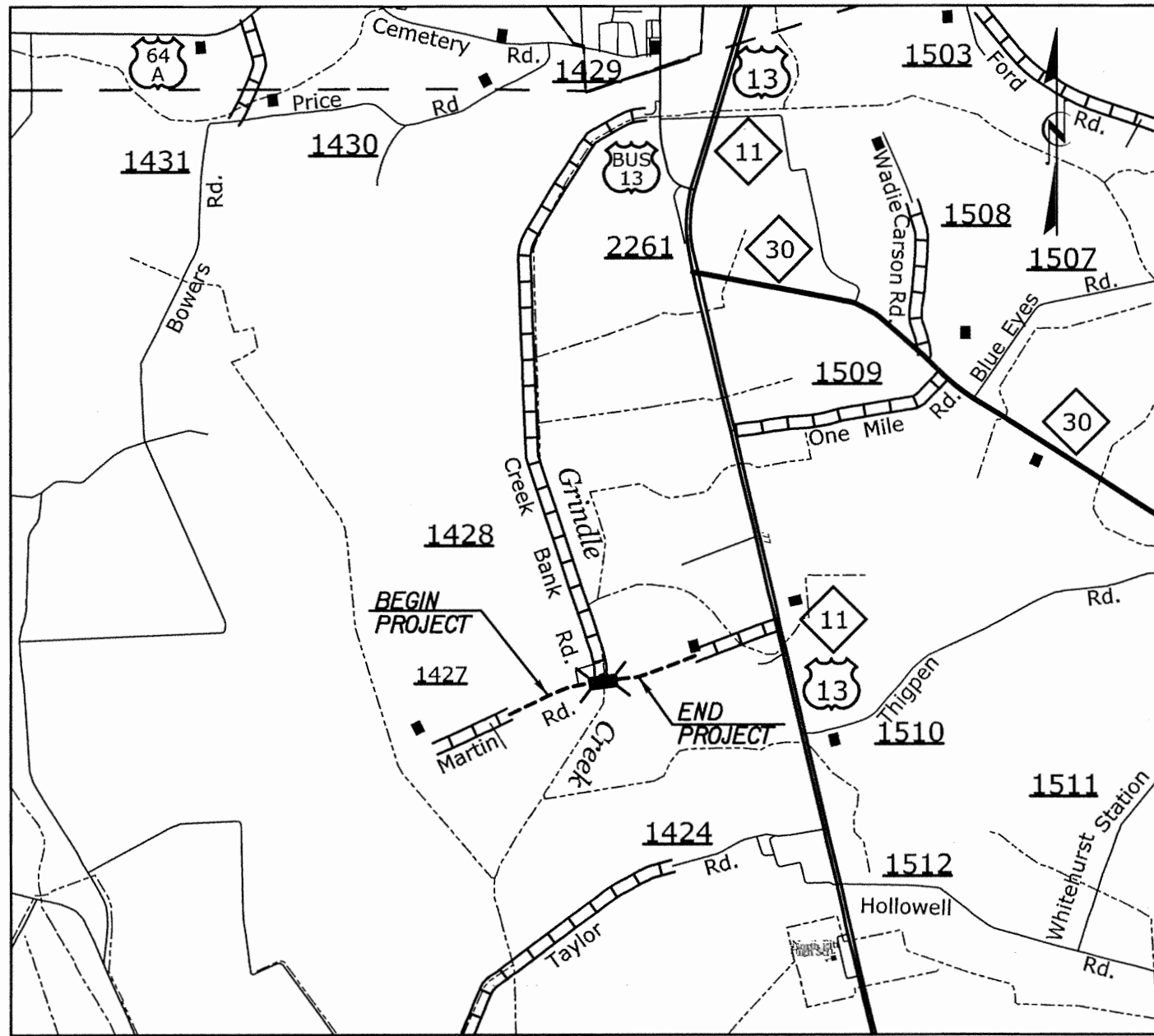


TIP PROJECT: BD-5102J

CONTRACT:

See Sheet 1-A For Index of Sheets



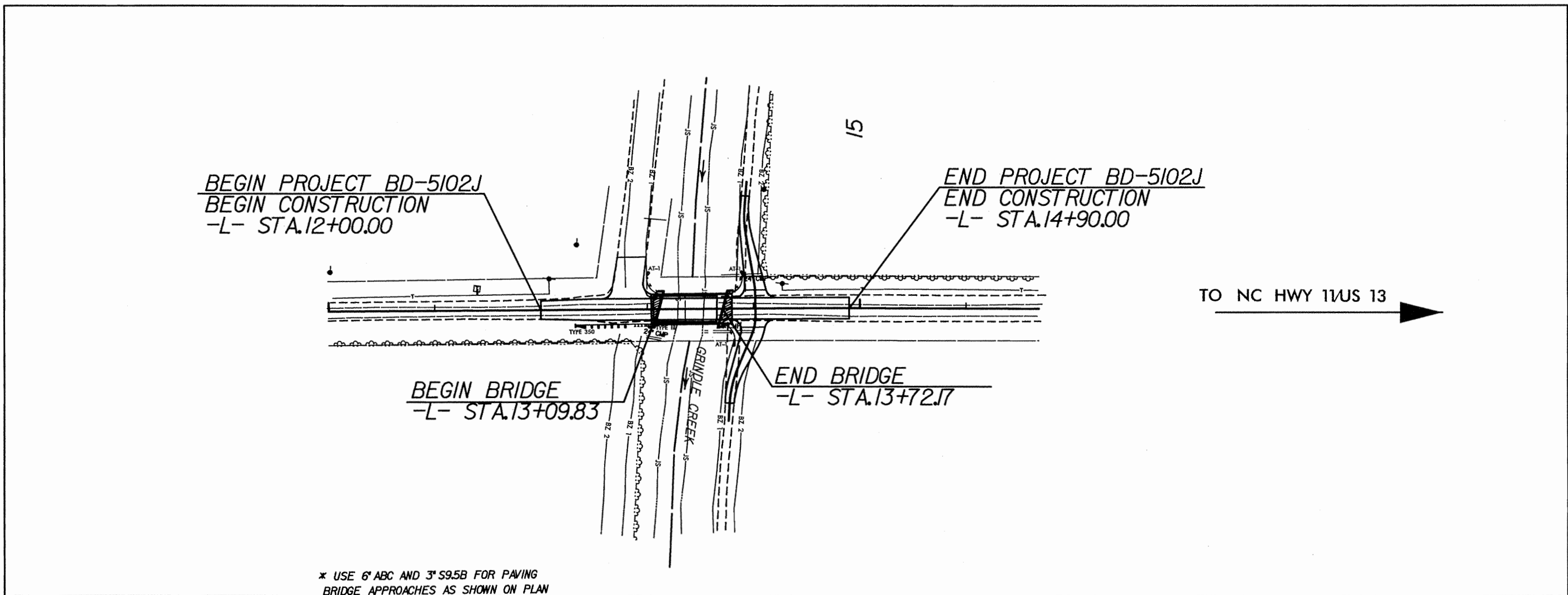
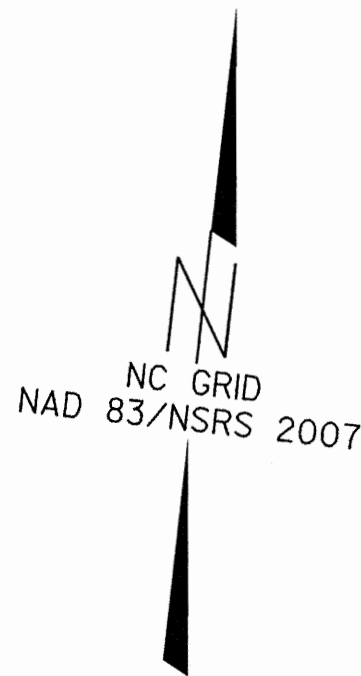
VICINITY MAP

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

PITT COUNTY

LOCATION: BRIDGE NO.162 OVER GRINDLE CREEK  
ON SR 1427 (MARTIN ROAD)

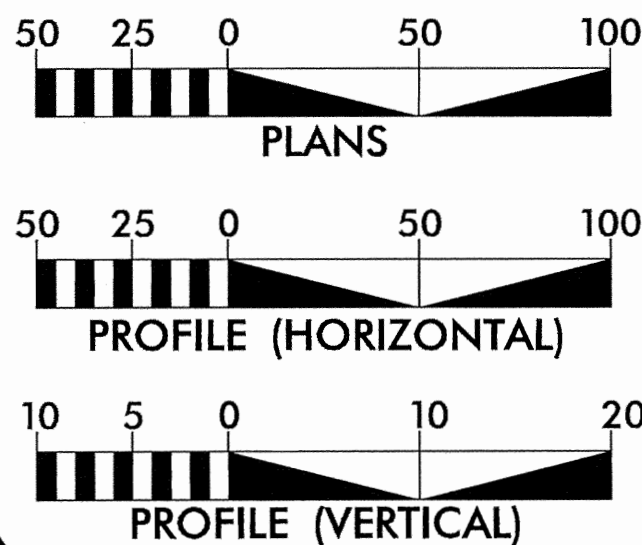
TYPE OF WORK: LOW IMPACT BRIDGE REPLACEMENT



\* USE 6" ABC AND 3" S9.5B FOR PAVING  
BRIDGE APPROACHES AS SHOWN ON PLAN

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

GRAPHIC SCALES



DESIGN DATA

ADT 2000 = 10  
ADT 2035 = 20  
DHV = 10%  
D = 60%  
T = 6% \*  
V = NOT POSTED  
45 MPH ADVISORY  
\* TTST 1% DUAL 2%

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT BD-5102J = 0.04 MI.  
LENGTH OF STRUCTURE TIP PROJECT BD-5102J = 0.01 MI.  
TOTAL LENGTH OF TIP PROJECT BD-5102J = 0.05 MI.

HNTB

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
OCTOBER 3, 2011

LETTING DATE:  
APRIL 3, 2012

Prepared In the Office of:

HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1554

ENRICO A. ROQUE, P.E.  
PROJECT ENGINEER

ANTHONY THOMPSON, P.E.  
PROJECT DESIGNER

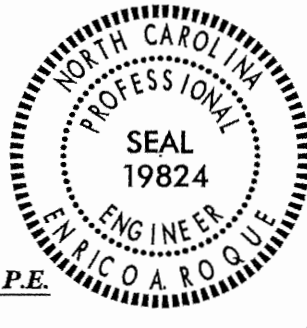
MARIA ROGERSON, P.E.  
NCDOT CONTACT

HYDRAULICS  
ENGINEER

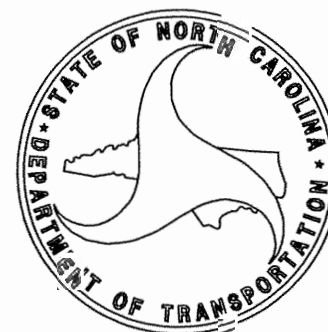
James R. Byrd, P.E.  
SIGNATURE:

ROADWAY  
DESIGN  
ENGINEER

Enrico A. Roque, P.E.  
SIGNATURE:



DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA



STATE HIGHWAY DESIGN ENGINEER

P.E.



REVISIONS

3/9/2012 5:08:43 PM  
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HNTB NORTH CAROLINA, P.C.  
343 E. SIX FORKS ROAD, SUITE 200  
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PROJECT REFERENCE NO.

SHEET NO.

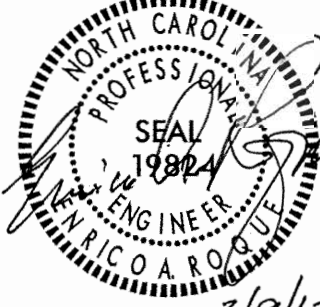
BD-5102J

1-A

R/W SHEET NO.

ROADWAY DESIGN  
ENGINEER

HYDRAULICS  
ENGINEER



GENERAL NOTES: 2012 SPECIFICATIONS  
EFFECTIVE: 01-17-12  
REVISED: 11/01/11

GRADE LINE:  
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

TITLE CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE CENTURY LINK - TELEPHONE & KINSTON-ELECTRIC DIVISION

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

NO UTILITIES WILL NEED TO BE RELOCATED.

RIGHT-OF-WAY MARKERS:

ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

INDEX OF SHEETS

| SHEET NUMBER     | SHEET                                                                                 |
|------------------|---------------------------------------------------------------------------------------|
| 1                | TITLE SHEET                                                                           |
| 1-A              | INDEX OF SHEETS, GENERAL NOTES & LIST OF STANDARDS                                    |
| 1-B              | SYMBOLGY SHEET                                                                        |
| 2                | TYPICAL SECTION SHEET                                                                 |
| 3                | EARTHWORK, PAVEMENT REMOVAL, GUARDRAIL SUMMARY, ROW SUMMARY, & DRAINAGE SUMMARY SHEET |
| 4                | PLAN & PROFILE SHEET                                                                  |
| TMP-1 THRU TMP-2 | TRAFFIC CONTROL PLANS                                                                 |
| EC-1             | EROSION CONTROL TITLE SHEET                                                           |
| EC-2             | EROSION CONTROL - COIR FIBER WATTLE DETAIL                                            |
| EC-3             | EROSION CONTROL- WATTLE / SILT FENCE BREAK DETAIL                                     |
| EC-4             | EROSION CONTROL - SOIL STABILIZATION TIME FRAMES                                      |
| EC-5             | EROSION CONTROL SHEET                                                                 |
| P-1              | PERMIT DRAWING                                                                        |
| X-1 THRU X-3     | -L- CROSS SECTION SHEETS                                                              |
| S-1 THRU S-13    | BRIDGE PLANS                                                                          |

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

| STD.NO.                                    | TITLE                                                                          |
|--------------------------------------------|--------------------------------------------------------------------------------|
| DIVISION 2 - EARTHWORK                     |                                                                                |
| 200.02                                     | Method of Clearing - Method II                                                 |
| 225.02                                     | Guide for Grading Subgrade - Secondary and Local                               |
| 225.04                                     | Method of Obtaining Superelevation - Two Lane Pavement                         |
| DIVISION 3 - PIPE CULVERTS                 |                                                                                |
| 300.01                                     | Method of Pipe Installation                                                    |
| DIVISION 4 - MAJOR STRUCTURES              |                                                                                |
| 422.11                                     | Reinforced Bridge Approach Fills - Sub Regional Tier                           |
| DIVISION 5 - SUBGRADE, BASES AND SHOULDERS |                                                                                |
| 560.01                                     | Method of Shoulder Construction - High Side of Superelevated Curve - Method I  |
| DIVISION 8 - INCIDENTALS                   |                                                                                |
| 840.20                                     | Frames and Wide Slot Flat Grates                                               |
| 840.36                                     | Traffic Bearing Grated Drop Inlet - for Steel (840.37) Double Frame and Grates |
| 846.01                                     | Concrete Curb, Gutter and Curb & Gutter                                        |
| 846.04                                     | Drop Inlet Installation in Shoulder Berm Gutter                                |
| 862.01                                     | Guardrail Placement                                                            |
| 862.02                                     | Guardrail Installation                                                         |
| 862.03                                     | Structure Anchor Units                                                         |
| 876.01                                     | Rip Rap in Channels                                                            |
| 876.02                                     | Guide for Rip Rap at Pipe Outlets                                              |



**Note: Not to Scale**  
**\*S.U.E. = Subsurface Utility Engineering**

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

| PROJECT REFERENCE NO. | SHEET NO. |
|-----------------------|-----------|
| BD-5102J              | 1-B       |

**BOUNDARIES AND PROPERTY:**

|                                     |         |
|-------------------------------------|---------|
| State Line                          |         |
| County Line                         |         |
| Township Line                       |         |
| City Line                           |         |
| Reservation Line                    |         |
| Property Line                       |         |
| Existing Iron Pin                   | ⊙ EIP   |
| Property Corner                     | ✕       |
| Property Monument                   | ECM     |
| Parcel/Sequence Number              | (23)    |
| Existing Fence Line                 | -x-x-x- |
| Proposed Woven Wire Fence           | ○       |
| Proposed Chain Link Fence           | □       |
| Proposed Barbed Wire Fence          | ◇       |
| Existing Wetland Boundary           | -WLB-   |
| Proposed Wetland Boundary           | WLB     |
| Existing Endangered Animal Boundary | -EAB-   |
| Existing Endangered Plant Boundary  | -EPB-   |

**BUILDINGS AND OTHER CULTURE:**

|                               |     |
|-------------------------------|-----|
| Gas Pump Vent or U/G Tank Cap | ○   |
| Sign                          | ⊙ S |
| Well                          | ⊙ W |
| Small Mine                    | ✕   |
| Foundation                    | ▭   |
| Area Outline                  | ▭   |
| Cemetery                      | ▭ ⊕ |
| Building                      | ▭   |
| School                        | ▭ ⊕ |
| Church                        | ▭ ⊕ |
| Dam                           | ▭   |

**HYDROLOGY:**

|                                    |        |
|------------------------------------|--------|
| Stream or Body of Water            |        |
| Hydro, Pool or Reservoir           | ▭      |
| Jurisdictional Stream              | -JS-   |
| Buffer Zone 1                      | -BZ 1- |
| Buffer Zone 2                      | -BZ 2- |
| Flow Arrow                         | ←      |
| Disappearing Stream                | ➤      |
| Spring                             | ○      |
| Wetland                            | ⌵      |
| Proposed Lateral, Tail, Head Ditch | ▭      |
| False Sump                         | ▽      |

**RAILROADS:**

|                    |        |
|--------------------|--------|
| Standard Gauge     | —      |
| RR Signal Milepost | ⊙      |
| Switch             | SWITCH |
| RR Abandoned       | - - -  |
| RR Dismantled      | - - -  |

**RIGHT OF WAY:**

|                                                            |             |
|------------------------------------------------------------|-------------|
| Baseline Control Point                                     | ◆           |
| Existing Right of Way Marker                               | △           |
| Existing Right of Way Line                                 | —           |
| Proposed Right of Way Line                                 | — (R) W —   |
| Proposed Right of Way Line with Iron Pin and Cap Marker    | — (R) W — ▲ |
| Proposed Right of Way Line with Concrete or Granite Marker | — (R) W — ▲ |
| Existing Control of Access                                 | — (C) A —   |
| Proposed Control of Access                                 | — (C) A —   |
| Existing Easement Line                                     | — E —       |
| Proposed Temporary Construction Easement                   | — E —       |
| Proposed Temporary Drainage Easement                       | — TDE —     |
| Proposed Permanent Drainage Easement                       | — PDE —     |
| Proposed Permanent Utility Easement                        | — PUE —     |

**ROADS AND RELATED FEATURES:**

|                                      |               |
|--------------------------------------|---------------|
| Existing Edge of Pavement            | —             |
| Existing Curb                        | —             |
| Proposed Slope Stakes Cut            | - - - C - - - |
| Proposed Slope Stakes Fill           | - - - F - - - |
| Proposed Wheel Chair Ramp            | WCR           |
| Proposed Wheel Chair Ramp Curb Cut   | WCC           |
| Curb Cut for Future Wheel Chair Ramp | CCFR          |
| Existing Metal Guardrail             | — T —         |
| Proposed Guardrail                   | — T —         |
| Existing Cable Guiderail             | —             |
| Proposed Cable Guiderail             | —             |
| Equality Symbol                      | ⊕             |
| Pavement Removal                     | ▨             |

**VEGETATION:**

|              |   |
|--------------|---|
| Single Tree  | ⊕ |
| Single Shrub | ⊕ |
| Hedge        | — |
| Woods Line   | — |
| Orchard      | ⊕ |
| Vineyard     | ▭ |

**EXISTING STRUCTURES:**

|                                          |         |
|------------------------------------------|---------|
| MAJOR:                                   |         |
| Bridge, Tunnel or Box Culvert            | CONC    |
| Bridge Wing Wall, Head Wall and End Wall | CONC WW |
| MINOR:                                   |         |
| Head and End Wall                        | CONC HW |
| Pipe Culvert                             | —       |
| Footbridge                               | —       |
| Drainage Box: Catch Basin, DI or JB      | CB      |
| Paved Ditch Gutter                       | —       |
| Storm Sewer Manhole                      | ⊙ S     |
| Storm Sewer                              | — S —   |

**UTILITIES:**

|                                     |               |
|-------------------------------------|---------------|
| POWER:                              |               |
| Existing Power Pole                 | ●             |
| Proposed Power Pole                 | ○             |
| Existing Joint Use Pole             | ●             |
| Proposed Joint Use Pole             | ○             |
| Power Manhole                       | ⊙ P           |
| Power Line Tower                    | ⊗             |
| Power Transformer                   | ⊗             |
| U/G Power Cable Hand Hole           | ⊕             |
| H-Frame Pole / Gate                 | —             |
| Recorded U/G Power Line             | — P —         |
| Designated U/G Power Line (S.U.E.*) | - - - P - - - |

**TELEPHONE:**

|                                             |                  |
|---------------------------------------------|------------------|
| Existing Telephone Pole                     | ●                |
| Proposed Telephone Pole                     | ○                |
| Telephone Manhole                           | ⊙ T              |
| Telephone Booth                             | ⊕                |
| Telephone Pedestal                          | ⊕                |
| Telephone Cell Tower                        | ⊕                |
| U/G Telephone Cable Hand Hole               | ⊕                |
| Recorded U/G Telephone Cable                | — T —            |
| Designated U/G Telephone Cable (S.U.E.*)    | - - - T - - -    |
| Recorded U/G Telephone Conduit              | — TC —           |
| Designated U/G Telephone Conduit (S.U.E.*)  | - - - TC - - -   |
| Recorded U/G Fiber Optics Cable             | — T FO —         |
| Designated U/G Fiber Optics Cable (S.U.E.*) | - - - T FO - - - |

**WATER:**

|                                     |               |
|-------------------------------------|---------------|
| Water Manhole                       | ⊙ W           |
| Water Meter                         | ⊕             |
| Water Valve                         | ⊗             |
| Water Hydrant                       | ⊕             |
| Recorded U/G Water Line             | — W —         |
| Designated U/G Water Line (S.U.E.*) | - - - W - - - |
| Above Ground Water Line             | A/G Water     |

**TV:**

|                                            |                   |
|--------------------------------------------|-------------------|
| TV Satellite Dish                          | ⊕                 |
| TV Pedestal                                | ⊕                 |
| TV Tower                                   | ⊗                 |
| U/G TV Cable Hand Hole                     | ⊕                 |
| Recorded U/G TV Cable                      | — TV —            |
| Designated U/G TV Cable (S.U.E.*)          | - - - TV - - -    |
| Recorded U/G Fiber Optic Cable             | — TV FO —         |
| Designated U/G Fiber Optic Cable (S.U.E.*) | - - - TV FO - - - |

**GAS:**

|                                   |               |
|-----------------------------------|---------------|
| Gas Valve                         | ◇             |
| Gas Meter                         | ⊕             |
| Recorded U/G Gas Line             | — G —         |
| Designated U/G Gas Line (S.U.E.*) | - - - G - - - |
| Above Ground Gas Line             | A/G Gas       |

**SANITARY SEWER:**

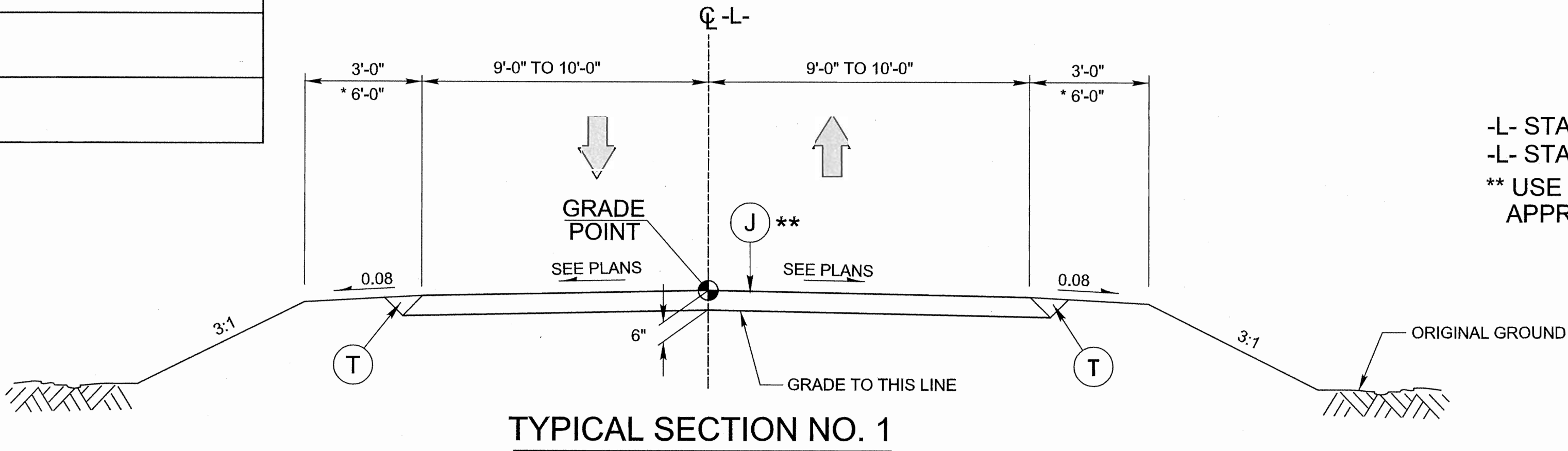
|                                          |                    |
|------------------------------------------|--------------------|
| Sanitary Sewer Manhole                   | ⊙                  |
| Sanitary Sewer Cleanout                  | ⊕                  |
| U/G Sanitary Sewer Line                  | — SS —             |
| Above Ground Sanitary Sewer              | A/G Sanitary Sewer |
| Recorded SS Forced Main Line             | — FSS —            |
| Designated SS Forced Main Line (S.U.E.*) | - - - FSS - - -    |

**MISCELLANEOUS:**

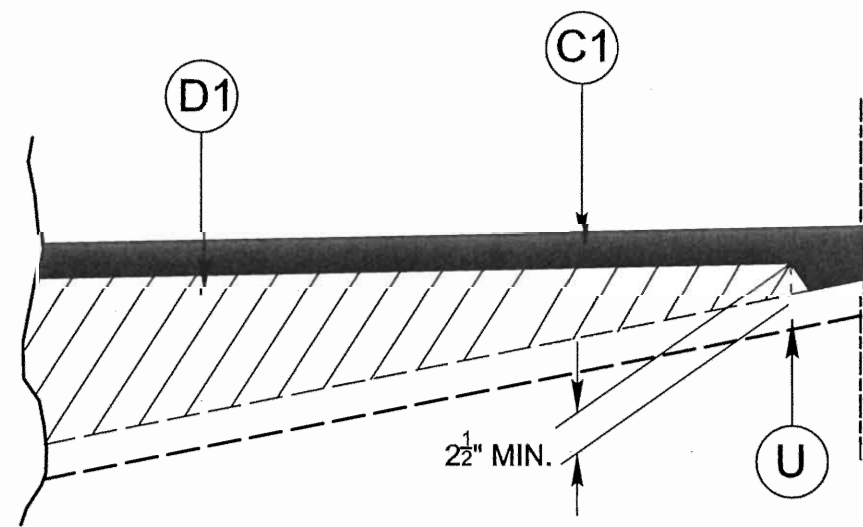
|                                        |          |
|----------------------------------------|----------|
| Utility Pole                           | ●        |
| Utility Pole with Base                 | ⊕        |
| Utility Located Object                 | ⊕        |
| Utility Traffic Signal Box             | ⊕        |
| Utility Unknown U/G Line               | — UTIL — |
| U/G Tank; Water, Gas, Oil              | ▭        |
| A/G Tank; Water, Gas, Oil              | ▭        |
| U/G Test Hole (S.U.E.*)                | ⊕        |
| Abandoned According to Utility Records | AATUR    |
| End of Information                     | E.O.I.   |



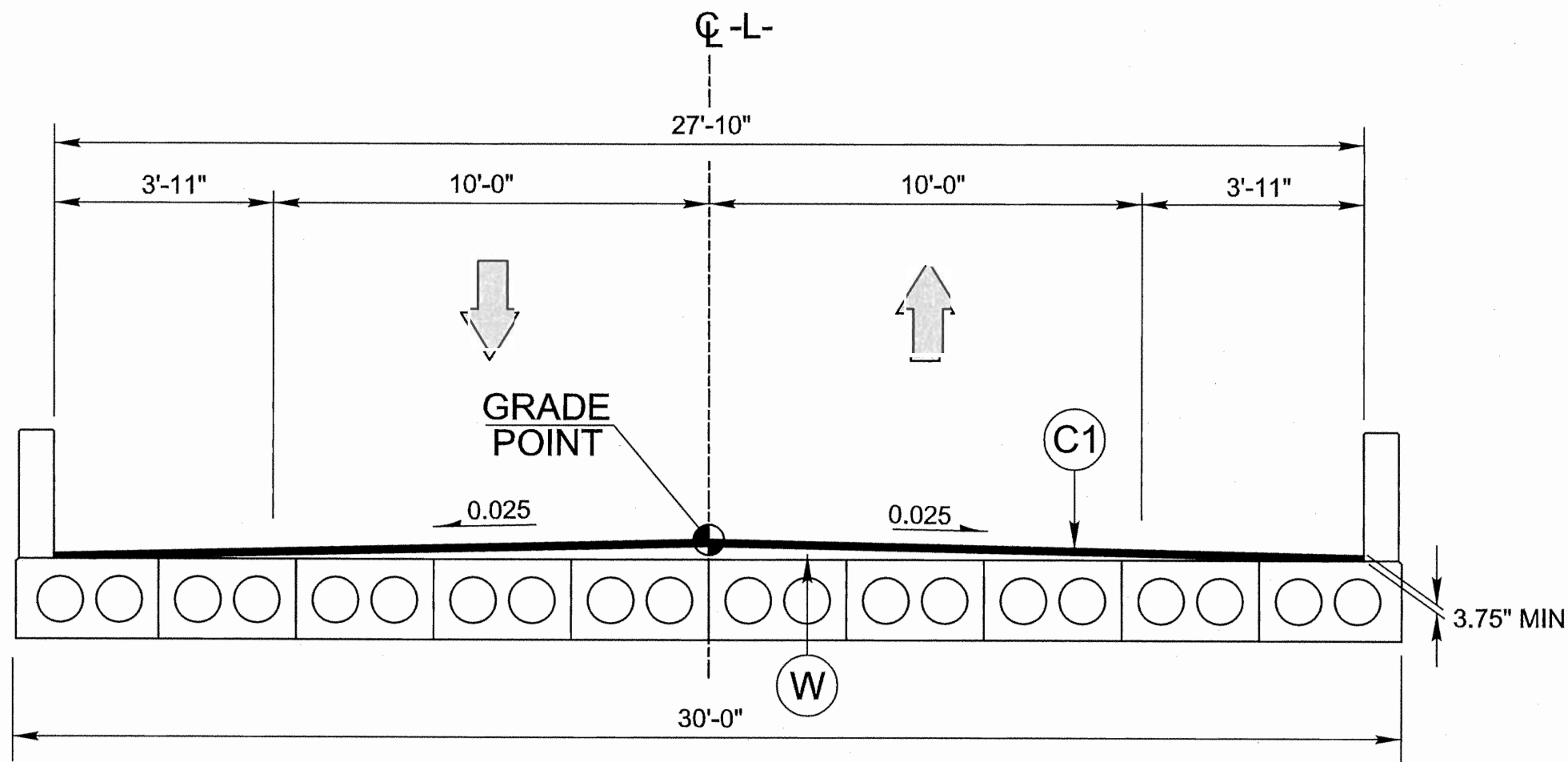
| PAVEMENT SCHEDULE |                                                                                                                                                                                                                |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| C1                | PROP. APPROX. 3.75" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 412.5 LBS. PER SQ. YARD.                                                                                                |
| D1                | PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH. |
| J                 | PROP. 6" AGGREGATE BASE COURSE                                                                                                                                                                                 |
| T                 | EARTH MATERIAL                                                                                                                                                                                                 |



USE TYPICAL SECTION NO. 1 FROM:  
-L- STA. 12+00.00 TO -L- STA. 13+09.83 (BEGIN BRIDGE)  
-L- STA. 13+72.17 (END BRIDGE) TO -L- STA. 14+90.00  
\*\* USE 6" ABC & 3" S9.5B FOR PAVING BRIDGE APPROACHES AS SHOWN ON PLAN.

