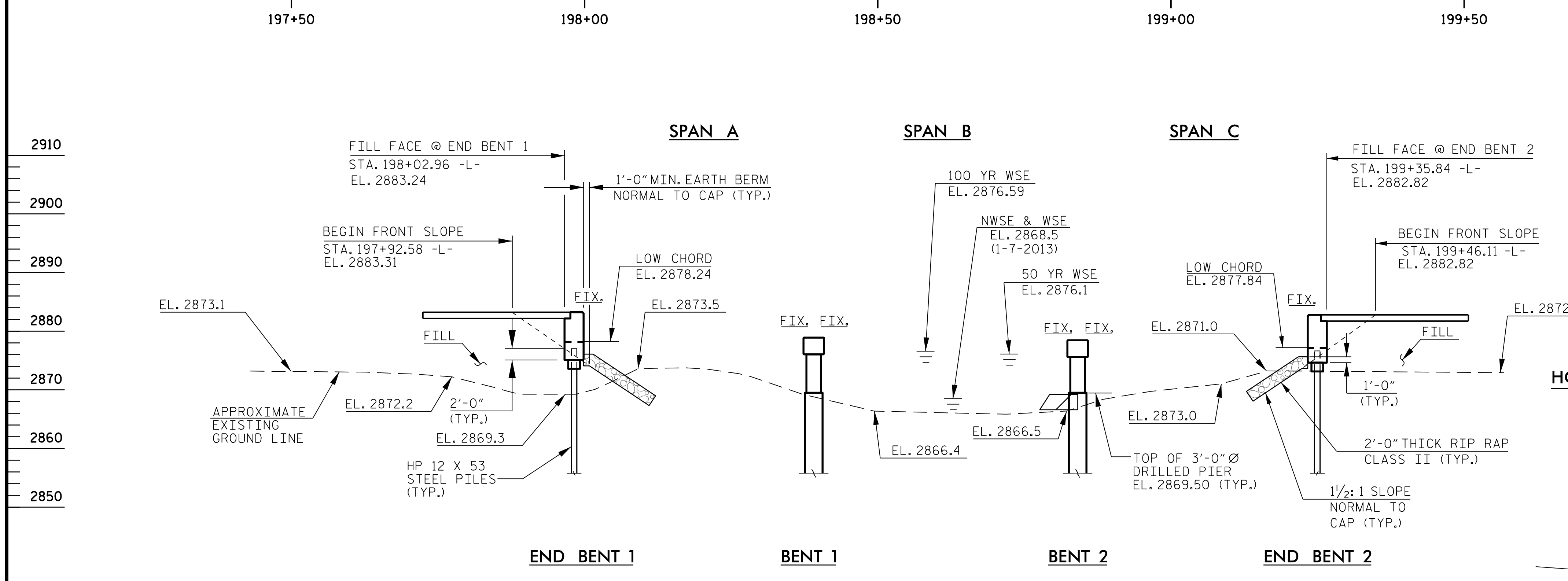


**This electronic collection of documents is provided  
for the convenience of the user  
and is Not a Certified Document –**

**The documents contained herein were originally issued  
and sealed by the individuals whose names and license  
numbers appear on each page, on the dates appearing  
with their signature on that page.**

**This file or an individual page  
shall not be considered a certified document.**



**HORIZONTAL CURVE DATA -L-**

PI STA. 195+10.72  
 $\Delta = 57^\circ 44' 33.0''$  (RT)  
 $D = 4^\circ 45' 38.7''$   
 $L = 1,212.88'$   
 $T = 663.58'$   
 $R = 1,203.50'$

**GRADE DATA -L-**

(-) 1.4200%      (-) 0.3400%

PI = 195+00.00  
 EL = 2,885.81'  
 VC = 200.00'

**HYDRAULIC DATA**

DESIGN DISCHARGE = 2400 CFS  
 FREQUENCY OF DESIGN FLOOD = 50 YEARS  
 DESIGN HIGH WATER ELEVATION = 2,876.1 FT.  
 DRAINAGE AREA = 9.5 SQ. MI.  
 BASE DISCHARGE (Q100) = 2,900 CFS  
 BASE HIGH WATER ELEVATION = 2,876.59 FT.

**OVERTOPPING FLOOD DATA**

OVERTOPPING DISCHARGE = >3,900 CFS  
 FREQUENCY OF OVERTOPPING FLOOD = >500 YEARS  
 OVERTOPPING FLOOD ELEVATION = 2,884.0 FT.  
 OVERTOPPING ROAD = 200+00 -L-

**SECTION ALONG -NBL- BRIDGE CONTROL LINE & Q BRIDGE**

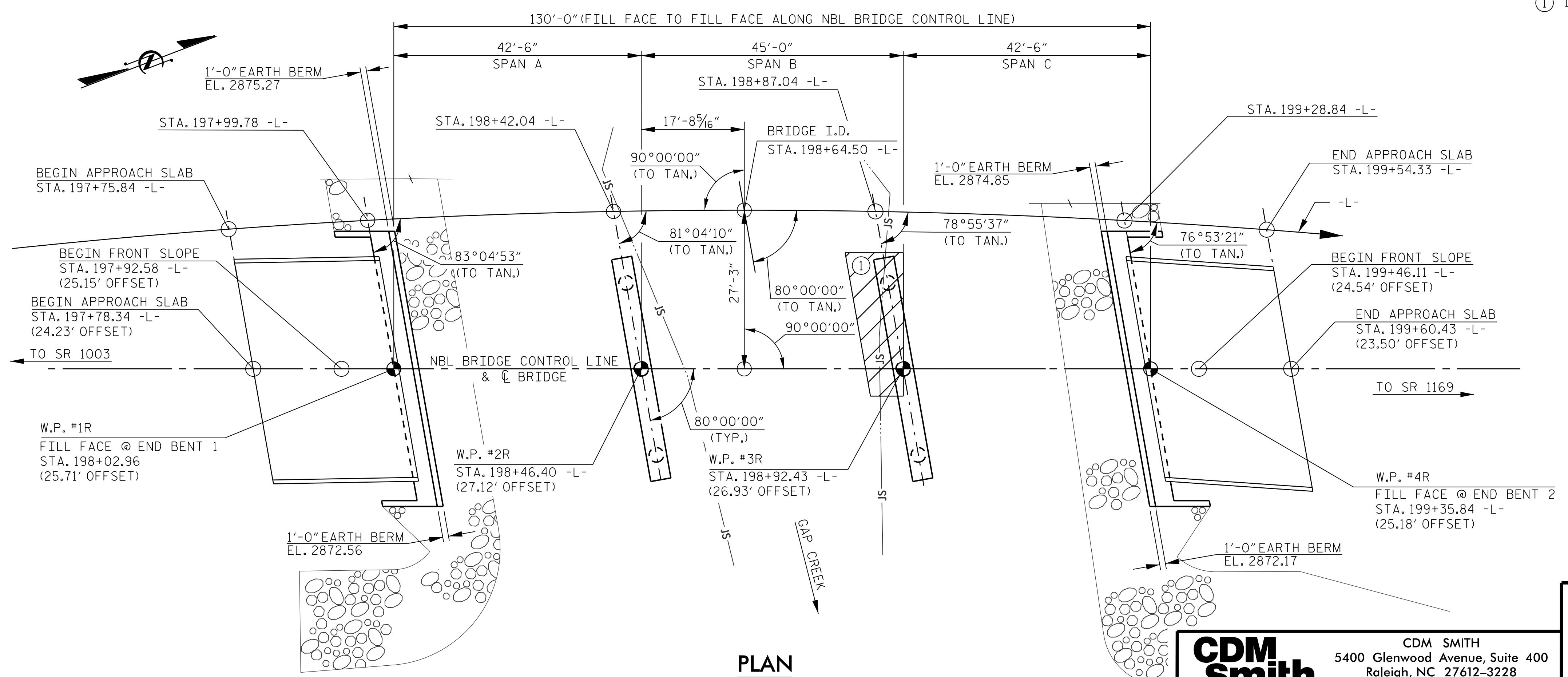
(SECTION AT END BENTS AND BENTS ARE AT RIGHT ANGLES TO BENTS)

TEMPORARY ROCK CAUSEWAY

**TEMPORARY ROCK CAUSEWAY AREA**

① 10'± x 25'± TEMPORARY ROCK CAUSEWAY AREA SHALL REMAIN IN PLACE UNTIL THE INTERIOR BENT SHAFTS, COLUMNS, AND CAP ARE CONSTRUCTED.

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS



PROJECT NO. R-2915B

ASHE COUNTY

STATION: 198+64.50 -L-

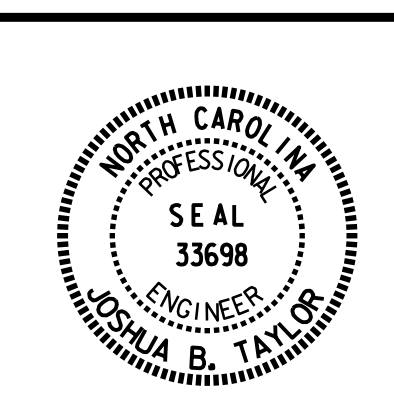
SHEET 1 OF 4 BRIDGE NO. 539

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 GENERAL DRAWING  
 BRIDGE OVER GAP CREEK  
 ON US 221 BETWEEN  
 SR 1003 AND SR 1169  
 (NBL)

**CDM Smith**  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

CDM SMITH  
 DRAWN BY : B. WADSWORTH      DATE : 06-15  
 CHECKED BY : J. TAYLOR      DATE : 06-15  
 DESIGN ENGINEER : J. TAYLOR      DATE : 06-15

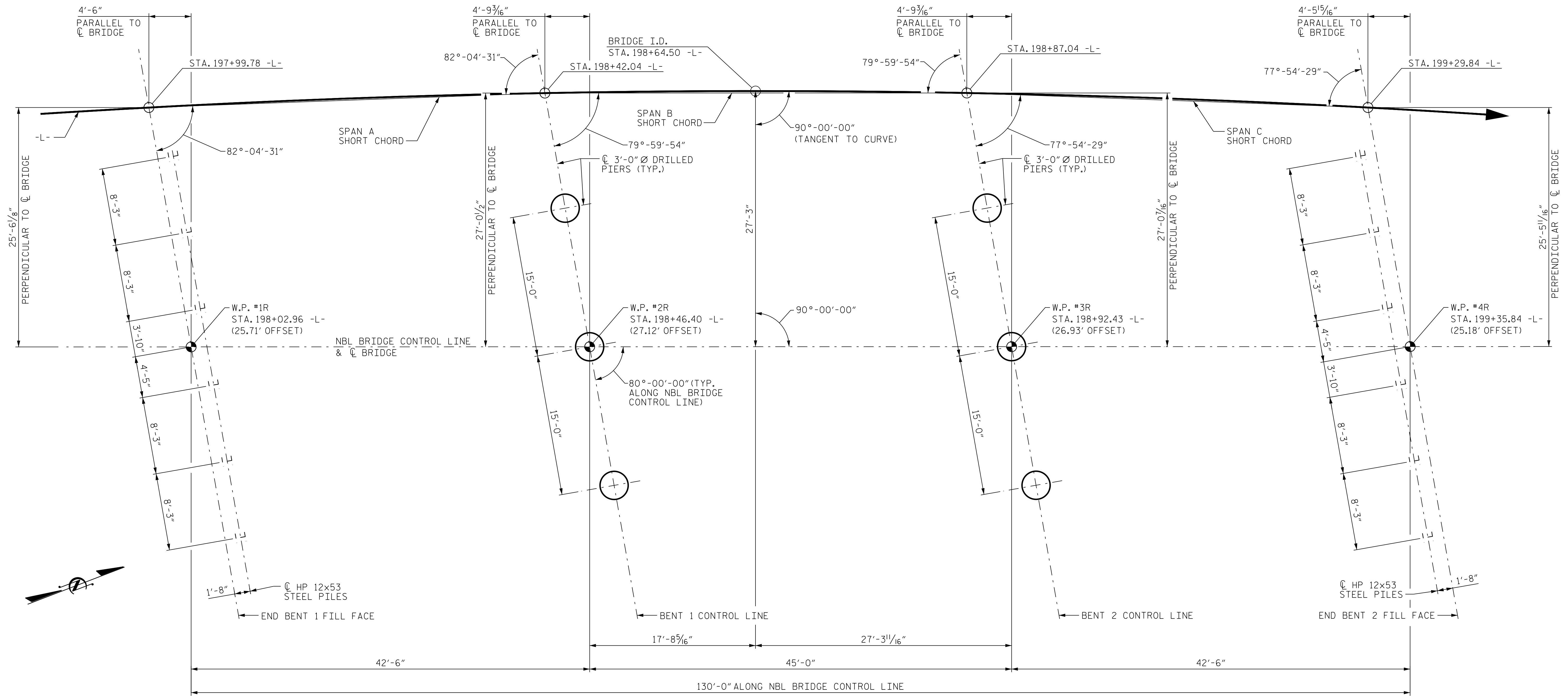
DWG. No.



| REVISIONS |     |       |     | SHEET No. |       |
|-----------|-----|-------|-----|-----------|-------|
| No.       | BY: | DATE: | No. | BY:       | DATE: |
| 1         |     |       | 3   |           |       |
| 2         |     |       | 4   |           |       |

TOTAL SHEETS: 34

FILE: R:\mcd\192915B Structures\PLANS\bridge 2 NBL\R2915B\_SD\_GD\_01.dgn  
 DATE: 8/10/2015 7:03:34 AM



**FOUNDATION LAYOUT**

**NOTES**

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 90 TONS PER PILE.

DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE.

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

INSTALL DRILLED PIERS AT BENT NO.1 TO A TIP ELEVATION NO HIGHER THAN 2852.0 FT AND WITH THE REQUIRED TIP RESISTANCE.

DRILLED PIERS AT BENT NO.1 ARE DESIGNED FOR A FACTORED RESISTANCE OF 244 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30.0 TSF.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO.1. IF REQUIRED, DO NOT EXTEND PERMANENT CASINGS BELOW ELEVATION 2860.0 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS ELEVATION 2859.0 FT. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

INSTALL DRILLED PIERS AT BENT NO.2 TO A TIP ELEVATION NO HIGHER THAN 2852.0 FT AND WITH THE REQUIRED TIP RESISTANCE.

DRILLED PIERS AT BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 244 TONS PER PIER. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE OF 30.0 TSF.

PERMANENT STEEL CASING MAY BE REQUIRED FOR DRILLED PIERS AT BENT NO.2. IF REQUIRED, DO NOT EXTEND CASING BELOW ELEVATION 2862 FT WITHOUT PRIOR APPROVAL FROM THE ENGINEER. THE ENGINEER WILL DETERMINE THE NEED FOR PERMANENT STEEL CASING.

THE SCOUR CRITICAL ELEVATION FOR BENT NO.2 IS ELEVATION 2859 FT. THE SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

SID INSPECTIONS ARE REQUIRED FOR DRILLED PIERS AT BENTS NOS. 1 AND 2. FOR SID INSPECTIONS, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

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

SPT IS REQUIRED FOR DRILLED PIERS AT BENTS NO.1 AND 2. FOR SPT TESTING, SEE SECTION 411 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 90 TONS PER PILE.

DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO.2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PREDRILLING FOR PILES IS REQUIRED AT END BENT NO.2. PREDRILL PILE LOCATIONS TO ELEVATION 2864.5 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 10". FOR PREDRILLING FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PROJECT NO. R-2915B  
ASHE COUNTY  
 STATION: 198+64.50 -L-

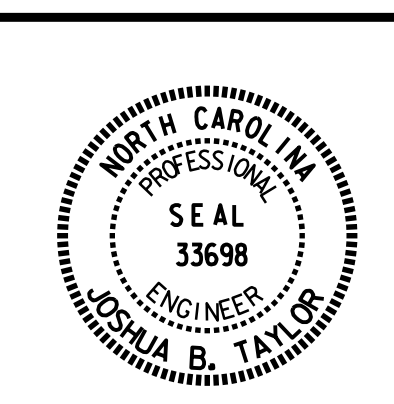
SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 GENERAL DRAWING  
**BRIDGE OVER GAP CREEK  
 ON US 221 BETWEEN  
 SR 1003 AND SR 1169**  
 (NBL)

**CDM Smith**  
 CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

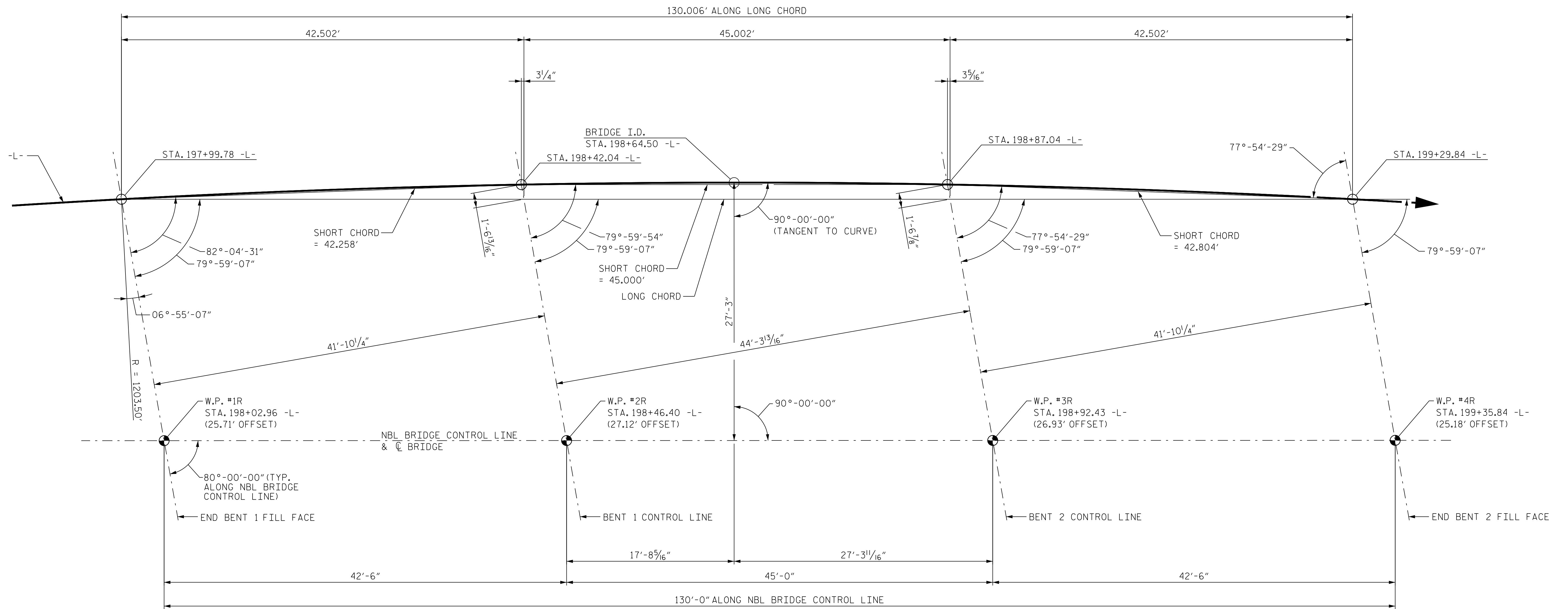
DRAWN BY : B. WADSWORTH      DATE : 06-15  
 CHECKED BY : J. TAYLOR      DATE : 06-15  
 DESIGN ENGINEER : J. TAYLOR      DATE : 06-15

DWG. No. \_\_\_\_\_



| REVISIONS |     |       |     | SHEET No.    |       |
|-----------|-----|-------|-----|--------------|-------|
| No.       | BY: | DATE: | No. | BY:          | DATE: |
| 1         |     |       | 3   |              |       |
| 2         |     |       | 4   |              |       |
|           |     |       |     | TOTAL SHEETS |       |
|           |     |       |     | 34           |       |

FILE: R:\med\p2915B\Structures\PLANS\Bridge 2 NBL\R2915B\_SD\_GD\_02.dgn  
 DATE: 8/10/2015 7:03:37 AM



LONG CHORD LAYOUT

NOTES

ALL END BENTS AND BENTS ARE PARALLEL.

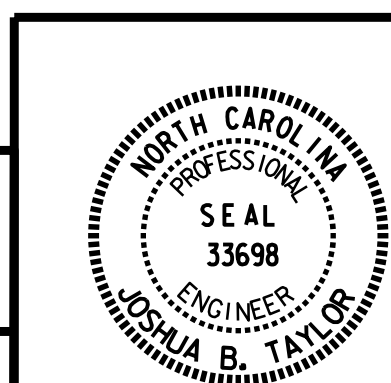
PROJECT NO. R-2915B  
ASHE COUNTY  
 STATION: 198+64.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 GENERAL DRAWING  
 BRIDGE OVER GAP CREEK  
 ON US 221 BETWEEN  
 SR 1003 AND SR 1169  
 (NBL)

**CDM Smith**  
 CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

DRAWN BY : B. WADSWORTH DATE : 06-15 DWG. No.  
 CHECKED BY : J. TAYLOR DATE : 06-15  
 DESIGN ENGINEER : J. TAYLOR DATE : 06-15

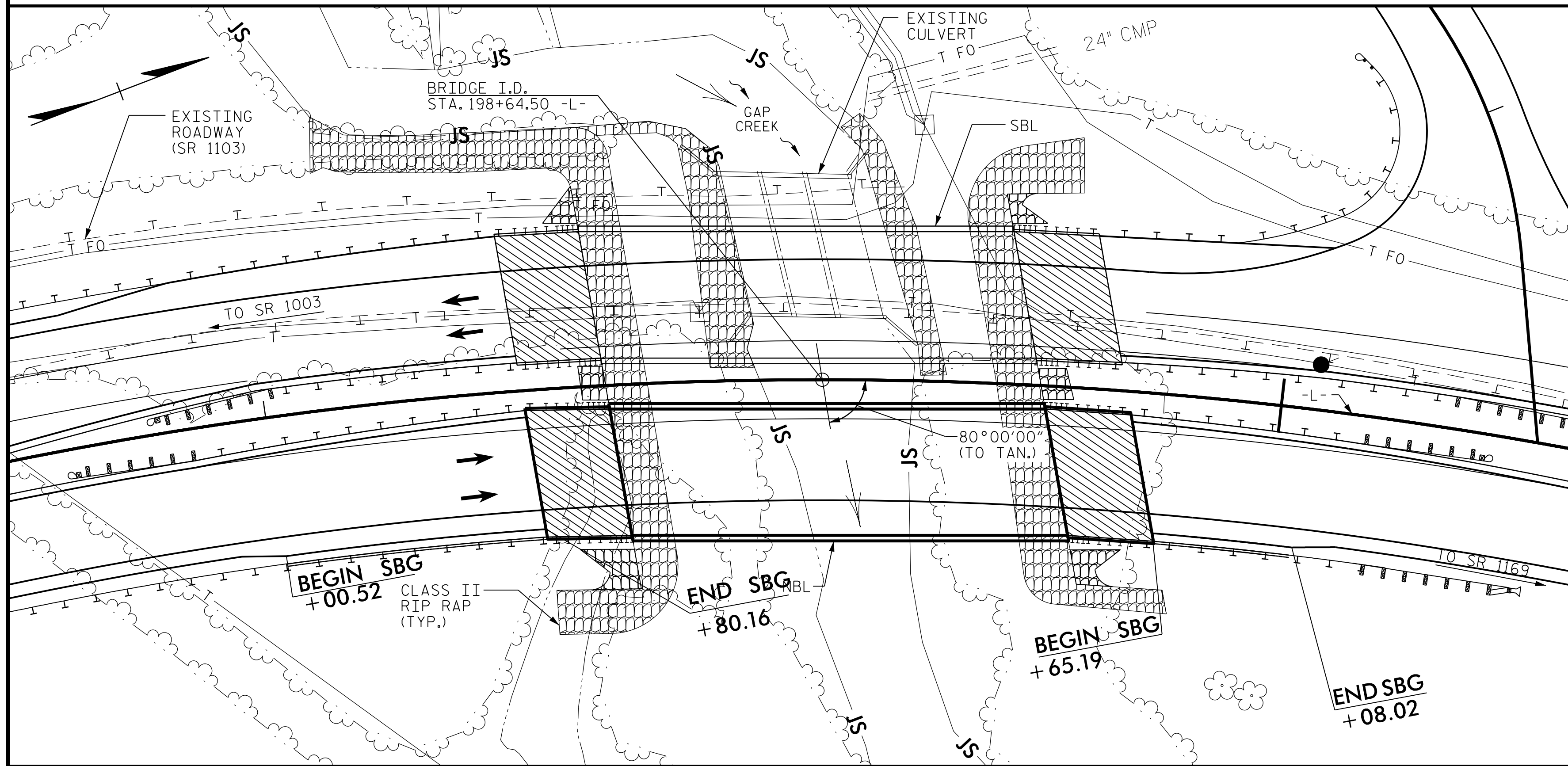


| REVISIONS |     |       | SHEET No. |     |       |
|-----------|-----|-------|-----------|-----|-------|
| No.       | BY: | DATE: | No.       | BY: | DATE: |
| 1         |     |       | 3         |     |       |
| 2         |     |       | 4         |     |       |

TOTAL SHEETS: 34

FILE: R:\med\192915B Structures\PLANS\Bridges 2 NBL\192915B\_SD\_GD\_03.dgn  
 DATE: 8/10/2015 7:03:39 AM

BM#8: RR SPIKE IN 30" WHITE PINE, STA 189+80.00 -L-, 191' LT EL.2881.14



LOCATION SKETCH

GENERAL NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.  
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.  
 THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.  
 THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH HEC 18, "EVALUATING SCOUR AT BRIDGES".  
 FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.  
 FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.  
 AT THE CONTRACTOR'S OPTION, AND UPON REMOVAL OF THE CAUSEWAY, THE CLASS II RIP RAP USED IN THE CAUSEWAY MAY BE PLACED AS RIP RAP SLOPE PROTECTION. SEE SPECIAL PROVISIONS FOR CONSTRUCTION, MAINTENANCE, AND REMOVAL OF TEMPORARY ACCESS AT STATION 198+64.50 -L-.  
 REMOVABLE FORMS MAY BE USED IN LIEU OF METAL STAY-IN-PLACE FORMS IN ACCORDANCE WITH ARTICLE 420-3 OF THE STANDARD SPECIFICATIONS.  
 NEEDLE BEAMS WILL NOT BE ALLOWED UNLESS OTHERWISE CALLED FOR ON THE PLANS OR APPROVED BY THE ENGINEER.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPLICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPLICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.  
 FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.  
 FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.  
 FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.  
 FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.  
 THE CLASS AA CONCRETE IN THE BRIDGE DECK SHALL CONTAIN FLY ASH OR GROUND GRANULATED BLAST FURNACE SLAG AT THE SUBSTITUTION RATE SPECIFIED IN ARTICLE 1024-1 AND IN ACCORDANCE WITH ARTICLES 1024-5 AND 1024-6 OF THE STANDARD SPECIFICATIONS. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE COST OF THE REINFORCED CONCRETE DECK SLAB.  
 FOR PLACING LOAD ON STRUCTURE MEMBERS, SEE SPECIAL PROVISIONS.

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

|                | CONSTRUCTION, MAINTENANCE, & REMOVAL OF TEMP. ACCESS | 3'-0" Ø DRILLED PIERS IN SOIL | 3'-0" Ø DRILLED PIERS NOT IN SOIL | PERMANENT STEEL CASING FOR 3'-0" Ø DRILLED PIER | PDA TESTING | SID INSPECTIONS | SPT TESTING | CSL TESTING | REINFORCED CONCRETE DECK SLAB | GROOVING BRIDGE FLOORS | CLASS A CONCRETE | BRIDGE APPROACH SLABS | REINFORCING STEEL | SPIRAL COLUMN REINFORCING STEEL | 36" PRESTRESSED CONCRETE GIRDERS | HP 12 X 53 STEEL PILES | STEEL PILE POINTS | PREDRILLING FOR PILES | CONCRETE BARRIER RAIL | RIP RAP CLASS II (2'-0" THICK) | GEOTEXTILE FOR DRAINAGE | ELASTOMERIC BEARINGS |          |          |
|----------------|--|-------------------------------|-----------------------------------|---|-------------|-----------------|-------------|-------------|-------------------------------|------------------------|------------------|-----------------------|-------------------|---------------------------------|----------------------------------|------------------------|-------------------|-----------------------|-----------------------|--------------------------------|-------------------------|----------------------|----------|----------|
|                | LUMP SUM   | LIN.FT.                       | LIN.FT.                           | LIN.FT.   | EACH        | EACH            | EACH        | EACH        | SO.FT.                        | SO.FT.                 | CU.YDS.          | LUMP SUM              | LBS.              | LBS.                            | NO.                              | LIN.FT.                | NO.               | LIN.FT.               | EACH                  | LIN.FT.                        | LIN.FT.                 | TONS                 | SO. YD.  | LUMP SUM |
| SUPERSTRUCTURE | --   | --                            | --                                | --  | --          | --              | --          | --          | 5,265                         | 5,990                  | --               | LUMP SUM              | --                | --                              | 12                               | 505.13                 | --                | --                    | --                    | 256.6                          | --                      | --                   | LUMP SUM |          |
| END BENT NO.1  | --   | --                            | --                                | --  | --          | --              | --          | --          | --                            | --                     | 26.8             | --                    | 4,924             | --                              | --                               | 6                      | 102               | --                    | --                    | --                             | 125                     | 139                  | --       |          |
| BENT NO.1      | --   | 21.5                          | 31.0                              | 28.5  | --          | --              | --          | --          | --                            | --                     | 18.9             | --                    | 7,668             | 1,239                           | --                               | --                     | --                | --                    | --                    | --                             | --                      | --                   | --       |          |
| BENT NO.2      | LUMP SUM   | 13.5                          | 39.0                              | 22.5  | --          | --              | --          | --          | --                            | --                     | 18.8             | --                    | 7,647             | 1,232                           | --                               | --                     | --                | --                    | --                    | --                             | --                      | --                   | --       |          |
| END BENT NO.2  | --   | --                            | --                                | --  | --          | --              | --          | --          | --                            | --                     | 26.8             | --                    | 4,924             | --                              | --                               | 6                      | 102               | 6                     | 30                    | --                             | 155                     | 172                  | --       |          |
| TOTAL          | LUMP SUM   | 35.0                          | 70.0                              | 51.0  | 1           | 1               | 1           | 1           | 5,265                         | 5,990                  | 91.3             | LUMP SUM              | 25,163            | 2,471                           | 12                               | 505.13                 | 12                | 204                   | 6                     | 30                             | 256.6                   | 280                  | 311      | LUMP SUM |

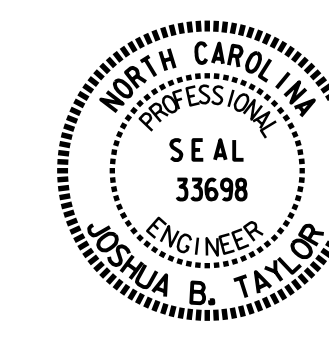
PROJECT NO. R-2915B  
 ASHE COUNTY  
 STATION: 198+64.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 GENERAL DRAWING  
 BRIDGE OVER GAP CREEK  
 ON US 221 BETWEEN  
 SR 1003 AND SR 1169  
 (NBL)

**CDM Smith**  
 CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

DRAWN BY : B. WADSWORTH DATE : 06-15 DWG. No.  
 CHECKED BY : J. TAYLOR DATE : 06-15  
 DESIGN ENGINEER : J. TAYLOR DATE : 06-15



| REVISIONS |     |       |             | SHEET No.       |
|-----------|-----|-------|-------------|-----------------|
| No.       | BY: | DATE: | Description | SHEET No.       |
| 1         |     |       | 3           | S02-4           |
| 2         |     |       | 4           | TOTAL SHEETS 34 |

FILE: R:\mcd\192915B Structures\PLANS\bridge 2 NBL\192915B\_SD\_GD\_04.dgn  
 DATE: 8/10/2015 7:03:44 AM

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

| LEVEL                    | VEHICLE                              | WEIGHT (W)<br>(TONS) | CONTROLLING<br>LOAD RATING<br># | MINIMUM<br>RATING FACTORS<br>(RF) | TONS = W x RF | STRENGTH I LIMIT STATE                  |                              |               |      |                 |   |                              |               |      |                 | SERVICE III LIMIT STATE                   |   |                              |               |      | COMMENT NUMBER |                 |   |  |
|--------------------------|--------------------------------------|----------------------|---------------------------------|-----------------------------------|---------------|---|------------------------------|---------------|------|-----------------|---|------------------------------|---------------|------|-----------------|---|---|------------------------------|---------------|------|----------------|-----------------|---|--|
|                          |                                      |                      |                                 |                                   |               | MOMENT                                  |                              |               |      |                 | SHEAR                                     |                              |               |      |                 | MOMENT                                    |   |                              |               |      |                |                 |   |  |
|                          |                                      |                      |                                 |                                   |               | LIVE-LOAD<br>FACTORS (γ <sub>L1</sub> ) | DISTRIBUTION<br>FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM<br>LEFT END OF<br>SPAN (FT) | DISTRIBUTION<br>FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM<br>LEFT END OF<br>SPAN (FT) | LIVE-LOAD<br>FACTORS (γ <sub>L1</sub> ) | DISTRIBUTION<br>FACTORS (DF) | RATING FACTOR | SPAN |                | GIRDER LOCATION | DISTANCE FROM<br>LEFT END OF<br>SPAN (FT) |  |
| DESIGN<br>LOAD<br>RATING | HL-93 (INVENTORY)                    | N/A                  | ①                               | 1.11                              | --            | 1.75                                    | 0.94                         | 1.28          | A    | I               | 21.55                                     | 1.09                         | 1.11          | B    | I               | 35.75                                     | 0.80                                    | 0.91                         | 1.24          | B    | I              | 22.50           |   |  |
|                          | HL-93 (OPERATING)                    | N/A                  |                                 | 1.66                              | --            | 1.35                                    | 0.94                         | 1.66          | A    | I               | 21.55                                     | 1.09                         | 1.87          | B    | I               | 35.75                                     | N/A                                     | -                            | -             | -    | -              | 22.50           |   |  |
|                          | HS-20 (INVENTORY)                    | 36.000               | ②                               | 1.52                              | 54.72         | 1.75                                    | 0.94                         | 1.59          | A    | I               | 21.55                                     | 1.09                         | 1.56          | B    | I               | 31.33                                     | 0.80                                    | 0.91                         | 1.52          | B    | I              | 22.50           |   |  |
|                          | HS-20 (OPERATING)                    | 36.000               |                                 | 2.06                              | 74.16         | 1.35                                    | 0.94                         | 2.06          | A    | I               | 21.55                                     | 1.09                         | 2.18          | B    | I               | 35.75                                     | N/A                                     | -                            | -             | -    | -              | 22.50           |   |  |
| LEGAL<br>LOAD<br>RATING  | SINGLE VEHICLE<br>(SV)               | SNSH                 | 13.500                          |                                   | 2.94          | 39.69                                   | 1.40                         | 0.94          | 3.71 | A               | I   | 21.55                        | 1.09          | 4.49 | B               | I   | 35.75                                   | 0.80                         | 0.91          | 2.94 | B              | I               | 22.50                                     |  |
|                          |                                      | SNGARBS2             | 20.000                          |                                   | 2.39          | 47.80                                   | 1.40                         | 0.94          | 3.07 | A               | I   | 21.55                        | 1.09          | 3.35 | B               | I   | 35.75                                   | 0.80                         | 0.91          | 2.39 | B              | I               | 22.50                                     |  |
|                          |                                      | SNAGRIS2             | 22.000                          |                                   | 2.36          | 51.92                                   | 1.40                         | 0.94          | 3.00 | A               | I   | 17.45                        | 1.09          | 3.18 | B               | I   | 35.75                                   | 0.80                         | 0.91          | 2.36 | B              | I               | 22.50                                     |  |
|                          |                                      | SNCOTTS3             | 27.250                          |                                   | 1.47          | 40.06                                   | 1.40                         | 0.94          | 1.85 | A               | I   | 21.55                        | 1.09          | 2.22 | B               | I   | 35.75                                   | 0.80                         | 0.91          | 1.47 | B              | I               | 22.50                                     |  |
|                          |                                      | SNAGGRS4             | 34.925                          |                                   | 1.30          | 45.40                                   | 1.40                         | 0.94          | 1.66 | A               | I   | 21.55                        | 1.09          | 1.96 | B               | I   | 35.75                                   | 0.80                         | 0.91          | 1.30 | B              | I               | 22.50                                     |  |
|                          |                                      | SNS5A                | 35.550                          |                                   | 1.27          | 45.15                                   | 1.40                         | 0.94          | 1.62 | A               | I   | 21.55                        | 1.09          | 2.06 | B               | I   | 35.75                                   | 0.80                         | 0.91          | 1.27 | B              | I               | 22.50                                     |  |
|                          |                                      | SNS6A                | 39.950                          |                                   | 1.20          | 47.94                                   | 1.40                         | 0.94          | 1.54 | A               | I   | 21.55                        | 1.09          | 1.92 | B               | I   | 35.75                                   | 0.80                         | 0.91          | 1.20 | B              | I               | 22.50                                     |  |
|                          | SNS7B                                | 42.000               | ③                               | 1.14                              | 47.88         | 1.40                                    | 0.94                         | 1.47          | A    | I               | 21.55                                     | 1.09                         | 1.96          | B    | I               | 35.75                                     | 0.80                                    | 0.91                         | 1.14          | B    | I              | 22.50           |   |  |
|                          | TRUCK TRACTOR SEMI-TRAILER<br>(TTST) | TNAGRIT3             | 33.000                          |                                   | 1.47          | 48.51                                   | 1.40                         | 0.94          | 1.89 | A               | I   | 21.55                        | 1.09          | 2.27 | B               | I   | 35.75                                   | 0.80                         | 0.91          | 1.47 | B              | I               | 22.50                                     |  |
|                          |                                      | TNT4A                | 33.075                          |                                   | 1.49          | 49.28                                   | 1.40                         | 0.94          | 1.92 | A               | I   | 21.55                        | 1.09          | 2.13 | B               | I   | 35.75                                   | 0.80                         | 0.91          | 1.49 | B              | I               | 22.50                                     |  |
|                          |                                      | TNT6A                | 41.600                          |                                   | 1.25          | 52.00                                   | 1.40                         | 0.94          | 1.62 | A               | I   | 21.55                        | 1.09          | 2.11 | B               | I   | 35.75                                   | 0.80                         | 0.91          | 1.25 | B              | I               | 22.50                                     |  |
|                          |                                      | TNT7A                | 42.000                          |                                   | 1.27          | 53.34                                   | 1.40                         | 0.94          | 1.66 | A               | I   | 21.55                        | 1.09          | 1.91 | B               | I   | 35.75                                   | 0.80                         | 0.91          | 1.27 | B              | I               | 22.50                                     |  |
|                          |                                      | TNT7B                | 42.000                          |                                   | 1.33          | 55.86                                   | 1.40                         | 0.94          | 1.71 | A               | I   | 21.55                        | 1.09          | 1.87 | B               | I   | 35.75                                   | 0.80                         | 0.91          | 1.33 | B              | I               | 22.50                                     |  |
|                          |                                      | TNAGRIT4             | 43.000                          |                                   | 1.26          | 54.18                                   | 1.40                         | 0.94          | 1.65 | A               | I   | 21.55                        | 1.09          | 1.78 | B               | I   | 35.75                                   | 0.80                         | 0.91          | 1.26 | B              | I               | 22.50                                     |  |
| TNAGT5A                  |                                      | 45.000               |                                 | 1.18                              | 53.10         | 1.40                                    | 0.94                         | 1.53          | A    | I               | 21.55                                     | 1.09                         | 1.85          | B    | I               | 35.75                                     | 0.80                                    | 0.91                         | 1.18          | B    | I              | 22.50           |   |  |
| TNAGT5B                  | 45.000                               |                      | 1.15                            | 51.75                             | 1.40          | 0.94                                    | 1.49                         | A             | I    | 21.55           | 1.09                                      | 1.59                         | B             | I    | 31.33           | 0.80                                      | 0.91                                    | 1.15                         | B             | I    | 22.50          |                 |   |  |

LOAD FACTORS:

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

**NOTES:**

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

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

**COMMENTS:**

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

# CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

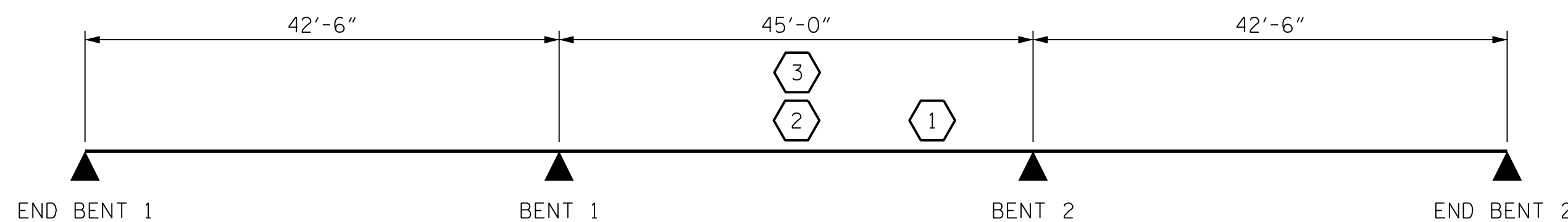
③ LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

---

GIRDER LOCATION

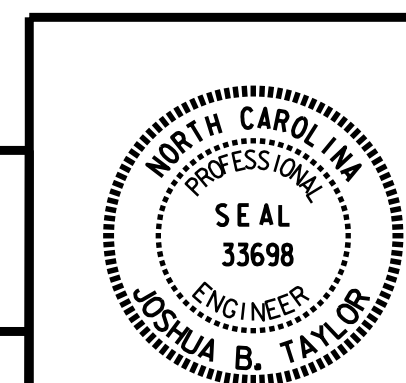
I - INTERIOR GIRDER  
EL - EXTERIOR LEFT GIRDER  
ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

PROJECT NO. R-2915B  
ASHE COUNTY  
 STATION: 198+64.50 -L-

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

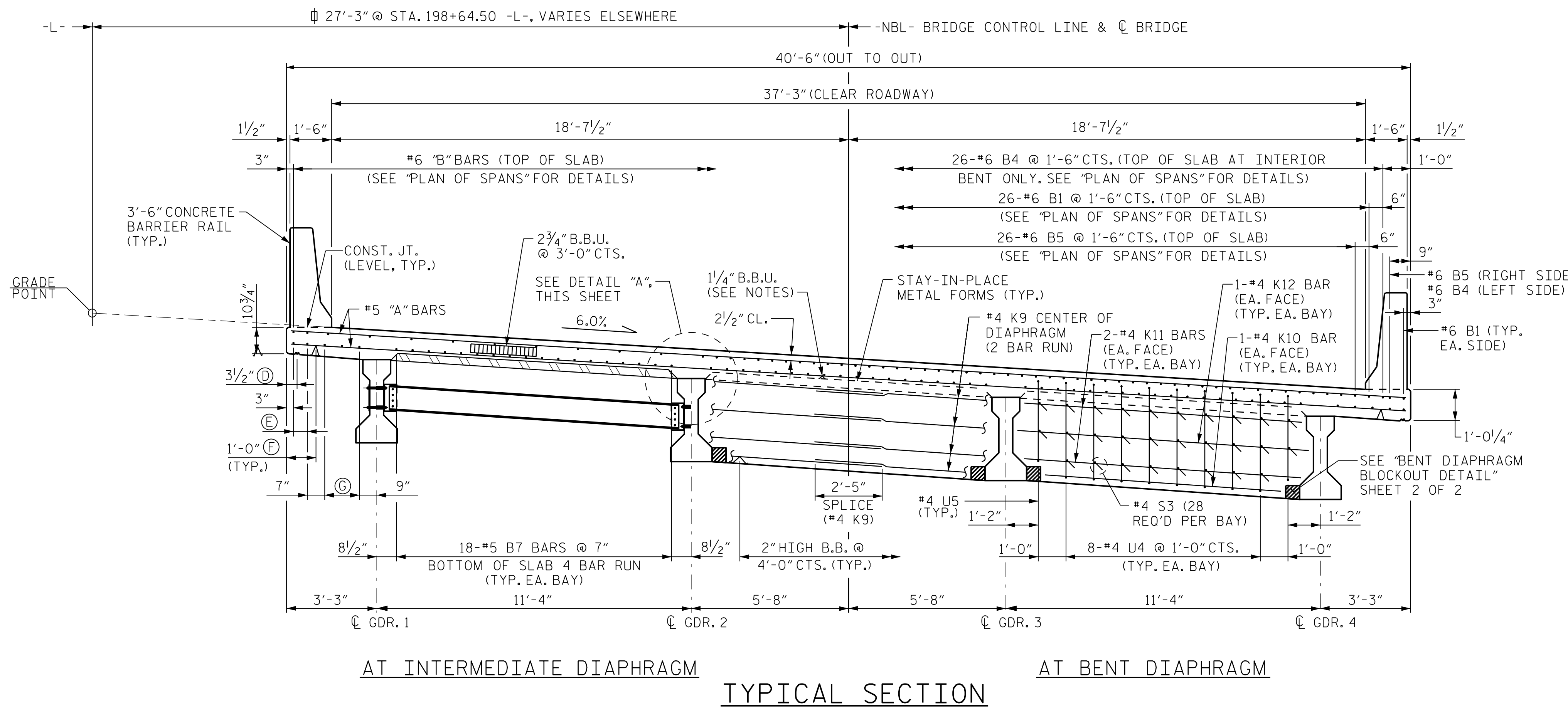


**CDM Smith**  
 CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

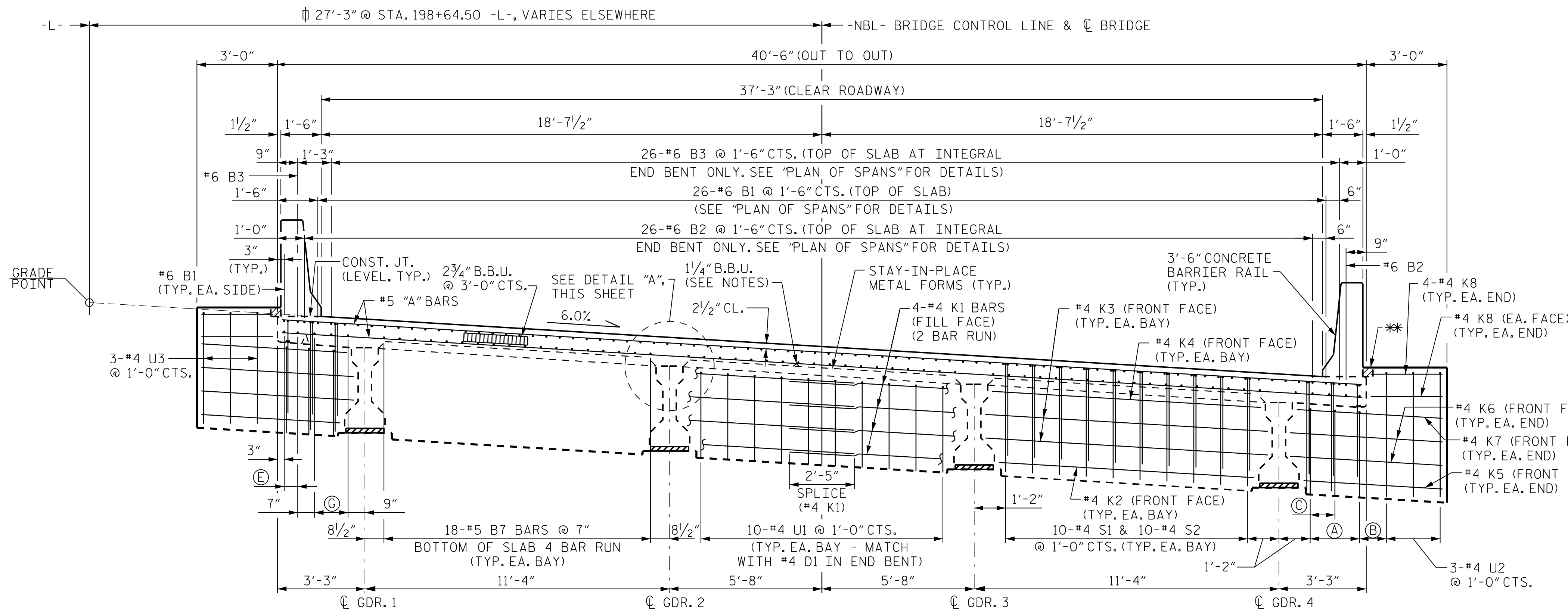
DESIGN ENGINEER : J. TAYLOR      DATE : 06-15  
 DWG. No.

ASSEMBLED BY : B. WADSWORTH      DATE : 06-15  
 CHECKED BY : J. TAYLOR      DATE : 06-15  
 DRAWN BY : MAA 1/08      REV. 11/12/08RR      MAA/GM  
 CHECKED BY : GM/DI 2/08      REV. 10/1/11      MAA/GM

| REVISIONS |     |       |     |     |       | SHEET No.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| No.       | BY: | DATE: | No. | BY: | DATE: | S02-5        |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 34           |



AT INTERMEDIATE DIAPHRAGM  
TYPICAL SECTION  
AT BENT DIAPHRAGM



TYPICAL SECTION AT INTEGRAL END BENT

**SHEET LEGEND**

- Ø RADIAL DIMENSION
- Ⓐ 3-#4 U1 & 3-#4 S1 @ 11" CTS. (TYP. EA. SIDE)
- Ⓑ 11" (TYP. EA. SIDE)
- Ⓒ 2-#4 S2 @ 11" CTS. (TYP. EA. SIDE)
- Ⓓ 2-1" Δ DRIP GROOVES (TYP. EA. OVERHANG)
- Ⓔ 2-#5 B8 @ 6" CTS. BOTTOM OF SLAB 4 BAR RUN (TYP. EA. OVERHANG)
- Ⓕ 3 3/4" B.B.U. (LEFT OVERHANG) 3" B.B.U. (RIGHT OVERHANG)
- Ⓖ 3-#5 B7 @ 7" CTS. BOTTOM OF SLAB 4 BAR RUN (TYP. EA. OVERHANG)

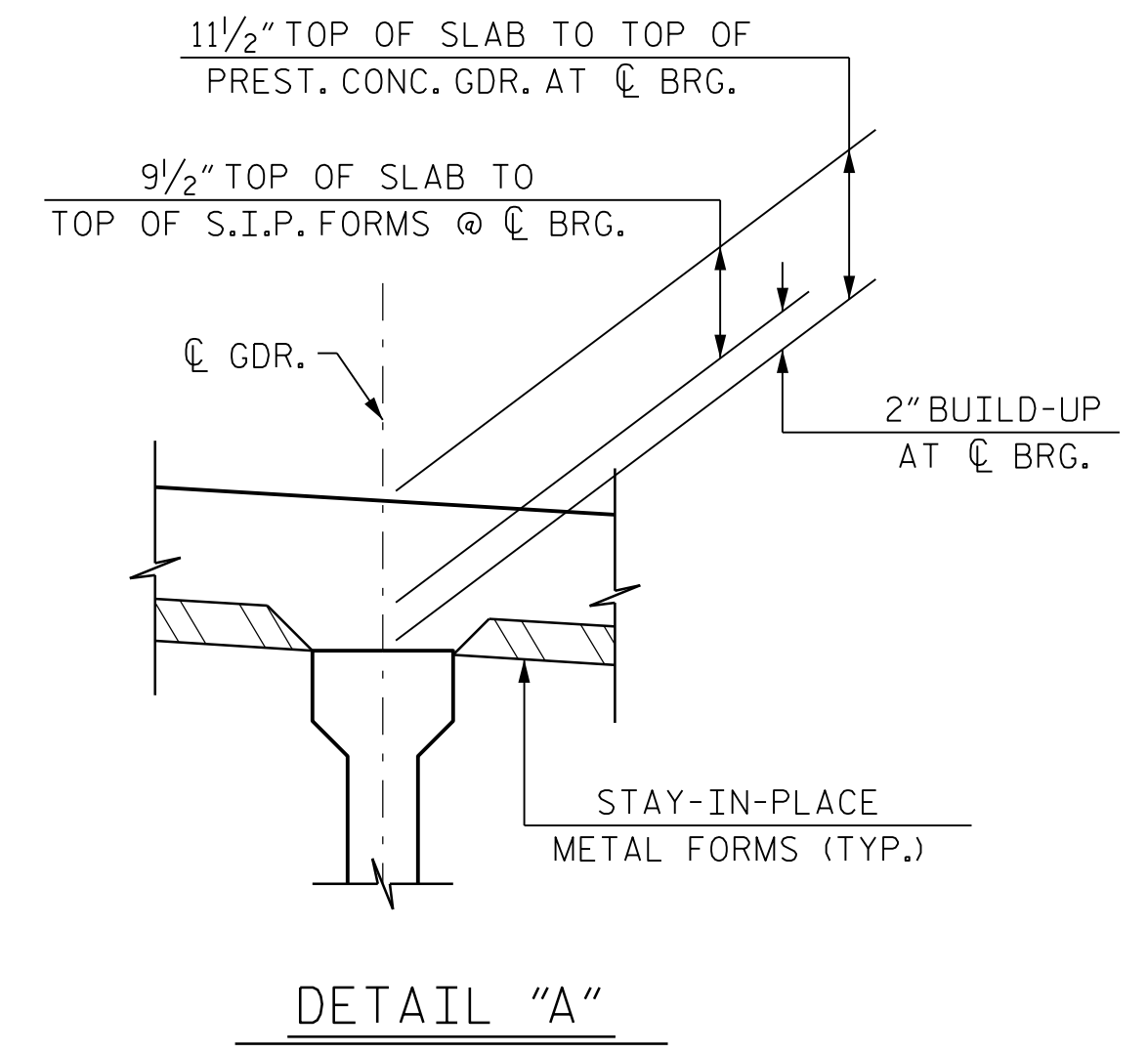
**NOTES**

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

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

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

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



\* THE CONCRETE IN THE HATCHED AREA OF THE INTEGRAL END BENT DIAPHRAGM SHALL BE POURED AFTER THE BARRIER IS CAST IF SLIP FORMING IS USED. SEE SHEET "PLAN OF SPAN DETAILS" FOR BLOCKOUT GEOMETRY. (TYP. EA. SIDE)

PROJECT NO. R-2915B  
ASHE COUNTY  
STATION: 198+64.50 -L-  
SHEET 1 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUPERSTRUCTURE  
TYPICAL SECTION  
(NBL)

| REVISIONS |     |       |     | SHEET No. |       |
|-----------|-----|-------|-----|-----------|-------|
| No.       | BY: | DATE: | No. | BY:       | DATE: |
| 1         |     |       | 3   |           |       |
| 2         |     |       | 4   |           |       |

SHEET No. S02-6  
TOTAL SHEETS 34

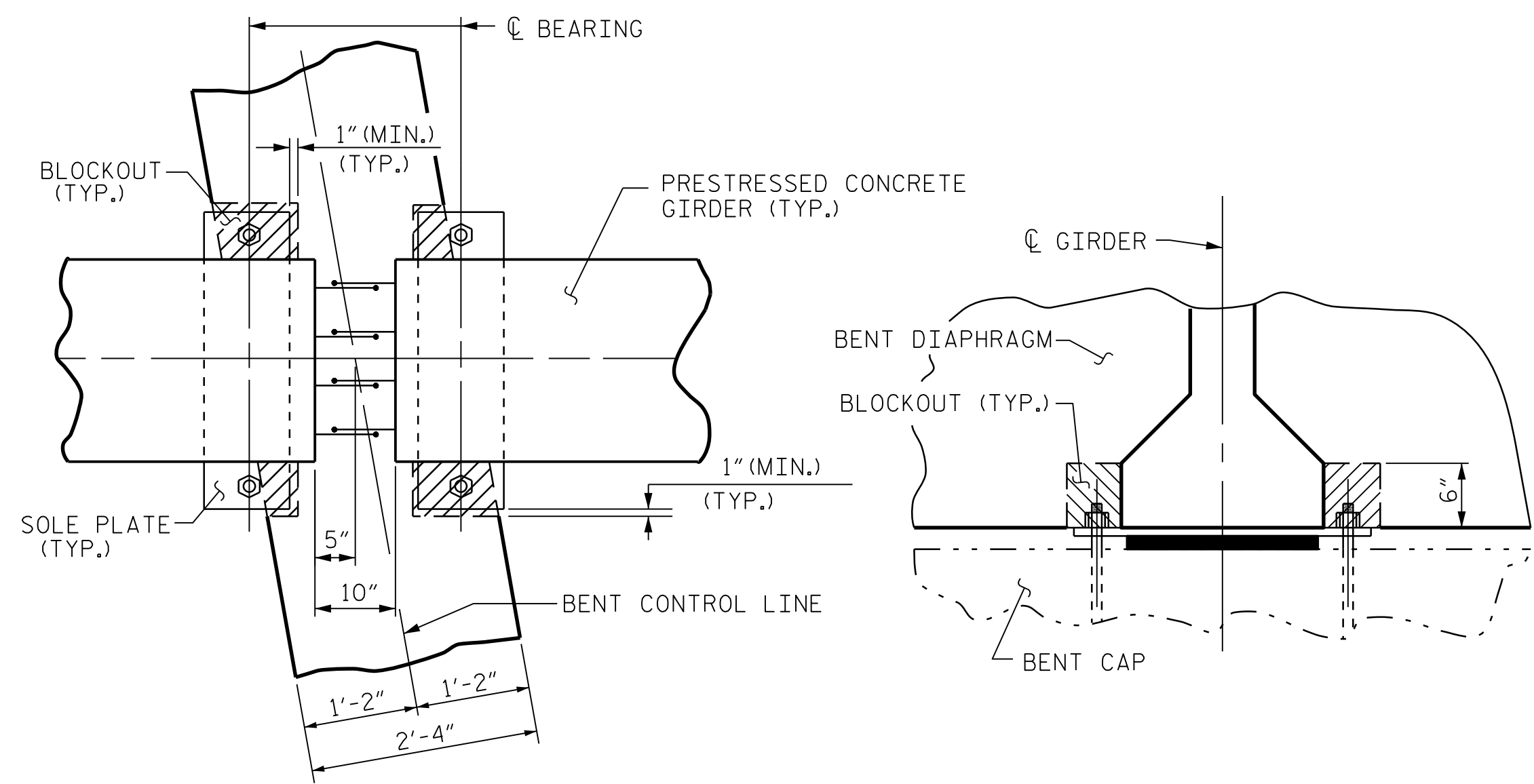
**CDM Smith**  
4000  
4000  
4000

CDM SMITH  
5400 Glenwood Avenue, Suite 400  
Raleigh, NC 27612-3228  
NC COA No. F-1255

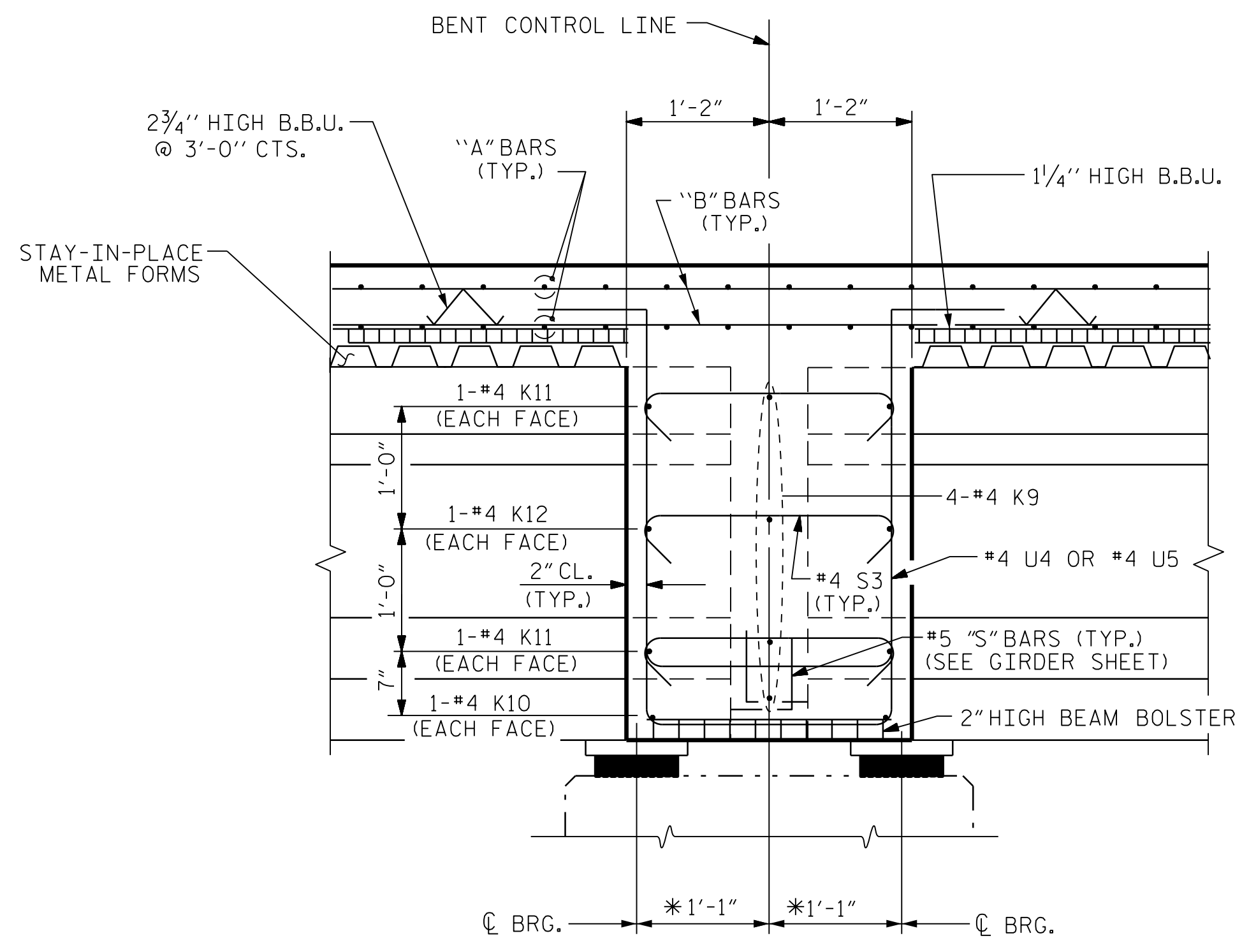
DWG. No. \_\_\_\_\_  
DRAWN BY : B. WADSWORTH DATE : 06-15  
CHECKED BY : J. TAYLOR DATE : 06-15  
DESIGN ENGINEER : J. TAYLOR DATE : 06-15



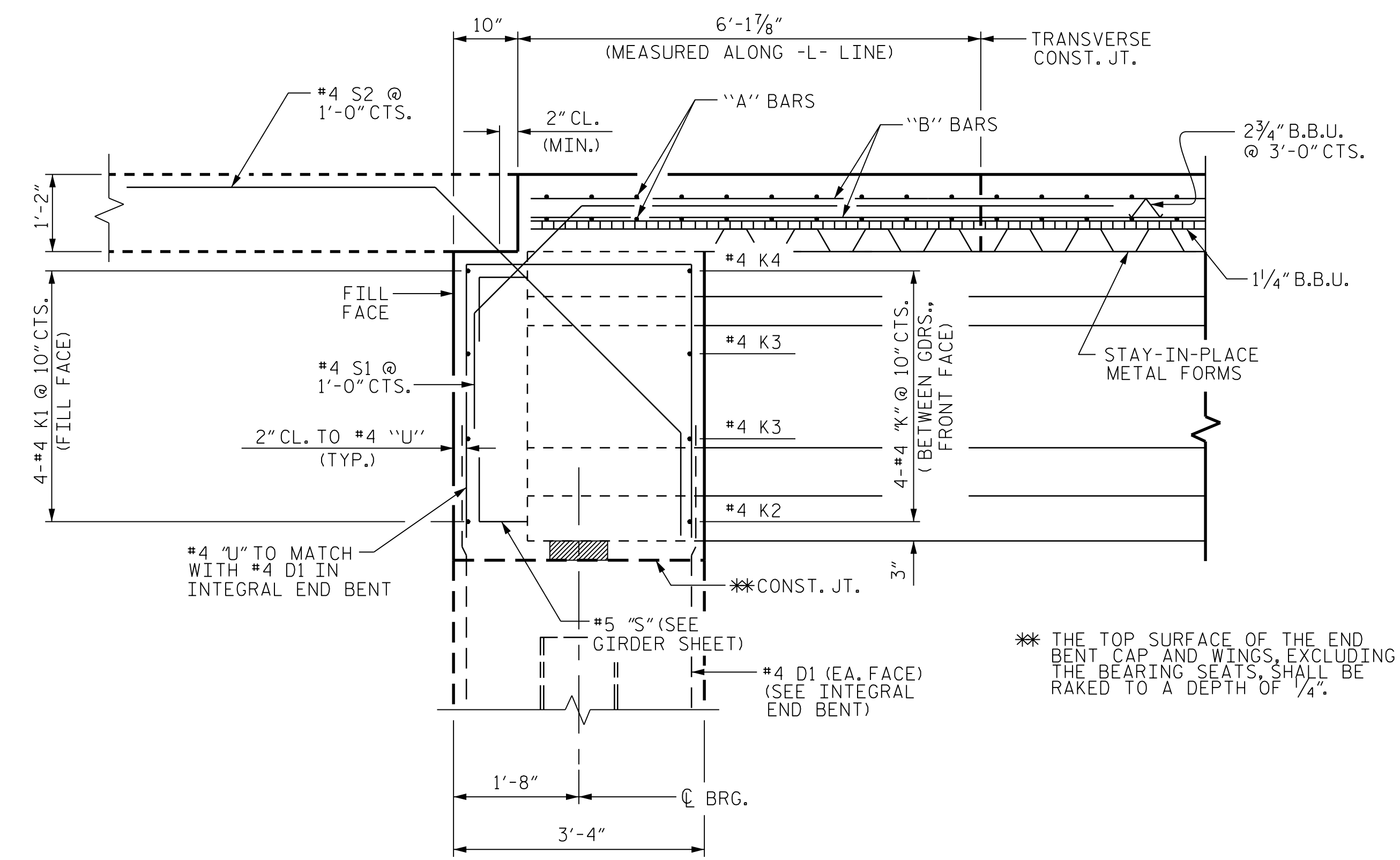
FILE: R:\mcd\192915B Structures\PLANS\Bridges 2 NBL\192915B\_S02\_S1.dwg  
DATE: 8/10/2015 7:03:46 AM



**PLAN SECTION**  
**BENT DIAPHRAGM BLOCK-OUT DETAIL**  
 PRESTRESSED GIRDERS WITH CONTINUOUS DECK SLAB

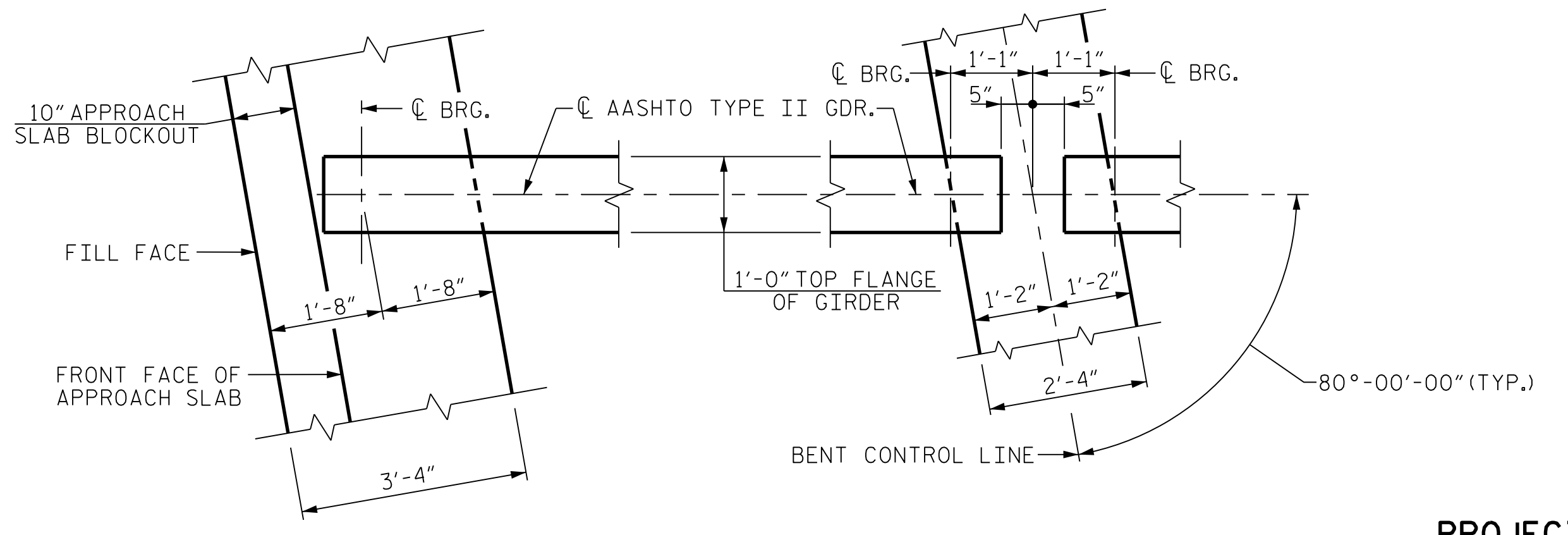


**SECTION B-B**  
 (AT BENTS 1 & 2)  
 \*MEASURED ALONG G GIRDER



**SECTION A-A**  
 (AT INTEGRAL END BENTS)

\* THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING SEATS, SHALL BE RAKED TO A DEPTH OF 1/4".



