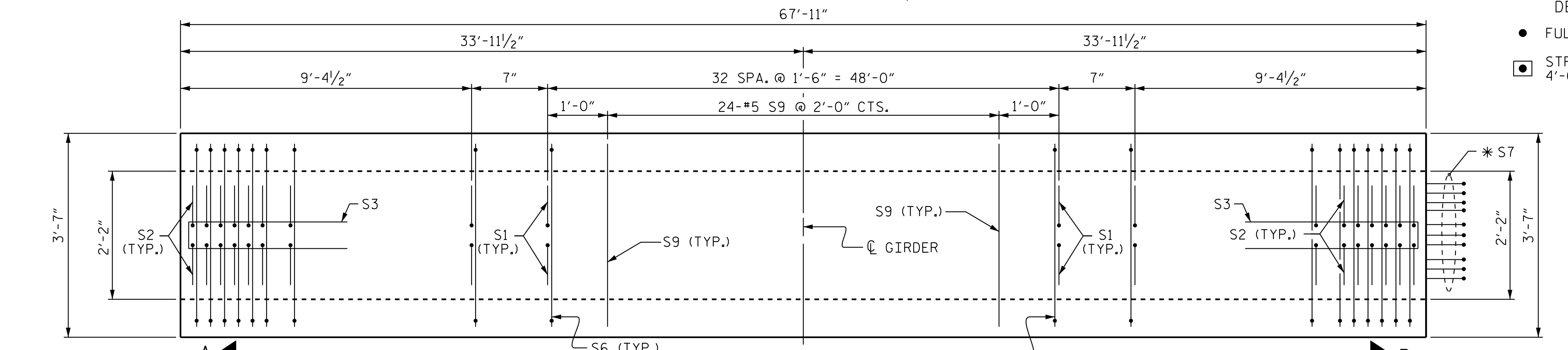
| REINFORCING STEEL FOR ONE GDR |        |      |      |        |         |     |
|-------------------------------|--------|------|------|--------|---------|-----|
| BAR                           | NUMBER | SIZE | TYPE | LENGTH | WEIGHT  |     |
| S1                            | 126    | #4   | 1    | 7'-0"  | 589     |     |
| S2                            | 24     | #5   | 1    | 7'-0"  | 175     |     |
| S3                            | 14     | #4   | 2    | 8'-5"  | 79      |     |
| S4                            | 84     | #4   | 3    | 3'-2"  | 178     |     |
| S5                            | 1      | #5   | 2    | 9'-10" | 10      |     |
| S6                            | 150    | #5   | 4    | 4'-4"  | 678     |     |
| *S7                           | 10     | #5   | STR  | 3'-8"  | 38      |     |
| S8                            | 2      | #5   | 2    | 9'-0"  | 19      |     |
| S9                            | 24     | #5   | STR  | 3'-3"  | 81      |     |
| S10                           | 1      | #3   | STR  | 1'-10" | 1       |     |
| GDR. AG1 & AG4                | S11    | 4    | #5   | 5      | 11'-10" | 49  |
| GDR. AG2 & AG3                | S11    | 8    | #5   | 5      | 11'-10" | 99  |
| GDR. AG1 & AG4                | S12    | 8    | #4   | STR    | 8'-0"   | 43  |
| GDR. AG2 & AG3                | S13    | 8    | #4   | STR    | 22'-6"  | 120 |

\*NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.



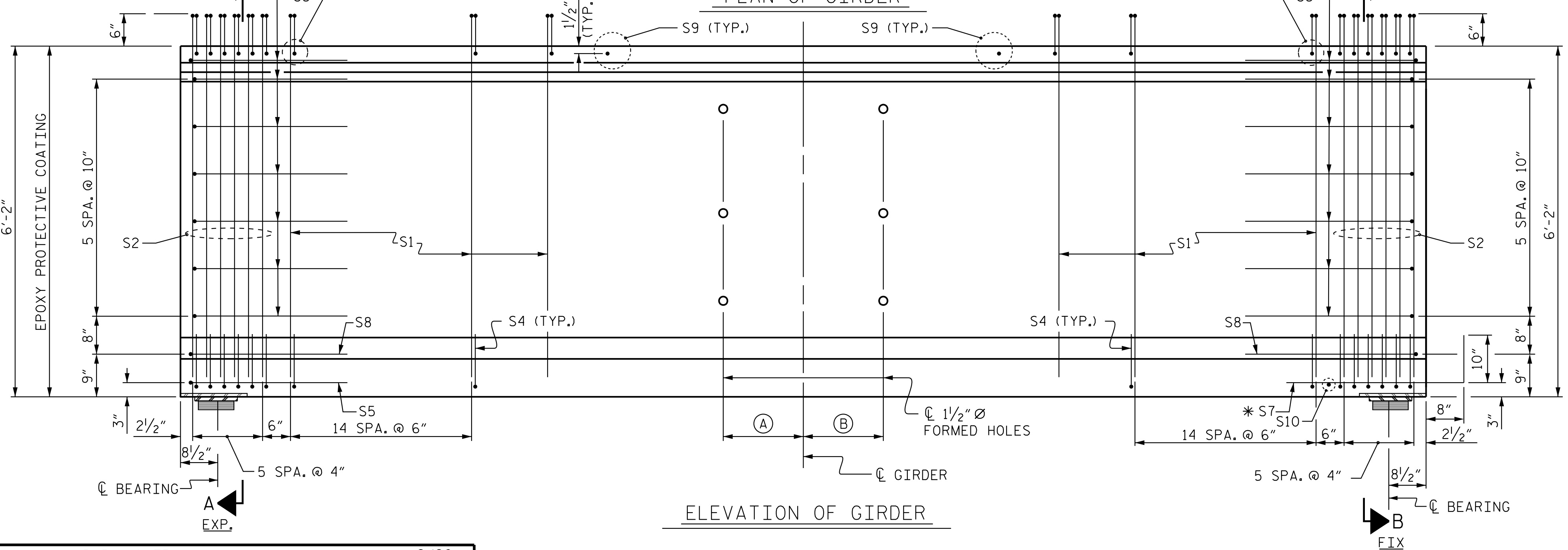
| QUANTITIES FOR ONE GIRDER |                   |                    |                     |
|---------------------------|-------------------|--------------------|---------------------|
|                           | REINFORCING STEEL | 9,000 PSI CONCRETE | 0.6" Ø L.R. STRANDS |
|                           | LB.               | C.Y.               | No.                 |
| GDR. AG1 & AG4            | 1,940             | 15.5               | 18                  |
| GDR. AG2 & AG3            | 2,067             | 15.5               | 18                  |

| GIRDERS REQUIRED |         |              |
|------------------|---------|--------------|
| NUMBER           | LENGTH  | TOTAL LENGTH |
| 4                | 67'-11" | 271'-8"      |

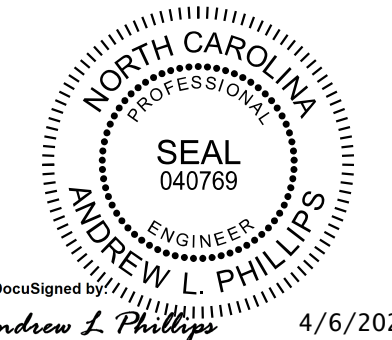


DEBONDING LEGEND  
 ● FULLY BONDED STRANDS  
 ◻ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER

NOTES  
 FOR PARTIAL ELEVATIONS REFERENCING SECTION C-C, SEE "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET 4 OF 5.



| GDR.    | (A)        | (B)        |
|---------|------------|------------|
| AG1     | 7'-2 1/16" | -          |
| AG2-AG3 | 7'-2 1/16" | 7'-2 1/16" |
| AG4     | -          | 7'-2 1/16" |



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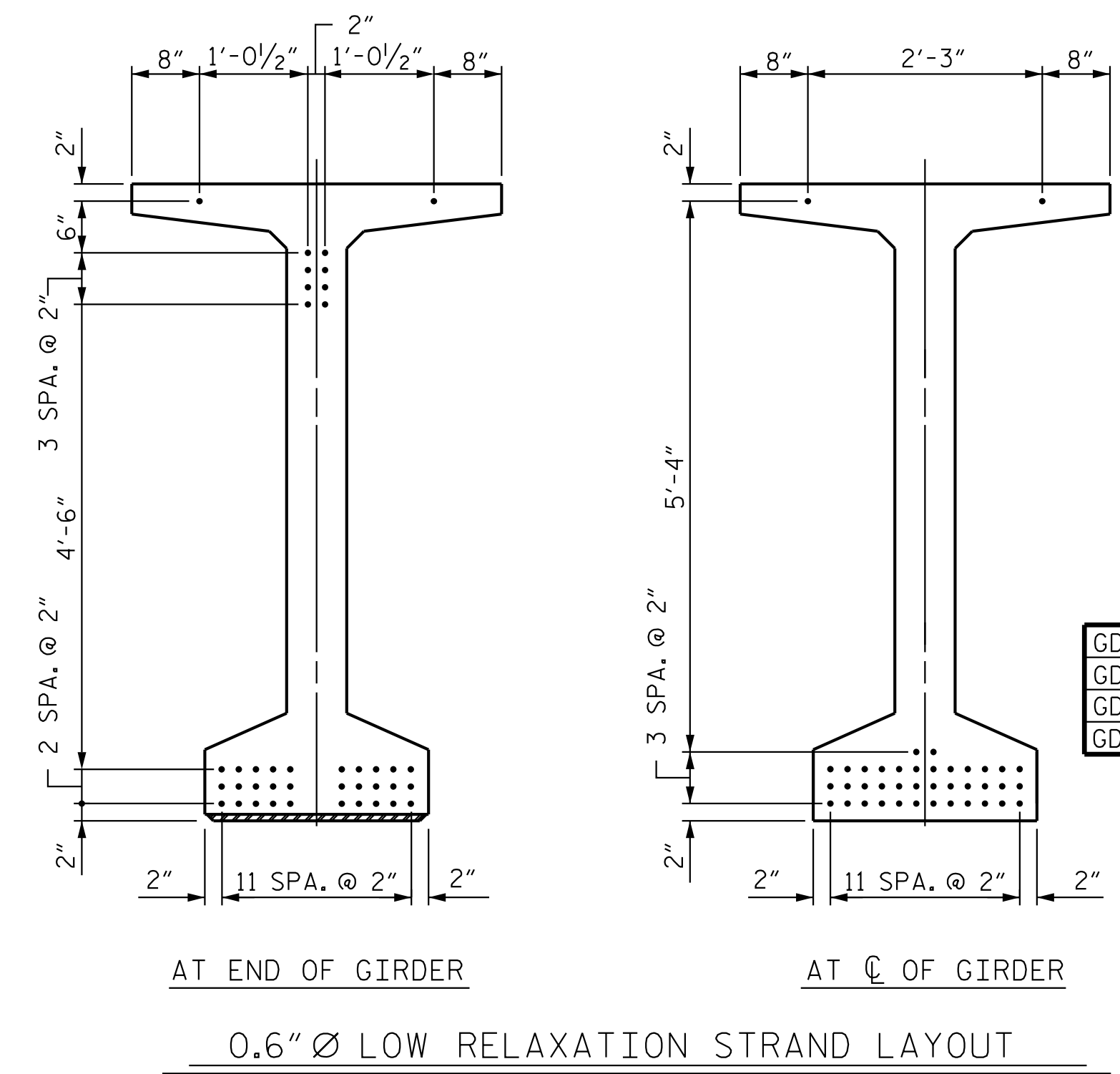
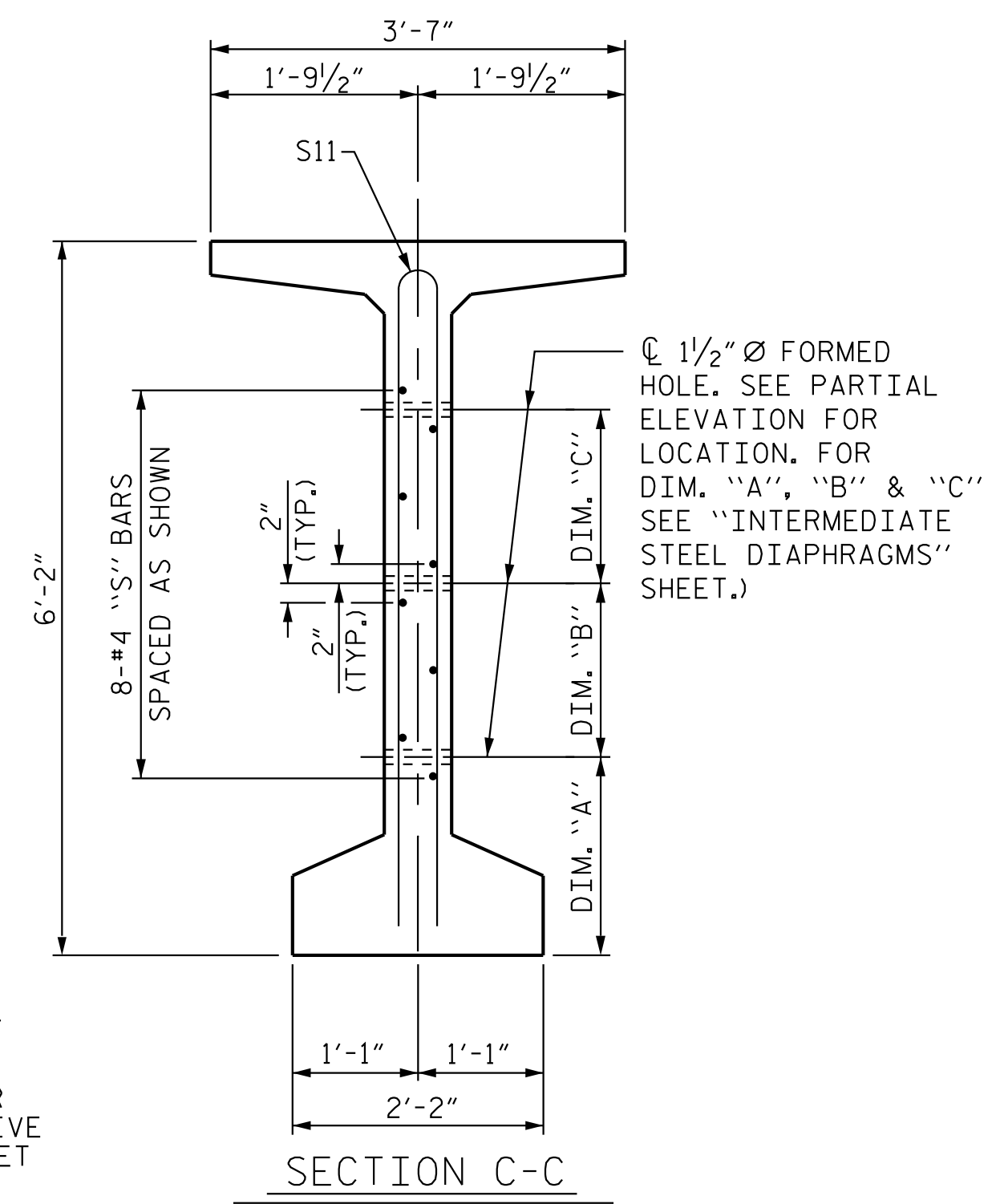
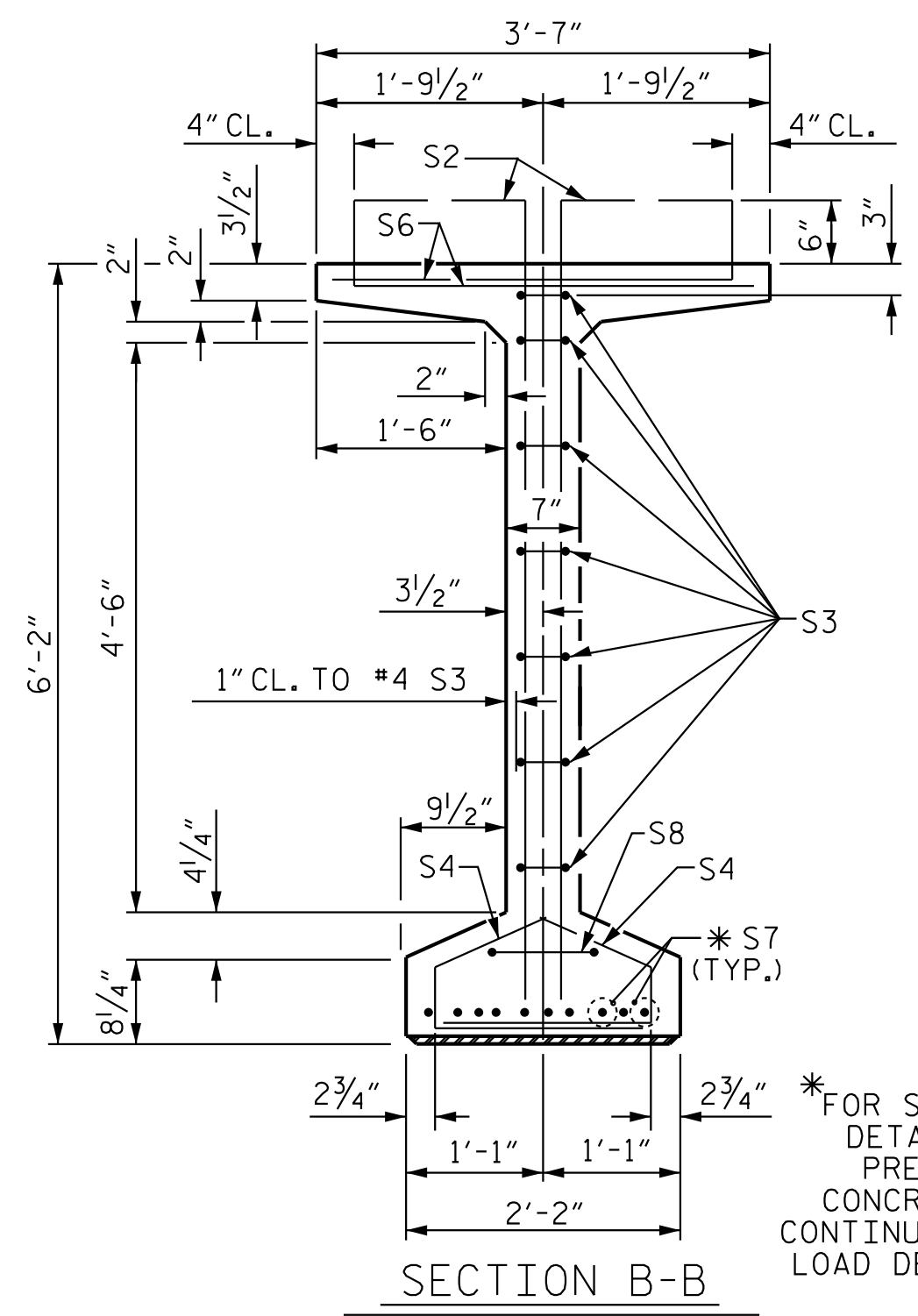
PROJECT NO. B-5301  
PITT COUNTY  
 STATION: 25+98.05 -L-

SHEET 1 OF 5

| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH        |     |       |     |     |              |
|---|-----|-------|-----|-----|--------------|
| 74" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD |     |       |     |     |              |
| SPAN A  |     |       |     |     |              |
| REVISIONS   |     |       |     |     | SHEET NO.    |
| NO.   | BY: | DATE: | NO. | BY: | DATE:        |
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| 2   |     |       | 4   |     |              |
|   |     |       |     |     | TOTAL SHEETS |
|   |     |       |     |     | 55           |

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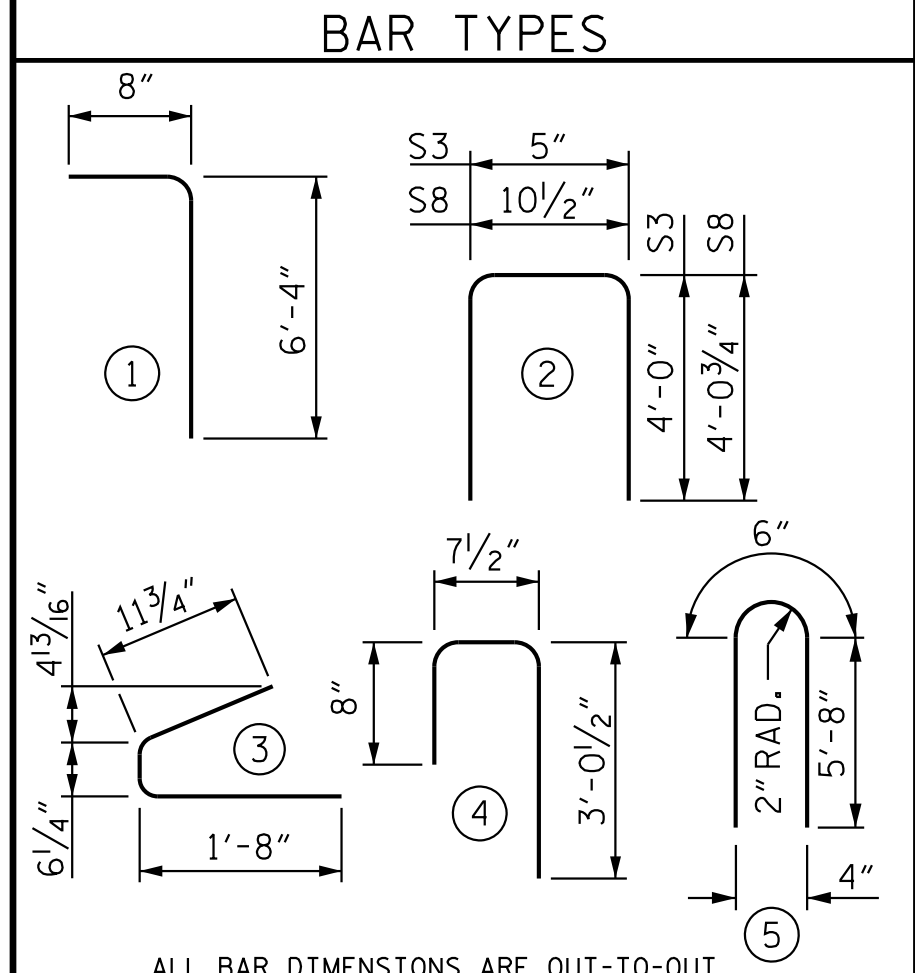
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| 0.6" Ø L. R. GRADE 270 STRANDS |                                     |                                     |
|--------------------------------|-------------------------------------|-------------------------------------|
| AREA (SQUARE INCHES)           | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED PRESTRESS (LBS. PER STRAND) |
| 0.217                          | 58,600                              | 43,950                              |

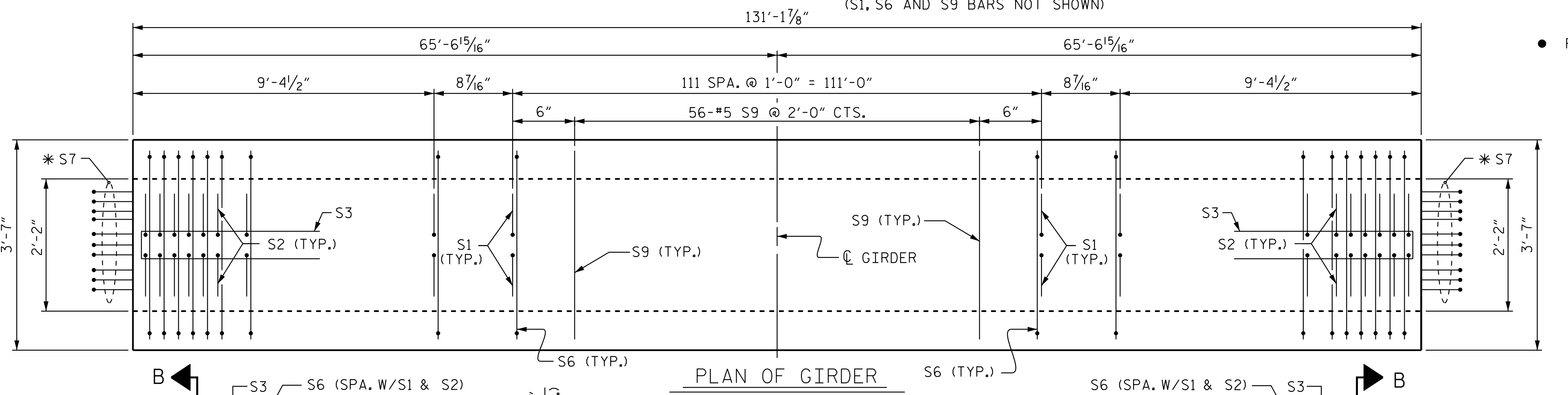
| REINFORCING STEEL FOR ONE GDR |        |      |      |        |         |     |
|-------------------------------|--------|------|------|--------|---------|-----|
| BAR                           | NUMBER | SIZE | TYPE | LENGTH | WEIGHT  |     |
| S1                            | 284    | #4   | 1    | 7'-0"  | 1328    |     |
| S2                            | 24     | #6   | 1    | 7'-0"  | 252     |     |
| S3                            | 14     | #4   | 2    | 8'-5"  | 79      |     |
| S4                            | 84     | #4   | 3    | 3'-2"  | 178     |     |
| S6                            | 308    | #5   | 4    | 4'-4"  | 1392    |     |
| *S7                           | 20     | #5   | STR  | 3'-8"  | 76      |     |
| S8                            | 2      | #5   | 2    | 9'-0"  | 19      |     |
| S9                            | 56     | #5   | STR  | 3'-3"  | 190     |     |
| S10                           | 2      | #3   | STR  | 1'-10" | 1       |     |
| GDR. BG1 & BG4                | S11    | 8    | #5   | 5      | 11'-10" | 99  |
| GDR. BG2 & BG3                | S11    | 16   | #5   | 5      | 11'-10" | 197 |
| GDR. BG1 & BG4                | S12    | 16   | #4   | STR    | 8'-0"   | 86  |
| GDR. BG2 & BG3                | S13    | 16   | #4   | STR    | 22'-9"  | 243 |

\*NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.



| QUANTITIES FOR ONE GIRDER |                   |                    |                     |
|---------------------------|-------------------|--------------------|---------------------|
|                           | REINFORCING STEEL | 9,000 PSI CONCRETE | 0.6" Ø L.R. STRANDS |
|                           | LB.               | C.Y.               | No.                 |
| GDR. BG1 & BG4            | 3,700             | 29.9               | 40                  |
| GDR. BG2 & BG3            | 3,955             | 29.9               | 40                  |

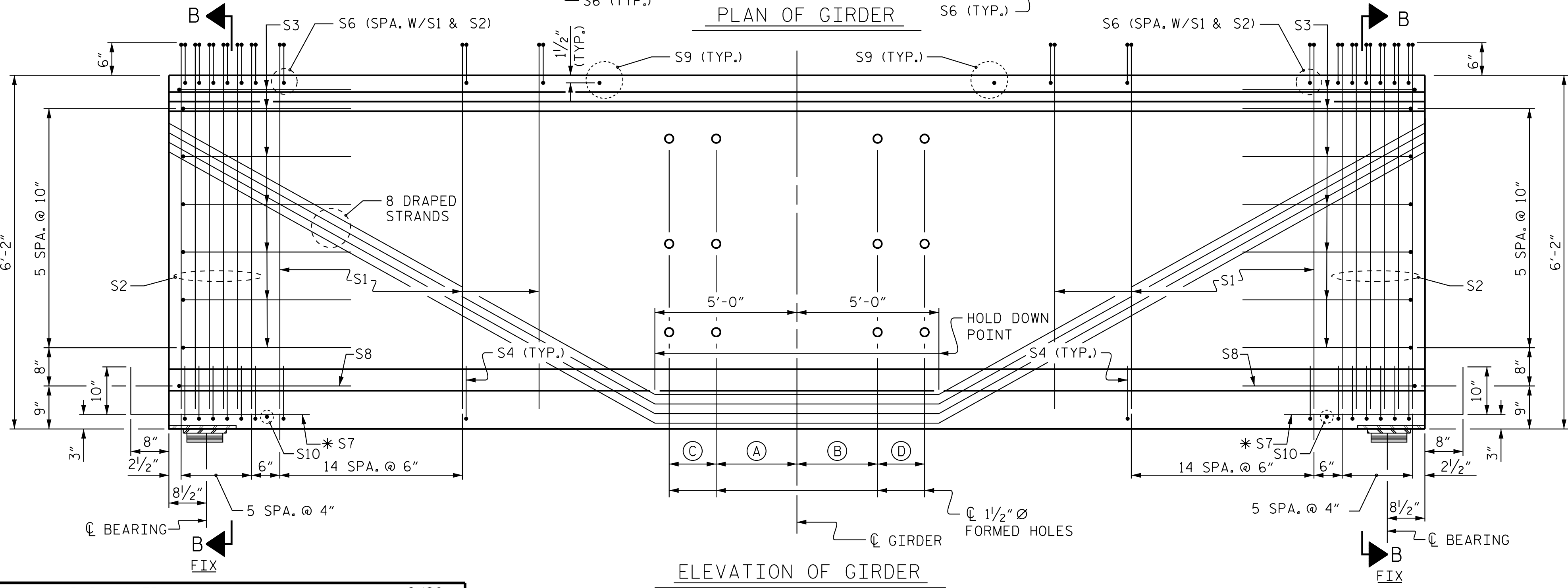
| GIRDERS REQUIRED |             |              |
|------------------|-------------|--------------|
| NUMBER           | LENGTH      | TOTAL LENGTH |
| 4                | 131'-1 7/8" | 524'-7 1/2"  |



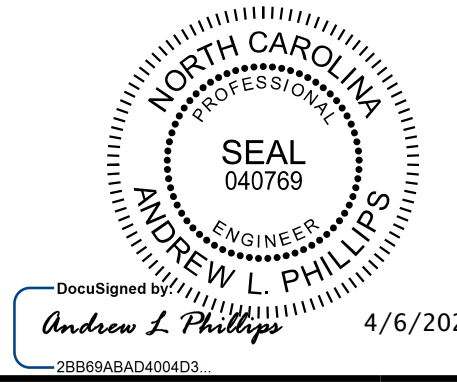
DEBONDING LEGEND  
● FULLY BONDED STRANDS

NOTES  
FOR PARTIAL ELEVATIONS REFERENCING SECTION C-C, SEE "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET 4 OF 5.

| GDR.    | (A)          | (B)          | (C)        | (D)        |
|---------|--------------|--------------|------------|------------|
| BG1     | 28'-11 3/16" | 14'-3 3/16"  | -          | -          |
| BG2-BG3 | 14'-3 3/16"  | 14'-3 3/16"  | 14'-8 5/8" | 14'-8 5/8" |
| BG4     | 14'-3 3/16"  | 28'-11 3/16" | -          | -          |



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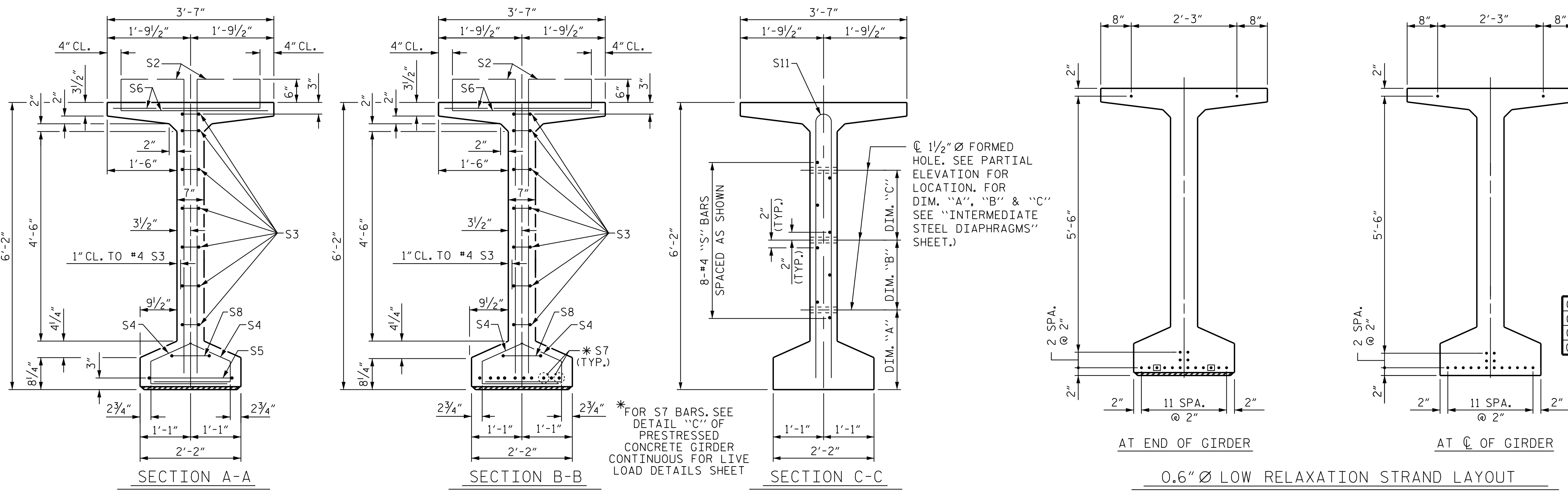
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PITT COUNTY  
STATION: 25+98.05 -L-

SHEET 2 OF 5

| STATE OF NORTH CAROLINA<br>DEPARTMENT OF TRANSPORTATION<br>RALEIGH        |     |       |     |     |              |
|---|-----|-------|-----|-----|--------------|
| 74" PRESTRESSED CONCRETE<br>MODIFIED BULB TEE<br>CONTINUOUS FOR LIVE LOAD |     |       |     |     |              |
| SPAN B  |     |       |     |     |              |
| REVISIONS   |     |       |     |     | SHEET NO.    |
| NO.   | BY: | DATE: | NO. | BY: | DATE:        |
| 1   |     |       | 3   |     |              |
| 2   |     |       | 4   |     |              |
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|   |     |       |     |     | 55           |

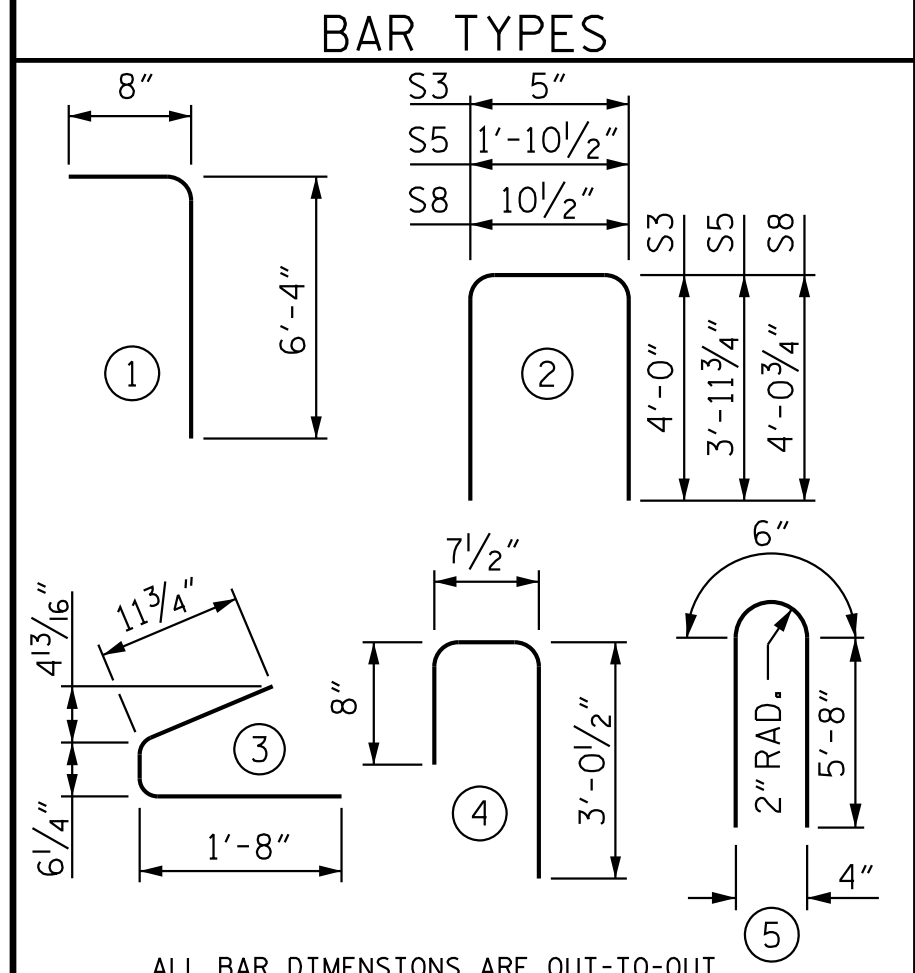




| 0.6" Ø L. R. GRADE 270 STRANDS |                                     |                                     |
|--------------------------------|-------------------------------------|-------------------------------------|
| AREA (SQUARE INCHES)           | ULTIMATE STRENGTH (LBS. PER STRAND) | APPLIED PRESTRESS (LBS. PER STRAND) |
| 0.217                          | 58,600                              | 43,950                              |

| REINFORCING STEEL FOR ONE GDR |        |      |      |        |         |     |
|-------------------------------|--------|------|------|--------|---------|-----|
| BAR                           | NUMBER | SIZE | TYPE | LENGTH | WEIGHT  |     |
| S1                            | 136    | #4   | 1    | 7'-0"  | 636     |     |
| S2                            | 24     | #5   | 1    | 7'-0"  | 175     |     |
| S3                            | 14     | #4   | 2    | 8'-5"  | 79      |     |
| S4                            | 84     | #4   | 3    | 3'-2"  | 178     |     |
| S5                            | 1      | #5   | 2    | 9'-10" | 10      |     |
| S6                            | 160    | #5   | 4    | 4'-4"  | 723     |     |
| *S7                           | 10     | #5   | STR  | 3'-8"  | 38      |     |
| S8                            | 2      | #5   | 2    | 9'-0"  | 19      |     |
| S9                            | 28     | #5   | STR  | 3'-3"  | 95      |     |
| S10                           | 1      | #3   | STR  | 1'-10" | 1       |     |
| GDR. CG1 & CG4                | S11    | 4    | #5   | 5      | 11'-10" | 49  |
| GDR. CG2 & CG3                | S11    | 8    | #5   | 5      | 11'-10" | 99  |
| GDR. CG1 & CG4                | S12    | 8    | #4   | STR    | 3'-8"   | 43  |
| GDR. CG2 & CG3                | S13    | 8    | #4   | STR    | 23'-0"  | 123 |

\*NOTE: S7 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.



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

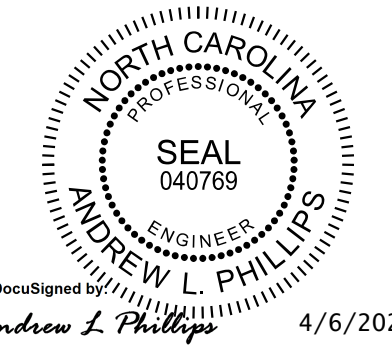
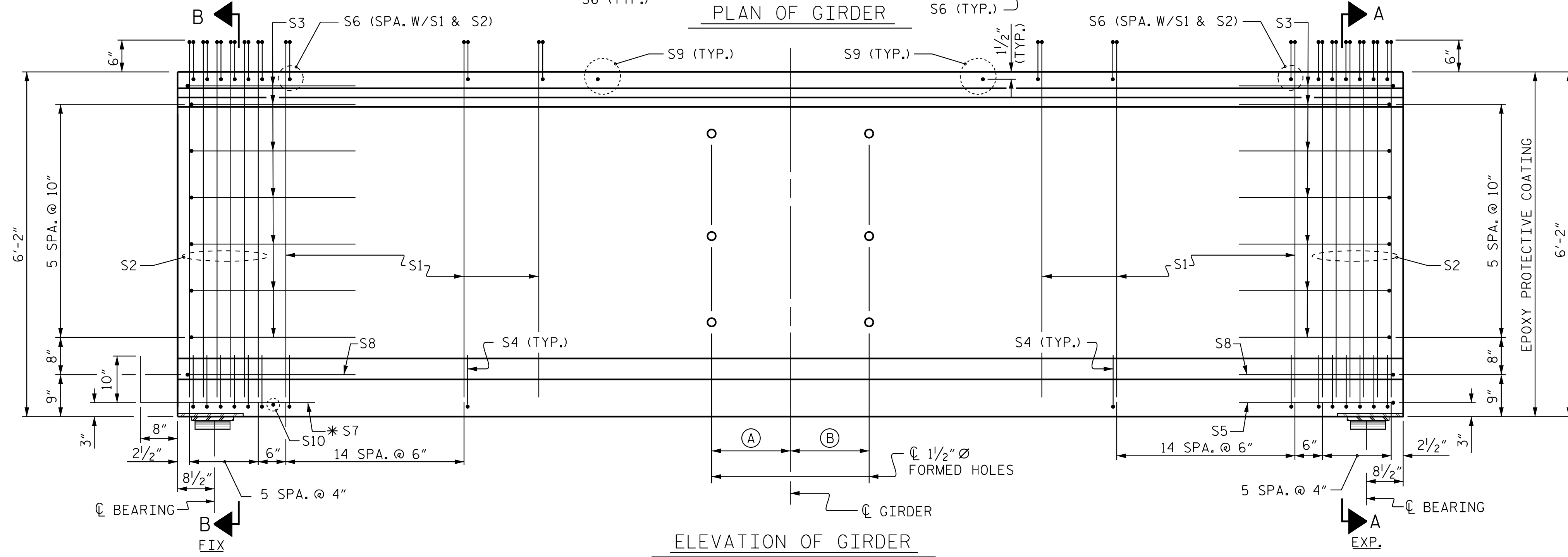
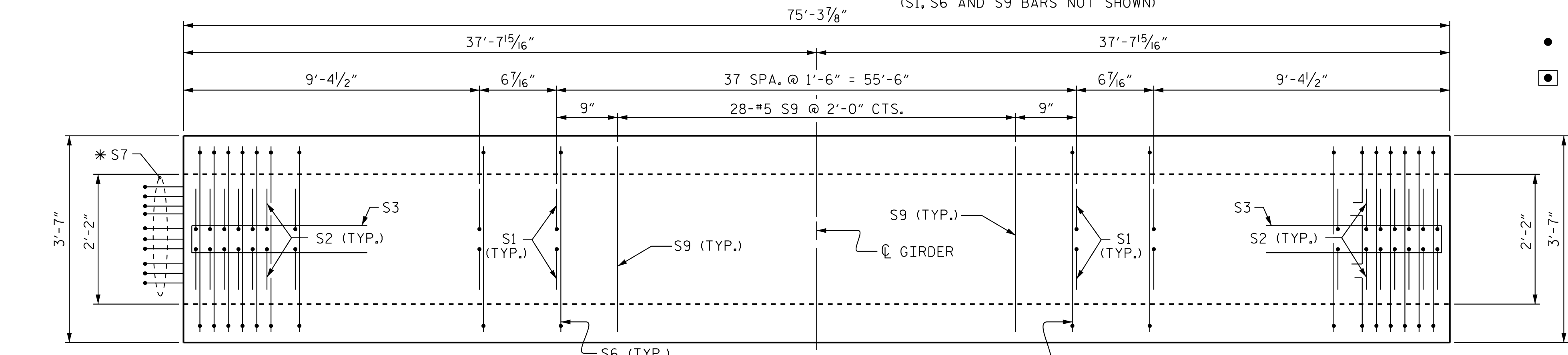
NOTES  
FOR PARTIAL ELEVATIONS REFERENCING SECTION C-C, SEE "PRESTRESSED CONCRETE GIRDER CONTINUOUS FOR LIVE LOAD DETAILS" SHEET 4 OF 5.

| QUANTITIES FOR ONE GIRDER |                   |                    |                     |
|---------------------------|-------------------|--------------------|---------------------|
|                           | REINFORCING STEEL | 9,000 PSI CONCRETE | 0.6" Ø L.R. STRANDS |
|                           | LB.               | C.Y.               | No.                 |
| GDR. CG1 & CG4            | 2,046             | 17.1               | 18                  |
| GDR. CG2 & CG3            | 2,176             | 17.1               | 18                  |

| GIRDERS REQUIRED |            |              |
|------------------|------------|--------------|
| NUMBER           | LENGTH     | TOTAL LENGTH |
| 4                | 75'-3 3/8" | 301'-3 1/2"  |

| GDR.    | (A)         | (B)         |
|---------|-------------|-------------|
| CG1     | 7'-5 15/16" | -           |
| CG2-CG3 | 7'-5 15/16" | 7'-5 15/16" |
| CG4     | -           | 7'-5 15/16" |



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PITT COUNTY  
STATION: 25+98.05 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

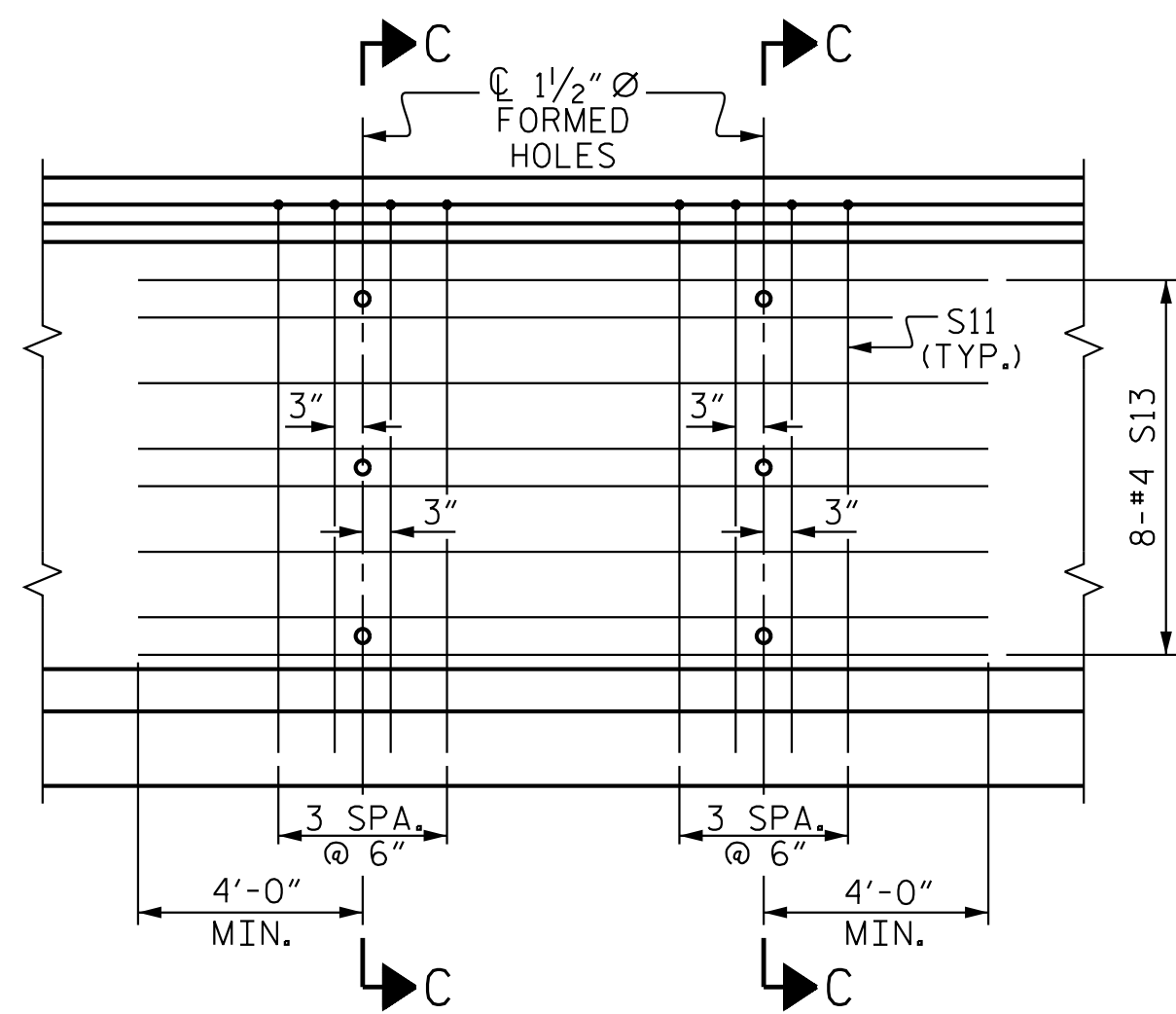
74" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD

SPAN C

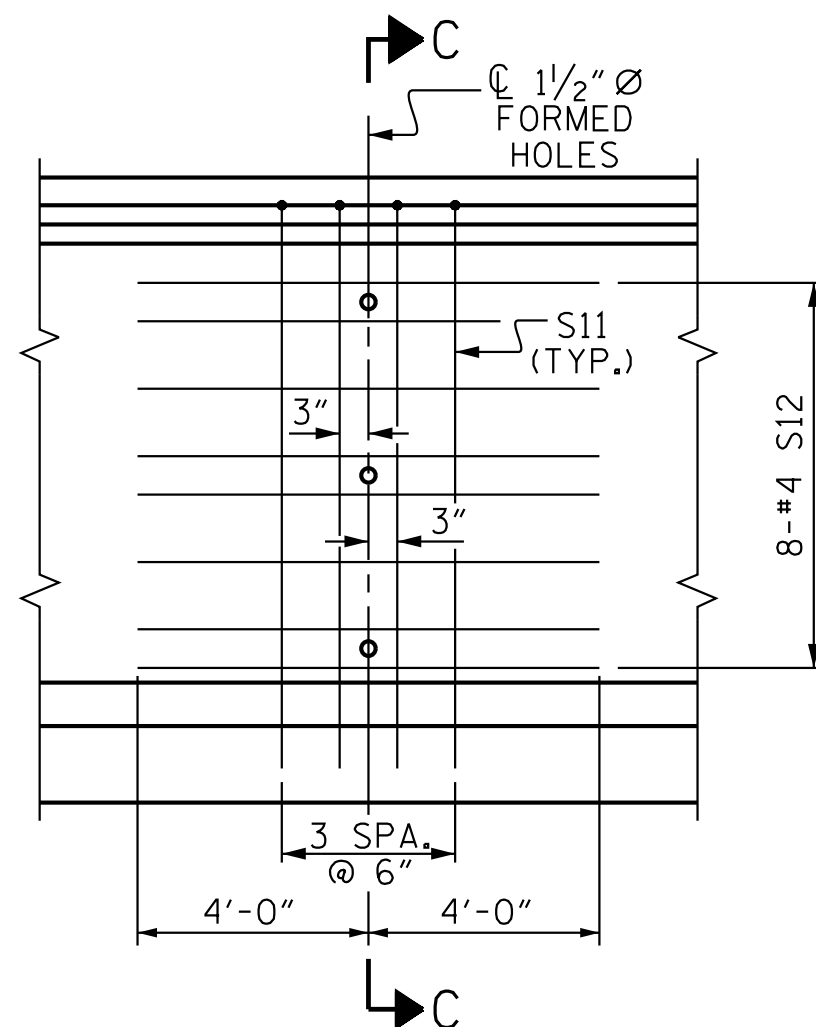
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| 2         |     |       | 4   |     |       |                    |

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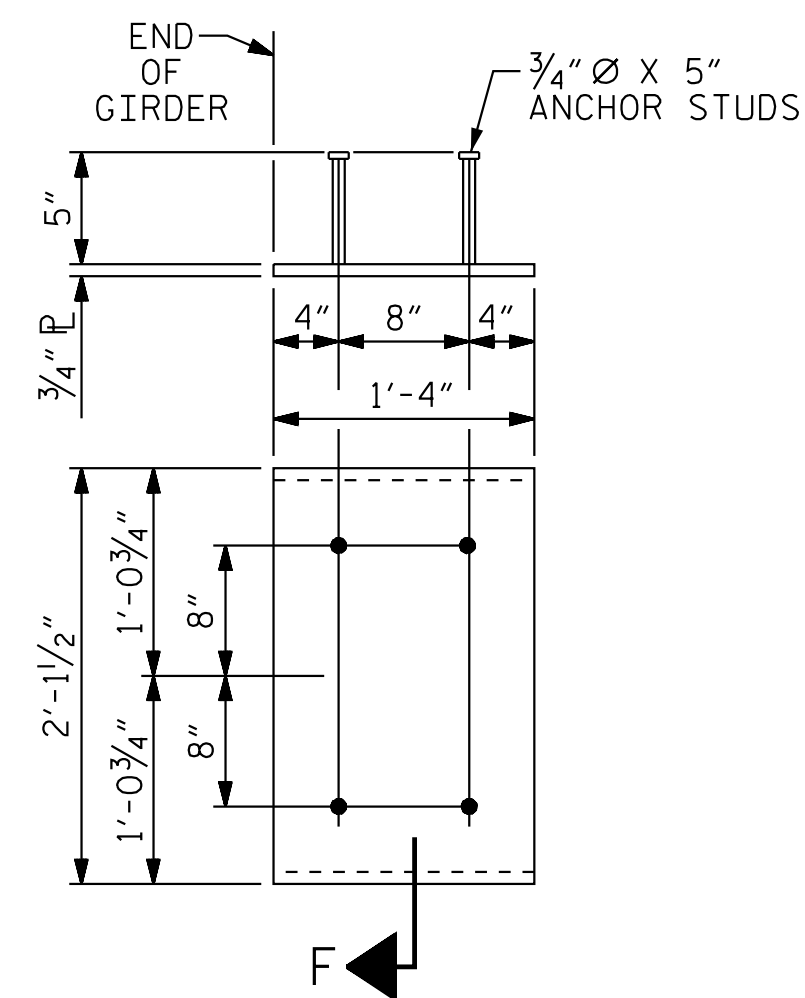
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DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 2/20



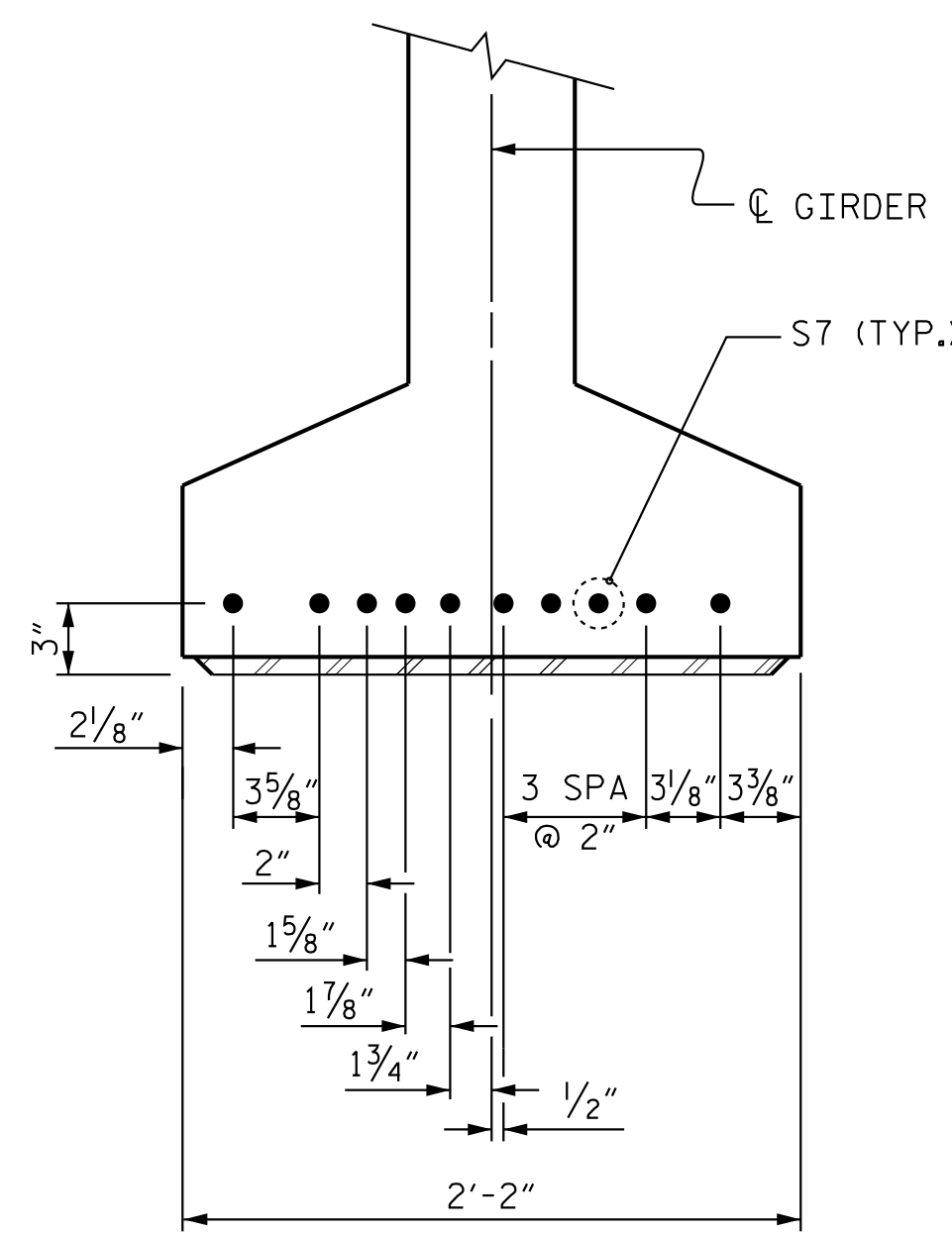
**PARTIAL ELEVATION**  
SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. AG2, AG3, BG2, BG3, CG2, & CG3



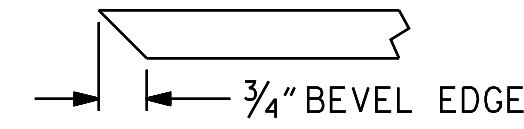
**PARTIAL ELEVATION**  
SHOWING INTERMEDIATE STEEL DIAPHRAGM REINFORCING STEEL FOR GIRDER Nos. AG1, AG4, BG1, BG4, CG1, & CG4



**EMBEDDED PLATE "B-1" DETAILS FOR 74" MODIFIED BULB TEES**  
(2 REQ'D PER GIRDER)



**DETAIL "C"**



**SECTION "F"**  
(SEE NOTES)

**NOTES**

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 EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

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

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 7,200 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".