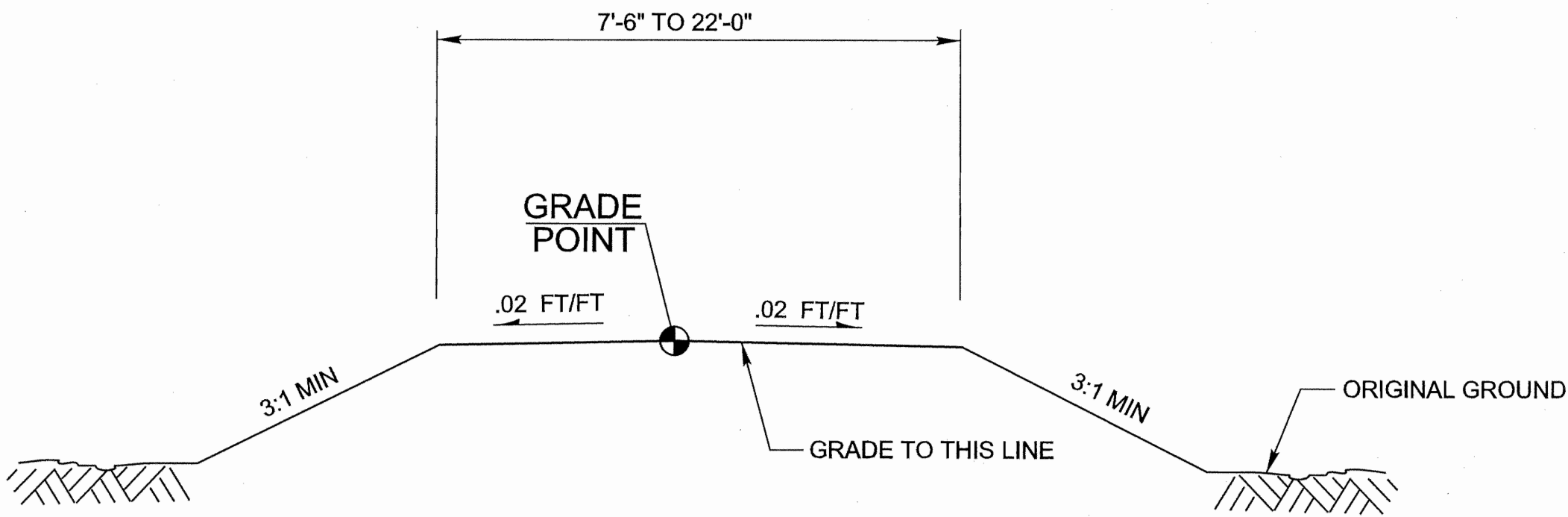


DETAIL SHOWING METHOD OF WEDGING  
SEE TYPICAL SECTIONS



USE TYPICAL SECTION NO. 2 FROM:  
-L- STA. 13+09.83 TO -L- STA. 13+72.17

TYPICAL SECTION NO. 2  
CORED SLAB BRIDGE OVERLAY



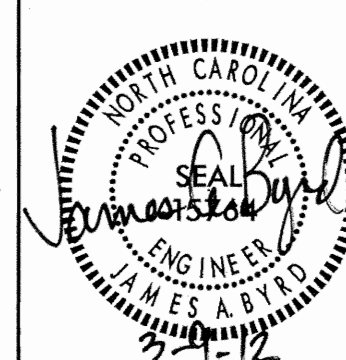
USE TYPICAL SECTION NO. 3 FOR DRIVES

TYPICAL SECTION NO. 3

NOTES: \* SHOULDER WIDTH INCREASED 3' WITH THE USE OF GUARDRAIL

REVISIONS





## SUMMARY OF EARTHWORK IN CUBIC YARDS

[illegible]

| STATION             | STATION             | UNCLASSIFIED<br>EXCAVATION | EMBANK.<br>+ % | BORROW | WASTE |
|---------------------|---------------------|----------------------------|----------------|--------|-------|
| -L- STA. 12 + 00.00 | -L- STA. 13 + 11.00 | 152                        | 7              |        | 145   |
| -L- STA. 13 + 71.00 | -L- STA. 14 + 90.00 | 104                        | 110            | 6      |       |
|                     |                     |                            |                |        |       |
|                     |                     |                            |                |        |       |
|                     |                     |                            |                |        |       |
|                     |                     |                            |                |        |       |
| GRAND TOTALS:       |                     | 256                        | 117            | 6      | 145   |
|                     |                     |                            |                |        |       |
| SAY:                |                     | 260                        | 120            |        | 140   |

## REVISIONS

[illegible]

## PAVEMENT REMOVAL SUMMARY

| STATION      | SIZE | THICKNESS<br>OR GAUGE | LOCATION (LT, RT, OR CJ) |    | STRUCTURE NO. |     | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | CLASS III R.C. PIPE<br>(UNLESS NOTED OTHERWISE) |                        |                 | 15" SIDE DRAIN PIPE | 18" SIDE DRAIN PIPE | 24" SIDE DRAIN PIPE | QUANTITIES FOR<br>DRAINAGE STRUCTURES |   |                 | TOTAL LF FOR PAY<br>QUANTITY SHALL BE<br>COL. A + (1/3 X COL. 'B') | GRADED T.B.D.I., TYPE 'B' STD. 840.22 | D.I. FRAME AND GRATE STD. 840.20 | PIPE REMOVAL (LF) | ABBREVIATIONS |                              |
|--------------|------|-----------------------|--------------------------|----|---------------|-----|---------------|------------------|------------------|----------------|-------------------------------------------------|------------------------|-----------------|---------------------|---------------------|---------------------|---------------------------------------|---|-----------------|--------------------------------------------------------------------|---------------------------------------|----------------------------------|-------------------|---------------|------------------------------|
|              |      |                       | FROM                     | TO | 15"           | 18" |               |                  |                  |                | 24"                                             | PER EACH (0 THRU 5.0') | 5.0' THRU 10.0' |                     |                     |                     | A                                     | B | 10.0' AND ABOVE |                                                                    |                                       |                                  |                   | C.B.          | CATCH BASIN                  |
|              |      |                       |                          |    |               |     |               |                  |                  |                |                                                 |                        |                 |                     |                     |                     |                                       |   |                 |                                                                    |                                       |                                  |                   |               | M.D.I.                       |
| —L— 13+92.00 | LT   |                       |                          |    |               |     | 39.21         | 39.19            |                  |                |                                                 |                        |                 |                     |                     | 46                  |                                       |   |                 |                                                                    |                                       |                                  | 40                | J.B.          | JUNCTION BOX                 |
| —L— 13+92.00 | RT   |                       |                          |    |               |     | 41.06         | 39.21            |                  |                |                                                 |                        |                 |                     |                     | 66                  |                                       |   |                 |                                                                    |                                       |                                  | 47                | M.H.          | MANHOLE                      |
|              |      |                       |                          |    |               |     |               |                  |                  |                |                                                 |                        |                 |                     |                     |                     |                                       |   |                 |                                                                    |                                       |                                  |                   | T.B.D.I.      | TRAFFIC BEARING DROP INLET   |
|              |      |                       |                          |    |               |     |               |                  |                  |                |                                                 |                        |                 |                     |                     |                     |                                       |   |                 |                                                                    |                                       |                                  |                   | T.B.J.B.      | TRAFFIC BEARING JUNCTION BOX |
| TOTAL        |      |                       |                          |    |               |     |               |                  |                  |                |                                                 |                        |                 |                     | 112                 |                     |                                       |   |                 |                                                                    |                                       | 87                               |                   | REMARKS       |                              |

| LOCATION                | REMOVAL OF ASPHALT PAVEMENT | BREAKING OF ASPHALT PAVEMENT |
|-------------------------|-----------------------------|------------------------------|
| -L- STA. 12+00 TO 13+11 | 0                           |                              |
| -L- STA. 13+71 TO 14+90 | 0                           |                              |
|                         |                             |                              |
|                         |                             |                              |
| GRAND TOTAL             | 0                           |                              |
| SAY                     | 0                           |                              |



REVISIONS

-L-  
PI Sta 14+63.19  
 $\Delta = 0^\circ 34' 16.8''$  (RT)  
D = 0' 53' 03.1"  
L = 64.62'  
T = 32.31'  
R = 6,480.00'

# PLAN

**HNTB**

HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1554

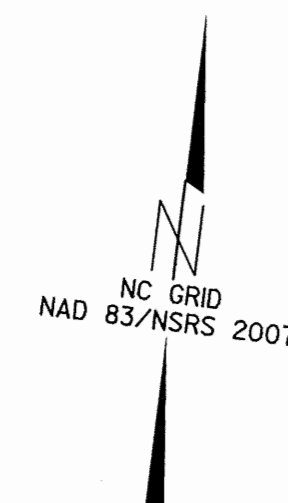
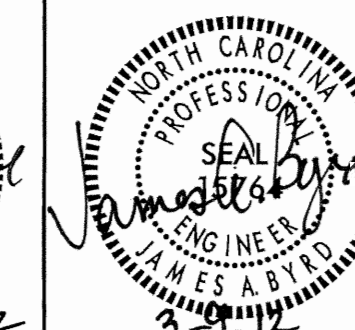
PROJECT REFERENCE NO. SHEET NO.

BD-5102J 4

RW SHEET NO.

ROADWAY DESIGN  
ENGINEER

HYDRAULICS  
ENGINEER

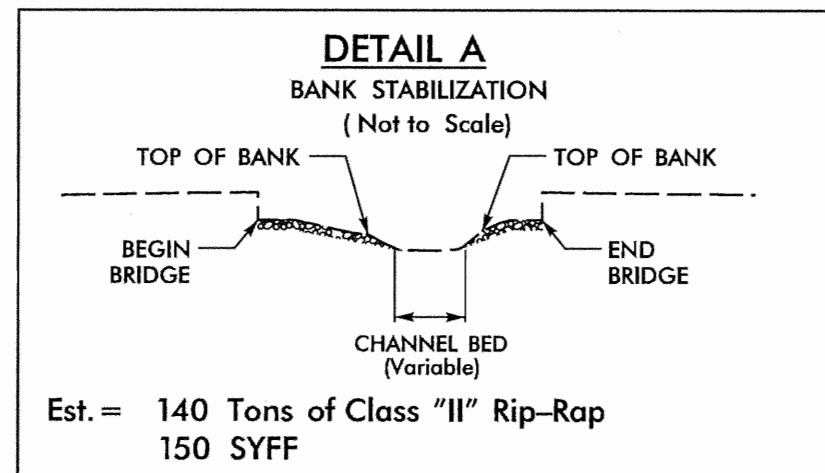


CENTERLINE COORDINATE LIST

| POINT | STATION  | NORTHING     | EASTING        |
|-------|----------|--------------|----------------|
| POT   | 10+00.00 | 736,603.1238 | 2,480,811.1662 |
| BEG   | 12+00.00 | 736,627.4142 | 2,481,009.6857 |
| INT   | 14+01.91 | 736,651.9371 | 2,481,210.1048 |
| PC    | 14+30.88 | 736,655.4551 | 2,481,238.8565 |
| END   | 14+90.00 | 736,662.3669 | 2,481,297.5654 |
| PT    | 14+95.50 | 736,662.9829 | 2,481,303.0316 |
| POT   | 16+68.39 | 736,682.2685 | 2,481,474.8428 |

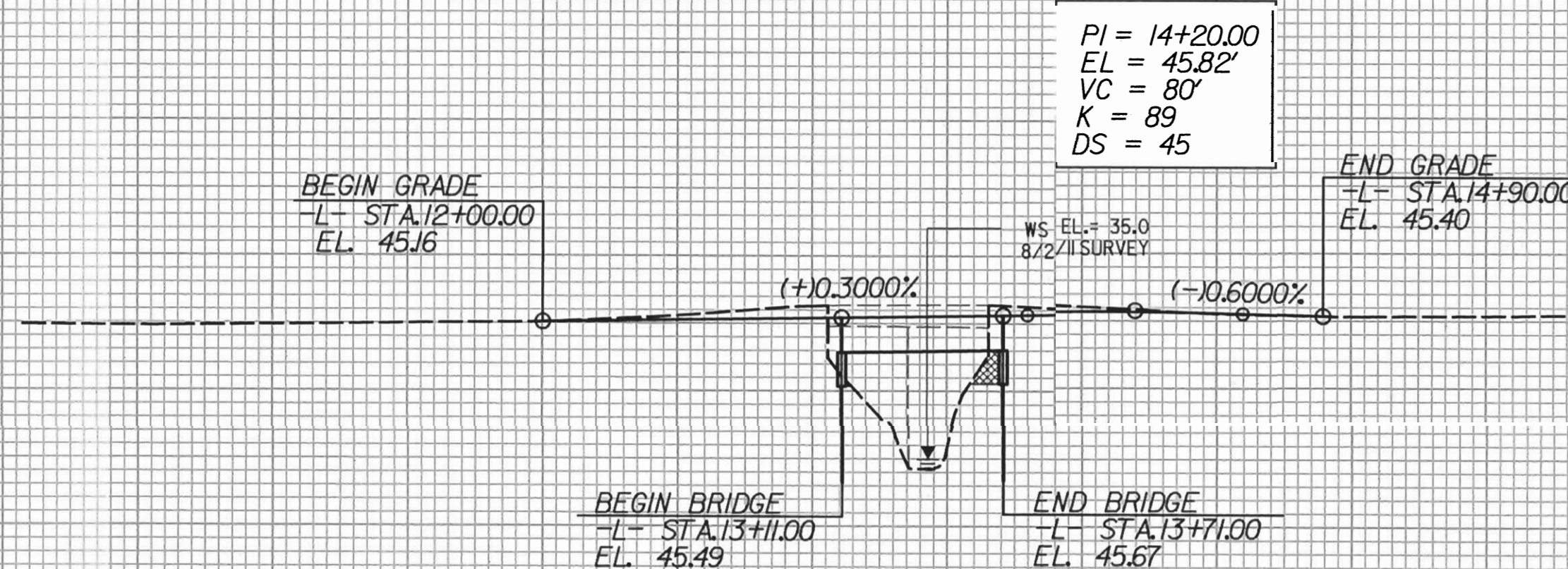
## DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-2" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 736625.282(FT) EASTING: 2481186.047(FT) ELEVATION: 47.27(FT) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99991564 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-2" TO -L- STATION 10+00.00 IS S 86° 37' 02.43" W 375.5351 FT ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88



\* USE 6" ABC AND 3" S9.5B FOR PAVING  
BRIDGE APPROACHES AS SHOWN ON PLAN

# PROFILE



## BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE = 1300 CFS  
DESIGN FREQUENCY = 25 YRS  
DESIGN HW ELEVATION = 45.2 FT  
BASE DISCHARGE = 1900 CFS  
BASE FREQUENCY = 100 YRS  
BASE HW ELEVATION = 45.8 FT  
OVERTOPPING DISCHARGE = 1150 CFS  
OVERTOPPING FREQUENCY = 25 (-) YRS  
OVERTOPPING ELEVATION = 44.8 FT

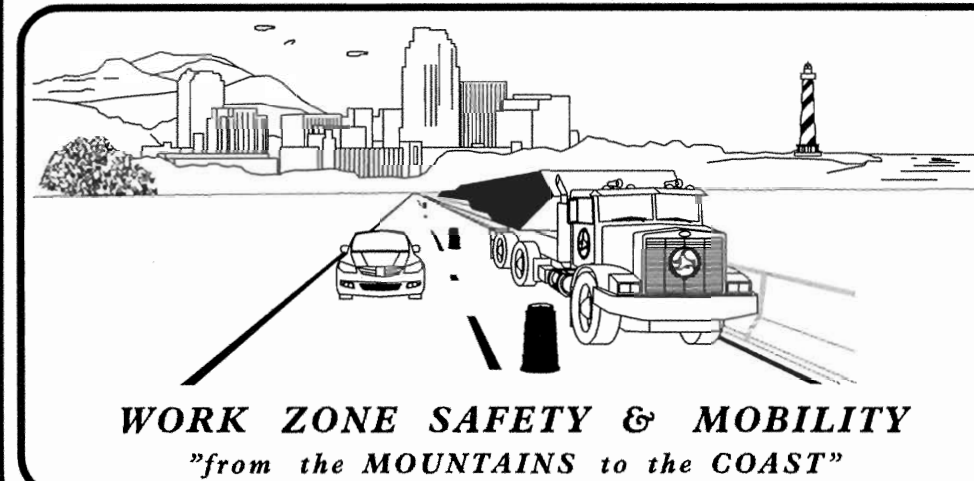
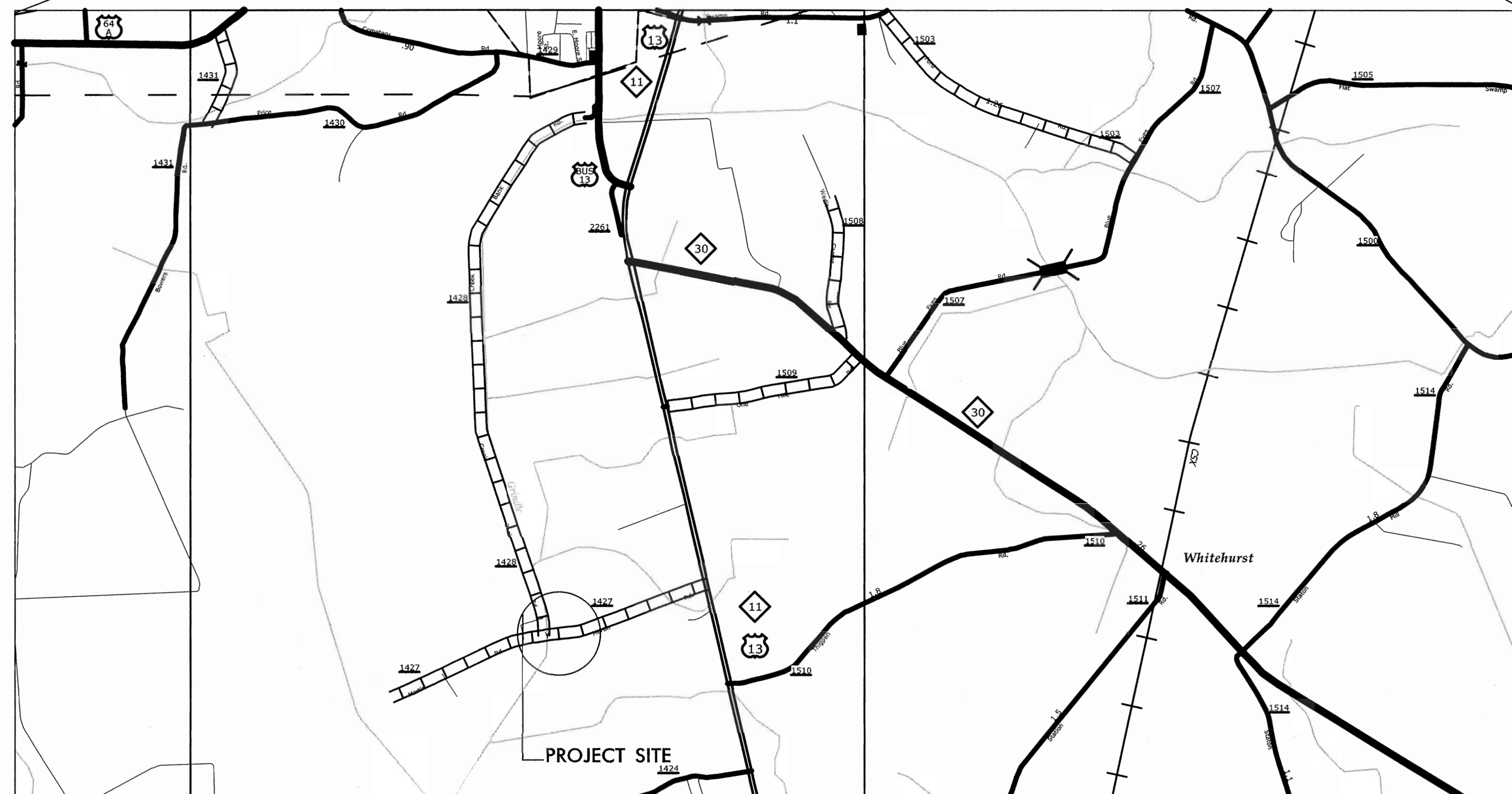
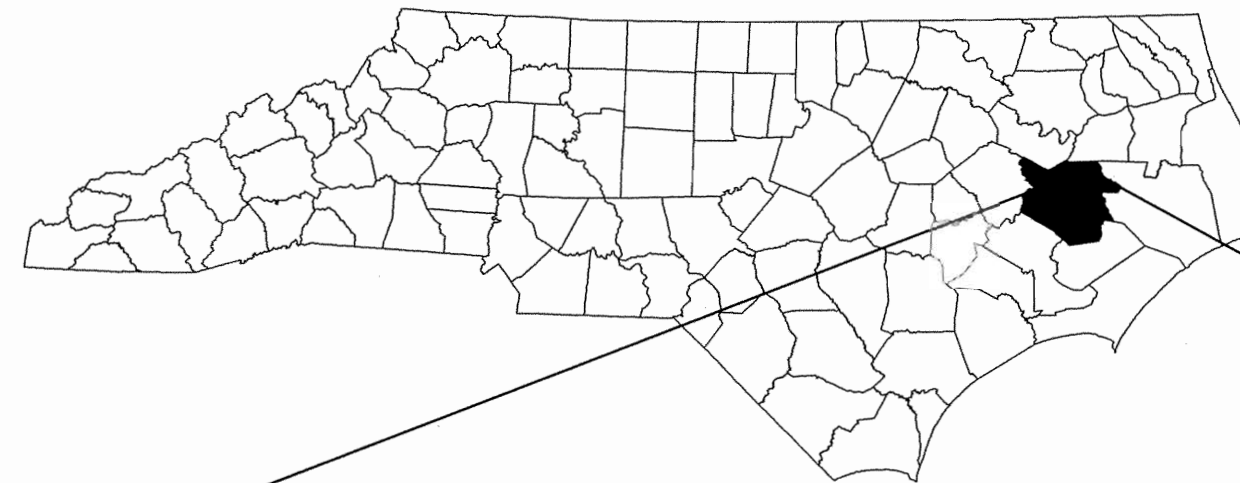
DATE OF SURVEY = 8/2/11  
W.S.ELEVATION AT DATE OF SURVEY = 35.0 FT



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

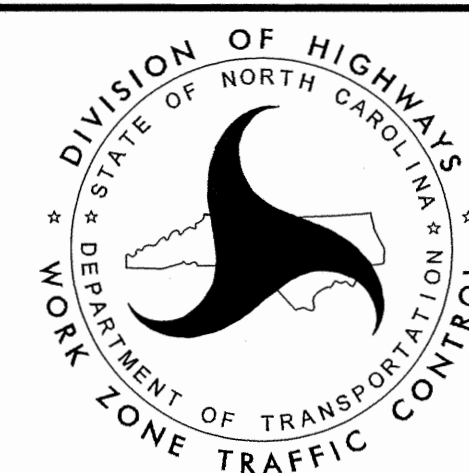
TRANSPORTATION MANAGEMENT PLAN

PITT COUNTY



N.C.D.O.T. WORK ZONE TRAFFIC CONTROL  
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561  
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)  
PHONE: (919) 773-2800 FAX: (919) 771-2745

STEVEN HAMILTON, PE DIVISION TRAFFIC ENGINEER



INDEX OF SHEETS

| SHEET NO. | TITLE                                                                                                    |
|-----------|----------------------------------------------------------------------------------------------------------|
| TMP-1     | TITLE SHEET WITH VICINTY MAP & INDEX OF SHEETS, LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND |
| TMP-2     | PROJECT NOTES, DETOUR AND PLANS.                                                                         |

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C. DATED JAN 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

| STD. NO. | TITLE                         |
|----------|-------------------------------|
| 1101.11  | TRAFFIC CONTROL DESIGN TABLES |
| 1110.11  | STATIONARY WORK ZONE SIGNS    |
| 1145.01  | BARRICADES                    |

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- WORK AREA

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)

**HNTB** HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1554

R. B. EARLY, PE TRAFFIC CONTROL PROJECT ENGINEER  
R. B. EARLY, PE TRAFFIC CONTROL PROJECT DESIGN ENGINEER  
J. A. PHILLIPS TRAFFIC CONTROL DESIGN ENGINEER

APPROVED: *[Signature]*  
DATE: 8-8-12

SEAL  
NORTH CAROLINA  
PROFESSIONAL  
ENGINEER  
SEAL  
023521  
PHONDA B. EARLY

SHEET NO.  
TMP-1

BD-5102J

TIP PROJECT:



ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JAN 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

| STD. NO. | TITLE                           |
|----------|---------------------------------|
| 1101.01  | WORK ZONE ADVANCE WARNING SIGNS |
| 1101.11  | TRAFFIC CONTROL DESIGN TABLES   |
| 1145.01  | BARRICADES                      |

LEGEND

GENERAL

|  |                                      |
|--|--------------------------------------|
|  | DIRECTION OF TRAFFIC FLOW            |
|  | DIRECTION OF PEDESTRIAN TRAFFIC FLOW |
|  | EXIST. PVMT.                         |
|  | NORTH ARROW                          |
|  | PROPOSED PVMT.                       |
|  | WORK AREA                            |
|  | REMOVAL                              |
|  | TEMPORARY PAVEMENT                   |
|  | WEDGE &/OR WIDEN                     |
|  | TEMPORARY ALIGNMENT                  |
|  | ONGOING CONSTRUCTION                 |

TRAFFIC CONTROL DEVICES

|  |                                        |
|--|----------------------------------------|
|  | BARRICADE (TYPE III)                   |
|  | CONE                                   |
|  | DRUM                                   |
|  | SKINNY DRUM                            |
|  | TUBULAR MARKER                         |
|  | TEMPORARY CRASH CUSHION                |
|  | FLASHING ARROW PANEL (TYPE C)          |
|  | FLAGGER                                |
|  | LAW ENFORCEMENT                        |
|  | TRUCK MOUNTED IMPACT ATTENUATOR (TMIA) |
|  | CHANGEABLE MESSAGE SIGN                |

TEMPORARY SIGNING

|  |                             |
|--|-----------------------------|
|  | PORTABLE SIGN               |
|  | STATIONARY SIGN             |
|  | STATIONARY OR PORTABLE SIGN |

SIGNALS

|  |          |  |          |  |           |
|--|----------|--|----------|--|-----------|
|  | EXISTING |  | PROPOSED |  | TEMPORARY |
|--|----------|--|----------|--|-----------|

PAVEMENT MARKINGS

|  |                 |
|--|-----------------|
|  | EXISTING LINES  |
|  | TEMPORARY LINES |

PAVEMENT MARKERS

|  |                  |
|--|------------------|
|  | CRYSTAL /CRYSTAL |
|  | CRYSTAL /RED     |
|  | YELLOW/YELLOW    |

PAVEMENT MARKING SYMBOLS

|  |                          |
|--|--------------------------|
|  | PAVEMENT MARKING SYMBOLS |
|--|--------------------------|

TEMPORARY PAVEMENT MARKING

| SYMBOL                 | DESCRIPTION               | PAY ITEM         |
|------------------------|---------------------------|------------------|
| PAVEMENT MARKING LINES |                           |                  |
|                        |                           | PAINT (4")       |
| PA                     | WHITE EDGELINE            |                  |
| PI                     | YELLOW DOUBLE CENTER LINE |                  |
| PAVEMENT MARKERS       |                           |                  |
|                        |                           | PERMANENT RAISED |
| MH                     | YELLOW & YELLOW           |                  |

NOTE: FOR EACH PAINT PAVEMENT MARKING ITEM, PLACE TWO (2) APPLICATIONS.

APPROVED: DATE: 3-8-12

SEAL

ROADWAY STANDARD DRAWINGS & LEGEND





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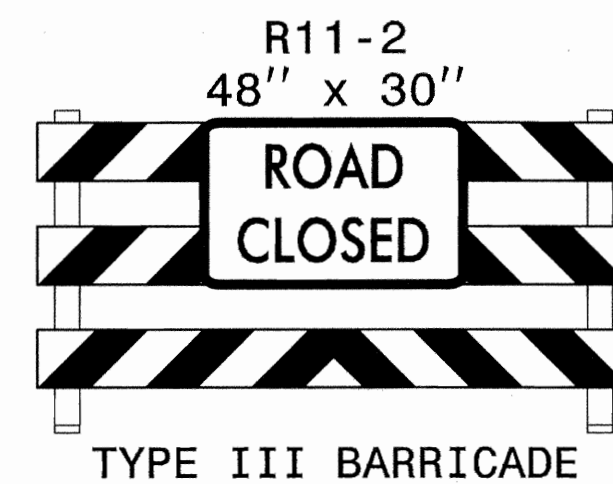
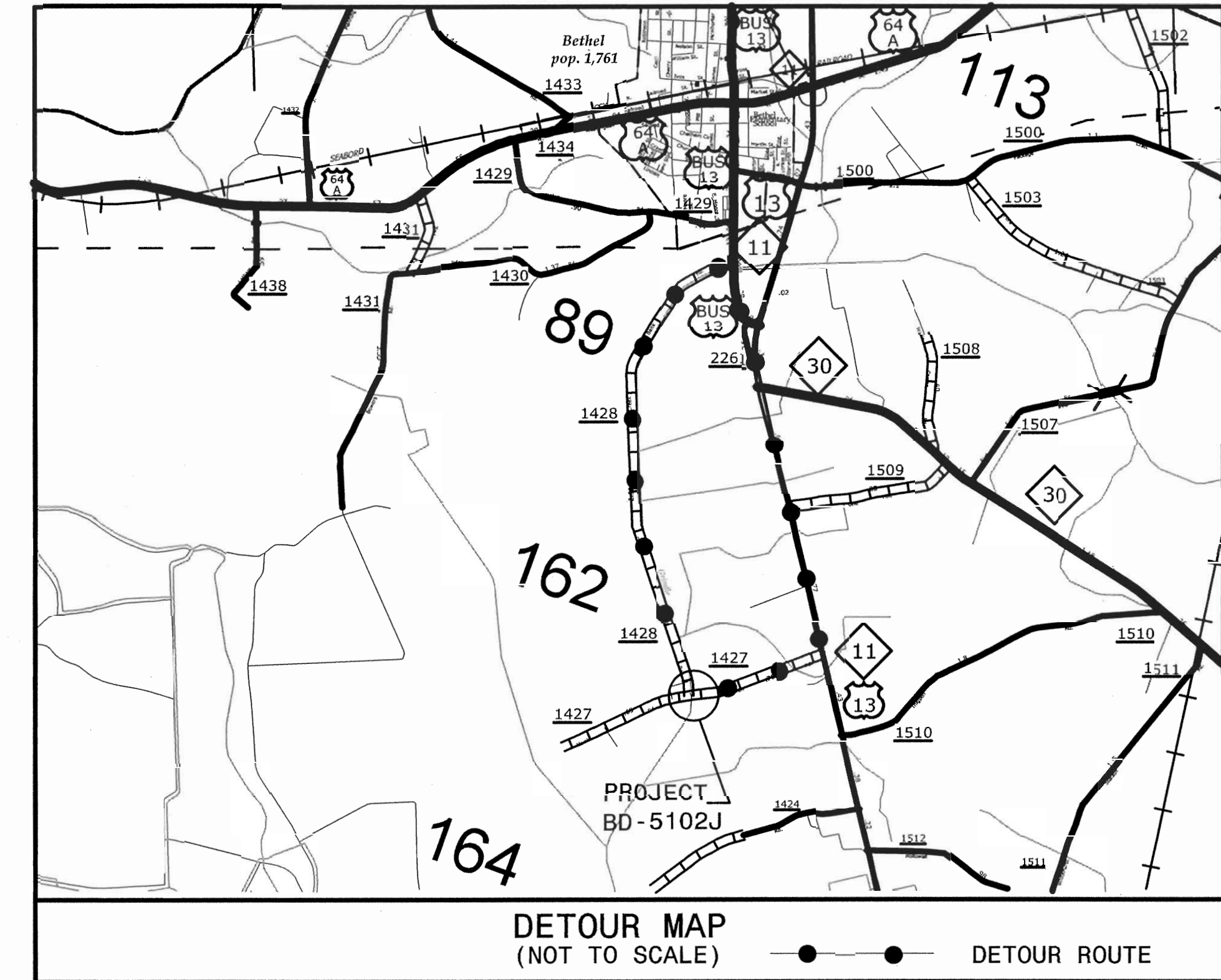
| PROJ. REFERENCE NO. | SHEET NO. |
|---------------------|-----------|
| BD-5102J            | TMP-2     |

## GENERAL NOTES

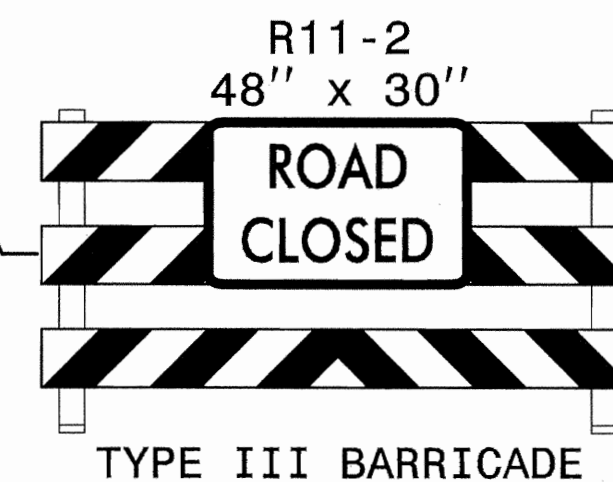
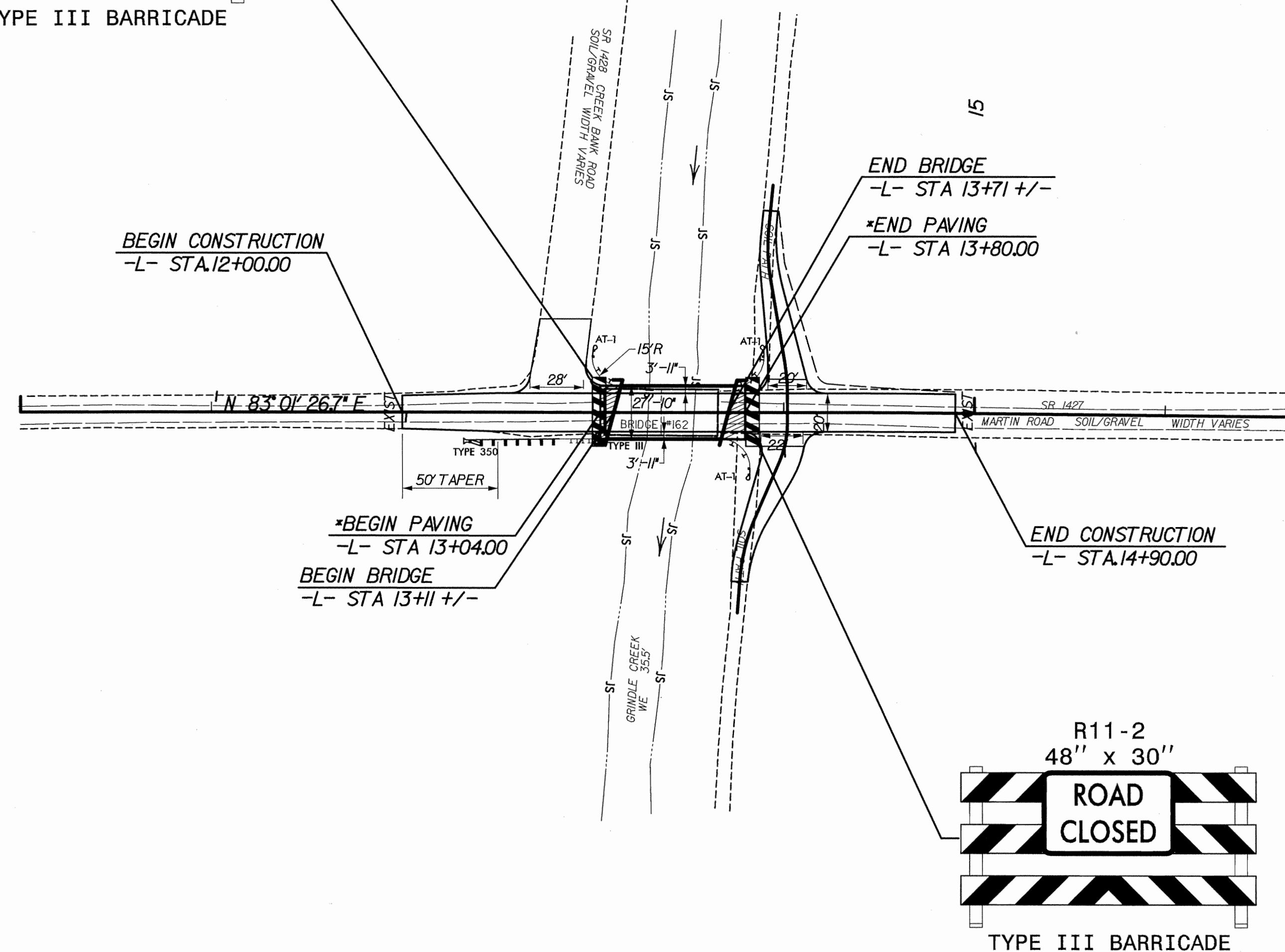
IMPLEMENT TRAFFIC CONTROL IN ACCORDANCE WITH THE ROADWAY STANDARD DRAWINGS LISTED ON TMP-1.

