

PROJECT NO. B-4468  
CLEVELAND COUNTY  
 STATION: 16+97.00-L-

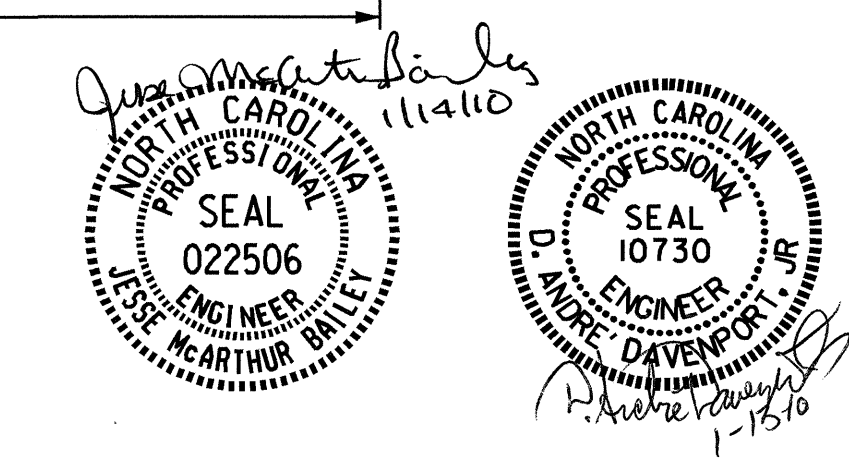
SHEET 1 OF 3 REPLACES BRIDGE NO. 144

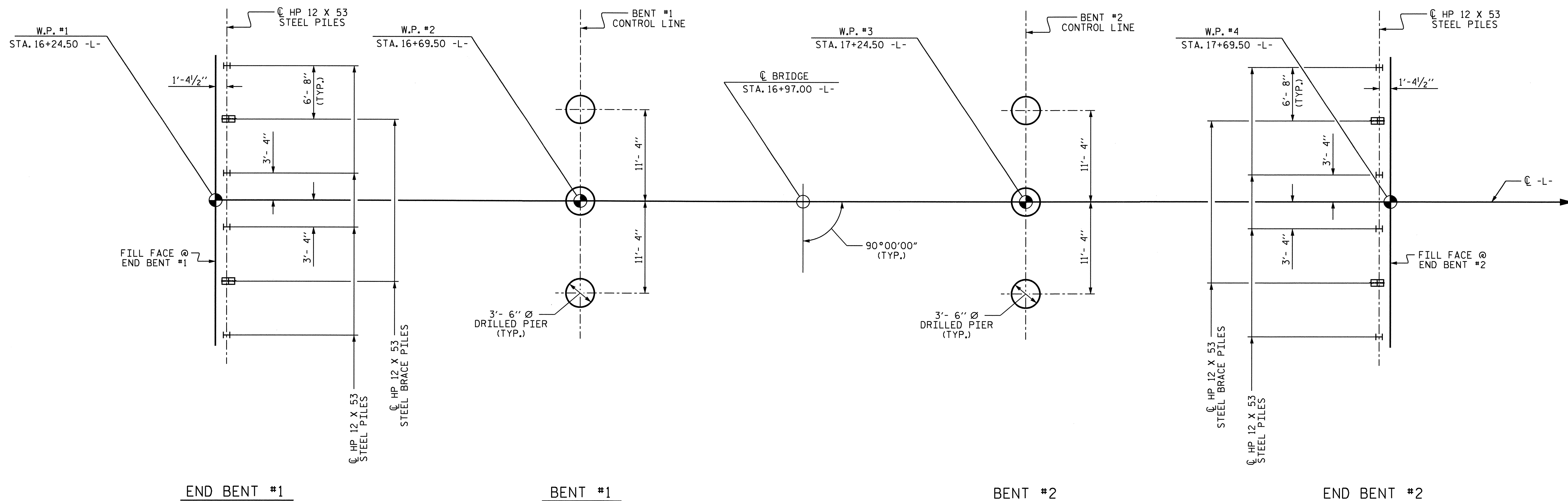
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE OVER SANDY  
 RUN CREEK ON SR 1327  
 BETWEEN MOORESBORO  
 AND POLKVILLE

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

DRAWN BY : D. A. GLADDEN DATE : 8-17-09  
 CHECKED BY : D. A. DAVENPORT DATE : 8-25-09

11-JAN-2010 10:37  
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 dgladden





### FOUNDATION LAYOUT

#### NOTES

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

DRILLED PIERS AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 250 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 60 TSF.

DRILLED PIERS AT BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 250 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 60 TSF.

INSTALL DRILLED PIERS AT BENT NO.1 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 784 FT. (LEFT AND CENTER) AND 787 FT. (RIGHT) AND SATISFY THE REQUIRED TIP RESISTANCE.

INSTALL DRILLED PIERS AT BENT NO.2 THAT EXTEND TO AN ELEVATION NO HIGHER THAN 804 FT., AND SATISFY THE REQUIRED TIP RESISTANCE.

PERMANET STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO.1. DO NOT EXTEND CASING BELOW ELEVATION 809 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

ALL DIMENSIONS LOCATING PILES ARE TO PILE CENTERLINE.

BRACE PILES AT END BENTS ARE BATTERED 3:12.

PERMANET STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO.2. DO NOT EXTEND CASING BELOW ELEVATION 812.7 FT. WITHOUT PRIOR APPROVAL FROM THE ENGINEER.

SPT TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR SPT TESTING.

CSL TUBES ARE REQUIRED AND CSL TESTING MAY BE REQUIRED FOR DRILLED PIERS. THE ENGINEER WILL DETERMINE THE NEED FOR CSL TESTING. FOR CROSSHOLE SONIC LOGGING, SEE SPECIAL PROVISIONS.

FOR PILES SEE SPECIAL PROVISIONS.

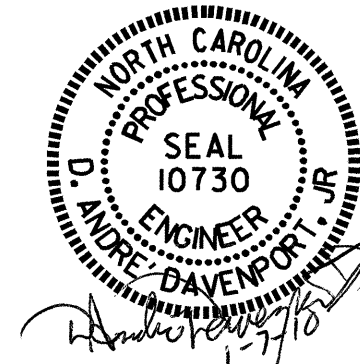
PILES AT END BENT NO.1 AND END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 60 TONS PER PILE. DRIVE PILES TO A REQUIRED DRIVING RESISTANCE OF 100 TONS PER PILE.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS ELEVATION 807 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.2 IS ELEVATION 811 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

PROJECT NO. B-4468  
CLEVELAND COUNTY  
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SHEET 2 OF 3



STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

#### GENERAL DRAWING

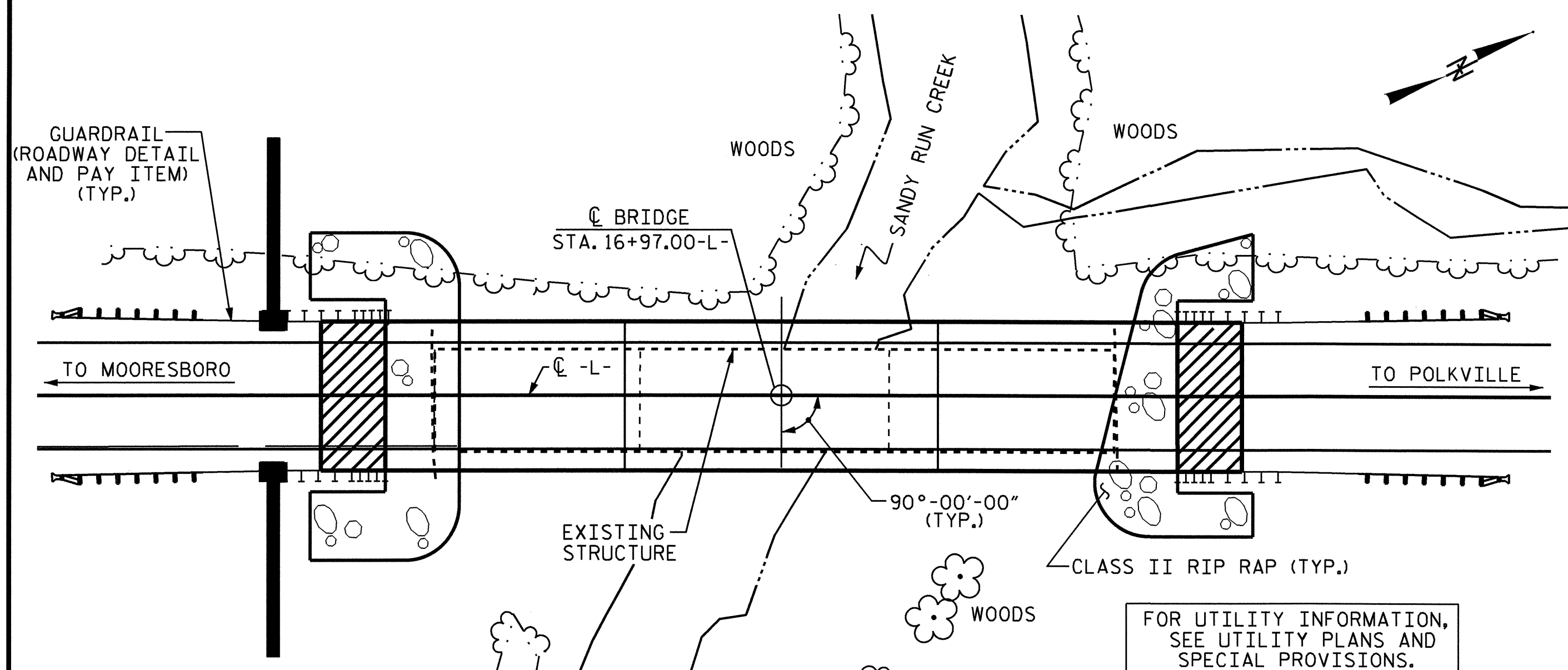
FOR BRIDGE OVER SANDY  
 RUN CREEK ON SR 1327  
 BETWEEN MOORESBORO  
 AND POLKVILLE

DRAWN BY : D. A. GLADDEN DATE : 8-17-09  
 CHECKED BY : D. A. DAVENPORT DATE : 8-25-09

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 ddavenport

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

BENCH MARK No. 2: STA. 17+94.78 -L- 94.00' LEFT EL. 826.210



**HYDRAULIC DATA**

|                             |   |              |
|-----------------------------|---|--------------|
| DESIGN DISCHARGE            | = | 2200 C.F.S.  |
| FREQUENCY OF DESIGN FLOOD   | = | 25 YRS.      |
| DESIGN HIGH WATER ELEVATION | = | 823.400      |
| DRAINAGE AREA               | = | 10.7 SQ. MI. |
| BASIC DISCHARGE (Q100)      | = | 3820 C.F.S.  |
| BASIC HIGH WATER ELEVATION  | = | 824.400      |

**OVERTOPPING FLOOD DATA**

|                                |   |              |
|--------------------------------|---|--------------|
| OVERTOPPING DISCHARGE          | = | 15000 C.F.S. |
| FREQUENCY OF OVERTOPPING FLOOD | = | 500 YRS.+    |
| OVERTOPPING FLOOD ELEVATION    | = | 832.980      |

**LOCATION SKETCH**

**NOTES**

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

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

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

THE EXISTING STRUCTURE CONSISTING OF 3 SIMPLE SPANS, 2 AT 40'-4", AND 1 AT 40'-0", TIMBER DECK ON I-BEAMS; CLEAR ROADWAY WIDTH OF 19.2 FT. ON TIMBER CAP AND PILES AT END BENTS AND TIMBER CAP AND POSTS ON CONCRETE SILLS AT INTERIOR BENTS AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT.

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 25 FT. EACH SIDE 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 SPECIFICATIONS.

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.

ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES", MAY, 2001.

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.

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 16+97.00 -L-".

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

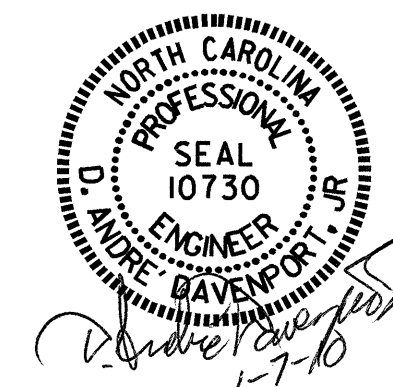
FOR PRESTRESSED CONCRETE MEMBERS, SEE SPECIAL PROVISIONS.

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

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR CURING CONCRETE, SEE SPECIAL PROVISIONS.



**TOTAL BILL OF MATERIAL**

|                | REMOVAL OF EXISTING STRUCTURE | 3'- 6" DIA. DRILLED PIERS IN SOIL | 3'- 6" DIA. DRILLED PIERS NOT IN SOIL | PERMANENT STEEL CASING FOR 3'- 6" Ø DRILLED PIERS | SID INSPECTION | SPT TESTING | CROSSHOLE SONIC LOGGING | UNCLASSIFIED STRUCTURE EXCAVATION | CLASS A CONCRETE | BRIDGE APPROACH SLABS | REINFORCING STEEL | SPIRAL COLUMN REINFORCING STEEL | HP 12 X 53 STEEL PILES | VERTICAL CONCRETE BARRIER RAIL | RIP RAP CLASS II (2'- 0" THICK) | FILTER FABRIC FOR DRAINAGE | ELASTOMERIC BEARINGS | 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS |          |
|----------------|-------------------------------|-----------------------------------|---------------------------------------|---|----------------|-------------|-------------------------|-----------------------------------|------------------|-----------------------|-------------------|---------------------------------|------------------------|--------------------------------|---------------------------------|----------------------------|----------------------|--|----------|
|                | LUMP SUM                      | LIN. FT.                          | LIN. FT.                              | LIN. FT.  | EACH           | EACH        | EACH                    | LUMP SUM                          | CU. YDS.         | LUMP SUM              | LBS.              | LBS.                            | NO.                    | LIN. FT.                       | LIN. FT.                        | TON                        | SQ. YDS.             | LUMP SUM                                       | LIN. FT. |
| SUPERSTRUCTURE |                               |                                   |                                       |   |                |             |                         |                                   |                  | LUMP SUM              |                   |                                 |                        |                                |                                 |                            |                      | LUMP SUM                                       | 1425.00  |
| END BENT NO. 1 |                               |                                   |                                       |   |                |             |                         |                                   | 12.6             |                       | 1862              |                                 | 6                      | 240                            |                                 | 140                        | 155                  |  |          |
| BENT NO. 1     |                               | 75.00                             | 9.00                                  | 11.89   |                |             |                         |                                   | 23.8             |                       | 11707             | 2860                            |                        |                                |                                 |                            |                      |  |          |
| BENT NO. 2     |                               | 6.75                              | 27.00                                 | 7.75  |                |             |                         |                                   | 22.2             |                       | 8419              | 1684                            |                        |                                |                                 |                            |                      |  |          |
| END BENT NO. 2 |                               |                                   |                                       |   |                |             |                         |                                   | 12.6             |                       | 1862              |                                 | 6                      | 90                             |                                 | 190                        | 210                  |  |          |
| TOTAL          | LUMP SUM                      | 81.75                             | 36.00                                 | 19.64   | 1              | 1           | 1                       | LUMP SUM                          | 71.2             | LUMP SUM              | 23850             | 4544                            | 12                     | 330                            | 285.50                          | 330                        | 365                  | LUMP SUM                                       | 1425.00  |

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SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**GENERAL DRAWING**  
 FOR BRIDGE OVER SANDY  
 RUN CREEK ON SR 1327  
 BETWEEN MOORESBORO  
 AND POLKVILLE

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

DRAWN BY : D. A. GLADDEN DATE : 8-17-09  
 CHECKED BY : D. A. DAVENPORT DATE : 8-25-09

LOAD FACTORS:

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

|         |      |       |
|---------|------|-------|
|         | YEAR | ADTT  |
| CURRENT | 2010 | 830   |
| FUTURE  | 2030 | 1,200 |

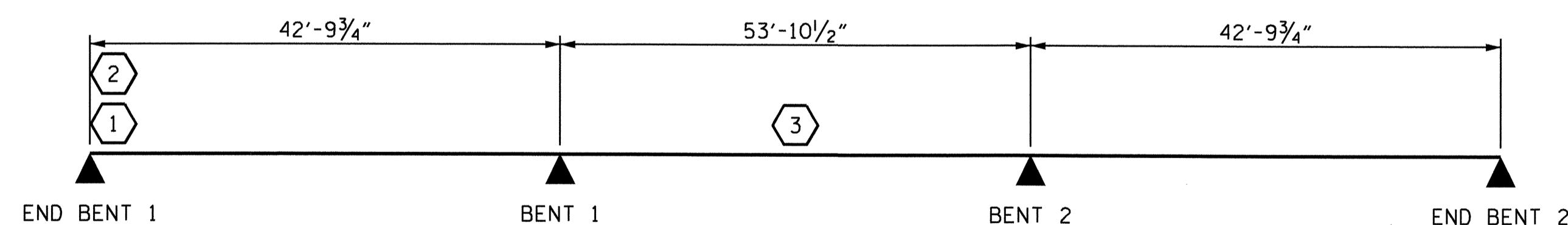
NOTES:

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.

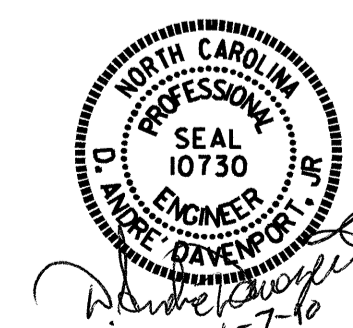
|                               |                            |
|-------------------------------|----------------------------|
| #                             | CONTROLLING LOAD RATING    |
| 1                             | DESIGN LOAD RATING (HL-93) |
| 2                             | DESIGN LOAD RATING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

| 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 |                 |                                     |  |
|--------------------|-----------------------------------|-------------------|---------------------------|-----------------------------|---------------|------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|---------------------------|---------------|------|-----------------|-------------------------------------|------------------------|---------------------------|---------------|------|----------------|-----------------|-------------------------------------|--|
|                    |                                   |                   |                           |                             |               | LIVE-LOAD FACTORS (%L) | MOMENT                    |               |      |                 |                                     | SHEAR                     |               |      |                 |                                     | LIVE-LOAD FACTORS (%L) | 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 (INVENTORY)                 | N/A               | 1                         | 1.01                        | --            | 1.75                   | 0.28                      | 1.42          | A    | ER              | 21.41                               | 0.54                      | 1.01          | A    | ER              | 2.14                                | 0.80                   | 0.28                      | 1.46          | A    | ER             | 21.41           |                                     |  |
|                    | HL-93 (OPERATING)                 | N/A               |                           | 1.30                        | --            | 1.35                   | 0.28                      | 1.84          | A    | ER              | 21.41                               | 0.54                      | 1.30          | A    | ER              | 2.14                                | N/A                    | ----                      | ----          | ---- | ER             | ----            |                                     |  |
|                    | HS-20 (INVENTORY)                 | 36.00             | 2                         | 1.15                        | 41.40         | 1.75                   | 0.28                      | 1.69          | A    | ER              | 21.41                               | 0.54                      | 1.15          | A    | ER              | 2.14                                | 0.80                   | 0.28                      | 1.42          | A    | ER             | 21.41           |                                     |  |
|                    | HS-20 (OPERATING)                 | 36.00             |                           | 1.53                        | 55.08         | 1.35                   | 0.28                      | 2.25          | A    | ER              | 21.41                               | 0.54                      | 1.53          | A    | ER              | 2.14                                | N/A                    | ----                      | ----          | ---- | ER             | ----            |                                     |  |
| LEGAL LOAD RATING  | SINGLE VEHICLE (SV)               | SNSH              | 13.50                     |                             | 2.76          | 37.29                  | 1.40                      | 0.28          | 4.20 | A               | ER                                  | 21.41                     | 0.54          | 3.24 | A               | ER                                  | 2.14                   | 0.80                      | 0.28          | 2.76 | A              | ER              | 21.41                               |  |
|                    |                                   | SNGARBS2          | 20.00                     |                             | 2.21          | 44.25                  | 1.40                      | 0.28          | 3.40 | B               | ER                                  | 26.94                     | 0.52          | 2.72 | B               | ER                                  | 2.69                   | 0.80                      | 0.28          | 2.21 | B              | ER              | 26.94                               |  |
|                    |                                   | SNAGRIS2          | 22.00                     |                             | 2.14          | 47.03                  | 1.40                      | 0.28          | 3.28 | B               | ER                                  | 26.94                     | 0.52          | 2.55 | B               | ER                                  | 2.69                   | 0.80                      | 0.28          | 2.14 | B              | ER              | 26.94                               |  |
|                    |                                   | SNCOTTS3          | 27.25                     |                             | 1.38          | 37.47                  | 1.40                      | 0.28          | 2.10 | A               | ER                                  | 21.41                     | 0.54          | 1.63 | A               | ER                                  | 2.14                   | 0.80                      | 0.28          | 1.38 | A              | ER              | 21.41                               |  |
|                    |                                   | SNAGGRS4          | 34.93                     |                             | 1.22          | 42.78                  | 1.40                      | 0.28          | 1.88 | B               | ER                                  | 26.94                     | 0.52          | 1.60 | B               | ER                                  | 2.69                   | 0.80                      | 0.28          | 1.22 | B              | ER              | 26.94                               |  |
|                    |                                   | SNS5A             | 35.55                     |                             | 1.19          | 42.22                  | 1.40                      | 0.28          | 1.83 | B               | ER                                  | 26.94                     | 0.52          | 1.63 | B               | ER                                  | 2.69                   | 0.80                      | 0.28          | 1.19 | B              | ER              | 26.94                               |  |
|                    |                                   | SNS6A             | 39.95                     |                             | 1.11          | 44.44                  | 1.40                      | 0.28          | 1.70 | B               | ER                                  | 26.94                     | 0.52          | 1.50 | B               | ER                                  | 2.69                   | 0.80                      | 0.28          | 1.11 | B              | ER              | 26.94                               |  |
|                    |                                   | SNS7B             | 42.00                     |                             | 1.05          | 44.10                  | 1.40                      | 0.28          | 1.62 | B               | ER                                  | 26.94                     | 0.52          | 1.49 | B               | ER                                  | 2.69                   | 0.80                      | 0.28          | 1.05 | B              | ER              | 26.94                               |  |
|                    | TRUCK TRACTOR SEMI-TRAILER (TTST) | TNAGRIT3          | 33.00                     |                             | 1.35          | 44.55                  | 1.40                      | 0.28          | 2.08 | B               | ER                                  | 26.94                     | 0.52          | 1.78 | B               | ER                                  | 2.69                   | 0.80                      | 0.28          | 1.35 | B              | ER              | 26.94                               |  |
|                    |                                   | TNT4A             | 33.08                     |                             | 1.36          | 45.06                  | 1.40                      | 0.28          | 2.10 | B               | ER                                  | 26.94                     | 0.52          | 1.72 | B               | ER                                  | 2.69                   | 0.80                      | 0.28          | 1.36 | B              | ER              | 26.94                               |  |
|                    |                                   | TNT6A             | 41.60                     |                             | 1.12          | 46.80                  | 1.40                      | 0.28          | 1.74 | B               | ER                                  | 26.94                     | 0.52          | 1.62 | B               | ER                                  | 2.69                   | 0.80                      | 0.28          | 1.12 | B              | ER              | 26.94                               |  |
|                    |                                   | TNT7A             | 42.00                     |                             | 1.15          | 48.30                  | 1.40                      | 0.28          | 1.76 | B               | ER                                  | 26.94                     | 0.52          | 1.54 | B               | ER                                  | 2.69                   | 0.80                      | 0.28          | 1.15 | B              | ER              | 26.94                               |  |
|                    |                                   | TNT7B             | 42.00                     |                             | 1.20          | 50.40                  | 1.40                      | 0.28          | 1.84 | B               | ER                                  | 26.94                     | 0.52          | 1.45 | B               | ER                                  | 2.69                   | 0.80                      | 0.28          | 1.20 | B              | ER              | 26.94                               |  |
|                    |                                   | TNAGRIT4          | 43.00                     |                             | 1.12          | 48.38                  | 1.40                      | 0.28          | 1.74 | B               | ER                                  | 26.94                     | 0.52          | 1.39 | B               | ER                                  | 2.69                   | 0.80                      | 0.28          | 1.12 | B              | ER              | 26.94                               |  |
|                    |                                   | TNAGT5A           | 45.00                     |                             | 1.06          | 47.81                  | 1.40                      | 0.28          | 1.63 | B               | ER                                  | 26.94                     | 0.52          | 1.41 | B               | ER                                  | 2.69                   | 0.80                      | 0.28          | 1.06 | B              | ER              | 26.94                               |  |
| TNAGT5B            | 45.00                             | 3                 | 1.04                      | 46.69                       | 1.40          | 0.28                   | 1.60                      | B             | ER   | 26.94           | 0.52                                | 1.32                      | B             | ER   | 2.69            | 0.80                                | 0.28                   | 1.04                      | B             | ER   | 26.94          |                 |                                     |  |



LRFR SUMMARY

PROJECT NO. B-4468  
 CLEVELAND COUNTY  
 STATION: 16+97.00 -L-

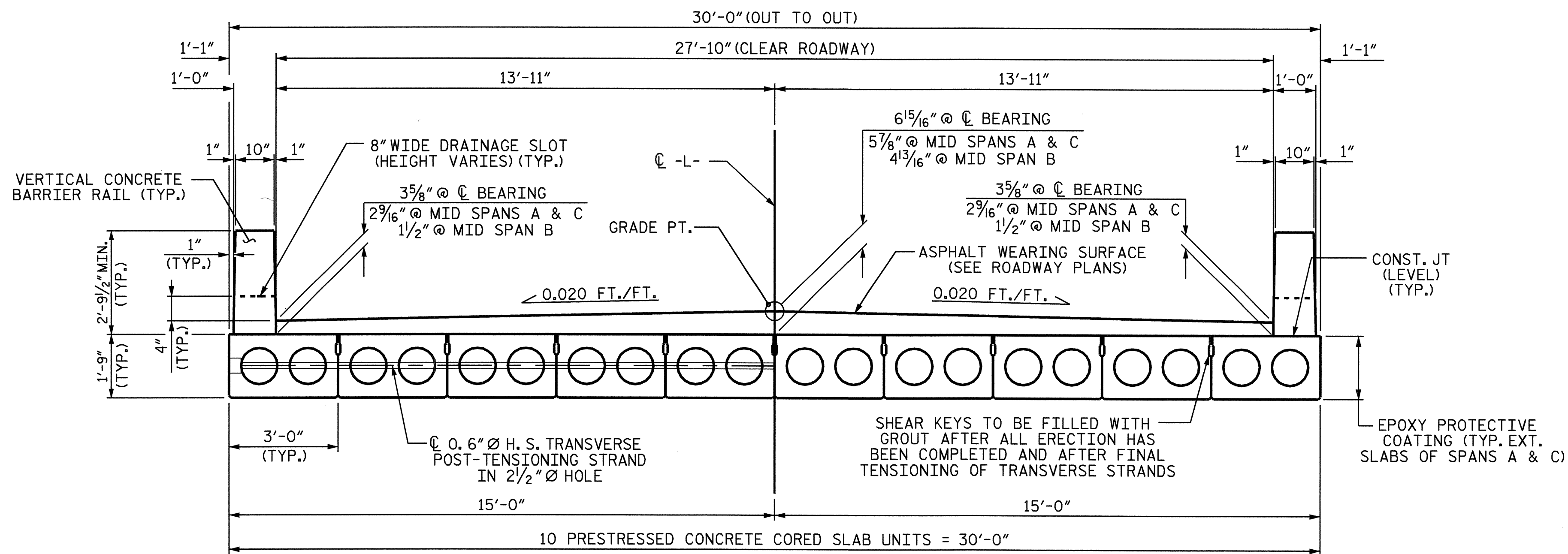


STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

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

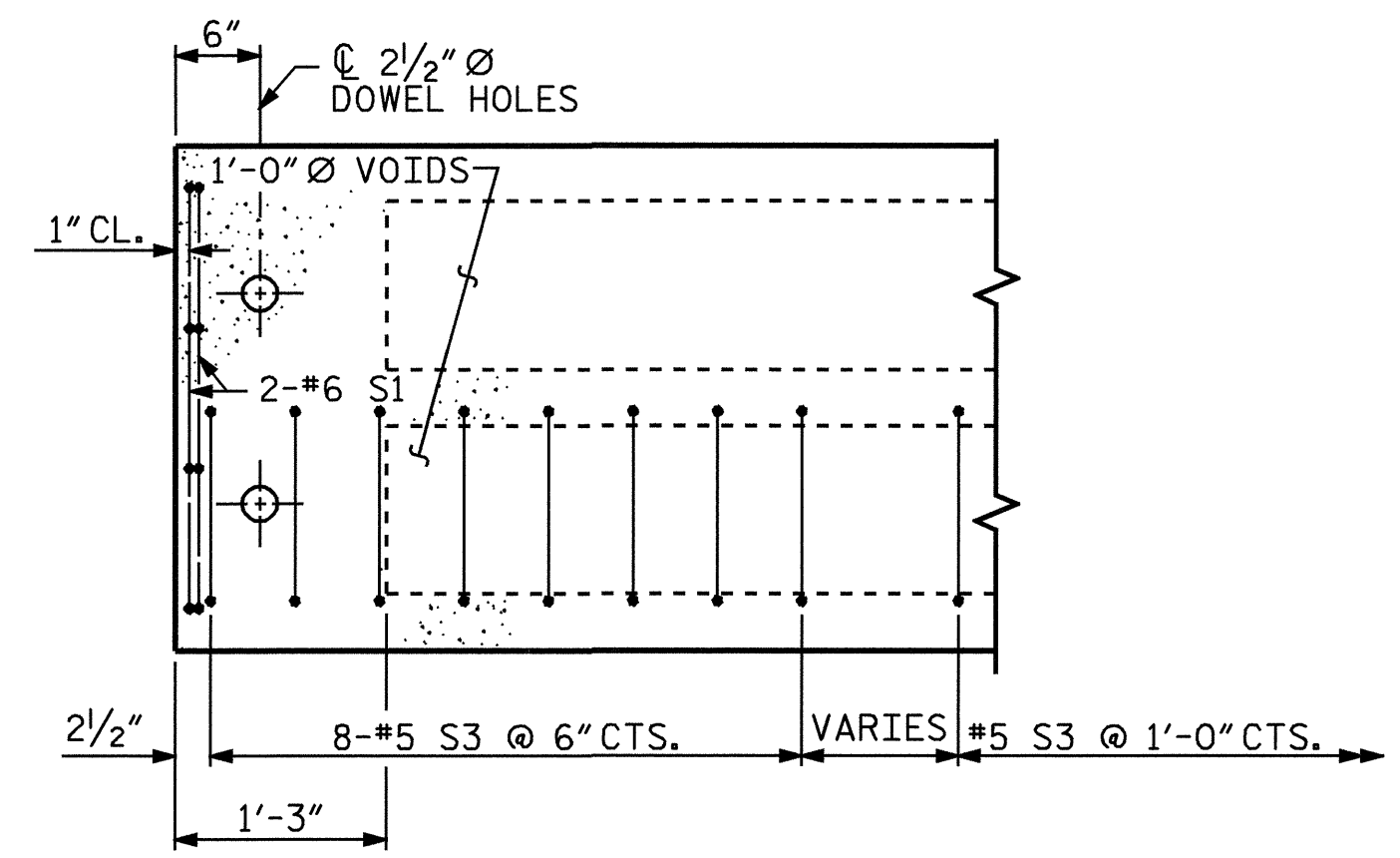
ASSEMBLED BY : M.H. ALI DATE : 08/14/09  
 CHECKED BY : D.A. DAVENPORT DATE : 10/09  
 DRAWN BY : MAA 1/08  
 CHECKED BY : GM/DI 2/08

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



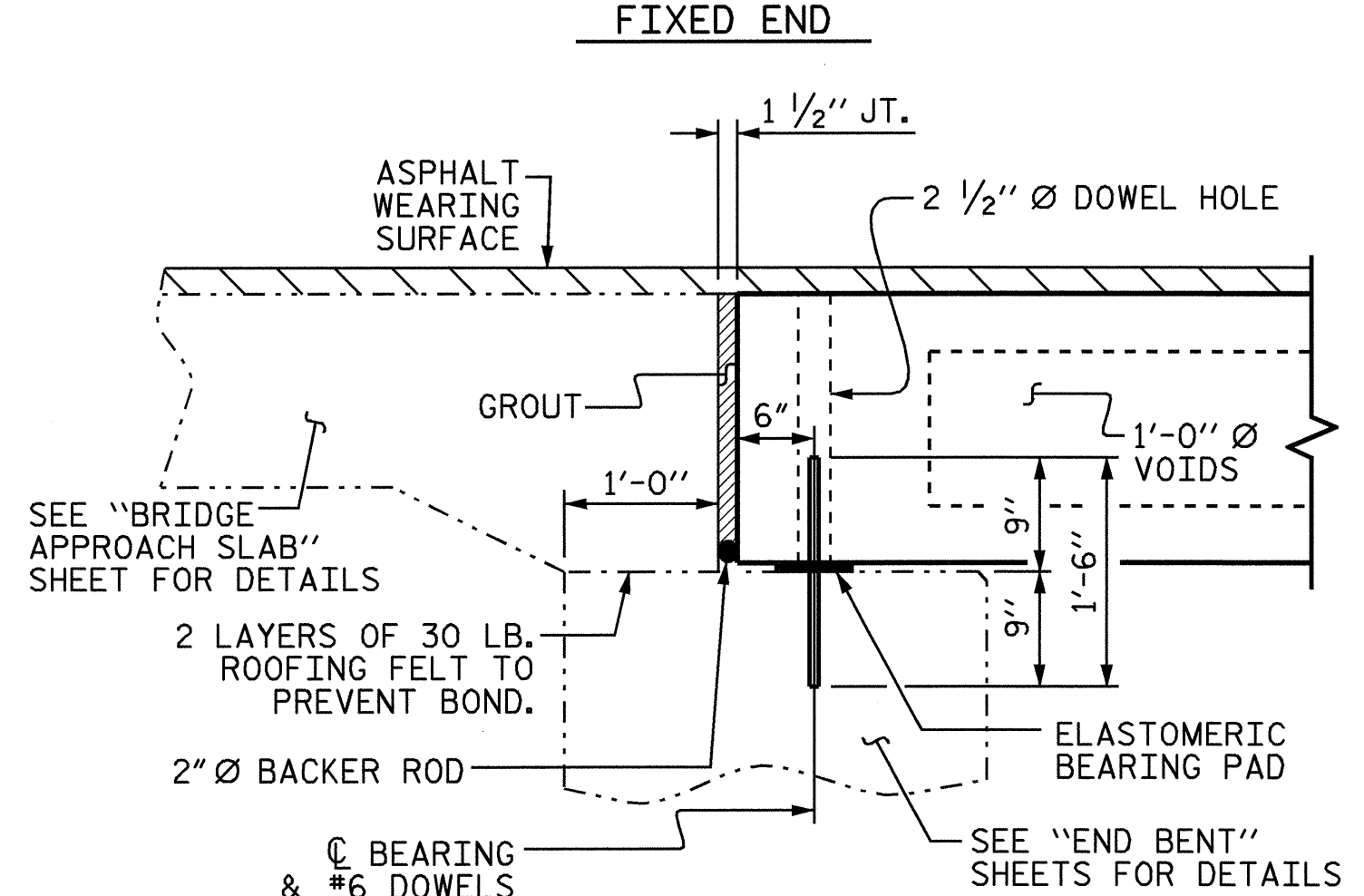
**TYPICAL SECTION**

THE MINIMUM HEIGHT OF THE VERTICAL CONCRETE BARRIER RAIL IS SHOWN. THE HEIGHT OF THE VERTICAL CONCRETE BARRIER RAIL VARIES WHILE THE TOP OF THE RAIL FOLLOWS THE PROFILE OF THE GUTTER LINE.

