

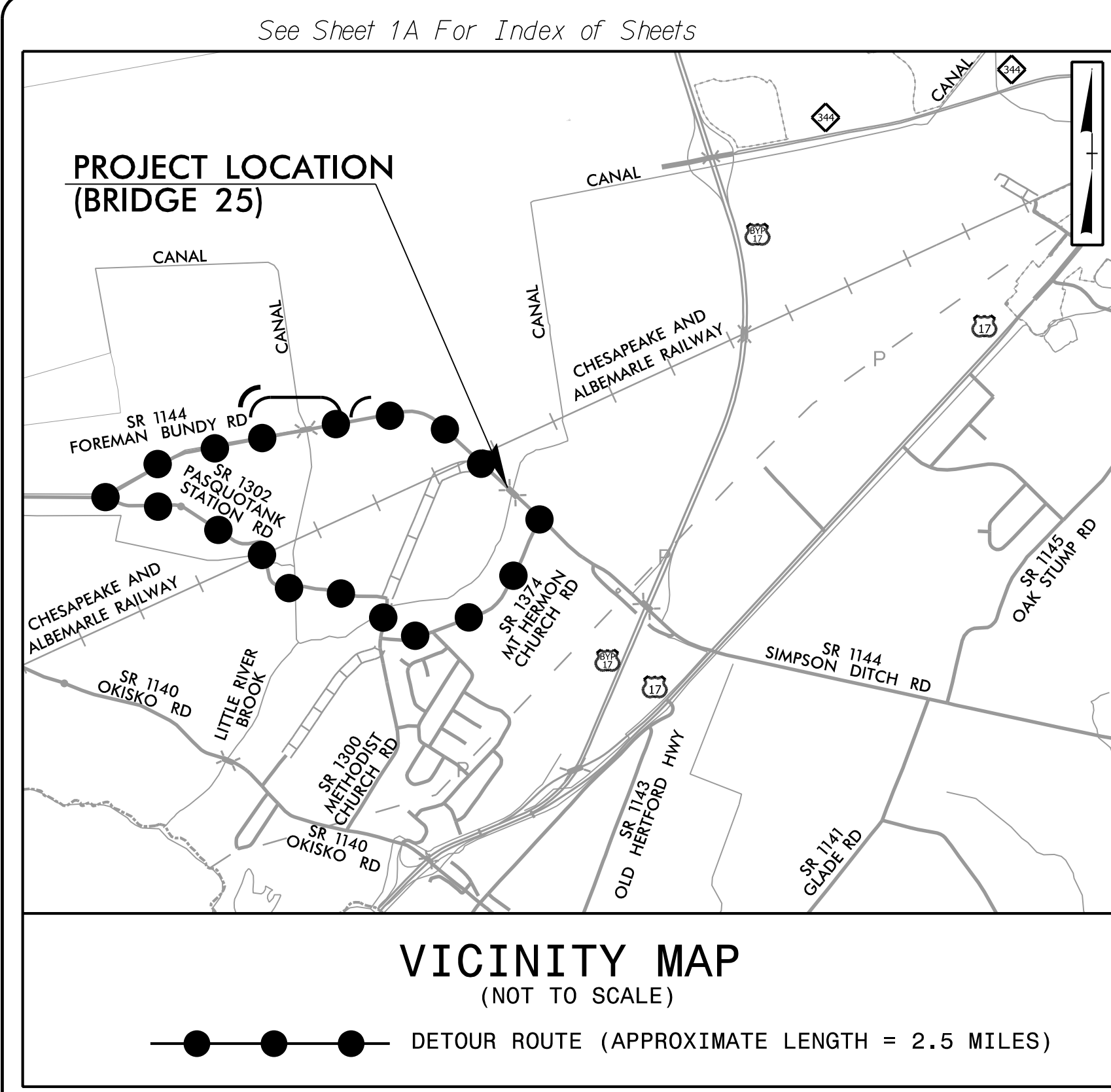
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PROJECT: 17BP.1.R.99

CONTRACT: DA00518



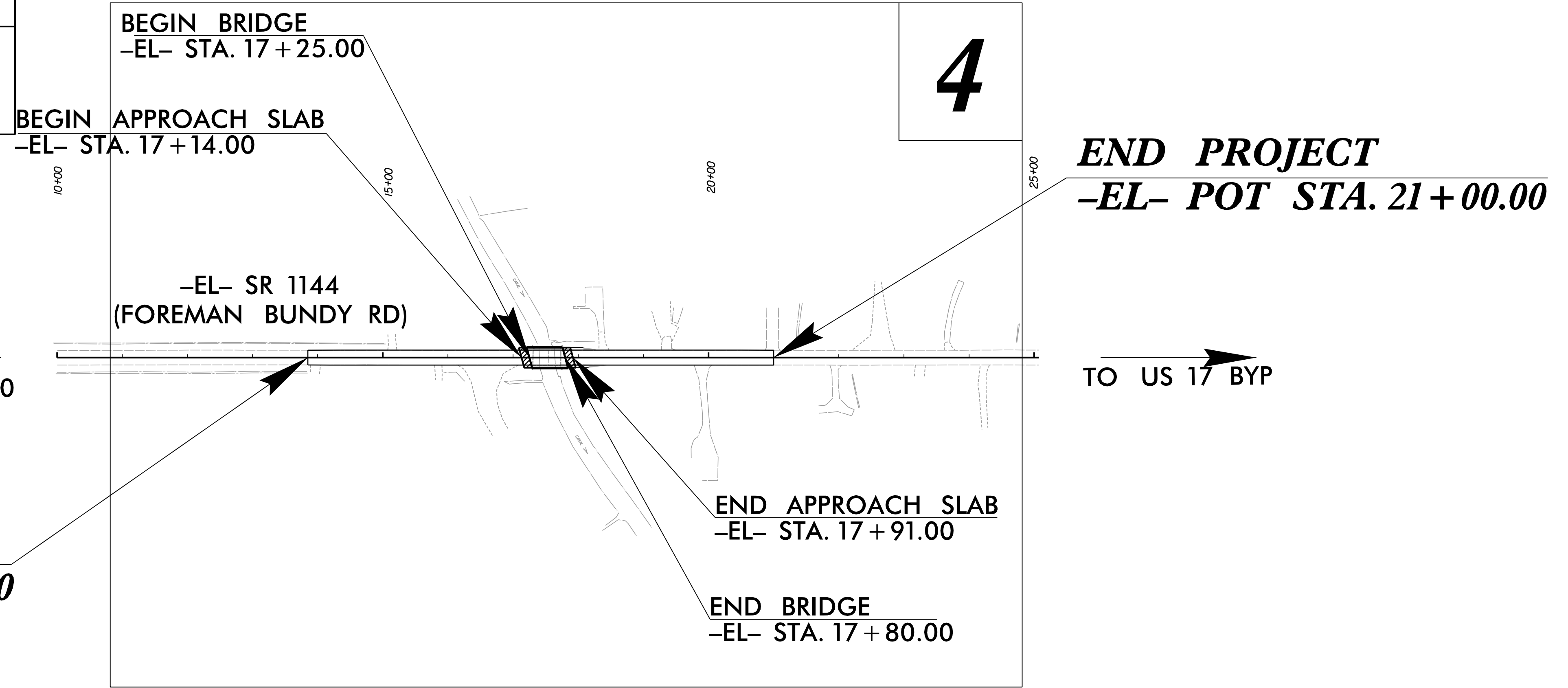
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**PASQUOTANK COUNTY**

**LOCATION: BRIDGE NO. 25 OVER CANAL  
ON SR 1144 (FOREMAN BUNDY RD)**

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

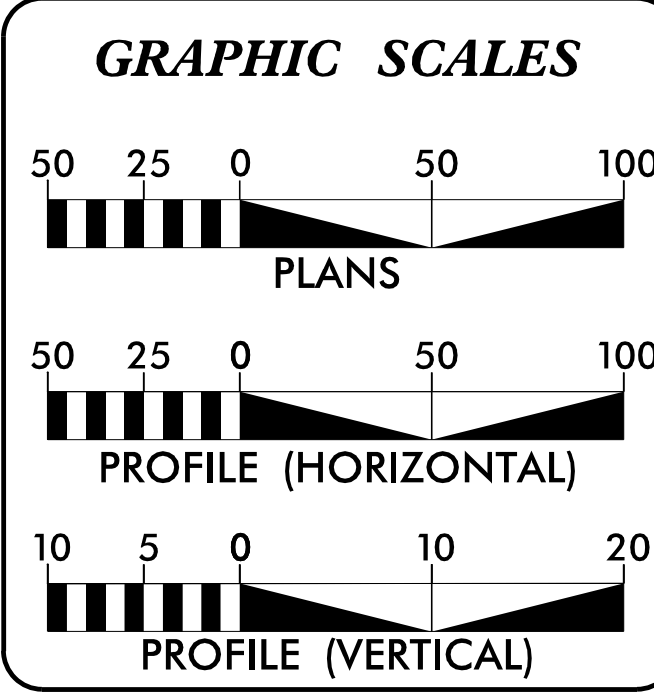
| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.    | TOTAL SHEETS |
|-----------------|-----------------------------|--------------|--------------|
| N.C.            | 17BP.1.R.99                 | 1            |              |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION  |              |
| 17BP.1.PE.99    |                             | PE           |              |
| 17BP.1.ROW.99   |                             | RW & UTIL    |              |
| 17BP.1.R.99     |                             | CONSTRUCTION |              |
|                 |                             |              |              |
|                 |                             |              |              |
|                 |                             |              |              |



**BEGIN PROJECT  
-EL- POT STA. 13+85.00**

THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



**DESIGN DATA**

ADT 2016 = 2,000  
V = 60 MPH  
FUNC CLASS = LOCAL  
SUBREGIONAL TIER

**PROJECT LENGTH**

LENGTH ROADWAY STATE PROJECT = 0.125 MILES  
LENGTH STRUCTURES STATE PROJECT = 0.010 MILES  
TOTAL LENGTH STATE PROJECT = 0.135 MILES

Prepared for:  
**HIGHWAY DIVISION 1**  
113 AIRPORT DR, SUITE 100  
EDENTON, NC 27932  
2018 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
JULY 2021

**LETTING DATE:**  
DECEMBER 15, 2021

Prepared by:  
**NV15**  
NV5 ENGINEERS & CONSULTANTS, INC.  
3300 REGENCY PARKWAY, SUITE 100  
CARY, NC 27518  
P: 919.853.1912 www.NV5.com  
NC License # F-1333  
Formerly CALX Engineers & Consultants

**L. KEVIN AUSTIN, PE**  
PROJECT MANAGER

**MICHAEL ANDREW HOLT, PE**  
ROADWAY PROJECT DESIGN ENGINEER

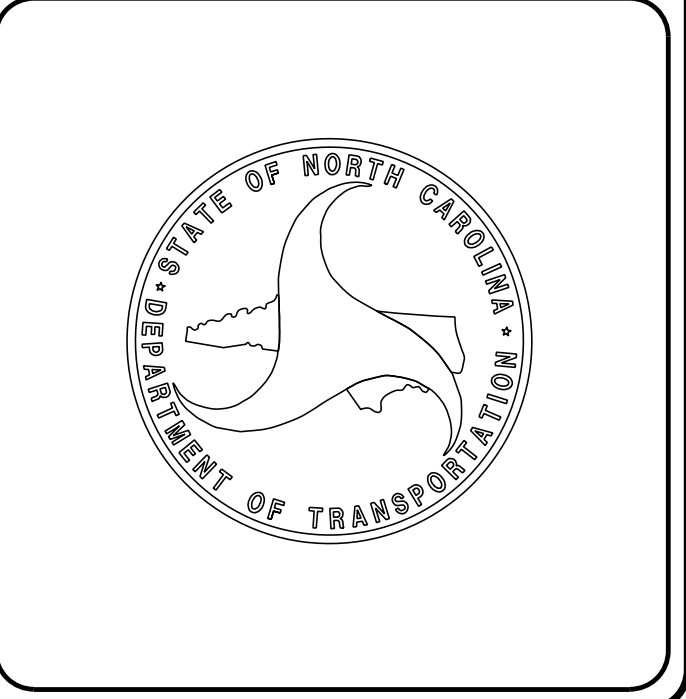
**RYAN SHOOK**  
NCDOT CONTACT

**HYDRAULICS ENGINEER**

DocuSigned by:  
Andrea Hayden  
10/12/2021  
ADCSAFE118E8413...  
SIGNATURE: P.E.

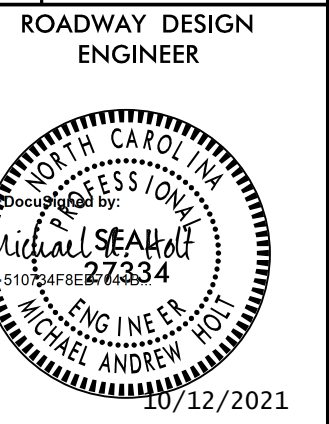
**ROADWAY DESIGN ENGINEER**

DocuSigned by:  
Michael A. Holt  
10/12/2021  
510734F8E07041B...  
SIGNATURE: P.E.



8/17/99

|                                    |                 |
|------------------------------------|-----------------|
| PROJECT REFERENCE NO.<br>17BPJR.99 | SHEET NO.<br>1A |
|------------------------------------|-----------------|



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

# INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARDS

## INDEX OF SHEETS

| SHEET #        | DESCRIPTION   |
|----------------|---|
| 1              | TITLE SHEET   |
| 1A             | INDEX OF SHEETS, GENERAL NOTES, & LIST OF STANDARD DRAWINGS               |
| 1B             | CONVENTIONAL PLAN SHEET SYMBOLS   |
| 2A-1           | PAVEMENT SCHEDULE AND TYPICAL SECTIONS                                    |
| 2C-1 THRU 2C-3 | DETAILS FOR GUARDRAIL INSTALLATION & FOR GUARDRAIL STRUCTURE ANCHOR UNITS |
| 3B-1           | SUMMARIES OF GUARDRAIL, EARTHWORK, REMOVAL & SHOULDER BERM GUTTER         |
| 3D-1           | SUMMARY OF DRAINAGE   |
| 3G-1           | GEOTECHNICAL SUMMARY  |
| 4 THRU 5       | PLAN & PROFILE SHEETS   |
| RW01 THRU RW04 | RIGHT OF WAY PLANS  |
| TMP-1          | TRANSPORTATION MANAGEMENT PLAN  |
| EC-1 THRU EC-5 | EROSION CONTROL PLANS   |
| X-1 THRU X-7   | CROSS-SECTIONS  |
| S-1 THRU S-13  | STRUCTURE PLANS   |

## STANDARD SPECIFICATIONS

**GENERAL NOTES:** 2018 SPECIFICATIONS  
EFFECTIVE: 01-16-2018  
REVISED:

**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:**  
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

**SIDE ROADS:**  
THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

**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.

**SUBSURFACE PLANS:**  
NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

**END BENTS:**  
THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

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

## LIST OF STANDARD DRAWINGS

EFF. 01-16-2018  
REV.

2018 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, 2018 are applicable to this project and by reference hereby are considered a part of these plans:

| STD.NO.   | TITLE   |
|---|---|
| <b>DIVISION 2 - EARTHWORK</b>                     |   |
| 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                        |
| <b>DIVISION 3 - PIPE CULVERTS</b>                 |   |
| 300.01  | Method of Pipe Installation   |
| <b>DIVISION 4 - MAJOR STRUCTURES</b>              |   |
| 422.02  | Reinforced Bridge Approach Fills - Type II Modified Approach Fill             |
| <b>DIVISION 5 - SUBGRADE, BASES AND SHOULDERS</b> |   |
| 560.01  | Method of Shoulder Construction - High Side of Superelevated Curve - Method I |
| <b>DIVISION 6 - ASPHALT BASES AND PAVEMENTS</b>   |   |
| 654.01  | Pavement Repairs  |
| <b>DIVISION 8 - INCIDENTALS</b>                   |   |
| 815.00  | Subsurface Drain  |
| 840.00  | Concrete Base Pad for Drainage Structures                                     |
| 840.29  | Frames and Narrow Slot Flat Grates  |
| 840.35  | Traffic Bearing Grated Drop Inlet - for Cast Iron 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  |
| 876.02  | Guide for Rip Rap at Pipe Outlets   |

10/12/2021  
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# STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

12/2/2016

## BOUNDARIES AND PROPERTY:

|                                       |           |
|---------------------------------------|-----------|
| State Line                            | -----     |
| County Line                           | -----     |
| Township Line                         | -----     |
| City Line                             | -----     |
| Reservation Line                      | -----     |
| Property Line                         | -----     |
| Existing Iron Pin                     | ○ EIP     |
| Computed Property Corner              | -----     |
| Property Monument                     | □ ECM     |
| Parcel/Sequence Number                | ①23       |
| 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 |
| Existing Historic Property Boundary   | ----- HPB |
| Known Contamination Area: Soil        | ☠-S-☠     |
| Potential Contamination Area: Soil    | ☠-S-☠     |
| Known Contamination Area: Water       | ☠-W-☠     |
| Potential Contamination Area: Water   | ☠-W-☠     |
| Contaminated Site: Known or Potential | ☠?        |

## 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 | ○ MILEPOST 35 |
| Switch             | □ SWITCH      |
| RR Abandoned       | -----         |
| RR Dismantled      | -----         |

## RIGHT OF WAY & PROJECT CONTROL:

|   |             |
|---|-------------|
| Secondary Horiz and Vert Control Point                    | ◆           |
| Primary Horiz Control Point                               | ○           |
| Primary Horiz and Vert Control Point                      | ◆           |
| Exist Permanent Easement Pin and Cap                      | ◇           |
| New Permanent Easement Pin and Cap                        | ◆           |
| Vertical Benchmark  | ▲           |
| Existing Right of Way Marker                              | △           |
| Existing Right of Way Line                                | -----       |
| New Right of Way Line                                     | ----- R/W   |
| New Right of Way Line with Pin and Cap                    | ----- R/W ▲ |
| New Right of Way Line with Concrete or Granite R/W Marker | ----- R/W ▲ |
| New Control of Access Line with Concrete C/A Marker       | ----- C/A   |
| Existing Control of Access                                | ----- C/A   |
| New Control of Access                                     | ----- C/A   |
| Existing Easement Line                                    | ----- E     |
| New Temporary Construction Easement                       | ----- E     |
| New Temporary Drainage Easement                           | ----- TDE   |
| New Permanent Drainage Easement                           | ----- PDE   |
| New Permanent Drainage / Utility Easement                 | ----- DUE   |
| New Permanent Utility Easement                            | ----- PUE   |
| New Temporary Utility Easement                            | ----- TUE   |
| New Aerial Utility Easement                               | ----- AUE   |

## ROADS AND RELATED FEATURES:

|                            |          |
|----------------------------|----------|
| Existing Edge of Pavement  | -----    |
| Existing Curb              | -----    |
| Proposed Slope Stakes Cut  | ----- C  |
| Proposed Slope Stakes Fill | ----- F  |
| Proposed Curb Ramp         | ----- CR |
| Existing Metal Guardrail   | -----    |
| Proposed Guardrail         | -----    |
| Existing Cable Guiderail   | -----    |
| Proposed Cable Guiderail   | -----    |
| Equality Symbol            | ⊕        |
| Pavement Removal           | -----    |

## VEGETATION:

|              |   |
|--------------|---|
| Single Tree  | ☼ |
| Single Shrub | ☼ |

Note: Not to Scale

\*S.U.E. = Subsurface Utility Engineering

|            |            |
|------------|------------|
| Hedge      | -----      |
| Woods Line | -----      |
| Orchard    | ☼ ☼ ☼ ☼    |
| Vineyard   | □ 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                      | ⊙       |
| Storm Sewer                              | ----- S |

## UTILITIES:

|                                |         |
|--------------------------------|---------|
| POWER:                         |         |
| Existing Power Pole            | ●       |
| Proposed Power Pole            | ○       |
| Existing Joint Use Pole        | ●       |
| Proposed Joint Use Pole        | ○       |
| Power Manhole                  | ⊙       |
| Power Line Tower               | ⊠       |
| Power Transformer              | ⊠       |
| U/G Power Cable Hand Hole      | -----   |
| H-Frame Pole                   | ●-●     |
| U/G Power Line LOS B (S.U.E.*) | ----- P |
| U/G Power Line LOS C (S.U.E.*) | ----- P |
| U/G Power Line LOS D (S.U.E.*) | ----- P |

## TELEPHONE:

|  |            |
|--|------------|
| Existing Telephone Pole                | ●          |
| Proposed Telephone Pole                | ○          |
| Telephone Manhole                      | ⊙          |
| Telephone Pedestal                     | ⊠          |
| Telephone Cell Tower                   | ⊠          |
| U/G Telephone Cable Hand Hole          | -----      |
| U/G Telephone Cable LOS B (S.U.E.*)    | ----- T    |
| U/G Telephone Cable LOS C (S.U.E.*)    | ----- T    |
| U/G Telephone Cable LOS D (S.U.E.*)    | ----- T    |
| U/G Telephone Conduit LOS B (S.U.E.*)  | ----- TC   |
| U/G Telephone Conduit LOS C (S.U.E.*)  | ----- TC   |
| U/G Telephone Conduit LOS D (S.U.E.*)  | ----- TC   |
| U/G Fiber Optics Cable LOS B (S.U.E.*) | ----- T FO |
| U/G Fiber Optics Cable LOS C (S.U.E.*) | ----- T FO |
| U/G Fiber Optics Cable LOS D (S.U.E.*) | ----- T FO |

## WATER:

|                                |                 |
|--------------------------------|-----------------|
| Water Manhole                  | ⊙               |
| Water Meter                    | ○               |
| Water Valve                    | ⊗               |
| Water Hydrant                  | ⊕               |
| U/G Water Line LOS B (S.U.E.*) | -----           |
| U/G Water Line LOS C (S.U.E.*) | -----           |
| U/G Water Line LOS D (S.U.E.*) | -----           |
| Above Ground Water Line        | ----- A/G Water |

## TV:

|                                       |             |
|---------------------------------------|-------------|
| TV Pedestal                           | ⊠           |
| TV Tower                              | ⊗           |
| U/G TV Cable Hand Hole                | -----       |
| U/G TV Cable LOS B (S.U.E.*)          | ----- TV    |
| U/G TV Cable LOS C (S.U.E.*)          | ----- TV    |
| U/G TV Cable LOS D (S.U.E.*)          | ----- TV    |
| U/G Fiber Optic Cable LOS B (S.U.E.*) | ----- TV FO |
| U/G Fiber Optic Cable LOS C (S.U.E.*) | ----- TV FO |
| U/G Fiber Optic Cable LOS D (S.U.E.*) | ----- TV FO |

## GAS:

|                              |               |
|------------------------------|---------------|
| Gas Valve                    | ◇             |
| Gas Meter                    | ⊕             |
| U/G Gas Line LOS B (S.U.E.*) | ----- G       |
| U/G Gas Line LOS C (S.U.E.*) | ----- G       |
| U/G Gas Line LOS D (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 |
| SS Forced Main Line LOS B (S.U.E.*) | ----- FSS                |
| SS Forced Main Line LOS C (S.U.E.*) | ----- FSS                |
| SS Forced Main Line LOS D (S.U.E.*) | ----- FSS                |

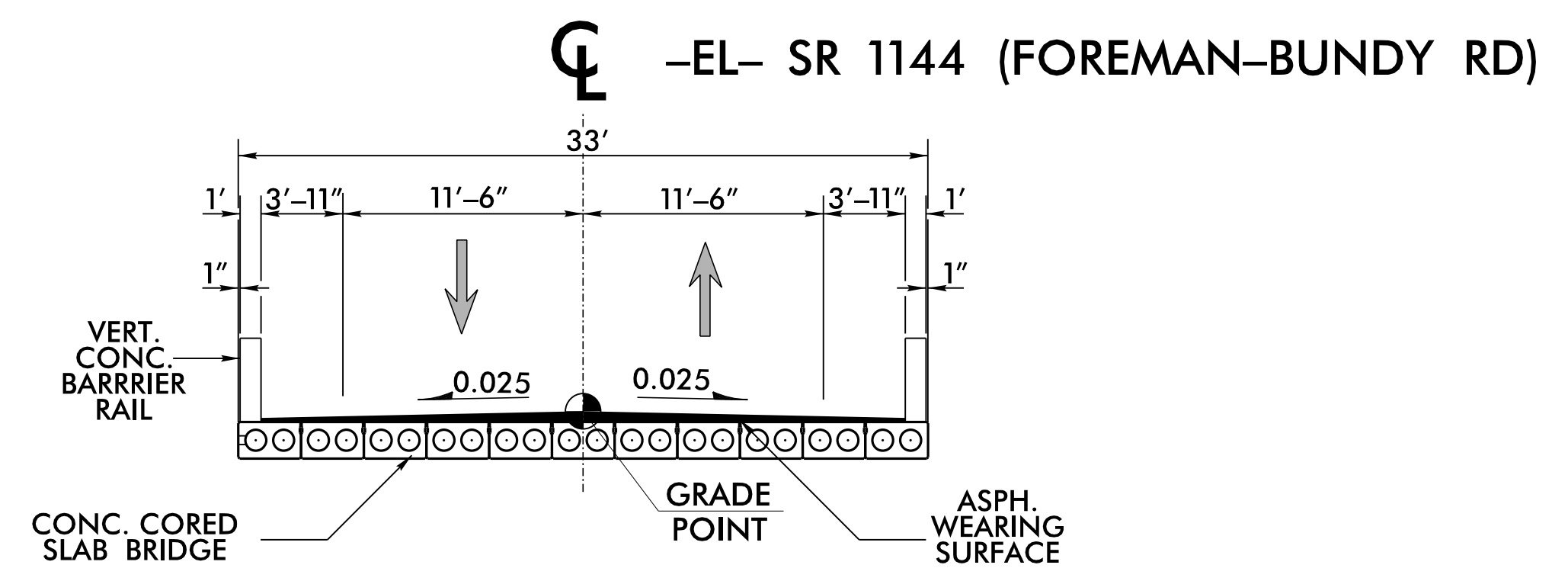
## MISCELLANEOUS:

|  |            |
|--|------------|
| Utility Pole                             | ●          |
| Utility Pole with Base                   | □          |
| Utility Located Object                   | ○          |
| Utility Traffic Signal Box               | ⊠          |
| Utility Unknown U/G Line LOS B (S.U.E.*) | ----- 7UTL |
| U/G Tank; Water, Gas, Oil                | □          |
| Underground Storage Tank, Approx. Loc.   | UST        |
| A/G Tank; Water, Gas, Oil                | □          |
| Geoenvironmental Boring                  | ⊕          |
| U/G Test Hole LOS A (S.U.E.*)            | ⊕          |
| Abandoned According to Utility Records   | AATUR      |
| End of Information                       | E.O.I.     |

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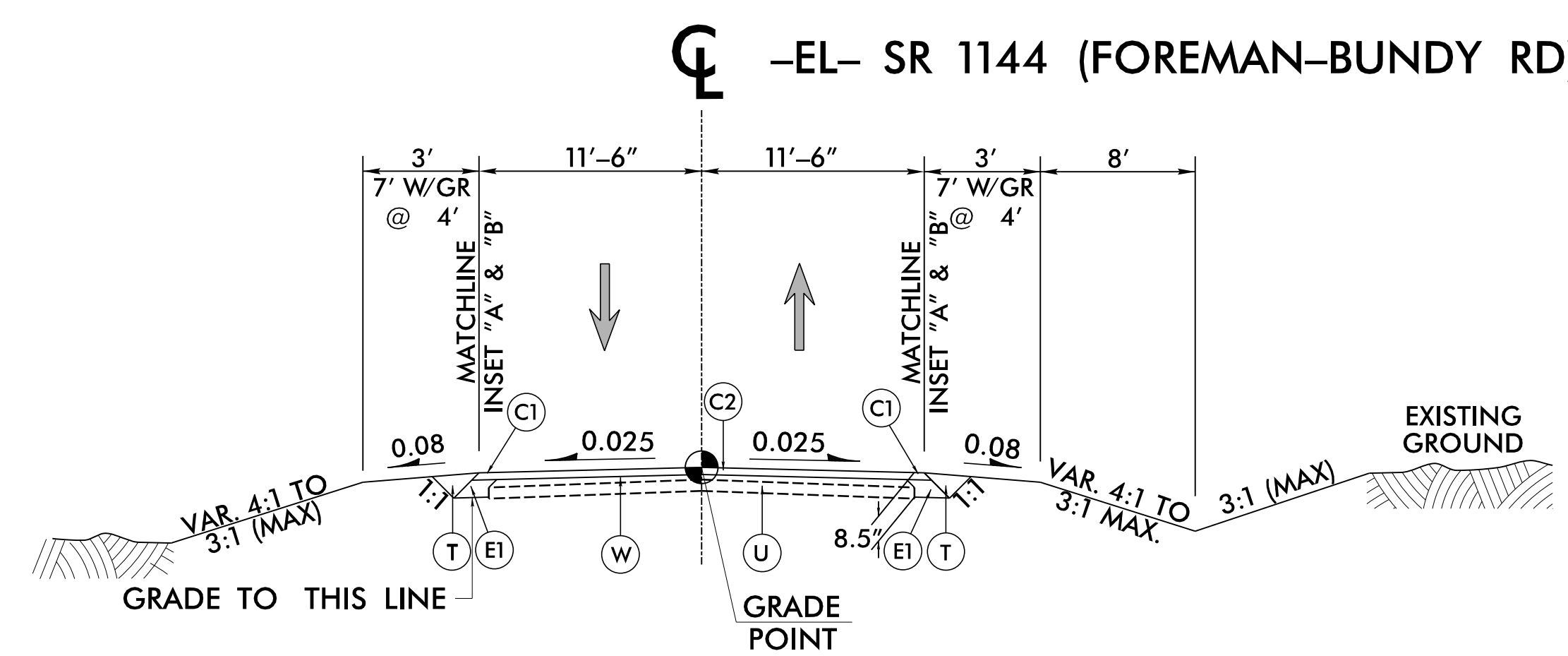
| PAVEMENT SCHEDULE |   |
|-------------------|---|
| C1                | PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.   |
| C2                | PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.                             |
| E1                | PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.   |
| E2                | PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH. |
| R                 | PROP. SHOULDER BERM GUTTER  |
| T                 | EARTH MATERIAL.   |
| U                 | EXISTING PAVEMENT.  |
| W                 | VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)  |

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



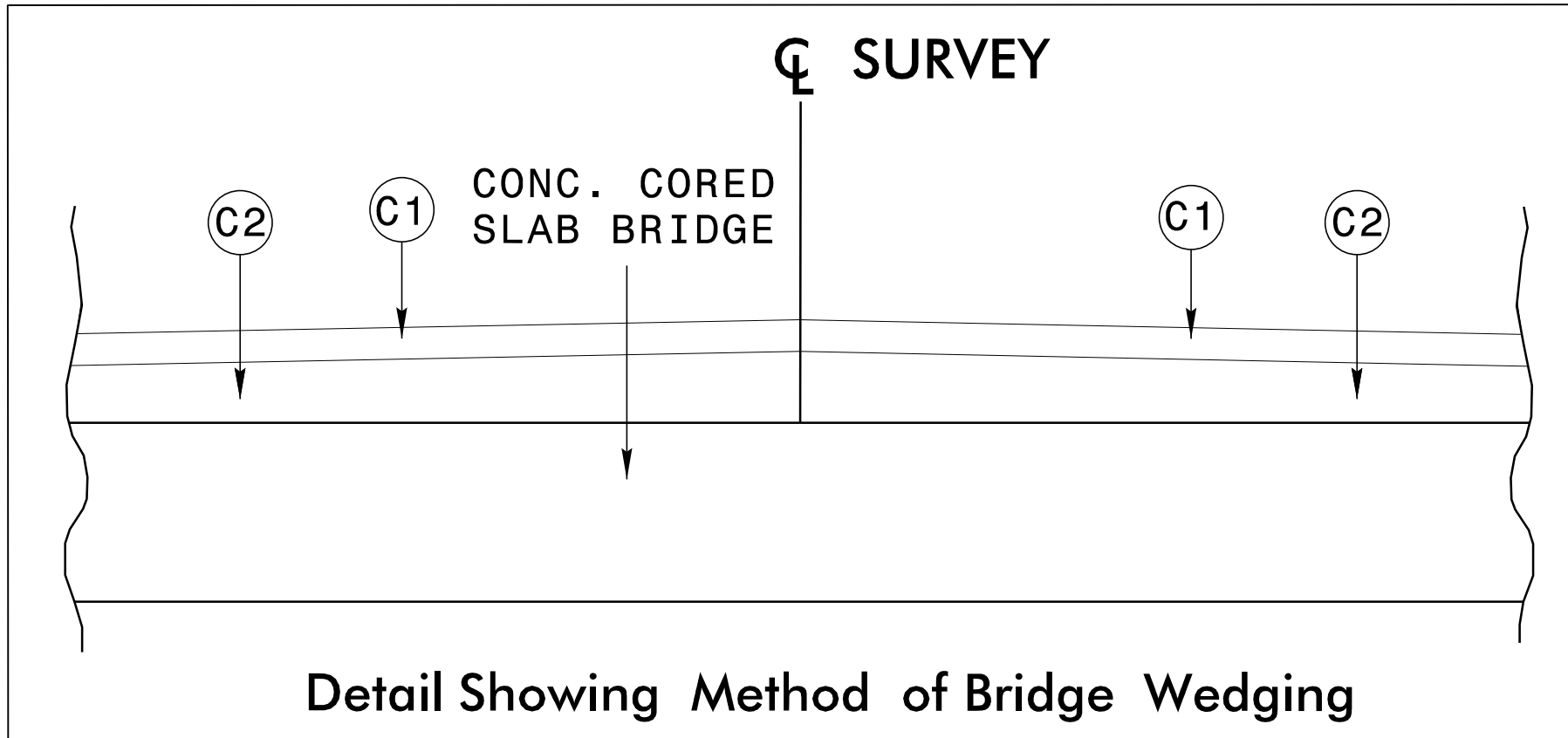
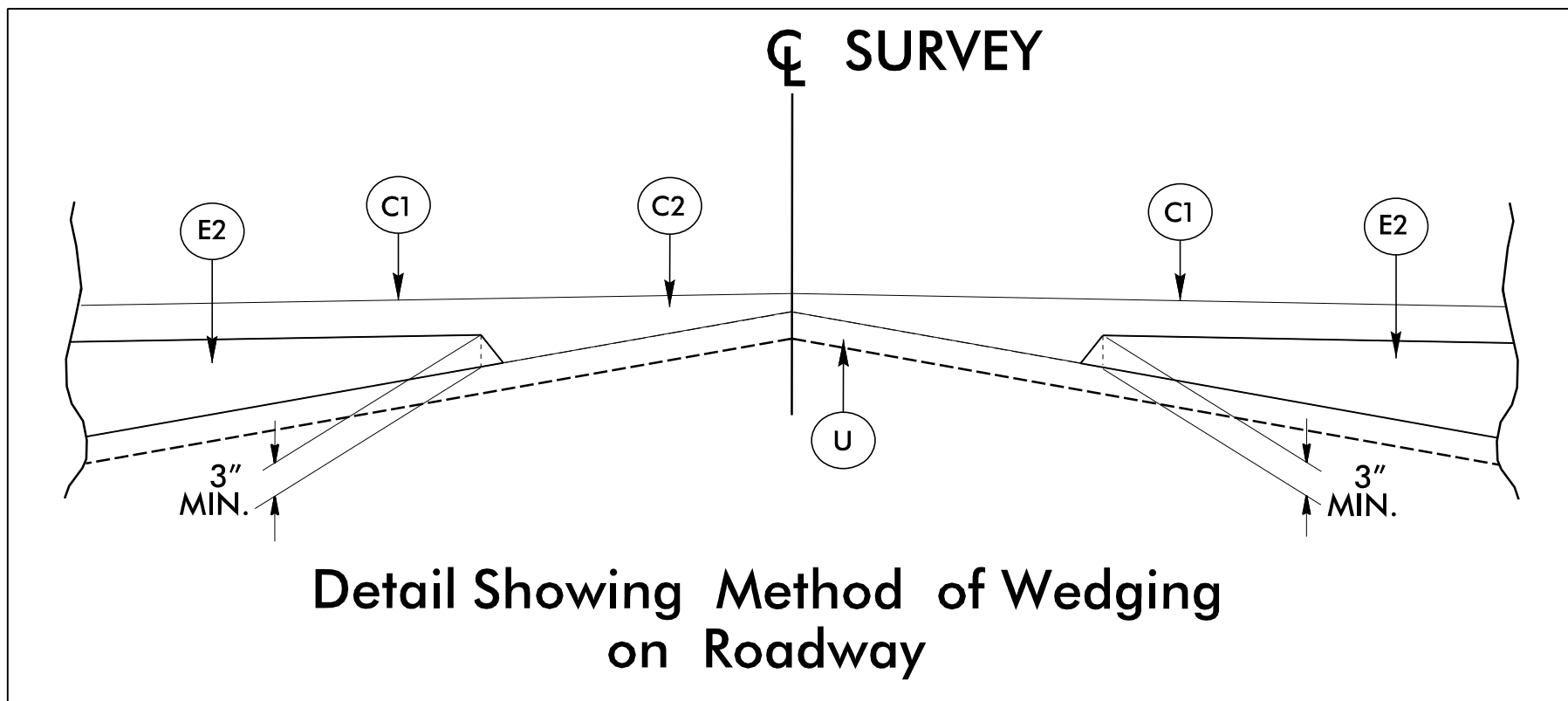
**BRIDGE SKETCH NO.1**  
BRIDGE #25

USE BRIDGE SKETCH NO.1 AS FOLLOWS:  
-EL- STA. 17+25.00 (BEGIN BRIDGE) TO 17+80.00 (END BRIDGE)

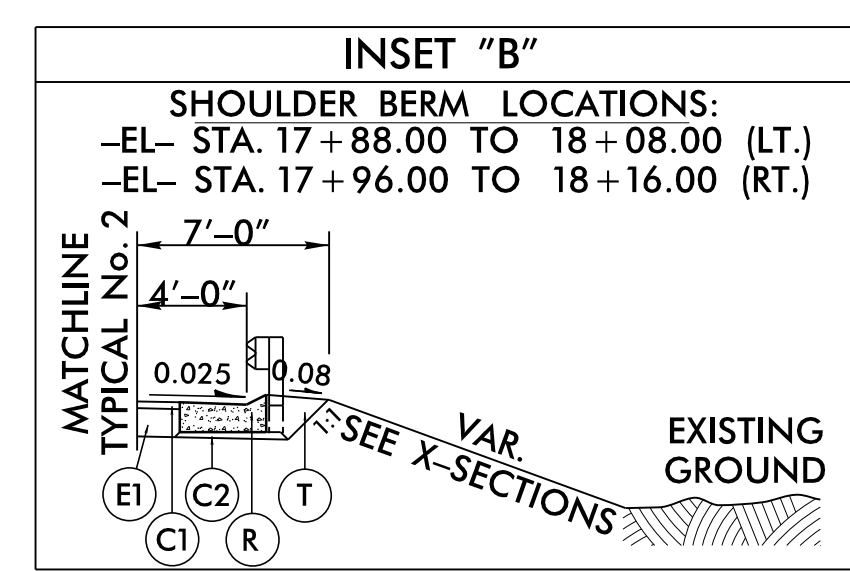
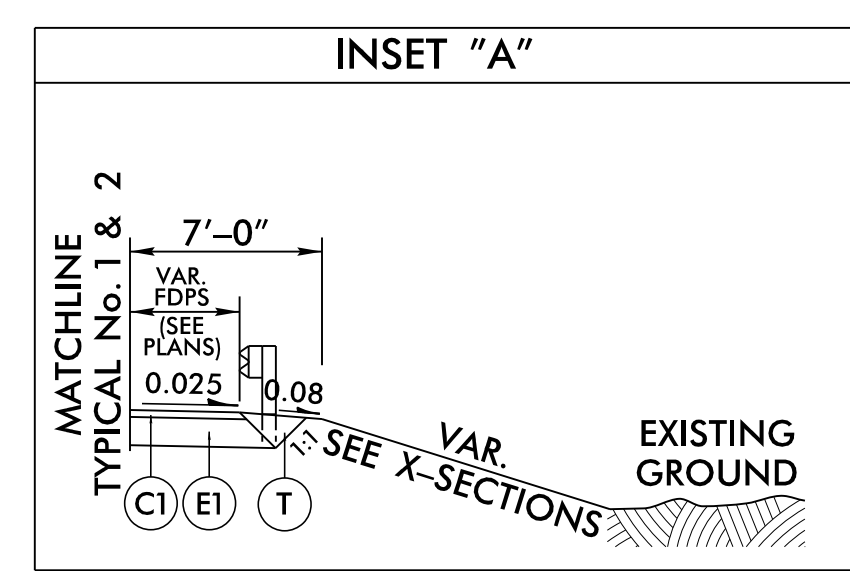


**TYPICAL SECTION NO. 1**

USE TYPICAL SECTION NO. 1 AS FOLLOWS:  
-EL- STA. 13+85.00 TO -EL- STA. 17+25.00 (BEGIN BRIDGE)  
-EL- STA. 17+80.00 (END BRIDGE) TO -EL- STA. 21+00.00



\*\*NOTE 1: USE INSET "A" FOR GUARDRAIL LOCATIONS WITHOUT SHOULDER BERM GUTTER  
\*\*NOTE 2: USE INSET "B" FOR GUARDRAIL LOCATIONS WITH SHOULDER BERM GUTTER



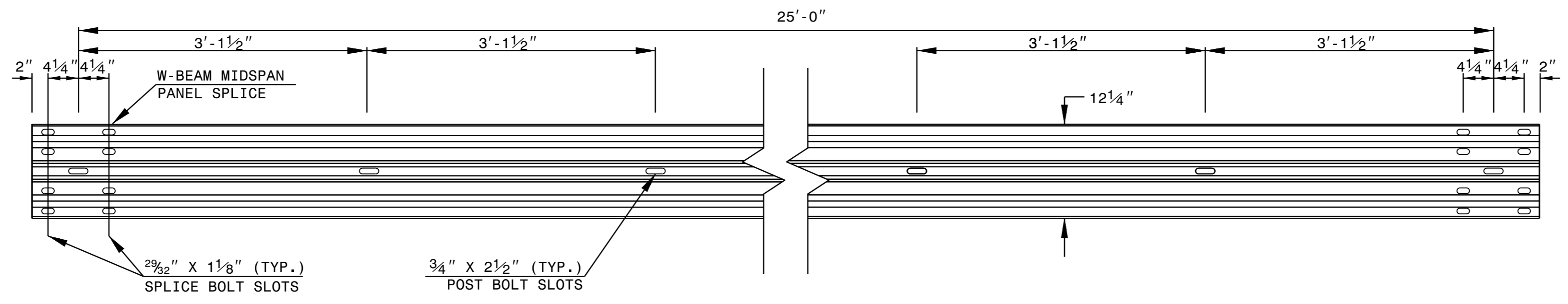
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| PROJECT REFERENCE NO.<br>17BP.J.R.99                                 | SHEET NO.<br>2A-1                          |
| ROADWAY DESIGN ENGINEER<br>MICHAEL BEAM<br>27334                     | PAVEMENT DESIGN ENGINEER<br>MICHAEL ANDREW |
| 10/12/2021   |  |
| <b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b> |  |

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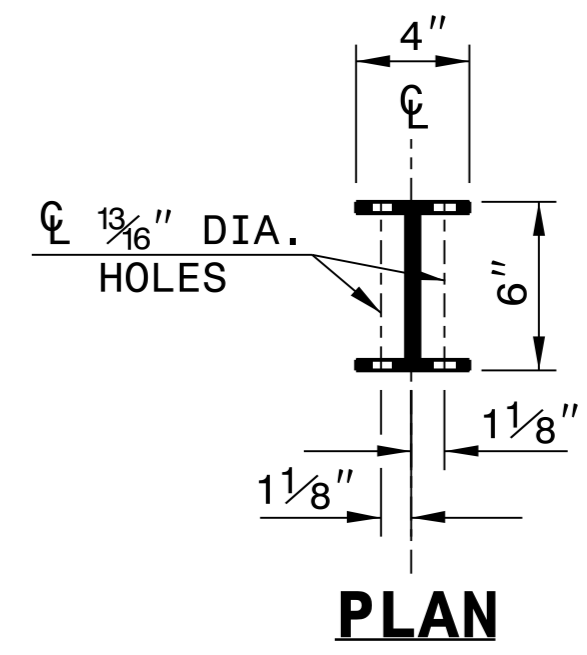
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

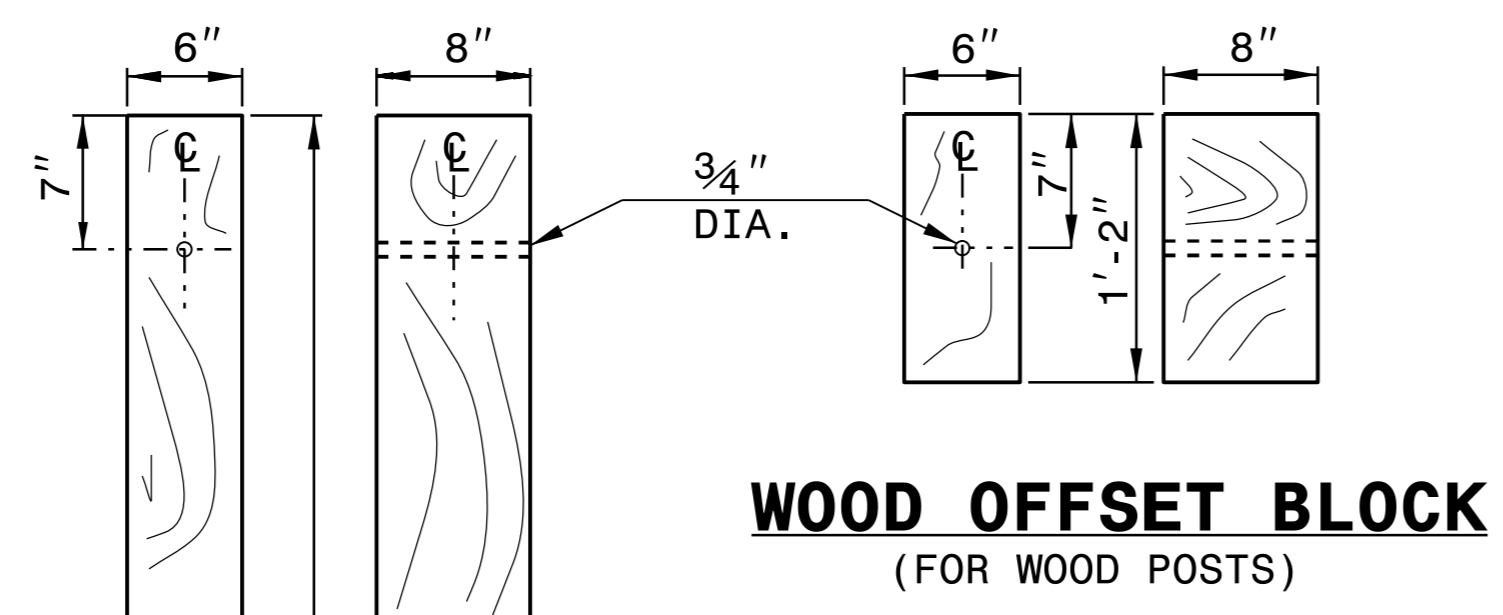
SHEET 6 OF 8  
**862D02**



**STANDARD W-BEAM GUARDRAIL**



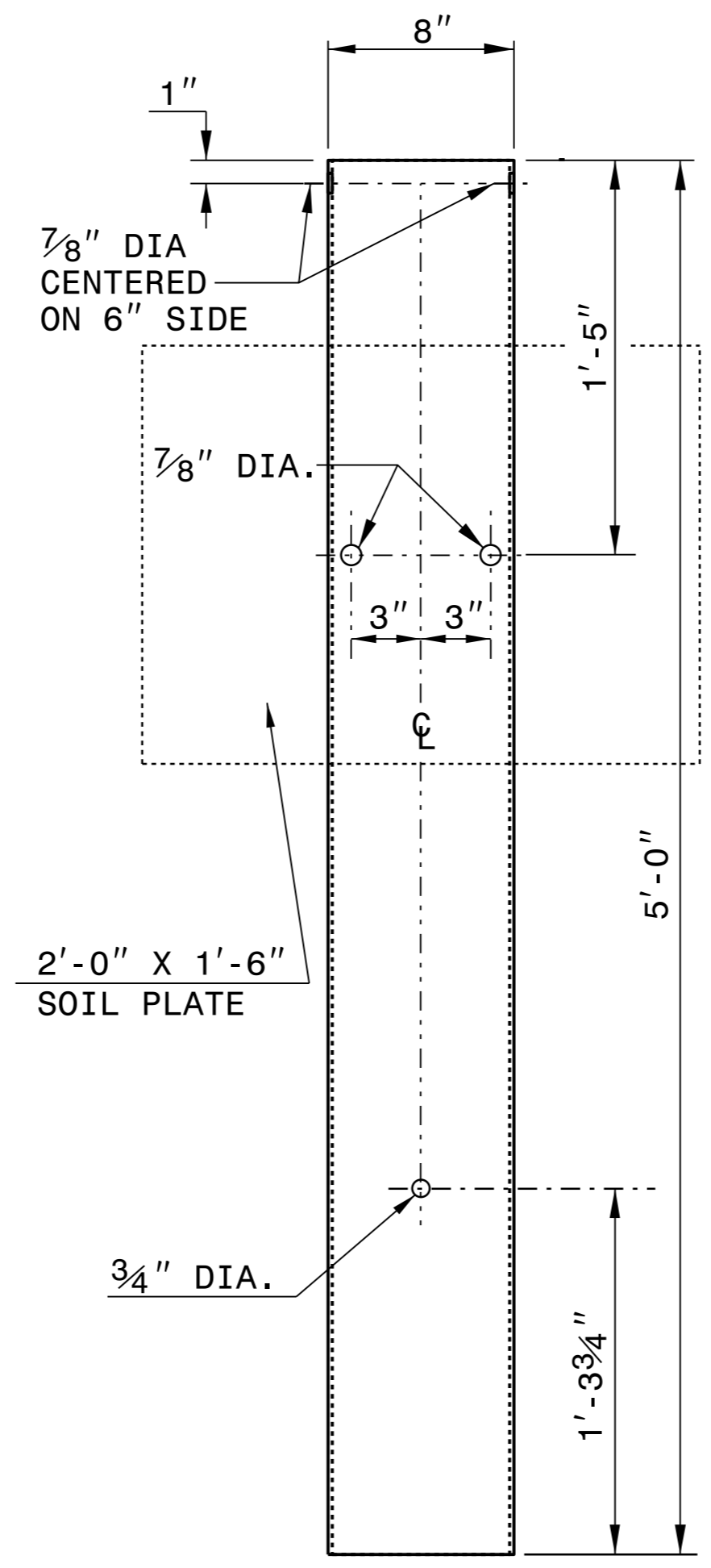
**PLAN**



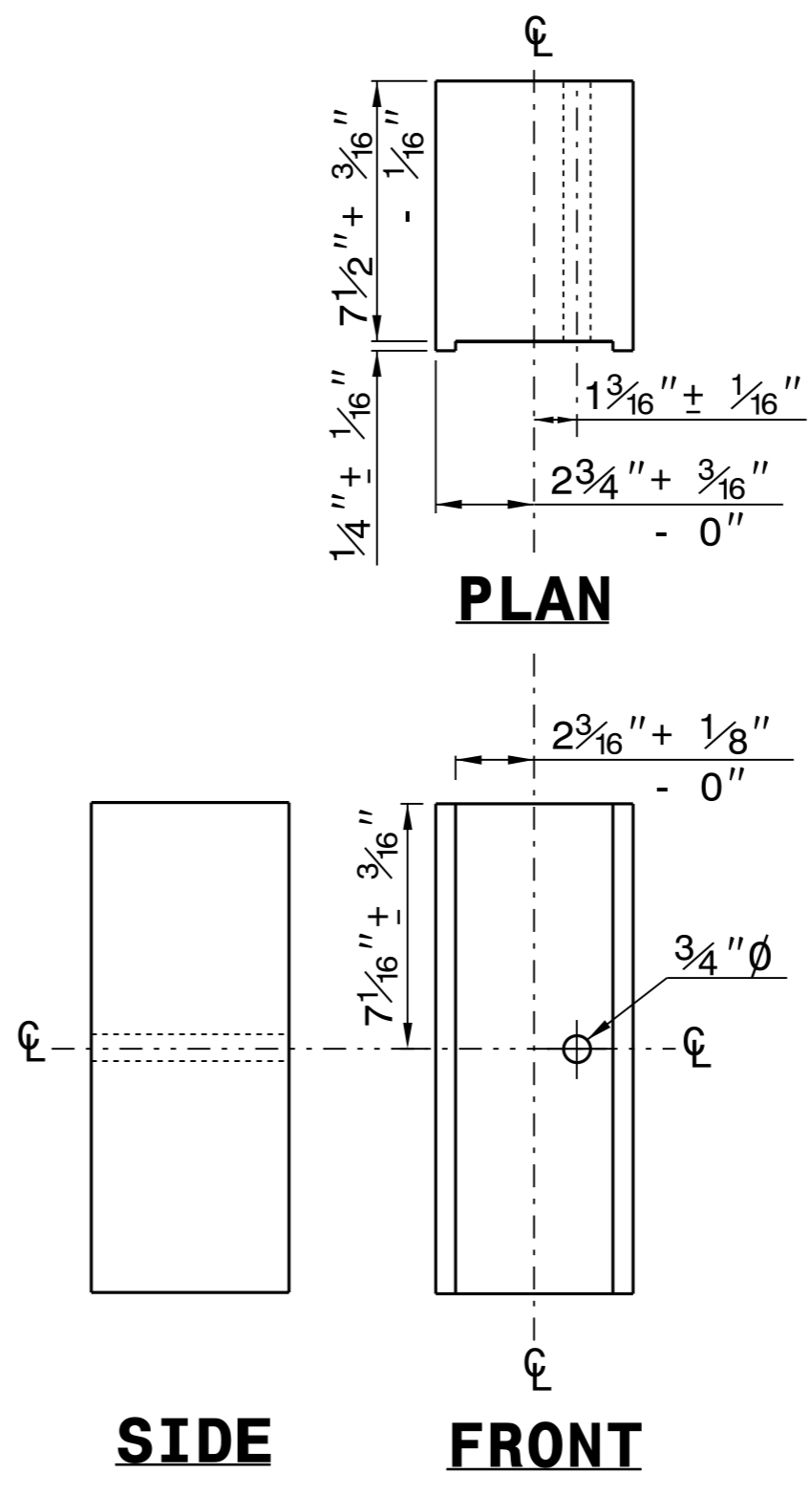
**WOOD OFFSET BLOCK  
(FOR WOOD POSTS)**

