

09/08/19

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

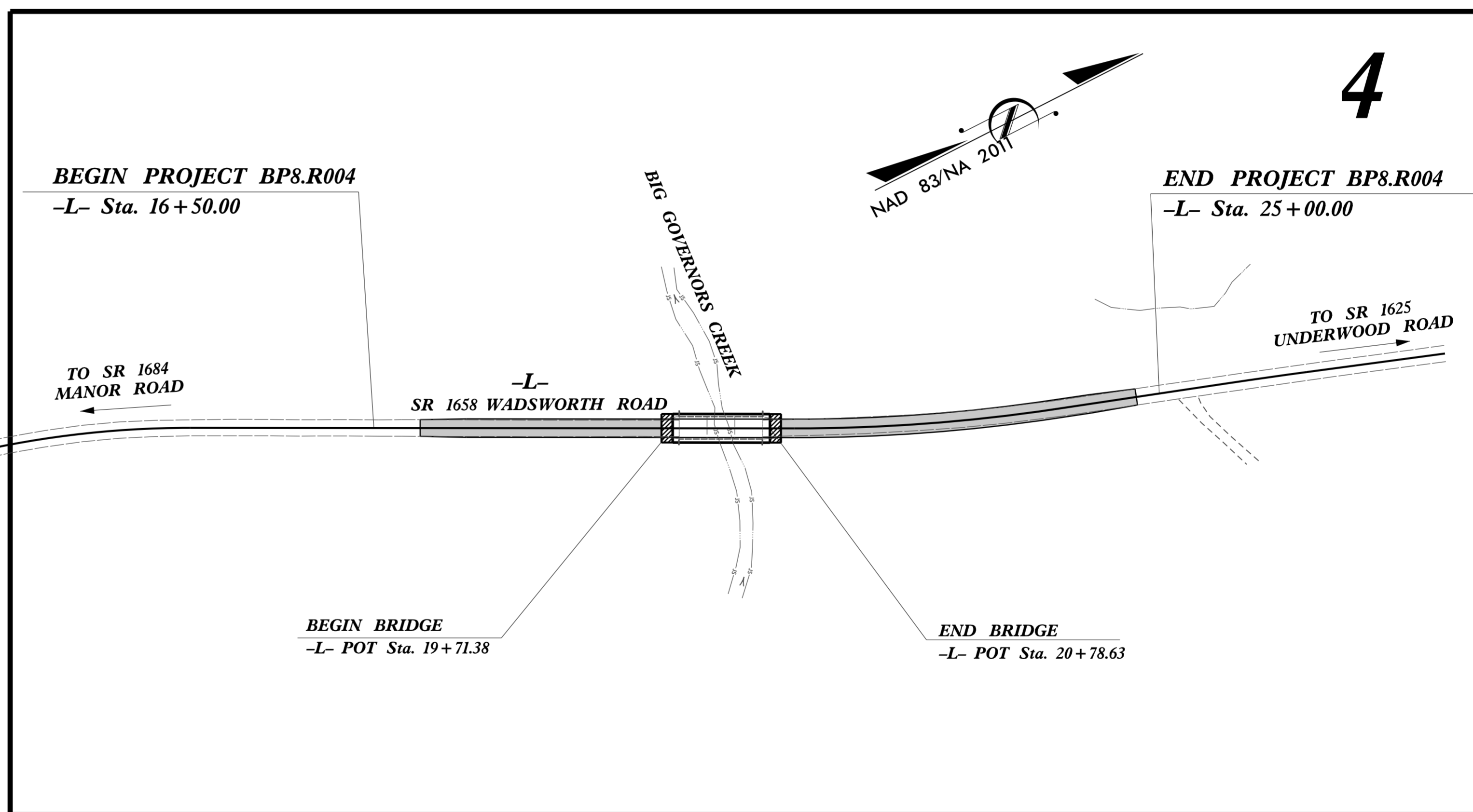
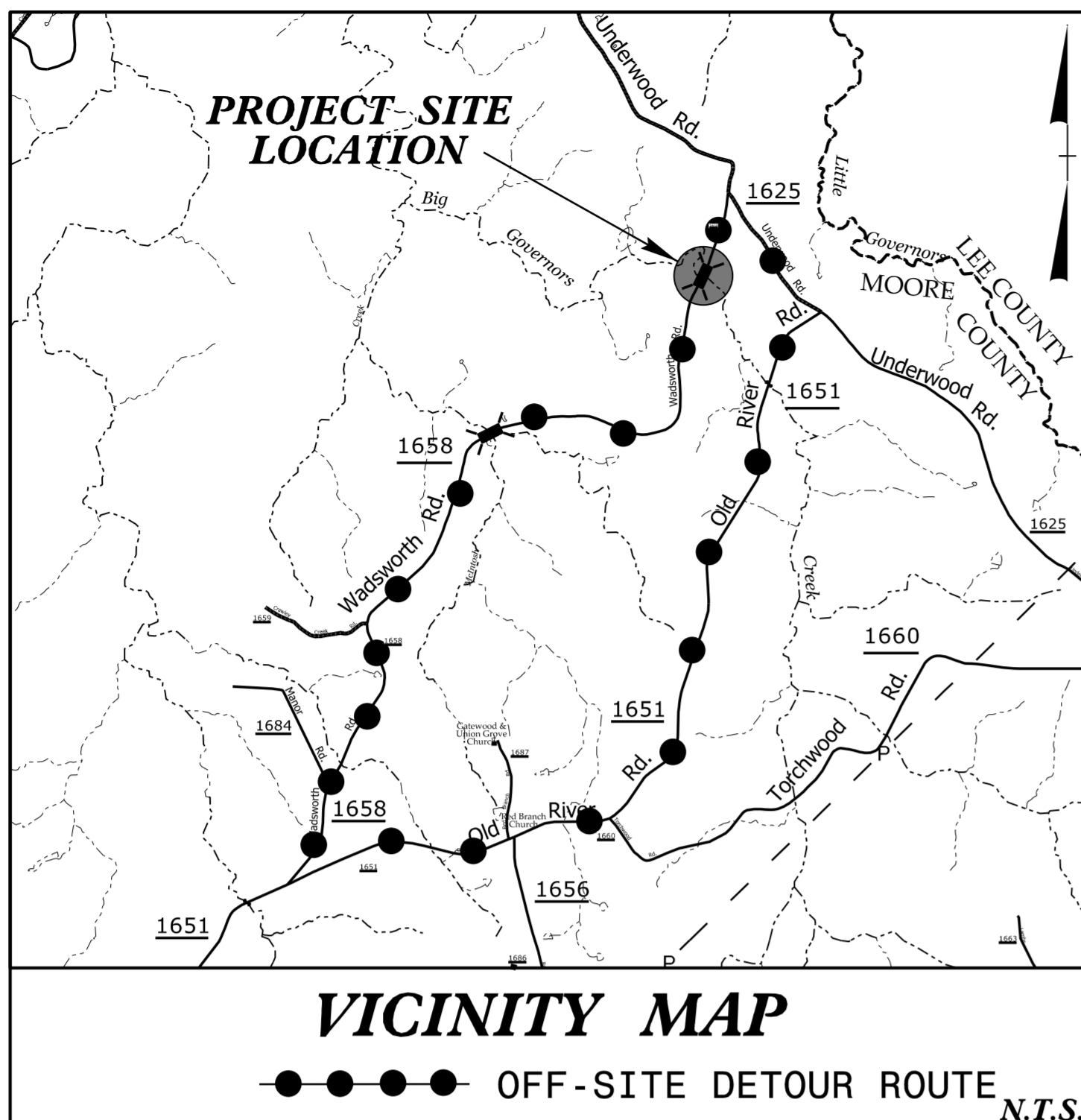
MOORE COUNTY

**LOCATION: BRIDGE 620047 OVER BIG GOVERNORS CREEK
ON SR 1658 (WADSWORTH ROAD)**

TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURES

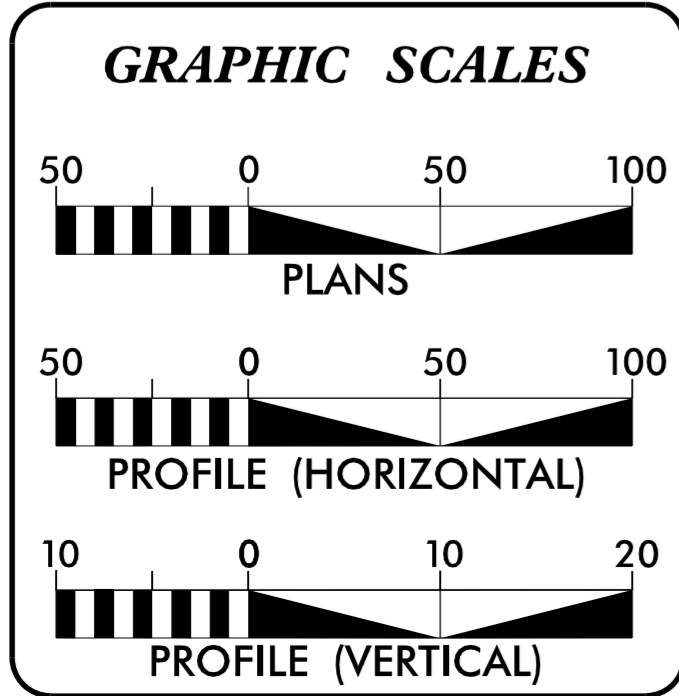
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|----------------|--------------|
| N.C. | BP8.R004 | 1 | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| BP8.R004.1 | | P.E. | |
| BP8.R004.2 | | RW & Utilities | |
| BP8.R004.3 | | Construction | |
| | | | |
| | | | |

PROJECT: BP8.R004



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CONTRACT:



DESIGN DATA

ADT 2012 = 100
ADT 2040 = 200

T = 6 %
V = 60 MPH

FUNC CLASS = LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

| | | |
|-----------------------------------|---|----------|
| LENGTH ROADWAY PROJECT BP8.R004 | = | 0.141 mi |
| LENGTH STRUCTURE PROJECT BP8.R004 | = | 0.020 mi |
| TOTAL LENGTH OF PROJECT BP8.R004 | = | 0.161 mi |

PLANS PREPARED BY:
CH ENGINEERING
DIVISION OF PENNCH
5430 WADE PARK BLVD., SUITE 100,
RALEIGH, NC 27607
919.785.0224
NC LICENSE #P-0189

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 18, 2023

LETTING DATE:
AUGUST 27, 2024

PLANS PREPARED FOR:
DIVISION OF HIGHWAYS
DIVISION 8
121 DOT Drive
Carthage, NC 28327

BRIAN A. WILES, PE
PROJECT ENGINEER

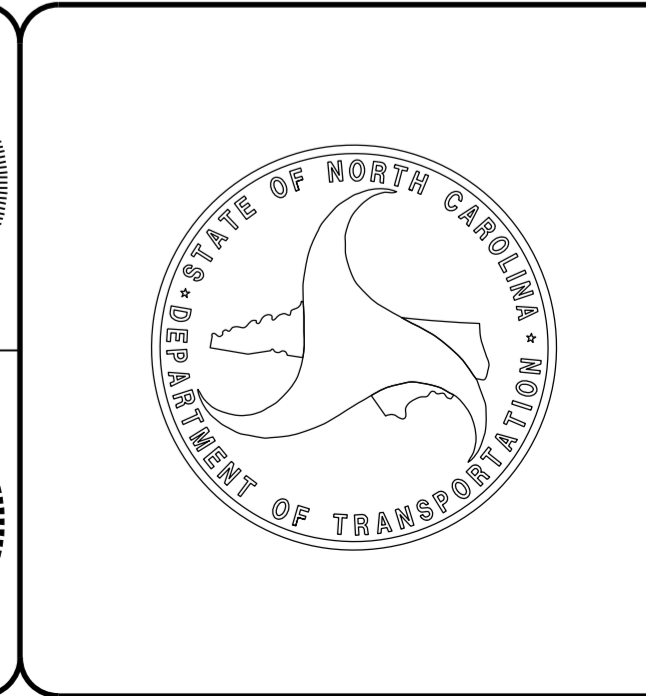
TIM WELCH, PE
NCDOT CONTACT
DIV 8 BRIDGE PROGRAM MANAGER

HYDRAULICS ENGINEER
MI ENGINEERING
1011 SCHUBERT DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 883-9966
FIRM PE NUMBER: P-6871
1/29/2024

DocuSigned by:
Andrew Nottingham
SIGNATURE:

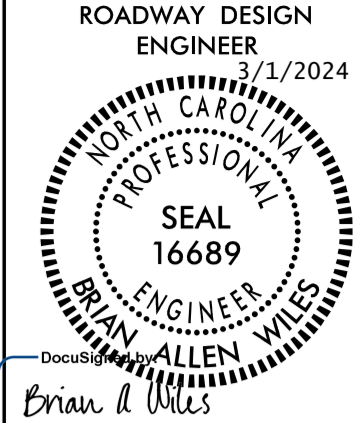
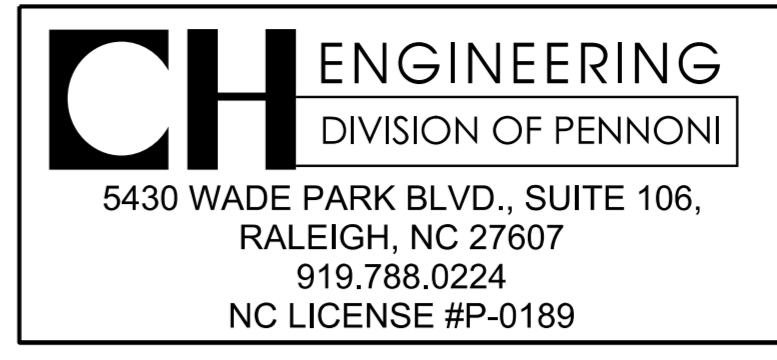
ROADWAY DESIGN ENGINEER
1/29/2024

DocuSigned by:
Brian A Wiles
SIGNATURE:



1/26/2024 R:\Roadway\Proj\620047_Rdy_Tsh.dgn -USERNAME-

8/17/19



**DOCUMENT NOT CONSIDERED FINAL
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| SHEET NUMBER | SHEET |
|------------------|--|
| 1 | TITLE SHEET |
| 1A | INDEX OF SHEETS, GENERAL NOTES AND STANDARD DRAWINGS |
| 1B | CONVENTIONAL SYMBOLS |
| 2A-1 | PAVEMENT SCHEDULE, TYPICAL SECTIONS No. 1 AND 2, INCIDENTAL MILLING AND WEDGING DETAIL |
| 2A-2 | PAVEMENT SCHEDULE, TYPICAL SECTION No. 3 AND PAVED SHOULDER DETAILS |
| 3B-1 | SUMMARIES OF EARTHWORK, GUARDRAIL, ASPHALT PAVEMENT REMOVAL AND SHOULDER BERM GUTTER |
| 3D-1 | LIST OF PIPES, ENDWALLS, ETC. (for PIPES 48" & UNDER) |
| 3G-1 | SUMMARY OF SUBSURFACE DRAINAGE |
| 4 | PLAN SHEET |
| 5 | PROFILE SHEET |
| RW01 THRU RW04 | SURVEY CONTROL, EXISTING CENTERLINES, RIGHT OF WAY, EASEMENT AND PROPERTY TIES |
| TMP-1 THRU TMP-4 | TRAFFIC MANAGEMENT PLANS |
| EC-1 THRU EC-5 | EROSION CONTROL PLANS |
| UO-1 THRU UO-2 | UTILITIES BY OTHERS PLANS |
| X-1 THRU X-18 | CROSS-SECTIONS |
| S-1 THRU S-16 | STRUCTURE PLANS |

GENERAL NOTES: 2024 SPECIFICATIONS
EFFECTIVE: 01-16-2024
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 III.

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.

SUBSURFACE DRAINS: SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

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.

TEMPORARY SHORING: SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

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.

UTILITIES: UTILITY OWNERS ON THIS PROJECT ARE CenturyLink/Lumen/Brightspeed - Communications.
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

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

2024 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 16, 2024 are applicable to this project and by reference hereby are considered a part of these plans:

| STD.NO. | TITLE |
|--|--|
| DIVISION 2 - EARTHWORK | |
| 200.03 | Method of Clearing - Method III |
| 225.02 | Guide for Grading Subgrade - Secondary and Local |
| 225.04 | Method of Obtaining Super-elevation - Two Lane Pavement |
| DIVISION 3 - PIPE CULVERTS | |
| 300.01 | Method of Pipe Installation |
| DIVISION 4 - MAJOR STRUCTURES | |
| 423.01 | Bridge Approach Fills - Type 1 Approach Fill for Bridge Abutment |
| DIVISION 5 - SUBGRADE, BASES AND SHOULDERS | |
| 560.01 | Method of Shoulder Construction - High Side of Super-elevated Curve - Method I |
| DIVISION 6 - ASPHALT BASES AND PAVEMENTS | |
| 654.01 | Pavement Repairs |
| DIVISION 8 - INCIDENTALS | |
| 806.01 | Concrete Right-of-Way Marker |
| 815.02 | Subsurface Drain |
| 840.00 | Concrete Base Pad for Drainage Structures |
| 840.25 | Anchorage for Frames - Brick or Concrete or Precast |
| 840.29 | Frames and Narrow Slot Flat Grates |
| 840.35 | Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates |
| 840.46 | Traffic Bearing Precast Drainage Structure |
| 840.66 | Drainage Structure Steps |
| 846.01 | Concrete Curb, Gutter and Curb & Gutter |
| 846.04 | Drop Inlet Installation in Shoulder Berm Gutter |
| 862.01 | Guardrail Placement |
| 862.02 | Guardrail Installation |
| 862.03 | Structure Anchor Units |
| 876.02 | Guide for Rip Rap at Pipe Outlets |
| 876.03 | Drainage Ditches with Class 'A' Rip Rap |
| 876.04 | Drainage Ditches with Class 'B' Rip Rap |

EFF. 01-16-2024
REV.

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

| | |
|---------------------------------------|---------|
| State Line | ----- |
| County Line | ----- |
| Township Line | ----- |
| City Line | ----- |
| Reservation Line | ----- |
| Property Line | ----- |
| Existing Iron Pin (EIP) | ○ |
| Computed Property Corner | × |
| Existing Concrete Monument (ECM) | ◻ |
| Parcel/Sequence Number | (123) |
| Existing Fence Line | -x-x-x- |
| Proposed Woven Wire Fence | -o-o-o- |
| Proposed Chain Link Fence | -□-□-□- |
| Proposed Barbed Wire Fence | -◇-◇-◇- |
| Existing Wetland Boundary | -NLB- |
| Proposed Wetland Boundary | -NLB- |
| Existing Endangered Animal Boundary | -EAB- |
| Existing Endangered Plant Boundary | -EPB- |
| Existing Historic Property Boundary | -HPB- |
| Known Contamination Area: Soil | -S-S-S- |
| Potential Contamination Area: Soil | -S-S-S- |
| Known Contamination Area: Water | -W-W-W- |
| Potential Contamination Area: Water | -W-W-W- |
| Contaminated Site: Known or Potential | ☠ ? |

BUILDINGS AND OTHER CULTURE:

| | |
|-------------------------------|---|
| Gas Pump Vent or U/G Tank Cap | ○ |
| Sign | ○ |
| Well | ○ |
| 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 | ← FLOW → |
| False Sump | ▽ |

RAILROADS:

| | |
|--------------------|-------|
| Standard Gauge | ----- |
| RR Signal Milepost | ⊙ |
| Switch | ⊞ |
| RR Abandoned | ----- |
| RR Dismantled | ----- |

RIGHT OF WAY & PROJECT CONTROL:

| | |
|--|-------|
| Primary Horiz Control Point | ○ |
| Primary Horiz and Vert Control Point | ● |
| Secondary Horiz and Vert Control Point | ◆ |
| Vertical Benchmark | ⊞ |
| Existing Right of Way Monument | △ |
| Proposed Right of Way Monument (Rebar and Cap) | ▲ |
| Proposed Right of Way Monument (Concrete) | ⊞ |
| Existing Permanent Easement Monument | ◇ |
| Proposed Permanent Easement Monument (Rebar and Cap) | ◆ |
| Existing C/A Monument | △ |
| Proposed C/A Monument (Rebar and Cap) | ▲ |
| Proposed C/A Monument (Concrete) | ⊞ |
| Existing Right of Way Line | ----- |
| Proposed Right of Way Line | ----- |
| Existing Control of Access Line | ----- |
| Proposed Control of Access Line | ----- |
| Proposed ROW and CA Line | ----- |
| Existing Easement Line | ----- |
| Proposed Temporary Construction Easement | ----- |
| Proposed Temporary Drainage Easement | ----- |
| Proposed Permanent Drainage Easement | ----- |
| Proposed Permanent Drainage/Utility Easement | ----- |
| Proposed Permanent Utility Easement | ----- |
| Proposed Temporary Utility Easement | ----- |
| Proposed 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 | ⊞ |
| 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:

* SUE - Subsurface Utility Engineering
LOS - Level of Service - A,B,C or D (Accuracy)

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 Test Hole (SUE - LOS A)* | ⊞ |
| U/G Power Line (SUE - LOS B)* | ----- |
| U/G Power Line (SUE - LOS C)* | ----- |
| U/G Power Line (SUE - LOS D)* | ----- |

TELEPHONE:

| | |
|--|-------|
| Existing Telephone Pole | ● |
| Proposed Telephone Pole | ○ |
| Telephone Manhole | ⊞ |
| Telephone Pedestal | ⊞ |
| Telephone Cell Tower | ⊞ |
| U/G Telephone Cable Hand Hole | ⊞ |
| U/G Telephone Test Hole (SUE - LOS A)* | ⊞ |
| U/G Telephone Cable (SUE - LOS B)* | ----- |
| U/G Telephone Cable (SUE - LOS C)* | ----- |
| U/G Telephone Cable (SUE - LOS D)* | ----- |
| U/G Telephone Conduit (SUE - LOS B)* | ----- |
| U/G Telephone Conduit (SUE - LOS C)* | ----- |
| U/G Telephone Conduit (SUE - LOS D)* | ----- |
| U/G Fiber Optics Cable (SUE - LOS B)* | ----- |
| U/G Fiber Optics Cable (SUE - LOS C)* | ----- |
| U/G Fiber Optics Cable (SUE - LOS D)* | ----- |

WATER:

| | |
|---|-------|
| Water Manhole | ⊞ |
| Water Meter | ○ |
| Water Valve | ⊞ |
| Water Hydrant | ⊞ |
| U/G Water Line Test Hole (SUE - LOS A)* | ⊞ |
| U/G Water Line (SUE - LOS B)* | ----- |
| U/G Water Line (SUE - LOS C)* | ----- |
| U/G Water Line (SUE - LOS D)* | ----- |
| Above Ground Water Line | ----- |

TV:

| | |
|--------------------------------------|-------|
| TV Pedestal | ⊞ |
| TV Tower | ⊞ |
| U/G TV Cable Hand Hole | ⊞ |
| U/G TV Test Hole (SUE - LOS A)* | ⊞ |
| U/G TV Cable (SUE - LOS B)* | ----- |
| U/G TV Cable (SUE - LOS C)* | ----- |
| U/G TV Cable (SUE - LOS D)* | ----- |
| U/G Fiber Optic Cable (SUE - LOS B)* | ----- |
| U/G Fiber Optic Cable (SUE - LOS C)* | ----- |
| U/G Fiber Optic Cable (SUE - LOS D)* | ----- |

GAS:

| | |
|---------------------------------------|-------|
| Gas Valve | ◇ |
| Gas Meter | ⊞ |
| U/G Gas Line Test Hole (SUE - LOS A)* | ⊞ |
| U/G Gas Line (SUE - LOS B)* | ----- |
| U/G Gas Line (SUE - LOS C)* | ----- |
| U/G Gas Line (SUE - LOS D)* | ----- |
| Above Ground Gas Line | ----- |

SANITARY SEWER:

| | |
|---|-------|
| Sanitary Sewer Manhole | ⊞ |
| Sanitary Sewer Cleanout | ⊞ |
| U/G Sanitary Sewer Line | ----- |
| Above Ground Sanitary Sewer | ----- |
| SS Force Main Line Test Hole (SUE - LOS A)* | ⊞ |
| SS Force Main Line (SUE - LOS B)* | ----- |
| SS Force Main Line (SUE - LOS C)* | ----- |
| SS Force Main Line (SUE - LOS D)* | ----- |

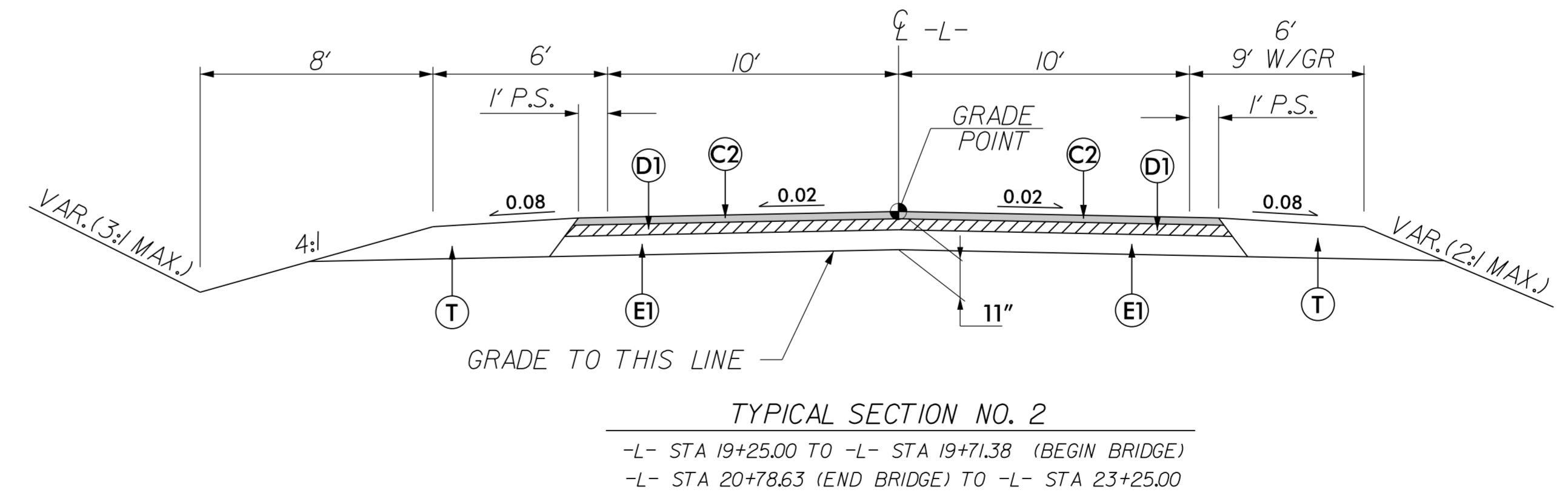
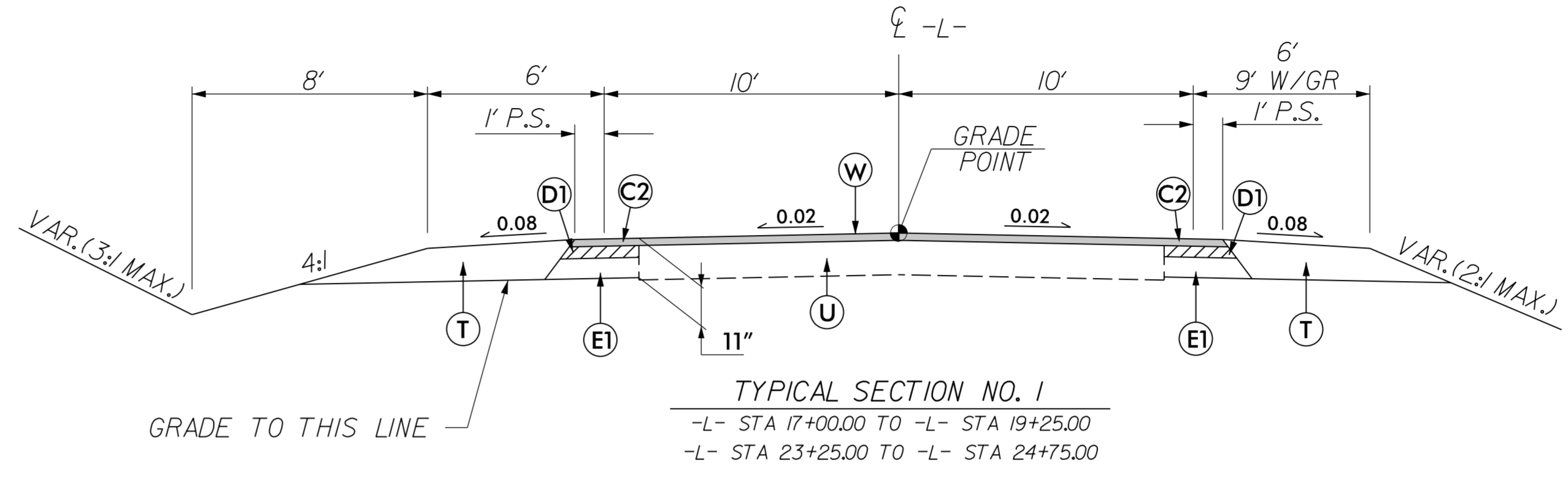
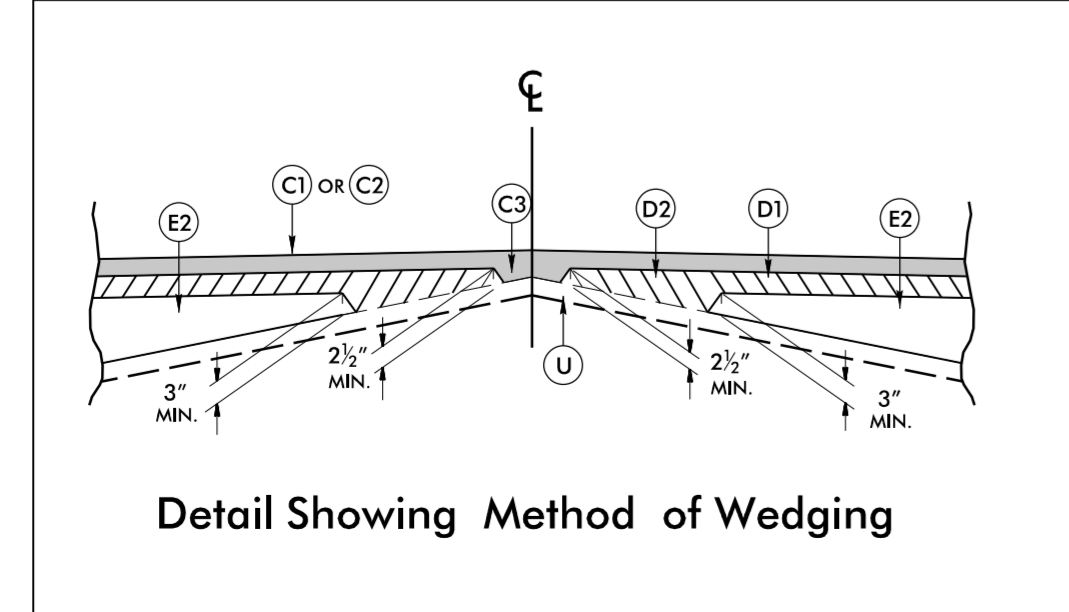
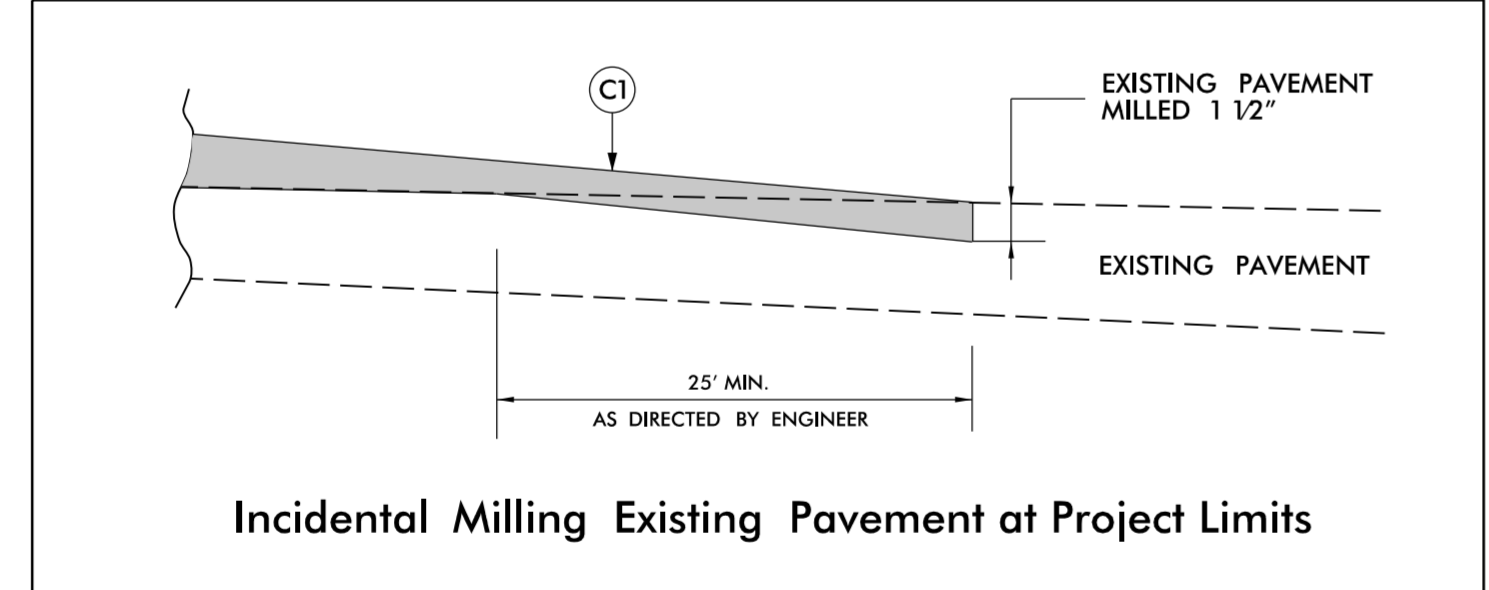
MISCELLANEOUS:

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

6/22/99

| PAVEMENT SCHEDULE | |
|-------------------|---|
| C1 | PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. |
| C2 | 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. |
| C3 | 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. |
| D1 | PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. |
| D2 | PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH. |
| E1 | PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 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. |
| R1 | SHOULDER BERM GUTTER |
| T | EARTH MATERIAL. |
| U | EXISTING PAVEMENT. |
| W | VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL THIS SHEET) |

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

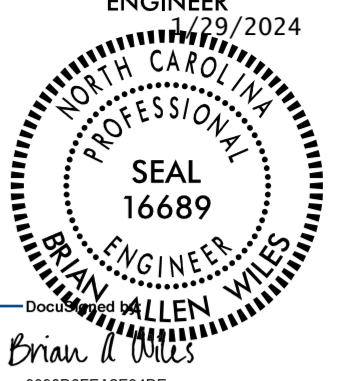


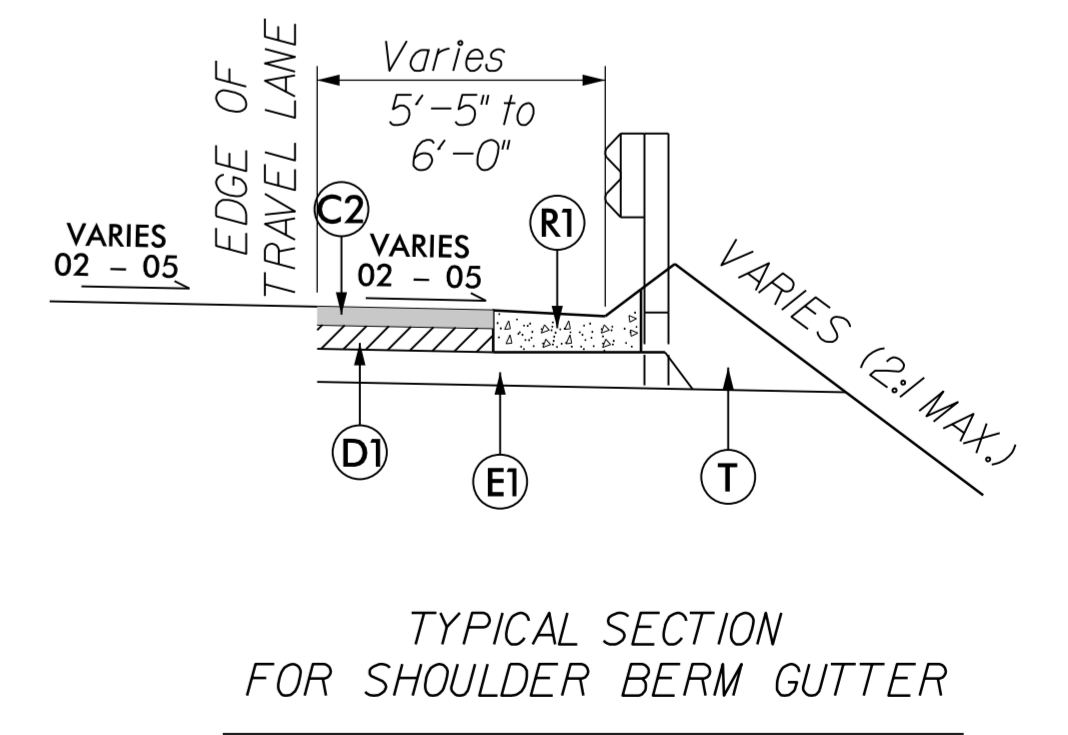
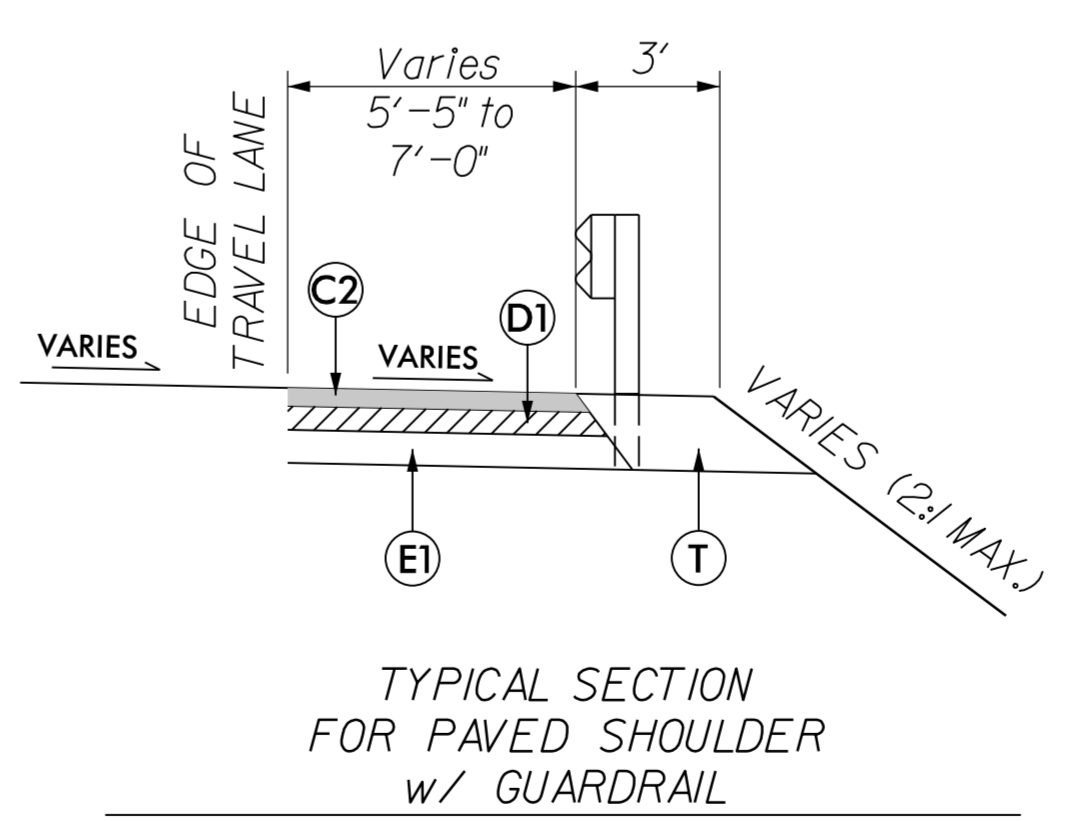
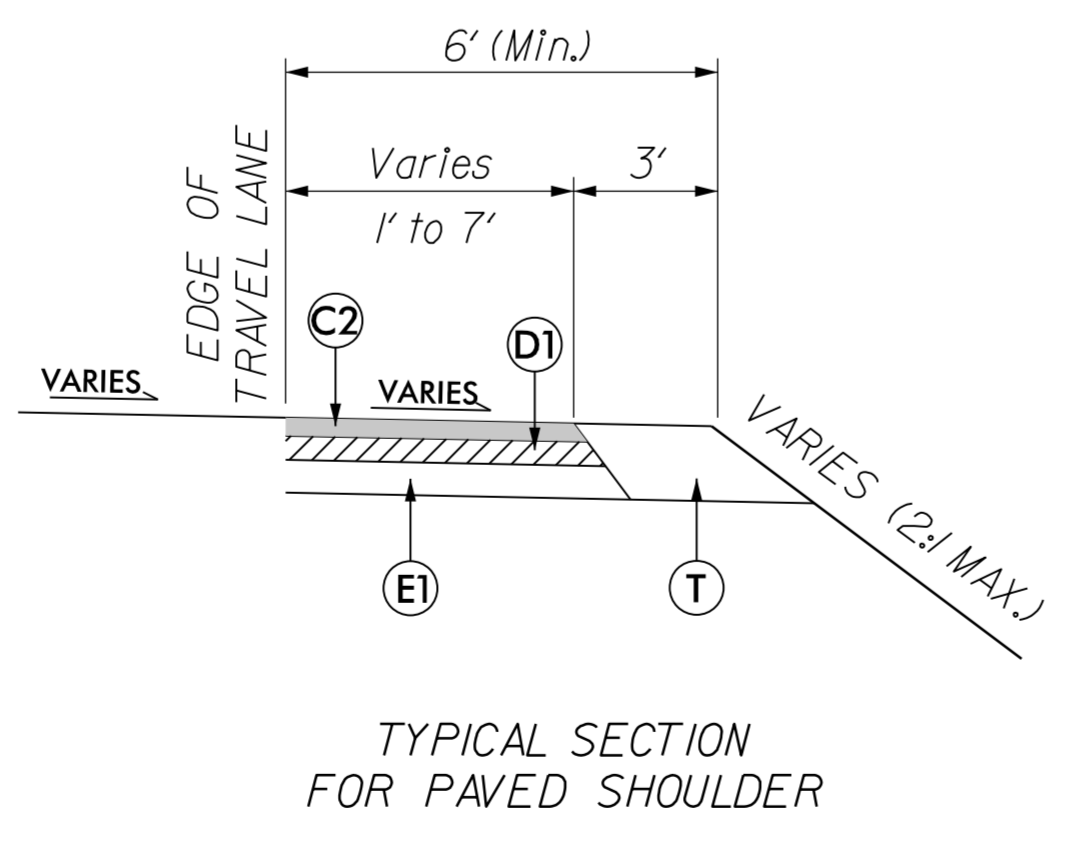
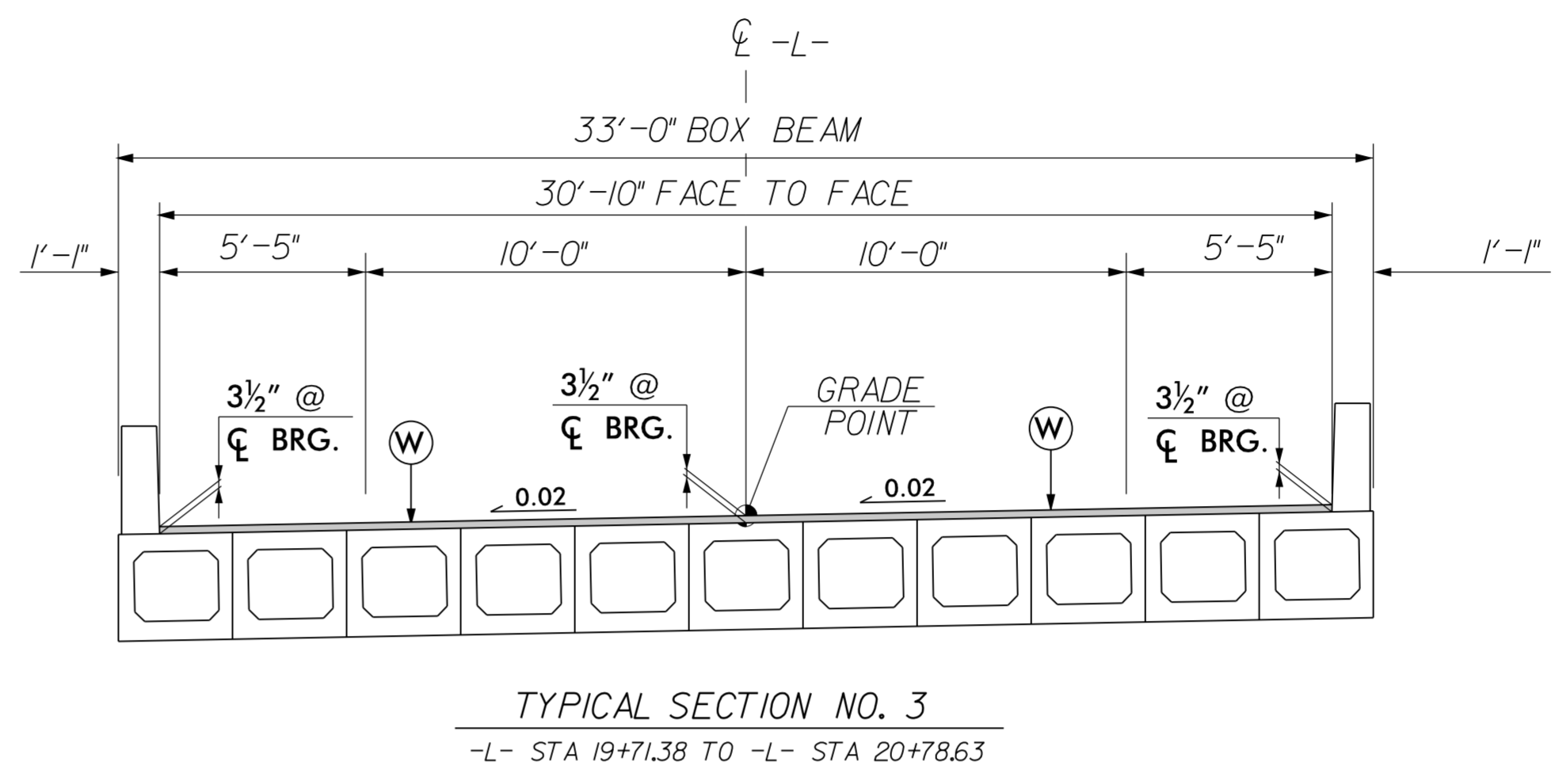
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| PROJECT REFERENCE NO. BF8.R004 | SHEET NO. 2A-1 |
| ROADWAY DESIGN ENGINEER BRIAN ALLEN WILLES | PAVEMENT DESIGN ENGINEER |
| | |
| <p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> | |
| <p>CH ENGINEERING DIVISION OF PENNONI</p> <p>5430 WADE PARK BLVD., SUITE 106, RALEIGH, NC 27607 919.788.0224 NC LICENSE #P-0189</p> | |

6/26/2024
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PAVEMENT SCHEDULE

| | |
|----|-----------------|
| C1 | 1½" S9.5B |
| C2 | 3" S9.5B |
| C3 | VAR. S9.5B |
| D1 | 4" I19.0C |
| D2 | VAR. I19.0C |
| E1 | 4" B25.0C |
| E2 | VAR. B25.0C |
| R1 | SBG |
| T | EARTH MATERIAL |
| U | EXIST. PAVEMENT |
| W | WEDGING |

| | |
|---|--------------------------|
| PROJECT REFERENCE NO. <i>BF8.R004</i> | SHEET NO. <i>2A-2</i> |
| ROADWAY DESIGN ENGINEER 11/29/2024  | PAVEMENT DESIGN ENGINEER |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |
| CH ENGINEERING DIVISION OF PENNONI 5430 WADE PARK BLVD., SUITE 106, RALEIGH, NC 27607 919.788.0224 NC LICENSE #P-0189 | |



COMPUTED BY: BF DATE: 07/12/2023
CHECKED BY: GG DATE: 07/12/2023

(2-3-23)

PROJECT NO.
BP8.R004

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 | 50 |
| | | | | TOTAL LF: | 50 |

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

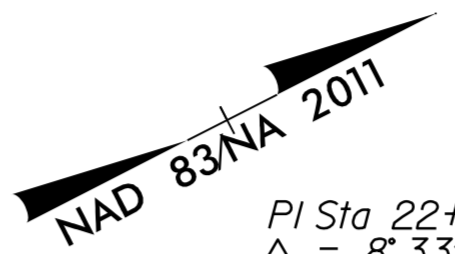
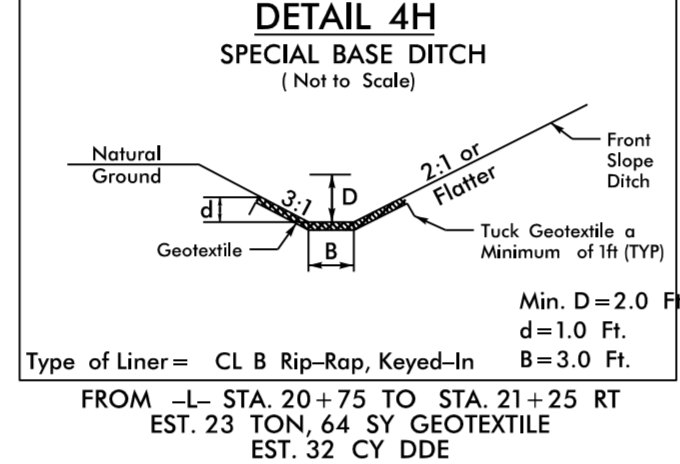
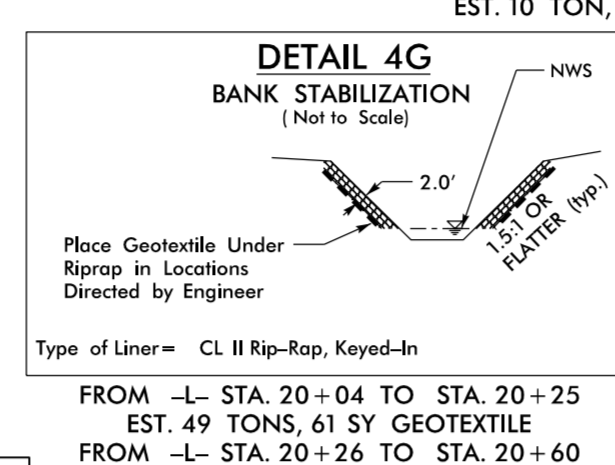
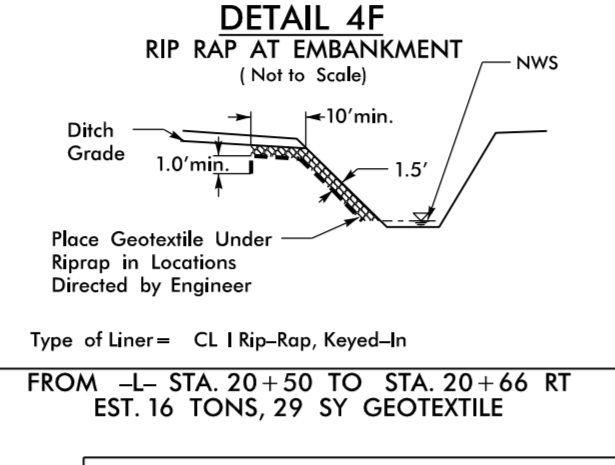
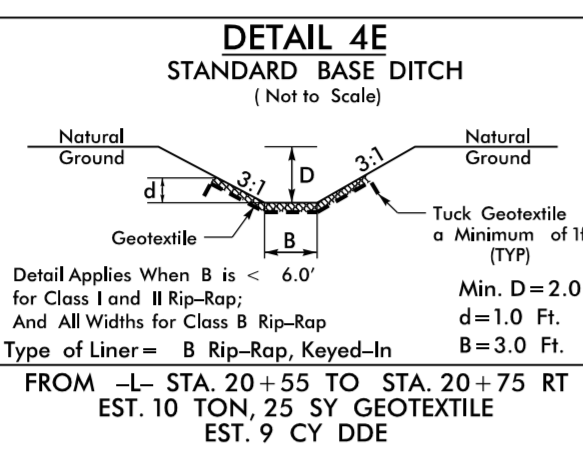
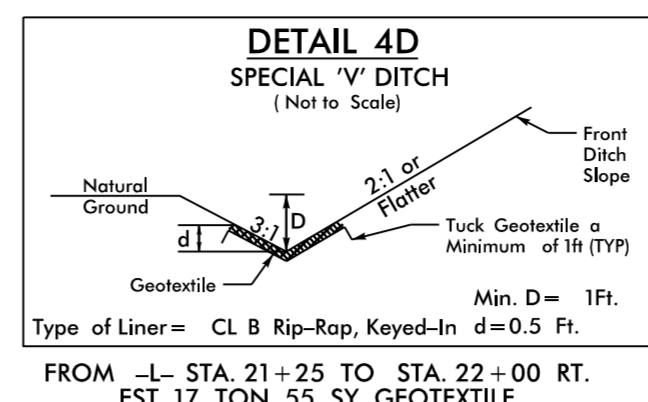
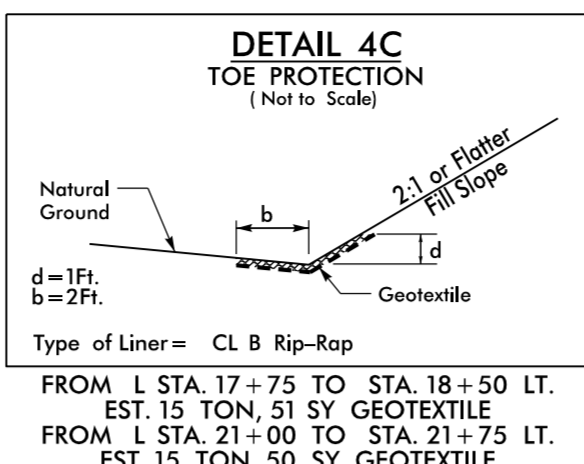
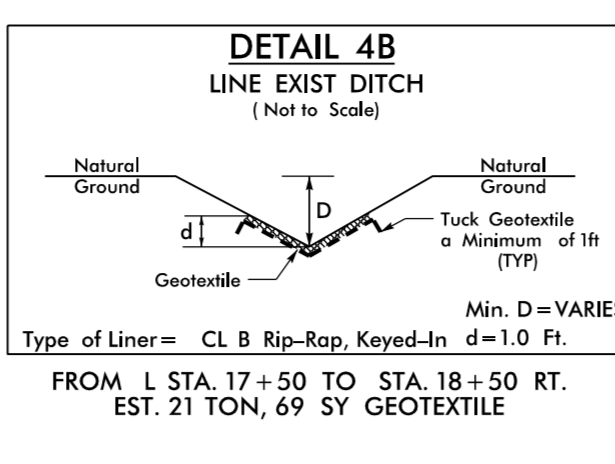
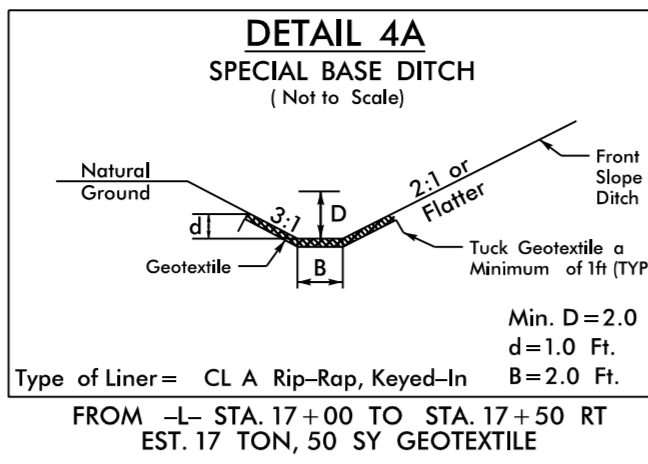
CH ENGINEERING
DIVISION OF PENNONI

5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607
919.788.0224
NC LICENSE #P-0189

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER: P-0621

| | |
|--|---------------------------------|
| PROJECT REFERENCE NO. BP8.R004 | SHEET NO. 4 |
| ROADWAY DESIGN ENGINEER MOORE COUNTY BRIDGE #47 | HYDRAULICS ENGINEER |
| SEAL 16689 BRIAN ALLEN WILES | SEAL 18533 ANDREW NOTTINGHAM |

