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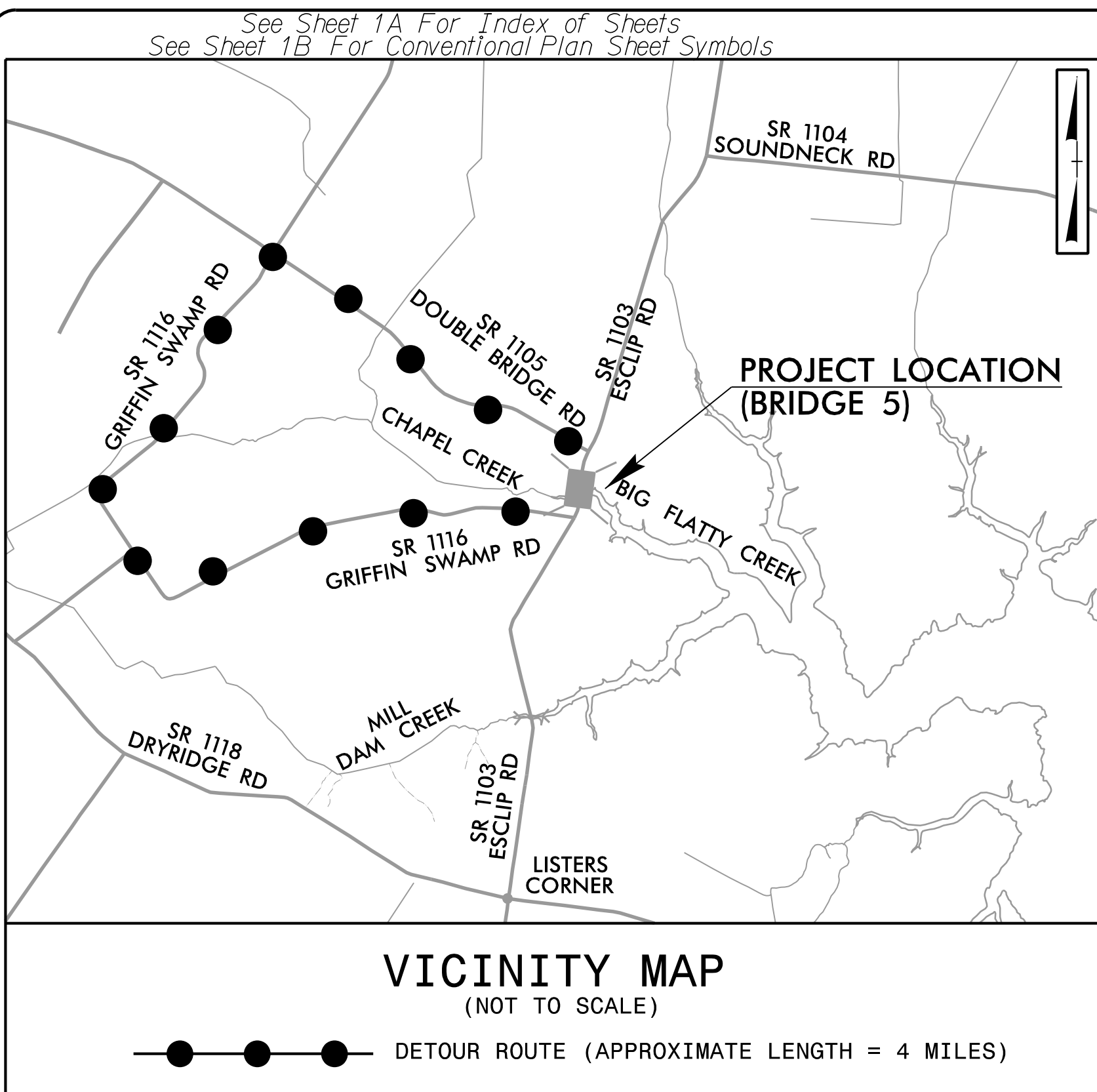
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09/08/2019

10/25/2022
R:\Roadway\Proj\6900005_RDY_TSH.dgn
Chris Anderson

PROJECT: 17BP.1.R.88

CONTRACT: DA00557



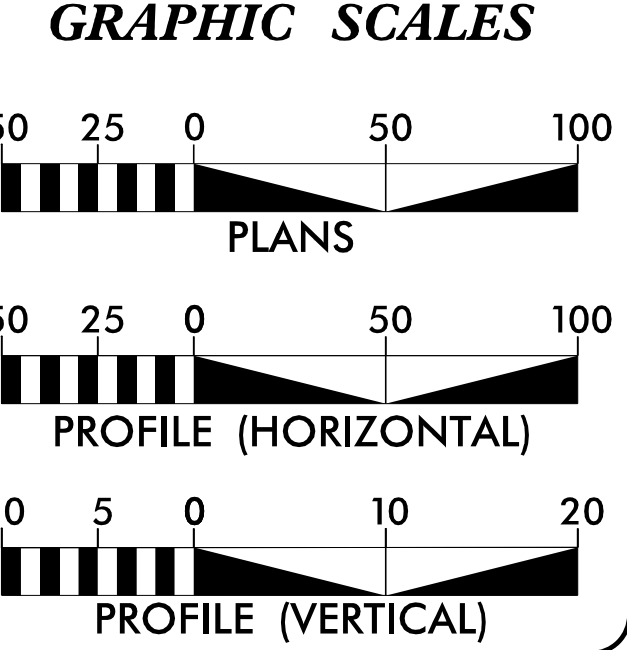
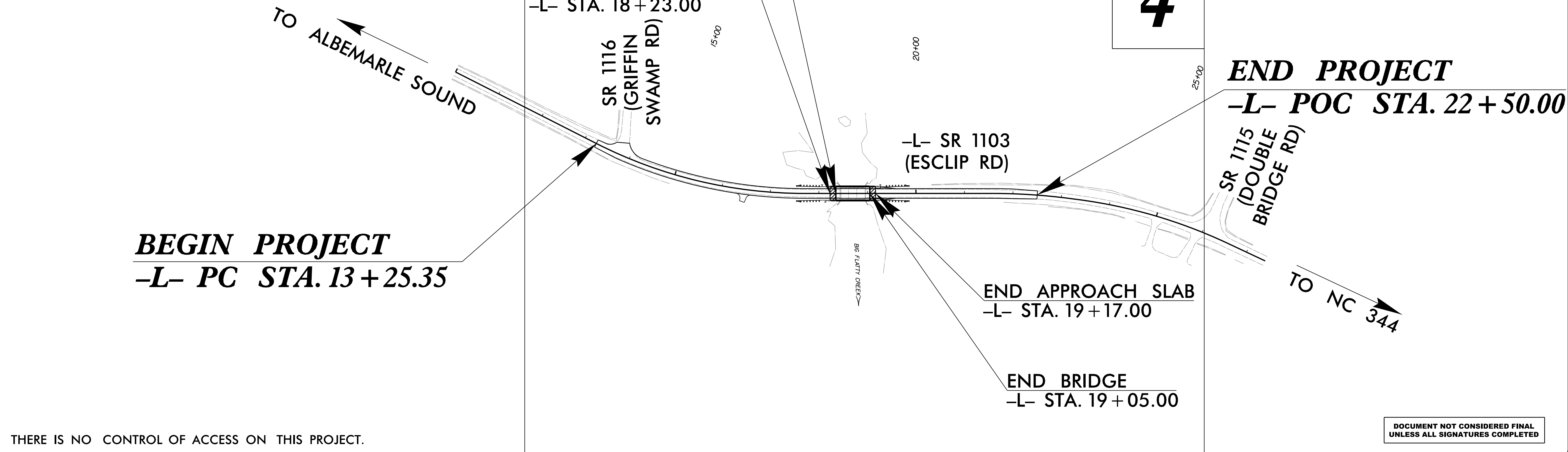
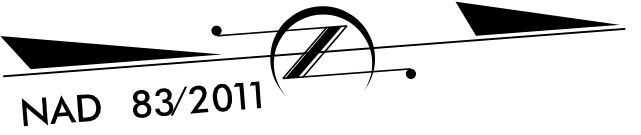
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PASQUOTANK COUNTY

**LOCATION: BRIDGE NO. 5 OVER CHAPEL CREEK
ON SR 1103 (ESCLIP RD)**

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

| | | | |
|-----------------|-----------------------------|--------------|--------------|
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
| N.C. | 17BP.1.R.88 | 1 | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| 17BP.1.PE.88 | | PE | |
| 17BP.1.ROW.88 | | RW & UTIL | |
| 17BP.1.R.88 | | CONSTRUCTION | |



DESIGN DATA
 ADT 2018 = <1,000
 V = 60 MPH
 TTST = 26
 FUNC CLASS = MINOR COLLECTOR SUBREGIONAL TIER

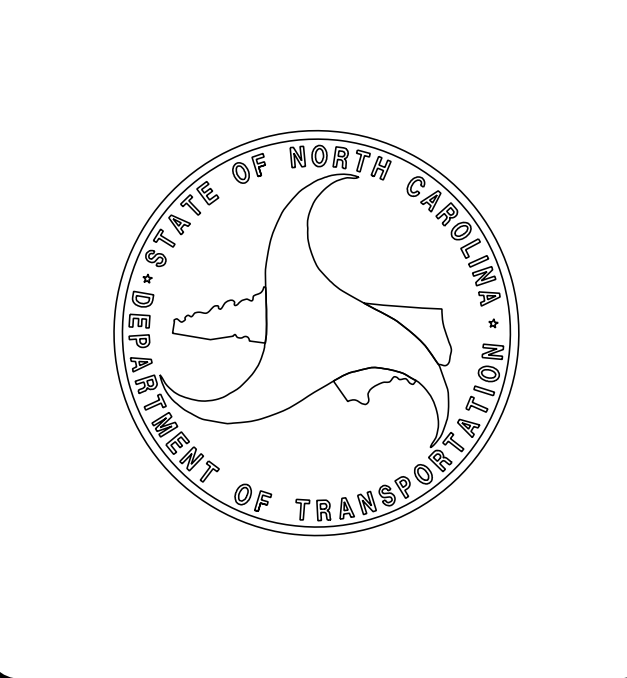
PROJECT LENGTH

| | | |
|---|---|-------------|
| LENGTH ROADWAY STATE PROJECT 17BP.1.R.88 | = | 0.162 MILES |
| LENGTH STRUCTURES STATE PROJECT 17BP.1.R.88 | = | 0.013 MILES |
| TOTAL LENGTH STATE PROJECT 17BP.1.R.88 | = | 0.175 MILES |

Prepared for:
HIGHWAY DIVISION 1
 113 AIRPORT DR, SUITE 100
 EDENTON, NC 27932
 2018 STANDARD SPECIFICATIONS
RIGHT OF WAY DATE:
 JUNE 20, 2022
LETTING DATE:

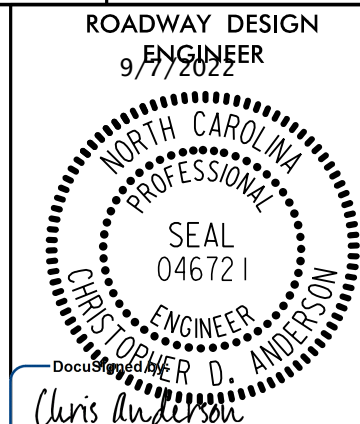
Prepared by:
NIV5
 NV5 ENGINEERS & CONSULTANTS, INC.
 3300 REGENCY PARKWAY, SUITE 100
 CARY, NC 27518
 P: 919.851.1842 www.NV5.com
 NC License # F1333
 Form NC-CAT.11-Engineers & Consultants
CHRIS ANDERSON, PE
 PROJECT MANAGER
ERICA MARTIN
 ROADWAY PROJECT DESIGN ENGINEER
RYAN SHOOK
 NCDOT CONTACT

HYDRAULICS ENGINEER
 DocuSigned by:
 David Becker
 475FE6857488
 10/25/2022 P.E.
ROADWAY DESIGN ENGINEER
 DocuSigned by:
 Chris Anderson
 2101F55849437
 10/25/2022 P.E.



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UNLESS ALL SIGNATURES COMPLETED

| | |
|---|------------------------|
| PROJECT REFERENCE NO. <i>17BP.J.R.88</i> | SHEET NO. <i>1A</i> |
|---|------------------------|



ROADWAY DESIGN
ENGINEER
NORTH CAROLINA
PROFESSIONAL
SEAL
046721
CHRIS D. ANDERSON
December 2018

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

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 THRU 2A-2 | PAVEMENT SCHEDULE AND TYPICAL SECTIONS |
| 2C-1 THRU 2C-3 | DETAILS FOR GUARDRAIL INSTALLATION, FOR GUARDRAIL STRUCTURE ANCHOR UNITS & ROCK PLATING DETAIL |
| 3B-1 | SUMMARIES OF GUARDRAIL, EARTHWORK, ASPHALT PAVEMENT 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-9 | CROSS-SECTIONS |
| S-1 THRU S-19 | 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

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 |
|---|---|
| DIVISION 2 - EARTHWORK | |
| 200.02 | Method of Clearing - Method II |
| 225.02 | Guide for Grading Subgrade - Secondary and Local |
| 225.04 | Method of Obtaining Superelevation - Two Lane Pavement |
| 275.01 | Rock Plating (Use Special Detail) |
| DIVISION 3 - PIPE CULVERTS | |
| 300.01 | Method of Pipe Installation |
| 310.10 | Driveway Pipe Construction |
| DIVISION 4 - MAJOR STRUCTURES | |
| 422.02 | Reinforced Bridge Approach Fills - Type II Modified Approach Fill |
| DIVISION 5 - SUBGRADE, BASES AND SHOULDERS | |
| 560.01 | Method of Shoulder Construction - High Side of Superelevated Curve - Method I |
| DIVISION 6 - ASPHALT BASES AND PAVEMENTS | |
| 654.01 | Pavement Repairs |
| DIVISION 8 - INCIDENTALS | |
| 815.02 | Subsurface Drains |
| 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 |

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 | ○ |
| 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 | ----- |
| New Right of Way Line with Pin and Cap | ----- |
| New Right of Way Line with Concrete or Granite R/W Marker | ----- |
| New Control of Access Line with Concrete C/A Marker | ----- |
| Existing Control of Access | ----- |
| New Control of Access | ----- |
| Existing Easement Line | ----- |
| New Temporary Construction Easement | ----- |
| New Temporary Drainage Easement | ----- |
| New Permanent Drainage Easement | ----- |
| New Permanent Drainage / Utility Easement | ----- |
| New Permanent Utility Easement | ----- |
| New Temporary Utility Easement | ----- |
| New Aerial Utility Easement | ----- |

ROADS AND RELATED FEATURES:

| | |
|----------------------------|---------|
| Existing Edge of Pavement | ----- |
| Existing Curb | ----- |
| Proposed Slope Stakes Cut | ----- C |
| Proposed Slope Stakes Fill | ----- F |
| Proposed Curb Ramp | ----- |
| 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 | ----- |

EXISTING STRUCTURES:

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

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.*) | ----- |
| U/G Power Line LOS C (S.U.E.*) | ----- |
| U/G Power Line LOS D (S.U.E.*) | ----- |

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.*) | ----- |
| U/G Telephone Cable LOS C (S.U.E.*) | ----- |
| U/G Telephone Cable LOS D (S.U.E.*) | ----- |
| U/G Telephone Conduit LOS B (S.U.E.*) | ----- |
| U/G Telephone Conduit LOS C (S.U.E.*) | ----- |
| U/G Telephone Conduit LOS D (S.U.E.*) | ----- |
| U/G Fiber Optics Cable LOS B (S.U.E.*) | ----- |
| U/G Fiber Optics Cable LOS C (S.U.E.*) | ----- |
| U/G Fiber Optics Cable LOS D (S.U.E.*) | ----- |

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.*) | ----- |
| U/G TV Cable LOS C (S.U.E.*) | ----- |
| U/G TV Cable LOS D (S.U.E.*) | ----- |
| U/G Fiber Optic Cable LOS B (S.U.E.*) | ----- |
| U/G Fiber Optic Cable LOS C (S.U.E.*) | ----- |
| U/G Fiber Optic Cable LOS D (S.U.E.*) | ----- |

GAS:

| | |
|------------------------------|---------------|
| Gas Valve | ◇ |
| Gas Meter | ⊕ |
| U/G Gas Line LOS B (S.U.E.*) | ----- |
| U/G Gas Line LOS C (S.U.E.*) | ----- |
| U/G Gas Line LOS D (S.U.E.*) | ----- |
| Above Ground Gas Line | ----- A/G Gas |

SANITARY SEWER:

| | |
|-------------------------------------|--------------------------|
| Sanitary Sewer Manhole | ⊕ |
| Sanitary Sewer Cleanout | ⊕ |
| U/G Sanitary Sewer Line | ----- |
| Above Ground Sanitary Sewer | ----- A/G Sanitary Sewer |
| SS Forced Main Line LOS B (S.U.E.*) | ----- |
| SS Forced Main Line LOS C (S.U.E.*) | ----- |
| SS Forced Main Line LOS D (S.U.E.*) | ----- |

MISCELLANEOUS:

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

6/2/2019



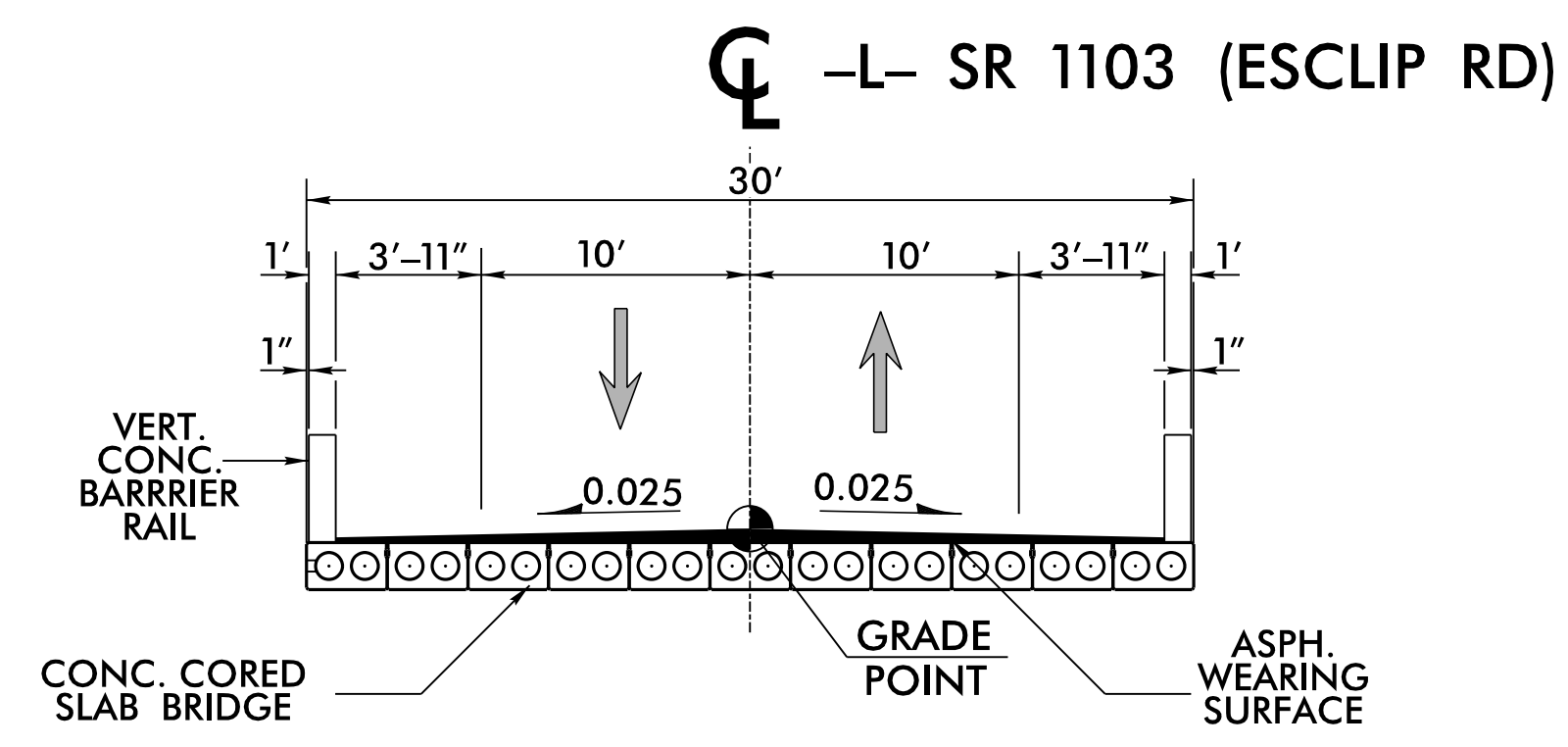
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| PROJECT REFERENCE NO. <i>17BPJR.88</i> | SHEET NO. <i>2A-1</i> |
| ROADWAY DESIGN ENGINEER <i>CHRISTOPHER D. ANDERSON</i> | PAVEMENT DESIGN ENGINEER <i>CHRISTOPHER D. ANDERSON</i> |

SEAL 046721

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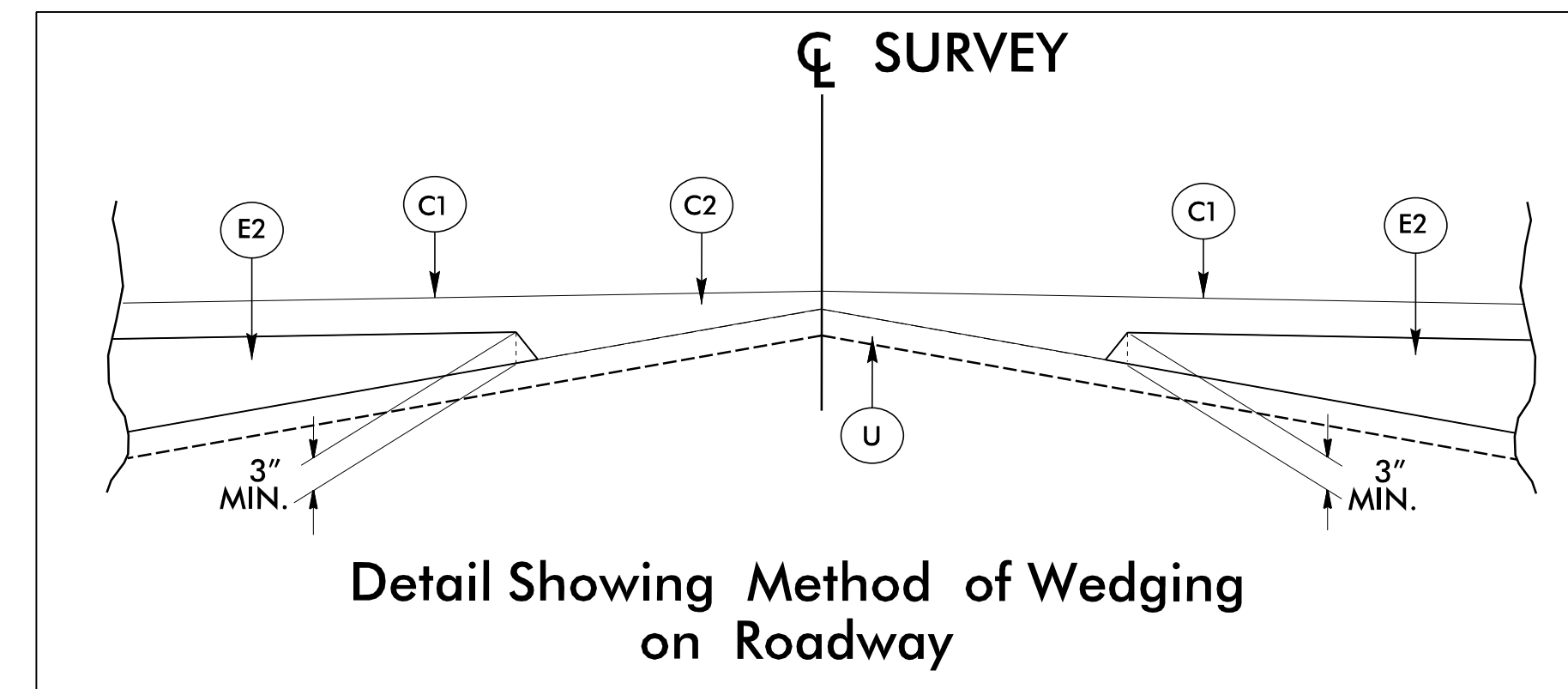
| PAVEMENT SCHEDULE | |
|-------------------|---|
| C1 | PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS. |
| C2 | PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 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 #5

USE BRIDGE SKETCH NO.1 AS FOLLOWS:
 -L- STA. 18+35.00 (BEGIN BRIDGE) TO
 -L- STA. 19+05.00 (END BRIDGE)

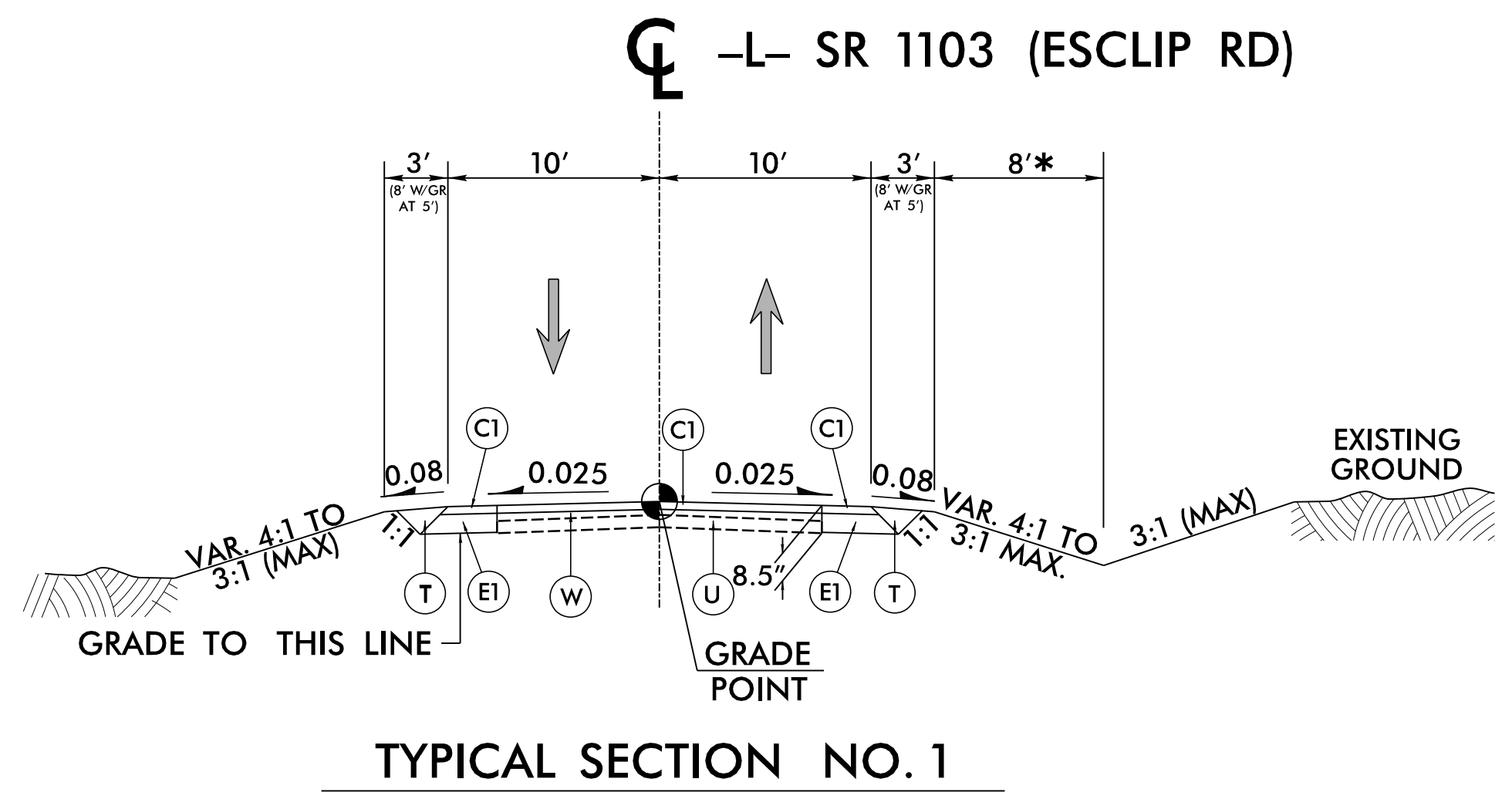


Detail Showing Method of Wedging on Roadway

TYPICAL DETAIL NO. 1

USE WITH TYPICAL SECTION NO. 2 & 3

-L- STA. 13+25.35 TO -L- STA. 15+00.00 RT
 -L- STA. 13+25.35 TO -L- STA. 15+00.00 LT (MIRRORED)



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS:
 -L- STA. 13+25.35 TO -L- STA. 15+00.00
 -L- STA. 21+00.00 TO -L- STA. 22+50.00

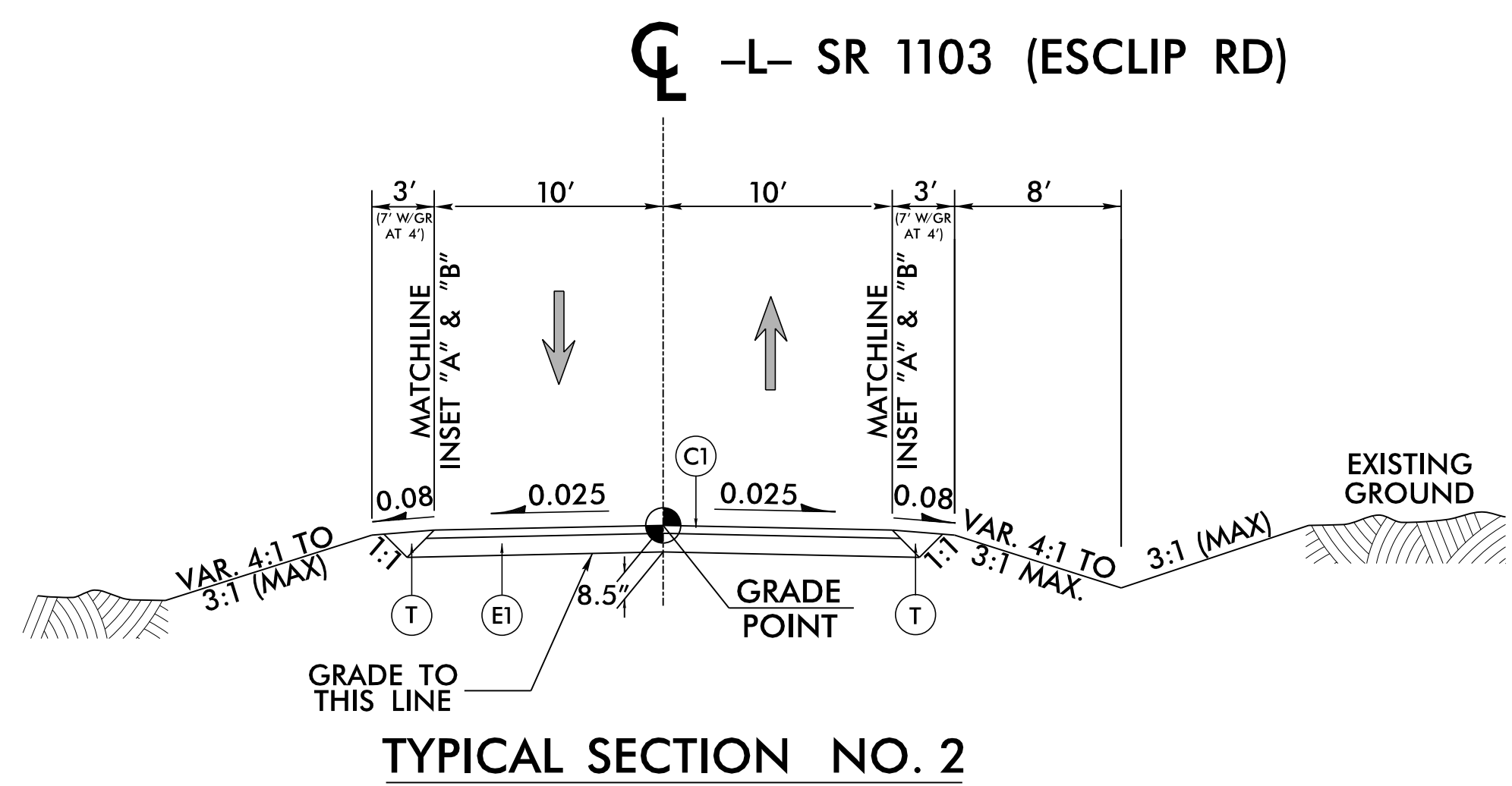
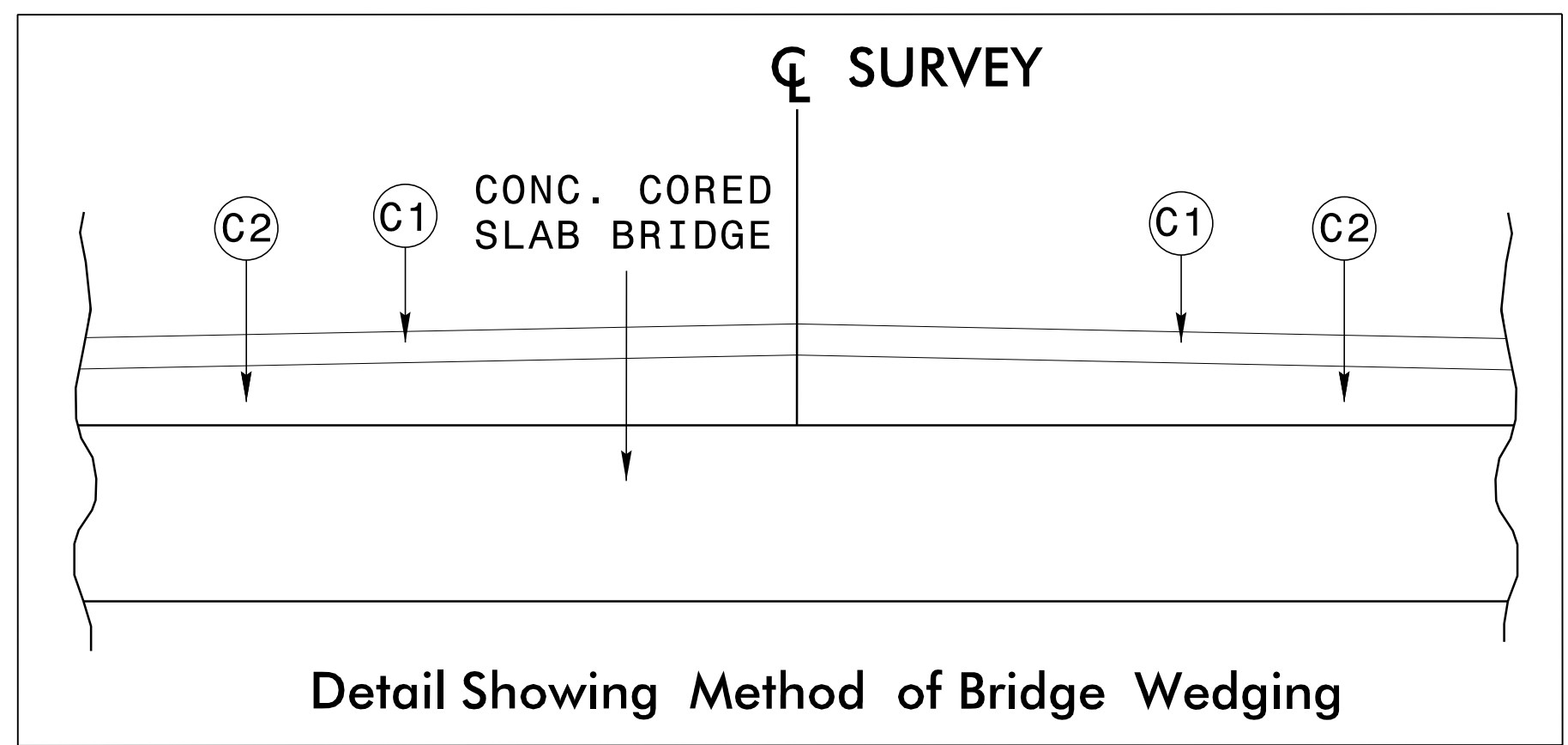
* SEE TYPICAL DETAIL NO. 1

7/29/2022
R:\Projects\N\Proje\6910005_RDY_TYP.dgn
E:\C:\Users\m\Documents

6/2/99

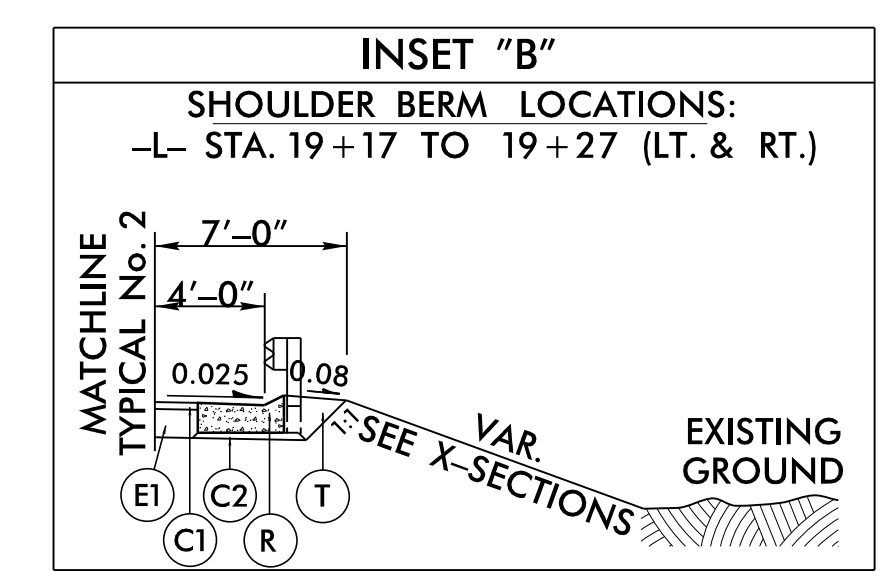
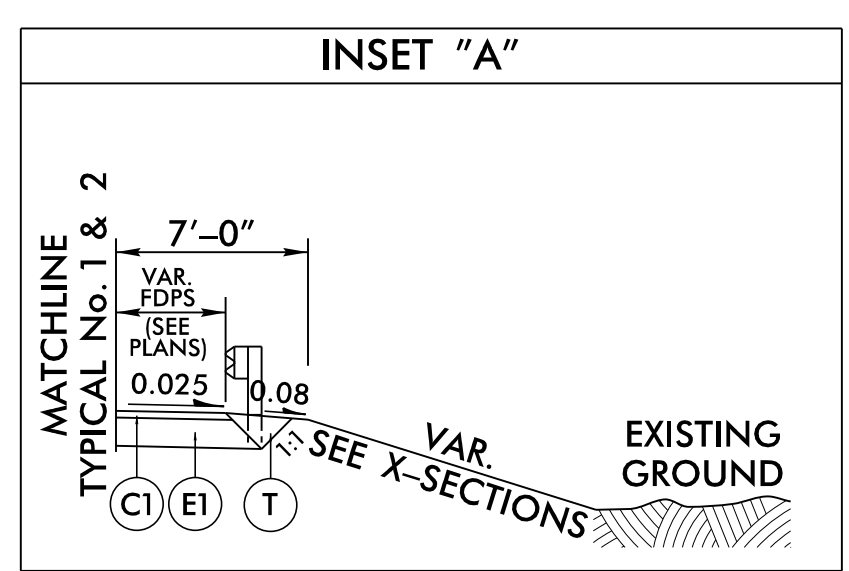
| PAVEMENT SCHEDULE | |
|-------------------|-----------------------|
| C1 | 3" S9.5B |
| C2 | VARIABLE DEPTH S9.5B |
| E1 | 5 1/2" B25.0C |
| E2 | VARIABLE DEPTH B25.0C |
| R | SHOULDER BERM GUTTER |
| T | EARTH MATERIAL |
| U | EXISTING PAVEMENT |
| W | WEDGING |

NOTES:
 1) SEE SHEET 2A-1 FOR DETAILED PAVEMENT SCHEDULE.
 2) PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



USE TYPICAL SECTION NO. 2 AS FOLLOWS:
 -L- STA. 15+00.00 TO -L- STA. 18+35.00 (BEGIN BRIDGE)
 -L- STA. 19+05.00 (END BRIDGE) TO -L- 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



| | |
|--|--------------------------|
| PROJECT REFERENCE NO. 17BP.J.R.88 | SHEET NO. 2A-2 |
| ROADWAY DESIGN ENGINEER 9/7/2022 | PAVEMENT DESIGN ENGINEER |
| | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

7/29/2022
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I4-DEC-2017 10:36
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 Jhowerton AT CSO-292895

| | | |
|--|--|-------------------------------|
| 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

ELEVATION

NOTE:
 **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
 *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
 -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" X 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
 -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
 -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
 -SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

PLAN VIEW

NOTE:
 **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
 *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
 -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" X 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
 -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
 -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
 -SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

| | | |
|--|--|-------------------------------|
| 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

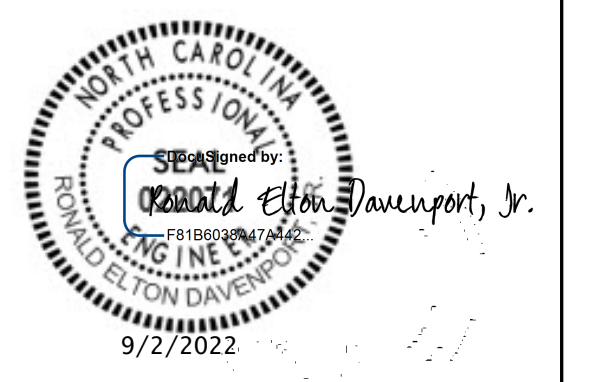
SHEET 2 OF 7
862D03

ELEVATION

NOTE:
 **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
 *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
 -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" X 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
 -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
 -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
 -SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.

PLAN VIEW

NOTE:
 **POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
 *THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
 -SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" X 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
 -MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
 -LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
 -SEE SHEET 3 FOR POST SECTIONS 1 THRU 9.



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

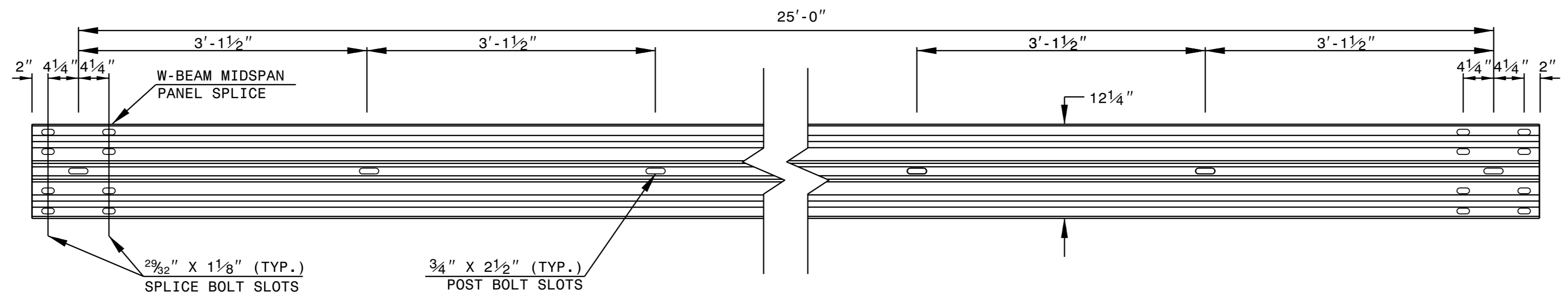
SEE TITLE BLOCK

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

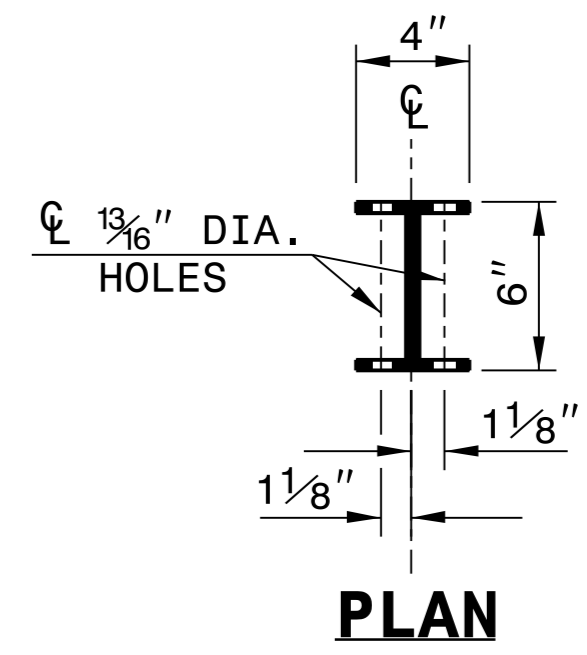
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

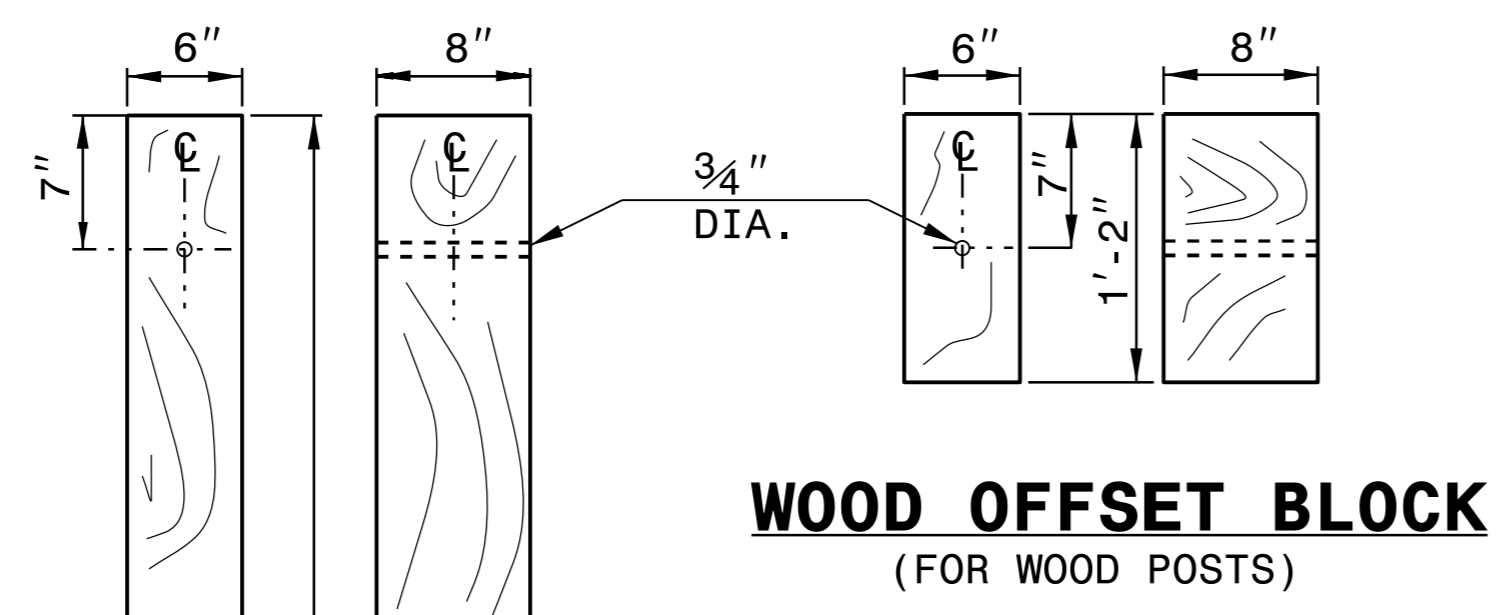
SHEET 6 OF 8
862D02



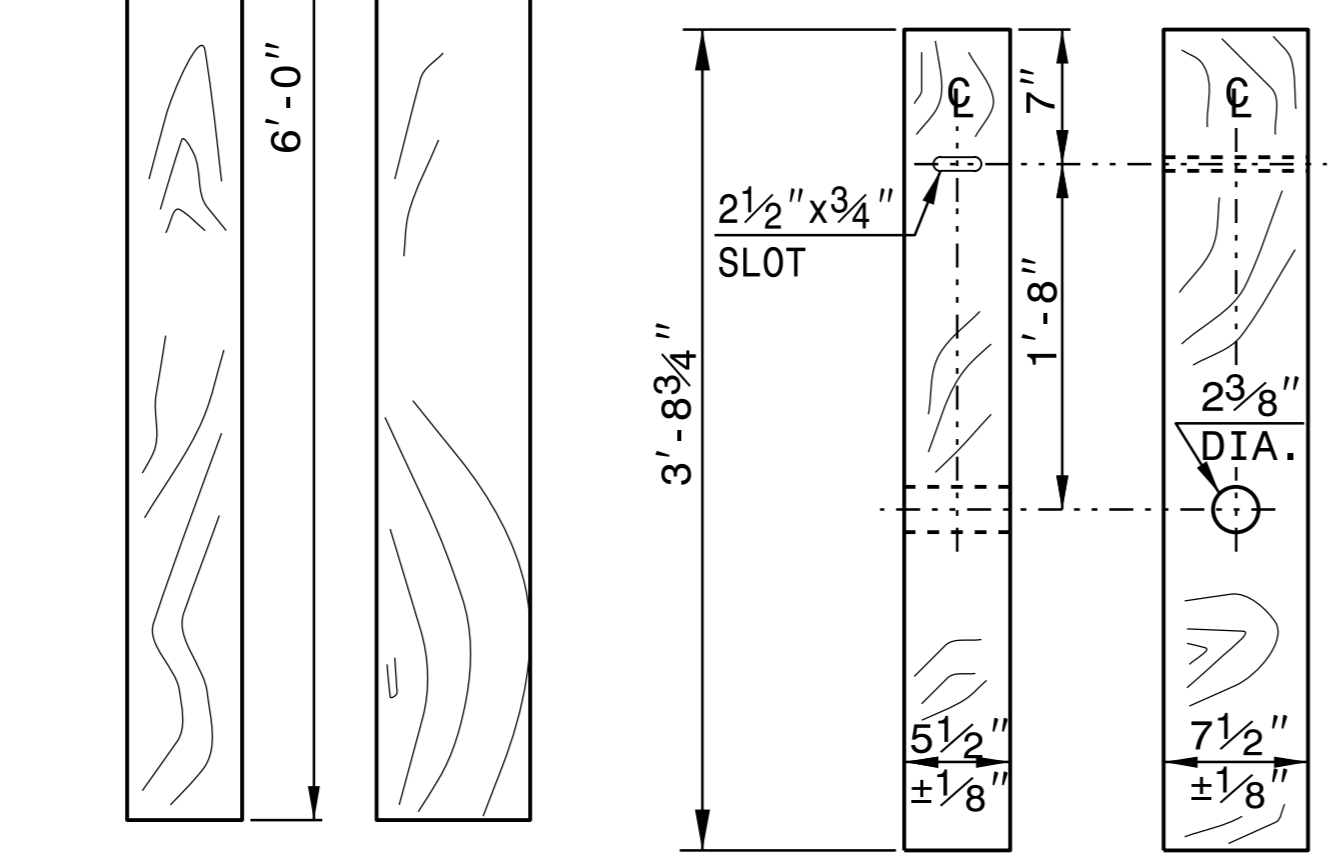
STANDARD W-BEAM GUARDRAIL



PLAN

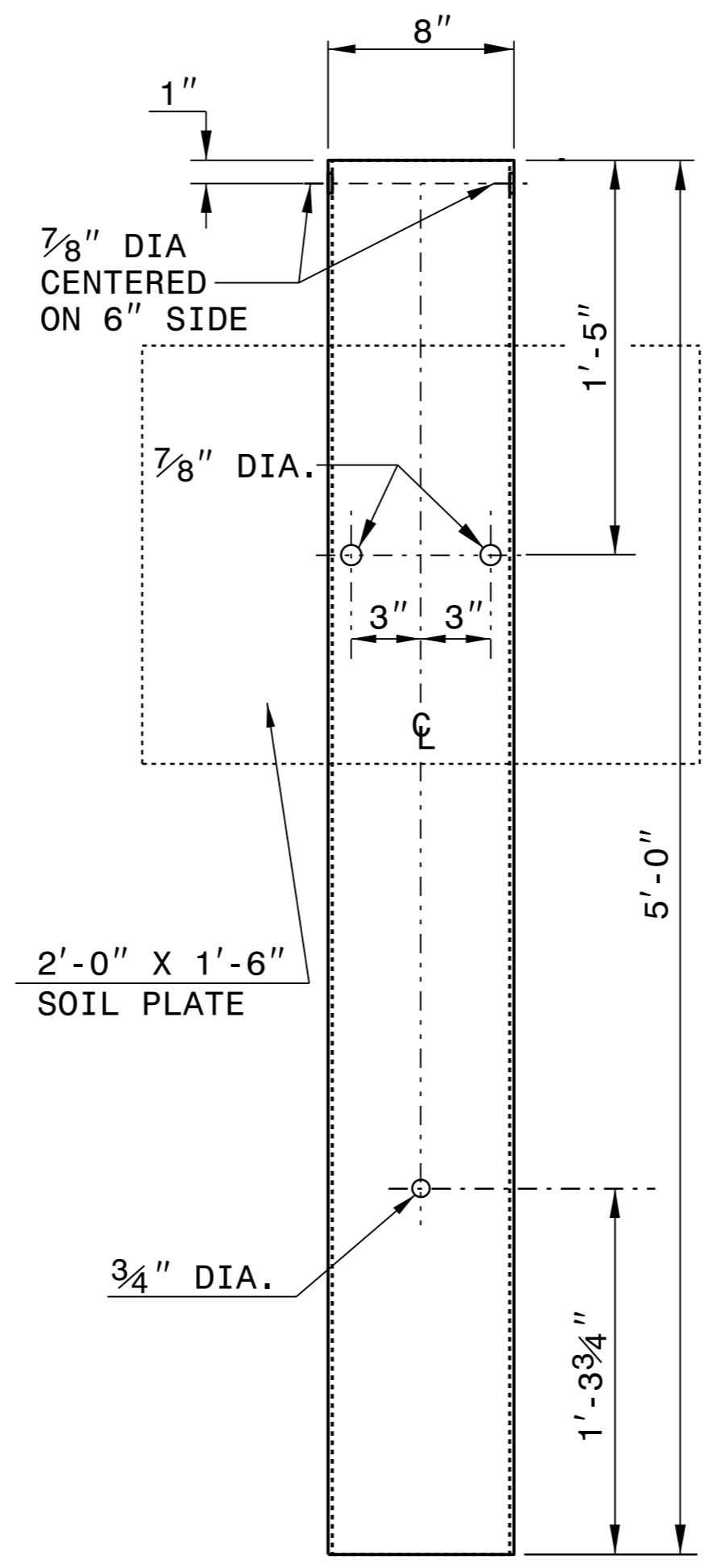


**WOOD OFFSET BLOCK
(FOR WOOD POSTS)**

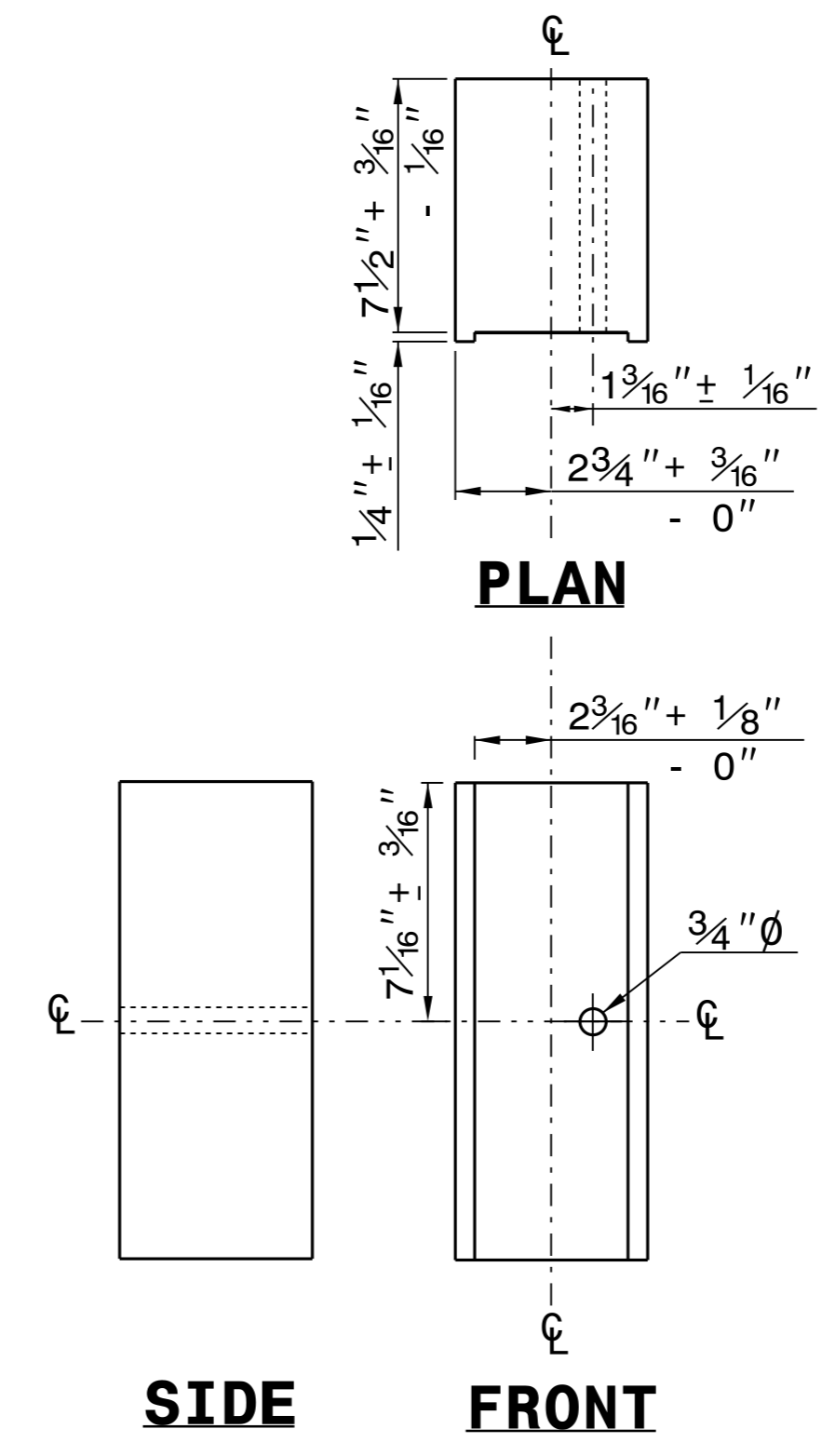


**STANDARD
LINE POST**

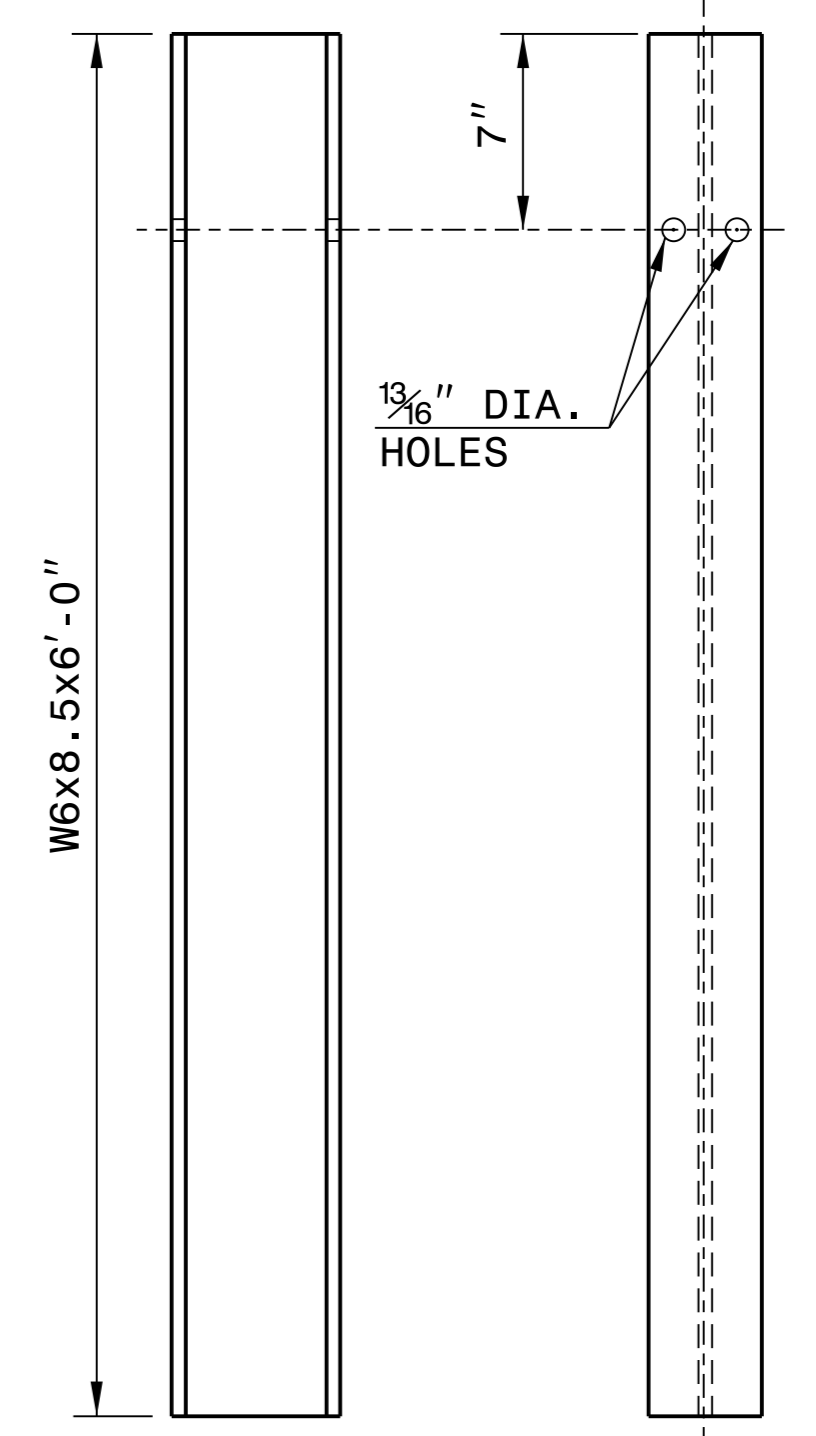
**SHORT WOOD
BREAKAWAY POST**



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



**ROUTED
OFFSET BLOCK**



"W6" STEEL POST

SYSTEM PARTS

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02



9/2/2022

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

SEE TITLE BLOCK

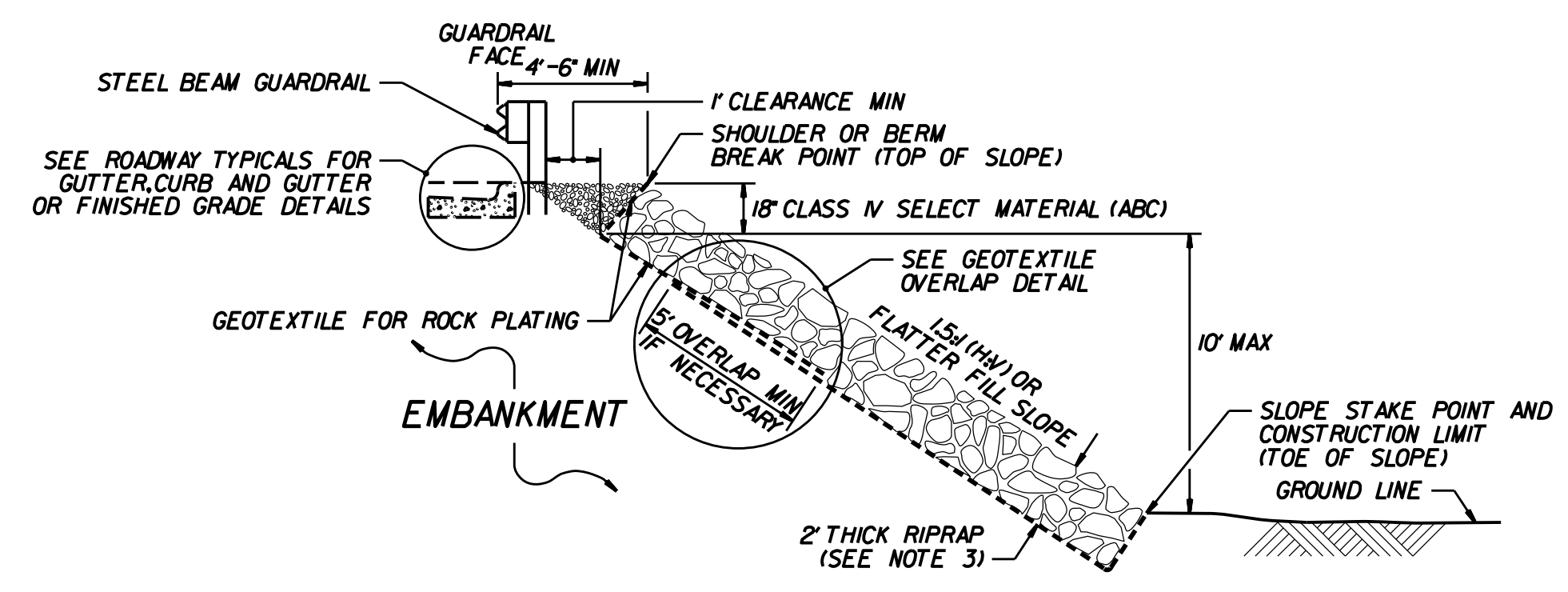
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| ORIGINAL BY: J. HOWERTON | DATE: 3-7-2018 |
| MODIFIED BY: | DATE: |
| CHECKED BY: | DATE: |
| FILE SPEC.: | |