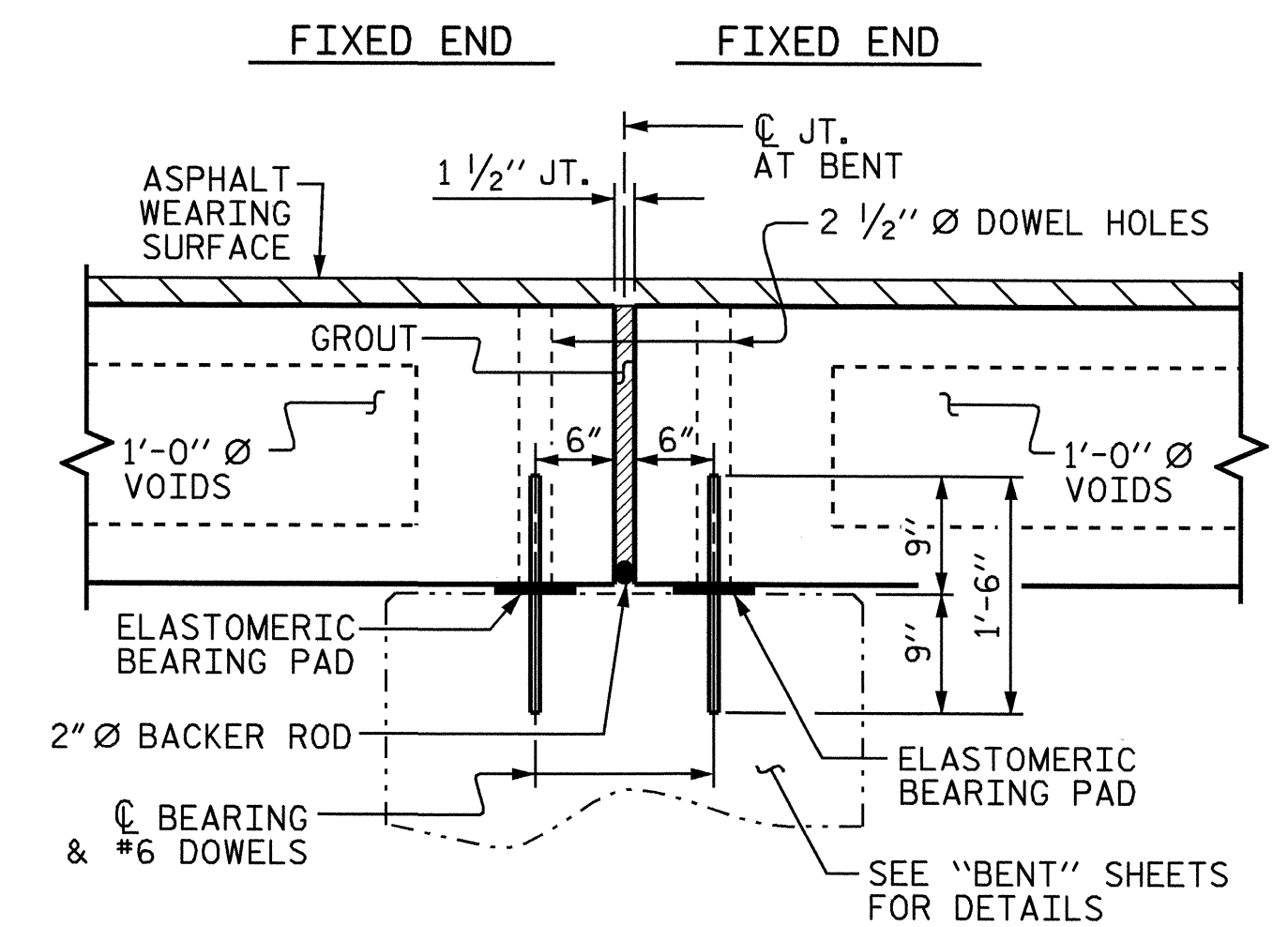


**PART PLAN-EXTERIOR SECTION**

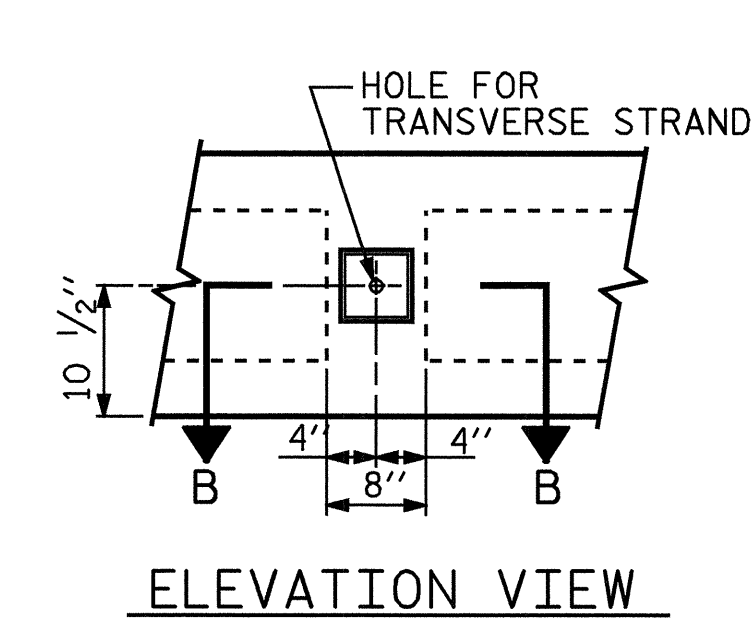
NOTE: EXTERIOR SECTION SHOWN-INTERIOR SECTION SIMILAR EXCEPT OMIT S3 BARS.



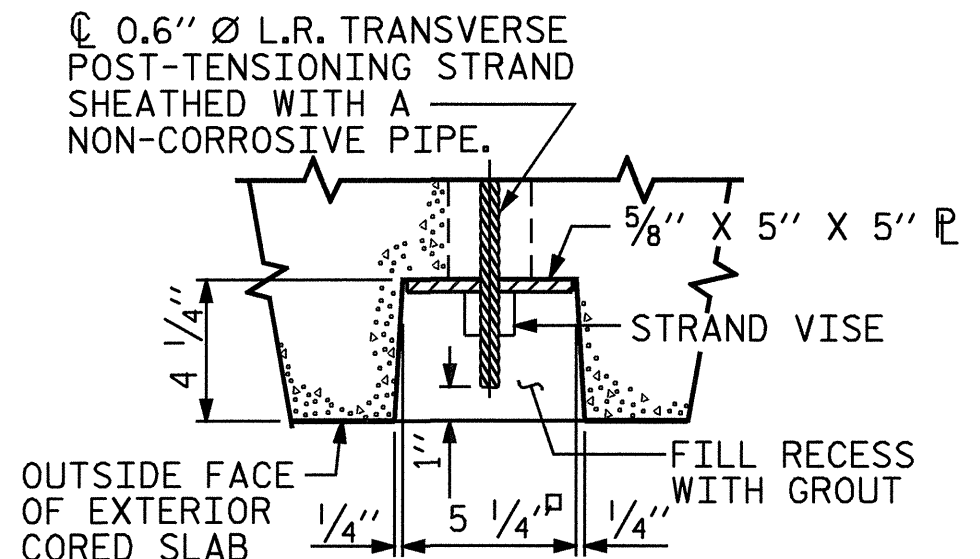
**SECTION AT END BENT**



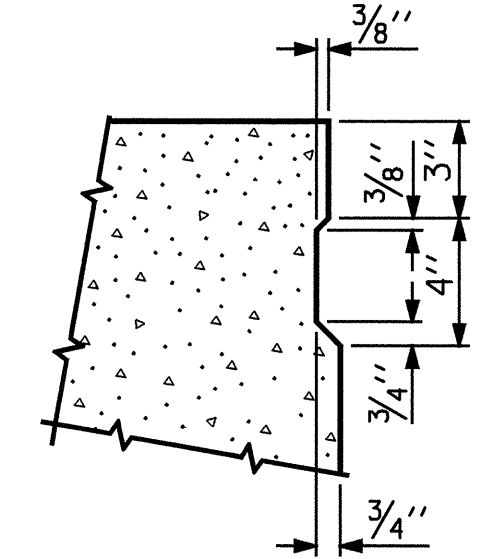
**SECTION AT BENT**



**ELEVATION VIEW**



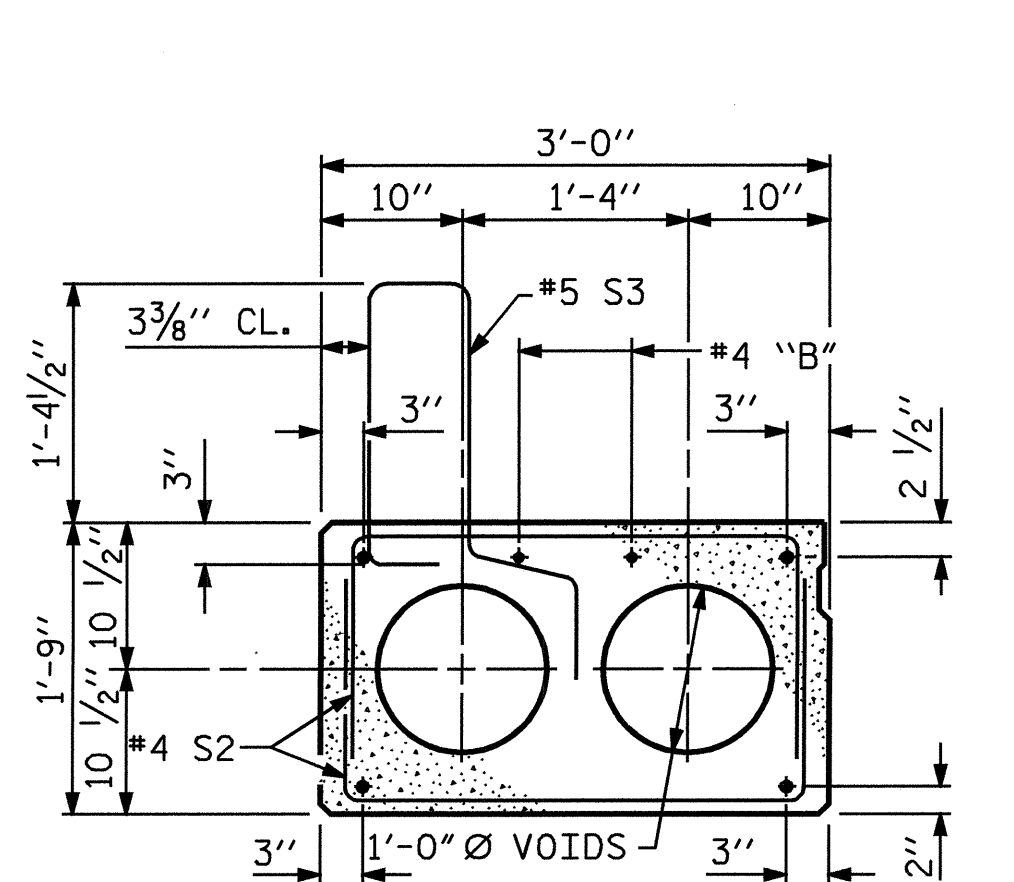
**SECTION B-B**



**SHEAR KEY DETAIL**

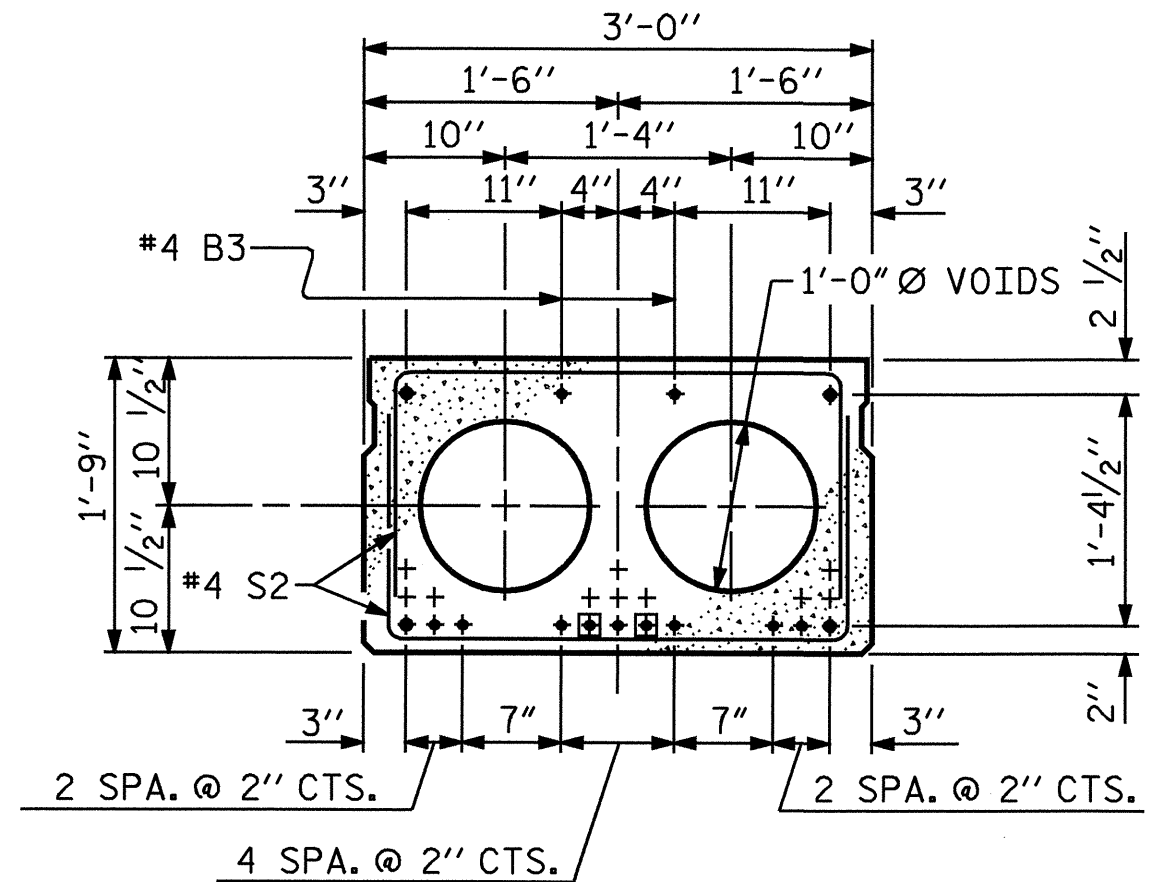
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

**GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS**



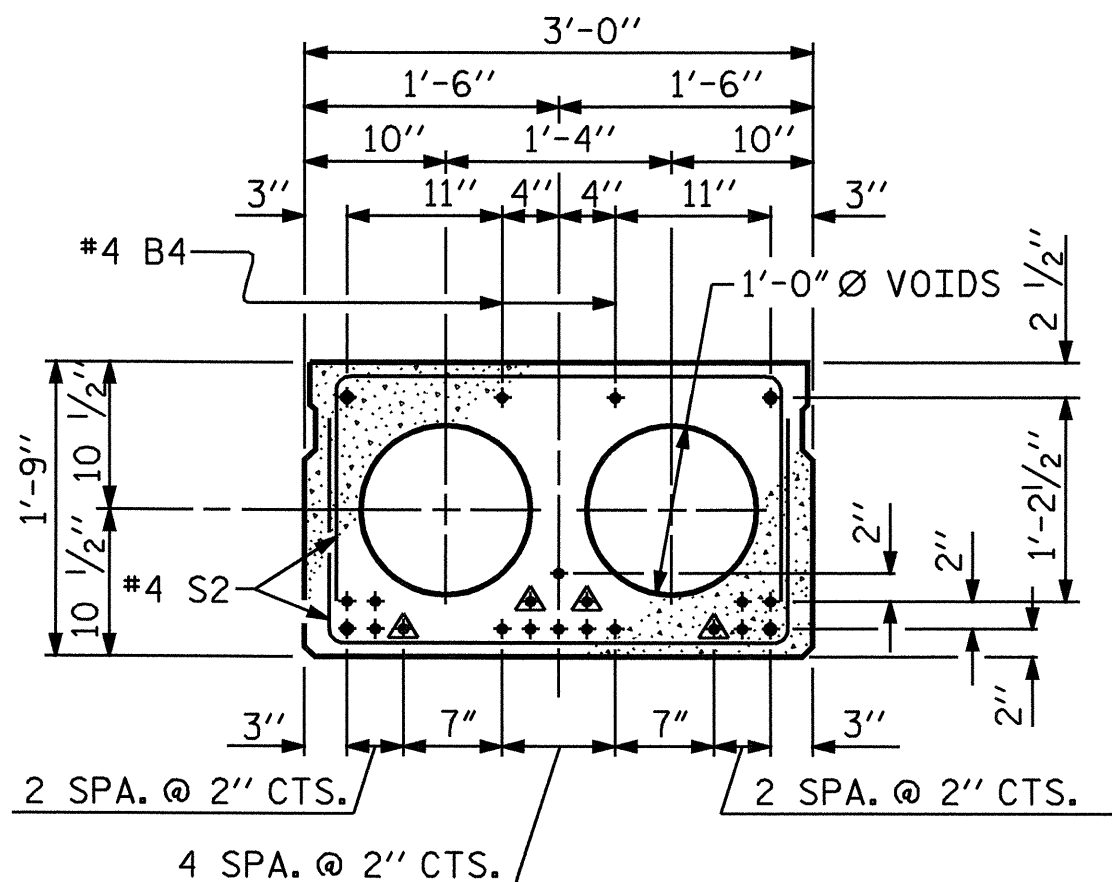
**EXTERIOR SLAB SECTION**

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



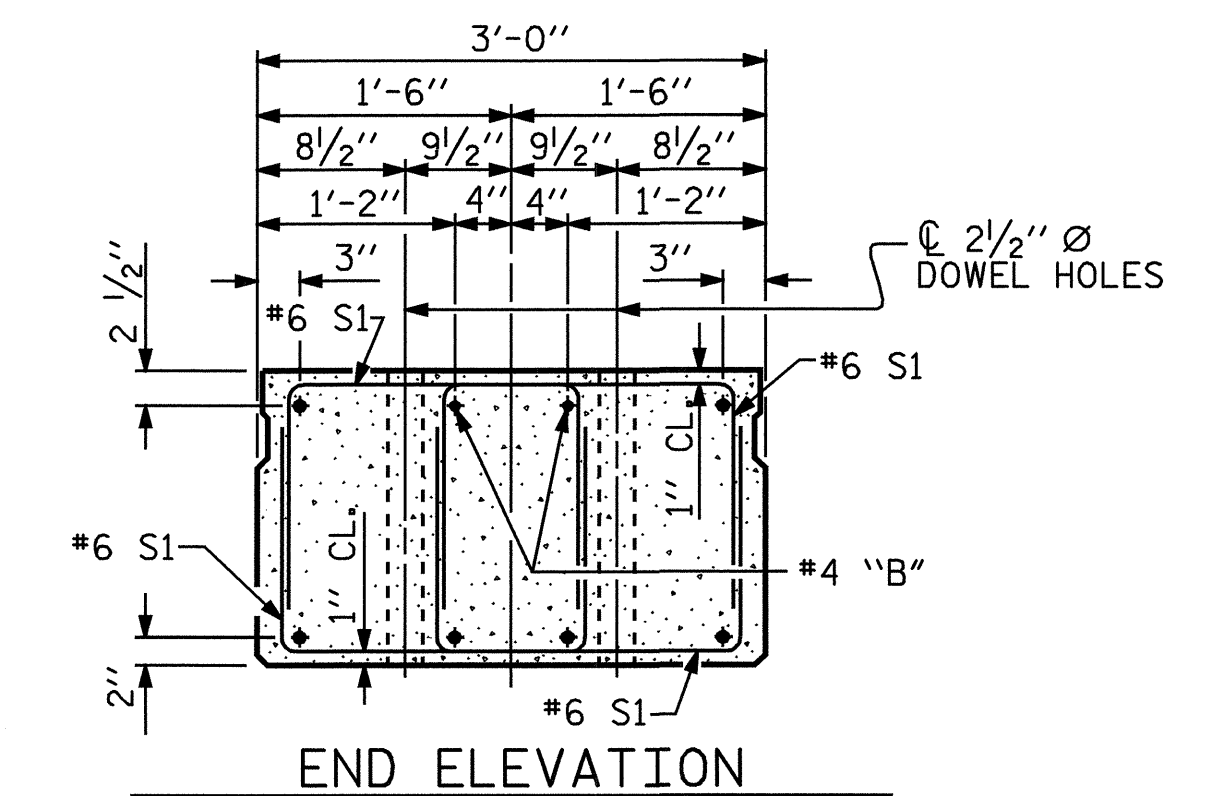
**INTERIOR SLAB SECTION  
13-0.6" Ø LOW RELAXATION STRAND LAYOUT**

SPAN A & C



**INTERIOR SLAB SECTION  
20-0.6" Ø LOW RELAXATION STRAND LAYOUT**

SPAN B



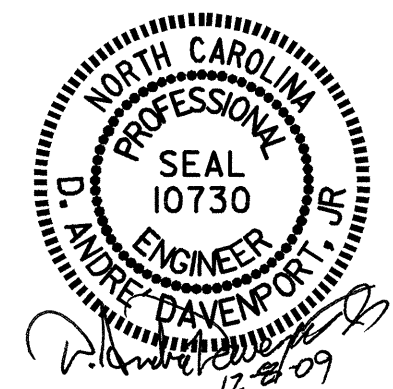
**END ELEVATION**

SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB SECTION SHOWN-EXTERIOR SLAB SECTION SIMILAR EXCEPT SHEAR KEY LOCATION.

|                |               |        |                        |
|----------------|---------------|--------|------------------------|
| ASSEMBLED BY : | M. G. SHAIKH  | DATE : | 12-31-08               |
| CHECKED BY :   | H. T. BARBOUR | DATE : | 01-08-09               |
| DRAWN BY :     | WJH           | 4/89   | REV. 10/17/00 RWW/LES  |
| CHECKED BY :   | FCJ           | 5/89   | REV. 7/10/01RR RWW/LES |
|                |               |        | REV. 5/1/06R TLA/GM    |

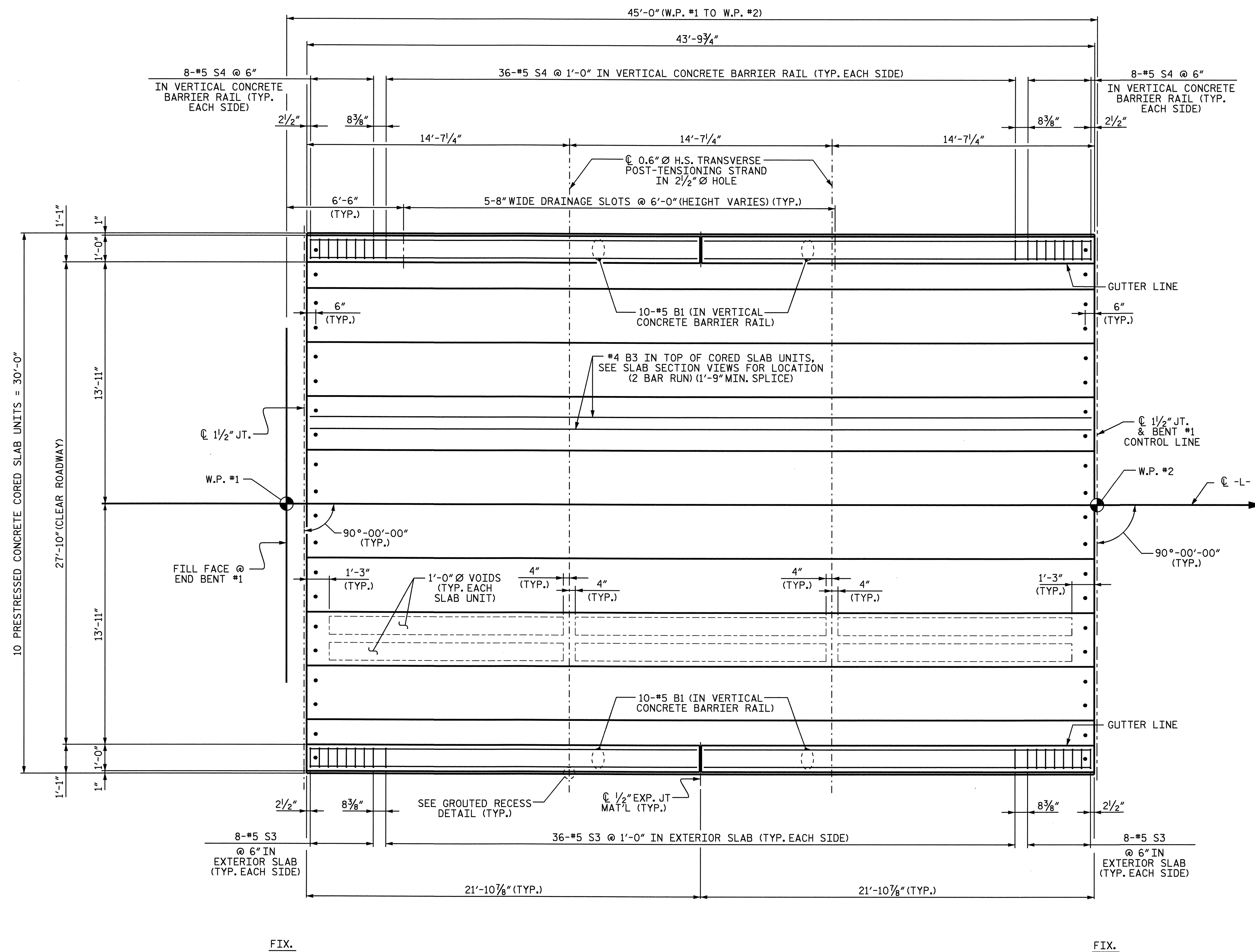
⊠ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-6" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7

⚠ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-6" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7



PROJECT NO. B-4468  
CLEVELAND COUNTY  
 STATION: 16+97.00 -L-  
 SHEET 1 OF 9

|  |     |       |     |     |                 |
|--|-----|-------|-----|-----|-----------------|
| STATE OF NORTH CAROLINA<br>DEPARTMENT OF TRANSPORTATION<br>RALEIGH |     |       |     |     |                 |
| <b>3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB UNIT</b>          |     |       |     |     |                 |
| REVISIONS  |     |       |     |     |                 |
| NO.  | BY: | DATE: | NO. | BY: | DATE:           |
| 1  |     |       | 3   |     |                 |
| 2  |     |       | 4   |     |                 |
| SHEET NO. S-5  |     |       |     |     | TOTAL SHEETS 26 |



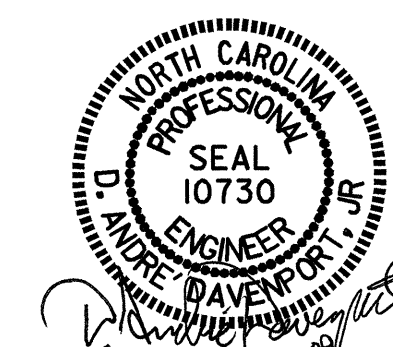
PLAN OF SPAN A

PROJECT NO. B-4468  
 CLEVELAND COUNTY  
 STATION: 16+97.00 -L-

SHEET 2 OF 9

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

3'-0" X 1'-9"  
 PRESTRESSED  
 CONCRETE CORED  
 SLAB UNIT  
 SPAN A



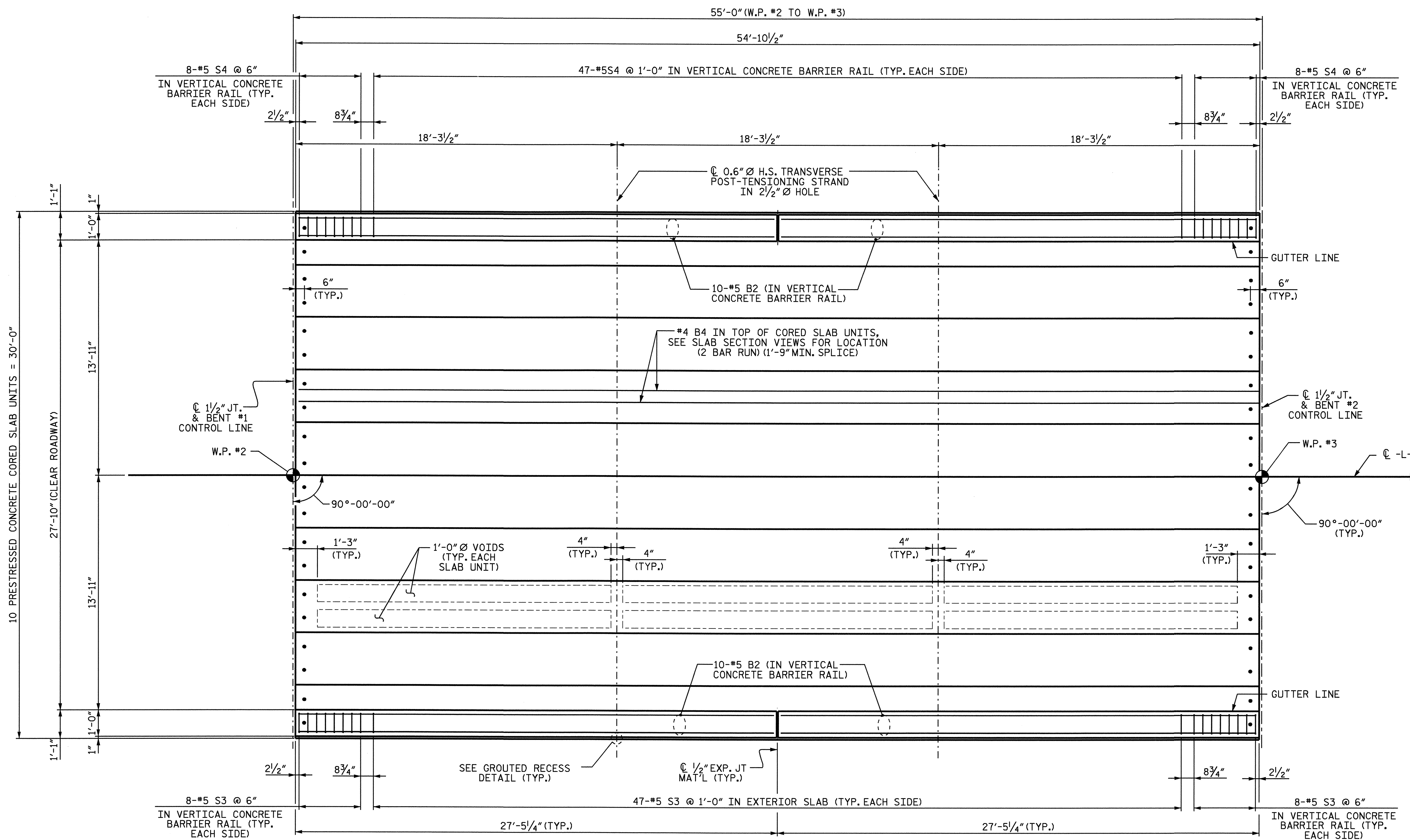
REVISIONS

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

| SHEET NO.    |
|--------------|
| S-6          |
| TOTAL SHEETS |
| 26           |

DRAWN BY : M. G. SHAIKH DATE : 12-31-08  
 CHECKED BY : H. T. BARBOUR DATE : 01-08-09

08-DEC-2009 09:10  
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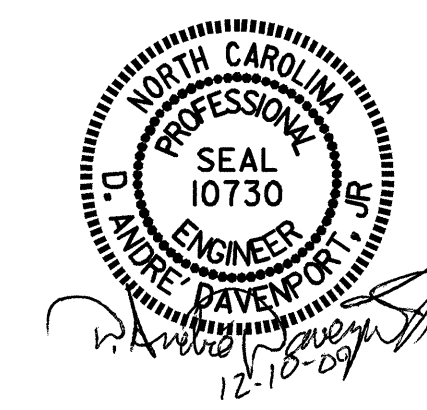
PLAN OF SPAN B

PROJECT NO. B-4468  
CLEVELAND COUNTY  
 STATION: 16+97.00 -L-

SHEET 3 OF 9

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

3'-0" X 1'-9"  
 PRESTRESSED  
 CONCRETE CORED  
 SLAB UNIT  
 SPAN B

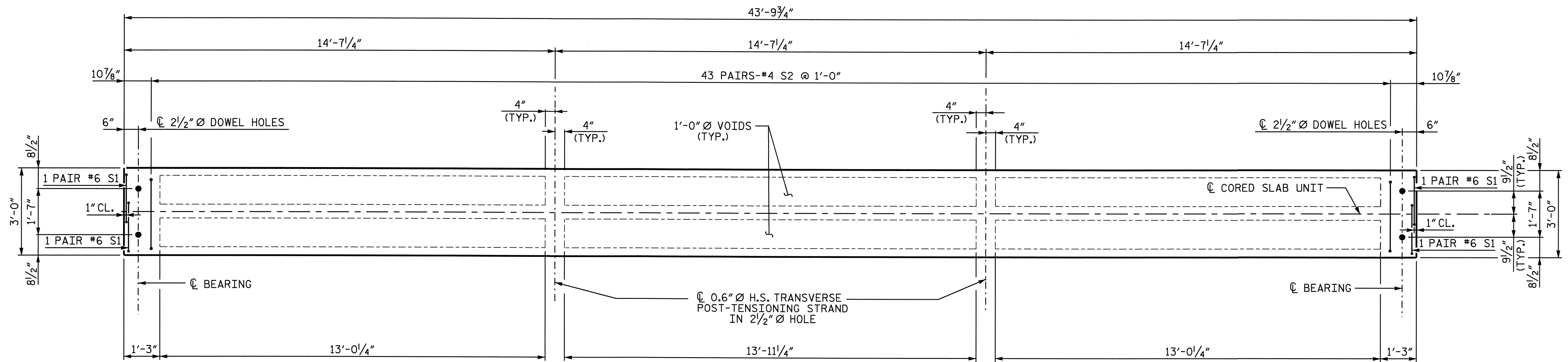


DRAWN BY : M. G. SHAIKH DATE : 01-02-09  
 CHECKED BY : H. T. BARBOUR DATE : 01-08-09

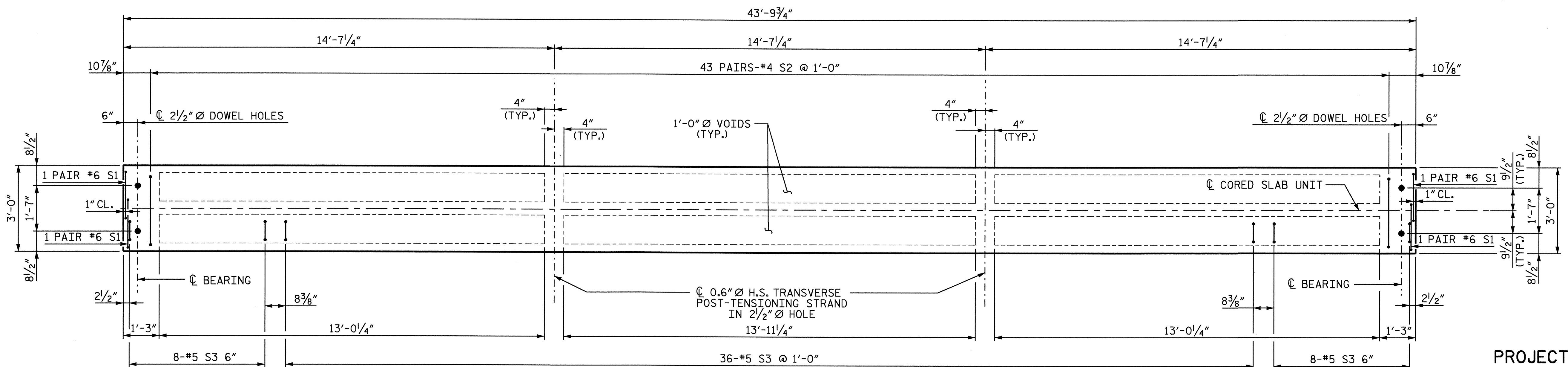
| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-7          |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 26           |







PLAN OF INTERIOR CORED SLAB UNIT (SPAN A)



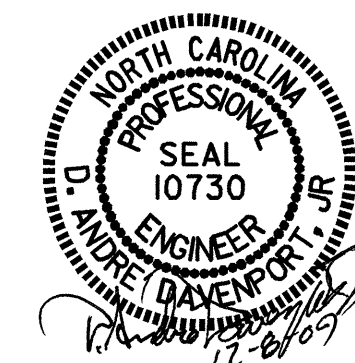
PLAN OF EXTERIOR CORED SLAB UNIT (SPAN A)