**INTEGRAL END BENT FIXED BENT**  
**PLAN OF DIAPHRAGMS**

PROJECT NO. R-2915B  
 ASHE COUNTY  
 STATION: 198+64.50 -L-  
 SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 TYPICAL SECTION  
 DETAILS  
 (NBL)

**CDM Smith**  
 CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

DRAWN BY: B. WADSWORTH DATE: 06-15 DWG. No.  
 CHECKED BY: J. TAYLOR DATE: 06-15  
 DESIGN ENGINEER: J. TAYLOR DATE: 06-15



| REVISIONS |     |       | SHEET No. |                 |       |
|-----------|-----|-------|-----------|-----------------|-------|
| No.       | BY: | DATE: | No.       | BY:             | DATE: |
| 1         |     |       | 3         |                 |       |
| 2         |     |       | 4         |                 |       |
|           |     |       |           | TOTAL SHEETS 34 |       |

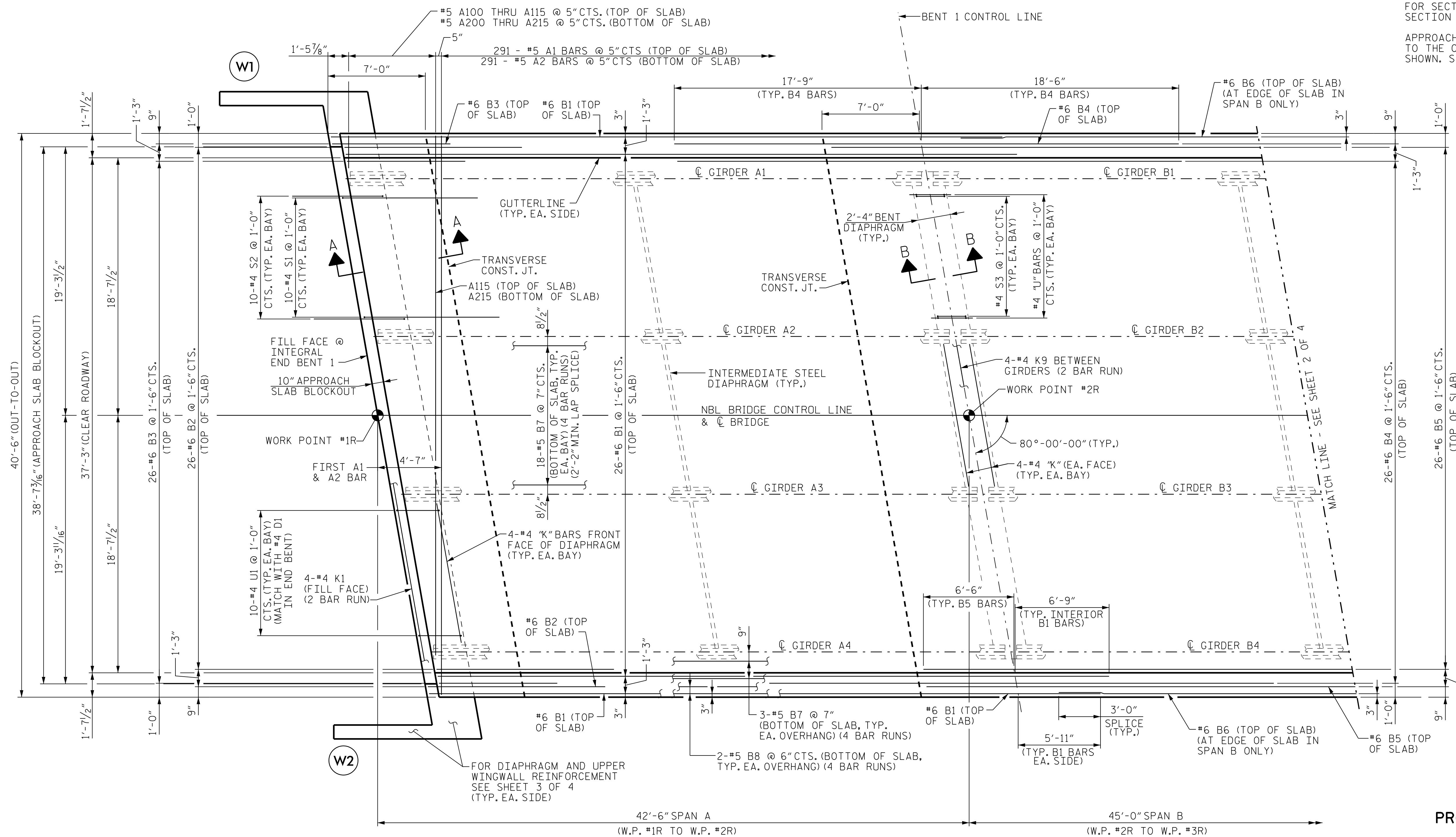
FILE: R:\med\192915B Structures\PLANS\bridge 2 NBL\R2915B\_SD\_TS\_02.dwg  
 DATE: 8/10/2015 7:03:49 AM



NOTES

FOR SECTIONS A-A & B-B, SEE SHEET "TYPICAL SECTION DETAILS."

APPROACH SLAB BLOCKOUT WIDTH VARIES NORMAL TO THE CONTROL LINE. MAXIMUM OFFSET WIDTHS SHOWN. SEE "PLAN OF SPAN DETAILS" SHEETS.



PLAN OF SPANS A & B

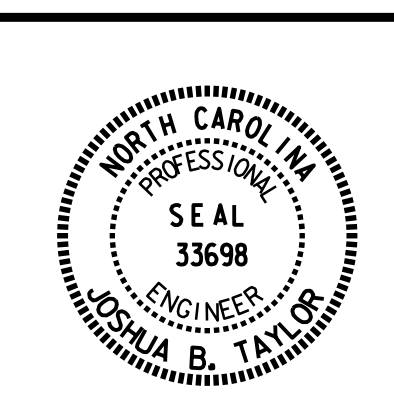
PROJECT NO. R-2915B  
 ASHE COUNTY  
 STATION: 198+64.50 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PLAN OF SPANS A & B  
 (NBL)

**CDM Smith**  
 CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

DRAWN BY : B. WADSWORTH DATE : 06-15 DWG. No.  
 CHECKED BY : J. TAYLOR DATE : 06-15  
 DESIGN ENGINEER : J. TAYLOR DATE : 06-15



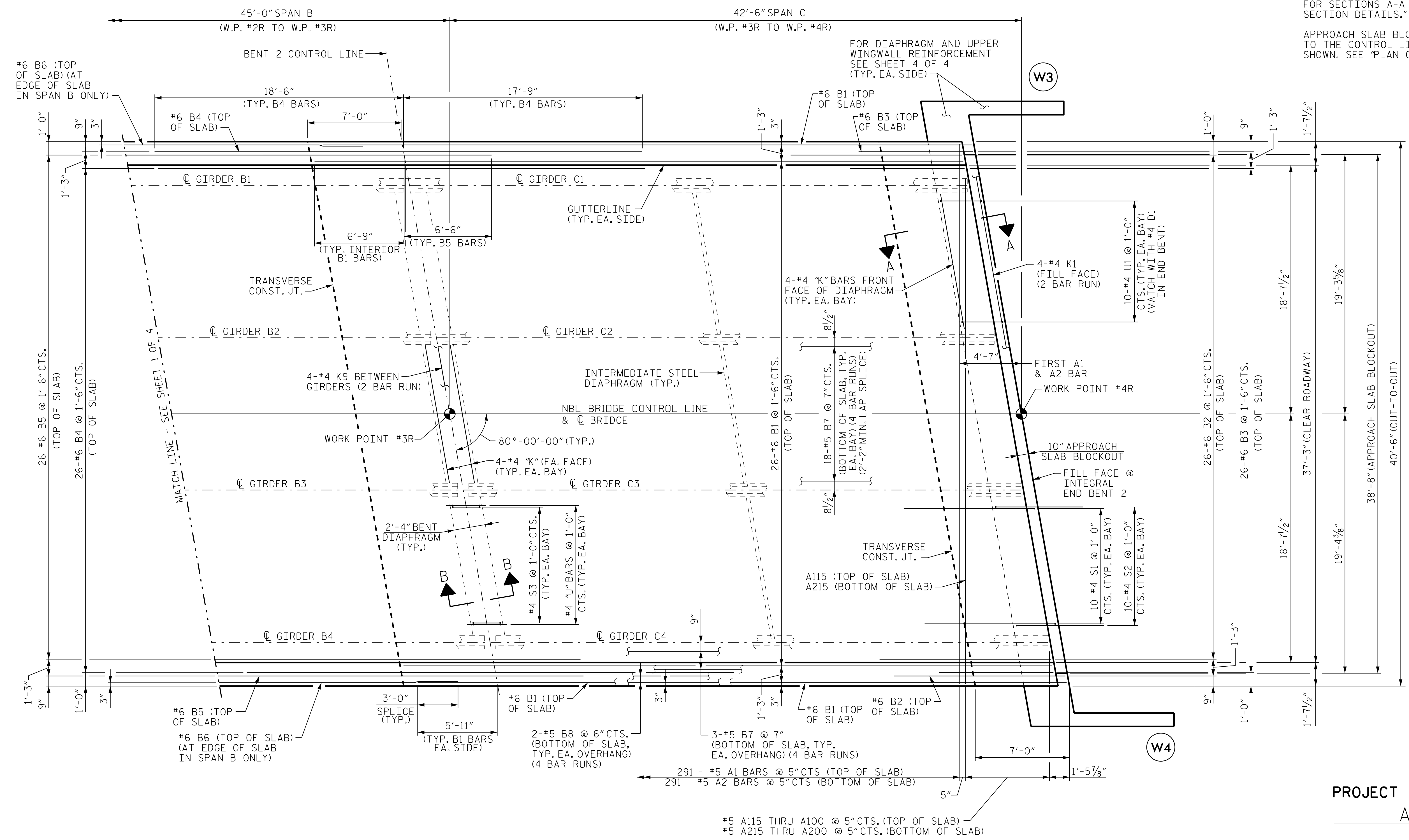
| REVISIONS |     |       | SHEET No. |     |       |
|-----------|-----|-------|-----------|-----|-------|
| No.       | BY: | DATE: | No.       | BY: | DATE: |
| 1         |     |       | 3         |     |       |
| 2         |     |       | 4         |     |       |

TOTAL SHEETS: 34

FILE: R:\mcd\192915B Structures\PLANS\bridge 2 NBL\192915B\_S02\_01.dgn  
 DATE: 8/10/2015 7:03:51 AM

NOTES

FOR SECTIONS A-A & B-B, SEE SHEET "TYPICAL SECTION DETAILS."  
 APPROACH SLAB BLOCKOUT WIDTH VARIES NORMAL TO THE CONTROL LINE. MAXIMUM OFFSET WIDTHS SHOWN. SEE "PLAN OF SPAN DETAILS" SHEETS.



PLAN OF SPANS B & C

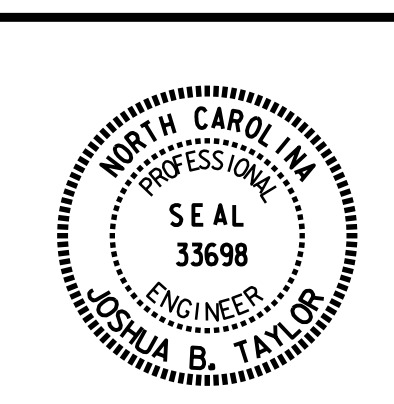
PROJECT NO. R-2915B  
 ASHE COUNTY  
 STATION: 198+64.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PLAN OF SPANS B & C  
 (NBL)

**CDM Smith**  
 CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

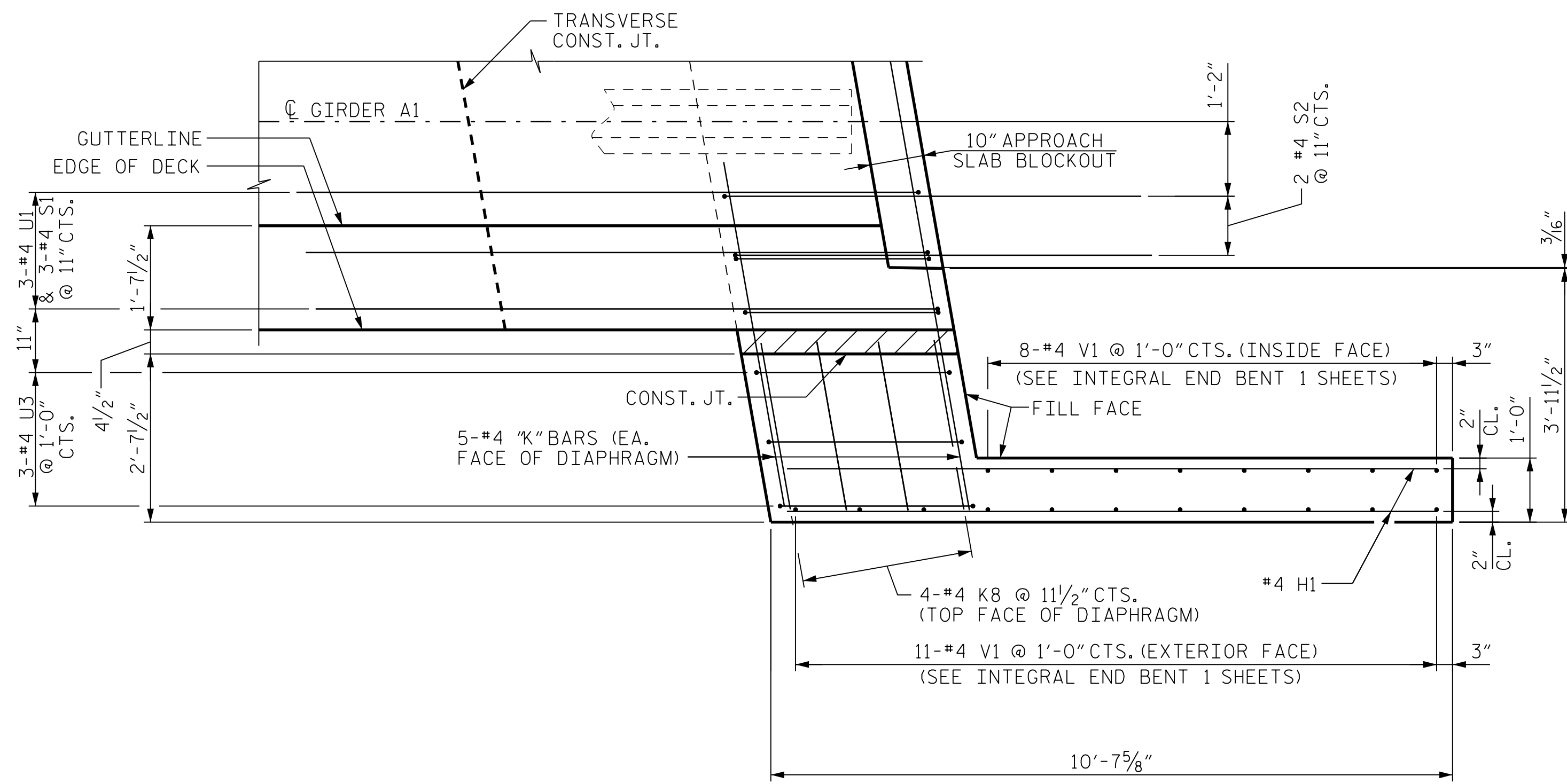
DRAWN BY: B. WADSWORTH DATE: 06-15 DWG. No.  
 CHECKED BY: J. TAYLOR DATE: 06-15  
 DESIGN ENGINEER: J. TAYLOR DATE: 06-15



| REVISIONS |     |       | SHEET No. |     |       |
|-----------|-----|-------|-----------|-----|-------|
| No.       | BY: | DATE: | No.       | BY: | DATE: |
| 1         |     |       | 3         |     |       |
| 2         |     |       | 4         |     |       |

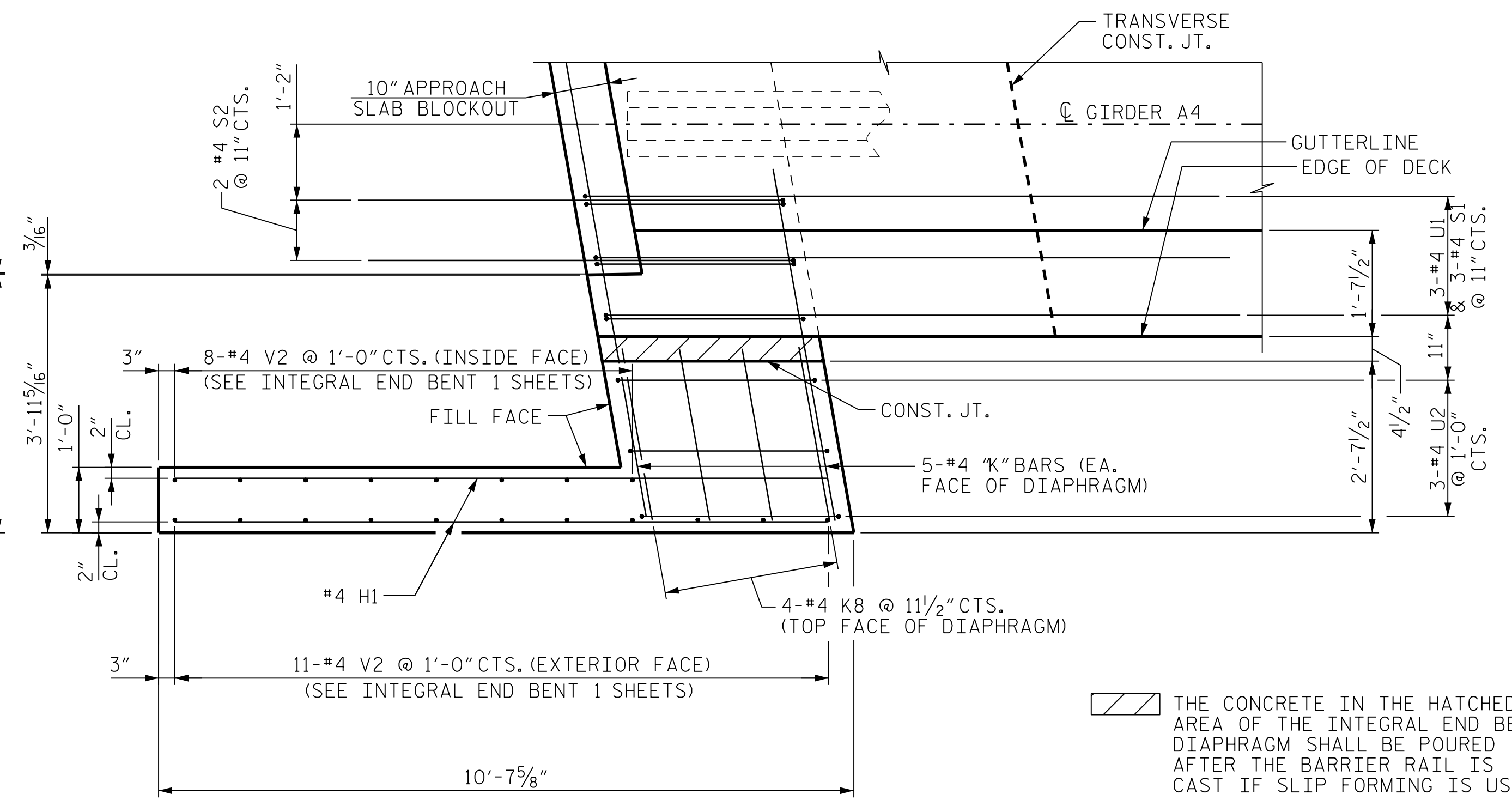
TOTAL SHEETS: 34

FILE: R:\mcd\192915B Structures\PLANS\bridge 2 NBL\192915B\_S02.dgn  
 DATE: 8/10/2015 7:03:53 AM



PLAN OF WING (W1)

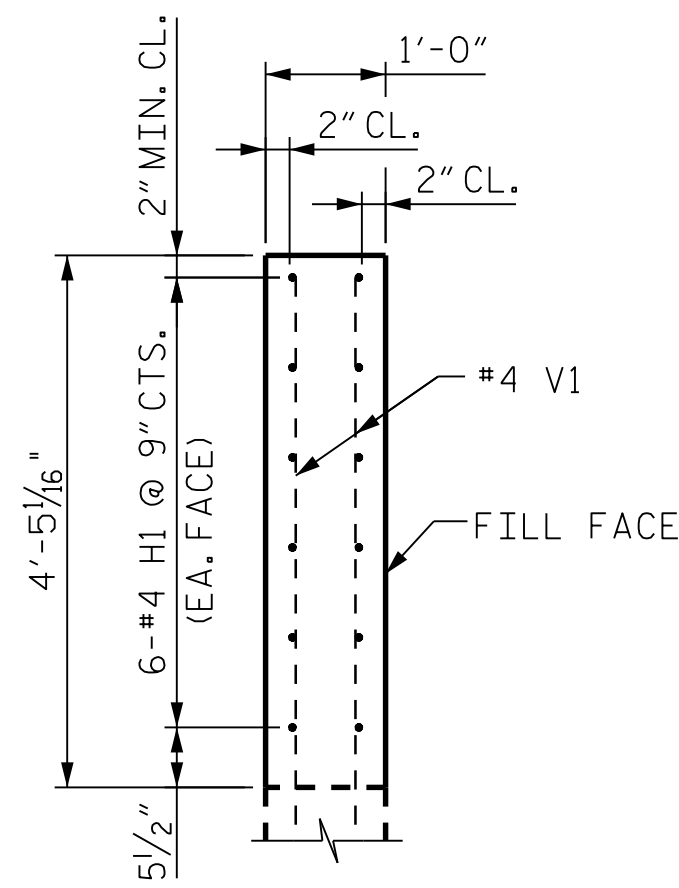
DECK "A" BARS AND "B" BARS NOT SHOWN FOR CLARITY



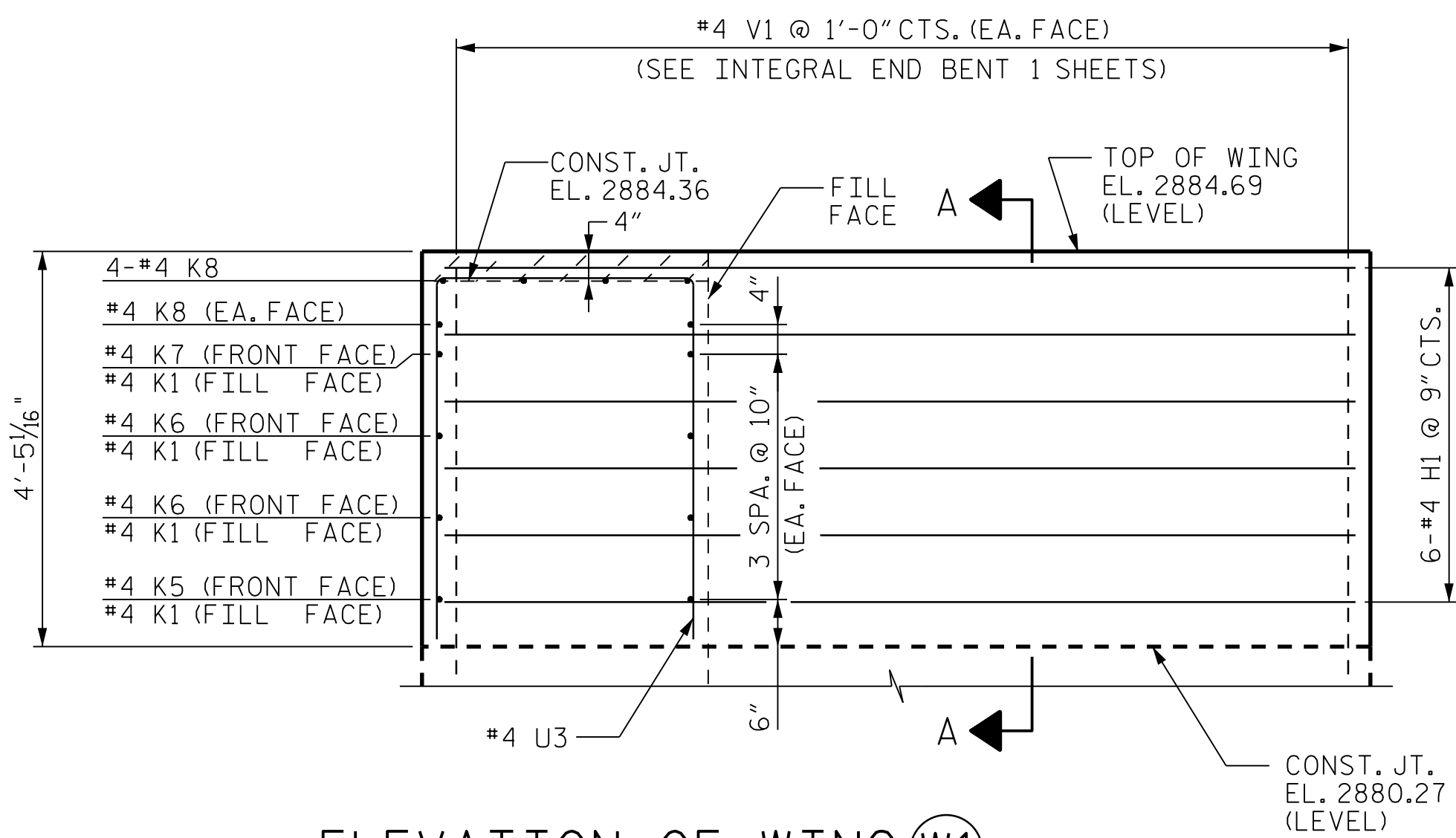
PLAN OF WING (W2)

DECK "A" BARS AND "B" BARS NOT SHOWN FOR CLARITY

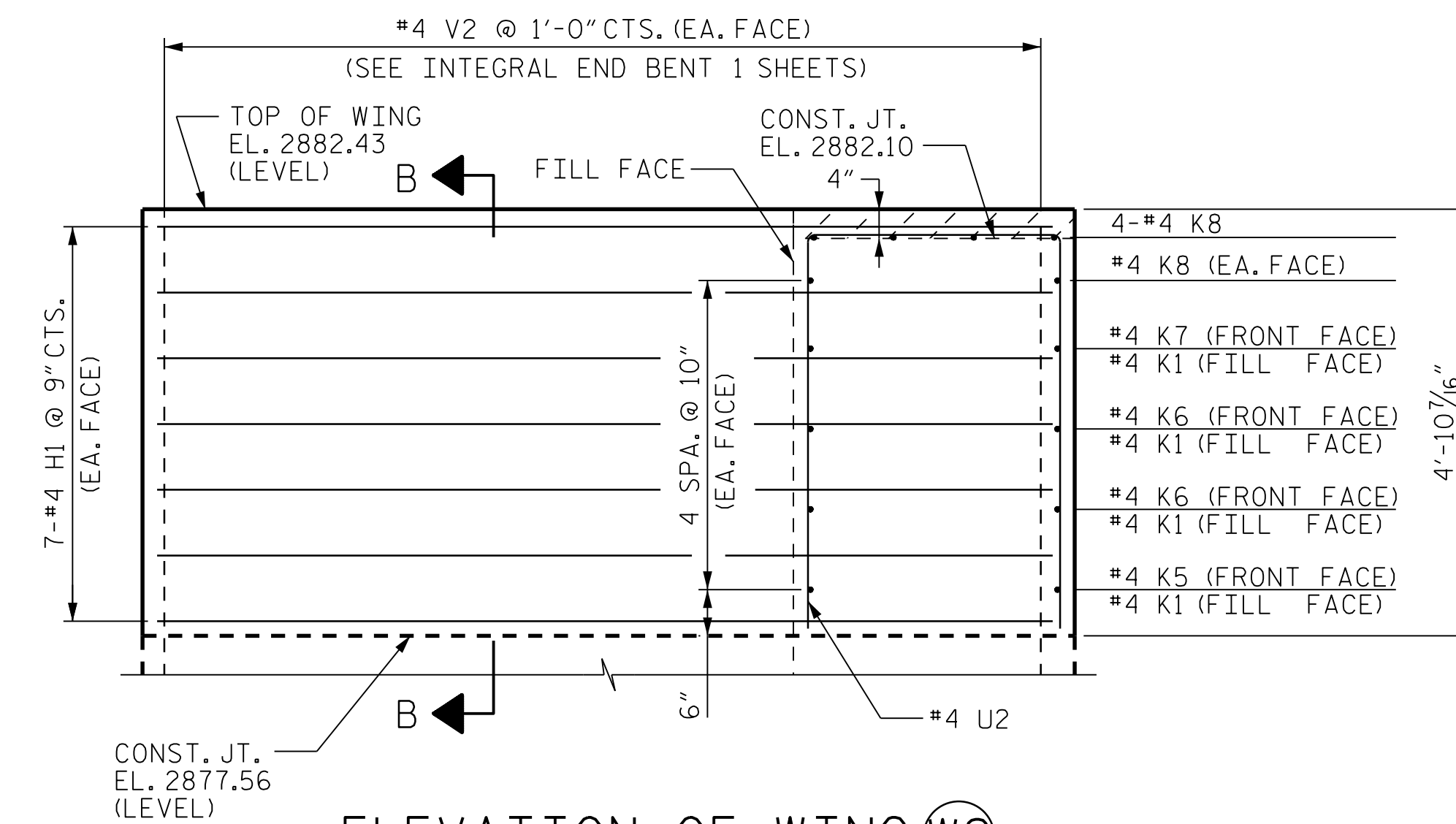
THE CONCRETE IN THE HATCHED AREA OF THE INTEGRAL END BENT DIAPHRAGM SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.



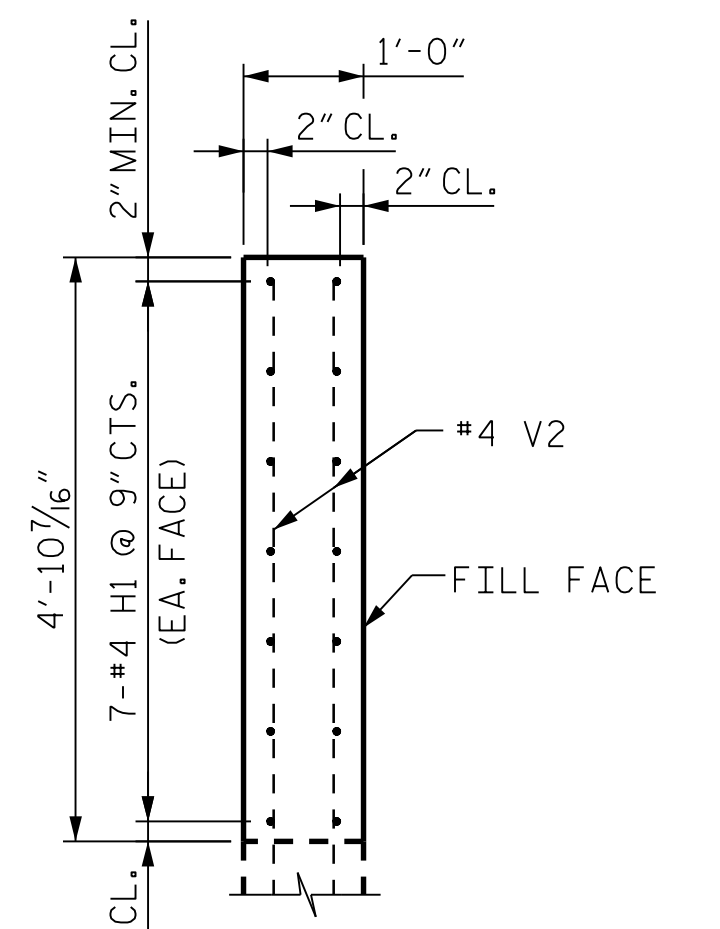
SECTION A-A



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)



SECTION B-B

PROJECT NO. R-2915B  
 ASHE COUNTY  
 STATION: 198+64.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUPERSTRUCTURE  
 PLAN OF SPAN  
 DETAILS

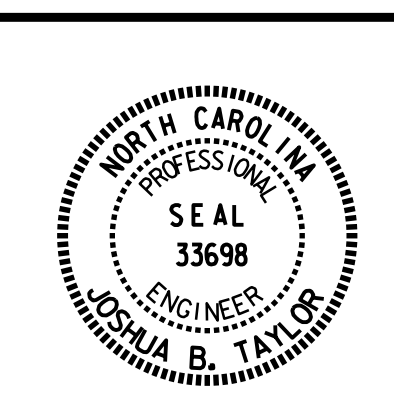
(NBL)

| REVISIONS |     |       |     | SHEET No.                 |
|-----------|-----|-------|-----|---------------------------|
| No.       | BY: | DATE: | No. |                           |
| 1         |     |       | 3   | S02-10<br>TOTAL SHEETS 34 |
| 2         |     |       | 4   |                           |

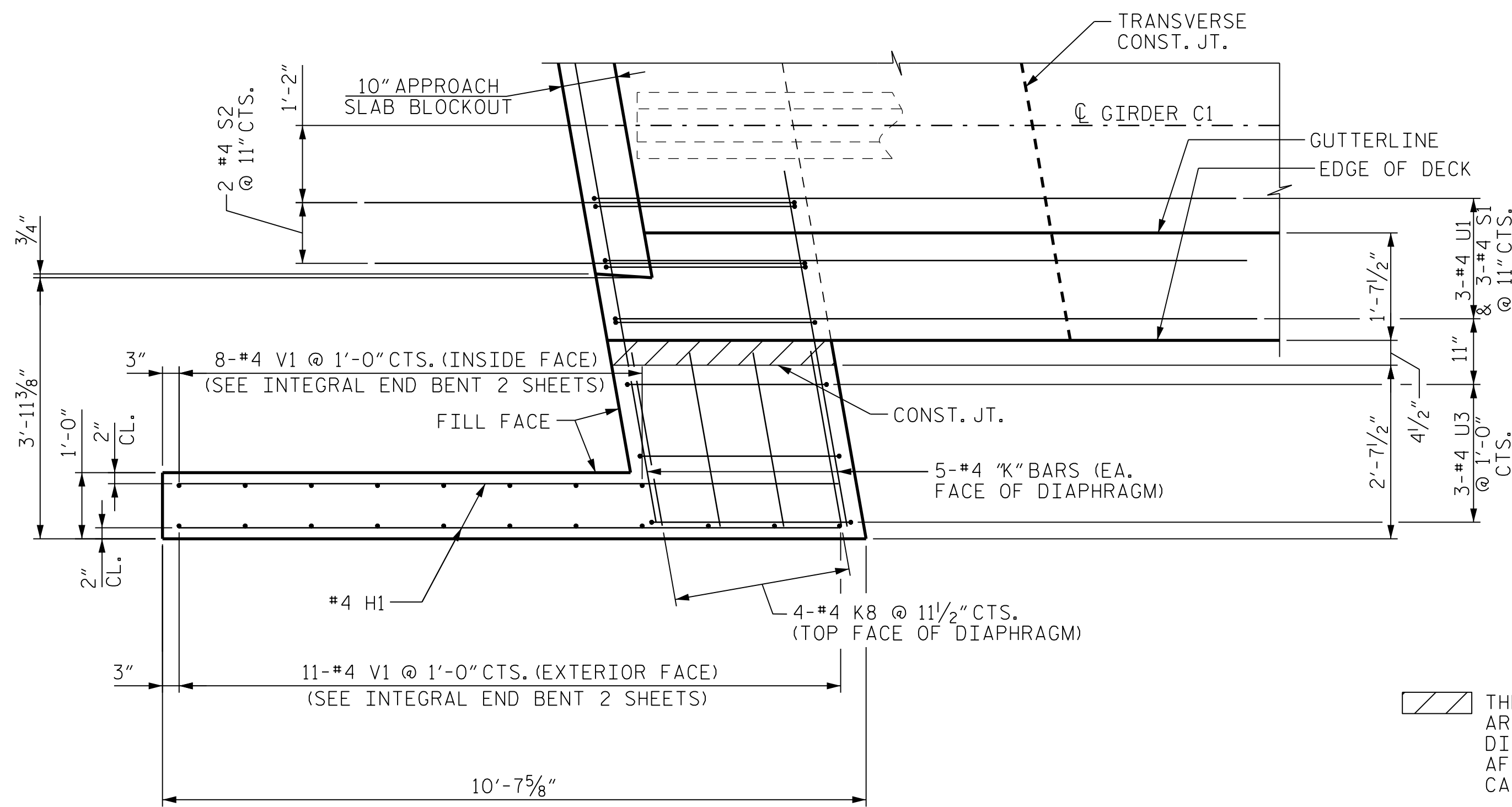
**CDM Smith**

CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

DRAWN BY: B. WADSWORTH DATE: 06-15 DWG. No.  
 CHECKED BY: J. TAYLOR DATE: 06-15  
 DESIGN ENGINEER: J. TAYLOR DATE: 06-15

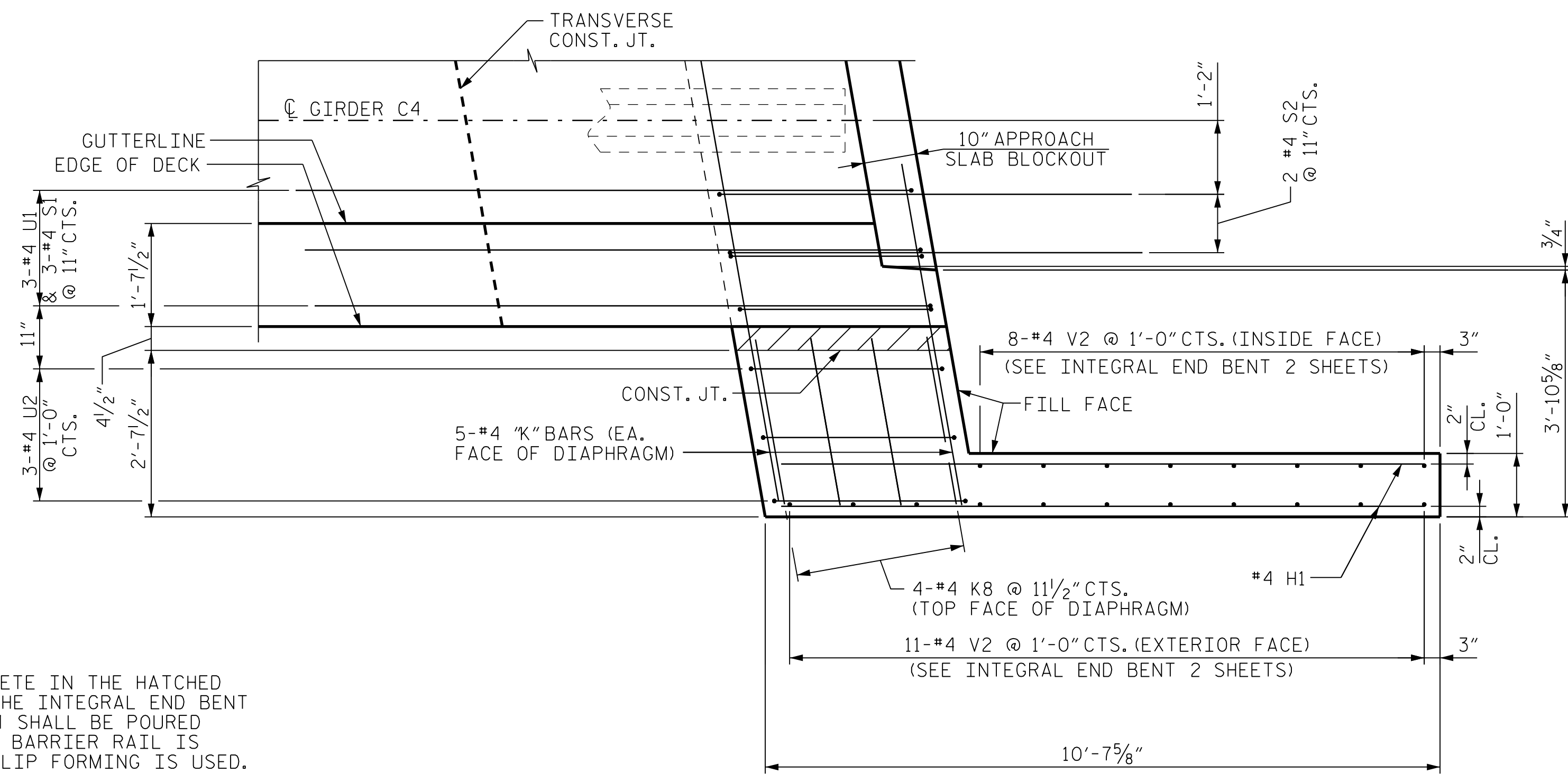


FILE: R:\medn\192915B Structures\PLANS\bridge 2 NBL\192915B\_S03.dgn  
 DATE: 8/10/2015 7:03:55 AM



PLAN OF WING (W3)

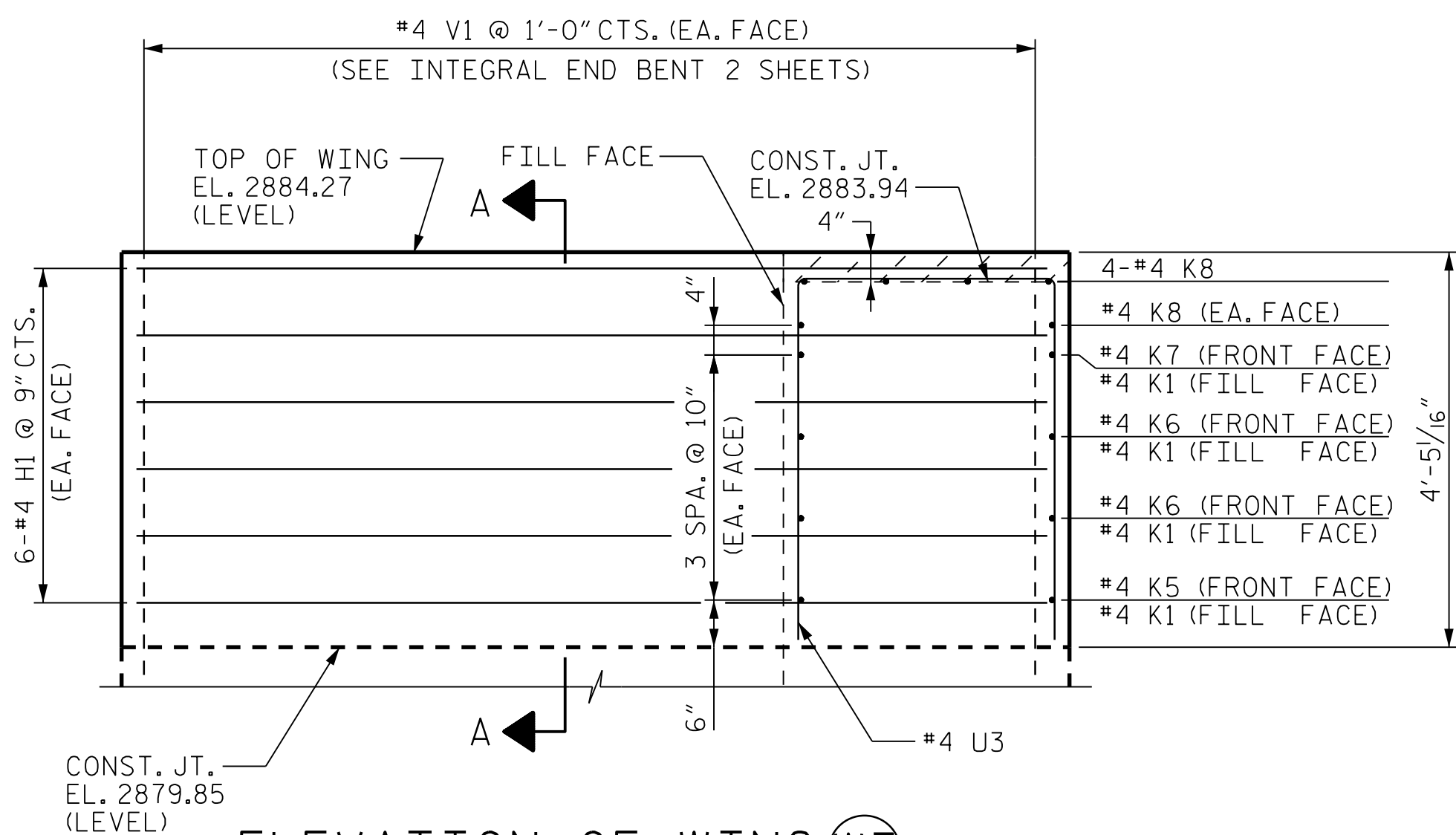
DECK "A" BARS AND "B" BARS NOT SHOWN FOR CLARITY



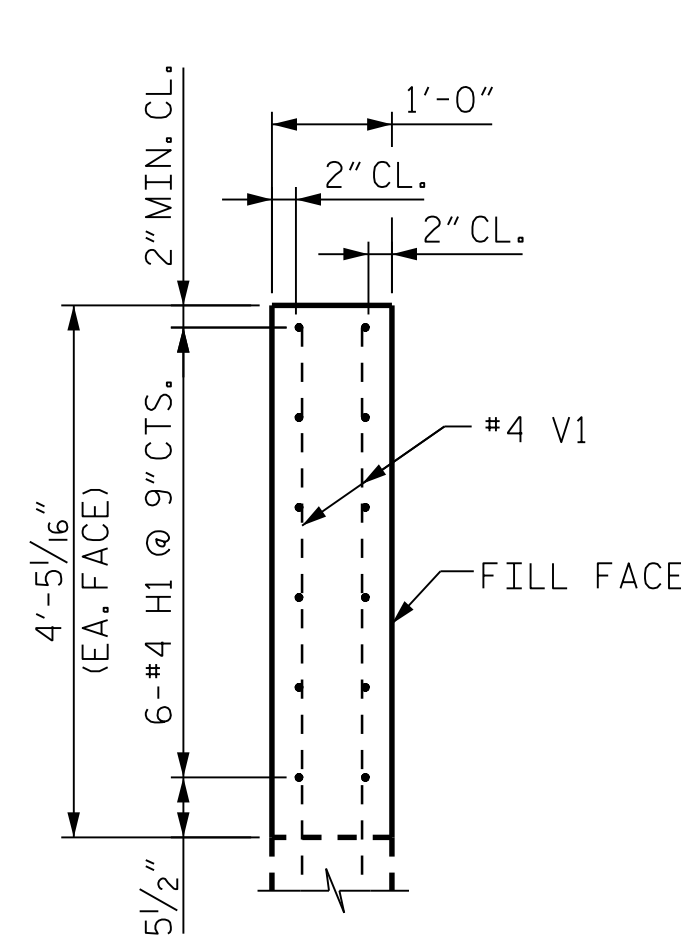
PLAN OF WING (W4)

DECK "A" BARS AND "B" BARS NOT SHOWN FOR CLARITY

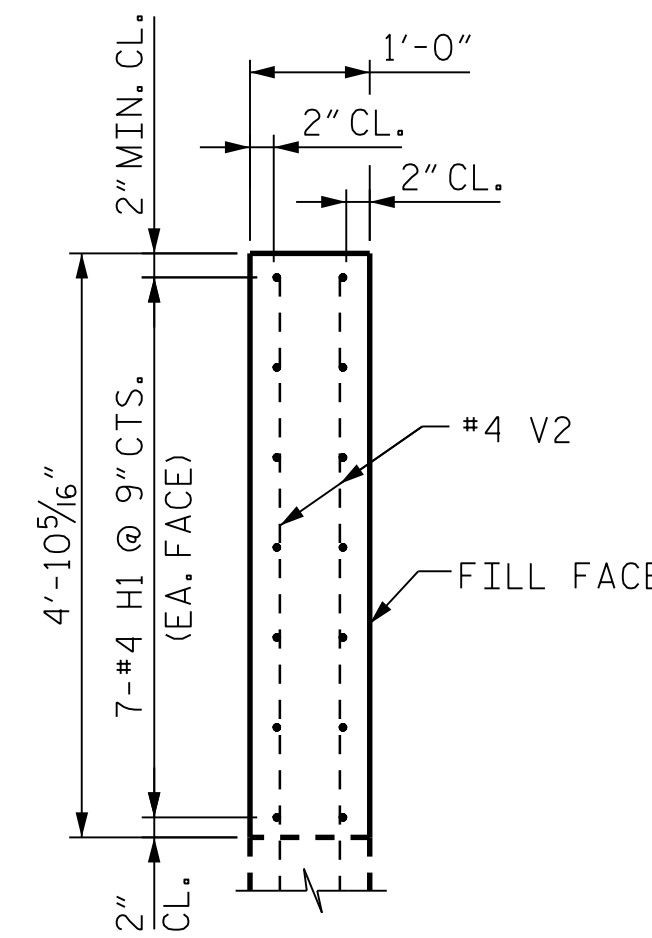
THE CONCRETE IN THE HATCHED AREA OF THE INTEGRAL END BENT DIAPHRAGM SHALL BE POURED AFTER THE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.