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

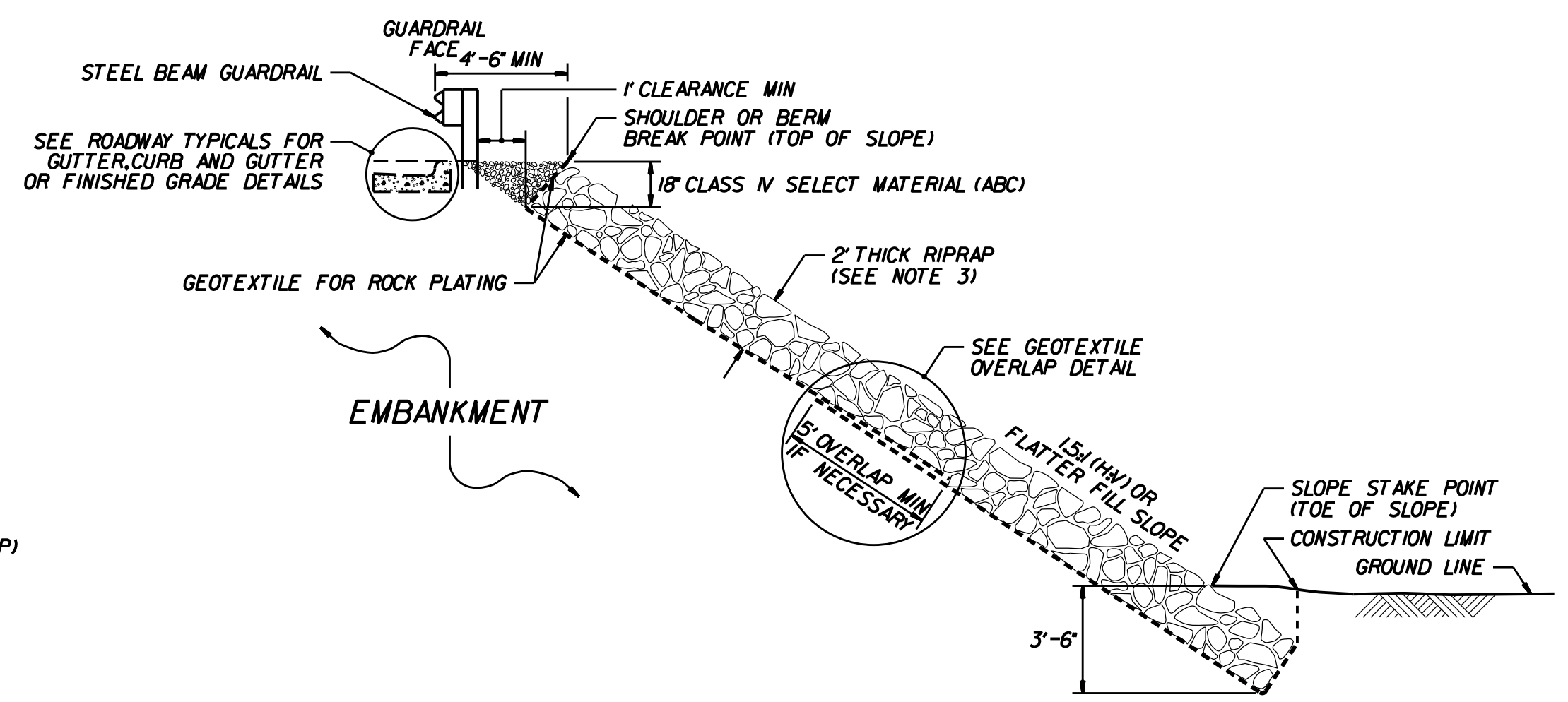
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
ROCK PLATING

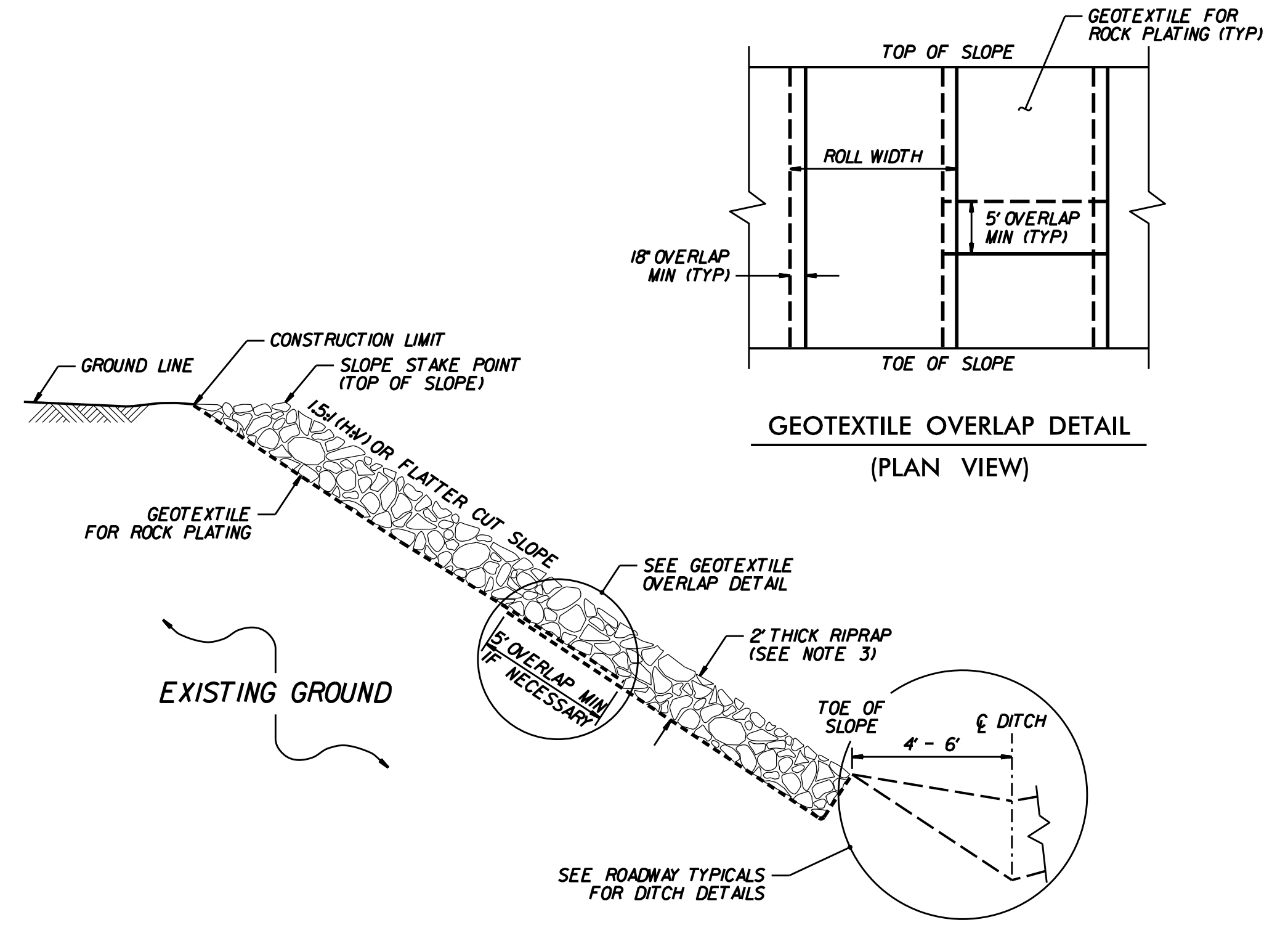
ROADWAY DETAIL DRAWING FOR
ROCK PLATING



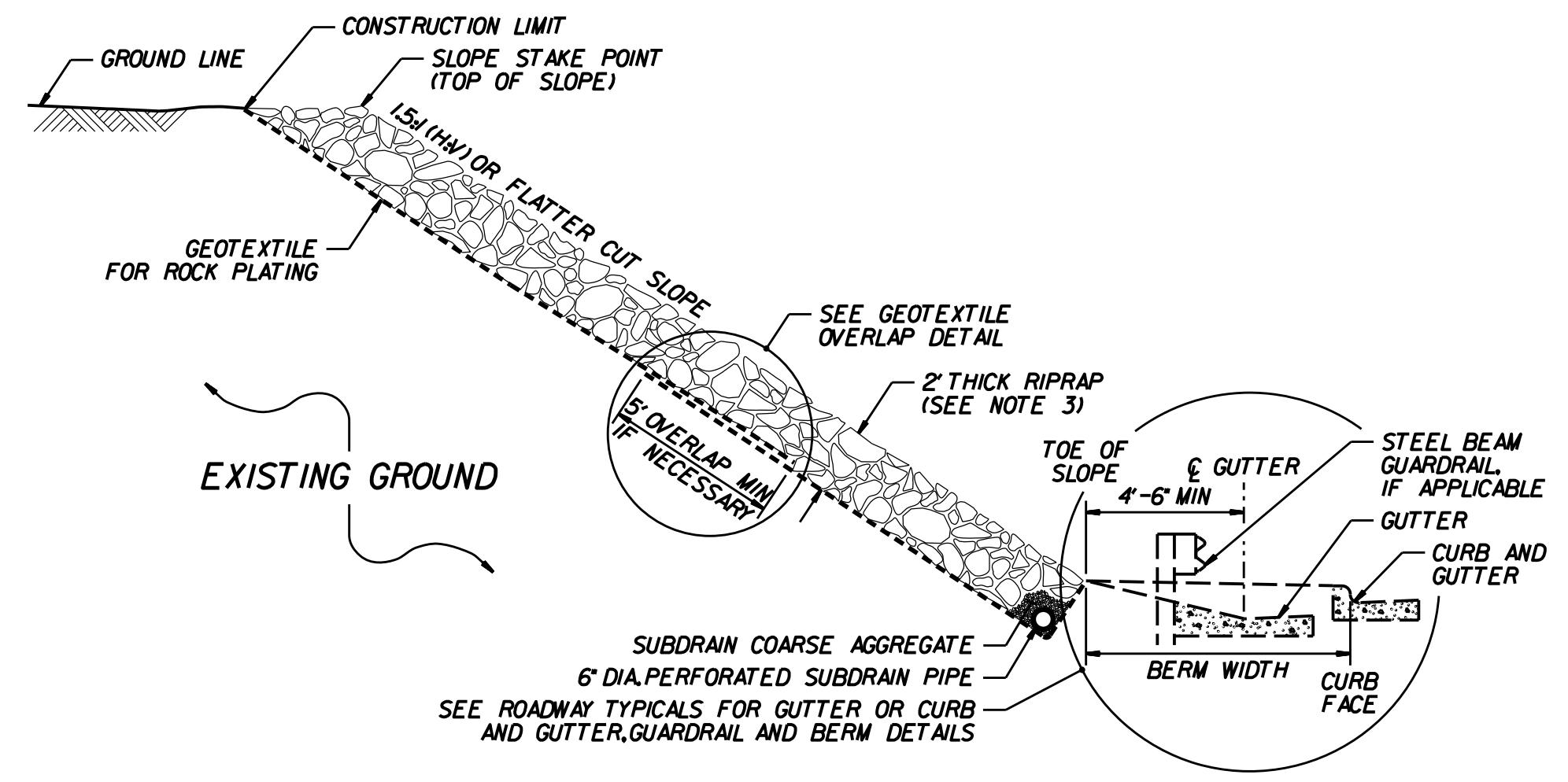
ROCK PLATING DETAIL NO. 1 - TYPICAL SECTION



ROCK PLATING DETAIL NO. 2 - TYPICAL SECTION



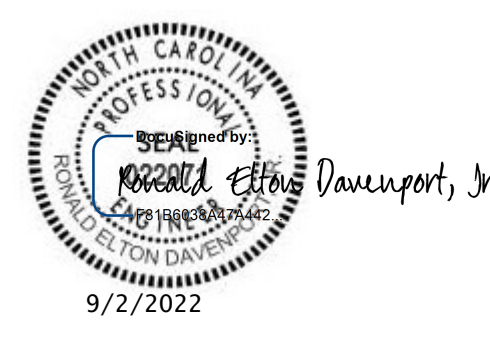
ROCK PLATING DETAIL NO. 3 - TYPICAL SECTION



ROCK PLATING DETAIL NO. 4 - TYPICAL SECTION

- NOTES:**
- SEE ROADWAY PLANS AND SUMMARY SHEETS FOR ROCK PLATING LOCATIONS.
 - FOR ROCK PLATING, SEE SECTION 275 OF THE STANDARD SPECIFICATIONS.
 - USE CLASS 1, 2 OR B RIPRAP UNLESS REQUIRED OTHERWISE IN THE ROADWAY SUMMARY SHEETS.

\$\$\$SYTIME\$\$\$
\$\$\$USERNAME\$\$\$



| | |
|--|----------------|
| CONTRACT STANDARDS AND DEVELOPMENT UNIT Office 919-707-6900 FAX 919-250-4119 | |
| SEE TITLE BLOCK | |
| ORIGINAL BY: S. HIDDEN | DATE: 03-11-22 |
| MODIFIED BY: | DATE: |
| CHECKED BY: | DATE: |
| FILE SPEC.: | |

COMPUTED BY: Tyler C. Bottoms DATE: 7/24/19
 CHECKED BY: Jinyoung Park DATE: 8/12/19

(5-15-18)

PROJECT NO. 17BP.1.R.88
 SHEET NO. 3G-1

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

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

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

SUMMARY OF GEOTEXTILE FOR PAVEMENT STABILIZATION

| LINE | Station | Station | Geotextile for Pavement Stabilization SY | Class IV Subgrade Stabilization TONS |
|-------------|---------|---------|--|--------------------------------------|
| | | | | |
| CONTINGENCY | | | | |
| | | | TOTAL SY/TONS: | 0 0* |

*Total tons of "Class IV Subgrade Stabilization" is only the estimated quantity for pavement stabilization and may only represent a portion of the subgrade stabilization quantity shown in the Item Sheets of the Proposal.

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

| LINE | Station | Station | Aggregate Type* ASU(1/2)/AST | Aggregate Thickness INCHES [8" for ASU(2)] | Shallow Undercut CY | Class IV Subgrade Stabilization TONS | Geotextile for Soil Stabilization SY | Stabilizer Aggregate TONS | Class IV Aggregate Stabilization TONS |
|-------------|---------|---------|------------------------------|--|---------------------|--------------------------------------|--------------------------------------|---------------------------|---------------------------------------|
| | | | | | | | | | |
| CONTINGENCY | | | | | | | | | |
| | | | | | TOTAL CY/TONS/SY: | 0 | 0** | 0** | 0 0 |

*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)
 *AST = Aggregate Stabilization
 **Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.

SUMMARY OF ROCK PLATING

| LINE | Beginning Slope (H:V) | Approx. Station | Ending Slope (H:V) | Approx. Station | Location LT/RT | Rock Plating Detail No. 1/2/3/4 | Riprap Class* 1/2/B | Rock Plating SY |
|------|-----------------------|-----------------|--------------------|-----------------|----------------|---------------------------------|---------------------|-----------------|
| | | | | | | | | |
| | | | | | | | | TOTAL SY: 0 |

*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.

SUMMARY OF REINFORCED SOIL SLOPES AND SLOPE EROSION CONTROL

| LINE | Beginning Slope/RSS (H:V) | Approx. Station | Ending Slope/RSS (H:V) | Approx. Station | Location LT/RT | Reinforced Soil Slope (RSS) SY | Geocells SY | Coir Fiber Mat SY | Matting for Erosion Control SY |
|------|---------------------------|-----------------|------------------------|-----------------|----------------|--------------------------------|-------------|-------------------|--------------------------------|
| | | | | | | | | | |
| | | | | | | TOTAL SY: | 0 | 0 | 0* 0** |

*Total square yards of "Coir Fiber Mat" is only the estimated quantity for slopes steeper than 2:1 (H:V) and may only represent a portion of the coir fiber mat quantity shown in the Item Sheets of the Proposal.
 **Total square yards of "Matting for Erosion Control" is only the estimated quantity for RSS and may only represent a portion of the matting quantity shown in the Item Sheets of the Proposal.

SUMMARY OF PRE-SPLITTING OF ROCK

| LINE | Beginning Rock Cut Slope (H:V) | Approx. Station | Ending Rock Cut Slope (H:V) | Approx. Station | Location LT/RT | Pre-splitting of Rock SY |
|------|--------------------------------|-----------------|-----------------------------|-----------------|----------------|--------------------------|
| | | | | | | |
| | | | | | | TOTAL SY: 0 |

SUMMARY OF SURCHARGES AND SURCHARGE WAITING PERIODS

| LINE | Station | Station | Surcharge Height FT | MONTHS |
|------|---------|---------|---------------------|--------|
| | | | | |
| | | | | |

SUMMARY OF SETTLEMENT GAUGES

| Gauge No. | LINE and Station | Offset | |
|----------------------|------------------|-------------|-----------------|
| | | Distance FT | Direction LT/RT |
| | | | |
| TOTAL GAUGES (EACH): | | | |

SUMMARY OF EMBANKMENT WAITING PERIODS

| LINE | Station | Station | MONTHS |
|------|---------|---------|--------|
| | | | |
| | | | |

SUMMARY OF BRIDGE WAITING PERIODS

| Bridge Description | End Bent/ Bent No. | MONTHS |
|---|--------------------|--------|
| Bridge No. 5 on SR 1103 over Chapel Creek | EB1, EB2 | 1 |
| | | |

8/17/19

BEGIN PROJECT 17BP.1.R.88
-L- PC STA. 13+25.35

NIV5
 NIV5 ENGINEERS & CONSULTANTS, INC.
 3300 REGENCY PARKWAY, SUITE 100
 CARY, NC 27518
 P: 919.851.1912 www.NIV5.com
 NC License # 91333

PROJECT REFERENCE NO. 17BP.1.R.88 SHEET NO. 4
 RW SHEET NO.

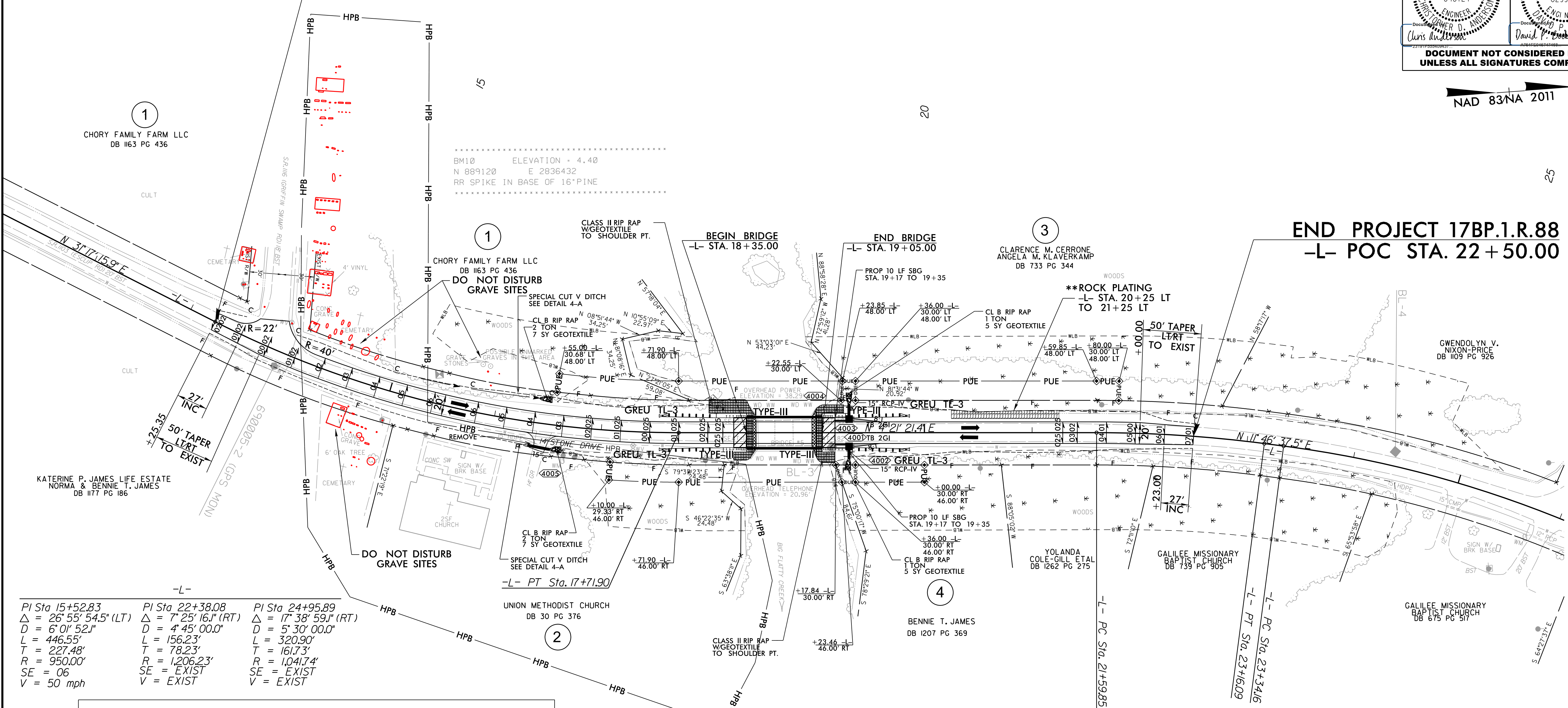
ROADWAY DESIGN ENGINEER 9/8/2022
 HYDRAULICS ENGINEER 9/8/2022

PROFESSIONAL SEAL 046721
 PROFESSIONAL SEAL 029984

CHRISTOPHER D. ANDERSON
 DAVID P. BOYLES

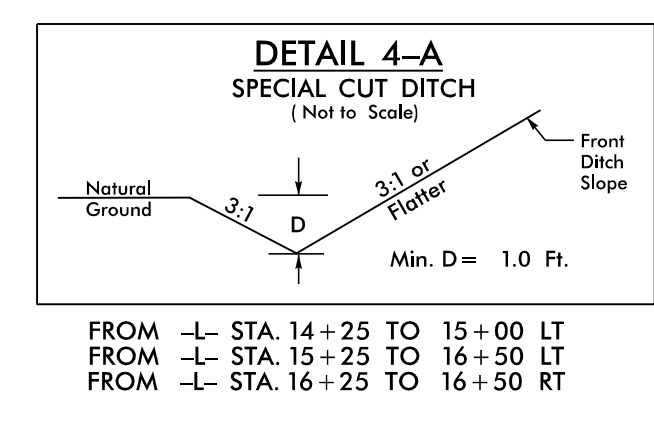
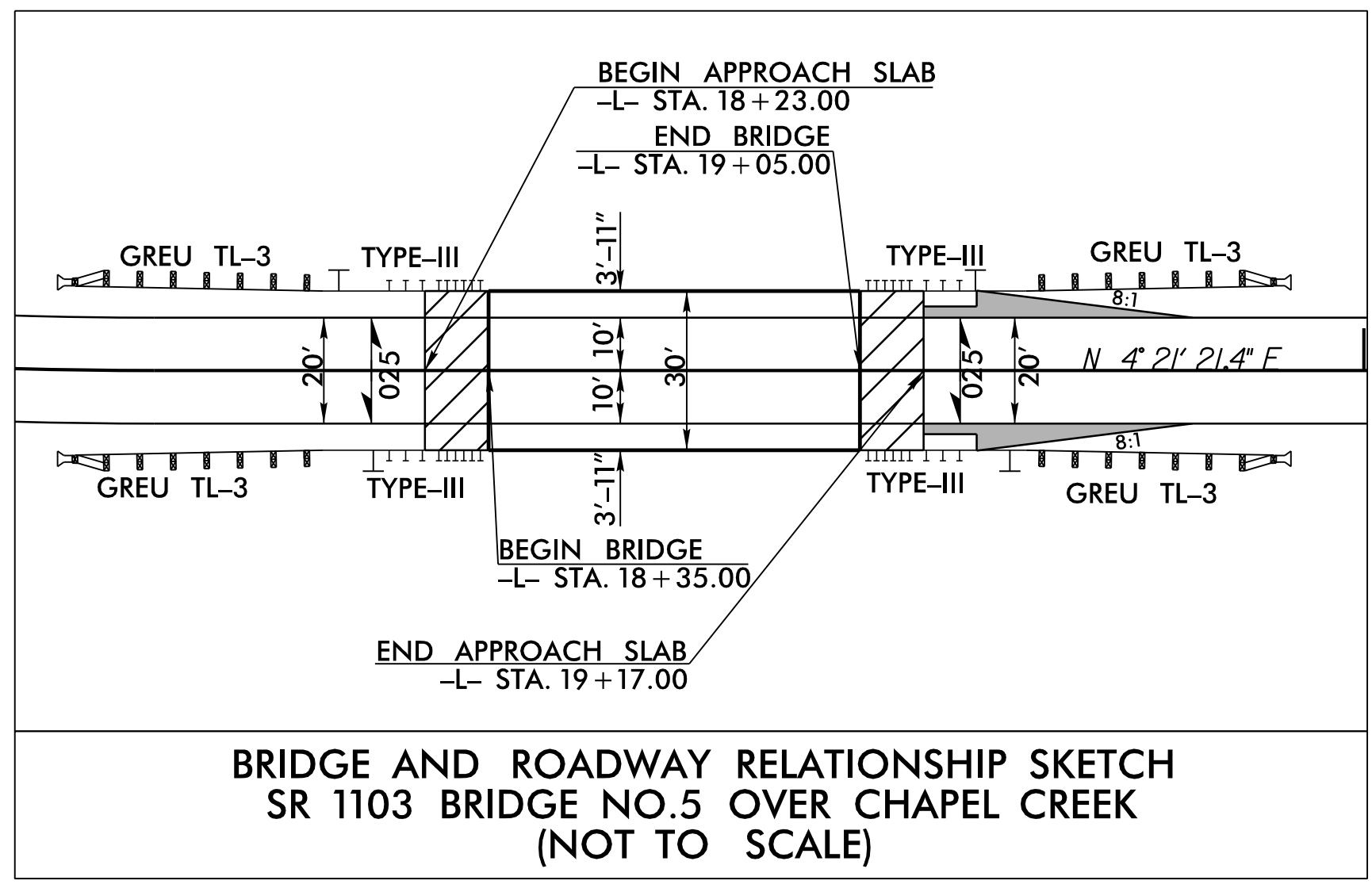
**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**

NAD 83/NA 2011



-L-

| | | |
|--|---|---|
| PI Sta 15+52.83 Δ = 26°55'54.5" (LT) D = 6'0" 52.1" L = 446.55' T = 227.48' R = 950.00' SE = .06 V = 50 mph | PI Sta 22+38.08 Δ = 7°25'16.1" (RT) D = 4'45'00.0" L = 156.23' T = 78.23' R = 1,206.23' SE = EXIST V = EXIST | PI Sta 24+95.89 Δ = 17°38'59.1" (RT) D = 5'30'00.0" L = 320.90' T = 161.73' R = 1,041.74' SE = EXIST V = EXIST |
|--|---|---|



| PARCEL NO. | PROPERTY OWNERS NAME | TOTAL AREA | AREA TAKEN | AREA REMAINING RIGHT | AREA REMAINING LEFT | CONSTRUCTION EASEMENT | PERMANENT UTILITY EASEMENT | PERMANENT DRAINAGE UTILITY EASEMENT |
|------------|---|------------|------------|----------------------|---------------------|-----------------------|----------------------------|-------------------------------------|
| 1 | CHORY FAMILY FARM LLC | | | | | | 1761 SF | |
| 2 | UNION METHODIST CHURCH | | | | | | 1715 SF | |
| 3 | CLARENCE M. CERRONE ANGELA M. KLAVERKAMP | | | | | | 4403 SF | 230 SF |
| 4 | BENNIE T. JAMES | | | | | | 1024 SF | 246 SF |

PAVED SHOULDER
 ROCK PLATING

NOTES:
 SEE SHEET 5 FOR -L- PROFILE
 ALL DRIVES HAVE 10' RADIUS UNLESS OTHERWISE NOTED
 ** SEE SHEET 2C-3 FOR ROCK PLATING DETAIL
 SEE SHEETS S-1 THRU S-19 FOR BRIDGE PLANS

9/8/2022
 R:\Roadway\Proj\16910005_RDY_PSH04.dgn
 Chris M. H. H.

5/14/99



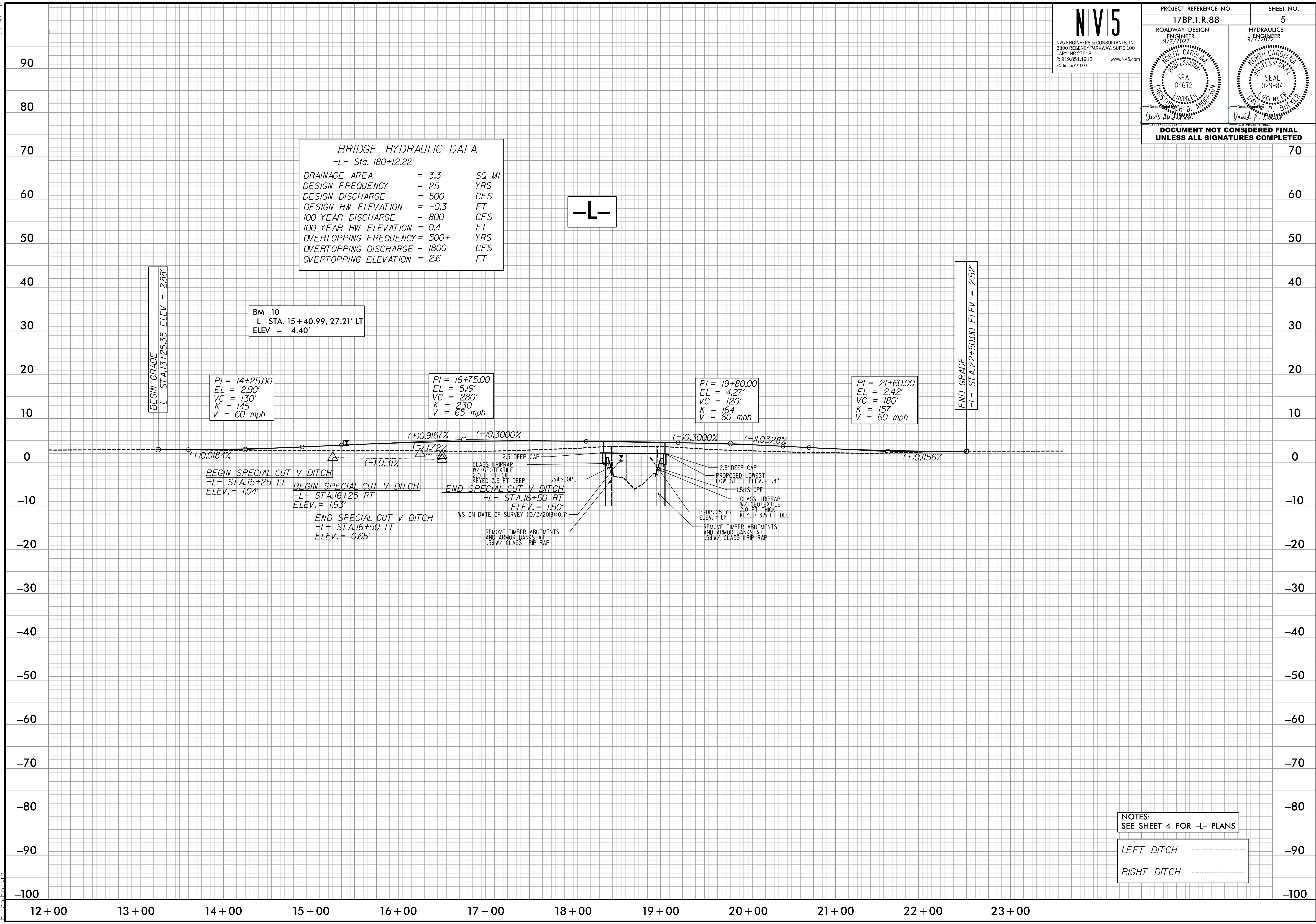
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| PROJECT REFERENCE NO. 17BP.1.R.88 | SHEET NO. 5 |
| ROADWAY DESIGN ENGINEER 9/7/2022 | HYDRAULICS ENGINEER 9/7/2022 |
| | |
| Christopher D. Addison | David P. Bocker |

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

BRIDGE HYDRAULIC DATA
-L- Sta. 180+12.22

| | | |
|-----------------------|--------|-------|
| DRAINAGE AREA | = 3.3 | SQ MI |
| DESIGN FREQUENCY | = 25 | YRS |
| DESIGN DISCHARGE | = 500 | CFS |
| DESIGN HW ELEVATION | = -0.3 | FT |
| 100 YEAR DISCHARGE | = 800 | CFS |
| 100 YEAR HW ELEVATION | = 0.4 | FT |
| OVERTOPPING FREQUENCY | = 500+ | YRS |
| OVERTOPPING DISCHARGE | = 1800 | CFS |
| OVERTOPPING ELEVATION | = 2.6 | FT |

-L-



NOTES:
SEE SHEET 4 FOR -L- PLANS

LEFT DITCH
RIGHT DITCH

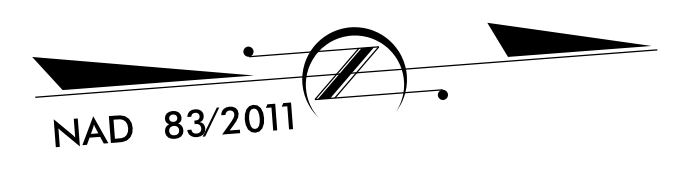
7/29/2022
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| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-------|-----------------------------|-----------|--------------|
| N.C. | 17BP.1.R.88 | RW01 | 6 |

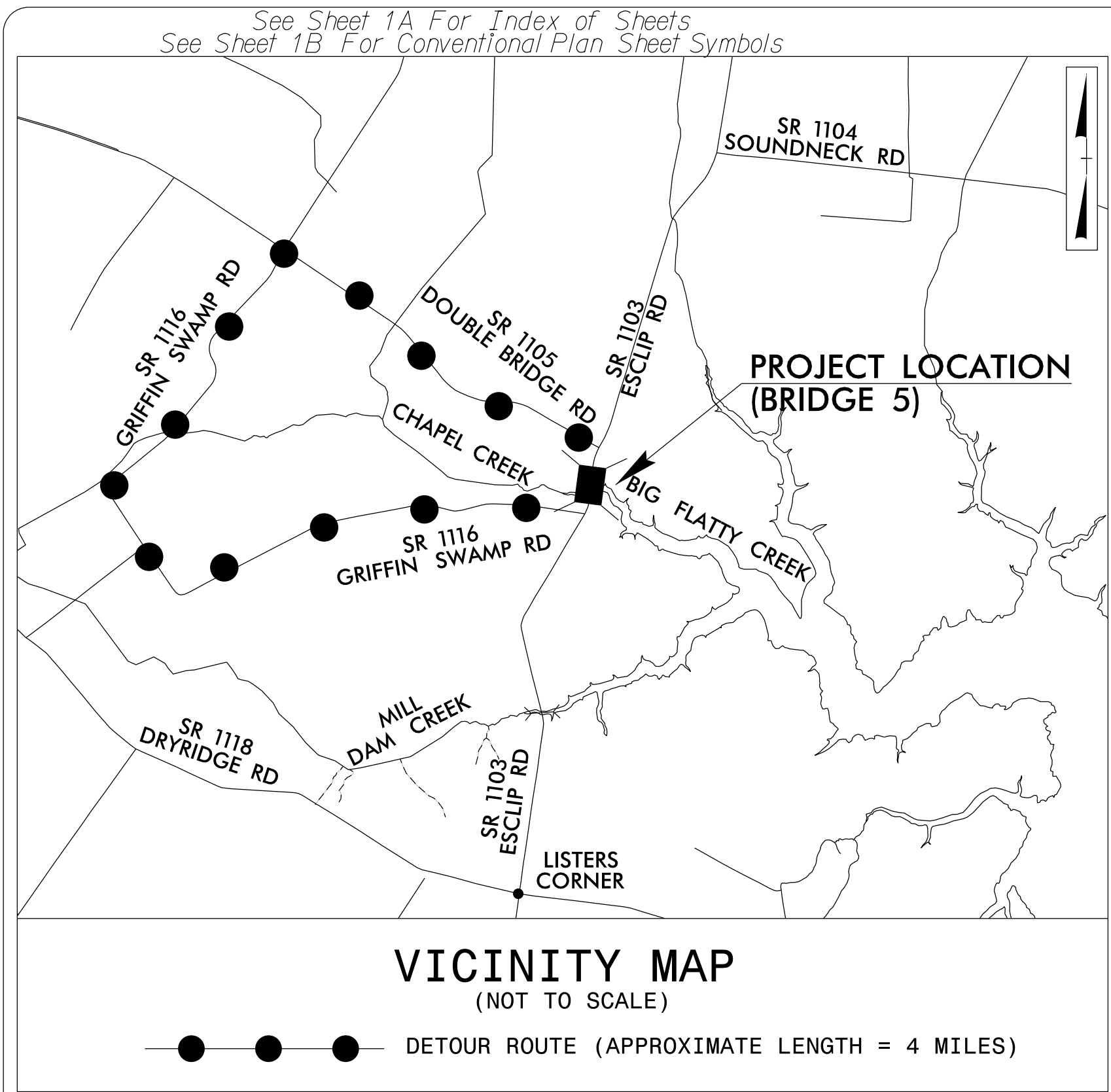
STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
 SURVEY CONTROL, EXISTING CENTERLINES,
 RIGHT OF WAY, EASEMENTS AND PROPERTY TIES

PASQUOTANK COUNTY

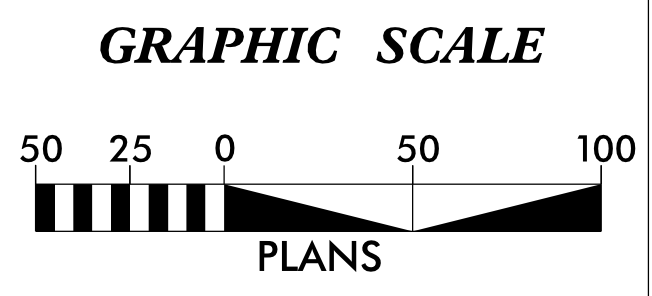
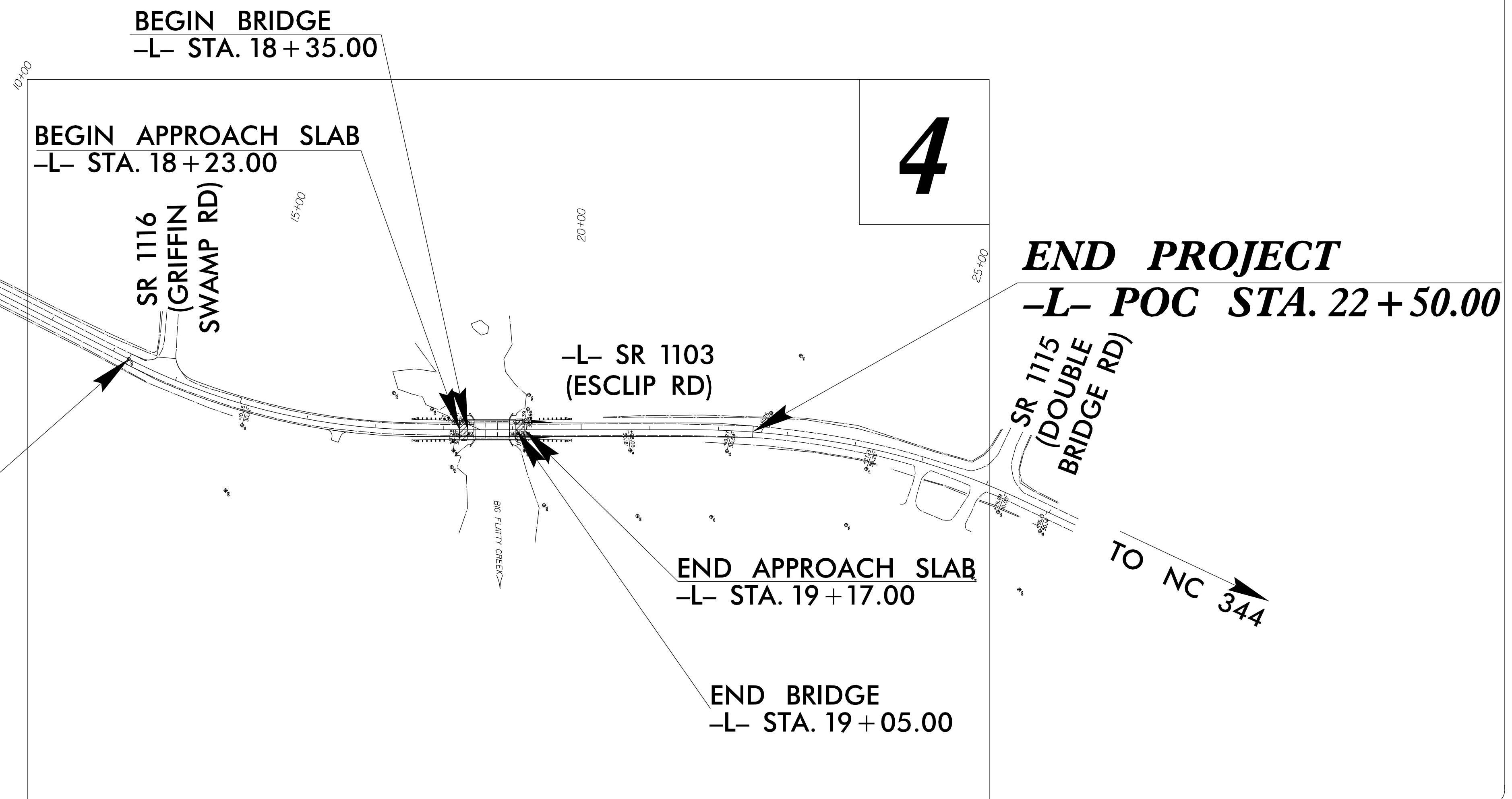
**LOCATION: BRIDGE NO. 5 OVER CHAPEL CREEK
 ON SR 1103 (ESCLIP RD)**



TIP PROJECT: 17BP.1.R.88



VICINITY MAP
(NOT TO SCALE)



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "690005-1" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 888,191.736(ft) EASTING: 2,835,947.0460(ft) ELEVATION: 1.84(ft)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.000003326
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "690005-1" TO -L- STATION 13+25.35 IS N 30°09'31.52" E 837.99(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 64 W
 PLYMOUTH, NC 27962

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JUNE 20, 2022

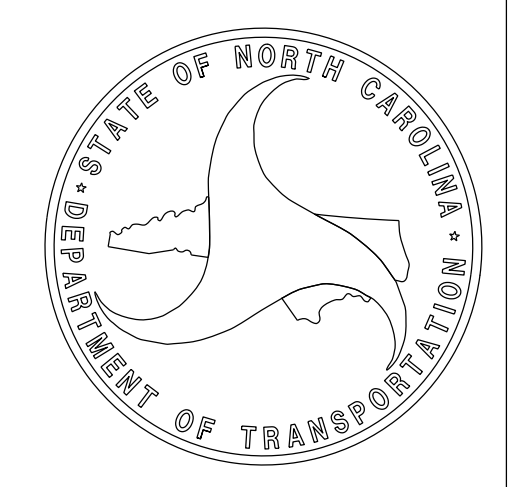
LETTING DATE:
NOVEMBER 23, 2022

PROFESSIONAL LAND SURVEYOR

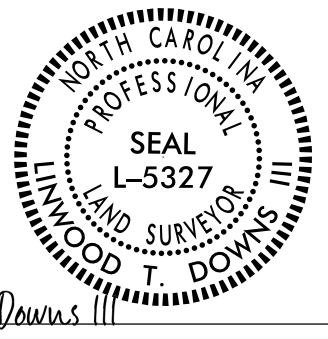


Disciplined by:
 Signature: *Wood T. Downs III*

Date: 09/06/2022



09/06/2022 13:20
 R:\B_Jobs\17478\690005\17bp.1.r.88\690005_Pasquotank\17bp.1.r.88\Control\ControlSheets\RW and Title-Sheets\690005_ls_rw01.dgn
 Tdowns AT LS-330215L

| | |
|--|----------------------|
| PROJECT REFERENCE NO. 17BP.1.R.88 | SHEET NO. RWO2C-1 |
| Location and Surveys | |
| LOCATION & SURVEYS DIVISION 1 1300 US HWY 64 W PLYMOUTH, NC 27962 | |
| PROJECT SURVEYOR  | |
| DocuSigned by: <i>Linwood T. Downs III</i> BASICALLY DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

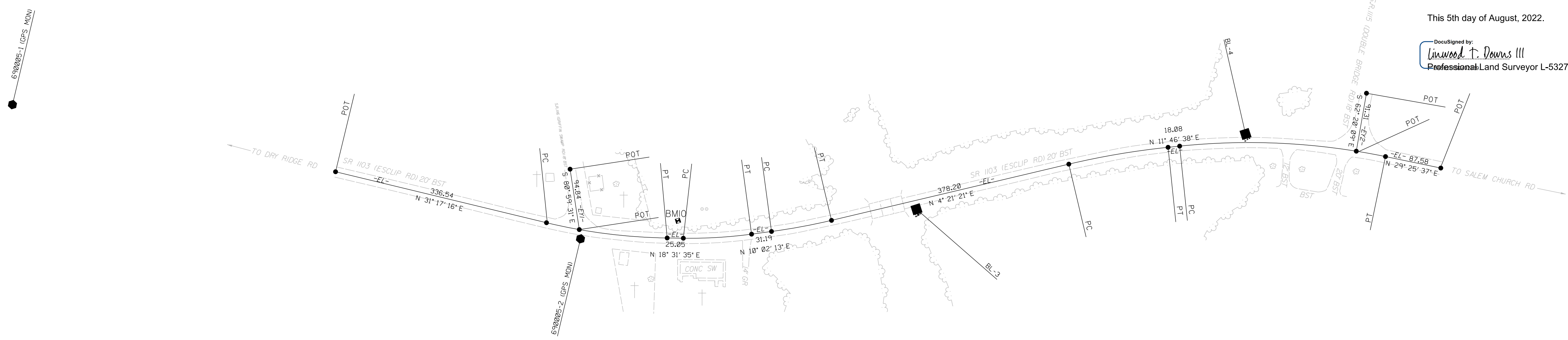
I, Linwood T. Downs III, PLS, certify that the Project Control was performed under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: **AA**
 Type of GPS field procedure: RTN
 Dates of survey: June 2018
 Datum/Epoch: NAD 83/NA 2011
 Published/Fixed-control use: N/A
 Localized around: 690005-1
 Northing: 888,191.736
 Easting: 2,835,947.0460
 Combined grid factor: 1.000003326
 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 in June 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 5th day of August, 2022.

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

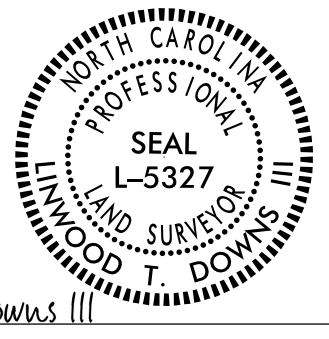


NOTES:

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.

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

| | |
|---|----------------------|
| PROJECT REFERENCE NO. 17BP.1.R.88 | SHEET NO. RW02C-2 |
| Location and Surveys | |
| LOCATION & SURVEYS DIVISION 1 1300 US HWY 64 W PLYMOUTH, NC 27962 | |
|  | |
| DocuSigned by: Linwood T. Downs III BASE021 | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

| BL | POINT | DESC. | NORTH | EAST | ELEVATION |
|----|---------|------------------|-------------|--------------|-----------|
| | 6900051 | 690005-1 GPS MON | 888191.7360 | 2835947.0460 | 1.84 |
| | 6900052 | 690005-2 GPS MON | 888967.6390 | 2836413.2390 | 2.11 |
| | BL3 | BL - 3 | 889478.0750 | 2836527.7540 | 2.30 |
| | BL4 | BL - 4 | 889999.6610 | 2836571.5810 | 1.89 |

.....
 BMT0 ELEVATION + 4.40
 N 889120 E 2836432
 RR SPIKE IN BASE OF 16" PINE

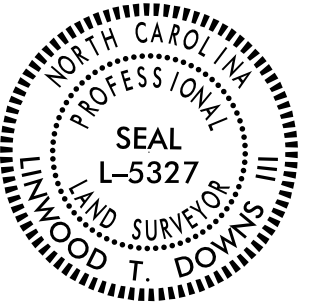
I, Linwood T. Downs III, PLS, certify that the Project Control was performed under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: **AA**
 Type of GPS field procedure: RTN
 Dates of survey: June 2018
 Datum/Epoch: NAD 83/NA 2011
 Published/Fixed-control use: N/A
 Localized around: 690005-1
 Northing: 888,191.736
 Easting: 2,835,947.0460
 Combined grid factor: 1.000003326
 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 in June 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 5th day of August, 2022.

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



REVISIONS

| EL | POINT | N | E | BEARING | DIST | DELTA | D | L | T | R |
|-------|------------|-------------|---|-----------------|--------|-----------------|-------------|--------|--------|---------|
| POT | 888637.403 | 2836198.564 | | | | | | | | |
| LINE | | | | N 31°17'15.9" E | 336.54 | | | | | |
| PC | 888925.004 | 2836373.344 | | | | | | | | |
| CURVE | | | | N 24°54'25.3" E | 188.67 | 12°45'41.1"(LT) | 06°45'00.0" | 189.06 | 94.92 | 848.83 |
| PT | 889096.124 | 2836452.801 | | | | | | | | |
| LINE | | | | N 18°31'34.8" E | 25.05 | | | | | |
| PC | 889119.879 | 2836460.761 | | | | | | | | |
| CURVE | | | | N 14°16'53.9" E | 106.02 | 08°29'21.8"(LT) | 08°00'00.0" | 106.12 | 53.16 | 716.20 |
| PT | 889222.623 | 2836486.915 | | | | | | | | |
| LINE | | | | N 10°02'12.9" E | 31.19 | | | | | |
| PC | 889253.334 | 2836492.351 | | | | | | | | |
| CURVE | | | | N 07°11'47.2" E | 94.64 | 05°40'51.5"(LT) | 06°00'00.0" | 94.68 | 47.38 | 954.93 |
| PT | 889347.233 | 2836504.207 | | | | | | | | |
| LINE | | | | N 04°21'21.4" E | 378.20 | | | | | |
| PC | 889724.341 | 2836532.932 | | | | | | | | |
| CURVE | | | | N 08°03'59.5" E | 156.13 | 07°25'16.1"(RT) | 04°45'00.0" | 156.23 | 78.23 | 1206.23 |
| PT | 889878.921 | 2836554.840 | | | | | | | | |
| LINE | | | | N 11°46'37.5" E | 18.08 | | | | | |
| PC | 889896.616 | 2836558.530 | | | | | | | | |
| CURVE | | | | N 20°36'07.1" E | 319.64 | 17°38'59.1"(RT) | 05°30'00.0" | 320.90 | 161.73 | 1041.74 |
| PT | 890195.812 | 2836671.002 | | | | | | | | |
| LINE | | | | N 29°25'36.6" E | 87.58 | | | | | |
| POT | 890272.091 | 2836714.030 | | | | | | | | |

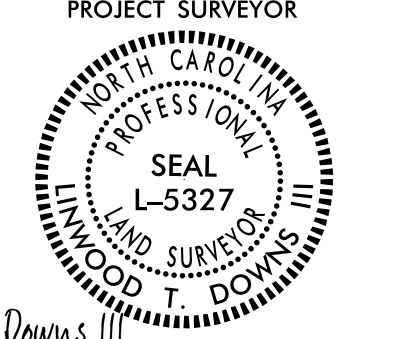
| EY1 | POINT | N | E | BEARING | DIST |
|------|------------|-------------|---|-----------------|-------|
| POT | 888985.118 | 2836305.316 | | | |
| LINE | | | | S 80°59'31.5" E | 94.84 |
| POT | 888970.269 | 2836398.987 | | | |

| EY2 | POINT | N | E | BEARING | DIST |
|------|------------|-------------|---|-----------------|-------|
| POT | 890197.581 | 2836568.382 | | | |
| LINE | | | | S 62°20'09.3" E | 91.31 |
| POT | 890155.186 | 2836649.255 | | | |

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.


PROPOSED ALIGNMENT CONTROL SHEET

| | |
|--|----------------------|
| PROJECT REFERENCE NO. 17BP.1.R.88 | SHEET NO. RWO2D-1 |
| Location and Surveys | |
| LOCATION & SURVEYS DIVISION 1 1300 US HWY 64 W PLYMOUTH, NC 27962 | |
| PROJECT SURVEYOR  | |
| DocuSigned by: Linwood T. Downs III DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

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 5th day of August, 2022.

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



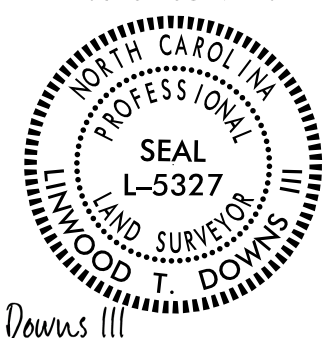
REVISIONS

| POINT | STATION | N | E | BEARING | DIST | DELTA | D | L | T | R |
|-------|----------|------------|-------------|-----------------|--------|------------------|-------------|--------|--------|---------|
| POT | 10+00.00 | 888638.258 | 2836199.084 | | | | | | | |
| LINE | | | | N 31°17'15.9" E | 325.35 | | | | | |
| PC | 13+25.35 | 888916.296 | 2836368.052 | | | | | | | |
| CURVE | | | | N 17°49'18.7" E | 442.45 | 26°55'54.5"(L T) | 06°01'52.1" | 446.55 | 227.48 | 950.00 |
| PT | 17+71.90 | 889337.511 | 2836503.467 | | | | | | | |
| LINE | | | | N 04°21'21.4" E | 387.95 | | | | | |
| PC | 21+59.85 | 889724.341 | 2836532.932 | | | | | | | |
| CURVE | | | | N 08°03'59.5" E | 156.13 | 07°25'16.1"(RT) | 04°45'00.0" | 156.23 | 78.23 | 1206.23 |
| PT | 23+16.09 | 889878.921 | 2836554.840 | | | | | | | |
| LINE | | | | N 11°46'37.5" E | 18.08 | | | | | |
| PC | 23+34.16 | 889896.616 | 2836558.530 | | | | | | | |
| CURVE | | | | N 20°36'07.1" E | 319.64 | 17°38'59.1"(RT) | 05°30'00.0" | 320.90 | 161.73 | 1041.74 |
| PT | 26+55.07 | 890195.812 | 2836671.002 | | | | | | | |
| LINE | | | | N 29°25'36.6" E | 87.58 | | | | | |
| POT | 27+42.64 | 890272.091 | 2836714.030 | | | | | | | |

NOTES:

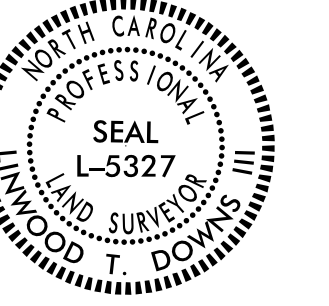
1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

RIGHT OF WAY CONTROL SHEET

| | |
|---|----------------------|
| PROJECT REFERENCE NO. 17BP.1.R.88 | SHEET NO. RW03E-1 |
| Location and Surveys | |
| LOCATION & SURVEYS DIVISION 1 1300 US HWY 64 W PLYMOUTH, NC 27962 | |
| PROJECT SURVEYOR | |
|  | |
| DocuSigned by: <i>Linwood T. Downs III</i> 845921 | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

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 August 4, 2022, and all coordinates are based on NAD83/2011. That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 5th day of August, 2022.
 DocuSigned by:
Linwood T. Downs III
 Professional Land Surveyor L-5327



| ROW MARKER PERMANENT EASEMENT-E | | | | |
|---------------------------------|----------|--------|-------------|--------------|
| ALIGN | STATION | OFFSET | NORTH | EAST |
| L | 16+55.00 | -30.68 | 889227.8542 | 2836457.3750 |
| L | 16+55.00 | -48.00 | 889231.2798 | 2836440.3954 |
| L | 17+10.00 | 46.00 | 889269.5124 | 2836542.3006 |
| L | 17+10.00 | 29.33 | 889271.8581 | 2836525.7971 |
| L | 17+71.90 | 46.00 | 889334.0169 | 2836549.3338 |
| L | 17+71.90 | -48.00 | 889341.1565 | 2836455.6053 |
| L | 19+17.84 | 30.00 | 889480.7481 | 2836544.4643 |
| L | 19+22.55 | -30.00 | 889490.0054 | 2836484.9957 |
| L | 19+23.46 | 46.00 | 889485.1358 | 2836560.8449 |
| L | 19+23.85 | -48.00 | 889492.6638 | 2836467.1460 |
| L | 19+36.00 | -30.00 | 889503.4143 | 2836486.0171 |
| L | 19+36.00 | -48.00 | 889504.7815 | 2836468.0690 |
| L | 19+36.00 | 46.00 | 889497.6419 | 2836561.7975 |
| L | 19+36.00 | 30.00 | 889498.8572 | 2836545.8437 |
| L | 20+00.00 | 46.00 | 889561.4571 | 2836566.6585 |
| L | 20+00.00 | 30.00 | 889562.6723 | 2836550.7047 |
| L | 21+59.85 | -48.00 | 889727.9864 | 2836485.0711 |
| L | 21+80.00 | -30.00 | 889747.1951 | 2836504.7594 |
| L | 21+80.00 | -48.00 | 889748.8619 | 2836486.8368 |

REVISIONS

P:\SEP-2022 (741)
 R5\B\1065\264783\690005\17bp.1.r.88\Control\Control Sheets\E-Sheets\690005_1s.rw03e-1.dgn
 L-downs AT LS-330213L

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 AUGUST 4, 2022.

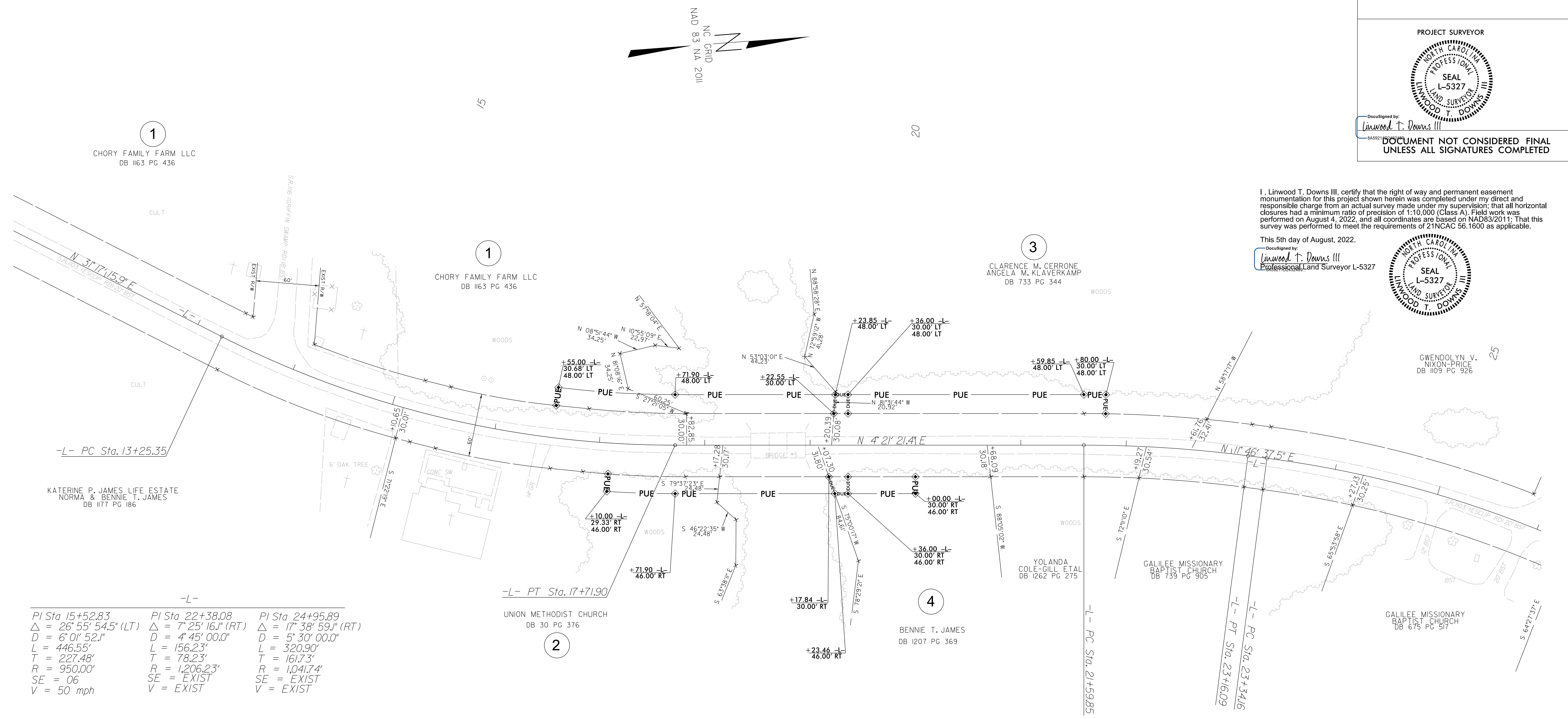
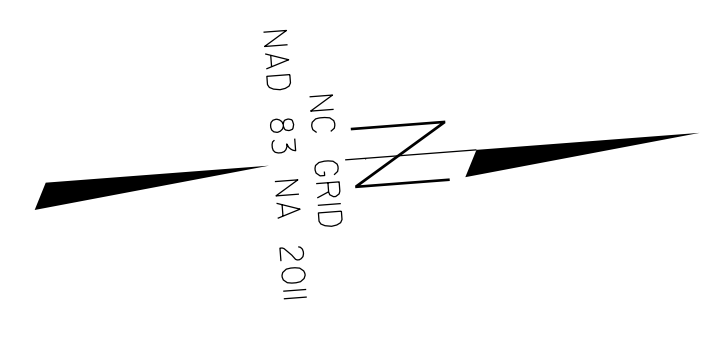
I, Linwood T. Downs III, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed on August 4, 2022, and all coordinates are based on NAD83/2011. That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 5th day of August, 2022.
 Documented by:
 Linwood T. Downs III
 Professional Land Surveyor L-5327



GWENDOLYN V. NIXON-PRICE
 DB 1109 PG 926

GALILEE MISSIONARY BAPTIST CHURCH
 DB 675 PG 517



| -L- | | |
|-------------------------------------|------------------------------------|-------------------------------------|
| PI Sta 15+52.83 | PI Sta 22+38.08 | PI Sta 24+95.89 |
| $\Delta = 26^{\circ}55'54.5''$ (LT) | $\Delta = 7^{\circ}25'16.1''$ (RT) | $\Delta = 17^{\circ}38'59.1''$ (RT) |
| $D = 6^{\circ}01'52.1''$ | $D = 4^{\circ}45'00.0''$ | $D = 5^{\circ}30'00.0''$ |
| $L = 446.55'$ | $L = 156.23'$ | $L = 320.90'$ |
| $T = 227.48'$ | $T = 78.23'$ | $T = 161.73'$ |
| $R = 950.00'$ | $R = 1,206.23'$ | $R = 1,041.74'$ |
| $SE = .06$ | $SE = EXIST$ | $SE = EXIST$ |
| $V = 50$ mph | $V = EXIST$ | $V = EXIST$ |

NOTES:

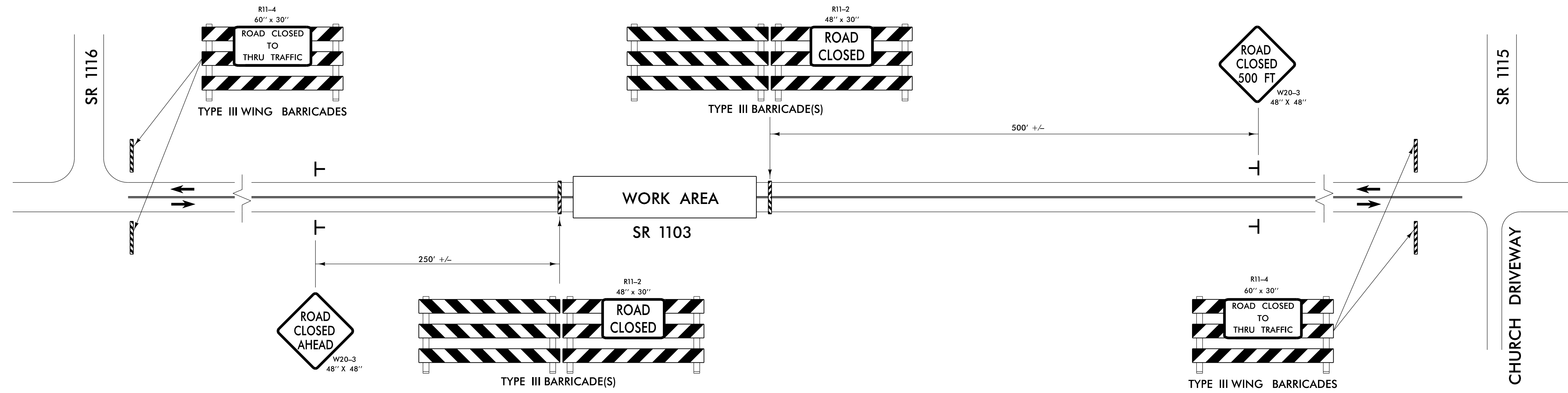
1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED ON AUGUST 4, 2022 .