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

A 2" x 2" CHAMFER IS ALLOWED AT THE INTERSECTION OF THE WEB AND THE BOTTOM FLANGE OF THE 74" MODIFIED BULB TEES ONLY.

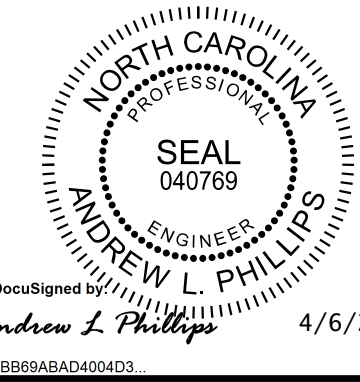
THE CONTRACTOR HAS THE OPTION TO PROVIDE, AT NO ADDITIONAL COST TO THE DEPARTMENT, 2 ADDITIONAL STRANDS AT THE TOP OF THE GIRDER TO FACILITATE TYING OF THE REINFORCING STEEL. THESE STRANDS SHALL BE PULLED TO A LOAD OF 4,500 LBS.

FOR THE LOCATION OF SECTION C-C, SEE "74" PRESTRESSED CONCRETE MODIFIED BULB TEE CONTINUOUS FOR LIVE LOAD" SHEETS 1 OF 5, 2 OF 5, & 3 OF 5.

THE UPLIFT FORCE DUE TO DRAPED STRANDS IS 28.0 KIPS.

PROJECT NO. B-5301  
PITT COUNTY  
STATION: 25+98.05 -L-

SHEET 4 OF 5



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

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
PRESTRESSED CONCRETE GIRDER  
CONTINUOUS FOR LIVE LOAD  
DETAILS

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-18         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 55           |

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|                             |                    |
|-----------------------------|--------------------|
| ASSEMBLED BY : D. D. LOWERY | DATE : 02/20       |
| CHECKED BY : C. T. POOLE    | DATE : 02/20       |
| DRAWN BY : ELR 11/91        | REV. 1/15 MAA/TMG  |
| CHECKED BY : GRP 11/91      | REV. 2/15 MAA/TMG  |
|                             | REV. 12/17 MAA/THC |



STRUCTURAL STEEL NOTES

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

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

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

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

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

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

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

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

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

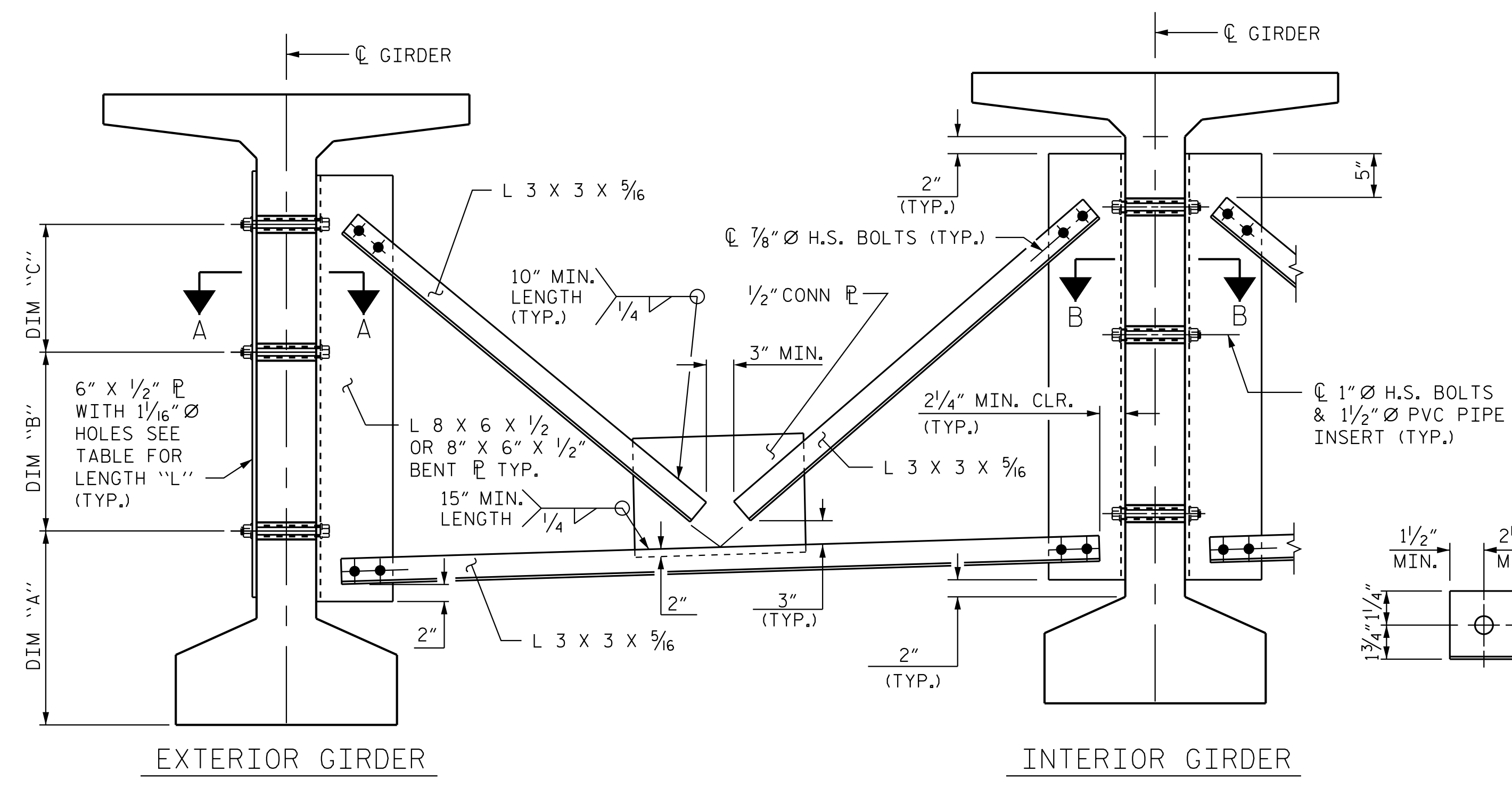
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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

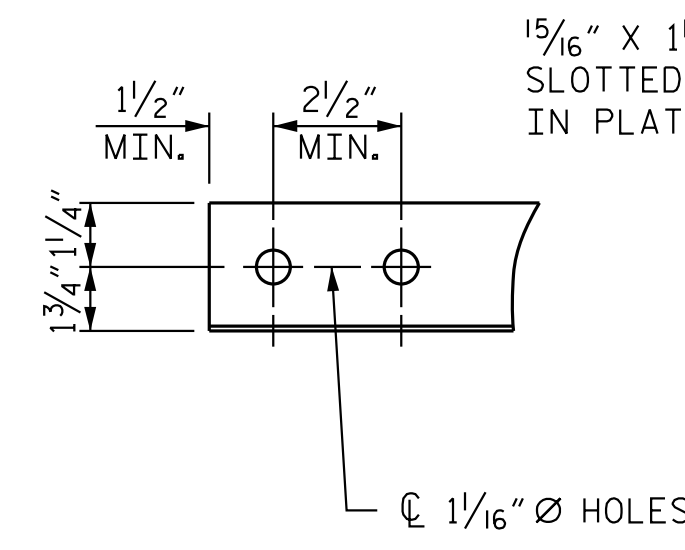
THE COST OF THE STEEL DIAPHRAGMS AND ASSEMBLIES SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE GIRDERS.

TABLE

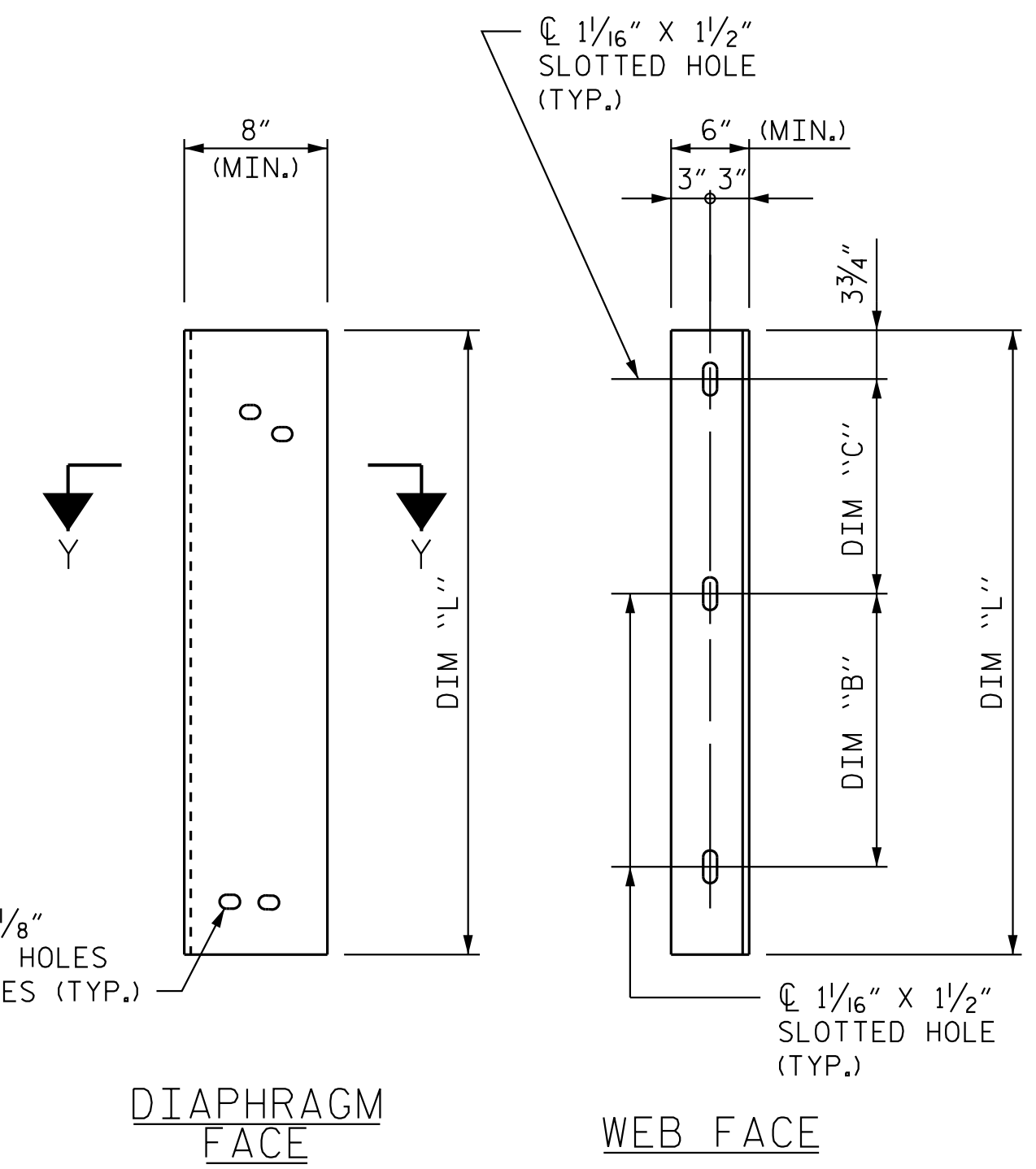
| GIRDER TYPE  | DIM "A"   | DIM "B"   | DIM "C" | DIM "L" |
|--------------|-----------|-----------|---------|---------|
| 74" BULB TEE | 1'-8 1/4" | 1'-6 1/2" | 1'-10"  | 4'-2"   |



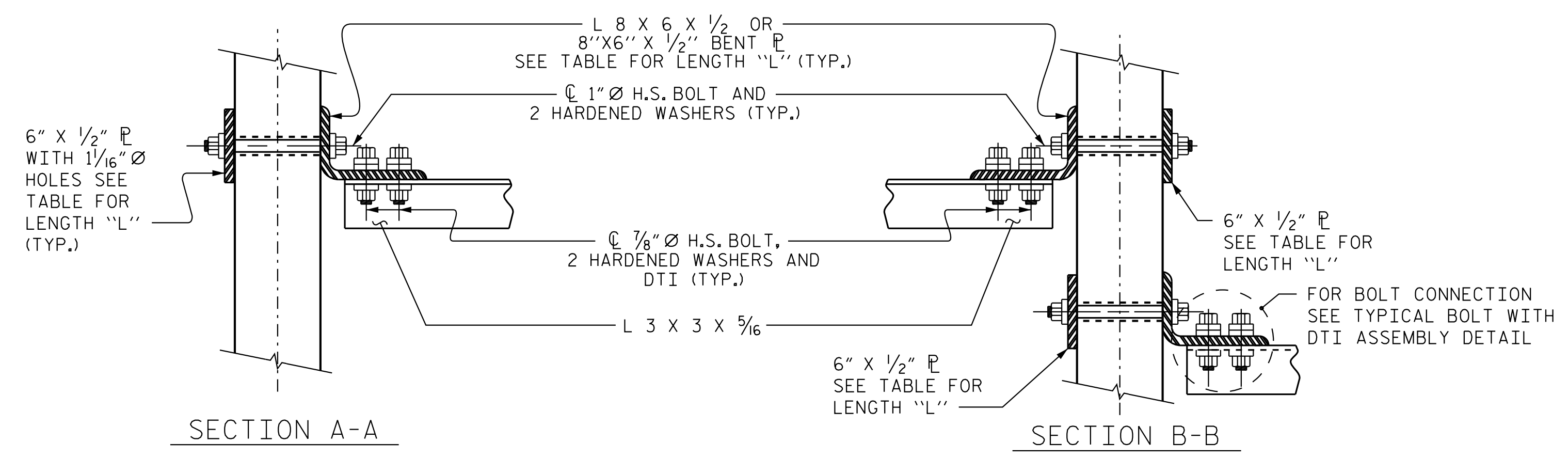
PART SECTION AT INTERMEDIATE DIAPHRAGM



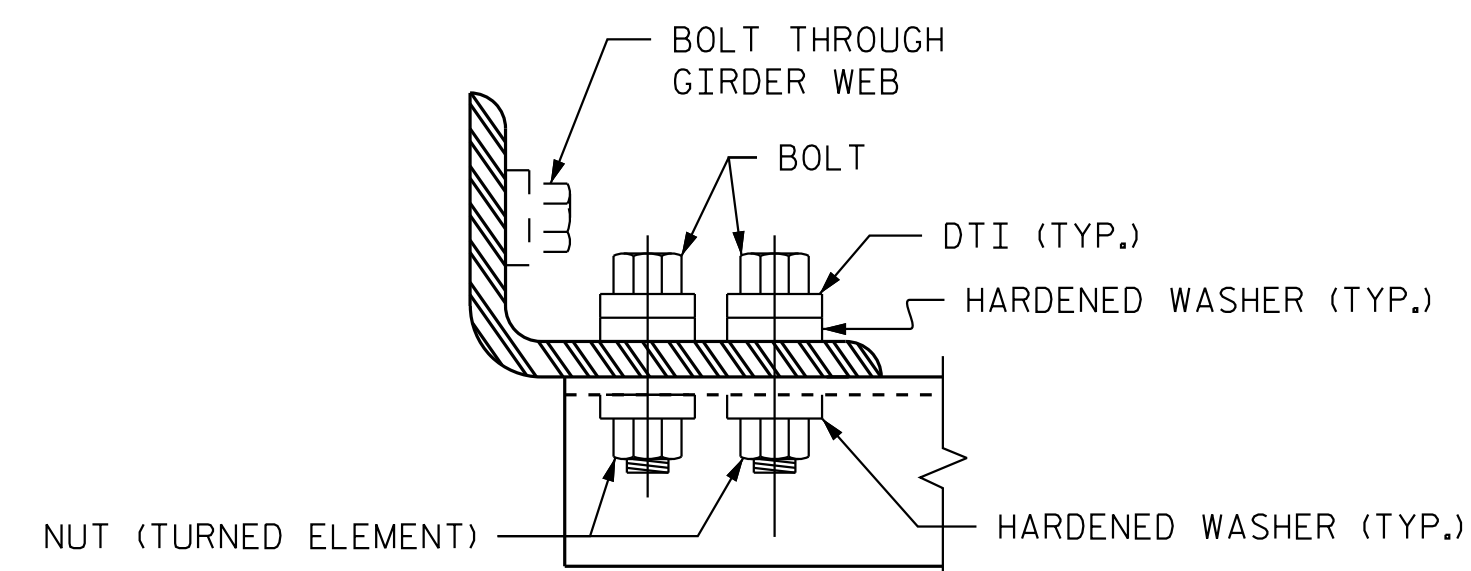
ANGLE END  
(L 3 x 3 x 5/16)



CONNECTOR PLATE DETAIL



CONNECTION DETAILS



BOLT WITH DTI ASSEMBLY DETAIL



Andrew L. Phillips 4/6/2020  
28869ABAD00403

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PROJECT NO. B-5301  
PITT COUNTY  
STATION: 25+98.05 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
INTERMEDIATE  
STEEL DIAPHRAGMS FOR  
74" MODIFIED BULB TEE  
PRESTRESSED CONCRETE  
GIRDERS

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-19         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 55           |

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|                             |                      |
|-----------------------------|----------------------|
| ASSEMBLED BY : D. D. LOWERY | DATE : 02/20         |
| CHECKED BY : C. T. POOLE    | DATE : 02/20         |
| DRAWN BY : RWW 11/09        | REV. 10/17/11 MAA/GM |
| CHECKED BY : GM 11/09       | REV. 12/17 MAA/THC   |

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS  |            |       |       |       |       |       |       |       |       |       |       |
|---|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0.6" Ø LOW RELAXATION STRANDS           | SPAN A     |       |       |       |       |       |       |       |       |       |       |
|   | GIRDER AG1 |       |       |       |       |       |       |       |       |       |       |
| TENTH POINTS                            | BRG.       | 0.10  | 0.20  | 0.30  | 0.40  | 0.50  | 0.60  | 0.70  | 0.80  | 0.90  | BRG.  |
| CAMBER (GIRDER ALONE IN PLACE) ↑        | 0.000      | 0.014 | 0.026 | 0.036 | 0.042 | 0.044 | 0.042 | 0.036 | 0.026 | 0.014 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. ↓ | 0.000      | 0.004 | 0.008 | 0.011 | 0.012 | 0.013 | 0.012 | 0.010 | 0.008 | 0.004 | 0.000 |
| FINAL CAMBER ↑                          | 0          | 1/16" | 3/16" | 1/4"  | 5/16" | 5/16" | 5/16" | 1/4"  | 3/16" | 1/16" | 0     |

| GIRDERS AG2 AND AG3                     |            |       |       |       |       |       |       |       |       |       |       |
|---|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0.6" Ø LOW RELAXATION STRANDS           | SPAN A     |       |       |       |       |       |       |       |       |       |       |
|   | GIRDER AG1 |       |       |       |       |       |       |       |       |       |       |
| TENTH POINTS                            | BRG.       | 0.10  | 0.20  | 0.30  | 0.40  | 0.50  | 0.60  | 0.70  | 0.80  | 0.90  | BRG.  |
| CAMBER (GIRDER ALONE IN PLACE) ↑        | 0.000      | 0.014 | 0.026 | 0.036 | 0.042 | 0.044 | 0.042 | 0.036 | 0.026 | 0.014 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. ↓ | 0.000      | 0.005 | 0.009 | 0.013 | 0.015 | 0.016 | 0.015 | 0.012 | 0.009 | 0.005 | 0.000 |
| FINAL CAMBER ↑                          | 0          | 1/16" | 3/16" | 1/4"  | 5/16" | 5/16" | 5/16" | 1/4"  | 3/16" | 1/16" | 0     |

| GIRDER AG4                              |            |       |       |       |       |       |       |       |       |       |       |
|---|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0.6" Ø LOW RELAXATION STRANDS           | SPAN A     |       |       |       |       |       |       |       |       |       |       |
|   | GIRDER AG1 |       |       |       |       |       |       |       |       |       |       |
| TENTH POINTS                            | BRG.       | 0.10  | 0.20  | 0.30  | 0.40  | 0.50  | 0.60  | 0.70  | 0.80  | 0.90  | BRG.  |
| CAMBER (GIRDER ALONE IN PLACE) ↑        | 0.000      | 0.014 | 0.026 | 0.036 | 0.042 | 0.044 | 0.042 | 0.036 | 0.026 | 0.014 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. ↓ | 0.000      | 0.004 | 0.008 | 0.011 | 0.013 | 0.014 | 0.013 | 0.011 | 0.008 | 0.004 | 0.000 |
| FINAL CAMBER ↑                          | 0          | 1/16" | 3/16" | 1/4"  | 5/16" | 5/16" | 5/16" | 1/4"  | 3/16" | 1/16" | 0     |

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

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS  |            |       |       |       |       |       |       |       |       |       |       |
|---|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0.6" Ø LOW RELAXATION STRANDS           | SPAN C     |       |       |       |       |       |       |       |       |       |       |
|   | GIRDER CG1 |       |       |       |       |       |       |       |       |       |       |
| TENTH POINTS                            | BRG.       | 0.10  | 0.20  | 0.30  | 0.40  | 0.50  | 0.60  | 0.70  | 0.80  | 0.90  | BRG.  |
| CAMBER (GIRDER ALONE IN PLACE) ↑        | 0.000      | 0.016 | 0.029 | 0.040 | 0.047 | 0.049 | 0.047 | 0.040 | 0.029 | 0.016 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. ↓ | 0.000      | 0.006 | 0.013 | 0.017 | 0.020 | 0.021 | 0.020 | 0.017 | 0.013 | 0.006 | 0.000 |
| FINAL CAMBER ↑                          | 0          | 1/16" | 3/16" | 1/4"  | 5/16" | 5/16" | 5/16" | 1/4"  | 3/16" | 1/16" | 0     |

| GIRDERS CG2 AND CG3                     |            |       |       |       |       |       |       |       |       |       |       |
|---|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0.6" Ø LOW RELAXATION STRANDS           | SPAN C     |       |       |       |       |       |       |       |       |       |       |
|   | GIRDER CG1 |       |       |       |       |       |       |       |       |       |       |
| TENTH POINTS                            | BRG.       | 0.10  | 0.20  | 0.30  | 0.40  | 0.50  | 0.60  | 0.70  | 0.80  | 0.90  | BRG.  |
| CAMBER (GIRDER ALONE IN PLACE) ↑        | 0.000      | 0.016 | 0.029 | 0.040 | 0.047 | 0.049 | 0.047 | 0.040 | 0.029 | 0.016 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. ↓ | 0.000      | 0.005 | 0.009 | 0.013 | 0.015 | 0.016 | 0.015 | 0.012 | 0.009 | 0.005 | 0.000 |
| FINAL CAMBER ↑                          | 0          | 1/8"  | 3/16" | 5/16" | 3/8"  | 3/8"  | 3/8"  | 5/16" | 3/16" | 1/8"  | 0     |

| GIRDER CG4                              |            |       |       |       |       |       |       |       |       |       |       |
|---|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0.6" Ø LOW RELAXATION STRANDS           | SPAN C     |       |       |       |       |       |       |       |       |       |       |
|   | GIRDER CG1 |       |       |       |       |       |       |       |       |       |       |
| TENTH POINTS                            | BRG.       | 0.10  | 0.20  | 0.30  | 0.40  | 0.50  | 0.60  | 0.70  | 0.80  | 0.90  | BRG.  |
| CAMBER (GIRDER ALONE IN PLACE) ↑        | 0.000      | 0.016 | 0.029 | 0.040 | 0.047 | 0.049 | 0.047 | 0.040 | 0.029 | 0.016 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. ↓ | 0.000      | 0.004 | 0.008 | 0.011 | 0.013 | 0.014 | 0.013 | 0.011 | 0.008 | 0.004 | 0.000 |
| FINAL CAMBER ↑                          | 0          | 1/8"  | 1/4"  | 5/16" | 3/8"  | 3/8"  | 3/8"  | 5/16" | 1/4"  | 1/8"  | 0     |

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

| DEAD LOAD DEFLECTION TABLE FOR GIRDERS  |            |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|---|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0.6" Ø LOW RELAXATION STRANDS           | SPAN B     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|   | GIRDER BG1 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| TWENTIETH POINTS                        | BRG.       | 0.05  | 0.10  | 0.15  | 0.20  | 0.25  | 0.30  | 0.35  | 0.40  | 0.45  | 0.50  | 0.55  | 0.60  | 0.65  | 0.70  | 0.75  | 0.80  | 0.85  | 0.90  | 0.95  | BRG.  |
| CAMBER (GIRDER ALONE IN PLACE) ↑        | 0.000      | 0.038 | 0.076 | 0.111 | 0.144 | 0.172 | 0.196 | 0.216 | 0.230 | 0.239 | 0.242 | 0.239 | 0.230 | 0.216 | 0.196 | 0.172 | 0.144 | 0.111 | 0.076 | 0.038 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. ↓ | 0.000      | 0.029 | 0.058 | 0.085 | 0.112 | 0.133 | 0.154 | 0.168 | 0.181 | 0.186 | 0.190 | 0.186 | 0.181 | 0.168 | 0.154 | 0.133 | 0.112 | 0.085 | 0.058 | 0.029 | 0.000 |
| FINAL CAMBER ↑                          | 0          | 1/16" | 3/16" | 1/4"  | 3/8"  | 7/16" | 1/2"  | 9/16" | 5/8"  | 9/16" | 5/8"  | 9/16" | 5/8"  | 9/16" | 1/2"  | 7/16" | 3/8"  | 1/4"  | 3/16" | 1/16" | 0     |

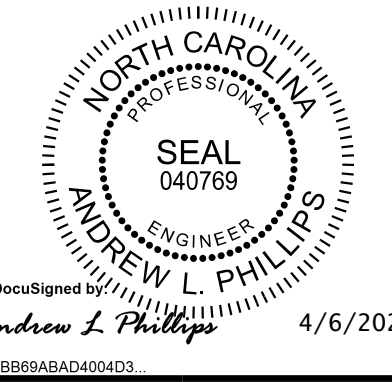
| GIRDERS BG2 AND BG3                     |            |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|---|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0.6" Ø LOW RELAXATION STRANDS           | SPAN B     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|   | GIRDER BG1 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| TWENTIETH POINTS                        | BRG.       | 0.05  | 0.10  | 0.15  | 0.20  | 0.25  | 0.30  | 0.35  | 0.40  | 0.45  | 0.50  | 0.55  | 0.60  | 0.65  | 0.70  | 0.75  | 0.80  | 0.85  | 0.90  | 0.95  | BRG.  |
| CAMBER (GIRDER ALONE IN PLACE) ↑        | 0.000      | 0.038 | 0.076 | 0.111 | 0.144 | 0.172 | 0.196 | 0.216 | 0.230 | 0.239 | 0.242 | 0.239 | 0.230 | 0.216 | 0.196 | 0.172 | 0.144 | 0.111 | 0.076 | 0.038 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. ↓ | 0.000      | 0.033 | 0.066 | 0.097 | 0.127 | 0.152 | 0.176 | 0.191 | 0.206 | 0.212 | 0.217 | 0.212 | 0.206 | 0.191 | 0.176 | 0.152 | 0.127 | 0.097 | 0.066 | 0.033 | 0.000 |
| FINAL CAMBER ↑                          | 0          | 0"    | 1/16" | 1/8"  | 3/16" | 3/16" | 3/16" | 1/4"  | 1/4"  | 5/16" | 1/4"  | 1/4"  | 1/4"  | 3/16" | 3/16" | 3/16" | 1/8"  | 1/16" | 0"    | 0     |       |

| GIRDER BG4                              |            |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|---|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 0.6" Ø LOW RELAXATION STRANDS           | SPAN B     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|   | GIRDER BG1 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| TWENTIETH POINTS                        | BRG.       | 0.05  | 0.10  | 0.15  | 0.20  | 0.25  | 0.30  | 0.35  | 0.40  | 0.45  | 0.50  | 0.55  | 0.60  | 0.65  | 0.70  | 0.75  | 0.80  | 0.85  | 0.90  | 0.95  | BRG.  |
| CAMBER (GIRDER ALONE IN PLACE) ↑        | 0.000      | 0.038 | 0.076 | 0.111 | 0.144 | 0.172 | 0.196 | 0.216 | 0.230 | 0.239 | 0.242 | 0.239 | 0.230 | 0.216 | 0.196 | 0.172 | 0.144 | 0.111 | 0.076 | 0.038 | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. ↓ | 0.000      | 0.033 | 0.066 | 0.097 | 0.127 | 0.151 | 0.176 | 0.191 | 0.206 | 0.211 | 0.217 | 0.211 | 0.206 | 0.191 | 0.176 | 0.151 | 0.127 | 0.097 | 0.066 | 0.033 | 0.000 |
| FINAL CAMBER ↑                          | 0          | 0"    | 1/16" | 1/8"  | 3/16" | 3/16" | 3/16" | 1/4"  | 1/4"  | 5/16" | 1/4"  | 1/4"  | 1/4"  | 3/16" | 3/16" | 3/16" | 1/8"  | 1/16" | 0"    | 0     |       |

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

PROJECT NO. B-5301  
PITT COUNTY  
STATION: 25+98.05 -L-



Andrew L. Phillips  
4/6/2020  
2880ABAD00403

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

DRAWN BY: D. D. LOWERY DATE: 2/20  
CHECKED BY: C. I. POOLE DATE: 2/20  
DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 2/20

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

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-20         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 55           |

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

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**NOTES**

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

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

**ALUMINUM RAILS**

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND 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.

**GALVANIZED STEEL RAILS**

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

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

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

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

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.

**GENERAL NOTES**

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

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE "END OF RAIL DETAILS FOR TWO BAR METAL RAIL" SHEET.

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

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

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

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

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

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

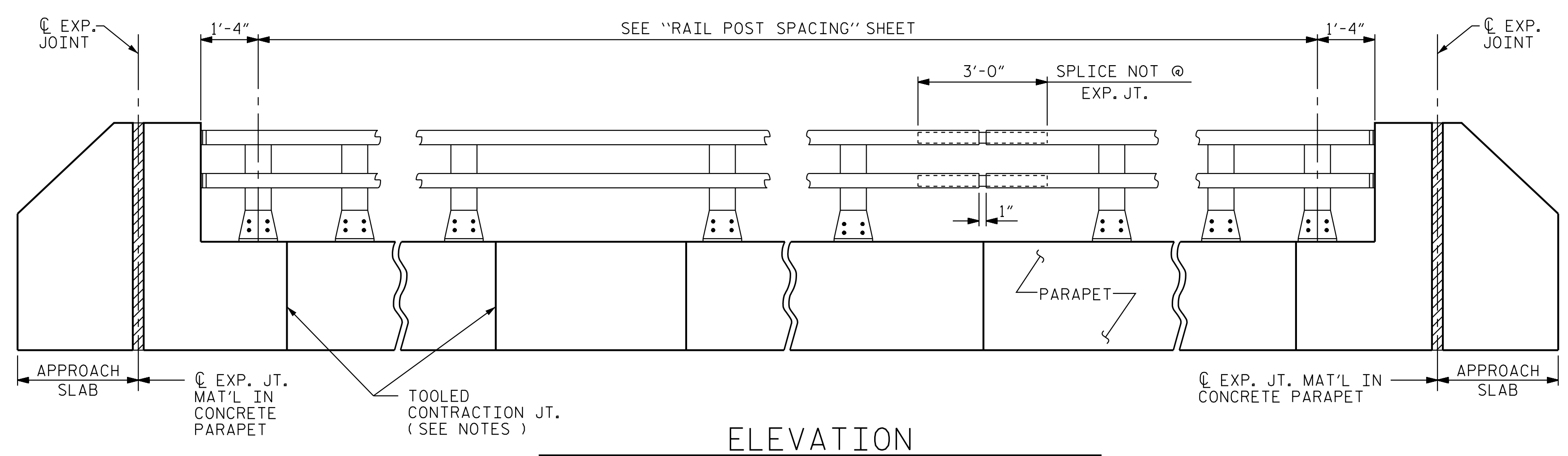
SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

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

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

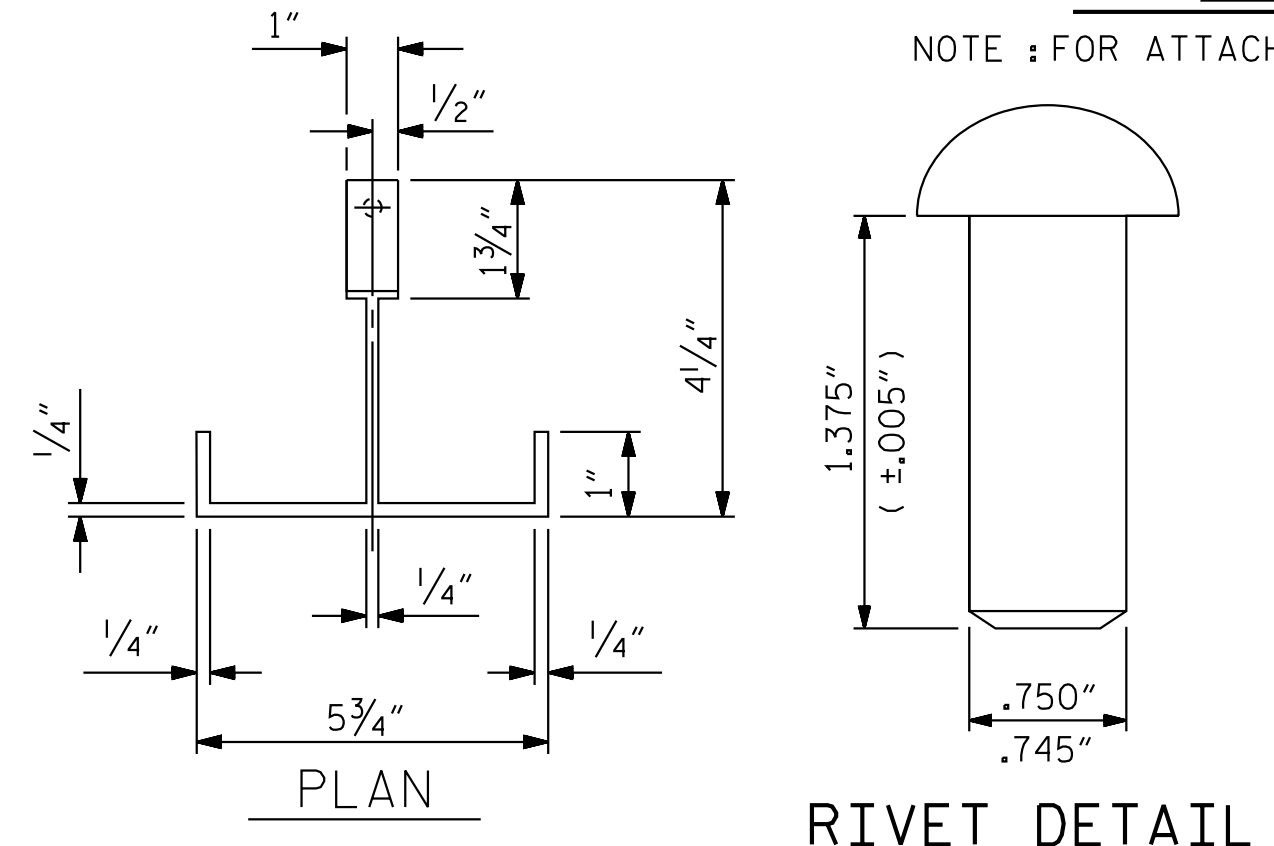
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT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

PAY LENGTH = 546.8 LIN. FT.



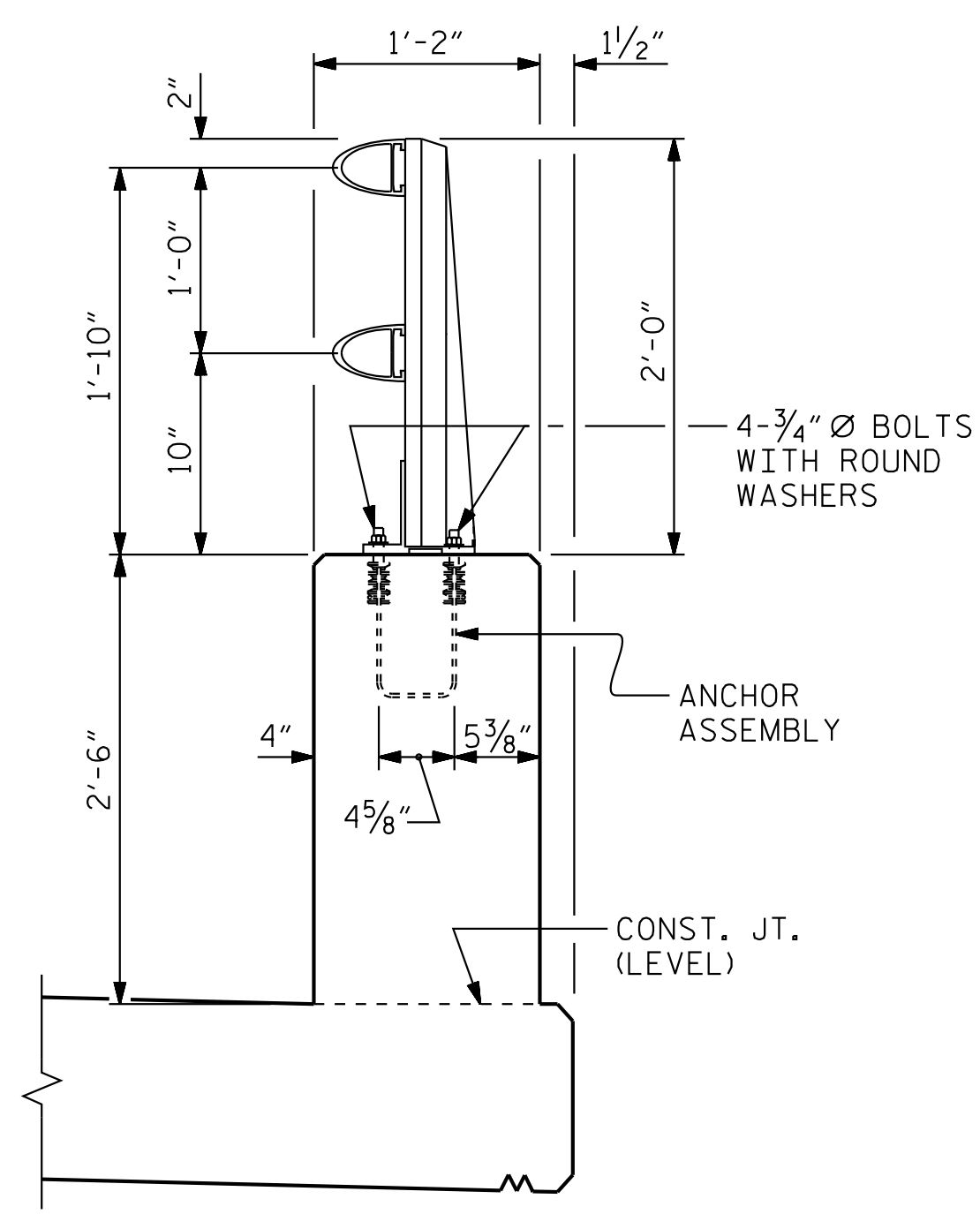
**ELEVATION**

NOTE: FOR ATTACHMENT OF METAL RAIL TO END POST, SEE "END OF RAIL DETAILS" SHEET.

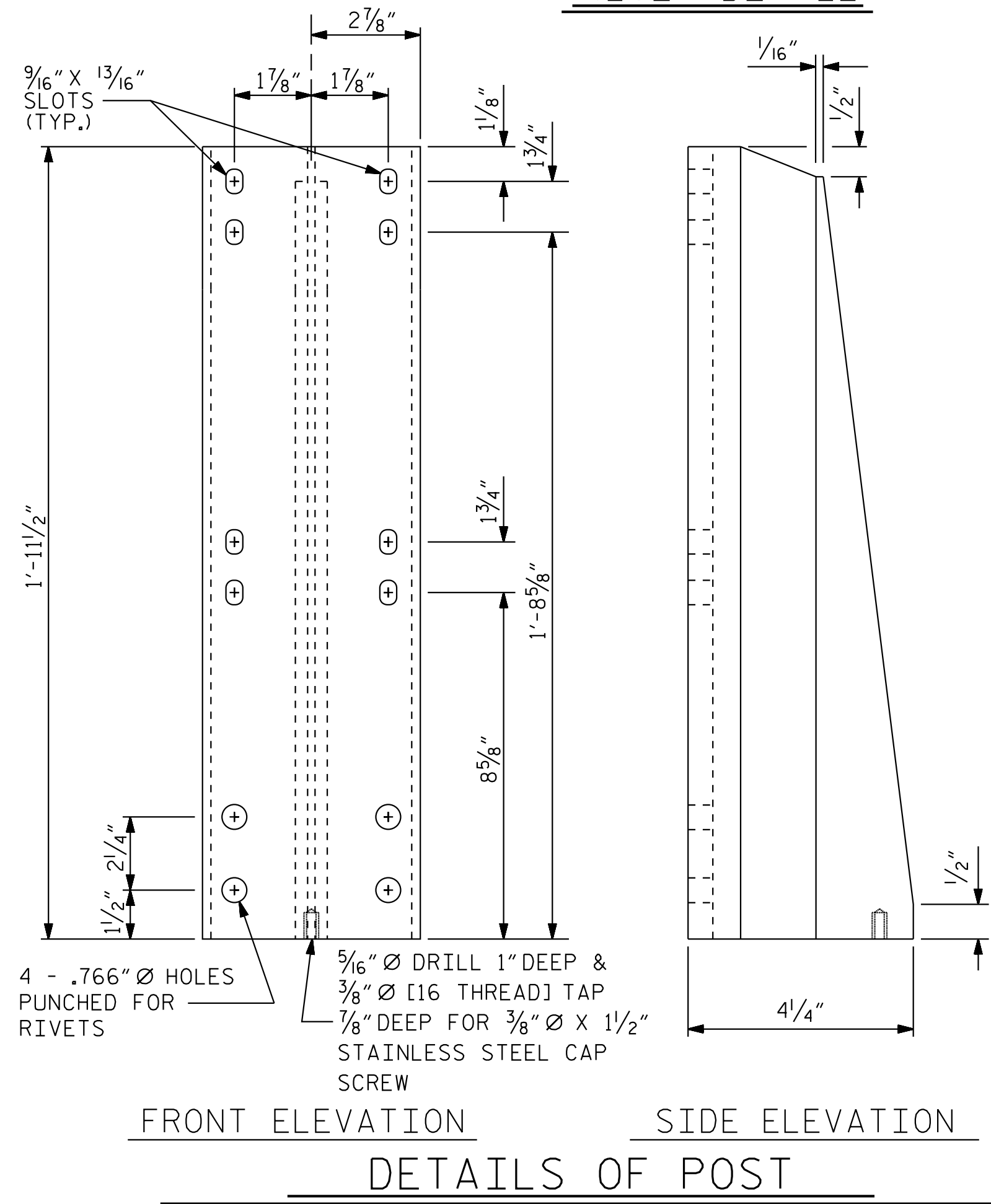


**PLAN**

**RIVET DETAIL**



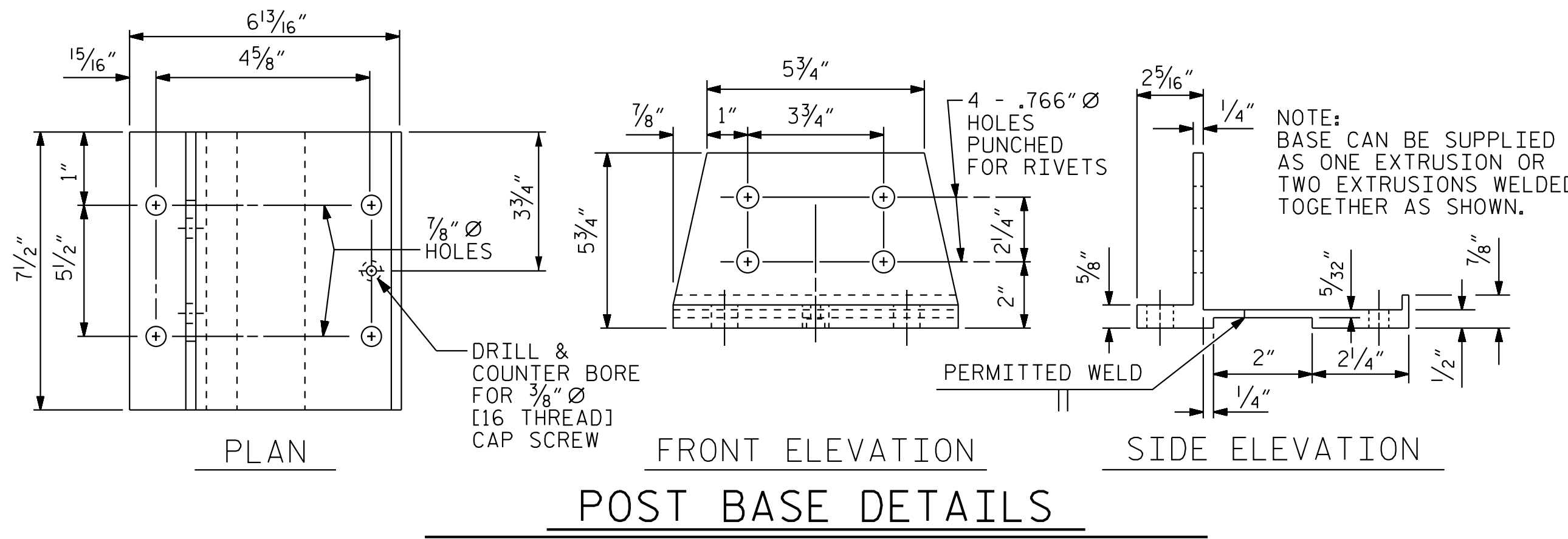
**SECTION THRU PARAPET AND RAIL**



**FRONT ELEVATION**

**SIDE ELEVATION**

**DETAILS OF POST**



**PLAN**

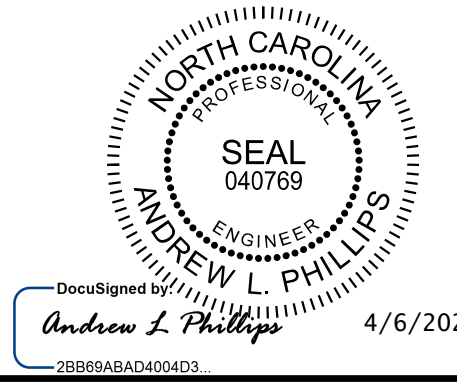
**FRONT ELEVATION**

**SIDE ELEVATION**

**POST BASE DETAILS**

PROJECT NO. B-5301  
 PITT COUNTY  
 STATION: 25+98.05 -L-

SHEET 1 OF 4



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

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-22         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 55           |

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|                            |                     |
|----------------------------|---------------------|
| ASSEMBLED BY: D. D. LOWERY | DATE: 02/20         |
| CHECKED BY: C. T. POOLE    | DATE: 02/20         |
| DRAWN BY: EEM 6/94         | REV. 10/1/11 MAA/GM |
| CHECKED BY: RGW 6/94       | REV. 6/13 MAA/GM    |
|                            | REV. 12/17 MAA/THC  |



### NOTES

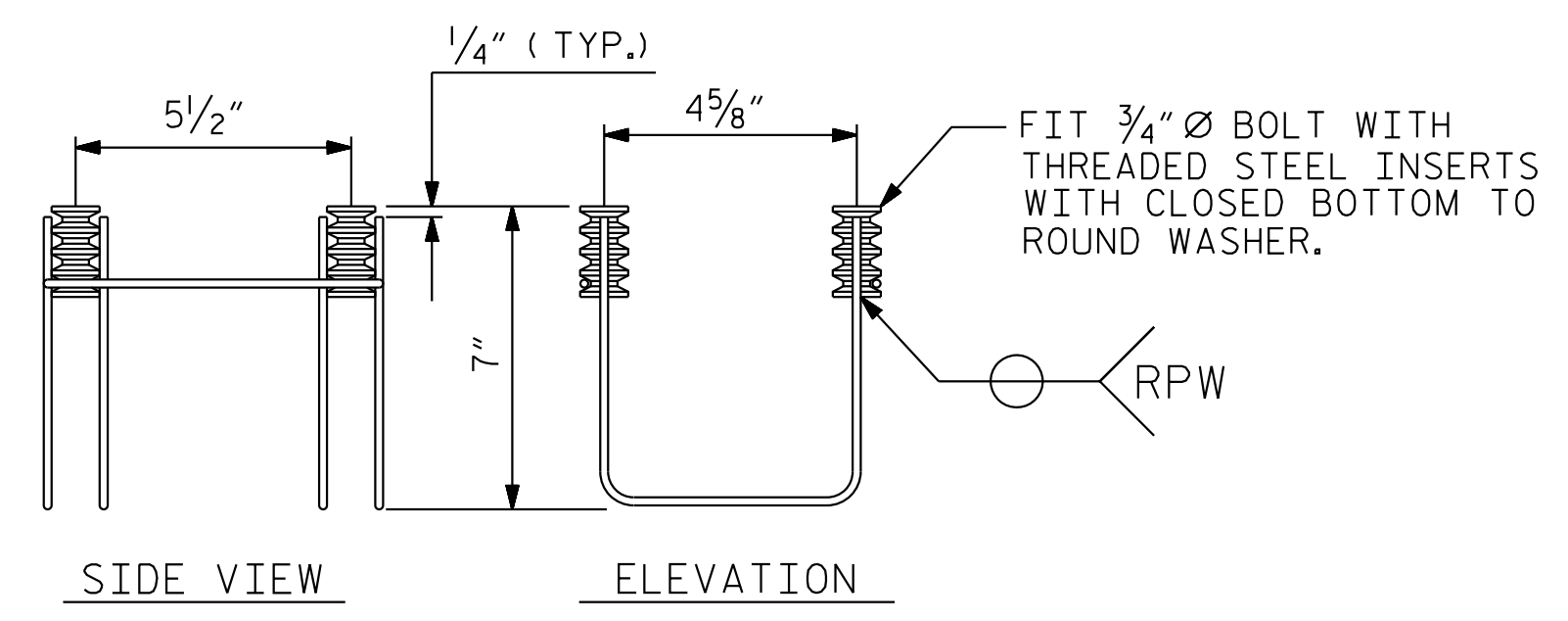
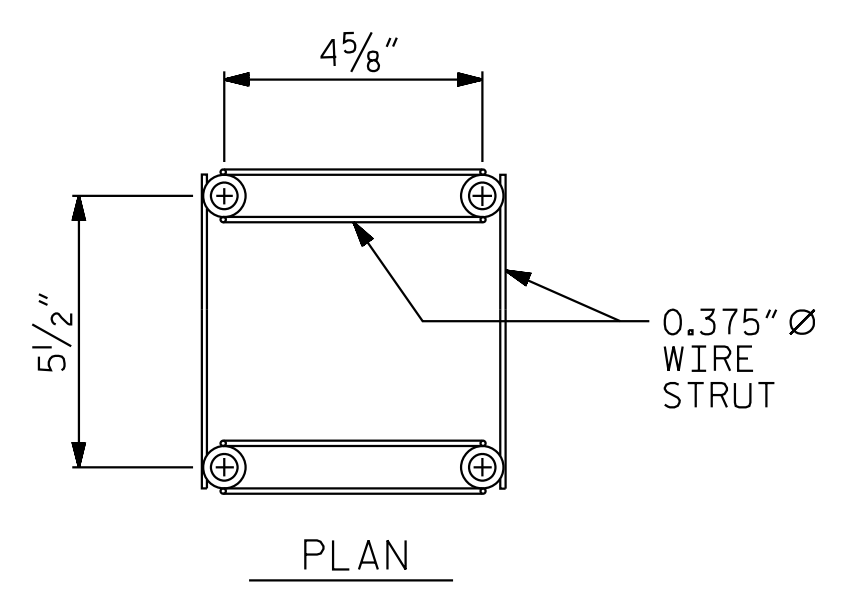
#### STRUCTURAL CONCRETE ANCHOR ASSEMBLY

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 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