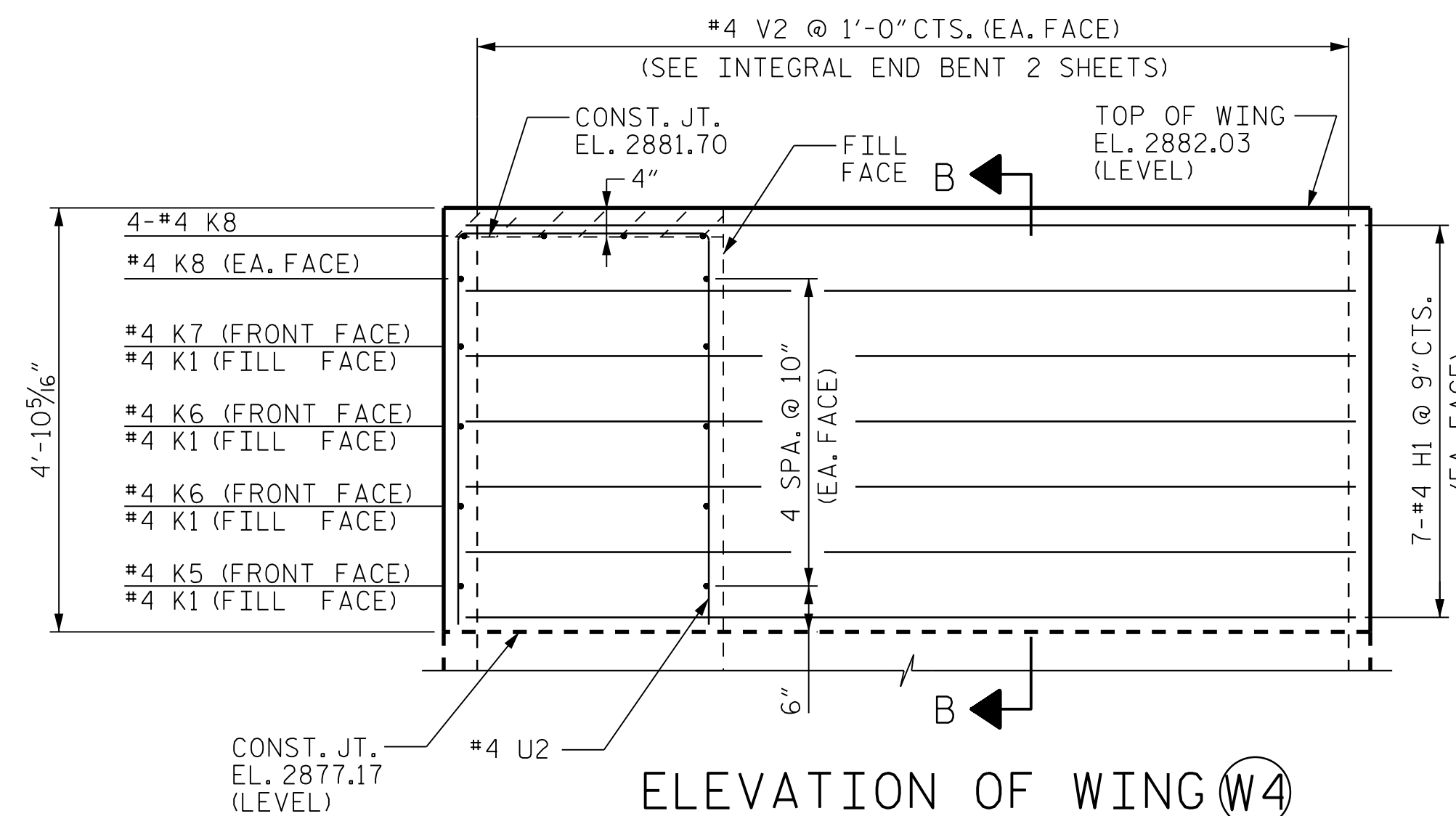
ELEVATION OF WING (W3)



SECTION A-A



SECTION B-B



ELEVATION OF WING (W4)

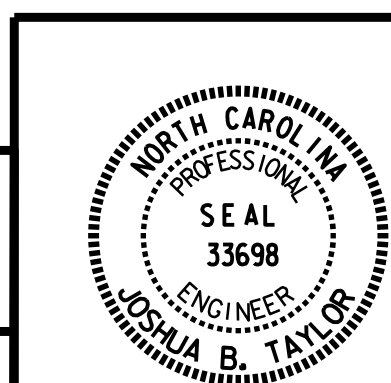
PROJECT NO. R-2915B  
 ASHE COUNTY  
 STATION: 198+64.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 PLAN OF SPAN  
 DETAILS  
 (NBL)

**CDM Smith**  
 CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

DRAWN BY : B. WADSWORTH DATE : 06-15 DWG. No.  
 CHECKED BY : J. TAYLOR DATE : 06-15  
 DESIGN ENGINEER : J. TAYLOR DATE : 06-15



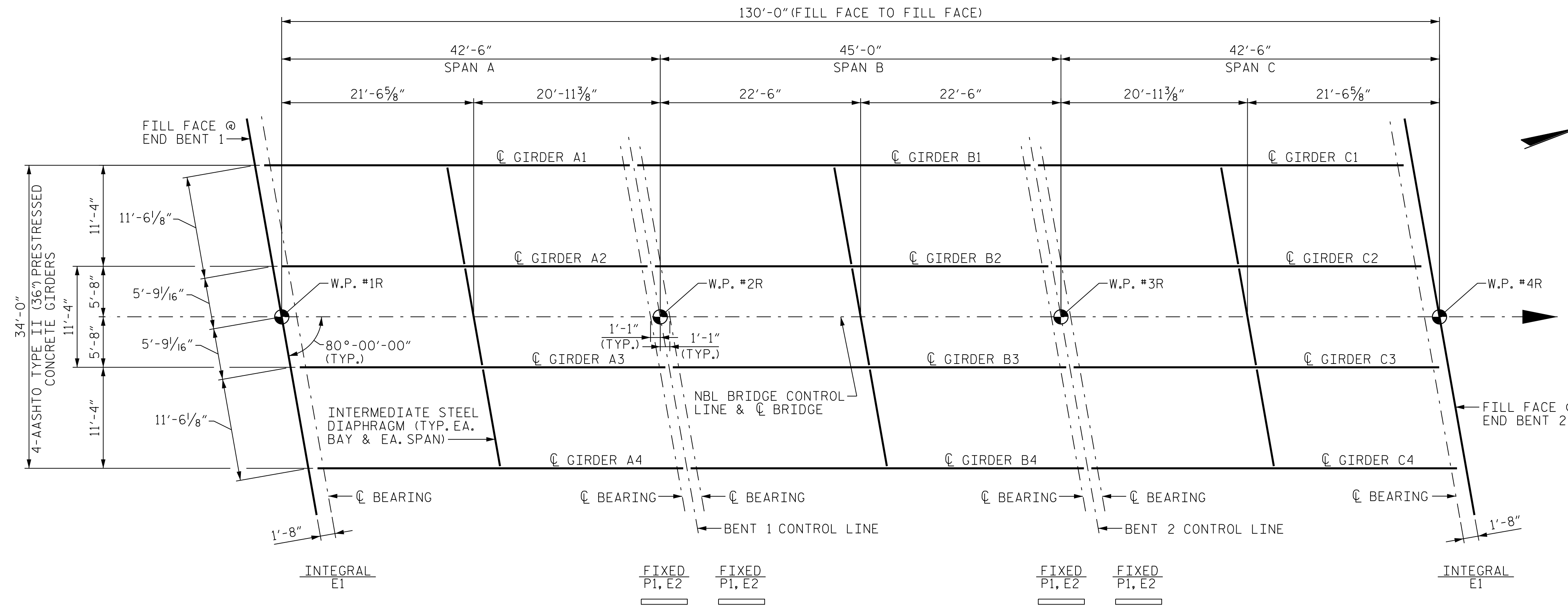
| REVISIONS |     |       |     | SHEET No. |       |
|-----------|-----|-------|-----|-----------|-------|
| No.       | BY: | DATE: | No. | BY:       | DATE: |
| 1         |     |       | 3   |           |       |
| 2         |     |       | 4   |           |       |

TOTAL SHEETS 34

FILE: R:\med\192915B Structures\PLANS\bridge 2 NBL\192915B\_S02.dgn  
 DATE: 8/10/2015 7:03:57 AM

NOTES

FOR INTERMEDIATE STEEL DIAPHRAGM DETAILS, SEE "INTERMEDIATE STEEL DIAPHRAGMS FOR TYPE II PRESTRESSED CONCRETE GIRDERS" SHEET.  
 FOR ELASTOMERIC BEARINGS AND SOLE PLATES, SEE "ELASTOMERIC BEARING DETAILS" SHEET.



FRAMING PLAN

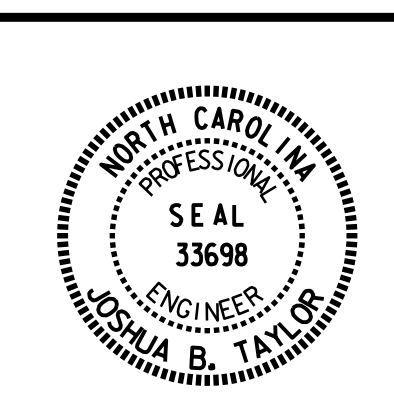
PROJECT NO. R-2915B  
 ASHE COUNTY  
 STATION: 198+64.50 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 FRAMING PLAN  
 (NBL)

**CDM Smith**  
 CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

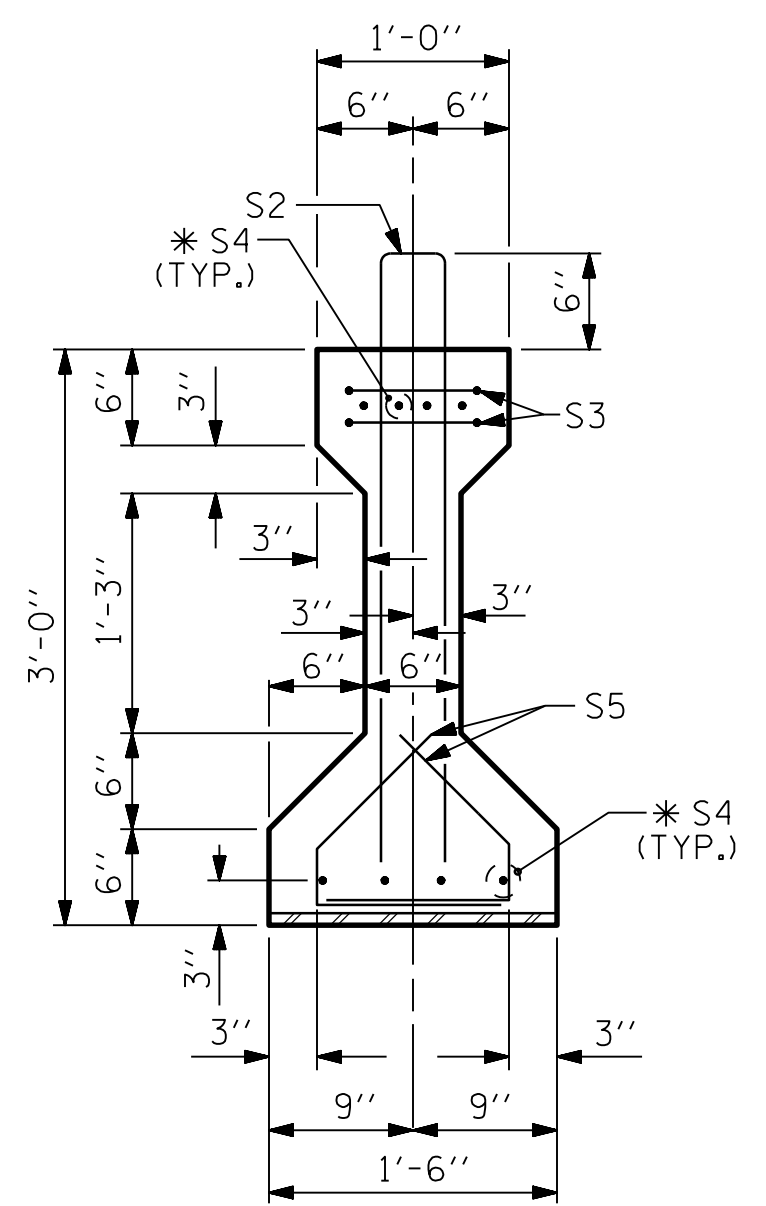
DRAWN BY : B. WADSWORTH      DATE : 06-15  
 CHECKED BY : J. TAYLOR      DATE : 06-15  
 DESIGN ENGINEER : J. TAYLOR      DATE : 06-15

DWG. No.

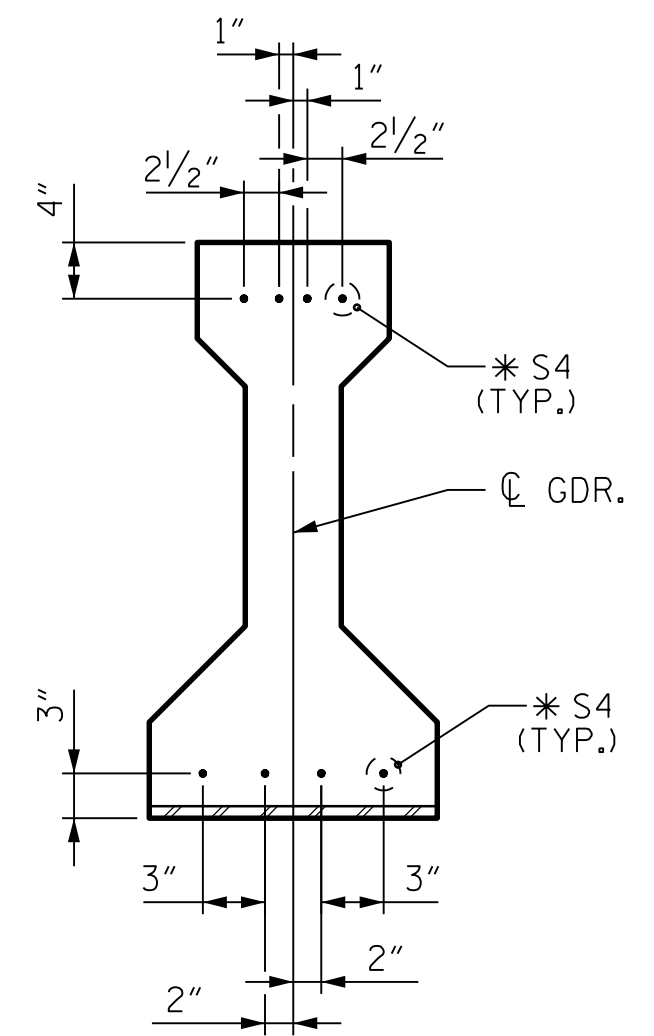


| REVISIONS |     |       |     |     |       | SHEET No.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| No.       | BY: | DATE: | No. | BY: | DATE: | TOTAL SHEETS |
| 1         |     |       | 3   |     |       | 34           |
| 2         |     |       | 4   |     |       |              |

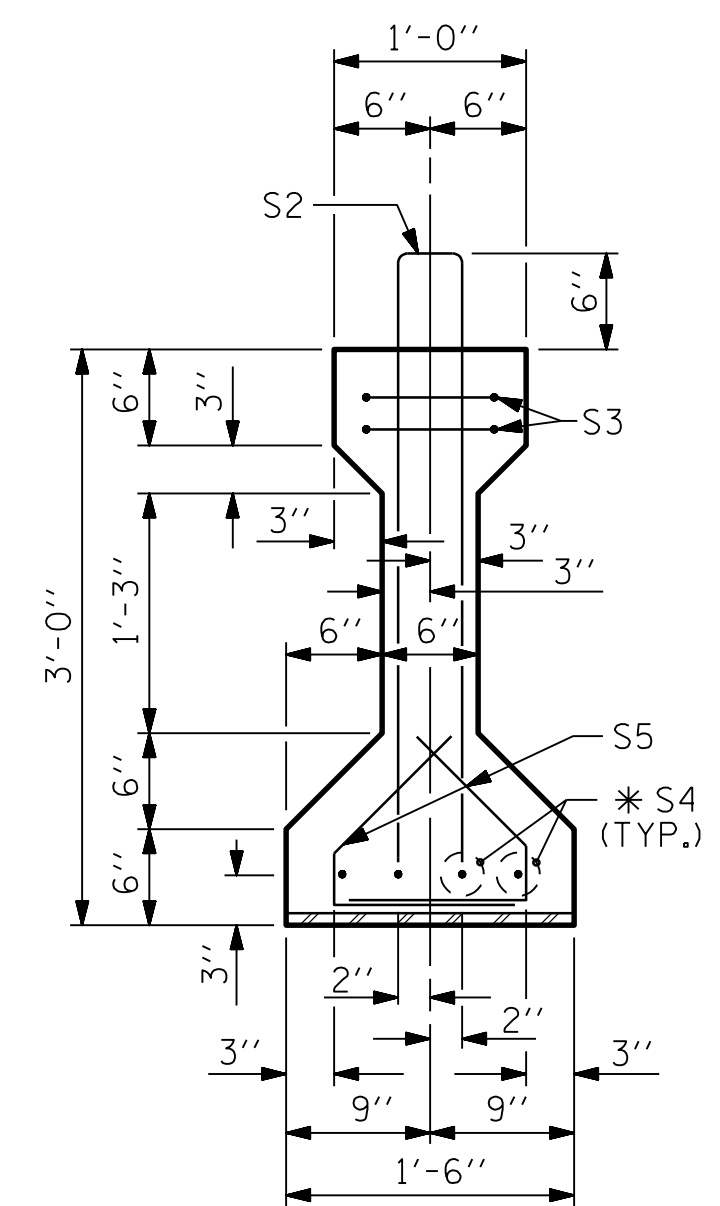
FILE: R:\medwin\R2915B\Structures\PLANS\Bridges 2 NBL\R2915B\_SD\_FF.dgn  
 DATE: 8/10/2015 7:04:00 AM



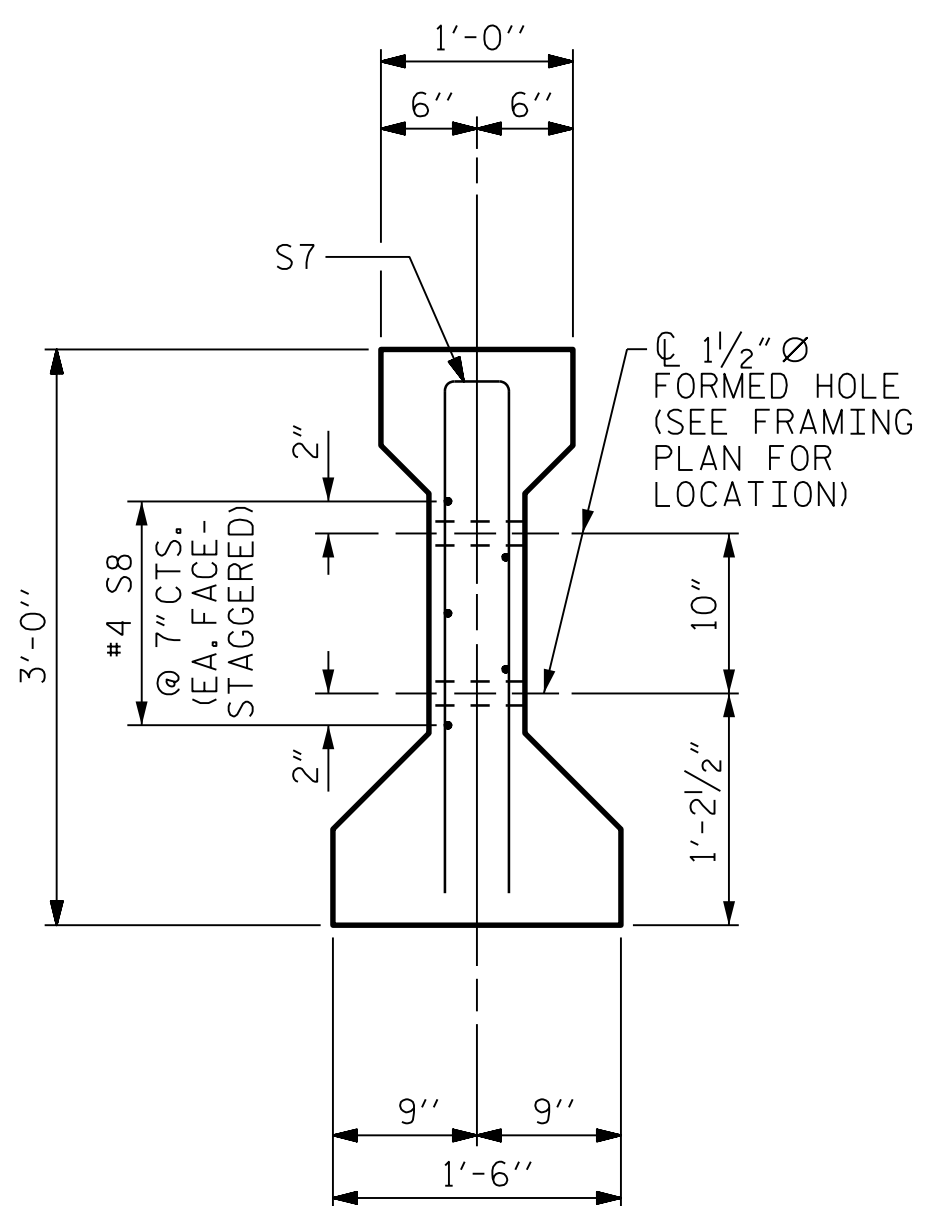
SECTION A-A  
FOR S4 BARS, SEE  
DETAIL "A"



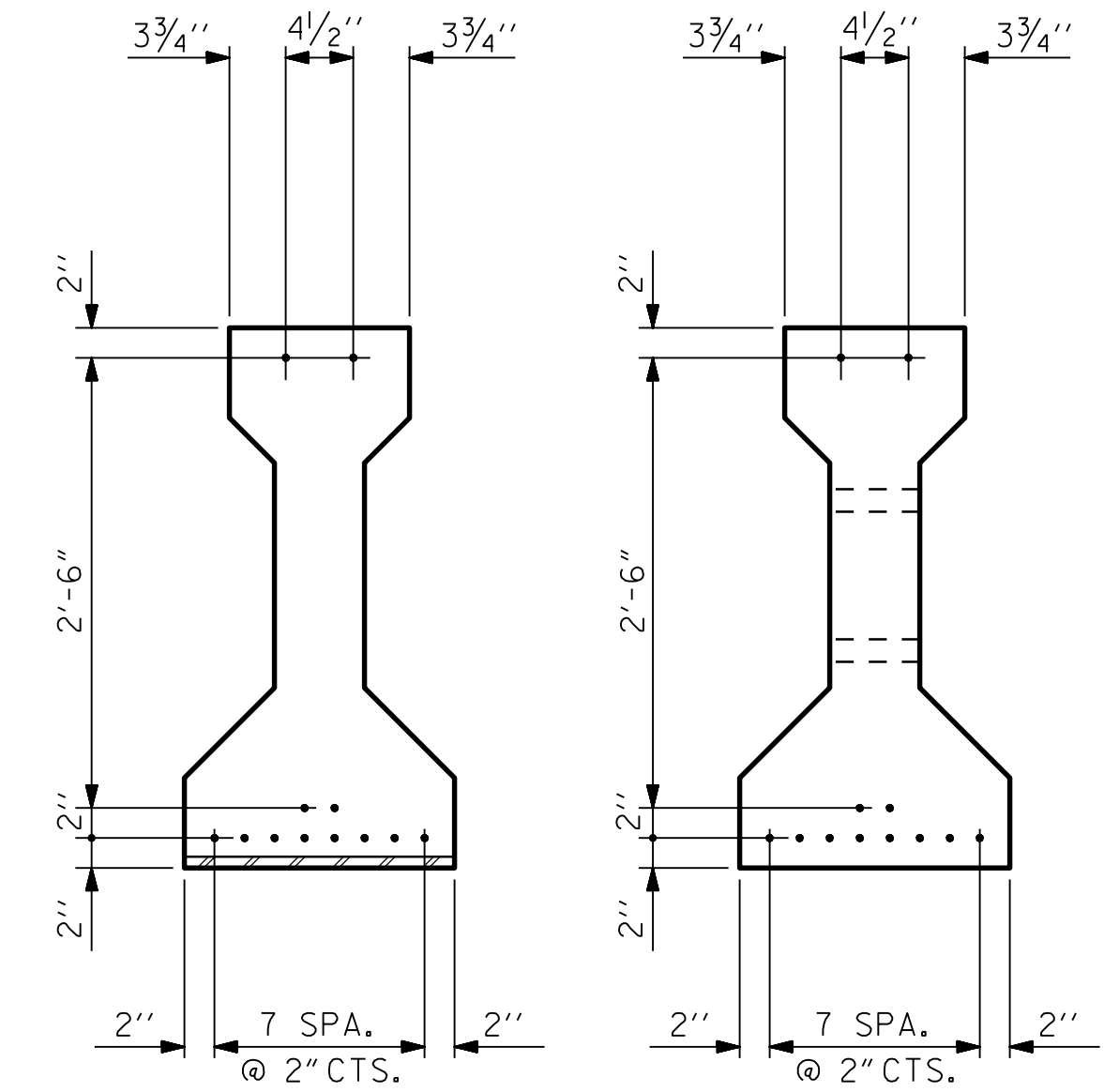
DETAIL "A"



SECTION B-B



SECTION C-C  
(S1 BARS NOT SHOWN)



AT END OF GIRDER  
(ALL STRANDS FULLY BONDED)  
AT C. OF GIRDER  
0.6" Ø LOW RELAXATION STRAND LAYOUT

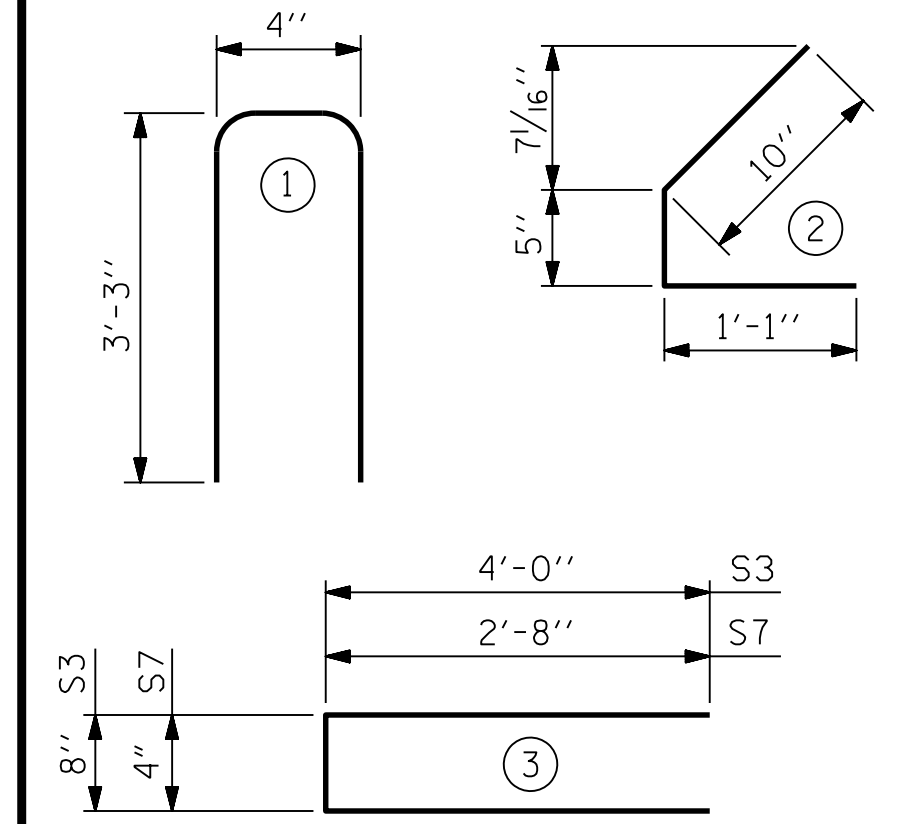
| 0.6" Ø L. R. GRADE 270 STRANDS |  |  |
|--------------------------------|--|--|
| AREA<br>(SQUARE INCHES)        | ULTIMATE STRENGTH<br>(LBS. PER STRAND) | APPLIED PRESTRESS<br>(LBS. PER STRAND) |
| 0.217                          | 58,600                                 | 43,950                   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

| REINFORCING STEEL FOR ONE GIRDER |        |      |      |        |        |
|----------------------------------|--------|------|------|--------|--------|
| BAR                              | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
| S1                               | 53     | #4   | 1    | 6'-10" | 242    |
| S2                               | 14     | #5   | 1    | 6'-10" | 100    |
| S3                               | 4      | #4   | 3    | 8'-8"  | 23     |
| *S4                              | 12     | #5   | STR  | 3'-8"  | 46     |
| S5                               | 134    | #4   | 2    | 2'-4"  | 209    |
| S6                               | 1      | #4   | STR  | 0'-8"  | 1      |
| S7                               | 2      | #5   | 3    | 5'-8"  | 12     |
| S8                               | 5      | #4   | STR  | 7'-0"  | 23     |
| S9                               | 1      | #4   | STR  | 1'-2"  | 1      |

\* NOTE: S4 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

|        | REINFORCING STEEL<br>LB. | 8,000 PSI CONCRETE<br>C.Y. | 0.6" Ø L. R. STRANDS<br>No. |
|--------|--------------------------|----------------------------|-----------------------------|
| SPAN A | 657                      | 3.9                        | 12                          |
| SPAN C | 657                      | 3.9                        | 12                          |

GIRDERS REQUIRED

| NUMBER     | LENGTH      | TOTAL LENGTH |
|------------|-------------|--------------|
| (SPAN A) 4 | 41'-0 1/16" | 164'-2 3/4"  |
| (SPAN C) 4 | 41'-0 1/16" | 164'-2 3/4"  |

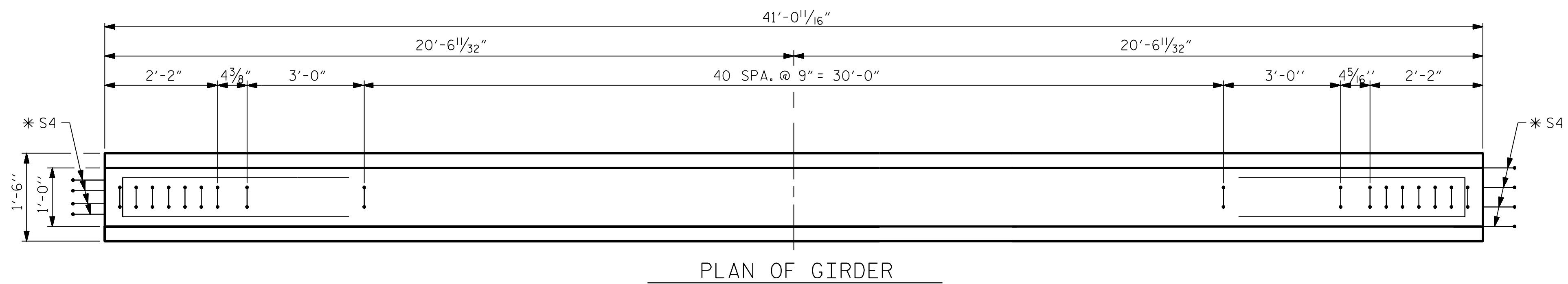
PROJECT NO. R-2915B  
ASHE COUNTY  
STATION: 198+64.50 -L-

SHEET 1 OF 4

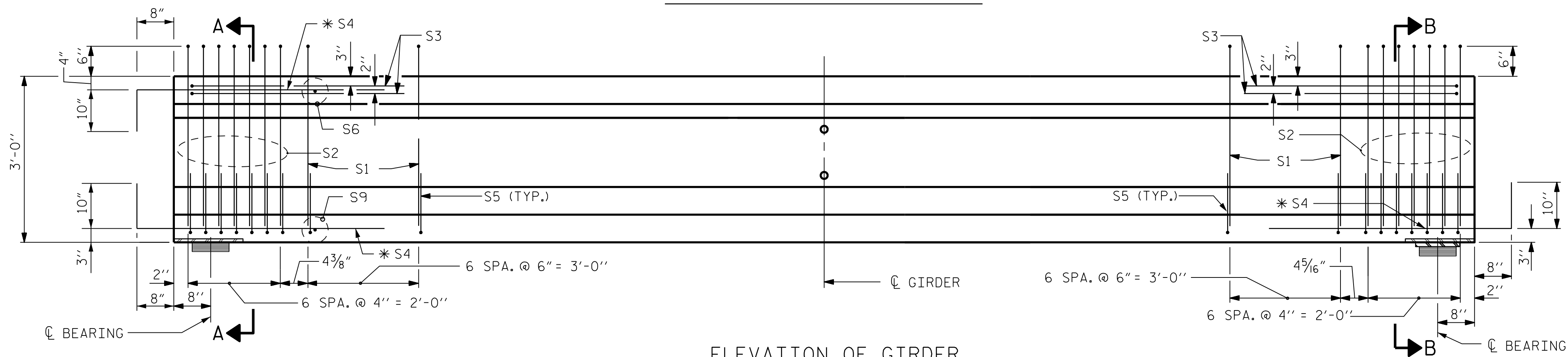
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
AASHTO TYPE II  
PRESTRESSED CONCRETE GIRDER  
CONTINUOUS FOR LIVE LOAD  
(SPANS A & C)  
(NBL)

| REVISIONS |     |       |     | SHEET No. |       |
|-----------|-----|-------|-----|-----------|-------|
| No.       | BY: | DATE: | No. | BY:       | DATE: |
| 1         |     |       | 3   |           |       |
| 2         |     |       | 4   |           |       |

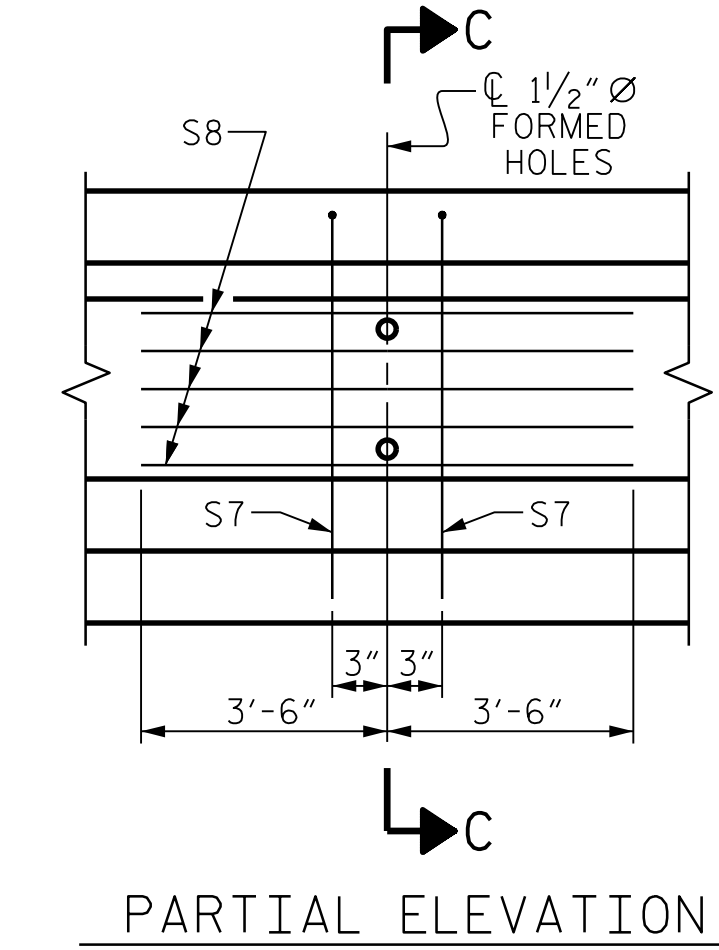
STD. NO. PCG4



PLAN OF GIRDER



ELEVATION OF GIRDER  
(SEE PARTIAL ELEVATION FOR ADDITIONAL "S" BARS)  
(SPAN A SHOWN. SPAN C SIMILAR BY ROTATION.)



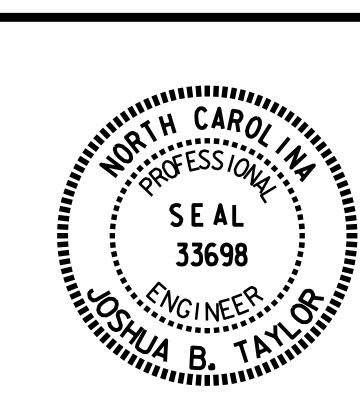
PARTIAL ELEVATION  
SHOWING INTERMEDIATE DIAPHRAGM  
REINFORCING STEEL FOR GIRDER Nos.  
A1 THRU A4 AND C1 THRU C4

FILE: R:\med\192915B Structures\PLANS\bridge 2 NBL\192915B\_SD\_GDR\_01.dgn  
DATE: 6/12/2015 2:27:33 PM

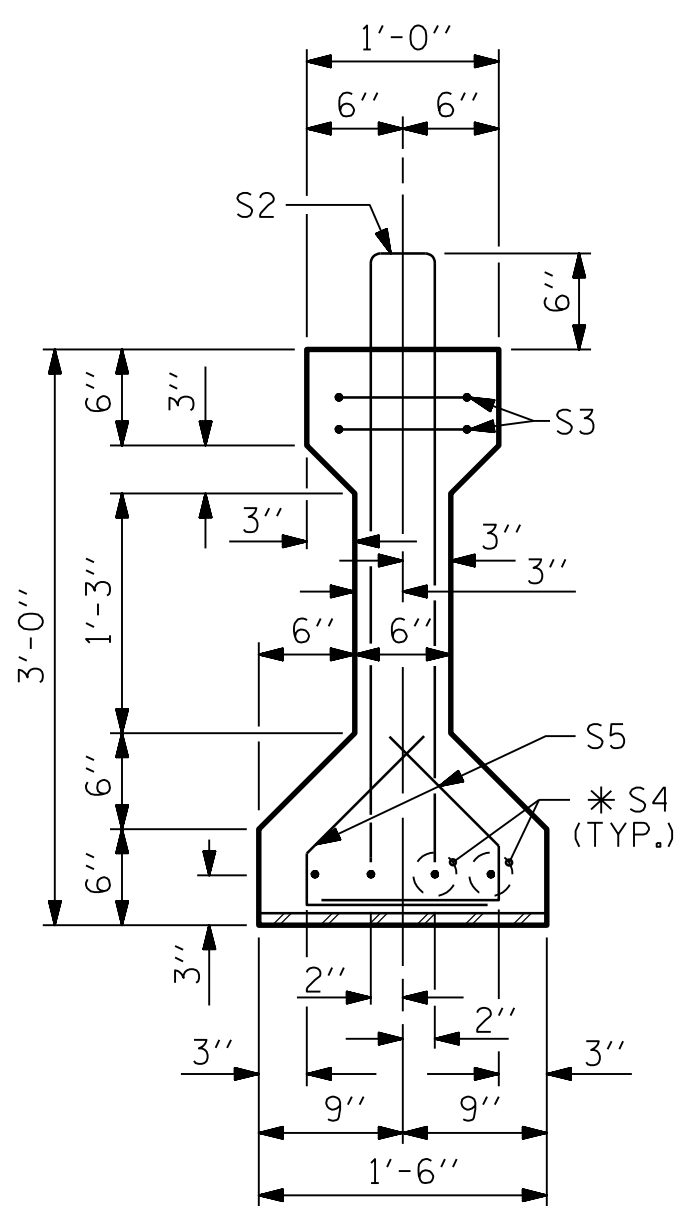
|                             |                        |
|-----------------------------|------------------------|
| ASSEMBLED BY : B. WADSWORTH | DATE : 06-15           |
| CHECKED BY : J. TAYLOR      | DATE : 06-15           |
| DRAWN BY : ELR 8/91         | REV. 10/17/00R RW/L/ES |
| CHECKED BY : GRP 8/91       | REV. 5/1/06R TLA/GM    |
|                             | REV. 10/11/11 MAA/GM   |

**CDM Smith**  
4000 Glenwood Avenue, Suite 400  
Raleigh, NC 27612-3228  
NC COA No. F-1255

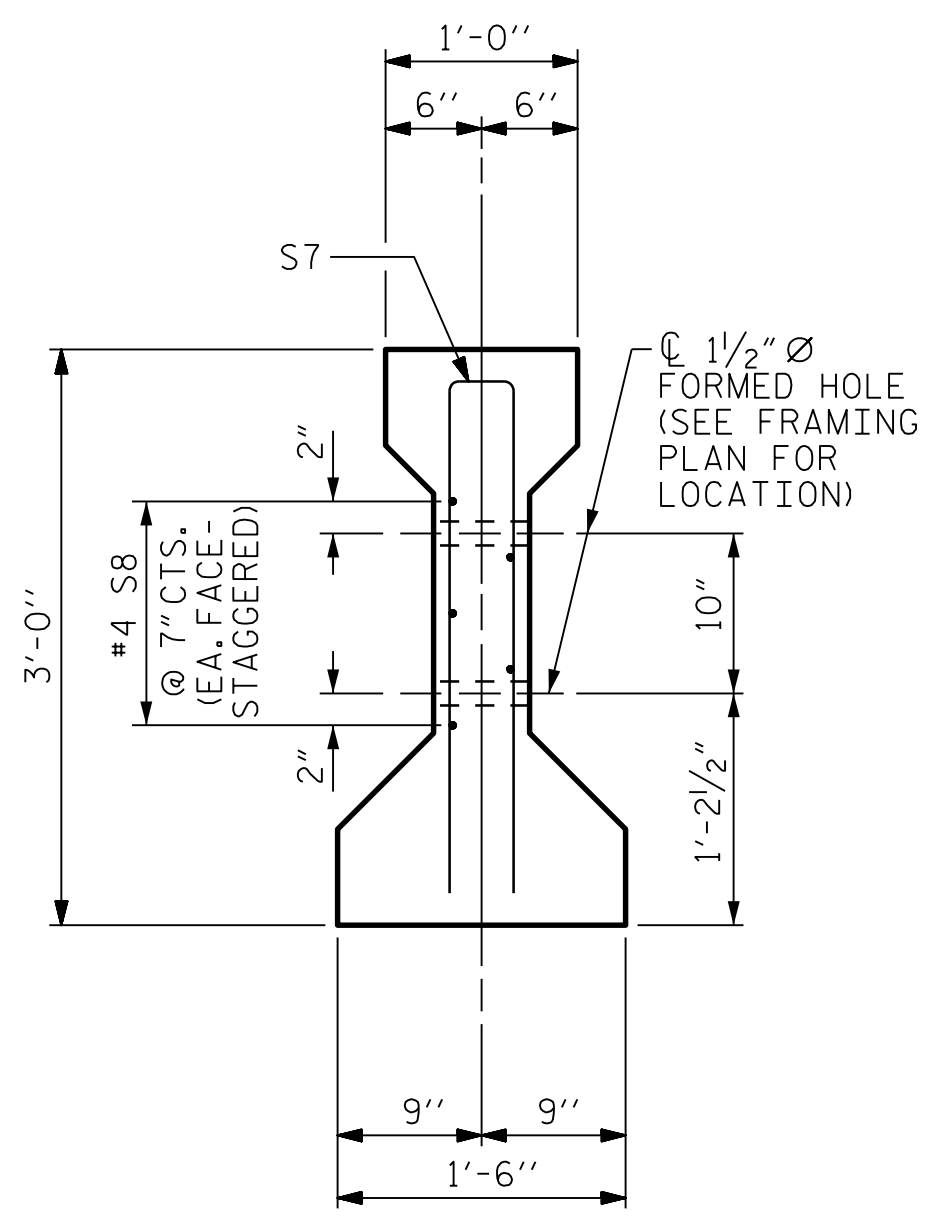
DESIGN ENGINEER : J. TAYLOR DATE : 06-15



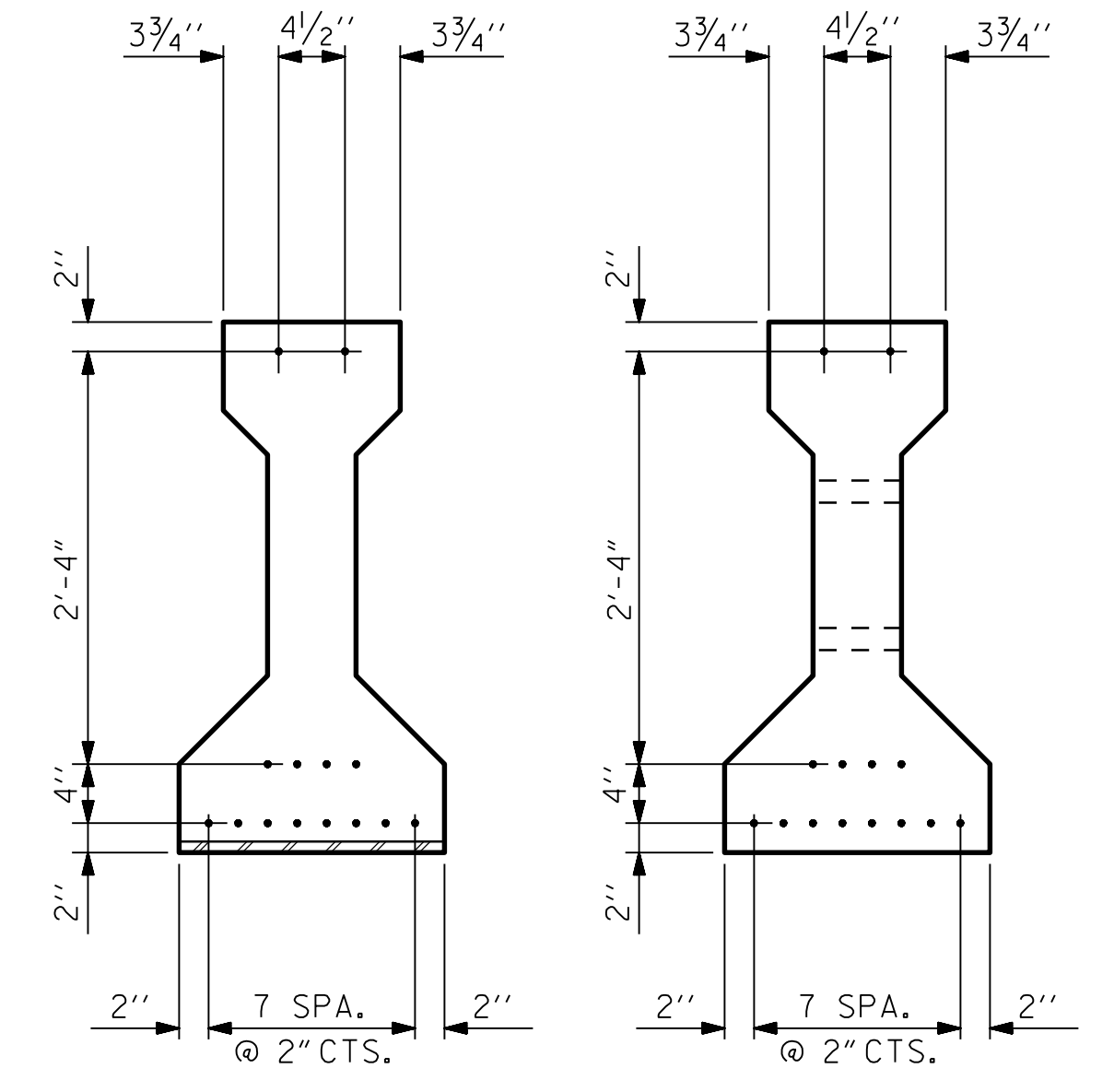
DWG. No.



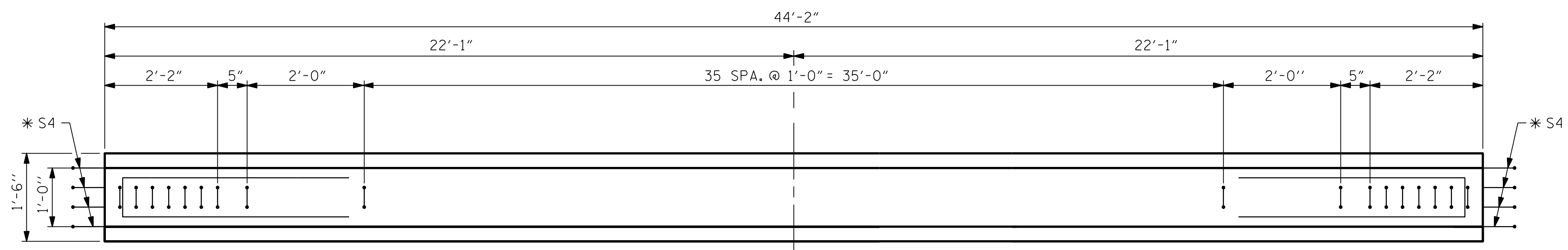
SECTION B-B



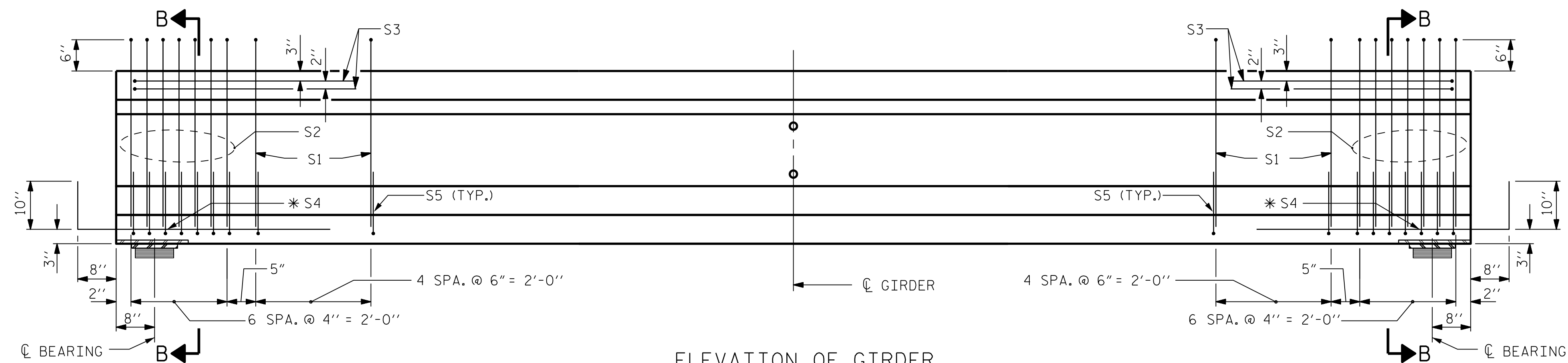
SECTION C-C  
(S1 BARS NOT SHOWN)



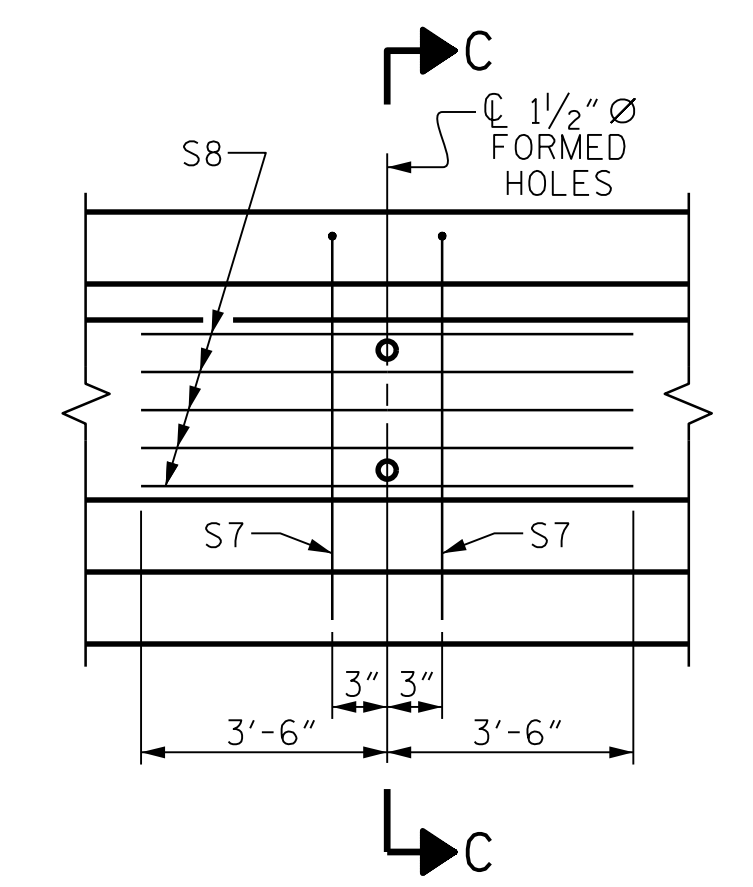
AT END OF GIRDER  
(ALL STRANDS FULLY BONDED)  
AT C OF GIRDER  
0.6" Ø LOW RELAXATION STRAND LAYOUT



PLAN OF GIRDER



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



PARTIAL ELEVATION  
SHOWING INTERMEDIATE DIAPHRAGM  
REINFORCING STEEL FOR GIRDER NOS.  
B1 THRU B4

0.6" Ø L. R. GRADE 270 STRANDS

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

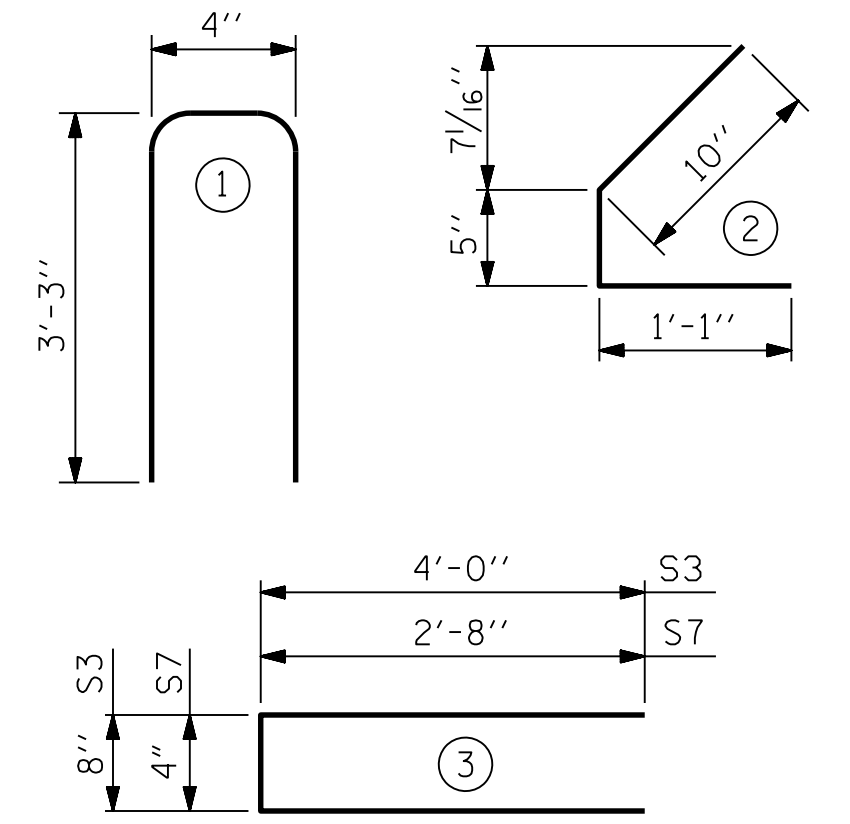
REINFORCING STEEL  
FOR ONE GIRDER

| BAR | NUMBER | SIZE | TYPE | LENGTH | WEIGHT |
|-----|--------|------|------|--------|--------|
| S1  | 44     | #4   | 1    | 6'-10" | 201    |
| S2  | 14     | #5   | 1    | 6'-10" | 100    |
| S3  | 4      | #4   | 3    | 8'-8"  | 23     |
| *S4 | 8      | #5   | STR  | 3'-8"  | 31     |
| S5  | 116    | #4   | 2    | 2'-4"  | 181    |
| S7  | 2      | #4   | 3    | 5'-8"  | 8      |
| S8  | 5      | #4   | STR  | 7'-0"  | 23     |

\* NOTE: S4 BARS SHALL BE BENT BEFORE SHIPMENT. HEAT BENDING SHALL NOT BE ALLOWED.

BAR TYPES

ALL BAR DIMENSIONS ARE OUT-TO-OUT



QUANTITIES FOR ONE GIRDER

|        | REINFORCING<br>STEEL<br>LB. | 6,500 PSI<br>CONCRETE<br>C.Y. | 0.6" Ø L. R.<br>STRANDS<br>No. |
|--------|-----------------------------|-------------------------------|--------------------------------|
| SPAN B | 567                         | 4.2                           | 14                             |

GIRDERS REQUIRED

| NUMBER | LENGTH | TOTAL LENGTH |
|--------|--------|--------------|
| 4      | 44'-2" | 176'-8"      |

PROJECT NO. R-2915B  
ASHE COUNTY  
STATION: 198+64.50 -L-

SHEET 2 OF 4

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

|                         |                        |
|-------------------------|------------------------|
| ASSEMBLED BY : J. SLOAN | DATE : 07-14           |
| CHECKED BY : J. TAYLOR  | DATE : 08-14           |
| DRAWN BY : ELR 8/91     | REV. 10/17/00R RWW/LES |
| CHECKED BY : GRP 8/91   | REV. 5/1/06R TLA/GM    |
|                         | REV. 10/11/11 MAA/GM   |

**CDM Smith**  
4500 Glenwood Avenue, Suite 400  
Raleigh, NC 27612-3228  
NC COA No. F-1255

DESIGN ENGINEER : J. TAYLOR DATE : 06-15

CDM SMITH  
5400 Glenwood Avenue, Suite 400  
Raleigh, NC 27612-3228  
NC COA No. F-1255

DWG. No.



| REVISIONS |     |       |     | SHEET No. |       |
|-----------|-----|-------|-----|-----------|-------|
| No.       | BY: | DATE: | No. | BY:       | DATE: |
| 1         |     |       | 3   |           |       |
| 2         |     |       | 4   |           |       |

TOTAL SHEETS 34

STD. NO. PCG4

NOTES

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

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.

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

BEVEL EDGES OF PLATE "B-1" TO GIVE CLOSE FIT BUT NOT TIGHT FIT TO STEEL CASTING FORM.

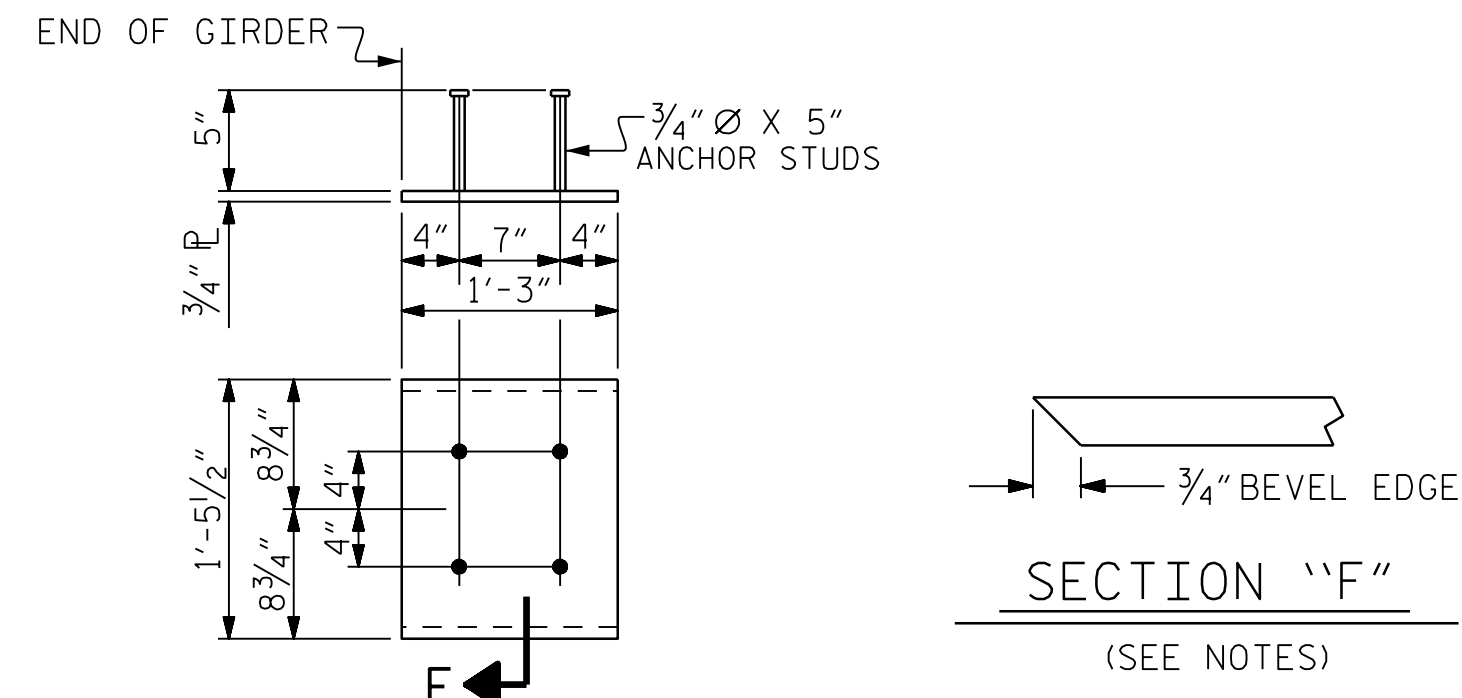
ANCHOR STUDS SHALL CONFORM TO AASHTO M169 GRADES 1010 THROUGH 1020 OR APPROVED EQUAL, AND SHALL MEET THE TYPE "B" REQUIREMENTS OF SUBSECTION 7.3 OF THE ANSI/AASHTO/AWS D1.5 BRIDGE WELDING CODE.

ALL PRESTRESSED STRANDS SHALL BE CUT FLUSH WITH THE GIRDER ENDS.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE GIRDER SHALL BE DONE WHEN CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 6,400 PSI FOR SPANS A & C GIRDERS AND NOT LESS THAN 5,000 PSI FOR SPAN B GIRDERS.

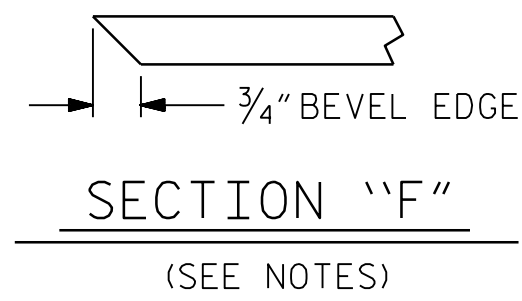
DEPENDING ON THE TYPE OF SYSTEM USED TO SUPPORT THE DECK SLAB FORMS, PRESET ANCHORS MAY BE NECESSARY IN THE PRESTRESSED CONCRETE GIRDER.

THE TOP SURFACE OF THE GIRDER SHALL BE RAKED TO A DEPTH OF 1/4" EXCEPT IN THE AREA BETWEEN THE STIRRUP AND THE EDGE OF THE GIRDER.



EMBEDDED PLATE "B-1" DETAILS

TWO EMBEDDED PLATES "B-1" ARE REQUIRED FOR EACH GIRDER.