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS, OR RESULT IN DUPLICATE, OR UNDESIRABLE OVERLAPPING, OF DEVICES. MODIFICATIONS MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING OR REMOVAL OF DEVICES, AS DIRECTED BY THE ENGINEER.

STATE FORCES WILL INSTALL AND MAINTAIN THE PROJECT DETOUR AND THE TYPE III BARRICADES AT THE PROJECT LIMITS.  
STATE FORCES WILL INSTALL PAINT AND MARKERS ON THE FINISHED PROJECT.  
CALL JIM EVANS AT 252-830-3493 FOR COORDINATION.



TYPE III BARRICADE



TYPE III BARRICADE

|                                                                                        |
|----------------------------------------------------------------------------------------|
| APPROVED: <i>[Signature]</i> DATE: 5-8-12                                              |
| SEAL<br>NORTH CAROLINA<br>PROFESSIONAL<br>ENGINEER<br>SEAL<br>023521<br>RONDA B. EARLY |

### PROJECT NOTES

SCALE: NONE  
DATE: 1/18/12  
DWG. BY: JAP  
DESIGN BY: JAP  
REVIEWED BY: RBE



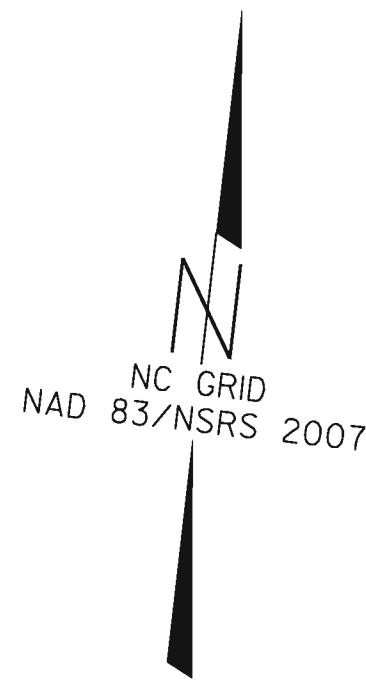
| REVISIONS |
|-----------|
|           |
|           |
|           |

\$\$\$\$\$SYTIME\$\$\$\$\$  
\$\$\$\$\$CDN\$\$\$\$\$  
\$\$\$\$\$JUSERNAME\$\$\$\$\$



10/21/15 AM 1:02 J \_ec\_ tsh.dgn  
\$\$\$\$\$USERNAME\$\$\$\$\$

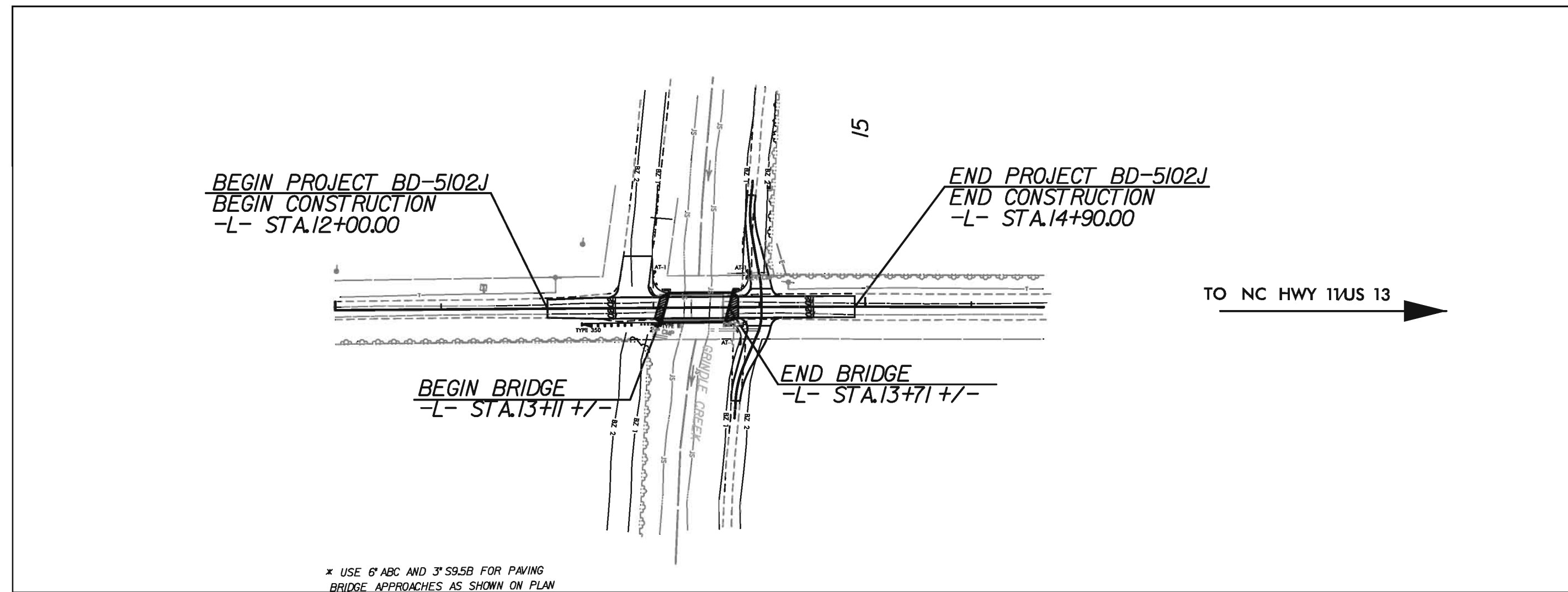
TIP PROJECT: BD-5102J



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
PLAN FOR PROPOSED  
HIGHWAY EROSION CONTROL

LOCATION: BRIDGE NO. 162 OVER GRINDLE CREEK  
ON SR 1427 (MARTIN ROAD)

TYPE OF WORK: LOW IMPACT BRIDGE REPLACEMENT

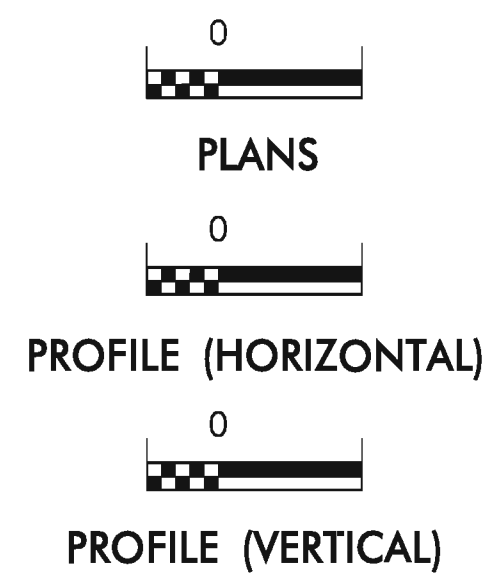


| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.   | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C.            | BD-5102J                    | EC-1        | 5            |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |

EROSION AND SEDIMENT CONTROL MEASURES

| Std. #  | Description                                                                 | Symbol |
|---------|-----------------------------------------------------------------------------|--------|
| 1630.03 | Temporary Silt Ditch.....                                                   | TD     |
| 1630.05 | Temporary Diversion.....                                                    | TD     |
| 1605.01 | Temporary Silt Fence.....                                                   |        |
| 1606.01 | Special Sediment Control Fence.....                                         | △      |
| 1622.01 | Temporary Berms and Slope Drains.....                                       | △      |
| 1633.01 | Silt Basin Type B.....                                                      | △      |
| 1633.01 | Temporary Rock Silt Check Type-A.....                                       | △      |
| 1633.01 | Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)..... | △      |
| 1633.01 | Temporary Rock Silt Check Type-B.....                                       | △      |
| 1633.01 | Wattle / Coir Fiber Wattle.....                                             | △      |
| 1633.01 | Wattle / Coir Fiber Wattle with Polyacrylamide (PAM).....                   | △      |
| 1634.01 | Temporary Rock Sediment Dam Type-A.....                                     | △      |
| 1634.02 | Temporary Rock Sediment Dam Type-B.....                                     | △      |
| 1635.01 | Rock Pipe Inlet Sediment Trap Type-A.....                                   | △      |
| 1635.02 | Rock Pipe Inlet Sediment Trap Type-B.....                                   | △      |
| 1630.04 | Stilling Basin.....                                                         | △      |
| 1630.06 | Special Stilling Basin.....                                                 | △      |
| 1632.01 | Rock Inlet Sediment Trap: Type A.....                                       | △      |
| 1632.02 | Type B.....                                                                 | △      |
| 1632.03 | Type C.....                                                                 | △      |
| 1632.01 | Skimmer Basin.....                                                          | △      |
| 1632.01 | Tiered Skimmer Basin.....                                                   | △      |
| 1632.01 | Infiltration Basin.....                                                     | △      |

GRAPHIC SCALE



ROADSIDE ENVIRONMENTAL UNIT  
DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER QUALITY.

HNTB HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1554

2012 STANDARD SPECIFICATIONS

PHILLIP E. ROGERS, P.E.  
EROSION CONTROL  
LEVEL III-A  
CERTIFICATION #330

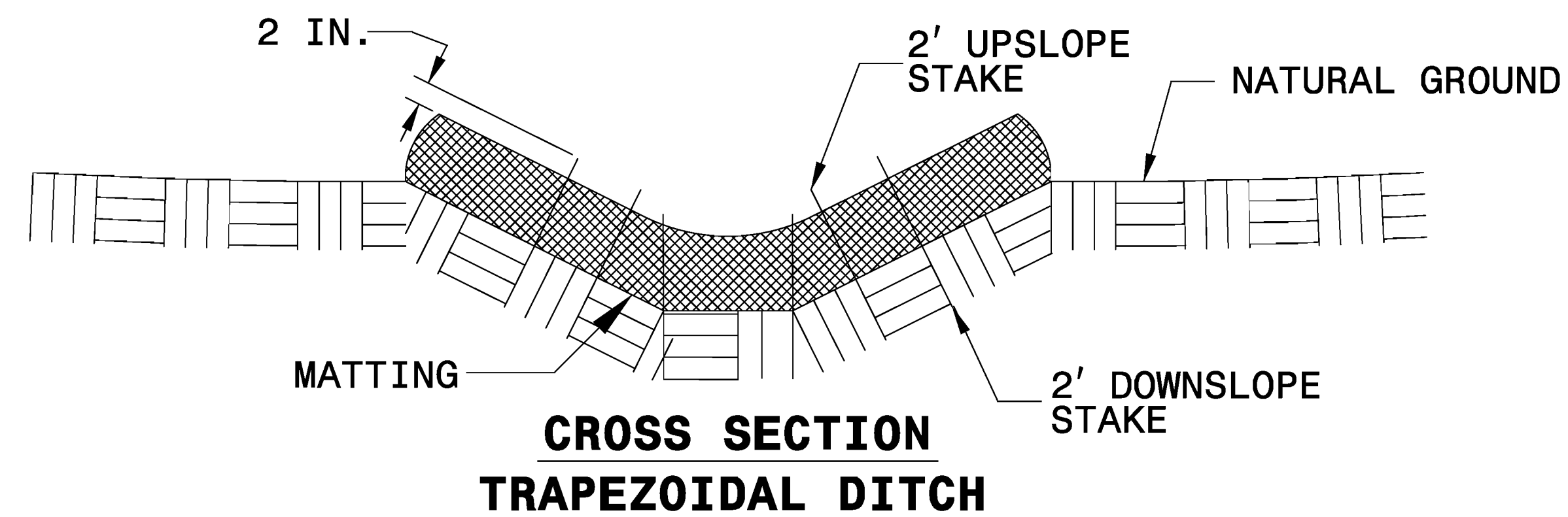
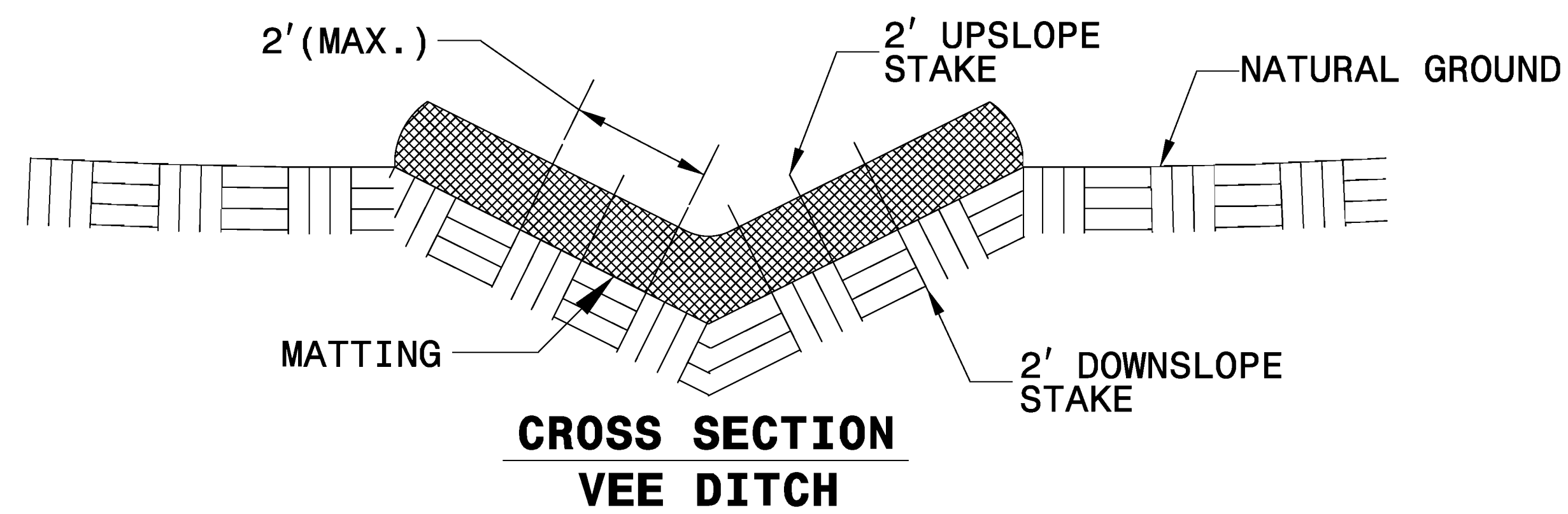
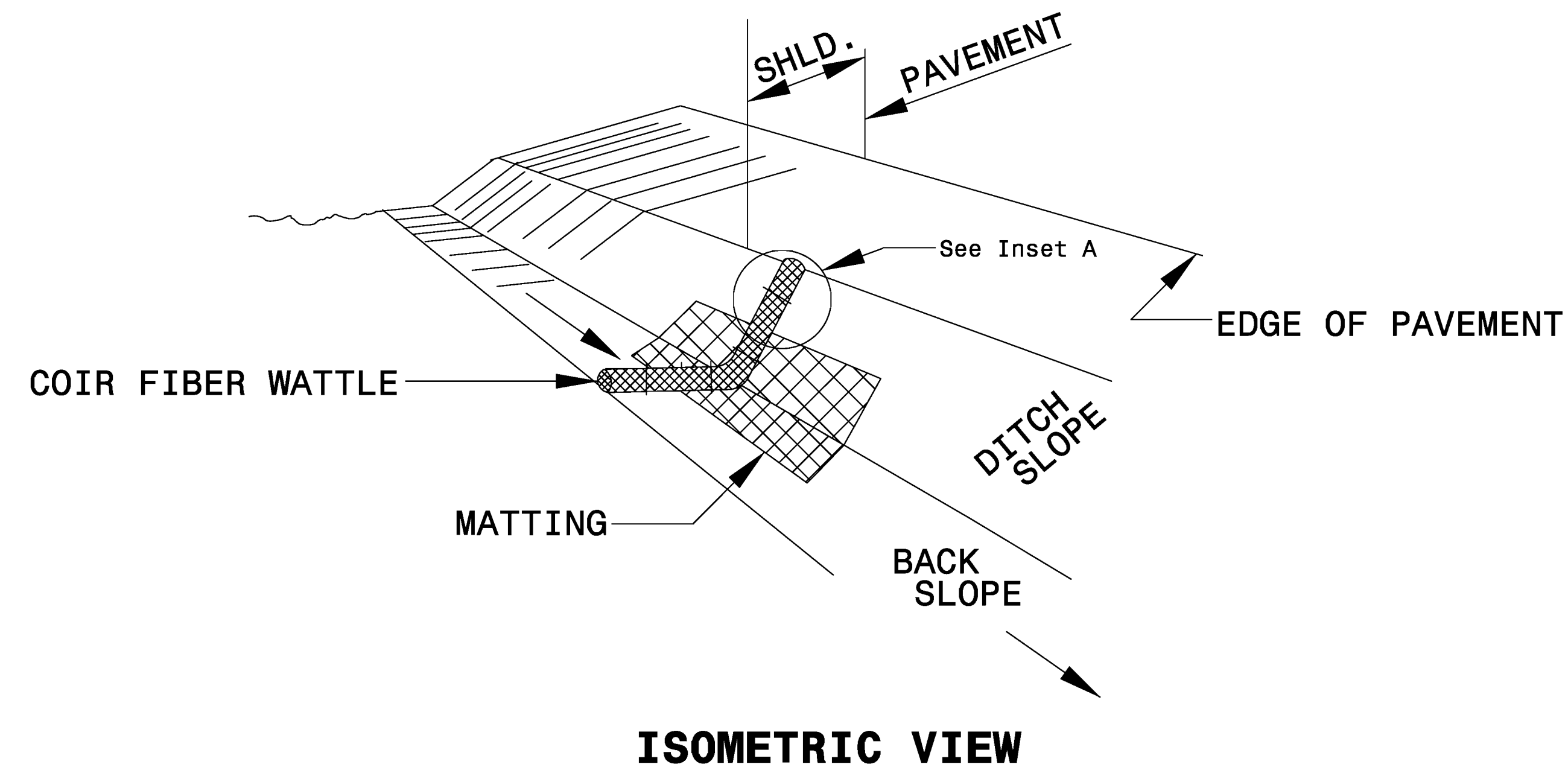
Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2012 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

|         |                                  |         |                                      |
|---------|----------------------------------|---------|--------------------------------------|
| 1604.01 | Railroad Erosion Control Detail  | 1632.01 | Rock Inlet Sediment Trap Type A      |
| 1605.01 | Temporary Silt Fence             | 1632.02 | Rock Inlet Sediment Trap Type B      |
| 1606.01 | Special Sediment Control Fence   | 1632.03 | Rock Inlet Sediment Trap Type C      |
| 1607.01 | Gravel Construction Entrance     | 1633.01 | Temporary Rock Silt Check Type A     |
| 1622.01 | Temporary Berms and Slope Drains | 1633.02 | Temporary Rock Silt Check Type B     |
| 1630.01 | Riser Basin                      | 1634.01 | Temporary Rock Sediment Dam Type A   |
| 1630.02 | Silt Basin Type B                | 1634.02 | Temporary Rock Sediment Dam Type B   |
| 1630.03 | Temporary Silt Ditch             | 1635.01 | Rock Pipe Inlet Sediment Trap Type A |
| 1630.04 | Stilling Basin                   | 1635.02 | Rock Pipe Inlet Sediment Trap Type B |
| 1630.05 | Temporary Diversion              | 1640.01 | Coir Fiber Baffle                    |
| 1630.06 | Special Stilling Basin           | 1645.01 | Temporary Stream Crossing            |
| 1631.01 | Matting Installation             |         |                                      |



# COIR FIBER WATTLE DETAIL



**NOTES:**

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

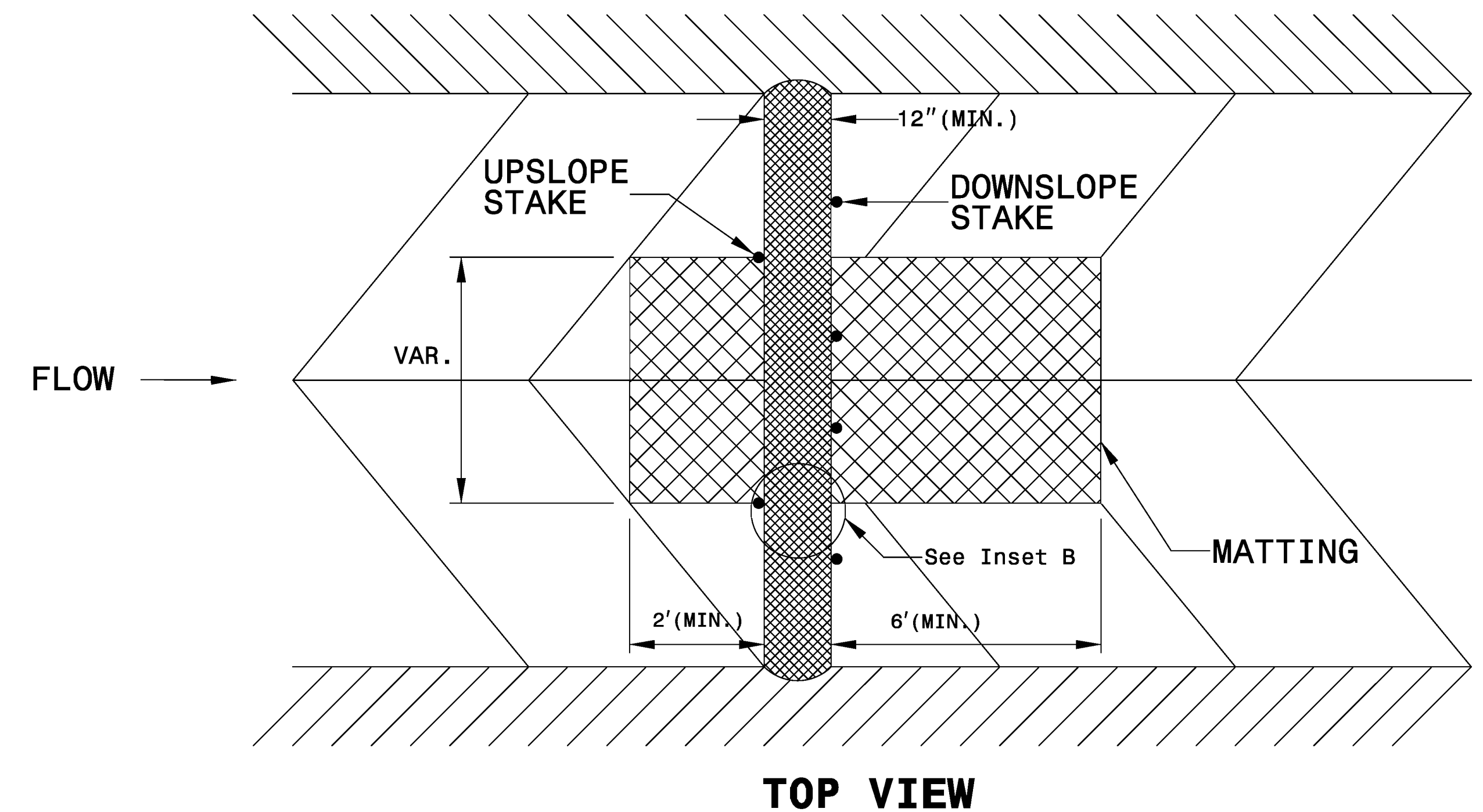
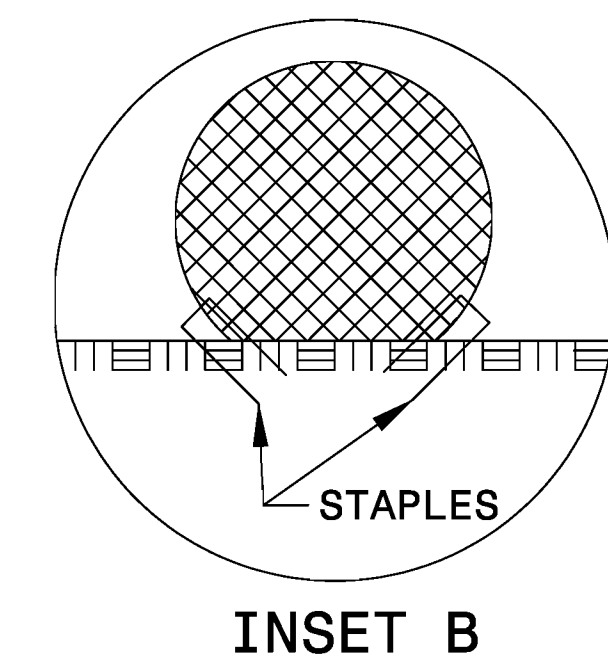
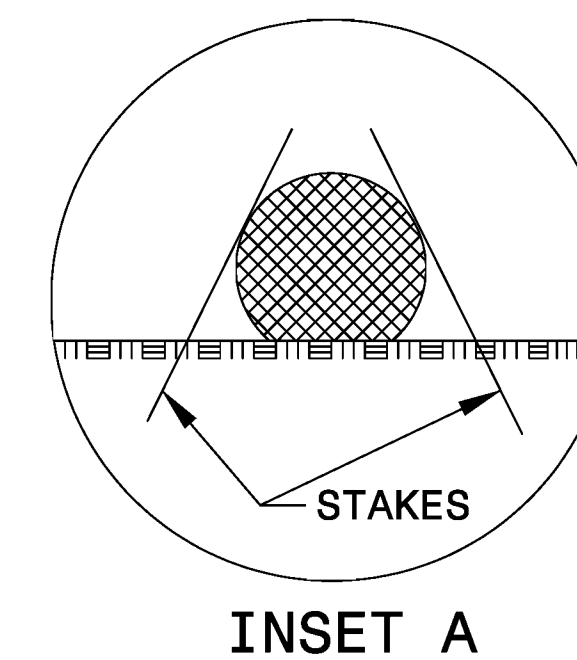
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

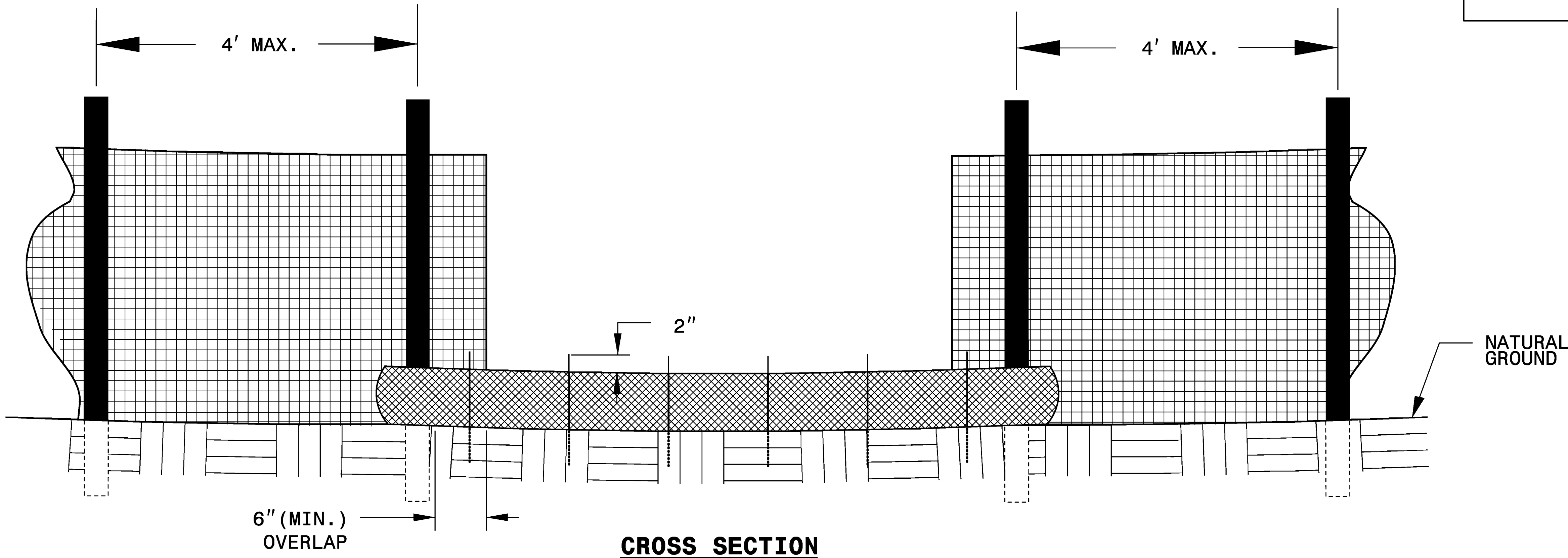
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE  
STANDARD SPECIFICATIONS.





# WATTLE SILT FENCE BREAK DETAIL

|                         |                     |
|-------------------------|---------------------|
| PROJECT REFERENCE NO.   | SHEET NO.           |
| BD-5102J                | EC-3                |
| R/W SHEET NO.           |                     |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |



**NOTES:**

INSTALL WATTLE WITH A 6" OVERLAP OF SILT FENCE.