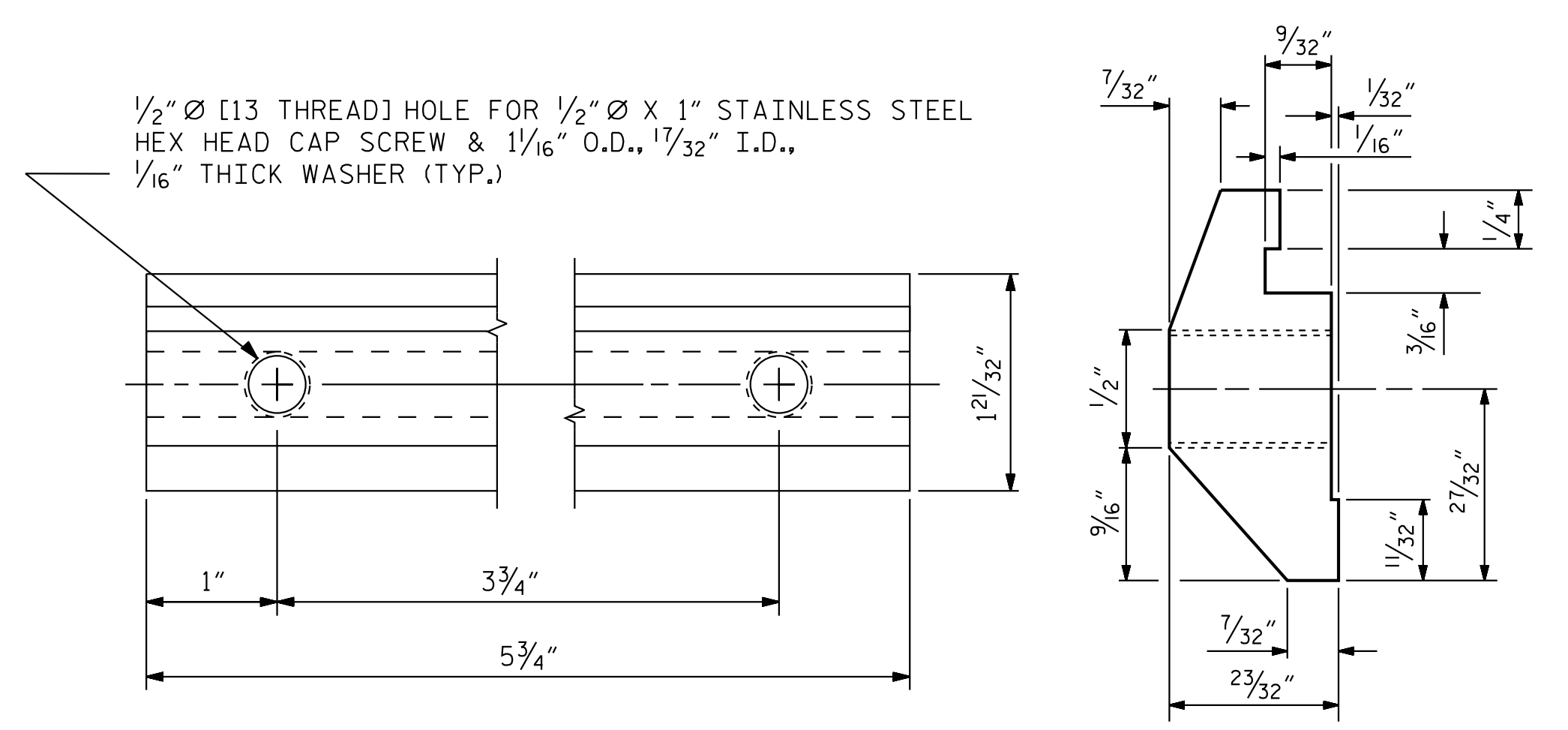
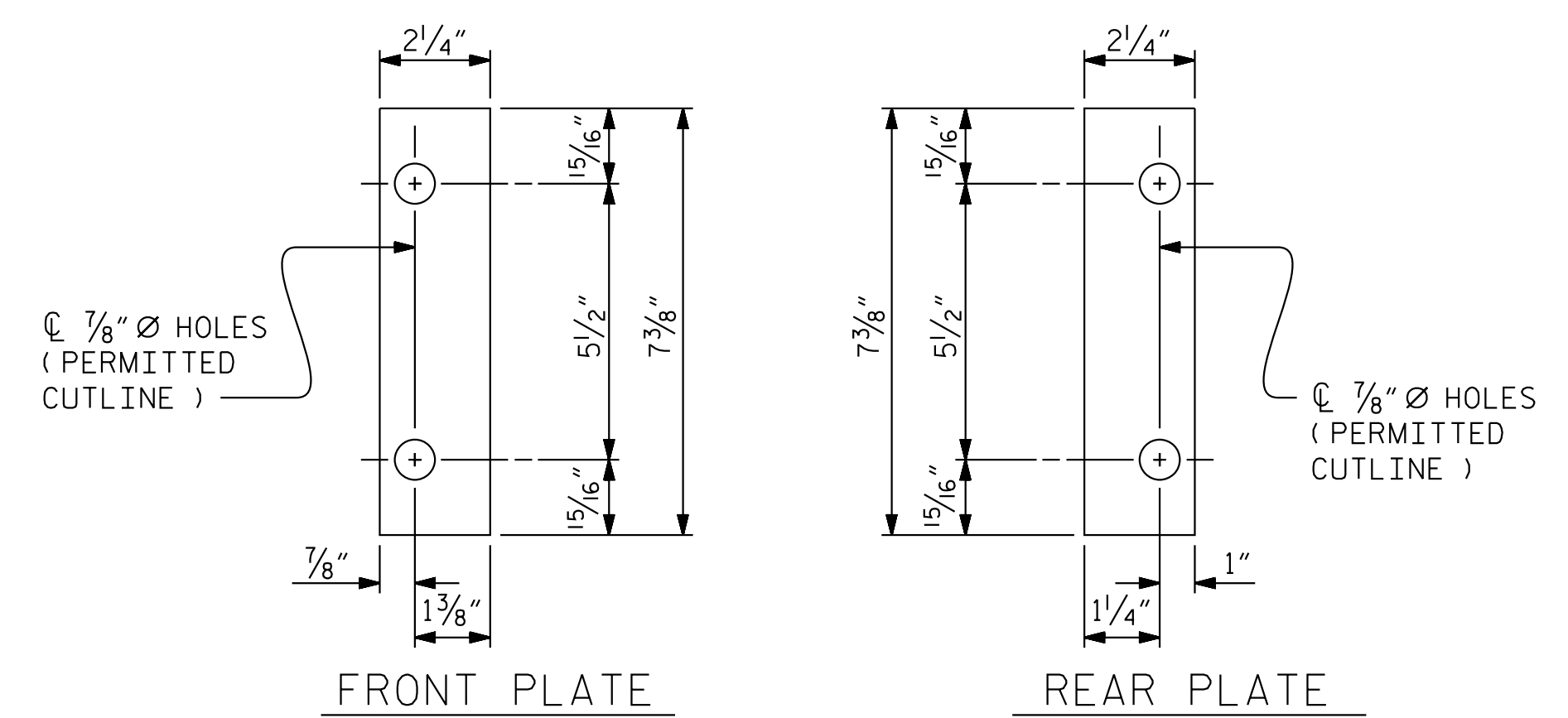
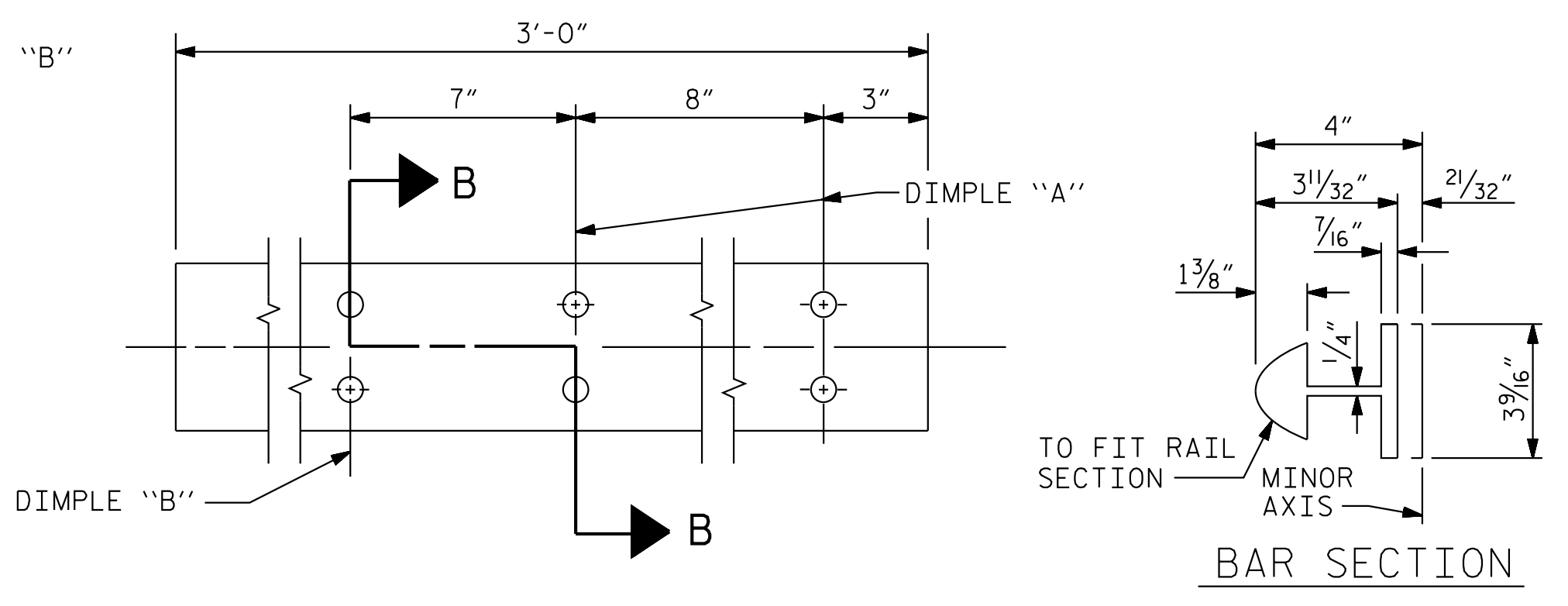
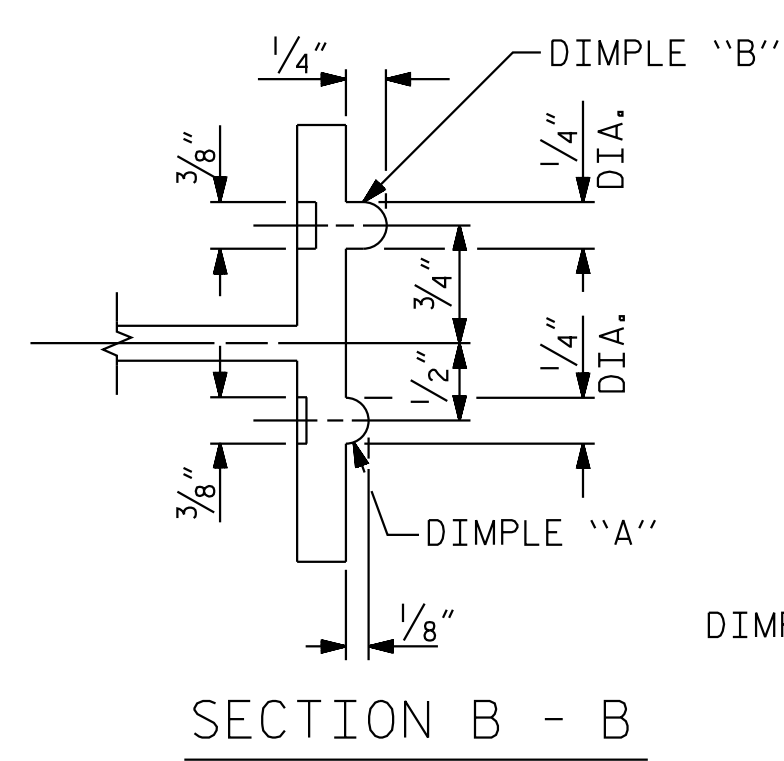
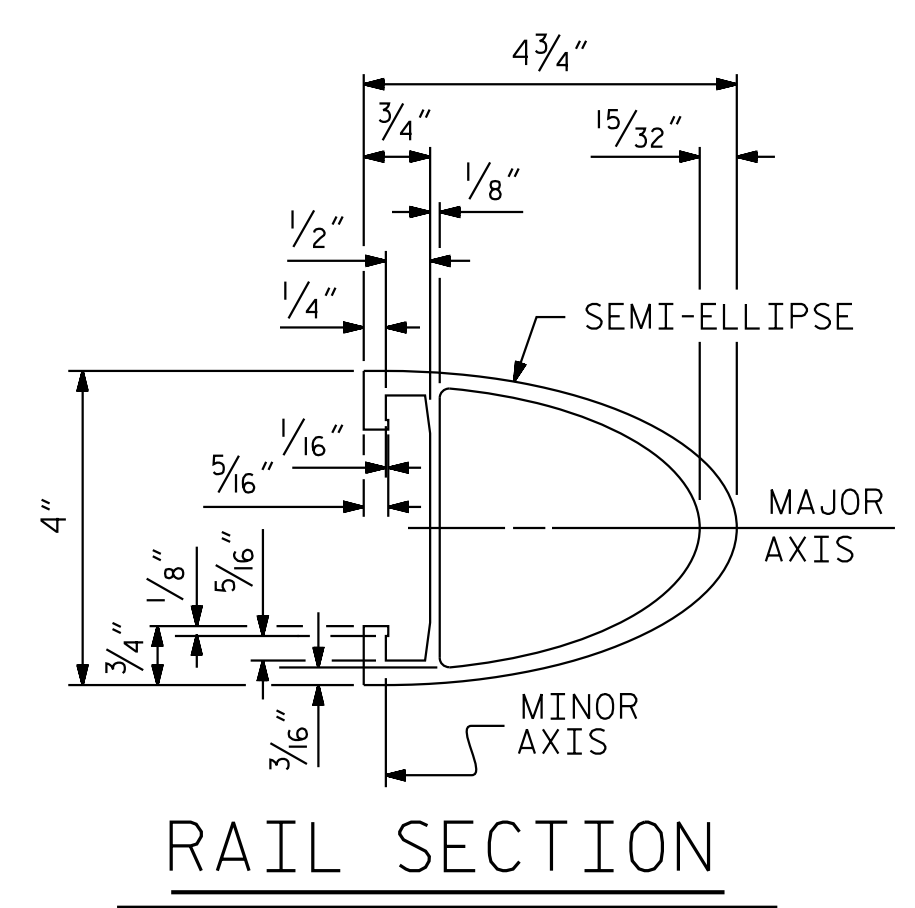
THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

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



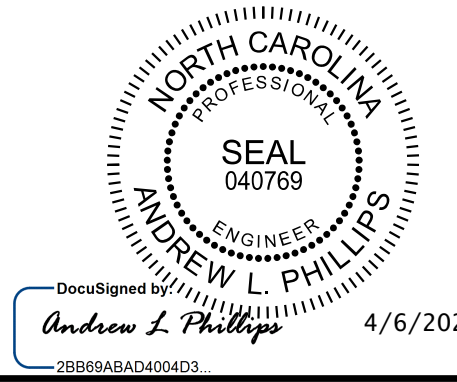
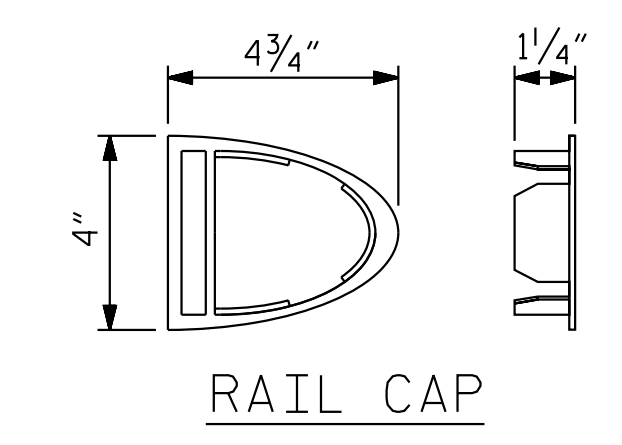
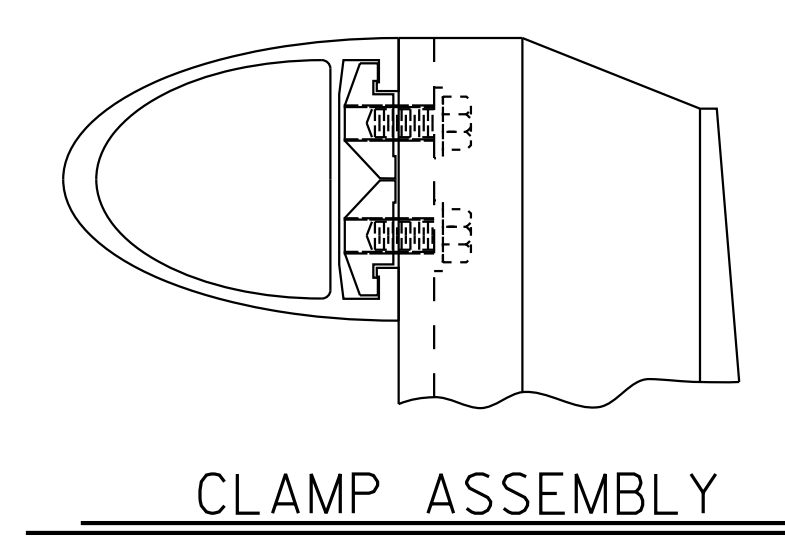
### 4-BOLT METAL RAIL ANCHOR ASSEMBLY

( 93 ASSEMBLIES REQUIRED )



### CLAMP BAR DETAIL

( 4 REQUIRED PER POST )



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PROJECT NO. B-5301  
PITT COUNTY  
 STATION: 25+98.05 -L-

SHEET 2 OF 4

|  |     |       |     |     |       |
|--|-----|-------|-----|-----|-------|
| STATE OF NORTH CAROLINA<br>DEPARTMENT OF TRANSPORTATION<br>RALEIGH |     |       |     |     |       |
| STANDARD   |     |       |     |     |       |
| 2 BAR METAL RAIL   |     |       |     |     |       |
| REVISIONS  |     |       |     |     |       |
| NO.  | BY: | DATE: | NO. | BY: | DATE: |
| 1  |     |       | 3   |     |       |
| 2  |     |       | 4   |     |       |

|              |  |
|--------------|--|
| SHEET NO.    |  |
| S-23         |  |
| TOTAL SHEETS |  |
| 55           |  |

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|                             |                     |
|-----------------------------|---------------------|
| ASSEMBLED BY : D. D. LOWERY | DATE : 02/20        |
| CHECKED BY : C. T. POOLE    | DATE : 02/20        |
| DRAWN BY : EEM 6/94         | REV. 5/1/06R KMM/GM |
| CHECKED BY : RGW 6/94       | REV. 10/1/11 MAA/GM |
|                             | REV. 12/17 MAA/THC  |

### 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

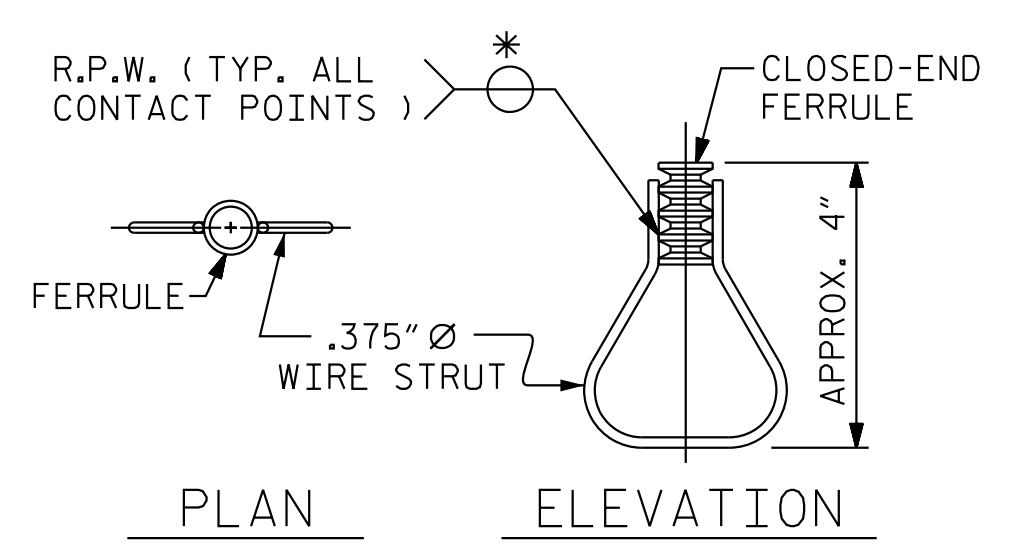
- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- A. 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
  - B. 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 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°F.
  - D. STANDARD CLAMP BARS ( SEE METAL RAIL SHEET ).
  - E. 1/2" 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 2 BAR METAL RAILS.

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

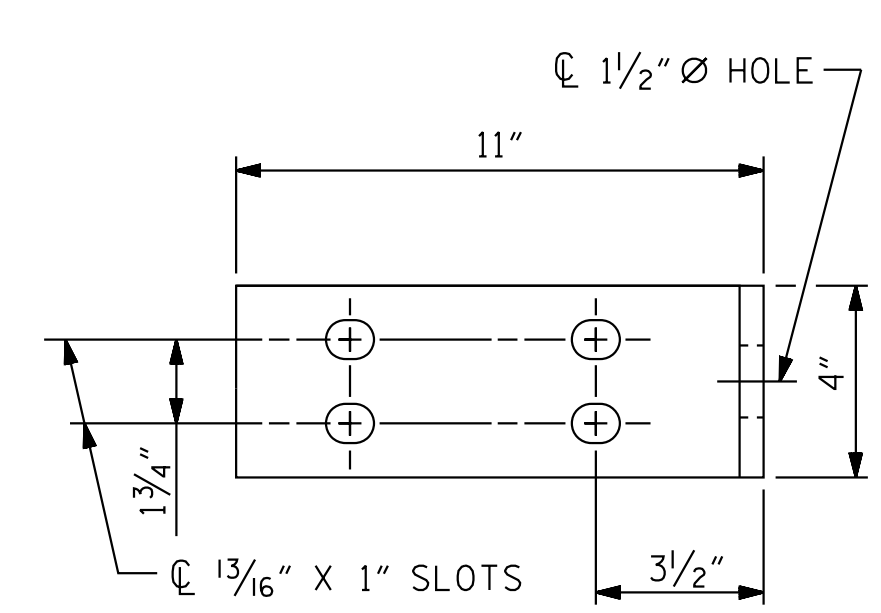
THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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.

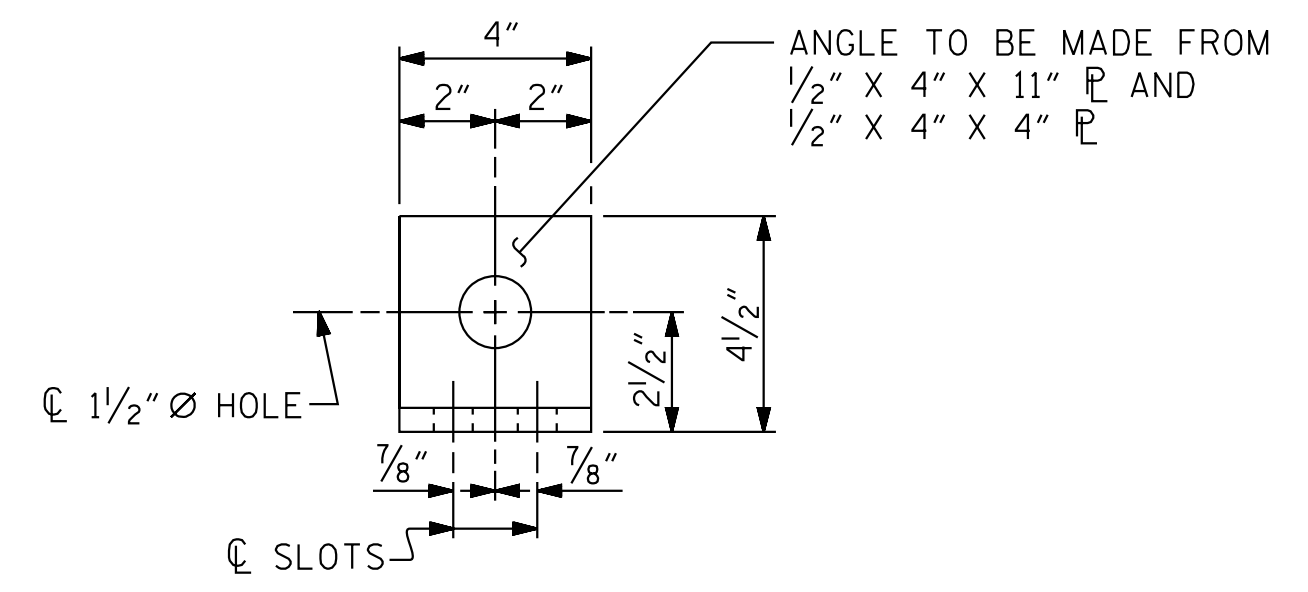


### STRUCTURAL CONCRETE INSERT

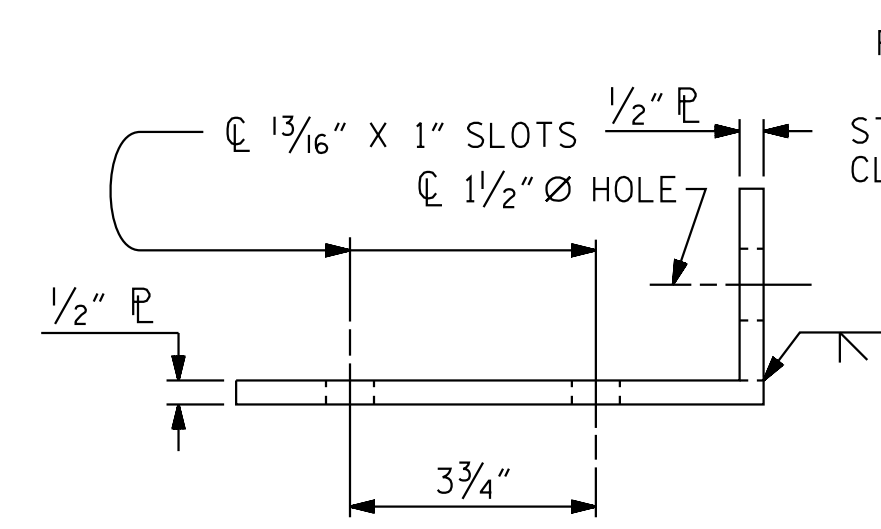
\* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.



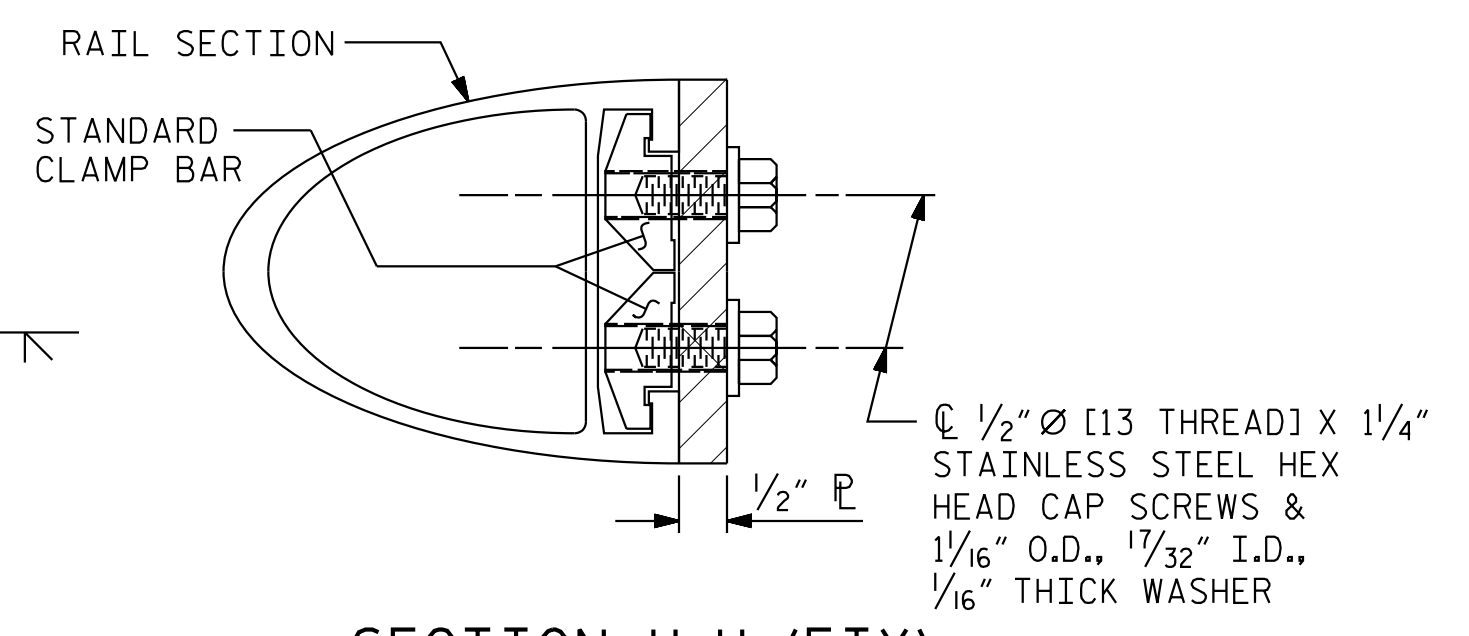
ELEVATION



END VIEW (FIX AND EXP.)



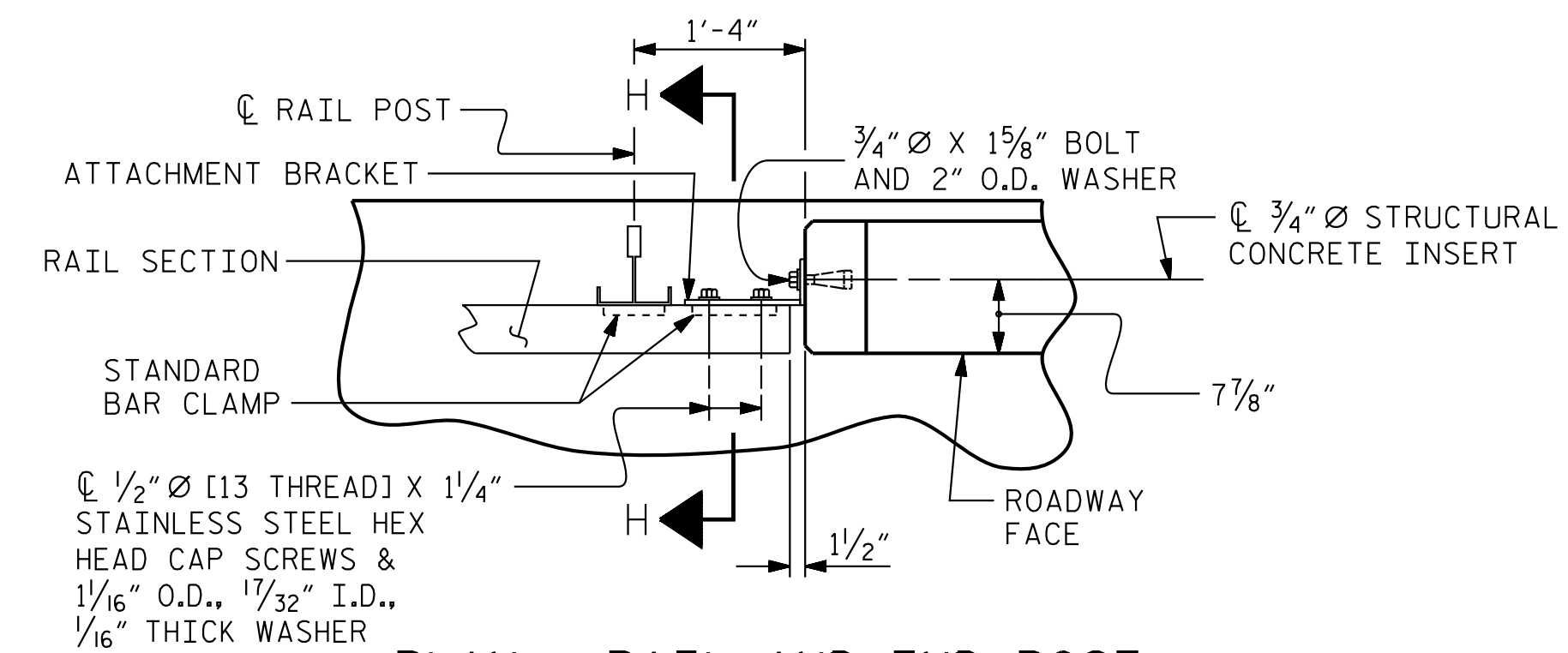
TOP VIEW



SECTION H-H (FIX)

FIXED

### DETAILS FOR ATTACHING METAL RAIL TO END POST

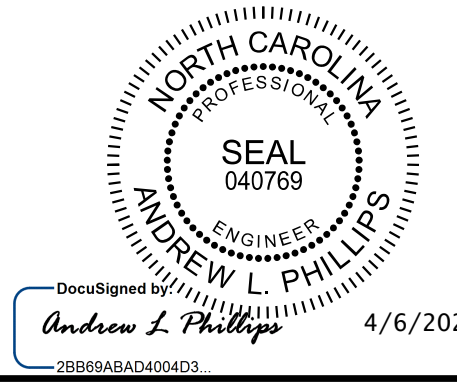


PLAN - RAIL AND END POST

PROJECT NO. B-5301  
PITT COUNTY  
 STATION: 25+98.05 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 END OF RAIL DETAILS  
 FOR TWO BAR METAL RAIL



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| 2         |     |       | 4   |     |       | 55           |

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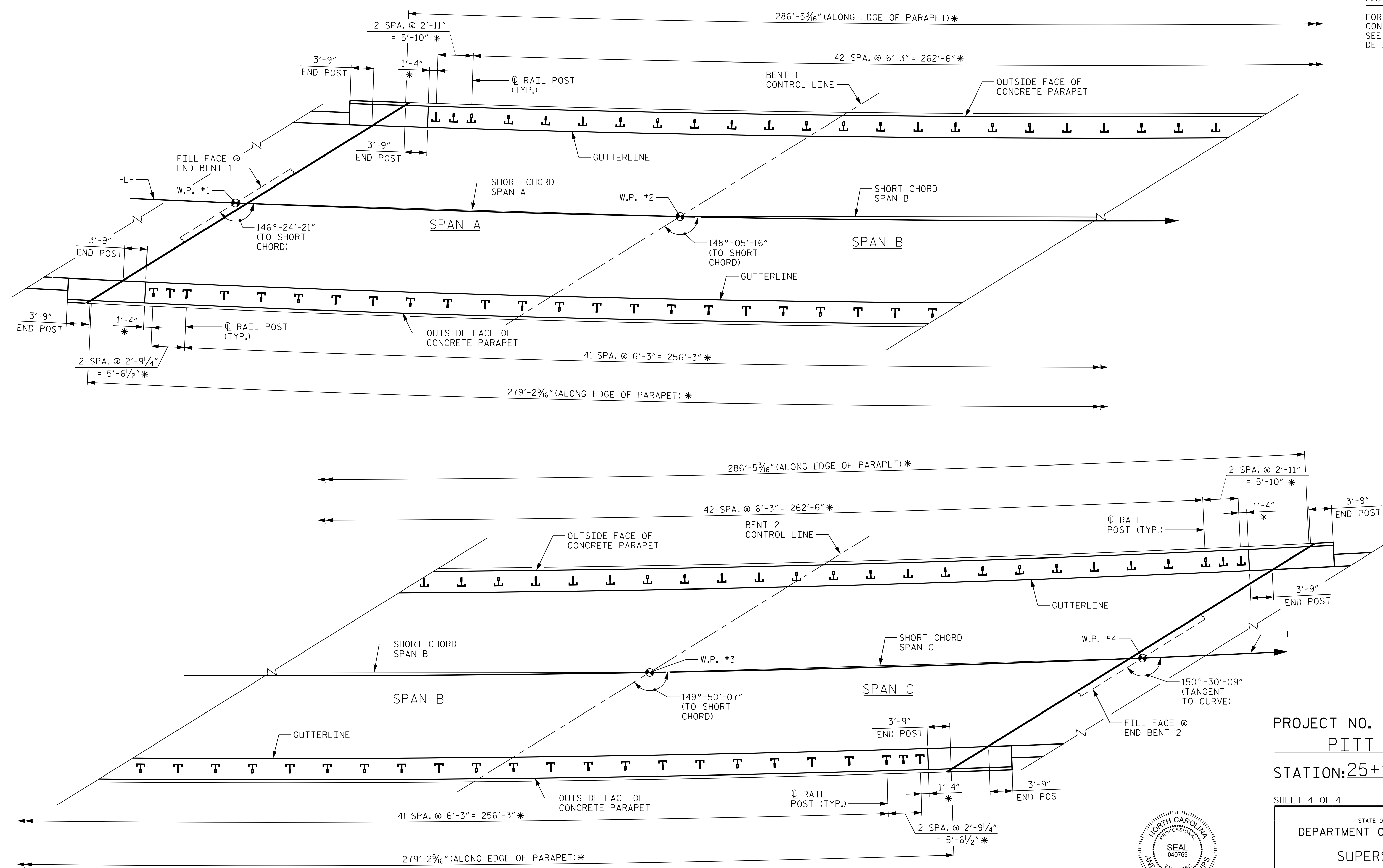
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|                             |                     |
|-----------------------------|---------------------|
| ASSEMBLED BY : D. D. LOWERY | DATE : 02/20        |
| CHECKED BY : C. T. POOLE    | DATE : 02/20        |
| DRAWN BY : FCJ 1/88         | REV. 5/1/06 TLA/GM  |
| CHECKED BY : CRK 3/89       | REV. 10/1/11 MAA/GM |
|                             | REV. 12/17 MAA/THC  |



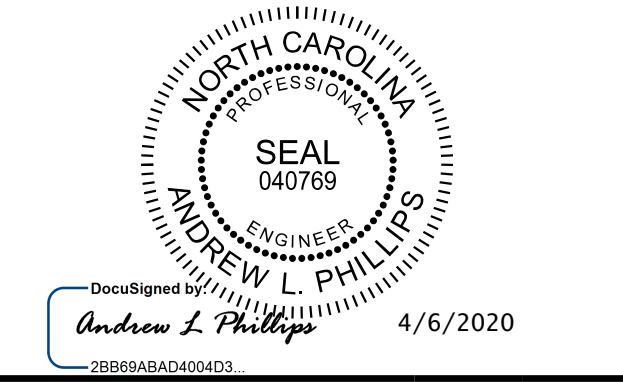
**NOTES:**  
 FOR 1/2" EXPANSION JOINT IN CONCRETE PARAPET SPACING, SEE "CONCRETE PARAPET DETAILS" SHEET.



**PLAN OF RAIL POST SPACING**  
 \* ARC DIMENSIONS MEASURED ALONG OUTSIDE EDGE OF PARAPET

PROJECT NO. B-5301  
PITT COUNTY  
 STATION: 25+98.05 -L-

SHEET 4 OF 4



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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 RAIL POST SPACING

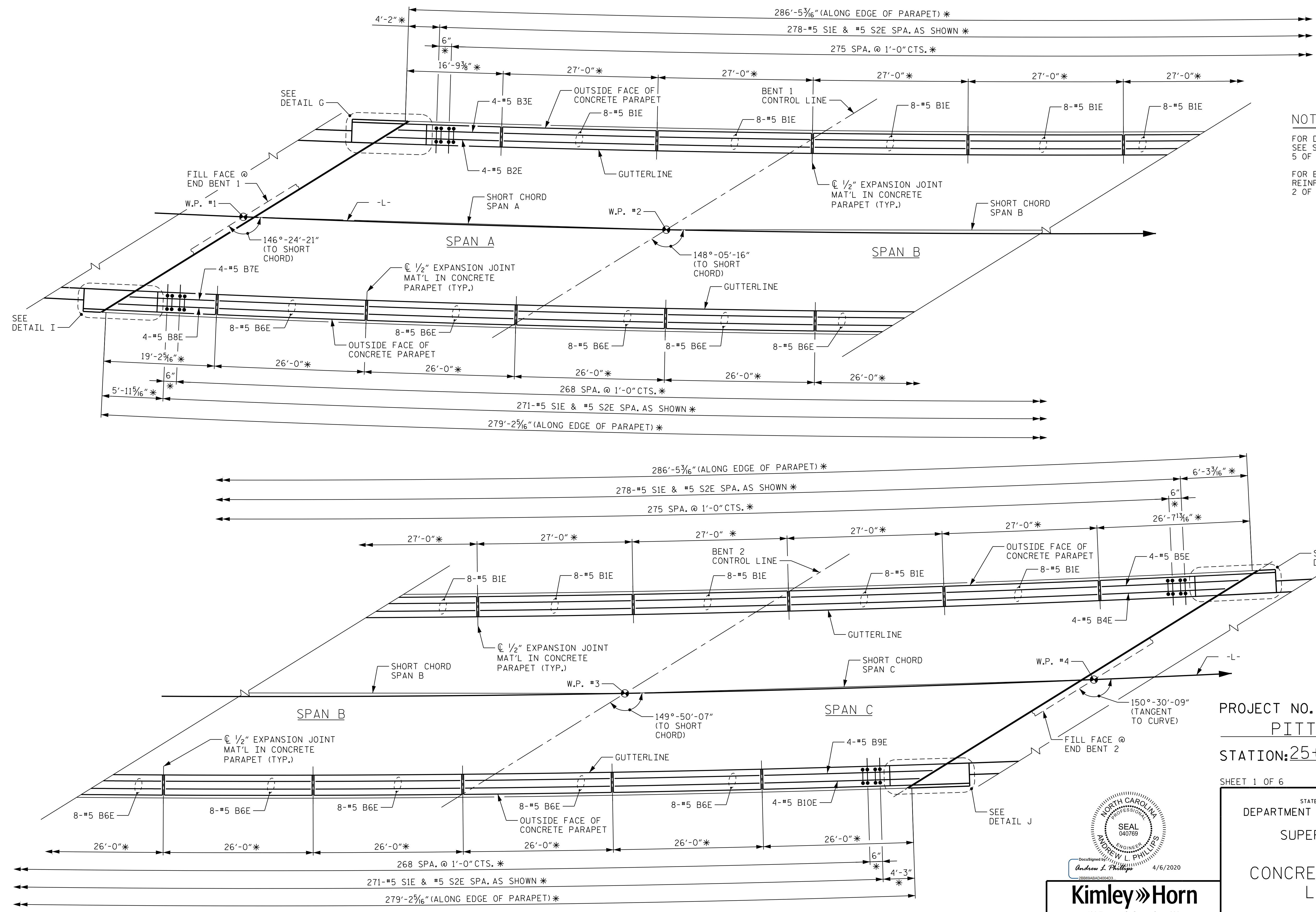
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| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 55           |

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 4/2/2020

DRAWN BY: D. D. LOWERY DATE: 2/20  
 CHECKED BY: C. I. POOLE DATE: 2/20  
 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 2/20

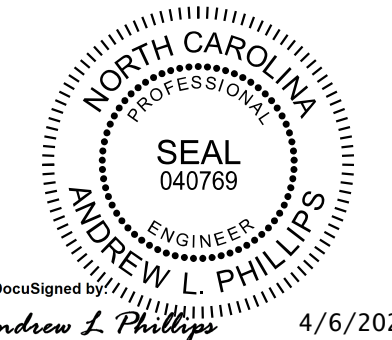
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**NOTES:**  
 FOR DETAILS G, H, I, J, SEE SHEETS 2 OF 6 THRU 5 OF 6.  
 FOR END POST & END PARAPET REINFORCING, SEE SHEETS 2 OF 6 THRU 5 OF 6.

PROJECT NO. B-5301  
 PITT COUNTY  
 STATION: 25+98.05 -L-

SHEET 1 OF 6



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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 CONCRETE PARAPET LAYOUT

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-26         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 55           |

**CONCRETE PARAPET LAYOUT**

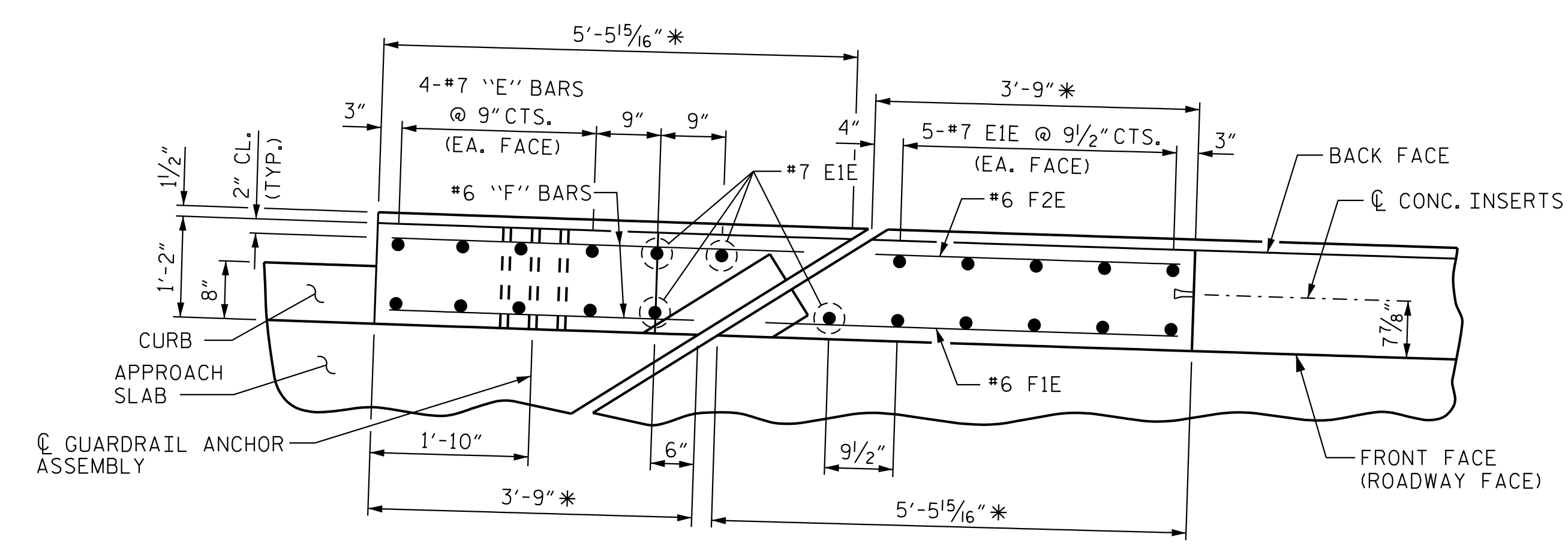
\* ARC DIMENSIONS MEASURED ALONG OUTSIDE EDGE OF PARAPET

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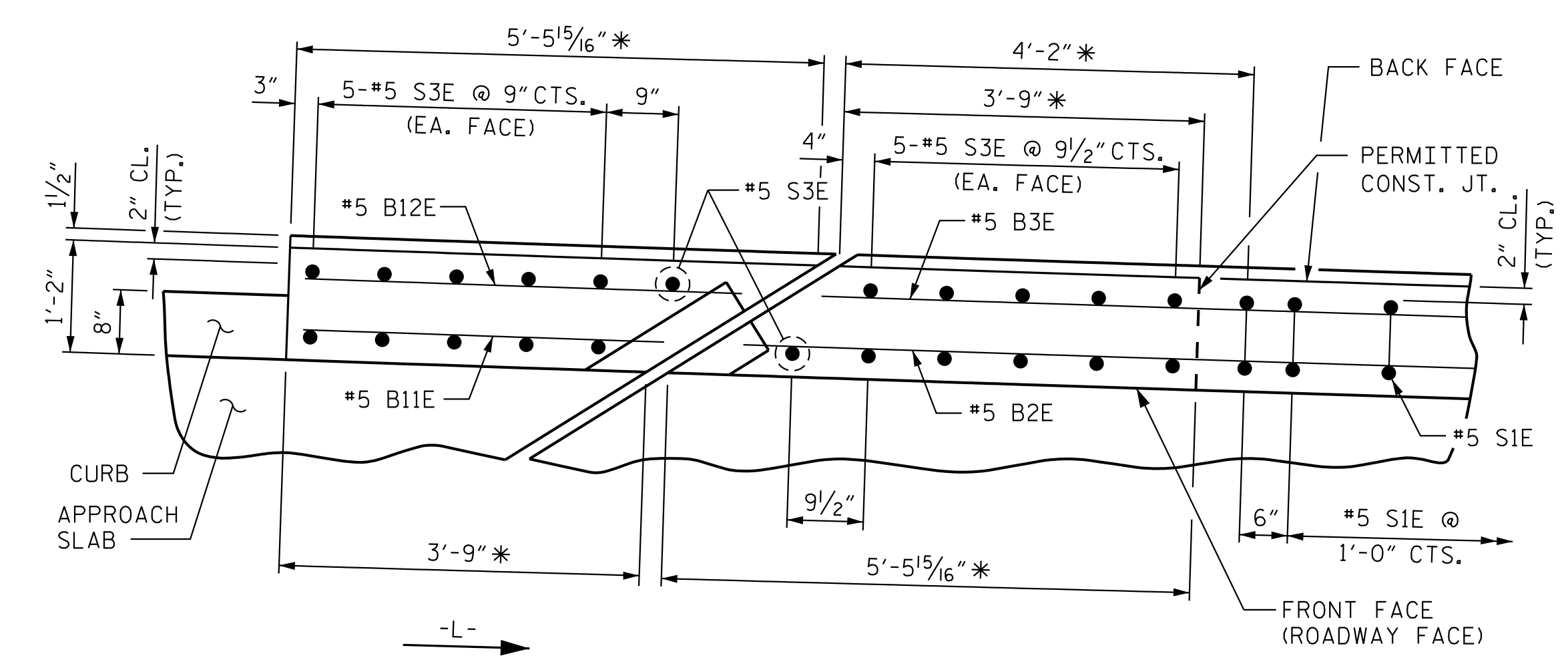
DRAWN BY: D. D. LOWERY DATE: 2/20  
 CHECKED BY: C. I. POOLE DATE: 2/20  
 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 2/20



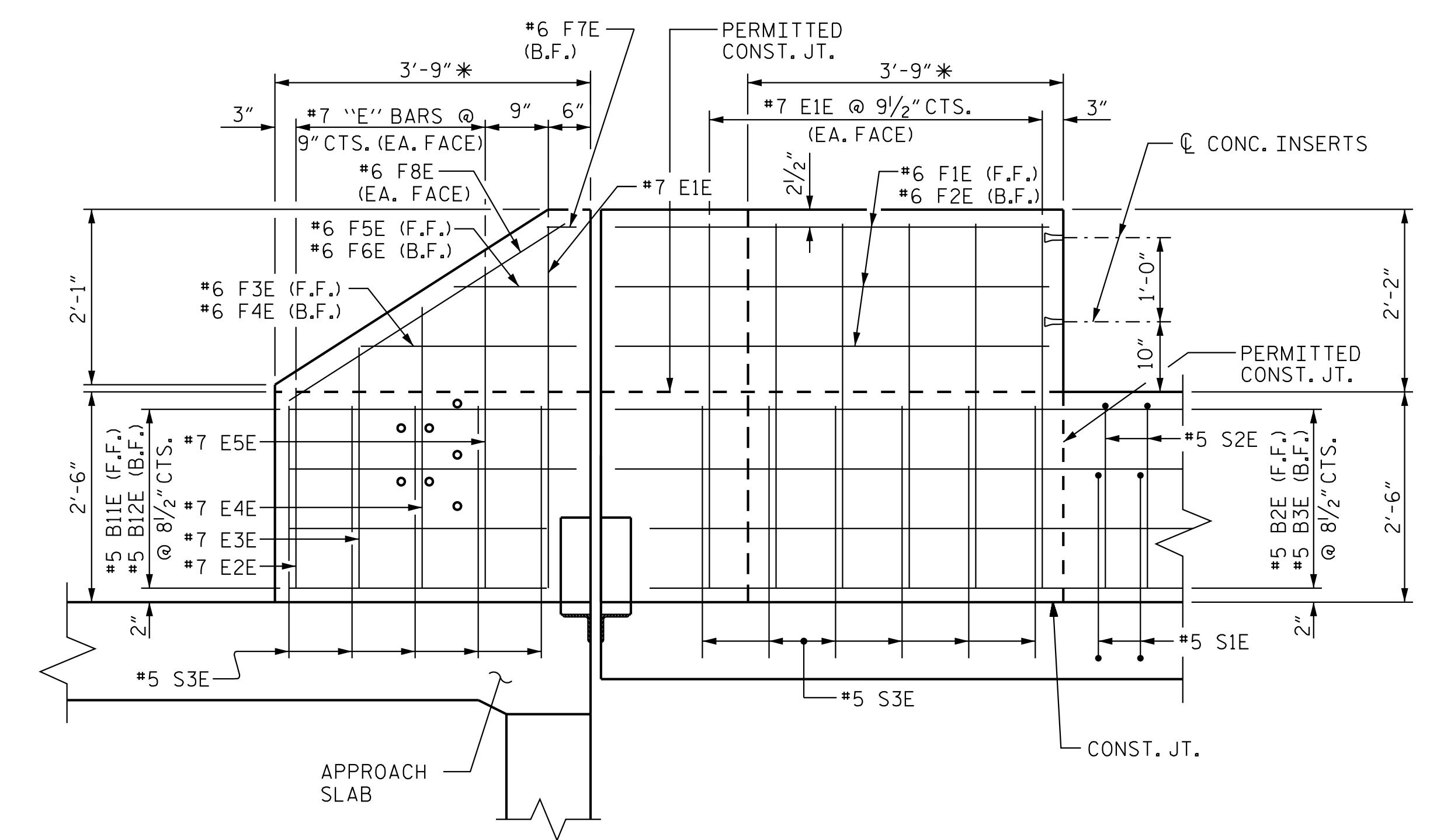
**NOTES:**  
 FOR NOTES & BILL OF MATERIAL, SEE SHEET 6 OF 6.  
 FOR SECTION THRU PARAPET AND END POST, SEE SHEET 6 OF 6.  
 \* ARC DIMENSION MEASURED ALONG EDGE OF PARAPET.