DEAD LOAD DEFLECTION TABLE FOR GIRDERS

| 0.6" Ø LOW RELAXATION                   | SPANS A & C              |        |        |        |        |        |        |        |        |        |       |       | SPAN B          |        |        |        |        |        |        |        |        |       |
|---|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
|   | GIRDERS A1, A4, C1, & C4 |        |        |        |        |        |        |        |        |        |       |       | GIRDERS B1 & B4 |        |        |        |        |        |        |        |        |       |
|   | TENTH POINTS             | 0      | .1     | .2     | .3     | .4     | .5     | .6     | .7     | .8     | .9    | 0     | 0               | .1     | .2     | .3     | .4     | .5     | .6     | .7     | .8     | .9    |
| CAMBER (GIRDER ALONE IN PLACE) ↑        | 0.000                    | 0.016  | 0.030  | 0.041  | 0.048  | 0.050  | 0.048  | 0.041  | 0.030  | 0.016  | 0.000 | 0.000 | 0.024           | 0.045  | 0.062  | 0.072  | 0.076  | 0.072  | 0.062  | 0.045  | 0.024  | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. ↓ | 0.000                    | -0.006 | -0.013 | -0.019 | -0.022 | -0.023 | -0.022 | -0.019 | -0.013 | -0.006 | 0.000 | 0.000 | -0.010          | -0.020 | -0.028 | -0.033 | -0.035 | -0.033 | -0.028 | -0.020 | -0.010 | 0.000 |
| FINAL CAMBER ↑                          | 0"                       | 1/8"   | 3/16"  | 1/4"   | 5/16"  | 5/16"  | 5/16"  | 1/4"   | 3/16"  | 1/8"   | 0"    | 0"    | 3/16"           | 5/16"  | 7/16"  | 7/16"  | 1/2"   | 7/16"  | 7/16"  | 5/16"  | 3/16"  | 0"    |

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

DEAD LOAD DEFLECTION TABLE FOR GIRDERS

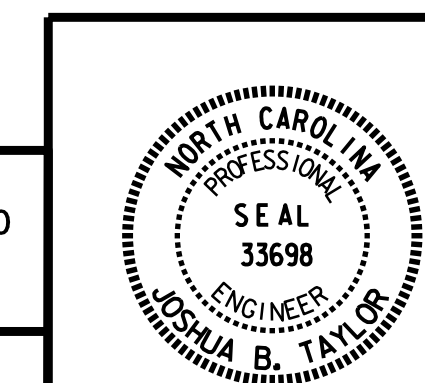
| 0.6" Ø LOW RELAXATION                   | SPANS A & C              |        |        |        |        |        |        |        |        |        |       |       | SPAN B          |        |        |        |        |        |        |        |        |       |
|---|--------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|-------|-----------------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
|   | GIRDERS A2, A3, C2, & C3 |        |        |        |        |        |        |        |        |        |       |       | GIRDERS B2 & B3 |        |        |        |        |        |        |        |        |       |
|   | TENTH POINTS             | 0      | .1     | .2     | .3     | .4     | .5     | .6     | .7     | .8     | .9    | 0     | 0               | .1     | .2     | .3     | .4     | .5     | .6     | .7     | .8     | .9    |
| CAMBER (GIRDER ALONE IN PLACE) ↑        | 0.000                    | 0.016  | 0.030  | 0.041  | 0.048  | 0.050  | 0.048  | 0.041  | 0.030  | 0.016  | 0.000 | 0.000 | 0.024           | 0.045  | 0.062  | 0.072  | 0.076  | 0.072  | 0.062  | 0.045  | 0.024  | 0.000 |
| * DEFLECTION DUE TO SUPERIMPOSED D.L. ↓ | 0.000                    | -0.008 | -0.016 | -0.023 | -0.027 | -0.028 | -0.027 | -0.023 | -0.016 | -0.008 | 0.000 | 0.000 | -0.012          | -0.024 | -0.034 | -0.040 | -0.042 | -0.040 | -0.034 | -0.024 | -0.012 | 0.000 |
| FINAL CAMBER ↑                          | 0"                       | 1/8"   | 3/16"  | 3/16"  | 1/4"   | 1/4"   | 1/4"   | 3/16"  | 3/16"  | 1/8"   | 0"    | 0"    | 1/8"            | 1/4"   | 5/16"  | 3/8"   | 7/16"  | 3/8"   | 5/16"  | 1/4"   | 1/8"   | 0"    |

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

PROJECT NO. R-2915B  
ASHE COUNTY  
STATION: 198+64.50 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
  
AASHTO TYPE II  
PRESTRESSED CONCRETE GIRDER  
CONTINUOUS FOR LIVE LOAD  
DETAILS  
(NBL)



**CDM Smith**  
4000 Glenwood Avenue, Suite 400  
Raleigh, NC 27612-3228  
NC COA No. F-1255

CDM SMITH  
DRAWN BY : B. WADSWORTH DATE : 06-15 DWG. No.  
CHECKED BY : J. TAYLOR DATE : 06-15  
DESIGN ENGINEER : J. TAYLOR DATE : 06-15

| REVISIONS |     |       |     |     |       | SHEET No.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| No.       | BY: | DATE: | No. | BY: | DATE: | S02-15       |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 34           |



STRUCTURAL STEEL NOTES

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

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

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

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

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

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

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

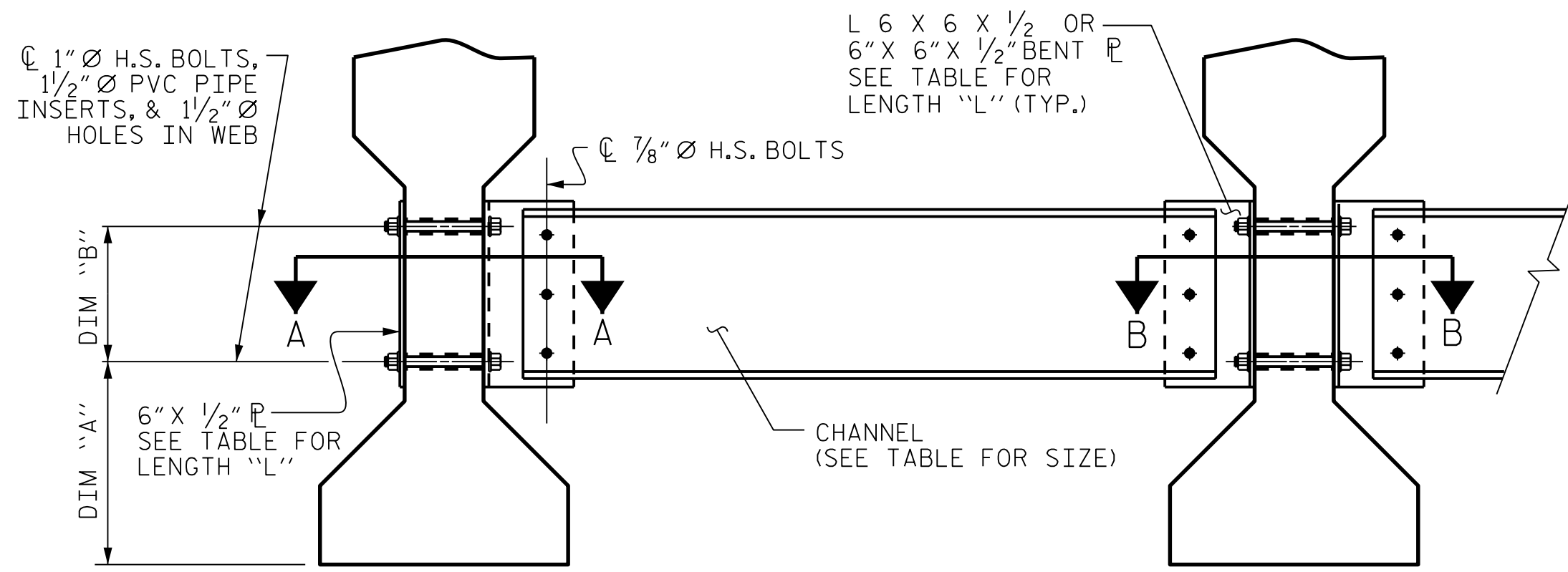
FOR BOLTS THROUGH THE GIRDER WEB, PROVIDE SUFFICIENT LENGTH OF THREADS ON ALL BOLTS TO ACCOMMODATE WASHERS AND THE THICKNESS OF CONNECTING MEMBER PLUS AT LEAST 1/4" PROJECTION BEYOND THE NUT.

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

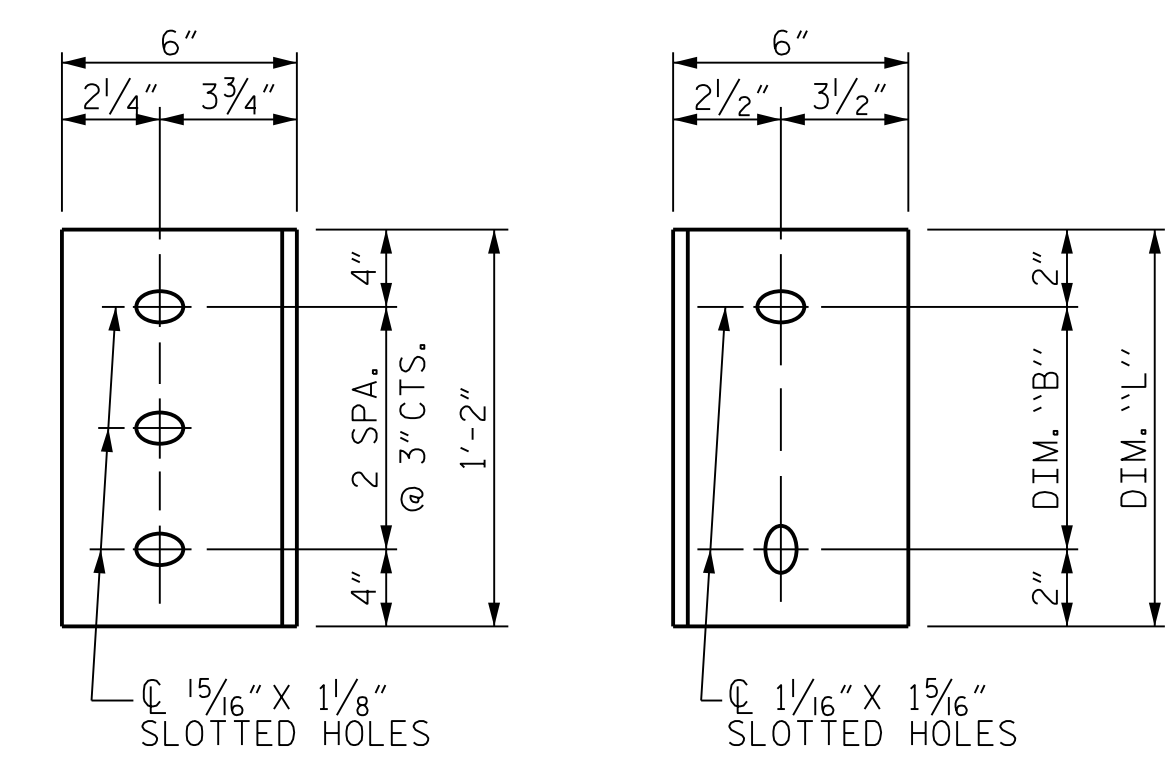
SUBMIT TWO SETS OF WORKING DRAWINGS FOR THE INTERMEDIATE DIAPHRAGM ASSEMBLY FOR REVIEW, COMMENTS AND ACCEPTANCE. AFTER REVIEW, COMMENTS, AND ACCEPTANCE, SUBMIT SEVEN SETS FOR DISTRIBUTION.

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

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



EXTERIOR GIRDER INTERIOR GIRDER  
PART SECTION AT INTERMEDIATE DIAPHRAGM



DIAPHRAGM FACE WEB FACE  
(TYPE II GDR.)

CONNECTOR PLATE DETAILS

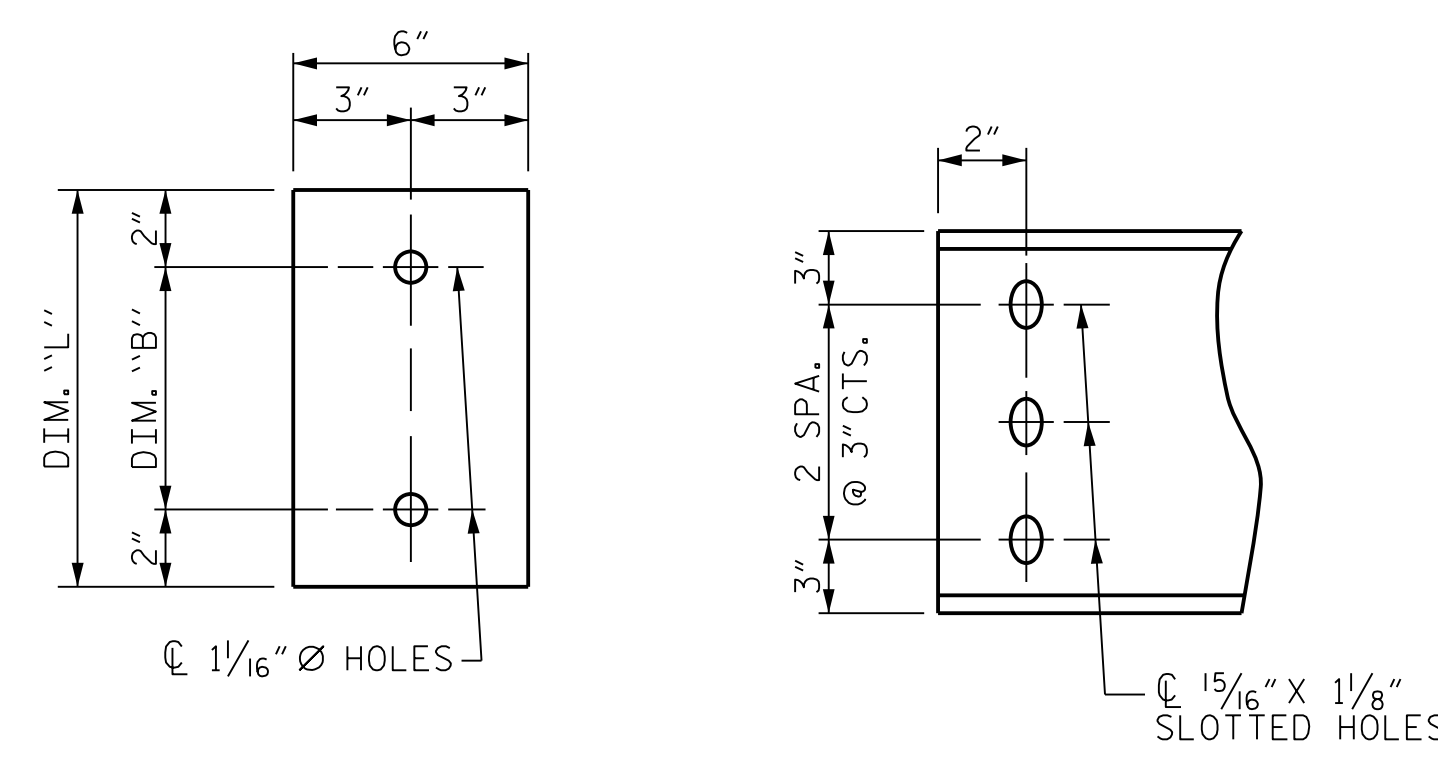
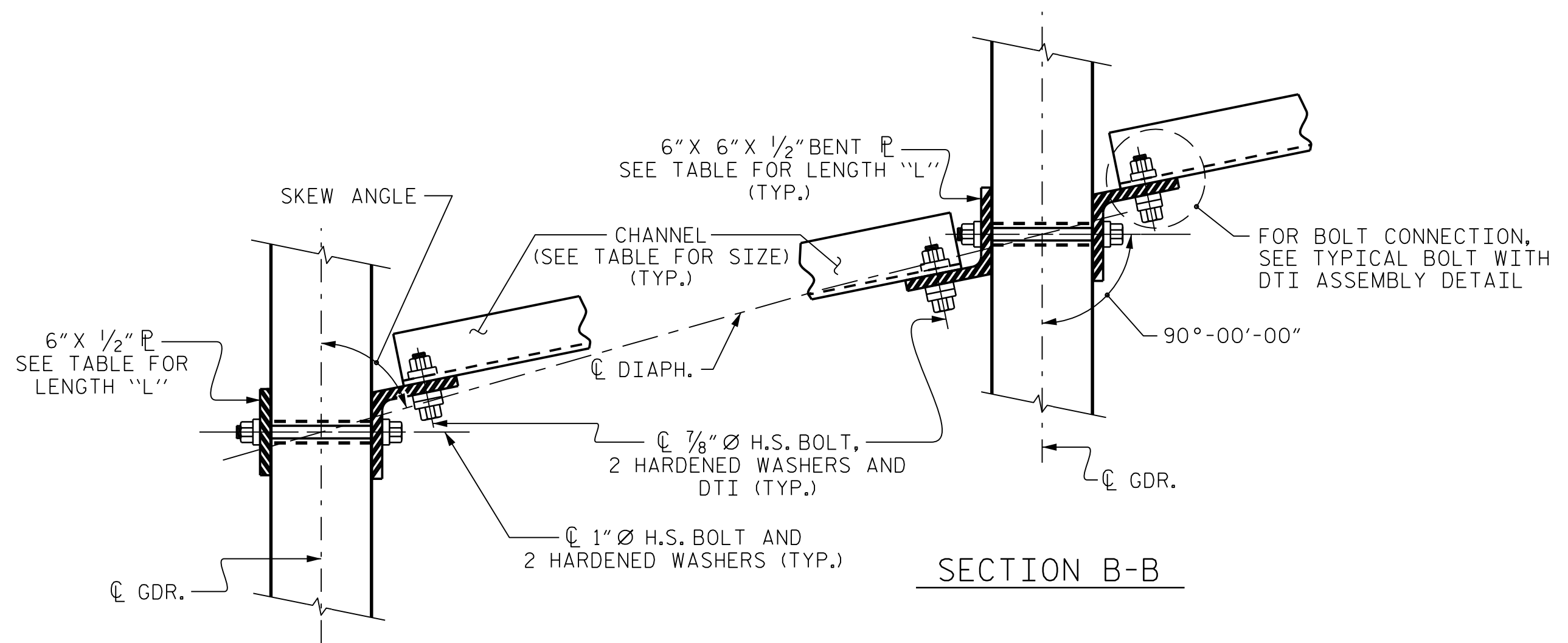


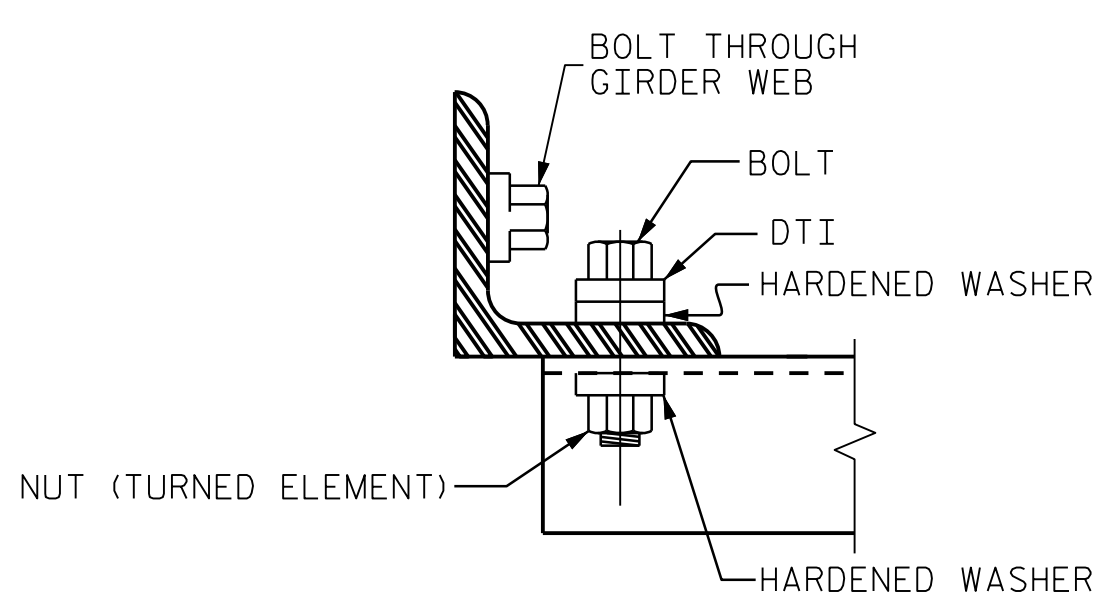
PLATE DETAILS CHANNEL END  
(TYPE II GDR.)

TABLE

| GIRDER TYPE | CHANNEL SIZE | DIM "A"   | DIM "B" | DIM "L" |
|-------------|--------------|-----------|---------|---------|
| II          | MC 12 x 31   | 1'-2 1/2" | 10"     | 1'-2"   |



SECTION A-A SECTION B-B  
CONNECTION DETAILS

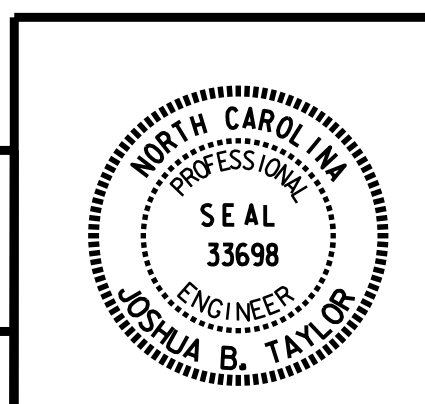


BOLT WITH DTI ASSEMBLY DETAIL

PROJECT NO. R-2915B  
ASHES COUNTY  
STATION: 198+64.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
INTERMEDIATE STEEL  
DIAPHRAGMS FOR TYPE II  
PRESTRESSED  
CONCRETE GIRDERS  
(NBL)



**CDM Smith**  
CDM SMITH  
5400 Glenwood Avenue, Suite 400  
Raleigh, NC 27612-3228  
NC COA No. F-1255

DESIGN ENGINEER: J. TAYLOR DATE: 06-15

DWG. No.

| REVISIONS |     |       |     | SHEET No. |
|-----------|-----|-------|-----|-----------|
| No.       | BY: | DATE: | No. | DATE:     |
| 1         |     |       | 3   |           |
| 2         |     |       | 4   |           |

TOTAL SHEETS 34

FILE: R:\med\192915B Structures\PLANS\bridge 2 NBL\192915B\_SD\_GDR\_04.dgn DATE: 8/10/2015 7:04:03 AM

|                         |                       |
|-------------------------|-----------------------|
| ASSEMBLED BY : J. SLOAN | DATE : 04-14          |
| CHECKED BY : J. TAYLOR  | DATE : 07-14          |
| DRAWN BY : TLA 6/05     | ADDED 10/21/05        |
| CHECKED BY : VC 6/05    | REV. 5/1/06RRR KMM/GM |
|                         | REV. 10/1/11 MAA/GM   |

**NOTES**

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

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

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

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

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

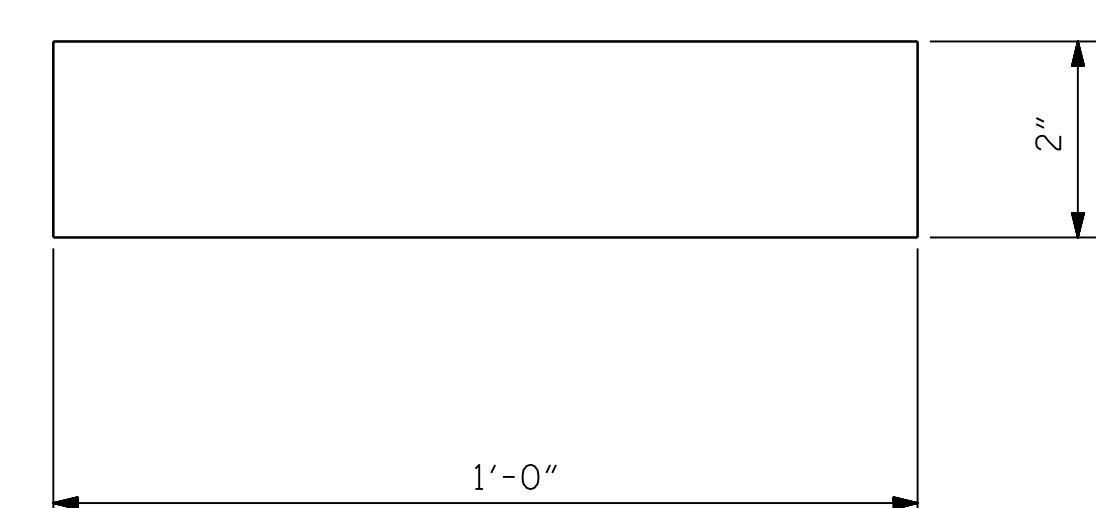
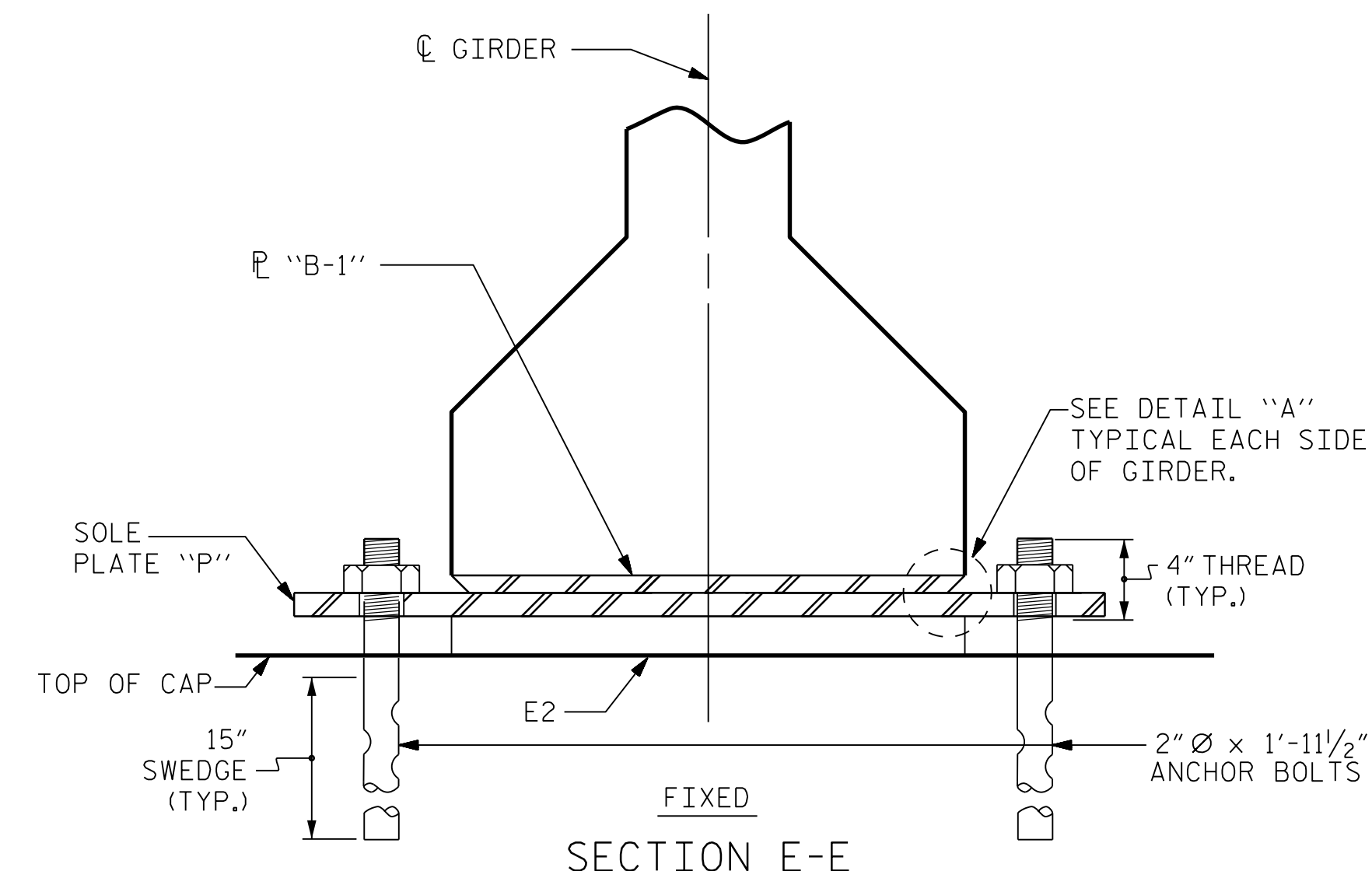
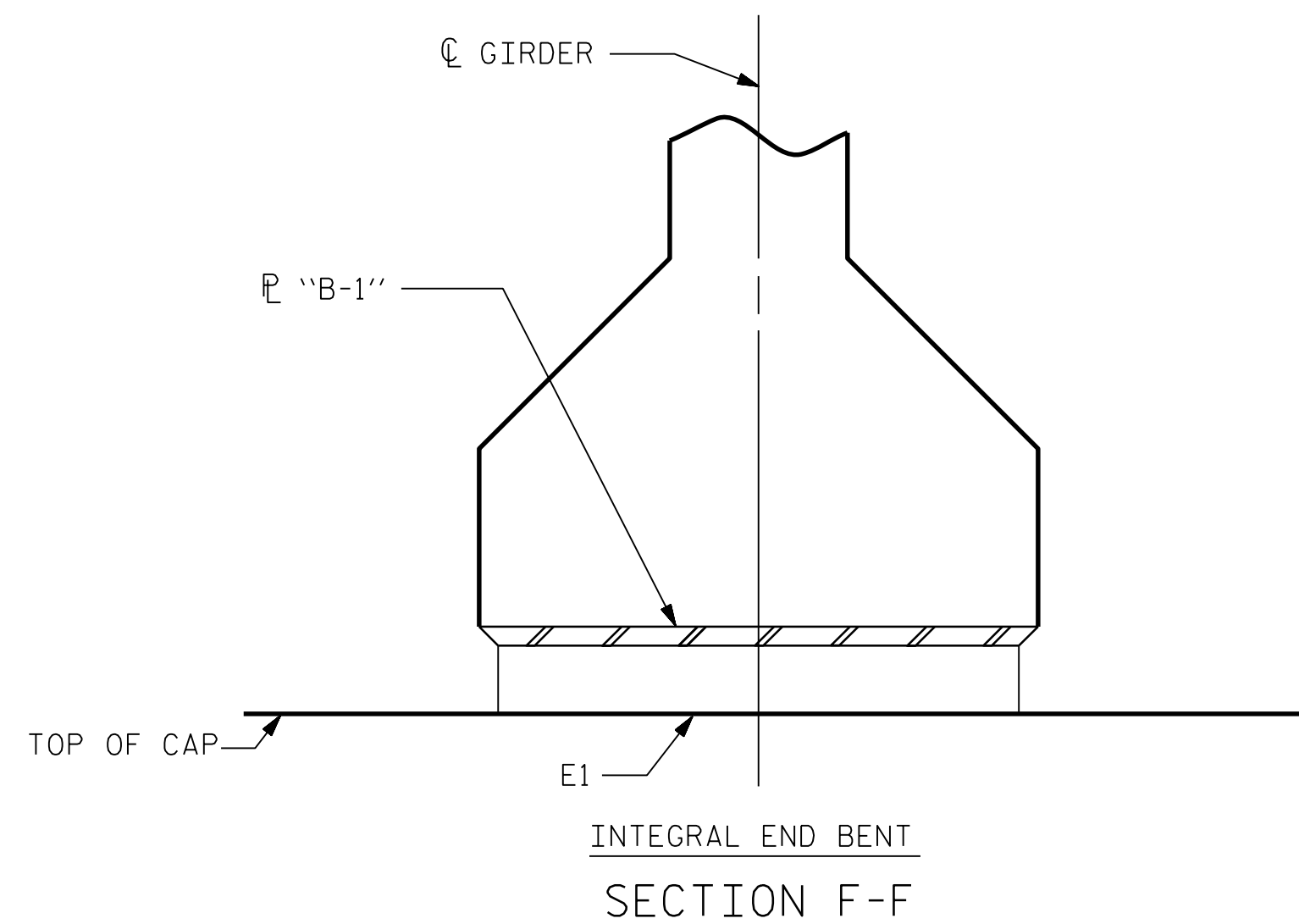
ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. NUTS SHALL MEET THE REQUIREMENTS OF AASHTO M291-DH OR AASHTO M292-2H. WASHERS SHALL MEET THE REQUIREMENTS OF AASHTO M293. SHOP DRAWINGS ARE NOT REQUIRED FOR ANCHOR BOLT, NUTS AND WASHERS. SHOP INSPECTION IS REQUIRED.

ALL SURFACES OF BEARING PLATES SHALL BE SMOOTH AND STRAIGHT.

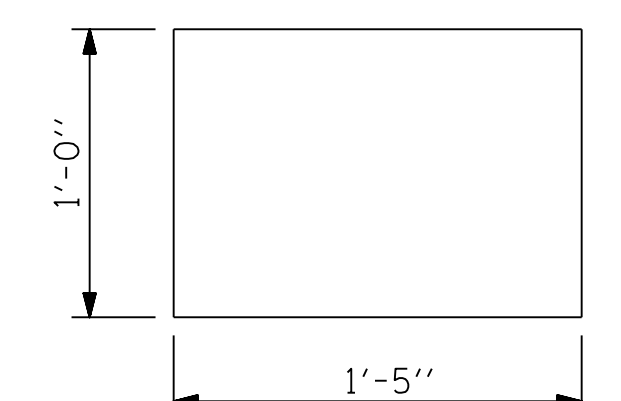
THE ELASTOMER IN THE PLAIN ELASTOMERIC BEARINGS SHALL HAVE A SHEAR MODULUS OF 0.11 KSI, IN ACCORDANCE WITH AASHTO M251.

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

FOR STEEL REINFORCED ELASTOMERIC BEARINGS, SEE SPECIAL PROVISIONS.

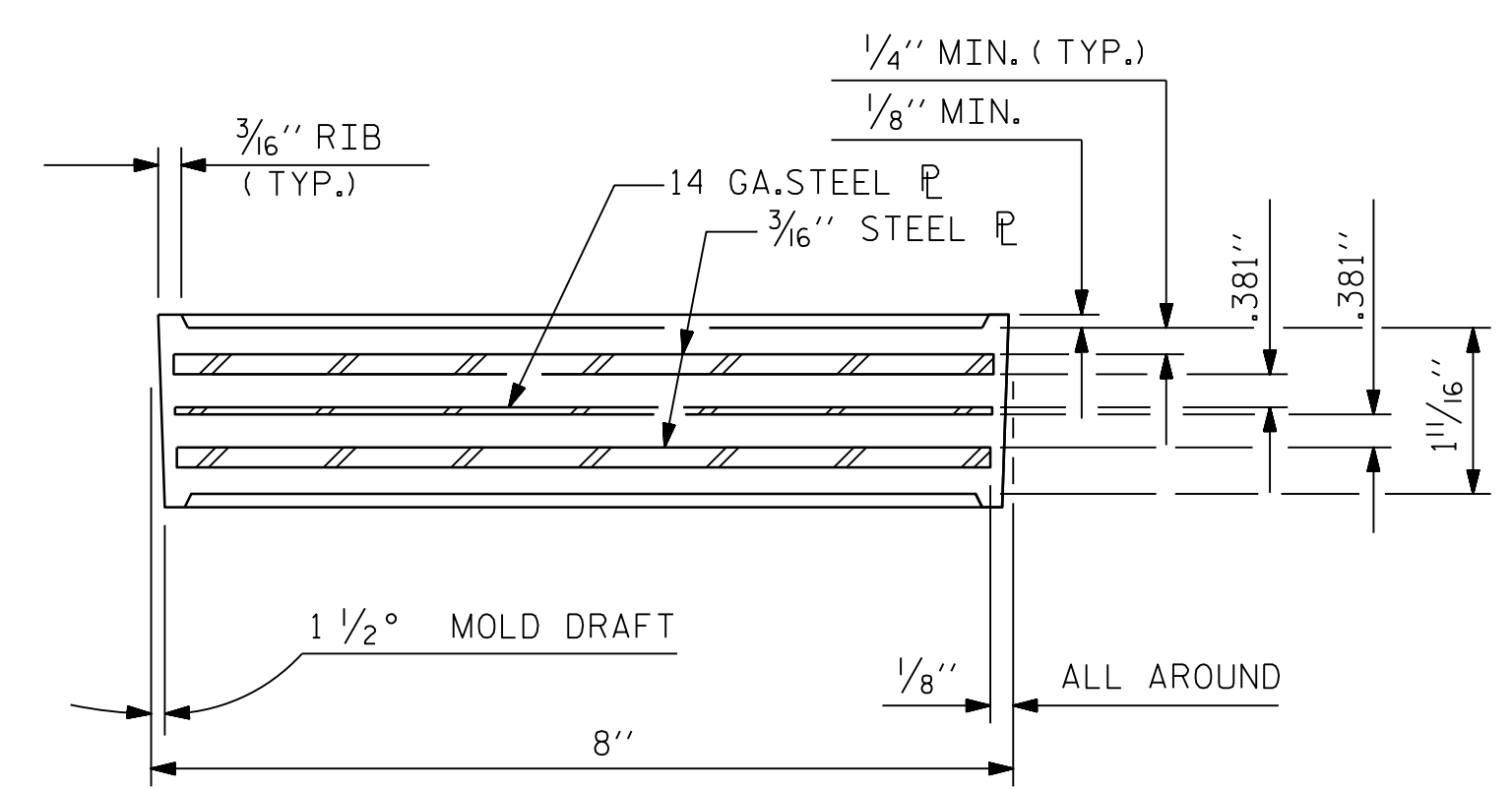


TYPICAL SECTION OF ELASTOMERIC BEARINGS

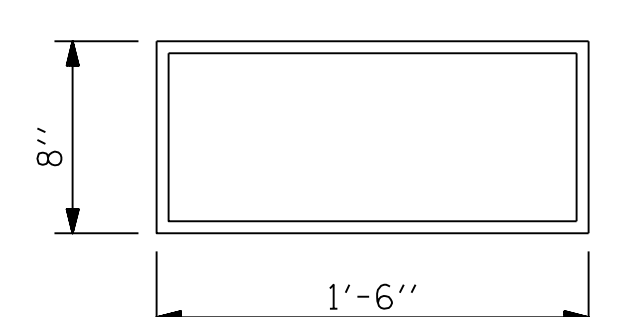


E1 (8 REQ'D)

PLAN VIEW OF ELASTOMERIC BEARING  
PLAIN ELASTOMERIC BEARING PAD

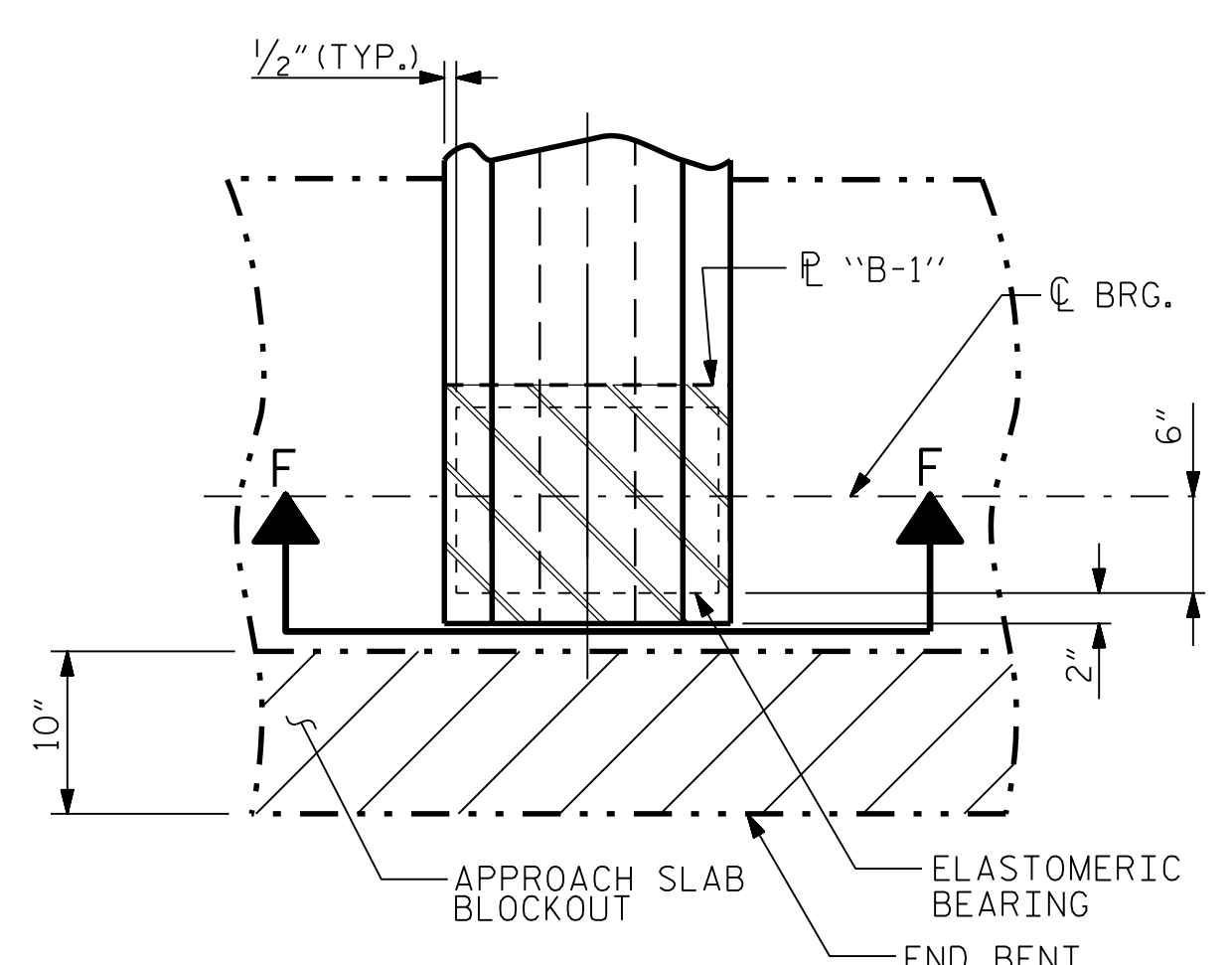


TYPICAL SECTION OF ELASTOMERIC BEARINGS

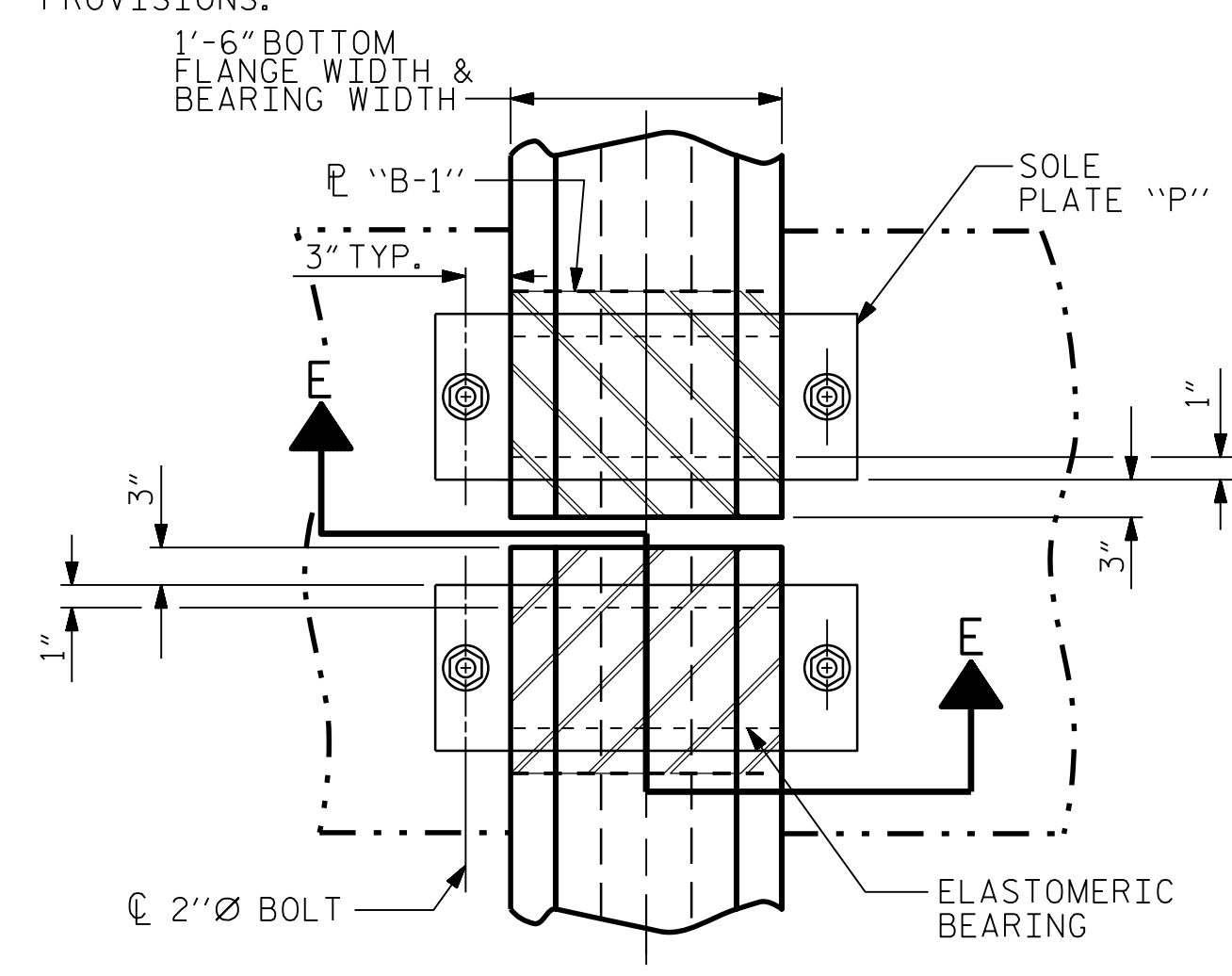


E2 (16 REQ'D)

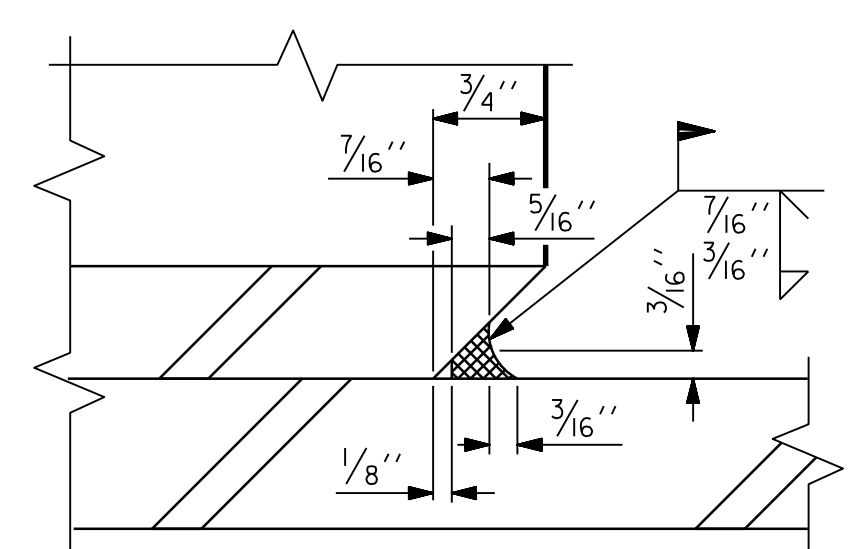
PLAN VIEW OF ELASTOMERIC BEARING  
TYPE III



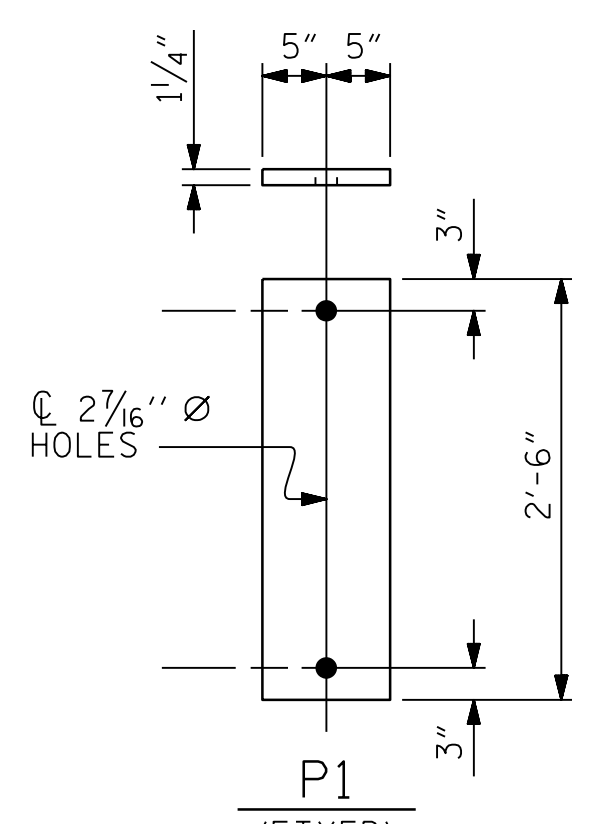
TYPICAL PLAN AT END BENT  
(INTEGRAL)



TYPICAL PLAN AT INTERIOR BENT  
(FIXED)



DETAIL "A"

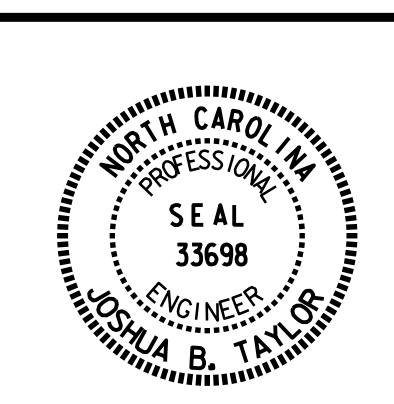


SOLE PLATE DETAILS ("P")

| MAXIMUM ALLOWABLE SERVICE LOADS |       |
|---------------------------------|-------|
| D.L.+L.L. (NO IMPACT)           |       |
| TYPE III                        | 205 k |
| PLAIN                           | 38 k  |

**CDM Smith**  
 CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

DRAWN BY : B. WADSWORTH DATE : 06-15 DWG. No.  
 CHECKED BY : J. TAYLOR DATE : 06-15  
 DESIGN ENGINEER : J. TAYLOR DATE : 06-15

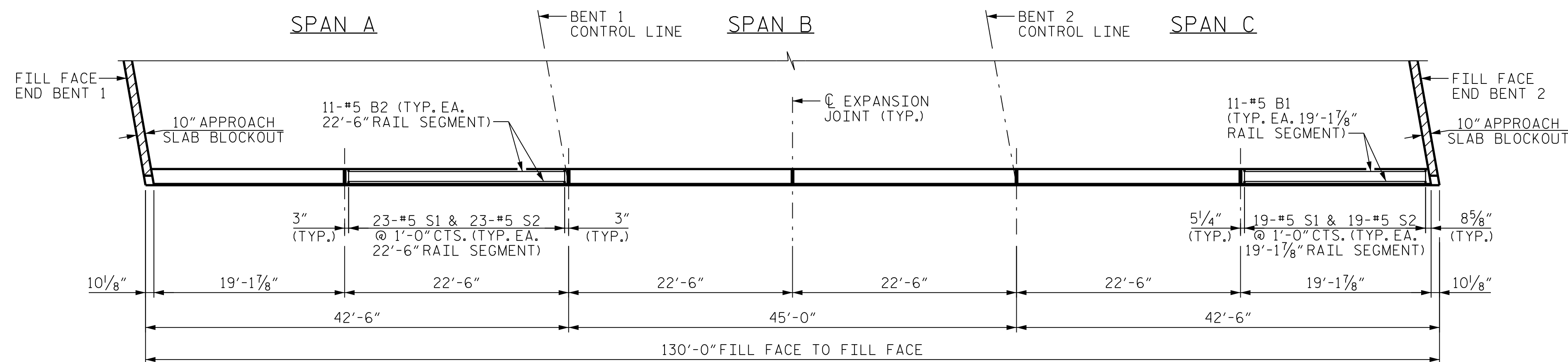


PROJECT NO. R-2915B  
 ASHE COUNTY  
 STATION: 198+64.50 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**ELASTOMERIC BEARING DETAILS**  
 PRESTRESSED CONCRETE GIRDER SUPERSTRUCTURE  
 (NBL)

| REVISIONS    |     |       |     | SHEET No. |
|--------------|-----|-------|-----|-----------|
| No.          | BY: | DATE: | No. | DATE:     |
| 1            |     |       | 3   |           |
| 2            |     |       | 4   |           |
| TOTAL SHEETS |     |       |     | 34        |

FILE: R:\med\192915B Structures\PLANS\bridge 2 NBL\192915B\_SD\_BRG.dgn  
 DATE: 8/10/2015 7:04:06 AM



**PLAN**

(RIGHT RAIL SHOWN. LEFT RAIL SIMILAR.)

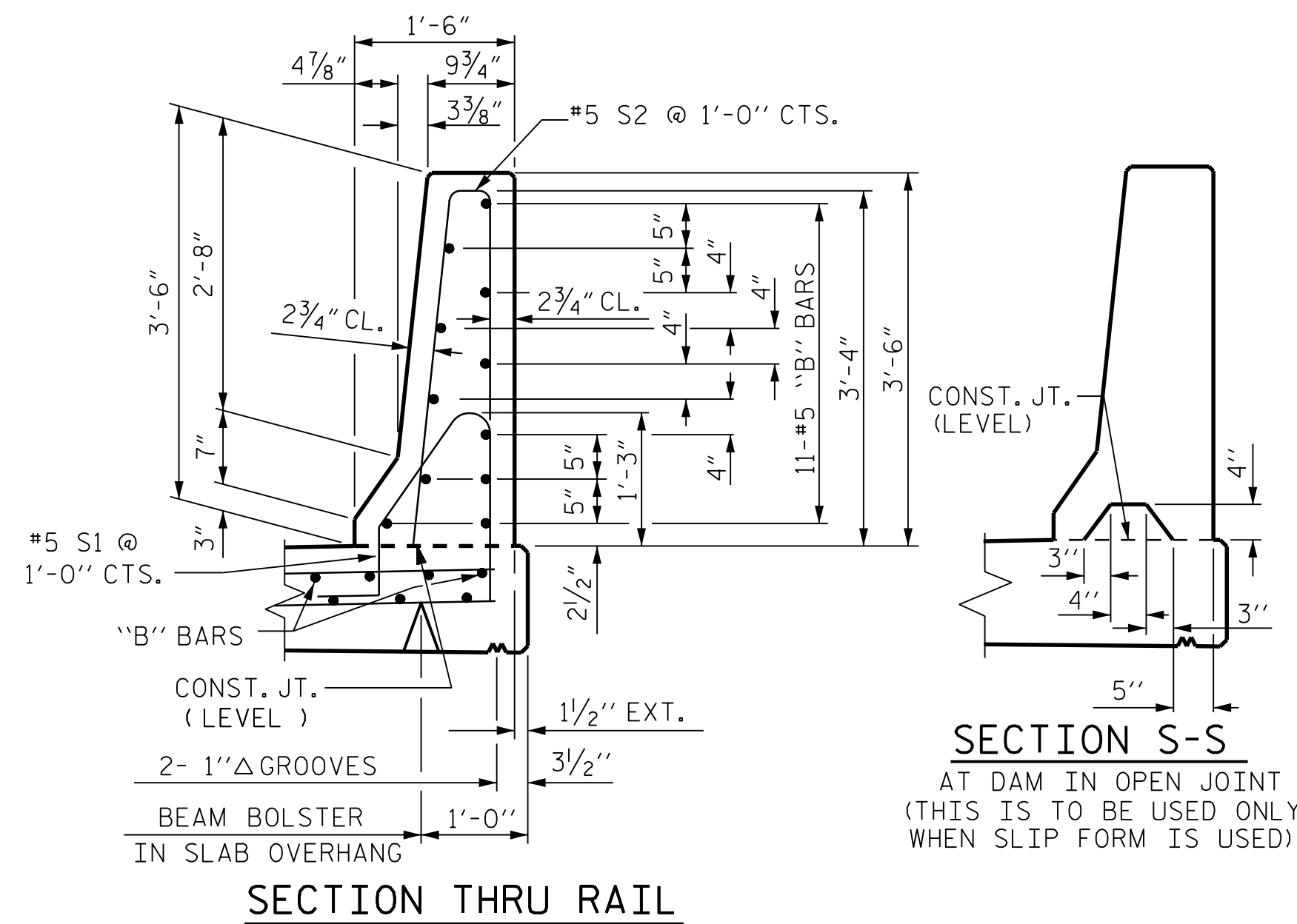
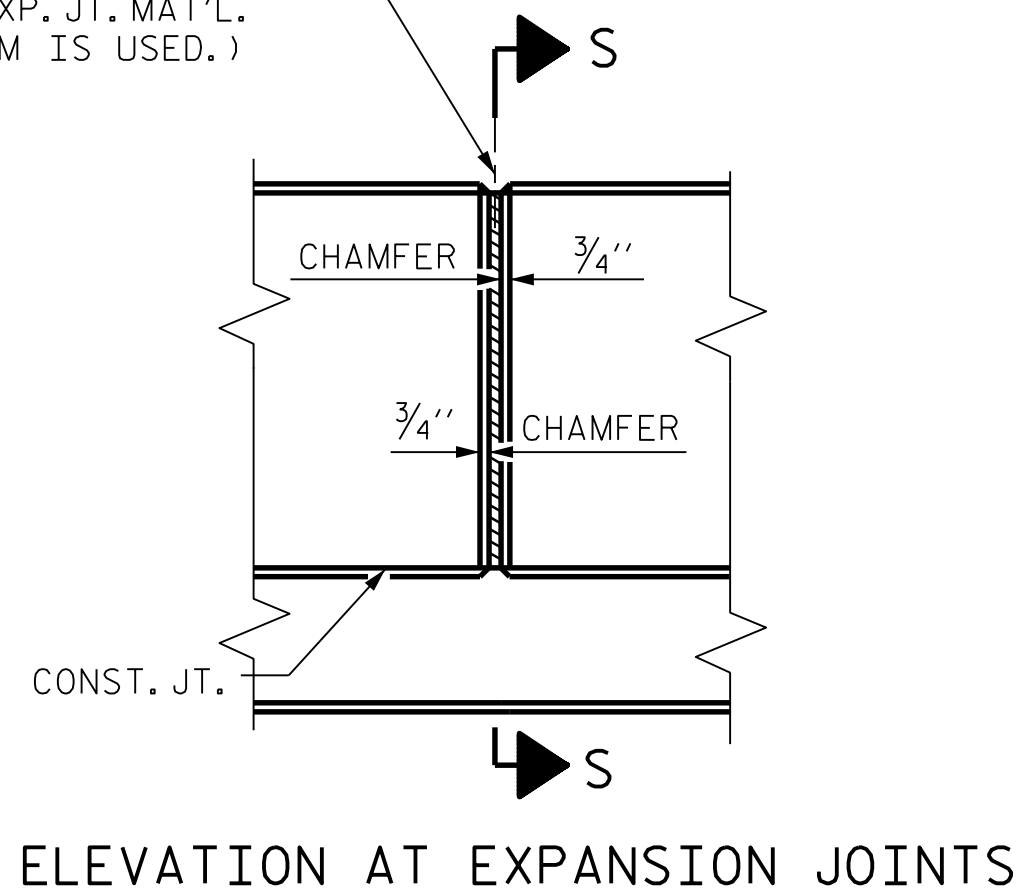
**NOTES**

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

ALL REINFORCING STEEL IN BARRIER RAILS SHALL BE EPOXY COATED.

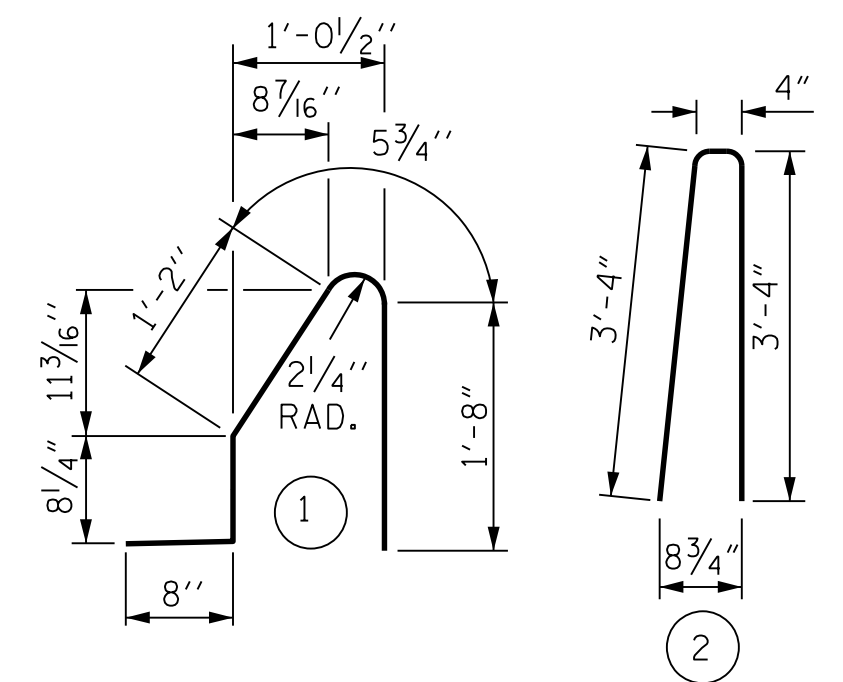
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS, THE CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS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

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



**BARRIER RAIL DETAILS**

**BAR TYPES**



ALL BAR DIMENSIONS ARE OUT TO OUT

**BILL OF MATERIAL**

FOR CONCRETE BARRIER RAIL ONLY

| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|-----|-----|------|------|--------|--------|
| *B1 | 44  | #5   | STR  | 18'-7" | 853    |
| *B2 | 88  | #5   | STR  | 22'-1" | 2027   |
| *S1 | 260 | #5   | 1    | 4'-8"  | 1266   |
| *S2 | 260 | #5   | 2    | 7'-0"  | 1898   |

|                                  |                |
|----------------------------------|----------------|
| * EPOXY COATED REINFORCING STEEL | 6,044 LBS.     |
| CLASS AA CONCRETE                | 34.9 CU. YD.   |
| CONCRETE BARRIER RAIL            | 256.6 LIN. FT. |

PROJECT NO. R-2915B  
ASHE COUNTY  
STATION: 198+64.50 -L-

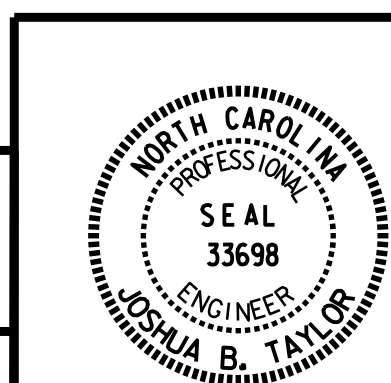
FILE: R:\medwin\2915B Structures\PLANS\bridge 2 NBL\2915B\_SD\_BR\_01.dgn DATE: 8/10/2015 7:04:08 AM

|                         |              |
|-------------------------|--------------|
| ASSEMBLED BY : J. SLOAN | DATE : 07-14 |
| CHECKED BY : J. TAYLOR  | DATE : 08-14 |
| DRAWN BY : ARB 5/87     | REV. 10/1/11 |
| CHECKED BY : SJD 9/87   | REV. 7/12    |
|                         | REV. 6/13    |
| MAA/GM                  |              |
| MAA/GM                  |              |
| MAA/GM                  |              |

**CDM Smith**  
CDM SMITH  
5400 Glenwood Avenue, Suite 400  
Raleigh, NC 27612-3228  
NC COA No. F-1255

DESIGN ENGINEER : J. TAYLOR DATE : 06-15

DWG. No.