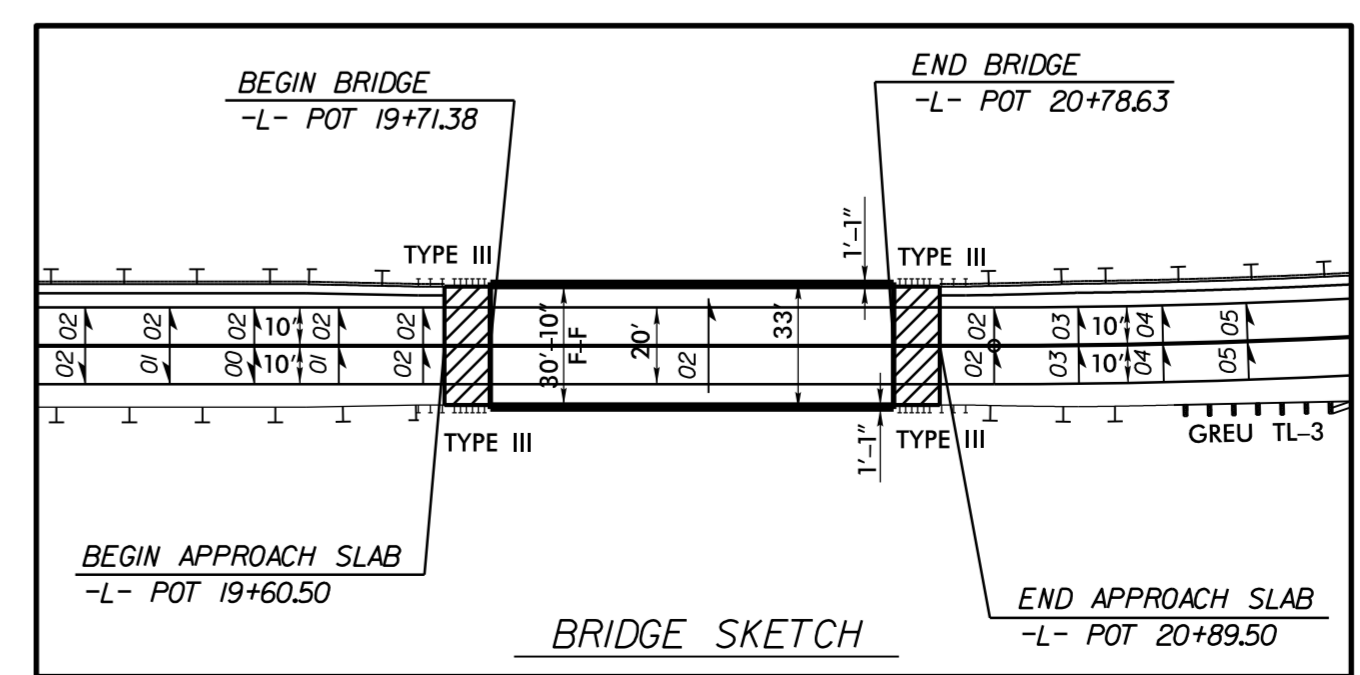
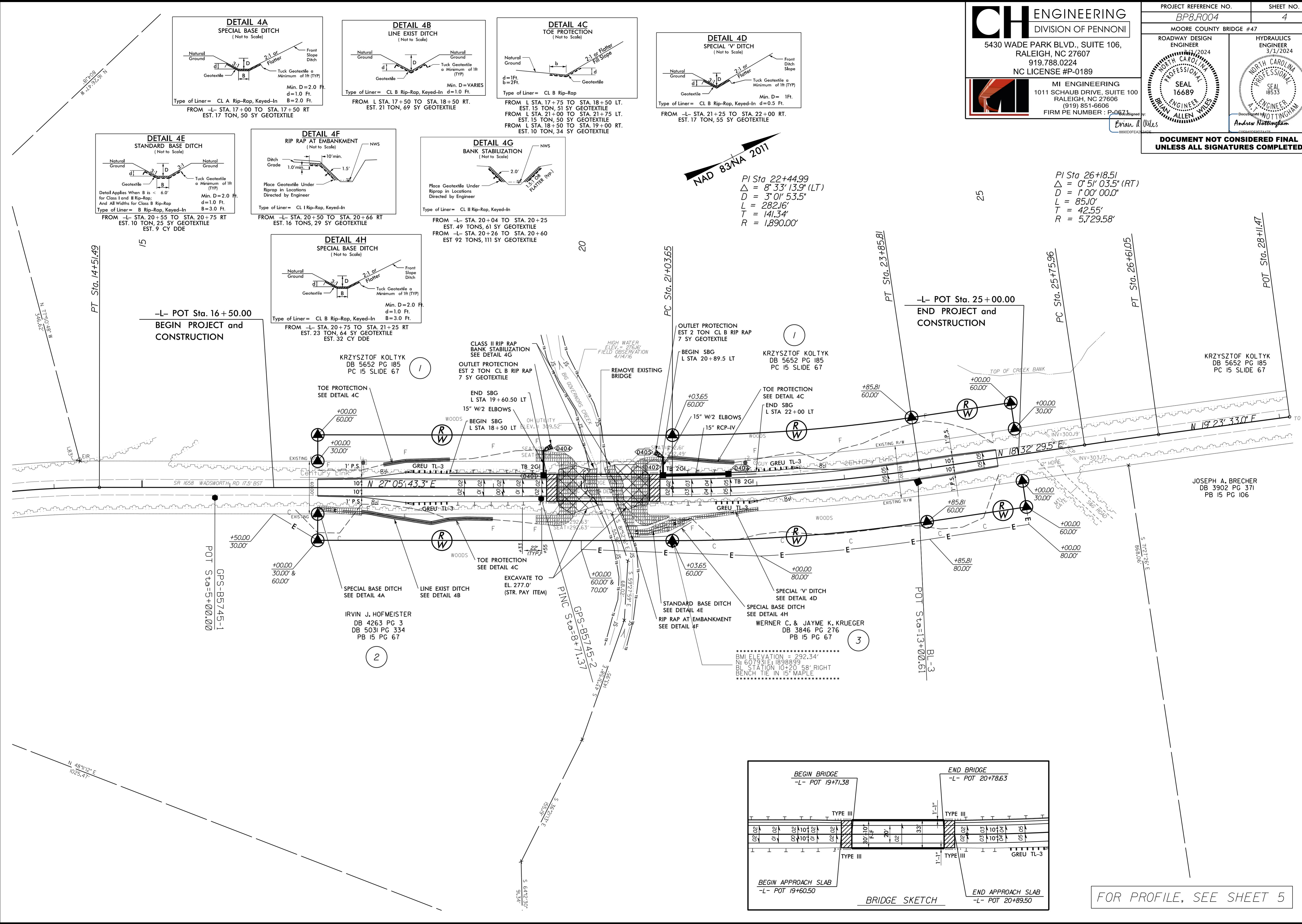
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UNLESS ALL SIGNATURES COMPLETED**



PI Sta 22+44.99
Δ = 8° 33' 13.9" (LT)
D = 3' 01" 53.5"
L = 282.16'
T = 141.34'
R = 1,890.00'

PI Sta 26+18.51
Δ = 0° 51' 03.5" (RT)
D = 1' 00" 00.0"
L = 85.10'
T = 42.55'
R = 5,729.58'

8/17/19
REVISIONS
2/1/2024
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FOR PROFILE, SEE SHEET 5

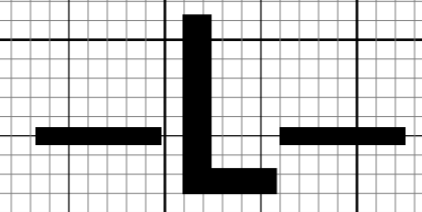
5/14/19

CH ENGINEERING
DIVISION OF PENNONI
5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607
919.788.0224
NC LICENSE #P-0189

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER: P-0671

| | |
|---|--|
| PROJECT REFERENCE NO. <i>BP8.R004</i> | SHEET NO. 5 |
| ROADWAY DESIGN ENGINEER <i>Ernan A. Miles</i> SEAL 16689 NORTH CAROLINA PROFESSIONAL ENGINEER BRYAN ALLEN WILES | HYDRAULICS ENGINEER <i>Andrew Nottingham</i> SEAL 18533 NORTH CAROLINA PROFESSIONAL ENGINEER ANDREW NOTTINGHAM |

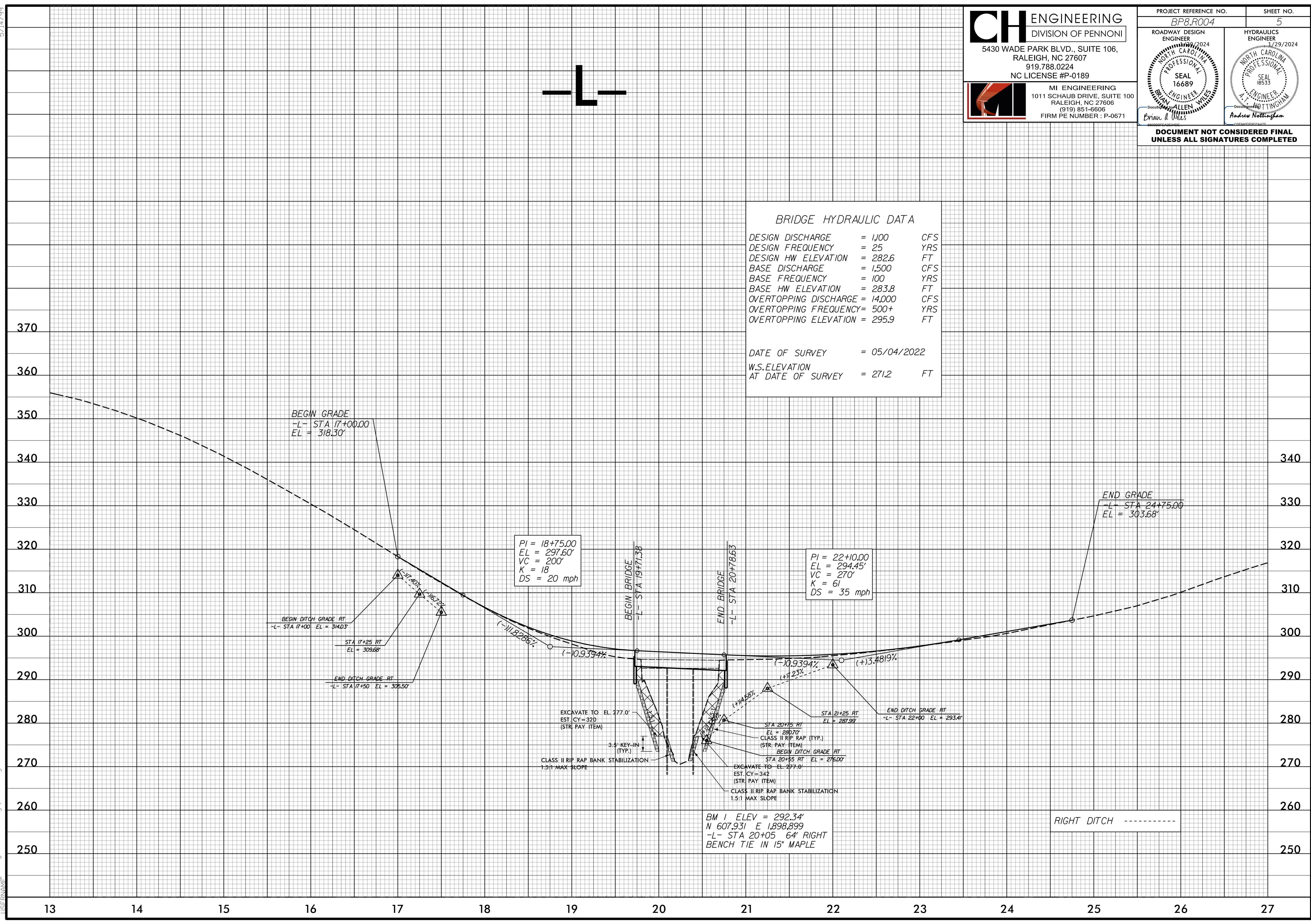
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



BRIDGE HYDRAULIC DATA

| | | |
|-----------------------|----------|-----|
| DESIGN DISCHARGE | = 1,100 | CFS |
| DESIGN FREQUENCY | = 25 | YRS |
| DESIGN HW ELEVATION | = 282.6 | FT |
| BASE DISCHARGE | = 1,500 | CFS |
| BASE FREQUENCY | = 100 | YRS |
| BASE HW ELEVATION | = 283.8 | FT |
| OVERTOPPING DISCHARGE | = 14,000 | CFS |
| OVERTOPPING FREQUENCY | = 500+ | YRS |
| OVERTOPPING ELEVATION | = 295.9 | FT |

| | |
|----------------------------------|--------------|
| DATE OF SURVEY | = 05/04/2022 |
| W.S. ELEVATION AT DATE OF SURVEY | = 271.2 FT |



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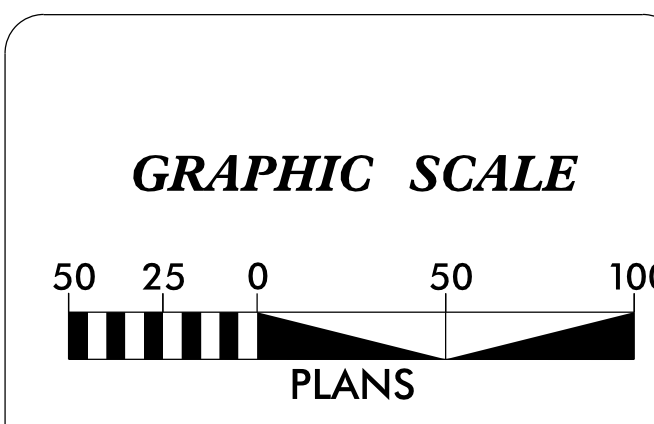
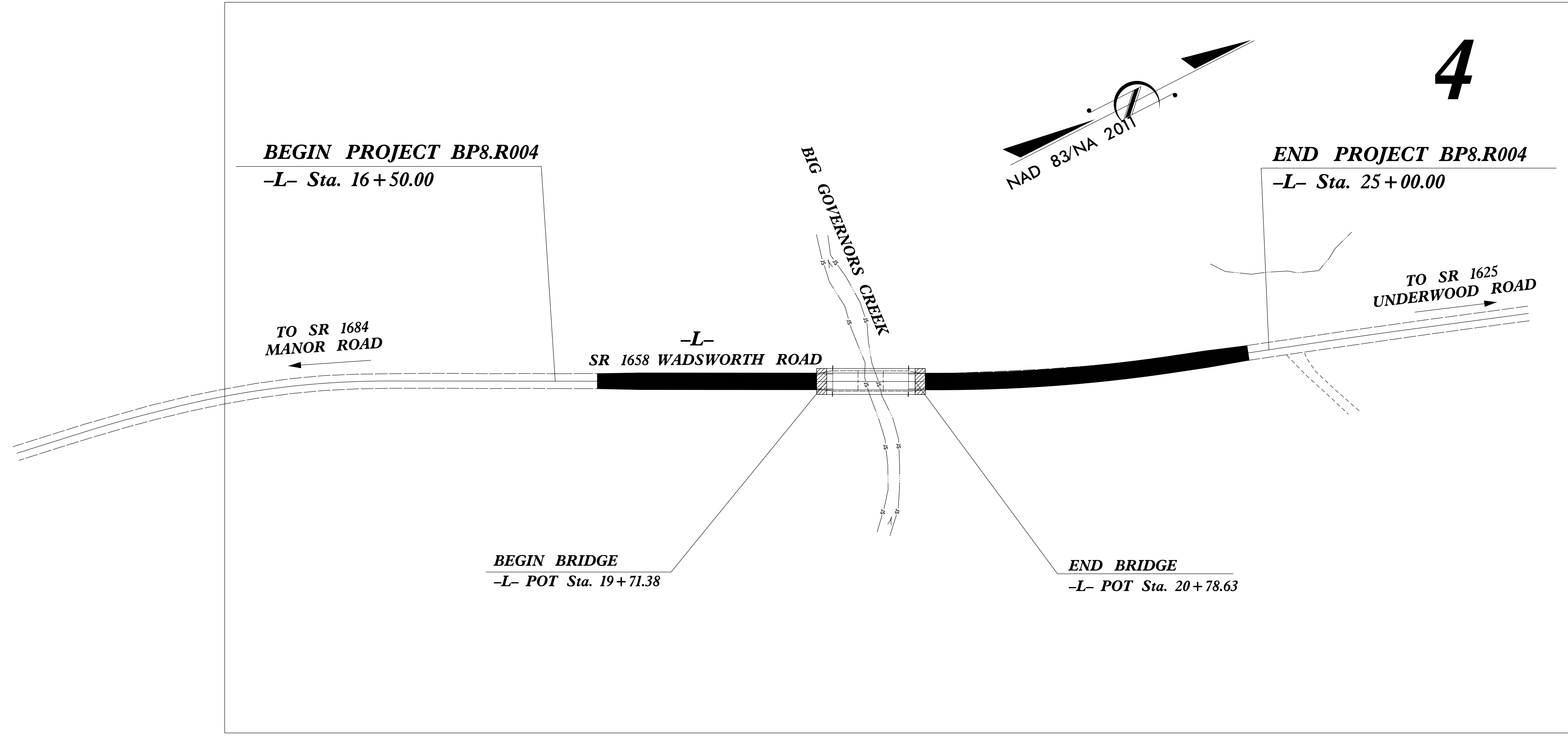
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-------|-----------------------------|-----------|--------------|
| N.C. | BP8.R004.1 | RW01 | 07 |

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

MOORE COUNTY

TIP PROJECT: BP8.R004.1



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "B5745-2" WITH NAD 83/NA 2001 STATE PLANE GRID COORDINATES OF NORTHING: 607,819.662(ft) EASTING: 1,898,784.479(ft) ELEVATION: 294.983(ft)

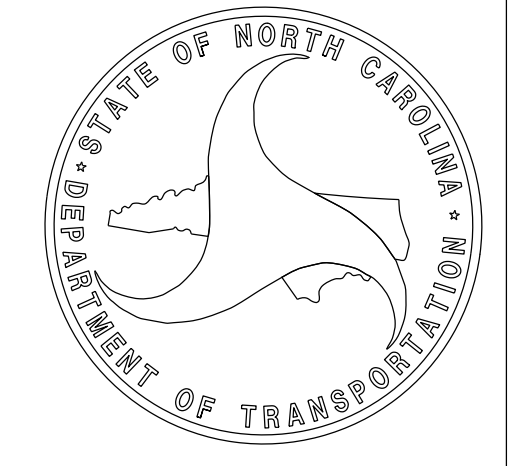
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999866809

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5745-2" TO -L- STATION 16+50.00 IS S 29°25'36.9" W 304.66(ft)

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

Prepared in the Office of:
DIVISION OF LOCATION
& SURVEYS OFFICE
300 DOT DR
ASHEBORO, NC 27205

| | |
|---|------------------------------------|
| <small>2018 STANDARD SPECIFICATIONS</small> | |
| RIGHT OF WAY DATE: 05/18/2023 | LETTING DATE: 11/25/2025 |



09-MAY-2023 15:07 S:\uhts\div08\ASHEBORO\PROJECTS\B-projects\5745-diso-b620047-diso-BP8.R004\RW Staking\rw_sheets\620047_ls_rw01.dgn
AT LS-329679L
mwoodruff

SURVEY CONTROL SHEET

W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

REVISIONS

| BL | POINT | DESC. | NORTH | EAST | ELEVATION |
|----|-------|---------|-------------|--------------|-----------|
| 1 | | B5745-1 | 607489.4022 | 1898614.6477 | 331.44 |
| 2 | | B5745-2 | 607819.6620 | 1898784.4790 | 294.98 |
| 3 | | BL-3 | 608210.2820 | 1898962.4280 | 299.97 |

* * * * *
 BM1 ELEVATION = 292.34
 N 607931 E 1898899
 BL STATION 10+20.00 58 RIGHT
 BM1 BENCH TIE SPIKE IN 15" MAPLE
 * * * * *

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

REVISIONS

09-MAY-2023 14:21
S:\Units\Div\08\ASHEBORO\PROJECTS\B.projects\B5745_also_b620047_also_BP8.R004.1\FW Staking\FW.sheets\620047_1s.rw02c-3.dgn
m.twoodruff AT LS-329679L

| EL POINT | N | E | BEARING | DIST | DELTA | D | L | T | R |
|-------------|------------|-------------|-----------------|--------|-----------------|-------------|--------|--------|---------|
| POT | 606945.715 | 1898420.280 | | | | | | | |
| LINE | | | N 09°34'08.9" E | 83.06 | | | | | |
| PC | 607027.620 | 1898434.088 | | | | | | | |
| CURVE | | | N 11°13'22.2" E | 82.67 | 03°18'26.5*(RT) | 04°00'00.0" | 82.68 | 41.35 | 1432.39 |
| PT | 607108.712 | 1898450.178 | | | | | | | |
| LINE | | | N 12°52'35.4" E | 27.22 | | | | | |
| PC | 607135.252 | 1898456.245 | | | | | | | |
| CURVE | | | N 19°59'09.4" E | 257.86 | 14°13'08.0*(RT) | 05°30'00.0" | 258.53 | 129.93 | 1041.74 |
| PT | 607377.585 | 1898544.380 | | | | | | | |
| LINE | | | N 27°05'43.3" E | 610.96 | | | | | |
| PC | 607921.493 | 1898822.656 | | | | | | | |
| CURVE | | | N 22°49'06.4" E | 364.06 | 08°33'13.9*(LT) | 02°20'50.7" | 364.39 | 182.54 | 2440.80 |
| PT | 608257.057 | 1898963.841 | | | | | | | |
| LINE | | | N 18°32'29.5" E | 148.95 | | | | | |
| PC | 608398.280 | 1899011.208 | | | | | | | |
| CURVE | | | N 18°58'01.2" E | 85.10 | 00°51'03.5*(RT) | 01°00'00.0" | 85.10 | 42.55 | 5729.58 |
| PT | 608478.756 | 1899038.866 | | | | | | | |
| LINE | | | N 19°23'33.0" E | 150.41 | | | | | |
| POT | 608620.634 | 1899088.808 | | | | | | | |

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

REVISIONS

6/2/09

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 AT LS-329679
 m\woodruff

| TYPE | STATION | L | |
|------|----------|-------------|--------------|
| | | NORTH | EAST |
| POT | 10+00.00 | 606945.7152 | 1898420.2800 |
| PC | 10+83.06 | 607027.6205 | 1898434.0878 |
| PT | 11+65.74 | 607108.7118 | 1898450.1779 |
| PC | 11+92.97 | 607135.2521 | 1898456.2450 |
| PT | 14+51.49 | 607377.5849 | 1898544.3796 |
| PC | 21+03.65 | 607958.1637 | 1898841.4176 |
| PT | 23+85.81 | 608218.0032 | 1898950.7425 |
| PC | 25+75.96 | 608398.2799 | 1899011.2075 |
| PT | 26+61.05 | 608478.7560 | 1899038.8658 |
| POT | 28+11.47 | 608620.6337 | 1899088.8079 |

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. | SHEET NO. |
| BP8.R004.1 | RW03E-1 |
| Location and Surveys | |

6/2/09

REVISIONS

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 C:\Users\j06066\Documents\Projects\B-projects\620047\Staking\row_sheets\620047_1s.rw03e-1.dgn
 AT LS-329679

ROW MARKER IRON PIN AND CAP-E

| ALIGN | STATION | OFFSET | NORTH | EAST |
|-------|----------|--------|-------------|--------------|
| L | 17+00.00 | 60.00 | 607571.4883 | 1898710.9820 |
| L | 17+00.00 | 30.00 | 607585.1525 | 1898684.2745 |
| L | 17+00.00 | -30.00 | 607612.4809 | 1898630.8595 |
| L | 17+00.00 | -60.00 | 607626.1451 | 1898604.1520 |
| L | 21+03.65 | 60.00 | 607930.8353 | 1898894.8325 |
| L | 21+03.65 | -60.00 | 607985.4921 | 1898788.0026 |
| L | 23+85.81 | 60.00 | 608198.9237 | 1899007.6281 |
| L | 23+85.81 | -60.00 | 608237.0827 | 1898893.8568 |
| L | 25+00.00 | 60.00 | 608307.1855 | 1899043.9392 |
| L | 25+00.00 | 30.00 | 608316.7253 | 1899015.4964 |
| L | 25+00.00 | -30.00 | 608335.8048 | 1898958.6108 |
| L | 25+00.00 | -60.00 | 608345.3445 | 1898930.1680 |

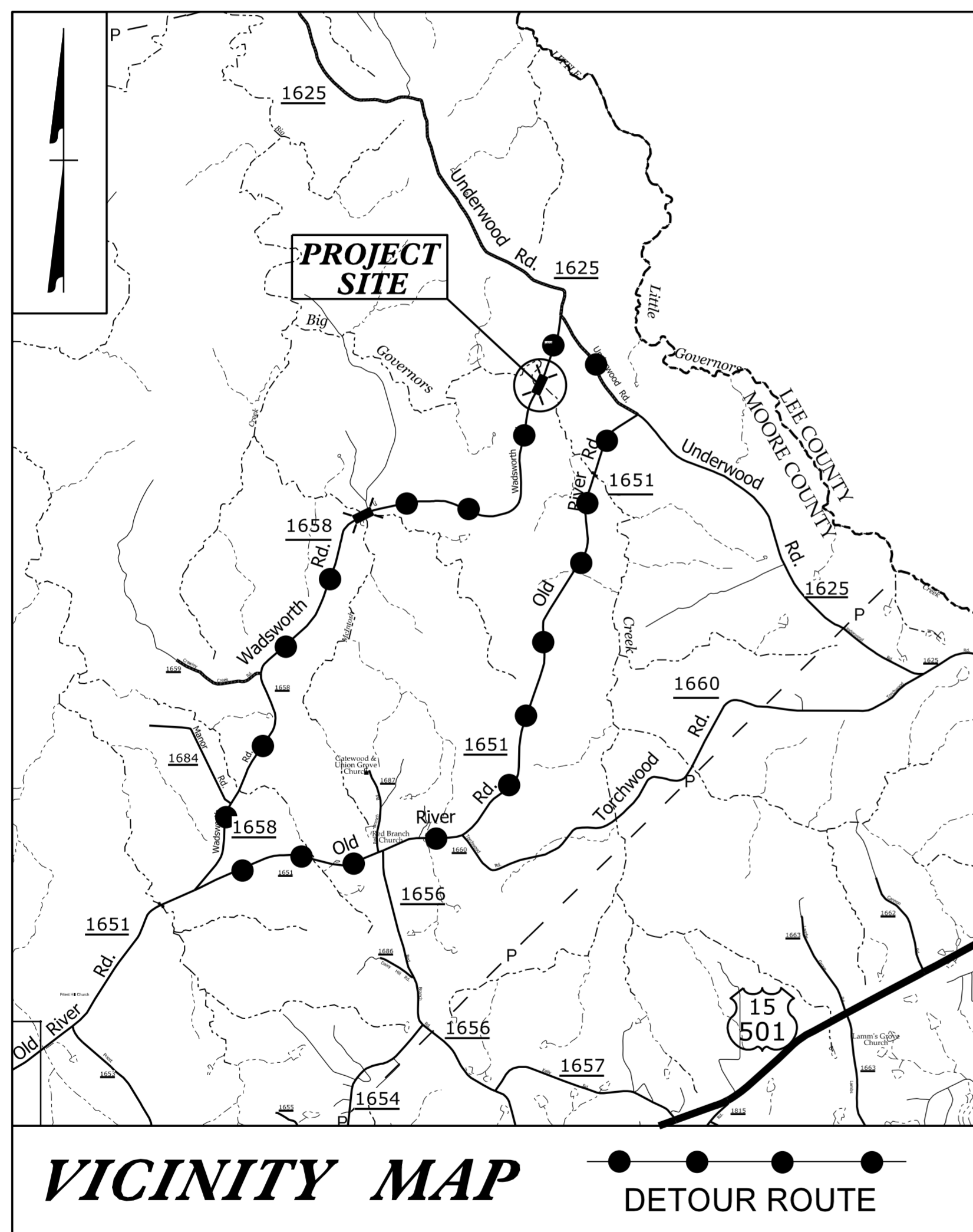
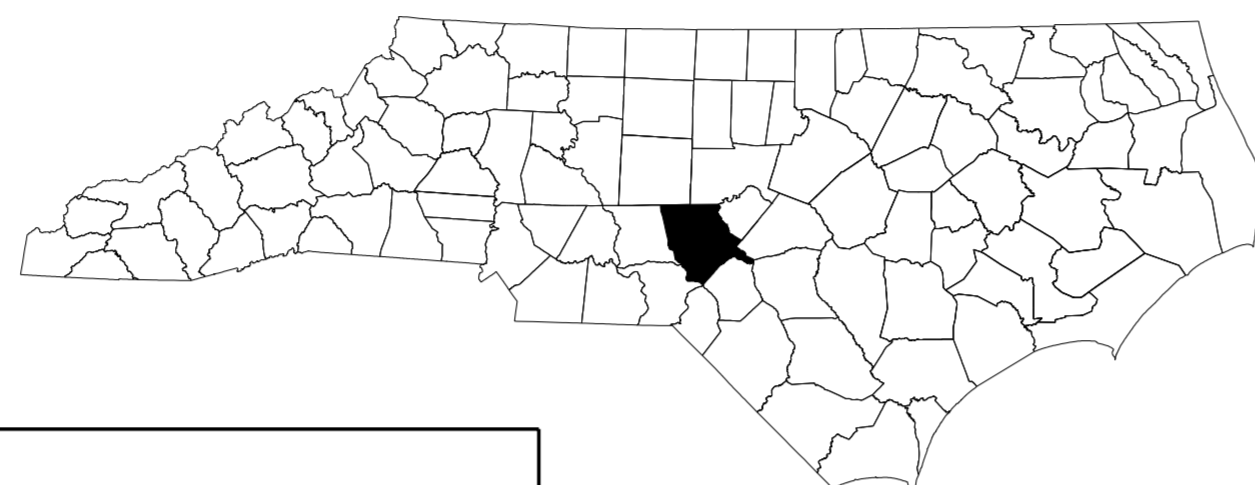
NOTES:

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 TO .

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

MOORE COUNTY



**LOCATION: BRIDGE NO. 47 OVER BIG GOVERNORS CREEK
ON SR 1658 (WADSWORTH ROAD)**

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

INDEX OF SHEETS

| SHEET NO. | TITLE |
|-----------|---|
| TMP-1 | TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS |
| TMP-1A | LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND |
| TMP-1B | TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES, AND LOCAL NOTES) |
| TMP-2 | SPECIAL SIGN DESIGN |
| TMP-3 | OFF-SITE DETOUR |
| TMP-4 | ROAD CLOSURE DETAIL AND DETOUR SIGNS |

SHEET NO.
TMP-1

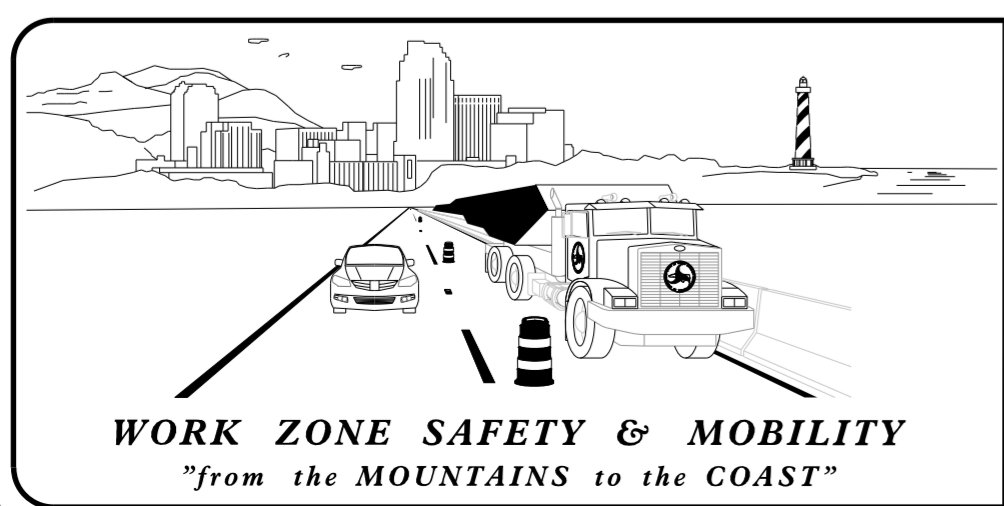
BP8.R004

PROJECT:

VICINITY MAP

● — ● — ● — ● — ●
DETOUR ROUTE

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



PLANS PREPARED BY:

BRIAN A. WILES, PE
PROJECT MANAGER

NC DOT CONTACTS:

TIM WELCH, PE
DIV. 8 BRIDGE PROGRAM MANAGER

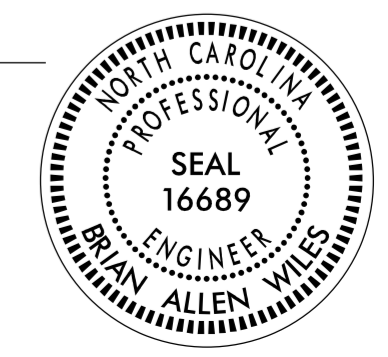


PLANS PREPARED FOR:
DIVISION OF HIGHWAYS
DIVISION 8
121 DOT Drive
Carthage, NC 28327

PLANS PREPARED BY:
CH ENGINEERING
DIVISION OF PENNSYLVANIA
5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607
919.788.0224
NC LICENSE #P-0189

APPROVED: *Brian A. Wiles*
DATE: 1/29/2024

SEAL



1/26/2024
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USER: BAWILES

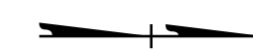
ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2024 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

| <u>STD. NO.</u> | <u>TITLE</u> |
|-----------------|--|
| 1101.03 | TEMPORARY ROAD CLOSURES |
| 1101.11 | TRAFFIC CONTROL DESIGN TABLES |
| 1110.01 | STATIONARY WORK ZONE SIGNS |
| 1145.01 | BARRICADES |
| 1205.01 | PAVEMENT MARKINGS - LINE TYPES AND OFFSETS |
| 1205.02 | PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS |
| 1205.12 | PAVEMENT MARKINGS - BRIDGES |
| 1250.01 | RAISED PAVEMENT MARKER - INSTALLATION SPACING |
| 1251.01 | RAISED PAVEMENT MARKER - PERMANENT AND TEMPORARY |
| 1261.01 | GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING |
| 1261.02 | GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING |
| 1262.01 | GUARDRAIL END DELINEATION |

LEGEND


GENERAL

- EXIST. PVMT.
-  NORTH ARROW
- PROPOSED PVMT.

TRAFFIC CONTROL DEVICES

-  BARRICADE (TYPE III)

TEMPORARY SIGNING


-  STATIONARY SIGN

FINAL PAVEMENT MARKING

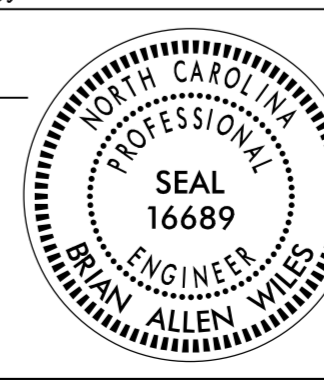
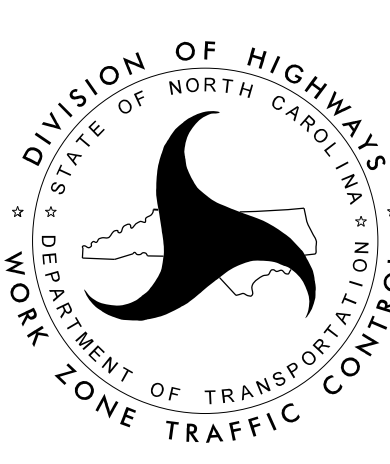
- PAINT PAVEMENT MARKING LINES (4") 6,800 LF
- PERMANENT RAISED PAVEMENT MARKERS 20 EACH

1/26/2024
 P:\SystemFiles\TrafficControl\TCP\Moore47_TC_TMP_1A.dgn
 USERNAME:

CH ENGINEERING
 DIVISION OF PENNONI
 5430 WADE PARK BLVD., SUITE 106,
 RALEIGH, NC 27607
 919.788.0224
 NC LICENSE #P-0189

APPROVED: 
8890DFEA2E34DE
 DATE: 1/29/2024

SEAL

ROADWAY STANDARD
DRAWINGS & LEGEND

MANAGEMENT STRATEGIES

- CLOSE SR 1658 (WADSWORTH ROAD) AND DETOUR TRAFFIC OFF-SITE
- MAINTAIN LOCAL ACCESS TO ALL RESIDENCES AND BUSINESSES BETWEEN CLOSURE POINTS AT ALL TIMES DURING CONSTRUCTION

GENERAL NOTES

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

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

SIGNING

- A) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRANSPORTATION MANAGEMENT PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRANSPORTATION MANAGEMENT PLANS.
- B) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.
- C) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

LOCAL NOTES

- 1) NOTIFY THE ENGINEER AT LEAST 30 DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.
- 2) NOTIFY THE MOORE COUNTY SCHOOLS TRANSPORTATION OFFICE AT (910) 947-5481 OF THE BRIDGE REMOVAL 30 DAYS PRIOR TO ROAD CLOSURE.
- 3) NOTIFY THE MOORE COUNTY EMERGENCY MANAGEMENT AT (910) 947-6317 OF THE BRIDGE REMOVAL 30 DAYS PRIOR TO ROAD CLOSURE.

PHASING

- STEP 1) USING RSD 1101.03, SHEET 1 OF 9 AND TMP-4, CLOSE SR 1658 (WADSWORTH ROAD) AND DETOUR TRAFFIC OFF-SITE AS SHOWN ON TMP-3. MAINTAIN ACCESS TO ALL RESIDENCES AND BUSINESSES BETWEEN CLOSURE POINTS.
- STEP 2) REMOVE THE EXISTING STRUCTURE.
- STEP 3) CONSTRUCT THE PROPOSED STRUCTURE AND ROADWAY.
- STEP 4) PLACE FINAL PAVEMENT MARKINGS.
- STEP 5) OPEN SR 1658 (WADSWORTH ROAD) TO TRAFFIC AND REMOVE ALL WORK ZONE TRAFFIC CONTROL DEVICES.

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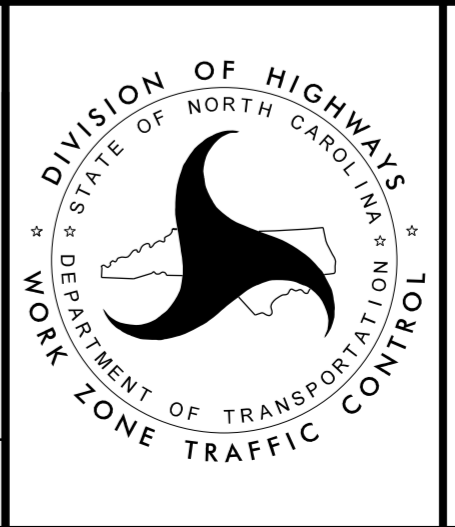


APPROVED: Brian A. Wiles
PROFESSIONAL ENGINEER

DATE: 1/29/2024

SEAL

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



TRANSPORTATION
OPERATIONS
PLAN

| <p>SIGN NUMBER: SP-1 BACKG COLOR: Fluorescent Orange</p> <p>TYPE: STATIONARY COPY COLOR: Black</p> <p>QUANTITY: SEE PLANS</p> <p>SIGN WIDTH: 4'-0" HEIGHT: 1'-6" TOTAL AREA: 6.0 Sq.Ft.</p> <p>BORDER TYPE: INSET RECESS: 0.47" WIDTH: 0.63" RADII: 1.5"</p> <p>NO. Z BARS: MAT'L: 0.080" (2.0 mm) ALUMINUM LENGTH:</p> | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>SYMBOL</th> <th>X</th> <th>Y</th> <th>WID</th> <th>HT</th> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </table> | SYMBOL | X | Y | WID | HT | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | <p>DESIGN BY: TAG CHECKED BY: May 30, 2023</p> <p>PROJECT ID: ID LOCATION: DIV: DIV</p> <div style="text-align: center;"> </div> <p>BORDER R=1.5" TH=0.63" IN=0.47"</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <p>USE NOTES: 1,2</p> <ol style="list-style-type: none"> Legend and border shall be direct applied black non-reflective sheeting. Background shall be NC GRADE B fluorescent orange retroreflective sheeting. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>LETTER POSITIONS</p> <p>Letter locations are panel edge to lower left corner</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="12">Letter locations are panel edge to lower left corner</th> <th>Series/Size</th> </tr> <tr> <th>W</th><th>a</th><th>d</th><th>s</th><th>w</th><th>o</th><th>r</th><th>t</th><th>h</th><th>R</th><th>d</th><th></th><th></th><th>Text Length</th> </tr> </thead> <tbody> <tr> <td>4.8</td><td>8.9</td><td>12</td><td>15.1</td><td>17.4</td><td>22.5</td><td>25.7</td><td>27.5</td><td>29.7</td><td>32.3</td><td>37.3</td><td>40.6</td><td></td><td>C 2000</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>38.4</td> </tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table> | | | Letter locations are panel edge to lower left corner | | | | | | | | | | | | Series/Size | W | a | d | s | w | o | r | t | h | R | d | | | Text Length | 4.8 | 8.9 | 12 | 15.1 | 17.4 | 22.5 | 25.7 | 27.5 | 29.7 | 32.3 | 37.3 | 40.6 | | C 2000 | | | | | | | | | | | | | | 38.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Letter locations are panel edge to lower left corner | | | | | | | | | | | | Series/Size | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| <p>FILENAME: SIGN DESIGNS - Work Zone_4 NORTH CAROLINA D.O.T. SIGN DETAIL</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

1/26/2024
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 USERNAME:

CH ENGINEERING
 DIVISION OF PENNONTI
 5430 WADE PARK BLVD., SUITE 106,
 RALEIGH, NC 27607
 919.788.0224
 NC LICENSE #P-0189

APPROVED: *Brian D. Wiles*
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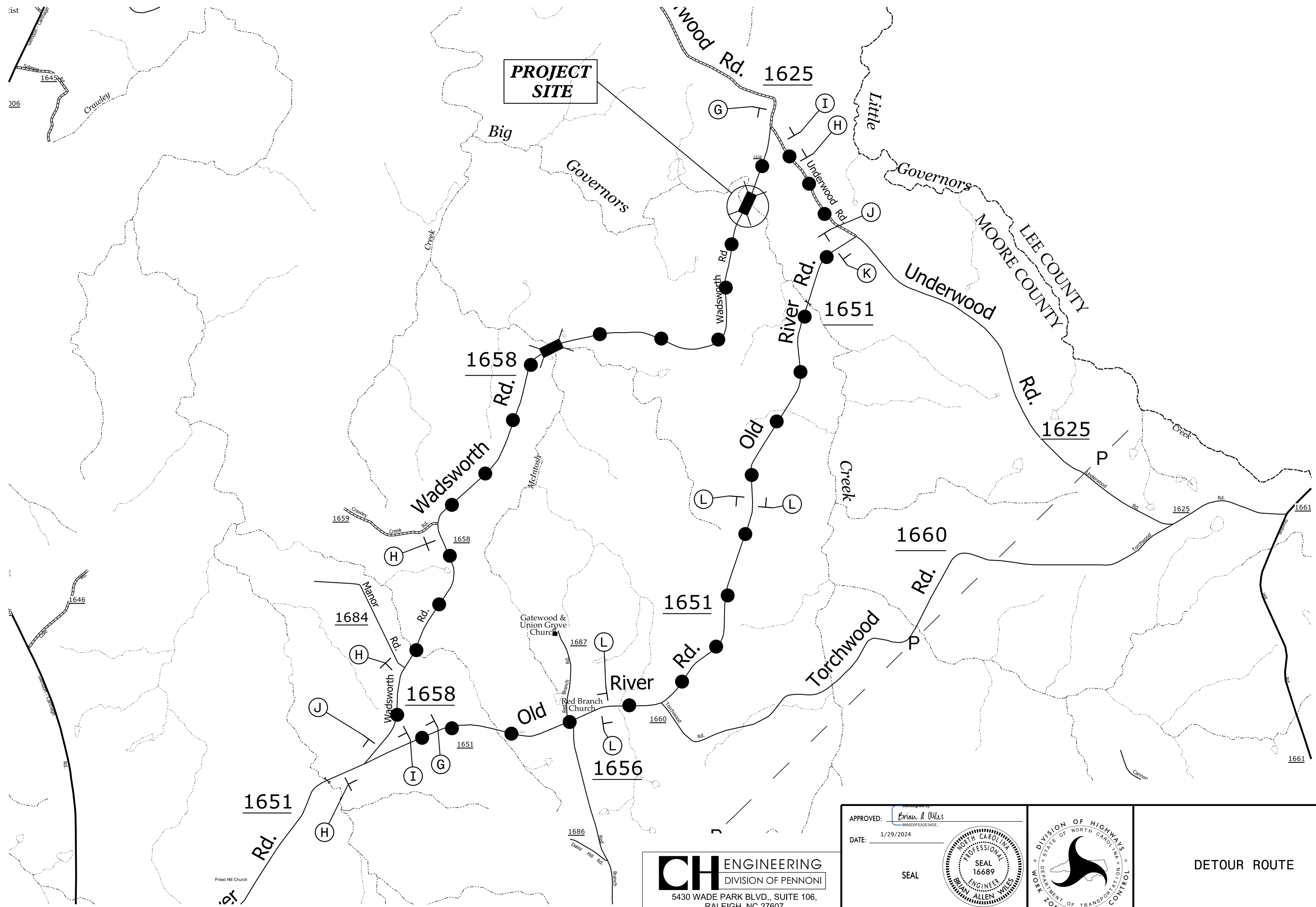
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 WORK ZONE TRAFFIC CONTROL

SPECIAL SIGN DESIGN



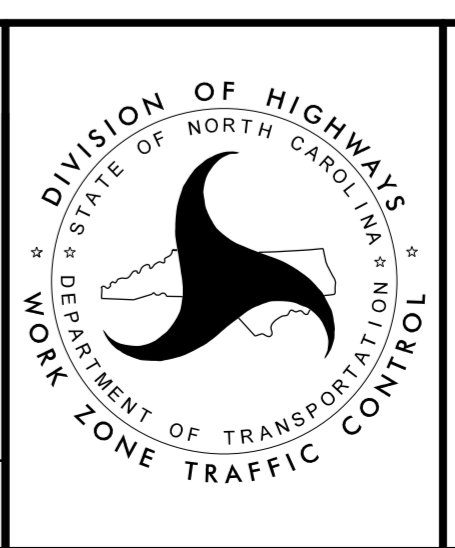
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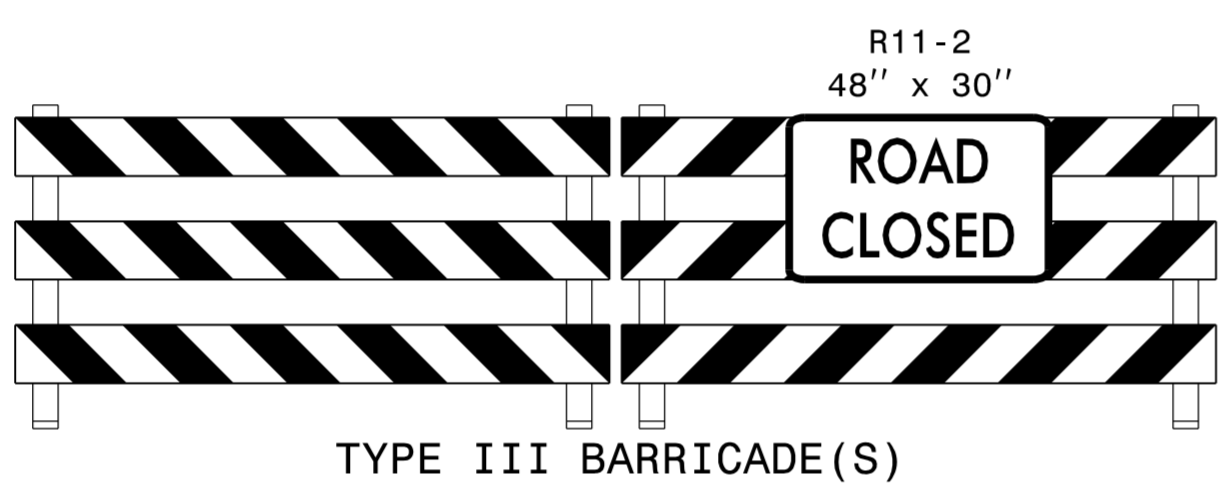
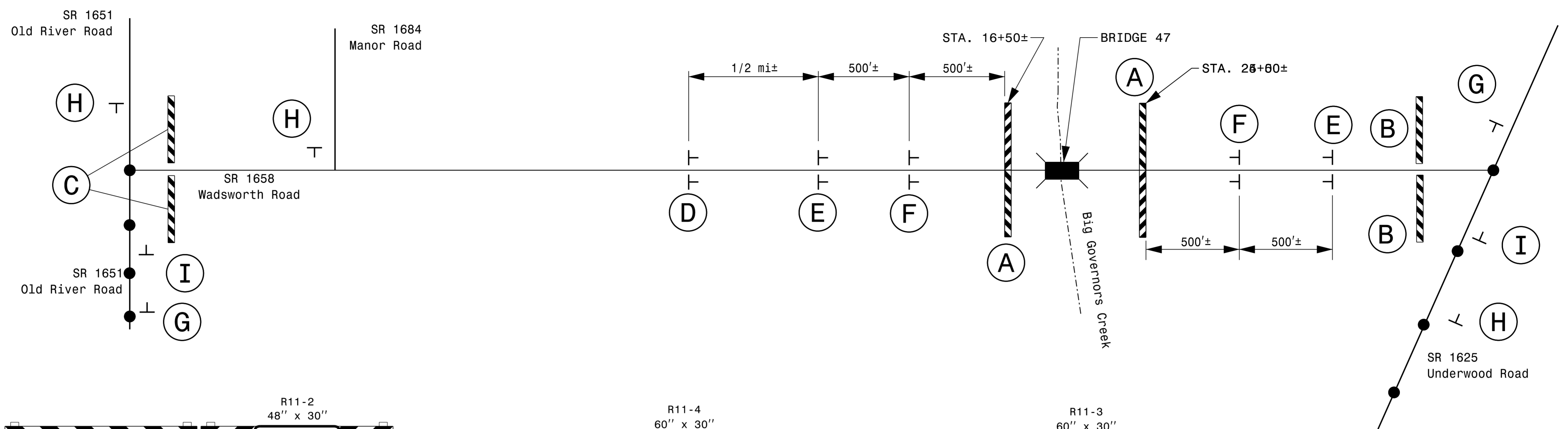
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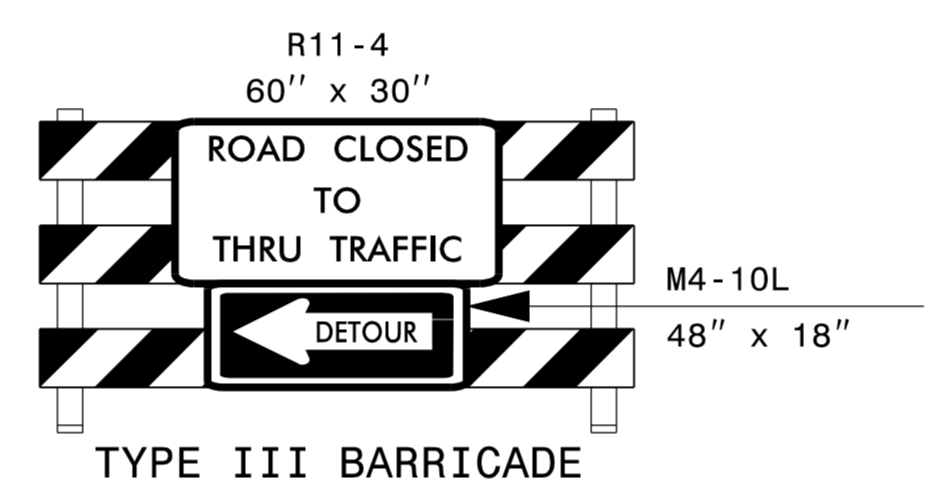
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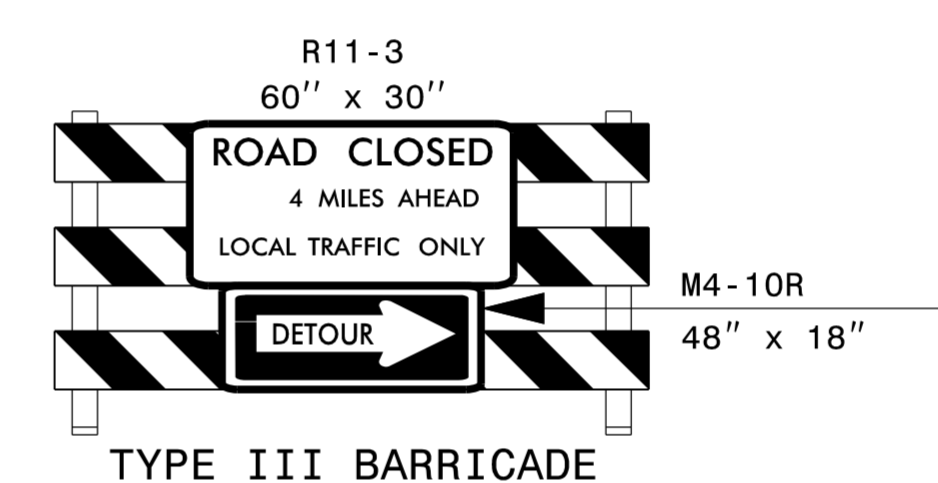
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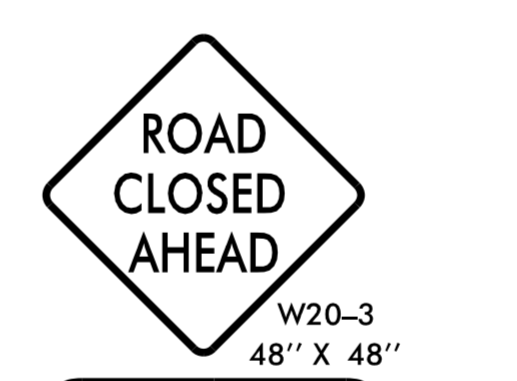
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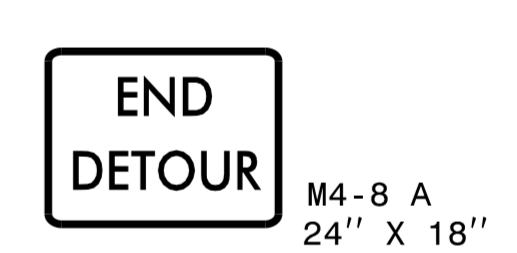
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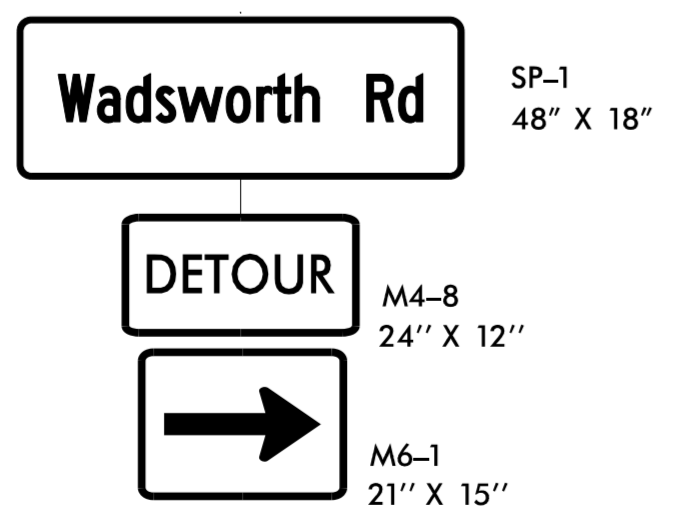
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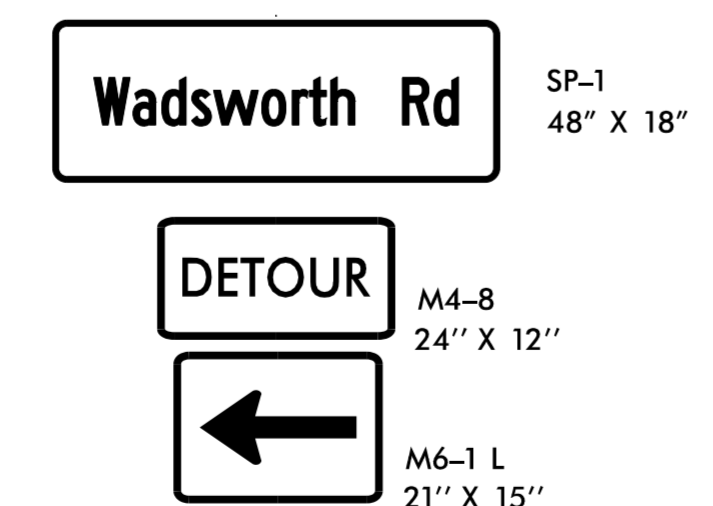
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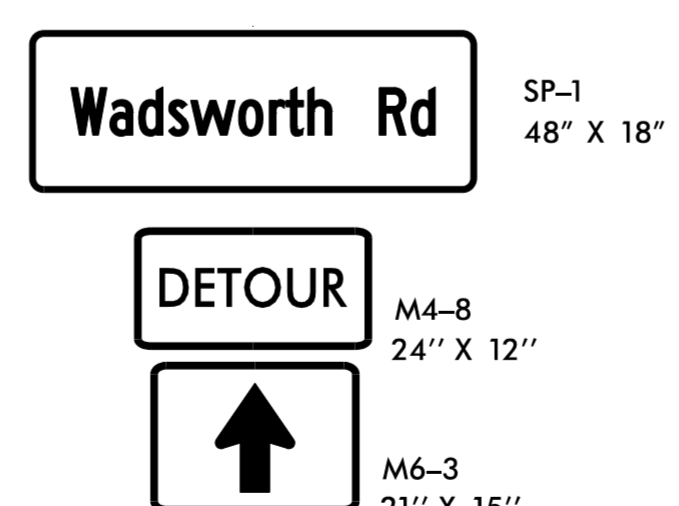
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L

CH ENGINEERING
DIVISION OF PENNONTI
5430 WADE PARK BLVD., SUITE 106,
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919.788.0224
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APPROVED: *Brian D. Wiles*
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SEAL

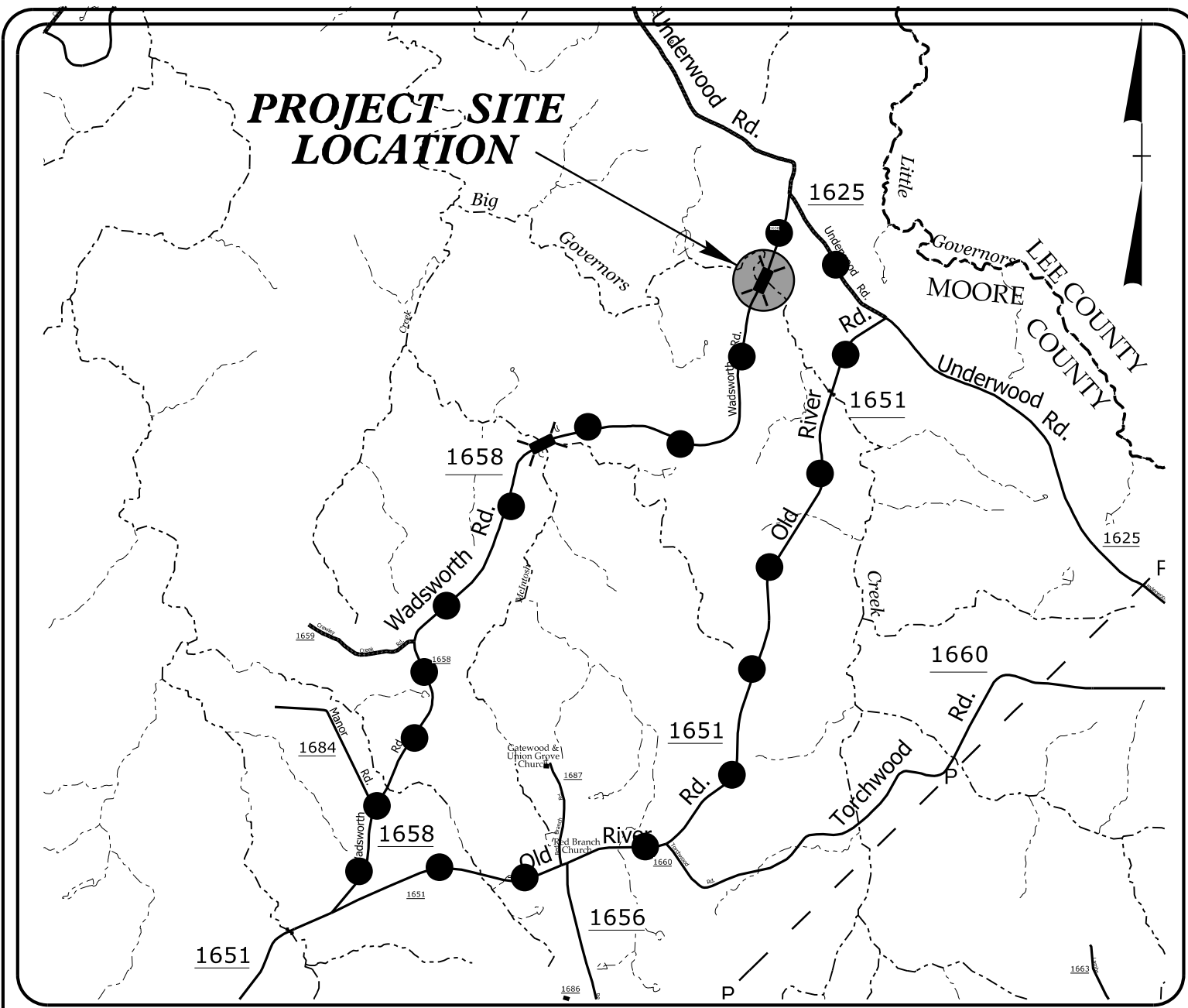
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DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

ROAD CLOSURE DETAIL
and
DETOUR SIGNS

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TIP PROJECT: BP8.R004



VICINITY MAP
NOT TO SCALE

●●●● OFF-SITE DETOUR ROUTE

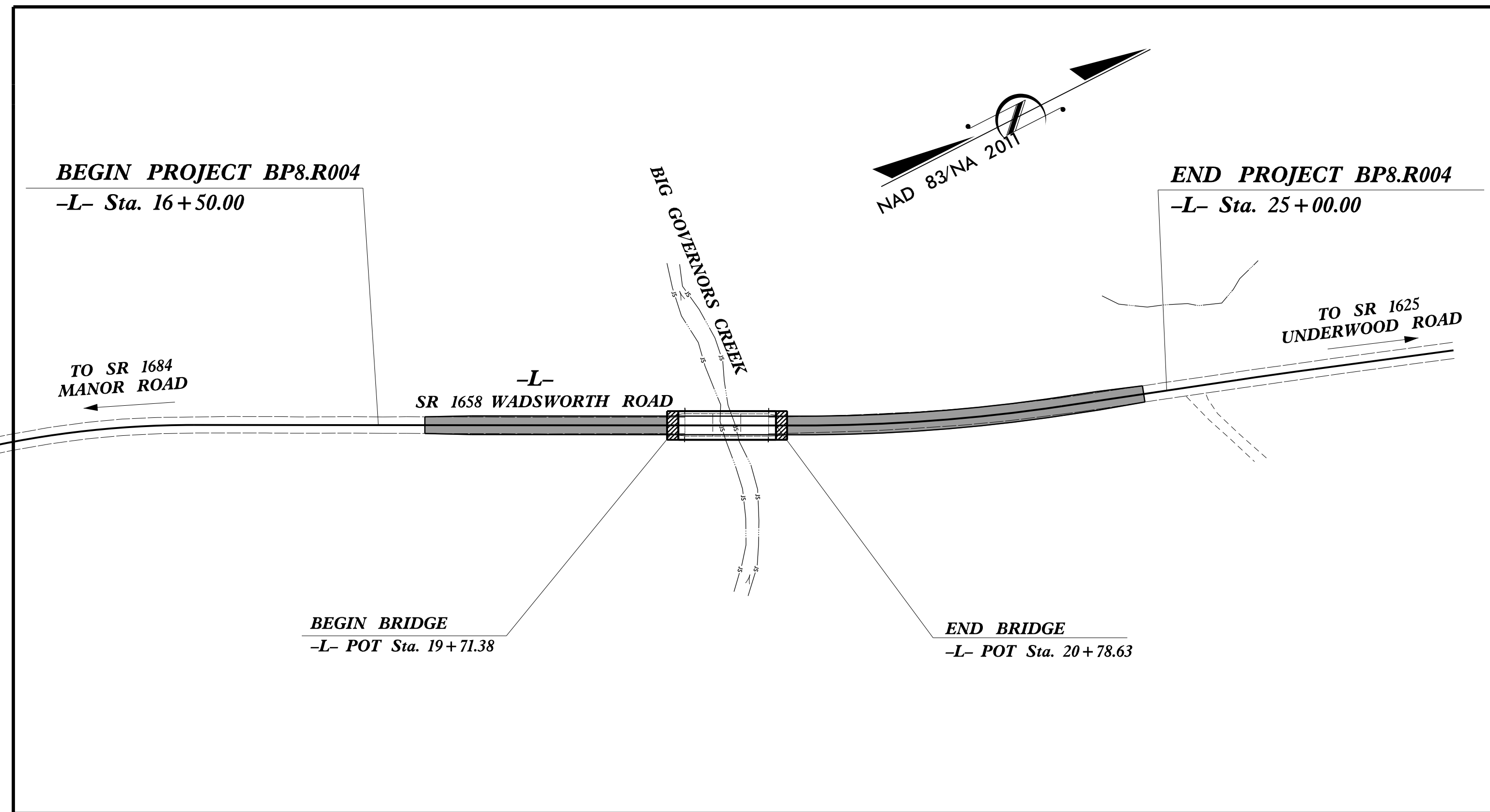
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

MOORE COUNTY

**LOCATION: BRIDGE 620047 OVER BIG GOVERNORS CREEK
ON SR 1658 (WADSWORTH ROAD)**

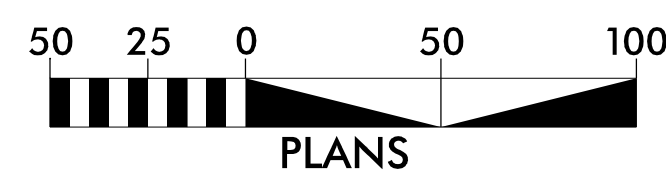
TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURES



| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C. | BP8.R004 | EC-1 | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
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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.



