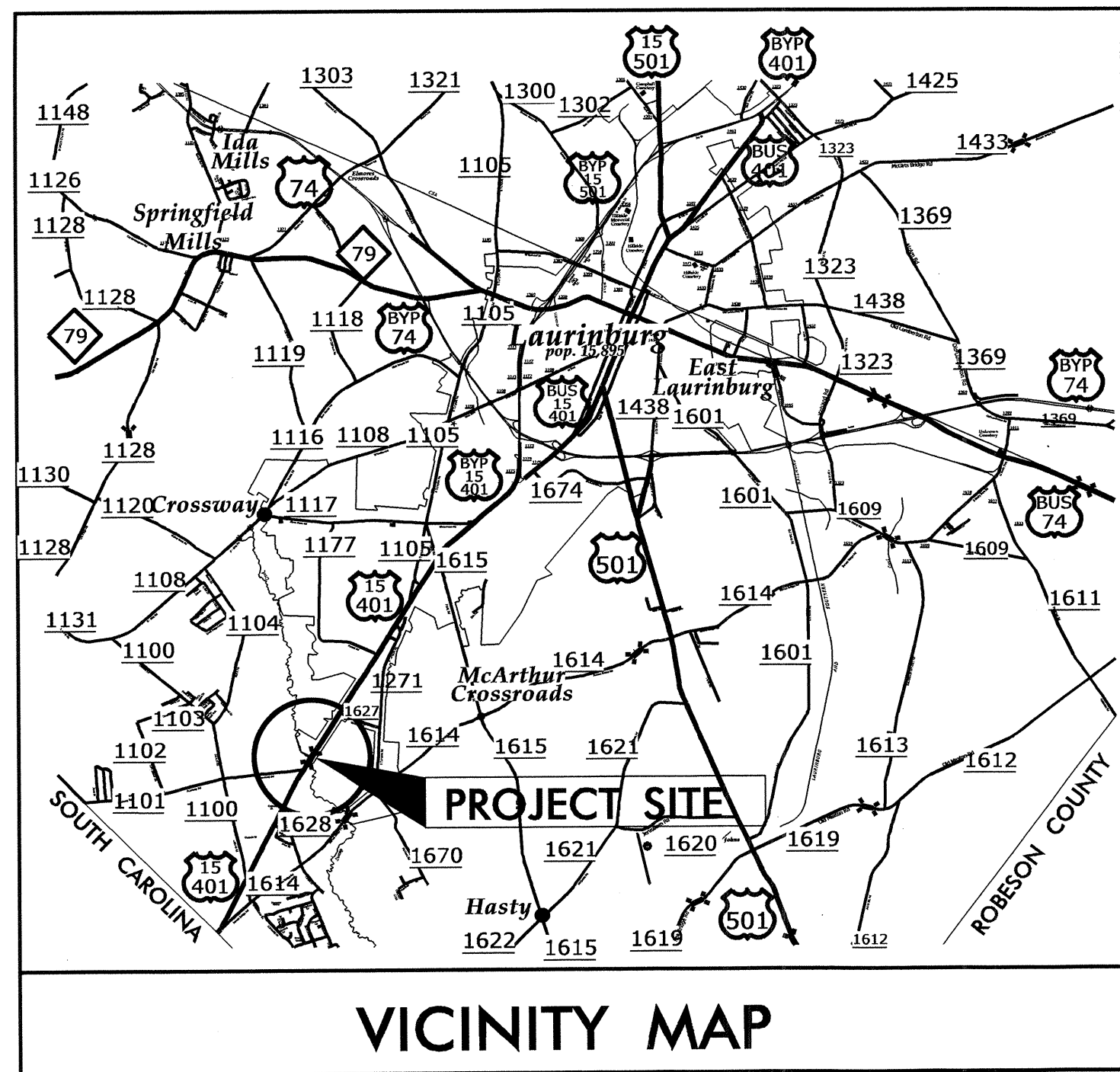


**CONTRACT: C203408 TIP PROJECT: B-4639**

**STRUCTURE**



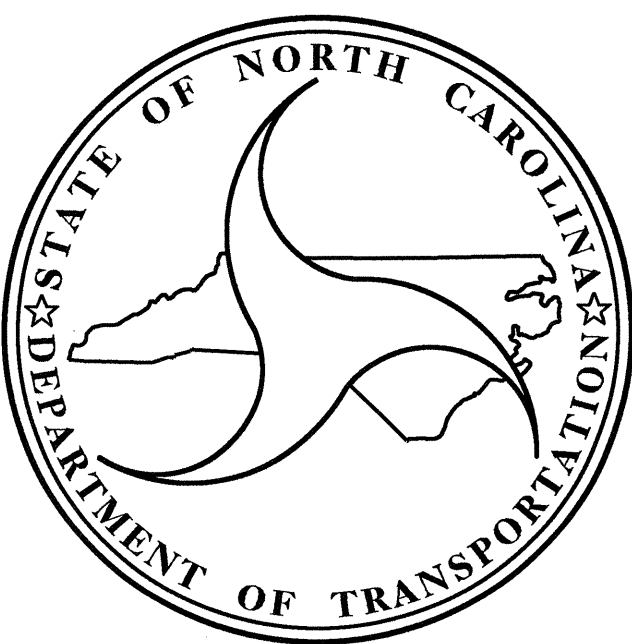
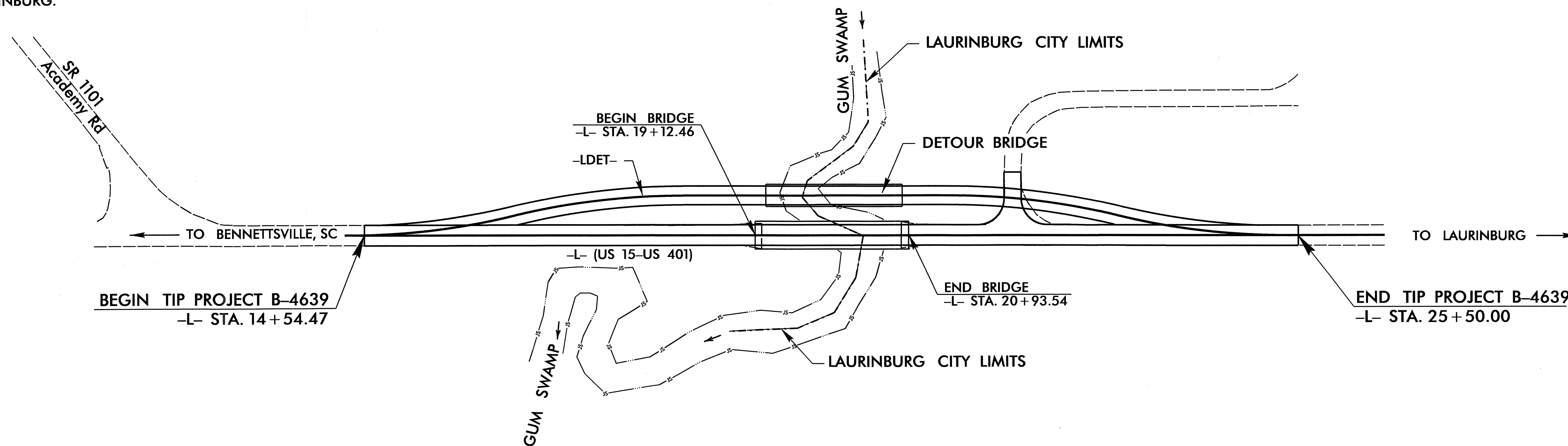
**VICINITY MAP**

A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF LAURINBURG.

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

**LOCATION: BRIDGE NO.17 OVER GUM SWAMP ON US 15-US 401**  
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE**

| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.    | TOTAL SHEETS |
|-----------------|-----------------------------|--------------|--------------|
| N.C.            | B-4639                      |              |              |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION  |              |
| 38449.1.1       | BRSTP-15(18)                | PE           |              |
| 38449.2.1       | BRSTP-15(18)                | RW           |              |
| 38449.2.U1      | BRSTP-15(18)                | UTILITIES    |              |
| 38449.3.FR1     | BRSTP-15(18)                | CONSTRUCTION |              |



**DESIGN DATA**

|  |          |
|--|----------|
| ADT 2014                                 | = 9400   |
| ADT 2035                                 | = 16,800 |
| DHV                                      | = 10 %   |
| D  | = 60 %   |
| T  | = 6 % *  |
| V  | = 60 MPH |
| * TTST 2% DUAL 4%                        |          |
| FUNC. CLASS=MINOR ARTERIAL REGIONAL TIER |          |

**PROJECT LENGTH**

|  |                   |
|--|-------------------|
| LENGTH ROADWAY TIP PROJECT B-4639      | = 0.173 MI        |
| LENGTH STRUCTURE TIP PROJECT B-4639    | = 0.034 MI        |
| <b>TOTAL LENGTH TIP PROJECT B-4639</b> | <b>= 0.207 MI</b> |

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

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2012 STANDARD SPECIFICATIONS

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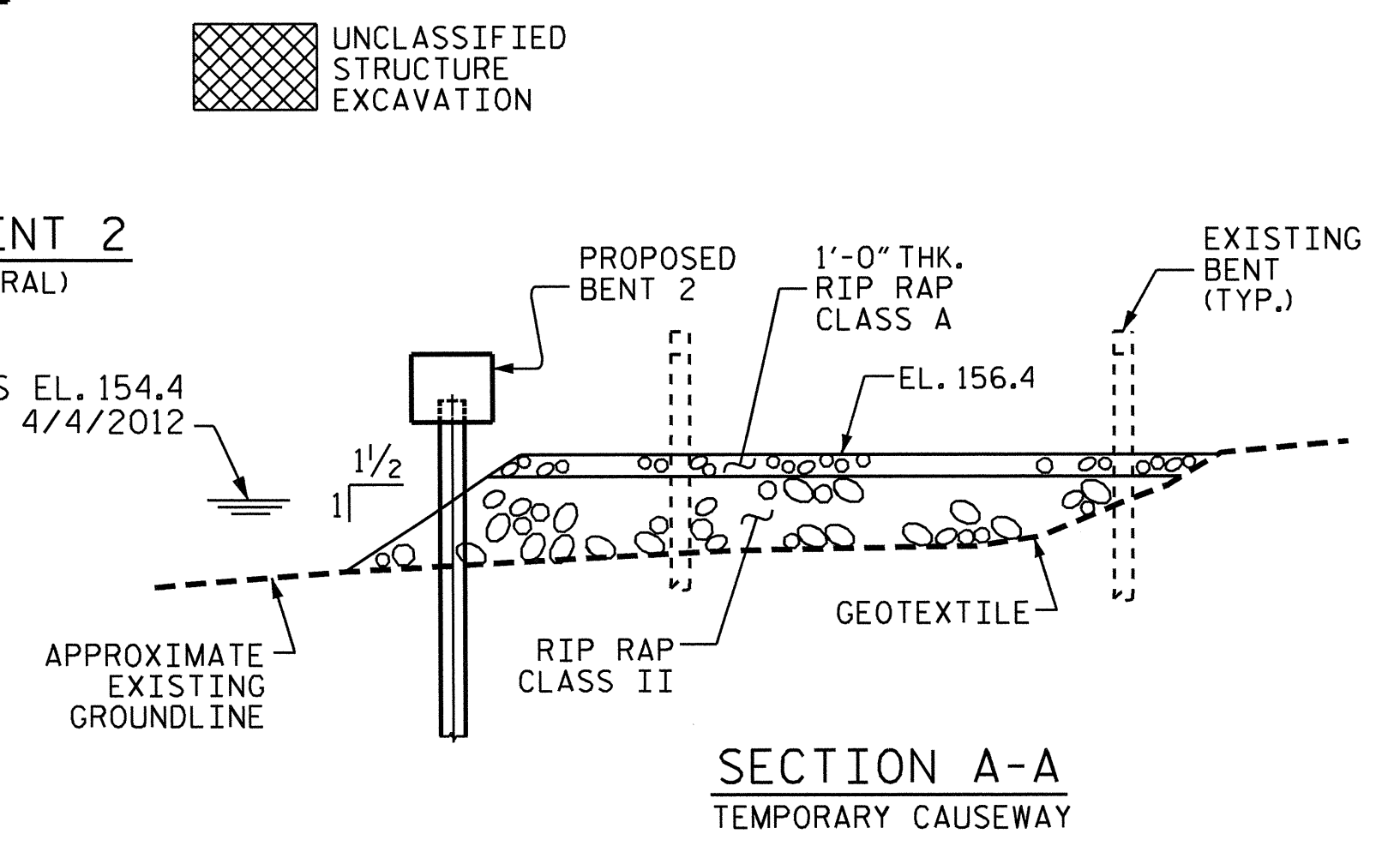
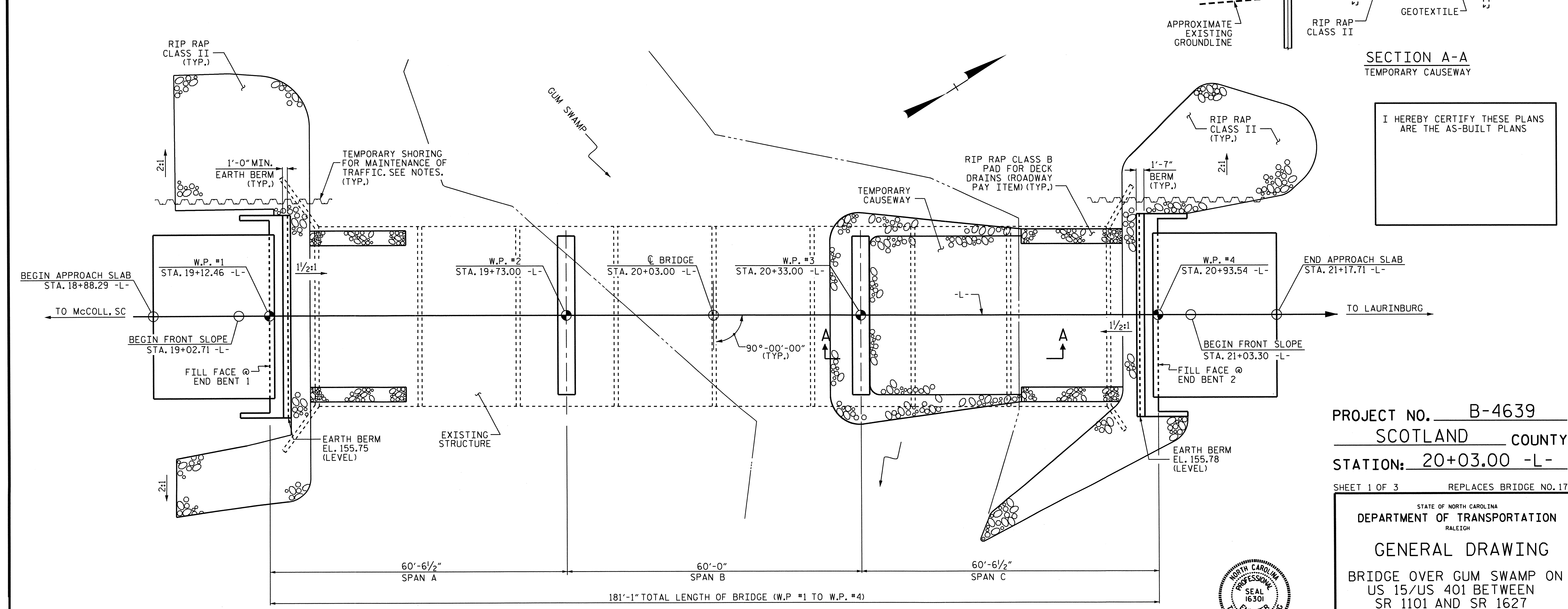
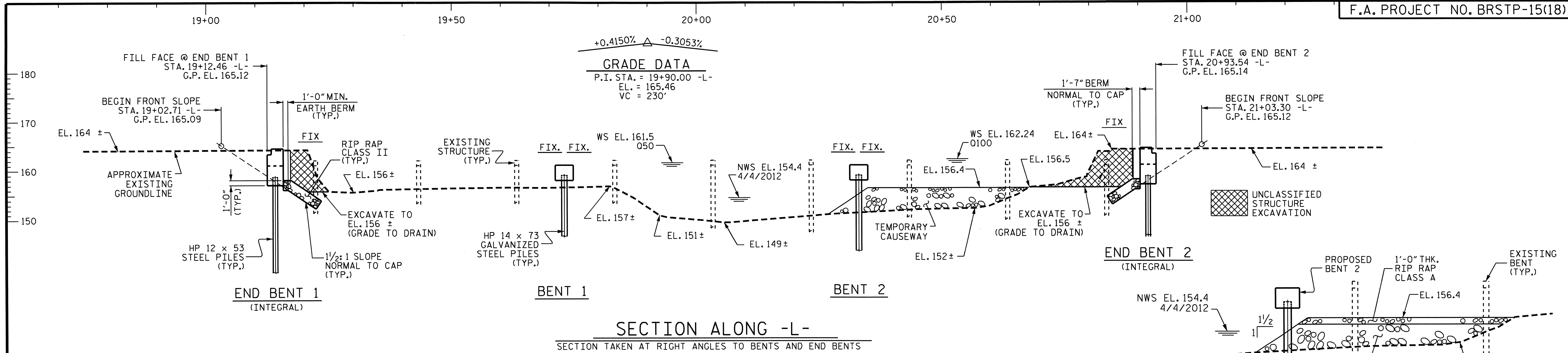
**LETTING DATE : JULY 15, 2014**

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J.M. BAILEY, P.E.  
PROJECT ENGINEER

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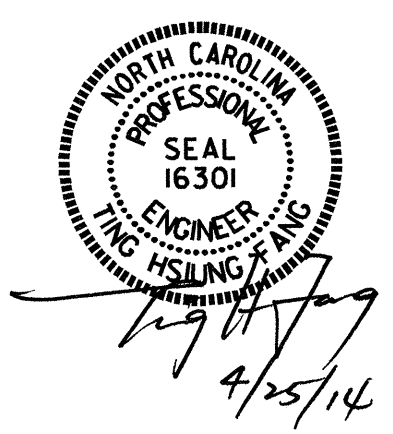
T. H. FANG, P.E.  
PROJECT DESIGN ENGINEER



I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

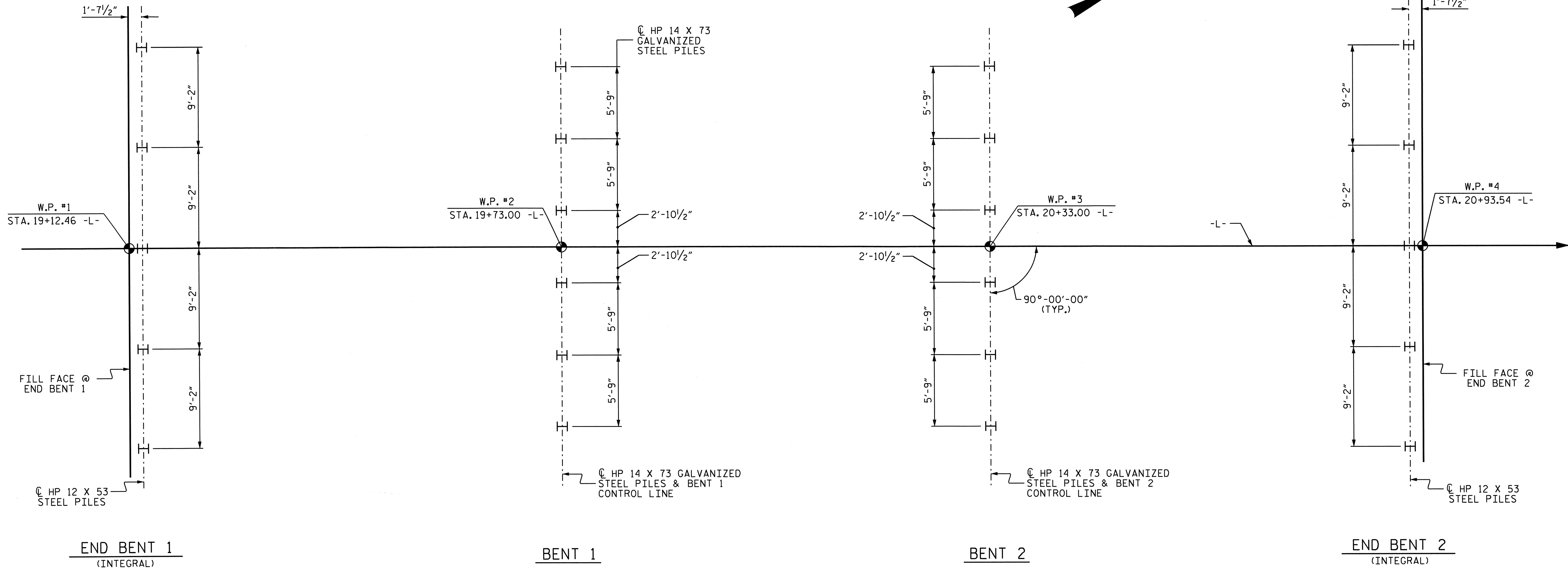
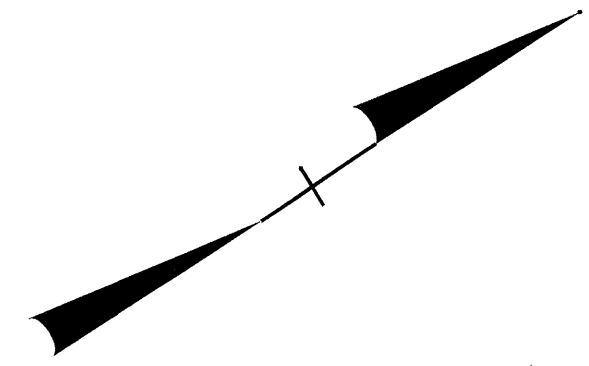
PROJECT NO. B-4639  
SCOTLAND COUNTY  
 STATION: 20+03.00 -L-  
 SHEET 1 OF 3 REPLACES BRIDGE NO. 17

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 BRIDGE OVER GUM SWAMP ON  
 US 15/US 401 BETWEEN  
 SR 1101 AND SR 1627



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

DRAWN BY: S.B. WILLIAMS DATE: 7/2012  
 CHECKED BY: S. WANCE DATE: 2/2014



**FOUNDATION LAYOUT**

DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES.  
ALL PILES ARE VERTICAL.

**NOTES**

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENTS 1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 110 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE.

PILES AT INTERIOR BENT 1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 135 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 185 TONS. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR SCOUR.

PILES AT INTERIOR BENT 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 135 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 210 TONS. THIS REQUIRED DRIVING RESISTANCE INCLUDES ADDITIONAL RESISTANCE FOR SCOUR.

INSTALL PILES AT INTERIOR BENT 1 TO A TIP ELEVATION NO HIGHER THAN 122 FT.

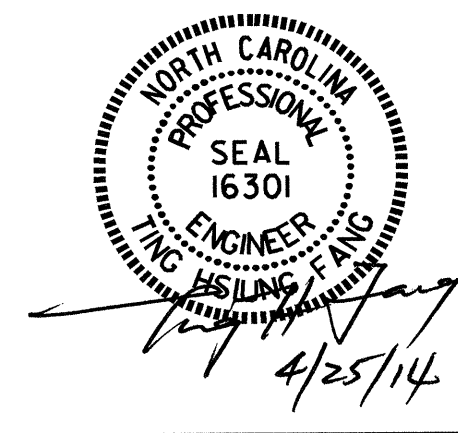
INSTALL PILES AT INTERIOR BENT 2 TO A TIP ELEVATION NO HIGHER THAN 122.5 FT.

THE SCOUR CRITICAL ELEVATIONS FOR INTERIOR BENTS 1 AND 2 ARE 144 AND 137 FEET, RESPECTIVELY. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

TESTING THE FIRST PRODUCTION PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING IS REQUIRED. FOR PDA TESTING, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS AND FOR PILE DRIVING CRITERIA, SEE PILE DRIVING CRITERIA PROVISION.

PROJECT NO. B-4639  
SCOTLAND COUNTY  
 STATION: 20+03.00 -L-

SHEET 2 OF 3



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 BRIDGE OVER GUM SWAMP ON  
 US 15/US 401 BETWEEN  
 SR 1101 AND SR 1627

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

DRAWN BY : S.B. WILLIAMS DATE : 7/2012  
 CHECKED BY : S. WANCE DATE : 2/2014

| TOTAL BILL OF MATERIAL |  |   |                               |             |                                   |                               |                        |                  |                       |                   |                                  |                        |                                   |               |                       |                                |                         |                      |          |  |
|------------------------|--|---|-------------------------------|-------------|-----------------------------------|-------------------------------|------------------------|------------------|-----------------------|-------------------|----------------------------------|------------------------|-----------------------------------|---------------|-----------------------|--------------------------------|-------------------------|----------------------|----------|--|
|                        | CONST. MAINT. & REMOVAL OF TEMP. STRUCTURE | CONST. MAINT. & REMOVAL OF TEMP. ACCESS | REMOVAL OF EXISTING STRUCTURE | PDA TESTING | UNCLASSIFIED STRUCTURE EXCAVATION | REINFORCED CONCRETE DECK SLAB | GROOVING BRIDGE FLOORS | CLASS A CONCRETE | BRIDGE APPROACH SLABS | REINFORCING STEEL | 36" PRESTRESSED CONCRETE GIRDERS | HP 12 X 53 STEEL PILES | HP 14 X 73 GALVANIZED STEEL PILES | PILE REDRIVES | CONCRETE BARRIER RAIL | RIP RAP CLASS II (2'-0" THICK) | GEOTEXTILE FOR DRAINAGE | ELASTOMERIC BEARINGS |          |  |
|                        | LUMP SUM                                   | LUMP SUM                                | LUMP SUM                      | EACH        | LUMP SUM                          | SQ. FT.                       | SQ. FT.                | CU. YDS.         | LUMP SUM              | LBS.              | NO.                              | LIN. FT.               | NO.                               | LIN. FT.      | EACH                  | TONS                           | SQ. YDS.                | LUMP SUM             |          |  |
| SUPERSTRUCTURE         |  |   |                               |             |                                   | 6,383                         | 6,595                  |                  |                       |                   | 15                               | 887.5                  |                                   |               |                       |                                |                         |                      |          |  |
| END BENT 1             |  |   |                               |             | LUMP SUM                          |                               |                        | 23.2             |                       | 2,839             |                                  | 5                      | 350                               | 5             |                       | 155                            | 170                     |                      |          |  |
| BENT 1                 |  |   |                               |             |                                   |                               |                        | 11.2             |                       | 2,027             |                                  |                        | 6                                 | 420           | 6                     |                                |                         |                      |          |  |
| BENT 2                 |  |   |                               |             |                                   |                               |                        | 11.2             |                       | 2,027             |                                  |                        | 6                                 | 450           | 6                     |                                |                         |                      |          |  |
| END BENT 2             |  |   |                               |             | LUMP SUM                          |                               |                        | 23.2             |                       | 2,839             |                                  | 5                      | 350                               | 5             |                       | 160                            | 175                     |                      |          |  |
| TOTAL                  | LUMP SUM                                   | LUMP SUM                                | LUMP SUM                      | 2           | LUMP SUM                          | 6,383                         | 6,595                  | 68.8             | LUMP SUM              | 9,732             | 15                               | 887.5                  | 10                                | 700           | 22                    | 358.83                         | 315                     | 345                  | LUMP SUM |  |

**NOTES:**

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 2.

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

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

THE EXISTING STRUCTURE CONSISTING OF EIGHT SPANS, 2 @ 21'-0" AND 6 @ 20'-0", WITH A 1 1/2" AWS, REINFORCED CONCRETE DECK ON STEEL BEAMS, A CLEAR ROADWAY WIDTH OF 34'-2", END BENTS AND BENTS 3, 4, & 5 ON TIMBER CAPS WITH TIMBER PILES, AND BENTS 2, 6, & 7 WITH STEEL CAPS AND PILE CRUTCHES LOCATED AT THE PROPOSED STRUCTURE SITE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. FOR REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 35 FT. EACH SIDE OF CENTERLINE ROADWAY AT END BENT 1 AND 30 FT. LEFT SIDE, 45 FT. RIGHT SIDE OF CENTERLINE ROADWAY AT END BENT 2 OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATION.

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

THE BRIDGE RAILS ON THE TEMPORARY STRUCTURE SHALL BE DESIGNED FOR THE AASHTO LRFD TEST LEVEL 3 (TL-3) CRASH TEST CRITERIA. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.

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.

A 1'-0" FINAL LAYER OF CLASS A RIP RAP SHALL BE INCLUDED WITHIN THE CLASS II RIP RAP USED FOR THE TEMPORARY CAUSEWAY. THE COST OF CLASS A RIP RAP SHALL BE INCLUDED IN THE PRICE BID FOR "CONSTRUCTION, MAINTENANCE & REMOVAL OF TEMPORARY ACCESS".

AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY ACCESS AT STATION 20+03.00 -L-.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPliced WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 20+03.00 -L-".

THE CONTRACTOR WILL BE REQUIRED TO CONSTRUCT, MAINTAIN AND AFTERWARDS REMOVE A TEMPORARY STRUCTURE AT STATION 20+03.00 -L- FOR USE DURING CONSTRUCTION OF THE PROPOSED STRUCTURE. FOR CONSTRUCTION, MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE, SEE SPECIAL PROVISIONS.

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

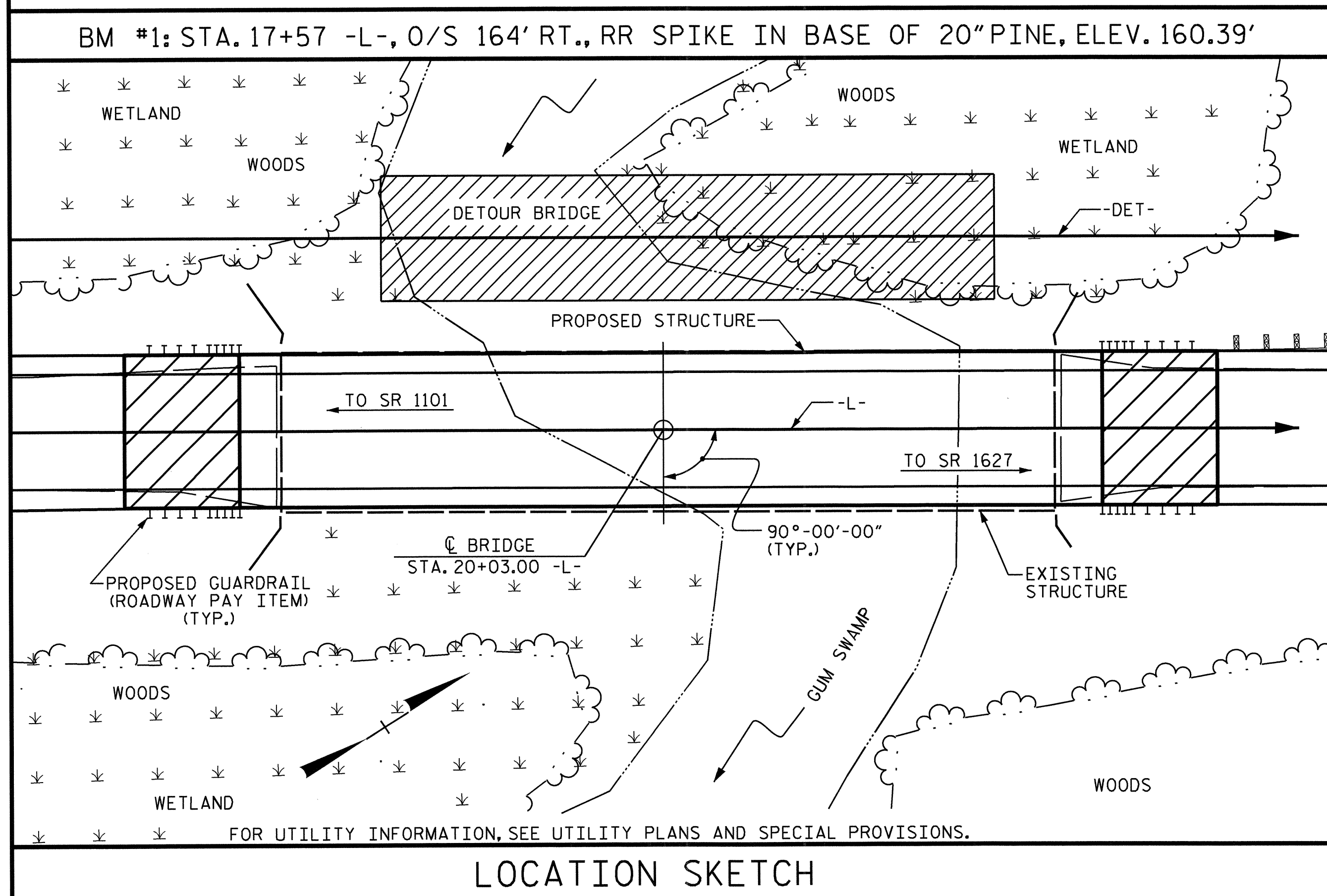
FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.



**LOCATION SKETCH**

**HYDRAULIC DATA**

|                             |                  |
|-----------------------------|------------------|
| DESIGN DISCHARGE            | = 3800 C.F.S.    |
| FREQUENCY OF DESIGN FLOOD   | = 50 YR.         |
| DESIGN HIGH WATER ELEVATION | = 161.5 FT.      |
| DRAINAGE AREA               | = 118.75 SQ. MI. |
| BASE DISCHARGE (Q100)       | = 4300 C.F.S.    |
| BASE HIGH WATER ELEVATION   | = 162.24 FT.     |

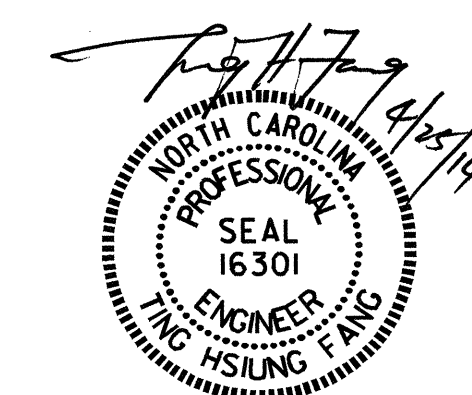
**OVERTOPPING FLOOD DATA**

|                                |             |
|--------------------------------|-------------|
| OVERTOPPING DISCHARGE          | = 3925 CFS  |
| FREQUENCY OF OVERTOPPING FLOOD | > 50 YR.    |
| OVERTOPPING FLOOD ELEVATION    | = 161.7 FT. |

DRAWN BY : S. B. WILLIAMS DATE : 7/12  
 CHECKED BY : S. WANCE DATE : 2/2014

PROJECT NO. B-4639  
SCOTLAND COUNTY  
 STATION: 20+03.00 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**GENERAL DRAWING**

BRIDGE OVER GUM SWAMP ON  
 US 15/US 401 BETWEEN  
 SR 1101 AND SR 1627

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

LOAD FACTORS:

|                            |             |               |               |
|----------------------------|-------------|---------------|---------------|
| DESIGN LOAD RATING FACTORS | LIMIT STATE | $\gamma_{DC}$ | $\gamma_{DW}$ |
|                            | STRENGTH I  | 1.25          | 1.50          |
|                            | SERVICE III | 1.00          | 1.00          |

| LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS |            |                   |                           |                             |               |                        |                           |               |      |                 |                                     |                           |               |      |                 |                                     |                  |                           |               |      |                |                 |                                     |
|---|------------|-------------------|---------------------------|-----------------------------|---------------|------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|------------------|---------------------------|---------------|------|----------------|-----------------|-------------------------------------|
| LEVEL   | VEHICLE    | WEIGHT (W) (TONS) | CONTROLLING LOAD RATING # | MINIMUM RATING FACTORS (RF) | TONS = W X RF | STRENGTH I LIMIT STATE |                           |               |      |                 |                                     |                           |               |      |                 | SERVICE III LIMIT STATE             |                  |                           |               |      | COMMENT NUMBER |                 |                                     |
|   |            |                   |                           |                             |               | LIVELOAD FACTORS       | MOMENT                    |               |      |                 |                                     | SHEAR                     |               |      |                 |                                     | LIVELOAD FACTORS | MOMENT                    |               |      |                |                 |                                     |
|   |            |                   |                           |                             |               |                        | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) |                  | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN |                | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) |
| DESIGN LOAD RATING  | HL-93(Inv) | N/A               | 1                         | 1.03                        | --            | 1.75                   | 0.676                     | 1.39          | A    | EL              | 28.917                              | 0.761                     | 1.72          | A    | I               | 17.35                               | 0.80             | 0.676                     | 1.03          | A    | EL             | 28.917          |                                     |
|   | HL-93(0pr) | N/A               | --                        | 1.81                        | --            | 1.35                   | 0.676                     | 1.81          | A    | EL              | 28.917                              | 0.761                     | 2.23          | A    | I               | 17.35                               | N/A              | --                        | --            | --   | --             | --              |                                     |
|   | HS-20(Inv) | 36.000            | 2                         | 1.31                        | 47.036        | 1.75                   | 0.676                     | 1.76          | A    | EL              | 28.917                              | 0.761                     | 2.03          | A    | I               | 17.35                               | 0.80             | 0.676                     | 1.31          | A    | EL             | 28.917          |                                     |
|   | HS-20(0pr) | 36.000            | --                        | 2.29                        | 82.319        | 1.35                   | 0.676                     | 2.29          | A    | EL              | 28.917                              | 0.761                     | 2.63          | A    | I               | 17.35                               | N/A              | --                        | --            | --   | --             | --              |                                     |
| LEGAL LOAD RATING   | SV         | SNSH              | 13.500                    | --                          | 2.80          | 37.771                 | 1.40                      | 0.676         | 4.72 | A               | EL                                  | 28.917                    | 0.761         | 5.56 | A               | I                                   | 17.35            | 0.80                      | 0.676         | 2.80 | A              | EL              | 28.917                              |
|   |            | SNGARBS2          | 20.000                    | --                          | 2.15          | 42.966                 | 1.40                      | 0.676         | 3.63 | A               | EL                                  | 28.917                    | 0.761         | 4.10 | A               | I                                   | 17.35            | 0.80                      | 0.676         | 2.15 | A              | EL              | 28.917                              |
|   |            | SNAGRIS2          | 22.000                    | --                          | 2.06          | 45.367                 | 1.40                      | 0.676         | 3.45 | A               | EL                                  | 34.700                    | 0.761         | 3.86 | A               | I                                   | 17.35            | 0.80                      | 0.676         | 2.06 | A              | EL              | 28.917                              |
|   |            | SNCOTTS3          | 27.250                    | --                          | 1.39          | 37.989                 | 1.40                      | 0.676         | 2.35 | A               | EL                                  | 28.917                    | 0.761         | 2.79 | A               | I                                   | 17.35            | 0.80                      | 0.676         | 1.39 | A              | EL              | 28.917                              |
|   |            | SNAGGRS4          | 34.925                    | --                          | 1.19          | 41.527                 | 1.40                      | 0.676         | 2.01 | A               | EL                                  | 28.917                    | 0.761         | 2.42 | A               | I                                   | 17.35            | 0.80                      | 0.676         | 1.19 | A              | EL              | 28.917                              |
|   |            | SNS5A             | 35.550                    | --                          | 1.16          | 41.277                 | 1.40                      | 0.676         | 1.96 | A               | EL                                  | 28.917                    | 0.761         | 2.50 | A               | I                                   | 17.35            | 0.80                      | 0.676         | 1.16 | A              | EL              | 28.917                              |
|   |            | SNS6A             | 39.950                    | --                          | 1.08          | 42.972                 | 1.40                      | 0.676         | 1.82 | A               | EL                                  | 28.917                    | 0.761         | 2.33 | A               | I                                   | 17.35            | 0.80                      | 0.676         | 1.08 | A              | EL              | 28.917                              |
|   | SNS7B      | 42.000            | --                        | 1.03                        | 43.039        | 1.40                   | 0.676                     | 1.73          | A    | EL              | 28.917                              | 0.761                     | 2.35          | A    | I               | 17.35                               | 0.80             | 0.676                     | 1.02          | A    | EL             | 28.917          |                                     |
|   | TTST       | TNAGRIT3          | 33.000                    | --                          | 1.32          | 43.388                 | 1.40                      | 0.676         | 2.22 | A               | EL                                  | 28.917                    | 0.761         | 2.74 | A               | I                                   | 17.35            | 0.80                      | 0.676         | 1.31 | A              | EL              | 28.917                              |
|   |            | TNT4A             | 33.075                    | --                          | 1.32          | 43.773                 | 1.40                      | 0.676         | 2.23 | A               | EL                                  | 28.917                    | 0.761         | 2.62 | A               | I                                   | 17.35            | 0.80                      | 0.676         | 1.32 | A              | EL              | 28.917                              |
|   |            | TNT6A             | 41.600                    | --                          | 1.09          | 45.437                 | 1.40                      | 0.676         | 1.84 | A               | EL                                  | 28.917                    | 0.761         | 2.63 | A               | I                                   | 17.35            | 0.80                      | 0.676         | 1.09 | A              | EL              | 28.917                              |
|   |            | TNT7A             | 42.000                    | --                          | 1.10          | 46.334                 | 1.40                      | 0.676         | 1.86 | A               | EL                                  | 28.917                    | 0.761         | 2.43 | A               | I                                   | 17.35            | 0.80                      | 0.676         | 1.10 | A              | EL              | 28.917                              |
|   |            | TNT7B             | 42.000                    | --                          | 1.15          | 48.389                 | 1.40                      | 0.676         | 1.94 | A               | EL                                  | 34.700                    | 0.761         | 2.25 | A               | I                                   | 17.35            | 0.80                      | 0.676         | 1.15 | A              | EL              | 28.917                              |
|   |            | TNAGRIT4          | 43.000                    | --                          | 1.09          | 46.808                 | 1.40                      | 0.676         | 1.84 | A               | EL                                  | 28.917                    | 0.761         | 2.16 | A               | I                                   | 17.35            | 0.80                      | 0.676         | 1.09 | A              | EL              | 28.917                              |
| TNAGT5A   |            | 45.000            | --                        | 1.02                        | 45.973        | 1.40                   | 0.676                     | 1.72          | A    | EL              | 28.917                              | 0.761                     | 2.22          | A    | I               | 17.35                               | 0.80             | 0.676                     | 1.02          | A    | EL             | 28.917          |                                     |
| TNAGT5B   | 45.000     | 3                 | 1.01                      | 45.230                      | 1.40          | 0.676                  | 1.70                      | A             | EL   | 28.917          | 0.761                               | 2.05                      | A             | I    | 17.35           | 0.80                                | 0.676            | 1.01                      | A             | EL   | 28.917         |                 |                                     |

NOTES:

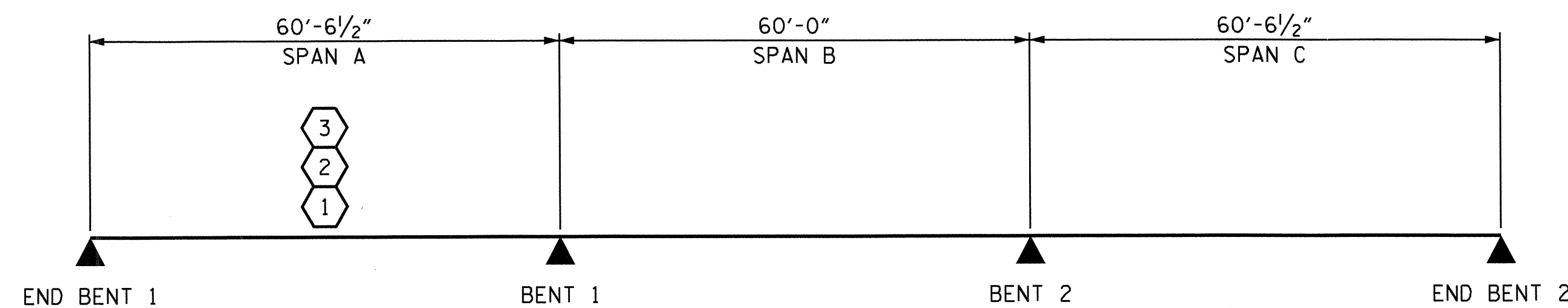
MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.