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
CONCRETE  
BARRIER RAIL  
(NBL)

| REVISIONS |     |       | SHEET No. |     |       |
|-----------|-----|-------|-----------|-----|-------|
| No.       | BY: | DATE: | No.       | BY: | DATE: |
| 1         |     |       | 3         |     |       |
| 2         |     |       | 4         |     |       |

TOTAL SHEETS 34

STD. NO. CBR1

NOTES

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

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

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

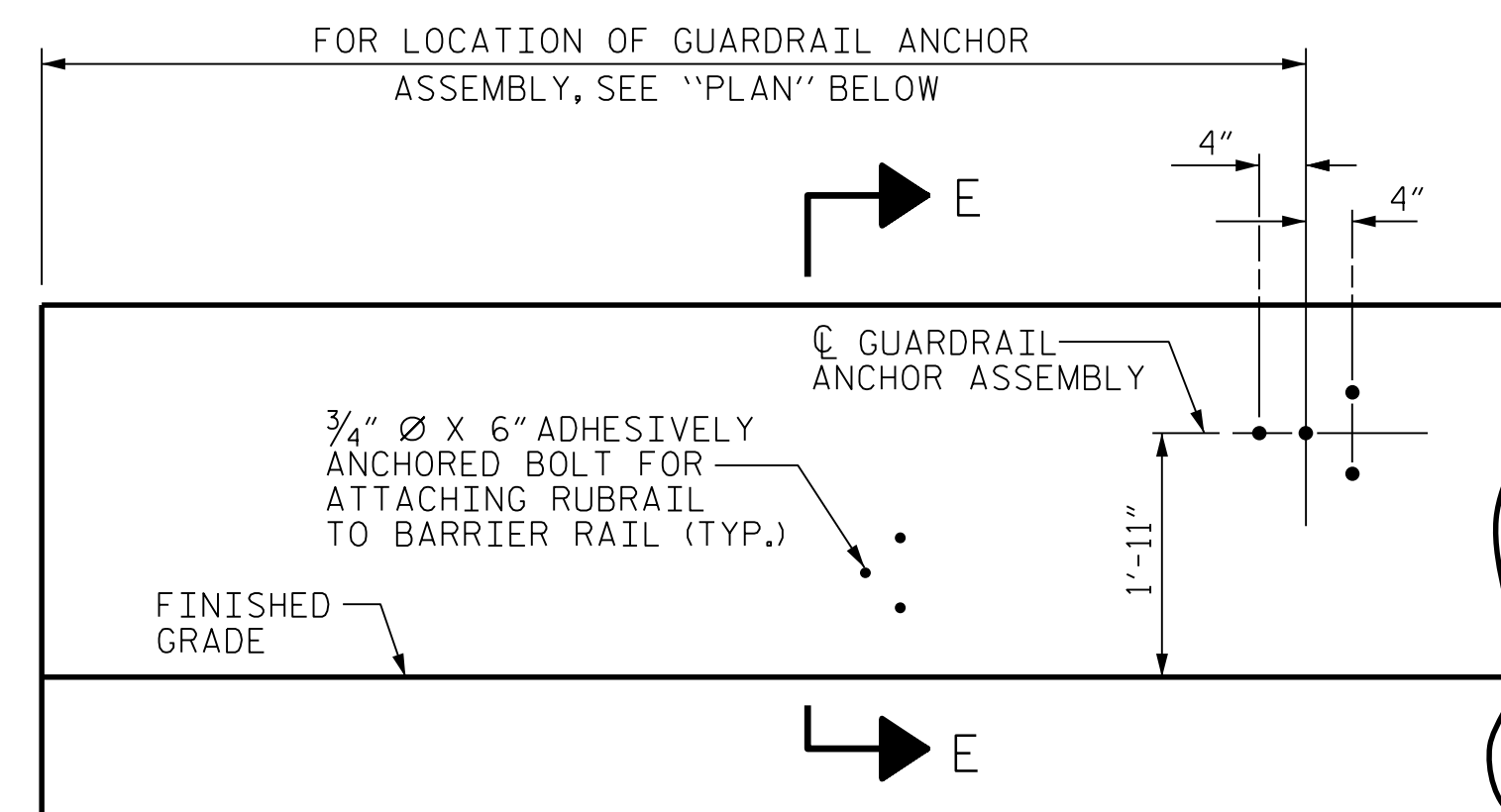
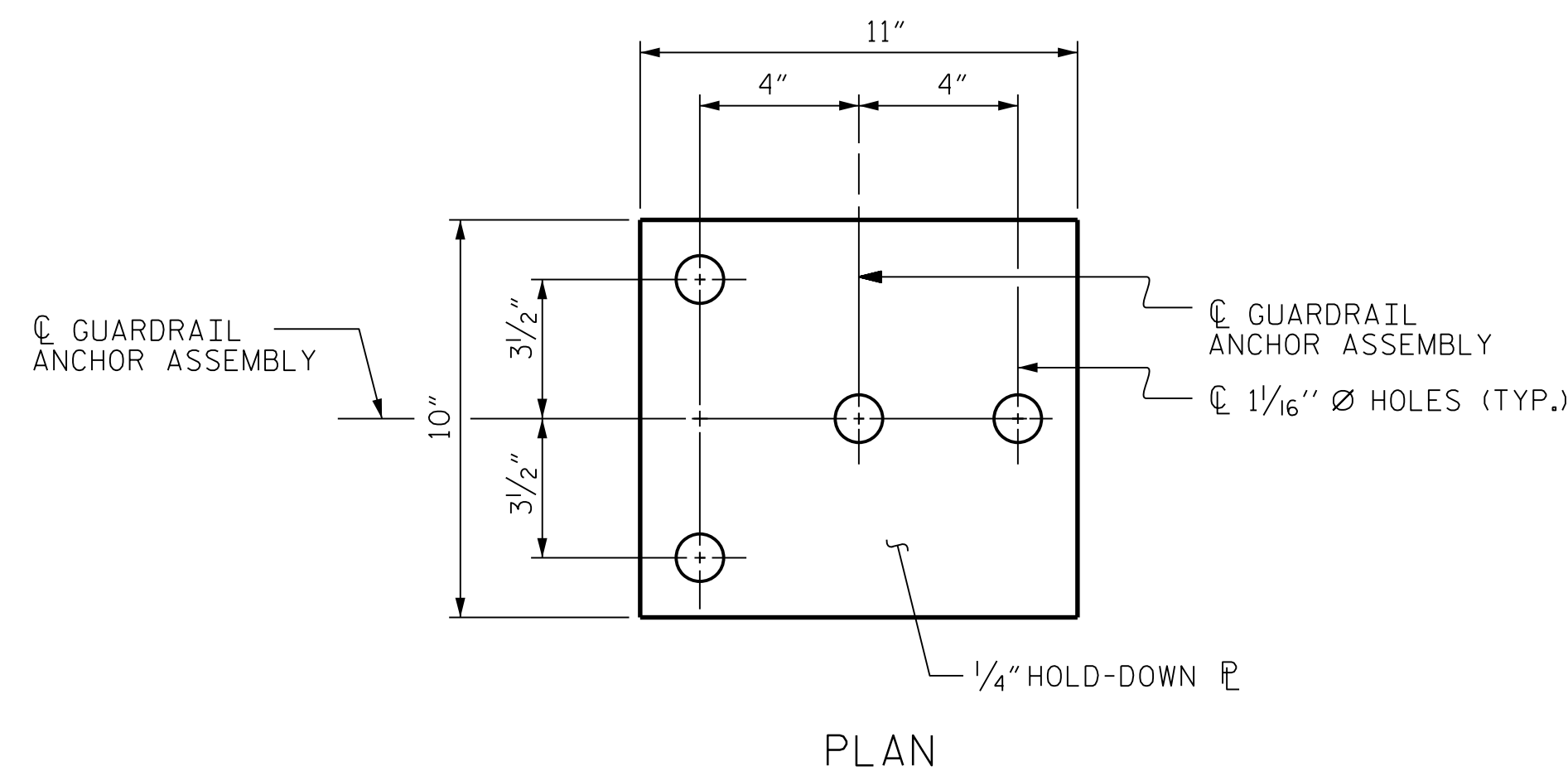
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

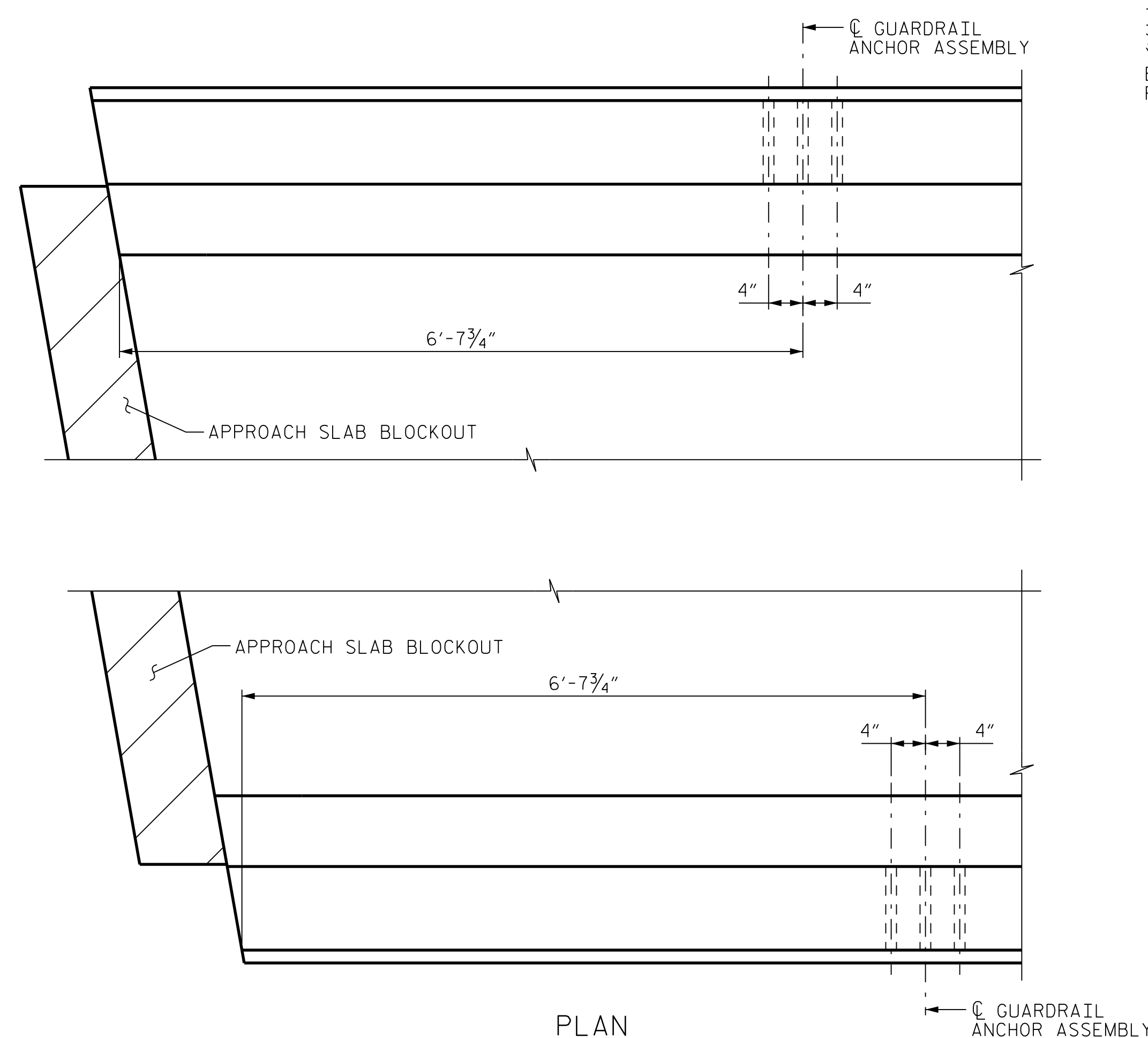
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CONCRETE BARRIER RAIL.

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

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



ELEVATION



PLAN

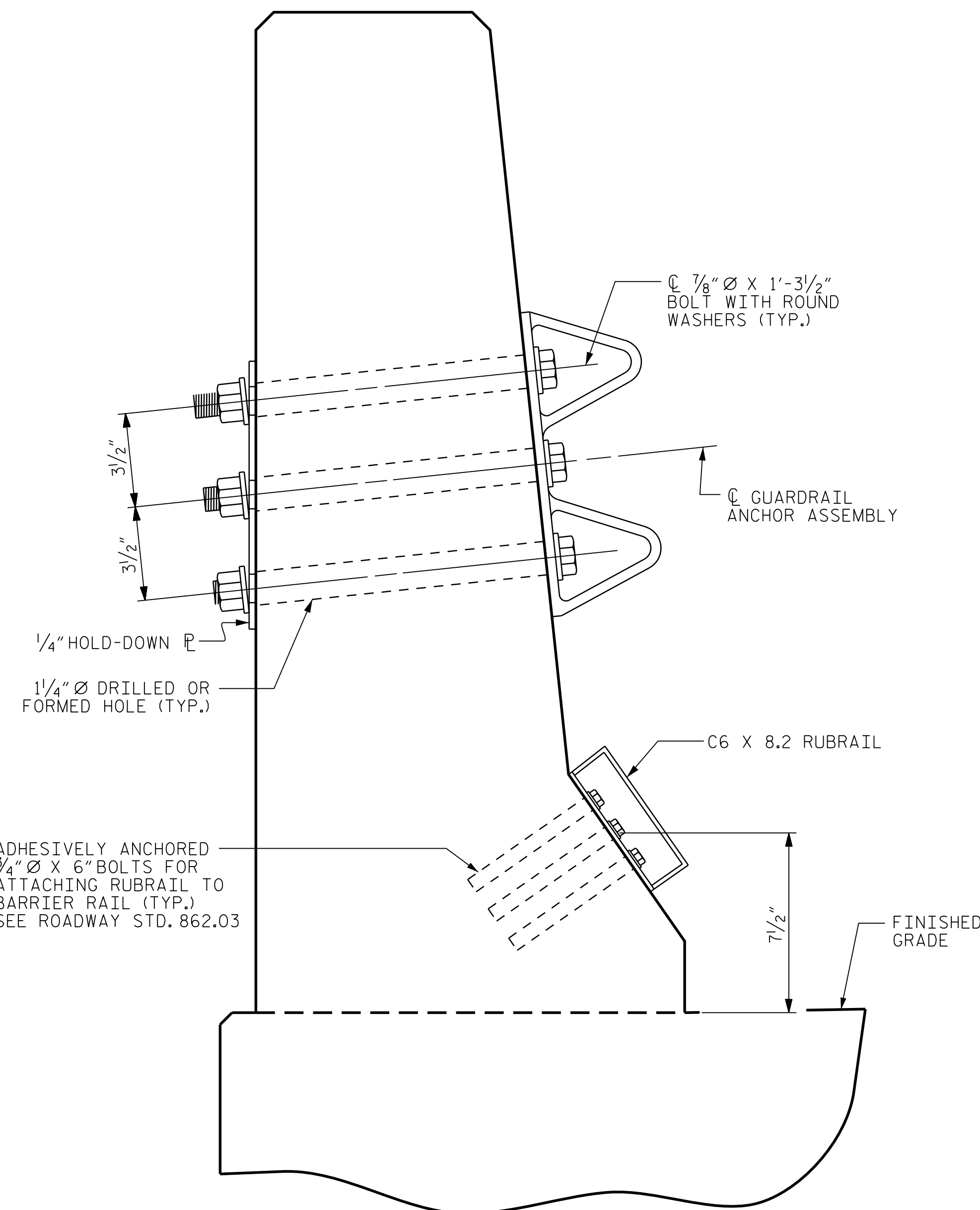
LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.  
(SEE ROADWAY STANDARD 862.03 FOR FURTHER DETAILS.)



SKETCH SHOWING POINTS OF ATTACHMENTS

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS

PROJECT NO. R-2915B  
ASHE COUNTY  
STATION: 198+64.50 -L-

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

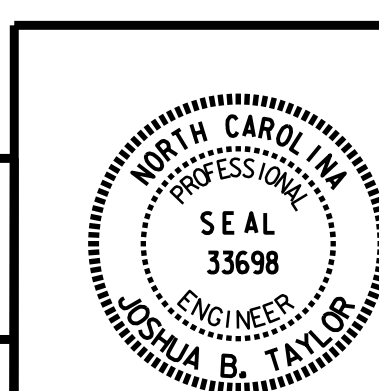
(NBL)

| REVISIONS |     |       | SHEET No. |     |              |
|-----------|-----|-------|-----------|-----|--------------|
| No.       | BY: | DATE: | No.       | BY: | DATE:        |
| 1         |     |       | 3         |     |              |
| 2         |     |       | 4         |     |              |
|           |     |       |           |     | TOTAL SHEETS |
|           |     |       |           |     | 34           |

**CDM Smith**  
4000 Glenwood Avenue, Suite 400  
Raleigh, NC 27612-3228  
NC COA No. F-1255

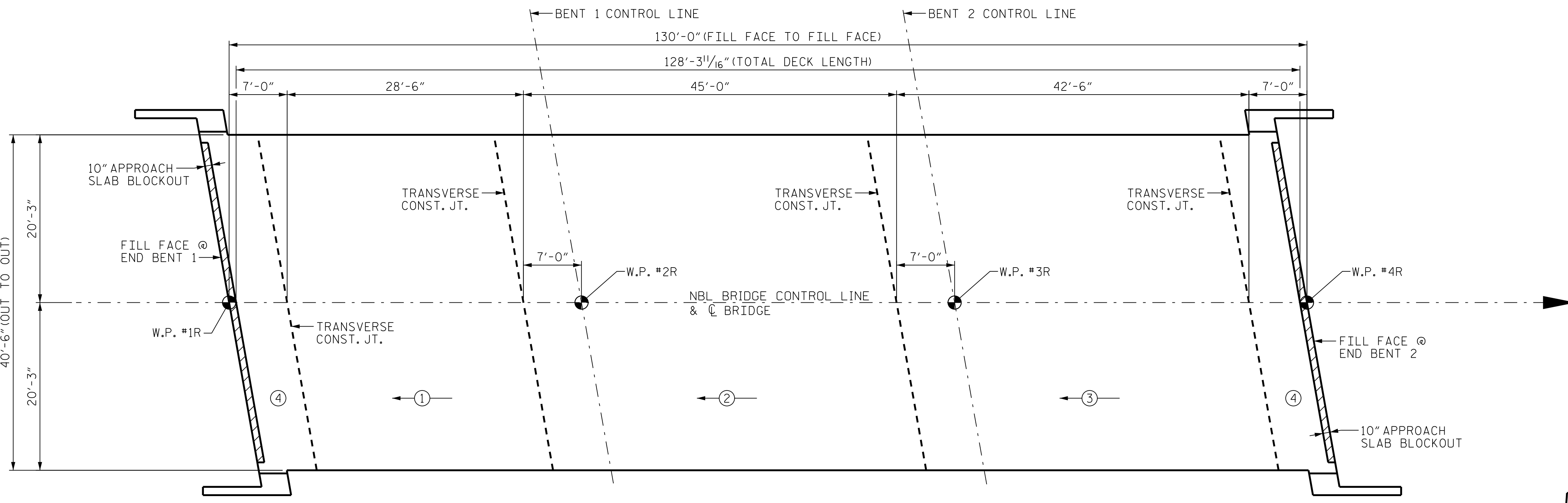
DESIGN ENGINEER : J. TAYLOR DATE : 06-15

DWG. No.



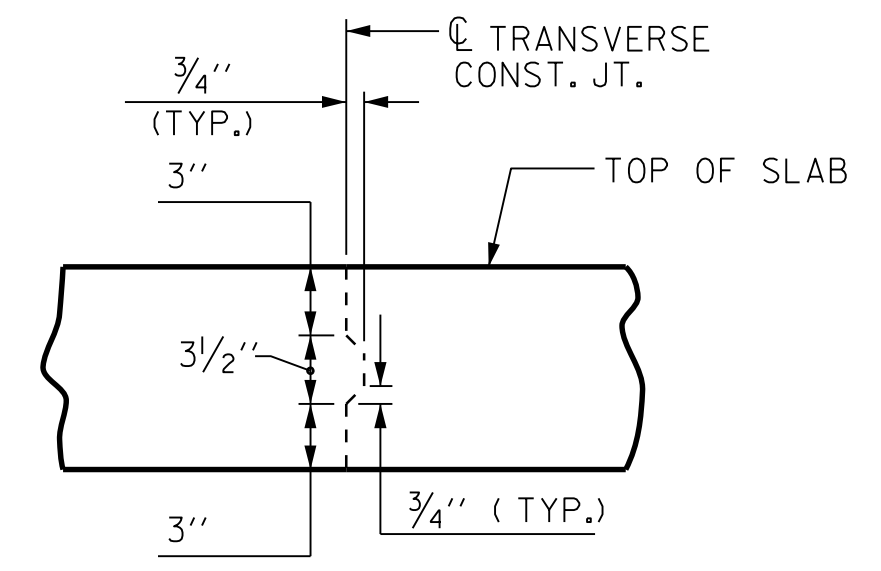
FILE: R:\medwin\2915B Structures\PLANS\bridge 2 NBL\2915B\_SD\_CR\_01.dgn  
DATE: 8/10/2015 7:04:10 AM

|                         |                     |
|-------------------------|---------------------|
| ASSEMBLED BY : J. SLOAN | DATE : 07-14        |
| CHECKED BY : J. TAYLOR  | DATE : 08-14        |
| DRAWN BY : TLA 5/06     | REV. 10/1/11 MAA/GM |
| CHECKED BY : GM 5/06    | REV. 7/12 MAA/GM    |
|                         | REV. 6/13 MAA/GM    |



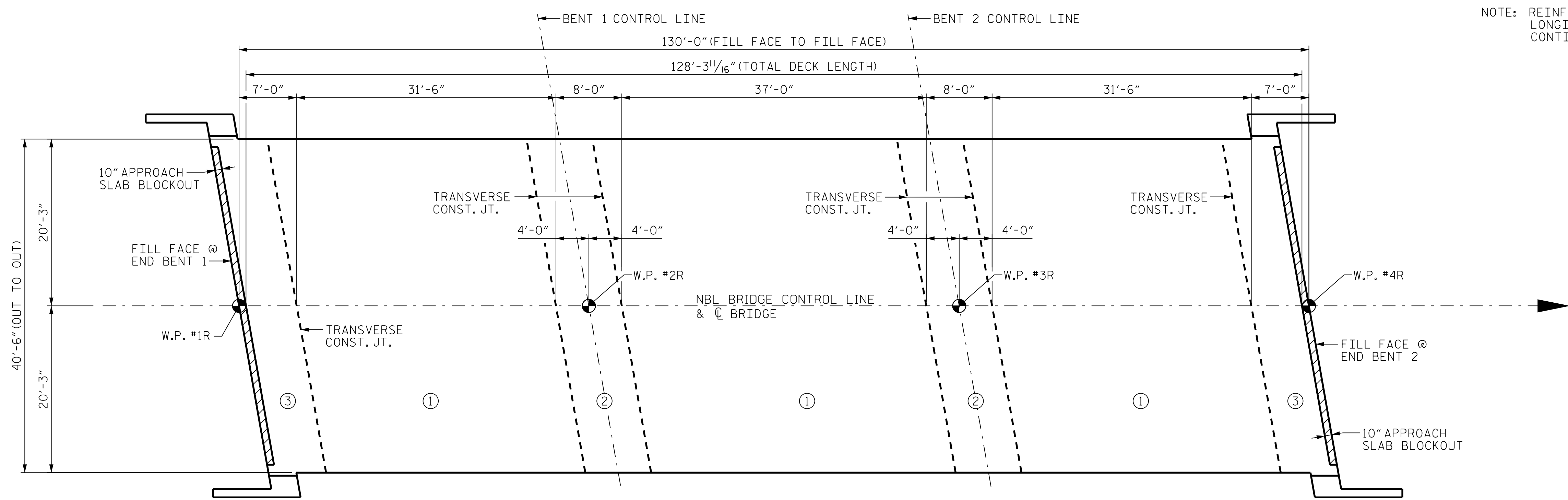
INDICATES POUR NUMBER AND DIRECTION  
**DECK POUR SEQUENCE**  
 SEE TRANSVERSE CONSTRUCTION JOINT DETAIL

**NOTES**  
 THE UPPER PORTION OF THE WINGWALLS SHALL BE POURED WITH THE DECK.



**TRANSVERSE CONSTRUCTION JOINT DETAIL**

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



**OPTIONAL DECK POUR SEQUENCE**

POURS ② AND ③ CANNOT BE STARTED UNTIL ADJACENT ① POURS REACH A MINIMUM STRENGTH OF 3000 PSI. SEE TRANSVERSE CONSTRUCTION JOINT DETAIL.

PROJECT NO. R-2915B  
ASHE COUNTY  
 STATION: 198+64.50 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUPERSTRUCTURE  
 DECK POUR SEQUENCE

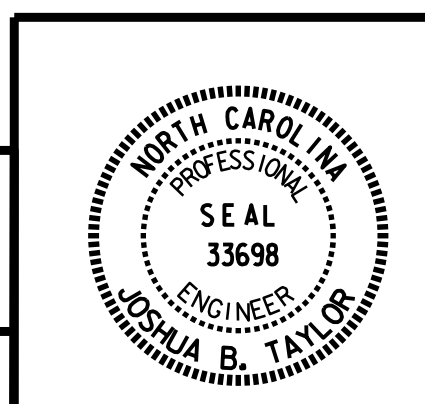
(NBL)

| REVISIONS |     |       | SHEET No. |     |       |
|-----------|-----|-------|-----------|-----|-------|
| No.       | BY: | DATE: | No.       | BY: | DATE: |
| 1         |     |       | 3         |     |       |
| 2         |     |       | 4         |     |       |

TOTAL SHEETS 34

**CDM Smith**  
 CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

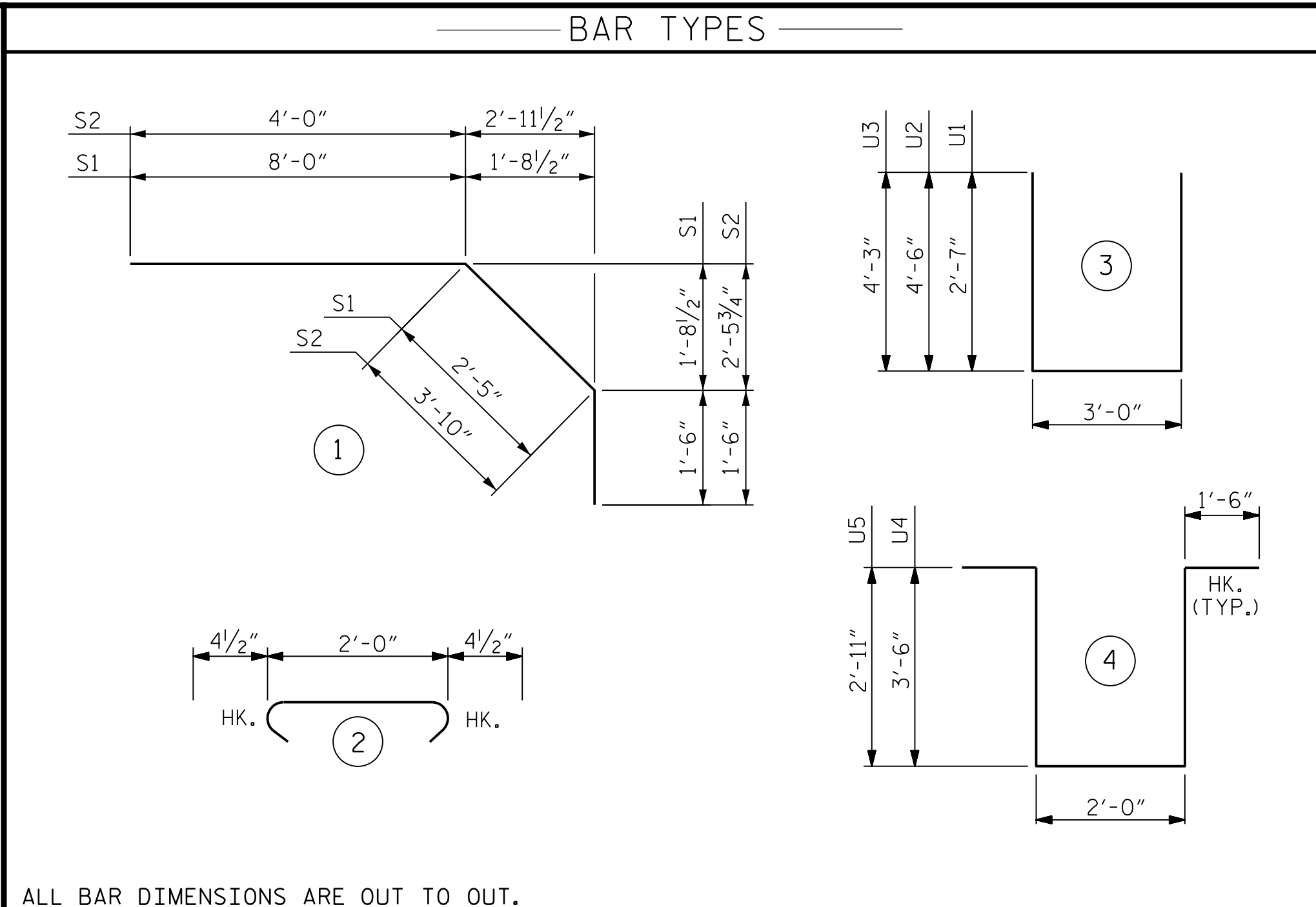
DRAWN BY : B. WADSWORTH DATE : 06-15 DWG. No.  
 CHECKED BY : J. TAYLOR DATE : 06-15  
 DESIGN ENGINEER : J. TAYLOR DATE : 06-15



FILE: R:\med\192915B Structures\PLANS\bridge 2 NBL\192915B\_SD\_BM\_01.dgn  
 DATE: 8/10/2015 7:04:12 AM

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

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



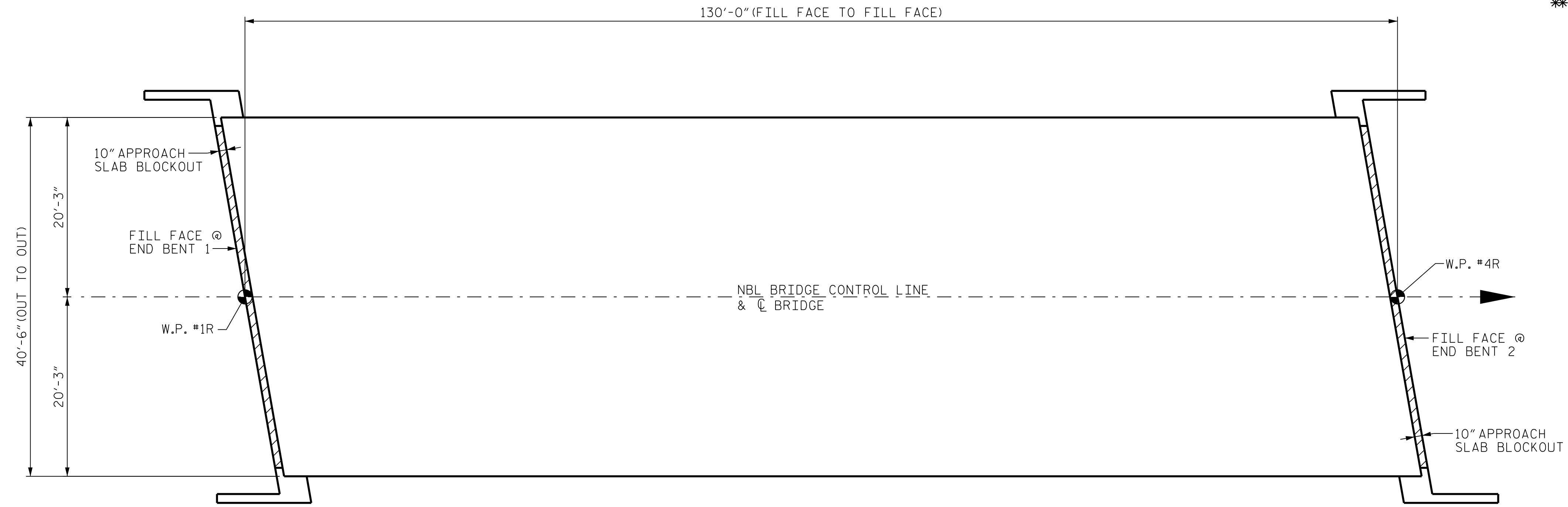
ALL BAR DIMENSIONS ARE OUT TO OUT.

| BAR TYPES |      |      |        |        |       | BILL OF MATERIAL |      |      |        |         |      |
|-----------|------|------|--------|--------|-------|------------------|------|------|--------|---------|------|
| BAR NO.   | SIZE | TYPE | LENGTH | WEIGHT |       | BAR NO.          | SIZE | TYPE | LENGTH | WEIGHT  |      |
| *A1       | 291  | #5   | STR    | 40'-2" | 12191 | *B1              | 56   | #6   | STR    | 48'-3"  | 4058 |
| *A100     | 2    | #5   | STR    | 2'-4"  | 5     | *B2              | 54   | #6   | STR    | 12'-9"  | 1034 |
| *A101     | 2    | #5   | STR    | 4'-8"  | 10    | *B3              | 54   | #6   | STR    | 8'-6"   | 689  |
| *A102     | 2    | #5   | STR    | 7'-0"  | 15    | *B4              | 54   | #6   | STR    | 36'-3"  | 2940 |
| *A103     | 2    | #5   | STR    | 9'-4"  | 19    | *B5              | 27   | #6   | STR    | 58'-0"  | 2352 |
| *A104     | 2    | #5   | STR    | 11'-8" | 24    | *B6              | 2    | #6   | STR    | 39'-2"  | 116  |
| *A105     | 2    | #5   | STR    | 14'-0" | 29    | B7               | 240  | #5   | STR    | 33'-8"  | 8427 |
| *A106     | 2    | #5   | STR    | 16'-4" | 34    | B8               | 16   | #5   | STR    | 34'-1"  | 569  |
| *A107     | 2    | #5   | STR    | 18'-8" | 39    |                  |      |      |        |         |      |
| *A108     | 2    | #5   | STR    | 21'-0" | 44    | H1               | 52   | #4   | STR    | 10'-1"  | 350  |
| *A109     | 2    | #5   | STR    | 23'-4" | 49    |                  |      |      |        |         |      |
| *A110     | 2    | #5   | STR    | 25'-8" | 54    | K1               | 16   | #4   | STR    | 24'-8"  | 264  |
| *A111     | 2    | #5   | STR    | 28'-0" | 58    | K2               | 6    | #4   | STR    | 9'-8"   | 39   |
| *A112     | 2    | #5   | STR    | 30'-4" | 63    | K3               | 12   | #4   | STR    | 10'-8"  | 86   |
| *A113     | 2    | #5   | STR    | 32'-8" | 68    | K4               | 6    | #4   | STR    | 10'-2"  | 41   |
| *A114     | 2    | #5   | STR    | 35'-0" | 73    | K5               | 4    | #4   | STR    | 5'-3"   | 14   |
| *A115     | 2    | #5   | STR    | 37'-4" | 78    | K6               | 8    | #4   | STR    | 5'-9"   | 31   |
| A2        | 291  | #5   | STR    | 40'-2" | 12191 | K7               | 4    | #4   | STR    | 5'-6"   | 15   |
| A200      | 2    | #5   | STR    | 2'-4"  | 5     | K8               | 24   | #4   | STR    | 2'-8"   | 43   |
| A201      | 2    | #5   | STR    | 4'-8"  | 10    | K9               | 16   | #4   | STR    | 18'-7"  | 199  |
| A202      | 2    | #5   | STR    | 7'-0"  | 15    | K10              | 12   | #4   | STR    | 8'-5"   | 67   |
| A203      | 2    | #5   | STR    | 9'-4"  | 19    | K11              | 24   | #4   | STR    | 10'-0"  | 160  |
| A204      | 2    | #5   | STR    | 11'-8" | 24    | K12              | 12   | #4   | STR    | 10'-6"  | 84   |
| A205      | 2    | #5   | STR    | 14'-0" | 29    |                  |      |      |        |         |      |
| A206      | 2    | #5   | STR    | 16'-4" | 34    | S1               | 72   | #4   | 1      | 11'-11" | 573  |
| A207      | 2    | #5   | STR    | 18'-8" | 39    | S2               | 68   | #4   | 1      | 9'-4"   | 424  |
| A208      | 2    | #5   | STR    | 21'-0" | 44    | S3               | 168  | #4   | 2      | 2'-9"   | 309  |
| A209      | 2    | #5   | STR    | 23'-4" | 49    |                  |      |      |        |         |      |
| A210      | 2    | #5   | STR    | 25'-8" | 54    | U1               | 72   | #4   | 3      | 8'-2"   | 393  |
| A211      | 2    | #5   | STR    | 28'-0" | 58    | U2               | 6    | #4   | 3      | 12'-0"  | 48   |
| A212      | 2    | #5   | STR    | 30'-4" | 63    | U3               | 6    | #4   | 3      | 11'-6"  | 46   |
| A213      | 2    | #5   | STR    | 32'-8" | 68    | U4               | 48   | #4   | 4      | 12'-0"  | 385  |
| A214      | 2    | #5   | STR    | 35'-0" | 73    | U5               | 12   | #4   | 4      | 10'-10" | 87   |
| A215      | 2    | #5   | STR    | 37'-4" | 78    |                  |      |      |        |         |      |

REINFORCING STEEL = 25,507 LBS.  
\* EPOXY COATED REINF. STEEL = 24,044 LBS.

| SUPERSTRUCTURE BILL OF MATERIAL |                             |                          |                                       |
|---------------------------------|-----------------------------|--------------------------|---------------------------------------|
| ITEM                            | CLASS AA CONCRETE (CU. YD.) | REINFORCING STEEL (LBS.) | EPOXY COATED REINFORCING STEEL (LBS.) |
| SPANS A, B, & C                 |                             | 25,507                   | 24,044                                |
| POUR #1                         | 35.5                        |                          |                                       |
| POUR #2                         | 65.2                        |                          |                                       |
| POUR #3                         | 62.1                        |                          |                                       |
| POUR #4                         | 63.2                        |                          |                                       |
| TOTALS **                       | 226.0                       | 25,507                   | 24,044                                |

\*\* DOES NOT INCLUDE BARRIER RAIL



LAYOUT FOR COMPUTING AREA OF REINFORCED CONCRETE DECK SLAB (SQ. FT. = 5,265)

| GROOVING BRIDGE FLOORS |               |
|------------------------|---------------|
| APPROACH SLABS         | 1,595 SQ. FT. |
| BRIDGE DECK            | 4,395 SQ. FT. |
| TOTAL                  | 5,990 SQ. FT. |

PROJECT NO. R-2915B  
ASHE COUNTY  
STATION: 198+64.50 -L-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
SUPERSTRUCTURE  
BILL OF MATERIAL  
(NBL)

**CDM Smith**  
4500 Glenwood Avenue, Suite 400  
Raleigh, NC 27612-3228  
NC COA No. F-1255

CDM SMITH  
5400 Glenwood Avenue, Suite 400  
Raleigh, NC 27612-3228  
NC COA No. F-1255

DRAWN BY : B. WADSWORTH DATE : 06-15 DWG. No.  
CHECKED BY : J. TAYLOR DATE : 06-15  
DESIGN ENGINEER : J. TAYLOR DATE : 06-15



| REVISIONS |     |       | SHEET No. |     |       |
|-----------|-----|-------|-----------|-----|-------|
| No.       | BY: | DATE: | No.       | BY: | DATE: |
| 1         |     |       | 3         |     |       |
| 2         |     |       | 4         |     |       |

TOTAL SHEETS 34

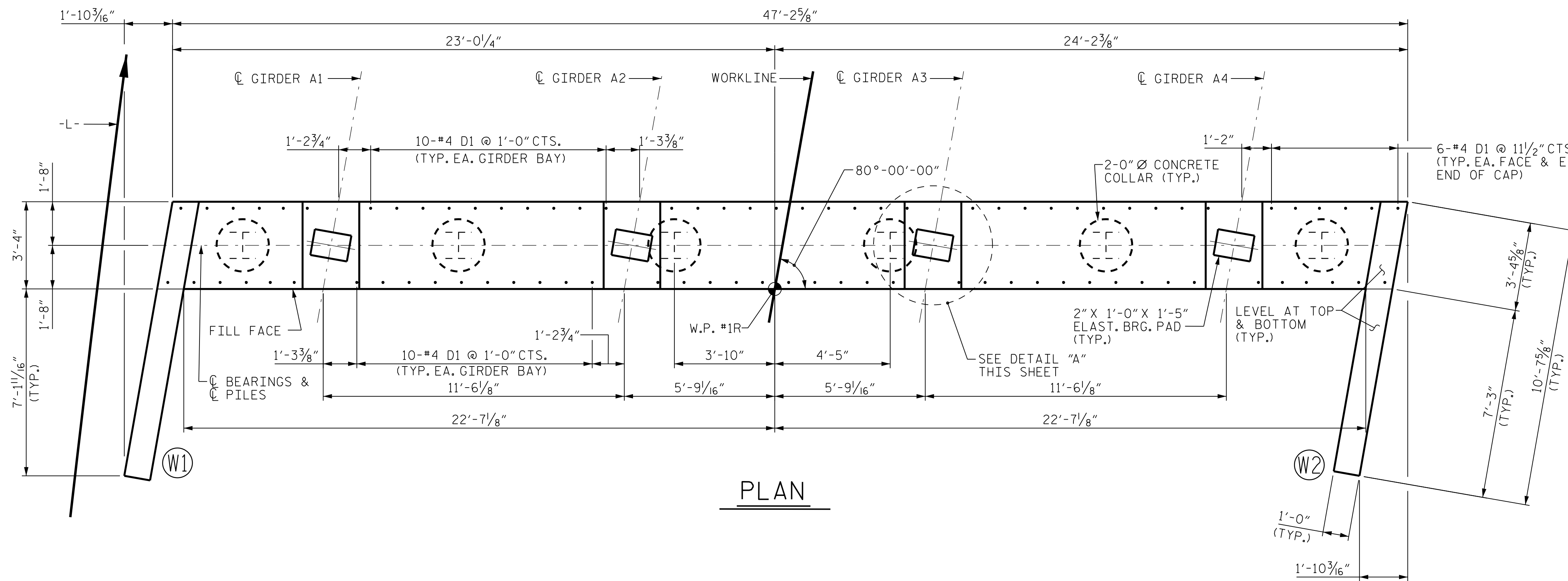
NOTES

FOR SECTION A-A, SEE SHEET 3 OF 3.

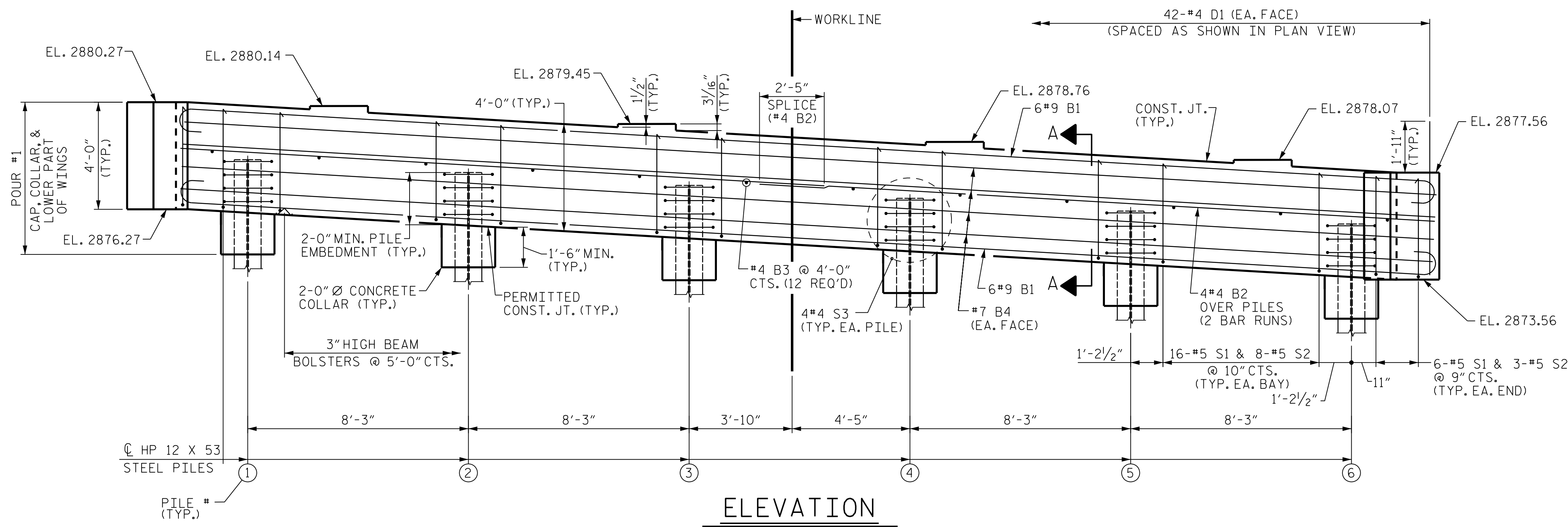
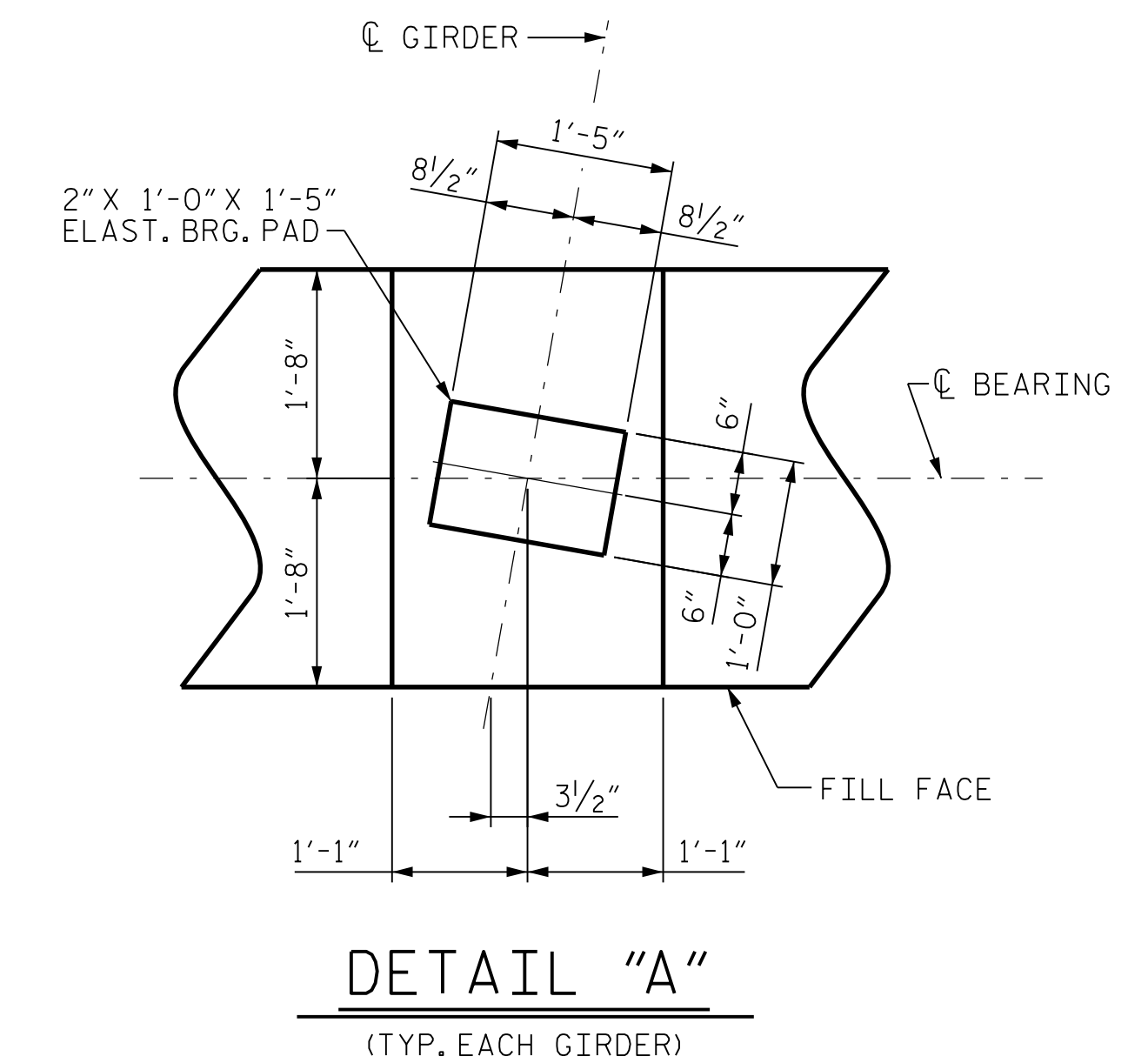
INSTALL THE 4"Ø DRAIN PIPE THROUGH THE WINGWALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WINGWALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING SEATS, SHALL BE RAKED TO A DEPTH OF 1/4".

| PILE | TOP OF PILE ELEVATION | ESTIMATED PILE LENGTH (FT) |
|------|-----------------------|----------------------------|
| 1    | 2878.15               | 17.0                       |
| 2    | 2877.66               | 17.0                       |
| 3    | 2877.16               | 17.0                       |
| 4    | 2876.67               | 17.0                       |
| 5    | 2876.17               | 17.0                       |
| 6    | 2875.68               | 17.0                       |



PLAN

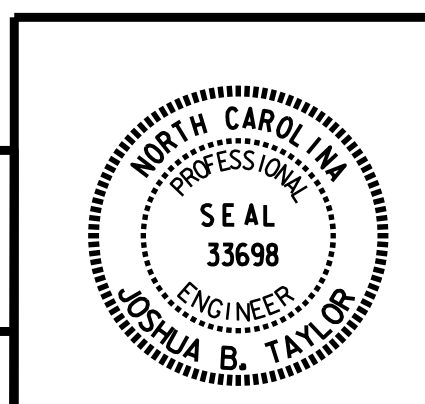


ELEVATION

PROJECT NO. R-2915B  
 ASHE COUNTY  
 STATION: 198+64.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 1  
 (NBL)



**CDM Smith**  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

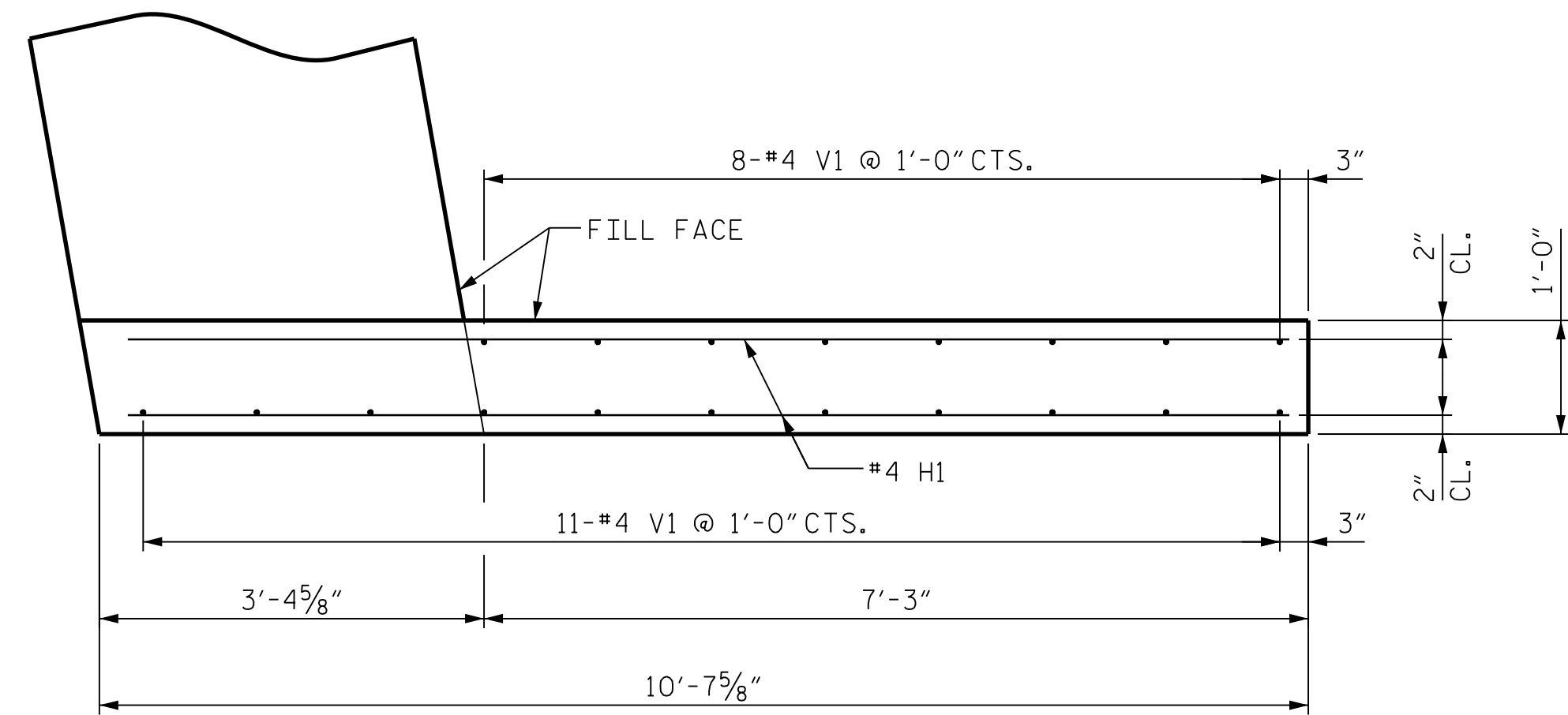
CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

DRAWN BY : B. WADSWORTH DATE : 06-15 DWG. No.  
 CHECKED BY : J. TAYLOR DATE : 06-15  
 DESIGN ENGINEER : J. TAYLOR DATE : 06-15

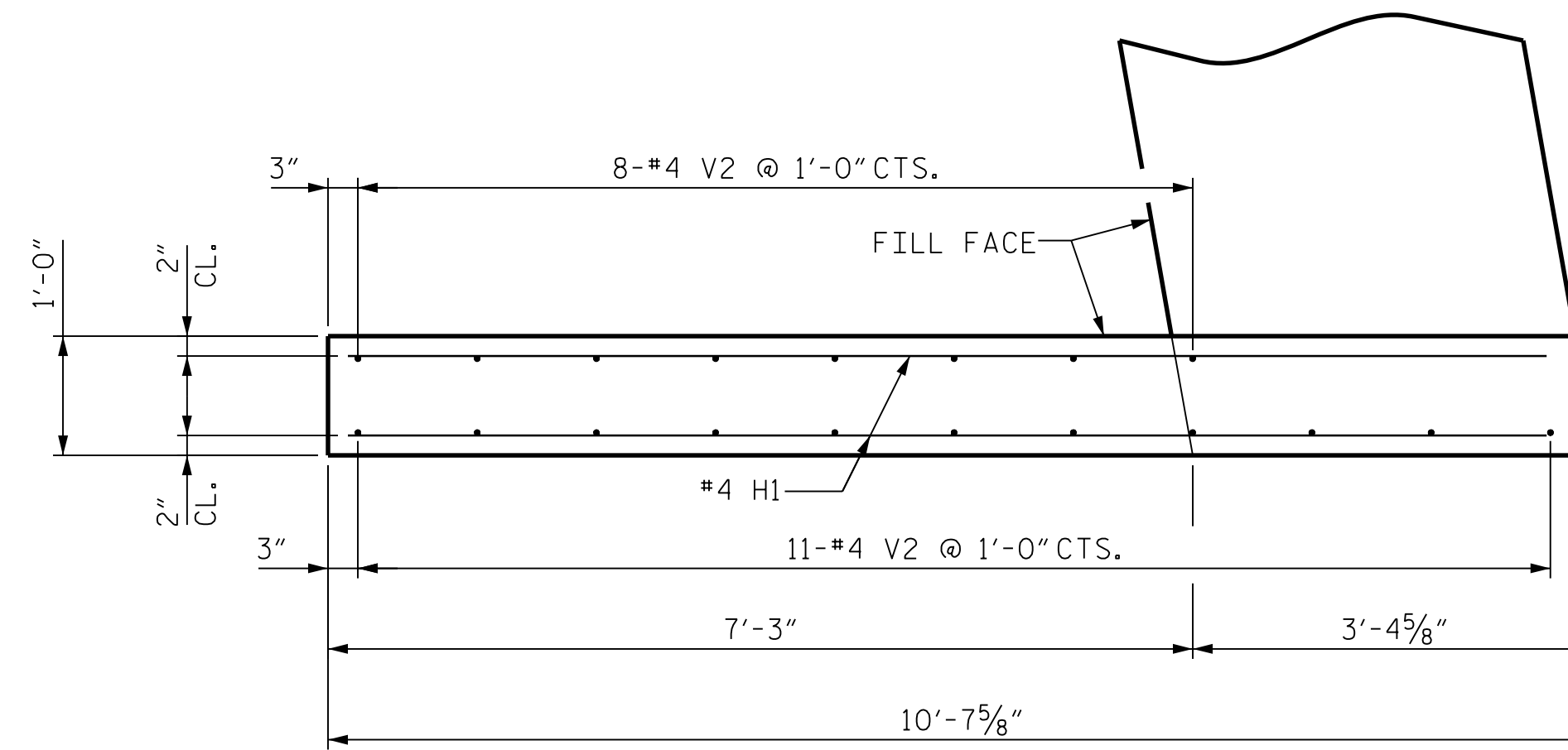
| REVISIONS |     |       | SHEET No. |     |       |
|-----------|-----|-------|-----------|-----|-------|
| No.       | BY: | DATE: | No.       | BY: | DATE: |
| 1         |     |       | 3         |     |       |
| 2         |     |       | 4         |     |       |