6/2/19

REVISIONS

PG_SFP_2022_1751
 R5_P1065_264783
 Ldowns AT L-5-3302131
 6900005\17bp.1.r.88\Control Sheets\RM and Title-Sheets\6900005.ls.rw04.dgn

TRAFFIC CONTROL FOR TEMPORARY ROAD CLOSURE



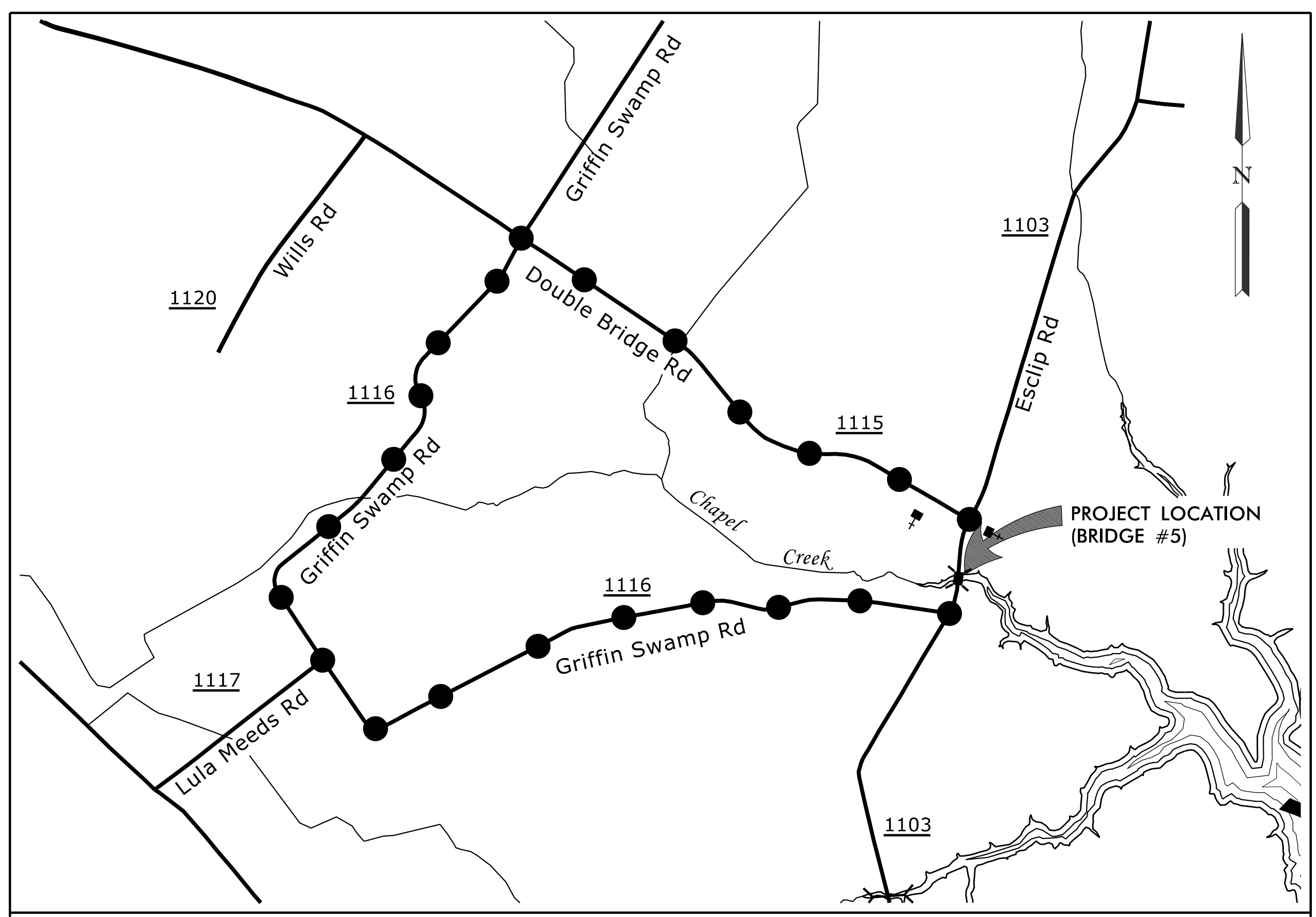
LEGEND

⊥ 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.



VICINITY MAP
(NOT TO SCALE)

● ● ● ● ● DETOUR ROUTE (APPROXIMATE LENGTH = 4 MILES)

PROJECT NO. 17BP.1.R.88
PASQUOTANK COUNTY
 STATION: 18+70.00 -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

DRAWN BY : W. B. ALLEN DATE : 6/18
 CHECKED BY : L. K. AUSTIN DATE : 6/18
 DESIGN ENGINEER OF RECORD: C. D. ANDERSON DATE : 9/22

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

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

9/9/2022 3:29:05 PM G:\Project\2016\20160326\CLIENT\Traffic\TrafficControl\TCA\B4783.TMP_690005.dgn

TIP PROJECT: 17BP.1.R.88

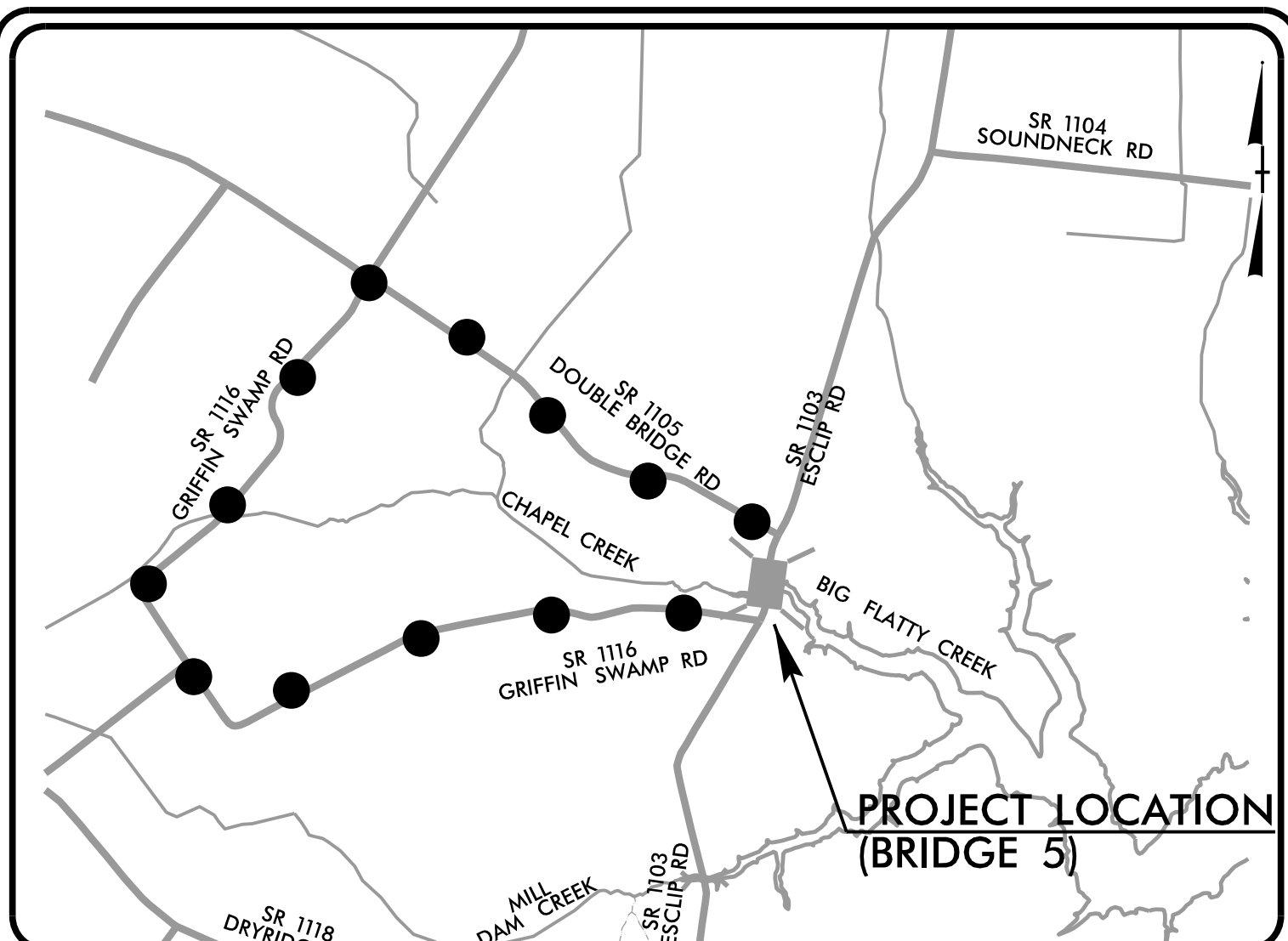
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

PASQUOTANK COUNTY

LOCATION: BRIDGE NO.5 OVER CHAPEL CREEK
ON SR 1103 (ESCLIP RD)

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

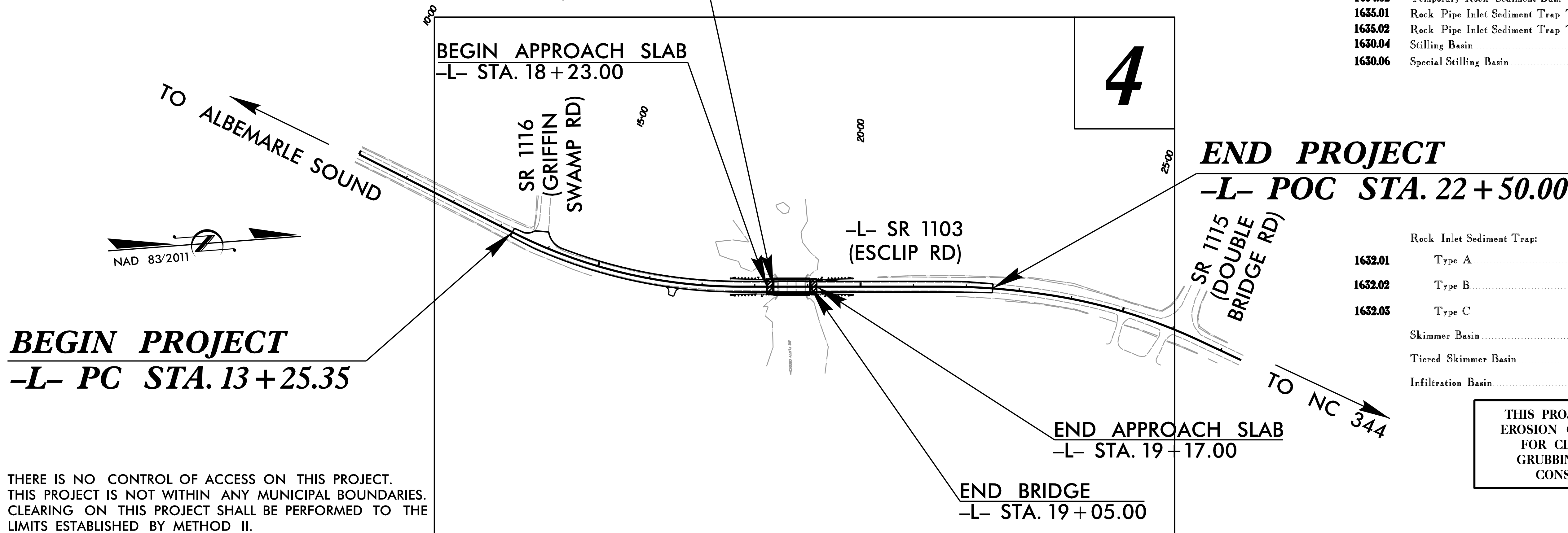


VICINITY MAP
NOT TO SCALE

| | | | |
|-----------------|-----------------------------|-------------|--------------|
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
| N.C. | 17BP.1.R.88 | EC-1 | 8 |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| | | | |
| | | | |

EROSION AND SEDIMENT CONTROL MEASURES

| Std. # | Description | Symbol |
|---------|--|-----------|
| 1630.03 | Temporary Silt Ditch | TD |
| 1630.05 | Temporary Diversion | TD |
| 1605.01 | Temporary Silt Fence | TSF |
| 1606.01 | Special Sediment Control Fence | SSCF |
| 1622.01 | Temporary Berms and Slope Drains | TBSD |
| 1630.02 | Silt Basin Type B | SBS |
| 1633.01 | Temporary Rock Silt Check Type-A | TRSCA |
| | Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM) | TRSCA-PAM |
| 1633.02 | Temporary Rock Silt Check Type-B | TRSCB |
| | Wattle-Coir Fiber Wattle | WCFW |
| | Wattle-Coir Fiber Wattle with Polyacrylamide (PAM) | WCFW-PAM |
| 1634.01 | Temporary Rock Sediment Dam Type-A | TRSDA |
| 1634.02 | Temporary Rock Sediment Dam Type-B | TRSDB |
| 1635.01 | Rock Pipe Inlet Sediment Trap Type-A | RPISTRA |
| 1635.02 | Rock Pipe Inlet Sediment Trap Type-B | RPISTRB |
| 1630.04 | Stilling Basin | SB |
| 1630.06 | Special Stilling Basin | SSB |



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.

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

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

GRAPHIC SCALE



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.

N | V | 5

N | V | 5

Prepared in the Office of:

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
NAME

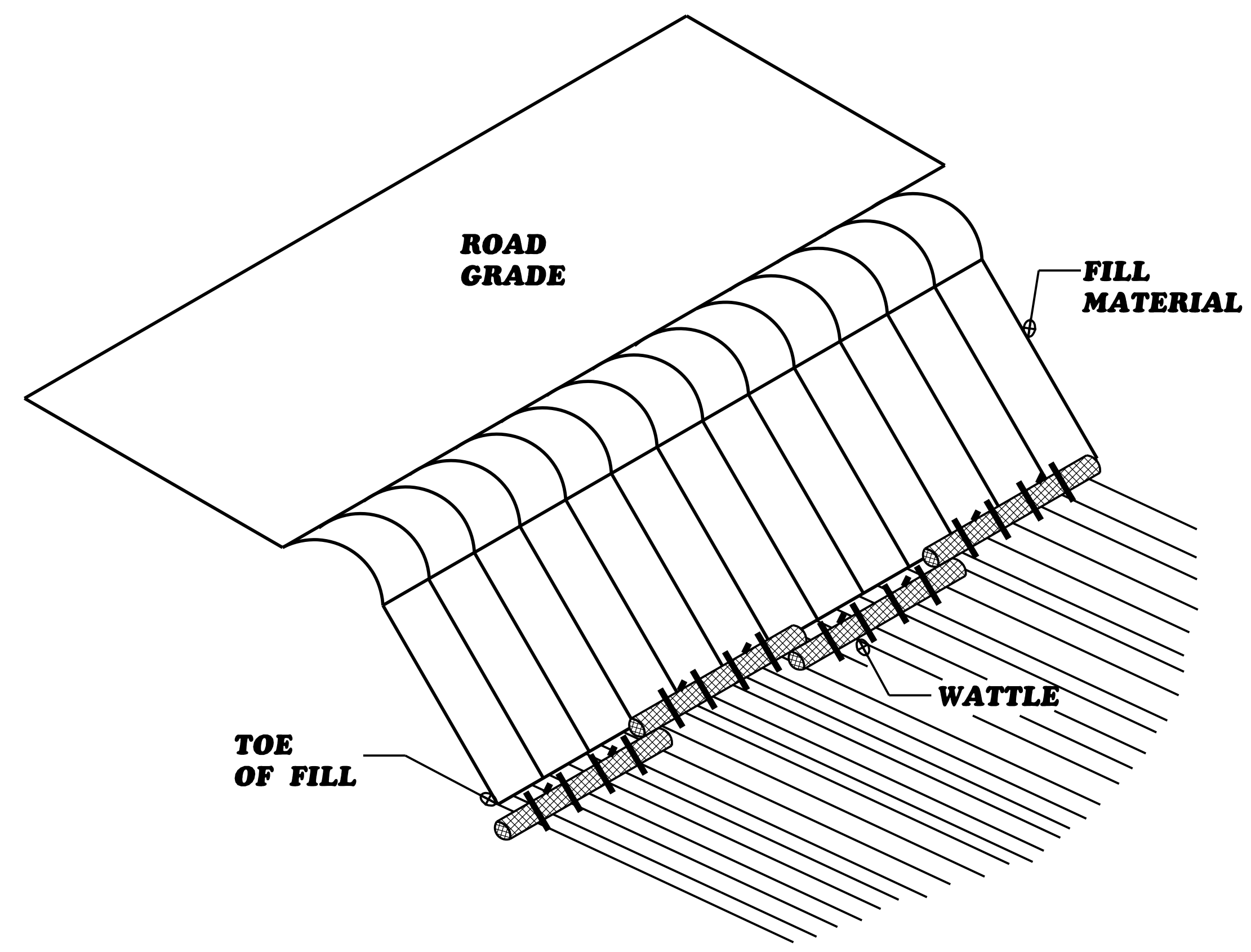
3161
LEVEL III CERTIFICATION NO.

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.

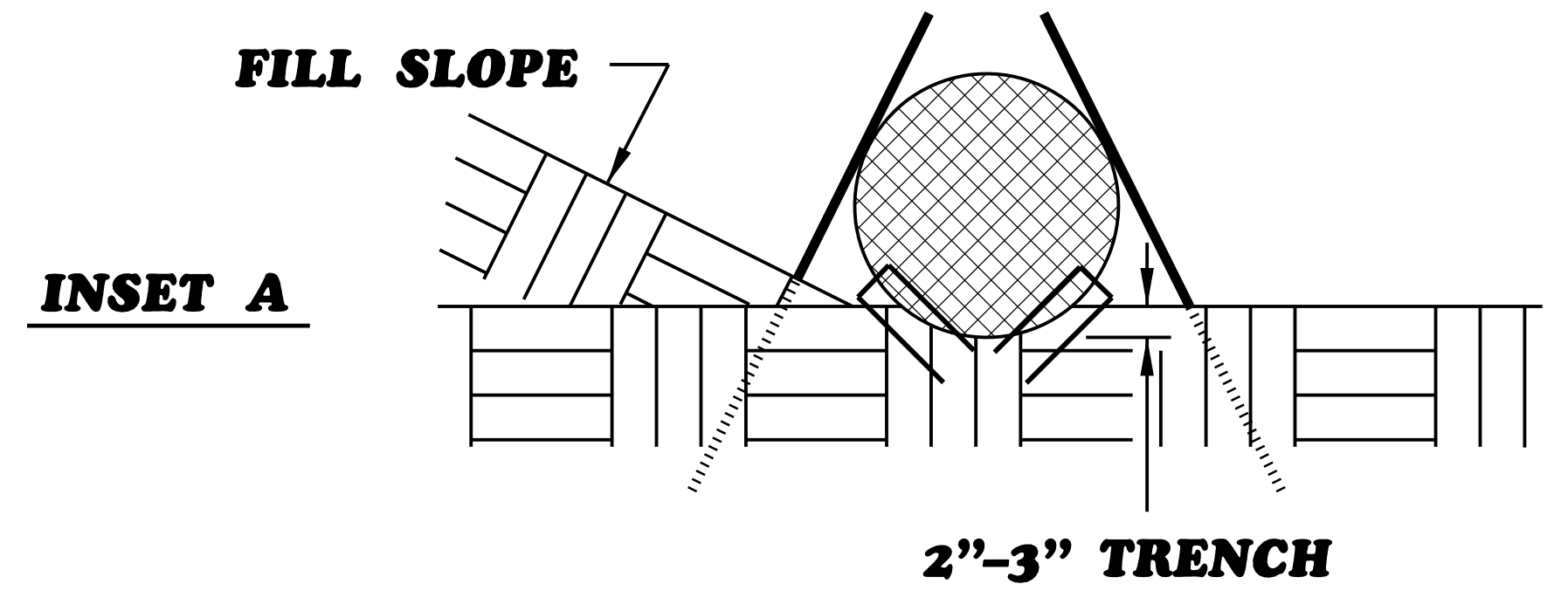
USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

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

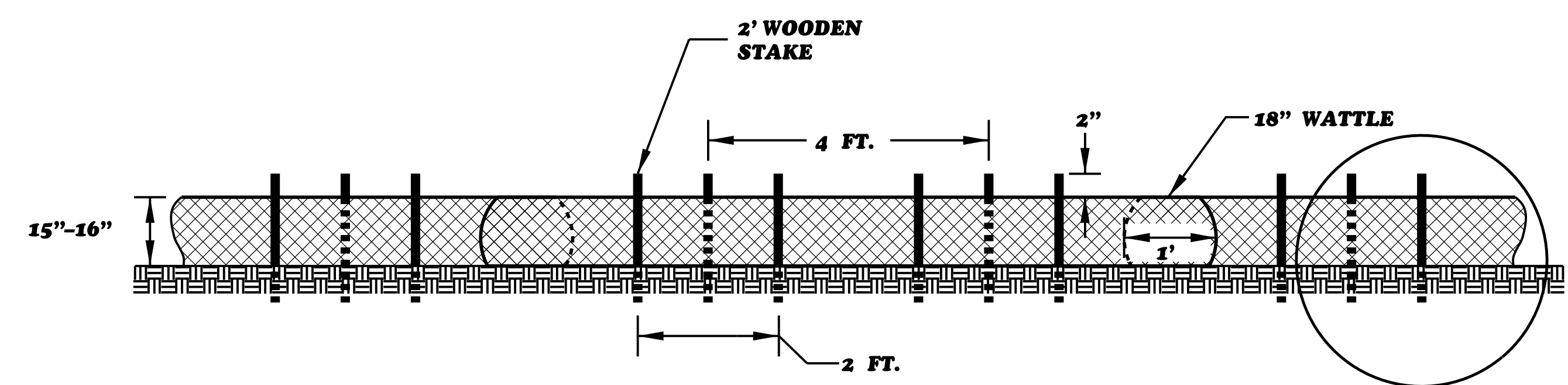
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

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

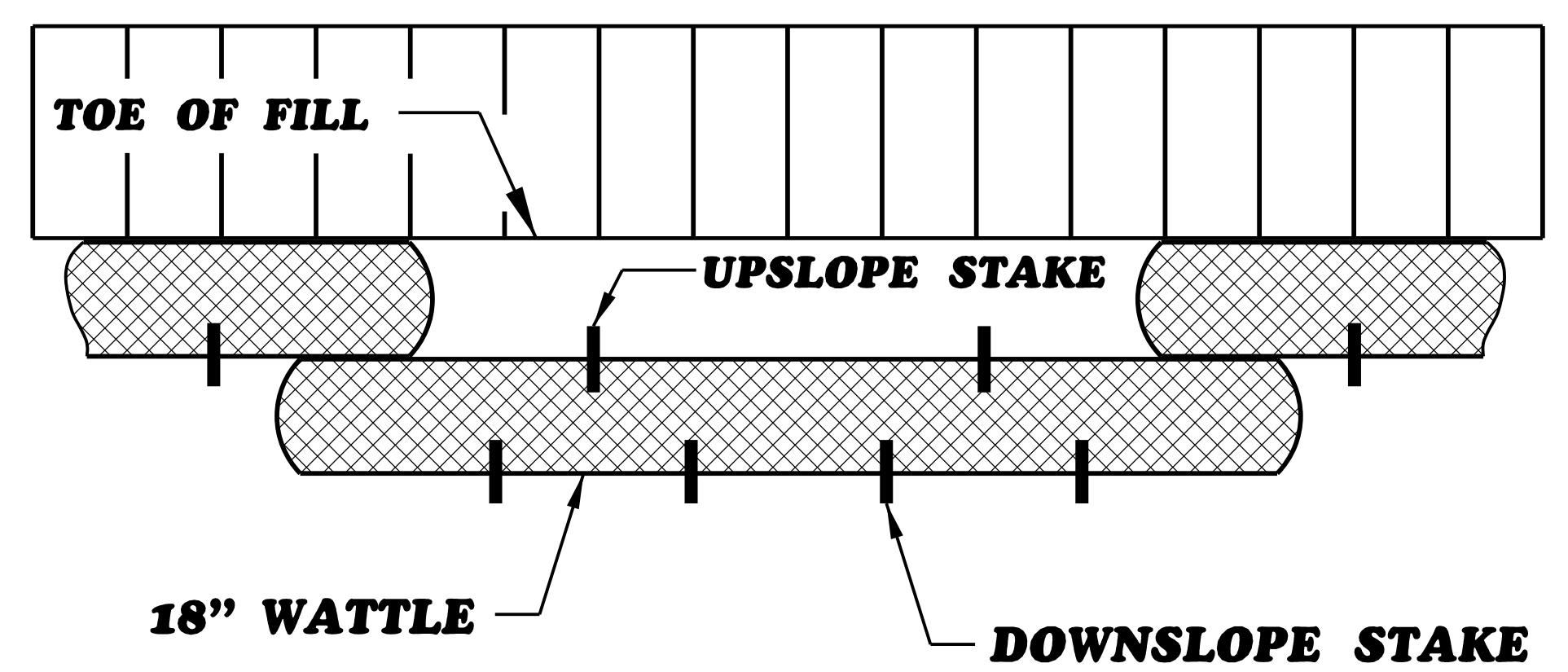
FOR BREAKS ALONG LARGE SLOPES, USE MAXIMUM SPACING OF 25 FT.



INSET A

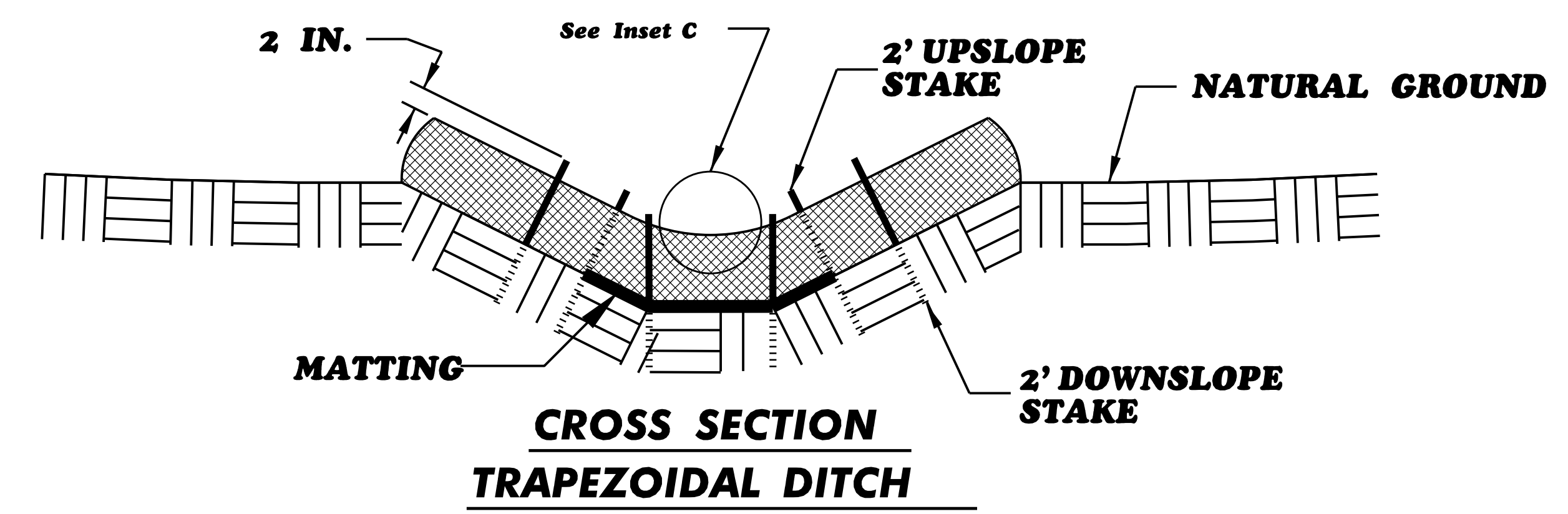
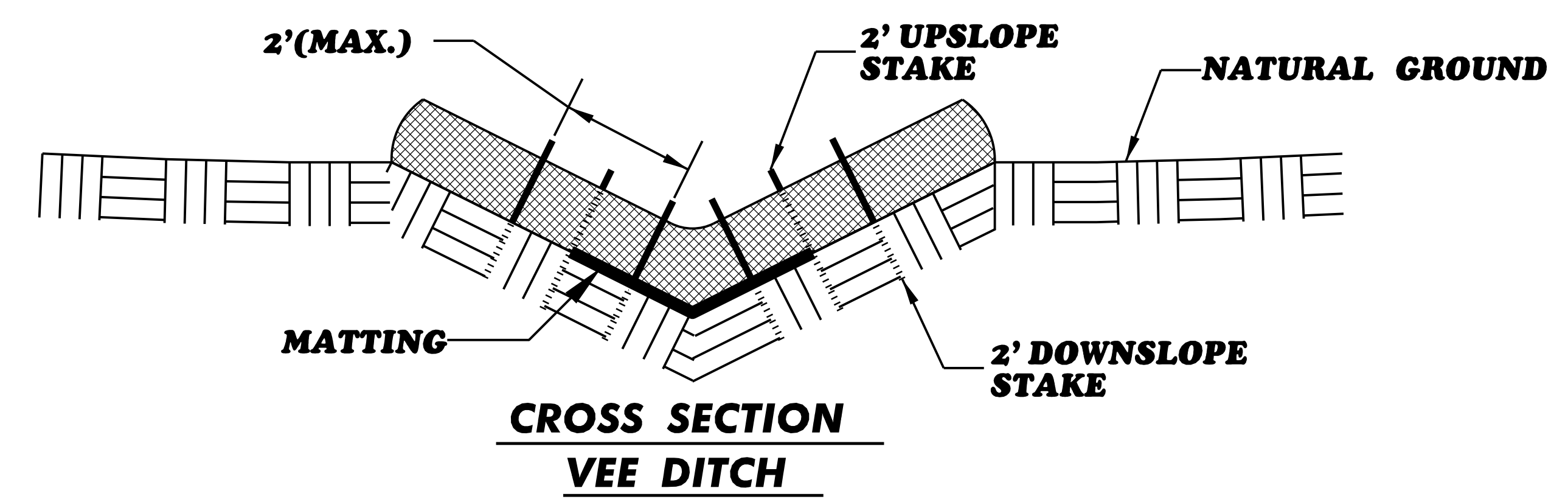
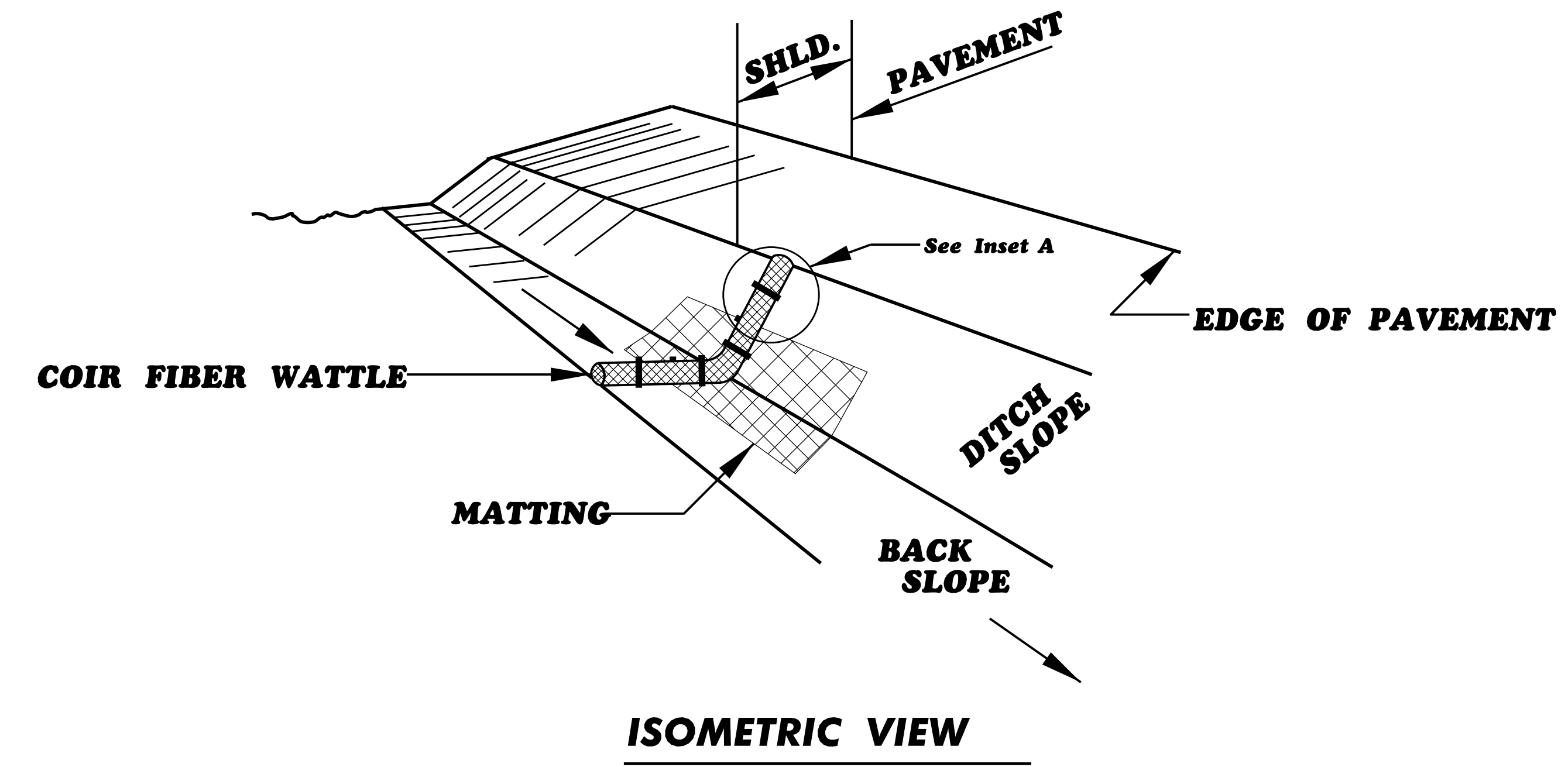


FRONT VIEW



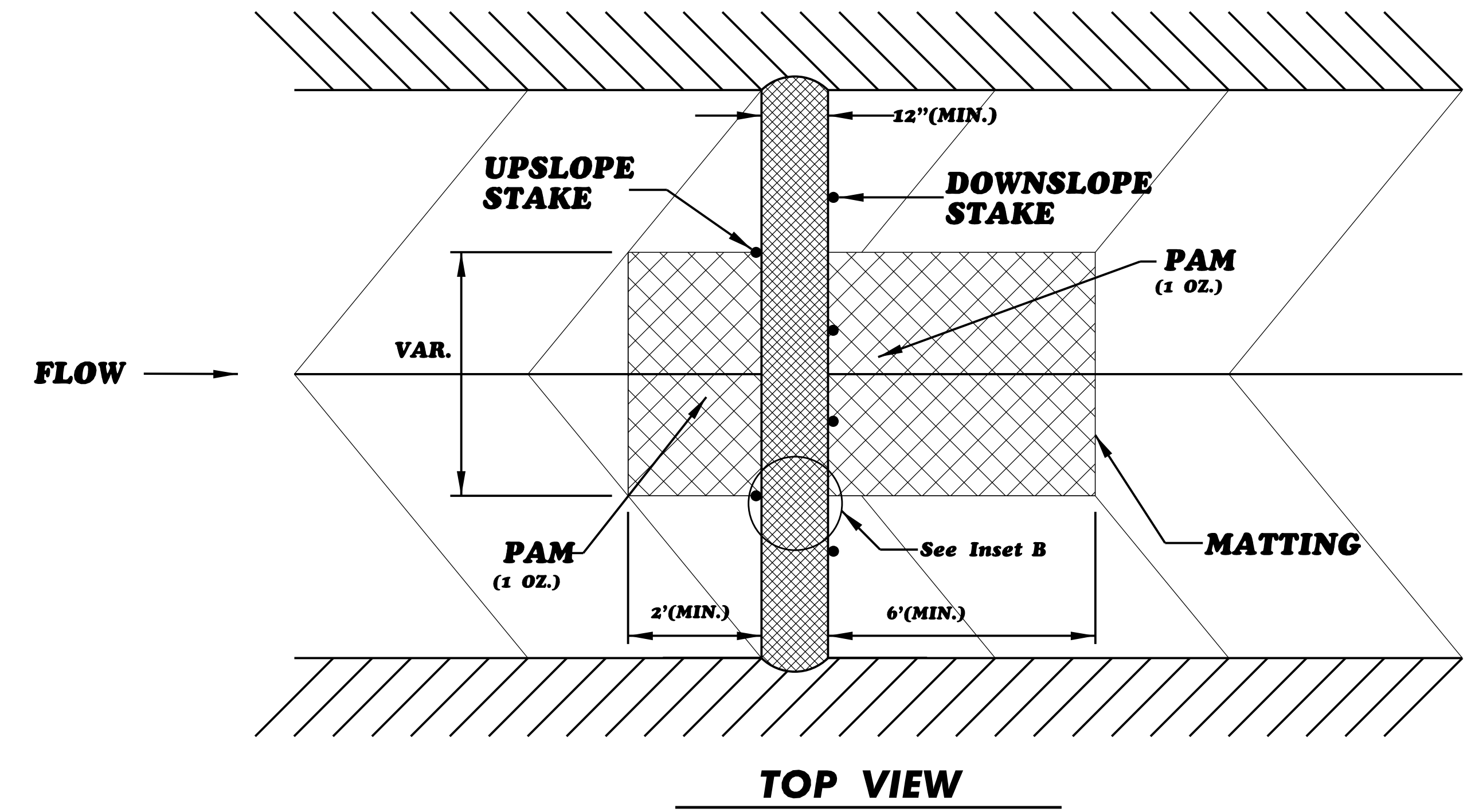
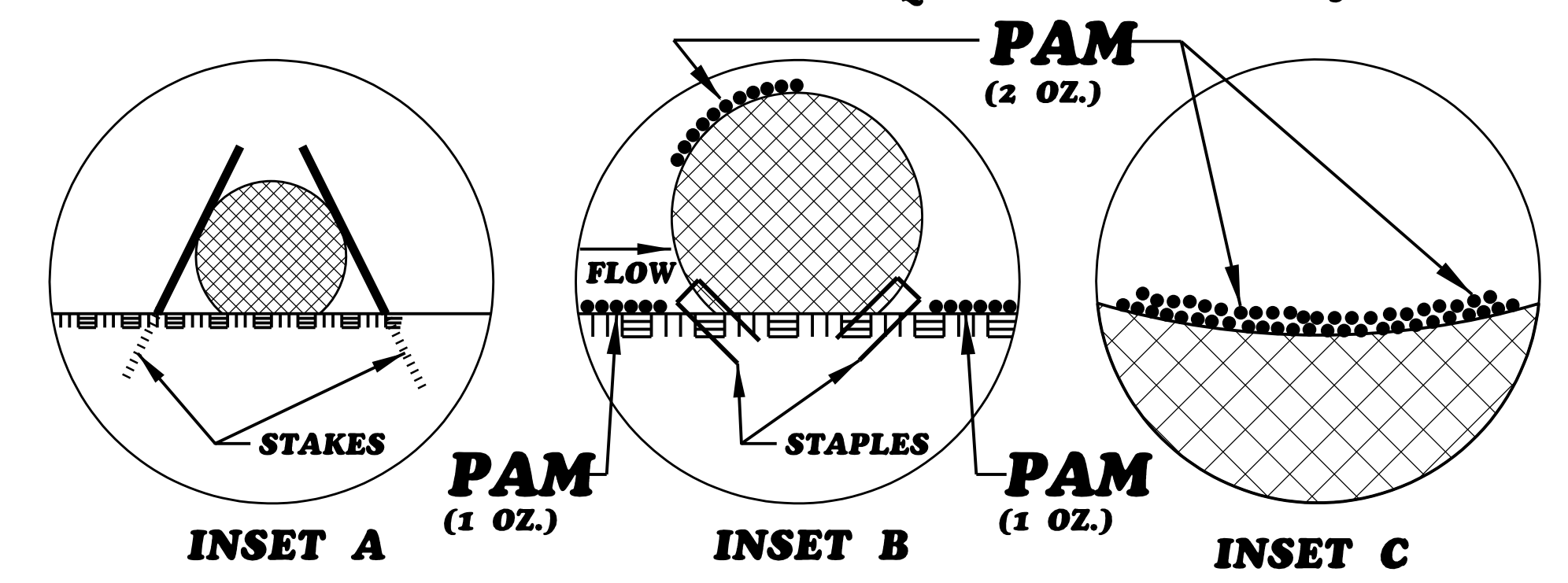
TOP VIEW

COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL

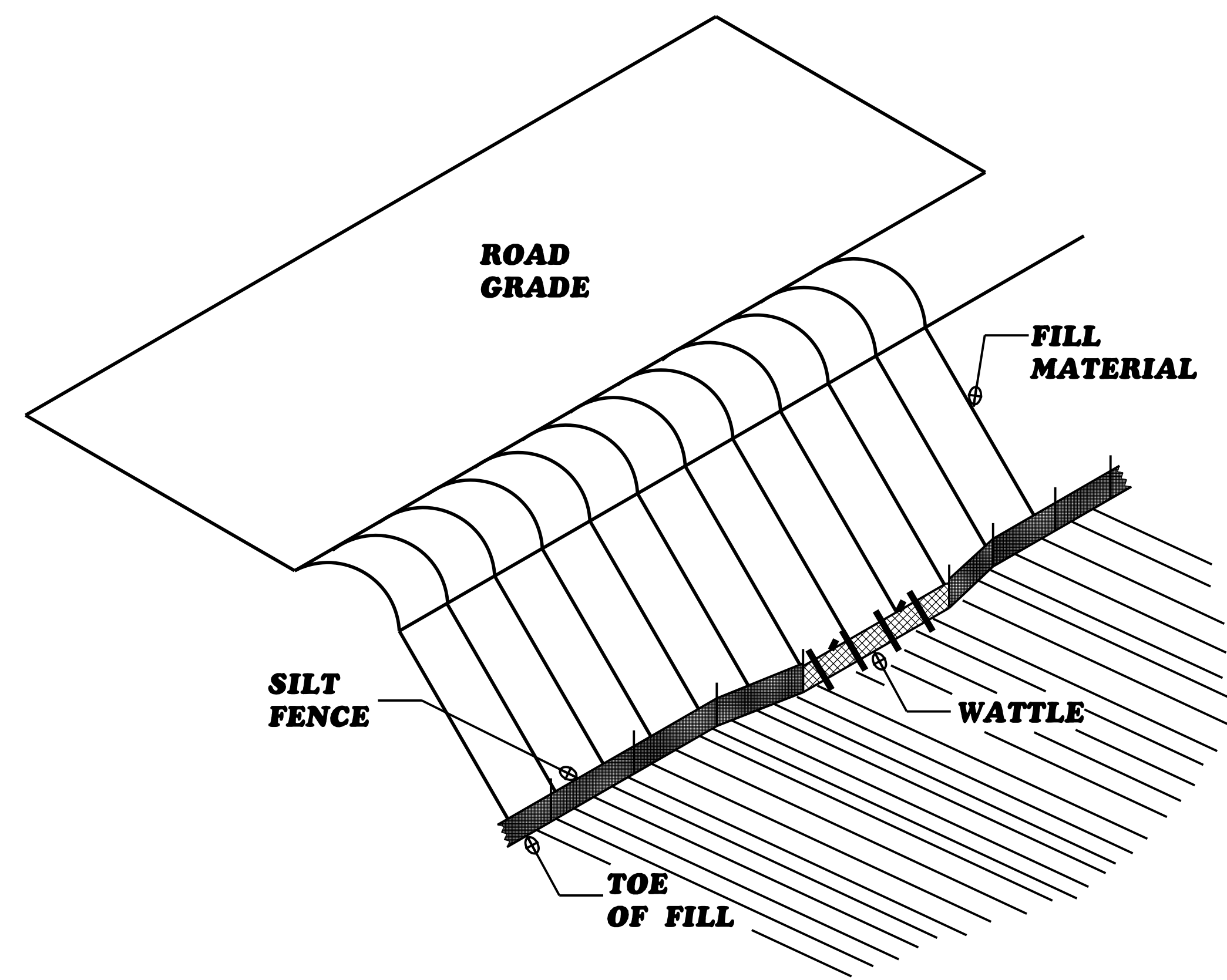


NOTES:

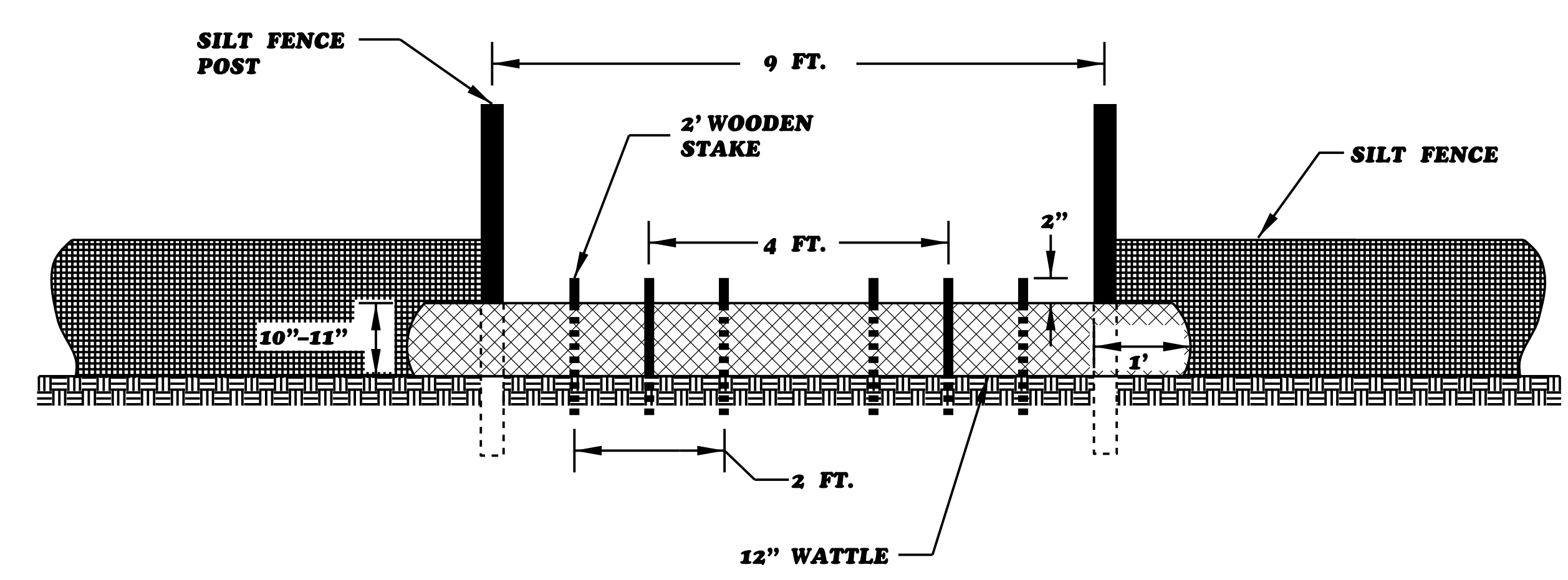
- USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.
- USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
- ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.
- INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 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 MATTING 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

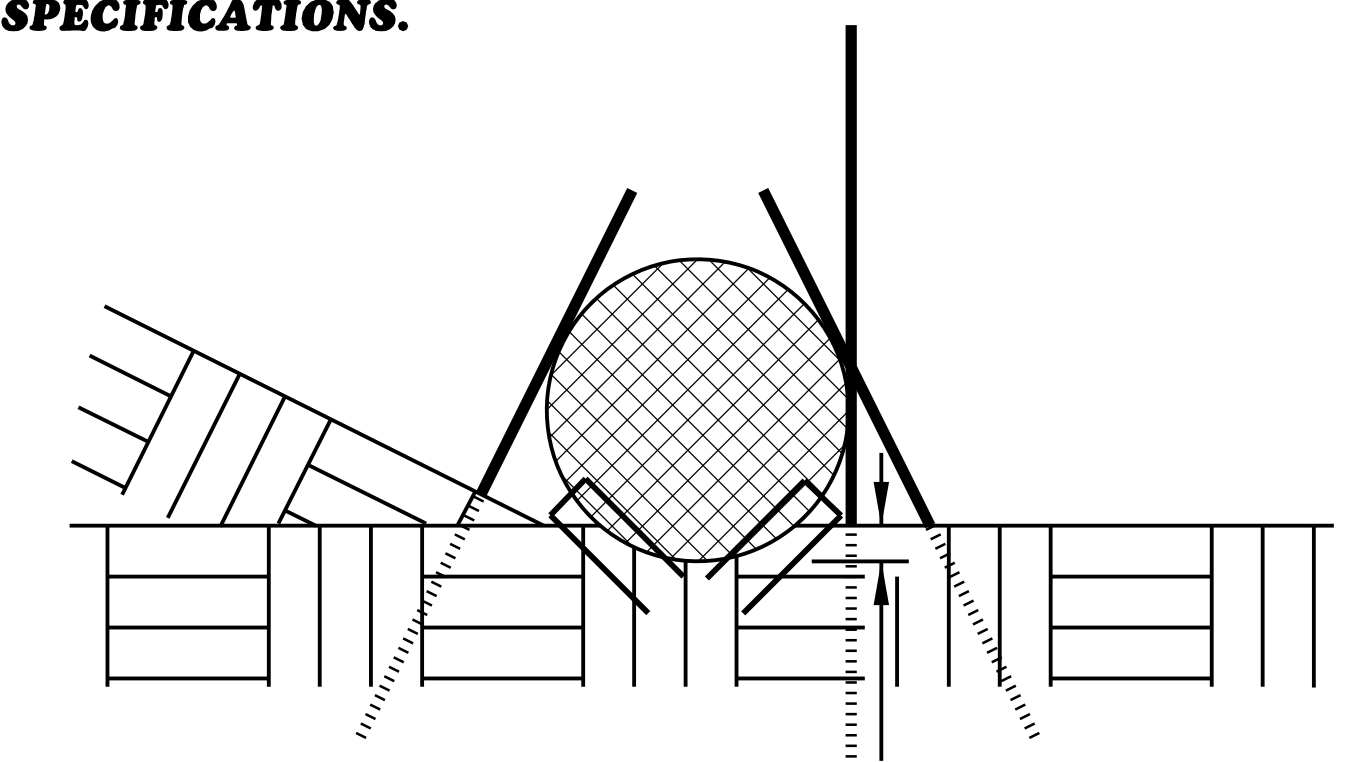


VIEW FROM SLOPE

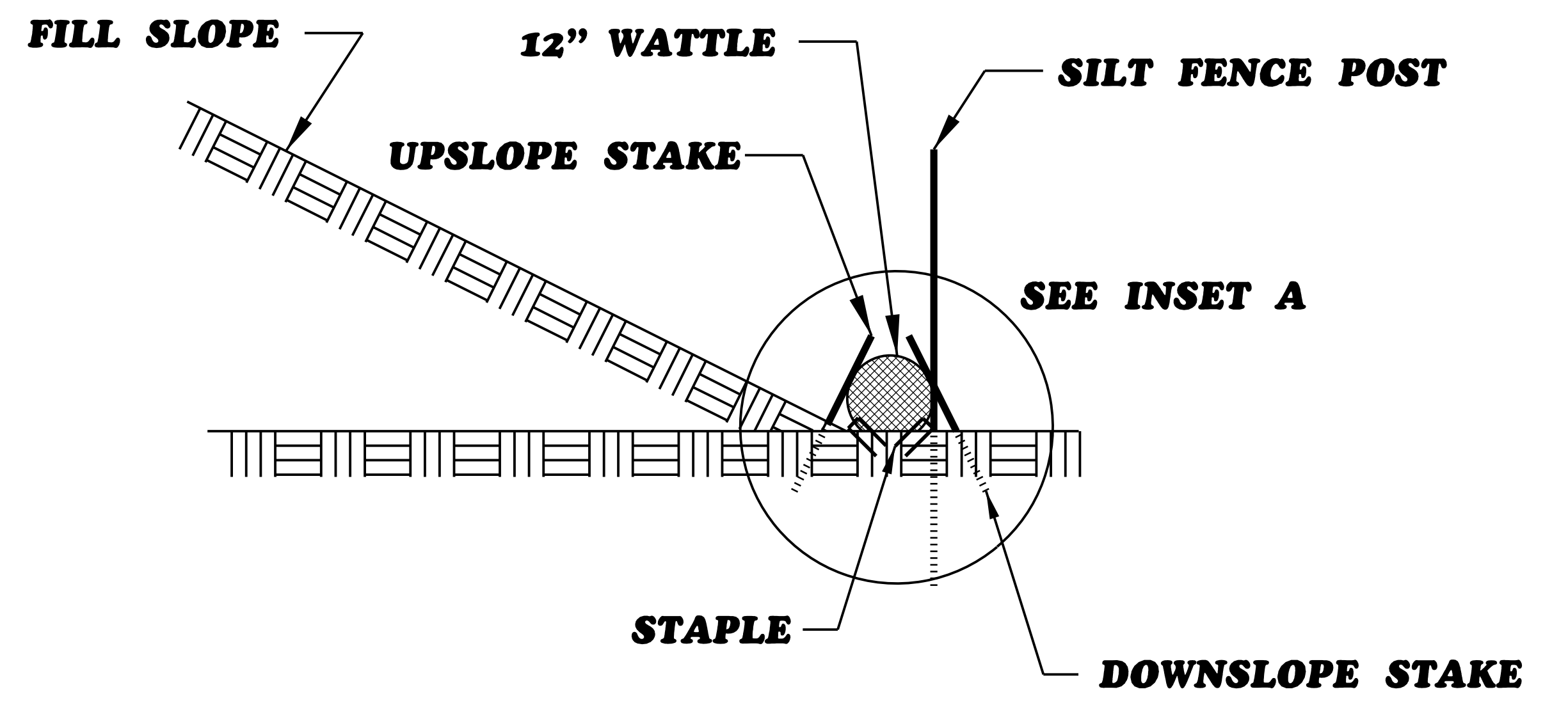
NOTES:

- 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

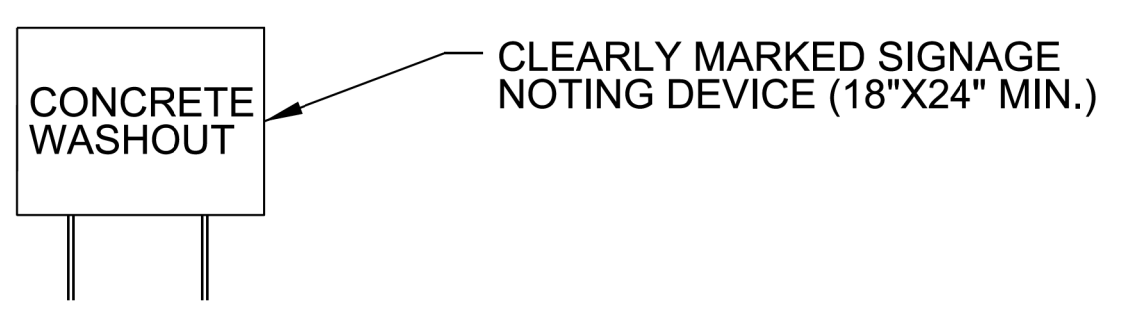
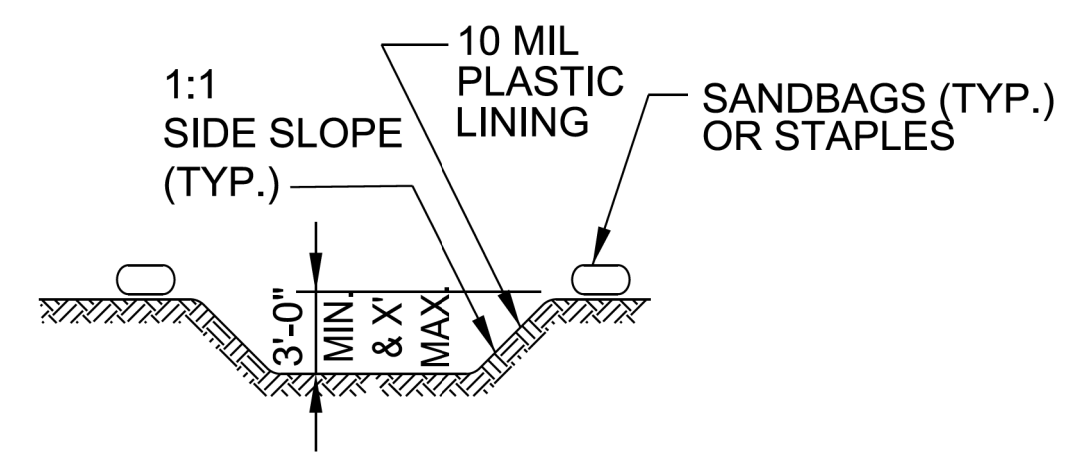
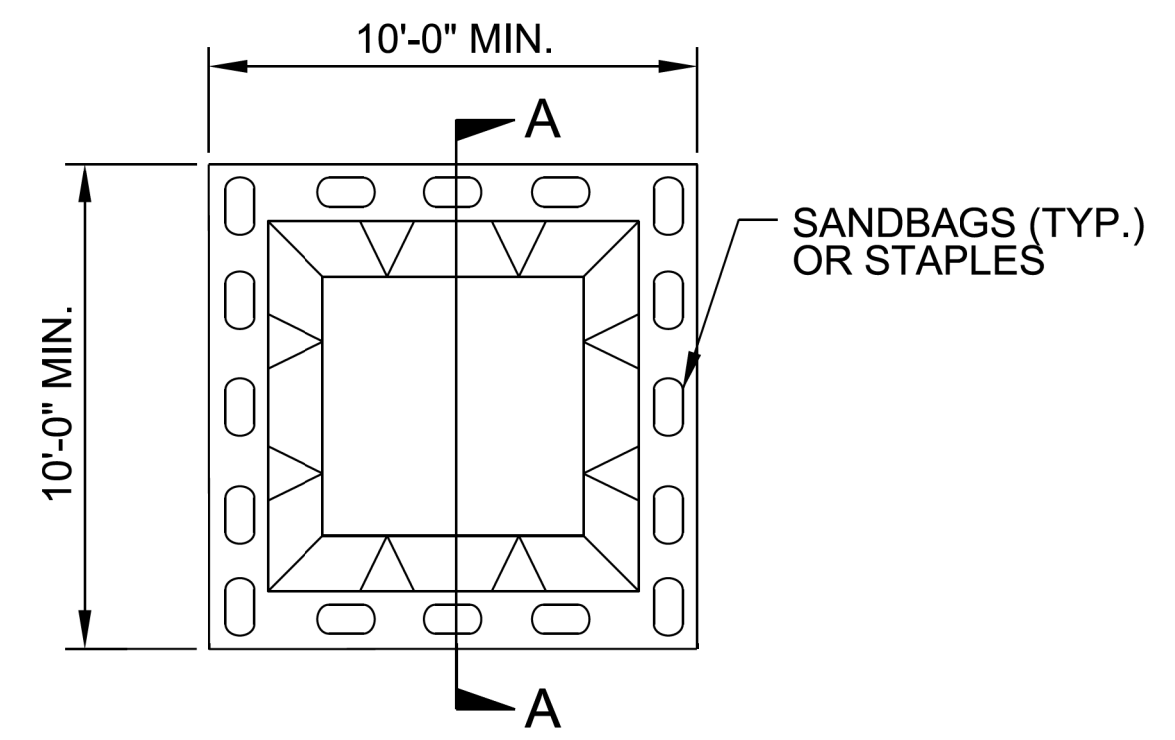