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

COMMENTS:

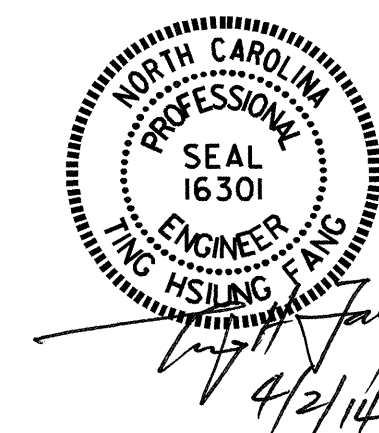
- 1.
- 2.
- 3.
- 4.

|  |                            |
|--|----------------------------|
| #  | 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 |                            |



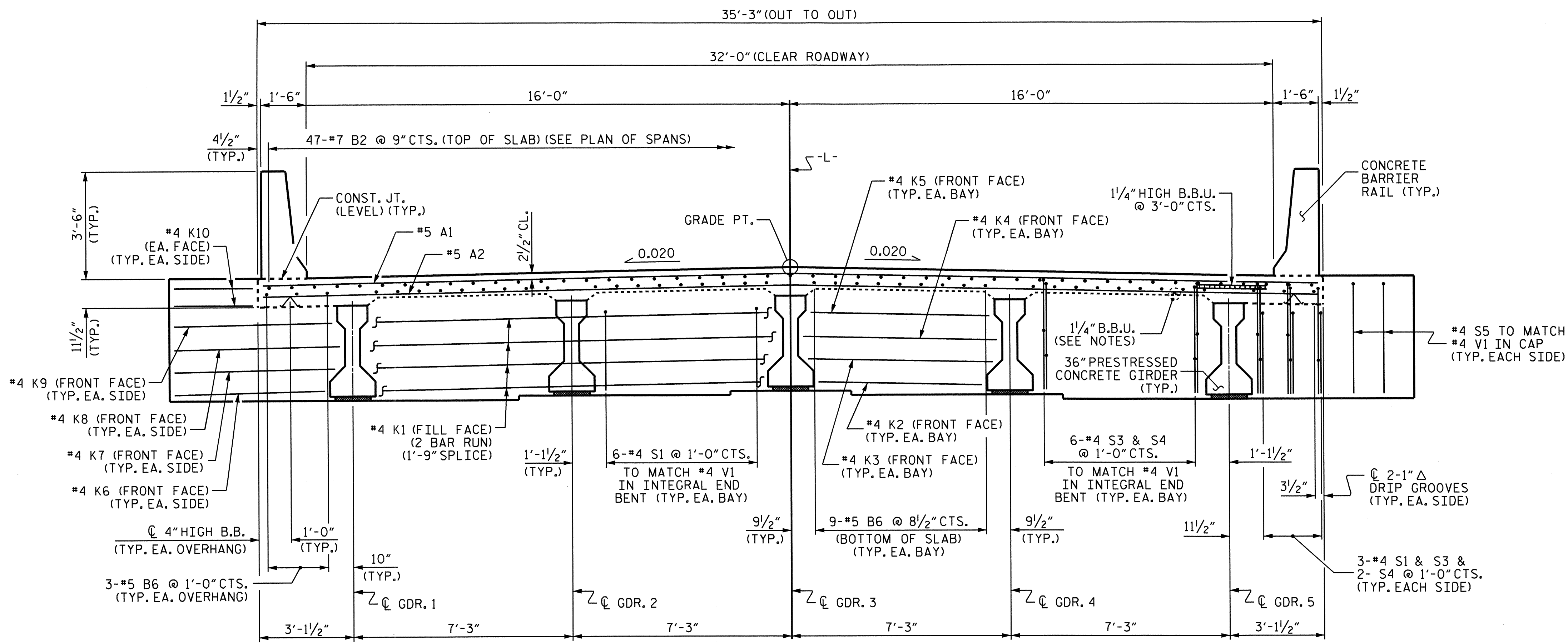
LRFR SUMMARY

PROJECT NO. B-4639  
SCOTLAND COUNTY  
 STATION: 20+03.00 -L-



|   |     |       |     |     |                 |
|---|-----|-------|-----|-----|-----------------|
| STATE OF NORTH CAROLINA<br>DEPARTMENT OF TRANSPORTATION<br>RALEIGH                          |     |       |     |     |                 |
| STANDARD<br>LRFR SUMMARY FOR<br>PRESTRESSED<br>CONCRETE GIRDERS<br>(NON-INTERSTATE TRAFFIC) |     |       |     |     |                 |
| REVISIONS   |     |       |     |     |                 |
| NO.   | BY: | DATE: | NO. | BY: | DATE:           |
| 1   |     |       | 3   |     |                 |
| 2   |     |       | 4   |     |                 |
| SHEET NO. S-4   |     |       |     |     | TOTAL SHEETS 23 |

|                                       |                       |
|---------------------------------------|-----------------------|
| DESIGN ENGINEER OF RECORD:<br>Fr. LEA | DATE: 3/31/14         |
| ASSEMBLED BY: P. K. NEWTON            | DATE: 3/28/14         |
| CHECKED BY: T. J. KIRSCHBAUM          | DATE: 3/31/14         |
| DRAWN BY: MAA 1/08                    | REV. 11/2/08RR MAA/GM |
| CHECKED BY: GM/DI 2/08                | REV. 10/1/11 MAA/GM   |



**TYPICAL SECTION**

SHOWING ABUTMENT WALL AT END BENT WINGS, APPROACH SLAB BLOCKOUT & SIP FORMS NOT SHOWN FOR CLARITY.

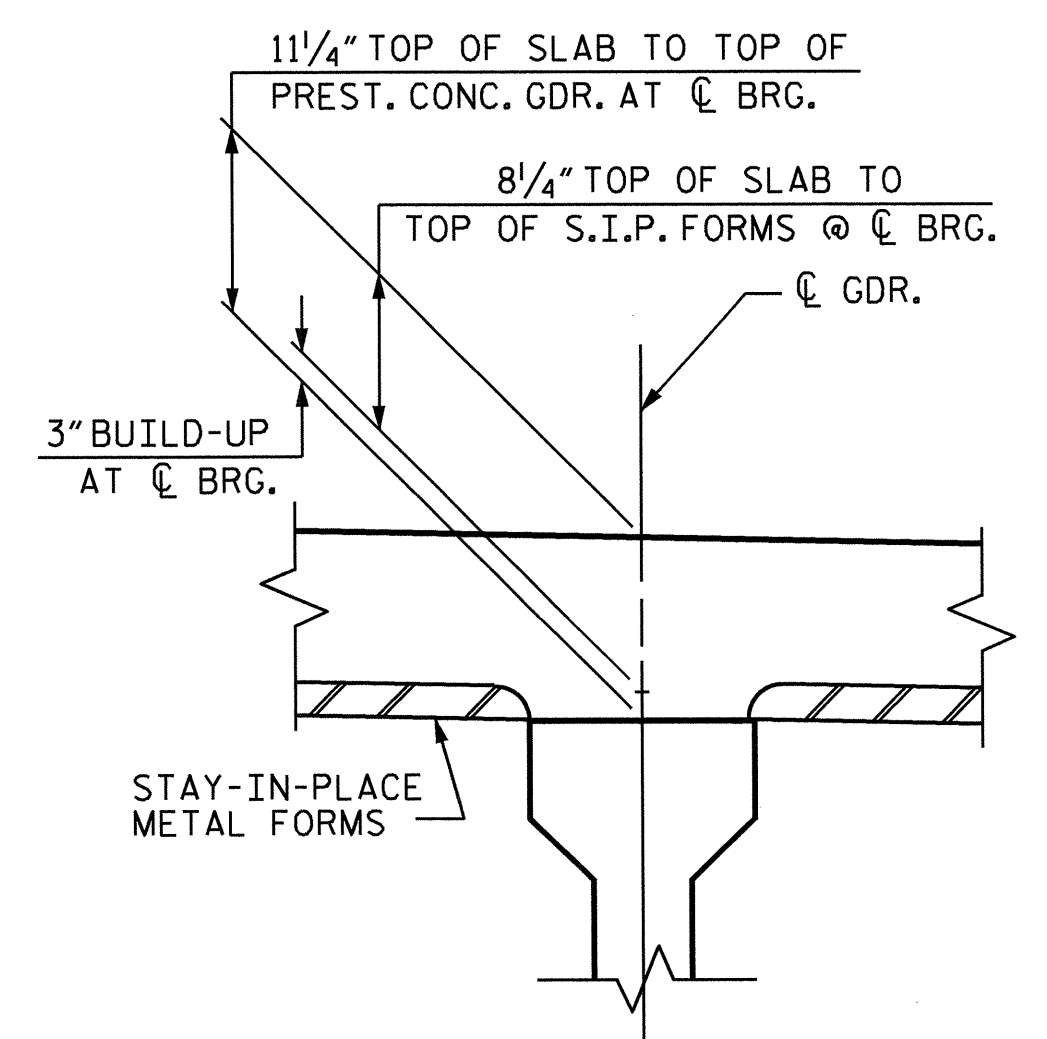
**NOTES**

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.

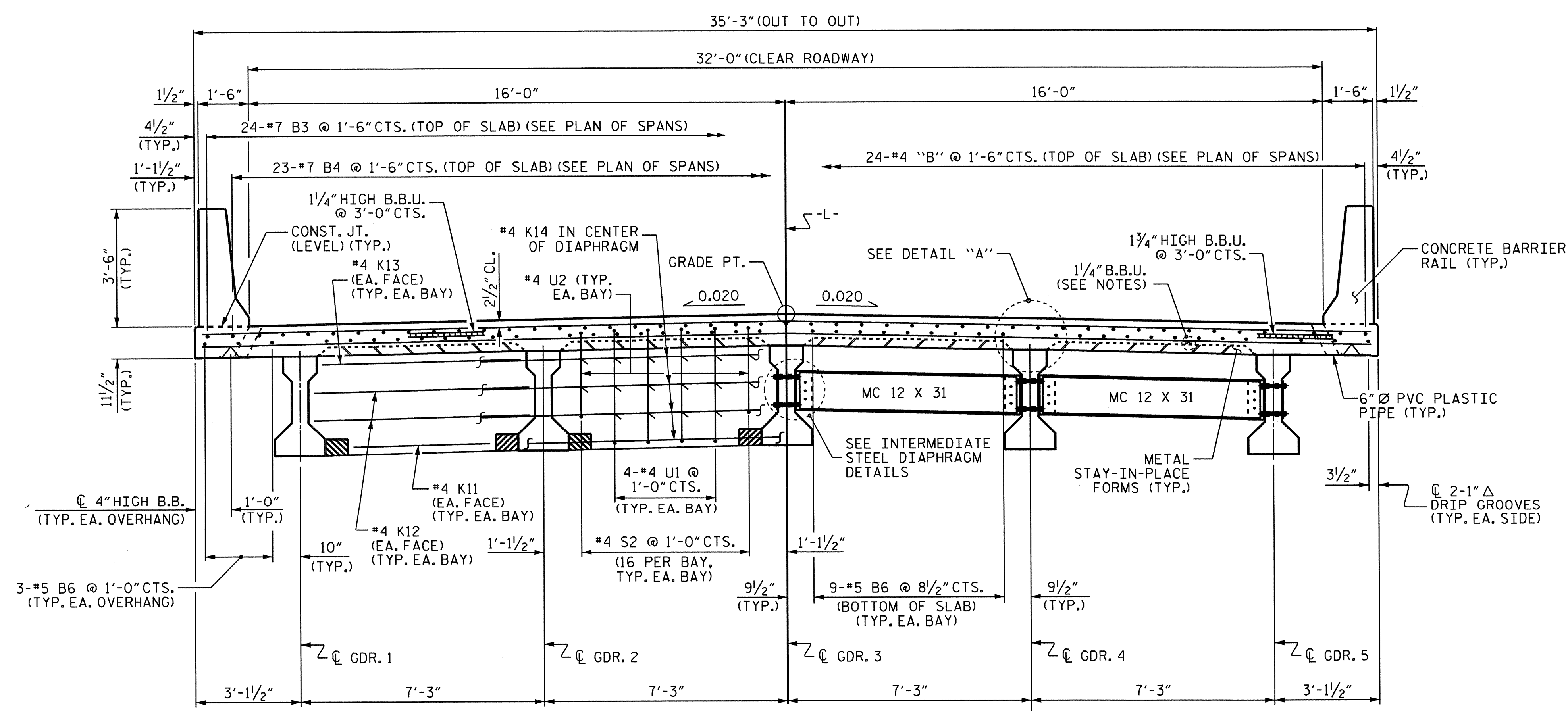
LONGITUDINAL STEEL MAY BE SHIFTED SLIGHTLY, AS NECESSARY, TO AVOID INTERFERENCE WITH STIRRUPS IN PRESTRESSED CONCRETE GIRDERS.

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 WING ELEVATIONS AND DETAILS, SEE "PLAN OF SPANS WING DETAILS" SHEET.



**DETAIL A**



**HALF TYPICAL SECTION**

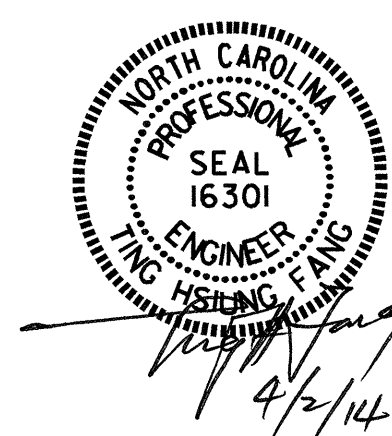
(SHOWING BENT DIAPHRAGM)

**HALF TYPICAL SECTION**

(SHOWING INTERMEDIATE DIAPHRAGMS)

DRAWN BY : Fr. Leo DATE : 7-25-12  
 CHECKED BY : R.P. PATEL DATE : 7-31-12  
 DESIGN ENGINEER OF RECORD : Fr. Leo DATE : 3-28-14

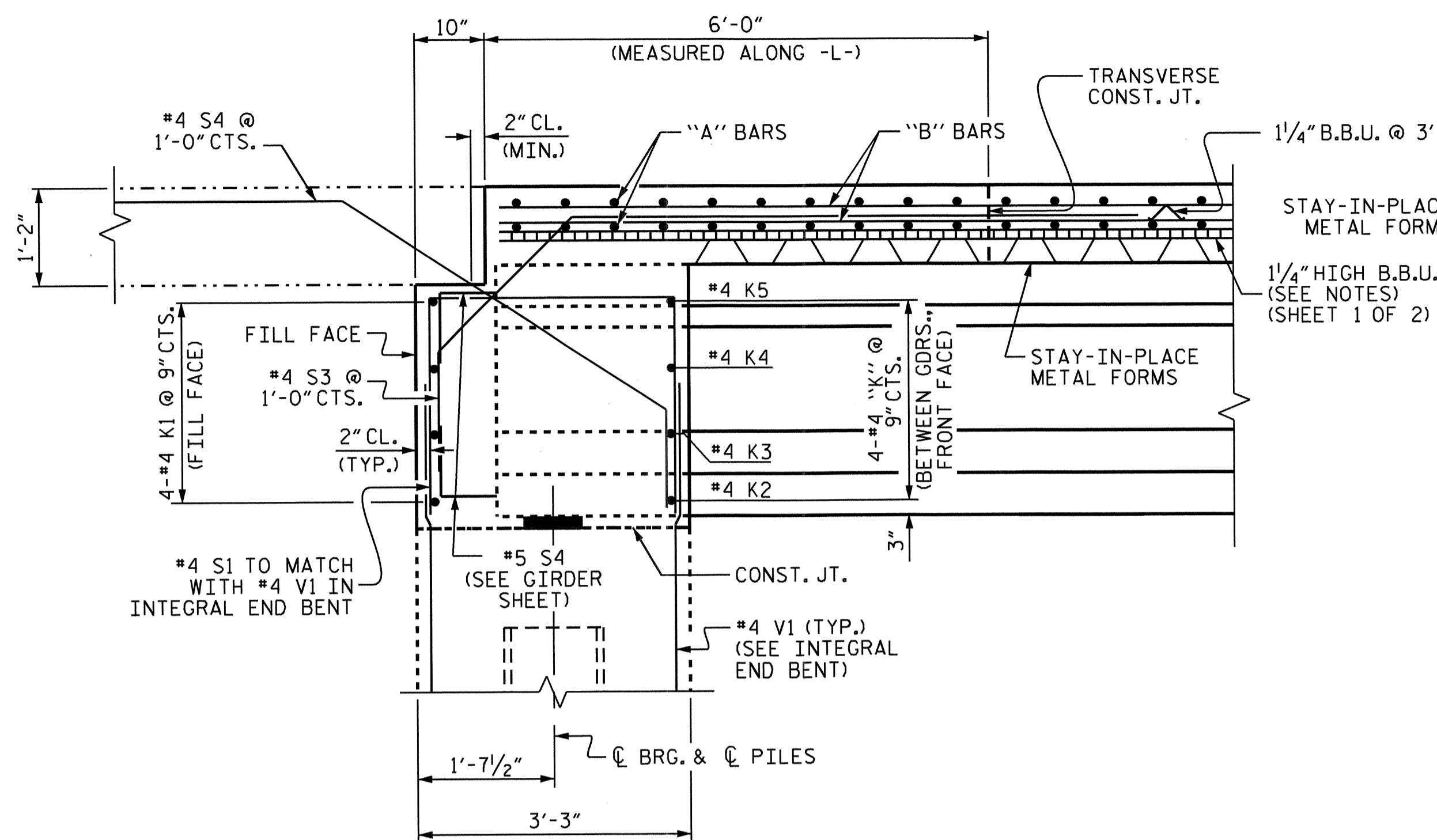
02-APR-2014 09:18  
 \\g01\dfsroot\1\Pro\TIPProjects-B\B4639\Structures\FINAL PLANS\B4639.sd.ts.dgn  
 clyokeley



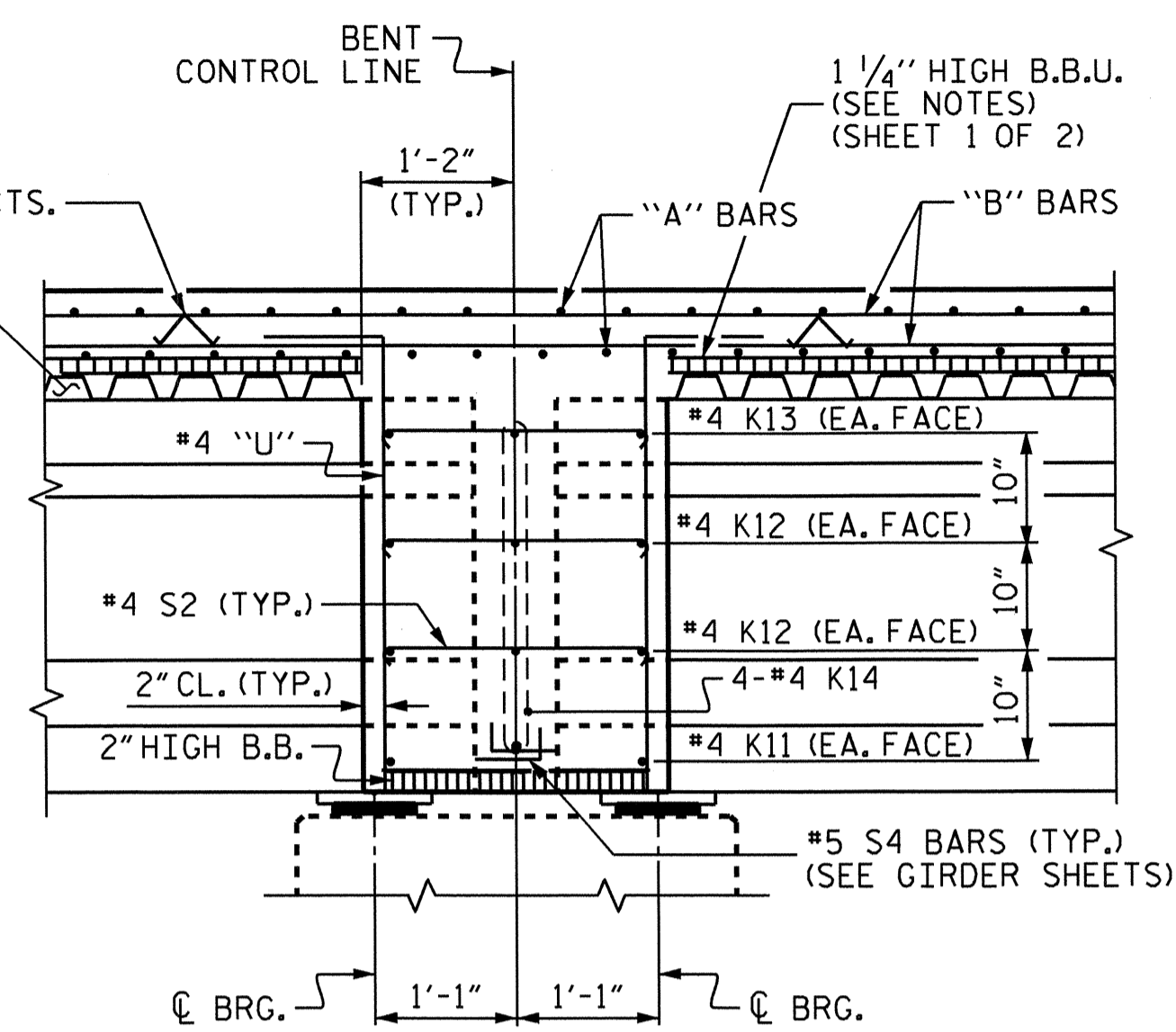
PROJECT NO. B-4639  
 SCOTLAND COUNTY  
 STATION: 20+03.00 -L-

SHEET 1 OF 2

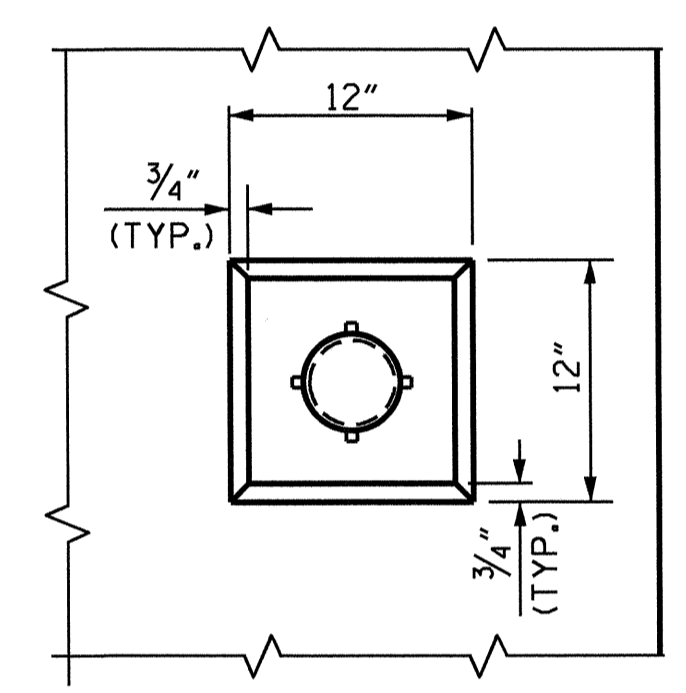
|                              |     |       |     |     |       |              |  |
|------------------------------|-----|-------|-----|-----|-------|--------------|--|
| STATE OF NORTH CAROLINA      |     |       |     |     |       | SHEET NO.    |  |
| DEPARTMENT OF TRANSPORTATION |     |       |     |     |       | S-5          |  |
| RALEIGH                      |     |       |     |     |       | TOTAL SHEETS |  |
| SUPERSTRUCTURE               |     |       |     |     |       | 23           |  |
| TYPICAL SECTION              |     |       |     |     |       |              |  |
| REVISIONS                    |     |       |     |     |       |              |  |
| NO.                          | BY: | DATE: | NO. | BY: | DATE: |              |  |
| 1                            |     |       | 3   |     |       |              |  |
| 2                            |     |       | 4   |     |       |              |  |



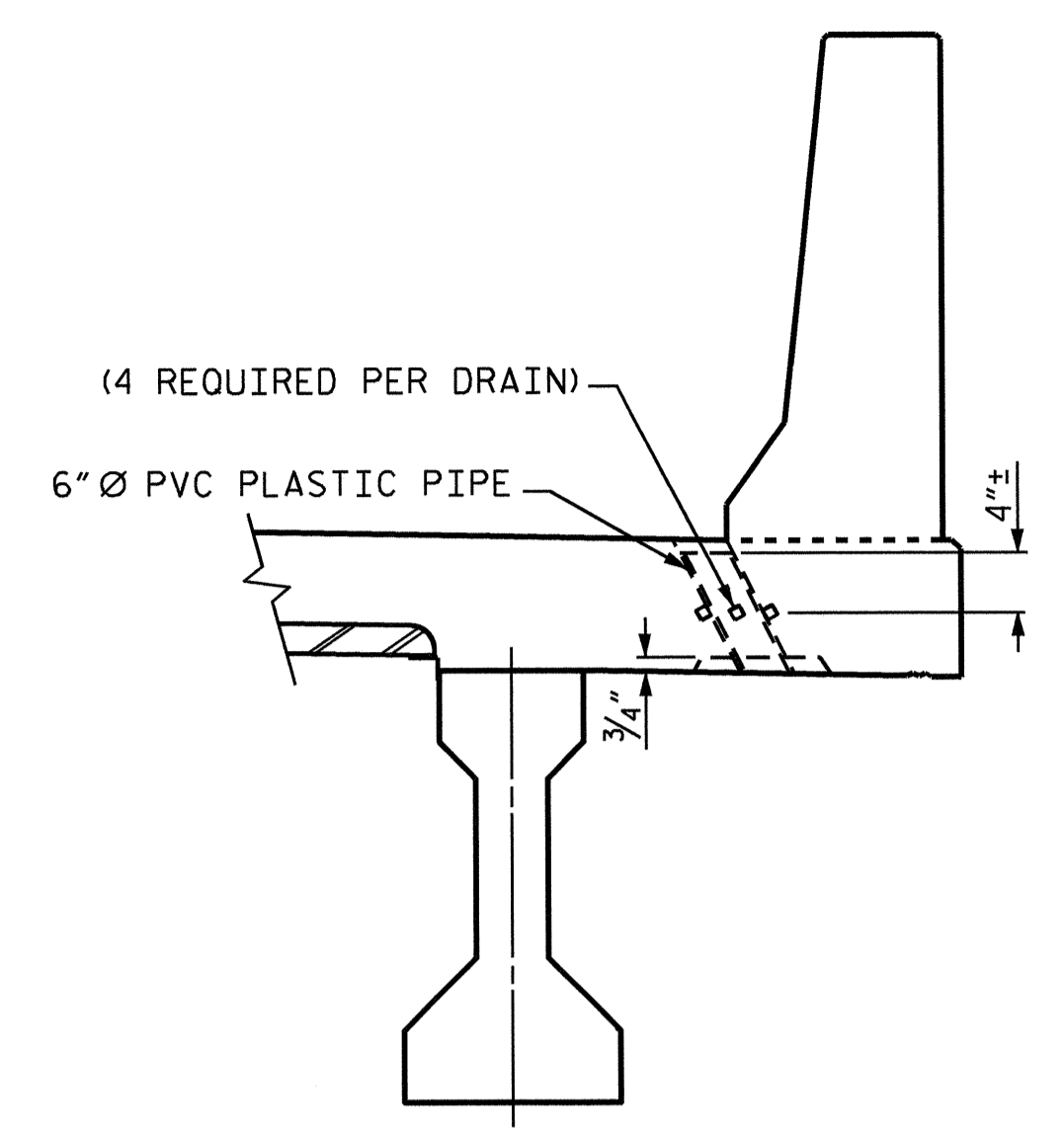
SECTION THRU INTEGRAL END BENT



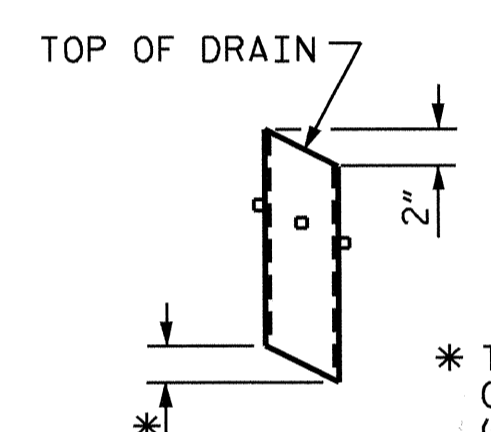
SECTION THRU BENT



PLAN OF RECESS



ELEVATION

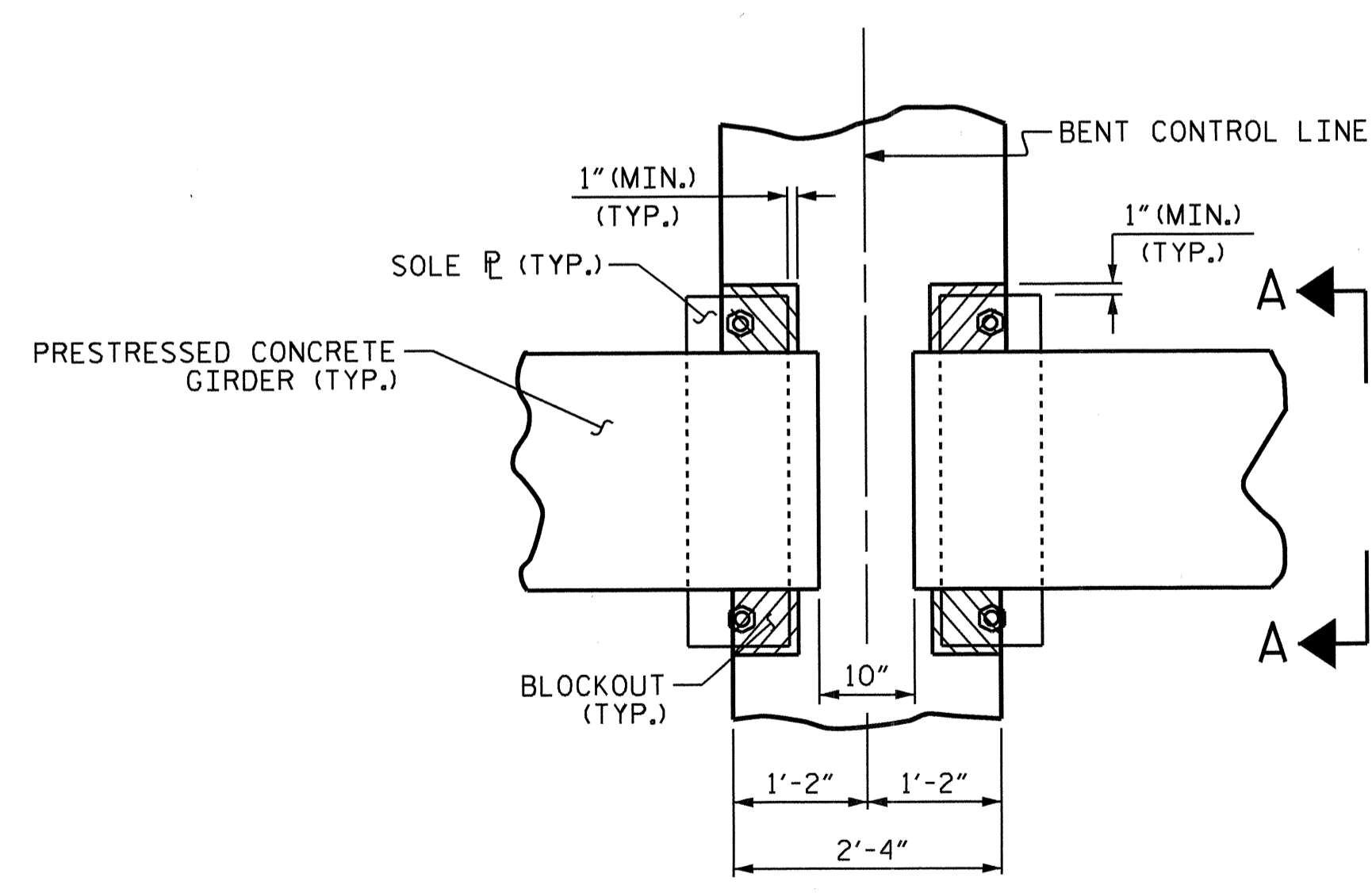


PIPE DETAIL

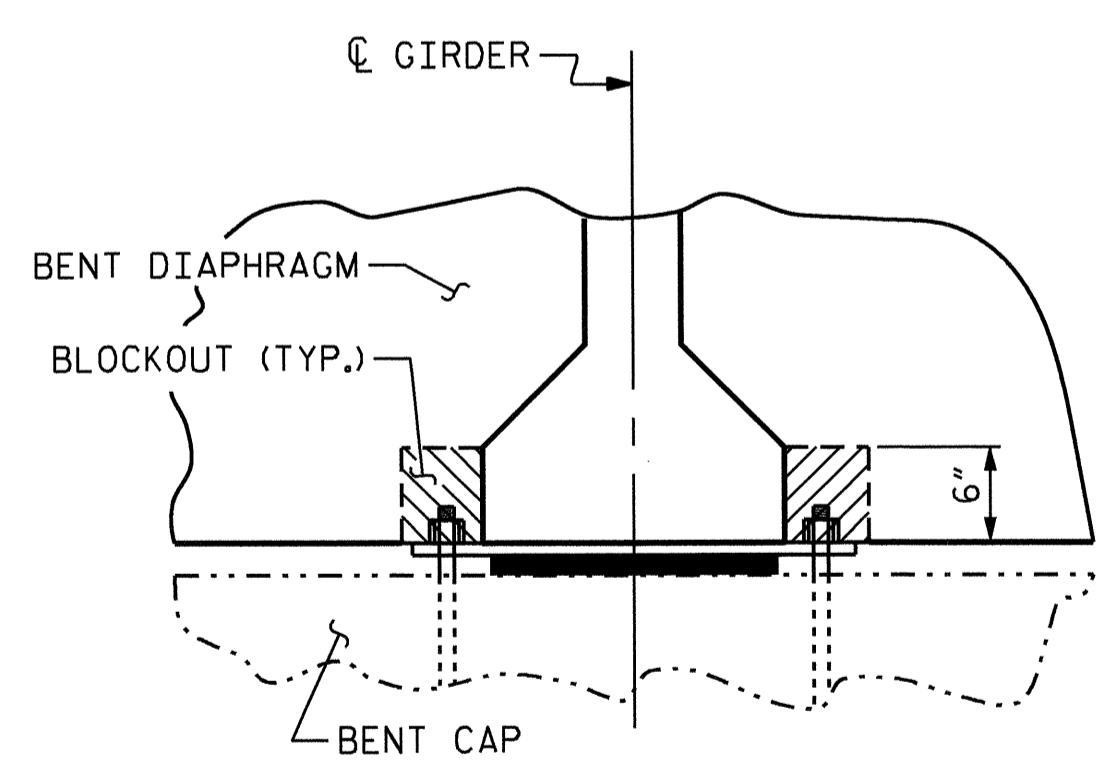
\* TO BE SET TO MATCH SLOPE OF BOTTOM OF OVERHANG (16 DRAINS REQUIRED)

TOP OF FLOOR DRAINS TO BE SET 3/8" BELOW SURFACE OF SLAB.  
 4 - 1/2" SQUARE LUGS TO BE GLUED TO THE P.V.C. PLASTIC PIPE AT EQUAL SPACES AROUND THE PIPE DRAIN APPROXIMATELY 4" FROM THE TOP OF THE PIPE.  
 THE 6" Ø PVC PLASTIC PIPE AND FITTINGS SHALL BE SCHEDULE 40 AND CONFORM TO ASTM D1785.

