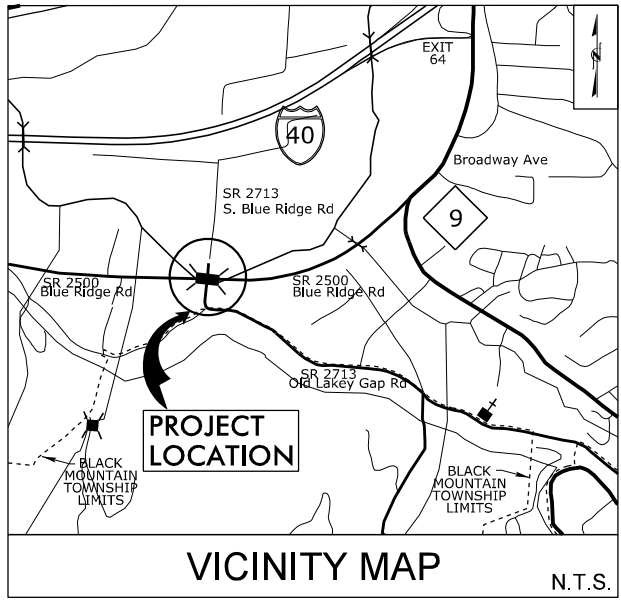


09/08/24

CONTRACT: DM00394 TIP PROJECT: DF18313.2011297.PR

See Sheet 1A For Index of Sheets
See Sheet 1B For Symbology Sheet



VICINITY MAP

FINAL PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BUNCOMBE COUNTY

LOCATION: REPLACEMENT OF BRIDGE NO. 100785 OVER SWANNANOA RIVER ON SR 2713 (S. BLUE RIDGE RD)

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

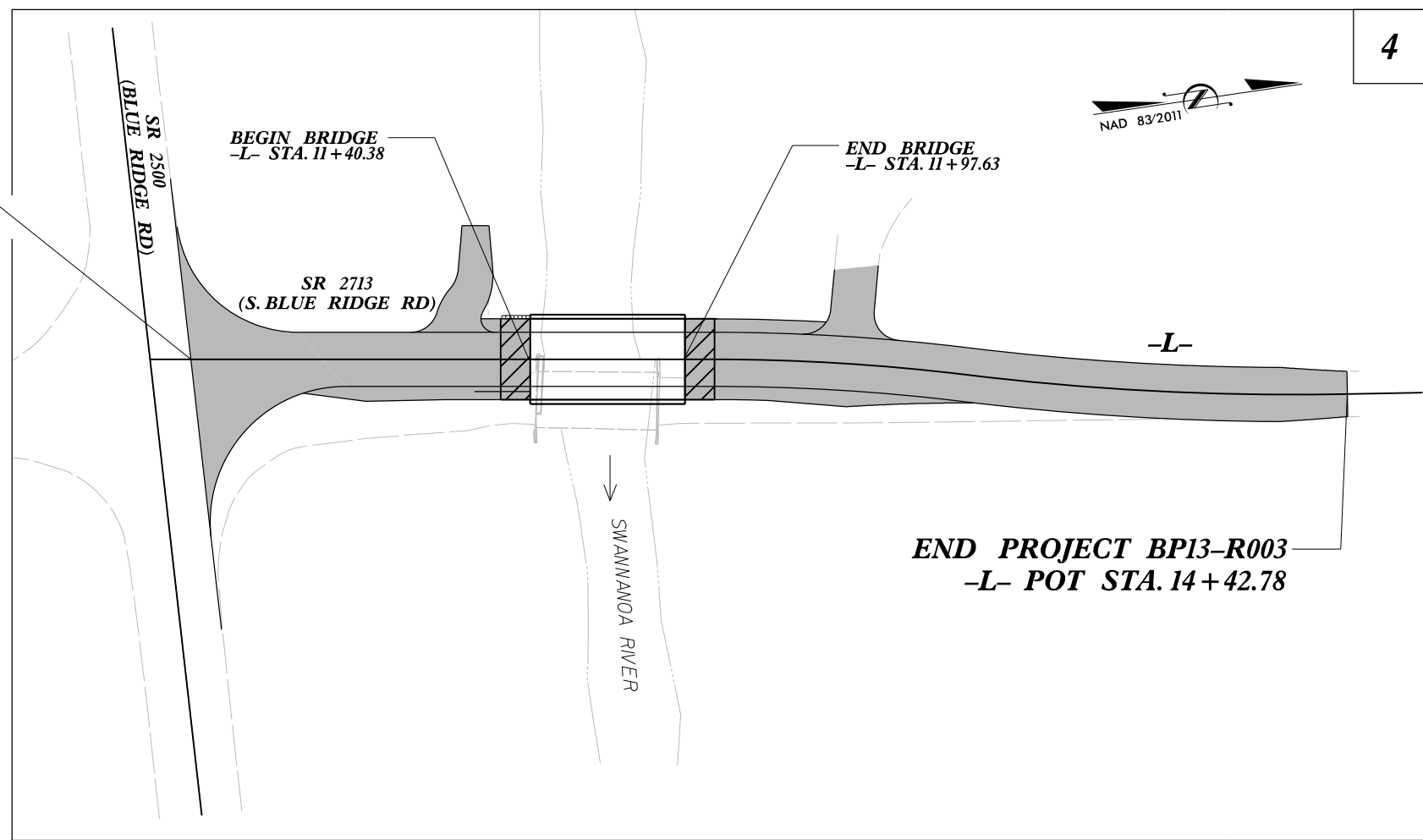
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|--------------------|-----------------------------|-------------|--------------|
| N.C. | DF18313.2011297.PR | 1 | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| DF18313.2011297.PR | | PE | |
| DF18313.2011297.PR | | RW | |
| DF18313.2011297.PR | | CONST | |

DIVISION 13



BEGIN PROJECT BP13-R003
-L- POT STA. 10 + 15.10

TO SR 2500
BLUE RIDGE RD

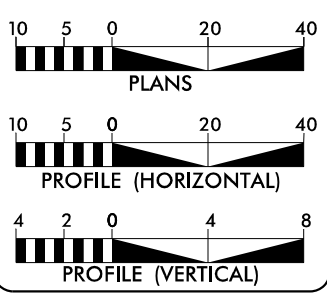


4

DEAD
END

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2023 = 460
ADT 2043 = 920
K = N/A %
D = N/A %
T = N/A % *
V = 40 MPH
* TTST = N/A DUAL = N/A
FUNC CLASS = LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT BP13.R003 = 0.070 MI
LENGTH STRUCTURES PROJECT BP13.R003 = 0.011 MI
TOTAL LENGTH PROJECT BP13.R003 = 0.081 MI

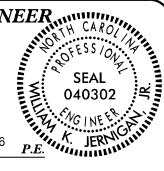
Prepared in the Office of: **GFT**
GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7650
NC Lic. No. F-0270

2024 STANDARD SPECIFICATIONS
RIGHT OF WAY DATE:
JANUARY 4, 2024
LETTING DATE:
JULY 1, 2026

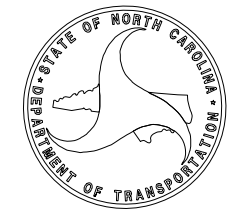
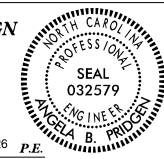
RICKY A. TIPTON, PE, PLS
PROJECT ENGINEER
ANGELA B. PRIDGEN, PE
PROJECT DESIGN ENGINEER
MARK E. HILL, PE
NCDOT DIVISION PROJECT MANAGER

HYDRAULICS ENGINEER

DocuSigned by:
[Signature]
5/22/2026
P.E.



ROADWAY DESIGN ENGINEER
DocuSigned by:
[Signature]
5/21/2026
P.E.



5/21/2026
c:\pwworking\gfpw01\apridgen\d0991419\Buncombe 785_r.dy_tsh.dgn
apridgen



GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. P-0270

| | |
|--|-----------------|
| PROJECT REFERENCE NO. DF18313.2011297.PR | SHEET NO. 1A |
| ROADWAY DESIGN ENGINEER SEAL 032579 ANGELA B. PROCTOR | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

GENERAL NOTES

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 II.

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

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 NOT SHOWN ON THE PLANS WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAIL, 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: AT&T, DUKE, CHARTER, SPECTRUM

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 OTHERS.

INDEX OF SHEETS

| SHEET NUMBER | SHEET |
|------------------|---|
| 1 | TITLE SHEET |
| 1A | INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS |
| 1B | CONVENTIONAL SYMBOLS |
| 2A-1 | PAVEMENT SCHEDULE AND TYPICAL SECTIONS |
| 2C-1 THRU 2C-5 | DETAILS |
| 3B-1 | ROADWAY SUMMARIES |
| 3D-1 | DRAINAGE SUMMARY |
| 3G-1 | GEOTECHNICAL SUMMARIES |
| 4 | PLAN AND PROFILE SHEET |
| RW01 THRU RW04 | SURVEY CONTROL SHEETS |
| TMP-1 THRU TMP-5 | TRAFFIC MANAGEMENT PLANS |
| PMP-1 THRU PMP-3 | PAVEMENT MARKING PLANS |
| EC-1 THRU EC-4 | EROSION CONTROL PLANS |
| UC-1 THRU UC-5 | UTILITY CONSTRUCTION PLANS |
| X-1 | CROSS-SECTION INDEX SHEET |
| X-1A | CROSS-SECTION SUMMARY |
| X-2 THRU X-6 | CROSS-SECTIONS |
| S-1 THRU S-21 | STRUCTURE PLANS |
| TITLE SHEET | |
| STANDARD NOTES | |

STANDARD DRAWINGS

EFF. 01-16-2024
REV.

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

| STD.NO. | TITLE |
|--|---|
| DIVISION 2 - EARTHWORK | |
| 200.02 | METHOD OF CLEARING - METHOD II |
| 225.02 | GUIDE FOR GRADING SUBGRADE - SECONDARY AND LOCAL |
| 225.04 | METHOD OF OBTAINING SUPERELEVATION - TWO LANE PAVEMENT |
| DIVISION 3 - PIPE CULVERTS | |
| 310.10 | DRIVEWAY PIPE CONSTRUCTION |
| DIVISION 4 - MAJOR STRUCTURES | |
| 423.01 | BRIDGE APPROACH FILLS - TYPE I APPROACH FILL FOR BRIDGE ABUTMENT |
| DIVISION 5 - SUBGRADE, BASES AND SHOULDERS | |
| 560.01 | METHOD OF SHOULDER CONSTRUCTION - HIGH SIDE OF SUPERELEVATED CURVE METHOD I |
| DIVISION 6 - ASPHALT BASES AND PAVEMENTS | |
| 654.01 | PAVEMENT REPAIRS |
| DIVISION 8 - INCIDENTALS | |
| 815.02 | SUBSURFACE DRAIN |
| 846.01 | CONCRETE CURB, GUTTER AND CURB & GUTTER |
| 862.02 | GUARDRAIL INSTALLATION |
| 862.03 | STRUCTURE ANCHOR UNITS |
| 876.02 | GUIDE FOR RIP RAP AT PIPE OUTLETS |

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 | ○ |
| Proposed Chain Link Fence | □ |
| Proposed Barbed Wire Fence | ◇ |
| Existing Wetland Boundary | ---WLB--- |
| Proposed Wetland Boundary | WLB |
| Existing Endangered Animal Boundary | ---EAB--- |
| Existing Endangered Plant Boundary | ---EPB--- |
| Existing Historic Property Boundary | ---HPB--- |
| Known Contamination Area: Soil | ----- |
| Potential Contamination Area: Soil | ----- |
| Known Contamination Area: Water | ----- |
| Potential Contamination Area: Water | ----- |
| 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 | → |
| 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) | ◇ |
| Proposed 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 | ---E--- |
| Proposed Temporary Construction Easement | ---E--- |
| Proposed Temporary Drainage Easement | ---TDE--- |
| Proposed Permanent Drainage Easement | ---PDE--- |
| Proposed Permanent Drainage/Utility Easement | ---DUE--- |
| Proposed Permanent Utility Easement | ---PUE--- |
| Proposed Temporary Utility Easement | ---TUE--- |
| Proposed Aerial Utility Easement | ---AUE--- |

ROADS AND RELATED FEATURES:

| | |
|----------------------------|---------|
| Existing Edge of Pavement | ----- |
| Existing Curb | ----- |
| Proposed Slope Stakes Cut | ---C--- |
| Proposed Slope Stakes Fill | ---F--- |
| Proposed Curb Ramp | ⊠ |
| 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 | ⊙ |
| End of Information | ⊙ |

8/17/99

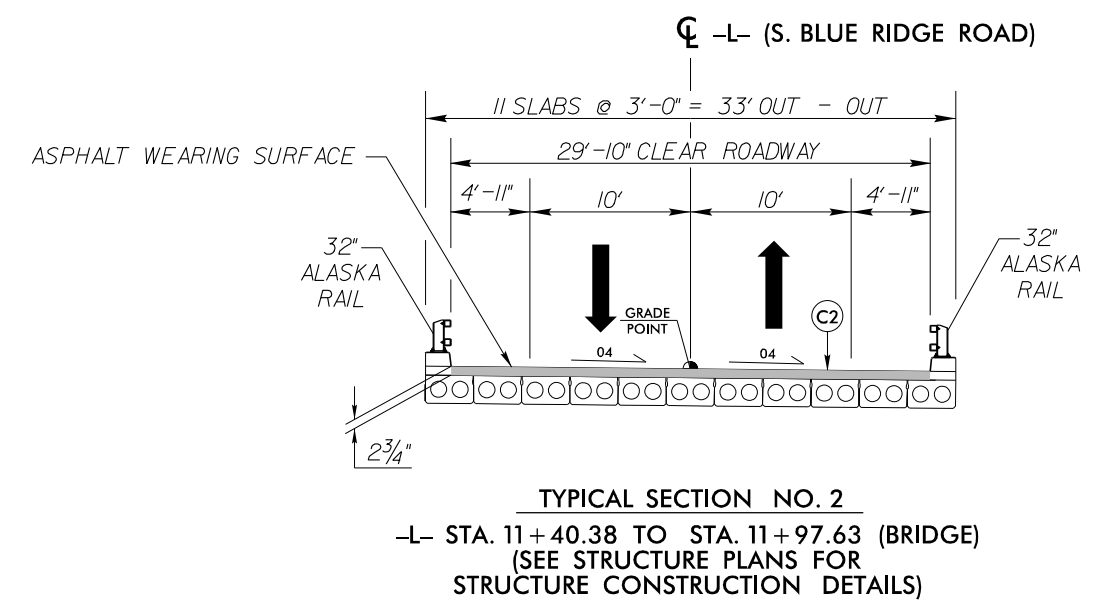
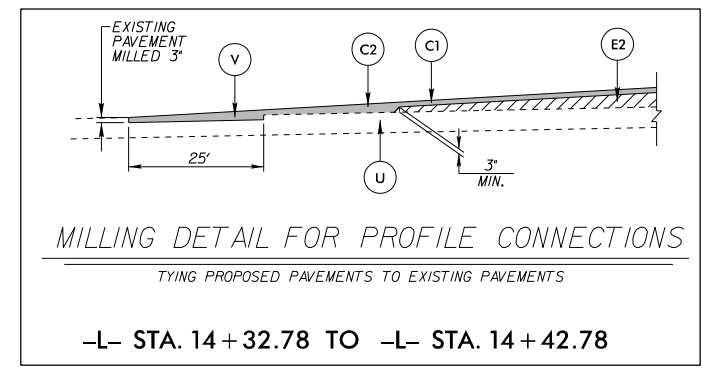
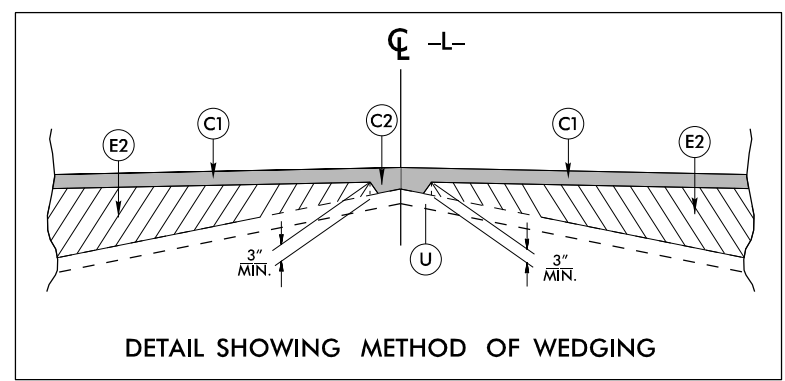
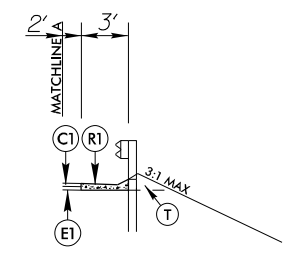
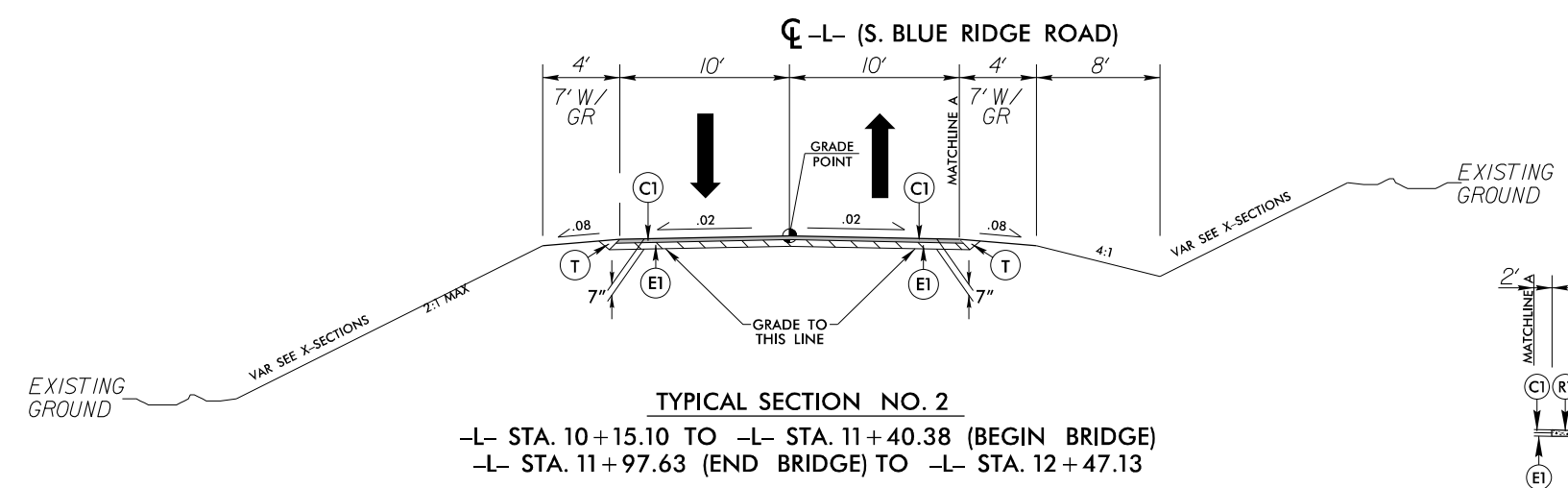
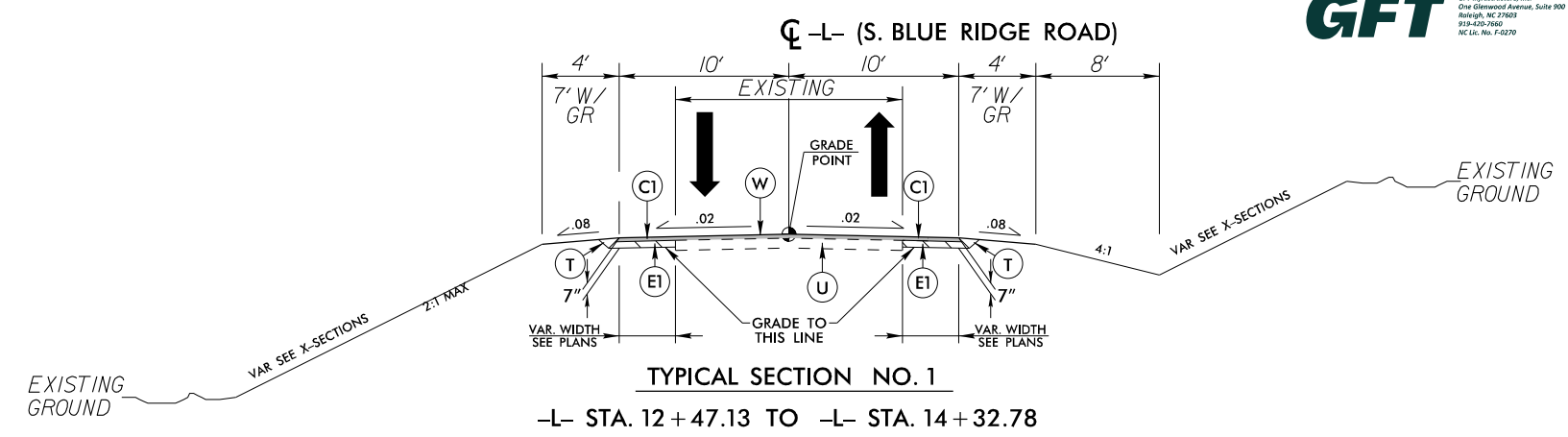
FINAL PAVEMENT SCHEDULE

| | |
|----|---|
| C1 | PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS. |
| C2 | PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1 1/2" 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 5 1/2" IN DEPTH. |
| R1 | SHOULDER BERM GUTTER |
| T | EARTH MATERIAL |
| U | EXISTING PAVEMENT |
| V | MILLING |
| W | VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL THIS SHEET) |

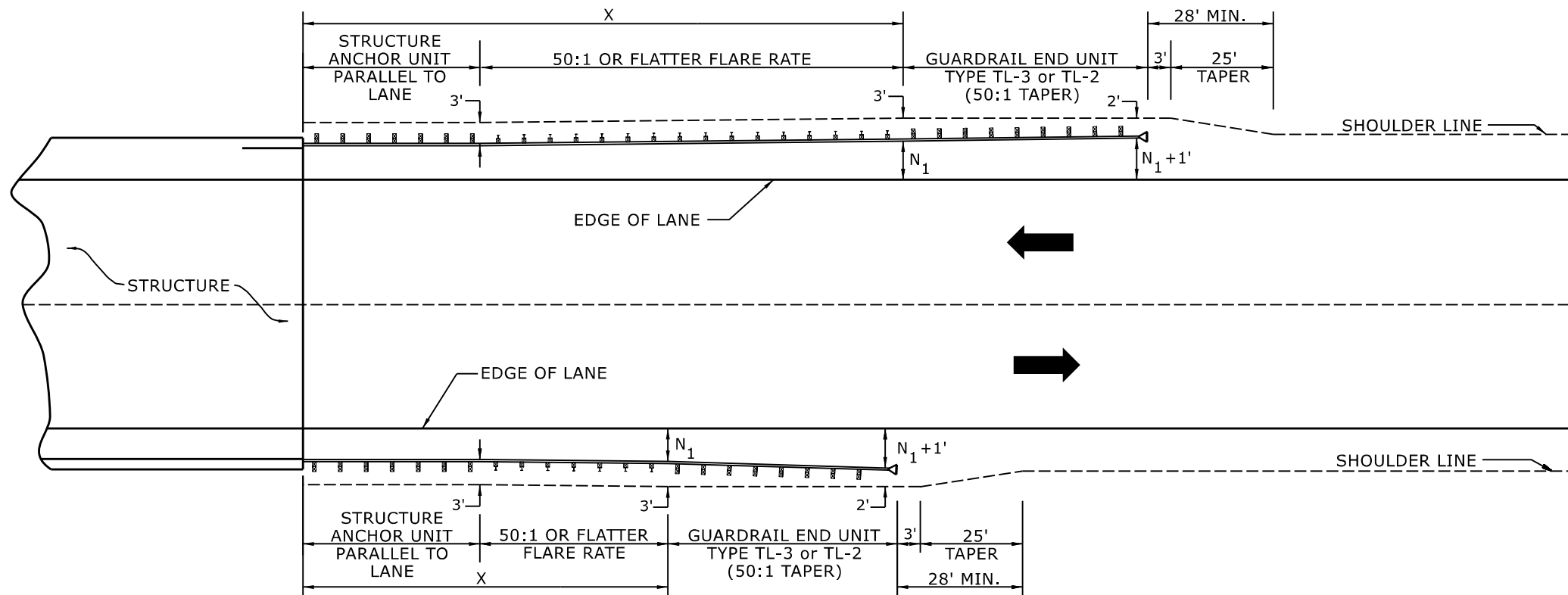
NOTE: ALL SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.



| | |
|---|---|
| PROJECT REFERENCE NO. DF18313.2011297.PR | SHEET NO. 2A-1 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER SEAL 032579 WENGLA B. PROCTOR | PAVEMENT DESIGN ENGINEER SEAL 038176 SHIHAI ZHANG |
| 12/10/2025 | 1/10/2025 |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |



12/10/2025
c:\pwork\king\gfpw01\emorrison@gft.net.com\d0991419\Buncombe785_r.dj - tujp.dgn



USE FLARE RATE AS THE CONTROL IF THE " N_1 " DISTANCE IS NOT OBTAINED.
 (" N_1 " IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)
 SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS
 FOR POSTED SPEEDS \geq 45MPH USE GREU TYPE TL-3
 FOR POSTED SPEEDS $<$ 45MPH USE GREU TYPE TL-2
 GUARDRAIL LENGTH OF NEED (X) IS CALCULATED BASED ON THE AASHTO ROADSIDE DESIGN GUIDE.

LENGTHS AND OFFSETS FOR PROPOSED GUARDRAIL AT TWO LANE - TWO WAY LOCATIONS

SHEET 4 OF 15
862D01

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

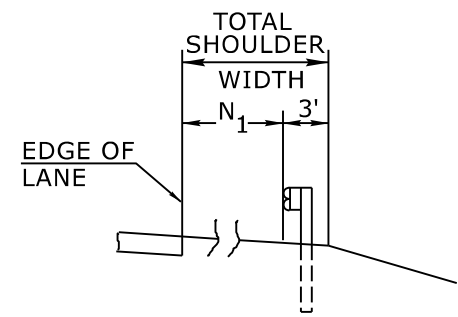


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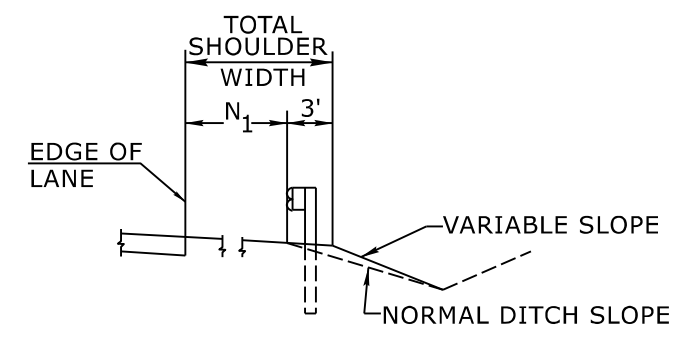
**CONTRACTS STANDARDS
 AND DEVELOPMENT UNIT**
 Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

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

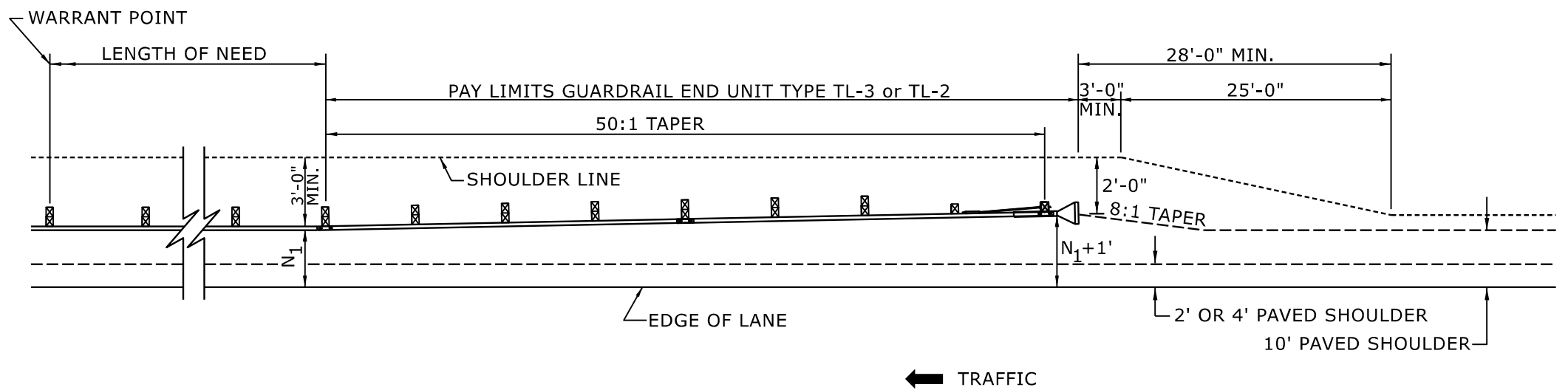


FILL SECTION



CUT SECTION

"N₁" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.



FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT



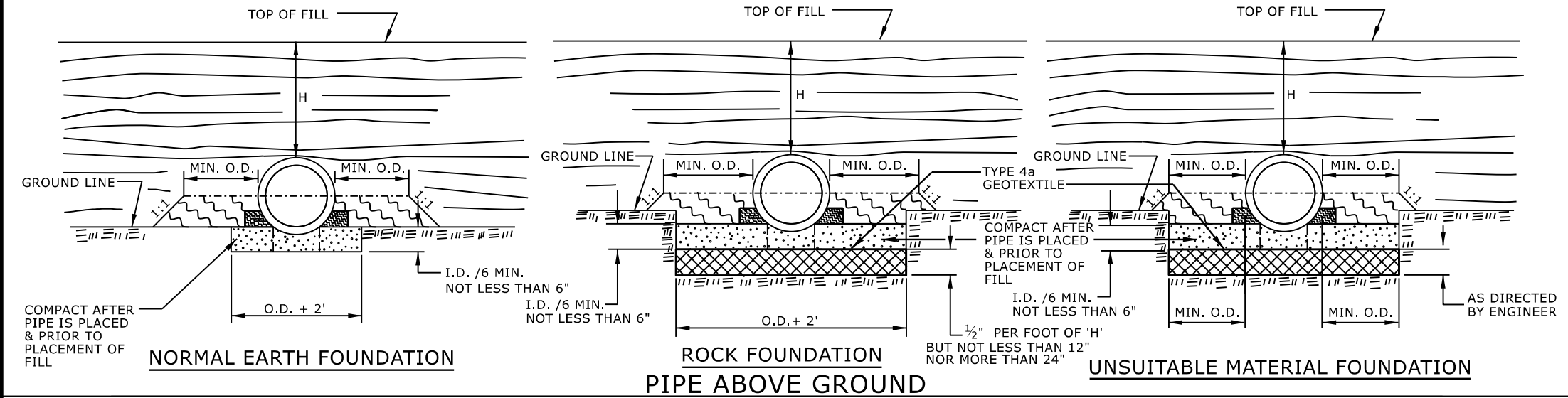
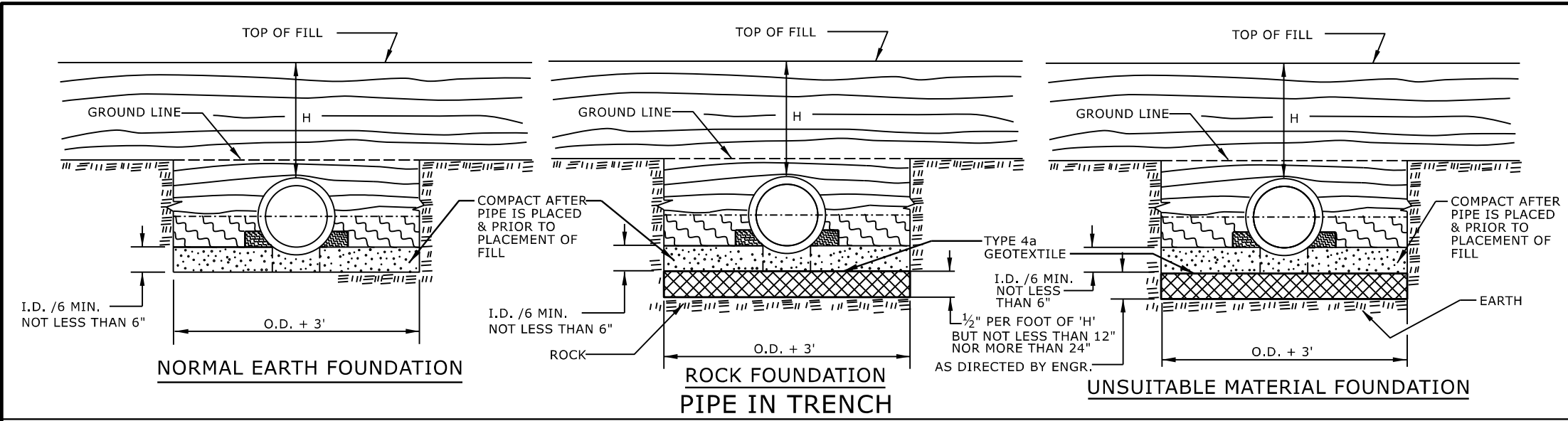
SHEET 6 OF 15
862D01

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| | |
|------------------------|-----------------|
| ORIGINAL BY: S.CALHOUN | DATE: 7-25-2024 |
| MODIFIED BY: _____ | DATE: _____ |
| CHECKED BY: _____ | DATE: _____ |
| FILE SPEC.: _____ | |



GENERAL NOTES:
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

- APPROVED SUITABLE LOCAL MATERIAL.
- TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
- LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

- SPRINGLINE OF PIPE
- SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.
- UNDISTURBED EARTH MATERIAL
- SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

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

ROADWAY DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
RIGID PIPE



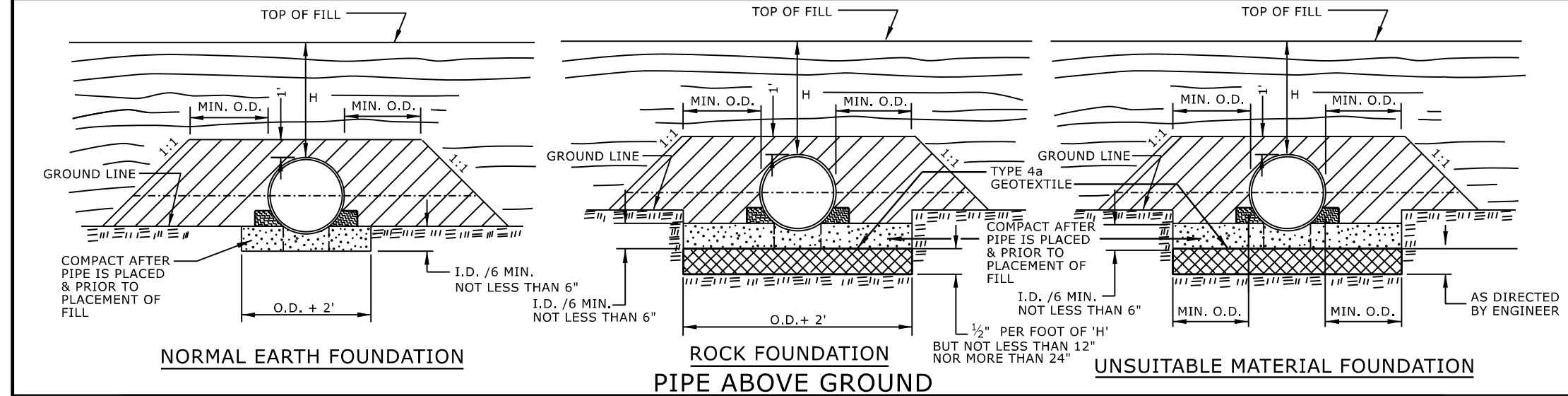
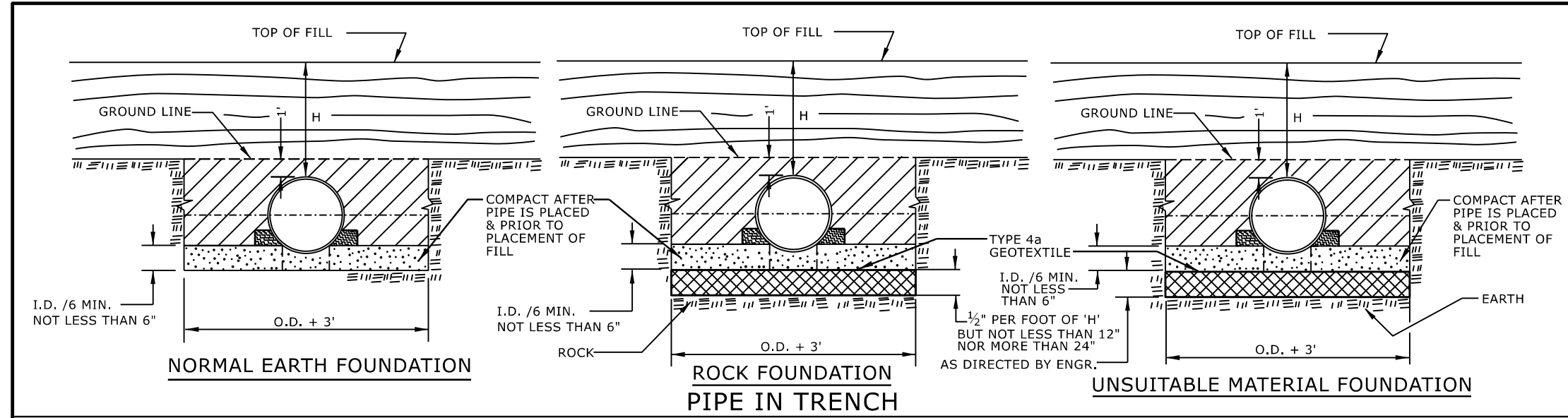
SHEET 2 OF 2
300.01

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



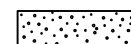
CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

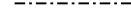
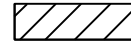
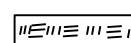
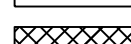
ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
 MODIFIED BY: DATE: _____
 CHECKED BY: DATE: _____
 FILE SPEC.: _____



GENERAL NOTES:
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
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 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

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-  TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
-  LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

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 REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

-  SPRINGLINE OF PIPE
-  SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.
-  UNDISTURBED EARTH MATERIAL
-  SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

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

ROADWAY DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
 FLEXIBLE PIPE



SHEET 1 OF 2
300.01

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

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

SEE TITLE BLOCK

ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
 MODIFIED BY: DATE: _____
 CHECKED BY: DATE: _____
 FILE SPEC.: _____