1'-2" TRENCH



SIDE VIEW

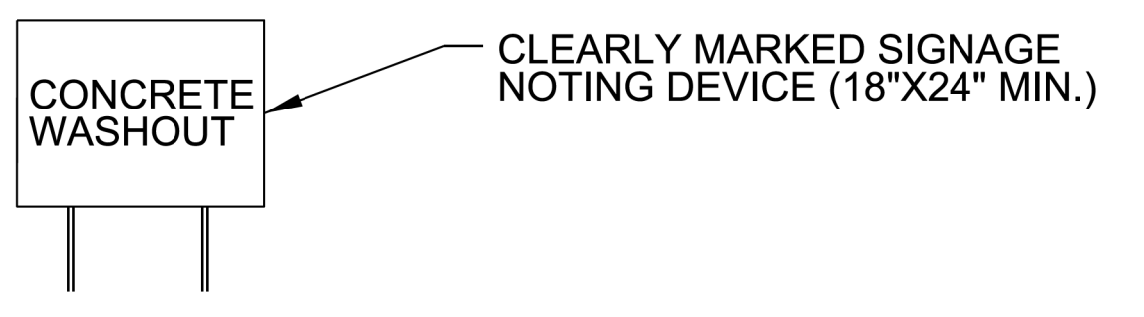
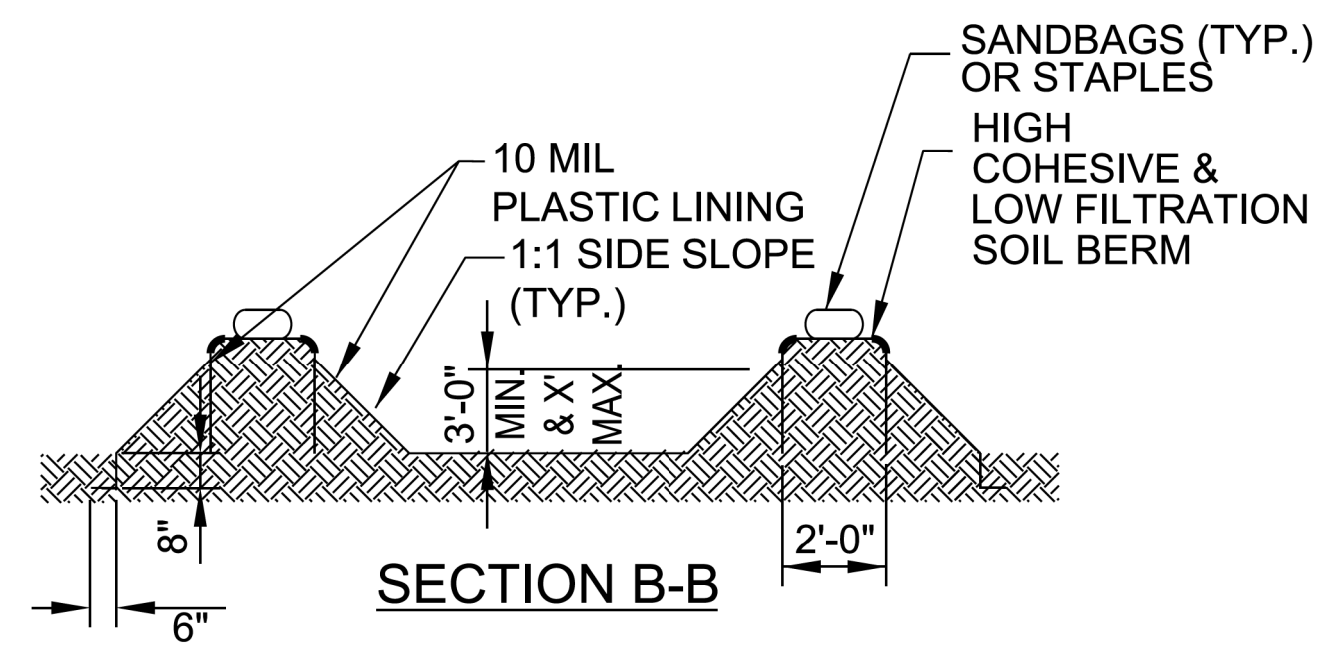
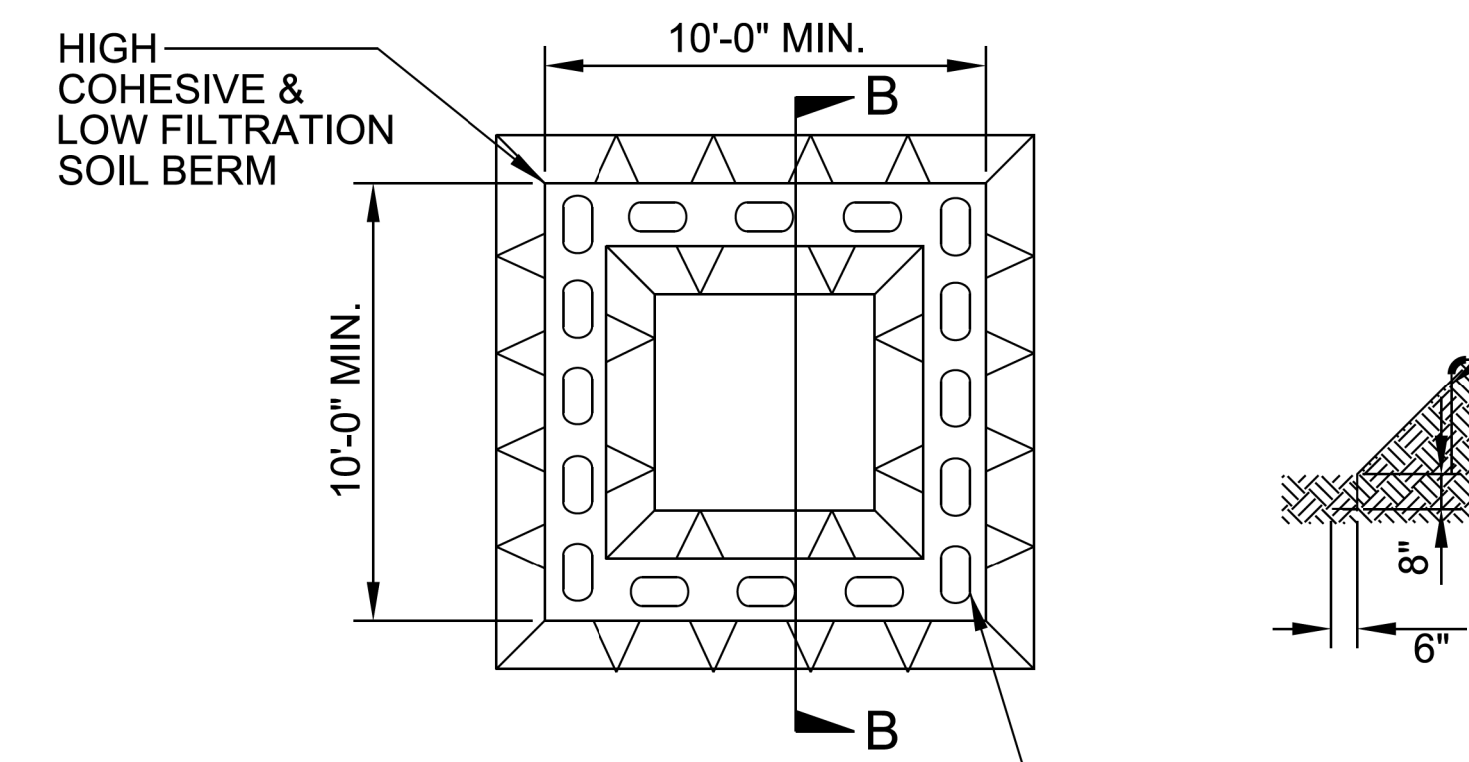
ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



- 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



- SECTION B-B**
- 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. |

BEGIN PROJECT 17BP.1.R.88
-L- PC STA. 13+25.35

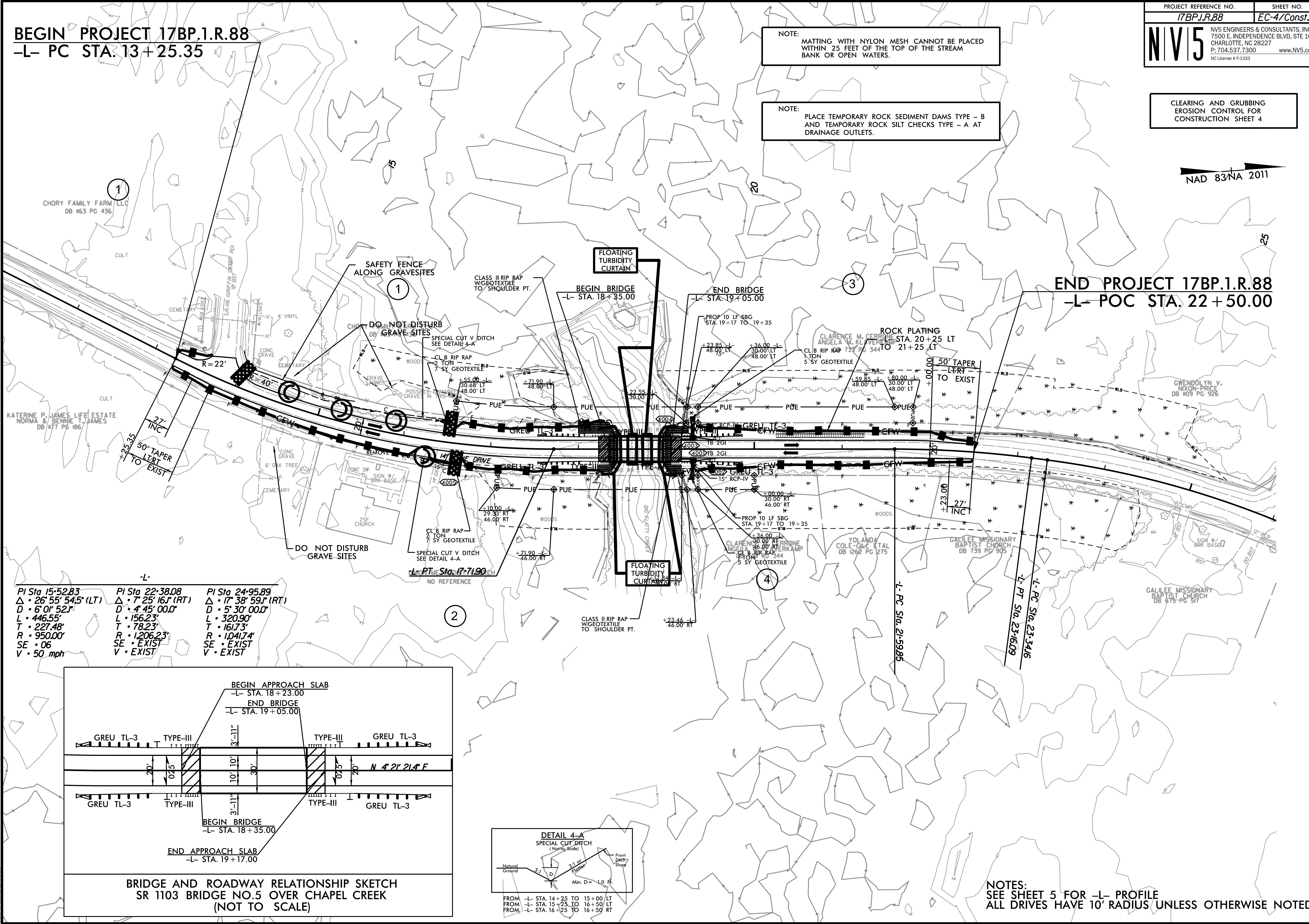
END PROJECT 17BP.1.R.88
-L- POC STA. 22+50.00

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

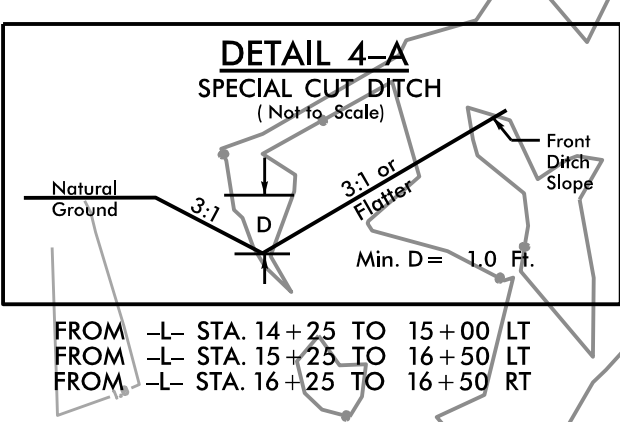
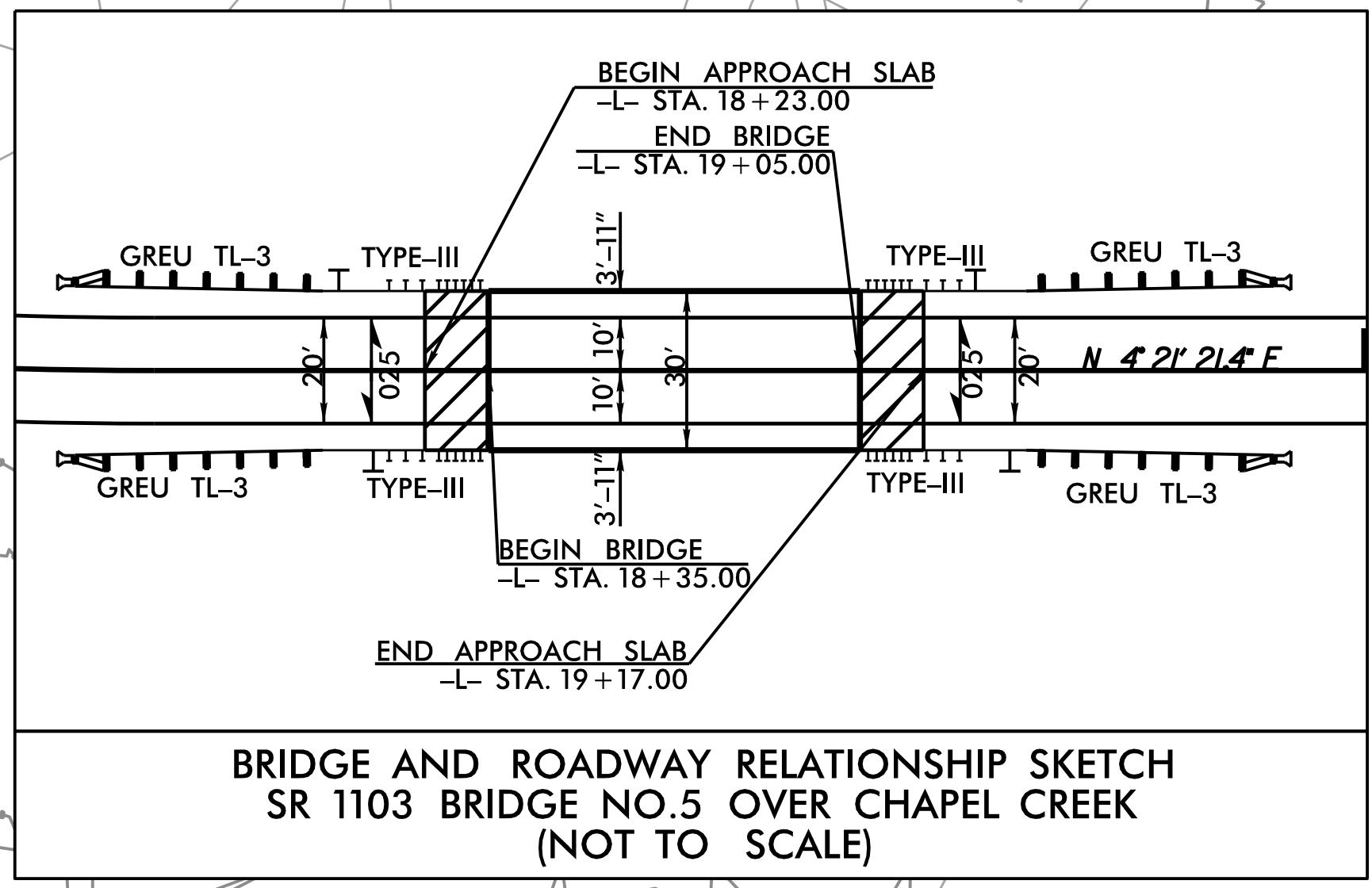
NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

NAD 83/NA 2011



| -L- | | |
|------------------------|-----------------------|------------------------|
| PI Sta 15+52.83 | PI Sta 22+38.08 | PI Sta 24+95.89 |
| Δ • 26° 55' 54.5" (LT) | Δ • 7° 25' 16.1" (RT) | Δ • 17° 38' 59.1" (RT) |
| D • 6' 0" 52.1' | D • 4' 45' 00.0' | D • 5' 30' 00.0' |
| L • 446.55' | L • 156.23' | L • 320.90' |
| T • 227.48' | T • 78.23' | T • 161.73' |
| R • 950.00' | R • 1206.23' | R • 1041.74' |
| SE • 06 | SE • EXIST | SE • EXIST |
| V • 50 mph | V • EXIST | V • EXIST |



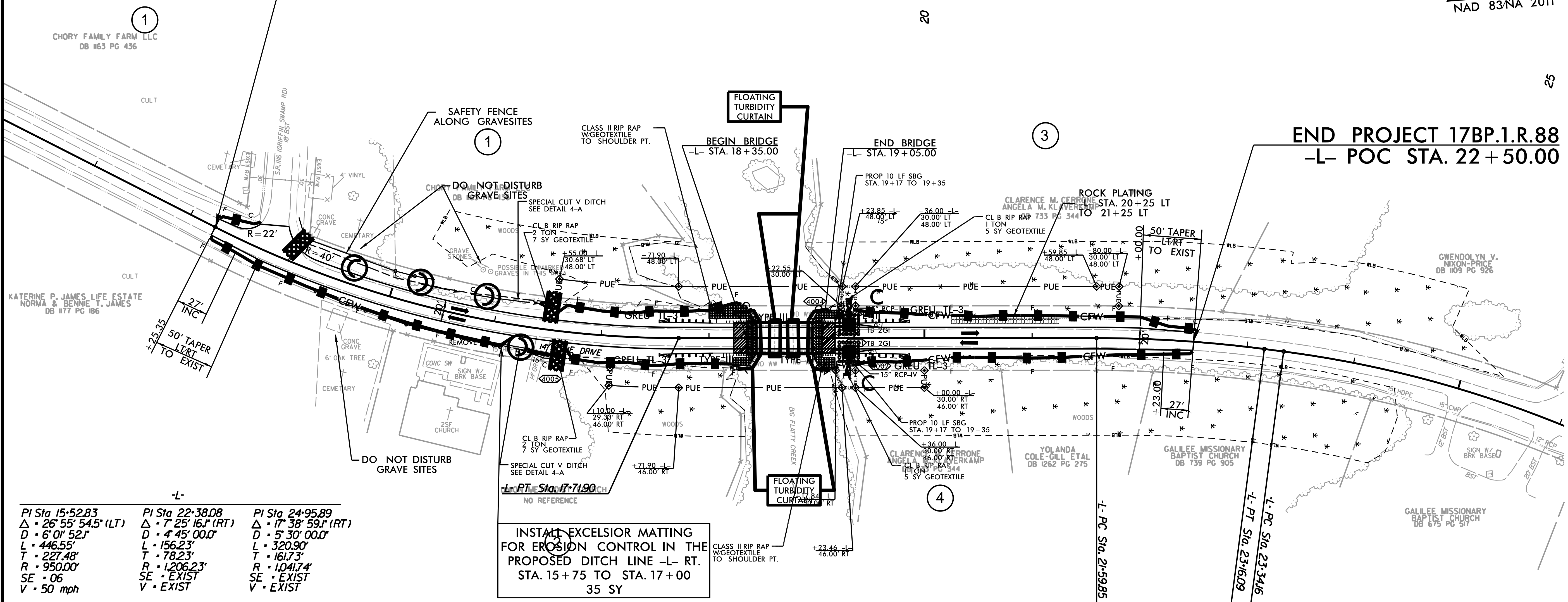
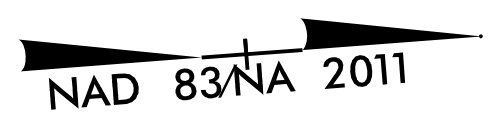
NOTES:
 SEE SHEET 5 FOR -L- PROFILE
 ALL DRIVES HAVE 10' RADIUS UNLESS OTHERWISE NOTED

8/2/2022 R:\Environmental\Design\6900005_EC_04_C&G.dgn

BEGIN PROJECT 17BP.1.R.88
 -L- PC STA. 13+25.35

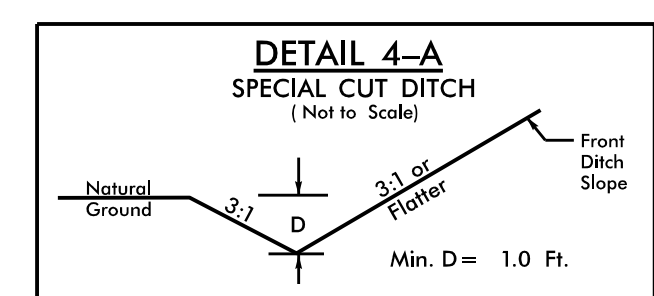
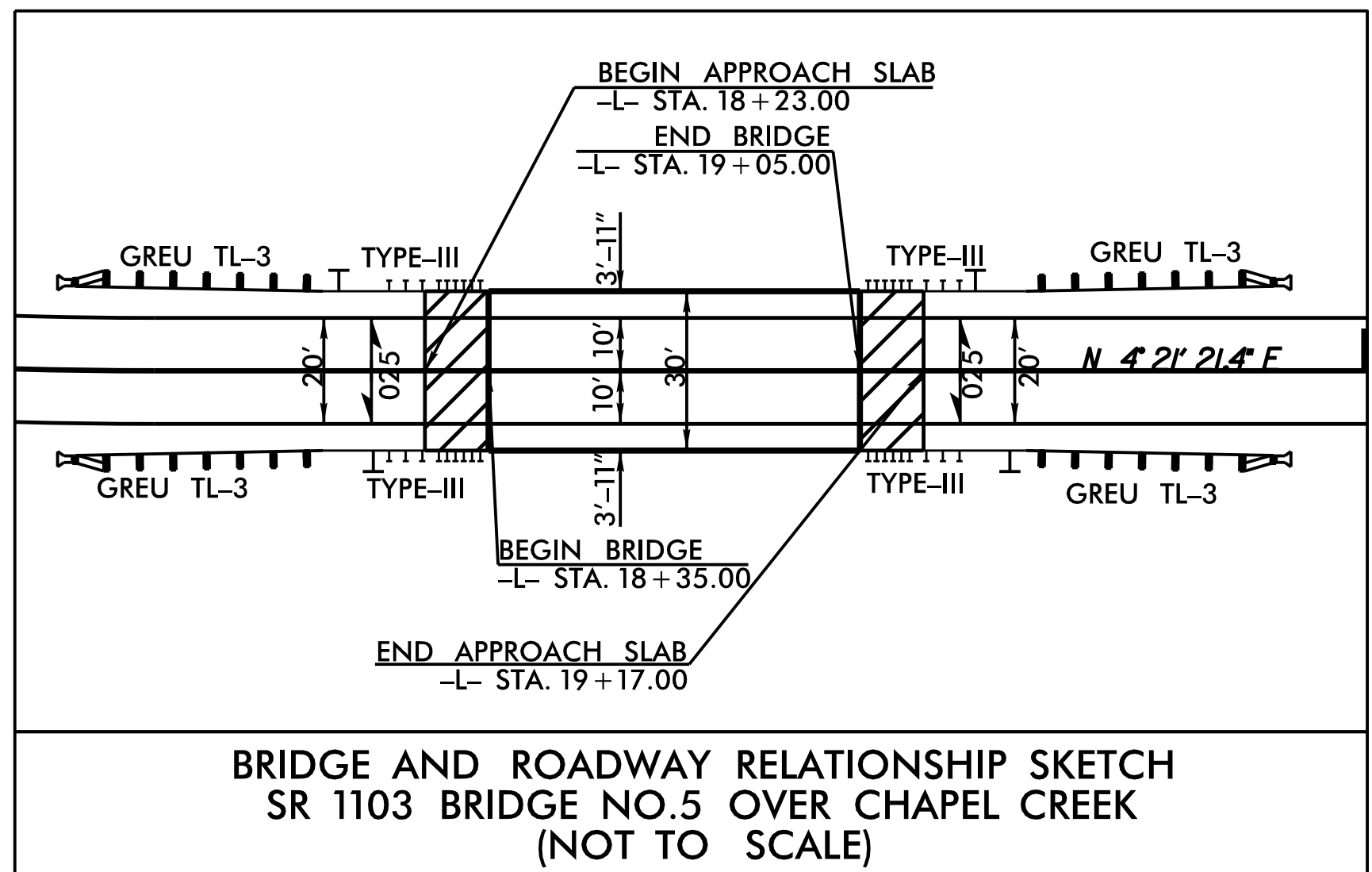
NOTE:
 MATTING WITH NYLON MESH CANNOT BE PLACED WITHIN 25 FEET OF THE TOP OF THE STREAM BANK OR OPEN WATERS.

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



| -L- | | |
|------------------------|-----------------------|------------------------|
| PI Sta 15+52.83 | PI Sta 22+38.08 | PI Sta 24+95.89 |
| Δ = 26° 55' 54.5" (LT) | Δ = 7° 25' 16.1" (RT) | Δ = 17° 38' 59.1" (RT) |
| D = 6' 0" 52.1' | D = 4' 45' 00.0' | D = 5' 30' 00.0' |
| L = 446.55' | L = 156.23' | L = 320.90' |
| T = 227.48' | T = 78.23' | T = 161.73' |
| R = 950.00' | R = 1206.23' | R = 1041.74' |
| SE = 06 | SE = EXIST | SE = EXIST |
| V = 50 mph | V = EXIST | V = EXIST |

INSTALL EXCELSIOR MATTING FOR EROSION CONTROL IN THE PROPOSED DITCH LINE -L- RT. STA. 15+75 TO STA. 17+00 35 SY



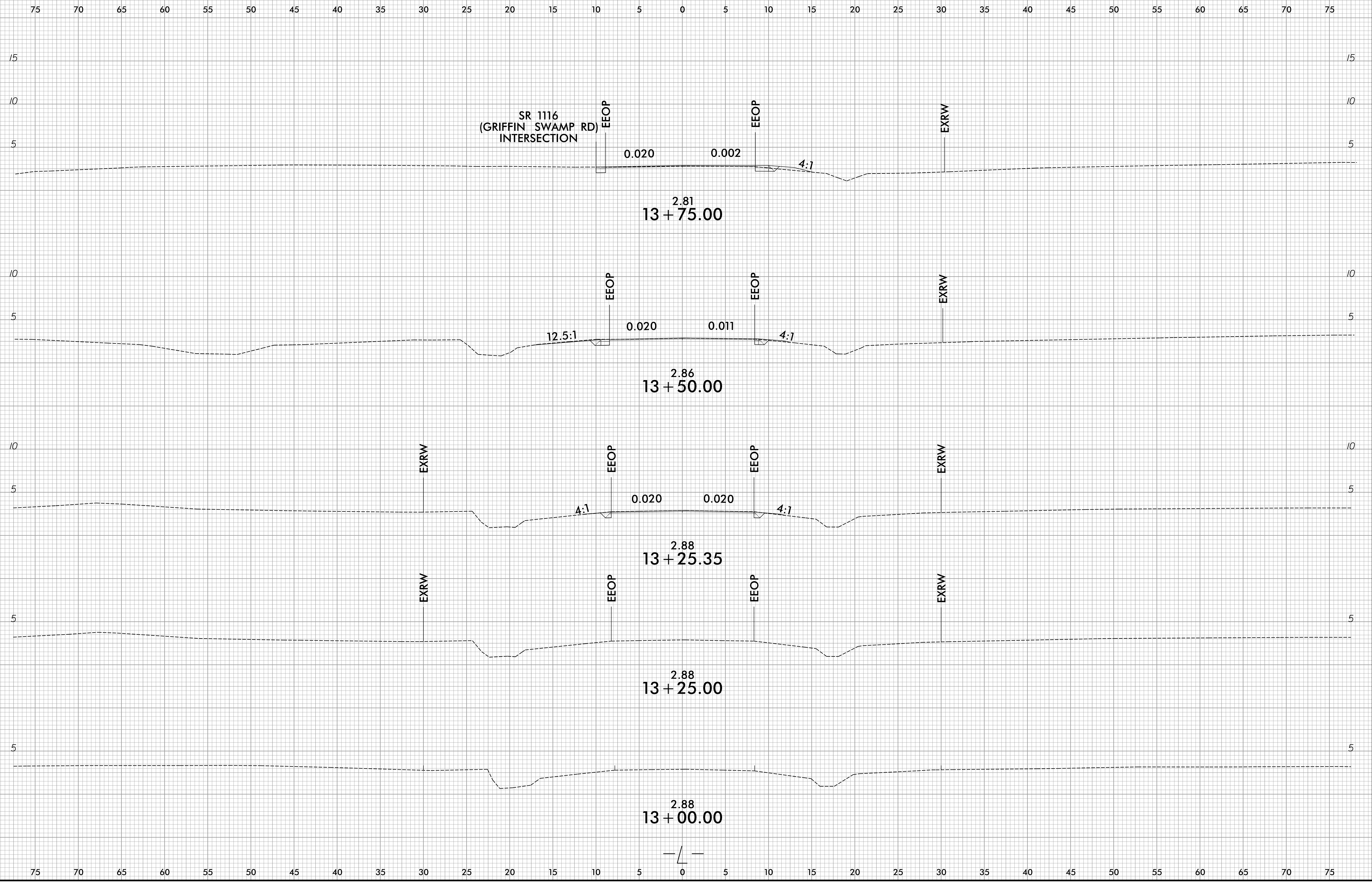
FROM -L- STA. 14+25 TO 15+00 LT
 FROM -L- STA. 15+25 TO 16+50 LT
 FROM -L- STA. 16+25 TO 16+50 RT

NOTES:
 SEE SHEET 5 FOR -L- PROFILE
 ALL DRIVES HAVE 10' RADIUS UNLESS OTHERWISE NOTED

8/17/199 8/2/2022 R:\Environmental\Design\6900005_EC_05_Final.dgn

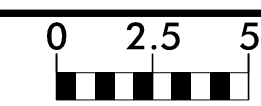
6/23/16

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| | PROJ. REFERENCE NO. | SHEET NO. |
| | 17BP.1.R.88 | X-1 |

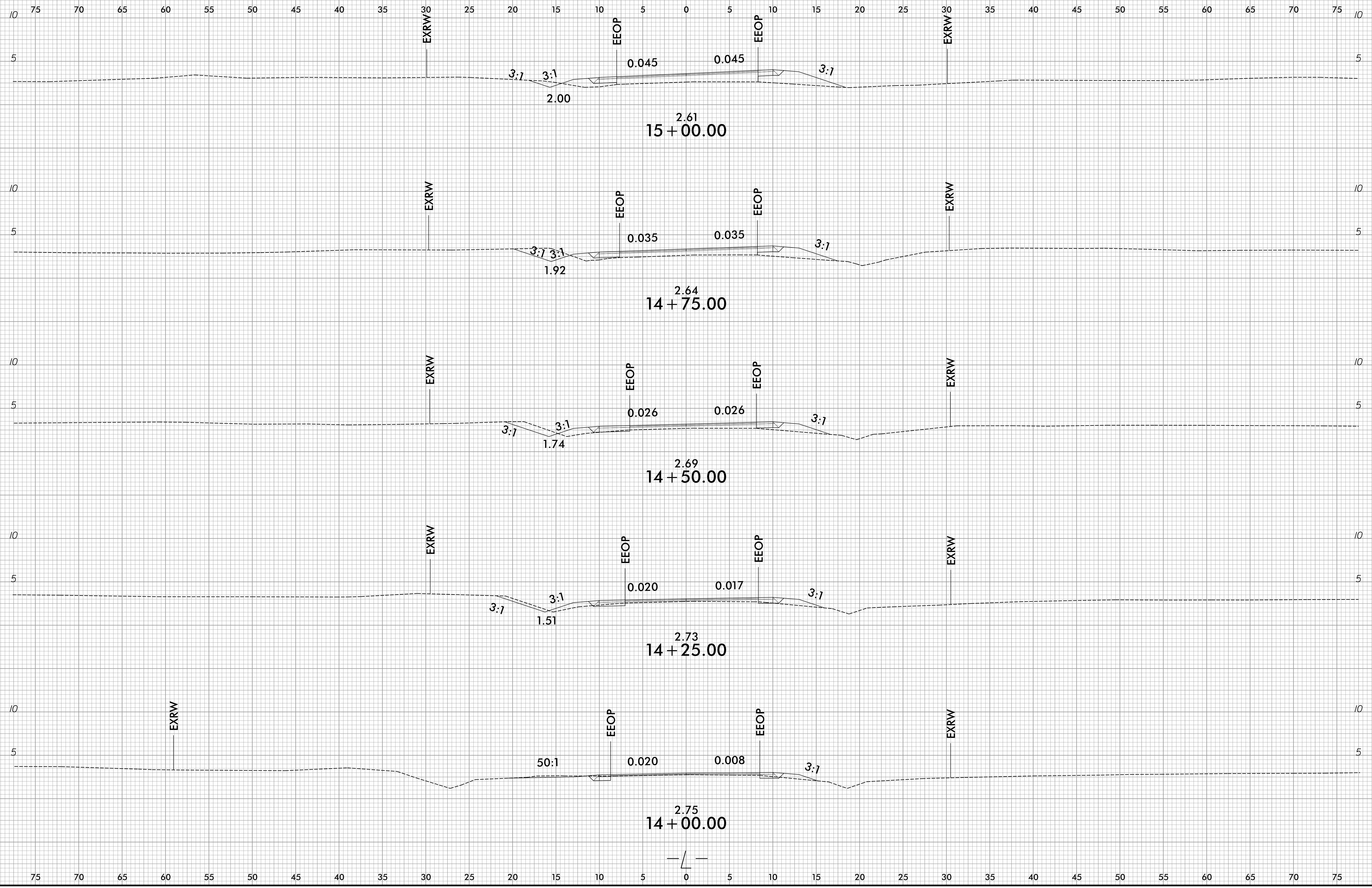


9/7/2022
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Erica.Briggs

6/23/16

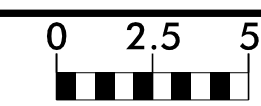


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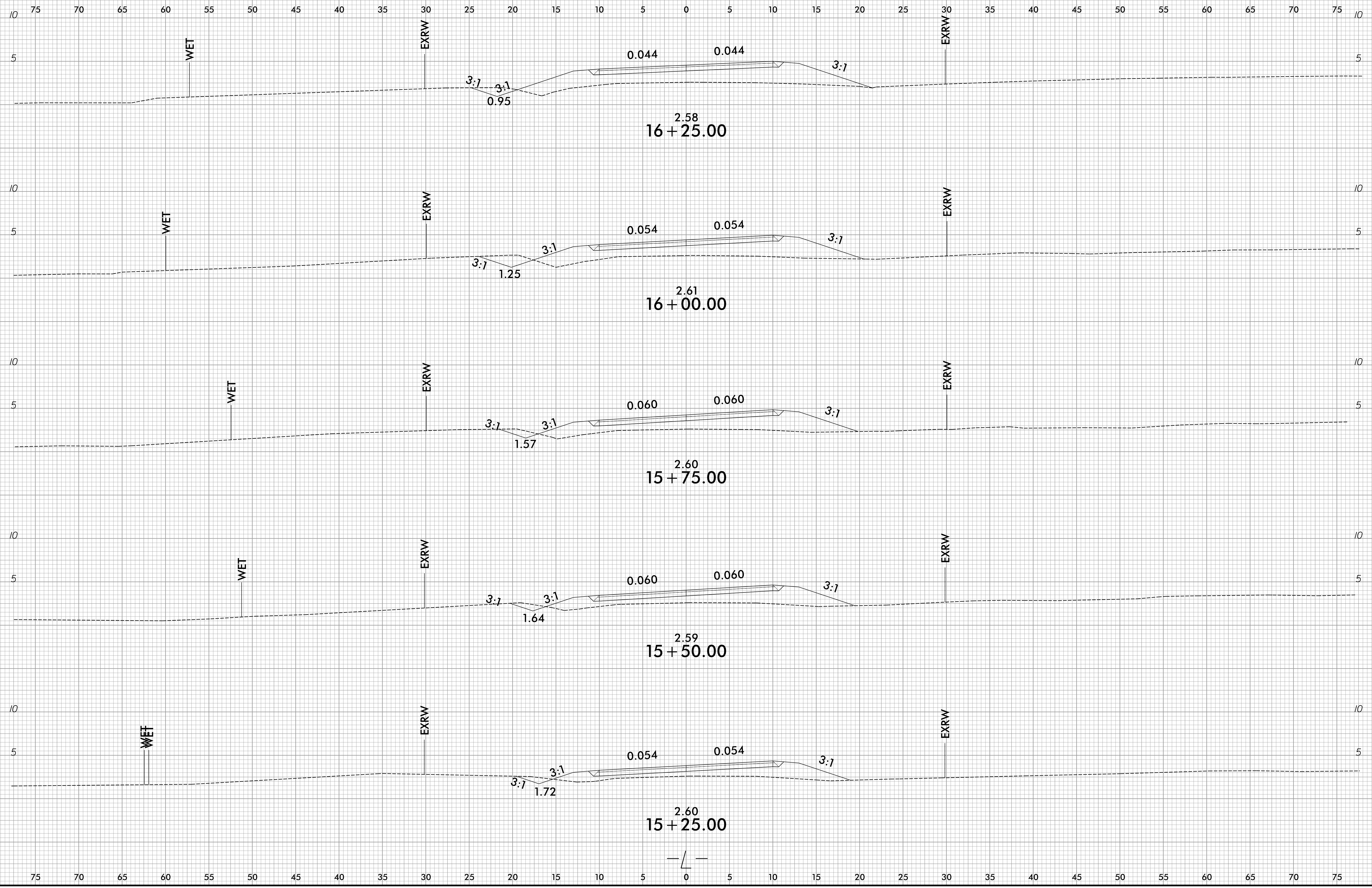


7/1/2022
E:\Roadway\CorridorModeling\690005.RDY_XPL.dgn
Erica.griffin

6/23/16



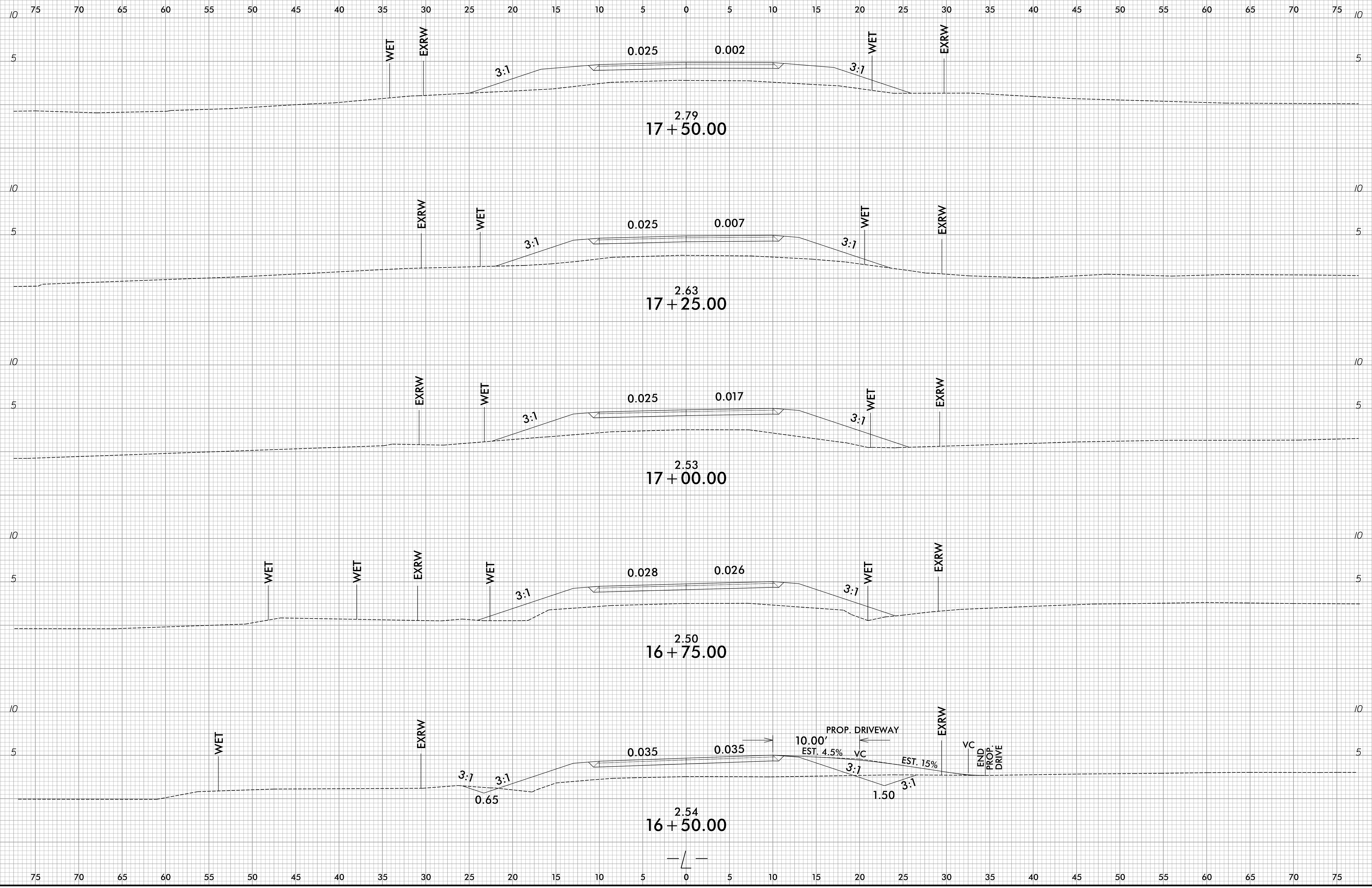
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Erica.griffin

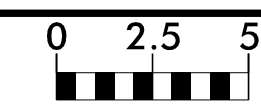
6/23/16

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| | 17BP.1.R.88 | X-4 |



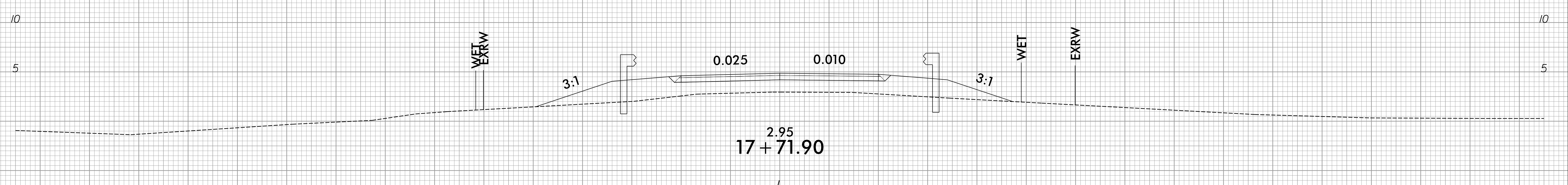
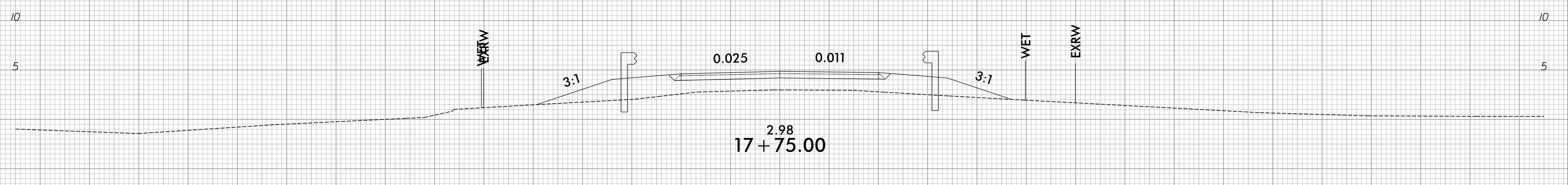
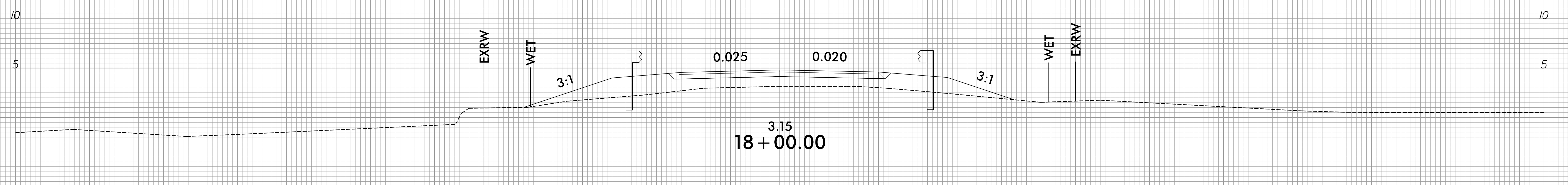
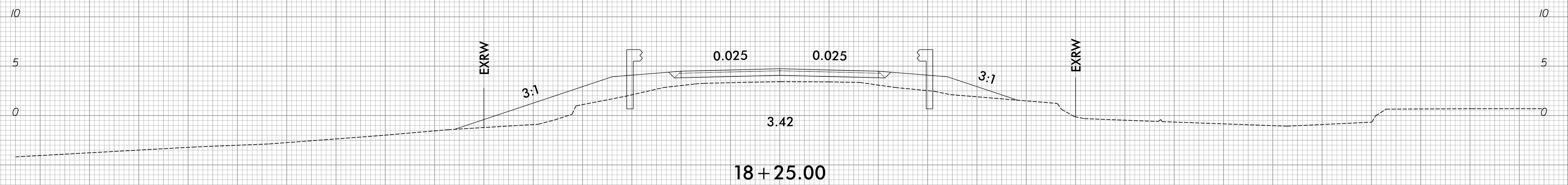
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6/23/16



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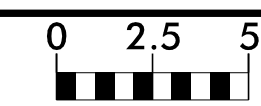
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75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

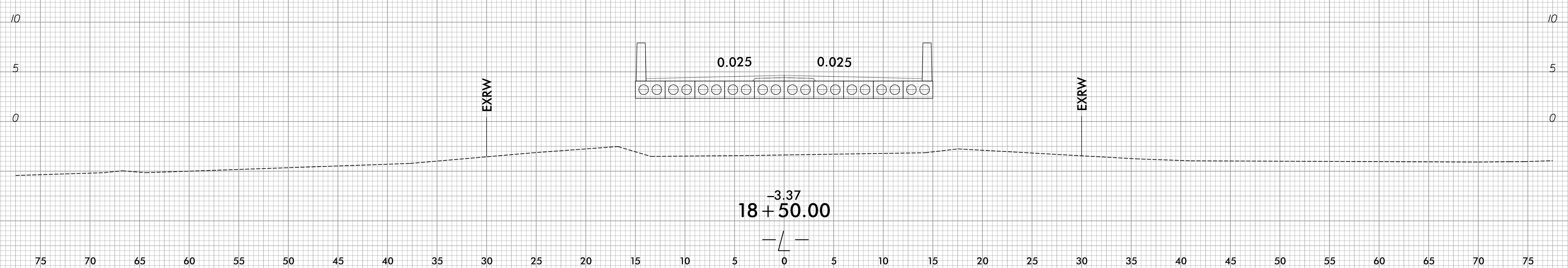
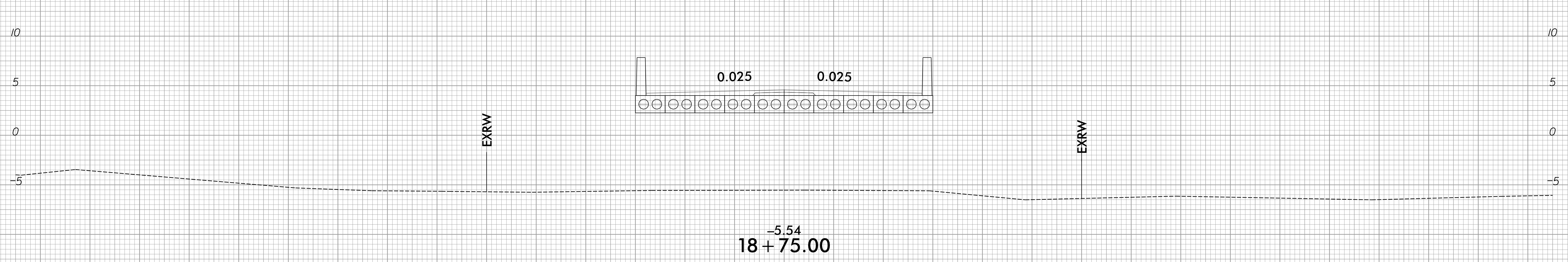
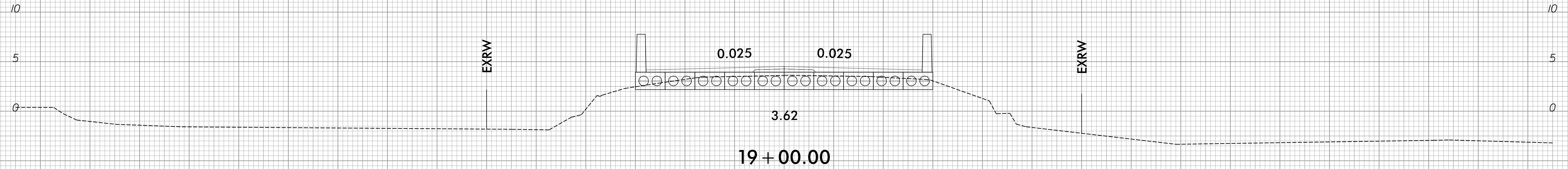
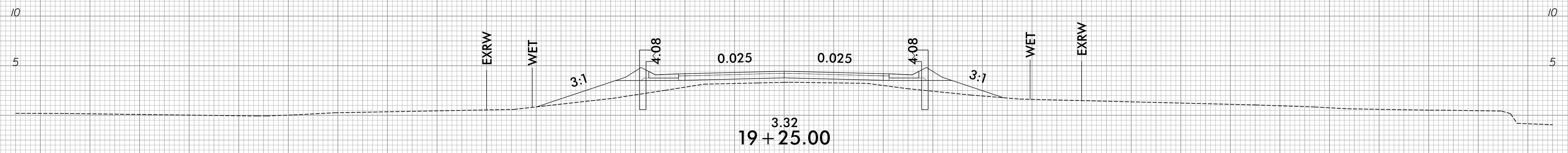
7/1/2022
E:\Roadway\CorridorModeling\690005.RDY_XPL.dgn
EricS@gr.com

6/23/16



| | |
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| PROJ. REFERENCE NO. | SHEET NO. |
| 17BP.1.R.88 | X-6 |

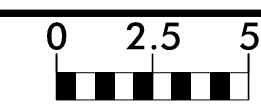
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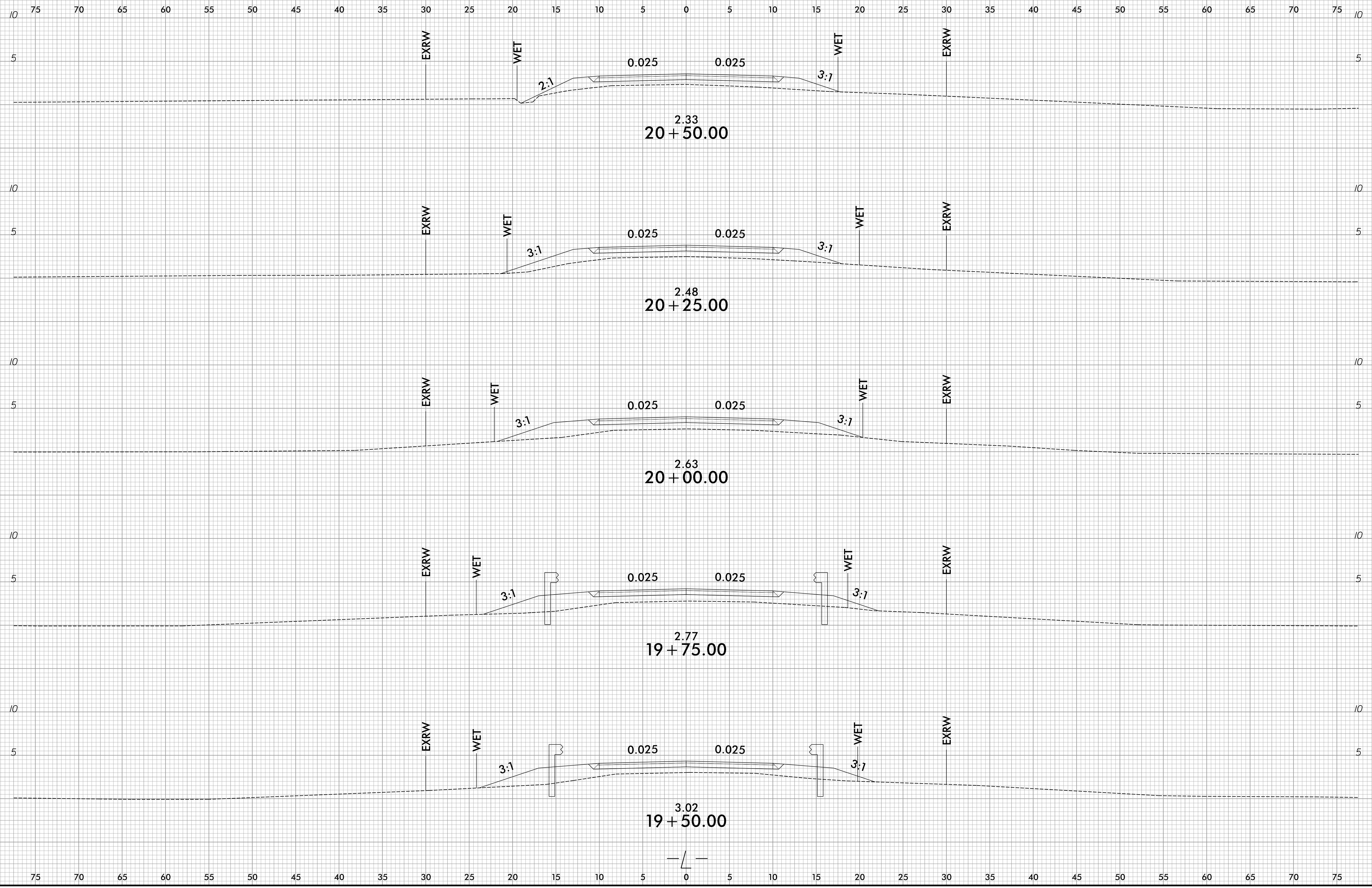
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Erica.griffin

6/23/16

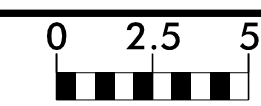


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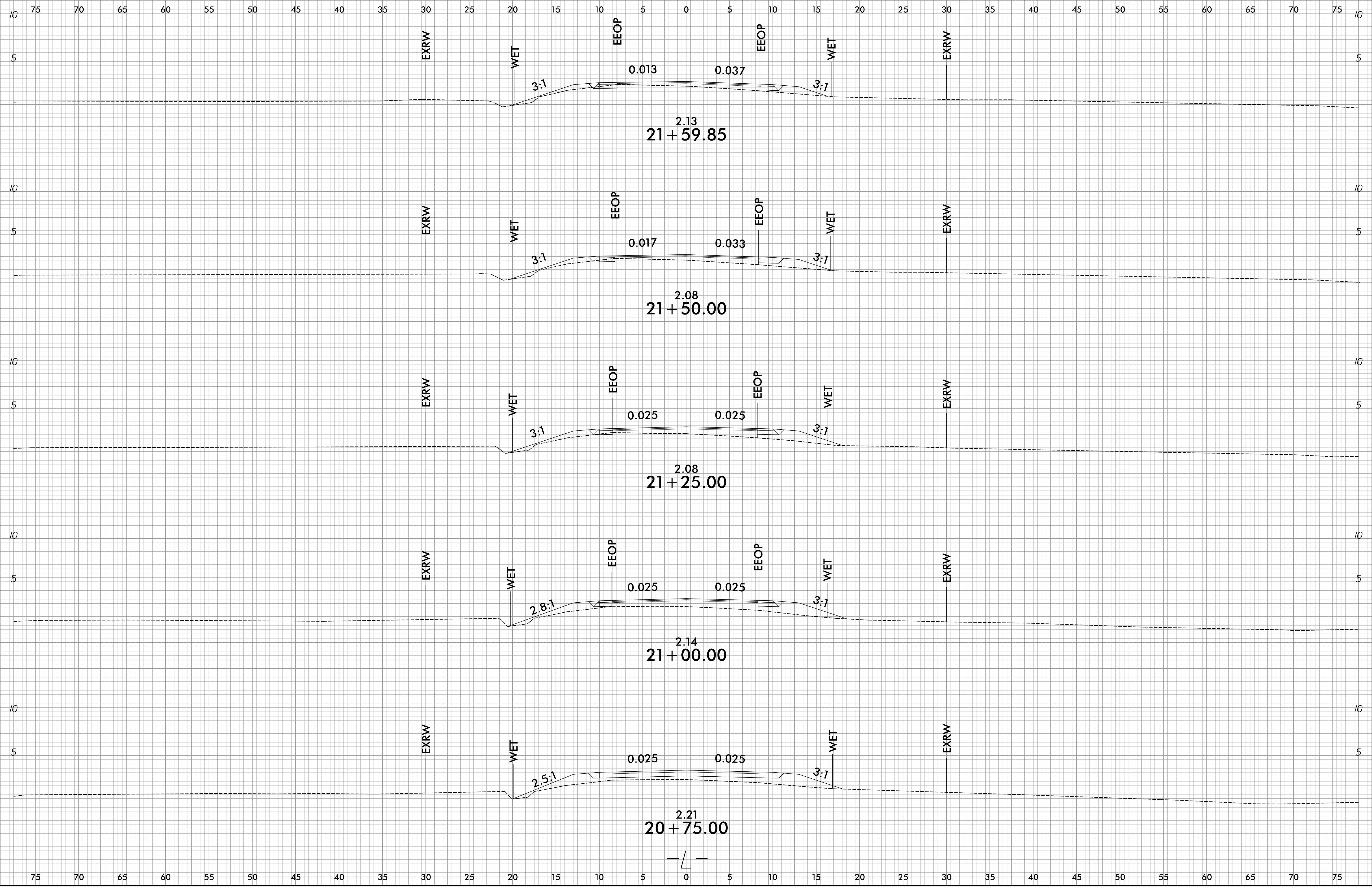


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Erica.griffin

6/23/16

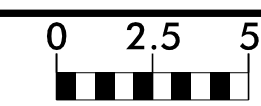


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| PROJ. REFERENCE NO. | SHEET NO. |
| 17BP.1.R.88 | X-8 |



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|---------------------|-----------|
| PROJ. REFERENCE NO. | SHEET NO. |
| 17BP.1.R.88 | X-9 |

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

5 5

2.54
22 + 75.00

10 10

5 5

2.52
22 + 50.00

10 10

5 5

2.44
22 + 25.00

10 10

5 5

2.33
22 + 00.00

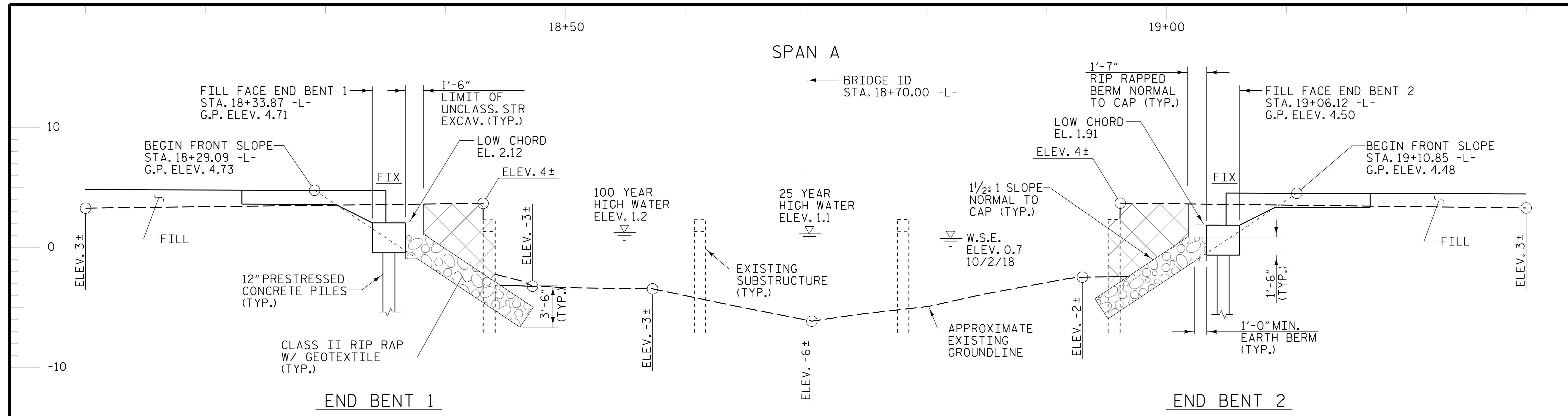
10 10

5 5

2.21
21 + 75.00

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

7/1/2022
E:\Roadway\CorridorModeling\690005.RDY_XPL.dgn
EricSinger.dgn



| | |
|-----------------------------|---------------|
| PI = 16+75.00 | PI = 19+80.00 |
| EL = 5.19' | EL = 4.27' |
| VC = 280' | VC = 120' |
| (+0.9167% | (-0.3000% |
| (-0.3000% | (-1.0328% |
| GRADE DATA -L- (SR 1103) | |

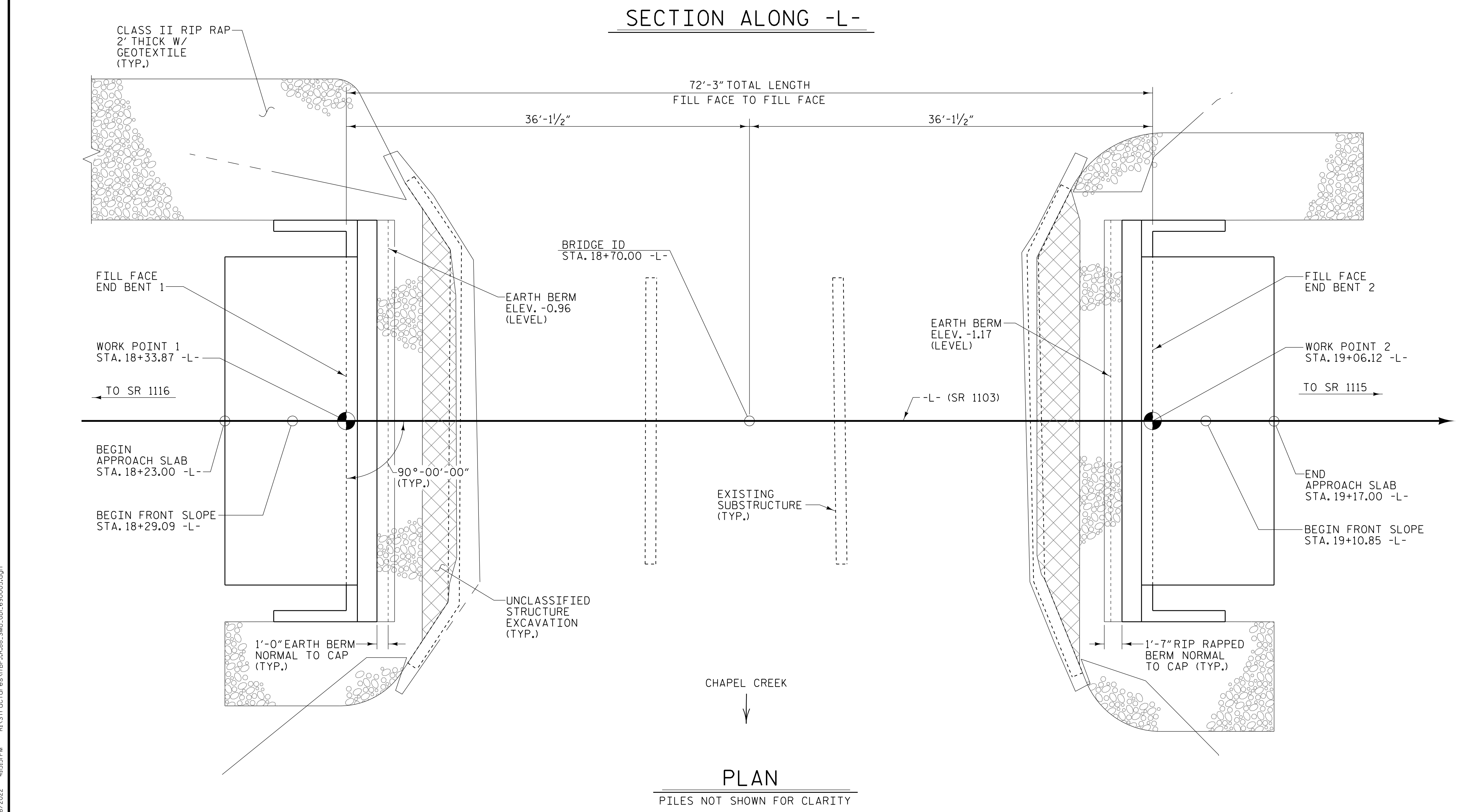
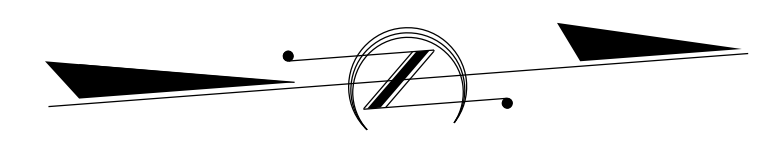
HYDRAULIC DATA:

| | |
|-------------------------------|-------------|
| DESIGN DISCHARGE - | 500 CFS |
| FREQUENCY OF DESIGN FLOOD - | 25 YEAR |
| DESIGN HIGH WATER ELEVATION - | 1.1 FT |
| DRAINAGE AREA - | 3.3 SQ. MI. |
| BASE DISCHARGE (Q 100) - | 800 CFS |
| BASE HIGH WATER ELEVATION - | 1.2 FT |

OVERTOPPING DATA:

| | |
|-------------------------------|-----------|
| OVERTOPPING DISCHARGE - | 1900 CFS |
| FREQUENCY OF OVERTOPPING - | >500 YEAR |
| OVERTOPPING FLOOD ELEVATION - | 2.6 FT |

LOW POINT OF ROADWAY OVERTOPPING PROFILE OCCURS AT -L- STA. 23+00



INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION

PLANS PREPARED BY:

NV5

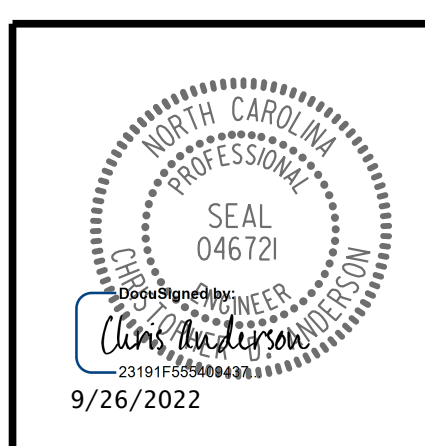
NV5 ENGINEERS & CONSULTANTS, INC.
3300 REGENCY PARKWAY, SUITE 100
CARY, NC 27518
P: 919.851.1912 www.NV5.com
NC License # F-1333
Formerly C&W Engineers & Consultants

PROJECT NO. 17BP.1.R.88
PASQUOTANK COUNTY
STATION: 18+70.00 -L-

SHEET 1 OF 2 REPLACES BRIDGE NO. 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
BRIDGE ON SR 1103
OVER CHAPEL CREEK
BETWEEN SR 1116 & SR 1115
27'-6" CLEAR ROADWAY - 90° SKEW



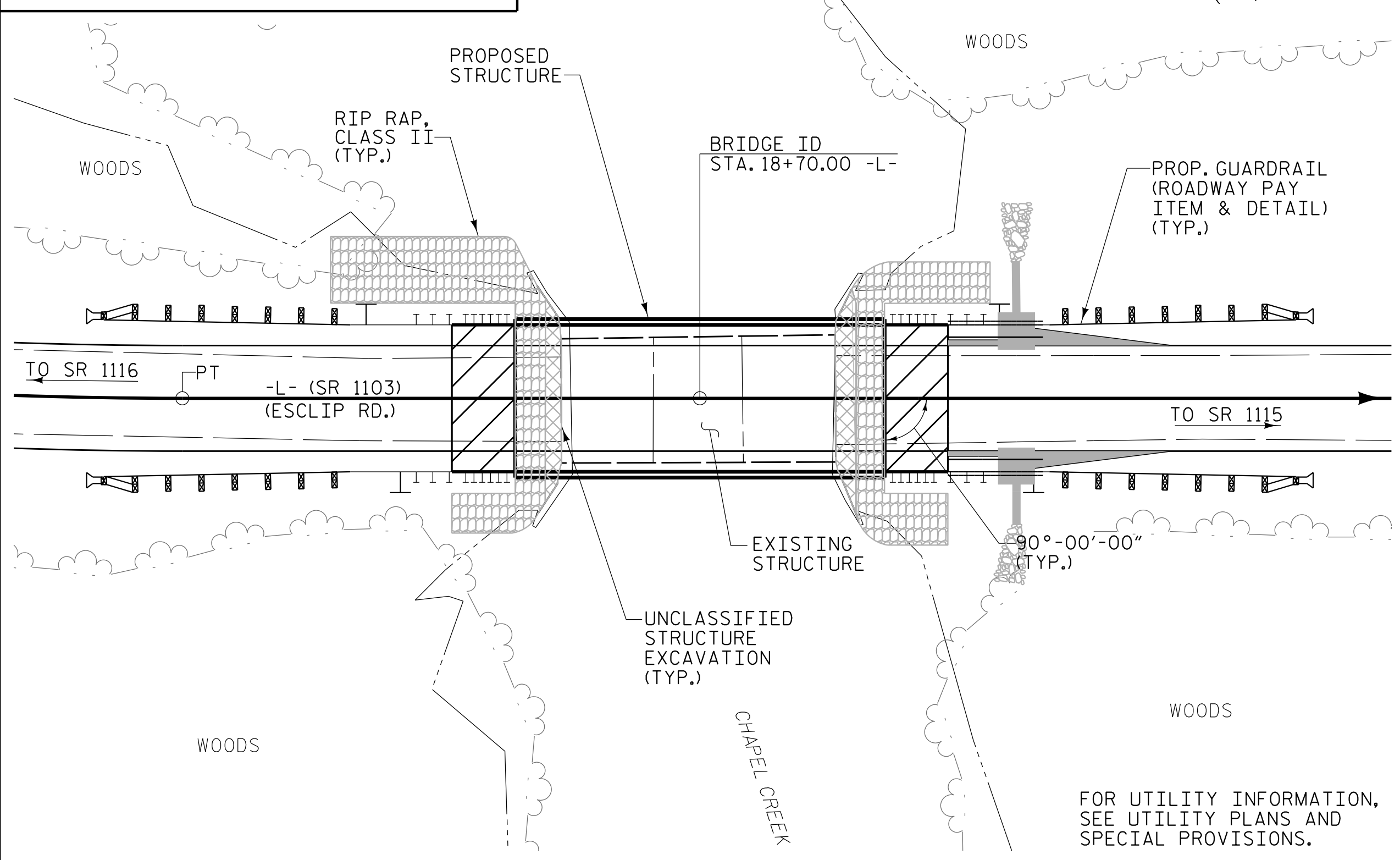
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|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-1 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 19 |

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

| | |
|--|---------------------|
| DRAWN BY : <u>W. B. ALLEN</u> | DATE : <u>11/20</u> |
| CHECKED BY : <u>G. F. WILSON</u> | DATE : <u>11/20</u> |
| DESIGN ENGINEER OF RECORD: <u>C. D. ANDERSON</u> | DATE : <u>9/22</u> |

9/26/2022 4:55PM R:\Structures\17BP.1.R.88_SML.GD.L90005.dgn

BM #10 - RR SPIKE SET IN BASE OF 16" PINE
 27.21' LT. OF STA. 15+40.99 -L-
 ELEV.= 4.40', N 889120 E 2836432



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.