TOTAL SHEETS 34

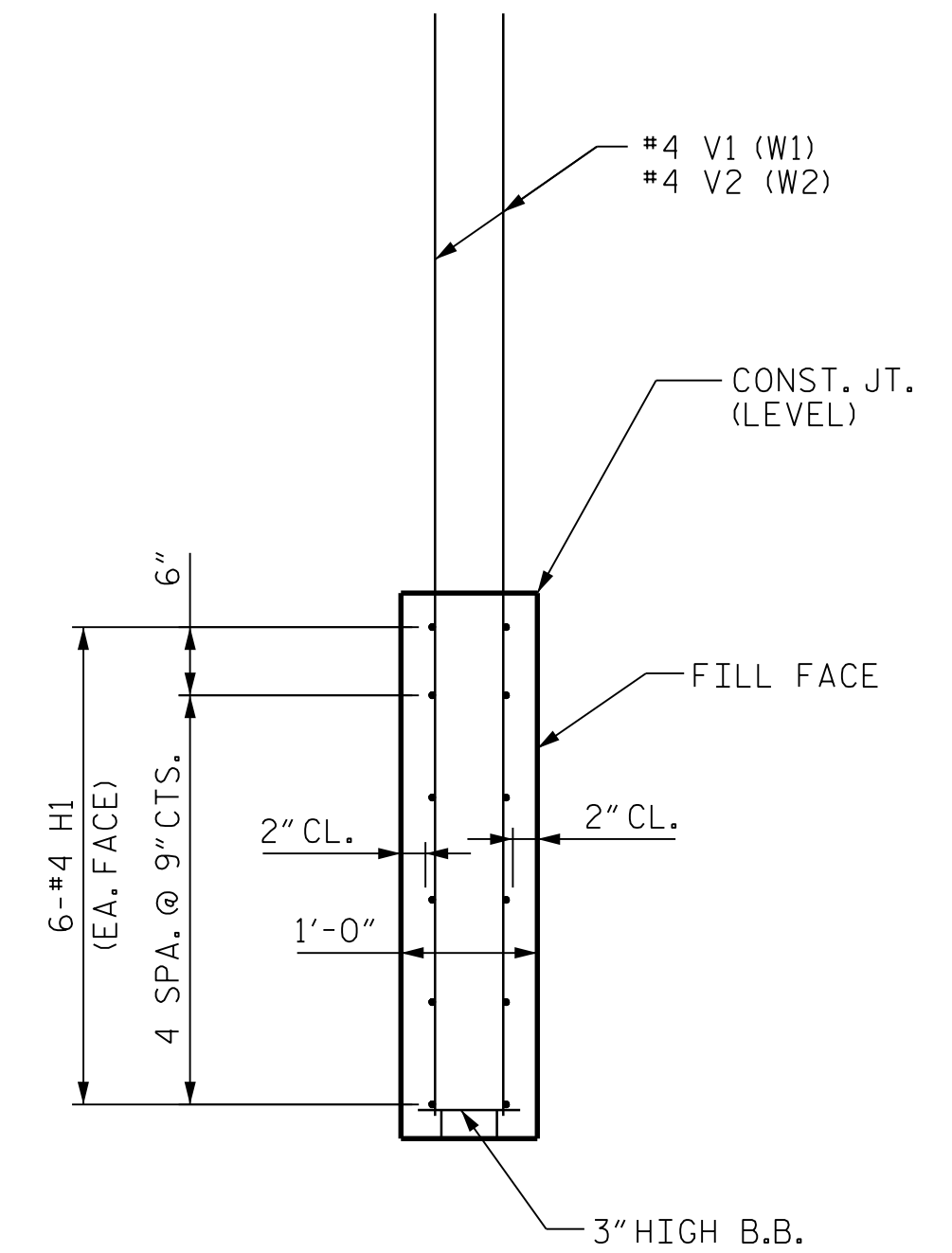
FILE: R:\med\192915B Structures\PLANS\Bentge 2 NBL\192915B\_SD\_EB1\_01.dgn  
 DATE: 8/10/2015 7:04:17 AM



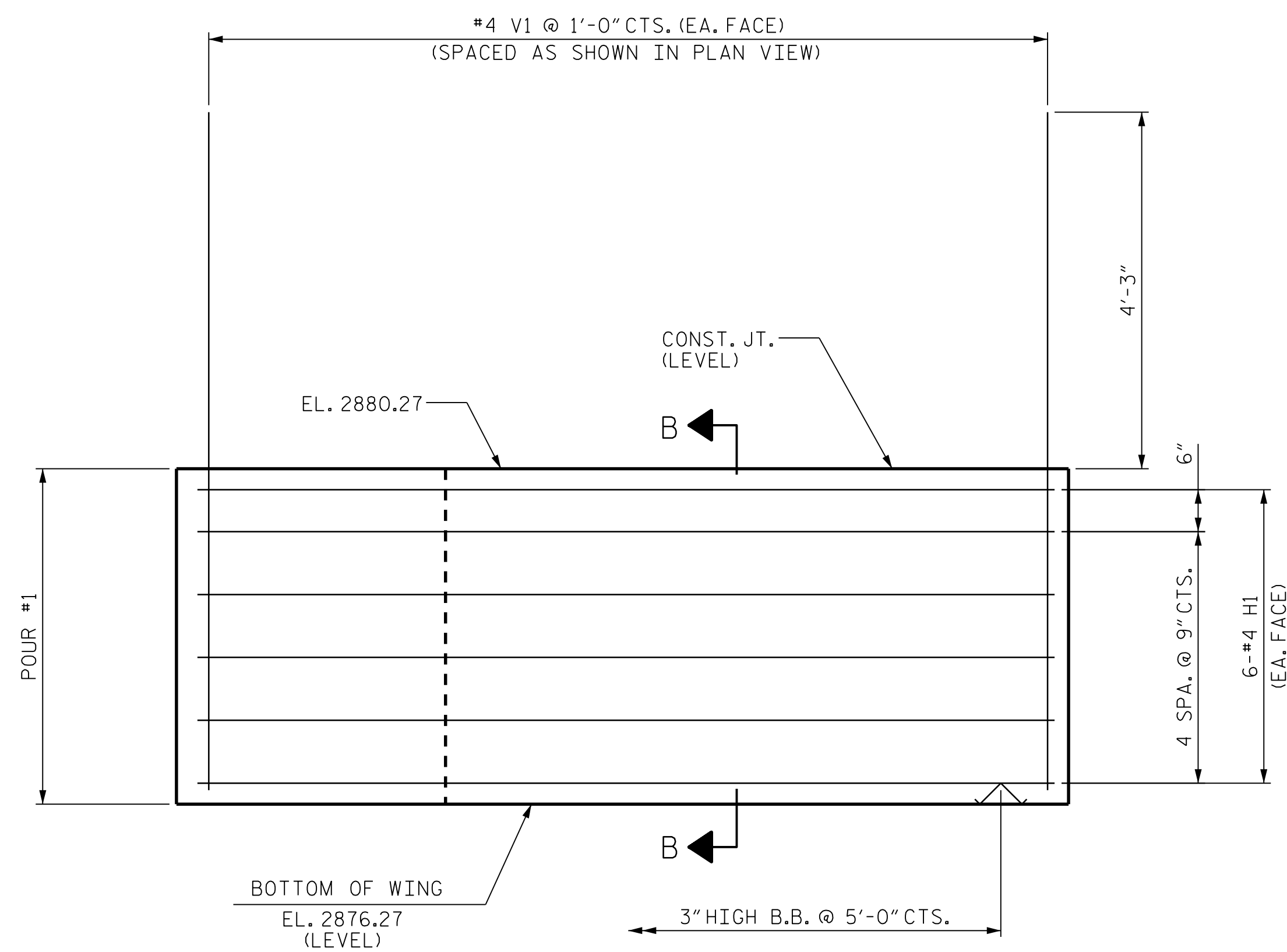
PLAN OF WING (W1)



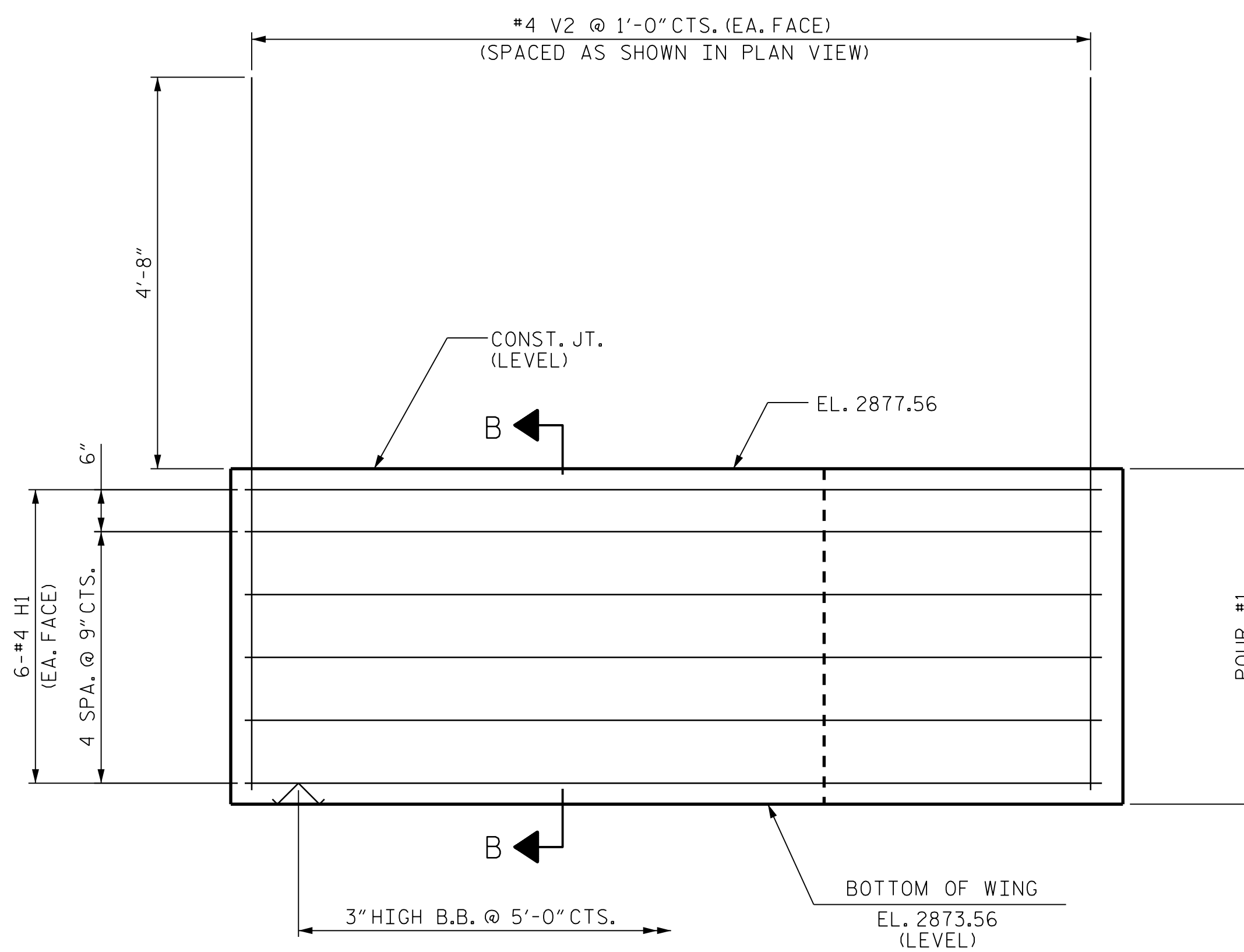
PLAN OF WING (W2)



SECTION B-B



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

PROJECT NO. R-2915B  
 ASHE COUNTY  
 STATION: 198+64.50 -L-

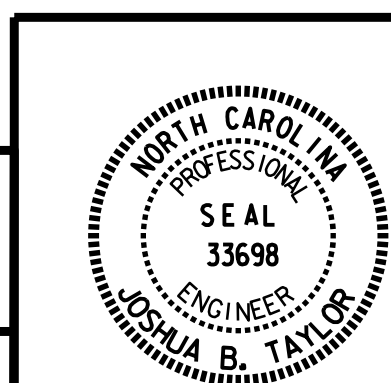
SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 END BENT 1  
 (NBL)

**CDM Smith**  
 CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

DRAWN BY : B. WADSWORTH DATE : 06-15  
 CHECKED BY : J. TAYLOR DATE : 06-15  
 DESIGN ENGINEER : J. TAYLOR DATE : 06-15

DWG. No.

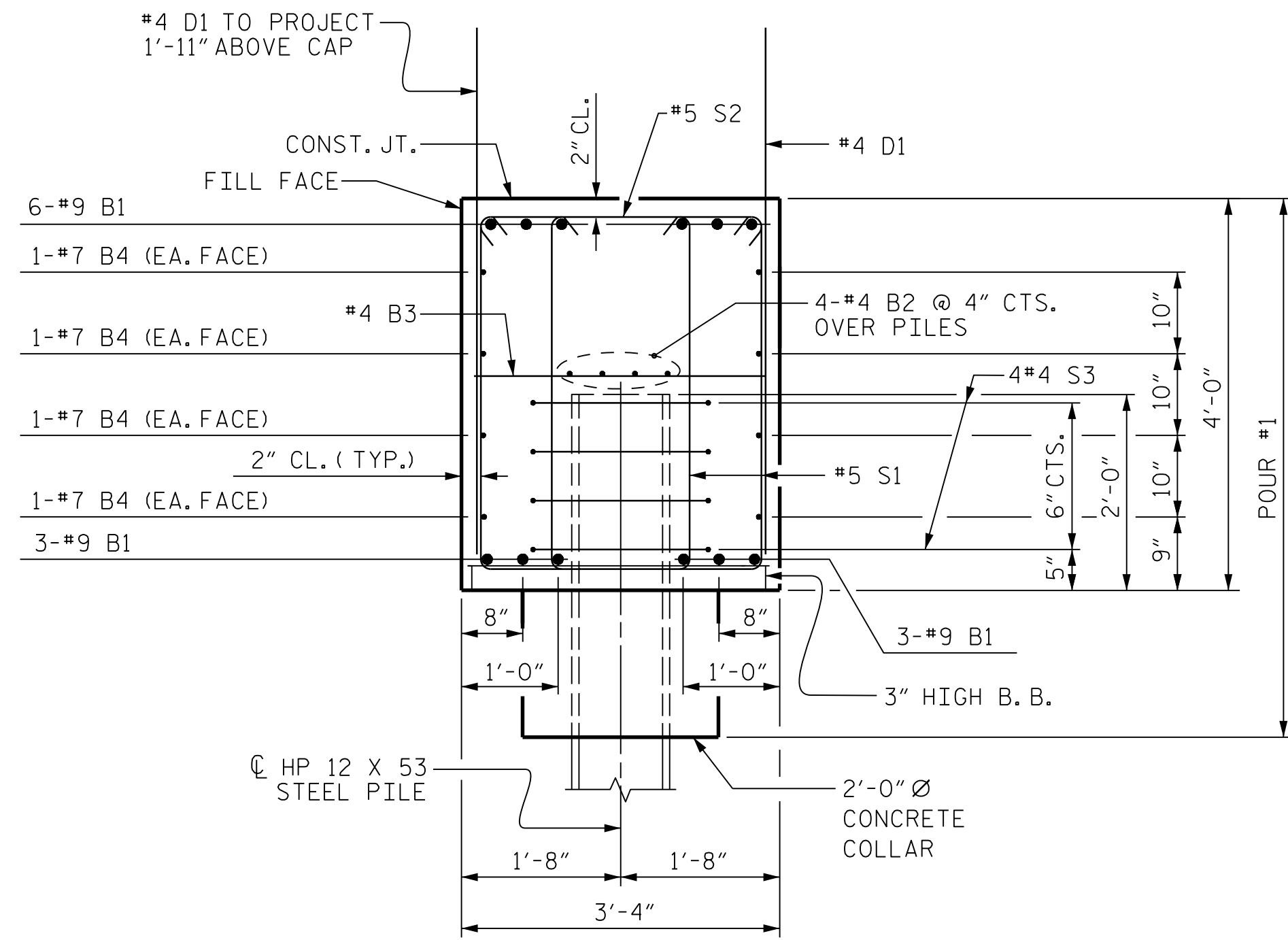


| REVISIONS |     |       | SHEET No. |     |       |
|-----------|-----|-------|-----------|-----|-------|
| No.       | BY: | DATE: | No.       | BY: | DATE: |
| 1         |     |       | 3         |     |       |
| 2         |     |       | 4         |     |       |

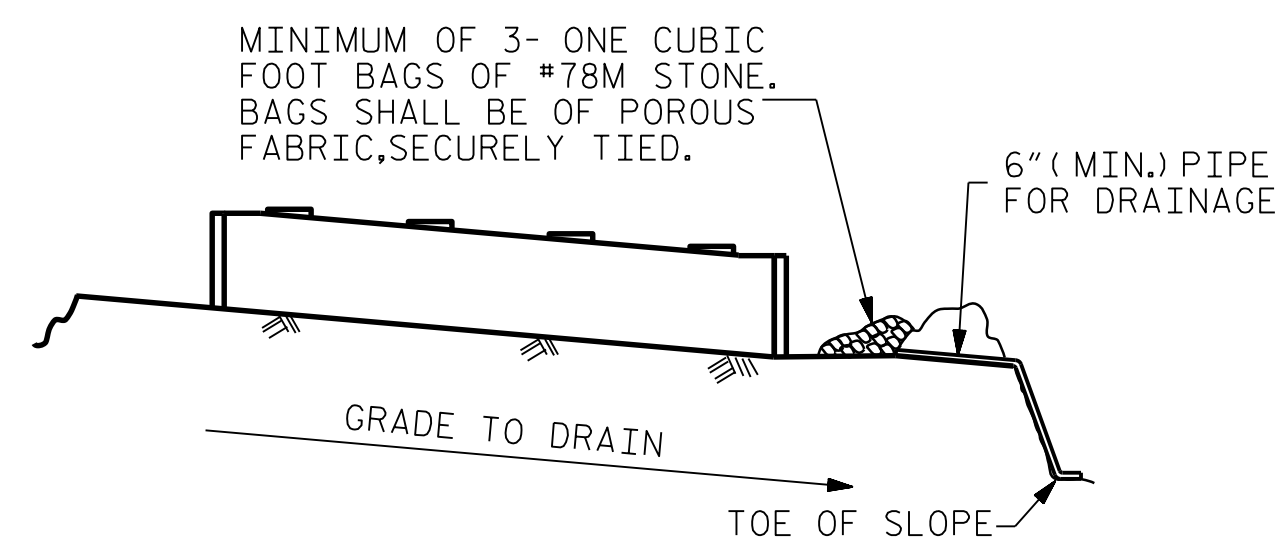
TOTAL SHEETS: 34

FILE: R:\med\192915B Structures\PLANS\Bentge 2 NBL\192915B\_SD\_B1\_02.dgn  
 DATE: 8/10/2015 7:04:19 AM





SECTION A-A



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

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

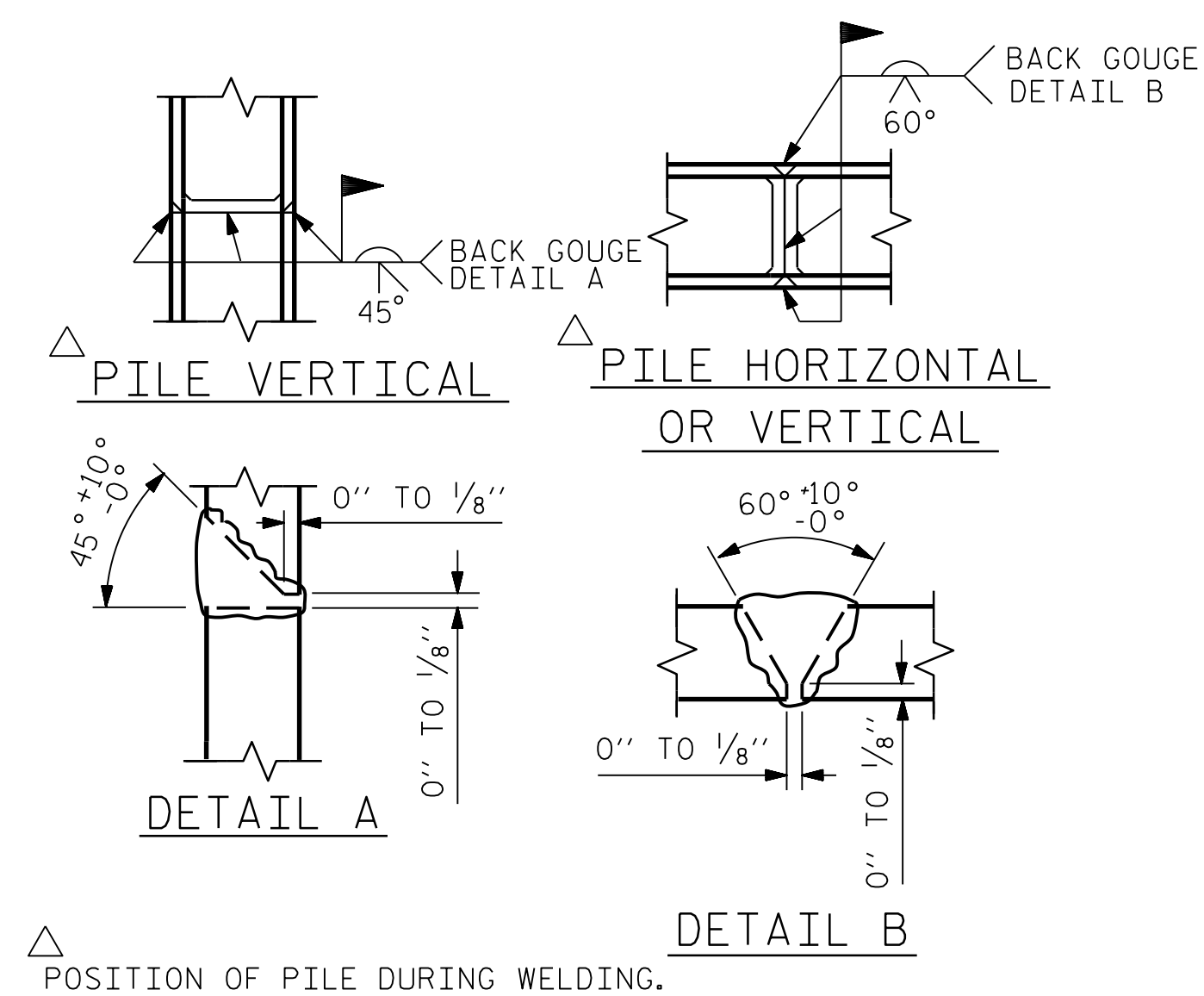
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

**TEMPORARY DRAINAGE AT END BENT**

LOOKING STATION AHEAD

| BAR TYPES                                   |      |      |        |              | BILL OF MATERIAL |                |  |  |  |  |
|---|------|------|--------|--------------|------------------|----------------|--|--|--|--|
|   |      |      |        |              | END BENT 1       |                |  |  |  |  |
| BAR NO.                                     | SIZE | TYPE | LENGTH | WEIGHT       |                  |                |  |  |  |  |
| B1  | 12   | #9   | 1      | 49'-4"       | 2013             |                |  |  |  |  |
| B2  | 8    | #4   | STR    | 24'-8"       | 132              |                |  |  |  |  |
| B3  | 12   | #4   | STR    | 3'-0"        | 24               |                |  |  |  |  |
| B4  | 8    | #7   | STR    | 46'-10"      | 766              |                |  |  |  |  |
| D1  | 84   | #4   | STR    | 5'-8"        | 318              |                |  |  |  |  |
| H1  | 24   | #4   | STR    | 10'-1"       | 162              |                |  |  |  |  |
| S1  | 92   | #5   | 2      | 10'-6"       | 1008             |                |  |  |  |  |
| S2  | 46   | #5   | 3      | 3'-11"       | 188              |                |  |  |  |  |
| S3  | 24   | #4   | 4      | 6'-6"        | 104              |                |  |  |  |  |
| V1  | 19   | #4   | STR    | 8'-0"        | 102              |                |  |  |  |  |
| V2  | 19   | #4   | STR    | 8'-5"        | 107              |                |  |  |  |  |
| REINFORCING STEEL                           |      |      |        | 4924 LBS.    |                  |                |  |  |  |  |
| CLASS A CONCRETE BREAKDOWN                  |      |      |        |              |                  |                |  |  |  |  |
| POUR #1 CAP, COLLARS, & LOWER PART OF WINGS |      |      |        | 26.8 CU. YD. |                  |                |  |  |  |  |
| TOTAL CLASS A CONCRETE                      |      |      |        | 26.8 CU. YD. |                  |                |  |  |  |  |
| HP 12 X 53 STEEL PILES                      |      |      |        |              |                  |                |  |  |  |  |
| NO. = 6                                     |      |      |        |              |                  | LIN. FT. = 102 |  |  |  |  |

ALL BAR DIMENSIONS ARE OUT TO OUT.



**PILE SPLICE DETAILS**

PROJECT NO. R-2915B  
 ASHE COUNTY  
 STATION: 198+64.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

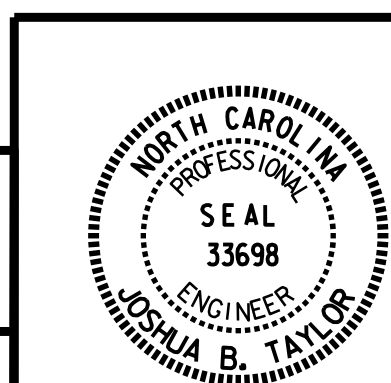
SUBSTRUCTURE

END BENT 1

(NBL)

**CDM Smith**  
 CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

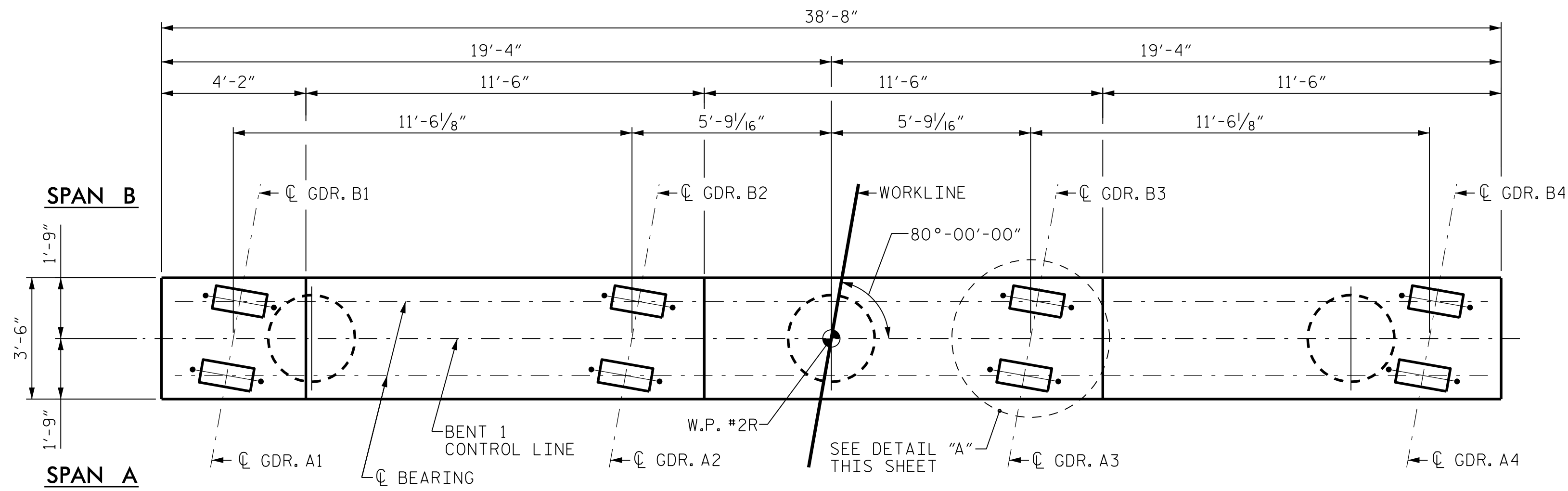
DRAWN BY : B. WADSWORTH DATE : 06-15 DWG. No.  
 CHECKED BY : J. TAYLOR DATE : 06-15  
 DESIGN ENGINEER : J. TAYLOR DATE : 06-15



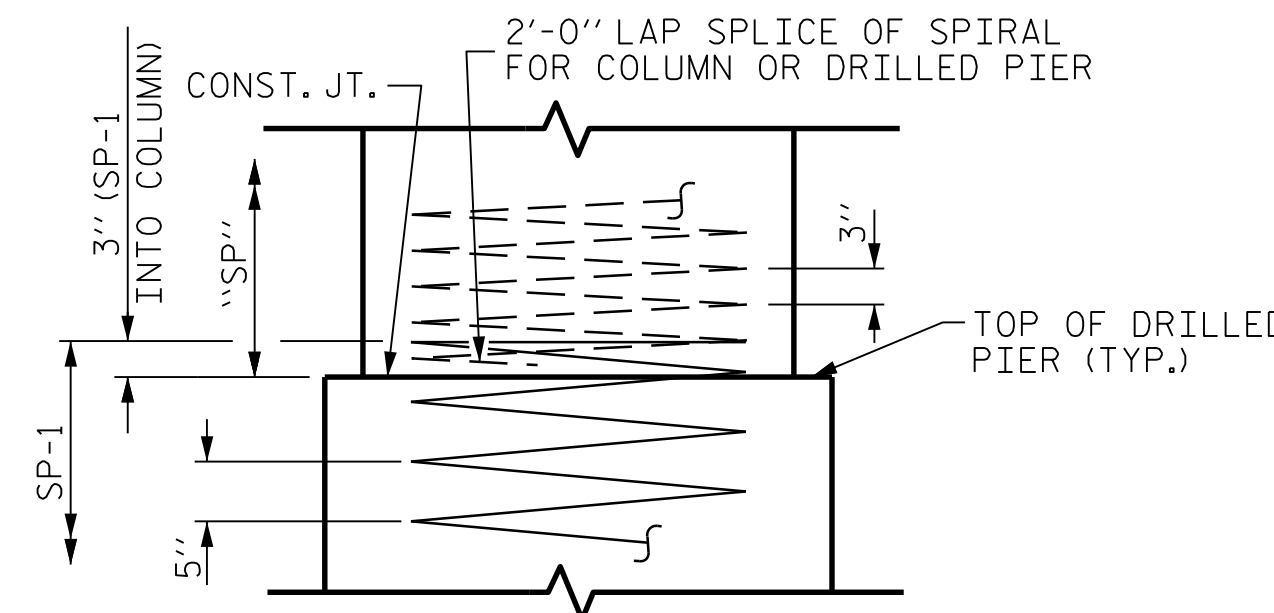
| REVISIONS |     |       | SHEET No. |     |       |
|-----------|-----|-------|-----------|-----|-------|
| No.       | BY: | DATE: | No.       | BY: | DATE: |
| 1         |     |       | 3         |     |       |
| 2         |     |       | 4         |     |       |

TOTAL SHEETS 34

FILE: R:\med\192915B Structures\PLANS\bridge 2 NBL\192915B\_SD\_EB1\_03.dgn  
 DATE: 8/10/2015 7:04:21 AM



PLAN



CONSTRUCTION JOINT DETAIL

NOTES

FOR SECTION A-A, VIEW X-X, AND VIEW Y-Y, SEE SHEET 2 OF 2.

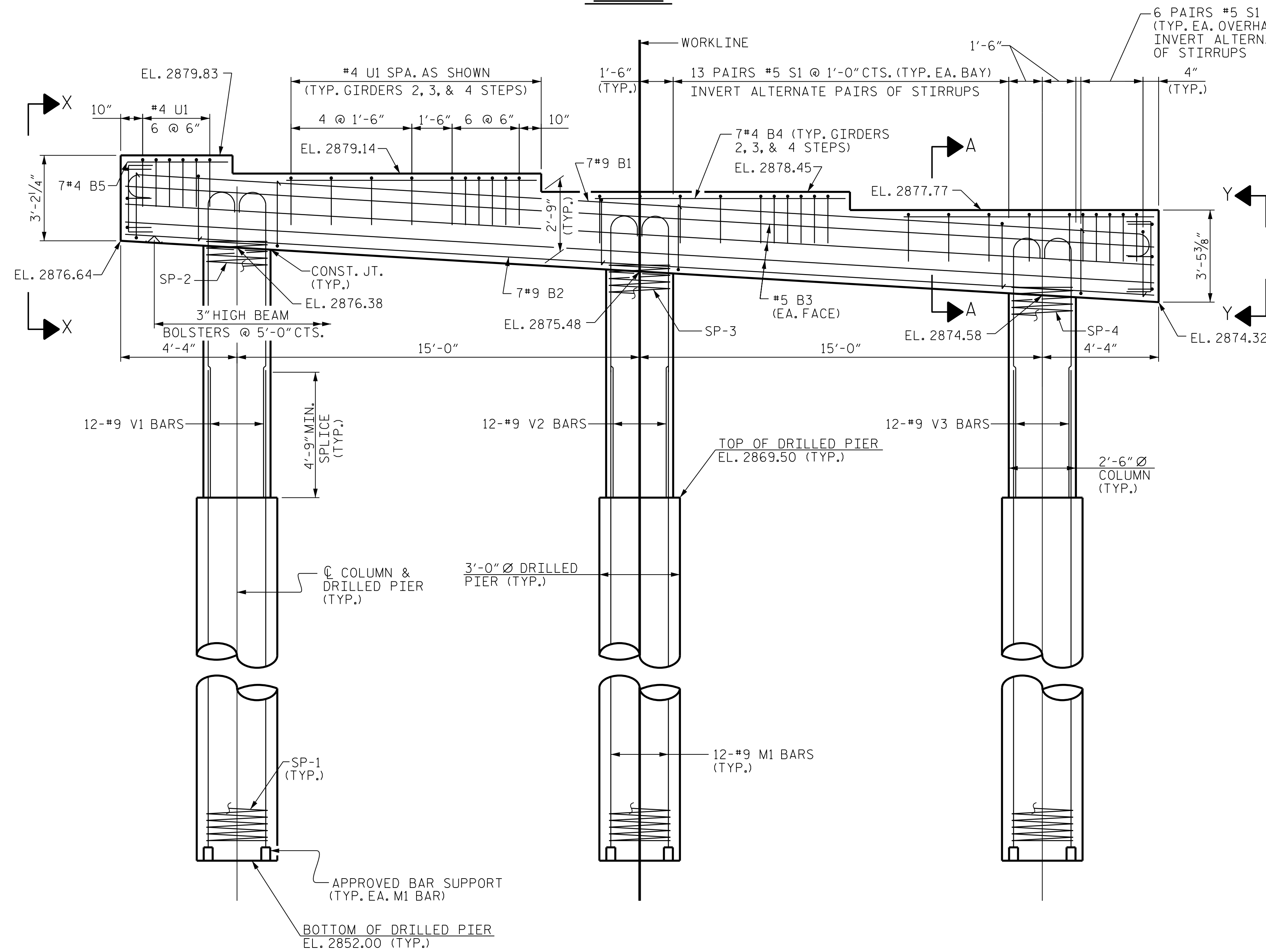
STIRRUPS AND U1 BARS IN THE CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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.

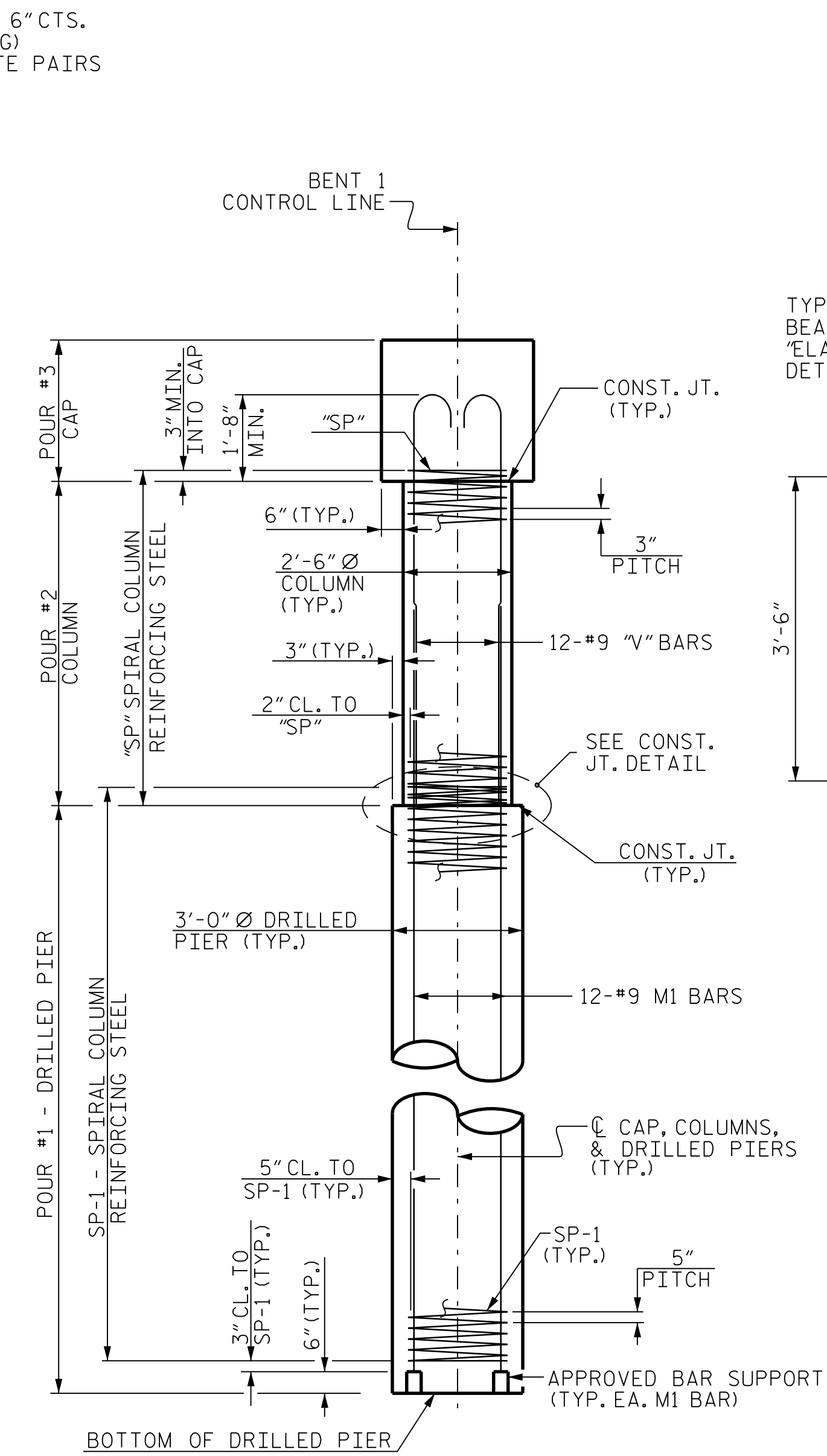
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

SPLICING OF LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.

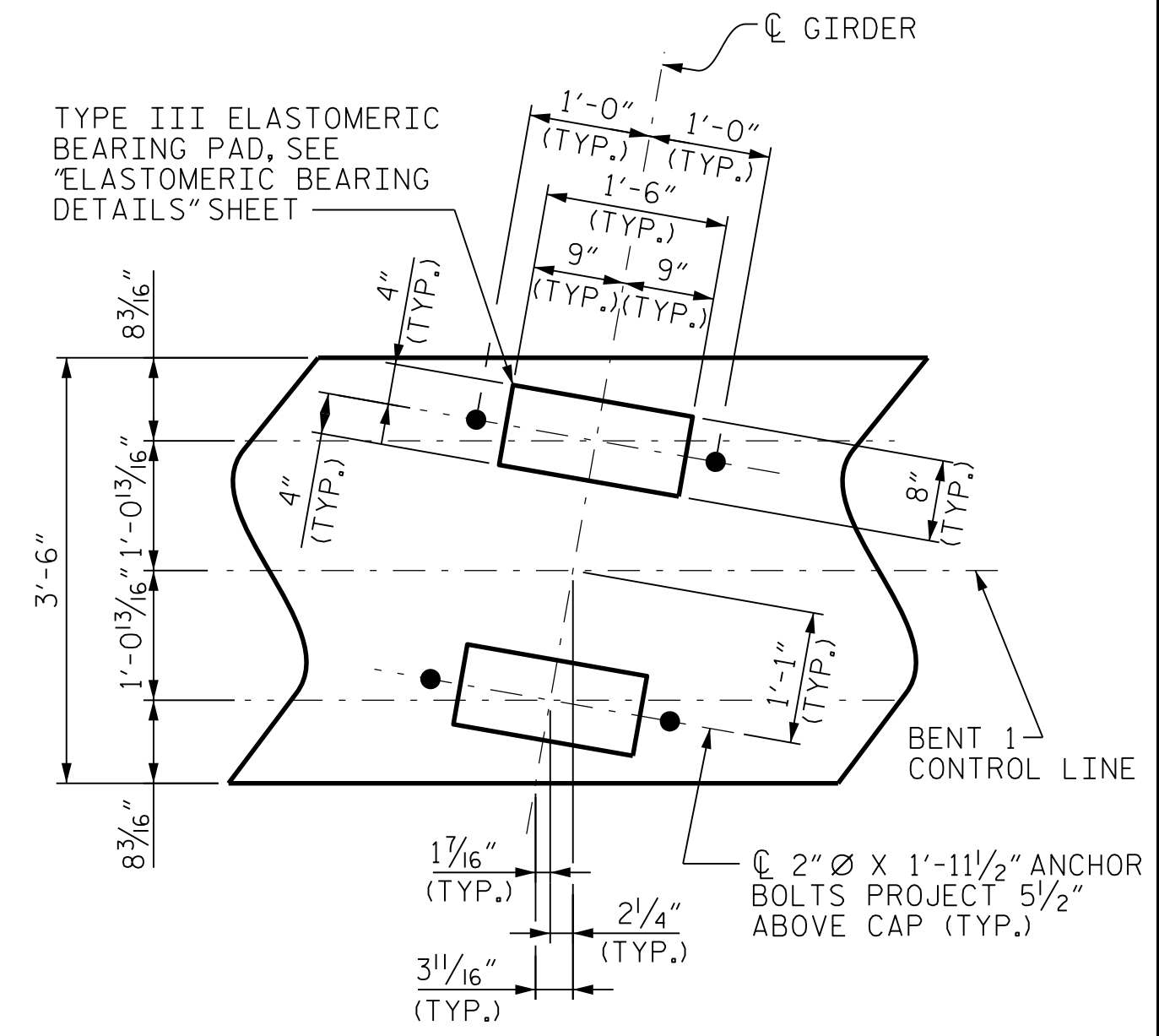
HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.



ELEVATION



END ELEVATION



DETAIL "A"

(TYP. EACH GIRDER)

PROJECT NO. R-2915B  
 ASHE COUNTY  
 STATION: 198+64.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 BENT 1  
 (NBL)

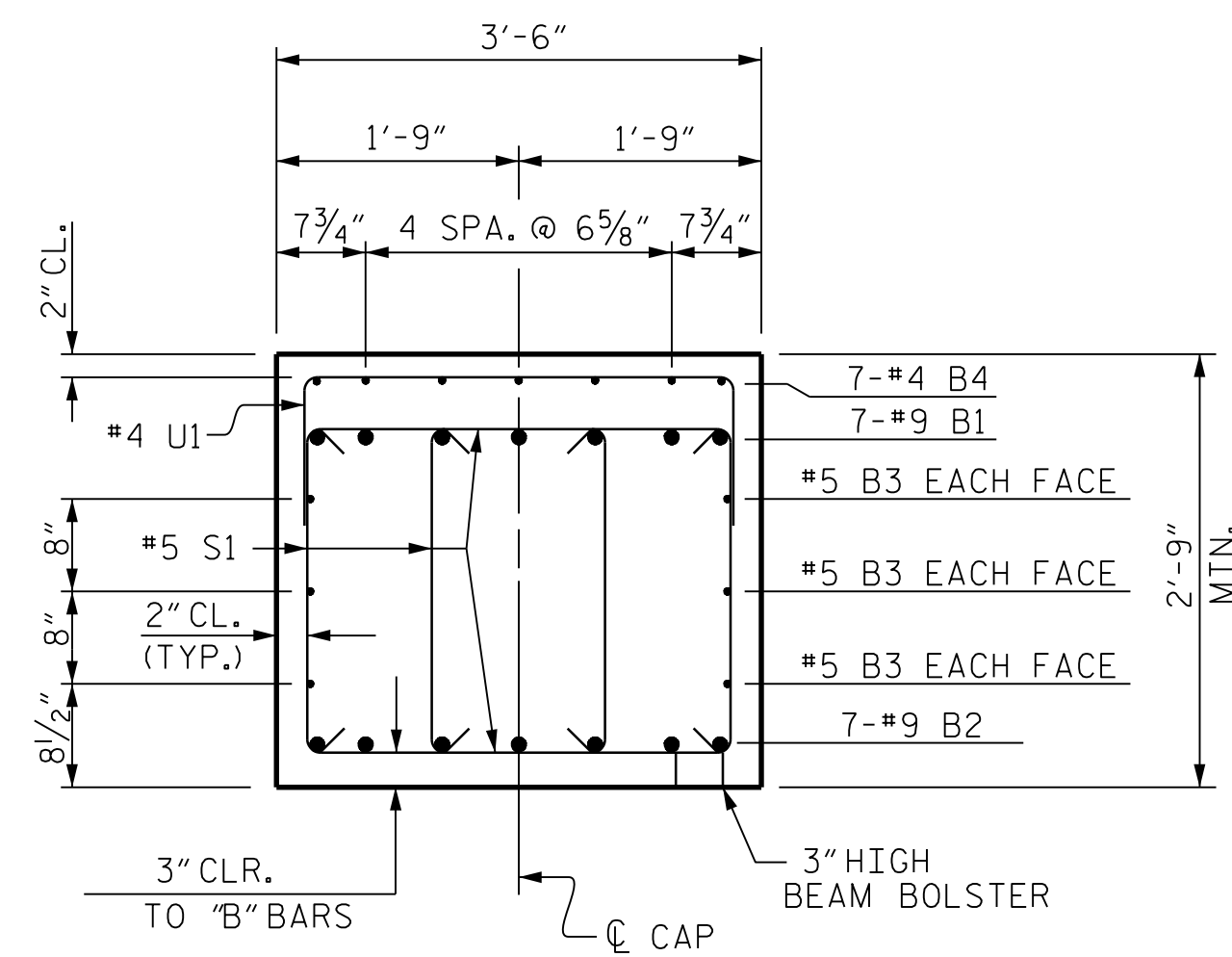


**CDM Smith**  
 CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

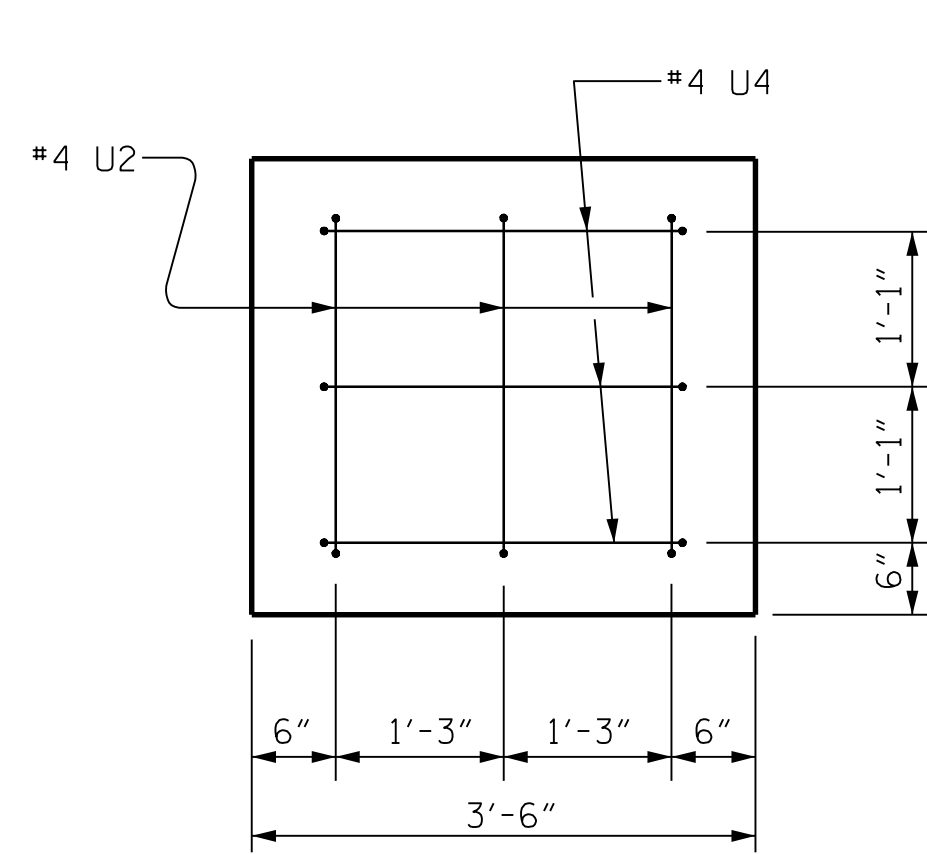
DRAWN BY : B. WADSWORTH DATE : 06-15 DWG. No.  
 CHECKED BY : J. TAYLOR DATE : 06-15  
 DESIGN ENGINEER : J. TAYLOR DATE : 06-15

| REVISIONS |     | SHEET No. |              |
|-----------|-----|-----------|--------------|
| No.       | BY: | DATE:     | DATE:        |
| 1         |     | 3         | TOTAL SHEETS |
| 2         |     | 4         | 34           |

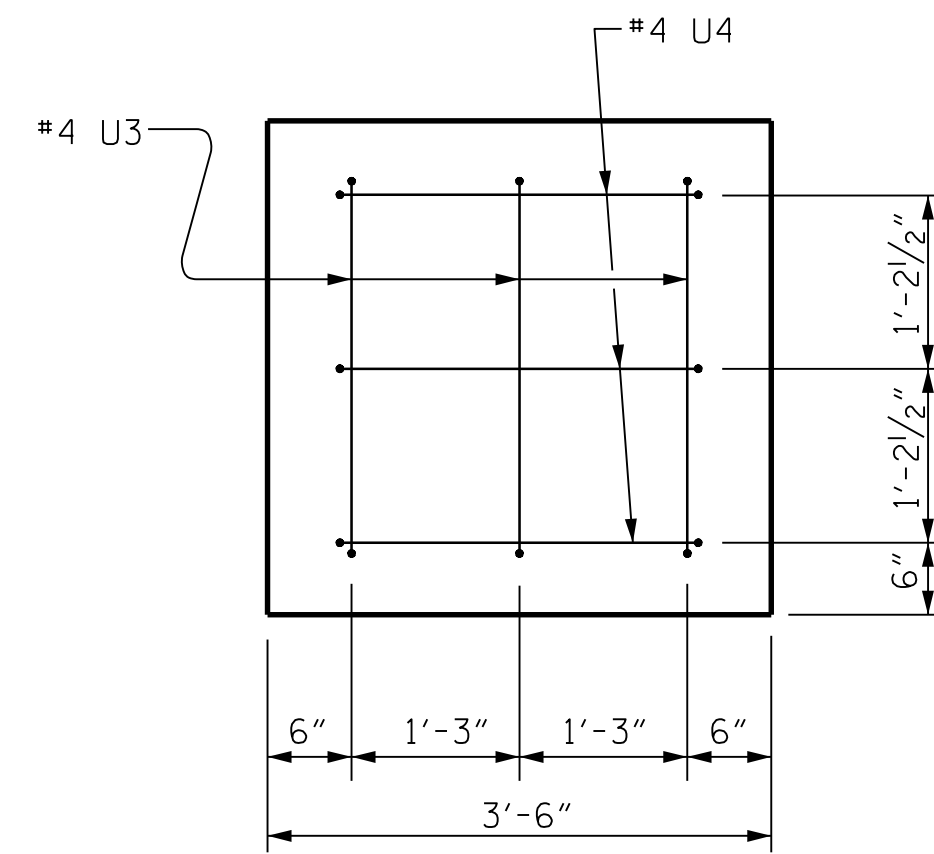
FILE: R:\med\192915B Structures\PLANS\Bent 2 NBL\192915B\_SD\_B1\_01.dgn  
 DATE: 8/10/2015 7:04:23 AM



SECTION A-A



VIEW X-X



VIEW Y-Y

BAR TYPES

BILL OF MATERIAL

BENT 1

| BAR NO. | SIZE | TYPE | LENGTH  | WEIGHT |
|---------|------|------|---------|--------|
| B1      | #9   | 1    | 40'-10" | 972    |
| B2      | #9   | STR  | 38'-4"  | 912    |
| B3      | #5   | STR  | 38'-4"  | 240    |
| B4      | #4   | STR  | 9'-11"  | 139    |
| B5      | #4   | STR  | 3'-10"  | 18     |
| M1      | #9   | STR  | 24'-9"  | 3029   |
| S1      | #5   | 3    | 7'-11"  | 1057   |
| U1      | #4   | 4    | 6'-8"   | 160    |
| U2      | #4   | 4    | 4'-8"   | 9      |
| U3      | #4   | 4    | 4'-11"  | 10     |
| U4      | #4   | 4    | 5'-0"   | 20     |
| V1      | #9   | 2    | 9'-11"  | 405    |
| V2      | #9   | 2    | 9'-0"   | 367    |
| V3      | #9   | 2    | 8'-1"   | 330    |

REINFORCING STEEL 7668 LBS.

| SP   | NO. | SIZE | TYPE | LENGTH   | WEIGHT |
|------|-----|------|------|----------|--------|
| SP-1 | 3   | #5   | 5    | 281'-7"  | 881    |
| SP-2 | 1   | #6   | 6    | 202'-11" | 136    |
| SP-3 | 1   | #6   | 6    | 178'-9"  | 119    |
| SP-4 | 1   | #6   | 6    | 154'-9"  | 103    |

SPIRAL COLUMN REINFORCING STEEL 1239 LBS.

\* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

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

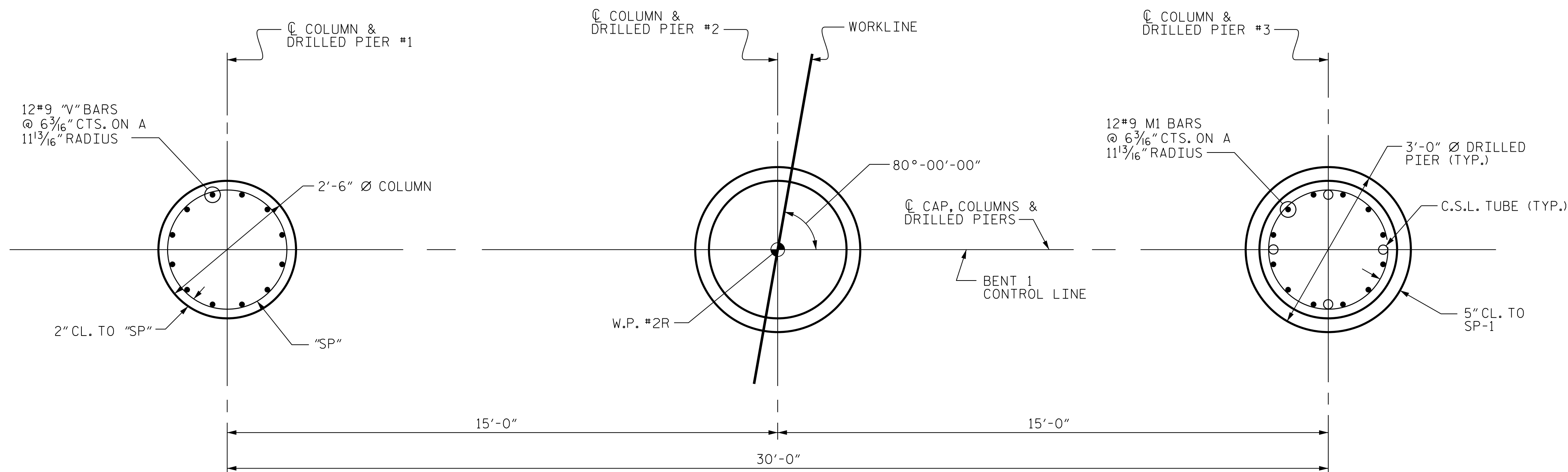
CLASS A CONCRETE BREAKDOWN

| POUR                   | DESCRIPTION | VOLUME       |
|------------------------|-------------|--------------|
| POUR #2                | (COLUMNS)   | 3.3 CU. YD.  |
| POUR #3                | (CAP)       | 15.6 CU. YD. |
| TOTAL CLASS A CONCRETE |             | 18.9 CU. YD. |

DRILLED PIERS

| POUR                   | DESCRIPTION     | VOLUME        |
|------------------------|-----------------|---------------|
| POUR #1                | (DRILLED PIERS) | 13.7 CU. YD.  |
| 3'-0" Ø DRILLED PIERS  |                 |               |
| IN SOIL                |                 | 21.5 LIN. FT. |
| NOT IN SOIL            |                 | 31.0 LIN. FT. |
| CSL TUBES              |                 | 228 LIN. FT.  |
| PERMANENT STEEL CASING |                 | 28.5 LIN. FT. |

ALL BAR DIMENSIONS ARE OUT TO OUT.



COLUMN REINFORCEMENT

DRILLED PIER REINFORCEMENT

PLAN OF DRILLED PIERS & COLUMNS

(REINFORCING STEEL IS TYPICAL FOR EACH COLUMN & DRILLED PIER)

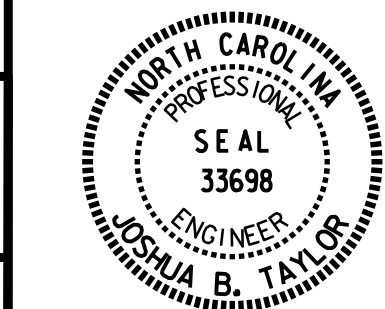
PROJECT NO. R-2915B  
 ASHE COUNTY  
 STATION: 198+64.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 SUBSTRUCTURE  
 BENT 1  
 (NBL)

**CDM Smith**  
 CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

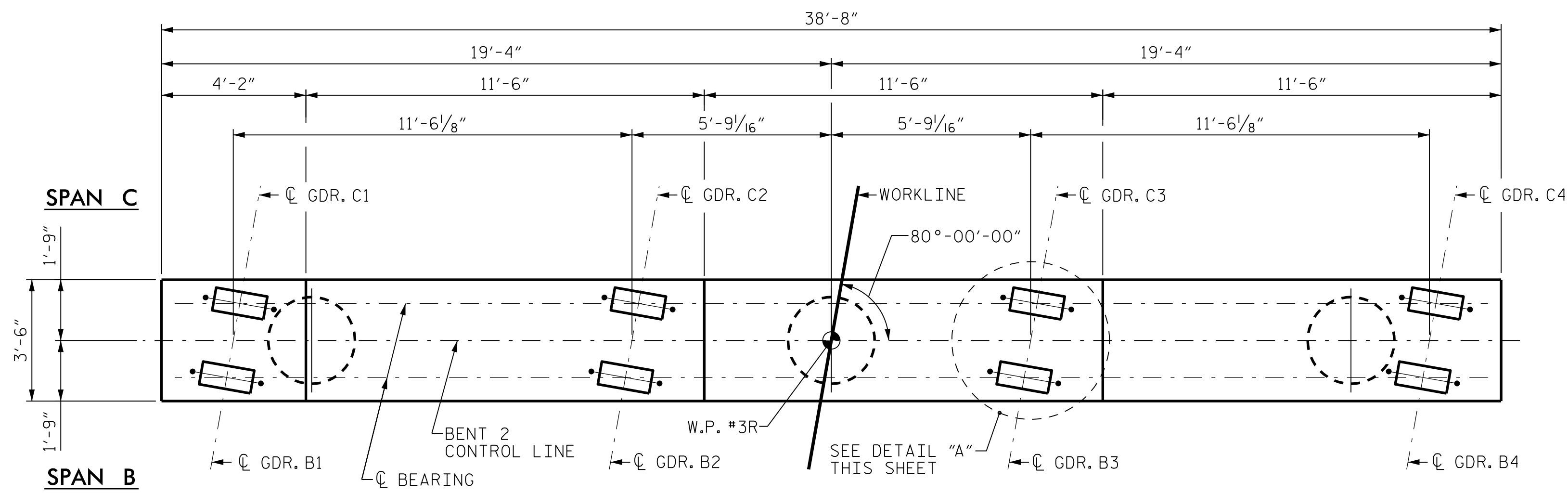
DRAWN BY: B. WADSWORTH DATE: 06-15 DWG. No.  
 CHECKED BY: J. TAYLOR DATE: 06-15  
 DESIGN ENGINEER: J. TAYLOR DATE: 06-15



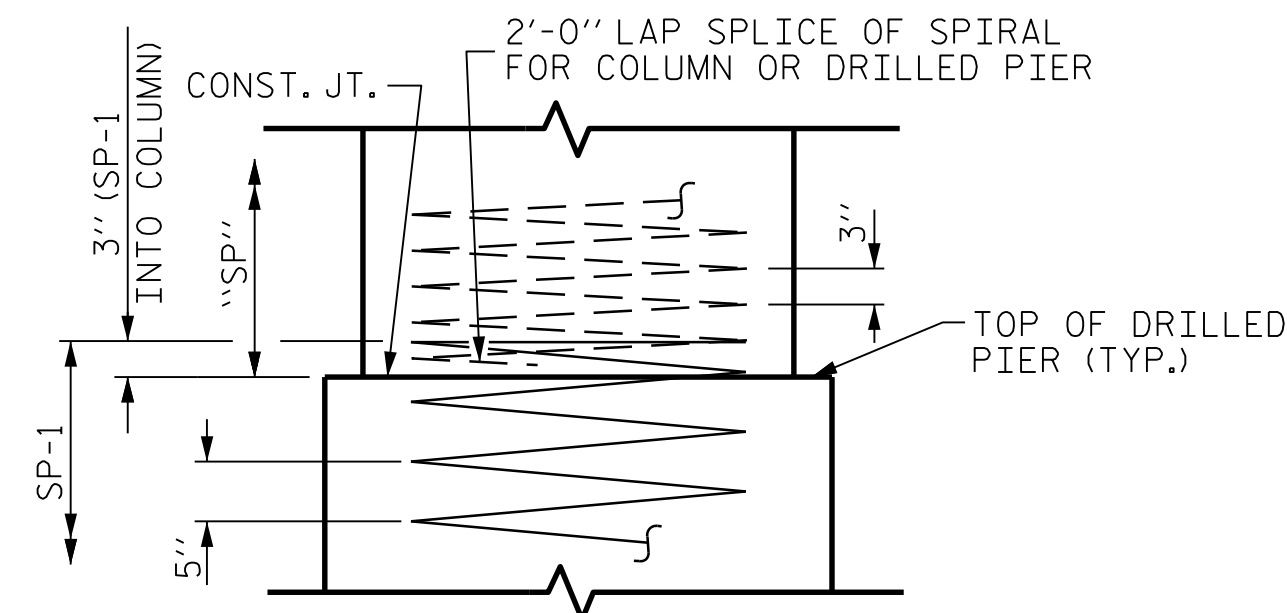
| REVISIONS |     |       | SHEET No. |     |       |
|-----------|-----|-------|-----------|-----|-------|
| No.       | BY: | DATE: | No.       | BY: | DATE: |
| 1         |     |       | 3         |     |       |
| 2         |     |       | 4         |     |       |

TOTAL SHEETS 34

FILE: R:\med\192915B Structures\PLANS\bridge 2 NBL\R2915B\_SD\_B1\_02.dwg  
 DATE: 8/10/2015 7:04:26 AM



PLAN



CONSTRUCTION JOINT DETAIL

NOTES

FOR SECTION A-A, VIEW X-X, AND VIEW Y-Y, SEE SHEET 2 OF 2.