DRAIN DETAILS



PLAN



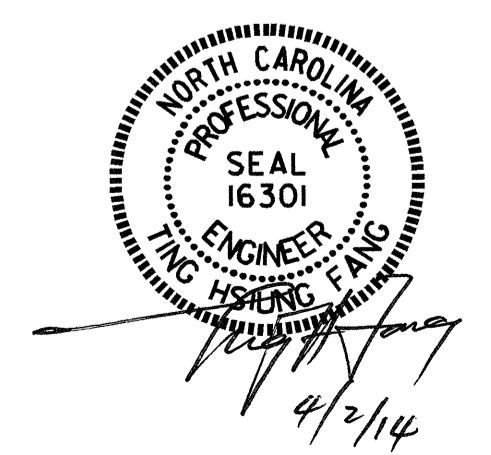
SECTION A-A

BENT DIAPHRAGM BLOCKOUT DETAIL

PROJECT NO. B-4639  
SCOTLAND COUNTY  
 STATION: 20+03.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 TYPICAL SECTION  
 DETAILS

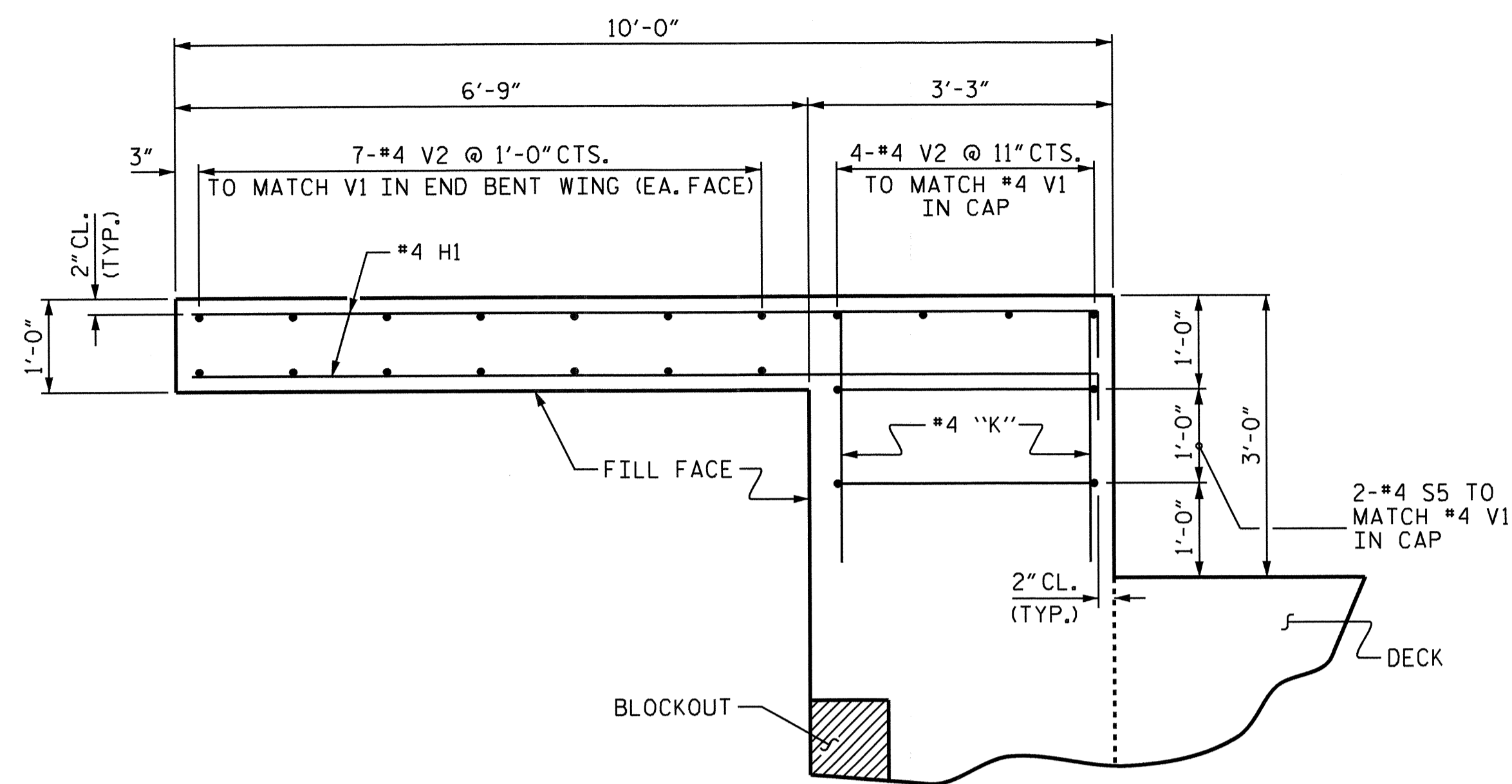


DRAWN BY: Fr. Lea DATE: 7-30-12  
 CHECKED BY: R.P. PATEL DATE: 8-3-12  
 DESIGN ENGINEER OF RECORD: Fr. Lea DATE: 3-28-14

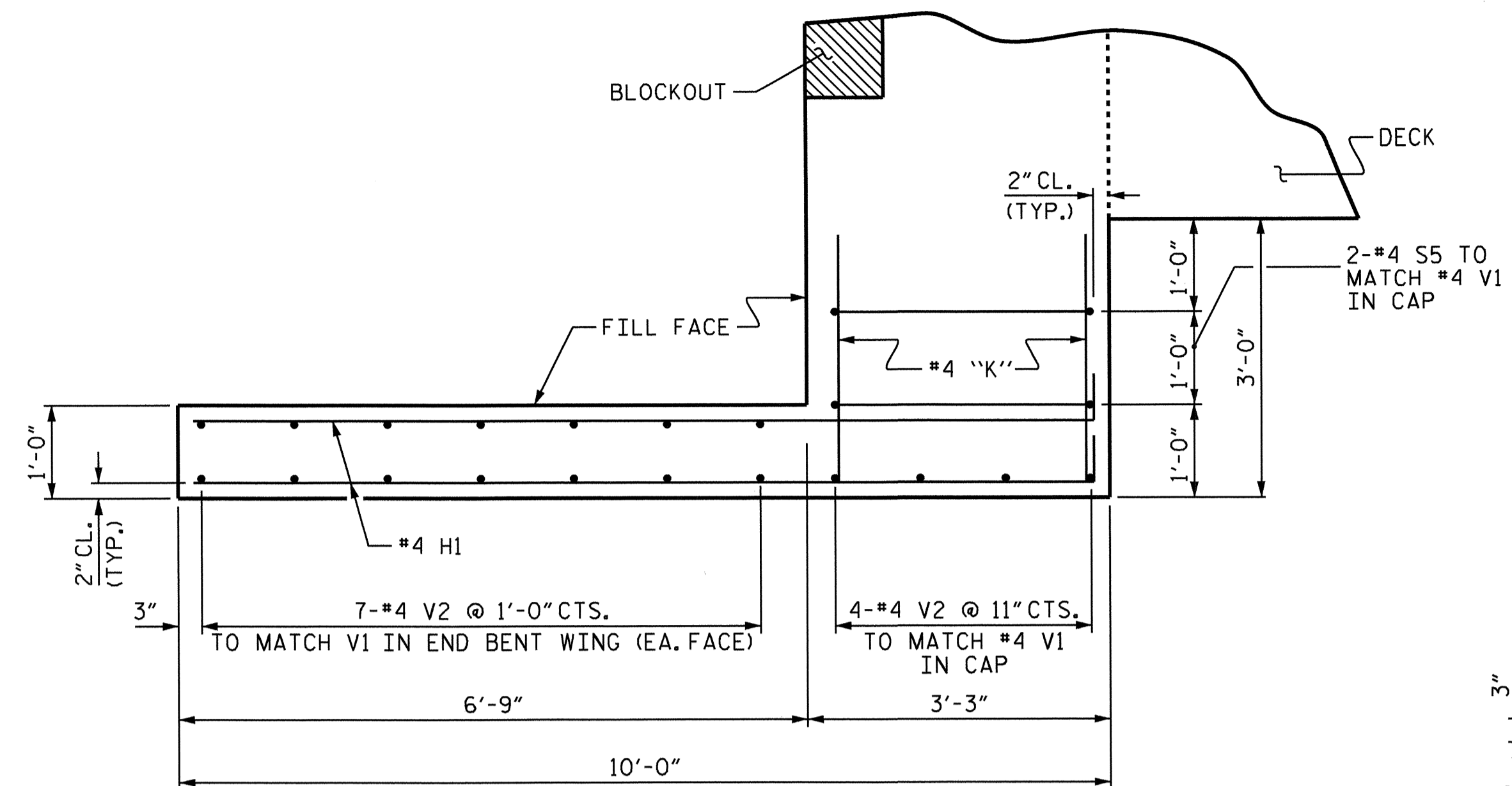
| REVISIONS |     |       |     |     |       | SHEET NO.    |  |
|-----------|-----|-------|-----|-----|-------|--------------|--|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-6          |  |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |  |
| 2         |     |       | 4   |     |       | 23           |  |



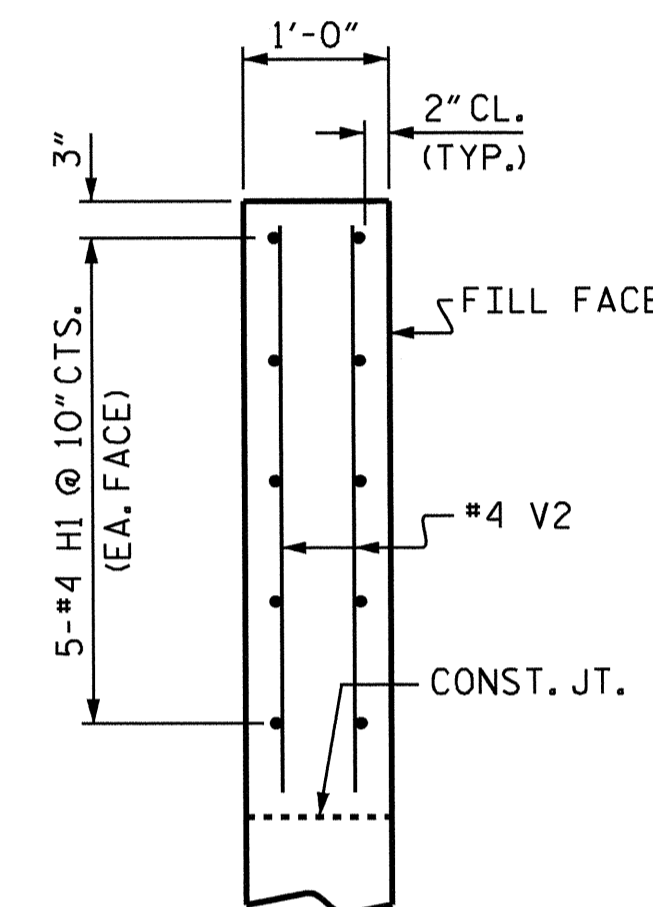




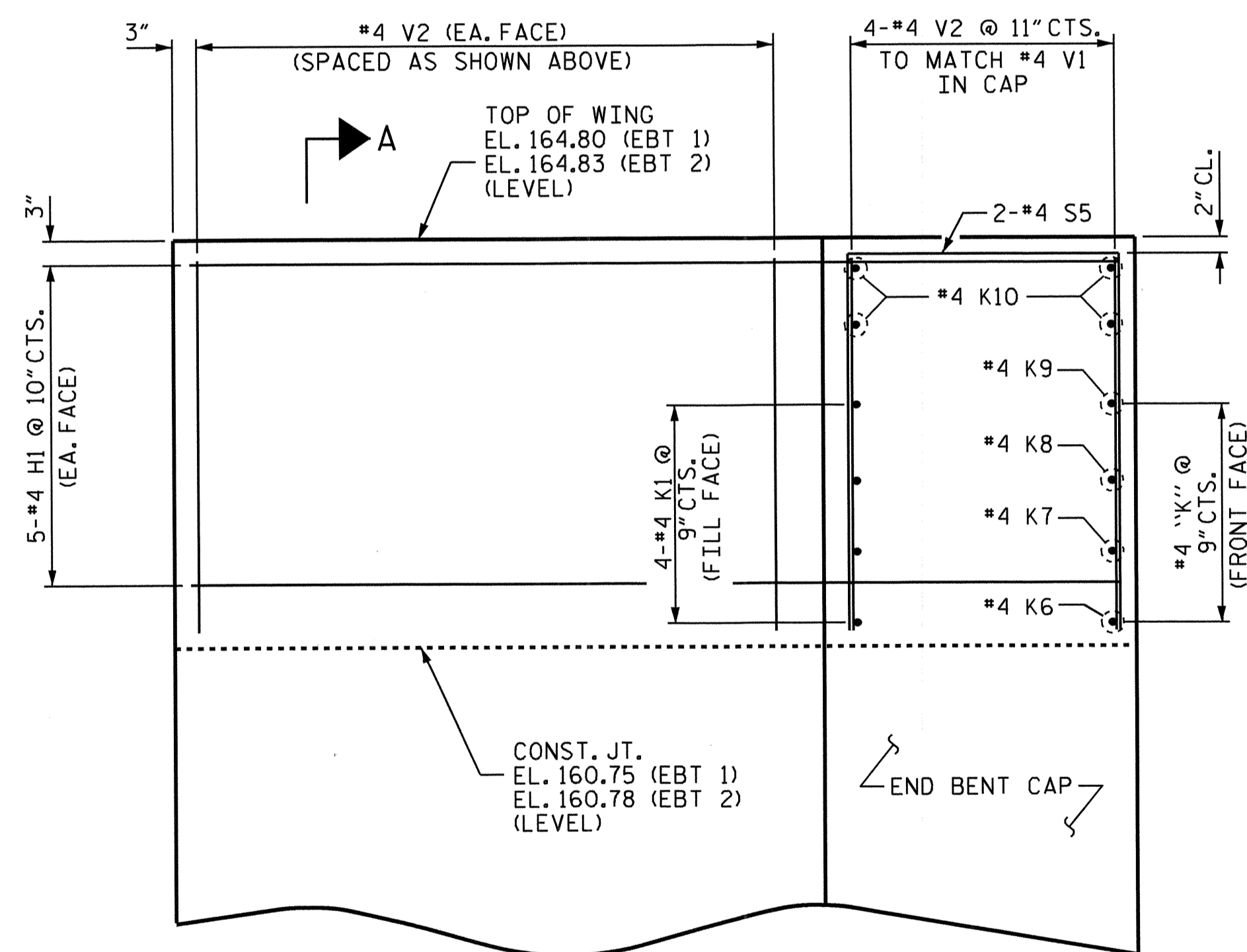
PLAN OF WING (W1)



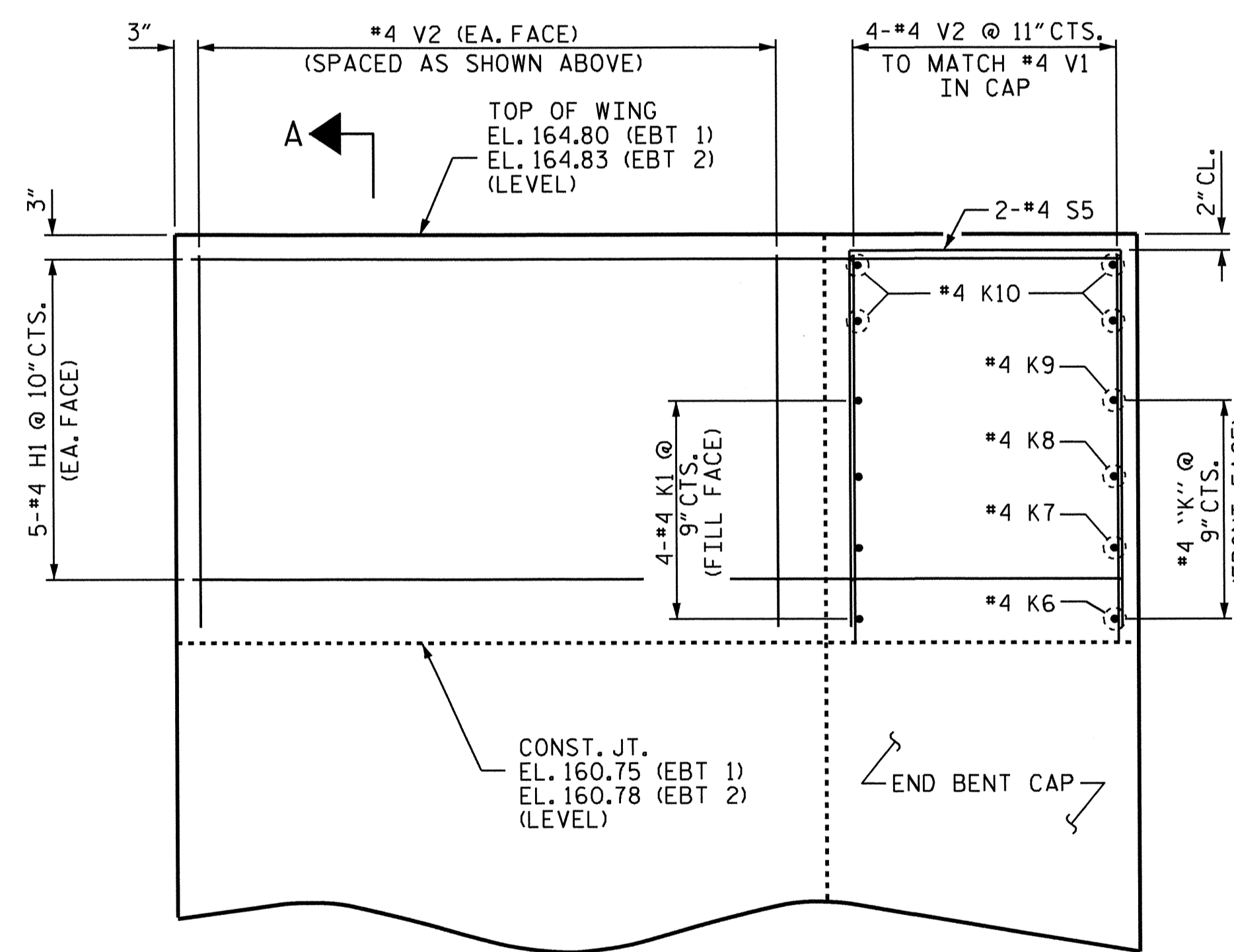
PLAN OF WING (W2)



SECTION A-A



ELEVATION OF WING (W1)



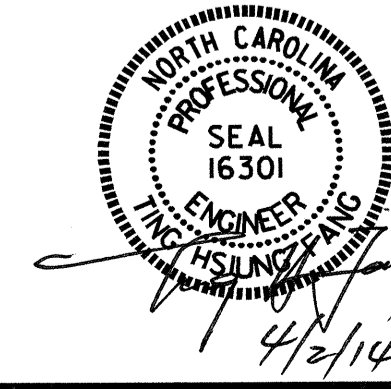
ELEVATION OF WING (W2)

ABUTMENT WINGS

END BENT 1 SHOWN, END BENT 2 SIMILAR BY ROTATION FOR END BENT REINFORCING STEEL AND DETAILS. SEE "SUBSTRUCTURE END BENT 1" SHEETS.

DRAWN BY : Fr. Lea DATE : 8-14-12  
 CHECKED BY : R.P. PATEL DATE : 8-17-12  
 DESIGN ENGINEER OF RECORD: Fr. Lea DATE : 3-27-14

02-APR-2014 09:19  
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 clyokeley

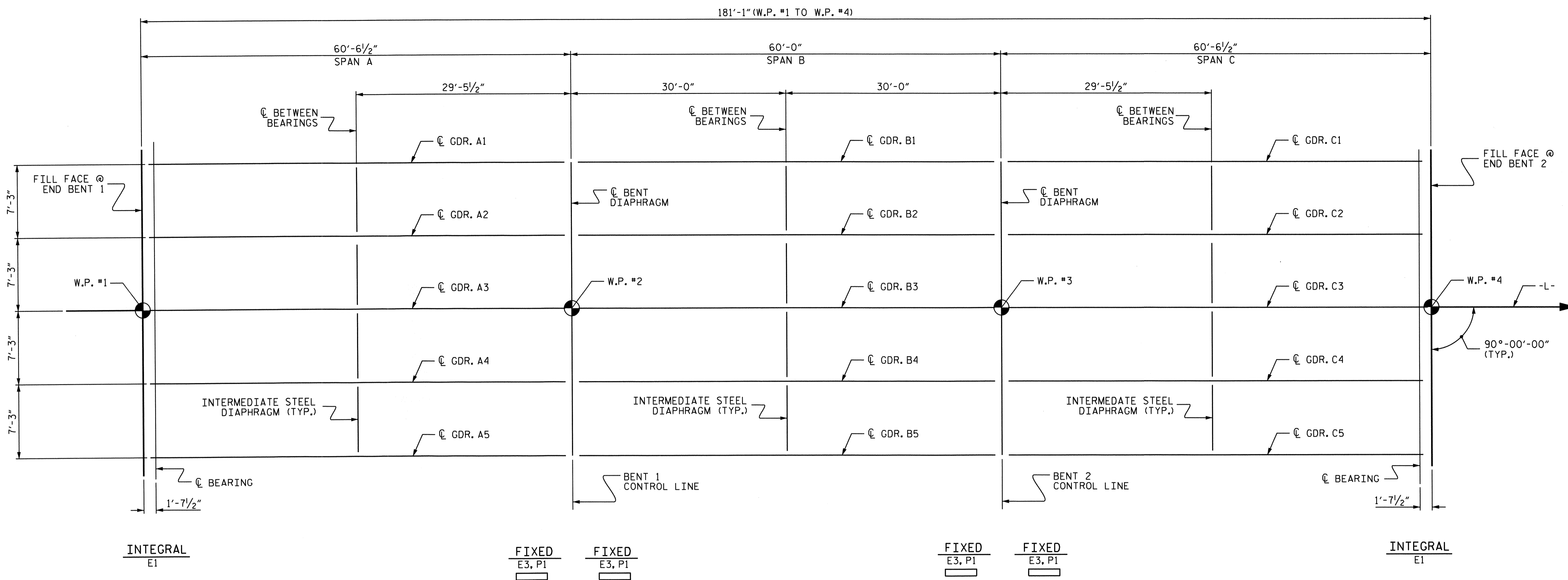


PROJECT NO. B-4639  
 SCOTLAND COUNTY  
 STATION: 20+03.00 -L-

SHEET 2 OF 2

| STATE OF NORTH CAROLINA<br>DEPARTMENT OF TRANSPORTATION<br>RALEIGH<br>SUPERSTRUCTURE |     |       |     |     |       |
|--|-----|-------|-----|-----|-------|
| PLAN OF SPANS<br>WING DETAILS  |     |       |     |     |       |
| REVISIONS  |     |       |     |     |       |
| NO.  | BY: | DATE: | NO. | BY: | DATE: |
| 1  |     |       | 3   |     |       |
| 2  |     |       | 4   |     |       |

SHEET NO. S-8  
 TOTAL SHEETS 23

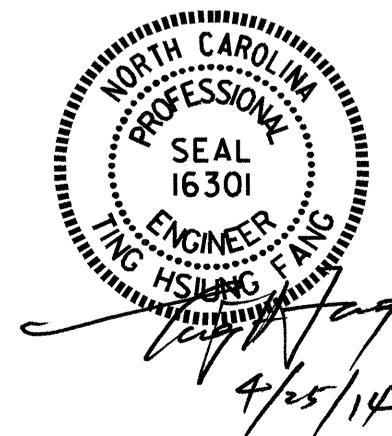


**FRAMING PLAN**

| DEAD LOAD DEFLECTION TABLE              |               |       |       |       |         |        |         |         |         |       |       |                  |       |       |       |         |        |         |         |         |       |      |
|---|---------------|-------|-------|-------|---------|--------|---------|---------|---------|-------|-------|------------------|-------|-------|-------|---------|--------|---------|---------|---------|-------|------|
| SPANS A & C                             |               |       |       |       |         |        |         |         |         |       |       |                  |       |       |       |         |        |         |         |         |       |      |
|   | GIRDERS 1 & 5 |       |       |       |         |        |         |         |         |       |       | GIRDERS 2, 3 & 4 |       |       |       |         |        |         |         |         |       |      |
|   | BRG.          | 0.1   | 0.2   | 0.3   | 0.4     | 0.5    | 0.6     | 0.7     | 0.8     | 0.9   | BRG.  | BRG.             | 0.1   | 0.2   | 0.3   | 0.4     | 0.5    | 0.6     | 0.7     | 0.8     | 0.9   | BRG. |
| CAMBER (GIRDER ALONE IN PLACE) ↑        | 0             | 0.073 | 0.138 | 0.189 | 0.221   | 0.232  | 0.221   | 0.189   | 0.138   | 0.073 | 0     | 0                | 0.073 | 0.138 | 0.189 | 0.221   | 0.232  | 0.221   | 0.189   | 0.138   | 0.073 | 0    |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. ↓ | 0             | 0.027 | 0.051 | 0.069 | 0.081   | 0.085  | 0.081   | 0.069   | 0.051   | 0.027 | 0     | 0                | 0.027 | 0.051 | 0.070 | 0.082   | 0.087  | 0.082   | 0.070   | 0.051   | 0.027 | 0    |
| FINAL CAMBER ↑                          | 0             | 3/16" | 1/16" | 1/16" | 1 1/16" | 1 3/4" | 1 1/16" | 1 1/16" | 1 1/16" | 1/16" | 3/16" | 0                | 0     | 3/16" | 1/16" | 1 1/16" | 1 3/4" | 1 1/16" | 1 1/16" | 1 1/16" | 1/16" | 0    |
| SPAN B                                  |               |       |       |       |         |        |         |         |         |       |       |                  |       |       |       |         |        |         |         |         |       |      |
|   | GIRDERS 1 & 5 |       |       |       |         |        |         |         |         |       |       | GIRDERS 2, 3 & 4 |       |       |       |         |        |         |         |         |       |      |
|   | BRG.          | 0.1   | 0.2   | 0.3   | 0.4     | 0.5    | 0.6     | 0.7     | 0.8     | 0.9   | BRG.  | BRG.             | 0.1   | 0.2   | 0.3   | 0.4     | 0.5    | 0.6     | 0.7     | 0.8     | 0.9   | BRG. |
| CAMBER (GIRDER ALONE IN PLACE) ↑        | 0             | 0.073 | 0.138 | 0.189 | 0.221   | 0.232  | 0.221   | 0.189   | 0.138   | 0.073 | 0     | 0                | 0.073 | 0.138 | 0.189 | 0.221   | 0.232  | 0.221   | 0.189   | 0.138   | 0.073 | 0    |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. ↓ | 0             | 0.040 | 0.075 | 0.103 | 0.121   | 0.127  | 0.121   | 0.103   | 0.075   | 0.040 | 0     | 0                | 0.040 | 0.076 | 0.104 | 0.122   | 0.128  | 0.122   | 0.104   | 0.076   | 0.040 | 0    |
| FINAL CAMBER ↑                          | 0             | 3/8"  | 3/4"  | 1"    | 1 3/16" | 1 1/4" | 1 3/16" | 1"      | 3/4"    | 3/8"  | 0     | 0                | 3/8"  | 3/4"  | 1"    | 1 3/16" | 1 1/4" | 1 3/16" | 1"      | 3/4"    | 3/8"  | 0    |

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

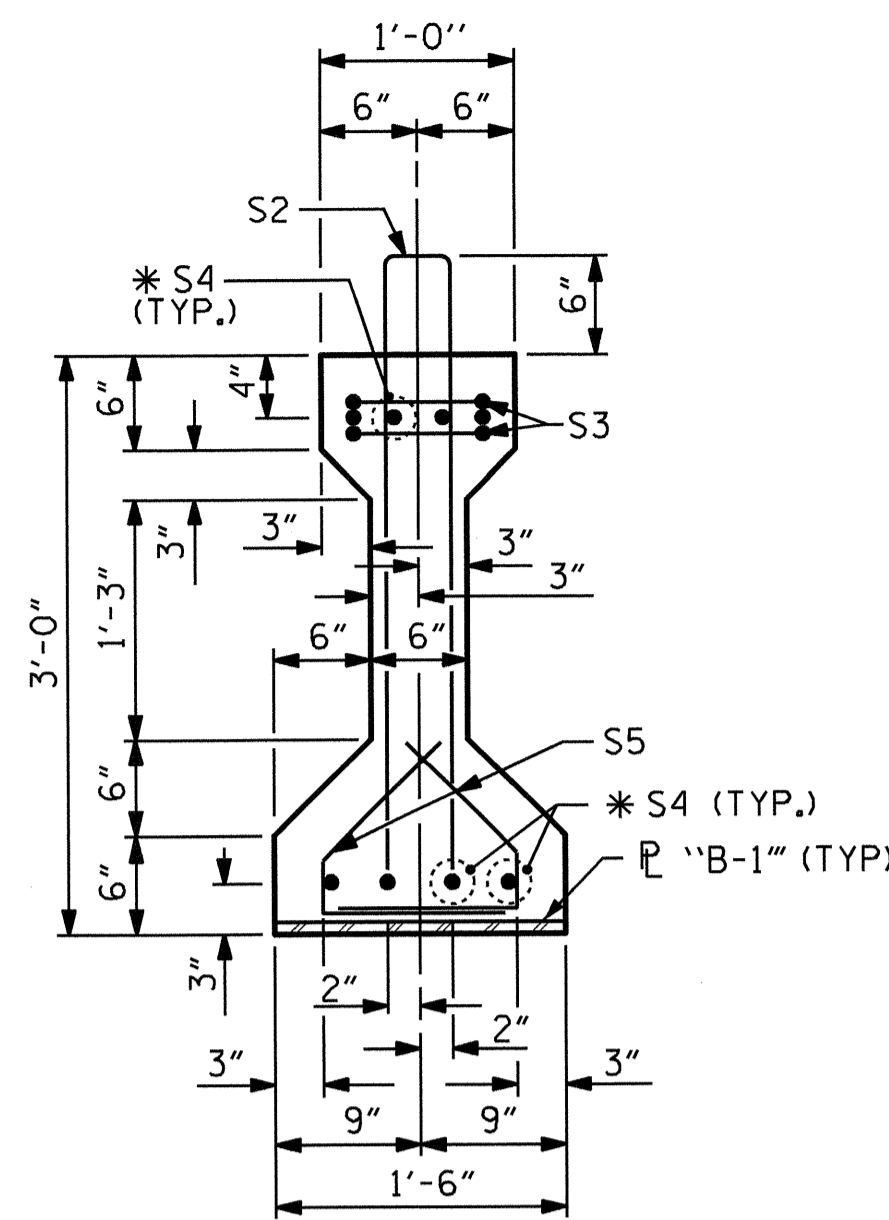
PROJECT NO. B-4639  
SCOTLAND COUNTY  
 STATION: 20+03.00 -L-



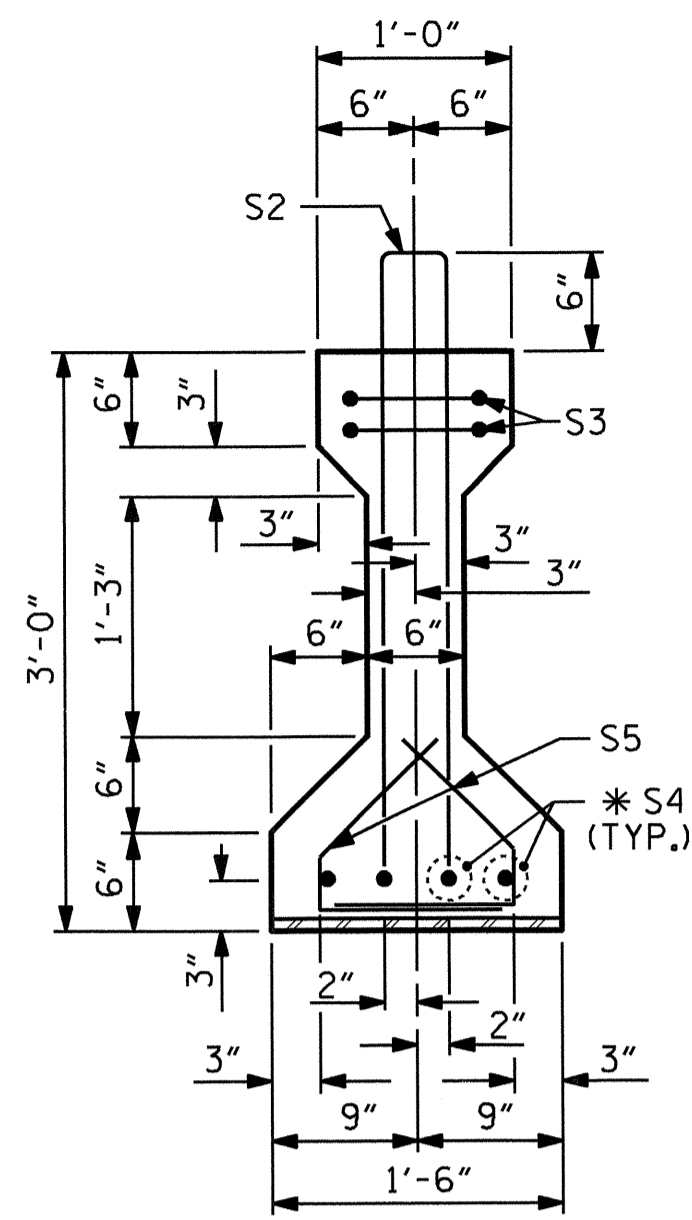
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 FRAMING PLAN  
 AND DEAD LOAD  
 DEFLECTIONS

DRAWN BY: P. K. NEWTON DATE: 4/24/14  
 CHECKED BY: T. H. FANG DATE: 4/25/14  
 DESIGN ENGINEER OF RECORD: Fr. LeQ DATE: 4/25/14

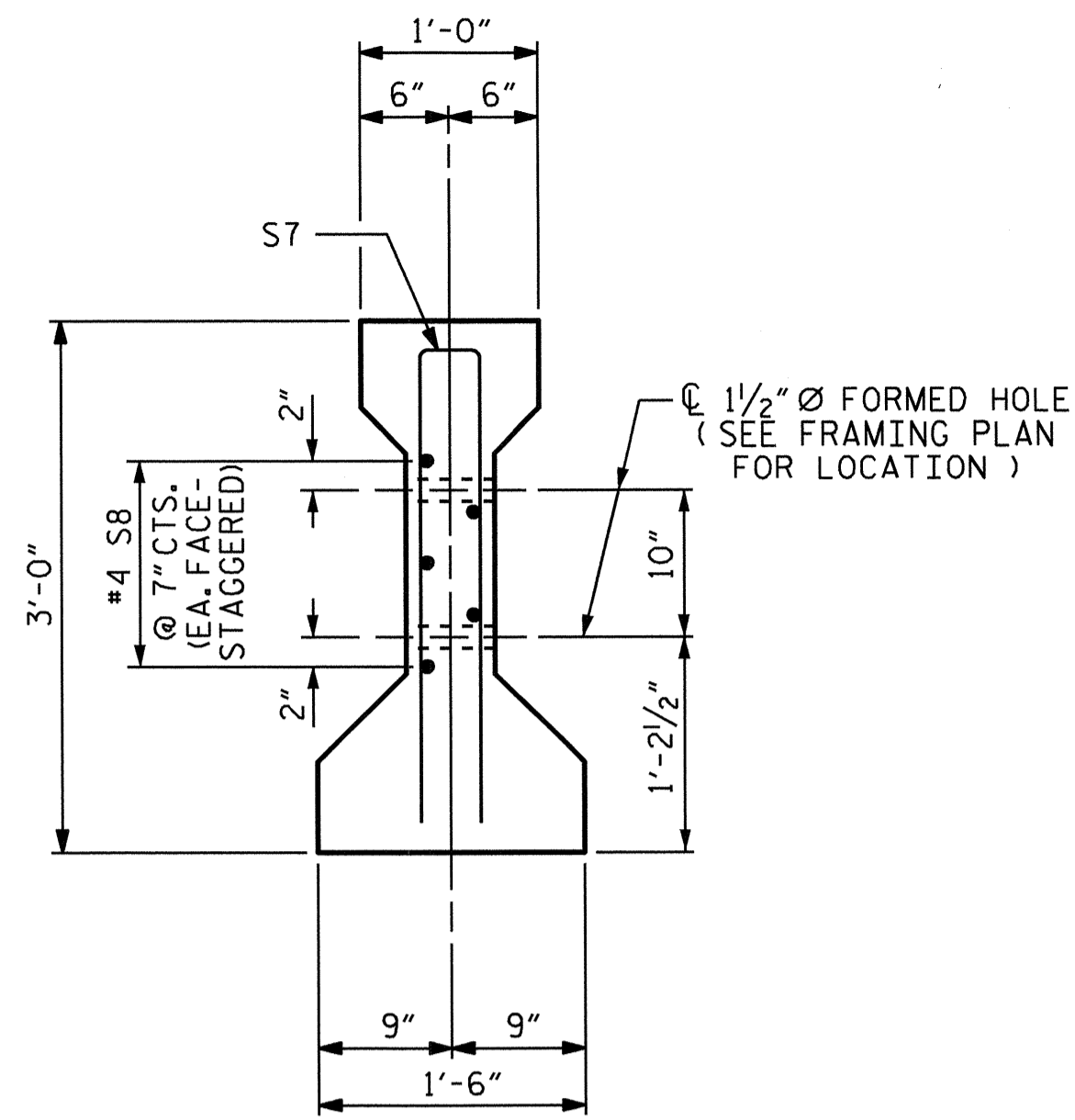
| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-9          |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 23           |



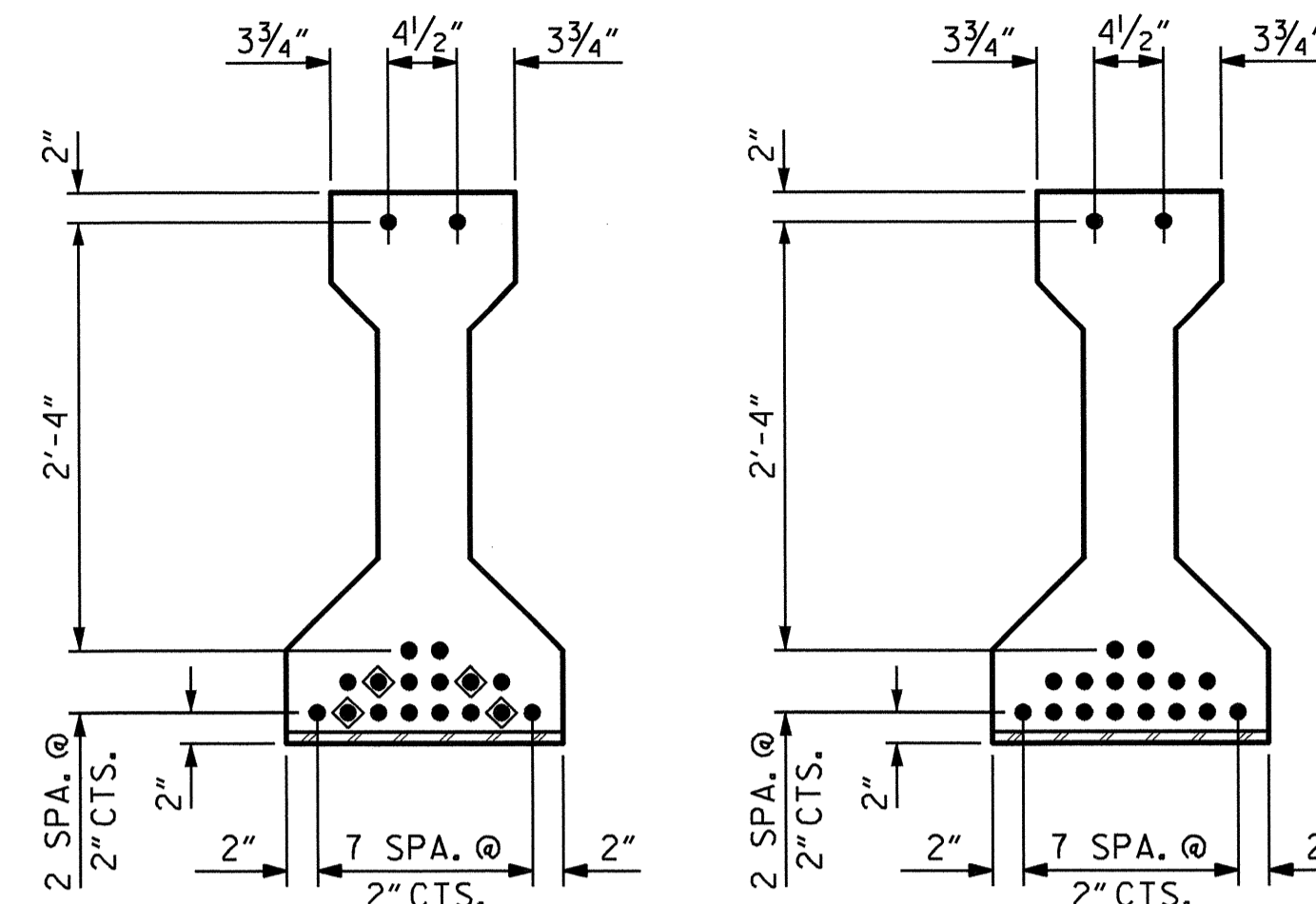
SECTION A-A  
FOR EMBEDDED P "B-1"  
DETAILS, SEE SHEET 3 OF 3



SECTION B-B



SECTION C-C  
(S1 BARS NOT SHOWN)



AT END OF GIRDER

AT C OF GIRDER

0.6" Ø LOW RELAXATION STRAND LAYOUT  
(18 STRANDS REQUIRED, ALL STRAIGHT)