DO NOT USE WATTLES TREATED WITH PAM

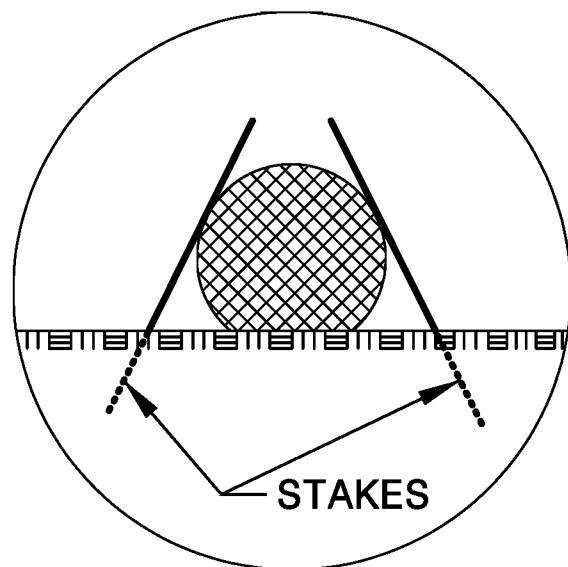
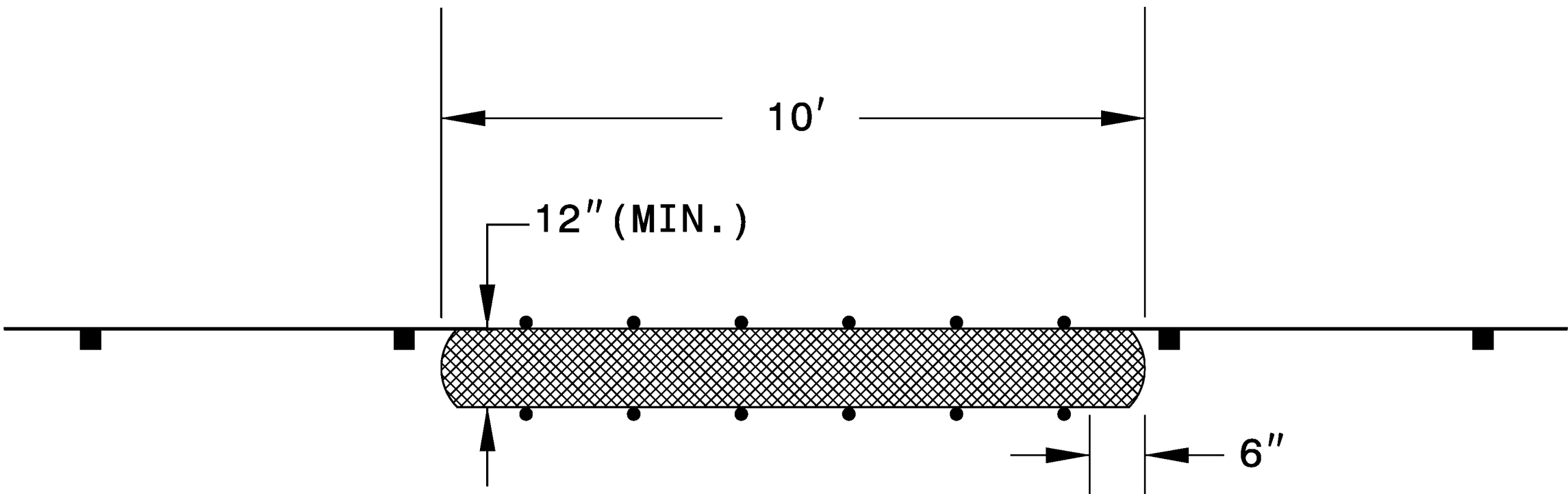
USE MINIMUM 12 IN. DIAMETER, 10 FT. LENGTH  
COIR FIBER (COCONUT FIBER) WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL  
CROSS SECTION.

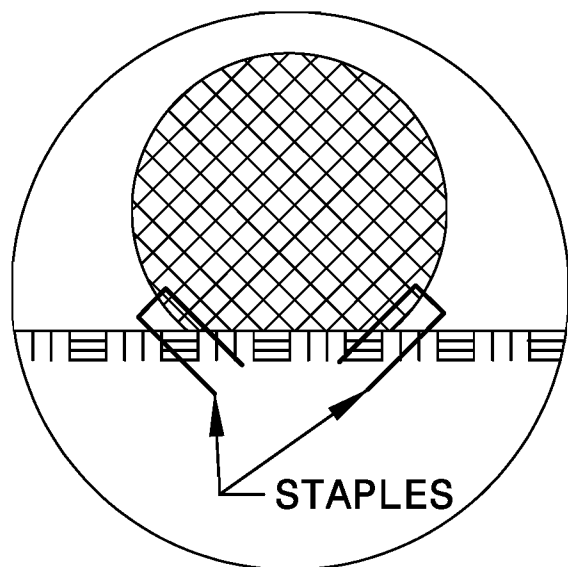
INSTALL STAKES AT A MINIMUM SPACING OF 2' AND INSERT  
STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE  
FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON  
BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.



**INSET A**



**INSET B**



DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

| SITE DESCRIPTION                             | STABILIZATION TIME | TIMEFRAME EXCEPTIONS                                                                   |
|----------------------------------------------|--------------------|----------------------------------------------------------------------------------------|
| PERIMETER DIKES, SWALES, DITCHES AND SLOPES  | 7 DAYS             | NONE                                                                                   |
| HIGH QUALITY WATER (HQW) ZONES               | 7 DAYS             | NONE                                                                                   |
| SLOPES STEEPER THAN 3:1                      | 7 DAYS             | IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED. |
| SLOPES 3:1 OR FLATTER                        | 14 DAYS            | 7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.                                          |
| ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1 | 14 DAYS            | NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.                                             |

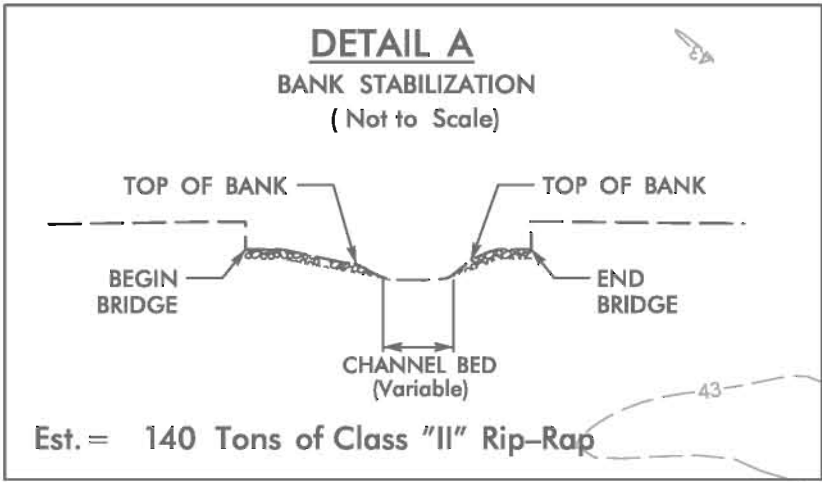
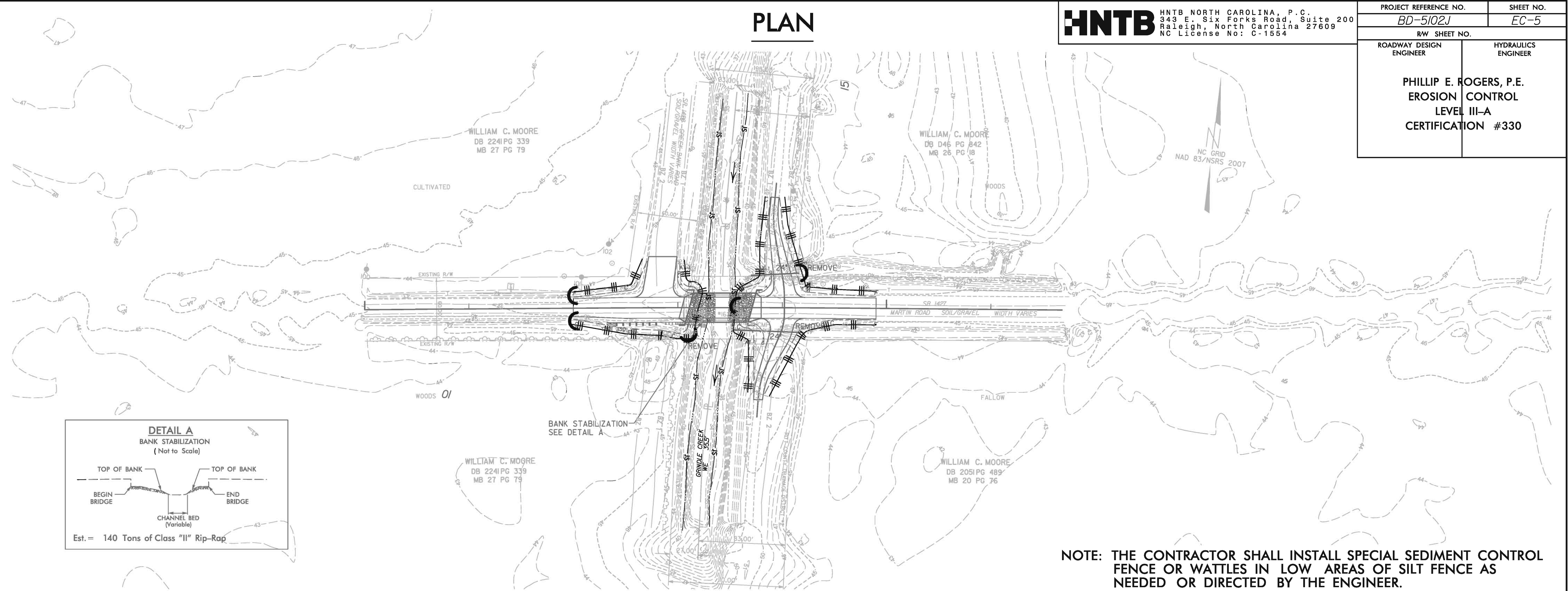


PLAN



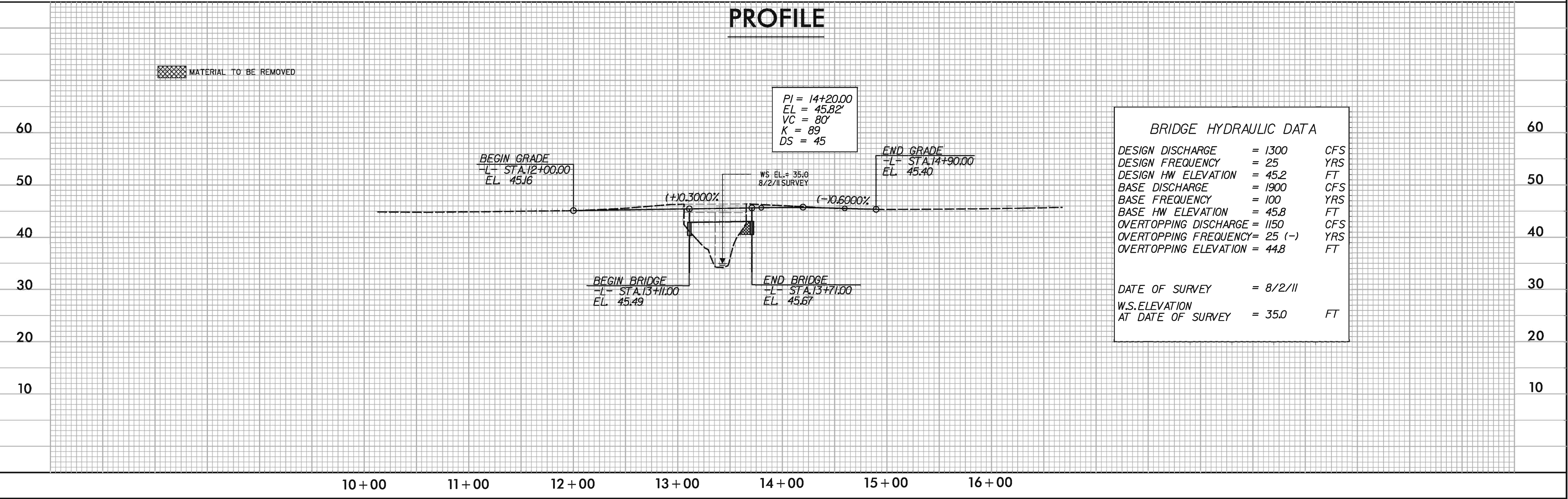
HNTB NORTH CAROLINA, P.C.  
343 E. Six Forks Road, Suite 200  
Raleigh, North Carolina 27609  
NC License No: C-1554

| PROJECT REFERENCE NO.   |  | SHEET NO.           |
|-------------------------|--|---------------------|
| BD-5102J                |  | EC-5                |
| RW SHEET NO.            |  |                     |
| ROADWAY DESIGN ENGINEER |  | HYDRAULICS ENGINEER |
| PHILLIP E. ROGERS, P.E. |  |                     |
| EROSION CONTROL         |  |                     |
| LEVEL III-A             |  |                     |
| CERTIFICATION #330      |  |                     |



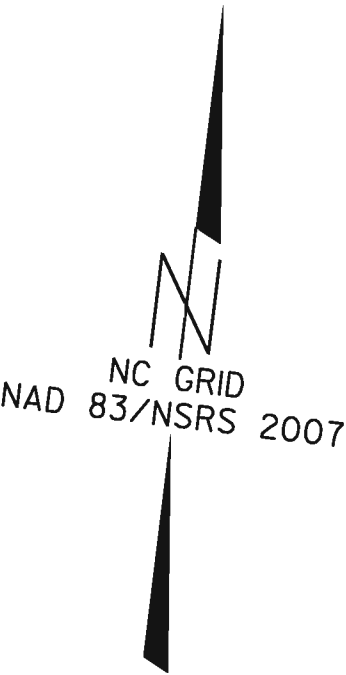
NOTE: THE CONTRACTOR SHALL INSTALL SPECIAL SEDIMENT CONTROL FENCE OR WATTLES IN LOW AREAS OF SILT FENCE AS NEEDED OR DIRECTED BY THE ENGINEER.

PROFILE

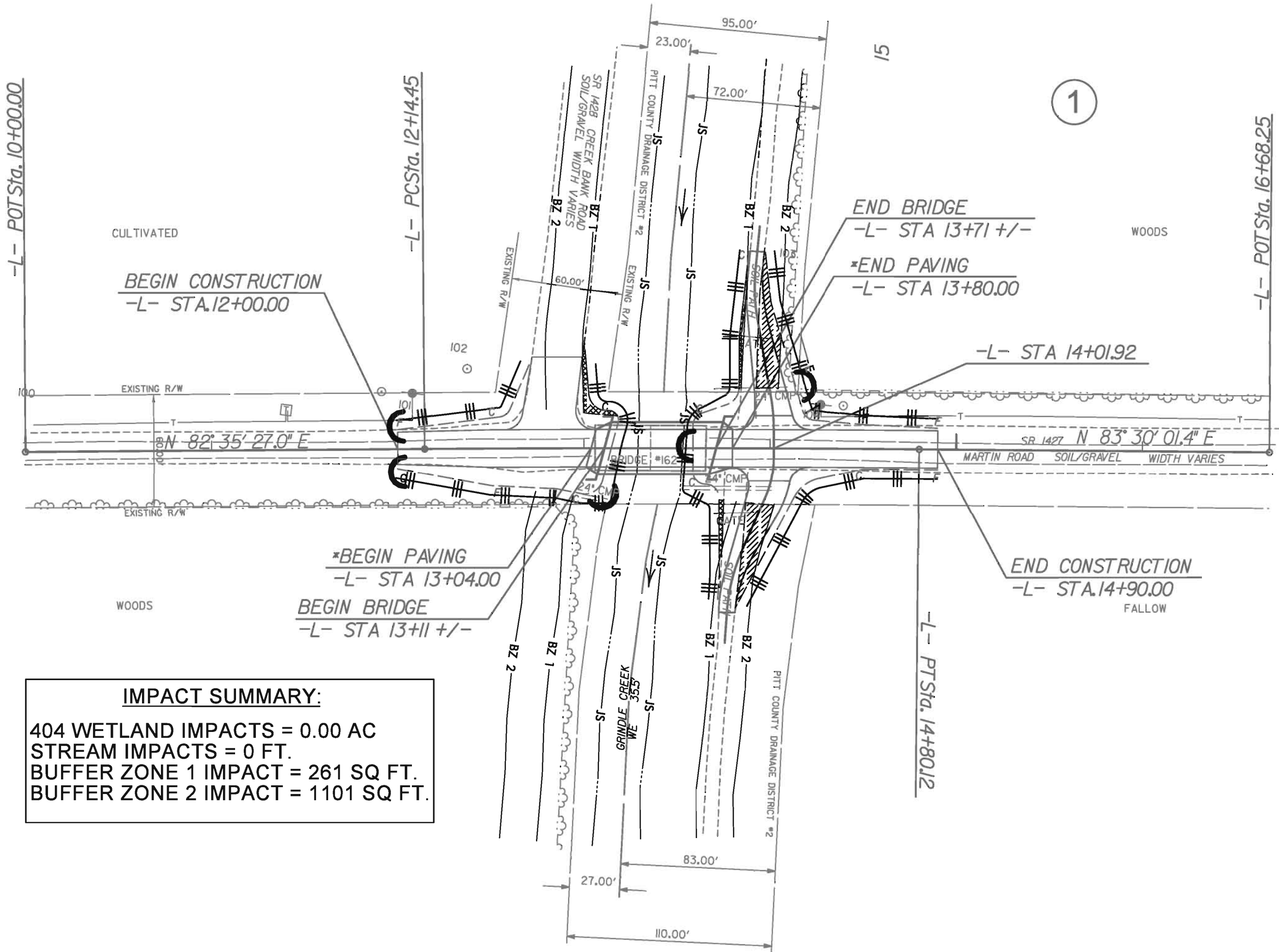


REVISIONS





-L-  
PI Sta 13+47.29  
Δ = 0° 54' 34.4" (RT)  
D = 0° 20' 32.5"  
L = 265.67'  
T = 132.84'  
R = 16,735.00'



**IMPACT SUMMARY:**  
404 WETLAND IMPACTS = 0.00 AC  
STREAM IMPACTS = 0 FT.  
BUFFER ZONE 1 IMPACT = 261 SQ FT.  
BUFFER ZONE 2 IMPACT = 1101 SQ FT.

**LEGEND**  
ALLOWABLE IMPACTS  
ZONE 1  
ALLOWABLE IMPACTS  
ZONE 2

NCDOT  
BD-5102J PITT COUNTY  
REPLACE BRIDGE NO. 162  
SR 1427 (MARTIN RD.)  
OVER GRINDLE CREEK  
BETWEEN NC HWY 11 / US 13  
AND SR 1428

SCALE: 1" = 50'  
JANUARY 30, 2012  
FOR PERMITTING ONLY:  
NOT FOR CONSTRUCTION



02/03/98

|                     |           |              |
|---------------------|-----------|--------------|
| PROJ. REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
| BD-5102J            | X-1       | 3            |

Note: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Shoulder Borrow, Fine Grading, Clearing and Grubbing, Breaking of Existing Pavement, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY  
IN CUBIC YARDS

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

| STATION           | UNCLASSIFIED EXCAVATION | EMBANK. | UNDERCUT |
|-------------------|-------------------------|---------|----------|
| -L- STA. 11+50.00 | 0                       | 0       | 0        |
| -L- STA. 12+00.00 | 0                       | 0       | 0        |
| -L- STA. 12+50.00 | 29                      | 4       | 0        |
| -L- STA. 13+00.00 | 92                      | 3       | 0        |
| -L- STA. 13+50.00 | 31                      | 0       | 0        |
| -L- STA. 14+00.00 | 54                      | 25      | 0        |
| -L- STA. 14+50.00 | 33                      | 85      | 0        |
| -L- STA. 15+00.00 | 0                       | 0       | 0        |
|                   |                         |         |          |
|                   |                         |         |          |
|                   |                         |         |          |
|                   |                         |         |          |

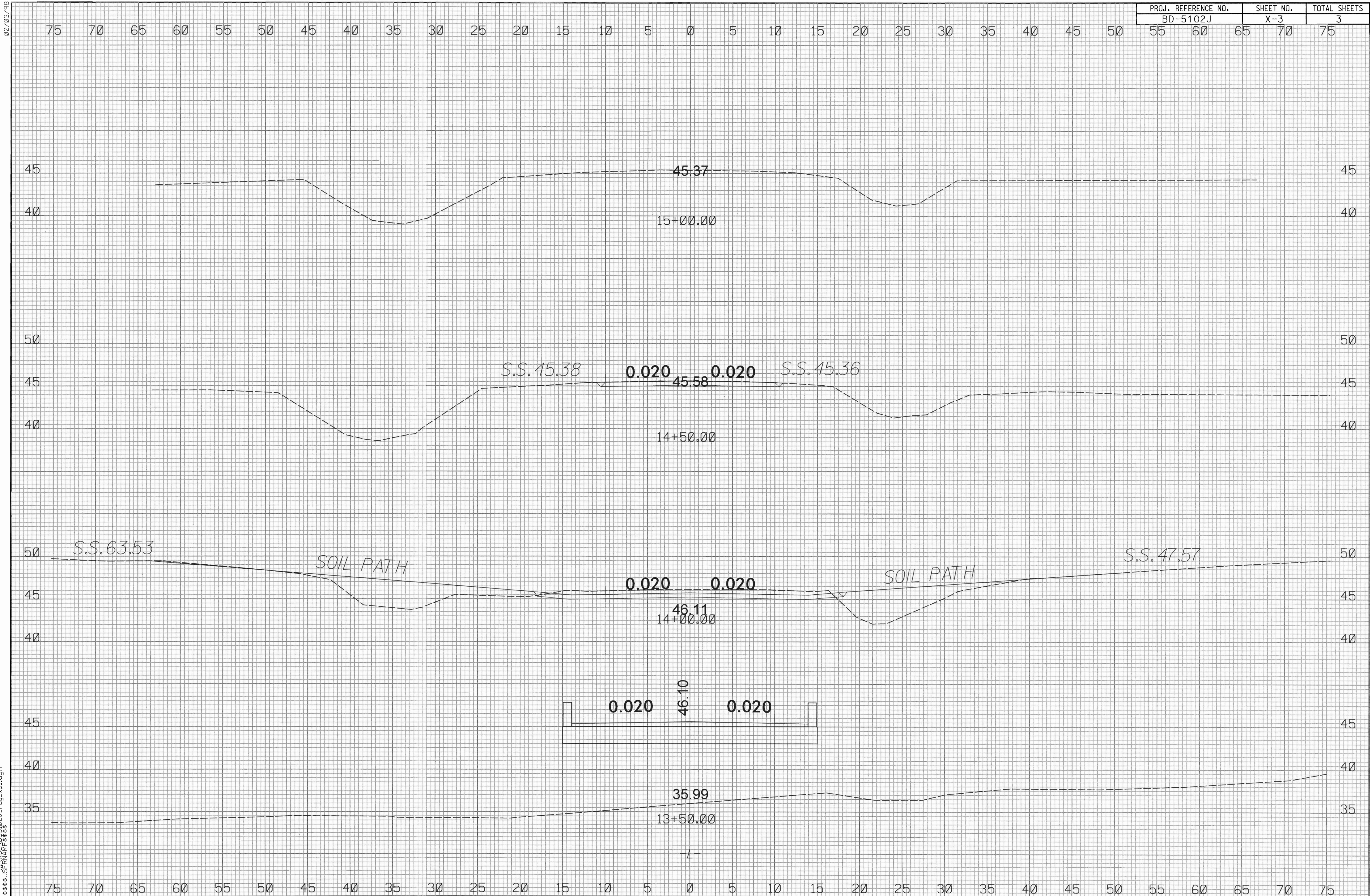






02.03/18

| PROJ. REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|---------------------|-----------|--------------|
| BD-5102J            | X-3       | 3            |





FOR GENERAL NOTES, SEE SHEET 2.

## BRIDGE HYDRAULIC DATA

|                             |   |              |
|-----------------------------|---|--------------|
| DESIGN DISCHARGE            | = | 1300 CFS     |
| FREQUENCY OF DESIGN FLOOD   | = | 25 YR        |
| DESIGN HIGH WATER ELEVATION | = | 45.2 FT.     |
| DRAINAGE AREA               | = | 15.6 SQ. MI. |
| BASIC DISCHARGE (Q100)      | = | 1900 CFS     |
| BASIC HIGH WATER ELEVATION  | = | 45.8 FT.     |

## OVERTOPPING FLOOD DATA

|                                |   |          |
|--------------------------------|---|----------|
| OVERTOPPING DISCHARGE          | = | 1150 CFS |
| FREQUENCY OF OVERTOPPING FLOOD | = | 25 YR -  |
| OVERTOPPING FLOOD ELEVATION    | = | 44.8 FT. |

## CURVE DATA -L-

|                                    |
|------------------------------------|
| PI STA. = 14+63.19 -L-             |
| $\Delta = 0^\circ 34' 16.8''$ (RT) |
| D = $0^\circ 53' 03.1''$           |
| L = 64.62'                         |
| T = 32.31'                         |
| R = 6,480.00'                      |

|                        |
|------------------------|
| PI STA. = 14+20.00 -L- |
| ELEV = 45.82           |
| V.C. = 80'             |

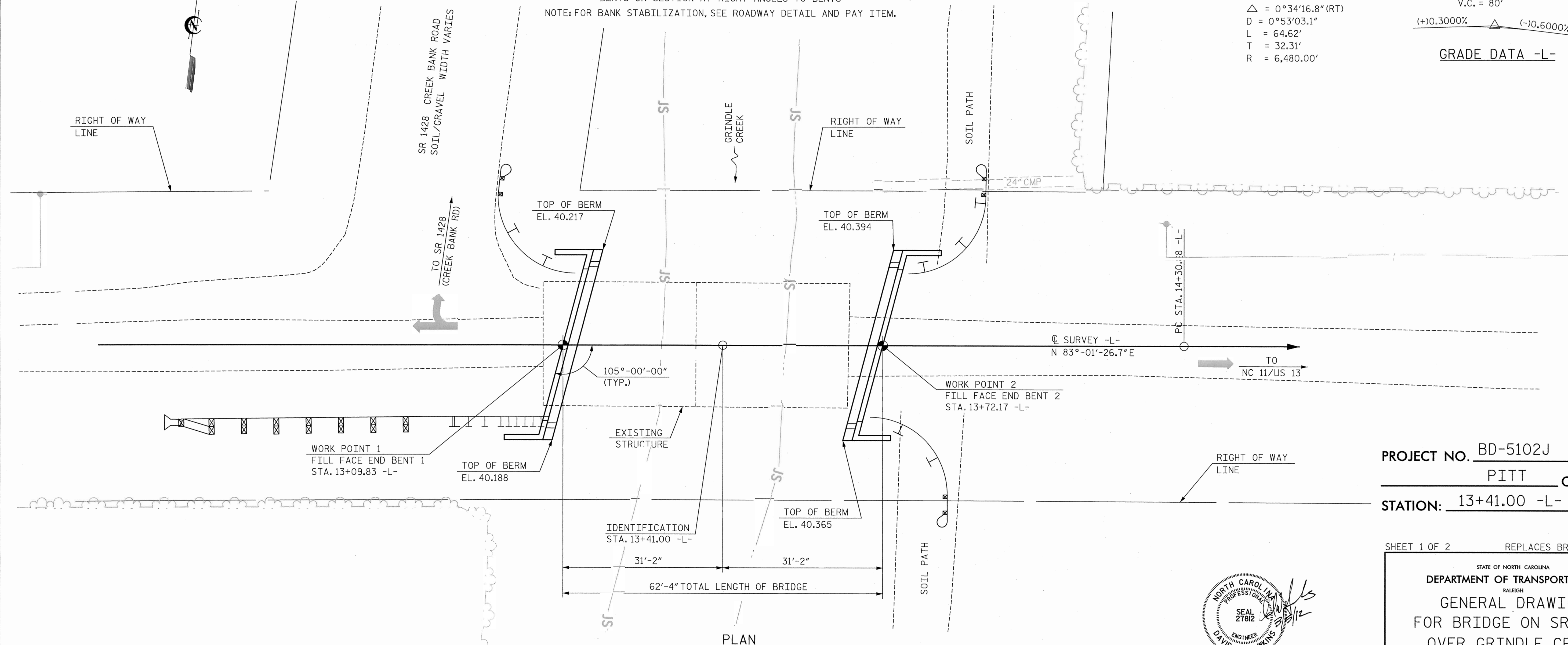
(+0.3000%  (-0.6000%)

## GRADE DATA -L-

## SECTION ALONG C SURVEY -L-

BENTS ON SECTION AT RIGHT ANGLES TO BENTS

NOTE: FOR BANK STABILIZATION, SEE ROADWAY DETAIL AND PAY ITEM.



## PLAN

NOTES: ALL SUBSTRUCTURE UNITS ARE PARALLEL.

PILES NOT SHOWN FOR CLARITY.

PROJECT NO. BD-5102J

PITT COUNTY

STATION: 13+41.00 -L-

SHEET 1 OF 2

REPLACES BRIDGE NO. 162

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

GENERAL DRAWING  
FOR BRIDGE ON SR 1427  
OVER GRINDLE CREEK  
BETWEEN NC 11/US 13  
AND SR 1428



HNTB

HNTB NORTH CAROLINA, P.C.  
NC License No. C-1554  
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY: M. WRIGHT  
CHECKED BY: K. DICKENS

DATE: 11/11  
DATE: 1/12

DWG. NO. 1

## REVISIONS

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

## SHEET NO.

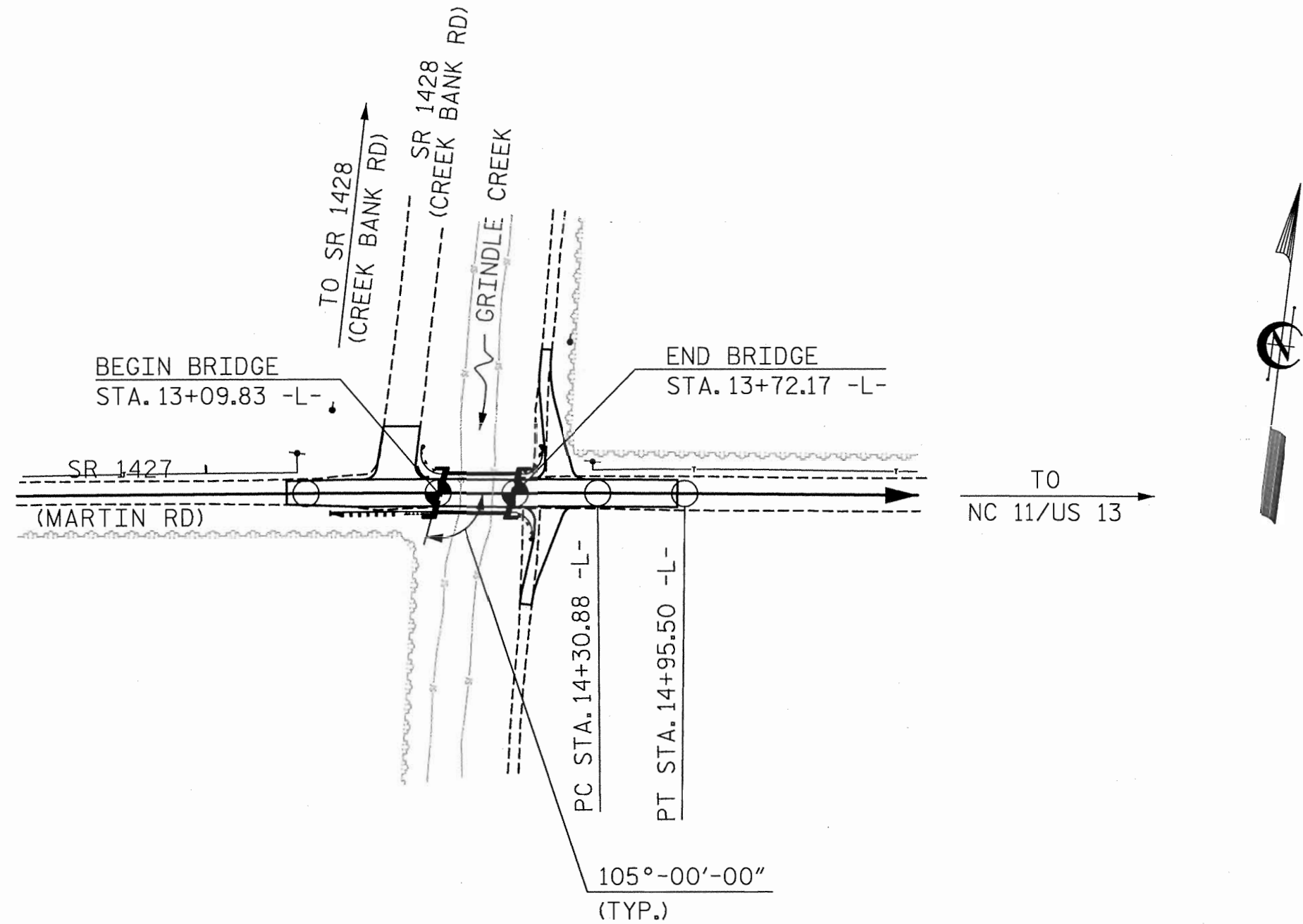
S-1

## TOTAL SHEETS

12



BM - BASELINE CAP "BL-1", STA. 5+00.00 -BL-, ELEV 43.12



LOCATION SKETCH

FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

|                | REMOVAL<br>OF EXISTING<br>STRUCTURE<br>AT STATION<br>13+41.00 -L- | UNCLASSIFIED<br>STRUCTURE<br>EXCAVATION<br>AT STATION<br>13+41.00 -L- | CLASS A<br>CONCRETE | REINFORCING<br>STEEL | HP 12x53<br>STEEL<br>PILES |          | PILE<br>REDRIVES | VERTICAL<br>CONCRETE<br>BARRIER<br>RAIL | ELASTOMERIC<br>BEARINGS | 3'-0"x2'-0"<br>PRESTRESSED<br>CONCRETE<br>CORED SLABS |          |
|----------------|-------------------------------------------------------------------|-----------------------------------------------------------------------|---------------------|----------------------|----------------------------|----------|------------------|-----------------------------------------|-------------------------|-------------------------------------------------------|----------|
|                | LUMP SUM                                                          | LUMP SUM                                                              | CU. YDS.            | LBS.                 | NO.                        | LIN. FT. | EACH             | LIN. FT.                                | LUMP SUM                | NO.                                                   | LIN. FT. |
| SUPERSTRUCTURE | LUMP SUM                                                          | _____                                                                 | _____               | _____                | —                          | _____    | _____            | 120.26                                  | LUMP SUM                | 10                                                    | 600      |
| END BENT NO. 1 | _____                                                             | _____                                                                 | 16.3                | 2,254                | 5                          | 300      | 3                | _____                                   | _____                   | —                                                     | _____    |
| END BENT NO. 2 | _____                                                             | LUMP SUM                                                              | 16.3                | 2,254                | 5                          | 300      | 3                | _____                                   | _____                   | —                                                     | _____    |
| TOTAL          | LUMP SUM                                                          | LUMP SUM                                                              | 32.6                | 4,508                | 10                         | 600      | 6                | 120.26                                  | LUMP SUM                | 10                                                    | 600      |

GENERAL NOTES

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

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

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

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 SPICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE PLUS A MINIMUM LAP SPICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 18 FT EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE EXISTING 2 SPAN STRUCTURE WITH SPAN LENGTHS OF 31'-0" AND 30'-0" WITH PRESTRESSED CONCRETE CHANNELS (STD BMD-13-1) SUPPORTING A REINFORCED CONCRETE DECK AND STEEL RAILINGS, A 24'-4" CLEAR ROADWAY WIDTH ON CONCRETE CAP AND TIMBER PILES BENT SHALL BE REMOVED. IN ADDITION, ANY PILES REMAINING FROM PREVIOUS BRIDGE CONSTRUCTION OR MAINTENANCE OPERATIONS SHALL BE REMOVED AND INCLUDED IN THE LUMP SUM PAY ITEM FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 13+41.00 -L-".