PROJECT NO. B-4468  
CLEVELAND COUNTY  
 STATION: 16+97.00 -L-

SHEET 5 OF 9

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

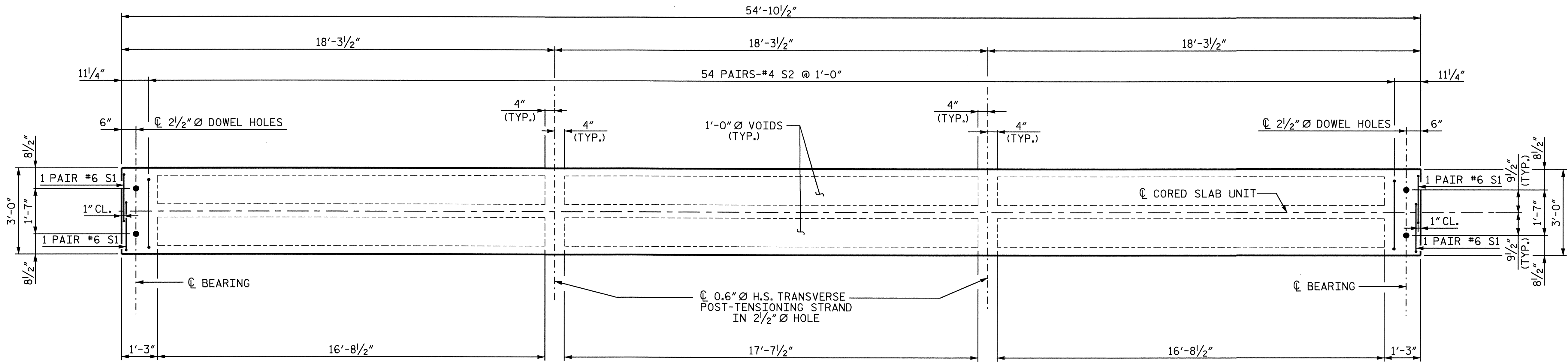
3'-0" X 1'-9"  
 PRESTRESSED  
 CONCRETE CORED  
 SLAB UNIT DETAILS  
 SPAN A



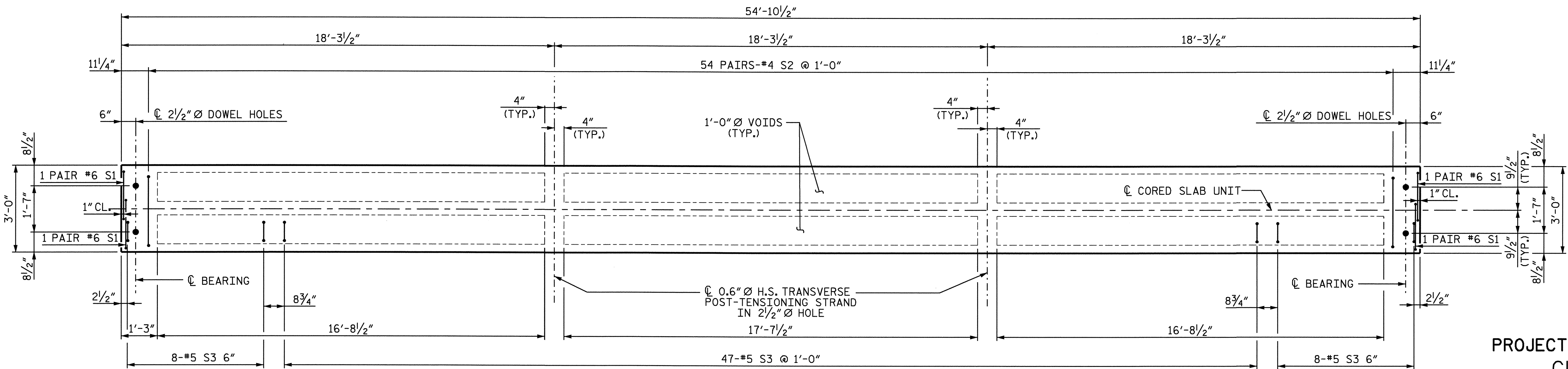
DRAWN BY : M. G. SHAIKH DATE : 12-31-08  
 CHECKED BY : H. T. BARBOUR DATE : 01-08-09

08-DEC-2009 08:09  
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| REVISIONS |     |       |     |     |       | SHEET NO.       |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-9             |
| 1         |     |       | 3   |     |       | TOTAL SHEETS 26 |
| 2         |     |       | 4   |     |       |                 |



PLAN OF INTERIOR CORED SLAB UNIT (SPAN B)



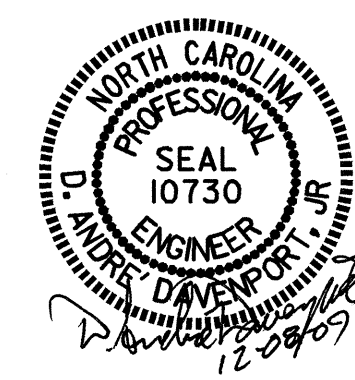
PLAN OF EXTERIOR CORED SLAB UNIT (SPAN B)

PROJECT NO. B-4468  
CLEVELAND COUNTY  
 STATION: 16+97.00 -L-

SHEET 6 OF 9

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

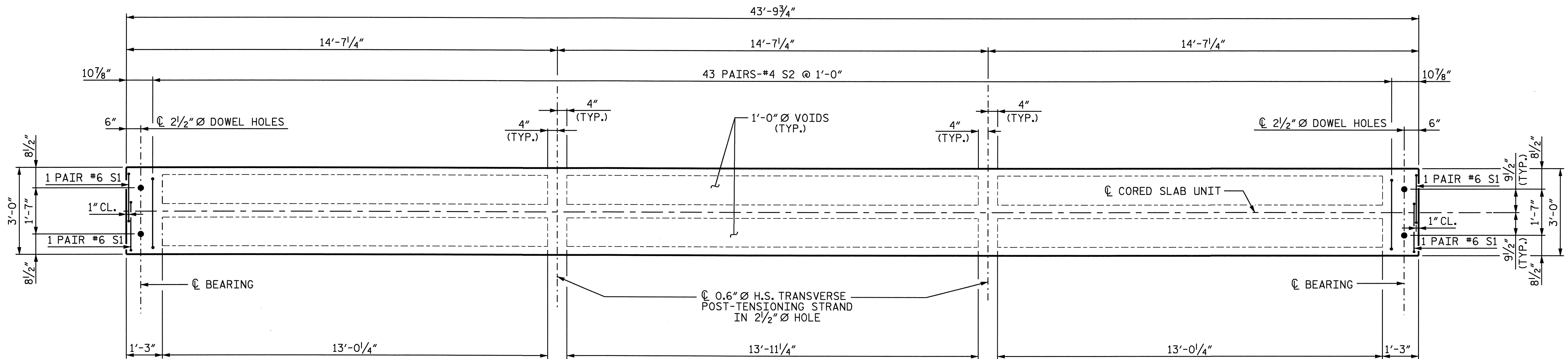
3'-0" X 1'-9"  
 PRESTRESSED  
 CONCRETE CORED  
 SLAB UNIT DETAILS  
 SPAN B



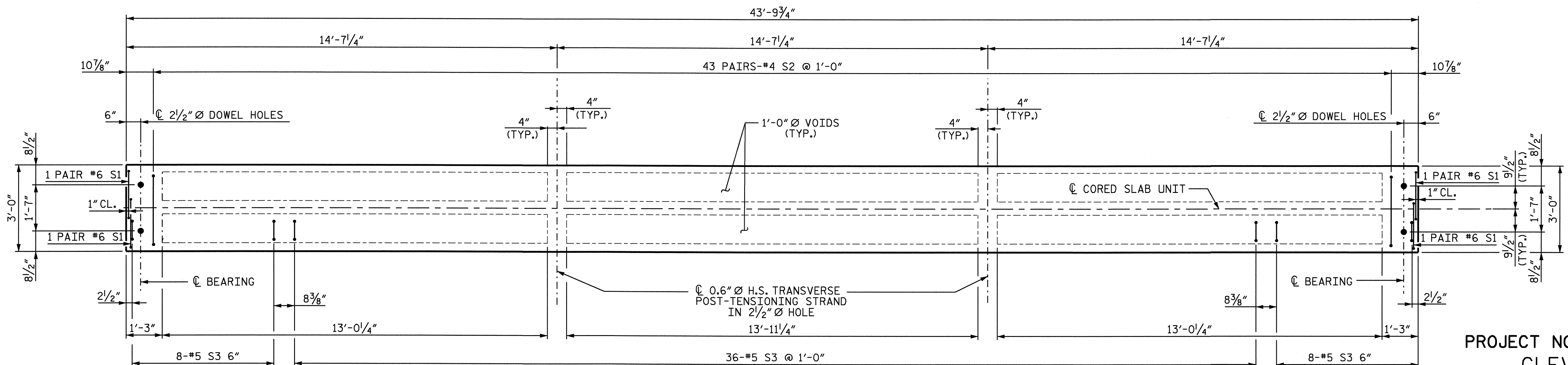
DRAWN BY: M. G. SHAIKH DATE: 01-02-09  
 CHECKED BY: H. I. BARBOUR DATE: 01-08-09

08-DEC-2009 08:09  
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| REVISIONS |     |       |     |     |       | SHEET NO.       |  |
|-----------|-----|-------|-----|-----|-------|-----------------|--|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-10            |  |
| 1         |     |       | 3   |     |       | TOTAL SHEETS 26 |  |
| 2         |     |       | 4   |     |       |                 |  |



PLAN OF INTERIOR CORED SLAB UNIT (SPAN C)



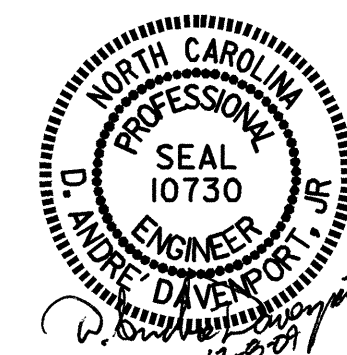
PLAN OF EXTERIOR CORED SLAB UNIT (SPAN C)

PROJECT NO. B-4468  
CLEVELAND COUNTY  
 STATION: 16+97.00 -L-

SHEET 7 OF 9

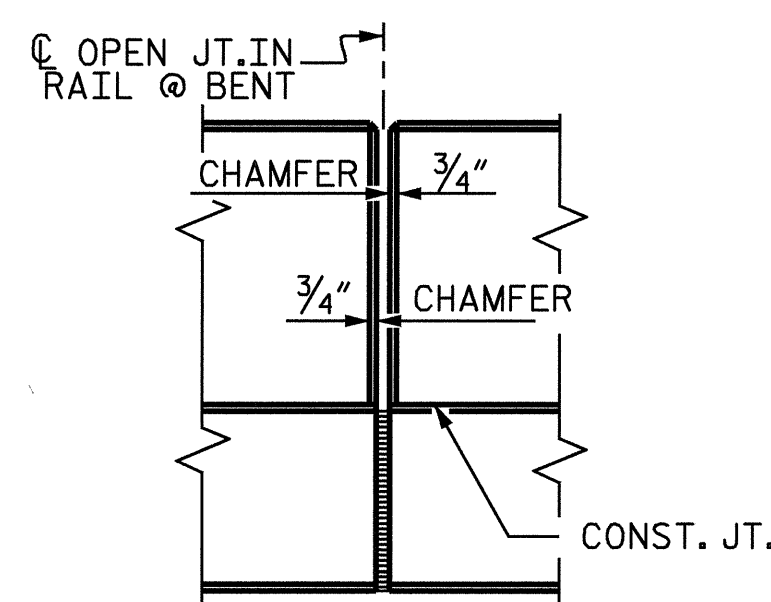
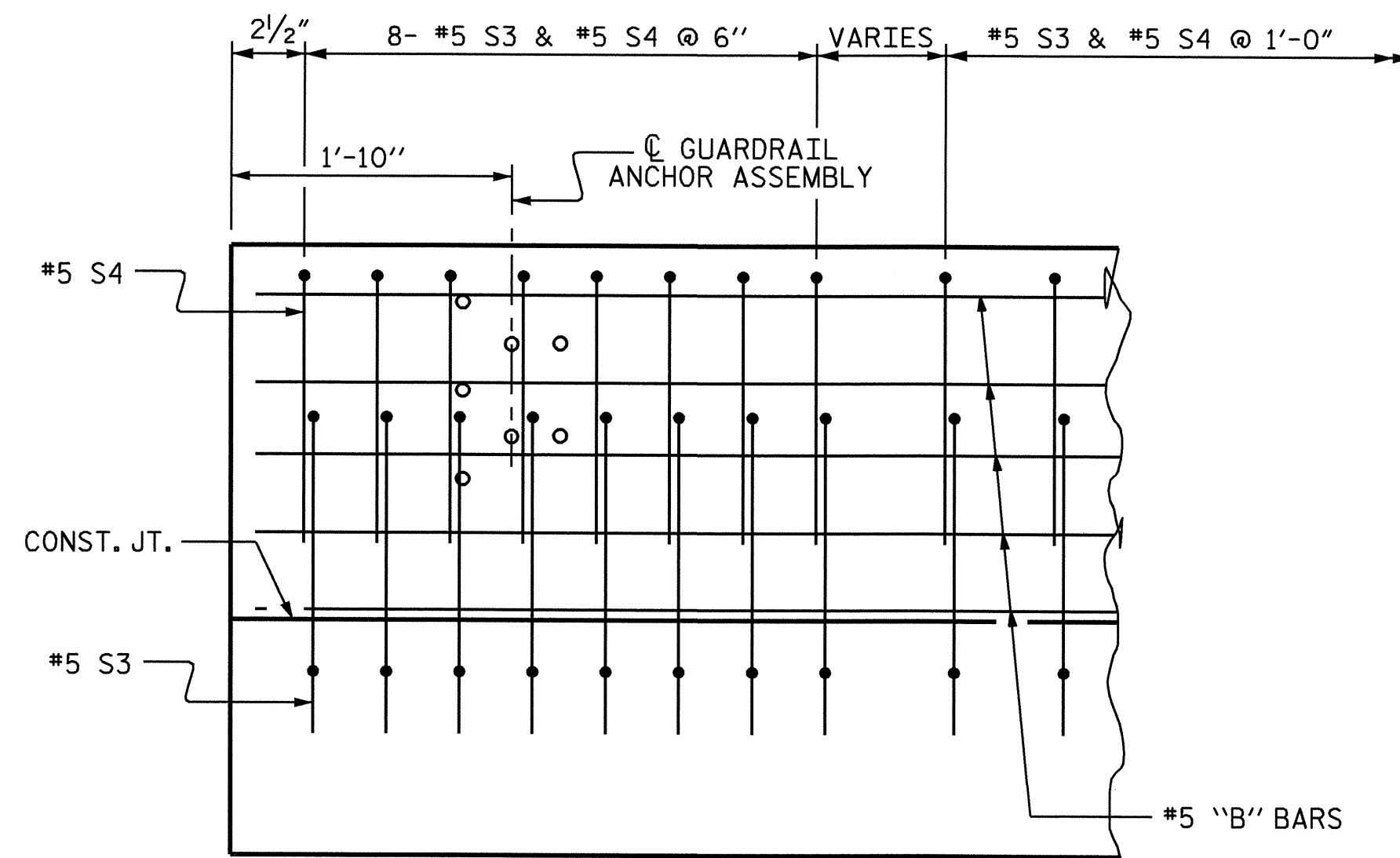
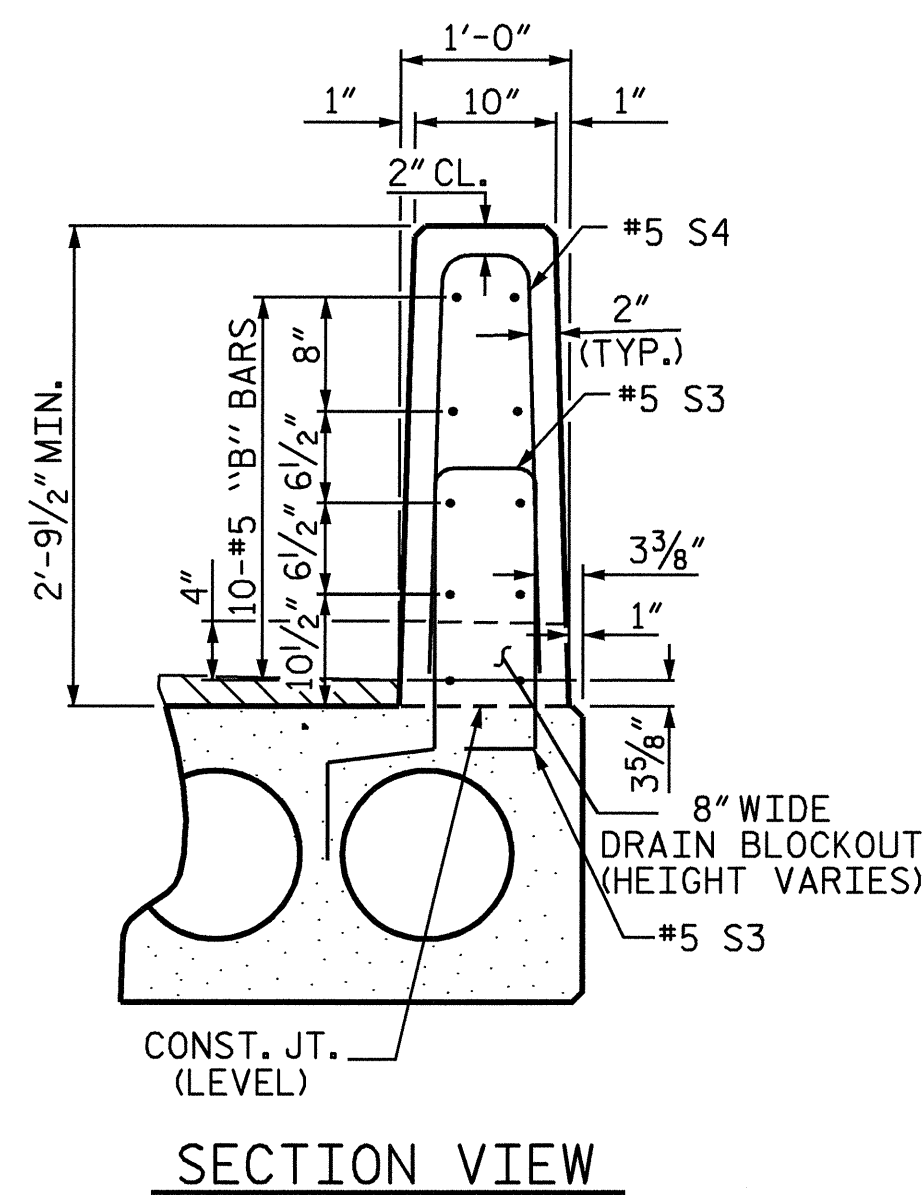
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

3'-0" X 1'-9"  
 PRESTRESSED  
 CONCRETE CORED  
 SLAB UNIT DETAILS  
 SPAN C



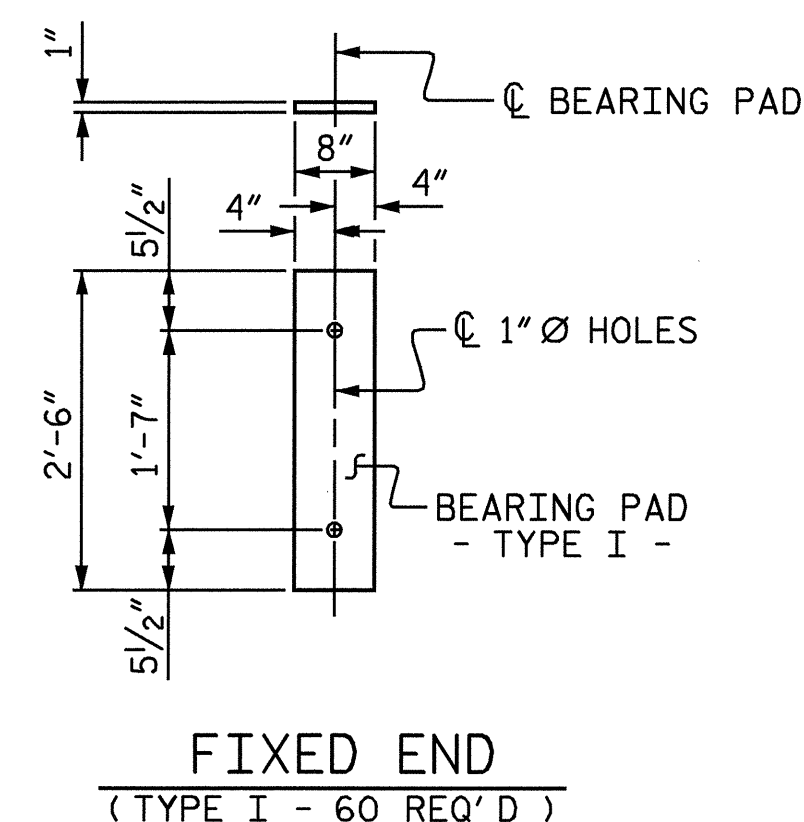
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|-----------|-----|-------|-----|-----|-------|-----------------|--|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-11            |  |
| 1         |     |       | 3   |     |       | TOTAL SHEETS 26 |  |
| 2         |     |       | 4   |     |       |                 |  |

DRAWN BY : M. G. SHAIKH DATE : 01-05-09  
 CHECKED BY : H. T. BARBOUR DATE : 01-08-09



ELEVATION AT EXPANSION JOINT

VERTICAL CONCRETE BARRIER RAIL DETAILS



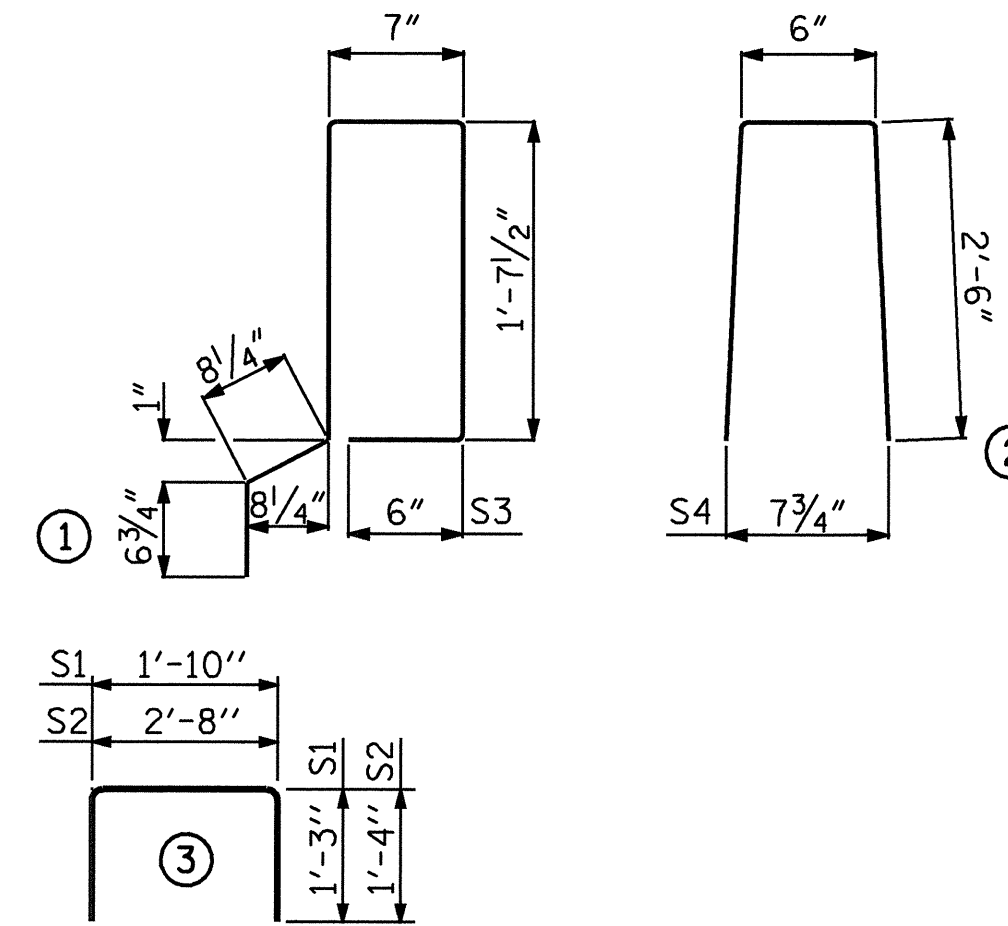
ELASTOMERIC BEARING DETAIL

| CORED SLABS REQUIRED |        |             |              |
|----------------------|--------|-------------|--------------|
| SPAN A               |        |             |              |
|                      | NUMBER | LENGTH      | TOTAL LENGTH |
| EXTERIOR C.S.        | 2      | 43'-9 3/4"  | 87'-7 1/2"   |
| INTERIOR C.S.        | 8      | 43'-9 3/4"  | 350'-6"      |
| SUBTOTAL             | 10     |             | 438'-1 1/2"  |
| SPAN B               |        |             |              |
|                      | NUMBER | LENGTH      | TOTAL LENGTH |
| EXTERIOR C.S.        | 2      | 54'-10 1/2" | 109'-9"      |
| INTERIOR C.S.        | 8      | 54'-10 1/2" | 439'-0"      |
| SUBTOTAL             | 10     |             | 548'-9"      |
| SPAN C               |        |             |              |
|                      | NUMBER | LENGTH      | TOTAL LENGTH |
| EXTERIOR C.S.        | 2      | 43'-9 3/4"  | 87'-7 1/2"   |
| INTERIOR C.S.        | 8      | 43'-9 3/4"  | 350'-6"      |
| SUBTOTAL             | 10     |             | 438'-1 1/2"  |
| TOTAL LENGTH         |        |             | 1425'-0"     |

| DEAD LOAD DEFLECTION AND CAMBER             |                    |                    |                    |                    |                    |                    |
|---|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
|   | SPAN A             |                    | SPAN B             |                    | SPAN C             |                    |
|   | EXT. UNITS         | INT. UNITS         | EXT. UNITS         | INT. UNITS         | EXT. UNITS         | INT. UNITS         |
|   | 3'-0" x 1'-9"      | 3'-0" x 1'-9"      | 3'-0" x 1'-9"      | 3'-0" x 1'-9"      | 3'-0" x 1'-9"      | 3'-0" x 1'-9"      |
| 0.6" Ø L.R. STRAND                          | 0.6" Ø L.R. STRAND | 0.6" Ø L.R. STRAND | 0.6" Ø L.R. STRAND | 0.6" Ø L.R. STRAND | 0.6" Ø L.R. STRAND | 0.6" Ø L.R. STRAND |
| CAMBER (SLAB ALONE IN PLACE)                | 1 5/16" ↑          | 1 5/16" ↑          | 2 1/16" ↑          | 2 1/16" ↑          | 1 5/16" ↑          | 1 5/16" ↑          |
| DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ** | 1/4" ↓             | 1/4" ↓             | 1/2" ↓             | 1/2" ↓             | 1/4" ↓             | 1/4" ↓             |
| FINAL CAMBER                                | 1 1/16" ↑          | 1 1/16" ↑          | 2 1/8" ↑           | 2 1/8" ↑           | 1 1/16" ↑          | 1 1/16" ↑          |

\*\* INCLUDES FUTURE WEARING SURFACE

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR ONE CORED SLAB SECTION

| BAR NUMBER                       | SIZE | TYPE | EXTERIOR UNIT |              | INTERIOR UNIT |              |
|----------------------------------|------|------|---------------|--------------|---------------|--------------|
|                                  |      |      | LENGTH        | WEIGHT       | LENGTH        | WEIGHT       |
| B3                               | #4   | STR  | 22'-8"        | 61           | 22'-8"        | 61           |
| S1                               | #6   | 3    | 4'-4"         | 52           | 4'-4"         | 52           |
| S2                               | #4   | 3    | 5'-4"         | 306          | 5'-4"         | 306          |
| * S3                             | #5   | 1    | 5'-7"         | 303          |               |              |
| REINFORCING STEEL                |      |      |               | LBS. 419     |               | LBS. 419     |
| * EPOXY COATED REINFORCING STEEL |      |      |               | LBS. 303     |               |              |
| 5000 P.S.I. CONCRETE             |      |      |               | CU. YDS. 6.2 |               | CU. YDS. 6.2 |
| 0.6" Ø L.R. STRANDS              |      |      | No.           | 13           |               | 13           |

BILL OF MATERIAL FOR ONE CORED SLAB SECTION

| BAR NUMBER                       | SIZE | TYPE | EXTERIOR UNIT |              | INTERIOR UNIT |              |
|----------------------------------|------|------|---------------|--------------|---------------|--------------|
|                                  |      |      | LENGTH        | WEIGHT       | LENGTH        | WEIGHT       |
| B4                               | #4   | STR  | 28'-2"        | 75           | 28'-2"        | 75           |
| S1                               | #6   | 3    | 4'-4"         | 52           | 4'-4"         | 52           |
| S2                               | #4   | 3    | 5'-4"         | 385          | 5'-4"         | 385          |
| * S3                             | #5   | 1    | 5'-7"         | 367          |               |              |
| REINFORCING STEEL                |      |      |               | LBS. 512     |               | LBS. 512     |
| * EPOXY COATED REINFORCING STEEL |      |      |               | LBS. 367     |               |              |
| 7000 P.S.I. CONCRETE             |      |      |               | CU. YDS. 7.8 |               | CU. YDS. 7.7 |
| 0.6" Ø L.R. STRANDS              |      |      | No.           | 20           |               | 20           |

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

| BAR  | BARS PER SPAN |        |        | TOTAL NO. | SIZE | TYPE | LENGTH | WEIGHT          |
|--|---------------|--------|--------|-----------|------|------|--------|-----------------|
|  | SPAN A        | SPAN B | SPAN C |           |      |      |        |                 |
| * B1   | 40            |        | 40     | 80        | #5   | STR  | 21'-6" | 1794            |
| * B2   |               | 40     |        | 40        | #5   | STR  | 27'-1" | 1130            |
| * S4   | 104           | 126    | 104    | 334       | #5   | 2    | 5'-6"  | 1916            |
| * EPOXY COATED REINFORCING STEEL                 |               |        |        |           |      |      |        | LBS. 4840       |
| CLASS AA CONCRETE                                |               |        |        |           |      |      |        | CU. YDS. 27.9   |
| TOTAL LIN. FT. OF VERTICAL CONCRETE BARRIER RAIL |               |        |        |           |      |      |        | LIN. FT. 285.50 |

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 CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE 2" Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, A POSITIVE HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. THIS SYSTEM SHALL BE DESIGNED TO BE LEFT IN PLACE UNTIL THE CONCRETE HAS REACHED RELEASE STRENGTH. AT LEAST THREE WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 4000 PSI FOR SPANS A & C, AND 4700 PSI FOR SPAN B.

ALL REINFORCING STEEL IN VERTICAL CONCRETE BARRIER RAILS SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

A 2" MIN. CLEARANCE TO REINFORCEMENT SHALL BE MAINTAINED FROM THE DRAINAGE SLOT. THE CONTRACTOR MAY FIELD CUT ANY "B" BARS IN THE VERTICAL CONCRETE BARRIER RAIL THAT CONFLICT WITH THE SLOT DRAINS.

GRADE 270 STRANDS

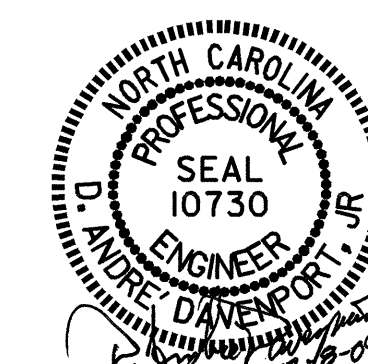
|                                       |        |
|---------------------------------------|--------|
| AREA ( SQUARE INCHES )                | 0.217  |
| ULTIMATE STRENGTH ( LBS. PER STRAND ) | 58,600 |
| APPLIED PRESTRESS ( LBS. PER STRAND ) | 43,950 |

PROJECT NO. B-4468  
CLEVELAND COUNTY  
 STATION: 16+97.00 -L-

SHEET 8 OF 9

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

3'-0" X 1'-9"  
 PRESTRESSED CONCRETE  
 CORED SLAB UNIT



| REVISIONS |     |       |     |     |       | SHEET NO.       |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-12            |
| 1         |     |       | 3   |     |       | TOTAL SHEETS 26 |
| 2         |     |       | 4   |     |       |                 |

ASSEMBLED BY : M. G. SHAIKH DATE : 11-04-08  
 CHECKED BY : H. T. BARBOUR DATE : 01-08-09  
 DRAWN BY : WJH 4/89 REV. 7/10/01 RWW/LJS  
 CHECKED BY : FCJ 5/89 REV. 5/7/03RRR RWW/JTE  
 REV. 5/1/06R TLA/GM

NOTES

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

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

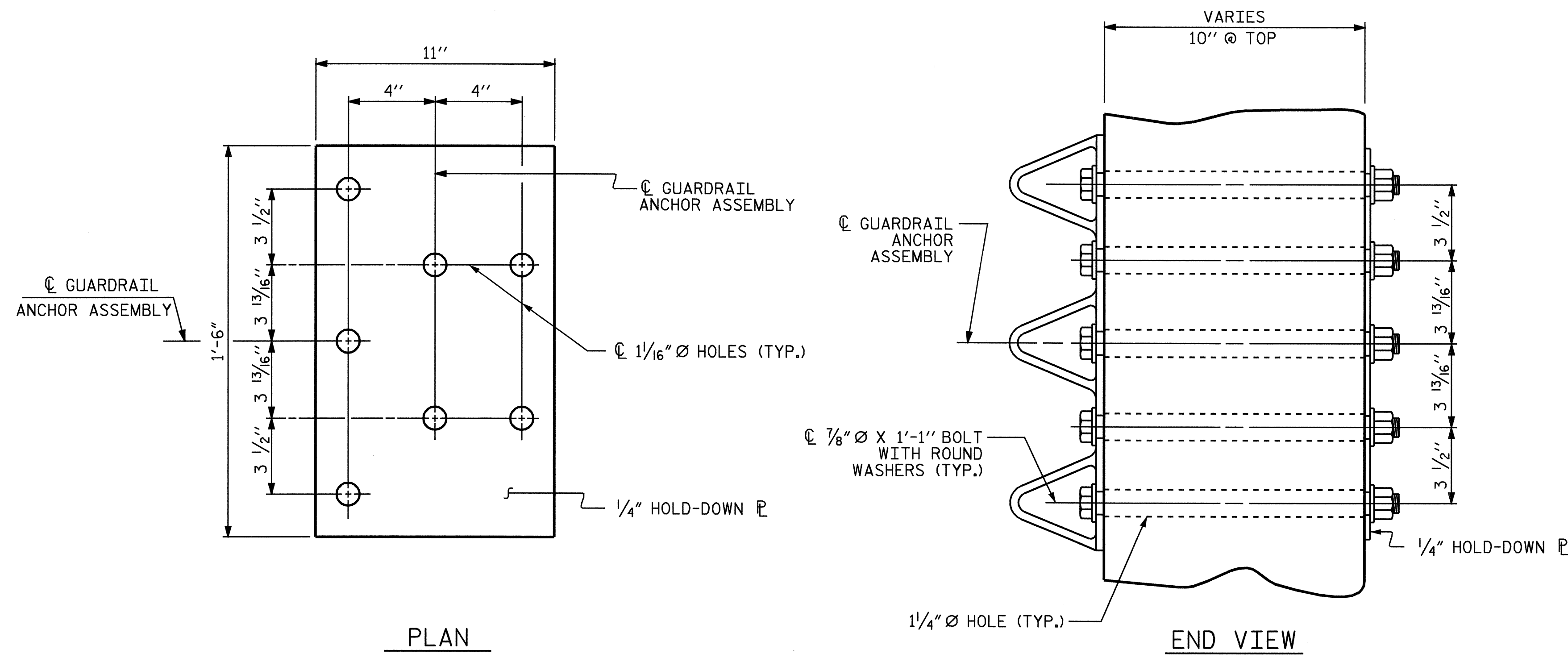
BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.