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

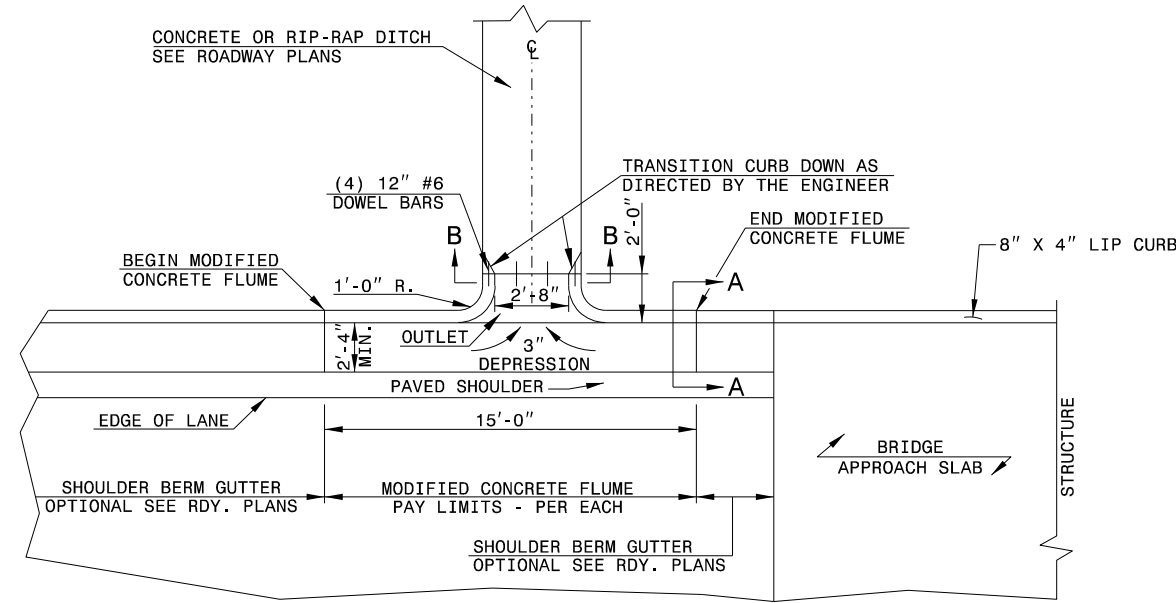
ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
WITH CONCRETE OR RIP-RAP DITCH

SHEET 1 OF 1
MODFLMDTCH

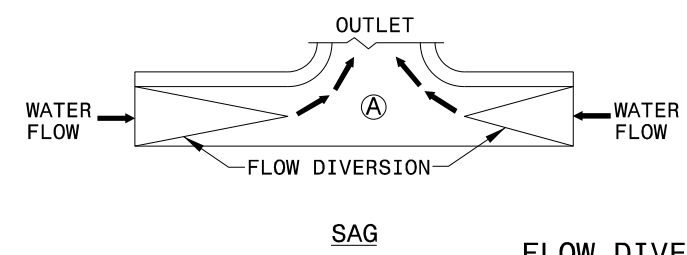
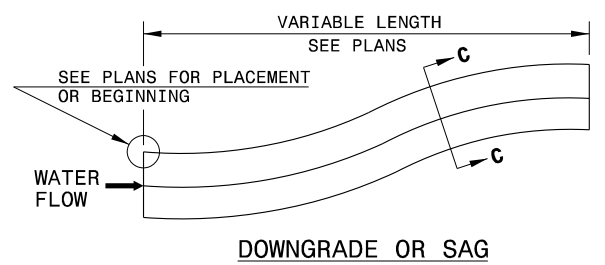
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
MODIFIED CONCRETE FLUME
WITH CONCRETE OR RIP-RAP DITCH

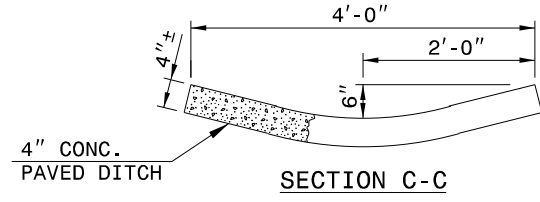
SHEET 1 OF 1
MODFLMDTCH



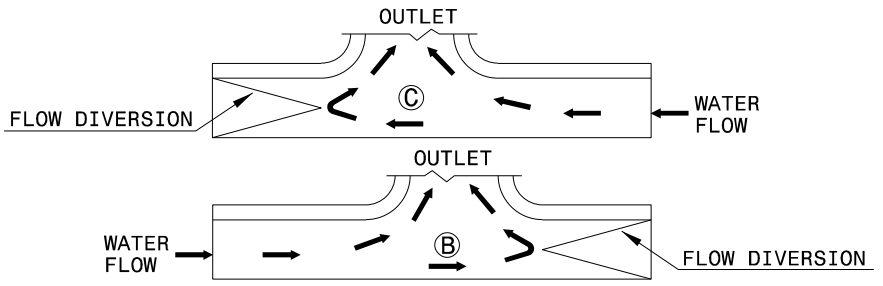
PLAN VIEW



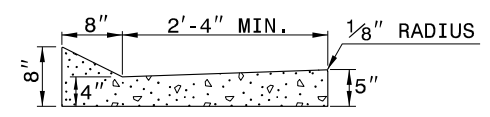
FLOW DIVERSION EXAMPLES



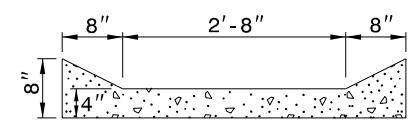
SECTION C-C



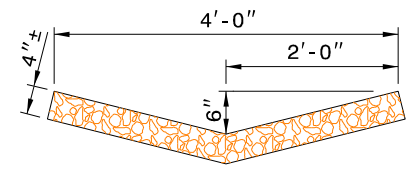
DOWN GRADE



SECTION A-A



SECTION B-B



RIP-RAP LINED DITCH

- NOTES:
- CONSTRUCT MODIFIED CONCRETE FLUME AND SHOULDER BERM GUTTER IN ACCORDANCE WITH THIS DETAIL.
 - CONSTRUCT CONCRETE DITCH IN ACCORDANCE WITH STD. DWG. NO. 850.01.
 - CONSTRUCT RIP RAP LINED DITCH IN ACCORDANCE WITH THIS DETAIL, IF CALLED FOR IN PLANS.
 - CONCRETE OR RIP RAP LINED DITCH SHALL BE THE TYPE AND LENGTH SPECIFIED BY THE ROADWAY PLANS. THE DITCH SHALL TERMINATE AS SHOWN ON THE PLANS. IF NO TERMINATION IS INDICATED PLACE RIP-RAP AT THE END OF THE DITCH AS INDICATED BY STD. DWG. 876.02 FOR AN 18" PIPE. TRANSITIONS FROM THE DITCH TO TERMINATION SHALL BE AS DIRECTED BY THE ENGINEER.
 - MODIFICATIONS SHALL BE AS DICTATED BY SITE CONDITIONS AND DIRECTED BY THE ENGINEER.

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

SEE PLATE FOR TITLE

ORIGINAL BY: E.E. Ward DATE: Apr. 2002
 MODIFIED BY: E.E. Ward DATE: July 2004
 CHECKED BY: DATE:
 FILE SPEC.: w:\details\stand\modifiedflume.dgn

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

COMPUTED BY: CRYSTAL D. JOHNSON DATE: 2-21-2024
 CHECKED BY: MICHAEL H. STEPHENS DATE: 2-21-2024

(2-3-23)

| | |
|-----------------------------------|-------------------|
| PROJECT NO. DF18313.2011297.PR | SHEET NO. 3G-1 |
|-----------------------------------|-------------------|

**STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS**

SUMMARY OF SUBSURFACE DRAINAGE

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

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

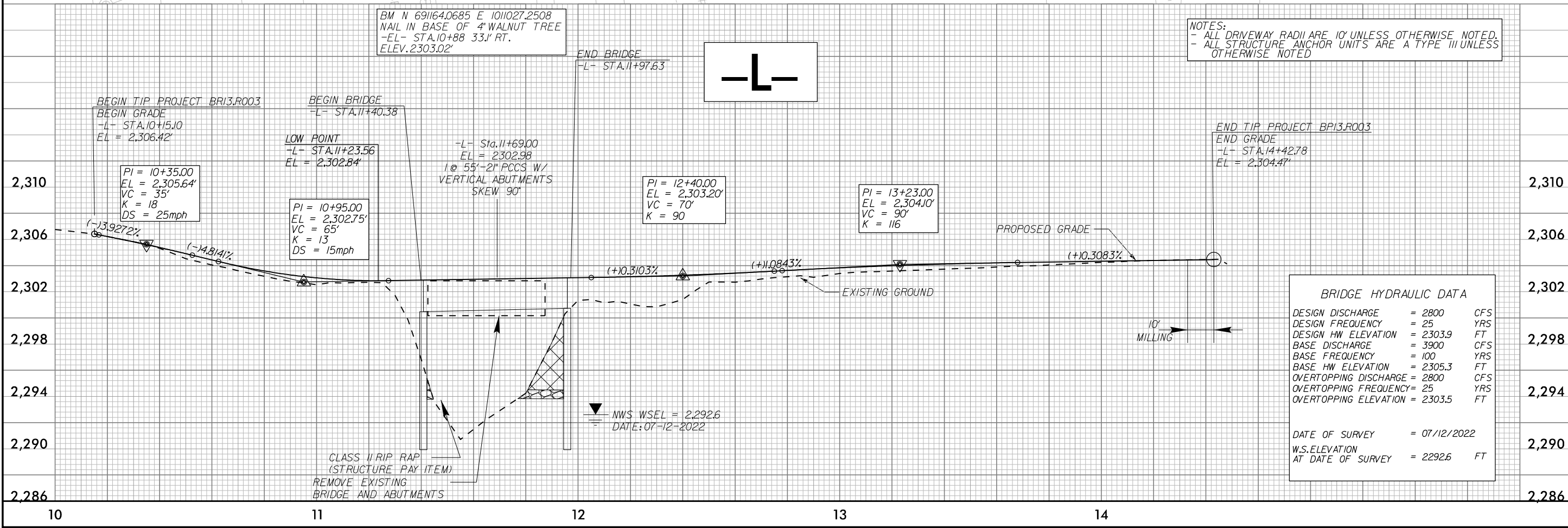
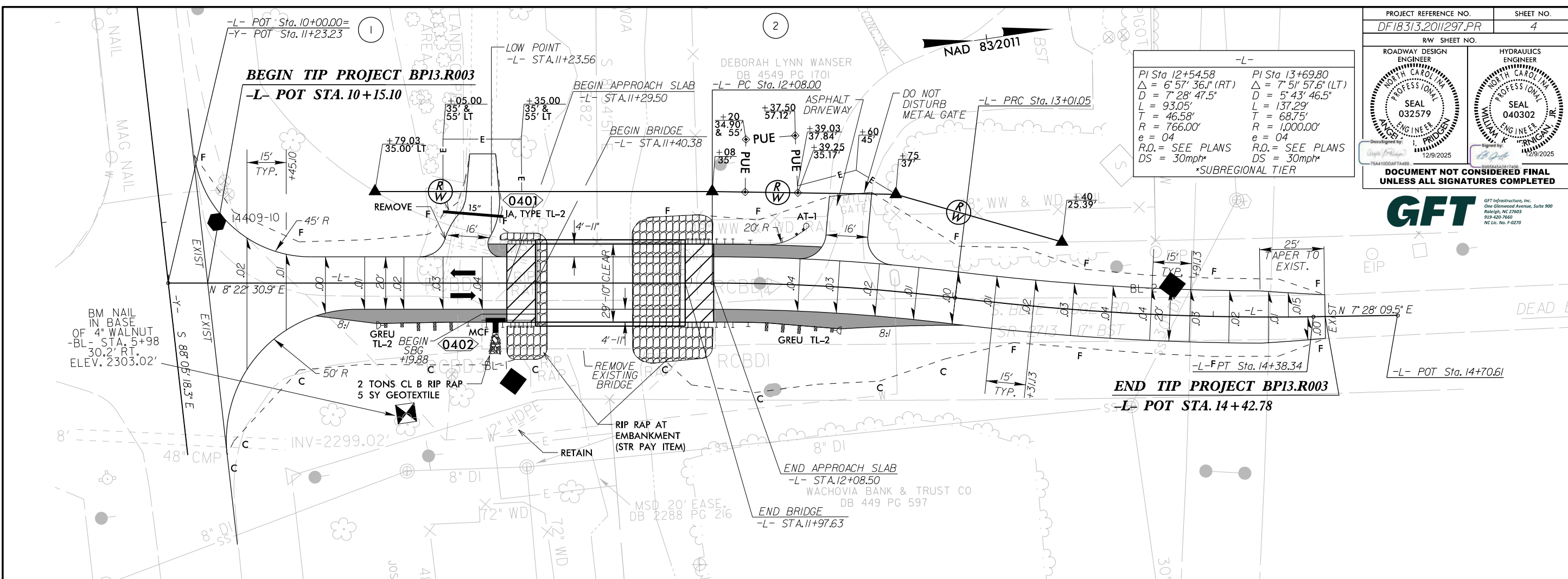
SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

| LINE | Station | Station | Aggregate Type* ASU(1/2)/ AST | Aggregate Thickness INCHES [8" for ASU(2)] | Shallow Undercut CY | Class IV Subgrade Stabilization TONS | Geotextile for Subgrade Stabilization SY | Stabilizer Aggregate TONS | Class IV Aggregate Stabilization TONS |
|------|---------|---------|--|--|---------------------------|---|---|---------------------------------|--|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | CONTINGENCY | 12 | 100 | 200 | 300 | | |
| | | | | | | | | | |
| | | | | TOTAL CY/TONS/SY: | 100 | 200** | 300** | 0 | 0 |

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

8/17/99

| | |
|--|---|
| PROJECT REFERENCE NO. DF18313.2011297.PR | SHEET NO. 4 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER SEAL 032579 12/9/2025 | HYDRAULICS ENGINEER SEAL 040302 12/9/2025 |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |



NOTES:
 - ALL DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED.
 - ALL STRUCTURE ANCHOR UNITS ARE A TYPE III UNLESS OTHERWISE NOTED

| BRIDGE HYDRAULIC DATA | |
|----------------------------------|--------------|
| DESIGN DISCHARGE | = 2800 CFS |
| DESIGN FREQUENCY | = 25 YRS |
| DESIGN HW ELEVATION | = 2303.9 FT |
| BASE DISCHARGE | = 3900 CFS |
| BASE FREQUENCY | = 100 YRS |
| BASE HW ELEVATION | = 2305.3 FT |
| OVERTOPPING DISCHARGE | = 2800 CFS |
| OVERTOPPING FREQUENCY | = 25 YRS |
| OVERTOPPING ELEVATION | = 2303.5 FT |
| DATE OF SURVEY | = 07/12/2022 |
| W.S. ELEVATION AT DATE OF SURVEY | = 2292.6 FT |

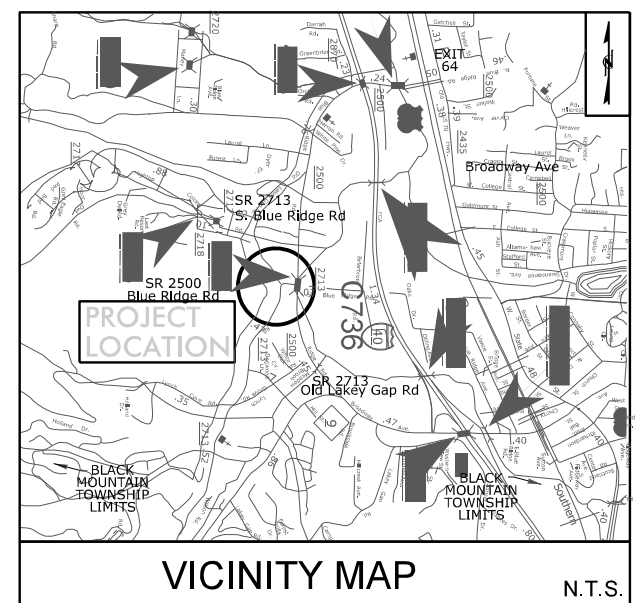
TIP PROJECT: 100785

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

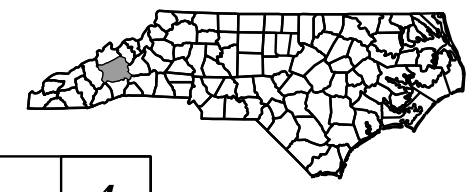
| | | | |
|-------|-----------------------------|-----------|--------------|
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
| N.C. | 100785 | RW01 | 5 |

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

BUNCOMBE COUNTY

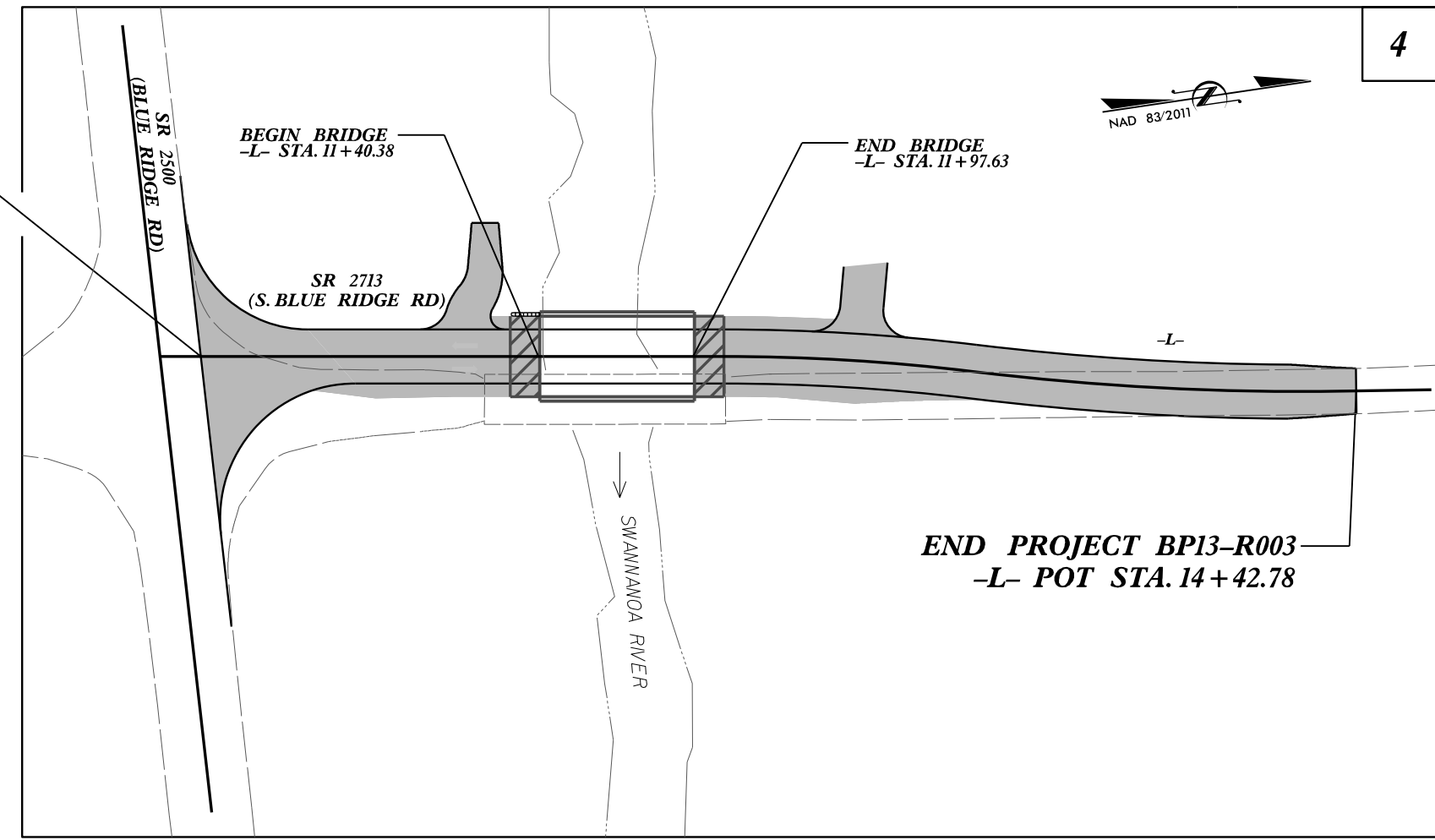


FINAL PLANS



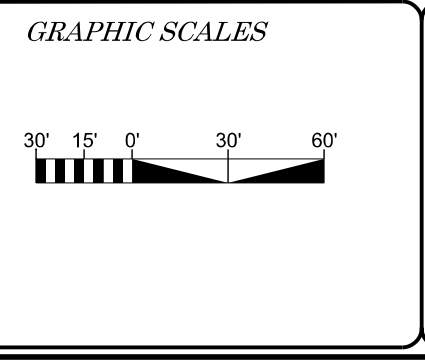
BEGIN PROJECT BP13-R003
-L- POT STA. 10 + 15.10

← **TO SR 2500**
BLUE RIDGE RD



END PROJECT BP13-R003
-L- POT STA. 14 + 42.78

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT GPS-1 WITH NAD 83 / NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 693584.636' EASTING: 1007201.422' ELEVATION: 2291.74'

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: .99978741

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

Prepared in the Office of:

JOHNSON, MIRMIRAN, & THOMPSON, INC.
108 ASHEVILLE COMMERS PARKWAY
CANDLER, NC 28715

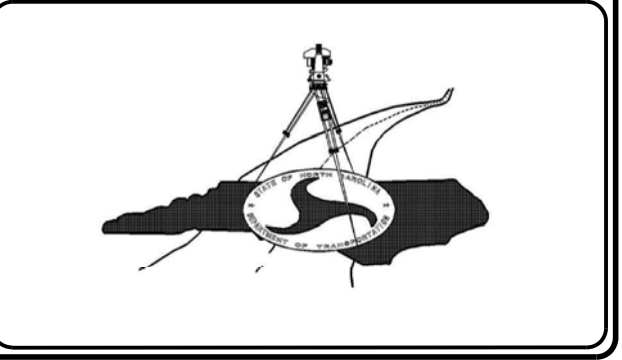
2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 04, 2024 LETTING DATE: DECEMBER 3, 25

PROFESSIONAL LAND SURVEYOR


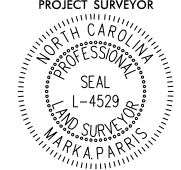
DocuSigned by:
Mark A. Parris
F1570CB85C7248A

SIGNATURE: _____ DATE: 11/18/25



SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

| | |
|--|----------------------|
| PROJECT REFERENCE NO. BP13-R003 | SHEET NO. RW02C-1 |
| Location and Surveys | |
|  <small>NC FIRM LICENSE # C-8802 1316 FAYTON AVENUE Asheville, NC 28906 828-252-0700</small> | |
| PROJECT SURVEYOR | |
|  | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

I, Mark A. Parris, PLS, certify that the Project Control was verified under my supervision from an actual GPS survey made by NCDOT and the following information was used to perform the survey:

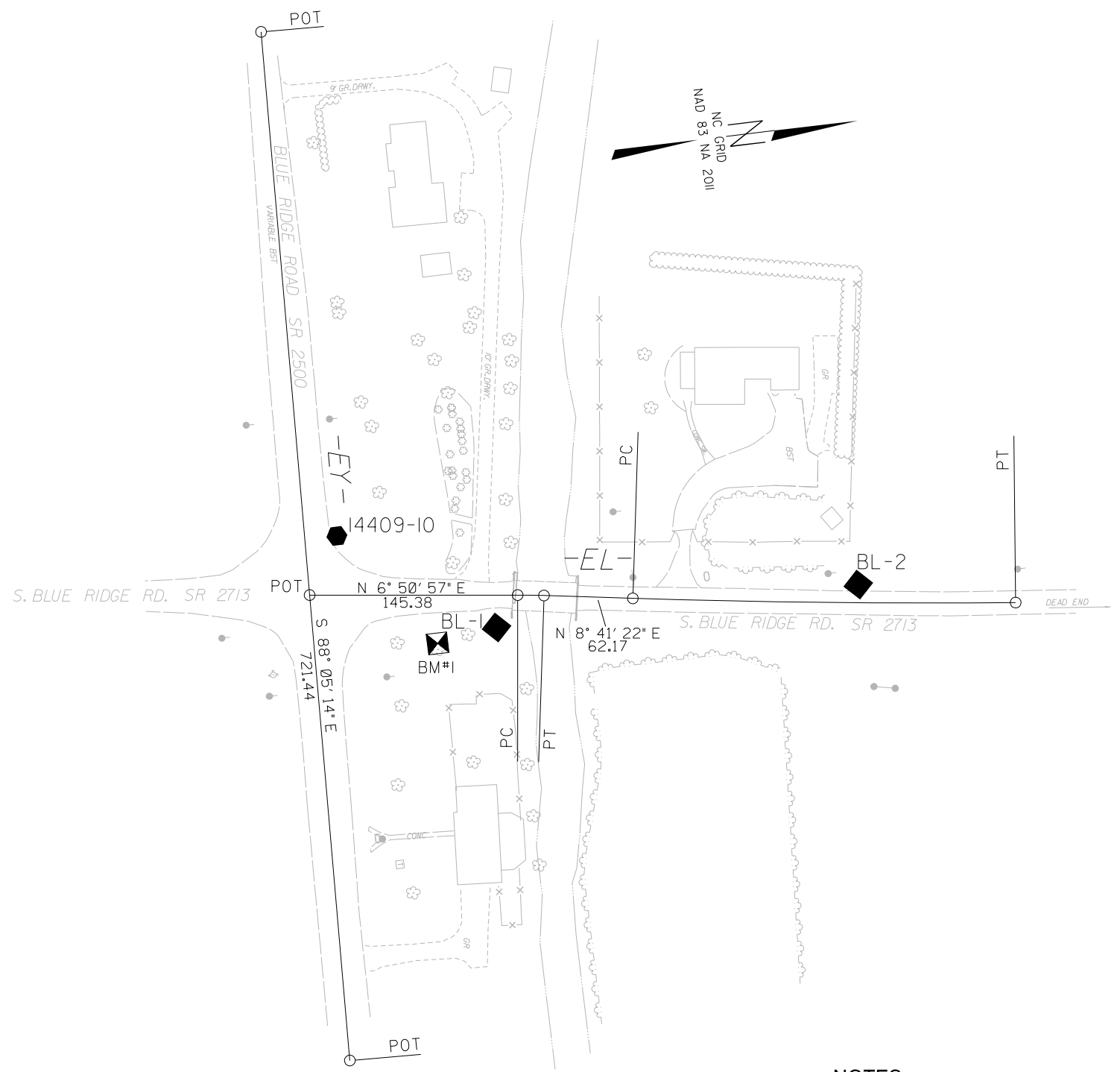
Class of survey: **AA**
 Type of GPS field procedure: RTN
 Dates of survey: June 2021
 Datum/Epoch: NAD83/NA 2011
 Published/Fixed-control use: N/A
 Localized around: 14409-1
 Northing: 693584.636
 Easting: 1007201.422
 Combined grid factor: 0.99978741
 Geoid model: 12BNC
 Units: US Survey Ft.

I also certify that the Baseline Control for this project was verified under my direct and responsible charge from an actual survey made by NCDOT; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed from May 6, 2021 to May 7, 2021, and all coordinates are based on NAD 83/NA 2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 29th day of April, 2024.


DocuSigned by:
Mark A. Parris
F1570C88C7248A

Professional Land Surveyor L-4529



NOTES:


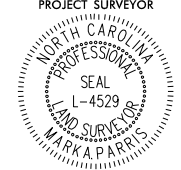
1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE SURVEY CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

REVISIONS

06-MAY-2024 09:30
 V:\NC\Survey\23-00572-068 bpl3-r-003-con-jmt\Survey\0ata - Work\BP13-R003.ls_FW02C-1.dgn
 jcgordon

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

| | |
|---|----------------------|
| PROJECT REFERENCE NO. BP13-R003 | SHEET NO. RW02C-2 |
| Location and Surveys | |
|  <small>NO. FROM LICENSE # C-8002 1316 FAYTON AVENUE Asheville, NC 28906 828-232-0700</small> | |
| PROJECT SURVEYOR  | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

| BL | POINT | DESC. | NORTH | EAST | ELEVATION |
|----|-------|----------|-------------|--------------|-----------|
| 10 | | 14409-10 | 691103.1030 | 1010944.3130 | 2305.32 |
| 1 | | BL-1 | 691206.3020 | 1011021.0590 | 2302.35 |
| 2 | | BL-2 | 691460.9250 | 1011021.5440 | 2303.62 |

.....
 BM1 ELEVATION = 2303.02
 N 691164 E 1011027
 NAIL IN BASE OF 4" WALNUT

| EL | | | | | | | | | |
|-------|------------|-------------|-----------------|--------|-----------------|-------------|--------|--------|---------|
| POINT | N | E | BEARING | DIST | DELTA | D | L | T | R |
| POT | 691079.302 | 1010983.079 | N 06°50'56.7" E | 145.38 | | | | | |
| LINE | | | | | | | | | |
| PC | 691223.647 | 1011000.417 | N 07°46'09.1" E | 18.40 | 01°50'24.8"(RT) | 10°00'00.0" | 18.40 | 9.20 | 572.96 |
| CURVE | | | | | | | | | |
| PT | 691241.880 | 1011002.905 | N 08°41'21.5" E | 62.17 | | | | | |
| LINE | | | | | | | | | |
| PC | 691303.333 | 1011012.296 | N 07°29'06.3" E | 267.59 | 02°24'30.4"(LT) | 00°54'00.0" | 267.61 | 133.82 | 6366.20 |
| CURVE | | | | | | | | | |
| PT | 691568.639 | 1011047.154 | | | | | | | |

| EY | | | | |
|-------|------------|-------------|-----------------|--------|
| POINT | N | E | BEARING | DIST |
| POT | 691092.486 | 1010588.299 | S 88°05'14.4" E | 721.44 |
| LINE | | | | |
| POT | 691068.407 | 1011309.338 | | |

I, Mark A. Parris, PLS, certify that the Project Control was verified under my supervision from an actual GPS survey made by NCDOT and the following information was used to perform the survey:

Class of survey: **AA**
 Type of GPS field procedure: RTN
 Dates of survey: June 2021
 Datum/Epoch: NAD83/NA 2011
 Published/Fixed-control use: N/A
 Localized around: 14409-1
 Northing: 693584.636
 Easting: 1007201.422
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 Geoid model: 12BNC
 Units: US Survey Ft.

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This 29th day of April, 2024.

Designed by:

 Professional Land Surveyor L-4529

REVISIONS

06-MAY-2024 09:31
 V:\NC\Survey\23-00572-068 bp13-r-003-con-jmt\Survey\0ata - Work\BP13-R003.ls_RW02C-2.dgn
 Jcgordon

NOTES:

- PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
- 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

I, MARK A PARRIS, PLS, CERTIFY THAT THE DATA COMPILED CAME FROM AVAILABLE SURVEYS/MAPPING PERFORMED BY OTHERS AND PROVIDED TO ME BY NCDOT AND DO NOT CERTIFY TO THE ACCURACY OR QUALITY OF THE INDIVIDUAL DATA SOURCES.

THIS 18th DAY OF NOVEMBER, 2025.

DocuSigned by:

 F1570CB85C7248A

PROFESSIONAL LAND SURVEYOR L-4529



100785

R/W 020

NORTH CAROLINA
 DEPARTMENT
 OF TRANSPORTATION



PROFESSIONAL LAND
 SURVEYOR



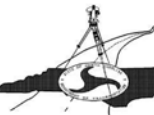
DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL SIGNATURES
 ARE COMPLETED

2021 STANDARD
 SPECIFICATIONS

| PROPOSED ALIGNMENT: L | | | | | | | | | | | | |
|-----------------------|-----------|-------------|--------------|---------|---------|---------------|---------------|---------|--------|----------|----|----|
| POINT | STATION | NORTHING | EASTING | BEARING | DIST | DELTA | D | L | T | R | LT | ST |
| START | 10+00.000 | 691081.3256 | 1010964.7298 | | 208.000 | | | | | | | |
| PC | 12+08.000 | 691287.1073 | 1010995.0262 | | 92.993 | 06°57'36.138" | 07°28'47.520" | 93.050 | 46.582 | 766.000 | | |
| PRC | 13+01.050 | 691378.1168 | 1011014.1307 | | 137.180 | 07°51'57.574" | 05°43'46.481" | 137.287 | 68.752 | 1000.000 | | |
| PT | 14+38.338 | 691512.5891 | 1011041.2507 | | 32.274 | | | | | | | |
| END | 14+70.612 | 691544.5890 | 1011045.4461 | | | | | | | | | |

TIP PROJECT: 100785
 County: Buncombe

PREPARED FOR



LOCATION AND
 SURVEYS UNIT

PREPARED BY



NOTES:

1. 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

I, MARK A PARRIS, PLS, CERTIFY THAT THE DATA COMPILED CAME FROM AVAILABLE SURVEYS/MAPPING PERFORMED BY OTHERS AND PROVIDED TO ME BY NCDOT AND DO NOT CERTIFY TO THE ACCURACY OR QUALITY OF THE INDIVIDUAL DATA SOURCES.

THIS 18th DAY OF NOVEMBER, 2025.

DocuSigned by:

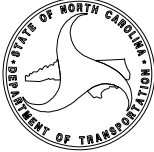
 F1570CB85C7248A
 PROFESSIONAL LAND SURVEYOR L-4529



100785

R/W 03E

NORTH CAROLINA
DEPARTMENT
OF TRANSPORTATION



PROFESSIONAL LAND
SURVEYOR



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL SIGNATURES
ARE COMPLETED

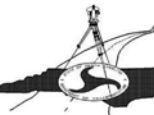
2021 STANDARD
SPECIFICATIONS

| ROW Marker Iron Pin and Cap: L | | | | |
|--------------------------------|---------------|--------------|-------------|--------------|
| Alignment | Start Station | Start Offset | Northing | Easting |
| L | 10+79.03 | -35.00 | 691164.6112 | 1010941.6143 |
| L | 12+08.00 | -35.00 | 691292.2053 | 1010960.3995 |
| L | 12+75.00 | -37.00 | 691361.4481 | 1010971.6751 |
| L | 13+40.00 | -25.39 | 691421.6262 | 1010998.9725 |

| ROW Permanent Easement Iron Pin and Cap: L | | | | |
|--|---------------|--------------|-------------|--------------|
| Alignment | Start Station | Start Offset | Northing | Easting |
| L | 12+20.00 | -34.91 | 691304.5899 | 1010962.4162 |
| L | 12+20.00 | -55.00 | 691307.8276 | 1010942.5857 |
| L | 12+37.50 | -57.00 | 691326.6702 | 1010943.8532 |
| L | 12+39.25 | -35.17 | 691324.4628 | 1010965.6523 |

TIP PROJECT: 100785
County: Buncombe

PREPARED FOR



LOCATION AND
SURVEYS UNIT


PREPARED BY




NOTES:

1. 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.

100785
R/W 04



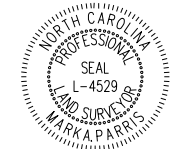
PROFESSIONAL LAND SURVEYOR



I, MARK A. PARRIS, PLS, CERTIFY THAT THE RIGHT OF WAY AND PERMANENT EASEMENT MONUMENTATION FOR THIS PROJECT SHOWN HEREIN WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT ALL HORIZONTAL CLOSURES HAD A MINIMUM RATIO OF PRECISION OF 1:10,000 (CLASS A). FIELD WORK WAS PERFORMED FROM 10/07/25 TO 11/18/25, AND ALL COORDINATES ARE BASED ON NAD83/NA 2011; THAT THIS SURVEY WAS PERFORMED TO MEET THE REQUIREMENTS OF 21NCAC 56.1600 AS APPLICABLE.

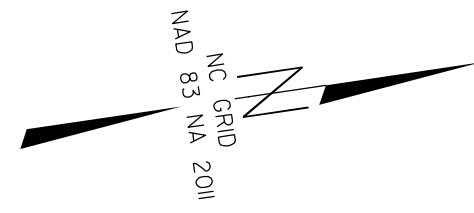
THIS 18th DAY OF NOVEMBER, 2025.

DocuSigned by:
Mark A. Parris
F1570CB85C7248A
PROFESSIONAL LAND SURVEYOR L-4529



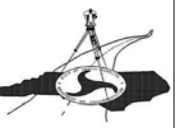
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED
2024 STANDARD SPECIFICATIONS

MARTHA K. JOHNSON, SARAH L. JOHNSON,
& WARD E. RINEHART
DB 5422 PG 1485



TIP PROJECT: 100785
County: Buncombe

PREPARED FOR



LOCATION AND SURVEYS UNIT

PREPARED BY



NOTES:

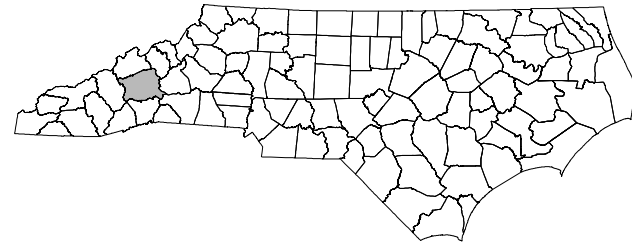
1. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.