LEVEL III CERTIFIED BY:
KAREN HEFNER, PE
CERTIFICATION NUMBER: 3824
ISSUED: JANUARY 23, 2024

Prepared in the Office of:
MI ENGINEERING, PLLC
1011 SCHAUB DR, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER: P-0671

Designed by:
KAREN HEFNER, PE 3824
NAME LEVEL III CERTIFICATION NO.

Roadway Standard Drawings

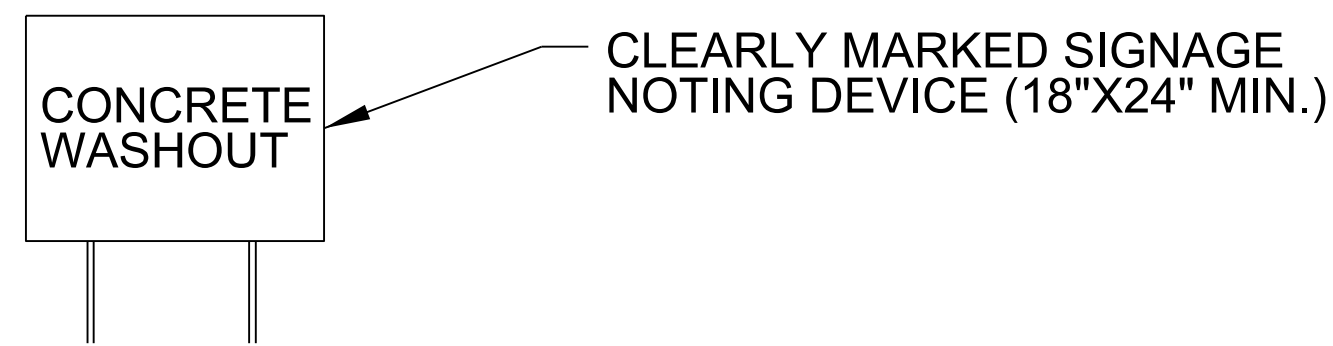
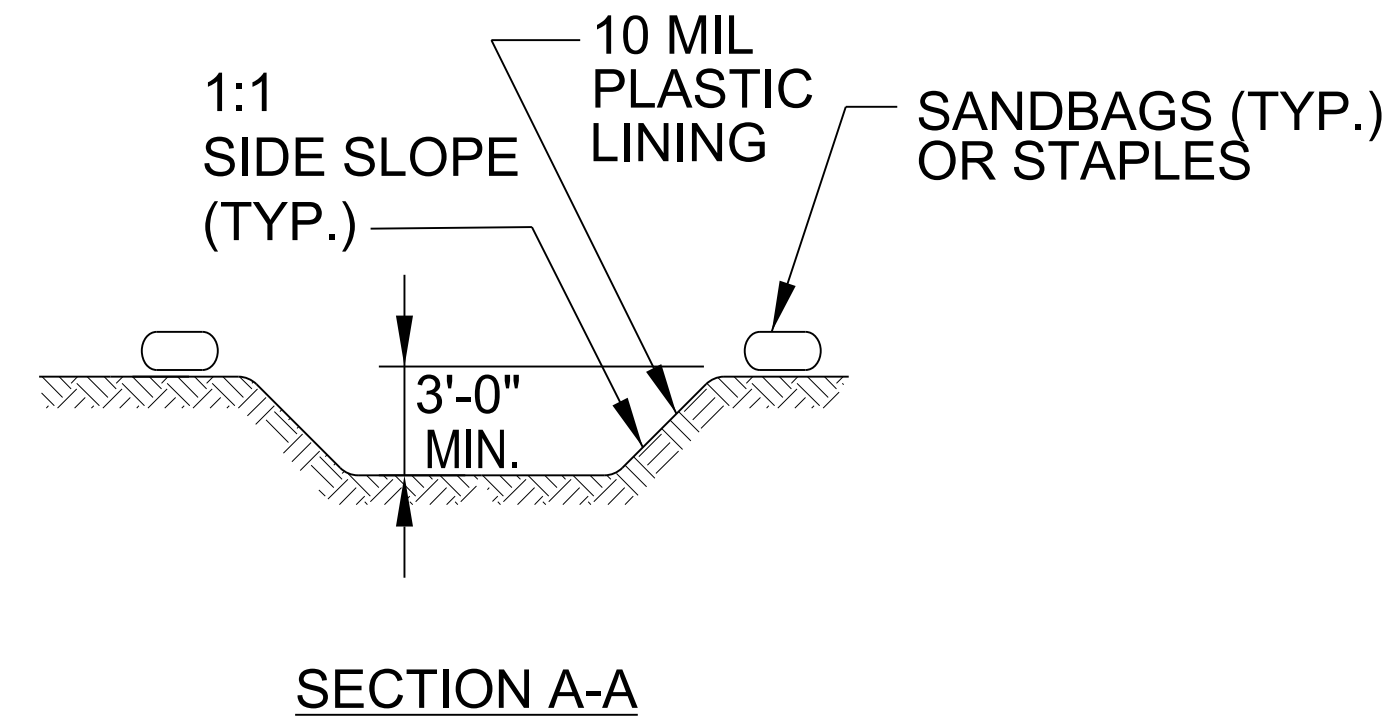
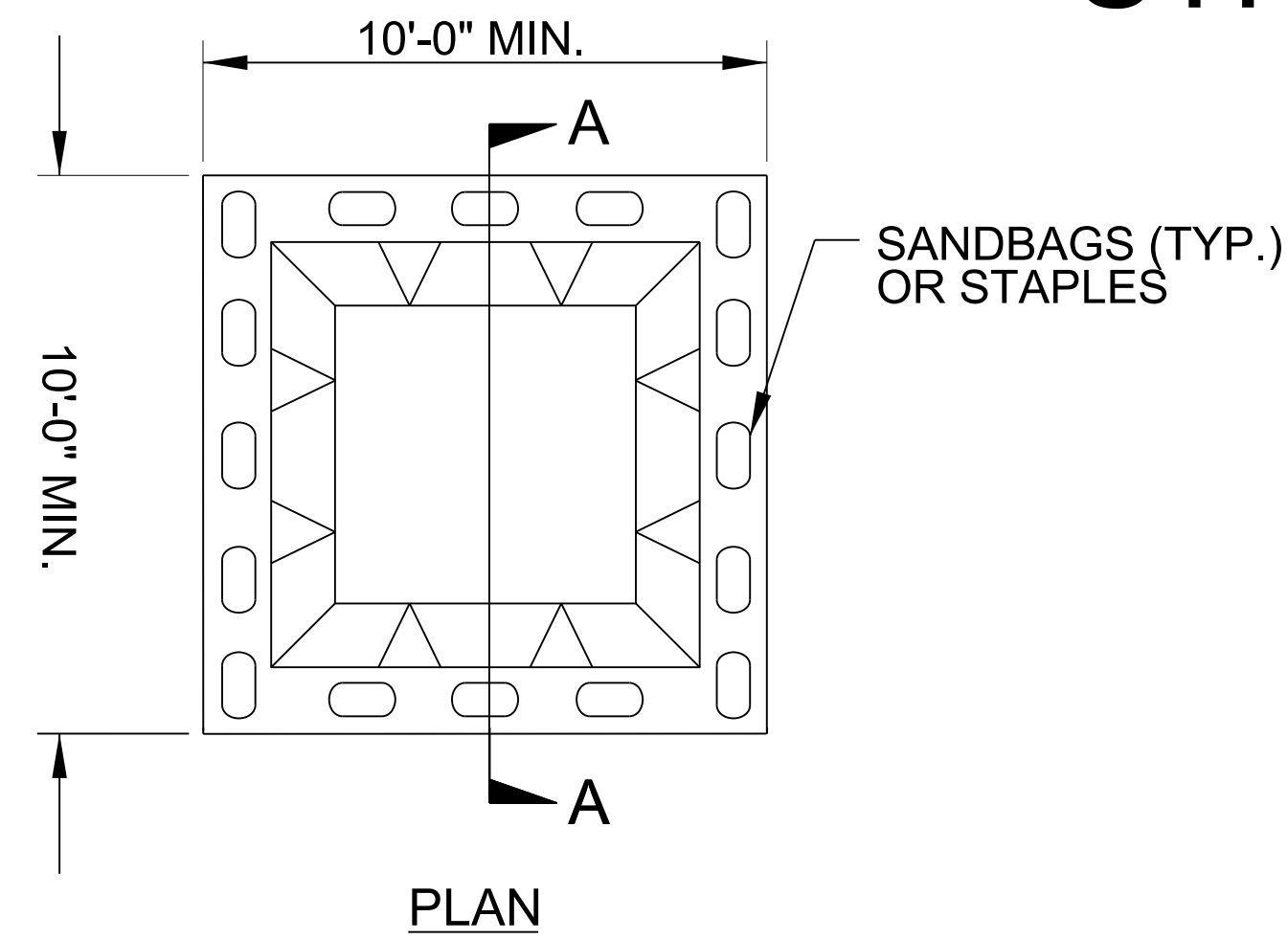
The "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2024 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

EROSION & SEDIMENT CONTROL LEGEND

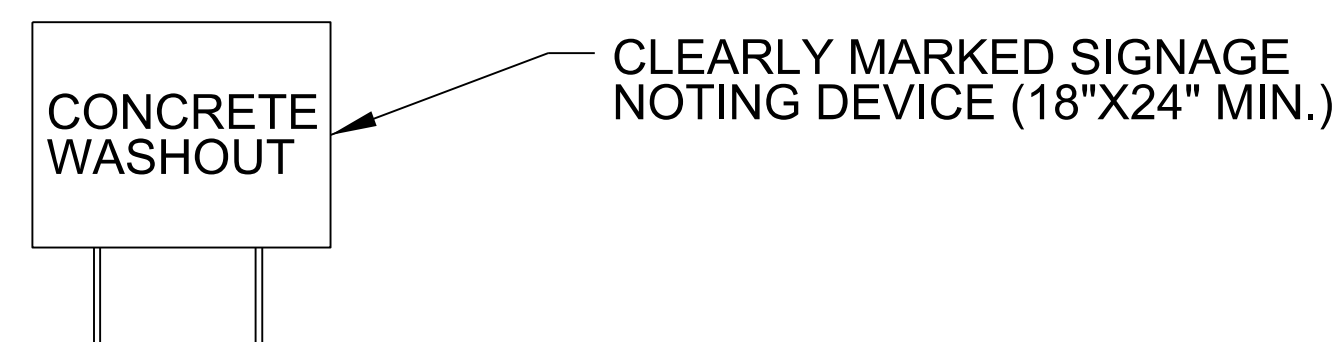
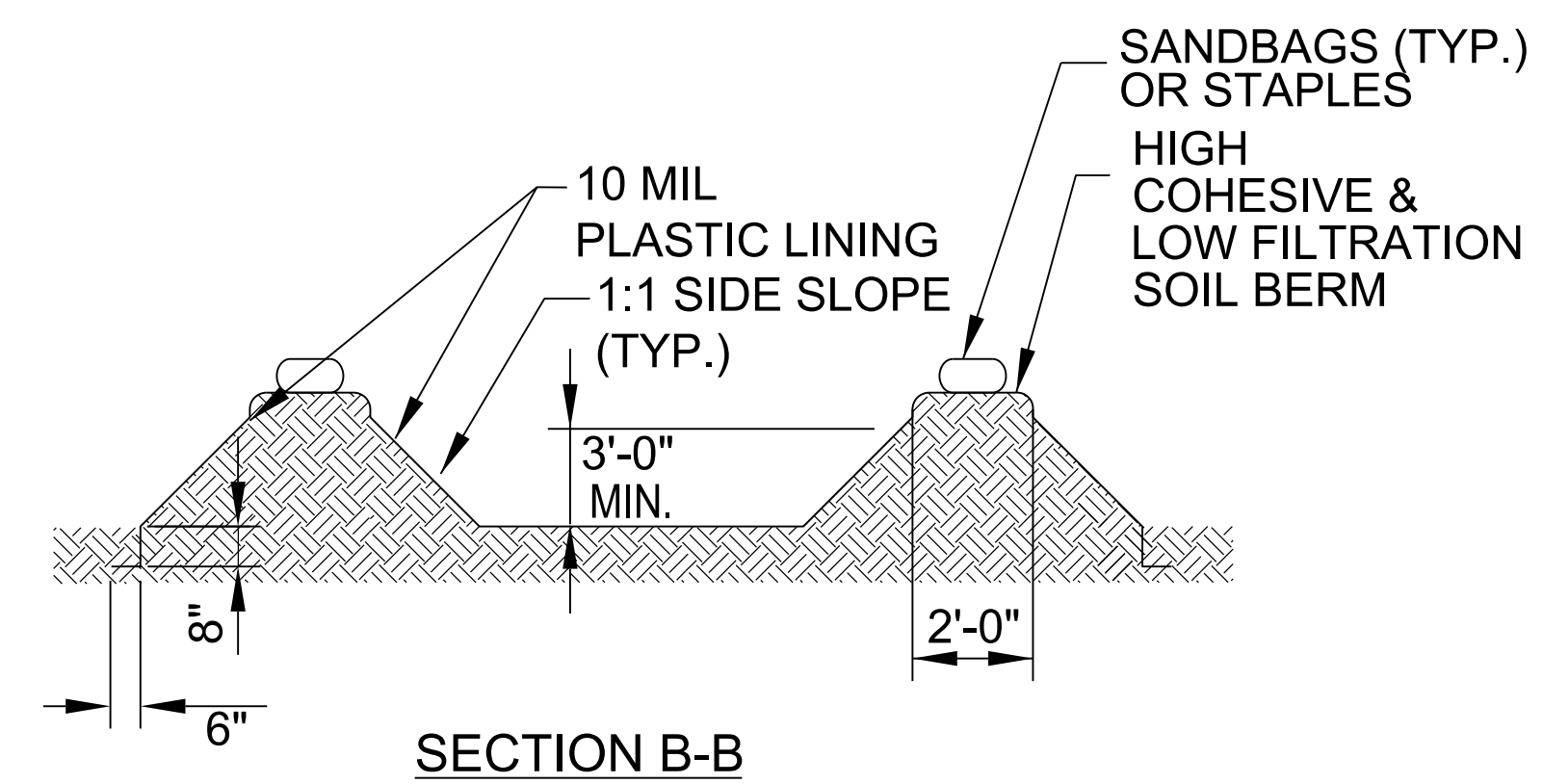
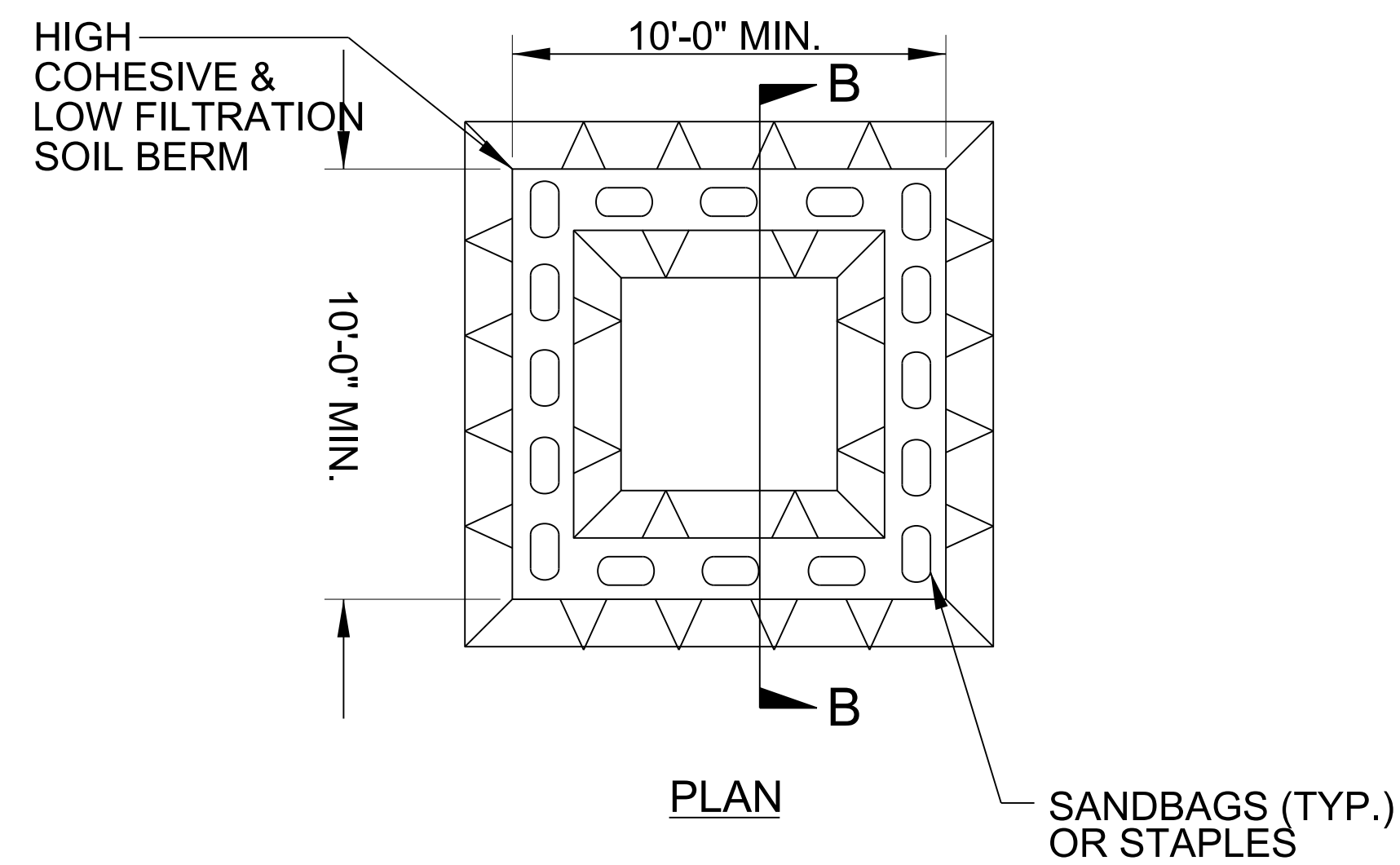
| Std. # | Description | Symbol | Std. # | Description | Symbol |
|---------|----------------------------------|--------|---------|--|--------|
| 1605.01 | Temporary Silt Fence | | 1633.01 | Temporary Rock Silt Check Type A | |
| 1606.01 | Special Sediment Control Fence | | 1633.02 | Temporary Rock Silt Check Type B | |
| 1622.01 | Temporary Berms and Slope Drains | | 1633.03 | Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant | |
| 1630.02 | Silt Basin Type B | | 1634.01 | Temporary Rock Sediment Dam Type A | |
| 1630.03 | Temporary Silt Ditch | | 1634.02 | Temporary Rock Sediment Dam Type B | |
| 1630.04 | Stilling Basin | | 1635.01 | Rock Pipe Inlet Sediment Trap Type A | |
| 1630.05 | Temporary Diversion | | 1635.02 | Rock Pipe Inlet Sediment Trap Type B | |
| 1630.06 | Special Stilling Basin | | 1636.01 | Excelsior Wattle Check | |
| 1630.07 | Skimmer Basin | | 1636.01 | Excelsior Wattle Check with Flocculant | |
| 1630.08 | Tiered Skimmer Basin | | 1636.01 | Coir Fiber Wattle Check | |
| 1630.09 | Earthen Dam with Skimmer | | 1636.01 | Coir Fiber Wattle Check with Flocculant | |
| | Infiltration Basin | | 1636.02 | Silt Fence Excelsior Wattle Break | |
| | Rock Inlet Sediment Trap: | | | Silt Fence Coir Fiber Wattle Break | |
| 1632.01 | Type A | | 1636.03 | Excelsior Wattle Barrier | |
| 1632.02 | Type B | | 1636.03 | Coir Fiber Wattle Barrier | |
| 1632.03 | Type C | | | | |

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



BELOW GRADE WASHOUT STRUCTURE
NOT TO SCALE

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



ABOVE GRADE WASHOUT STRUCTURE
NOT TO SCALE

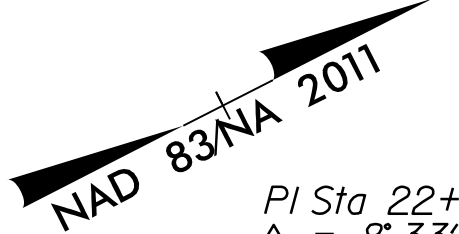
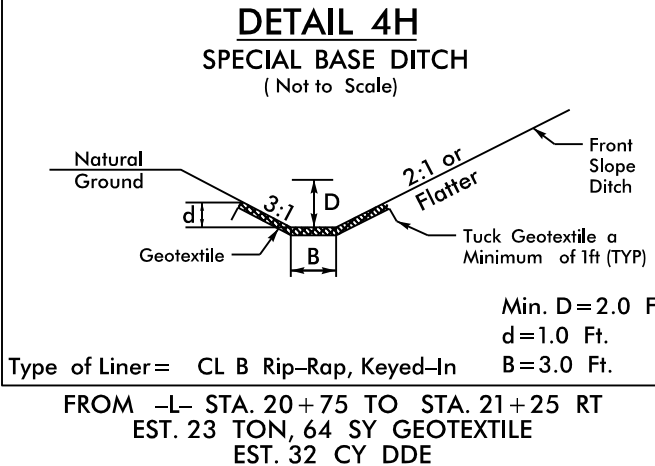
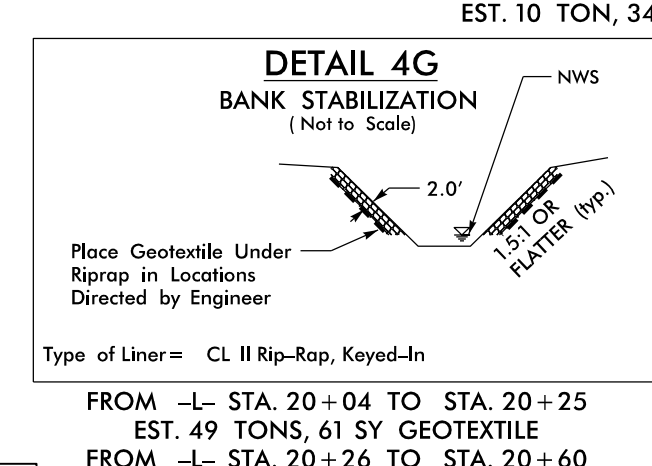
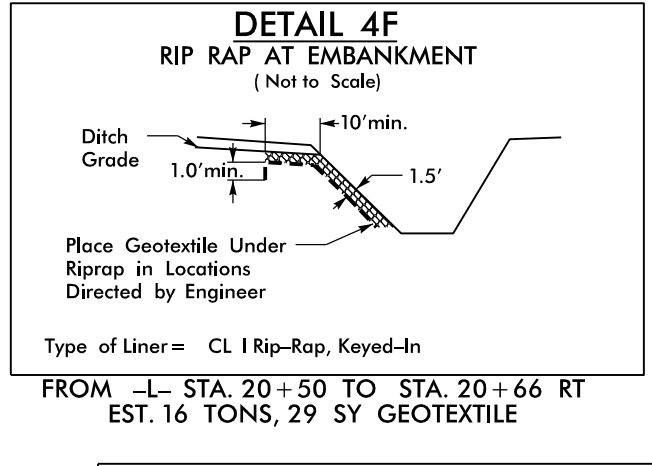
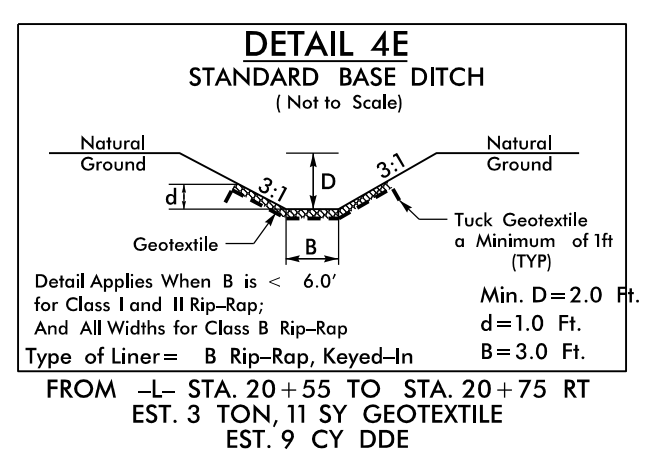
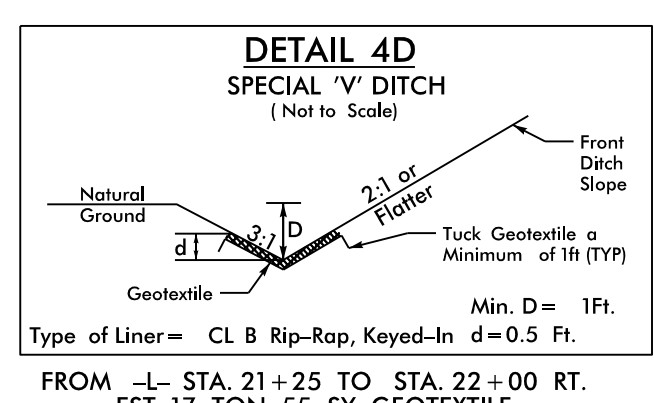
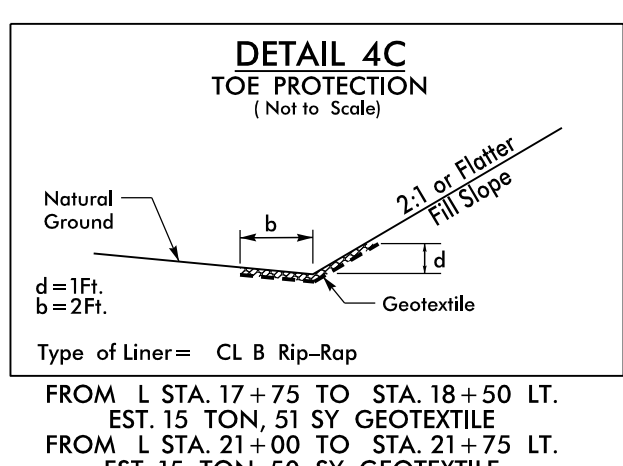
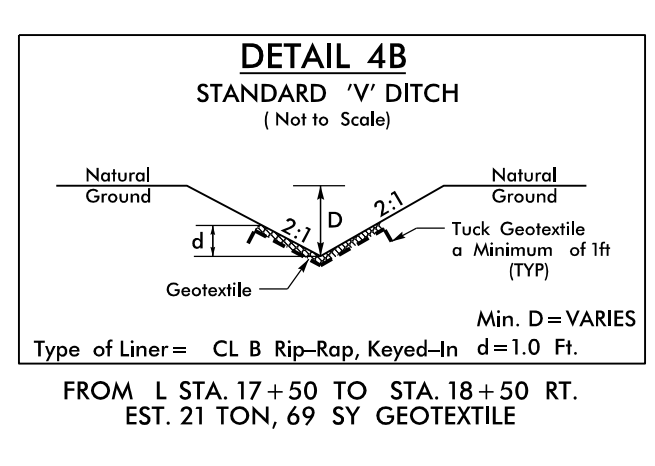
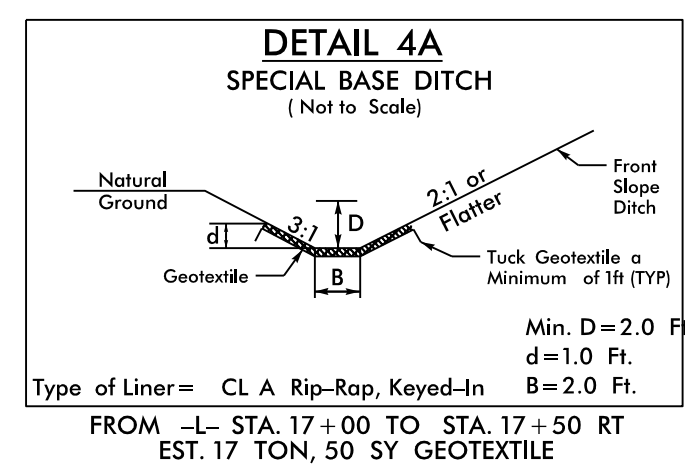
- NOTES:**
1. ACTUAL LOCATION DETERMINED IN FIELD
 2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
 3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY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

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

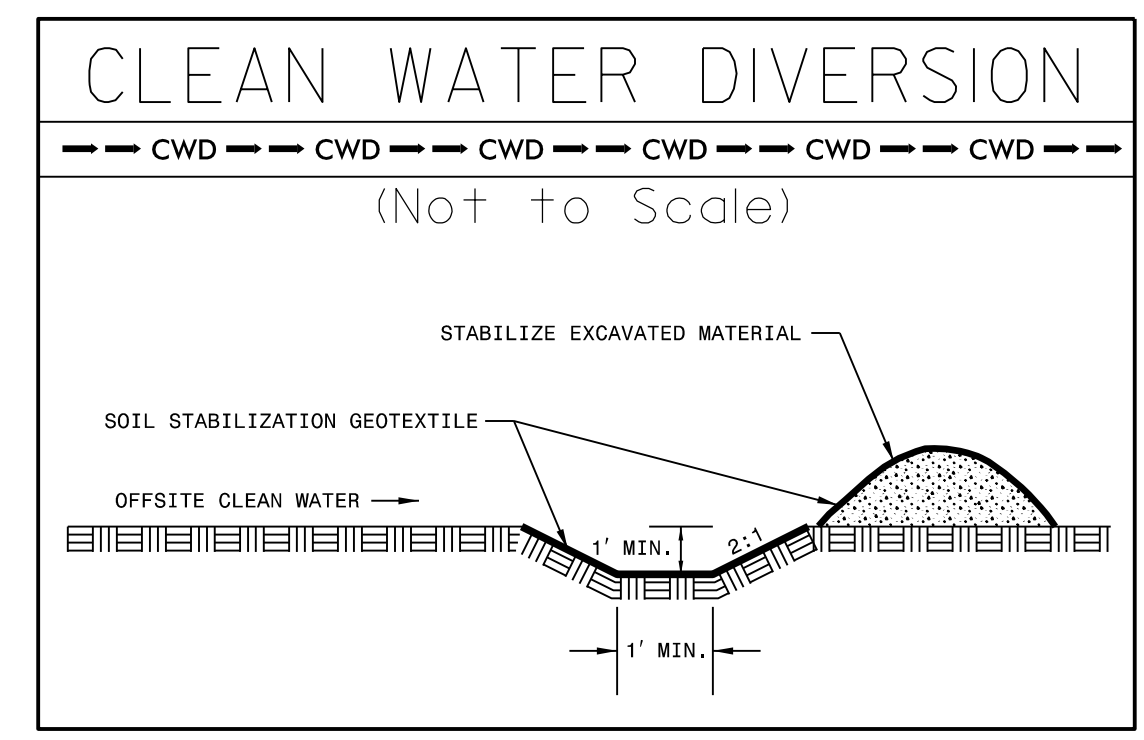
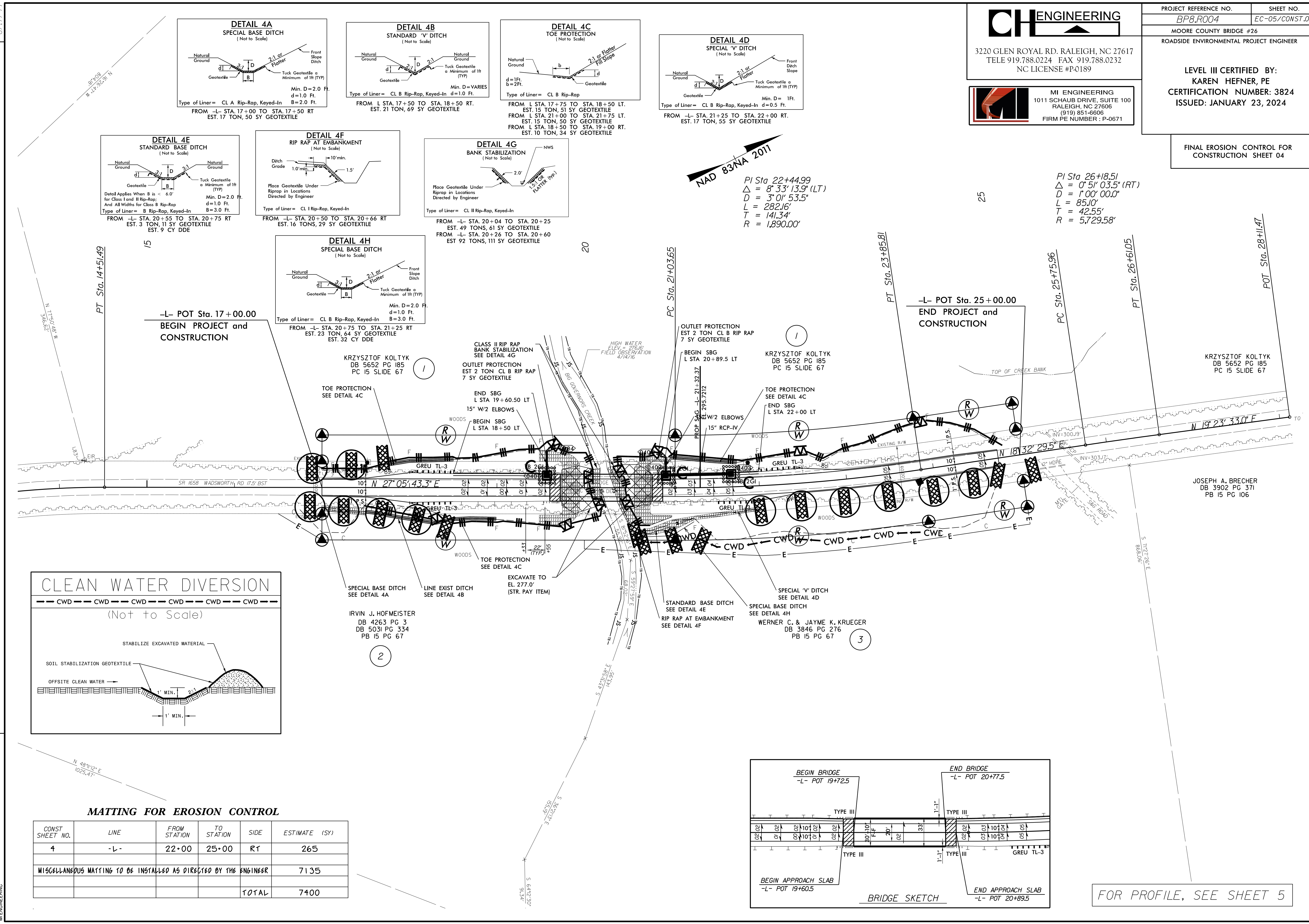
| <i>SITE DESCRIPTION</i> | <i>STABILIZATION TIME</i> | <i>TIMEFRAME EXCEPTIONS</i> |
|--|---------------------------|---|
| PERIMETER DIKES, SWALES, DITCHES AND SLOPES | 7 DAYS | NONE |
| HIGH QUALITY WATER (HQW) ZONES | 7 DAYS | NONE |
| SLOPES STEEPER THAN 3:1 | 7 DAYS | IF SLOPES ARE 10' OR LESS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

FINAL EROSION CONTROL FOR CONSTRUCTION SHEET 04



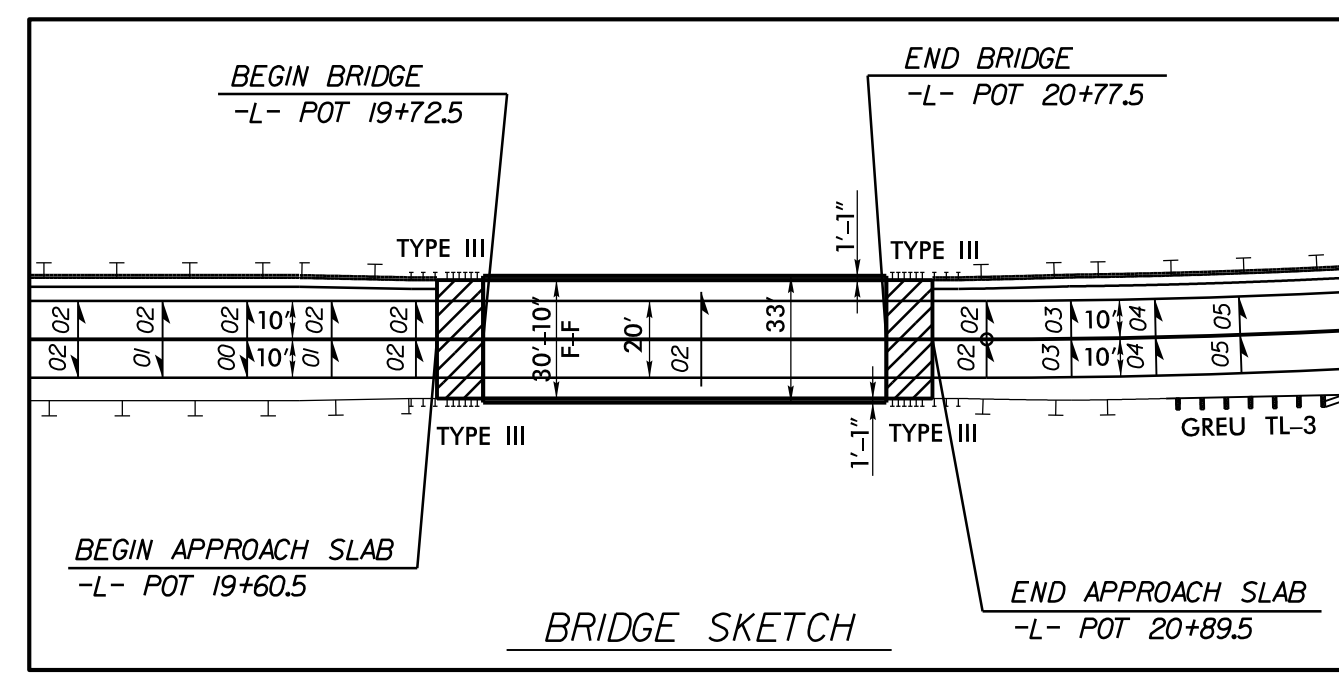
PI Sta 22+44.99
 $\Delta = 8^{\circ}33'13.9''$ (LT)
 $D = 3^{\circ}01'53.5''$
 $L = 282.16'$
 $T = 141.34'$
 $R = 1,890.00'$

PI Sta 26+18.51
 $\Delta = 0^{\circ}51'03.5''$ (RT)
 $D = 1^{\circ}00'00.0''$
 $L = 85.10'$
 $T = 42.55'$
 $R = 5,729.58'$



MATTING FOR EROSION CONTROL

| CONST SHEET NO. | LINE | FROM STATION | TO STATION | SIDE | ESTIMATE (SY) |
|---|------|--------------|------------|------|---------------|
| 4 | -L- | 22+00 | 25+00 | RT | 265 |
| MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER | | | | | 7135 |
| TOTAL | | | | | 7400 |



FOR PROFILE, SEE SHEET 5

REVISIONS

8/17/99
 1/28/2024
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 MI ENGINEERING

09/08/99

2/12/2024
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-USERNAME-

PROJECT: BP8.R004

CONTRACT:

CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

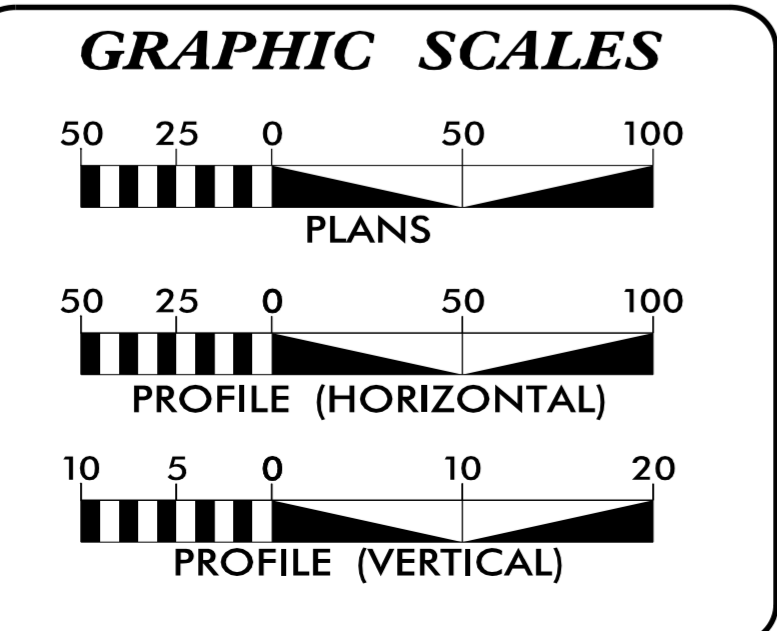
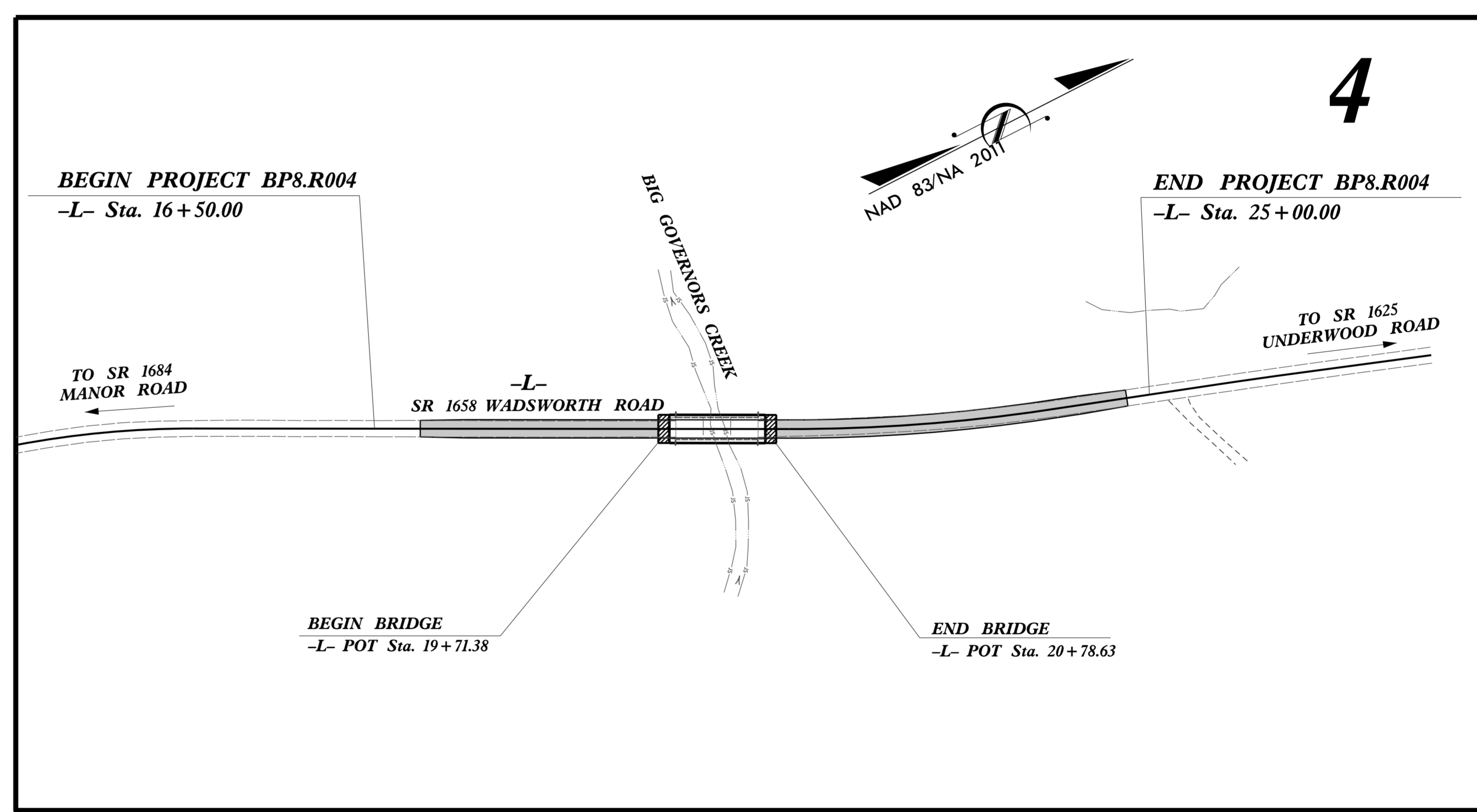
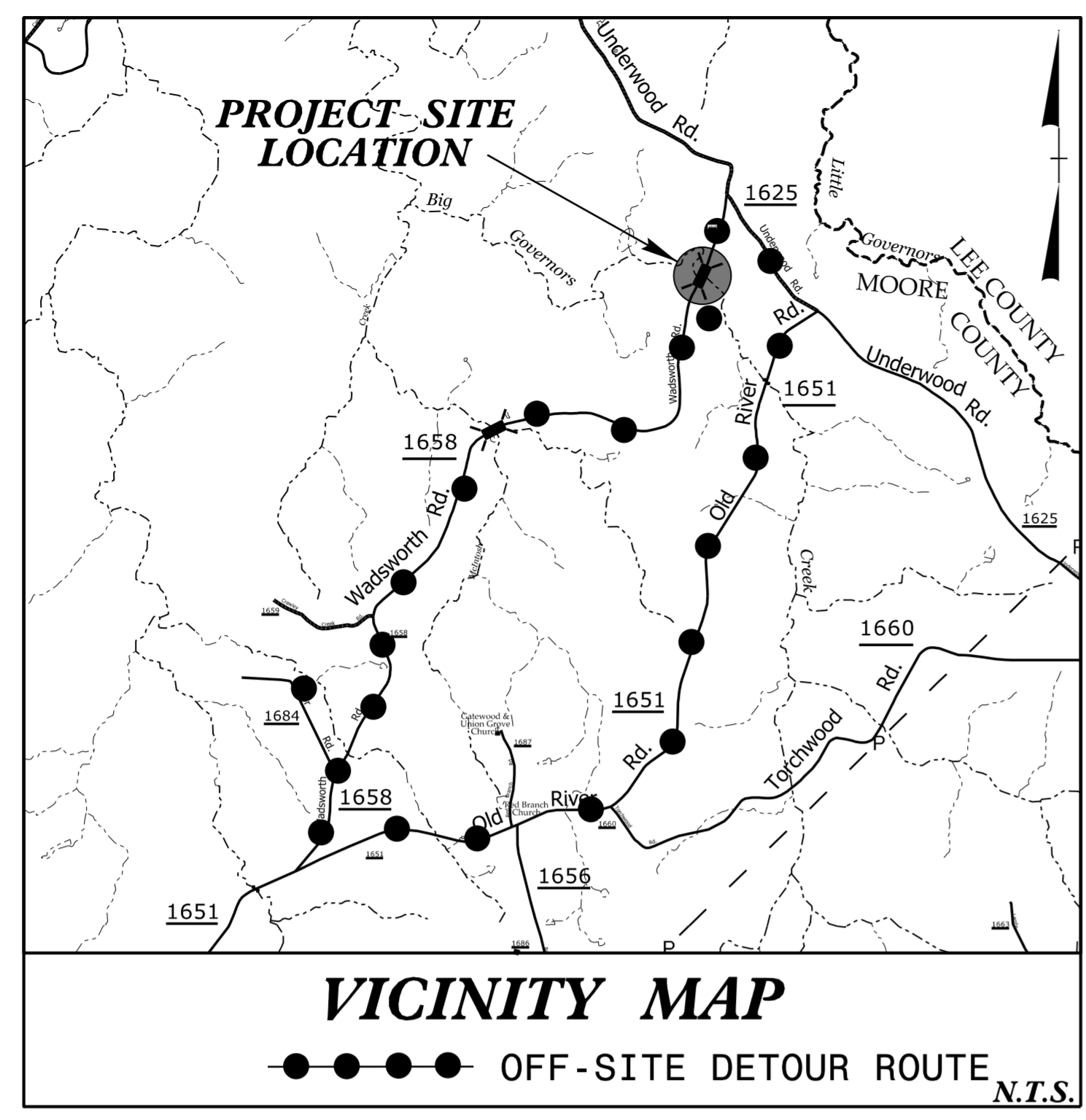
**UTILITIES BY OTHERS PLANS
MOORE COUNTY**

**LOCATION: BRIDGE 620047 OVER BIG GOVERNORS CREEK
ON SR 1658 (WADSWORTH ROAD)**

TYPE OF WORK: UTILITIES BY OTHERS

| | |
|------------|-----------|
| T.I.P. NO. | SHEET NO. |
| BP8.R004 | UO-1 |

NOTE:
ALL UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.