**STANDARD  
LINE POST**

**SHORT WOOD  
BREAKAWAY POST**



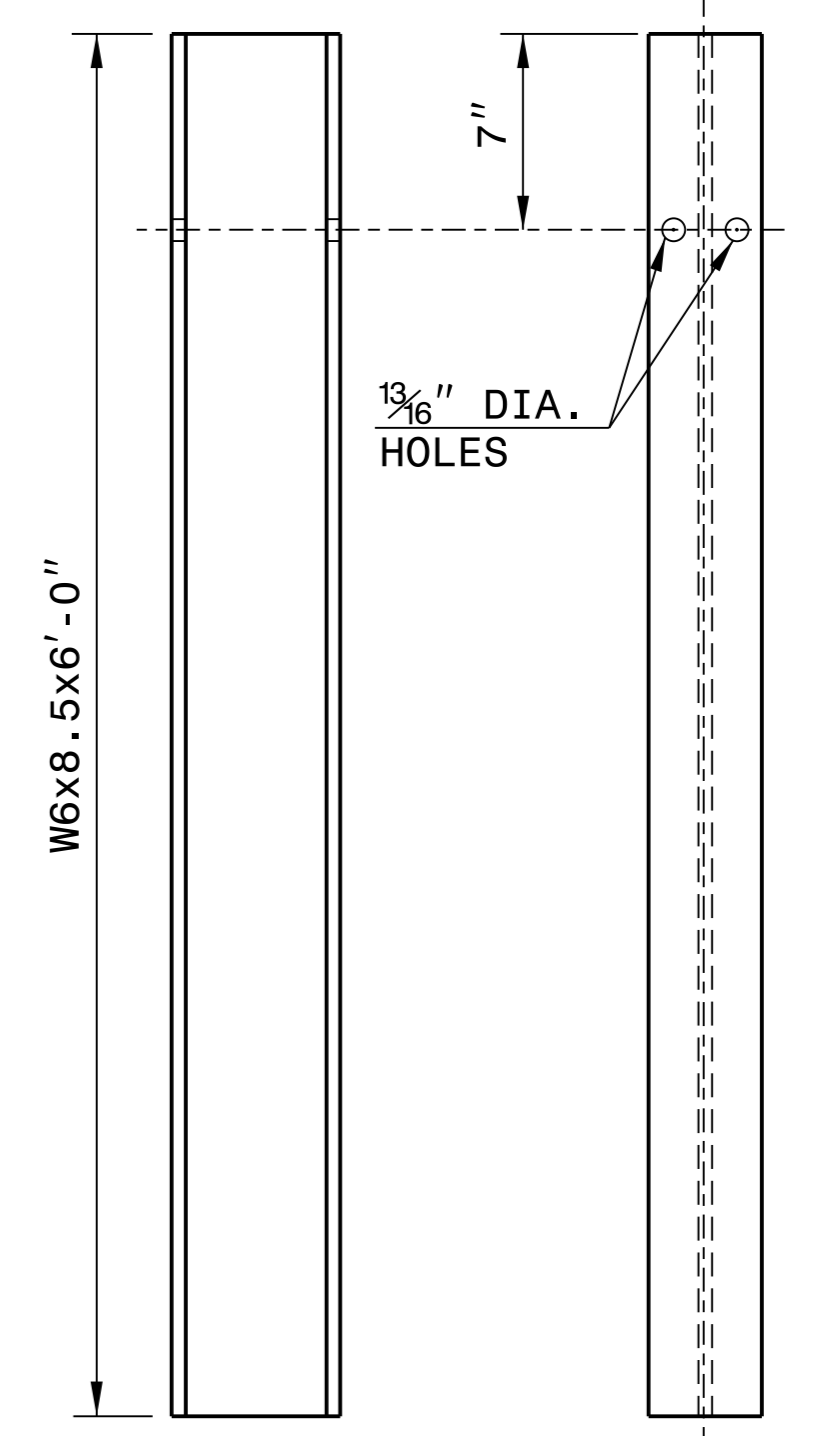
**STEEL TUBE  
TS 6"x8"x0.1875"**



**SIDE**

**FRONT**

**ROUTED  
OFFSET BLOCK**



**SIDE**

**FRONT**

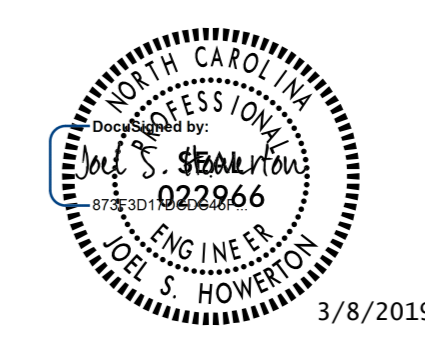
**"W6" STEEL POST**

STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET 6 OF 8  
**862D02**

**SYSTEM PARTS**



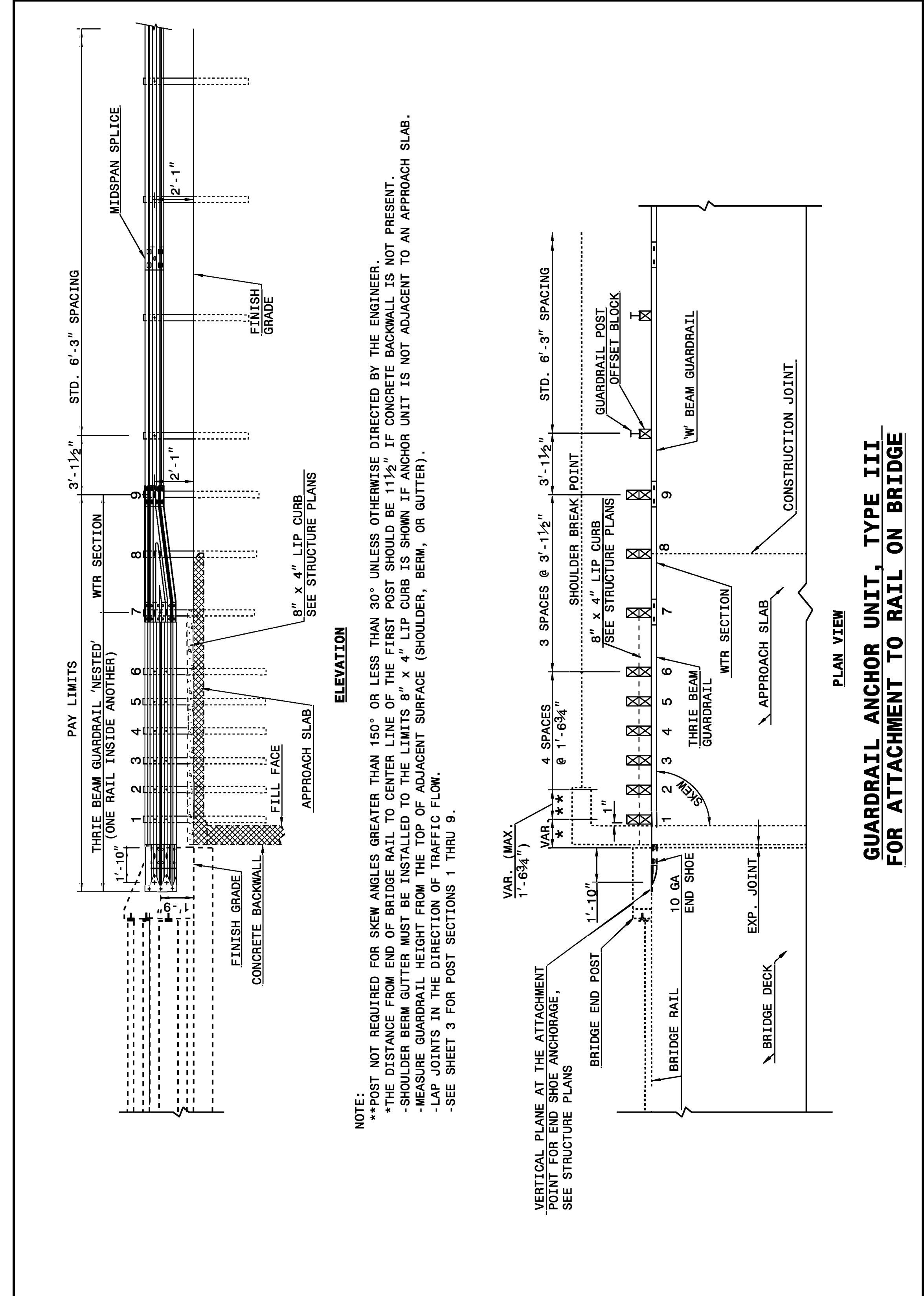
**CONTRACTS STANDARDS  
AND DEVELOPMENT UNIT**  
Office 919-707-6950 FAX 919-250-4119

**SEE TITLE BLOCK**

|                          |                |
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| ORIGINAL BY: J. HOWERTON | DATE: 3-7-2018 |
| MODIFIED BY:             | DATE:          |
| CHECKED BY:              | DATE:          |
| FILE SPEC.:              |                |

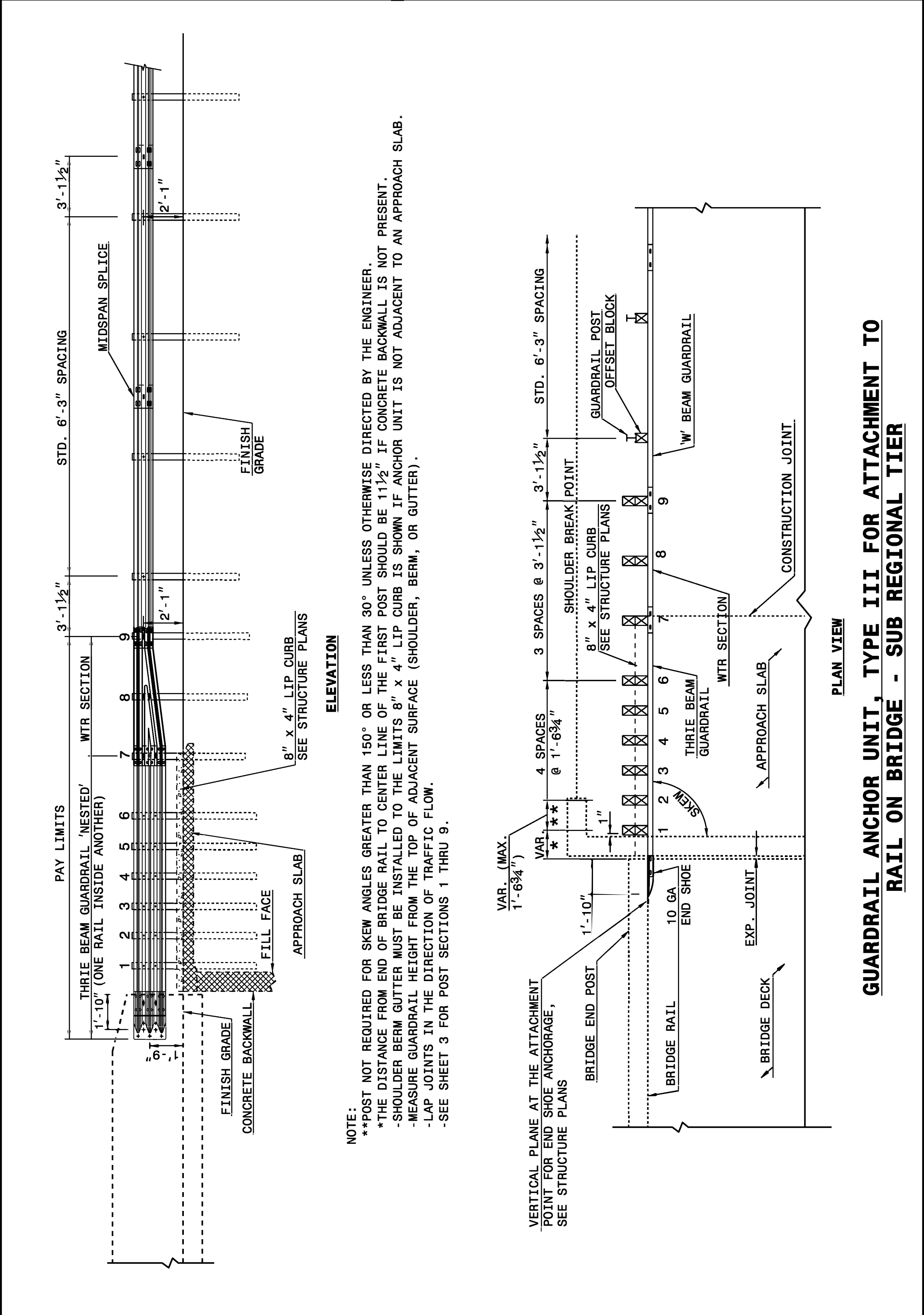
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STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.  
ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE  
SHEET 1 OF 7 862D03

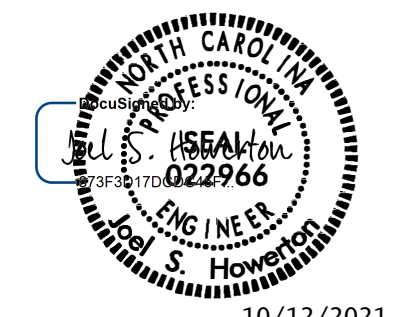


STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.  
ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE  
SHEET 1 OF 7 862D03

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.  
ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER  
SHEET 2 OF 7 862D03



STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.  
ROADWAY DETAIL DRAWING FOR STRUCTURE ANCHOR UNITS GUARDRAIL ANCHOR UNIT, TYPE III FOR ATTACHMENT TO RAIL ON BRIDGE - SUB REGIONAL TIER  
SHEET 2 OF 7 862D03



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

**CONTRACT STANDARDS AND DEVELOPMENT UNIT**  
 Office 919-707-6950 FAX 919-250-4119

**SEE TITLE BLOCK**

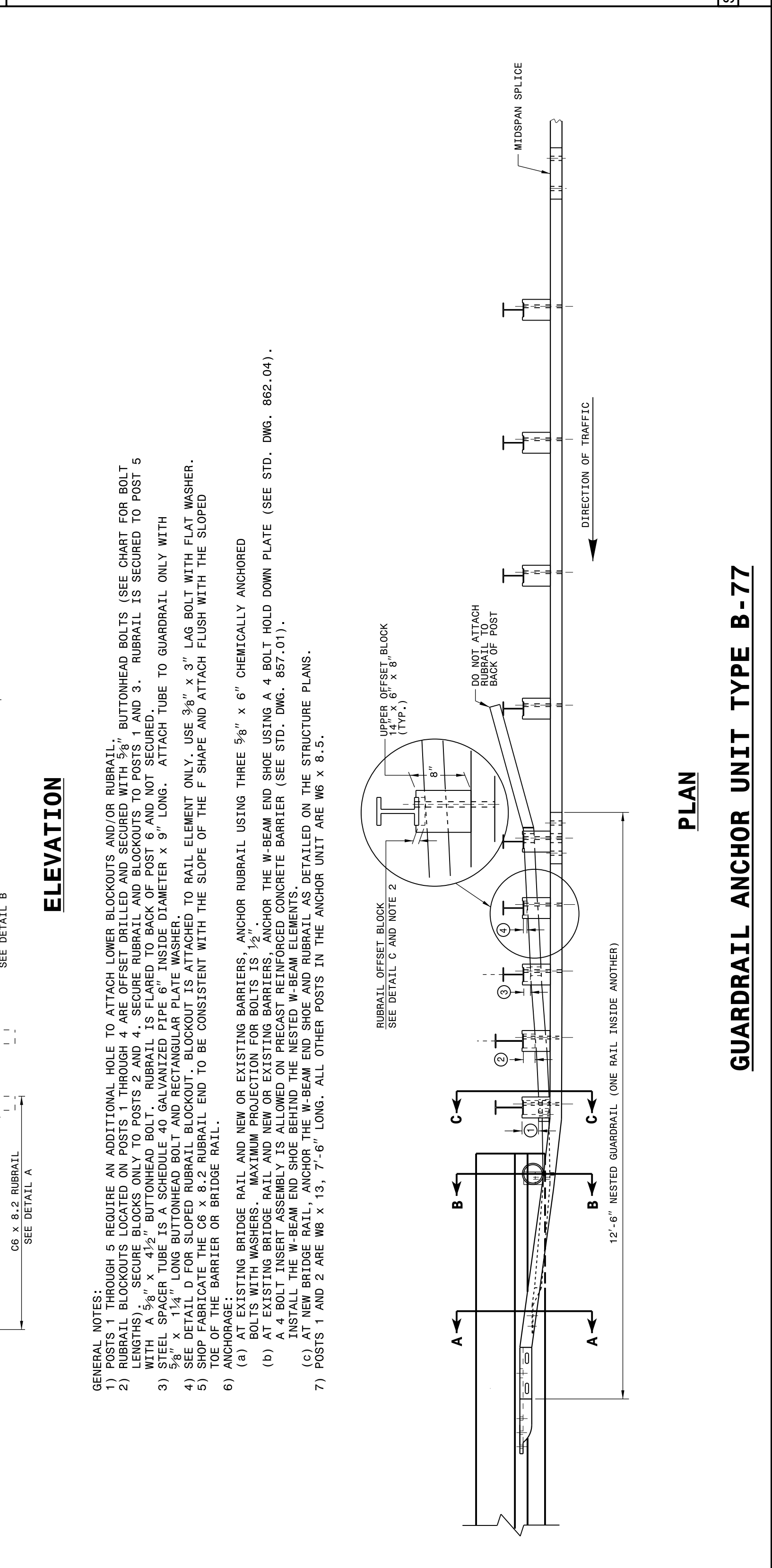
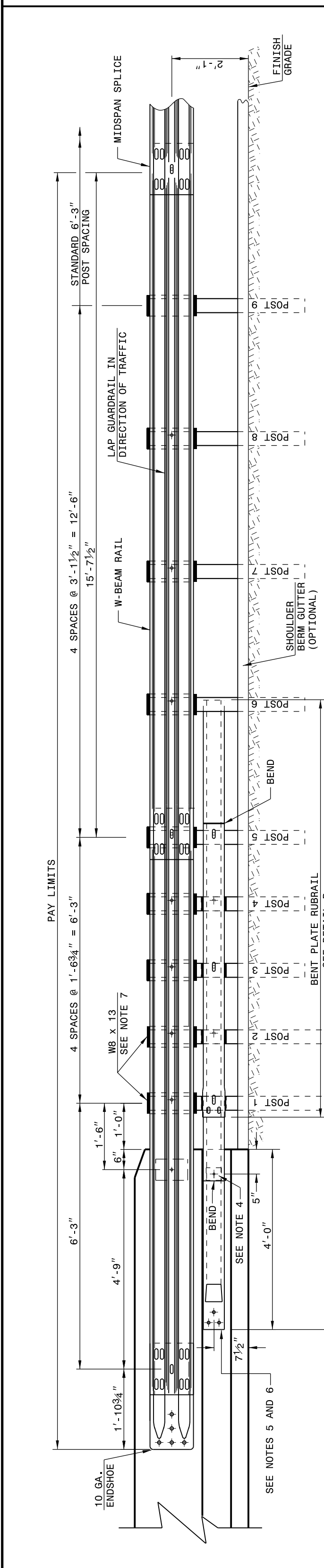
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 MODIFIED BY: DATE:  
 CHECKED BY: DATE:  
 FILE SPEC.:

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 howerton AI CS0-232595

STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNIT**  
 FOR F-SHAPE BARRIER

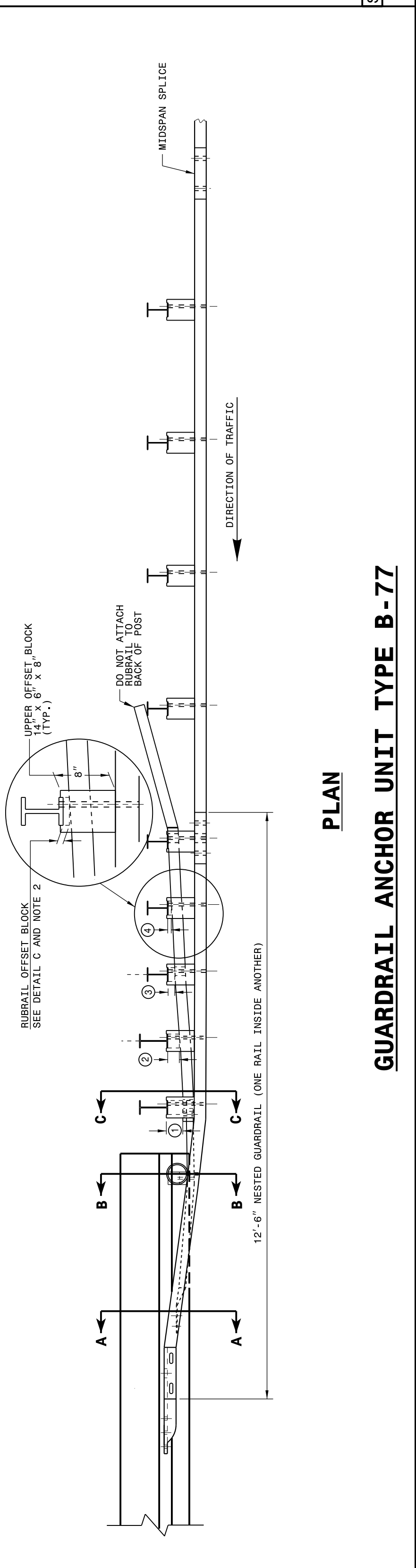
SHEET 4 OF 7  
**862D03**



**ELEVATION**

- GENERAL NOTES:
- POSTS 1 THROUGH 5 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKOUTS AND/OR RUBRAIL. RUBRAIL BLOCKOUTS LOCATED ON POSTS 1 THROUGH 4 ARE OFFSET DRILLED AND SECURED WITH 3/8\"
  - RUBRAIL BLOCKOUTS LOCATED ON POSTS 1 THROUGH 4 ARE OFFSET DRILLED AND SECURED WITH 3/8\"
  - 5/8\" x 1 1/4\" LONG BUTTONHEAD BOLT AND RECTANGULAR PLATE WASHER.
  - SEE DETAIL D FOR SLOPED RUBRAIL BLOCKOUT. BLOCKOUT IS ATTACHED TO RAIL ELEMENT ONLY. USE 3/8\" x 3\" LAG BOLT WITH FLAT WASHER.
  - SHOP FABRICATE THE C6 x 8.2 RUBRAIL END TO BE CONSISTENT WITH THE SLOPE OF THE F SHAPE AND ATTACH FLUSH WITH THE SLOPED RAIL.
  - ANCHORAGE THE BARRIER OR BRIDGE RAIL.
  - (a) AT EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, ANCHOR RUBRAIL USING THREE 5/8\" x 6\" CHEMICALLY ANCHORED BOLTS WITH WASHERS. MAXIMUM PROJECTION FOR BOLTS IS 1/2\".
  - (b) AT EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, ANCHOR THE W-BEAM END SHOE USING A 4 BOLT HOLD DOWN PLATE (SEE STD. DWG. 862.04).
  - A 4 BOLT INSERT ASSEMBLY IS ALLOWED ON PRECAST REINFORCED CONCRETE BARRIER (SEE STD. DWG. 857.01).
  - (c) AT NEW BRIDGE RAIL AND NEW OR EXISTING BARRIERS, ANCHOR THE W-BEAM END SHOE AND RUBRAIL AS DETAILED ON THE STRUCTURE PLANS.
  - POSTS 1 AND 2 ARE W8 x 13, 7'-6\"

**PLAN**



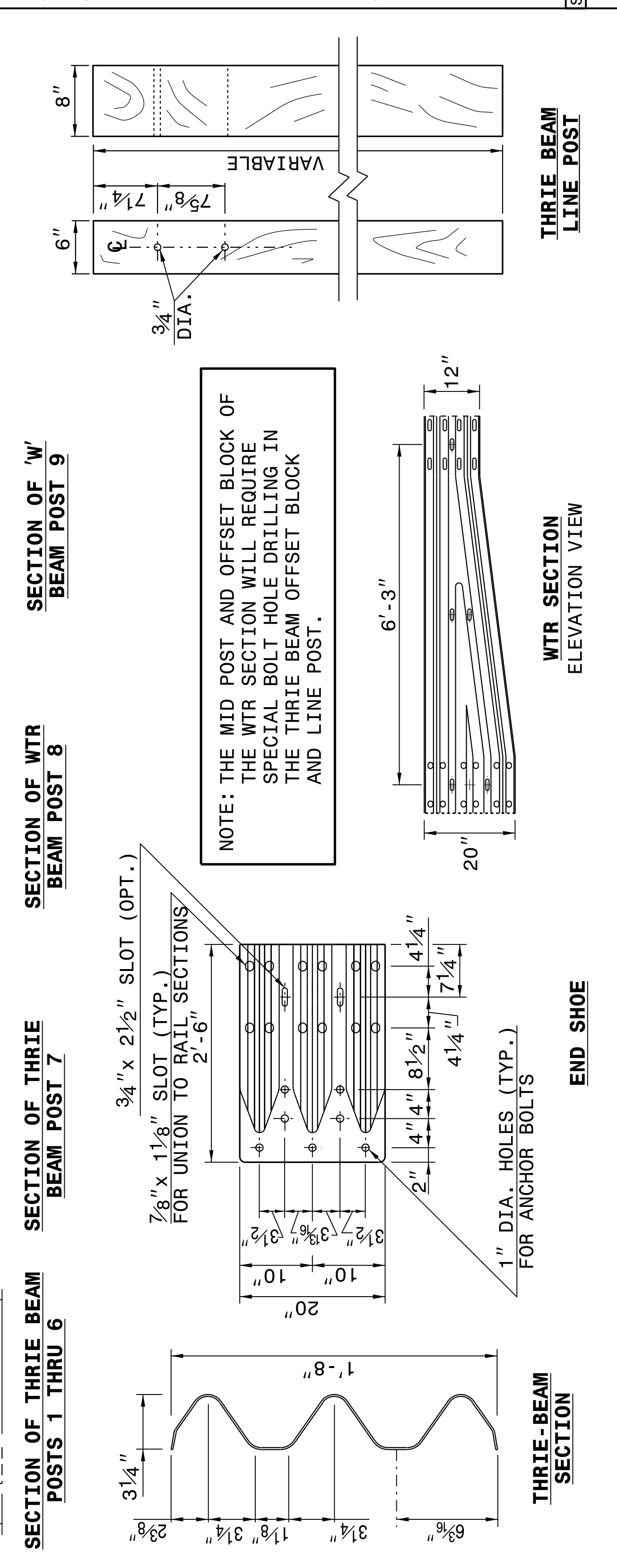
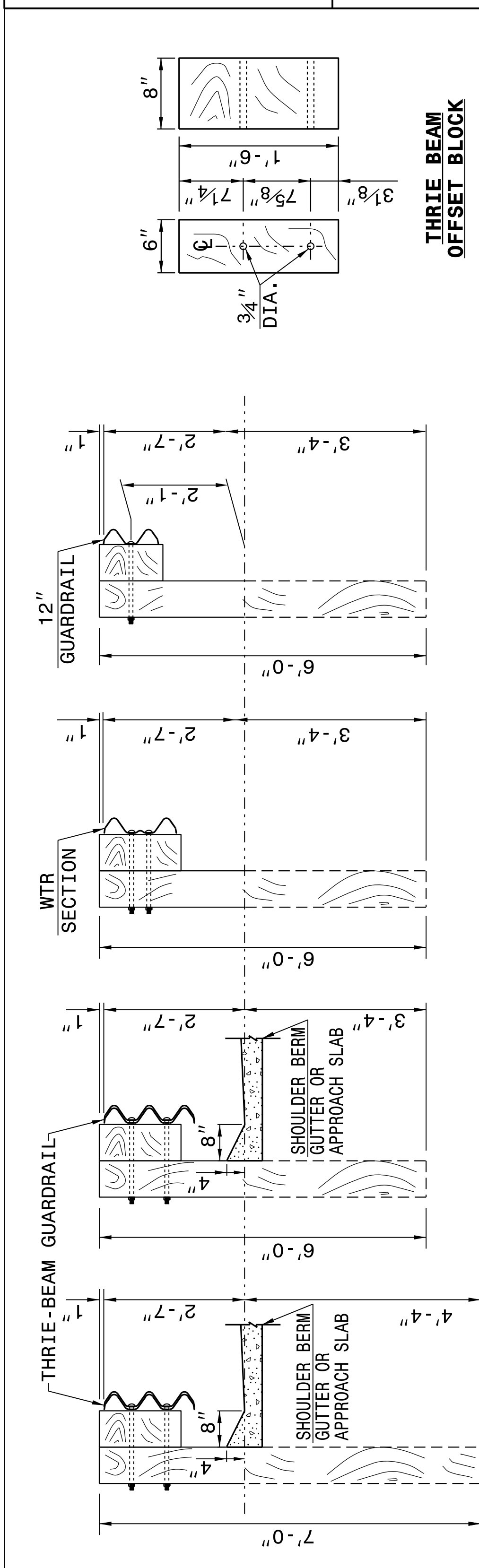
**GUARDRAIL ANCHOR UNIT TYPE B-77**

SHEET 4 OF 7  
**862D03**

STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
 TYPE III

SHEET 3 OF 7  
**862D03**



NOTE: THE MID POST AND OFFSET BLOCK OF THE WTR SECTION WILL REQUIRE SPECIAL BOLT HOLE DRILLING IN THE THRIE BEAM OFFSET BLOCK AND LINE POST.

STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
 TYPE III

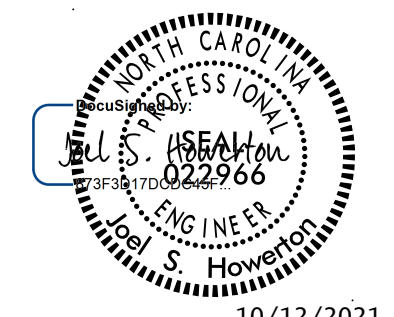
SHEET 3 OF 7  
**862D03**

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

**CONTRACT STANDARDS  
 AND DEVELOPMENT UNIT**  
 Office 919-707-6950 FAX 919-250-4119

**SEE TITLE BLOCK**

|                          |                |
|--------------------------|----------------|
| ORIGINAL BY: J. HOWERTON | DATE: 06-22-12 |
| MODIFIED BY:             | DATE:          |
| CHECKED BY:              | DATE:          |
| FILE SPEC.:              | DATE:          |



10/12/2021







COMPUTED BY: Tyler C. Bottoms DATE: 8/27/19  
CHECKED BY: Jinyoung Park DATE: 9/16/19

|             |           |
|-------------|-----------|
| PROJECT NO. | SHEET NO. |
| 17BP.1.R.99 | 3G-1      |

(5-15-18)

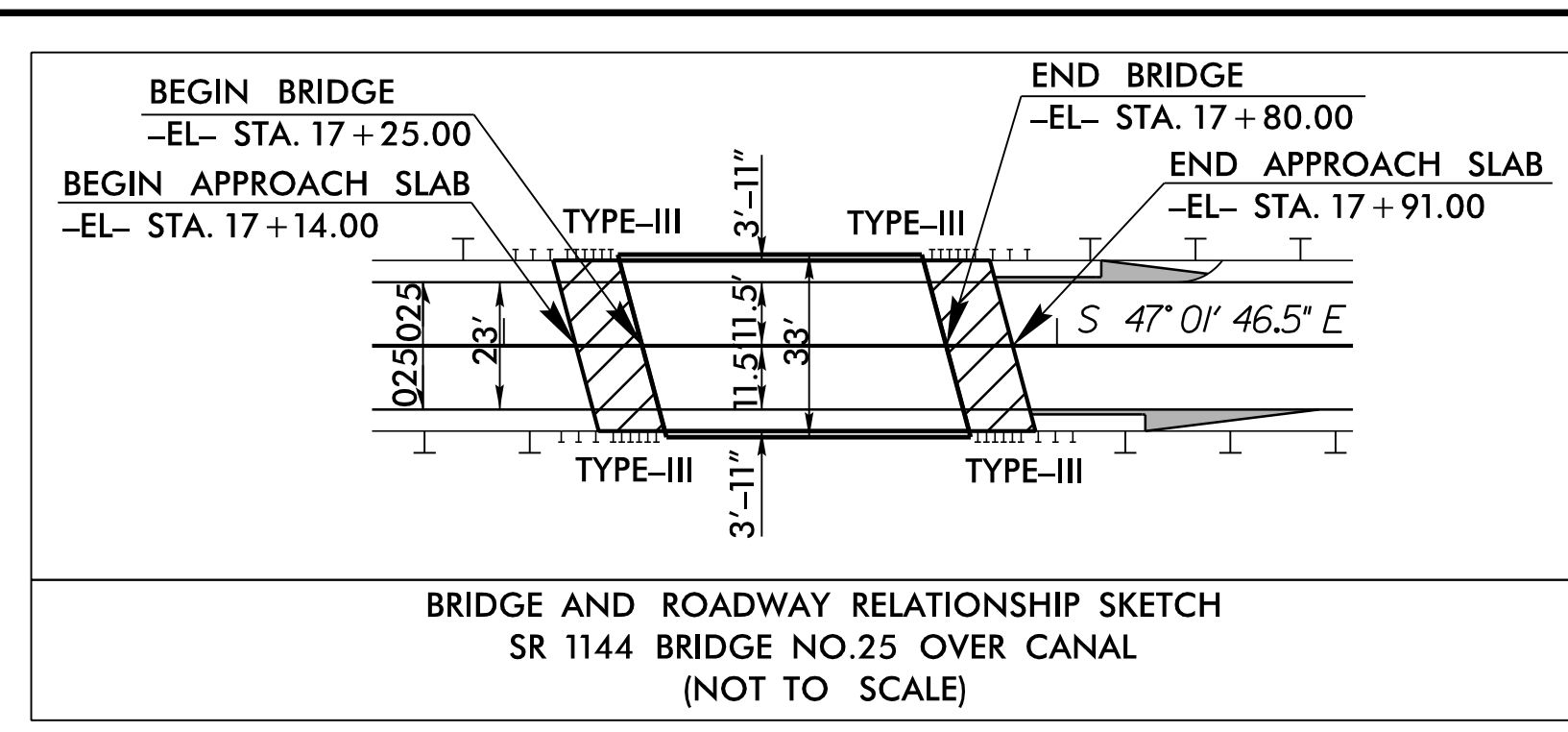
**STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS**

**SUMMARY OF SUBSURFACE DRAINAGE**

| LINE        | Station | Station | Location<br>LT/RT/CL | Drain Type*<br>UD/BD/SD | LF  |
|-------------|---------|---------|----------------------|-------------------------|-----|
|             |         |         |                      |                         |     |
|             |         |         |                      |                         |     |
|             |         |         |                      |                         |     |
| CONTINGENCY |         |         |                      | SD                      | 200 |
|             |         |         |                      | <b>TOTAL LF:</b>        | 200 |

\*UD = Underdrain  
\*BD = Blind Drain  
\*SD = Subsurface Drain

8.17.17.99



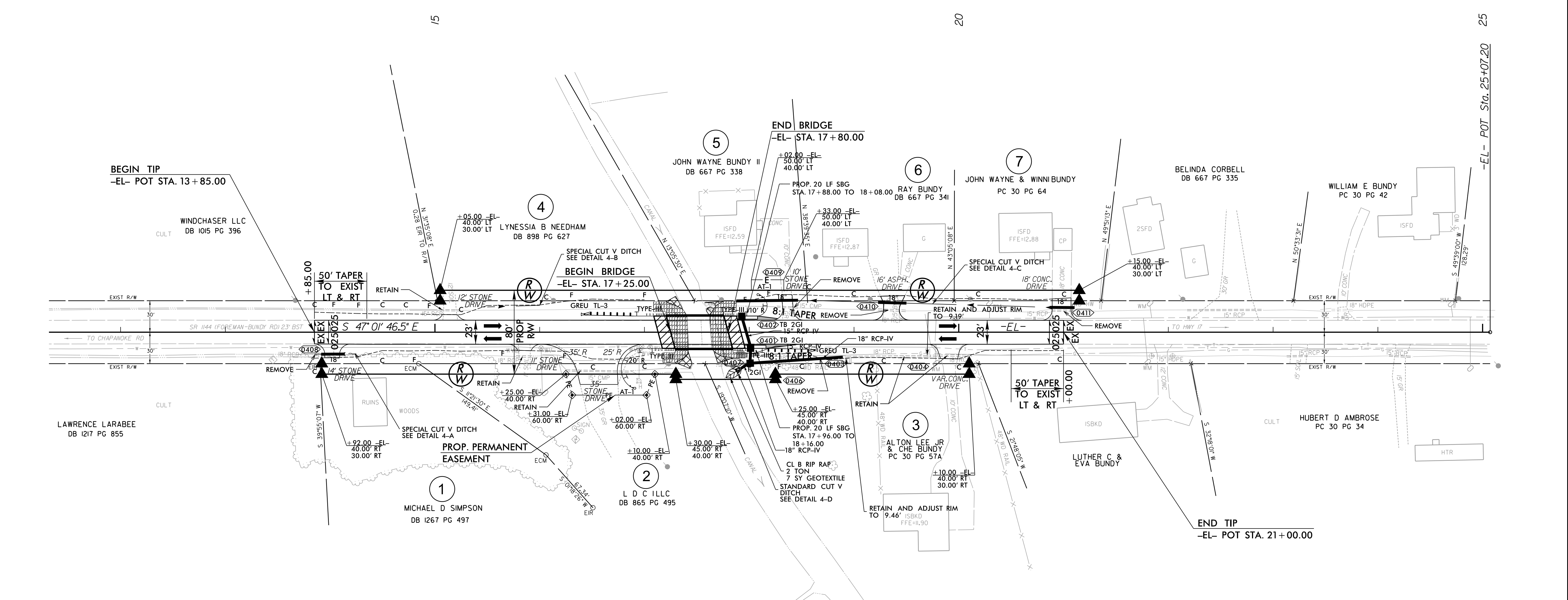
**NIV5**  
NIV5 ENGINEERS & CONSULTANTS, INC.  
3300 REGENCY PARKWAY, SUITE 100  
CARY, NC 27518  
P: 919.851.1912  
www.NIV5.com  
NC License # F-1333

PROJECT REFERENCE NO. 17BP.J.R.99  
SHEET NO. 4

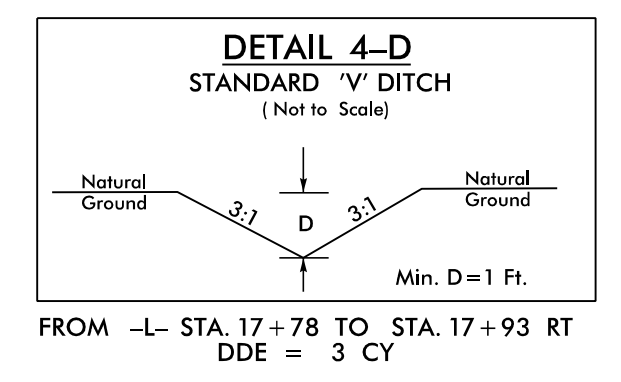
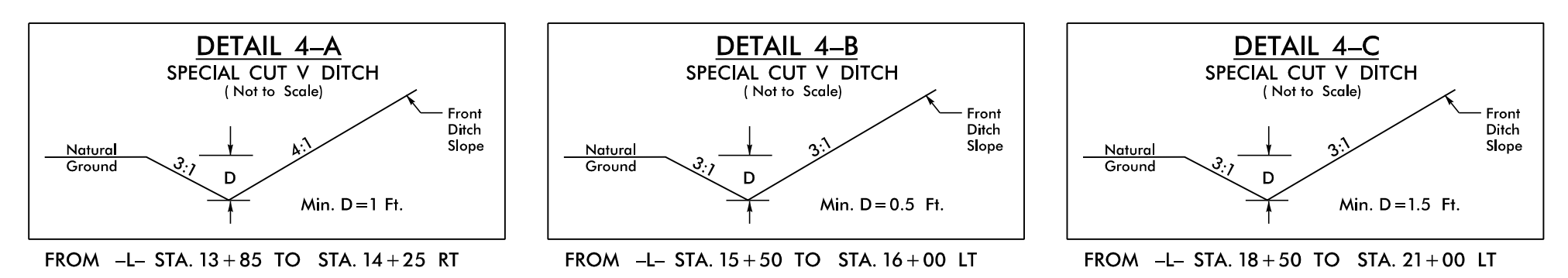
ROADWAY DESIGN ENGINEER  
MICHAEL ANDREW TOY  
10/12/2021

HYDRAULICS ENGINEER  
MICHAEL ANDREW TOY  
10/12/2021

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



| PARCEL NO. | PROPERTY OWNERS NAME     | TOTAL AREA | AREA TAKEN | AREA REMAINING RIGHT | AREA REMAINING LEFT | CONSTRUCTION EASEMENT | PERMANENT DRAINAGE EASEMENT | TEMPORARY DRAINAGE EASEMENT | PERMANENT EASEMENT |
|------------|--------------------------|------------|------------|----------------------|---------------------|-----------------------|-----------------------------|-----------------------------|--------------------|
| 1          | MICHAEL D SIMPSON        |            | 997 SF     |                      |                     |                       |                             |                             |                    |
| 2          | L D C I LLC              |            | 2852 SF    |                      |                     |                       |                             |                             | 1561 SF            |
| 3          | ALTON LEE JR & CHE BUNDY |            | 2808 SF    |                      |                     |                       |                             |                             |                    |
| 4          | LYNESSIA B NEEDHAM       |            | 2401 SF    |                      |                     |                       |                             |                             |                    |
| 5          | JOHN WAYNE BUNDY II      |            | 1103 SF    |                      |                     |                       |                             |                             | 310 SF             |
| 6          | RAY BUNDY                |            | 1405 SF    |                      |                     |                       |                             |                             |                    |
| 7          | JOHN WAYNE & WINNI BUNDY |            | 1194 SF    |                      |                     |                       |                             |                             |                    |



PAVED SHOULDER

-PE- PERMANENT EASEMENT

**NOTES:**  
SEE SHEET 5 FOR -EL- PROFILE  
SEE SHEETS S-1 THRU S-13 FOR STRUCTURE PLANS  
ALL DRIVEWAYS HAVE 10' RADII UNLESS NOTED

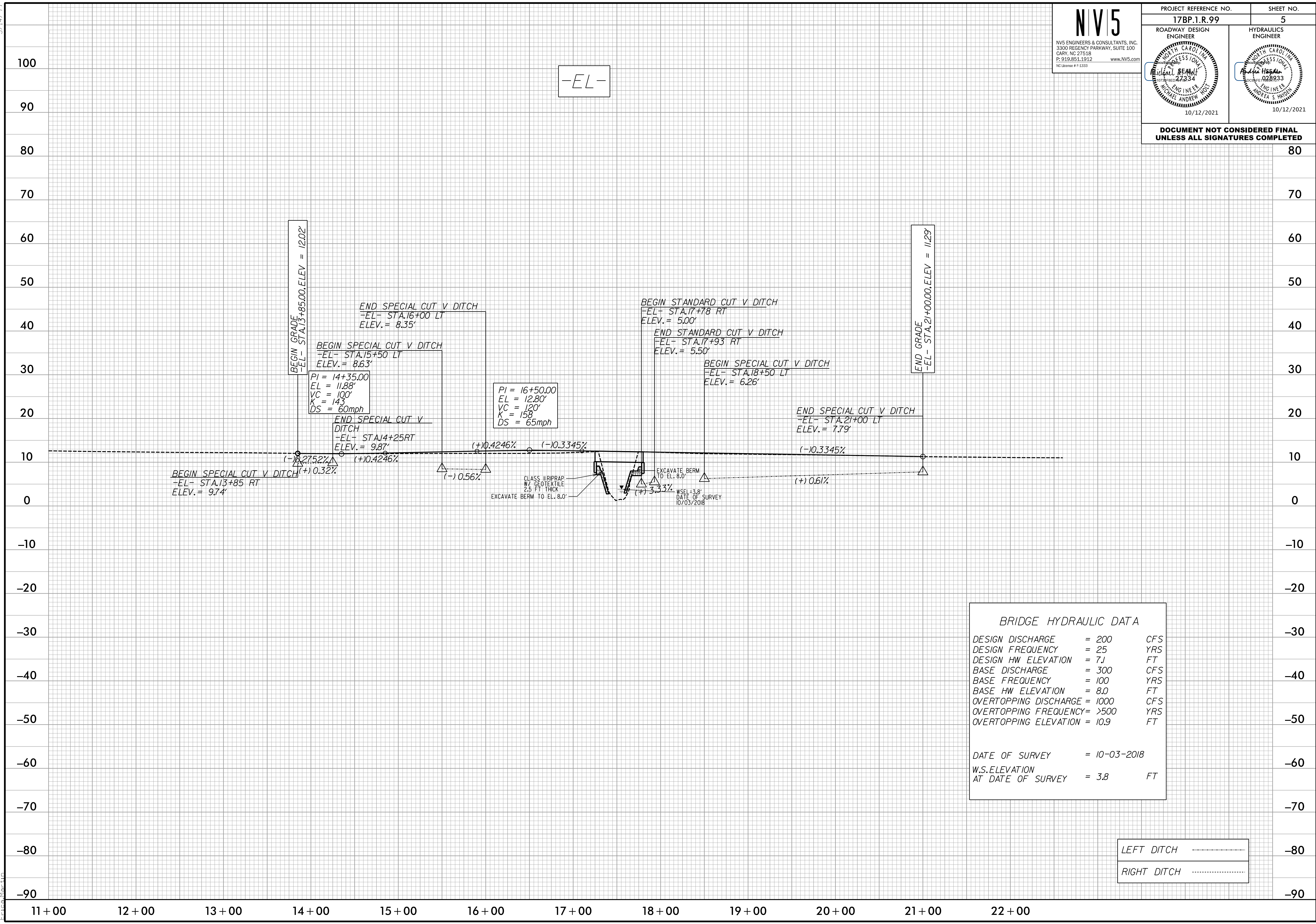
10/12/2021  
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E:\Projects\690025\_RDY\_PSH\_04.dgn

5/14/99

**NV5**  
 NV5 ENGINEERS & CONSULTANTS, INC.  
 3300 REGENCY PARKWAY, SUITE 100  
 CARY, NC 27518  
 P: 919.851.1912 www.NV5.com  
 NC License # P-1333

|   |   |
|---|---|
| PROJECT REFERENCE NO.<br><b>17BP.1.R.99</b>                 | SHEET NO.<br><b>5</b>                                   |
| ROADWAY DESIGN ENGINEER<br><i>[Signature]</i><br>10/12/2021 | HYDRAULICS ENGINEER<br><i>[Signature]</i><br>10/12/2021 |

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



**BRIDGE HYDRAULIC DATA**

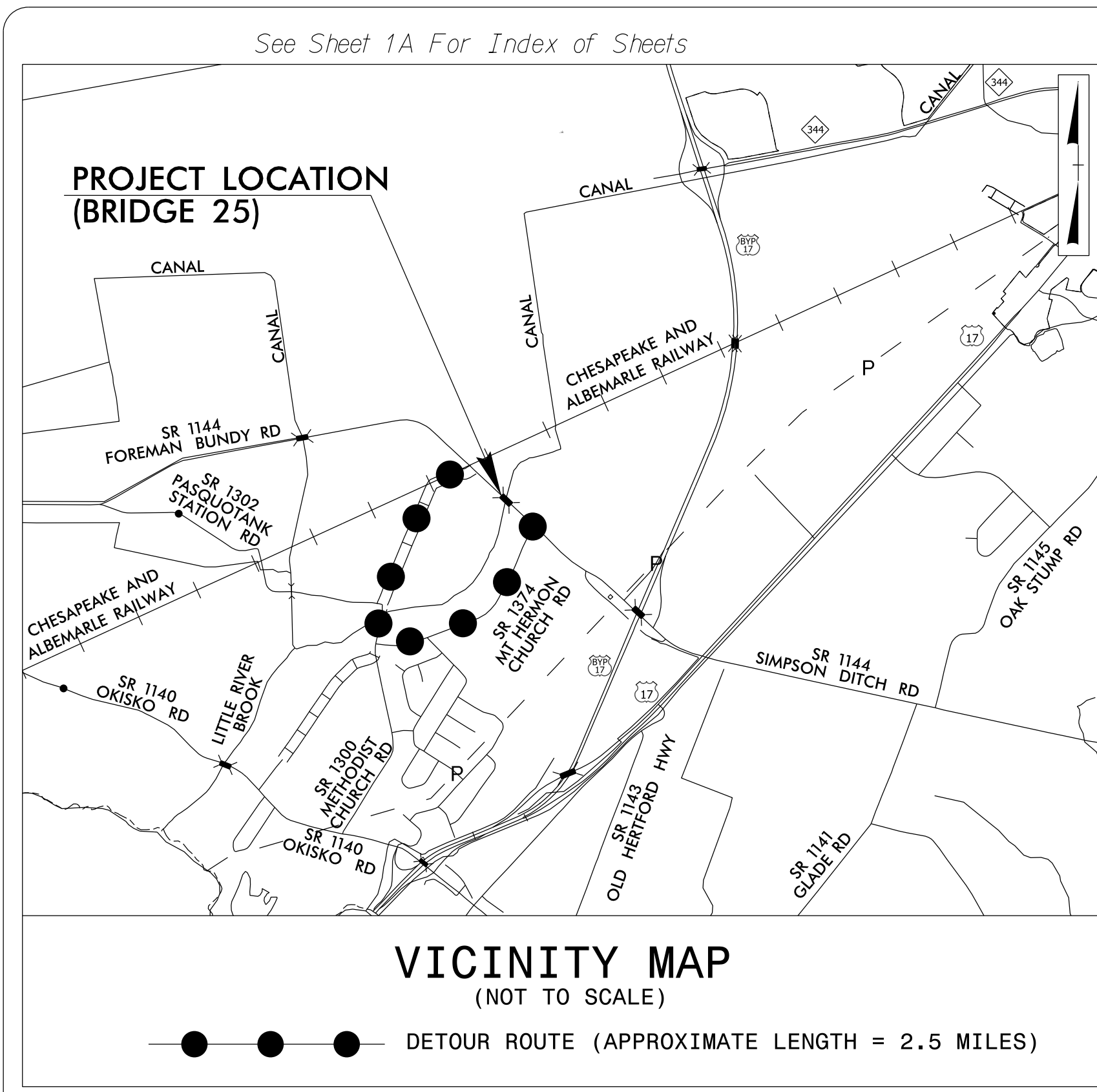
|                       |        |     |
|-----------------------|--------|-----|
| DESIGN DISCHARGE      | = 200  | CFS |
| DESIGN FREQUENCY      | = 25   | YRS |
| DESIGN HW ELEVATION   | = 7J   | FT  |
| BASE DISCHARGE        | = 300  | CFS |
| BASE FREQUENCY        | = 100  | YRS |
| BASE HW ELEVATION     | = 8.0  | FT  |
| OVERTOPPING DISCHARGE | = 1000 | CFS |
| OVERTOPPING FREQUENCY | = >500 | YRS |
| OVERTOPPING ELEVATION | = 10.9 | FT  |

DATE OF SURVEY = 10-03-2018  
 W.S.ELEVATION AT DATE OF SURVEY = 3.8 FT

LEFT DITCH .....  
 RIGHT DITCH .....