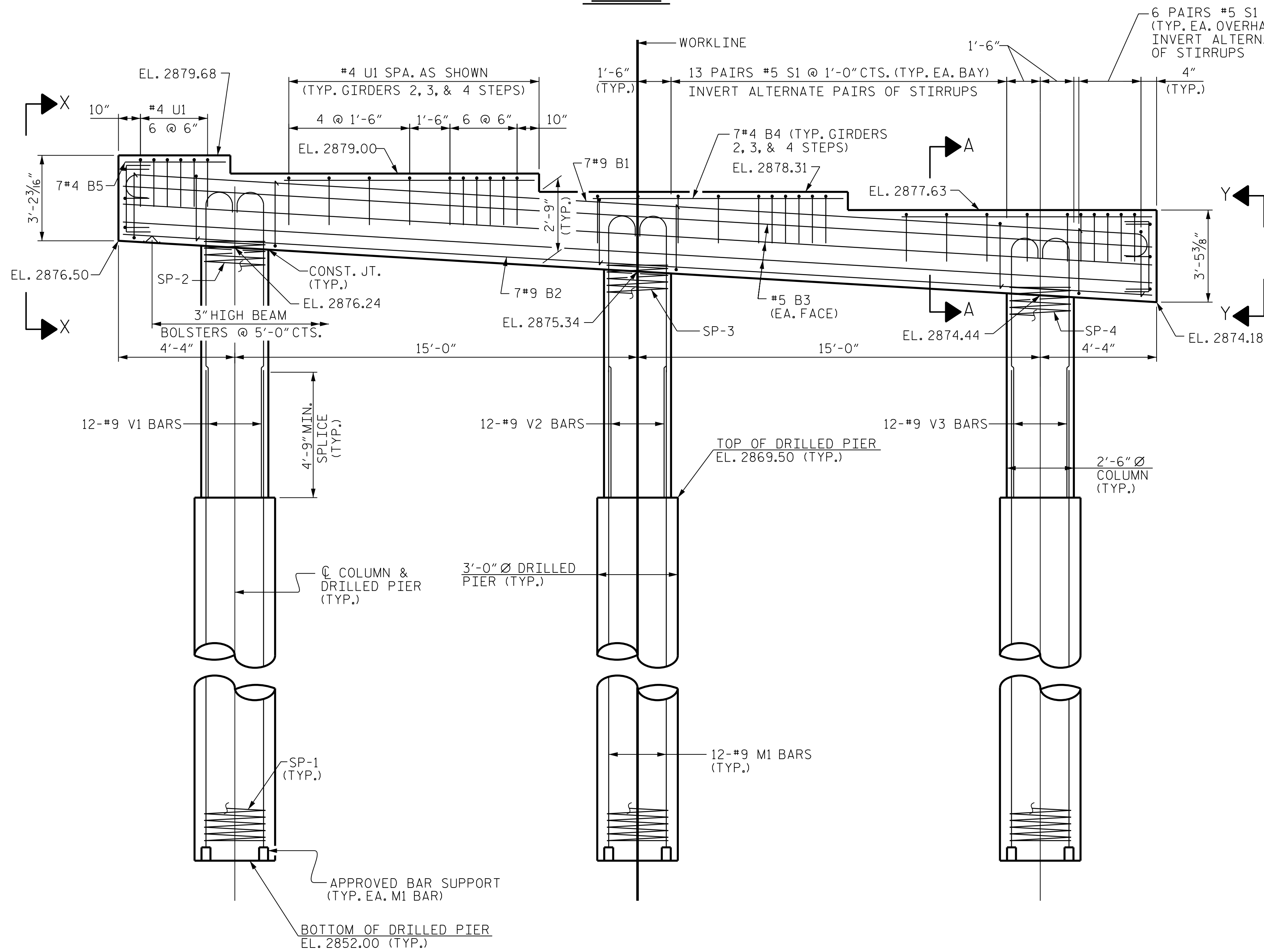
STIRRUPS AND U1 BARS IN THE CAP MAY BE SHIFTED AS NECESSARY TO CLEAR ANCHOR BOLTS.

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.

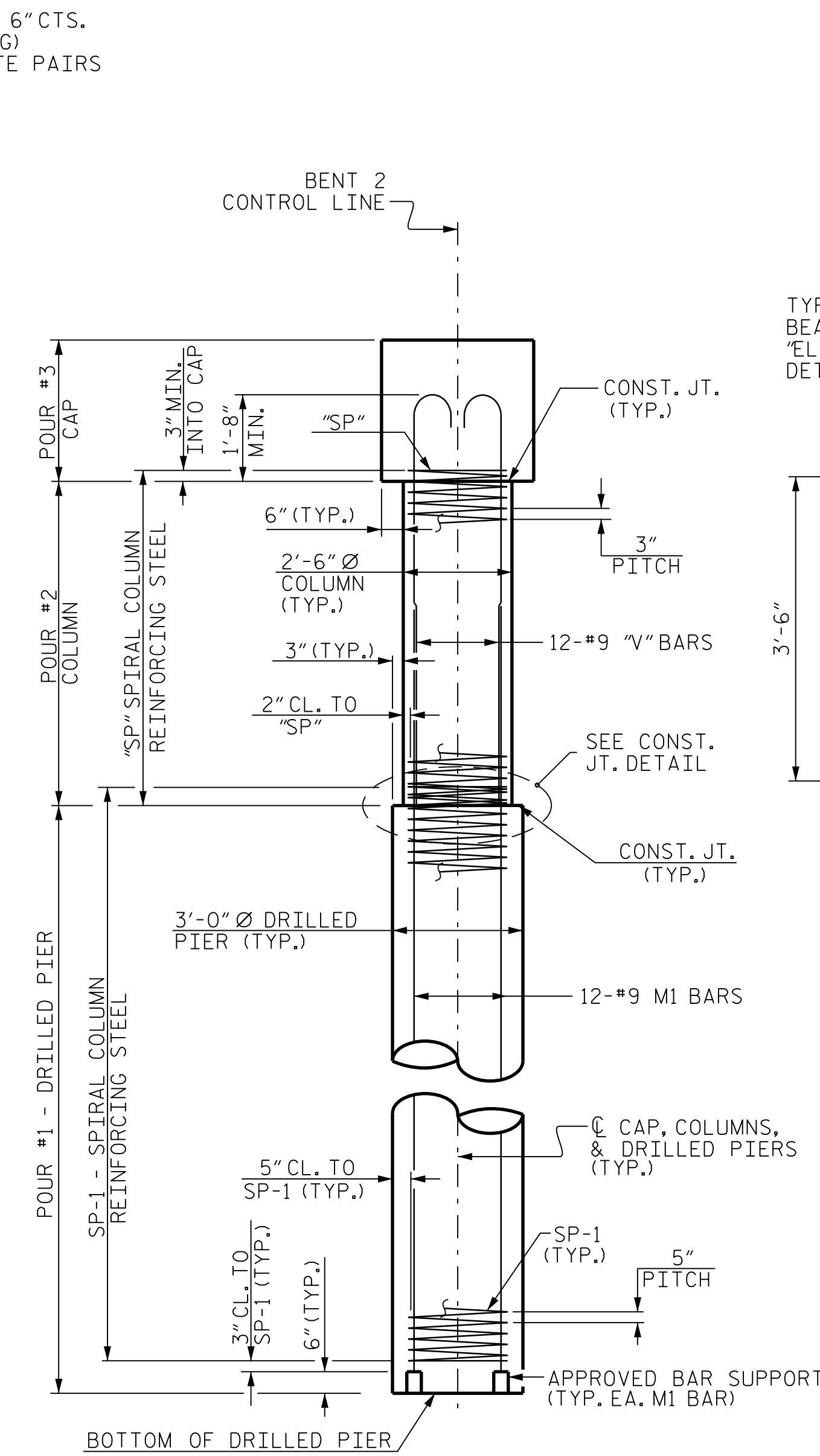
ALL STEEL IN THE DRILLED PIERS IS INCLUDED IN THE PAY ITEMS FOR "REINFORCING STEEL" AND "SPIRAL COLUMN REINFORCING STEEL."

SPLICING OF LONGITUDINAL BARS IN THE DRILLED PIER WILL NOT BE PERMITTED.

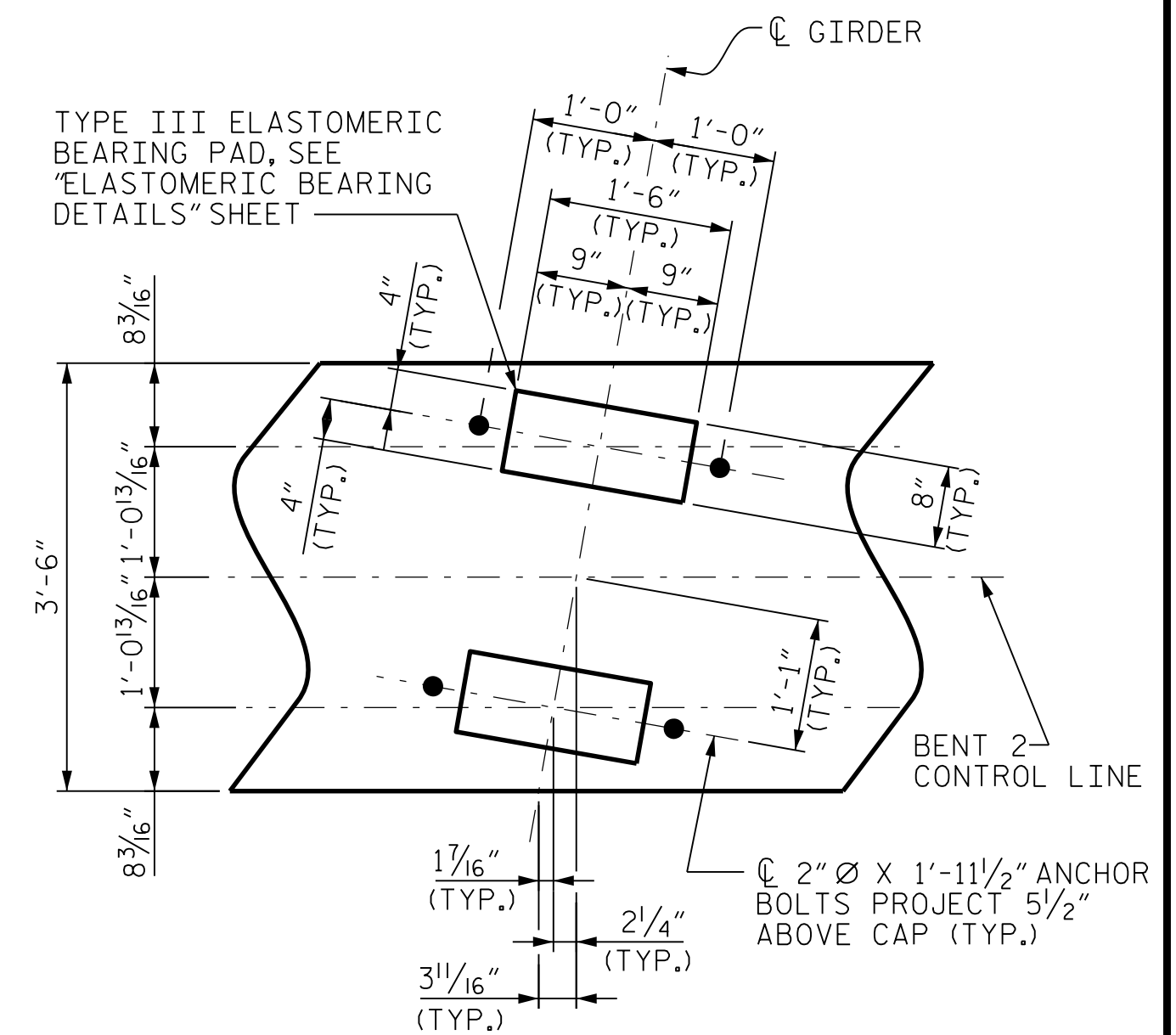
HOOKS ON "V" BARS MAY BE TURNED AS NECESSARY FOR PLACING REINFORCING STEEL.



ELEVATION



END ELEVATION



DETAIL "A"

(TYP. EACH GIRDER)

PROJECT NO. R-2915B  
 ASHE COUNTY  
 STATION: 198+64.50 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE

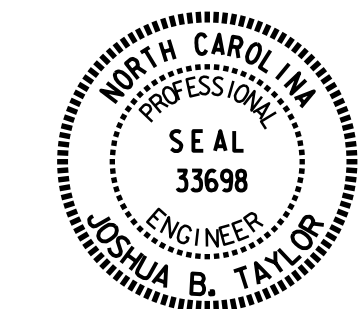
BENT 2

(NBL)

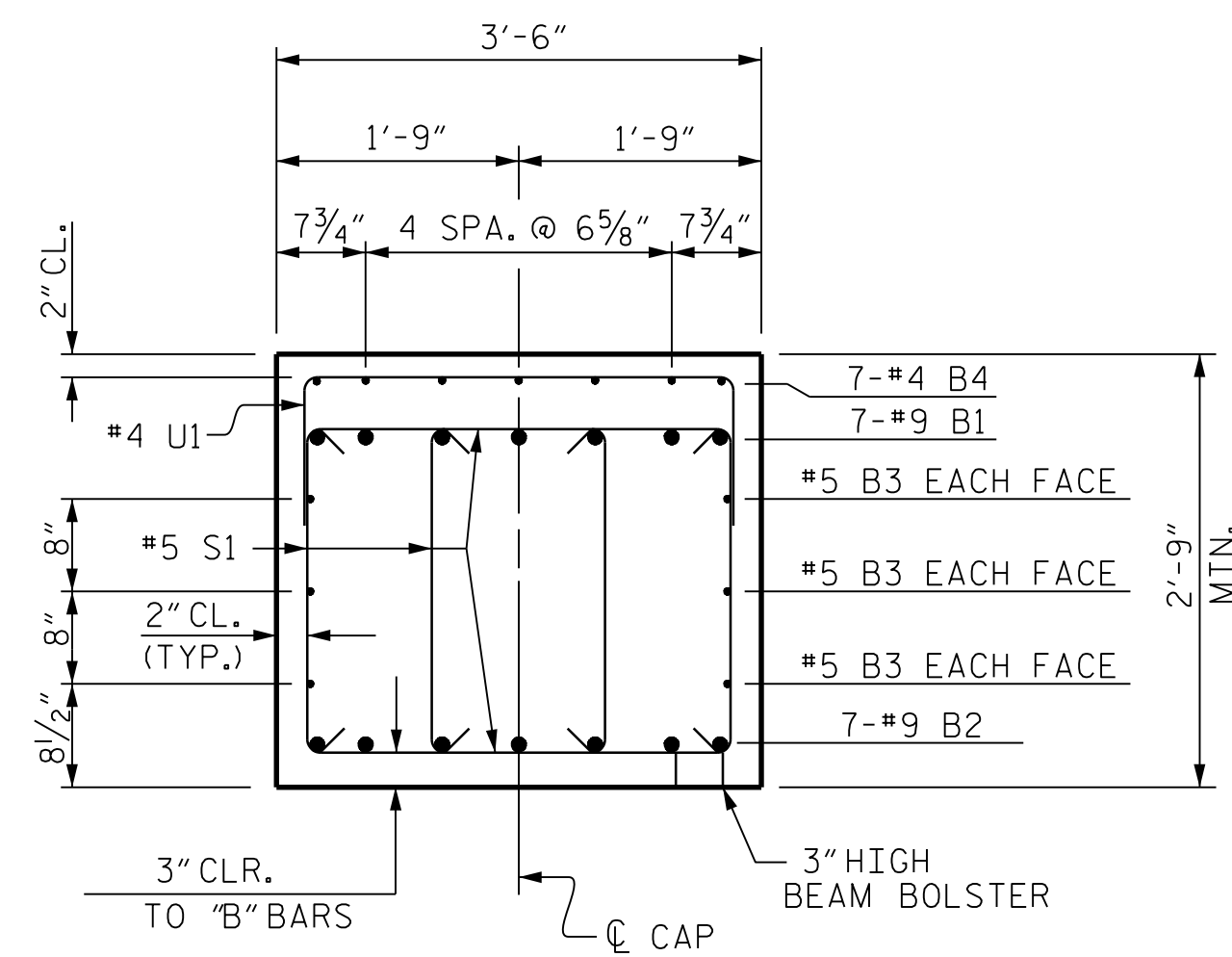
| REVISIONS |     |       |     | SHEET No. |              |
|-----------|-----|-------|-----|-----------|--------------|
| No.       | BY: | DATE: | No. | BY:       | DATE:        |
| 1         |     |       | 3   |           |              |
| 2         |     |       | 4   |           |              |
|           |     |       |     |           | TOTAL SHEETS |
|           |     |       |     |           | 34           |

**CDM Smith**  
 CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

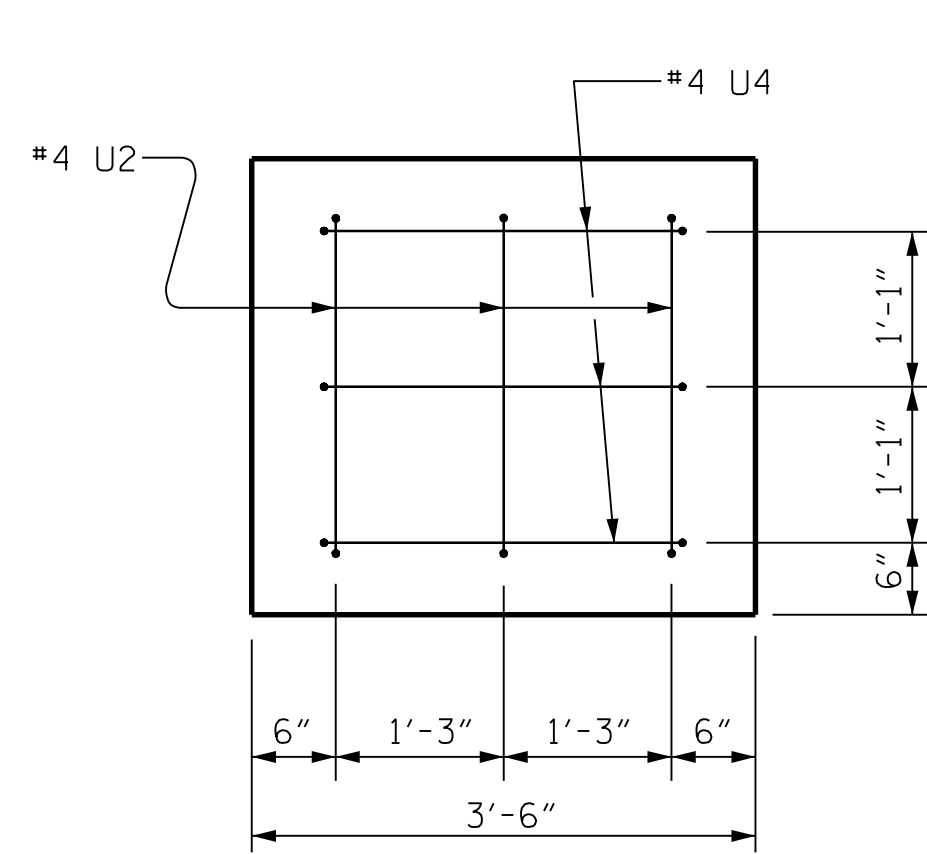
DRAWN BY : B. WADSWORTH DATE : 06-15 DWG. No.  
 CHECKED BY : J. TAYLOR DATE : 06-15  
 DESIGN ENGINEER : J. TAYLOR DATE : 06-15



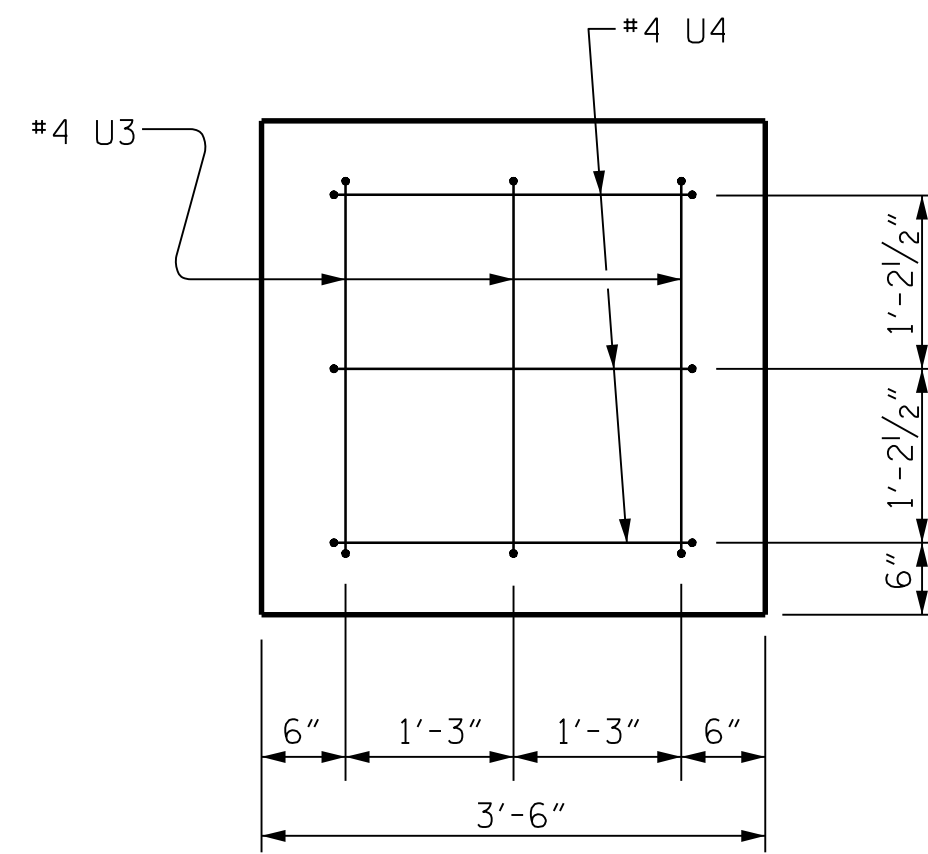
FILE: R:\mcd\192915B Structures\PLANS\Bent 2 NBL.R2915B\_SD\_B2\_01.dgn  
 DATE: 8/10/2015 7:04:28 AM



SECTION A-A



VIEW X-X



VIEW Y-Y

BAR TYPES

BILL OF MATERIAL

BENT 2

| BAR NO. | SIZE | TYPE | LENGTH  | WEIGHT |
|---------|------|------|---------|--------|
| B1      | #9   | 1    | 40'-10" | 972    |
| B2      | #9   | STR  | 38'-4"  | 912    |
| B3      | #5   | STR  | 38'-4"  | 240    |
| B4      | #4   | STR  | 9'-11"  | 139    |
| B5      | #4   | STR  | 3'-10"  | 18     |
| M1      | #9   | STR  | 24'-9"  | 3029   |
| S1      | #5   | 3    | 7'-11"  | 1057   |
| U1      | #4   | 4    | 6'-8"   | 160    |
| U2      | #4   | 4    | 4'-8"   | 9      |
| U3      | #4   | 4    | 4'-11"  | 10     |
| U4      | #4   | 4    | 5'-0"   | 20     |
| V1      | #9   | 2    | 9'-9"   | 398    |
| V2      | #9   | 2    | 8'-10"  | 360    |
| V3      | #9   | 2    | 7'-11"  | 323    |

REINFORCING STEEL 7647 LBS.

| SP-# | SIZE | TYPE | LENGTH  | WEIGHT |
|------|------|------|---------|--------|
| SP-1 | #5   | *    | 281'-7" | 881    |
| SP-2 | #6   | **   | 199'-2" | 133    |
| SP-3 | #6   | **   | 175'-0" | 117    |
| SP-4 | #6   | **   | 151'-0" | 101    |

SPIRAL COLUMN REINFORCING STEEL 1232 LBS.

\* THE SP-1 SPIRAL REINFORCING STEEL SHALL BE W31 OR D-31 COLD DRAWN WIRE OR #5 PLAIN OR DEFORMED BAR

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

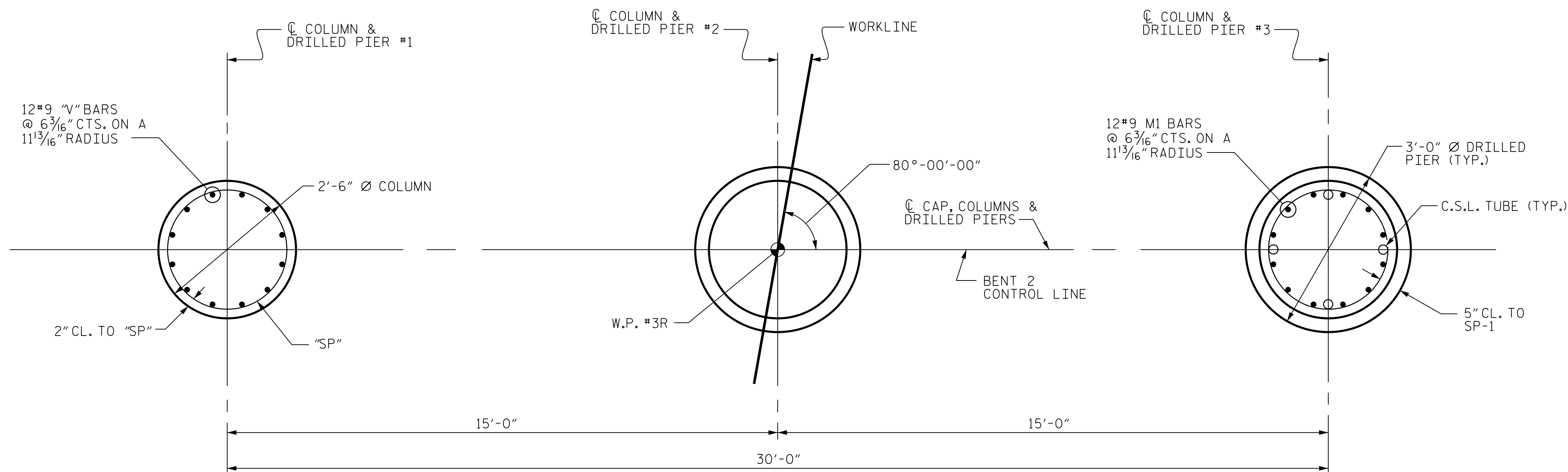
CLASS A CONCRETE BREAKDOWN

| POUR #                 | DESCRIPTION | VOLUME       |
|------------------------|-------------|--------------|
| #2                     | (COLUMNS)   | 3.2 CU. YD.  |
| #3                     | (CAP)       | 15.6 CU. YD. |
| TOTAL CLASS A CONCRETE |             | 18.8 CU. YD. |

DRILLED PIERS

| POUR #                        | DESCRIPTION     | VOLUME        |
|-------------------------------|-----------------|---------------|
| #1                            | (DRILLED PIERS) | 13.7 CU. YD.  |
| 3'-0" Ø DRILLED PIERS IN SOIL |                 | 13.5 LIN. FT. |
| NOT IN SOIL                   |                 | 39.0 LIN. FT. |
| CSL TUBES                     |                 | 228 LIN. FT.  |
| PERMANENT STEEL CASING        |                 | 22.5 LIN. FT. |

ALL BAR DIMENSIONS ARE OUT TO OUT.



COLUMN REINFORCEMENT

DRILLED PIER REINFORCEMENT

PLAN OF DRILLED PIERS & COLUMNS

(REINFORCING STEEL IS TYPICAL FOR EACH COLUMN & DRILLED PIER)

PROJECT NO. R-2915B  
 ASHE COUNTY  
 STATION: 198+64.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

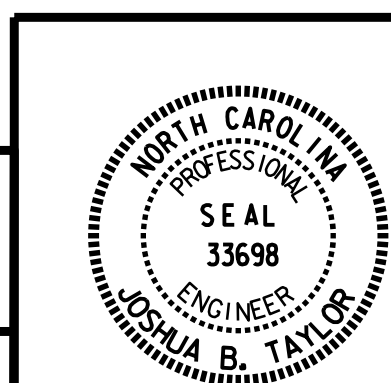
SUBSTRUCTURE

BENT 2

(NBL)

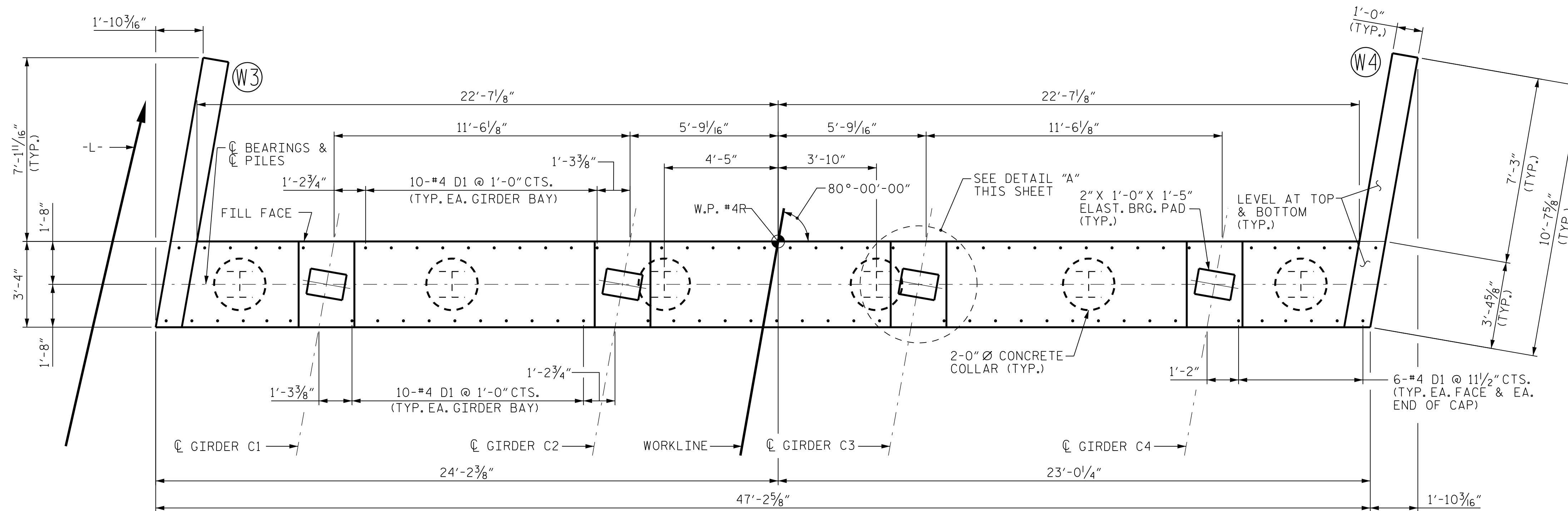
**CDM Smith**  
 CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

DRAWN BY: B. WADSWORTH DATE: 06-15 DWG. No.  
 CHECKED BY: J. TAYLOR DATE: 06-15  
 DESIGN ENGINEER: J. TAYLOR DATE: 06-15

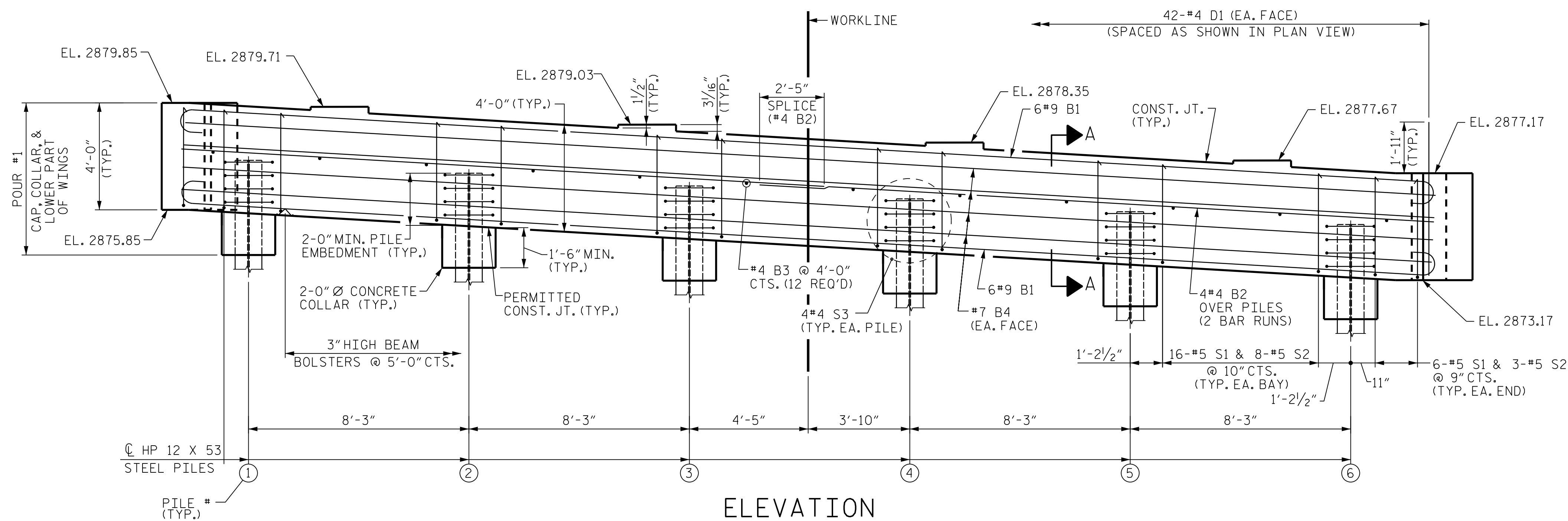


| REVISIONS |     |       | SHEET No. |     |       |
|-----------|-----|-------|-----------|-----|-------|
| No.       | BY: | DATE: | No.       | BY: | DATE: |
| 1         |     |       | 3         |     |       |
| 2         |     |       | 4         |     |       |

TOTAL SHEETS 34



PLAN



ELEVATION

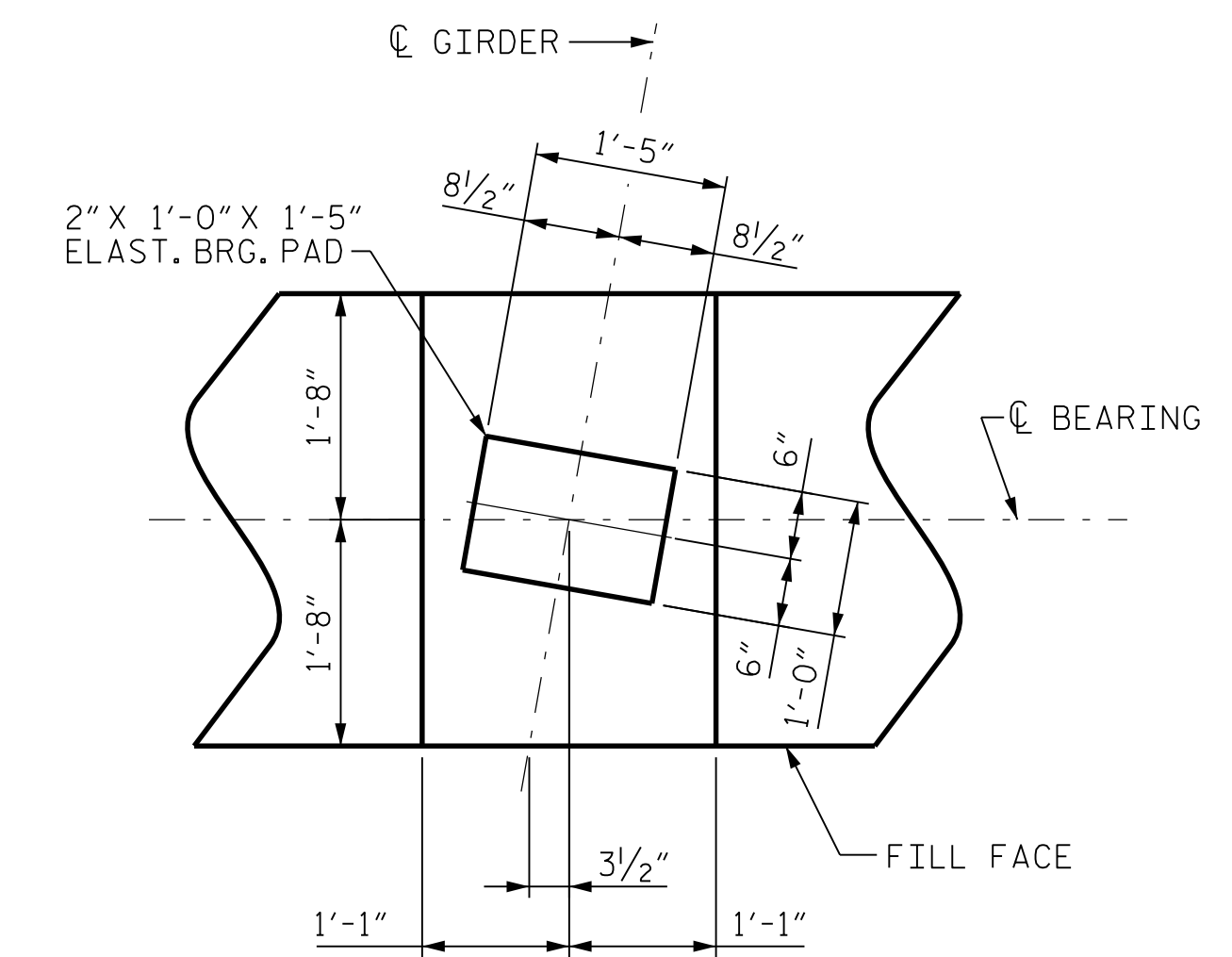
**NOTES**

FOR SECTION A-A, SEE SHEET 3 OF 3.

INSTALL THE 4" Ø DRAIN PIPE THROUGH THE WINGWALL AS REQUIRED FOR REINFORCED BRIDGE APPROACH FILLS, SEE THE ROADWAY PLANS. REINFORCING STEEL IN THE WINGWALL MAY BE SHIFTED AS NECESSARY TO CLEAR THE DRAIN PIPE.

THE TOP SURFACE OF THE END BENT CAP AND WINGS, EXCLUDING THE BEARING SEATS, SHALL BE RAKED TO A DEPTH OF 1/4".

| PILE | TOP OF PILE ELEVATION | ESTIMATED PILE LENGTH (FT) |
|------|-----------------------|----------------------------|
| 1    | 2877.73               | 12.0                       |
| 2    | 2877.24               | 14.0                       |
| 3    | 2876.75               | 16.0                       |
| 4    | 2876.26               | 18.0                       |
| 5    | 2875.77               | 20.0                       |
| 6    | 2875.29               | 22.0                       |



DETAIL "A"  
(TYP. EACH GIRDER)

PROJECT NO. R-2915B  
 ASHE COUNTY  
 STATION: 198+64.50 -L-

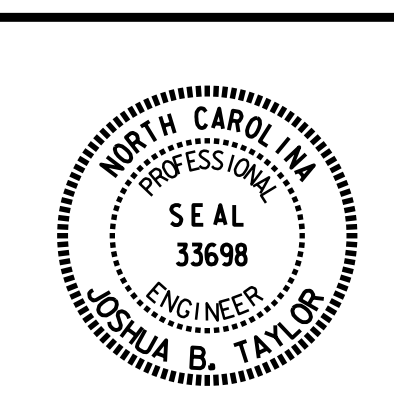
SHEET 1 OF 3

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

**CDM Smith**  
 CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

DRAWN BY: B. WADSWORTH DATE: 06-15  
 CHECKED BY: J. TAYLOR DATE: 06-15  
 DESIGN ENGINEER: J. TAYLOR DATE: 06-15

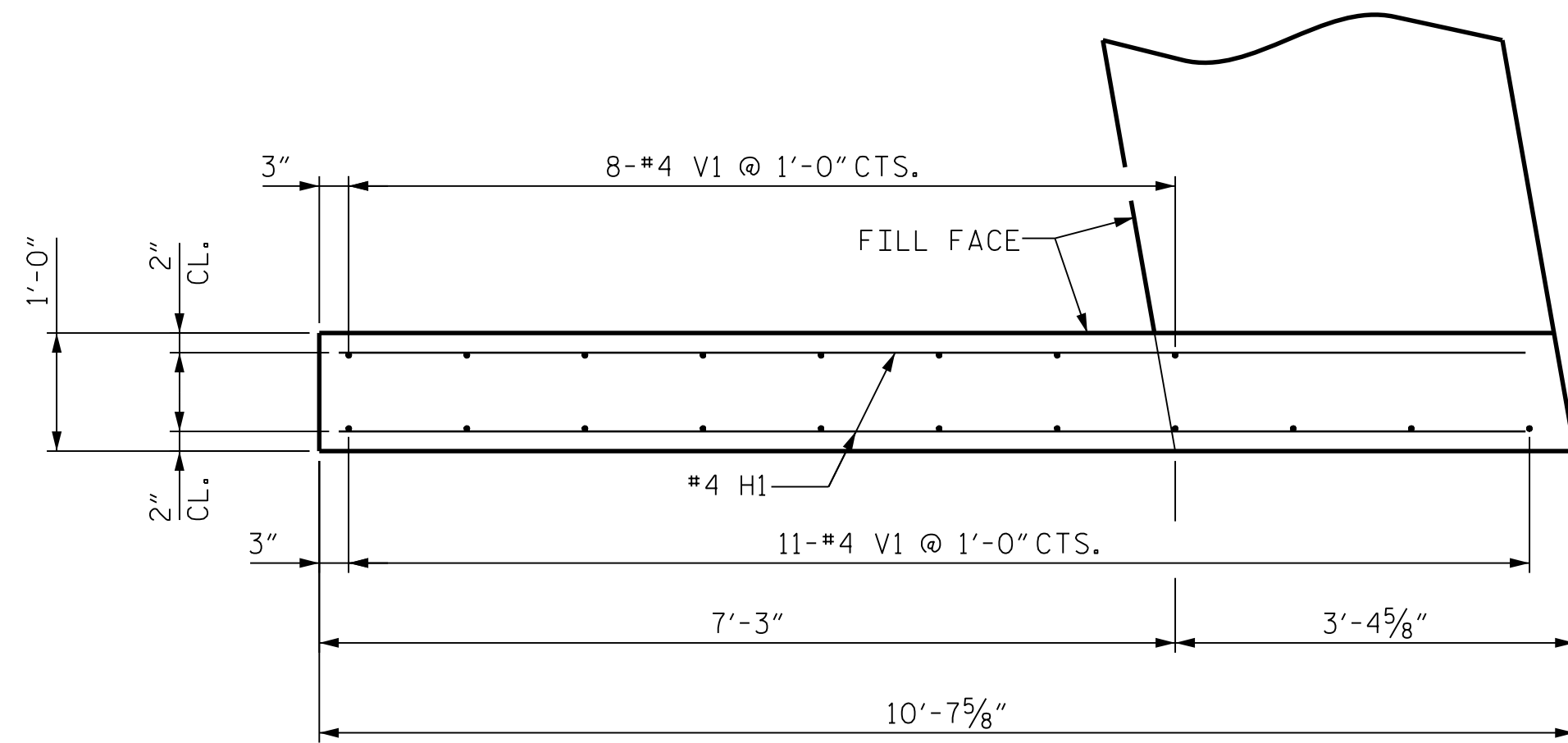
DWG. No.



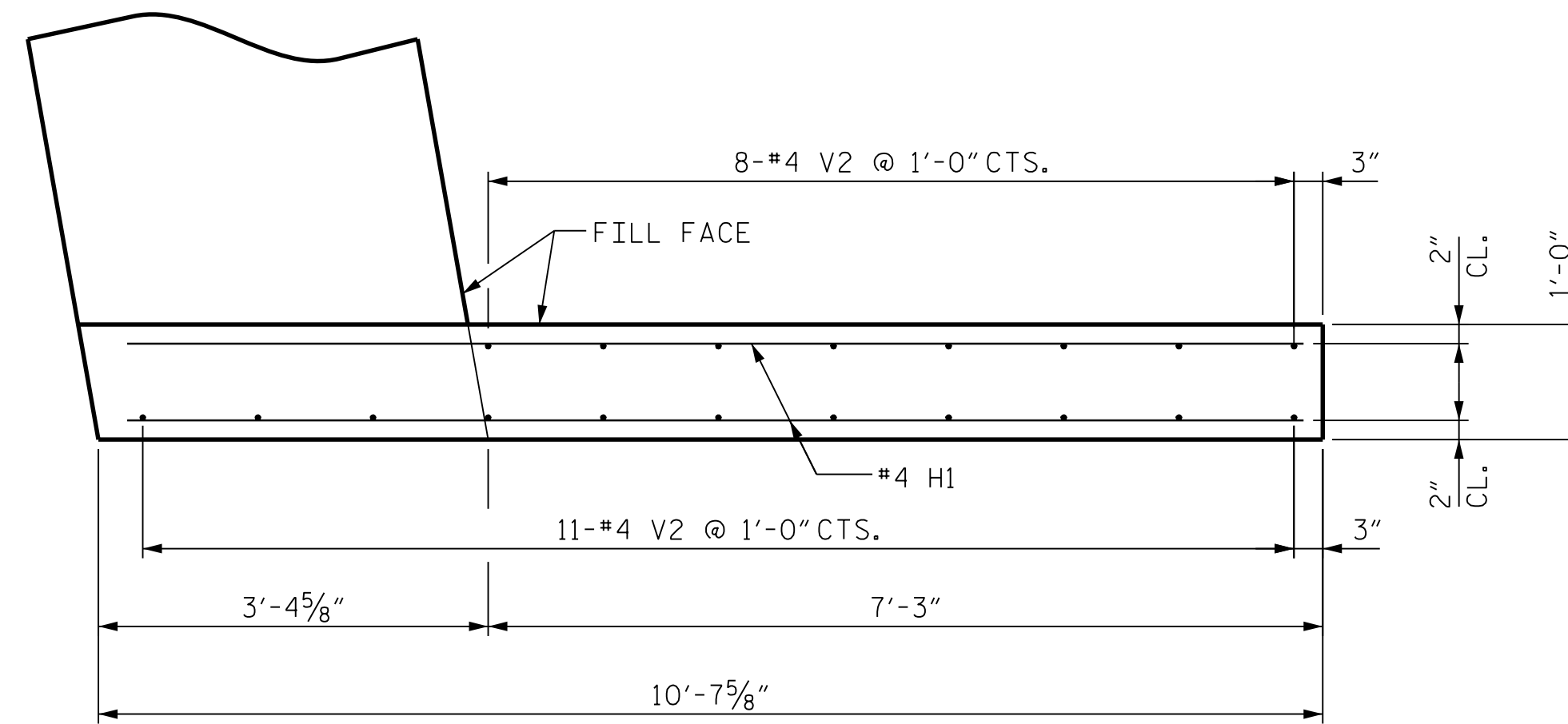
| REVISIONS |     |       | SHEET No. |     |       |
|-----------|-----|-------|-----------|-----|-------|
| No.       | BY: | DATE: | No.       | BY: | DATE: |
| 1         |     |       | 3         |     |       |
| 2         |     |       | 4         |     |       |

TOTAL SHEETS: 34

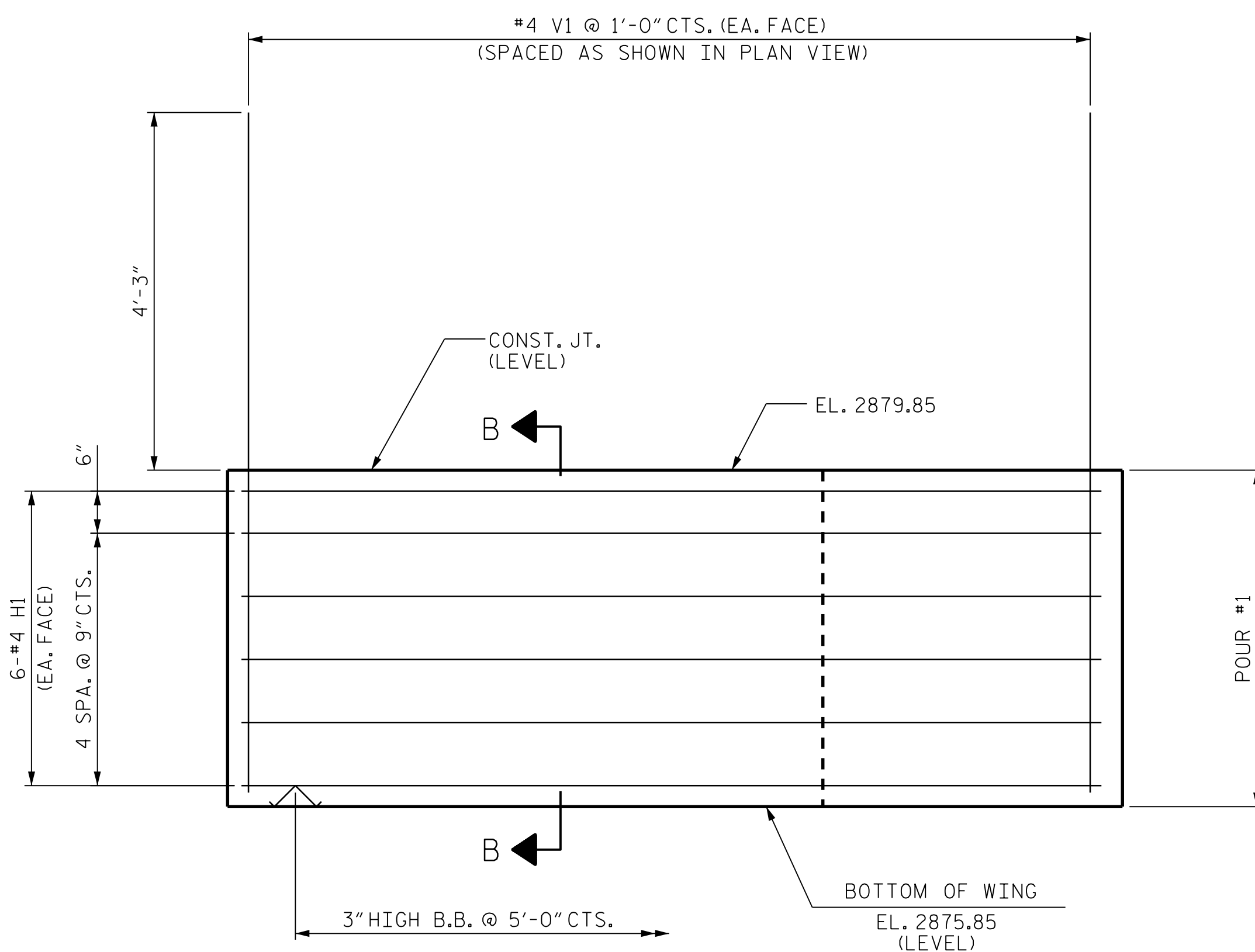
FILE: R:\med\192915B Structures\PLANS\Bent 2 NBL\192915B\_SD\_B2\_01.dgn  
 DATE: 8/10/2015 7:04:32 AM



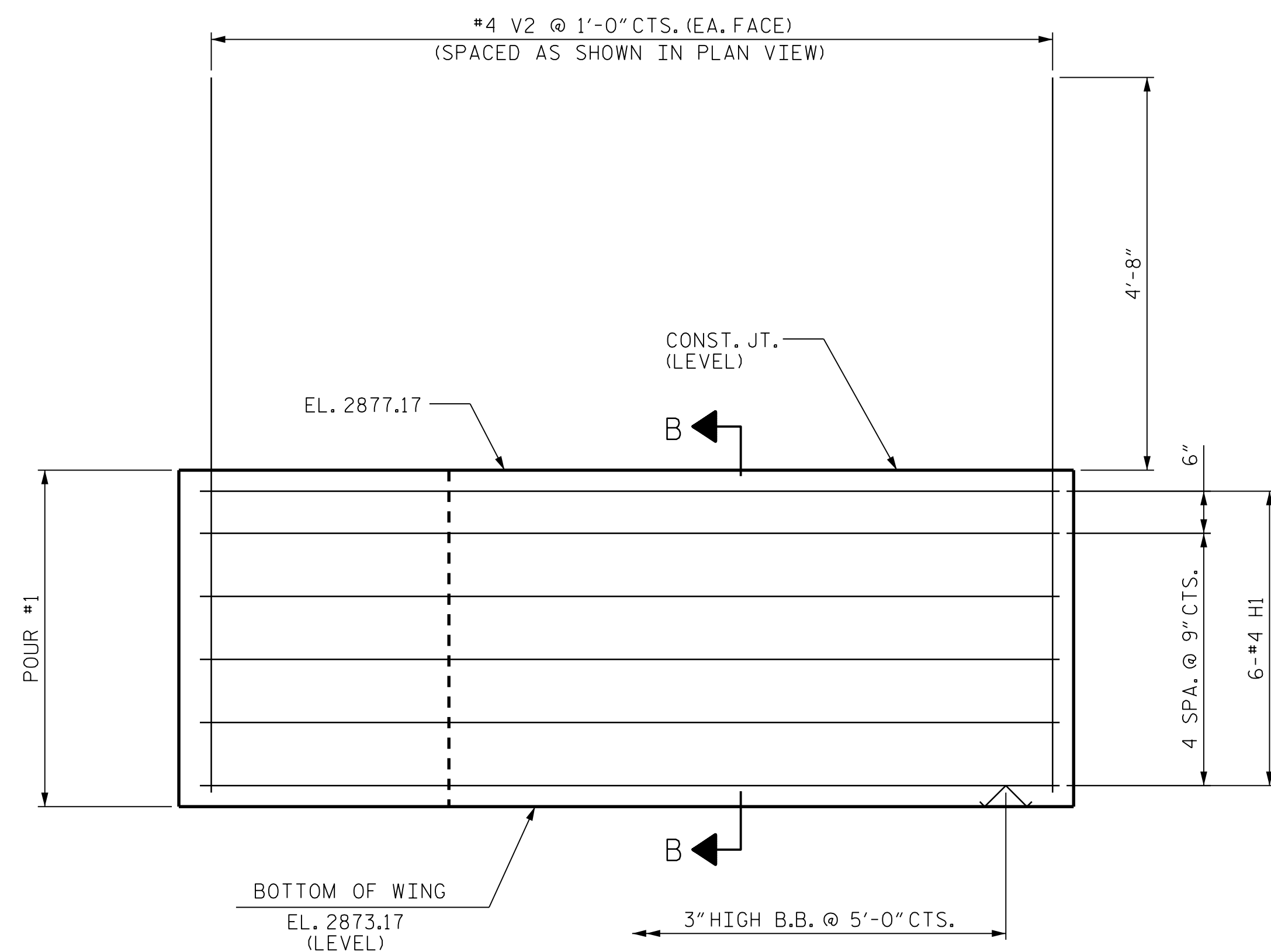
PLAN OF WING (W3)



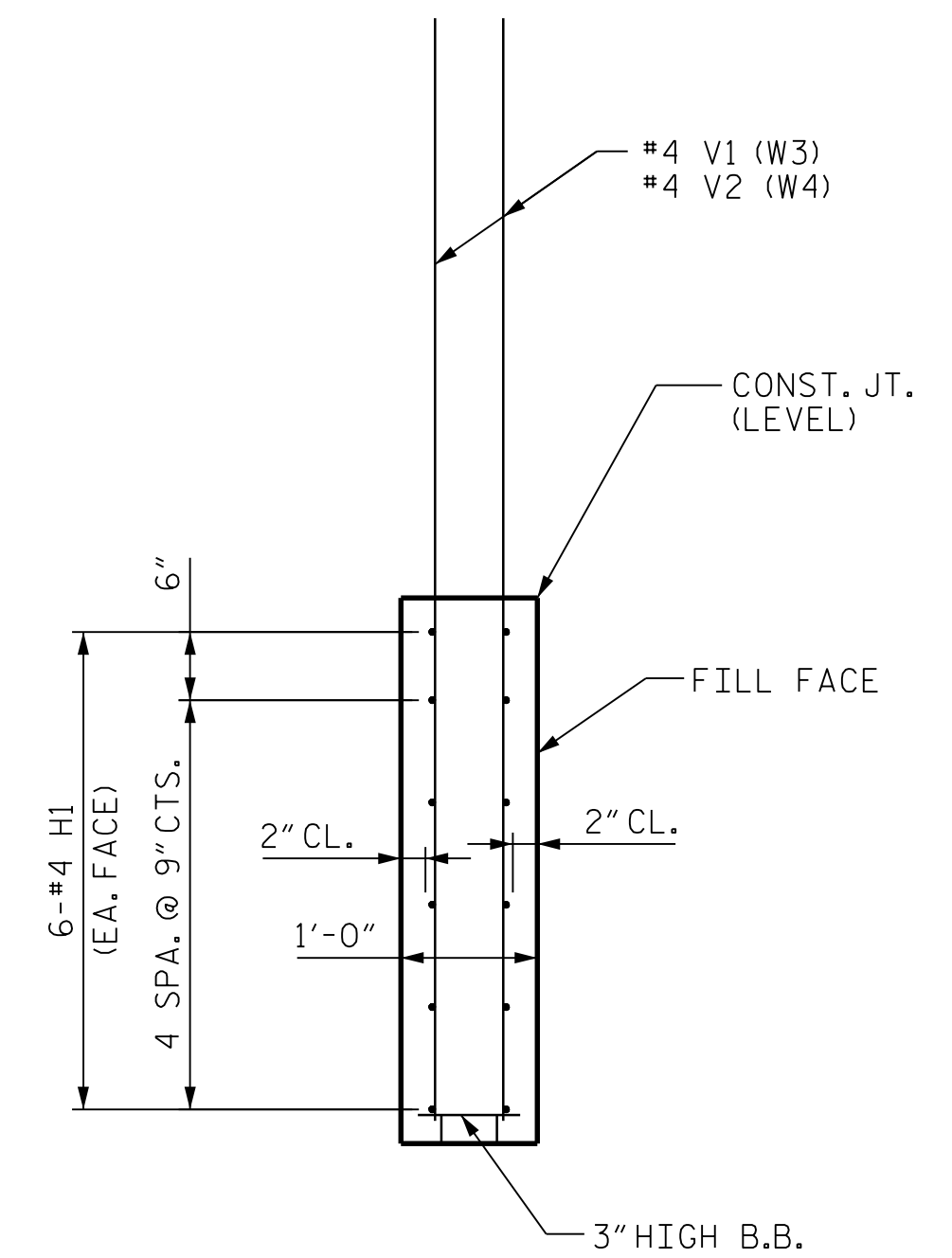
PLAN OF WING (W4)



ELEVATION OF WING (W3)



ELEVATION OF WING (W4)