DETAIL G  
 PLAN OF END POST



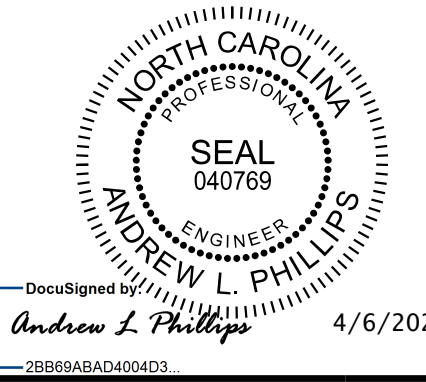
DETAIL G  
 PLAN OF END PARAPET



ELEVATION - DETAIL G  
 LOOKING AT FRONT FACE (ROADWAY FACE)  
 F.F. - FRONT FACE (ROADWAY FACE)  
 B.F. - BACK FACE

PROJECT NO. B-5301  
PITT COUNTY  
 STATION: 25+98.05 -L-

SHEET 2 OF 6



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 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 CONCRETE PARAPET  
 DETAILS

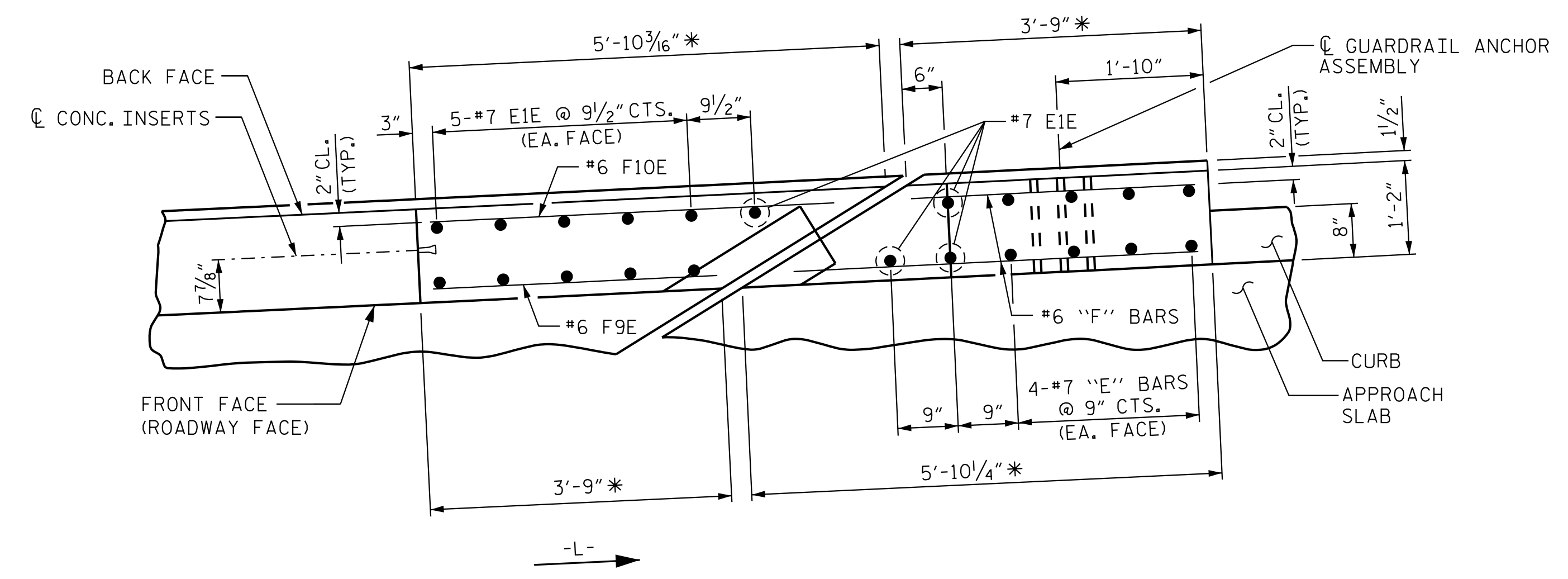
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|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-27         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 55           |

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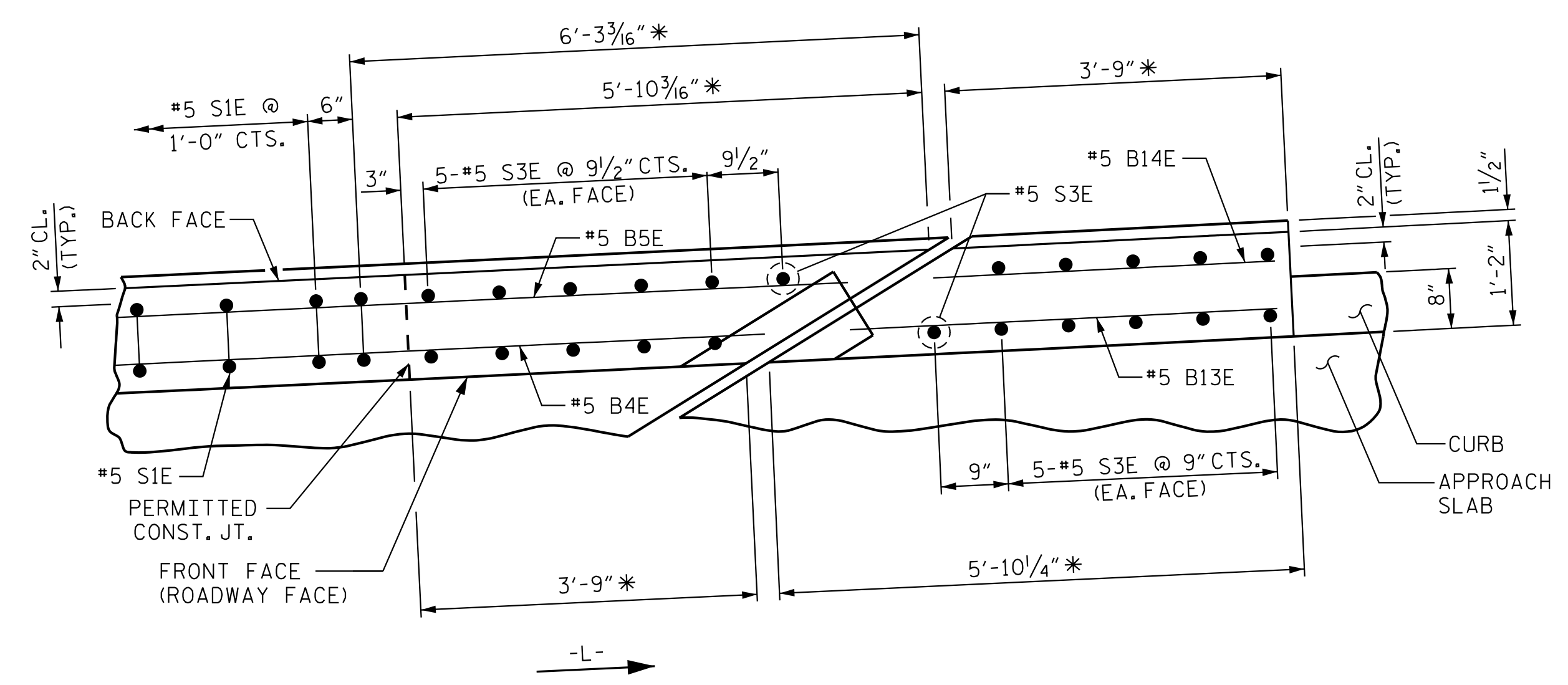
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 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 2/20

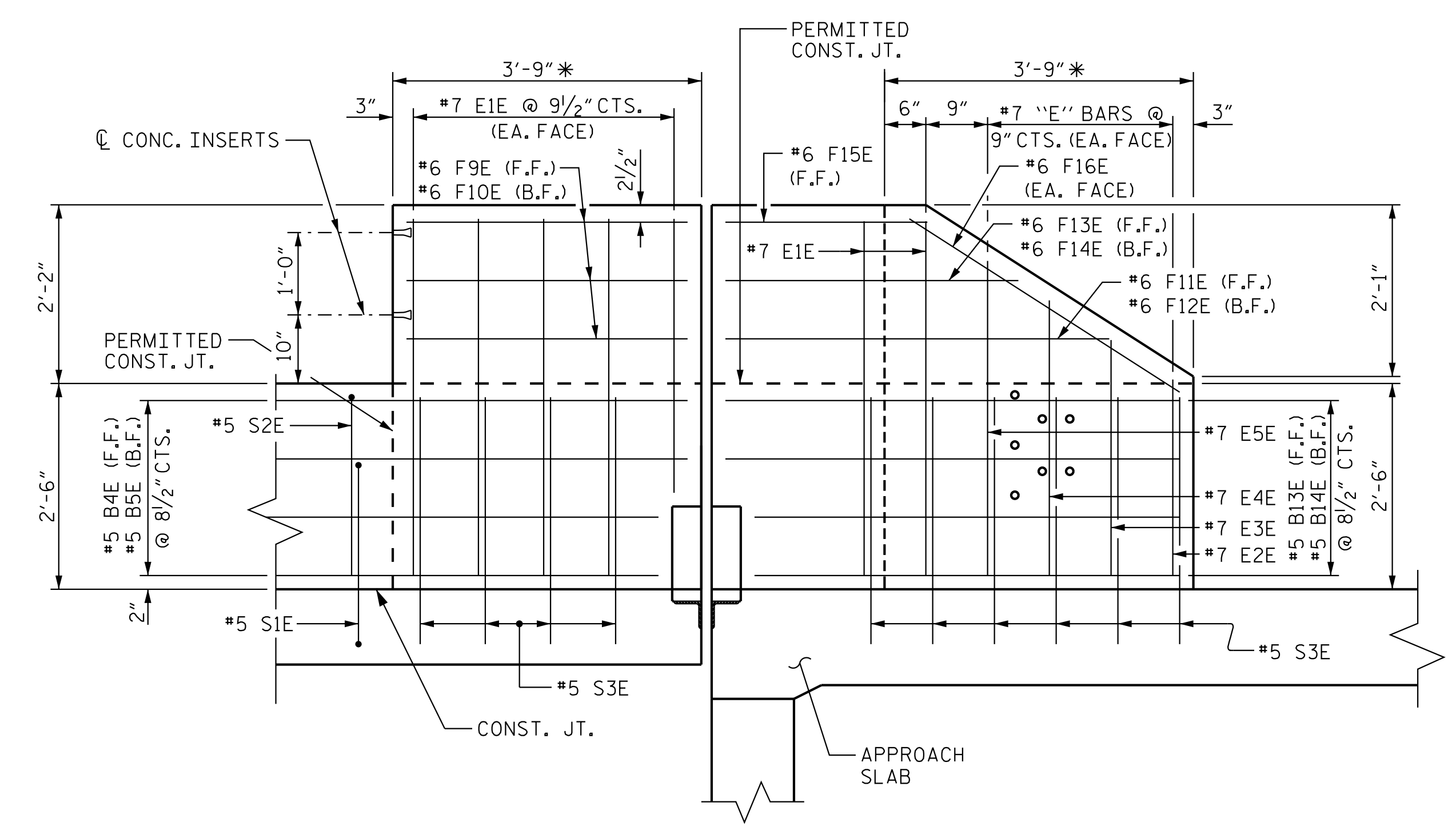
**NOTES:**  
 FOR NOTES & BILL OF MATERIAL, SEE SHEET 6 OF 6.  
 FOR SECTION THRU PARAPET AND END POST, SEE SHEET 6 OF 6.  
 \* ARC DIMENSION MEASURED ALONG EDGE OF PARAPET.



DETAIL H  
 PLAN OF END POST



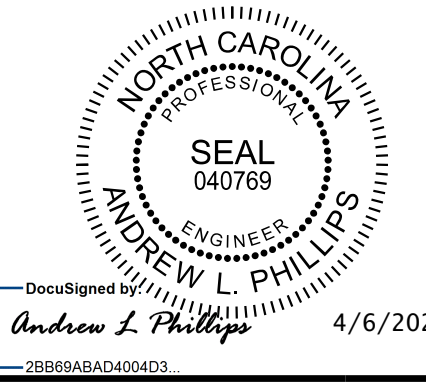
DETAIL H  
 PLAN OF END PARAPET



ELEVATION - DETAIL H  
 LOOKING AT FRONT FACE (ROADWAY FACE)  
 F.F. - FRONT FACE (ROADWAY FACE)  
 B.F. - BACK FACE

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PITT COUNTY  
 STATION: 25+98.05 -L-

SHEET 3 OF 6



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 RALEIGH  
 SUPERSTRUCTURE  
 CONCRETE PARAPET  
 DETAILS

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-28         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
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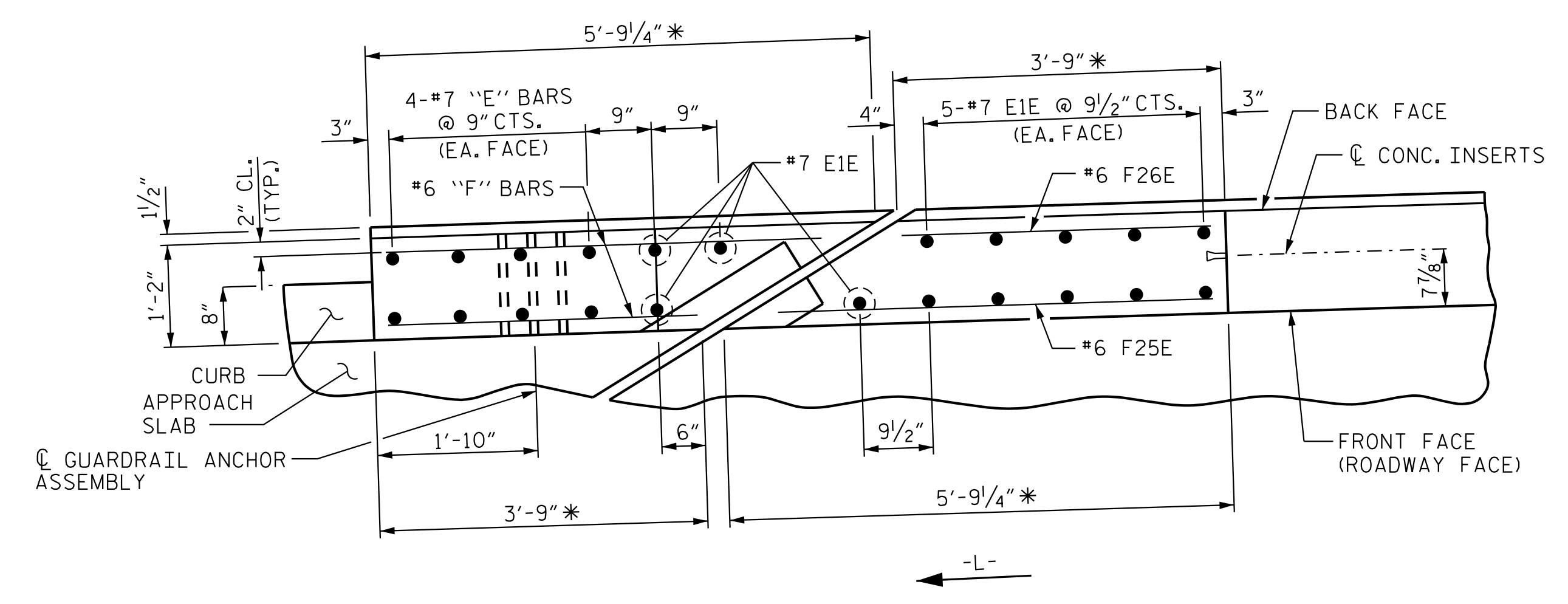
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 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 2/20

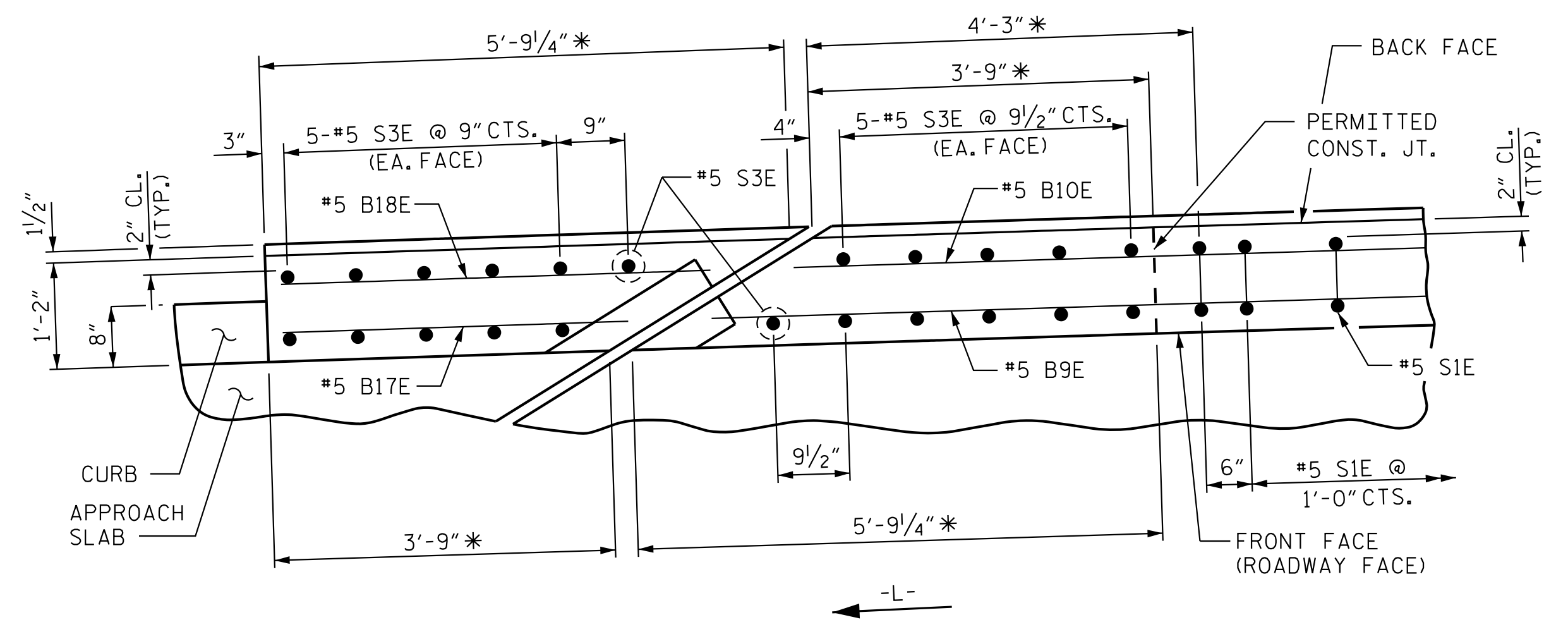




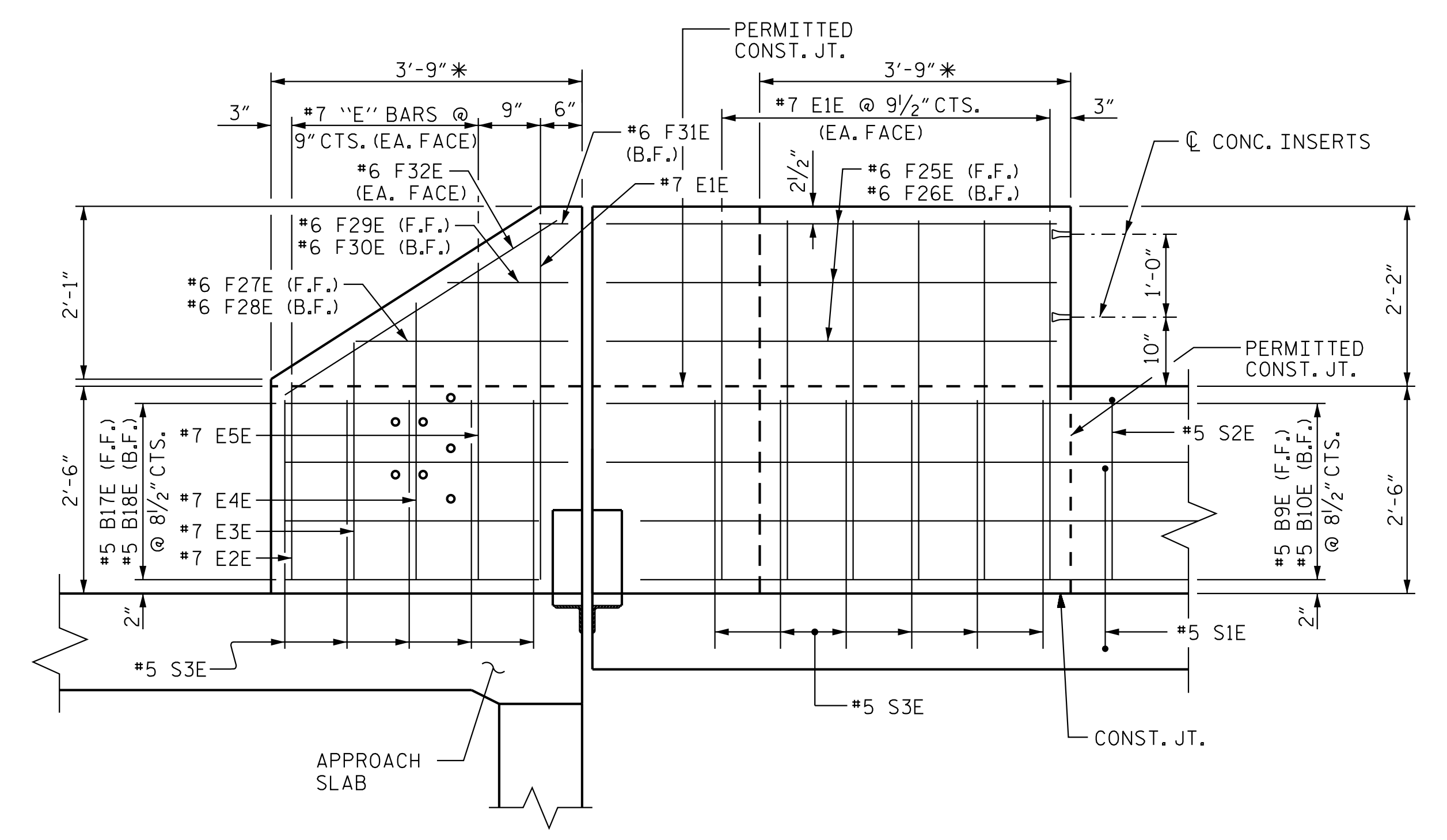
**NOTES:**  
 FOR NOTES & BILL OF MATERIAL, SEE SHEET 6 OF 6.  
 FOR SECTION THRU PARAPET AND END POST, SEE SHEET 6 OF 6.  
 \* ARC DIMENSION MEASURED ALONG EDGE OF PARAPET.



DETAIL J  
 PLAN OF END POST



DETAIL J  
 PLAN OF END PARAPET



ELEVATION - DETAIL J  
 LOOKING AT FRONT FACE (ROADWAY FACE)  
 F.F. - FRONT FACE (ROADWAY FACE)  
 B.F. - BACK FACE

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 CHECKED BY: C. I. POOLE DATE: 2/20  
 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 2/20

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Andrew L. Phillips  
 4/6/2020  
 2889ABAD00403

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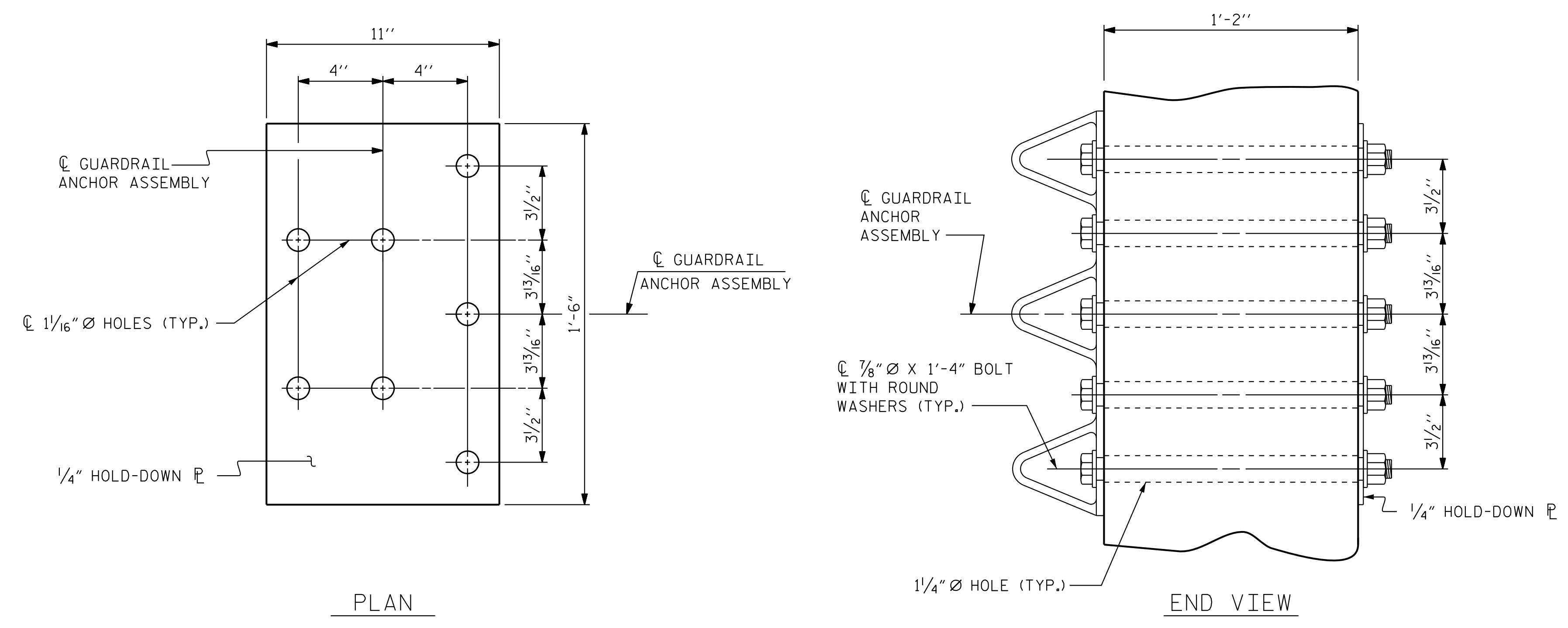
PROJECT NO. B-5301  
PITT COUNTY  
 STATION: 25+98.05 -L-

SHEET 5 OF 6

|  |     |       |     |     |       |                    |
|--|-----|-------|-----|-----|-------|--------------------|
| STATE OF NORTH CAROLINA<br>DEPARTMENT OF TRANSPORTATION<br>RALEIGH |     |       |     |     |       | SHEET NO.<br>S-30  |
| SUPERSTRUCTURE   |     |       |     |     |       |                    |
| CONCRETE PARAPET<br>DETAILS  |     |       |     |     |       |                    |
| REVISIONS  |     |       |     |     |       |                    |
| NO.  | BY: | DATE: | NO. | BY: | DATE: |                    |
| 1  |     |       | 3   |     |       | TOTAL SHEETS<br>55 |
| 2  |     |       | 4   |     |       |                    |







**GUARDRAIL ANCHOR ASSEMBLY DETAILS**

**NOTES**

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

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

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

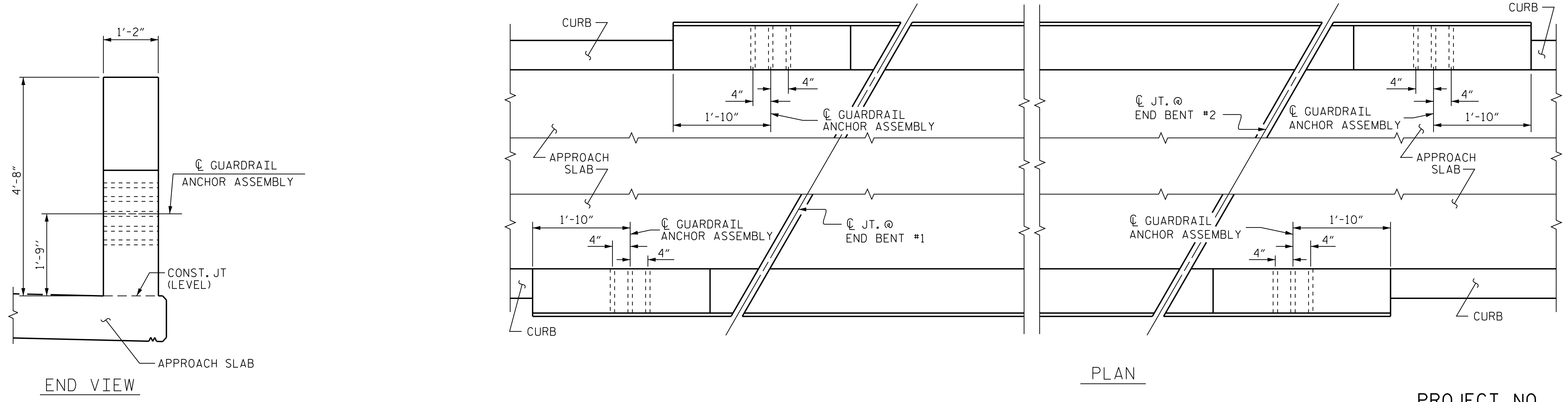
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

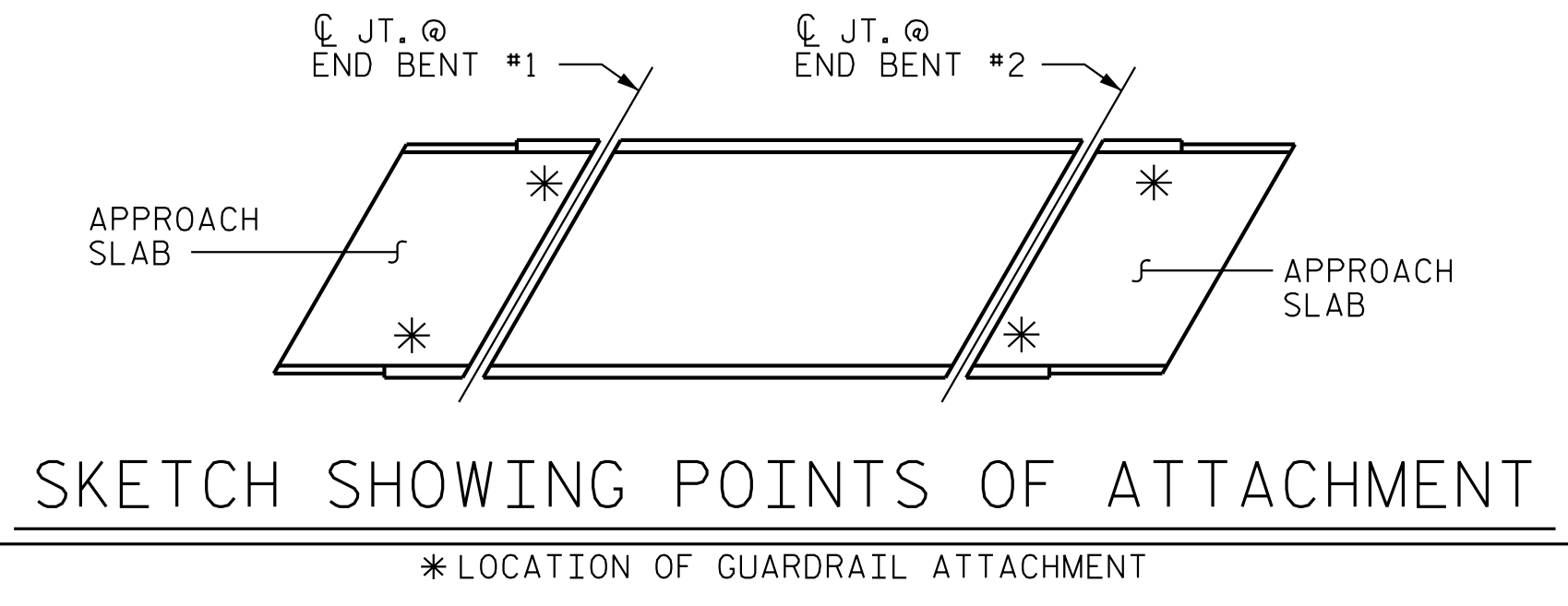
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

THE 1/4" 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.

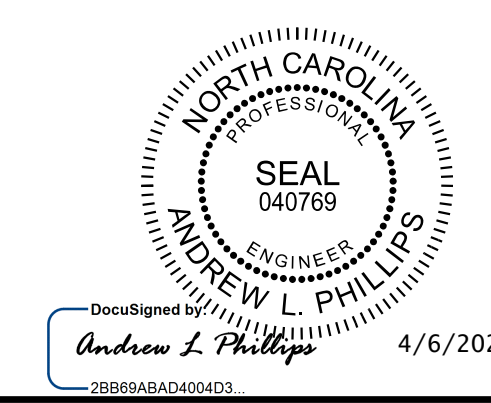


**LOCATION OF GUARDRAIL ANCHOR AT END POST**

PROJECT NO. B-5301  
PITT COUNTY  
 STATION: 25+98.05 -L-



**SKETCH SHOWING POINTS OF ATTACHMENT**



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

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-32         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 55           |

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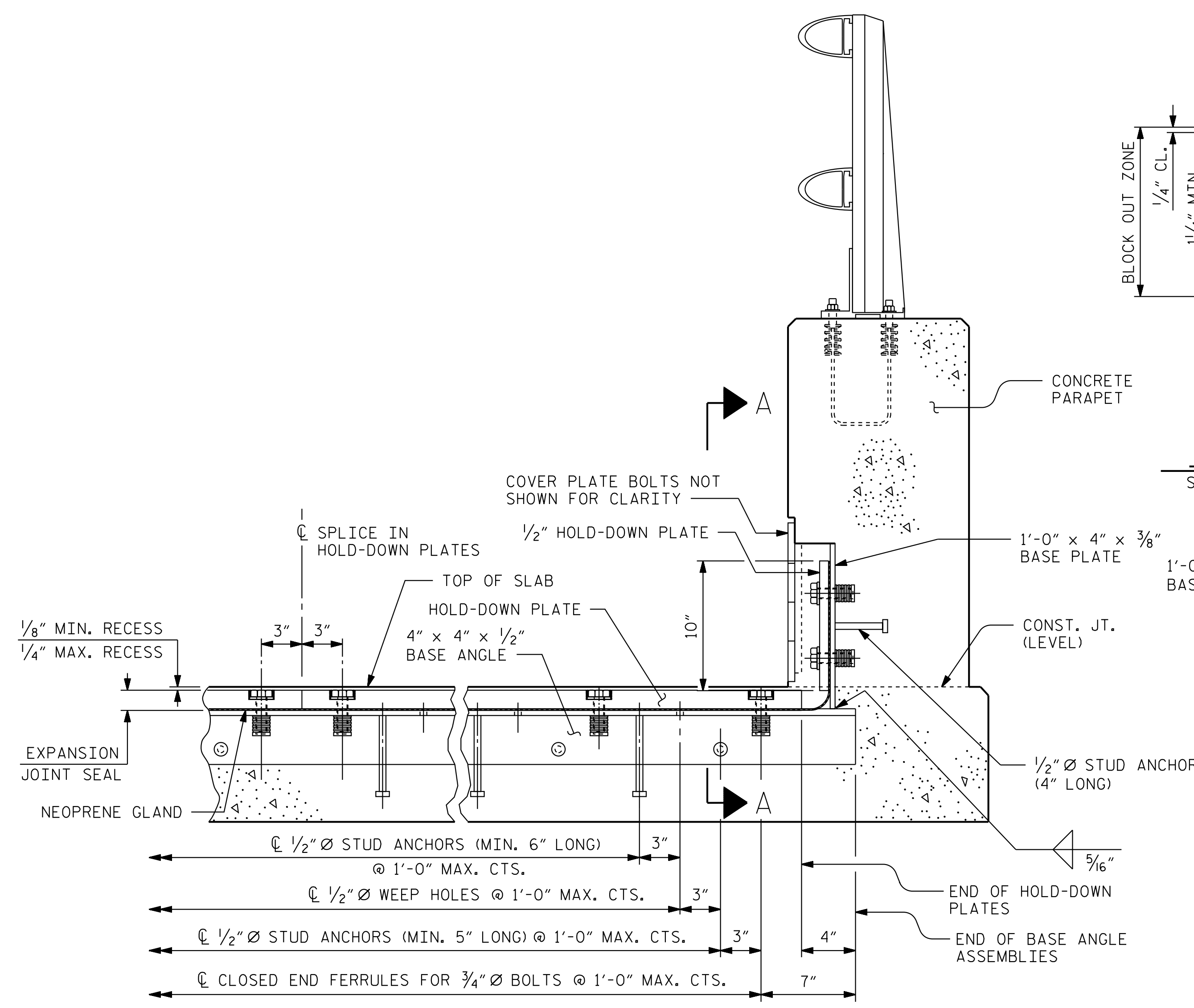
|                             |                    |
|-----------------------------|--------------------|
| ASSEMBLED BY : D. D. LOWERY | DATE : 02/20       |
| CHECKED BY : C. T. POOLE    | DATE : 02/20       |
| DRAWN BY : MAA 5/10         | REV. 1/15 MAA/TMG  |
| CHECKED BY : GM 5/10        | REV. 12/17 MAA/THC |
|                             | REV. 5/18 MAA/THC  |



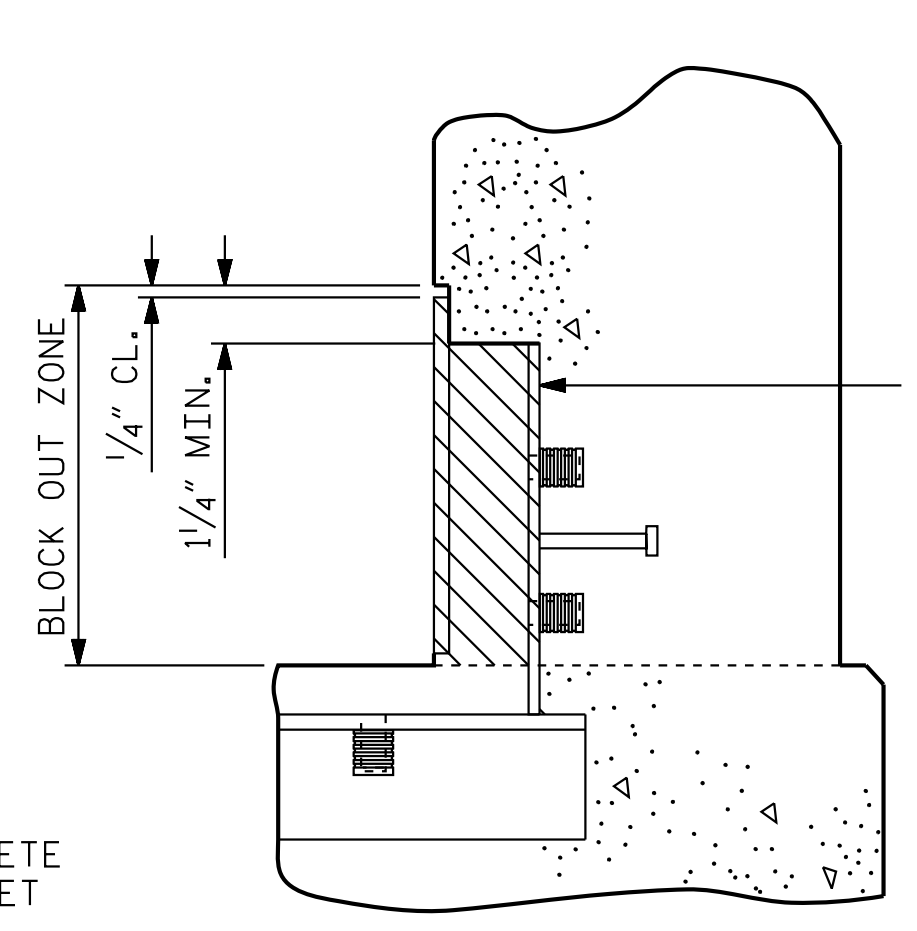




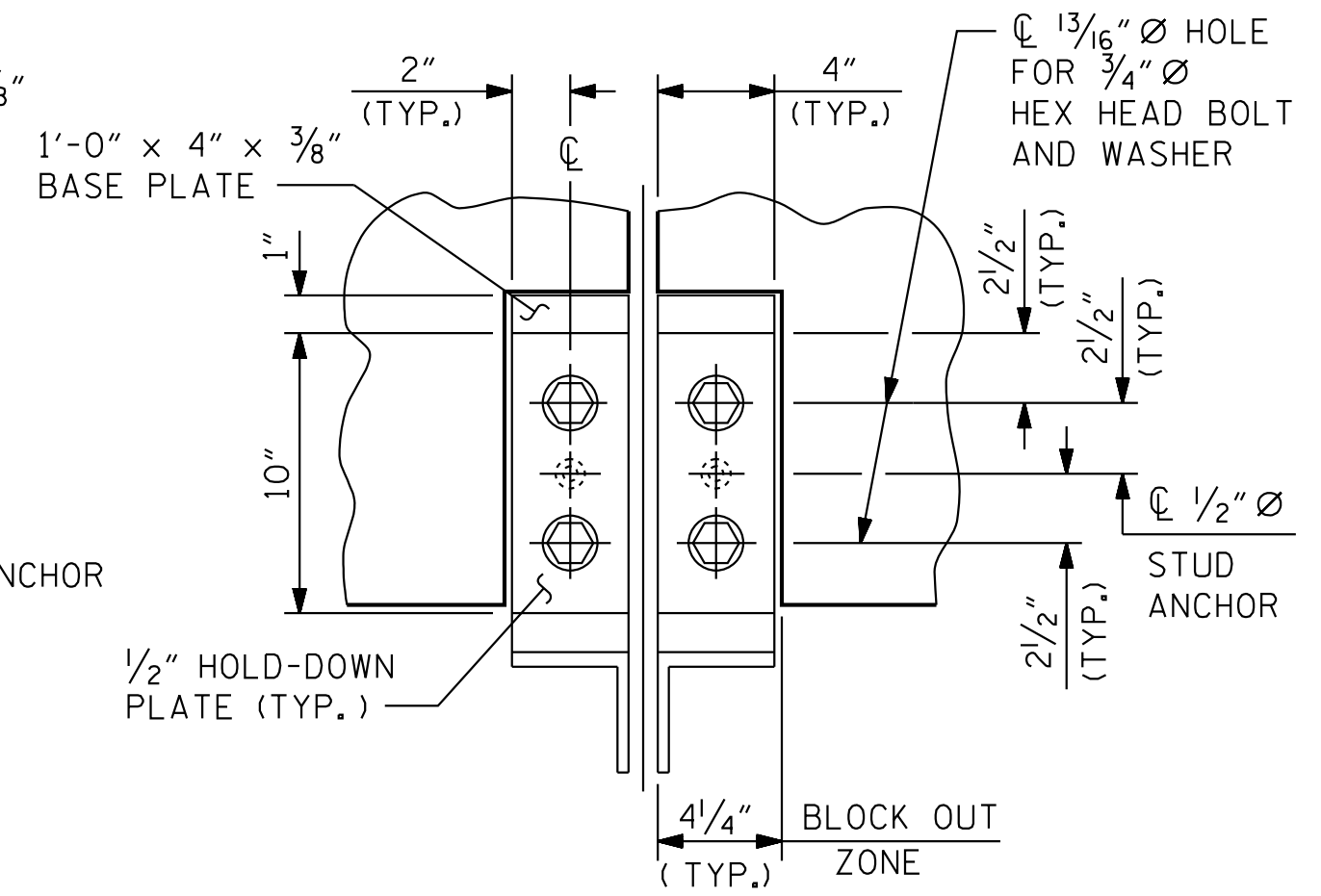
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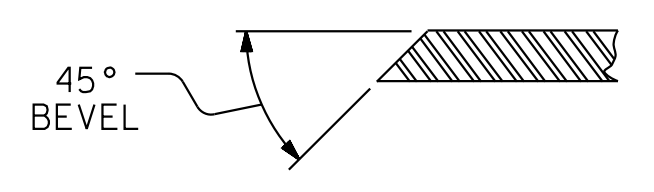
**SECTION THRU PARAPET NORMAL TO JOINT**  
RIGHT SIDE SHOWN, LEFT SIDE SIMILAR



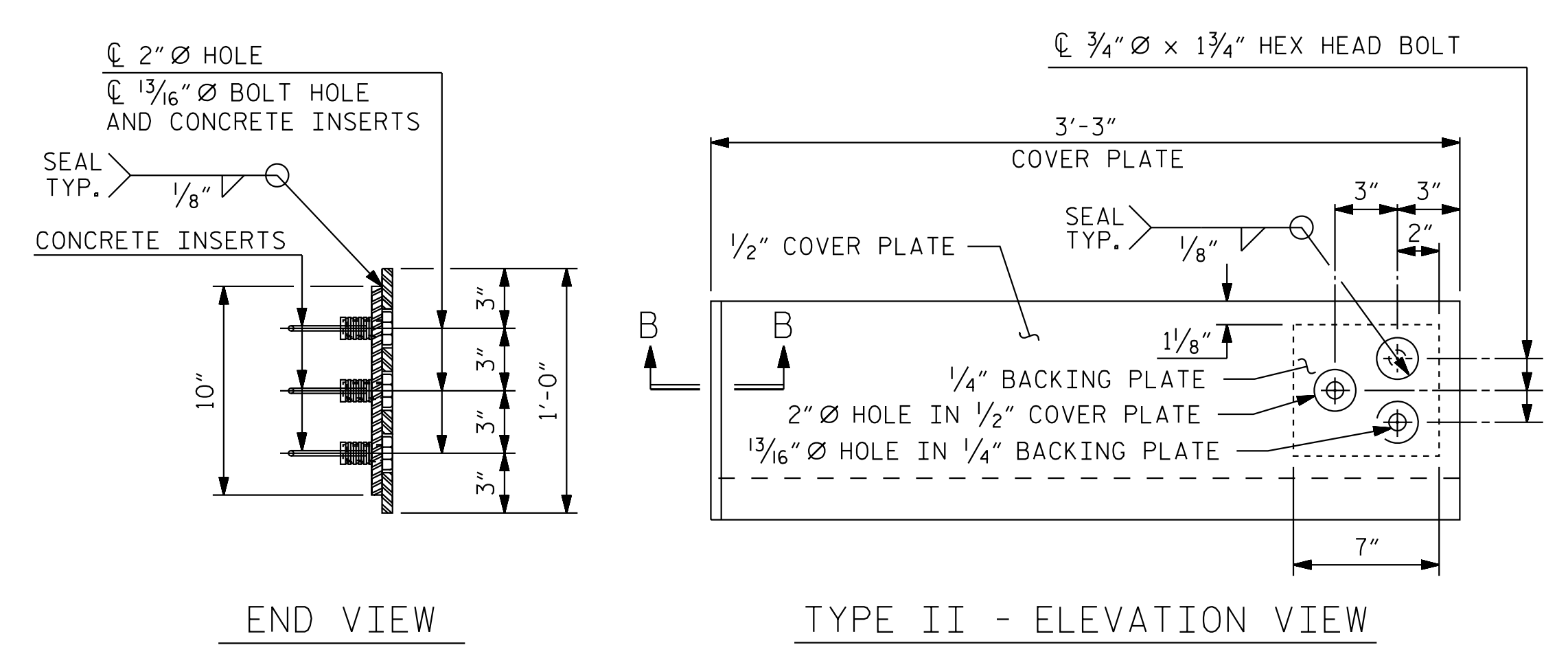
**BLOCK OUT DETAIL**  
SEE "SECTION A-A" FOR OTHER DETAILS.



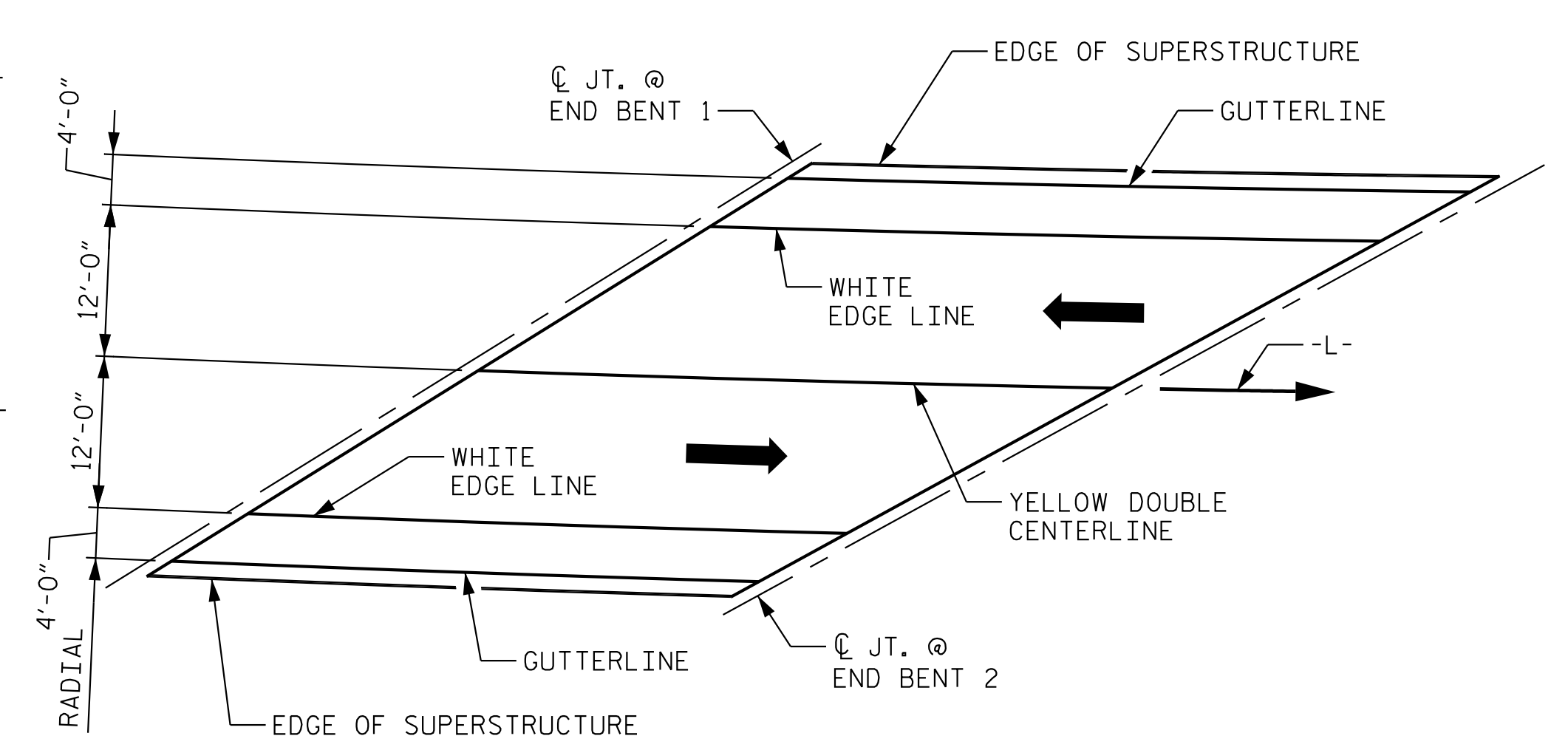
**SECTION A - A**



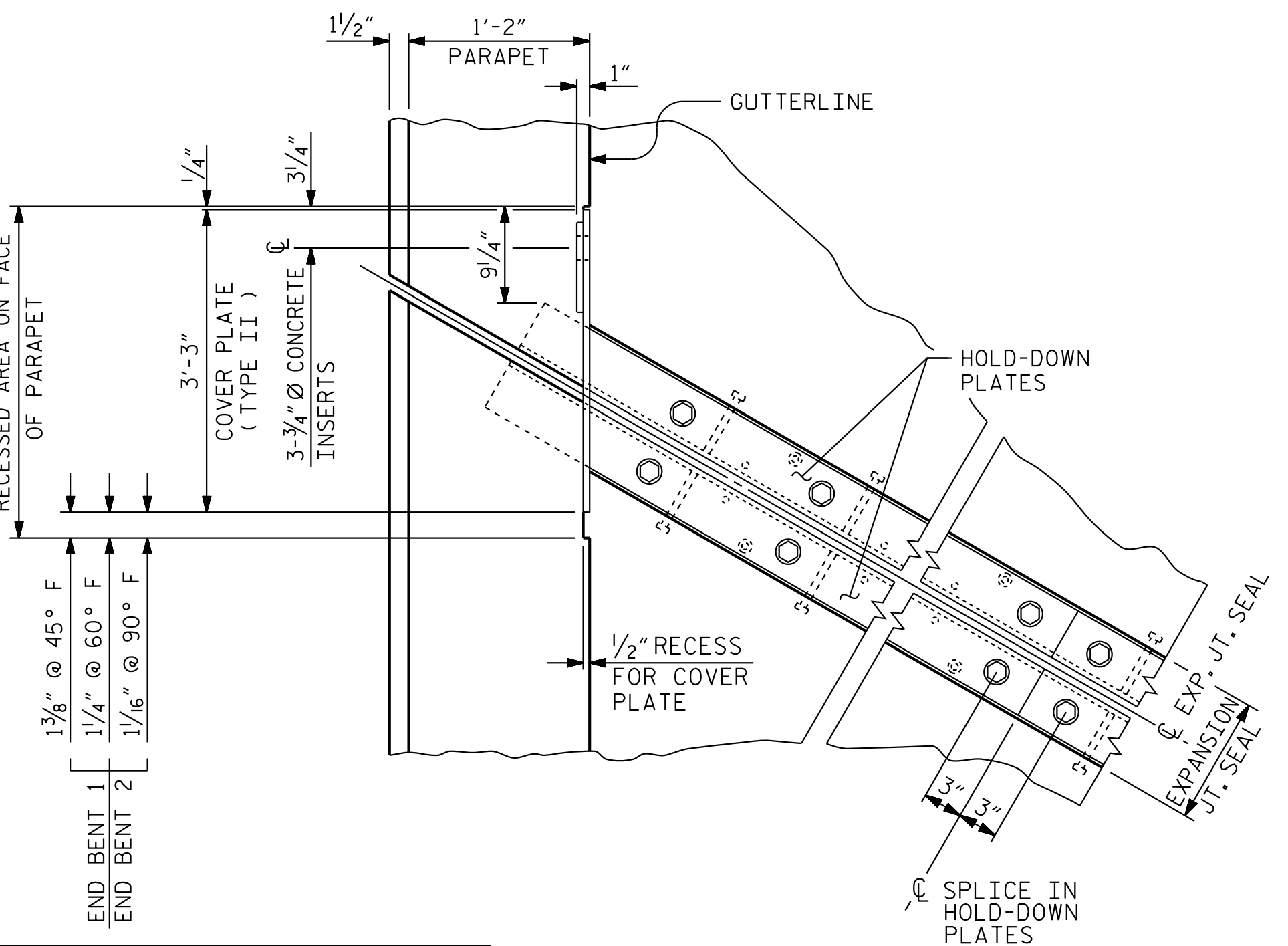
**SECTION B - B**



**COVER PLATE DETAILS**



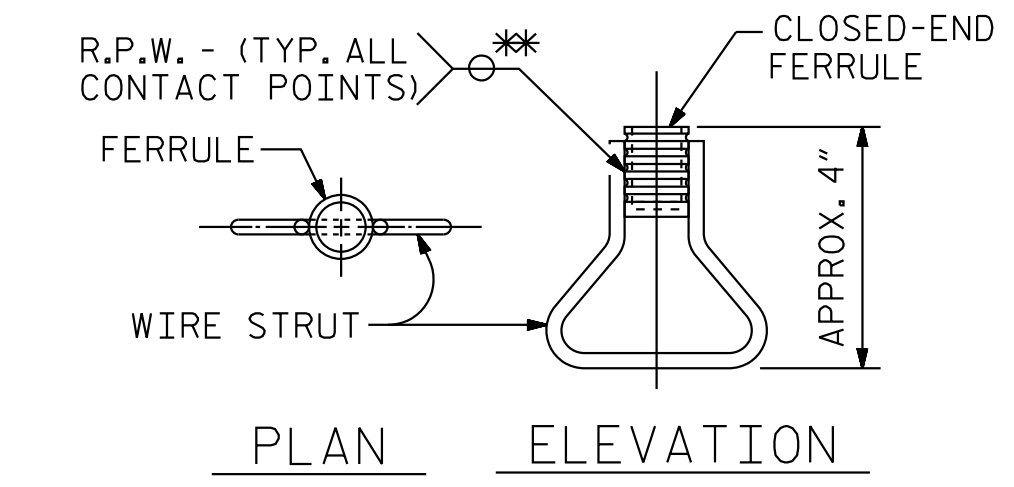
**PAVEMENT MARKING ALIGNMENT**



**PLAN OF EXPANSION JOINT SEAL**

FLOW OF TRAFFIC

FLOW OF TRAFFIC

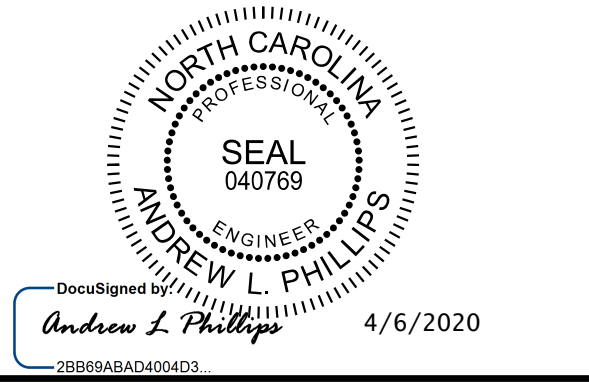


**CONCRETE INSERT**

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

PROJECT NO. B-5301  
PITT COUNTY  
STATION: 25+98.05 -L-

SHEET 2 OF 2



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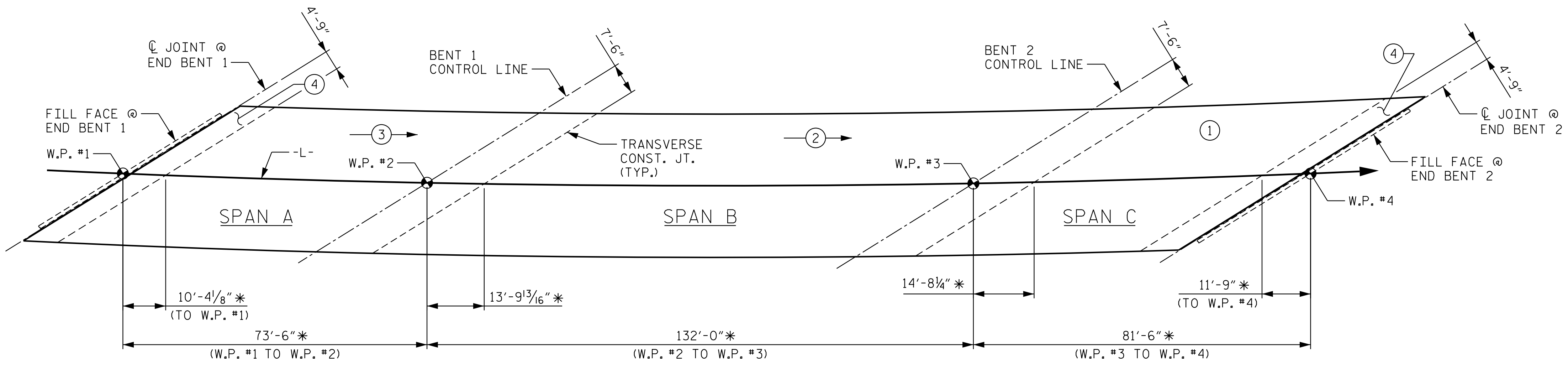
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
EXPANSION JOINT  
SEAL DETAILS FOR  
CONCRETE PARAPET

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-34         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 55           |

|                             |                    |
|-----------------------------|--------------------|
| ASSEMBLED BY : D. D. LOWERY | DATE : 02/20       |
| CHECKED BY : C. T. POOLE    | DATE : 02/20       |
| DRAWN BY : REK 9/87         | REV. 7/12 MAA/GM   |
| CHECKED BY : CRK 10/87      | REV. 6/13 MAA/GM   |
|                             | REV. 12/17 MAA/THC |

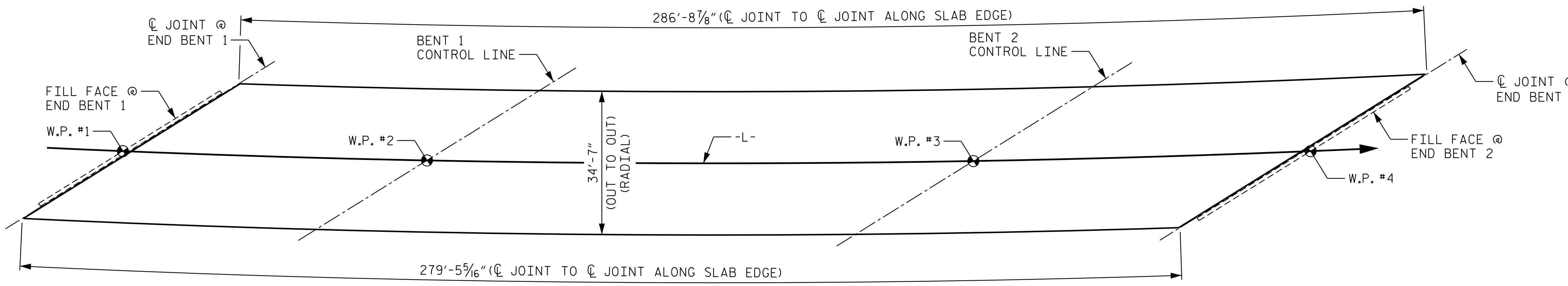
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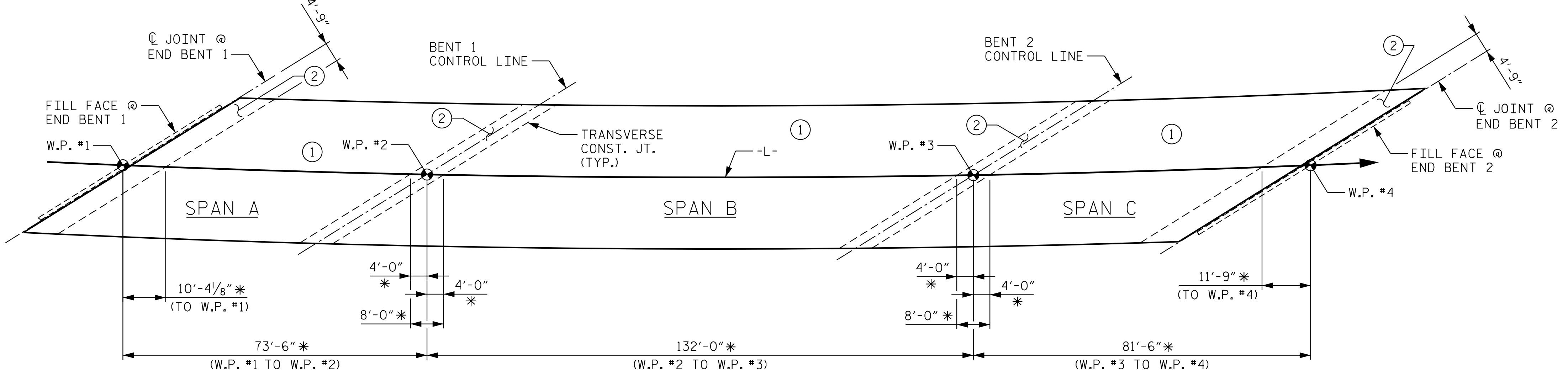


**POUR SEQUENCE** \* MEASURED ALONG ARC

⊕ DENOTES POUR NUMBER AND DIRECTION.



**LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE SLAB**  
(SQ. FT. = 9,781)



**OPTIONAL POUR SEQUENCE**

POUR #2 MAY NOT BE STARTED UNTIL BOTH ADJACENT POUR #1 REACH A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI  
\* MEASURED ALONG ARC

| SUPERSTRUCTURE BILL OF MATERIAL |                   |                   |                                |
|---------------------------------|-------------------|-------------------|--------------------------------|
|                                 | CLASS AA CONCRETE | REINFORCING STEEL | EPOXY COATED REINFORCING STEEL |
|                                 | (CU. YDS.)        | (LBS.)            | (LBS.)                         |
| POUR 1                          | 59.6              |                   |                                |
| POUR 2                          | 182.7             |                   |                                |
| POUR 3                          | 121.9             |                   |                                |
| POUR 4                          | 31.3              |                   |                                |
| TOTALS **                       | 395.5             | 28,183            | 36,163                         |

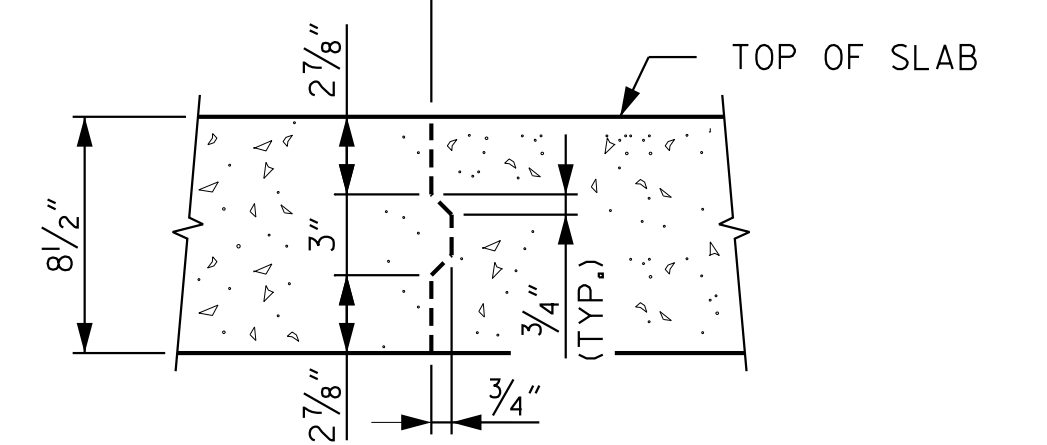
\*\* QUANTITIES FOR CONCRETE PARAPETS & END POSTS ARE NOT INCLUDED.

| GROOVING BRIDGE FLOORS |              |
|------------------------|--------------|
| APPROACH SLABS         | 1,438 SQ.FT. |
| BRIDGE DECK            | 8,189 SQ.FT. |
| TOTAL                  | 9,627 SQ.FT. |

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

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

**TRANSVERSE CONSTRUCTION JOINT**

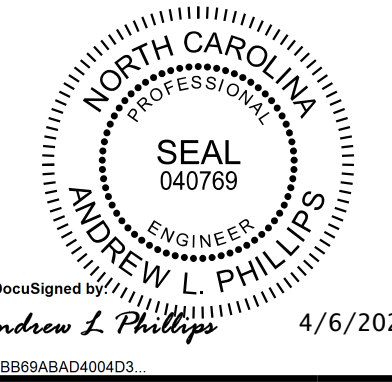


**TRANSVERSE CONSTRUCTION JOINT IN DECK SLAB**

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

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SHEET 1 OF 3



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

| REVISIONS |     |       |     |     |       | SHEET NO.<br>S-35  |
|-----------|-----|-------|-----|-----|-------|--------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                    |
| 1         |     |       | 3   |     |       | TOTAL SHEETS<br>55 |
| 2         |     |       | 4   |     |       |                    |

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 CHECKED BY: C. I. POOLE DATE: 2/20  
 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 2/20

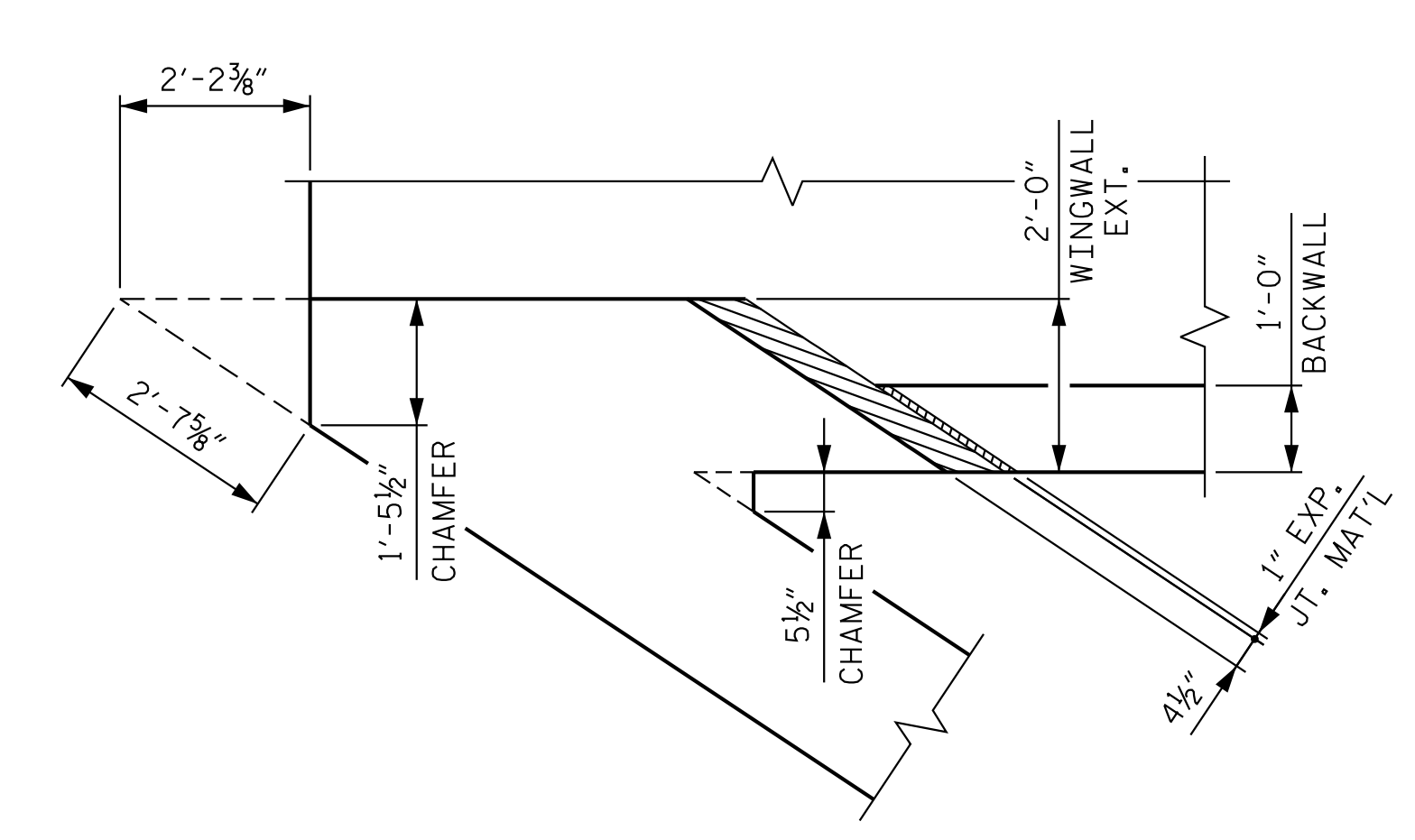
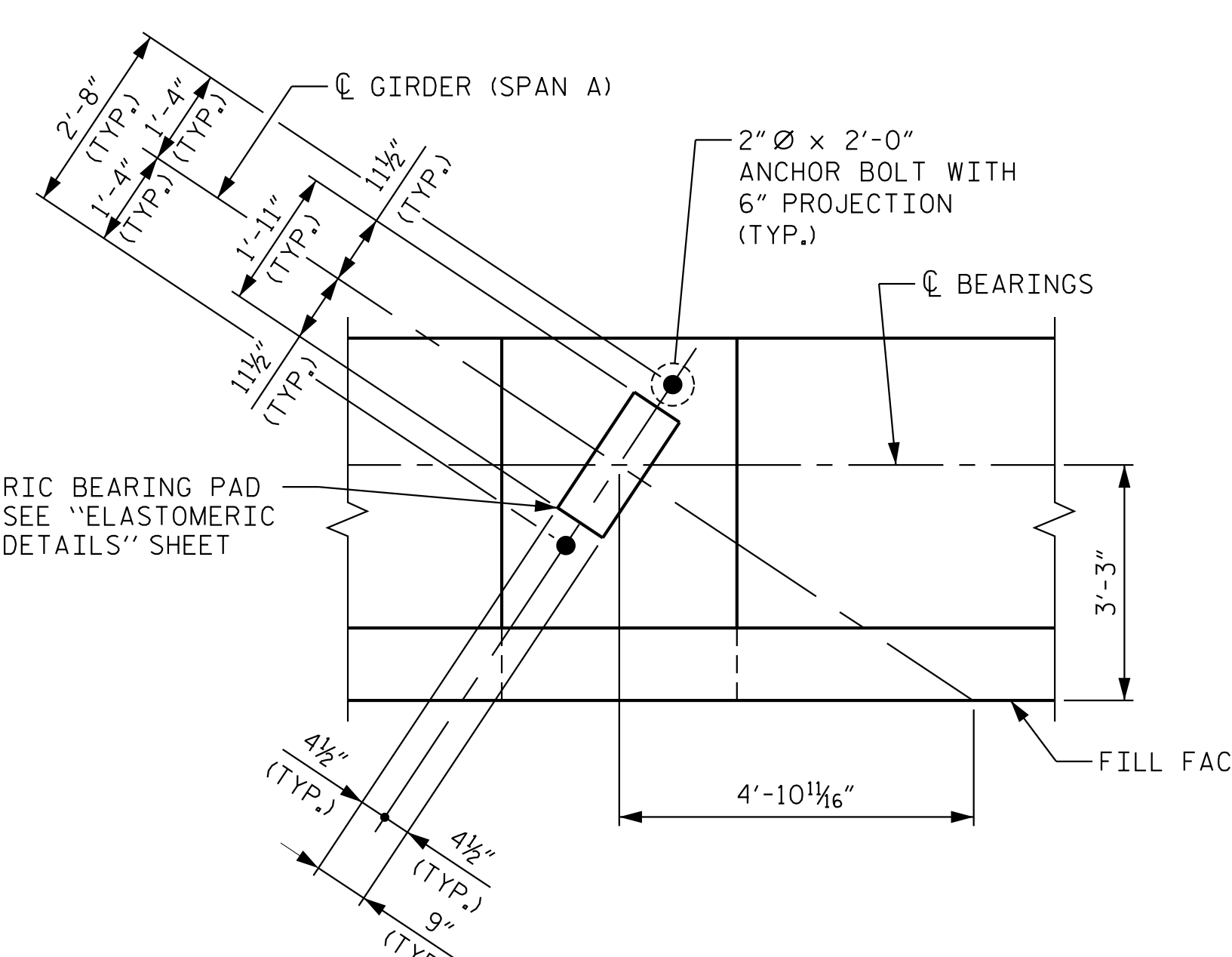
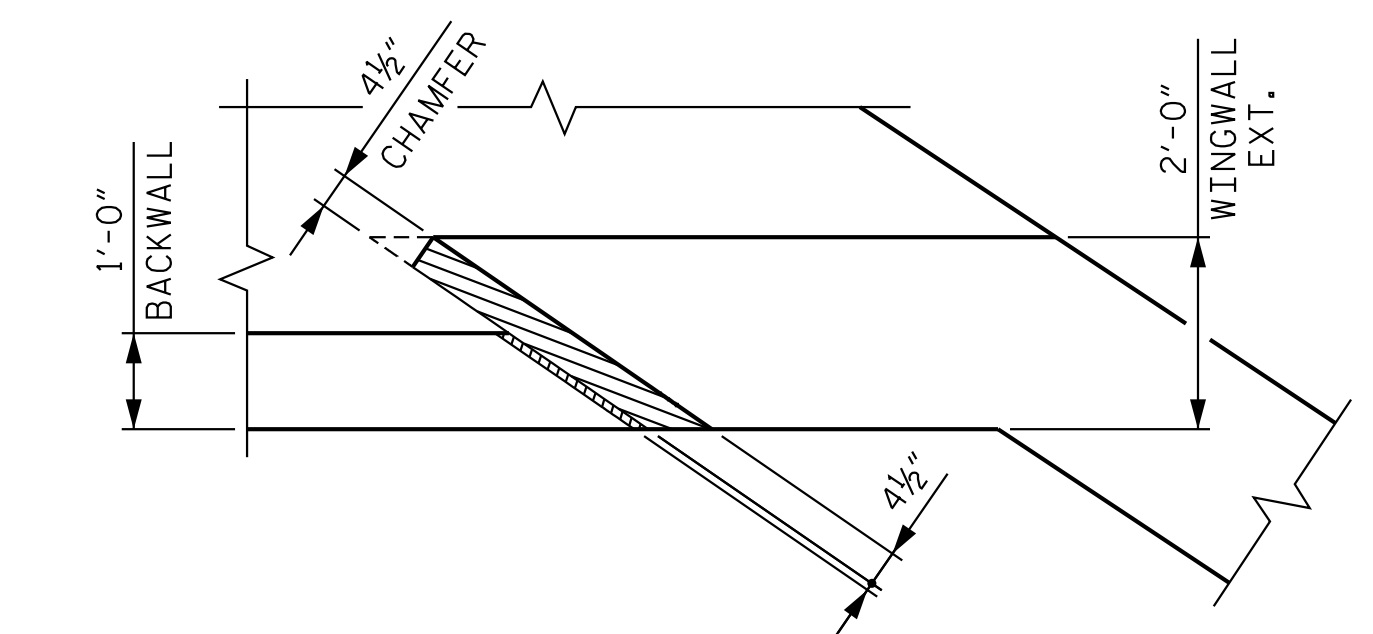
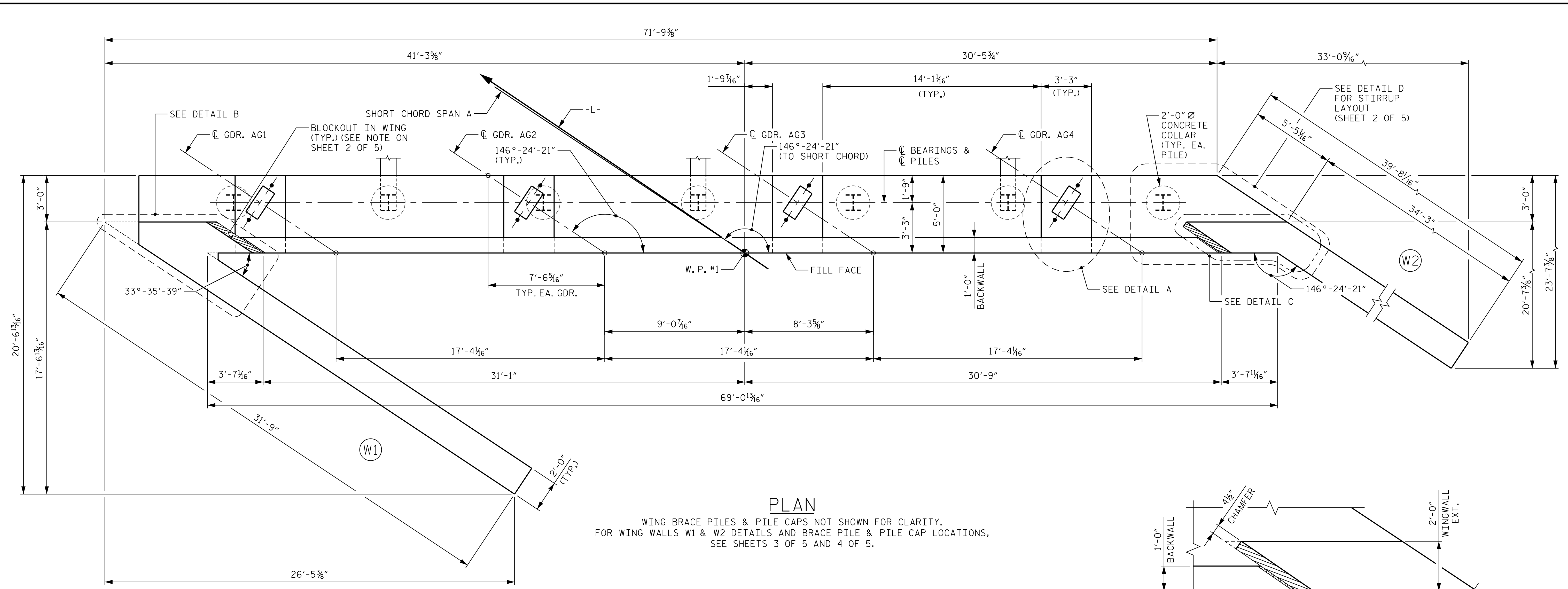


BILL OF MATERIAL

| BAR   | NO. | SIZE | TYPE | LENGTH  | WEIGHT | BAR   | NO. | SIZE | TYPE | LENGTH   | WEIGHT | BAR   | NO. | SIZE | TYPE | LENGTH  | WEIGHT | BAR   | NO. | SIZE | TYPE | LENGTH  | WEIGHT | BAR  | NO. | SIZE | TYPE | LENGTH  | WEIGHT | BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|-------|-----|------|------|---------|--------|-------|-----|------|------|----------|--------|-------|-----|------|------|---------|--------|-------|-----|------|------|---------|--------|------|-----|------|------|---------|--------|-----|-----|------|------|--------|--------|
| A1E   | 363 | 5    | STR  | 34'-3"  | 12,967 | A153E | 1   | 5    | STR  | 12'-7"   | 13     | A209E | 1   | 5    | STR  | 23'-0"  | 24     | A265E | 1   | 5    | STR  | 2'-9"   | 3      | A453 | 1   | 5    | STR  | 12'-7"  | 13     |     |     |      |      |        |        |
| A2    | 363 | 5    | STR  | 34'-3"  | 12,967 | A154E | 1   | 5    | STR  | 12'-2"   | 13     | A210E | 1   | 5    | STR  | 22'-2"  | 24     | A266E | 1   | 5    | STR  | 2'-5"   | 3      | A454 | 1   | 5    | STR  | 12'-2"  | 13     |     |     |      |      |        |        |
| A3E   | 6   | 6    | STR  | 12'-0"  | 108    | A155E | 1   | 5    | STR  | 11'-9"   | 12     | A211E | 1   | 5    | STR  | 22'-3"  | 23     | A267E | 6   | 5    | STR  | 2'-0"   | 13     | A455 | 1   | 5    | STR  | 11'-9"  | 12     |     |     |      |      |        |        |
| A101E | 1   | 5    | STR  | 34'-0"  | 35     | A156E | 1   | 5    | STR  | 11'-4"   | 12     | A212E | 1   | 5    | STR  | 21'-11" | 23     | A401  | 1   | 5    | STR  | 34'-0"  | 35     | A456 | 1   | 5    | STR  | 11'-4"  | 12     |     |     |      |      |        |        |
| A102E | 1   | 5    | STR  | 33'-7"  | 35     | A157E | 1   | 5    | STR  | 10'-11"  | 11     | A213E | 1   | 5    | STR  | 21'-6"  | 22     | A402  | 1   | 5    | STR  | 33'-7"  | 35     | A457 | 1   | 5    | STR  | 10'-11" | 11     |     |     |      |      |        |        |
| A103E | 1   | 5    | STR  | 33'-2"  | 35     | A158E | 1   | 5    | STR  | 10'-6"   | 11     | A214E | 1   | 5    | STR  | 21'-2"  | 22     | A403  | 1   | 5    | STR  | 33'-2"  | 35     | A458 | 1   | 5    | STR  | 10'-6"  | 11     |     |     |      |      |        |        |
| A104E | 1   | 5    | STR  | 32'-9"  | 34     | A159E | 1   | 5    | STR  | 10'-1"   | 11     | A215E | 1   | 5    | STR  | 20'-10" | 22     | A404  | 1   | 5    | STR  | 32'-9"  | 34     | A459 | 1   | 5    | STR  | 10'-1"  | 11     |     |     |      |      |        |        |
| A105E | 1   | 5    | STR  | 32'-4"  | 34     | A160E | 1   | 5    | STR  | 9'-8"    | 10     | A216E | 1   | 5    | STR  | 20'-5"  | 21     | A405  | 1   | 5    | STR  | 32'-4"  | 34     | A460 | 1   | 5    | STR  | 9'-8"   | 10     |     |     |      |      |        |        |
| A106E | 1   | 5    | STR  | 31'-11" | 33     | A161E | 1   | 5    | STR  | 9'-3"    | 10     | A217E | 1   | 5    | STR  | 20'-1"  | 21     | A406  | 1   | 5    | STR  | 31'-11" | 33     | A461 | 1   | 5    | STR  | 9'-3"   | 10     |     |     |      |      |        |        |
| A107E | 1   | 5    | STR  | 31'-6"  | 33     | A162E | 1   | 5    | STR  | 8'-10"   | 9      | A218E | 1   | 5    | STR  | 19'-9"  | 21     | A407  | 1   | 5    | STR  | 31'-6"  | 33     | A462 | 1   | 5    | STR  | 8'-10"  | 9      |     |     |      |      |        |        |
| A108E | 1   | 5    | STR  | 31'-1"  | 32     | A163E | 1   | 5    | STR  | 8'-5"    | 9      | A219E | 1   | 5    | STR  | 19'-4"  | 20     | A408  | 1   | 5    | STR  | 31'-1"  | 32     | A463 | 1   | 5    | STR  | 8'-5"   | 9      |     |     |      |      |        |        |
| A109E | 1   | 5    | STR  | 30'-8"  | 32     | A164E | 1   | 5    | STR  | 8'-0"    | 8      | A220E | 1   | 5    | STR  | 19'-0"  | 20     | A409  | 1   | 5    | STR  | 30'-8"  | 32     | A464 | 1   | 5    | STR  | 8'-0"   | 8      |     |     |      |      |        |        |
| A110E | 1   | 5    | STR  | 30'-3"  | 32     | A165E | 1   | 5    | STR  | 7'-7"    | 8      | A221E | 1   | 5    | STR  | 18'-7"  | 19     | A410  | 1   | 5    | STR  | 30'-3"  | 32     | A465 | 1   | 5    | STR  | 7'-7"   | 8      |     |     |      |      |        |        |
| A111E | 1   | 5    | STR  | 29'-10" | 31     | A166E | 1   | 5    | STR  | 7'-2"    | 7      | A222E | 1   | 5    | STR  | 18'-3"  | 19     | A411  | 1   | 5    | STR  | 29'-10" | 31     | A466 | 1   | 5    | STR  | 7'-2"   | 7      |     |     |      |      |        |        |
| A112E | 1   | 5    | STR  | 29'-6"  | 31     | A167E | 1   | 5    | STR  | 6'-9"    | 7      | A223E | 1   | 5    | STR  | 17'-11" | 19     | A412  | 1   | 5    | STR  | 29'-6"  | 31     | A467 | 1   | 5    | STR  | 6'-9"   | 7      |     |     |      |      |        |        |
| A113E | 1   | 5    | STR  | 29'-1"  | 30     | A168E | 1   | 5    | STR  | 6'-4"    | 7      | A224E | 1   | 5    | STR  | 17'-6"  | 18     | A413  | 1   | 5    | STR  | 29'-1"  | 30     | A468 | 1   | 5    | STR  | 6'-4"   | 7      |     |     |      |      |        |        |
| A114E | 1   | 5    | STR  | 28'-8"  | 30     | A169E | 1   | 5    | STR  | 5'-11"   | 6      | A225E | 1   | 5    | STR  | 17'-2"  | 18     | A414  | 1   | 5    | STR  | 28'-8"  | 30     | A469 | 1   | 5    | STR  | 5'-11"  | 6      |     |     |      |      |        |        |
| A115E | 1   | 5    | STR  | 28'-3"  | 29     | A170E | 1   | 5    | STR  | 5'-6"    | 6      | A226E | 1   | 5    | STR  | 16'-10" | 18     | A415  | 1   | 5    | STR  | 28'-3"  | 29     | A470 | 1   | 5    | STR  | 5'-6"   | 6      |     |     |      |      |        |        |
| A116E | 1   | 5    | STR  | 27'-10" | 29     | A171E | 1   | 5    | STR  | 5'-1"    | 5      | A227E | 1   | 5    | STR  | 16'-5"  | 17     | A416  | 1   | 5    | STR  | 27'-10" | 29     | A471 | 1   | 5    | STR  | 5'-1"   | 5      |     |     |      |      |        |        |
| A117E | 1   | 5    | STR  | 27'-5"  | 29     | A172E | 1   | 5    | STR  | 4'-8"    | 5      | A228E | 1   | 5    | STR  | 16'-1"  | 17     | A417  | 1   | 5    | STR  | 27'-5"  | 29     | A472 | 1   | 5    | STR  | 4'-8"   | 5      |     |     |      |      |        |        |
| A118E | 1   | 5    | STR  | 27'-0"  | 28     | A173E | 1   | 5    | STR  | 4'-3"    | 4      | A229E | 1   | 5    | STR  | 15'-9"  | 16     | A418  | 1   | 5    | STR  | 27'-0"  | 28     | A473 | 1   | 5    | STR  | 4'-3"   | 4      |     |     |      |      |        |        |
| A119E | 1   | 5    | STR  | 26'-7"  | 28     | A174E | 1   | 5    | STR  | 3'-10"   | 4      | A230E | 1   | 5    | STR  | 15'-4"  | 16     | A419  | 1   | 5    | STR  | 26'-7"  | 28     | A474 | 1   | 5    | STR  | 3'-10"  | 4      |     |     |      |      |        |        |
| A120E | 1   | 5    | STR  | 26'-2"  | 27     | A175E | 1   | 5    | STR  | 3'-5"    | 4      | A231E | 1   | 5    | STR  | 15'-0"  | 16     | A420  | 1   | 5    | STR  | 26'-2"  | 27     | A475 | 1   | 5    | STR  | 3'-5"   | 4      |     |     |      |      |        |        |
| A121E | 1   | 5    | STR  | 25'-9"  | 27     | A176E | 1   | 5    | STR  | 3'-0"    | 3      | A232E | 1   | 5    | STR  | 14'-8"  | 15     | A421  | 1   | 5    | STR  | 25'-9"  | 27     | A476 | 1   | 5    | STR  | 3'-0"   | 3      |     |     |      |      |        |        |
| A122E | 1   | 5    | STR  | 25'-4"  | 26     | A177E | 1   | 5    | STR  | 2'-7"    | 3      | A233E | 1   | 5    | STR  | 14'-3"  | 15     | A422  | 1   | 5    | STR  | 25'-4"  | 26     | A477 | 1   | 5    | STR  | 2'-7"   | 3      |     |     |      |      |        |        |
| A123E | 1   | 5    | STR  | 24'-11" | 26     | A178E | 6   | 5    | STR  | 2'-2"    | 14     | A234E | 1   | 5    | STR  | 13'-11" | 15     | A423  | 1   | 5    | STR  | 24'-11" | 26     | A478 | 6   | 5    | STR  | 2'-2"   | 14     |     |     |      |      |        |        |
| A124E | 1   | 5    | STR  | 24'-6"  | 26     | A179E | 1   | 5    | STR  | 34'-0"   | 35     | A235E | 1   | 5    | STR  | 13'-7"  | 14     | A424  | 1   | 5    | STR  | 24'-6"  | 26     | A479 | 1   | 5    | STR  | 34'-0"  | 35     |     |     |      |      |        |        |
| A125E | 1   | 5    | STR  | 24'-1"  | 25     | A180E | 1   | 5    | STR  | 33'-7"   | 35     | A236E | 1   | 5    | STR  | 13'-2"  | 14     | A425  | 1   | 5    | STR  | 24'-1"  | 25     | A480 | 1   | 5    | STR  | 33'-7"  | 35     |     |     |      |      |        |        |
| A126E | 1   | 5    | STR  | 23'-9"  | 25     | A181E | 1   | 5    | STR  | 33'-3"   | 35     | A237E | 1   | 5    | STR  | 12'-10" | 13     | A426  | 1   | 5    | STR  | 23'-9"  | 25     | A481 | 1   | 5    | STR  | 33'-3"  | 35     |     |     |      |      |        |        |
| A127E | 1   | 5    | STR  | 23'-4"  | 24     | A182E | 1   | 5    | STR  | 32'-11"  | 34     | A238E | 1   | 5    | STR  | 12'-6"  | 13     | A427  | 1   | 5    | STR  | 23'-4"  | 24     | A482 | 1   | 5    | STR  | 32'-11" | 34     |     |     |      |      |        |        |
| A128E | 1   | 5    | STR  | 22'-11" | 24     | A183E | 1   | 5    | STR  | 32'-6"   | 34     | A239E | 1   | 5    | STR  | 12'-1"  | 13     | A428  | 1   | 5    | STR  | 22'-11" | 24     | A483 | 1   | 5    | STR  | 32'-6"  | 34     |     |     |      |      |        |        |
| A129E | 1   | 5    | STR  | 22'-6"  | 23     | A184E | 1   | 5    | STR  | 32'-2"   | 34     | A240E | 1   | 5    | STR  | 11'-9"  | 12     | A429  | 1   | 5    | STR  | 22'-6"  | 23     | A484 | 1   | 5    | STR  | 32'-2"  | 34     |     |     |      |      |        |        |
| A130E | 1   | 5    | STR  | 22'-1"  | 23     | A185E | 1   | 5    | STR  | 31'-9"   | 33     | A241E | 1   | 5    | STR  | 11'-4"  | 12     | A430  | 1   | 5    | STR  | 22'-1"  | 23     | A485 | 1   | 5    | STR  | 31'-9"  | 33     |     |     |      |      |        |        |
| A131E | 1   | 5    | STR  | 21'-8"  | 23     | A186E | 1   | 5    | STR  | 31'-5"   | 33     | A242E | 1   | 5    | STR  | 11'-0"  | 11     | A431  | 1   | 5    | STR  | 21'-8"  | 23     | A486 | 1   | 5    | STR  | 31'-5"  | 33     |     |     |      |      |        |        |
| A132E | 1   | 5    | STR  | 21'-3"  | 22     | A187E | 1   | 5    | STR  | 31'-0"   | 32     | A243E | 1   | 5    | STR  | 10'-8"  | 11     | A432  | 1   | 5    | STR  | 21'-3"  | 22     | A487 | 1   | 5    | STR  | 31'-0"  | 32     |     |     |      |      |        |        |
| A133E | 1   | 5    | STR  | 20'-10" | 22     | A188E | 1   | 5    | STR  | 30'-8"   | 32     | A244E | 1   | 5    | STR  | 10'-3"  | 11     | A433  | 1   | 5    | STR  | 20'-10" | 22     | A488 | 1   | 5    | STR  | 30'-8"  | 32     |     |     |      |      |        |        |
| A134E | 1   | 5    | STR  | 20'-5"  | 21     | A189E | 1   | 5    | STR  | 30'-4"   | 32     | A245E | 1   | 5    | STR  | 9'-11"  | 10     | A434  | 1   | 5    | STR  | 20'-5"  | 21     | A489 | 1   | 5    | STR  | 30'-4"  | 32     |     |     |      |      |        |        |
| A135E | 1   | 5    | STR  | 20'-0"  | 21     | A190E | 1   | 5    | STR  | 29'-11"  | 31     | A246E | 1   | 5    | STR  | 9'-7"   | 10     | A435  | 1   | 5    | STR  | 20'-0"  | 21     | A490 | 1   | 5    | STR  | 29'-11" | 31     |     |     |      |      |        |        |
| A136E | 1   | 5    | STR  | 19'-7"  | 20     | A191E | 1   | 5    | STR  | 29'-7"   | 31     | A247E | 1   | 5    | STR  | 9'-3"   | 10     | A436  | 1   | 5    | STR  | 19'-7"  | 20     | A491 | 1   | 5    | STR  | 29'-7"  | 31     |     |     |      |      |        |        |
| A137E | 1   | 5    | STR  | 19'-2"  | 20     | A192E | 1   | 5    | STR  | 29'-2"   | 30     | A248E | 1   | 5    | STR  | 8'-10"  | 9      | A437  | 1   | 5    | STR  | 19'-2"  | 20     | A492 | 1   | 5    | STR  | 29'-2"  | 30     |     |     |      |      |        |        |
| A138E | 1   | 5    | STR  | 18'-9"  | 20     | A193E | 1   | 5    | STR  | 28'-10"  | 30     | A249E | 1   | 5    | STR  | 8'-6"   | 9      | A438  | 1   | 5    | STR  | 18'-9"  | 20     | A493 | 1   | 5    | STR  | 28'-10" | 30     |     |     |      |      |        |        |
| A139E | 1   | 5    | STR  | 18'-4"  | 19     | A194E | 1   | 5    | STR  | 28'-6"   | 30     | A250E | 1   | 5    | STR  | 8'-2"   | 9      | A439  | 1   | 5    | STR  | 18'-4"  | 19     | A494 | 1   | 5    | STR  | 28'-6"  | 30     |     |     |      |      |        |        |
| A140E | 1   | 5    | STR  | 17'-11" | 19     | A195E | 1   | 5    | STR  | 28'-1"   | 29     | A251E | 1   | 5    | STR  | 7'-9"   | 8      | A440  | 1   | 5    | STR  | 17'-11" | 19     | A495 | 1   | 5    | STR  | 28'-1"  | 29     |     |     |      |      |        |        |
| A141E | 1   | 5    | STR  | 17'-6"  | 18     | A196E | 1   | 5    | STR  | 27'-9"   | 29     | A252E | 1   | 5    | STR  | 7'-5"   | 8      | A441  | 1   | 5    | STR  | 17'-6"  | 18     | A496 | 1   | 5    | STR  | 27'-9"  | 29     |     |     |      |      |        |        |
| A142E | 1   | 5    | STR  | 17'-1"  | 18     | A197E | 1   | 5    | STR  | 27'-4"   | 29     | A253E | 1   | 5    | STR  | 7'-1"   | 7      | A442  | 1   | 5    | STR  | 17'-1"  | 18     | A497 | 1   | 5    | STR  | 27'-4"  | 29     |     |     |      |      |        |        |
| A143E | 1   | 5    | STR  | 16'-8"  | 17     | A198E | 1   | 5    | STR  | 27'-0"   | 28     | A254E | 1   | 5    | STR  | 6'-8"   | 7      | A443  | 1   | 5    | STR  | 16'-8"  | 17     | A498 | 1   | 5    | STR  | 27'-0"  | 28     |     |     |      |      |        |        |
| A144E | 1   | 5    | STR  | 16'-3"  | 17     | A199E | 1   | 5    | STR  | 26'-8"   | 28     | A255E | 1   | 5    | STR  | 6'-4"   | 7      | A444  | 1   | 5    | STR  | 16'-3"  | 17     | A499 | 1   | 5    | STR  | 26'-8"  | 28     |     |     |      |      |        |        |
| A145E | 1   | 5    | STR  | 15'-10" | 17     | A200E | 1   | 5    | STR  | 26'-3"   | 27     | A256E | 1   | 5    | STR  | 6'-0"   | 6      | A445  | 1   | 5    | STR  | 15'-10" | 17     | A500 | 1   | 5    | STR  | 26'-3"  | 27     |     |     |      |      |        |        |
| A146E | 1   | 5    | STR  | 15'-5"  | 16     | A201E | 1   | 5    | STR  | 25'-11"  | 27     | A257E | 1   | 5    | STR  | 5'-7"   | 6      | A446  | 1   | 5    | STR  | 15'-5"  | 16     | A501 | 1   | 5    | STR  | 25'-11" | 27     |     |     |      |      |        |        |
| A147E | 1   | 5    | STR  | 15'-0"  | 16     | A202E | 1   | 5    | STR  | 25'-7"   | 27     | A258E | 1   | 5    | STR  | 5'-3"   | 5      | A447  | 1   | 5    | STR  | 15'-0"  | 16     | A502 | 1   | 5    | STR  | 25'-7"  | 27     |     |     |      |      |        |        |
| A148E | 1   | 5    | STR  | 14'-8"  | 15     | A203E | 1   | 5    | STR  | 25'-2"   | 26     | A259E | 1   | 5    | STR  | 4'-11"  | 5      | A448  | 1   | 5    | STR  | 14'-8"  | 15     | A503 | 1   | 5    | STR  | 25'-2"  | 26     |     |     |      |      |        |        |
| A149E | 1   | 5    | STR  | 14'-3"  | 15     | A204E | 1   | 5    | STR  | 24'-10"  | 26     | A260E | 1   | 5    | STR  | 4'-6"   | 5      | A449  | 1   | 5    | STR  | 14'-3"  | 15     | A504 | 1   | 5    | STR  | 24'-10" | 26     |     |     |      |      |        |        |
| A150E | 1   | 5    | STR  | 13'-10" | 14     | A205E | 1   | 5    | STR  | 24'-5"   | 25     | A261E | 1   | 5    | STR  | 4'-2"   | 4      | A450  | 1   | 5    | STR  | 13'-10" | 14     | A505 | 1   | 5    | STR  | 24'-5"  | 25     |     |     |      |      |        |        |
| A151E | 1   | 5    | STR  | 13'-5"  | 14     | A206E | 1   | 5    | STR  | 24'-1"   | 25     | A262E | 1   | 5    | STR  | 3'-10"  | 4      | A451  | 1   | 5    | STR  | 13'-5"  | 14     | A506 | 1   | 5    | STR  | 24'-1"  | 25     |     |     |      |      |        |        |
| A152E | 1   | 5    | STR  | 13'-0"  | 14     | A207E | 1   | 5    | STR  | 23'-9"   | 25     | A263E | 1   | 5    | STR  | 3'-6"   | 4      | A452  | 1   | 5    | STR  | 13'-0"  | 14     | A507 | 1   | 5    | STR  | 23'-9"  | 25     |     |     |      |      |        |        |
|       |     |      |      |         |        | A208E | 1   | 5    | STR  | 23'-4"</ |        |       |     |      |      |         |        |       |     |      |      |         |        |      |     |      |      |         |        |     |     |      |      |        |        |

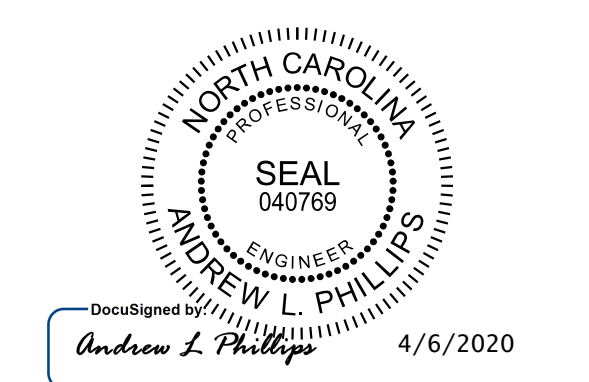






PROJECT NO. B-5301  
PITT COUNTY  
 STATION: 25+98.05 -L-

SHEET 1 OF 5



**Kimley»Horn**  
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|  |     |       |     |     |       |
|--|-----|-------|-----|-----|-------|
| STATE OF NORTH CAROLINA<br>DEPARTMENT OF TRANSPORTATION<br>RALEIGH |     |       |     |     |       |
| SUBSTRUCTURE   |     |       |     |     |       |
| END BENT 1   |     |       |     |     |       |
| REVISIONS  |     |       |     |     |       |
| NO.  | BY: | DATE: | NO. | BY: | DATE: |
| 1  |     |       | 3   |     |       |
| 2  |     |       | 4   |     |       |
| SHEET NO.  |     |       |     |     | S-38  |
| TOTAL SHEETS   |     |       |     |     | 55    |

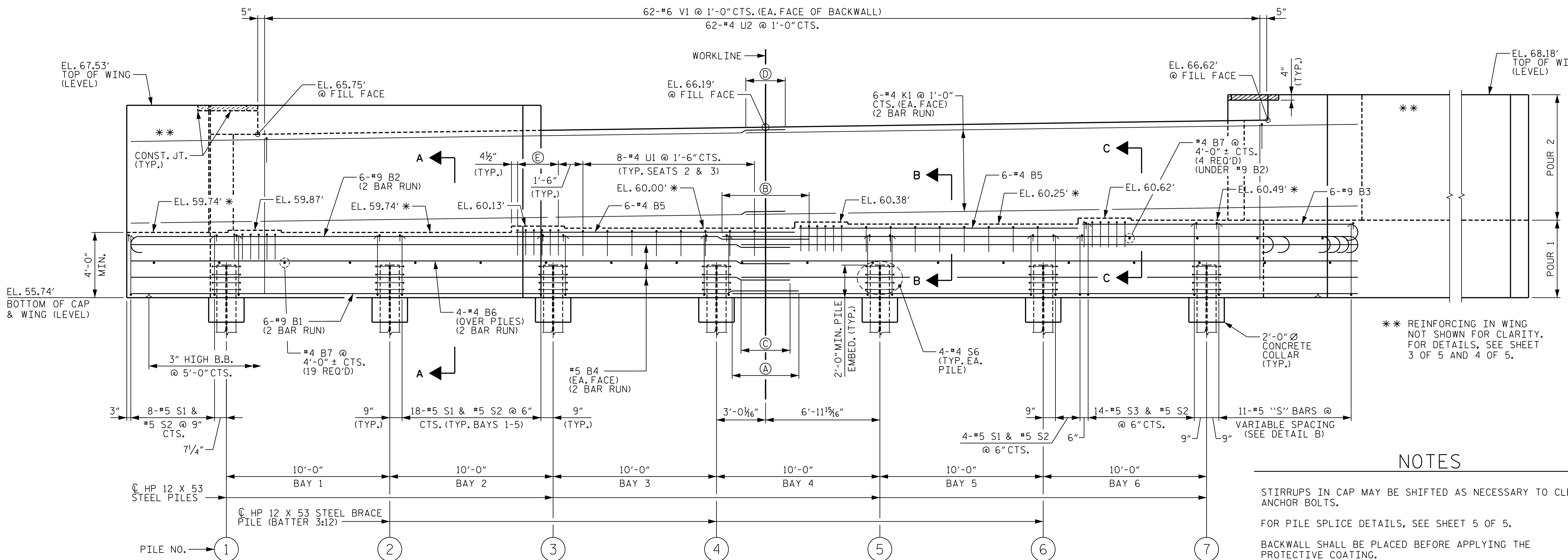
DRAWN BY: D. D. LOWERY DATE: 2/20  
 CHECKED BY: C. I. POOLE DATE: 2/20  
 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 2/20

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

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C:\Users\andrew.phillips\Public\Bridges - Documents\B-5301\Coord\Drawings\401\_075\_B5301\_SML\_E01\_038\_130087.dgn  
 4/2/2020





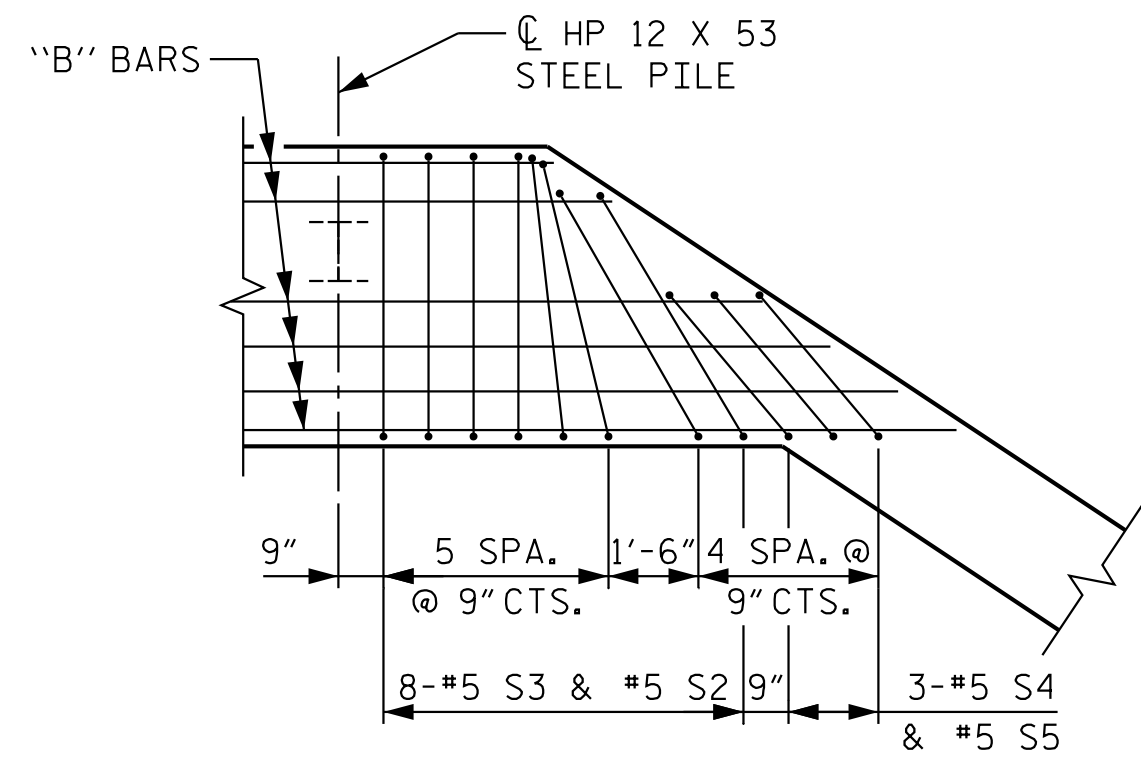
- (A) 4'-1" MIN. SPLICE (#9 B1)
- (B) 5'-4" MIN. SPLICE (#9 B2)
- (C) 3'-0" MIN. SPLICE (#5 B4)
- (D) 2'-5" MIN. SPLICE (#4 B6 & #4 K1)
- (E) 6-#4 U1 @ 6" CTS. (TYP. EA. SEAT)

**ELEVATION**

\* FOR LOCATION OF ELEVATION BETWEEN BRIDGE SEATS, SEE "SECTION A-A" ON SHEET 5 OF 5. WING PILES & PILE CAPS NOT SHOWN FOR CLARITY.

**NOTES**

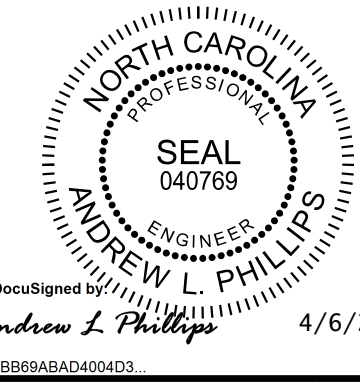
- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- FOR PILE SPLICE DETAILS, SEE SHEET 5 OF 5.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE PROTECTIVE COATING.
- THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE FRONT FACE AT THE RATE OF 2%.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE PARAPET & END POSTS ARE CAST IF SLIP FORMING IS USED.