THIS STRUCTURE CONTAINS THE NECESSARY CORROSION PROTECTION REQUIRED FOR A CORROSIVE SITE.

FOR EROSION CONTROL MEASURES SEE EROSION CONTROL PLANS.

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

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

THE MATERIAL SHOWN ON SHEET 1 OF 2 IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A MAX. DISTANCE OF 19 FT. LT. AND 20 FT. RT. OF CENTERLINE ROADWAY AT END BENT 1 AND 21 FT. LT. AND 22 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 ONE 17'-6" SPAN, ONE 17'-0" SPAN AND ONE 17'-6" SPAN WITH A 24'-1" CLEAR ROADWAY WIDTH AND REINF. CONCRETE DECK ON TIMBER JOISTS SUPPORTED ON TIMBER CAPS & TIMBER PILES SHALL BE REMOVED. THE BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT.

CLASS AA CONCRETE SHALL BE USED IN ALL CAST-IN-PLACE END BENT CAPS AND SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR.

ALL BAR SUPPORTS USED IN THE BARRIER RAIL, END BENT CAPS AND ALL INCIDENTAL REINFORCING STEEL SHALL BE EPOXY COATED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE CONCRETE IN THE END BENT CAPS OF END BENT NO.1 & 2 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB OF CEMENT. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

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

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

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 ARE DESIGNED FOR A FACTORED RESISTANCE OF 97 TONS PER PILE.

PILES AT END BENT NO.2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 97 TONS PER PILE.

DRIVE PILES AT END BENT NO.1 TO A REQUIRED DRIVING RESISTANCE OF 165 TONS PER PILE.

DRIVE PILES AT END BENT NO.2 TO A REQUIRED DRIVING RESISTANCE OF 165 TONS PER PILE.

TESTING PILES 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.

OBSERVE ONE MONTH WAITING PERIOD AFTER CONSTRUCTING THE EMBANKMENT, END BENT AND BRIDGE APPROACH FILL BEFORE APPROACH SLAB CONSTRUCTION AT END BENT NO.1 AND END BENT NO.2. FOR BRIDGE WAITING PERIODS, SEE ROADWAY PLANS AND SECTION 235 OF THE STANDARD SPECIFICATIONS.

TOTAL BILL OF MATERIAL

| | REMOVAL OF EXISTING STRUCTURE | ASBESTOS ASSESSMENT | PDA TESTING | UNCLASSIFIED STRUCTURE EXCAVATION | CLASS AA CONCRETE | BRIDGE APPROACH SLABS | EPOXY COATED REINFORCING STEEL | PILE DRIVING EQUIPMENT SETUP FOR 12" PRESTRESSED CONCRETE PILES | 12" PRESTRESSED CONCRETE PILES | PILE REDRIVES | TWO BAR METAL RAIL | 1'-2" X 2'-9 1/2" CONCRETE PARAPET | RIP RAP CLASS II (2'-0" THICK) | GEOTEXTILE FOR DRAINAGE | ELASTOMERIC BEARINGS | 3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLABS |
|----------------|-------------------------------|---------------------|-------------|-----------------------------------|-------------------|-----------------------|--------------------------------|---|--------------------------------|---------------|--------------------|------------------------------------|--------------------------------|-------------------------|----------------------|--|
| | LUMP SUM | LUMP SUM | EACH | LUMP SUM | CU. YARDS | LUMP SUM | LBS. | EACH | NO., LIN. FT. | EACH | LIN. FT. | LIN. FT. | TONS | SQ. YARDS | LUMP SUM | NO., LIN. FT. |
| SUPERSTRUCTURE | | LUMP SUM | | | | LUMP SUM | | | | | 125.00 | 140.25 | | | LUMP SUM | 10 700.00 |
| END BENT 1 | | | | LUMP SUM | 12.4 | | 1928 | 5 | 5 200 | 3 | | | 84 | 94 | | |
| END BENT 2 | | | | LUMP SUM | 12.4 | | 1928 | 5 | 5 200 | 3 | | | 56 | 62 | | |
| TOTAL | LUMP SUM | LUMP SUM | 1 | LUMP SUM | 24.8 | LUMP SUM | 3856 | 10 | 10 400 | 6 | 125.00 | 140.25 | 140 | 156 | LUMP SUM | 10 700.00 |

INCOMPLETE PLANS
 DO NOT USE FOR CONSTRUCTION

PLANS PREPARED BY:

NV5

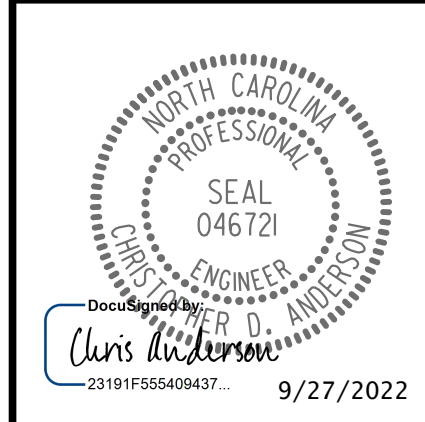
NV5 ENGINEERS & CONSULTANTS, INC.
 3300 REGENCY PARKWAY, SUITE 100
 CARY, NC 27518
 P: 919.851.1912 www.NV5.com
NC License # E3333
 formerly CALYX Engineers & Consultants

PROJECT NO. 17BP.1.R.88
PASQUOTANK COUNTY
 STATION: 18+70.00 -L-

SHEET 2 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 BRIDGE ON SR 1103
 OVER CHAPEL CREEK
 BETWEEN SR 1116 & SR 1115
 27'-6" CLEAR ROADWAY - 90° SKEW



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

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

DRAWN BY : W. B. ALLEN DATE : 11/20
 CHECKED BY : G. F. WILSON DATE : 11/20
 DESIGN ENGINEER OF RECORD: C. D. ANDERSON DATE : 9/22

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

| LEVEL | VEHICLE | WEIGHT (W) (TONS) | CONTROLLING LOAD RATING | MINIMUM RATING FACTORS (RF) | TONS = W X RF | STRENGTH I LIMIT STATE | | | | | | | | | | SERVICE III LIMIT STATE | | | | | COMMENT NUMBER | | | |
|--------------------------|------------|----------------------|----------------------------|-----------------------------------|---------------|------------------------|------------------------------|------------------|------|-----------------|---|------------------------------|------------------|------|-----------------|---|---------------------|------------------------------|------------------|------|----------------|-----------------|---|--|
| | | | | | | MOMENT | | | | | SHEAR | | | | | MOMENT | | | | | | | | |
| | | | | | | LIVELOAD FACTORS | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | LIVELOAD FACTORS | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | |
| DESIGN LOAD RATING | HL-93(Inv) | N/A | 1 | 1.006 | -- | 1.75 | 0.273 | 1.03 | 70' | EL | 34.5 | 0.507 | 1.32 | 70' | EL | 6.9 | 0.80 | 0.273 | 1.01 | 70' | EL | 34.5 | | |
| | HL-93(0pr) | N/A | -- | 1.341 | -- | 1.35 | 0.273 | 1.34 | 70' | EL | 34.5 | 0.507 | 1.72 | 70' | EL | 6.9 | N/A | -- | -- | -- | -- | -- | | |
| | HS-20(Inv) | 36.000 | 2 | 1.306 | 47.02 | 1.75 | 0.273 | 1.34 | 70' | EL | 34.5 | 0.507 | 1.65 | 70' | EL | 6.9 | 0.80 | 0.273 | 1.31 | 70' | EL | 34.5 | | |
| | HS-20(0pr) | 36.000 | -- | 1.74 | 62.64 | 1.35 | 0.273 | 1.74 | 70' | EL | 34.5 | 0.507 | 2.14 | 70' | EL | 6.9 | N/A | -- | -- | -- | -- | -- | | |
| LEGAL LOAD RATING | SV | SNSH | 13.500 | -- | 2.917 | 39.379 | 1.4 | 0.273 | 3.75 | 70' | EL | 34.5 | 0.507 | 4.87 | 70' | EL | 6.9 | 0.80 | 0.273 | 2.92 | 70' | EL | 34.5 | |
| | | SNGARBS2 | 20.000 | -- | 2.187 | 43.741 | 1.4 | 0.273 | 2.81 | 70' | EL | 34.5 | 0.507 | 3.47 | 70' | EL | 6.9 | 0.80 | 0.273 | 2.19 | 70' | EL | 34.5 | |
| | | SNAGRIS2 | 22.000 | -- | 2.077 | 45.69 | 1.4 | 0.273 | 2.67 | 70' | EL | 34.5 | 0.507 | 3.23 | 70' | EL | 6.9 | 0.80 | 0.273 | 2.08 | 70' | EL | 34.5 | |
| | | SNCOTTS3 | 27.250 | -- | 1.452 | 39.565 | 1.4 | 0.273 | 1.87 | 70' | EL | 34.5 | 0.507 | 2.43 | 70' | EL | 6.9 | 0.80 | 0.273 | 1.45 | 70' | EL | 34.5 | |
| | | SNAGGRS4 | 34.925 | -- | 1.218 | 42.554 | 1.4 | 0.273 | 1.57 | 70' | EL | 34.5 | 0.507 | 2.03 | 70' | EL | 6.9 | 0.80 | 0.273 | 1.22 | 70' | EL | 34.5 | |
| | | SNS5A | 35.550 | -- | 1.191 | 42.346 | 1.4 | 0.273 | 1.53 | 70' | EL | 34.5 | 0.507 | 2.06 | 70' | EL | 6.9 | 0.80 | 0.273 | 1.19 | 70' | EL | 34.5 | |
| | | SNS6A | 39.950 | -- | 1.095 | 43.747 | 1.4 | 0.273 | 1.41 | 70' | EL | 34.5 | 0.507 | 1.88 | 70' | EL | 6.9 | 0.80 | 0.273 | 1.10 | 70' | EL | 34.5 | |
| | SNS7B | 42.000 | -- | 1.043 | 43.801 | 1.4 | 0.273 | 1.34 | 70' | EL | 34.5 | 0.507 | 1.85 | 70' | EL | 6.9 | 0.80 | 0.273 | 1.04 | 70' | EL | 34.5 | | |
| | TTST | TNAGRIT3 | 33.000 | -- | 1.336 | 44.087 | 1.4 | 0.273 | 1.72 | 70' | EL | 34.5 | 0.507 | 2.23 | 70' | EL | 6.9 | 0.80 | 0.273 | 1.34 | 70' | EL | 34.5 | |
| | | TNT4A | 33.075 | -- | 1.342 | 44.401 | 1.4 | 0.273 | 1.72 | 70' | EL | 34.5 | 0.507 | 2.17 | 70' | EL | 6.9 | 0.80 | 0.273 | 1.34 | 70' | EL | 34.5 | |
| | | TNT6A | 41.600 | -- | 1.1 | 45.746 | 1.4 | 0.273 | 1.41 | 70' | EL | 34.5 | 0.507 | 1.98 | 70' | EL | 6.9 | 0.80 | 0.273 | 1.10 | 70' | EL | 34.5 | |
| | | TNT7A | 42.000 | -- | 1.106 | 46.462 | 1.4 | 0.273 | 1.42 | 70' | EL | 34.5 | 0.507 | 1.94 | 70' | EL | 6.9 | 0.80 | 0.273 | 1.11 | 70' | EL | 34.5 | |
| | | TNT7B | 42.000 | -- | 1.147 | 48.18 | 1.4 | 0.273 | 1.47 | 70' | EL | 34.5 | 0.507 | 1.8 | 70' | EL | 6.9 | 0.80 | 0.273 | 1.15 | 70' | EL | 34.5 | |
| | | TNAGRIT4 | 43.000 | -- | 1.089 | 46.838 | 1.4 | 0.273 | 1.4 | 70' | EL | 34.5 | 0.507 | 1.74 | 70' | EL | 6.9 | 0.80 | 0.273 | 1.09 | 70' | EL | 34.5 | |
| TNAGT5A | | 45.000 | -- | 1.026 | 46.175 | 1.4 | 0.273 | 1.32 | 70' | EL | 34.5 | 0.507 | 1.74 | 70' | EL | 6.9 | 0.80 | 0.273 | 1.03 | 70' | EL | 34.5 | | |
| TNAGT5B | 45.000 | 3 | 1.013 | 45.579 | 1.4 | 0.273 | 1.3 | 70' | EL | 34.5 | 0.507 | 1.66 | 70' | EL | 6.9 | 0.80 | 0.273 | 1.01 | 70' | EL | 34.5 | | | |

LOAD FACTORS:

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

NOTES:

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

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

COMMENTS:

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

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

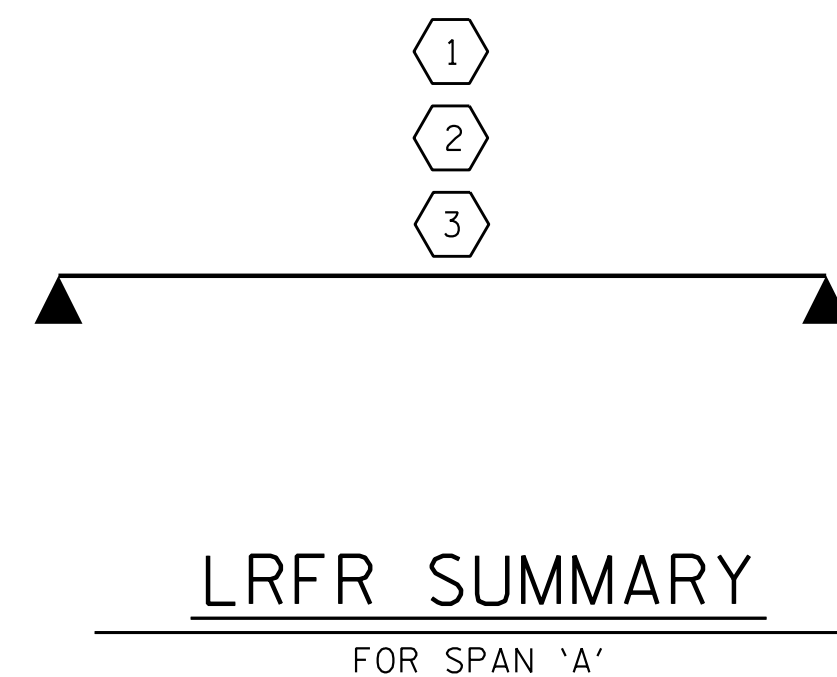
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



PROJECT NO. 17BP.1.R.88
PASQUOTANK COUNTY
 STATION: 18+70.00 -L-

| | |
|-----------------------------------|-------------|
| ASSEMBLED BY : W. B. ALLEN | DATE : 6/19 |
| CHECKED BY : G. F. WILSON | DATE : 6/19 |
| 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
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NC License # F-1333
formerly CALYX Engineers & Consultants

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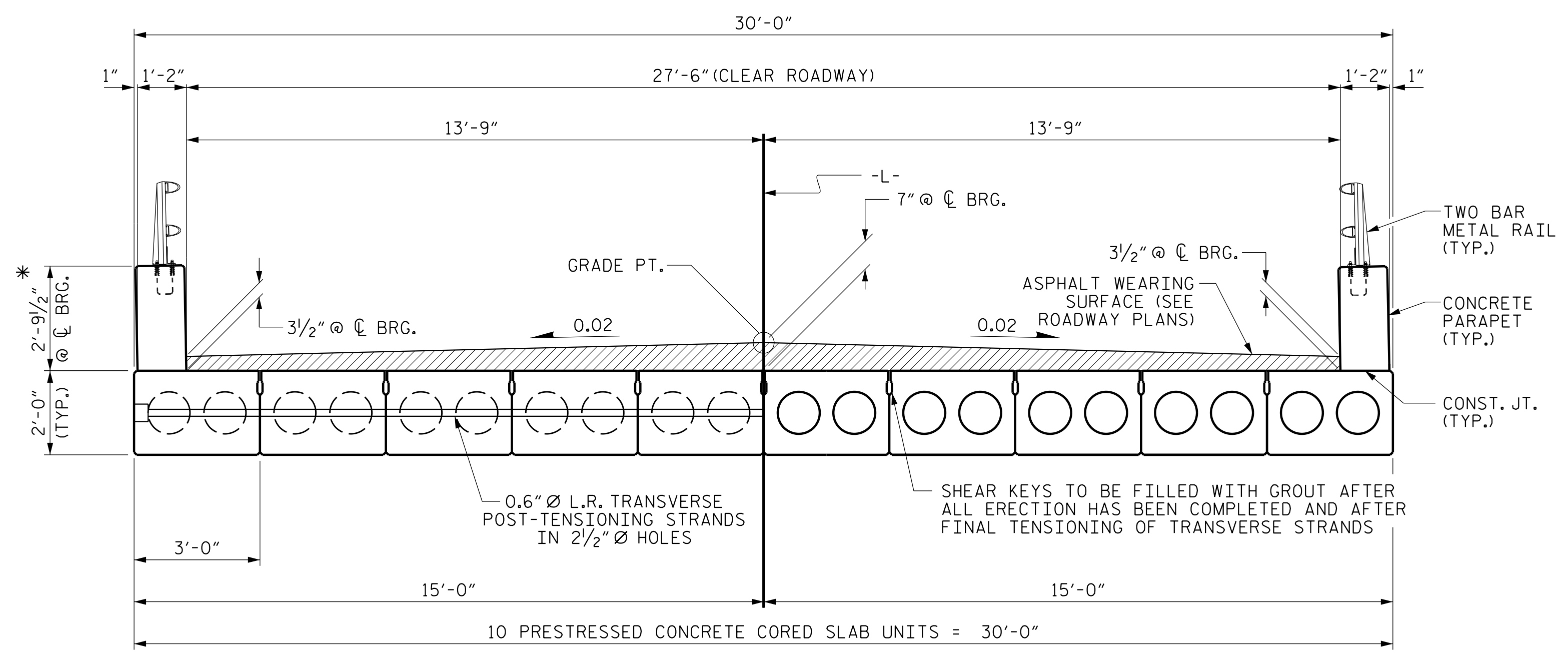
NORTH CAROLINA PROFESSIONAL SEAL
046721
9/26/2022

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR
70' CORED SLAB UNIT
90° SKEW
(NON-INTERSTATE TRAFFIC)

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

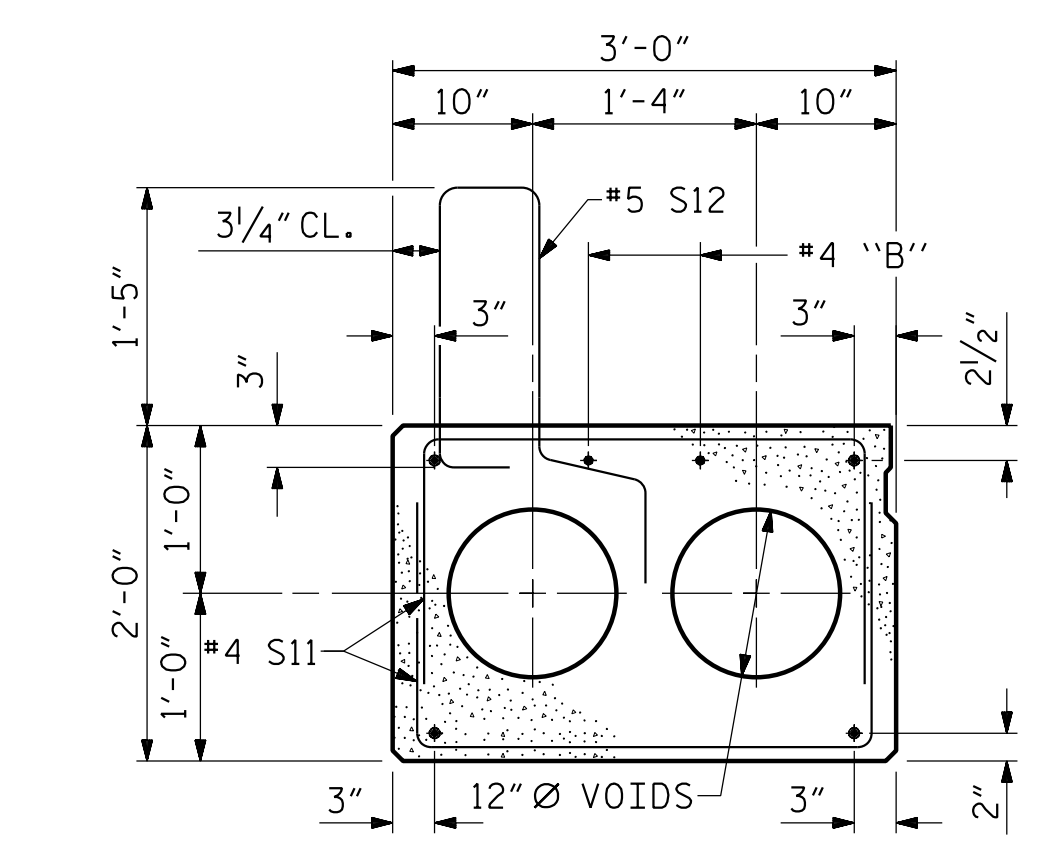
9/26/2022 4:17:52 PM R:\Structures\17BP.1.R.88_SML.GD3_690006.dgn



HALF SECTION AT INTERMEDIATE DIAPHRAGMS
HALF SECTION THROUGH VOIDS

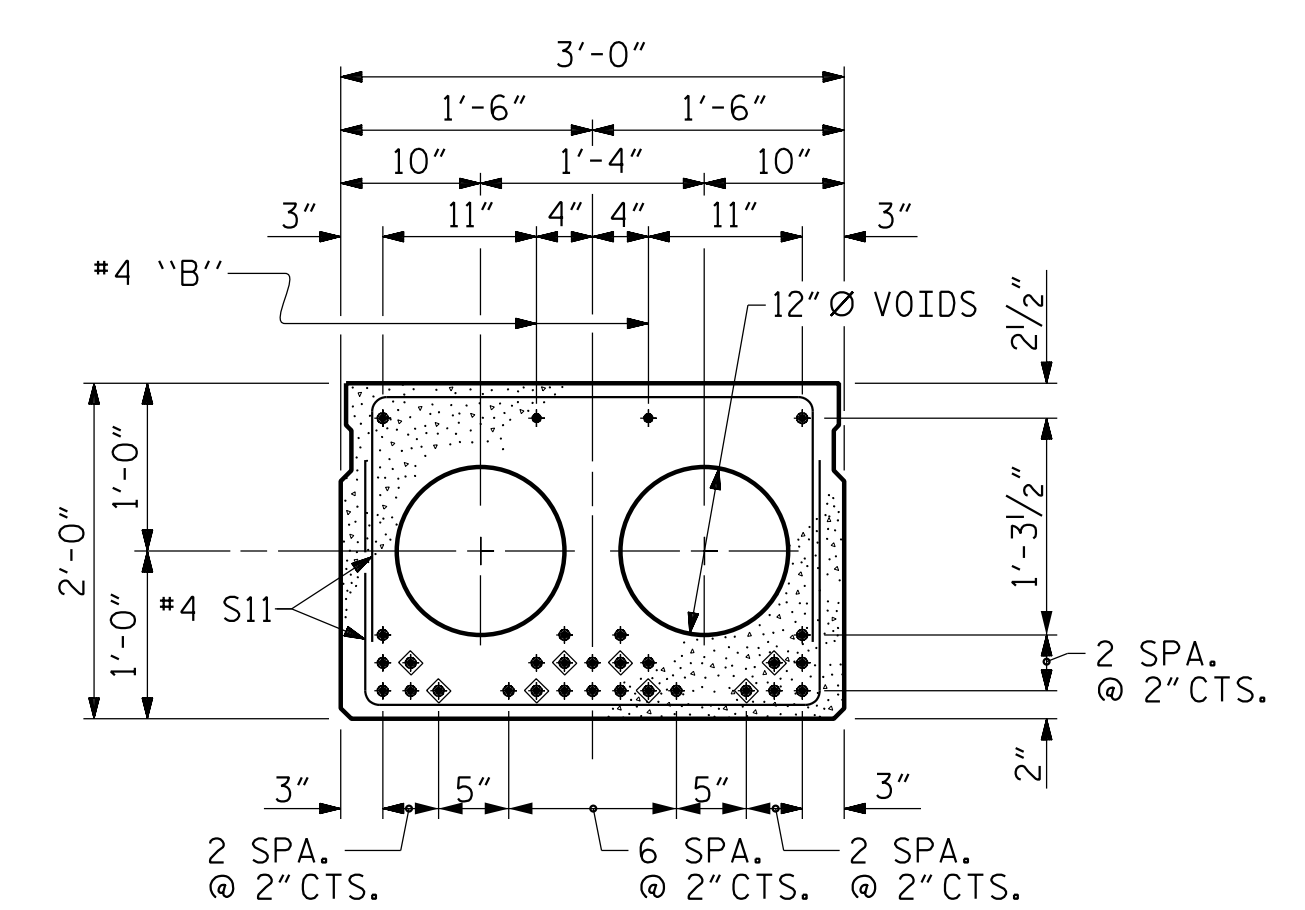
TYPICAL SECTION

* - THE MAXIMUM PARAPET HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE PARAPET AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE PARAPET FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR PARAPET HEIGHT DETAILS AND ASPHALT THICKNESS, SEE SHEET S-6.



EXTERIOR SLAB SECTION

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

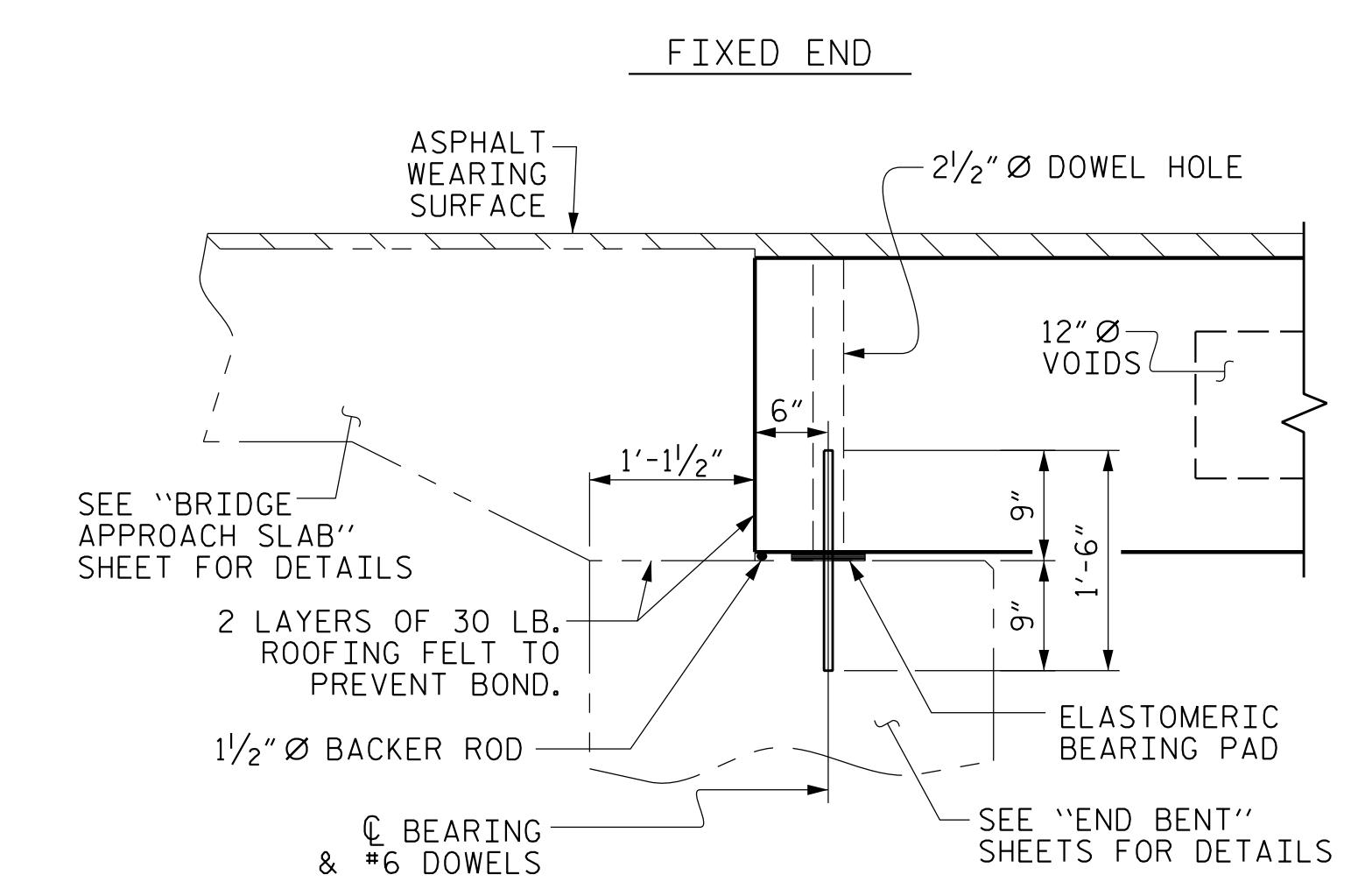


INTERIOR SLAB SECTION (70' UNIT)
(28 STRANDS REQUIRED)

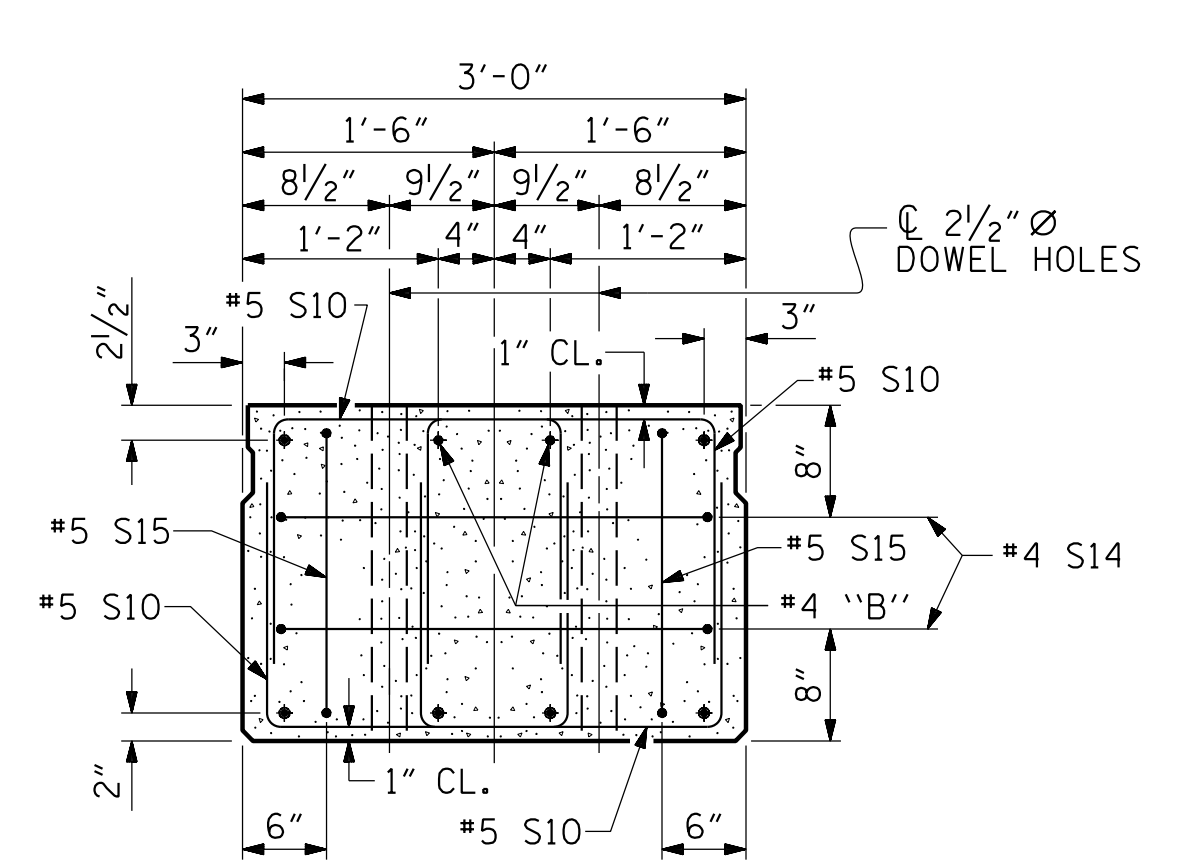
0.6" Ø LOW RELAXATION STRAND LAYOUT

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

DEBONDING LEGEND

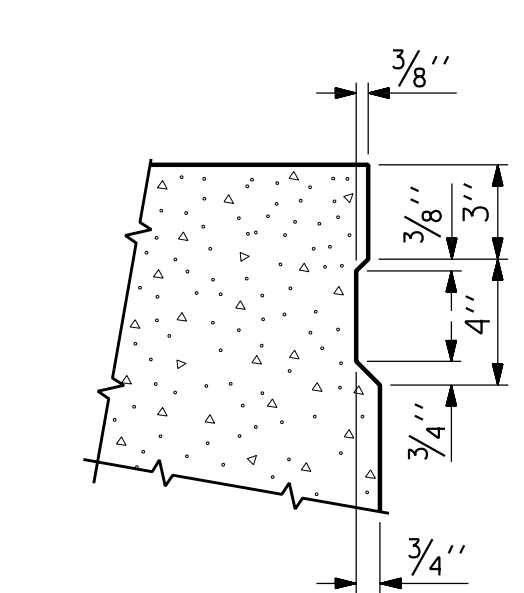


SECTION AT END BENT



END ELEVATION

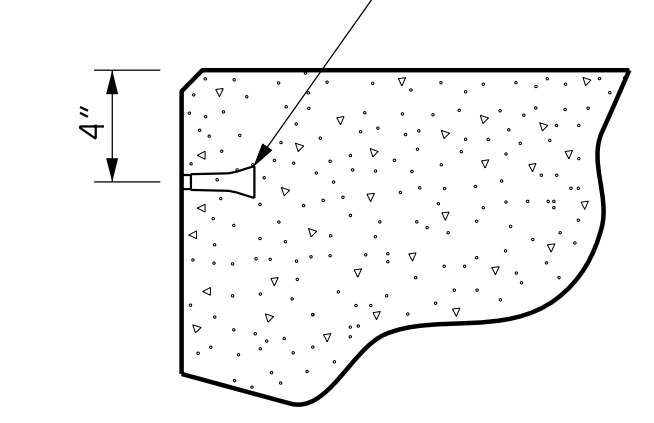
SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.



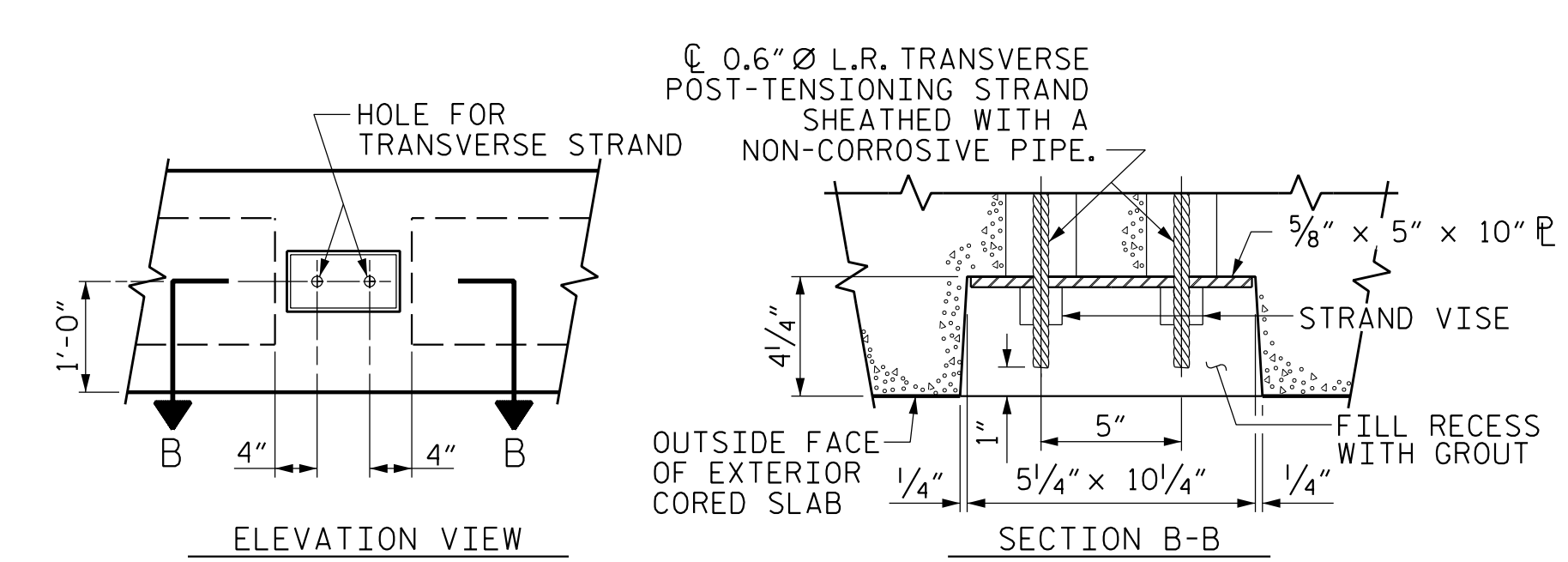
SHEAR KEY DETAIL

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

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



THREADED INSERT DETAIL



GROUTED RECESS AT END OF POST-TENSIONED STRAND CORED SLABS

PROJECT NO. 17BP.1.R.88
PASQUOTANK COUNTY
STATION: 18+70.00 -L-

SHEET 1 OF 3

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

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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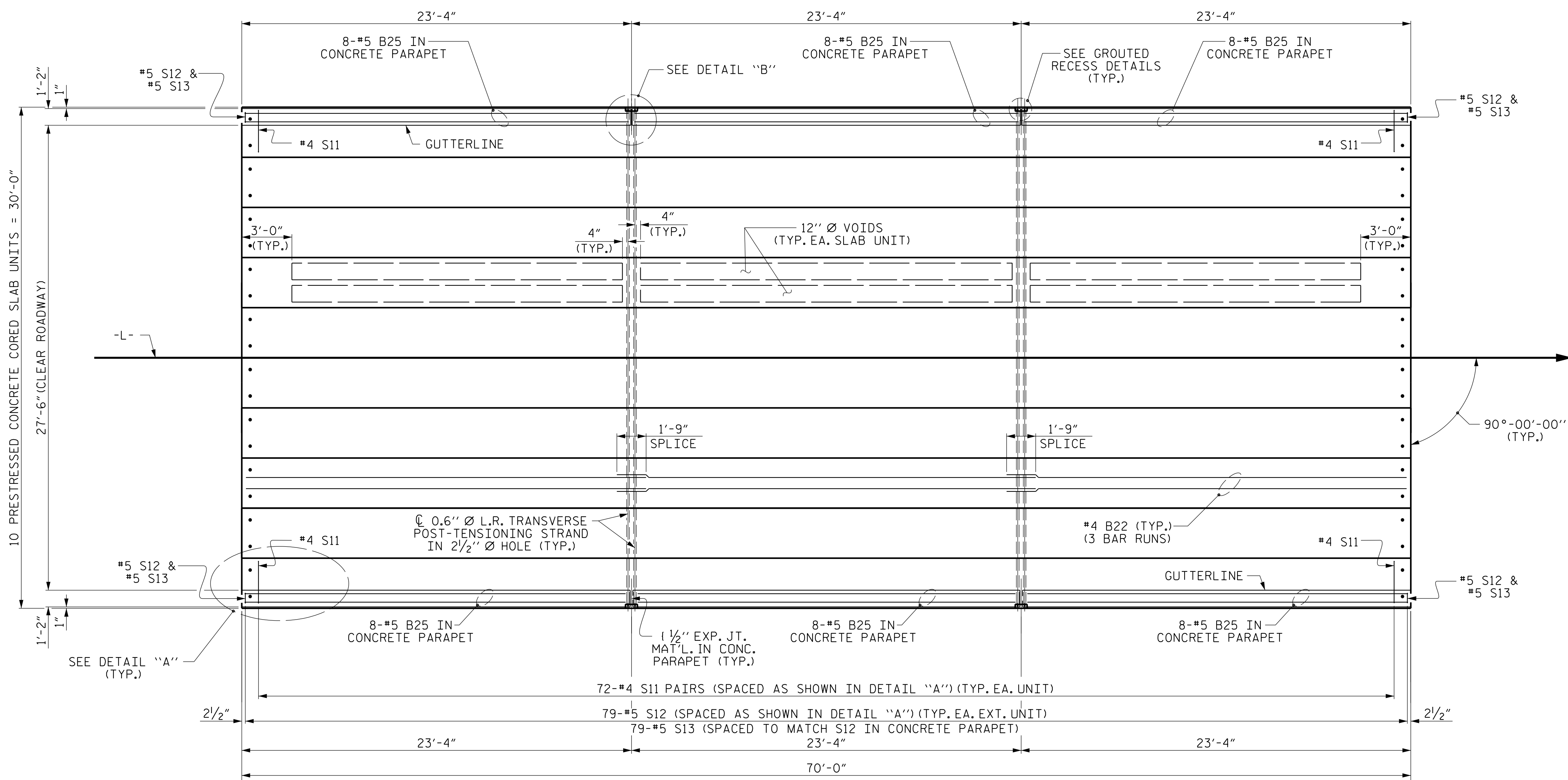


PLANS PREPARED BY:
NV5
NV5 ENGINEERS & CONSULTANTS, INC.
3300 REGENCY PARKWAY, SUITE 100
CARY, NC 27518
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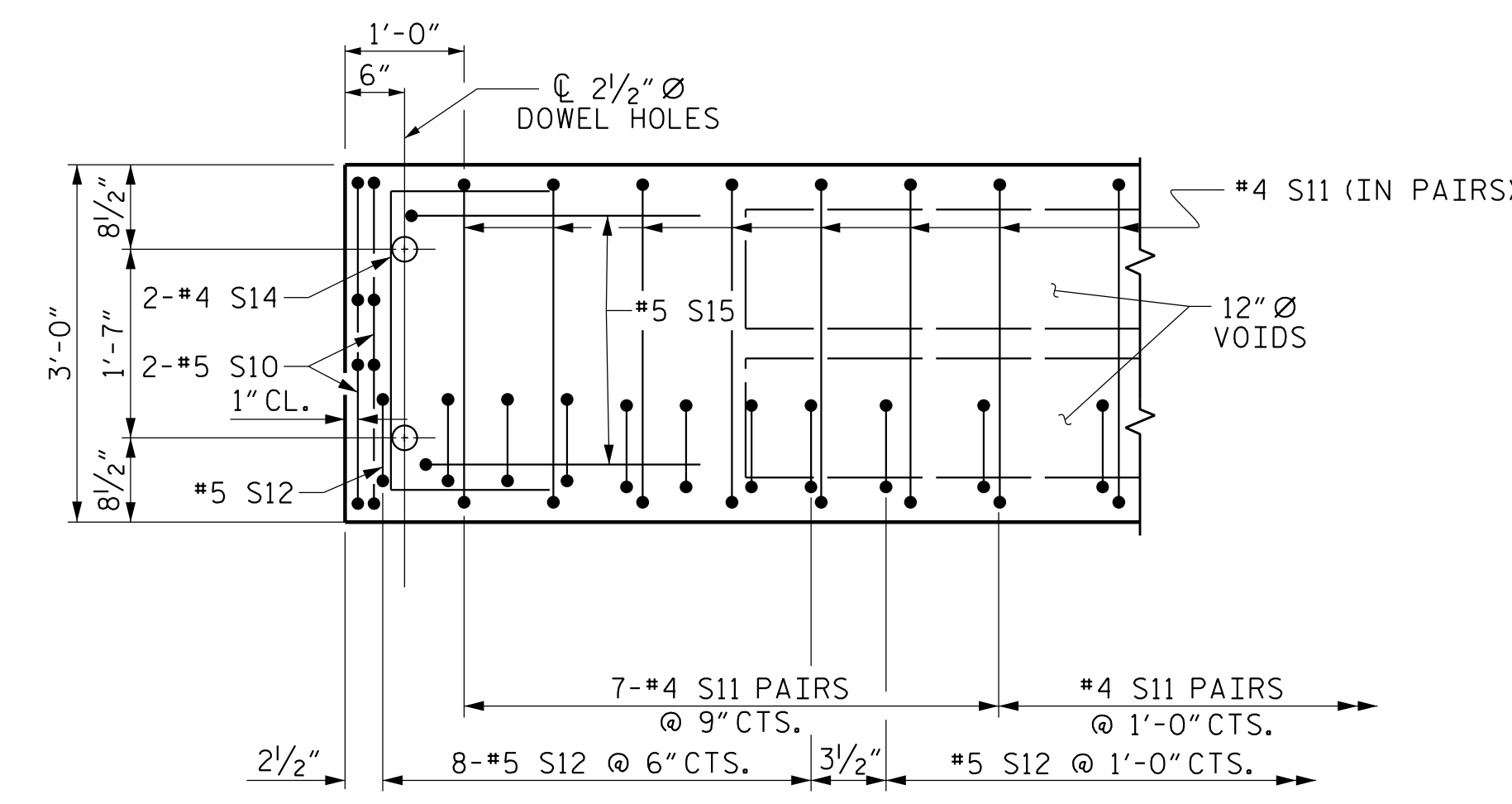
| REVISIONS | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----------|-------|
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

TOTAL SHEETS: 19

| | | | |
|----------------|--------------|--------|---------|
| ASSEMBLED BY : | W. B. ALLEN | DATE : | 6/19 |
| CHECKED BY : | G. F. WILSON | DATE : | 6/19 |
| DRAWN BY : | MAA 6/10 | REV. : | 8/14 |
| CHECKED BY : | MKT 7/10 | | MAA/TMG |

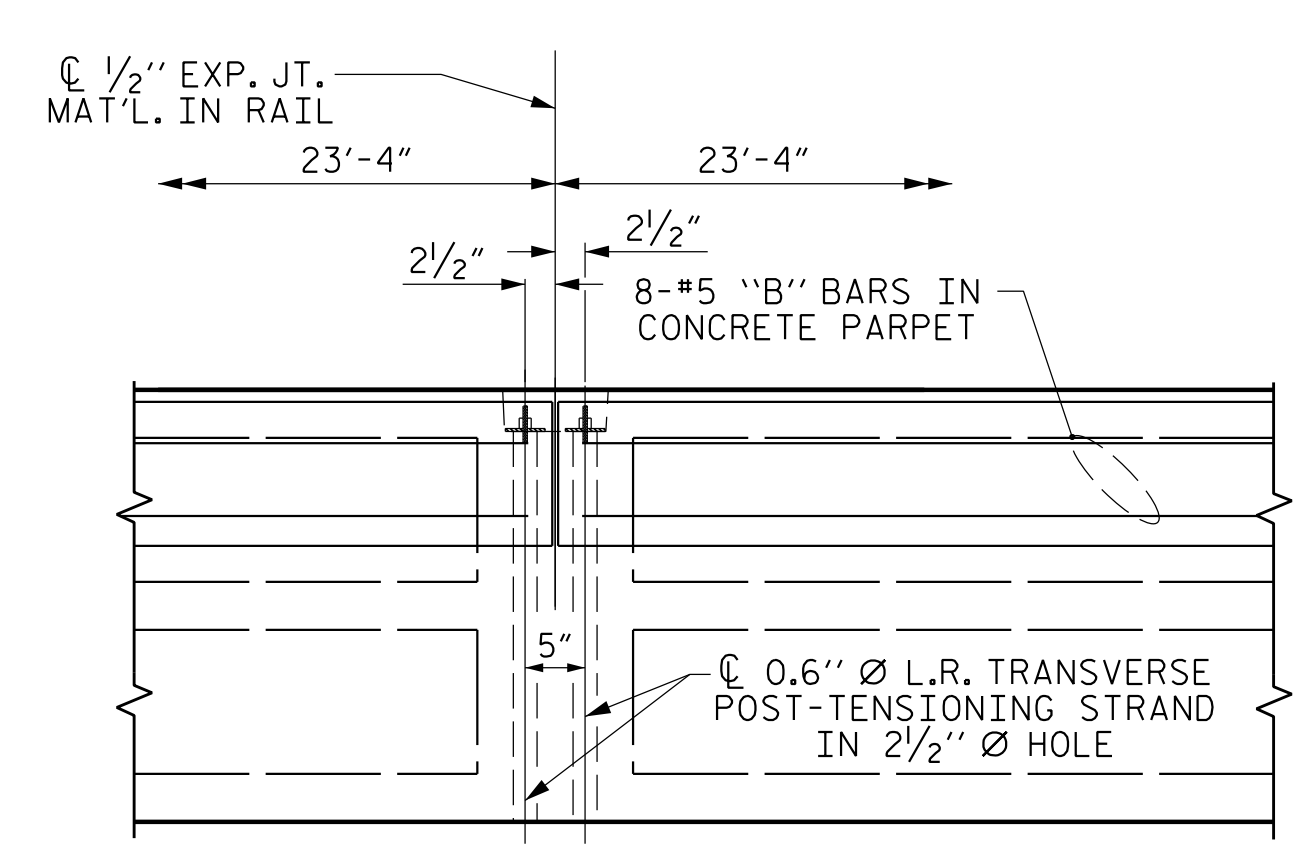


PLAN OF UNIT



DETAIL "A"

(TYPICAL EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.