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

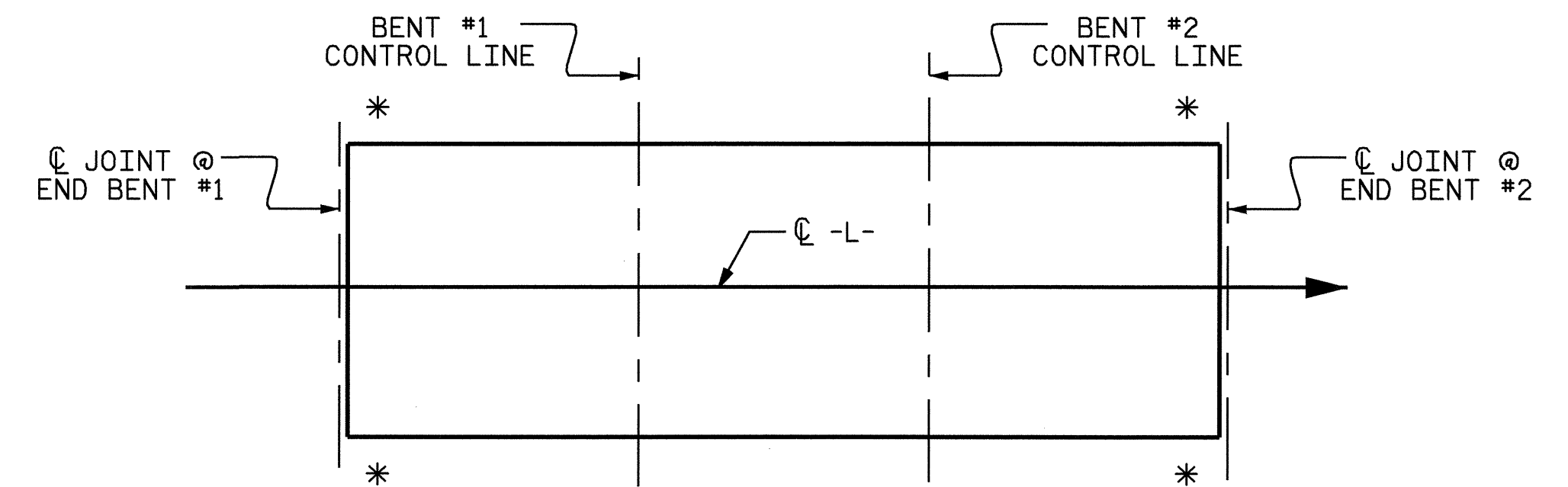
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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

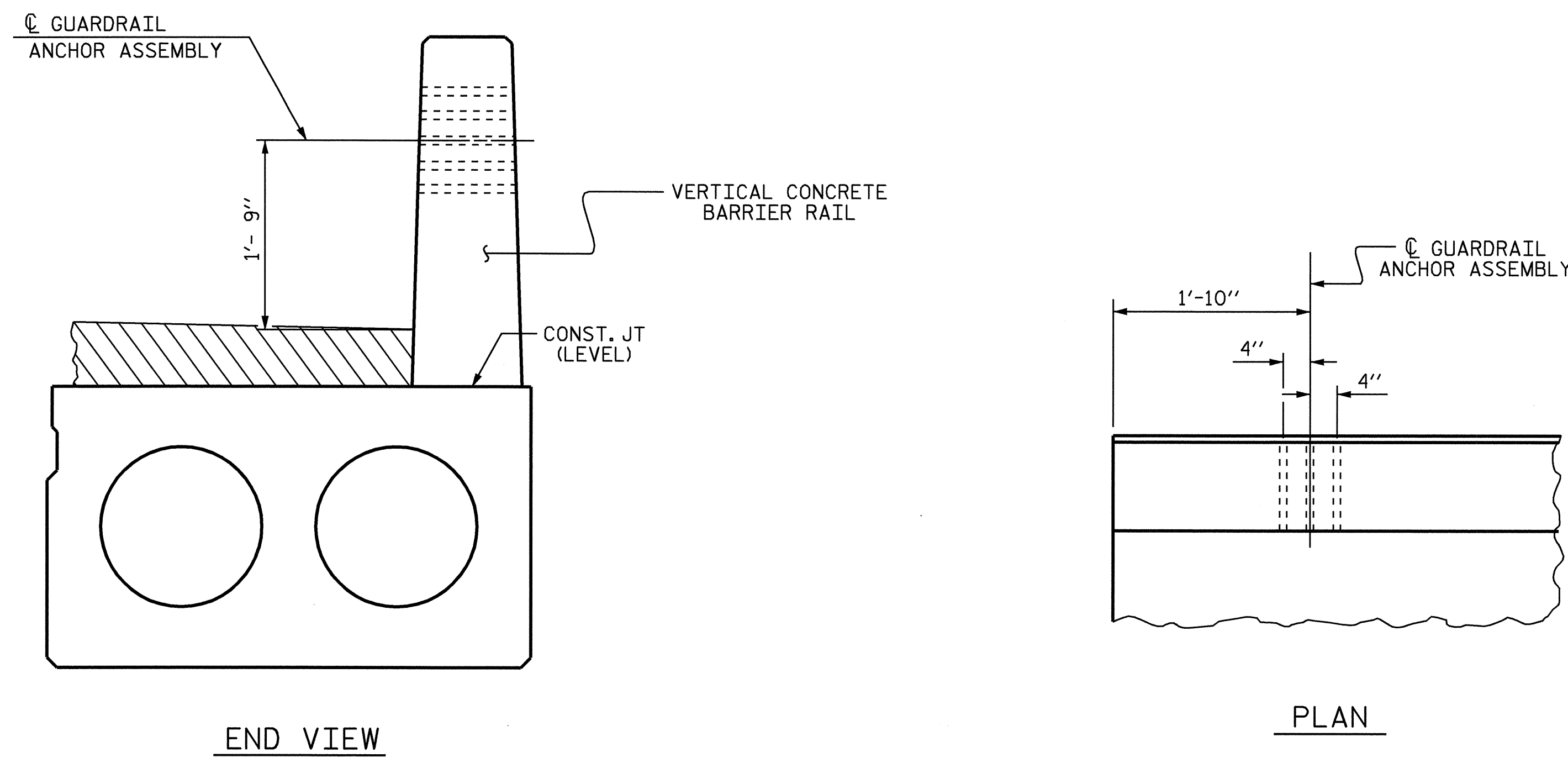


GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT

\* LOCATION OF GUARDRAIL ATTACHMENT

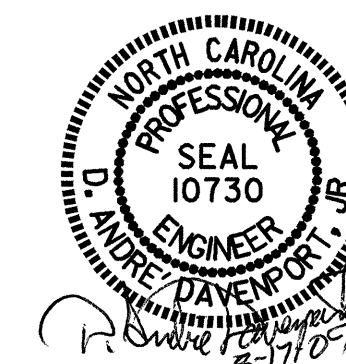


LOCATION OF ANCHOR ASSEMBLY FOR GUARDRAIL

PROJECT NO. B-4468  
CLEVELAND COUNTY  
 STATION: 16+97.00 -L-

SHEET 9 OF 9

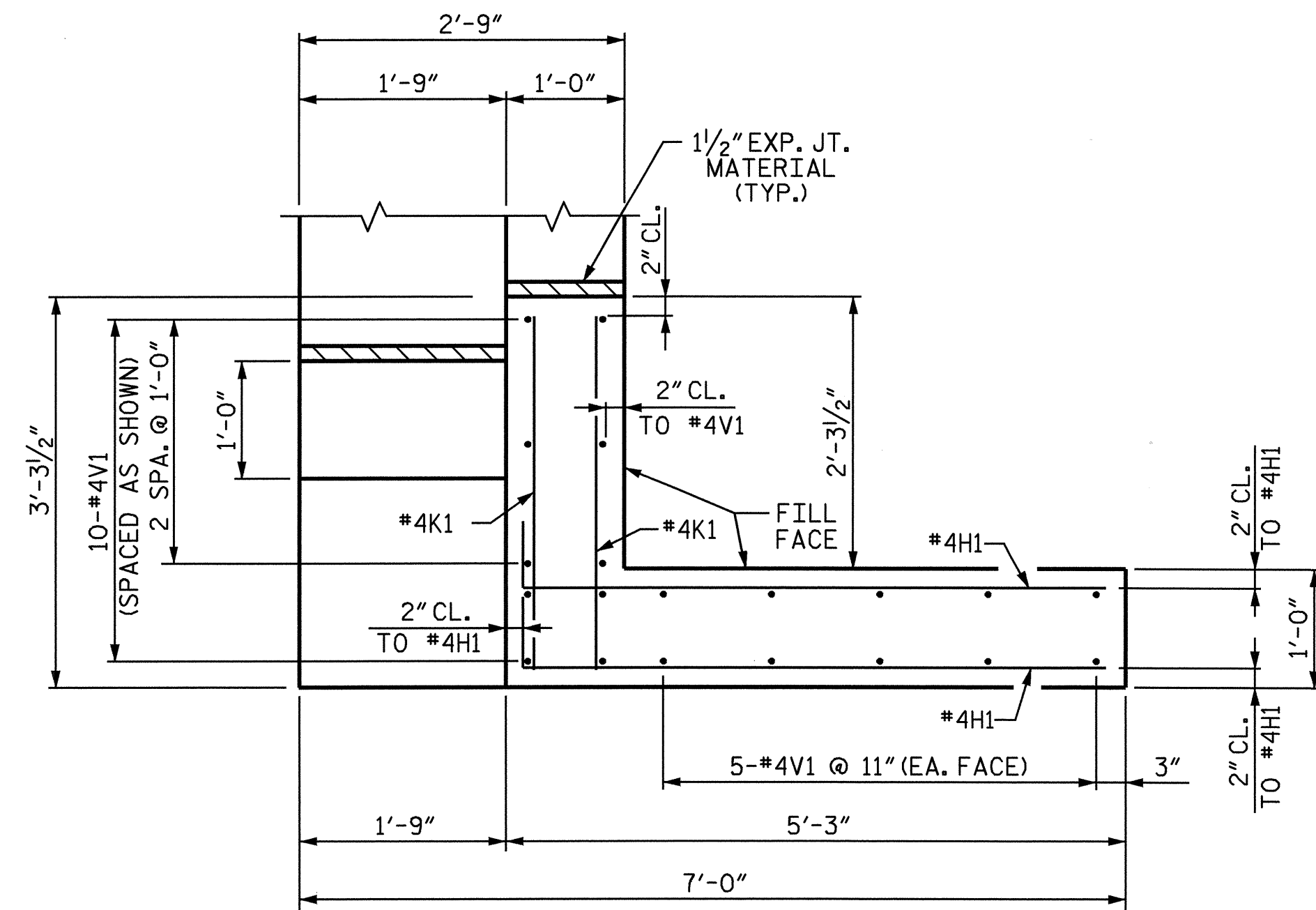
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 GUARDRAIL ANCHORAGE  
 DETAILS FOR  
 VERTICAL CONCRETE  
 BARRIER RAILS



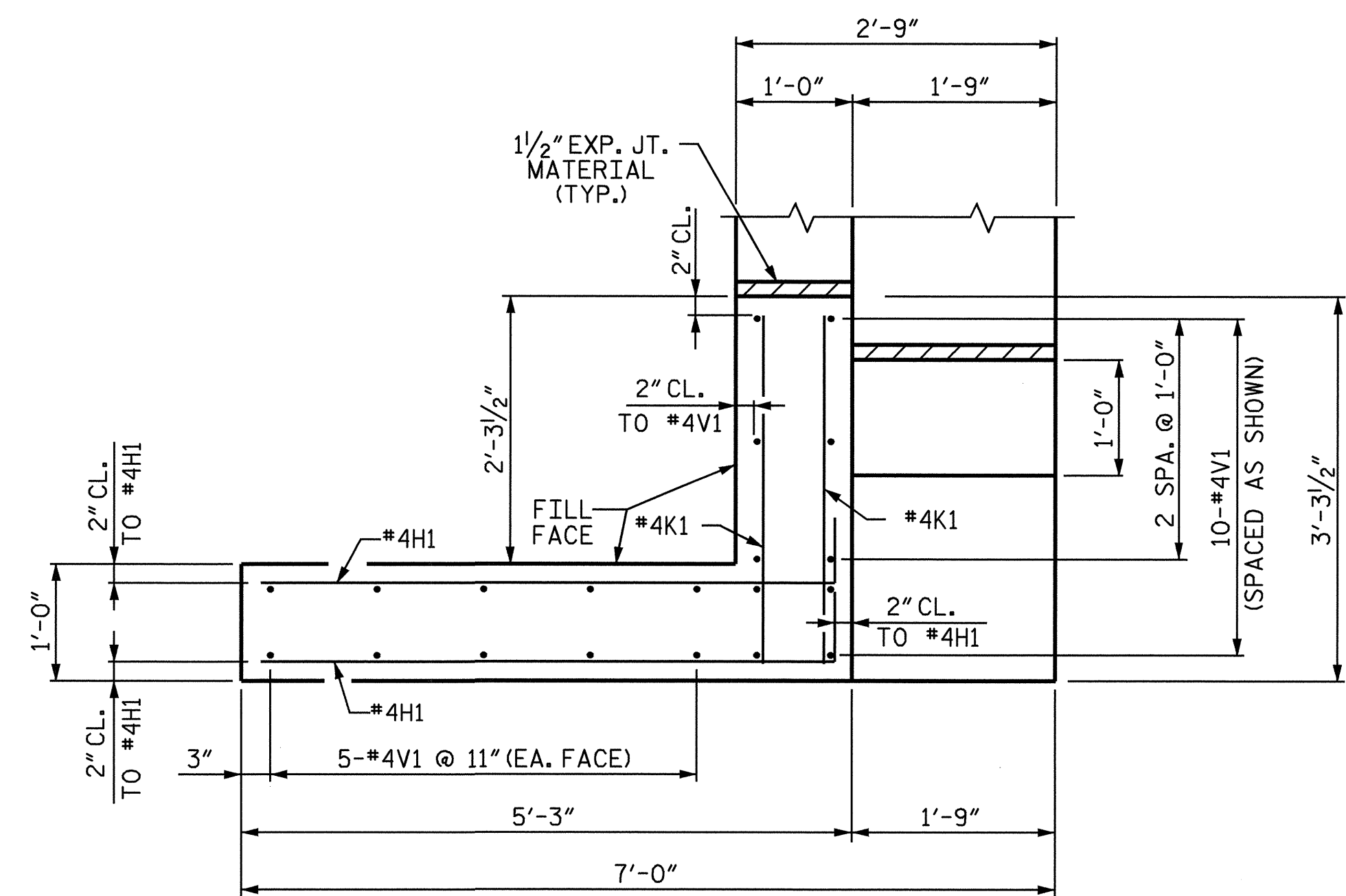
| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-13         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 26           |

DRAWN BY : M. G. SHAIKH DATE : 01-06-09  
 CHECKED BY : H. T. BARBOUR DATE : 01-06-09

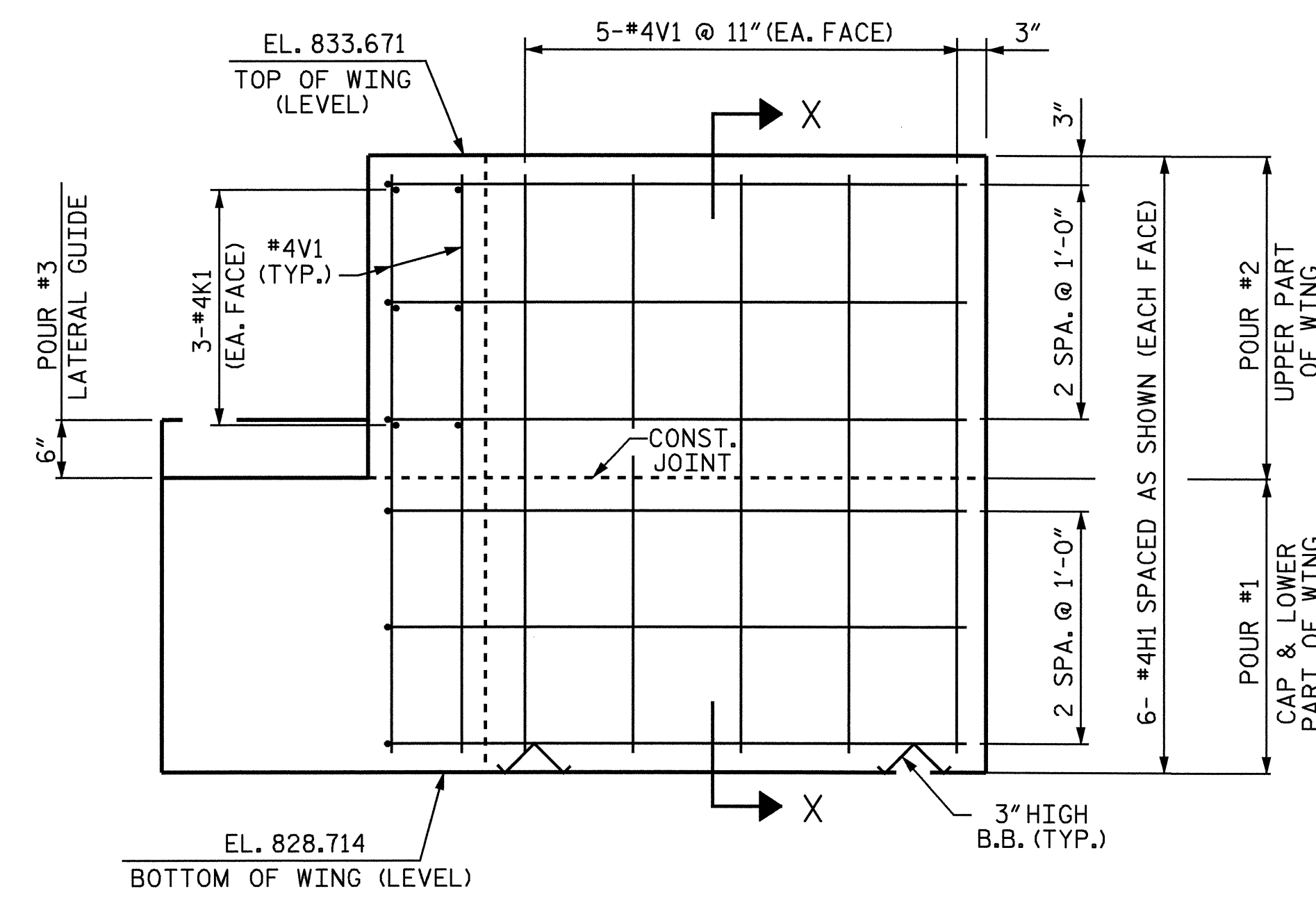




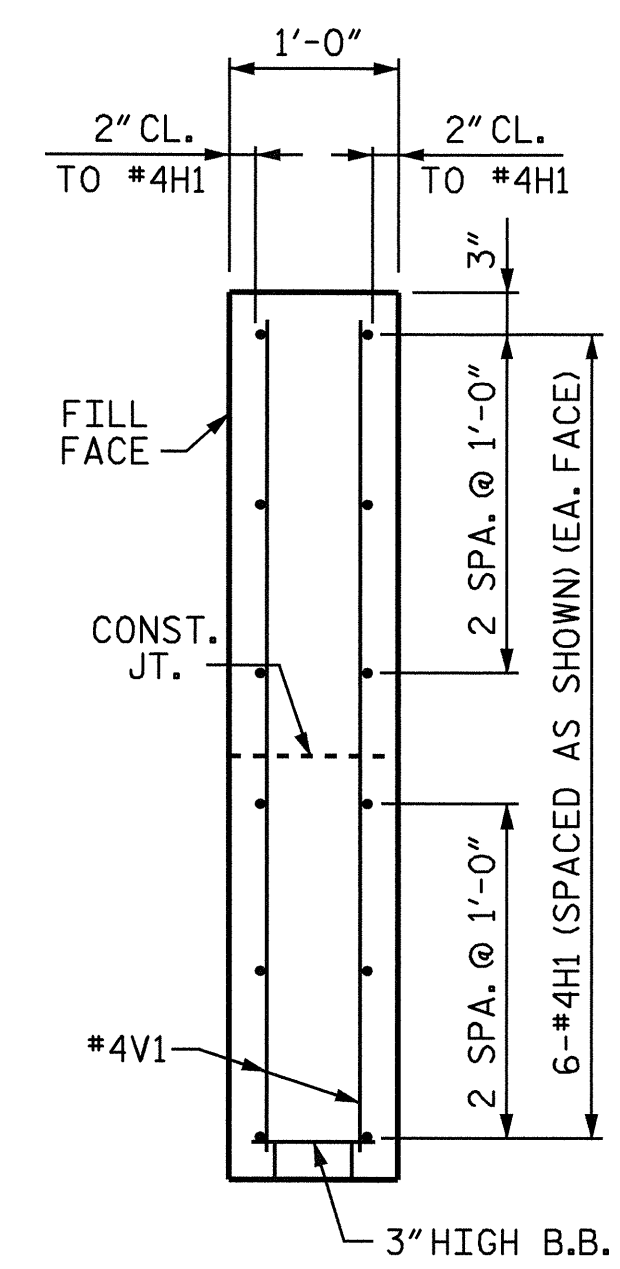
PLAN OF LEFT WING - (W1)



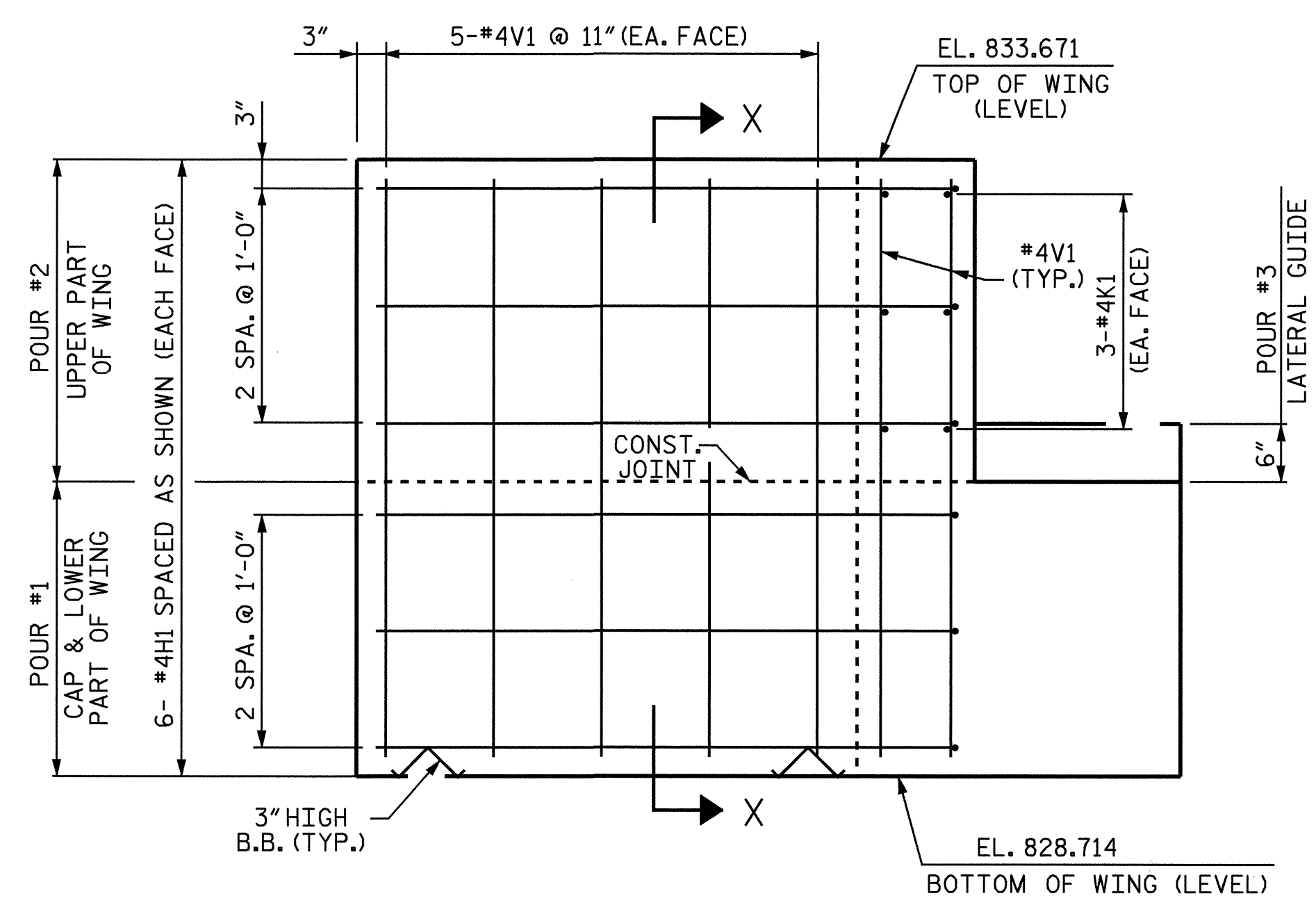
PLAN OF RIGHT WING - (W2)



ELEVATION OF LEFT WING - (W1)



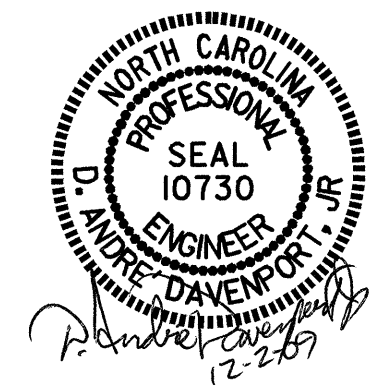
SECTION X-X



ELEVATION OF RIGHT WING - (W2)

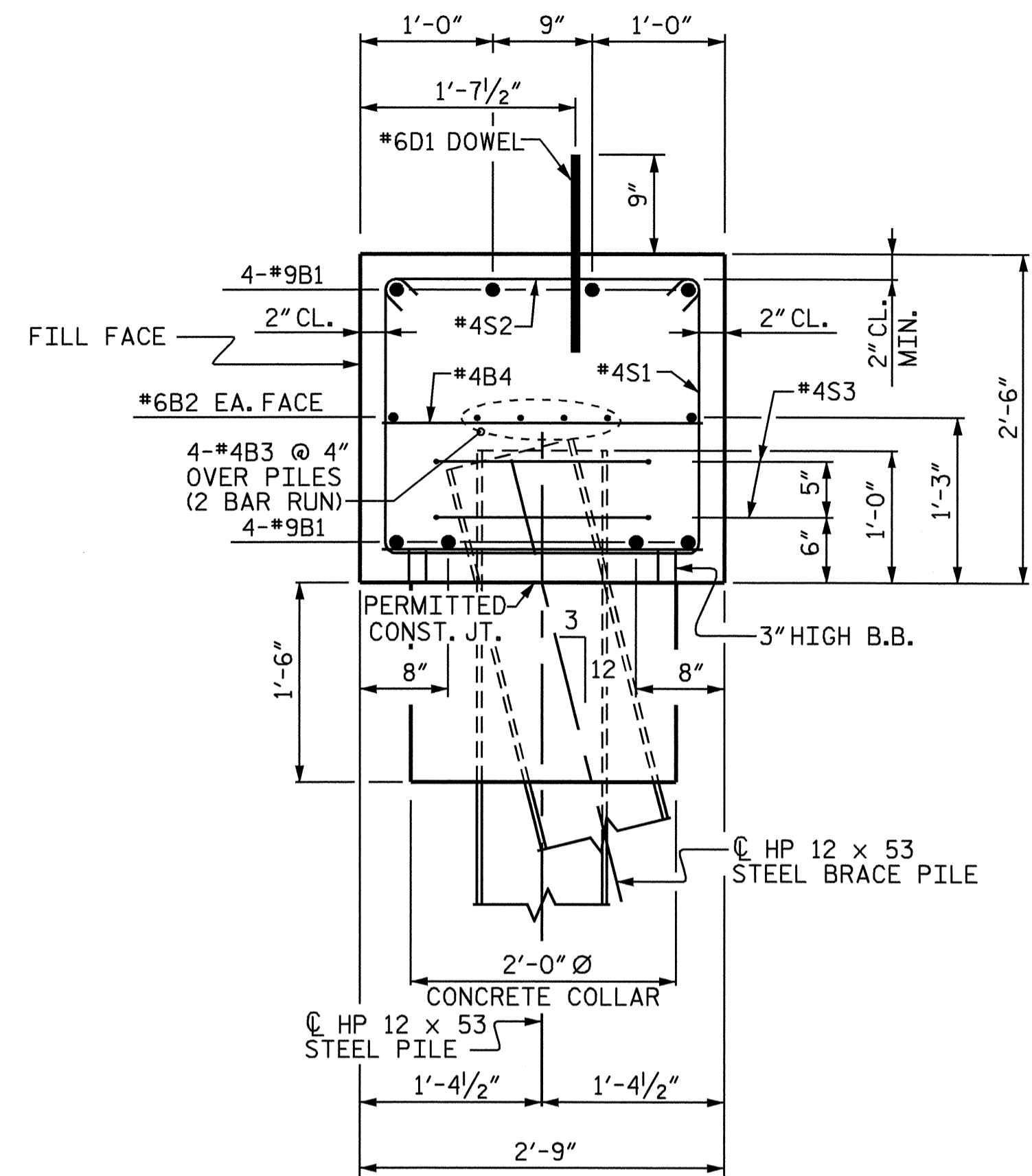
PROJECT NO. B-4468  
 CLEVELAND COUNTY  
 STATION: 16+97.00-L-  
 SHEET 2 OF 3

|  |     |       |     |     |                    |
|--|-----|-------|-----|-----|--------------------|
| STATE OF NORTH CAROLINA<br>DEPARTMENT OF TRANSPORTATION<br>RALEIGH |     |       |     |     |                    |
| SUBSTRUCTURE<br>END BENT #1  |     |       |     |     |                    |
| REVISIONS  |     |       |     |     |                    |
| NO.  | BY: | DATE: | NO. | BY: | DATE:              |
| 1  |     |       | 3   |     |                    |
| 2  |     |       | 4   |     |                    |
| SHEET NO.<br>S-15  |     |       |     |     | TOTAL SHEETS<br>26 |

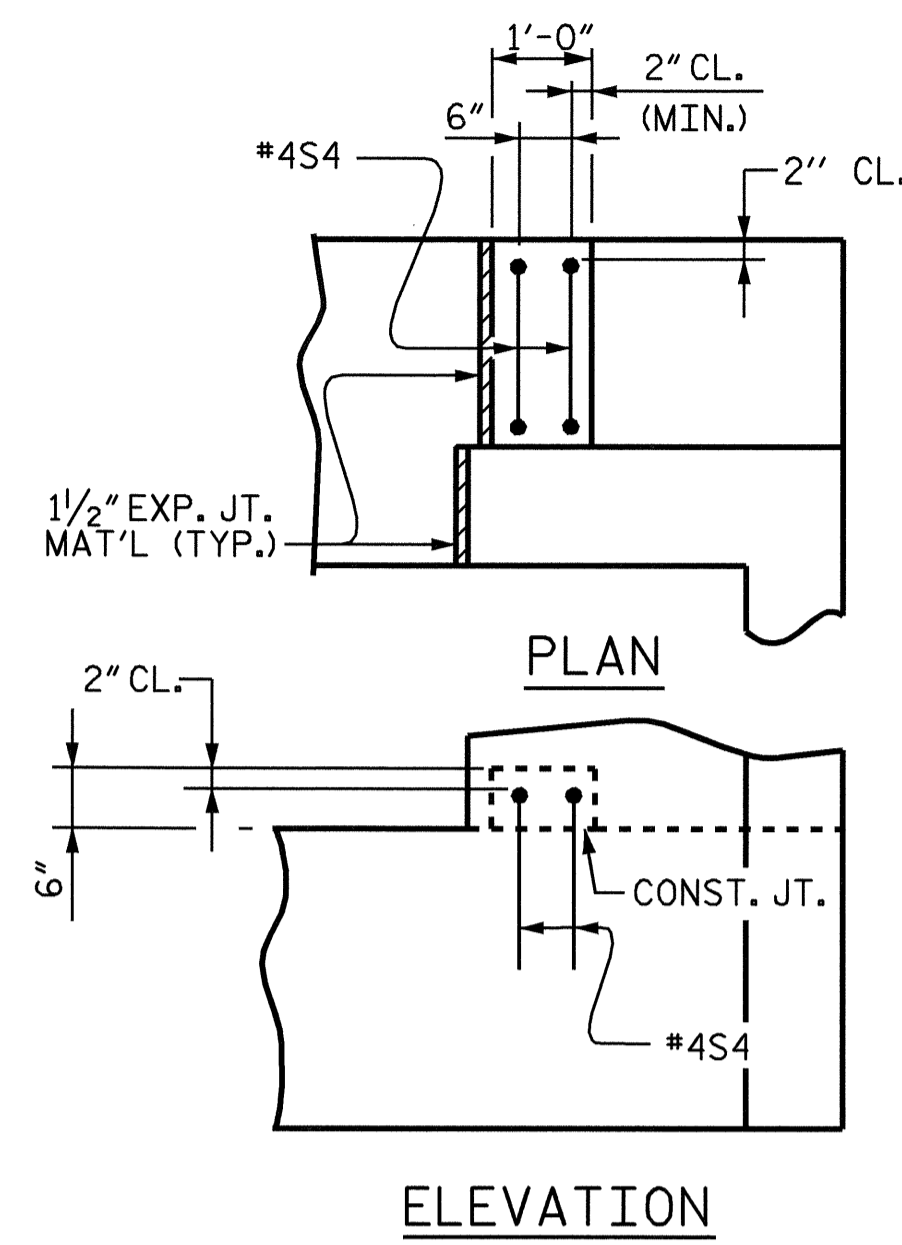


DRAWN BY: H. TOM BARBOUR DATE: 02-10-09  
 CHECKED BY: M. G. SHAIKH DATE: 02-27-09



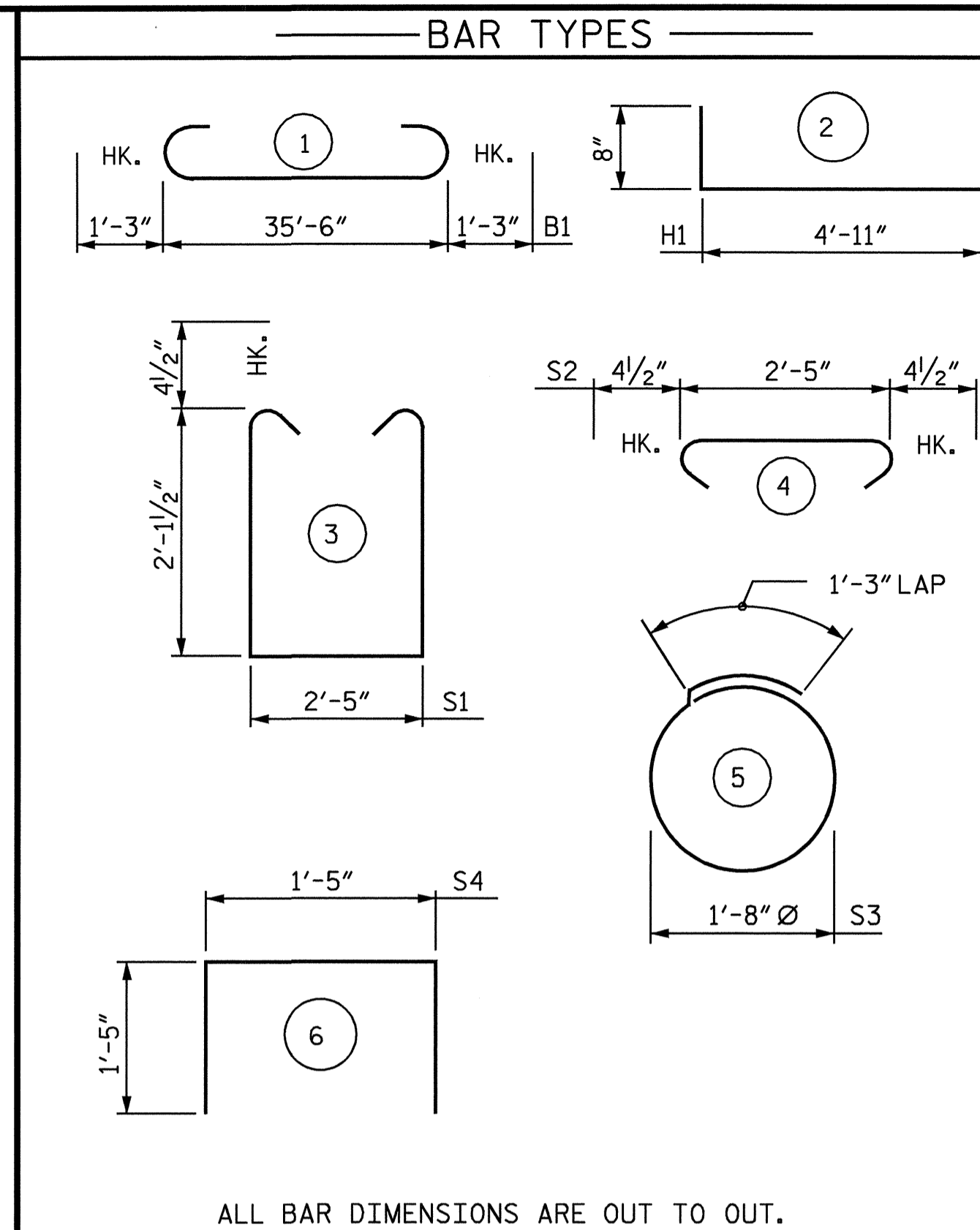


SECTION A-A



LATERAL GUIDE DETAIL

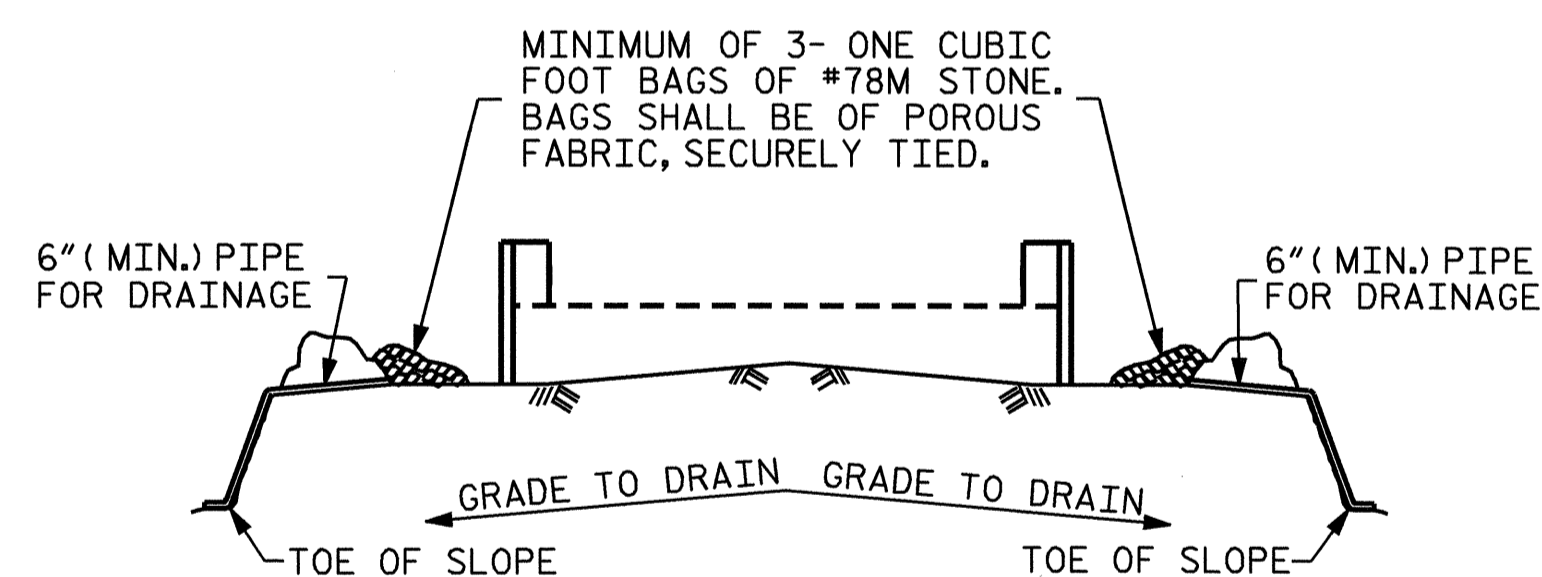
(EA. END SIMILAR)