SECTION B-B

PROJECT NO. R-2915B  
 ASHE COUNTY  
 STATION: 198+64.50 -L-

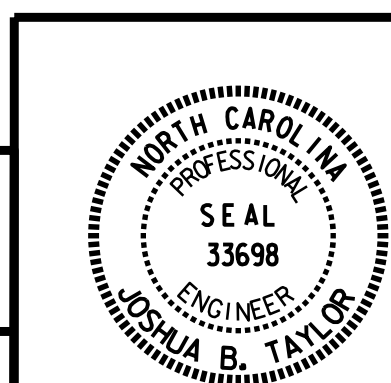
SHEET 2 OF 3

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

**CDM Smith**  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

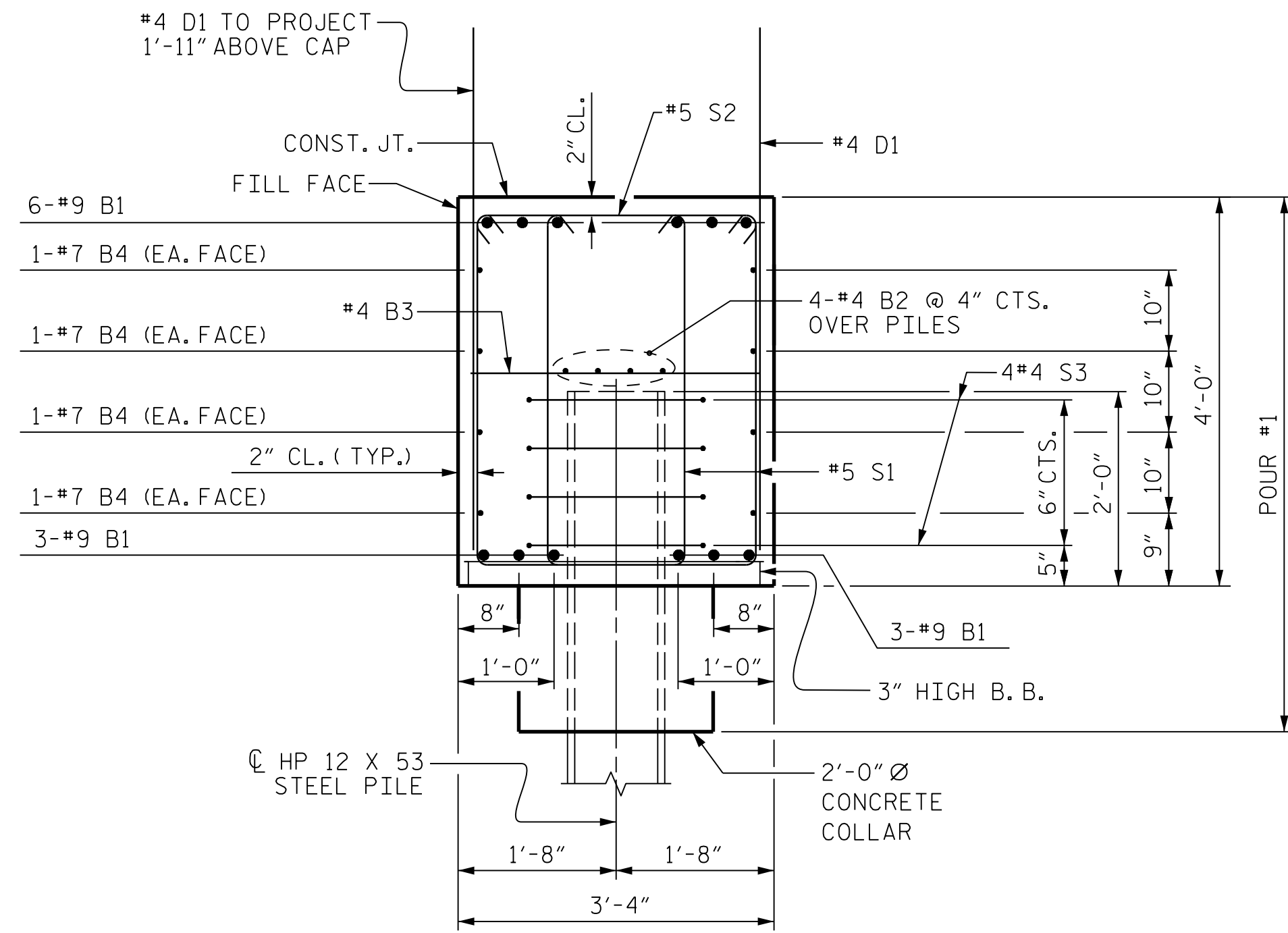
DRAWN BY : B. WADSWORTH DATE : 06-15 DWG. No.  
 CHECKED BY : J. TAYLOR DATE : 06-15  
 DESIGN ENGINEER : J. TAYLOR DATE : 06-15



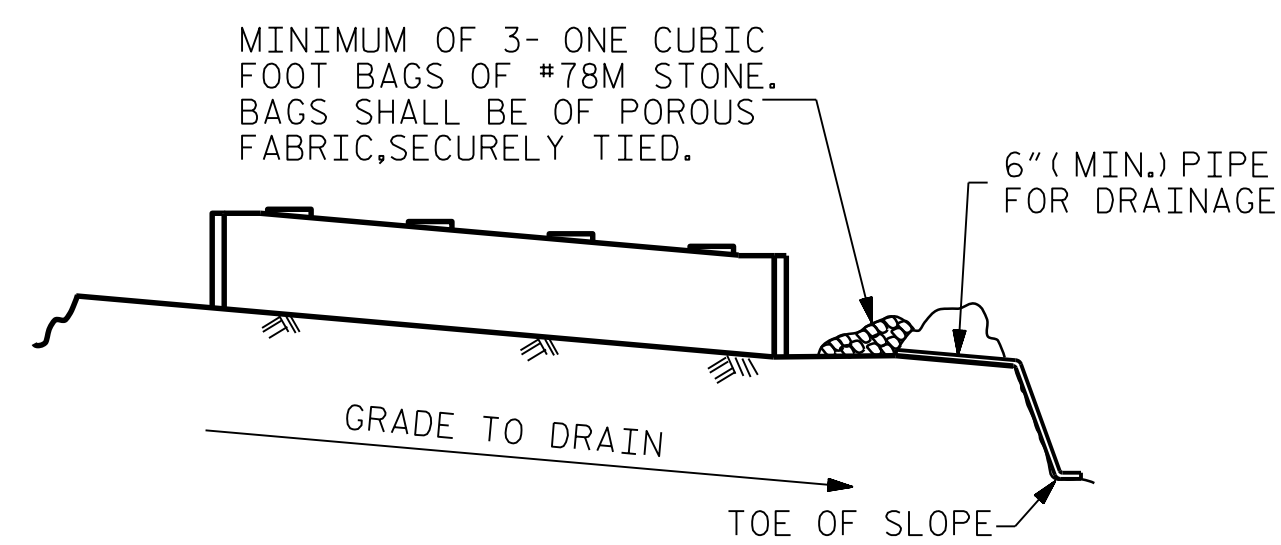
| REVISIONS |     |       | SHEET No. |     |       |
|-----------|-----|-------|-----------|-----|-------|
| No.       | BY: | DATE: | No.       | BY: | DATE: |
| 1         |     |       | 3         |     |       |
| 2         |     |       | 4         |     |       |

TOTAL SHEETS: 34

FILE: R:\med\192915B\Structures\PLANS\Bent2\NBL\2915B\_SD\_B2\_02.dgn  
 DATE: 8/10/2015 7:04:35 AM



SECTION A-A



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

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

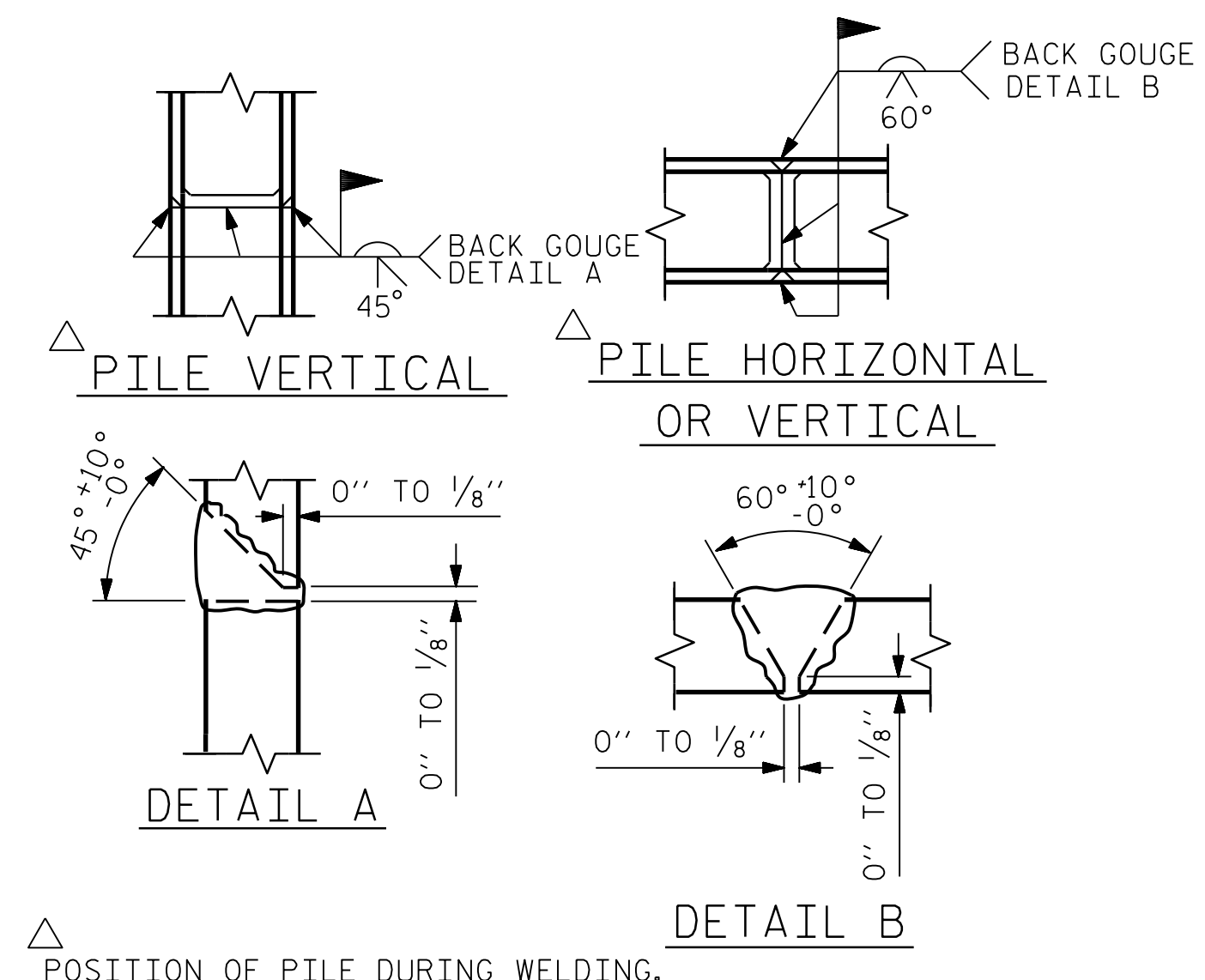
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

**TEMPORARY DRAINAGE AT END BENT**

LOOKING STATION AHEAD

| BAR TYPES                                   |      |      |        |         | BILL OF MATERIAL |      |      |        |        |
|---|------|------|--------|---------|------------------|------|------|--------|--------|
|   |      |      |        |         | END BENT 2       |      |      |        |        |
| BAR NO.                                     | SIZE | TYPE | LENGTH | WEIGHT  | BAR NO.          | SIZE | TYPE | LENGTH | WEIGHT |
| B1  | 12   | #9   | 1      | 49'-4"  | 2013             |      |      |        |        |
| B2  | 8    | #4   | STR    | 24'-8"  | 132              |      |      |        |        |
| B3  | 12   | #4   | STR    | 3'-0"   | 24               |      |      |        |        |
| B4  | 8    | #7   | STR    | 46'-10" | 766              |      |      |        |        |
| D1  | 84   | #4   | STR    | 5'-8"   | 318              |      |      |        |        |
| H1  | 24   | #4   | STR    | 10'-1"  | 162              |      |      |        |        |
| S1  | 92   | #5   | 2      | 10'-6"  | 1008             |      |      |        |        |
| S2  | 46   | #5   | 3      | 3'-11"  | 188              |      |      |        |        |
| S3  | 24   | #4   | 4      | 6'-6"   | 104              |      |      |        |        |
| V1  | 19   | #4   | STR    | 8'-0"   | 102              |      |      |        |        |
| V2  | 19   | #4   | STR    | 8'-5"   | 107              |      |      |        |        |
| REINFORCING STEEL                           |      |      |        |         | 4924 LBS.        |      |      |        |        |
| CLASS A CONCRETE BREAKDOWN                  |      |      |        |         |                  |      |      |        |        |
| POUR #1 CAP, COLLARS, & LOWER PART OF WINGS |      |      |        |         | 26.8 CU. YD.     |      |      |        |        |
| TOTAL CLASS A CONCRETE                      |      |      |        |         | 26.8 CU. YD.     |      |      |        |        |
| HP 12 X 53 STEEL PILES                      |      |      |        |         | LIN. FT. = 102   |      |      |        |        |
| NO. = 6                                     |      |      |        |         |                  |      |      |        |        |
| STEEL PILE POINTS                           |      |      |        |         | NO. = 6          |      |      |        |        |
| PREDRILLING FOR PILES                       |      |      |        |         | LIN. FT. = 30    |      |      |        |        |

ALL BAR DIMENSIONS ARE OUT TO OUT.



**PILE SPLICE DETAILS**

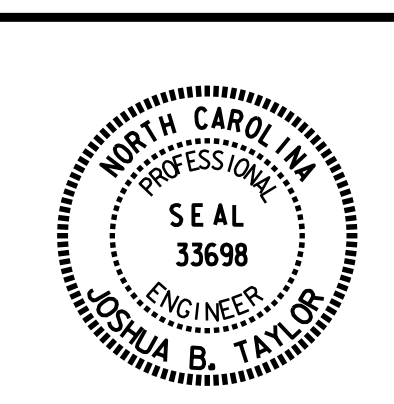
PROJECT NO. R-2915B  
 ASHE COUNTY  
 STATION: 198+64.50 -L-

SHEET 3 OF 3

|  |     |       |     |           |
|--|-----|-------|-----|-----------|
| STATE OF NORTH CAROLINA<br>DEPARTMENT OF TRANSPORTATION<br>RALEIGH |     |       |     |           |
| SUBSTRUCTURE<br>END BENT 2<br>(NBL)                                |     |       |     |           |
| REVISIONS  |     |       |     | SHEET No. |
| No.  | BY: | DATE: | No. | DATE:     |
| 1  |     |       | 3   |           |
| 2  |     |       | 4   |           |
| TOTAL SHEETS   |     |       |     | 34        |

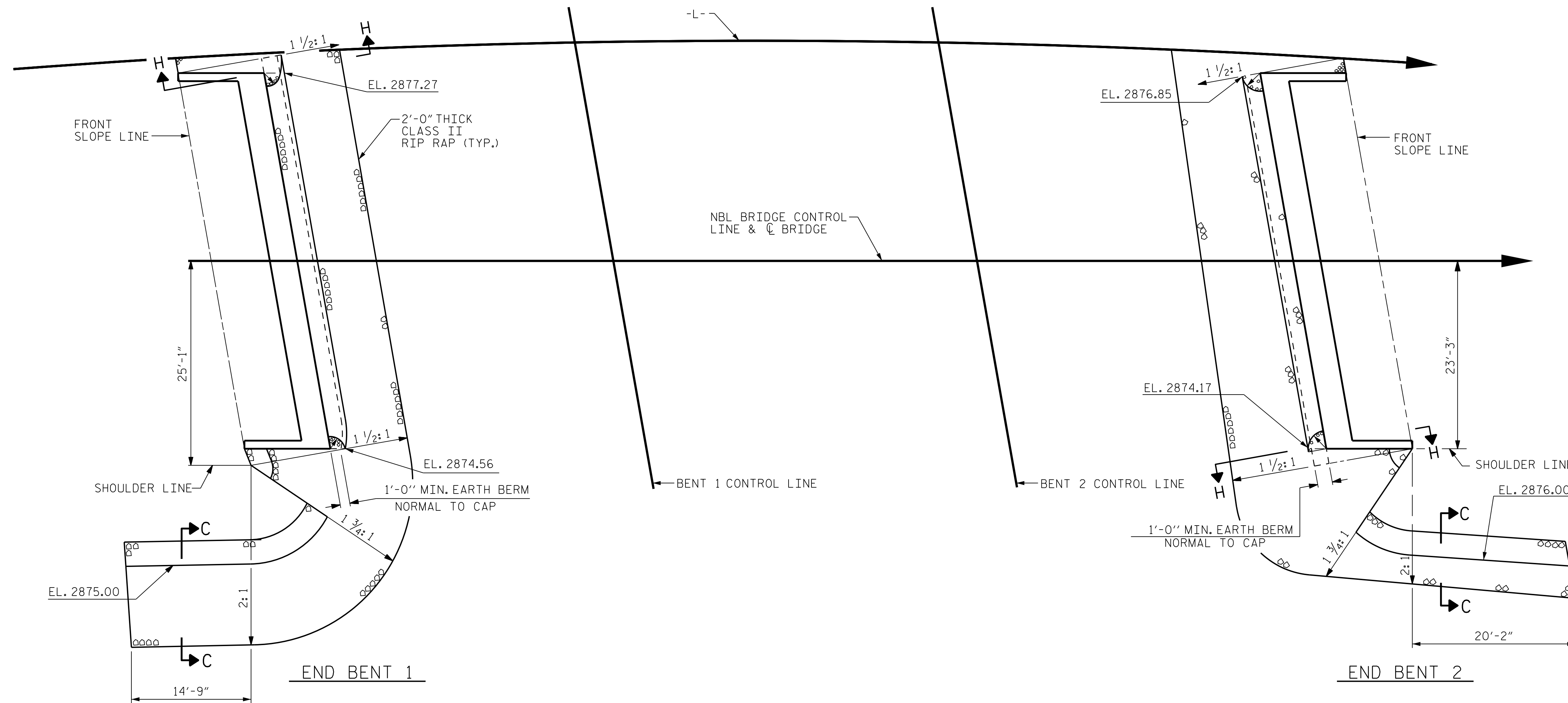
**CDM Smith**  
 CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

DRAWN BY : B. WADSWORTH DATE : 06-15 DWG. No.  
 CHECKED BY : J. TAYLOR DATE : 06-15  
 DESIGN ENGINEER : J. TAYLOR DATE : 06-15

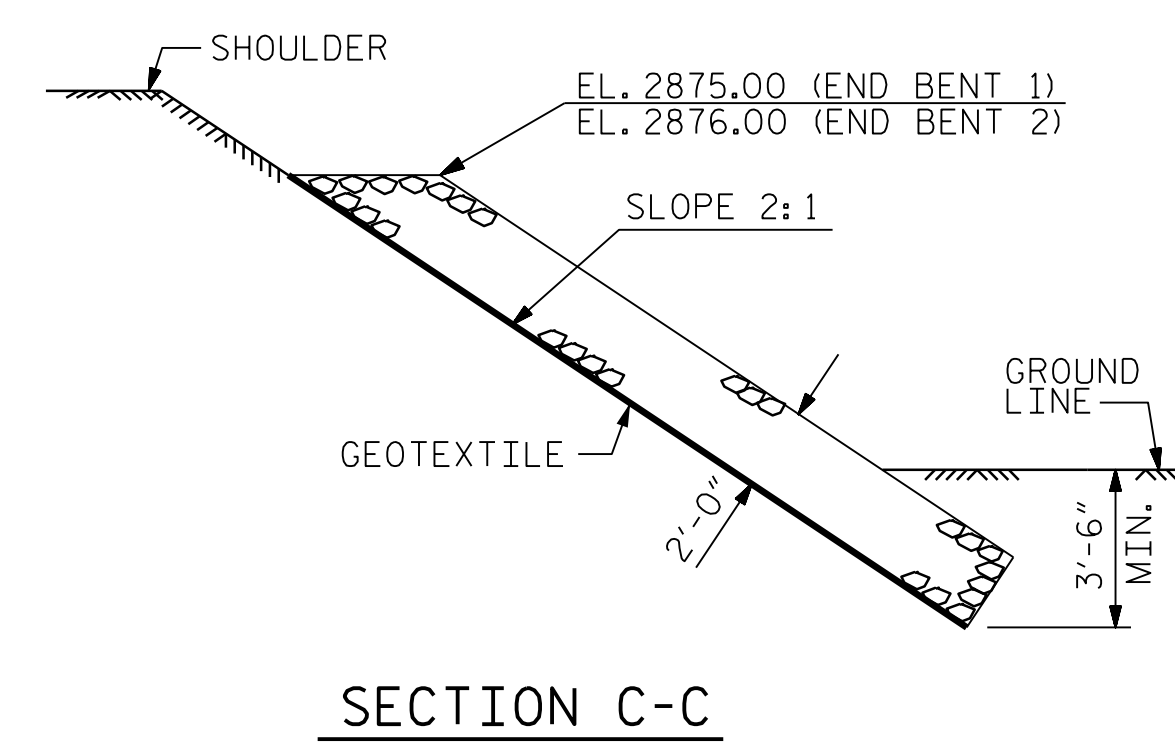
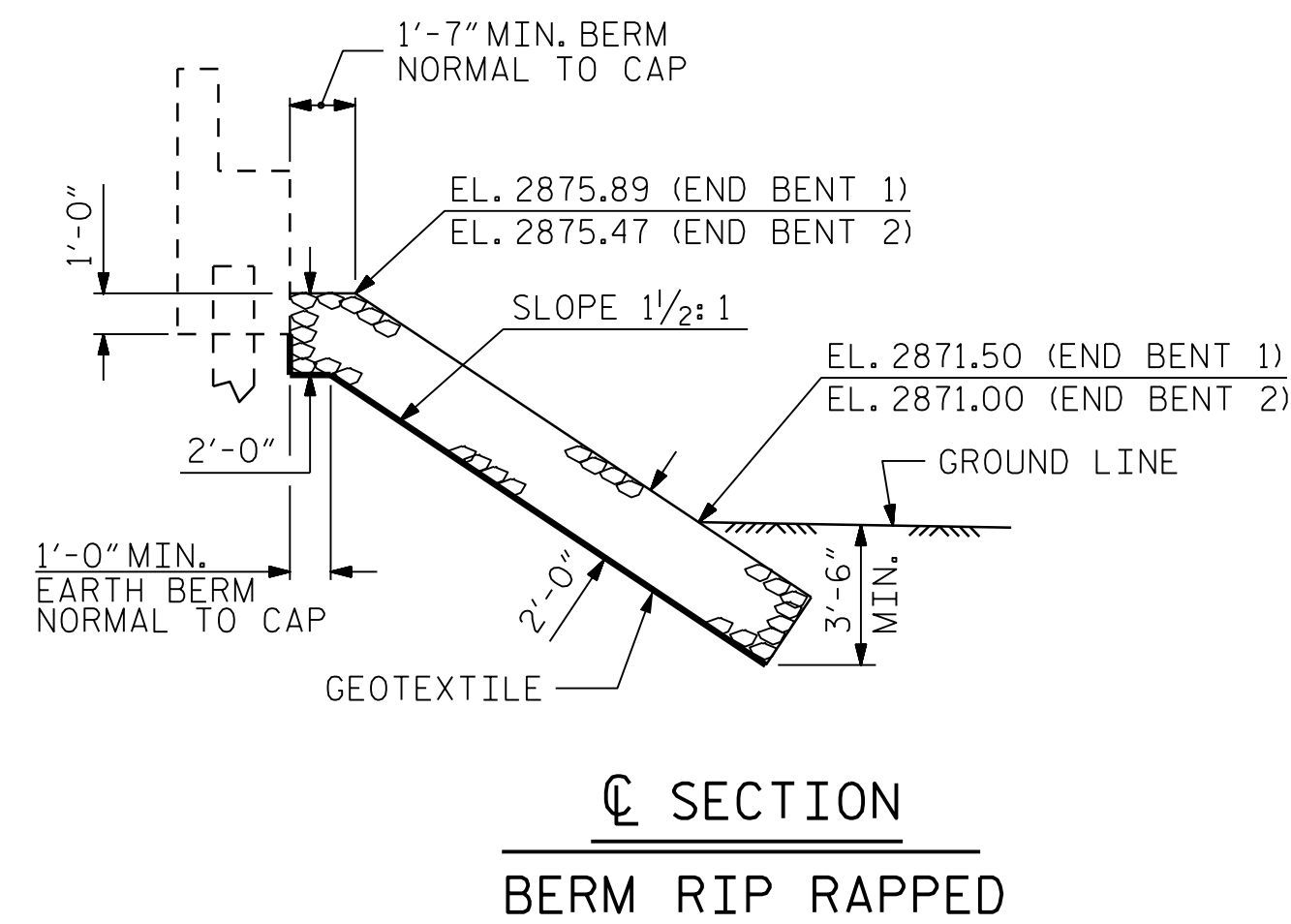
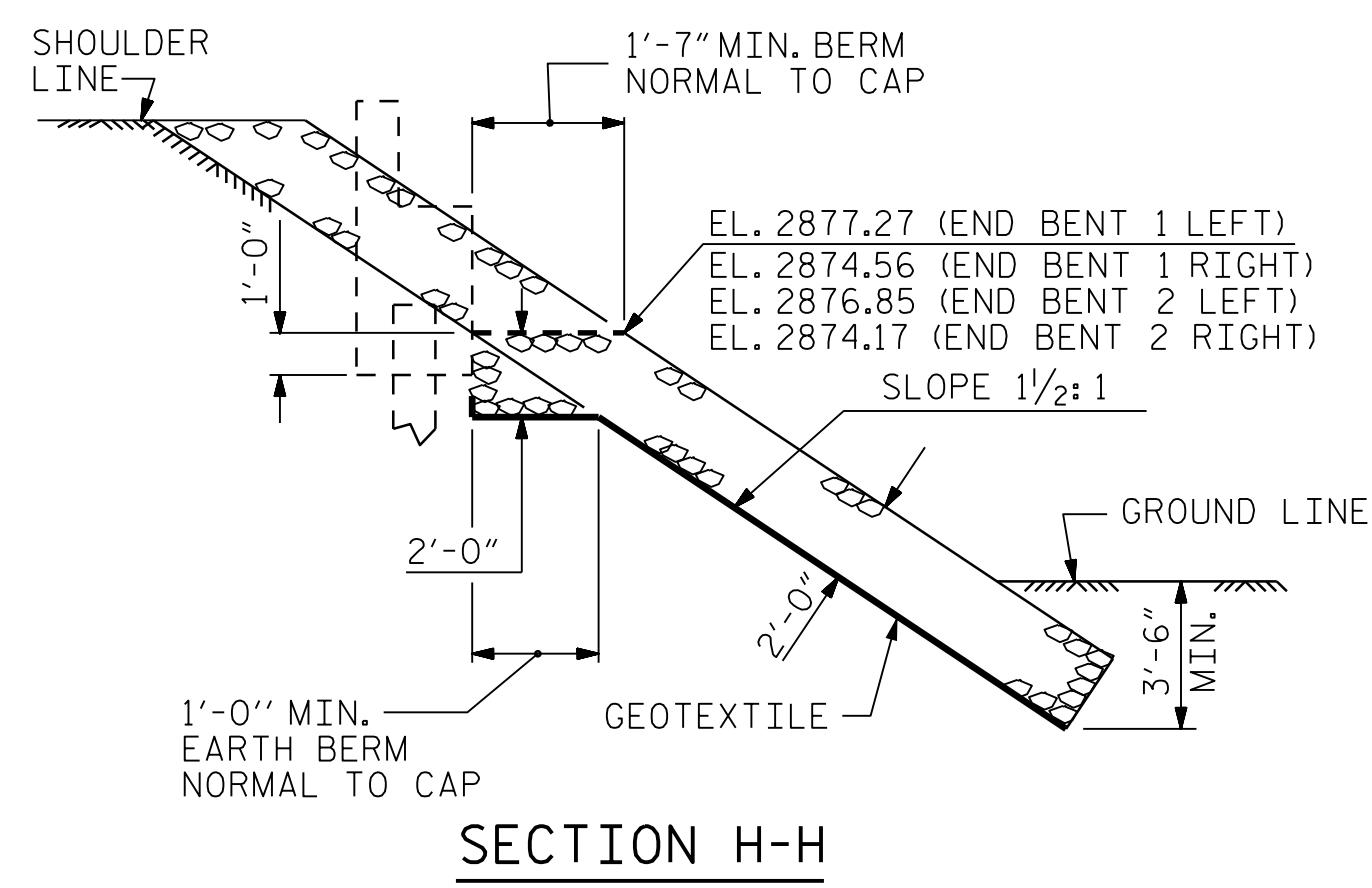


FILE: R:\med\192915B Structures\PLANS\bridge 2 NBL\192915B\_SD\_B2\_03.dgn  
 DATE: 8/10/2015 7:04:37 AM





| ESTIMATED QUANTITIES        |                                |                         |
|-----------------------------|--------------------------------|-------------------------|
| NBL BRIDGE @ STA. 198+64.50 | RIP RAP CLASS II (2'-0" THICK) | GEOTEXTILE FOR DRAINAGE |
|                             | TONS                           | SQUARE YARDS            |
| END BENT 1                  | 125                            | 139                     |
| END BENT 2                  | 155                            | 172                     |



PROJECT NO. R-2915B  
 ASHE COUNTY  
 STATION: 198+64.50 -L-

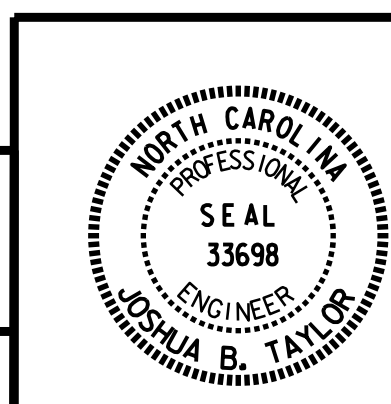
STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
 STANDARD  
 RIP RAP DETAILS  
 (NBL)

|                         |                      |
|-------------------------|----------------------|
| ASSEMBLED BY : J. SLOAN | DATE : 08-14         |
| CHECKED BY : J. TAYLOR  | DATE : 08-14         |
| DRAWN BY : REK 1/84     | REV. 5/1/06R TLA/GM  |
| CHECKED BY : RDU 1/84   | REV. 10/1/11 MAA/GM  |
|                         | REV. 12/21/11 MAA/GM |

**CDM Smith**  
 CDM SMITH  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

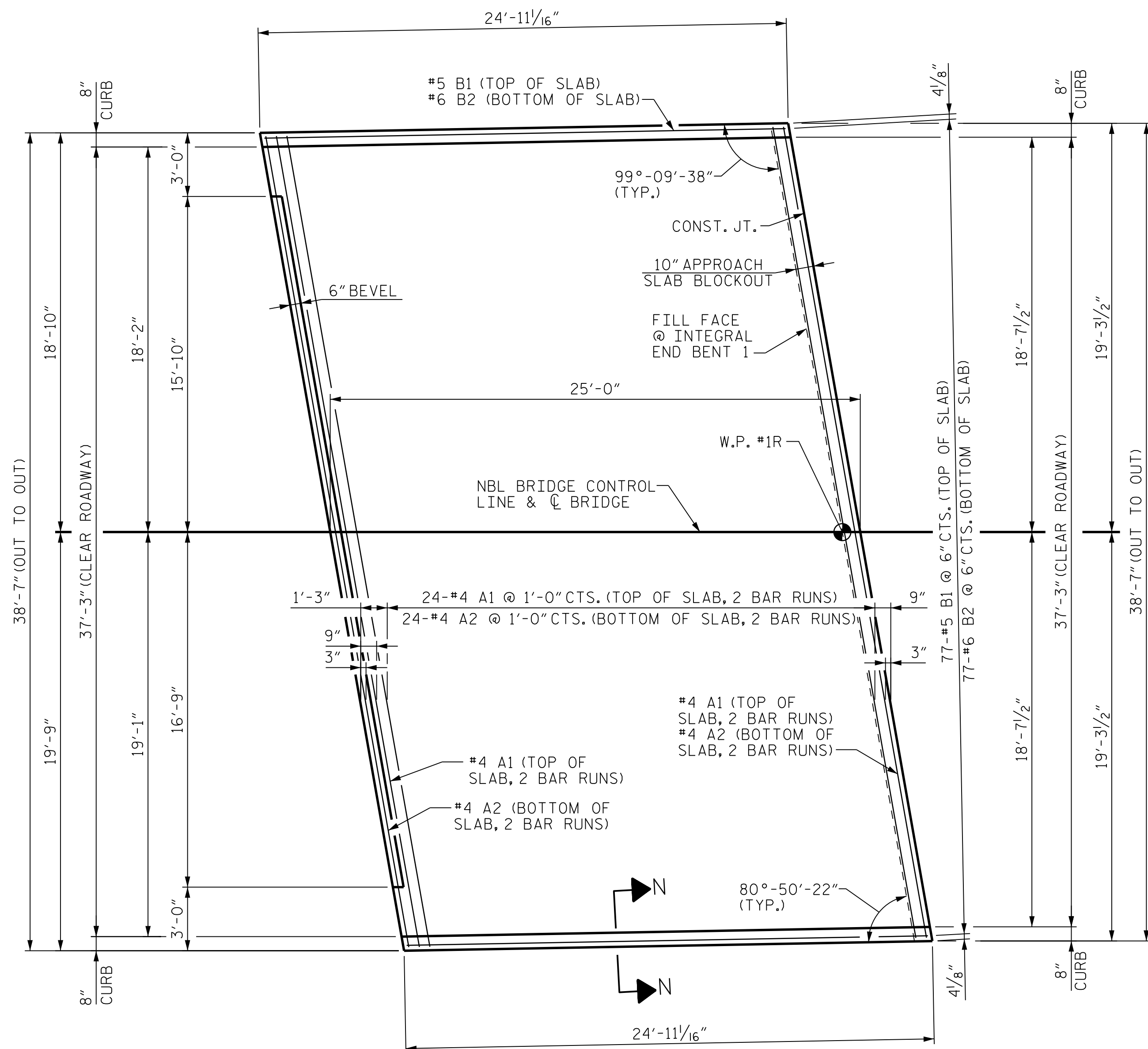
DESIGN ENGINEER : J. TAYLOR DATE : 06-15

DWG. No.

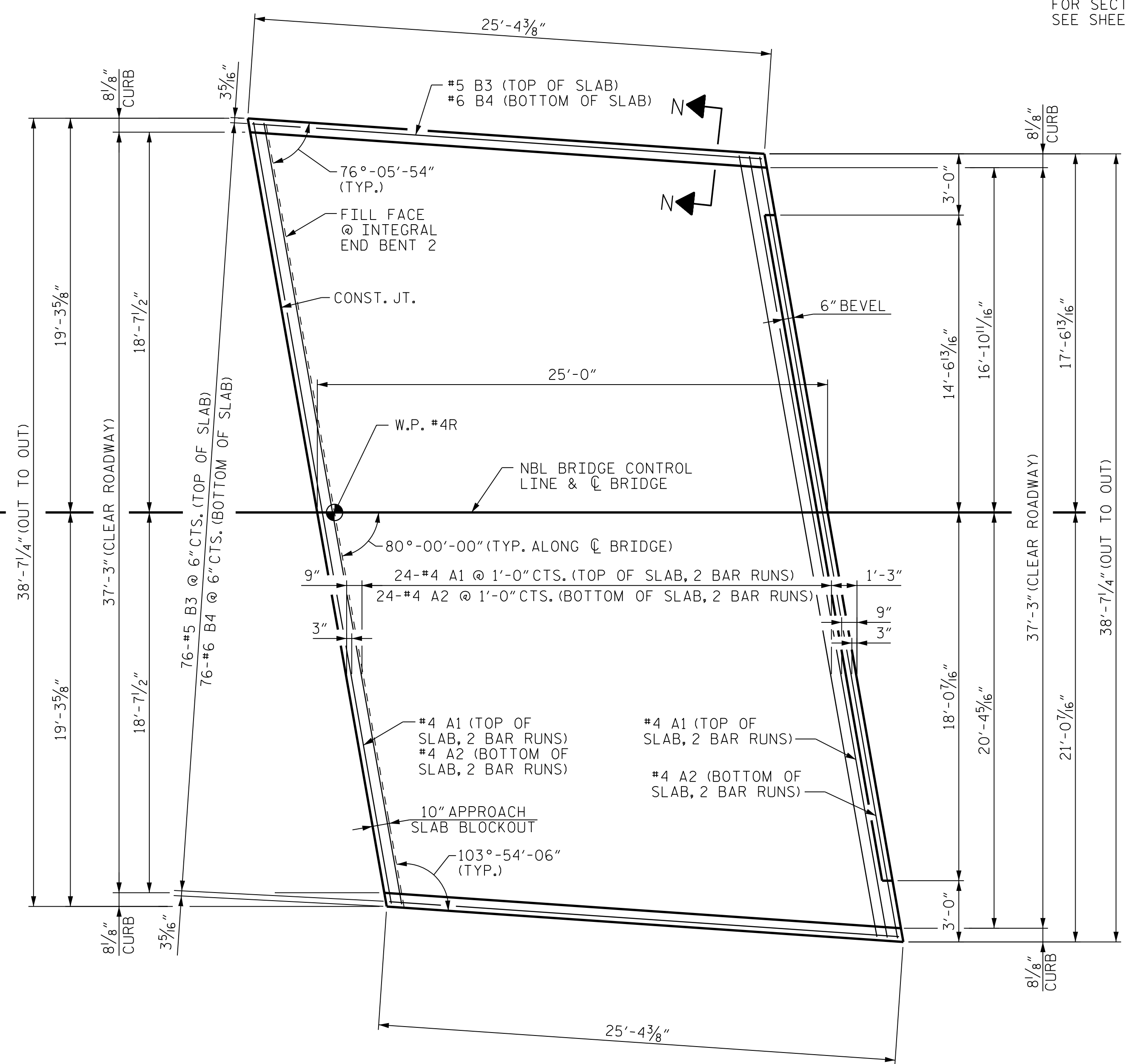


| REVISIONS |     |       |     |     |       | SHEET No.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| No.       | BY: | DATE: | No. | BY: | DATE: | TOTAL SHEETS |
| 1         |     |       | 3   |     |       | 34           |
| 2         |     |       | 4   |     |       |              |

NOTES  
FOR SECTION THRU APPROACH SLAB,  
SEE SHEET 2 OF 2.

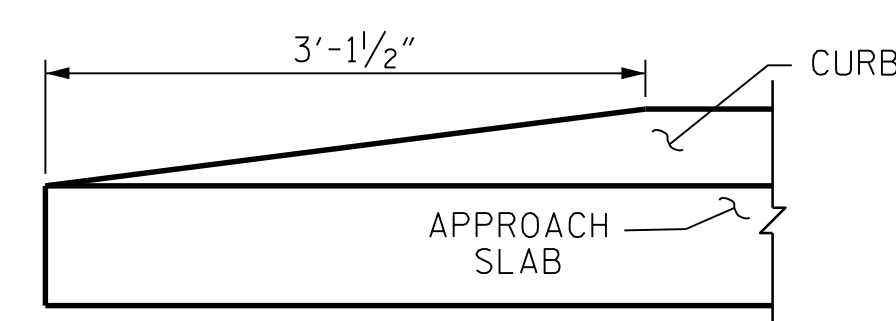


PLAN AT END BENT 1

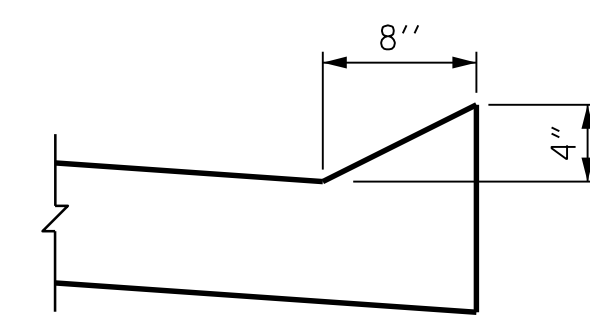


PLAN AT END BENT 2

| APPROACH SLAB SPLICE LENGTHS |              |          |
|------------------------------|--------------|----------|
| BAR SIZE                     | EPOXY COATED | UNCOATED |
| #4                           | 2'-0"        | 1'-9"    |
| #5                           | 2'-6"        | 2'-2"    |
| #6                           | 3'-10"       | 2'-7"    |



END OF CURB WITHOUT SHOULDER BERM GUTTER



SECTION N-N

PROJECT NO. R-2915B  
ASHE COUNTY  
STATION: 198+64.50 -L-

SHEET 1 OF 2

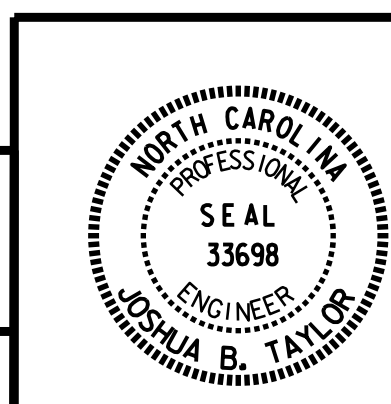
STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
BRIDGE APPROACH SLAB  
FOR INTEGRAL ABUTMENT  
(NBL)

|                         |                      |
|-------------------------|----------------------|
| ASSEMBLED BY : J. SLOAN | DATE : 08-14         |
| CHECKED BY :            | DATE :               |
| DRAWN BY : TLA 10/05    | REV. 10/1/11 MAA/GM  |
| CHECKED BY : GM 5/06    | REV. 12/21/11 MAA/GM |
|                         | REV. 6/13 MAA/GM     |

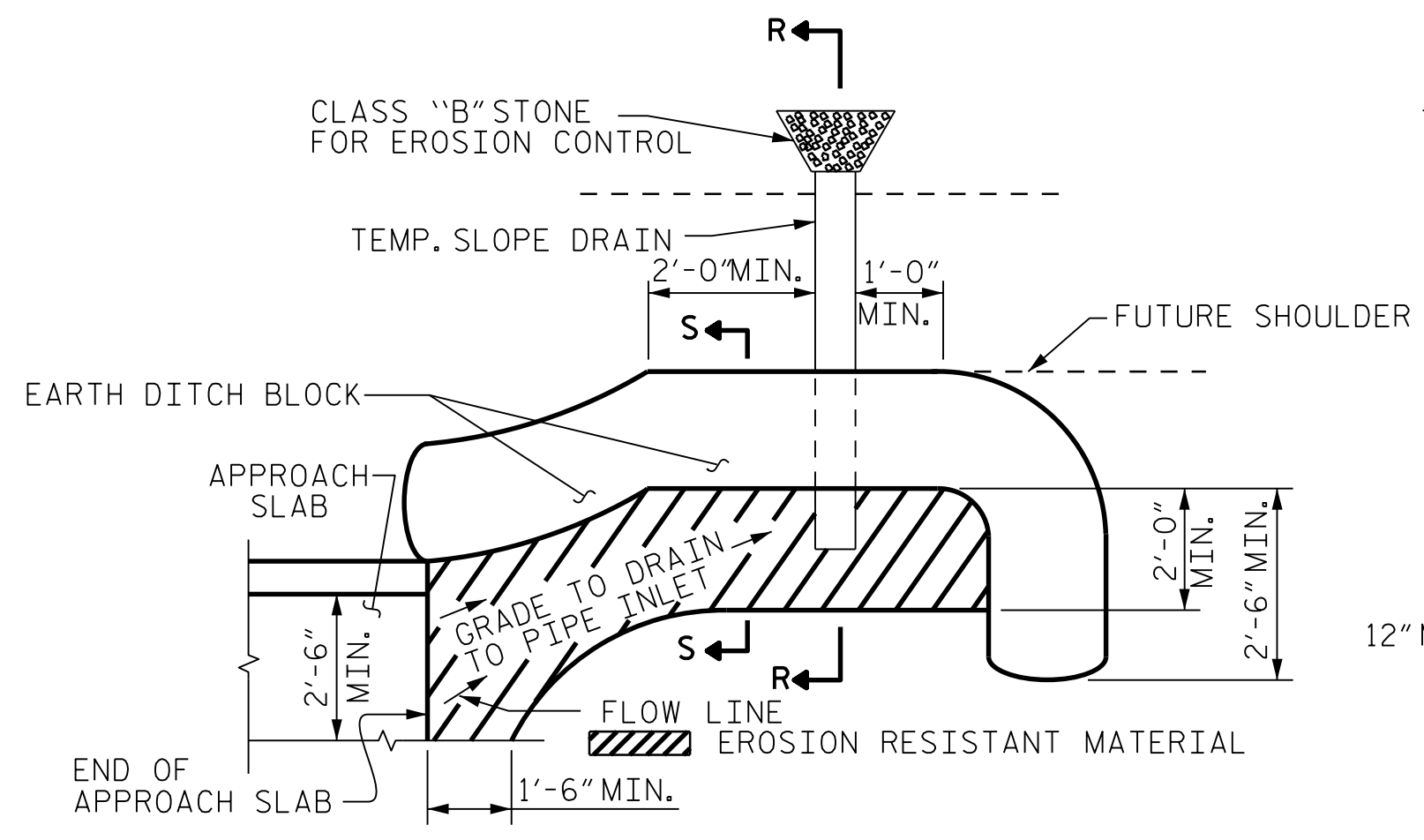
**CDM Smith**  
CDM SMITH  
5400 Glenwood Avenue, Suite 400  
Raleigh, NC 27612-3228  
NC COA No. F-1255

DESIGN ENGINEER : J. TAYLOR DATE : 06-15

DWG. No.

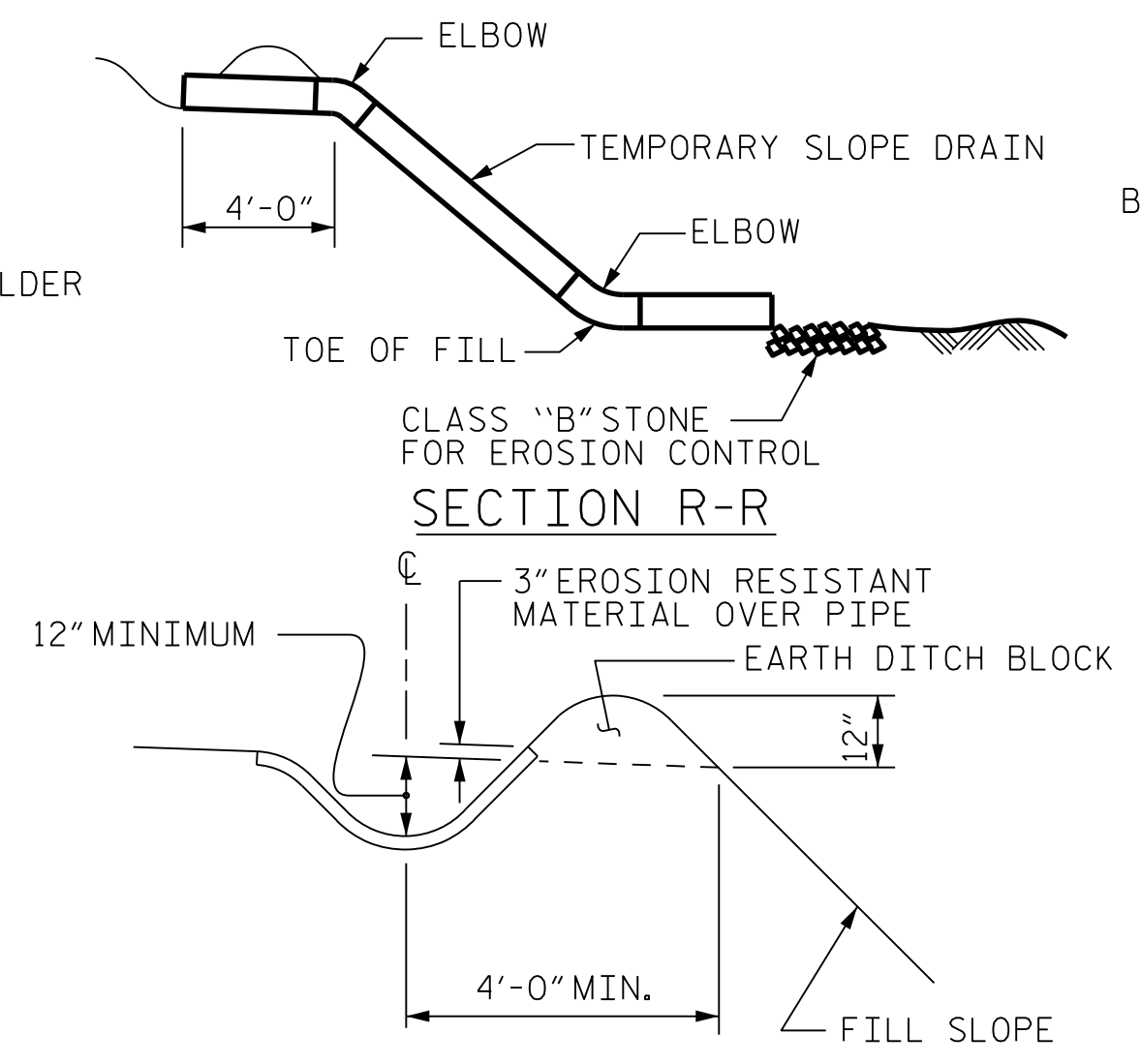


| REVISIONS |     |       |     | SHEET No. |                    |
|-----------|-----|-------|-----|-----------|--------------------|
| No.       | BY: | DATE: | No. | BY:       | DATE:              |
| 1         |     |       | 3   |           |                    |
| 2         |     |       | 4   |           |                    |
|           |     |       |     |           | TOTAL SHEETS<br>34 |

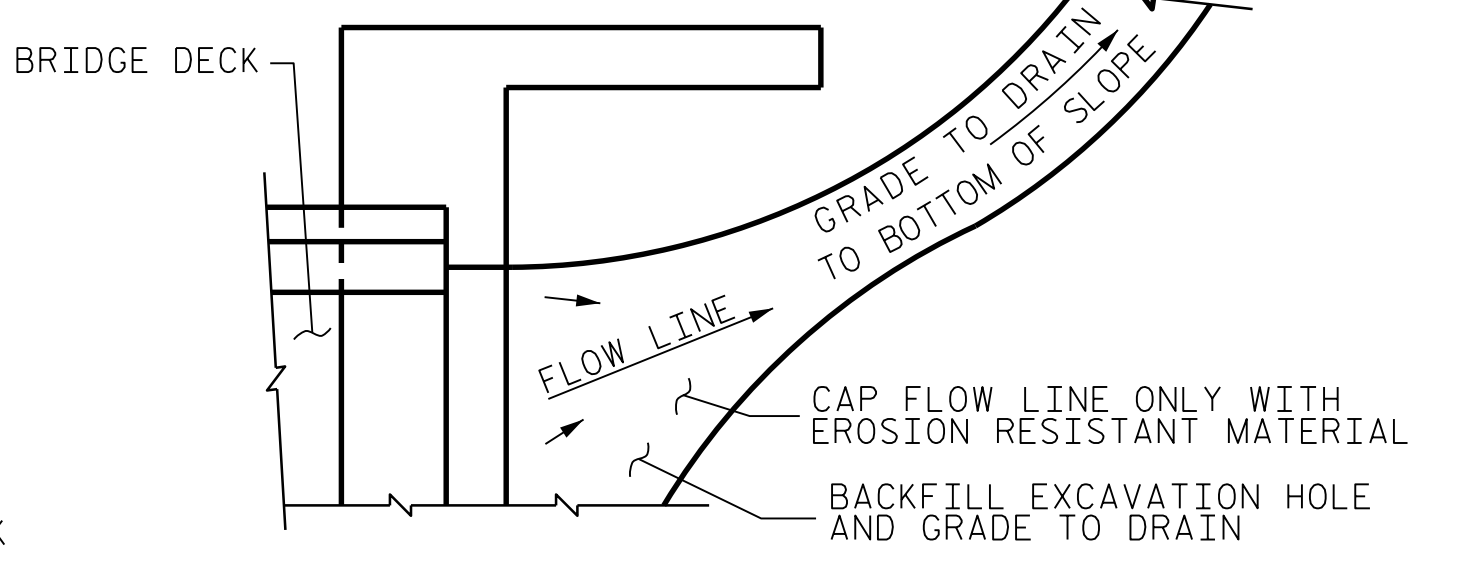


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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



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)

| BILL OF MATERIAL                           |     |      |      |        |        | BILL OF MATERIAL                           |     |      |      |        |        |
|--|-----|------|------|--------|--------|--|-----|------|------|--------|--------|
| APPROACH SLAB AT END BENT 1                |     |      |      |        |        | APPROACH SLAB AT END BENT 2                |     |      |      |        |        |
| BAR  | NO. | SIZE | TYPE | LENGTH | WEIGHT | BAR  | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| *A1  | 52  | #4   | STR  | 20'-5" | 709    | *A1  | 52  | #4   | STR  | 20'-5" | 709    |
| A2   | 52  | #4   | STR  | 20'-4" | 706    | A2   | 52  | #4   | STR  | 20'-4" | 706    |
| *B1  | 77  | #5   | STR  | 24'-1" | 1934   | *B3  | 76  | #5   | STR  | 24'-6" | 1942   |
| B2   | 77  | #6   | STR  | 24'-7" | 2843   | B4   | 76  | #6   | STR  | 25'-0" | 2854   |
| REINFORCING STEEL LBS. 3549                |     |      |      |        |        | REINFORCING STEEL LBS. 3560                |     |      |      |        |        |
| * EPOXY COATED REINFORCING STEEL LBS. 2643 |     |      |      |        |        | * EPOXY COATED REINFORCING STEEL LBS. 2651 |     |      |      |        |        |
| CLASS AA CONCRETE C. Y. 41.7               |     |      |      |        |        | CLASS AA CONCRETE C. Y. 41.8               |     |      |      |        |        |

— APPROACH SLABS BILL OF MATERIAL —

| APPROACH SLAB LOCATION | CLASS AA CONCRETE (CU. YD.) | REINFORCING STEEL (LBS.) | EPOXY COATED REINFORCING STEEL (LBS.) |
|------------------------|-----------------------------|--------------------------|---------------------------------------|
| END BENT 1             | 41.7                        | 3549                     | 2643                                  |
| END BENT 2             | 41.8                        | 3560                     | 2651                                  |
| TOTALS                 | 83.5                        | 7109                     | 5294                                  |

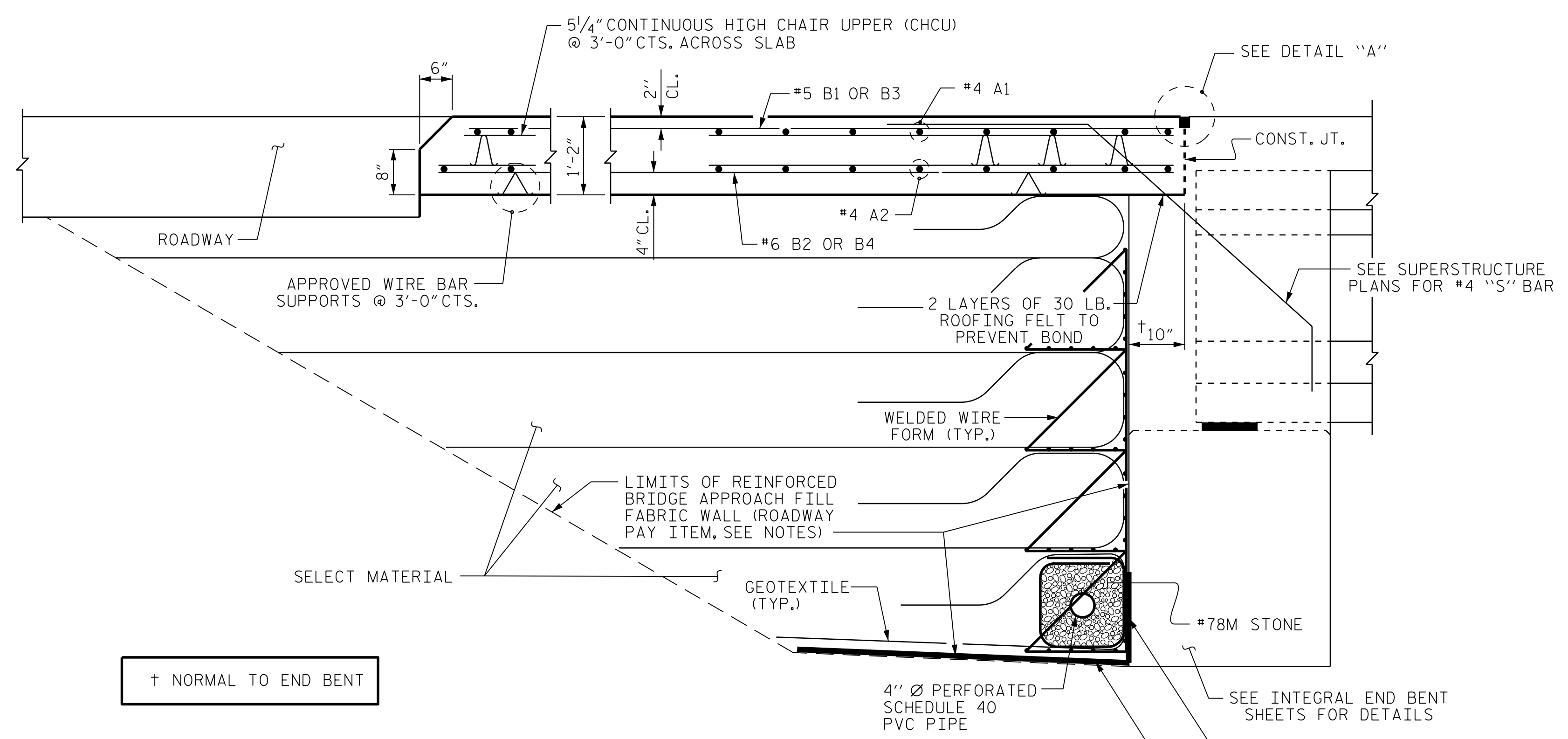
**NOTES**

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

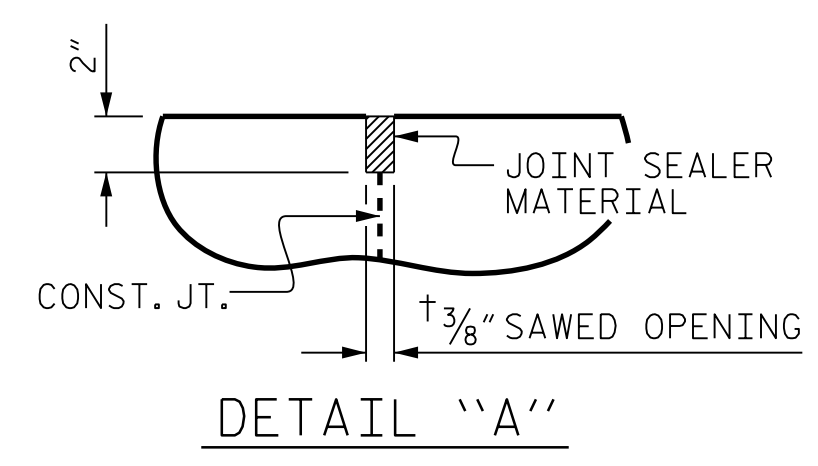
FOR REINFORCED BRIDGE APPROACH FILL FABRIC WALL INCLUDING GEOTEXTILE, IMPERMEABLE GEOMEMBRANE, 4" Ø DRAINAGE PIPE, #78M STONE, WELDED WIRE FORM, AND SELECT MATERIAL, SEE ROADWAY PLANS.

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

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



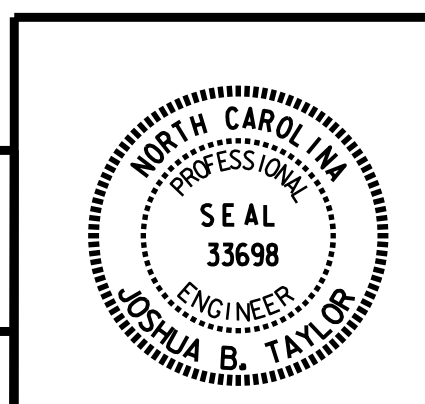
SECTION THRU SLAB



DETAIL "A"

PROJECT NO. R-2915B  
 ASHE COUNTY  
 STATION: 198+64.50 -L-  
 SHEET 2 OF 2

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



**CDM Smith**  
 5400 Glenwood Avenue, Suite 400  
 Raleigh, NC 27612-3228  
 NC COA No. F-1255

DESIGN ENGINEER : J. TAYLOR DATE : 06-15

|                         |                      |
|-------------------------|----------------------|
| ASSEMBLED BY : J. SLOAN | DATE : 05-14         |
| CHECKED BY :            | DATE :               |
| DRAWN BY : TLA 10/05    | REV. 10/1/11 MAA/GM  |
| CHECKED BY : GM 5/06    | REV. 12/21/11 MAA/GM |
|                         | REV. 6/13 MAA/GM     |

| REVISIONS |     |       |     | SHEET No. |
|-----------|-----|-------|-----|-----------|
| No.       | BY: | DATE: | No. | DATE:     |
| 1         |     |       | 3   |           |
| 2         |     |       | 4   |           |

TOTAL SHEETS 34