INDEX OF SHEETS

| SHEET NO.: | DESCRIPTION: |
|------------|----------------|
| UO-1 | TITLE SHEET |
| UO-2 | UBO PLAN SHEET |

UTILITY OWNERS WITH CONFLICTS
(A) COMMUNICATIONS - CENTURYLINK/BRIGHTSPEED

PREPARED IN THE OFFICE OF:

CH ENGINEERING
DIVISION OF PENNONI

5430 WADE PARK BLVD., SUITE 106,
RALEIGH, NC 27607 PHONE: 919.929.1173
FAX: 919.493.6548 NC LICENSE #P-0189

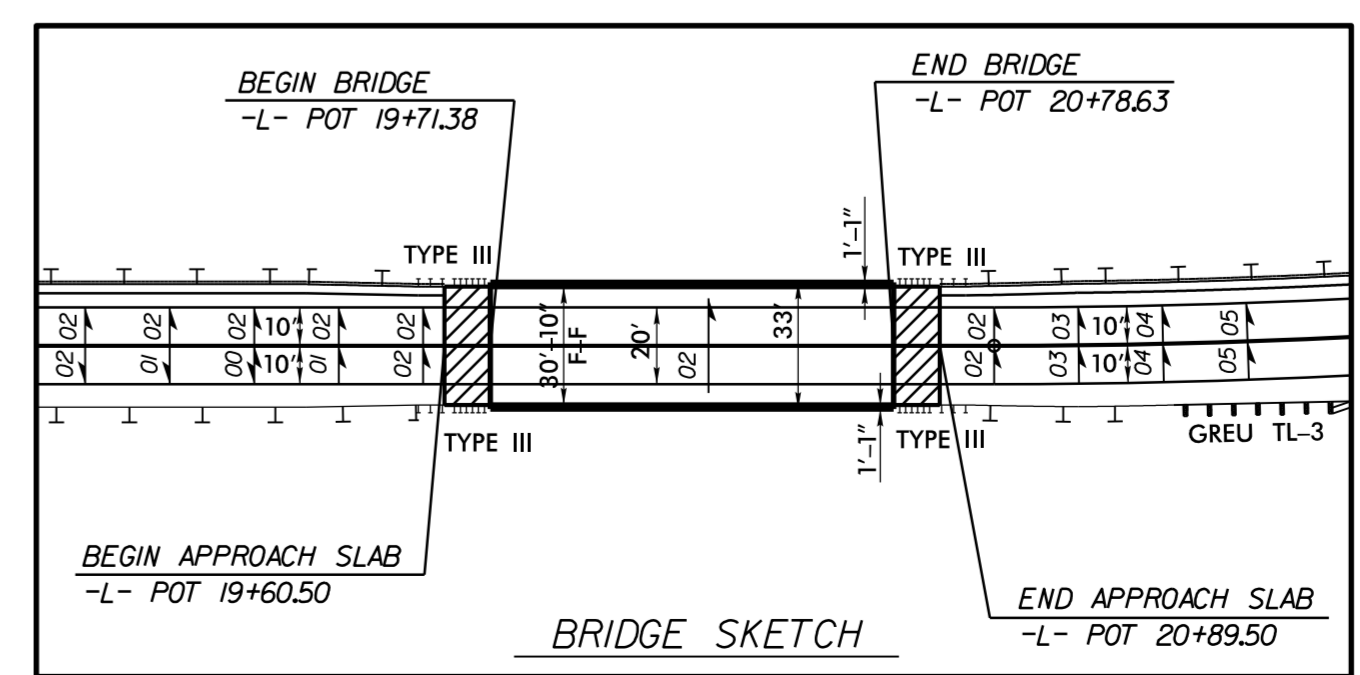
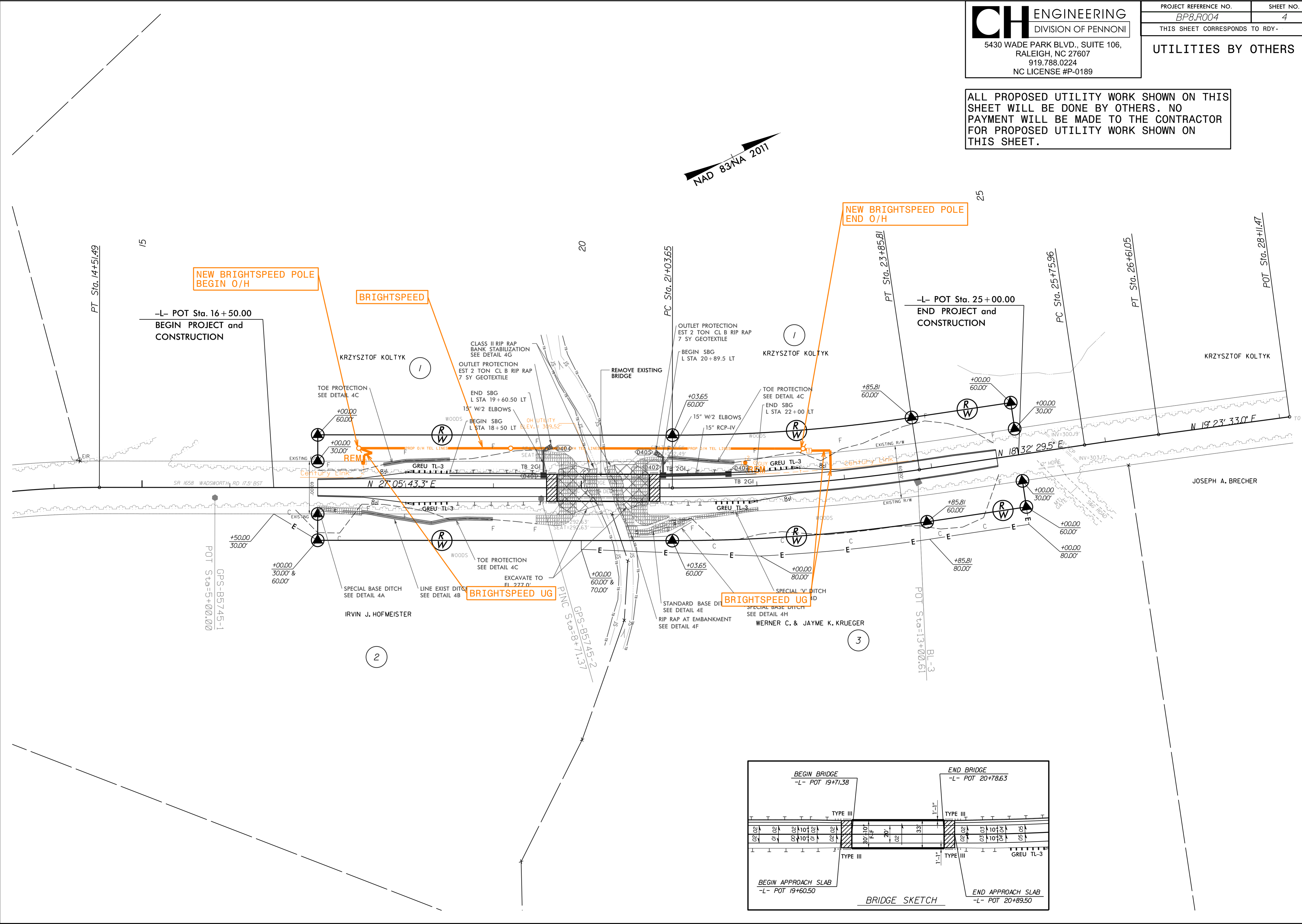
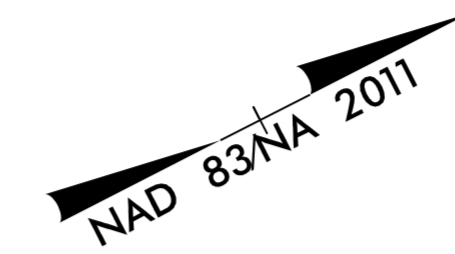
BRIAN WILES, PE UTILITY PROJECT MANAGER
LEVI SMITH PROJECT UTILITY COORDINATOR

**DIVISION OF HIGHWAYS
DIVISION 8**
121 DOT DRIVE
CARTHAGE NC 28327

TIM WELCH, PE DIV. BRIDGE PROG. MANAGER
JAMIE YOW UTILITIES COORDINATOR

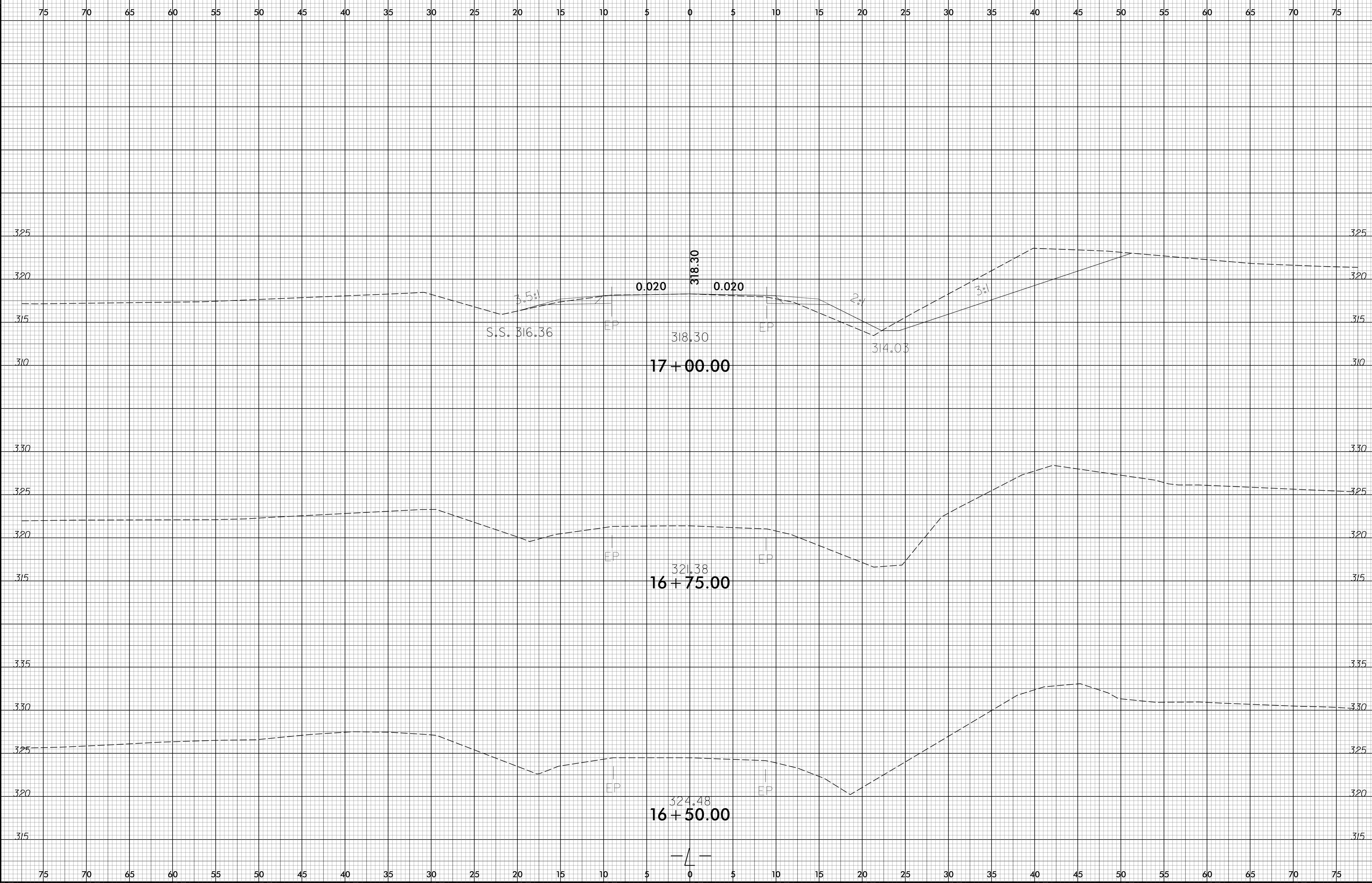
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ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR PROPOSED UTILITY WORK SHOWN ON THIS SHEET.

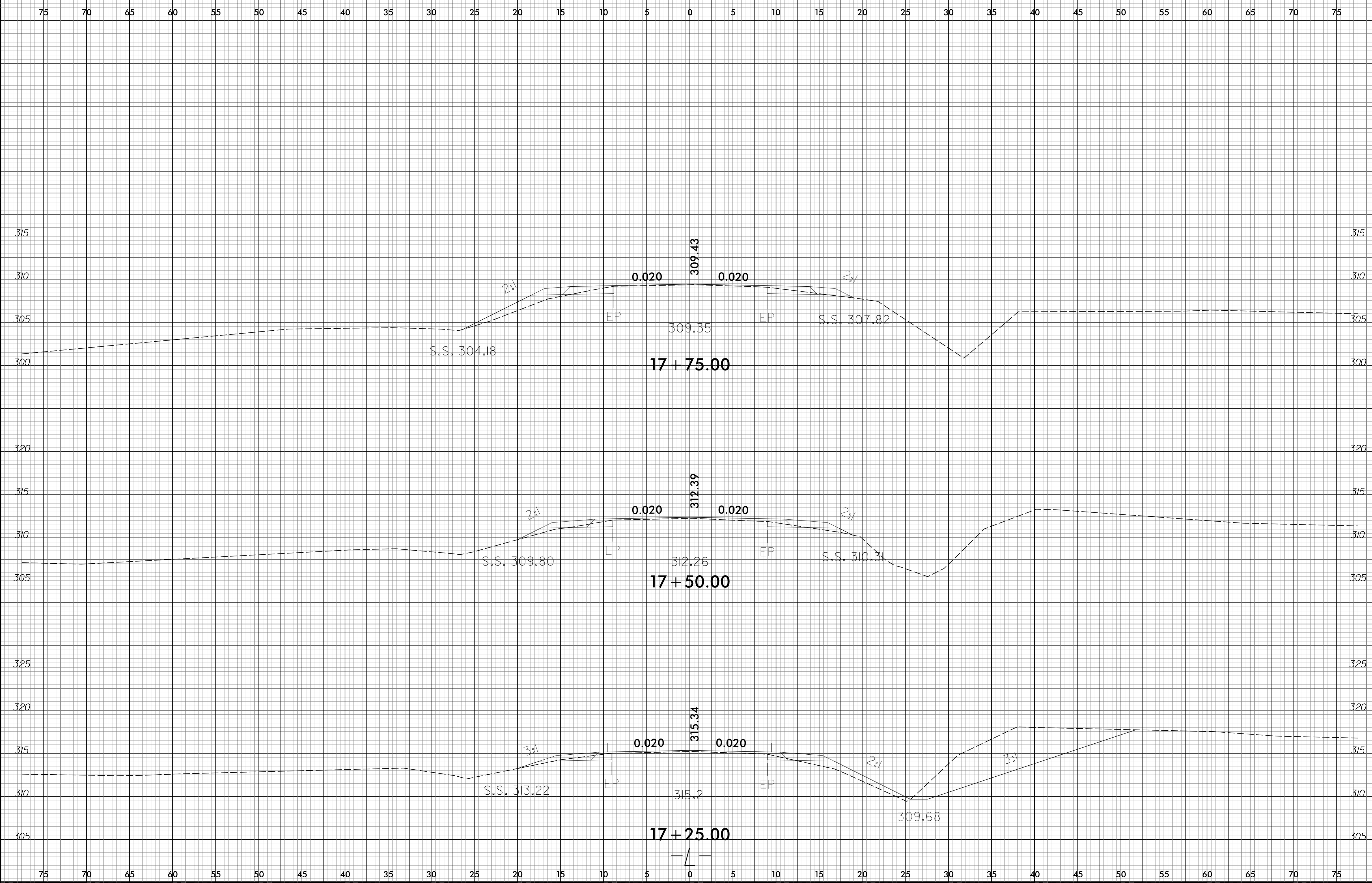


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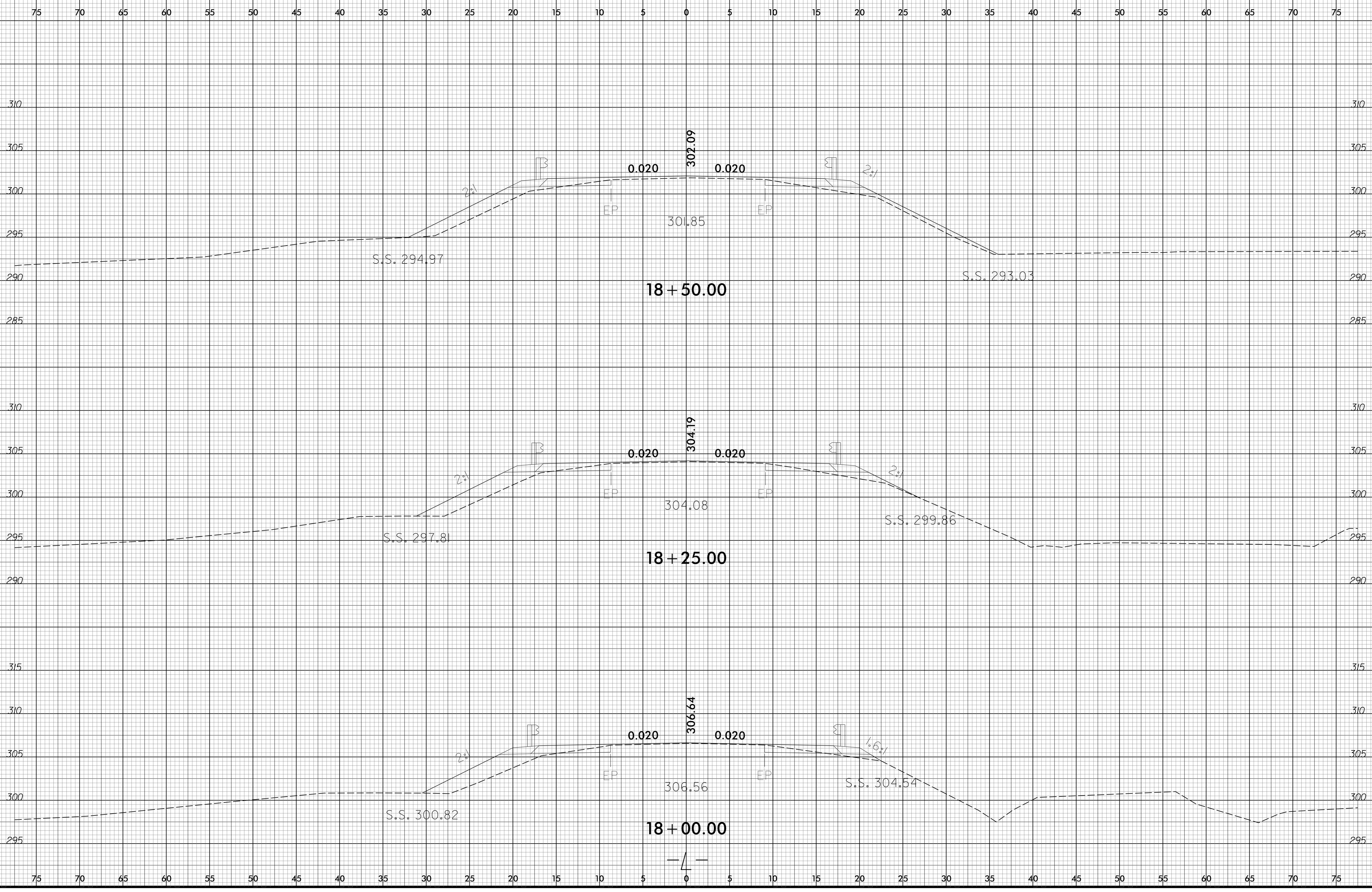
6/23/16



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6/23/16

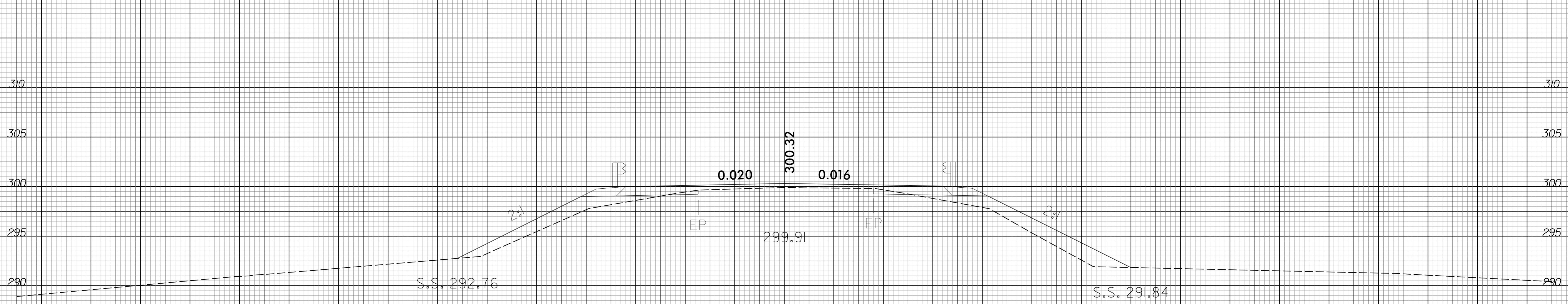
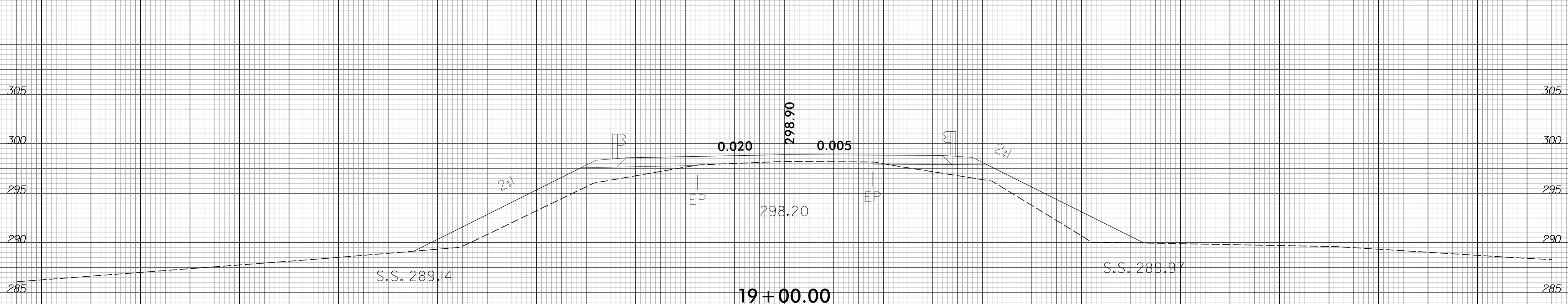
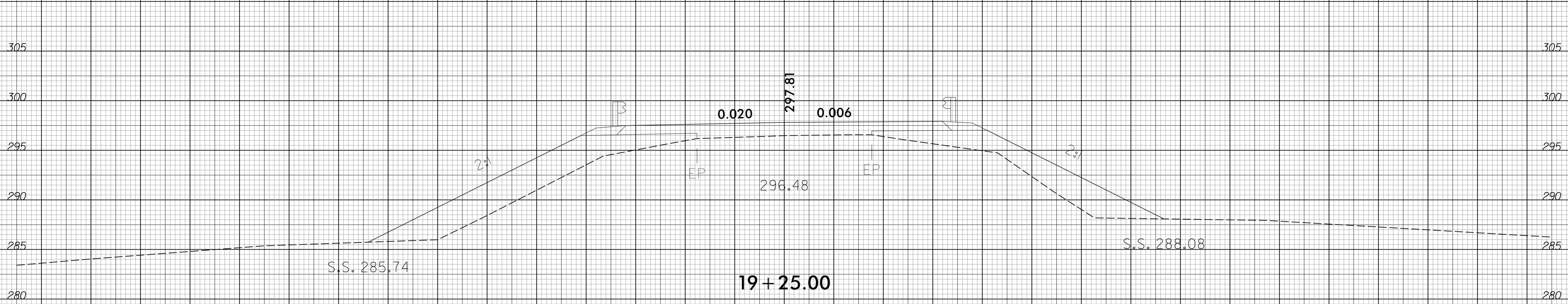


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| | | |
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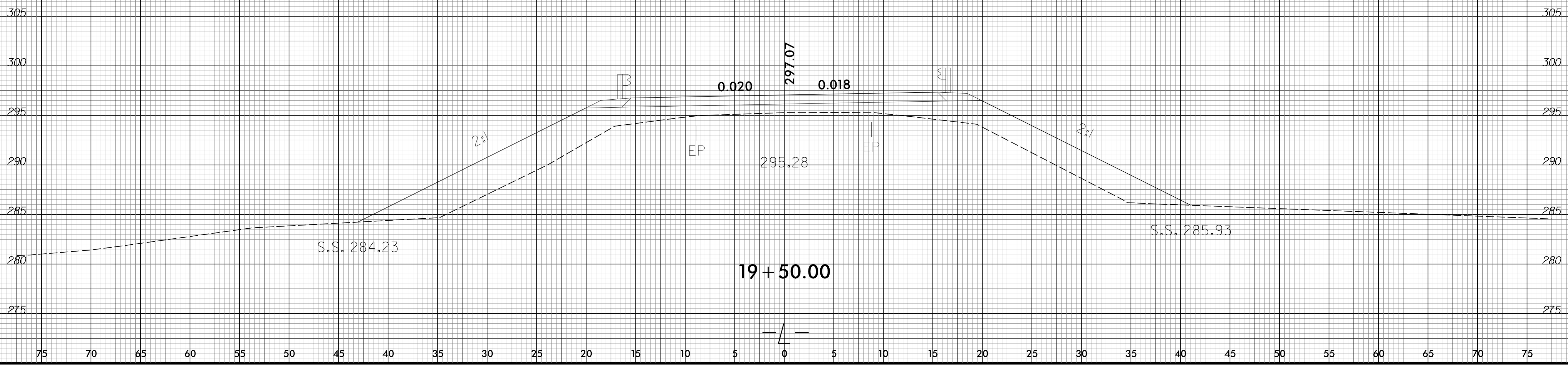
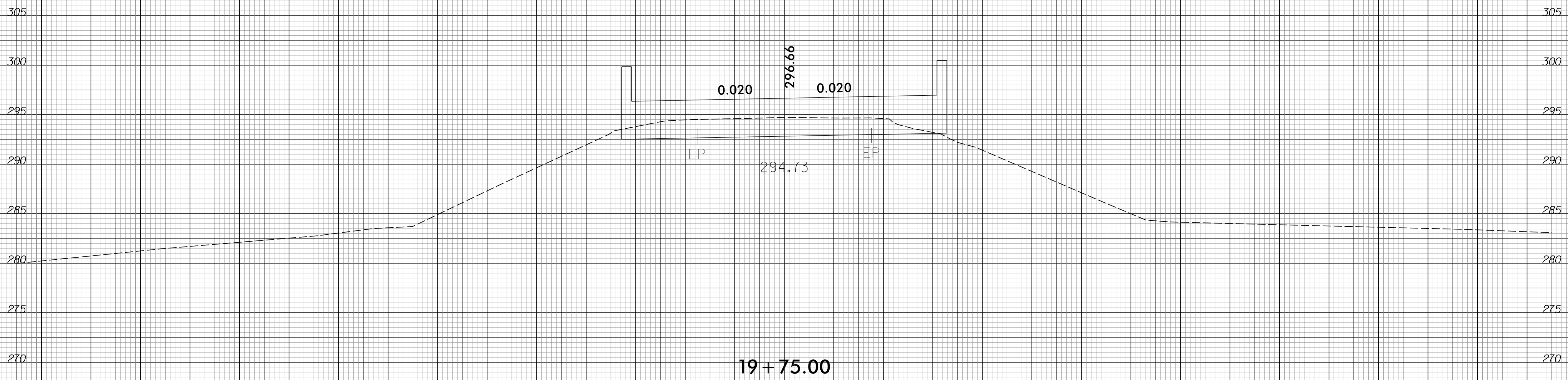


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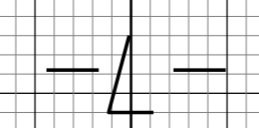
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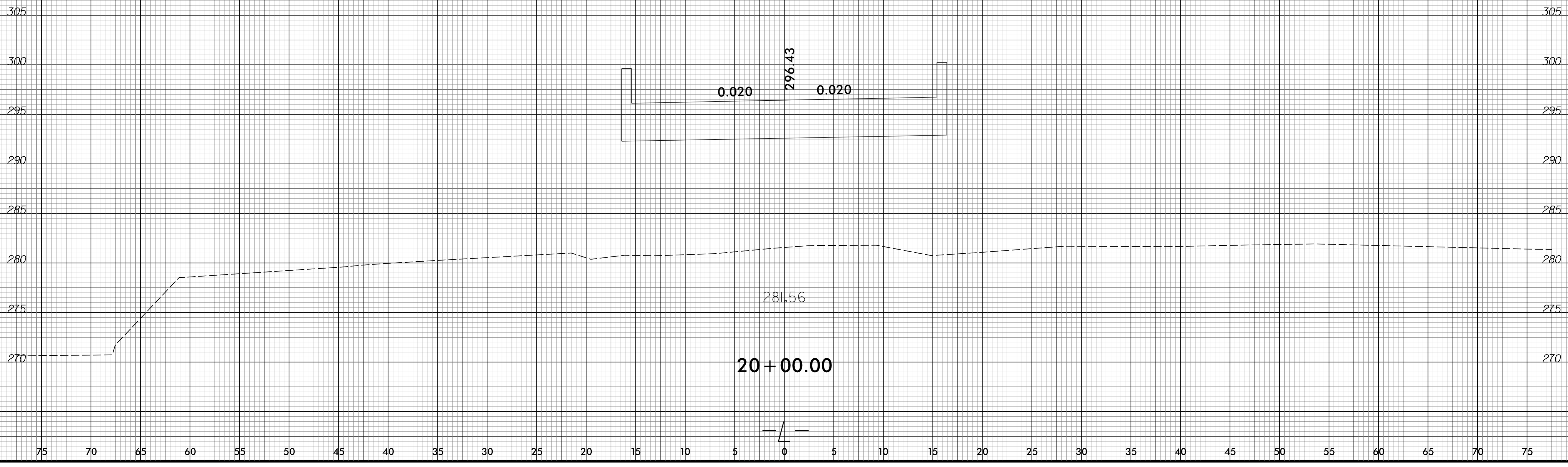
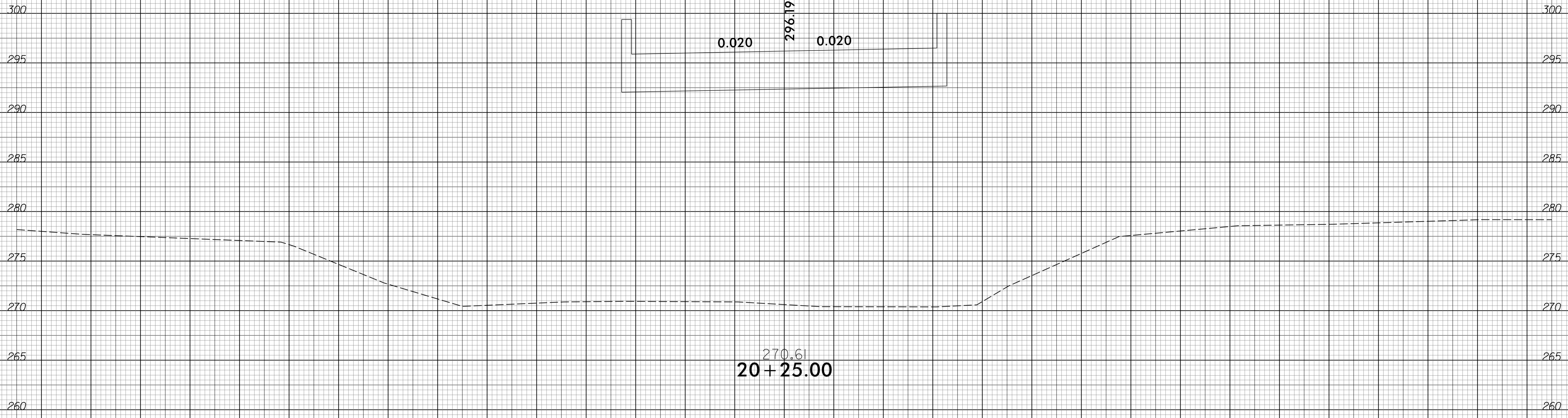
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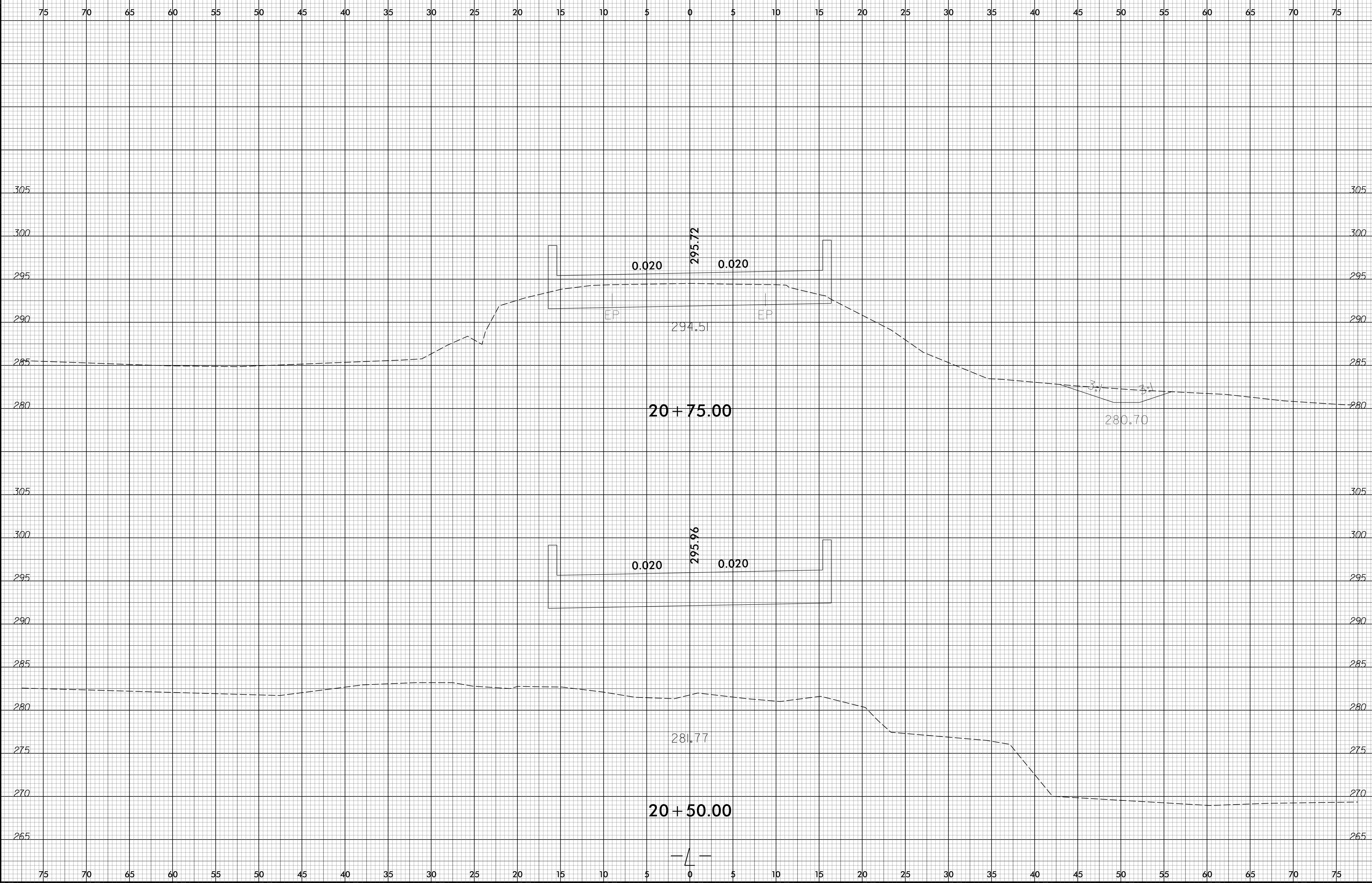


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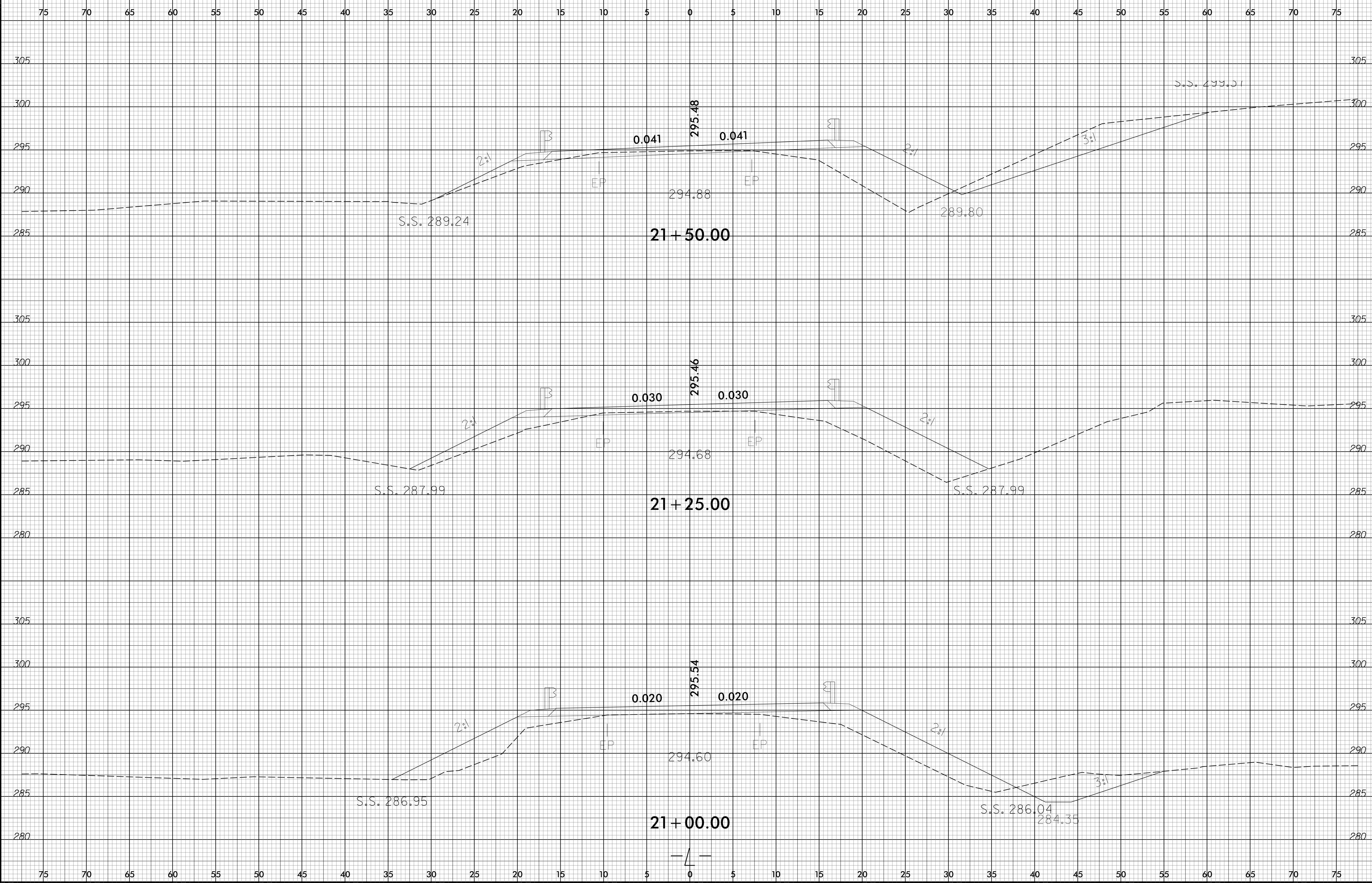


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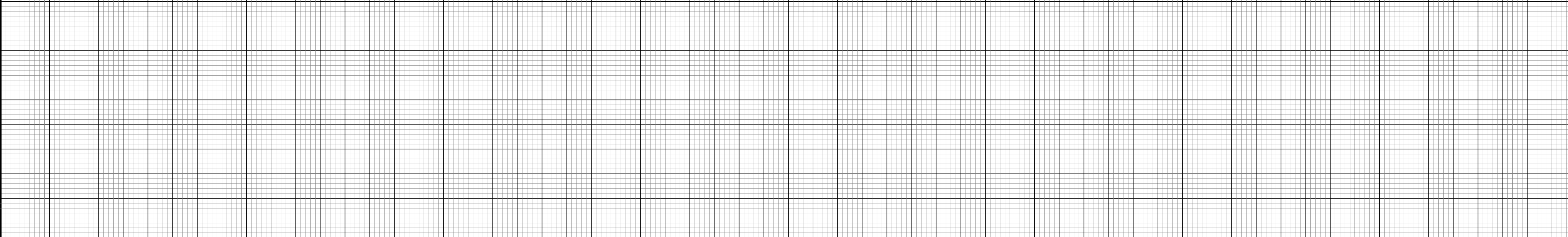


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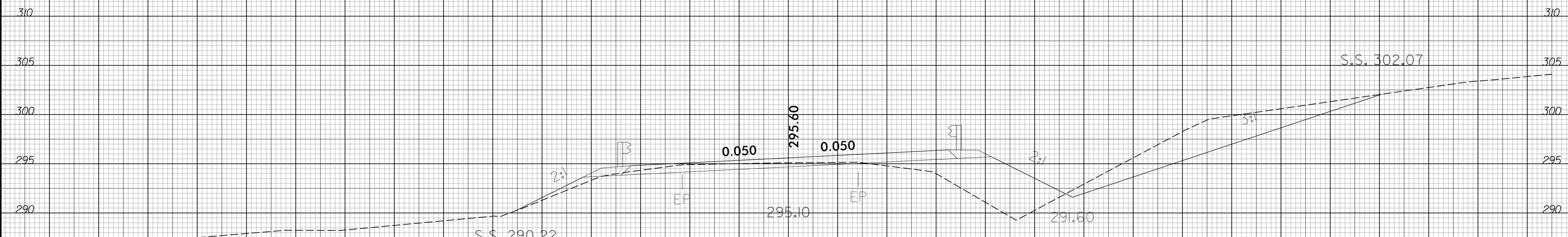


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22 + 00.00



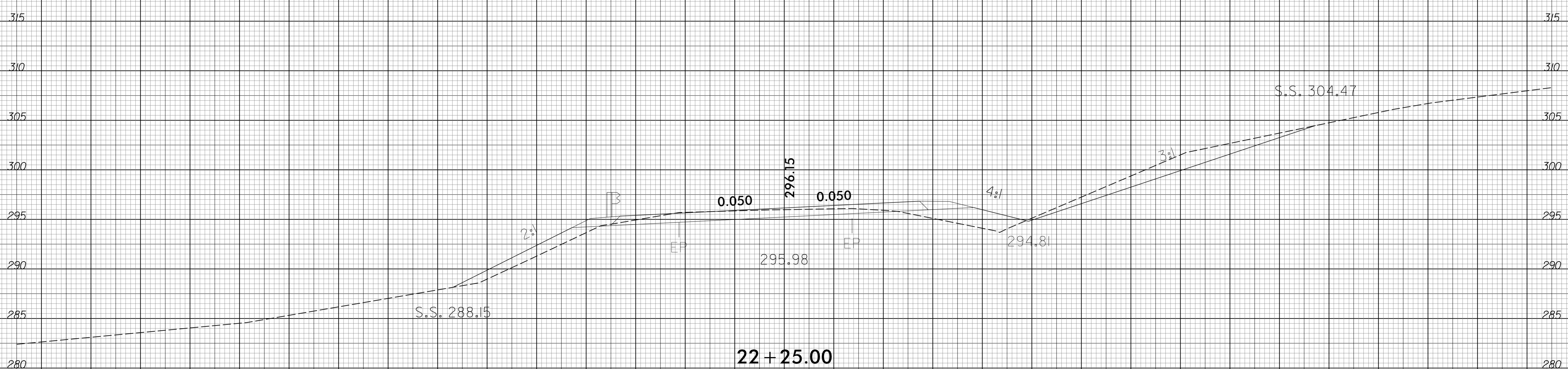
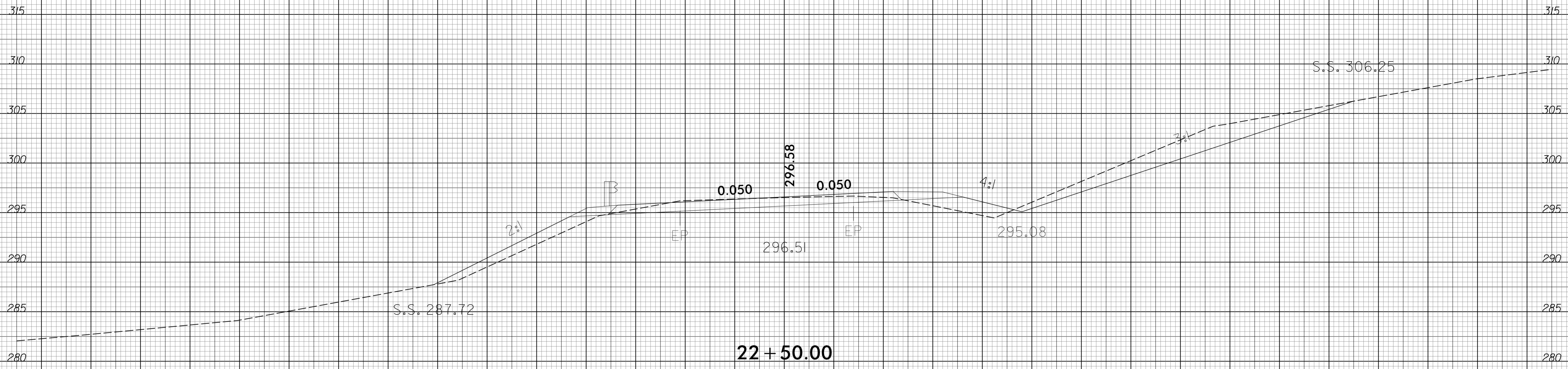
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6/23/16

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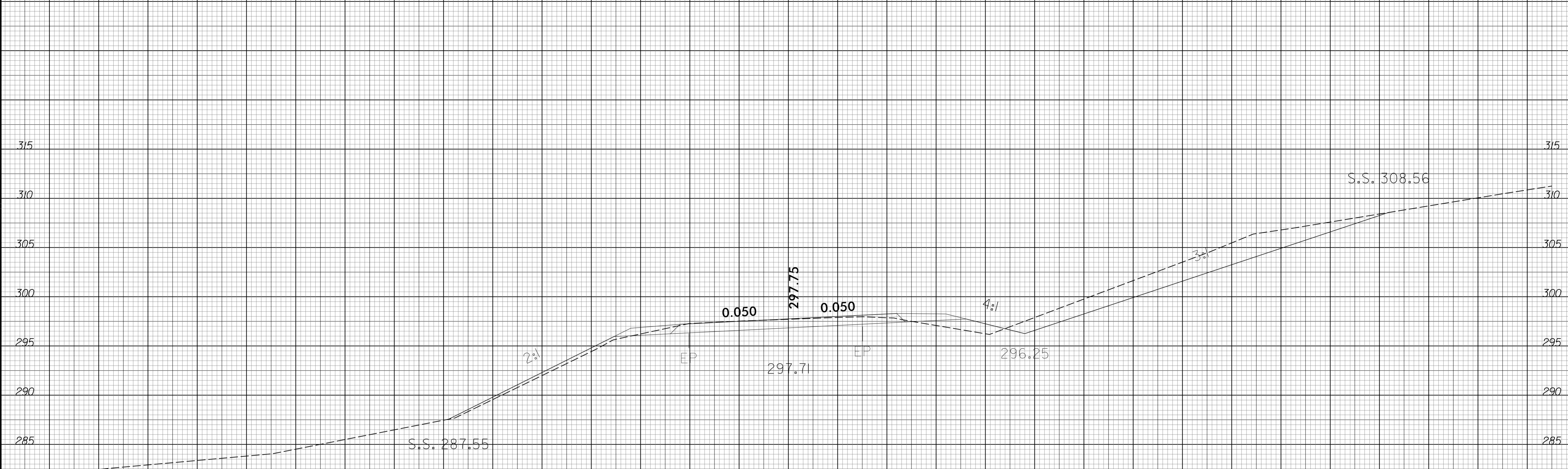


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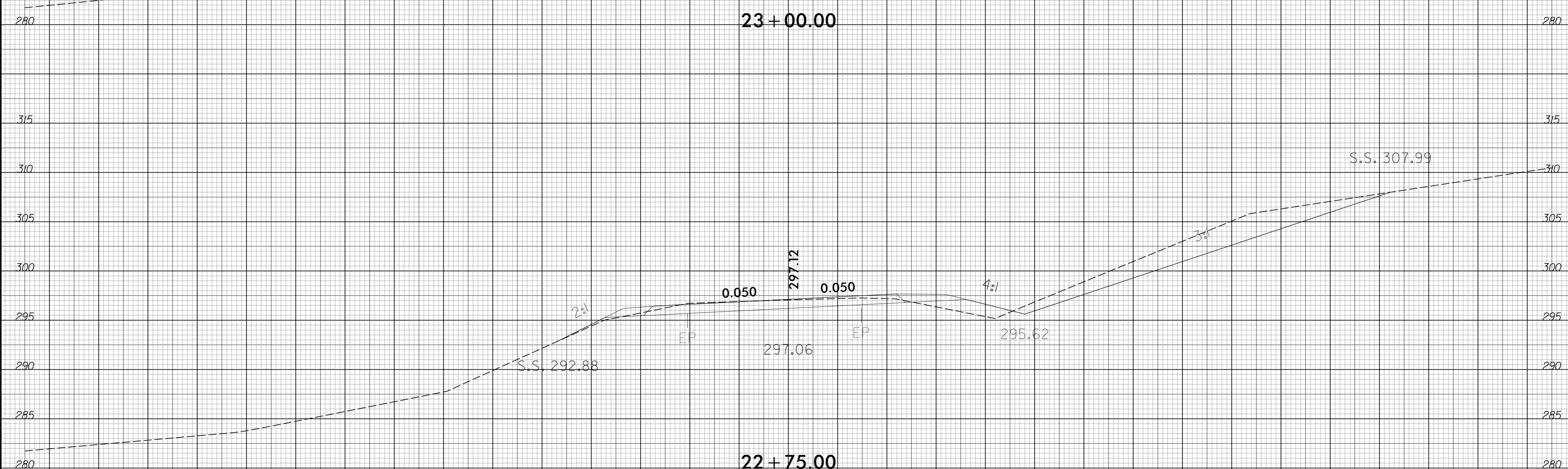
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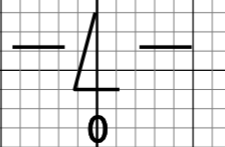
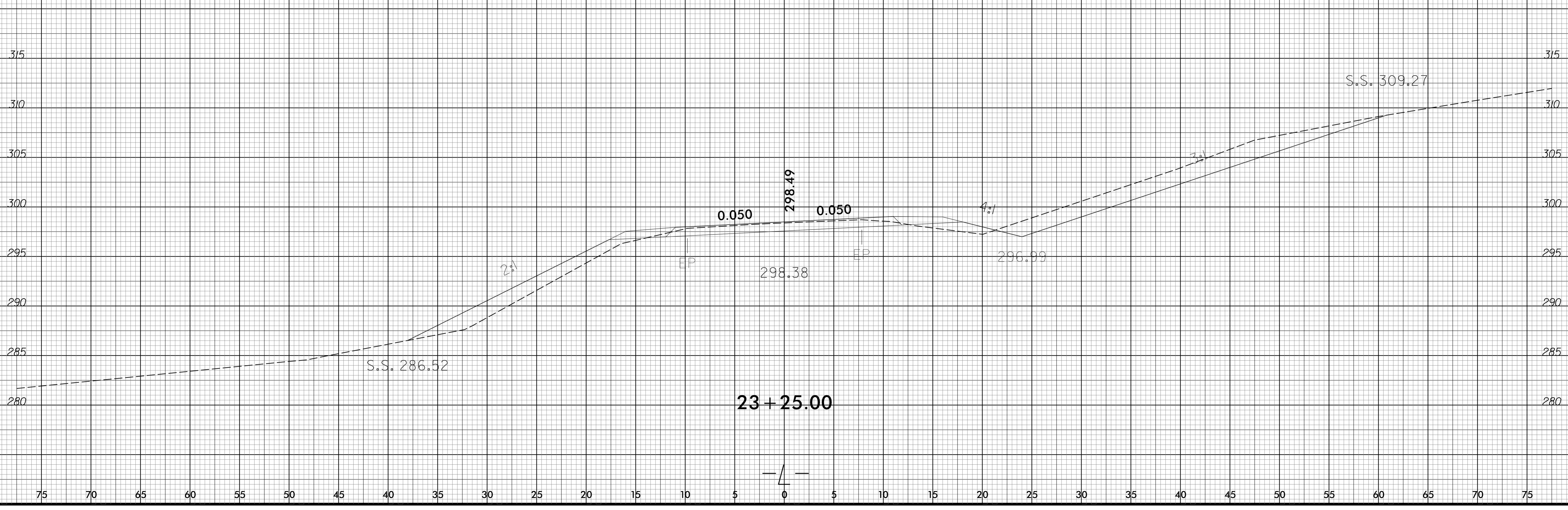
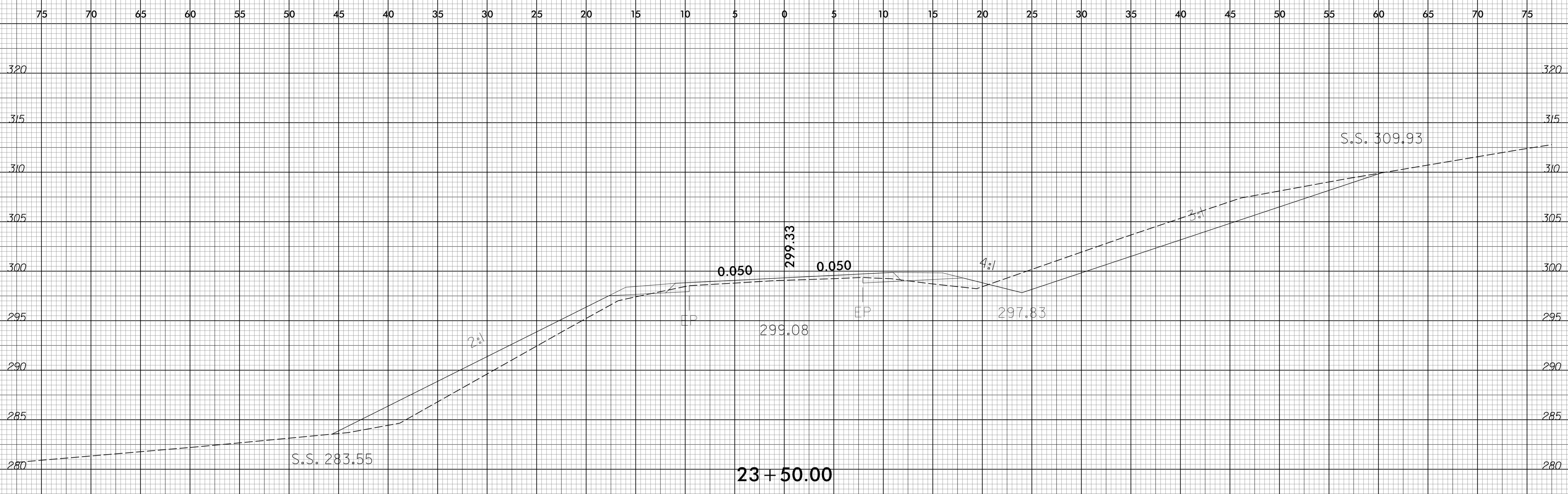


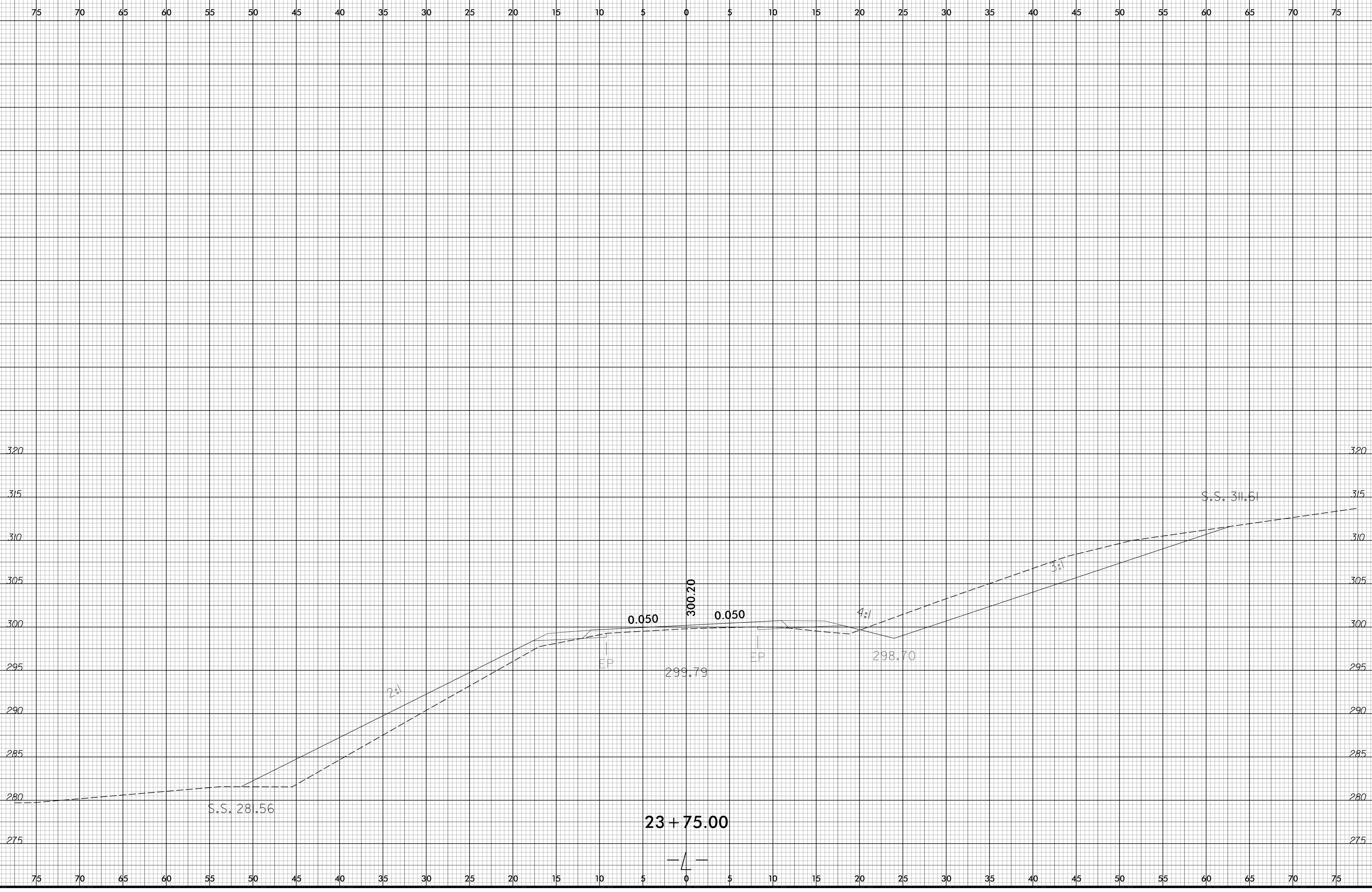
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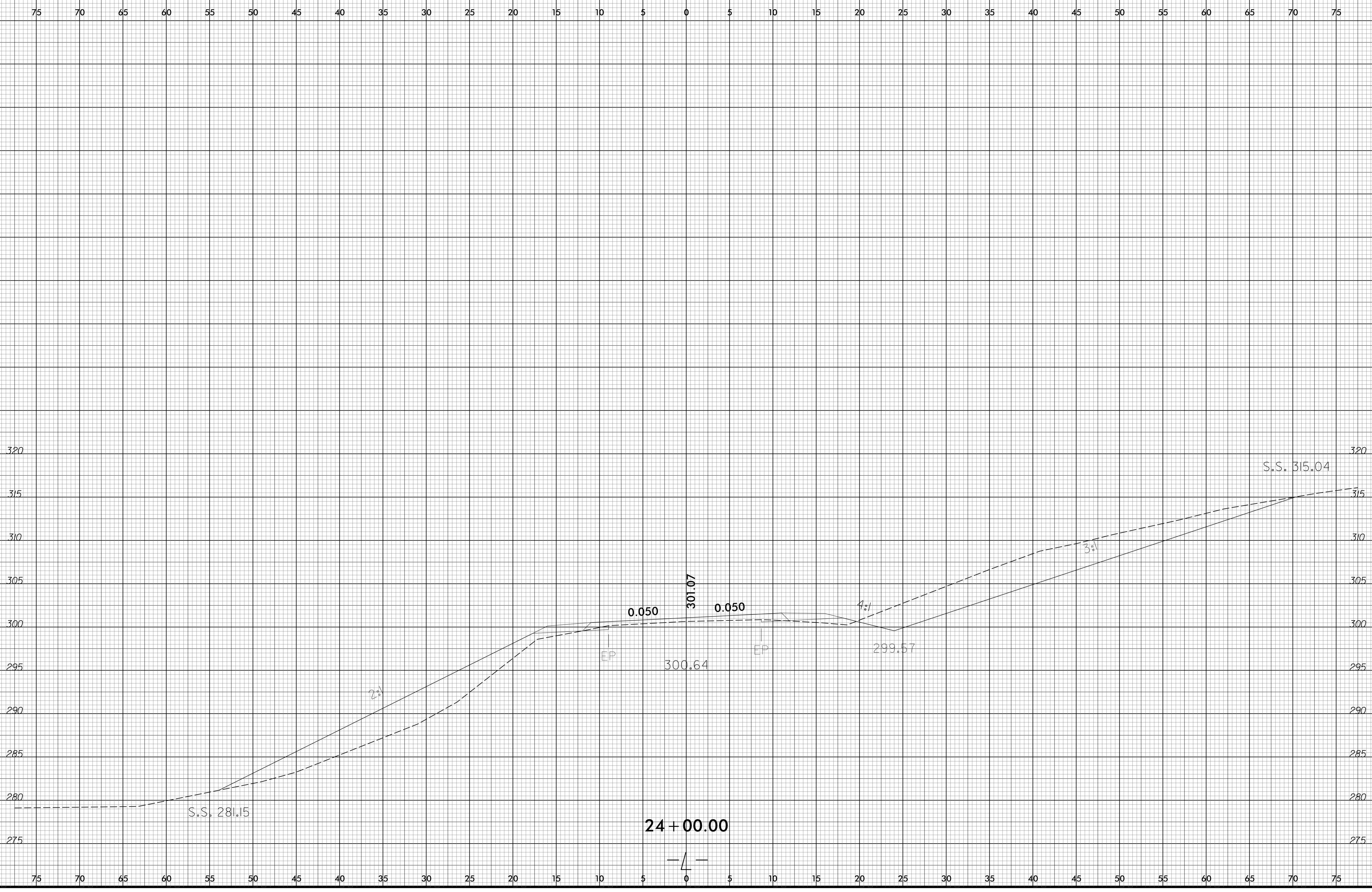
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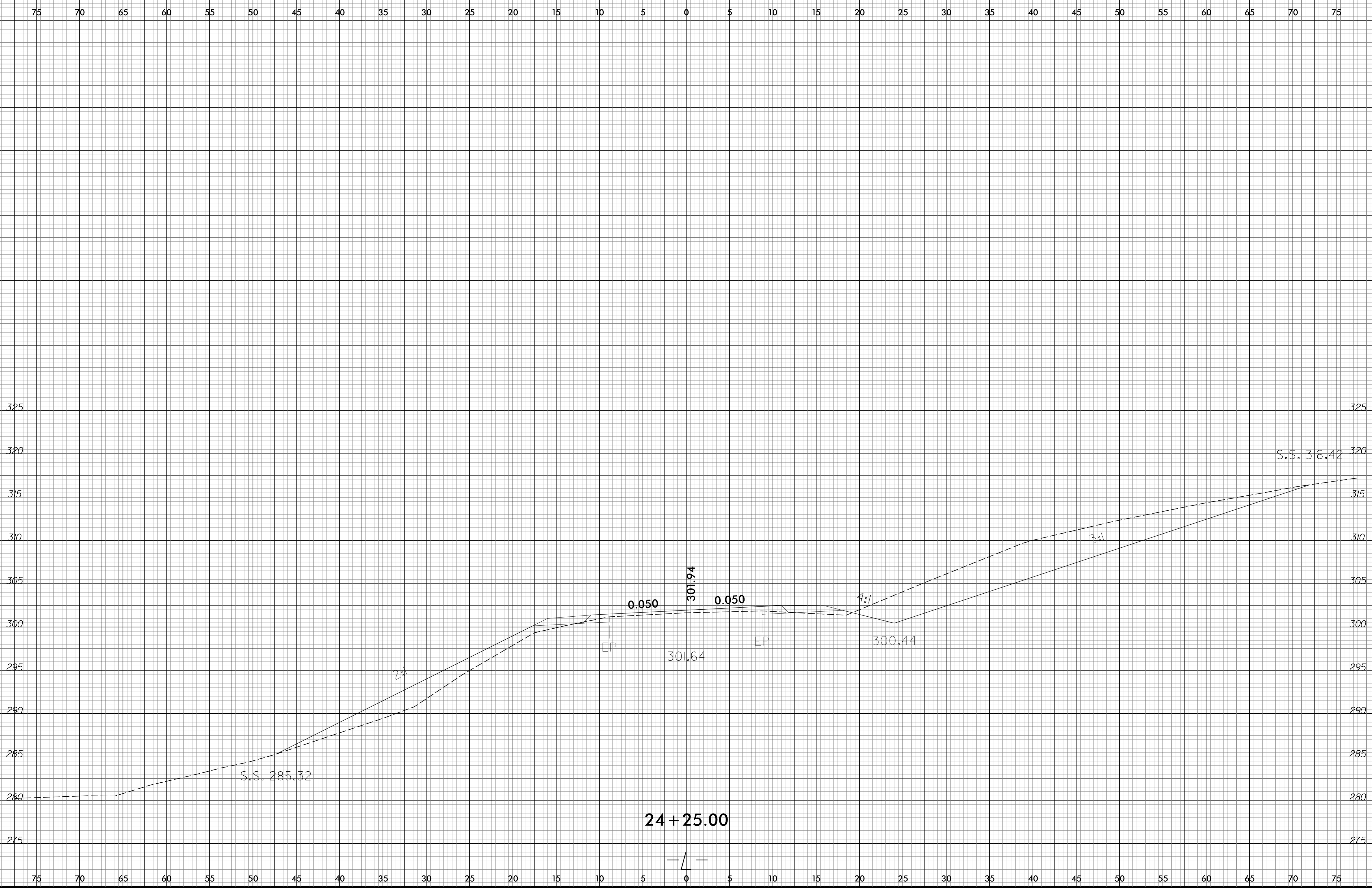