**DETAIL D**

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SHEET 2 OF 5



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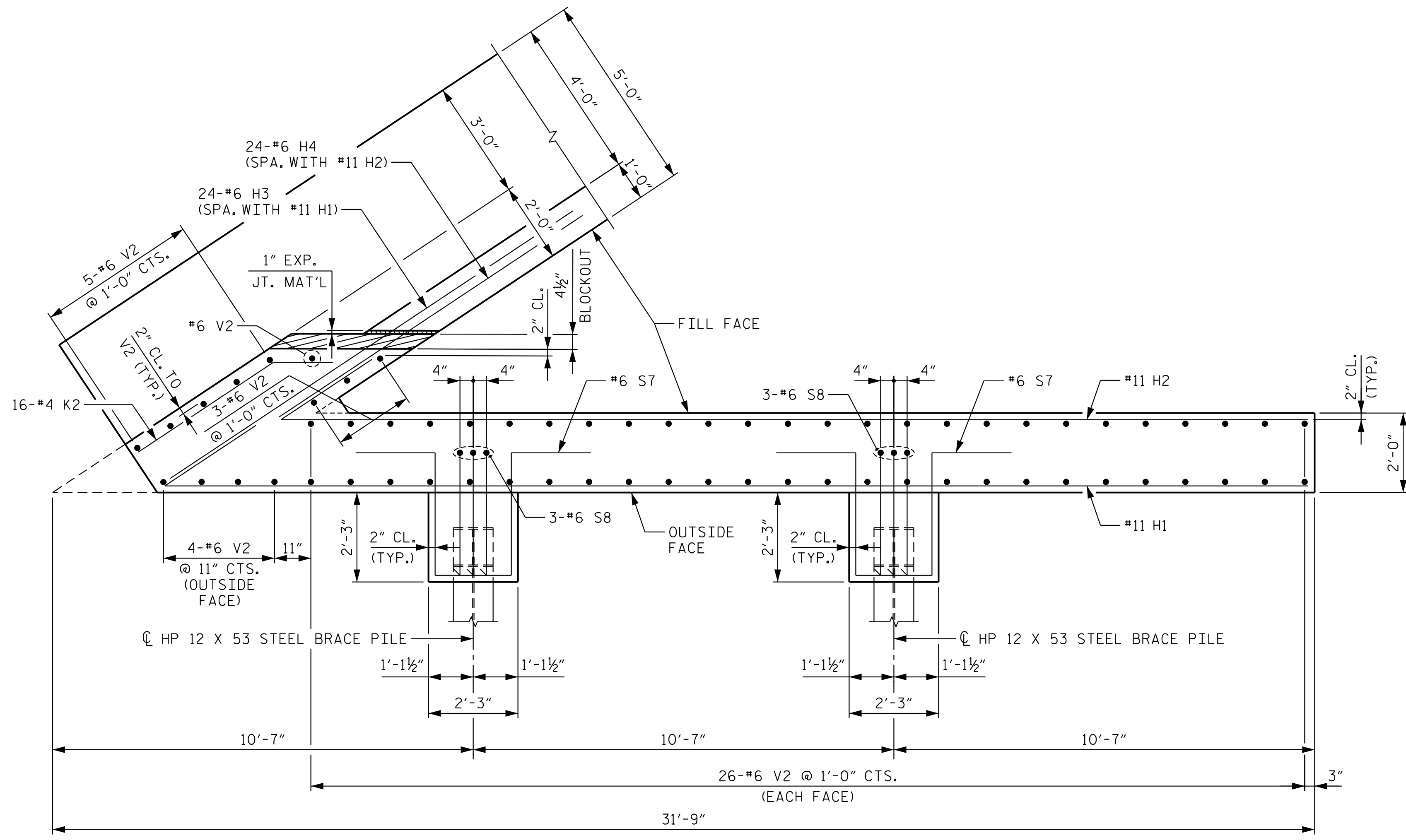
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 SUBSTRUCTURE  
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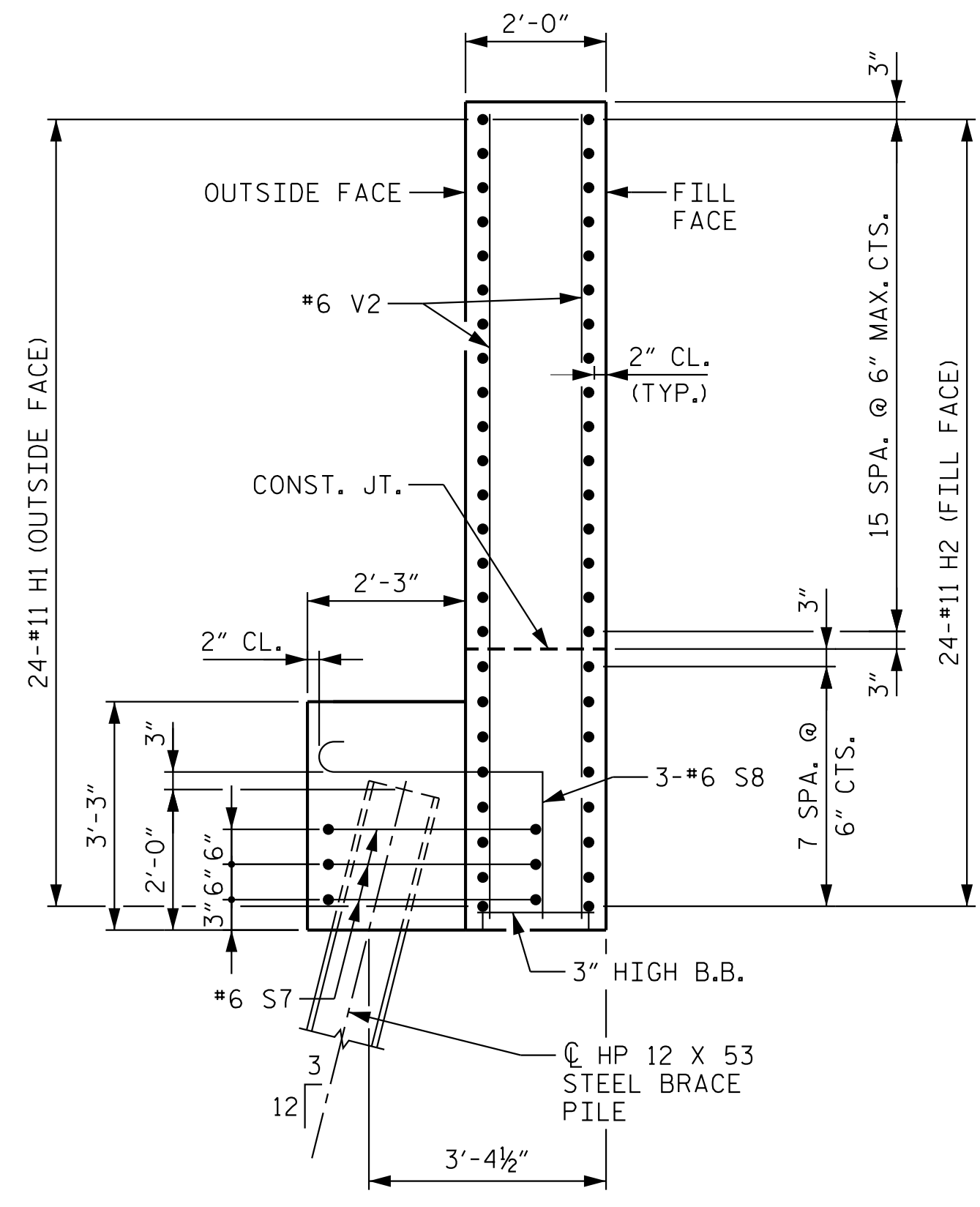
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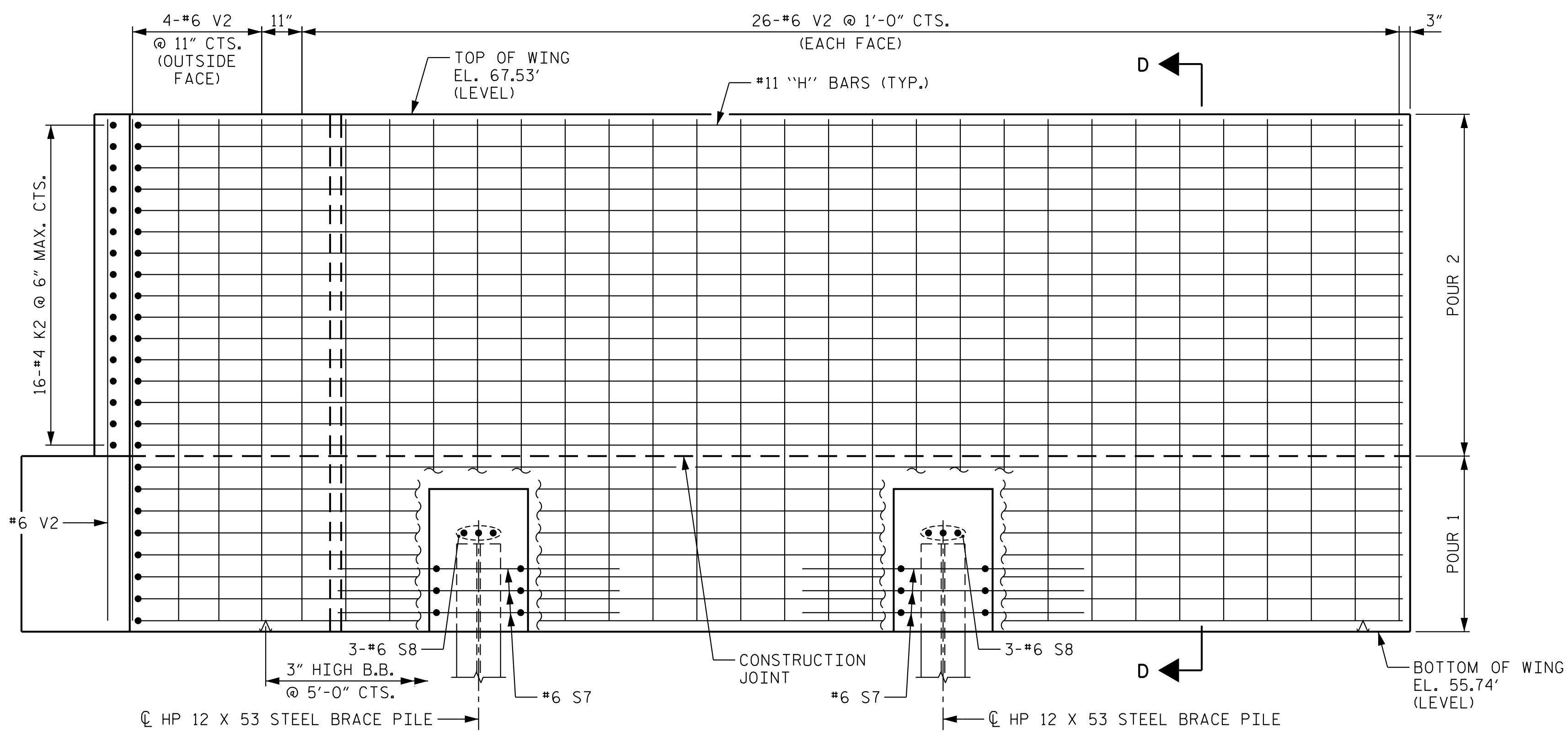
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PLAN W1



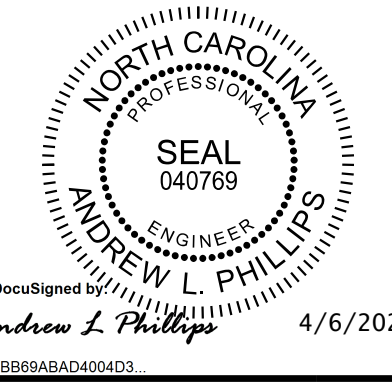
SECTION D-D



ELEVATION W1

PROJECT NO. B-5301  
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 STATION: 25+98.05 -L-

SHEET 3 OF 5



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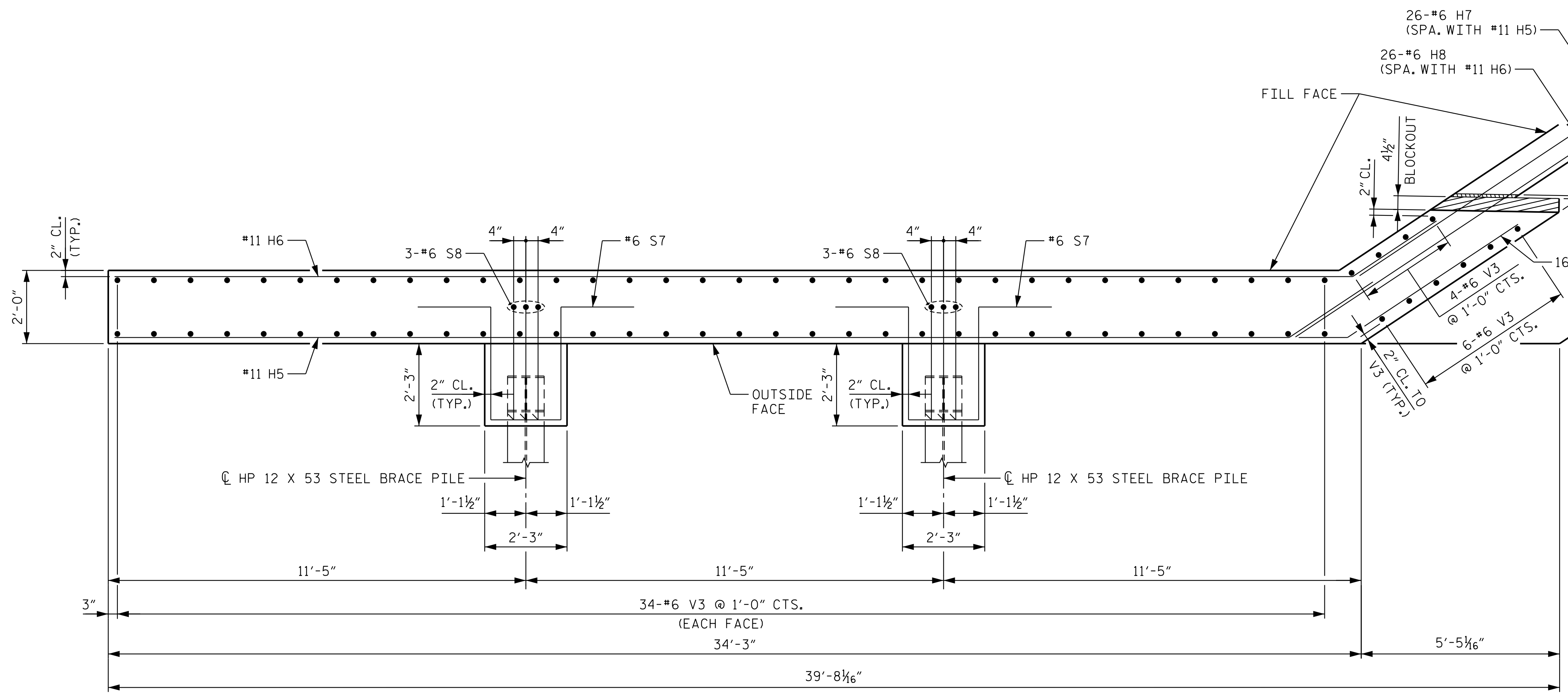
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| SUBSTRUCTURE<br>END BENT 1   |     |       |     |     |                    |
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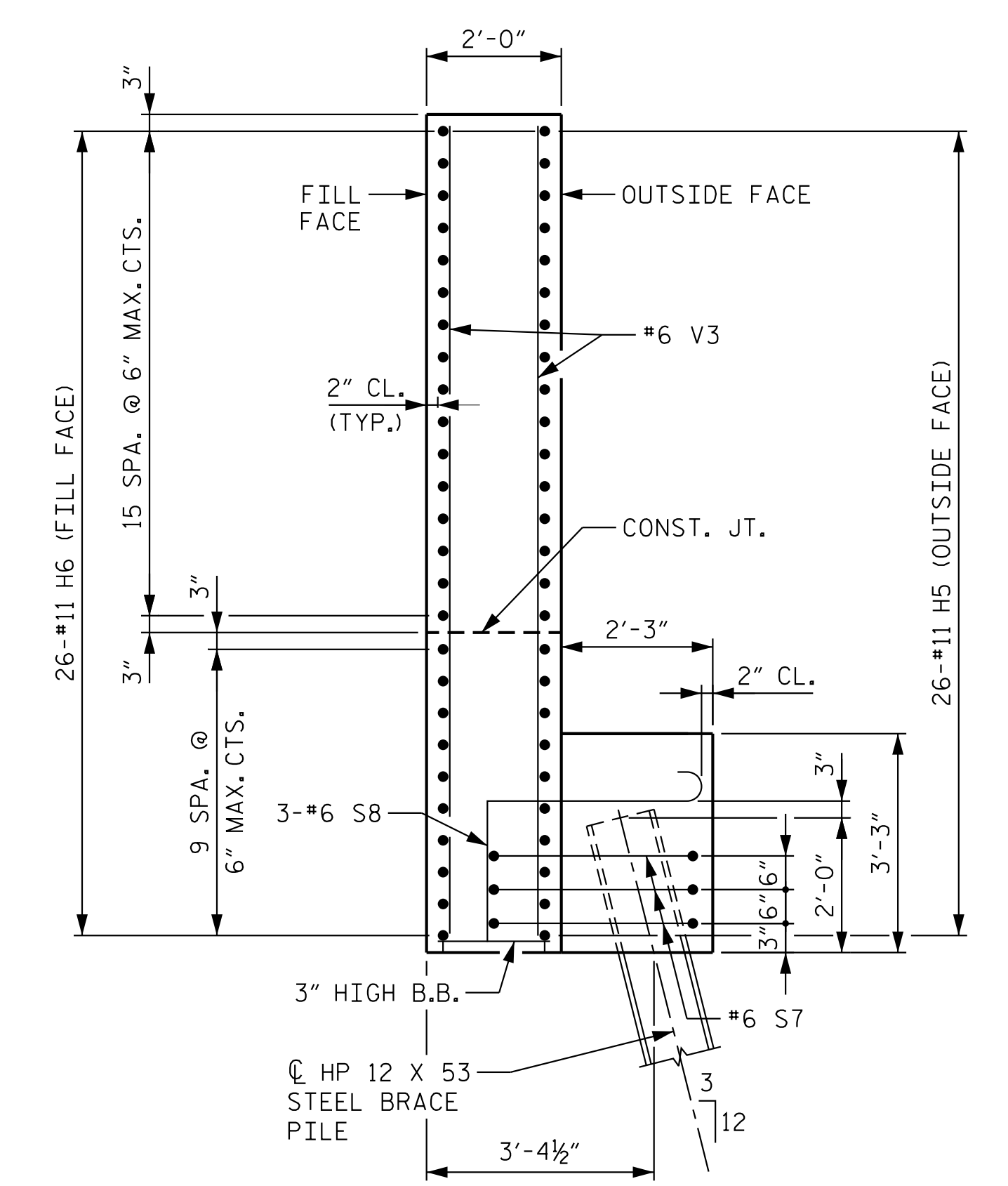
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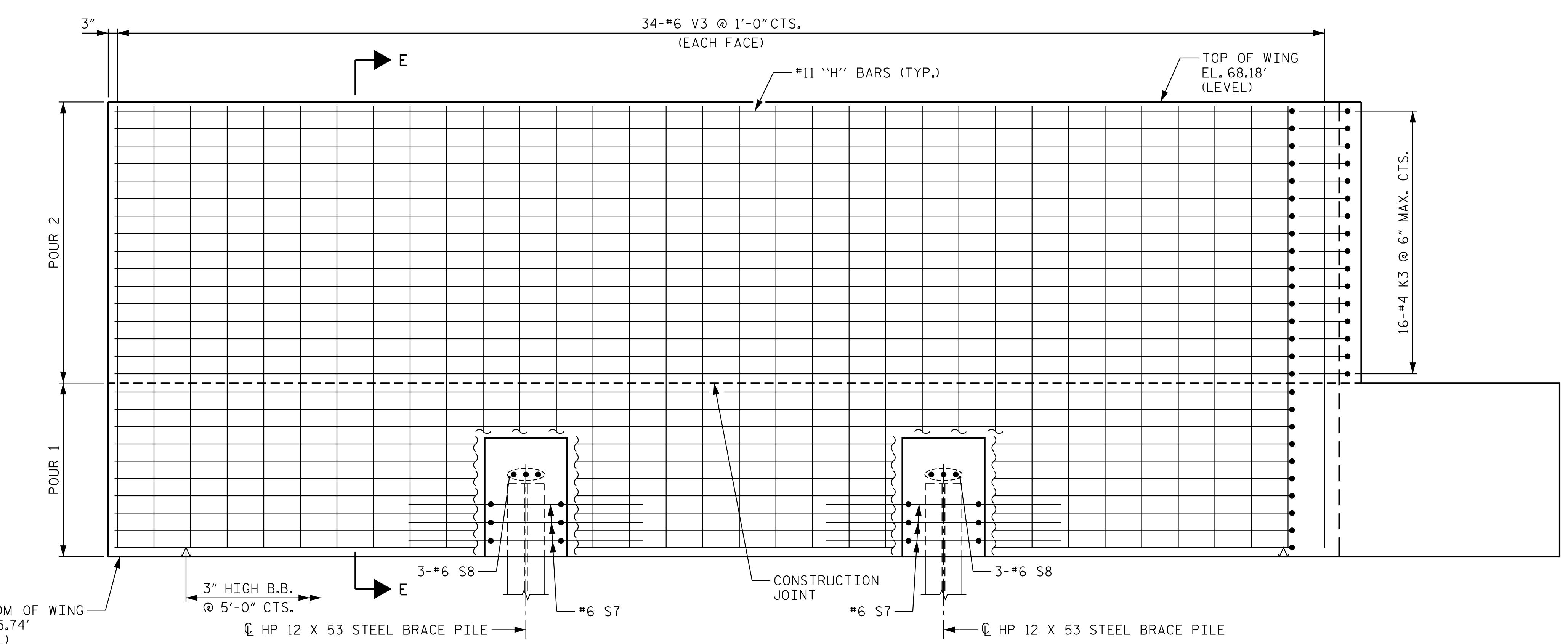




PLAN W2



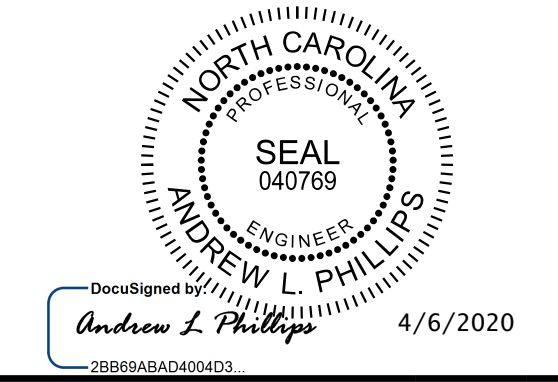
SECTION E-E



ELEVATION W2

PROJECT NO. B-5301  
PITT COUNTY  
 STATION: 25+98.05 -L-

SHEET 4 OF 5



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| SUBSTRUCTURE                 |     |       |     |     |       |
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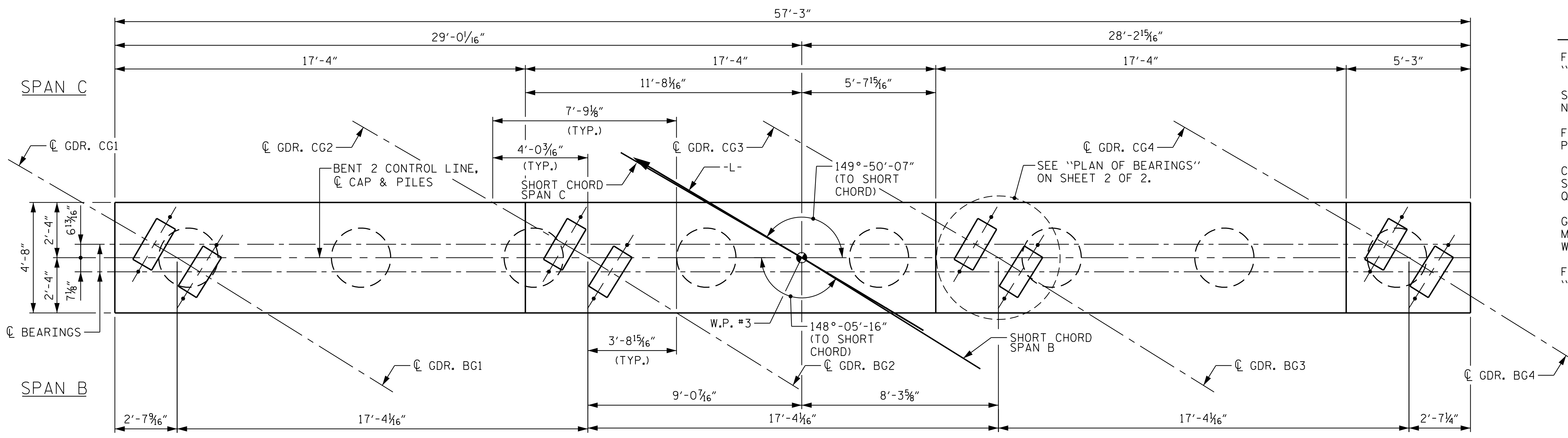




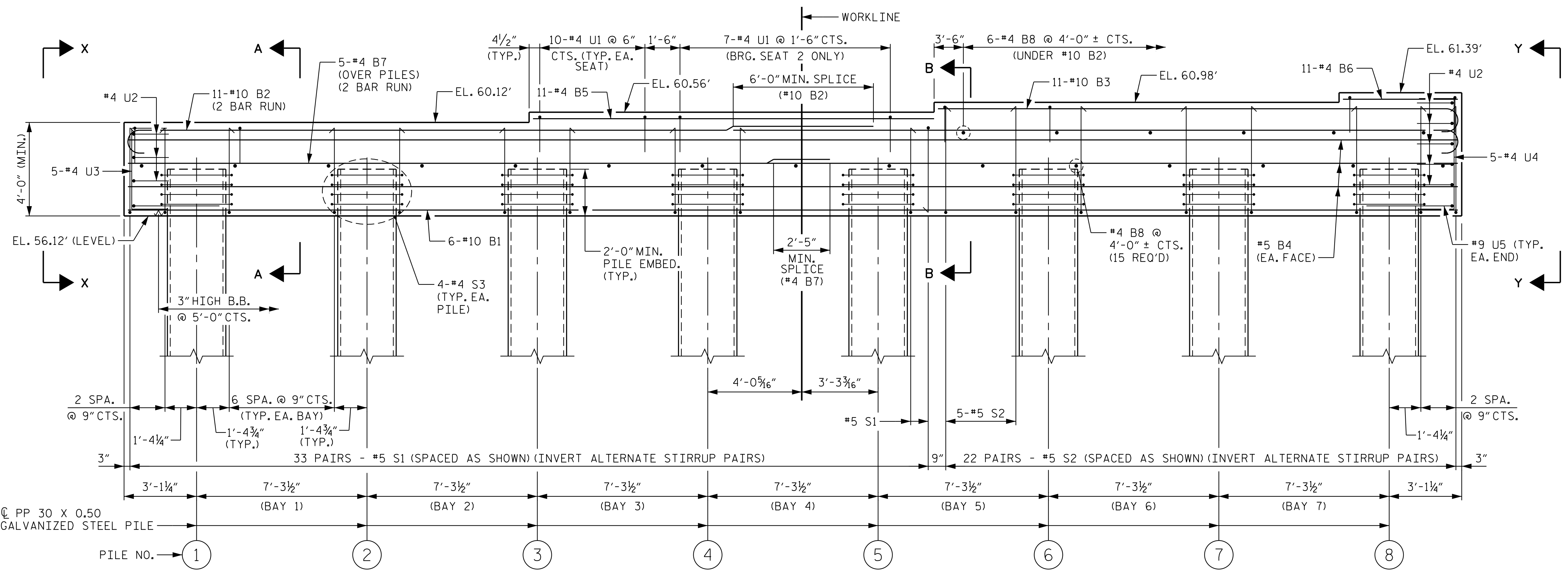








PLAN



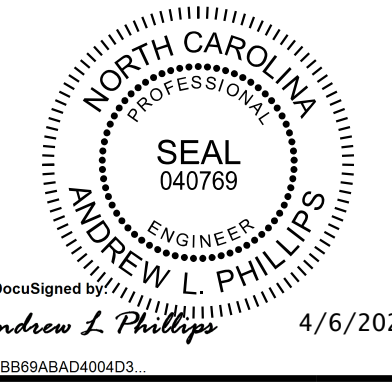
ELEVATION

NOTES

- FOR "SECTION A-A", "SECTION B-B", "VIEW X-X" & "VIEW Y-Y", SEE SHEET 2 OF 2.
- STIRRUPS AND "U" BARS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- FOR REINFORCING STEEL IN PILE, SEE "30" STEEL PIPE PILE" SHEET.
- CONCRETE DISPLACED BY PP 30 X 0.50 GALVANIZED STEEL PILE HAS BEEN DEDUCTED FROM THE CONCRETE QUANTITY.
- GALVANIZE THE TOP OF EACH INTERIOR BENT PILE A MINIMUM OF 40 FEET. GALVANIZE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.
- FOR ADDITIONAL INFORMATION AND NOTES, SEE "GENERAL DRAWING" SHEET 2 OF 4.

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SHEET 1 OF 2



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| SUBSTRUCTURE   |     |       |     |     |       |
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| REVISIONS  |     |       |     |     |       |
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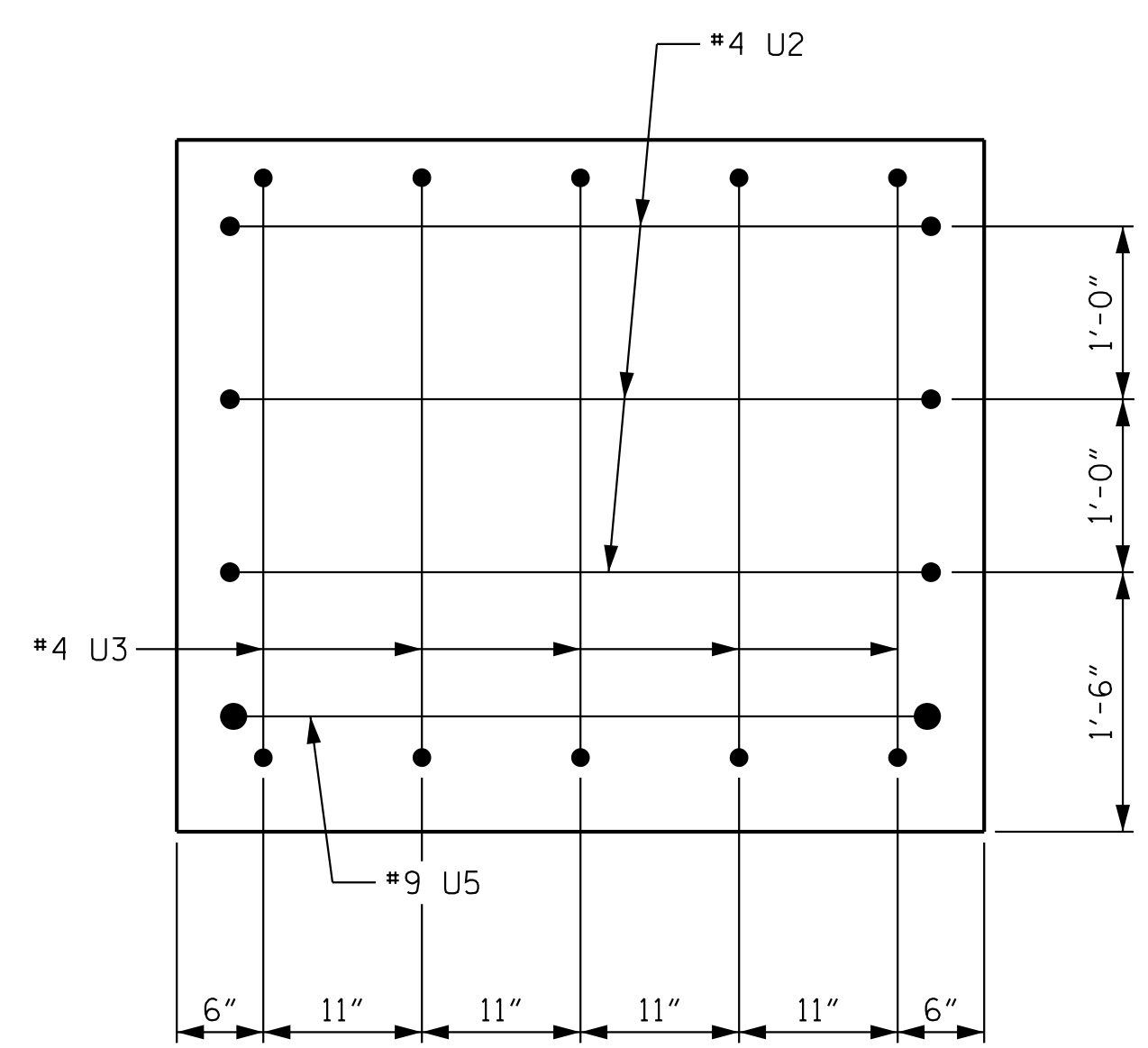
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S-45  
TOTAL SHEETS  
55

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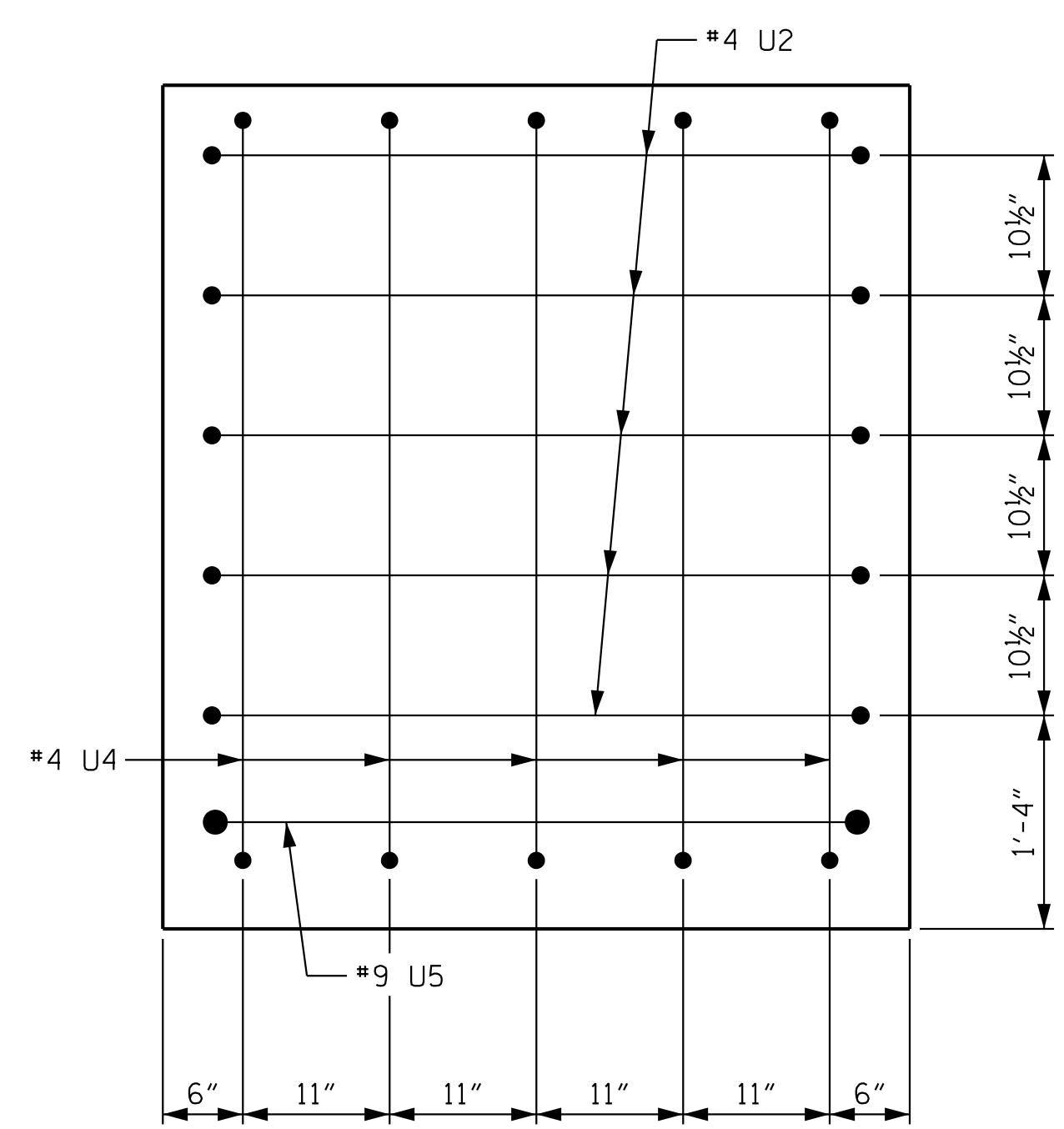
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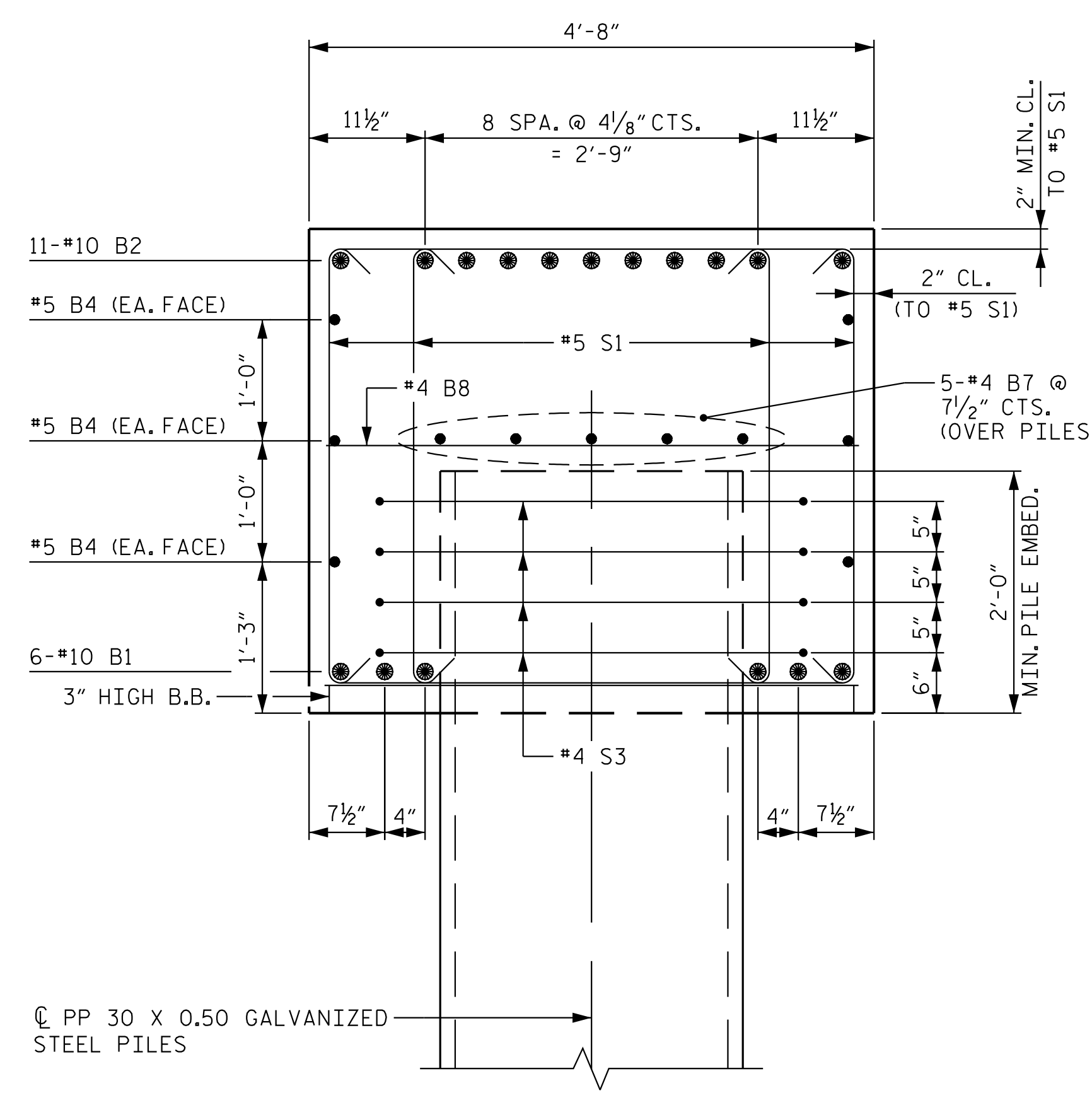
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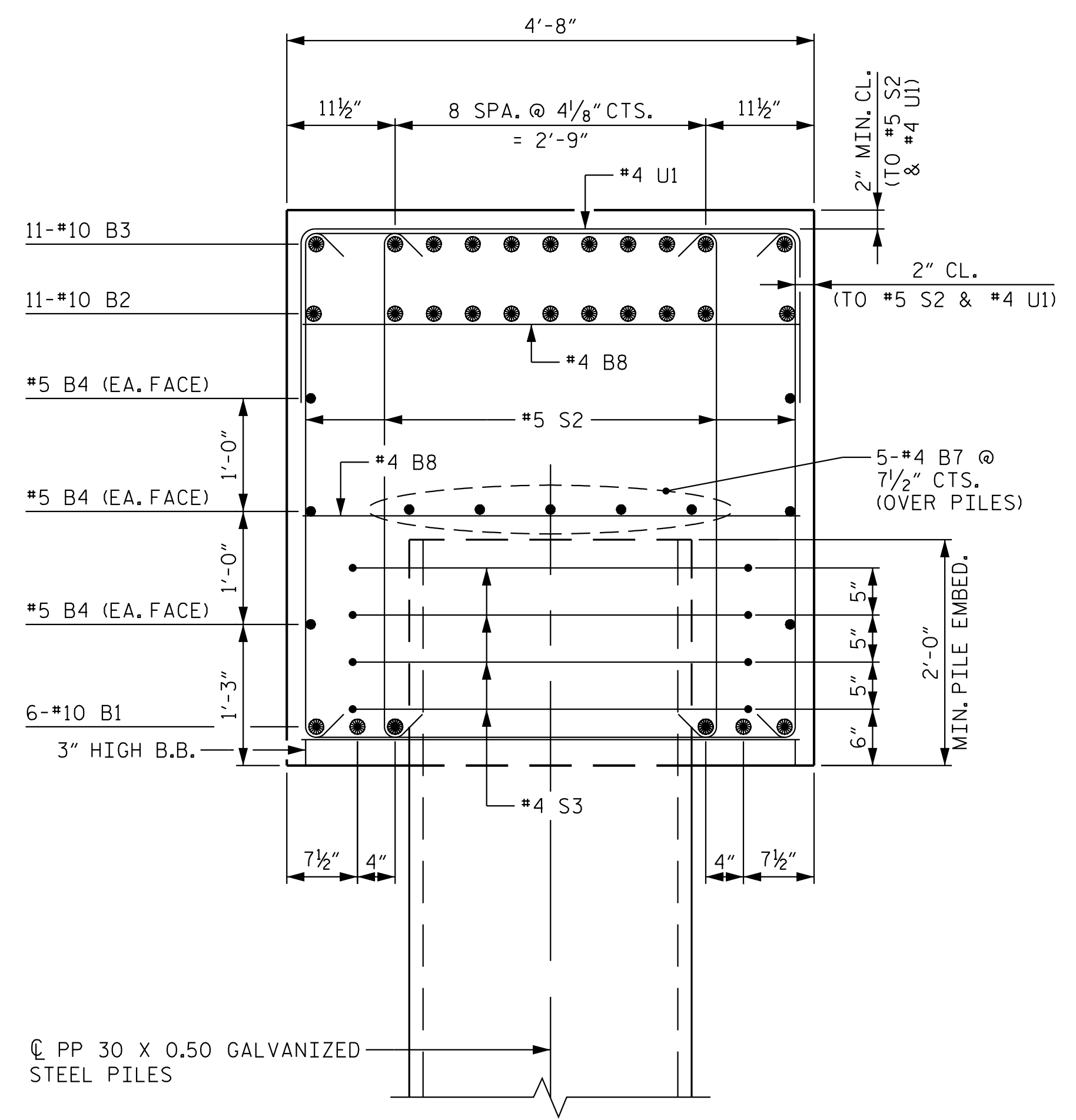
VIEW X-X



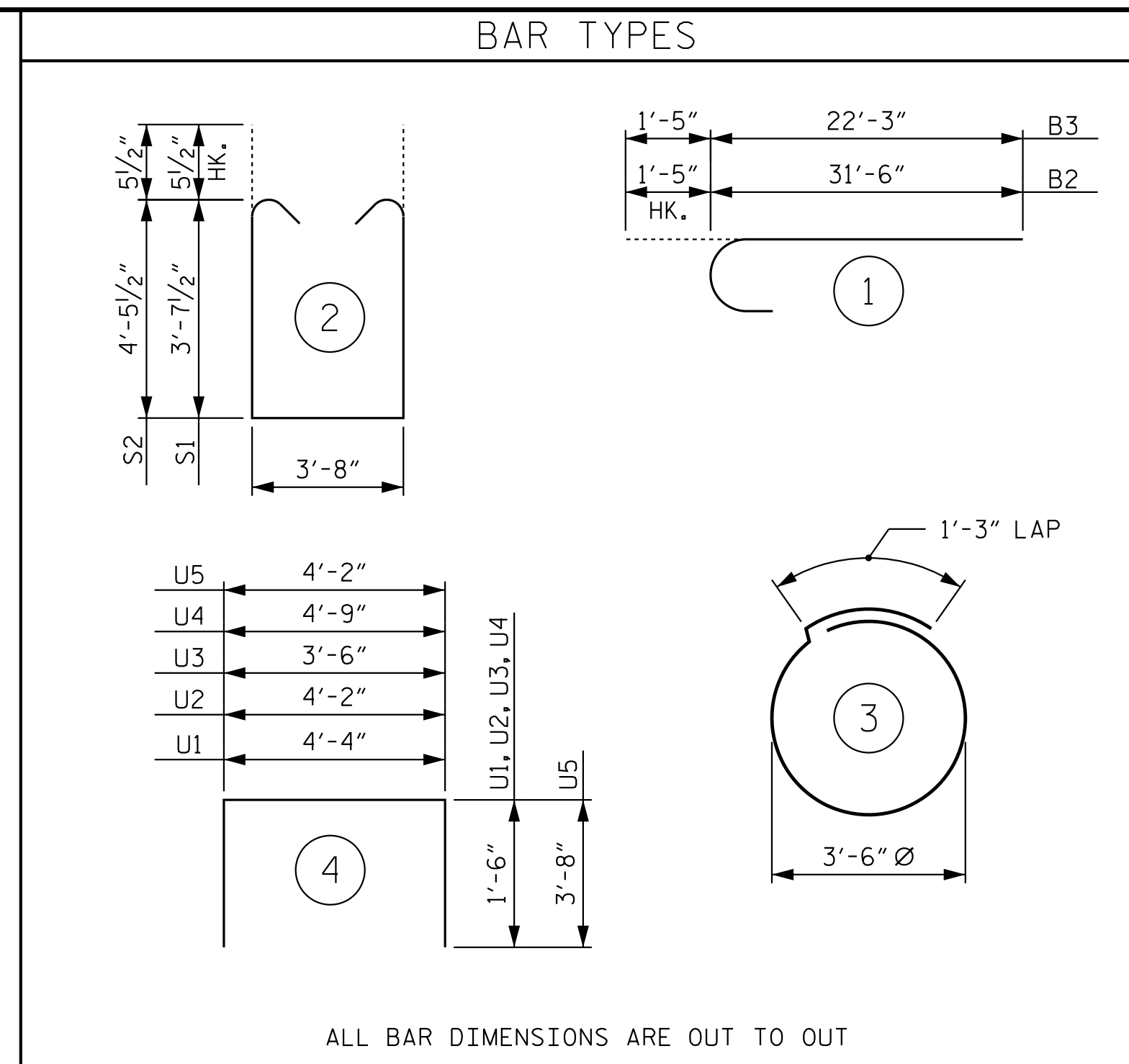
VIEW Y-Y



SECTION A-A

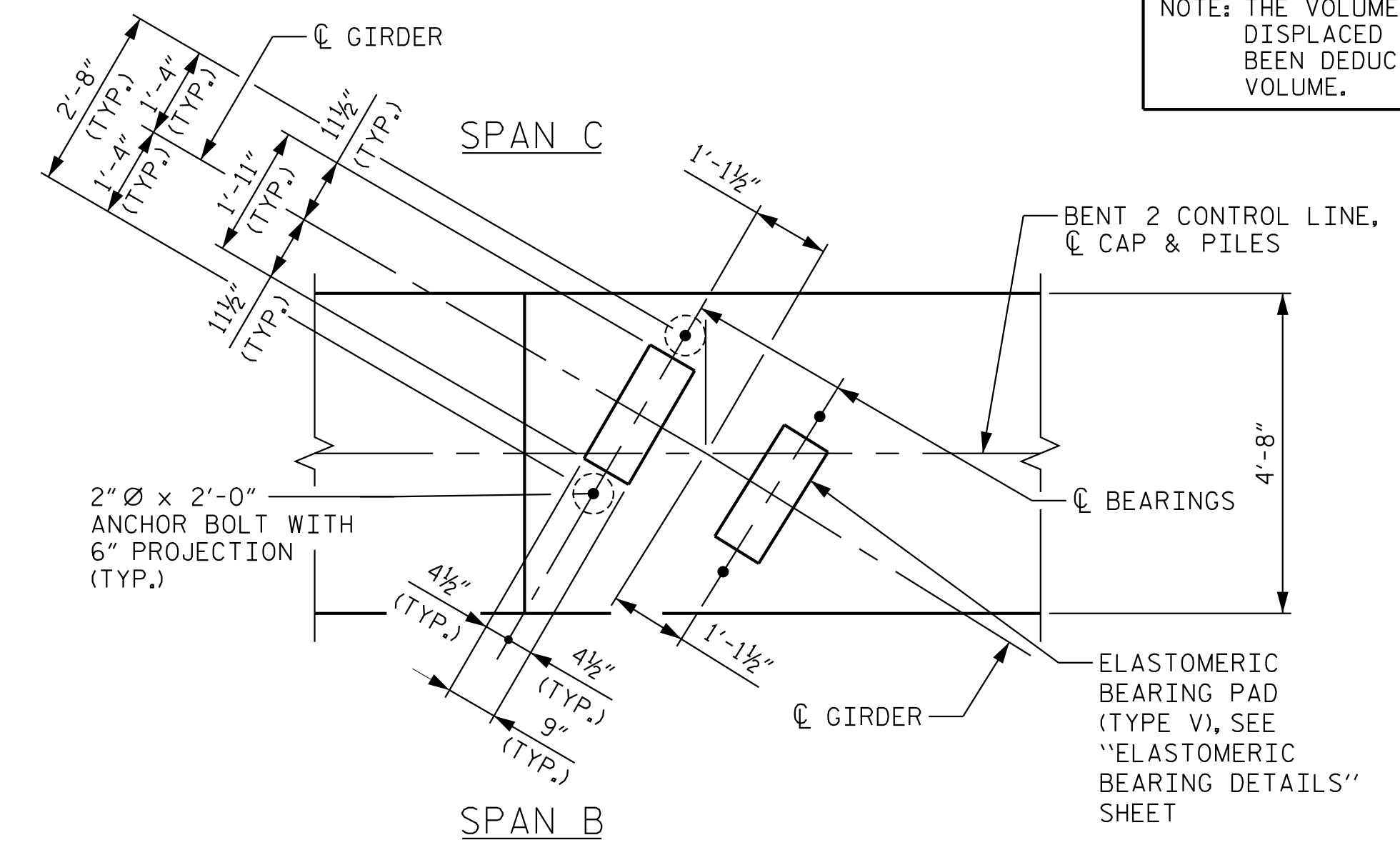


SECTION B-B



ALL BAR DIMENSIONS ARE OUT TO OUT

| BILL OF MATERIAL  |     |      |      |              |        |
|---|-----|------|------|--------------|--------|
| BENT 2  |     |      |      |              |        |
| BAR   | NO. | SIZE | TYPE | LENGTH       | WEIGHT |
| B1  | 6   | 10   | STR  | 56'-11"      | 1,469  |
| B2  | 22  | 10   | 1    | 32'-11"      | 3,116  |
| B3  | 11  | 10   | 1    | 23'-8"       | 1,120  |
| B4  | 6   | 5    | STR  | 56'-11"      | 356    |
| B5  | 11  | 4    | STR  | 17'-2"       | 126    |
| B6  | 11  | 4    | STR  | 4'-11"       | 36     |
| B7  | 10  | 4    | STR  | 29'-8"       | 198    |
| B8  | 21  | 4    | STR  | 4'-4"        | 61     |
| S1  | 66  | 5    | 2    | 11'-10"      | 815    |
| S2  | 44  | 5    | 2    | 13'-6"       | 620    |
| S3  | 32  | 4    | 3    | 12'-3"       | 262    |
| U1  | 47  | 4    | 4    | 7'-4"        | 230    |
| U2  | 8   | 4    | 4    | 7'-2"        | 38     |
| U3  | 5   | 4    | 4    | 6'-6"        | 22     |
| U4  | 5   | 4    | 4    | 7'-9"        | 26     |
| U5  | 2   | 9    | 4    | 11'-6"       | 78     |
| REINFORCING STEEL   |     |      |      | 8,573 LBS.   |        |
| CLASS "A" CONCRETE BREAKDOWN  |     |      |      |              |        |
| POUR 1 (CAP)  |     |      |      | C.Y. 41.7    |        |
| PP 30 X 0.50 GALVANIZED STEEL PILES   |     |      |      |              |        |
| NO. 8   |     |      |      | 680 LIN. FT. |        |
| PILE REDRIVES   |     |      |      | 4 EA.        |        |
| PILE DRIVING EQUIPMENT SETUP FOR PP 30 X 0.50 GALVANIZED STEEL PILES                                  |     |      |      | 8 EA.        |        |
| NOTE: THE VOLUME OF THE CONCRETE DISPLACED BY THE PIPE PILES HAS BEEN DEDUCTED FROM THE TOTAL VOLUME. |     |      |      |              |        |

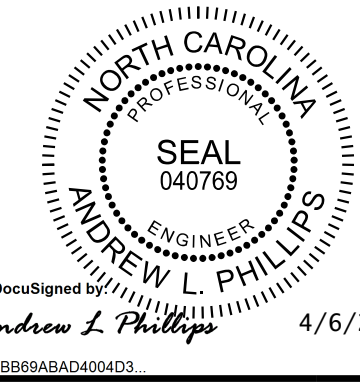


PLAN OF BEARINGS

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

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SHEET 2 OF 2



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| SUBSTRUCTURE                 |     |       |     |     |       |
| BENT 2                       |     |       |     |     |       |
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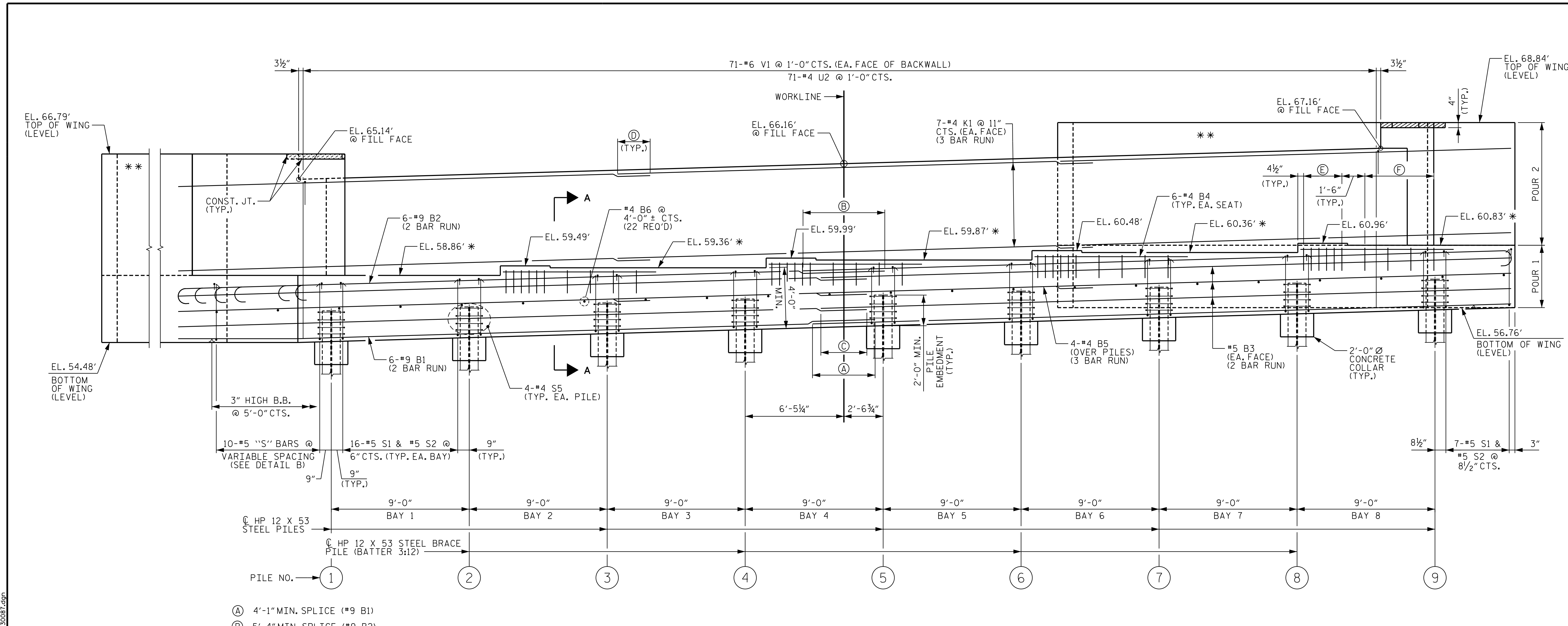
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- (A) 4'-1" MIN. SPLICE (#9 B1)
- (B) 5'-4" MIN. SPLICE (#9 B2)
- (C) 3'-0" MIN. SPLICE (#5 B3)
- (D) 2'-5" MIN. SPLICE (#4 B5 & #4 K1)
- (E) 6-#4 U1 @ 6" CTS. (TYP. EA. SEAT)
- (F) 4-#4 U1 @ 1'-6" CTS. (TYP. EA. SEAT)

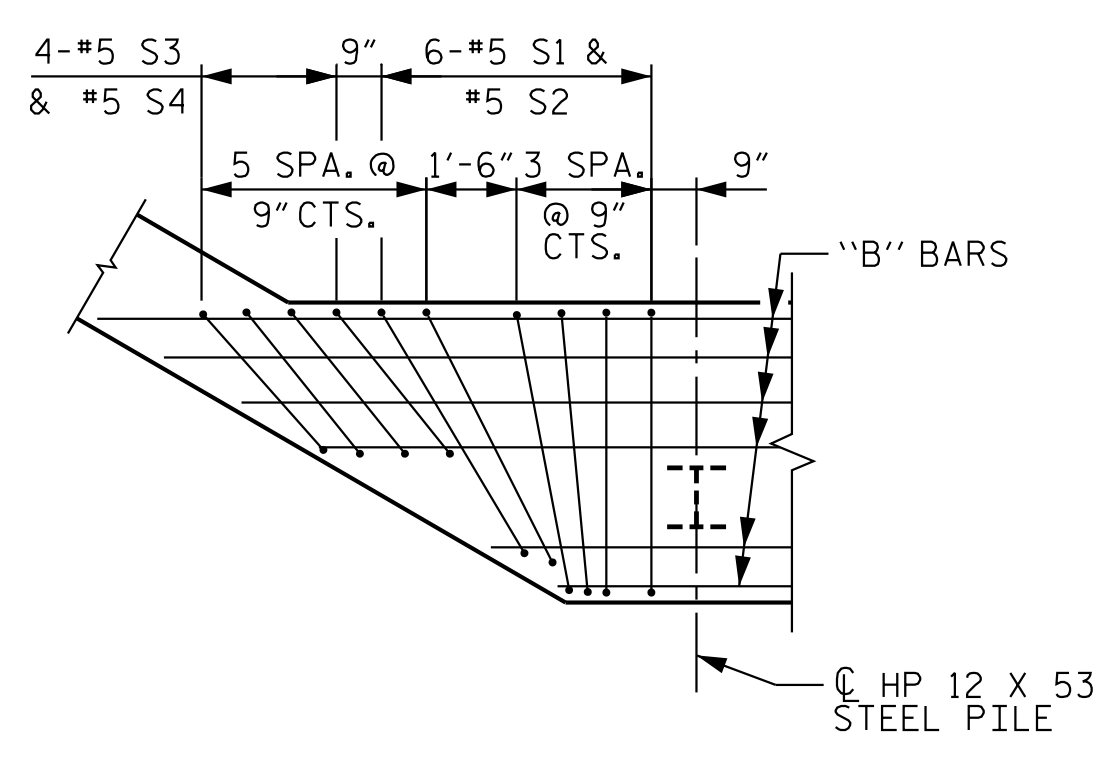
**ELEVATION**

\* FOR LOCATION OF ELEVATION BETWEEN BRIDGE SEATS, SEE "SECTION A-A" ON SHEET 5 OF 5. WING PILES & PILE CAPS NOT SHOWN FOR CLARITY.