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

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

THIS BRIDGE SHALL BE CONSTRUCTED USING TOP-DOWN CONSTRUCTION METHODS. THE USE OF A TEMPORARY CAUSEWAY OR WORK BRIDGE IS NOT PERMITTED.

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOUNDATION NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILES AT END BENT NO. 1 AND END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 90 TONS PER PILE.

DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 150 TONS PER PILE.

IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 40 TO 60 FT-KIPS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

PROJECT NO. BD-5102J

PITT COUNTY

STATION: 13+41.00 -L-

SHEET 2 OF 2



|                              |  |  |  |  |  |
|------------------------------|--|--|--|--|--|
| STATE OF NORTH CAROLINA      |  |  |  |  |  |
| DEPARTMENT OF TRANSPORTATION |  |  |  |  |  |
| RALEIGH                      |  |  |  |  |  |
| GENERAL DRAWING              |  |  |  |  |  |
| FOR BRIDGE ON SR 1427        |  |  |  |  |  |
| OVER GRINDLE CREEK           |  |  |  |  |  |
| BETWEEN NC 11/US 13          |  |  |  |  |  |
| AND SR 1428                  |  |  |  |  |  |

| REVISIONS |    |      |     |    |      | SHEET NO.<br><b>S-2</b>      |
|-----------|----|------|-----|----|------|------------------------------|
| NO.       | BY | DATE | NO. | BY | DATE |                              |
| 1         |    |      | 3   |    |      | TOTAL<br>SHEETS<br><b>12</b> |
| 2         |    |      | 4   |    |      |                              |

**HNTB**

HNTB NORTH CAROLINA, P.C.  
NC License No. C-1554  
343 E. Six Forks Rd., Suite 200, Raleigh, N.C. 27609

DRAWN BY M. WRIGHT

CHECKED BY K. DICKENS

DATE 11/11

DATE 1/12

DWG. NO. 2



LOAD FACTORS:

| DESIGN<br>LOAD<br>RATING<br>FACTORS | LIMIT STATE | $\gamma_{DC}$ | $\gamma_{DW}$ |
|-------------------------------------|-------------|---------------|---------------|
|                                     | 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

PROJECT NO. BD-5102J

PITT COUNTY

STATION: 13+41.00 -L-



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

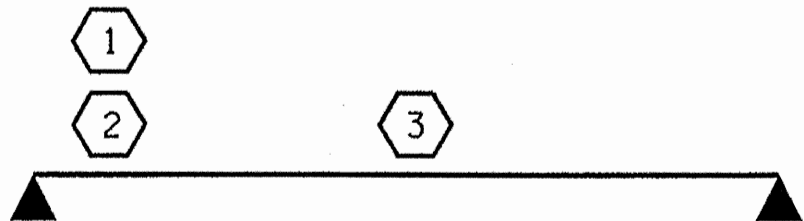
STANDARD  
LRFR SUMMARY FOR  
60' CORED SLAB UNIT  
75° SKEW & 105° SKEW  
(NON-INTERSTATE TRAFFIC)

| REVISIONS |     |       |     |     |       | SHEET NO.          |
|-----------|-----|-------|-----|-----|-------|--------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                    |
| 1         |     |       | 3   |     |       | 5-3                |
| 2         |     |       | 4   |     |       | TOTAL SHEETS<br>12 |

STD. NO. 24LRFR1\_75&105S\_60L

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

| LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS |            |                      |                            |                                   |               |                        |                              |               |      |                 |                                           |                              |               |      |                 |                                           |                         |                              |               |      |                 |                                           |                   |  |
|-----------------------------------------------------------------------------------|------------|----------------------|----------------------------|-----------------------------------|---------------|------------------------|------------------------------|---------------|------|-----------------|-------------------------------------------|------------------------------|---------------|------|-----------------|-------------------------------------------|-------------------------|------------------------------|---------------|------|-----------------|-------------------------------------------|-------------------|--|
| LEVEL                                                                             | VEHICLE    | WEIGHT (W)<br>(TONS) | CONTROLLING<br>LOAD RATING | MINIMUM<br>RATING FACTORS<br>(RF) | TONS = W X RF | STRENGTH I LIMIT STATE |                              |               |      |                 |                                           |                              |               |      |                 |                                           | SERVICE III LIMIT STATE |                              |               |      |                 |                                           | COMMENT<br>NUMBER |  |
|                                                                                   |            |                      |                            |                                   |               | LIVELOAD<br>FACTORS    | MOMENT                       |               |      |                 |                                           | SHEAR                        |               |      |                 |                                           | LIVELOAD<br>FACTORS     | MOMENT                       |               |      |                 |                                           |                   |  |
|                                                                                   |            |                      |                            |                                   |               |                        | DISTRIBUTION<br>FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM<br>LEFT END OF<br>SPAN (ft) | DISTRIBUTION<br>FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM<br>LEFT END OF<br>SPAN (ft) |                         | DISTRIBUTION<br>FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM<br>LEFT END OF<br>SPAN (ft) |                   |  |
| DESIGN<br>LOAD<br>RATING                                                          | HL-93(Inv) | N/A                  | 1                          | 1.128                             | --            | 1.75                   | 0.27                         | 1.35          | 60'  | EL              | 29.482                                    | 0.608                        | 1.13          | 60'  | EL              | 2.948                                     | 0.80                    | 0.27                         | 1.39          | 60'  | EL              | 29.482                                    |                   |  |
|                                                                                   | HL-93(Opr) | N/A                  | --                         | 1.463                             | --            | 1.35                   | 0.27                         | 1.76          | 60'  | EL              | 29.482                                    | 0.608                        | 1.46          | 60'  | EL              | 2.948                                     | N/A                     | --                           | --            | --   | --              | --                                        |                   |  |
|                                                                                   | HS-20(Inv) | 36.000               | 2                          | 1.381                             | 49.722        | 1.75                   | 0.27                         | 1.72          | 60'  | EL              | 29.482                                    | 0.608                        | 1.38          | 60'  | EL              | 2.948                                     | 0.80                    | 0.27                         | 1.76          | 60'  | EL              | 29.482                                    |                   |  |
|                                                                                   | HS-20(Opr) | 36.000               | --                         | 1.79                              | 64.455        | 1.35                   | 0.27                         | 2.22          | 60'  | EL              | 29.482                                    | 0.608                        | 1.79          | 60'  | EL              | 2.948                                     | N/A                     | --                           | --            | --   | --              | --                                        |                   |  |
| LEGAL<br>LOAD<br>RATING                                                           | SV         | SNSH                 | 13.500                     | --                                | 3.791         | 51.185                 | 1.4                          | 0.27          | 4.62 | 60'             | EL                                        | 29.482                       | 0.608         | 4.02 | 60'             | EL                                        | 2.948                   | 0.80                         | 0.27          | 3.79 | 60'             | EL                                        | 29.482            |  |
|                                                                                   |            | SNGARBS2             | 20.000                     | --                                | 2.888         | 57.751                 | 1.4                          | 0.27          | 3.53 | 60'             | EL                                        | 29.482                       | 0.608         | 2.89 | 60'             | EL                                        | 2.948                   | 0.80                         | 0.27          | 2.90 | 60'             | EL                                        | 29.482            |  |
|                                                                                   |            | SNAGRIS2             | 22.000                     | --                                | 2.691         | 59.194                 | 1.4                          | 0.27          | 3.39 | 60'             | EL                                        | 29.482                       | 0.608         | 2.69 | 60'             | EL                                        | 2.948                   | 0.80                         | 0.27          | 2.78 | 60'             | EL                                        | 29.482            |  |
|                                                                                   |            | SNCOTTS3             | 27.250                     | --                                | 1.889         | 51.473                 | 1.4                          | 0.27          | 2.3  | 60'             | EL                                        | 29.482                       | 0.608         | 2.01 | 60'             | EL                                        | 2.948                   | 0.80                         | 0.27          | 1.89 | 60'             | EL                                        | 29.482            |  |
|                                                                                   |            | SNAGGRS4             | 34.925                     | --                                | 1.608         | 56.157                 | 1.4                          | 0.27          | 1.96 | 60'             | EL                                        | 29.482                       | 0.608         | 1.69 | 60'             | EL                                        | 2.948                   | 0.80                         | 0.27          | 1.61 | 60'             | EL                                        | 29.482            |  |
|                                                                                   |            | SNS5A                | 35.550                     | --                                | 1.57          | 55.826                 | 1.4                          | 0.27          | 1.91 | 60'             | EL                                        | 29.482                       | 0.608         | 1.72 | 60'             | EL                                        | 2.948                   | 0.80                         | 0.27          | 1.57 | 60'             | EL                                        | 29.482            |  |
|                                                                                   |            | SNS6A                | 39.950                     | --                                | 1.453         | 58.064                 | 1.4                          | 0.27          | 1.77 | 60'             | EL                                        | 29.482                       | 0.608         | 1.58 | 60'             | EL                                        | 2.948                   | 0.80                         | 0.27          | 1.45 | 60'             | EL                                        | 29.482            |  |
|                                                                                   |            | SNS7B                | 42.000                     | --                                | 1.385         | 58.152                 | 1.4                          | 0.27          | 1.69 | 60'             | EL                                        | 29.482                       | 0.608         | 1.56 | 60'             | EL                                        | 2.948                   | 0.80                         | 0.27          | 1.38 | 60'             | EL                                        | 29.482            |  |
|                                                                                   | TTST       | TNAGRIT3             | 33.000                     | --                                | 1.776         | 58.612                 | 1.4                          | 0.27          | 2.16 | 60'             | EL                                        | 29.482                       | 0.608         | 1.87 | 60'             | EL                                        | 2.948                   | 0.80                         | 0.27          | 1.78 | 60'             | EL                                        | 29.482            |  |
|                                                                                   |            | TNT4A                | 33.075                     | --                                | 1.787         | 59.12                  | 1.4                          | 0.27          | 2.18 | 60'             | EL                                        | 29.482                       | 0.608         | 1.81 | 60'             | EL                                        | 2.948                   | 0.80                         | 0.27          | 1.79 | 60'             | EL                                        | 29.482            |  |
|                                                                                   |            | TNT6A                | 41.600                     | --                                | 1.474         | 61.31                  | 1.4                          | 0.27          | 1.79 | 60'             | EL                                        | 29.482                       | 0.608         | 1.68 | 60'             | EL                                        | 2.948                   | 0.80                         | 0.27          | 1.47 | 60'             | EL                                        | 29.482            |  |
|                                                                                   |            | TNT7A                | 42.000                     | --                                | 1.488         | 62.489                 | 1.4                          | 0.27          | 1.81 | 60'             | EL                                        | 29.482                       | 0.608         | 1.62 | 60'             | EL                                        | 2.948                   | 0.80                         | 0.27          | 1.49 | 60'             | EL                                        | 29.482            |  |
|                                                                                   |            | TNT7B                | 42.000                     | --                                | 1.515         | 63.636                 | 1.4                          | 0.27          | 1.89 | 60'             | EL                                        | 29.482                       | 0.608         | 1.52 | 60'             | EL                                        | 2.948                   | 0.80                         | 0.27          | 1.55 | 60'             | EL                                        | 29.482            |  |
|                                                                                   |            | TNAGRIT4             | 43.000                     | --                                | 1.464         | 62.958                 | 1.4                          | 0.27          | 1.79 | 60'             | EL                                        | 29.482                       | 0.608         | 1.46 | 60'             | EL                                        | 2.948                   | 0.80                         | 0.27          | 1.47 | 60'             | EL                                        | 29.482            |  |
|                                                                                   |            | TNAGT5A              | 45.000                     | --                                | 1.378         | 62.016                 | 1.4                          | 0.27          | 1.68 | 60'             | EL                                        | 29.482                       | 0.608         | 1.47 | 60'             | EL                                        | 2.948                   | 0.80                         | 0.27          | 1.38 | 60'             | EL                                        | 29.482            |  |
|                                                                                   |            | TNAGT5B              | 45.000                     | 3                                 | 1.356         | 61.038                 | 1.4                          | 0.27          | 1.65 | 60'             | EL                                        | 29.482                       | 0.608         | 1.39 | 60'             | EL                                        | 2.948                   | 0.80                         | 0.27          | 1.36 | 60'             | EL                                        | 29.482            |  |

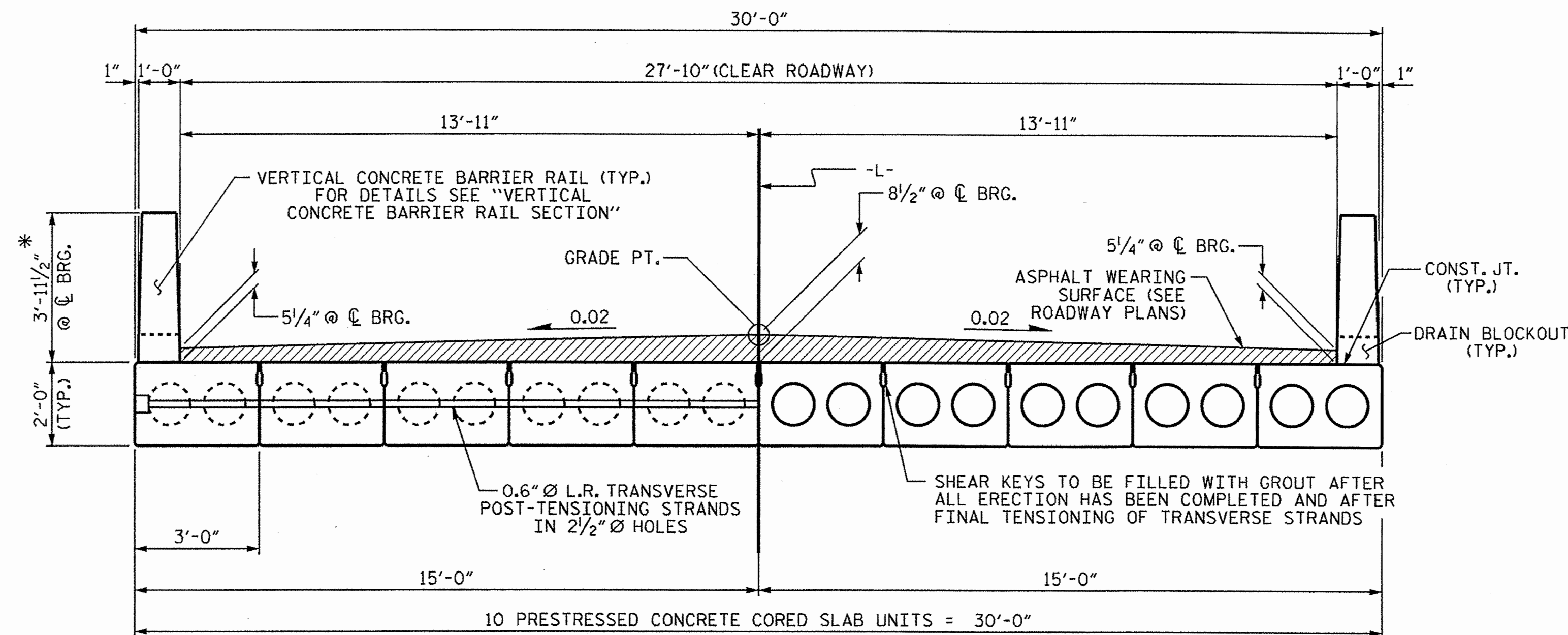


LRFR SUMMARY  
FOR SPAN 'A'

|                           |               |
|---------------------------|---------------|
| ASSEMBLED BY : E. K. POPE | DATE : 1-9-12 |
| CHECKED BY : N. RUFFIN    | DATE : 2-1-12 |
| DRAWN BY : CVC            | 6/10          |
| CHECKED BY : DNS          | 6/10          |

10-FEB-2012 09:14  
S:\DPG1\kai\th\BD-5102J\BD5102J\_SD\_CS.dgn  
kpaschal



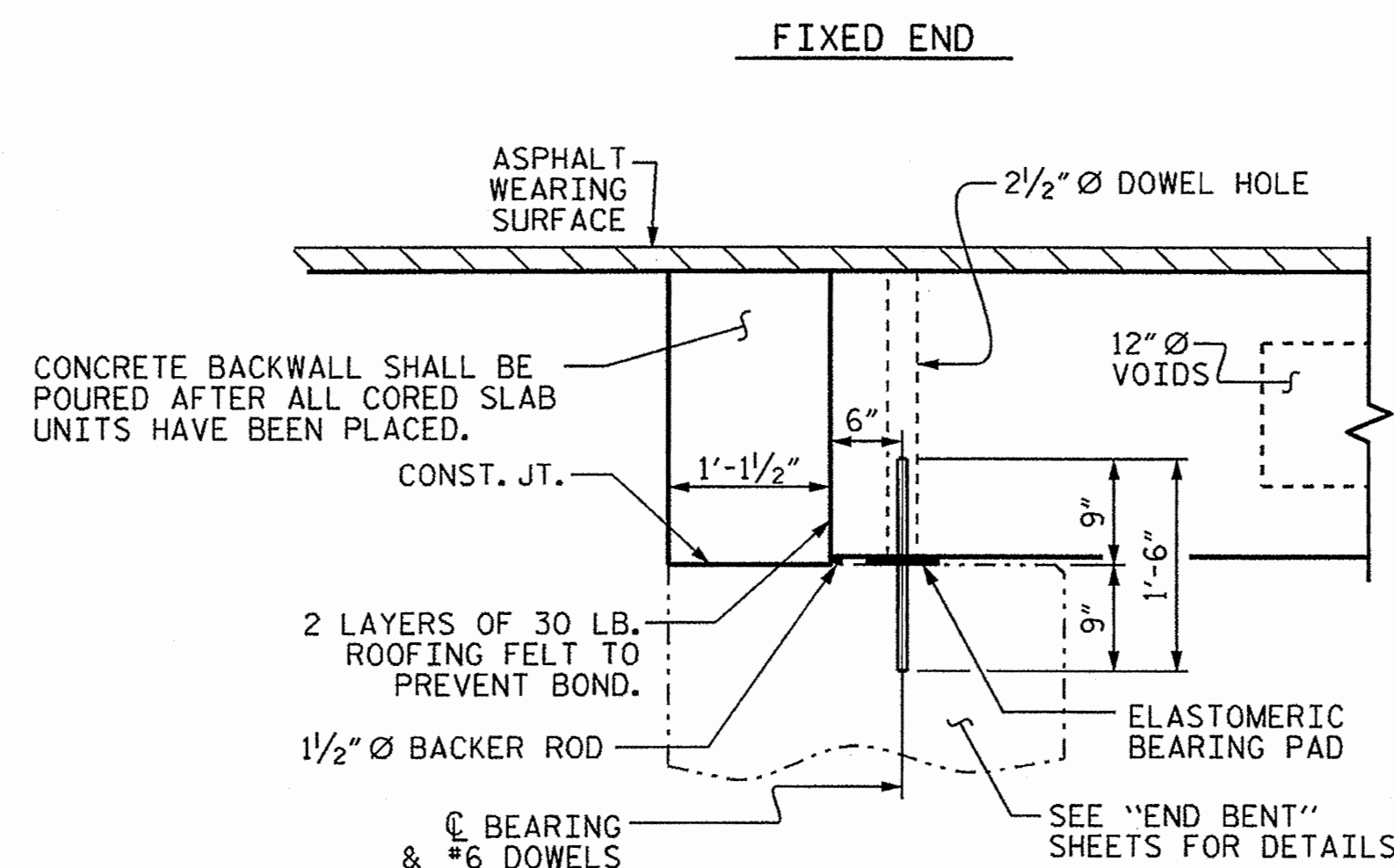


HALF SECTION  
AT INTERMEDIATE DIAPHRAGMS

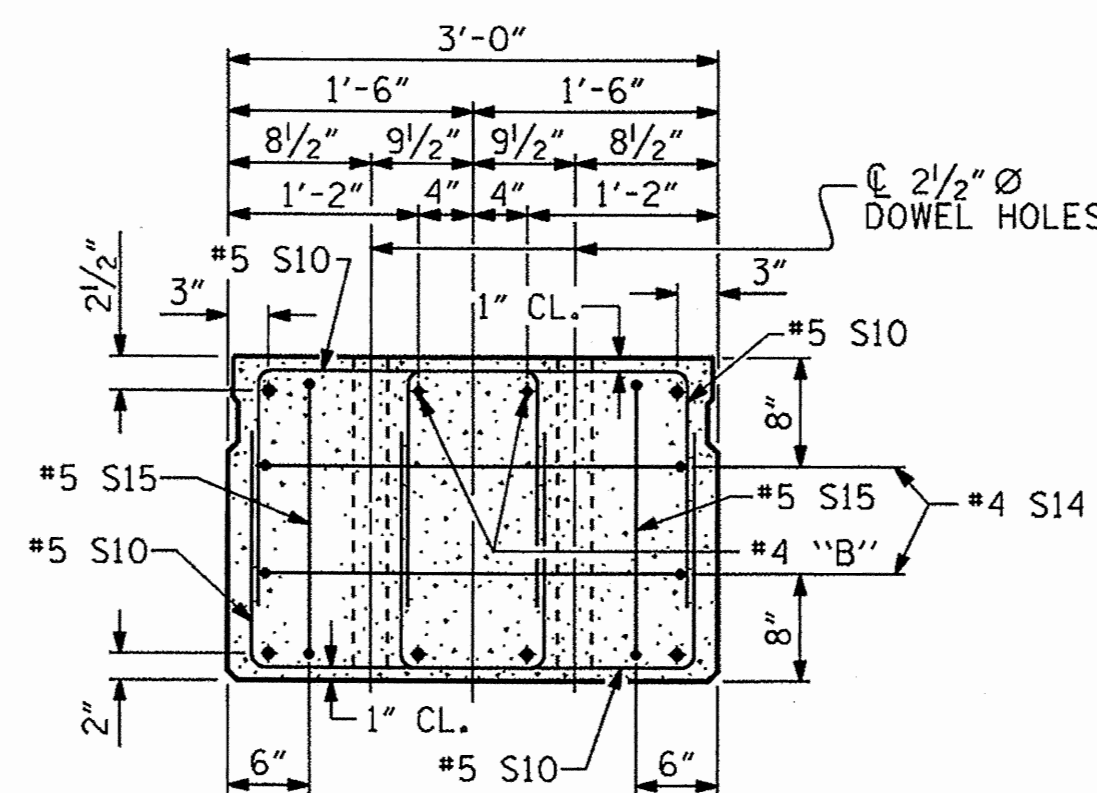
TYPICAL SECTION

HALF SECTION  
THROUGH VOIDS

\* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.

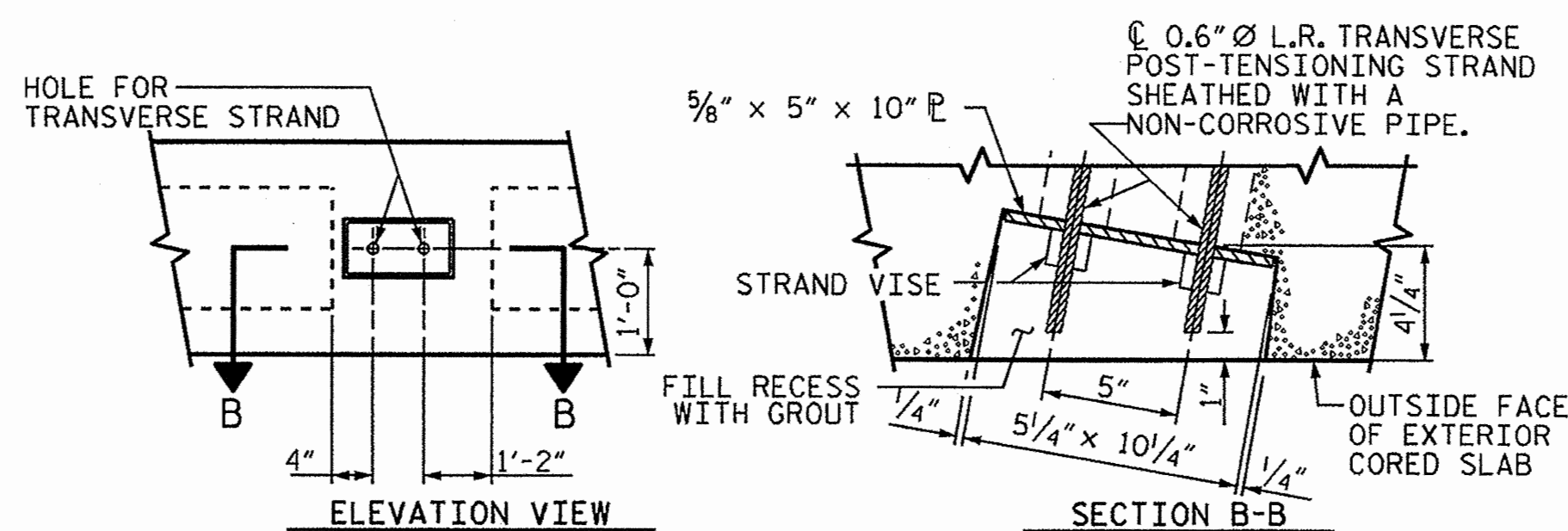


SECTION AT END BENT

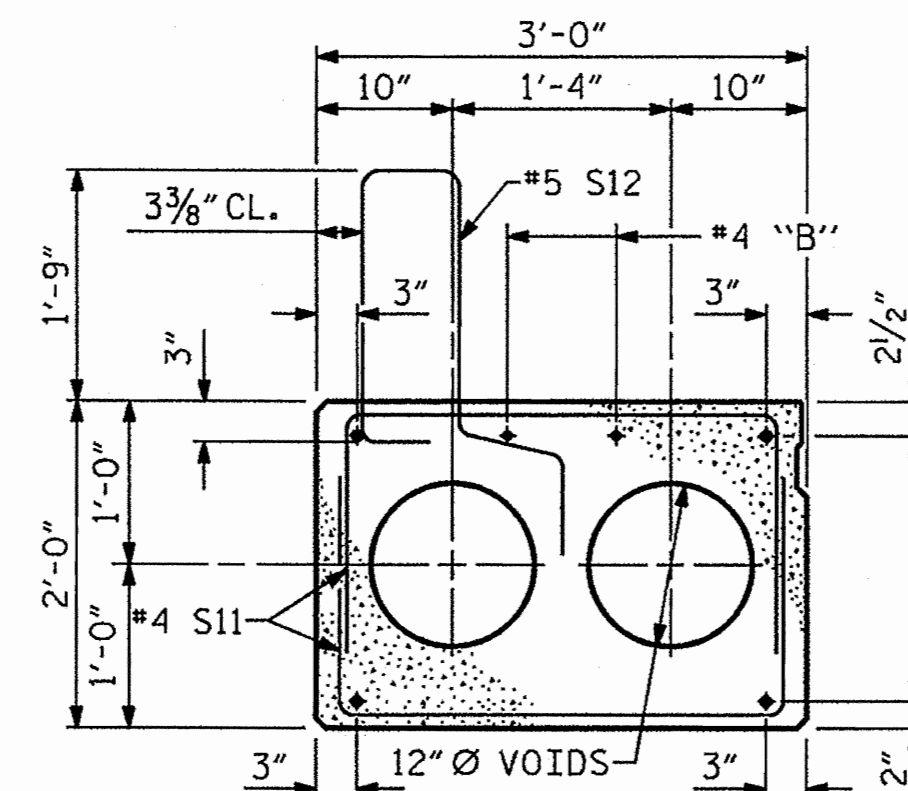


END ELEVATION

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



GRADED RECESS AT END OF POST-TENSIONED STRAND-CORED SLABS



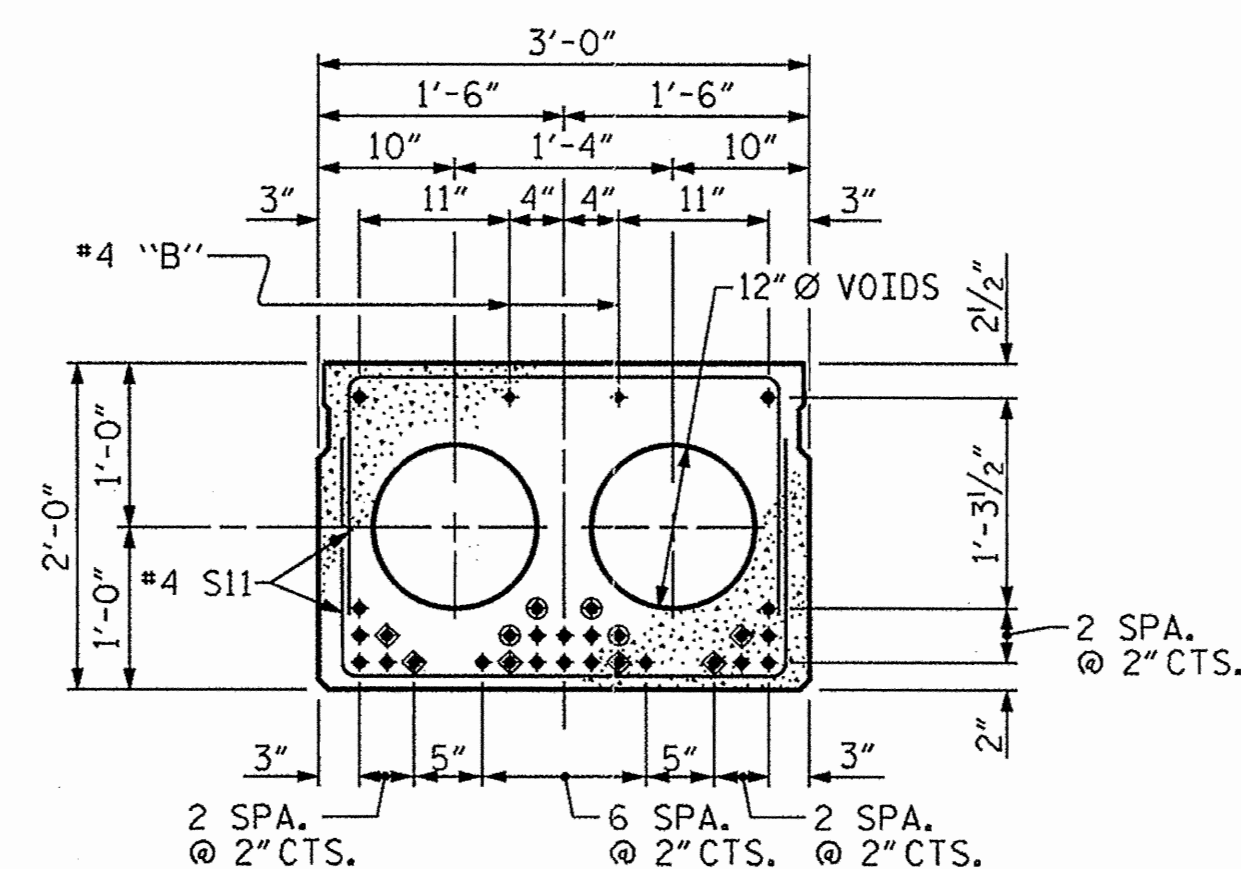
EXTERIOR SLAB SECTION

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

◆ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

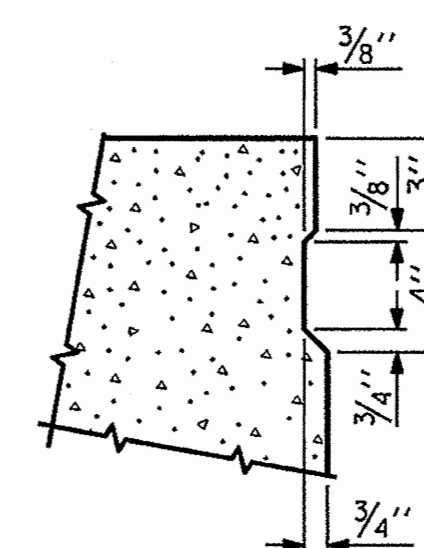
● OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