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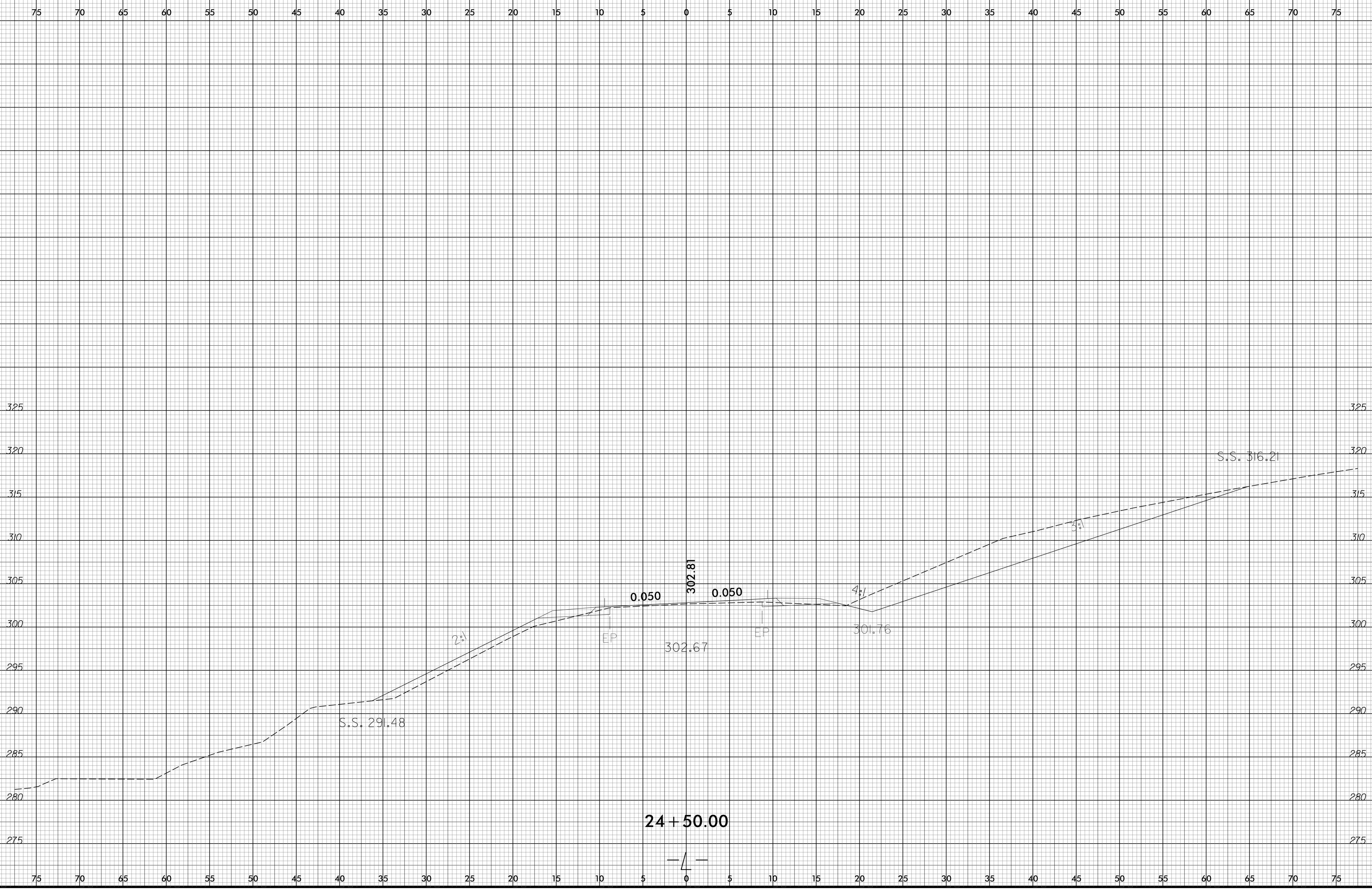
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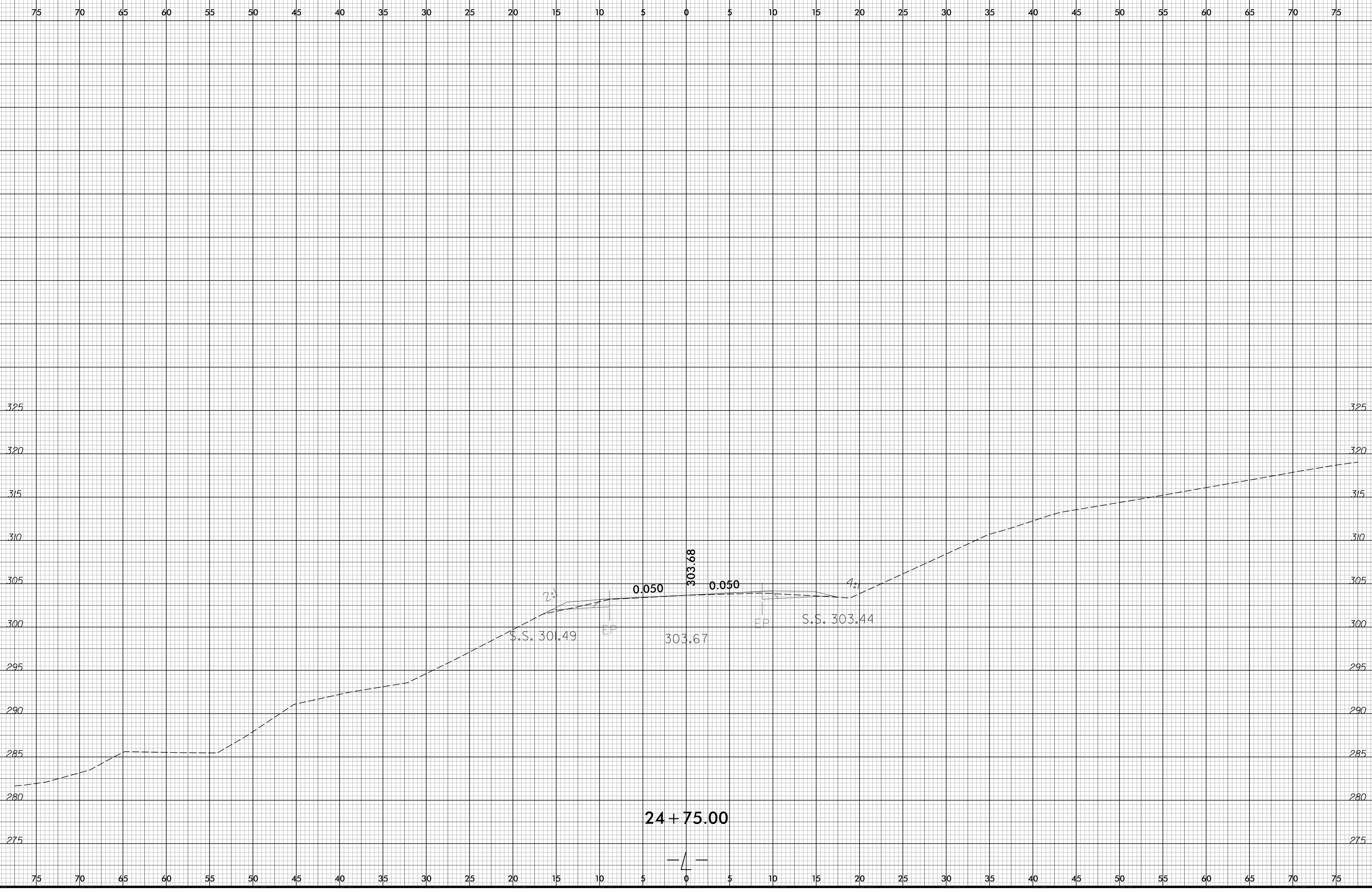
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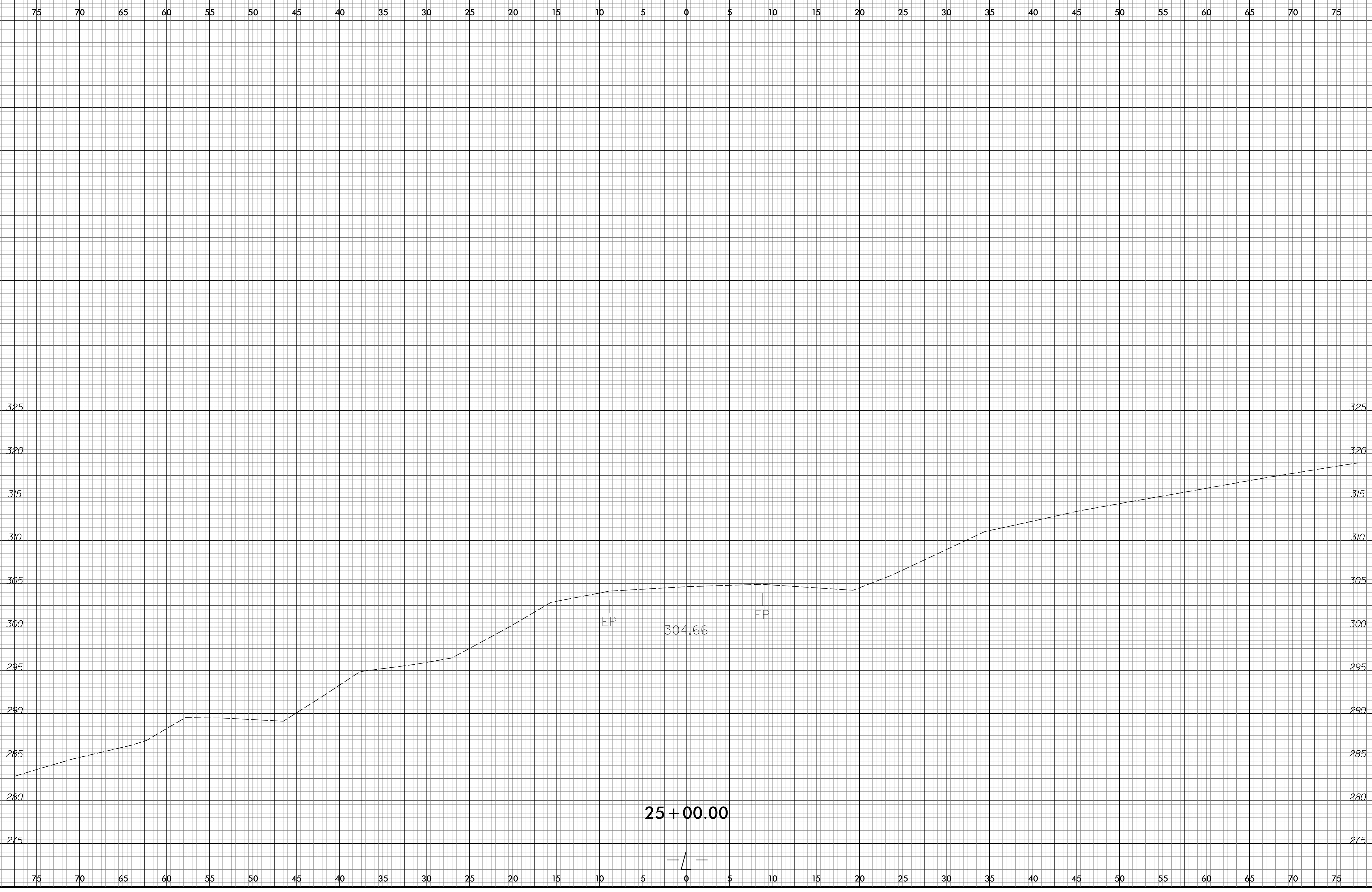
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6/23/16

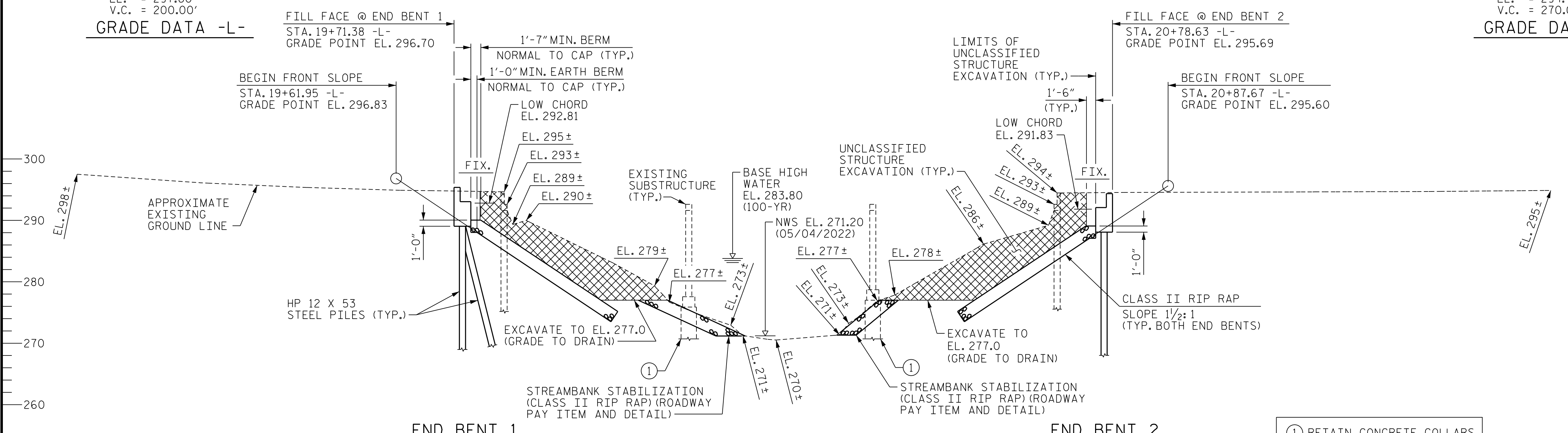


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R:\PROJECTS\XSC\620047_Rev1_xp1.dgn
USER:NAME

-11.8286% Δ -0.9394%
 PVI = 18+75.00 -L-
 EL. = 297.60
 V.C. = 200.00'
GRADE DATA -L-

-0.9394% Δ +3.4819%
 PVI = 22+10.00 -L-
 EL. = 294.45
 V.C. = 270.00'
GRADE DATA -L-

SPAN A



SECTION ALONG -L-

① RETAIN CONCRETE COLLARS & FOOTING SILLS (TYP.)

HYDRAULIC DATA

| | |
|-----------------------------|----------------|
| DESIGN DISCHARGE | = 1100 CFS |
| FREQUENCY OF DESIGN FLOOD | = 25 YRS. |
| DESIGN HIGH WATER ELEVATION | = 282.6 |
| DRAINAGE AREA | = 9.02 SQ. MI. |
| BASE DISCHARGE (1000) | = 1500 CFS |
| BASE HIGH WATER ELEVATION | = 283.8 |

OVERTOPPING FLOOD DATA

| | |
|--------------------------------|-------------|
| OVERTOPPING DISCHARGE | = 14000 CFS |
| FREQUENCY OF OVERTOPPING FLOOD | = 500+ YRS. |
| OVERTOPPING FLOOD ELEVATION | = 295.9 * |

* AT STA. 21+68.00 -L- (LEFT SHOULDER)

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

HORIZ. CURVE DATA -L-

| | |
|----------|--------------------|
| PI STA. | 22+44.99 -L- |
| Δ | 8°-33'-13.9" (LT.) |
| D | 3°-01'-53.5" |
| L | 282.16' |
| T | 141.34' |
| R | 1890.00' |

PROJECT NO. BP8.R004
 MOORE COUNTY
 STATION: 20+25.00 -L-

SHEET 1 OF 2 REPLACES BRIDGE NO. 620047

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON SR 1658
 OVER BIG GOVERNORS CREEK
 BETWEEN SR 1684 & SR 1625

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

MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671

| REVISIONS | | | | | |
|-----------|-----|-------|-----|-----|-------|
| NO. | BY: | DATE: | NO. | BY: | DATE: |
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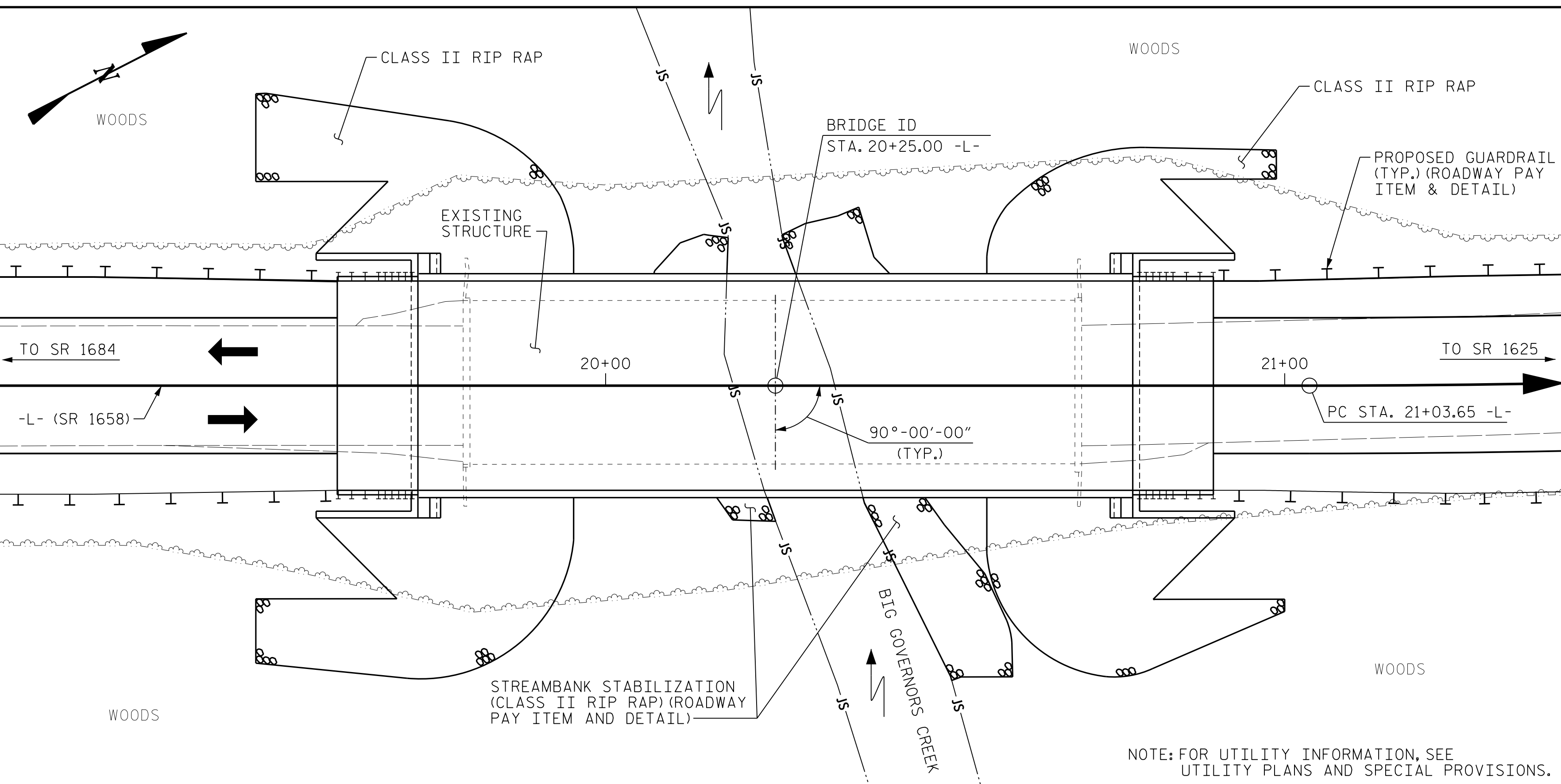
SHEET NO. **S-1**
 TOTAL SHEETS **16**

DRAWN BY : B.E. LANNING DATE : 11/2023
 CHECKED BY : B.E. ATKINSON DATE : 11/2023
 DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 01/2024

PLAN
 (PILES NOT SHOWN FOR CLARITY)

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B.M. #1: BENCH TIE IN 15" MAPLE, 63.57' RT. OF STA. 21+05.06 -L-, EL. 292.34



LOCATION SKETCH

NOTES

ASSUMED LIVE LOAD = HL 93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE EXISTING STRUCTURE CONSISTING OF THREE SPANS (1 @ 30'-5", 1 @ 30'-1" AND 1 @ 30'-4"), WITH ASPHALT WEARING SURFACE ON PRECAST PRESTRESSED CONCRETE CHANNELS AND A CLEAR ROADWAY WIDTH OF 24'-2" ON PRECAST PRESTRESSED CONCRETE CAPS WITH TIMBER PILES ON END BENTS AND PRECAST CONCRETE CAPS WITH TIMBER PILES IN CONCRETE COLLARS ON CONCRETE SILLS AT INTERIOR BENTS AND LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED IN IT'S ENTIRETY, EXCEPT METAL RAILS & POSTS, AND CONCRETE COLLARS & FOOTING SILLS AS NOTED ON GENERAL DRAWING SHEET 1 OF 2. THE EXISTING BRIDGE IS PRESENTLY POSTED FOR LOAD LIMIT. FOR REMOVAL OF EXISTING STRUCTURE, SEE SPECIAL PROVISIONS.

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

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR A DISTANCE OF 50 FT. EACH SIDE OF CENTERLINE ROADWAY AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION. SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

ASPHALT WEARING SURFACE IS INCLUDED IN THE ROADWAY QUANTITY. SEE ROADWAY QUANTITIES.

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

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.

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

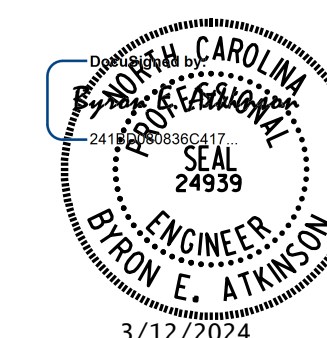
FOR FOUNDATION NOTES, SEE "PILE FOUNDATION TABLES" SHEET.

TOTAL BILL OF MATERIAL

| | REMOVAL OF EXISTING STRUCTURE | ASBESTOS ASSESSMENT | PILE EXCAVATION IN SOIL | PILE EXCAVATION NOT IN SOIL | DYNAMIC PILE TESTING | UNCLASSIFIED STRUCTURE EXCAVATION | CLASS A CONCRETE | BRIDGE APPROACH SLABS | REINFORCING STEEL | PILE DRIVING EQUIPMENT SETUP FOR HP 12 X 53 STEEL PILES | HP 12 X 53 STEEL PILES | STEEL PILE POINTS | VERTICAL CONCRETE BARRIER RAIL | RIP RAP CLASS II (2'-0" THICK) | GEOTEXTILE FOR DRAINAGE | ELASTOMERIC BEARINGS | 3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAMS | | |
|----------------|-------------------------------|---------------------|-------------------------|-----------------------------|----------------------|-----------------------------------|------------------|-----------------------|-------------------|---|------------------------|-------------------|--------------------------------|--------------------------------|-------------------------|----------------------|--|----------|---------|
| | LUMP SUM | LUMP SUM | LIN. FT. | LIN. FT. | EACH | LUMP SUM | CU. YDS. | LUMP SUM | LBS. | EACH | NO. | LIN. FT. | EACH | LIN. FT. | TON | LUMP SUM | NO. | LIN. FT. | |
| SUPERSTRUCTURE | | | | | | | | LUMP SUM | | | | | 210.00 | | | LUMP SUM | 11 | 1155.00 | |
| END BENT 1 | | | | | | | 29.0 | | 4,610 | 7 | 7 | 140 | 7 | | 368 | 409 | | | |
| END BENT 2 | | | 45.5 | 24.5 | | LUMP SUM | 29.0 | | 4,610 | 7 | 7 | 105 | 7 | | 307 | 342 | | | |
| TOTAL | LUMP SUM | LUMP SUM | 45.5 | 24.5 | 1 | LUMP SUM | 58.0 | LUMP SUM | 9,220 | 14 | 14 | 245 | 14 | 210.00 | 675 | 751 | LUMP SUM | 11 | 1155.00 |

PROJECT NO. BP8.R004
MOORE COUNTY
 STATION: 20+25.00 -L-

SHEET 2 OF 2



DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
GENERAL DRAWING
 FOR BRIDGE ON SR 1658
 OVER BIG GOVERNORS CREEK
 BETWEEN SR 1684 & SR 1625

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

DRAWN BY : B.E. LANNING DATE : 11/2023
 CHECKED BY : B.E. ATKINSON DATE : 11/2023
 DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 01/2024

3/12/2024 10:07:27 AM User: blanning
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SUMMARY OF PILE INFORMATION/INSTALLATION

(Blank entries indicate item is not applicable to structure)

| End Bent/ Bent No, Pile(s) # (e.g., "Bent 1, Piles 1-5") | Factored Resistance per Pile TONS | Pile Cut-Off (Top of Pile) Elevation FT | Estimated Pile Lenth per Pile FT | Scour Critical Elevation FT | Driven Piles | | | Predrilling for Piles* | | | Drilled-In Piles | | |
|--|--|--|---|--------------------------------------|---|---|---|---|---|---|--|---|-----|
| | | | | | Min Pile Tip (Tip No Higher Than) Elev FT | Required Driving Resistance (RDR)** per Pile TONS | Total Pile Redrives Quantity EACH | Predrilling Length per Pile Lin FT | Predrilling Elevation (Elev Not To Predrill Below) FT | Maximum Predrilling Dia INCHES | Pile Exc Not In Soil per Pile Lin FT | Pile Exc In Soil per Pile Lin FT | |
| End Bent 1 (Piles 1 - 7) | 115 | See Substructure Plans | 20 | | | 195 | | | | | | | |
| End Bent 2 (Piles 1 - 7) | 115 | See Substructure Plans | 15 | | | 195 | | | | | 277.7 | 3.5 | 6.5 |

*Predrilling for Piles is required for end bents/bents with a predrilling length and at the Contractor's option for end bents/bents with predrilling information but no predrilling length.

$$**RDR = \frac{\text{Factored Resistance} + \text{Factored Downdrag Load} + \text{Factored Dead Load}}{\text{Dynamic Resistance Factor}} + \text{Nominal Downdrag Resistance} + \frac{\text{Nominal Scour Resistance}}{\text{Scour Resistance Factor}}$$

SUMMARY OF DPT/PILE ORDER LENGTHS

(Blank entries indicate item is not applicable to structure)

| Dynamic Pile Testing (DPT) | | | | Pile Order Lengths | |
|----------------------------|--|----------------------------------|---|-------------------------|--|
| End Bent/ Bent No | DPT Testing Required? YES or MAYBE | DPT Test Pile Length FT | Total DPT Testing Quantity EACH | End Bent/ Bent No(s) | Pile Order Length Basis* EST or DPT |
| End Bent 1 | Maybe | 20 | 1 | | |
| End Bent 2 | Maybe | 15 | | | |

*EST = Pile order lengths from estimated pile lengths; DPT = Pile order lengths based on DPT testing. For groups of end bents/bents with pile order lengths based on DPT testing, the first end bent/bent no. listed for each group is the representative end bent/bent with the DPT.

PILE DESIGN INFORMATION

(Blank entries indicate item is not applicable to structure)

| End Bent/ Bent No, Pile(s) # (e.g., "Bent 1, Piles 1-5") | Factored Axial Load per Pile TONS | Factored Downdrag Load per Pile TONS | Factored Dead Load* per Pile TONS | Dynamic Resistance Factor | Nominal Downdrag Resistance per Pile TONS | Nominal Scour Resistance per Pile TONS | Scour Resistance Factor (Default = 1.00) |
|--|---|--|---|---------------------------------|---|---|---|
| End Bent 1 (Piles 1 - 7) | 115 | | | 0.60 | | | |
| End Bent 2 (Piles 1 - 7) | 115 | | | 0.60 | | | |

*Factored Dead Load is factored weight of pile above the ground line.

SUMMARY OF PILE ACCESSORIES

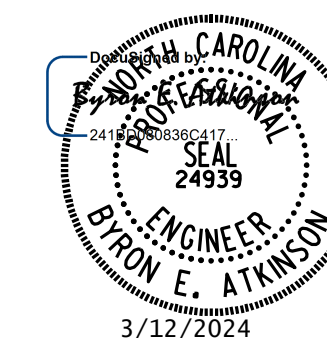
(Blank entries indicate item is not applicable to structure)

| End Bent/ Bent No, Pile(s) # (e.g., "Bent 1, Piles 1-5") | Pipe Pile Plates Required? YES or MAYBE | Steel Pile Points | | | Steel Pile Tips Required? YES |
|--|---|---|--|--------------------------------------|--|
| | | Pipe Pile Cutting Shoes Required? YES | Pipe Pile Conical Points Required? YES | H-Pile Points Required? YES | |
| End Bent 1 (Piles 1 - 7) | | | | Yes | |
| End Bent 2 (Piles 1 - 7) | | | | Yes | |
| TOTAL QTY: | | | | 14 | |

NOTES:

1. THE PILE FOUNDATION TABLES ARE BASED ON THE BRIDGE SUBSTRUCTURE DESIGN AND FOUNDATION RECOMMENDATIONS SEALED BY A NORTH CAROLINA PROFESSIONAL ENGINEER (MARGARET M. SWEITZER, PE #024955) ON 03-11-2024.
2. TOTAL PILE DRIVING EQUIPMENT SETUP QUANTITY (NOT SHOWN IN PILE FOUNDATION TABLES) EQUALS THE NUMBER OF DRIVEN PILES, I.E., THE NUMBER OF PILES WITH A REQUIRED DRIVING RESISTANCE.
3. THE ENGINEER WILL DETERMINE THE NEED FOR DPT TESTING WHEN DPTS MAY BE REQUIRED.
4. FOR PILES, SEE PILES PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
5. BEFORE FILLING HOLES FOR PILE EXCAVATION AT END BENT NO. 2, DRIVE PILES TO THE REQUIRED DRIVING RESISTANCE.
6. FILL HOLES FOR PILE EXCAVATION AT END BENT NO. 2 WITH CONCRETE OR GROUT.
7. PILE EXCAVATION AT END BENT NO. 2 WILL EXTEND INTO MATERIAL THAT DETERIORATES WHEN EXPOSED TO THE ELEMENTS. CHECK FIELD CONDITIONS FOR THE REQUIRED TIP RESISTANCE AND PLACE CONCRETE IMMEDIATELY AFTER THE EXCAVATION IS COMPLETED.

PROJECT NO. BP8.R004
MOORE COUNTY
 STATION: 20+25.00 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
**PILE
 FOUNDATION
 TABLES**

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



MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671

| REVISIONS | | | | | |
|-----------|-----|-------|-----|-----|-------|
| NO. | BY: | DATE: | NO. | BY: | DATE: |
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SHEET NO.
S-3
 TOTAL SHEETS
16

| | |
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| DRAWN BY : <u>B.E. LANNING</u> | DATE : <u>11/2023</u> |
| CHECKED BY : <u>B.E. ATKINSON</u> | DATE : <u>11/2023</u> |
| DESIGN ENGINEER OF RECORD : <u>B.E. ATKINSON</u> | DATE : <u>01/2024</u> |

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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 | 1.70 | -- | 1.75 | 0.209 | 1.82 | A | E | 51.8 | 0.490 | 1.87 | A | E | 10.4 | 0.80 | 0.209 | 1.70 | A | E | 51.8 | | |
| | HL-93(Opr) | N/A | | 2.36 | -- | 1.35 | 0.209 | 2.36 | A | E | 51.8 | 0.490 | 2.48 | A | E | 10.4 | N/A | -- | -- | -- | -- | -- | | |
| | HS-20(Inv) | 36.00 | ② | 2.39 | 86.04 | 1.75 | 0.209 | 2.57 | A | E | 51.8 | 0.490 | 2.58 | A | E | 10.4 | 0.80 | 0.209 | 2.39 | A | E | 51.8 | | |
| | HS-20(Opr) | 36.00 | | 3.33 | 119.88 | 1.35 | 0.209 | 3.33 | A | E | 51.8 | 0.490 | 3.41 | A | E | 10.4 | N/A | -- | -- | -- | -- | -- | | |
| LEGAL LOAD RATING | SV | SNSH | 13.50 | | 5.70 | 76.95 | 1.40 | 0.209 | 7.65 | A | E | 51.8 | 0.490 | 8.41 | A | E | 10.4 | 0.80 | 0.209 | 5.70 | A | E | 51.8 | |
| | | SNGARBS2 | 20.00 | | 4.11 | 82.20 | 1.40 | 0.209 | 5.52 | A | E | 51.8 | 0.490 | 5.82 | A | E | 10.4 | 0.80 | 0.209 | 4.11 | A | E | 51.8 | |
| | | SNAGRIS2 | 22.00 | | 3.84 | 84.48 | 1.40 | 0.209 | 5.16 | A | E | 51.8 | 0.490 | 5.35 | A | E | 10.4 | 0.80 | 0.209 | 3.84 | A | E | 51.8 | |
| | | SNCOTTS3 | 27.25 | | 2.83 | 77.12 | 1.40 | 0.209 | 3.80 | A | E | 51.8 | 0.490 | 4.08 | A | E | 10.4 | 0.80 | 0.209 | 2.83 | A | E | 51.8 | |
| | | SNAGGRS4 | 34.93 | | 2.32 | 81.03 | 1.40 | 0.209 | 3.11 | A | E | 51.8 | 0.490 | 3.28 | A | E | 10.4 | 0.80 | 0.209 | 2.32 | A | E | 51.8 | |
| | | SNS5A | 35.55 | | 2.27 | 80.70 | 1.40 | 0.209 | 3.04 | A | E | 51.8 | 0.490 | 3.28 | A | E | 10.4 | 0.80 | 0.209 | 2.27 | A | E | 51.8 | |
| | | SNS6A | 39.95 | | 2.06 | 82.30 | 1.40 | 0.209 | 2.76 | A | E | 51.8 | 0.490 | 2.96 | A | E | 10.4 | 0.80 | 0.209 | 2.06 | A | E | 51.8 | |
| | TTST | SNS7B | 42.00 | | 1.96 | 82.32 | 1.40 | 0.209 | 2.63 | A | E | 51.8 | 0.490 | 2.87 | A | E | 10.4 | 0.80 | 0.209 | 1.96 | A | E | 51.8 | |
| | | TNAGRIT3 | 33.00 | | 2.51 | 82.83 | 1.40 | 0.209 | 3.36 | A | E | 51.8 | 0.490 | 3.58 | A | E | 10.4 | 0.80 | 0.209 | 2.51 | A | E | 51.8 | |
| | | TNT4A | 33.08 | | 2.51 | 83.02 | 1.40 | 0.209 | 3.37 | A | E | 51.8 | 0.490 | 3.51 | A | E | 10.4 | 0.80 | 0.209 | 2.51 | A | E | 51.8 | |
| | | TNT6A | 41.60 | | 2.03 | 84.45 | 1.40 | 0.209 | 2.73 | A | E | 51.8 | 0.490 | 3.00 | A | E | 10.4 | 0.80 | 0.209 | 2.03 | A | E | 51.8 | |
| | | TNT7A | 42.00 | | 2.03 | 85.26 | 1.40 | 0.209 | 2.73 | A | E | 51.8 | 0.490 | 2.94 | A | E | 10.4 | 0.80 | 0.209 | 2.03 | A | E | 51.8 | |
| | | TNT7B | 42.00 | | 2.08 | 87.36 | 1.40 | 0.209 | 2.79 | A | E | 51.8 | 0.490 | 2.81 | A | E | 10.4 | 0.80 | 0.209 | 2.08 | A | E | 51.8 | |
| | | TNAGRIT4 | 43.00 | | 2.00 | 86.00 | 1.40 | 0.209 | 2.68 | A | E | 51.8 | 0.490 | 2.73 | A | E | 10.4 | 0.80 | 0.209 | 2.00 | A | E | 51.8 | |
| EMERGENCY VEHICLE (EV) | TNAGT5A | 45.00 | | 1.89 | 85.05 | 1.40 | 0.209 | 2.54 | A | E | 51.8 | 0.490 | 2.68 | A | E | 10.4 | 0.80 | 0.209 | 1.89 | A | E | 51.8 | | |
| | TNAGT5B | 45.00 | ③ | 1.88 | 84.60 | 1.40 | 0.209 | 2.52 | A | E | 51.8 | 0.490 | 2.59 | A | E | 10.4 | 0.80 | 0.208 | 1.88 | A | I | 51.8 | | |
| EMERGENCY VEHICLE (EV) | EV2 | 28.750 | | 2.89 | 83.09 | 1.30 | 0.209 | 4.18 | A | E | 51.8 | 0.490 | 4.33 | A | E | 10.4 | 0.80 | 0.209 | 2.89 | A | E | 51.8 | | |
| | EV3 | 43.00 | ④ | 1.91 | 82.13 | 1.30 | 0.209 | 2.76 | A | E | 51.8 | 0.490 | 2.84 | A | E | 10.4 | 0.80 | 0.209 | 1.91 | A | E | 51.8 | | |

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 CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

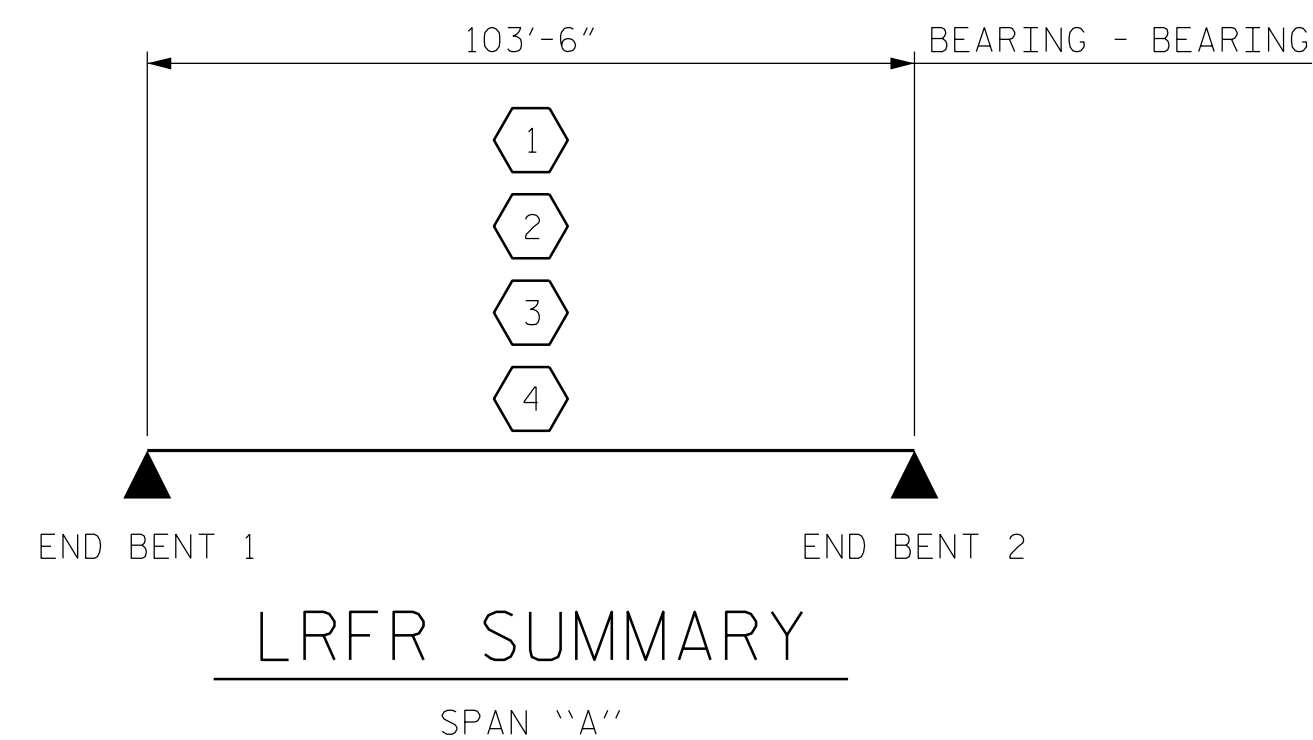
③ LEGAL LOAD RATING **

④ EMERGENCY LEGAL LOAD RATING **

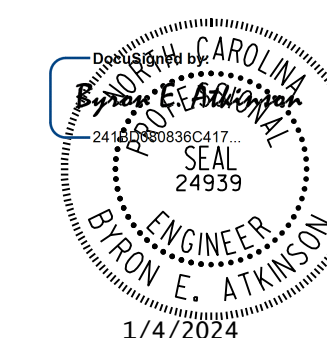
** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

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



PROJECT NO. BP8.R004
MOORE COUNTY
 STATION: 20+25.00 -L-



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

LRFR SUMMARY FOR
105' BOX BEAM UNIT
90° SKEW
(NON-INTERSTATE TRAFFIC)

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

DRAWN BY : B.E. LANNING DATE : 07/2023
 CHECKED BY : B.E. ATKINSON DATE : 07/2023
 DESIGN ENGINEER OF RECORD : B.E. ATKINSON DATE : 01/2024

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 BOX BEAM SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE BOX BEAMS.

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

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

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF BOX BEAM 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.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE BOX BEAM UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN 5,500 PSI.

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

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE BOX BEAM UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO BOX BEAM UNIT ENDS.

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

THE LOCATION OF THE VOID DRAINS MAY BE SHIFTED SLIGHTLY WHERE NECESSARY TO CLEAR PRESTRESSING STRANDS OR TRANSVERSE REINFORCING STEEL.

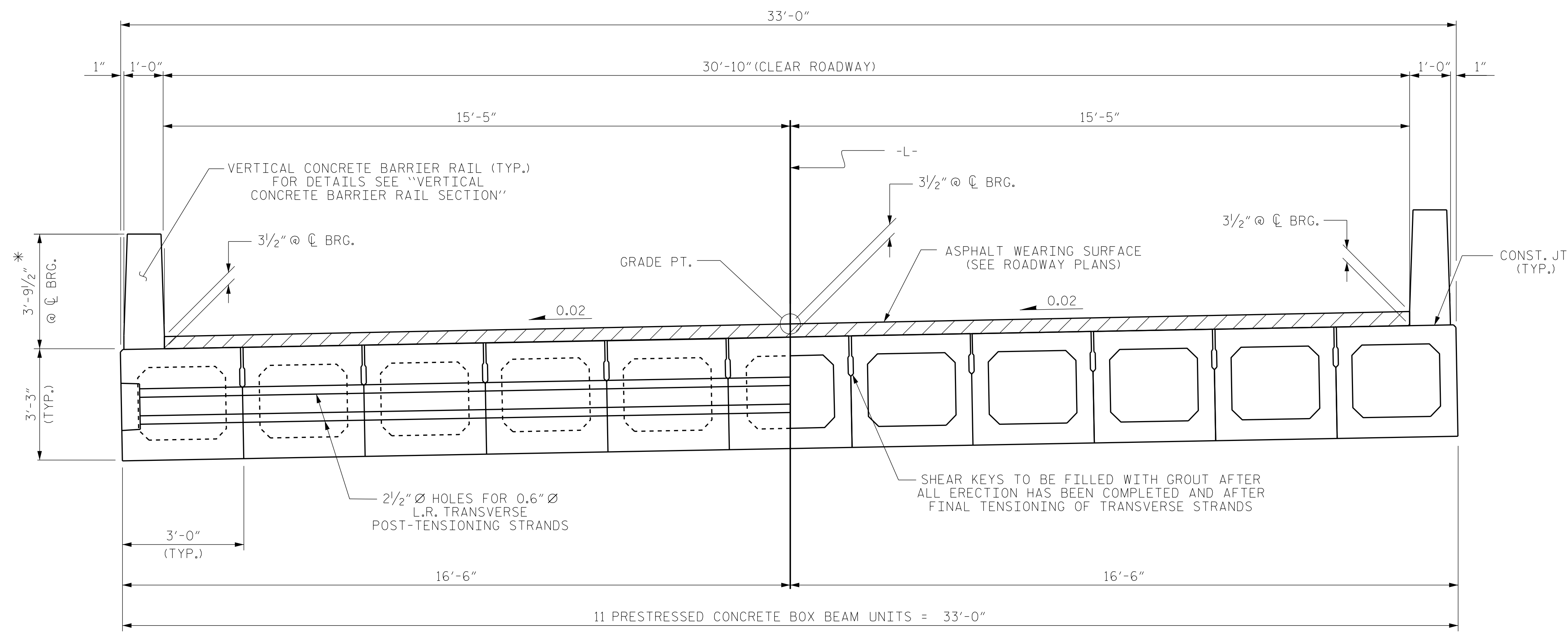
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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.

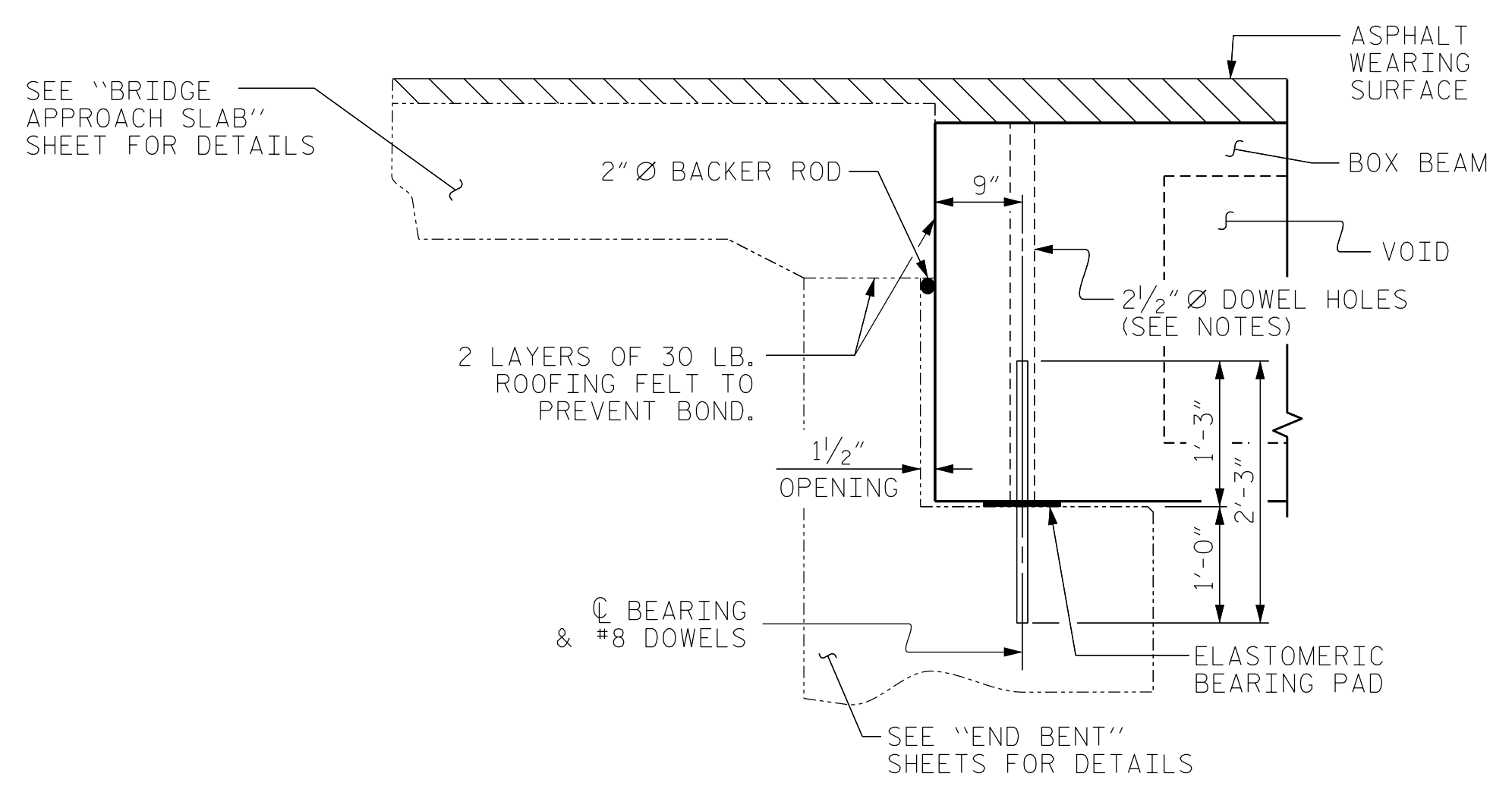


HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

HALF SECTION
THROUGH VOIDS

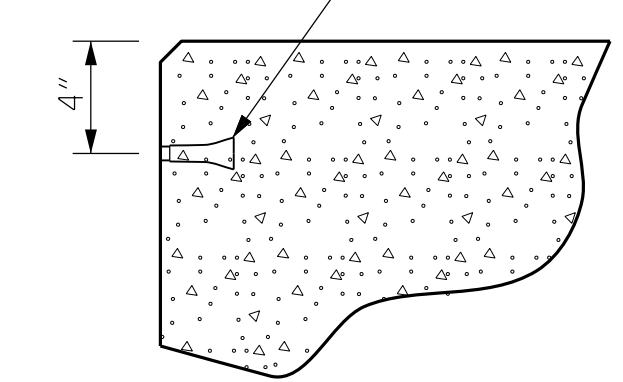
TYPICAL SECTION

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



SECTION AT END BENT

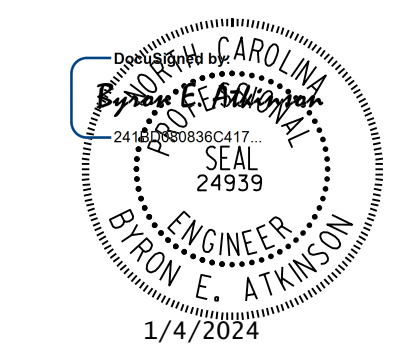
PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.