10/12/2021  
P:\Projects\17BP.1.R.99\17BP.1.R.99\_PSH\_05.dgn

**TIP PROJECT: 17BP.I.R.99**



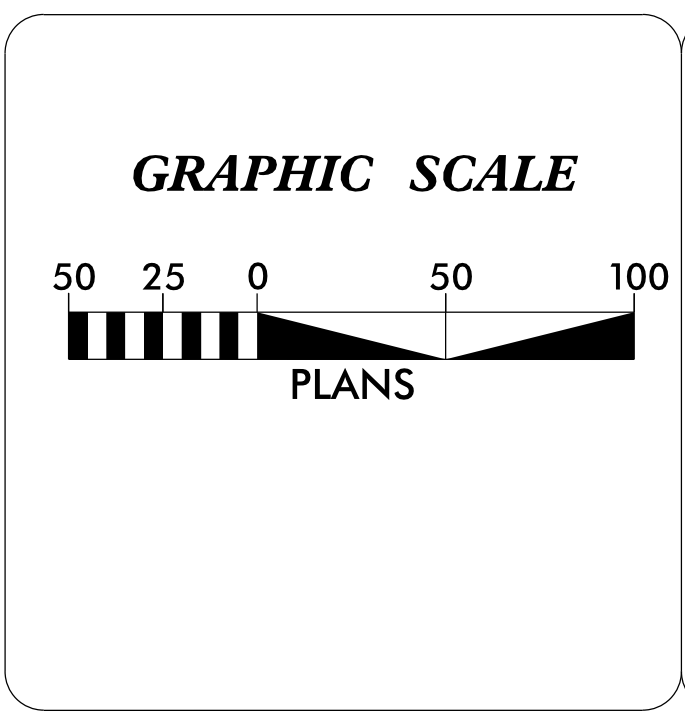
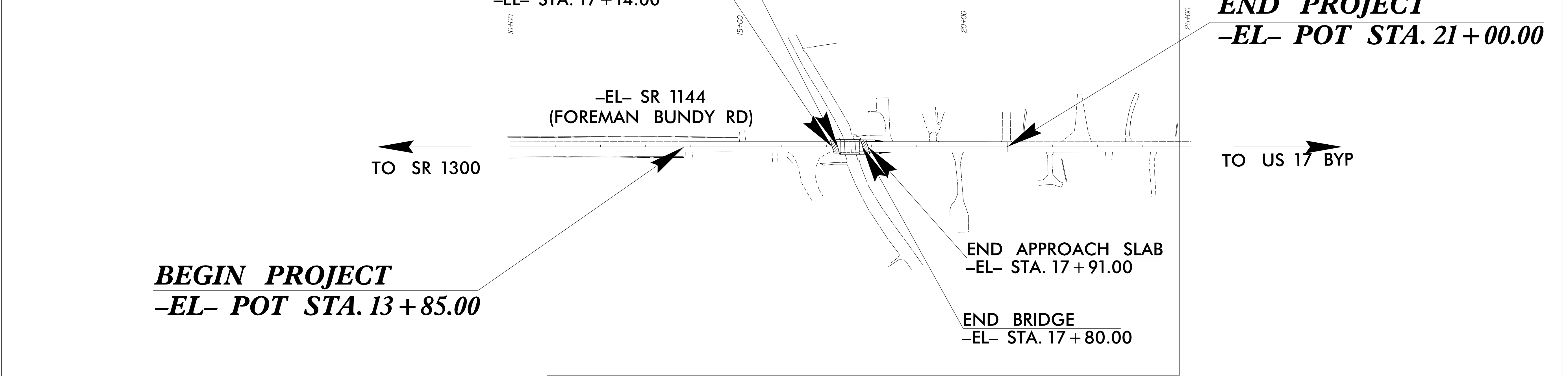
STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

SURVEY CONTROL, EXISTING CENTERLINES,  
 RIGHT OF WAY, EASEMENTS, AND PROPERTY TIES

**PASQUOTANK COUNTY**

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-------|-----------------------------|-----------|--------------|
| N.C.  | 17BP.I.R.99                 | RW01      | 06           |

**LOCATION: BRIDGE NO. 25 OVER CANAL  
 ON SR 1144 (FOREMAN BUNDY RD)**



**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "690025-2" WITH NAD 83/NSRS 2011 STATE PLANE GRID COORDINATES OF NORTHING: 928,797.3220(ft) EASTING: 2,789,840.4100(ft) ELEVATION: 12.23(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.000030703

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "690025-2" TO -L- STATION 13+85.00 IS S 44°-47'37.30" E 389.93(ft)

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:  
 Location & Surveys  
 Division 1  
 1300 US HWY 64W  
 Plymouth, NC 27962

2018 STANDARD SPECIFICATIONS

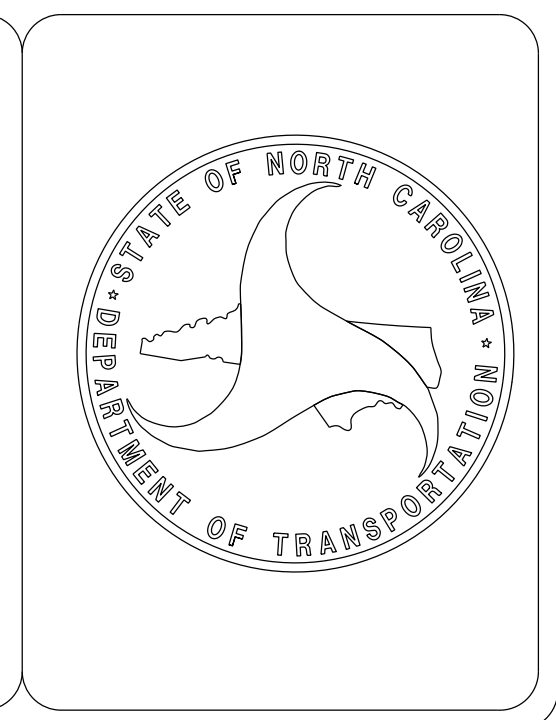
**RIGHT OF WAY DATE:**  
 JULY 2021

**LETTING DATE:**  
 DECEMBER 15, 2021

**PROFESSIONAL LAND SURVEYOR**

DocuSigned by:  
 Linwood T. Downs III  
 8/30/2021

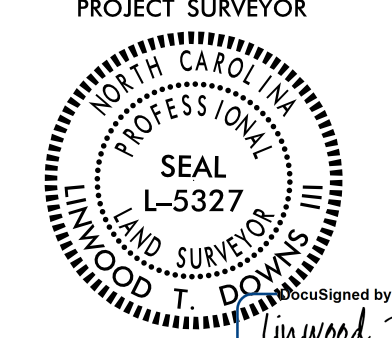
Signature: \_\_\_\_\_ Date: \_\_\_\_\_



6/2/19

# SURVEY CONTROL SHEET

## W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

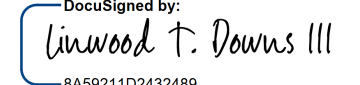
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|---|----------------------|
| PROJECT REFERENCE NO.<br>17.BP.1.R.99   | SHEET NO.<br>RW02C-1 |
| LOCATION & SURVEYS<br>DIVISION 1<br>1300 US HWY 64 W<br>PLYMOUTH, NC 27962  |                      |
| PROJECT SURVEYOR<br><br>Linwood T. Downs III |                      |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED  |                      |

I, Linwood T. Downs III, PLS, certify that the Project Control was performed under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: **AA**  
 Type of GPS field procedure: RTN  
 Dates of survey: August 2018  
 Datum/Epoch: NAD 83/NA 2011  
 Published/Fixed-control use: N/A  
 Localized around: 690025-2  
 Northing: 928,797.3220  
 Easting: 2,789,840.4100  
 Combined grid factor: 1.000030703  
 Geoid model: GEOID 12  
 Units: US Survey Feet

I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from August 2018 to September 2018, and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 25th day of August, 2021.

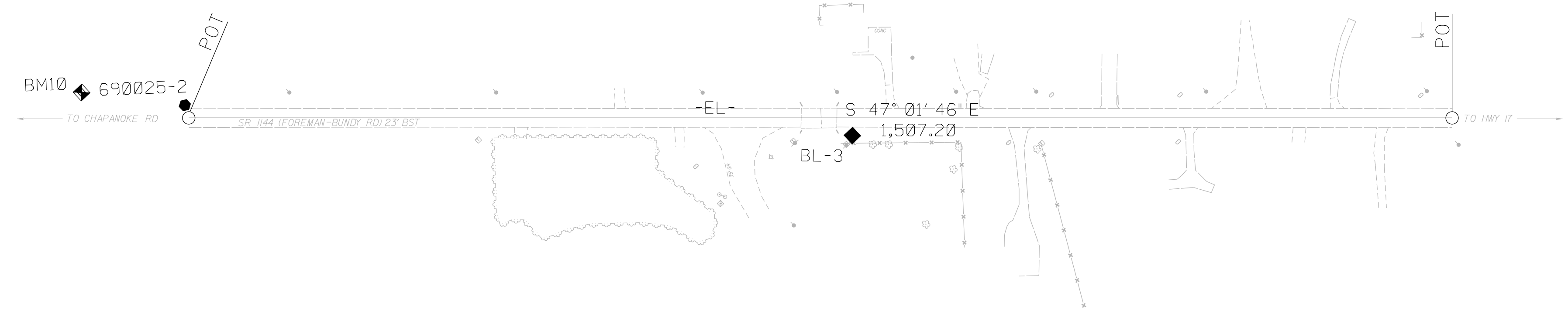
DocuSigned by:  
  
 Linwood T. Downs III  
 Professional Land Surveyor L-5327



REVISIONS

30-AUG-2021 09:27  
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 At L.S. 311565  
 L.tdowns

690025-1

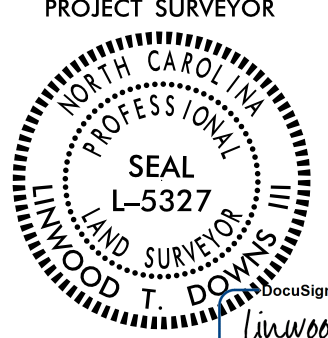


### NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

# SURVEY CONTROL SHEET

## W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

|   |                             |
|---|-----------------------------|
| <b>PROJECT REFERENCE NO.</b><br>17.BP.1.R.99  | <b>SHEET NO.</b><br>RW02C-2 |
| <b>Location and Surveys</b>   |                             |
| LOCATION & SURVEYS<br>DIVISION 1<br>1300 US HWY 64 W<br>PLYMOUTH, NC 27962                              |                             |
| PROJECT SURVEYOR<br> |                             |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED  |                             |

### EXISTING CENTERLINE ALIGNMENT

| EL   | POINT      | N           | E | BEARING         | DIST    |
|------|------------|-------------|---|-----------------|---------|
| POT  | 928783.031 | 2789833.433 |   |                 |         |
| LINE |            |             |   | S 47°01'46.5" E | 1507.20 |
| POT  | 927755.695 | 2790936.257 |   |                 |         |

### BASELINE DATA

| BL | POINT   | DESC.            | NORTH       | EAST         | ELEVATION |
|----|---------|------------------|-------------|--------------|-----------|
|    | 6900251 | 690025-1 GPS MON | 929327.5590 | 2789224.9710 | 13.19     |
|    | 6900252 | 690025-2 GPS MON | 928797.3220 | 2789840.4100 | 12.23     |
|    | BL3     | BL-3             | 928228.0300 | 2790398.3290 | 10.30     |

### BENCHMARK DATA

.....  
 BM10      ELEVATION = 13.70  
 N 928892      E 2789761  
 R/R SPIKE IN POWER POLE  
 .....

I, Linwood T. Downs III, PLS, certify that the Project Control was performed under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: **AA**  
 Type of GPS field procedure: RTN  
 Dates of survey: August 2018  
 Datum/Epoch: NAD 83/NA 2011  
 Published/Fixed-control use: N/A  
 Localized around: 690025-2  
 Northing: 928,797.3220  
 Easting: 2,789,840.4100  
 Combined grid factor: 1.000030703  
 Geoid model: GEOID 12  
 Units: US Survey Feet

I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from August 2018 to September 2018, and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 25th day of August, 2021.

DocuSigned by:  
  
 6A9021102452489  
 Professional Land Surveyor L-5327



### NOTES:

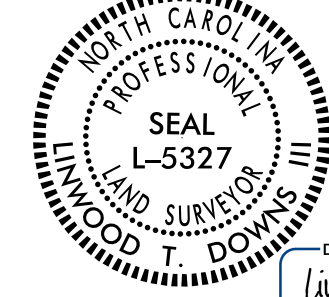
1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

REVISIONS

30-AUG-2021 09:25  
 B:\Low Impact\Non-NBIS Bridges\690025\_Pasquotank (17bp.1.r.99)\Contr-ol\Contr-ol Sheets\690025\_1s.rw02c-2.dgn  
 Ltdowns AT LS-311565



# PROPOSED ALIGNMENT CONTROL SHEET

|  |                      |
|--|----------------------|
| PROJECT REFERENCE NO.<br>17.BP.1.R.99  | SHEET NO.<br>RW02D-1 |
| <b>Location and Surveys</b>  |                      |
| LOCATION & SURVEYS<br>DIVISION 1<br>1300 US HWY 64 W<br>PLYMOUTH, NC 27962   |                      |
| PROJECT SURVEYOR<br><br>DocuSigned by:<br><i>Linwood T. Downs III</i> |                      |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>   |                      |

I, Linwood T. Downs III, PLS, certify that the data compiled came from available surveys/mapping performed by others and provided to me by NCDOT and do not certify to the accuracy or quality of the individual data sources.

This 25th day of August, 2021.

DocuSigned by:  
*Linwood T. Downs III*  
Professional Land Surveyor L-5327



REVISIONS

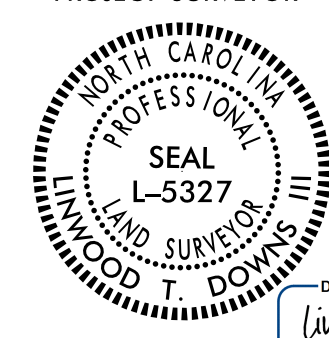
| EL    |            |             |                 |         |
|-------|------------|-------------|-----------------|---------|
| POINT | N          | E           | BEARING         | DIST    |
| POT   | 928783.031 | 2789833.433 |                 |         |
| LINE  |            |             | S 47°01'46.5" E | 1507.20 |
| POT   | 927755.695 | 2790936.257 |                 |         |

### NOTES:

1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

C:\Users\linwood\OneDrive\Documents\17BP.1.R.99\Control Sheets\690025.LS.rw02d-1.dgn  
6/2/2021 10:25 AM  
Linwood T. Downs III

# RIGHT OF WAY CONTROL SHEET

|   |           |
|---|-----------|
| PROJECT REFERENCE NO.   | SHEET NO. |
| 17.BP.1.R.99  | RW03E-1   |
| <b>Location and Surveys</b>   |           |
| LOCATION & SURVEYS<br>DIVISION 1<br>1300 US HWY 64 W<br>PLYMOUTH, NC 27962          |           |
| PROJECT SURVEYOR  |           |
|  |           |
| DocuSigned by:<br><i>Linwood T. Downs III</i>                                       |           |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>            |           |

ROW MARKER IRON PIN AND CAP-E

| ALIGN | STATION  | OFFSET | NORTH       | EAST         |
|-------|----------|--------|-------------|--------------|
| EL    | 13+92.00 | 30.00  | 928493.8847 | 2790099.8125 |
| EL    | 13+92.00 | 40.00  | 928486.5677 | 2790092.9963 |
| EL    | 15+05.00 | -30.00 | 928460.7639 | 2790223.3925 |
| EL    | 15+05.00 | -40.00 | 928468.0810 | 2790230.2087 |
| EL    | 17+30.00 | 40.00  | 928256.1799 | 2790340.3128 |
| EL    | 17+30.00 | 45.00  | 928252.5213 | 2790336.9047 |
| EL    | 18+25.00 | 45.00  | 928187.7674 | 2790406.4168 |
| EL    | 18+25.00 | 40.00  | 928191.4259 | 2790409.8249 |
| X     | 20+10.00 | 40.00  | 928065.3261 | 2790545.1904 |
| EL    | 20+10.00 | 30.00  | 928072.6431 | 2790552.0066 |
| EL    | 21+15.00 | -40.00 | 928052.2923 | 2790676.5492 |
| EL    | 21+15.00 | -30.00 | 928044.9753 | 2790669.7330 |

ROW MARKER PERMANENT EASEMENT-E

| ALIGN | STATION  | OFFSET   | NORTH       | EAST         |              |
|-------|----------|----------|-------------|--------------|--------------|
| EL    | 16+25.00 | 40.00    | 928327.7500 | 2790263.4837 |              |
| EL    | 16+25.00 | 40.00    | 928327.7500 | 2790263.4837 |              |
| EL    | 16+31.00 | 60.00    | 928309.0247 | 2790254.2402 |              |
| EL    | 17+02.00 | 60.00    | 928260.6297 | 2790306.1913 |              |
| X     | EL       | 17+10.00 | 40.00       | 928269.8123  | 2790325.6787 |

X = NOT SET DUE TO INACCESSIBILITY

I, Linwood T. Downs III, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed on July 15, 2021, and all coordinates are based on NAD83/2011. That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 25th day of August, 2021.  
 DocuSigned by:  
*Linwood T. Downs III*  
 Professional Land Surveyor L-5327

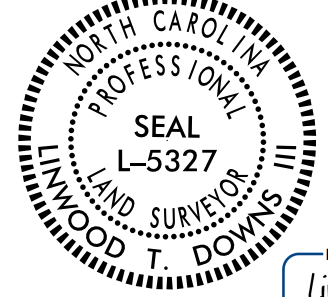


### NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED ON JULY 15, 2021.

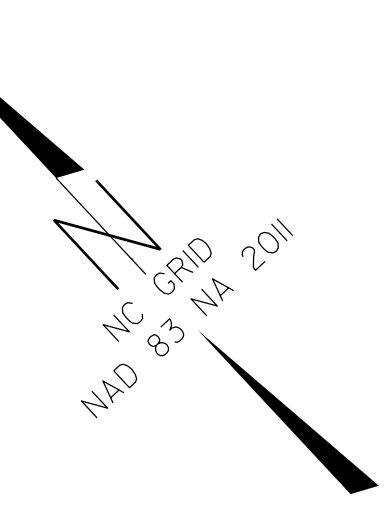
REVISIONS

20-AUG-2021 10:45 AM  
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 L. Downs

|   |                   |
|---|-------------------|
| PROJECT REFERENCE NO.<br>17.BP.1.R.99   | SHEET NO.<br>RW04 |
| <b>Location and Surveys</b>   |                   |
| LOCATION & SURVEYS<br>DIVISION 1<br>1300 US 64 W<br>PLYMOUTH, NC 27962              |                   |
| PROJECT SURVEYOR  |                   |
|  |                   |
| <p>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</p>            |                   |

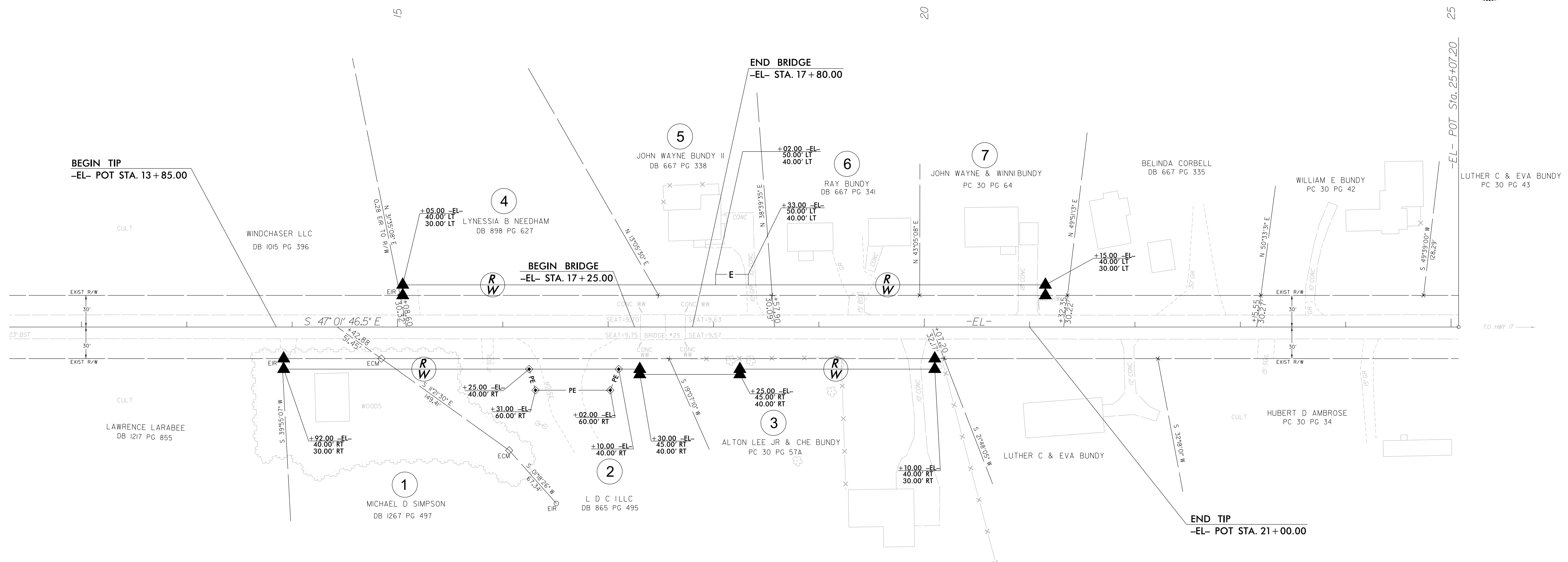
I, Linwood T. Downs III, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed on July 15, 2021, and all coordinates are based on NAD83/2011. That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 25th day of August, 2021.  
 Documented by:  
 Linwood T. Downs III  
 Professional Land Surveyor L-5327



REVISIONS

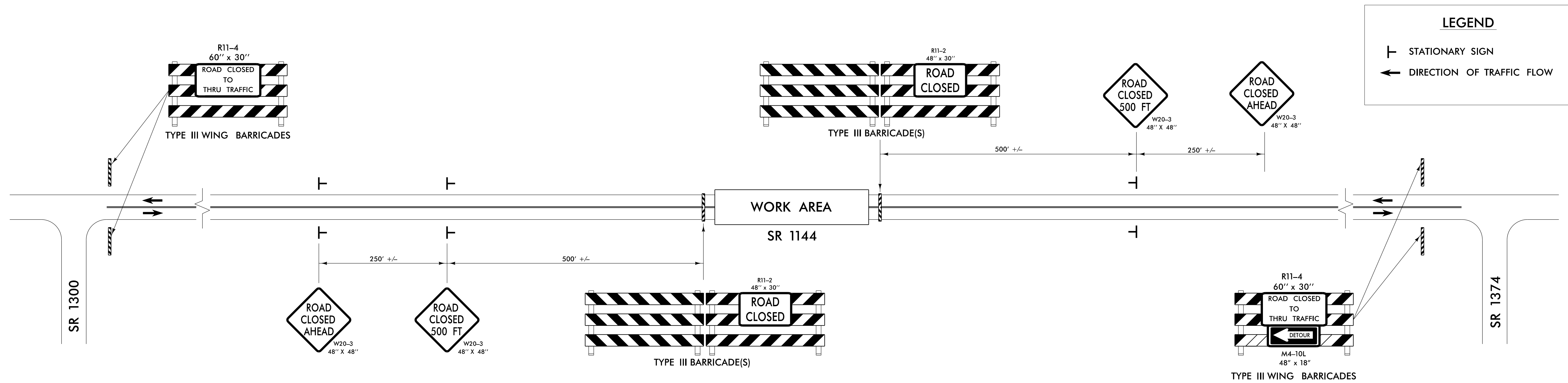
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 L.tdowns



**NOTES:**

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED ON JULY 15, 2021.

# TRAFFIC CONTROL FOR TEMPORARY ROAD CLOSURE



**LEGEND**

└ STATIONARY SIGN

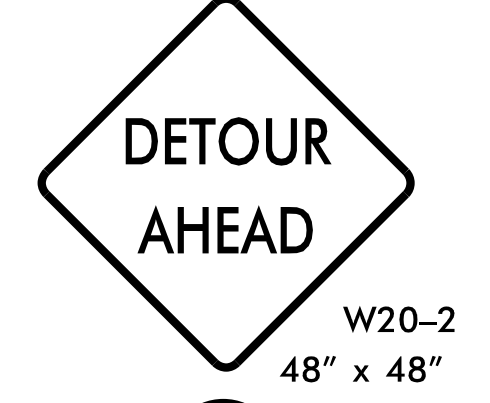
← DIRECTION OF TRAFFIC FLOW

**GENERAL NOTES**

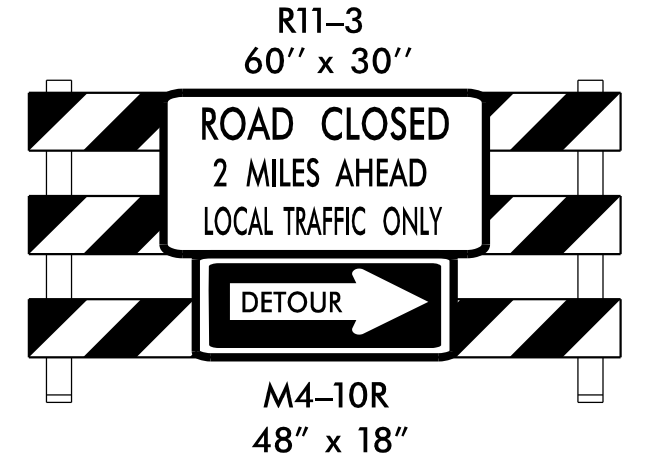
- 1- INSTALLATION OF TEMPORARY ROUTE MARKERS, DESTINATION SIGNS AND ANY NECESSARY MODIFICATIONS TO EXISTING OR PROPOSED REGULATORY OR WARNING SIGNS WILL BE MADE BY OTHERS (STATE OR CITY FORCES) UNLESS OTHERWISE DESIGNATED IN PLANS. PROVIDE A MINIMUM 21 CALENDAR DAY NOTICE TO STATE FORCES BEFORE A ROADWAY IS CLOSED TO TRAFFIC SUCH THAT NECESSARY PROVISIONS CAN BE MADE TO INFORM LOCAL EMERGENCY AND LAW ENFORCEMENT PERSONNEL, SCHOOLS OR ANY OTHER PARTIES AFFECTED BY THE ROAD CLOSURE.
- 2- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO BEGINING OF WORK.
- 3- INSTALL SIGNS BEFORE THE BARRICADES WHEN CLOSING THE ROADWAY TO TRAFFIC. REMOVE BARRICADES BEFORE SIGNS WHEN OPENING THE ROADWAY TO TRAFFIC. INSTALL/REMOVE SIGNS AND BARRICADES WITHIN THE SAME CALENDAR DAY.
- 4- POSITION WING BARRICADES ON THE SHOULDERS AND SLOPE THE STRIPES DOWNWARD IN THE DIRECTION TOWARD WHICH TRAFFIC MUST TURN IN DETOURING.
- 5- USE ADDITIONAL TYPE III BARRICADES IN STAGGERED LOCATIONS SUPPLEMENTED WITH SIGN R11-4 "ROAD CLOSED TO THRU TRAFFIC" IN THE EVENT THAT TRAFFIC MUST BE MAINTAINED BEYOND THE DETOUR POINT.
- 6- DO NOT DISPLAY FRACTIONS OR DECIMALS ON SIGN R11-3 "ROAD CLOSED XX MILES AHEAD".
- 7- USE PORTABLE SIGNS IF ROAD CLOSURE IS TO BE IMPLEMENTED FOR LESS THAN ONE DAY OR FOR EMERGENCIES.



(A)

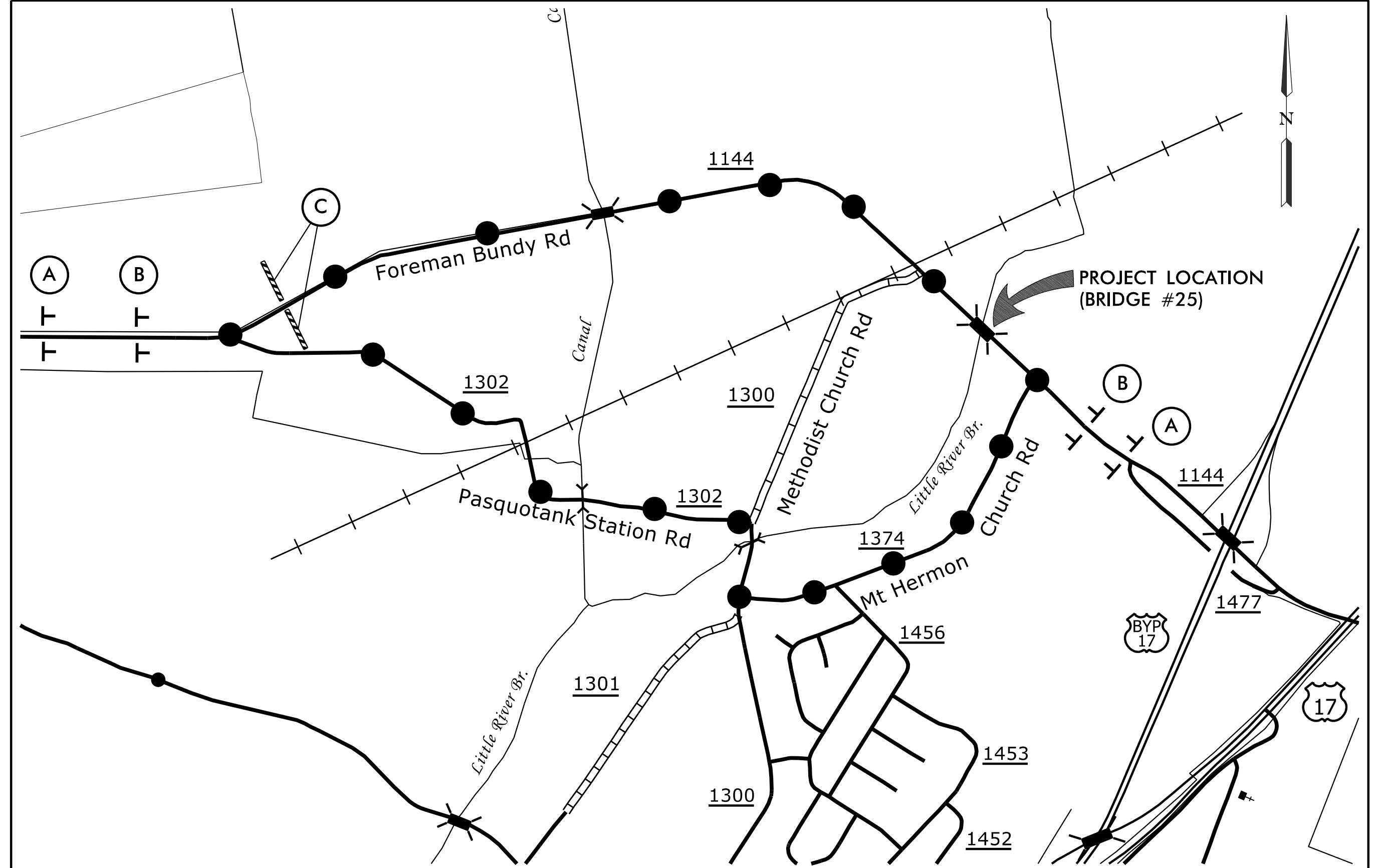


(B)



TYPE III BARRICADE

(C)



**VICINITY MAP**  
(NOT TO SCALE)

●●●●● DETOUR ROUTE (APPROXIMATE LENGTH = 4.5 MILES)

PROJECT NO. 17BP.1.R.99  
PASQUOTANK COUNTY  
 STATION: 17+52.50 -L-

PLANS PREPARED BY:

**NV5**

NV5 ENGINEERS & CONSULTANTS, INC.  
 3300 REGENCY PARKWAY, SUITE 100  
 CARY, NC 27518  
 P: 919.851.1912 www.NV5.com  
 NC License # F-1333  
 former NV CALIX Engineers & Consultants

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

**TRAFFIC MANAGEMENT PLAN**

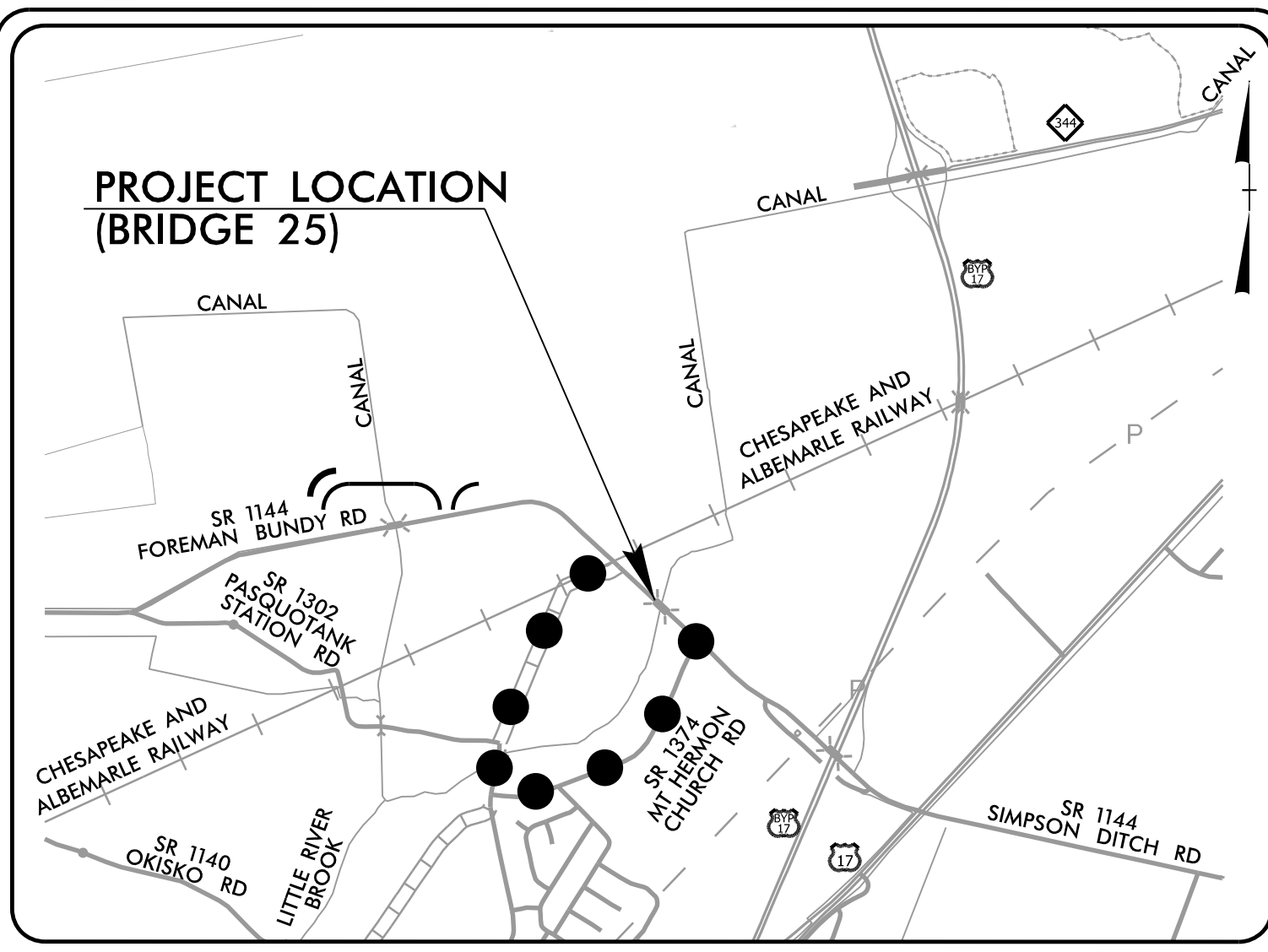
| REVISIONS |     |       |     |     |       | SHEET NO.    |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | TMP-1        |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 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

DRAWN BY : W. B. ALLEN DATE : 6/18  
 CHECKED BY : L. K. AUSTIN DATE : 6/18  
 DESIGN ENGINEER OF RECORD: L. K. AUSTIN DATE : 10/21

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

10/12/2021 10:23:26 AM R:\TrafficControl\17BP\17BP\_1.R.99\_TMP\_690025.dgn

**TIP PROJECT: 17BP.1.R.99**



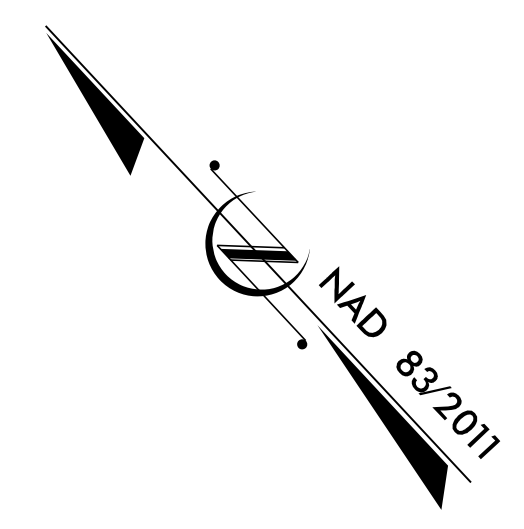
**VICINITY MAP**  
NOT TO SCALE

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

**PASQUOTANK COUNTY**

**LOCATION: BRIDGE NO. 25 OVER CANAL  
ON SR 1144 (FOREMAN BUNDY RD)**

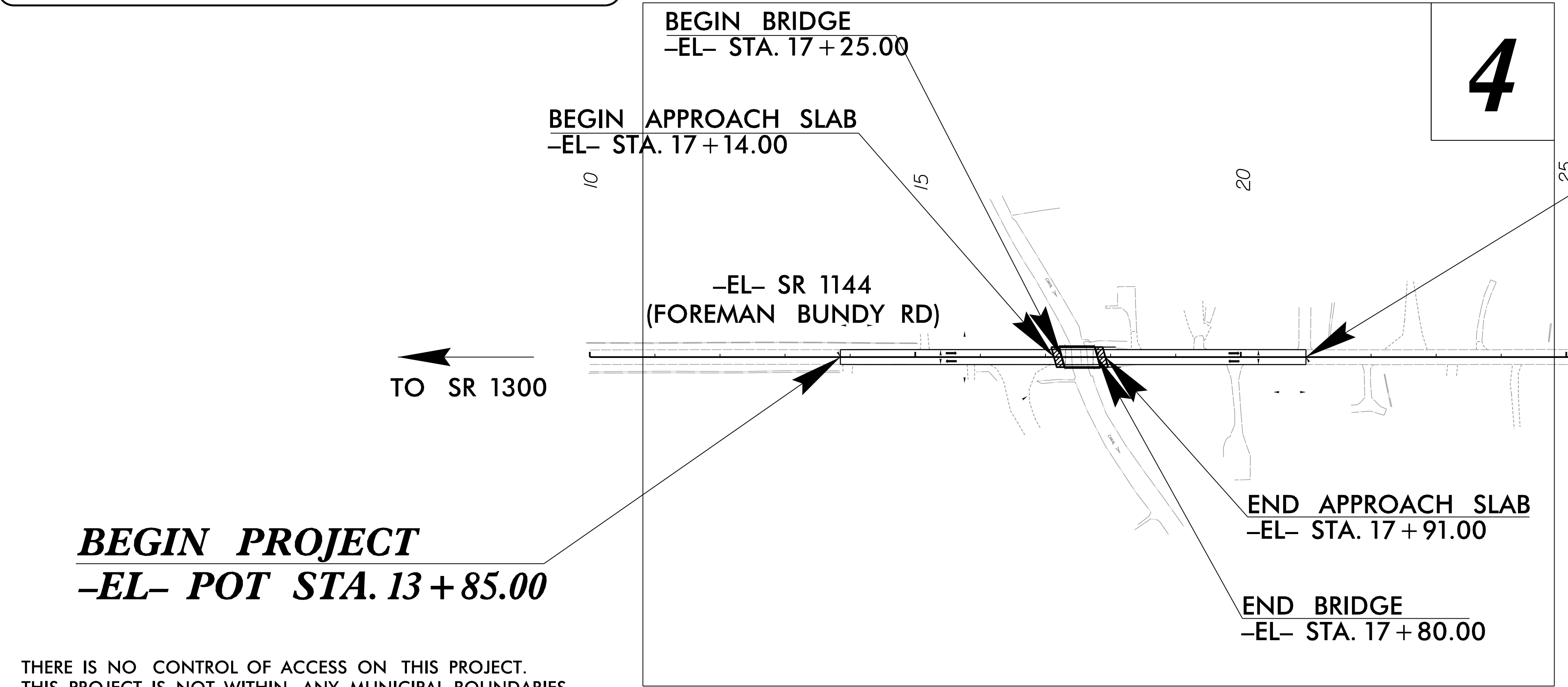
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE**



|                 |                             |             |              |
|-----------------|-----------------------------|-------------|--------------|
| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.   | TOTAL SHEETS |
| N.C.            | 17BP.1.R.99                 | EC-1        | 7            |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |

**EROSION AND SEDIMENT CONTROL MEASURES**

| Std.#   | Description  | Symbol      |
|---------|--|-------------|
| 1630.05 | Temporary Silt Ditch   | TD          |
| 1630.05 | Temporary Diversion  | TD          |
| 1605.01 | Temporary Silt Fence   | III III III |
| 1606.01 | Special Sediment Control Fence   | III III III |
| 1622.01 | Temporary Berms and Slope Drains                                       | TD          |
| 1630.02 | Silt Basin Type B  | SB          |
| 1633.01 | Temporary Rock Silt Check Type-A                                       | RC          |
|         | Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM) | RC          |
| 1633.02 | Temporary Rock Silt Check Type-B                                       | RC          |
|         | Wattle Coir Fiber Wattle   | W           |
|         | Wattle Coir Fiber Wattle with Polyacrylamide (PAM)                     | W           |
| 1634.01 | Temporary Rock Sediment Dam Type-A                                     | RD          |
| 1634.02 | Temporary Rock Sediment Dam Type-B                                     | RD          |
| 1635.01 | Rock Pipe Inlet Sediment Trap Type-A                                   | RPI         |
| 1635.02 | Rock Pipe Inlet Sediment Trap Type-B                                   | RPI         |
| 1630.04 | Stilling Basin   | SB          |
| 1630.06 | Special Stilling Basin   | SB          |

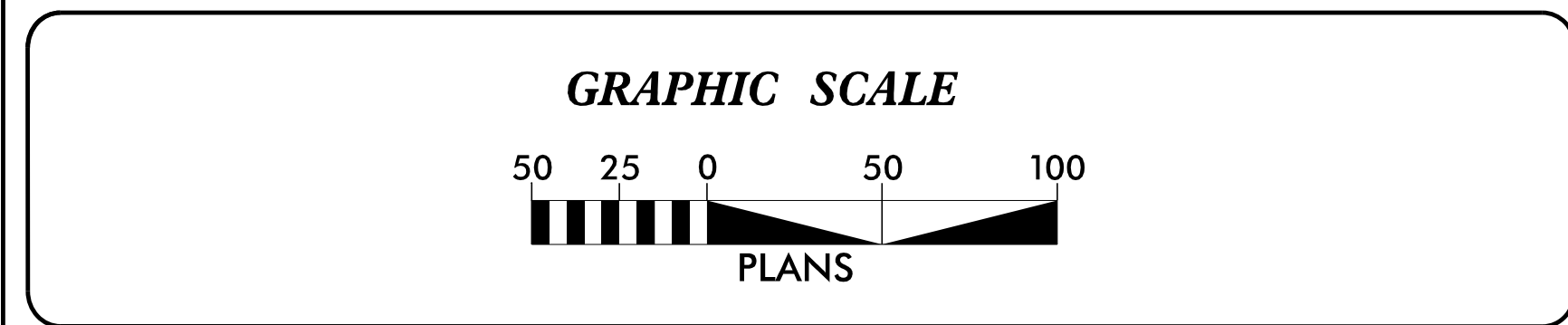


**END PROJECT**  
**-EL- POT STA. 21 + 00.00**

| Rock Inlet Sediment Trap: |                      |    |
|---------------------------|----------------------|----|
| 1632.01                   | Type A               | A  |
| 1632.02                   | Type B               | B  |
| 1632.03                   | Type C               | C  |
|                           | Skimmer Basin        | SK |
|                           | Tiered Skimmer Basin | SK |
|                           | Infiltration Basin   | IB |

**THIS PROJECT CONTAINS  
EROSION CONTROL PLANS  
FOR CLEARING AND  
GRUBBING PHASE OF  
CONSTRUCTION.**

THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.  
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.  
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE  
LIMITS ESTABLISHED BY METHOD II.



**THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH  
THE APPLICABLE REGULATIONS SET FORTH BY THE NCG-010000  
GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019  
AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF  
ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.**

**NV5**  
NV5 ENGINEERS & CONSULTANTS, INC.  
3300 REGENCY PARKWAY, SUITE 100  
CARY, NC 27518  
P: 919.851.1912 www.NV5.com  
NC License # F-1333  
formerly CALYX Engineers & Consultants

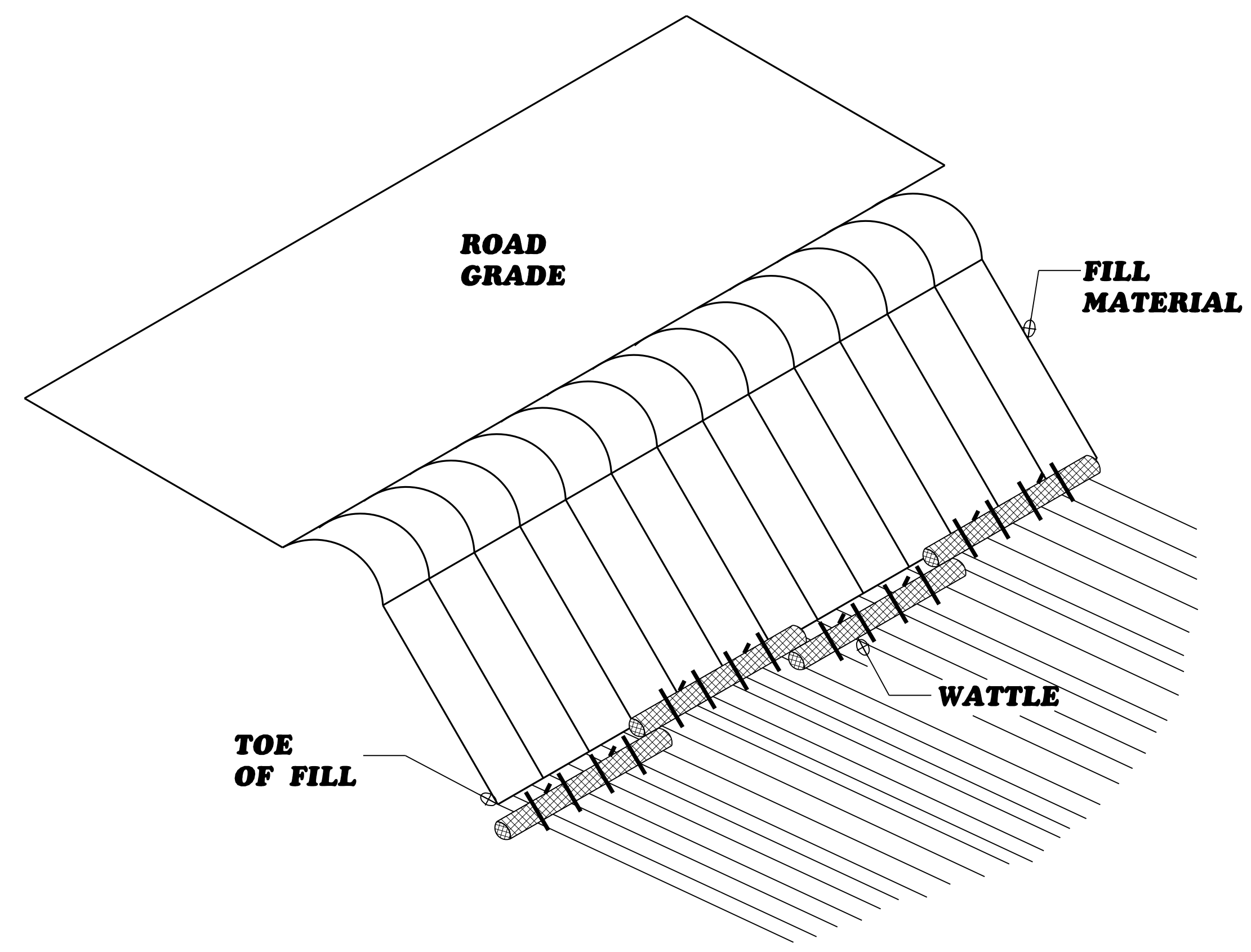
Prepared in the Office of:  
**NV5**  
NV5 ENGINEERS & CONSULTANTS, INC.  
7500 E. INDEPENDENCE BLVD, STE 100  
CHARLOTTE, NC 28227  
P: 704.537.7300 www.NV5.com  
NC License # F-1333  
formerly CALYX Engineers & Consultants  
Designed by:  
**Will Weathersbee, PE** 3161  
NAME LEVEL III CERTIFICATION NO.

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 2018 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 BARRIER DETAIL



**ISOMETRIC VIEW**

**NOTES:**

USE MINIMUM 18 IN. NOMINAL DIAMETER COIR FIBER (COCONUT) WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 2 TO 3 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLES ON TOE OF SLOPE.