INTERIOR SLAB SECTION (60' UNIT)  
(24 STRANDS REQUIRED)

0.6" Ø LOW  
RELAXATION STRAND LAYOUT



SHEAR KEY DETAIL

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

PROJECT NO. BD-5102J  
PITT COUNTY  
STATION: 13+41.00 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
3'-0" X 2'-0"  
PRESTRESSED CONCRETE  
CORED SLAB UNIT

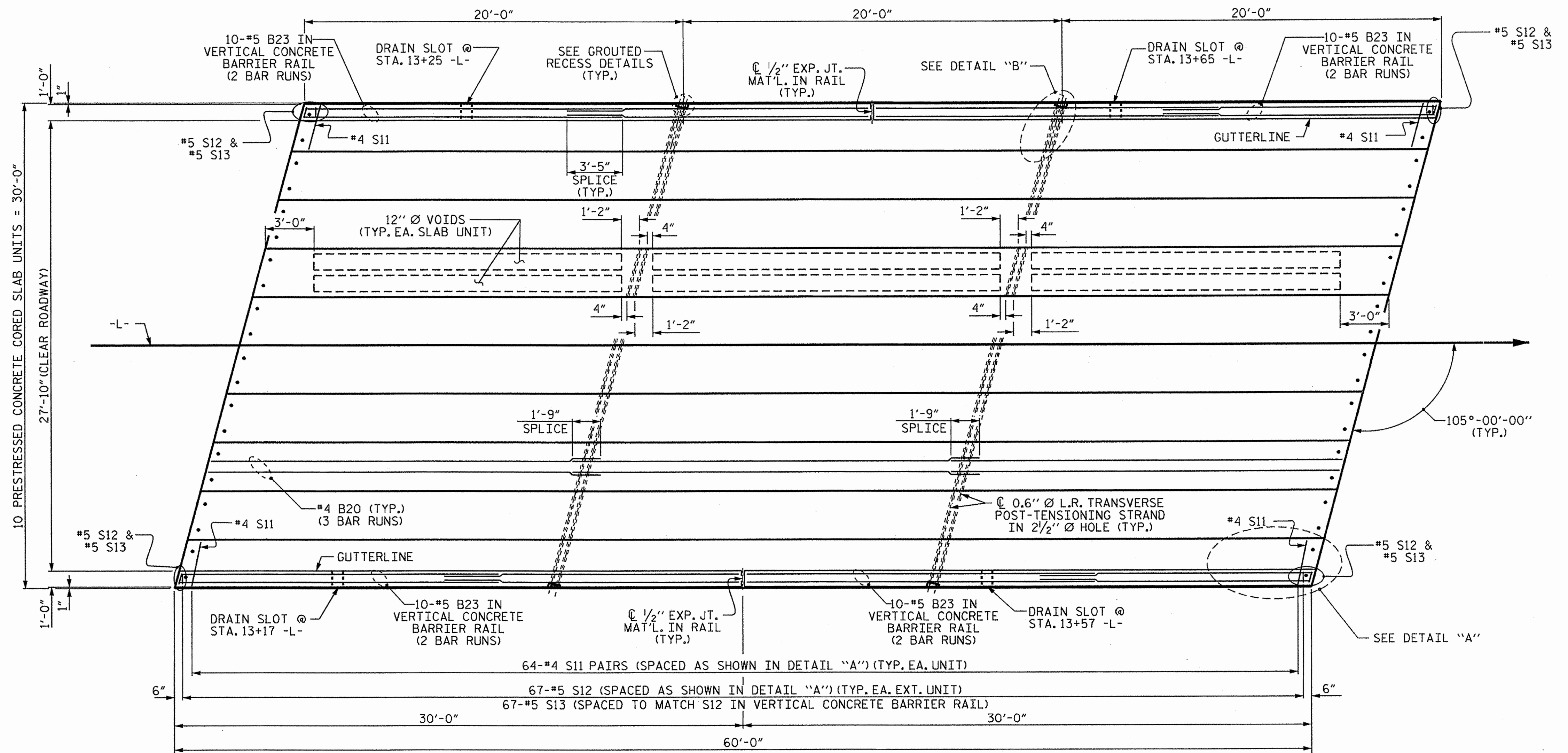
| REVISIONS |     |       |     |     |       | SHEET NO.       |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                 |
| 1         |     |       | 3   |     |       | 6-4             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 12 |

STD. NO. 24PCS4.30.105S

ASSEMBLED BY : E. K. POPE DATE : 1-9-12  
CHECKED BY : N. RUFFIN DATE : 2-1-12  
DRAWN BY : MAA 6/10 REV. 12/11 MAA/AAC  
CHECKED BY : MKT 7/10

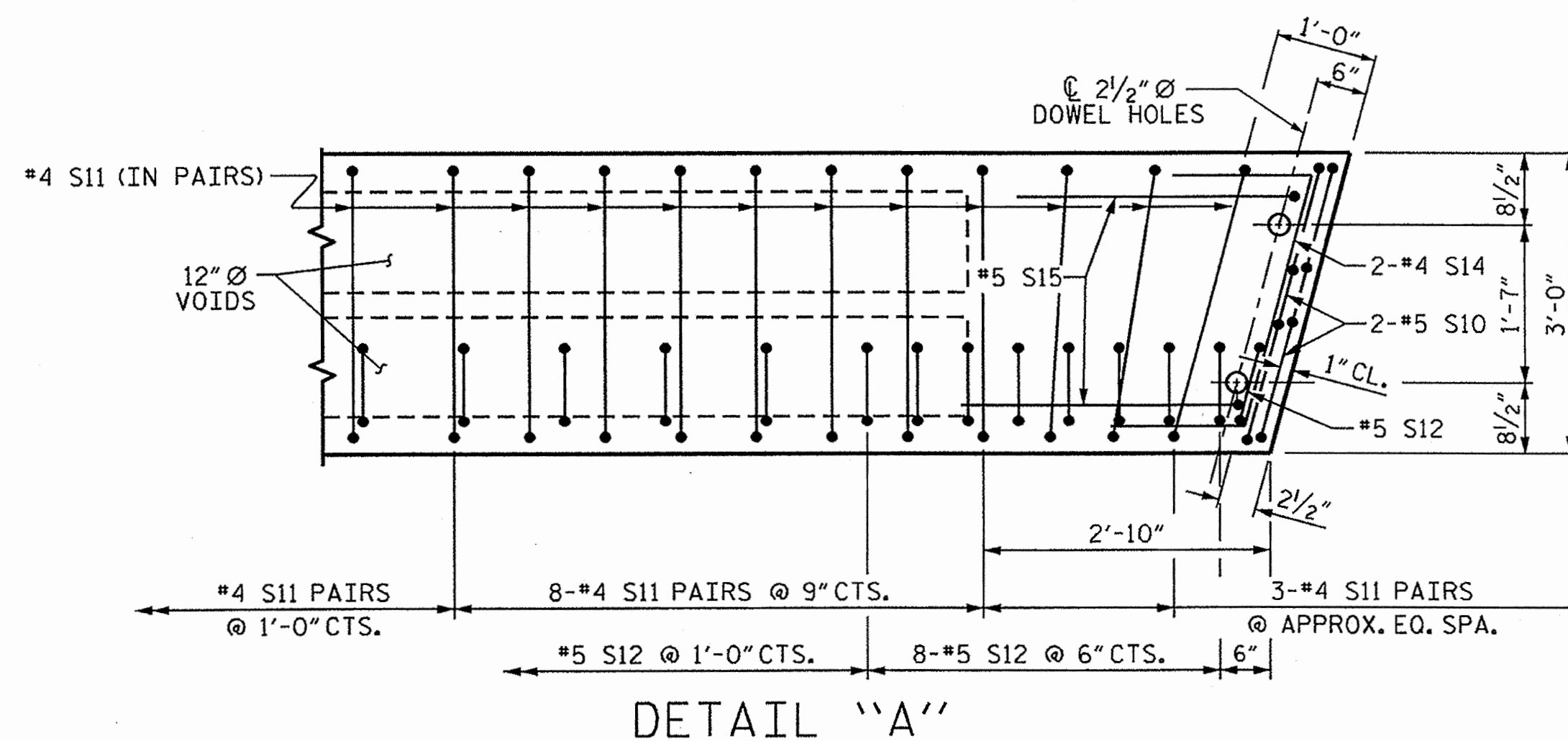
02-MAR-2012 08:47  
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kpaschal





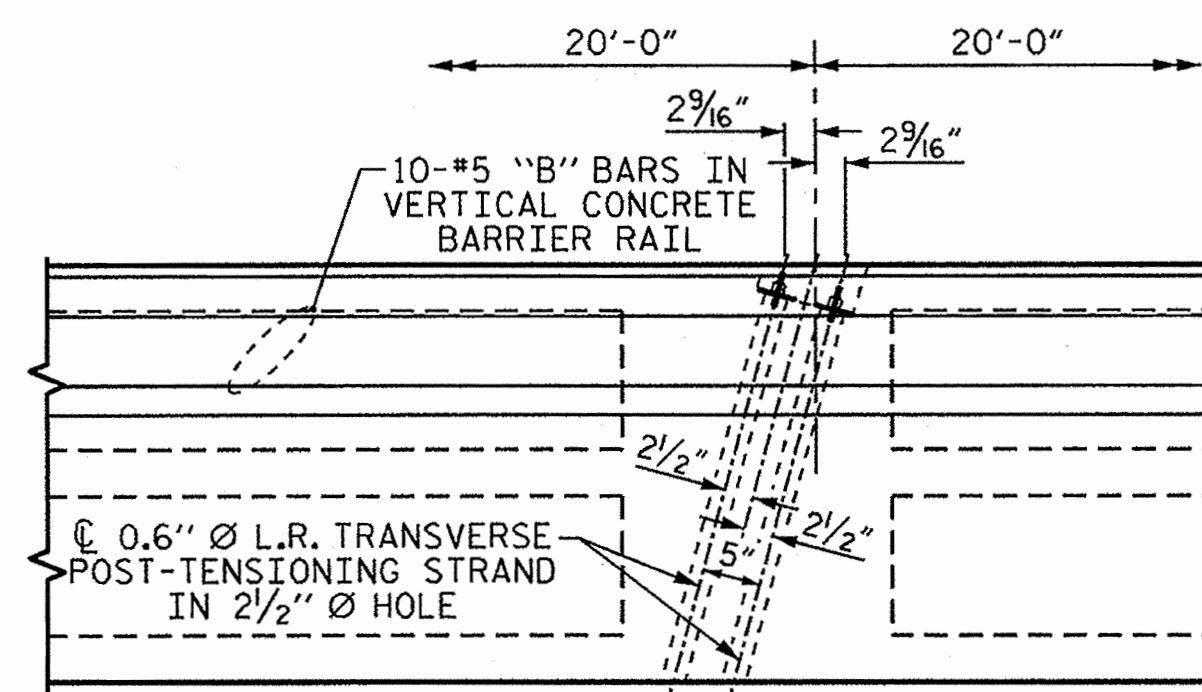
### PLAN OF UNIT

DECK DRAINS ARE TO BE INSTALLED AT THE FOLLOWING LOCATIONS:  
 LT: STA. 13+25 & STA. 13+65, RT: STA. 13+17 & STA. 13+57



DETAIL "A"

NOTE: EXTERIOR UNIT SHOWN - INTERIOR  
 UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.



DETAIL "B"

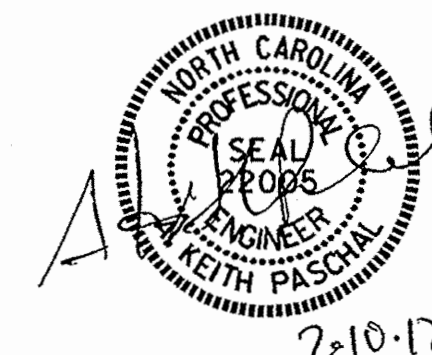
#4 S11 BARS MAY BE SHIFTED AS NECESSARY  
 TO MAINTAIN 1" CLEAR TO GROUTED RECESS AND  
 2 1/2" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

PROJECT NO. BD-5102J  
PITT COUNTY  
 STATION: 13+41.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

PLAN OF 60' UNIT  
 27'-10" CLEAR ROADWAY  
 105° SKEW



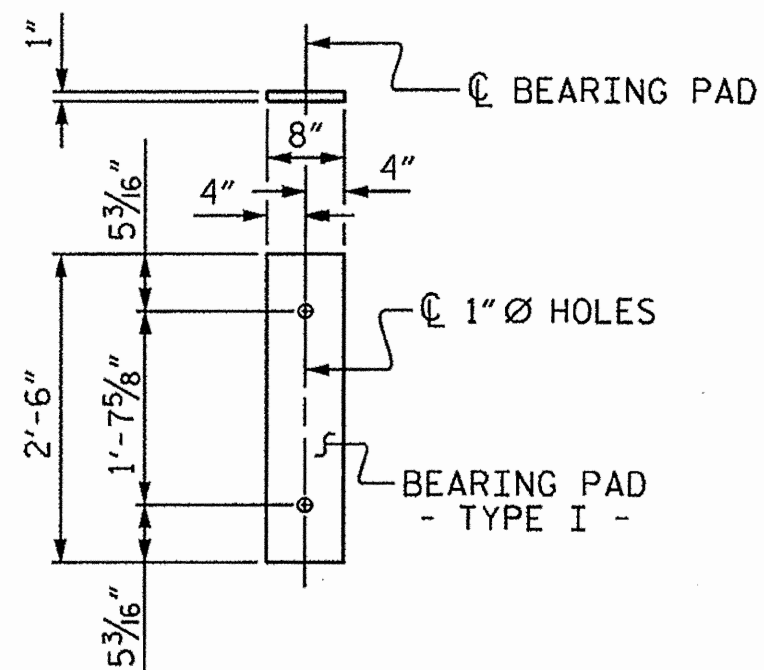
ASSEMBLED BY : E. K. POPE DATE : 1-9-12  
 CHECKED BY : N. RUFFIN DATE : 2-1-12  
 DRAWN BY : MAA 6/10 REV. 12/5/11 MAA/AAC  
 CHECKED BY : MKT 7/10

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 kpaschal

| REVISIONS |    |      |     |    |      | SHEET NO.       |
|-----------|----|------|-----|----|------|-----------------|
| NO.       | BY | DATE | NO. | BY | DATE |                 |
| 1         |    |      | 3   |    |      | 5-5             |
| 2         |    |      | 4   |    |      | TOTAL SHEETS 12 |

STD. NO. 24PCS-30-105S-60L





FIXED END  
(TYPE I - 20 REQ'D)

## ELASTOMERIC BEARING DETAILS

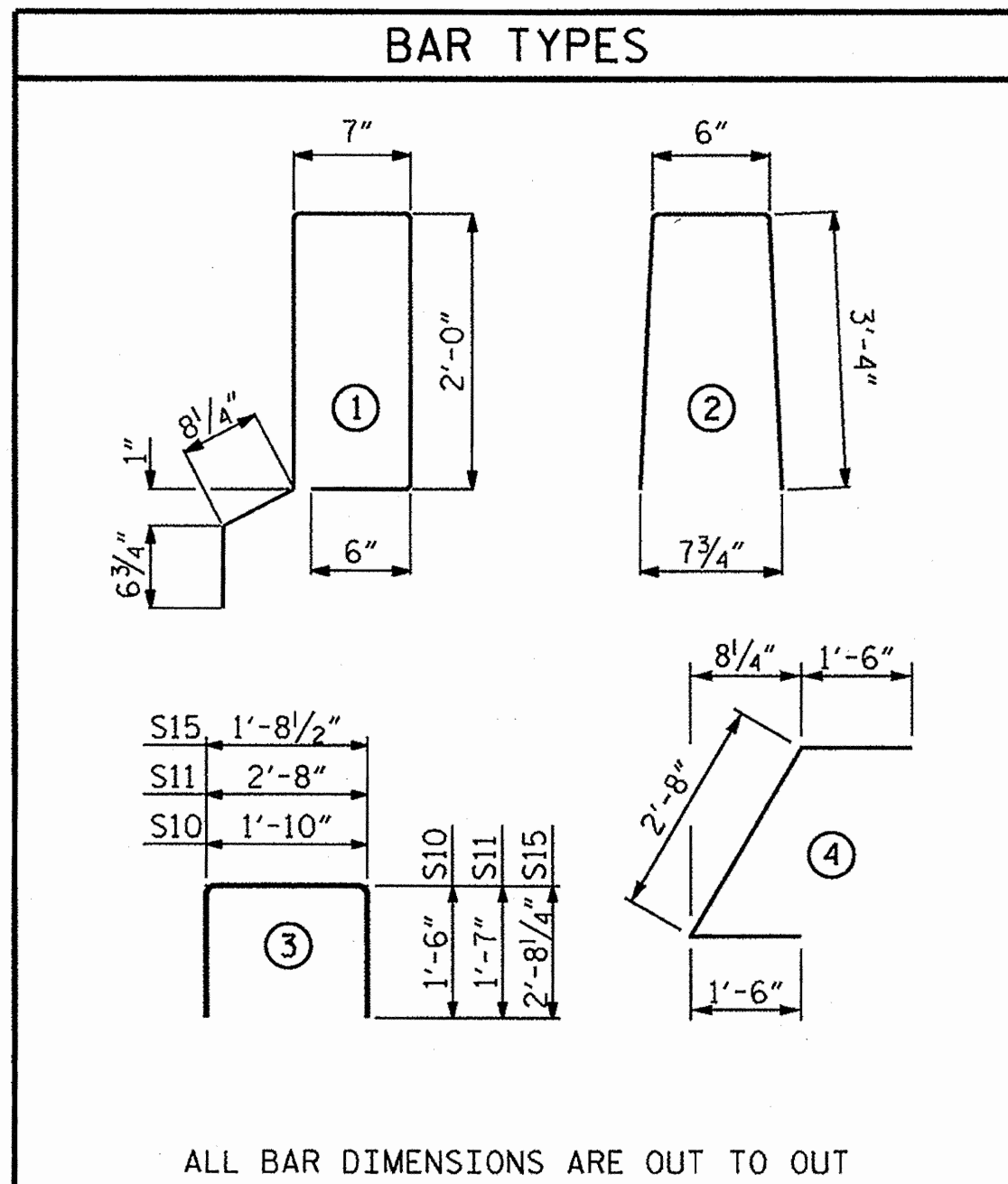
ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

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

| CORED SLABS REQUIRED |        |        |              |
|----------------------|--------|--------|--------------|
| 60' UNIT             | NUMBER | LENGTH | TOTAL LENGTH |
| EXTERIOR C.S.        | 2      | 60'-0" | 120'-0"      |
| INTERIOR C.S.        | 8      | 60'-0" | 480'-0"      |
| TOTAL                | 10     |        | 600'-0"      |

| DEAD LOAD DEFLECTION AND CAMBER            |                    |
|--------------------------------------------|--------------------|
| 60' CORED SLAB UNIT                        | 3'-0" x 2'-0"      |
| CAMBER ( SLAB ALONE IN PLACE )             | 0.6" Ø L.R. STRAND |
| DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD** | 3 3/8" ↑           |
| FINAL CAMBER                               | 1/2" ↓             |
|                                            | 2 7/8" ↑           |

\*\* INCLUDES FUTURE WEARING SURFACE



## NOTES

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

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

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

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

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

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM, IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

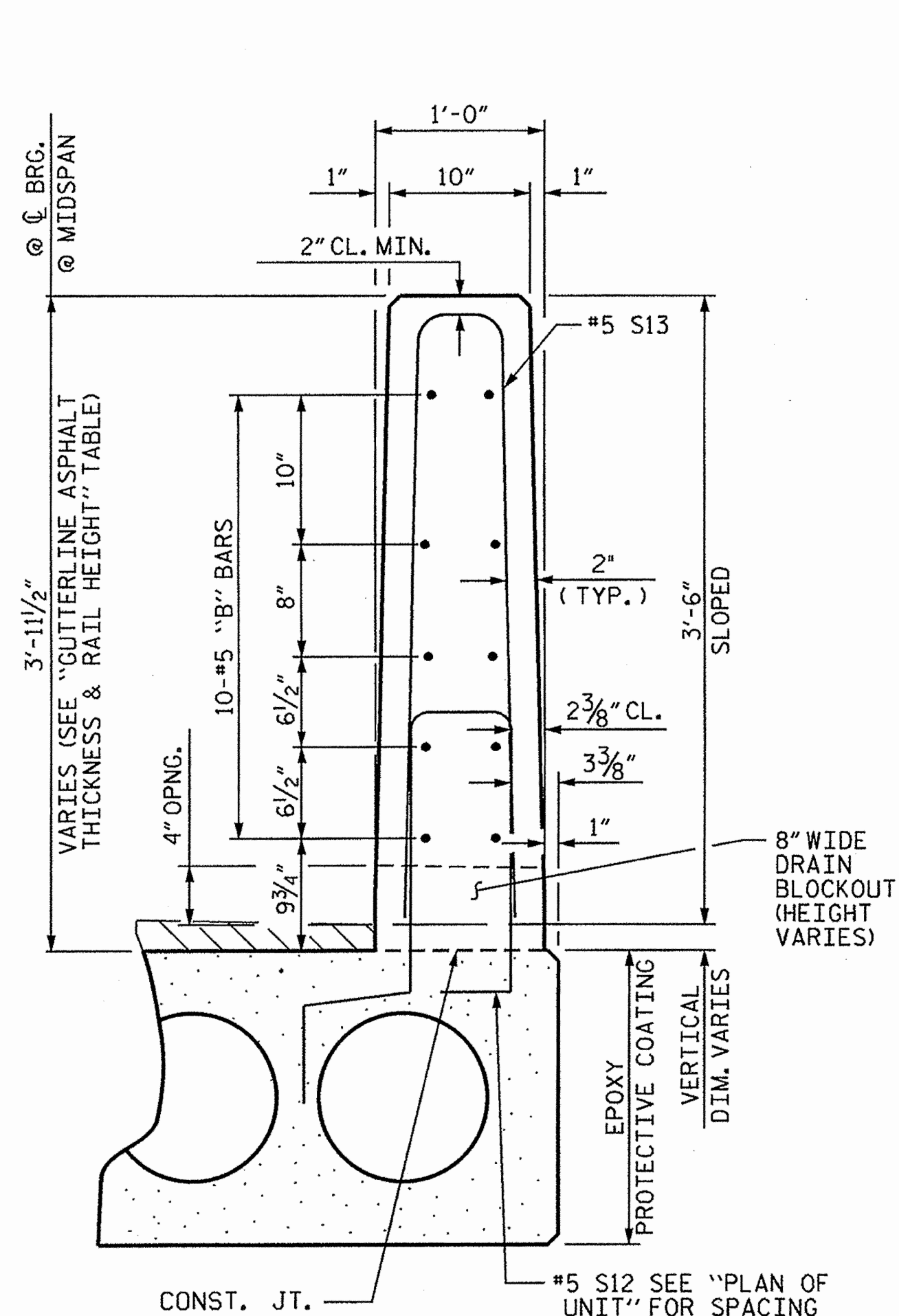
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED 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.

TRANSVERSE POST TENSIONING OF THE CORED SLAB UNITS SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

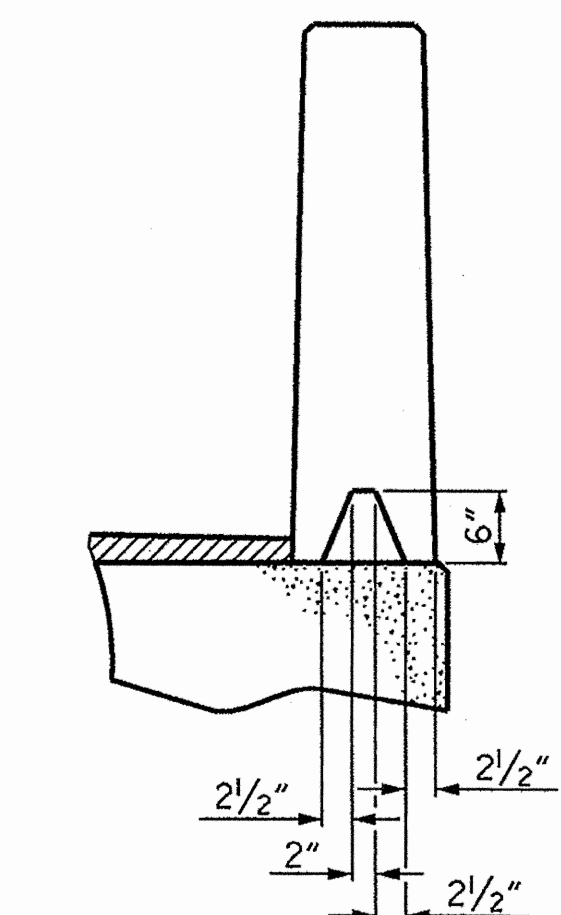
MAINTAIN A SYMMETRIC TENSION FORCE BETWEEN EACH PAIR OF TRANSVERSE POST TENSIONING STRANDS IN THE DIAPHRAGM.

THE #4 S11 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

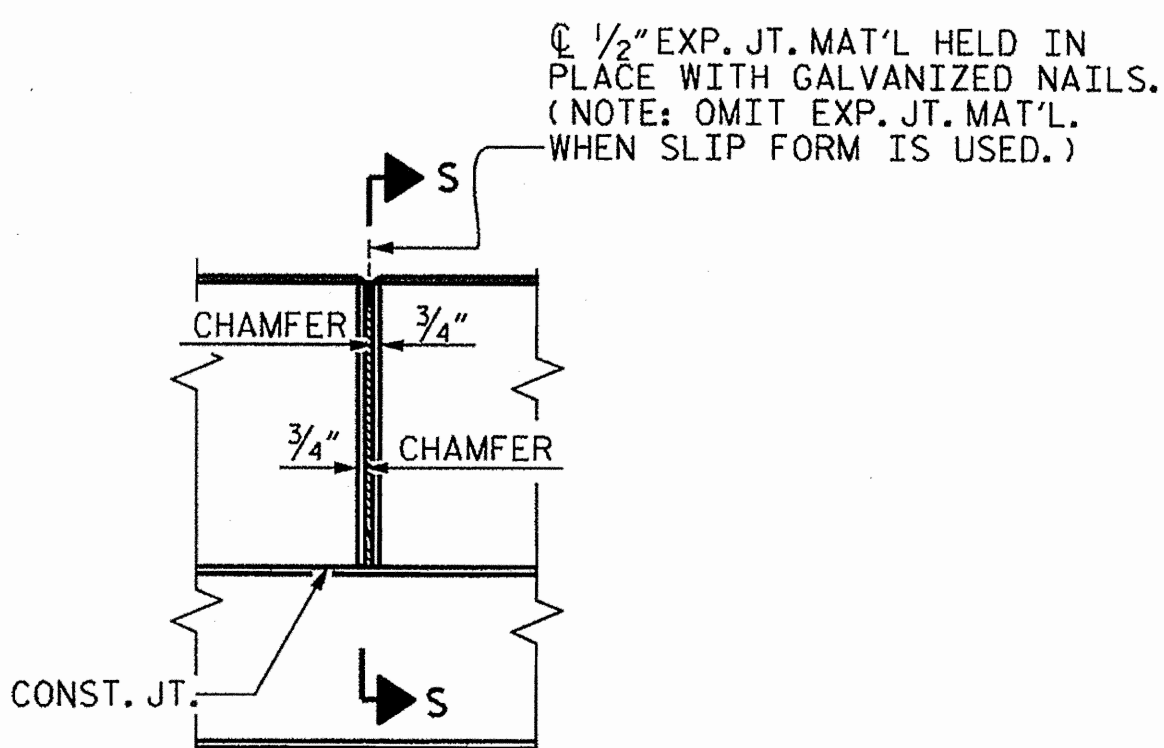
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.