THREADED INSERT DETAIL

PROJECT NO. BP8.R004
MOORE COUNTY
 STATION: 20+25.00 -L-

SHEET 1 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

3'-0" X 3'-3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT

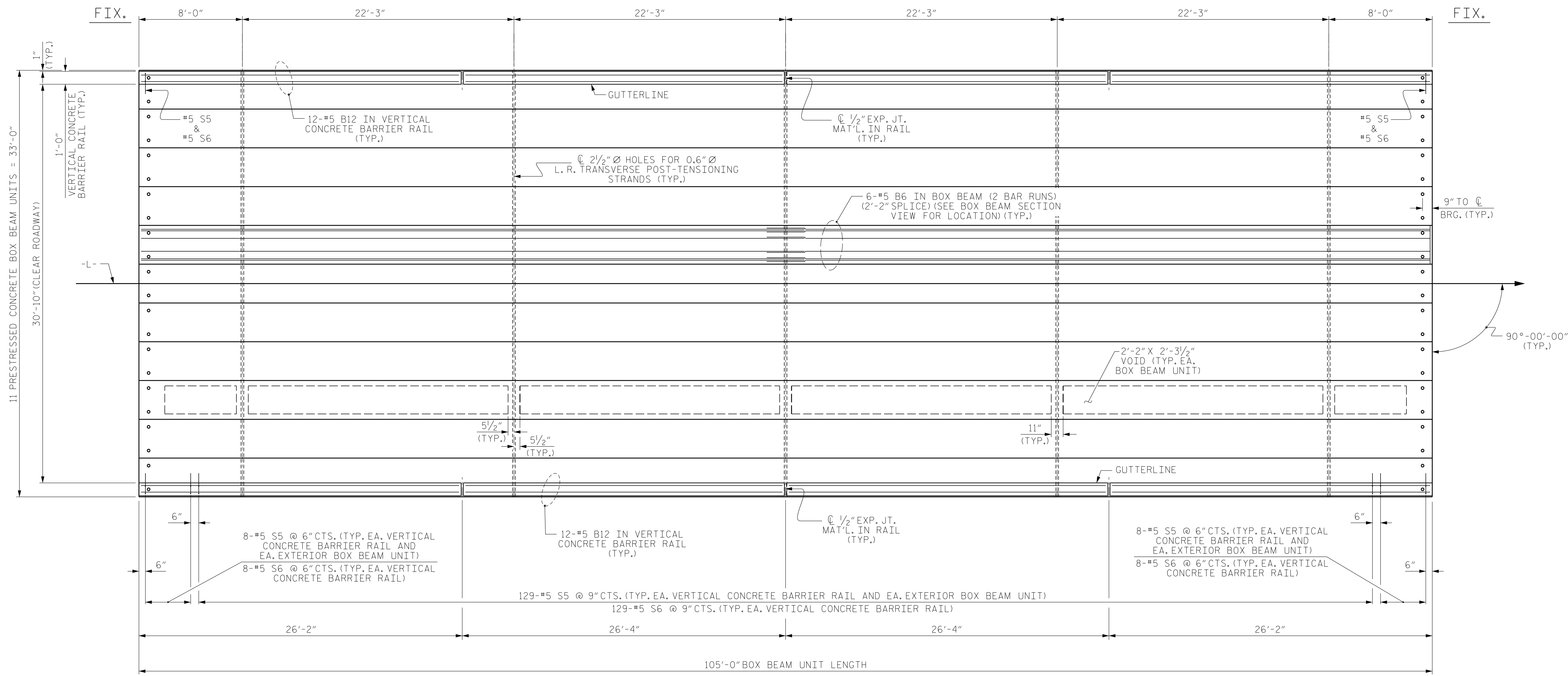
**DOCUMENT NOT CONSIDERED FINAL
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 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671

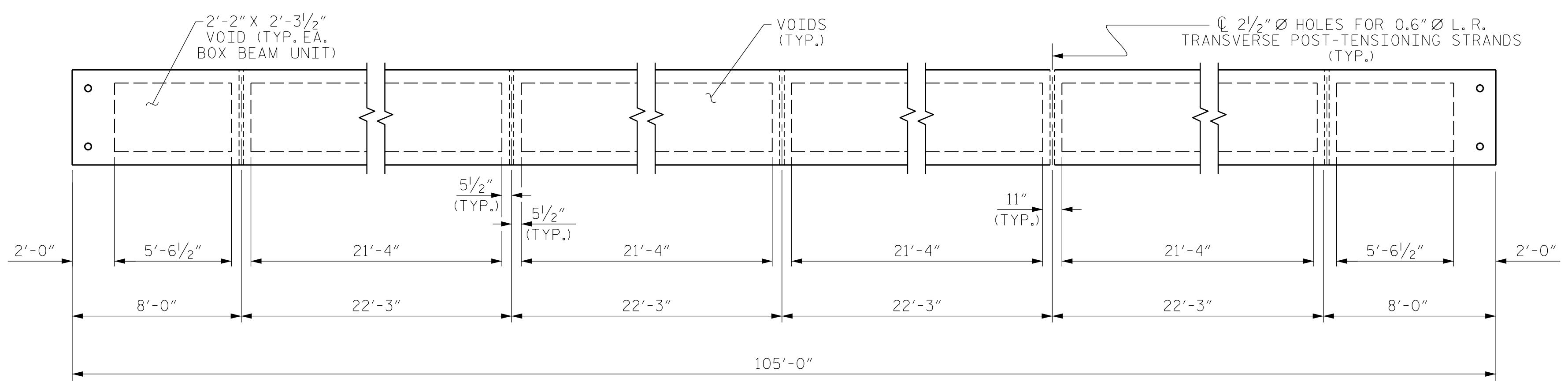
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|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-5 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 16 |

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| | |
|--|-----------------------|
| DRAWN BY : <u>B.E. LANNING</u> | DATE : <u>05/2023</u> |
| CHECKED BY : <u>B.E. ATKINSON</u> | DATE : <u>07/2023</u> |
| DESIGN ENGINEER OF RECORD : <u>B.E. ATKINSON</u> | DATE : <u>01/2024</u> |



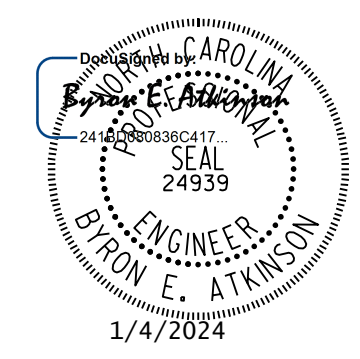
PLAN OF UNIT



DIAPHRAGM AND VOID LAYOUT

PROJECT NO. BP8.R004
MOORE COUNTY
 STATION: 20+25.00 -L-
 SHEET 2 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 PLAN OF 105' UNIT
 30'-10" CLEAR ROADWAY
 90° SKEW



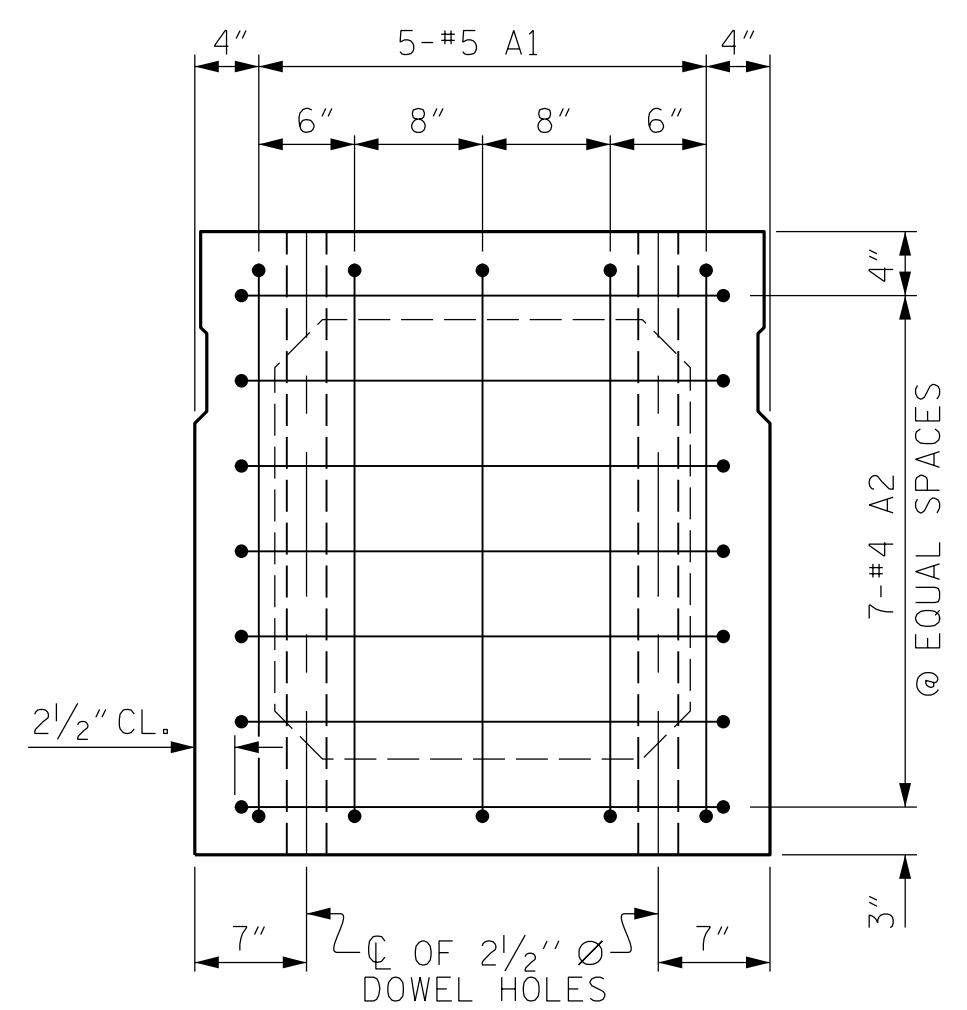
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 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

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|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-6 |
| 1 | | | 3 | | | TOTAL SHEETS |
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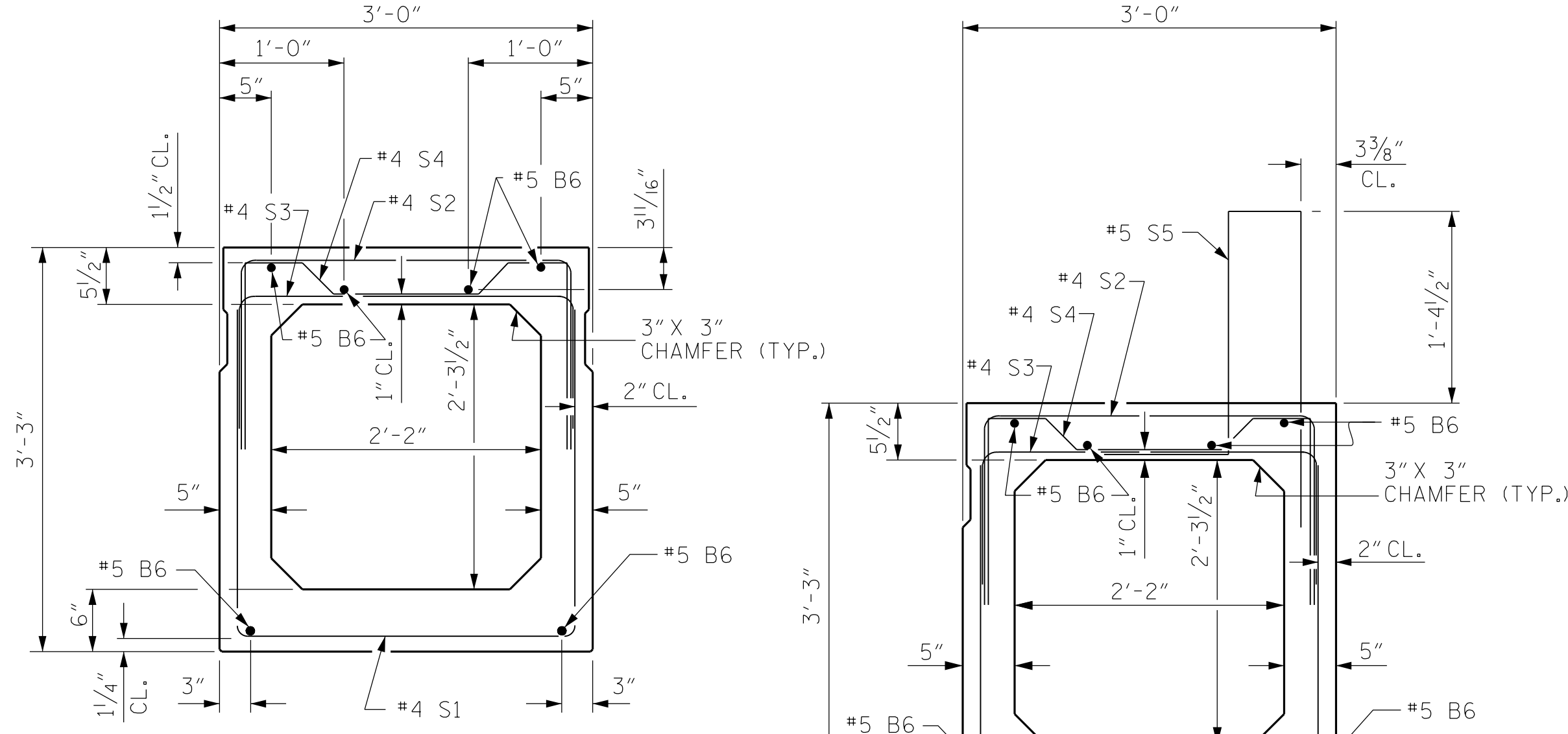
DRAWN BY: B.E. LANNING DATE: 05/2023
 CHECKED BY: B.E. ATKINSON DATE: 07/2023
 DESIGN ENGINEER OF RECORD: B.E. ATKINSON DATE: 01/2024

1/4/2024 1:13:59 PM User: blanning
 Filename: N:\NC Bridges\W22003_MI_Eng Prime_Moore_47_Br_Rep\BP8R004\Structures\01_011_BP8R004_SMU_BB12_620047.dgn



END ELEVATION

SHOWING PLACEMENT OF #5 & #4 "A" BARS AND LOCATION OF DOWEL HOLES. (INTERIOR BOX BEAM SECTION SHOWN-EXTERIOR SECTION SIMILAR EXCEPT SHEAR KEY LOCATION, STRAND LAYOUT NOT SHOWN.)



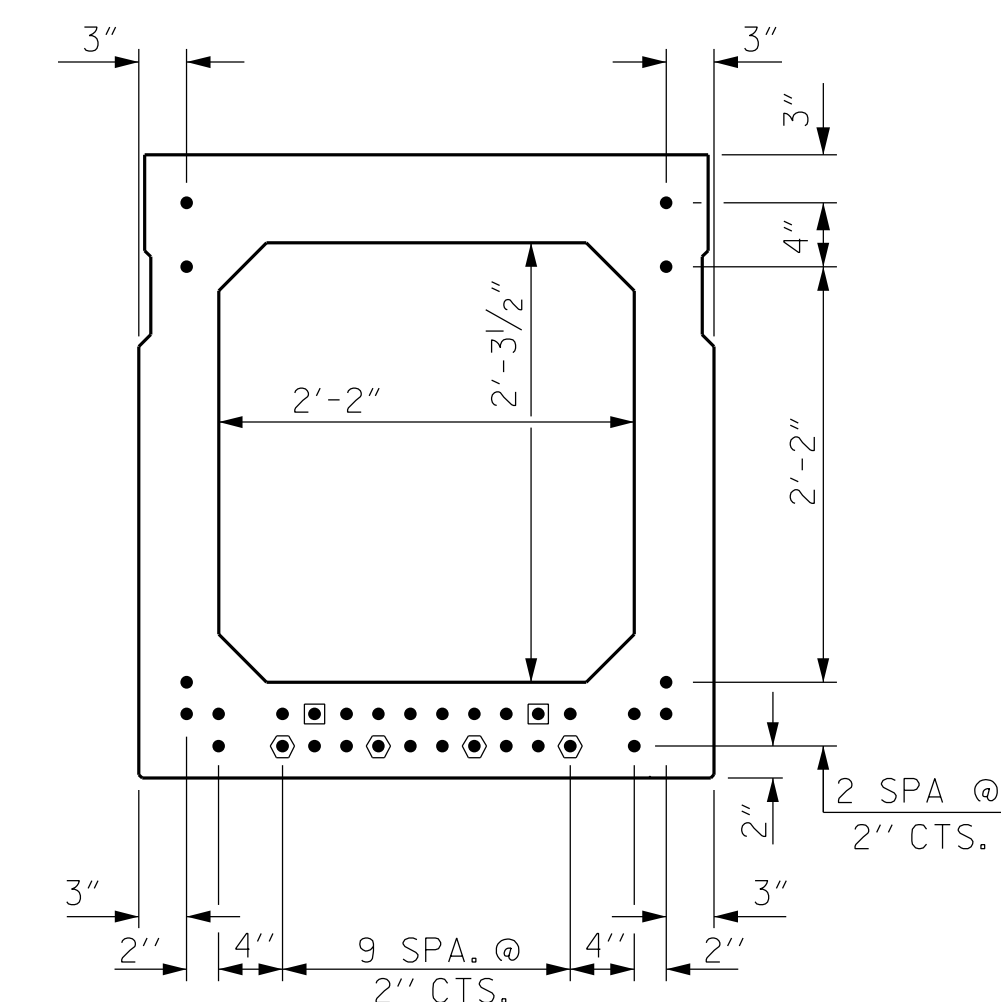
INTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

EXTERIOR BOX BEAM SECTION

(STRAND LAYOUT NOT SHOWN)

0.6" Ø LOW RELAXATION STRAND LAYOUT



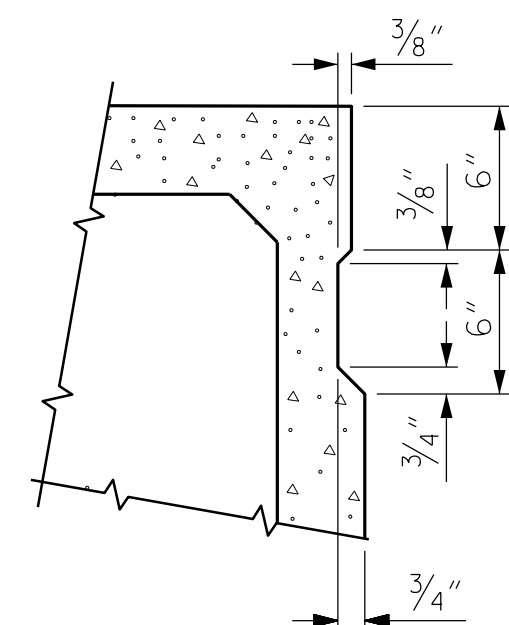
TYPICAL STRAND LOCATION

(32 STRANDS REQUIRED)

DEBONDING LEGEND

- FULLY BONDED STRANDS
- ◐ STRANDS DEBONDED FOR 4'-0" FROM END OF GIRDER
- ◑ STRANDS DEBONDED FOR 12'-0" FROM END OF GIRDER

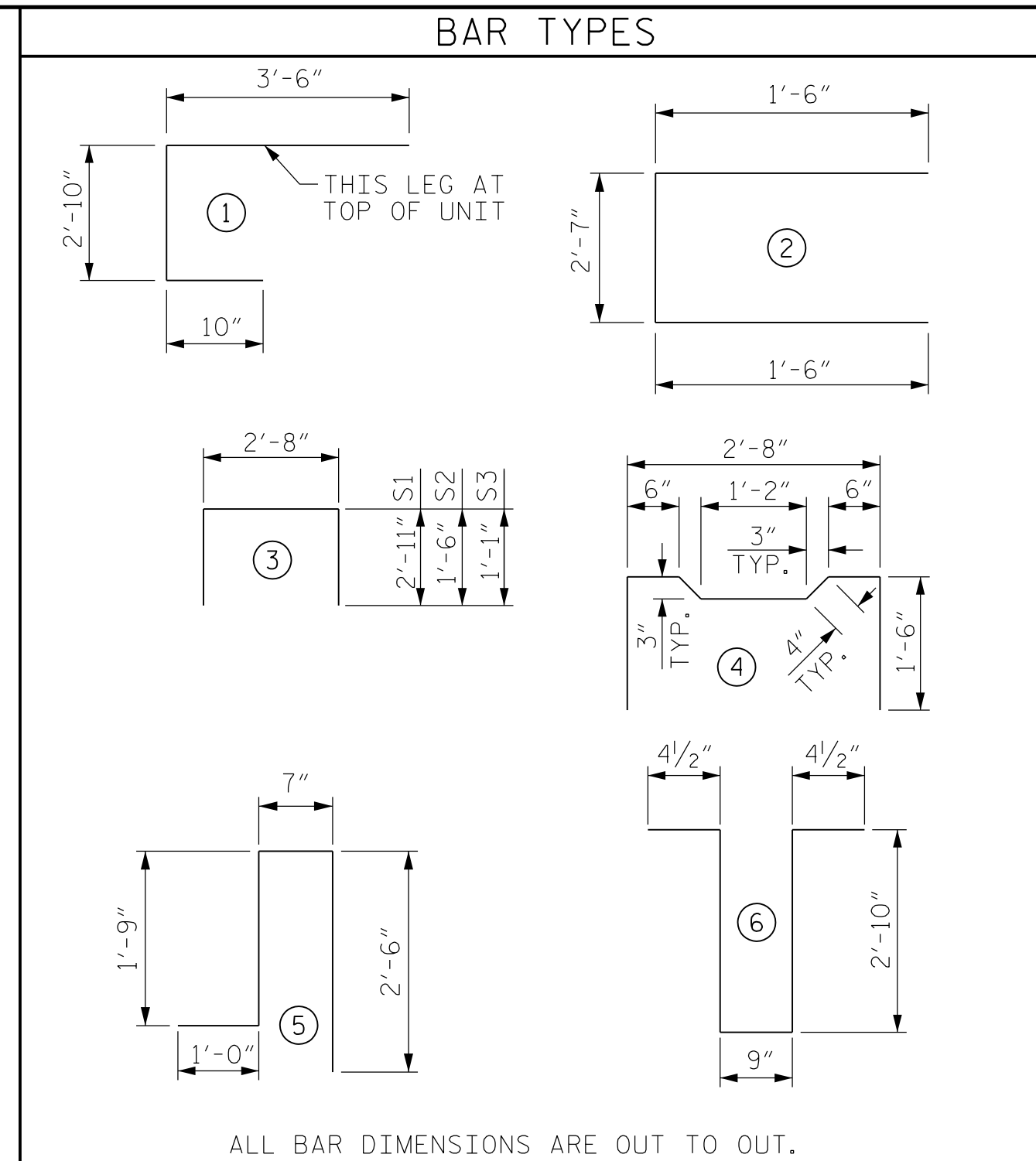
BOND SHALL BE BROKEN ON STRANDS AS SHOWN FOR THE SPECIFIED LENGTH FROM EACH END OF THE BOX BEAM. SEE STANDARD SPECIFICATIONS ARTICLE 1078-7.



SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR BOX BEAMS.

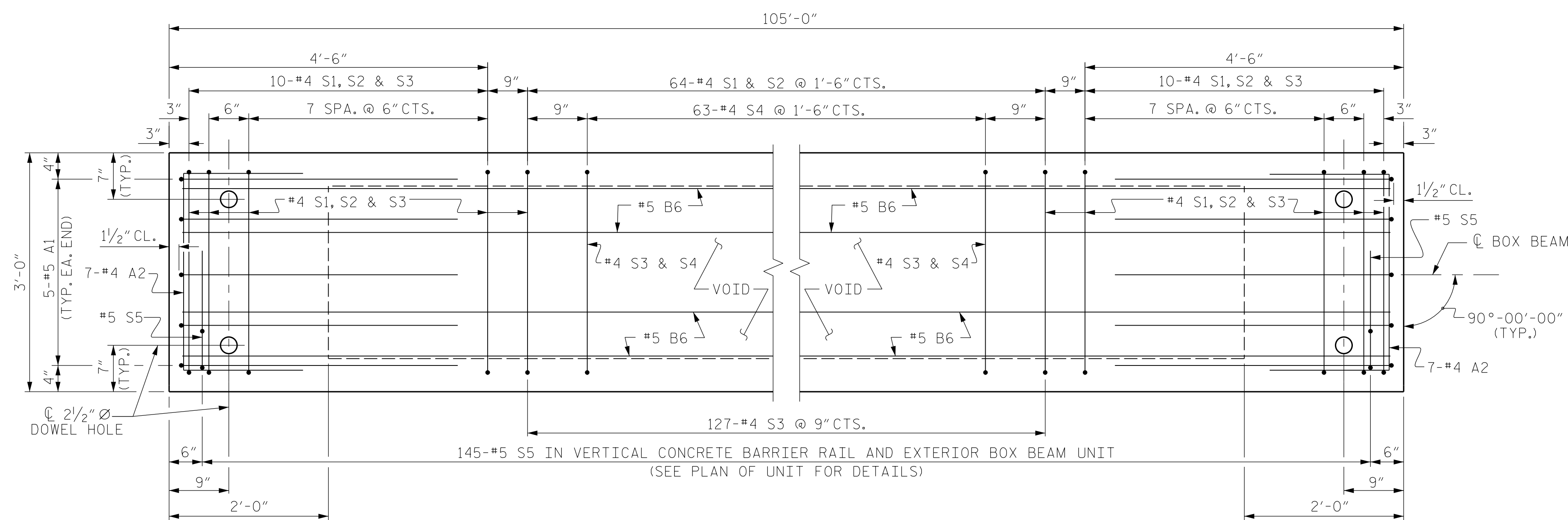
| GRADE 270 STRANDS | |
|---------------------------------------|--------|
| AREA (SQUARE INCHES) | 0.217 |
| ULTIMATE STRENGTH (LBS. PER STRAND) | 58,600 |
| APPLIED PRESTRESS (LBS. PER STRAND) | 43,950 |
| 0.6" Ø L.R. | |



ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL FOR ONE BOX BEAM SECTION

| BAR | NUMBER | SIZE | TYPE | EXTERIOR UNIT | | INTERIOR UNIT | |
|-----------------------------|--------|------|------|---------------|----------|---------------|----------|
| | | | | LENGTH | WEIGHT | LENGTH | WEIGHT |
| A1 | 10 | #5 | 1 | 7'-2" | 75 | 7'-2" | 75 |
| A2 | 44 | #4 | 2 | 5'-7" | 164 | 5'-7" | 164 |
| B6 | 12 | #5 | STR | 53'-6" | 670 | 53'-6" | 670 |
| K1 | 15 | #4 | 6 | 7'-2" | 72 | 7'-2" | 72 |
| K2 | 10 | #4 | STR | 2'-7" | 17 | 2'-7" | 17 |
| S1 | 84 | #4 | 3 | 8'-6" | 477 | 8'-6" | 477 |
| S2 | 84 | #4 | 3 | 5'-8" | 318 | 5'-8" | 318 |
| S3 | 147 | #4 | 3 | 4'-10" | 475 | 4'-10" | 475 |
| S4 | 63 | #4 | 4 | 5'-10" | 245 | 5'-10" | 245 |
| * S5 | 145 | #5 | 5 | 5'-10" | 882 | -- | -- |
| REINFORCING STEEL | | | | 2513 | LBS. | 2513 | LBS. |
| * EPOXY COATED REINF. STEEL | | | | 882 | LBS. | | |
| 7500 P.S.I. CONCRETE | | | | 20.5 | CU. YDS. | 20.3 | CU. YDS. |
| 0.6" Ø L.R. STRANDS | | | | No. 32 | | No. 32 | |



PLAN OF BOX BEAM

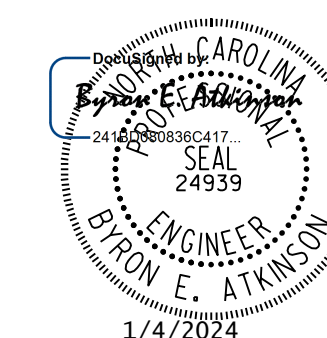
EXTERIOR UNIT SHOWN, INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S5 BARS. FOR LOCATION OF DIAPHRAGMS, SEE "PLAN OF UNIT". FOR THREADED INSERTS, SEE "THREADED INSERT DETAIL". FOR REINFORCING STEEL IN DIAPHRAGMS, SEE "DOUBLE DIAPHRAGM DETAILS".

PROJECT NO. BP8.R004
MOORE COUNTY
 STATION: 20+25.00 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

3'-0" X 3'-3"
 PRESTRESSED CONCRETE
 BOX BEAM UNIT



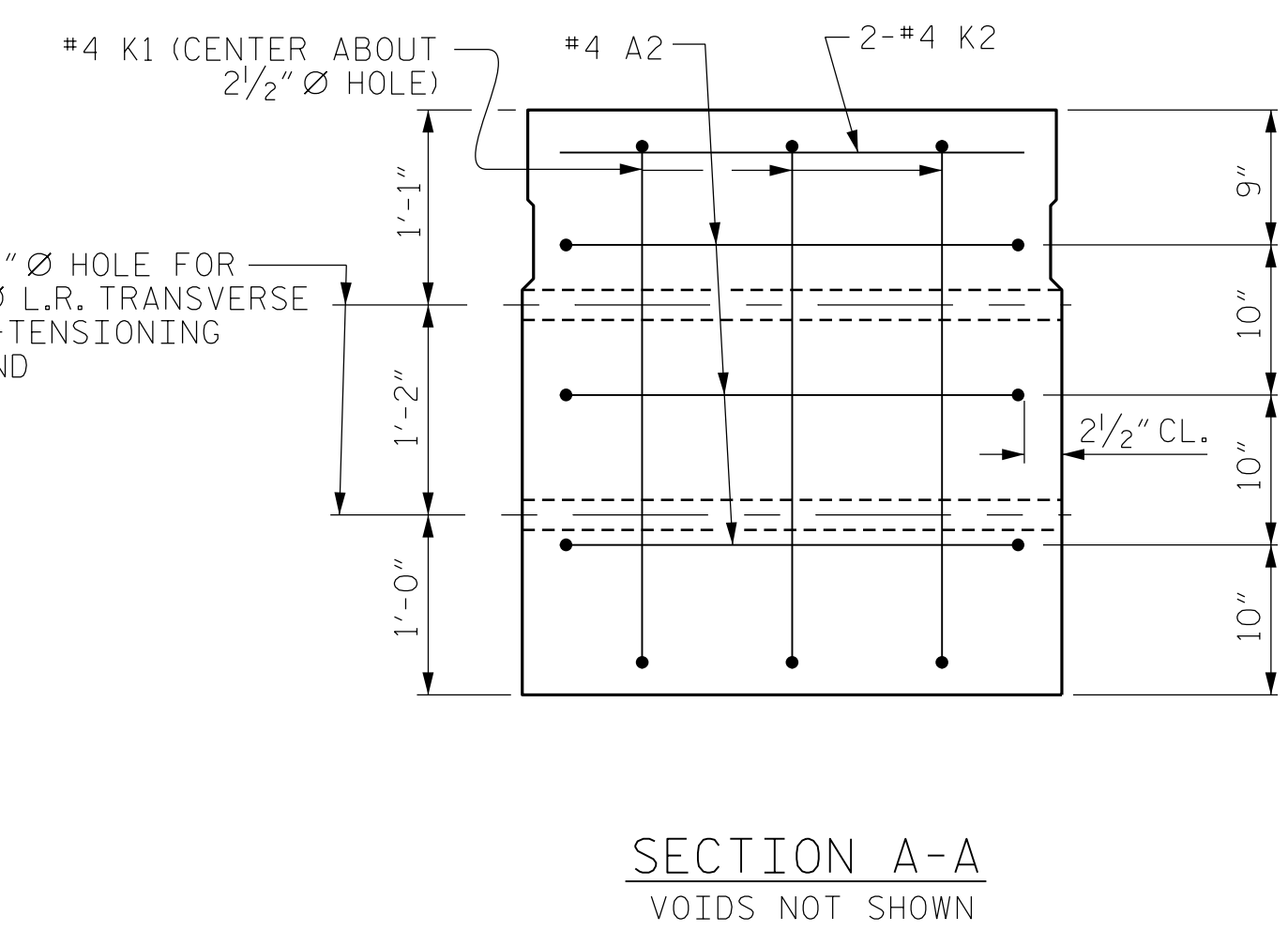
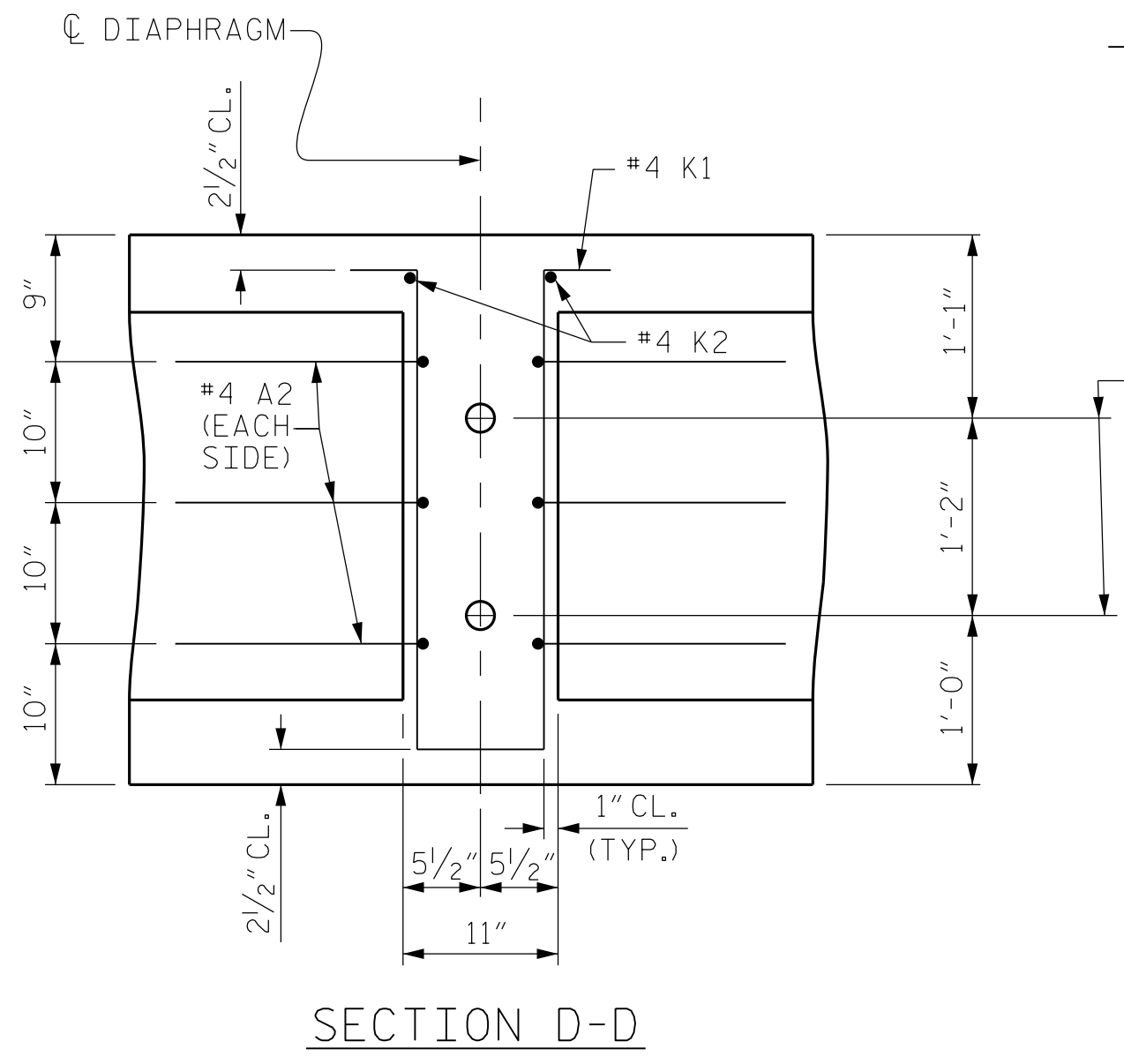
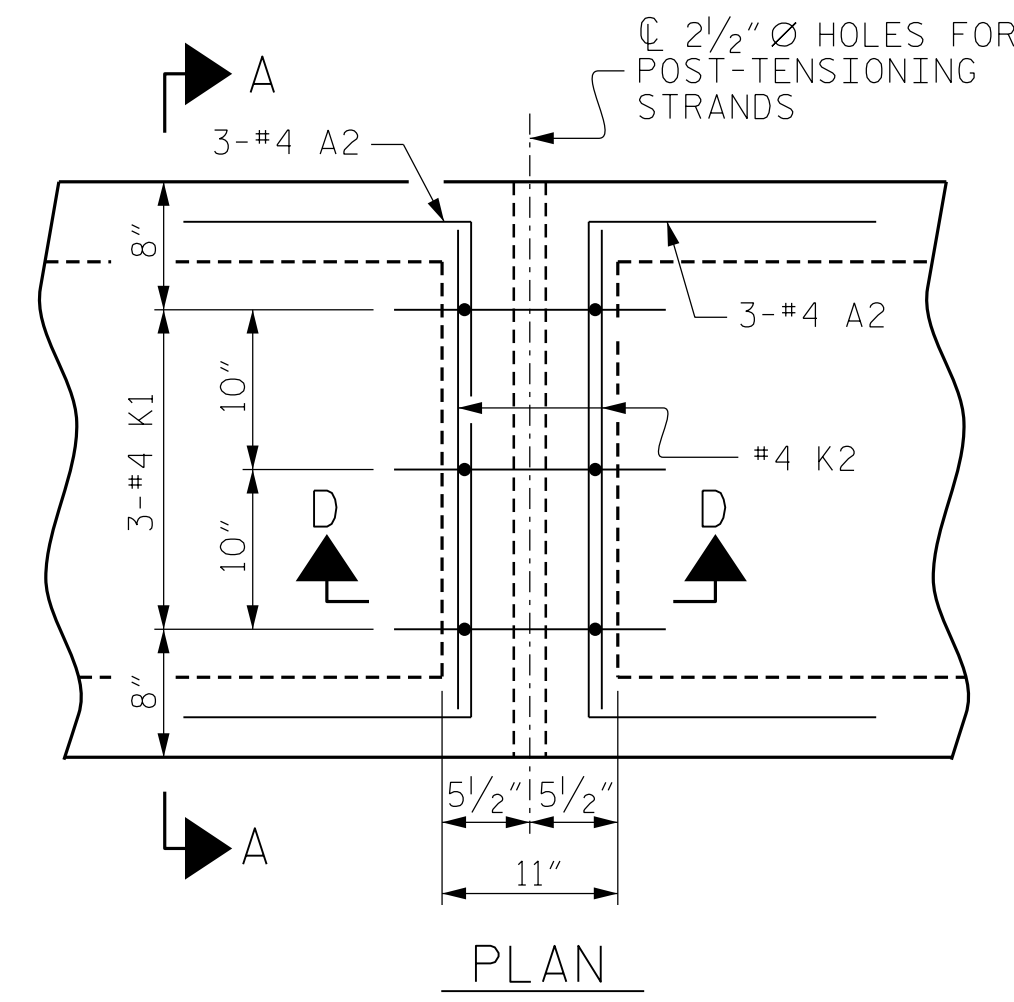
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-7 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 16 |

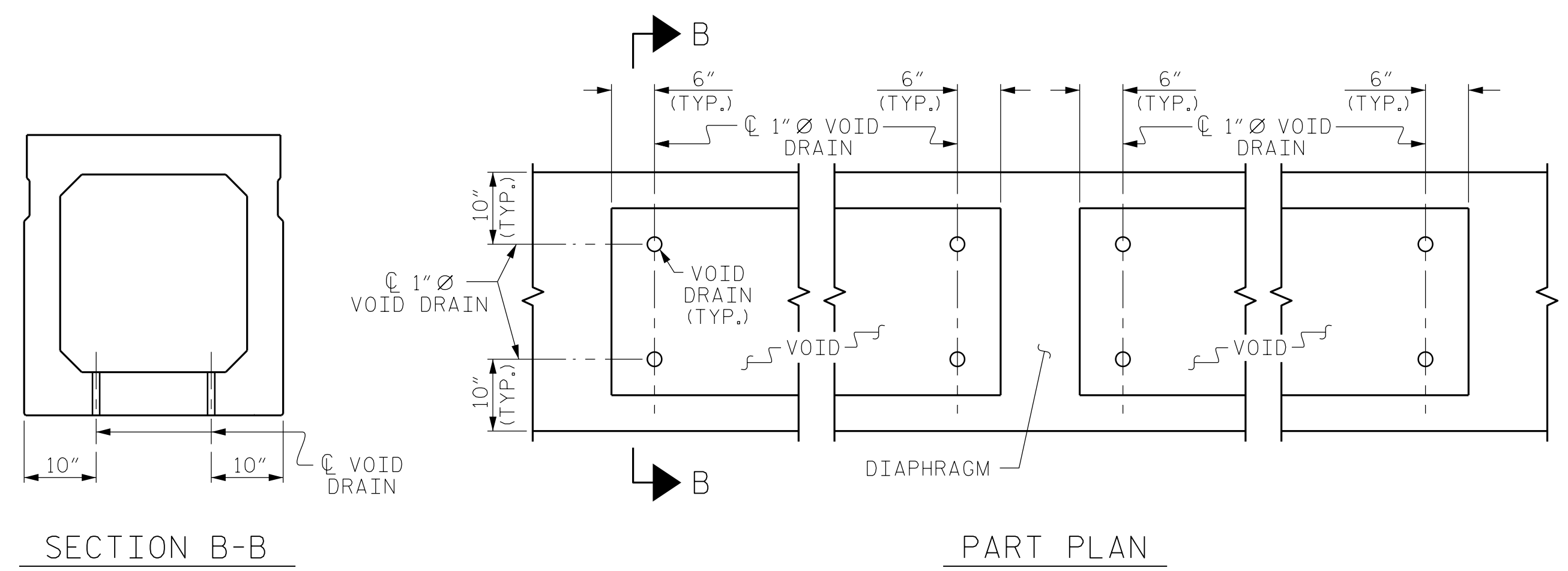
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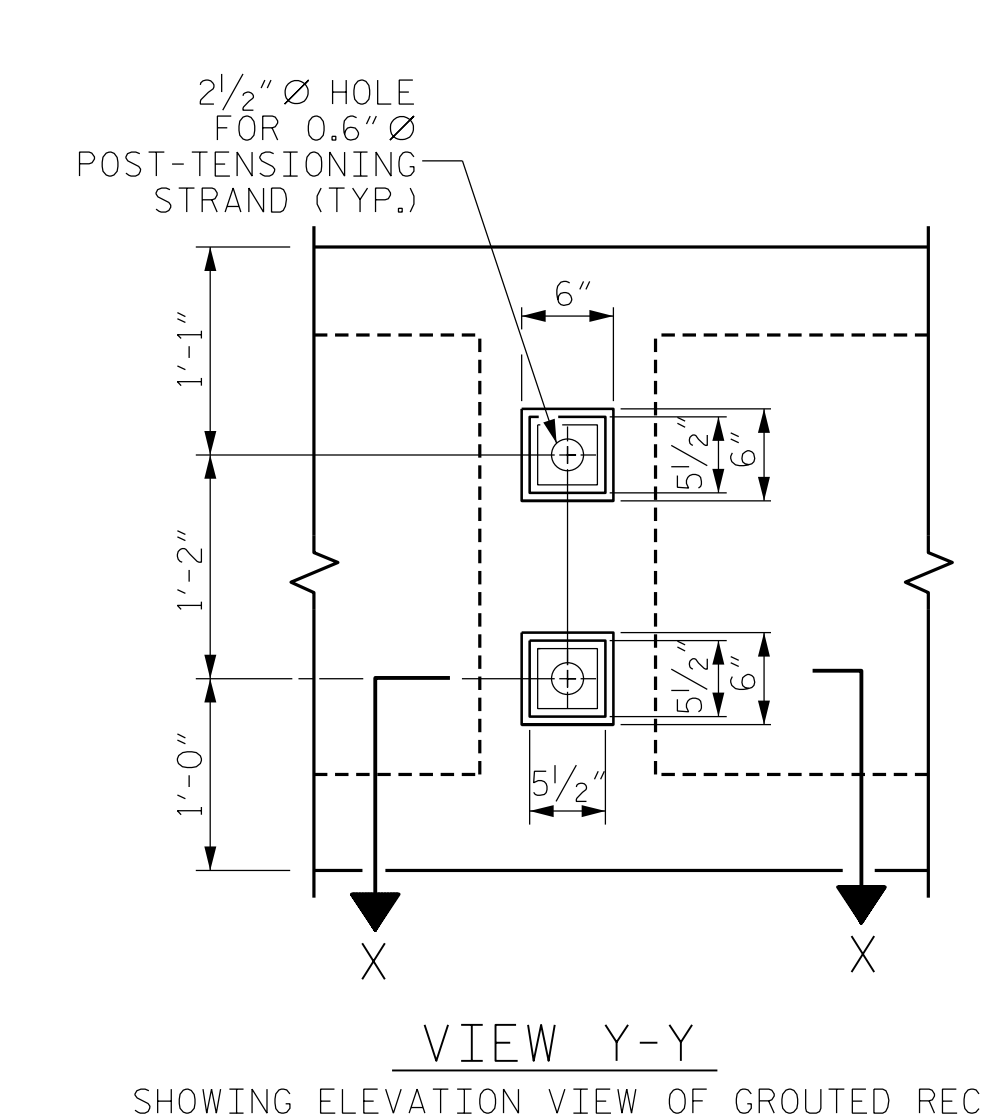


DOUBLE DIAPHRAGM DETAILS

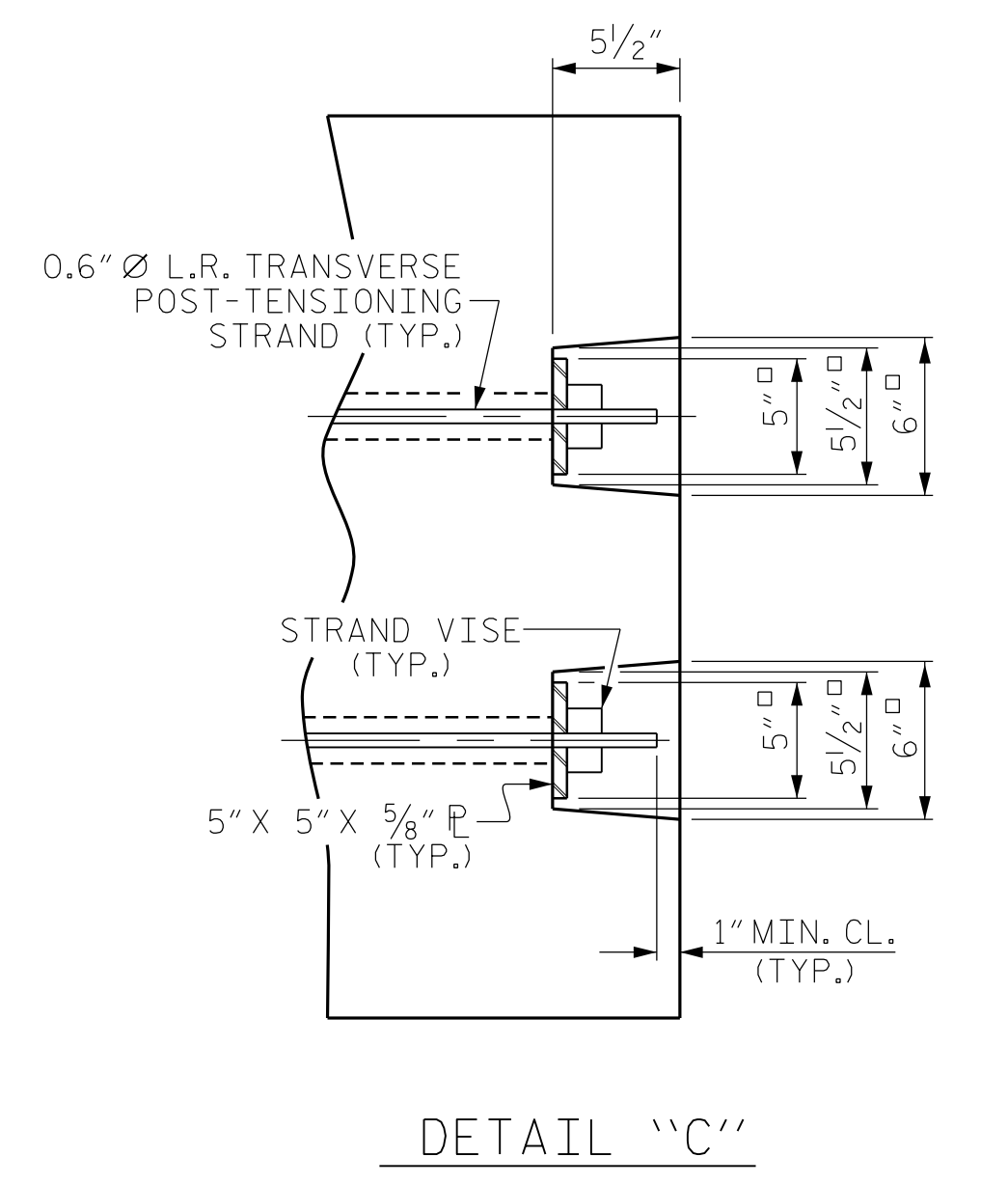
#4 "S" BARS NOT SHOWN. #4 "S" BARS MAY BE SHIFTED SLIGHTLY TO CLEAR 2 1/2" Ø HOLE.



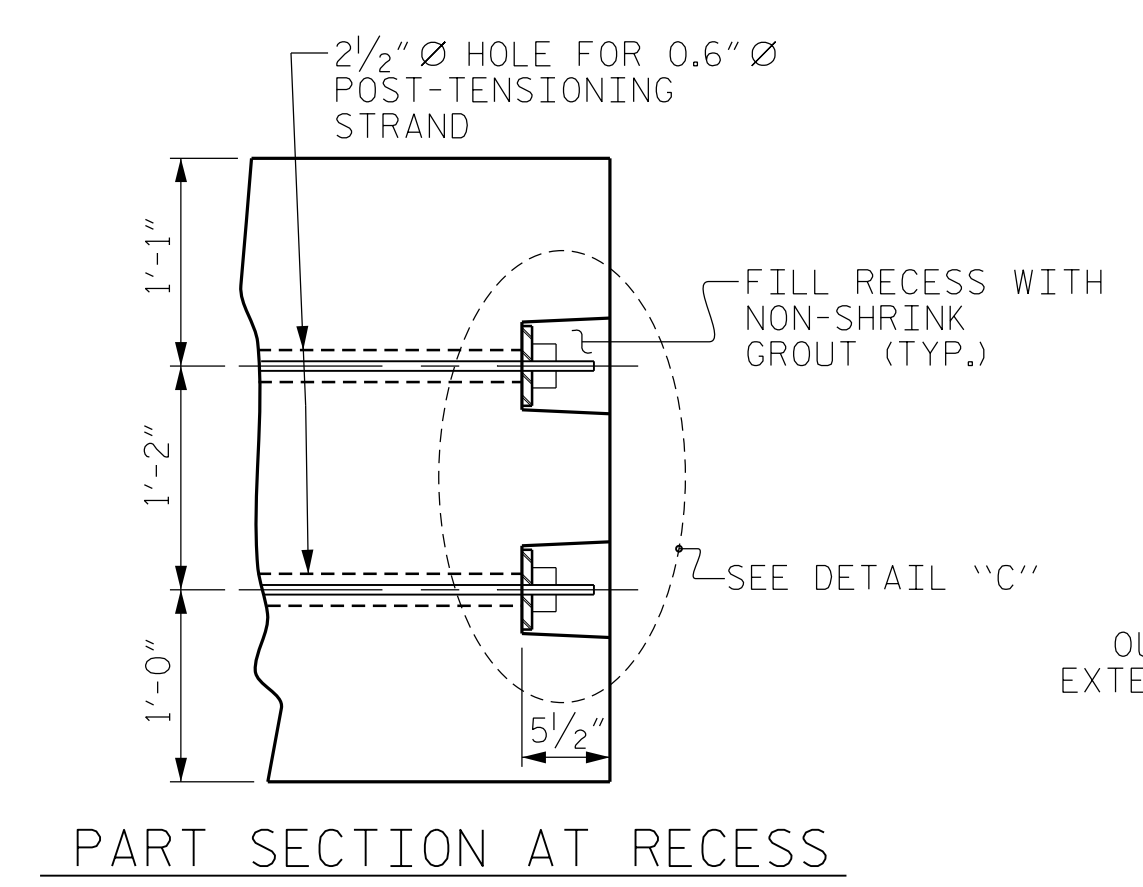
VOID DRAIN DETAILS
(DIMENSIONS SHOWN ARE TYPICAL FOR EACH VOID)



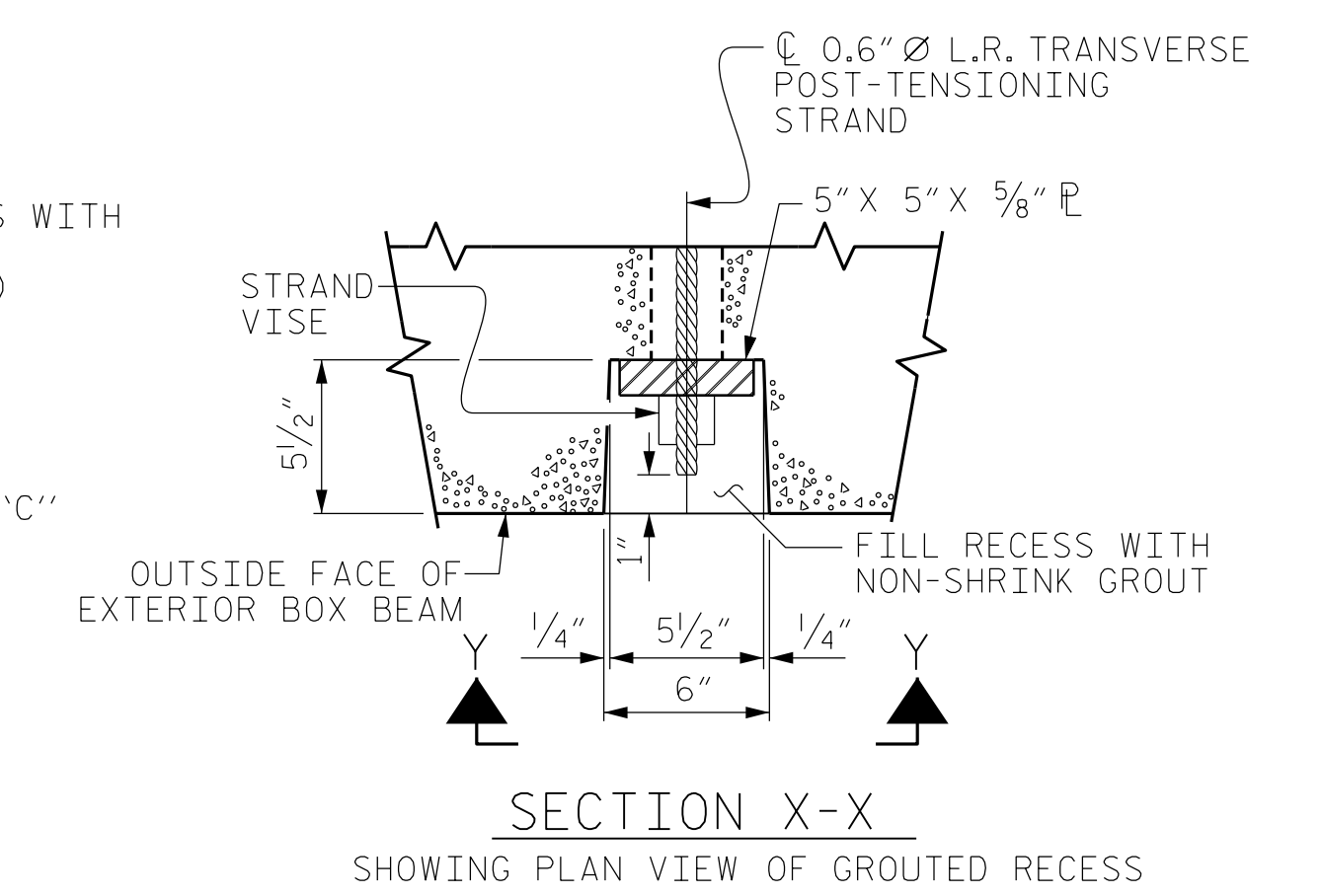
VIEW Y-Y
SHOWING ELEVATION VIEW OF GROUDED RECESS



DETAIL "C"



PART SECTION AT RECESS



SECTION X-X
SHOWING PLAN VIEW OF GROUDED RECESS

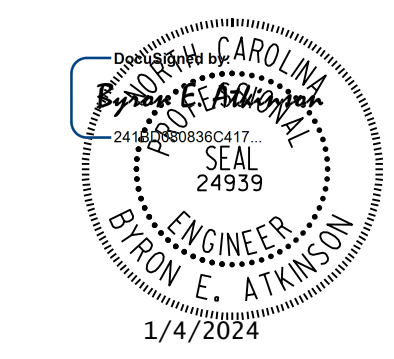
GROUDED RECESS DETAIL AT END OF POST-TENSIONED STRANDS OF EXTERIOR BOX BEAM

| DEAD LOAD DEFLECTION AND CAMBER | |
|---|----------------------------------|
| 105' BOX BEAM UNIT | 3'-0" x 3'-3" 0.6" Ø L.R. STRAND |
| CAMBER (SLAB ALONE IN PLACE) | 1 3/4" ↑ |
| DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD ** | 1 3/16" ↓ |
| FINAL CAMBER | 9/16" ↑ |

** INCLUDES FUTURE WEARING SURFACE

PROJECT NO. BP8.R004
MOORE COUNTY
 STATION: 20+25.00 -L-

SHEET 4 OF 5



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 (919) 851-6606
 FIRM PE NUMBER : P-0671

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

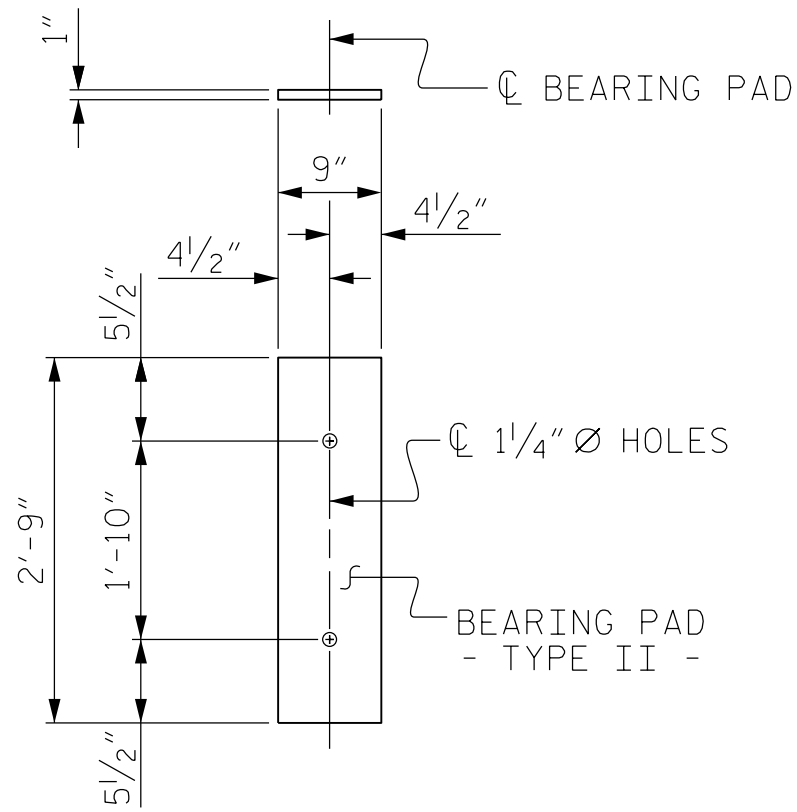
3'-0" X 3'-3" PRESTRESSED CONCRETE BOX BEAM UNIT

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

SHEET NO. **S-8**
 TOTAL SHEETS **16**

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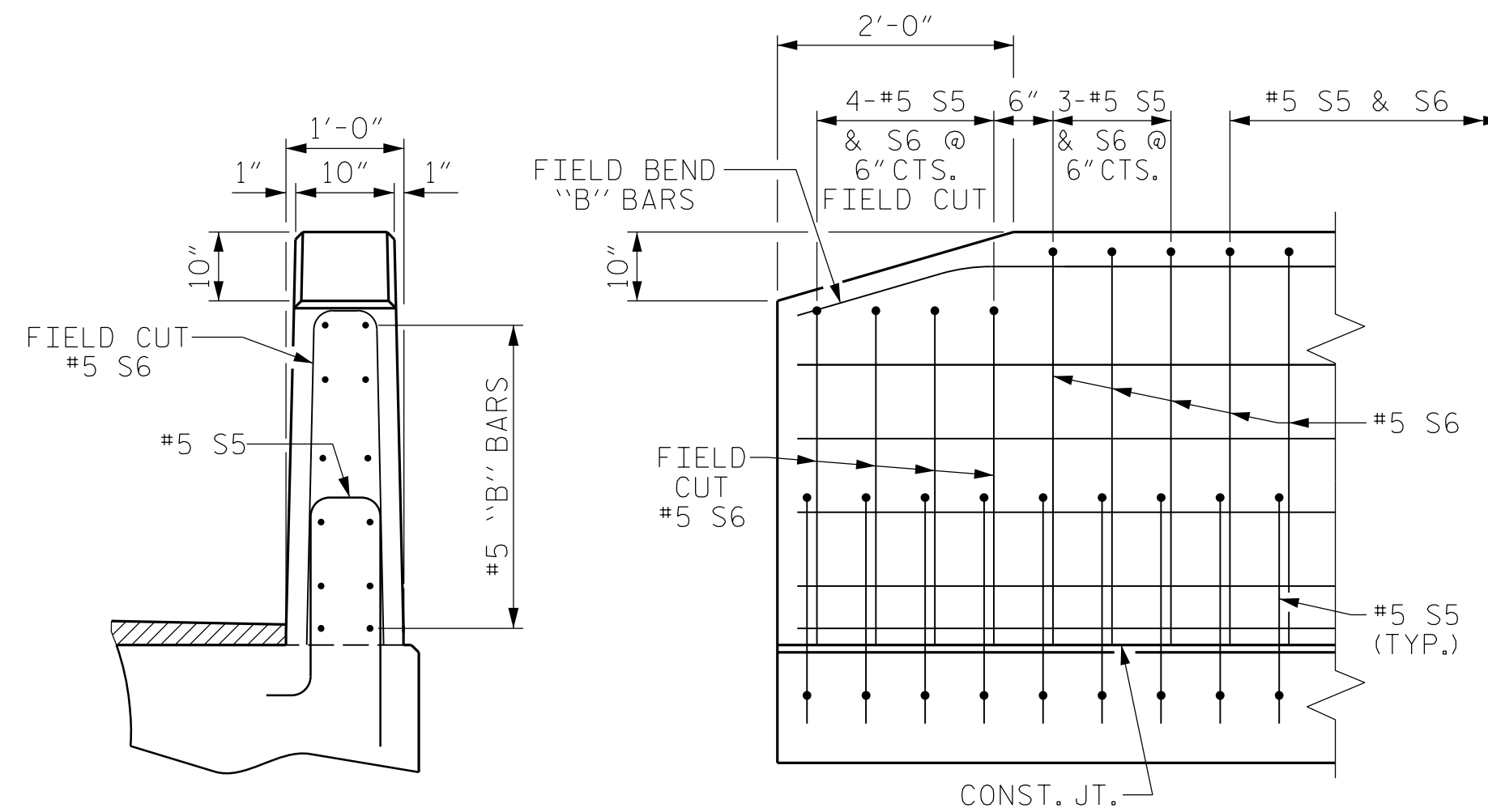
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FIXED END
(TYPE II - 22 REQ'D.)