\*\* REINFORCING IN WING NOT SHOWN FOR CLARITY. FOR DETAILS, SEE SHEET 3 OF 5 AND 4 OF 5.

**NOTES**

- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- FOR PILE SPLICE DETAILS, SEE SHEET 5 OF 5.
- BACKWALL SHALL BE PLACED BEFORE APPLYING THE PROTECTIVE COATING.
- THE TOP SURFACE AREAS OF THE END BENT CAP SHALL BE CURED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS EXCEPT THAT THE MEMBRANE CURING COMPOUND METHOD SHALL NOT BE USED.
- THE TOP SURFACE OF THE CAP EXCEPT THE BRIDGE SEAT BUILDUPS SHALL BE SLOPED TRANSVERSELY FROM THE FILL FACE TO THE FRONT FACE AT THE RATE OF 2%.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE PARAPET & END POSTS ARE CAST IF SLIP FORMING IS USED.

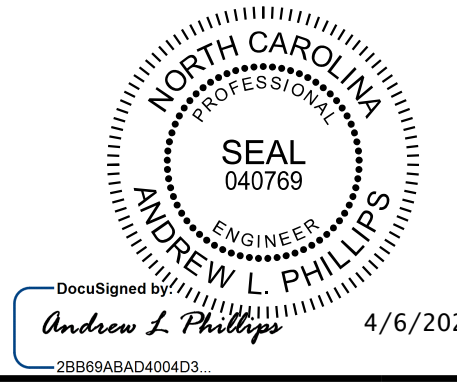


**DETAIL D**

| TOP OF PILE ELEVATIONS |           |
|------------------------|-----------|
| PILE NO.               | ELEVATION |
| 1                      | 56.55'    |
| 2                      | 56.80'    |
| 3                      | 57.06'    |
| 4                      | 57.32'    |
| 5                      | 57.58'    |
| 6                      | 57.84'    |
| 7                      | 58.10'    |
| 8                      | 58.35'    |
| 9                      | 58.61'    |

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SHEET 2 OF 5



STATE OF NORTH CAROLINA  
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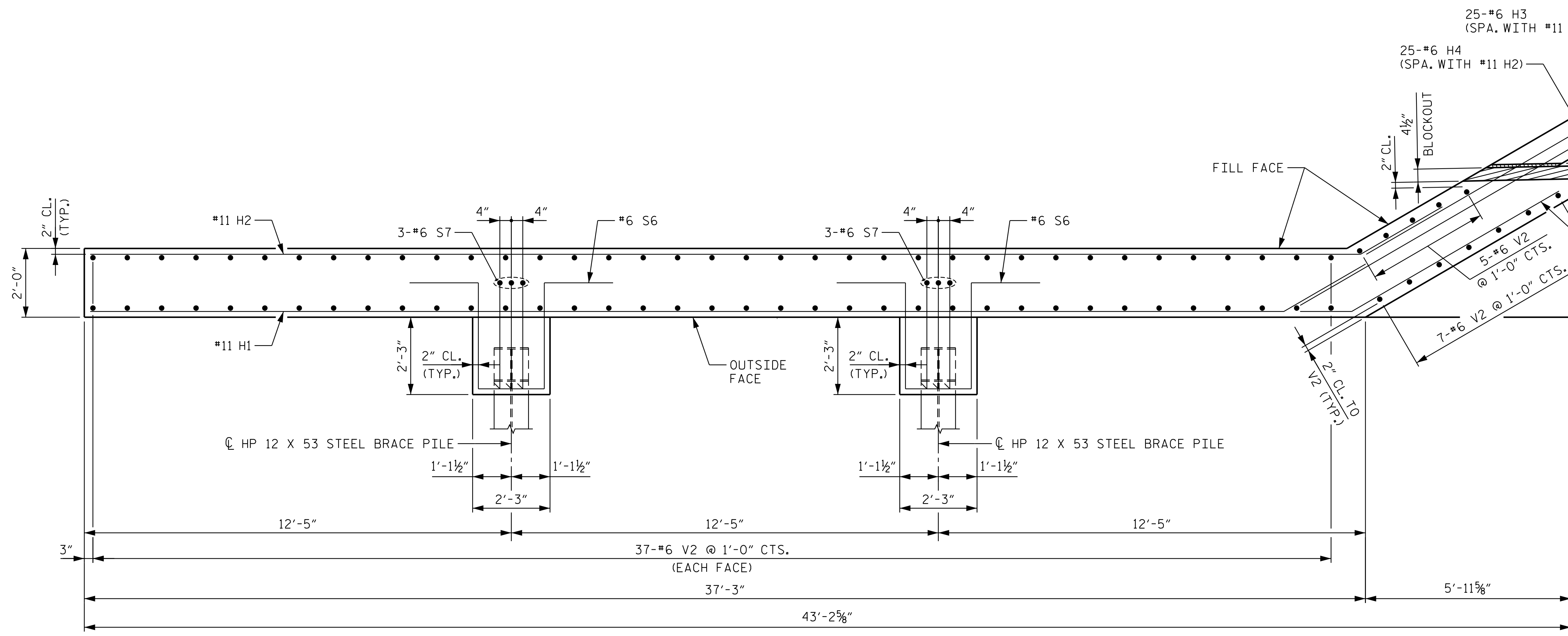
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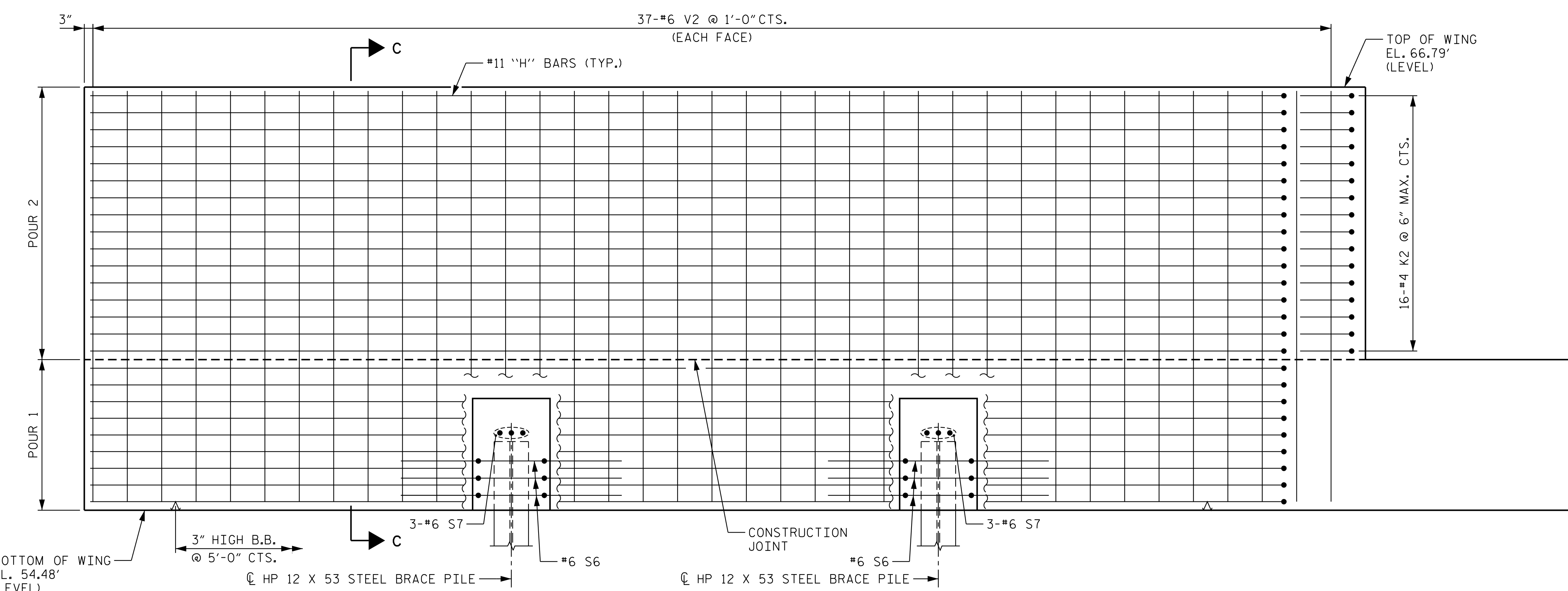
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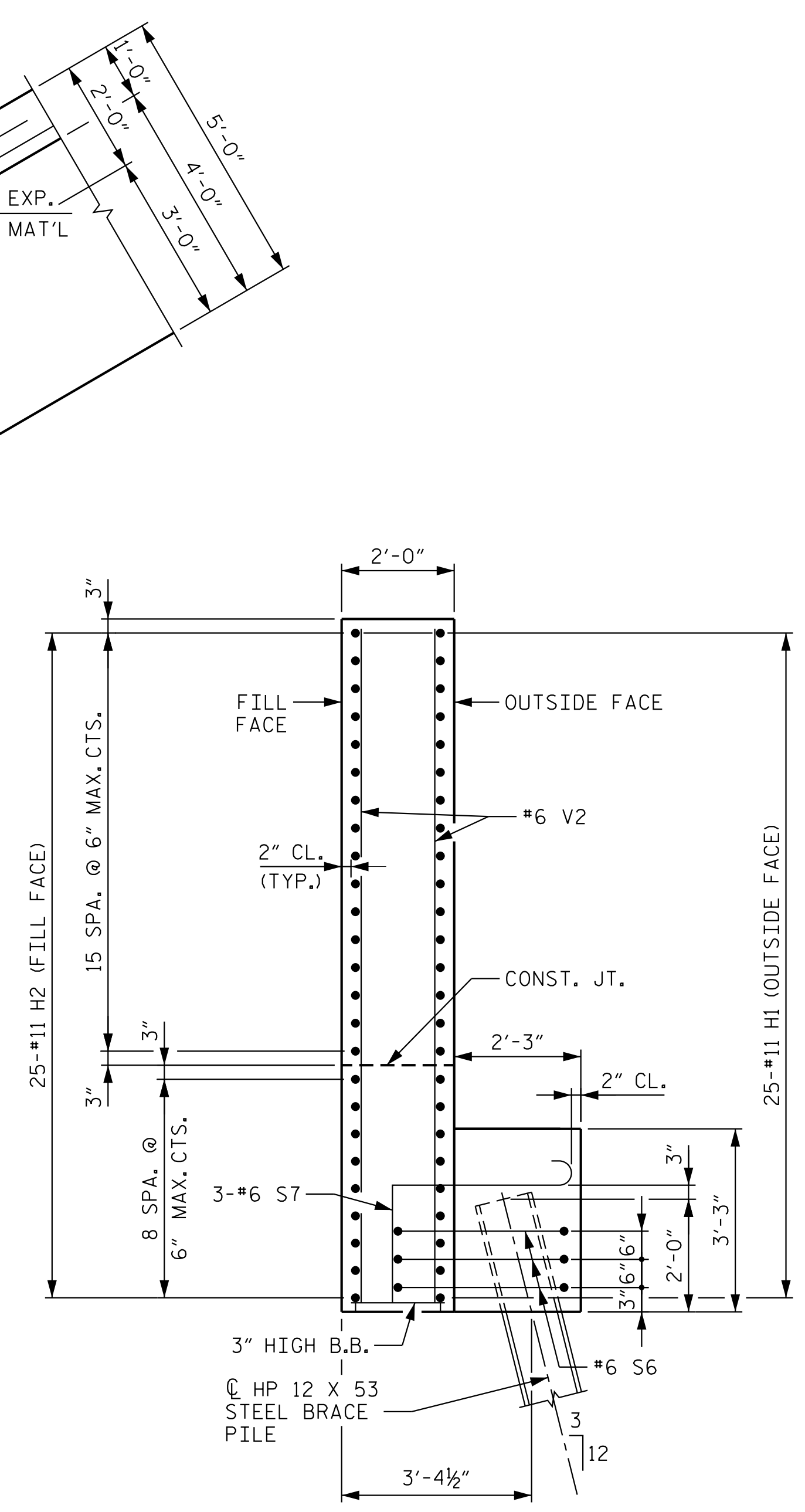




PLAN W3



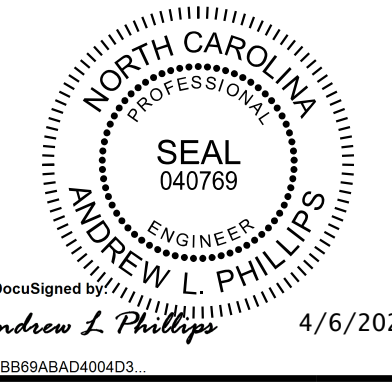
ELEVATION W3



SECTION C-C

PROJECT NO. B-5301  
PITT COUNTY  
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SHEET 3 OF 5



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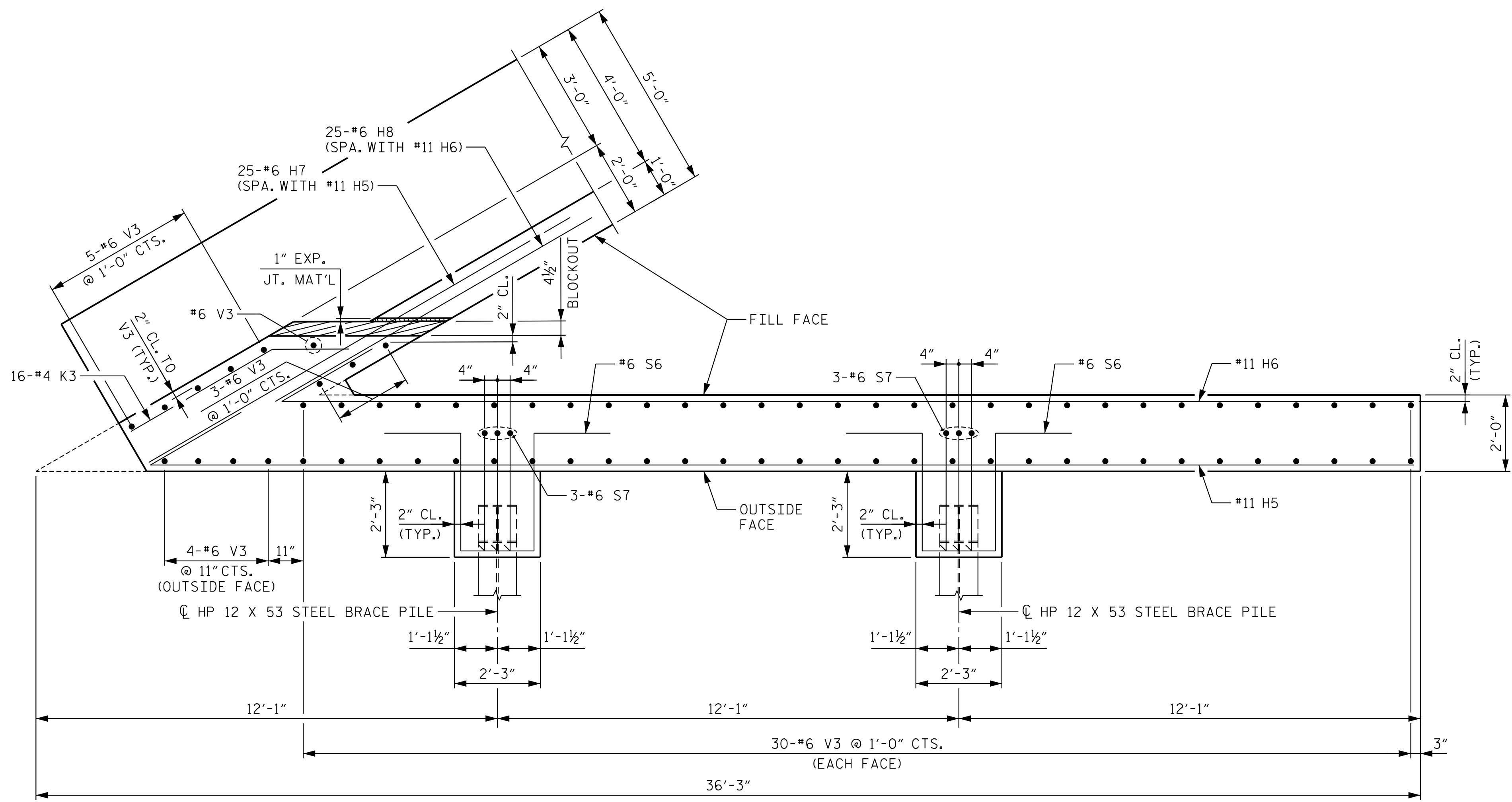
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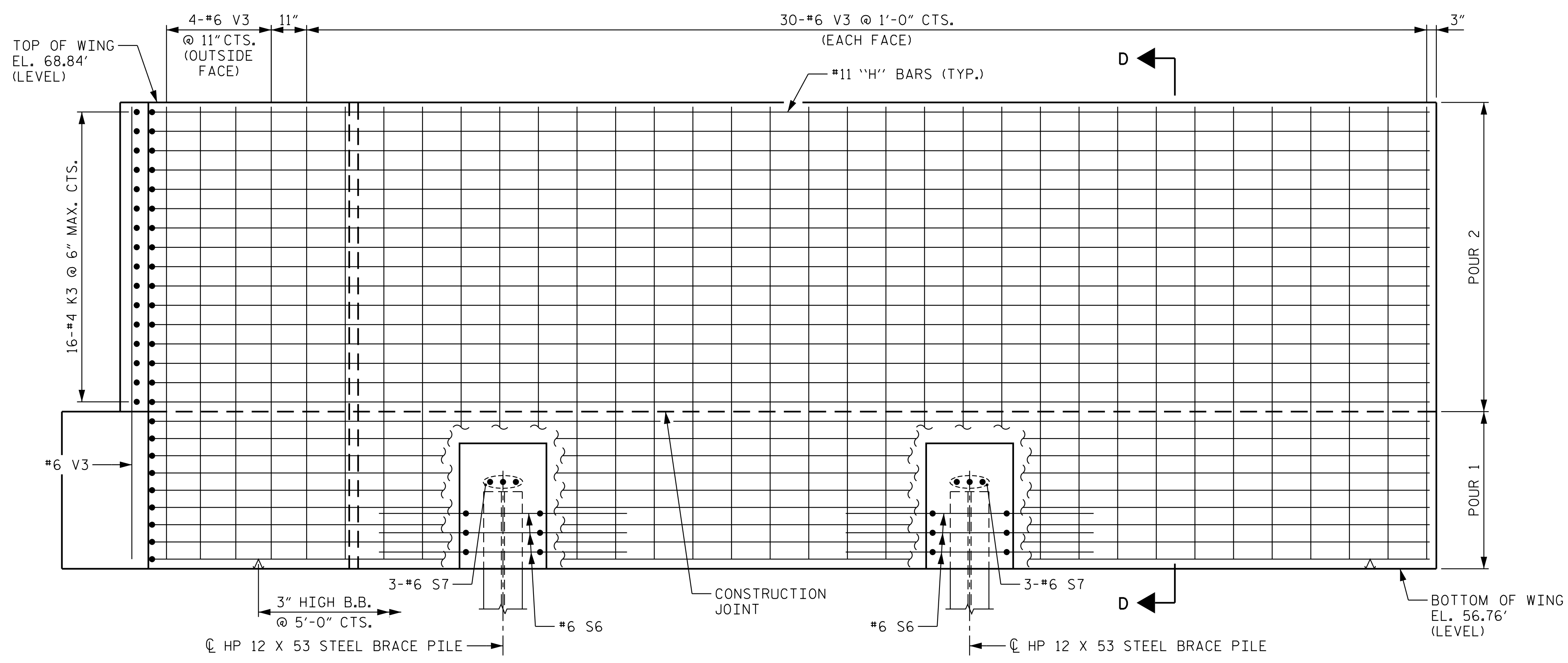
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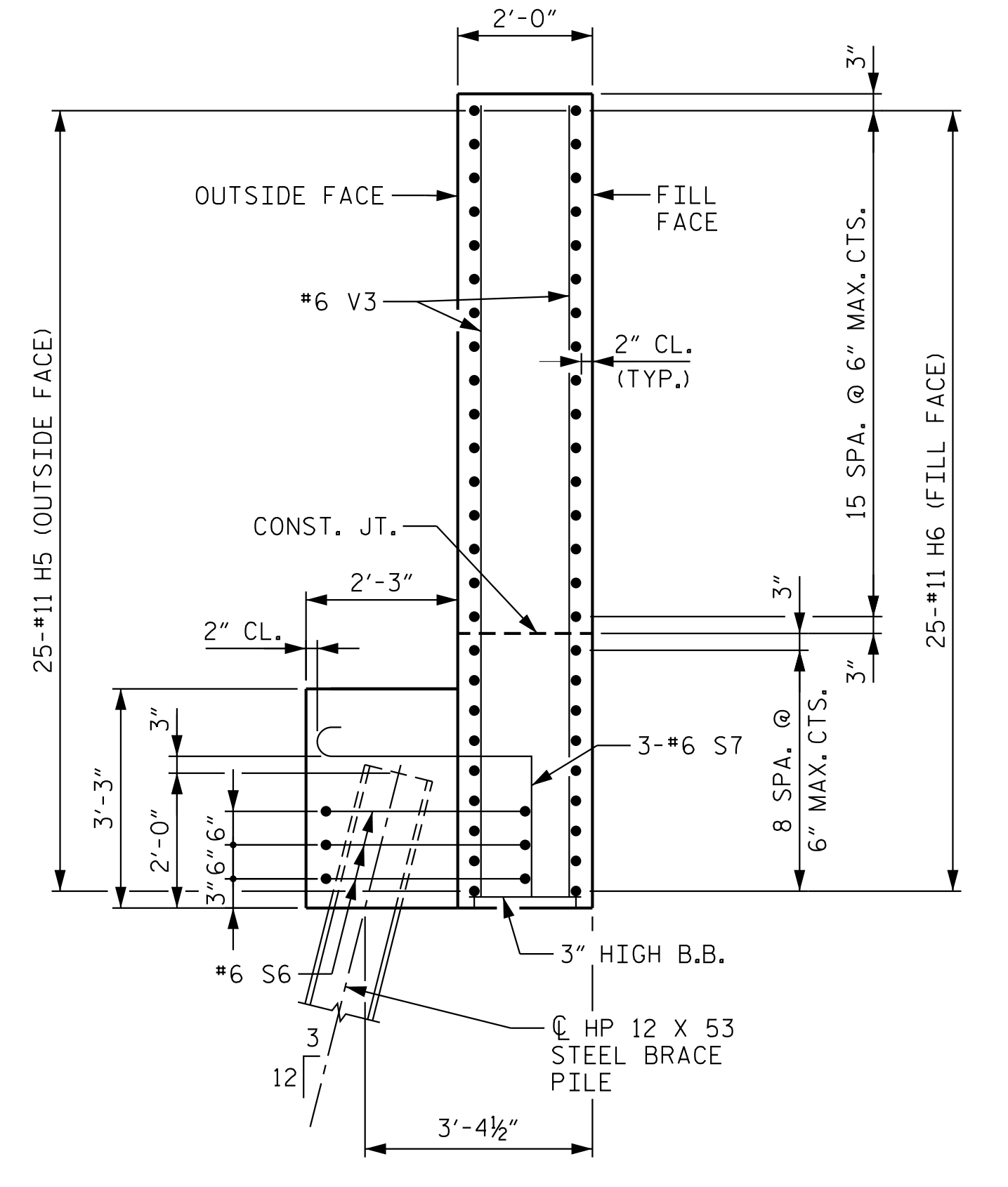
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PLAN W4



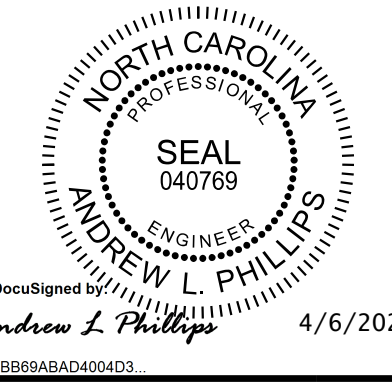
ELEVATION W4



SECTION D-D

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SHEET 4 OF 5



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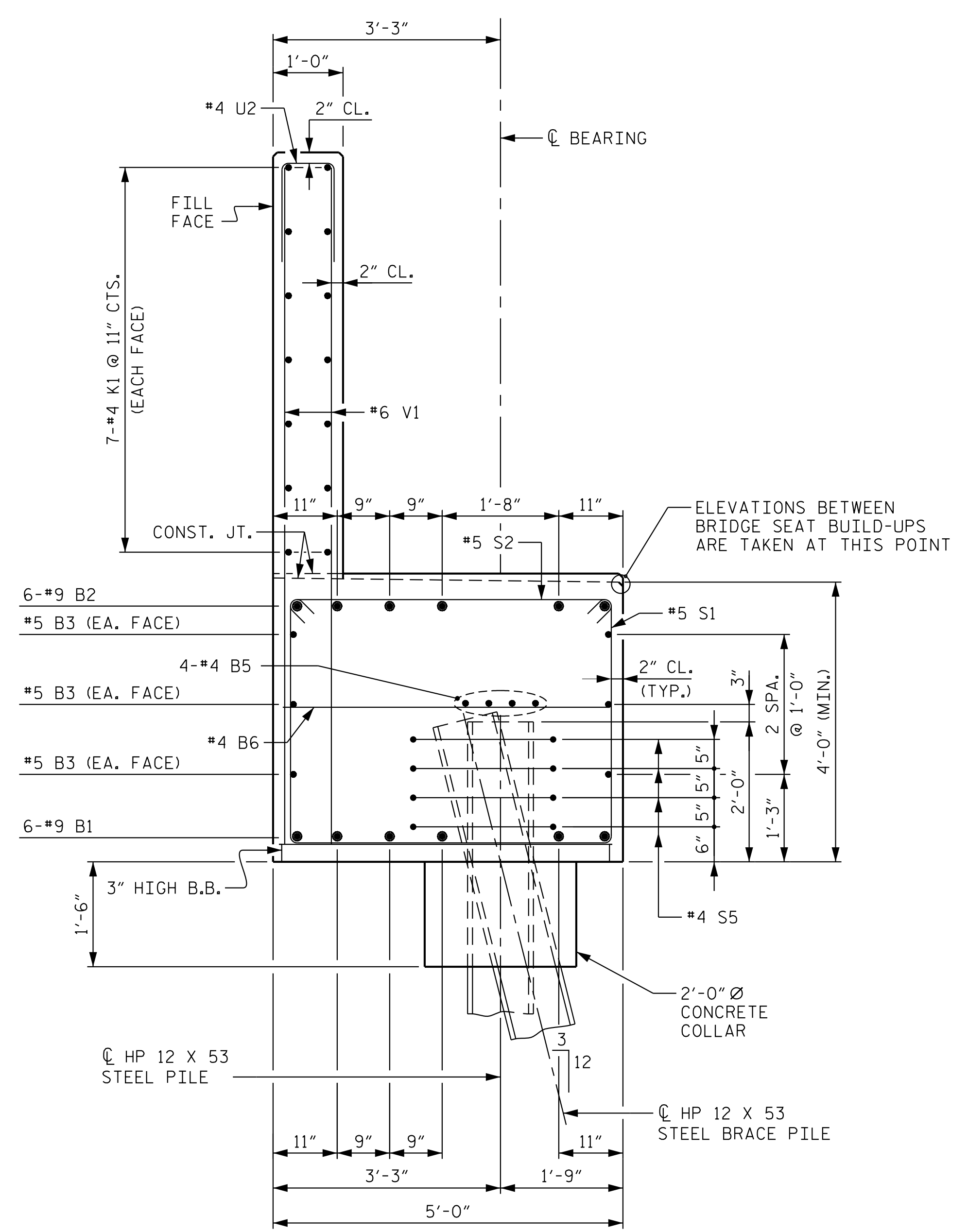
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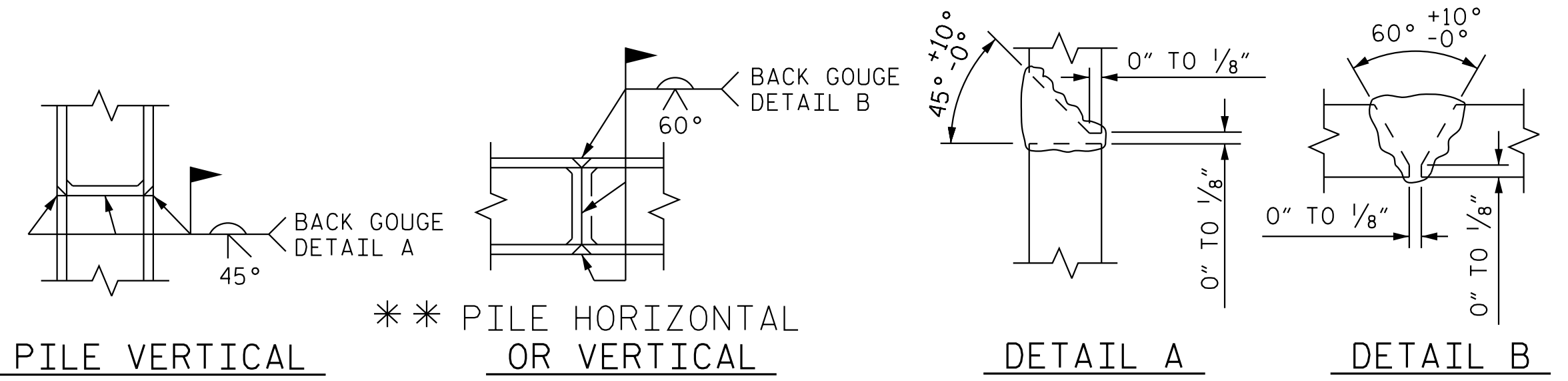
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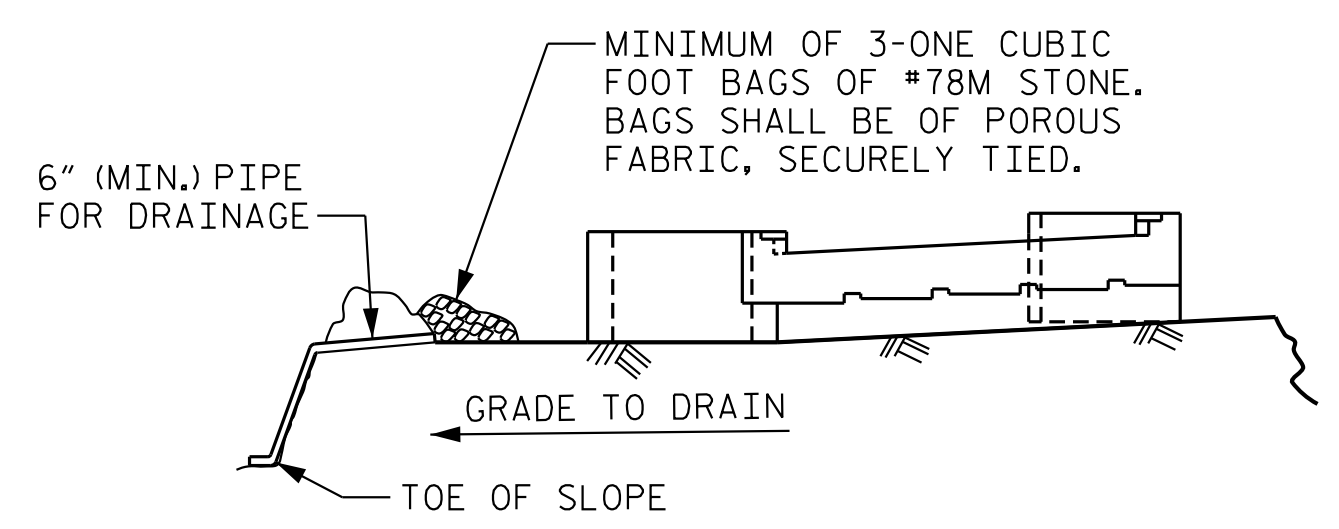




SECTION A-A



PILE SPLICE DETAILS



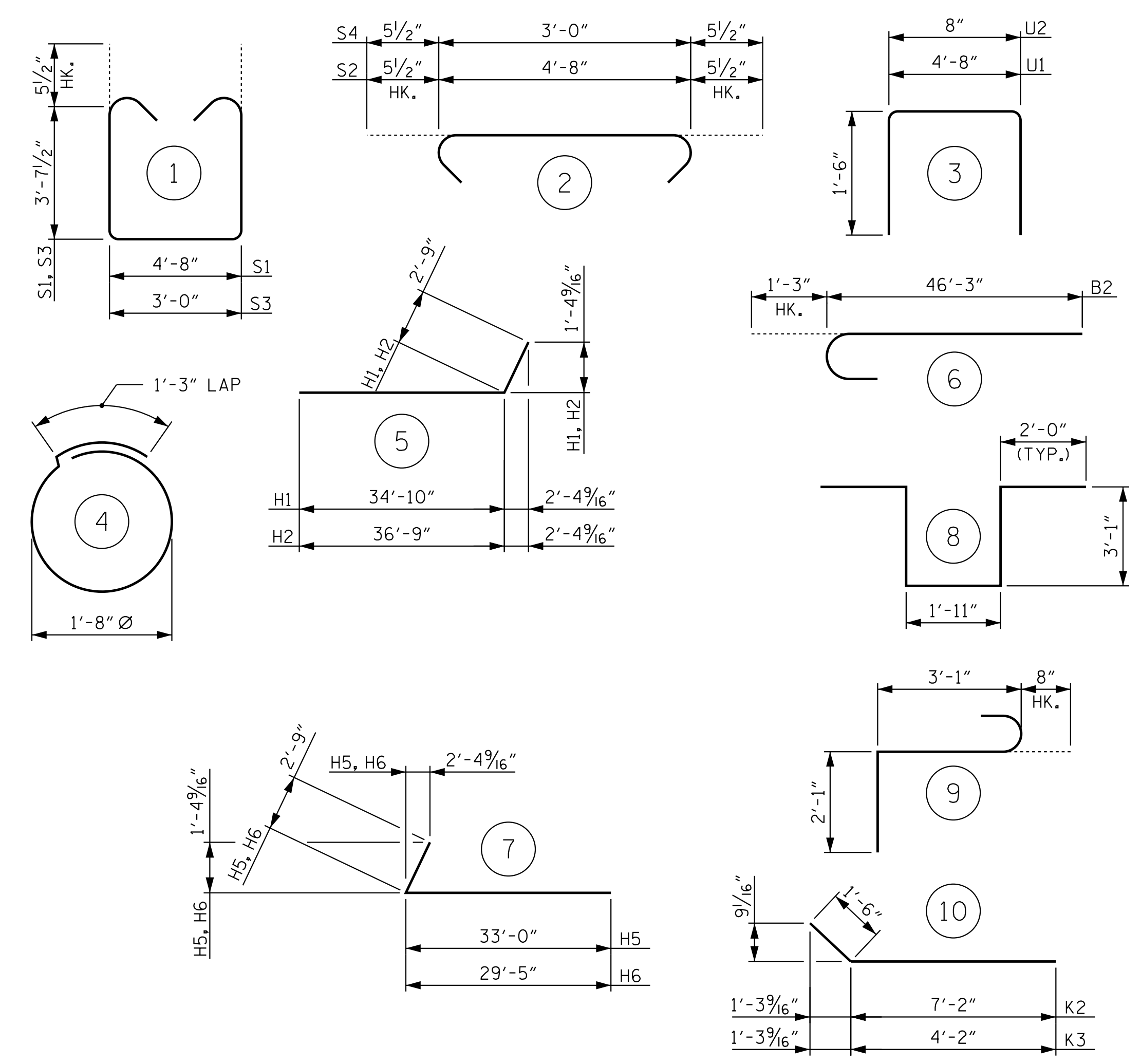
BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

BAR TYPES



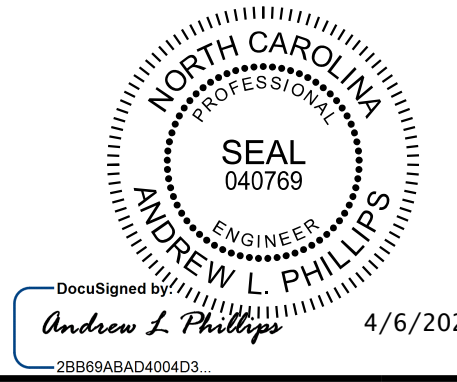
ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL

| END BENT 2  |     |      |      |         |              |
|---|-----|------|------|---------|--------------|
| BAR   | NO. | SIZE | TYPE | LENGTH  | WEIGHT       |
| B1  | 12  | 9    | STR  | 45'-7"  | 1,860        |
| B2  | 12  | 9    | 6    | 47'-6"  | 1,938        |
| B3  | 12  | 5    | STR  | 45'-1"  | 564          |
| B4  | 24  | 4    | STR  | 10'-0"  | 160          |
| B5  | 12  | 4    | STR  | 29'-5"  | 236          |
| B6  | 22  | 4    | STR  | 4'-8"   | 69           |
|   |     |      |      |         |              |
| H1  | 25  | 11   | 5    | 37'-7"  | 4,992        |
| H2  | 25  | 11   | 5    | 39'-6"  | 5,247        |
| H3  | 25  | 6    | STR  | 13'-8"  | 513          |
| H4  | 25  | 6    | STR  | 10'-4"  | 388          |
| H5  | 25  | 11   | 7    | 35'-9"  | 4,748        |
| H6  | 25  | 11   | 7    | 32'-2"  | 4,273        |
| H7  | 25  | 6    | STR  | 12'-9"  | 479          |
| H8  | 25  | 6    | STR  | 9'-6"   | 357          |
|   |     |      |      |         |              |
| K1  | 42  | 4    | STR  | 30'-8"  | 860          |
| K2  | 16  | 4    | 10   | 8'-8"   | 93           |
| K3  | 16  | 4    | 10   | 5'-8"   | 61           |
|   |     |      |      |         |              |
| S1  | 141 | 5    | 1    | 12'-10" | 1,887        |
| S2  | 141 | 5    | 2    | 5'-7"   | 821          |
| S3  | 4   | 5    | 1    | 11'-2"  | 47           |
| S4  | 4   | 5    | 2    | 3'-11"  | 16           |
| S5  | 36  | 4    | 4    | 6'-6"   | 156          |
| S6  | 12  | 6    | 8    | 12'-1"  | 218          |
| S7  | 12  | 6    | 9    | 5'-10"  | 105          |
|   |     |      |      |         |              |
| U1  | 40  | 4    | 3    | 7'-8"   | 205          |
| U2  | 71  | 4    | 3    | 3'-8"   | 174          |
|   |     |      |      |         |              |
| V1  | 142 | 6    | STR  | 10'-2"  | 2,168        |
| V2  | 86  | 6    | STR  | 11'-10" | 1,529        |
| V3  | 73  | 6    | STR  | 11'-7"  | 1,270        |
|   |     |      |      |         |              |
| REINFORCING STEEL                                       |     |      |      |         | 35,434 LBS.  |
| CLASS A CONCRETE BREAKDOWN                              |     |      |      |         |              |
| POUR 1 (CAP & LOWER WING)                               |     |      |      |         | 89.4 C.Y.    |
| POUR 2 (BACKWALL & UPPER PORTION OF WING)               |     |      |      |         | 65.0 C.Y.    |
| TOTAL CLASS A CONCRETE                                  |     |      |      |         | 154.4 C.Y.   |
| HP 12 X 53 STEEL PILES                                  |     |      |      |         |              |
| NO. 13  |     |      |      |         | 975 LIN. FT. |
| PILE REDRIVES   |     |      |      |         | 5 EA.        |
| PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES |     |      |      |         | 13 EA.       |

PROJECT NO. B-5301  
PITT COUNTY  
 STATION: 25+98.05 -L-

SHEET 5 OF 5



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

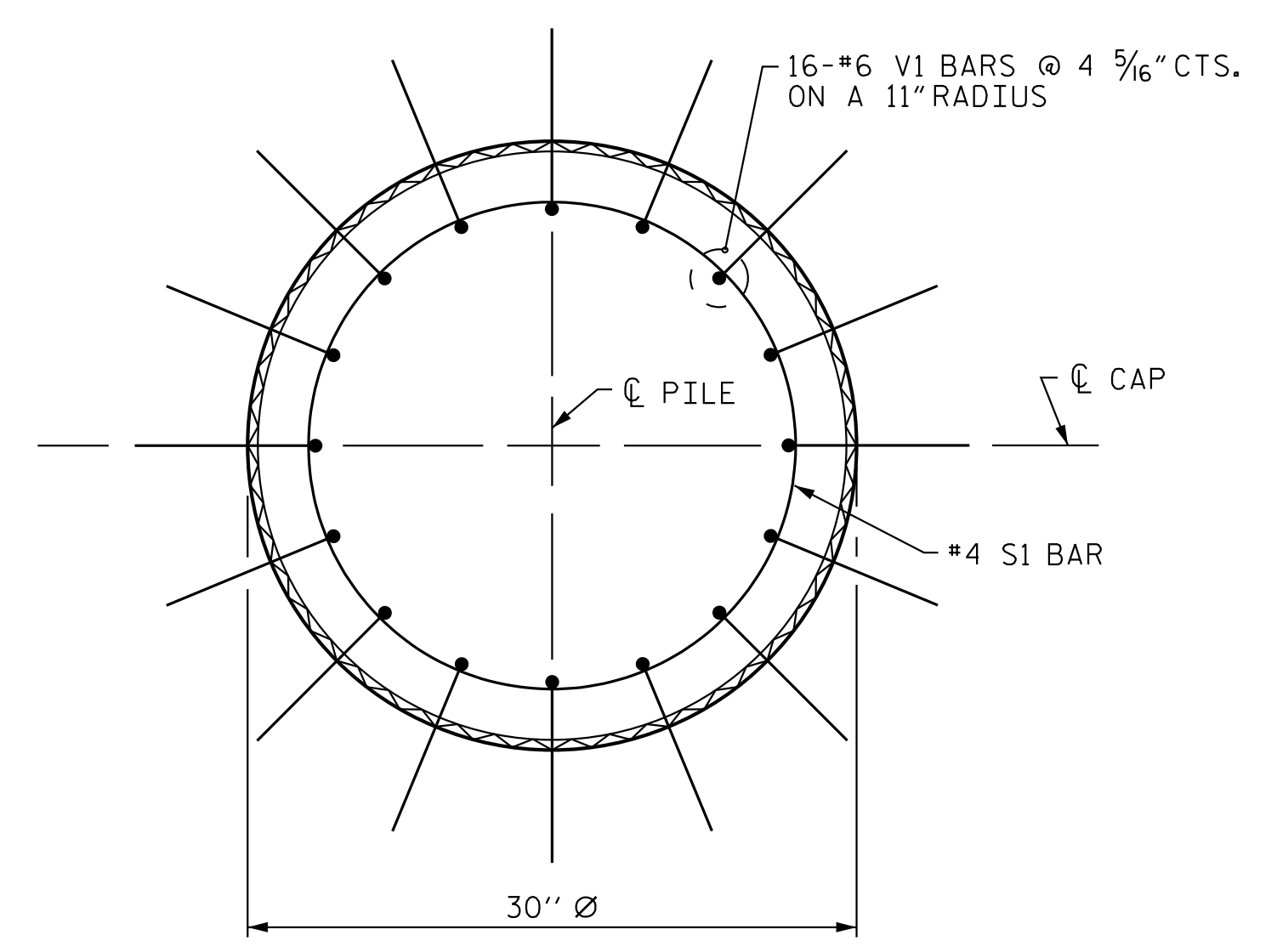
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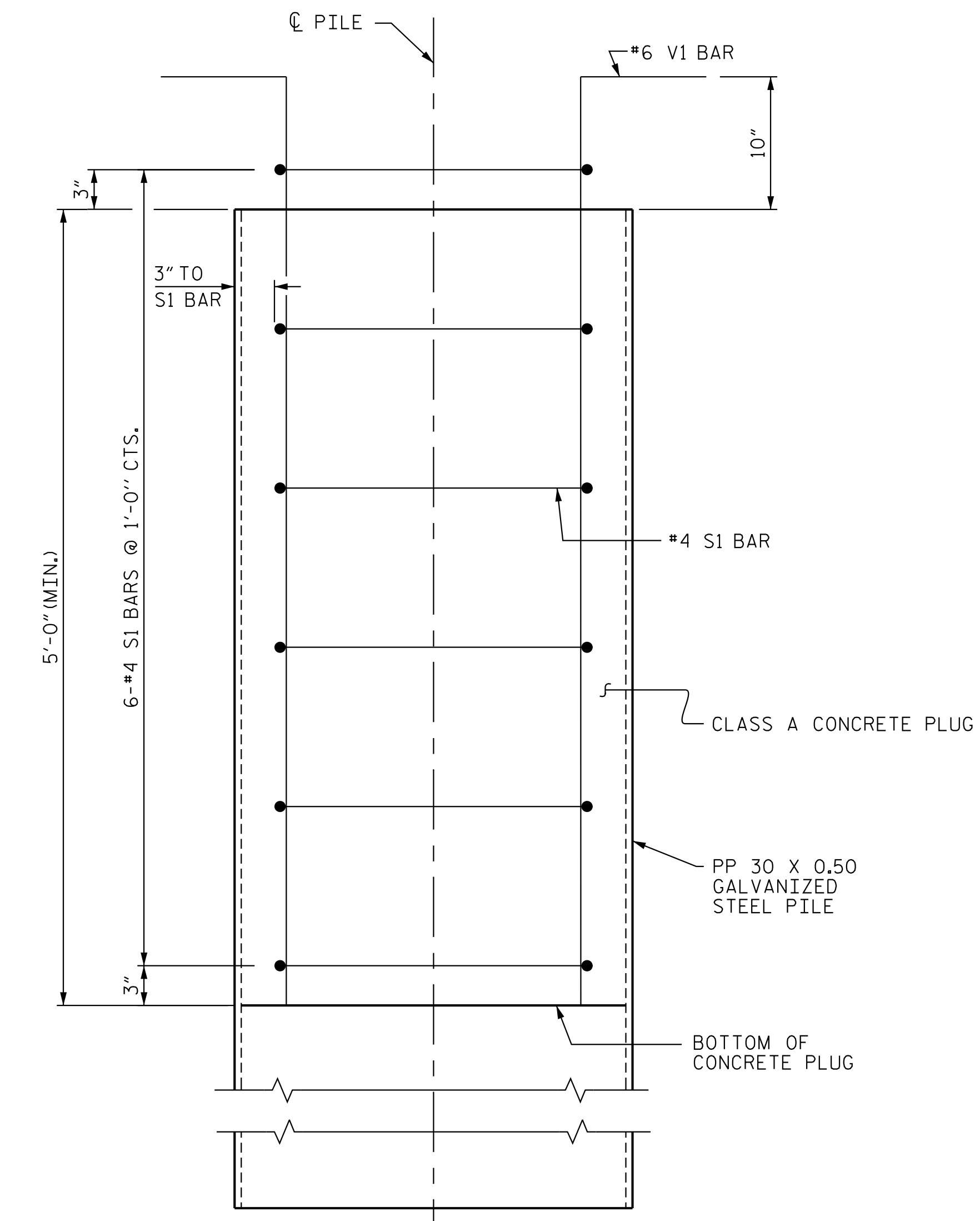
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DRAWN BY: D. D. LOWERY DATE: 2/20  
 CHECKED BY: C. I. POOLE DATE: 2/20  
 DESIGN ENGINEER OF RECORD: A. L. PHILLIPS DATE: 2/20

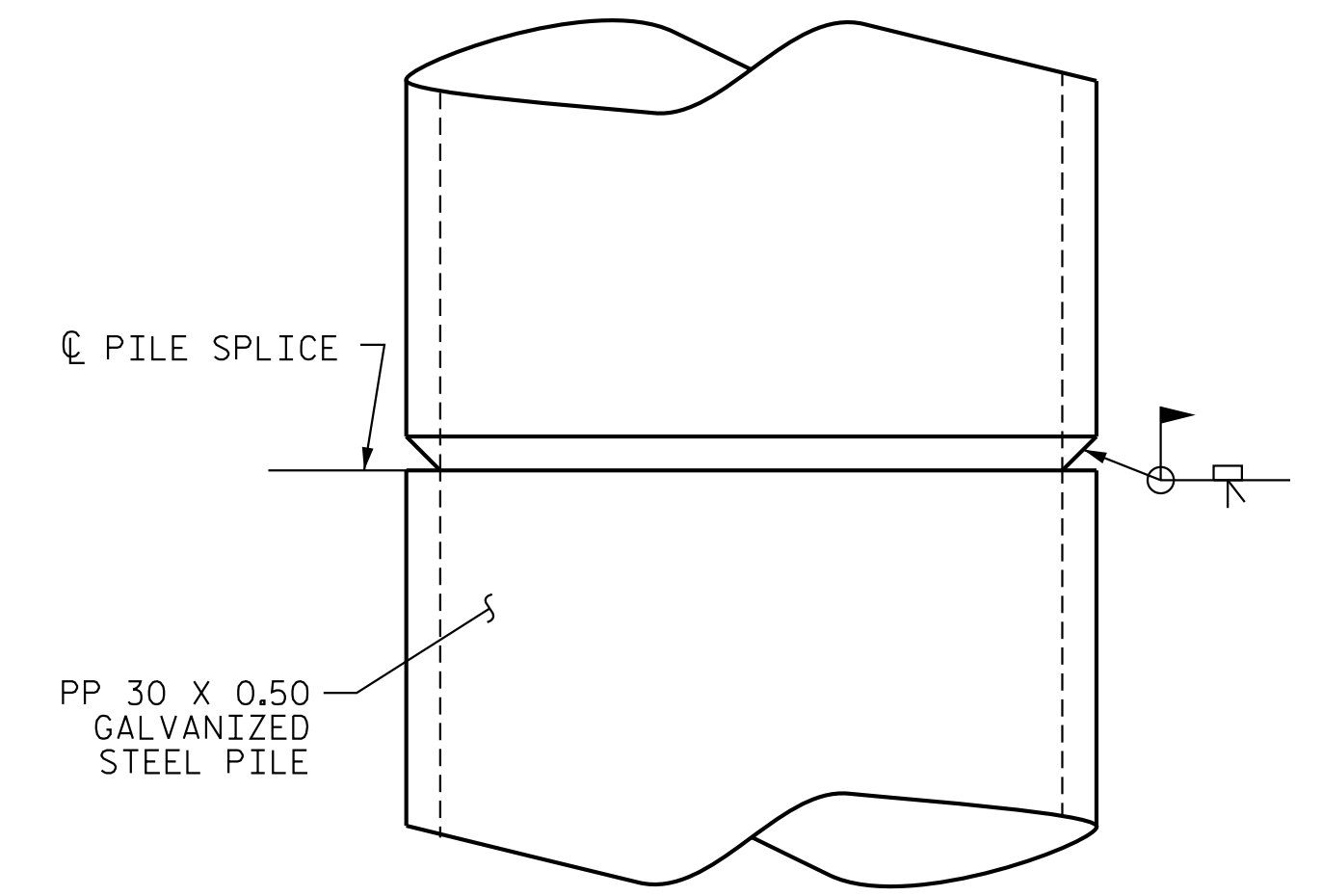


PLAN



ELEVATION

PP 30 X 0.50 GALVANIZED STEEL PILE  
( OPEN END )



PIPE PILE SPLICE DETAIL

NOTES

PIPE PILES SHALL BE IN ACCORDANCE WITH SECTION 1084 OF THE STANDARD SPECIFICATIONS.