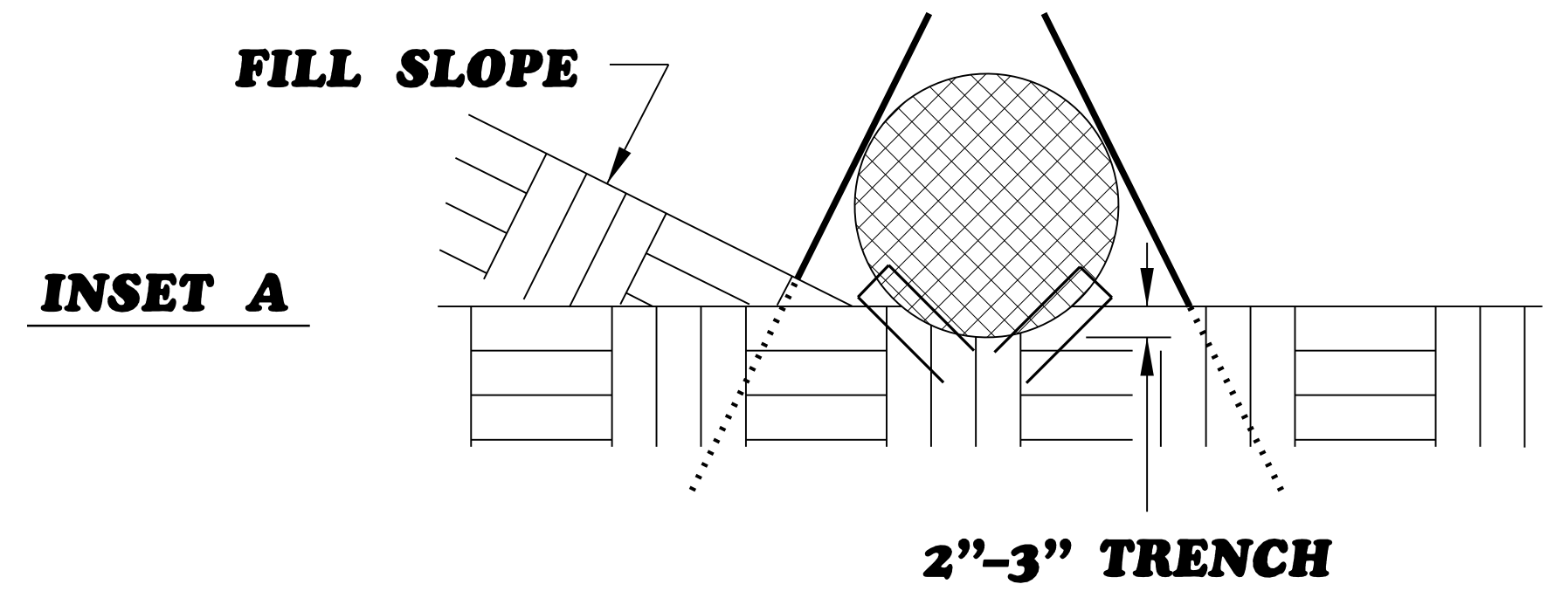
USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

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

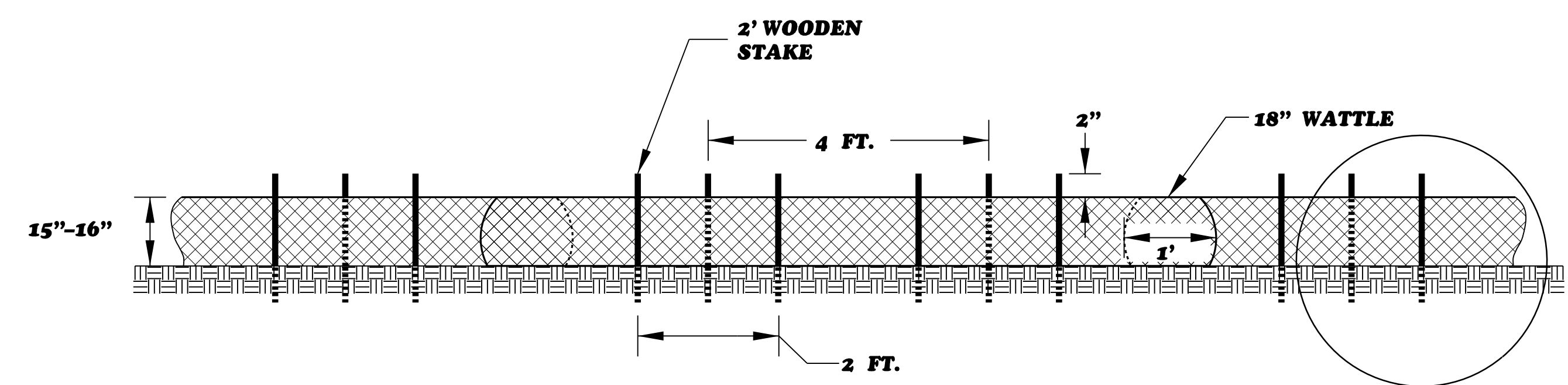
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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

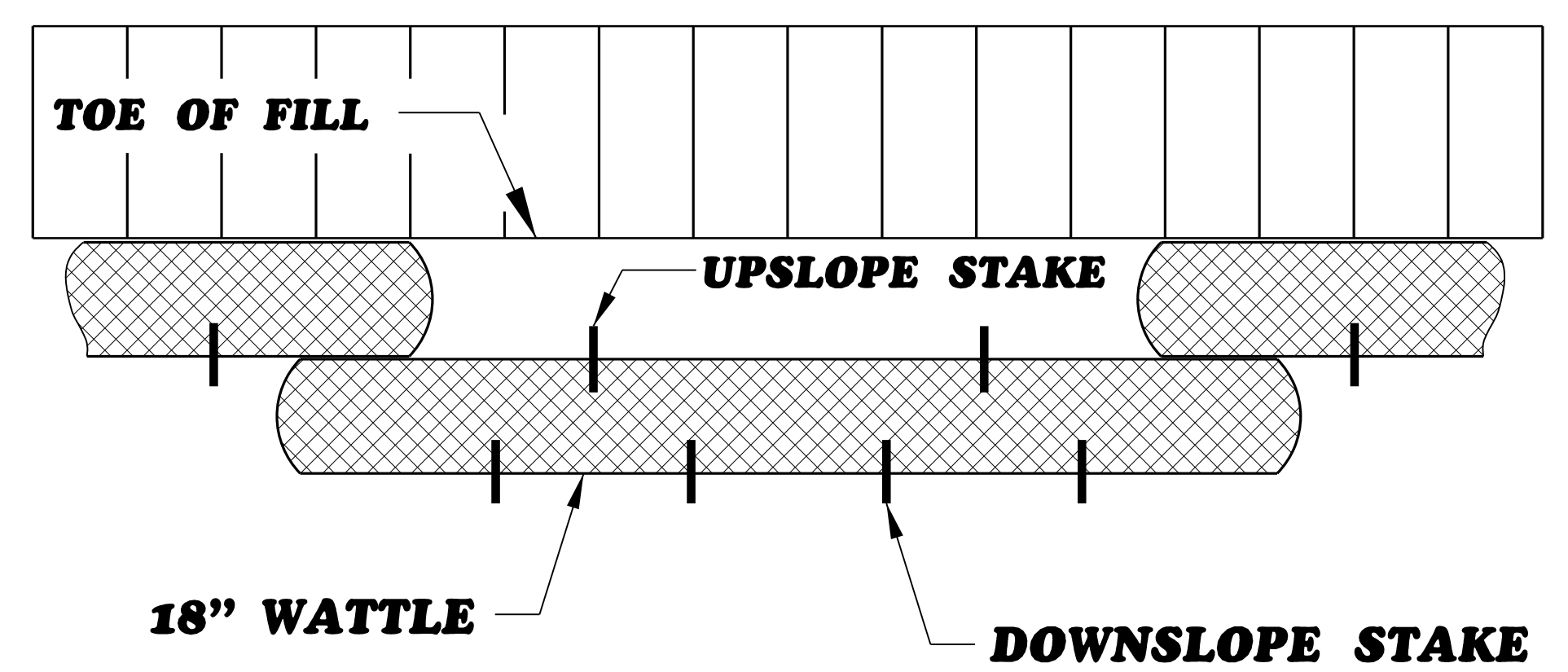
FOR BREAKS ALONG LARGE SLOPES, USE MAXIMUM SPACING OF 25 FT.



**INSET A**



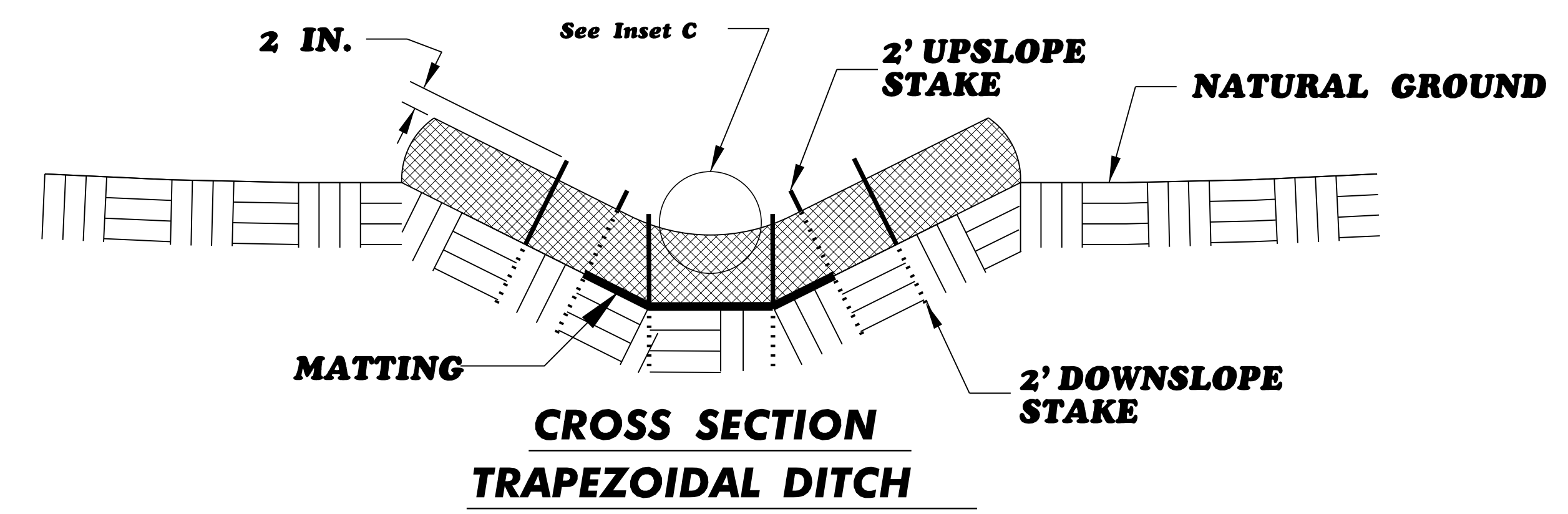
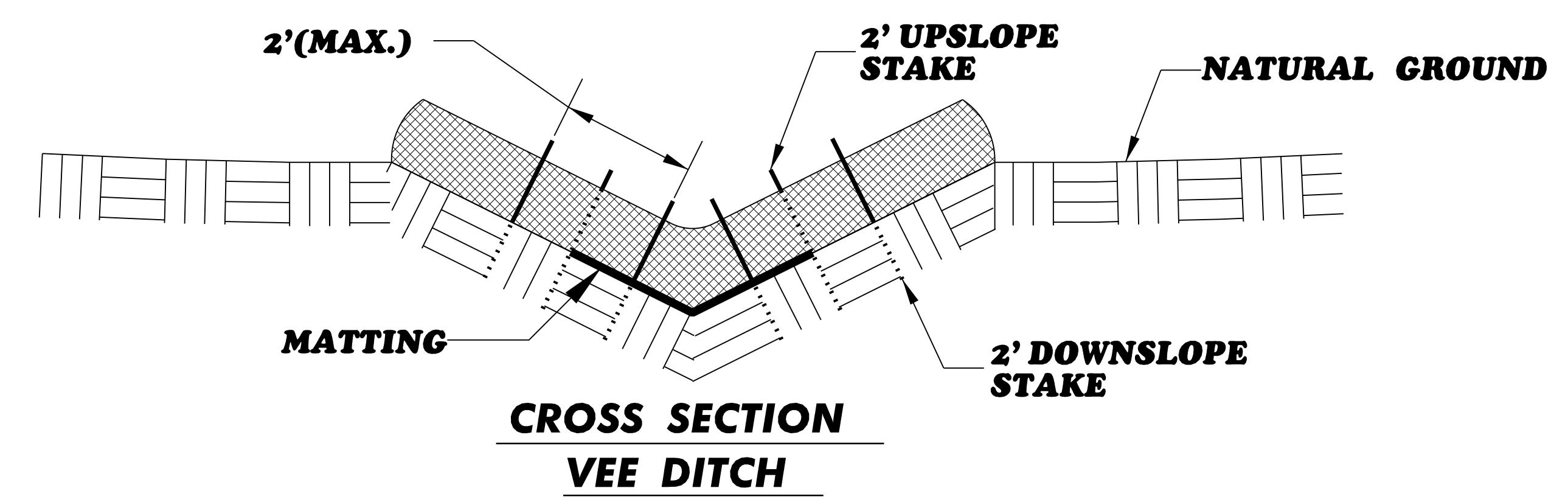
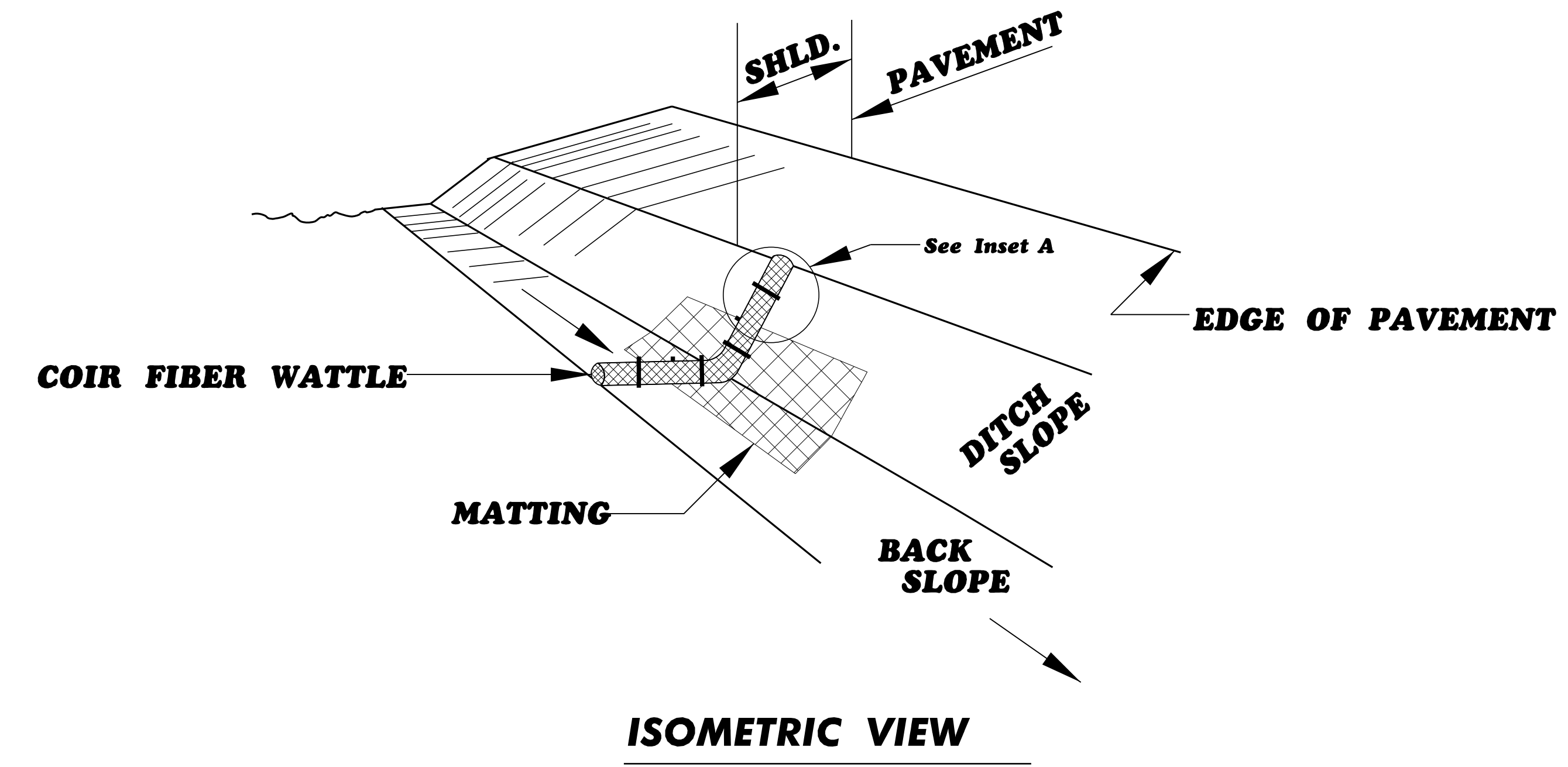
**FRONT VIEW**



**TOP VIEW**

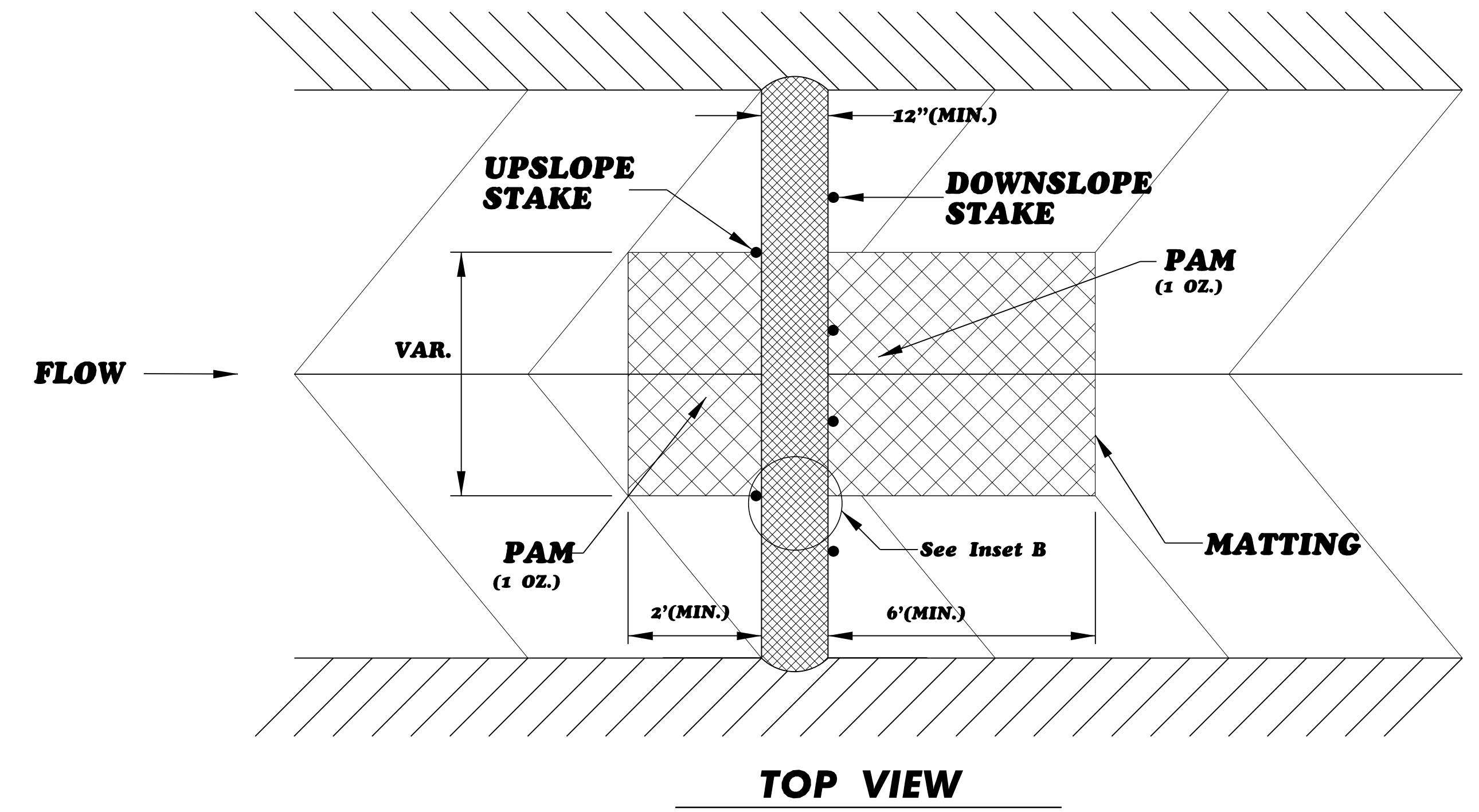
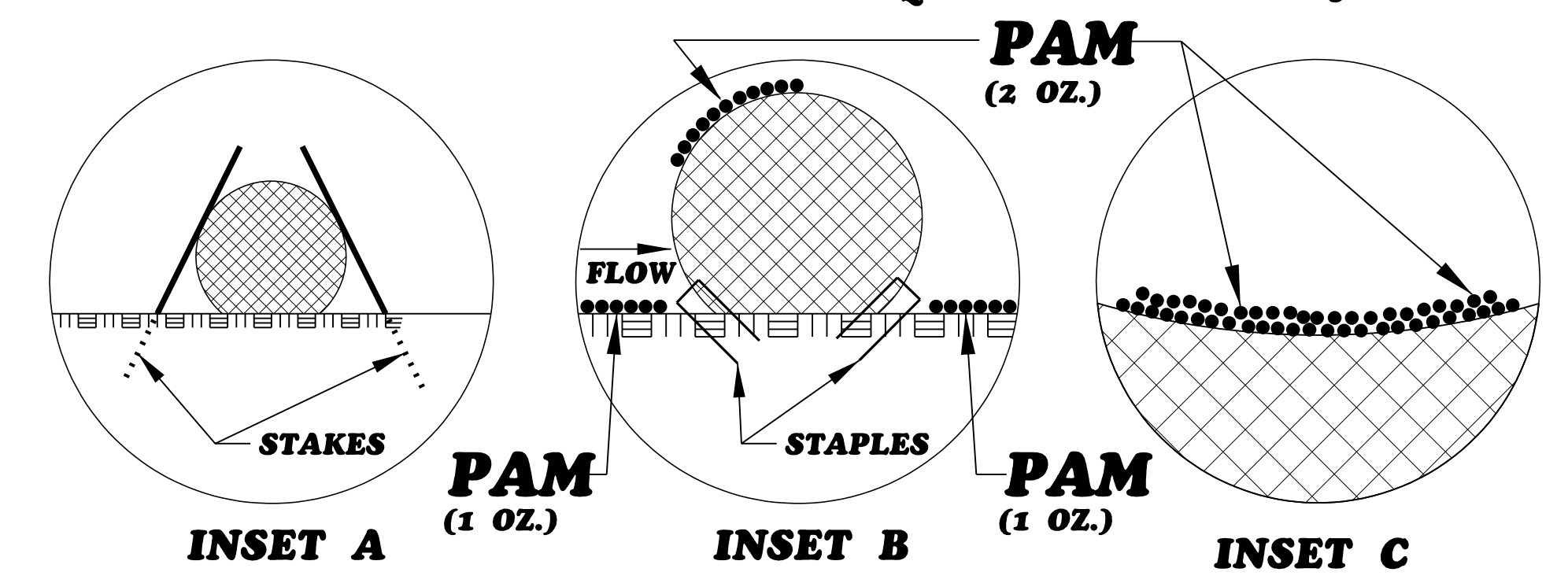
SEE INSET A

# COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL

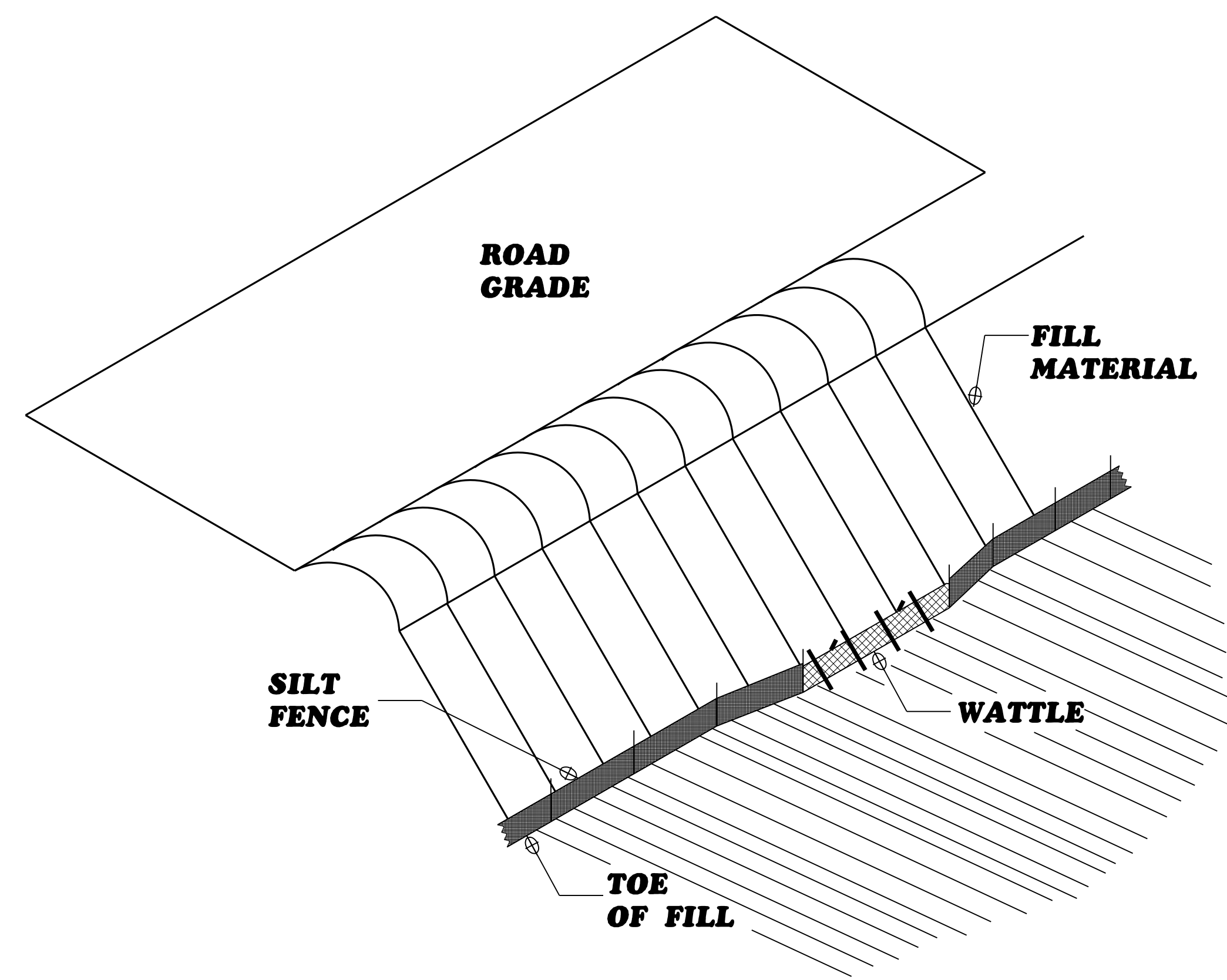


**NOTES:**

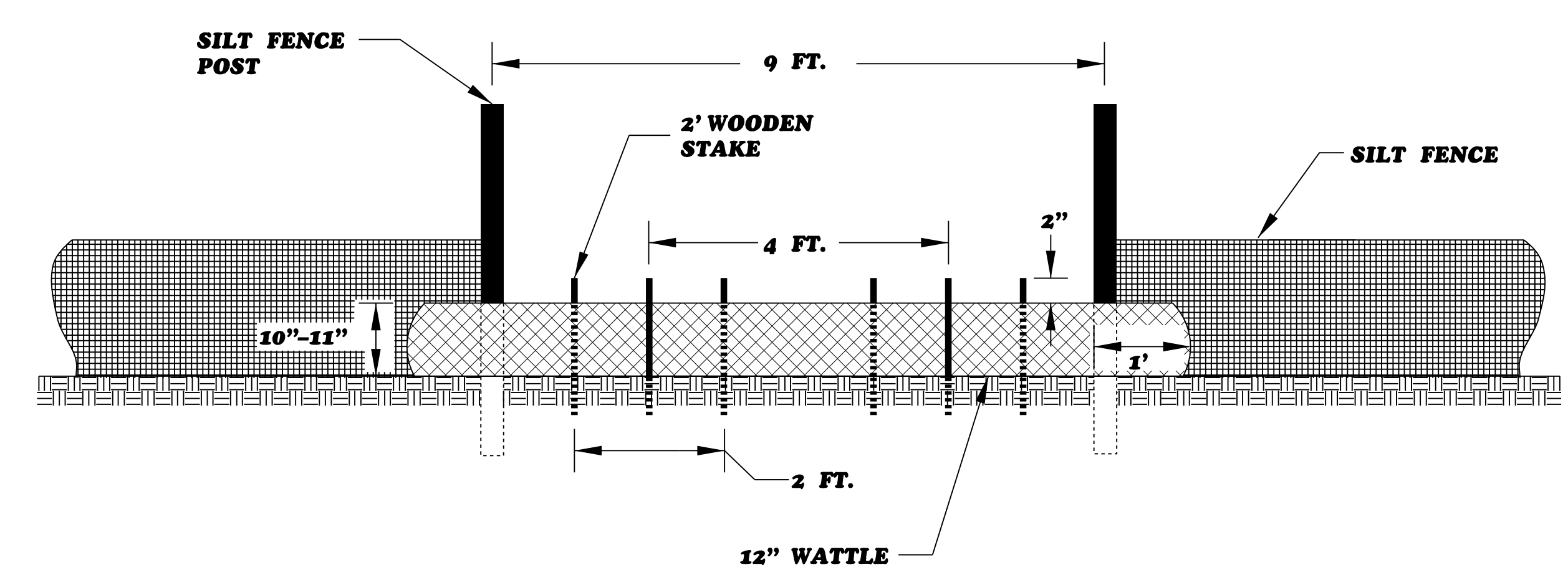
- USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.
- USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
- ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.
- INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 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.
- PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.
- INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.



# SILT FENCE COIR FIBER WATTLE BREAK DETAIL



**ISOMETRIC VIEW**

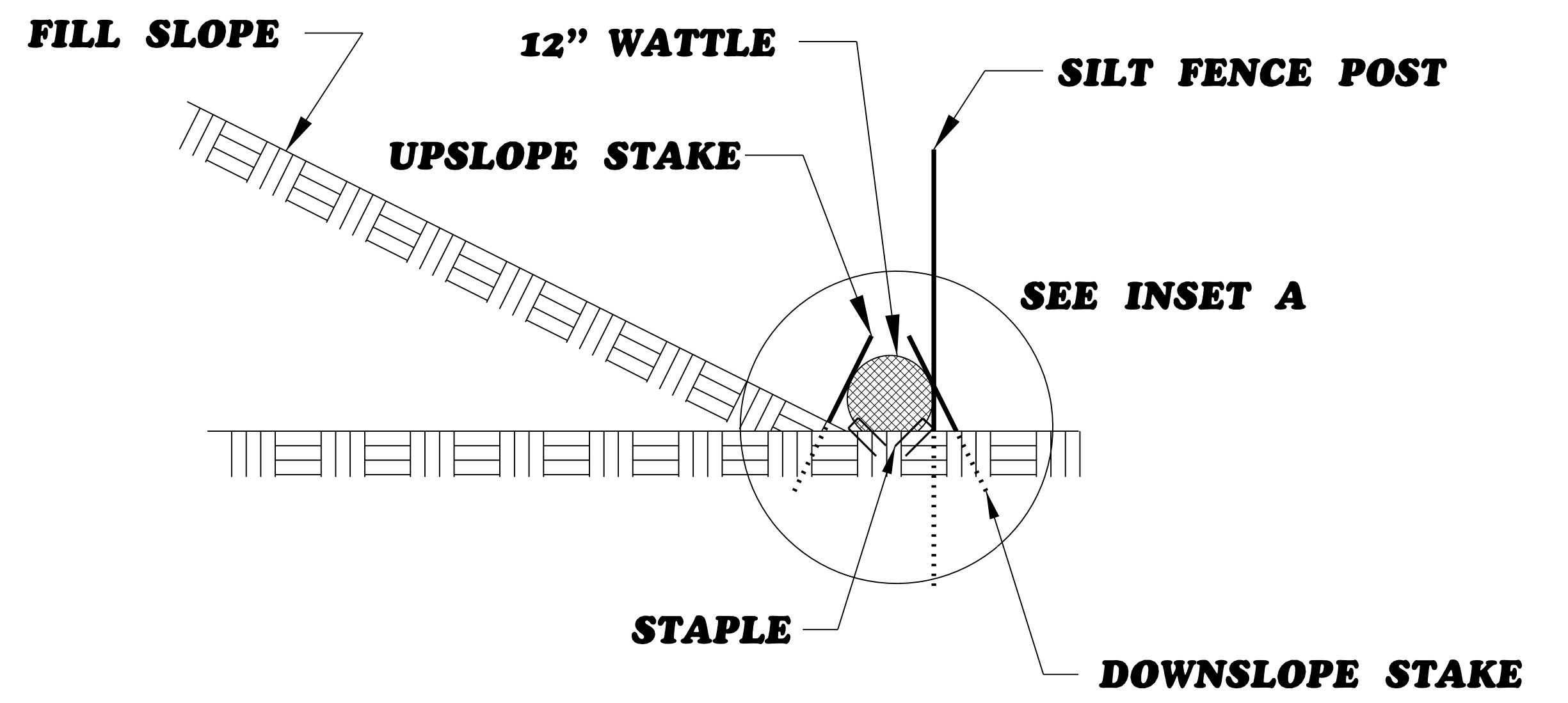
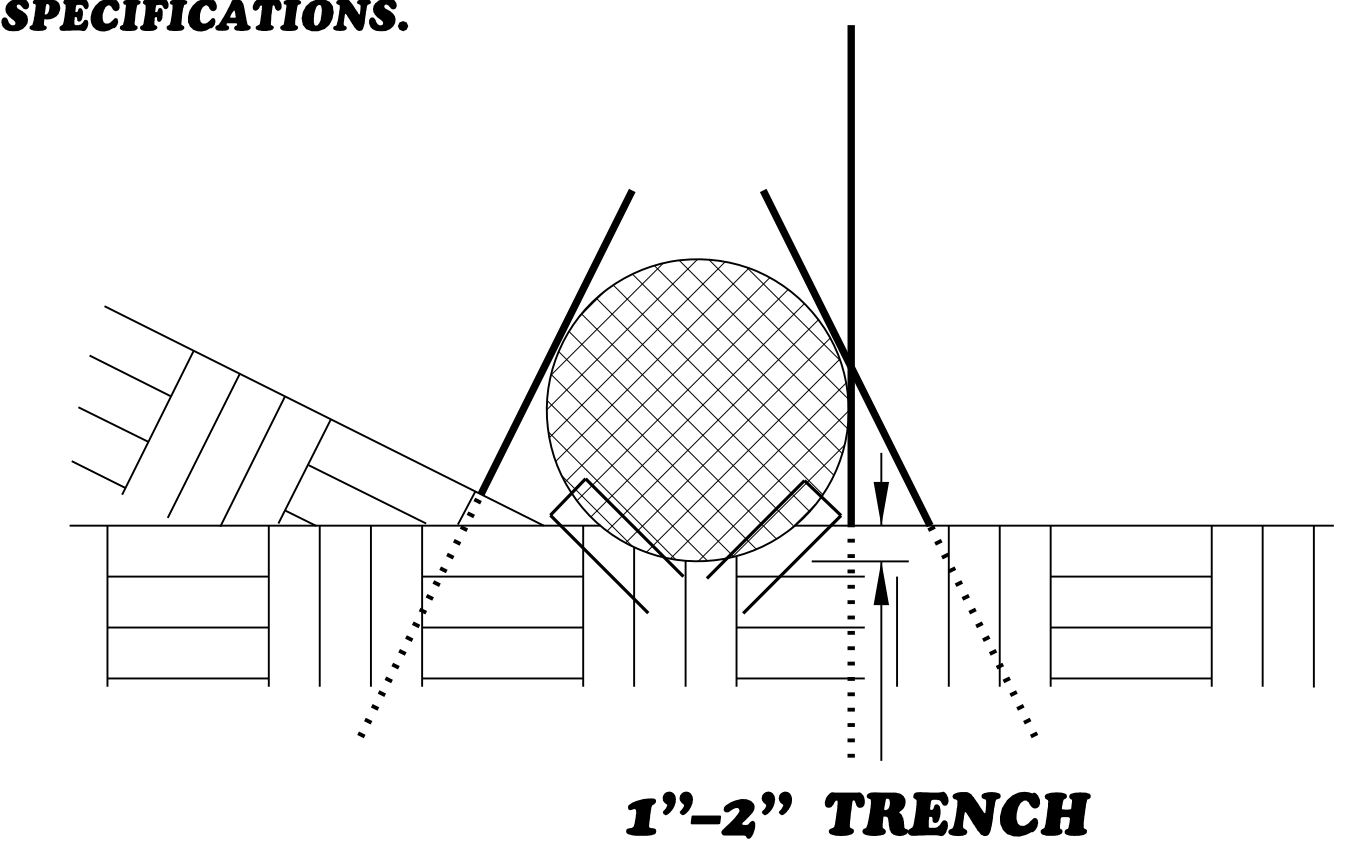


**VIEW FROM SLOPE**

**NOTES:**

- USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE AND LENGTH OF 10 FT.
- EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.
- DO NOT PLACE WATTLE ON TOE OF SLOPE.
- USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
- INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.
- 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.
- WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.
- INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

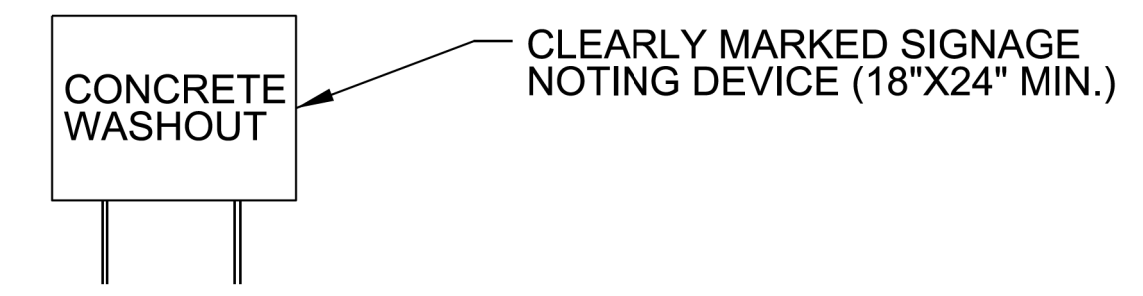
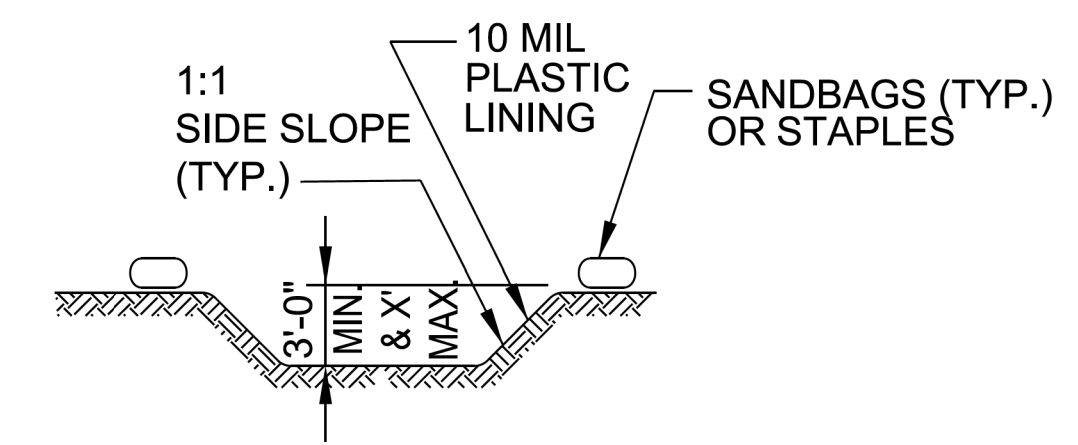
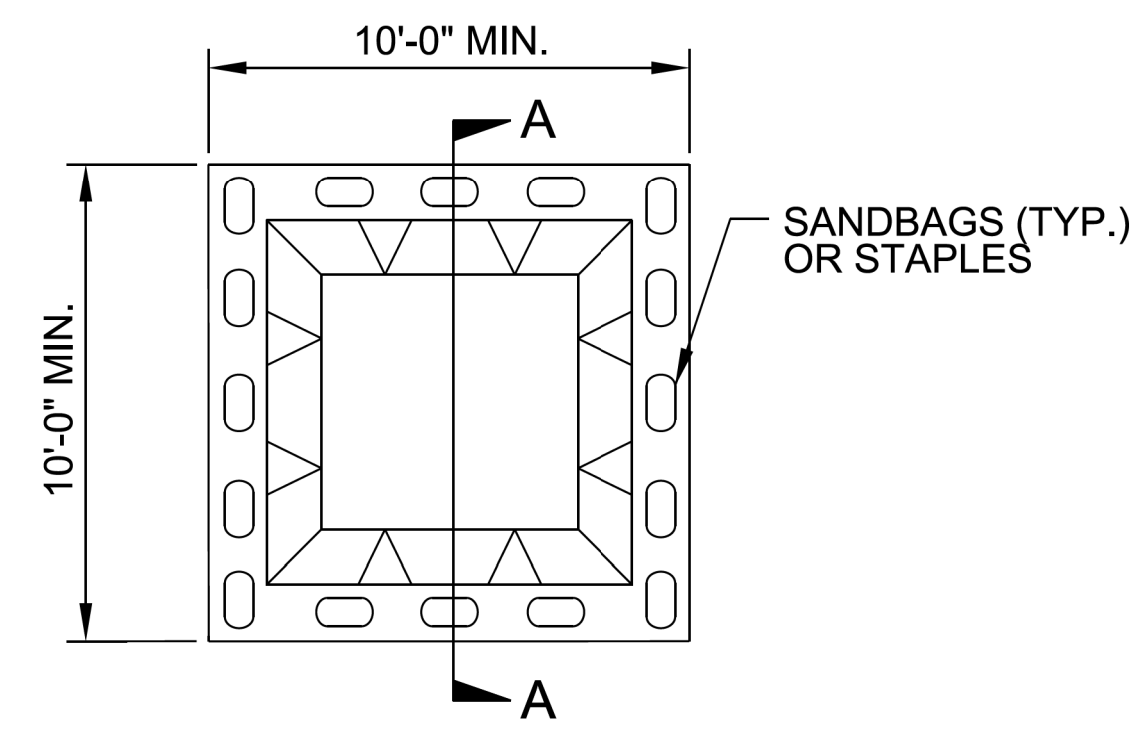
**INSET A**



**SIDE VIEW**



## ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER

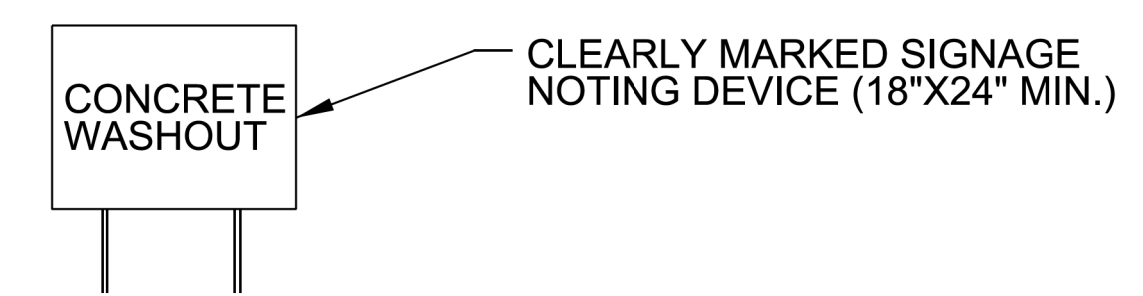
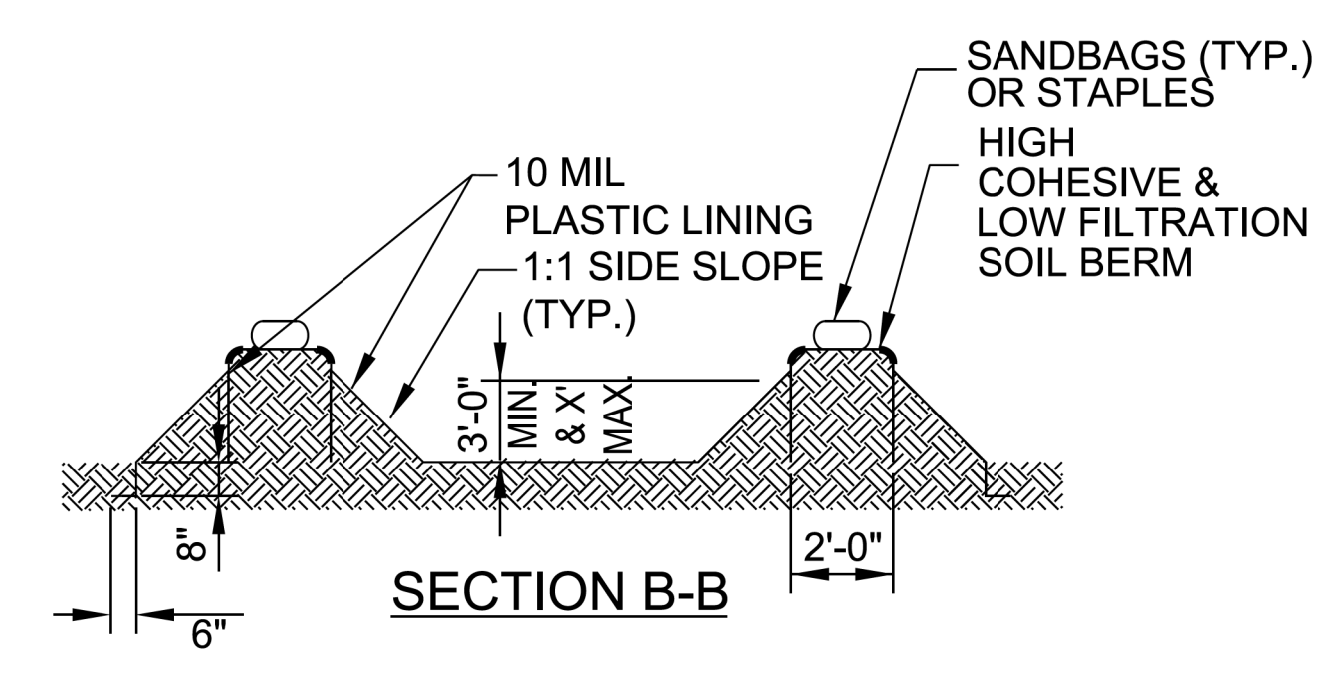
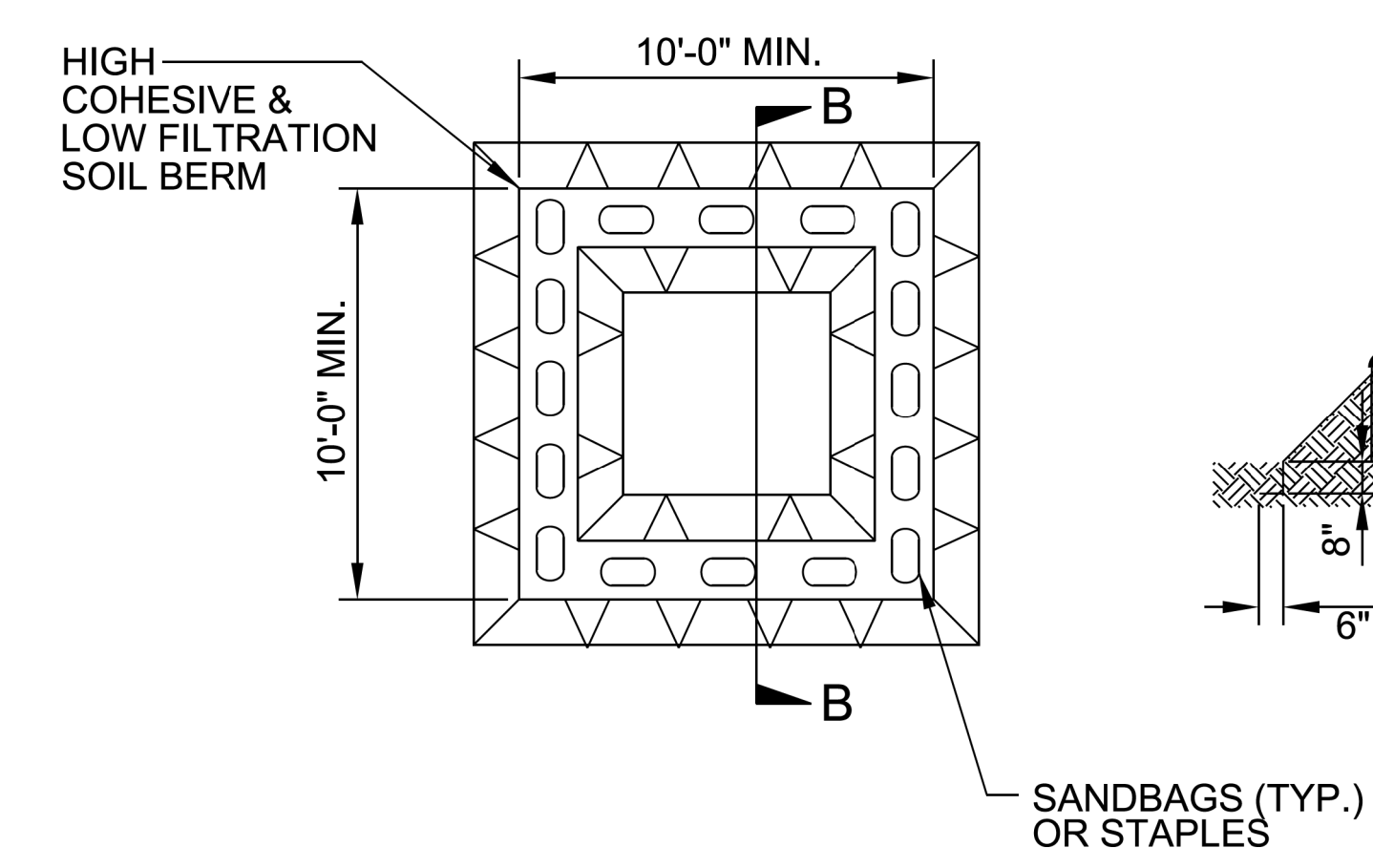


### SECTION A-A

- NOTES:**
1. ACTUAL LOCATION DETERMINED IN FIELD
  2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY.
  3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

### PLAN

### BELOW GRADE WASHOUT STRUCTURE NOT TO SCALE



- NOTES:**
1. ACTUAL LOCATION DETERMINED IN FIELD
  2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
  3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

### PLAN

### ABOVE GRADE WASHOUT STRUCTURE NOT TO SCALE

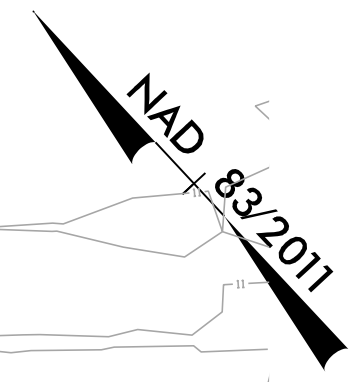
DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

***SOIL STABILIZATION TIMEFRAMES***

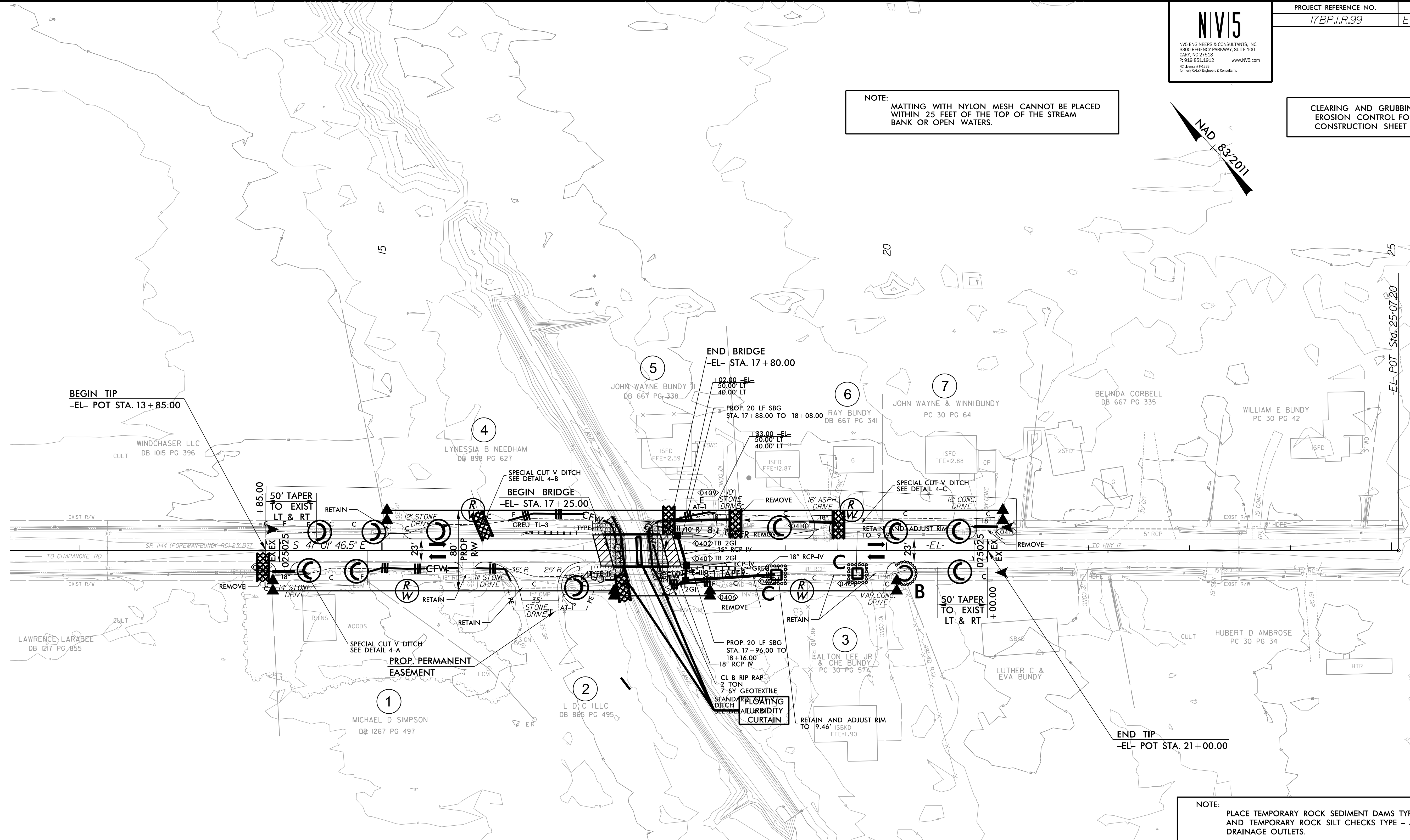
| <i>SITE DESCRIPTION</i>                      | <i>STABILIZATION TIME</i> | <i>TIMEFRAME EXCEPTIONS</i>  |
|--|---------------------------|--|
| PERIMETER DIKES, SWALES, DITCHES AND SLOPES  | 7 DAYS                    | NONE   |
| HIGH QUALITY WATER (HQW) ZONES               | 7 DAYS                    | 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.   |

NOTE:  
 MATTING WITH NYLON MESH CANNOT BE PLACED WITHIN 25 FEET OF THE TOP OF THE STREAM BANK OR OPEN WATERS.