DEBONDING LEGEND

- FULLY BONDED STRANDS
- ◆ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

0.6" Ø L. R. GRADE 270 STRANDS

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

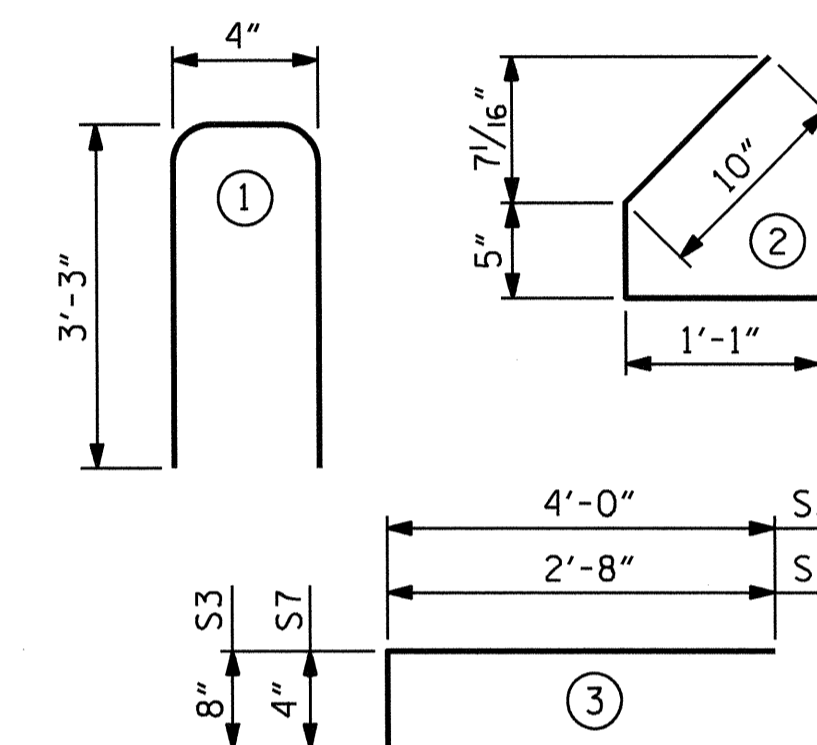
REINFORCING STEEL  
FOR ONE GIRDER

| BAR  | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
|------|--------|------|------|--------|--------|
| S1   | 84     | #5   | 1    | 6'-10" | 599    |
| S2   | 12     | #5   | 1    | 6'-10" | 86     |
| S3   | 4      | #4   | 3    | 8'-8"  | 23     |
| * S4 | 12     | #5   | STR  | 3'-8"  | 46     |
| S5   | 64     | #4   | 2    | 2'-4"  | 100    |
| S7   | 2      | #5   | 3    | 5'-8"  | 12     |
| S8   | 5      | #4   | STR  | 7'-0"  | 23     |

S4 BARS SHALL BE BENT BEFORE SHIPMENT.  
HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT

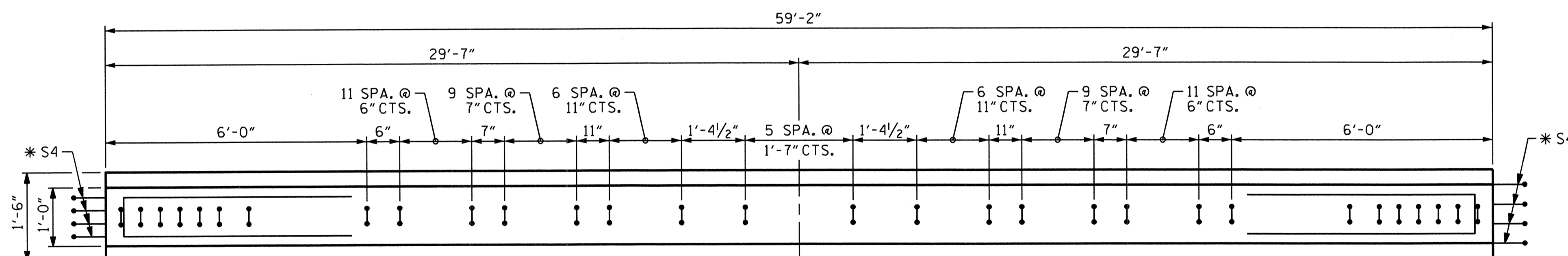


QUANTITIES FOR ONE GIRDER

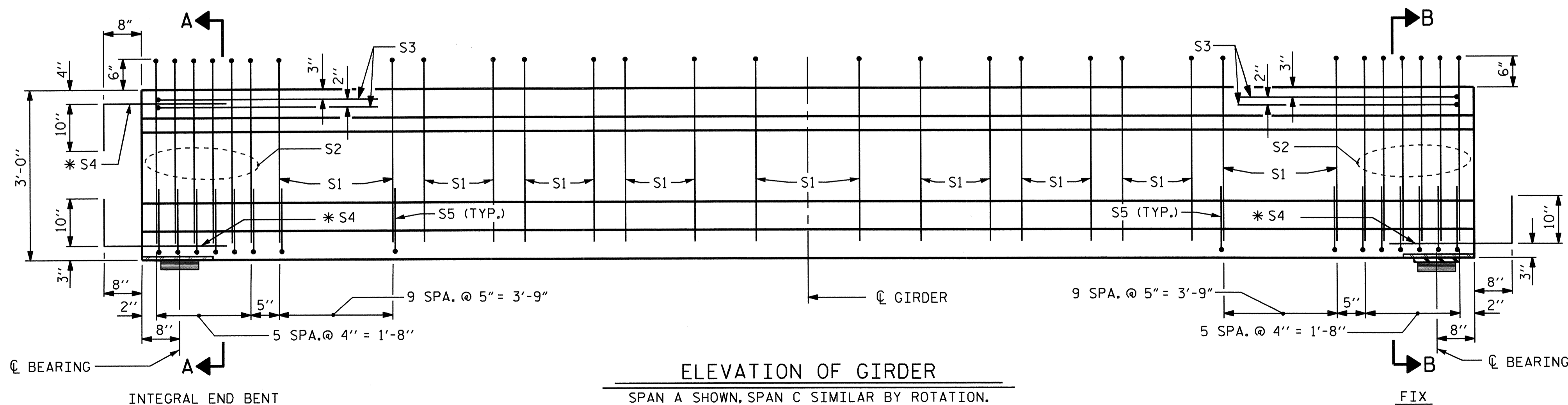
|  | REINFORCING<br>STEEL<br>LB. | 6500 PSI<br>CONCRETE<br>C.Y. | 0.6" Ø L. R.<br>STRANDS<br>No. |
|--|-----------------------------|------------------------------|--------------------------------|
|  | 889                         | 5.62                         | 18                             |

GIRDERS REQUIRED

| SPAN | NUMBER | LENGTH | TOTAL LENGTH |
|------|--------|--------|--------------|
| A    | 5      | 59'-2" | 295.83       |
| C    | 5      | 59'-2" | 295.83       |

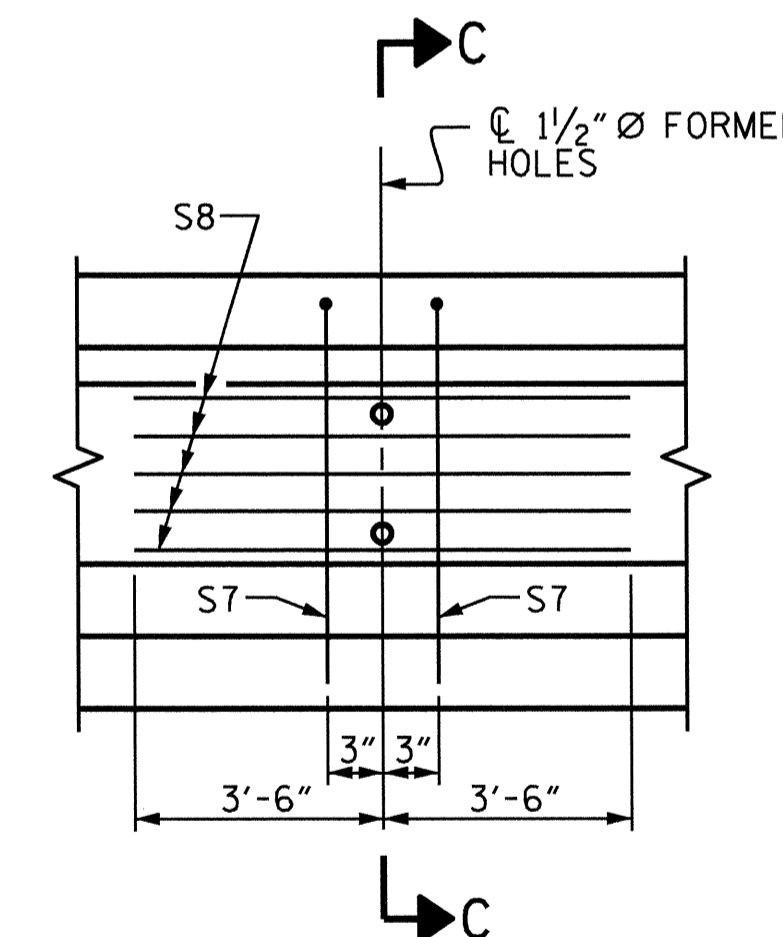


PLAN OF GIRDER



ELEVATION OF GIRDER

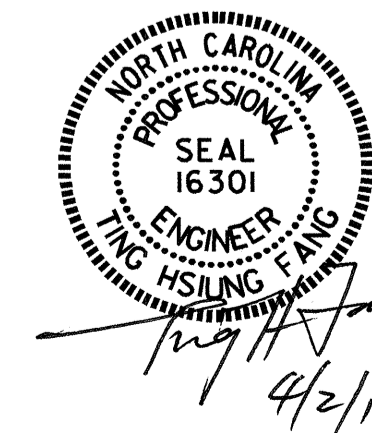
SPAN A SHOWN, SPAN C SIMILAR BY ROTATION.  
SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS



PARTIAL ELEVATION

SHOWING INTERMEDIATE DIAPHRAGM  
REINFORCING STEEL FOR ALL GIRDERS.

|   |
|---|
| DESIGN ENGINEER OF RECORD:<br>Fr. LEA DATE: 3/31/14 |
| ASSEMBLED BY: P. K. NEWTON DATE: 3/28/14            |
| CHECKED BY: T. J. KIRSCHBAUM DATE: 3/31/14          |
| DRAWN BY: ELR 8/91 REV. 10/17/00R RWW/LES           |
| CHECKED BY: GRP 8/91 REV. 5/1/06R TLA/GM            |
| REV. 10/1/11 MAA/GM                                 |



PROJECT NO. B-4639  
SCOTLAND COUNTY  
STATION: 20+03.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
AASHTO TYPE II  
PRESTRESSED CONCRETE GIRDER  
CONTINUOUS FOR LIVE LOAD  
SPANS A & C

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-10         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 23           |

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.

EMBEDDED PLATE "B-1" SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. BEVEL EDGES OF PLATE "B-1" TO GIVE CLOSE FIT BUT NOT TIGHT FIT TO STEEL CASTING FORM.

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 5900 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".

0.6" Ø L. R. GRADE 270 STRANDS

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

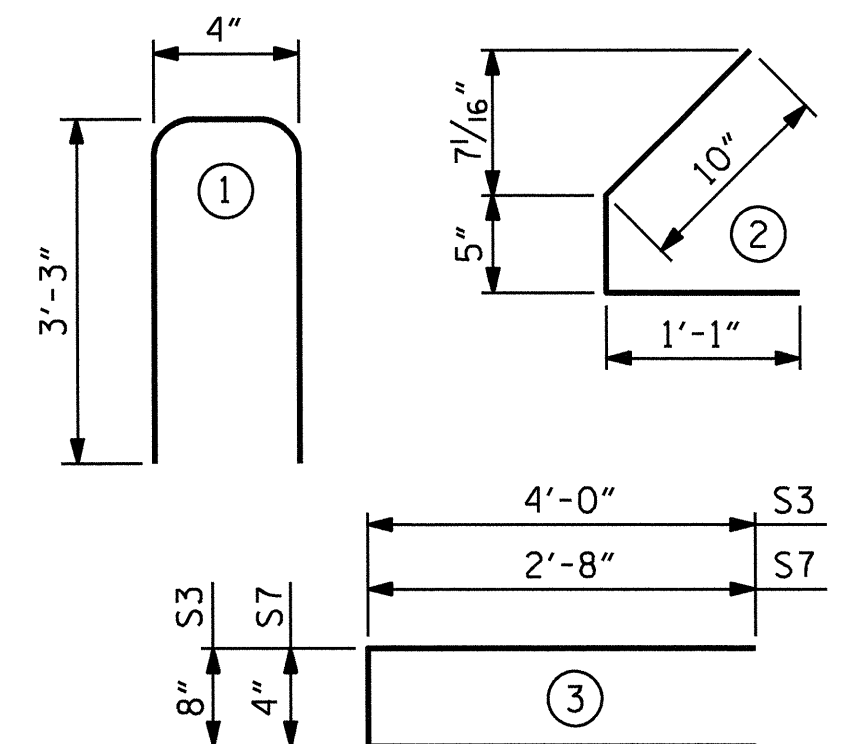
REINFORCING STEEL FOR ONE GIRDER

| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
|-----|--------|------|------|--------|--------|
| S1  | 84     | #5   | 1    | 6'-10" | 599    |
| S2  | 12     | #5   | 1    | 6'-10" | 86     |
| S3  | 4      | #4   | 3    | 8'-8"  | 23     |
| *S4 | 8      | #5   | STR  | 3'-8"  | 31     |
| S5  | 64     | #4   | 2    | 2'-4"  | 100    |
| S7  | 2      | #5   | 3    | 5'-8"  | 12     |
| S8  | 5      | #4   | STR  | 7'-0"  | 23     |

S4 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

|  | REINFORCING STEEL | 6500 PSI CONCRETE | 0.6" Ø L. R. STRANDS |
|--|-------------------|-------------------|----------------------|
|  | LB.               | C.Y.              | No.                  |
|  | 874               | 5.62              | 18                   |

GIRDERS REQUIRED

| SPAN | NUMBER | LENGTH | TOTAL LENGTH |
|------|--------|--------|--------------|
| B    | 5      | 59'-2" | 295.83       |

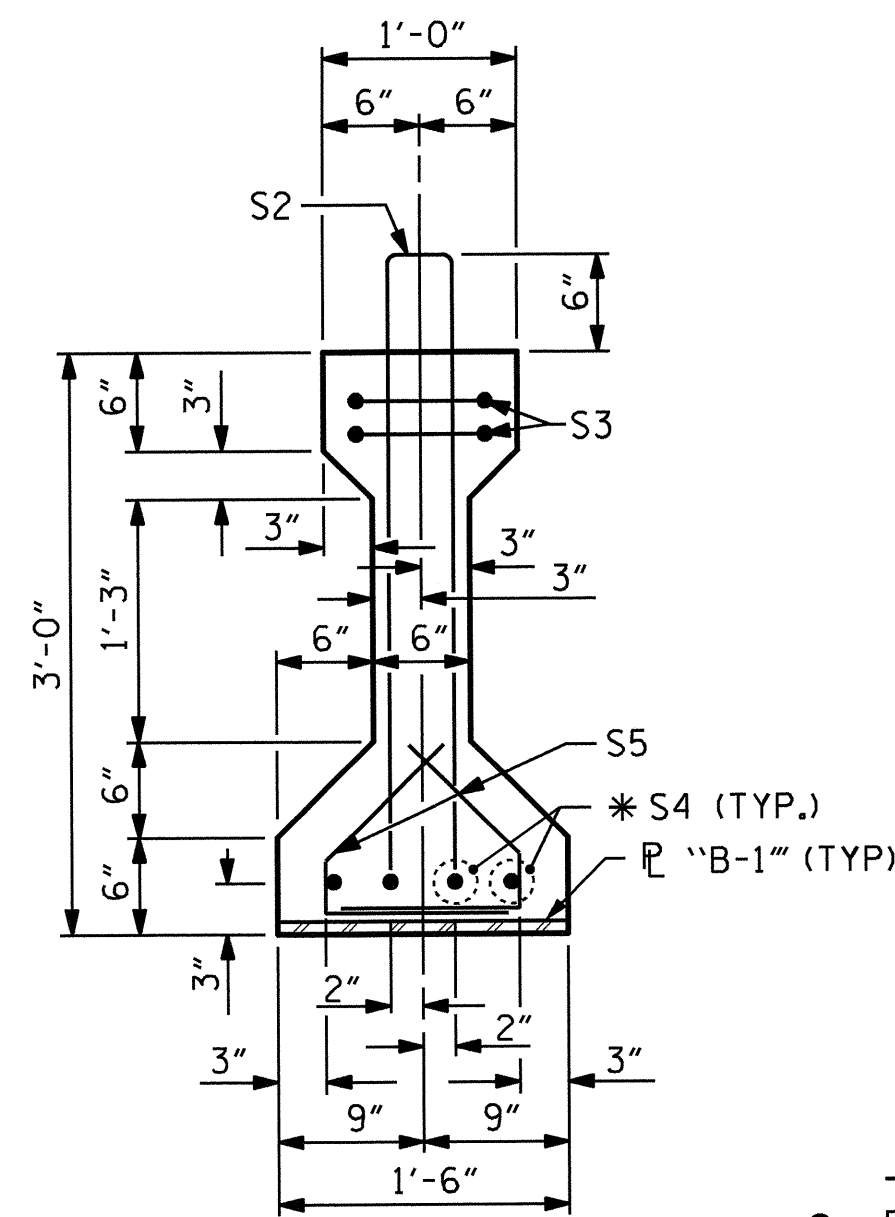
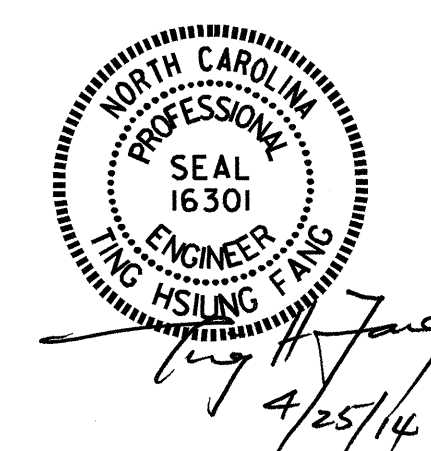
PROJECT NO. B-4639  
SCOTLAND COUNTY  
 STATION: 20+03.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 AASHTO TYPE II  
 PRESTRESSED CONCRETE GIRDER  
 CONTINUOUS FOR LIVE LOAD  
 SPAN B

| REVISIONS |     |       |     |     |       | SHEET NO.<br>S-11  |
|-----------|-----|-------|-----|-----|-------|--------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                    |
| 1         |     |       | 3   |     |       | TOTAL SHEETS<br>23 |
| 2         |     |       | 4   |     |       |                    |

STD. NO. PCG4

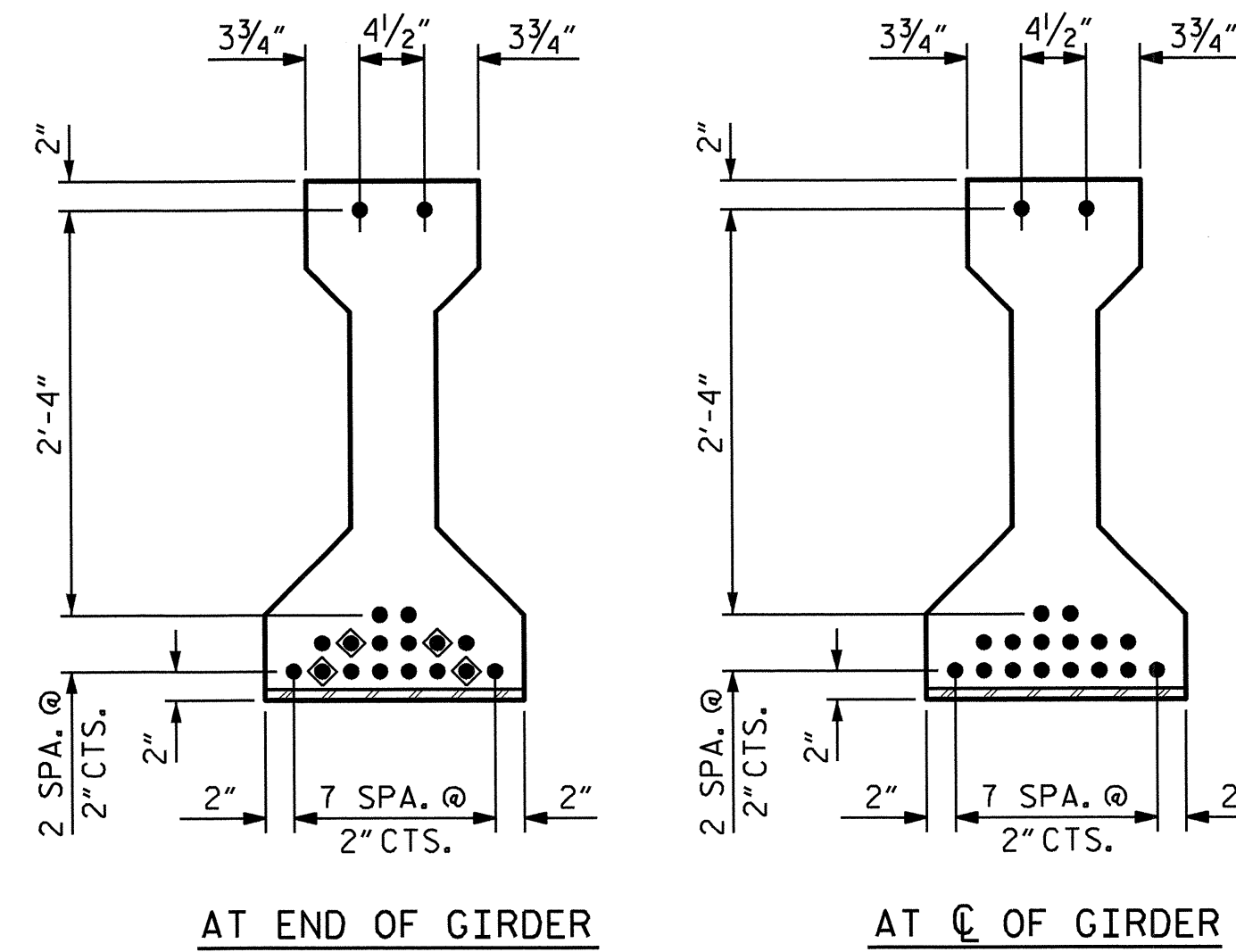


SECTION B-B

FOR EMBEDDED P "B-1"  
 DETAILS, SEE SHEET 3 OF 3

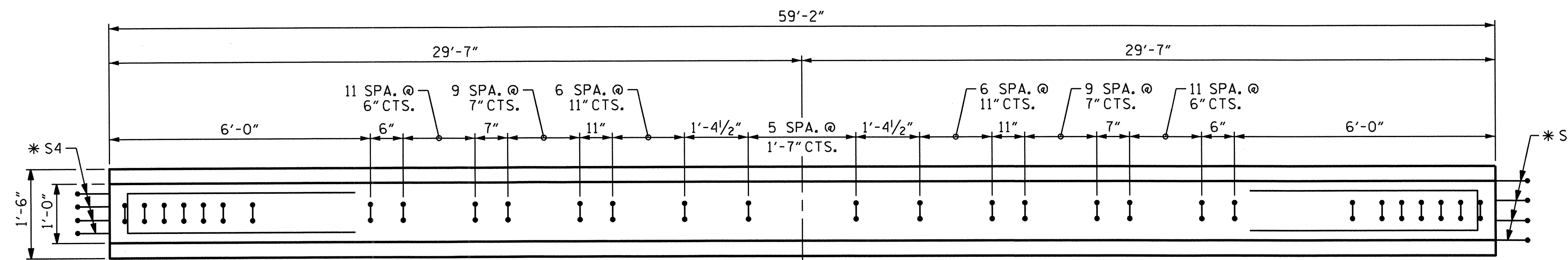
DEBONDING LEGEND

- FULLY BONDED STRANDS
- ◆ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

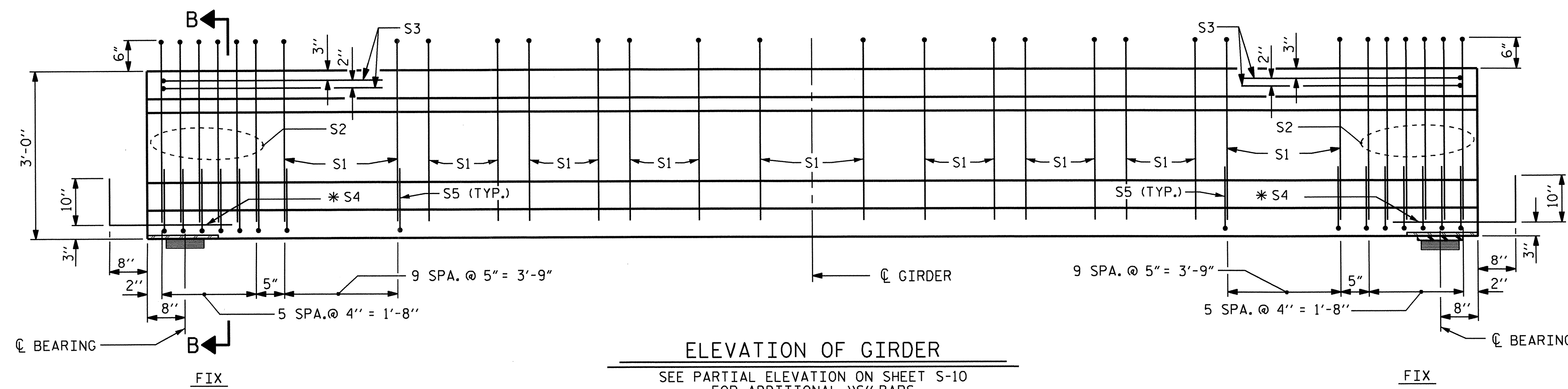


0.6" Ø LOW RELAXATION STRAND LAYOUT

(18 STRANDS REQUIRED, ALL STRAIGHT)



PLAN OF GIRDER



ELEVATION OF GIRDER

SEE PARTIAL ELEVATION ON SHEET S-10  
 FOR ADDITIONAL "S" BARS

|   |                        |
|---|------------------------|
| DESIGN ENGINEER OF RECORD:<br>Fr. LEA DATE: 3/31/14 |                        |
| ASSEMBLED BY: P. K. NEWTON                          | DATE: 3/28/14          |
| CHECKED BY: T. J. KIRSCHBAUM                        | DATE: 3/31/14          |
| DRAWN BY: ELR 8/91                                  | REV. 10/17/00R RWW/LES |
| CHECKED BY: GRP 8/91                                | REV. 5/1/06R TLA/GM    |
|   | REV. 10/1/11 MAA/GM    |

**STRUCTURAL STEEL NOTES**

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

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

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

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

FOR METALLIZATION, APPLY AN 8 MIL THICK 99.99 PERCENT ZINC (W-Zn-1) THERMAL SPRAYED COATING WITH A 0.5 MIL THICK SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE THERMAL SPRAYED COATINGS SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

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

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

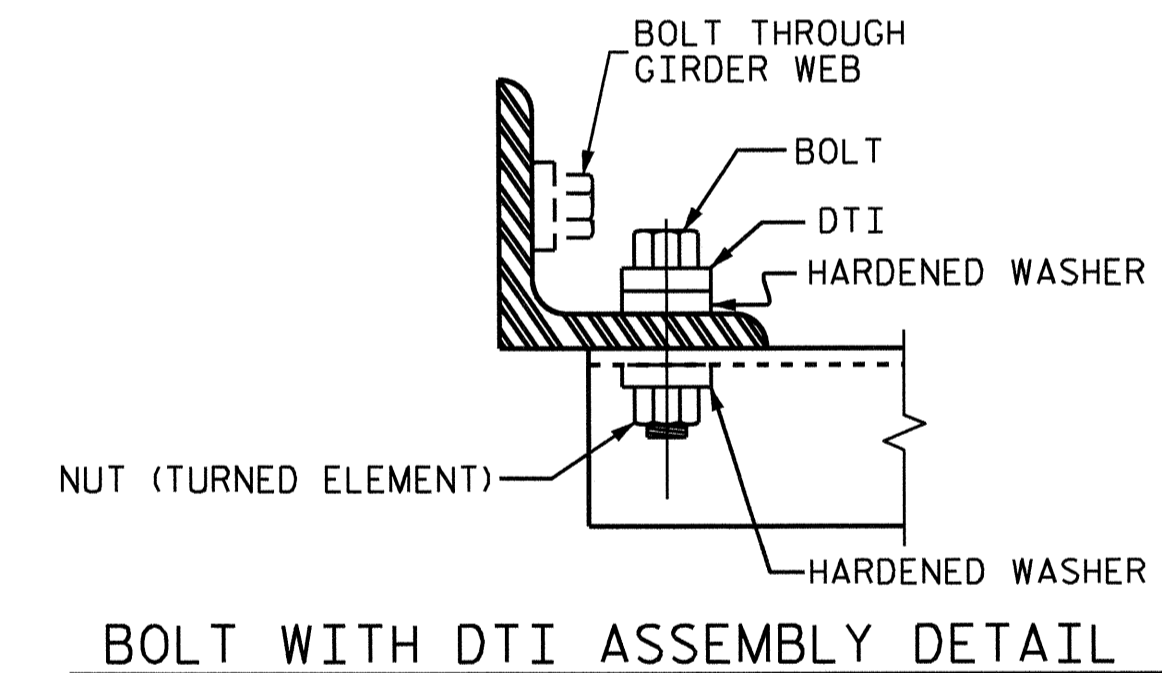
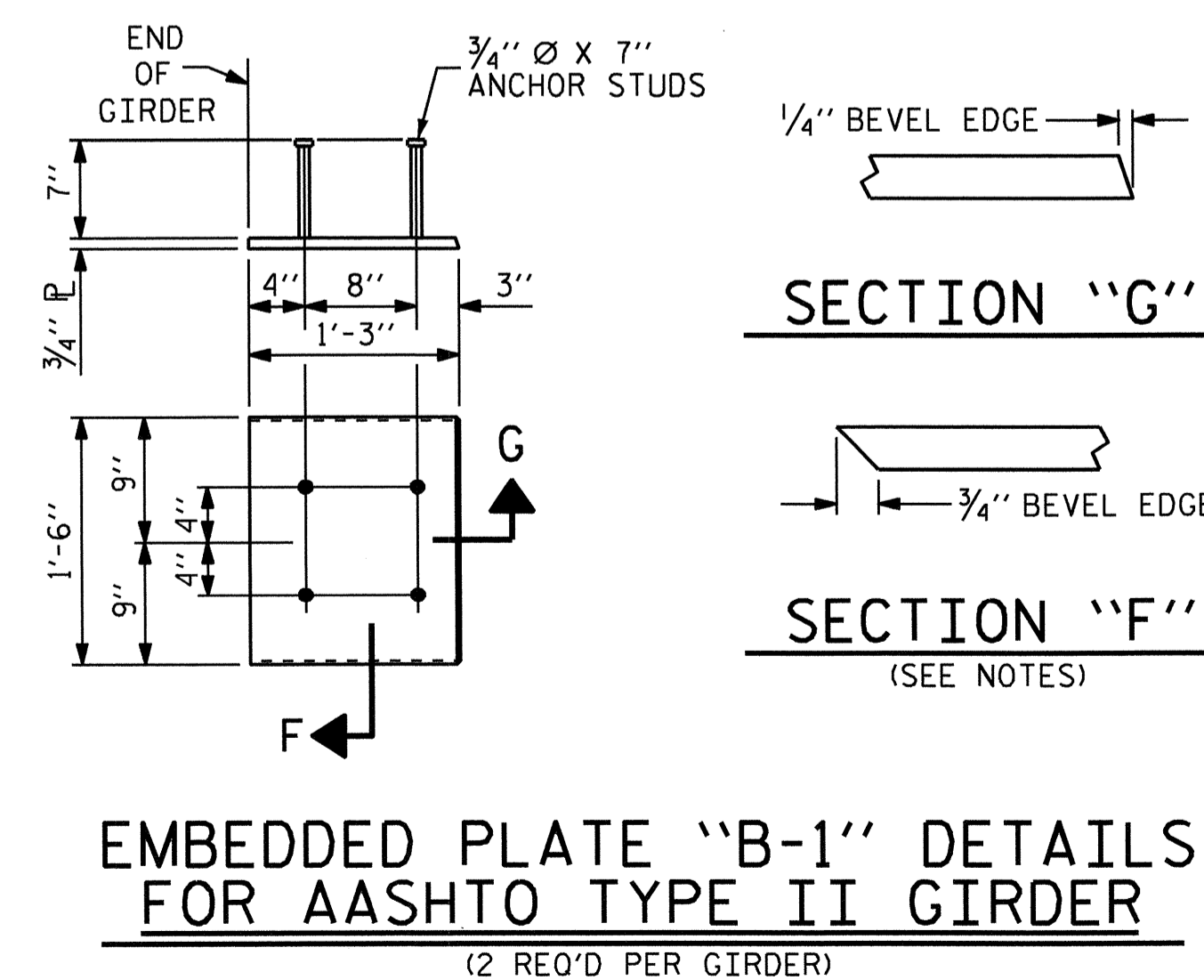
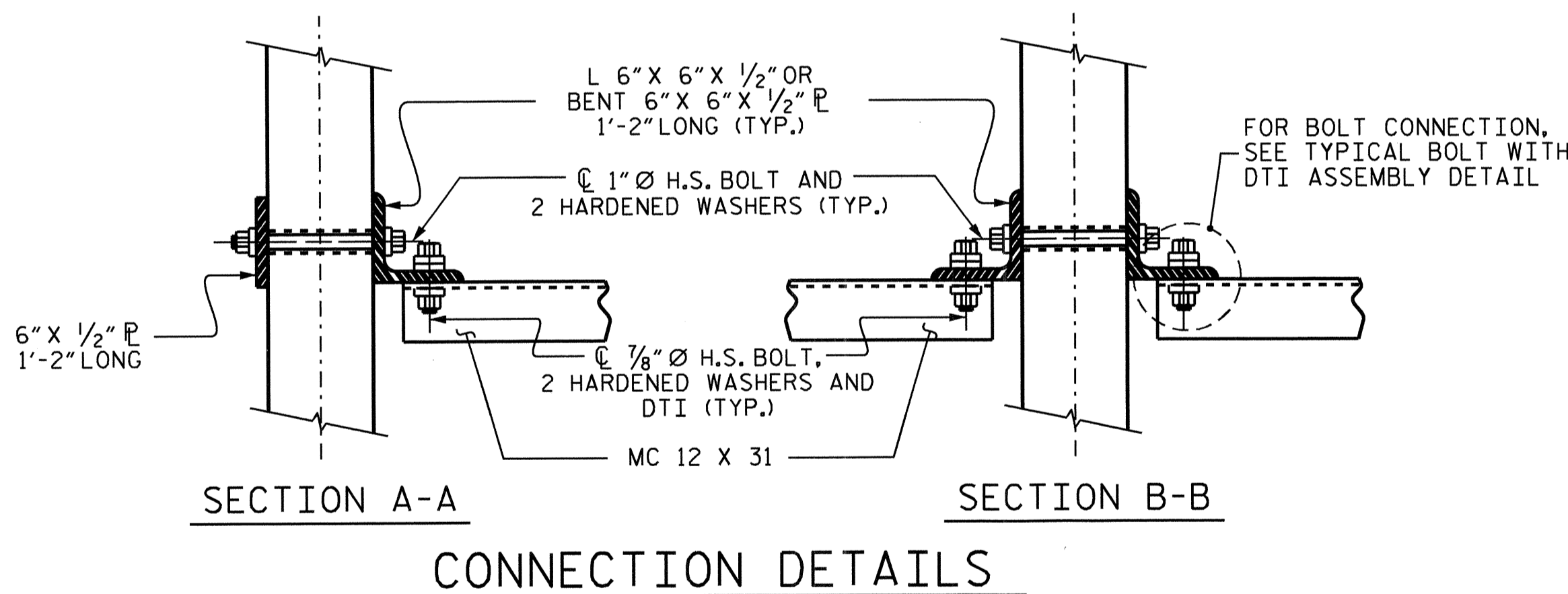
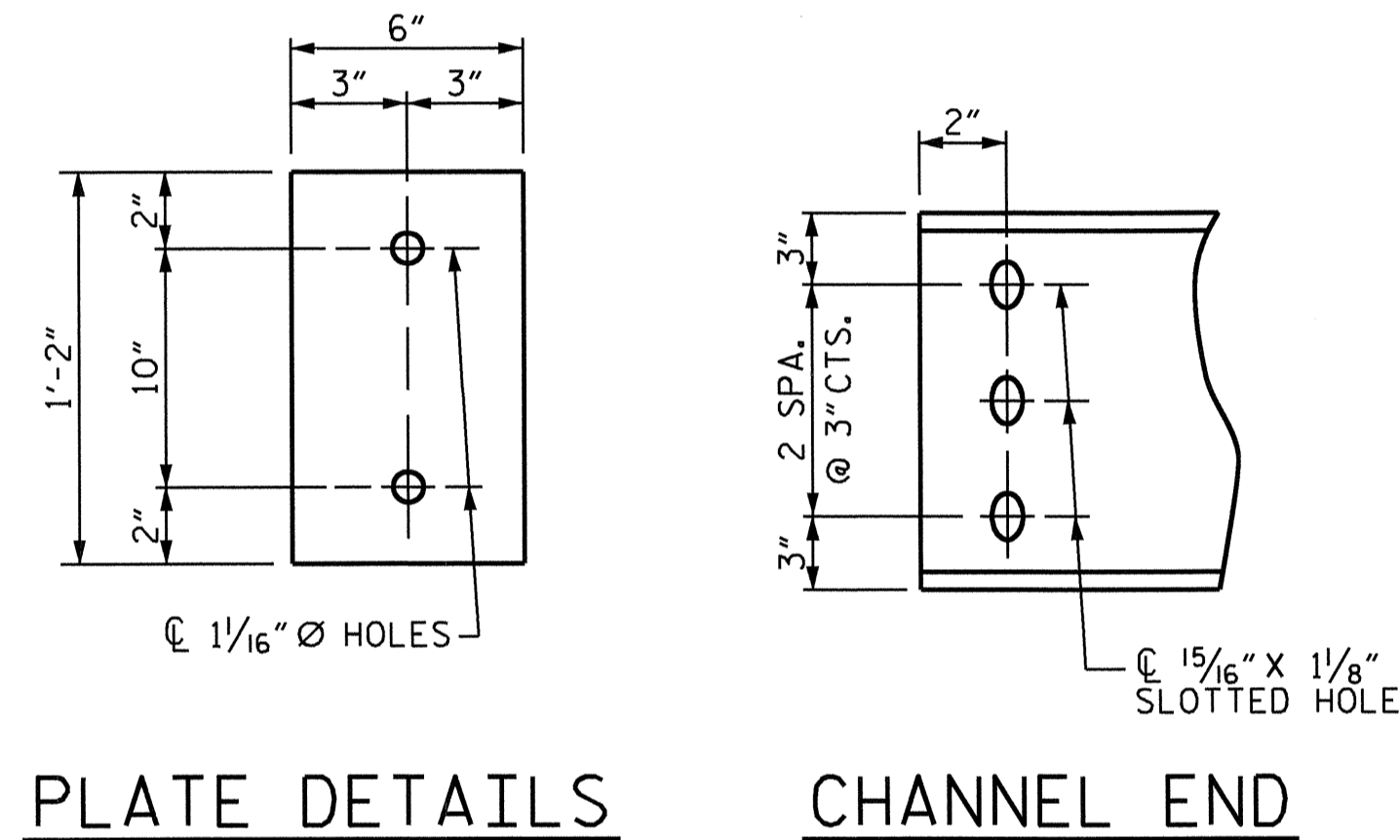
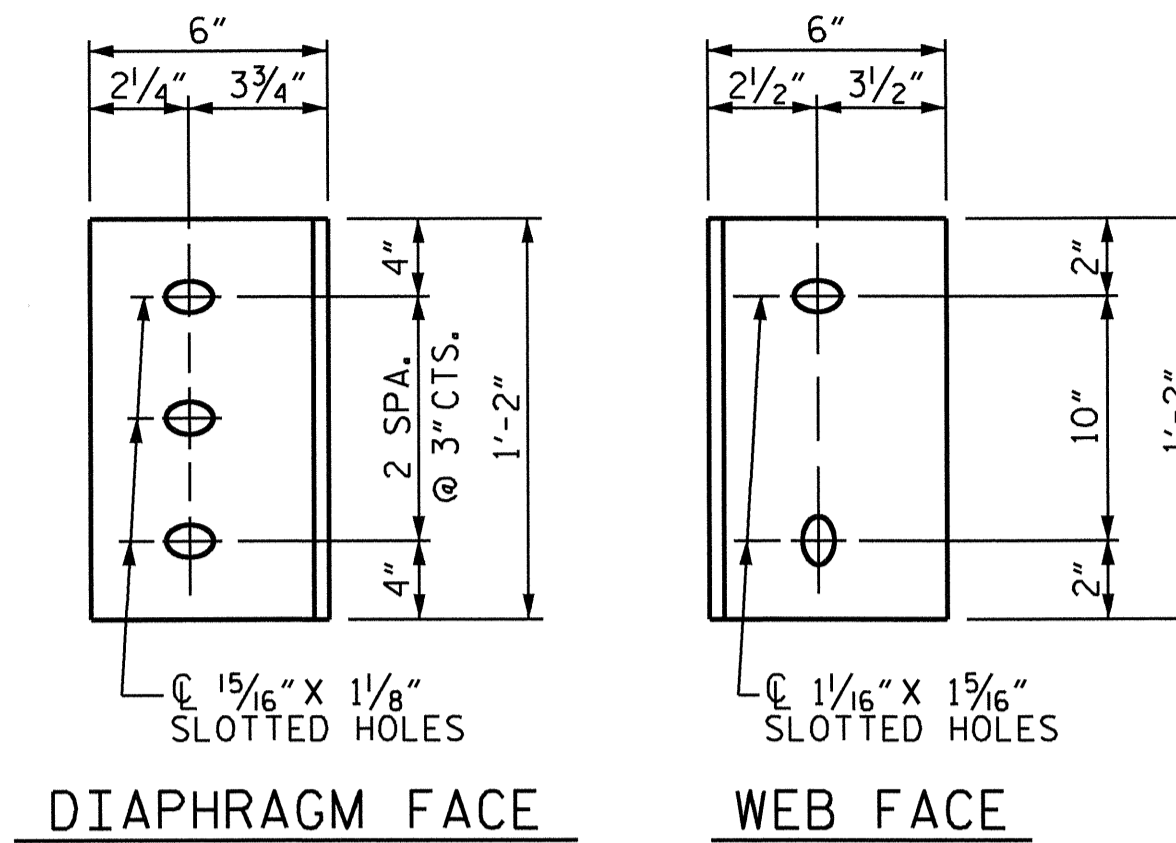
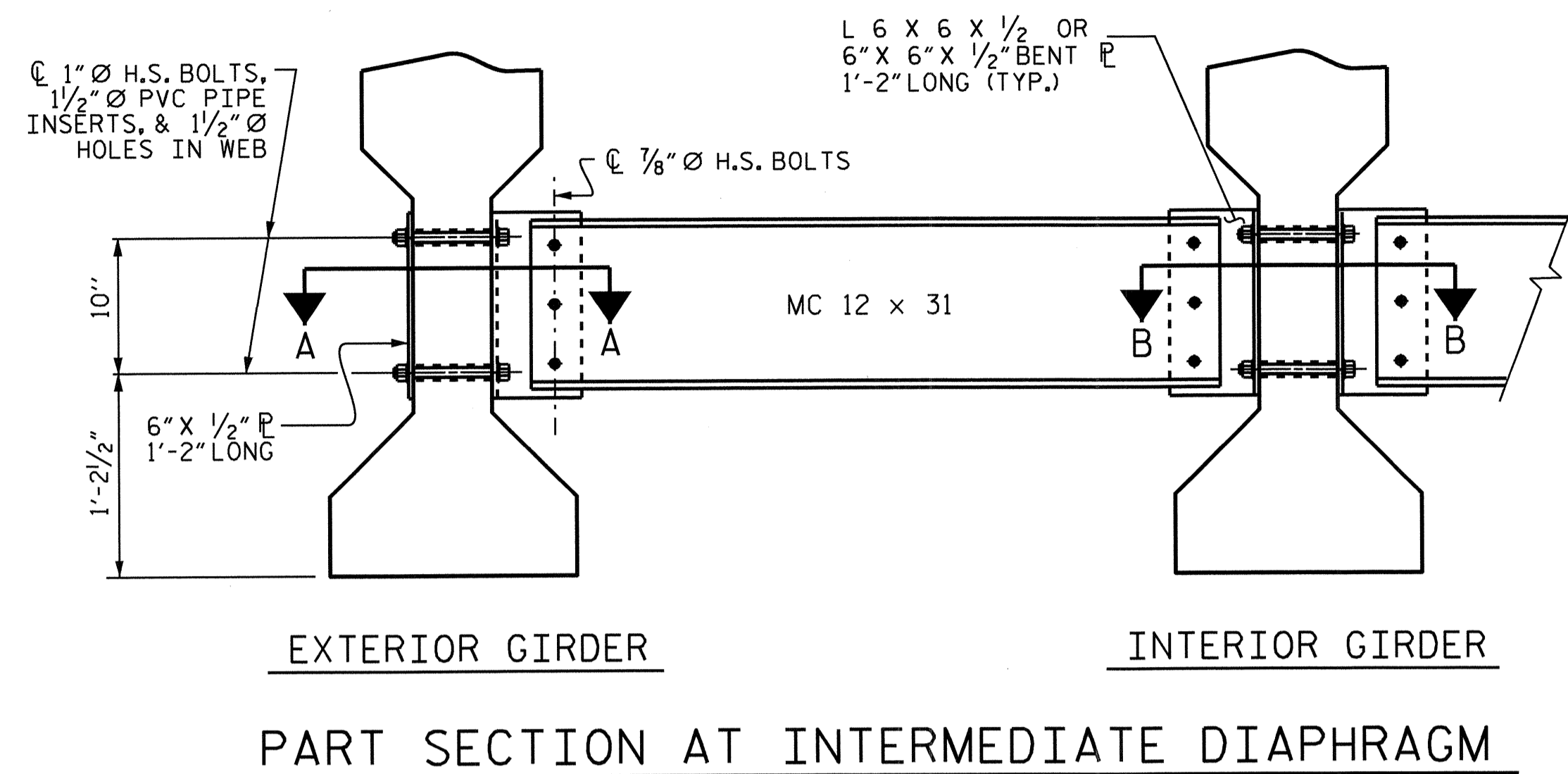
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