GALVANIZE STEEL PIPE PILES IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS UNLESS METALLIZING IS REQUIRED. GALVANIZING OR METALLIZING PIPE PILE PLATES IS NOT REQUIRED.

REMOVE AND REPLACE OR REPAIR TO THE SATISFACTION OF THE ENGINEER PILES THAT ARE DAMAGED, DEFORMED OR COLLAPSED DURING INSTALLATION OR DRIVING.

PILE SPLICES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS AND AWS D1.1.

FOR OPEN END PIPE PILES, REMOVE ENOUGH SOIL AND WATER FROM INSIDE THE PILES TO CONSTRUCT THE CONCRETE PLUG WITHOUT FOULING THE CONCRETE.

FORM THE CONCRETE PLUG SUCH THAT THE REINFORCING STEEL OR CONCRETE DOES NOT MOVE AND THE CLEARANCE FROM THE REINFORCING STEEL TO THE INSIDE OF THE PILE IS MAINTAINED AFTER CONCRETE PLACEMENT. DO NOT PLACE CONCRETE IN THE BENT CAP UNTIL THE CONCRETE PLUG HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1500 PSI.

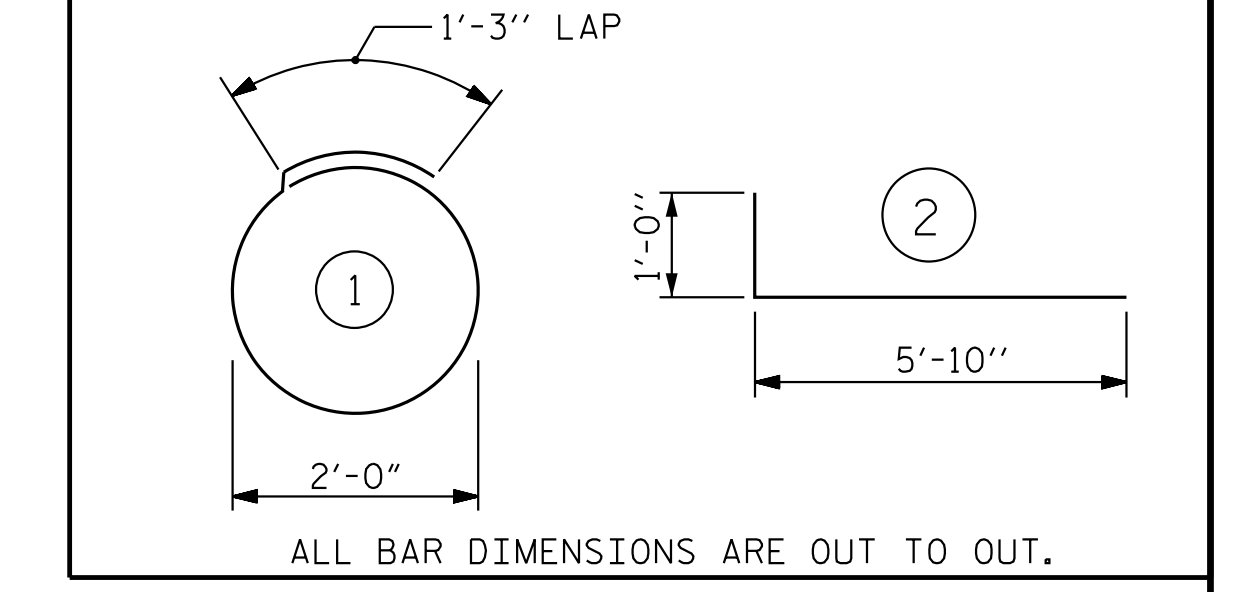
THE REINFORCING STEEL, CLASS A CONCRETE, AND GALVANIZING ARE CONSIDERED INCIDENTAL TO THE CONTRACT UNIT PRICE BID PER LINEAR FOOT FOR PP 30 X 0.50 GALVANIZED STEEL PILES.

BILL OF MATERIAL FOR ONE PP 30 X 0.50 GALVANIZED STEEL PILE

| BAR                 | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|---------------------|-----|------|------|--------|--------|
| S1                  | 6   | #4   | 1    | 7'-7"  | 30     |
| V1                  | 16  | #6   | 2    | 6'-10" | 164    |
| REINFORCING STEEL = |     |      |      | 194    | lbs    |

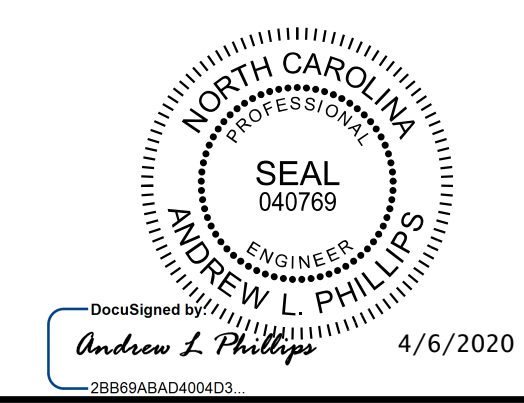
CLASS A CONCRETE  
5'-0" MINIMUM PLUG 0.8 CY

BAR TYPES



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STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
30" STEEL PIPE PILE

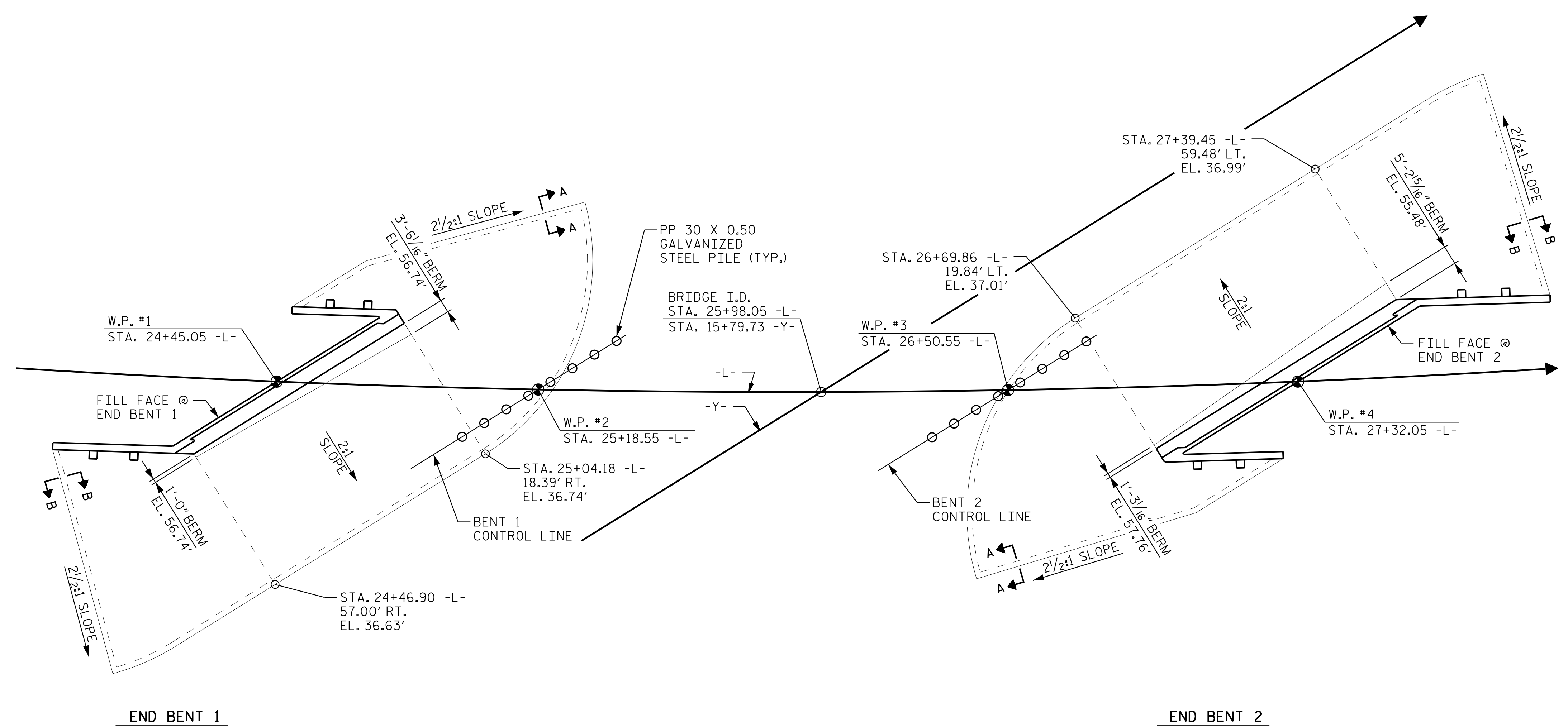
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| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 55           |

|                             |                      |
|-----------------------------|----------------------|
| ASSEMBLED BY : D. D. LOWERY | DATE : 02/20         |
| CHECKED BY : C. T. POOLE    | DATE : 02/20         |
| DRAWN BY : TLA 8/05         | REV. 5/1/06R MAA/KMM |
| CHECKED BY : GM 9/05        | REV. 10/1/11 MAA/GM  |
|                             | REV. 12/17 MAA/THC   |

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**GENERAL NOTES**

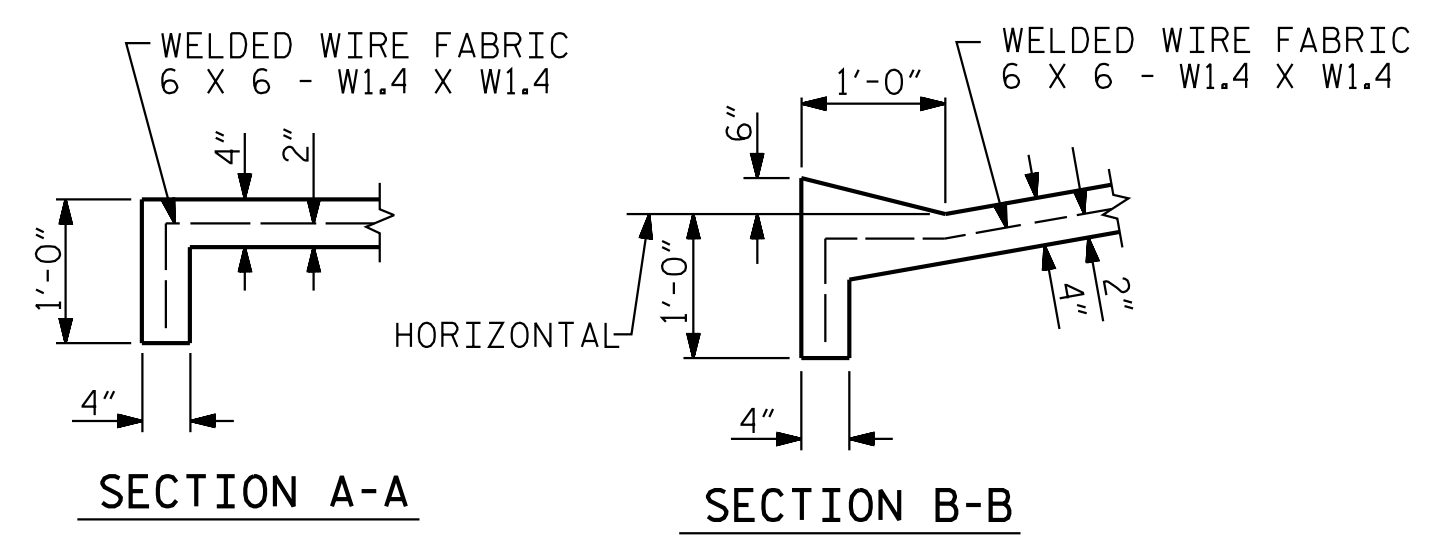
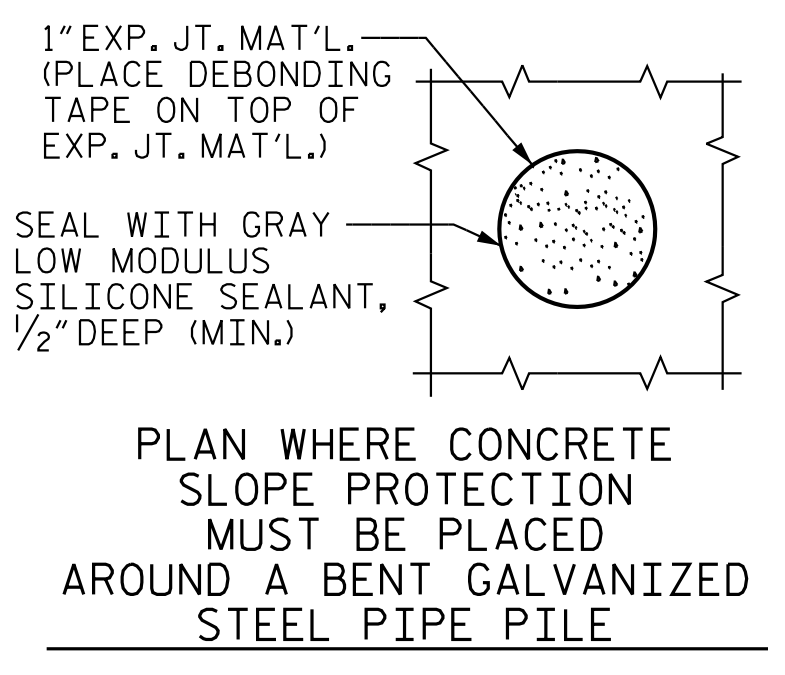
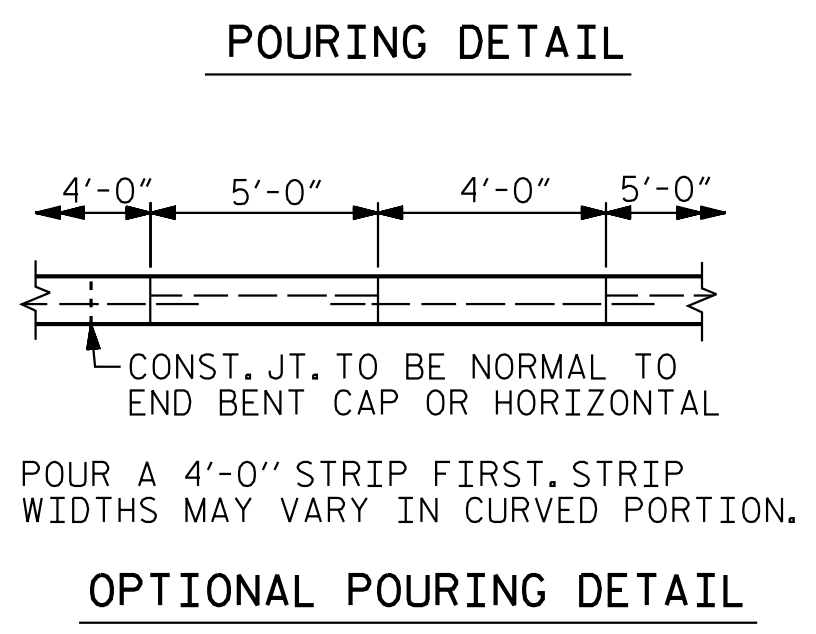
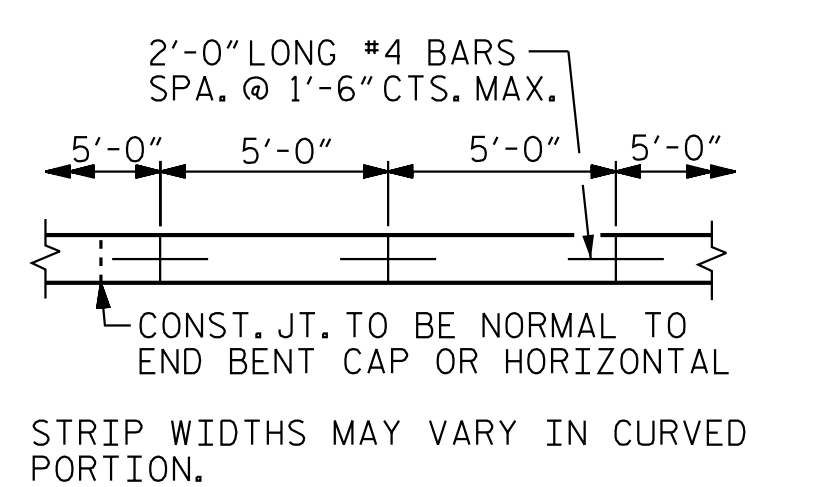
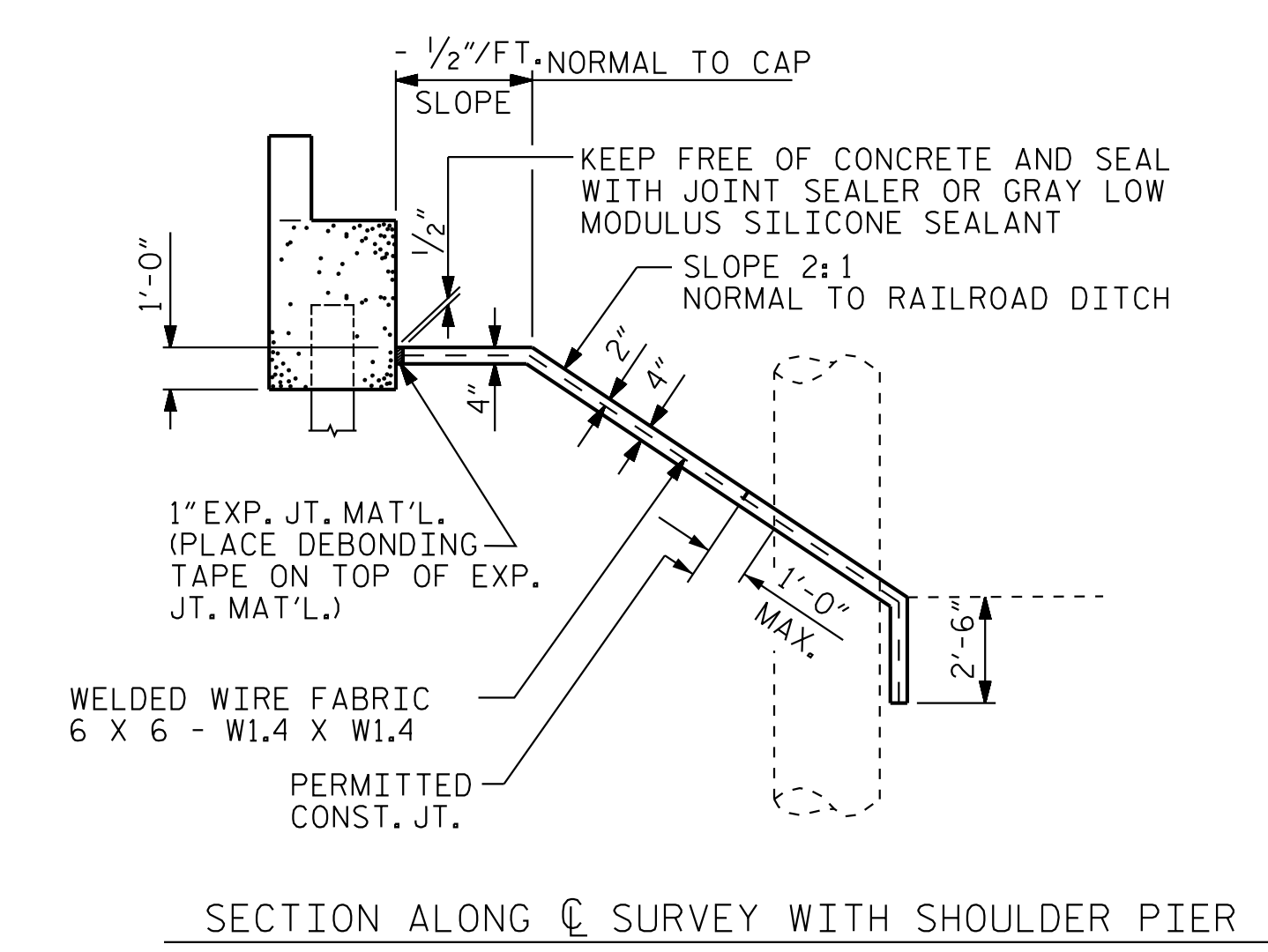
SLOPE PROTECTION SHALL BE PLACED UNDER THE ENDS OF THE BRIDGE AS SHOWN IN THE DETAILS. STRAIGHT EDGING WILL NOT BE REQUIRED UNLESS, IN THE OPINION OF THE ENGINEER, VISUAL INSPECTION INDICATES A NEED FOR IT. MEASUREMENT AND PAYMENT SHALL BE AS PRESCRIBED IN SECTION 462 OF THE STANDARD SPECIFICATIONS.

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

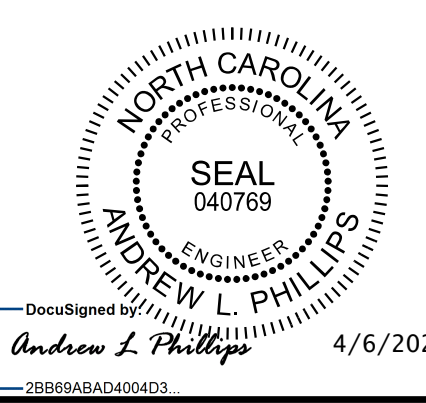
| BRIDGE @<br>STA. 25+98.05 -L- | 4 INCH<br>SLOPE PROTECTION | *<br>WELDED WIRE FABRIC<br>60 INCHES WIDE |
|-------------------------------|----------------------------|---|
|                               | SQUARE YARDS               | APPROX. L.F.                              |
| END BENT 1                    | 1030                       | 1854                                      |
| END BENT 2                    | 1122                       | 2020                                      |

\* QUANTITY SHOWN IS BASED ON 5' POURS.

**PLAN**



PROJECT NO. B-5301  
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|--|-----|-------|-----|-----|-------|
| STANDARD<br>SLOPE PROTECTION<br>DETAILS                            |     |       |     |     |       |
| REVISIONS  |     |       |     |     |       |
| NO.  | BY: | DATE: | NO. | BY: | DATE: |
| 1  |     |       | 3   |     |       |
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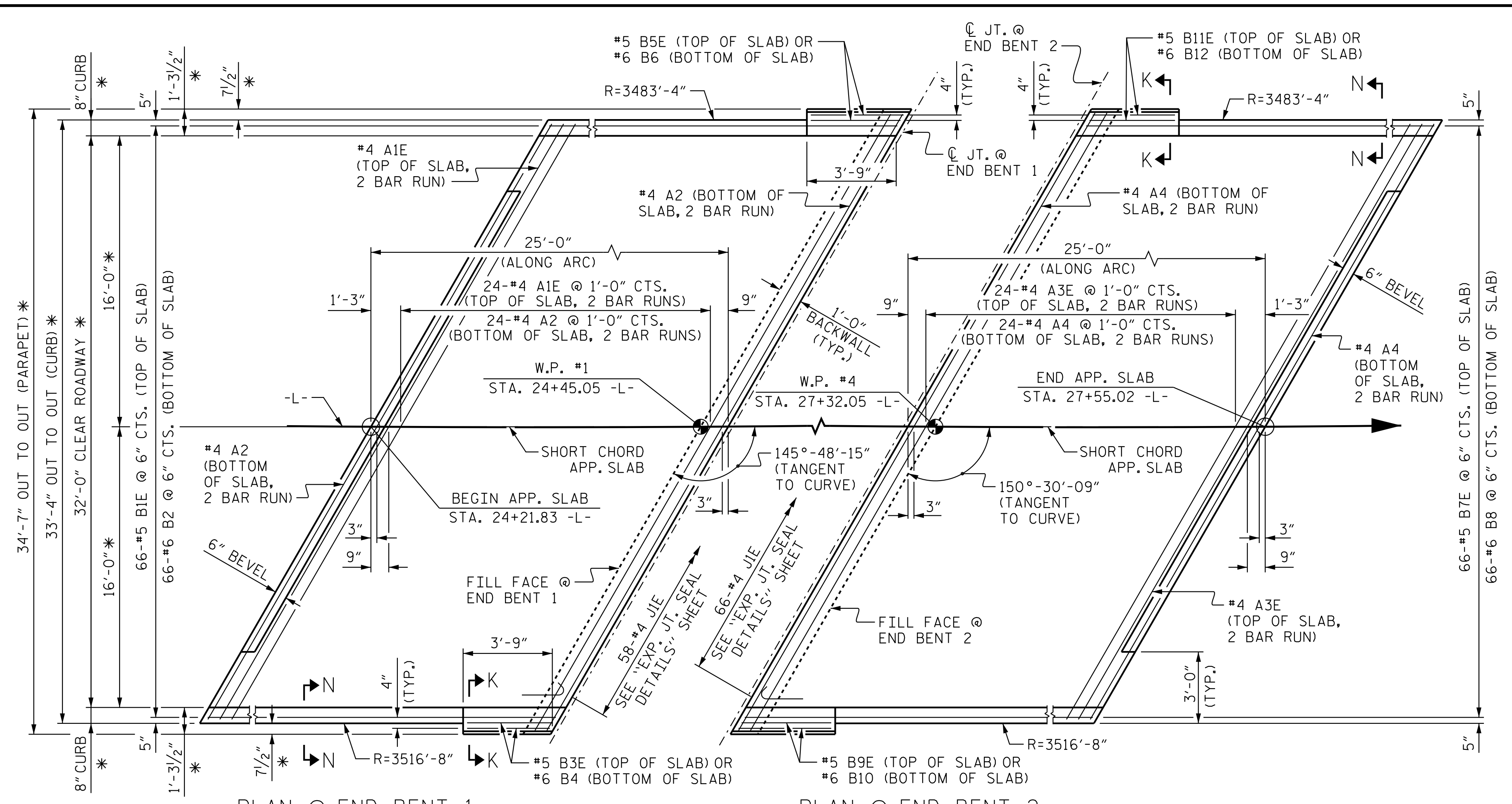
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| TOTAL SHEETS<br>55 |

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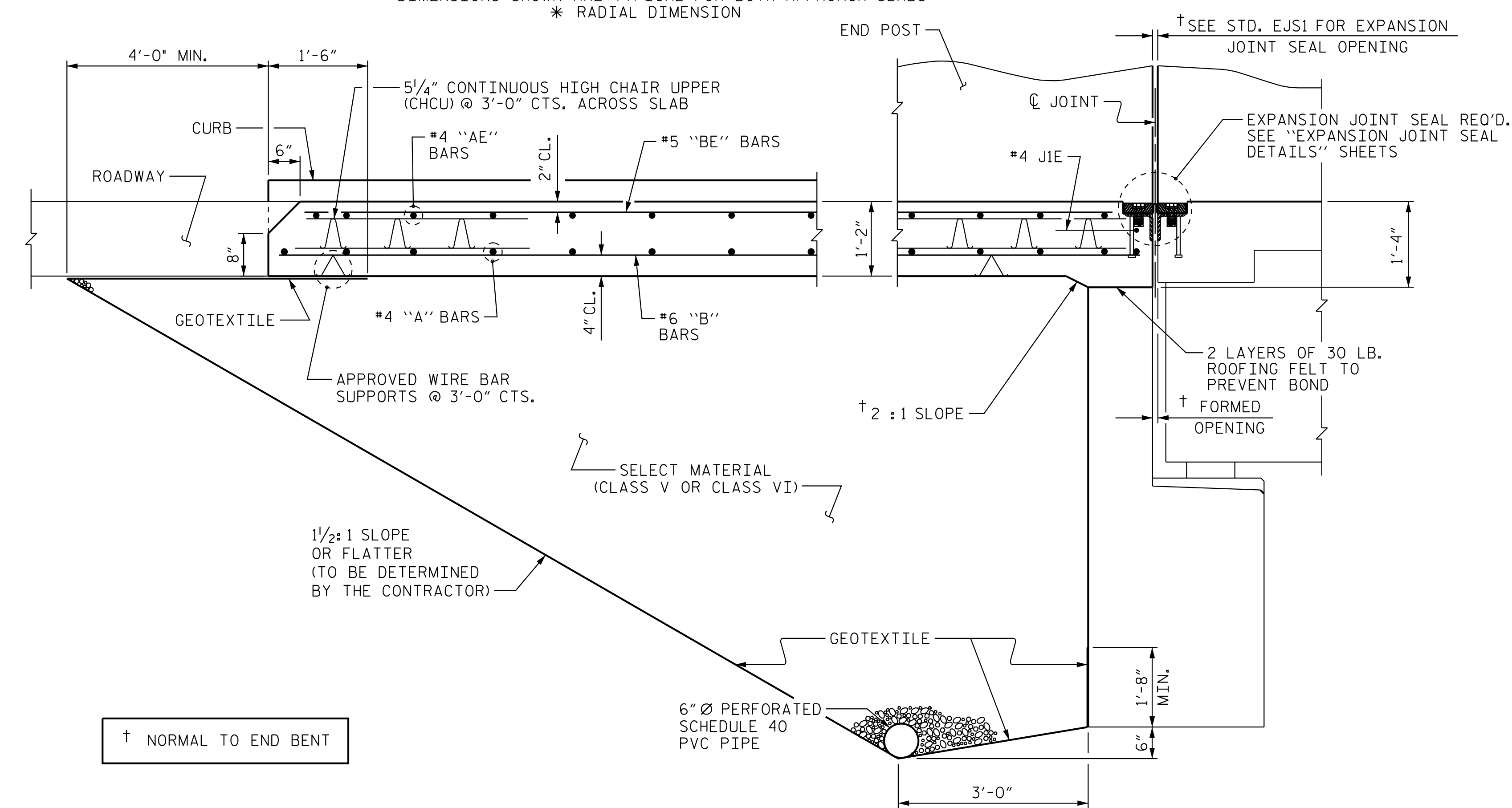
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|                             |                      |
|-----------------------------|----------------------|
| ASSEMBLED BY : D. D. LOWERY | DATE : 02/20         |
| CHECKED BY : C. T. POOLE    | DATE : 02/20         |
| DRAWN BY : ELR 5/92         | REV. 12/21/11 MAA/GM |
| CHECKED BY : GRP 6/92       | REV. 1/16 MAA/TMG    |
|                             | REV. 12/17 MAA/THC   |





PLAN @ END BENT 1  
 PLAN @ END BENT 2  
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS  
 \* RADIAL DIMENSION



SECTION THRU SLAB  
 (TYPE I - STANDARD APPROACH FILL)

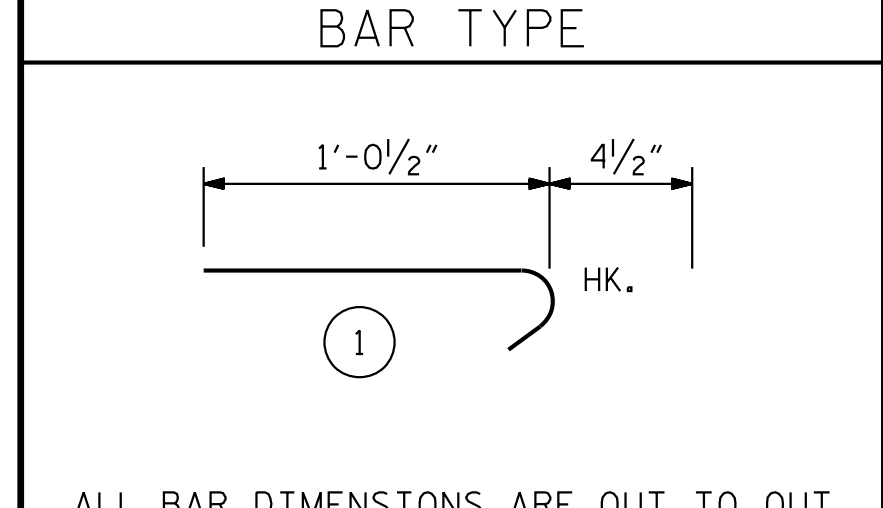
NOTES

- FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 6" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.
- GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.
- SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.
- SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.
- APPROACH SLAB SHALL NOT BE CONSTRUCTED PRIOR TO COMPLETION OF THE BRIDGE DECK.
- FOR THE 6" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.
- AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.
- FOR EXPANSION JOINT SEALS, SEE SPECIAL PROVISIONS.
- #5 "BE" AND #6 "B" BARS TO BE PLACED PARALLEL TO APPROACH SLAB SHORT CHORD.
- FOR SECTIONS K-K AND N-N, SEE SHEET 2 OF 2.

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

BILL OF MATERIAL

| APPROACH SLAB AT EB 1            |     |      |      |         |            |
|----------------------------------|-----|------|------|---------|------------|
| BAR                              | NO. | SIZE | TYPE | LENGTH  | WEIGHT     |
| A1E                              | 50  | #4   | STR  | 31'-8"  | 1,058      |
| A2                               | 52  | #4   | STR  | 31'-6"  | 1,094      |
| B1E                              | 66  | #5   | STR  | 22'-7"  | 1,555      |
| B2                               | 66  | #6   | STR  | 24'-4"  | 2,412      |
| B3E                              | 2   | #5   | STR  | 3'-7"   | 7          |
| B4                               | 2   | #6   | STR  | 3'-7"   | 11         |
| B5E                              | 2   | #5   | STR  | 4'-1"   | 9          |
| B6                               | 2   | #6   | STR  | 4'-1"   | 12         |
| J1E                              | 58  | #4   | 1    | 1'-5"   | 55         |
| REINFORCING STEEL *              |     |      |      |         | LBS. 3,529 |
| EPOXY COATED REINFORCING STEEL * |     |      |      |         | LBS. 2,684 |
| CLASS AA CONCRETE *              |     |      |      |         | C. Y. 36.6 |
| APPROACH SLAB AT EB 2            |     |      |      |         |            |
| BAR                              | NO. | SIZE | TYPE | LENGTH  | WEIGHT     |
| A3E                              | 50  | #4   | STR  | 36'-0"  | 1,202      |
| A4                               | 52  | #4   | STR  | 35'-10" | 1,245      |
| B7E                              | 66  | #5   | STR  | 22'-3"  | 1,532      |
| B8                               | 66  | #6   | STR  | 24'-3"  | 2,404      |
| B9E                              | 2   | #5   | STR  | 4'-7"   | 10         |
| B10                              | 2   | #6   | STR  | 4'-7"   | 14         |
| B11E                             | 2   | #5   | STR  | 3'-10"  | 8          |
| B12                              | 2   | #6   | STR  | 3'-10"  | 12         |
| J1E                              | 66  | #4   | 1    | 1'-5"   | 62         |
| REINFORCING STEEL *              |     |      |      |         | LBS. 3,675 |
| EPOXY COATED REINFORCING STEEL * |     |      |      |         | LBS. 2,814 |
| CLASS AA CONCRETE *              |     |      |      |         | C. Y. 36.7 |

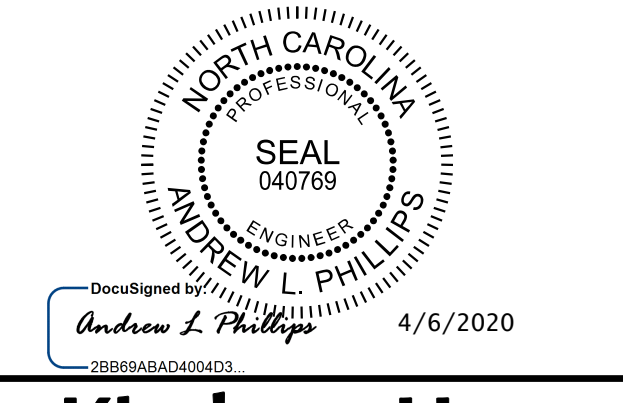


ALL BAR DIMENSIONS ARE OUT TO OUT  
 \* QUANTITIES FOR END POST ARE NOT INCLUDED. SEE "CONCRETE PARAPET DETAILS", SHEET 6 OF 6.

THE QUANTITY OF #4 J1E BARS ON THE BILL OF MATERIAL IS BASED ON 1'-0" CENTERS. J1E BARS SHALL BE PLACED AT EACH VERTICAL STUD ANCHOR BOLT. IN THE EVENT THAT THE NUMBER OF VERTICAL STUD ANCHORS EXCEEDS THE NUMBER OF J1E BARS SPECIFIED, ADDITIONAL J1E BARS WILL NOT BE REQUIRED.

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SHEET 1 OF 2



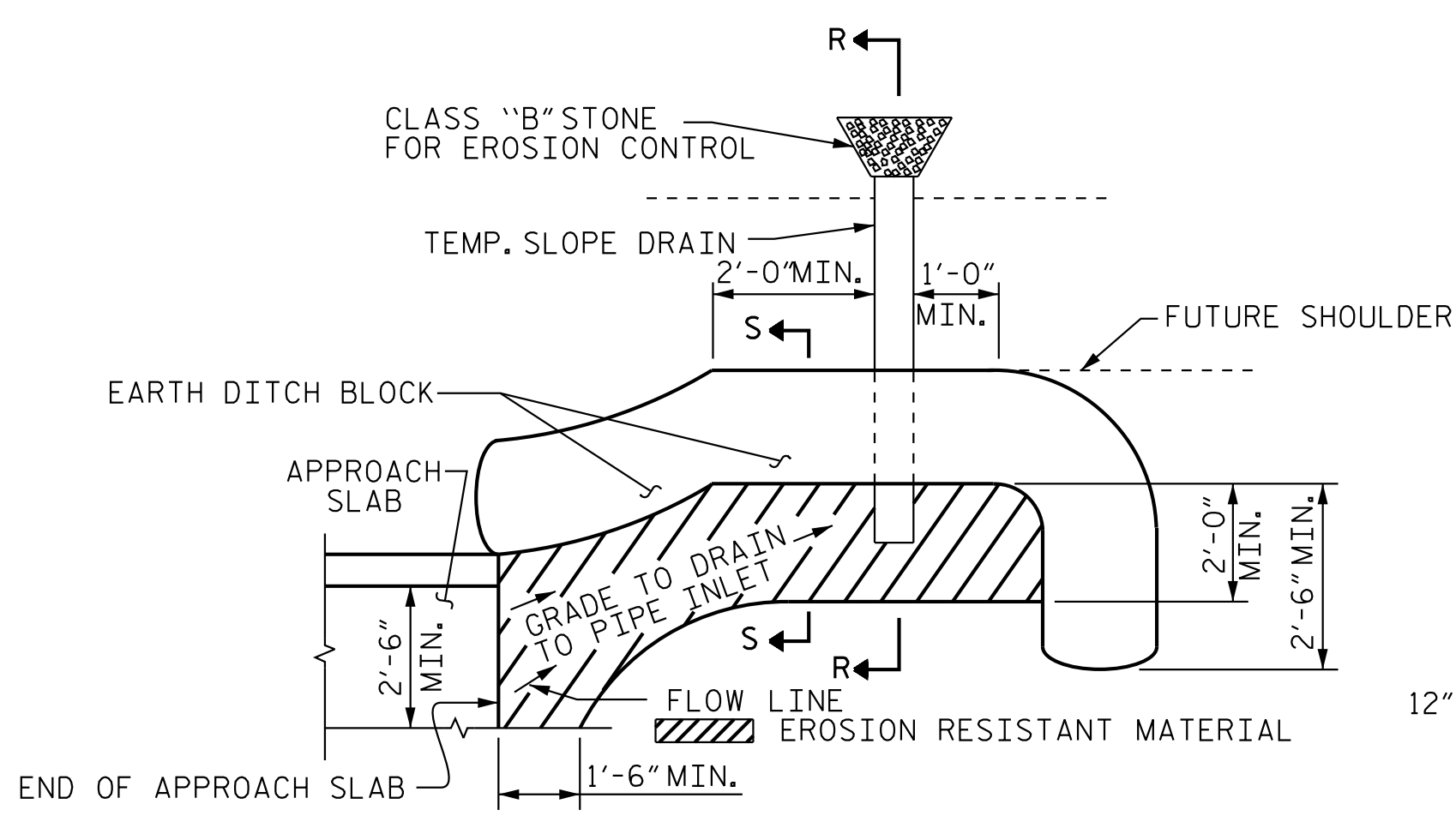
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STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 BRIDGE APPROACH SLAB  
 FOR FLEXIBLE PAVEMENT

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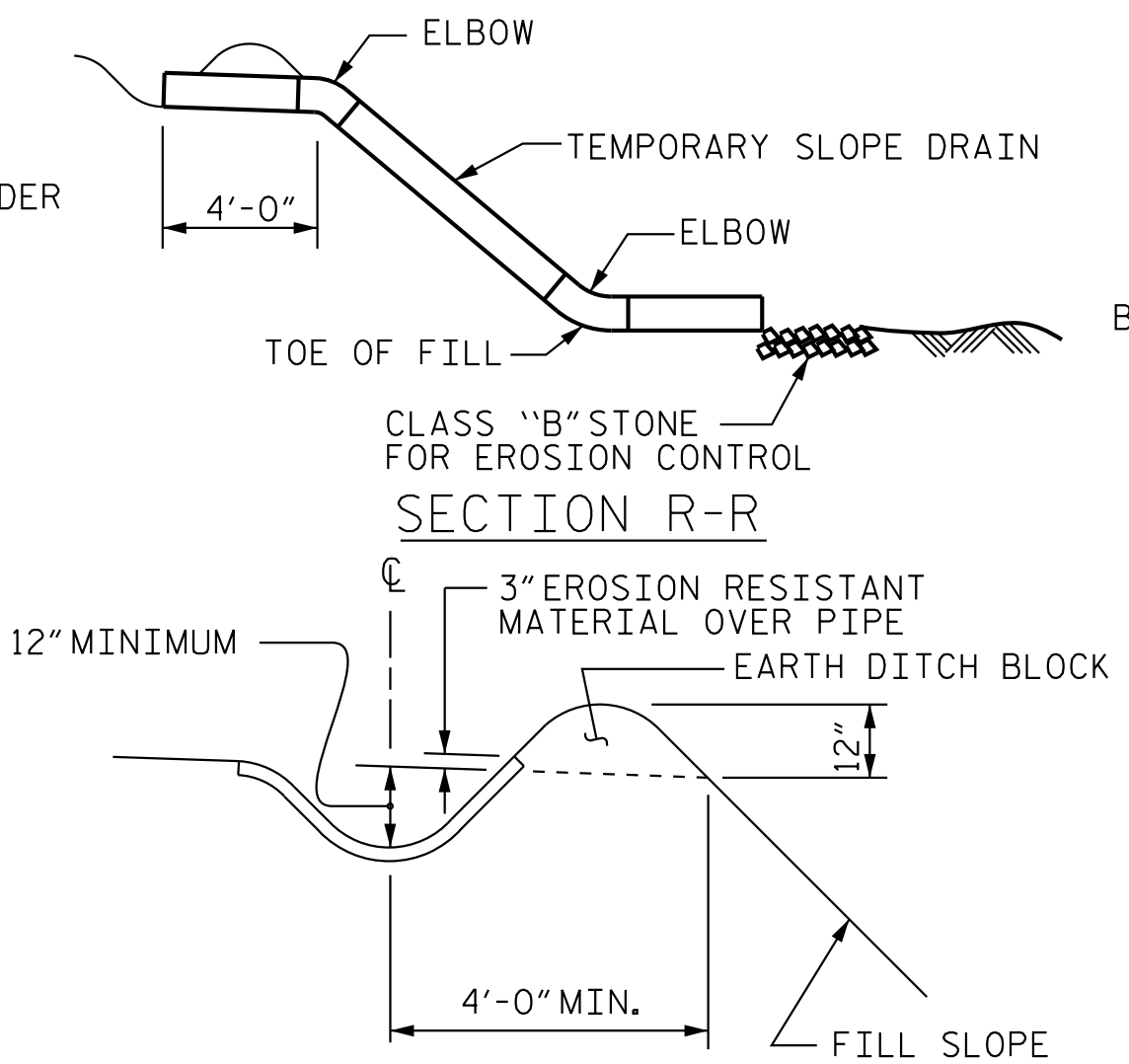
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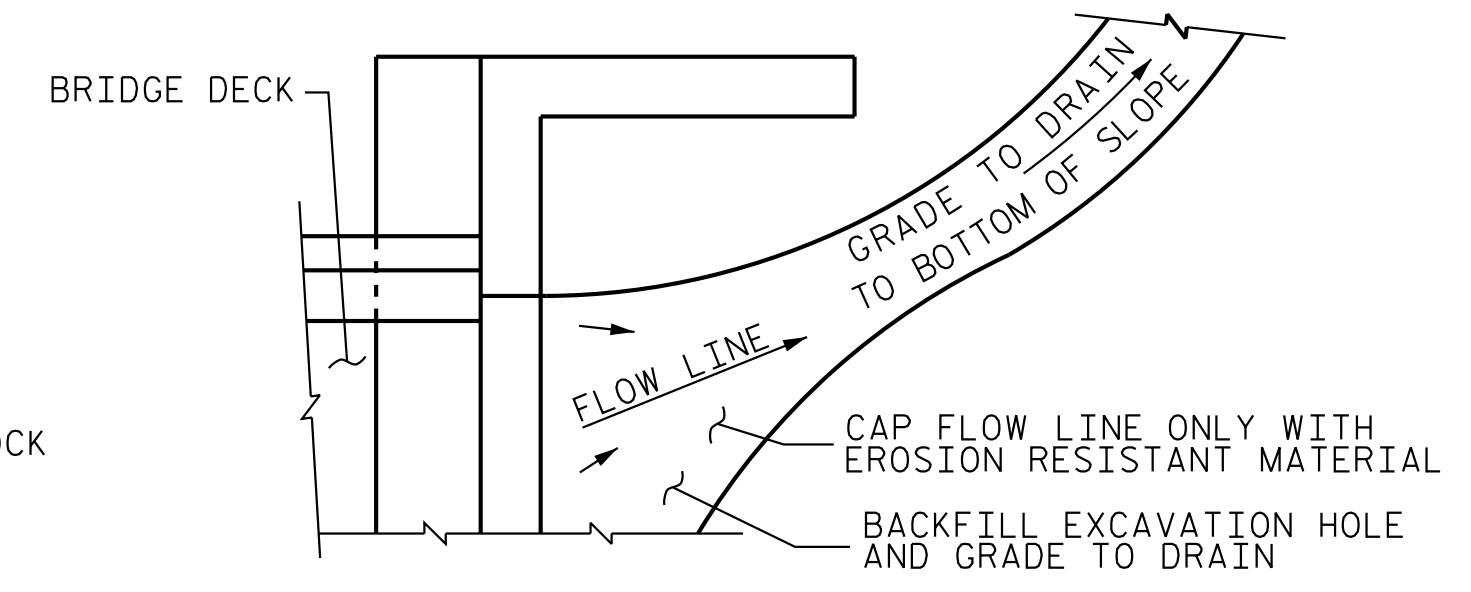


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN. 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



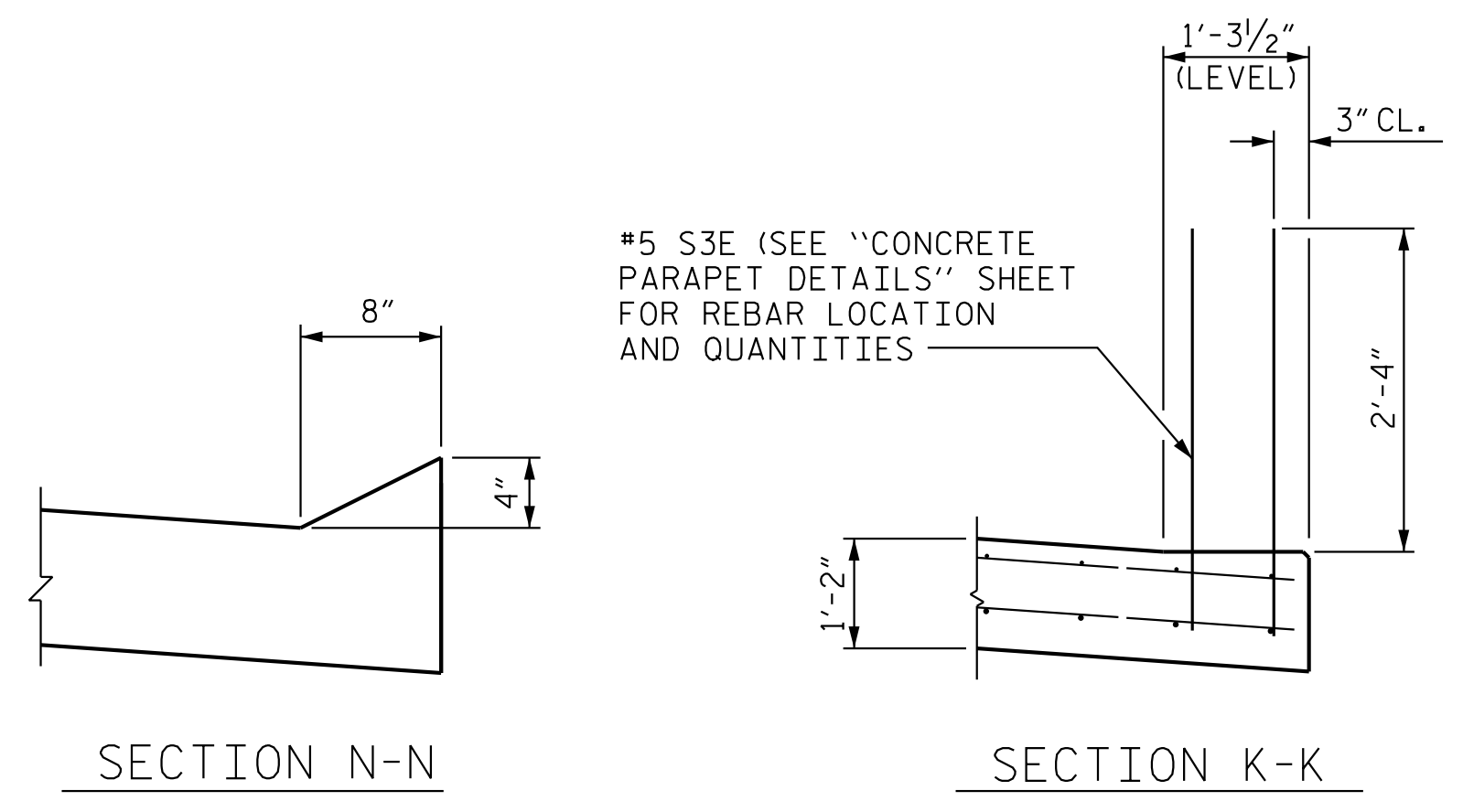
SECTION S-S



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.

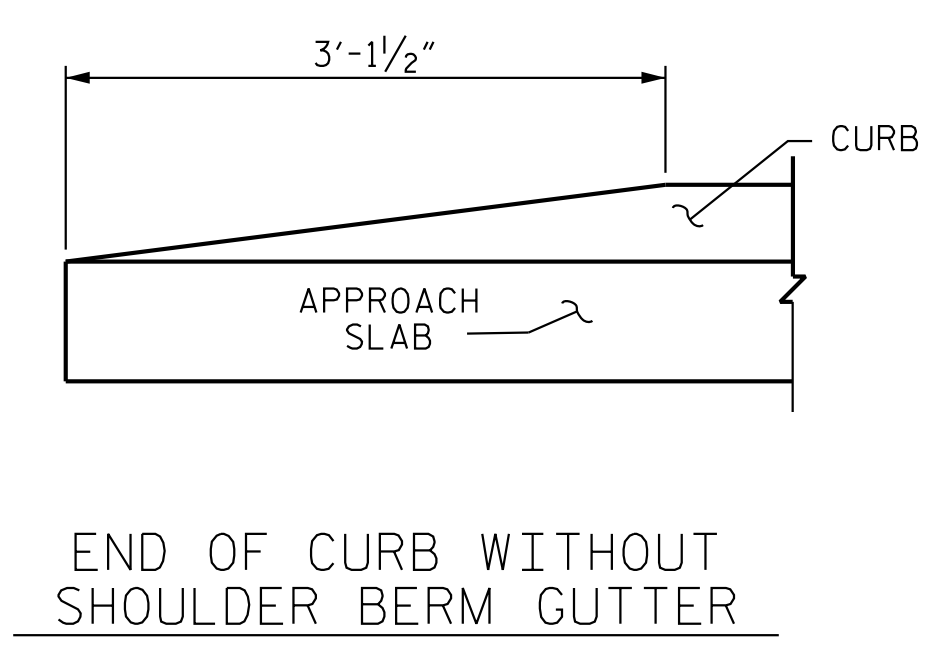
TEMPORARY DRAINAGE DETAIL

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



SECTION N-N

SECTION K-K

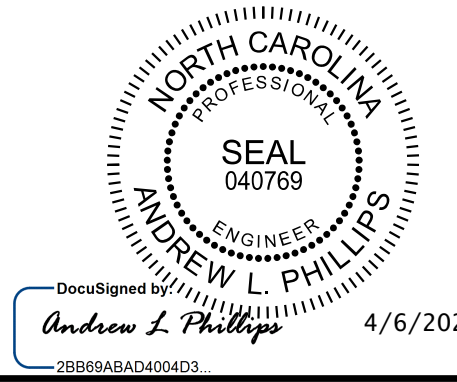


CURB DETAILS

PROJECT NO. B-5301  
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STATION: 25+98.05 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
BRIDGE APPROACH  
SLAB DETAILS



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| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 55           |

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