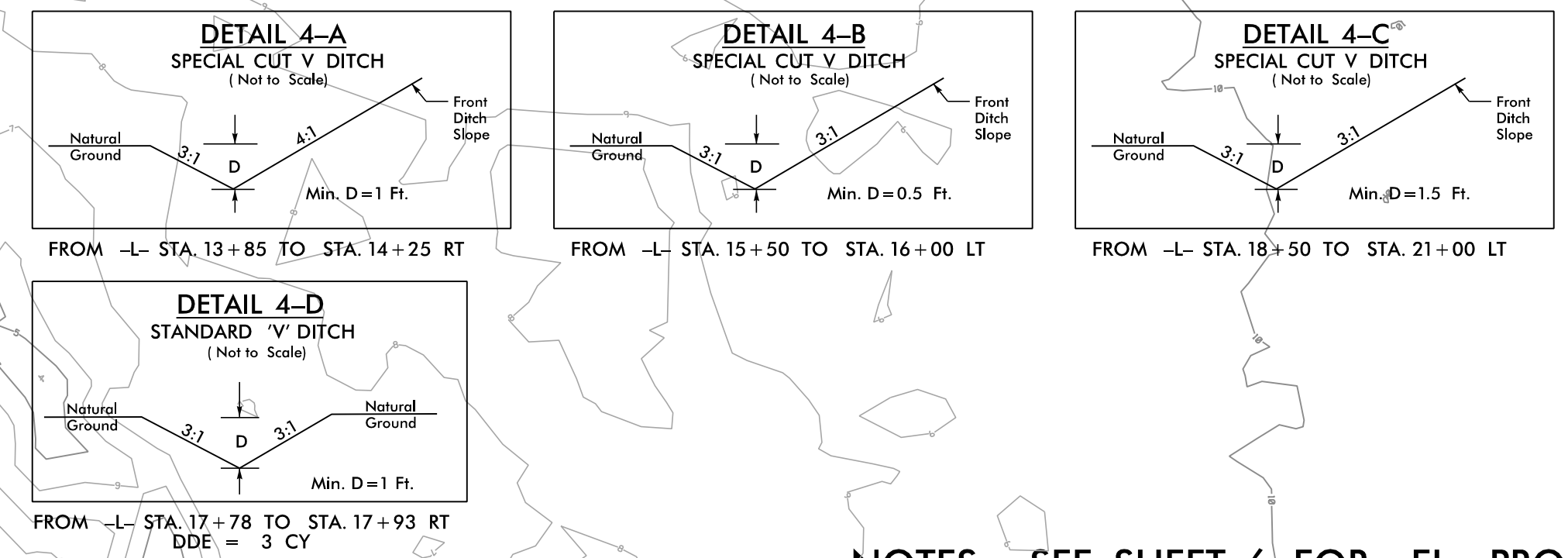
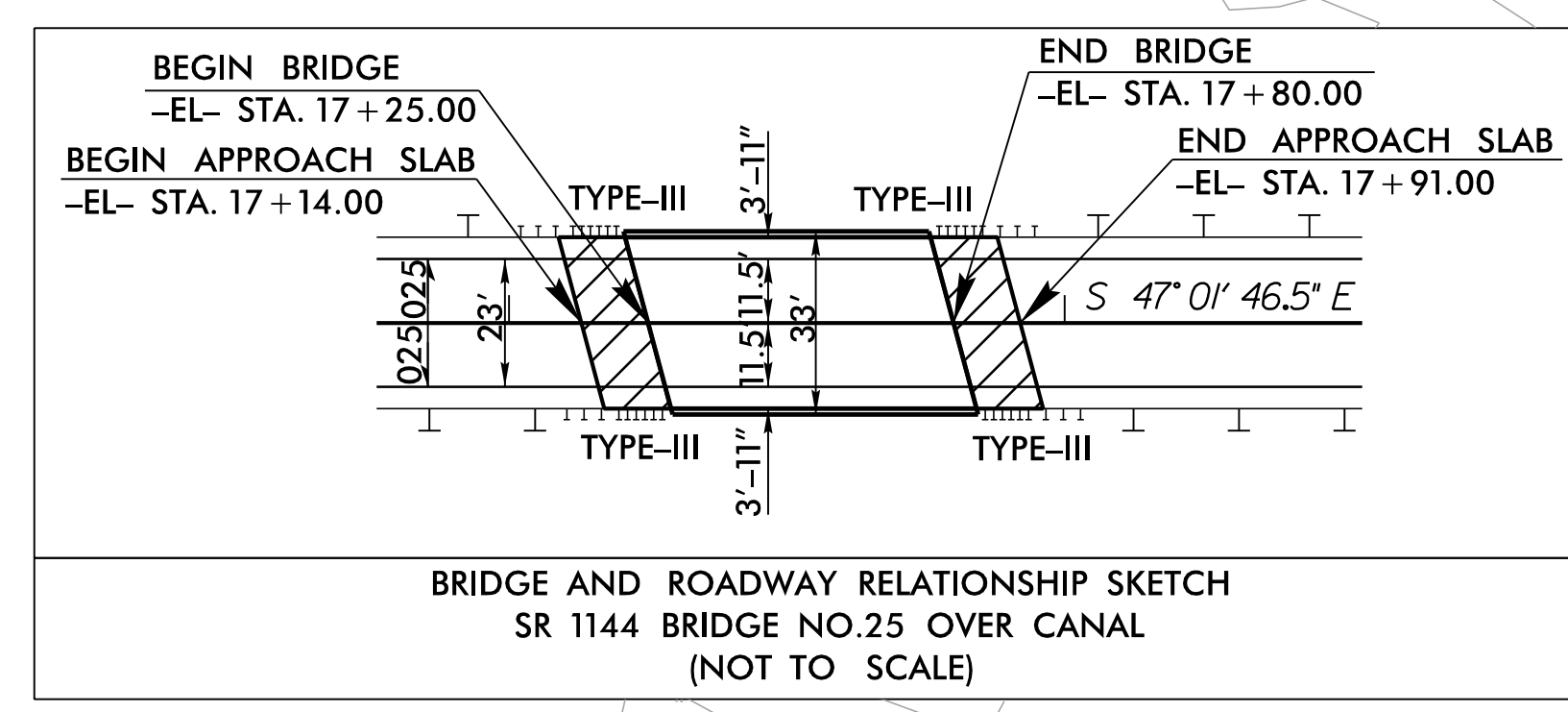
CLEARING AND GRUBBING  
 EROSION CONTROL FOR  
 CONSTRUCTION SHEET 4



REVISIONS



NOTE:  
 PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.



NOTES: SEE SHEET 6 FOR -EL- PROFILE

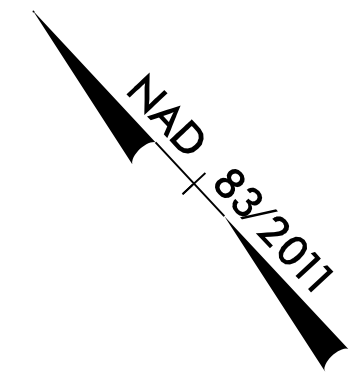
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 10/12/2021  
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 Andrea.Haiden

8/17/99

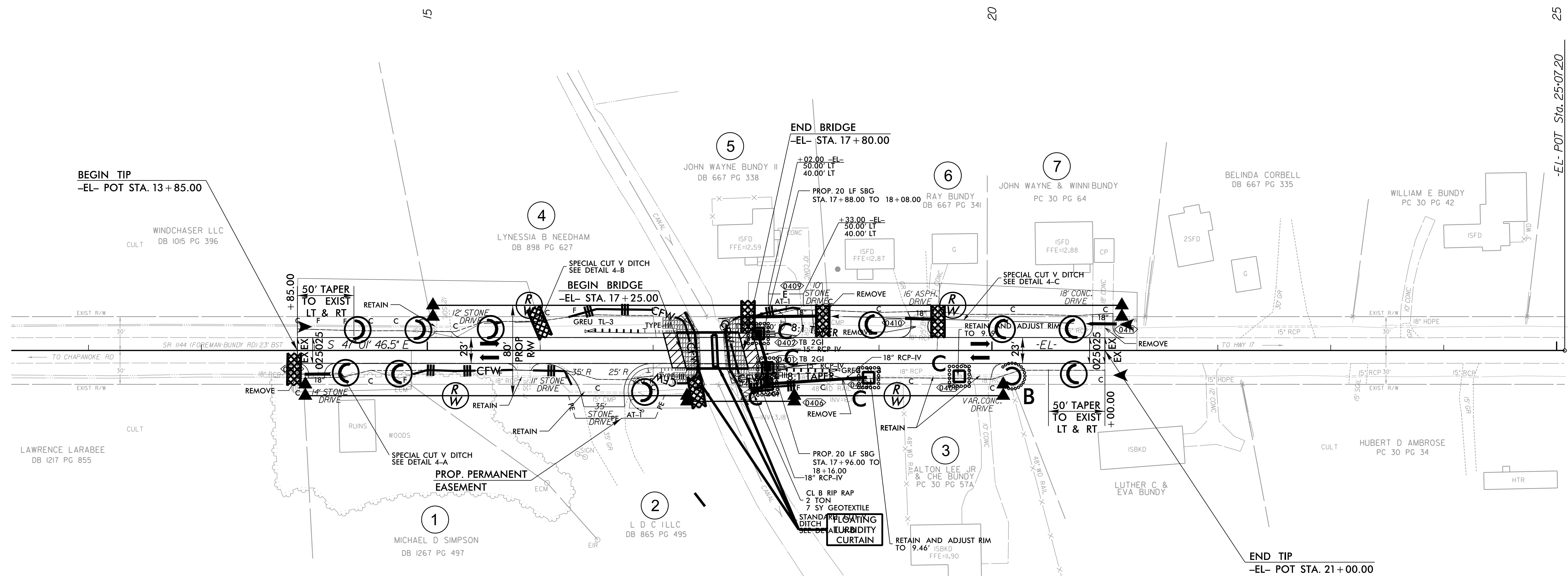
# NV5

NV5 ENGINEERS & CONSULTANTS, INC.  
3300 REGENCY PARKWAY, SUITE 100  
CARY, NC 27513  
P: 919.851.1912 www.nv5.com  
NCS License # 32333  
Formerly: DAVIS Engineers & Consultants

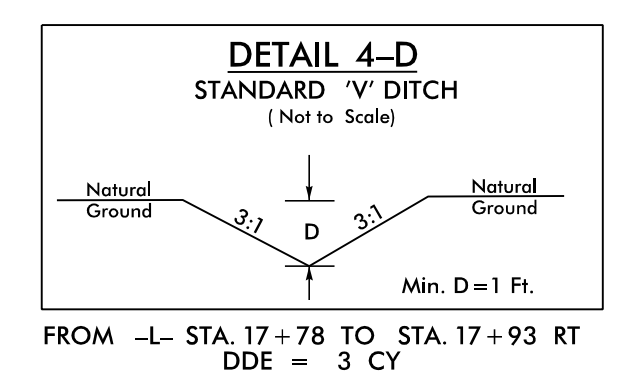
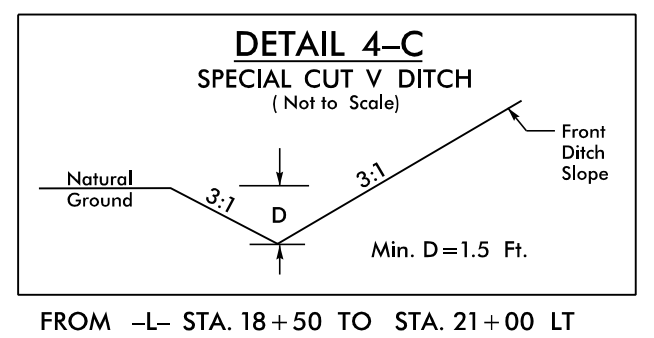
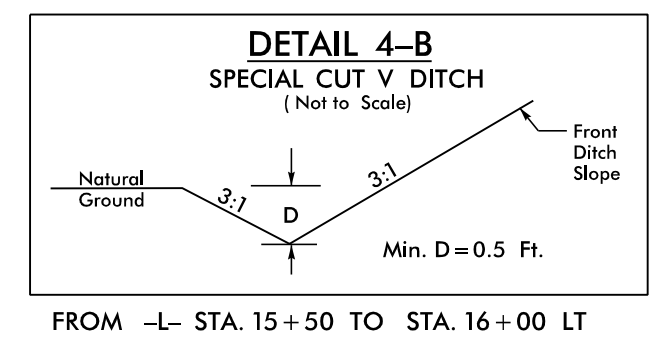
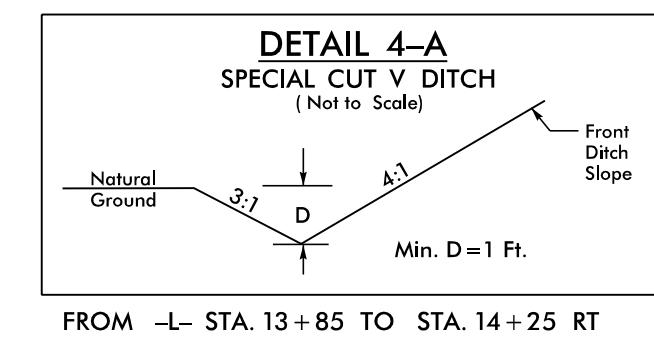
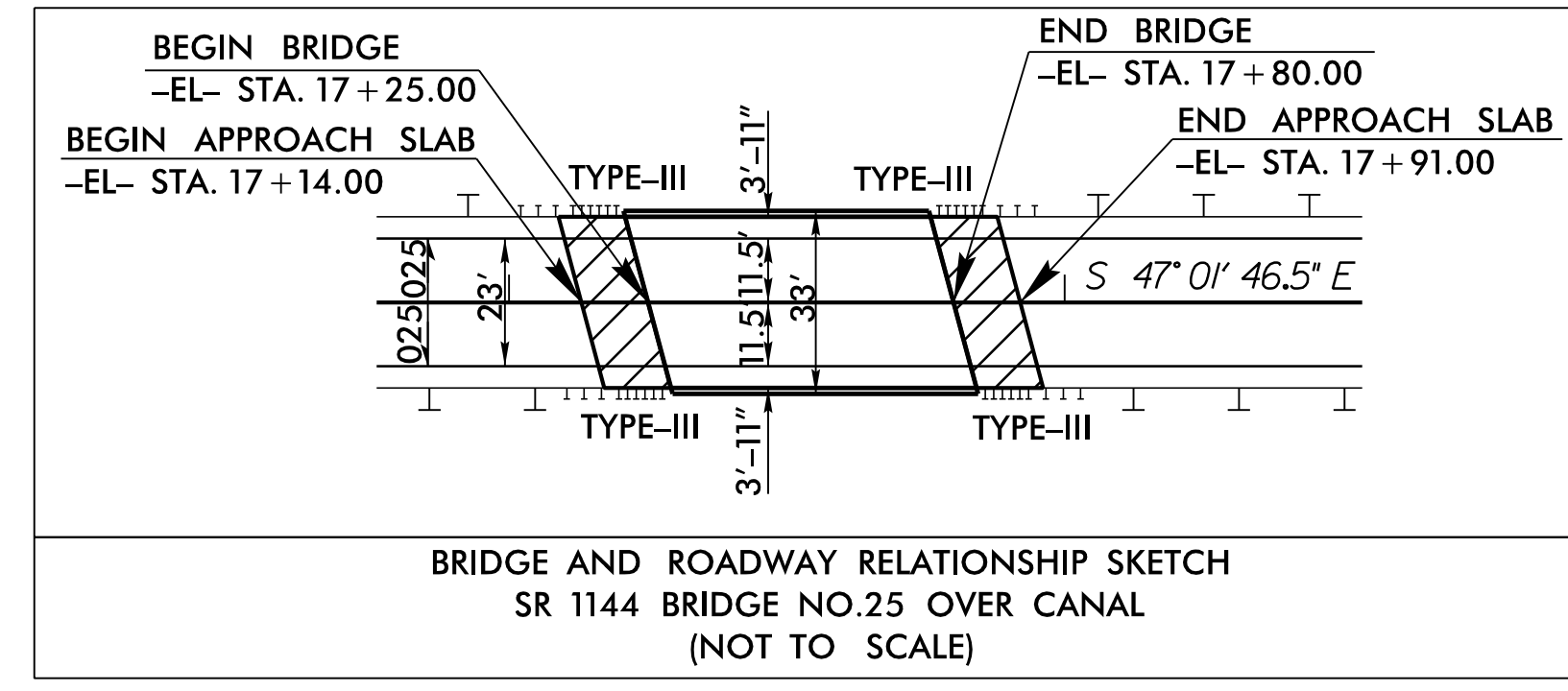
NOTE:  
MATTING WITH NYLON MESH CANNOT BE PLACED WITHIN 25 FEET OF THE TOP OF THE STREAM BANK OR OPEN WATERS.



REVISIONS



NOTE:  
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

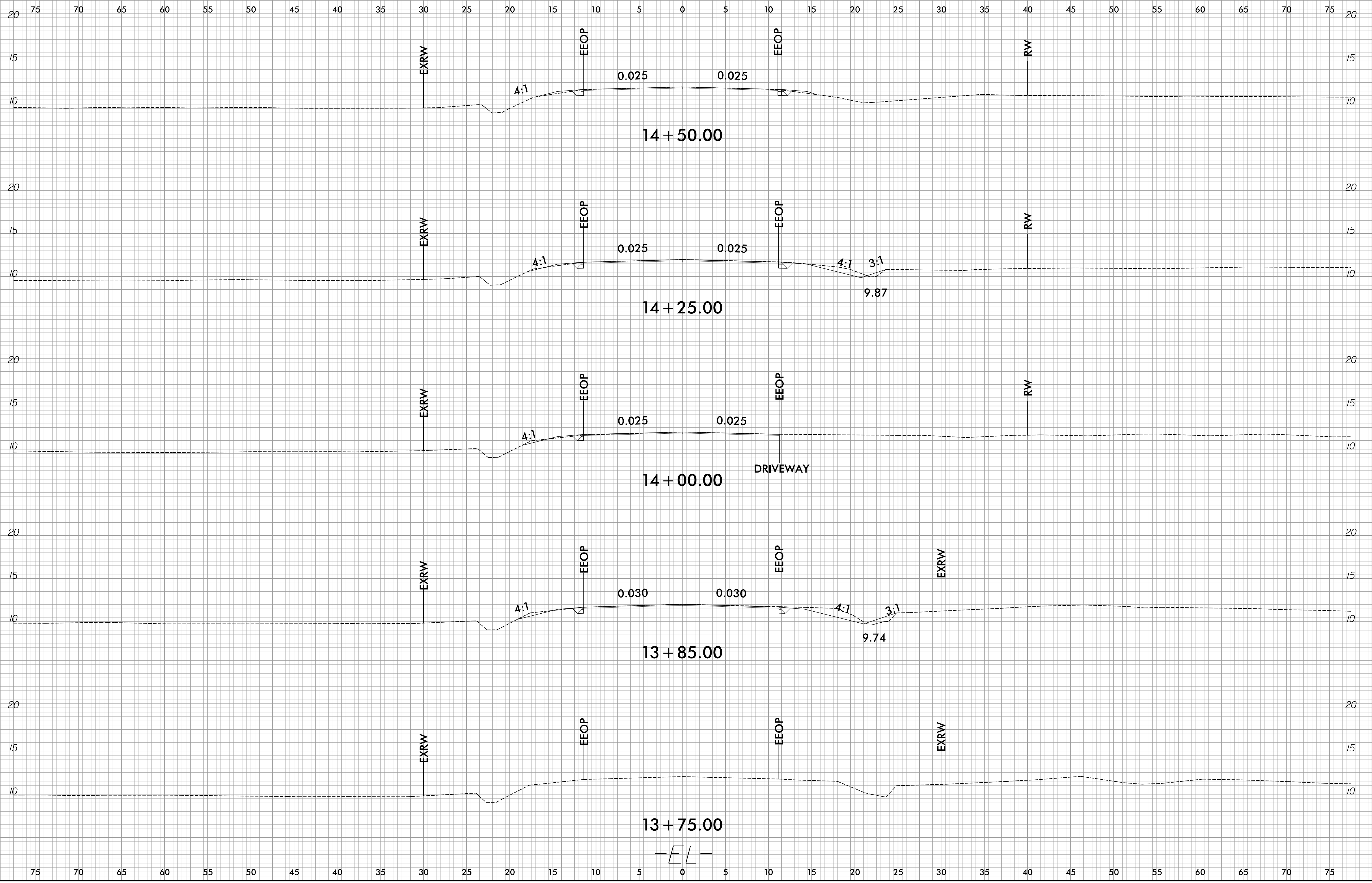


NOTES: SEE SHEET 6 FOR -EL- PROFILE

10/12/2021  
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Andrea Hayden

6/23/16

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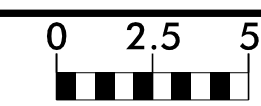


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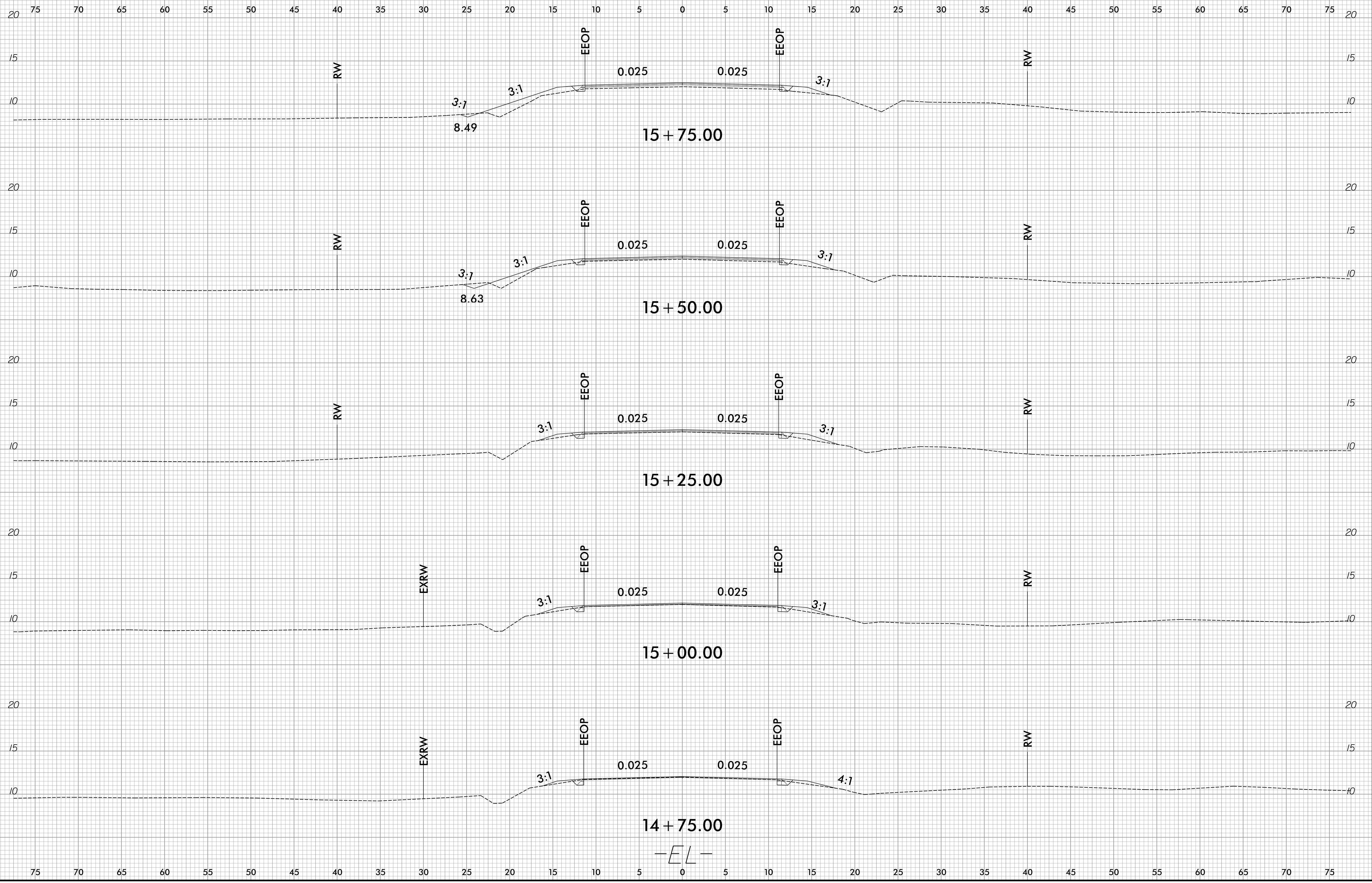
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Erica.Burton

6/23/16

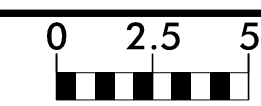


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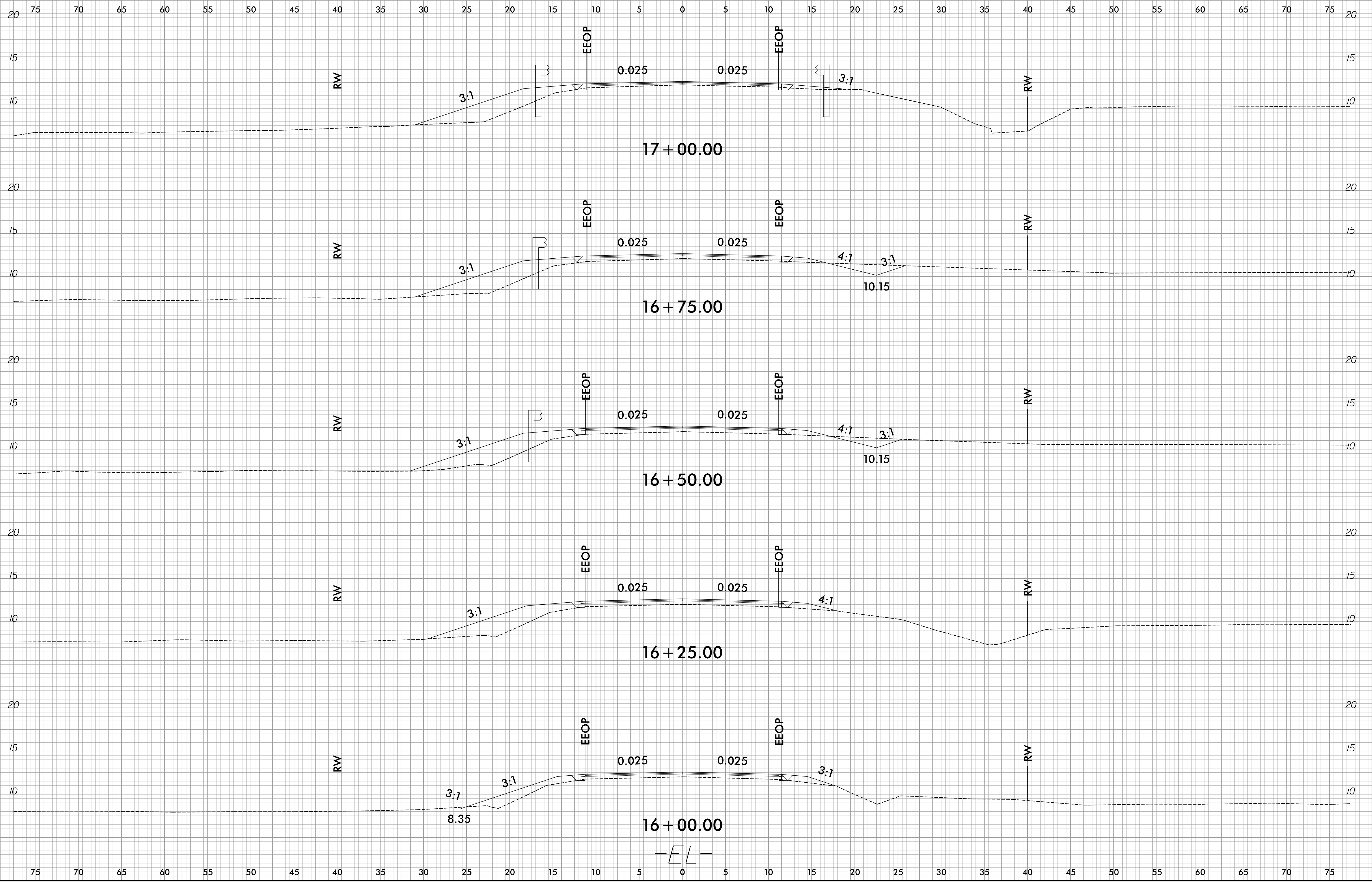


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Erica.griffin

6/23/16



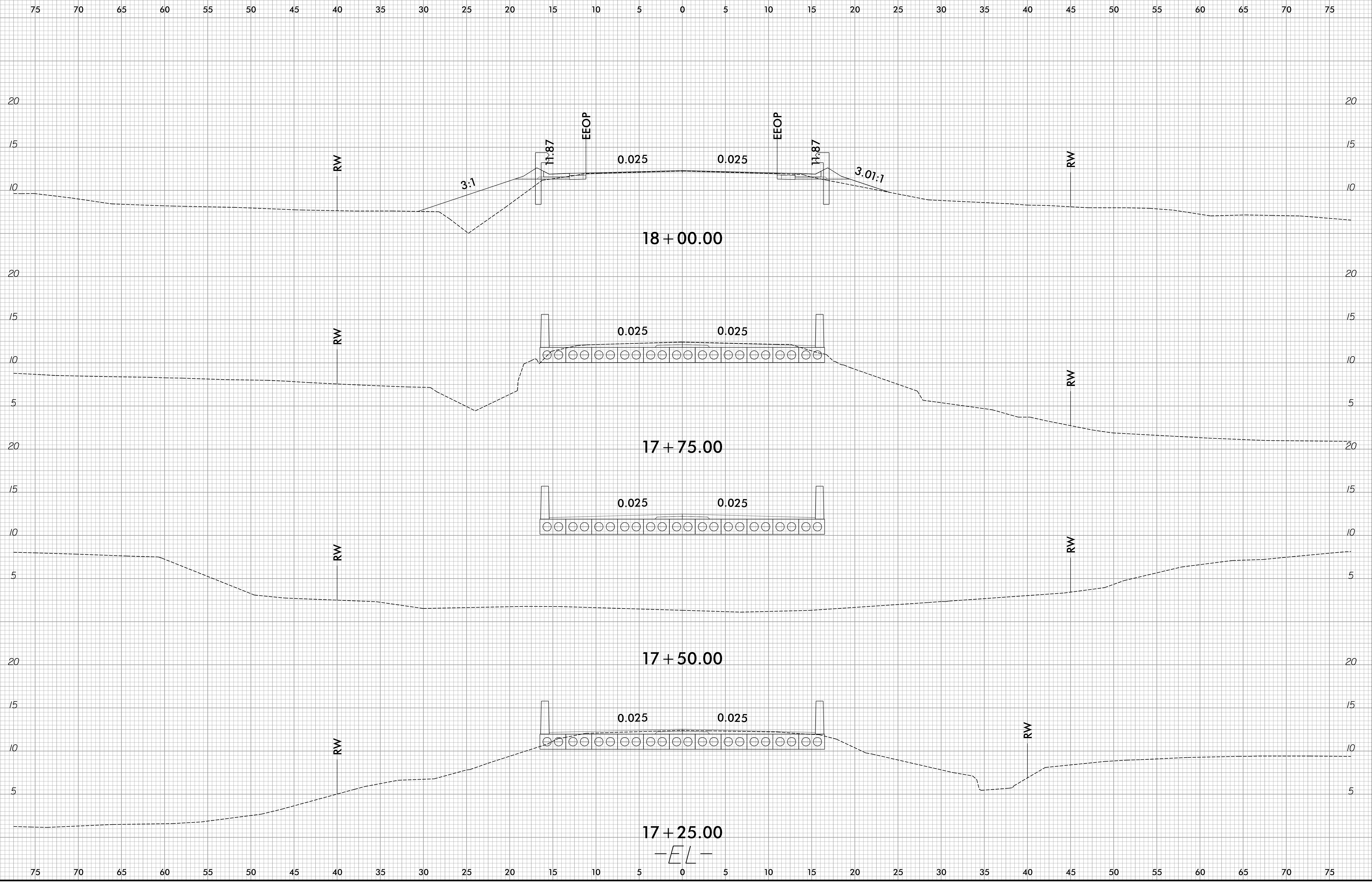
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Erica.Briggs

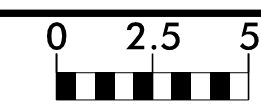
6/23/16  
10/12/2021  
E:\Roadway\CorridorModeling\690025.RDY\_XPL\_EL.dgn  
Eric.Briggs

|  |                     |           |
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|  | PROJ. REFERENCE NO. | SHEET NO. |
|  | 17BP.1.R.99         | X-4       |



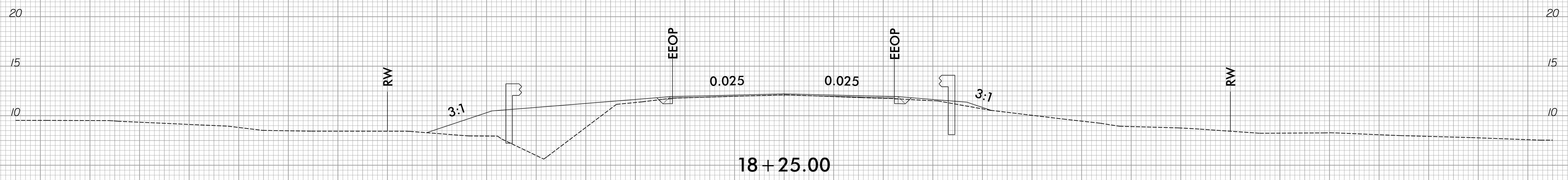
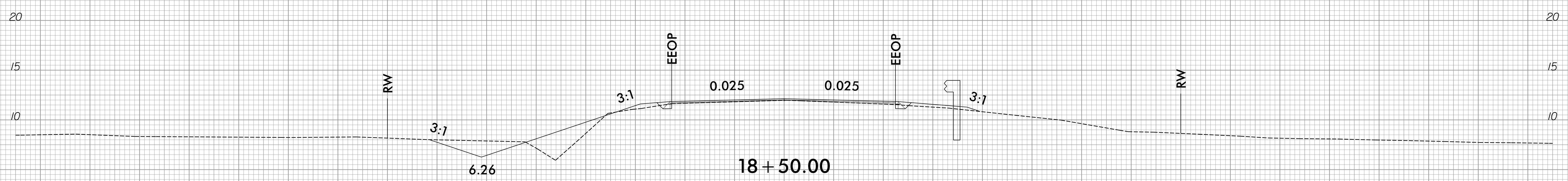
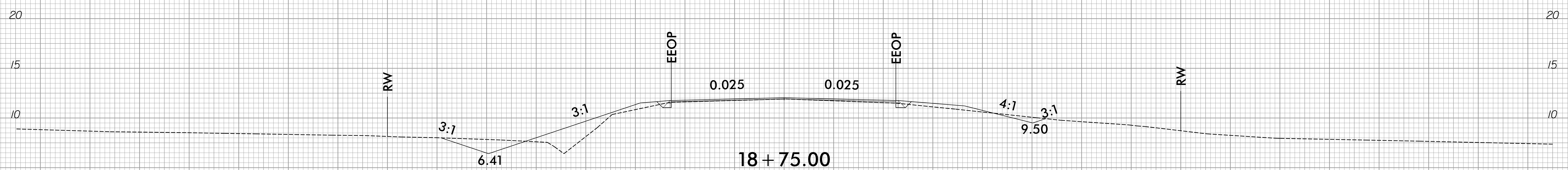
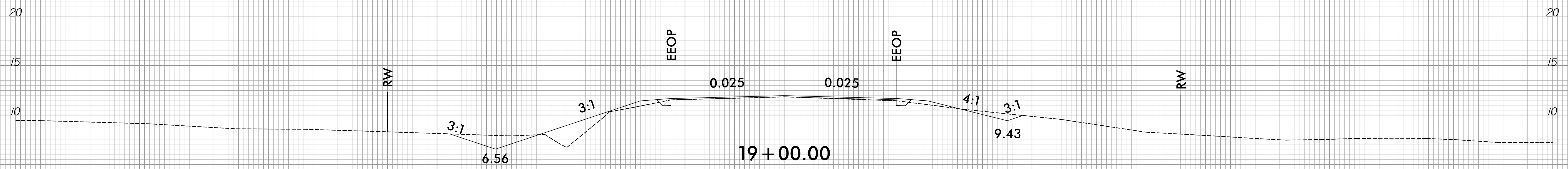


6/23/16



|                     |           |
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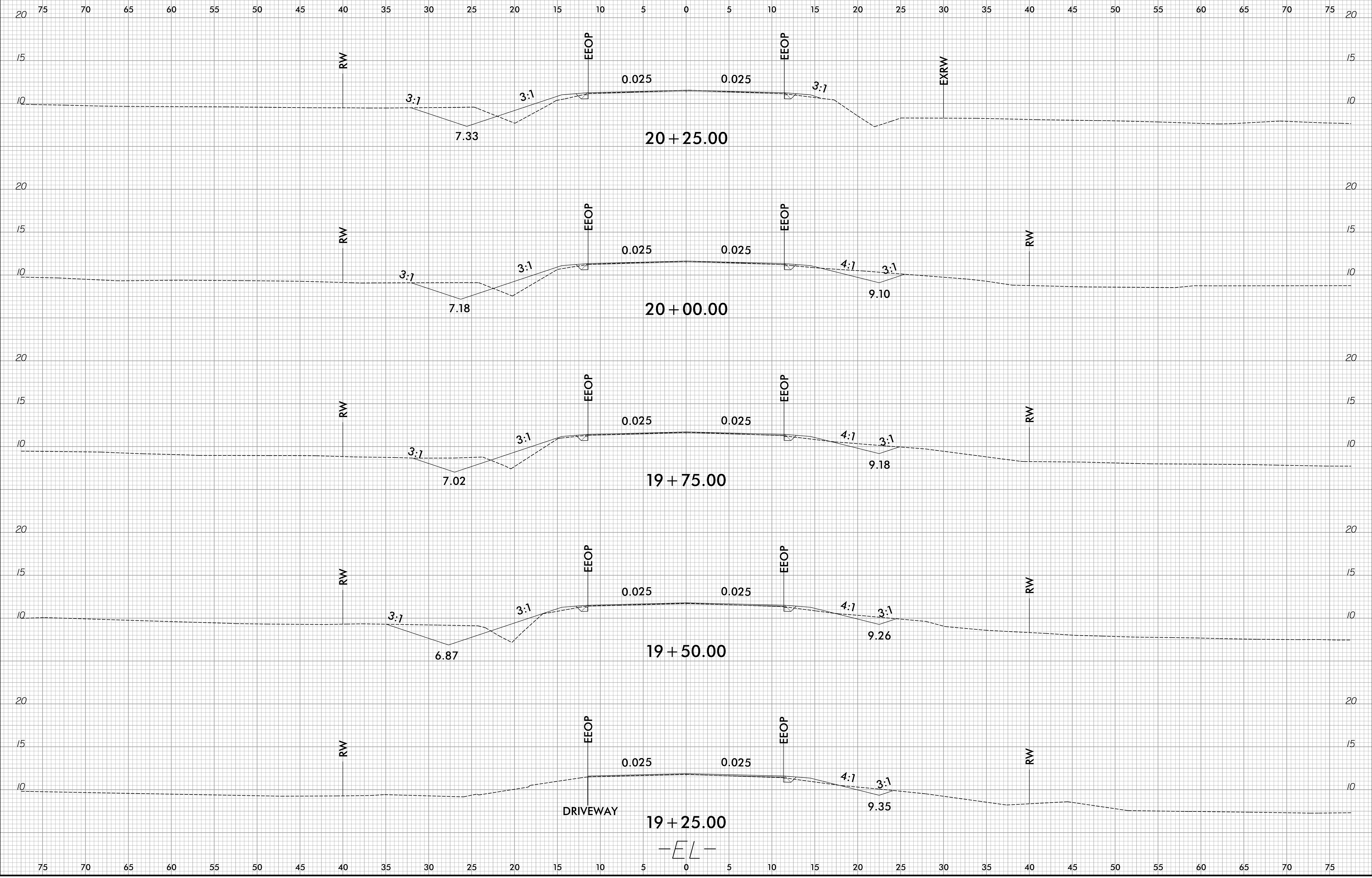
-E.L.-

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10/12/2021  
E:\Roadway\CorridorModeling\690025.RDY\_XPL\_EL.dgn  
Erica.griffin

6/23/16

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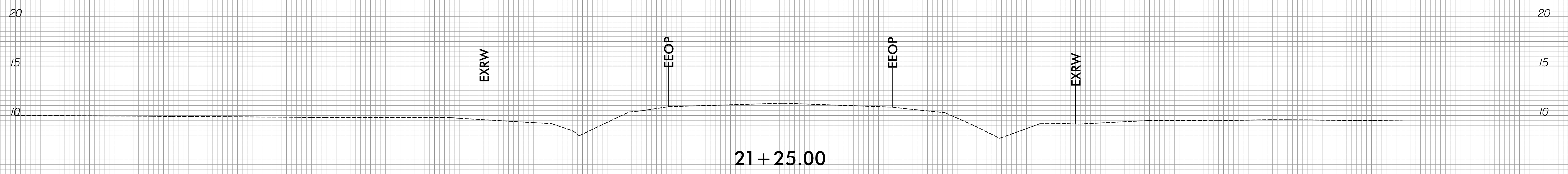


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Erica.griffin

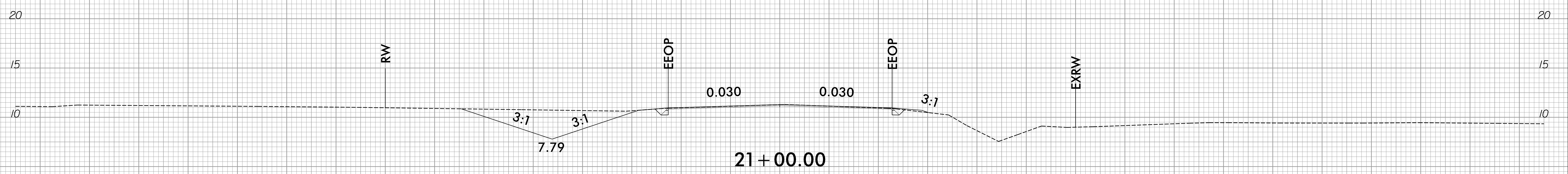
6/23/16

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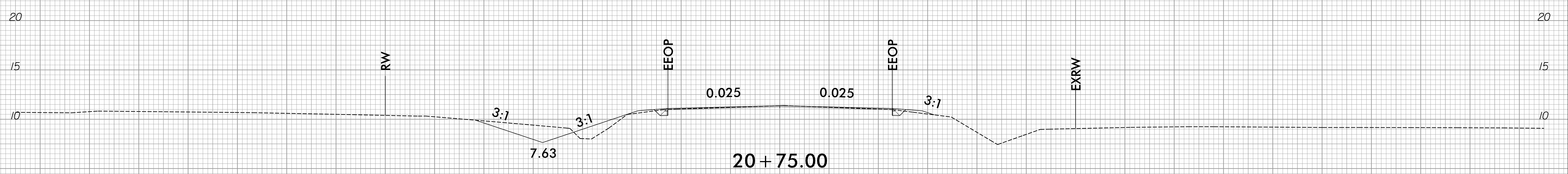
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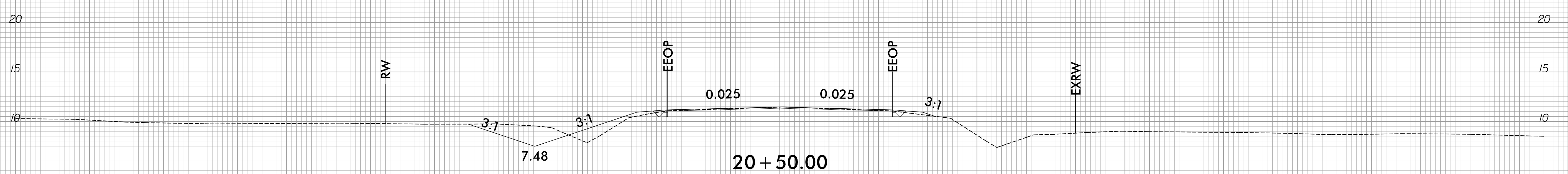
21+25.00



21+00.00



20+75.00

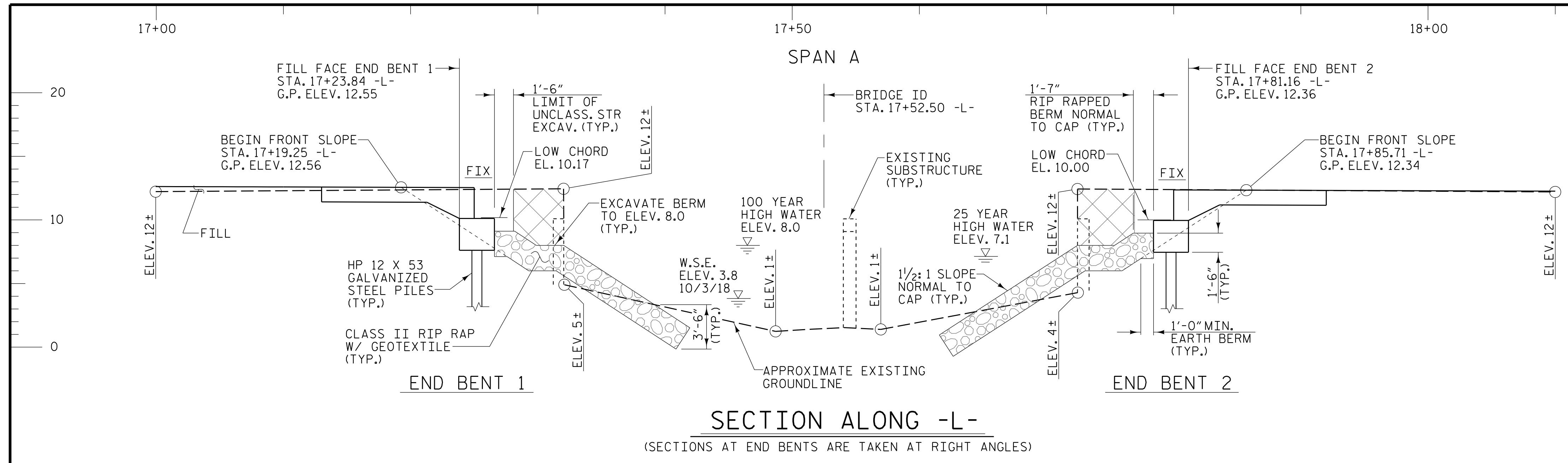


20+50.00

-E L-

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

10/12/2021  
E:\Roadway\CorridorModeling\690025.RDY\_XPL\_EL.dgn  
Erica.Briggs



|                             |
|-----------------------------|
| PI = 16+50.00               |
| EL = 12.80'                 |
| VC = 120'                   |
| (+0.4246%    (-)0.3345%     |
| GRADE DATA<br>-L- (SR 1144) |

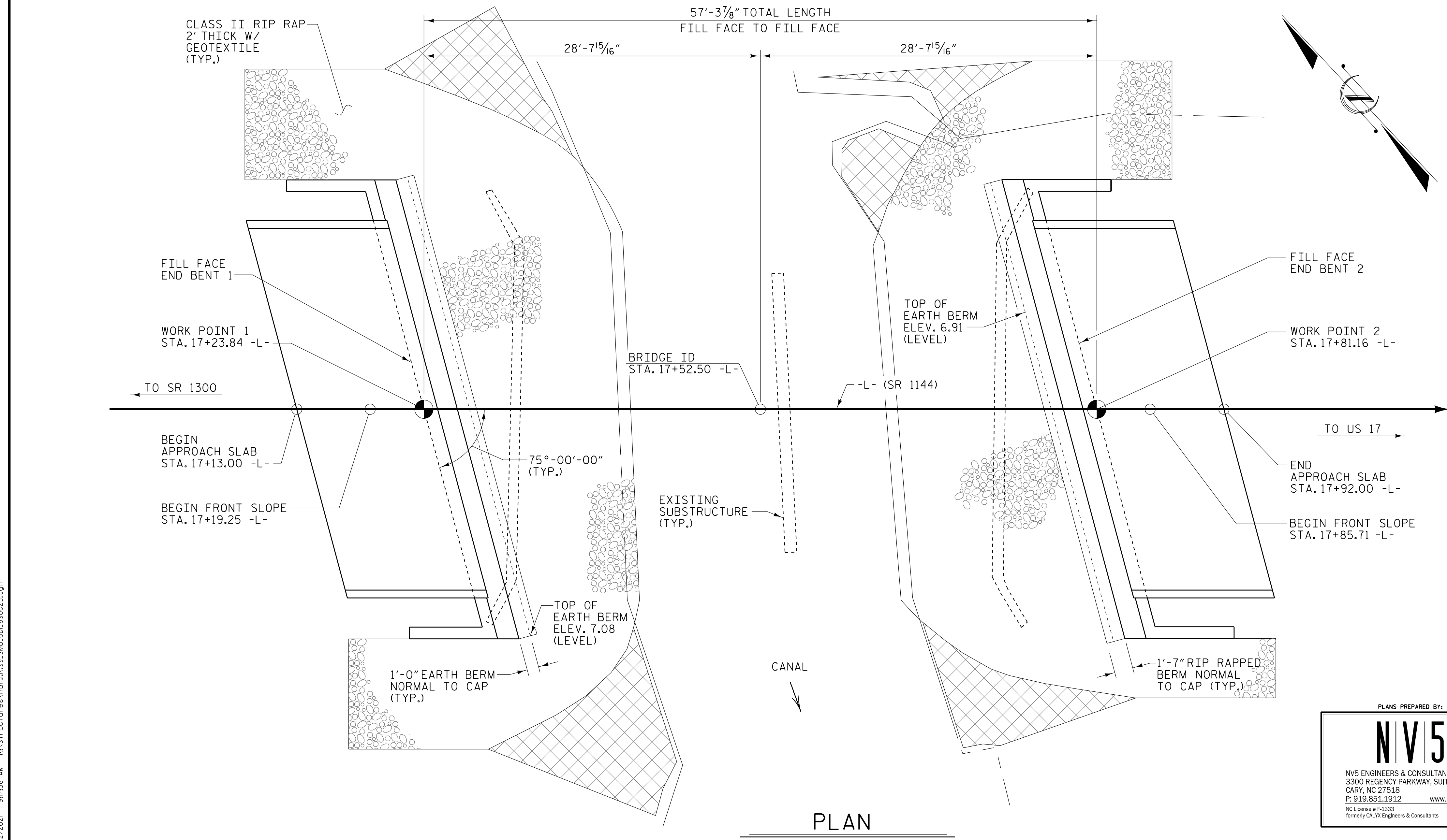
HYDRAULIC DATA:

|                               |              |
|-------------------------------|--------------|
| DESIGN DISCHARGE -            | 200 CFS      |
| FREQUENCY OF DESIGN FLOOD -   | 25 YEAR      |
| DESIGN HIGH WATER ELEVATION - | 7.1 FT.      |
| DRAINAGE AREA -               | 0.65 SQ. MI. |
| BASE DISCHARGE (Q 100) -      | 300 CFS      |
| BASE HIGH WATER ELEVATION -   | 8.0 FT.      |

OVERTOPPING DATA:

|                               |           |
|-------------------------------|-----------|
| OVERTOPPING DISCHARGE -       | 1000 CFS  |
| FREQUENCY OF OVERTOPPING -    | >500 YEAR |
| OVERTOPPING FLOOD ELEVATION - | 10.9 FT.  |

OVERTOPPING EXCEEDS 500 YEAR EVENT  
LOW POINT OF ROADWAY OVERTOPPING  
PROFILE OCCURS AT -L- STA. 22+94.20



PLANS PREPARED BY:

**NV5**

NV5 ENGINEERS & CONSULTANTS, INC.  
3300 REGENCY PARKWAY, SUITE 100  
CARY, NC 27518  
P: 919.851.1912    www.NV5.com  
NC License # F-1333  
Formerly CALIX Engineers & Consultants



PROJECT NO. 17BP.1.R.99  
PASQUOTANK COUNTY  
STATION: 17+52.50 -L-

SHEET 1 OF 2    REPLACES BRIDGE NO. 25

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**GENERAL DRAWING**  
BRIDGE ON SR 1144  
OVER CANAL  
BETWEEN SR 1300 & US 17  
30'-10" CLEAR ROADWAY - 75° SKEW

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

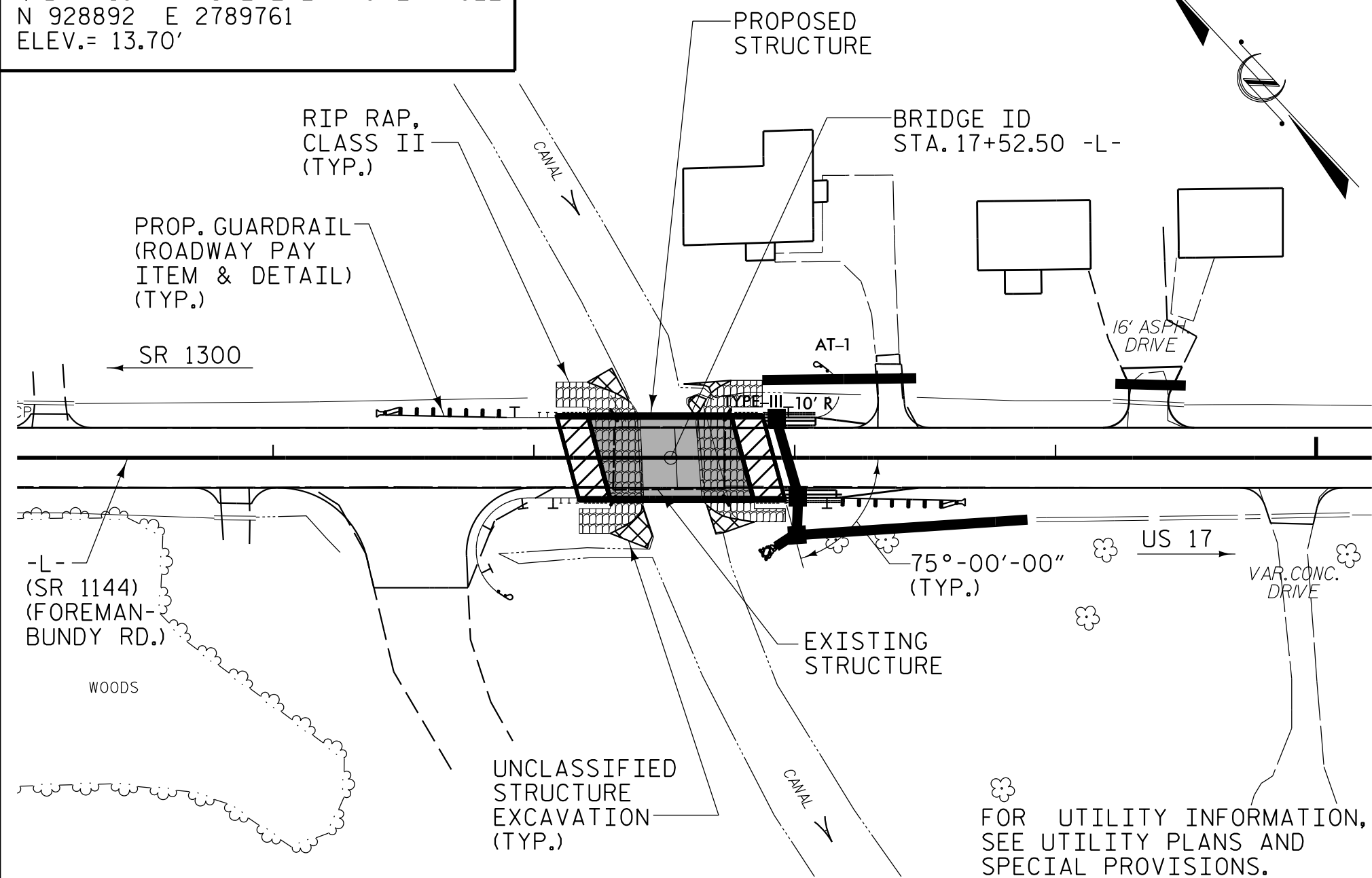
|                            |              |        |       |
|----------------------------|--------------|--------|-------|
| DRAWN BY :                 | W. B. ALLEN  | DATE : | 11/20 |
| CHECKED BY :               | G. F. WILSON | DATE : | 1/21  |
| DESIGN ENGINEER OF RECORD: | G. F. WILSON | DATE : | 10/21 |

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

10/22/2021

10/22/2021 9:47:56 AM R:\Structures\17BP.1.R.99\_SML.GD 690025.dgn

\* BM #10- RR SPIKE IN POWER POLE  
N 928892 E 2789761  
ELEV.= 13.70'



**LOCATION SKETCH**

**NOTES**

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR 'REMOVAL OF EXISTING AT STATION 17+52.50 -L-.'