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

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

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

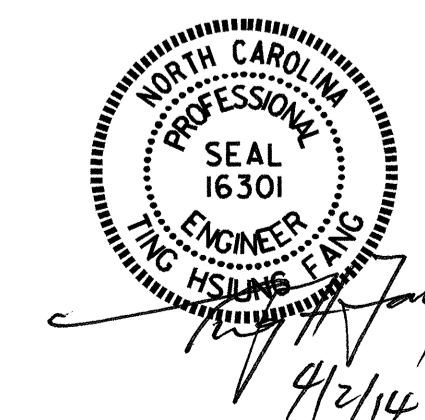


PROJECT NO. B-4639  
 SCOTLAND COUNTY  
 STATION: 20+03.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD

INTERMEDIATE STEEL  
 DIAPHRAGMS FOR  
 TYPE II PRESTRESSED  
 CONCRETE GIRDERS



|                                       |                       |
|---------------------------------------|-----------------------|
| DESIGN ENGINEER OF RECORD:<br>Fr. LEA | DATE: 3/31/14         |
| ASSEMBLED BY: Fr. LEA                 | DATE: 7/24/12         |
| CHECKED BY: R. P. PATEL               | DATE: 7/30/12         |
| DRAWN BY: TLA 6/05                    | ADDED 10/21/05        |
| CHECKED BY: VC 6/05                   | REV. 5/1/06RRR KMM/GM |
|                                       | REV. 10/1/11 MAA/GM   |

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

STD. NO. PCG10



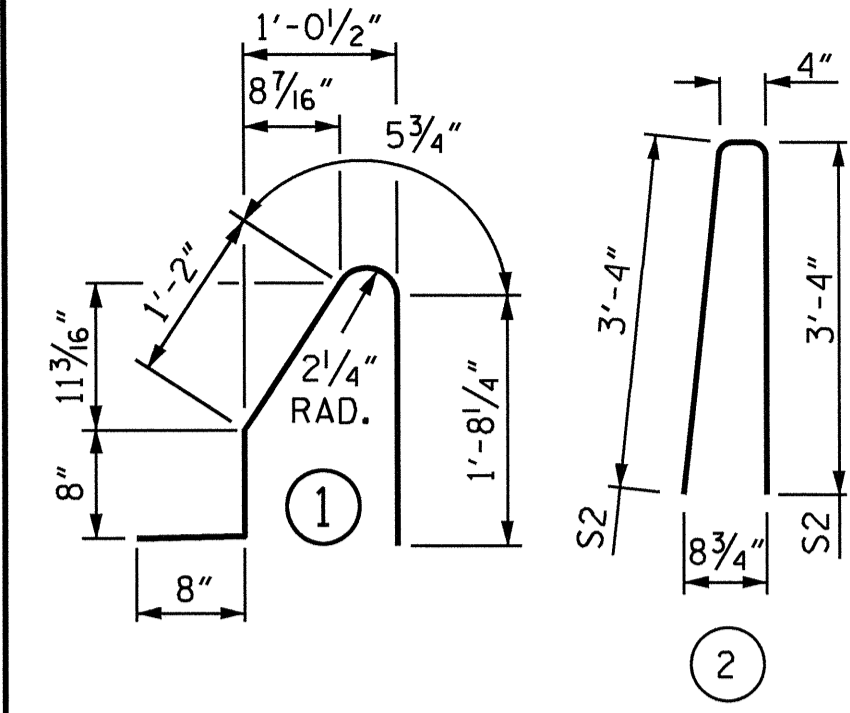
**NOTES**

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

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

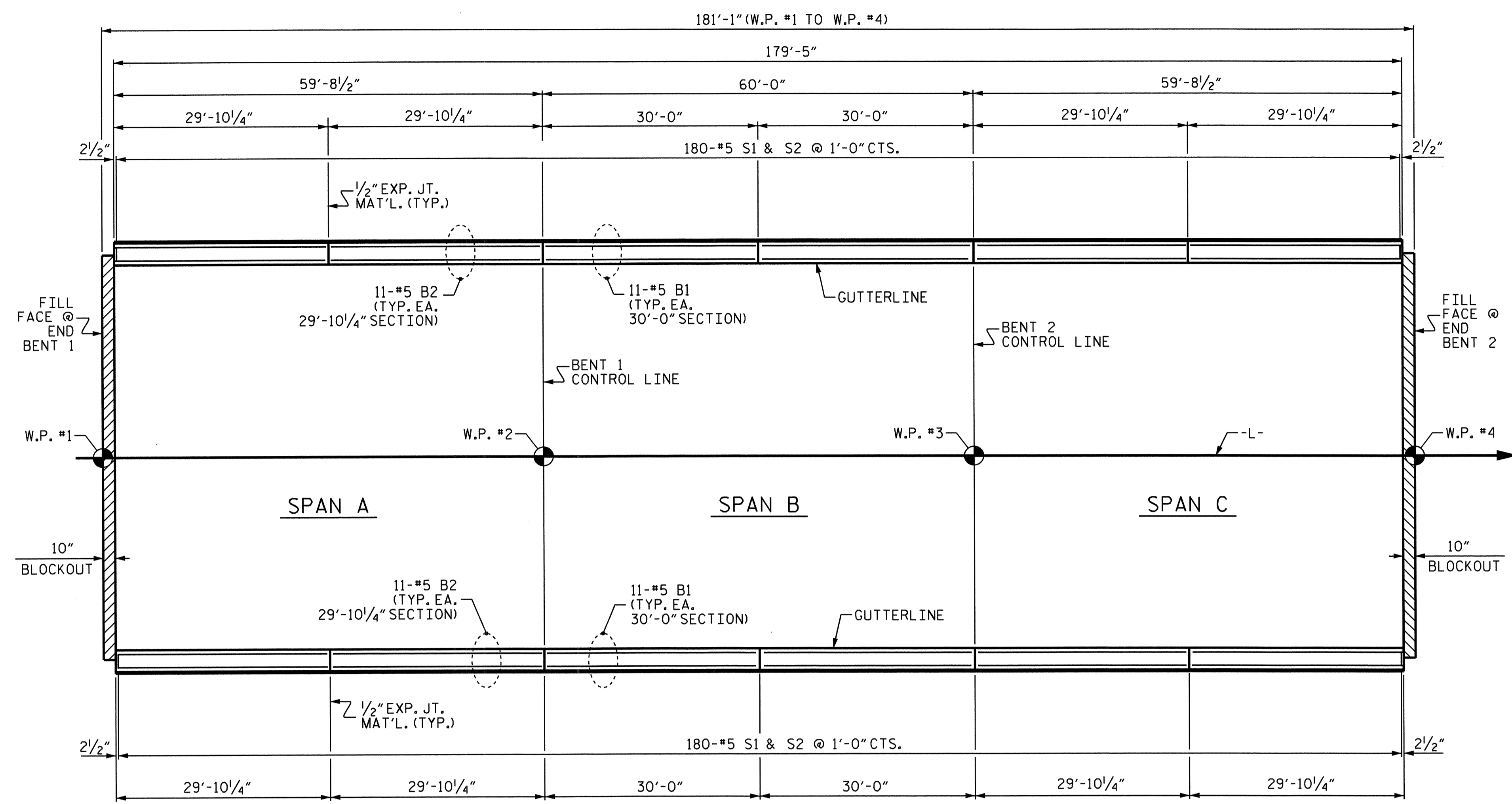
**BAR TYPES**



ALL BAR DIMENSIONS ARE OUT TO OUT

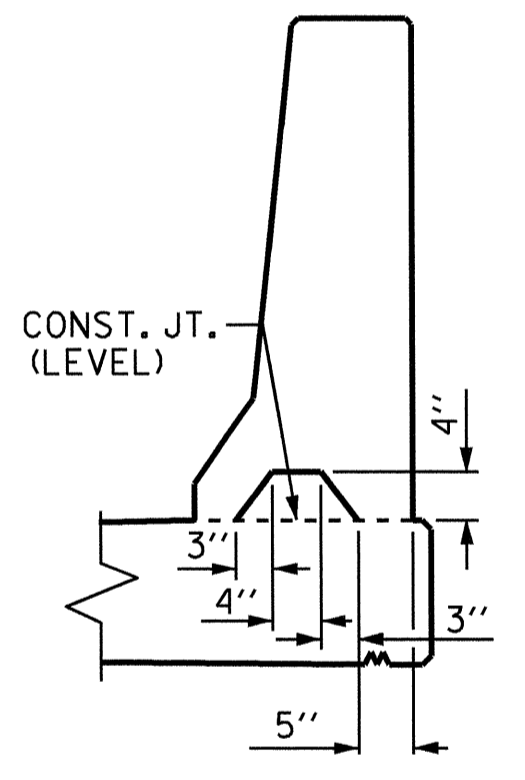
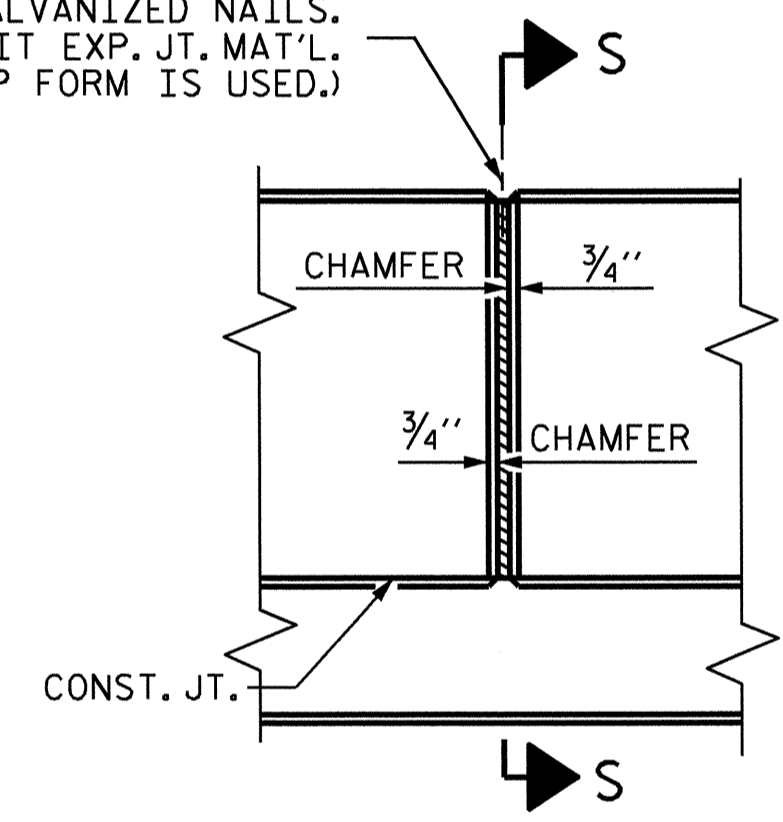
**BILL OF MATERIAL**

| FOR CONCRETE BARRIER RAIL ONLY   |     |      |      |        |                 |
|----------------------------------|-----|------|------|--------|-----------------|
| BAR                              | NO. | SIZE | TYPE | LENGTH | WEIGHT          |
| * B1                             | 44  | #5   | STR  | 29'-8" | 1361            |
| * B2                             | 88  | #5   | STR  | 29'-6" | 2708            |
| * S1                             | 360 | #5   | 1    | 4'-8"  | 1752            |
| * S2                             | 360 | #5   | 2    | 7'-0"  | 2628            |
| * EPOXY COATED REINFORCING STEEL |     |      |      |        | 8449 LBS.       |
| CLASS AA CONCRETE                |     |      |      |        | 36.0 CU. YDS.   |
| CONCRETE BARRIER RAIL            |     |      |      |        | 358.83 LIN. FT. |



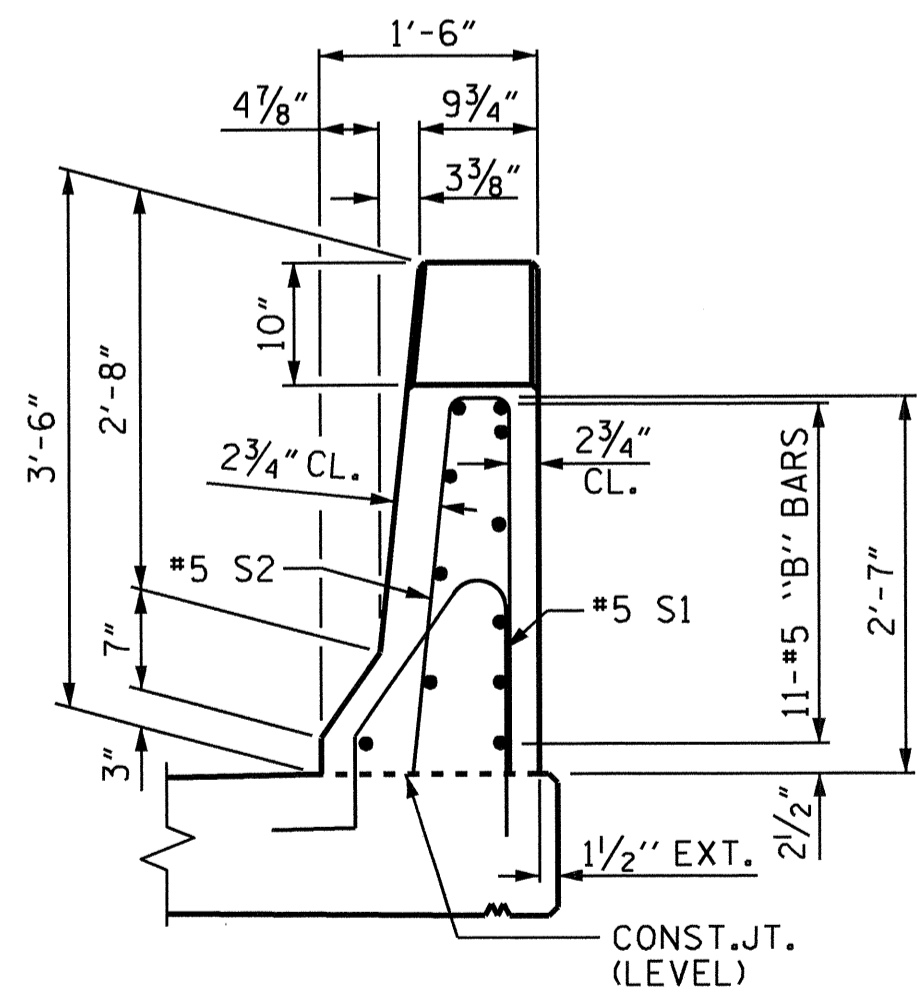
**PLAN**

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

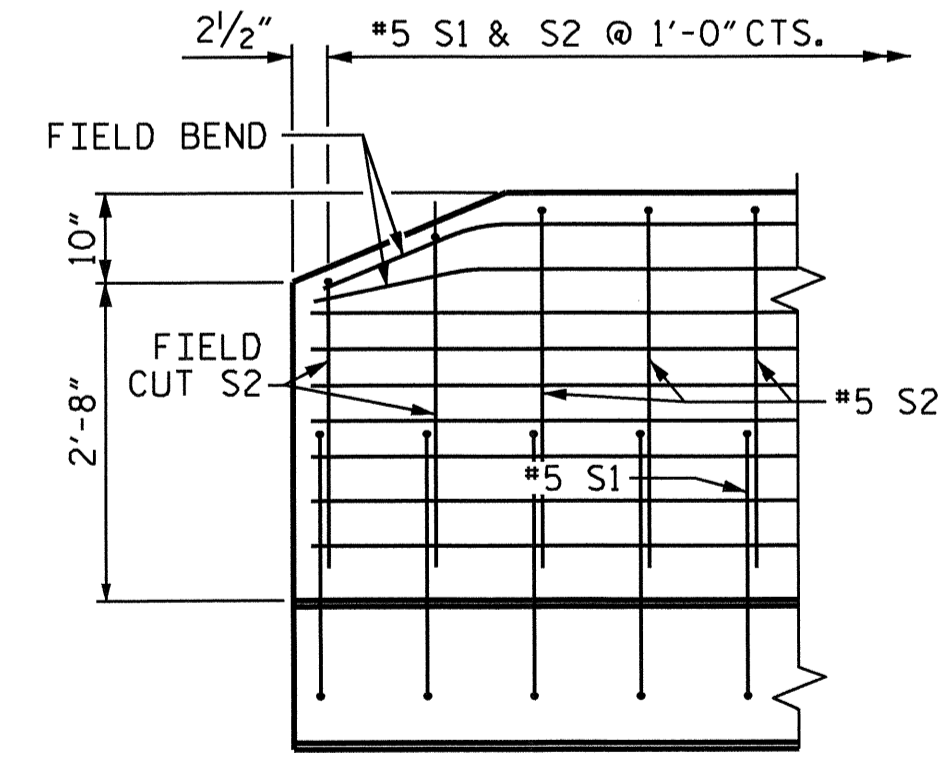


**SECTION S-S**  
AT DAM IN OPEN JOINT  
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

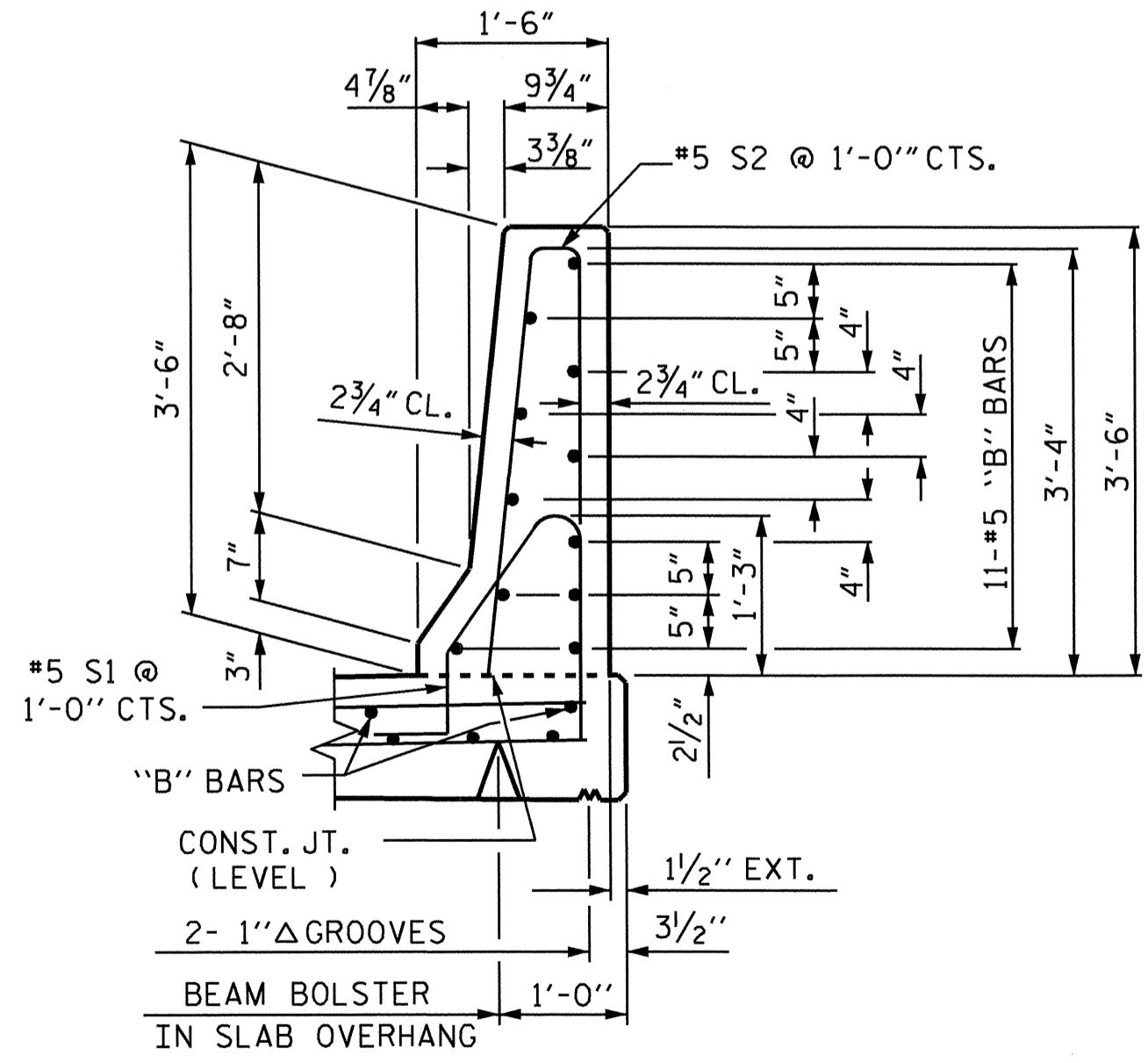
**ELEVATION AT EXPANSION JOINTS  
BARRIER RAIL DETAILS**



**END VIEW**



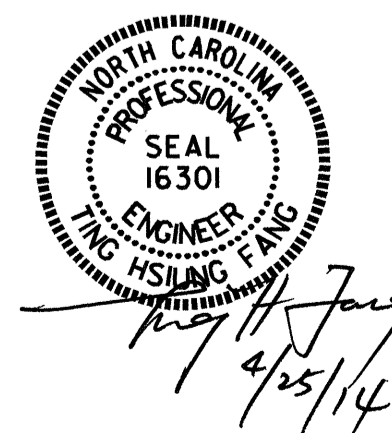
**SIDE VIEW**



**SECTION THRU RAIL**

**END OF RAIL DETAILS**

PROJECT NO. B-4639  
SCOTLAND COUNTY  
STATION: 20+03.00 -L-



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
CONCRETE  
BARRIER RAIL

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

SHEET NO. S-14  
TOTAL SHEETS 23

|                         |                     |
|-------------------------|---------------------|
| ASSEMBLED BY : Fr. Leo  | DATE : 7-24-12      |
| CHECKED BY : R.P. Patel | DATE : 8-22-12      |
| DRAWN BY : ARB 5/87     | REV. 10/1/11 MAA/GM |
| CHECKED BY : SJD 9/87   | REV. 7/12 MAA/GM    |
|                         | REV. 6/13 MAA/GM    |

# NOTES

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

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

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

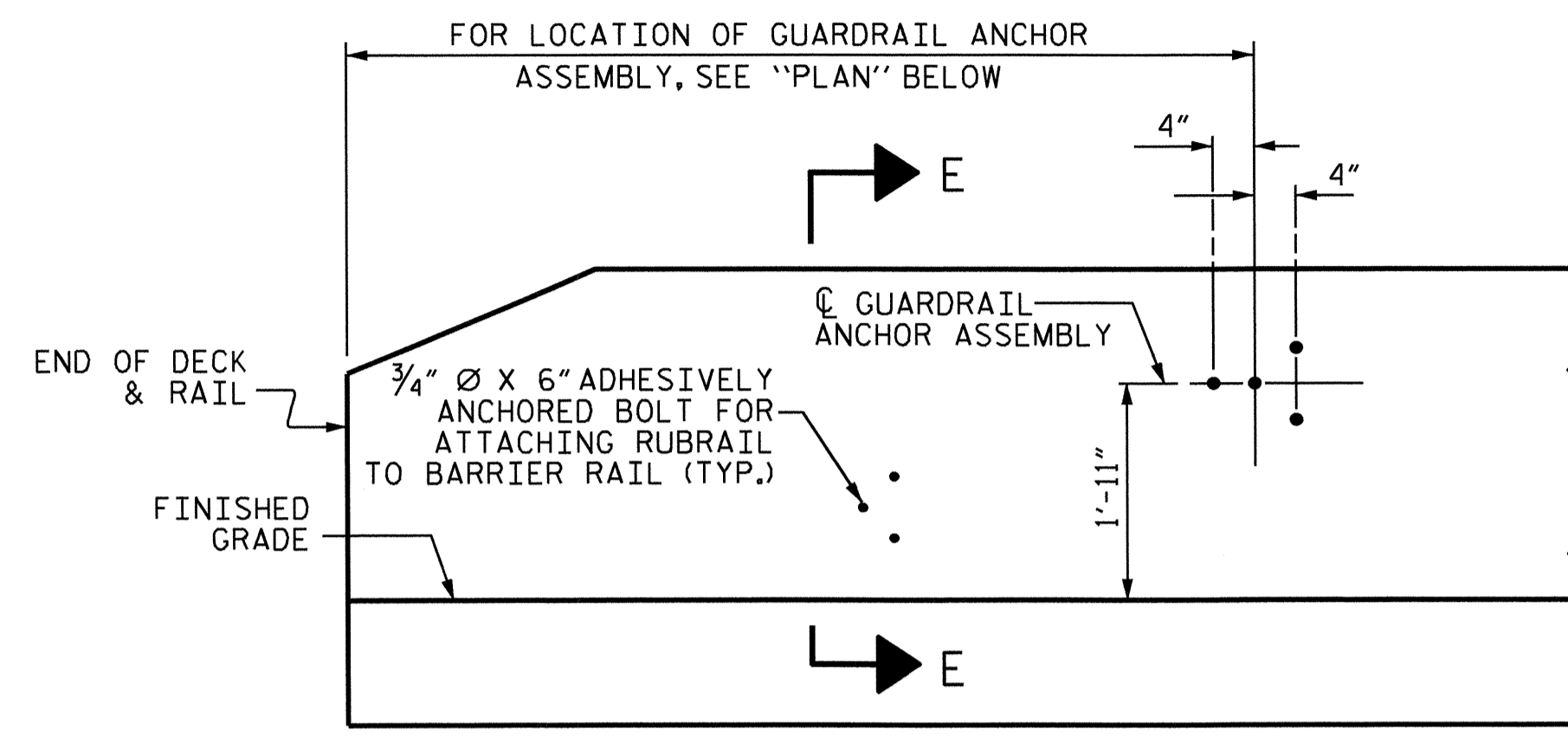
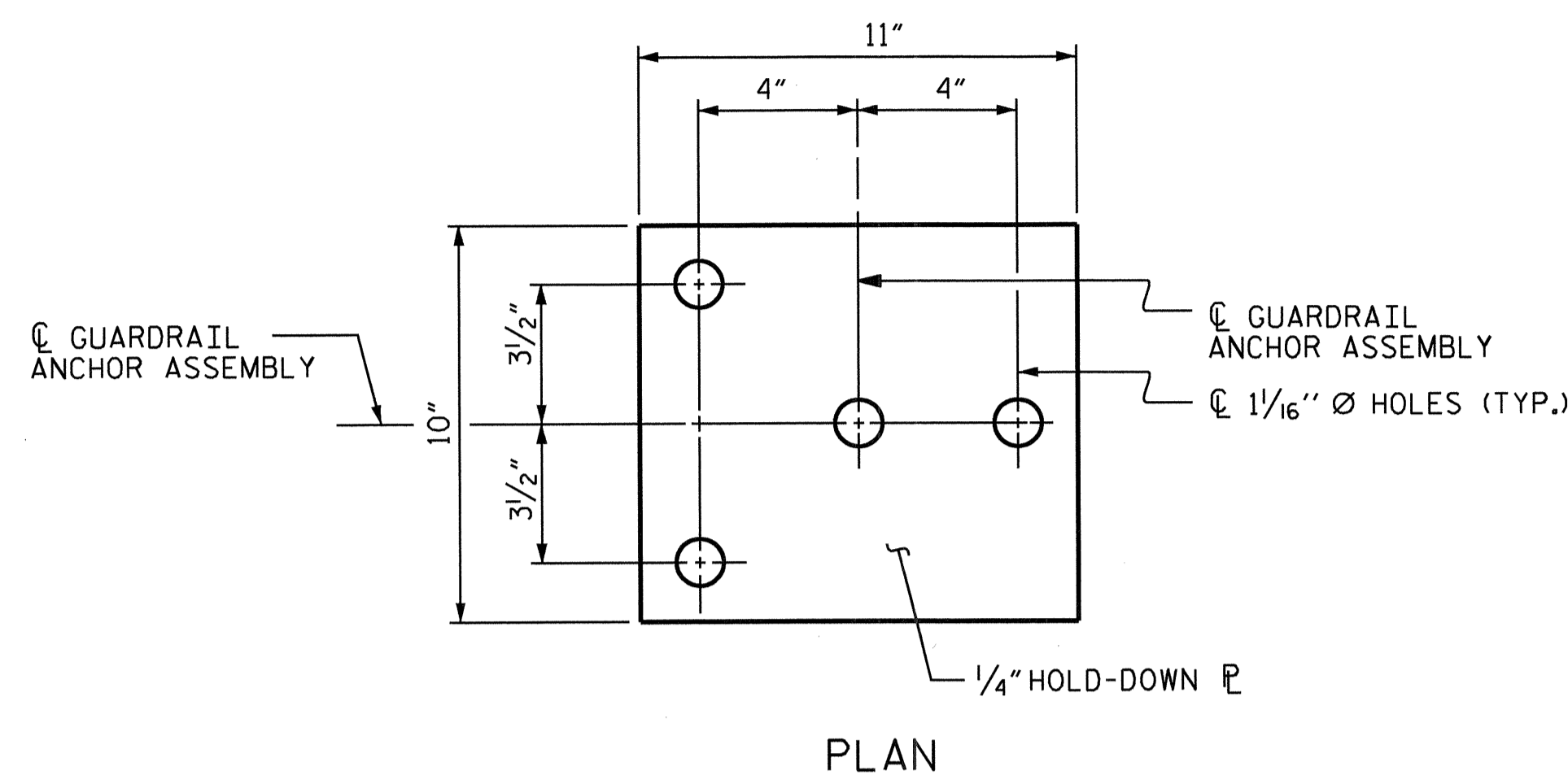
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

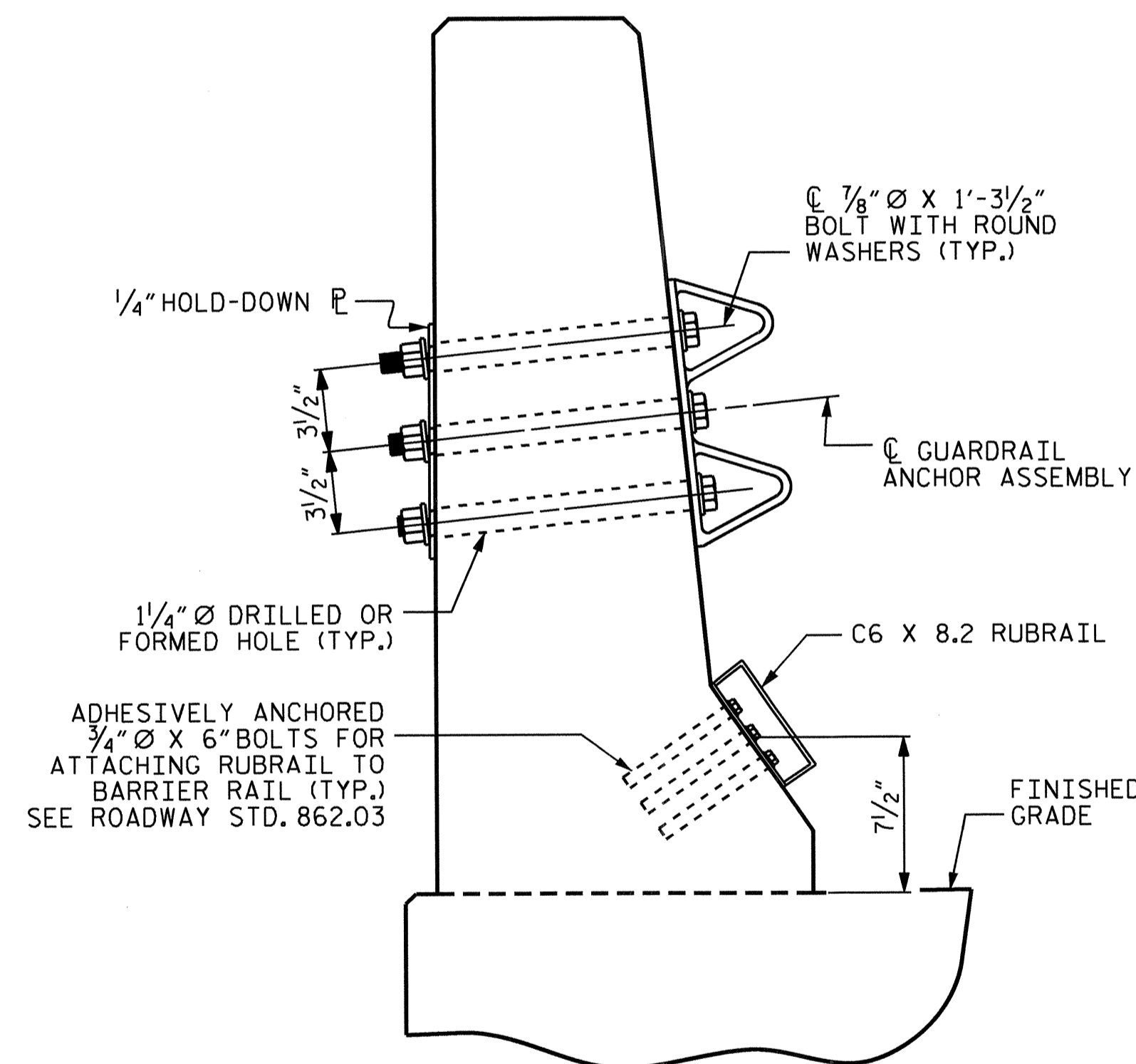
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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.