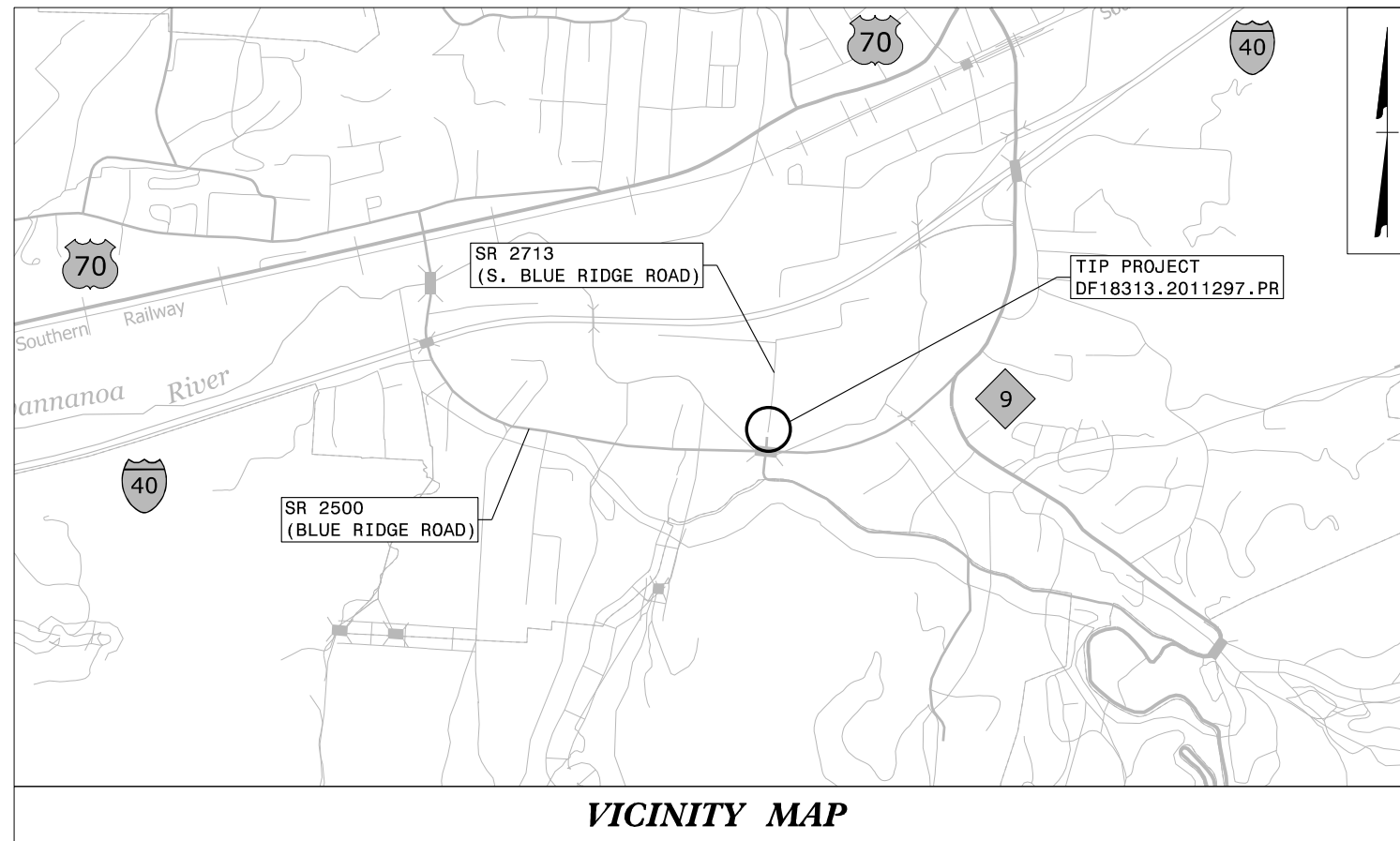
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

BUNCOMBE COUNTY



LOCATION: REPLACEMENT OF BRIDGE NO. 100785 OVER SWANNANOA RIVER ON SR 2713 (SOUTH BLUE RIDGE ROAD)



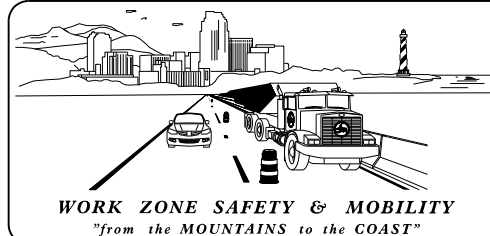
INDEX OF SHEETS

| 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 |
| TMP-2 | TEMPORARY SHORING NOTES |
| TMP-2A | PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS |
| TMP-3 | PHASE I DETAIL |
| TMP-4 | PHASE II DETAIL |
| TMP-5 | CUT SECTIONS |

SHEET NO.
TMP-1

TIP PROJECT: DF18313.2011297.PR

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



PLANS PREPARED BY:

RICKY A. TIPTON, PE
PROJECT ENGINEER

BENJAMIN A. WHITE, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACTS:

MARK E. HILL, PE
NCDOT DIVISION PROJECT MANAGER



APPROVED: 
DATE: 1/5/2026

SEAL



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:

| STD. NO. | TITLE |
|----------|---|
| 1101.01 | WORK ZONE WARNING SIGNS |
| 1101.02 | TEMPORARY LANE CLOSURES |
| 1101.03 | TEMPORARY ROAD CLOSURES |
| 1101.11 | TRAFFIC CONTROL DESIGN TABLES |
| 1110.01 | STATIONARY WORK ZONE SIGNS |
| 1110.02 | PORTABLE WORK ZONE SIGNS |
| 1130.01 | DRUMS |
| 1145.01 | BARRICADES |
| 1150.01 | FLAGGING DEVICES |
| 1205.01 | PAVEMENT MARKINGS - LINE TYPES AND OFFSETS |
| 1205.02 | PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS |
| 1205.04 | PAVEMENT MARKINGS - INTERSECTIONS |
| 1205.12 | PAVEMENT MARKINGS - BRIDGES |

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- TEMP. SHORING (LOCATION PURPOSES ONLY)

- WORK AREA
- REMOVAL
- TEMPORARY PAVEMENT

SIGNALS

- PROPOSED
- TEMPORARY
- PORTABLE
- DS

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM
- SKINNY DRUM
- TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

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

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

| SYMBOL | DESCRIPTION |
|--------|---------------------------|
| P1 | PAINT WHITE EDGELINE (4") |
| P61 | WHITE STOPBAR (24") |



| | | | |
|--|--|--|---------------------------------------|
| APPROVED: DATE: 12/5/2025 SEAL | | | ROADWAY STANDARD DRAWINGS & LEGEND |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | | | |

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 UNDESIRE 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.

LANE AND SHOULDER CLOSURE REQUIREMENTS

- A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.
- B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.
- C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 5 FT OF AN OPEN TRAVEL LANE ON AN UNDIVIDED FACILITY, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 10 FT OF AN OPEN TRAVEL LANE ON A DIVIDED FACILITY, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.
- D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.
- E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

TRAFFIC PATTERN ALTERATIONS

- F) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

- G) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
- H) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

- I) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PAVEMENT MARKINGS AND MARKERS

- J) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

| ROAD NAME | MARKING | MARKER |
|-----------------------------|---------|--------|
| SR 2713 SOUTH BLUE RIDGE RD | PAINT | N/A |

- K) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.
- L) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- M) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

PHASING

NOTE: BEFORE BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL PLACE ADVANCE WORK ZONE WARNING SIGNS ALONG SR 2713 (S. BLUE RIDGE RD) AND SR 2500 (BLUE RIDGE RD). SEE ROADWAY STANDARD DRAWING 1101.01 SHEET 3 OF 3.

PHASE I

- STEP 1: USING ROADWAY STANDARD DRAWING 1101.02 SHEET 1 OF 19 AS NECESSARY, CONSTRUCT NEW PAVEMENT UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE AS FOLLOWS (SEE SHEET TMP-3):

-L- STA. 10+15 +/- TO STA. 14+43 +/-

CONSTRUCT DRIVEWAY TIES AS SHOWN ON SHEET TMP-3. MAINTAIN ACCESS TO DRIVEWAY AT ALL TIMES. CONSTRUCT DRAINAGE PIPE UNDER DRIVEWAY.

AWAY FROM TRAFFIC AND BEHIND SHORING, CONSTRUCT STAGED BRIDGE AND ROADWAY APPROACHES AS FOLLOWS (SEE SHEET TMP-3):

-L- STA. 11+40 +/- (BEGIN BRIDGE) TO STA. 11+98 +/- (END BRIDGE)

PHASE II

- STEP 1: USING ROADWAY STANDARD DRAWING 1101.02 SHEET 1 OF 19 AS NECESSARY, PLACE TEMPORARY PAVEMENT MARKINGS AS FOLLOWS (SEE SHEET TMP-4):

-L- STA. 10+15 +/- TO STA. 14+43 +/-
ALL STOP BAR LOCATIONS

- STEP 2: PLACE TRAFFIC CONTROL DEVICES AND TEMPORARY SIGNAL SIGNAGE AND ONE LANE BRIDGE SIGNING. PLACE TEMPORARY PORTABLE SIGNALS AND ACTIVATE (SEE SHEET TMP-4).

- STEP 3: SHIFT TRAFFIC FROM THE PHASE I PATTERN TO A NEW ONE LANE, TWO WAY PATTERN FOR PHASE II ON SR 2713 (S. BLUE RIDGE RD) AS SHOWN ON SHEET TMP-4.

- STEP 4: CONSTRUCT NEW PAVEMENT UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE AS FOLLOWS (SEE SHEET TMP-4):

-L- STA. 10+15 +/- TO STA. 14+43 +/-

MAINTAIN ACCESS TO DRIVEWAY AT ALL TIMES AS SHOWN ON SHEET TMP-4.

CONSTRUCT STAGED BRIDGE AND ROADWAY APPROACHES AS FOLLOWS (SEE SHEET TMP-4):

-L- STA. 11+40 +/- (BEGIN BRIDGE) TO STA. 11+98 +/- (END BRIDGE)

PHASE III


- STEP 1: USING ROADWAY STANDARD DRAWING 1101.02 SHEET 1 OF 19, PAVE THE FINAL LAYER OF SURFACE COURSE FOR -L- AS FOLLOWS:

-L- STA. 10+15 +/- TO STA. 14+43 +/-

- STEP 2: USING ROADWAY STANDARD DRAWING 1101.02 SHEET 1 OF 19, PLACE FINAL PAVEMENT MARKINGS FOR -L- LINE (SEE FINAL PAVEMENT MARKING PLANS) AND REMOVE ALL TRAFFIC CONTROL DEVICES.

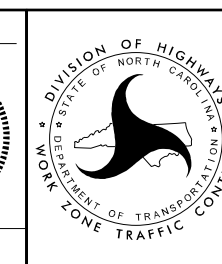
- STEP 3: OPEN SR 2713 (S. BLUE RIDGE RD) TO THE FINAL TRAFFIC PATTERN.



APPROVED: 
DATE: 12/5/2025

SEAL

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**TRANSPORTATION
OPERATIONS PLAN**

| SHORING I.D. NO. | BEGIN STATION AND OFFSET | END STATION AND OFFSET | ESTIMATED AVERAGE HEIGHT | ESTIMATED MAXIMUM HEIGHT | SHORING LOCATION TYPE |
|------------------|--------------------------------|--------------------------------|--------------------------|--------------------------|-----------------------|
| ① | -L- STA. 11+25 +/- 1.5 FT (RT) | -L- STA. 11+41 +/- 1.5 FT (RT) | 4.5 FT | 6.3 FT | STRUCTURE |
| ② | -L- STA. 11+98 +/- 1.5 FT (RT) | -L- STA. 12+12 +/- 1.5 FT (RT) | 5.9 FT | 8.5 FT | STRUCTURE |
| ③ | -L- STA. 11+20 +/- 4.5 FT (RT) | -L- STA. 11+45 +/- 4.5 FT (RT) | 5.1 FT | 8.8 FT | STRUCTURE |
| ④ | -L- STA. 11+86 +/- 4.5 FT (RT) | -L- STA. 12+15 +/- 4.5 FT (RT) | 6.3 FT | 9.2 FT | STRUCTURE |

TEMPORARY SHORING NOTES

SHORING LOCATION NO. 1 AND NO. 2

TEMPORARY SHORING LOCATIONS ARE AS FOLLOWS:

NO. 1 FROM -L- STA. 11+25 +/-, 1.5' RT TO -L- STA. 11+41 +/-, 1.5' RT
 NO. 2 FROM -L- STA. 11+98 +/-, 1.5' RT TO -L- STA. 12+12 +/-, 1.5' RT

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISION.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

DESIGN TEMPORARY SHORING LOCATION NO. 1 AND NO. 2 FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT () = 120 PCF
 FRICTION ANGLE () = 30 DEGREES
 COHESION (c) = 0 PSF
 GROUNDWATER ELEVATION = 2,292 FT

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF TEMPORARY SHORING LOCATION NO. 1 AND NO. 2. THE INFORMATION PROVIDED FOR TEMPORARY SHORING DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

AT THE CONTRACTOR'S OPTION, USE A STANDARD TEMPORARY WALL FOR TEMPORARY SHORING LOCATION NO. 1 AND NO. 2. SEE GEOTECHNICAL STANDARD DETAIL NO. 1801.02 FOR STANDARD TEMPORARY WALLS.

WHEN BACKFILL FOR BRIDGE APPROACH FILLS OVERLAPS WITH THE REINFORCED ZONE OF TEMPORARY WALLS, USE SHORING BACKFILL OR BACKFILL MATERIAL REQUIRED FOR BRIDGE APPROACH FILLS, WHICHEVER IS BETTER, IN THE REINFORCED ZONE OF TEMPORARY WALLS.

SHORING LOCATION NO. 3 AND NO. 4

TEMPORARY SHORING LOCATIONS ARE AS FOLLOWS:

NO. 3 FROM -L- STA. 11+20 +/-, 4.5' RT TO -L- STA. 11+45 +/-, 4.5' RT
 NO. 4 FROM -L- STA. 11+86 +/-, 4.5' RT TO -L- STA. 12+15 +/-, 4.5' RT

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISION.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

DESIGN TEMPORARY SHORING LOCATION NO. 3 AND NO. 4 FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT () = 120 PCF
 FRICTION ANGLE () = 30 DEGREES
 COHESION (c) = 0 PSF
 GROUNDWATER ELEVATION = 2,292 FT

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF TEMPORARY SHORING LOCATION NO. 3 AND NO. 4. THE INFORMATION PROVIDED FOR TEMPORARY SHORING DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

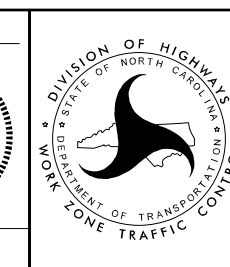
AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING LOCATION NO. 3 AND NO. 4. SEE GEOTECHNICAL STANDARD DETAIL NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

IT MAY BE PREFERRED TO USE A TEMPORARY SOIL NAIL WALL FOR TEMPORARY SHORING FOR LOCATION NO. 3 AND NO. 4. FOR TEMPORARY SOIL NAIL WALLS, SEE TEMPORARY SOIL NAIL WALLS PROVISION.

THE TEMPORARY SHORING NOTES SHOWN ON THIS SHEET WERE PROVIDED THROUGH A SEALED DOCUMENT FROM THE GEOTECHNICAL ENGINEERING UNIT. THE DOCUMENT WAS SUBMITTED TO THE DIVISION 13 ASSISTANT BRIDGE PROGRAM MANAGER ON 8/29/2025 AND SEALED BY A PROFESSIONAL ENGINEER, MICHAEL H. STEPHENS, LICENSE #028893.

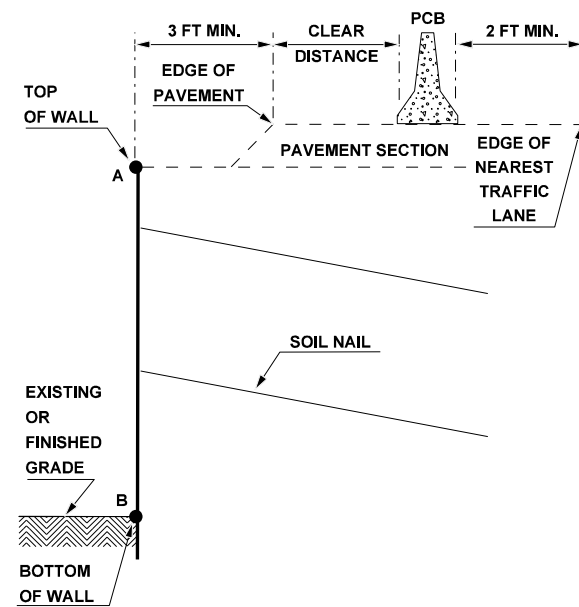


APPROVED: Benjamin A. White
 DATE: 12/5/2025
 SEAL
 DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

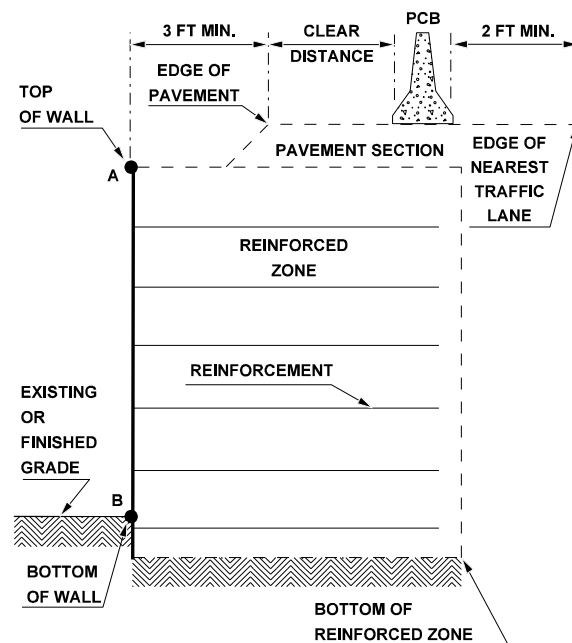


TEMPORARY SHORING NOTES

TEMPORARY SOIL NAIL WALL



TEMPORARY MSE WALL



NOTE: WALL OR SHORING HEIGHT = A-B

TEMPORARY SHORING

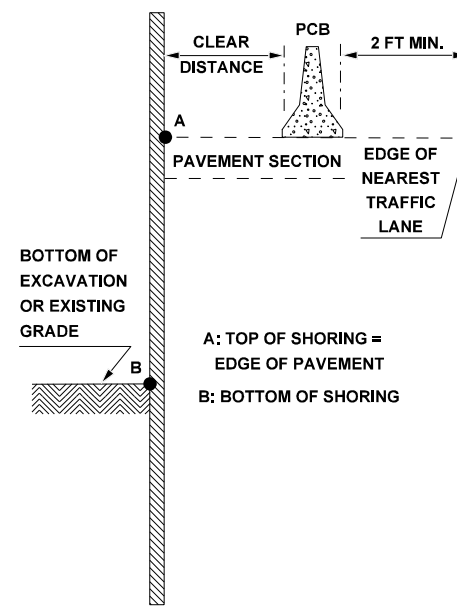


FIGURE A

NOTES

- REFER TO THE TRAFFIC CONTROL PLANS FOR TEMPORARY SHORING LOCATIONS AND NOTES.
- REFER TO THE "TEMPORARY SHORING" STANDARD PROVISION FOR INFORMATION ABOUT TEMPORARY SHORING AND PORTABLE CONCRETE BARRIER (PCB).
- PCB IS REQUIRED IF TEMPORARY SHORING/WALL IS LOCATED WITHIN THE CLEAR ZONE IN ACCORDANCE WITH THE AASHTO ROADSIDE DESIGN GUIDE. DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE. (CONTACT NCDOT PAVEMENT MANAGEMENT FOR APPLICABLE PAVEMENT DESIGN).
- BASED ON THE CLEAR DISTANCE, OFFSET, DESIGN SPEED AND PAVEMENT TYPE, CHOOSE AN UNANCHORED OR ANCHORED PCB FROM THE TABLE SHOWN IN FIGURE B. CLEAR DISTANCE IS DEFINED AS SHOWN IN FIGURE A AND OFFSET IS DEFINED AS SHOWN IN FIGURE B.
- AT THE CONTRACTOR'S OPTION OR IF THE MINIMUM REQUIRED CLEAR DISTANCE IS NOT AVAILABLE, SET PCB NEXT TO AND UP AGAINST THE TRAFFIC SIDE OF THE TEMPORARY SHORING/WALLS EXCEPT FOR BARRIER ABOVE TEMPORARY WALLS. PCB WITH THE MINIMUM REQUIRED CLEAR DISTANCE IS REQUIRED ABOVE TEMPORARY WALLS.
- USE NCDOT PORTABLE CONCRETE BARRIER (PCB) IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1170.01 AND SECTION 1170 OF THE STANDARD SPECIFICATIONS.
- SET PCB WITH A MINIMUM HORIZONTAL DISTANCE OF 2 FT BETWEEN THE FRONT FACE OF THE BARRIER AND THE EDGE OF THE NEAREST TRAFFIC LANE AS SHOWN IN FIGURE A UNLESS OTHERWISE SHOWN IN THE PLANS OR APPROVED BY THE ENGINEER.
- FOR PCB ABOVE AND BEHIND TEMPORARY WALLS, PROVIDE A MINIMUM DISTANCE OF 3 FT BETWEEN THE EDGE OF PAVEMENT AND THE WALL FACE AS SHOWN IN FIGURE A. IF THIS MINIMUM REQUIRED DISTANCE IS NOT AVAILABLE, CONTACT THE ENGINEER.
- TABLE SHOWN IN FIGURE B IS BASED ON NCDOT RESEARCH PROJECT NO. 2005-010 WITH VEHICLE TYPE USED FOR NCHRP 350 CRASH TESTS.

MINIMUM REQUIRED CLEAR DISTANCE, inches

| Barrier Type | Pavement Type | Offset * ft | Design Speed, mph | | | | | |
|----------------|--|----------------|--------------------------|-------|-------|-------|-------|-------|
| | | | <30 | 31-40 | 41-50 | 51-60 | 61-70 | 71-80 |
| Unanchored PCB | Asphalt | <8 | 24 | 26 | 29 | 32 | 36 | 40 |
| | | 8-14 | 26 | 28 | 31 | 35 | 38 | 42 |
| | | 14-20 | 27 | 29 | 34 | 36 | 39 | 43 |
| | | 20-26 | 28 | 31 | 35 | 38 | 40 | 44 |
| | | 26-32 | 29 | 32 | 36 | 39 | 42 | 45 |
| | | 32-38 | 30 | 34 | 38 | 41 | 43 | 46 |
| | | 38-44 | 31 | 34 | 41 | 43 | 45 | 48 |
| | 44-50 | 31 | 35 | 41 | 43 | 46 | 49 | |
| | 50-56 | 32 | 36 | 42 | 44 | 47 | 50 | |
| | >56 | 32 | 36 | 42 | 45 | 47 | 51 | |
| | Concrete | <8 | 17 | 18 | 21 | 22 | 25 | 26 |
| | | 8-14 | 19 | 20 | 23 | 25 | 26 | 29 |
| | | 14-20 | 22 | 22 | 24 | 26 | 28 | 31 |
| | | 20-26 | 23 | 24 | 26 | 27 | 30 | 34 |
| 26-32 | | 24 | 25 | 27 | 28 | 32 | 35 | |
| 32-38 | | 24 | 26 | 27 | 30 | 33 | 36 | |
| 38-44 | | 25 | 26 | 28 | 30 | 34 | 37 | |
| 44-50 | 26 | 26 | 28 | 32 | 35 | 37 | | |
| 50-56 | 26 | 26 | 28 | 32 | 35 | 38 | | |
| >56 | 26 | 27 | 29 | 32 | 36 | 38 | | |
| Anchored PCB | Asphalt | All Offsets | 24 for All Design Speeds | | | | | |
| Anchored PCB | Concrete (including bridge approach slabs) | All Offsets | 12 for All Design Speeds | | | | | |

* See Figure Below

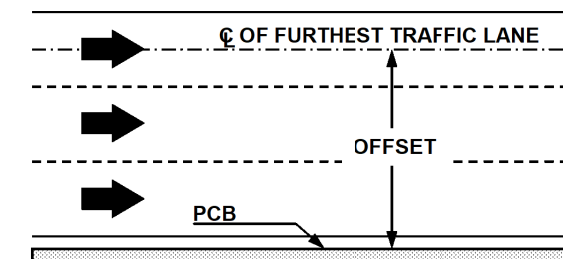
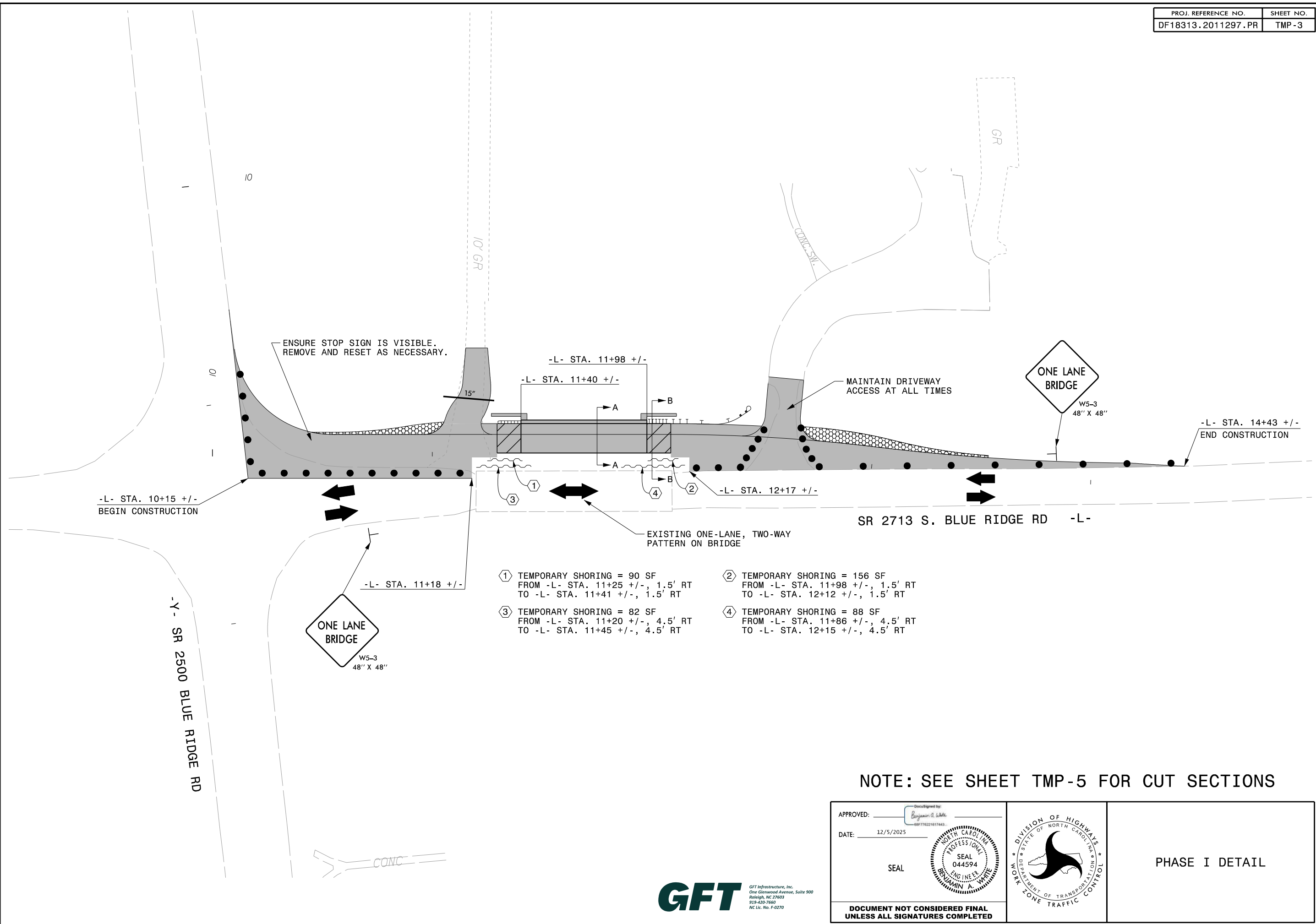


FIGURE B

| | | |
|---|--|---|
| <p>APPROVED: _____ DATE: 12/5/2025</p> <p>SEAL</p> <p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> | <p>DocuSigned by: Benjamin A. White 58F776221617443</p> <p>SEAL 044594 ENGINEER BENJAMIN A. WHITE</p> <p>DIVISION OF HIGHWAYS DEPARTMENT OF TRANSPORTATION & WORK ZONE TRAFFIC CONTROL</p> | <p>PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS</p> |
|---|--|---|


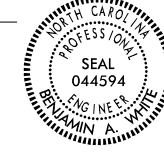

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12/5/2025
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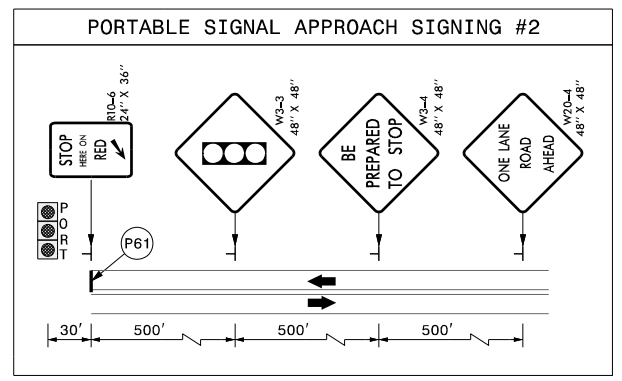
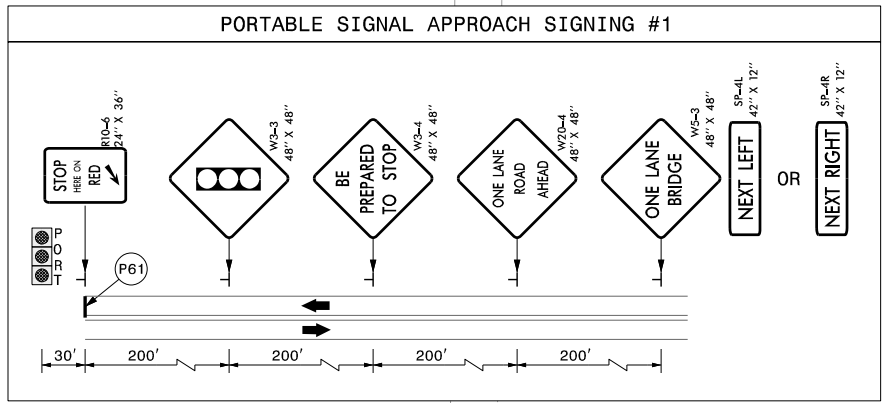


- ① TEMPORARY SHORING = 90 SF
FROM -L- STA. 11+25 +/-, 1.5' RT
TO -L- STA. 11+41 +/-, 1.5' RT
- ② TEMPORARY SHORING = 156 SF
FROM -L- STA. 11+98 +/-, 1.5' RT
TO -L- STA. 12+12 +/-, 1.5' RT
- ③ TEMPORARY SHORING = 82 SF
FROM -L- STA. 11+20 +/-, 4.5' RT
TO -L- STA. 11+45 +/-, 4.5' RT
- ④ TEMPORARY SHORING = 88 SF
FROM -L- STA. 11+86 +/-, 4.5' RT
TO -L- STA. 12+15 +/-, 4.5' RT

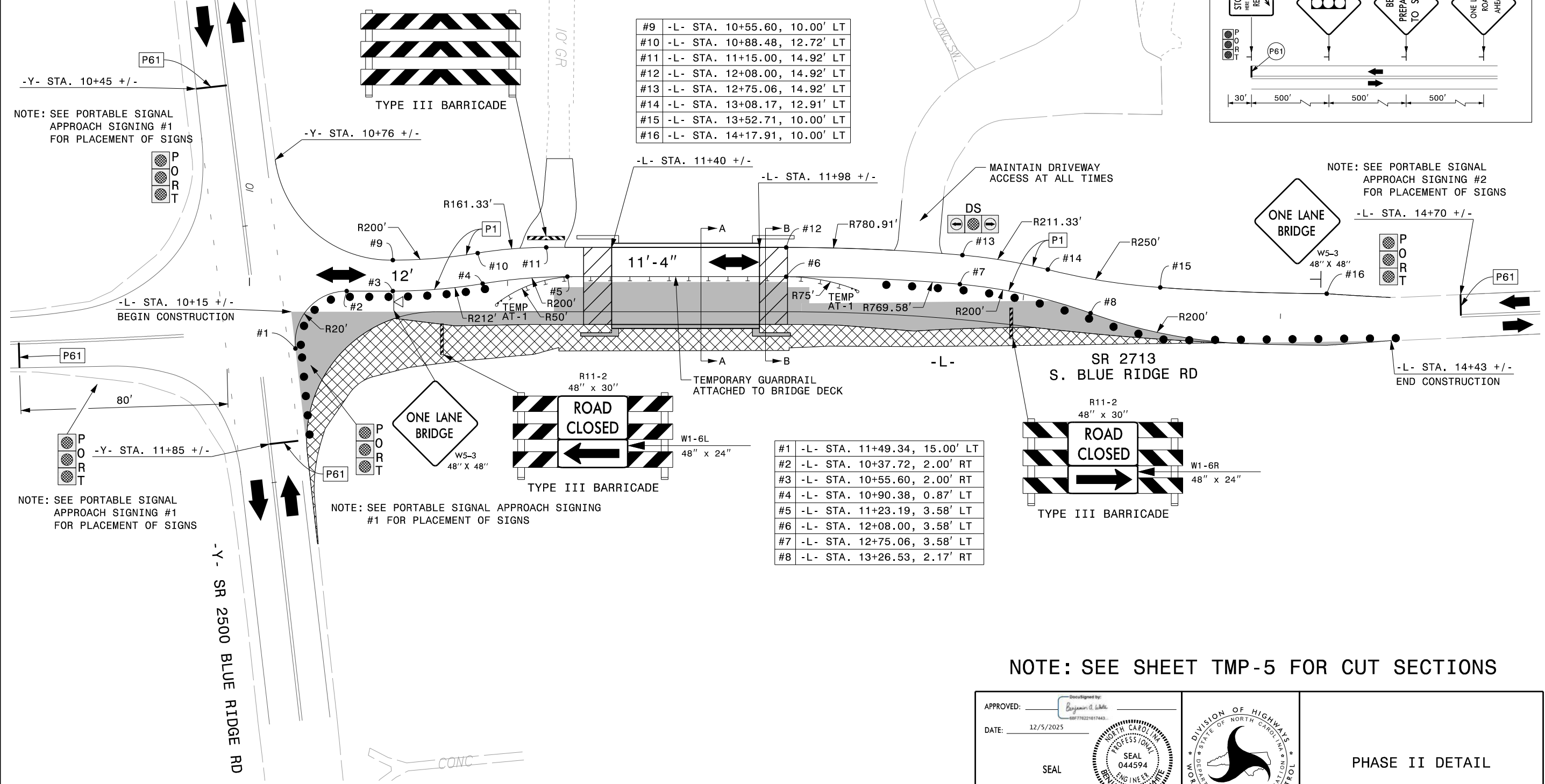
NOTE: SEE SHEET TMP-5 FOR CUT SECTIONS

| | | | |
|--|---|---|----------------|
| APPROVED:  DATE: 12/5/2025 SEAL |  |  | PHASE I DETAIL |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | | | |






| | |
|-----|------------------------------|
| #9 | -L- STA. 10+55.60, 10.00' LT |
| #10 | -L- STA. 10+88.48, 12.72' LT |
| #11 | -L- STA. 11+15.00, 14.92' LT |
| #12 | -L- STA. 12+08.00, 14.92' LT |
| #13 | -L- STA. 12+75.06, 14.92' LT |
| #14 | -L- STA. 13+08.17, 12.91' LT |
| #15 | -L- STA. 13+52.71, 10.00' LT |
| #16 | -L- STA. 14+17.91, 10.00' LT |



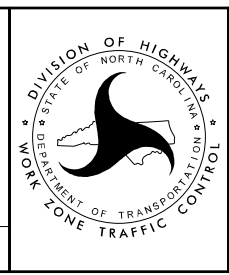
| | |
|----|------------------------------|
| #1 | -L- STA. 11+49.34, 15.00' LT |
| #2 | -L- STA. 10+37.72, 2.00' RT |
| #3 | -L- STA. 10+55.60, 2.00' RT |
| #4 | -L- STA. 10+90.38, 0.87' LT |
| #5 | -L- STA. 11+23.19, 3.58' LT |
| #6 | -L- STA. 12+08.00, 3.58' LT |
| #7 | -L- STA. 12+75.06, 3.58' LT |
| #8 | -L- STA. 13+26.53, 2.17' RT |

NOTE: SEE SHEET TMP-5 FOR CUT SECTIONS


APPROVED: 
DATE: 12/5/2025

SEAL

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



PHASE II DETAIL

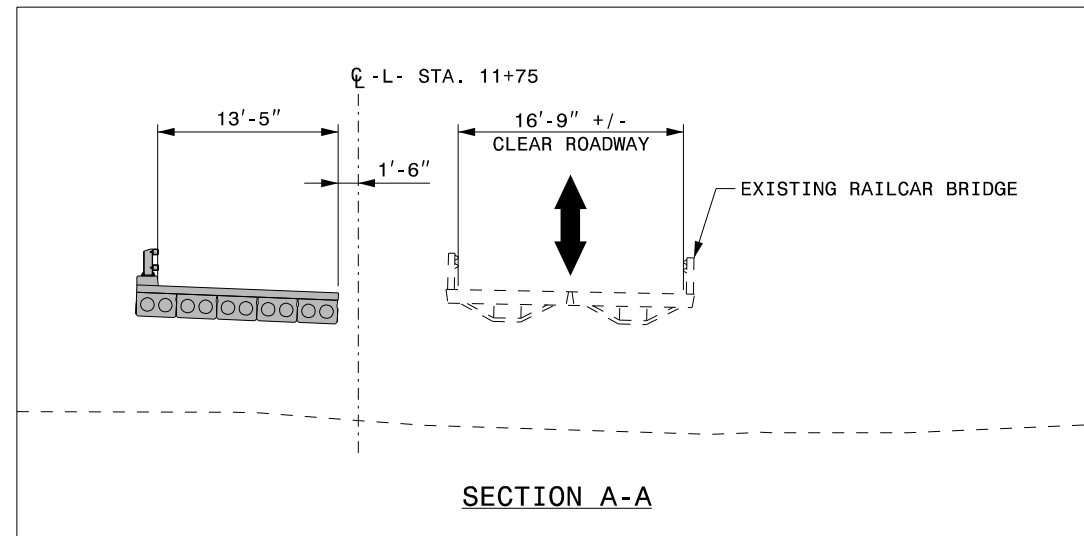


DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

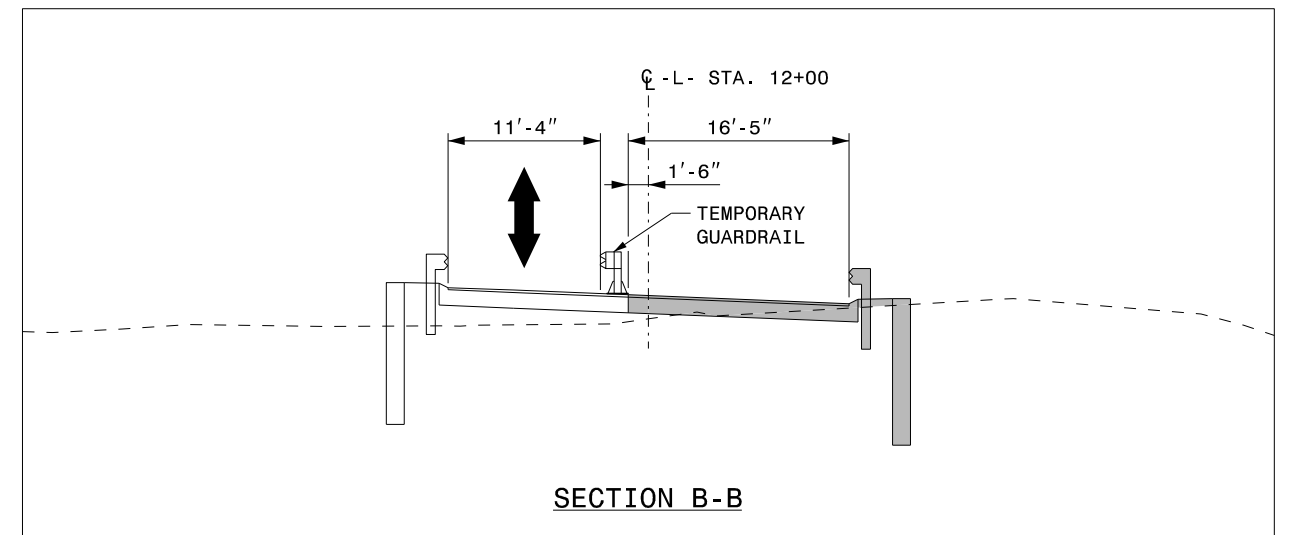
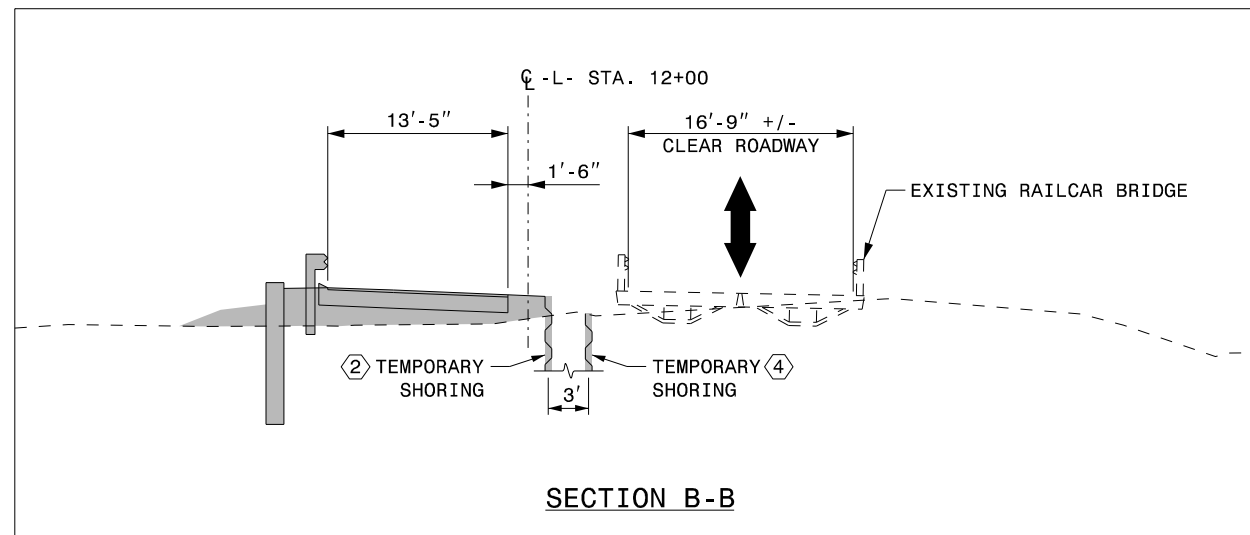
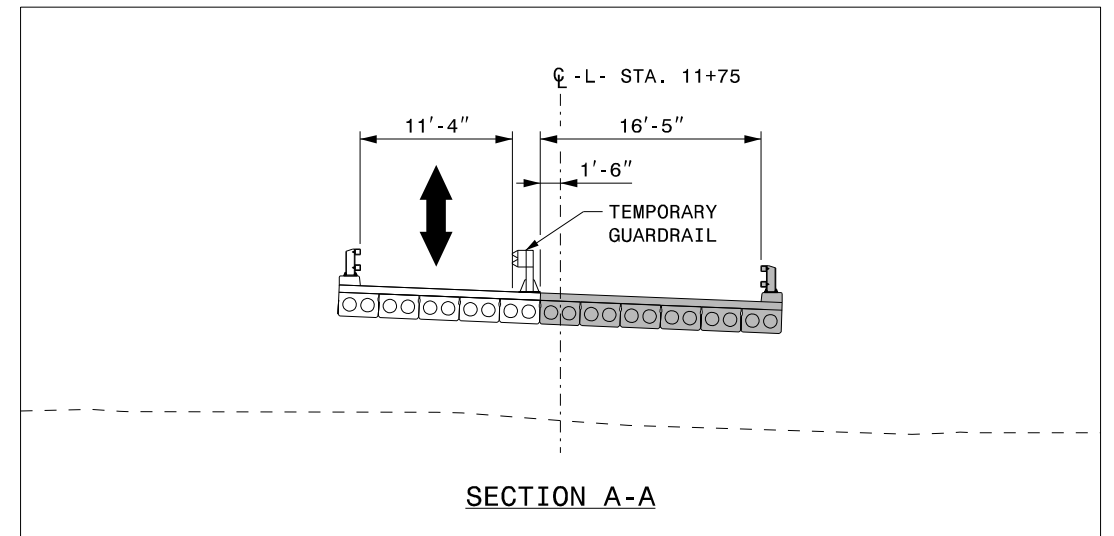
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PHASE I




PHASE II



12/5/2025
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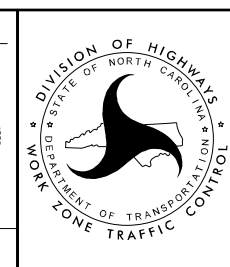


APPROVED: 
DATE: 12/5/2025

SEAL

SEAL
044594
BENJAMIN A. WHITE
ENGINEER

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



CUT SECTIONS

TIP: DF18313.2011297.PR

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

**PAVEMENT MARKING PLAN
BUNCOMBE COUNTY**

**LOCATION: REPLACEMENT OF BRIDGE NO. 785 OVER SWANNANOA
RIVER ON SR 2713 (SOUTH BLUE RIDGE RD)**

| | |
|--|----------------------|
| TIP NO. DF18313.2011297.PR | SHEET NO. PMP - 1 |
| APPROVED: | |
| DATE: 5/30/2026 | |
| | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

INDEX

| SHEET NO. | DESCRIPTION |
|-----------|--|
| PMP-1 | PAVEMENT MARKING PLAN INDEX, GENERAL NOTES, ROADWAY STANDARD DRAWINGS, AND PAVEMENT MARKING SCHEDULE |
| PMP-2 | PAVEMENT MARKINGS - DETAIL IN LIEU OF STANDARD FOR ROADWAY STANDARD DRAWING 1205.01 SHEET 1 OF 2 |
| PMP-3 | PAVEMENT MARKING DETAILS |

GENERAL NOTES

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.