THE MATERIAL SHOWN ON SHEET 1 OF 2 IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A MAX. DISTANCE OF 34 FT. LT. AND 35 FT. RT. OF CENTERLINE ROADWAY AT END BENT 1 AND 30 FT. LT. AND 29 FT. RT. OF CENTERLINE ROADWAY AT END BENT 2 AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE EXISTING STRUCTURE CONSISTING OF TWO 18'-2" SPANS WITH A 24'-1" CLEAR ROADWAY WIDTH AND REINF. CONCRETE DECK ON STEEL JOISTS SUPPORTED ON REINF. CONC. ABUTMENTS AND AN INTERIOR BENT OF TIMBER CAP ON TIMBER PILES BE REMOVED. THE BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT.

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.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

IF EXISTING TIMBER PILES CANNOT BE REMOVED, THEY MAY BE CUT-OFF AT THE MUDLINE.

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

THE SCOUR CRITICAL ELEVATION FOR BENT NO.1 IS ELEVATION 0 FT. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

GALVANIZED STEEL PILES ARE REQUIRED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

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

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

NO DECK DRAINS REQUIRED.

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

**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 71 TONS PER PILE.

DRIVE PILES AT END BENT NO.1 AND END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 120 TONS PER PILE.

TESTING THE FIRST PRODUCTION PILE WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

**TOTAL BILL OF MATERIAL**

|                | REMOVAL OF EXISTING STRUCTURE @ STA. 17+52.50 -L- | ASBESTOS ASSESSMENT | PDA TESTING | UNCLASSIFIED STRUCTURE EXCAVATION | CLASS A CONCRETE | BRIDGE APPROACH SLABS | REINFORCING STEEL | PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 GALVANIZED STEEL PILES |          | PILE REDRIVES | VERTICAL CONCRETE BARRIER RAIL | RIP RAP CLASS II (2'-0" THICK) | GEOTEXTILE FOR DRAINAGE | ELASTOMERIC BEARINGS | 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS |          |
|----------------|---|---------------------|-------------|-----------------------------------|------------------|-----------------------|-------------------|--|----------|---------------|--------------------------------|--------------------------------|-------------------------|----------------------|--|----------|
|                |   |                     |             |                                   |                  |                       |                   | NO.  | LIN. FT. |               |                                |                                |                         |                      | NO.  | LIN. FT. |
|                | LUMP SUM  | LUMP SUM            | EACH        | LUMP SUM                          | CU. YARDS        | LUMP SUM              | LBS.              | EACH   | LIN. FT. | EACH          | LIN. FT.                       | TONS                           | SQ. YARDS               | LUMP SUM             | NO.  | LIN. FT. |
| SUPERSTRUCTURE |   | LUMP SUM            |             |                                   |                  | LUMP SUM              |                   |  |          |               | 110.25                         |                                |                         | LUMP SUM             | 11   | 605.00   |
| END BENT 1     |   |                     |             | LUMP SUM                          | 14.8             |                       | 2181              | 7  | 7        | 420           | 4                              | 128                            | 142                     |                      |  |          |
| END BENT 2     |   |                     |             | LUMP SUM                          | 14.8             |                       | 2181              | 7  | 7        | 455           | 4                              | 103                            | 114                     |                      |  |          |
| TOTAL          | LUMP SUM  | LUMP SUM            | 1           | LUMP SUM                          | 29.6             | LUMP SUM              | 4362              | 14   | 14       | 875           | 8                              | 110.25                         | 256                     | LUMP SUM             | 11   | 605.00   |

PLANS PREPARED BY:

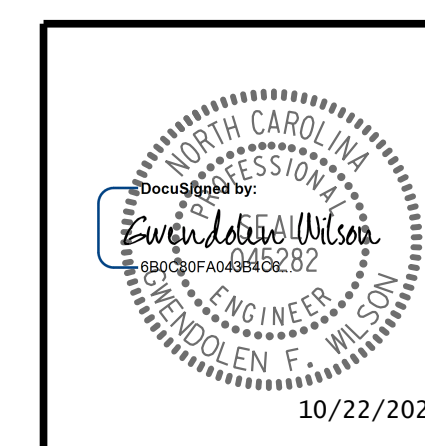
NV5 ENGINEERS & CONSULTANTS, INC.  
3300 REGENCY PARKWAY, SUITE 100  
CARY, NC 27513  
P: 919.851.1912 www.NV5.com  
NC License # F-1333  
formerly CALYX Engineers & Consultants

PROJECT NO. 17BP.1.R.99  
PASQUOTANK COUNTY  
STATION: 17+52.50 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**GENERAL DRAWING**  
BRIDGE ON SR 1144  
OVER CANAL  
BETWEEN SR 1300 & US 17  
30'-10" CLEAR ROADWAY - 75° SKEW



DRAWN BY : W. B. ALLEN DATE : 11/20  
CHECKED BY : G. F. WILSON DATE : 1/21  
DESIGN ENGINEER OF RECORD: G. F. WILSON DATE : 10/21

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

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

10/22/2021

## 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 NUMBER |                 |   |  |
|--------------------------|------------|----------------------|----------------------------|-----------------------------------|---------------|------------------------|------------------------------|------------------|------|-----------------|---|------------------------------|------------------|------|-----------------|---|---------------------|------------------------------|------------------|------|----------------|-----------------|---|--|
|                          |            |                      |                            |                                   |               | MOMENT                 |                              |                  |      |                 | SHEAR                                     |                              |                  |      |                 | MOMENT                                    |                     |                              |                  |      |                |                 |   |  |
|                          |            |                      |                            |                                   |               | LIVELOAD<br>FACTORS    | DISTRIBUTION<br>FACTORS (DF) | RATING<br>FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM<br>LEFT END OF<br>SPAN (ft) | DISTRIBUTION<br>FACTORS (DF) | RATING<br>FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM<br>LEFT END OF<br>SPAN (ft) | LIVELOAD<br>FACTORS | DISTRIBUTION<br>FACTORS (DF) | RATING<br>FACTOR | SPAN |                | GIRDER LOCATION | DISTANCE FROM<br>LEFT END OF<br>SPAN (ft) |  |
| DESIGN<br>LOAD<br>RATING | HL-93(Inv) | N/A                  | <b>1</b>                   | 1.065                             | --            | 1.75                   | 0.27                         | 1.25             | 55'  | EL              | 26.982                                    | 0.616                        | 1.12             | 55'  | EL              | 5.396                                     | 0.80                | 0.27                         | <b>1.07</b>      | 55'  | EL             | <b>26.982</b>   |   |  |
|                          | HL-93(Opr) | N/A                  | --                         | 1.452                             | --            | 1.35                   | 0.27                         | 1.61             | 55'  | EL              | 26.982                                    | 0.616                        | 1.45             | 55'  | EL              | 5.396                                     | N/A                 | --                           | --               | --   | --             | --              |   |  |
|                          | HS-20(Inv) | 36.000               | <b>2</b>                   | 1.335                             | 48.043        | 1.75                   | 0.27                         | 1.56             | 55'  | EL              | 26.982                                    | 0.616                        | 1.34             | 55'  | EL              | 5.396                                     | 0.80                | 0.27                         | <b>1.33</b>      | 55'  | EL             | <b>26.982</b>   |   |  |
|                          | HS-20(Opr) | 36.000               | --                         | 1.734                             | 62.425        | 1.35                   | 0.27                         | 2.02             | 55'  | EL              | 26.982                                    | 0.616                        | 1.73             | 55'  | EL              | 5.396                                     | N/A                 | --                           | --               | --   | --             | --              |   |  |
| LEGAL<br>LOAD<br>RATING  | SV         | SNSH                 | 13.500                     | --                                | 2.802         | 37.83                  | 1.4                          | 0.27             | 4.09 | 55'             | EL  | 26.982                       | 0.616            | 3.81 | 55'             | EL  | 5.396               | 0.80                         | 0.27             | 2.80 | 55'            | EL              | 26.982                                    |  |
|                          |            | SNGARBS2             | 20.000                     | --                                | 2.175         | 43.506                 | 1.4                          | 0.27             | 3.18 | 55'             | EL  | 26.982                       | 0.616            | 2.76 | 55'             | EL  | 5.396               | 0.80                         | 0.27             | 2.18 | 55'            | EL              | 26.982                                    |  |
|                          |            | SNAGRIS2             | 22.000                     | --                                | 2.099         | 46.173                 | 1.4                          | 0.27             | 3.07 | 55'             | EL  | 26.982                       | 0.616            | 2.58 | 55'             | EL  | 5.396               | 0.80                         | 0.27             | 2.10 | 55'            | EL              | 26.982                                    |  |
|                          |            | SNCOTTS3             | 27.250                     | --                                | 1.397         | 38.065                 | 1.4                          | 0.27             | 2.04 | 55'             | EL  | 26.982                       | 0.616            | 1.91 | 55'             | EL  | 5.396               | 0.80                         | 0.27             | 1.40 | 55'            | EL              | 26.982                                    |  |
|                          |            | SNAGGRS4             | 34.925                     | --                                | 1.2           | 41.922                 | 1.4                          | 0.27             | 1.75 | 55'             | EL  | 26.982                       | 0.616            | 1.62 | 55'             | EL  | 5.396               | 0.80                         | 0.27             | 1.20 | 55'            | EL              | 26.982                                    |  |
|                          |            | SNS5A                | 35.550                     | --                                | 1.172         | 41.648                 | 1.4                          | 0.27             | 1.71 | 55'             | EL  | 26.982                       | 0.616            | 1.66 | 55'             | EL  | 5.396               | 0.80                         | 0.27             | 1.17 | 55'            | EL              | 26.982                                    |  |
|                          |            | SNS6A                | 39.950                     | --                                | 1.089         | 43.514                 | 1.4                          | 0.27             | 1.59 | 55'             | EL  | 26.982                       | 0.616            | 1.53 | 55'             | EL  | 5.396               | 0.80                         | 0.27             | 1.09 | 55'            | EL              | 26.982                                    |  |
|                          | SNS7B      | 42.000               | --                         | 1.038                             | 43.587        | 1.4                    | 0.27                         | 1.52             | 55'  | EL              | 26.982                                    | 0.616                        | 1.53             | 55'  | EL              | 5.396                                     | 0.80                | 0.27                         | 1.04             | 55'  | EL             | 26.982          |   |  |
|                          | TTST       | TNAGRIT3             | 33.000                     | --                                | 1.333         | 43.973                 | 1.4                          | 0.27             | 1.95 | 55'             | EL  | 26.982                       | 0.616            | 1.81 | 55'             | EL  | 5.396               | 0.80                         | 0.27             | 1.33 | 55'            | EL              | 26.982                                    |  |
|                          |            | TNT4A                | 33.075                     | --                                | 1.342         | 44.4                   | 1.4                          | 0.27             | 1.96 | 55'             | EL  | 26.982                       | 0.616            | 1.75 | 55'             | EL  | 5.396               | 0.80                         | 0.27             | 1.34 | 55'            | EL              | 26.982                                    |  |
|                          |            | TNT6A                | 41.600                     | --                                | 1.112         | 46.252                 | 1.4                          | 0.27             | 1.62 | 55'             | EL  | 26.982                       | 0.616            | 1.67 | 55'             | EL  | 5.396               | 0.80                         | 0.27             | 1.11 | 55'            | EL              | 26.982                                    |  |
|                          |            | TNT7A                | 42.000                     | --                                | 1.125         | 47.255                 | 1.4                          | 0.27             | 1.64 | 55'             | EL  | 26.982                       | 0.616            | 1.56 | 55'             | EL  | 5.396               | 0.80                         | 0.27             | 1.13 | 55'            | EL              | 26.982                                    |  |
|                          |            | TNT7B                | 42.000                     | --                                | 1.174         | 49.318                 | 1.4                          | 0.27             | 1.72 | 55'             | EL  | 26.982                       | 0.616            | 1.47 | 55'             | EL  | 5.396               | 0.80                         | 0.27             | 1.17 | 55'            | EL              | 26.982                                    |  |
|                          |            | TNAGRIT4             | 43.000                     | --                                | 1.111         | 47.786                 | 1.4                          | 0.27             | 1.62 | 55'             | EL  | 26.982                       | 0.616            | 1.42 | 55'             | EL  | 5.396               | 0.80                         | 0.27             | 1.11 | 55'            | EL              | 26.982                                    |  |
| TNAGT5A                  |            | 45.000               | --                         | 1.041                             | 46.851        | 1.4                    | 0.27                         | 1.52             | 55'  | EL              | 26.982                                    | 0.616                        | 1.44             | 55'  | EL              | 5.396                                     | 0.80                | 0.27                         | 1.04             | 55'  | EL             | 26.982          |   |  |
| TNAGT5B                  | 45.000     | <b>3</b>             | 1.023                      | 46.02                             | 1.4           | 0.27                   | 1.49                         | 55'              | EL   | 26.982          | 0.616                                     | 1.35                         | 55'              | EL   | 5.396           | 0.80                                      | 0.27                | <b>1.02</b>                  | 55'              | EL   | <b>26.982</b>  |                 |   |  |

**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)

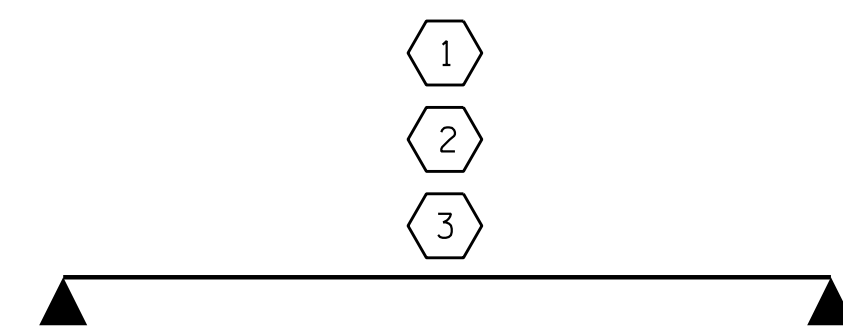
3 LEGAL LOAD RATING \*\*

\*\* SEE CHART FOR VEHICLE TYPE

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GIRDER LOCATION

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



**LRFR SUMMARY**  
FOR SPAN 'A'

PROJECT NO. 17.BP.1.R.99  
PASQUOTANK COUNTY  
 STATION: 17+52.50 -L-

|                                   |             |
|-----------------------------------|-------------|
| ASSEMBLED BY : <b>W. B. ALLEN</b> | DATE : 7/19 |
| CHECKED BY : <b>G. F. WILSON</b>  | DATE : 1/21 |
| DRAWN BY : CVC 6/10               |             |
| CHECKED BY : DNS 6/10             |             |

PLANS PREPARED BY:

NVS

NVS ENGINEERS & CONSULTANTS, INC.  
3300 REGENCY PARKWAY, SUITE 100  
CARY, NC 27518  
P: 919.851.1912 www.NV5.com  
NC License # F-1333  
formerly CALYX Engineers & Consultants

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THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:

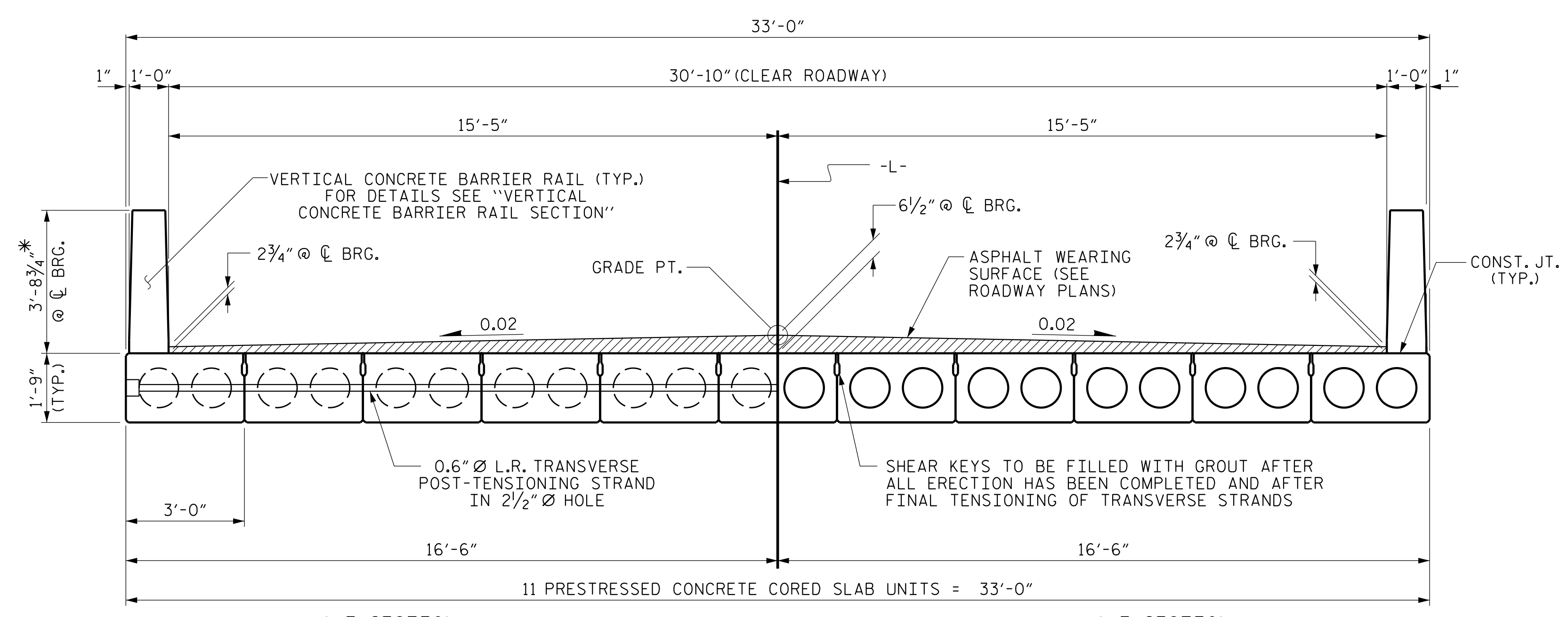
10/12/2021

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

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

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

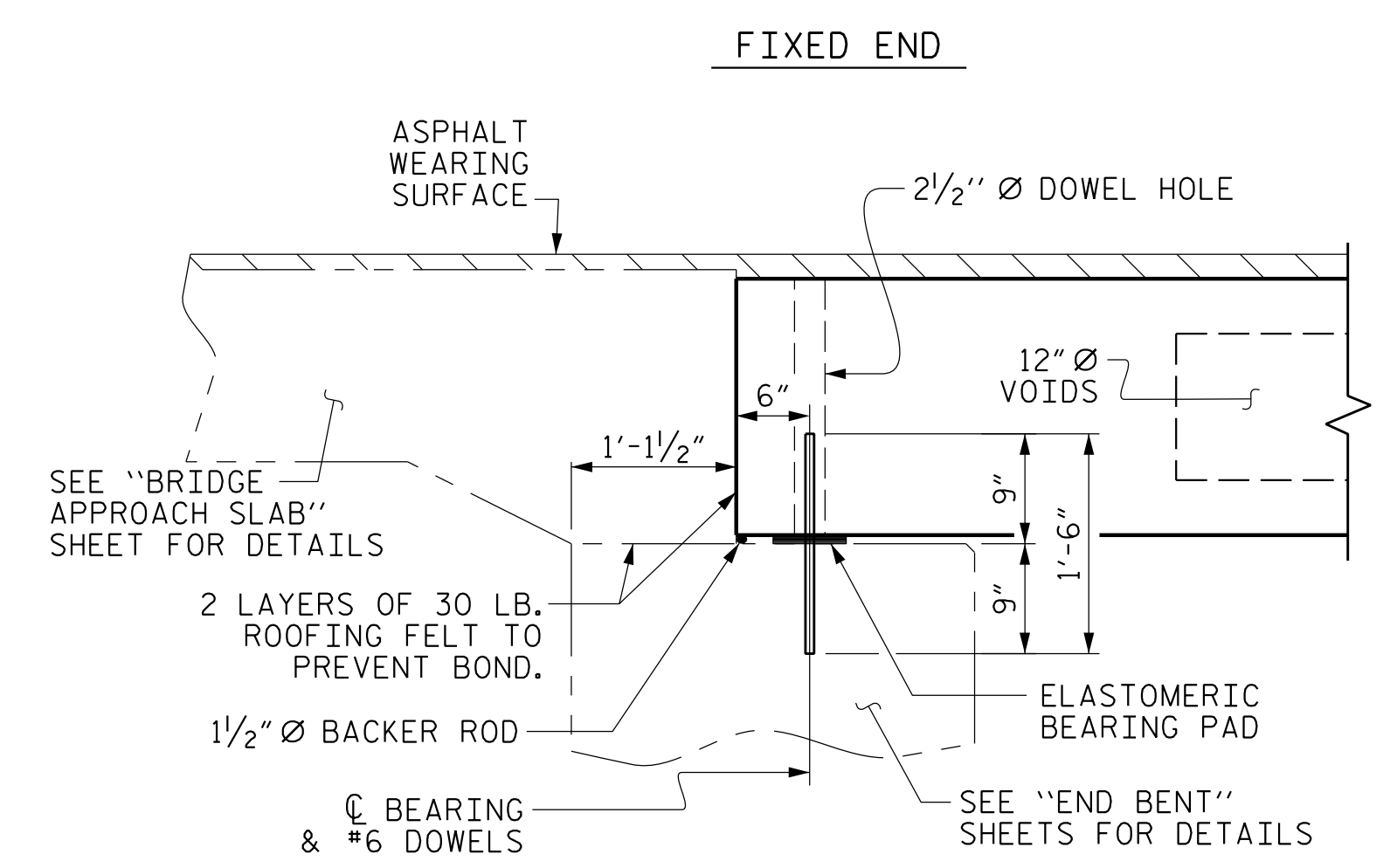
STD. NO. 21LRFR1\_75&105S\_55L



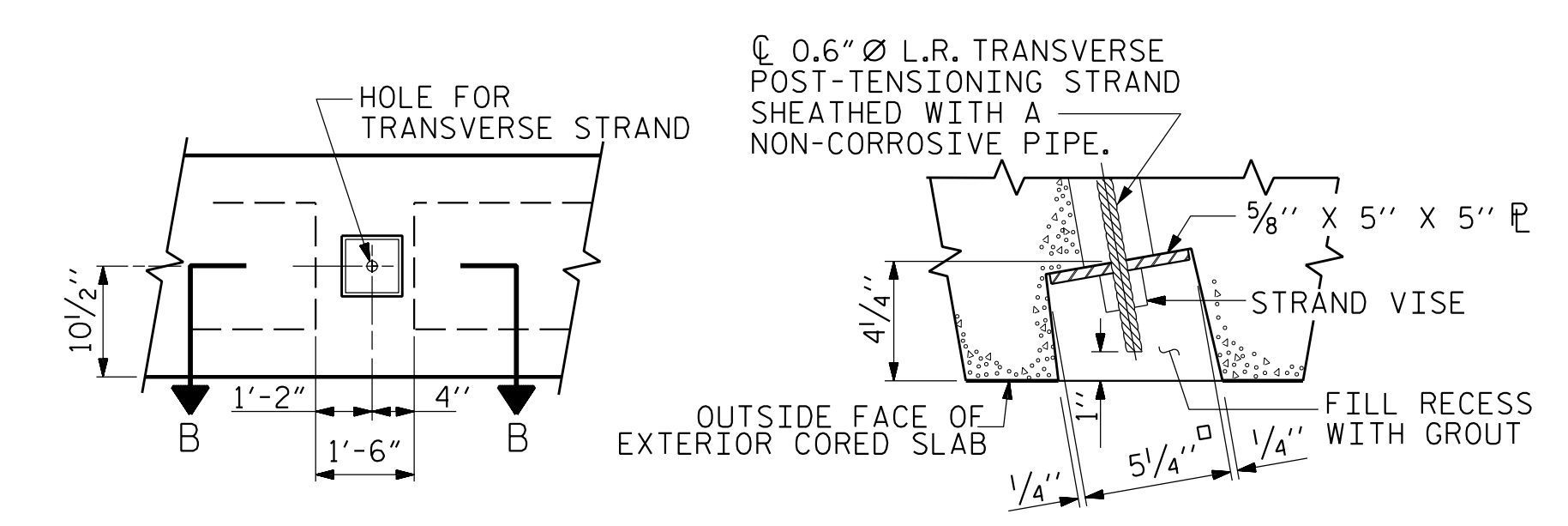
HALF SECTION AT INTERMEDIATE DIAPHRAGMS      HALF SECTION THROUGH VOIDS

**TYPICAL SECTION**

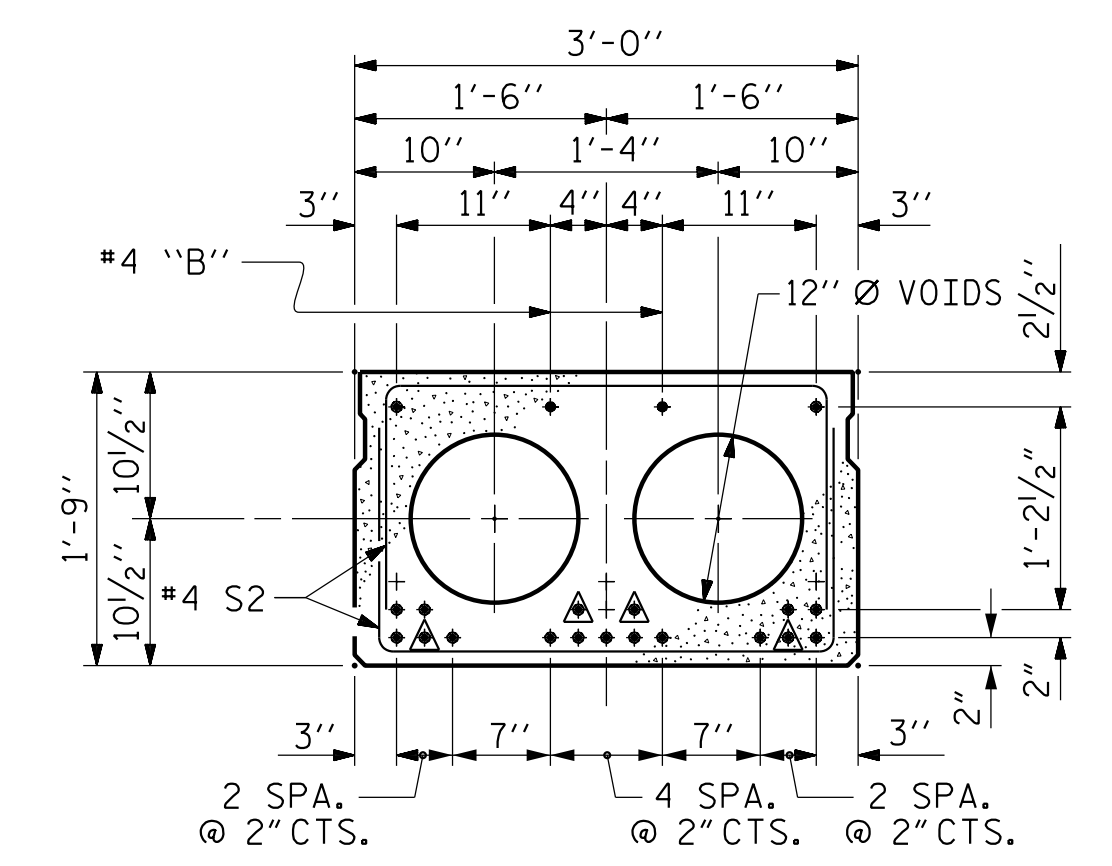
\* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN, THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "VERTICAL CONCRETE BARRIER RAIL SECTION" DETAIL.



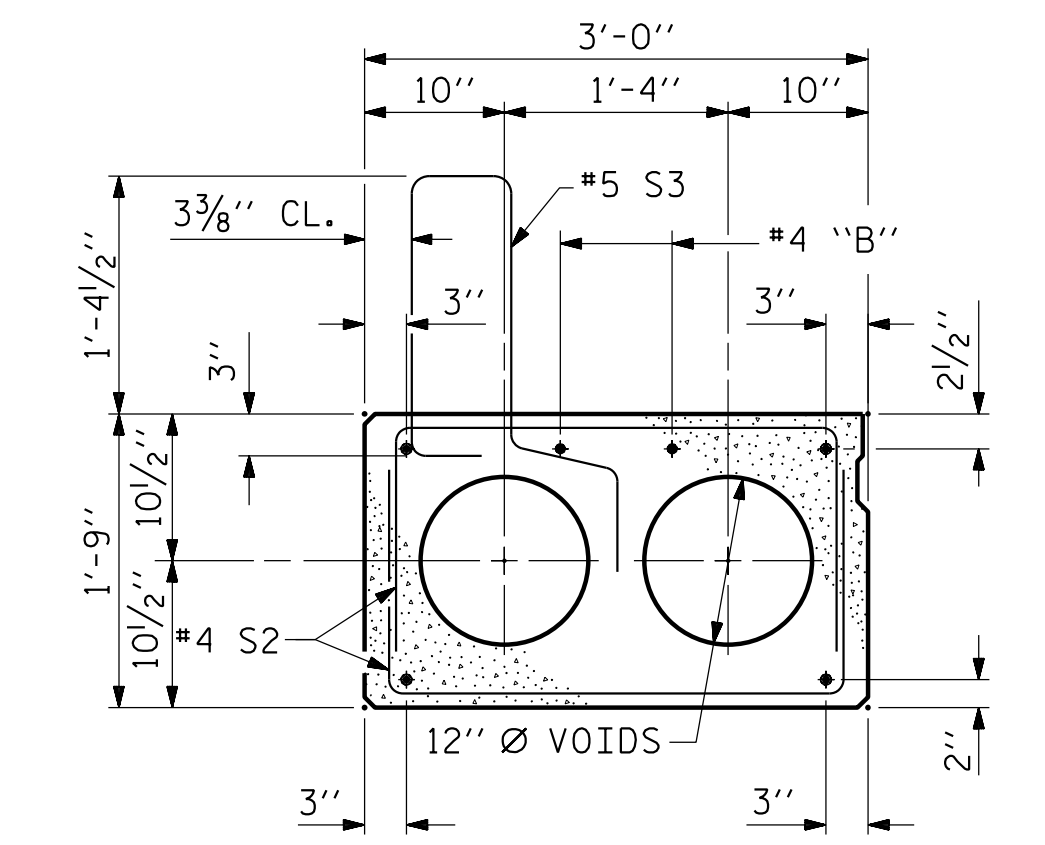
**SECTION AT END BENT**



**ELEVATION VIEW      SECTION B-B**  
**GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS**

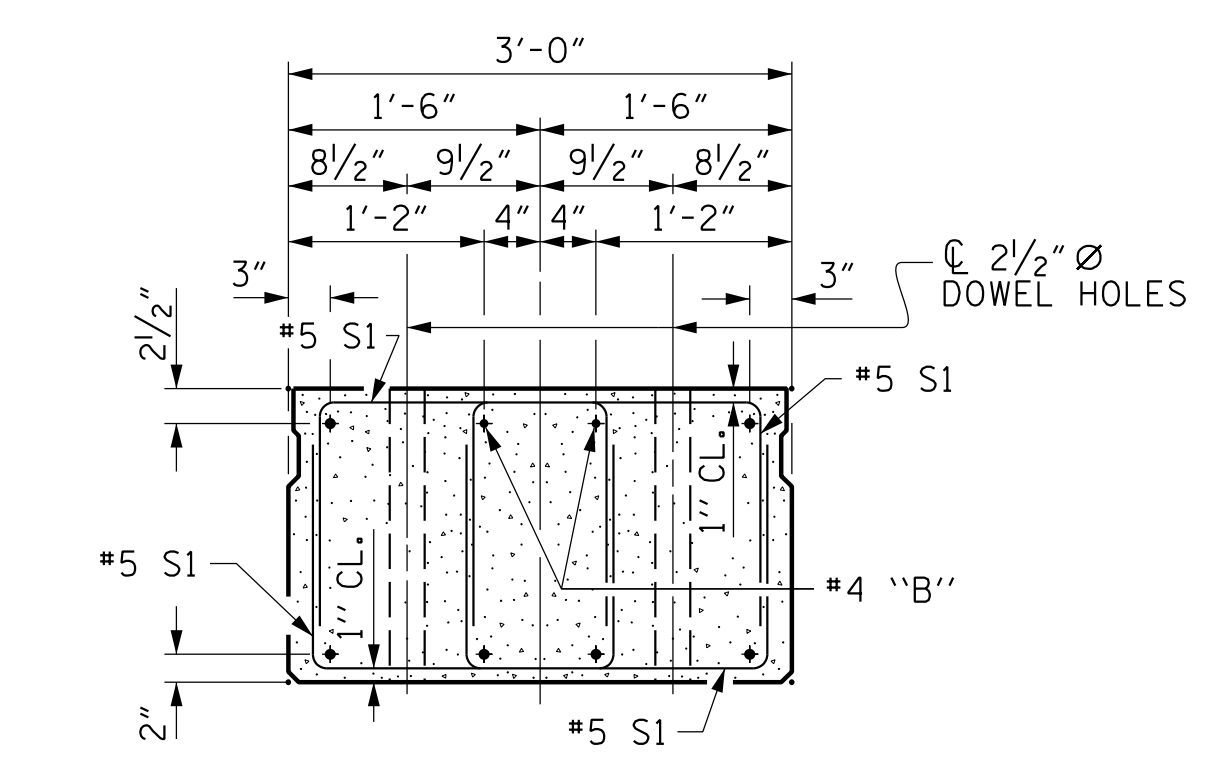


**INTERIOR SLAB SECTION (55' UNIT)**  
(19 STRANDS REQUIRED)

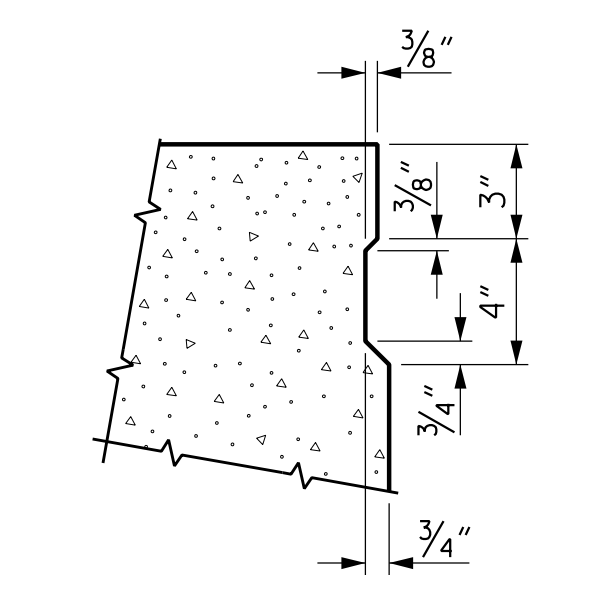


**EXT. SLAB SECTION**  
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)

**0.6" Ø LOW RELAXATION STRAND LAYOUT**



**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.

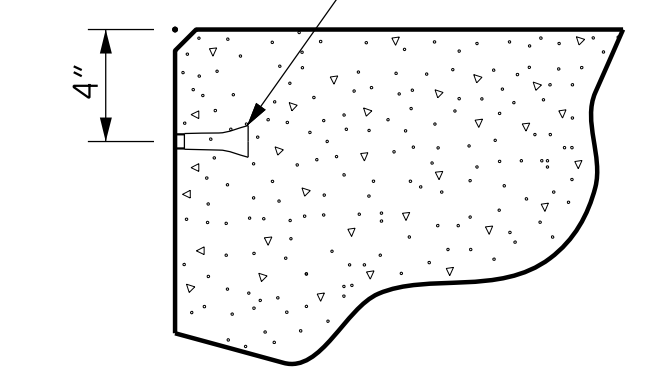


**SHEAR KEY DETAIL**  
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

- ⊕ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- ⊙ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-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**

PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



**THREADED INSERT DETAIL**

PROJECT NO. 17BP.1.R.99  
PASQUOTANK COUNTY  
STATION: 17+52.50 -L-

SHEET 1 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

**3'-0" X 1'-9"**  
**PRESTRESSED CONCRETE CORED SLAB UNIT**  
**75° SKEW**  
30'-10" CLEAR ROADWAY - 75° SKEW

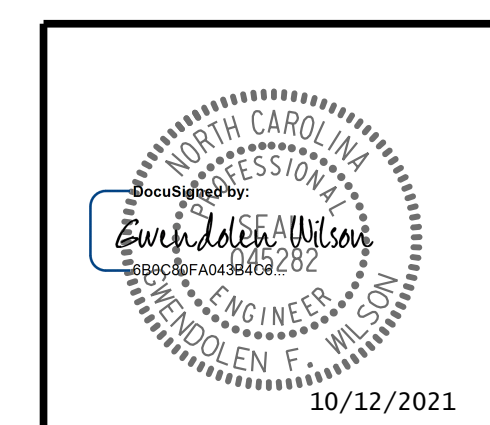
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| NO.       | BY: | DATE: | NO. | BY:       | DATE: |
| 1         |     |       | 3   |           |       |
| 2         |     |       | 4   |           |       |

TOTAL SHEETS: 13

PLANS PREPARED BY:

**NV5**

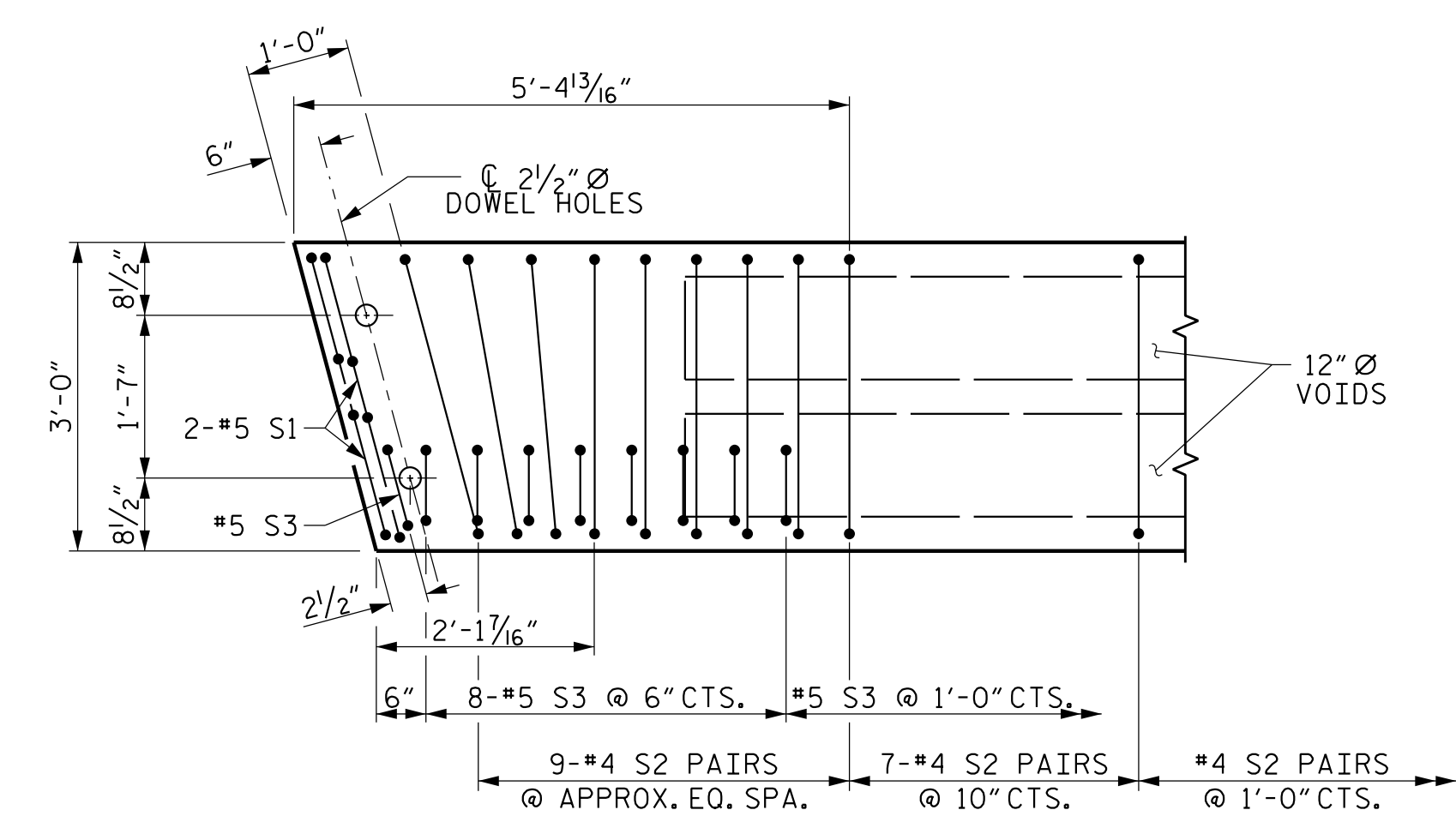
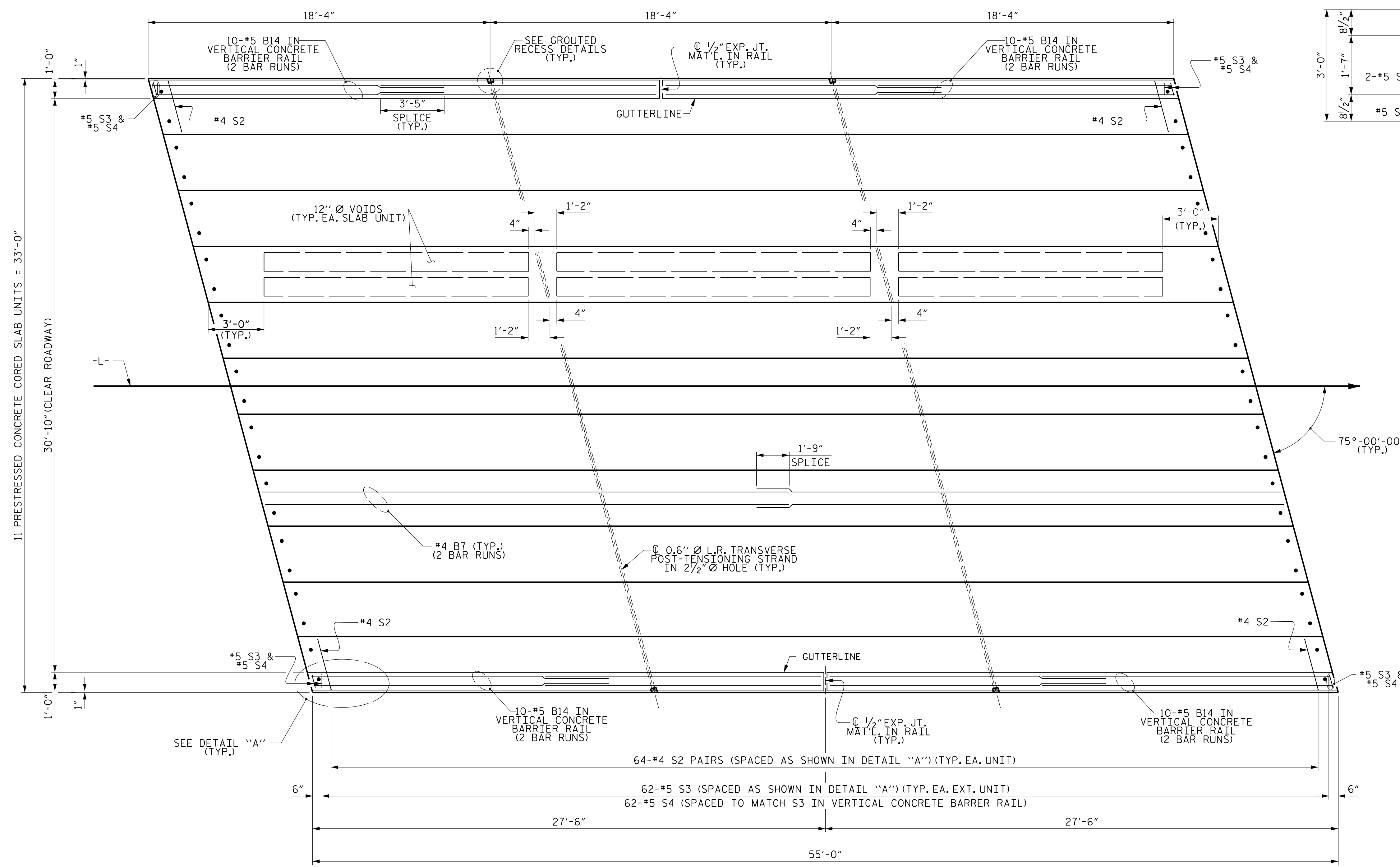
NV5 ENGINEERS & CONSULTANTS, INC.  
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CARY, NC 27518  
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CHECKED BY: G. F. WILSON      DATE: 1/21  
DESIGN ENGINEER OF RECORD: G. F. WILSON      DATE: 10/21

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**DETAIL "A"**  
 (SIMILAR EACH END OF UNIT)  
 NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S3 BARS.