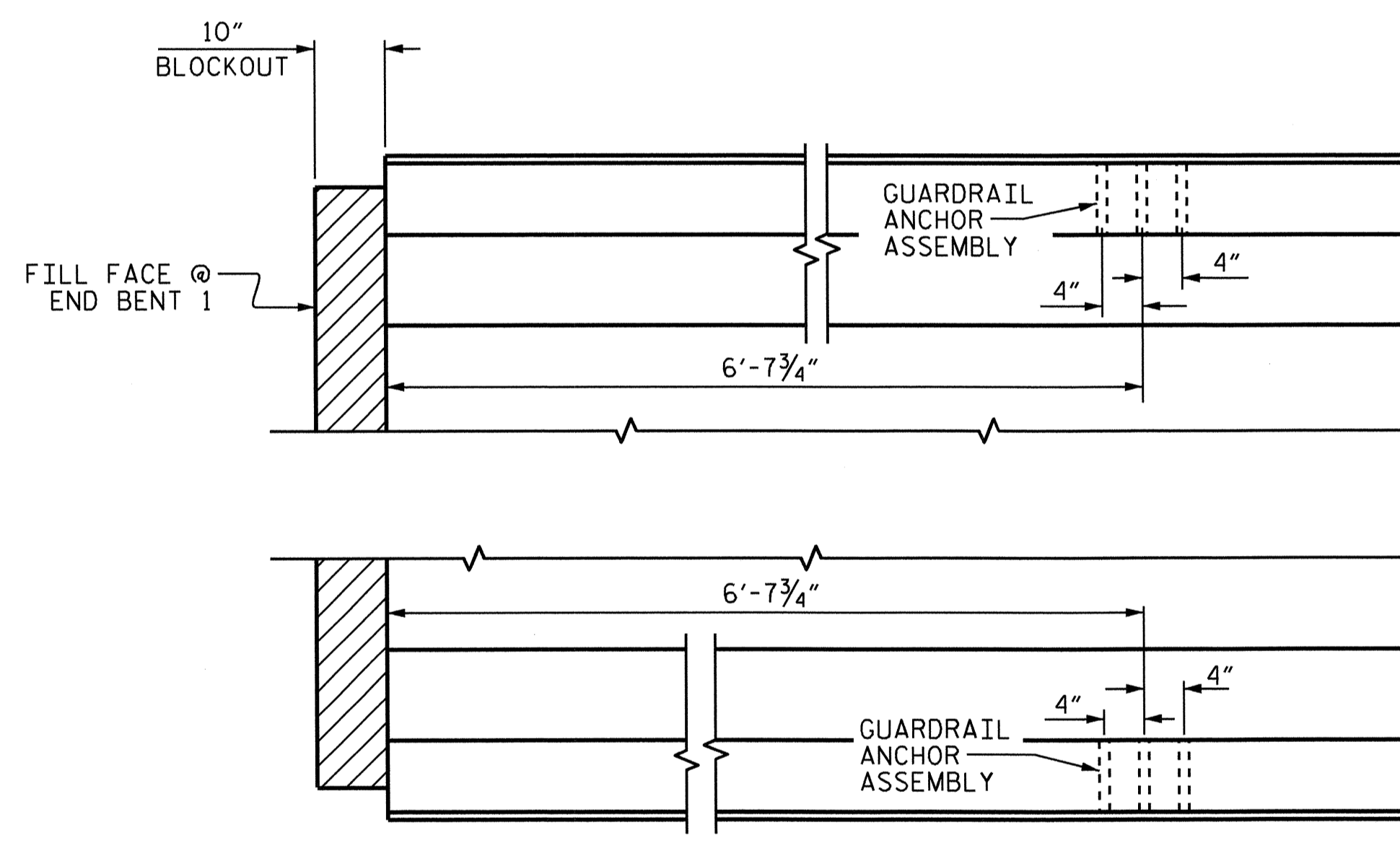
THE C6 X 8.2 RUBRAIL IS TO BE ADHESIVELY ANCHORED TO THE RAIL USING THREE 3/4" Ø X 6" BOLTS WITH WASHERS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 12 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS. SEE ROADWAY STANDARD 862.03 FOR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



ELEVATION



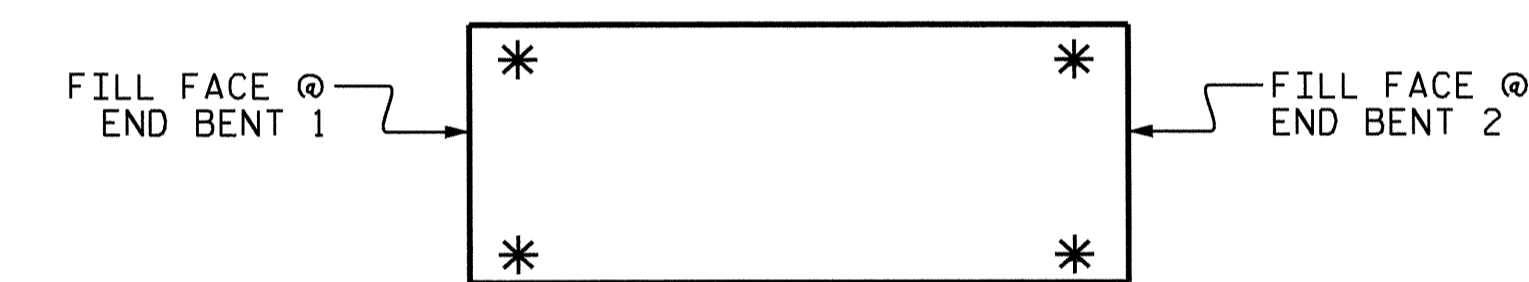
SECTION E-E



PLAN

## LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.



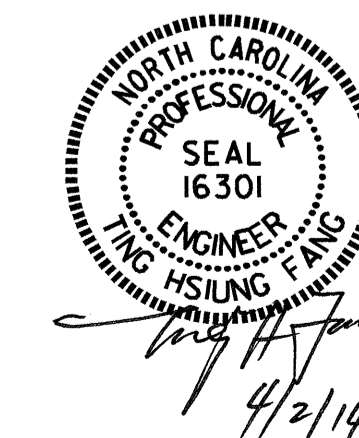
SKETCH SHOWING POINTS OF ATTACHMENTS

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

## GUARDRAIL ANCHOR ASSEMBLY DETAILS

|                |            |               |         |
|----------------|------------|---------------|---------|
| ASSEMBLED BY : | Fr. Leo    | DATE :        | 7-13-12 |
| CHECKED BY :   | R.P. PATEL | DATE :        | 8-3-12  |
| DRAWN BY :     | TLA 5/06   | REV. 10/11/11 | MAA/GM  |
| CHECKED BY :   | GM 5/06    | REV. 7/12     | MAA/GM  |
|                |            | REV. 6/13     | MAA/GM  |

02-APR-2014 09:19  
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PROJECT NO. B-4639  
SCOTLAND COUNTY  
 STATION: 20+03.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 GUARDRAIL ANCHORAGE  
 FOR BARRIER RAIL

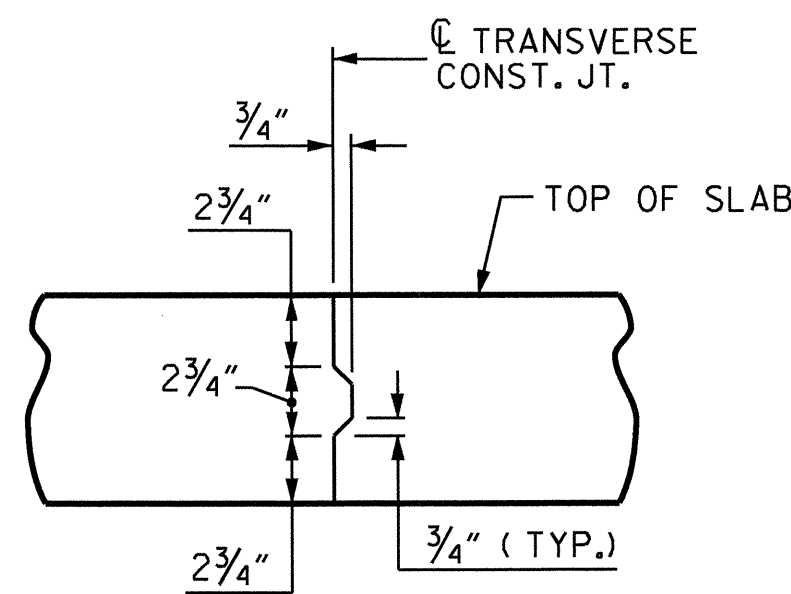
| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-15         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 23           |

STD. NO. GRA2

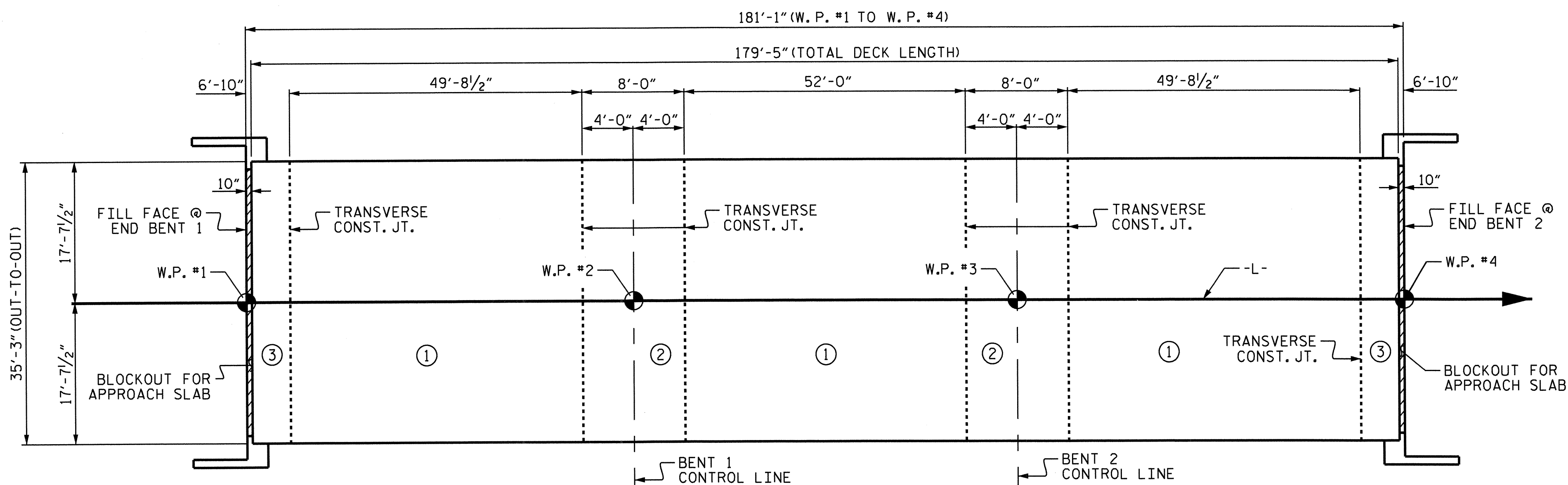


SUPERSTRUCTURE REINFORCING STEEL LENGTHS ARE BASED ON THE FOLLOWING MINIMUM SPLICE LENGTHS

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

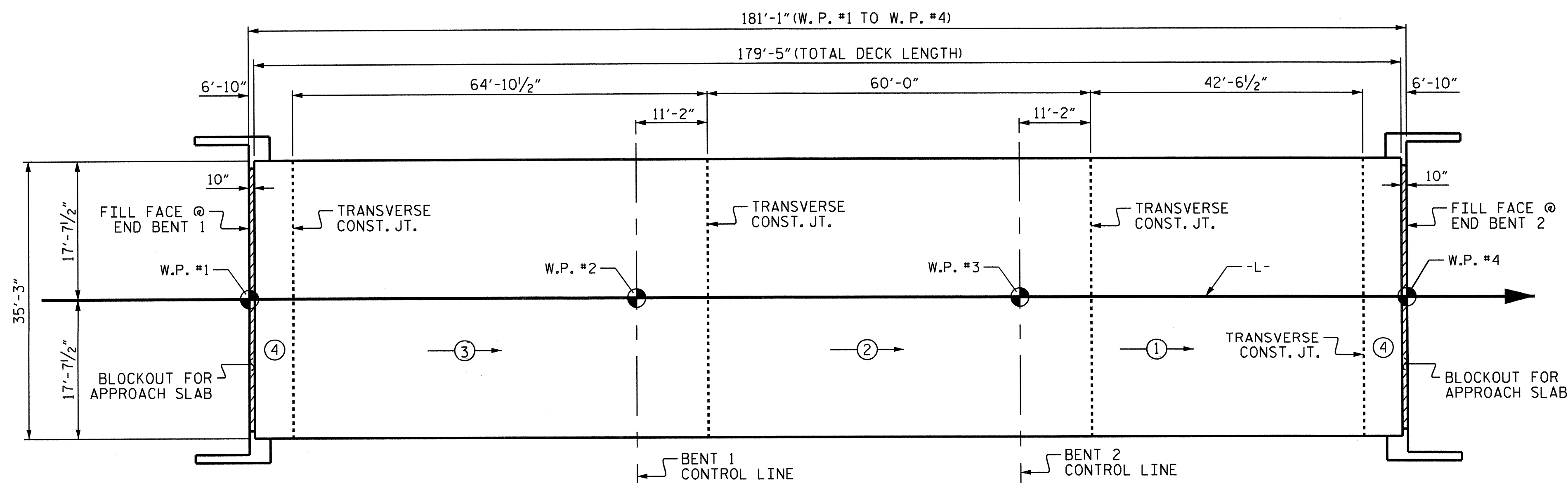


TRANSVERSE CONSTRUCTION JOINT DETAIL



OPTIONAL POURING SEQUENCE

POUR 2 CANNOT BE STARTED UNTIL BOTH ADJACENT POUR 1 REACH A MINIMUM OF 3000 PSI RESPECTIVELY. SEE TRANSVERSE CONSTRUCTION JOINT DETAIL

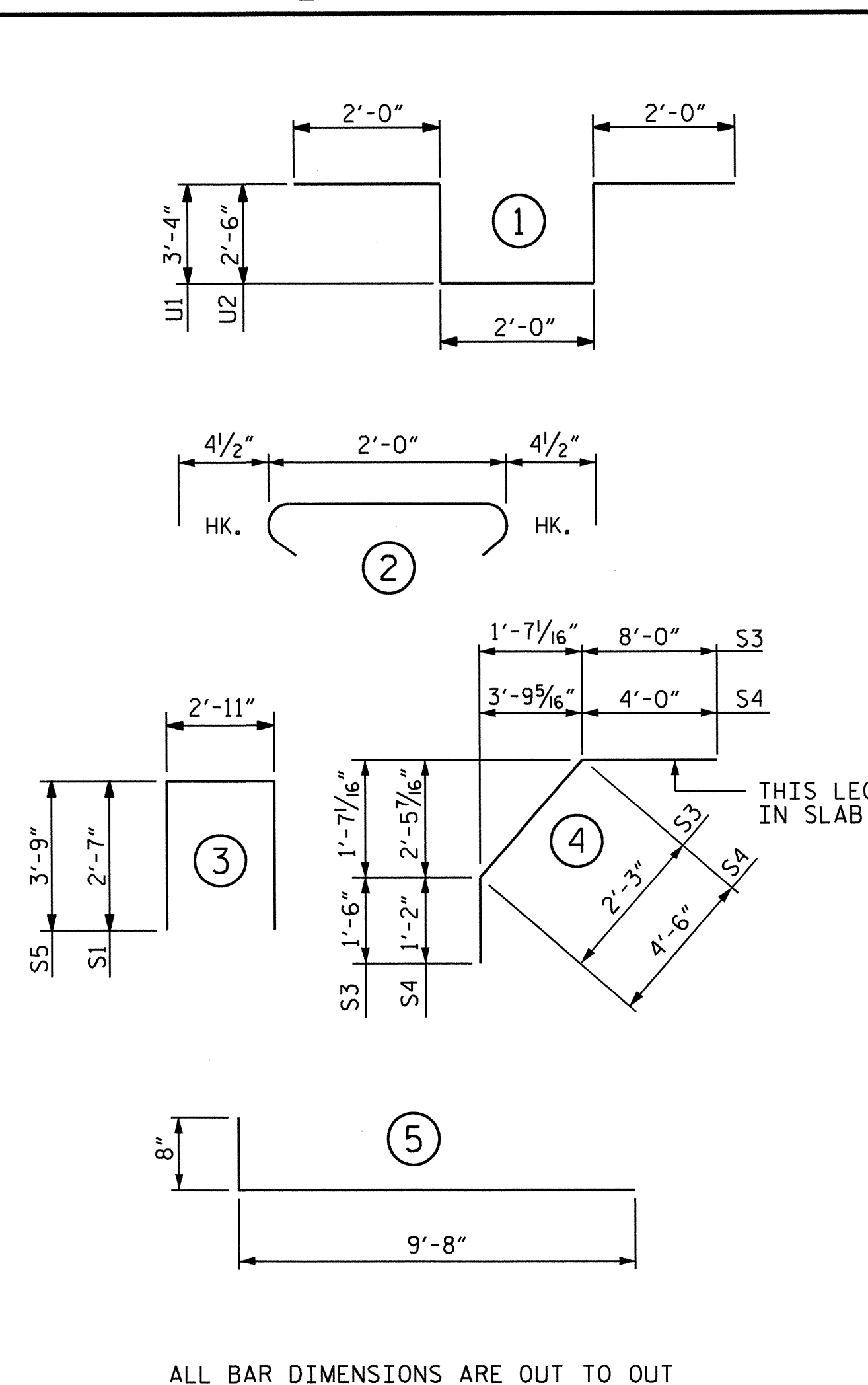


POURING SEQUENCE AND LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 6,383)

|                         |                      |
|-------------------------|----------------------|
| ASSEMBLED BY : Fr. Leo  | DATE : 8-3-12        |
| CHECKED BY : R.P. PATEL | DATE : 8-10-12       |
| DRAWN BY : JMB 5/87     | REV. 6/11/94 EEM/GRP |
| CHECKED BY : SJD 9/87   | REV. 8/16/99 RWW/LES |
|                         | REV. 5/1/06 TLA/GM   |

○ = INDICATES POUR NUMBER AND DIRECTION OF POUR

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL

| BAR NO.                     | NO. | SIZE | TYPE | LENGTH  | WEIGHT       |
|-----------------------------|-----|------|------|---------|--------------|
| * A1                        | 359 | #5   | STR  | 34'-11" | 13074        |
| A2                          | 359 | #5   | STR  | 34'-11" | 13074        |
| * B1                        | 48  | #4   | STR  | 28'-6"  | 914          |
| * B2                        | 94  | #7   | STR  | 12'-0"  | 2306         |
| * B3                        | 48  | #7   | STR  | 46'-4"  | 4546         |
| * B4                        | 46  | #7   | STR  | 18'-2"  | 1708         |
| * B5                        | 24  | #4   | STR  | 17'-8"  | 283          |
| B6                          | 168 | #5   | STR  | 46'-5"  | 8133         |
| H1                          | 40  | #4   | 5    | 10'-4"  | 276          |
| K1                          | 16  | #4   | STR  | 21'-4"  | 228          |
| K2                          | 8   | #4   | STR  | 5'-5"   | 29           |
| K3                          | 8   | #4   | STR  | 6'-3"   | 33           |
| K4                          | 8   | #4   | STR  | 6'-5"   | 34           |
| K5                          | 8   | #4   | STR  | 5'-11"  | 32           |
| K6                          | 4   | #4   | STR  | 4'-11"  | 13           |
| K7                          | 4   | #4   | STR  | 5'-3"   | 14           |
| K8                          | 4   | #4   | STR  | 5'-5"   | 14           |
| K9                          | 4   | #4   | STR  | 5'-2"   | 14           |
| K10                         | 16  | #4   | STR  | 2'-8"   | 29           |
| K11                         | 16  | #4   | STR  | 4'-1"   | 44           |
| K12                         | 32  | #4   | STR  | 6'-5"   | 137          |
| K13                         | 16  | #4   | STR  | 5'-11"  | 63           |
| K14                         | 8   | #4   | STR  | 29'-2"  | 156          |
| S1                          | 60  | #4   | 3    | 8'-1"   | 324          |
| S2                          | 128 | #4   | 2    | 2'-9"   | 235          |
| * S3                        | 60  | #4   | 4    | 11'-9"  | 471          |
| * S4                        | 56  | #4   | 4    | 9'-8"   | 362          |
| S5                          | 8   | #4   | 3    | 10'-5"  | 56           |
| * U1                        | 32  | #4   | 1    | 12'-8"  | 271          |
| * U2                        | 16  | #4   | 1    | 11'-0"  | 118          |
| V2                          | 72  | #4   | STR  | 3'-9"   | 180          |
| REINFORCING STEEL           |     |      |      |         | = 23,119 LBS |
| * EPOXY COATED REINF. STEEL |     |      |      |         | = 24,052 LBS |

SUPERSTRUCTURE BILL OF MATERIAL

|          | CLASS AA CONCRETE (CU. YDS.) | REINFORCING STEEL (LBS.) | EPOXY COATED REINFORCING STEEL (LBS.) |
|----------|------------------------------|--------------------------|---------------------------------------|
| POUR 1   | 78.8                         |                          |                                       |
| POUR 2   | 73.5                         |                          |                                       |
| POUR 3   | 46.7                         |                          |                                       |
| POUR 4   | 50.1                         |                          |                                       |
| TOTAL ** | 249.1                        | 23,119                   | 24,052                                |

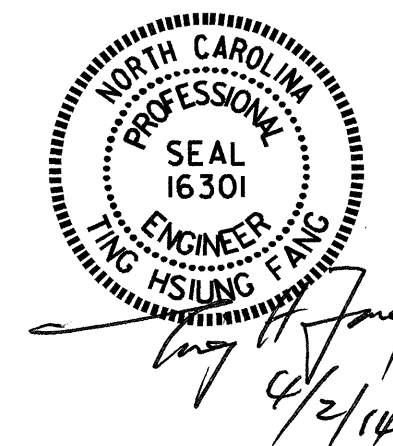
\*\* QUANTITIES FOR BARRIER RAIL ARE NOT INCLUDED

NOTE: THE UPPER PORTION OF THE WINGS SHALL BE POURED WITH THE SUPERSTRUCTURE.

GROOVING BRIDGE FLOORS

|                |              |
|----------------|--------------|
| APPROACH SLABS | 1,402 SO.FT. |
| BRIDGE DECK    | 5,193 SO.FT. |
| TOTAL          | 6,595 SO.FT. |

PROJECT NO. B-4639  
SCOTLAND COUNTY  
STATION: 20+03.00 -L-



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE

BILL OF MATERIAL & POUR SEQUENCE

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-16         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 23           |

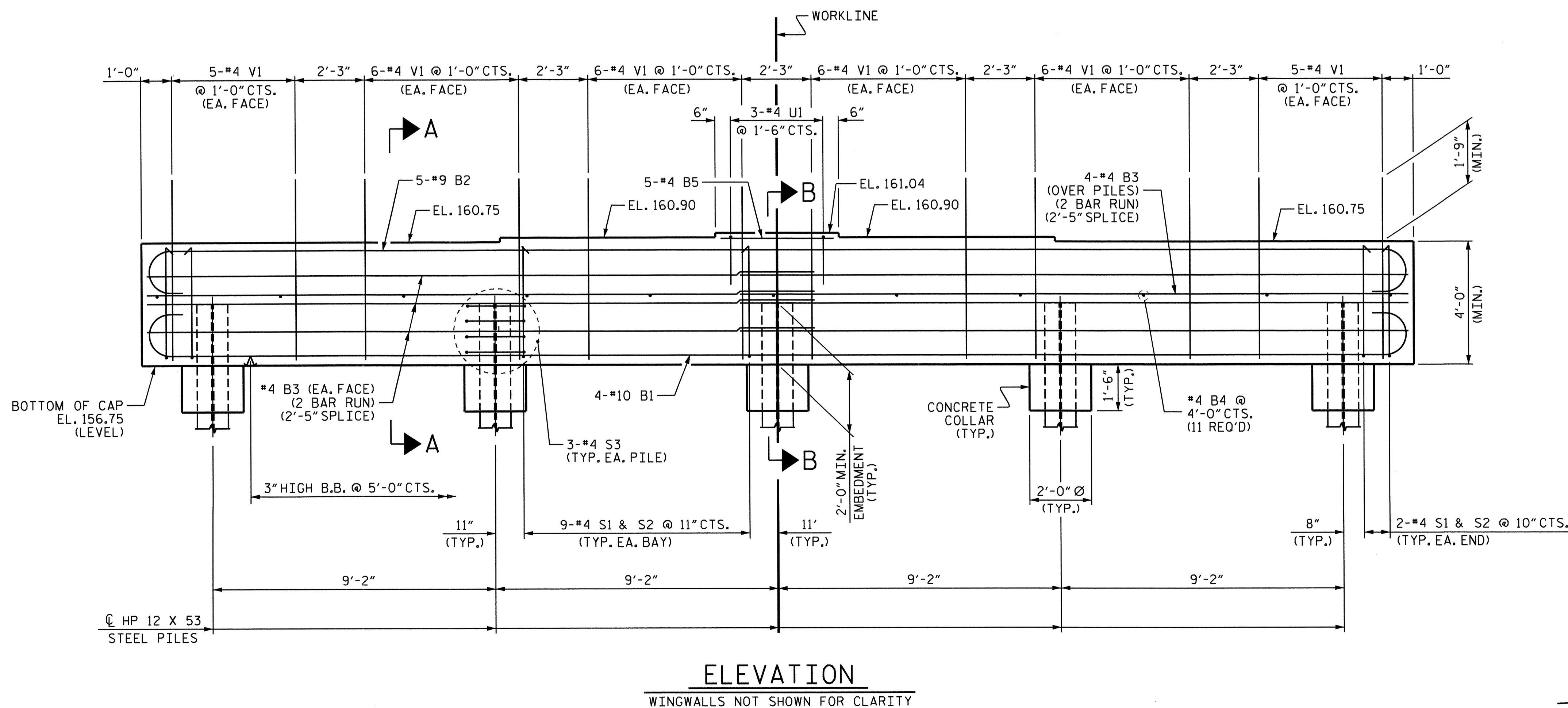
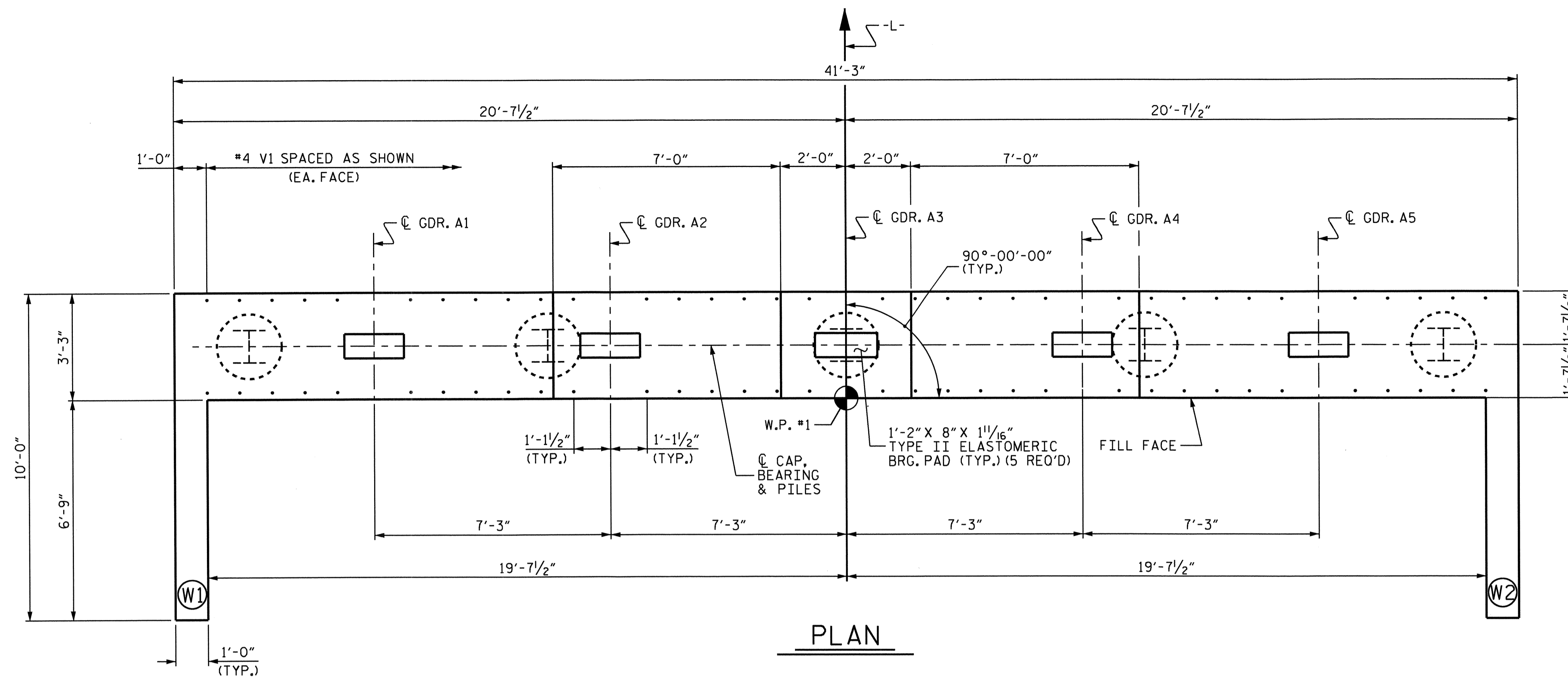
STD. NO. BOM1

**NOTES**

THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

SEE SUPERSTRUCTURE SHEETS FOR THE ABUTMENT DETAILS.

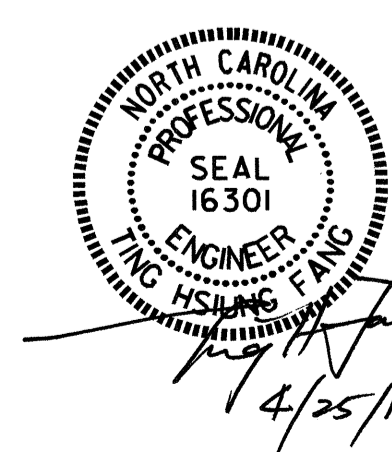
FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.



**ELEVATION**  
 WINGWALLS NOT SHOWN FOR CLARITY

PROJECT NO. B-4639  
 SCOTLAND COUNTY  
 STATION: 20+03.00 -L-

SHEET 1 OF 3



|                              |     |       |     |     |       |                    |
|------------------------------|-----|-------|-----|-----|-------|--------------------|
| STATE OF NORTH CAROLINA      |     |       |     |     |       | SHEET NO.<br>S-17  |
| DEPARTMENT OF TRANSPORTATION |     |       |     |     |       |                    |
| RALEIGH                      |     |       |     |     |       | TOTAL SHEETS<br>23 |
| SUBSTRUCTURE                 |     |       |     |     |       |                    |
| END BENT 1 (INTEGRAL)        |     |       |     |     |       |                    |
| REVISIONS                    |     |       |     |     |       | SHEET NO.<br>S-17  |
| NO.                          | BY: | DATE: | NO. | BY: | DATE: |                    |
| 1                            |     |       | 3   |     |       |                    |
| 2                            |     |       | 4   |     |       |                    |

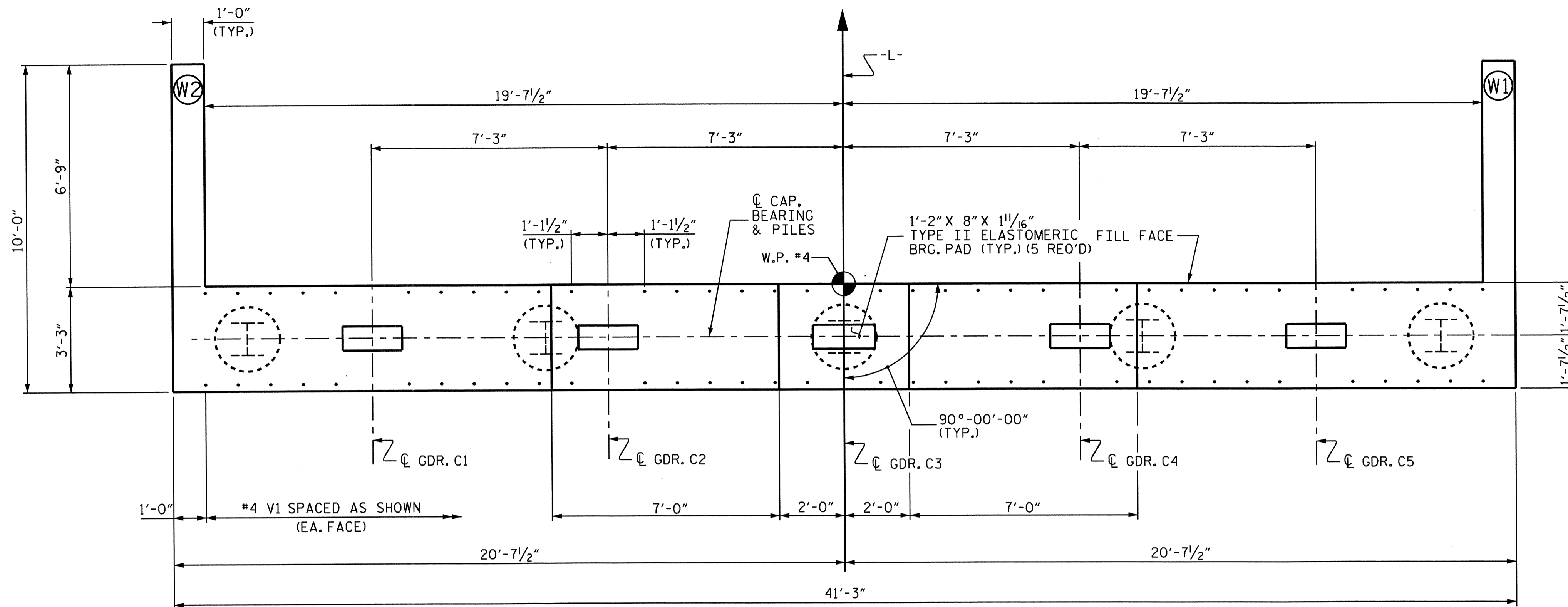
DRAWN BY: Fr. Lea DATE: 7-19-12  
 CHECKED BY: R.P. PATEL DATE: 8-9-12  
 DESIGN ENGINEER OF RECORD: Fr. Lea DATE: 3-28-14

**NOTES**

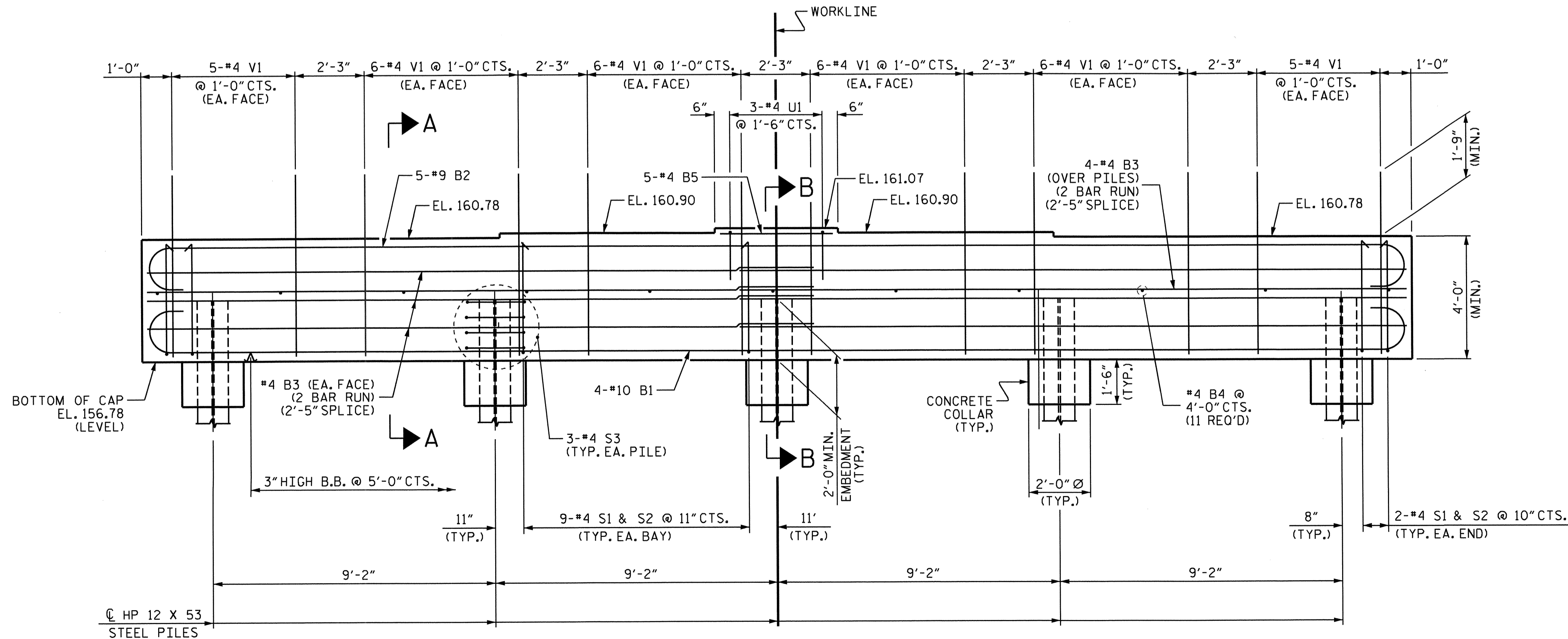
THE CONTRACTOR SHALL PROVIDE FOR INSTALLATION OF THE 4" DIAMETER DRAIN PIPE THROUGH THE WING WALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS. SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WING WALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

SEE SUPERSTRUCTURE SHEETS FOR THE ABUTMENT DETAILS.

FOR PILE SPLICE DETAILS, SEE SHEET 3 OF 3.