A) INSTALL PAVEMENT MARKINGS ON THE FINAL SURFACE AS FOLLOWS:

| ROAD NAME | MARKING |
|--|---------------|
| (-L-) SR 2713 (SOUTH BLUE RIDGE RD) | THERMOPLASTIC |

B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - 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:

| STD. NO. | TITLE |
|----------|--|
| 1205.01 | PAVEMENT MARKINGS - LINE TYPES AND OFFSETS |
| 1205.02 | PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS |
| 1205.12 | PAVEMENT MARKINGS - BRIDGES |
| 1261.01 | GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING |
| 1261.02 | GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING |
| 1262.01 | GUARDRAIL AND DELINEATION |

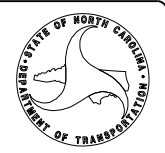
**PAVEMENT MARKING AND
MARKER SCHEDULE**

| SYMBOL | DESCRIPTION |
|--------|--|
| T1 | THERMOPLASTIC WHITE EDGELINE (4", 90 MIL) |
| T5 | THERMOPLASTIC 2 FT. - 6 FT./SP WHITE MINISKIP (4", 90 MIL) |
| T13 | THERMOPLASTIC YELLOW DOUBLE CENTER (4", 90 MIL) |

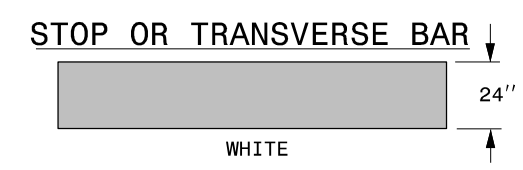
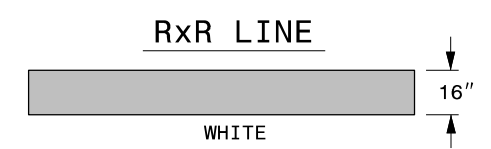
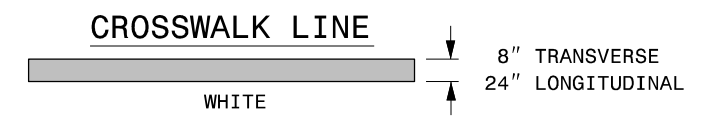
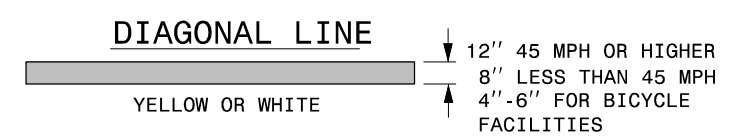
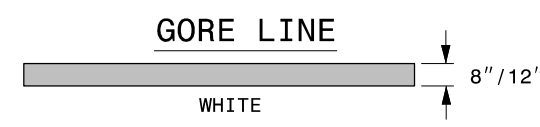
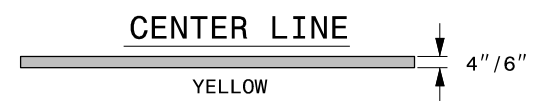
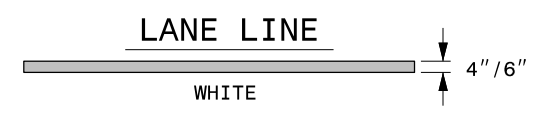
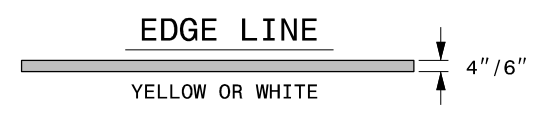
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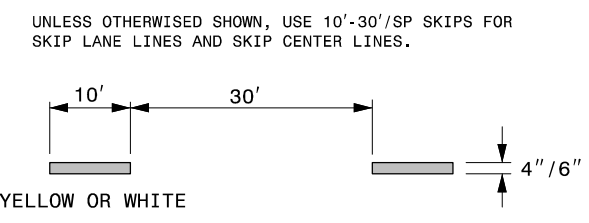
RICKY A. TIPTON, PE PROJECT ENGINEER
BENJAMIN A. WHITE, PE PROJECT DESIGN ENGINEER



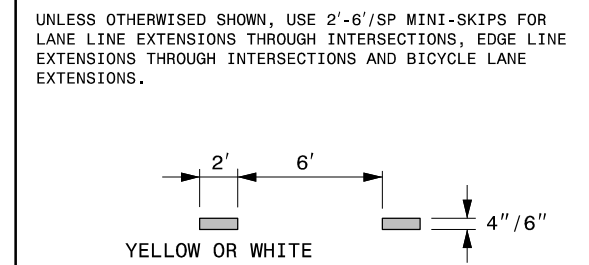
CONTINUOUS LINES



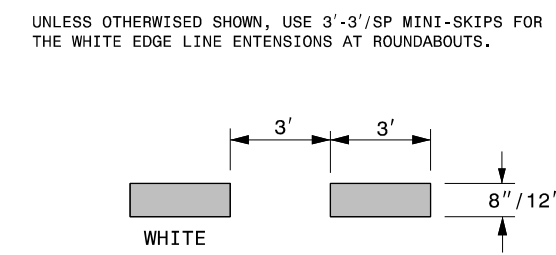
10'-30'/SP SKIP LINE



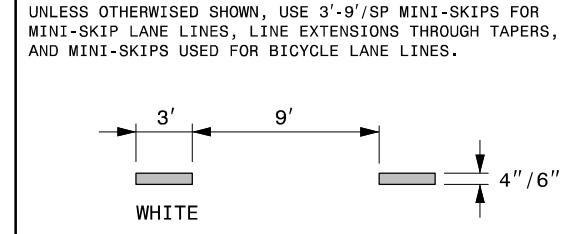
2'-6'/SP MINI-SKIP LINE



3'-3'/SP MINI-SKIP LINE



3'-9'/SP MINI-SKIP LINE



- GENERAL NOTES:
- 1- USE 6" LANE, EDGE, AND CENTER LINES ON ALL FULL CONTROL OF ACCESS FACILITIES AND OTHER ROUTES AS DIRECTED BY THE ENGINEER.
 - 2- LANE LINES INDICATED AS "WIDE" ON THE ROADWAY STANDARD DRAWINGS SHALL BE AT LEAST TWICE THE WIDTH OF THE NORMAL LINE.
 - 3- GORE LINES SHALL BE TWICE THE WIDTH OF THE NORMAL LINE.

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

ROADWAY DETAIL DRAWING FOR
PAVEMENT MARKINGS
LINE TYPES AND OFFSETS

SHEET 1 OF 2
1205D01

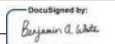



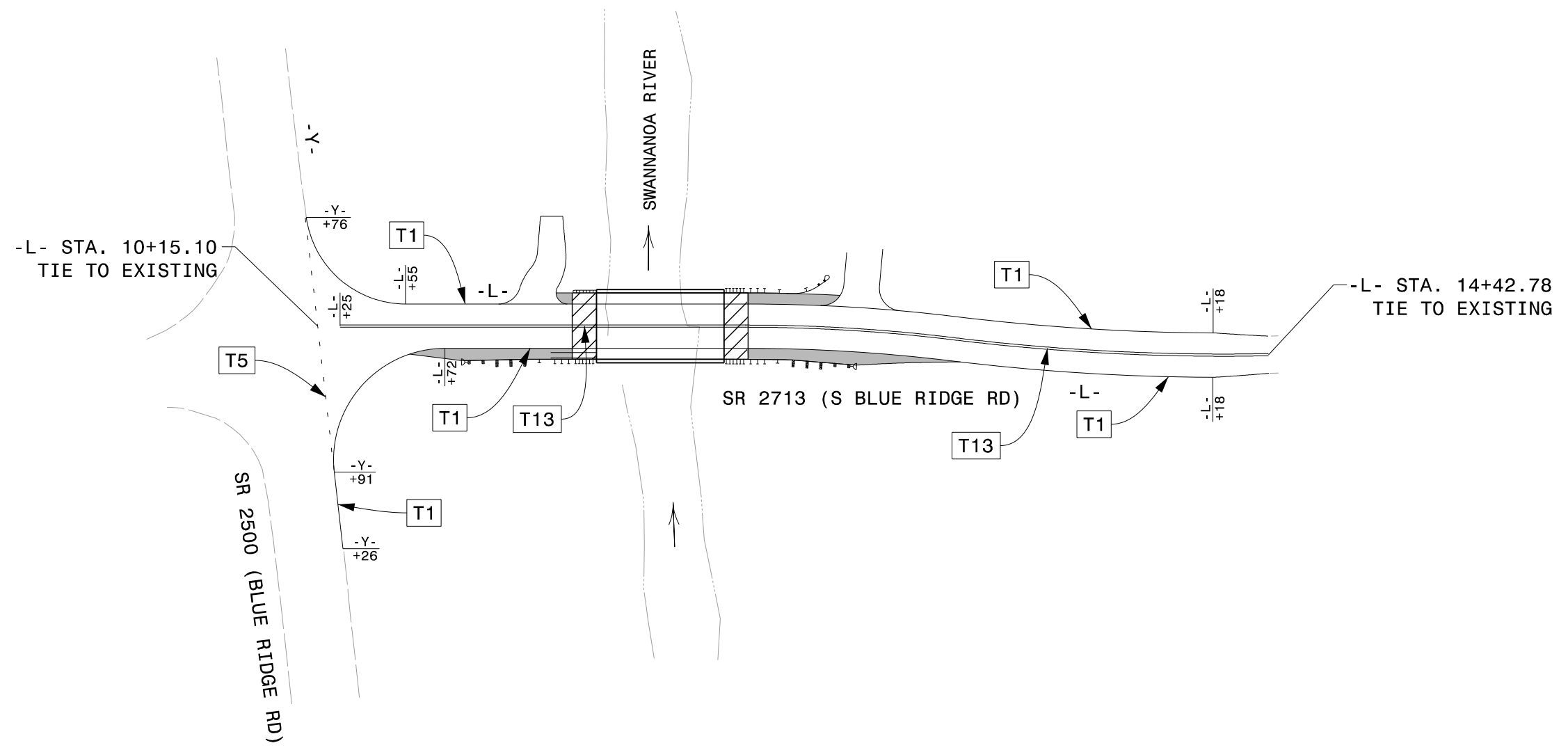
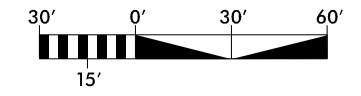
Signed by:
Matthew V. Springer
-300923003-0003-

CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-8950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: M.V. SPRINGER DATE: 2-15-24
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

| | |
|--|--------------------|
| TIP NO. DF18313.2011297.PR | SHEET NO. PMP-3 |
| APPROVED:  DATE: 5/30/2026 | |
| SEAL  | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |



GFT
 GFT Infrastructure, Inc.
 One Glenwood Avenue, Suite 900
 Raleigh, NC 27603
 919-420-7660
 NC Lic. No. F-0270

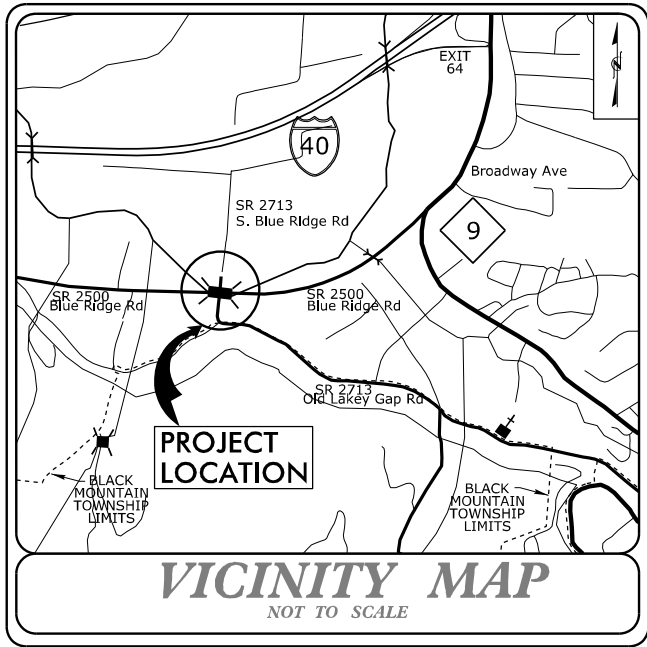
PAVEMENT MARKING DETAIL

NOTE: ALL LANE WIDTHS ARE 10' UNLESS OTHERWISE SHOWN

FEMA WBS: DF18313.2011297.PR

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

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C. | DF18313.2011297.PR | EC-1 | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| | | | |
| | | | |
| | | | |



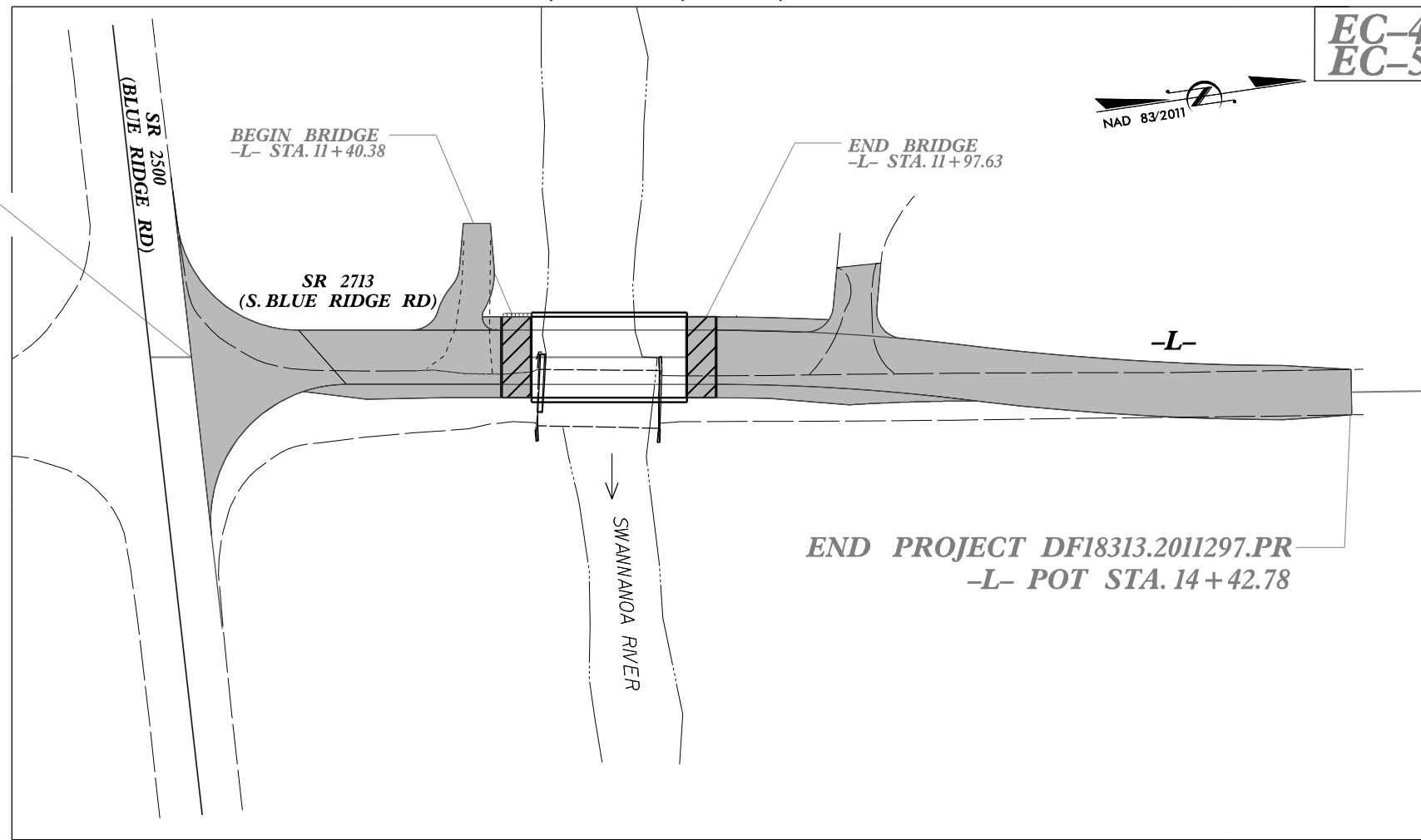
LOCATION: REPLACEMENT OF BRIDGE NO. 100785 OVER SWANNANOA RIVER ON SR 2713 (S. BLUE RIDGE RD)
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

DIVISION 13



BEGIN PROJECT DF18313.2011297.PR
 -L- POT STA. 10 + 15.10

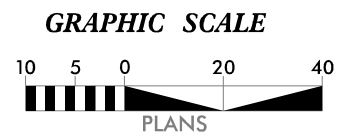
← TO SR 2500
 BLUE RIDGE RD



EC-4
EC-5




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



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

Prepared in the Office of:



GANNETT FLEMING
 One Glenwood Avenue
 Suite 900
 Raleigh, NC 27603
 919-420-7660
 NC Lic. No. F-0270

Designed by:

DAVID FULLER 4541
 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

| | |
|--|---------------------------|
| PROJECT REFERENCE NO. DF18313.2011297.PR | SHEET NO. EC-02 |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

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 | | 1636.02 | Silt Fence Excelsior Wattle Break | |
| 1632.02 | Type B | | 1636.03 | Excelsior Wattle Barrier | |
| 1632.03 | Type C | | 1636.03 | Coir Fiber Wattle Barrier | |

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

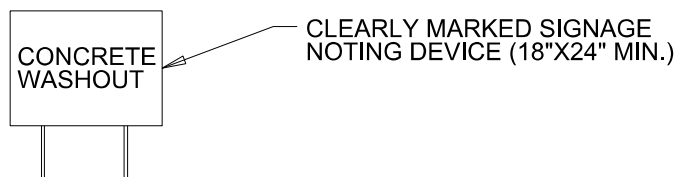
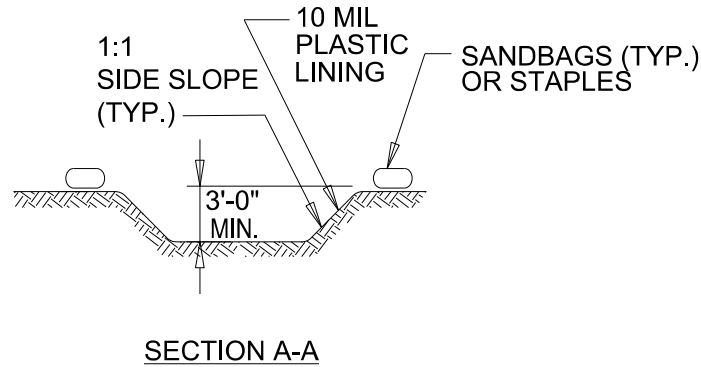
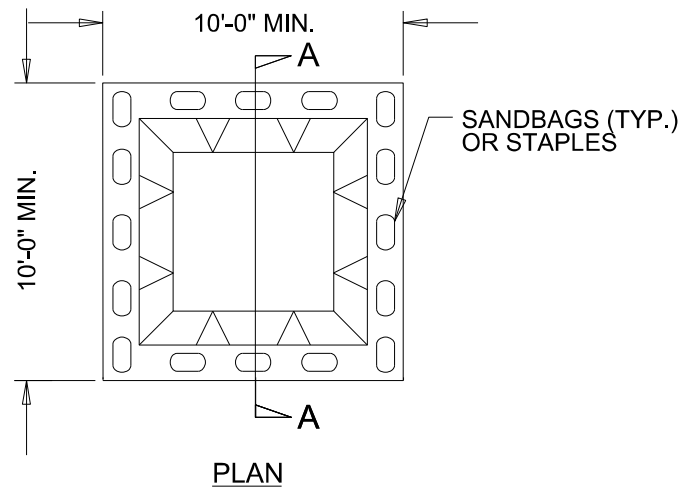
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| PROJECT REFERENCE NO. <i>DF18313.2011297.PR</i> | SHEET NO. <i>EC-3</i> |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

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 |

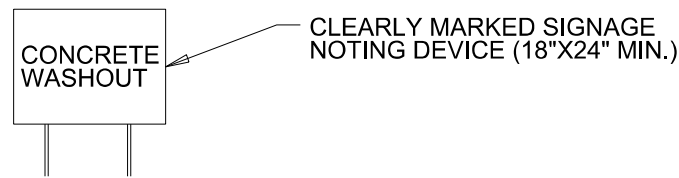
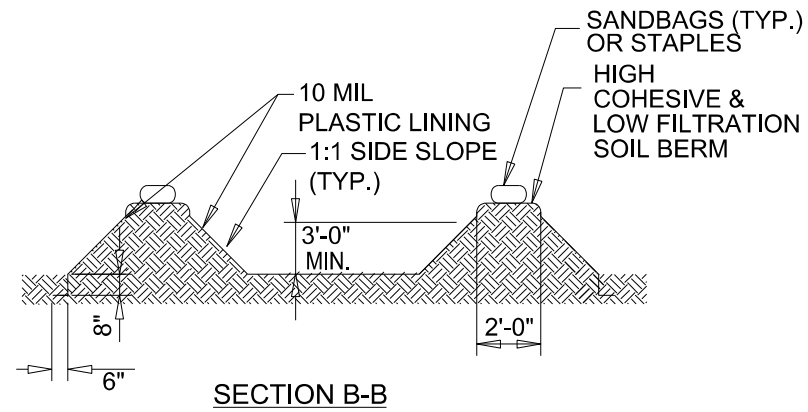
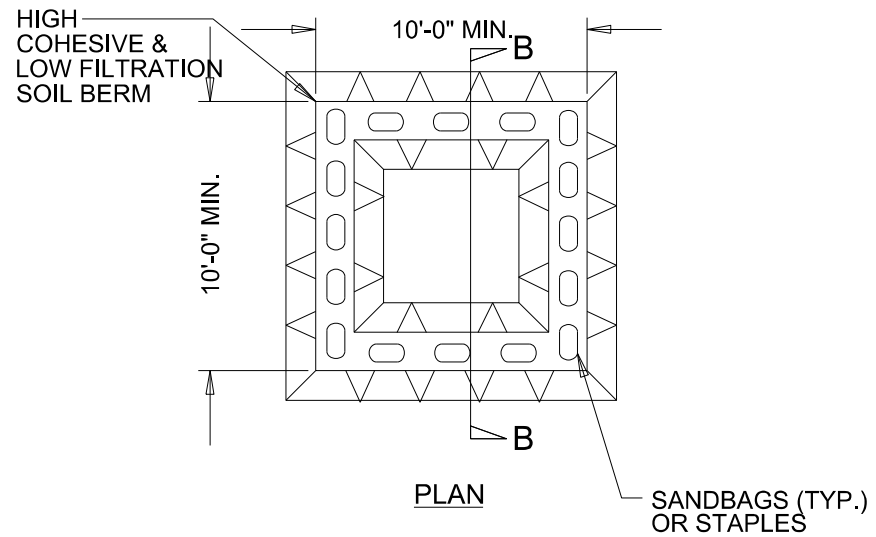
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|--|---------------------------|
| PROJECT REFERENCE NO. <i>DF18313.2011297.PR</i> | SHEET NO. <i>EC-3B</i> |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

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.

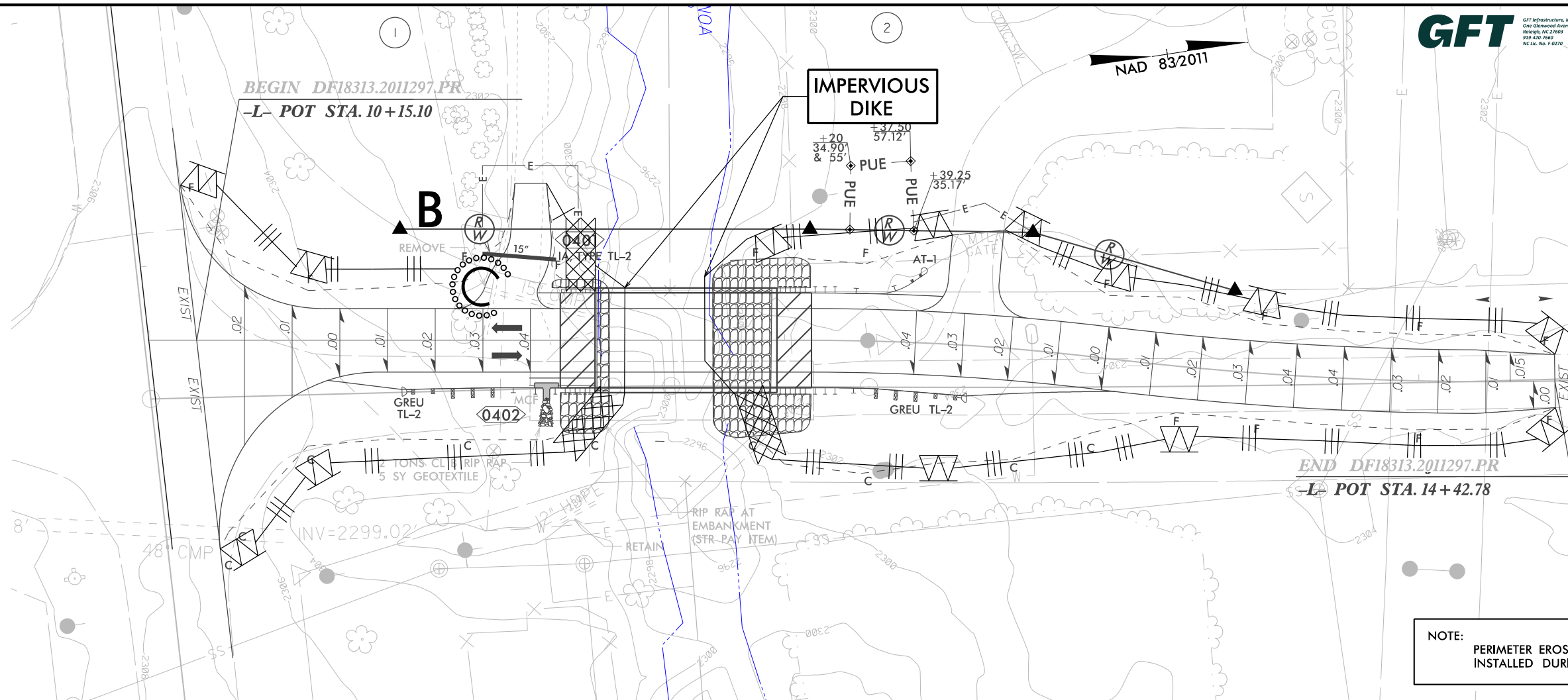
8.17/99



GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-401-7600
NC Lic. No. F-02720

| | |
|---|---------------------------|
| PROJECT REFERENCE NO. DF18313.2011297.PR | SHEET NO. EC-4/CONST.4 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

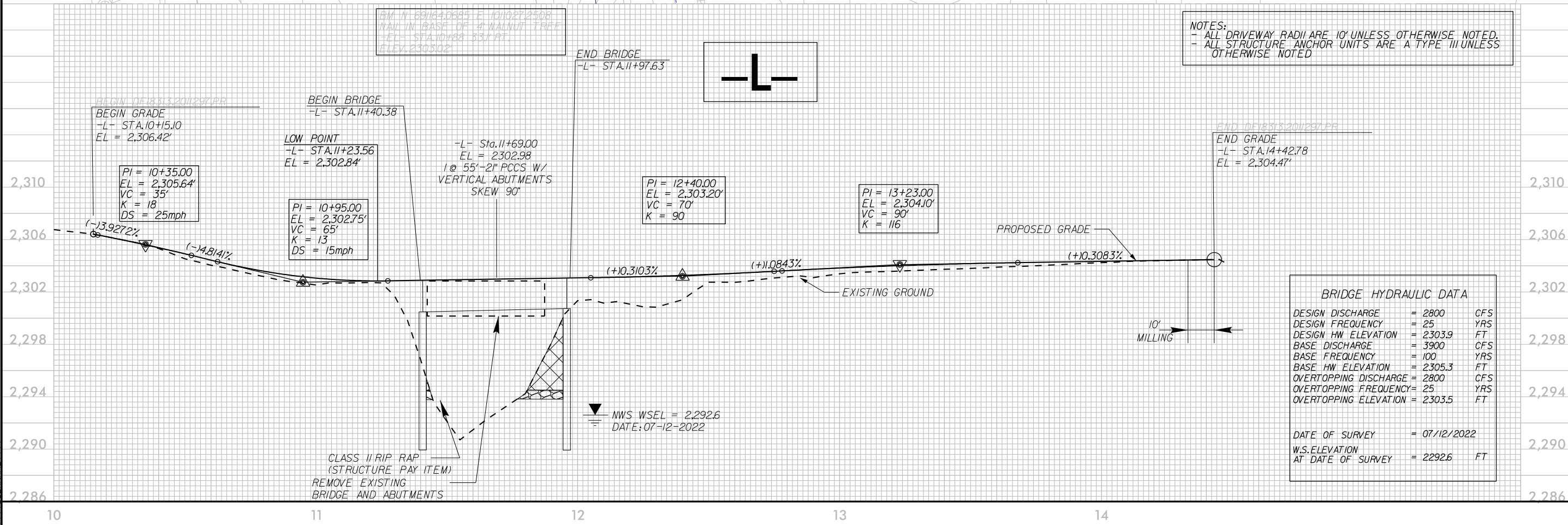
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UNLESS ALL SIGNATURES COMPLETED



CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET _

NOTE:
PERIMETER EROSION CONTROL MEASURES SHALL BE
INSTALLED DURING CLEARING AND GRUBBING PHASE.