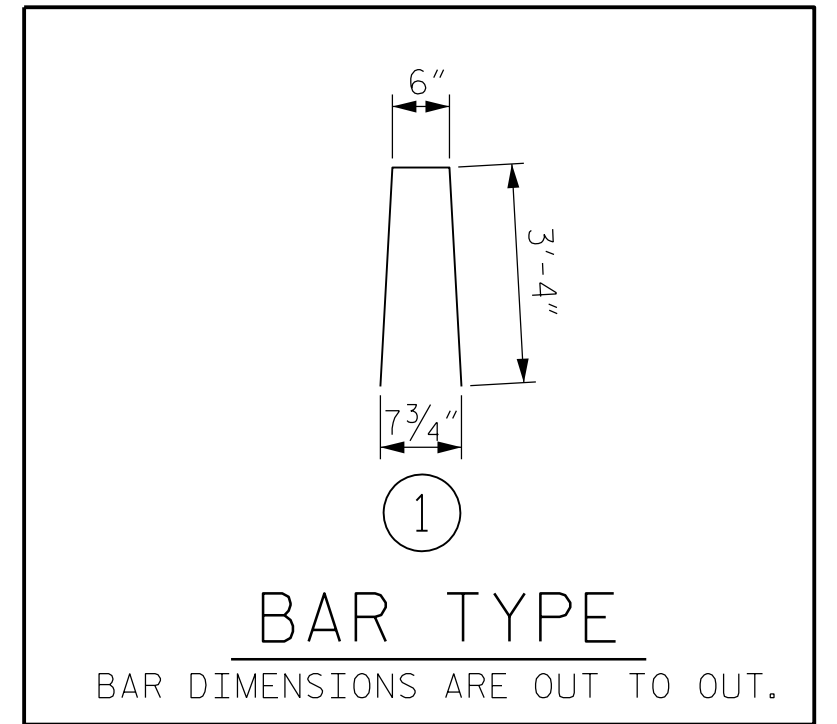
ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



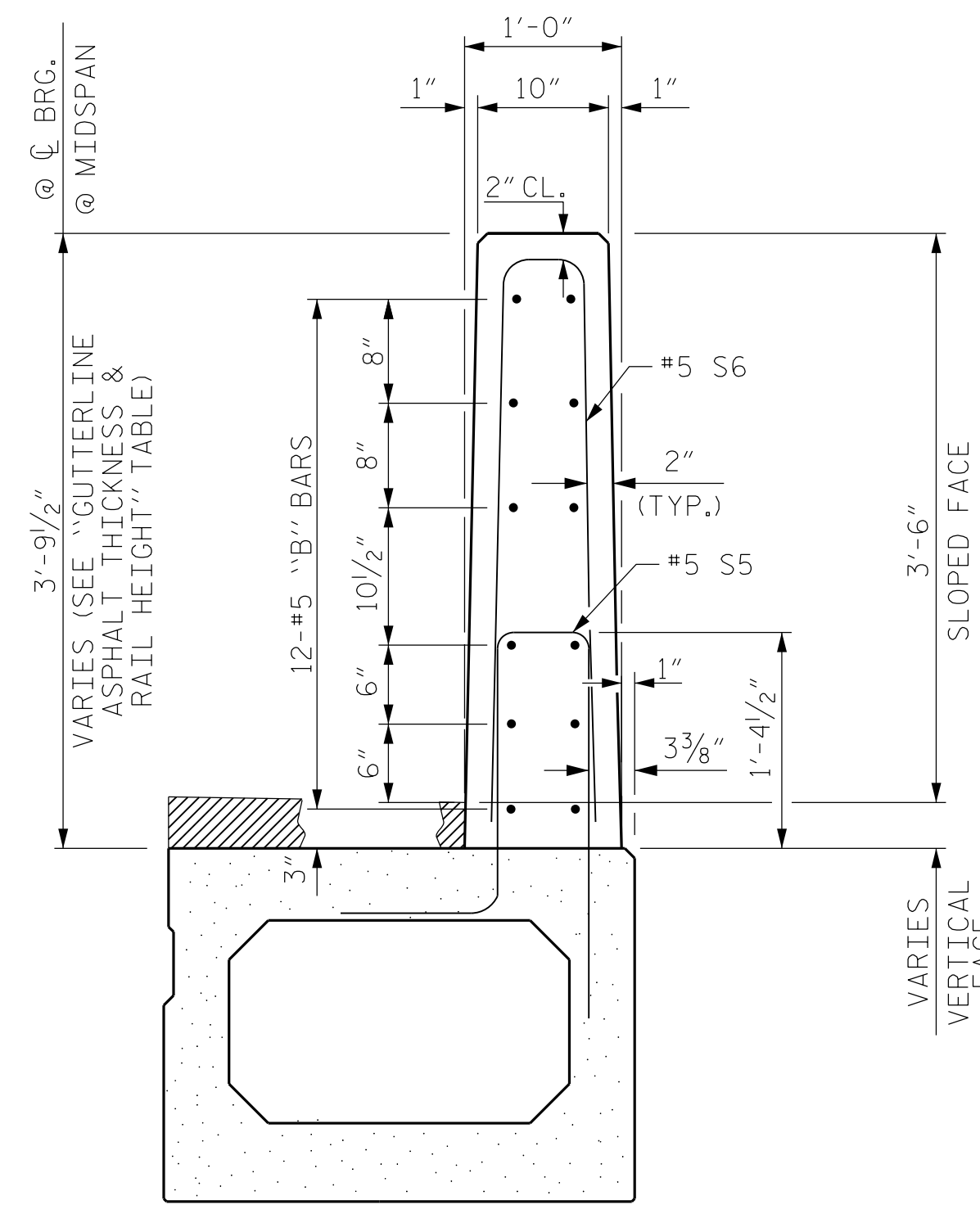
END VIEW SIDE VIEW
END OF RAIL DETAILS

| BOX BEAM UNITS REQUIRED | | | |
|-------------------------|--------|---------|--------------|
| | NUMBER | LENGTH | TOTAL LENGTH |
| EXTERIOR B.B. | 2 | 105'-0" | 210'-0" |
| INTERIOR B.B. | 9 | 105'-0" | 945'-0" |
| TOTAL | 11 | | 1155'-0" |

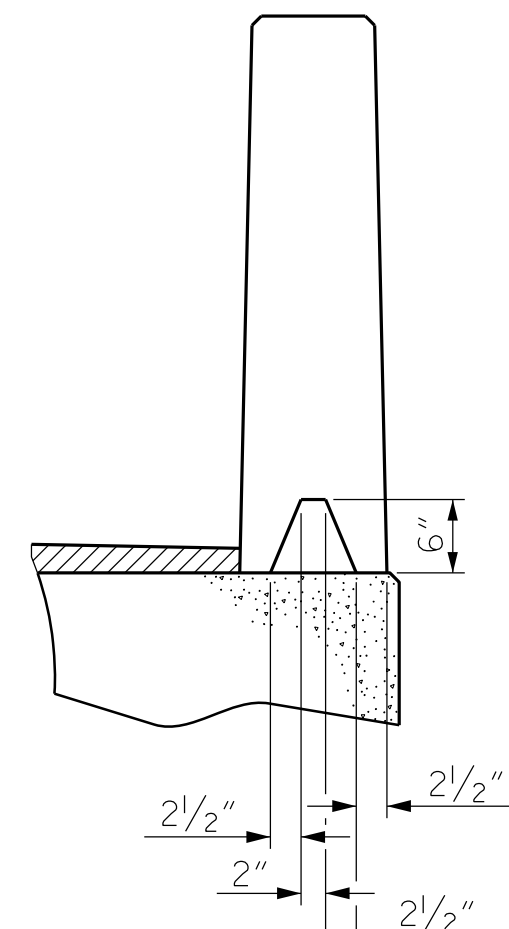


BAR TYPE
BAR DIMENSIONS ARE OUT TO OUT.

| BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL | | | | | |
|---|--|------|------|---------|--------|
| BAR | BARS PER PAIR OF EXTERIOR UNITS 105' UNIT | SIZE | TYPE | LENGTH | WEIGHT |
| *B12 | 96 | #5 | STR | 25'-11" | 2595 |
| *S6 | 290 | #5 | 1 | 7'-2" | 2168 |
| * EPOXY COATED REINFORCING STEEL | | | | LBS. | 4763 |
| CLASS AA CONCRETE | | | | CU.YDS. | 27.2 |
| TOTAL VERTICAL CONCRETE BARRIER RAIL | | | | LN. FT. | 210.0 |

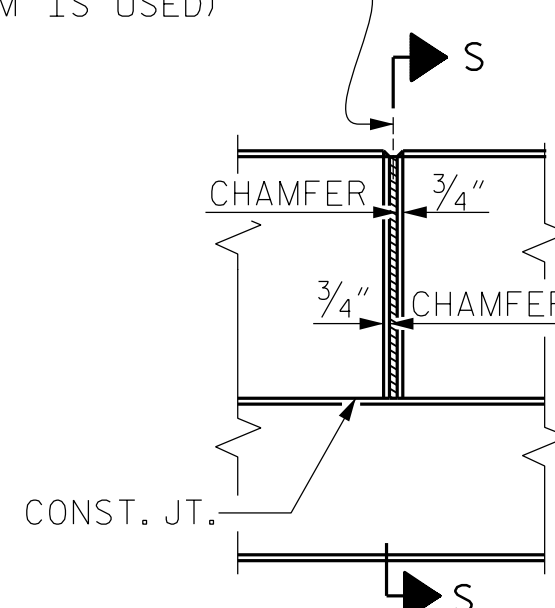


SECTION THRU RAIL



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

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



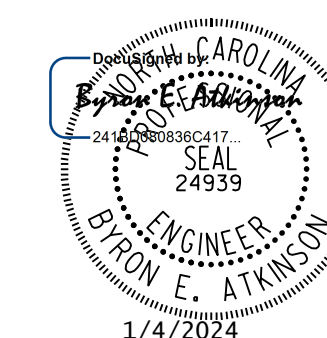
ELEVATION AT EXPANSION JOINTS

| GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT | | |
|--|--------------------------------------|------------------------|
| | ASPHALT OVERLAY THICKNESS @ MID-SPAN | RAIL HEIGHT @ MID-SPAN |
| 105' UNITS | 2 15/16" | 3'-8 5/16" |

VERTICAL CONCRETE BARRIER RAIL DETAILS

PROJECT NO. BP8.R004
MOORE COUNTY
STATION: 20+25.00 -L-

SHEET 5 OF 5



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
3'-0" X 3'-3"
PRESTRESSED CONCRETE
BOX BEAM UNIT

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(919) 851-6606
FIRM PE NUMBER : P-0671

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | S-9 |
| 2 | | | 4 | | | TOTAL SHEETS 16 |

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CHECKED BY : B.E. ATKINSON DATE : 07/2023
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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.)

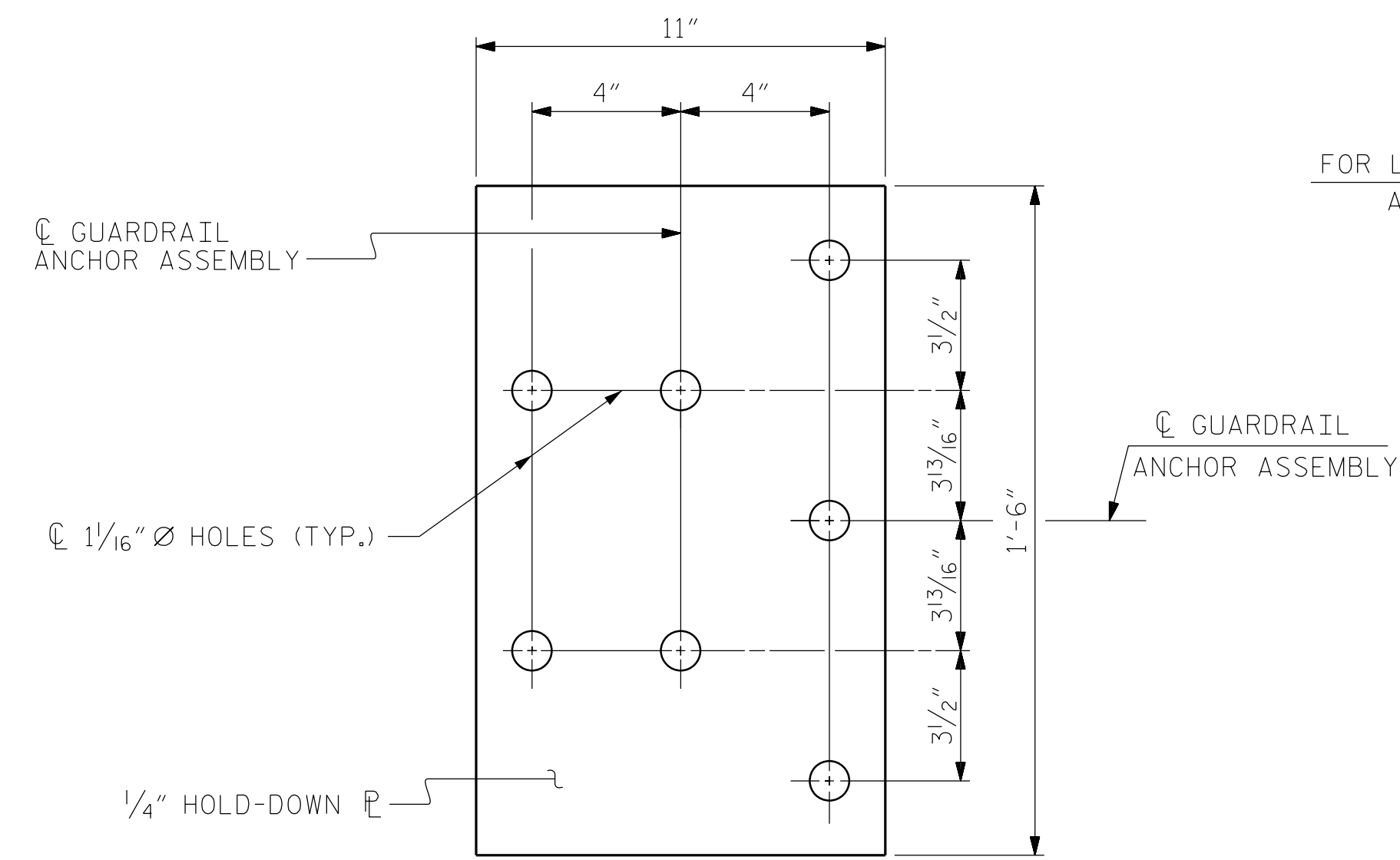
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

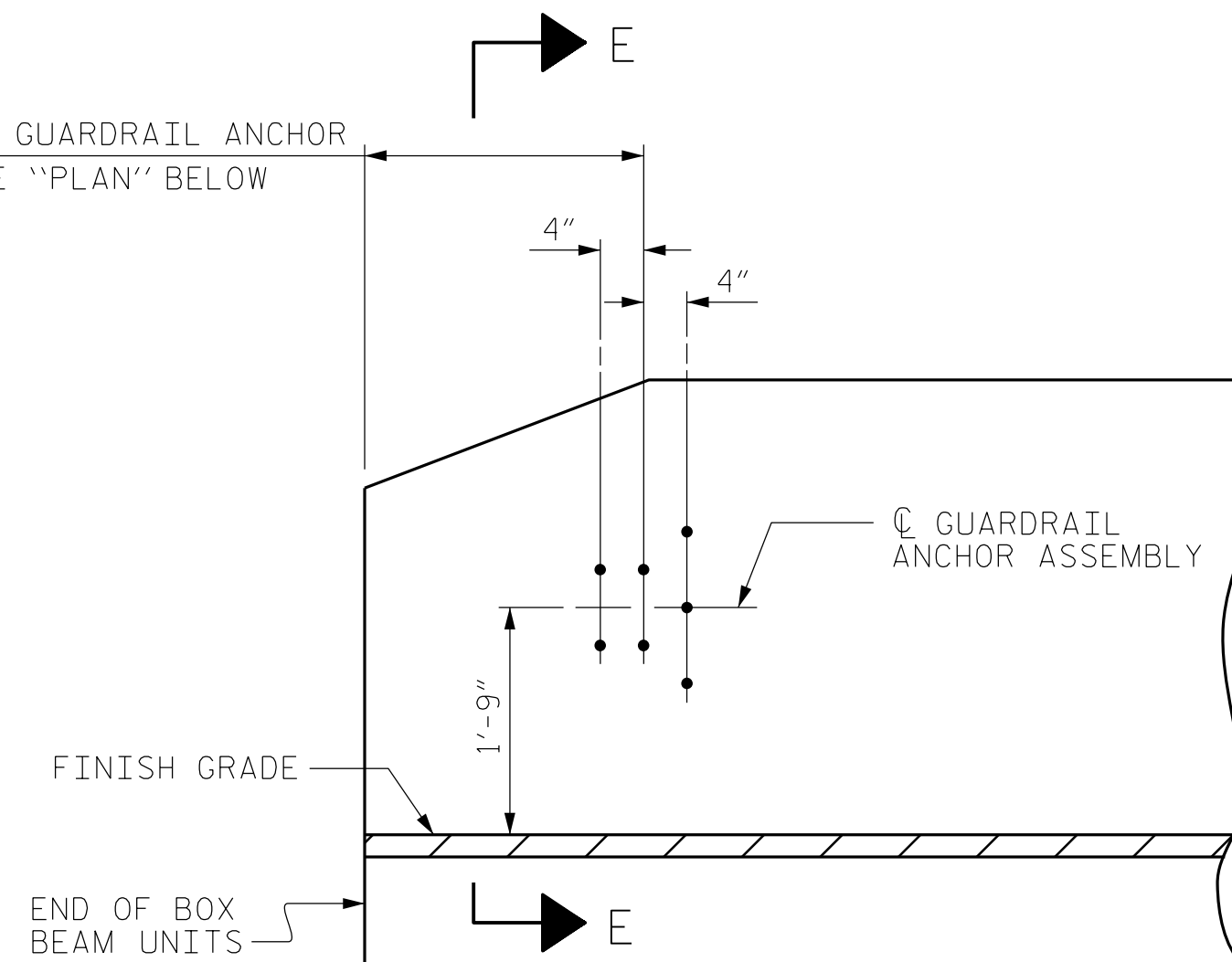
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

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

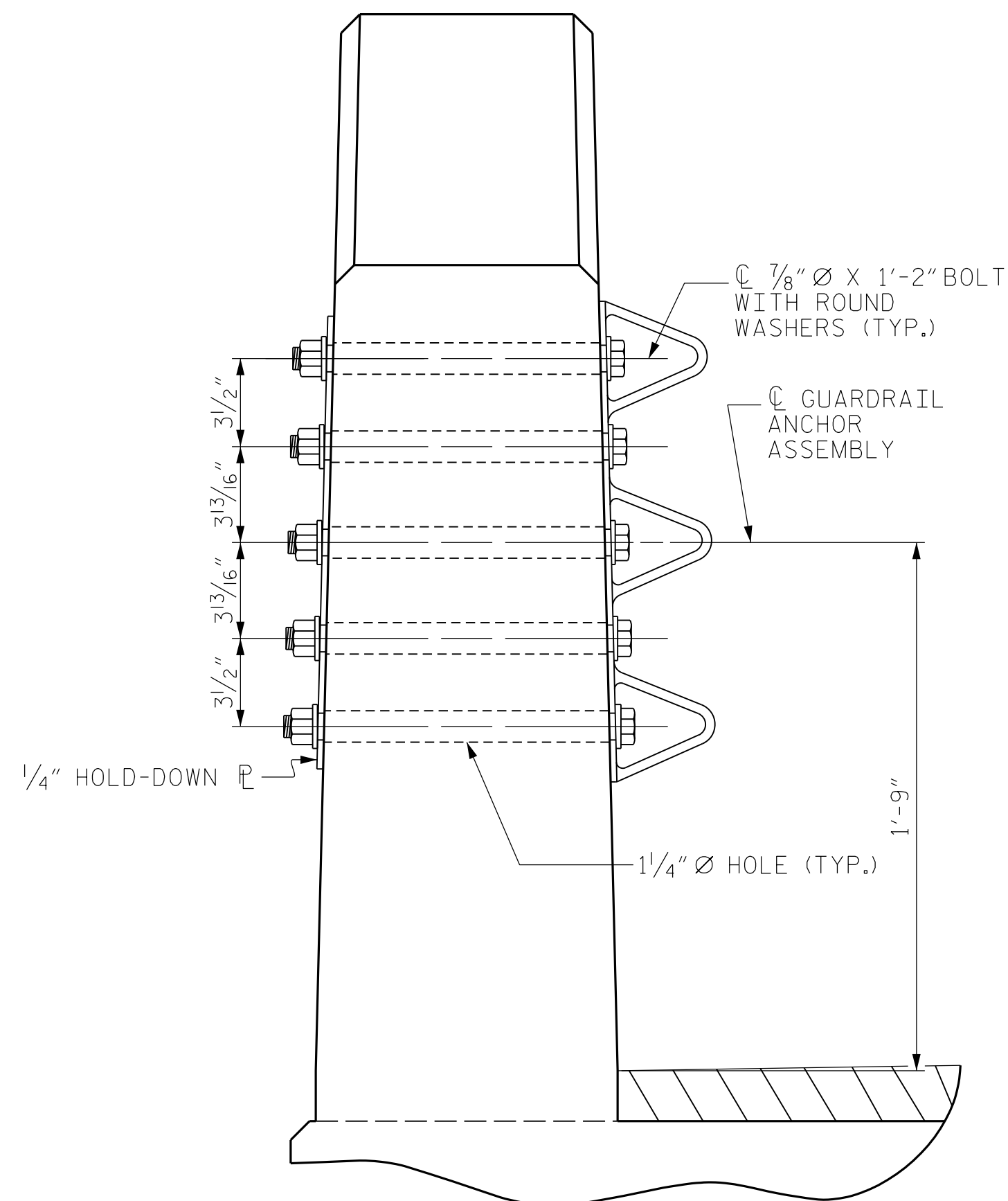


PLAN

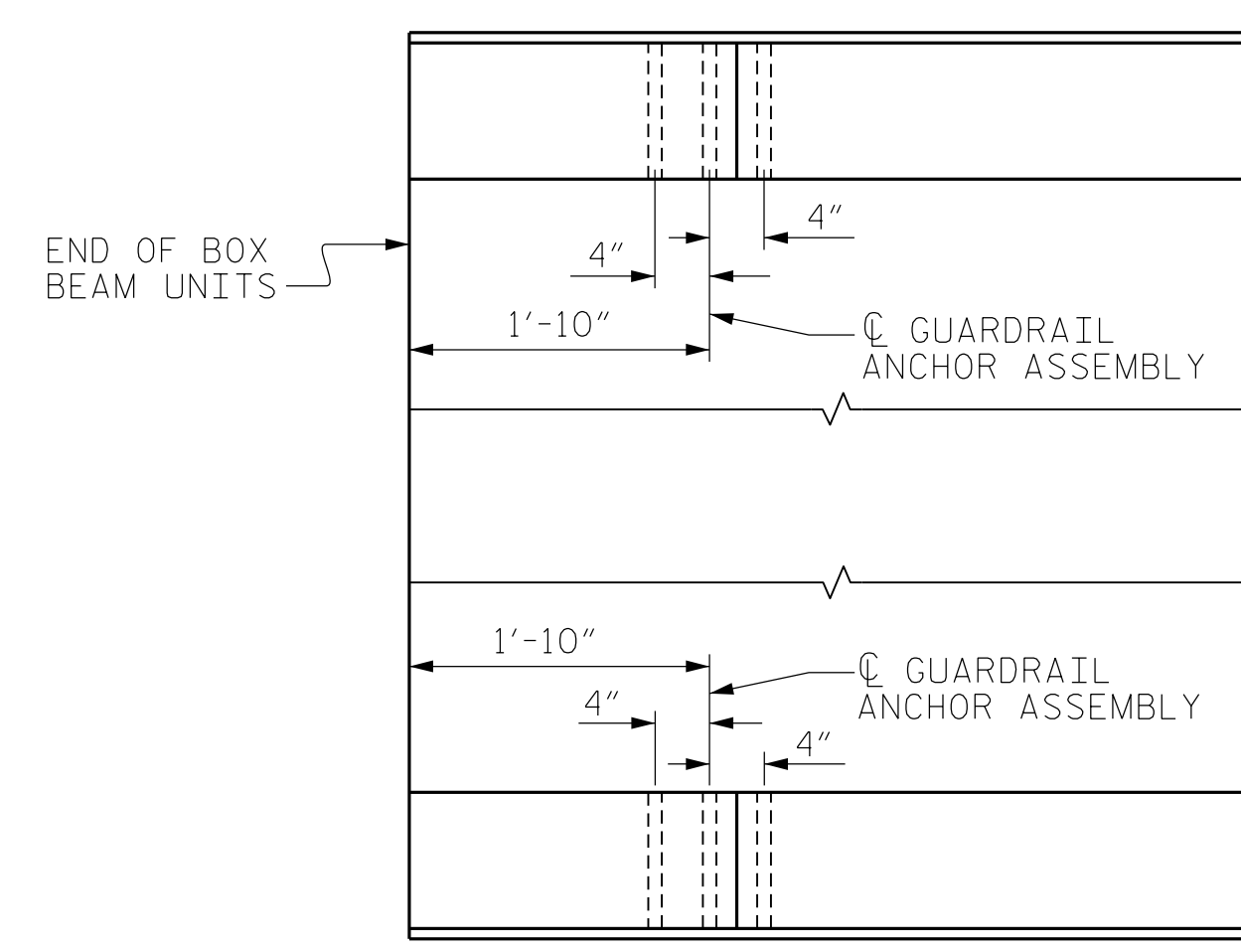
FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" BELOW



ELEVATION



SECTION E-E
GUARDRAIL ANCHOR ASSEMBLY DETAILS



LOCATION OF ANCHORS FOR GUARDRAIL

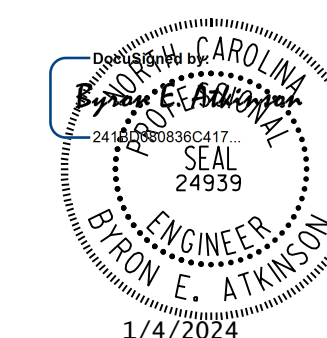
END BENT 1 SHOWN, END BENT 2 SIMILAR.



SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

PROJECT NO. BP8.R004
MOORE COUNTY
 STATION: 20+25.00 -L-



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 FIRM PE NUMBER : P-0671

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

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

(SHT 1) STD. NO. GRA3

1/4/2024 1:14:04 PM User: blanning
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| | |
|--|--------------------|
| ASSEMBLED BY: B.E. LANNING | DATE: 05/2023 |
| CHECKED BY: B.E. ATKINSON | DATE: 07/2023 |
| DESIGN ENGINEER OF RECORD: B.E. ATKINSON | DATE: 01/2024 |
| 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 |

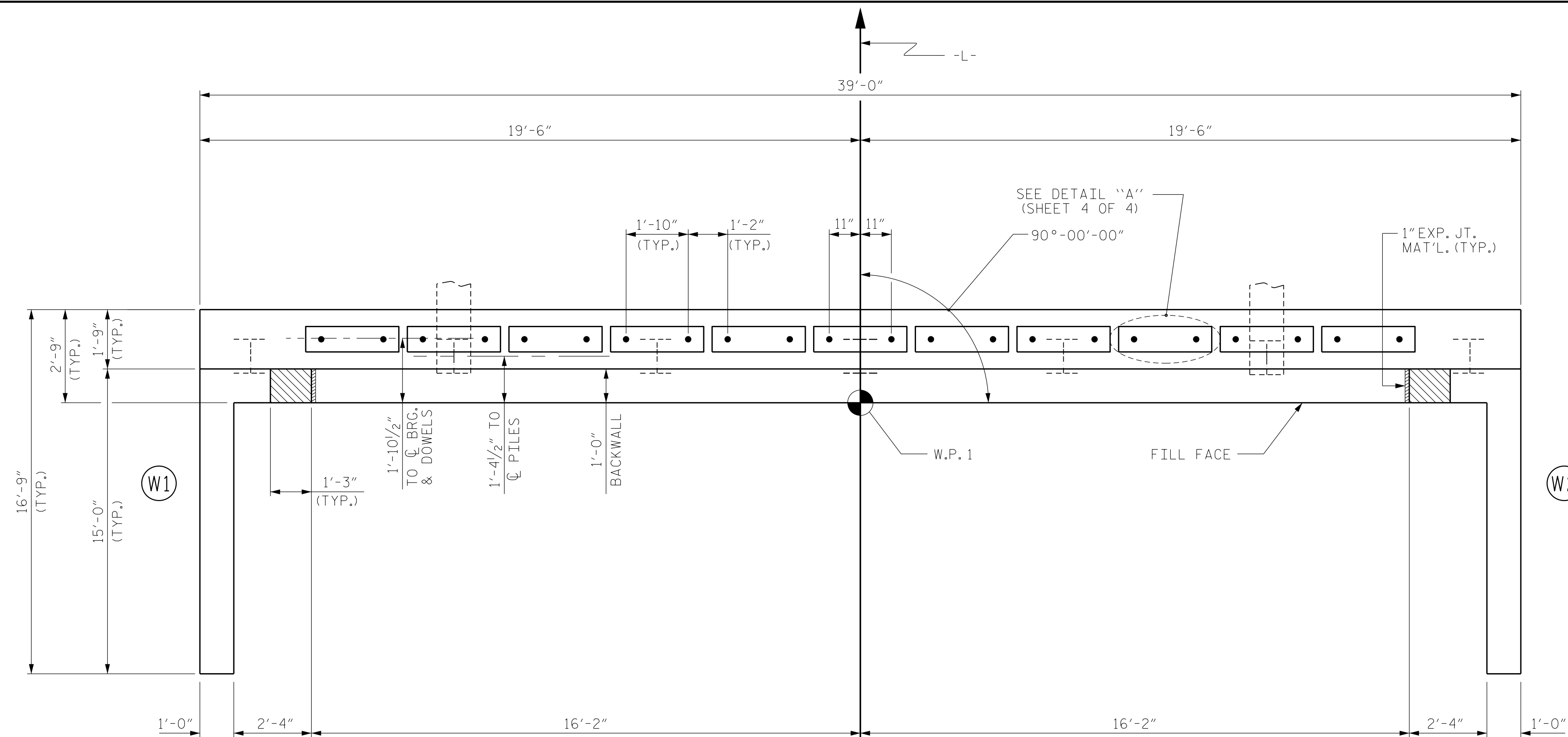
NOTES

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

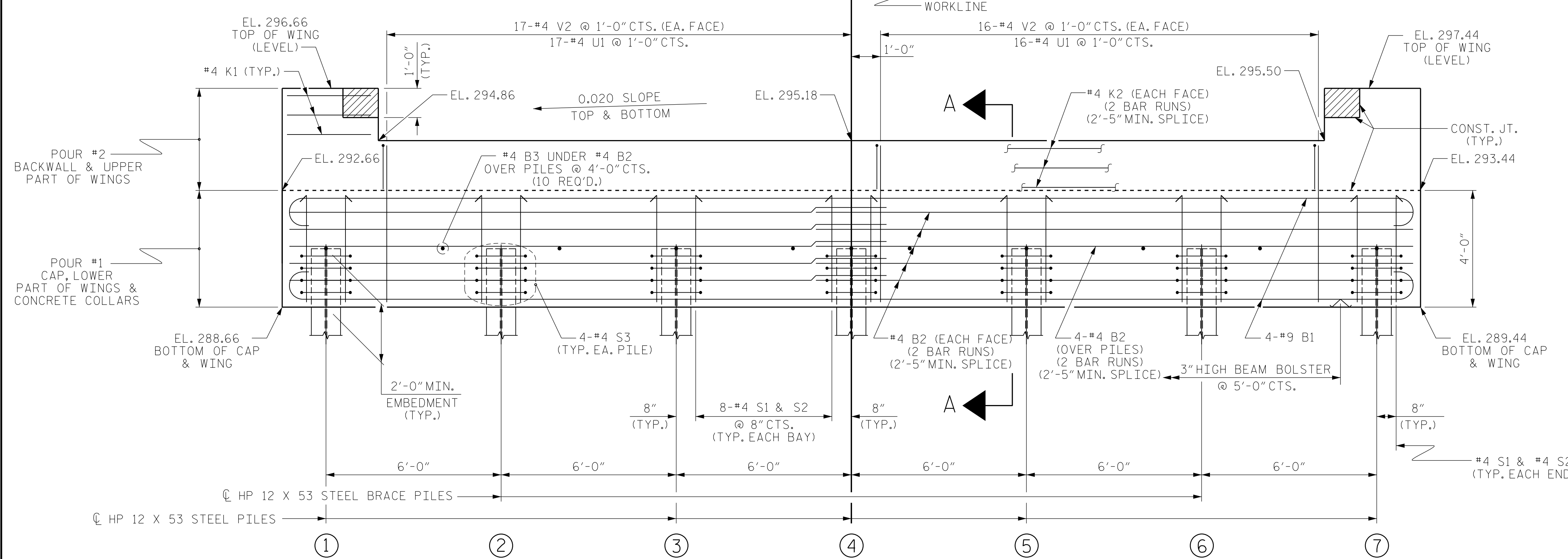
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

| TOP OF PILE ELEVATIONS | |
|------------------------|--------|
| ① | 290.70 |
| ② | 290.82 |
| ③ | 290.94 |
| ④ | 291.06 |
| ⑤ | 291.18 |
| ⑥ | 291.30 |
| ⑦ | 291.42 |

PROJECT NO. BP8.R004
MOORE COUNTY
 STATION: 20+25.00 -L-

SHEET 1 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1



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

MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|--------------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-11 | |
| 1 | | | 3 | | | TOTAL SHEETS | |
| 2 | | | 4 | | | 16 | |

DRAWN BY: B.E. LANNING DATE: 05/2023
 CHECKED BY: B.E. ATKINSON DATE: 07/2023
 DESIGN ENGINEER OF RECORD: B.E. ATKINSON DATE: 01/2024

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

1/4/2024 1:14:06 PM User: blanning
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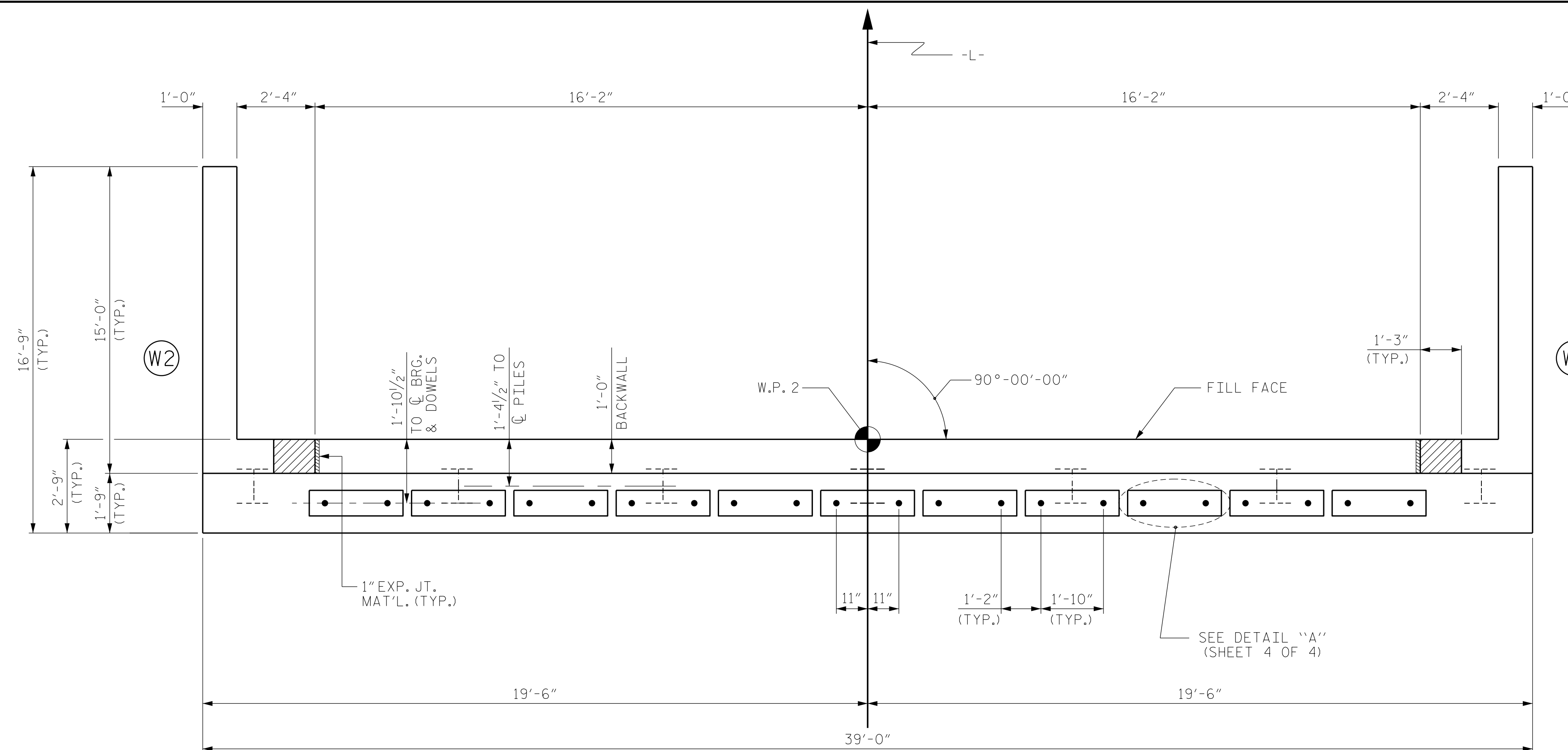
NOTES

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

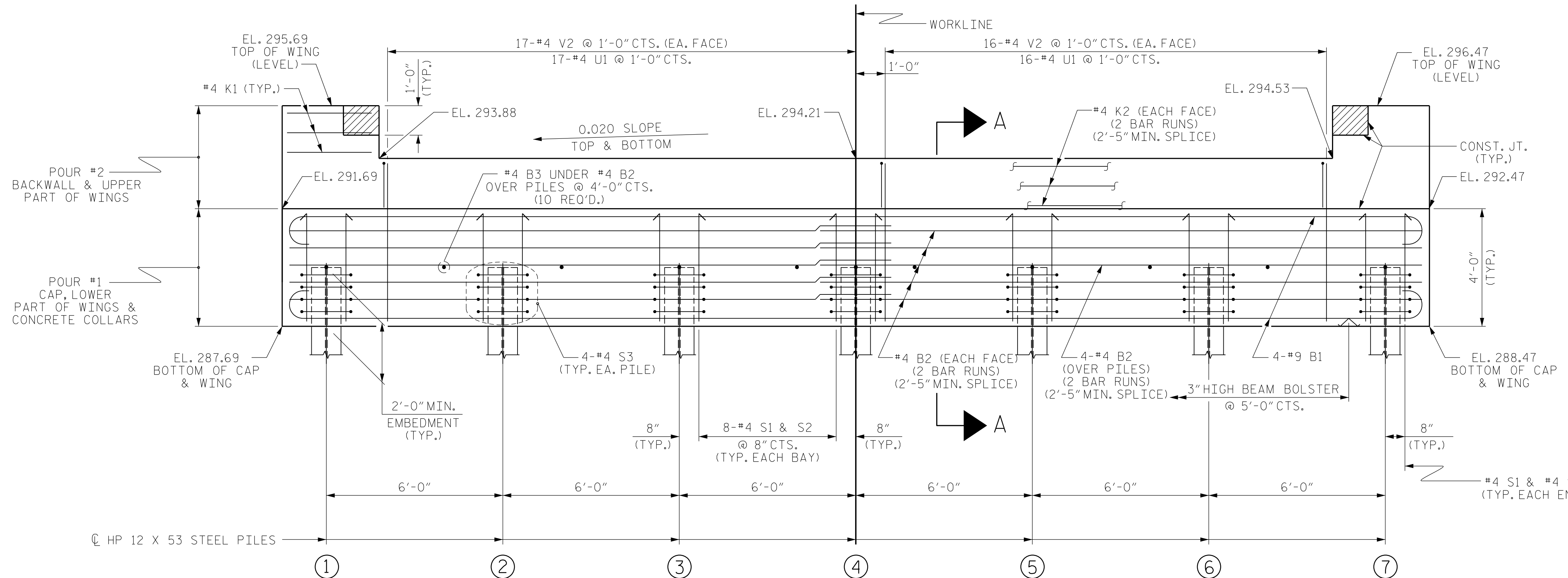
THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



PLAN



ELEVATION

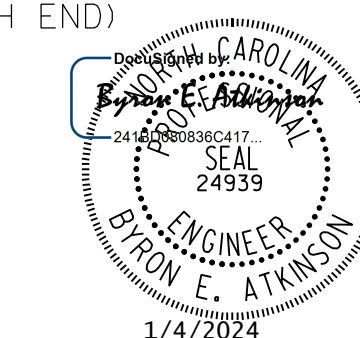
| TOP OF PILE ELEVATIONS | |
|------------------------|--------|
| ① | 289.73 |
| ② | 289.85 |
| ③ | 289.97 |
| ④ | 290.09 |
| ⑤ | 290.21 |
| ⑥ | 290.33 |
| ⑦ | 290.45 |

PROJECT NO. BP8.R004
MOORE COUNTY
 STATION: 20+25.00 -L-

SHEET 2 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 2



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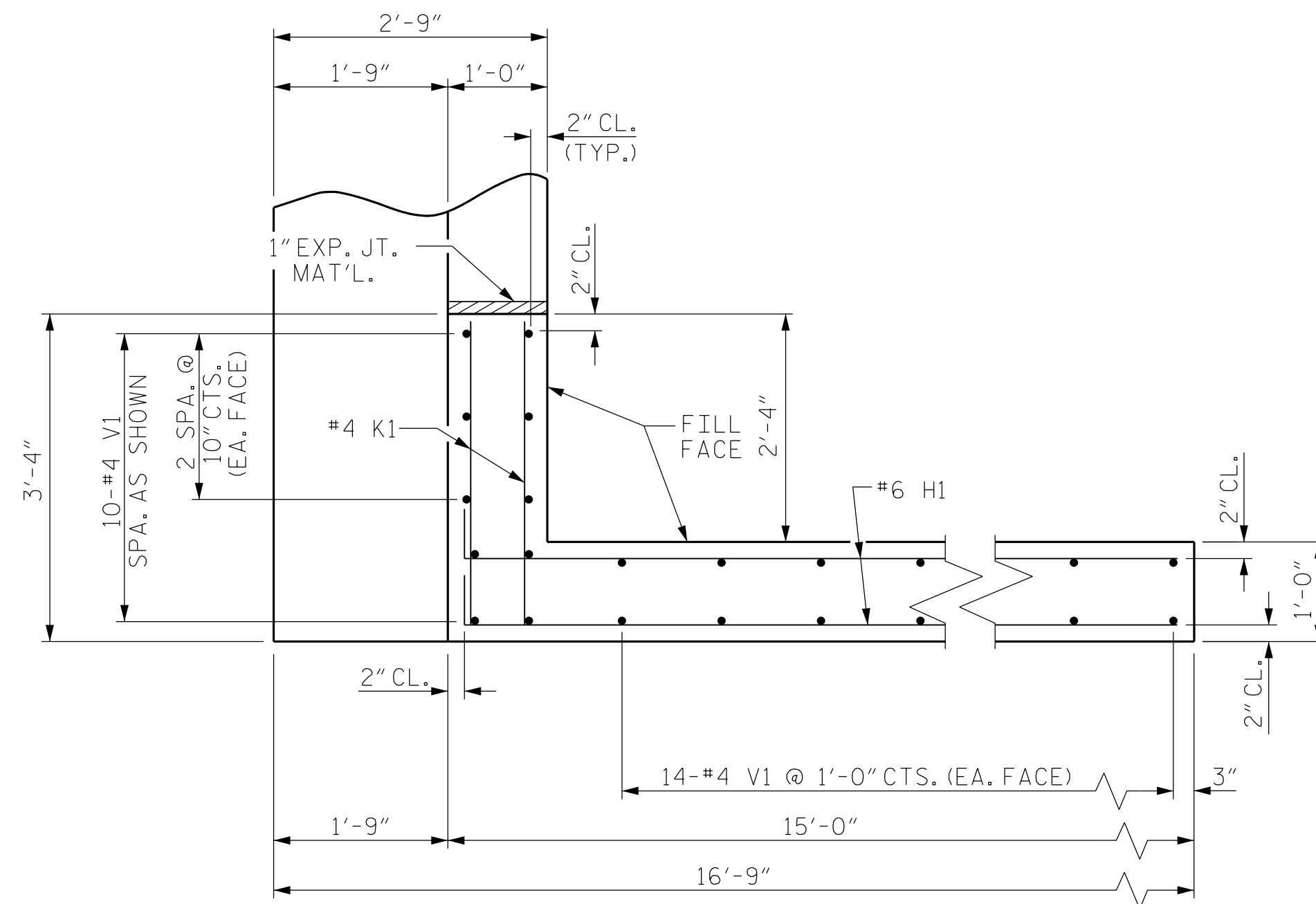
MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

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

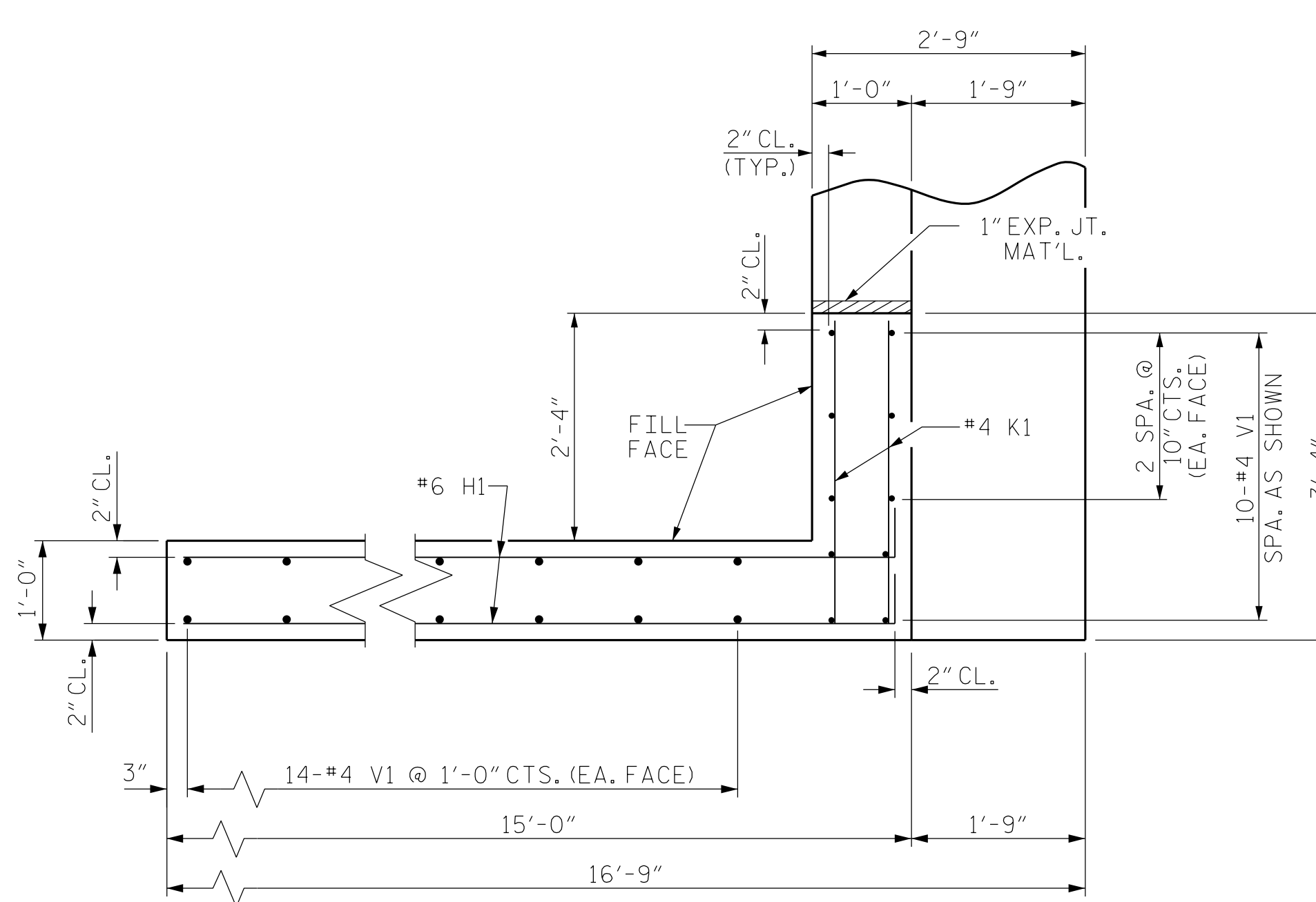
DRAWN BY: B.E. LANNING DATE: 11/2023
 CHECKED BY: B.E. ATKINSON DATE: 11/2023
 DESIGN ENGINEER OF RECORD: B.E. ATKINSON DATE: 01/2024

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

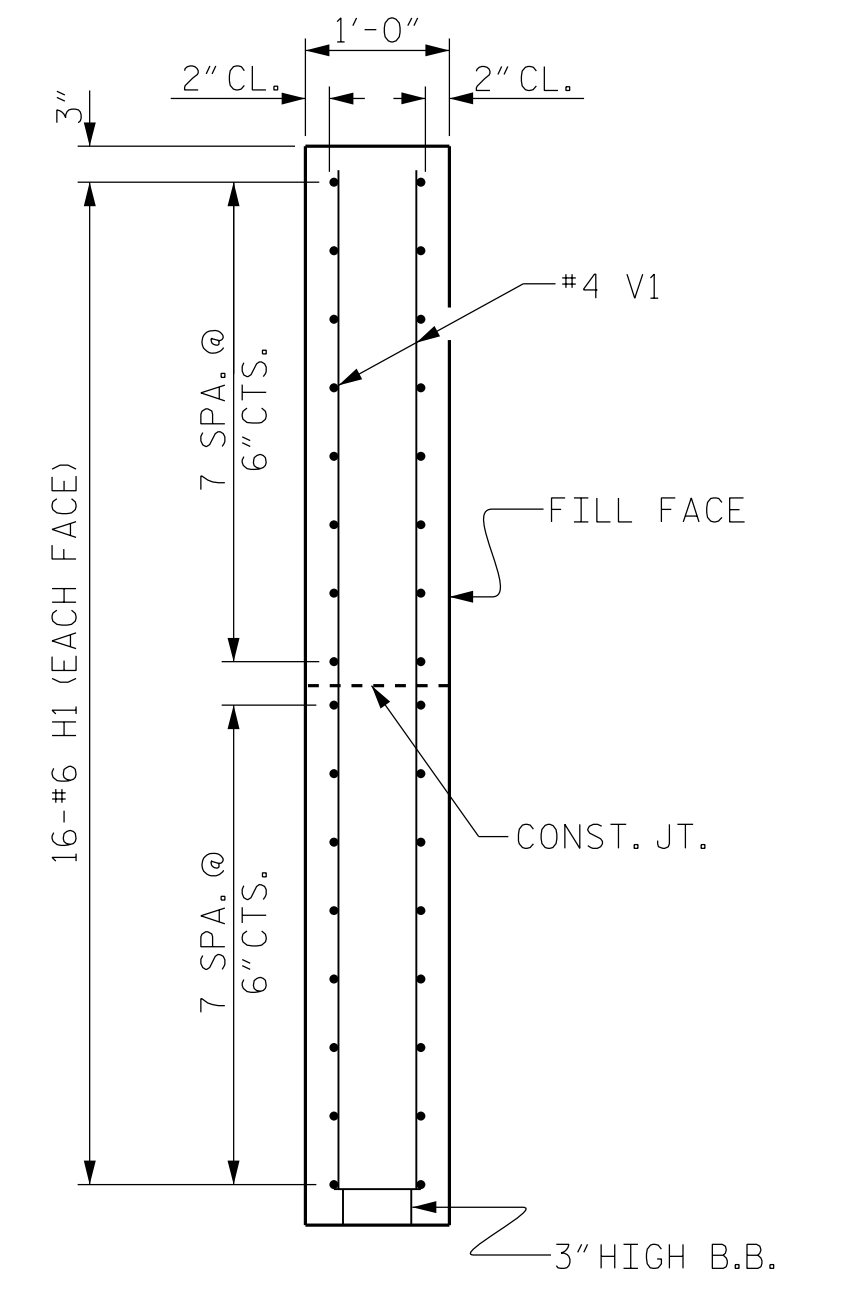
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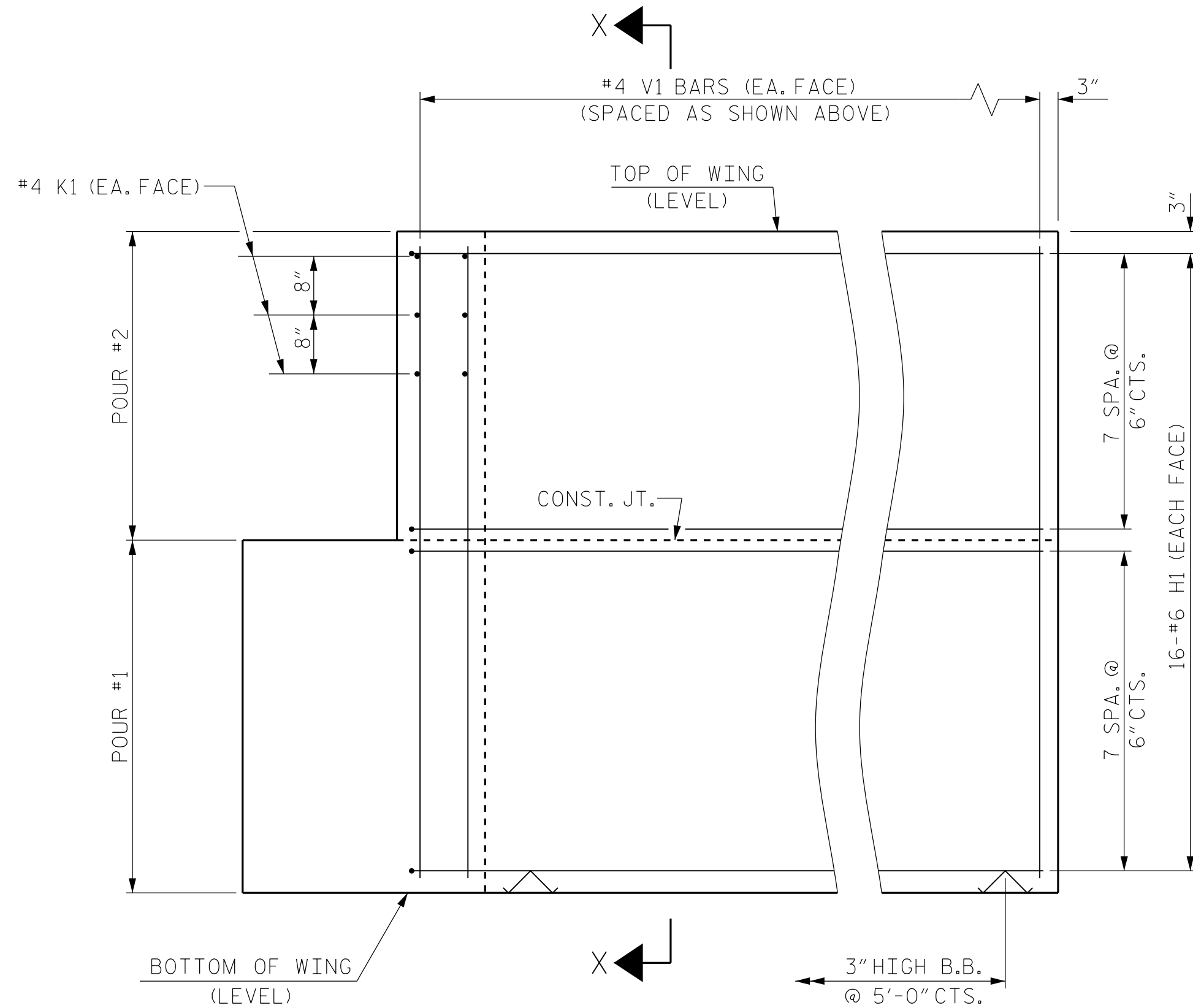
PLAN OF WING (W1)



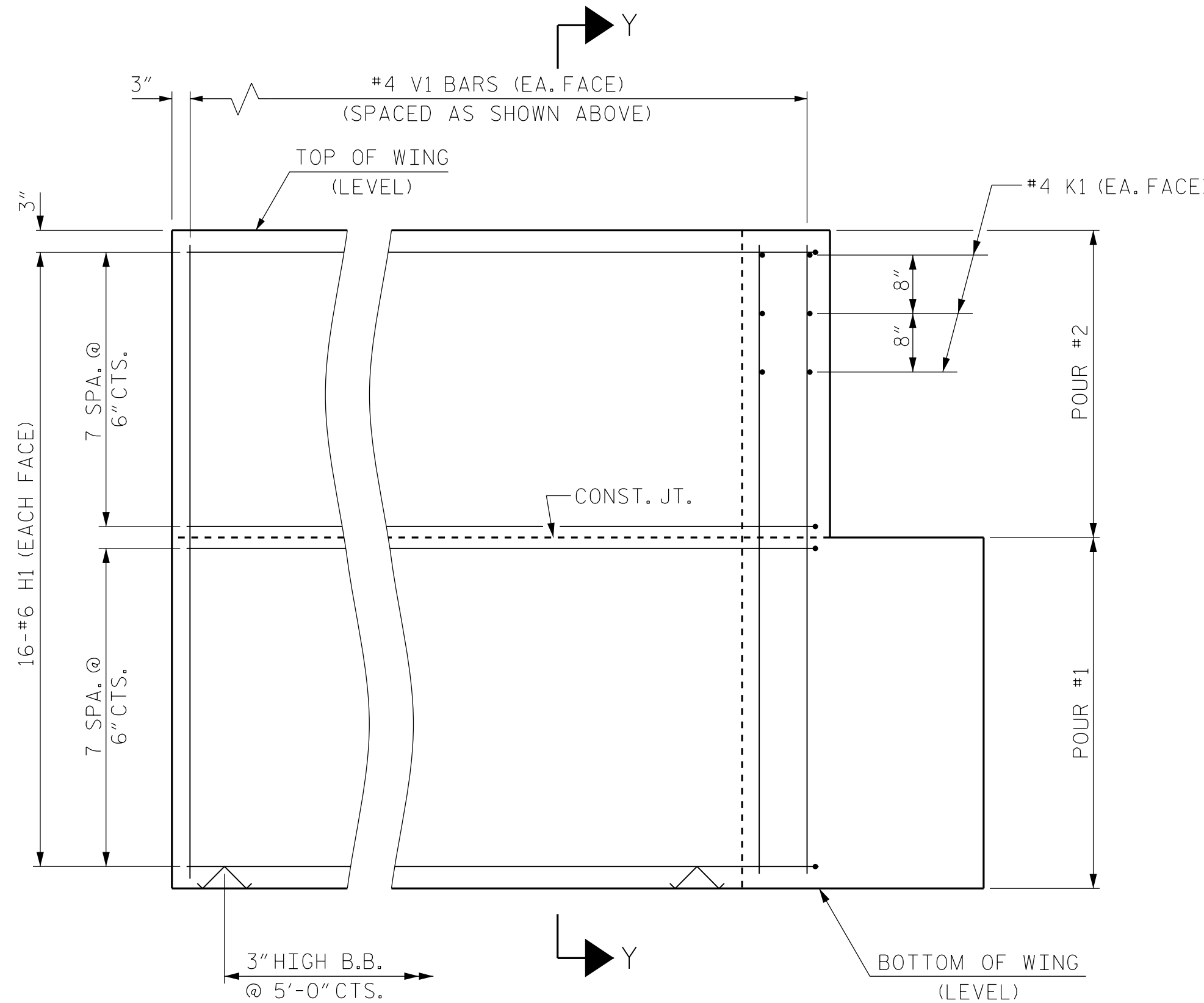
PLAN OF WING (W2)