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL  
END BENT #1

| BAR   | NO. | SIZE | TYPE | LENGTH | WEIGHT        |
|---|-----|------|------|--------|---------------|
| B1  | 8   | #9   | 1    | 38'-0" | 1034          |
| B2  | 2   | #6   | STR. | 35'-8" | 107           |
| B3  | 8   | #4   | STR. | 19'-1" | 102           |
| B4  | 9   | #4   | STR. | 2'-5"  | 15            |
| D1  | 20  | #6   | STR. | 1'-6"  | 45            |
| H1  | 24  | #4   | 2    | 5'-7"  | 90            |
| K1  | 12  | #4   | STR. | 2'-11" | 23            |
| S1  | 37  | #4   | 3    | 7'-5"  | 183           |
| S2  | 37  | #4   | 4    | 3'-2"  | 78            |
| S3  | 12  | #4   | 5    | 6'-6"  | 52            |
| S4  | 4   | #4   | 6    | 4'-3"  | 11            |
| V1  | 40  | #4   | STR. | 4'-7"  | 122           |
| REINFORCING STEEL                                   |     |      |      |        | LBS. 1862     |
| CLASS A CONCRETE                                    |     |      |      |        |               |
| POUR #1 CAP, LOWER PART OF WINGS & CONCRETE COLLARS |     |      |      |        | CU. YDS. 11.0 |
| POUR #2 UPPER PART OF WINGS                         |     |      |      |        | CU. YDS. 1.5  |
| POUR #3 LATERAL GUIDES                              |     |      |      |        | CU. YDS. 0.1  |
| TOTAL   |     |      |      |        | CU. YDS. 12.6 |
| HP 12 x 53 STEEL PILES                              |     |      |      |        |               |
| No. = 6   |     |      |      |        | 240 LIN. FT.  |

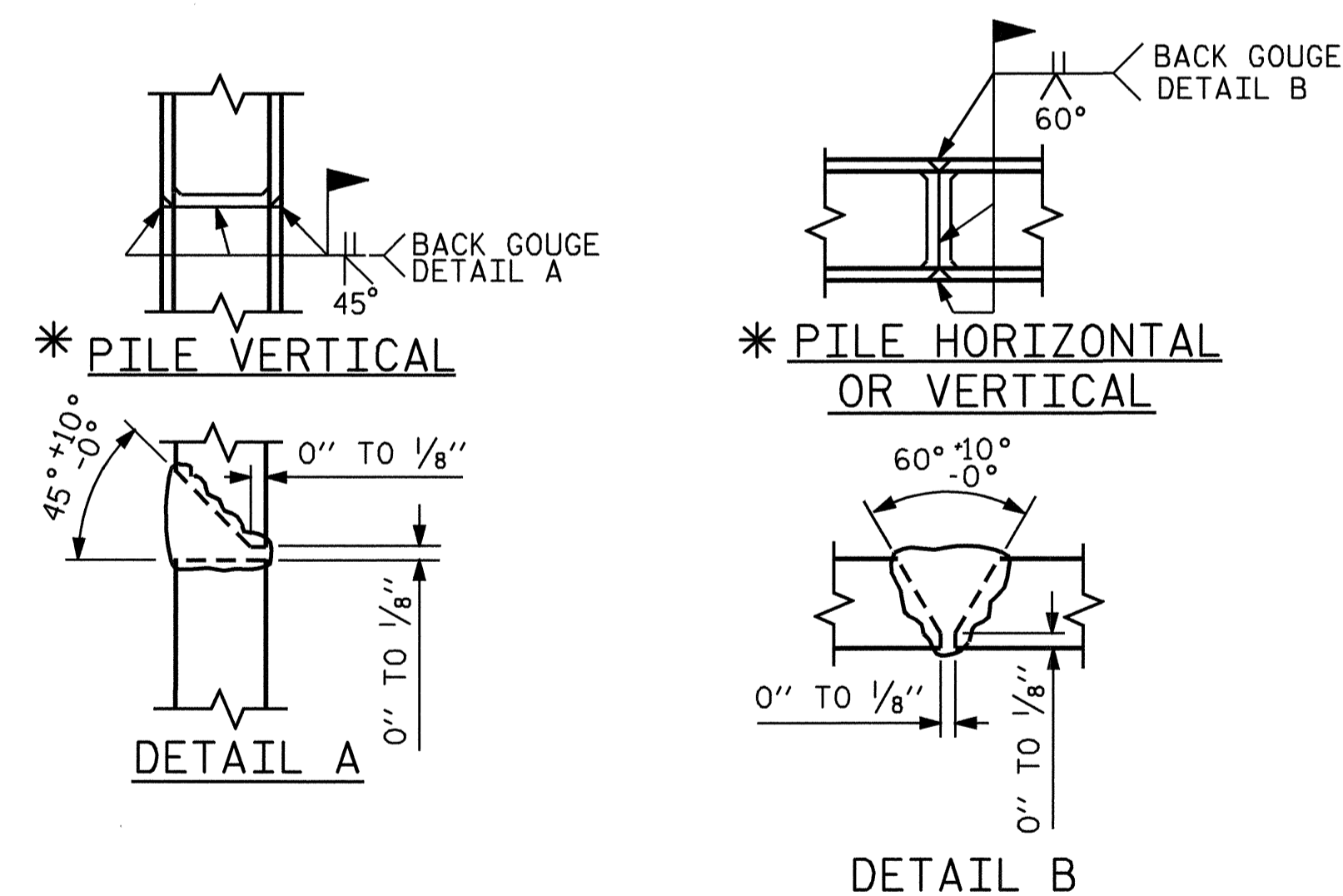


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

TEMPORARY DRAINAGE AT END BENT



\* POSITION OF PILE DURING WELDING.

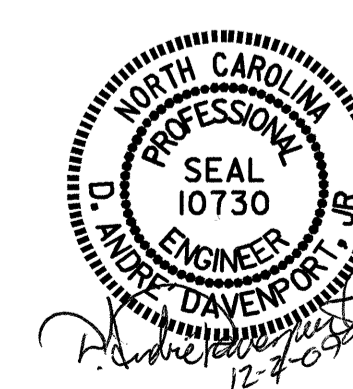
PILE SPLICE DETAILS

PROJECT NO. B-4468  
CLEVELAND COUNTY  
 STATION: 16+97.00-L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT #1



DRAWN BY: H. TOM BARBOUR DATE: 02-10-09  
 CHECKED BY: M. G. SHAIKH DATE: 02-27-09

02-DEC-2009 14:24  
 Z:\structures\barbour\Microstation\Microstation\B-4468.sd.E\*.dgn  
 adavenport

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-16         |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 26           |

**NOTES**

THE STIRRUPS IN THE CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6 D1 DOWELS.

HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

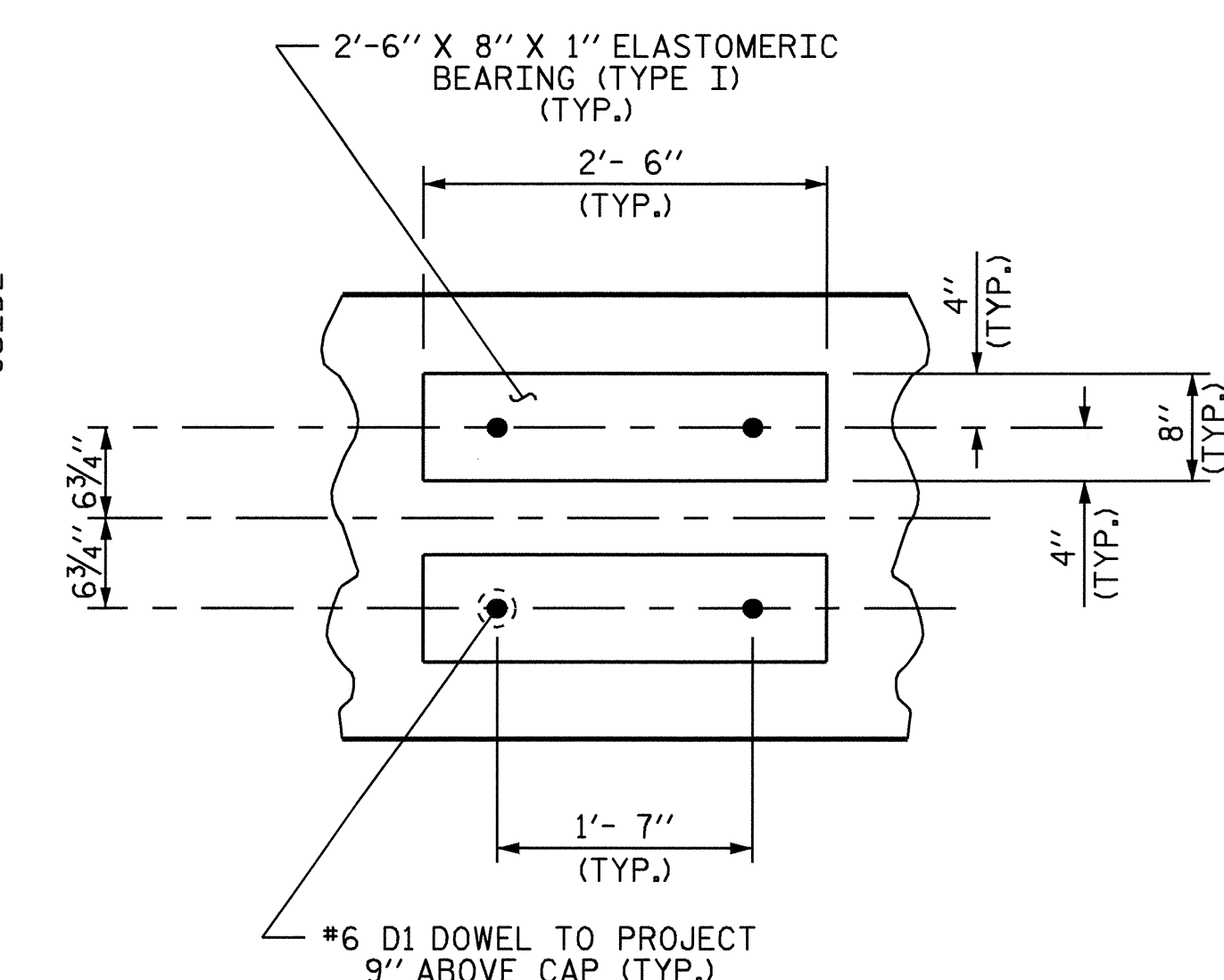
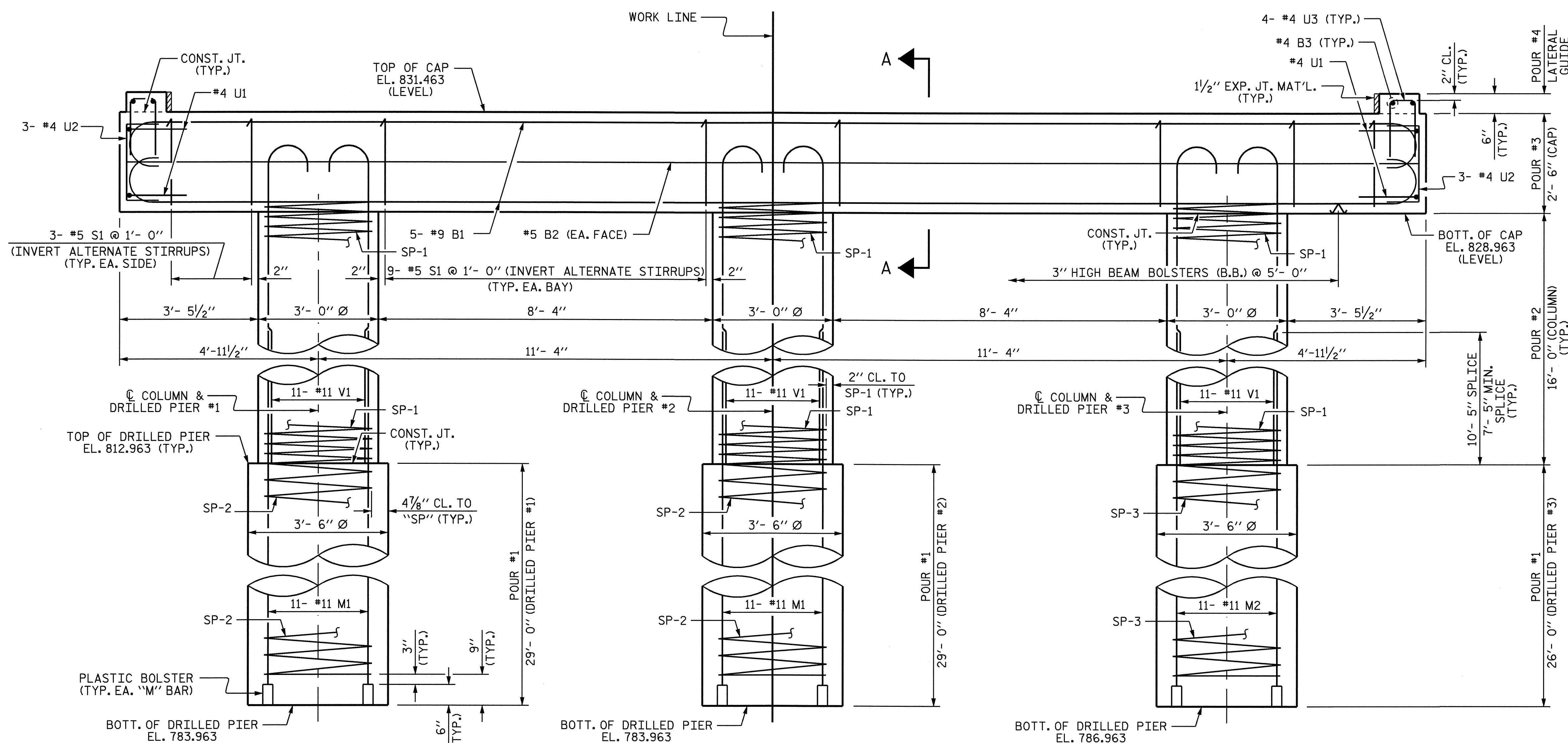
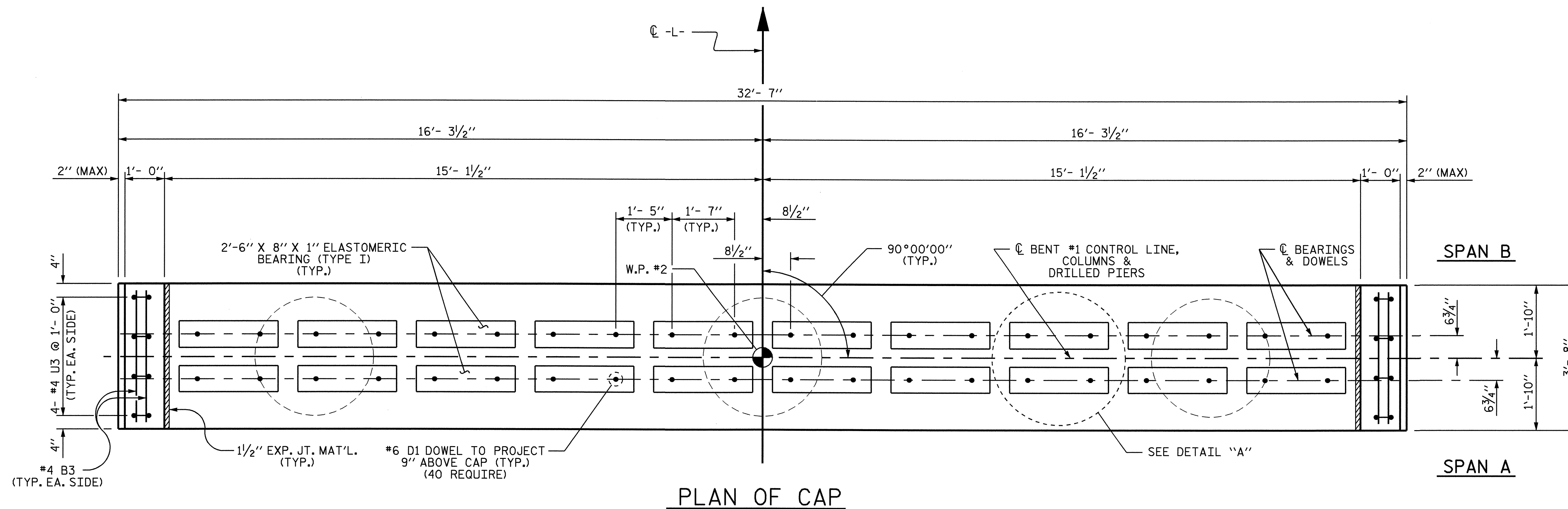
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

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

FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

THE LATERAL GUIDE AT EACH END OF THE BENT CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

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



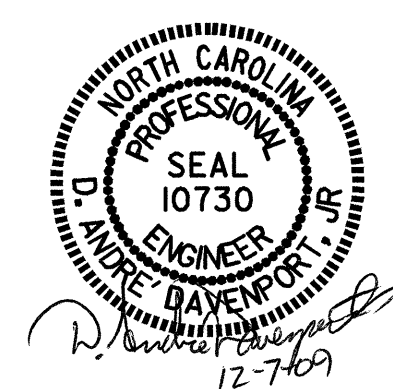
PROJECT NO. B-4468  
CLEVELAND COUNTY  
 STATION: 16+97.00 -L-

SHEET 1 OF 2

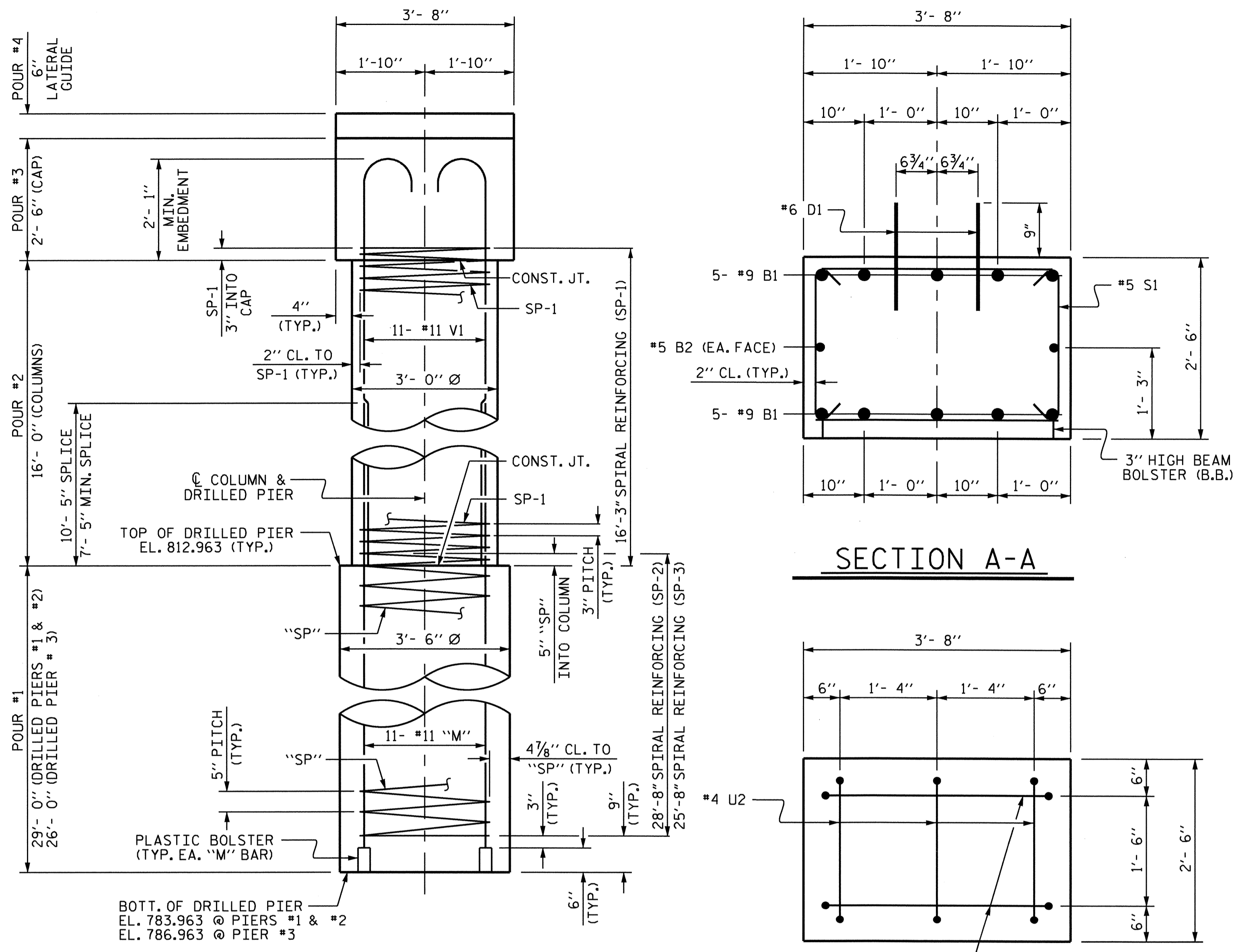
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE  
 BENT #1**

| REVISIONS |     |       |     |     |       | SHEET NO.    |    |
|-----------|-----|-------|-----|-----|-------|--------------|----|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-17         |    |
| 1         |     |       | 3   |     |       | TOTAL SHEETS | 26 |
| 2         |     |       | 4   |     |       |              |    |

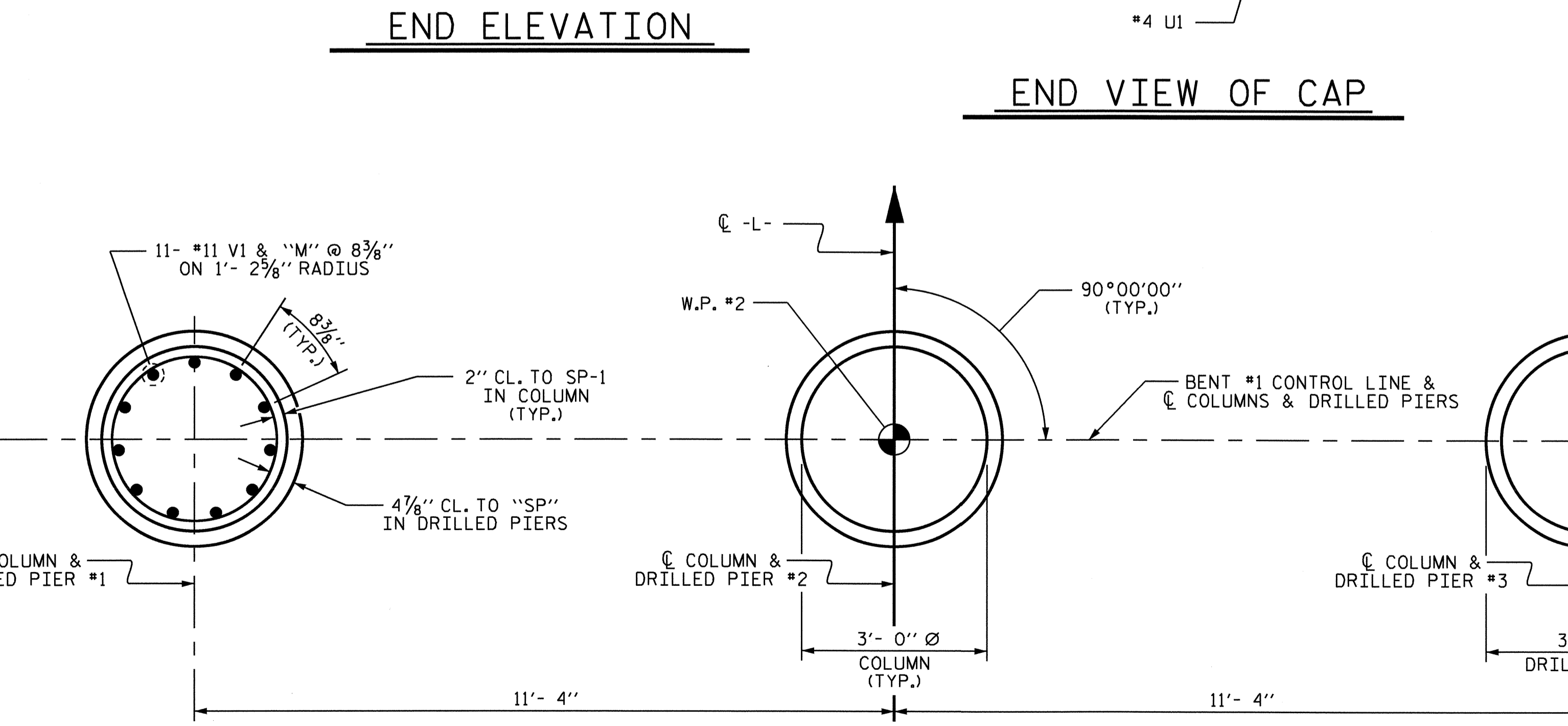


DRAWN BY: D. A. GLADDEN DATE: 3-16-09  
 CHECKED BY: D. A. DAVENPORT DATE: 8-21-09



SECTION A-A

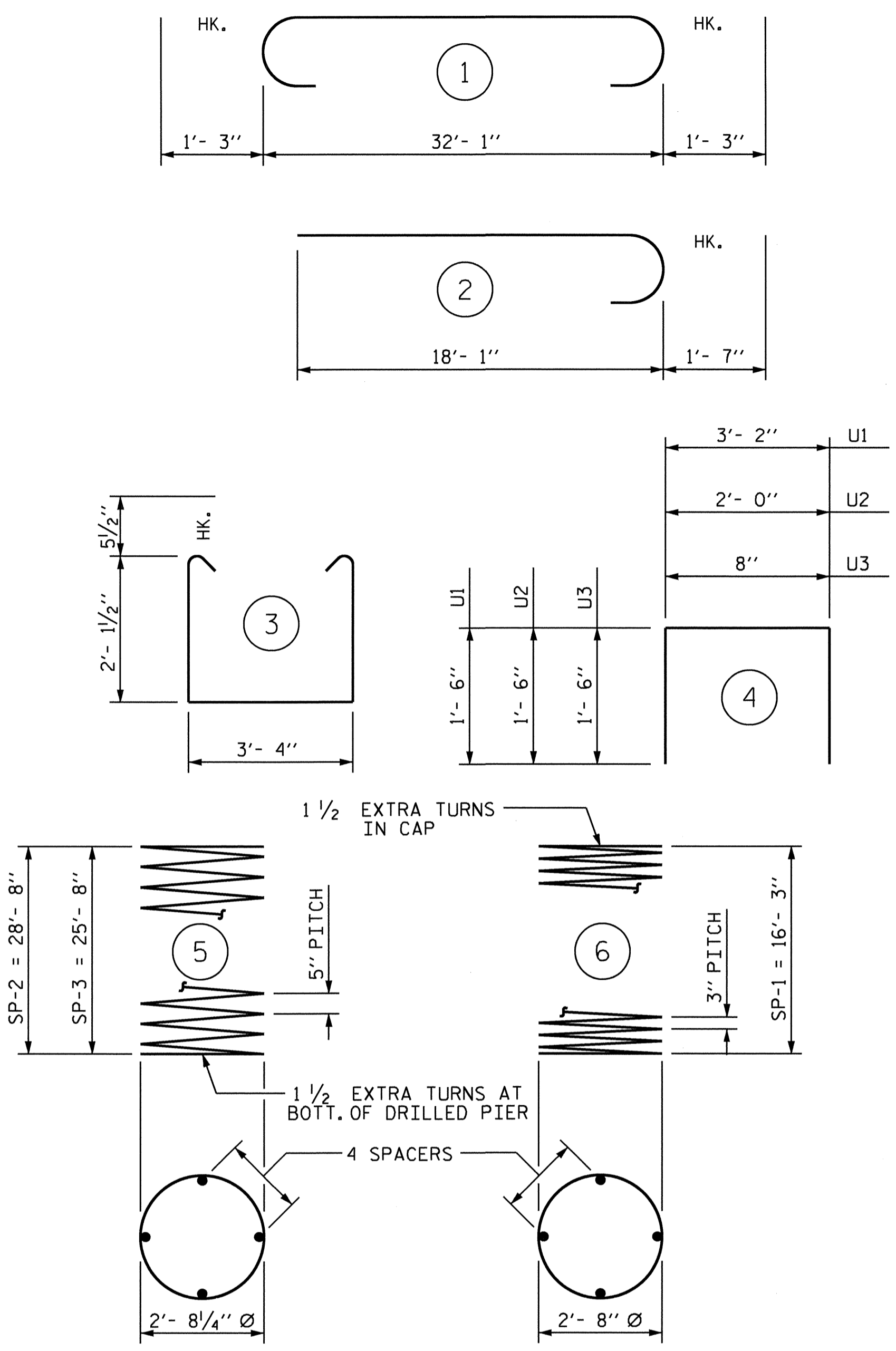
END VIEW OF CAP



END ELEVATION

PLAN OF COLUMNS AND DRILLED PIERS

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

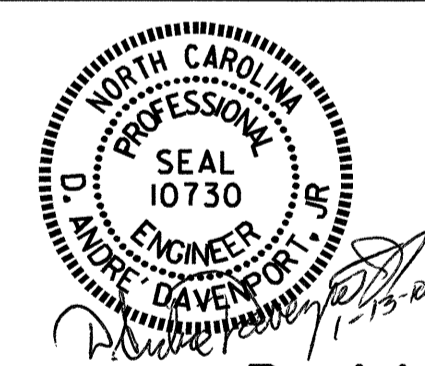
- \* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BARS.
- \*\* THE SP-2 AND SP-3 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BARS.

BILL OF MATERIAL

| BAR NO.                         | SIZE | TYPE | LENGTH    | WEIGHT      |
|---------------------------------|------|------|-----------|-------------|
| B1                              | #9   | 1    | 34'-7"    | 1176        |
| B2                              | #5   | STR  | 32'-3"    | 67          |
| B3                              | #4   | STR  | 3'-4"     | 9           |
| D1                              | #6   | STR  | 1'-6"     | 90          |
| M1                              | #11  | STR  | 38'-11"   | 4549        |
| M2                              | #11  | STR  | 35'-11"   | 2099        |
| S1                              | #5   | 3    | 8'-6"     | 213         |
| U1                              | #4   | 4    | 6'-2"     | 16          |
| U2                              | #4   | 4    | 5'-0"     | 20          |
| U3                              | #4   | 4    | 3'-8"     | 20          |
| V1                              | #11  | 2    | 19'-8"    | 3448        |
| REINFORCING STEEL               |      |      |           | = 11707 LBS |
| SP-1                            | 3    | *    | 6 547'-7" | 1097        |
| SP-2                            | 2    | **   | 5 583'-4" | 1217        |
| SP-3                            | 1    | **   | 5 523'-4" | 546         |
| SPIRAL COLUMN REINFORCING STEEL |      |      |           | 2860 LBS    |
| CLASS A CONCRETE BREAKDOWN      |      |      |           |             |
| POUR #2 (COLUMNS)               |      |      |           | 12.6 C.Y.   |
| POUR #3 (CAP)                   |      |      |           | 11.1 C.Y.   |
| POUR #4 (LATERAL GUIDES)        |      |      |           | 0.1 C.Y.    |
| TOTAL                           |      |      |           | 23.8 C.Y.   |

DRILLED PIERS

|                                   |                |
|-----------------------------------|----------------|
| DRILLED PIER CONCRETE             |                |
| POUR #1 (DRILLED PIERS)           | 29.9 C.Y.      |
| 3'-6" Ø DRILLED PIERS NOT IN SOIL | 9.00 LIN. FT.  |
| 3'-6" Ø DRILLED PIERS IN SOIL     | 75.00 LIN. FT. |
| 3'-6" Ø PERMANENT STEEL CASING    | 11.89 LIN. FT. |
| CSL TUBES                         | 366 LIN. FT.   |

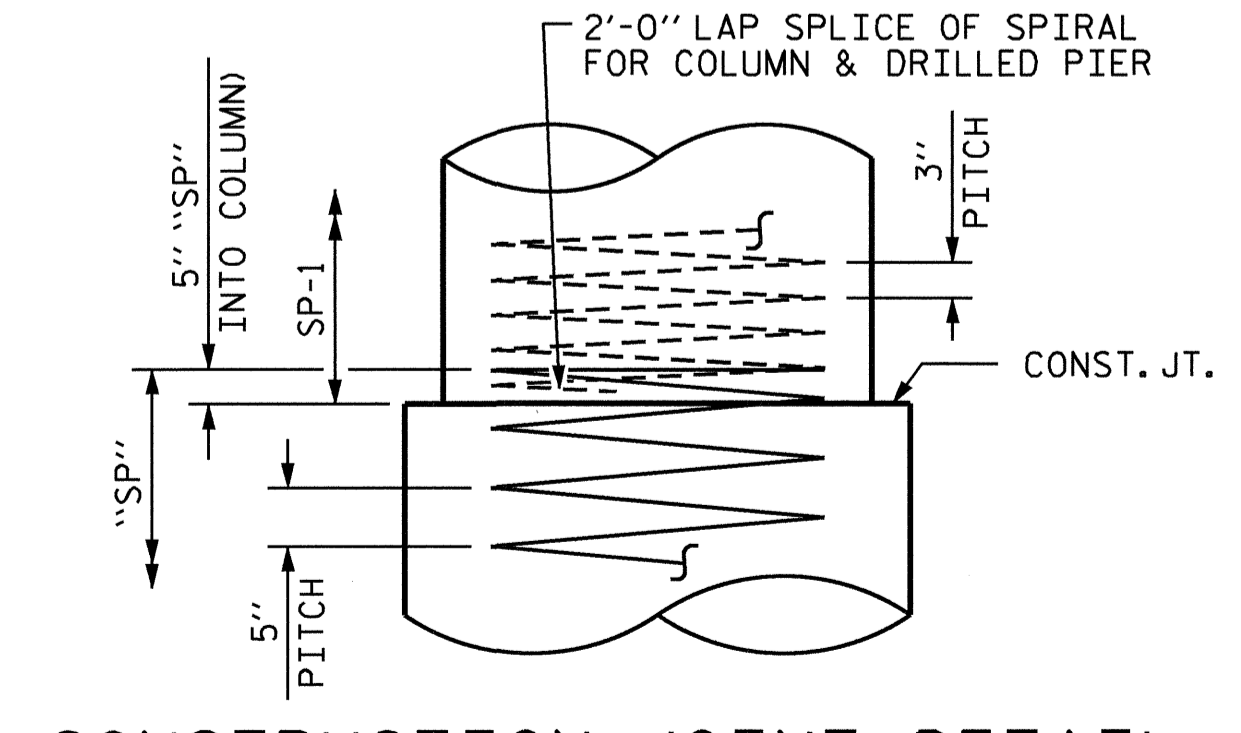


PROJECT NO. B-4468  
CLEVELAND COUNTY  
 STATION: 16+97.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT #1



CONSTRUCTION JOINT DETAIL

DRAWN BY: D. A. GLADDEN DATE: 3-16-09  
 CHECKED BY: D. A. DAVENPORT DATE: 8-21-09

11-JAN-2010 09:10  
 x:\structures\agladden\microstation\b4468.sd.b\*.dgn  
 davenport

| REVISIONS |     |       |     |     |       | SHEET NO.<br>S-18  |
|-----------|-----|-------|-----|-----|-------|--------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                    |
| 1         |     |       | 3   |     |       | TOTAL SHEETS<br>26 |
| 2         |     |       | 4   |     |       |                    |

**NOTES**

THE STIRRUPS IN THE CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6 DI DOWELS.