NOTES:
- ALL DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED.
- ALL STRUCTURE ANCHOR UNITS ARE A TYPE III UNLESS OTHERWISE NOTED



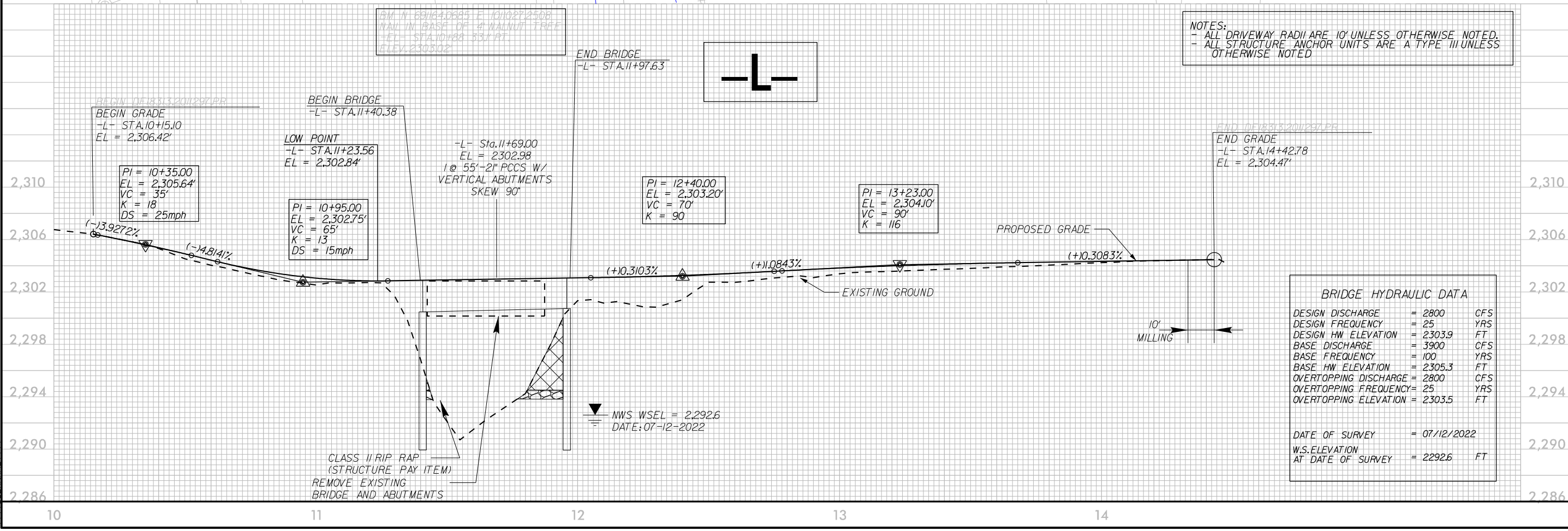
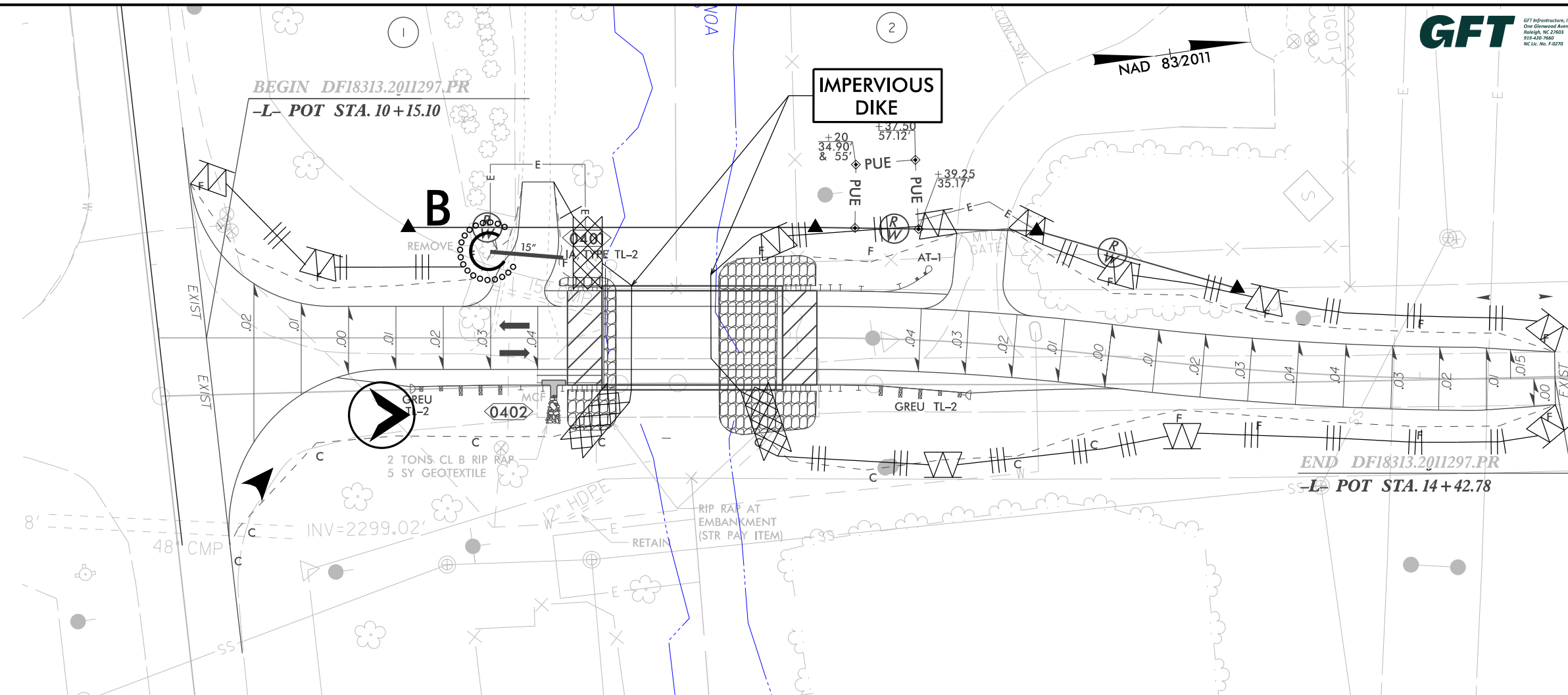
SYSTEMS TIME \$\$\$\$\$\$
DESIGN \$\$\$\$\$\$
DATE \$\$\$\$\$\$

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GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-876-7600
NC Lic. No. F-6270

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| PROJECT REFERENCE NO. DF18313.2011297.PR | SHEET NO. EC-5/CONST.4 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |



NOTES:
 - ALL DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED.
 - ALL STRUCTURE ANCHOR UNITS ARE A TYPE III UNLESS OTHERWISE NOTED

\$\$\$\$\$SYTIME\$\$\$\$\$
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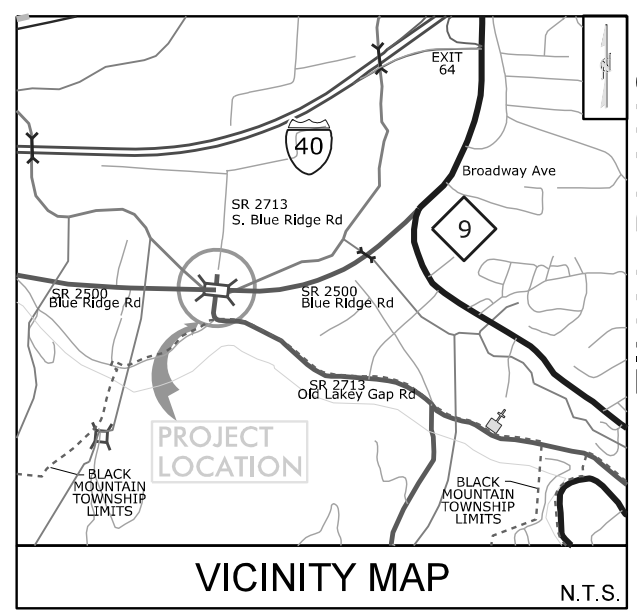
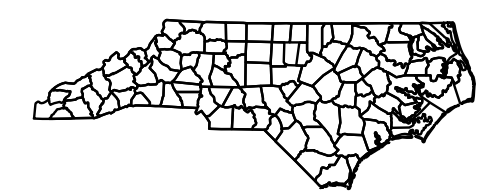
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CONTRACT: DF18313.2011297.PR

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
UTILITY CONSTRUCTION PLANS
BUNCOMBE COUNTY

| | |
|--------------------|-----------|
| T.I.P. NO. | SHEET NO. |
| DF18313.2011297.PR | UC-1 |

DIVISION 13

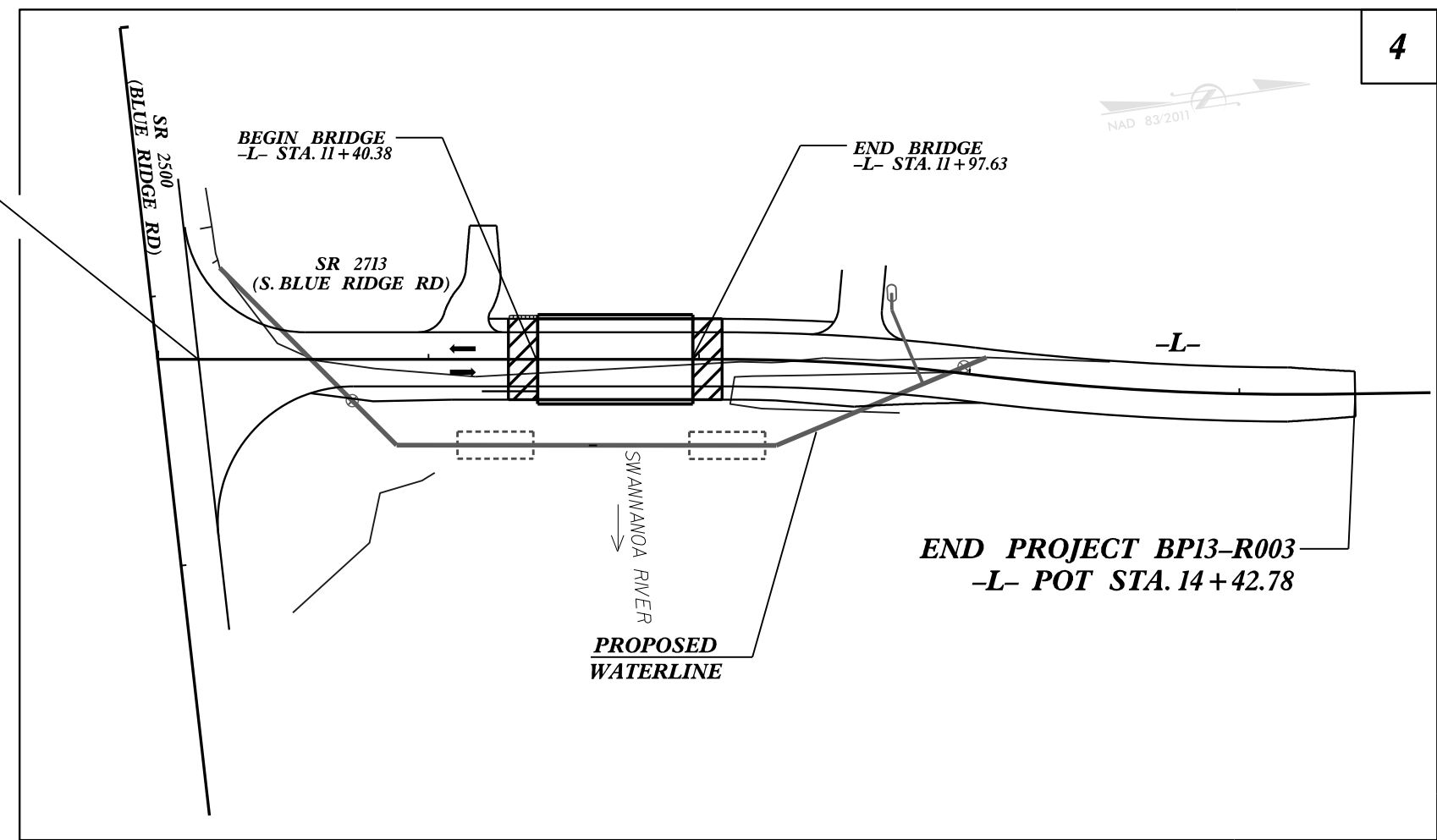


FINAL PLANS

LOCATION: BRIDGE NO. 785 OVER SWANNANOA RIVER
ON SR 2713 (S. BLUE RIDGE RD)
TYPE OF WORK: BURIED WATERLINE RELOCATION

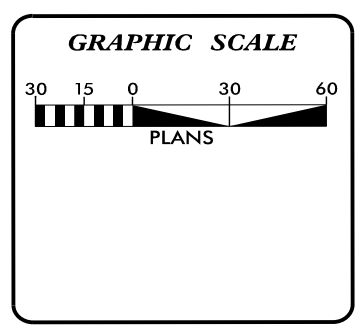
BEGIN PROJECT BP13-R003
-L- POT STA. 10 + 15.10

TO SR 2500
BLUE RIDGE RD



Mattern & Craig
 ENGINEERS • SURVEYORS
 FIRM LICENSE No. C-1154
 231 16TH AVE NE
 HICKORY, NC 28601
 (828) 855-2233
 FAX (828) 254-4562

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INDEX OF SHEETS

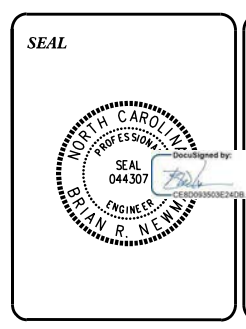
| SHEET NO.: | DESCRIPTION: |
|------------|----------------------------|
| UC-1 | TITLE SHEET |
| UC-2 | UTILITY SYMBOLOGY |
| UC-3 | NOTES |
| UC-3A | DETAILS |
| UC-4 | UTILITY CONSTRUCTION SHEET |
| UC-5 | UTILITY STAGING PLAN |

WATER AND SEWER OWNERS ON PROJECT

(A) WATER - Town of Black Mountain

PREPARED IN THE OFFICE OF
MATTERN & CRAIG
 FIRM LICENSE No. C-1154
 231 16TH AVE NE
 HICKORY, NC 28601
 (828) 855 - 2233
 FOR NCDOT DIVISION OF HIGHWAYS

| | |
|-------------------------|-----------------------|
| ROBERT KUN | CONSULTANT CONTACT #1 |
| BRIAN NEWMAN, PE | CONSULTANT CONTACT #2 |
| JAMES VOSO, PE | CONSULTANT CONTACT #3 |



DIVISION OF HIGHWAYS
UTILITIES UNIT
 1555 MAIL SERVICES CENTER
 RALEIGH, NC 27699-1555
 PHONE (919) 707-6690
 FAX (919) 250-4151

| | |
|--------------------------|-----------------------------|
| Donald E. Hampton | UTILITIES REGIONAL ENGINEER |
| Jong-Tae Yoon, PE | UTILITIES ENGINEER |
| Steve C. Trexler | UTILITIES AREA COORDINATOR |
| Steve C. Trexler | UTILITIES COORDINATOR |

04/09/2026

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

| | |
|---------------------------------|--------|
| Water Line (Sized as Shown) | _____ |
| 11¼ Degree Bend | _____ |
| 22½ Degree Bend | _____ |
| 45 Degree Bend | _____ |
| 90 Degree Bend | _____ |
| Plug | _____ |
| Tee | _____ |
| Cross | _____ |
| Reducer | _____ |
| Gate Valve | _____ |
| Butterfly Valve | _____ |
| Tapping Valve | _____ |
| Line Stop | _____ |
| Line Stop with Bypass | _____ |
| Blow Off | _____ |
| Fire Hydrant | _____ |
| Relocate Fire Hydrant | _____ |
| Remove Fire Hydrant | REM FH |
| Water Meter | PWM |
| Relocate Water Meter | RWM |
| Remove Water Meter | REM WM |
| Water Pump Station | PST(W) |
| RPZ Backflow Preventer | RPZ |
| DCV Backflow Preventer | PBEF |
| Relocate RPZ Backflow Preventer | RRPZ |
| Relocate DCV Backflow Preventer | RBEP |

PROPOSED SEWER SYMBOLS

| | |
|--|---------|
| Gravity Sewer Line (Sized as Shown) | _____ |
| Force Main Sewer Line (Sized as Shown) | _____ |
| Manhole (Sized per Note) | • |
| Sewer Pump Station | PST(SS) |

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

| | |
|--|---------|
| Power Pole | ○ |
| Telephone Pole | ○ |
| Joint Use Pole | ○ |
| Telephone Pedestal | TEL PED |
| Utility Line by Others (Type as Shown) | _____ |
| Trenchless Installation | _____ |
| Encasement by Open Cut | _____ |
| Encasement | _____ |

| | |
|-------------------|----------|
| Thrust Block | |
| Air Release Valve | AR |
| Utility Vault | UV |
| Concrete Pier | CP |
| Steel Pier | SP |
| Plan Note | NOTE |
| Pay Item Note | PAY ITEM |

EXISTING UTILITIES SYMBOLS

| | | | |
|--|--------|---|--------------------|
| Power Pole | • | *Underground Power Line | _____ |
| Telephone Pole | • | *Underground Telephone Cable | _____ |
| Joint Use Pole | • | *Underground Telephone Conduit | _____ |
| Utility Pole | • | *Underground Fiber Optics Telephone Cable | _____ |
| Utility Pole with Base | □ | *Underground TV Cable | _____ |
| H-Frame Pole | •—• | *Underground Fiber Optics TV Cable | _____ |
| Power Transmission Line Tower | ⊗ | *Underground Gas Pipeline | _____ |
| Water Manhole | ⊙ | Aboveground Gas Pipeline | A/G Gas |
| Power Manhole | ⊙ | *Underground Water Line | _____ |
| Telephone Manhole | ⊙ | Aboveground Water Line | A/G Water |
| Sanitary Sewer Manhole | ⊙ | *Underground Gravity Sanitary Sewer Line | _____ |
| Hand Hole for Cable | ⊗ | Aboveground Gravity Sanitary Sewer Line | A/G Sanitary Sewer |
| Power Transformer | ⊗ | *Underground SS Forced Main Line | _____ |
| Telephone Pedestal | ⊗ | Underground Unknown Utility Line | _____ |
| CATV Pedestal | ⊗ | SUE Test Hole | ⊙ |
| Gas Valve | ◇ | Water Meter | ○ |
| Gas Meter | ◇ | Water Valve | ⊙ |
| Located Miscellaneous Utility Object | ○ | Fire Hydrant | ◇ |
| Abandoned According to Utility Records | AATUR | Sanitary Sewer Cleanout | ⊙ |
| End of Information | E.O.I. | | |

*For Existing Utilities
 Utility Line Drawn from Record _____
 (Type as Shown)
 Designated Utility Line _____
 (Type as Shown)

PROJECT SPECIFIC NOTES:

- A. The Contractor shall comply with the latest revisions of North Carolina Occupational Safety and Health Standards for the Construction Industry as well as all Local and State erosion and sedimentation control ordinances, laws and requirements.
- B. The proposed utility construction shall meet the applicable requirements of the NC Department of Transportation's "Standard Specifications for Roads and Structures" dated January 2018. All utility materials shall be approved prior to delivery to the project. See 1500-7, "Submittals and Records" in section 1500 of the NCDOT Standard Specifications.
- C. The existing utilities belong to Town of Marshall. The utility Owner owns the existing utility facilities and will own the new utility facilities after acceptance by the Department. The Department owns the construction contract and has administrative authority. Communications and decisions between the contractor and utility Owner are not binding upon the Department or this contract unless authorized by the Engineer. Agreements between the utility Owner and contractor for the work that is not part of this contract or is secondary to this contract are allowed, but are not binding upon the Department.
- D. All water lines to be installed within compliance of the rules and regulations of the North Carolina Department of Environmental Quality, Division of Water Resources, Public Water Supply Section. All sewer lines to be installed within compliance of the rules and regulations of the North Carolina Department of Environment Quality, Division of Water Resources, Water Quality Section. Perform all work in accordance with the applicable plumbing codes.
- E. Provide access for the Department personnel and the Owner's representatives to all phases of construction. Notify Department personnel and the utility Owner two weeks prior to commencement of any work and one week prior to service interruption. Keep utility Owners' representatives informed of work progress and provide opportunity for inspection of construction and testing.
- F. The plans depict the best available information for the location, size, and type of material for all existing utilities. Make investigations for determining the exact location, size, and type material of the existing facilities as necessary for the construction of the proposed utilities and for avoiding damage to existing facilities. Repair any damage incurred to existing facilities to the original or better condition at no additional cost to the department.
- G. Make final connections of the new work to the existing system where indicated on the plans, as required to fit the actual conditions, or as directed. All proposed waterline to be constructed with restrained joint. MEGALUG, or engineered approved equal.
- H. Make connections between existing and proposed utilities at times most convenient to the public, without endangering the utility service, and in accordance with the utility Owner's requirements. Make connections on weekends, at night, and on holidays if necessary.

WATER SYSTEM INSTALLATION NOTES:

MATERIALS - GENERAL

- A. The Contractor shall excavate all materials encountered to the lines and grades indicated, the trenches and ditches, detailed on the drawings along the alignments shown on the drawings.
- B. All materials and appurtenances required for the work shall be new, of first-class quality and shall be furnished, delivered, erected, connected and finished in every detail as specified or indicated. All materials found defective, regardless of the circumstances, shall be replaced with new material. All materials and appurtenances shall be per the locality's standard manufacturer and model.
- C. Comply with all codes, laws, ordinances and regulations of governmental authorities including, but not limited to, local municipalities and sanitary districts having jurisdiction over this part of the work.

PIPE SELECTION

- A. Water pipe shall be ductile cast iron and shall conform with AWWA C151/ANSI 21.51 and fittings shall conform with ANSI/AWWA C110, or C153 (compact fittings). The pipe and fittings shall be asphalt coated and cement lined in accordance with AWWA C104/ANSI 21.40. The pipe thickness shall conform with AWWA C 150/ANSI 21.50 and shall be Class 350, as a minimum. Fittings for water pipe shall be mechanical or push-on joint. Fittings shall be either ductile iron or gray iron.
- B. Water service shall be copper tubing and shall conform to AWWA C800 and shall be Type "K" or Type "L". Tubing shall be the size indicated, suitable for 250 PSI working pressure.
- C. Brass service pipe and fittings shall be UNS No. 83600, have a minimum working pressure rating of 150 psi and shall conform to AWWA C800 and ASTM B62

JOINTS AND COUPLINGS

- A. Ductile iron pipe and fittings for buried service shall be either mechanical or bell and spigot type joints as specified or indicated. Joints shall be made with a single watertight rubber gasket manufactured in accordance with AWWA C111/ANSI 21.11. The joints shall be made in strict accordance with the recommendations of the pipe manufacturer. Joints for above ground or in-vault service shall be flanged joints in accordance with AWWA C115.
- B. Joints for copper tubing shall be couplings manufactured by Ford Meter Box Company, Mueller, McDonald or equal.

- C. Brass fittings shall be stamped or embossed with the manufacturer's name. All brass fittings surfaces in contact with potable water shall comply with ANSI/NF Standard 61.

WATER SYSTEM APPURTENANCES

- A. Gate Valves and Blowoff Valves:
 - 1. Gate valves and blowoff gate valves shall be compression resilient seated valves conforming to AWWA C515. The valve shall be designed so no sliding or shear on the resilient seating surface is present when compressed to a drop tight shut off. Valve shall seal equally well in either direction. Valve shall provide fully open waterway. Valve shall have O-ring sealing and a fusion bonded epoxy coating inside and out. Valve shall be permanently lubricated. Valve shall have a manganese bronze stem and nut with anti-thrust washers. Operating nut shall be 2-inch square.
 - 2. Each gate valve shall be provided with a valve box constructed of cast iron with a round base. The valve box shall be the sliding (screw) type with a five-inch shaft and the cover shall be slotted for easy removal. Covers shall have the word "WATER" cast into them.
- B. Fire hydrant laterals shall include 6-inch ductile-iron pipe, as specified, 6-inch gate valve with valve box (vault), frame and cover. Fire hydrants shall conform to AWWA C 502 (latest revision) and shall be dry top, dry barrel, compression type with double O-ring seals suitable for 150 psi working pressure. Hydrants shall be designed for water mains having three (3) feet minimum cover; however, each proposed location shall be coordinated by the Contractor as to the exact setting depth required.
- C. Hydrants shall be equipped with a 5 1/4-inch valve opening, and a 7-inch minimum inside diameter standpipe. Each hydrant shall have a 6-inch mechanical joint shoe, two (2) 2-1/2" inch hose nozzles with National Standard threads connection and one (1) 4-1/2" inch pumper nozzle with National Standard threads connection. Prior to ordering hydrants, Contractor shall confirm with local fire department that nozzles, threads, and operating nut suit their standards. Each hydrant shall be provided with one operating wrench for its operating stem nut. The direction of rotation shall be counterclockwise. The operating stem nut shall be a 5-sided nut with a flat to point dimension of one and one half (1-1/2) inches. Hydrants shall be coated and painted in accordance with AWWA C502, with colors to suit the Owner's standard. The upper and lower operating stems shall be joined by a safety coupling, located to prevent damage to hydrant valve when upper standpipe is damaged.
- D. Restrained Joints shall be used for all fittings, valves and transitions. Minimum restrained lengths shall be as specified on Mattern & Craig Supplementary Drawing MCW-7. Each restrained joint shall be follower gland type, suitable for a 250 PSI working pressure and a 500 PSI water hammer (surge) pressure. Glands shall be single piece, except where required to be split for application on existing pipe. Material shall be ductile iron. Joint shall be designed to restrain standard mechanical joints. Rated pressure shall include a 2:1 safety factor. Joint shall be Ebaa Iron Megalug, Tyton Joint by US Pipe, or equal. Gasket type restraints are not acceptable.
- E. Tapping sleeves shall be manufactured from gray iron, meeting or exceeding ASTM A126 Grade B, or ductile iron, meeting ASTM A536 Grade 65-45-12. As an alternative, tapping sleeves can be all stainless steel (18-8 Type 304) style FAST as manufactured by Ford Meter Box Co. or equal. Tapping sleeves shall have mechanical joint ends and flanged outlets conforming to Class 125, ANSI B16.1. Outside coating of iron sleeves shall be asphaltic coating. Tapping valves shall meet the requirements of ANSI/AWWA C515. Tapping sleeves and tapping valves shall be supplied by the same manufacturer.

LAYING PIPE AND INSTALLING APPURTENANCES

- A. The water pipe shall be laid and maintained at the required lines and grades with fittings and valves at the required locations. Under no circumstances shall water system materials be dropped or dumped into the trenches. All pipe shall be installed with the bell ends facing the direction of laying or flow and in accordance with the recommendations of the pipe manufacturers. The cutting of pipe for inserting valves, fittings or closure pieces shall be done in a neat and workmanlike manner, without damage to the pipe, so as to leave a smooth end at right angles to the axis of the pipe. Care shall be taken to avoid damaging the lining. Flame cutting of pipe with oxyacetylene torch will not be permitted.
- B. Every precaution shall be taken to prevent foreign material from entering the pipe while it is being placed in the trench. During laying operations, no debris, tools, clothing or other materials shall be placed in the pipe. At times when pipe laying is not in progress, the open ends of the pipe shall be closed by a watertight plug or other means approved by the Engineer. This provision shall apply during the noon hour as well as overnight. If water is in the trench, the seal shall remain in place until the trench is pumped completely dry.
- C. Before joints are made the pipe shall be well bedded on a firm foundation and no pipe shall be brought into position until the preceding length has been thoroughly embedded and secured in place. Any defects due to settlement shall be made good by the Contractor at his expense. Bell holes shall be dug sufficiently large to insure the making of proper joints.
- D. All tees, bends, plugs and abrupt change in direction of the water lines three (3) inches and larger in diameter shall be restrained as indicated above, except hydrants and their isolation gate valves shall be harnessed to the main water pipe and shall be harnessed such that the hydrant could be removed and the valve would still be harnessed to the main water pipe.
- E. The trench may be curved to change direction or to avoid obstructions within the limits of the curvature of the pipe (joint deflections) as recommended by the pipe manufacturer. Where necessary to maintain the required curvature, short sections of

pipe or fittings shall be provided. Restraint shall be provided for these short sections of pipe or where fittings are provided for the water pipe.

All fittings, valves and hydrants shall be supported by concrete independently of the pipe. All bends, tees, and changes in direction or changes in pipe size shall be provided with harnessing. Joints between the pipe and the mechanical joint fittings shall be made in accordance with the pipe manufacturer's requirements with a lubricant supplied by the pipe manufacturer. Nuts shall be tightened on alternate sides of the gland until the pressure on the gland is equally distributed. All nuts shall be tightened to the torque listed below:

| BOLT SIZE (IN) | TORQUE (FT-LBS) |
|----------------|-----------------|
| 5/8 | 40 - 60 |
| 3/4 | 60 - 90 |
| 1 | 70 - 100 |

- F. Valves shall be installed in accordance with ANSI/AWWA C 600 with the operator's stems in the vertical plane through the pipe axis and perpendicular to the pipe axis. Valves shall be located where shown on the drawings and shall be supported on a concrete cradle so that no load transfers to the pipe. Valves shall be thoroughly cleaned before installation and shall be checked for satisfactory operation. All underground valves shall be equipped with valve boxes. Valve boxes shall be set in alignment with the valve stem centered on the valve nut, and shall be set to prevent transmitting shock or stress to the valve. The cover shall be set flush with the finished ground surface or pavement.

- G. Fire hydrants shall be installed in accordance with ANSI/AWWA C 600 where indicated on the drawings in accordance with the details. The hydrants shall be set plumb at the elevation of existing or finished grade, whichever is higher and shall be supported on a concrete cradle so that the drain line is not obstructed and so that no load transfers to the pipe. The pumper nozzles shall be placed perpendicular to the street line with nozzles at least 18 inches above grade. Hydrant shall be harnessed as hereinbefore specified and as indicated. Drainage fill shall be provided at the base of the hydrant; as detailed.

CONNECTIONS TO EXISTING SYSTEM


- A. Provide the connections to the existing system under a pressure condition or non-pressure condition, as indicated, complying with the Municipality's requirements for the time of day such work can be done. If the Municipality's forces perform the work, arrange for the work to be done.

STREAM CROSSING

- A. The Contractor shall install casings by bore and jack and properly complete pipeline construction as shown on the plans. Boring operations must not interfere with, interrupt, or endanger the surface or material improvements upon the surface. Contractor shall complete work in accordance with NCDOT Standard Specifications Section 1550 - Trenchless Installation of Utilities.
- B. Contractor submittal shall document active engagement in the installation of underground pipe by directional boring or directional drilling for a minimum of three years during which time the contractor has completed at least 3 projects similar or greater in diameter, length, and value to this project requirement.
- C. Materials submittals shall include: shop drawings for casing pipe showing sizes, connector equipment & details, working drawings and written procedures and detail the proposed method of installation. This will include, but not be limited to, setup requirements and type of equipment for joining pipe if applicable, type of tool head, and method of monitoring and controlling alignment and depth.
- D. Provide continuous support of the hole by simultaneously jacking the pipe or casing into the hole. Use equipment suitably sized and designed to simultaneously bore or drill the soil or rock while pushing or jacking pipe on a controlled grade. Position the cutter head within one diameter of the leading edge of the pipe. In cohesive, dense and dry soils and rock, position the cutter head in front of the leading edge. In non-cohesive or loose soils, position the cutter head inside the pipe. Dry bore only, do not use jetting or wet boring methods. Use drilling fluids only on the outside of pipe for lubrication or hole stabilization. Minimize core bore, match cutter diameter to the outside diameter of the encasement pipe. Limit overbore to the O.D. + 2 inches. Provide steering controls as necessary to maintain line and grade.
- E. If the Contractor determines that modifications to the method and equipment as stated in the submittal are necessary during construction, the Contractor will submit a plan describing such modifications, including the reasons for the modification. The Contractor shall follow the alignment as shown on the drawings, within the specifications stated. If adjustments are required, the Contractor shall notify the Engineer for approval prior to making the adjustments.

DISINFECTION

- F. All pipe shall be disinfected, tested and flushed in accordance with AWWA Standard C651 (latest revision), Section 4.4.3, the Continuous Feed Method. The Contractor, upon his request, will be provided with a copy of AWWA C651, standard for disinfecting water mains.
- G. Contractor shall provide all materials, equipment, necessary taps and perform all work required for the sterilization, testing and flushing of the water main. All tests shall be performed only by an approved independent laboratory, paid for by the Contractor. The water main or valved off section that has been completed shall be filled, tested and flushed. Test locations shall be subject to the discretion of the Engineer and as valves and blow-offs permit. Flushing velocities shall be 2.5 feet per second minimum.
- H. As soon as the main or valved off section has been laid and sufficiently backfilled for safety, water shall be turned on and the main allowed to fill slowly. The water flowing into the section shall not have a velocity greater than 1 foot per second. Care shall be exercised not to flush the main at this time. Air only shall be allowed to escape. The water shall then remain in contact with the pipe for 24 hours. All valves and appurtenances shall be operated while the chlorinated water is in the main. No tested

| | |
|---|-------------------|
| PROJECT REFERENCE NO. DF18313.2011297.PR | SHEET NO. UC-3 |
| DESIGNED BY: EKW | |
| DRAWN BY: EKW | |
| CHECKED BY: RJLK | |
| APPROVED BY: BRN | |
| REVISIONS: | |
|  | |
| NORTH CAROLINA DEPARTMENT OF TRANSPORTATION | |
| UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 | |
| UTILITY CONSTRUCTION PLANS ONLY | |
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section of water line shall be approved to deliver water service until a favorable laboratory report has been achieved. Any tested section of water line failing to meet the requirements specified shall be repaired by the Contractor and retested until the results are within the limits specified.

- I. During the disinfection process, valves shall be manipulated to prevent the treatment dosage from falling back into the line supplying the water. The application shall not cease until the entire section is filled with the chlorine solution. The chlorinated water shall be retained in the main for at least 24 hours, during which time all valves and hydrants in the system shall be operated in order to disinfect the appurtenances. At the end of this 24-hour period, the treated water shall be tested and shown to contain no less than 10 milligrams per liter of available chlorine throughout the section.
- J. After the retention period, the heavily chlorinated water shall be flushed from the system with potable water until the chlorine concentration in the water leaving the system is no higher than that generally prevailing in the system, or less than one milligram per liter. The heavily chlorinated water shall not be allowed to flow into adjacent natural waterways. The chlorine residual determinations shall be made to ascertain that the heavily chlorinated water has been removed from the system. The disposal of the heavily chlorinated water shall be in accordance with Section 6 (and Appendix B) of AWWA C651.
- K. After final flushing, and before the water system is placed in service, at least two consecutive bacteriologically satisfactory samples shall be collected from the end of the section and from each appurtenance. In no case shall the interval between bacteriological stations exceed 1000 feet. The samples shall be collected at least 24 hours apart. The samples shall be analyzed by a certified laboratory. Samples shall be tested for bacteriological quality and shall show the absence of coliform organisms. If the initial disinfection fails to produce satisfactory samples, disinfection shall be repeated until satisfactory samples have been obtained. The Contractor shall arrange for and pay for all sampling and testing.

TESTING

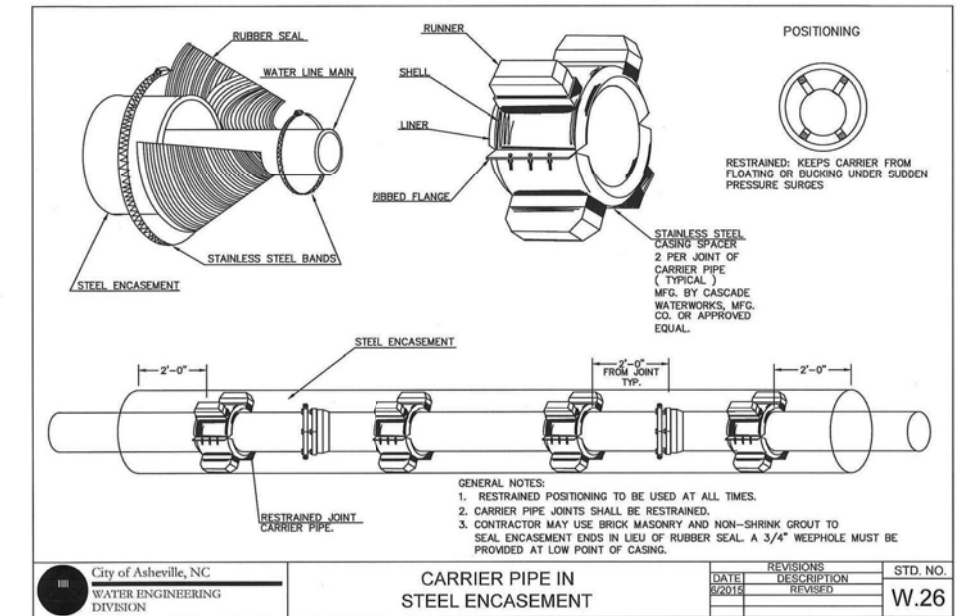
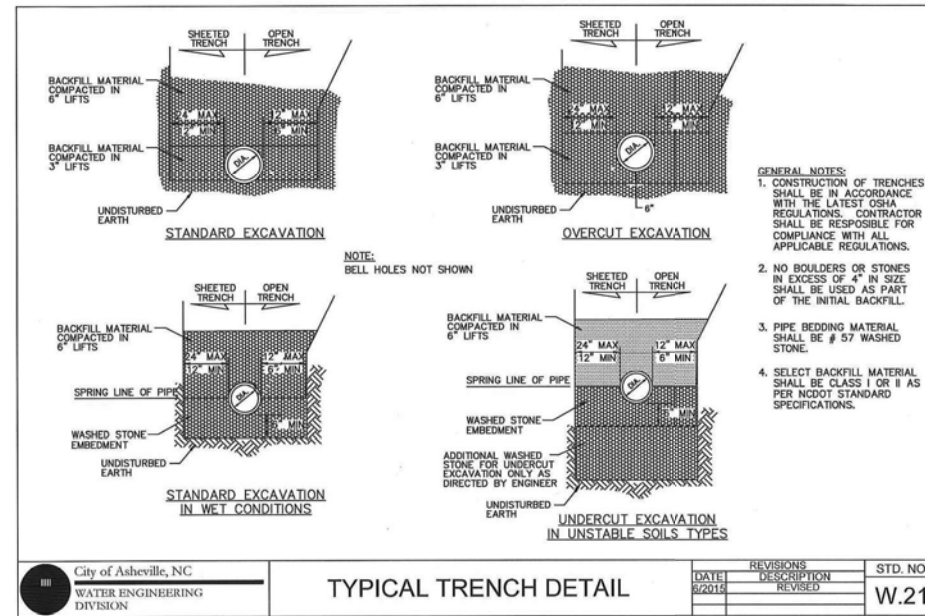
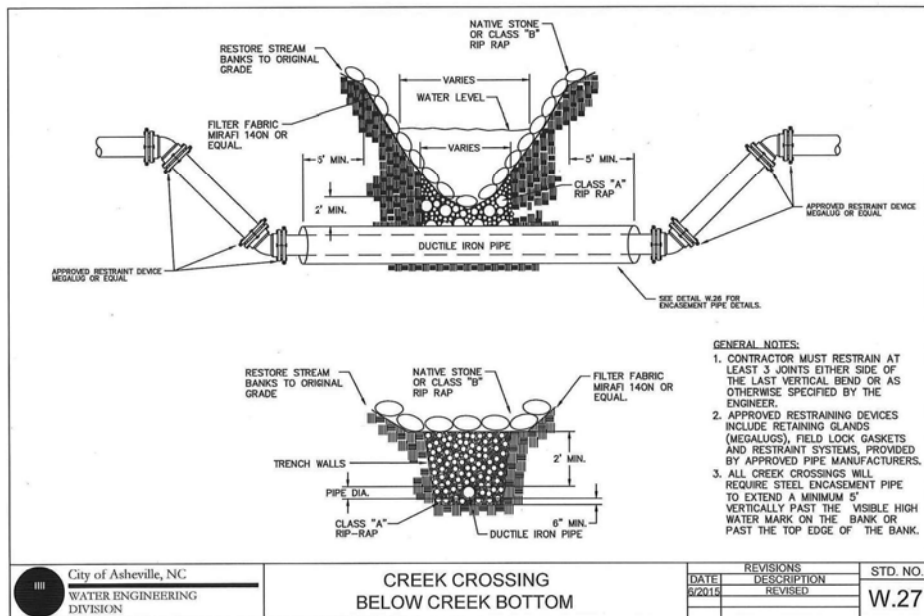
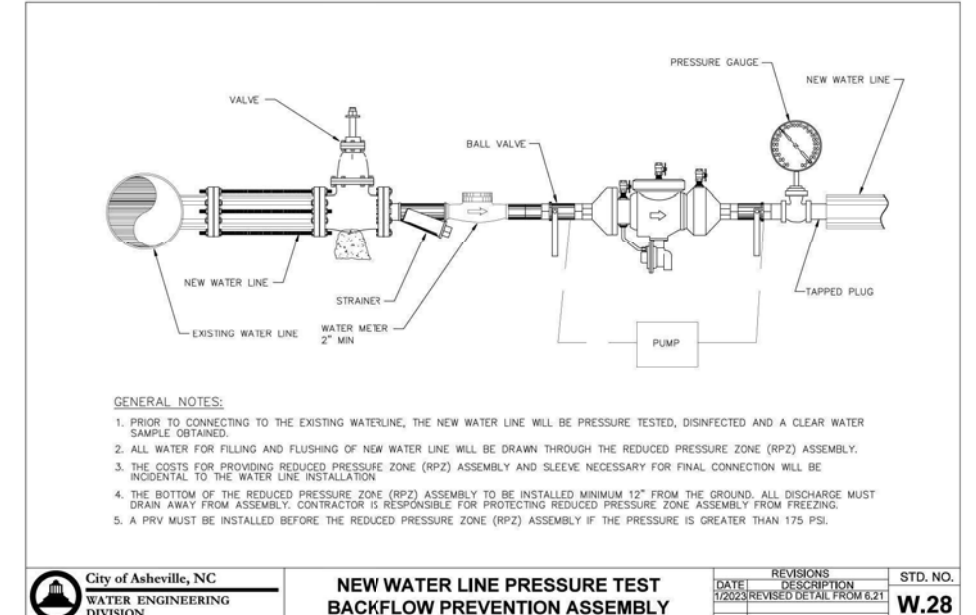
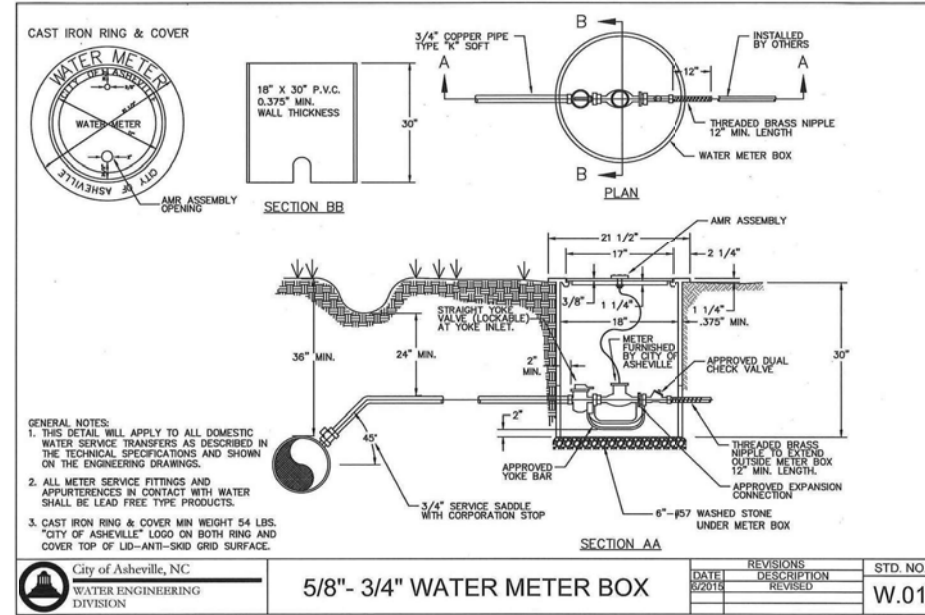
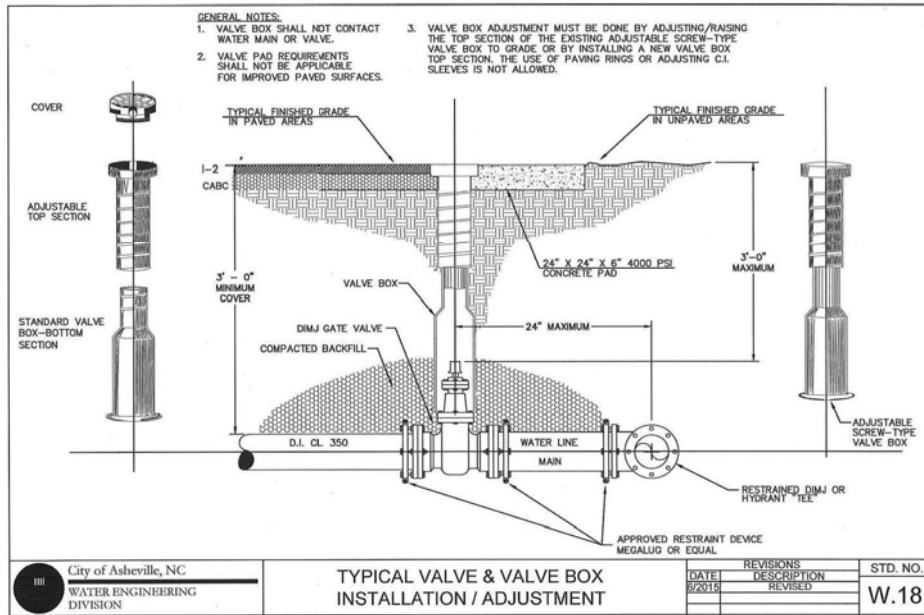
- A. All testing will be performed in accordance with the AWWA C600, current revision. After placing all harnessing and all valve support concrete (if applicable), sufficient backfill shall be placed prior to filling the pipe with water and field testing to prevent lifting of the pipe. When local conditions require that the trenches be backfilled immediately after the pipe has been laid, the testing shall be carried out after backfilling has been completed but prior to placement of the permanent surface. At least seven (7) days shall elapse after the last valve support or hydrant block has been cast (Type I Portland Cement) prior to testing, unless high early strength concrete (Type III) is used, in which case three (3) days shall elapse.
- B. Pressure Test: After the pipe has been laid, all newly laid pipe or any valved section thereof shall be subjected to a hydrostatic pressure test.
 - 1. Test pressure restrictions. Test pressures shall: not be less than 1.25 times the stated working pressure measured at the highest elevation along the test section and not less than 1.5 times the stated working pressure at the lowest elevation of the test section; not exceed thrust restraint design pressures or 1.5 times the pressure rating of the pipe or joint, whichever is less (as specified by the manufacturer); be of at least 2-hour duration; not vary by more than + 5 psi; and not exceed the working rated pressure of the valves when the pressure boundary of the test section includes closed, resilient-seated gate valves or butterfly valves.
 - 2. Each valved section of pipe shall be filled with properly disinfected water slowly and the specified test pressure shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Engineer.
 - 3. Before applying the specified test pressure, air shall be expelled completely from the pipe, valves, and hydrants.
 - 4. All exposed pipe, fittings, valves, hydrants and joints shall be examined carefully during the test. Any damaged or defective pipe, fittings, valves, or hydrants that are discovered following the pressure test shall be repaired or replaced with sound material and the test shall be repeated until it is satisfactory to the Engineer.
- C. A leakage test shall be conducted concurrently with the pressure test. Leakage shall be defined as the quantity of water (makeup water) that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within 5 psi of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water. No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{SD(P)^{1.75}}{148,000}$$


in which L is the allowable leakage (makeup water), in gallons per hour; S is the length of pipeline tested in feet; D is the nominal diameter of the pipe, in inches; and P is the average test pressure during the leakage test, in pounds per square inch gauge. When testing against closed metal-seated valves, an additional leakage per enclosed valve of 0.0078 gal/hr/in. of nominal valve size shall be allowed. When hydrants are in the test section, the test shall be made on the basis of allowable leakage. If any test of pipe laid discloses leakage greater than the allowable amount, the Contractor shall, at his own expense, locate and repair the defective material until the leakage is within the specified allowance. All visible leaks are to be repaired regardless of the amount of leakage.
- D. All pipe and joints of the water line entering or crossing streams shall be tested in place and shall exhibit zero leakage. Minimum strength of concrete cast for encasement shall be equal to or greater than 75 percent of the 28-day compressive strength prior to backfilling crossing trench. 3 cylinders shall be made during the placement and shall be left in same environment as concrete placed. One cylinder shall be tested at 3 days, one at 7 days and the third at 28 days to verify adequacy.