SECTION THRU RAIL



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



ELEVATION AT EXPANSION JOINTS

| BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL |                                 |           |      |      |         |        |
|-----------------------------------------------------|---------------------------------|-----------|------|------|---------|--------|
| BAR                                                 | BARS PER PAIR OF EXTERIOR UNITS | TOTAL NO. | SIZE | TYPE | LENGTH  | WEIGHT |
| 60' UNIT                                            |                                 |           |      |      |         |        |
| *B23                                                | 80                              | 80        | #5   | STR  | 16'-11" | 1412   |
| *S13                                                | 138                             | 138       | #5   | 2    | 7'-2"   | 1032   |
| * EPOXY COATED REINFORCING STEEL                    |                                 |           |      |      | LBS.    | 2444   |
| CLASS AA CONCRETE                                   |                                 |           |      |      | CU.YDS. | 16.2   |
| TOTAL VERTICAL CONCRETE BARRIER RAIL                |                                 |           |      |      | LN.FT.  | 120.26 |

| BILL OF MATERIAL FOR ONE 60' CORED SLAB UNIT |        |      |      |                      |                      |                      |                      |
|----------------------------------------------|--------|------|------|----------------------|----------------------|----------------------|----------------------|
| BAR                                          | NUMBER | SIZE | TYPE | EXTERIOR UNIT LENGTH | EXTERIOR UNIT WEIGHT | INTERIOR UNIT LENGTH | INTERIOR UNIT WEIGHT |
| B20                                          | 6      | #4   | STR  | 21'-2"               | 85                   | 21'-2"               | 85                   |
| S10                                          | 8      | #5   | 3    | 4'-10"               | 40                   | 4'-10"               | 40                   |
| S11                                          | 128    | #4   | 3    | 5'-10"               | 499                  | 5'-10"               | 499                  |
| *S12                                         | 69     | #5   | 1    | 6'-4"                | 456                  |                      |                      |
| S14                                          | 4      | #4   | 4    | 5'-8"                | 15                   | 5'-8"                | 15                   |
| S15                                          | 4      | #5   | 3    | 7'-1"                | 30                   | 7'-1"                | 30                   |
| REINFORCING STEEL                            |        |      |      |                      | LBS.                 | 669                  | 669                  |
| * EPOXY COATED REINFORCING STEEL             |        |      |      |                      | LBS.                 | 456                  |                      |
| 6000 P.S.I. CONCRETE                         |        |      |      |                      | CU.YDS.              | 10.3                 | 10.3                 |
| 0.6" Ø L.R. STRANDS                          |        |      |      |                      | No.                  | 24                   | 24                   |

| GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT |                                      |                        |
|--------------------------------------------|--------------------------------------|------------------------|
|                                            | ASPHALT OVERLAY THICKNESS @ MID-SPAN | RAIL HEIGHT @ MID-SPAN |
| 60' UNITS                                  | 2 3/8"                               | 3'-8 5/8"              |

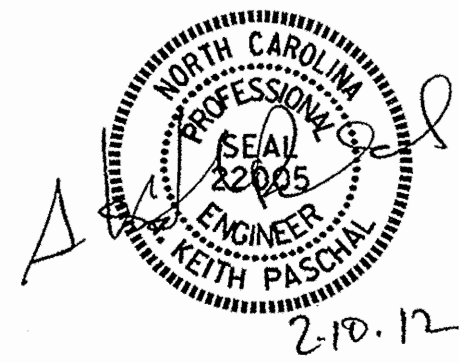
| CONCRETE RELEASE STRENGTH |      |
|---------------------------|------|
| UNIT                      | PSI  |
| 60' UNITS                 | 4800 |

PROJECT NO. BD-5102J  
PITT COUNTY  
STATION: 13+41.00 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
3'-0" X 2'-0"  
PRESTRESSED CONCRETE  
CORED SLAB UNIT

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



|                |            |        |            |
|----------------|------------|--------|------------|
| ASSEMBLED BY : | E. K. POPE | DATE : | 1-9-12     |
| CHECKED BY :   | N. RUFFIN  | DATE : | 2-1-12     |
| DRAWN BY :     | MAA        | 6/10   | REV. 12/11 |
| CHECKED BY :   | MKT        | 7/10   | MAA/AAC    |



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

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

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

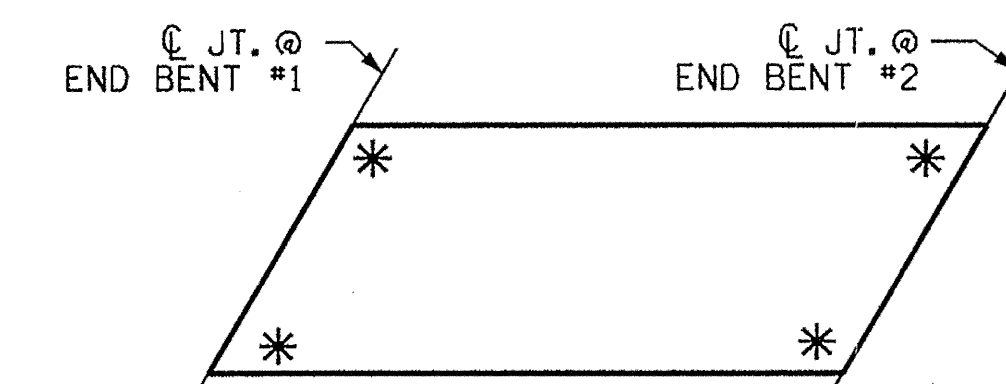
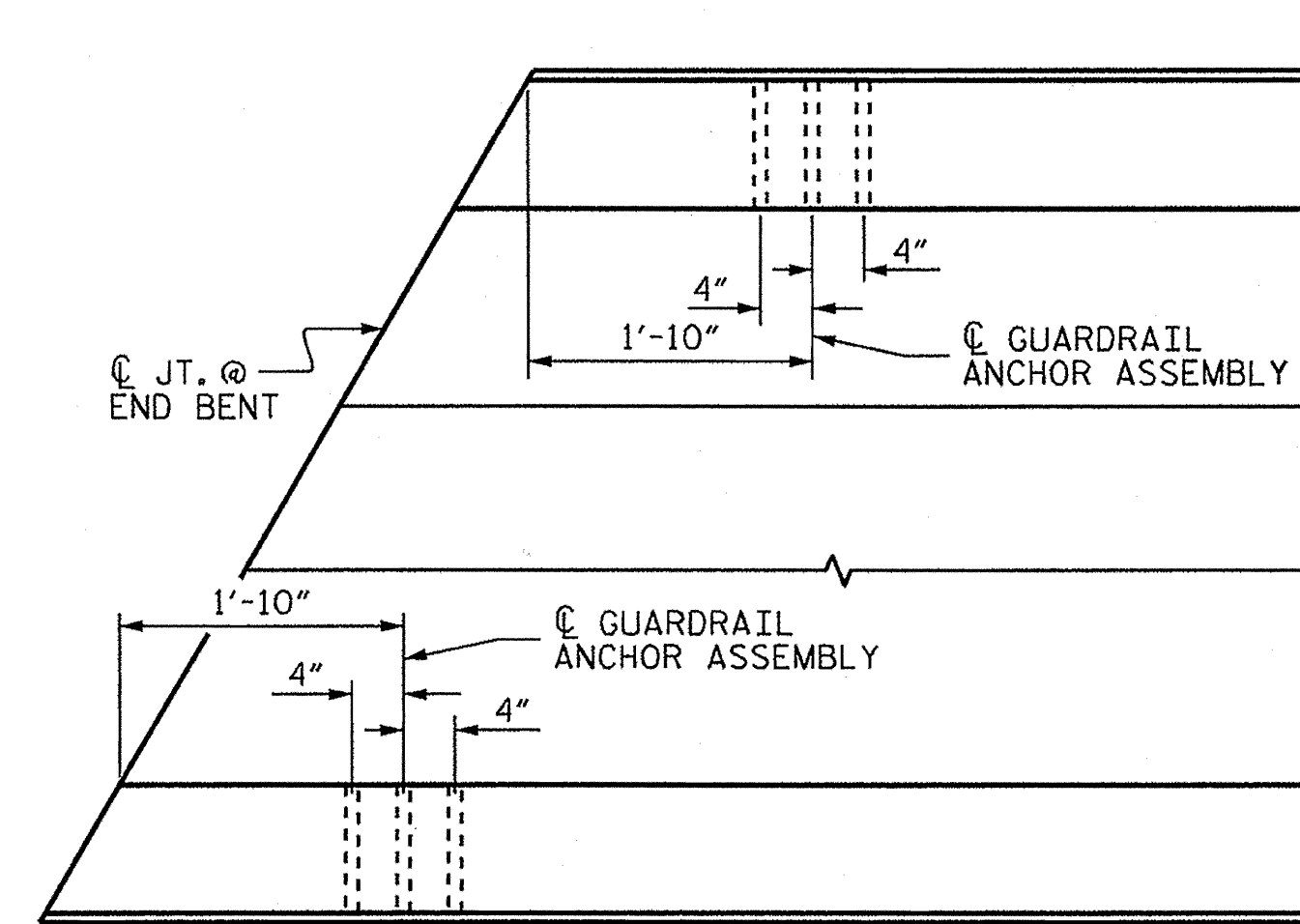
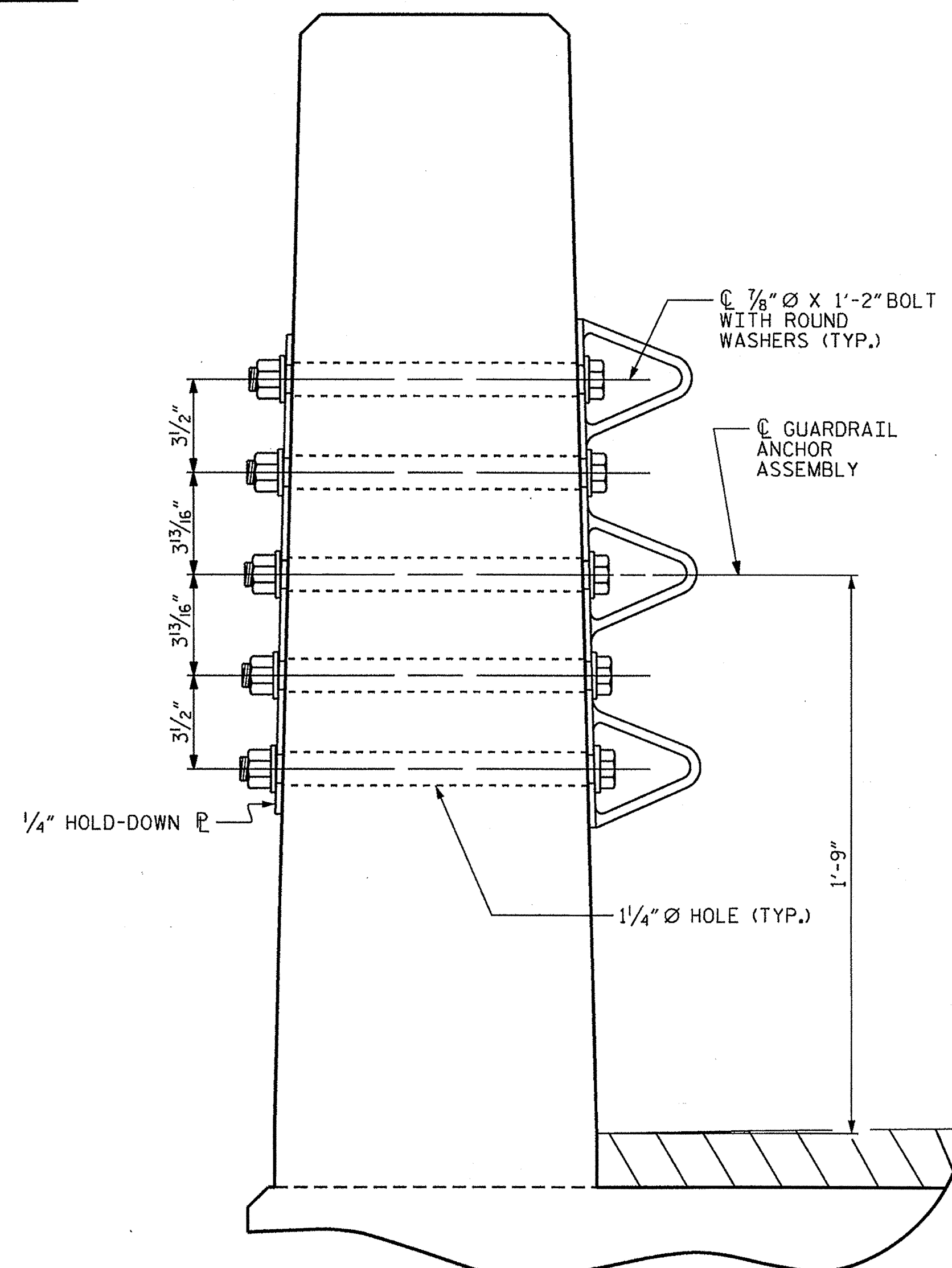
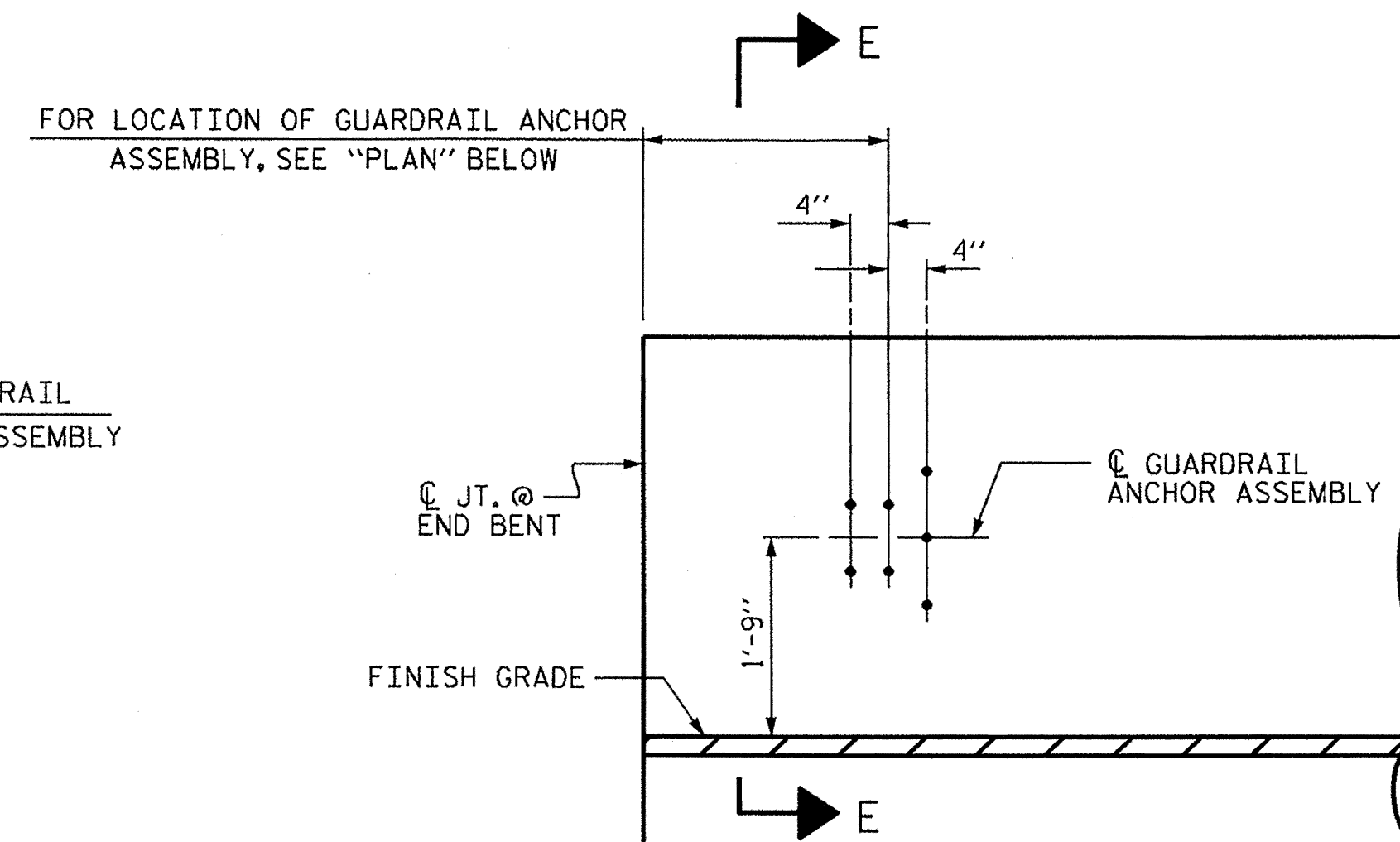
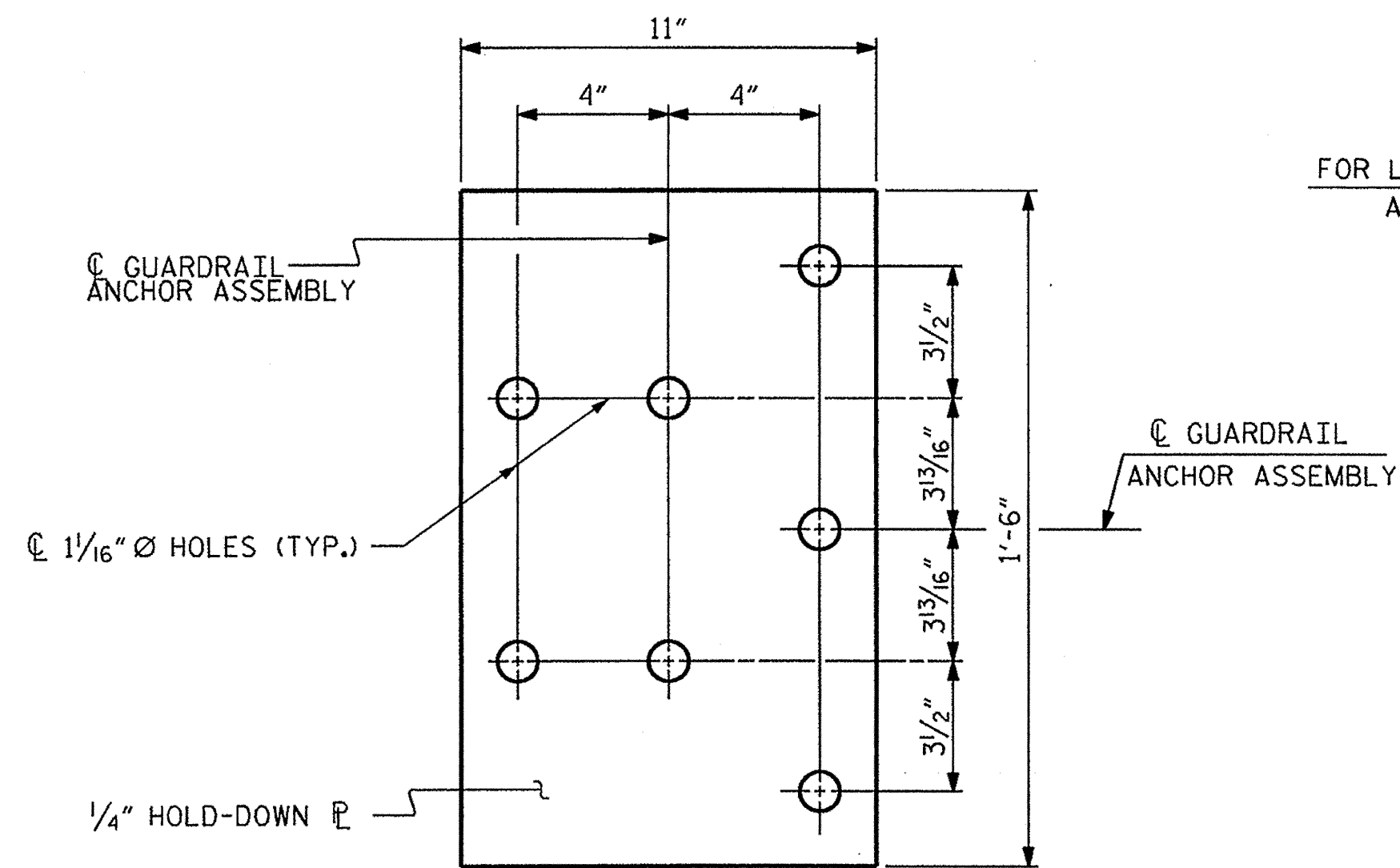
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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 VERTICAL CONCRETE BARRIER RAIL.

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

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



SKETCH SHOWING  
POINTS OF ATTACHMENT

\* DENOTES GUARDRAIL ANCHOR ASSEMBLY

## LOCATION OF ANCHORS FOR GUARDRAIL

END BENT #1 SHOWN, END BENT #2 SIMILAR.

PROJECT NO. BD-5102J

PITT COUNTY

STATION: 13+41.00 -L-

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

# STANDARD GUARDRAIL ANCHORAGE FOR VERTICAL CONCRETE BARRIER RAIL

| REVISIONS |     |       |     |     |       | SHEET NO.             |
|-----------|-----|-------|-----|-----|-------|-----------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | TOTAL<br>SHEETS<br>12 |
| 1         |     |       | 3   |     |       |                       |
| 2         |     |       | 4   |     |       |                       |
|           |     |       |     |     |       |                       |

(SHT 2)                      STD. NO. GRA3

|                           |  |               |        |
|---------------------------|--|---------------|--------|
| ASSEMBLED BY : E. K. POPE |  | DATE : 1-9-12 |        |
| CHECKED BY : N. RUFFIN    |  | DATE : 2-1-12 |        |
| DRAWN BY : MAA 5/10       |  | ADDED 5/6/10  |        |
| CHECKED BY : GM 5/10      |  | REV. 10/1/11  | MAA/GM |
|                           |  | REV. 12/5/11  | MAA/GM |

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kpgschol



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

THE LATERAL GUIDES ARE NOT TO BE  
POURED UNTIL AFTER THE CORED SLAB  
UNITS ARE IN PLACE.

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

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

THE CONTRACTOR HAS THE OPTION TO OMIT  
THE LATERAL GUIDES IF APPROVED BY THE  
ENGINEER.

\* THE CONCRETE BACKWALL SHALL BE POURED AFTER ALL CORED SLAB UNITS HAVE BEEN PLACED



| TOP OF PILL ELEVATIONS |        |
|------------------------|--------|
| ①                      | 41.215 |
| ②                      | 41.209 |
| ③                      | 41.202 |
| ④                      | 41.196 |
| ⑤                      | 41.190 |



WINGS NOT SHOWN FOR CLARITY.  
FOR SECTION A-A, SEE SHEET 4 OF 4.  
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

|                           |               |
|---------------------------|---------------|
| ASSEMBLED BY : E. K. POPE | DATE : 1-9-12 |
| CHECKED BY : N. RUFFIN    | DATE : 2-1-12 |
| DRAWN BY : DGE 02/10      |               |
| CHECKED BY : MKT 02/10    |               |

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kpschul

PROJECT NO. BD-5102J  
PITT COUNTY  
 STATION: 13+41.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT No. 1

| REVISIONS |     |       |     |     |       | SHEET NO.<br>5-8      |
|-----------|-----|-------|-----|-----|-------|-----------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                       |
| 1         |     |       | 3   |     |       | TOTAL<br>SHEETS<br>17 |
| 2         |     |       | 4   |     |       |                       |

STD. NO. EB\_30\_105S



# NOTES

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

THE LATERAL GUIDES ARE NOT TO BE POURED UNTIL AFTER THE CORED SLAB UNITS ARE IN PLACE.

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

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.

THE CONTRACTOR HAS THE OPTION TO OMIT THE LATERAL GUIDES IF APPROVED BY THE ENGINEER.

\* THE CONCRETE BACKWALL SHALL BE POURED AFTER ALL CORED SLAB UNITS HAVE BEEN PLACED

## TOP OF PILE ELEVATIONS

|   |        |
|---|--------|
| ① | 41.392 |
| ② | 41.386 |
| ③ | 41.379 |
| ④ | 41.373 |
| ⑤ | 41.367 |

PROJECT NO. BD-5102J  
PITT COUNTY  
STATION: 13+41.00 -L-

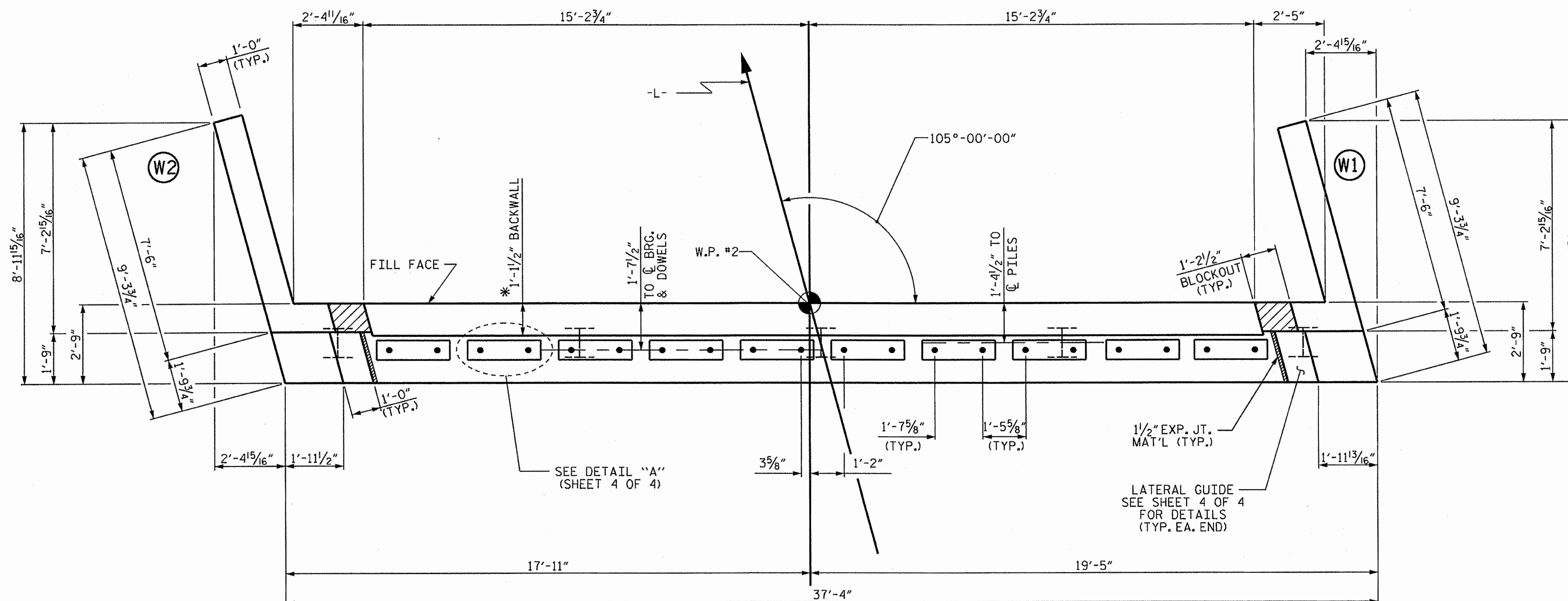
SHEET 2 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

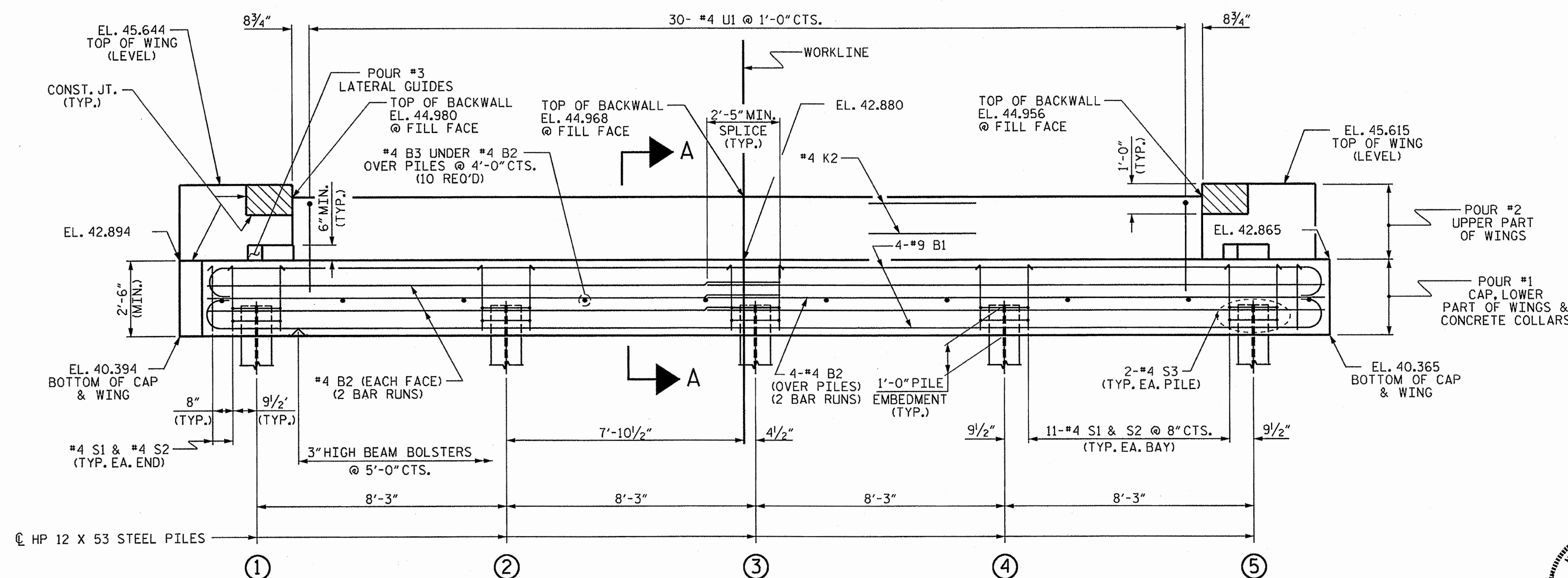
SUBSTRUCTURE  
END BENT No. 2

| REVISIONS |     |       |     |     |       | SHEET NO.       |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                 |
| 1         |     |       | 3   |     |       | 5-9             |
| 2         |     |       | 4   |     |       | TOTAL SHEETS 12 |

STD. NO. EB-30-105S



## PLAN



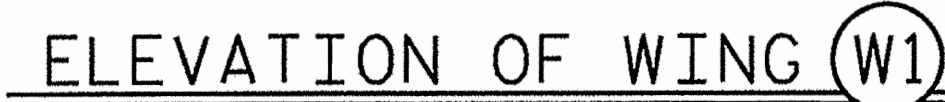
## ELEVATION

WINGS NOT SHOWN FOR CLARITY.  
FOR SECTION A-A, SEE SHEET 4 OF 4.  
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.  
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

|                           |               |
|---------------------------|---------------|
| ASSEMBLED BY : E. K. POPE | DATE : 1-9-12 |
| CHECKED BY : N. RUFFIN    | DATE : 2-1-12 |
| DRAWN BY : DGE 02/10      |               |
| CHECKED BY : MKT 02/10    |               |

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## WING DETAILS

SHEET 3 OF 4
DATE: 12/1/77

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

RALEIGH

SUBSTRUCTURE

END BENT

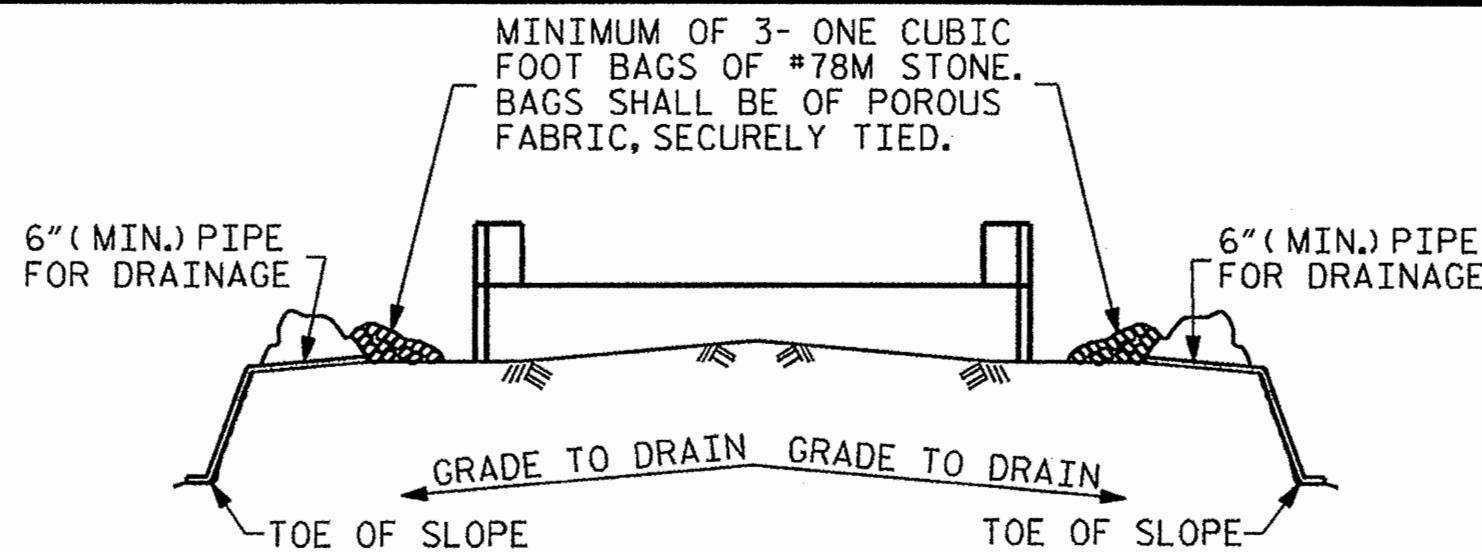
WING DETAILS

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

SHEET NO. 5-10

TOTAL SHEETS 17



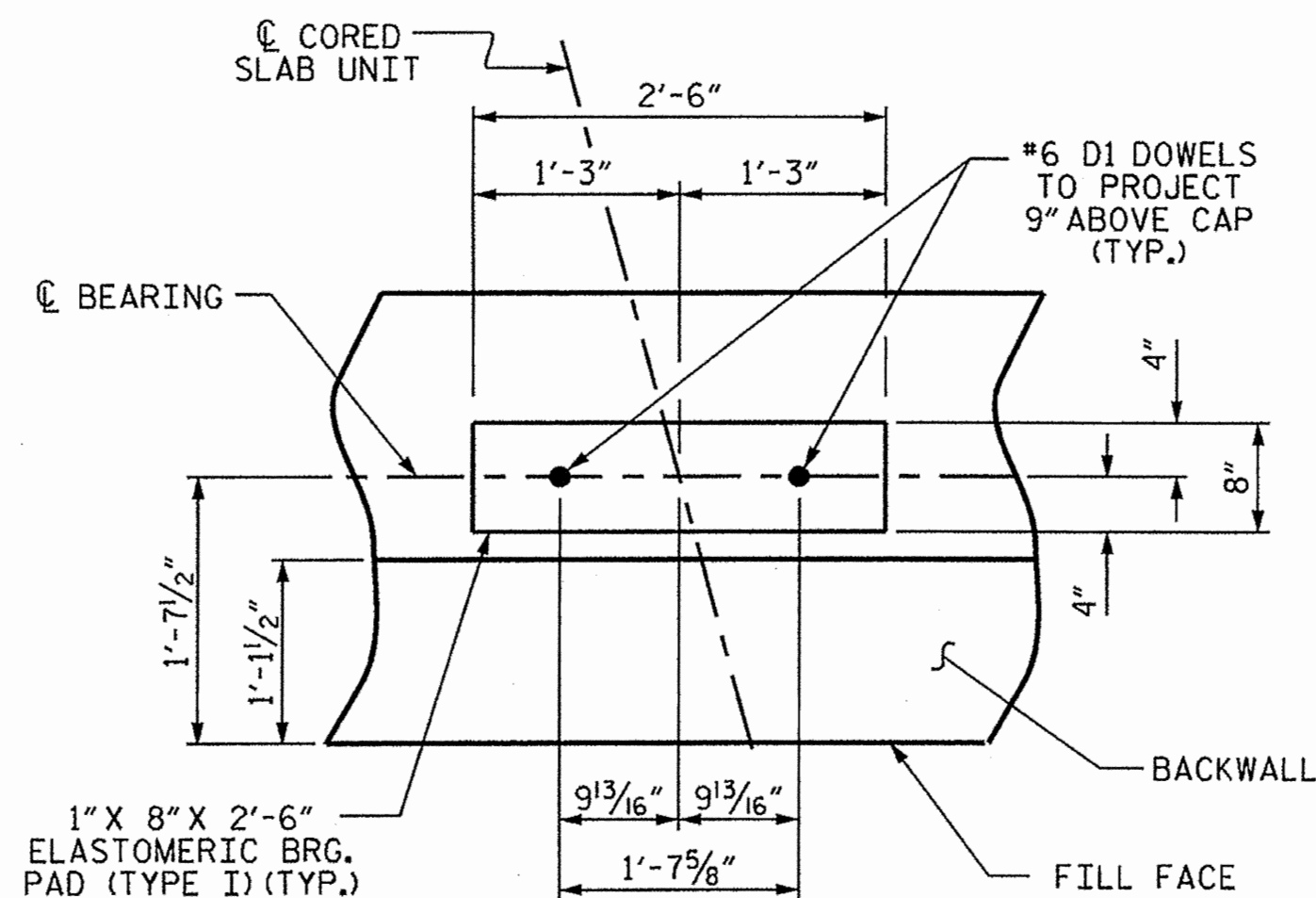


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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.