HOOKS ON V1 BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.

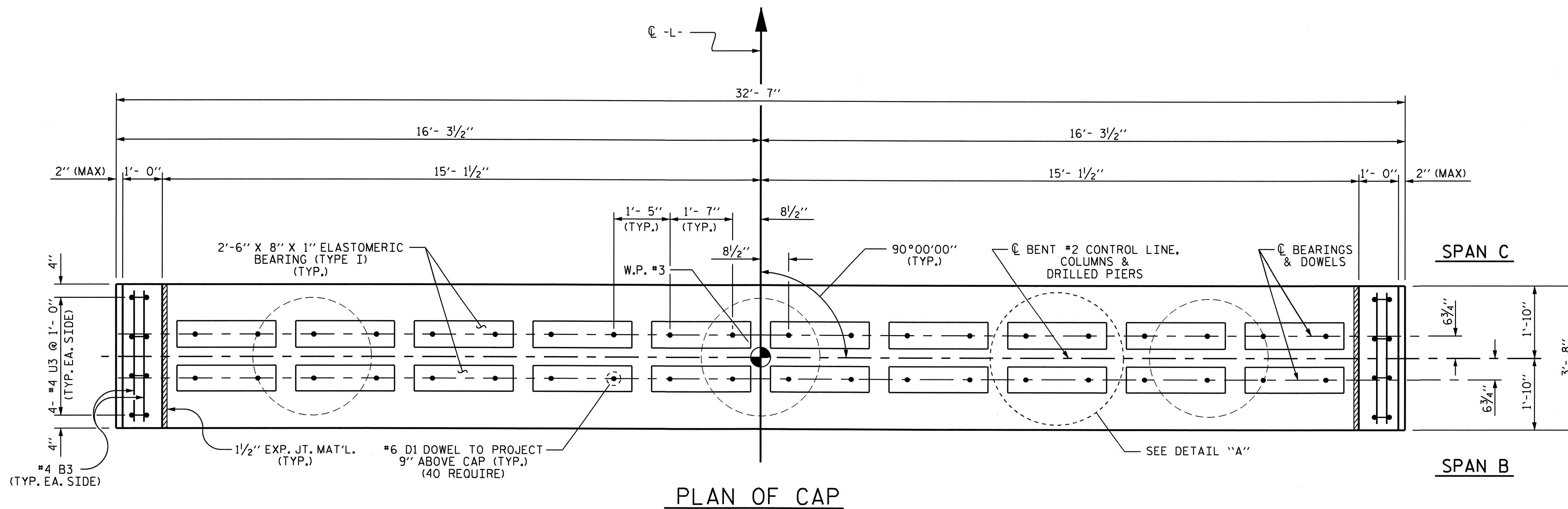
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL".

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

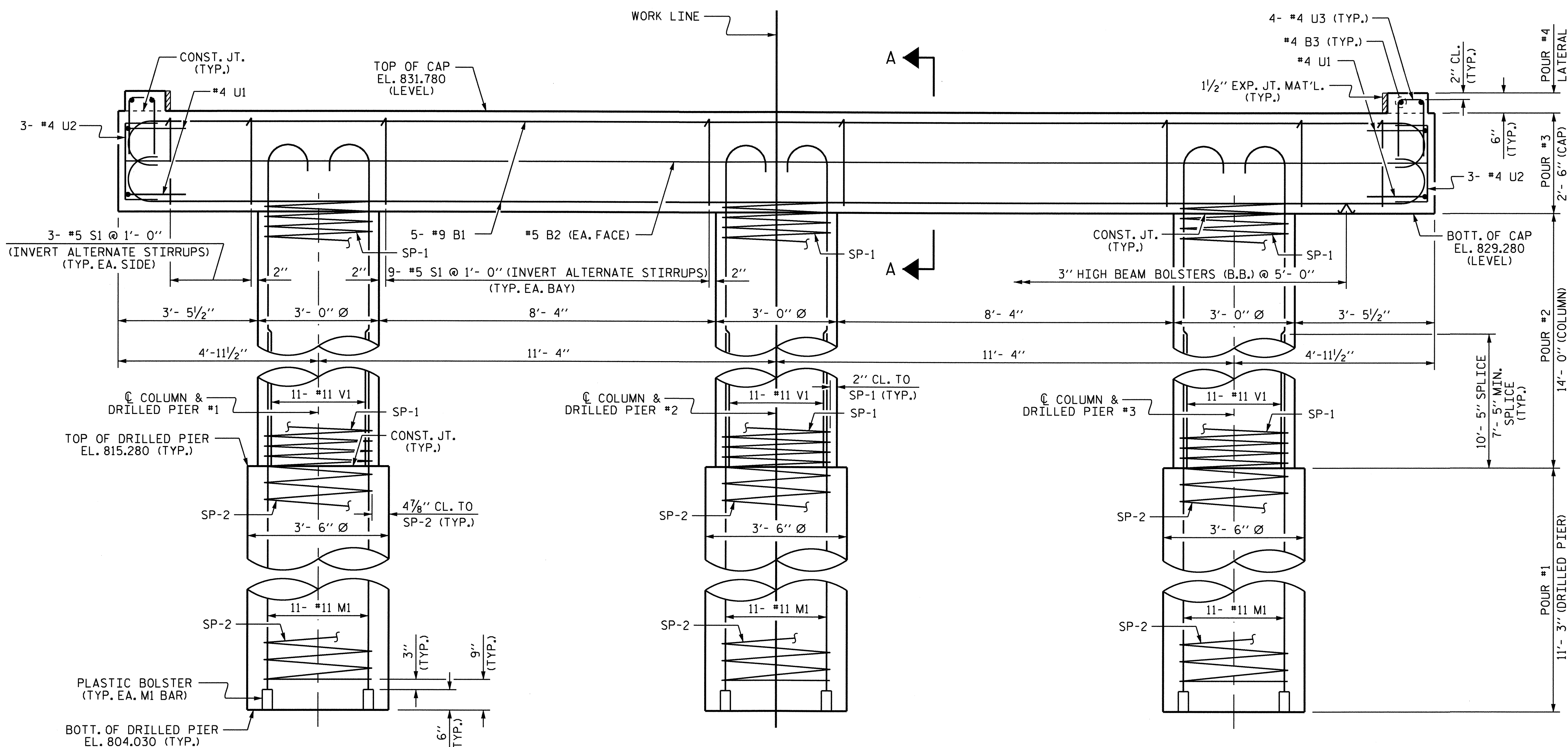
FOR DRILLED PIERS, SEE SPECIAL PROVISIONS.

THE LATERAL GUIDE AT EACH END OF THE BENT CAP IS NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

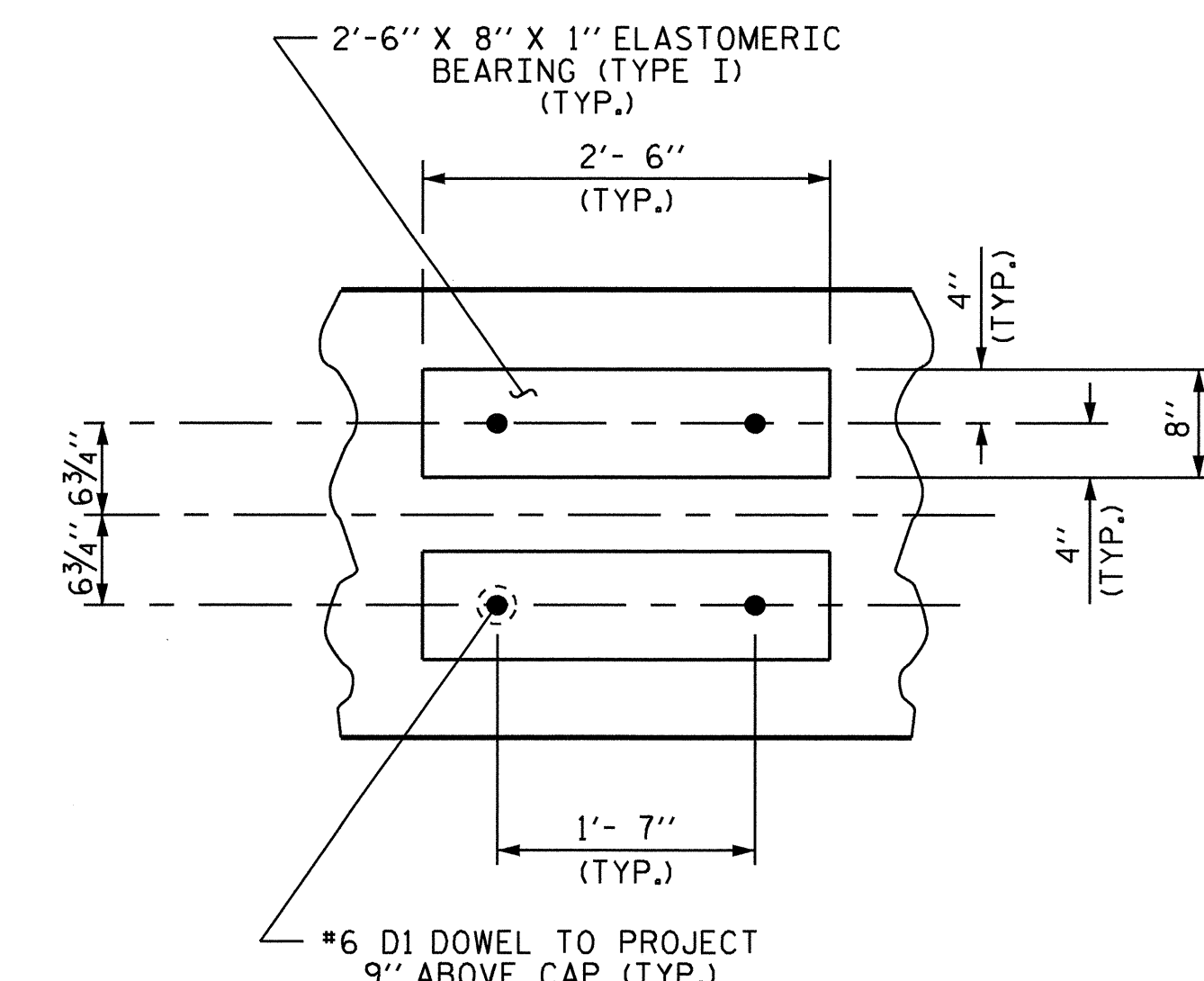
THE LOCATION OF THE CONSTRUCTION JOINT IN THE DRILLED PIERS IS BASED ON AN APPROXIMATE GROUND LINE ELEVATION. IF THE CONSTRUCTION JOINT IS ABOVE THE ACTUAL GROUND LINE ELEVATION, THE CONTRACTOR SHALL PLACE THE CONSTRUCTION JOINT 1 FT. BELOW THE GROUND LINE.



**PLAN OF CAP**



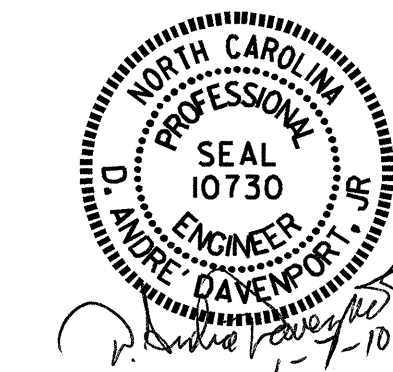
**ELEVATION**



**DETAIL "A"**

PROJECT NO. B-4468  
CLEVELAND COUNTY  
 STATION: 16+97.00 -L-

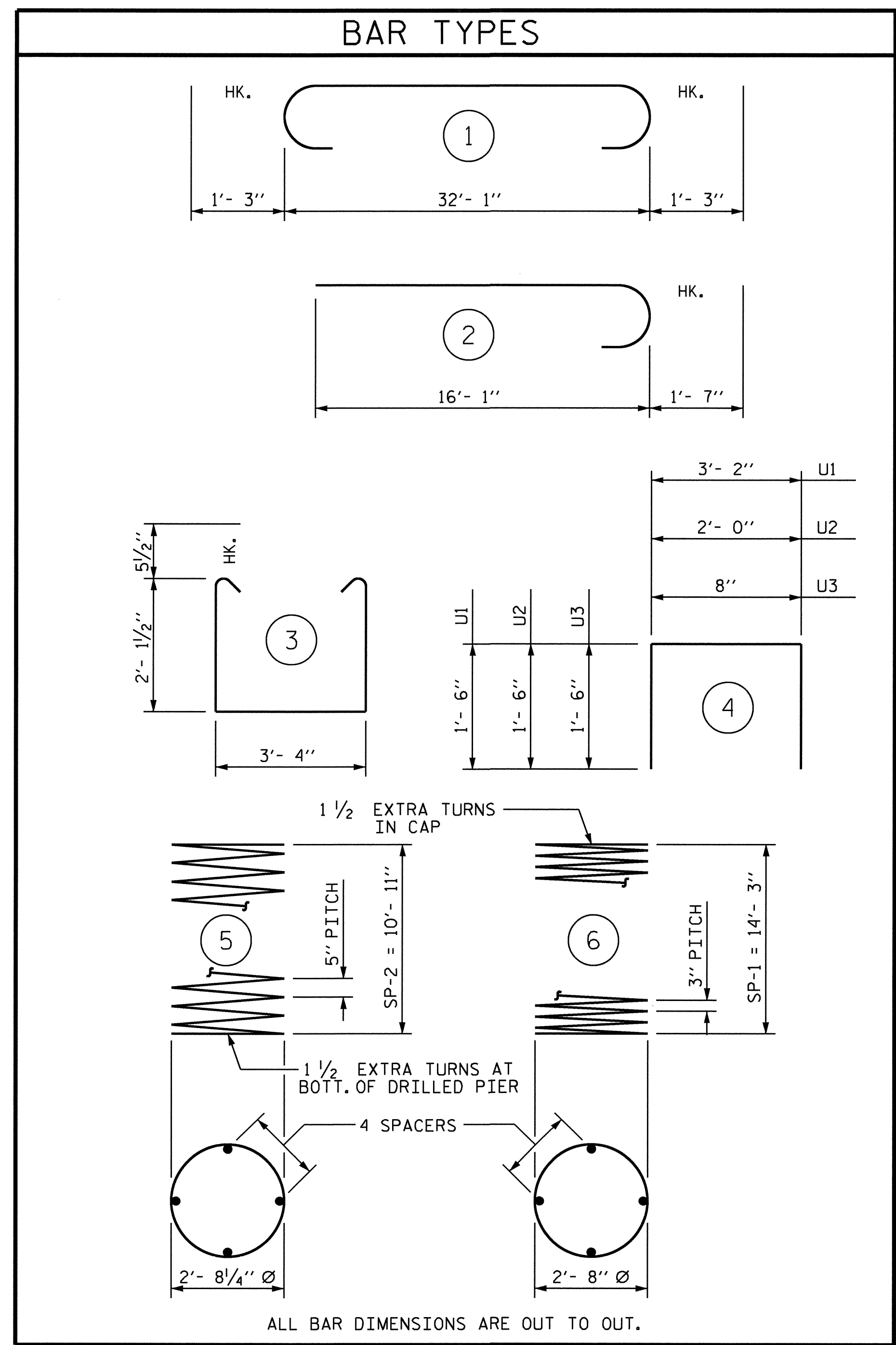
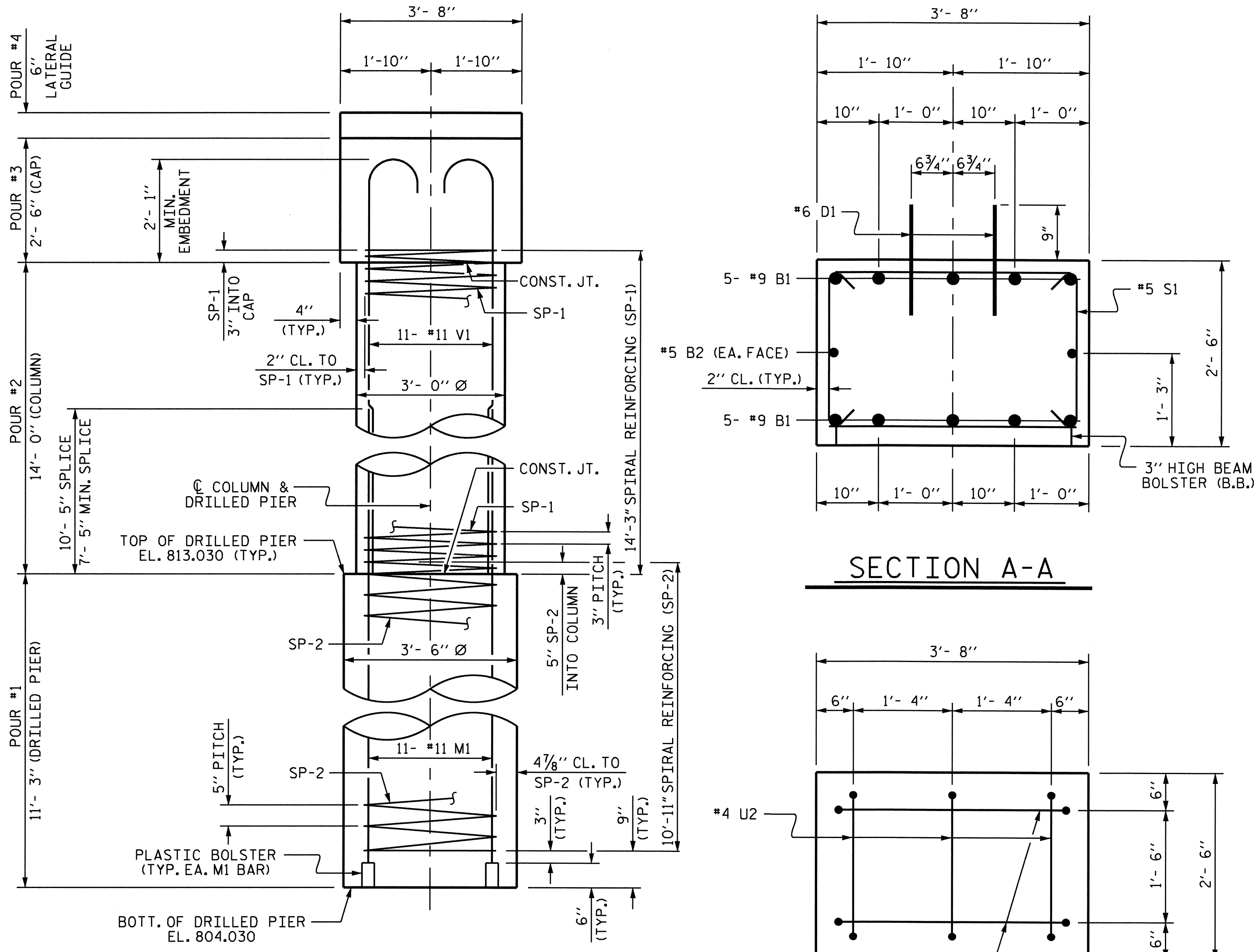
SHEET 1 OF 2



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

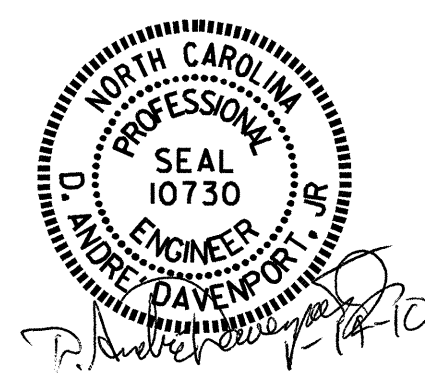
|                    |
|--------------------|
| SHEET NO.<br>S-19  |
| TOTAL SHEETS<br>26 |

DRAWN BY: D. A. GLADDEN DATE: 3-16-09  
 CHECKED BY: D. A. DAVENPORT DATE: 8-21-09



| BILL OF MATERIAL                |      |      |        |         |           |
|---------------------------------|------|------|--------|---------|-----------|
| BAR NO.                         | SIZE | TYPE | LENGTH | WEIGHT  |           |
| B1                              | #9   | 1    | 34'-7" | 1176    |           |
| B2                              | #5   | STR  | 32'-3" | 67      |           |
| B3                              | #4   | STR  | 3'-4"  | 9       |           |
| D1                              | #6   | STR  | 1'-6"  | 90      |           |
| M1                              | #11  | STR  | 21'-2" | 3711    |           |
| S1                              | #5   | 3    | 8'-6"  | 213     |           |
| U1                              | #4   | 4    | 6'-2"  | 16      |           |
| U2                              | #4   | 4    | 5'-0"  | 20      |           |
| U3                              | #4   | 4    | 3'-8"  | 20      |           |
| V1                              | #11  | 2    | 17'-8" | 3097    |           |
| REINFORCING STEEL               |      |      |        | =       | 8419 LBS  |
| SP-1                            | 3    | *    | 6      | 481'-9" | 965       |
| SP-2                            | 3    | **   | 5      | 229'-8" | 719       |
| SPIRAL COLUMN REINFORCING STEEL |      |      |        |         | 1697 LBS  |
| CLASS A CONCRETE BREAKDOWN      |      |      |        |         |           |
| POUR #2 (COLUMNS)               |      |      |        |         | 11.0 C.Y. |
| POUR #3 (CAP)                   |      |      |        |         | 11.1 C.Y. |
| POUR #4 (LATERAL GUIDES)        |      |      |        |         | 0.1 C.Y.  |
| TOTAL                           |      |      |        |         | 22.2 C.Y. |

| DRILLED PIERS                     |                |
|-----------------------------------|----------------|
| DRILLED PIER CONCRETE             |                |
| POUR #1 (DRILLED PIERS)           | 12.0 C.Y.      |
| 3'-6" Ø DRILLED PIERS NOT IN SOIL | 27.00 LIN. FT. |
| 3'-6" Ø DRILLED PIERS IN SOIL     | 6.75 LIN. FT.  |
| 3'-6" Ø PERMANENT STEEL CASING    | 7.75 LIN. FT.  |
| CSL TUBES                         | 165 LIN. FT.   |



- \* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W20 OR D-20 COLD DRAWN WIRE OR #4 PLAIN OR DEFORMED BARS.
- \*\* THE SP-2 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BARS.

PROJECT NO. B-4468  
CLEVELAND COUNTY  
 STATION: 16+97.00 -L-

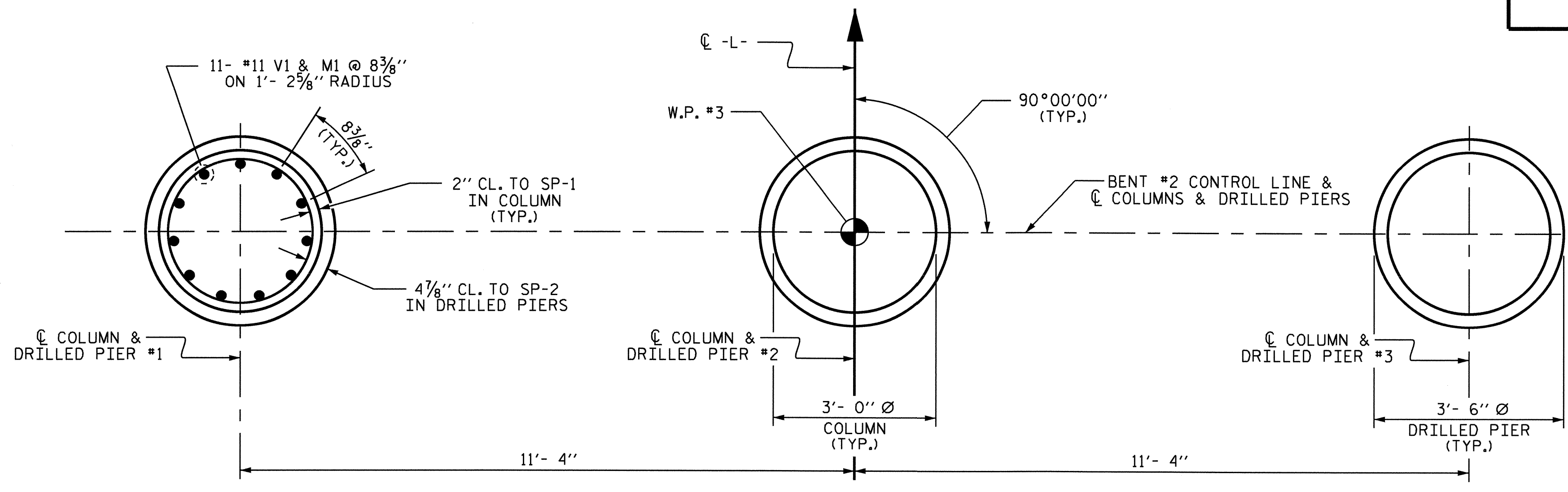
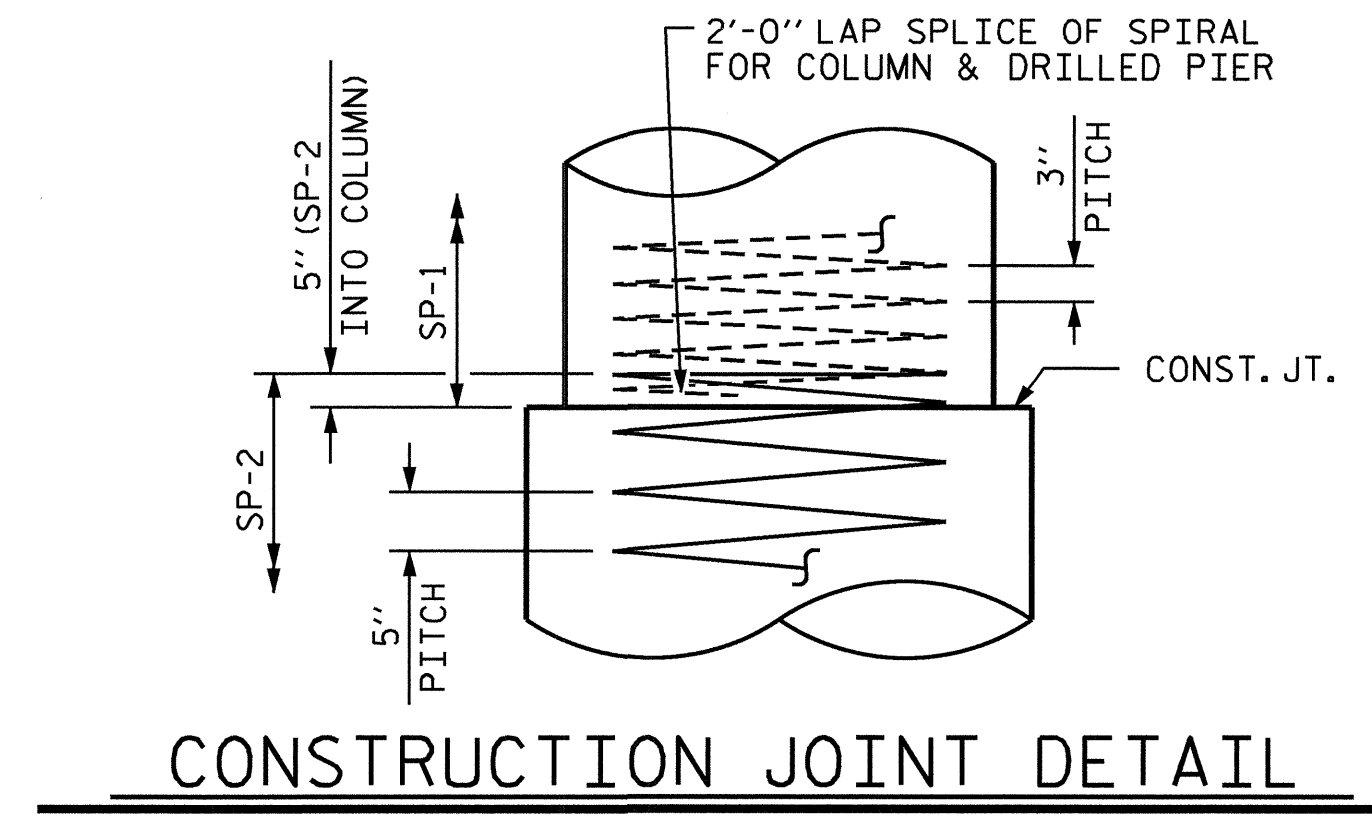
SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE  
 BENT #2**

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

SHEET NO. S-20  
 TOTAL SHEETS 26



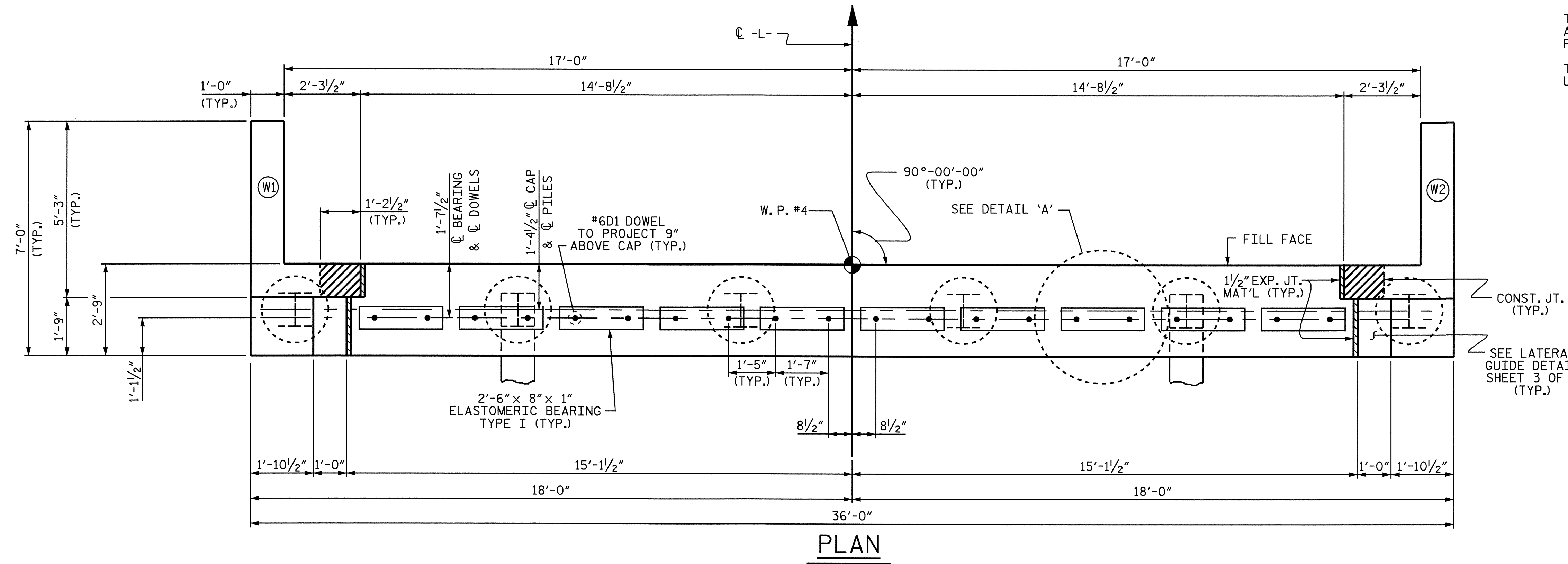
DRAWN BY: D. A. GLADDEN DATE: 3-16-09  
 CHECKED BY: D. A. DAVENPORT DATE: 8-21-09

-- NOTES --

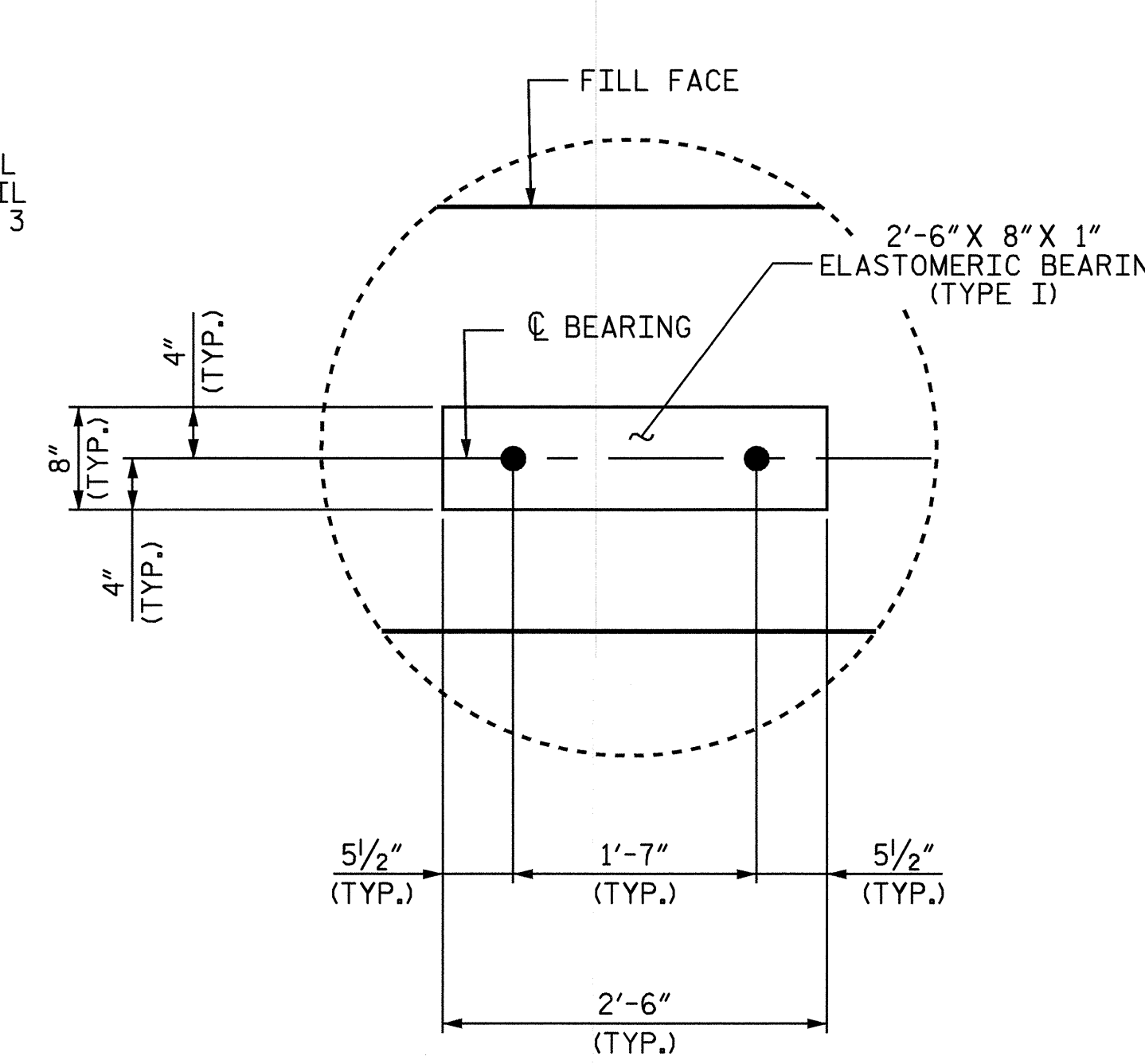
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR #6D1 DOWELS.

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

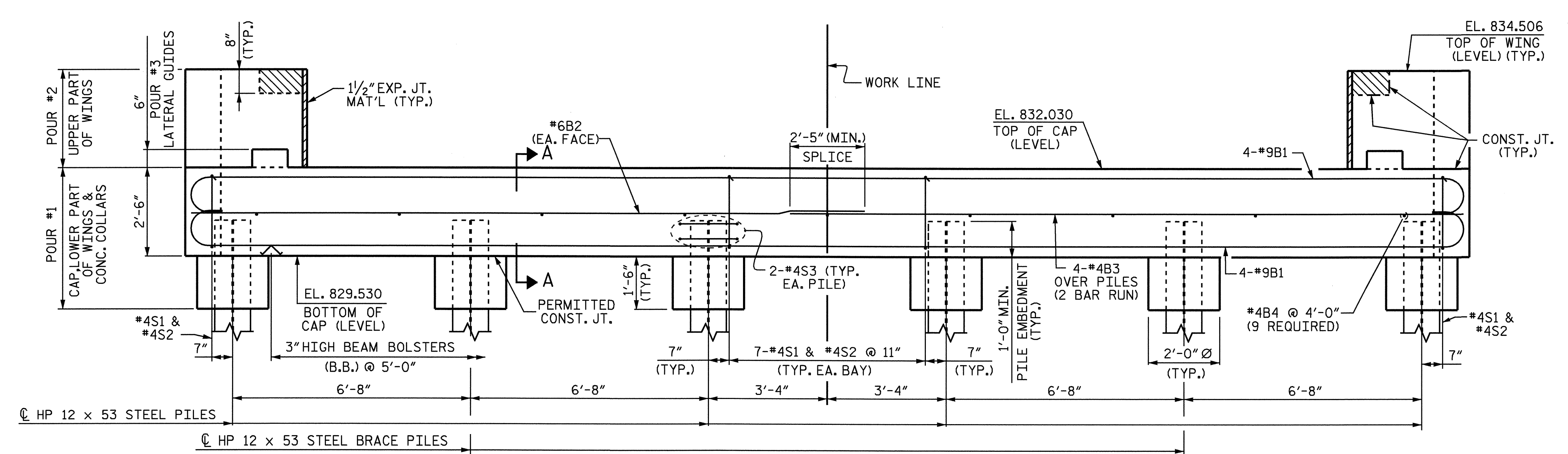
THE LATERAL GUIDE AT EACH END OF THE CAP SHALL NOT BE POURED UNTIL THE CORED SLAB UNITS ARE PLACED.