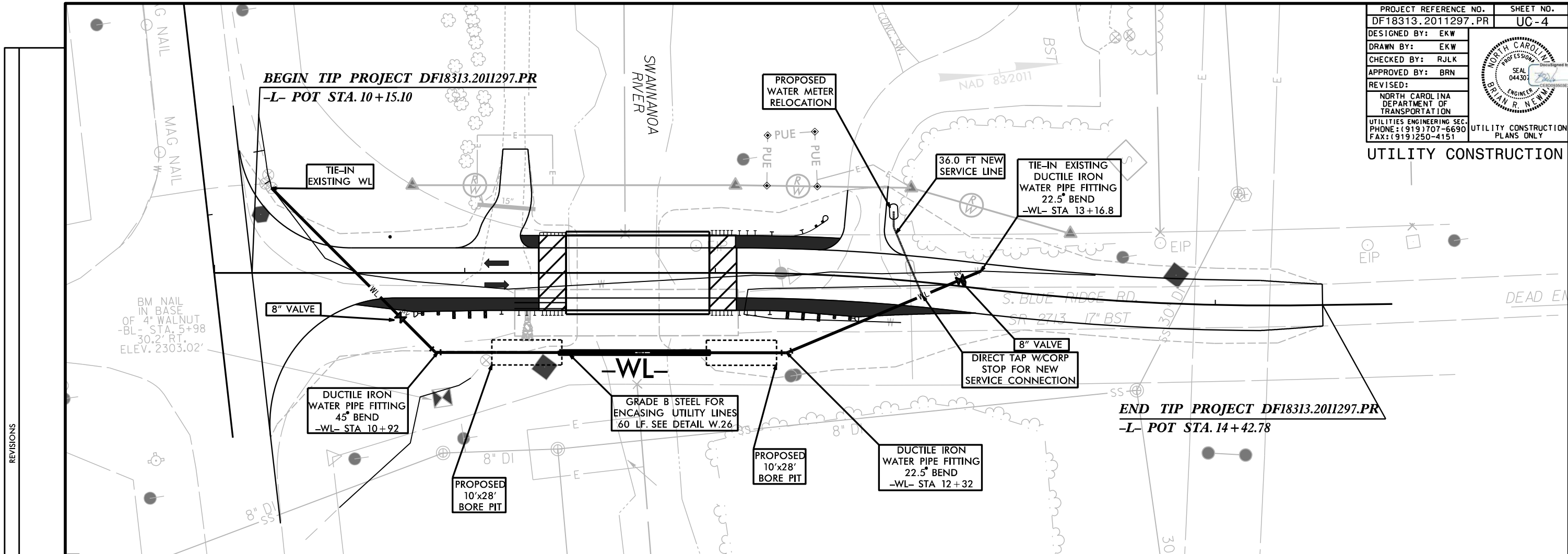
PROJECT TYPICAL DETAILS

| | |
|---|--------------------|
| PROJECT REFERENCE NO. DF18313.2011297.PR | SHEET NO. UC-3A |
| DESIGNED BY: EKW | |
| DRAWN BY: EKW | |
| CHECKED BY: RJLK | |
| APPROVED BY: BRN | |
| REVISED: | |
| NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 | |
| UTILITY CONSTRUCTION PLANS ONLY | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

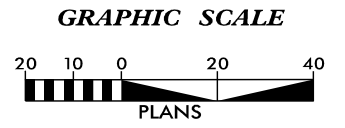
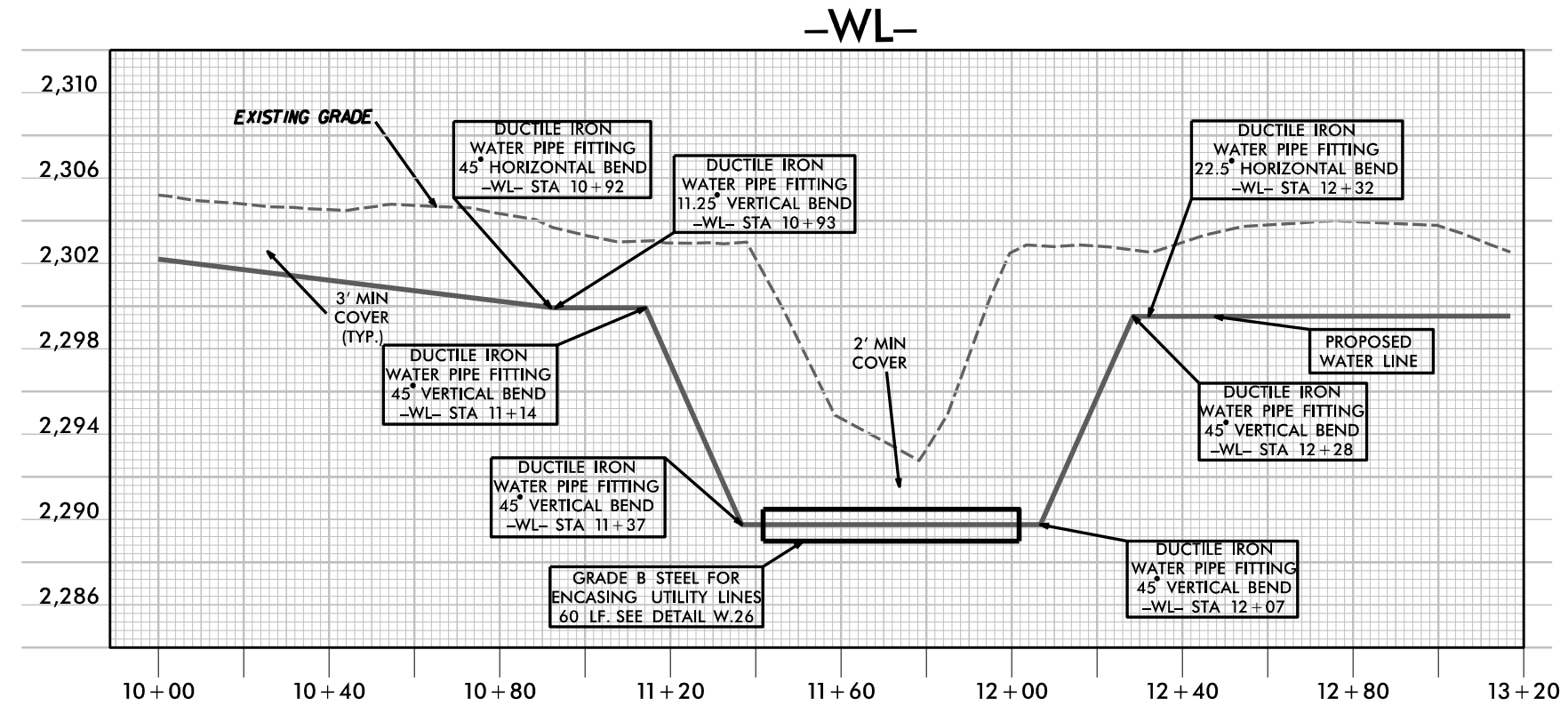


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| | |
|---|--|
| PROJECT REFERENCE NO. | SHEET NO. |
| DF18313.2011297.PR | UC-4 |
| DESIGNED BY: EKW |  |
| DRAWN BY: EKW | |
| CHECKED BY: RJLK | |
| APPROVED BY: BRN | |
| REVISED: | |
| NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151 | |
| UTILITY CONSTRUCTION PLANS ONLY | |



REVISIONS

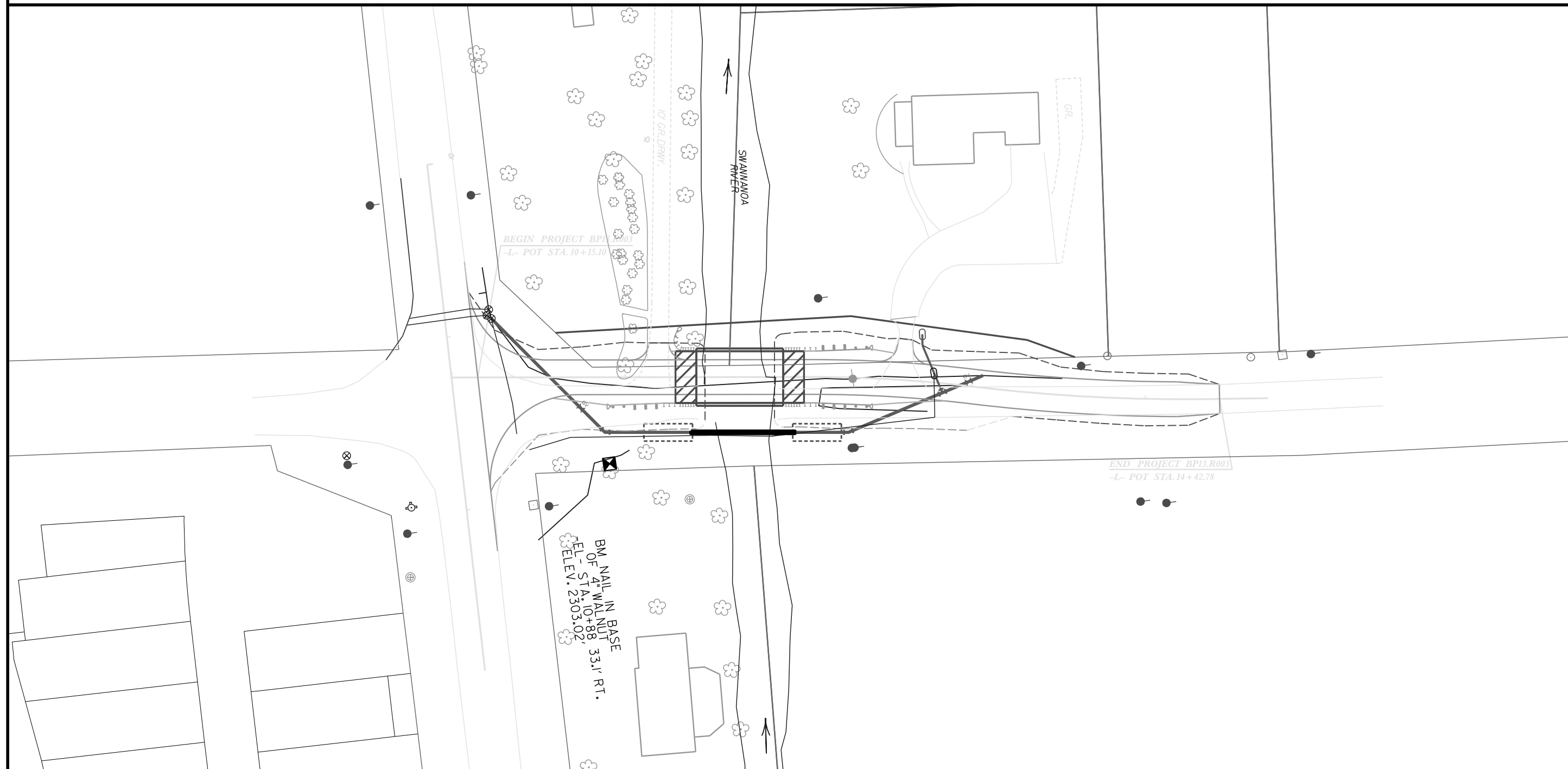


WATERLINE CONSTRUCTION SEQUENCE STA. 10+22.89 -L-

| | |
|---|--|
| PROJECT REFERENCE NO. | SHEET NO. |
| DF18313.2011297.PR | UC-5 |
| DESIGNED BY: EKW |  |
| DRAWN BY: EKW | |
| CHECKED BY: RJLK | |
| APPROVED BY: BRN | |
| REVISED: | |
| NORTH CAROLINA DEPARTMENT OF TRANSPORTATION | |
| UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 1250-4151 | |

UTILITY CONSTRUCTION
PLANS ONLY

1. CONTRACTOR SHALL CONTACT TOWN OF BLACK MOUNTAIN AND TY GAINES, MATTERN & CRAIG 828-708-9651 AT LEAST 72 HOURS PRIOR TO WATERLINE CONSTRUCTION.
2. MAINTAIN EXISTING WATERLINE DURING CONSTRUCTION AND COMPLETE TIE-INS UNDER THE DIRECTION OF THE TOWN IN THE PRESENCE OF THE ENGINEER.
3. MATTERN & CRAIG WILL COORDINATE WITH THE TOWN UTILTY STAFF TO PERFORM ANY SYSTEM-SIDE VALVE MAINTENANCE SEQUENCE DURING NEW WATERLINE TAPS.
4. WATERLINE CONSTRUCTION SHALL BE IN ACCORANCE WITH "CITY OF ASHEVILLE WATER RESOURCES DESIGN & CONSTRUCTION MANUAL".
5. PERFORM EXCAVATION OPERATIONS TO THE DIMENSIONS AND LOCATIONS OF THE BORING PITS TO A DEPTH THAT ALLOWS THE BORING TO BE PERFORMED AT A MINIMUM DEPTH OF 2' BELOW WATER TABLE TO BEGIN INSTALLING CARRIER PIPE.
6. CONSTRUCT PROPOSED WATERLINE AS SHOWN AND PROVIDE NEW WATERLINE PRESSURE TEST BACKFLOW PREVENTION ASSEMBLY FOR TESTING.
7. PERFORM PRESSURE TESTING AND BACTERIAL TESTING UNDER THE DIRECTION OF THE TOWN IN THE PRESENCE OF THE ENGINEER.
8. UPON APPROVED TEST RESULTS, REMOVE BACKFLOW PREVENTION ASSEMBLY AND TIE INTO EXISTING SYSTEM.



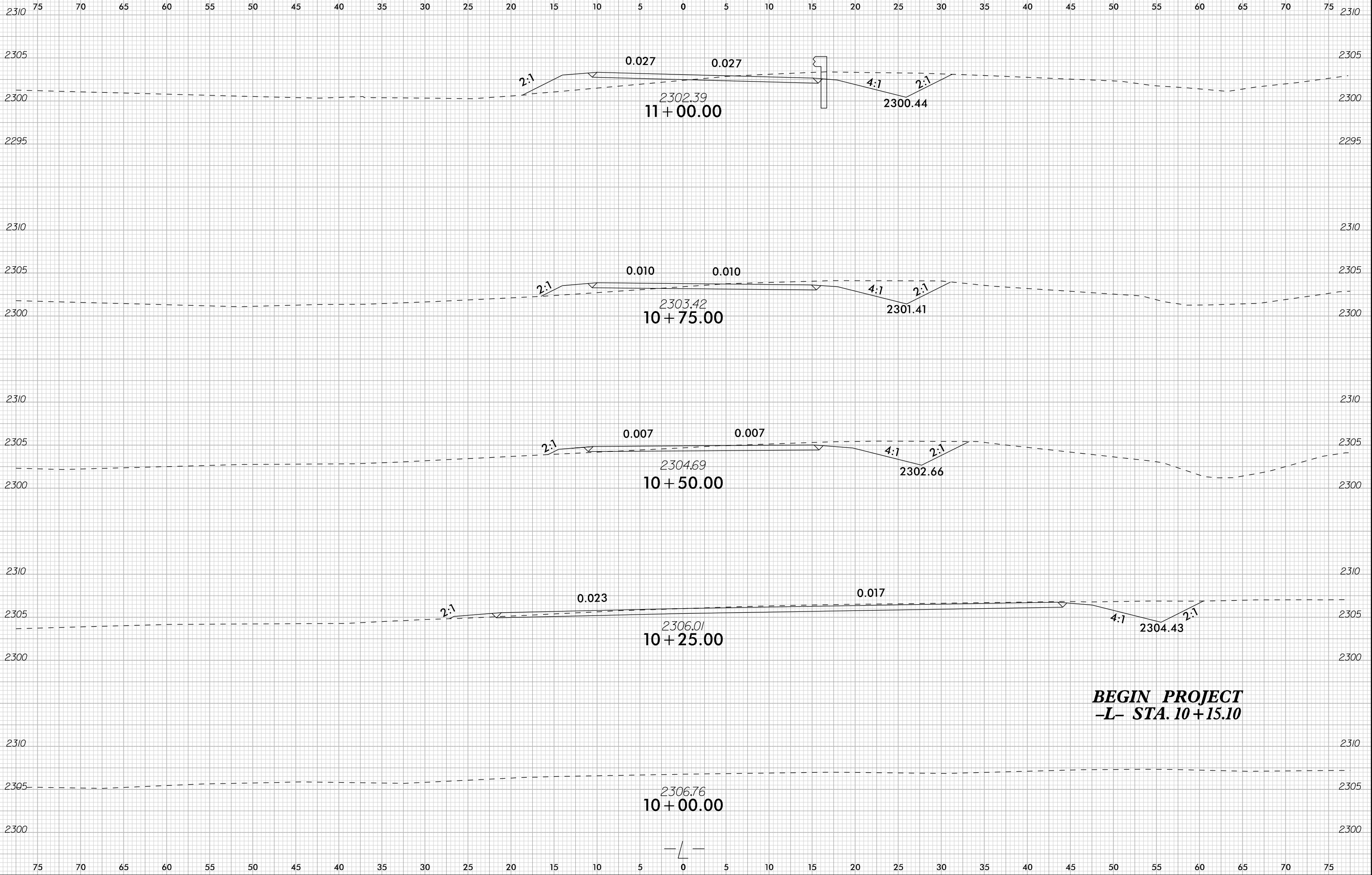
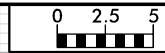


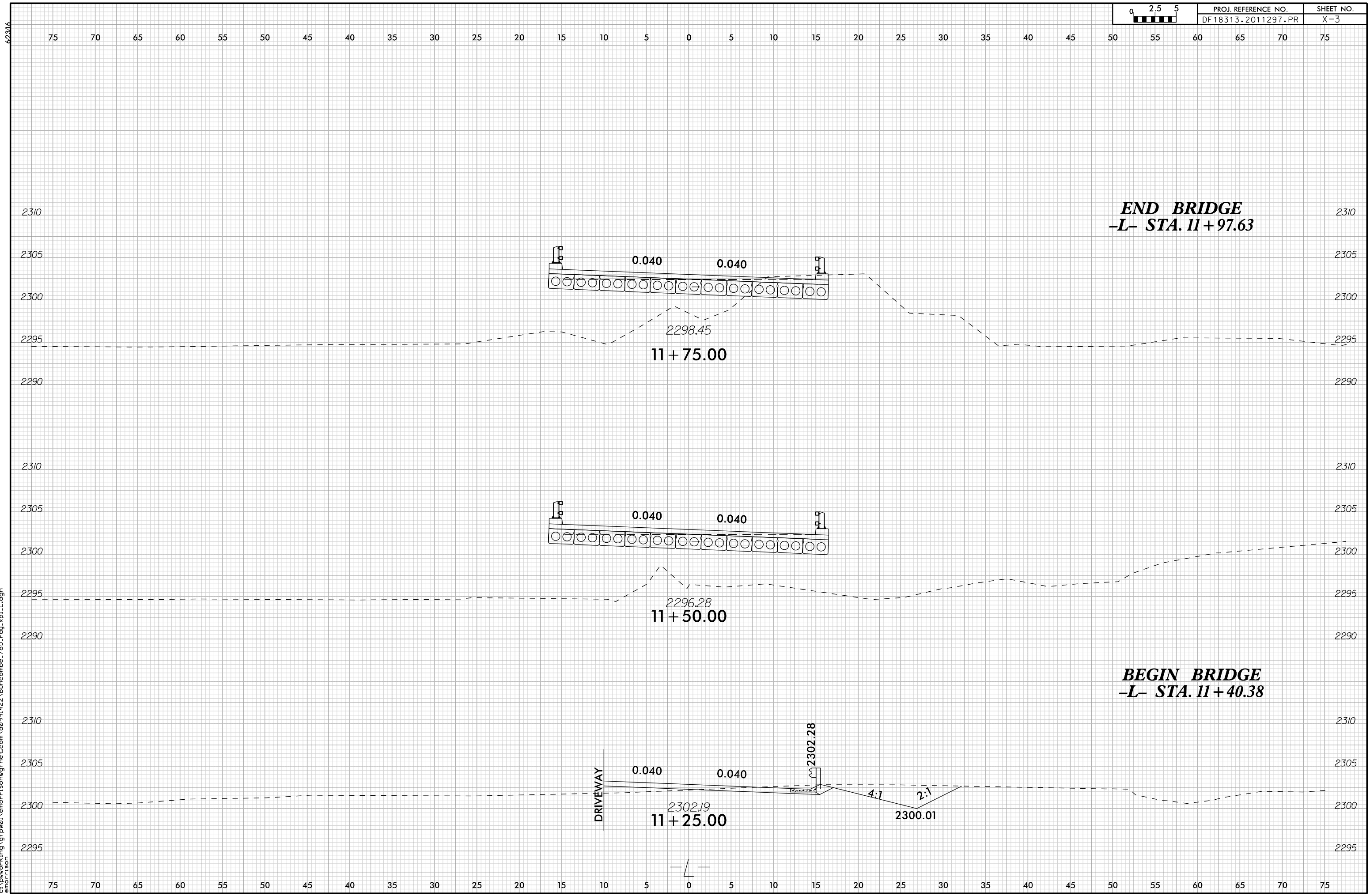
CROSS SECTION INDEX

CROSS SECTION INDEX
 CROSS SECTION SUMMARY

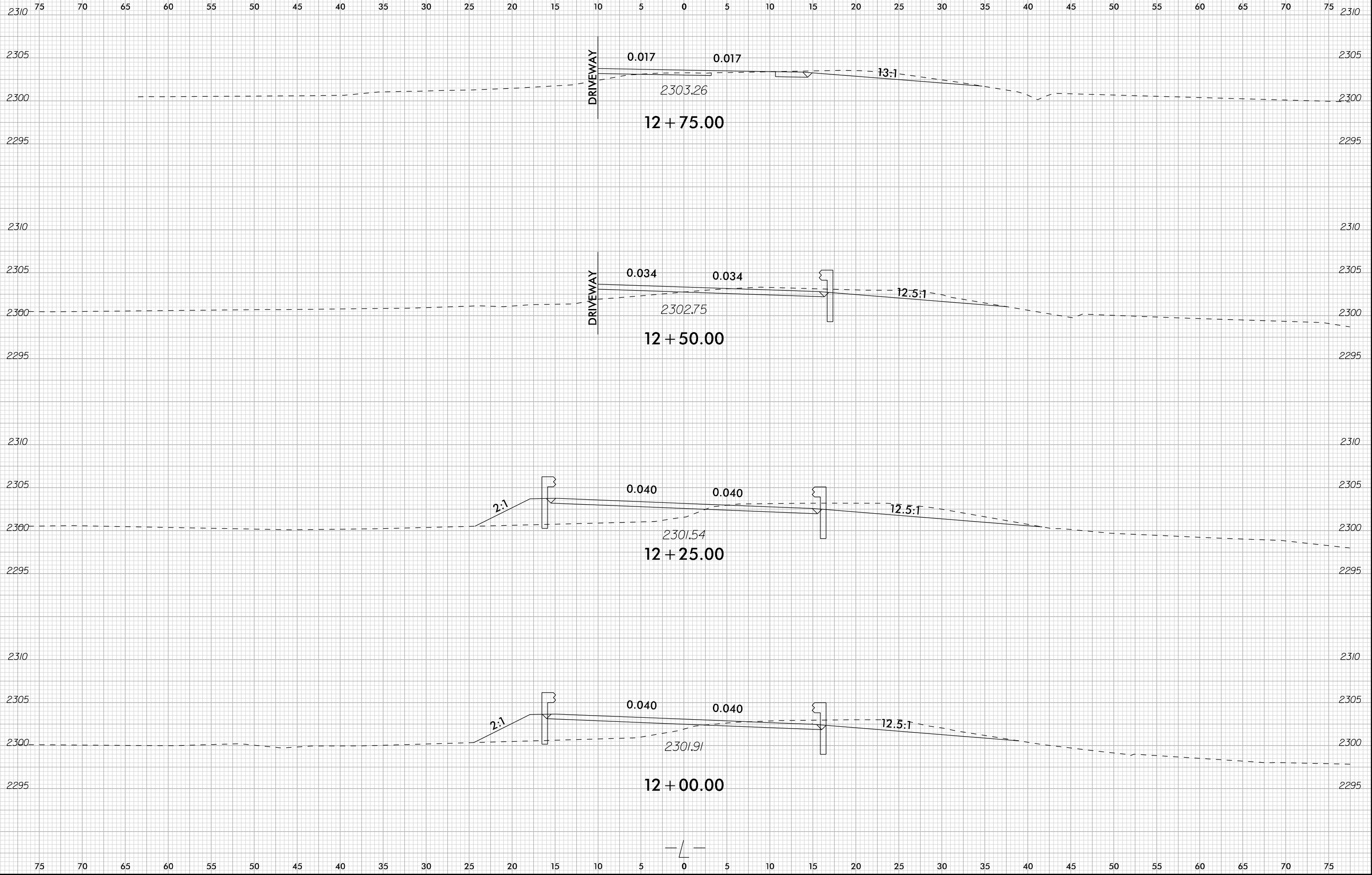
X-1
 X-1A

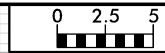
| <u>ROADWAY</u> | <u>STATION</u> | <u>TO</u> | <u>STATION</u> | <u>SHEET NO.</u> |
|-----------------------------------|----------------|-----------|----------------|------------------|
| -L- SR 2713 (S. BLUE RIDGE RD) | 10 + 00.00 | | 14 + 50.00 | X-2 TO X-6 |



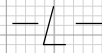
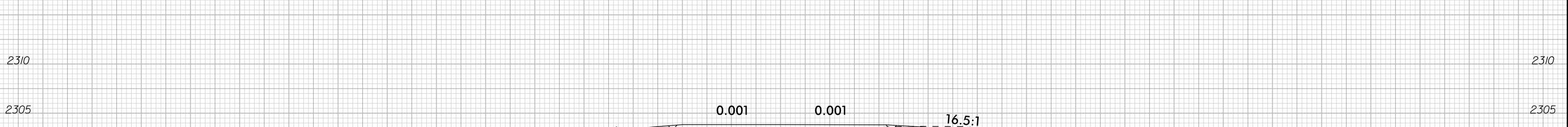
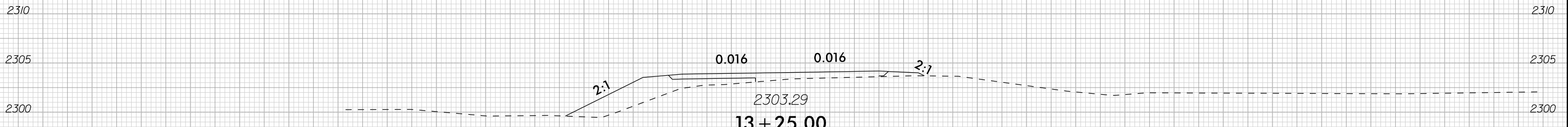
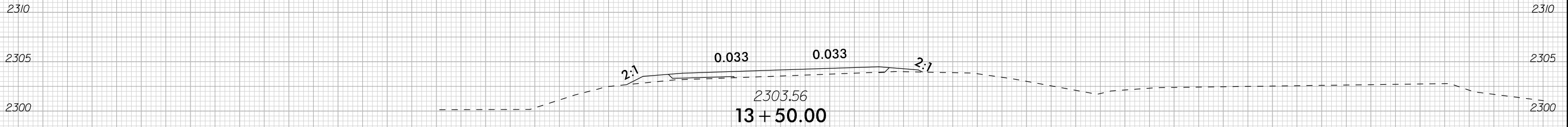
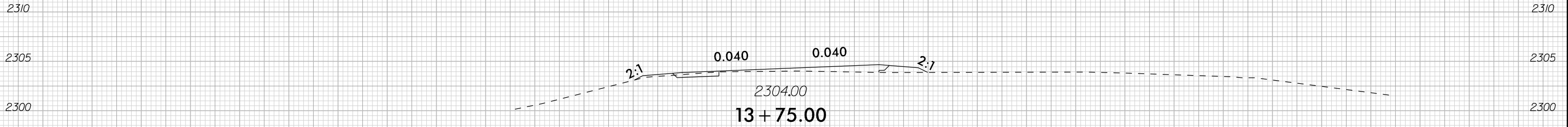


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 emorrison



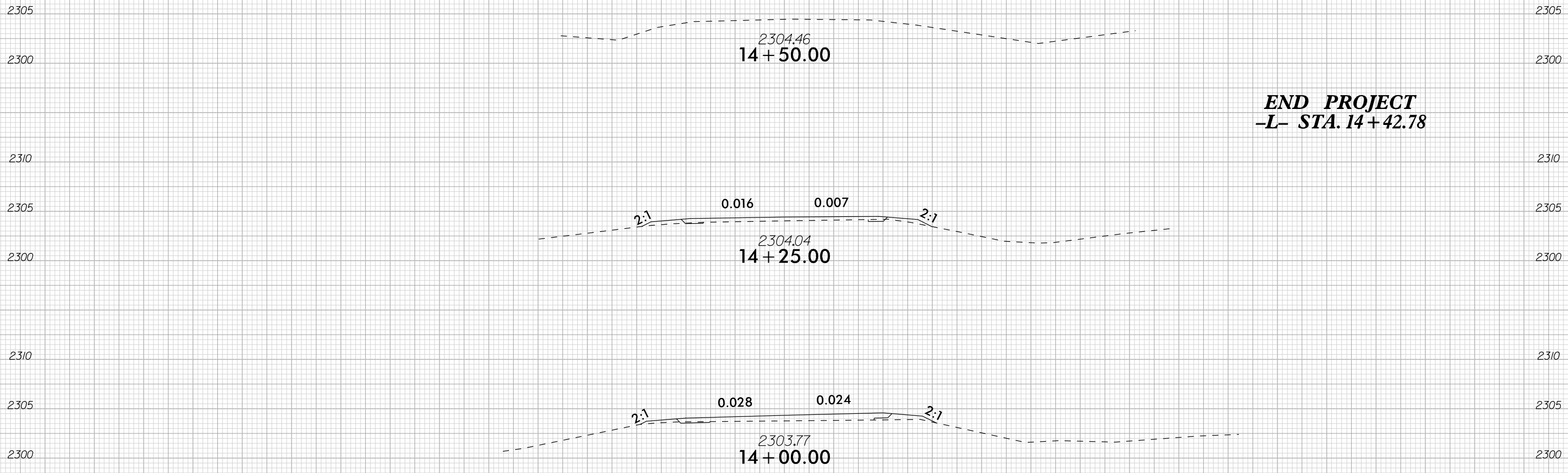


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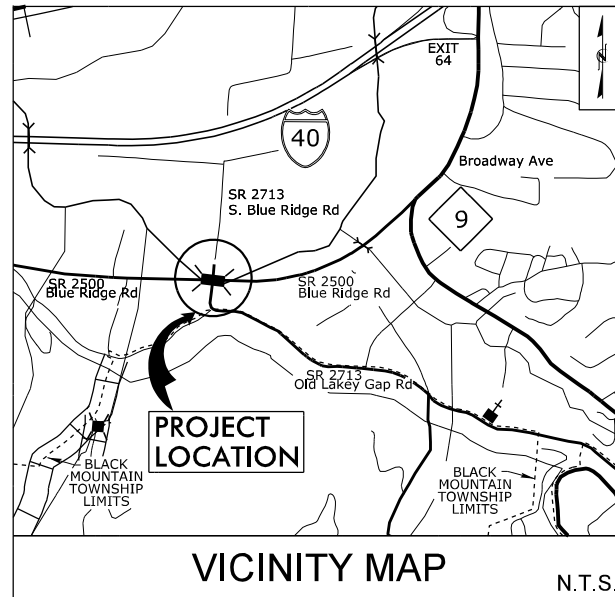
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75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

CONTRACT NO: DM00394 TIP PROJECT: DF18313.2011297.PR



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

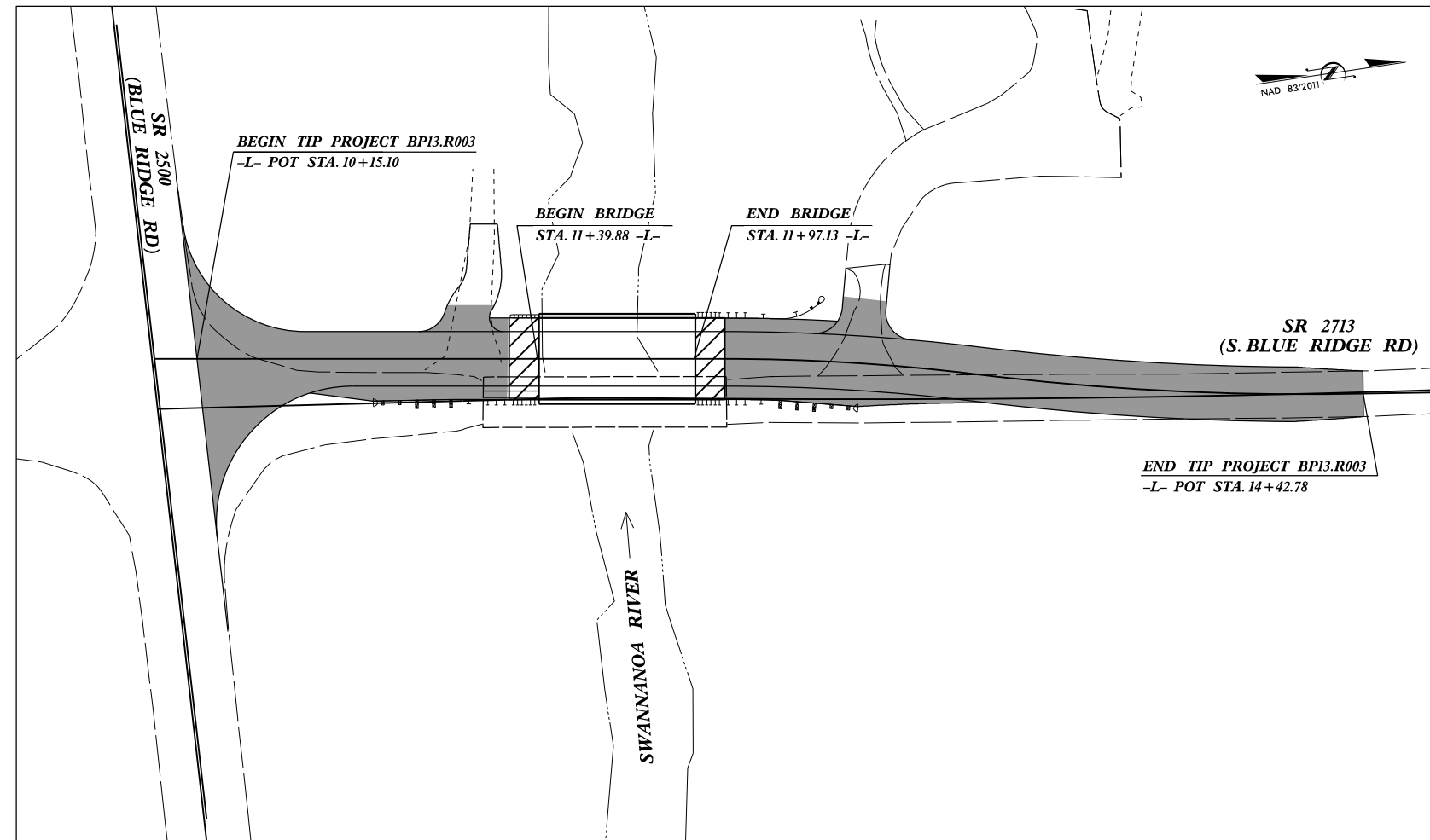
BUNCOMBE COUNTY STRUCTURES

LOCATION: REPLACEMENT OF BRIDGE NO. 100785 OVER SWANNANOA RIVER ON SR 2713 (S. BLUE RIDGE RD)