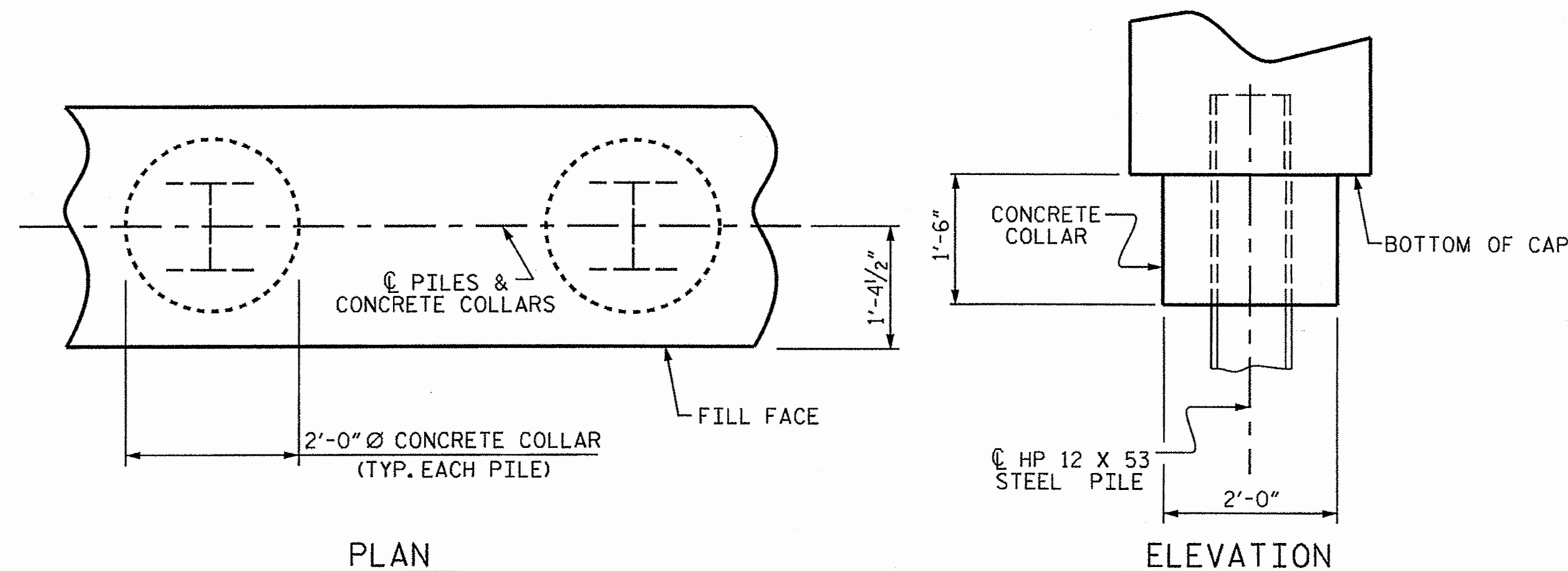
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

### TEMPORARY DRAINAGE AT END BENT



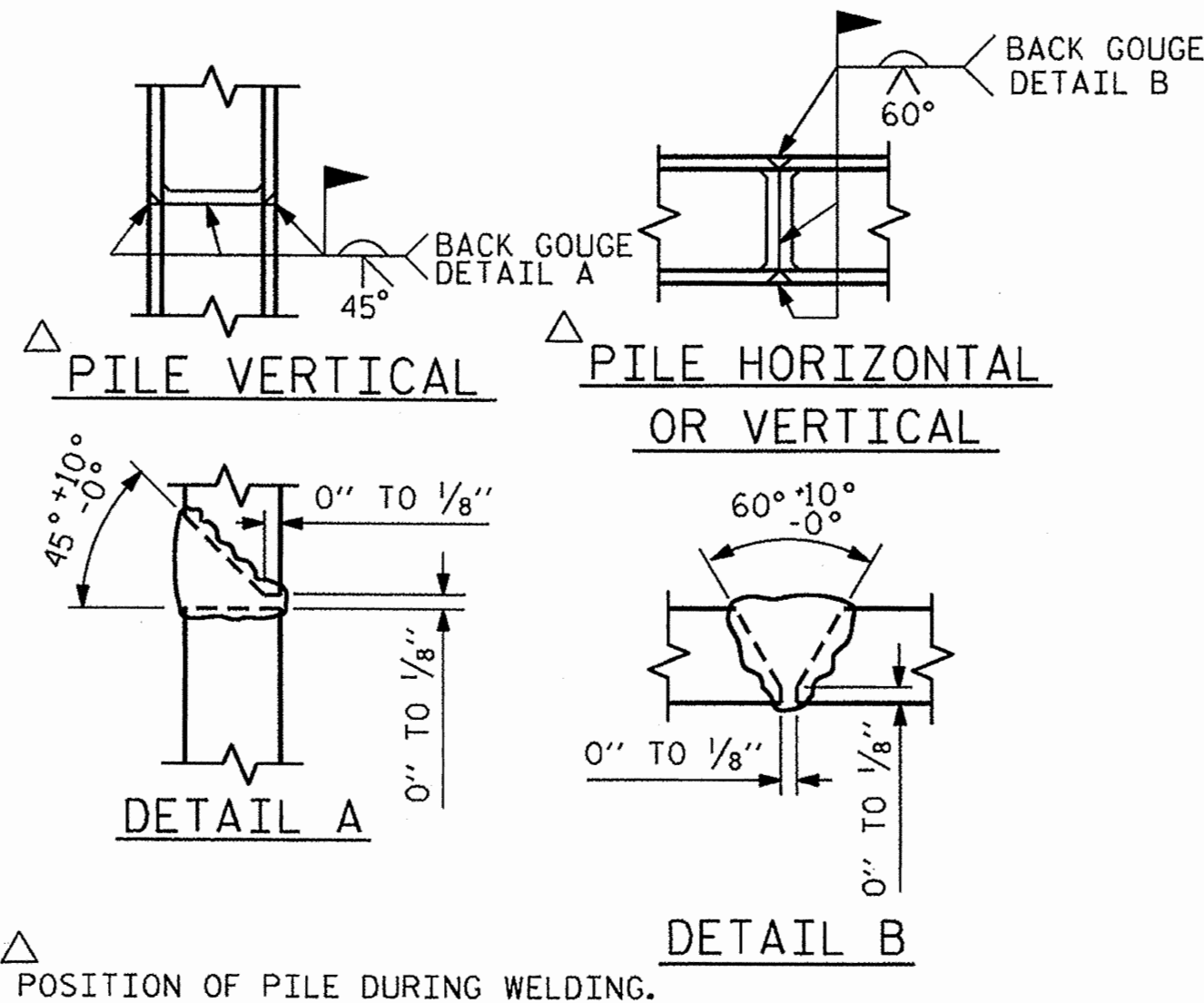
#### DETAIL "A"

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)

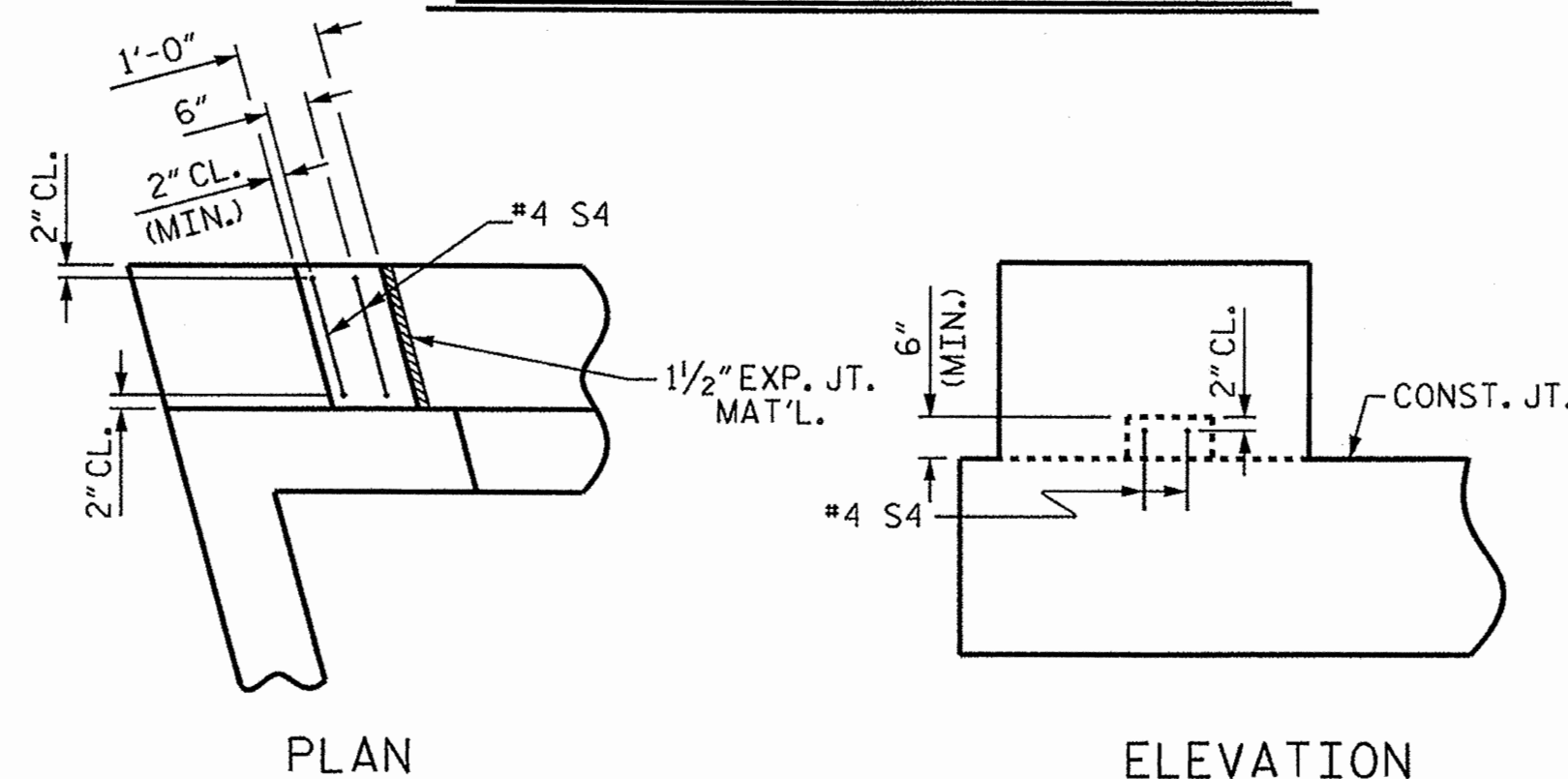


### CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)

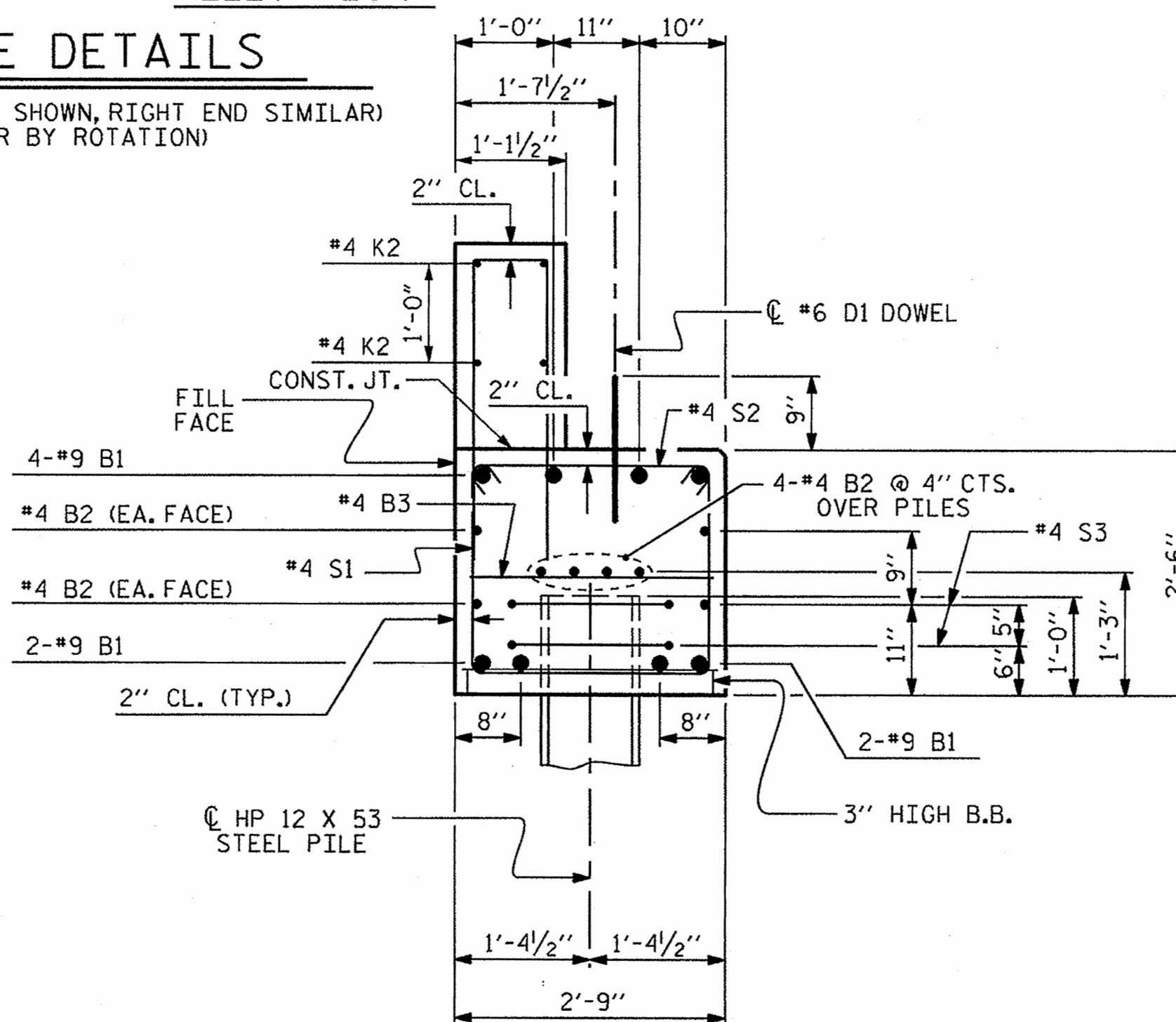


### PILE SPLICE DETAILS



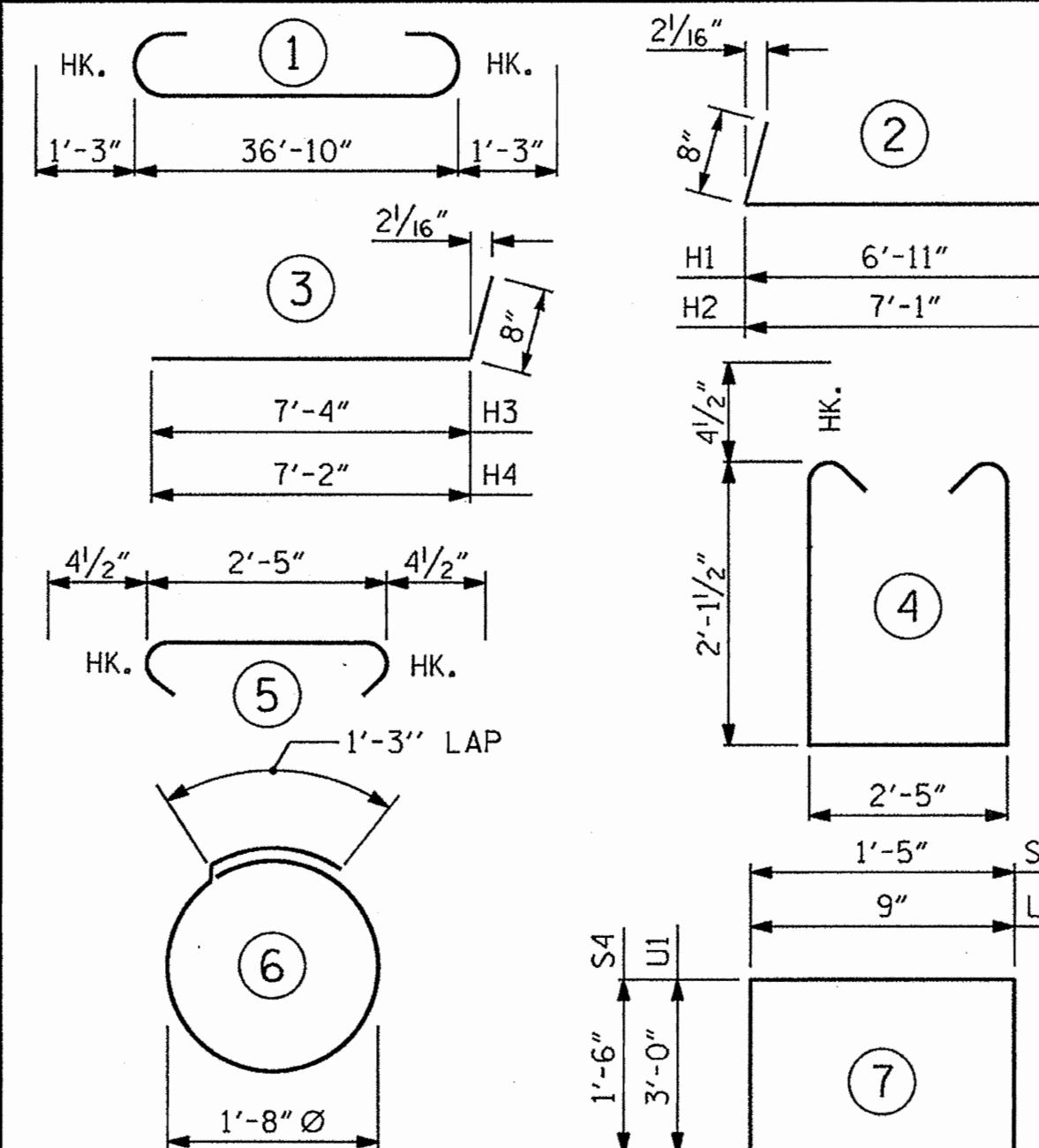
### LATERAL GUIDE DETAILS

(END BENT No. 1, LEFT LATERAL GUIDE SHOWN, RIGHT END SIMILAR)  
(END BENT No. 2 SIMILAR BY ROTATION)



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

### BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT.

| END BENT No. 1         |  |  |  | END BENT No. 2         |  |  |  |
|------------------------|--|--|--|------------------------|--|--|--|
| HP 12 X 53 STEEL PILES |  |  |  | HP 12 X 53 STEEL PILES |  |  |  |
| NO: 5                  |  |  |  | NO: 5                  |  |  |  |
| LIN. FT.= 300          |  |  |  | LIN. FT.= 300          |  |  |  |
| PILE REDRIVES          |  |  |  | PILE REDRIVES          |  |  |  |
| NO: 3                  |  |  |  | NO: 3                  |  |  |  |

### BILL OF MATERIAL

#### FOR ONE END BENT

| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
|-----|-----|------|------|--------|--------|
| B1  | 8   | #9   | 1    | 39'-4" | 1070   |
| B2  | 16  | #4   | STR  | 19'-9" | 211    |
| B3  | 10  | #4   | STR  | 2'-5"  | 16     |
| D1  | 20  | #6   | STR  | 1'-6"  | 45     |
| H1  | 6   | #4   | 2    | 7'-7"  | 30     |
| H2  | 6   | #4   | 2    | 7'-9"  | 31     |
| H3  | 6   | #4   | 3    | 8'-0"  | 32     |
| H4  | 6   | #4   | 3    | 7'-10" | 31     |
| K1  | 12  | #4   | STR  | 3'-1"  | 25     |
| K2  | 4   | #4   | STR  | 30'-0" | 80     |
| S1  | 48  | #4   | 4    | 7'-5"  | 238    |
| S2  | 48  | #4   | 5    | 3'-2"  | 102    |
| S3  | 10  | #4   | 6    | 6'-6"  | 43     |
| S4  | 4   | #4   | 7    | 4'-5"  | 12     |
| V1  | 49  | #4   | STR  | 4'-8"  | 153    |
| U1  | 30  | #4   | 7    | 6'-9"  | 135    |

REINFORCING STEEL (FOR ONE END BENT) 2254 LBS.

#### CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)

|                        |                                    |           |
|------------------------|------------------------------------|-----------|
| POUR #1                | CAP, LOWER PART OF WINGS & COLLARS | 11.6 C.Y. |
| POUR #2                | UPPER PART OF WINGS                | 2.0 C.Y.  |
| POUR #3                | LATERAL GUIDES                     | 0.1 C.Y.  |
| POUR #4                | BACKWALL                           | 2.6 C.Y.  |
| TOTAL CLASS A CONCRETE |                                    | 16.3 C.Y. |

PROJECT NO. BD-5102J  
PITT COUNTY  
STATION: 13+41.00 -L-

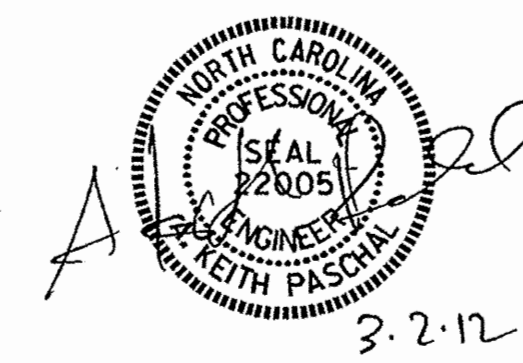
SHEET 4 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE

END BENT No. 1 & 2  
DETAILS

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



|                          |              |
|--------------------------|--------------|
| ASSEMBLED BY: E. K. POPE | DATE: 1-9-12 |
| CHECKED BY: N. RUFFIN    | DATE: 2-1-12 |
| DRAWN BY: DGE            | 03/10        |
| CHECKED BY: MKT          | 03/10        |

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kposchall

STD. NO. EB-30.105S



NOTES

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

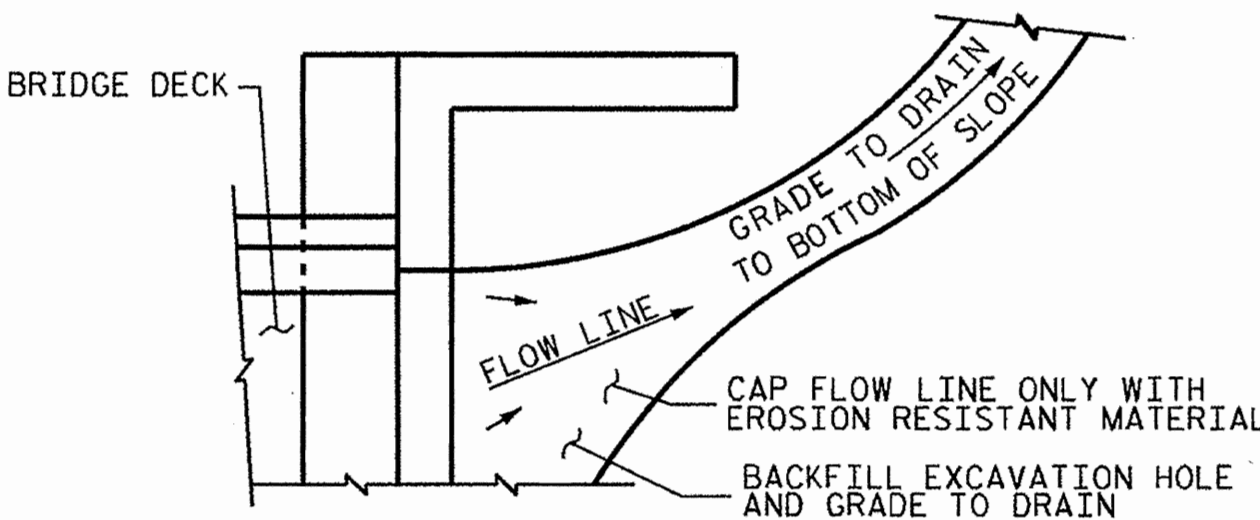
GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

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

\*78M STONE BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM WING FILL FACE TO WING FILL FACE OF END BENTS.

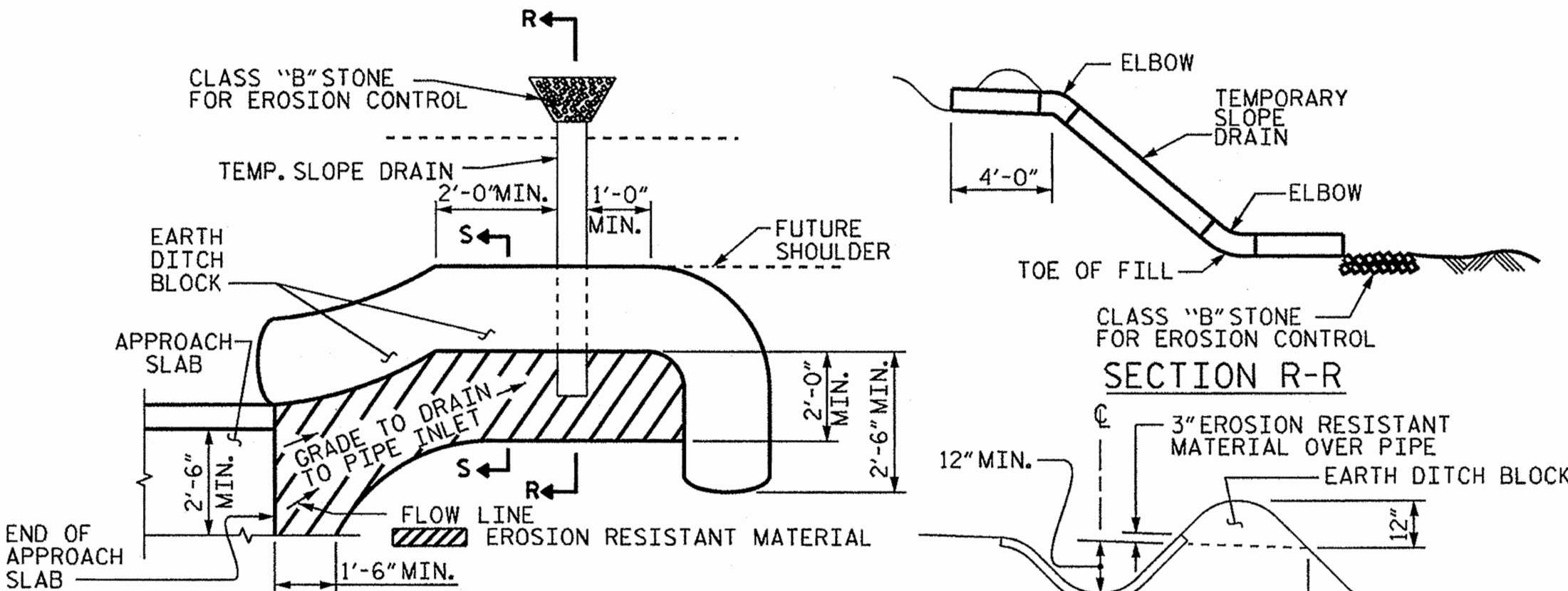
FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

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



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

TEMPORARY DRAINAGE DETAIL

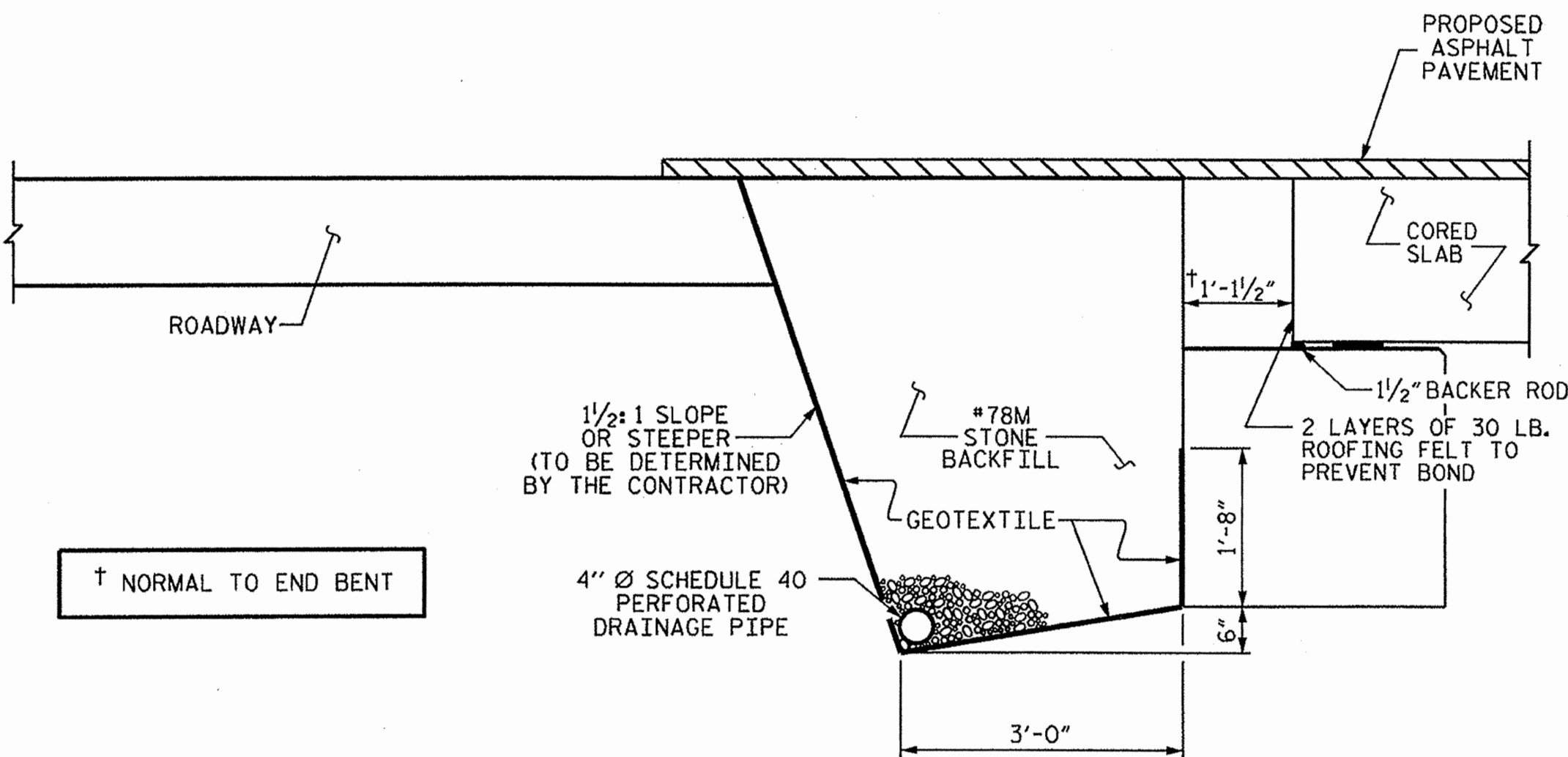


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

PLAN VIEW

TEMPORARY BERM AND SLOPE DRAIN DETAILS

(TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)



SECTION THRU APPROACH FILL

ASSEMBLED BY : N. RUFFIN DATE : 2/27/12  
CHECKED BY : A. K. PASCHAL DATE : 3/1/12  
DRAWN BY : SHS/MAA 5-09  
CHECKED BY : BCH 5-09

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kpaschal



PROJECT NO. BD-5102J  
PITT COUNTY  
STATION: 13+41.00 -L-

SHEET OF

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
STANDARD  
BRIDGE APPROACH FILL  
FOR PRESTRESSED CONCRETE  
CORED SLAB UNIT  
(SUB-REGIONAL TIER)  
105° SKEW

| REVISIONS |     |       |     |     |       | SHEET NO.<br>5-12     |
|-----------|-----|-------|-----|-----|-------|-----------------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: |                       |
| 1         |     |       | 3   |     |       | TOTAL<br>SHEETS<br>12 |
| 2         |     |       | 4   |     |       |                       |



STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

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

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

CONCRETE:

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

CONCRETE CHAMFERS:

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

DOWELS:

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

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

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

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS. WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8"Ø SHEAR STUDS FOR THE 3/4"Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8"Ø STUDS FOR 4 - 3/4"Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8"Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4"Ø STUDS BASED ON THE RATIO OF 3 - 7/8"Ø STUDS FOR 4 - 3/4"Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0". EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16"IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2"OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED. WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB. METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

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