DETAIL "B"

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

| | | | |
|----------------|--------------|--------------|---------|
| ASSEMBLED BY : | W. B. ALLEN | DATE : | 6/19 |
| CHECKED BY : | G. F. WILSON | DATE : | 6/19 |
| DRAWN BY : | MAA 6/10 | REV. 12/5/11 | MAA/AAC |
| CHECKED BY : | MKT 7/10 | REV. 8/14 | MAA/TMG |

PLANS PREPARED BY:

NVS
NVS ENGINEERS & CONSULTANTS, INC.
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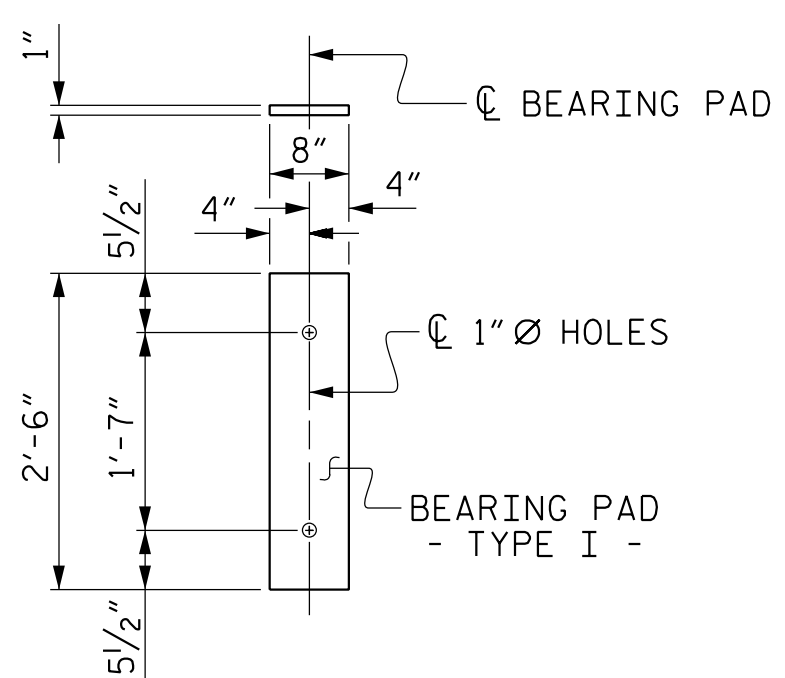
PROJECT NO. 17BP.1.R.88
PASQUOTANK COUNTY
STATION: 18+70.00 -L-

SHEET 2 OF 3

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

**PLAN OF 70' UNIT
27'-6" CLEAR ROADWAY
90° SKEW**

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-5 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 19 |



FIXED END
(TYPE I - 20 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

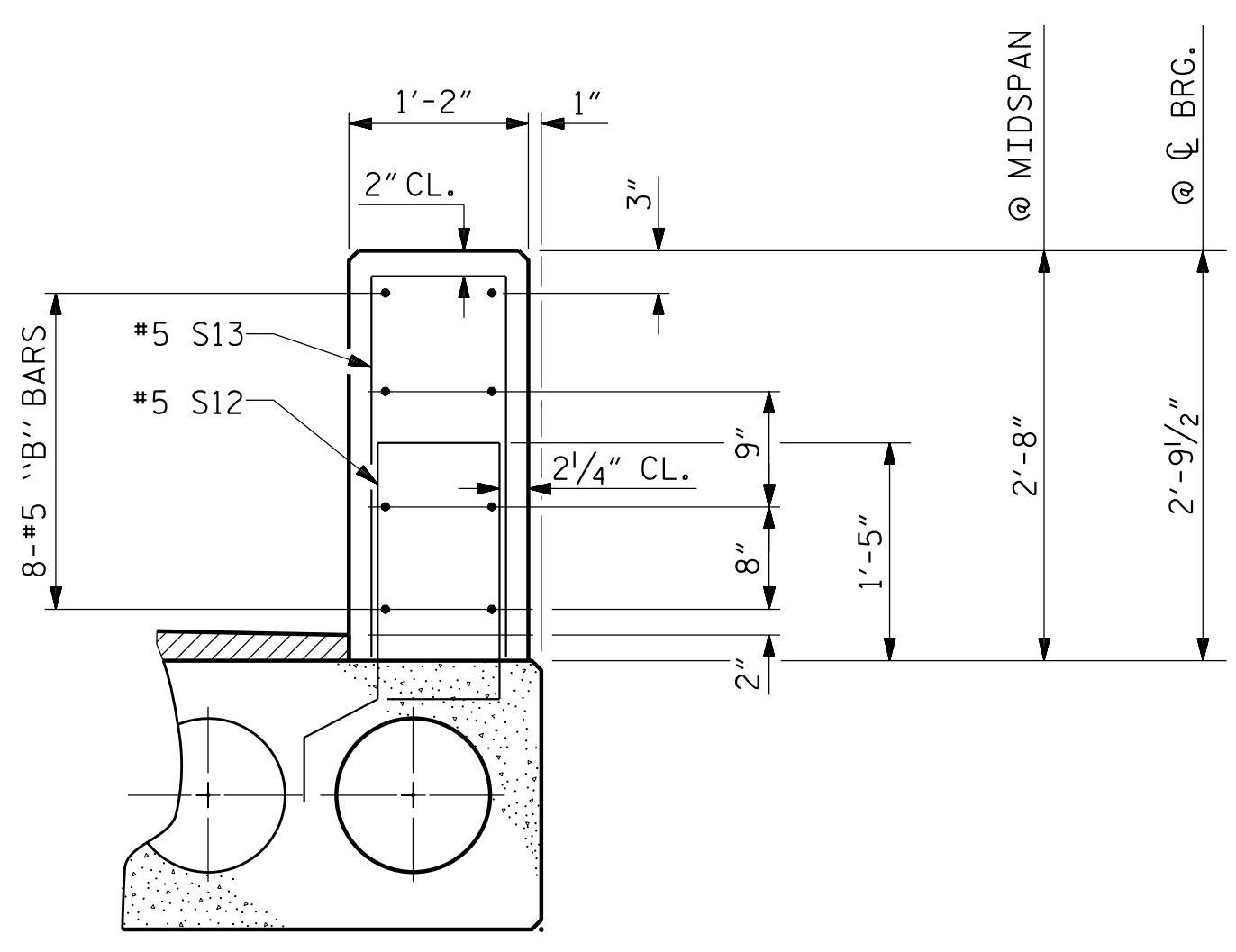
| DEAD LOAD DEFLECTION AND CAMBER | |
|--|------------------------------|
| 70' CORED SLAB UNIT | 3'-0" x 2'-0" |
| CAMBER (SLAB ALONE IN PLACE) | 0.6" Ø L.R. STRAND 2/4" ↑ |
| DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD** | 3/4" ↓ |
| FINAL CAMBER | 1/2" ↑ |

** INCLUDES FUTURE WEARING SURFACE

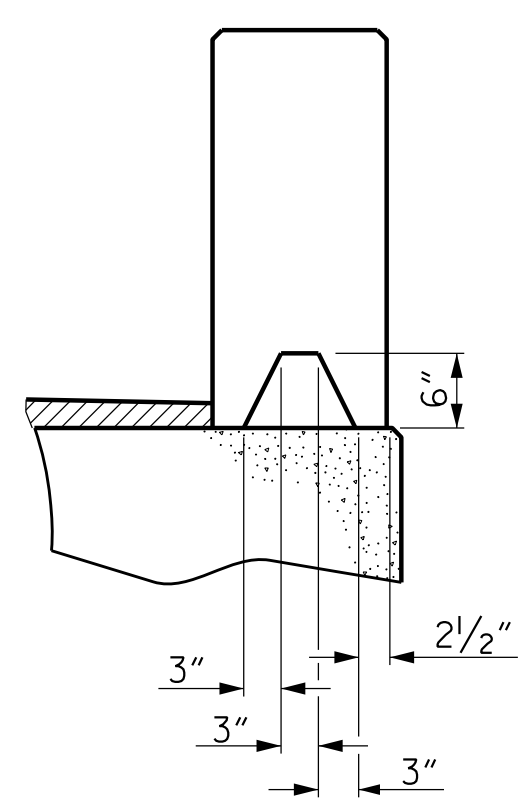
| GRADE 270 STRANDS | |
|---------------------------------------|-------------|
| AREA (SQUARE INCHES) | 0.6" Ø L.R. |
| ULTIMATE STRENGTH (LBS. PER STRAND) | 58,600 |
| APPLIED PRESTRESS (LBS. PER STRAND) | 43,950 |

| CONCRETE RELEASE STRENGTH | |
|---------------------------|------|
| UNIT | PSI |
| 70' UNITS | 5500 |

| CORED SLABS REQUIRED | | | |
|----------------------|--------|--------|--------------|
| 70' UNIT | NUMBER | LENGTH | TOTAL LENGTH |
| EXTERIOR C.S. | 2 | 70'-0" | 140'-0" |
| INTERIOR C.S. | 8 | 70'-0" | 560'-0" |
| TOTAL | 10 | | 700'-0" |

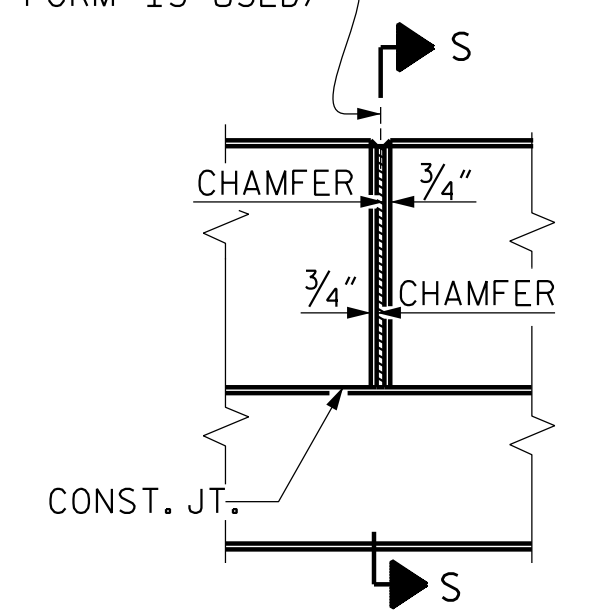


SECTION THRU PARAPET



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

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

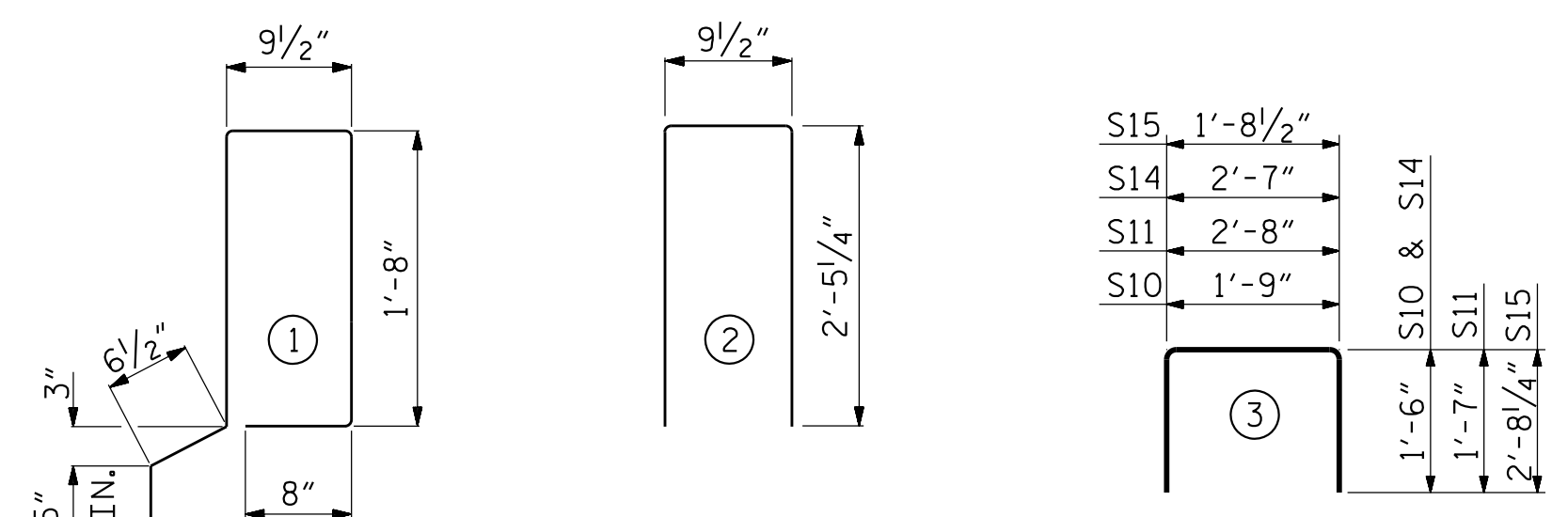


ELEVATION AT EXPANSION JOINTS

CONCRETE PARAPET DETAILS

| | | | |
|----------------|--------------|--------|---------|
| ASSEMBLED BY : | W. B. ALLEN | DATE : | 6/19 |
| CHECKED BY : | G. F. WILSON | DATE : | 6/19 |
| DRAWN BY : | MAA 6/10 | REV. | 5/18 |
| CHECKED BY : | MKT 7/10 | | MAA/THC |

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

BILL OF MATERIAL FOR CONCRETE PARAPET

| BAR | BARS PER PAIR OF EXTERIOR UNITS 70' UNIT | TOTAL NO. | SIZE | TYPE | LENGTH | WEIGHT |
|----------------------------------|--|-----------|------|------|---------|--------|
| *B25 | 48 | 48 | #5 | STR | 22'-11" | 1147 |
| *S13 | 158 | 158 | #5 | 2 | 5'-8" | 934 |
| * EPOXY COATED REINFORCING STEEL | | | | | LBS. | 2081 |
| CLASS AA CONCRETE | | | | | CU.YDS. | 17.3 |
| TOTAL CONCRETE PARAPET | | | | | LN.FT. | 140.25 |

BILL OF MATERIAL FOR ONE 70' CORED SLAB UNIT

| BAR | NUMBER | SIZE | TYPE | EXTERIOR UNIT LENGTH | EXTERIOR UNIT WEIGHT | INTERIOR UNIT LENGTH | INTERIOR UNIT WEIGHT |
|----------------------------------|--------|------|------|----------------------|----------------------|----------------------|----------------------|
| B22 | 6 | #4 | STR | 24'-6" | 98 | 24'-6" | 98 |
| S10 | 8 | #5 | 3 | 4'-9" | 40 | 4'-9" | 40 |
| S11 | 144 | #4 | 3 | 5'-10" | 561 | 5'-10" | 561 |
| *S12 | 79 | #5 | 1 | 5'-9" | 474 | | |
| S14 | 4 | #4 | 3 | 5'-7" | 15 | 5'-7" | 15 |
| S15 | 4 | #5 | 3 | 7'-1" | 30 | 7'-1" | 30 |
| REINFORCING STEEL | | | | LBS. | | 744 | |
| * EPOXY COATED REINFORCING STEEL | | | | LBS. | | 474 | |
| 7000 P.S.I. CONCRETE | | | | CU. YDS. | | 11.8 | |
| 0.6" Ø L.R. STRANDS | | | | No. | | 28 | |

GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT

| | ASPHALT OVERLAY THICKNESS @ MID-SPAN | RAIL HEIGHT @ MID-SPAN |
|-----------|--------------------------------------|------------------------|
| 70' UNITS | 2" | 2'-8" |

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.

PRESTRESSED CONCRETE CORED SLAB UNITS ARE DESIGNED FOR 0 PSI TENSION IN THE PRECOMPRESSED TENSILE ZONE UNDER ALL LOADING CONDITIONS.

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 SIDWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

PRESTRESSED CONCRETE CORED SLAB UNITS SHALL CONTAIN CALCIUM NITRITE CORROSION INHIBITOR IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

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

ALL REINFORCING STEEL IN CONCRETE PARAPET 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 CONCRETE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN CONCRETE PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF CONCRETE PARAPET 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.

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

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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.

PROJECT NO. 17BP.1.R.88
PASQUOTANK COUNTY
 STATION: 18+70.00 -L-

SHEET 3 OF 3

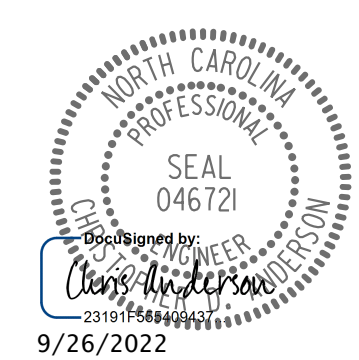
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 3'-0" X 2'-0"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-6 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 19 |

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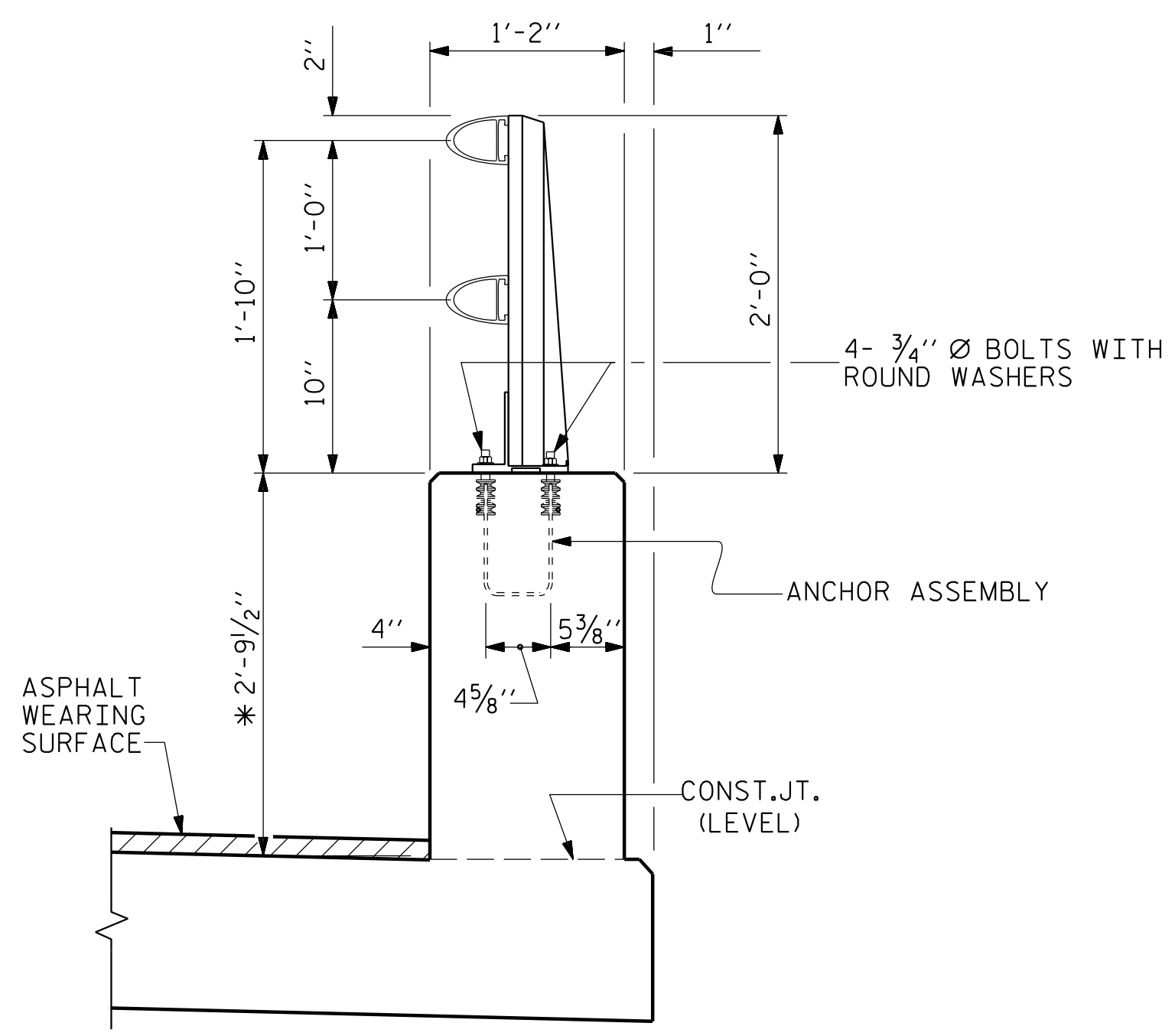


PLANS PREPARED BY:

NV5

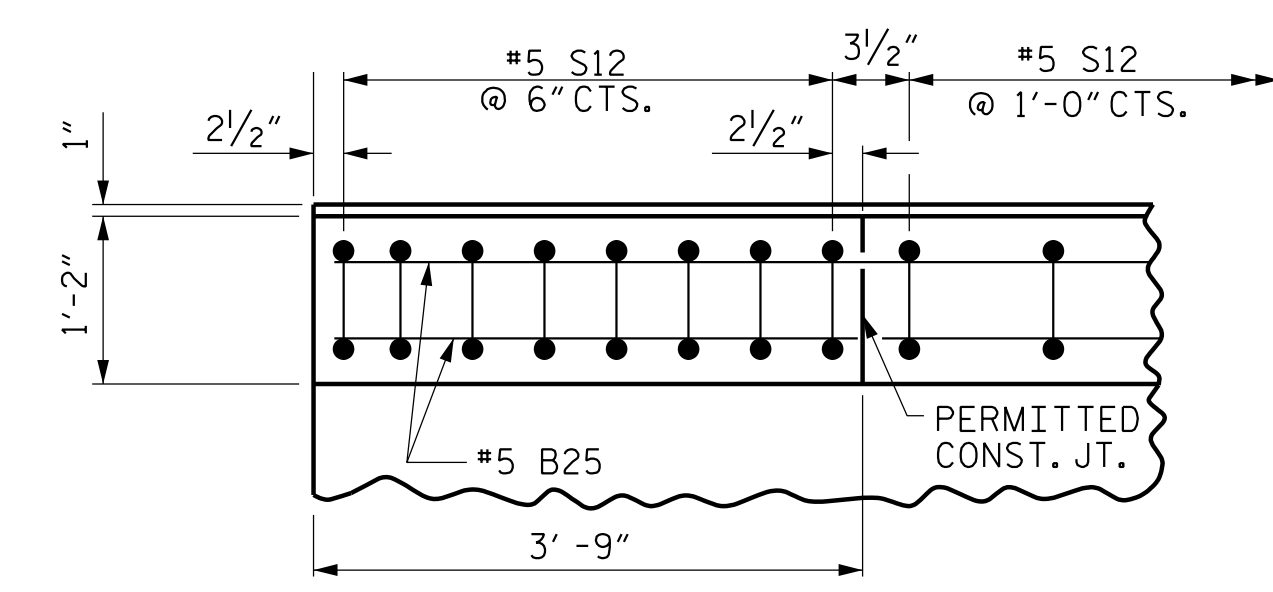
NV5 ENGINEERS & CONSULTANTS, INC.
 3300 REGENCY PARKWAY, SUITE 100
 CARY, NC 27518
 P: 919.851.1912 www.NV5.com
 NC License # F41333
 formerly CALYX Engineers & Consultants

| BILL OF MATERIAL FOR END POSTS | | | | | |
|---|-----|------|------|--------|--------|
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| *E1 | 8 | #7 | STR | 2'-9" | 44 |
| *E2 | 8 | #7 | STR | 3'-3" | 52 |
| *E3 | 8 | #7 | STR | 3'-9" | 60 |
| *E4 | 8 | #7 | STR | 4'-3" | 68 |
| *E5 | 8 | #7 | STR | 4'-7" | 74 |
| *F1 | 8 | #6 | STR | 1'-10" | 22 |
| *F2 | 8 | #6 | STR | 3'-0" | 36 |
| *F3 | 8 | #6 | STR | 3'-3" | 39 |
| * EPOXY COATED REINFORCING STEEL LBS. = | | | | | 395 |

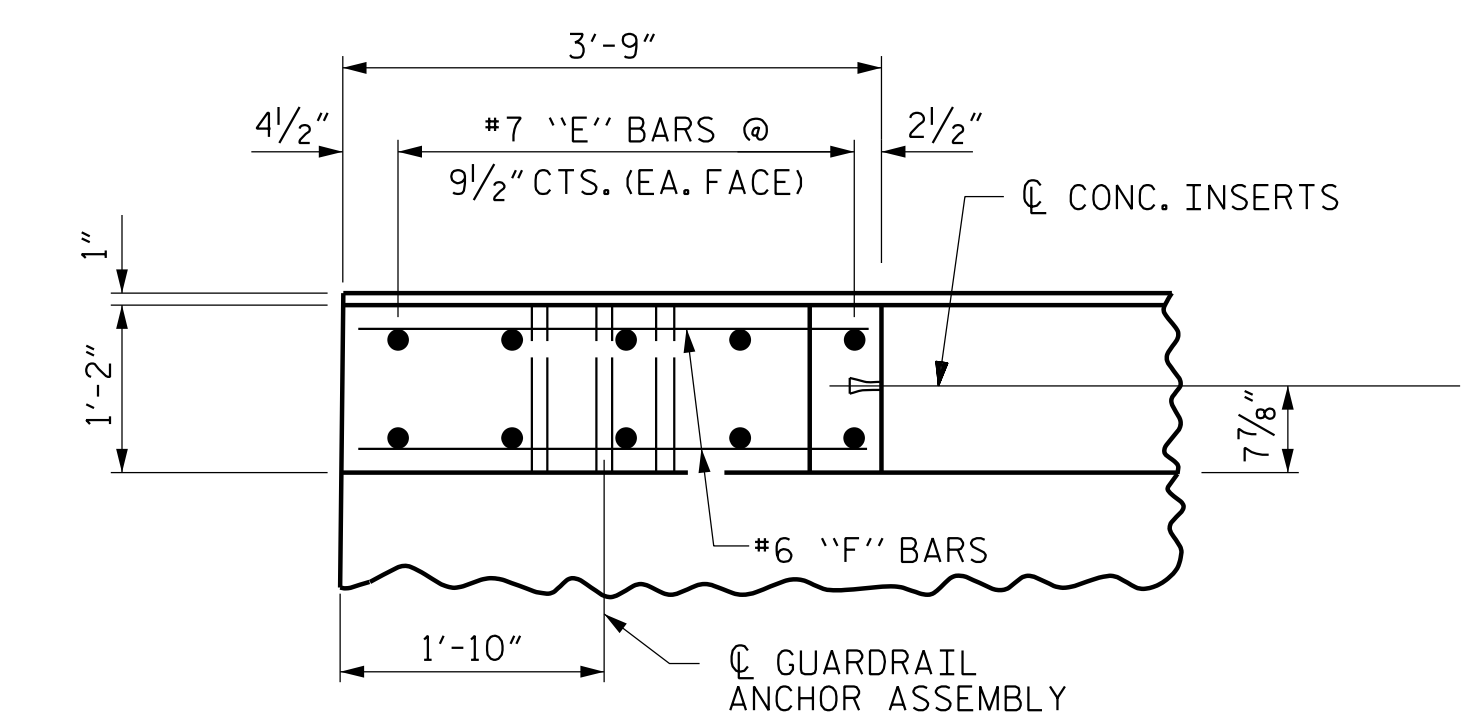


SECTION THRU PARAPET AND RAIL

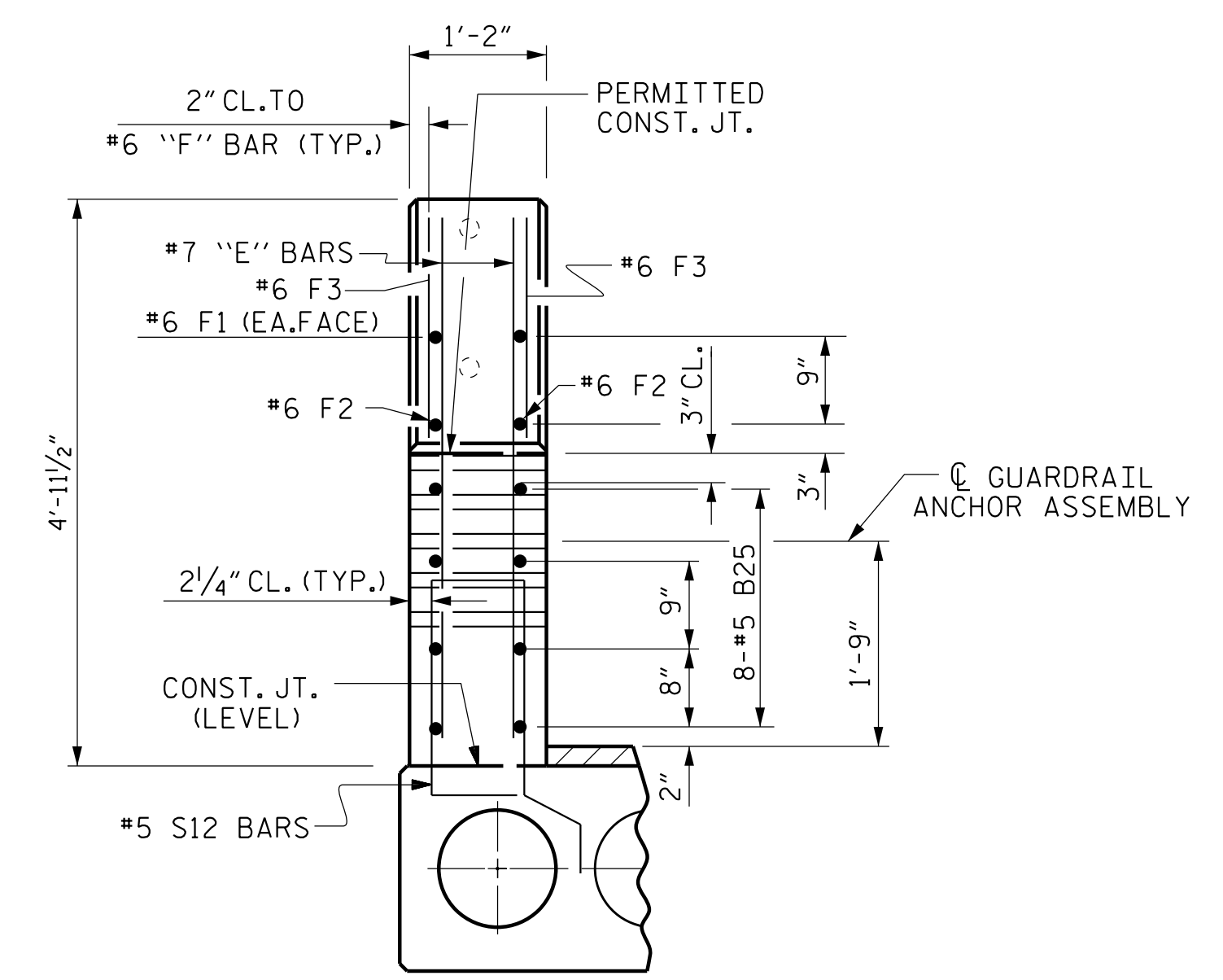
* THE MAXIMUM HEIGHT OF THE PARAPET IS SHOWN. THE HEIGHT OF THE PARAPET FOLLOWS THE GUTTERLINE.



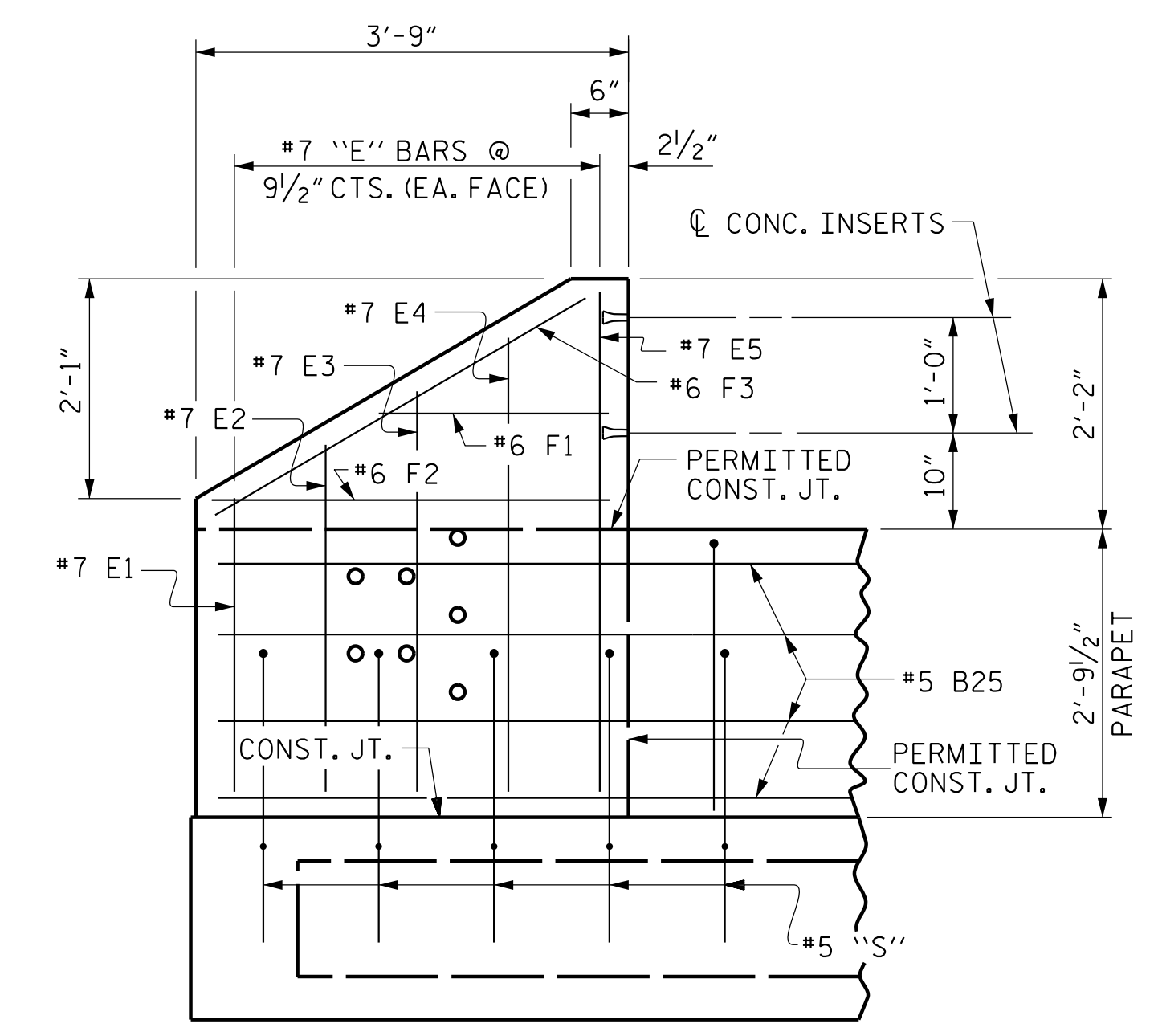
PLAN OF PARAPET



PLAN OF END POSTS



END VIEW



ELEVATION

PARAPET AND END POST DETAILS

NOTES

ALL REINFORCING STEEL IN THE PARAPET AND END POSTS SHALL BE EPOXY COATED.

#5 "S" BARS MAY BE SHIFTED SLIGHTLY AS NECESSARY TO AVOID INTERFERENCE WITH THE TWO BAR METAL RAIL POST ANCHORAGE ASSEMBLIES.

FOR DETAILS OF GUARDRAIL ANCHOR ASSEMBLY, SEE "GUARDRAIL ANCHORAGE", SHT. NO. S-11.

FOR DETAILS OF CONCRETE INSERT SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS", SHT. NO. S-8.

ADDITIONAL CONCRETE FOR END POST IS INCLUDED IN THE CLASS AA CONCRETE QUANTITY FOR THE PARAPET SHOWN ON SHEET S-6.

PROJECT NO. 17BP.1.R.88
PASQUOTANK COUNTY
 STATION: 18+70.00 -L-

| | | | |
|----------------|--------------|-----------|---------|
| ASSEMBLED BY : | W. B. ALLEN | DATE : | 6/19 |
| CHECKED BY : | G. F. WILSON | DATE : | 6/19 |
| DRAWN BY : | MAA 6/10 | REV. 5/18 | MAA/THC |
| CHECKED BY : | MKT 7/10 | | |

PLANS PREPARED BY:

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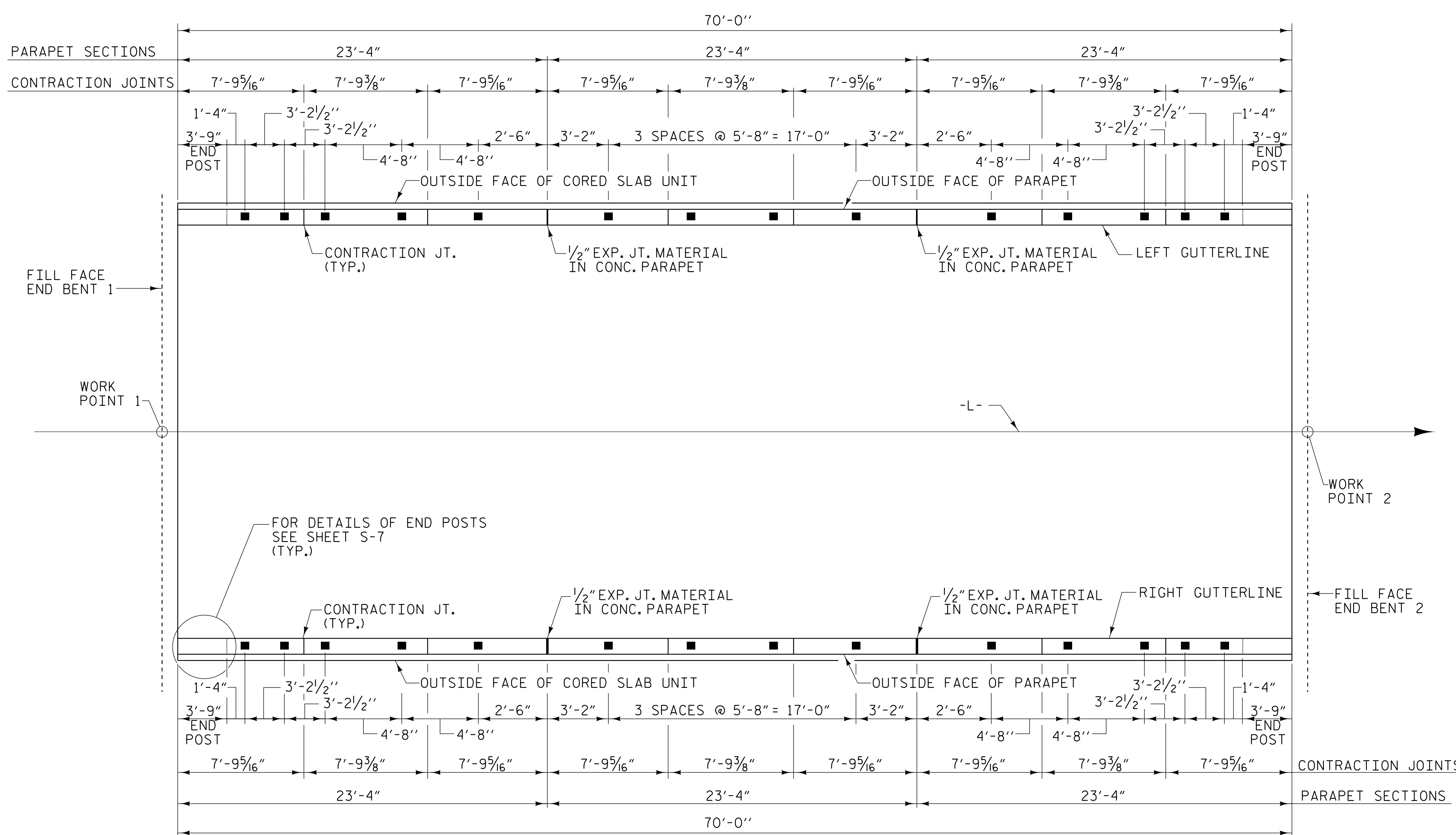
Chris Anderson
 PROFESSIONAL ENGINEER
 SEAL 046721
 9/26/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

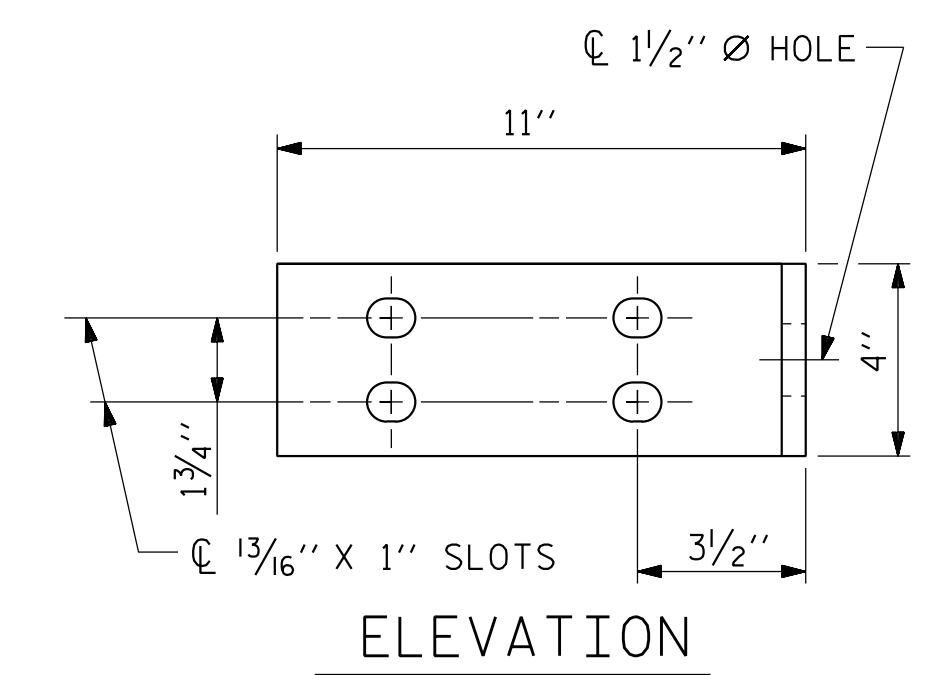
PARAPET AND END POST DETAILS

27'-6" CLEAR ROADWAY - 90° SKEW

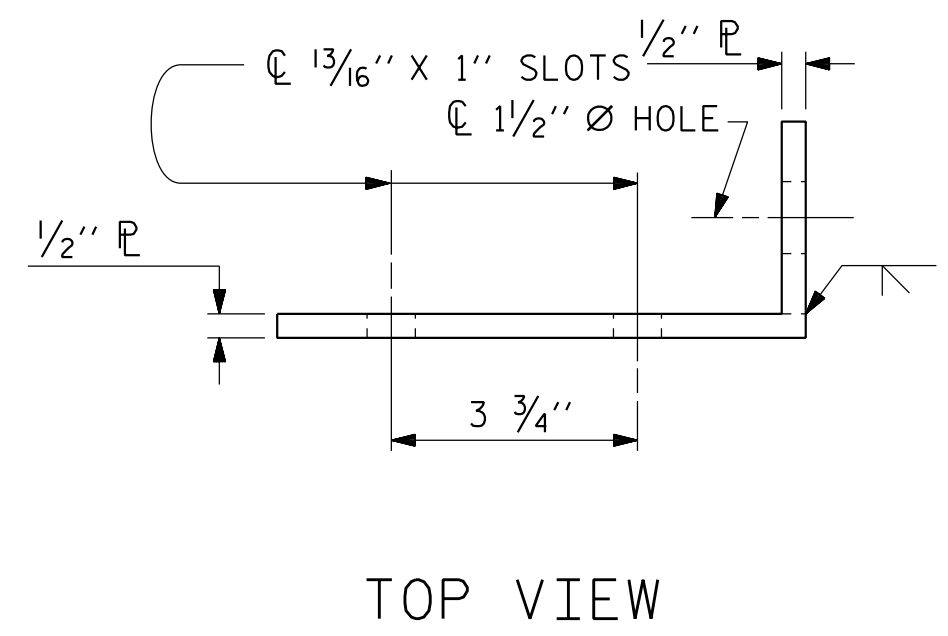
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| 2 | | | 4 | | | 19 |



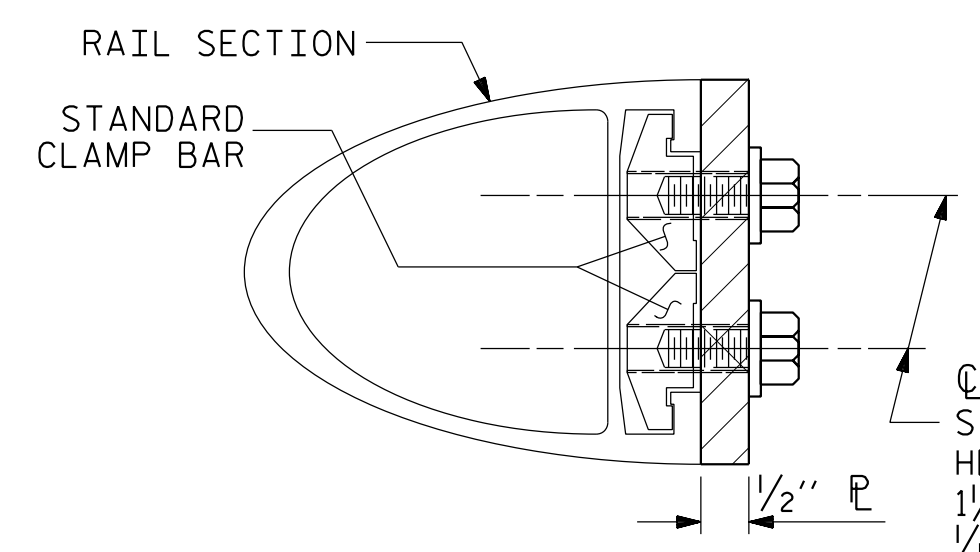
PLAN OF RAIL POST SPACINGS



ELEVATION

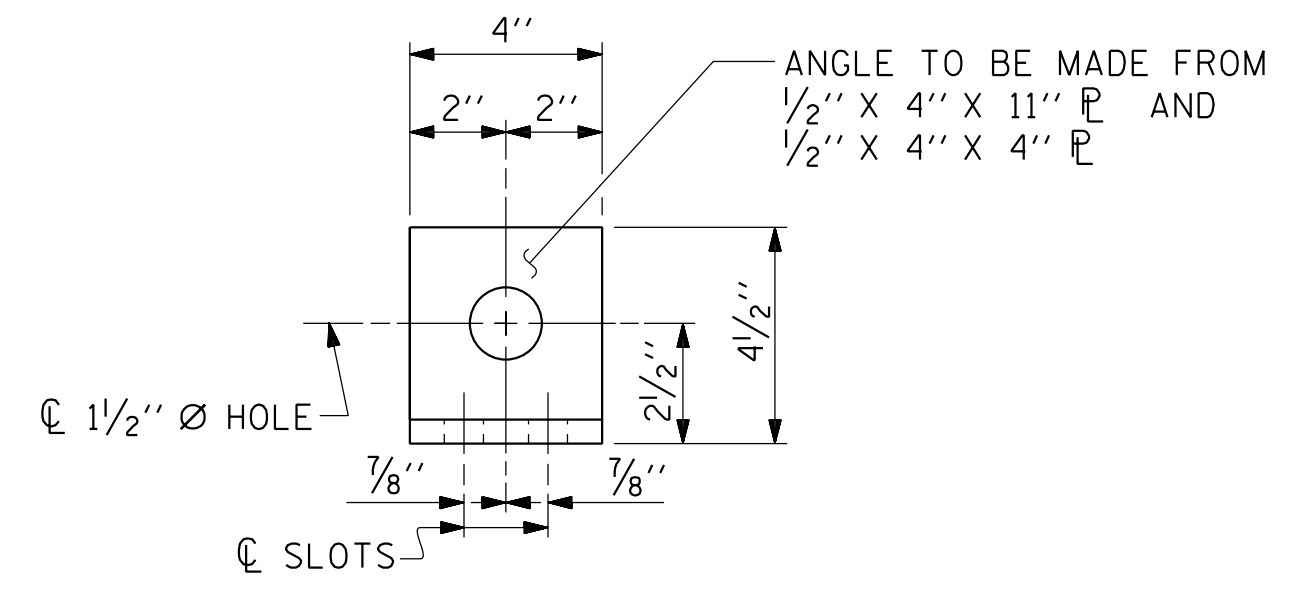


TOP VIEW



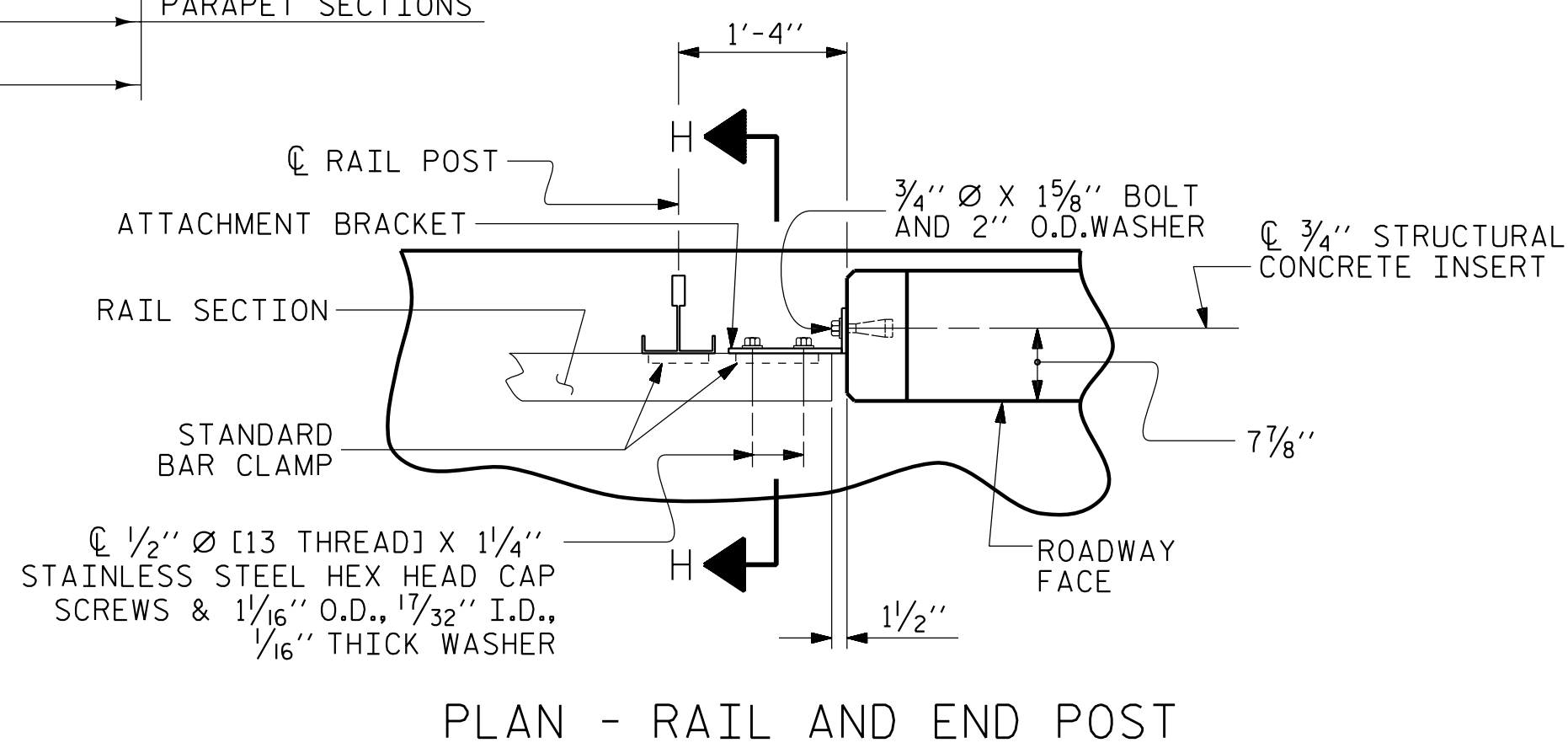
FIXED

SECTION H-H (FIX)

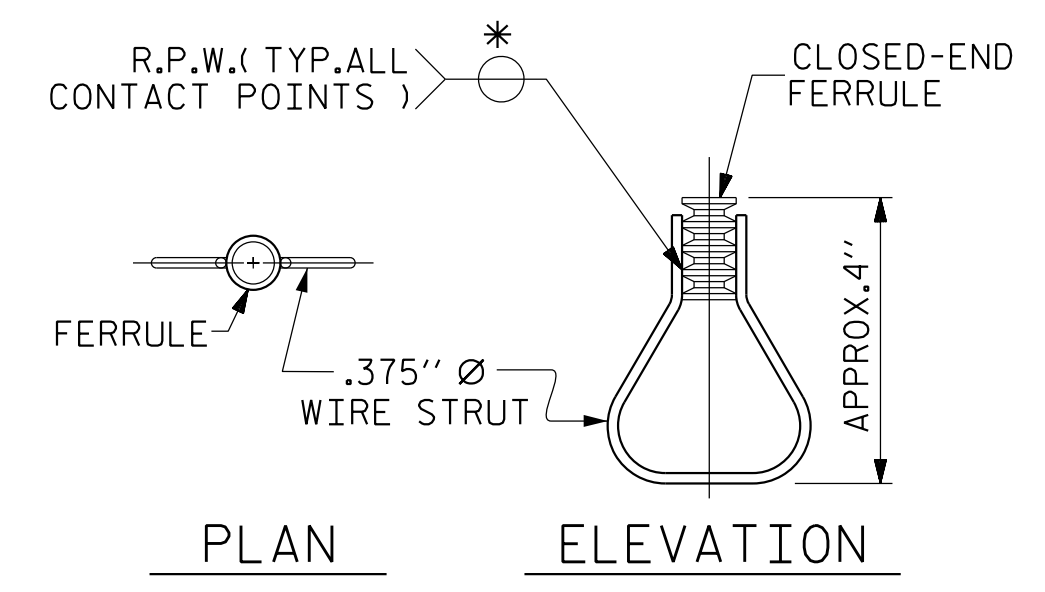


END VIEW (FIX AND EXP.)

DETAILS FOR ATTACHING METAL RAIL TO END POST



PLAN - RAIL AND END POST



STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. 17BP.1.R.88
 PASQUOTANK COUNTY
 STATION: 18+70.00 -L-

NOTES

- STRUCTURAL CONCRETE INSERT
- THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF 1 1/2".
 - 1 - 3/4" Ø X 1 5/8" BOLT WITH WASHER. BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 5/8" GALVANIZED BOLT AND WASHER. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
 - WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

NOTES

- METAL RAIL TO END POST CONNECTION
- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 5/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 5/8" BOLT SHALL HAVE N.C. THREADS.
 - CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60°F.
 - STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
 - 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.

THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.

THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.

THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 5/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 5/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

| | | | |
|----------------|--------------|--------|---------|
| ASSEMBLED BY : | W. B. ALLEN | DATE : | 6/19 |
| CHECKED BY : | G. F. WILSON | DATE : | 6/19 |
| DRAWN BY : | MAA 6/10 | REV. : | 5/18 |
| CHECKED BY : | MKT 7/10 | | MAA/THC |

PLANS PREPARED BY:

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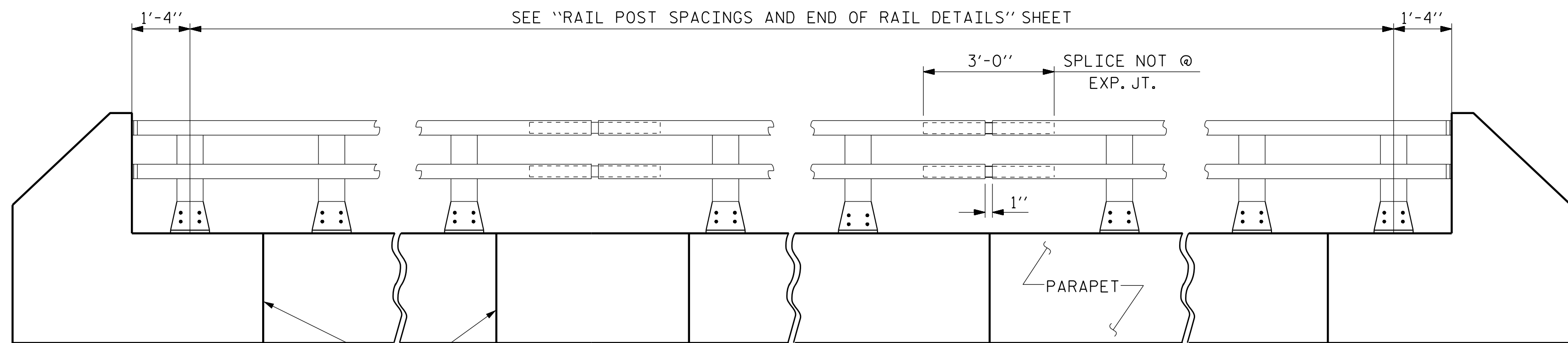
PROFESSIONAL ENGINEER
 SEAL 046721
 2319
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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

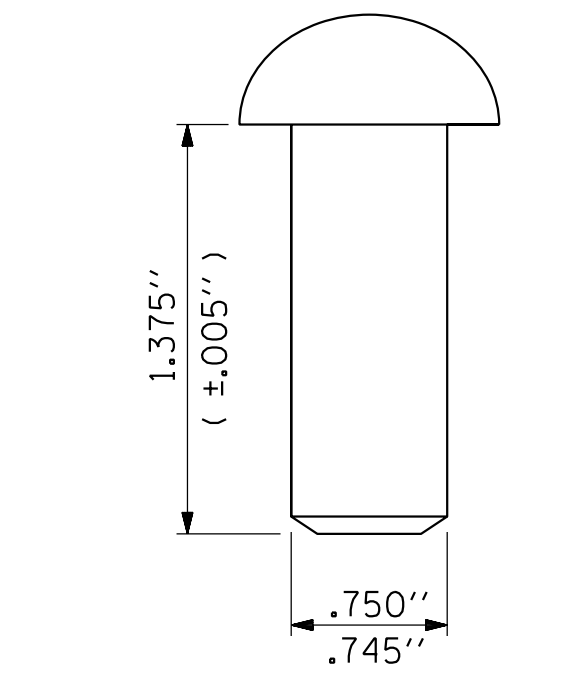
STANDARD

RAIL POST SPACINGS AND
 END OF RAIL DETAILS
 FOR TWO BAR METAL RAILS

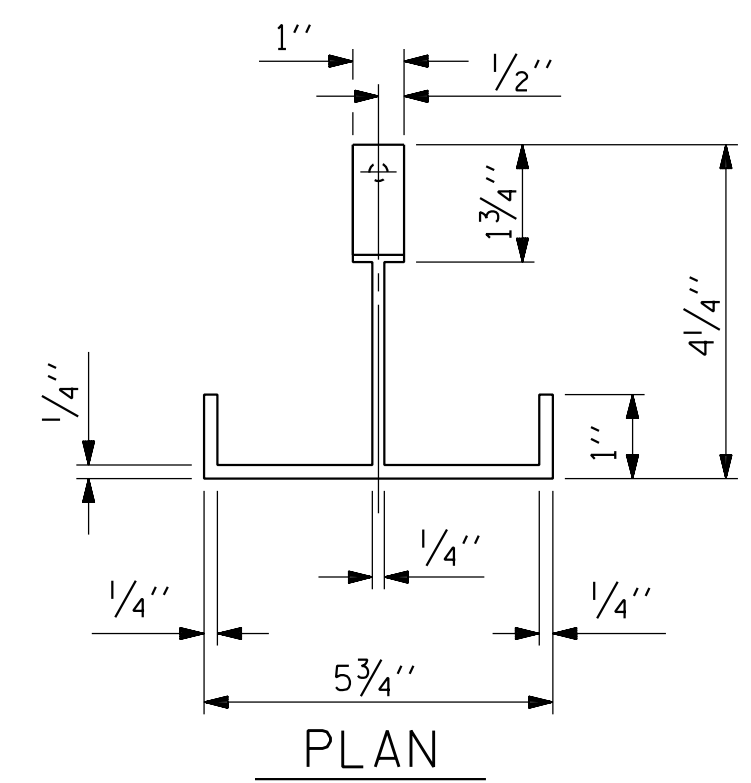
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|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-8 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 19 |



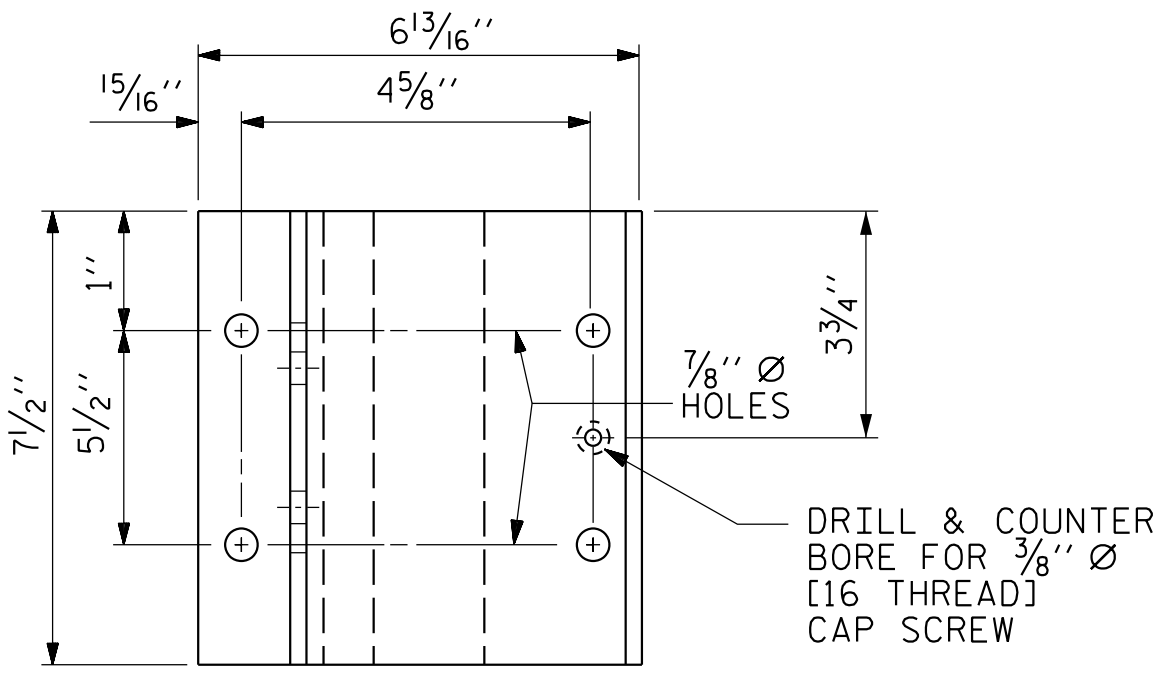
ELEVATION
 NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE SHEET S-8.



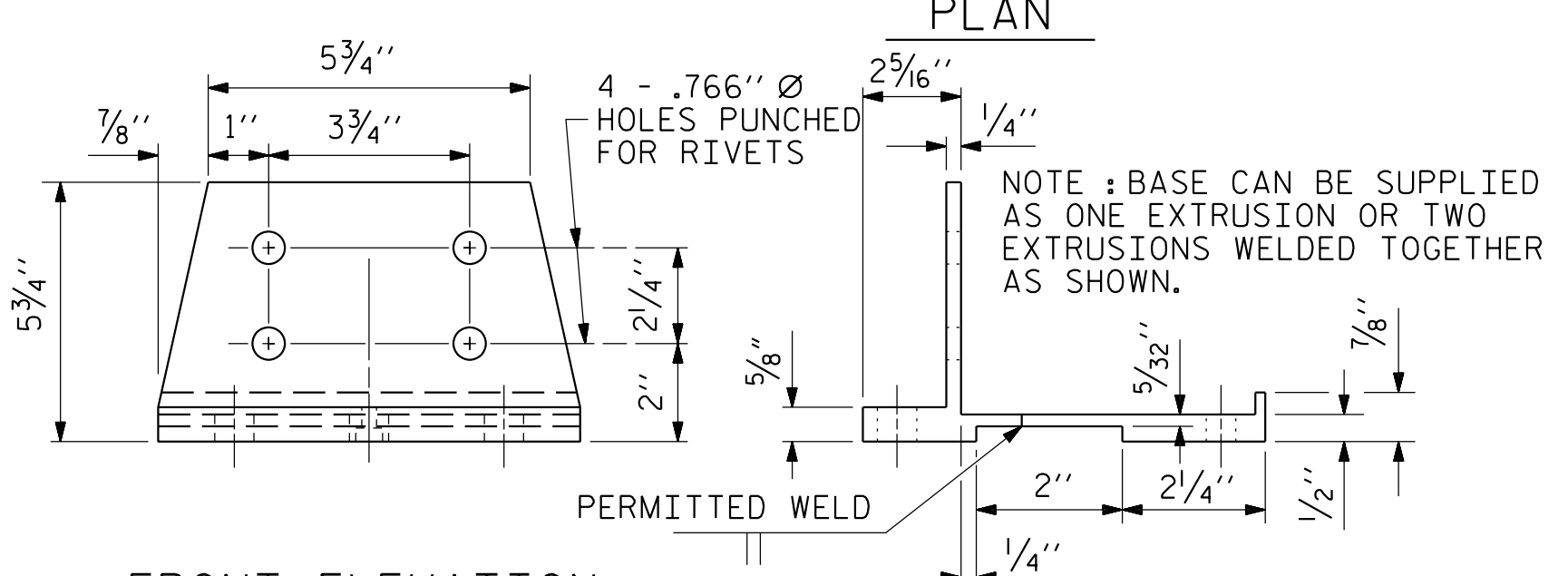
RIVET DETAIL



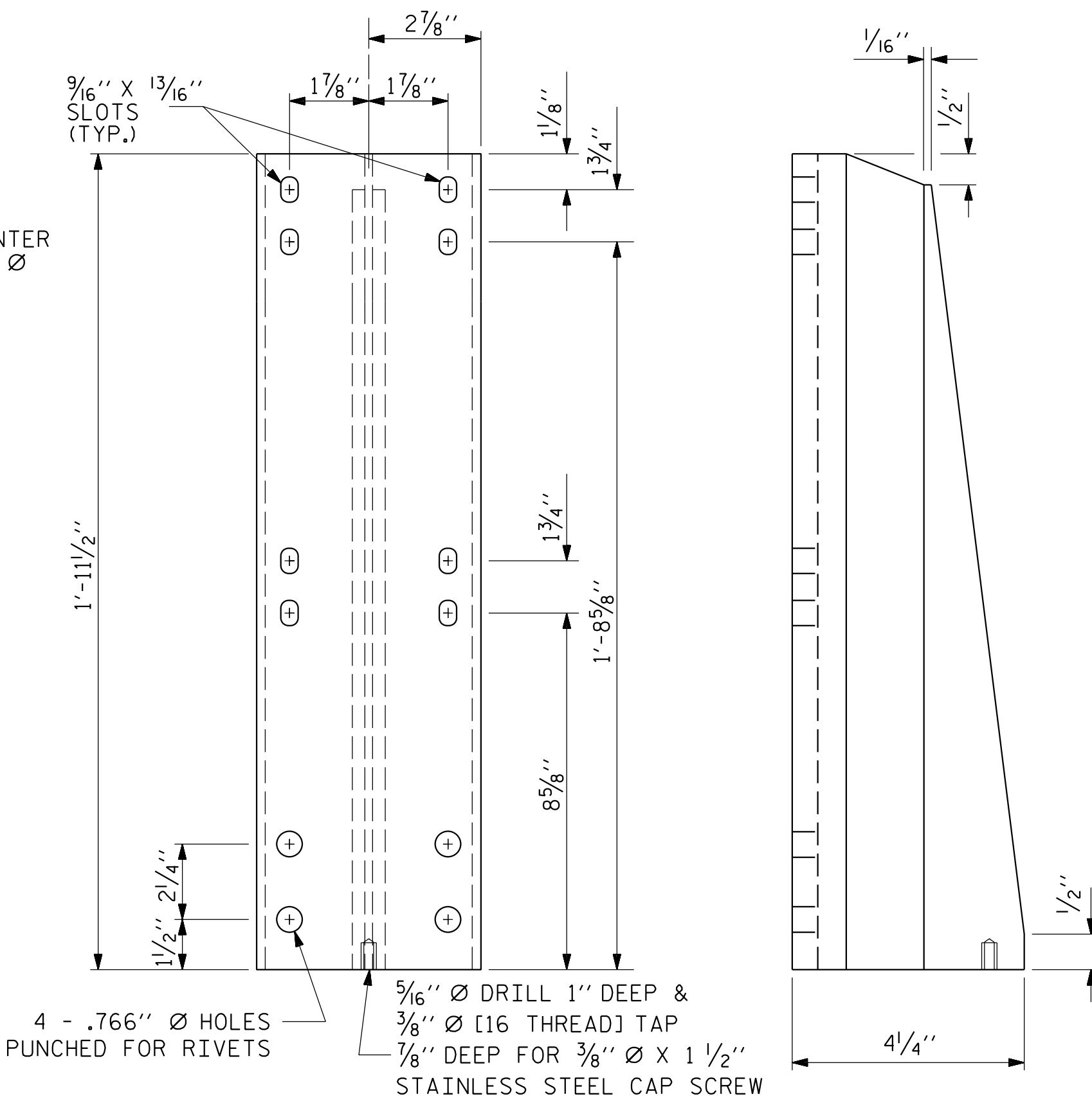
PLAN



PLAN



FRONT ELEVATION
SIDE ELEVATION
POST BASE DETAILS



FRONT ELEVATION
SIDE ELEVATION
DETAILS OF POST

NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

UNLESS OTHERWISE REQUIRED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR HAS THE OPTION TO USE AN ALTERNATE TO THE 2 BAR METAL RAIL. THE ALTERNATE RAIL SHALL MEET THE REQUIREMENTS OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) UNDER "2 BAR METAL RAIL ALTERNATE". ADJUSTMENTS TO THE CONCRETE PARAPET WILL NOT BE ALLOWED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING. THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY. MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:
 POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.
 RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.
 THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.
 SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.
 RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS. FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.
 CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.
 CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.
 METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.
 METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.
 CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.
 TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.
 SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.
 ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.
 MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.
 GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

PAY LENGTH = 125.00 LIN. FT.