**PLAN**



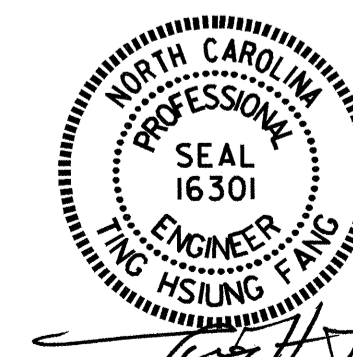
**ELEVATION**

WINGWALLS NOT SHOWN FOR CLARITY

PROJECT NO. B-4639  
SCOTLAND COUNTY  
 STATION: 20+03.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 2  
 (INTEGRAL)



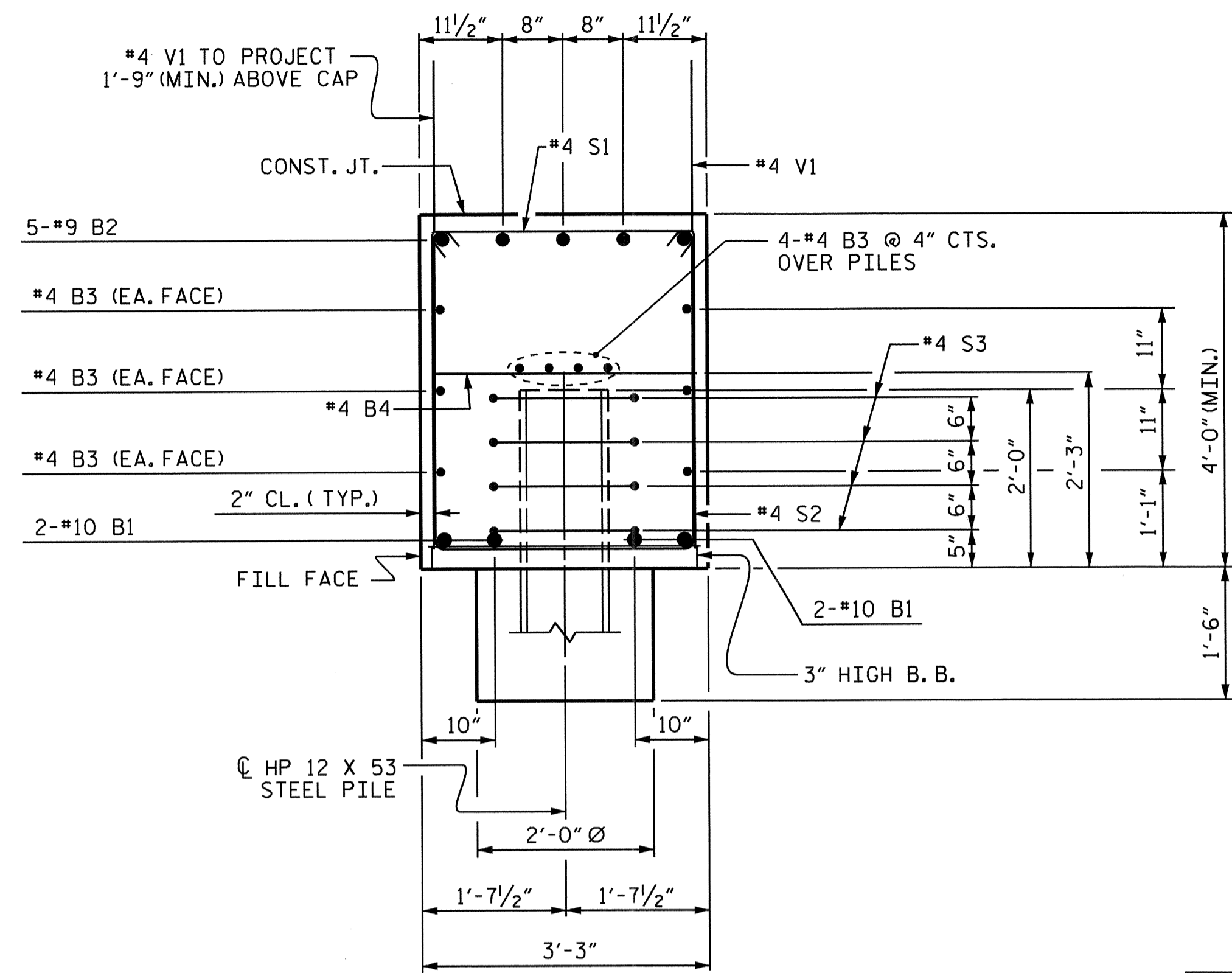
*Ting Hsiung F. Ang*  
 4/25/14

DRAWN BY : Fr. Lea DATE : 7-19-12  
 CHECKED BY : R.P. PATEL DATE : 8-9-12  
 DESIGN ENGINEER OF RECORD : Fr. Lea DATE : 3-28-14

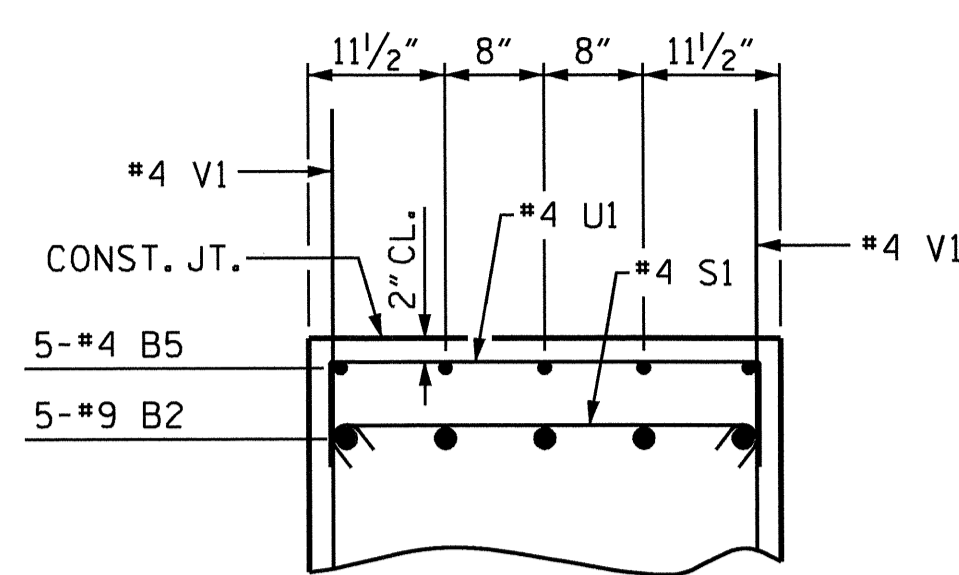
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 clyoketey

| REVISIONS |     |       |     |     |       | SHEET NO. |    |
|-----------|-----|-------|-----|-----|-------|-----------|----|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-18      |    |
| 1         |     |       | 3   |     |       | TOTAL     | 23 |
| 2         |     |       | 4   |     |       | SHEETS    |    |

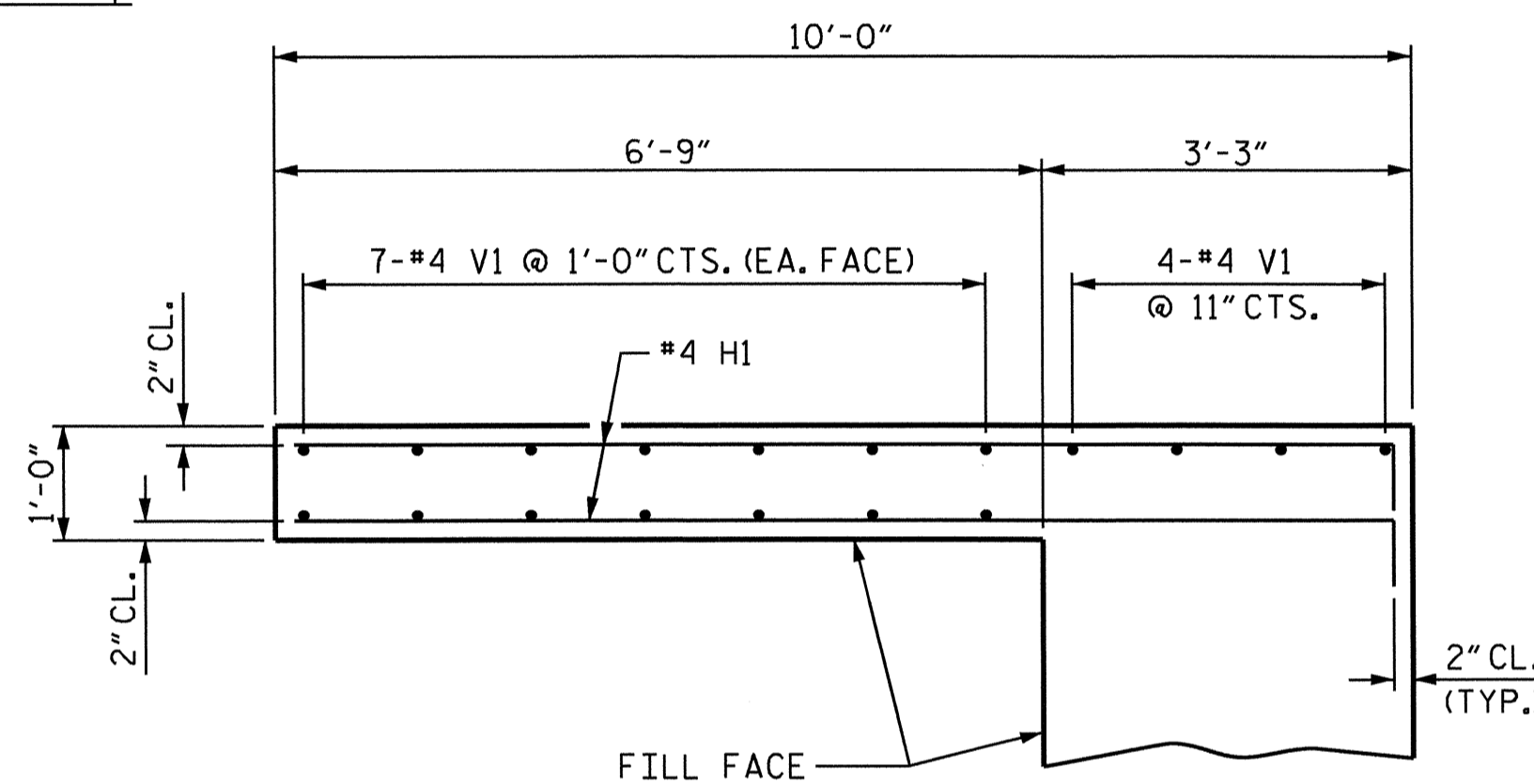
NC005



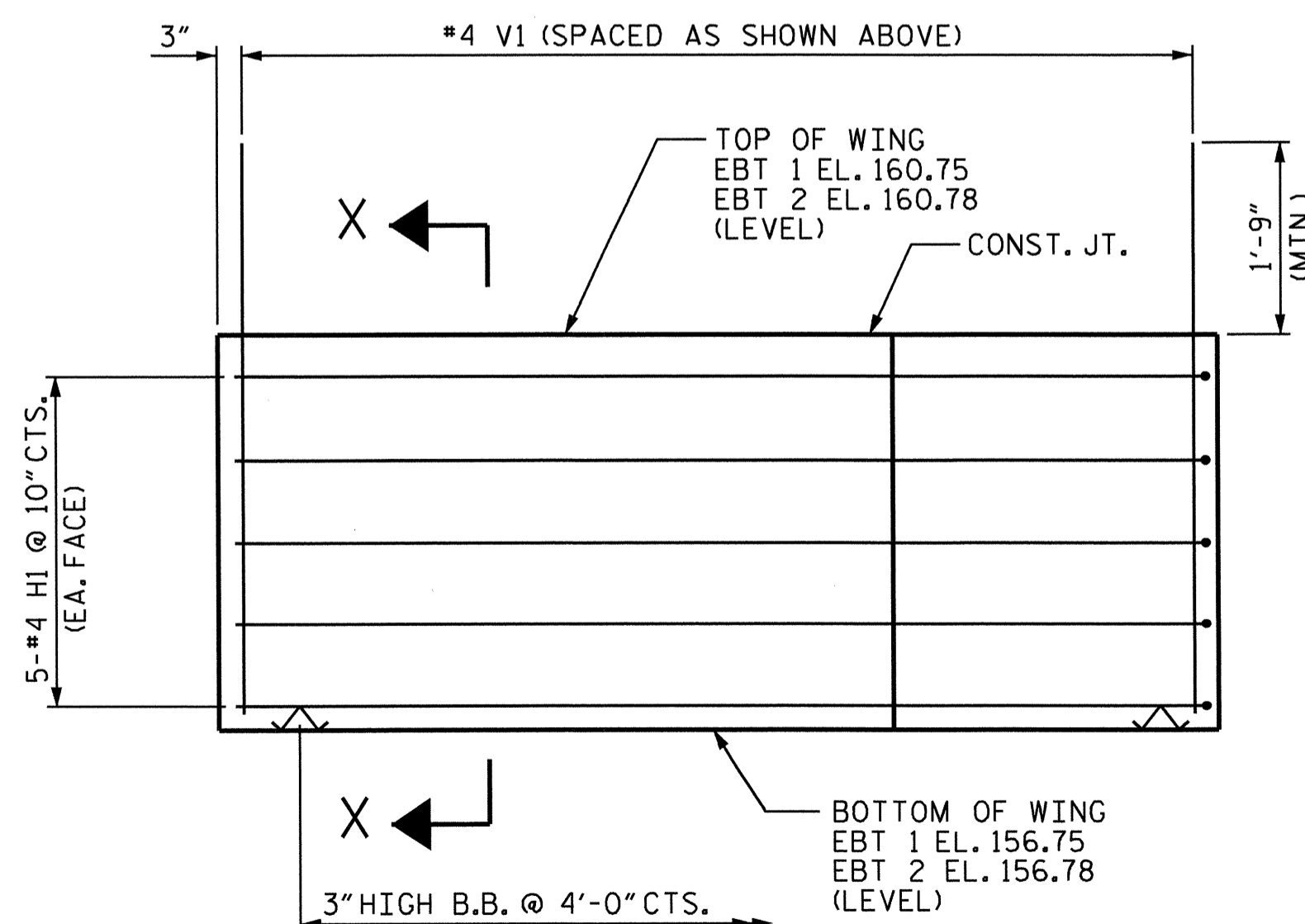
SECTION A-A



PARTIAL SECTION B-B



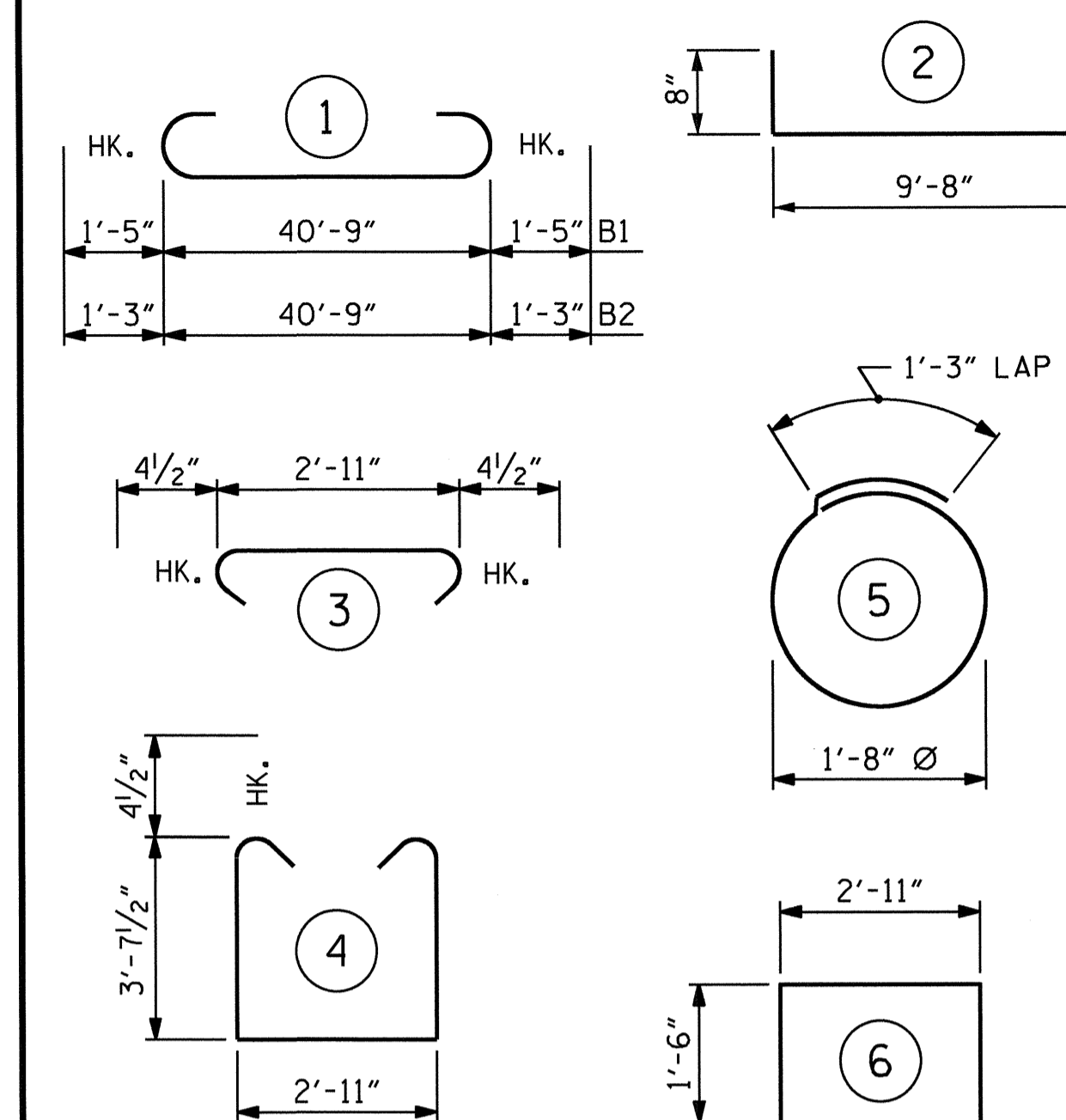
PLAN OF WING (W1)



ELEVATION OF WING (W1)

WING 1 SHOWN, W2 SIMILAR

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

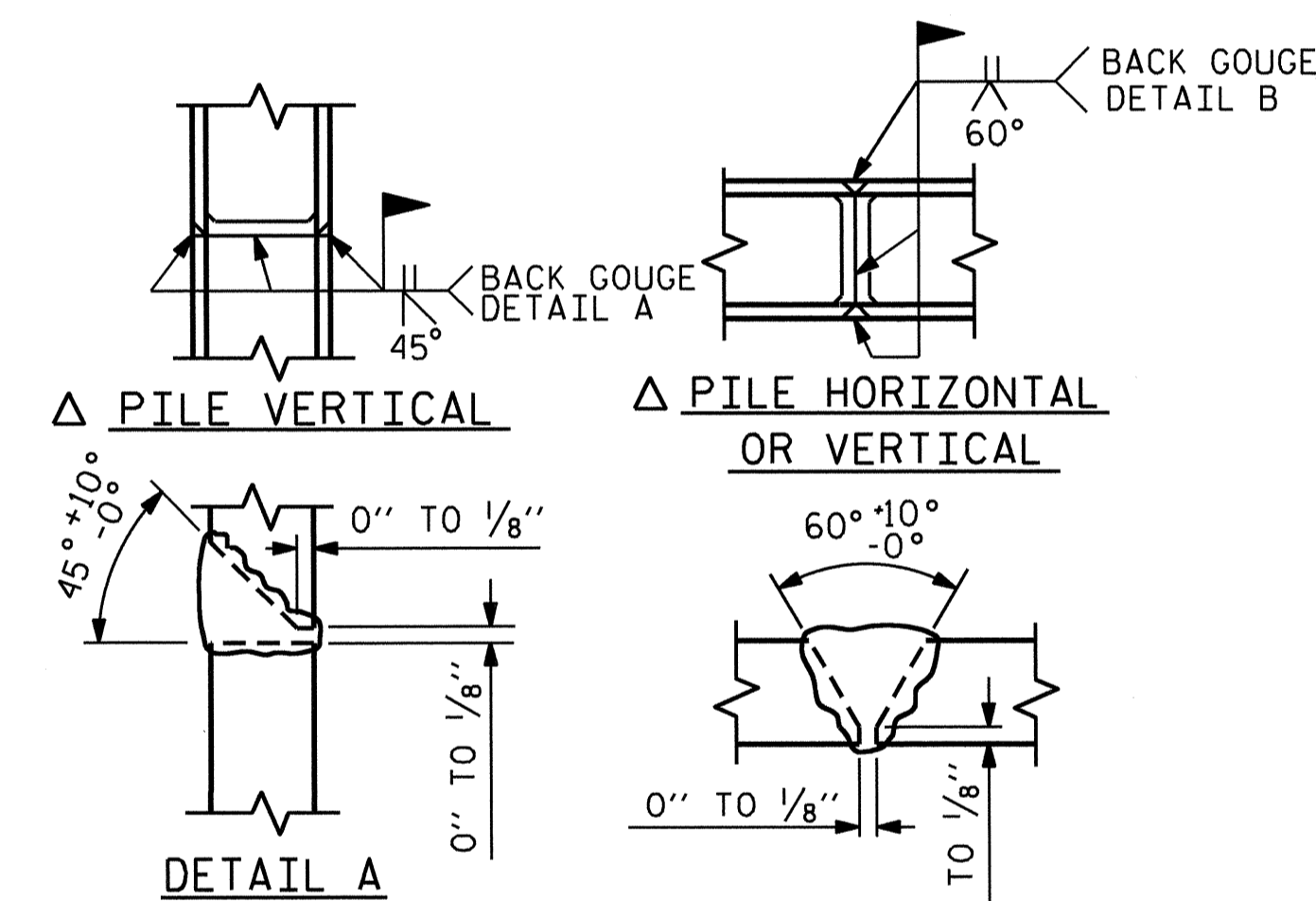
BILL OF MATERIAL FOR ONE END BENT

| BAR | NO. | SIZE | TYPE | LENGTH  | WEIGHT |
|-----|-----|------|------|---------|--------|
| B1  | 4   | #10  | 1    | 43'-7"  | 750    |
| B2  | 5   | #9   | 1    | 43'-3"  | 735    |
| B3  | 20  | #4   | STR  | 21'-8"  | 289    |
| B4  | 11  | #4   | STR  | 2'-11"  | 21     |
| B5  | 5   | #4   | STR  | 3'-8"   | 12     |
| H1  | 20  | #4   | 2    | 10'-4"  | 138    |
| S1  | 40  | #4   | 3    | 3'-8"   | 98     |
| S2  | 40  | #4   | 4    | 10'-11" | 292    |
| S3  | 20  | #4   | 5    | 6'-6"   | 87     |
| U1  | 3   | #4   | 6    | 5'-11"  | 12     |
| V1  | 104 | #4   | STR  | 5'-10"  | 405    |

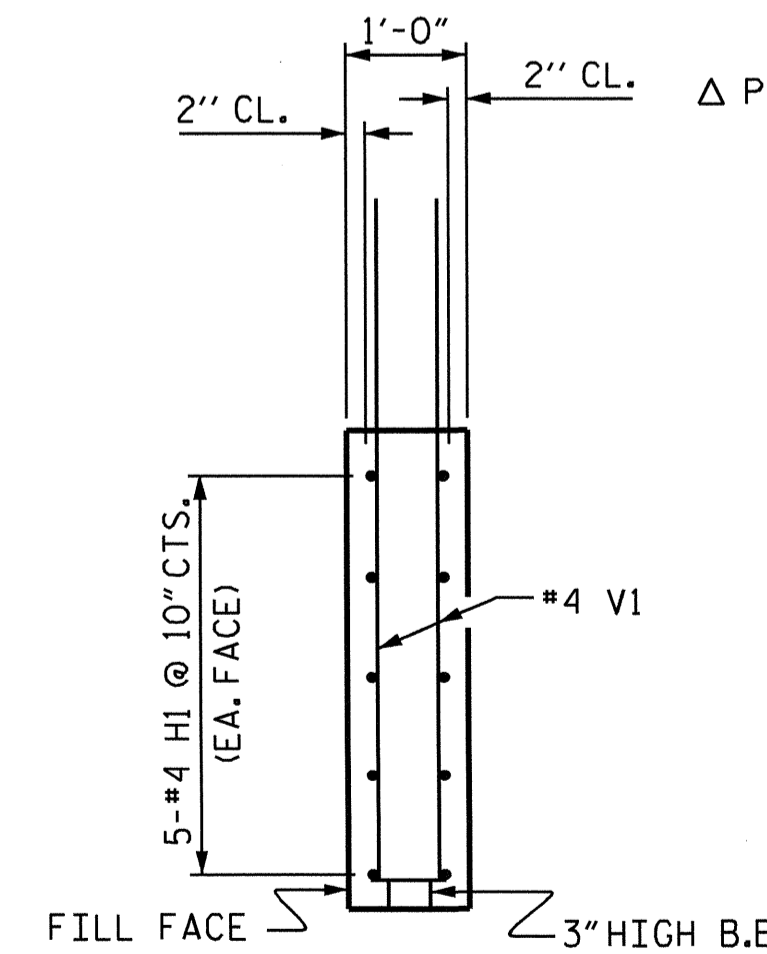
REINFORCING STEEL = 2,839 LBS

CLASS A CONCRETE:  
CAP, LOWER WINGS & COLLARS = 23.2 C.Y.

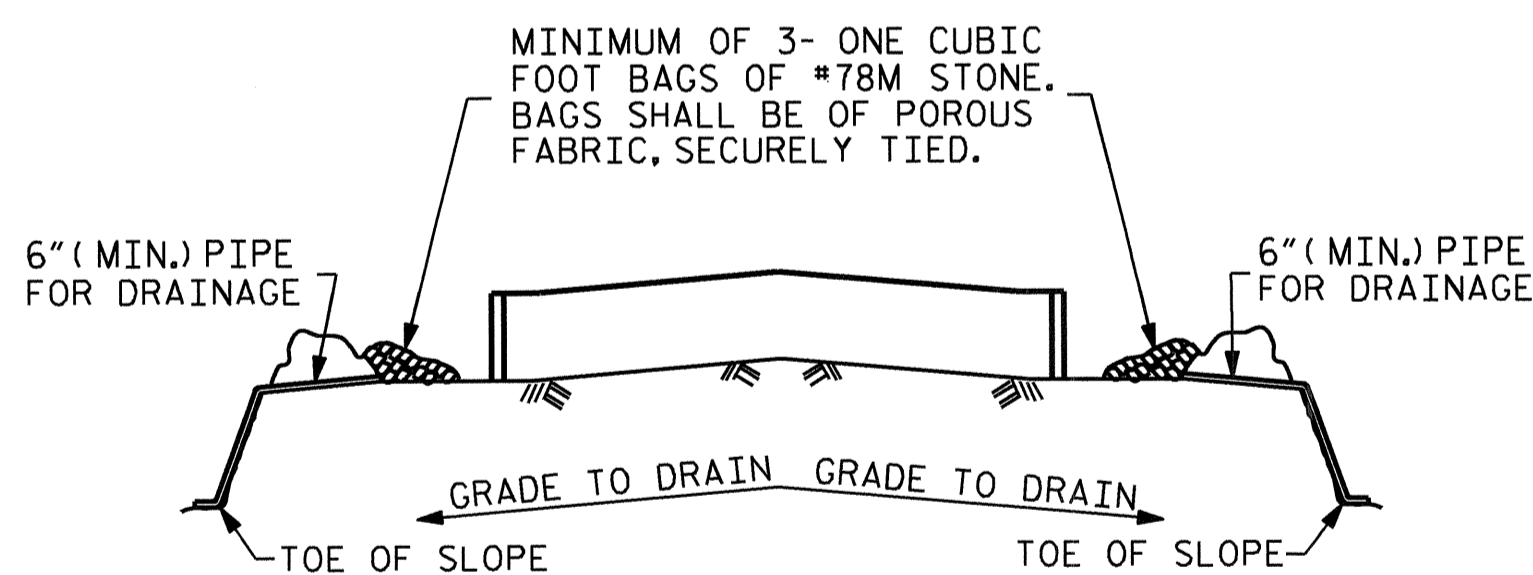
HP 12 X 53 STEEL PILES :  
No. 5 LIN. FT. 350  
PILE REDRIVES EA. 5



PILE SPLICE DETAILS



SECTION X-X



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

DRAWN BY : Fr. Leo DATE : 7-18-12  
CHECKED BY : R.P. PATEL DATE : 8-9-12  
DESIGN ENGINEER OF RECORD : Fr. Leo DATE : 3-28-14

PROJECT NO. B-4639  
SCOTLAND COUNTY  
STATION: 20+03.00 -L-

SHEET 3 OF 3

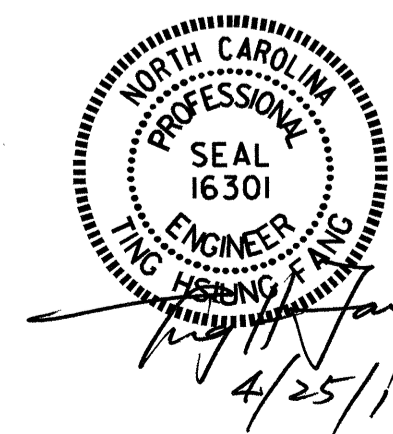
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

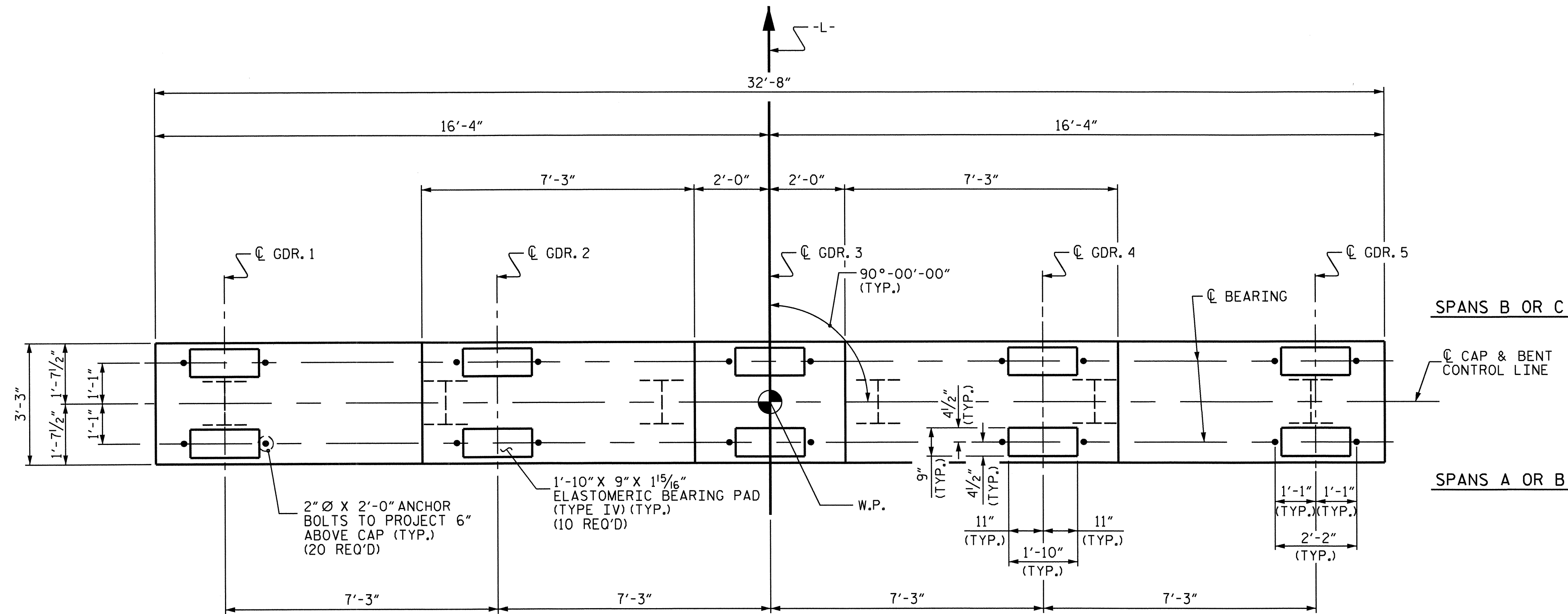
SUBSTRUCTURE

END BENT  
DETAILS

REVISIONS

| NO. | BY: | DATE: | NO. | BY: | DATE: | SHEET NO.       |
|-----|-----|-------|-----|-----|-------|-----------------|
| 1   |     |       | 3   |     |       | S-19            |
| 2   |     |       | 4   |     |       | TOTAL SHEETS 23 |



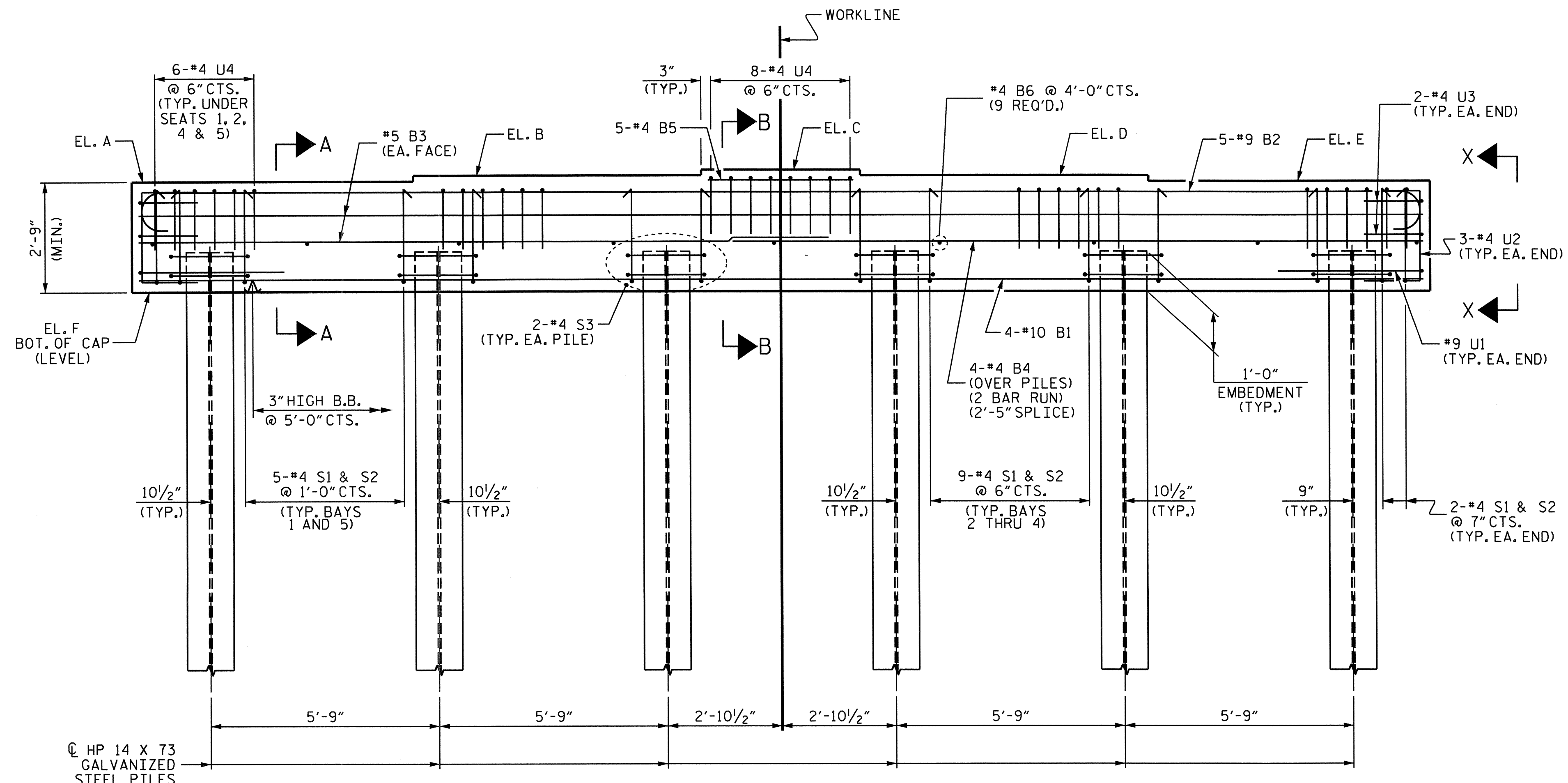


PLAN

NOTES:

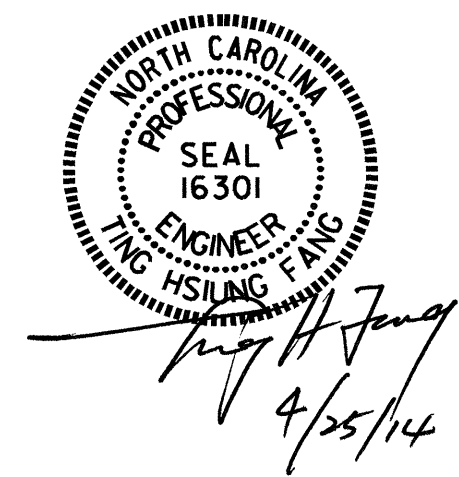
- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.
- GALVANIZE THE TOP 28 FEET OF EACH BENT 1 HP 14 X 73 STEEL PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.
- GALVANIZE THE TOP 38 FEET OF EACH BENT 2 HP 14 X 73 STEEL PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

| ELEVATION | A      | B      | C      | D      | E      | F      |
|-----------|--------|--------|--------|--------|--------|--------|
| BENT 1    | 160.74 | 160.89 | 161.04 | 160.89 | 160.74 | 157.99 |
| BENT 2    | 160.75 | 160.90 | 161.05 | 160.90 | 160.75 | 158.00 |



PROJECT NO. B-4639  
SCOTLAND COUNTY  
 STATION: 20+03.00 -L-

SHEET 1 OF 2

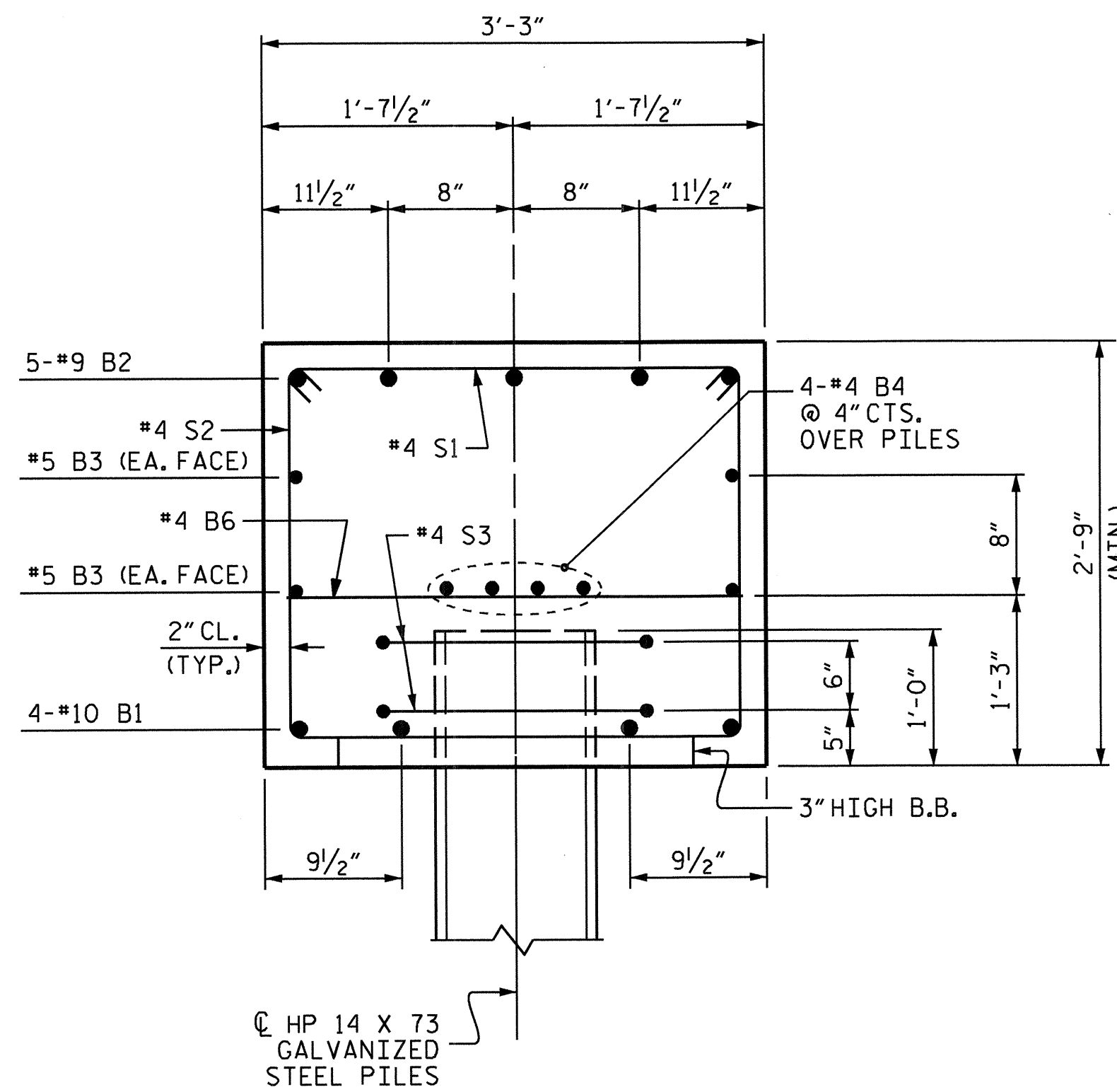


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 BENTS 1 & 2

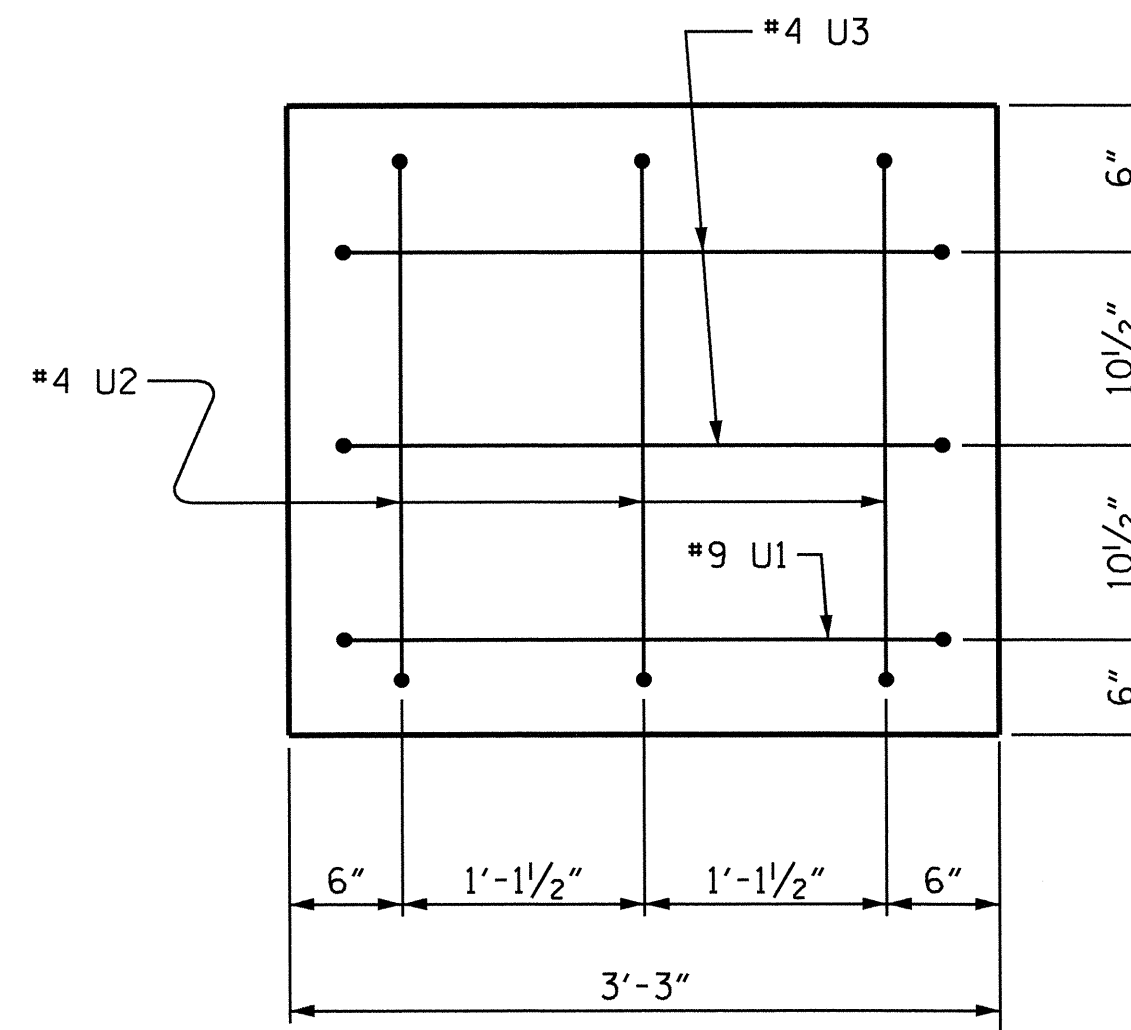
| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-20         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 23           |