PLAN



DETAIL 'A'

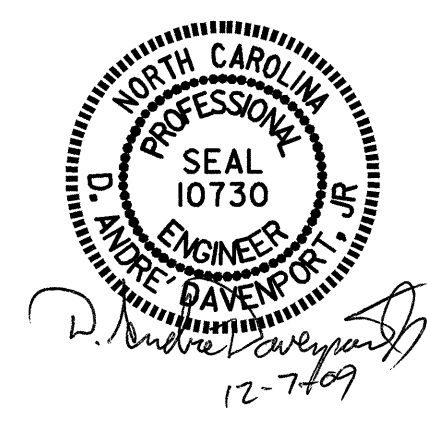


ELEVATION

PROJECT NO. B-4468  
CLEVELAND COUNTY  
 STATION: 16+97.00-L-  
 SHEET 1 OF 3

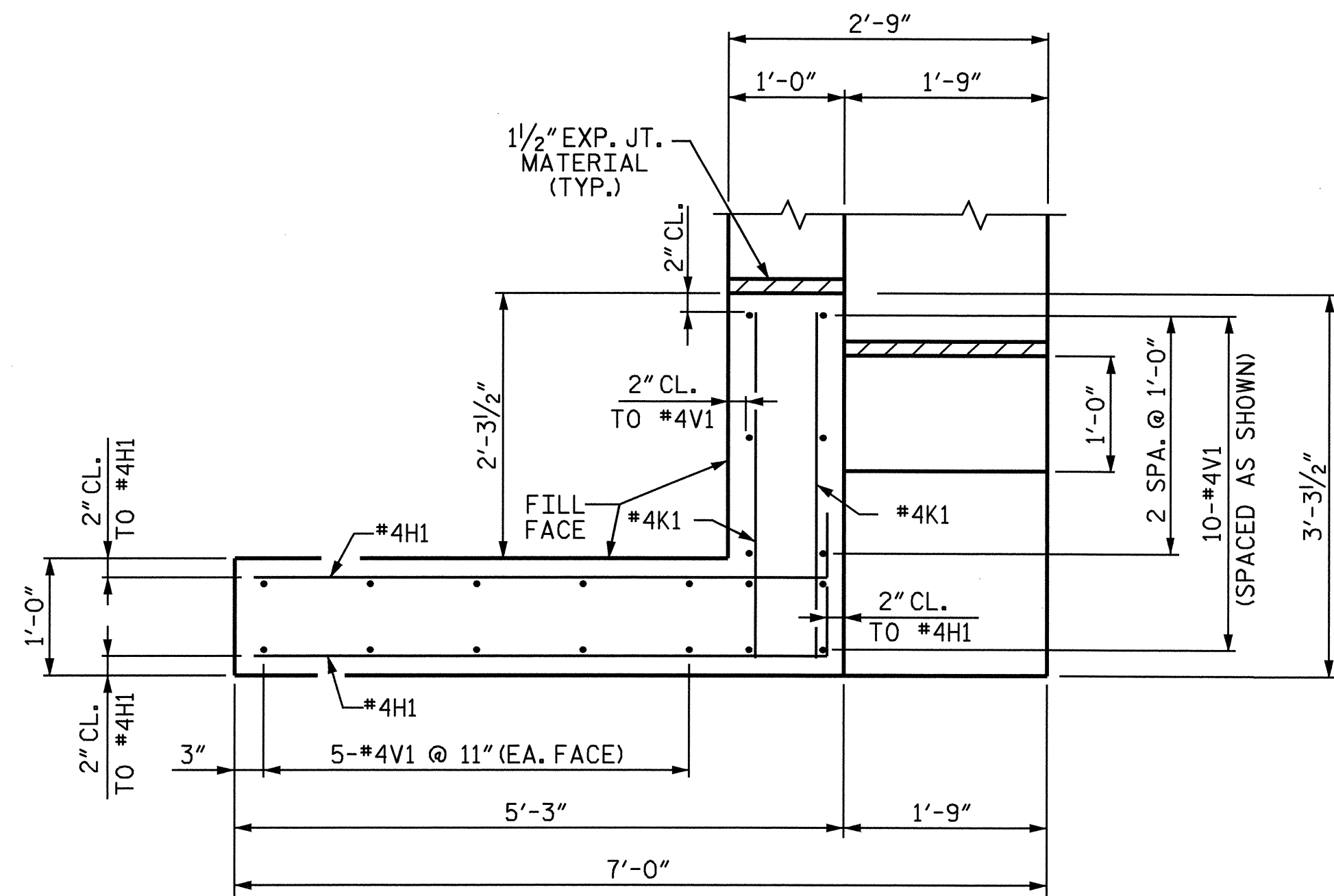
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**SUBSTRUCTURE  
 END BENT #2**

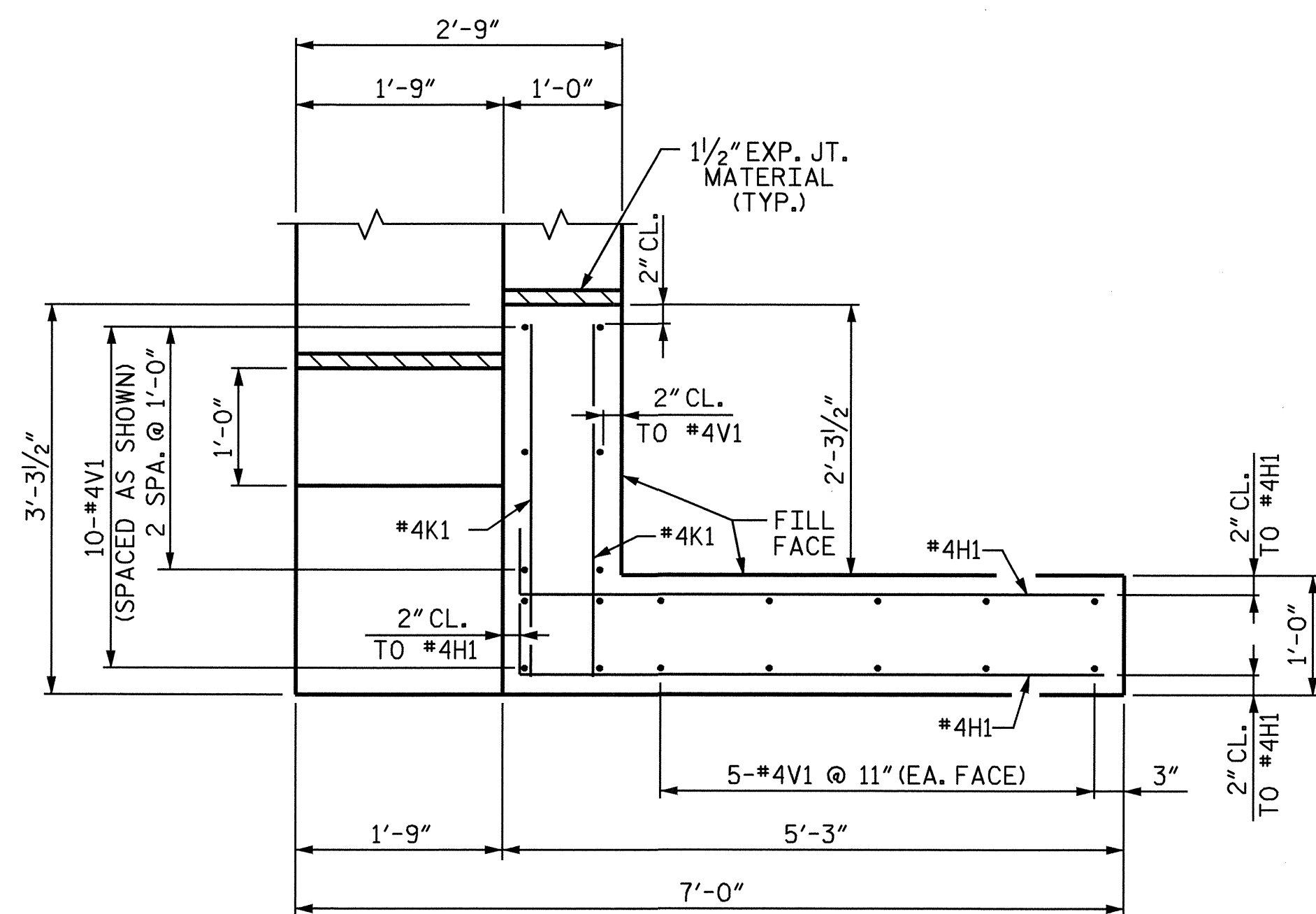


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| 2         |     |       | 4   |     |       | 26           |  |

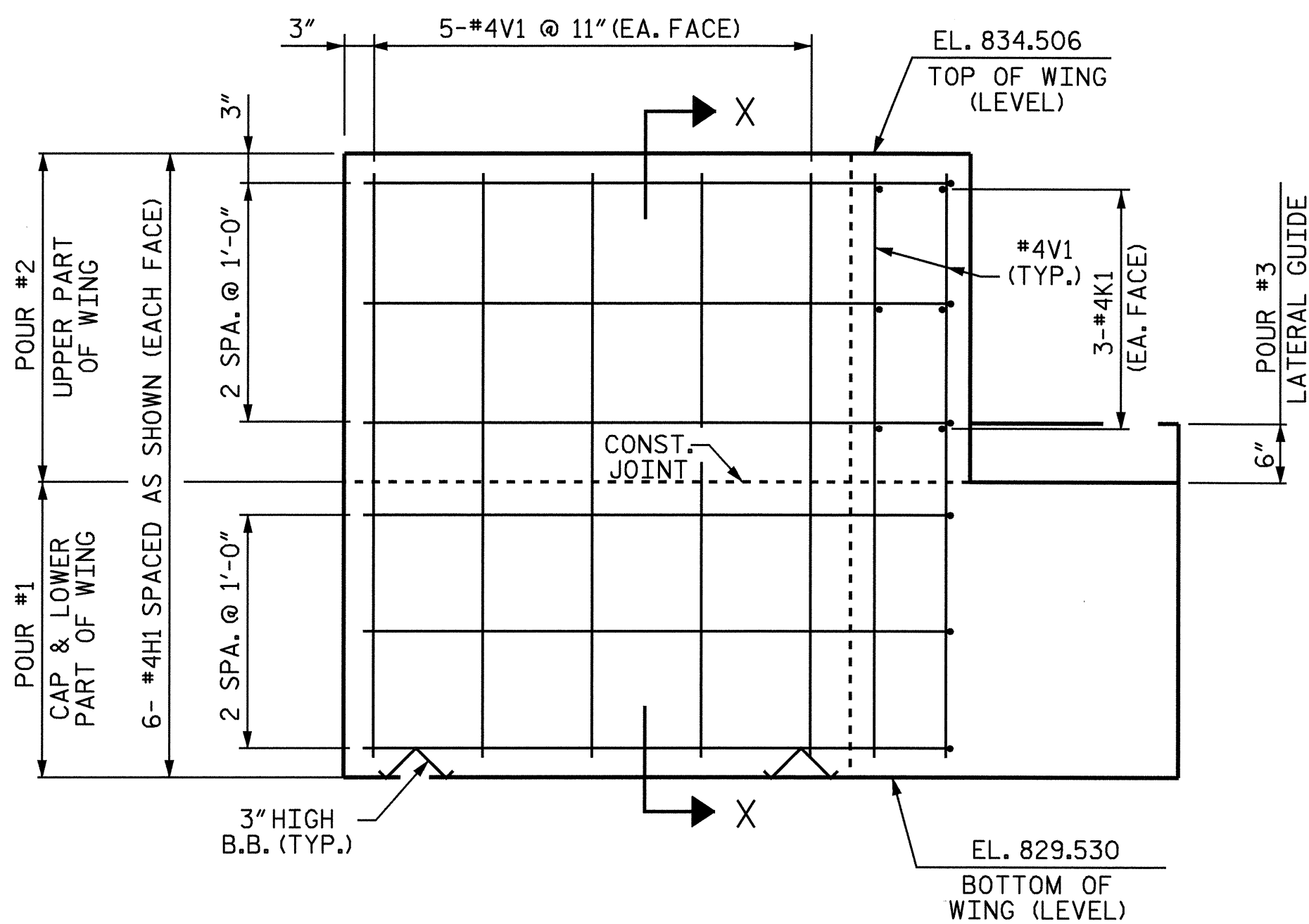
DRAWN BY : H. TOM BARBOUR DATE : 02-09-09  
 CHECKED BY : M. G. SHAIKH DATE : 02-27-09



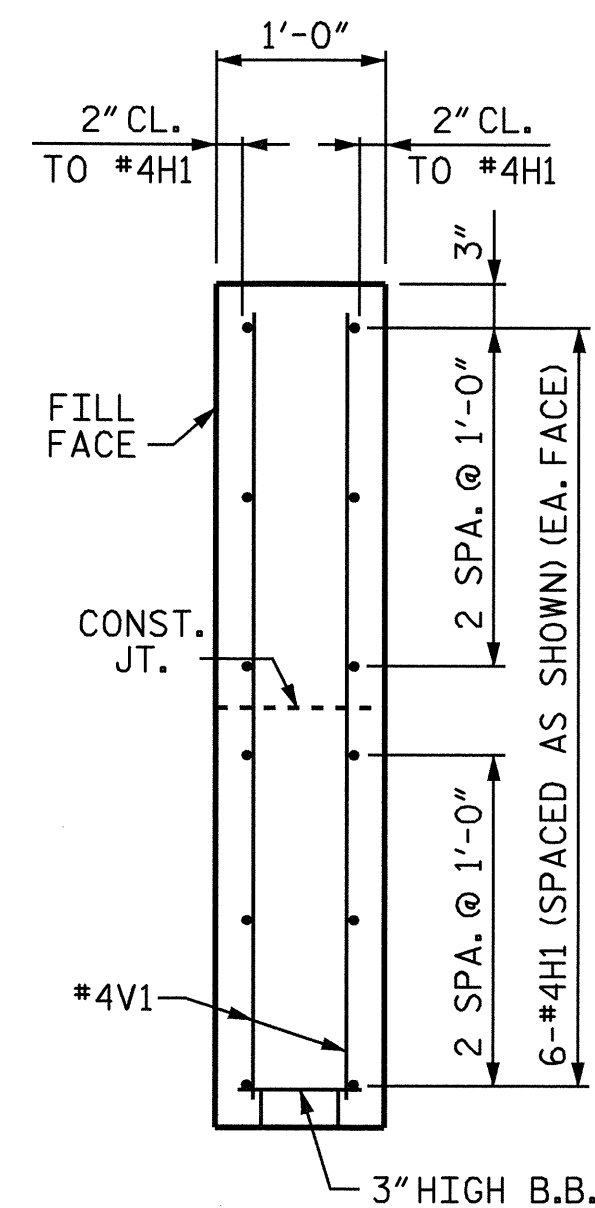
PLAN OF LEFT WING - (W1)



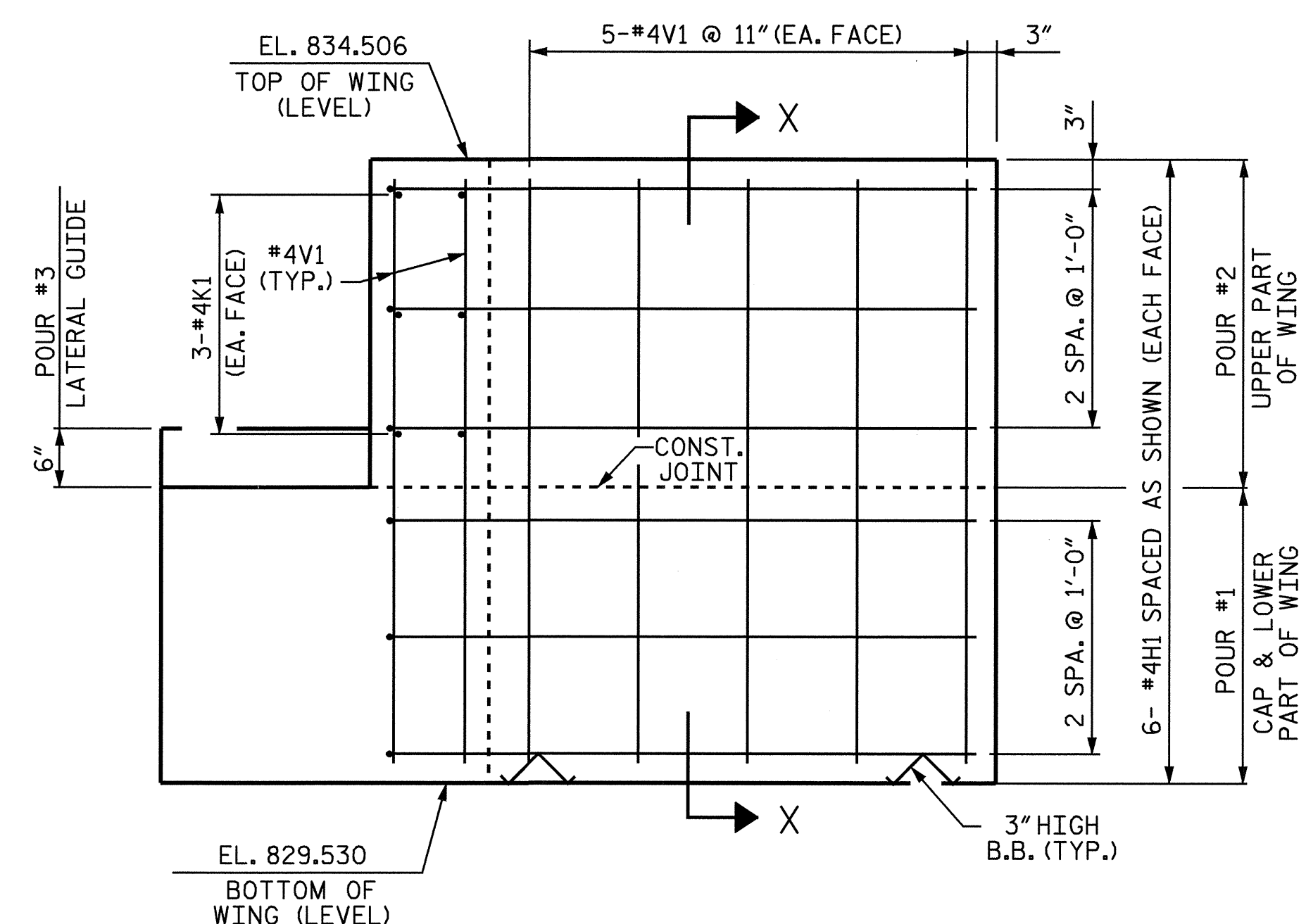
PLAN OF RIGHT WING - (W2)



ELEVATION OF LEFT WING - (W1)



SECTION X-X



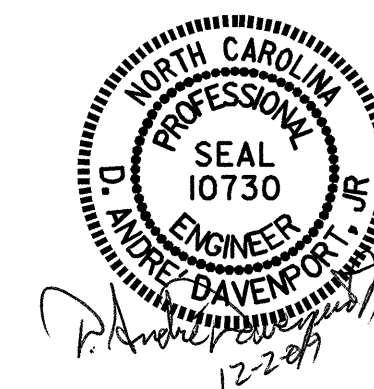
ELEVATION OF RIGHT WING - (W2)

PROJECT NO. B-4468  
 CLEVELAND COUNTY  
 STATION: 16+97.00-L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

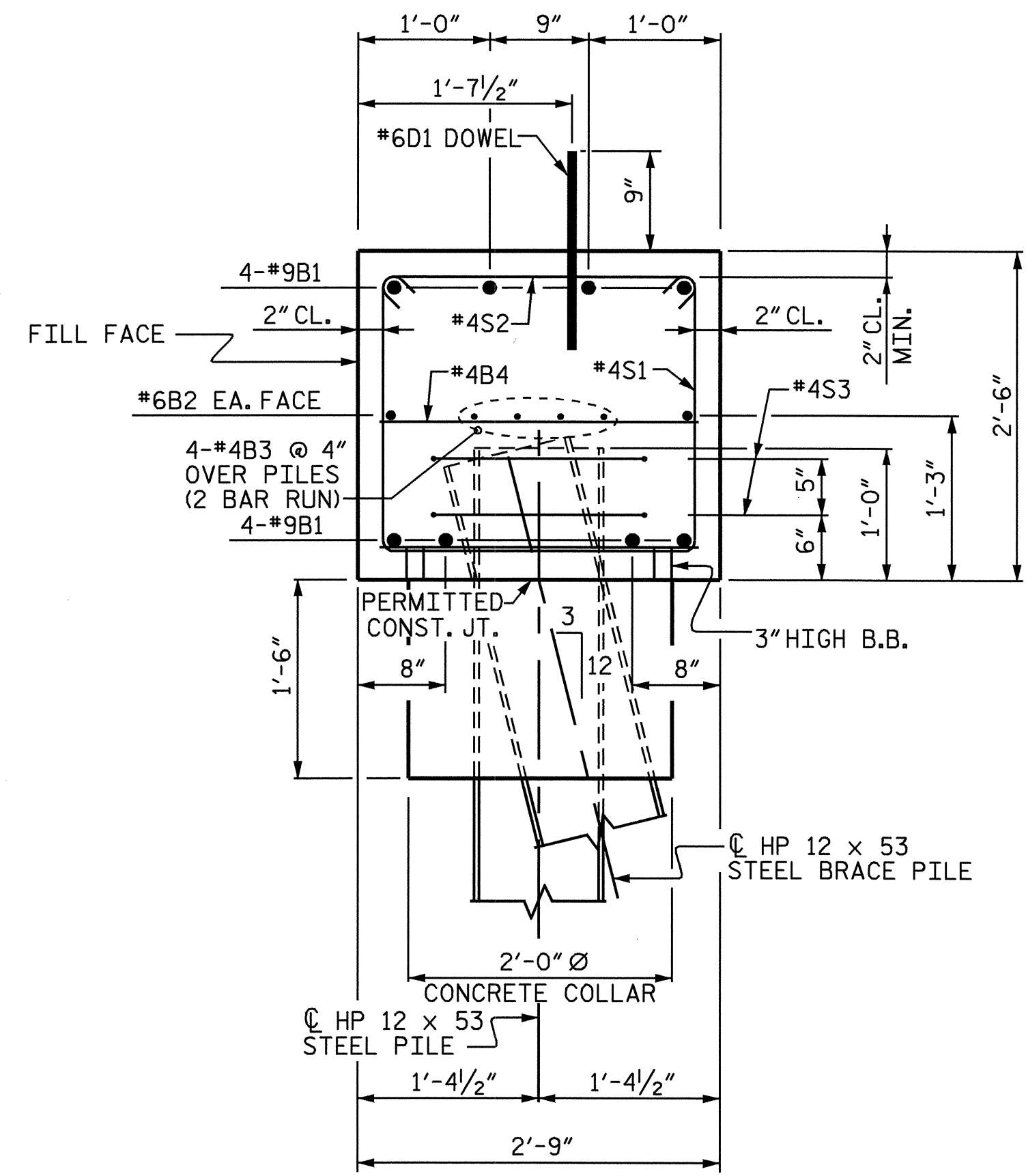
SUBSTRUCTURE  
 END BENT #2



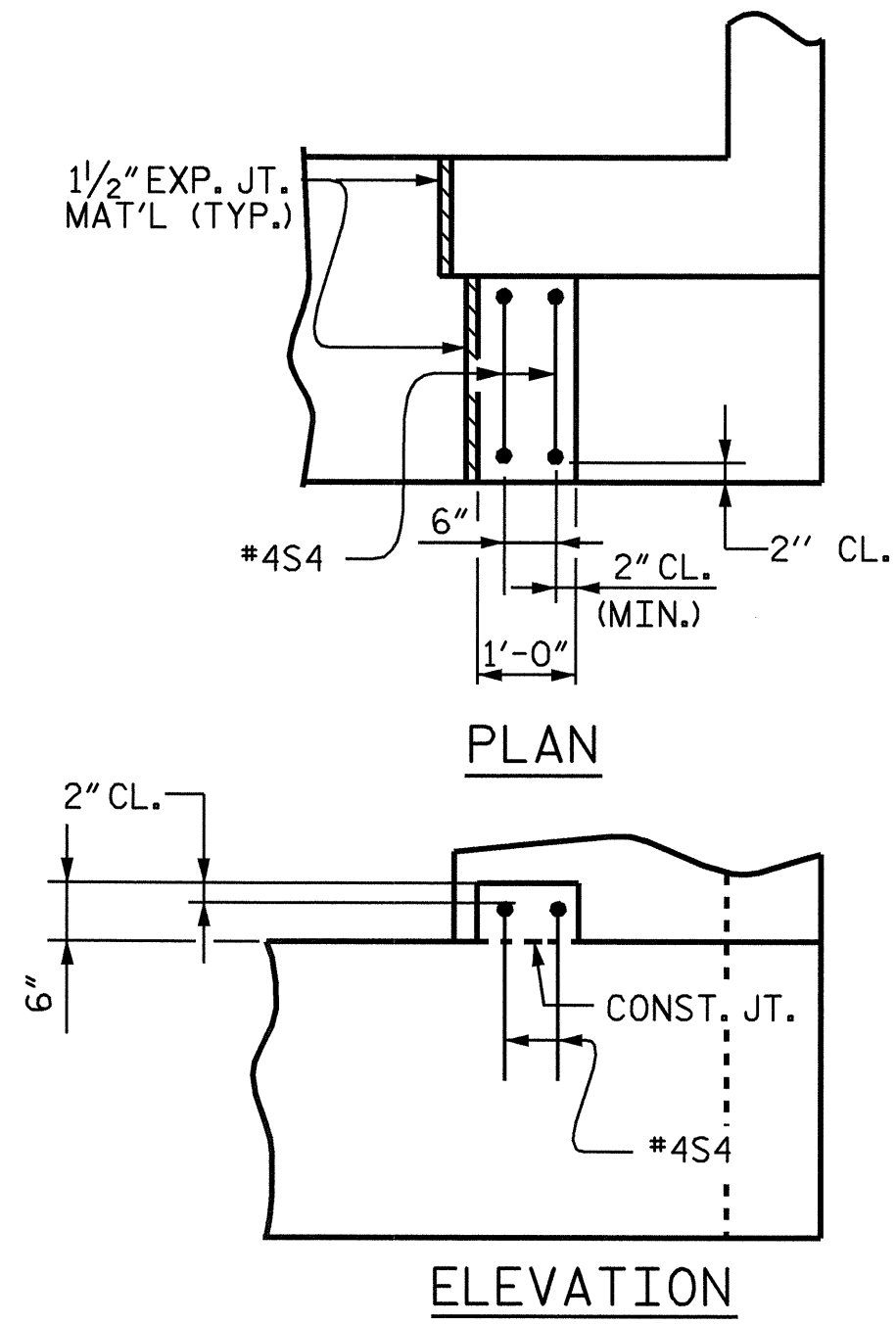
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 CHECKED BY: M. G. SHAIKH DATE: 02-27-09

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 adavenport

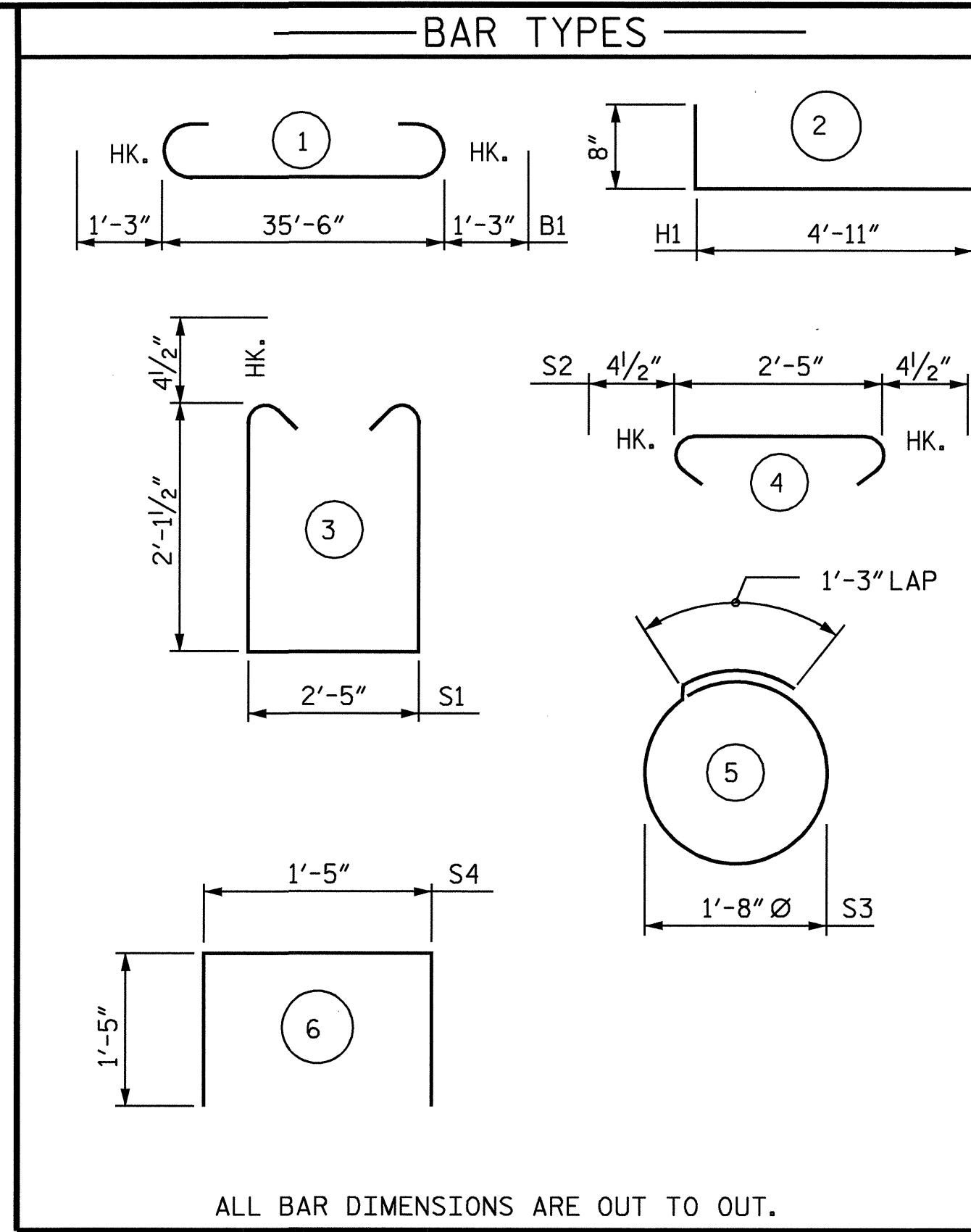
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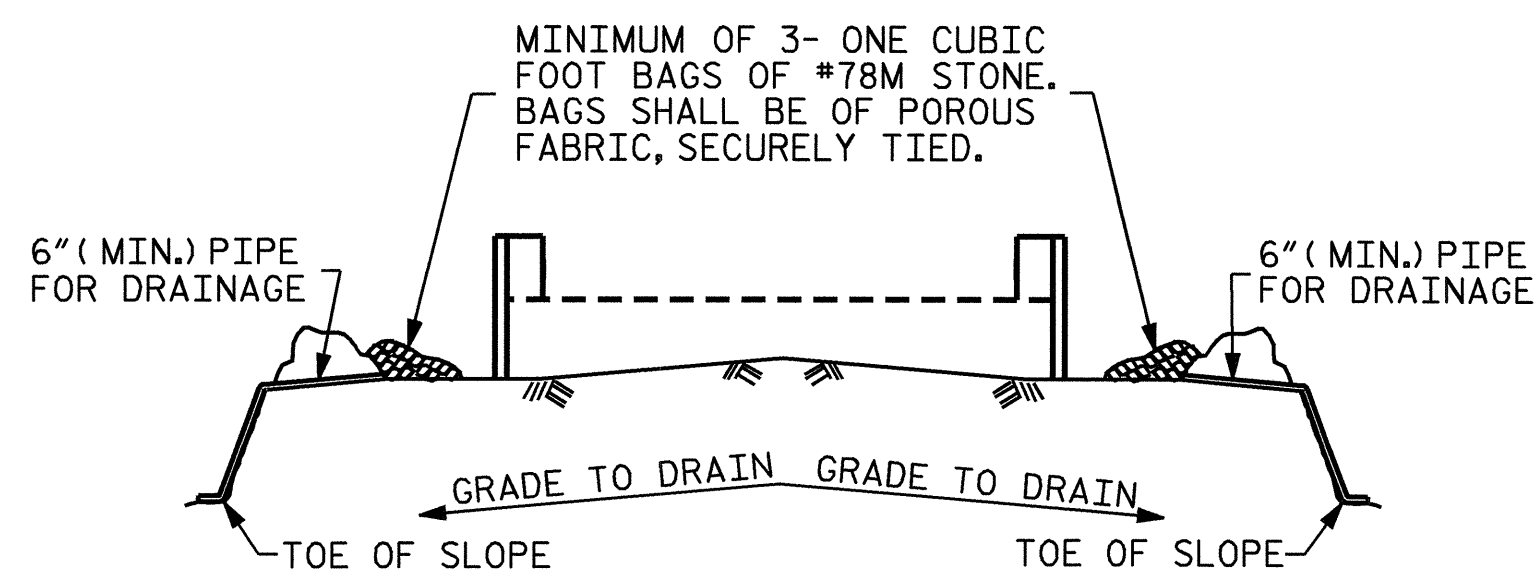
SECTION A-A



LATERAL GUIDE DETAIL  
(EA. END SIMILAR)



| BILL OF MATERIAL<br>END BENT #2                     |     |      |      |        |          |             |
|---|-----|------|------|--------|----------|-------------|
| BAR   | NO. | SIZE | TYPE | LENGTH | WEIGHT   |             |
| B1  | 8   | #9   | 1    | 38'-0" | 1034     |             |
| B2  | 2   | #6   | STR. | 35'-8" | 107      |             |
| B3  | 8   | #4   | STR. | 19'-1" | 102      |             |
| B4  | 9   | #4   | STR. | 2'-5"  | 15       |             |
| D1  | 20  | #6   | STR. | 1'-6"  | 45       |             |
| H1  | 24  | #4   | 2    | 5'-7"  | 90       |             |
| K1  | 12  | #4   | STR. | 2'-11" | 23       |             |
| S1  | 37  | #4   | 3    | 7'-5"  | 183      |             |
| S2  | 37  | #4   | 4    | 3'-2"  | 78       |             |
| S3  | 12  | #4   | 5    | 6'-6"  | 52       |             |
| S4  | 4   | #4   | 6    | 4'-3"  | 11       |             |
| V1  | 40  | #4   | STR. | 4'-7"  | 122      |             |
| REINFORCING STEEL                                   |     |      |      | LBS.   | 1862     |             |
| CLASS A CONCRETE                                    |     |      |      |        |          |             |
| POUR #1 CAP, LOWER PART OF WINGS & CONCRETE COLLARS |     |      |      |        | CU. YDS. | 11.0        |
| POUR #2 UPPER PART OF WINGS                         |     |      |      |        | CU. YDS. | 1.5         |
| POUR #3 LATERAL GUIDES                              |     |      |      |        | CU. YDS. | 0.1         |
| TOTAL   |     |      |      |        | CU. YDS. | 12.6        |
| HP 12 x 53 STEEL PILES                              |     |      |      |        |          |             |
| No. = 6   |     |      |      |        |          | 90 LIN. FT. |