PROJECT NO. 17BP.1.R.88
PASQUOTANK COUNTY
 STATION: 18+70.00 -L-

SHEET 1 OF 2

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 2 BAR METAL RAIL

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-9 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 19 |

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Chris Anderson
 9/26/2022

| | |
|-----------------------------------|-------------|
| ASSEMBLED BY : W. B. ALLEN | DATE : 6/19 |
| CHECKED BY : G. F. WILSON | DATE : 6/19 |
| DRAWN BY : MAA | 6/10 |
| CHECKED BY : MKT | 7/10 |
| REV. 5/18 | MAA/THC |

NOTES

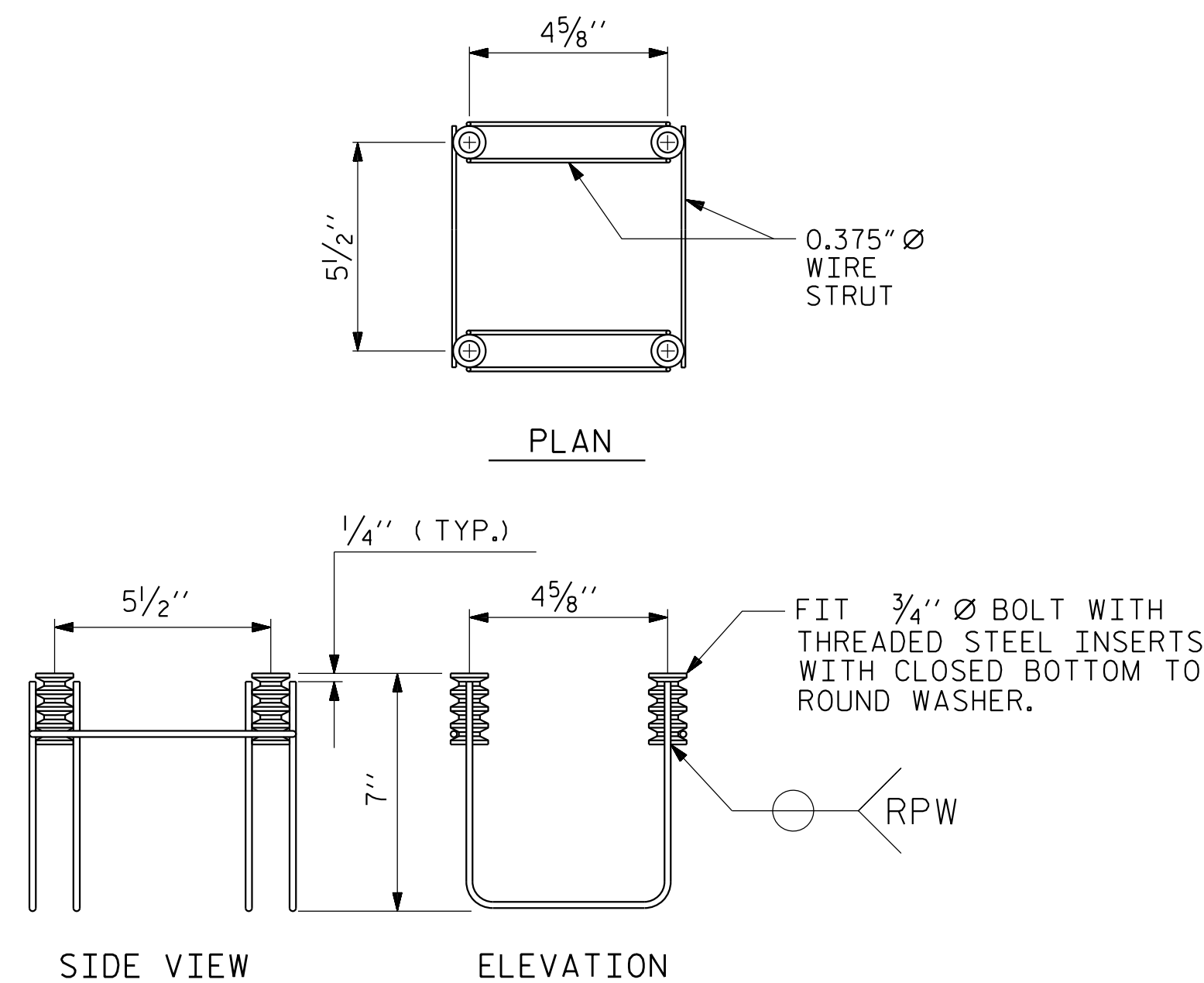
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :

- A. FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- B. 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- C. WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- D. THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- E. THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- F. BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

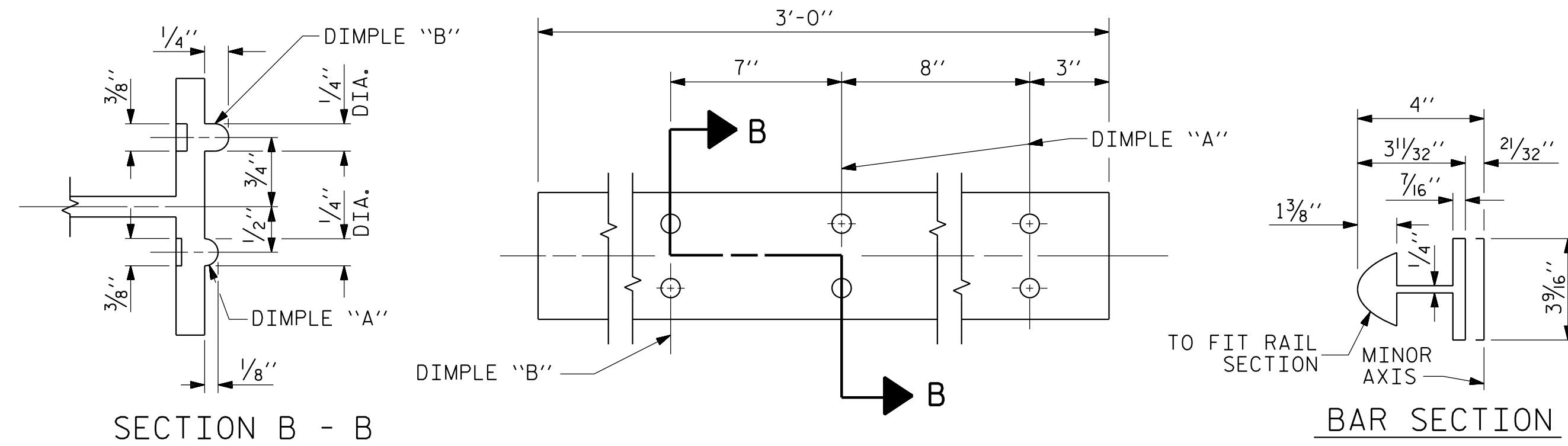
THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

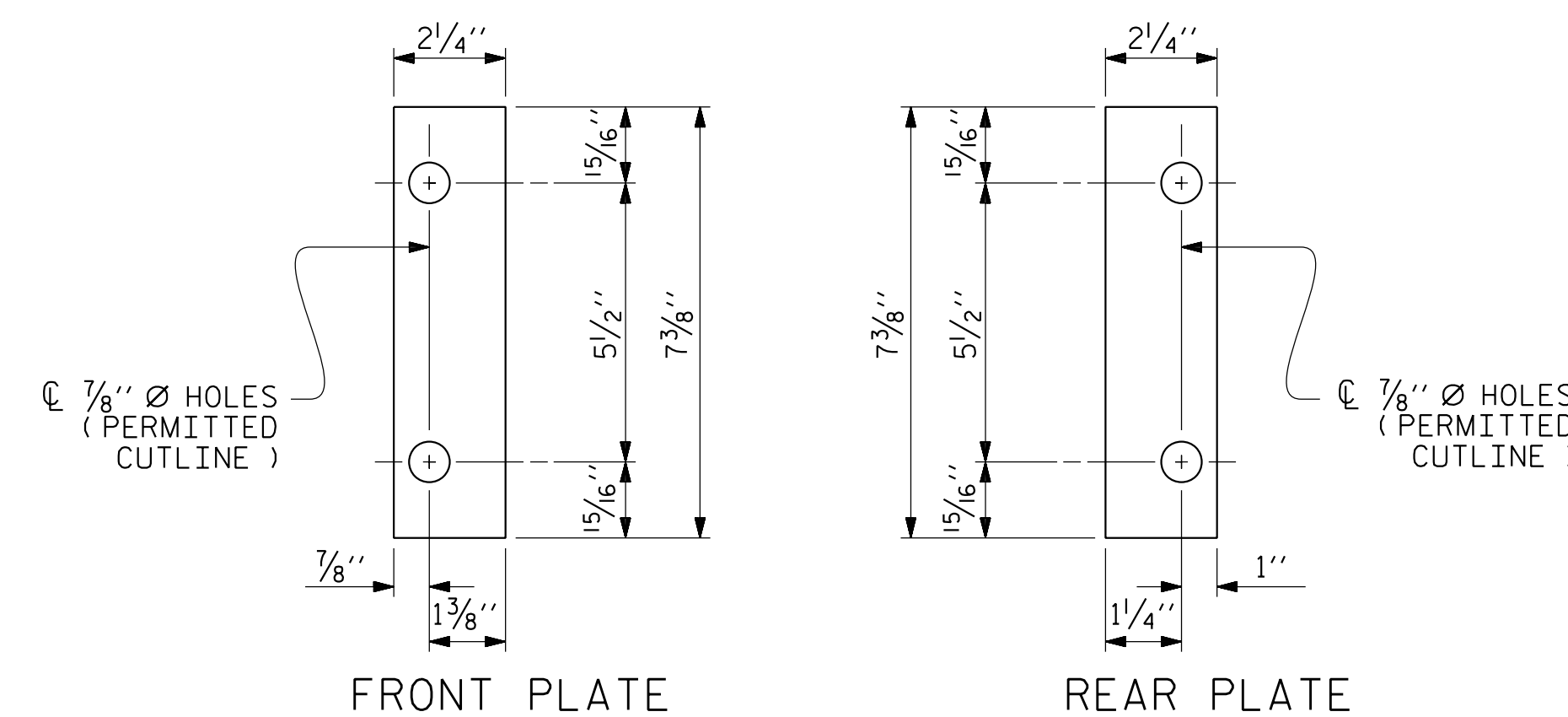


4-BOLT METAL RAIL ANCHOR ASSEMBLY

(28 ASSEMBLIES REQUIRED)

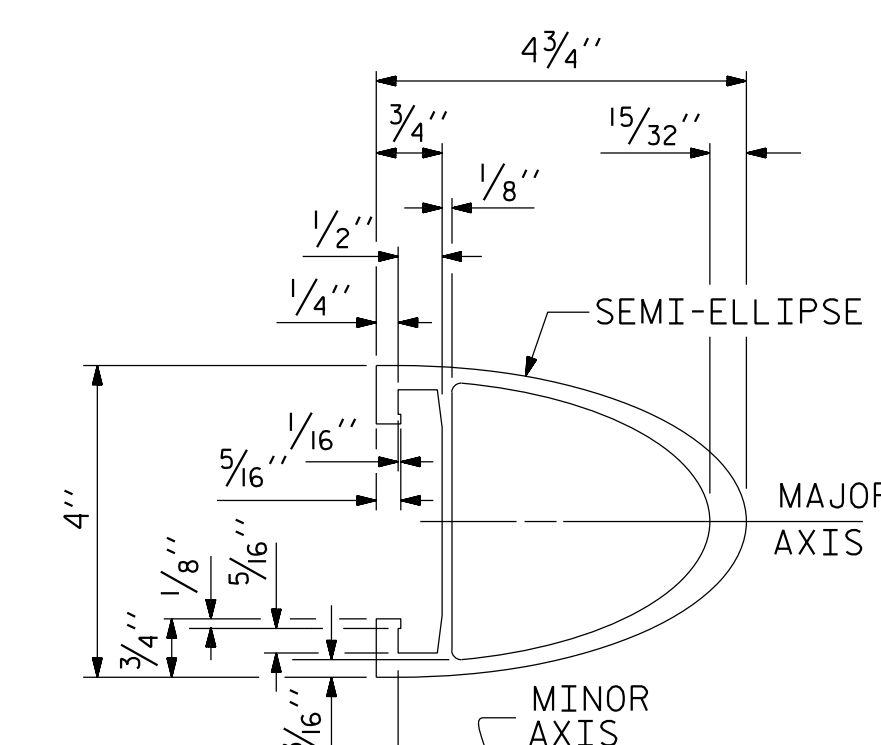


EXPANSION BAR DETAILS



SHIM DETAILS

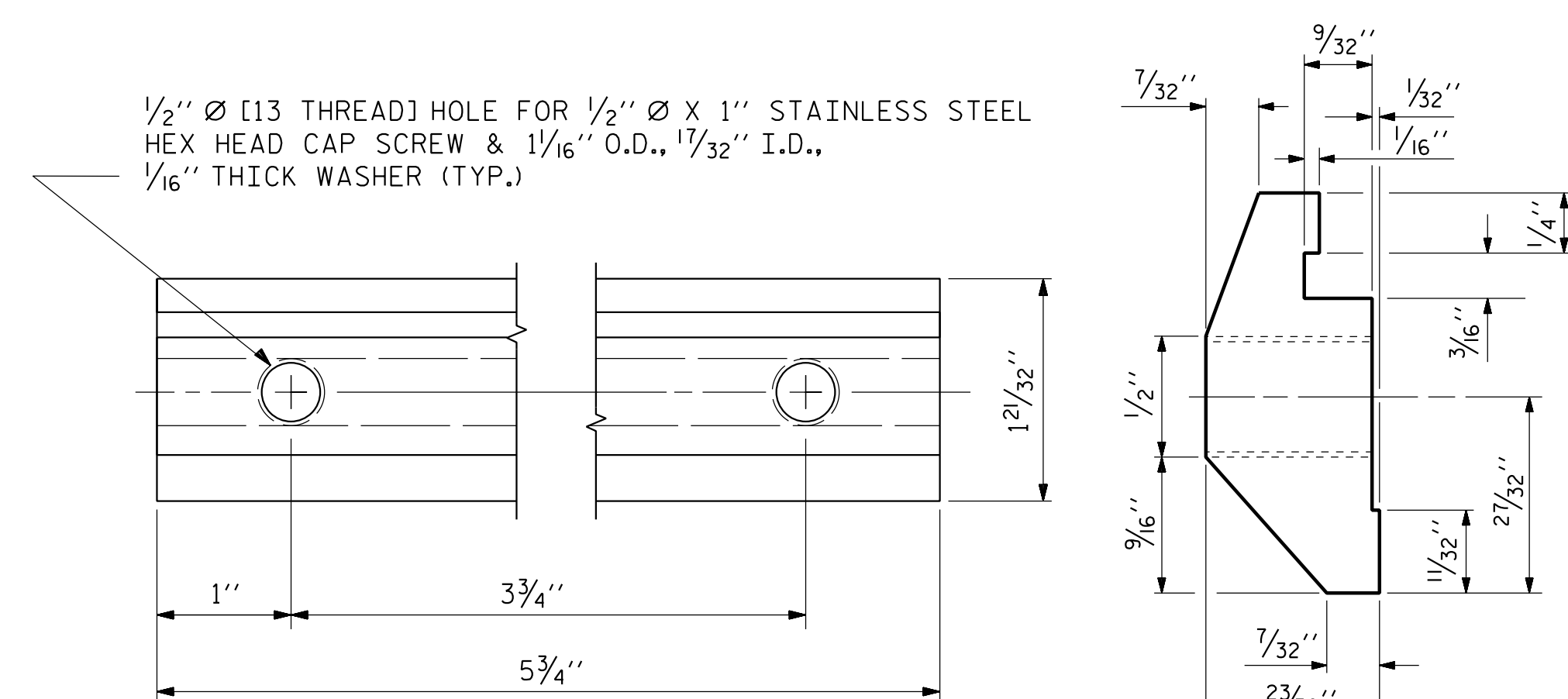
NOTE : SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.



RAIL SECTION

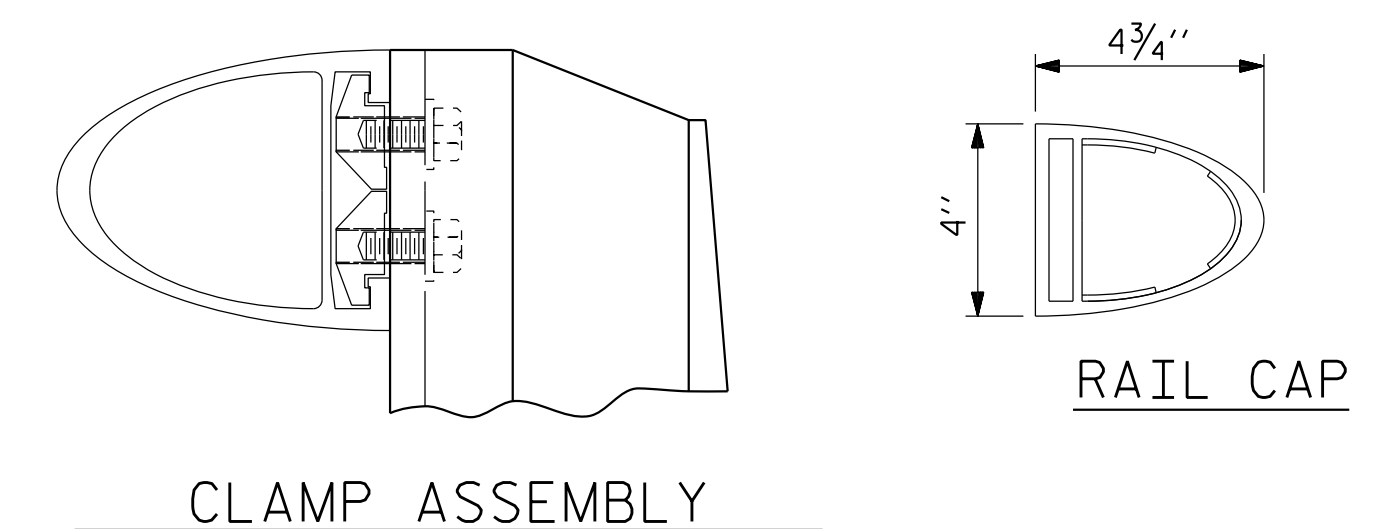
PROJECT NO. 17BP.1.R.88
PASQUOTANK COUNTY
 STATION: 18+70.00 -L-

SHEET 2 OF 2



CLAMP BAR DETAIL

(4 REQUIRED PER POST)



CLAMP ASSEMBLY

| | | | |
|----------------|--------------|-----------|---------|
| ASSEMBLED BY : | W. B. ALLEN | DATE : | 6/19 |
| CHECKED BY : | G. F. WILSON | DATE : | 6/19 |
| DRAWN BY : | MAA 6/10 | REV. 5/18 | MAA/THC |
| CHECKED BY : | MKT 7/10 | | |

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23197
 9/26/2022

| | | | | | |
|--|-----|-------|-----|-----|-------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
| STANDARD | | | | | |
| 2 BAR METAL RAIL | | | | | |
| REVISIONS | | | | | |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |
| SHEET NO. | | | | | S-10 |
| TOTAL SHEETS | | | | | 19 |

NOTES

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

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

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

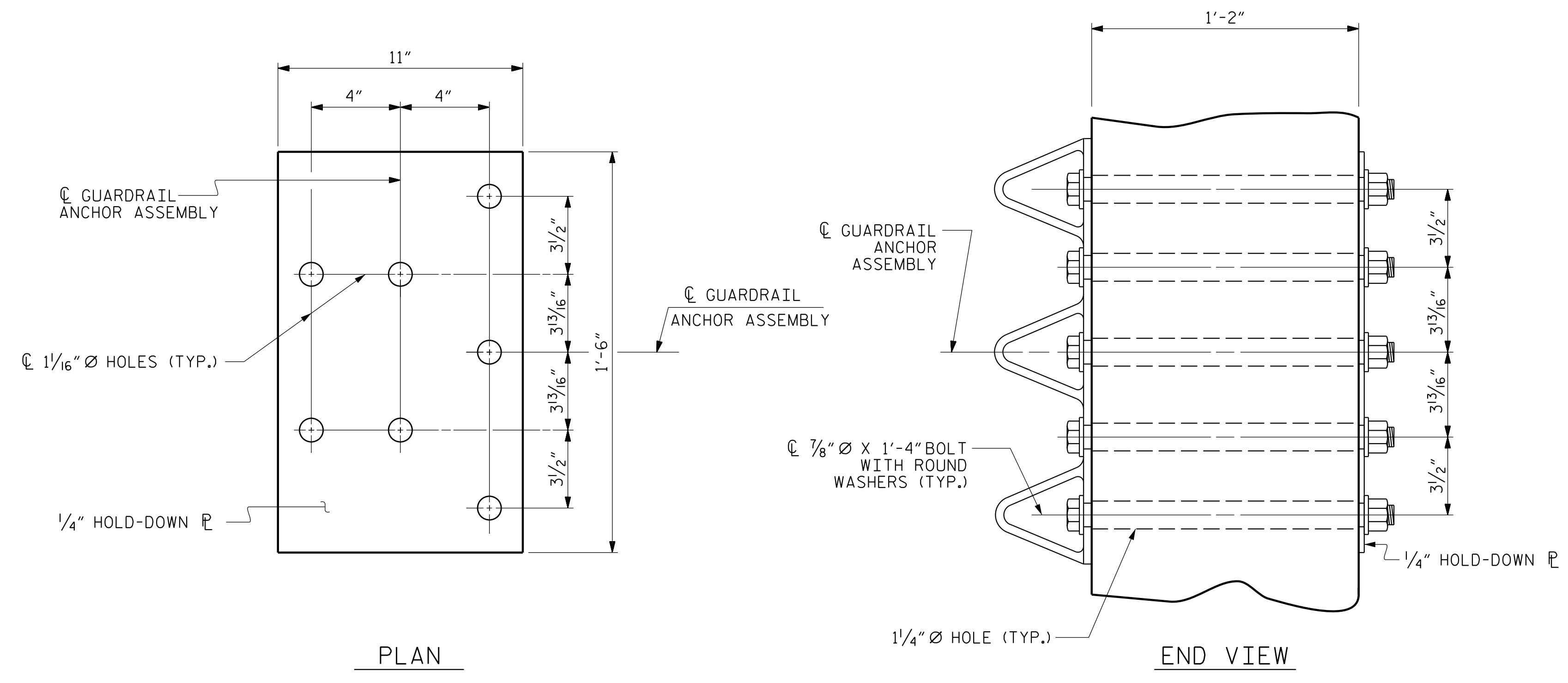
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

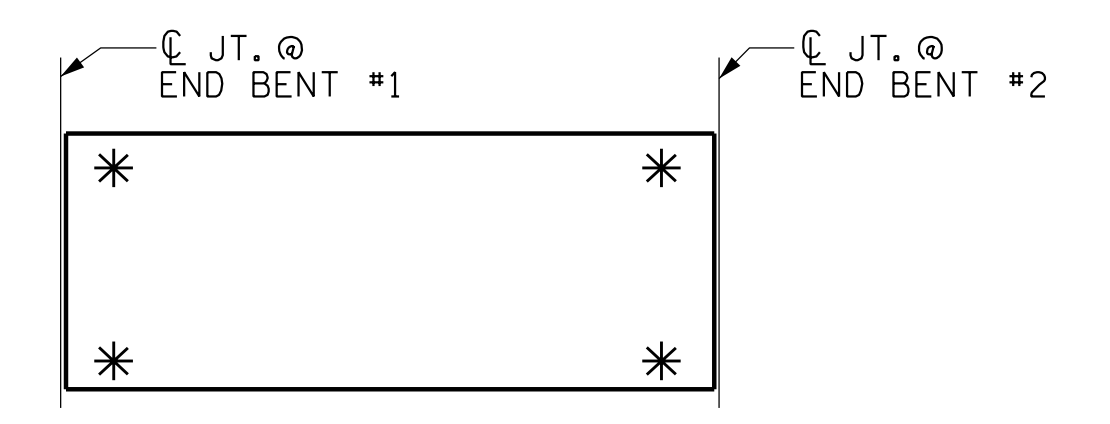
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

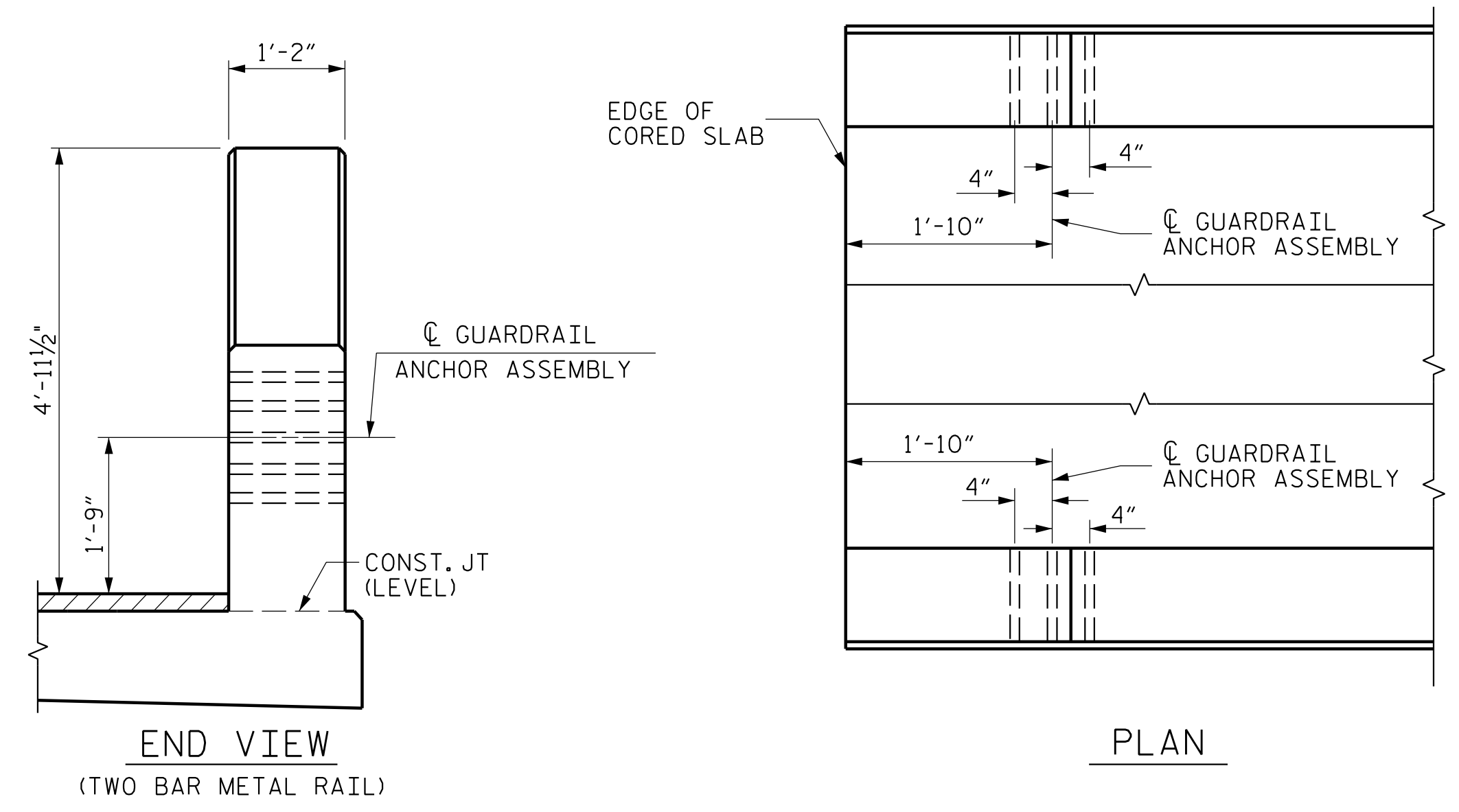
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



GUARDRAIL ANCHOR ASSEMBLY DETAILS



SKETCH SHOWING POINTS OF ATTACHMENT
* DENOTES GUARDRAIL ANCHOR ASSEMBLY



LOCATION OF GUARDRAIL ANCHOR AT END POST

PROJECT NO. 17BP.1.R.88
PASQUOTANK COUNTY
STATION: 18+70.00 -L-

| | | | |
|----------------|--------------|------------|---------|
| ASSEMBLED BY : | W. B. ALLEN | DATE : | 6/19 |
| CHECKED BY : | G. F. WILSON | DATE : | 6/19 |
| DRAWN BY : | MAA 5/10 | REV. 1/15 | MAA/TMG |
| CHECKED BY : | GM 5/10 | REV. 12/17 | MAA/THC |
| | | REV. 5/18 | MAA/THC |

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Professional Engineer Seal for G. F. Wilson, State of North Carolina, License No. 23197, dated 9/26/2022.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
GUARDRAIL ANCHORAGE
DETAILS
FOR METAL RAILS

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-11 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 19 |

(SHT 1) STD. NO. GRA3

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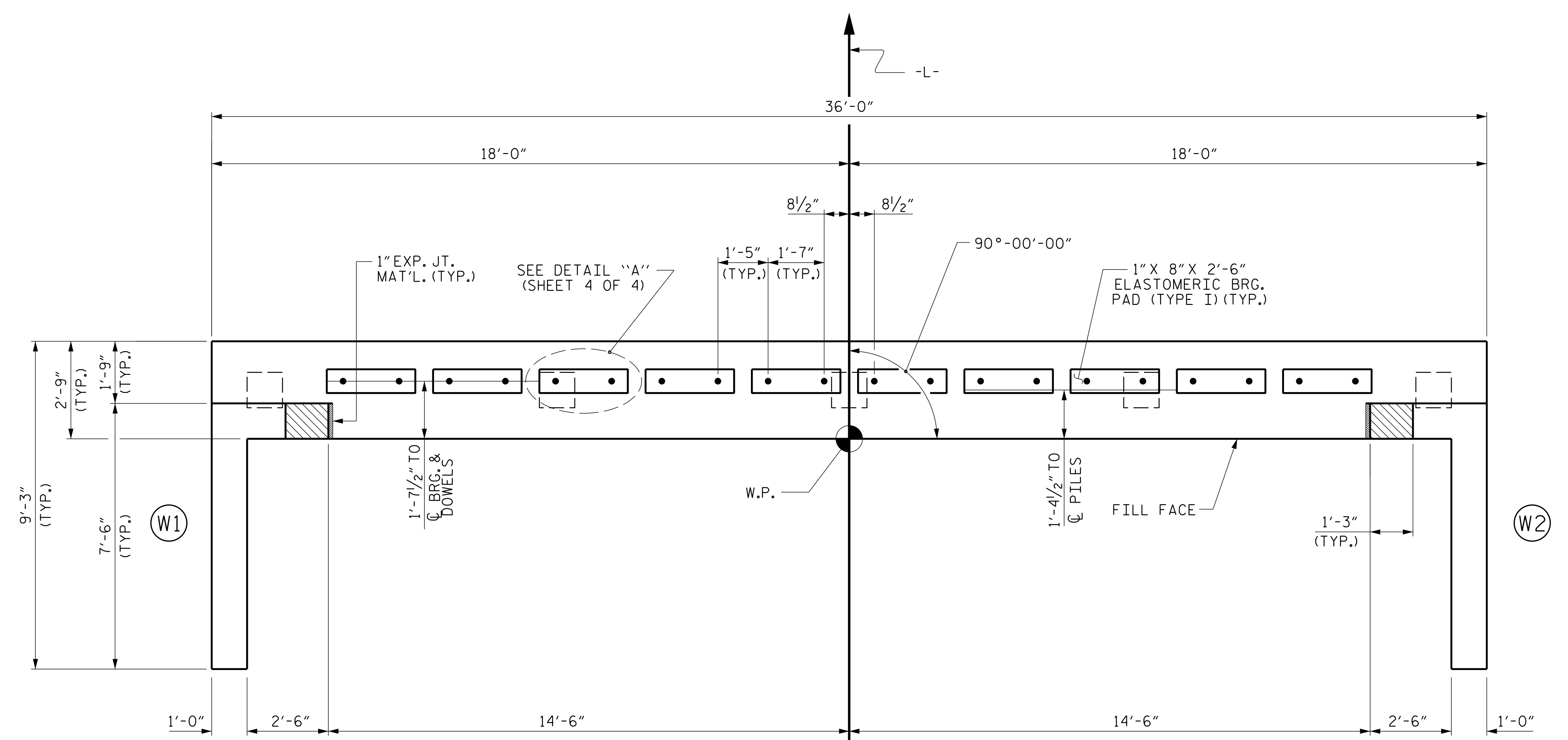
NOTES

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

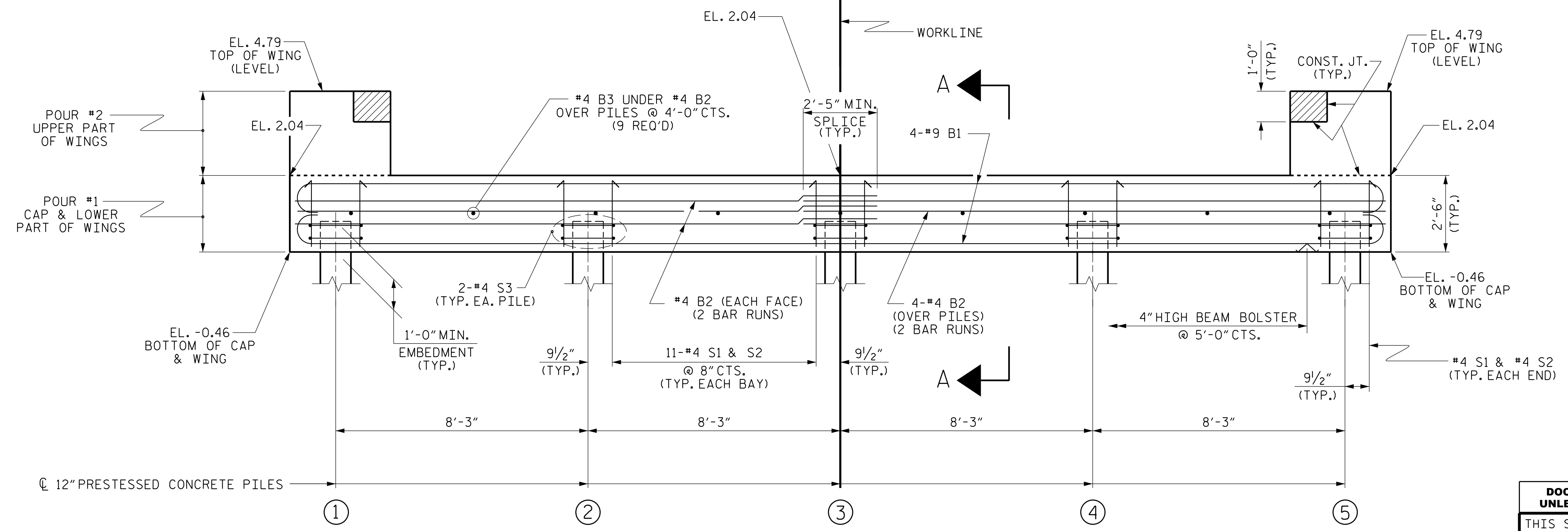
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

THE CONCRETE IN THE END BENT CAPS OF END BENT NO. 1 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY. FOR SECTION A-A, SEE SHEET 4 OF 4.

PROJECT NO. 17BP.1.R.88
PASQUOTANK COUNTY
 STATION: 18+70.00 -L-

SHEET 1 OF 4

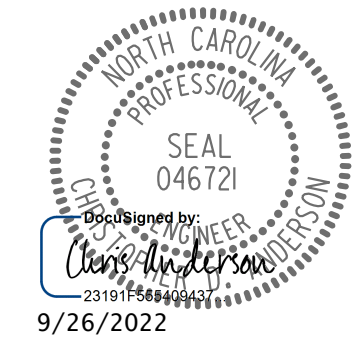
STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT No. 1**

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-12 |
| 1 | | | 3 | | | TOTAL SHEETS |
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| | |
|-----------------------------------|-------------|
| ASSEMBLED BY : W. B. ALLEN | DATE : 6/19 |
| CHECKED BY : G. F. WILSON | DATE : 6/19 |
| DRAWN BY : DGE 01/10 | REV. 4/15 |
| CHECKED BY : MKT 01/10 | MAA/TMG |

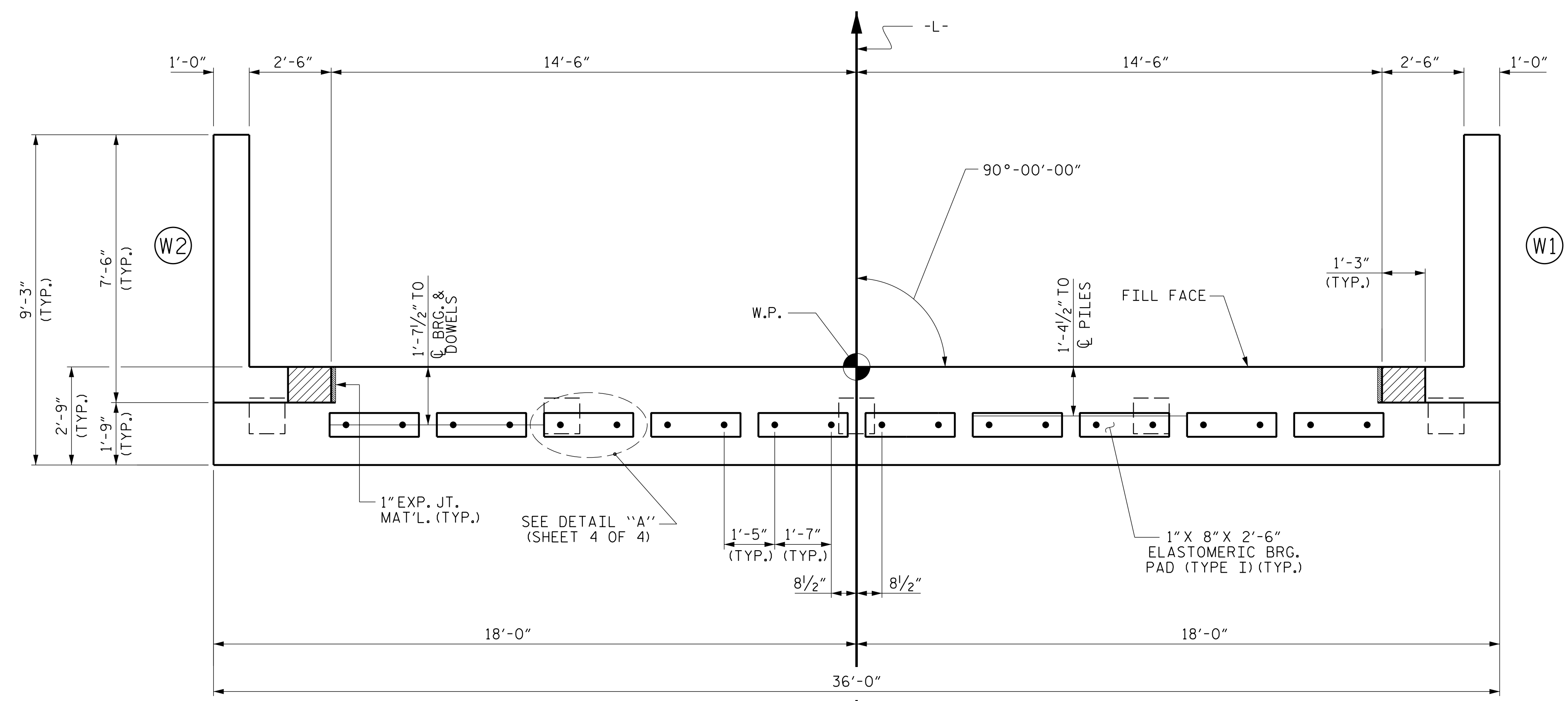
NOTES

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

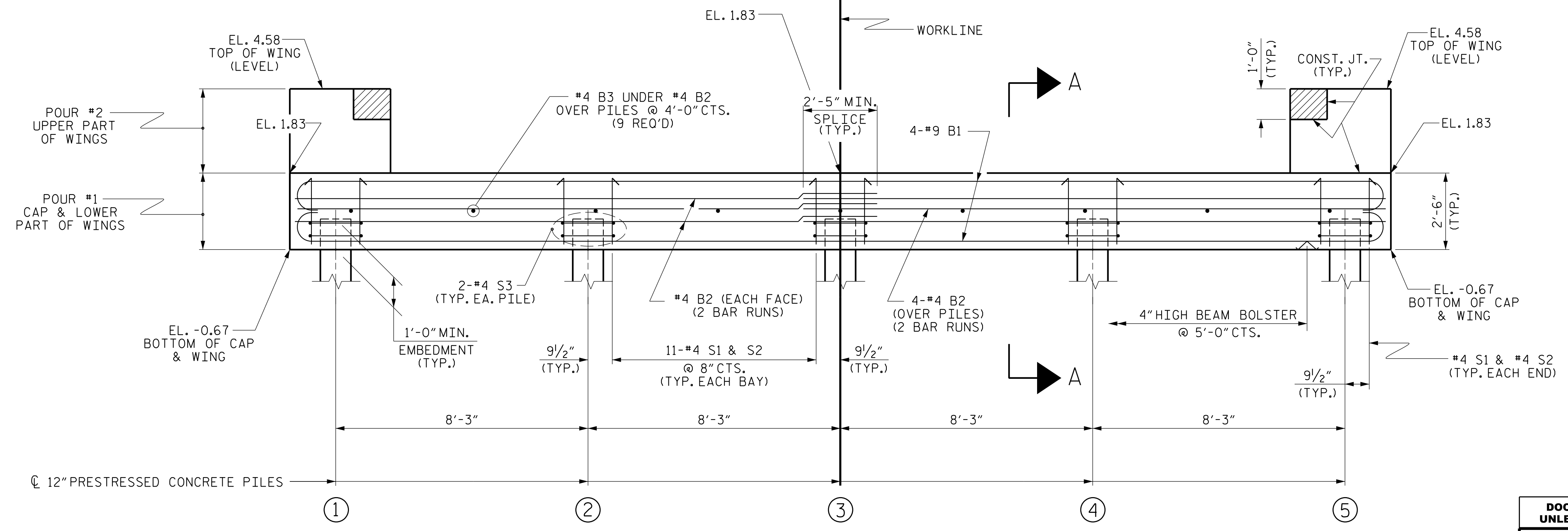
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

THE CONCRETE IN THE END BENT CAPS OF END BENT NO. 2 SHALL CONTAIN SILICA FUME. SILICA FUME SHALL BE SUBSTITUTED FOR 5% OF THE PORTLAND CEMENT BY WEIGHT. IF THE OPTION OF ARTICLE 1024-1 OF THE STANDARD SPECIFICATIONS TO PARTIALLY SUBSTITUTE CLASS F FLY ASH FOR PORTLAND CEMENT IS EXERCISED, THEN THE RATE OF FLY ASH SUBSTITUTION SHALL BE REDUCED TO 1.0 LB OF FLY ASH PER 1.0 LB. NO PAYMENT WILL BE MADE FOR THIS SUBSTITUTION AS IT IS CONSIDERED INCIDENTAL TO THE VARIOUS PAY ITEMS.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY. FOR SECTION A-A, SEE SHEET 4 OF 4.

PROJECT NO. 17BP.1.R.88
PASQUOTANK COUNTY
 STATION: 18+70.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**SUBSTRUCTURE
 END BENT No. 2**

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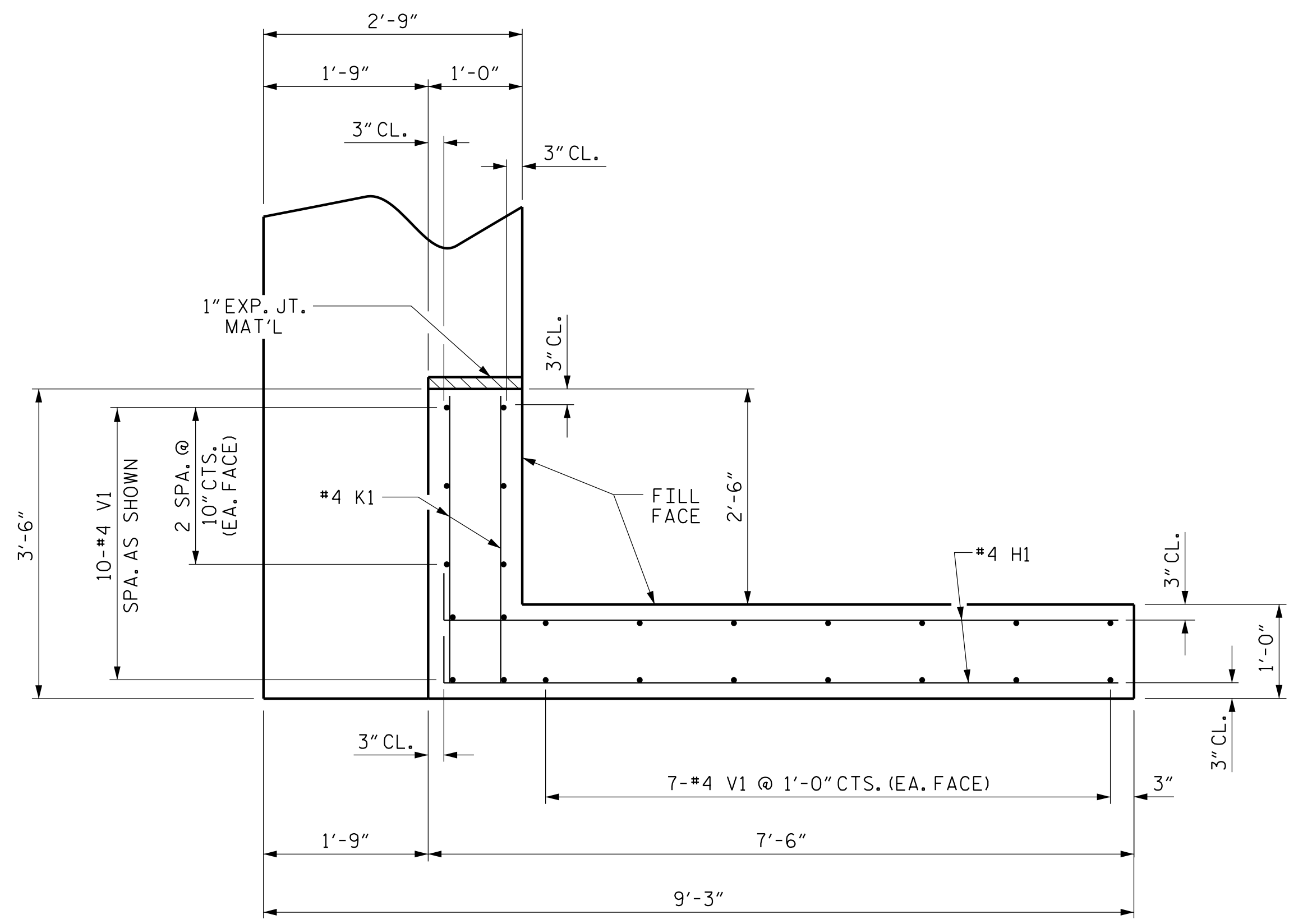
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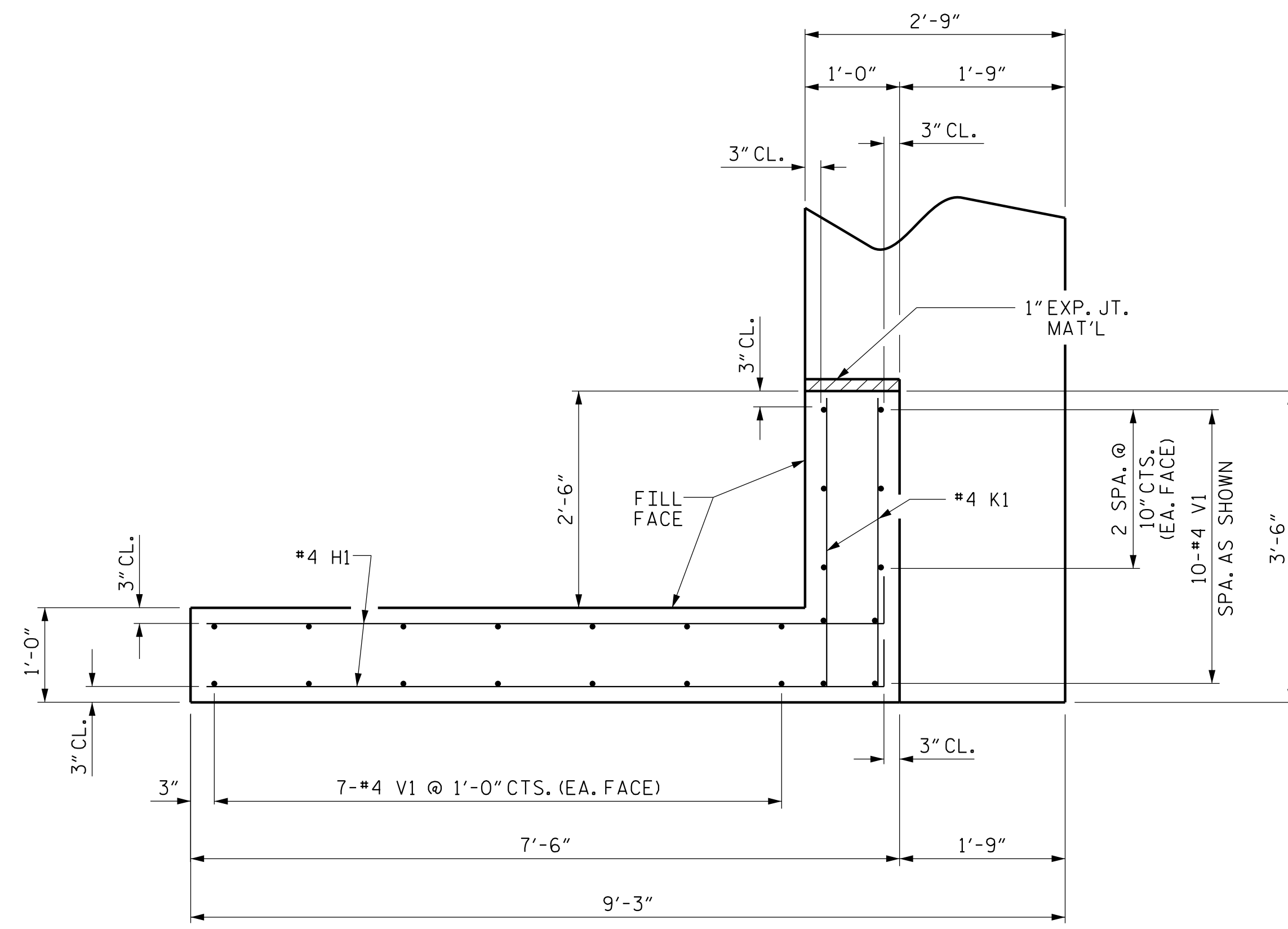
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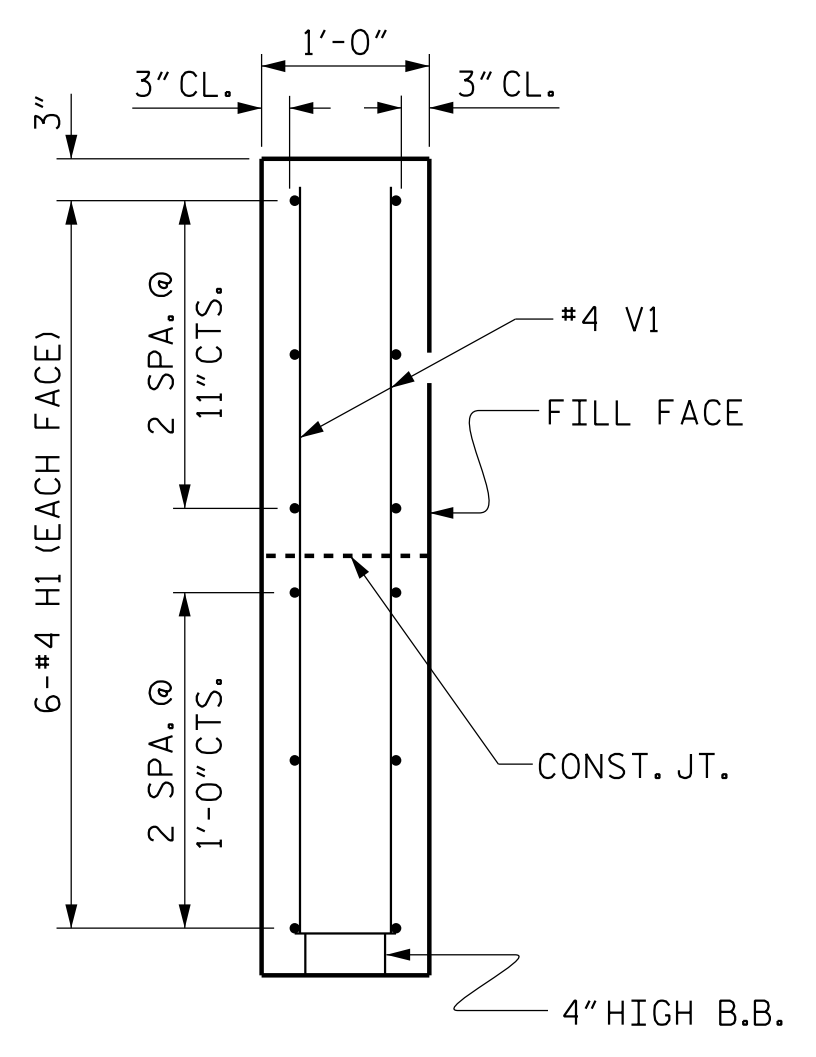
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| DRAWN BY : DGE 01/10 | REV. 4/15 |
| CHECKED BY : MKT 01/10 | MAA/TMG |



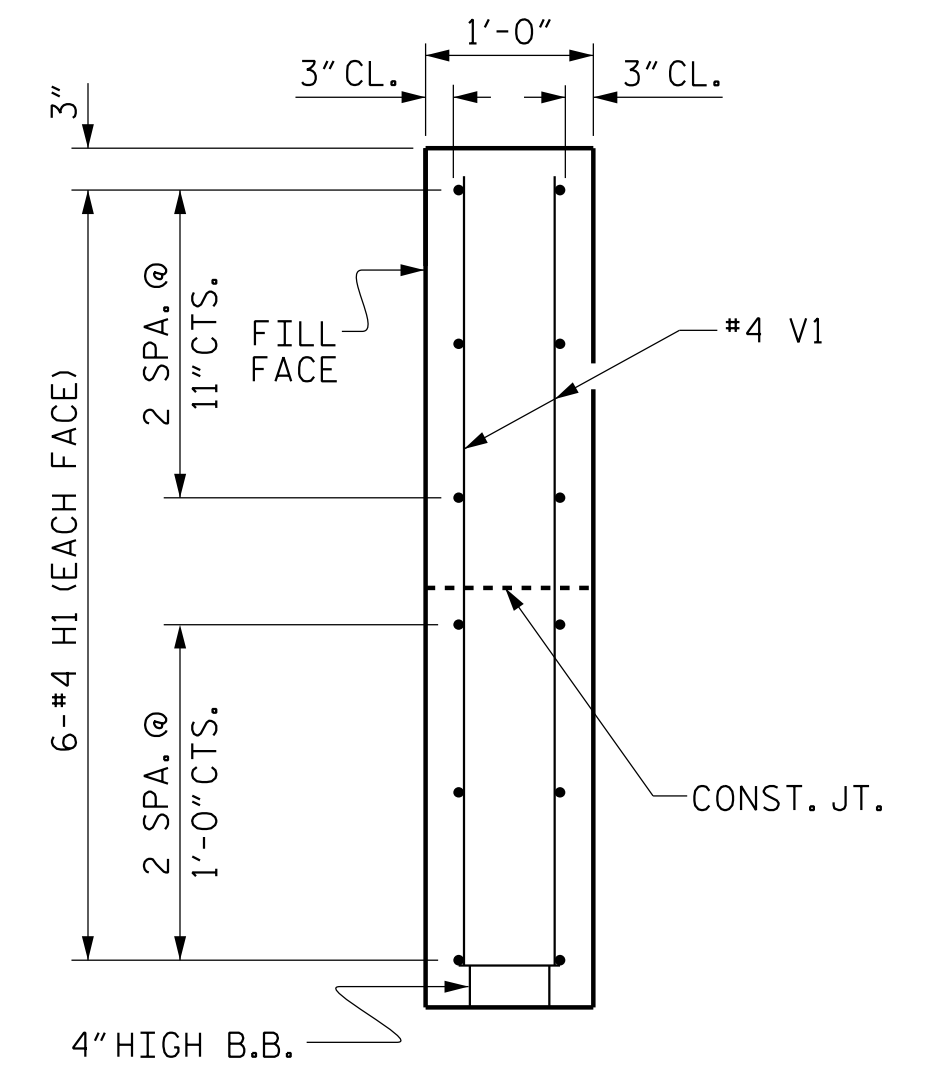
PLAN OF WING (W1)



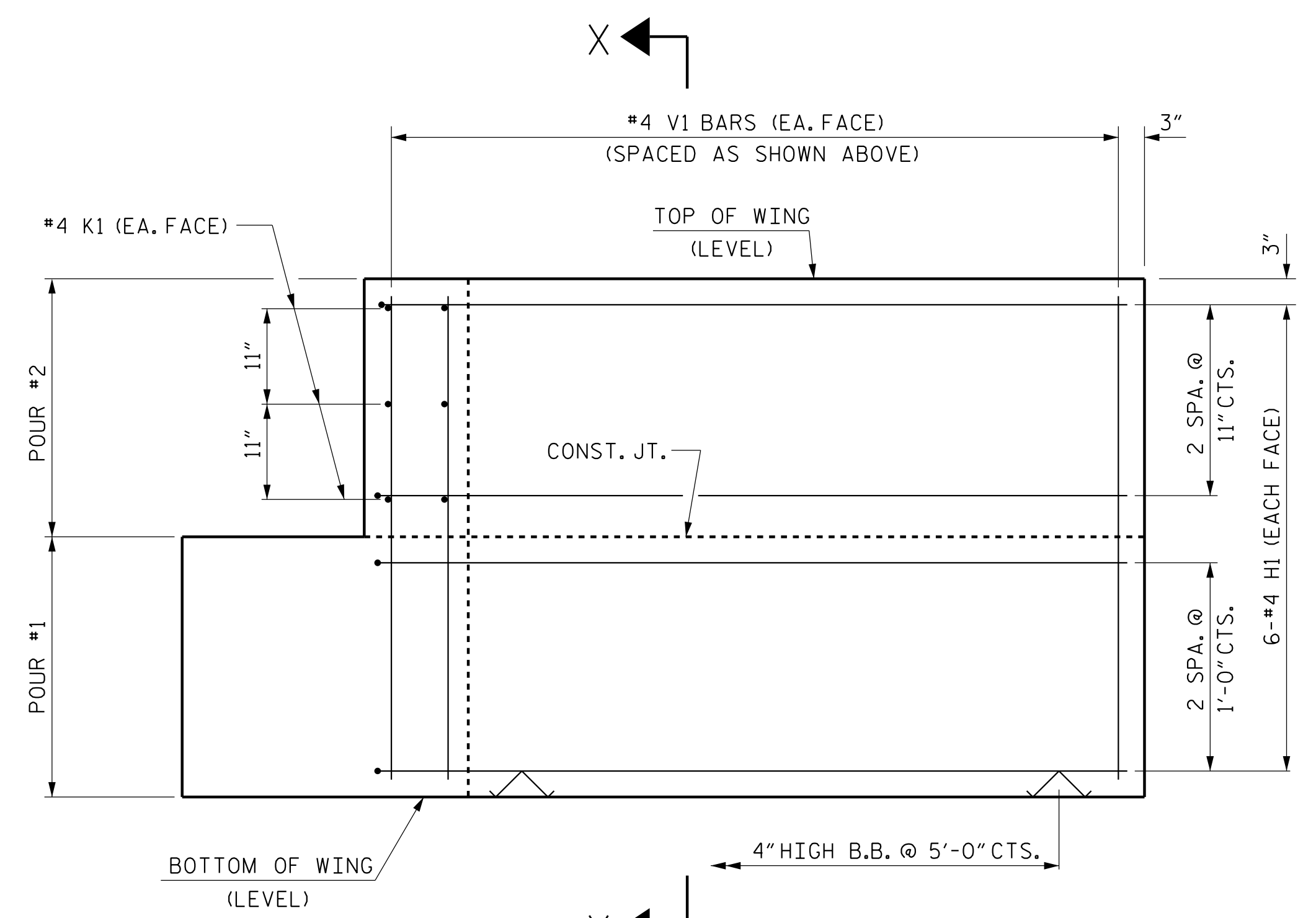
PLAN OF WING (W2)



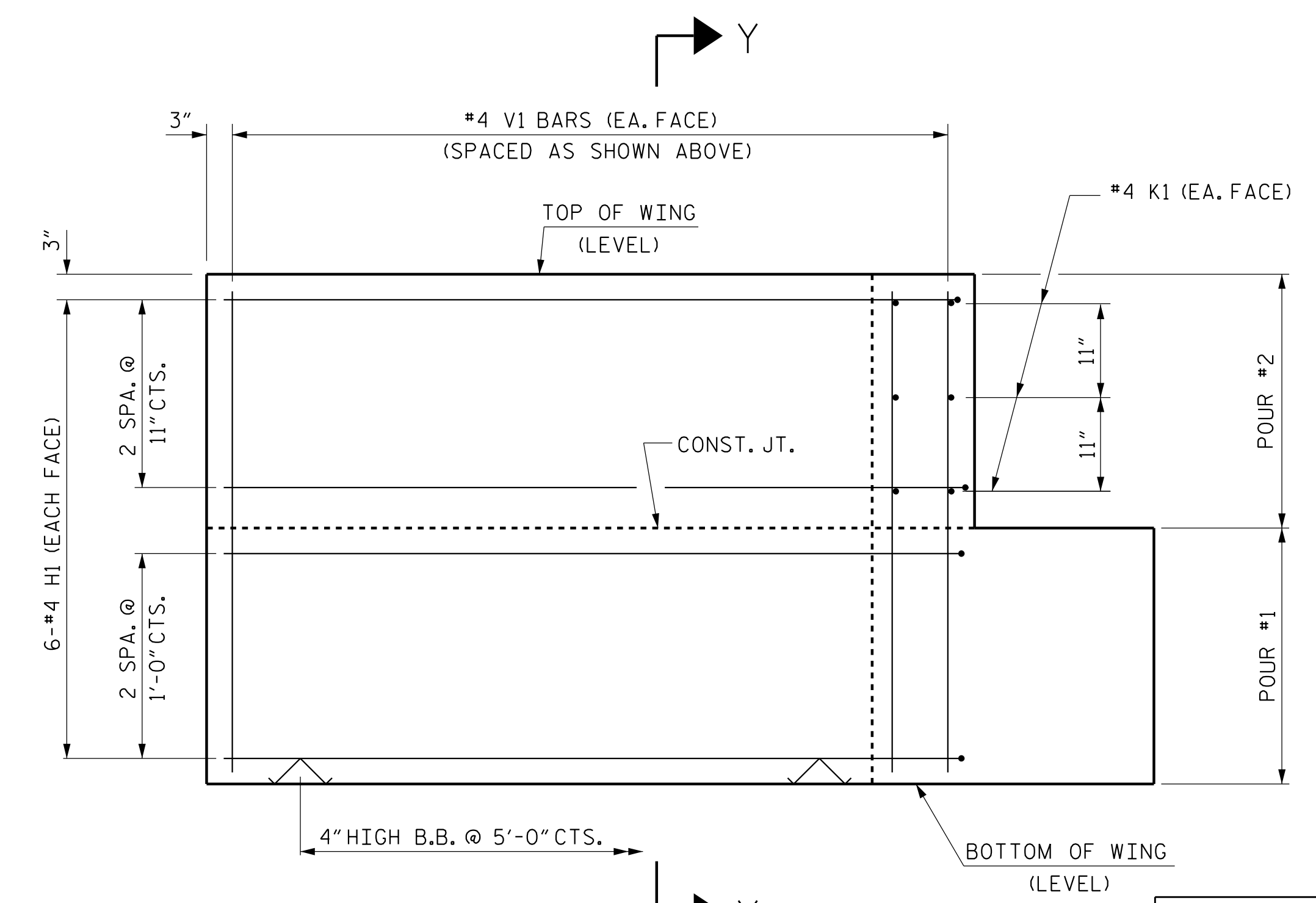
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