**PLAN OF UNIT**

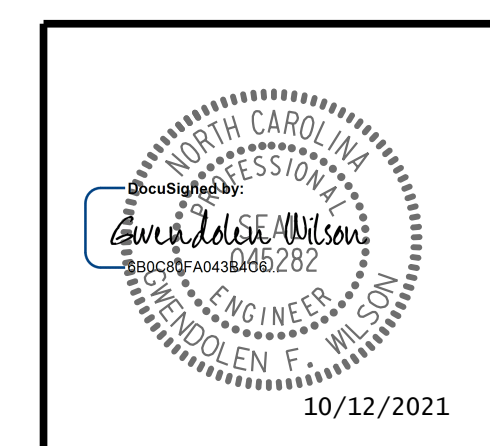
PROJECT NO. 17BP.1.R.99  
PASQUOTANK COUNTY  
 STATION: 17+52.50 -L-

SHEET 2 OF 3  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH  
**PLAN OF 55' UNIT**  
**30'-10" CLEAR ROADWAY**  
**75° SKEW**  
 30'-10" CLEAR ROADWAY - 75° SKEW

PLANS PREPARED BY:

**NV|5**

NV5 ENGINEERS & CONSULTANTS, INC.  
 3300 REGENCY PARKWAY, SUITE 100  
 CARY, NC 27518  
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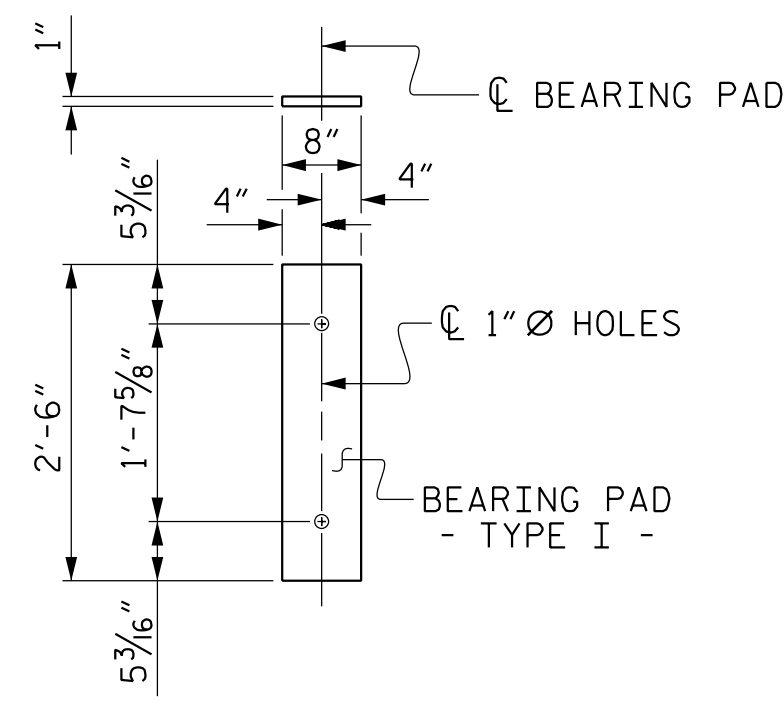
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|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-5          |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 13           |

DRAWN BY: W. B. ALLEN DATE: 7/19  
 CHECKED BY: G. F. WILSON DATE: 1/21  
 DESIGN ENGINEER OF RECORD: G. F. WILSON DATE: 10/21

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**FIXED END**  
(TYPE I - 22 REQ'D)

**ELASTOMERIC BEARING DETAILS**

ELASTOMER IN ALL BEARINGS SHALL BE 50 DUROMETER HARDNESS.

| BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL |                                 |           |      |      |        |                |
|---|---------------------------------|-----------|------|------|--------|----------------|
| BAR   | BARS PER PAIR OF EXTERIOR UNITS | TOTAL NO. | SIZE | TYPE | LENGTH | WEIGHT         |
| 55' UNIT  |                                 |           |      |      |        |                |
| *B14  | 80                              | 80        | #5   | STR  | 15'-5" | 1286           |
| *S4   | 128                             | 128       | #5   | 2    | 7'-2"  | 957            |
| *EPOXY COATED REINFORCING STEEL                     |                                 |           |      |      |        | LBS. 2243      |
| CLASS AA CONCRETE                                   |                                 |           |      |      |        | CU.YDS. 14.1   |
| TOTAL VERTICAL CONCRETE BARRIER RAIL                |                                 |           |      |      |        | LN. FT. 110.25 |

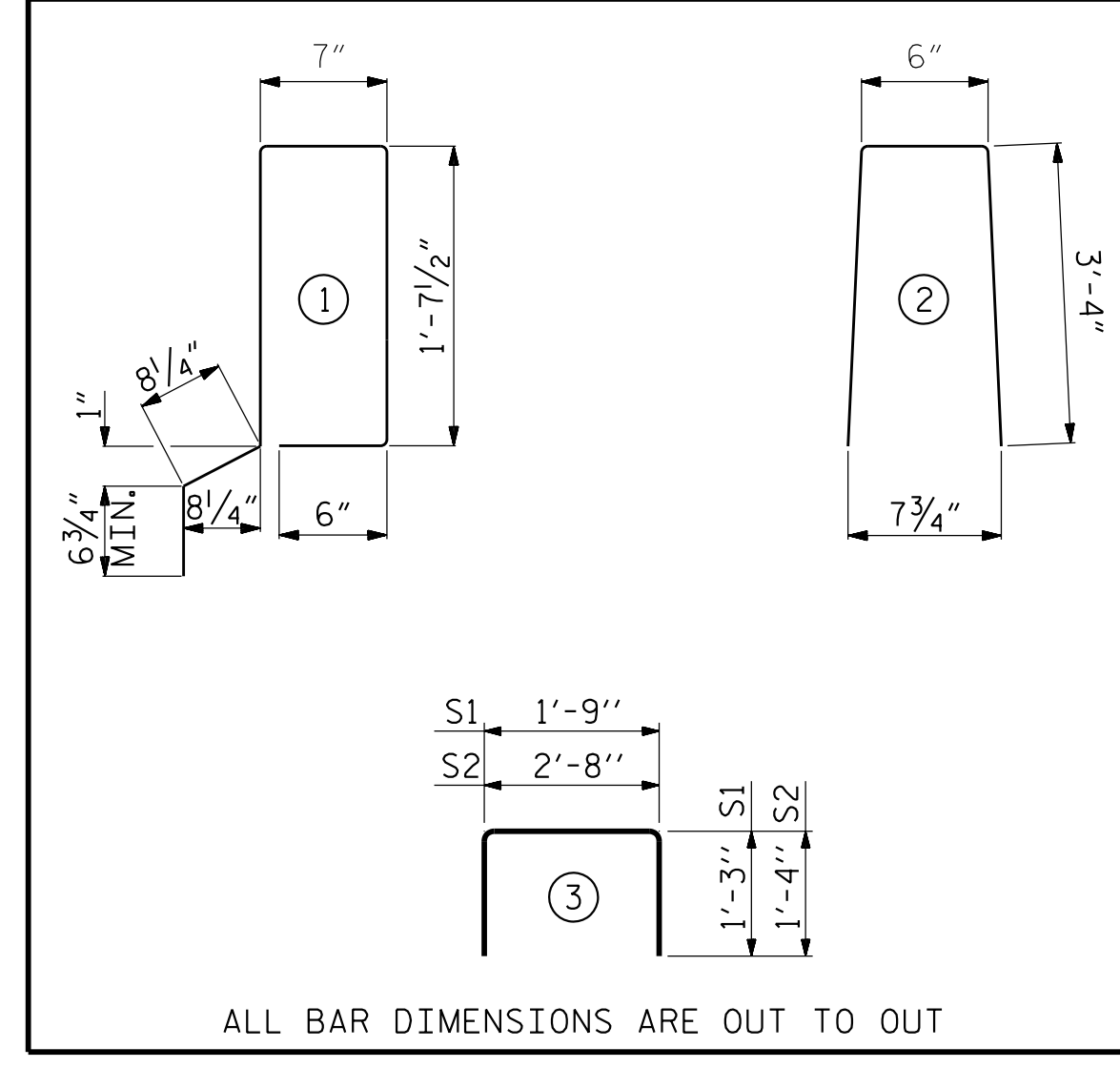
**DEAD LOAD DEFLECTION AND CAMBER**

|  | 3'-0" x 1'-9"      |
|--|--------------------|
| 55' CORED SLAB UNIT                        | 0.6" Ø L.R. STRAND |
| CAMBER (SLAB ALONE IN PLACE)               | 1 1/2" ↑           |
| DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD** | 3/8" ↓             |
| FINAL CAMBER                               | 1 1/8" ↑           |

\*\* INCLUDES FUTURE WEARING SURFACE

| GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT |                           |             |
|--|---------------------------|-------------|
|  | ASPHALT OVERLAY THICKNESS | RAIL HEIGHT |
|  | @ MID-SPAN                | @ MID-SPAN  |
| 55' UNITS                                  | 1 5/8"                    | 3'-7 5/8"   |

**BAR TYPES**



ALL BAR DIMENSIONS ARE OUT TO OUT

**BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT**

| BAR                             | NUMBER | SIZE | TYPE | EXTERIOR UNIT |        | INTERIOR UNIT |        |
|---------------------------------|--------|------|------|---------------|--------|---------------|--------|
|                                 |        |      |      | LENGTH        | WEIGHT | LENGTH        | WEIGHT |
| B7                              | 4      | #4   | STR  | 28'-3"        | 75     | 28'-3"        | 75     |
| S1                              | 8      | #5   | 3    | 4'-3"         | 35     | 4'-3"         | 35     |
| S2                              | 128    | #4   | 3    | 5'-4"         | 456    | 5'-4"         | 456    |
| *S3                             | 64     | #5   | 1    | 5'-7"         | 373    |               |        |
| REINFORCING STEEL               |        |      |      | LBS.          | 566    |               | 566    |
| *EPOXY COATED REINFORCING STEEL |        |      |      | LBS.          | 373    |               |        |
| 6500 P.S.I. CONCRETE            |        |      |      | CU. YDS.      | 7.9    |               | 7.9    |
| 0.6" Ø L.R. STRANDS             |        |      |      | No.           | 19     |               | 19     |

**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 BACKER RODS 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 SIDEWAYS. 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.

ALL REINFORCING STEEL IN THE VERTICAL CONCRETE BARRIER RAIL 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.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

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.

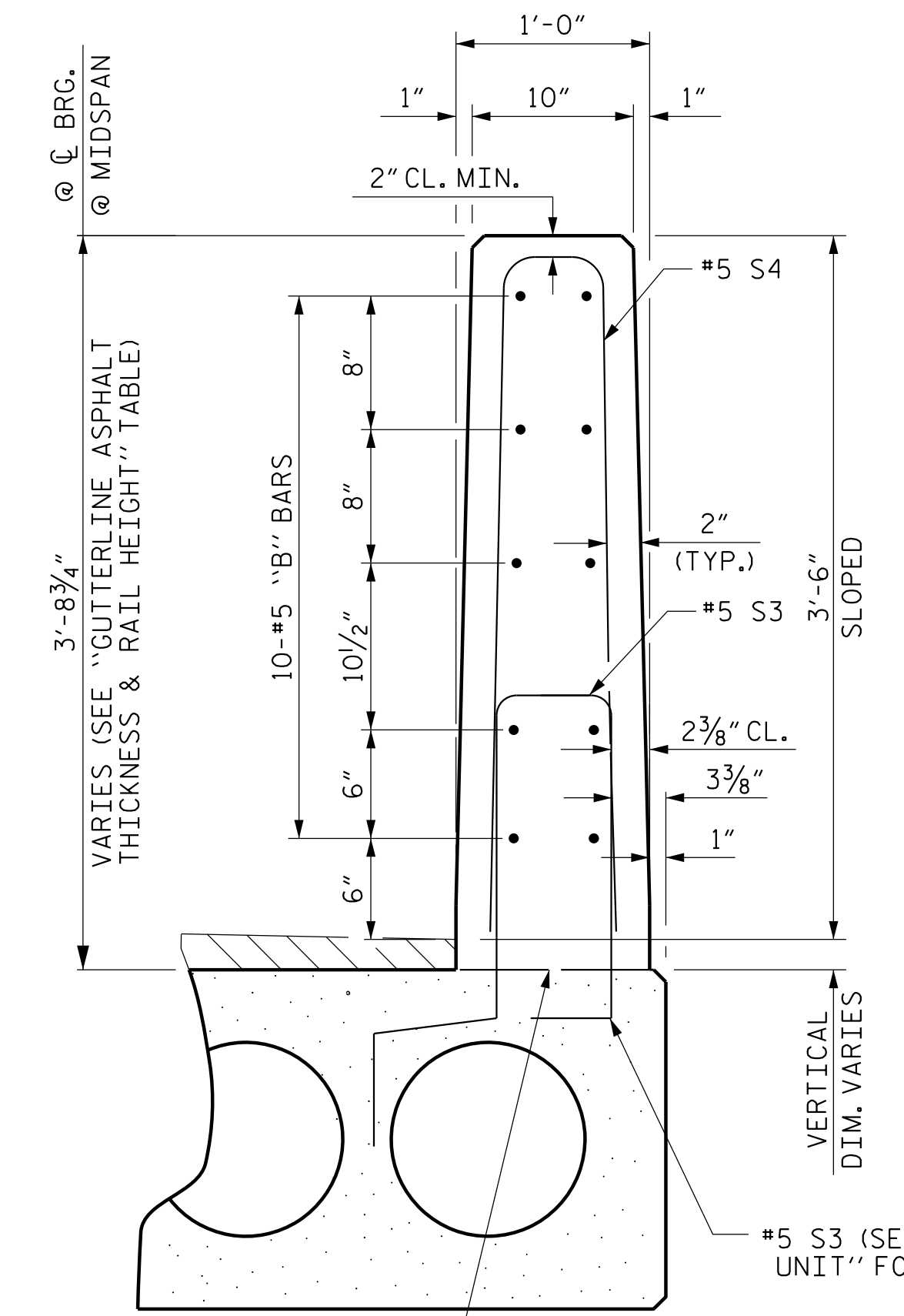
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

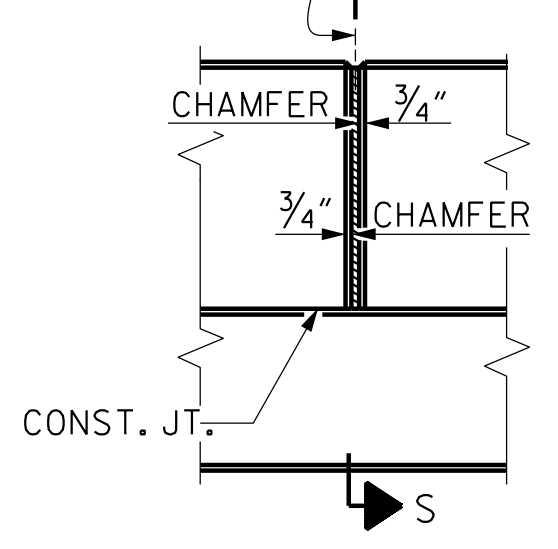
THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

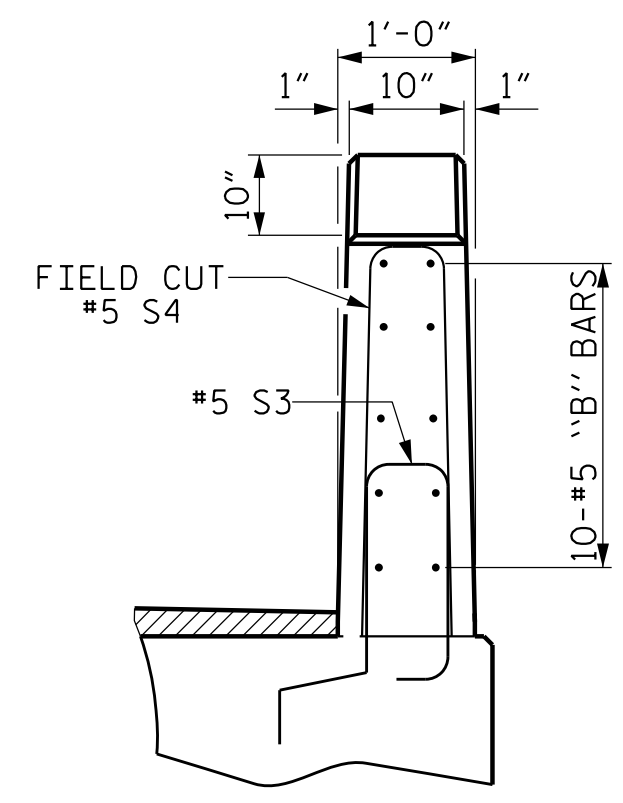


**SECTION S-S**  
AT DAM IN OPEN JOINT  
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

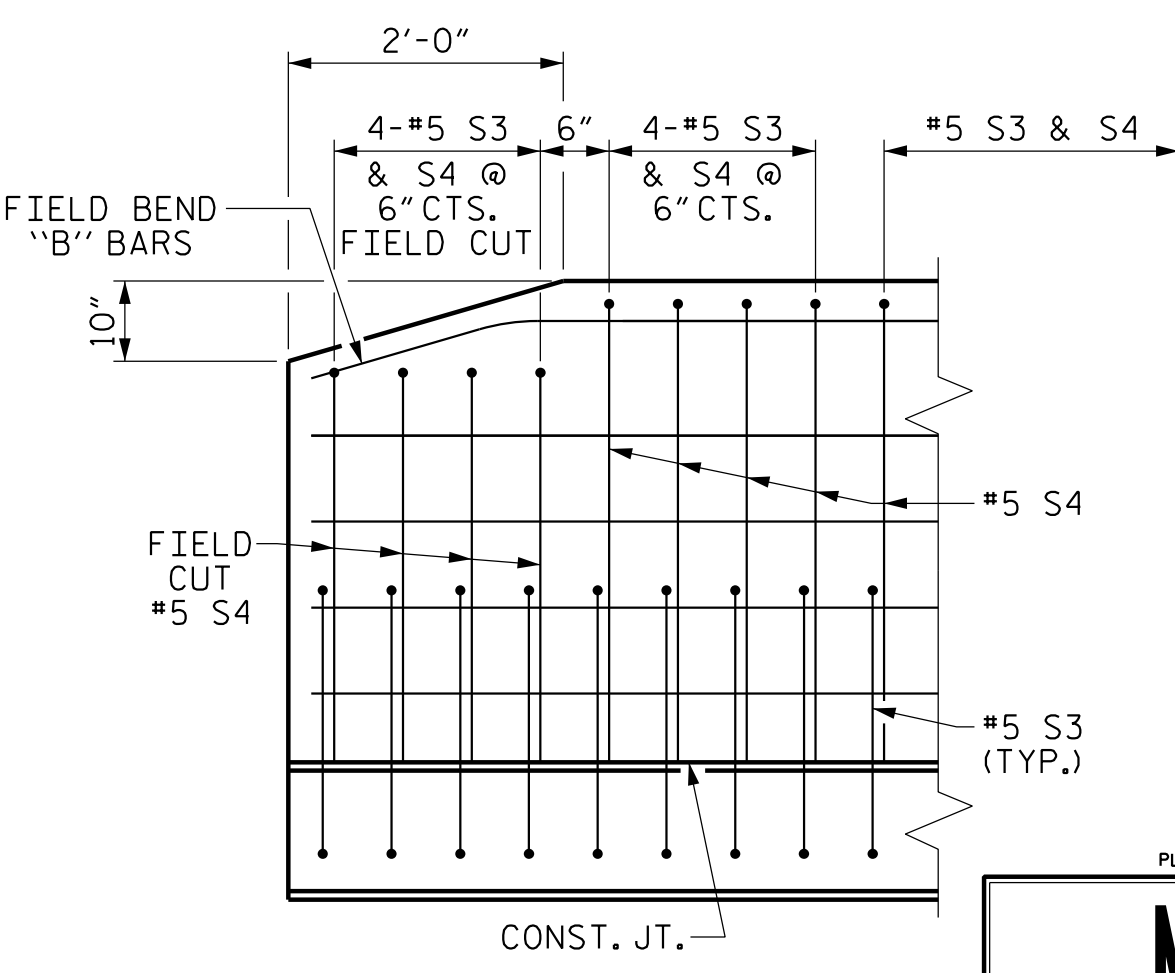
1/2" EXP. JT. MAT'L HELD IN PLACE WITH GALVANIZED NAILS.  
(NOTE: OMIT EXP. JT. MAT'L WHEN SLIP FORM IS USED)



**ELEVATION AT EXPANSION JOINTS**



**END VIEW**



**SIDE VIEW**

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

| CONCRETE RELEASE STRENGTH |      |
|---------------------------|------|
| UNIT                      | PSI  |
| 55' UNITS                 | 4900 |

| CORED SLABS REQUIRED |        |        |              |
|----------------------|--------|--------|--------------|
| 55' UNIT             | NUMBER | LENGTH | TOTAL LENGTH |
| EXTERIOR C.S.        | 2      | 55'-0" | 110'-0"      |
| INTERIOR C.S.        | 9      | 55'-0" | 495'-0"      |
| TOTAL                |        |        | 605'-0"      |

PROJECT NO. 17BP.1.R.99  
PASQUOTANK COUNTY  
STATION: 17+52.50 -L-

SHEET 3 OF 3

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH  
**3'-0" X 1'-9"**  
**PRESTRESSED CONCRETE**  
**CORED SLAB UNIT**  
**75° SKEW**  
30'-10" CLEAR ROADWAY - 75° SKEW

PLANS PREPARED BY:  
**NV5**  
NV5 ENGINEERS & CONSULTANTS, INC.  
3300 REGENCY PARKWAY, SUITE 100  
CARY, NC 27518  
P: 919.851.1912 www.NV5.com  
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| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-6          |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
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10/12/2021 10:41:00 AM RA:\Structures\17BP.1.R.99\_SML\_C33\_690026.dgn

DRAWN BY: W. B. ALLEN DATE: 7/19  
CHECKED BY: G. F. WILSON DATE: 1/21  
DESIGN ENGINEER OF RECORD: G. F. WILSON DATE: 10/21

**NOTES**

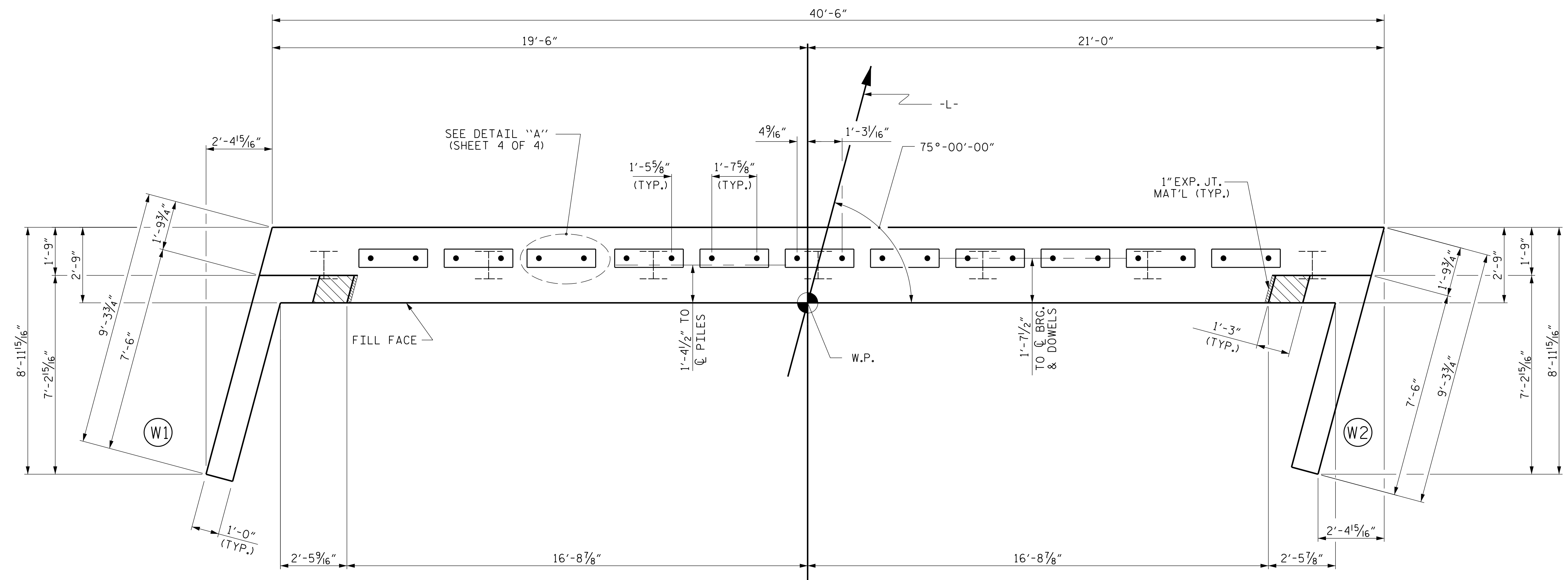
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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.

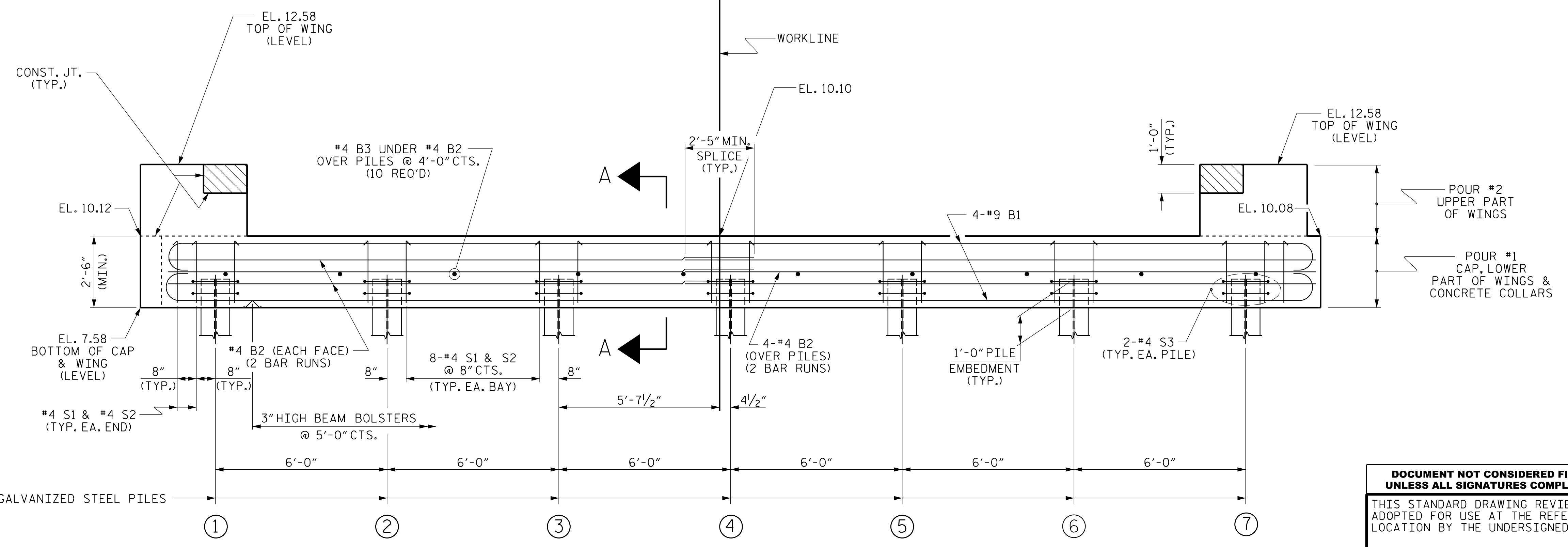
GALVANIZE THE FULL LENGTH OF EACH END BENT PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



**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.

PLANS PREPARED BY:

**NIV5**

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PASQUOTANK COUNTY  
 STATION: 17+52.50 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT No. 1

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10/22/2021

|                            |             |
|----------------------------|-------------|
| ASSEMBLED BY : W. B. ALLEN | DATE : 7/19 |
| CHECKED BY : G. F. WILSON  | DATE : 1/21 |
| DRAWN BY : DGE 01/10       | REV. 4/15   |
| CHECKED BY : MKT 01/10     | MAA/TMG     |

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|-----------|-----|-------|-----|-----|-------|--------------|
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| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 13           |

### NOTES

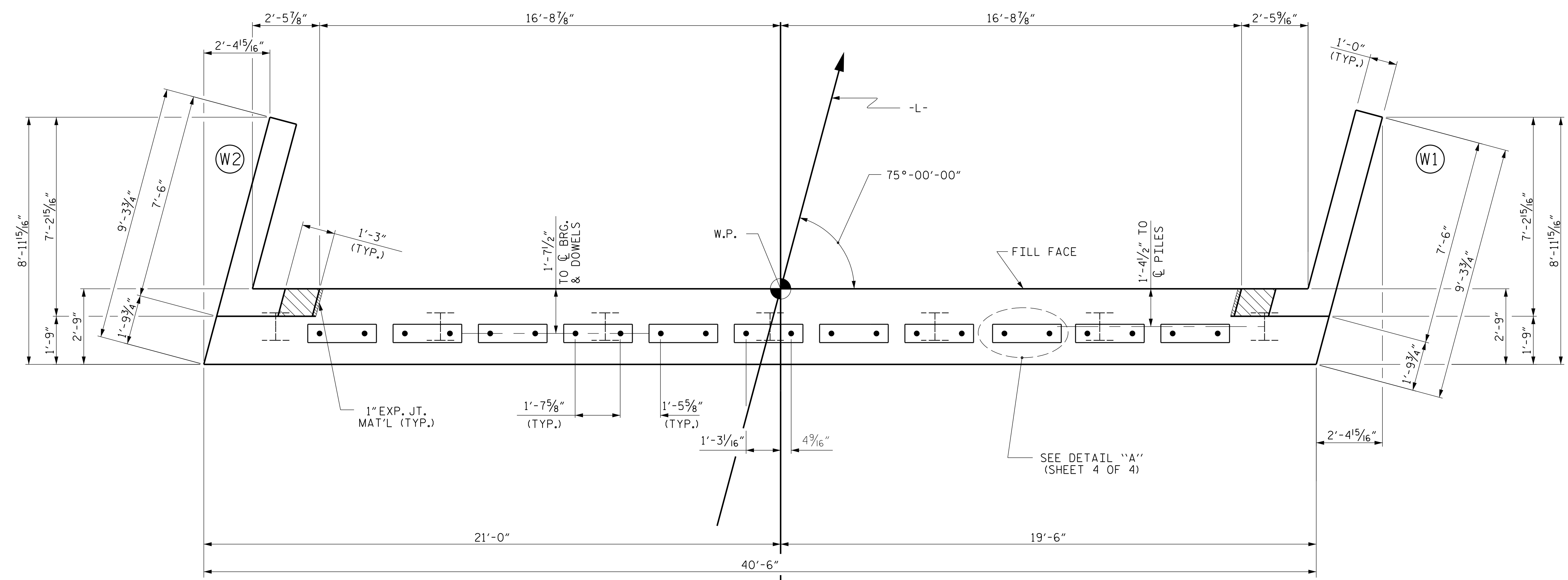
STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

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.

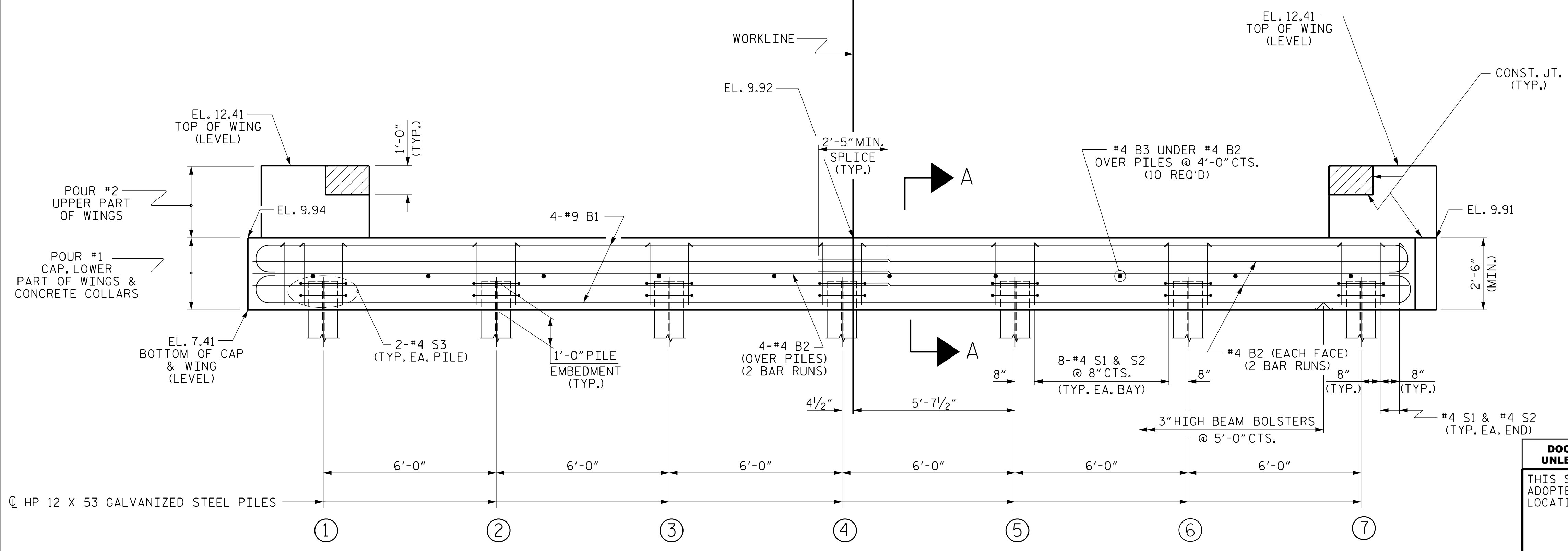
GALVANIZE THE FULL LENGTH OF EACH END BENT PILE IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



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.

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PROJECT NO. 17.BP.1.R.99  
PASQUOTANK COUNTY  
STATION: 17+52.50 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
RALEIGH

SUBSTRUCTURE  
END BENT No. 2

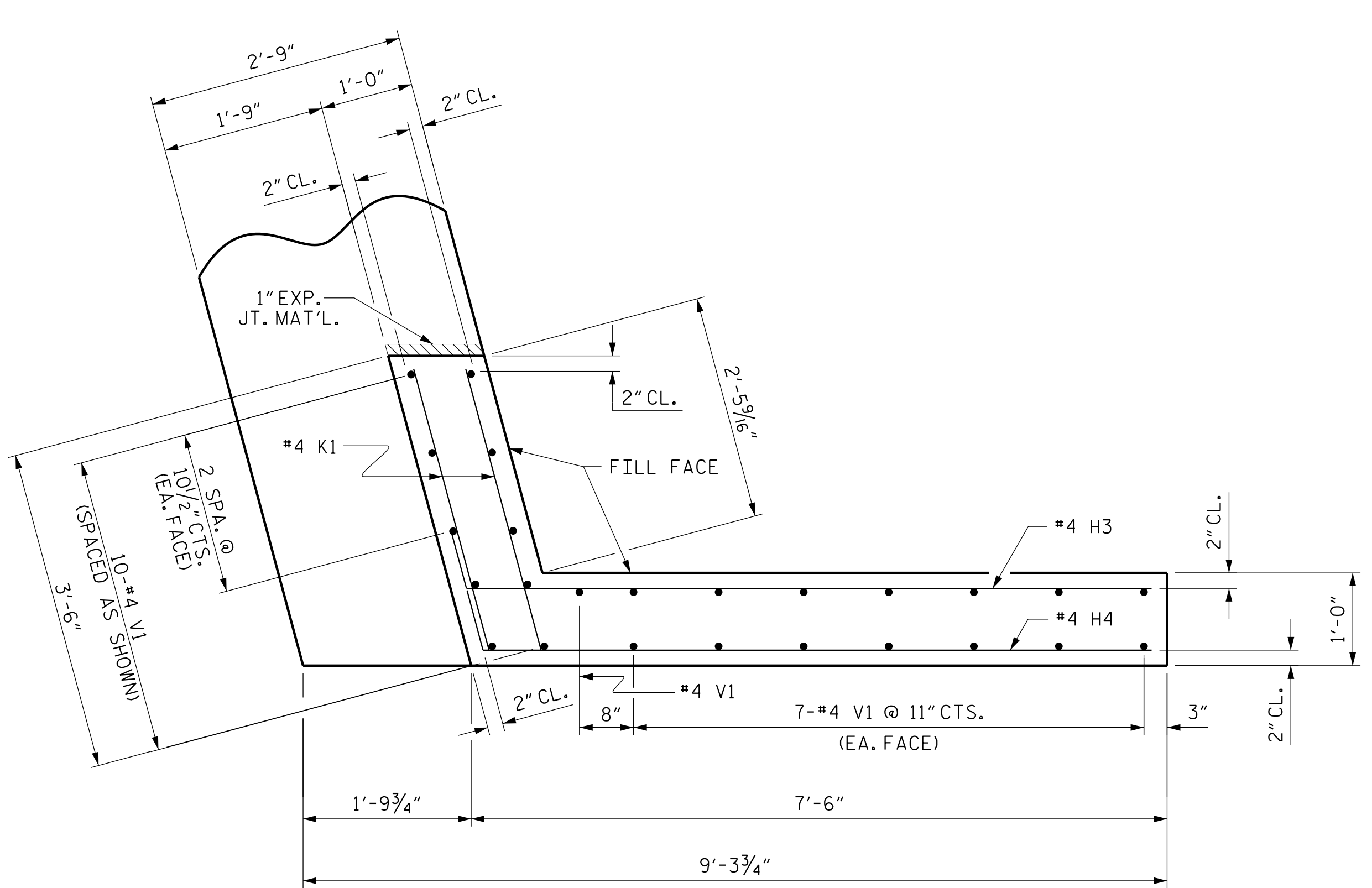
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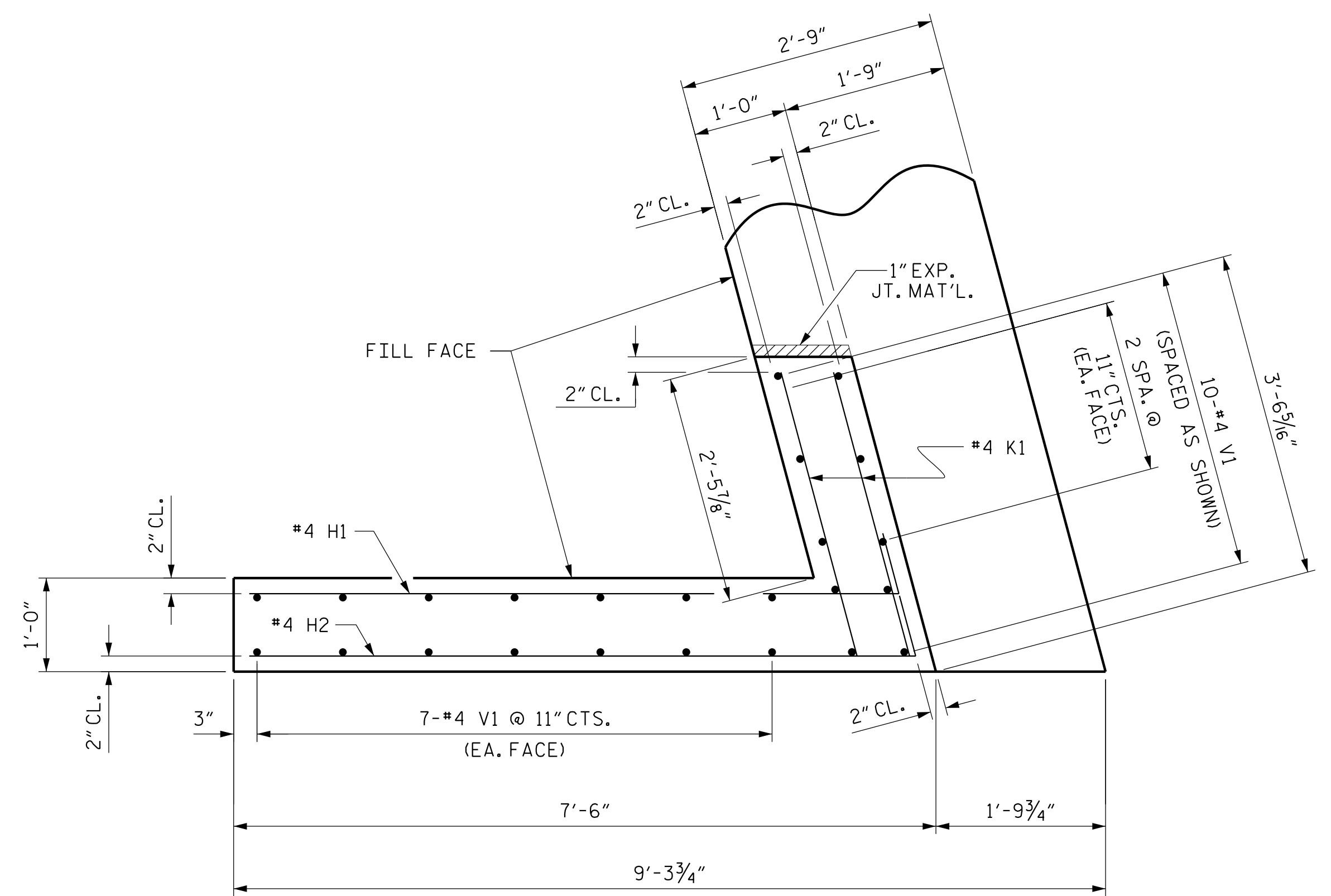


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|-----------|-----|-------|-----|-----|-------|--------------|
| NO.       | BY: | DATE: | NO. | BY: | DATE: | S-8          |
| 1         |     |       | 3   |     |       | TOTAL SHEETS |
| 2         |     |       | 4   |     |       | 13           |

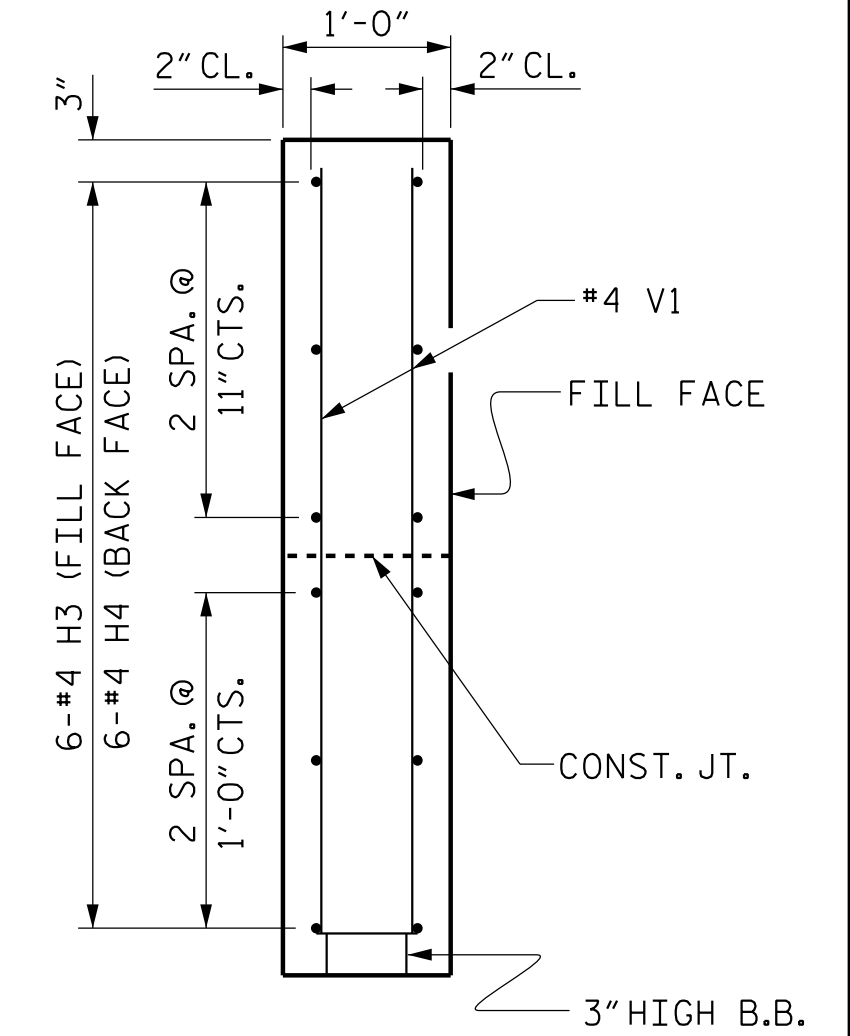
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|----------------------------|-------------|
| ASSEMBLED BY : W. B. ALLEN | DATE : 7/19 |
| CHECKED BY : G. F. WILSON  | DATE : 1/21 |
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| CHECKED BY : MKT 01/10     | MAA/TMG     |



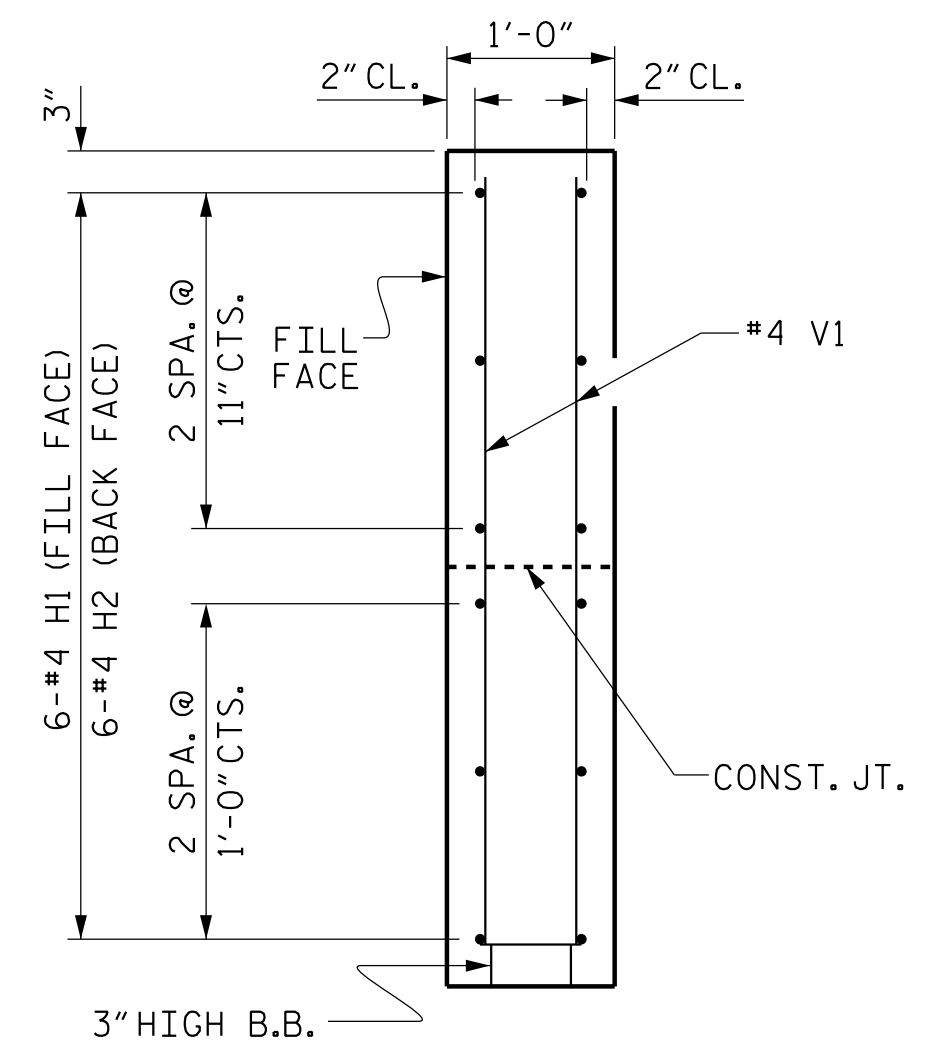
PLAN OF WING (W1)



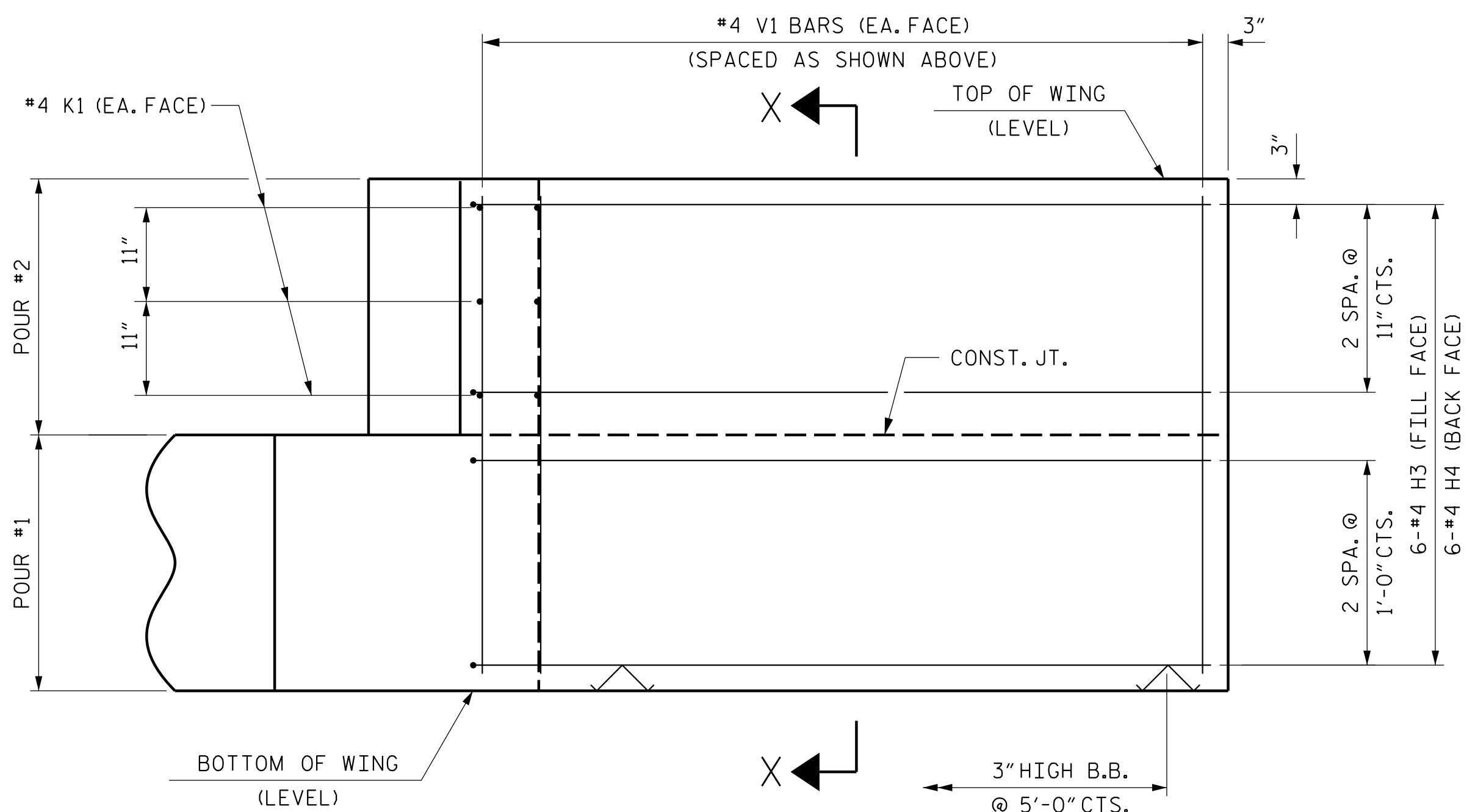
PLAN OF WING (W2)



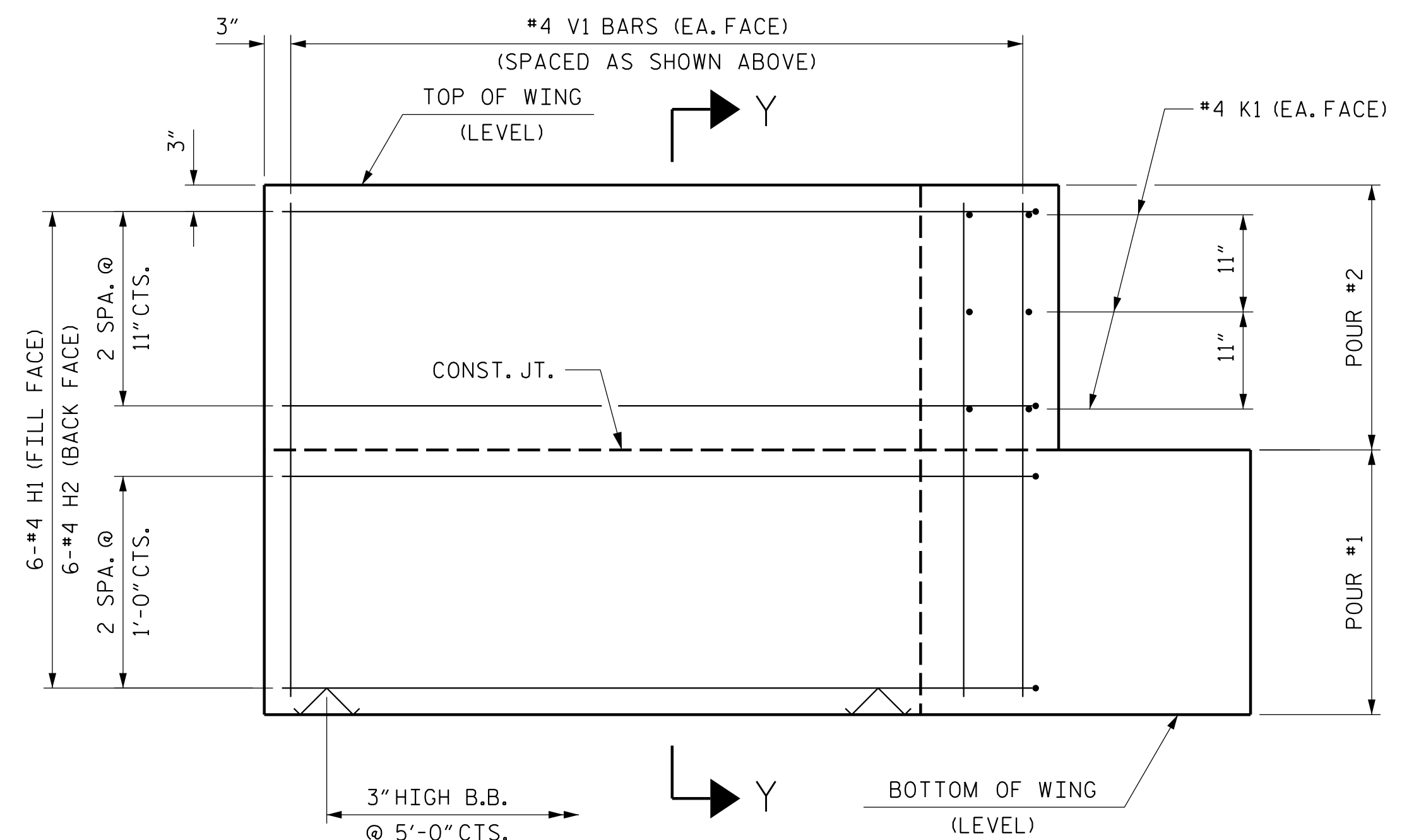
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

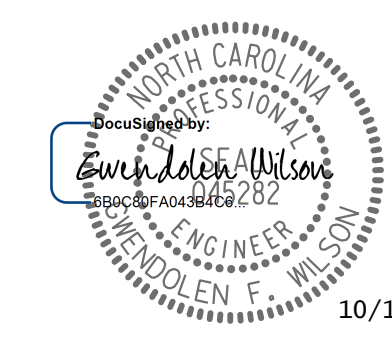
PROJECT NO. 17.BP.1.R.99  
 PASQUOTANK COUNTY  
 STATION: 17+52.50 -L-

SHEET 3 OF 4

|  |     |       |     |     |                    |
|--|-----|-------|-----|-----|--------------------|
| STATE OF NORTH CAROLINA<br>DEPARTMENT OF TRANSPORTATION<br>RALEIGH |     |       |     |     |                    |
| SUBSTRUCTURE<br>END BENT<br>WING DETAILS                           |     |       |     |     |                    |
| REVISIONS  |     |       |     |     |                    |
| NO.  | BY: | DATE: | NO. | BY: | DATE:              |
| 1  |     |       | 3   |     |                    |
| 2  |     |       | 4   |     |                    |
|  |     |       |     |     | SHEET NO.<br>S-9   |
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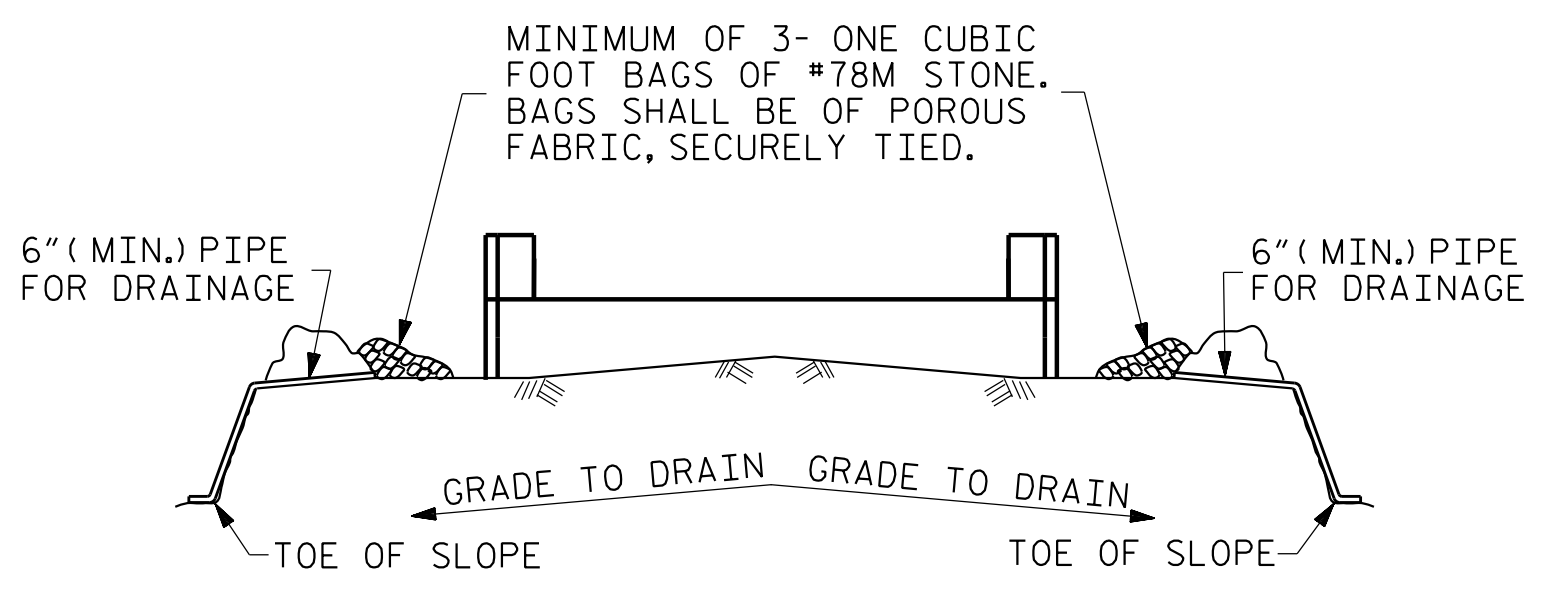
10/12/2021