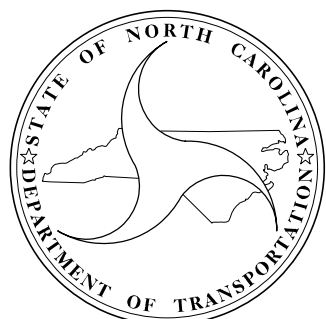
TYPE OF WORK: GRADING, DRAINAGE, PAVING & STRUCTURE

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|--------------------|-----------------------------|-------------|--------------|
| N.C. | DF18313.2011297.PR | | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| DF18313.2011297.PR | | P.E. | |
| DF18313.2011297.PR | | RW | |

DIVISION 13



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED



DESIGN DATA

ADT 2023 = 460
ADT 2043 = 920

V = 40 MPH

FUNC CLASS = LOCAL SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT BP13.R003 = 0.070 MI
LENGTH STRUCTURES PROJECT BP13.R003 = 0.011 MI
TOTAL LENGTH PROJECT BP13.R003 = 0.081 MI

NCDOT CONTACT: MARK E. HILL, P.E.
DIVISION 13 CONTACT



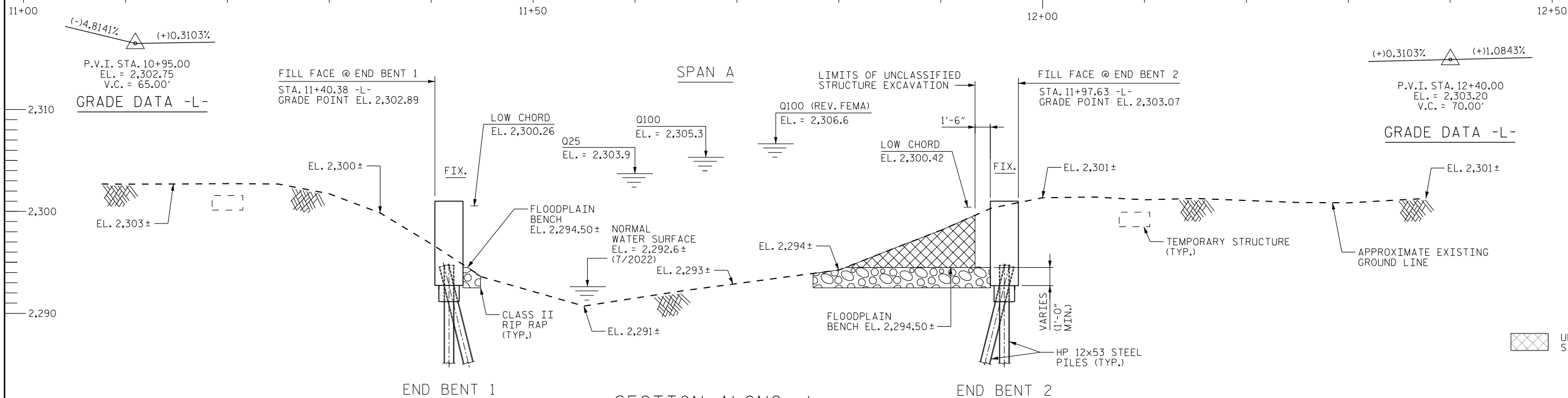
GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

2024 STANDARD SPECIFICATIONS

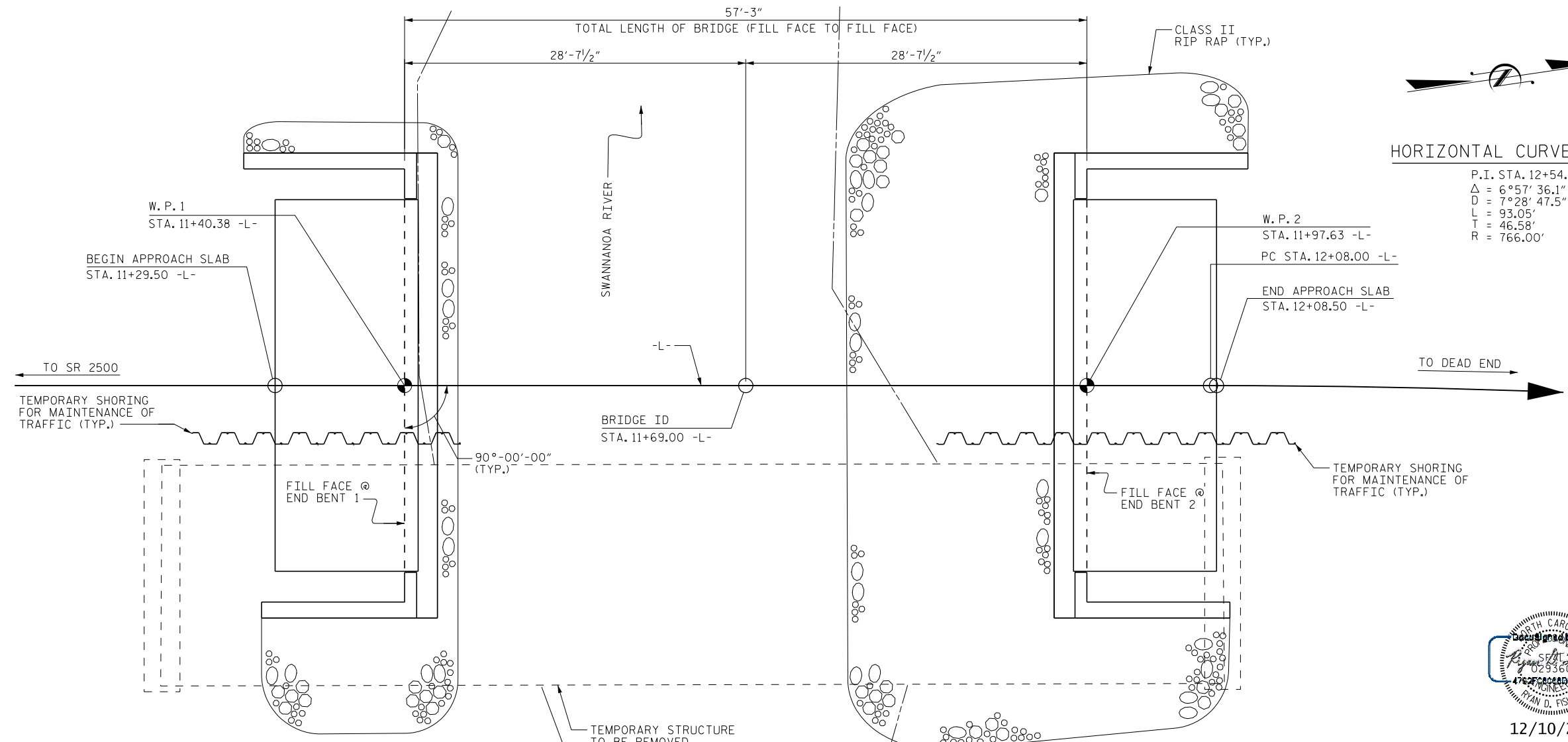
LETTING DATE: JULY 1, 2026

ERIC B. NELSON, P.E.
PROJECT ENGINEER

RYAN D. FISHER, P.E.
PROJECT DESIGN ENGINEER



SECTION ALONG -L-
(SECTION TAKEN AT RIGHT ANGLES TO END BENTS)



HORIZONTAL CURVE DATA -L-

P.I. STA. 12+54.58
 $\Delta = 6^\circ 57' 36.1''$ (RT)
 $D = 7^\circ 28' 47.5''$
 $L = 93.05'$
 $T = 46.58'$
 $R = 766.00'$

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. DF18313.2011297.PR
 BUNCOMBE COUNTY
 STATION: 11+69.00 -L-
 SHEET 1 OF 2 REPLACES BRIDGE NO. 100785

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON
 SR 2713 (S. BLUE RIDGE RD.)
 OVER SWANNANOVA RIVER

DRAWN BY : J. MYA DATE : 01/2025
 CHECKED BY : R. FISHER DATE : 07/2025
 DESIGN ENGINEER OF RECORD : R. FISHER DATE : 11/2025

PLAN
 (PILES NOT SHOWN FOR CLARITY)



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-1 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 21 |

pw:\gfnnet-pw.bentley.com\gfnnet-pw-01\Documents\Projects\69172\5-Working\Task 014 - Buncombe 785\Structures\CAD\3.0 100% Plans\401_003_BP13R003_SMU_CD_002_100785
 12/9/2025 11:42:27 AM Raleigh PDF Creator (Full)ptcfcg 785_12-31-24.tbl

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") | Number of Piles per Line | Factored Resistance per Pile KIPS | Pile Cut-Off (Top of Pile) Elevation FT | Estimated Pile Length 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 KIPS | Pile Redrives Quantity EACH | Predrilling Length per Pile LIN FT | Predrilling Elevation (Elev. Not To Predrill Below) FT | Maximum Predrilling Diameter INCHES | Pile Excavation (Bottom of Hole) Elev. FT | Pile Exc. Not In Soil per Pile LIN FT | Pile Exc In Soil per Pile LIN FT |
| End Bent 1, Piles 1-7 | 7 | 155 | | 35 | | | 260 | | | | | | | |
| End Bent 2, Piles 1-7 | 7 | 155 | | 45 | | | 260 | | | | | | | |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

* 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 = $\frac{\text{Factored Resistance} + \text{Factored Drag Load} + \text{Factored Dead Load}}{\text{Dynamic Resistance Factor}}$ + Nominal Drag Load Resistance + Nominal Resistance from Scourable Material

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 KIPS | Factored Drag Load per Pile KIPS | Factored Dead Load * per Pile KIPS | Dynamic Resistance Factor | Nominal Drag Resistance per Pile KIPS | Nominal Scour Resistance per Pile KIPS |
|--|---|--|--|---------------------------------|---|--|
| End Bent 1, Piles 1-7 | 155 | | | 0.60 | | |
| End Bent 2, Piles 1-7 | 155 | | | 0.60 | | |
| | | | | | | |
| | | | | | | |

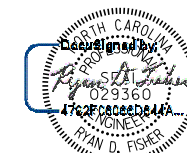
* Factored Dead Load is factored weight of pile above the ground line.

NOTES:

- The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Michael H. Stephens, #028893) on 09-16-2024.
- Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, i.e., the number piles with a Required Driving Resistance.
- The Engineer may adjust the quantity for DPT Testing and Pipe Pile Plates when necessary.

PROJECT NO. DF18313.2011297.PR
BUNCOMBE COUNTY
 STATION: 11+69.00 -L-

SHEET 2 OF 3



12/10/2025

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING

FOR BRIDGE ON
SR 2713 (S. BLUE RIDGE RD.)
OVER SWANNANOA RIVER

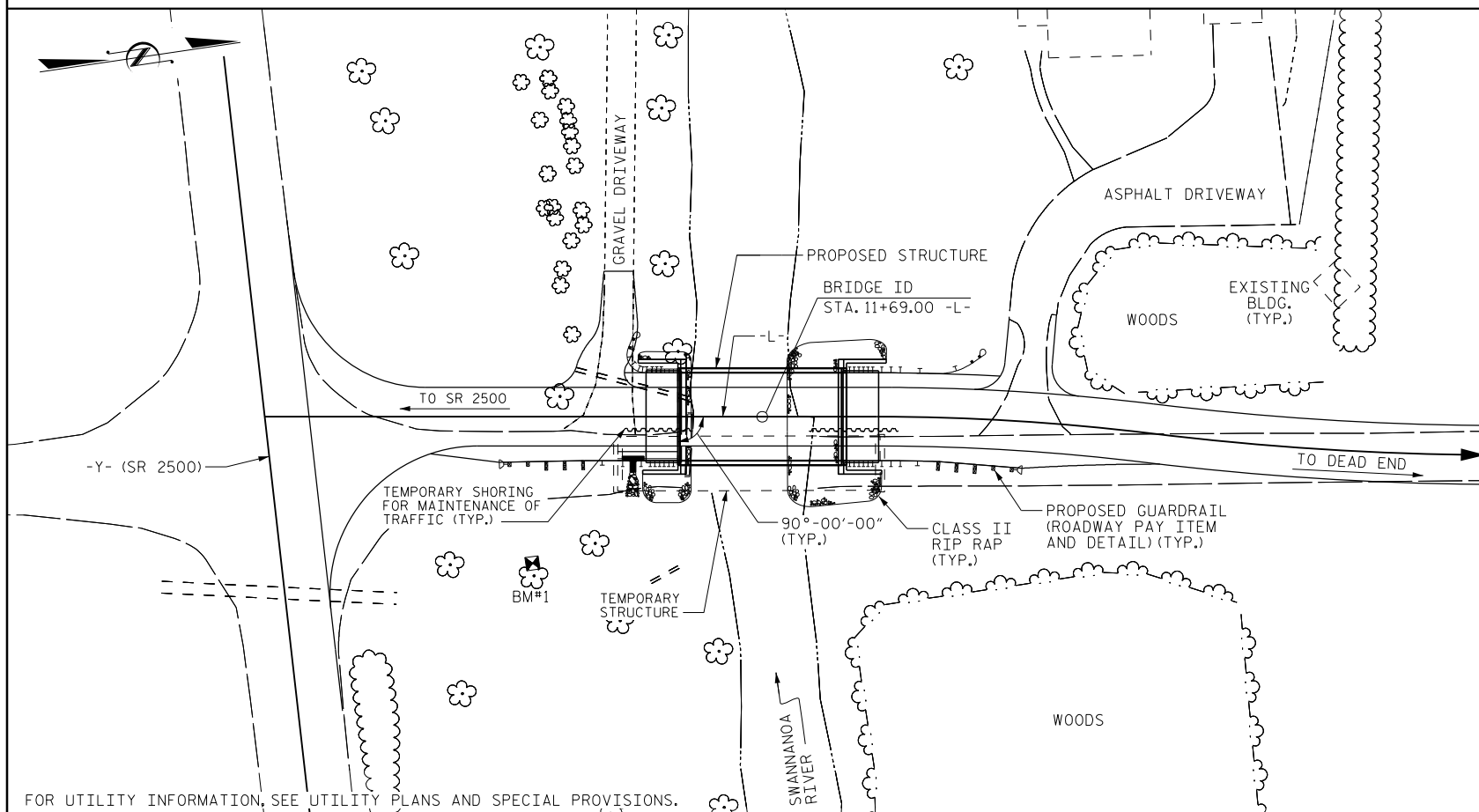
DRAWN BY : J. MYA DATE : 01/2025
 CHECKED BY : R. FISHER DATE : 07/2025
 DESIGN ENGINEER OF RECORD: R. FISHER DATE : 11/2025



DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

| REVISIONS | | | | | | SHEET NO. |
|-----------|-----|-------|-----|-----|-------|--------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-2 |
| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 21 |

BENCHMARK: BM#1 NAIL IN BASE OF 4" WALNUT STA. 10+90.97 -L-, OFFSET 49.80' RT.; EL. 2303.02



FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

HYDRAULIC DATA:

DESIGN DISCHARGE = 2,800 C.F.S.
 FREQUENCY OF DESIGN FLOOD = 25 YEARS
 DESIGN HIGH WATER ELEVATION = 2,305.9
 DRAINAGE AREA = 14.8 SQ. MI.
 BASE DISCHARGE (Q100) = 3,900 C.F.S.
 BASE HIGH WATER ELEVATION = 2,305.3

OVERTOPPING FLOOD DATA:

OVERTOPPING DISCHARGE = 2,800 C.F.S.
 FREQUENCY OF OVERTOPPING FLOOD = 25 YEARS
 OVERTOPPING FLOOD ELEVATION = 2,303.5 ± *

* OVERTOPPING OCCURS AT ROADWAY LOW-POINT AT STA. 11+22.85 -L-

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATIVE LOADING.
 THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE REQUIREMENTS OF 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 TEMPORARY STRUCTURE CONSISTING OF A SINGLE SPAN @ 90'-0", STEEL RAIL CARS ON CORED SLAB END BENTS WITH A CLEAR ROADWAY WIDTH OF 16'-9" AND LOCATED AT THE PROPOSED SITE SHALL BE REMOVED. THE TEMPORARY BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

REMOVAL OF THE TEMPORARY 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.

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

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 FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.

INASMUCH AS THE PAINT SYSTEM ON THE RAIL CARS CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "MAINTENANCE AND REMOVAL OF TEMPORARY STRUCTURE AT STATION 11+69.00 -L-."

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

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA SHALL BE EXCAVATED FOR A DISTANCE OF 22 FT (LEFT) AND 22 FT (RIGHT) AT END BENT 2 OF THE 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.

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

FOR LIMITS OF TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE TRAFFIC CONTROL PLANS. FOR PAY ITEM FOR TEMPORARY SHORING FOR MAINTENANCE OF TRAFFIC, SEE ROADWAY PLANS.

FOR REMOVAL OF TEMPORARY STRUCTURE AT STATION 11+69.00 -L-, SEE SPECIAL PROVISIONS.

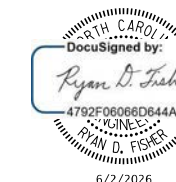
FOR CORED SLAB AND BOX BEAM POST TENSIONING, SEE SPECIAL PROVISIONS.

TOTAL BILL OF MATERIAL

| | REMOVAL OF TEMPORARY STRUCTURE @ STA. 11+69.00 -L- | ASBESTOS ASSESSMENT | UNCLASSIFIED STRUCTURE EXCAVATION @ STA. 11+69.00 -L- | CLASS A CONCRETE | BRIDGE APPROACH SLABS | REINFORCING STEEL | PILE DRIVING EQUIPMENT SET UP FOR HP 12 X 53 STEEL PILES | HP 12 X 53 STEEL PILES | | 32" ALASKA RAIL | PLAIN RIP RAP CLASS II (2'-0" THICK) | GEOTEXTILE FOR DRAINAGE | ELASTOMERIC BEARINGS | 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLABS | | |
|----------------|--|---------------------|---|------------------|-----------------------|-------------------|--|------------------------|----------|-----------------|--------------------------------------|-------------------------|----------------------|--|------|----------|
| | | | | | | | | NO. | LIN. FT. | | | | | LIN. FT. | TONS | SQ. YDS. |
| | LUMP SUM | LUMP SUM | LUMP SUM | CU. YDS. | LUMP SUM | LBS. | EACH | | | 110.00 | | | LUMP SUM | | 11 | 605 |
| SUPERSTRUCTURE | | | | | LUMP SUM | | | | | | | | LUMP SUM | | | |
| END BENT 1 | | | | 47.3 | | 6,335 | 7 | 7 | 245 | | 57 | 39 | | | | |
| END BENT 2 | | | LUMP SUM | 48.2 | | 6,362 | 7 | 7 | 315 | | 143 | 136 | | | | |
| TOTAL | LUMP SUM | LUMP SUM | LUMP SUM | 95.5 | LUMP SUM | 12,697 | 14 | 14 | 560 | 110.00 | 200 | 175 | LUMP SUM | | 11 | 605 |

PROJECT NO. DF18313.2011297.PR
 BUNCOMBE COUNTY
 STATION: 11+69.00 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 GENERAL DRAWING
 FOR BRIDGE ON
 SR 2713 (S. BLUE RIDGE RD.)
 OVER SWANNANOA RIVER

DRAWN BY: J. MYA DATE: 01/2025
 CHECKED BY: R. FISHER DATE: 07/2025
 DESIGN ENGINEER OF RECORD: R. FISHER DATE: 11/2025



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

| REVISIONS | | | | | | SHEET NO. S-3 |
|-----------|-----|-------|-----|-----|-------|--------------------|
| NO. | BY: | DATE: | NO. | BY: | DATE: | |
| 1 | | | 3 | | | TOTAL SHEETS 21 |
| 2 | | | 4 | | | |

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 12/9/2025 11:42:46 AM Raleigh PDF Creator (Full)ptcfcg 785_12-31-24.tbl

| LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|----------------------|-----------------------------------|-----------------------------------|---------------|-----------------------------|------------------------------|---------------|------|--------------------|---|------------------------------|---------------|------|--------------------|---|-----------------------------|------------------------------|---------------|------|--------------------|---|----|----------------|
| LOAD TYPE | 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 | | | | | | | | |
| | | | | | | LIVE-LOAD FACTORS (Y LL) | 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) | LIVE-LOAD FACTORS (Y LL) | DISTRIBUTION FACTORS (DF) | RATING FACTOR | SPAN | GIRDER LOCATION | DISTANCE FROM LEFT END OF SPAN (ft) | | |
| DESIGN LOAD | HL-93 (INVENTORY) | N/A | ① | 1.055 | - | 1.75 | 0.275 | 1.23 | 55' | EL | 27 | 0.523 | 1.23 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.05 | 55' | EL | 27 | | |
| | HL-93 (OPERATING) | N/A | | 1.591 | -- | 1.35 | 0.275 | 1.59 | 55' | EL | 27 | 0.523 | 1.59 | 55' | EL | 5.4 | N/A | -- | -- | -- | -- | -- | | |
| | HS-20 (INVENTORY) | 36.000 | ② | 1.322 | 47.585 | 1.75 | 0.275 | 1.54 | 55' | EL | 27 | 0.523 | 1.47 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.32 | 55' | EL | 27 | | |
| | HS-20 (OPERATING) | 36.000 | | 1.900 | 68.396 | 1.35 | 0.275 | 1.99 | 55' | EL | 27 | 0.523 | 1.90 | 55' | EL | 5.4 | N/A | -- | -- | -- | -- | -- | | |
| LEGAL LOAD | SINGLE VEHICLE (SV) | SNSH | 13.500 | | 2.776 | 37.476 | 1.4 | 0.275 | 4.04 | 55' | EL | 27 | 0.523 | 4.17 | 55' | EL | 5.4 | 0.80 | 0.275 | 2.78 | 55' | EL | 27 | |
| | | SNGARBS2 | 20.000 | | 2.155 | 43.095 | 1.4 | 0.275 | 3.14 | 55' | EL | 27 | 0.523 | 3.02 | 55' | EL | 5.4 | 0.80 | 0.275 | 2.15 | 55' | EL | 27 | |
| | | SNAGRIS2 | 22.000 | | 2.079 | 45.734 | 1.4 | 0.275 | 3.03 | 55' | EL | 27 | 0.523 | 2.83 | 55' | EL | 5.4 | 0.80 | 0.275 | 2.08 | 55' | EL | 27 | |
| | | SNCOTTS3 | 27.250 | | 1.384 | 37.708 | 1.4 | 0.275 | 2.01 | 55' | EL | 27 | 0.523 | 2.09 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.38 | 55' | EL | 27 | |
| | | SNAGGRS4 | 34.925 | | 1.189 | 41.527 | 1.4 | 0.275 | 1.73 | 55' | EL | 27 | 0.523 | 1.77 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.19 | 55' | EL | 27 | |
| | | SNS5A | 35.550 | | 1.160 | 41.255 | 1.4 | 0.275 | 1.69 | 55' | EL | 27 | 0.523 | 1.82 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.16 | 55' | EL | 27 | |
| | | SNS6A | 39.950 | | 1.079 | 43.102 | 1.4 | 0.275 | 1.57 | 55' | EL | 27 | 0.523 | 1.68 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.08 | 55' | EL | 27 | |
| | SNS7B | 42.000 | | 1.028 | 43.175 | 1.4 | 0.275 | 1.50 | 55' | EL | 27 | 0.523 | 1.67 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.03 | 55' | EL | 27 | | |
| | TRUCK TRACTOR SEMI-TRAILER (TTST) | TNAGRIT3 | 33.000 | | 1.320 | 43.556 | 1.4 | 0.275 | 1.92 | 55' | EL | 27 | 0.523 | 1.98 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.32 | 55' | EL | 27 | |
| | | TNT4A | 33.075 | | 1.330 | 43.979 | 1.4 | 0.275 | 1.94 | 55' | EL | 27 | 0.523 | 1.91 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.33 | 55' | EL | 27 | |
| | | TNT6A | 41.600 | | 1.101 | 45.811 | 1.4 | 0.275 | 1.60 | 55' | EL | 27 | 0.523 | 1.83 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.10 | 55' | EL | 27 | |
| | | TNT7A | 42.000 | | 1.114 | 46.804 | 1.4 | 0.275 | 1.62 | 55' | EL | 27 | 0.523 | 1.71 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.11 | 55' | EL | 27 | |
| | | TNT7B | 42.000 | | 1.163 | 48.848 | 1.4 | 0.275 | 1.69 | 55' | EL | 27 | 0.523 | 1.62 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.16 | 55' | EL | 27 | |
| | | TNAGRIT4 | 43.000 | | 1.101 | 47.330 | 1.4 | 0.275 | 1.60 | 55' | EL | 27 | 0.523 | 1.56 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.10 | 55' | EL | 27 | |
| TNAGT5A | | 45.000 | | 1.031 | 46.405 | 1.4 | 0.275 | 1.50 | 55' | EL | 27 | 0.523 | 1.58 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.03 | 55' | EL | 27 | | |
| TNAGT5B | 45.000 | ③ | 1.013 | 45.582 | 1.4 | 0.275 | 1.47 | 55' | EL | 27 | 0.523 | 1.48 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.01 | 55' | EL | 27 | | | |
| EMERGENCY VEHICLE (EV) | EV2 | 28.750 | | 1.617 | 46.483 | 1.3 | 0.275 | 2.37 | 55' | EL | 27 | 0.523 | 2.27 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.62 | 55' | EL | 27 | | |
| | EV3 | 43.000 | ④ | 1.049 | 45.107 | 1.3 | 0.275 | 1.54 | 55' | EL | 27 | 0.523 | 1.53 | 55' | EL | 5.4 | 0.80 | 0.275 | 1.05 | 55' | EL | 27 | | |

LOAD FACTORS:

| DESIGN LOAD RATING FACTORS | LIMIT STATE | γDC | γDW |
|-------------------------------------|-------------|------|------|
| | STRENGTH I | 1.25 | 1.50 |
| | SERVICE III | 1.00 | 1.00 |

NOTES:

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

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

COMMENTS:

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

CONTROLLING LOAD RATING

① DESIGN LOAD RATING (HL-93)

② DESIGN LOAD RATING (HS-20)

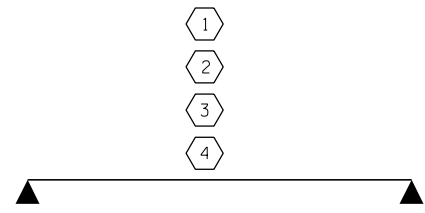
③ LEGAL LOAD RATING **

④ EMERGENCY VEHICLE LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

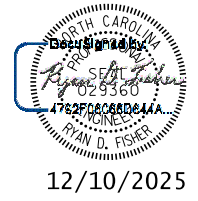
GIRDER LOCATION

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



LRFR SUMMARY
FOR SPAN A

PROJECT NO. DF18313.2011297.PR
BUNCOMBE COUNTY
 STATION: 11+69.00 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 LRFR SUMMARY FOR
 55' CORED SLAB UNIT
 90° SKEW
 (NON-INTERSTATE TRAFFIC)

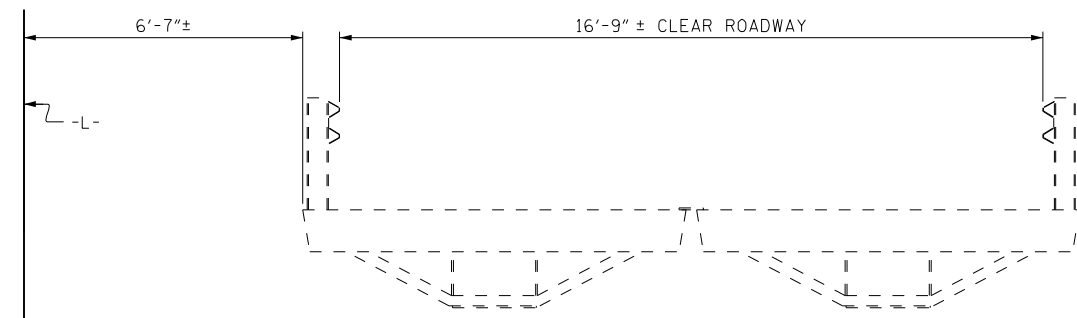
| | |
|--------------------------------------|------------------------|
| DRAWN BY : J. MYA | DATE : 01/2025 |
| CHECKED BY : R. FISHER | DATE : 06/2025 |
| DESIGN ENGINEER OF RECORD: R. FISHER | DATE : 11/2025 |
| DRAWN BY : MAA 1/08 | REV. 11/12/08RR MAA/GM |
| CHECKED BY : GM/DI 2/08 | REV. 10/1/11 MAA/GM |
| | REV. 04/23 BNB/AAI |



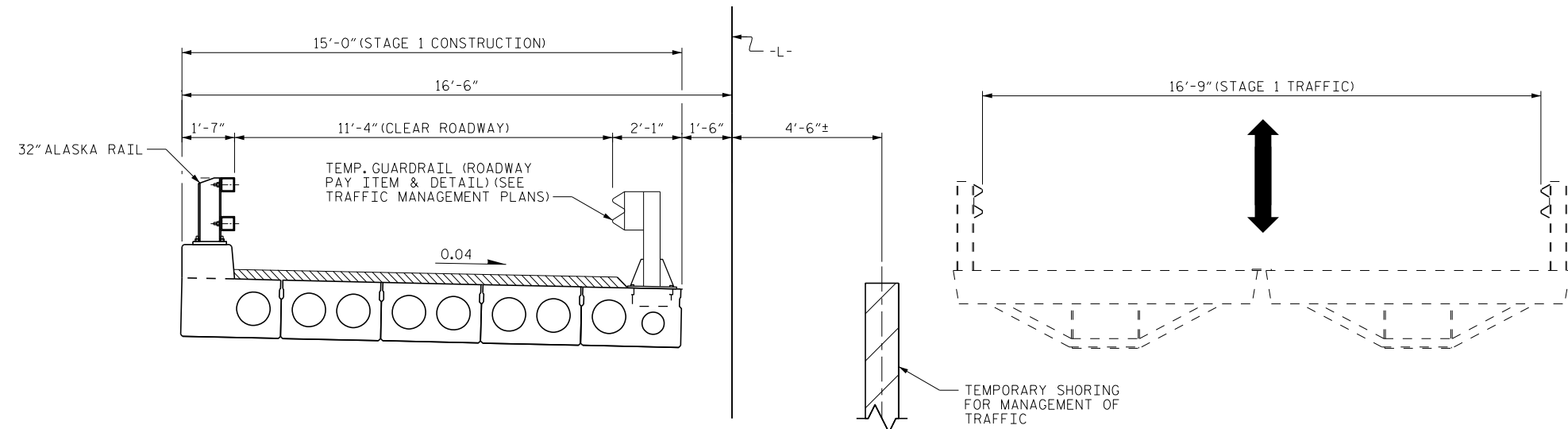
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| 1 | | | 3 | | | TOTAL SHEETS |
| 2 | | | 4 | | | 21 |

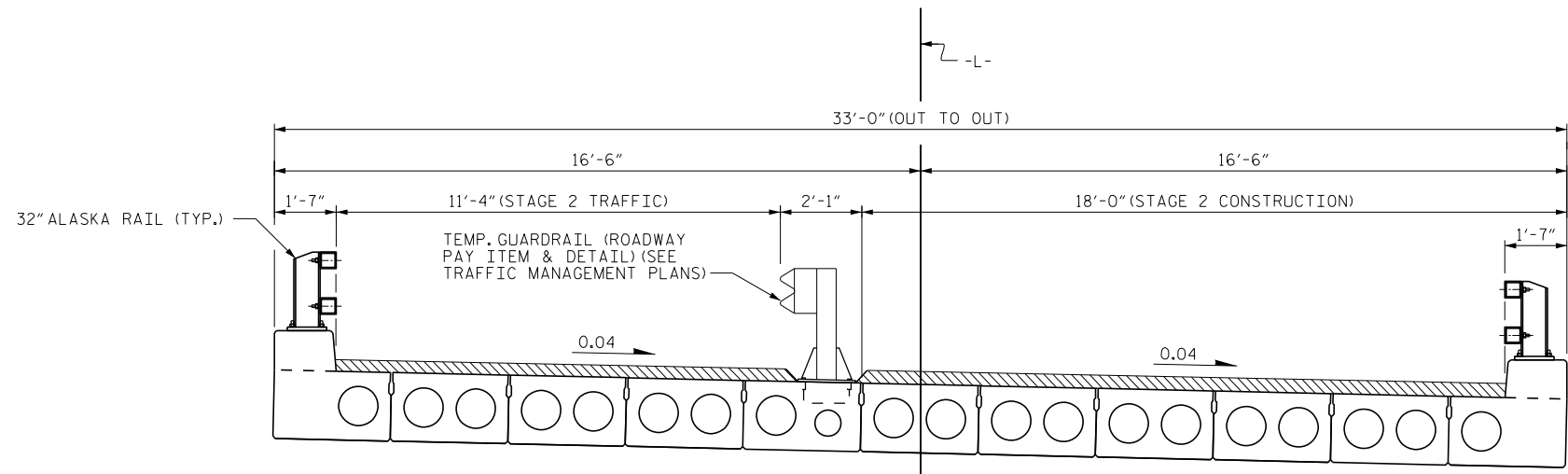
NOTE:
 FOR TRAFFIC PHASING, SEE TRAFFIC CONTROL PLANS.
 FOR TEMPORARY GUARDRAIL DETAILS AND PAY ITEM, SEE ROADWAY PLANS.



TEMPORARY BRIDGE



STAGE 1 CONSTRUCTION



STAGE 2 CONSTRUCTION

PROJECT NO. DF18313.2011297.PR
BUNCOMBE COUNTY
 STATION: 11+69.00 -L-



12/10/2025

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

CONSTRUCTION SEQUENCE

DRAWN BY : J. MYA DATE : 01/2025
 CHECKED BY : R. FISHER DATE : 07/2025
 DESIGN ENGINEER OF RECORD: R. FISHER DATE : 11/2025

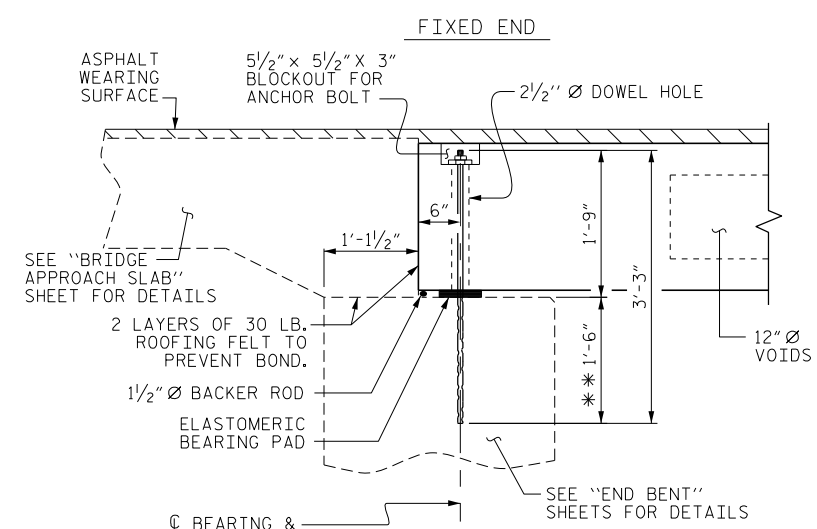
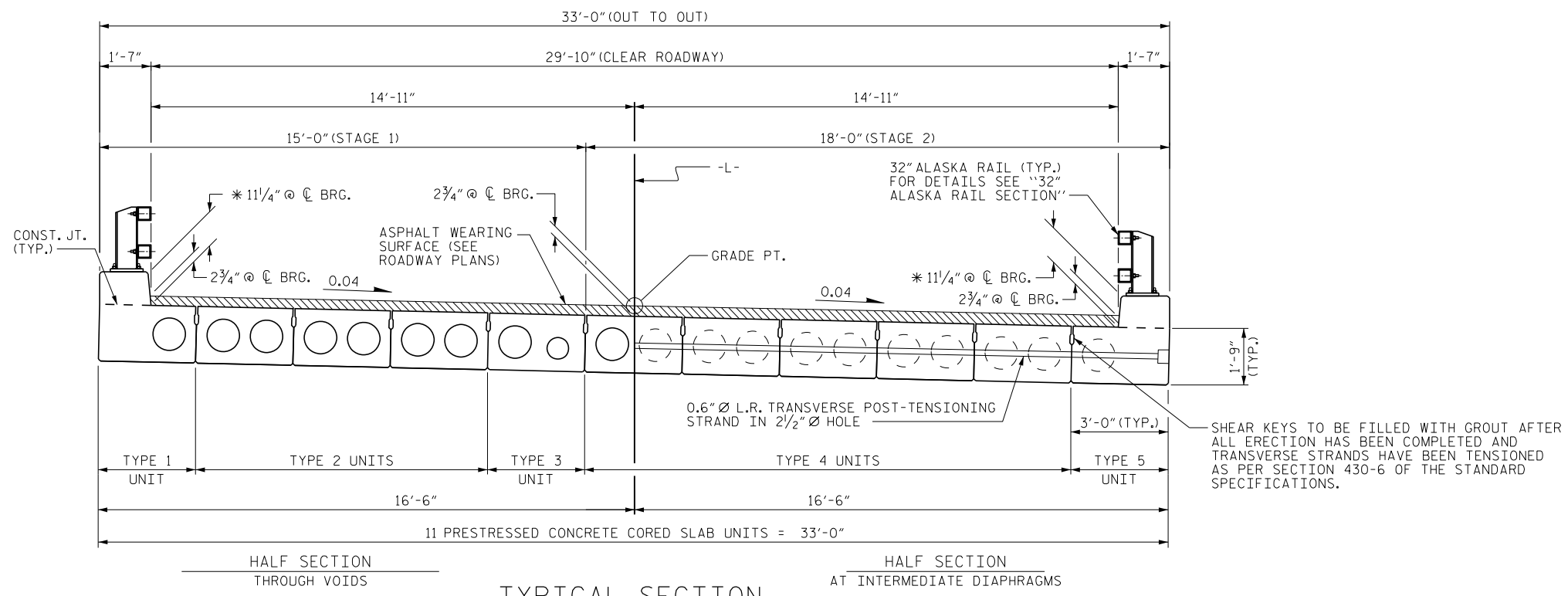