PROJECT NO. 17BP.1.R.88
 PASQUOTANK COUNTY
 STATION: 18+70.00 -L-

SHEET 3 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT
 WING DETAILS

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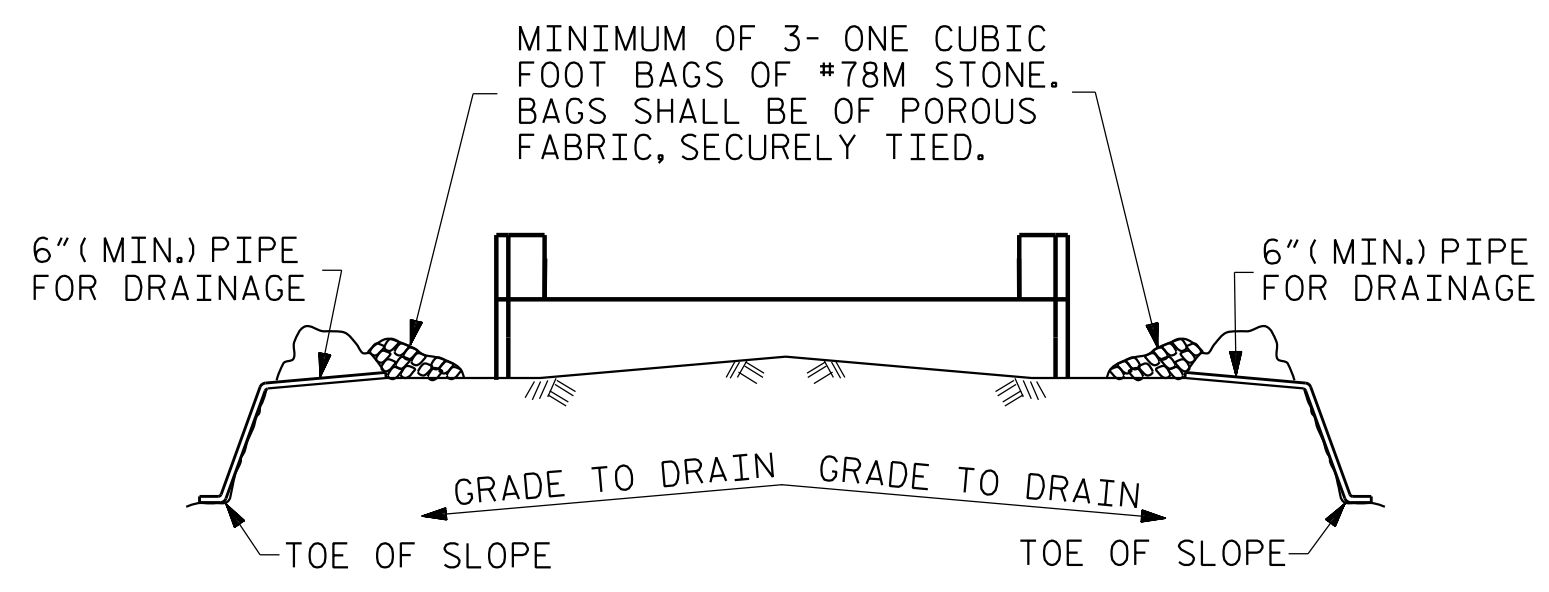
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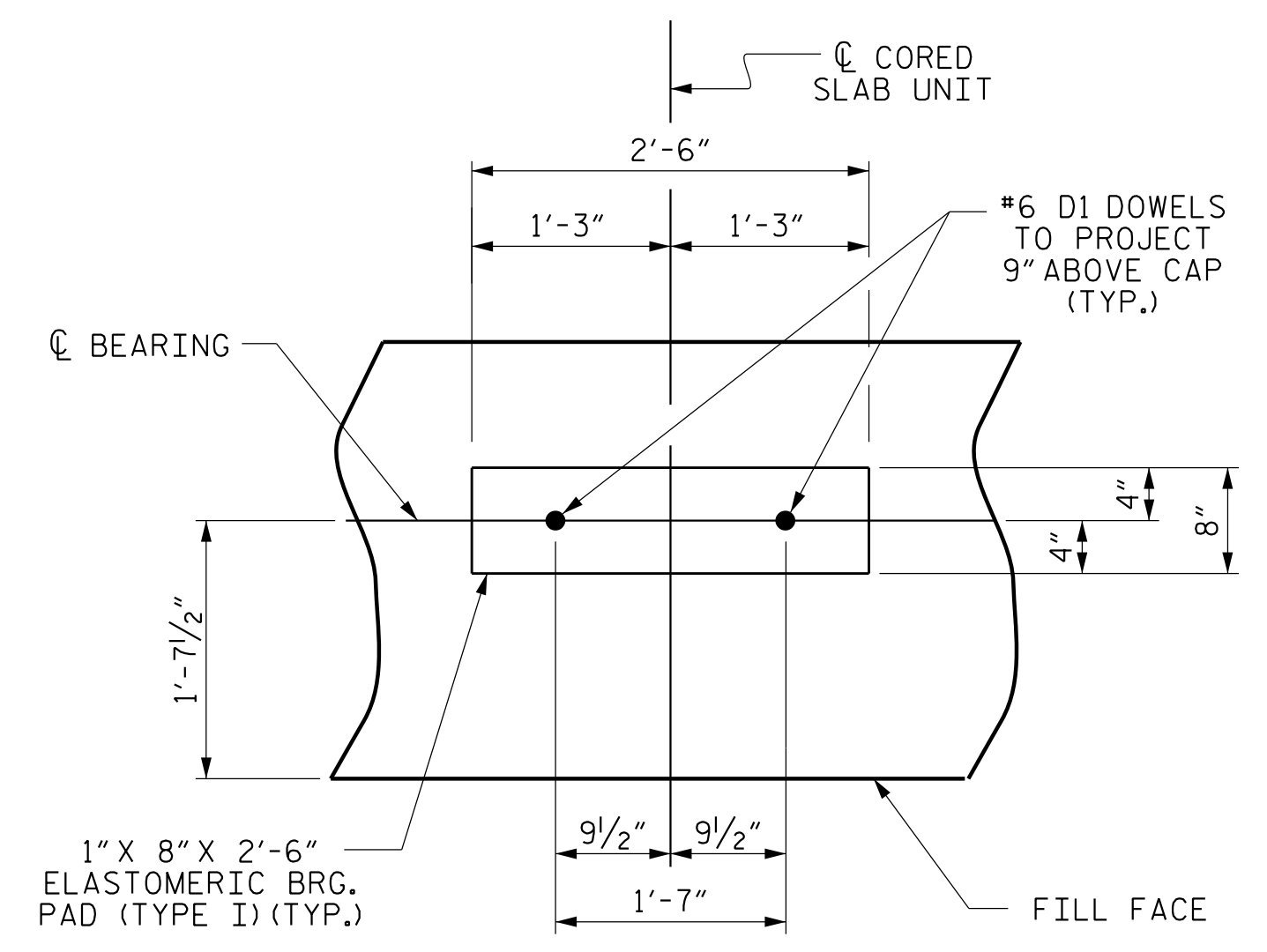


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

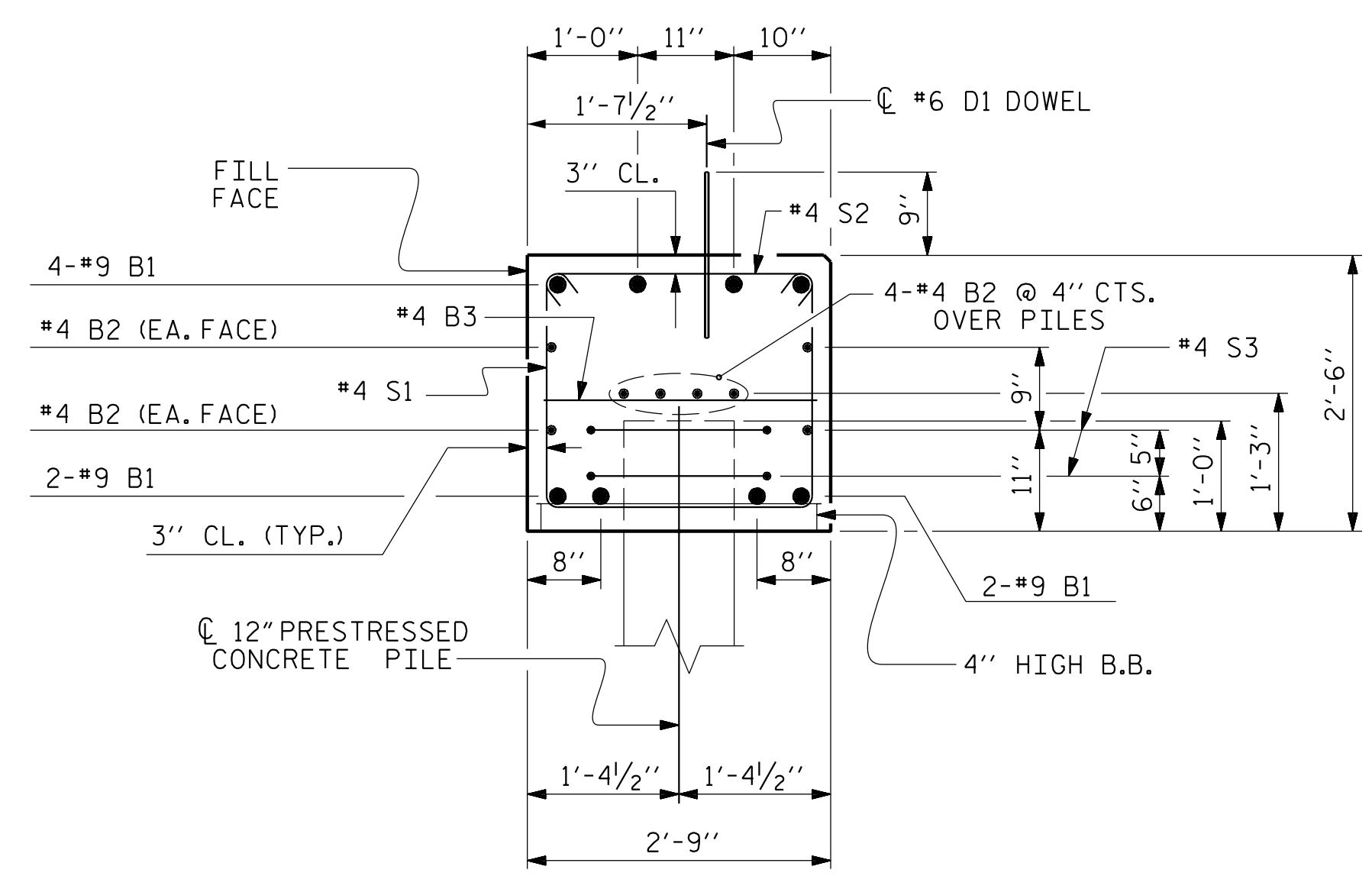
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT



DETAIL "A"

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



SECTION A-A

| BAR TYPES | |
|--|--|
| | |
| | |
| ALL BAR DIMENSIONS ARE OUT TO OUT. | |
| END BENT No. 1 | END BENT No. 2 |
| 12" PRESTRESSED CONCRETE PILES NO: 5 LIN. FT. = 200 | 12" PRESTRESSED CONCRETE PILES NO: 5 LIN. FT. = 200 |
| PILE DRIVING EQUIPMENT SETUP FOR 12" PRESTRESSED CONCRETE PILES NO: 5 | PILE DRIVING EQUIPMENT SETUP FOR 12" PRESTRESSED CONCRETE PILES NO: 5 |
| PILE REDRIVES NO: 3 | PILE REDRIVES NO: 3 |

| BILL OF MATERIAL FOR ONE END BENT | | | | | |
|---|------|------|---------|---------|-----------|
| BAR NO. | SIZE | TYPE | LENGTH | WEIGHT | |
| B1 | #8 | | 1 | 37'-10" | 1029 |
| B2 | #4 | STR | 18'-11" | 202 | |
| B3 | #4 | STR | 2'-3" | 14 | |
| D1 | #6 | STR | 1'-6" | 45 | |
| H1 | #4 | 2 | 7'-8" | 123 | |
| K1 | #4 | STR | 2'-11" | 23 | |
| S1 | #4 | 3 | 6'-11" | 213 | |
| S2 | #4 | 4 | 3'-0" | 92 | |
| S3 | #4 | 5 | 6'-6" | 43 | |
| V1 | #4 | STR | 4'-6" | 144 | |
| EPOXY COATED REINFORCING STEEL (FOR ONE END BENT) | | | | | 1928 LBS. |
| CLASS AA CONCRETE BREAKDOWN (FOR ONE END BENT) | | | | | |
| POUR #1 CAP & LOWER PART OF WINGS | | | | | 10.5 C.Y. |
| POUR #2 UPPER PART OF WINGS | | | | | 1.9 C.Y. |
| TOTAL CLASS AA CONCRETE | | | | | 12.4 C.Y. |

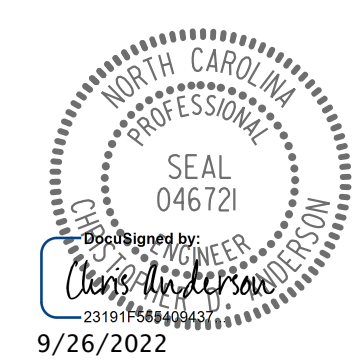
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| | |
|----------------------------|-------------|
| ASSEMBLED BY : W. B. ALLEN | DATE : 6/19 |
| CHECKED BY : G. F. WILSON | DATE : 6/19 |
| DRAWN BY : DGE 12/09 | REV. 4/17 |
| CHECKED BY : MKT 01/10 | MAA/THC |



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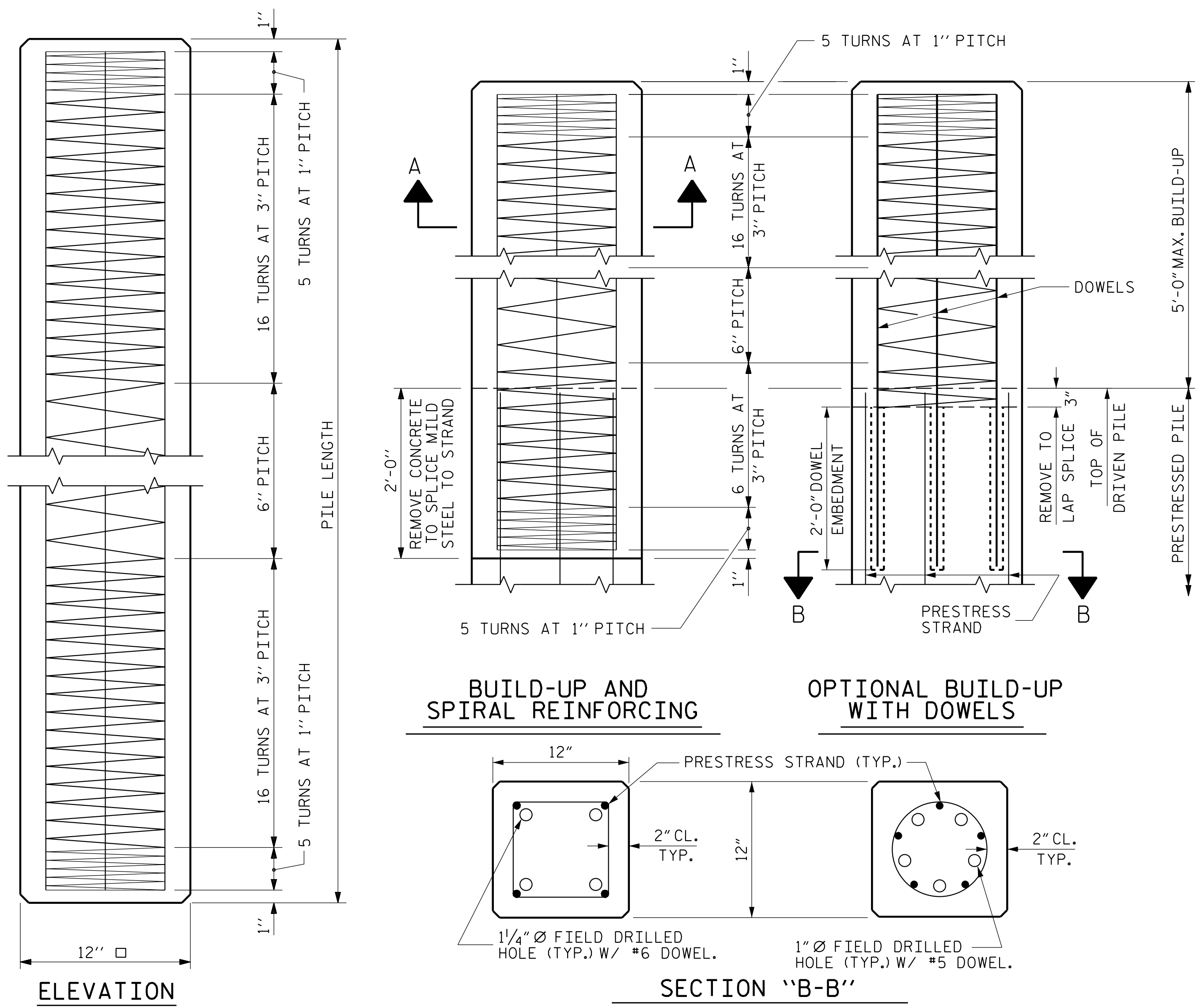


PROJECT NO. 17BP.1.R.88
PASQUOTANK COUNTY
STATION: 18+70.00 -L-

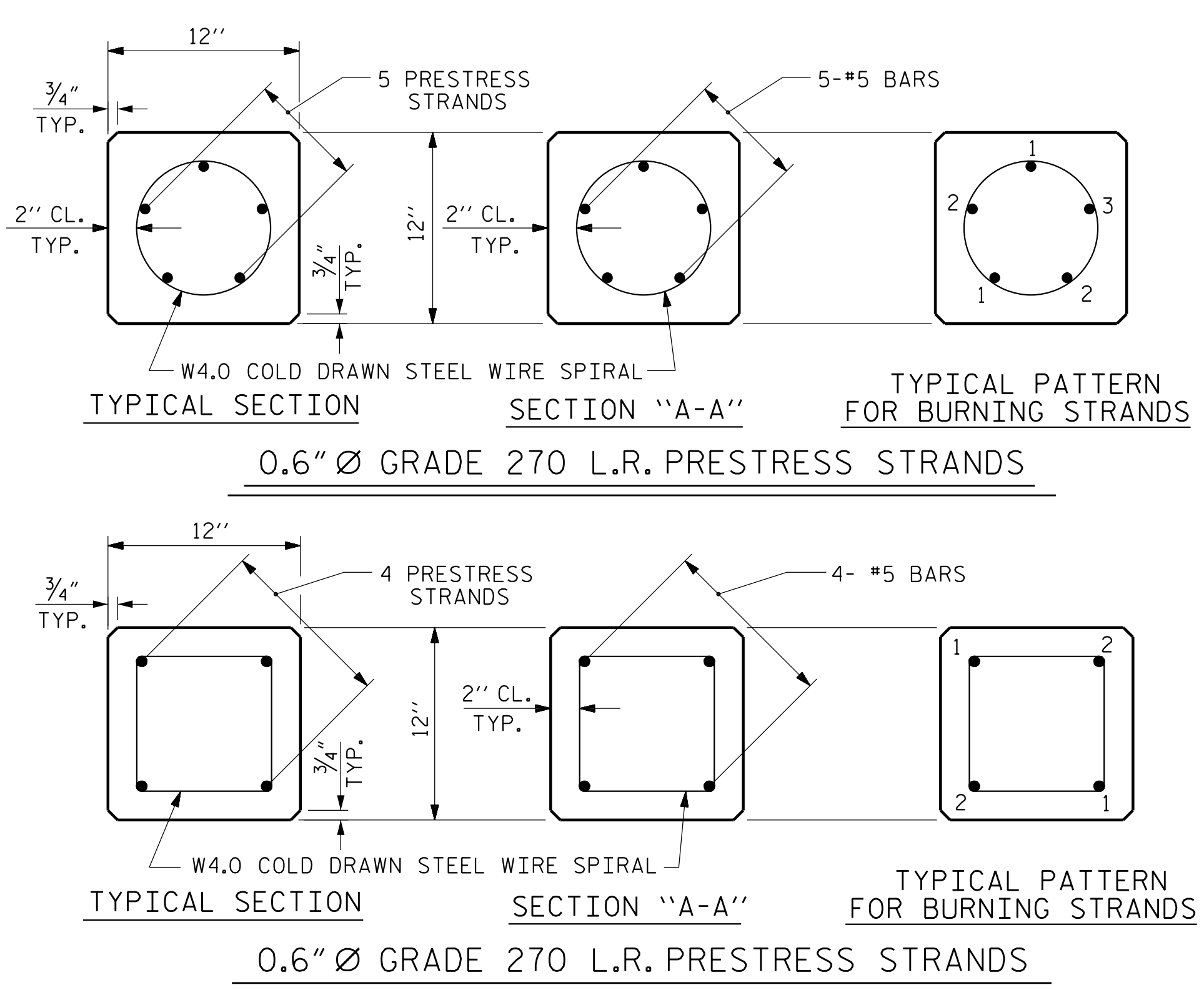
SHEET 4 OF 4

| | | | | | |
|--|-----|-------|-----|-----|--------------------|
| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
| SUBSTRUCTURE END BENT No. 1 & 2 DETAILS | | | | | |
| REVISIONS | | | | | SHEET NO. |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |
| | | | | | TOTAL SHEETS 19 |

STD. NO. EB-30-90S



(AT THE CONTRACTOR'S OPTION, PILE BUILD-UP MAY BE CONSTRUCTED WITH DOWELS.)



NOTES

PRESTRESSED CONCRETE STRENGTH : $f'_c = 7,500$ PSI
 BUILD-UP CONCRETE STRENGTH : $f'_c = 7,500$ PSI

STRAND DATA:

| SIZE | GRADE | AREA | ULTIMATE STRENGTH | APPLIED PRESTRESS FORCE |
|------|----------|-------|-----------------------|-------------------------|
| 0.6" | 270 L.R. | 0.217 | 58,600* PER STRAND | 43,940* PER STRAND |

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW-RELAXATION GRADE 270 STRANDS CONFORMING TO AASHTO M203. STRAND SAMPLING REQUIREMENTS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THE SLIP-FORM METHOD OF CASTING PILES WILL NOT BE PERMITTED.

TRANSFER THE LOAD FROM THE ANCHORAGES TO THE PILE AFTER THE CONCRETE HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI.

IF STRAND STRESS IS RELIEVED BY BURNING, THE STRANDS SHALL BE BURNED IN PAIRS, EXCEPT WHERE 5 STRANDS ARE USED, THE LAST STRAND MAY BE BURNED SINGLY ACCORDING TO BURNING PATTERNS SHOWN, NOT MORE THAN 4 STRANDS MAY BE BURNED AT ANY ONE SECTION BEFORE THE SAME STRANDS ARE BURNED AT BOTH ENDS OF THE BED AND BETWEEN EACH PAIR OF PILES IN THE BED.

PROPOSED DEVICES FOR LIFTING PILES, RECESS DETAILS, AND PATCHING MATERIAL SHALL BE DETAILED IN SHOP DRAWINGS. AFTER ATTACHMENTS HAVE BEEN REMOVED, OPENINGS SHALL BE REPAIRED SUCH THAT THE APPEARANCE OF THE PILE IS UNIFORM.

WHERE CAST-IN-PLACE LIFTING DEVICES ARE NOT USED, PICK-UP POINTS ARE TO BE INDICATED WITH A 2" WIDE BLACK MARK.

DRIVE PILES USING A METHOD APPROVED BY THE ENGINEER, WHEREBY THE HEAD OF THE PILE IS NOT DAMAGED.

DRIVING OF THE BUILT-UP PILE WILL NOT BE PERMITTED UNTIL THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF 5,000 PSI AND UNTIL A PERIOD OF SEVEN DAYS HAS ELAPSED SINCE CASTING OF THE BUILD-UP.

DOWEL INSTALLATION FOR OPTIONAL BUILD-UP

GROUT COMPRESSIVE STRENGTH: $f'_c = 5,000$ PSI

BEFORE DRILLING DOWEL HOLES, REMOVE THE UPPER 3" OF CONCRETE FROM THE TOP OF THE PILE WITHOUT DAMAGE TO THE REINFORCING STEEL. THE REMOVAL PLANE SHOULD BE NORMAL TO THE EDGE OF THE PILE.

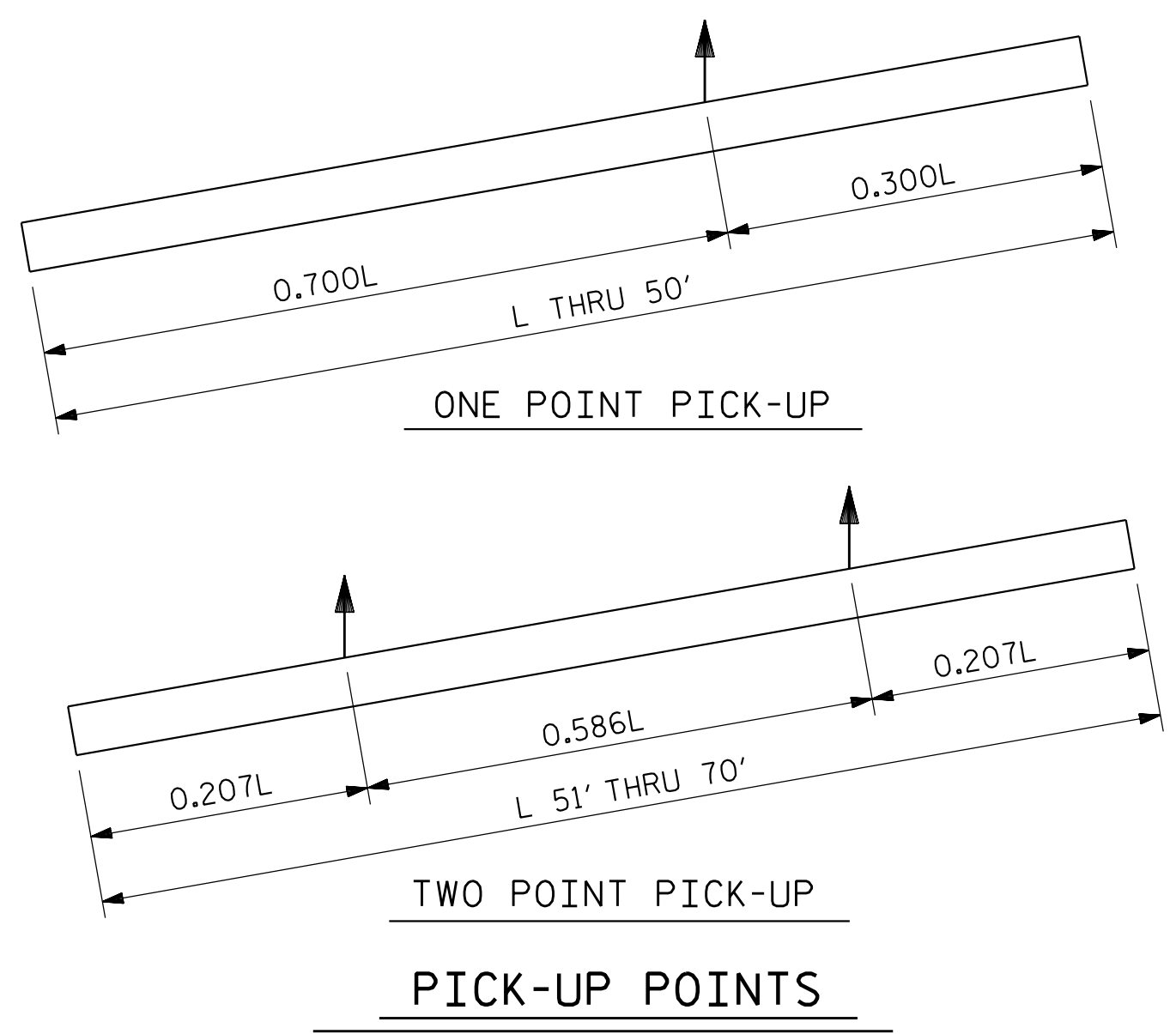
DOWEL HOLES SHALL BE POSITIONED TO MAINTAIN 1/2" CLEAR TO ALL EXISTING PRESTRESSING STRANDS IN THE CONCRETE PILE.

FIELD DRILLED HOLES SHALL BE CLEAN AND FREE OF ANY OBSTRUCTIONS BEFORE GROUTING OF DOWELS. DOWEL BARS SHALL BE INSTALLED AND GROUTED WITH AN APPROVED NON-SHRINK GROUT.

THE SPIRAL REINFORCING IN ALL BUILD-UPS SHALL BE W4.0 COLD DRAWN WIRE WHICH SHALL BE SECURED TO THE LONGITUDINAL REINFORCEMENT TO MAINTAIN PITCH.

THE SPIRAL REINFORCING IN THE BUILD-UP AND THE PRESTRESSED CONCRETE PILE SHALL BE SPLICED BY OVERLAPPING A MIN. OF ONE TURN.

THE WATER/CEMENT RATIO FOR CONCRETE PILES SHALL NOT EXCEED 0.40.



QUANTITIES FOR ONE 12" PRESTRESSED PILE

| LENGTH | CONCRETE CU. YDS. | PILE WT. TONS | ONE POINT PICK-UP | | TWO POINT PICK-UP | |
|--------|-------------------|---------------|-------------------|--------|-------------------|--------|
| | | | 0.300L | 0.700L | 0.207L | 0.586L |
| 25'-0" | 0.91 | 1.85 | 7'-6" | 17'-6" | | |
| 30'-0" | 1.10 | 2.22 | 9'-0" | 21'-0" | | |
| 35'-0" | 1.28 | 2.59 | 10'-6" | 24'-6" | | |
| 40'-0" | 1.46 | 2.96 | 12'-0" | 28'-0" | | |
| 45'-0" | 1.64 | 3.33 | 13'-6" | 31'-6" | | |
| 50'-0" | 1.83 | 3.72 | 15'-0" | 35'-0" | | |
| 55'-0" | 2.01 | 4.09 | | | 11'-4 1/2" | 32'-3" |
| 60'-0" | 2.19 | 4.46 | | | 12'-5" | 35'-2" |
| 65'-0" | 2.38 | 4.81 | | | 13'-5 1/2" | 38'-1" |
| 70'-0" | 2.57 | 5.18 | | | 14'-6" | 41'-0" |

PROJECT NO. 17BP.1.R.88
PASQUOTANK COUNTY
 STATION: 18+70.00 -L-

ASSEMBLED BY : W. B. ALLEN DATE : 12/20
 CHECKED BY : G. F. WILSON DATE : 12/20
 DRAWN BY : FCJ 7/88 MAA/TMG
 CHECKED BY : CRK 3/89 REV. 12/14 MAA/THC
 REV. 12/17 MAA/THC
 REV. 12/20 BNB/THC



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9/26/2022

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

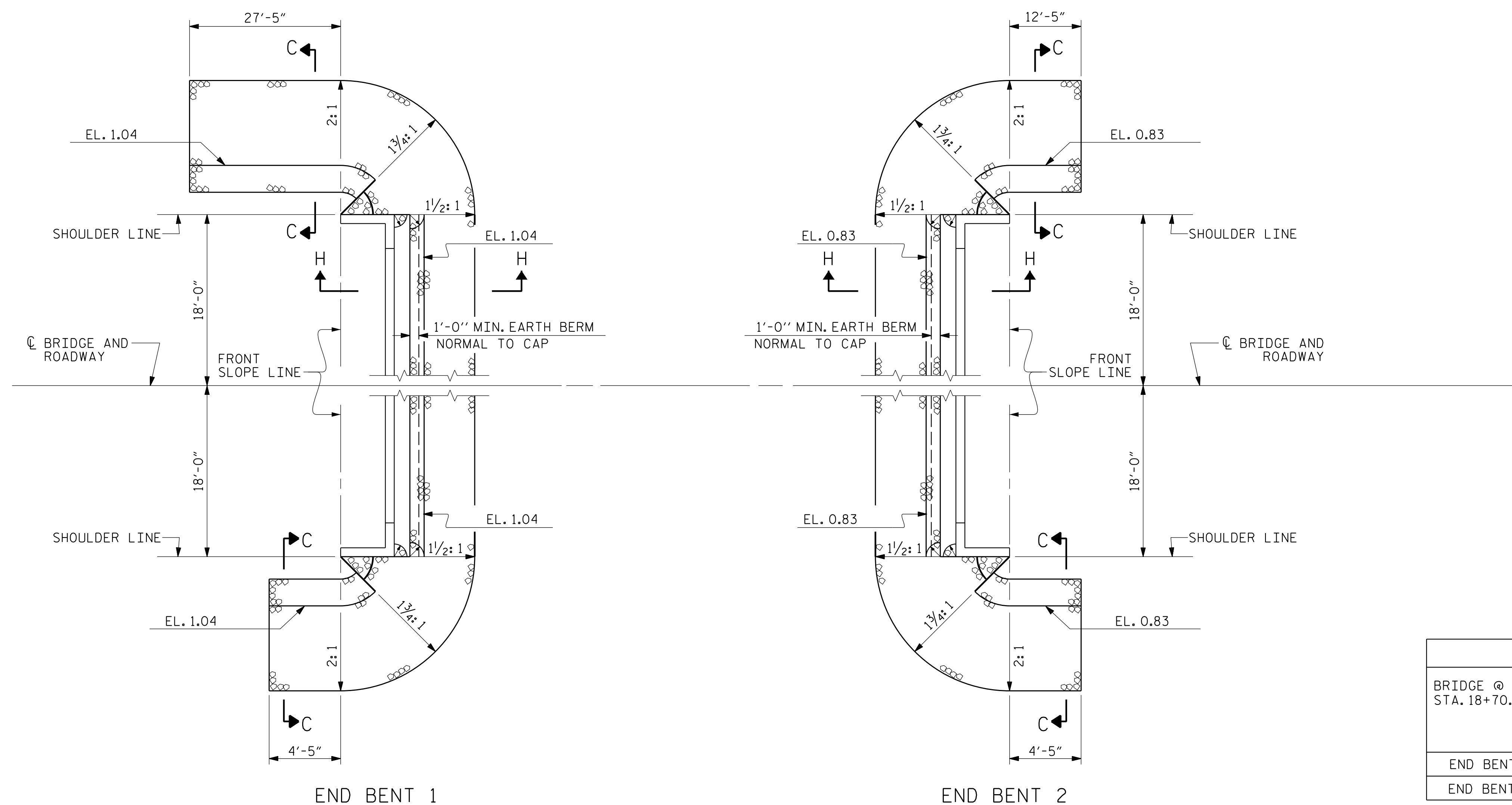
STANDARD
12" PRESTRESSED CONCRETE PILE

REVISIONS

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

SHEET NO. S-16
 TOTAL SHEETS 19

NOTES :
FOR BERM WIDTH DIMENSIONS, SEE GENERAL DRAWING.

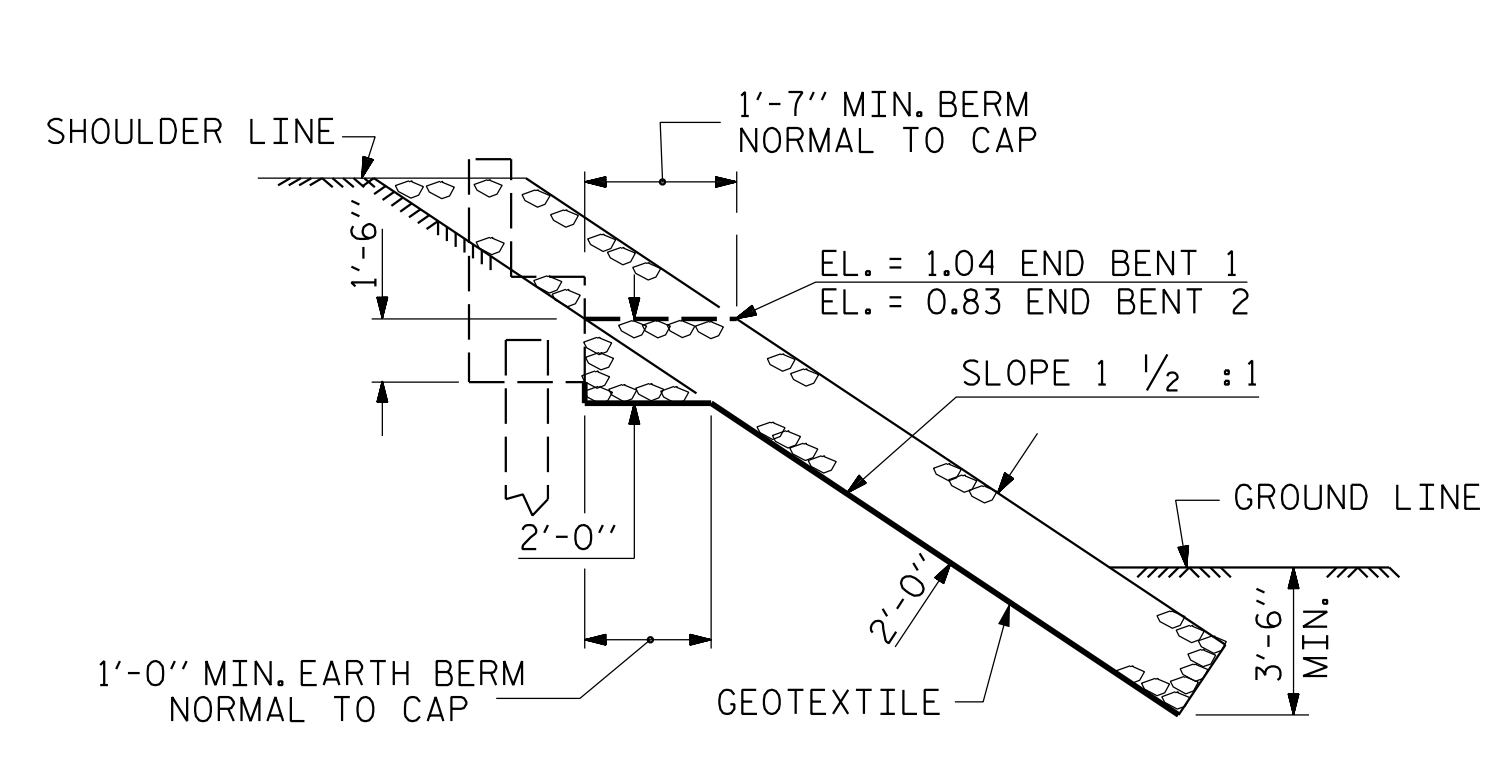


END BENT 1

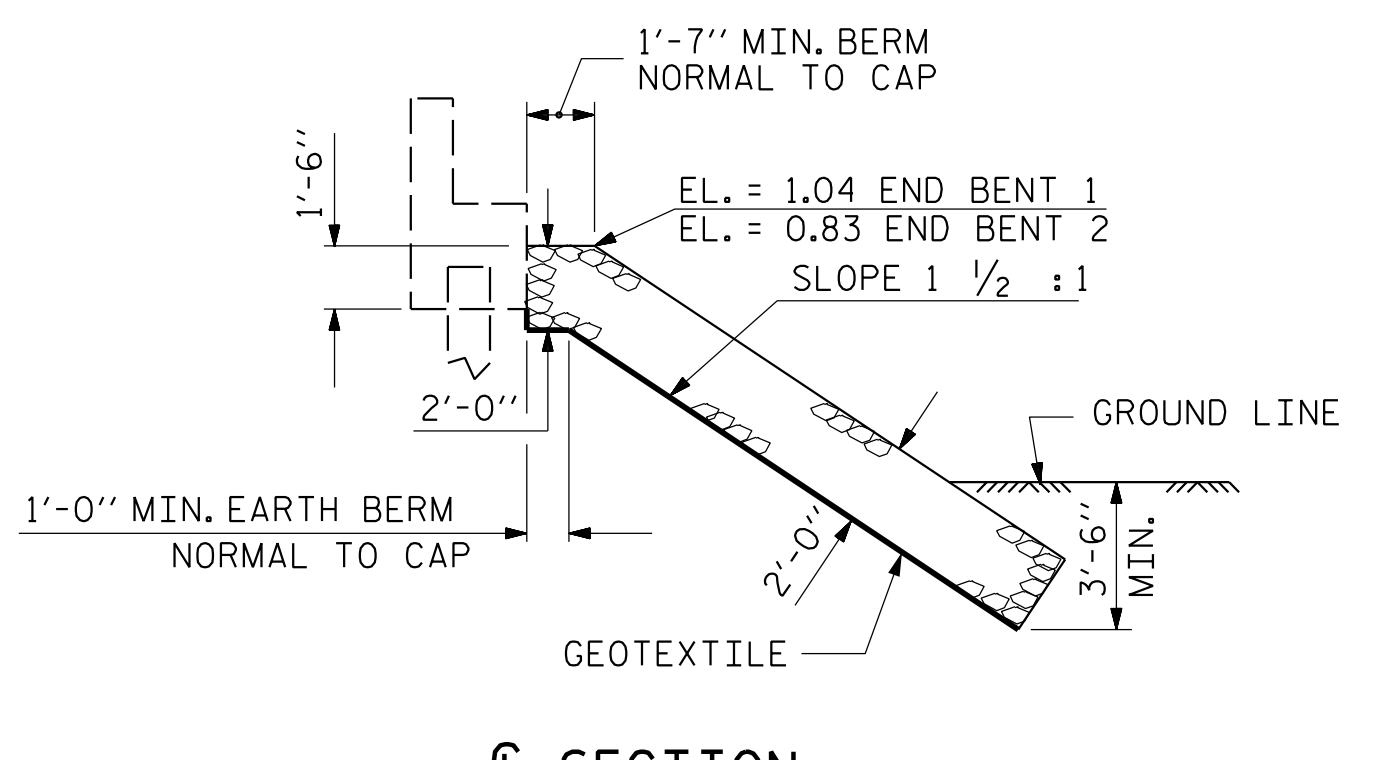
END BENT 2

SHOULDER RIP RAP IS HIGHER THAN BERM RIP RAP

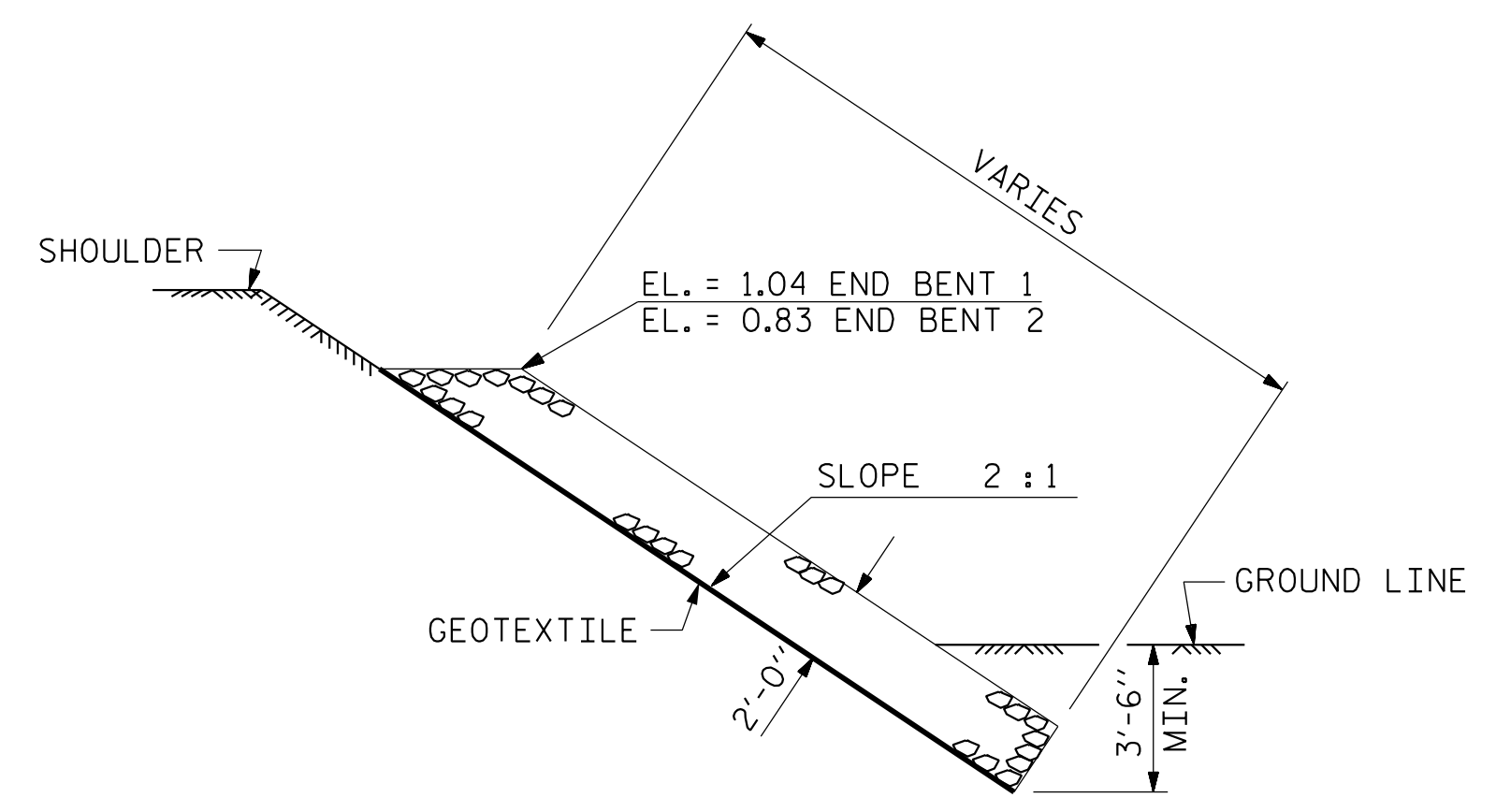
| ESTIMATED QUANTITIES | | |
|-------------------------------|--------------------------------------|----------------------------|
| BRIDGE @ STA. 18+70.00 -L- | RIP RAP CLASS II (2'-0" THICK) | GEOTEXTILE FOR DRAINAGE |
| | TONS | SQUARE YARDS |
| END BENT 1 | 84 | 94 |
| END BENT 2 | 56 | 62 |



SECTION H-H



SECTION C-C
BERM RIP RAPPED



SECTION C-C

PROJECT NO. 17BP.1.R.88
PASQUOTANK COUNTY
STATION: 18+70.00 -L-

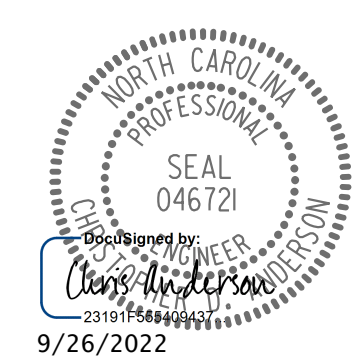
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
RIP RAP DETAILS

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

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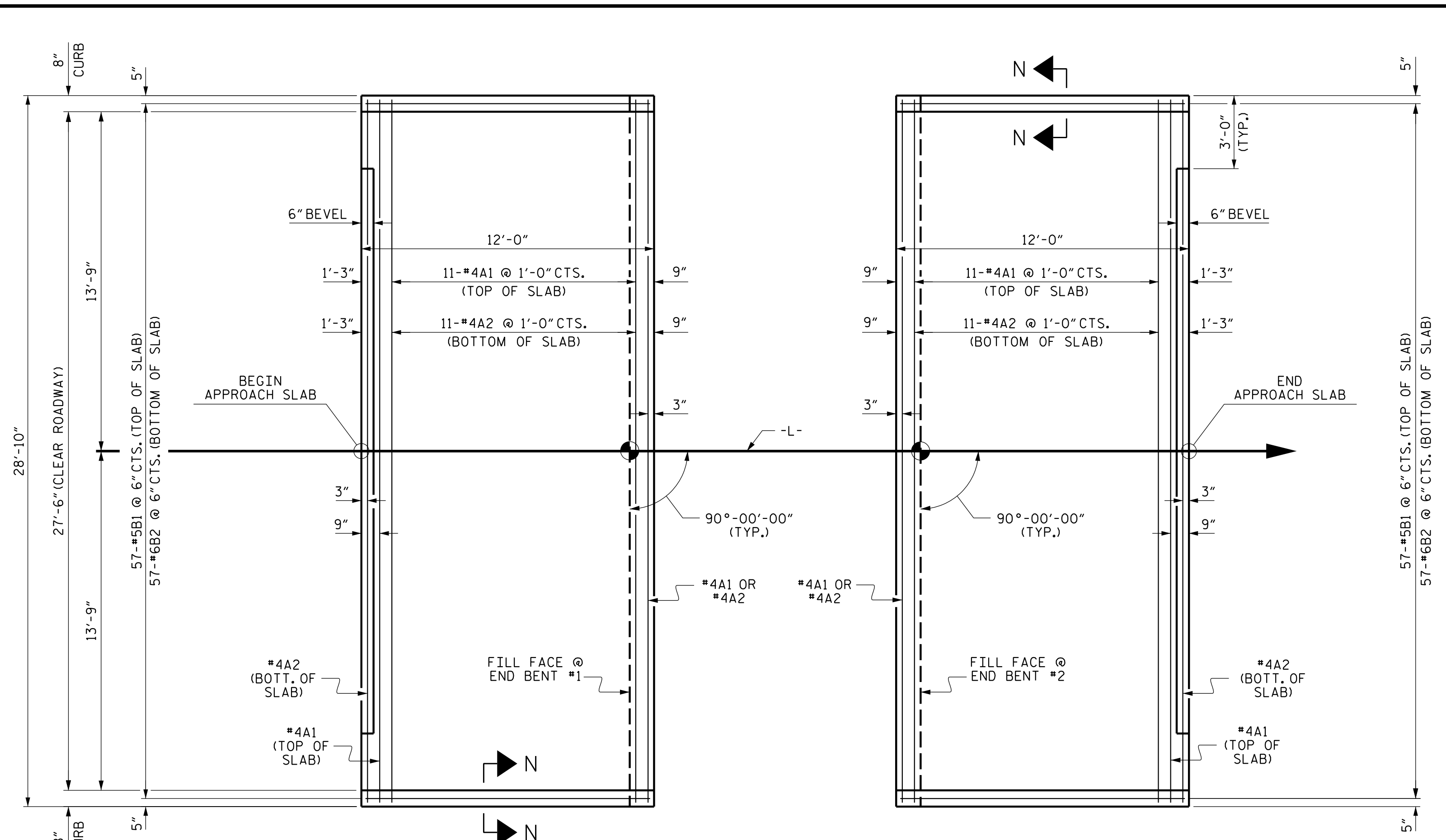


PLANS PREPARED BY:

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

| | |
|----------------------------|----------------------|
| ASSEMBLED BY : W. B. ALLEN | DATE : 6/19 |
| CHECKED BY : G. F. WILSON | DATE : 6/19 |
| 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

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.

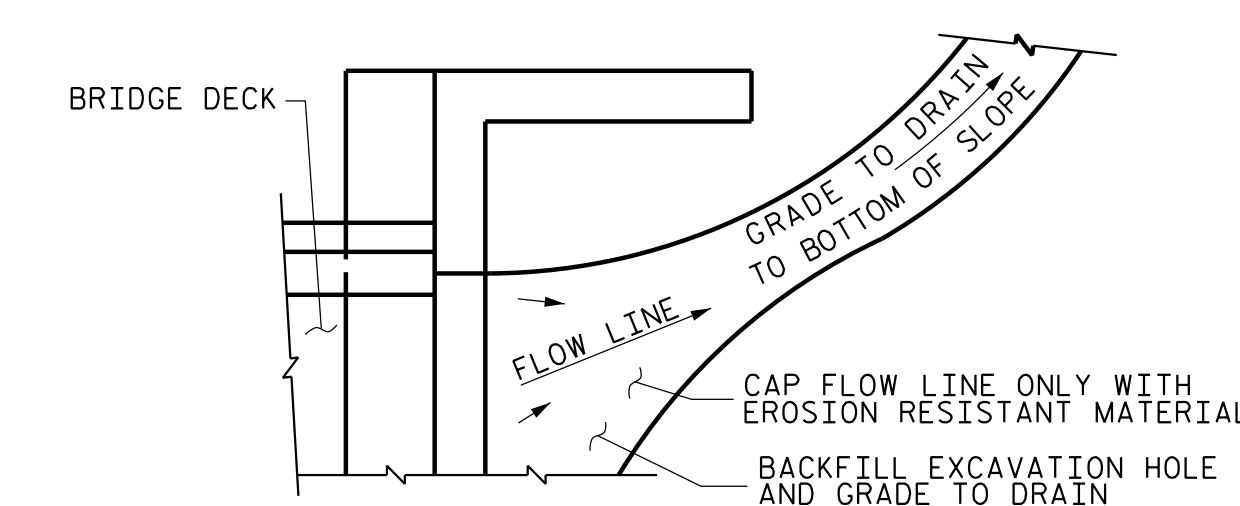
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

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.

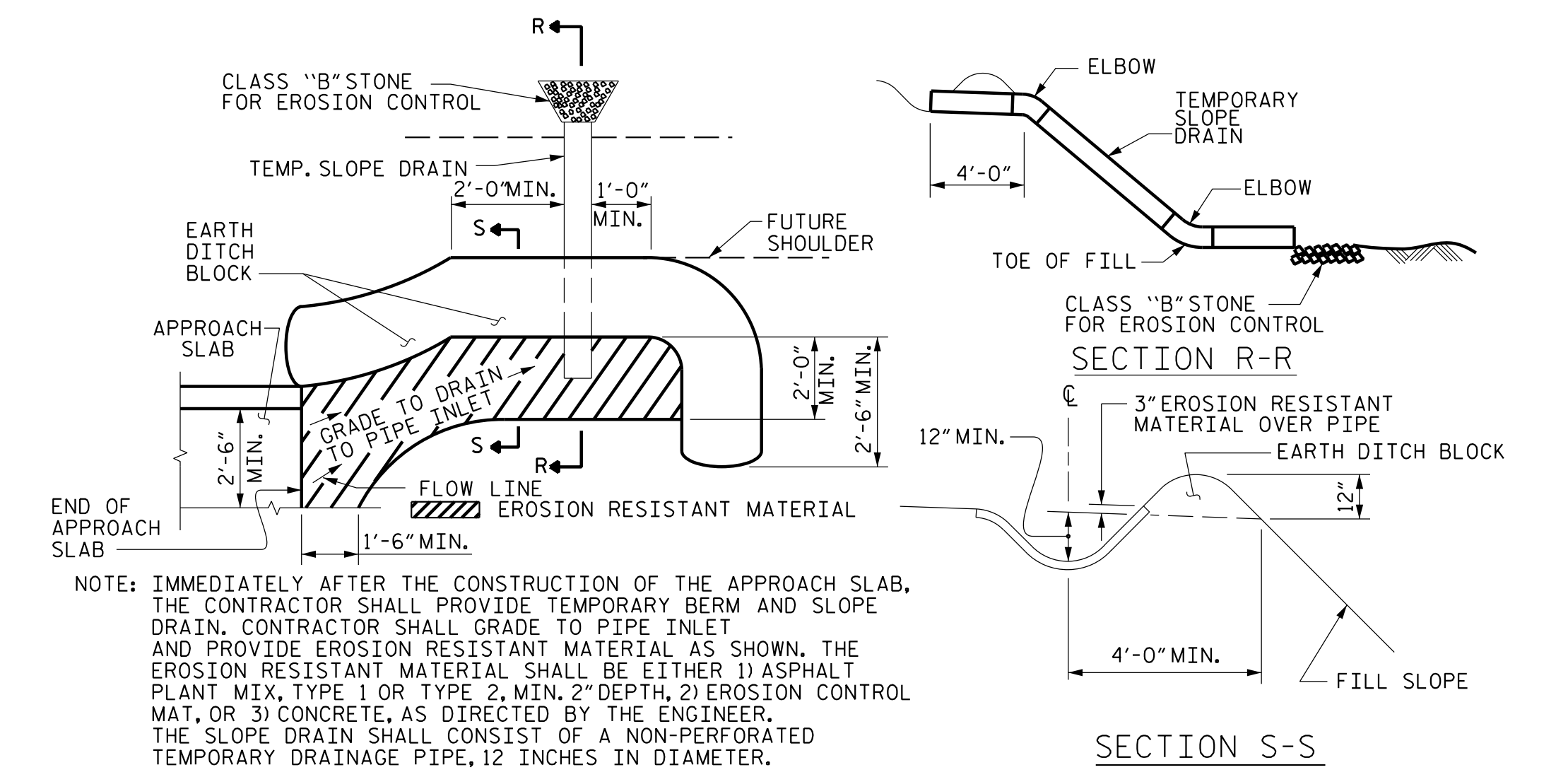
AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



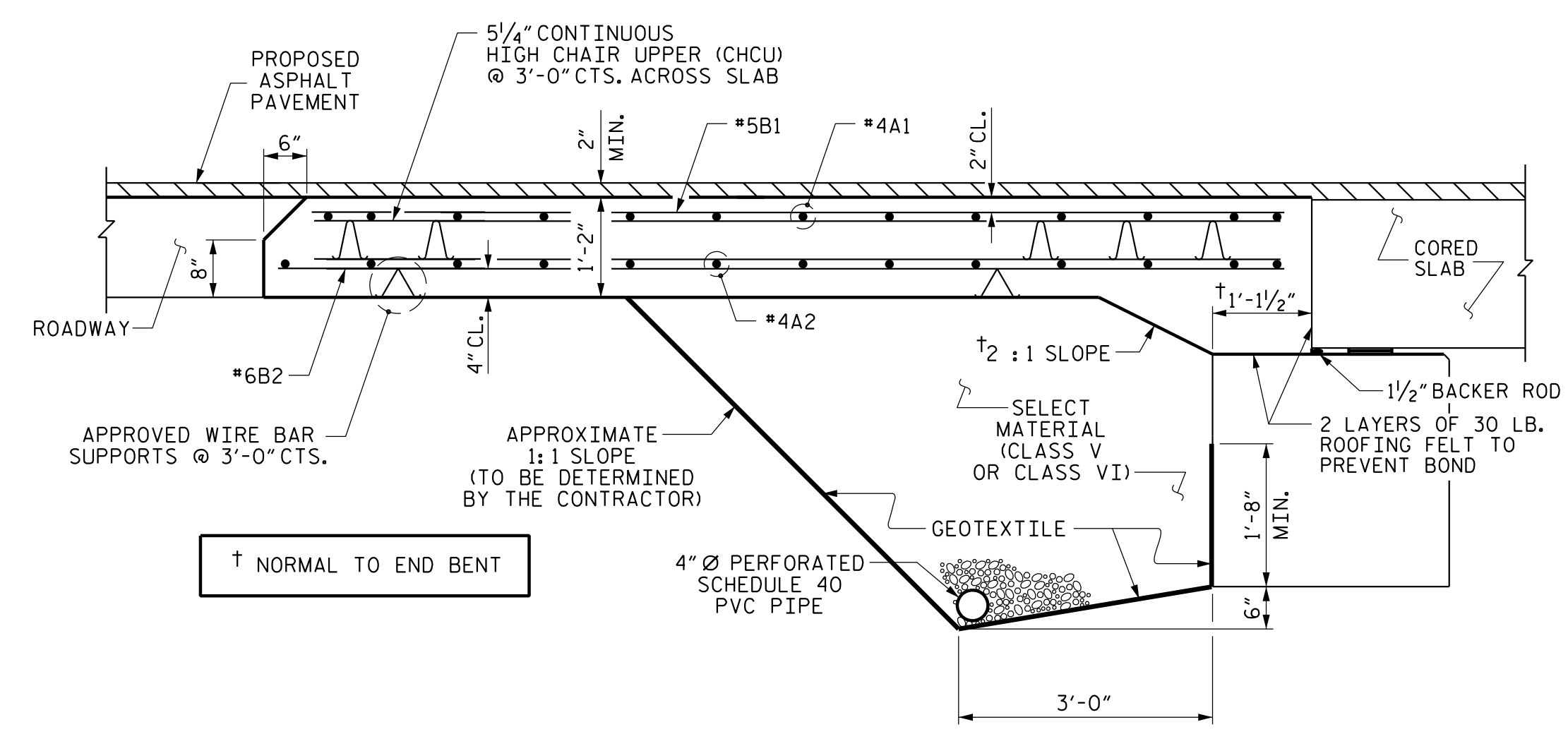
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT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

TEMPORARY DRAINAGE DETAIL

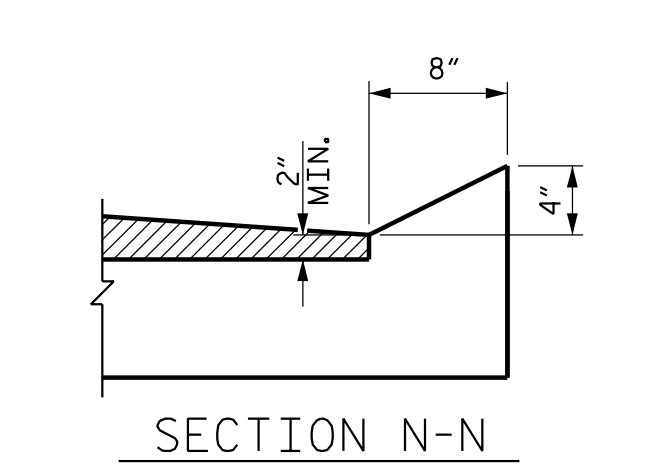


NOTE: IMMEDIATELY AFTER THE CONSTRUCTION OF THE APPROACH SLAB, THE CONTRACTOR SHALL PROVIDE TEMPORARY BERM AND SLOPE DRAIN. CONTRACTOR SHALL GRADE TO PIPE INLET AND PROVIDE EROSION RESISTANT MATERIAL AS SHOWN. THE EROSION RESISTANT MATERIAL SHALL BE EITHER 1) ASPHALT PLANT MIX, TYPE 1 OR TYPE 2, MIN.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

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



SECTION THRU SLAB
 (TYPE II - MODIFIED APPROACH FILL)



CURB DETAILS

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

PLANS PREPARED BY:

NV5

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 3300 REGENCY PARKWAY, SUITE 100
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9/26/2022

| BILL OF MATERIAL | | | | | |
|----------------------------------|-----|------|------|--------|------------|
| APPROACH SLAB AT EB #1 | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| *A1 | 13 | #4 | STR | 28'-6" | 247 |
| *A2 | 13 | #4 | STR | 28'-6" | 247 |
| *B1 | 58 | #5 | STR | 11'-2" | 676 |
| *B2 | 58 | #6 | STR | 11'-8" | 1016 |
| * EPOXY COATED REINFORCING STEEL | | | | | LBS. 2186 |
| CLASS AA CONCRETE | | | | | C. Y. 17.0 |
| APPROACH SLAB AT EB #2 | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| *A1 | 13 | #4 | STR | 28'-6" | 247 |
| *A2 | 13 | #4 | STR | 28'-6" | 247 |
| *B1 | 57 | #5 | STR | 11'-2" | 664 |
| *B2 | 57 | #6 | STR | 11'-8" | 999 |
| * EPOXY COATED REINFORCING STEEL | | | | | LBS. 2157 |
| CLASS AA CONCRETE | | | | | C. Y. 17.0 |

PROJECT NO. 17BP.1.R.88
PASQUOTANK COUNTY
 STATION: 18+70.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 BRIDGE APPROACH SLAB
 FOR PRESTRESSED CONCRETE
 CORED SLAB UNIT
 (SUB-REGIONAL TIER)
 90° SKEW

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-18 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 19 |

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 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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| | |
|----------------|--------------------|
| ENGLISH | SHEET NO. S-19 |
| JANUARY, 1990 | TOTAL SHEETS 19 |