PLANS PREPARED BY:

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|---------------------------|-------------|
| ASSEMBLED BY : W.B. ALLEN | DATE : 7/19 |
| CHECKED BY : G.F. WILSON  | DATE : 1/21 |
| DRAWN BY : DGE 03/10      | REV. 4/15   |
| CHECKED BY : MKT 03/10    | MAA/TMG     |

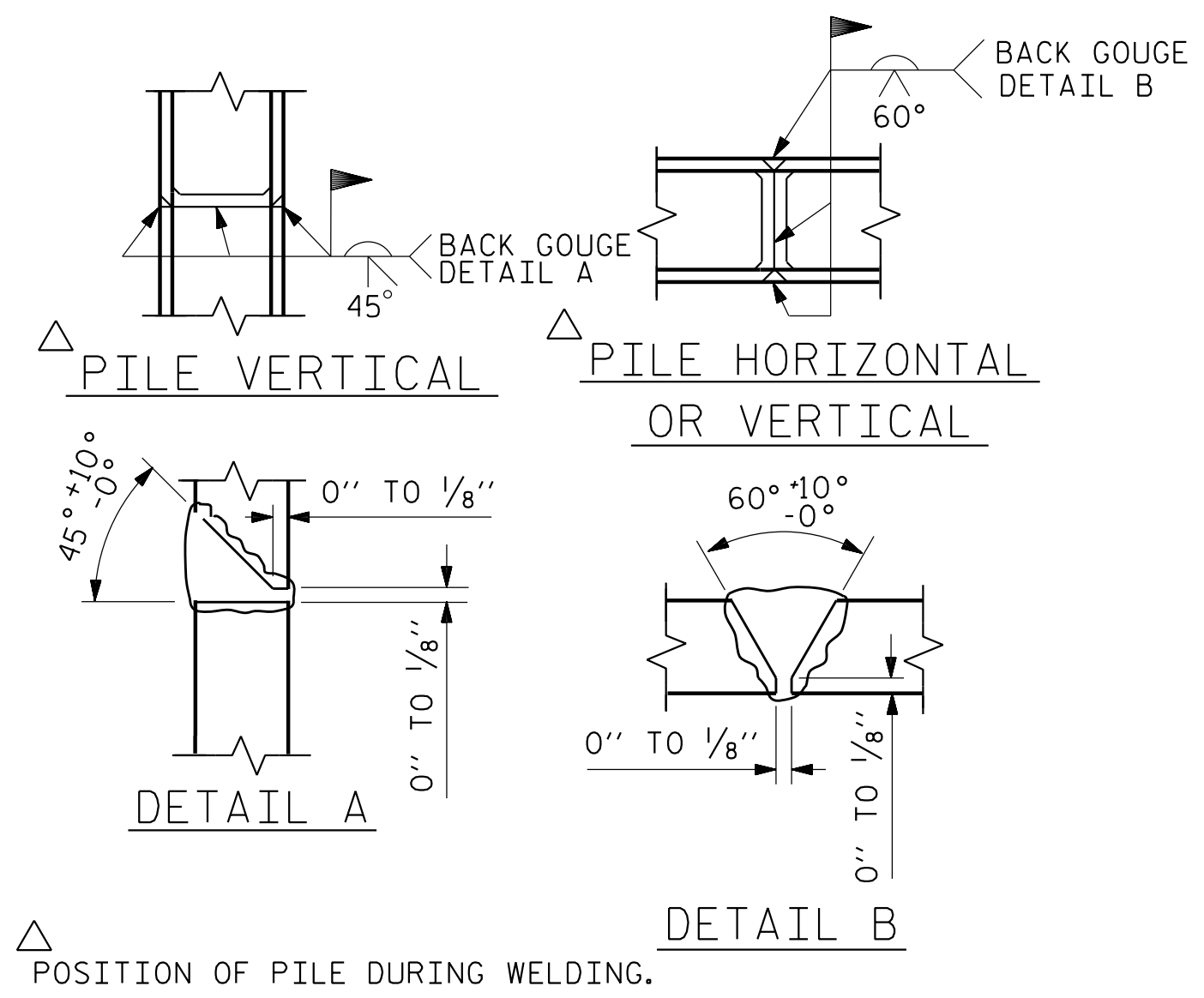


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

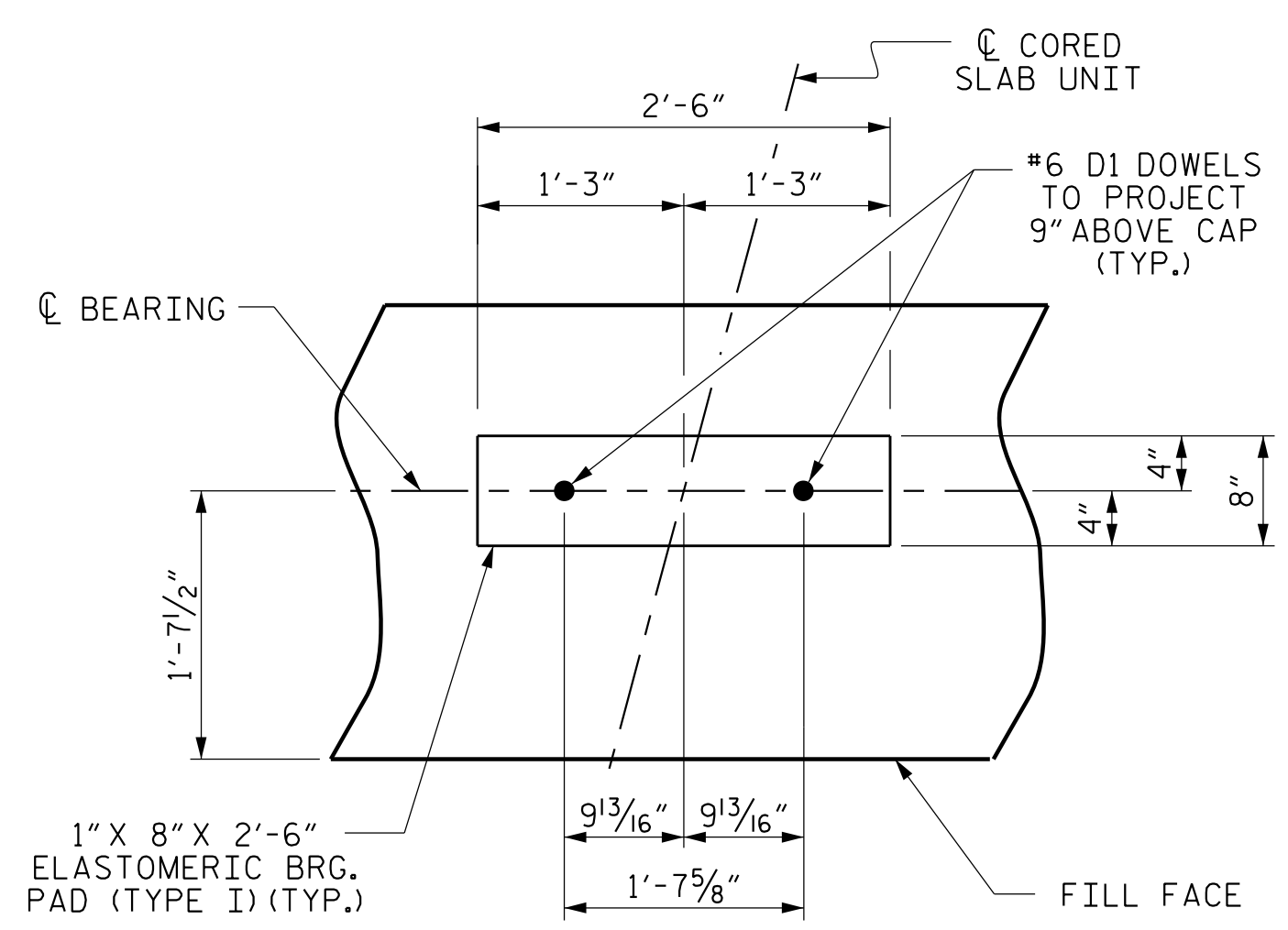
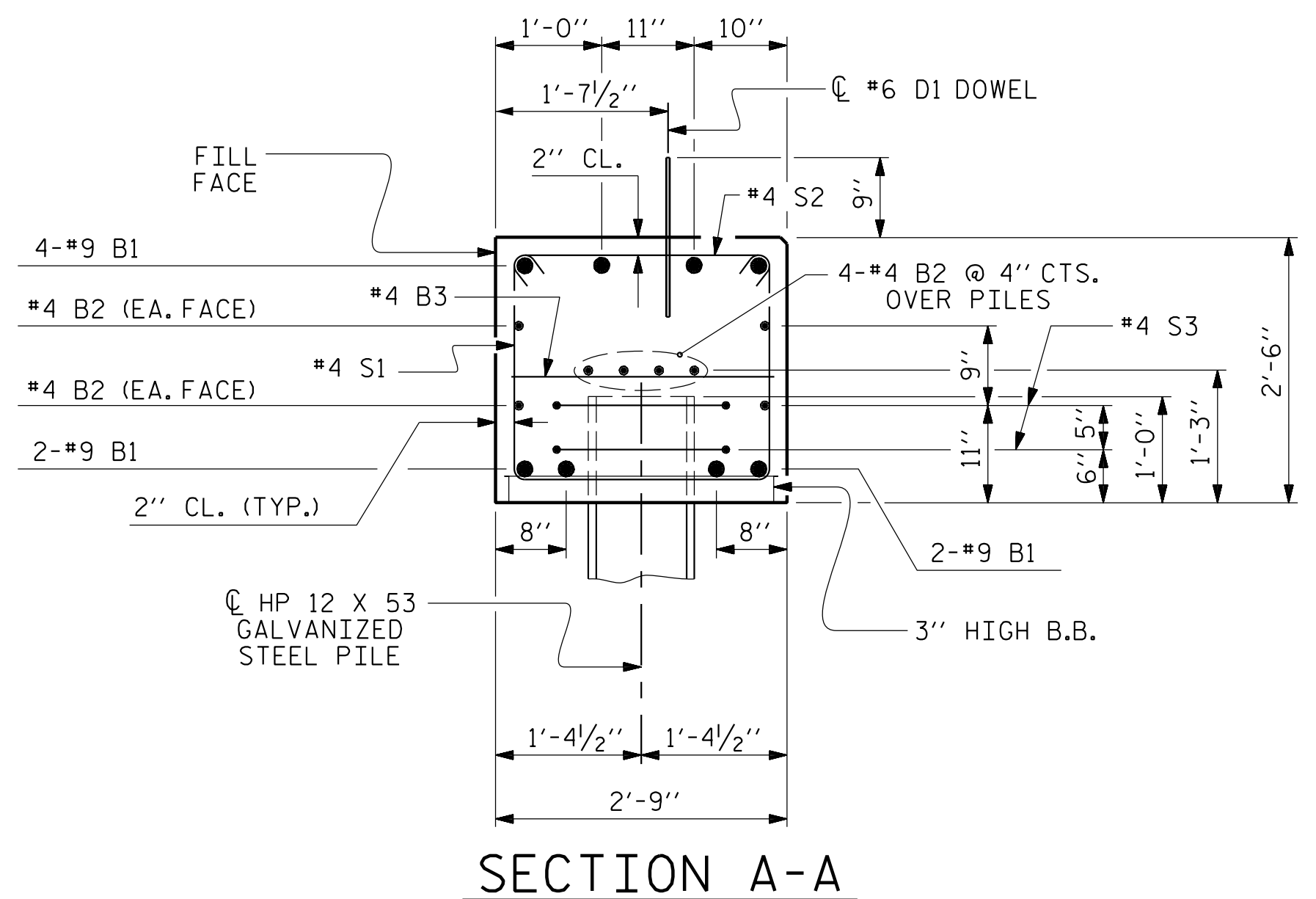
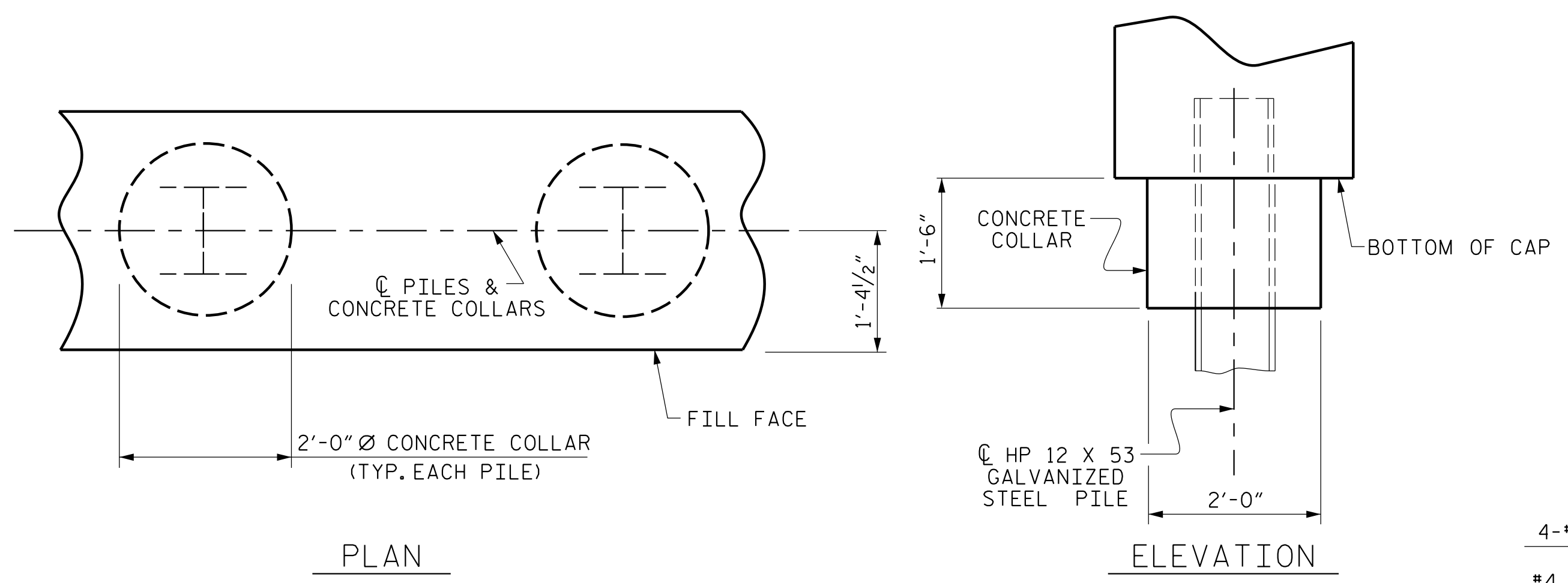
**TEMPORARY DRAINAGE AT END BENT**



**PILE SPLICE DETAILS**

| BAR TYPES  |   |   |  |   |   |
|--|---|---|--|---|---|
| 1  | 2 | 3 | 4  | 5 | 6 |
| ALL BAR DIMENSIONS ARE OUT TO OUT.                                 |   |   |  |   |   |
| END BENT No. 1   |   |   | END BENT No. 2   |   |   |
| HP 12 X 53 GALVANIZED STEEL PILES                                  |   |   | HP 12 X 53 GALVANIZED STEEL PILES                                  |   |   |
| NO: 7 LIN. FT.= 420  |   |   | NO: 7 LIN. FT.= 455  |   |   |
| PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 GALVANIZED STEEL PILES |   |   | PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 GALVANIZED STEEL PILES |   |   |
| NO: 7  |   |   | NO: 7  |   |   |
| PILE REDRIVES  |   |   | PILE REDRIVES  |   |   |
| NO: 4  |   |   | NO: 4  |   |   |

| BILL OF MATERIAL FOR ONE END BENT             |      |      |        |           |  |
|---|------|------|--------|-----------|--|
| BAR NO.                                       | SIZE | TYPE | LENGTH | WEIGHT    |  |
| B1  | #8   |      | 42'-6" | 1156      |  |
| B2  | #4   | STR  | 21'-4" | 228       |  |
| B3  | #4   | STR  | 2'-5"  | 16        |  |
| D1  | #6   | STR  | 1'-6"  | 50        |  |
| H1  | #4   | 2    | 7'-7"  | 30        |  |
| H2  | #4   | 2    | 7'-9"  | 31        |  |
| H3  | #4   | 3    | 8'-0"  | 32        |  |
| H4  | #4   | 3    | 7'-10" | 31        |  |
| K1  | #4   | STR  | 3'-1"  | 25        |  |
| S1  | #4   | 4    | 7'-5"  | 258       |  |
| S2  | #4   | 5    | 3'-2"  | 110       |  |
| S3  | #4   | 6    | 6'-6"  | 61        |  |
| V1  | #4   | STR  | 4'-8"  | 153       |  |
| REINFORCING STEEL (FOR ONE END BENT)          |      |      |        | 2181 LBS. |  |
| CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT) |      |      |        |           |  |
| POUR #1 CAP, LOWER PART OF WINGS & COLLARS    |      |      |        | 13.0 C.Y. |  |
| POUR #2 UPPER PART OF WINGS                   |      |      |        | 1.8 C.Y.  |  |
| TOTAL CLASS A CONCRETE                        |      |      |        | 14.8 C.Y. |  |



PROJECT NO. 17.BP.1.R.99  
 PASQUOTANK COUNTY  
 STATION: 17+52.50 -L-

SHEET 4 OF 4

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

SUBSTRUCTURE  
 END BENT No. 1 & 2  
 DETAILS

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

SHEET NO. S-10  
 TOTAL SHEETS 13

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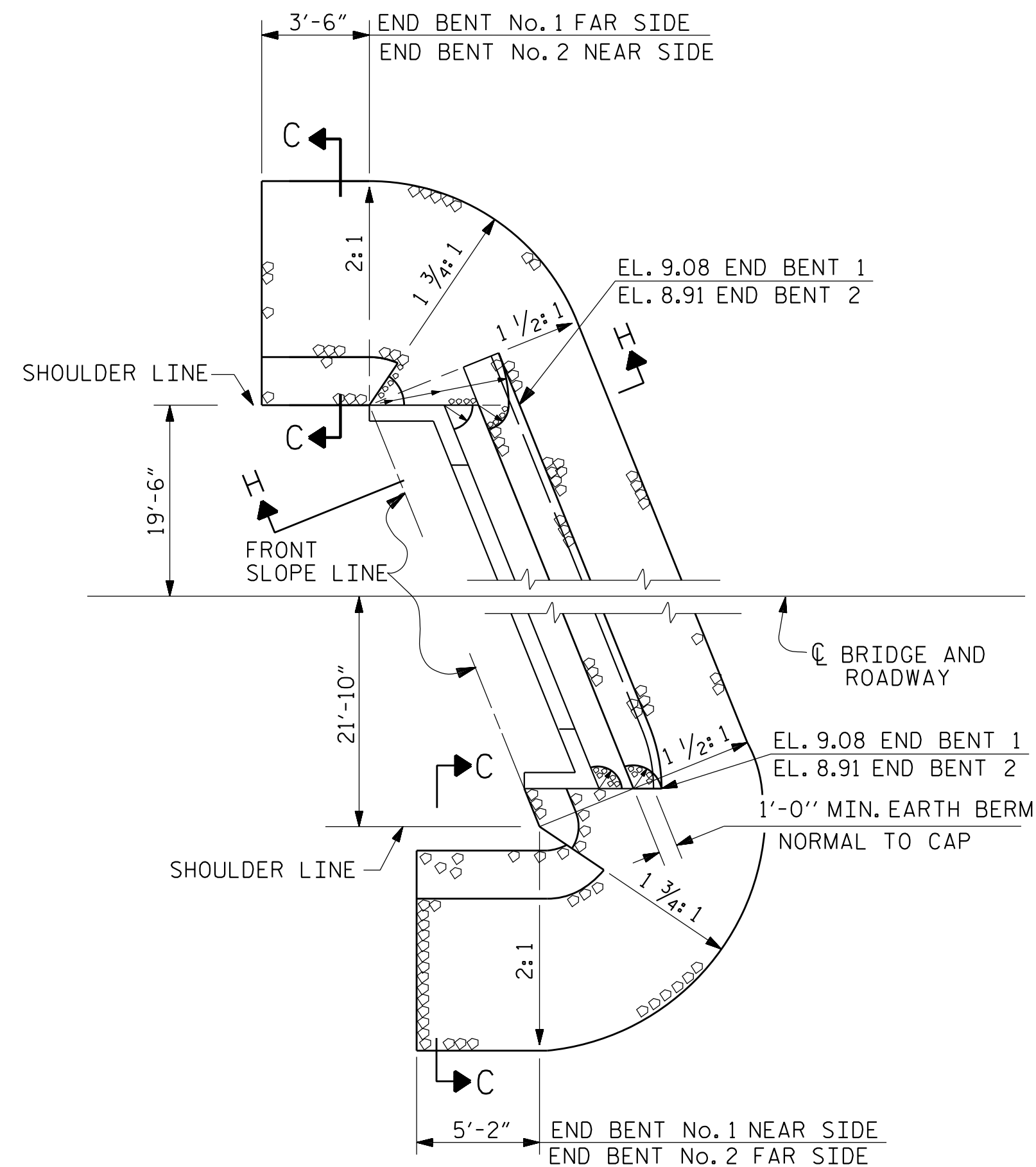
NV5 ENGINEERS & CONSULTANTS, INC.  
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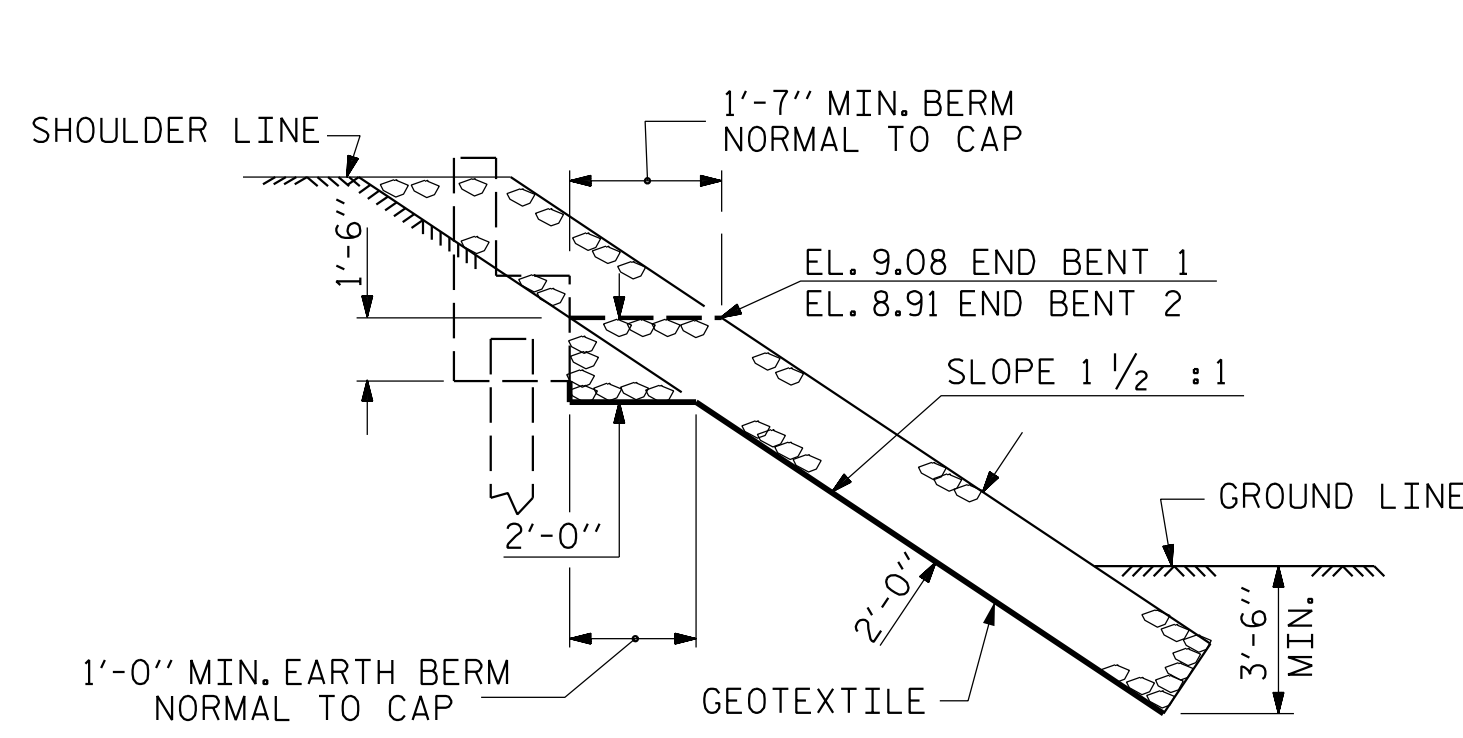
|                            |              |
|----------------------------|--------------|
| ASSEMBLED BY : W. B. ALLEN | DATE : 11/20 |
| CHECKED BY : G. F. WILSON  | DATE : 1/21  |
| DRAWN BY : DGE 12/09       | REV. 4/17    |
| CHECKED BY : MKT 01/10     | MAA/THC      |



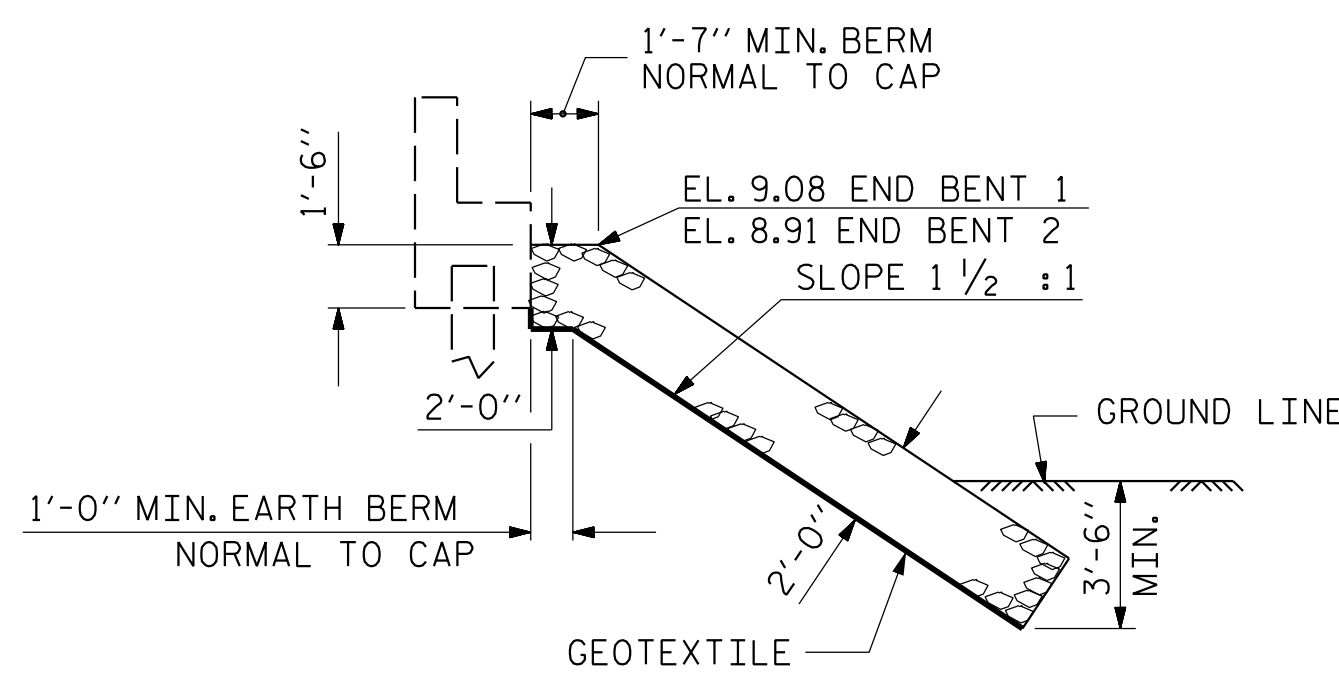
SHOULDER RIP RAP IS HIGHER THAN BERM RIP RAP

NOTES :  
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

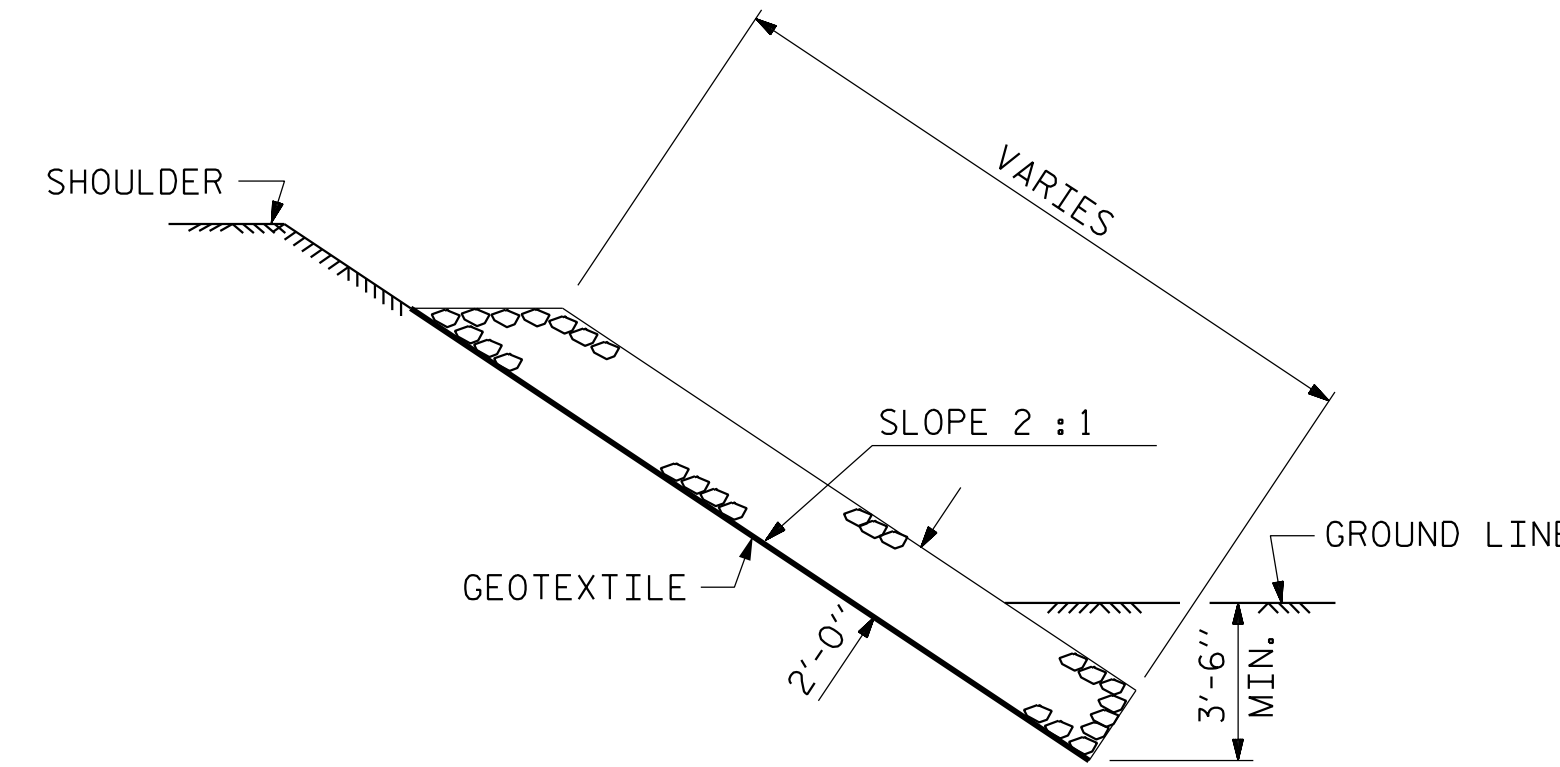
| ESTIMATED QUANTITIES          |                                      |                            |
|-------------------------------|--------------------------------------|----------------------------|
| BRIDGE @<br>STA. 17+52.50 -L- | RIP RAP<br>CLASS II<br>(2'-0" THICK) | GEOTEXTILE<br>FOR DRAINAGE |
|                               | TONS                                 | SQUARE YARDS               |
| END BENT 1                    | 128                                  | 142                        |
| END BENT 2                    | 103                                  | 114                        |



SECTION H-H



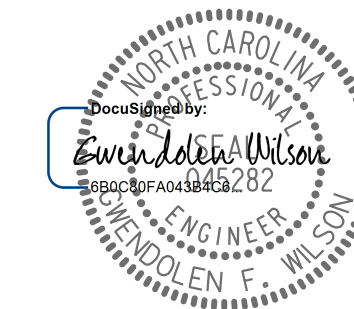
SECTION C-C  
BERM RIP RAPPED



SECTION C-C

PROJECT NO. 17.BP.1.R.99  
PASQUOTANK COUNTY  
STATION: 17+52.50 -L-

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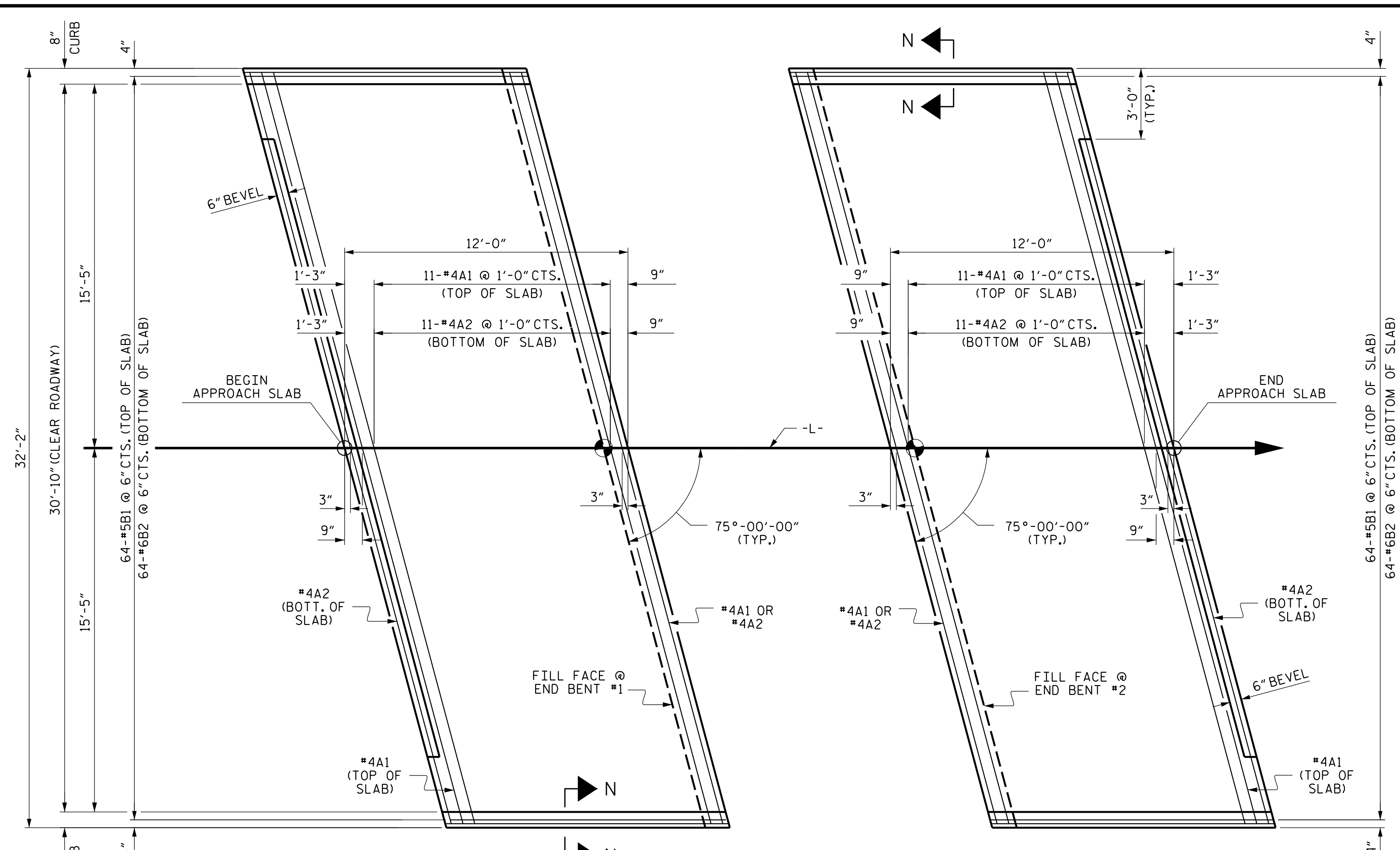
10/12/2021

|  |     |       |     |     |              |
|--|-----|-------|-----|-----|--------------|
| STATE OF NORTH CAROLINA<br>DEPARTMENT OF TRANSPORTATION<br>RALEIGH |     |       |     |     |              |
| STANDARD<br>RIP RAP DETAILS  |     |       |     |     |              |
| REVISIONS  |     |       |     |     | SHEET NO.    |
| NO.  | BY: | DATE: | NO. | BY: | DATE:        |
| 1  |     |       | 3   |     |              |
| 2  |     |       | 4   |     |              |
|  |     |       |     |     | TOTAL SHEETS |
|  |     |       |     |     | 13           |

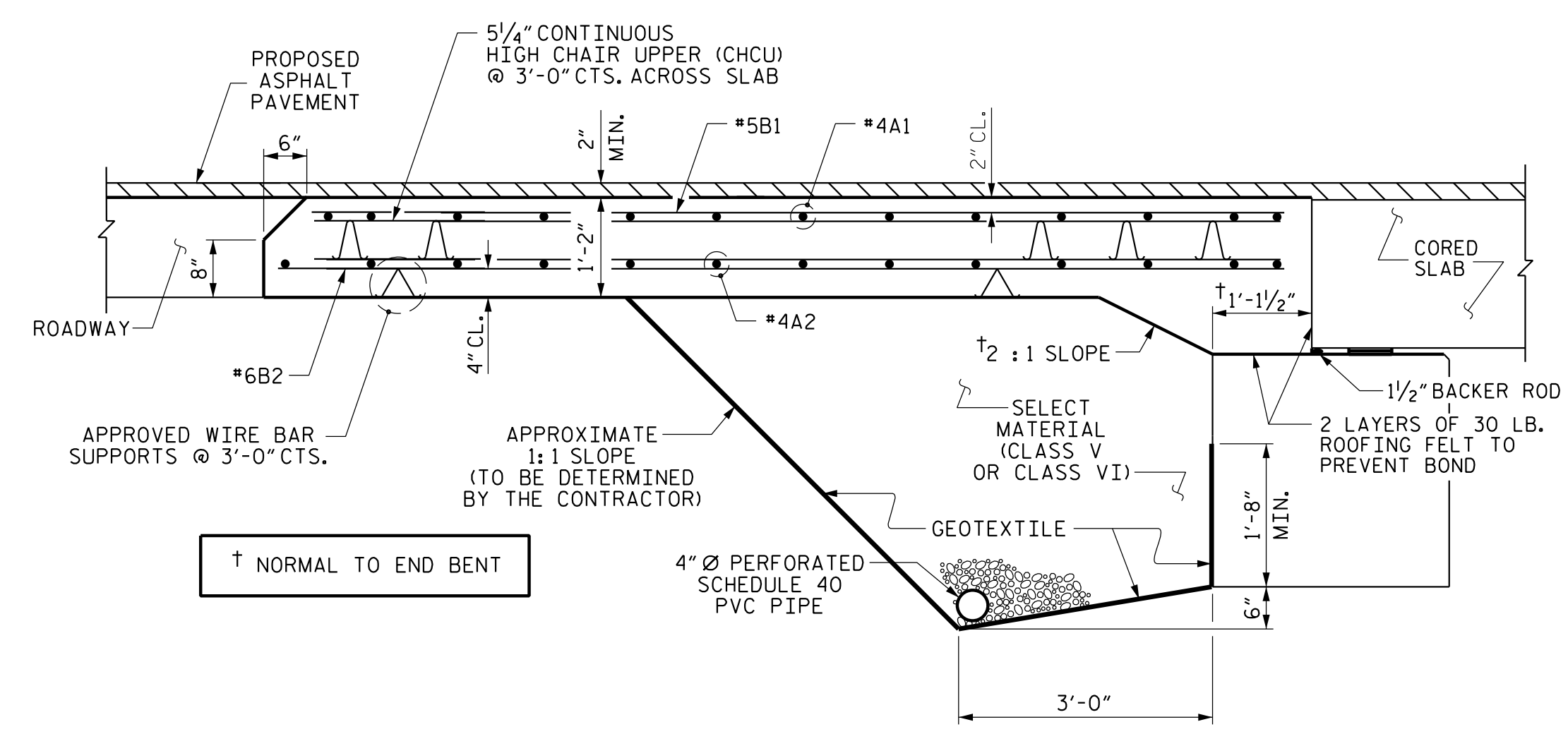
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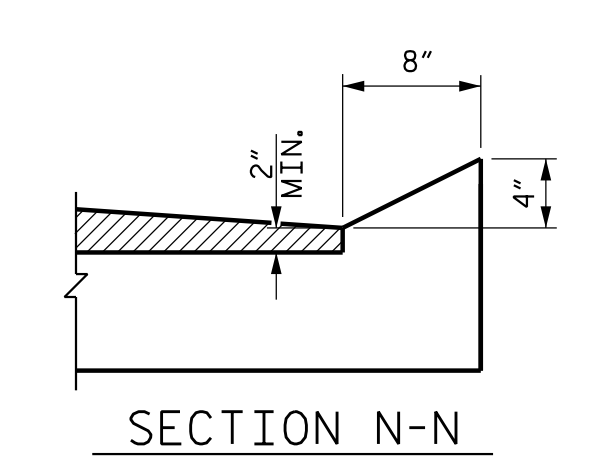
|                                   |                      |
|-----------------------------------|----------------------|
| ASSEMBLED BY : <b>W. B. ALLEN</b> | DATE : 11/20         |
| CHECKED BY : <b>G. F. WILSON</b>  | DATE : 1/21          |
| DRAWN BY : REK 1/84               | REV. 10/1/11 MAA/GM  |
| CHECKED BY : RDU 1/84             | REV. 12/21/11 MAA/GM |
|                                   | REV. 12/17 MAA/THC   |



**PLAN @ END BENT #1**      **PLAN @ END BENT #2**  
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS



**SECTION THRU SLAB**  
 (TYPE II - MODIFIED APPROACH FILL)

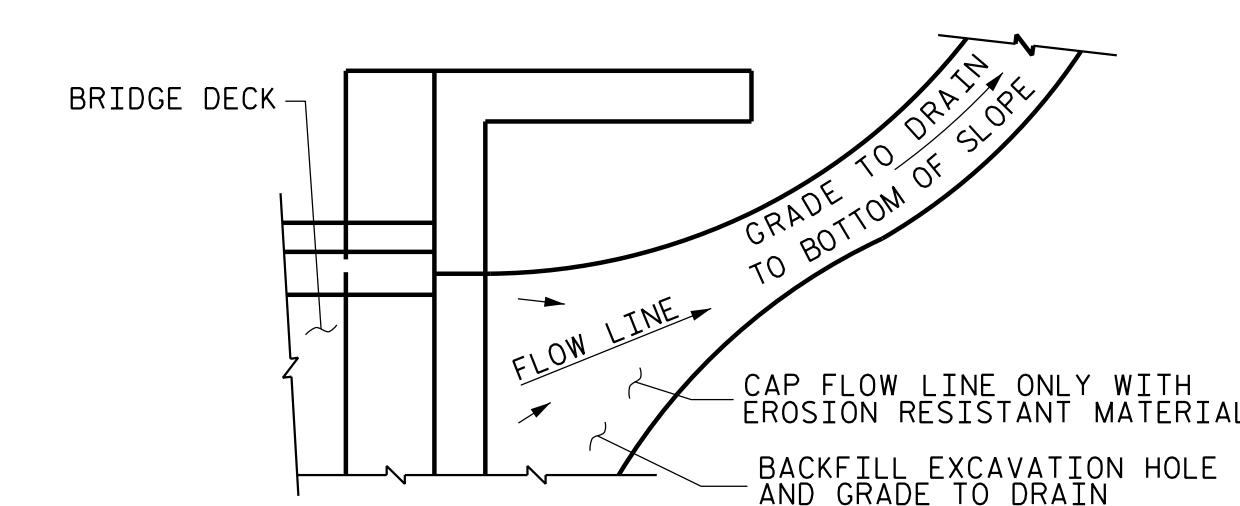


**SECTION N-N**  
**CURB DETAILS**

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

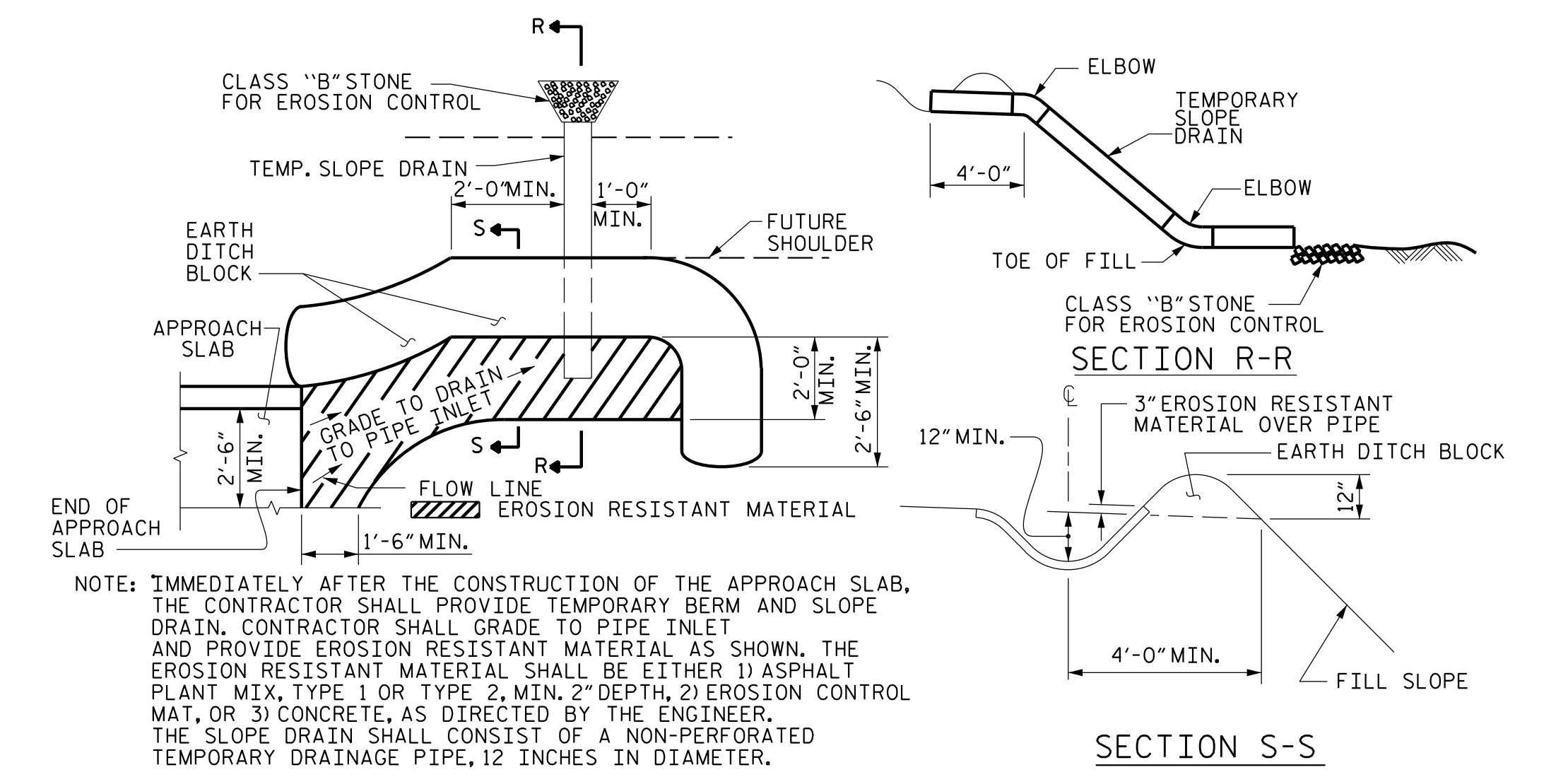
**NOTES**

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.  
 GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.  
 SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.  
 SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.  
 FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.  
 AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.  
 APPROACH SLAB GROOVING IS NOT REQUIRED.



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**



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

| BILL OF MATERIAL       |     |      |      |         |        |
|------------------------|-----|------|------|---------|--------|
| APPROACH SLAB AT EB #1 |     |      |      |         |        |
| BAR                    | NO. | SIZE | TYPE | LENGTH  | WEIGHT |
| *A1                    | 13  | #4   | STR  | 32'-11" | 286    |
| A2                     | 13  | #4   | STR  | 32'-11" | 286    |
| *B1                    | 64  | #5   | STR  | 11'-1"  | 74Q    |
| B2                     | 64  | #6   | STR  | 11'-7"  | 1113   |
| REINFORCING STEEL      |     |      |      | LBS.    | 1399   |
| *EPOXY COATED          |     |      |      |         |        |
| REINFORCING STEEL      |     |      |      | LBS.    | 1026   |
| CLASS AA CONCRETE      |     |      |      | C. Y.   | 18.4   |
| APPROACH SLAB AT EB #2 |     |      |      |         |        |
| BAR                    | NO. | SIZE | TYPE | LENGTH  | WEIGHT |
| *A1                    | 13  | #4   | STR  | 32'-11" | 286    |
| A2                     | 13  | #4   | STR  | 32'-11" | 286    |
| *B1                    | 64  | #5   | STR  | 11'-1"  | 74Q    |
| B2                     | 64  | #6   | STR  | 11'-7"  | 1113   |
| REINFORCING STEEL      |     |      |      | LBS.    | 1399   |
| *EPOXY COATED          |     |      |      |         |        |
| REINFORCING STEEL      |     |      |      | LBS.    | 1026   |
| CLASS AA CONCRETE      |     |      |      | C. Y.   | 18.4   |

PROJECT NO. 17.BP.1.R.99  
 PASQUOTANK COUNTY  
 STATION: 17+52.50 -L-

STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD  
 BRIDGE APPROACH SLAB  
 FOR PRESTRESSED CONCRETE  
 CORED SLAB UNIT  
 (SUB-REGIONAL TIER)  
 75° SKEW

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

SHEET NO. S-12  
 TOTAL SHEETS 13

PLANS PREPARED BY:  
**NV5**  
 NV5 ENGINEERS & CONSULTANTS, INC.  
 3300 REGENCY PARKWAY, SUITE 100  
 CARY, NC 27518  
 P: 919.851.1912      www.NV5.com  
 NC License # F-1333  
 formerly CALYX Engineers & Consultants

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

THIS STANDARD DRAWING REVIEWED & ADOPTED FOR USE AT THE REFERENCED LOCATION BY THE UNDERSIGNED:

*G. F. Wilson*  
 PROFESSIONAL ENGINEER  
 STATE OF NORTH CAROLINA  
 LICENSE NO. 26262

10/12/2021

## 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<br>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<br>EXTREME FIBER STRESS      | ---   | 1,800 LBS. PER SQ. IN.           |
| COMPRESSION PERPENDICULAR TO GRAIN<br>OF TIMBER                       | ----- | 375 LBS. PER SQ. IN.             |
| EQUIVALENT FLUID PRESSURE OF EARTH                                    | ----- | 30 LBS. PER CU. FT.<br>(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 2018 "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.

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