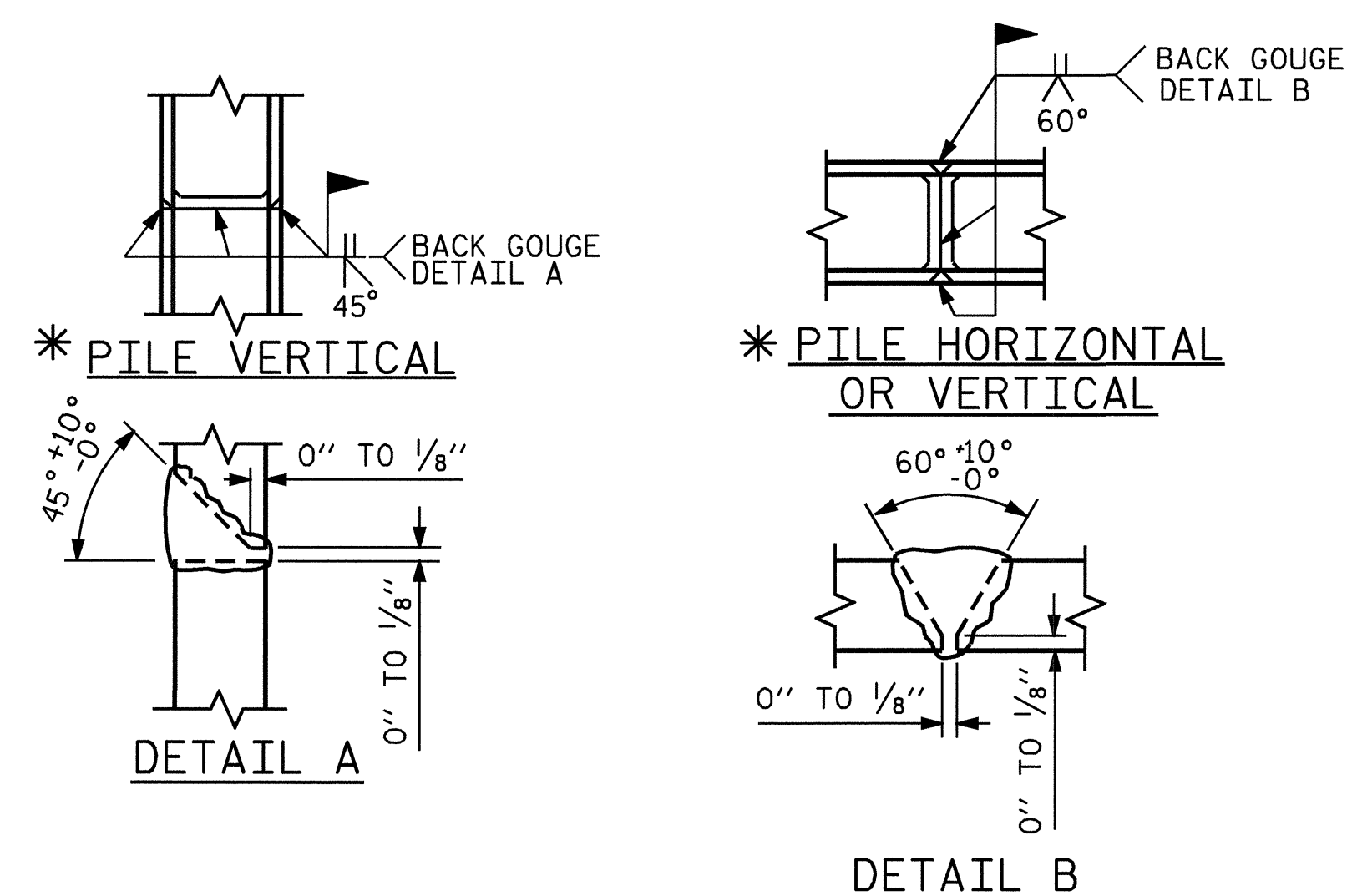


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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



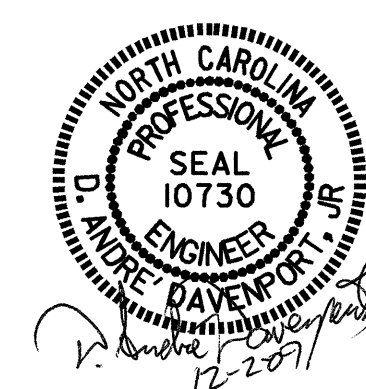
PILE SPLICE DETAILS

PROJECT NO. B-4468  
CLEVELAND COUNTY  
 STATION: 16+97.00-L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT #2

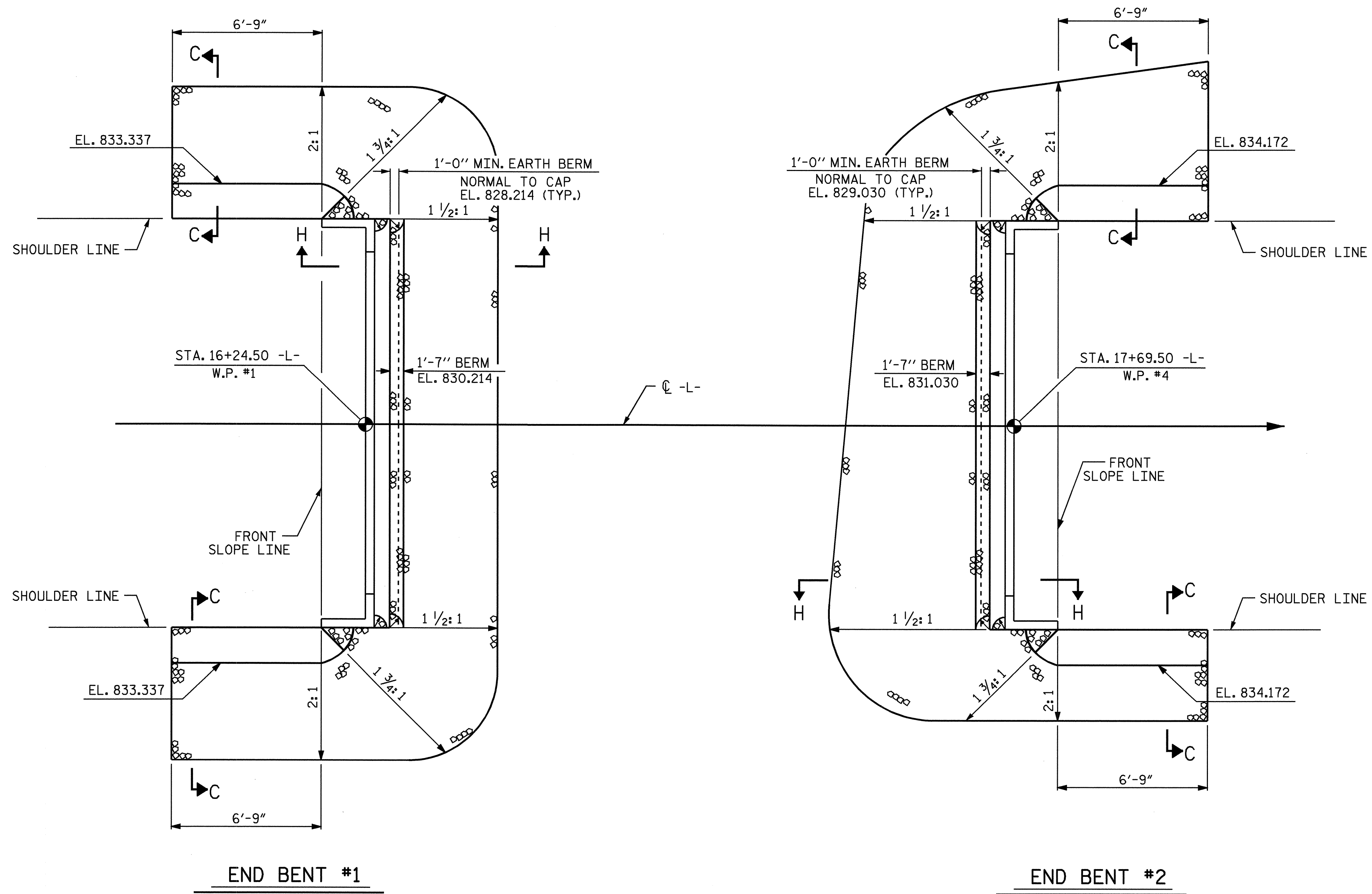


DRAWN BY : H. TOM BARBOUR DATE : 02-10-09  
 CHECKED BY : M. G. SHAIKH DATE : 02-27-09

02-DEC-2009 14:22  
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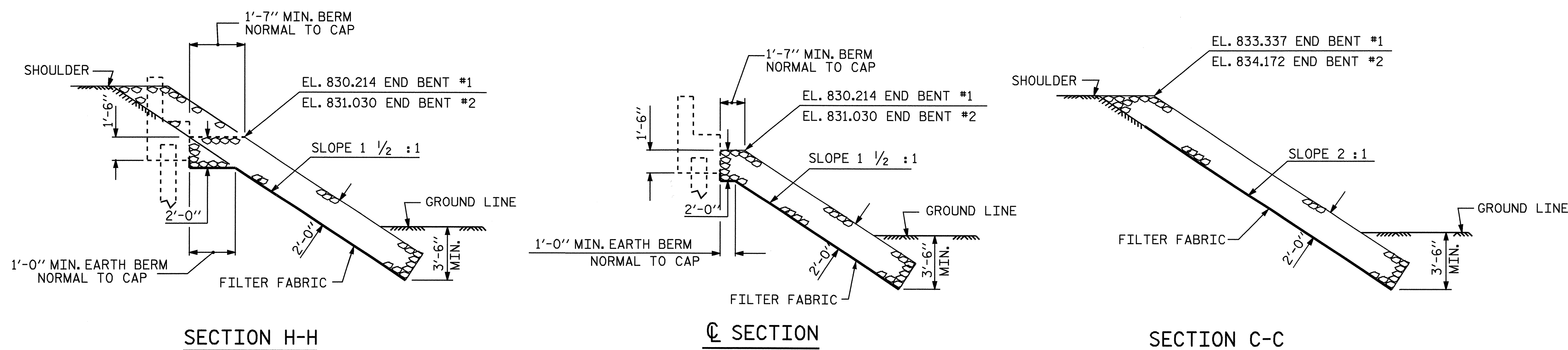
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| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 26           |





| ESTIMATED QUANTITIES          |                     |                               |
|-------------------------------|---------------------|-------------------------------|
| BRIDGE @<br>STA. 16+97.00 -L- | RIP RAP<br>CLASS II | FILTER FABRIC<br>FOR DRAINAGE |
|                               | TONS                | SQUARE YARDS                  |
| END BENT #1                   | 140                 | 155                           |
| END BENT #2                   | 190                 | 210                           |
| TOTAL                         | 330                 | 365                           |

PLAN



SECTION H-H

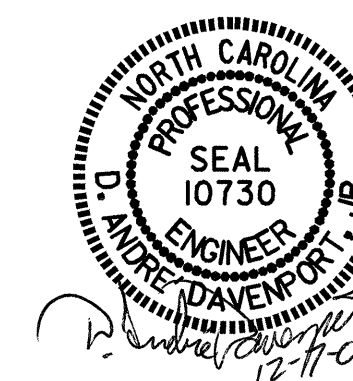
SECTION C-C

BERM RIP RAPPED

PROJECT NO. B-4468  
CLEVELAND COUNTY  
 STATION: 16+97.00-L-

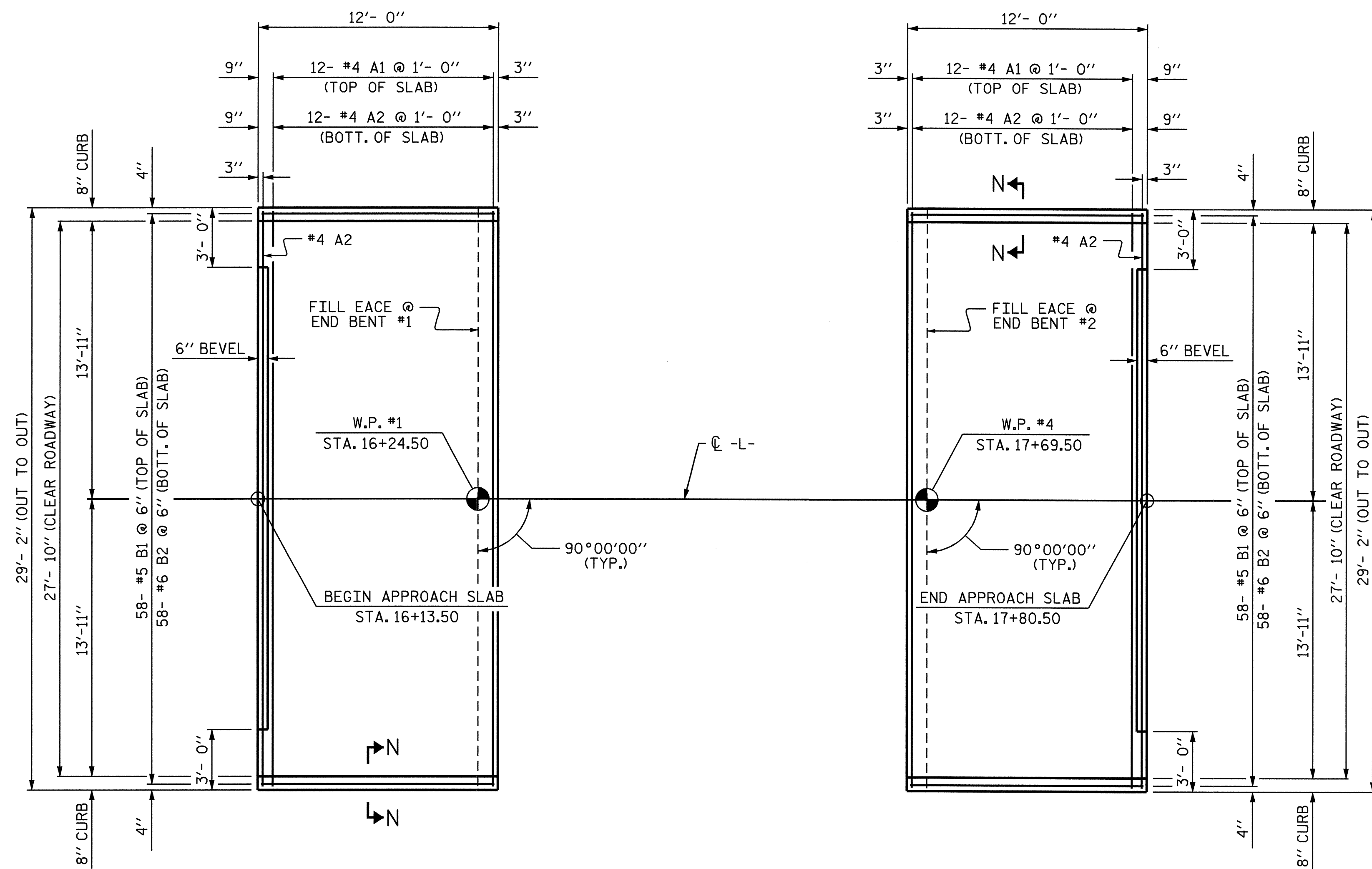
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

— RIP RAP DETAILS —



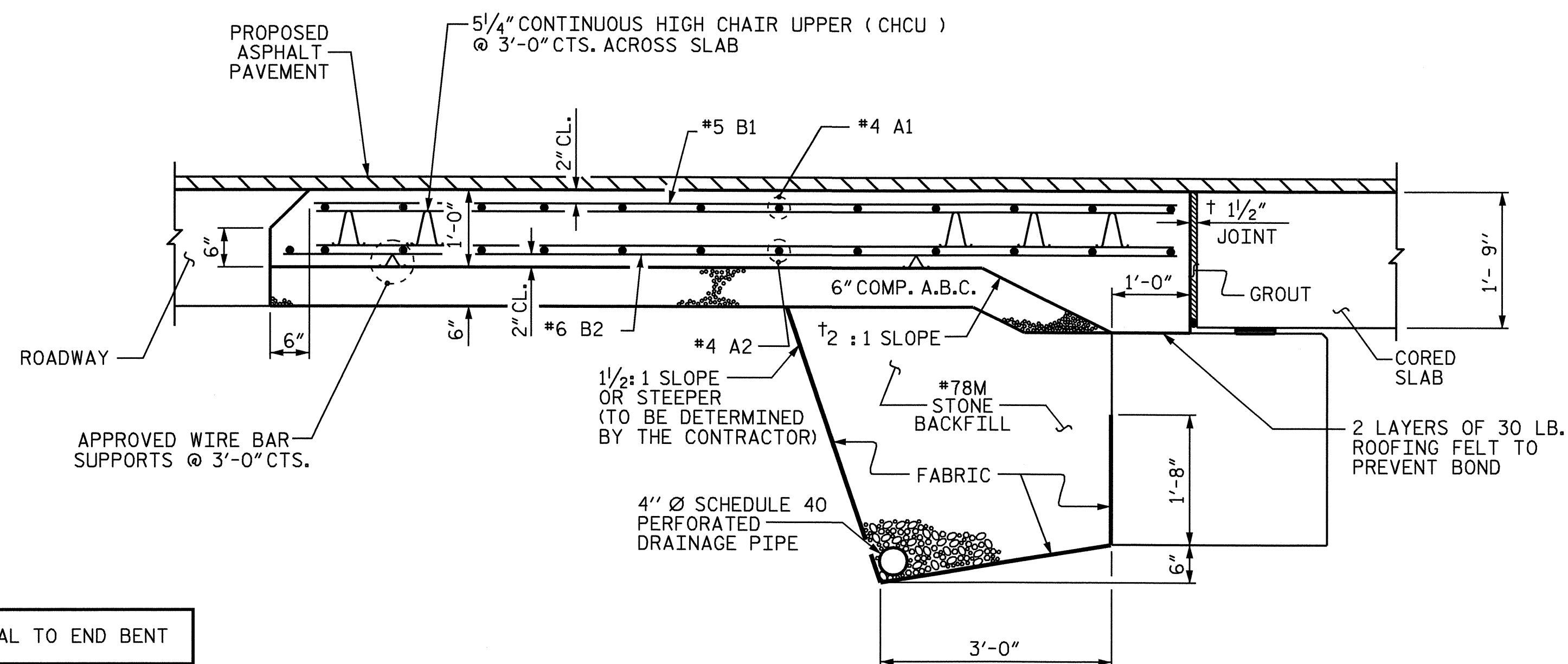
ASSEMBLED BY : M. G. SHAIKH DATE : 3-20-09  
 CHECKED BY : W. B. HILL DATE : 4-21-09  
 DRAWN BY : FCJ 2/88 REV. 7/17/98 REK/RWW  
 CHECKED BY : ARB 8/88 REV. 8/16/99 RWW/LES  
 REV. 10/17/00 RWW/LES

| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-24         |
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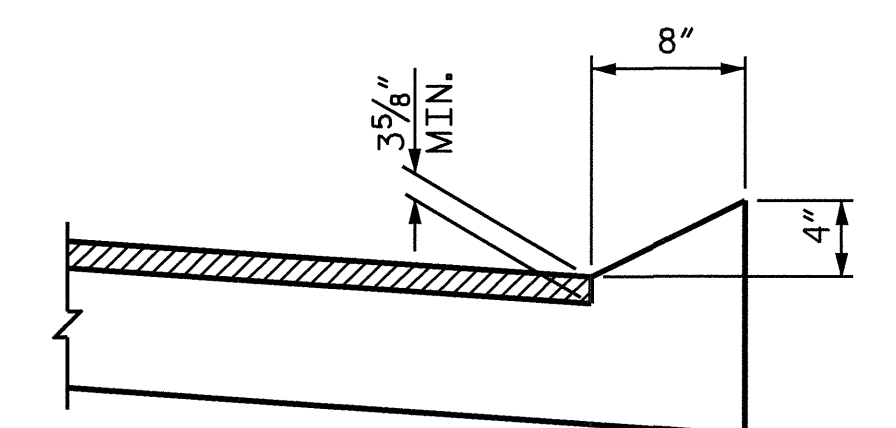


APPROACH SLAB @ END BENT #1

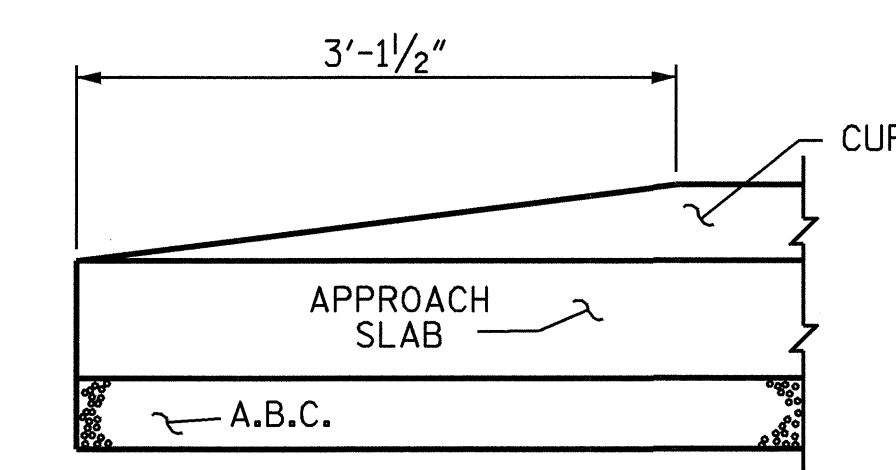
APPROACH SLAB @ END BENT #2



SECTION THRU SLAB



SECTION N-N



END OF CURB WITHOUT SHOULDER BERM GUTTER

CURB DETAILS

NOTES

FOR BRIDGE APPROACH FILL INCLUDING FABRIC, 4" Ø DRAINAGE PIPE, AND #78M STONE BACKFILL, SEE ROADWAY PLANS.

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

FABRIC SHALL BE TYPE 1 ENGINEERING FABRIC IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

#78M STONE BACKFILL (CLASS V SELECT MATERIAL) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

#78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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

THE 6" COMP. A.B.C. SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB AND SHALL EXTEND 1'-0" OUTSIDE OF EACH EDGE OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 4" TYPE B-25.0B ASPHALT CONCRETE BASE COURSE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE BASE COURSE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB.

THE CONTRACTOR MAY USE 5" CLASS "A" CONCRETE BASE IN LIEU OF 6" COMP. A.B.C. IF THIS OPTION IS USED, THE CONCRETE BASE SHALL BE FLUSH WITH THE ROADWAY END OF THE APPROACH SLAB, AND THE WIDTH SHALL BE THE SAME AS THAT OF THE APPROACH SLAB. THE CONCRETE SHALL BE FINISHED TO A SMOOTH SURFACE AND A LAYER OF 30 LB ROOFING FELT SHALL BE PLACED BETWEEN THE CONCRETE BASE AND THE APPROACH SLAB TO PREVENT BOND. THE APPROACH SLAB SHALL NOT BE CAST UNTIL THE CONCRETE BASE HAS REACHED AN AGE OF THREE CURING DAYS.

FOR JOINT DETAILS, SEE "PRESTRESSED CONCRETE CORED SLAB UNIT" SHEETS.

THE JOINT AT THE END BENT SHALL BE GROUTED AS SOON AS PRACTICAL AFTER THE CONSTRUCTION OF THE APPROACH SLABS.

APPROACH SLAB GROOVING IS NOT REQUIRED.

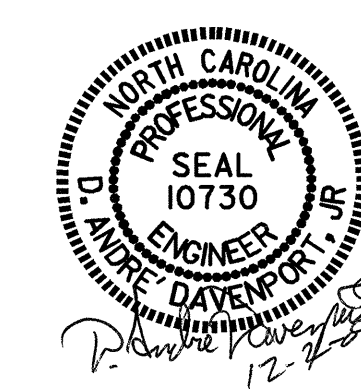
| BILL OF MATERIAL                |     |      |      |         |            |
|---------------------------------|-----|------|------|---------|------------|
| APPROACH SLAB AT EB #1          |     |      |      |         |            |
| BAR                             | NO. | SIZE | TYPE | LENGTH  | WEIGHT     |
| *A1                             | 12  | #4   | STR  | 28'-10" | 231        |
| A2                              | 13  | #4   | STR  | 28'-10" | 250        |
| *B1                             | 58  | #5   | STR  | 11'-2"  | 676        |
| B2                              | 58  | #6   | STR  | 11'-8"  | 1016       |
| REINFORCING STEEL               |     |      |      |         | 1266 LBS.  |
| *EPOXY COATED REINFORCING STEEL |     |      |      |         | 907        |
| CLASS AA CONCRETE               |     |      |      |         | 14.7 C. Y. |
| APPROACH SLAB AT EB #2          |     |      |      |         |            |
| BAR                             | NO. | SIZE | TYPE | LENGTH  | WEIGHT     |
| *A1                             | 12  | #4   | STR  | 28'-10" | 231        |
| A2                              | 13  | #4   | STR  | 28'-10" | 250        |
| *B1                             | 58  | #5   | STR  | 11'-2"  | 676        |
| B2                              | 58  | #6   | STR  | 11'-8"  | 1016       |
| REINFORCING STEEL               |     |      |      |         | 1266 LBS.  |
| *EPOXY COATED REINFORCING STEEL |     |      |      |         | 907        |
| CLASS AA CONCRETE               |     |      |      |         | 14.7 C. Y. |

PROJECT NO. B-4468  
CLEVELAND COUNTY  
 STATION: 16+97.00 -L-

SHEET 1 OF 2

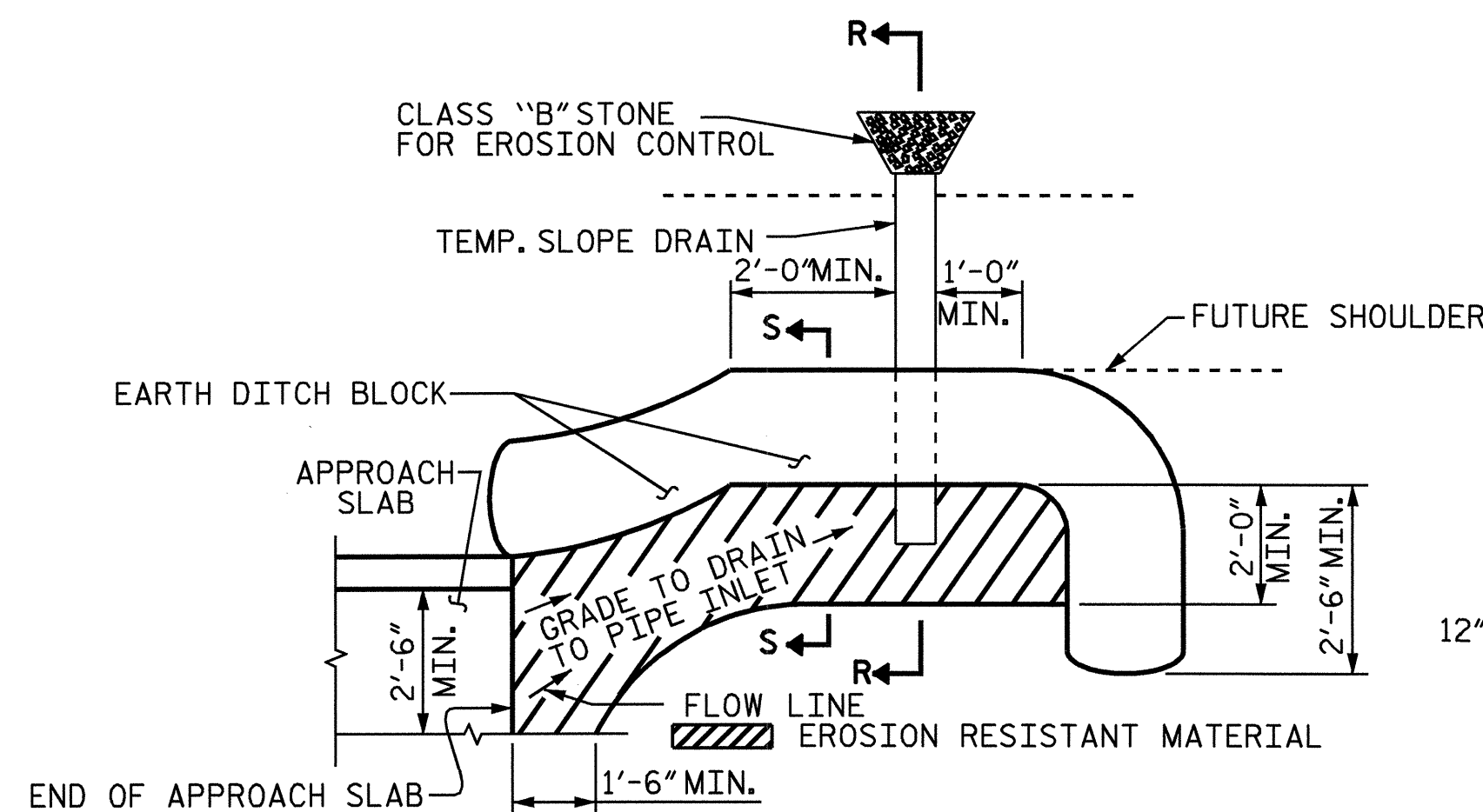
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

BRIDGE APPROACH SLAB  
 FOR PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 (SUB-REGIONAL TIER)



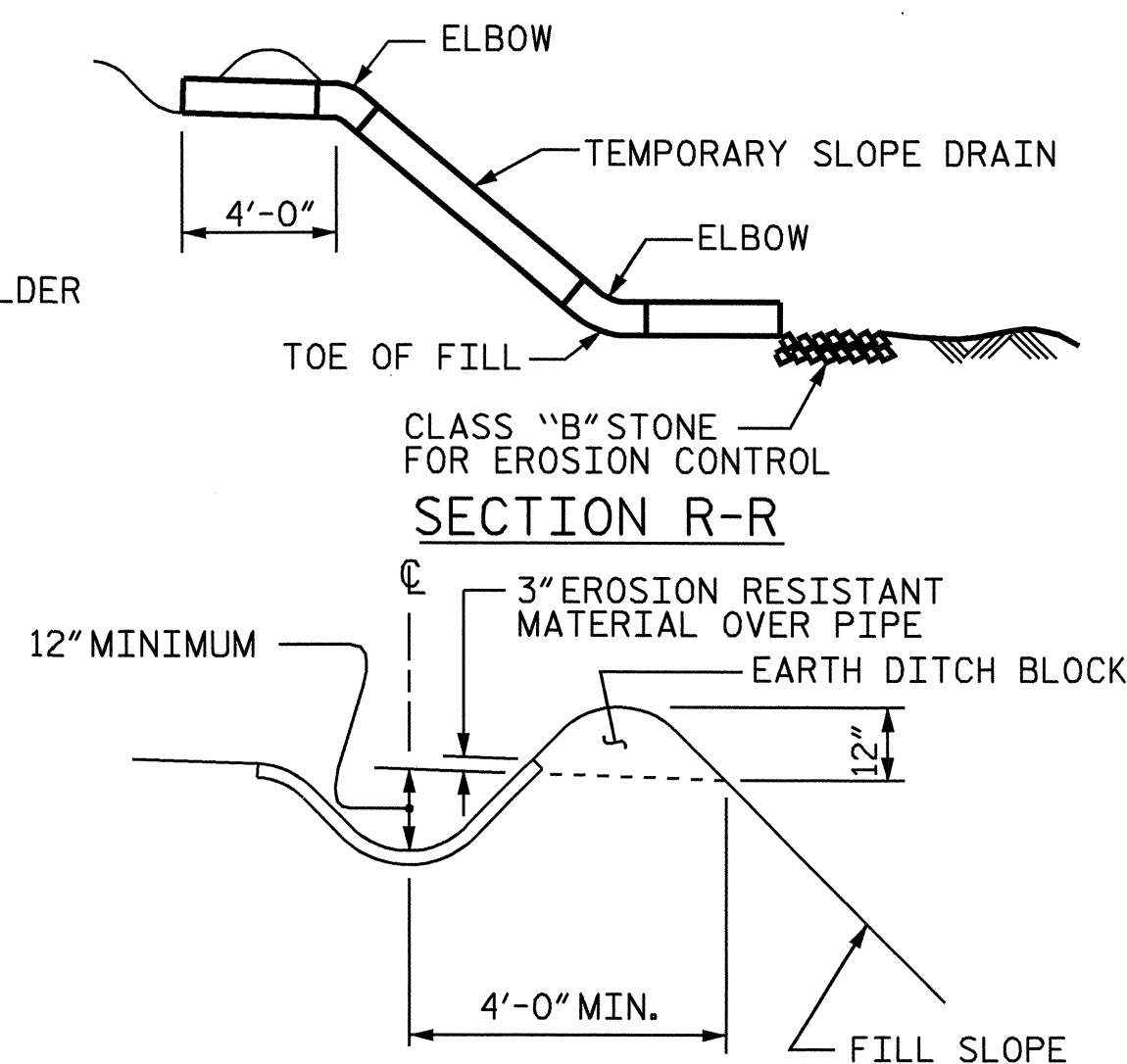
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| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-25         |    |
| 1         |     |       | 3   |     |       | TOTAL SHEETS | 26 |
| 2         |     |       | 4   |     |       |              |    |

ASSEMBLED BY: D. A. GLADDEN DATE: 1-26-09  
 CHECKED BY: A. DAVENPORT DATE: 3-12-09  
 DRAWN BY: KMM 3-08  
 CHECKED BY: GM 3-08

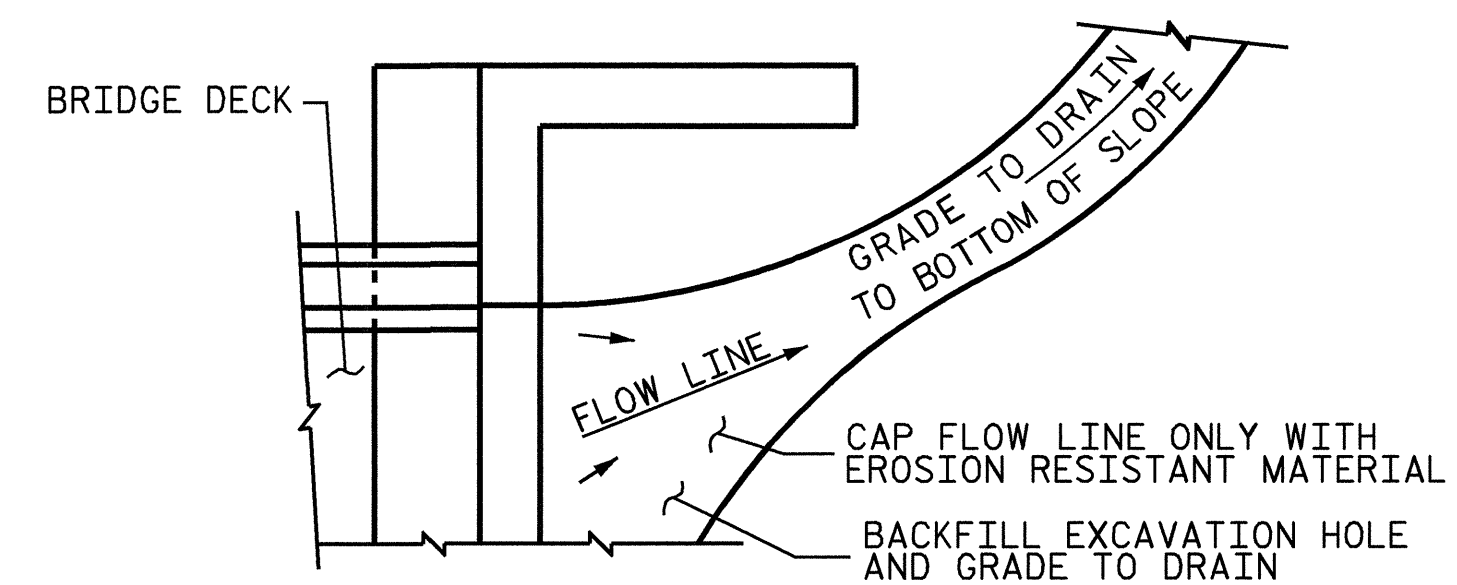


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW



SECTION S-S



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

TEMPORARY DRAINAGE DETAIL

## TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

PROJECT NO. B-4468

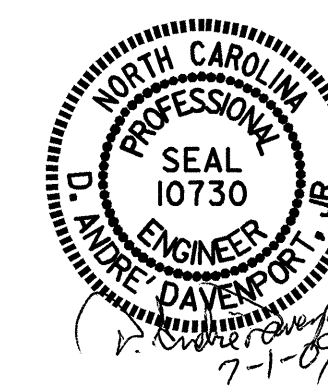
CLEVELAND COUNTY

STATION: 16+97.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

STANDARD  
BRIDGE APPROACH  
SLAB DETAILS



ASSEMBLED BY : D. A. GLADDEN DATE : 1-26-09  
CHECKED BY : A. DAVENPORT DATE : 3-12-09  
DRAWN BY : FCJ 11/88 REV. 10/17/00 RWW/LES  
CHECKED BY : ARB 11/88 REV. 5/7/03 RWW/JTE  
REV. 5/1/06R MAA/KMM

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

STD. NO. BAS10