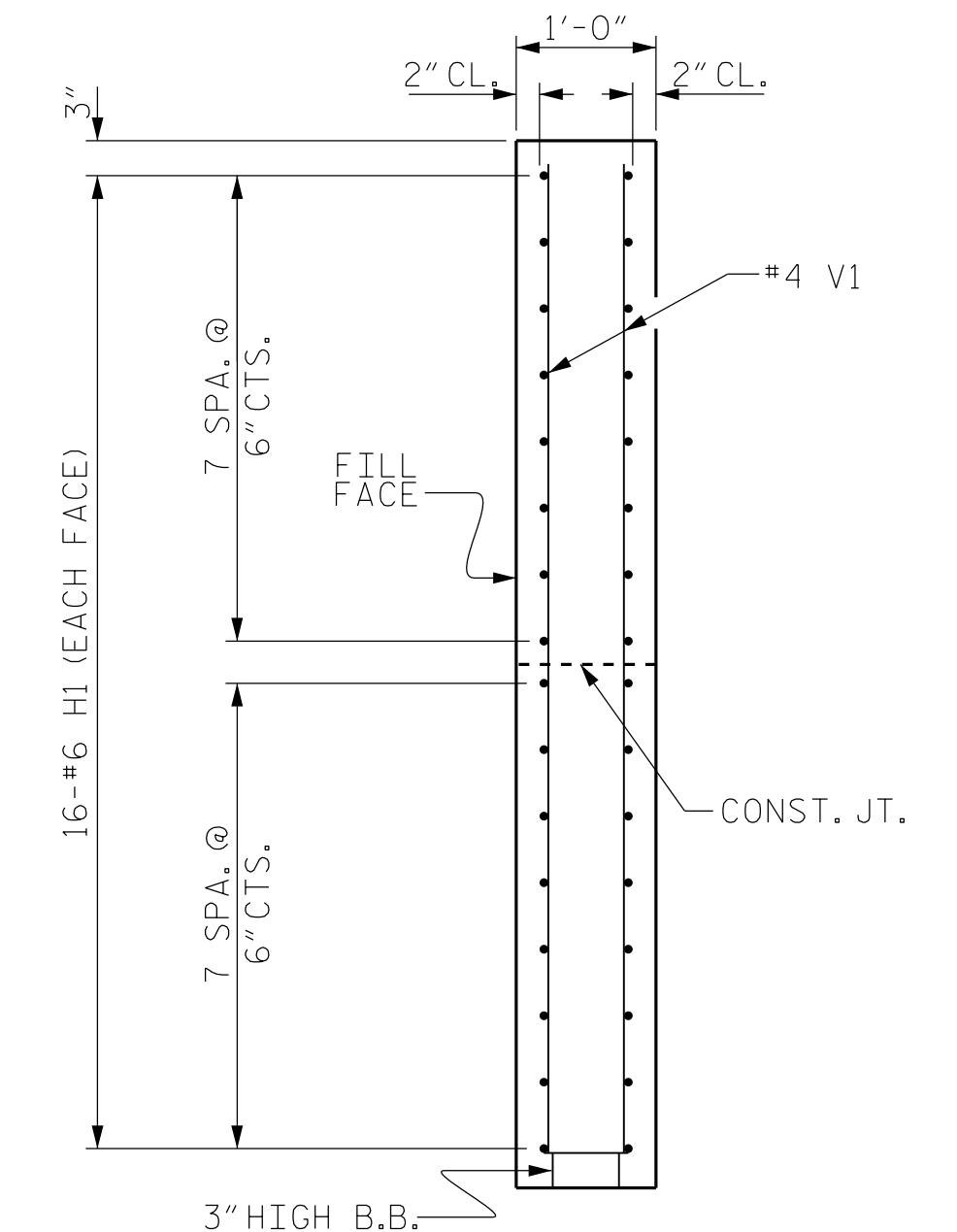
SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

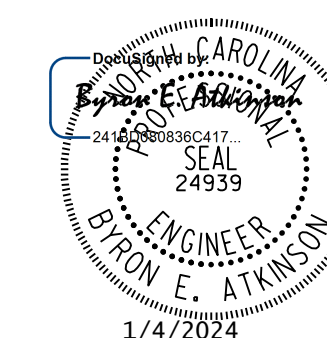


SECTION Y-Y

WING DETAILS

PROJECT NO. BP8.R004
MOORE COUNTY
 STATION: 20+25.00 -L-

SHEET 3 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT
 WING DETAILS

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED



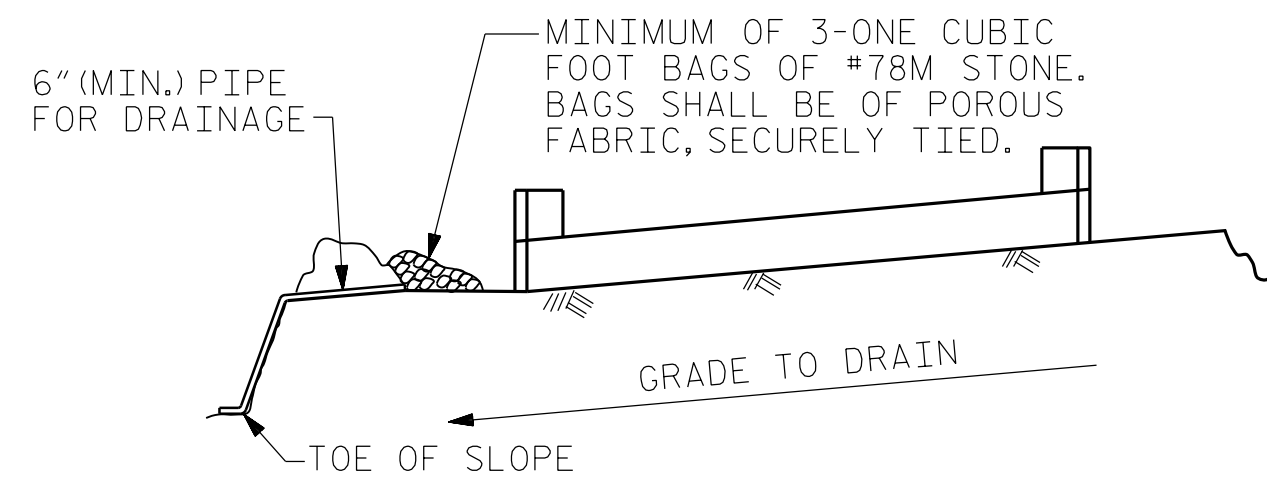
MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

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

SHEET NO.
S-13
 TOTAL SHEETS
16

DRAWN BY: B.E. LANNING DATE: 05/2023
 CHECKED BY: B.E. ATKINSON DATE: 07/2023
 DESIGN ENGINEER OF RECORD: B.E. ATKINSON DATE: 01/2024

1/4/2024 1:14:08 PM User: blanning
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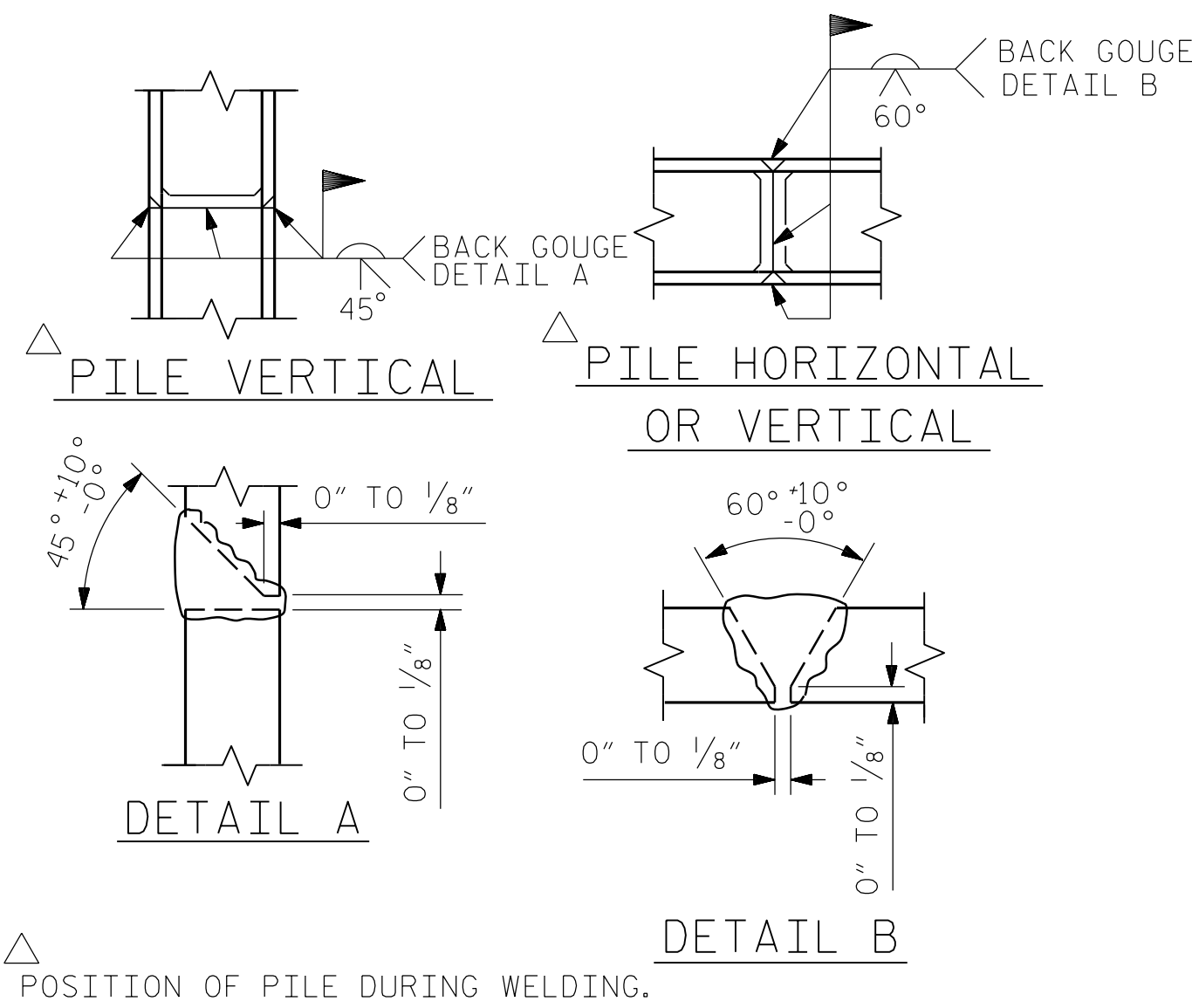


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

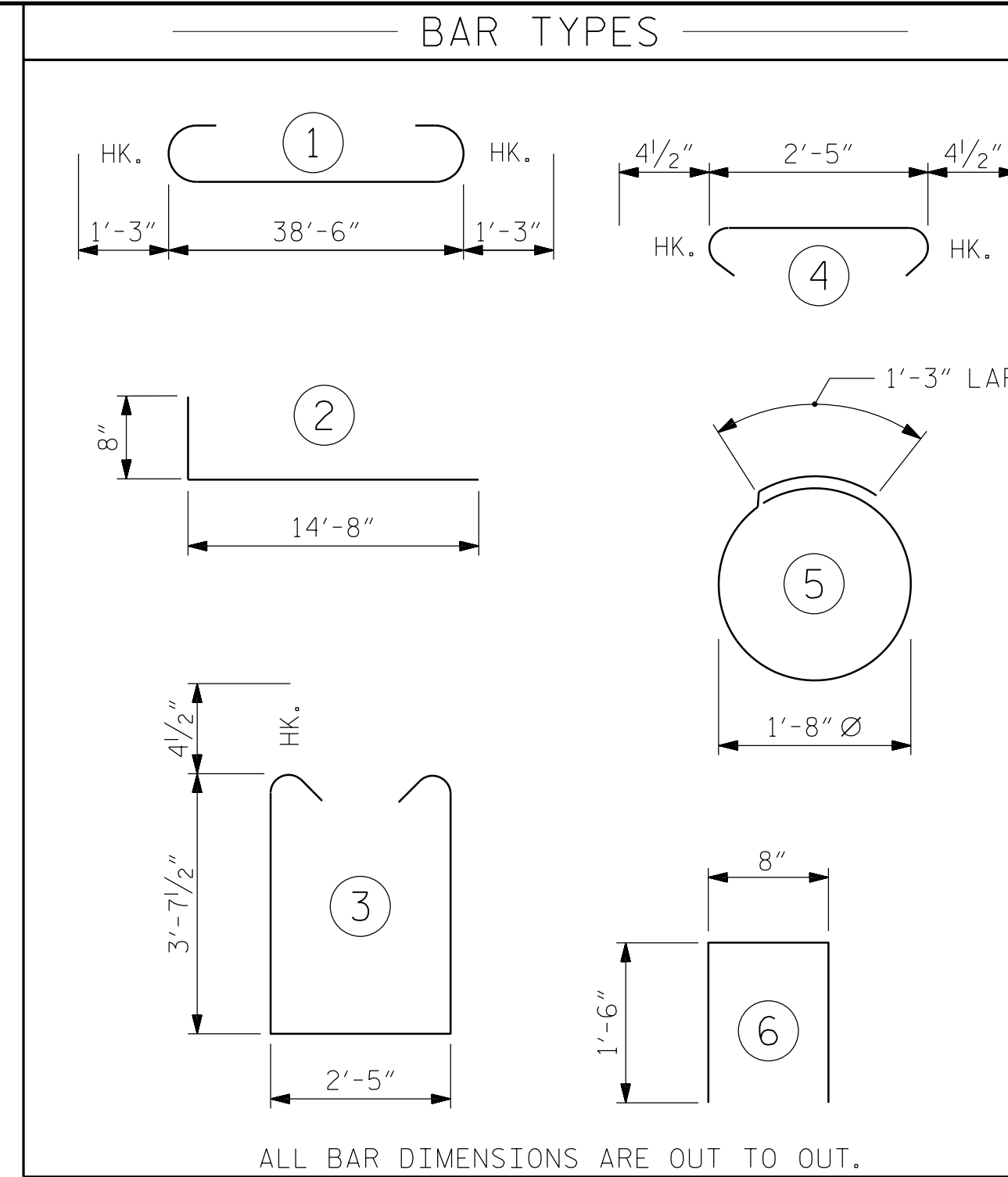
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR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

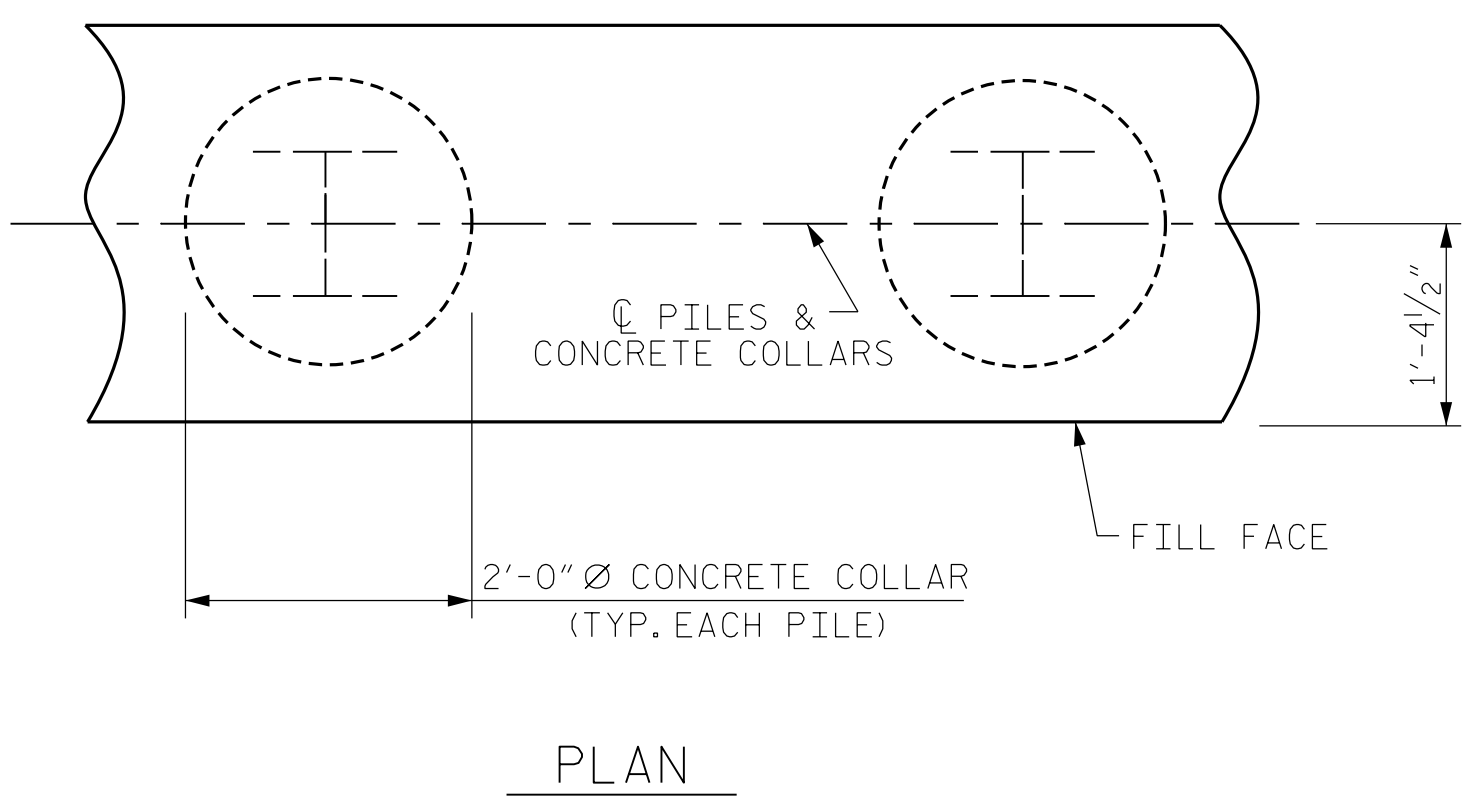
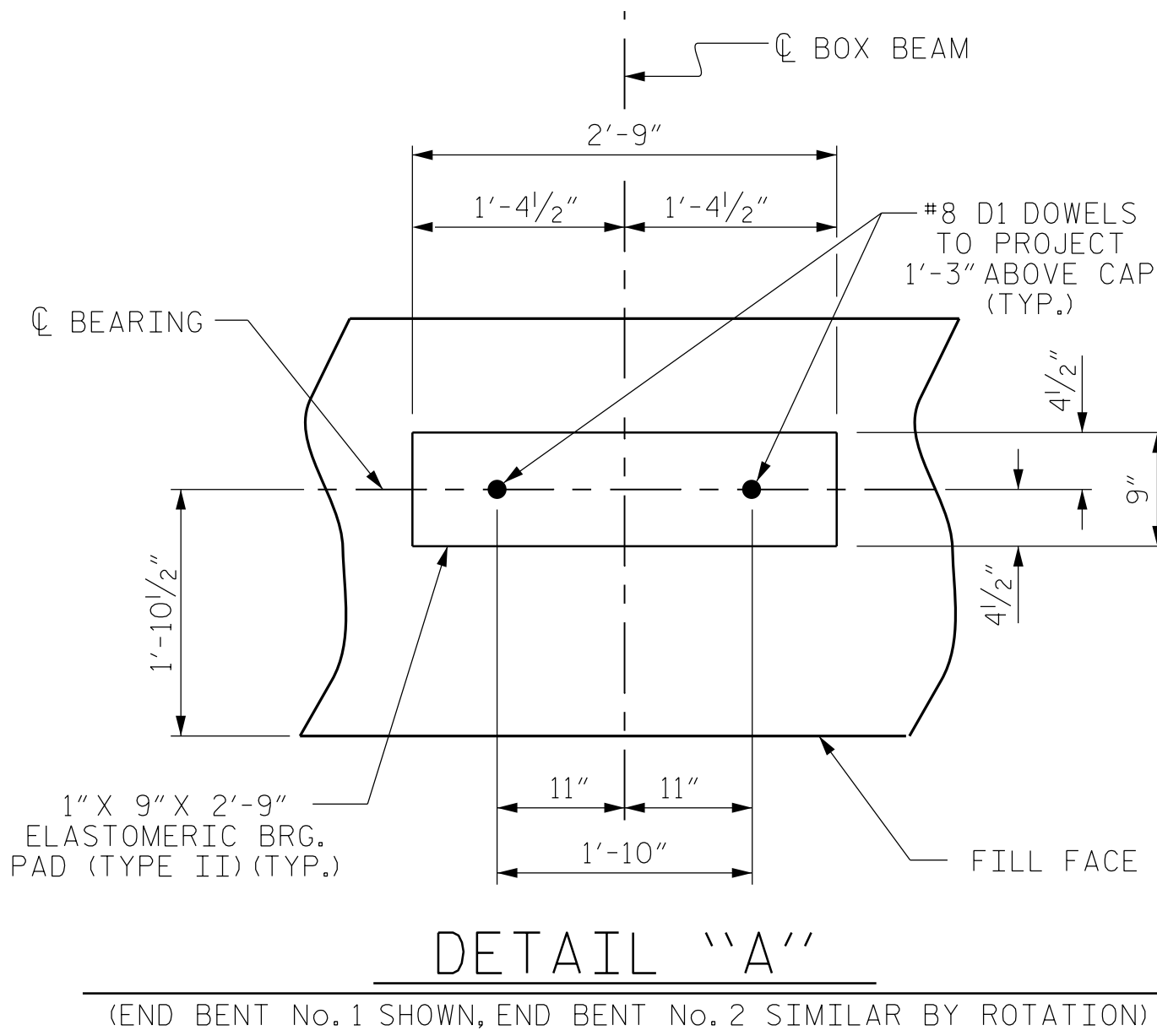
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

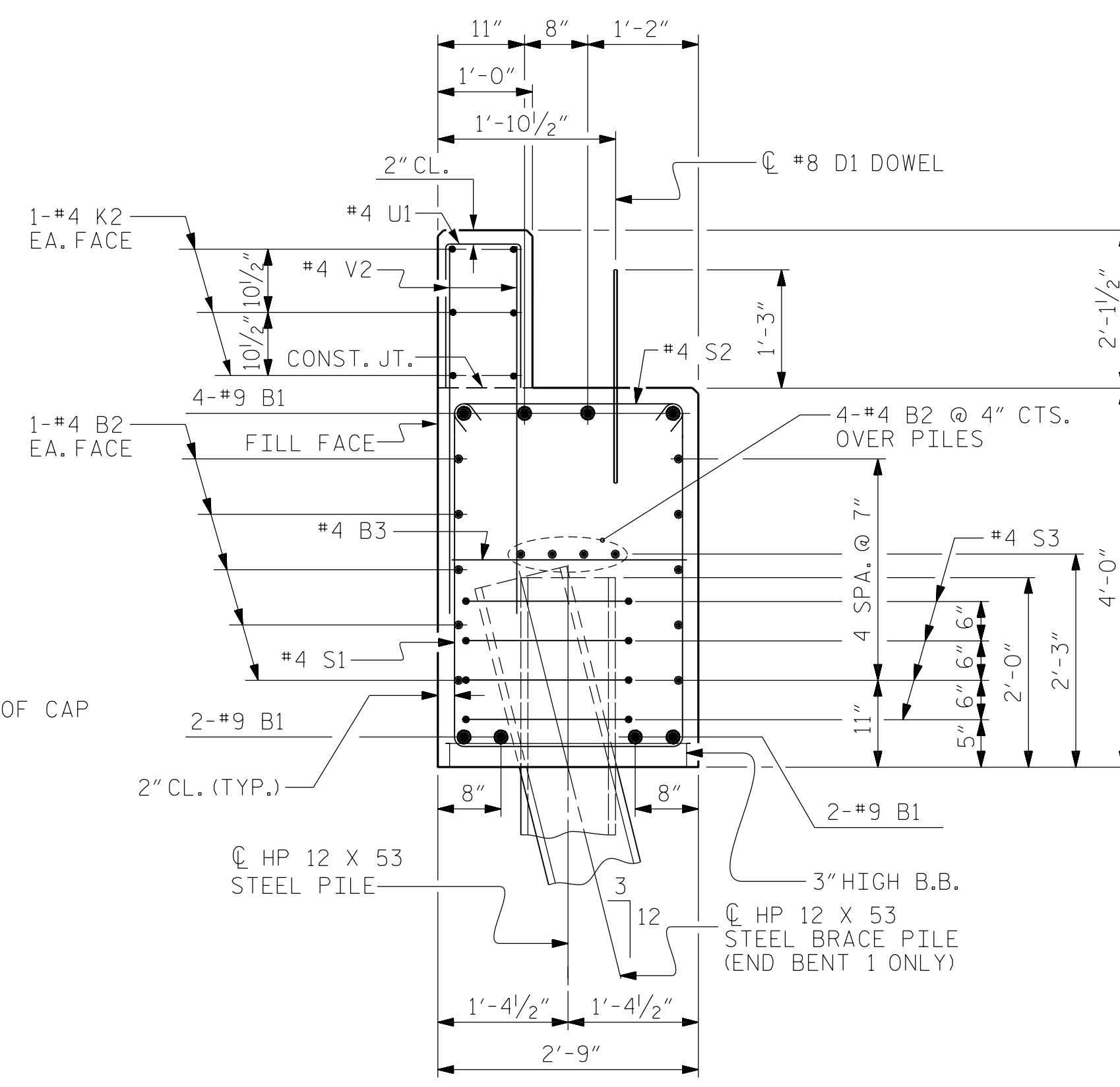
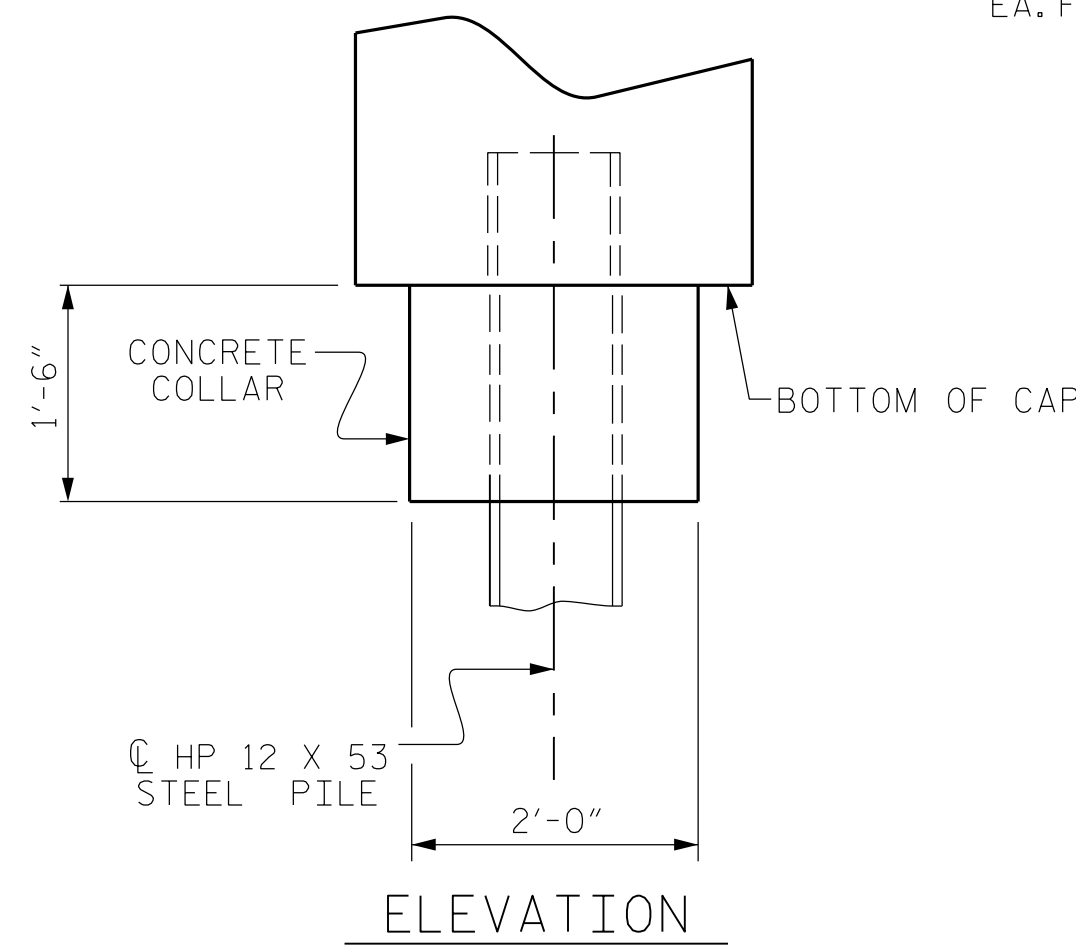


| BILL OF MATERIAL FOR ONE END BENT | | | | | |
|---|------------------------------------|------|------|--------|-----------|
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| B1 | 8 | #9 | 1 | 41'-0" | 1115 |
| B2 | 28 | #4 | STR | 20'-7" | 385 |
| B3 | 10 | #4 | STR | 2'-5" | 16 |
| D1 | 22 | #8 | STR | 2'-3" | 132 |
| H1 | 64 | #6 | 2 | 15'-4" | 1474 |
| K1 | 12 | #4 | STR | 2'-11" | 23 |
| K2 | 12 | #4 | STR | 20'-7" | 165 |
| S1 | 50 | #4 | 3 | 10'-5" | 348 |
| S2 | 50 | #4 | 4 | 3'-2" | 106 |
| S3 | 28 | #4 | 5 | 6'-6" | 122 |
| U1 | 33 | #4 | 6 | 3'-8" | 81 |
| V1 | 76 | #4 | STR | 7'-8" | 389 |
| V2 | 66 | #4 | STR | 5'-9" | 254 |
| REINFORCING STEEL (FOR ONE END BENT) | | | | | 4610 LBS. |
| CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT) | | | | | |
| POUR #1 | CAP, LOWER PART OF WINGS & COLLARS | | | | 21.3 C.Y. |
| POUR #2 | BACKWALL & UPPER PART OF WINGS | | | | 7.7 C.Y. |
| TOTAL CLASS A CONCRETE | | | | | 29.0 C.Y. |



CORROSION PROTECTION FOR STEEL PILES DETAIL

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



SECTION A-A

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

PROJECT NO. BP8.R004
MOORE COUNTY
 STATION: 20+25.00 -L-
 SHEET 4 OF 4

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT No. 1 & 2
 DETAILS



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

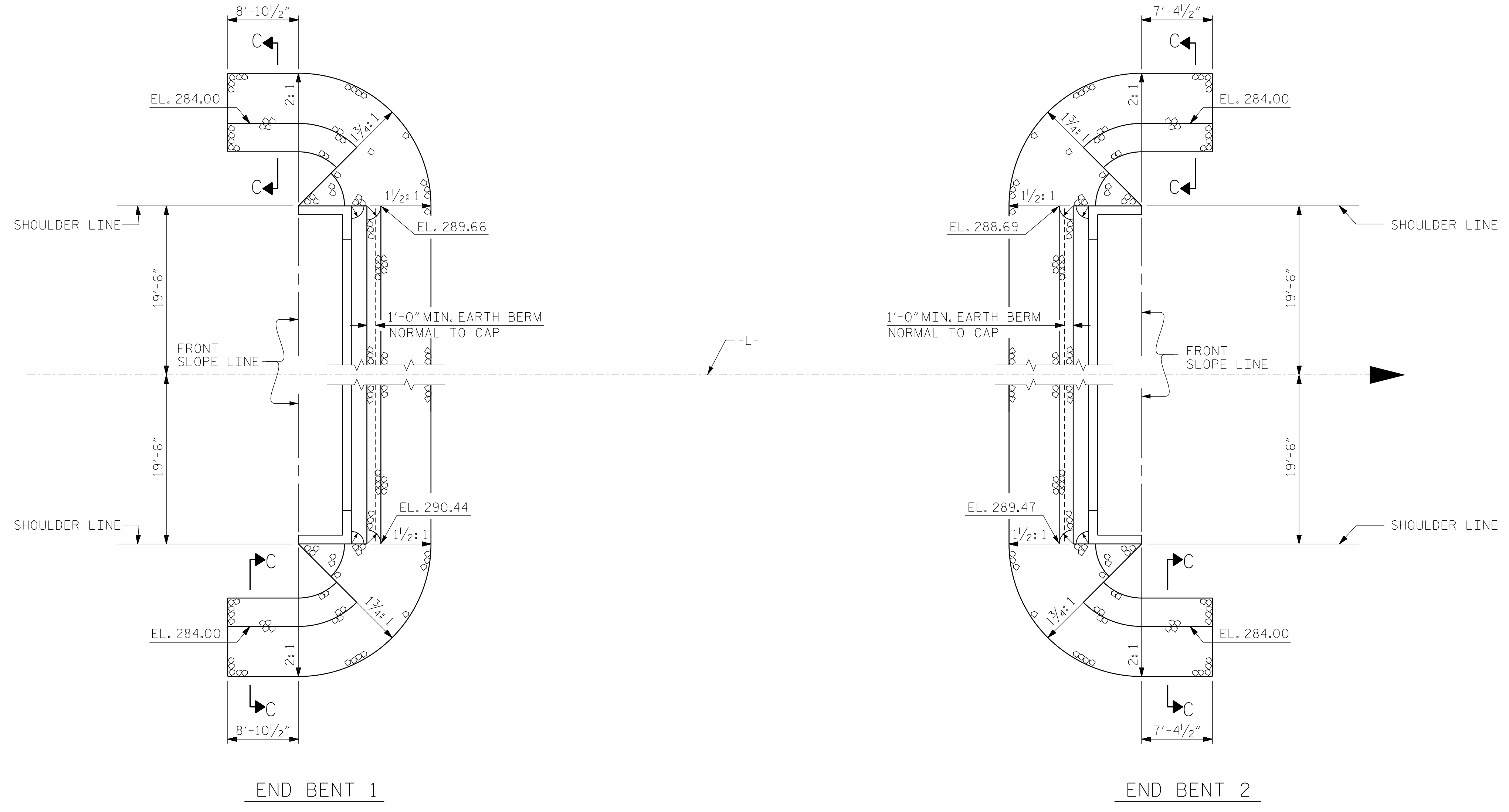
MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671

| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|-----------------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-14 | |
| 1 | | | 3 | | | TOTAL SHEETS 16 | |
| 2 | | | 4 | | | | |

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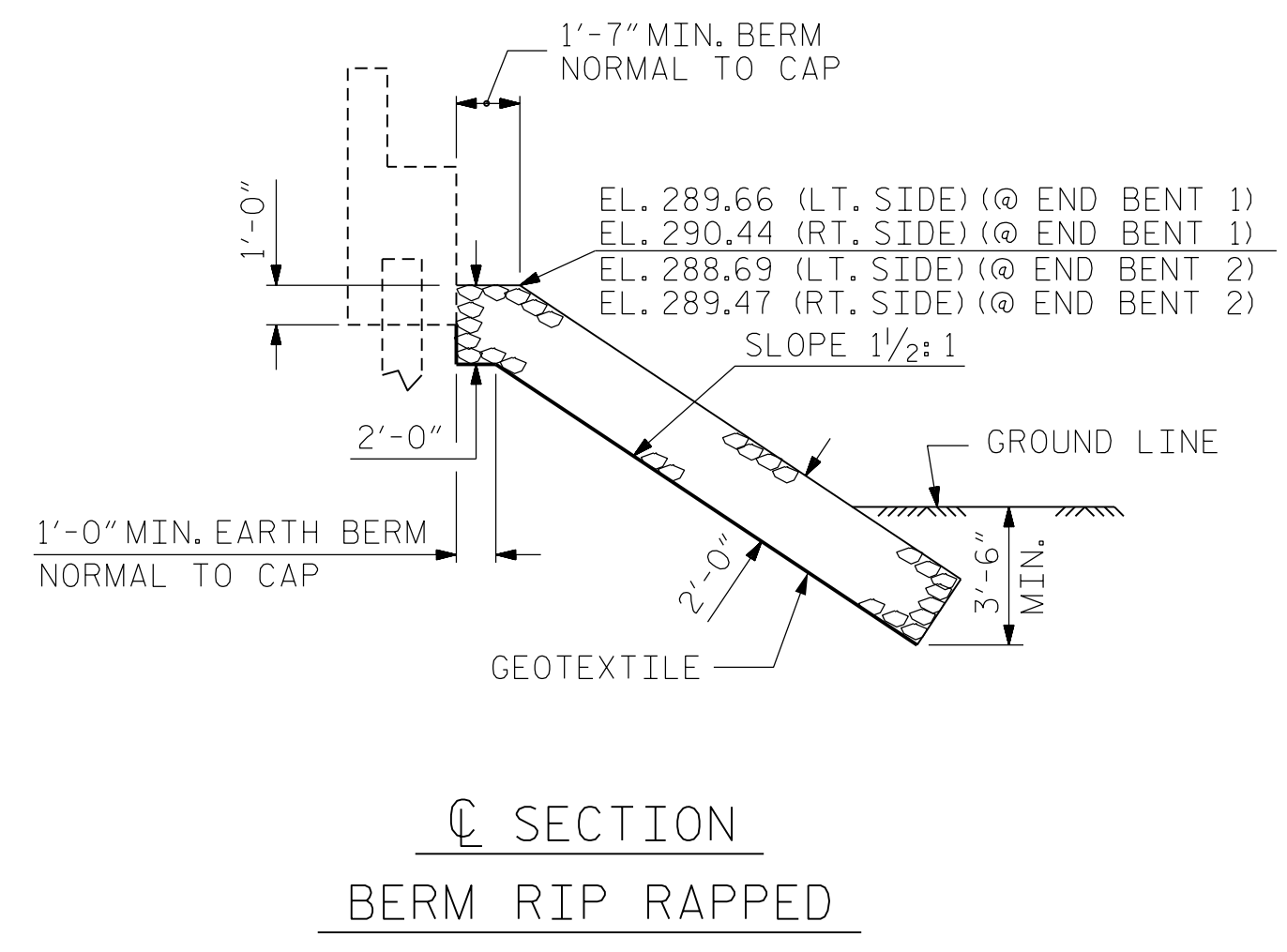
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|--|-----------------------|
| DRAWN BY : <u>B.E. LANNING</u> | DATE : <u>11/2023</u> |
| CHECKED BY : <u>B.E. ATKINSON</u> | DATE : <u>11/2023</u> |
| DESIGN ENGINEER OF RECORD : <u>B.E. ATKINSON</u> | DATE : <u>01/2024</u> |

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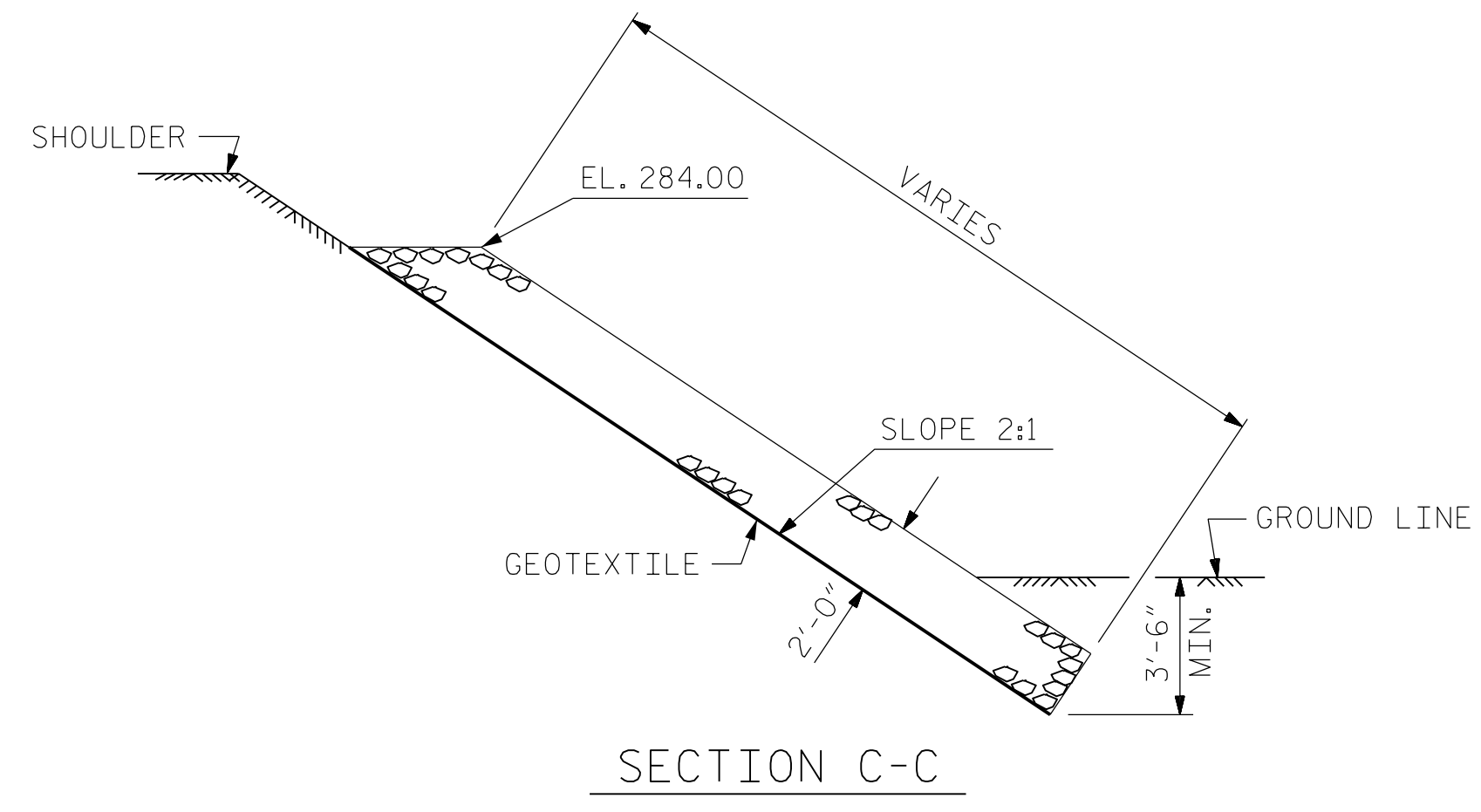


PLAN

| ESTIMATED QUANTITIES | | |
|-------------------------------|--------------------------------------|----------------------------|
| BRIDGE @ STA. 20+25.00 -L- | RIP RAP CLASS II (2'-0" THICK) | GEOTEXTILE FOR DRAINAGE |
| | TONS | SQUARE YARDS |
| END BENT 1 | 368 | 409 |
| END BENT 2 | 307 | 342 |

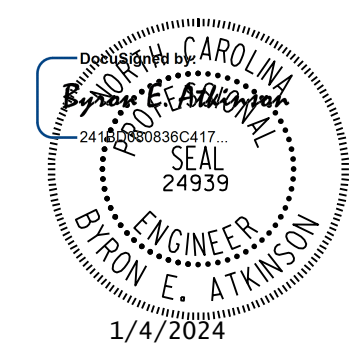


SECTION C-C
BERM RIP RAPPED



SECTION C-C

PROJECT NO. BP8.R004
MOORE COUNTY
 STATION: 20+25.00 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 RIP RAP DETAILS

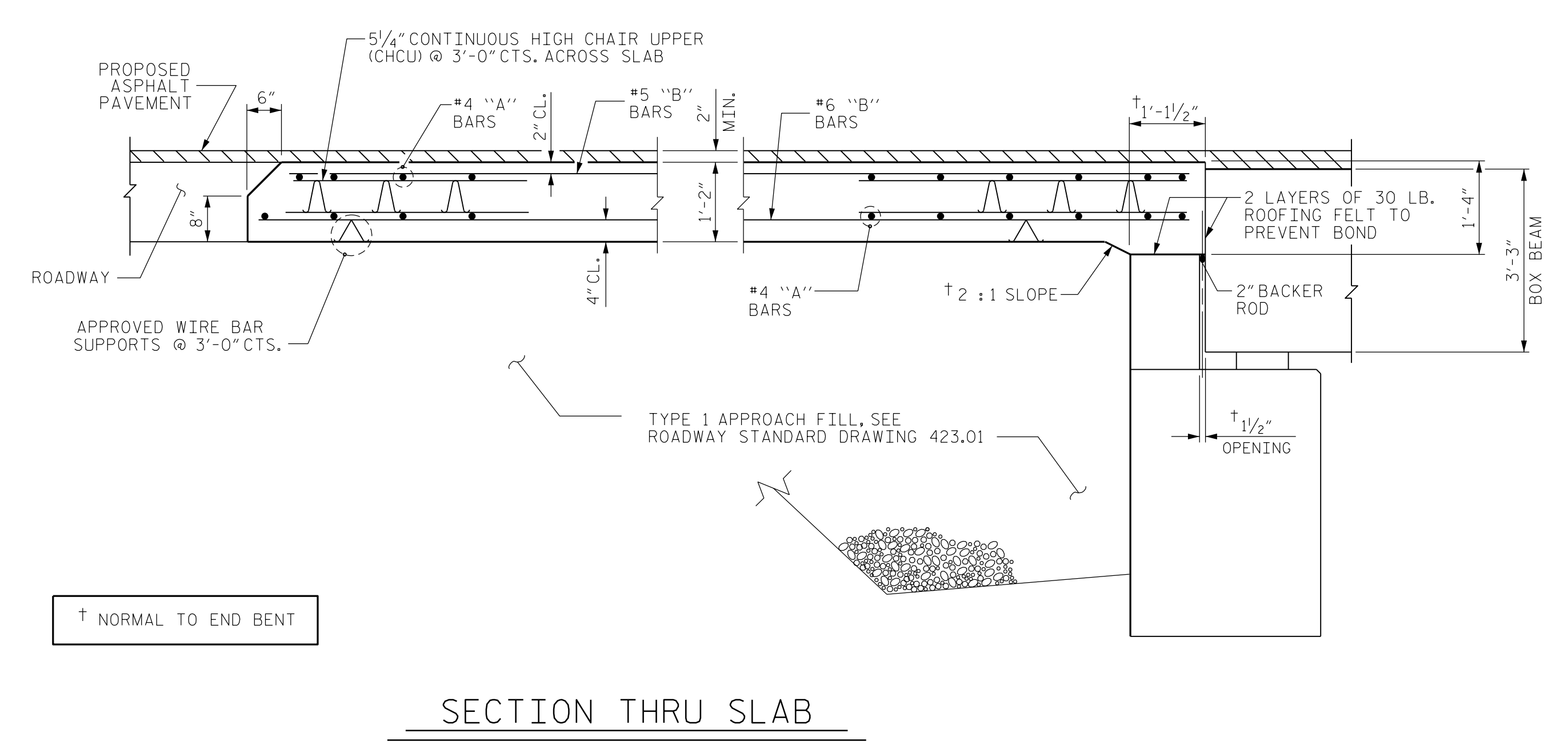
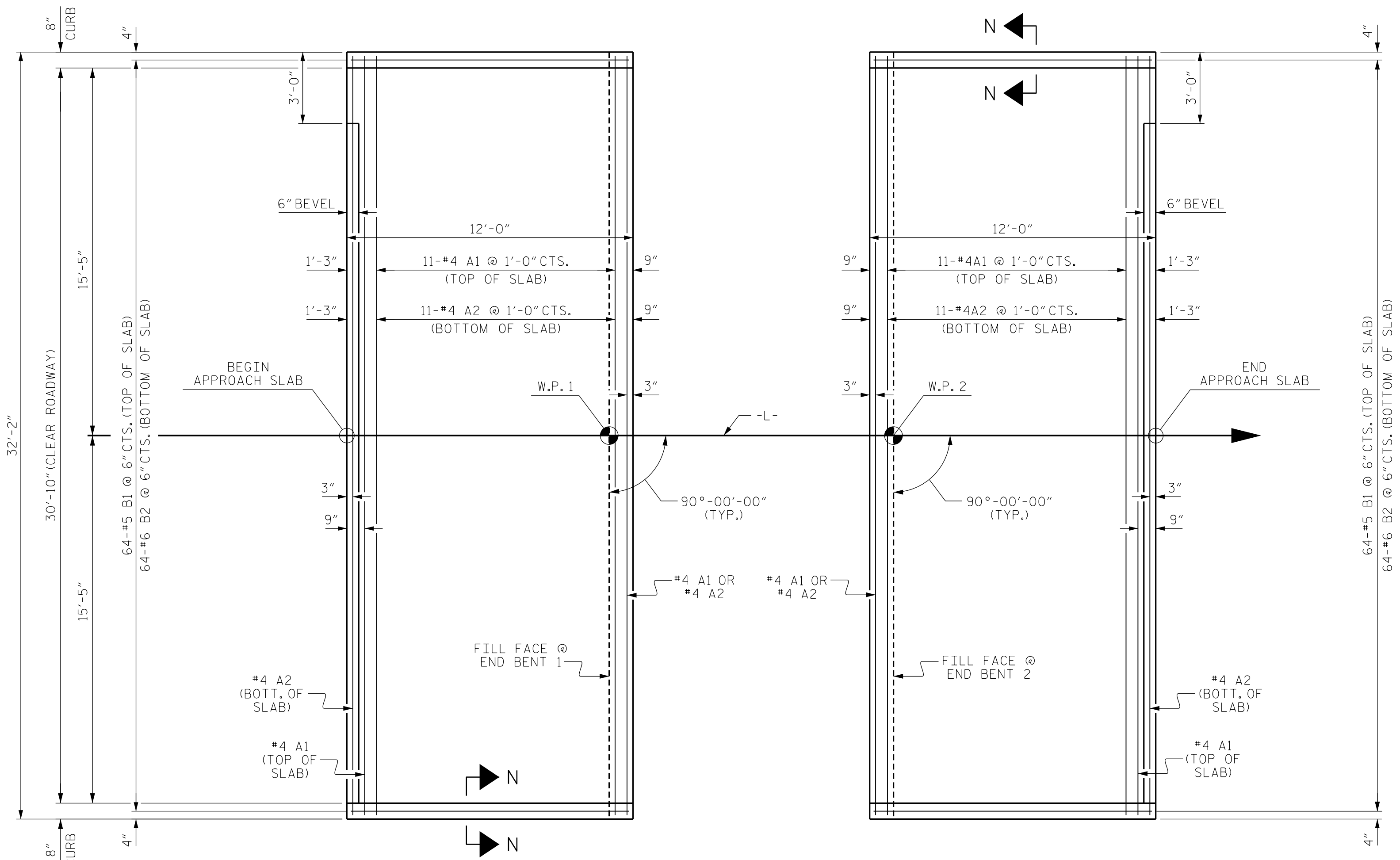
DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER: P-0671

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|-----------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-15 |
| 1 | | | 3 | | | TOTAL SHEETS 16 |
| 2 | | | 4 | | | |

DRAWN BY: B.E. LANNING DATE: 05/2023
 CHECKED BY: B.E. ATKINSON DATE: 07/2023
 DESIGN ENGINEER OF RECORD: B.E. ATKINSON DATE: 01/2024

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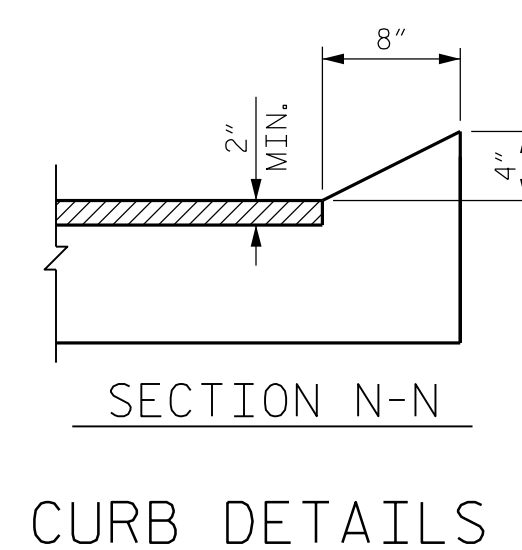
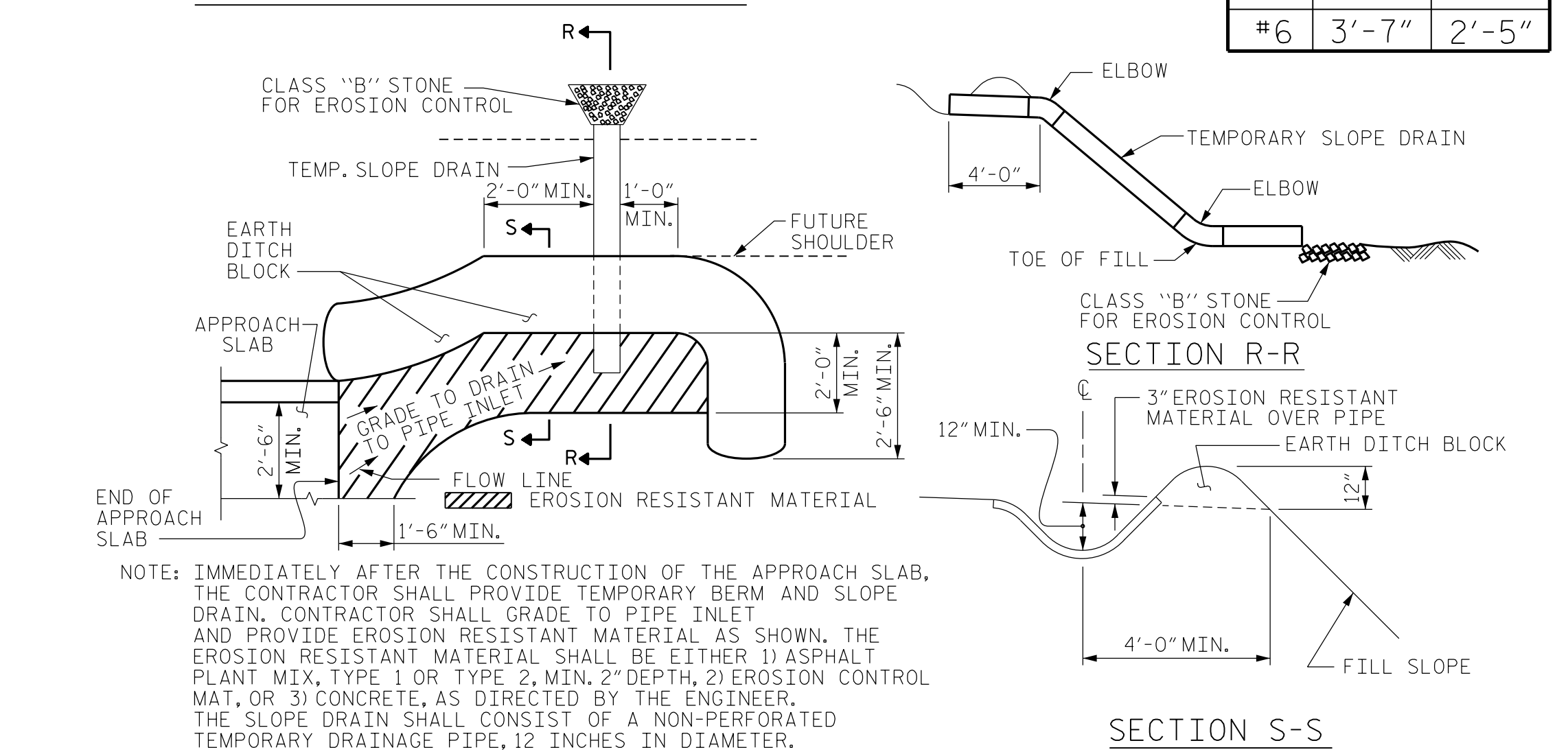
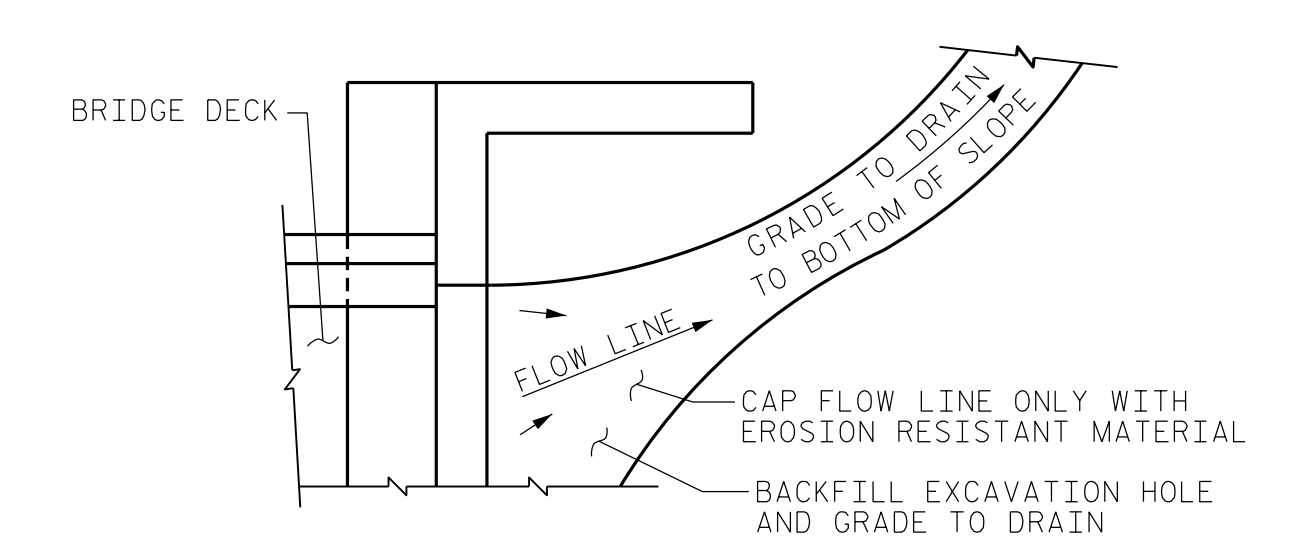


NOTES

FOR BRIDGE APPROACH FILL, SEE ROADWAY PLANS.

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

APPROACH SLAB GROOVING IS NOT REQUIRED.



BILL OF MATERIAL

APPROACH SLAB AT EB 1

| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT | |
|---------------------------------|-----|------|------|---------|--------|------|
| *A1 | 13 | #4 | STR | 31'-10" | 276 | |
| A2 | 13 | #4 | STR | 31'-10" | 276 | |
| *B1 | 64 | #5 | STR | 11'-2" | 745 | |
| B2 | 64 | #6 | STR | 11'-8" | 1121 | |
| REINFORCING STEEL | | | | | LBS. | 1397 |
| *EPOXY COATED REINFORCING STEEL | | | | | LBS. | 1021 |
| CLASS AA CONCRETE | | | | | C. Y. | 17.0 |

APPROACH SLAB AT EB 2

| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT | |
|---------------------------------|-----|------|------|---------|--------|------|
| *A1 | 13 | #4 | STR | 31'-10" | 276 | |
| A2 | 13 | #4 | STR | 31'-10" | 276 | |
| *B1 | 64 | #5 | STR | 11'-2" | 745 | |
| B2 | 64 | #6 | STR | 11'-8" | 1121 | |
| REINFORCING STEEL | | | | | LBS. | 1397 |
| *EPOXY COATED REINFORCING STEEL | | | | | LBS. | 1021 |
| CLASS AA CONCRETE | | | | | C. Y. | 17.0 |

SPLICE LENGTHS

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MI ENGINEERING
 1011 SCHAUB DRIVE, SUITE 100
 RALEIGH, NC 27606
 (919) 851-6606
 FIRM PE NUMBER : P-0671

PROJECT NO. BP8.R004
MOORE COUNTY
 STATION: 20+25.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

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

REVISIONS

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

SHEET NO. **S-16**
 TOTAL SHEETS **16**

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 2024 "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 $\frac{3}{4}$ " WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO $\frac{1}{2}$ " RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A $\frac{1}{4}$ " 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 $\frac{1}{4}$ " 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 $\frac{7}{8}$ " \emptyset SHEAR STUDS FOR THE $\frac{3}{4}$ " \emptyset STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - $\frac{7}{8}$ " \emptyset STUDS FOR 4 - $\frac{3}{4}$ " \emptyset STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF $\frac{7}{8}$ " \emptyset STUDS ALONG THE BEAM AS SHOWN FOR $\frac{3}{4}$ " \emptyset STUDS BASED ON THE RATIO OF 3 - $\frac{7}{8}$ " \emptyset STUDS FOR 4 - $\frac{3}{4}$ " \emptyset 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 $\frac{3}{16}$ " 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 $\frac{1}{16}$ " 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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