DRAWN BY: R.P. PATEL DATE: 8-15-13  
 CHECKED BY: E.I. OMILE DATE: 8-19-13  
 DESIGN ENGINEER OF RECORD: Fr. LEA DATE: 3-28-14

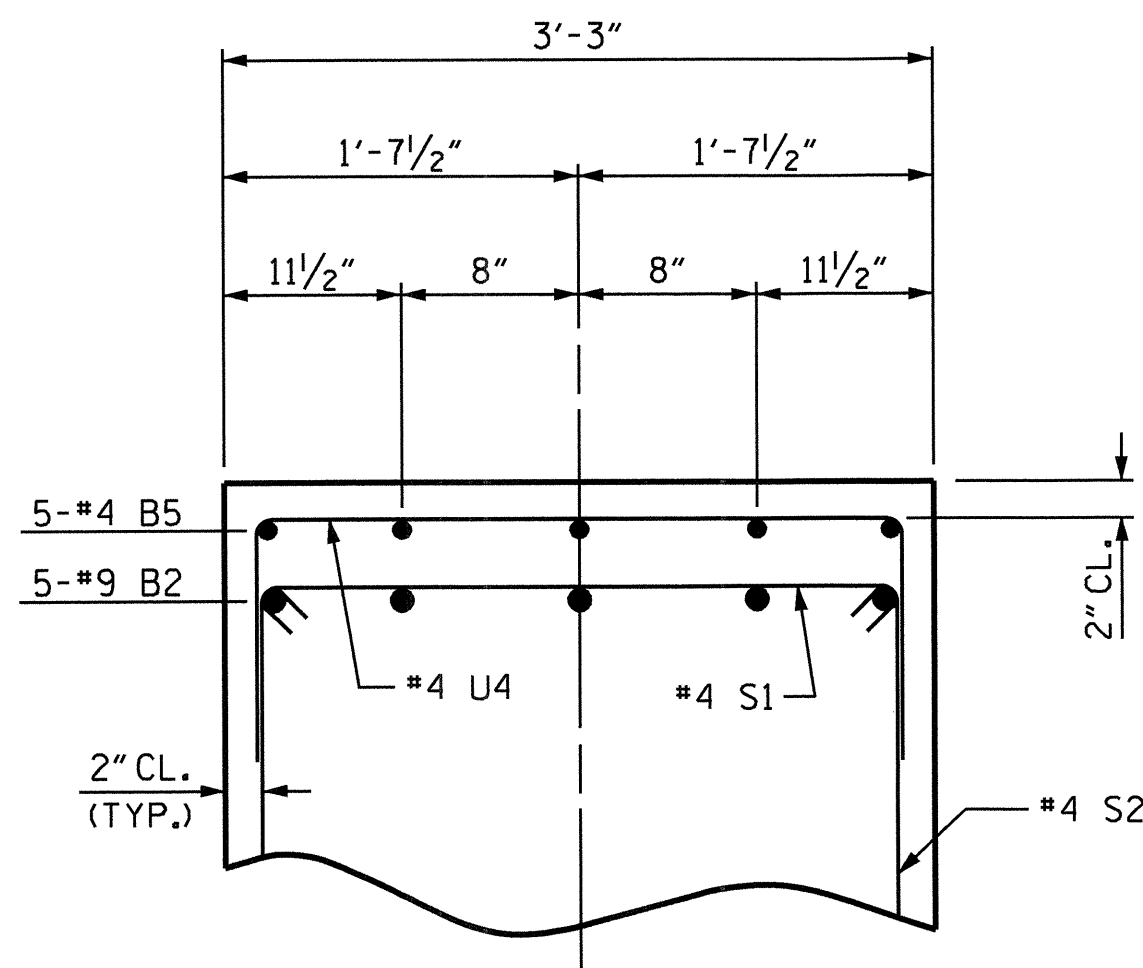
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 clyokeley



SECTION A-A



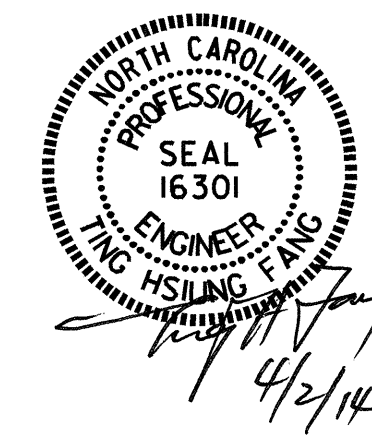
SECTION X-X  
(TYP. EA. END)



PARTIAL SECTION B-B

| BAR TYPES |     |      |      |        |        | BILL OF MATERIAL                  |     |              |      |              |        |
|-----------|-----|------|------|--------|--------|-----------------------------------|-----|--------------|------|--------------|--------|
|           |     |      |      |        |        | FOR ONE BENT                      |     |              |      |              |        |
| BAR       | NO. | SIZE | TYPE | LENGTH | WEIGHT | BAR                               | NO. | SIZE         | TYPE | LENGTH       | WEIGHT |
| B1        | 4   | #10  | STR  | 32'-4" | 557    | S1                                | 41  | #4           | 2    | 3'-8"        | 100    |
| B2        | 5   | #9   | 1    | 34'-8" | 589    | S2                                | 41  | #4           | 3    | 8'-5"        | 231    |
| B3        | 4   | #5   | STR  | 32'-4" | 135    | S3                                | 12  | #4           | 5    | 7'-7"        | 61     |
| B4        | 8   | #4   | STR  | 17'-5" | 93     | U1                                | 2   | #9           | 4    | 10'-1"       | 69     |
| B5        | 5   | #4   | STR  | 3'-8"  | 12     | U2                                | 6   | #4           | 4    | 5'-3"        | 21     |
| B6        | 9   | #4   | STR  | 2'-11" | 18     | U3                                | 4   | #4           | 4    | 5'-9"        | 15     |
|           |     |      |      |        |        | U4                                | 32  | #4           | 4    | 5'-11"       | 126    |
|           |     |      |      |        |        | REINFORCING STEEL = 2027 LBS      |     |              |      |              |        |
|           |     |      |      |        |        | CLASS A CONCRETE (FOR ONE BENT)   |     |              |      |              |        |
|           |     |      |      |        |        | TOTAL CLASS A CONCRETE 11.2 C.Y.  |     |              |      |              |        |
|           |     |      |      |        |        | HP 14 X 73 GALVANIZED STEEL PILES |     |              |      |              |        |
|           |     |      |      |        |        | BENT 1                            |     | BENT 2       |      |              |        |
|           |     |      |      |        |        | NUMBER = 6                        |     | 420 LIN. FT. |      | 450 LIN. FT. |        |
|           |     |      |      |        |        | PILE REDRIVES                     |     | 6 EACH       |      | 6 EACH       |        |

ALL BAR DIMENSIONS ARE OUT TO OUT.



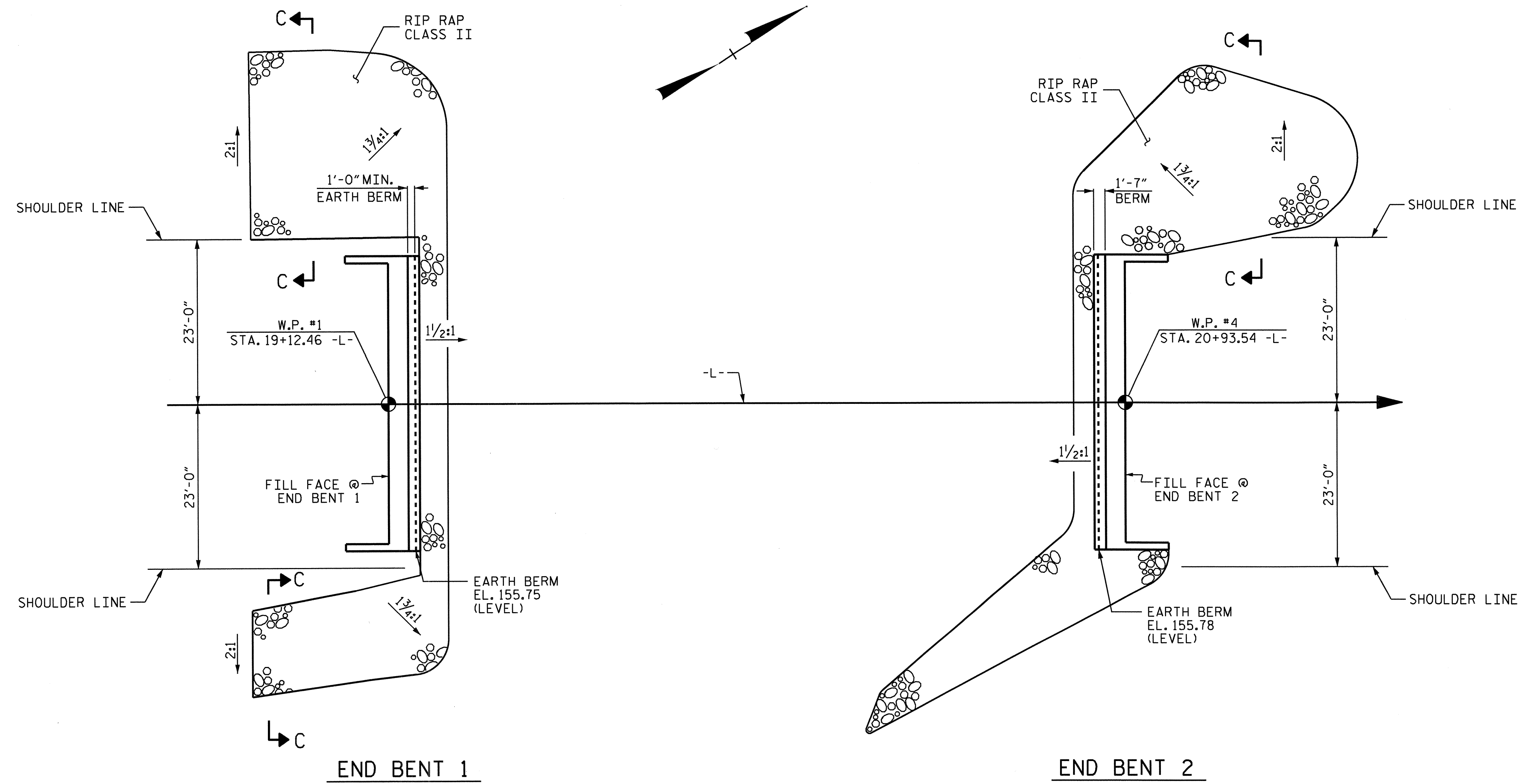
PROJECT NO. B-4639  
SCOTLAND COUNTY  
 STATION: 20+03.00 -L-  
 SHEET 2 OF 2

| STATE OF NORTH CAROLINA<br>DEPARTMENT OF TRANSPORTATION<br>RALEIGH |     |       |     |     |       |
|--|-----|-------|-----|-----|-------|
| SUBSTRUCTURE   |     |       |     |     |       |
| BENTS 1 & 2  |     |       |     |     |       |
| REVISIONS  |     |       |     |     |       |
| NO.  | BY: | DATE: | NO. | BY: | DATE: |
| 1  |     |       | 3   |     |       |
| 2  |     |       | 4   |     |       |

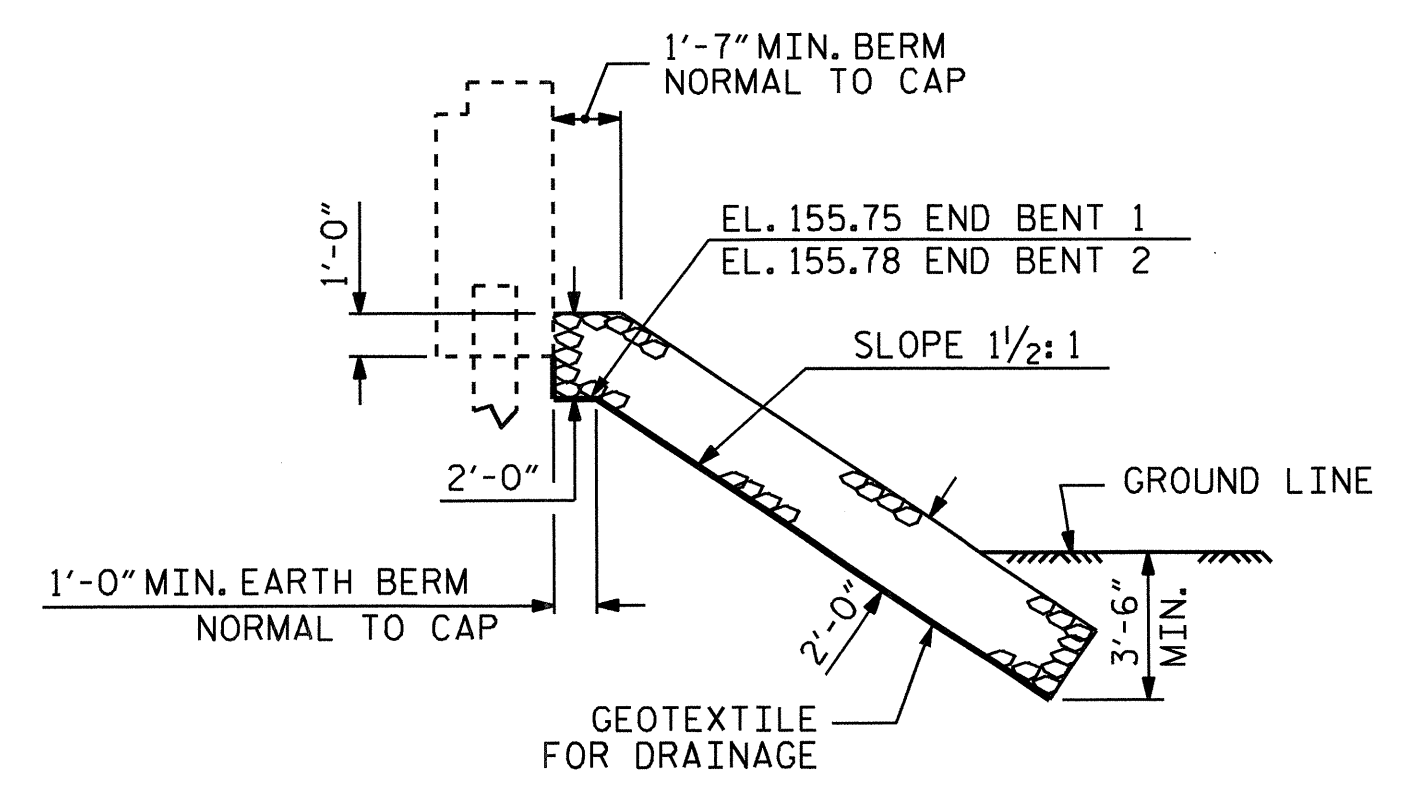
|              |      |
|--------------|------|
| SHEET NO.    | S-21 |
| TOTAL SHEETS | 23   |

DRAWN BY : R. P. PATEL DATE : 8-15-13  
 CHECKED BY : E. I. OMILE DATE : 8-19-13  
 DESIGN ENGINEER OF RECORD: FR. LEA DATE : 3-28-14

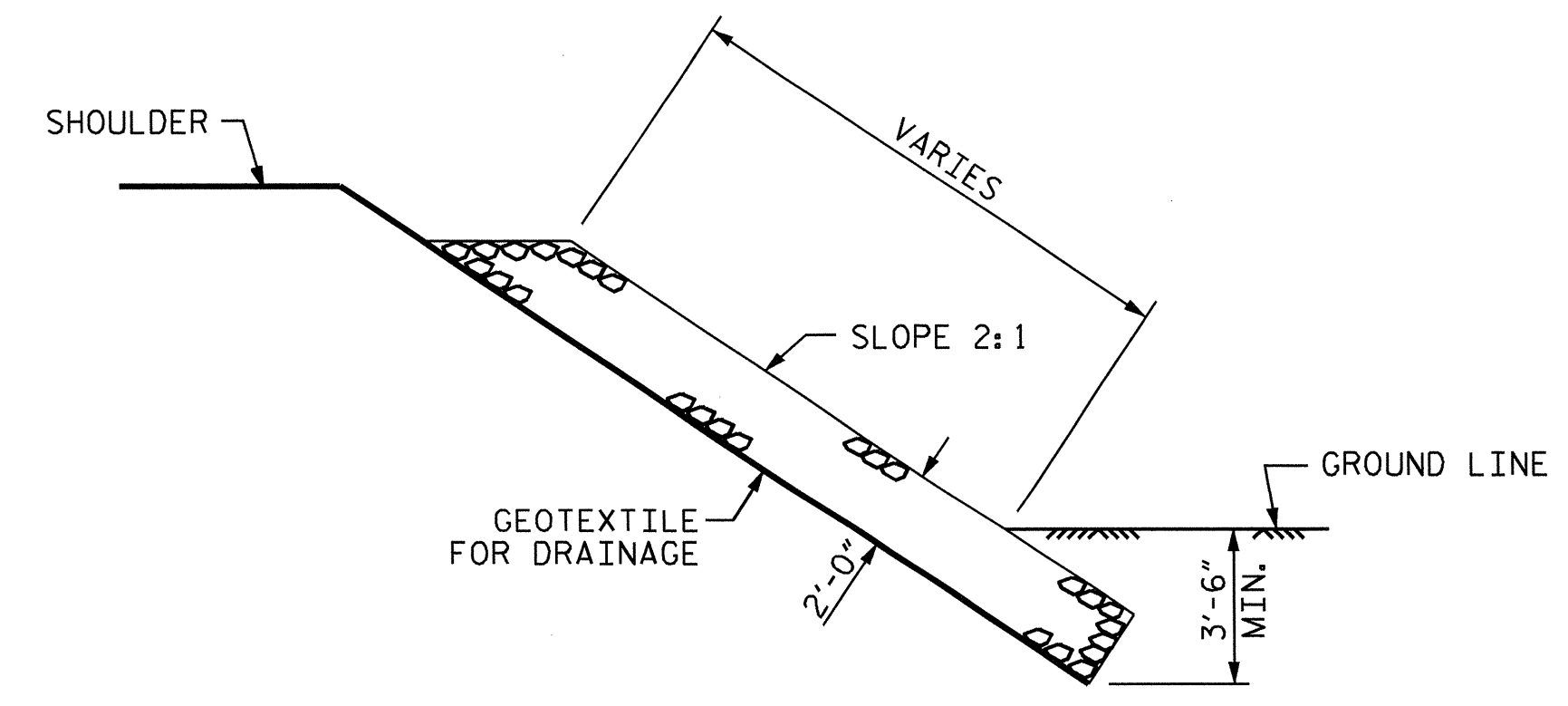
| ESTIMATED QUANTITIES          |                     |                            |
|-------------------------------|---------------------|----------------------------|
| BRIDGE @<br>STA. 20+03.00 -L- | RIP RAP<br>CLASS II | GEOTEXTILE<br>FOR DRAINAGE |
|                               | TONS                | SQUARE YARDS               |
| END BENT 1                    | 155                 | 170                        |
| END BENT 2                    | 160                 | 175                        |
| TOTAL                         | 315                 | 345                        |



PLAN

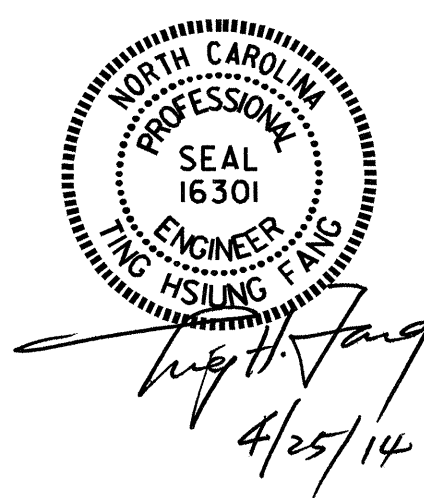


SECTION C-C  
BERM RIP RAPPED



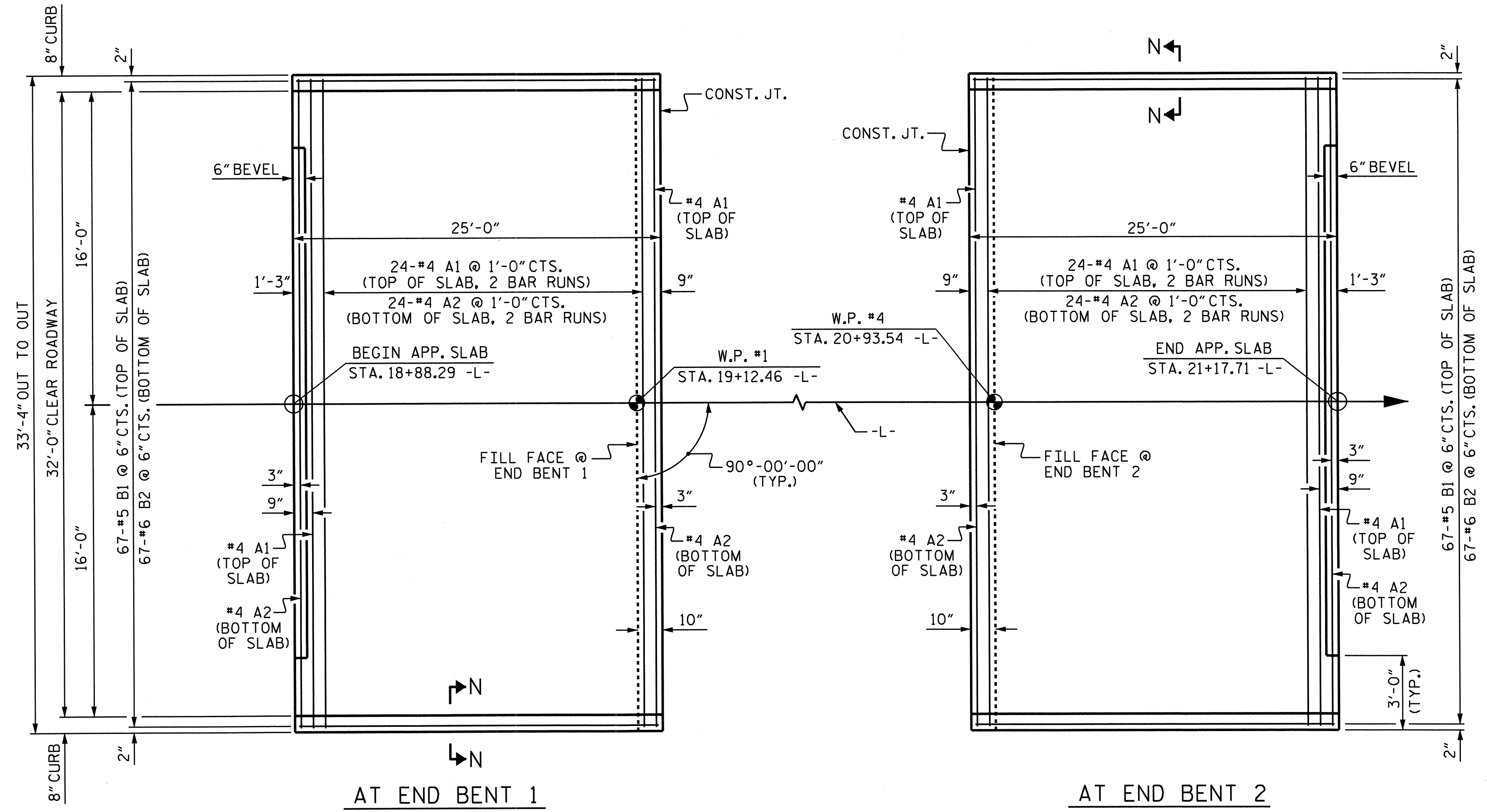
SECTION C-C

PROJECT NO. B-4639  
SCOTLAND COUNTY  
 STATION: 20+03.00 -L-



|  |     |       |     |     |       |                    |  |
|--|-----|-------|-----|-----|-------|--------------------|--|
| STATE OF NORTH CAROLINA<br>DEPARTMENT OF TRANSPORTATION<br>RALEIGH |     |       |     |     |       | RIP RAP DETAILS    |  |
| REVISIONS  |     |       |     |     |       |                    |  |
| NO.  | BY: | DATE: | NO. | BY: | DATE: | SHEET NO.<br>S-22  |  |
| 1  |     |       | 3   |     |       | TOTAL SHEETS<br>23 |  |
| 2  |     |       | 4   |     |       |                    |  |

ASSEMBLED BY : T. KIRSCHBAUM DATE : 6-25-13  
 CHECKED BY : S. WANCE DATE : 2-2014  
 DRAWN BY : REK 1/84 REV. 5/1/06R TLA/GM  
 CHECKED BY : RDU 1/84 REV. 10/1/11 MAA/GM  
 REV. 12/21/11 MAA/GM

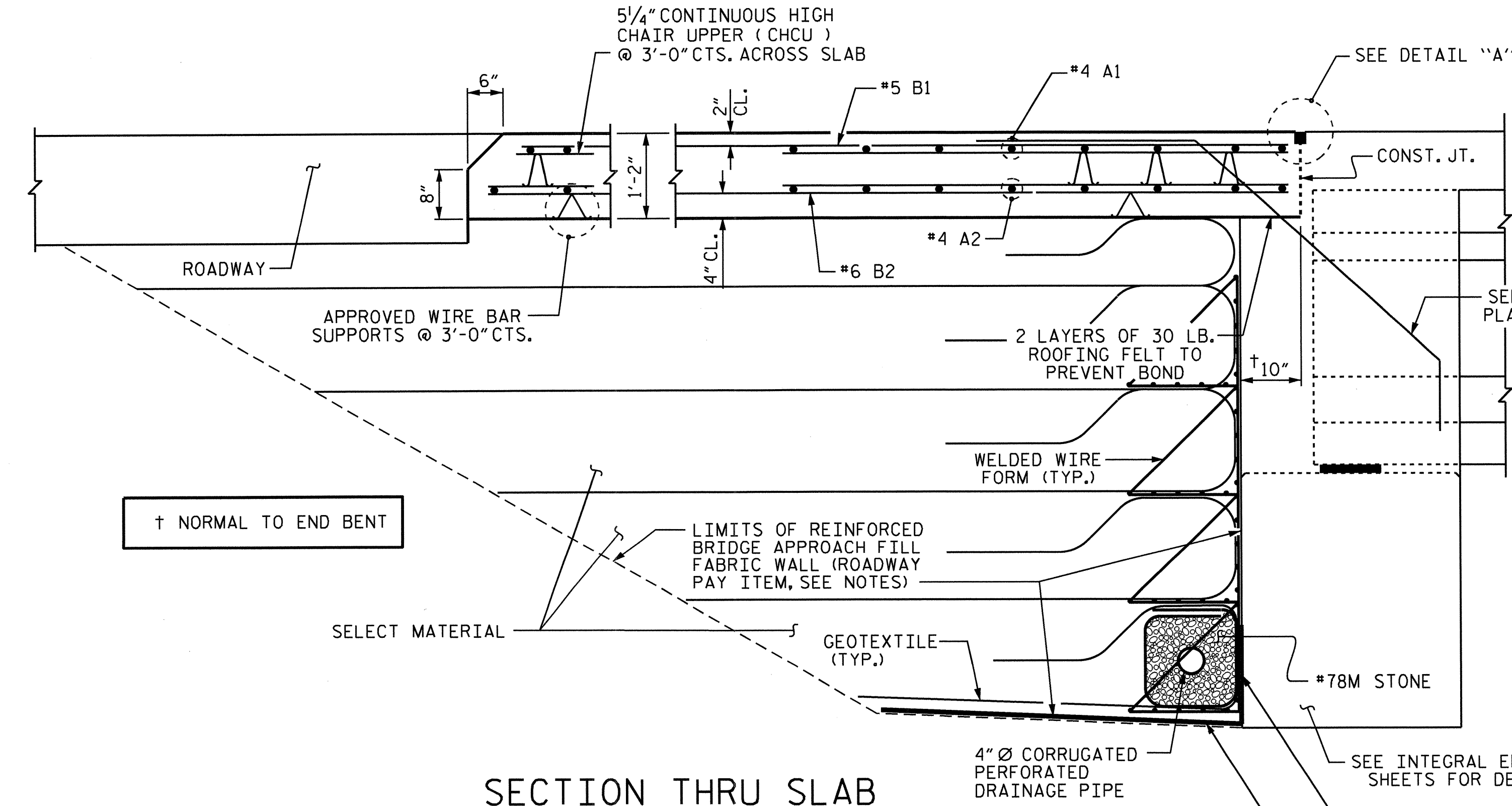


AT END BENT 1

AT END BENT 2

**PLAN**

DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



SECTION THRU SLAB

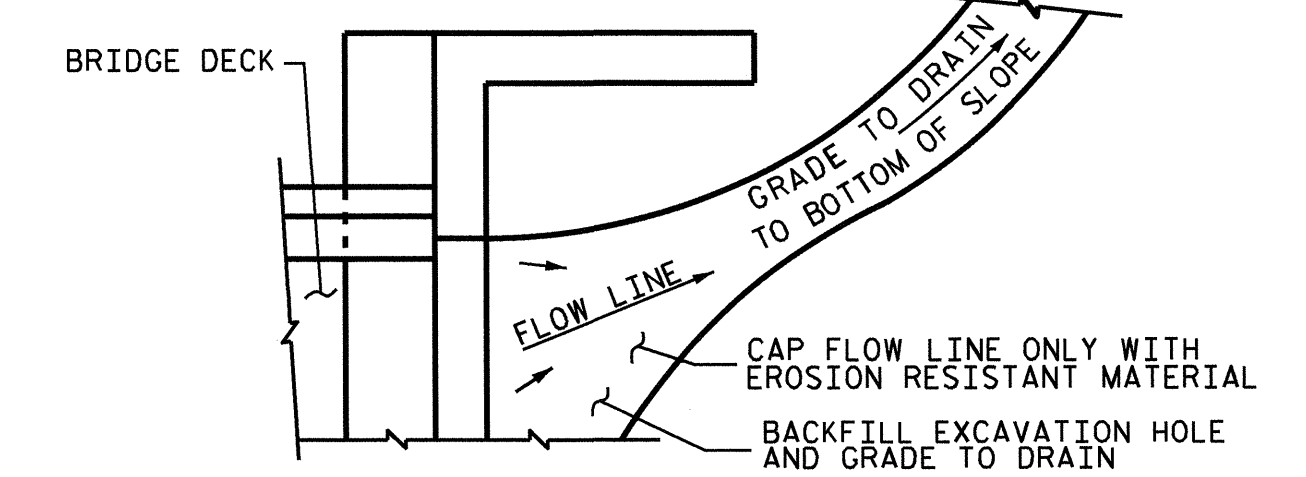
**NOTES**

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

FOR REINFORCED BRIDGE APPROACH FILL FABRIC WALL INCLUDING GEOTEXTILE, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.

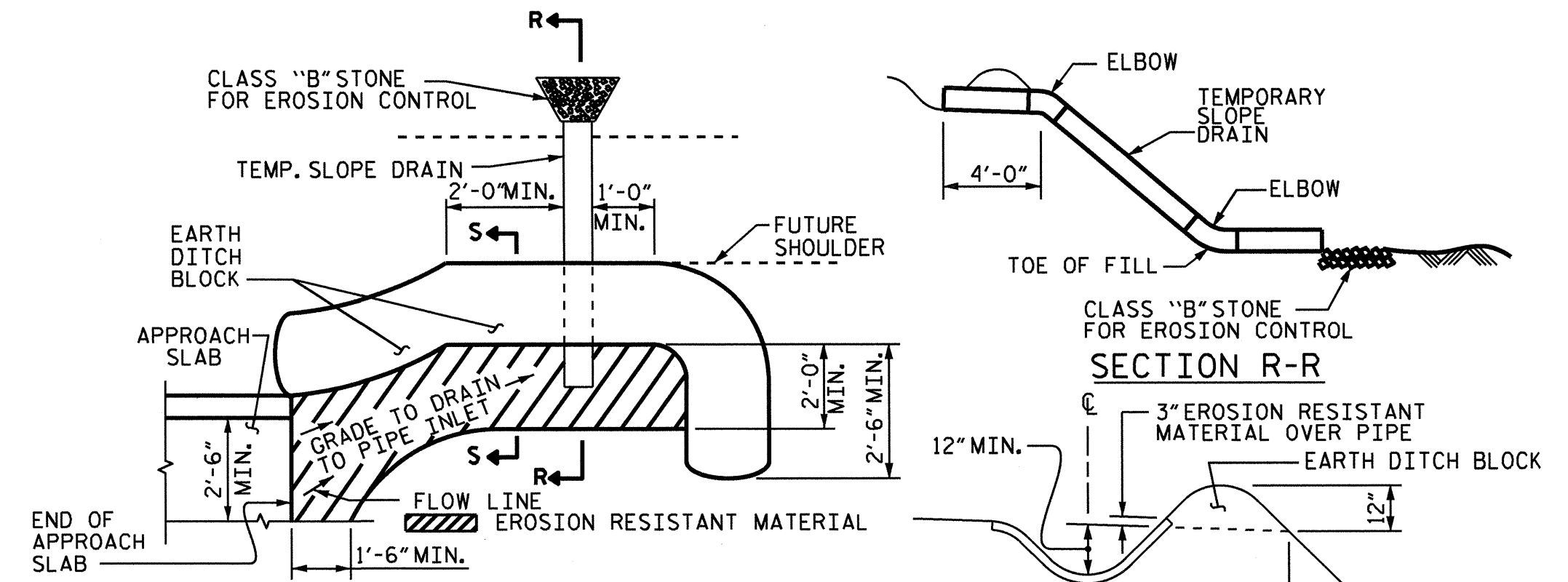
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

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



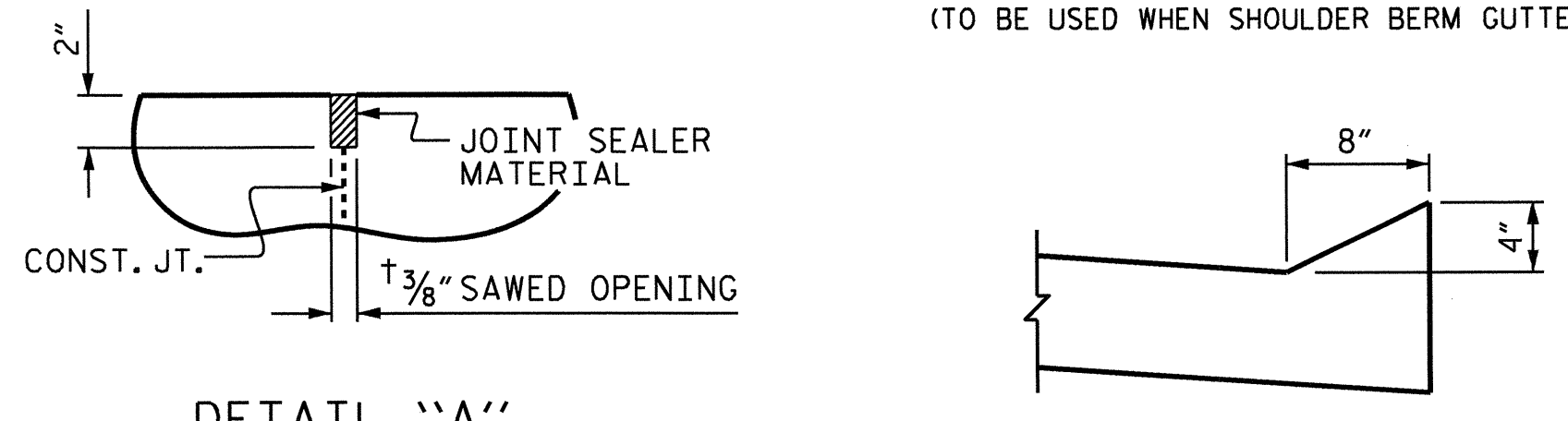
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

**TEMPORARY DRAINAGE DETAIL**



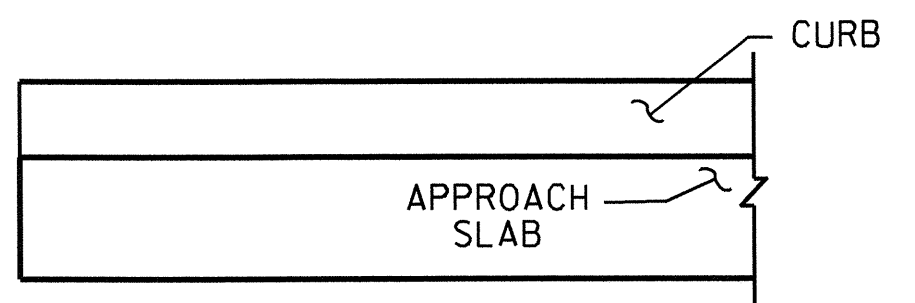
NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

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



DETAIL "A"

SECTION N-N

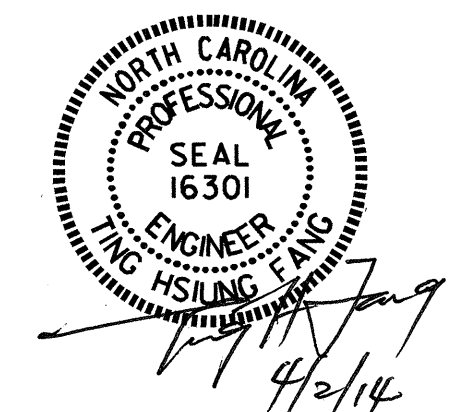


END OF CURB WITH SHOULDER BERM GUTTER

| BILL OF MATERIAL                 |     |      |      |        |        |      |
|----------------------------------|-----|------|------|--------|--------|------|
| FOR ONE APPROACH SLAB (2 REQ'D)  |     |      |      |        |        |      |
| BAR                              | NO. | SIZE | TYPE | LENGTH | WEIGHT |      |
| * A1                             | 52  | #4   | STR  | 17'-6" | 608    |      |
| A2                               | 52  | #4   | STR  | 17'-5" | 605    |      |
| * B1                             | 67  | #5   | STR  | 24'-2" | 1689   |      |
| B2                               | 67  | #6   | STR  | 24'-8" | 2482   |      |
| REINFORCING STEEL                |     |      |      |        | 3,087  | LBS. |
| * EPOXY COATED REINFORCING STEEL |     |      |      |        | 2,297  | LBS. |
| CLASS AA CONCRETE                |     |      |      |        | 36.1   | C.Y. |

ASSEMBLED BY : T. KIRSCHBAUM DATE : 6-26-13  
 CHECKED BY : S. WANCE DATE : 2-2014  
 DRAWN BY : TLA 10/05  
 CHECKED BY : GM 5/06

ADDED 5/1/06RR KMM/GM  
 REV. 10/1/11 MAA/GM  
 REV. 12/21/11 MAA/GM



PROJECT NO. B-4639  
 SCOTLAND COUNTY  
 STATION: 20+03.00 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 BRIDGE APPROACH SLAB  
 FOR  
 INTEGRAL ABUTMENT

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



## STANDARD NOTES

### DESIGN DATA:

|   |       |                         |
|---|-------|-------------------------|
| SPECIFICATIONS                          | ----- | A.A.S.H.T.O. (CURRENT)  |
| LIVE LOAD                               | ----- | SEE PLANS               |
| IMPACT ALLOWANCE                        | ----- | SEE A.A.S.H.T.O.        |
| STRESS IN EXTREME FIBER OF              |       |                         |
| STRUCTURAL STEEL - AASHTO M270 GRADE 36 | -     | 20,000 LBS. PER SQ. IN. |
| - AASHTO M270 GRADE 50W                 | -     | 27,000 LBS. PER SQ. IN. |
| - AASHTO M270 GRADE 50                  | -     | 27,000 LBS. PER SQ. IN. |
| REINFORCING STEEL IN TENSION            |       |                         |
| GRADE 60                                | --    | 24,000 LBS. PER SQ. IN. |
| CONCRETE IN COMPRESSION                 | ----- | 1,200 LBS. PER SQ. IN.  |
| CONCRETE IN SHEAR                       | ----- | SEE A.A.S.H.T.O.        |
| STRUCTURAL TIMBER - TREATED OR          |       |                         |
| UNTREATED - EXTREME FIBER STRESS        | ----- | 1,800 LBS. PER SQ. IN.  |
| COMPRESSION PERPENDICULAR TO GRAIN      |       |                         |
| OF TIMBER                               | ----- | 375 LBS. PER SQ. IN.    |
| EQUIVALENT FLUID PRESSURE OF EARTH      | ----- | 30 LBS. PER CU. FT.     |
|   |       | (MINIMUM)               |

### MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

### CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

### CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

### DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

### ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE. ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER. DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

### REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

### STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

### HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

### SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990