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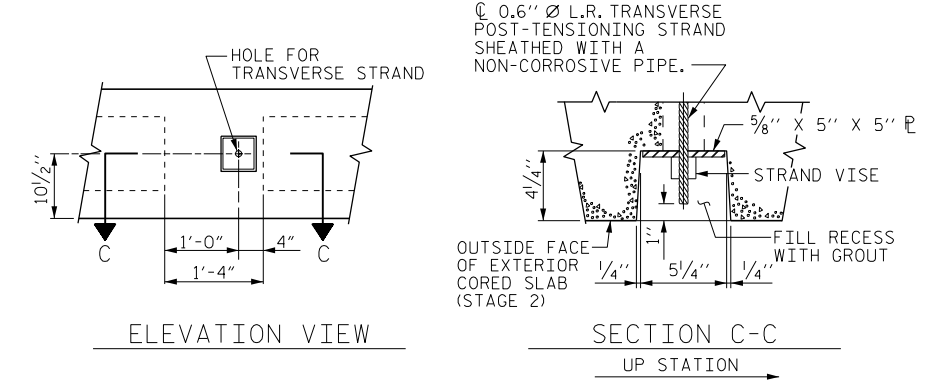
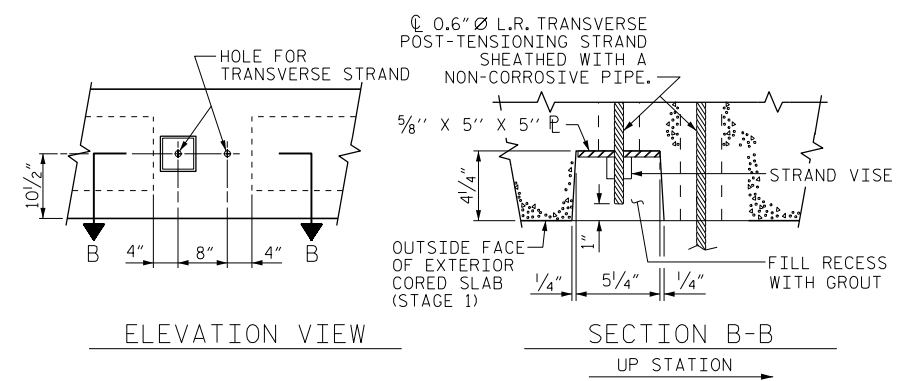
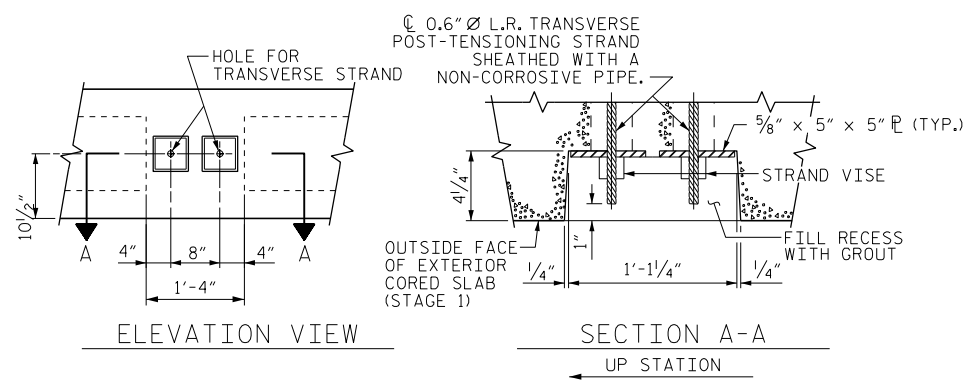
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HALF SECTION THROUGH VOIDS
 TYPICAL SECTION
 HALF SECTION AT INTERMEDIATE DIAPHRAGMS

SECTION AT END BENT
 (TYP. FOR ALL CORED SLABS)
 (POST TENSIONING NOT SHOWN FOR CLARITY)
 ** SWEDGED

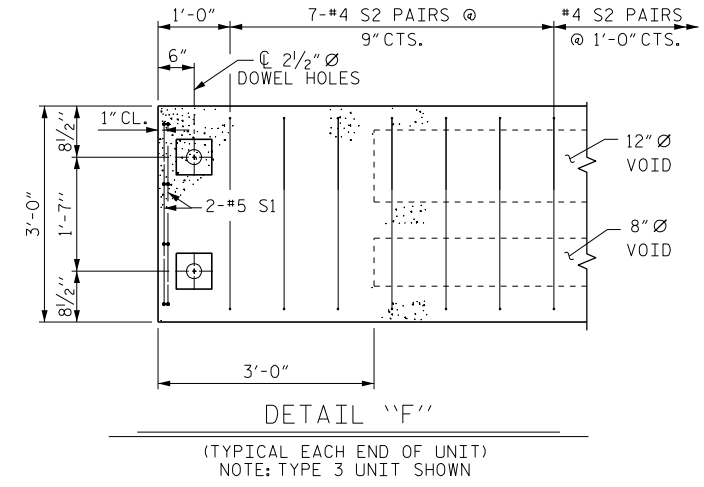
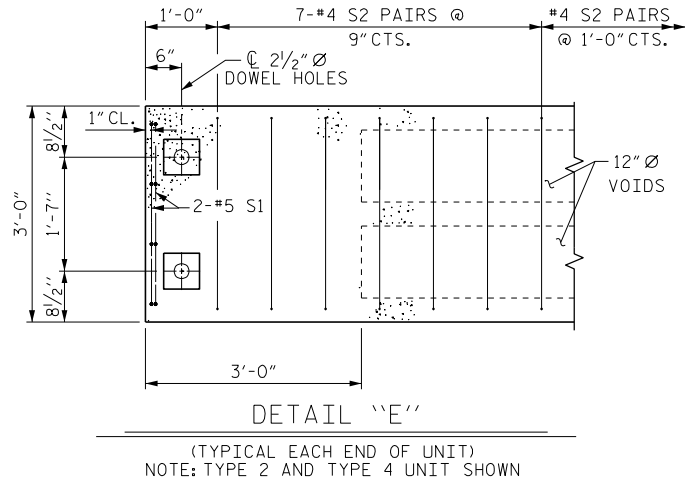
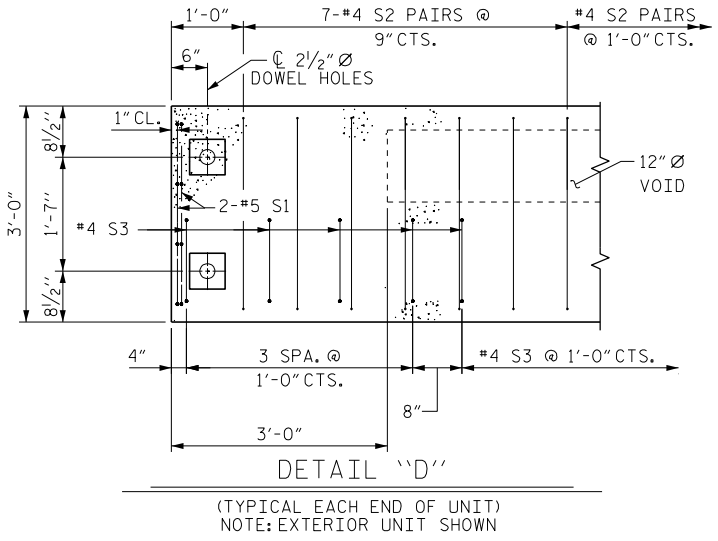
* - THE MAXIMUM CURB HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS SEE THE "32" ALASKA RAIL SECTION" DETAIL.



GROUDED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS
 (TYPE 1)

GROUDED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS
 (TYPE 3)

GROUDED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS
 (TYPE 5)



DETAIL "D"
 (TYPICAL EACH END OF UNIT)
 NOTE: EXTERIOR UNIT SHOWN

DETAIL "E"
 (TYPICAL EACH END OF UNIT)
 NOTE: TYPE 2 AND TYPE 4 UNIT SHOWN

DETAIL "F"
 (TYPICAL EACH END OF UNIT)
 NOTE: TYPE 3 UNIT SHOWN



PROJECT NO. DF18313.2011297.PR
 BUNCOMBE COUNTY
 STATION: 11+69.00 -L-
 SHEET 1 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 90° SKEW

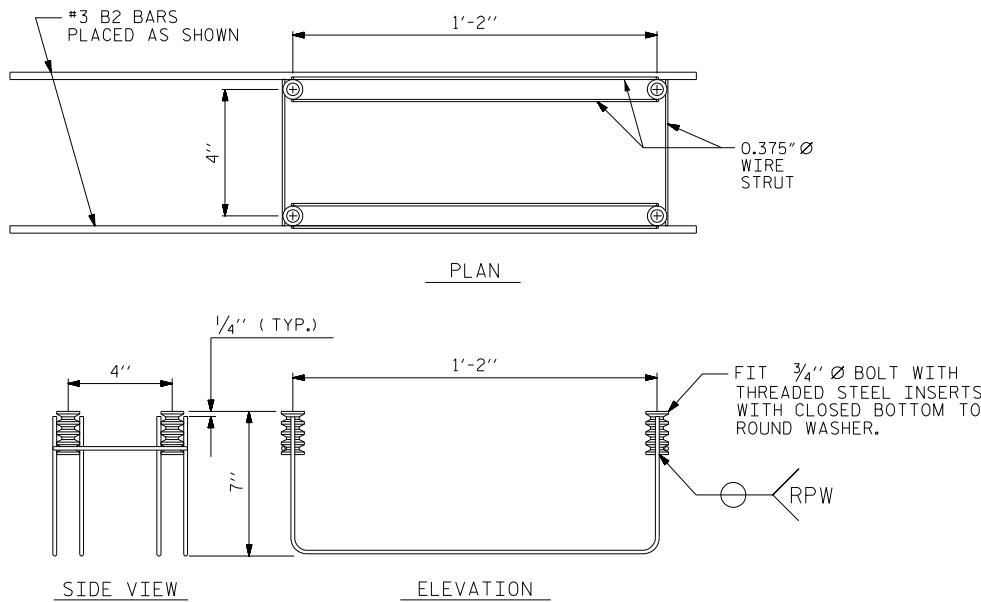
DRAWN BY: J. MYA DATE: 01/2025
 CHECKED BY: R. FISHER DATE: 07/2025
 DESIGN ENGINEER OF RECORD: R. FISHER DATE: 11/2025



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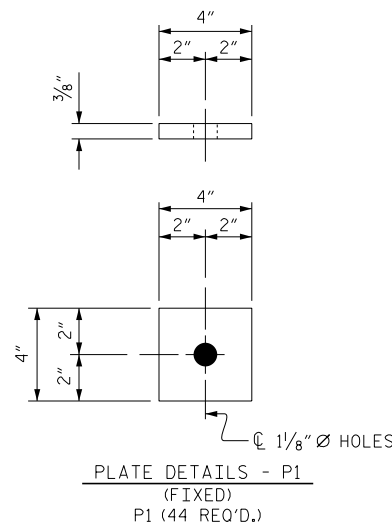
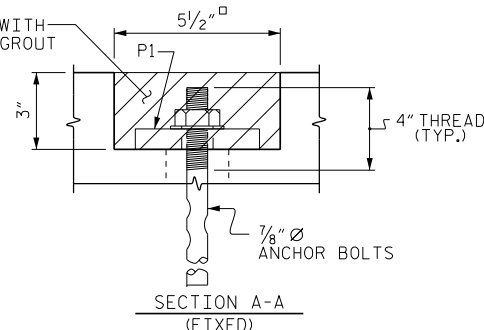
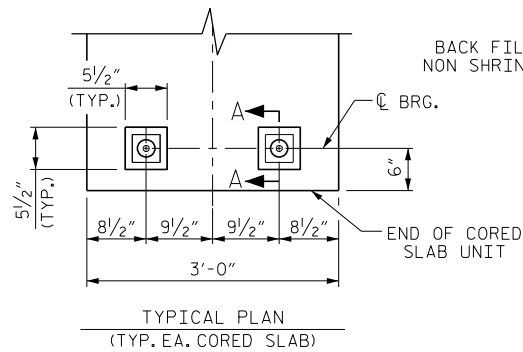
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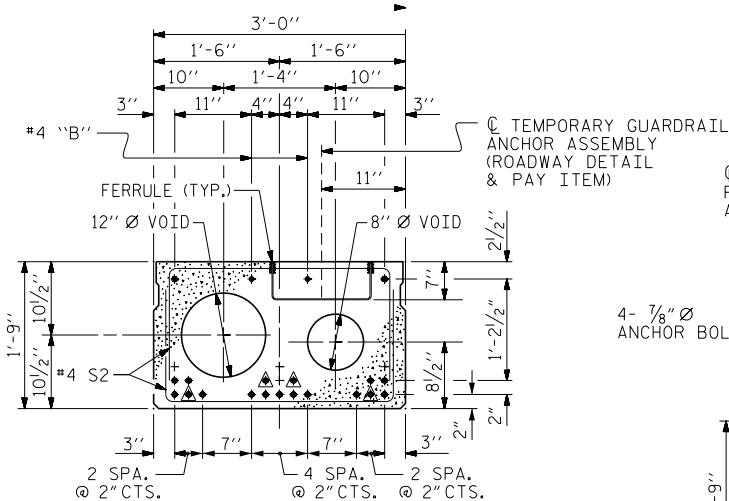


TEMPORARY GUARDRAIL ANCHOR ASSEMBLY

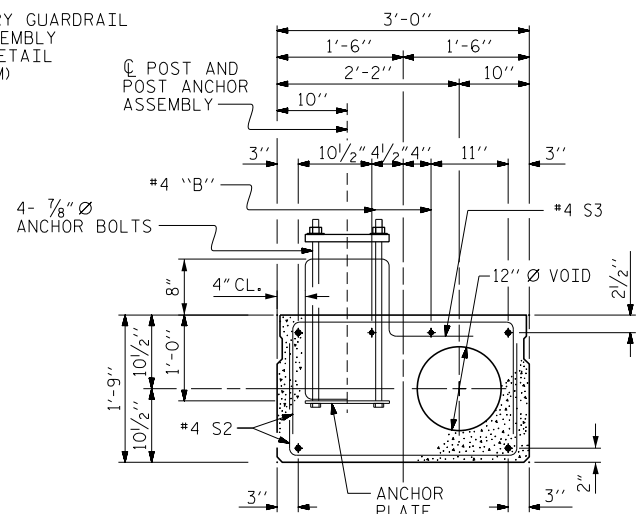
(9 ASSEMBLIES REQUIRED IN THE CORED SLABS)



BLOCKOUT DETAIL FOR ANCHOR BOLTS
(TYP. FOR EACH CORED SLAB)

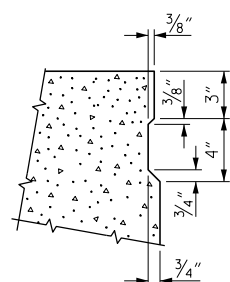


0.6" Ø LOW RELAXATION STRAND LAYOUT



EXTERIOR SLAB SECTION

TYPE 1 & 5
(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION - TYPE 2 & 4)



SHEAR KEY DETAIL

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

NOTES

STRUCTURAL CONCRETE ANCHOR ASSEMBLY

THE TEMPORARY GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :

- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2 1/2".
- 4 - 1" Ø X 2 1/4" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 1" Ø X 2 1/4" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 7/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

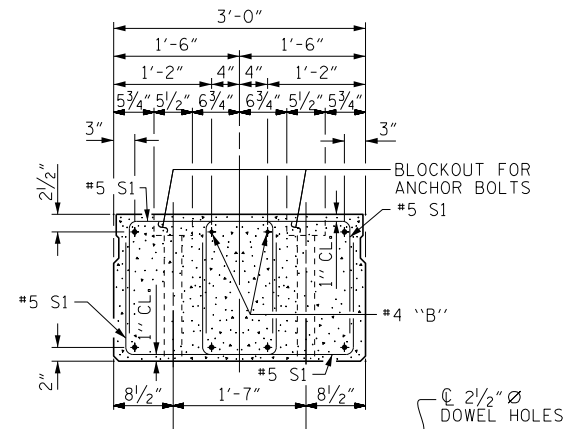
TEMPORARY GUARDRAIL ANCHOR ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.

THE COST OF THE TEMPORARY GUARDRAIL ANCHOR ASSEMBLY COMPLETE IN PLACE, SHALL BE INCLUDED, AS APPLICABLE, IN THE UNIT CONTRACT PRICE BID FOR 3'-0" X 1'-9" PRESTRESSED CONCRETE CORED SLAB OR LUMP SUM PRICE BID FOR APPROACH SLABS.

FERRULES TO BE PLUGGED DURING CASTING OF THE CORED SLAB UNITS OR POURING OF APPROACH SLAB AS RECOMMENDED BY THE MANUFACTURER.

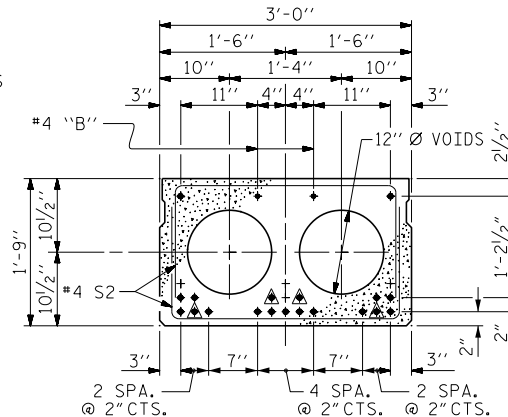
AT THE CONTRACTOR'S OPTION, FERRULES WITH OPEN OR CLOSED ENDS MAY BE USED.

PAYMENT FOR GUARDRAIL, POSTS, AND POST PLATES IS INCLUDED IN ROADWAY PAY ITEMS.

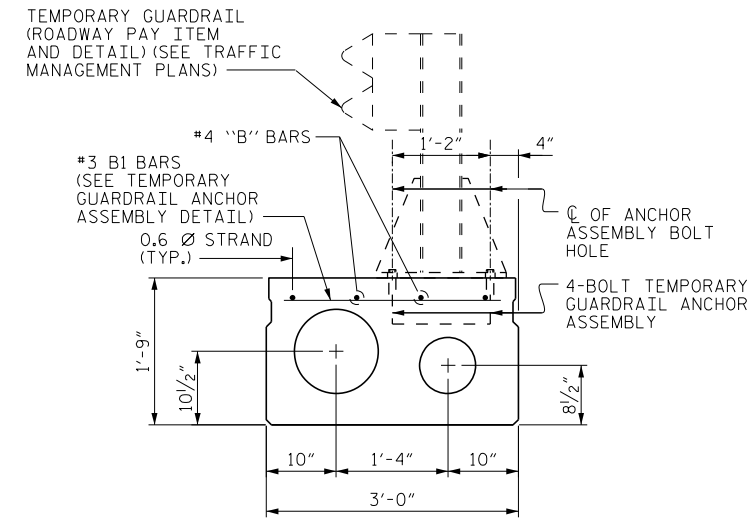


END ELEVATION

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



0.6" Ø LOW RELAXATION STRAND LAYOUT

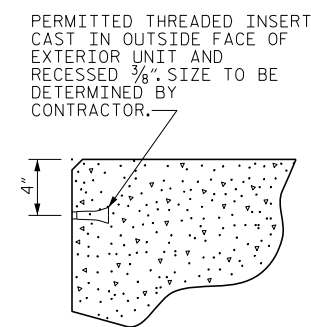


SECTION OF ANCHOR ASSEMBLY LOCATION

(TYPE 3 UNIT OF STAGE 1)

- ▲ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 6'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 2'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED. IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



THREADED INSERT DETAIL

PROJECT NO. DF18313.2011297.PR
 BUNCOMBE COUNTY
 STATION: 11+69.00 -L-

SHEET 2 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 90° SKEW



12/10/2025

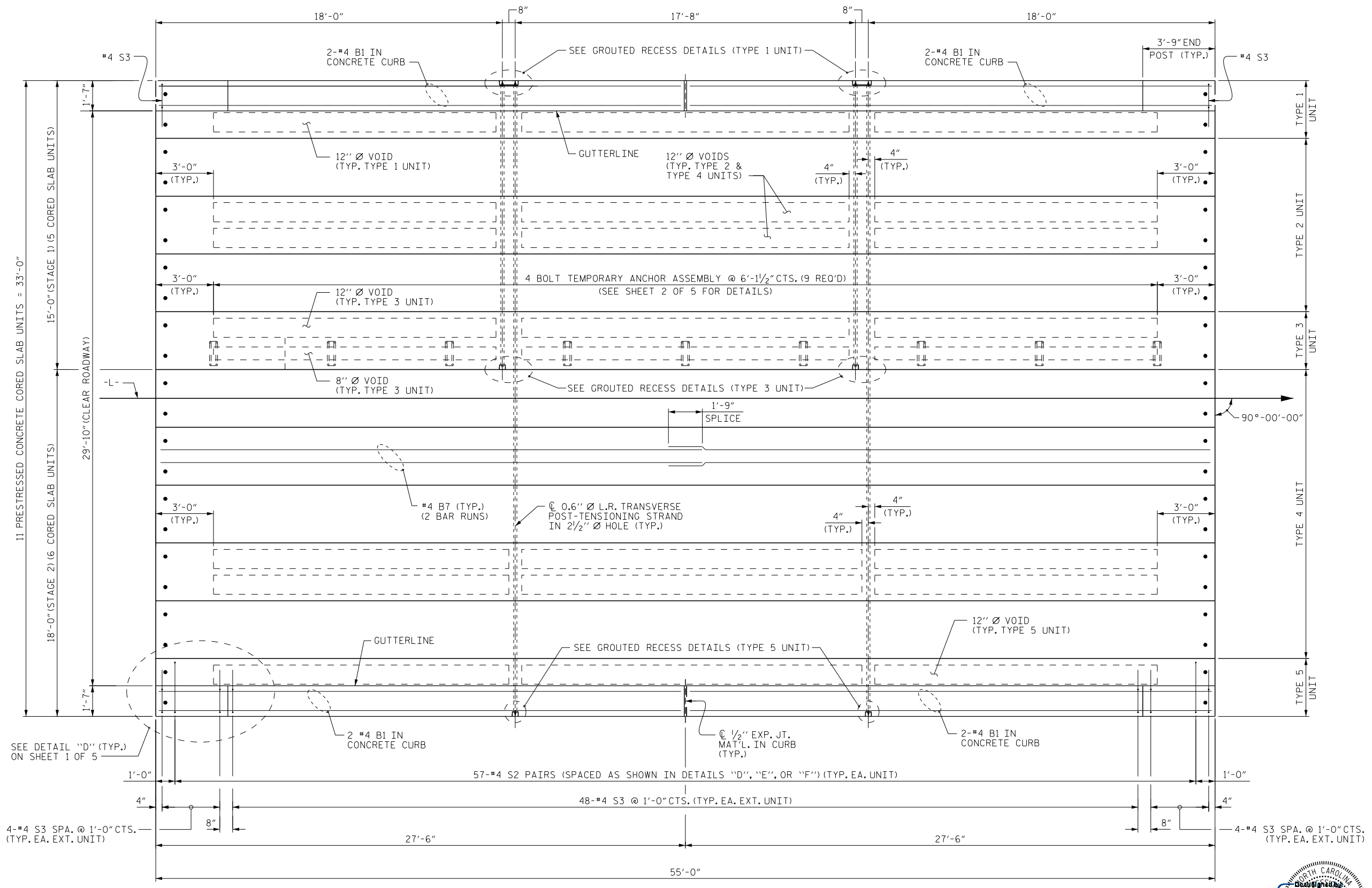
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 CHECKED BY : R. FISHER DATE : 07/2025
 DESIGN ENGINEER OF RECORD : R. FISHER DATE : 11/2025

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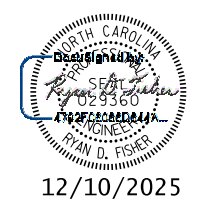


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PLAN OF SPAN A

PROJECT NO. DF18313.2011297.PR
BUNCOMBE COUNTY
 STATION: 11+69.00 -L-
 SHEET 3 OF 5



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
PLAN OF 55' UNIT
29'-10" CLEAR ROADWAY
90° SKEW
SPAN A
 12/10/2025

DRAWN BY: J. MYA DATE: 01/2025
 CHECKED BY: R. FISHER DATE: 07/2025
 DESIGN ENGINEER OF RECORD: R. FISHER DATE: 11/2025



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

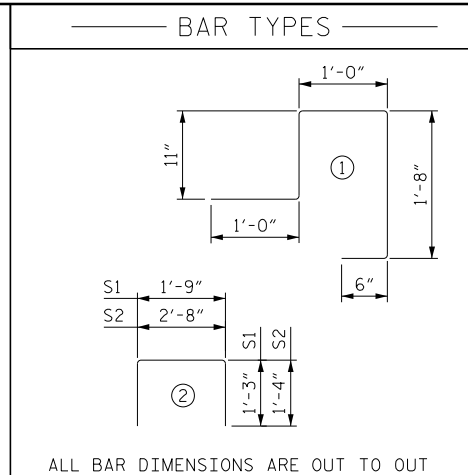
| GRADE 270 STRANDS | |
|-------------------------------------|-------------|
| AREA (SQUARE INCHES) | 0.6" Ø L.R. |
| ULTIMATE STRENGTH (LBS. PER STRAND) | 58,600 |
| APPLIED PRESTRESS (LBS. PER STRAND) | 43,950 |

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

| BILL OF MATERIAL FOR ONE 55' CORED SLAB UNIT | | | | | | | | | | | |
|--|--------|------|------|------------------|--------|--------|--------|--------|--------|--------|--------|
| BAR | NUMBER | SIZE | TYPE | TYPE 1 OR TYPE 5 | | TYPE 2 | | TYPE 3 | | TYPE 4 | |
| | | | | LENGTH | WEIGHT | LENGTH | WEIGHT | LENGTH | WEIGHT | LENGTH | WEIGHT |
| B1 | 18 | #3 | STR. | - | - | - | - | 2'-7" | 17 | - | - |
| B7 | 4 | #4 | STR. | 28'-3" | 75 | 28'-3" | 75 | 28'-3" | 75 | 28'-3" | 75 |
| S1 | 8 | #5 | 2 | 4'-3" | 35 | 4'-3" | 35 | 4'-3" | 35 | 4'-3" | 35 |
| S2 | 170 | #4 | 2 | 5'-4" | 607 | - | - | - | - | - | - |
| S2 | 114 | #4 | 2 | - | - | 5'-4" | 406 | 5'-4" | 406 | 5'-4" | 406 |
| * S3 | 56 | #4 | 1 | 5'-1" | 190 | - | - | - | - | - | - |
| REINFORCING STEEL LBS. | | | | 717 | 516 | 533 | 516 | | | | |
| * EPOXY COATED REINFORCING STEEL LBS. | | | | 190 | | | | | | | |
| 6500 P.S.I. CONCRETE CU. YDS. | | | | 9.2 | 7.9 | 8.6 | 7.8 | | | | |
| 0.6" Ø L.R. STRANDS No. | | | | 19 | 19 | 19 | 19 | | | | |

| CORED SLABS REQUIRED | | | |
|----------------------|--------|--------|--------------|
| 55' UNIT | NUMBER | LENGTH | TOTAL LENGTH |
| TYPE 1 C.S. | 1 | 55'-0" | 55'-0" |
| TYPE 2 C.S. | 3 | 55'-0" | 165'-0" |
| TYPE 3 C.S. | 1 | 55'-0" | 55'-0" |
| TYPE 4 C.S. | 5 | 55'-0" | 275'-0" |
| TYPE 5 C.S. | 1 | 55'-0" | 55'-0" |
| TOTAL | 11 | | 605'-0" |

| GUTTERLINE ASPHALT THICKNESS & RAIL HEIGHT | | |
|--|---------------------------|-------------|
| | ASPHALT OVERLAY THICKNESS | CURB HEIGHT |
| | @ MID-SPAN | @ MID-SPAN |
| 55' UNITS | 1 5/8" | 10 1/8" |



NOTES

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

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

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

AT ALL FIXED ENDS OF CORED SLAB SECTIONS WITH HOLD-DOWN ANCHOR BOLTS, NUTS FOR ANCHOR BOLTS SHALL BE FINGER-TIGHTENED AND THEN BACKED OFF 1/2 TURN. THE THREAD OF THE NUT AND BOLT SHALL THEN BE BURRED WITH A SHARP POINTED TOOL.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF CORED SLAB SECTIONS WITH HOLD-DOWN ANCHOR BOLTS SHALL BE FILLED WITH NON-SHRINK GROUT TO THE BOTTOM OF THE ANCHOR BOLT BLOCKOUT PRIOR TO INSTALLING THE ANCHOR PLATES, WASHERS, AND NUTS.

THE ANCHOR BOLT BLOCKOUTS IN CORED SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT PRIOR TO PLACEMENT OF THE WEARING SURFACE.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER, SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

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

ALL REINFORCING STEEL IN THE CONCRETE CURBS SHALL BE EPOXY COATED. PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

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

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

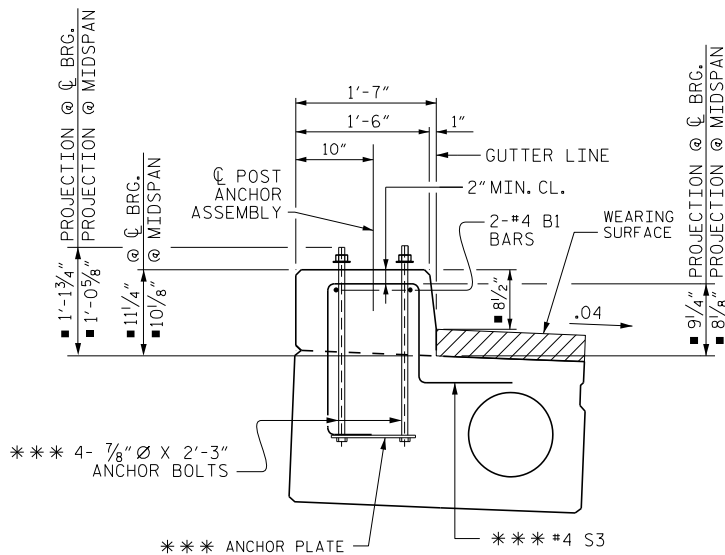
THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

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

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

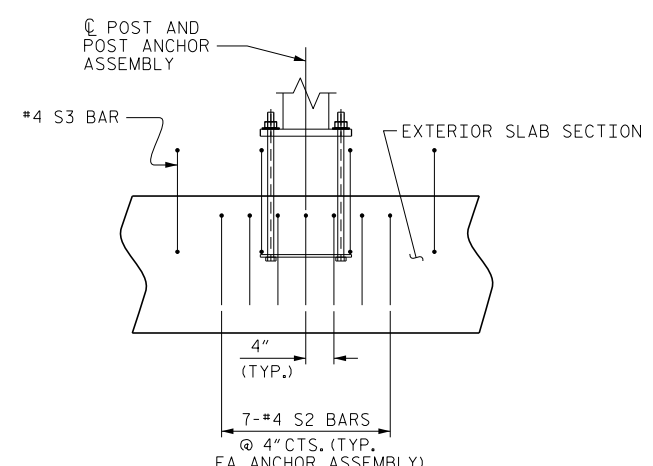
THE COST OF THE METAL RAIL ANCHOR ASSEMBLY CAST WITH THE CORED SLAB SECTIONS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

FOR CORED SLAB AND BOX BEAM POST TENSIONING, SEE SPECIAL PROVISIONS.



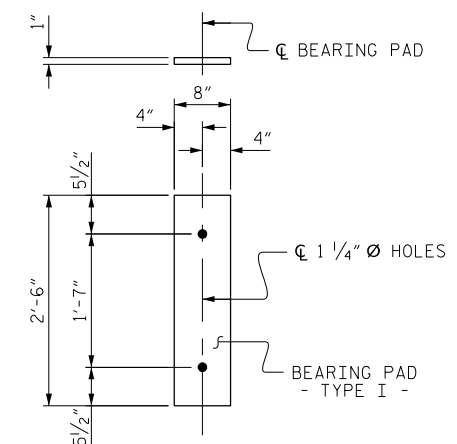
32" ALASKA RAIL CURB SECTION

*** THE PRECASTER SHALL ROTATE THE ANCHOR BOLTS, ANCHOR PLATE, AND #4 S3 BARS TO ACCOUNT FOR THE 4 PERCENT SUPERELEVATION. THE TOP OF CURB SHALL BE LEVEL AND THE ALASKA RAIL SHALL BE PLUMB.



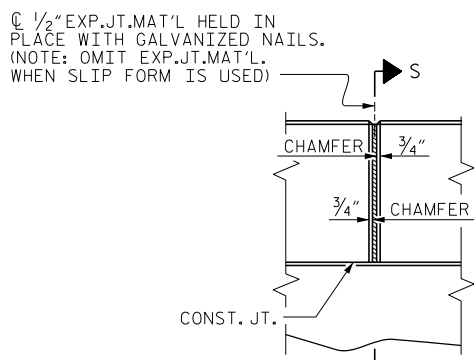
SIDE VIEW AT POST LOCATION

(SHOWING ADDITIONAL S2 BARS AT EACH POST ASSEMBLY)

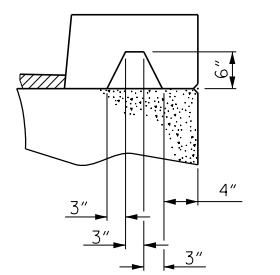


ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



ELEVATION AT EXPANSION JOINTS



SECTION S-S

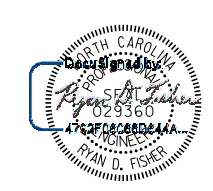
AT DAM IN OPEN JOINT (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)

PROJECT NO. DF18313.2011297.PR

BUNCOMBE COUNTY

STATION: 11+69.00 -L-

SHEET 4 OF 5



12/10/2025

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 3'-0" X 1'-9"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT
 90° SKEW

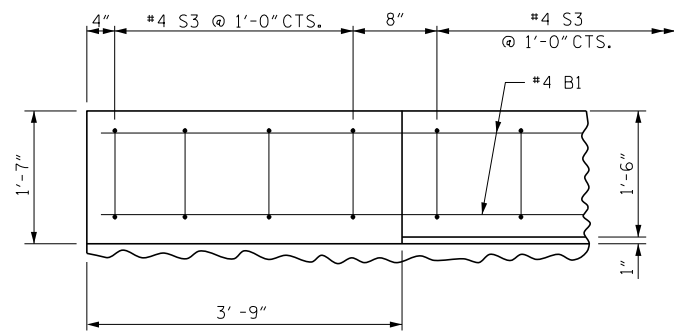
DRAWN BY: J. MYA DATE: 01/2025
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 DESIGN ENGINEER OF RECORD: R. FISHER DATE: 11/2025



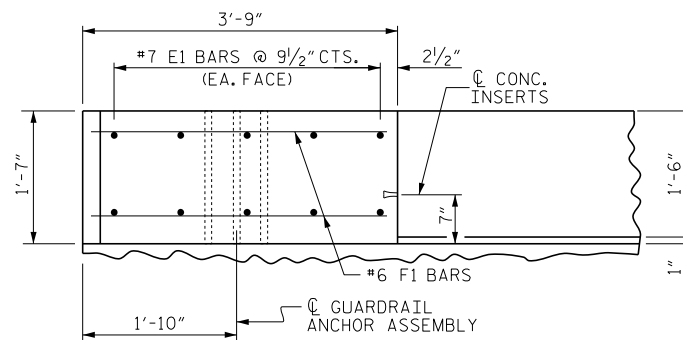
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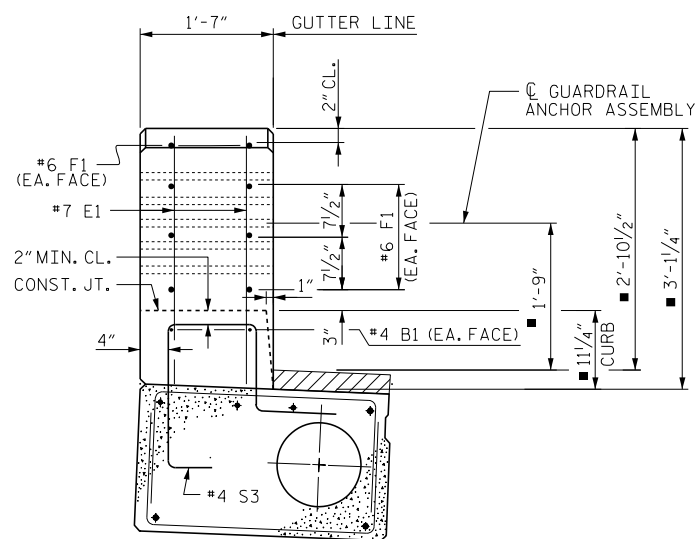
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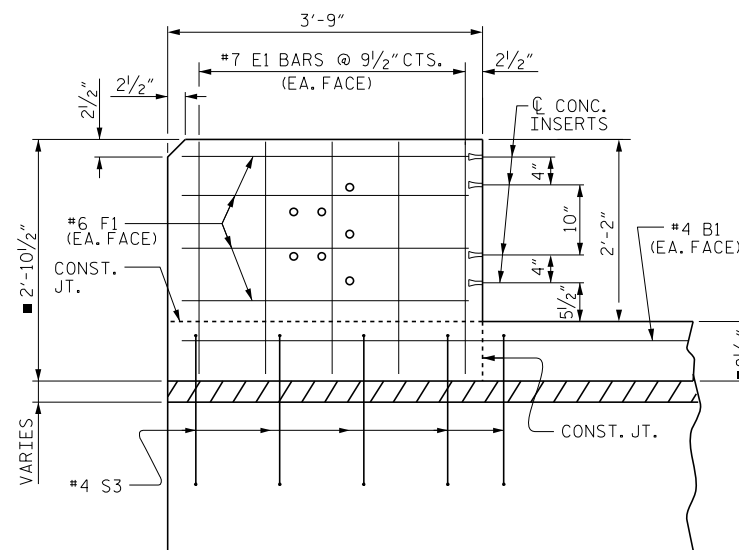
PLAN OF CURB



PLAN OF END POST



END VIEW



ELEVATION

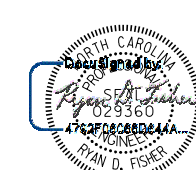
■ DIMENSIONS MEASURED AT GUTTER LINE

CURB AND END POST FOR 32" ALASKA RAIL

| BILL OF MATERIAL FOR 2 CURBS & 4 END POSTS | | | | | |
|---|-----|------|------|----------|--------|
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| *B1 | 8 | #4 | STR. | 27'-1" | 145 |
| *E1 | 40 | #7 | STR. | 2'-11" | 238 |
| *F1 | 32 | #6 | STR. | 3'-5" | 164 |
| * EPOXY COATED REINFORCING STEEL | | | | LBS. | 547 |
| CLASS AA CONCRETE | | | | CU. YDS. | 7.6 |
| 1'-7" x 1'-0" CONCRETE CURB | | | | LIN. FT. | 110.00 |

PROJECT NO. DF18313.2011297.PR
BUNCOMBE COUNTY
 STATION: 11+69.00 -L-

SHEET 5 OF 5



12/10/2025

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 CHECKED BY : R. FISHER DATE : 07/2025
 DESIGN ENGINEER OF RECORD: R. FISHER DATE : 11/2025

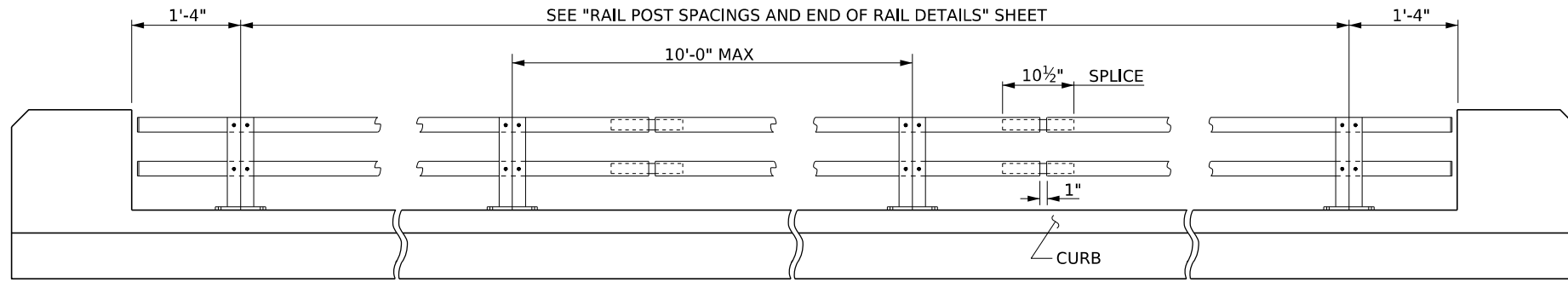


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 SIGNATURES COMPLETED

| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
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| CONCRETE CURBS AND END POSTS | | | | | |
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| 2 | | | 4 | | |

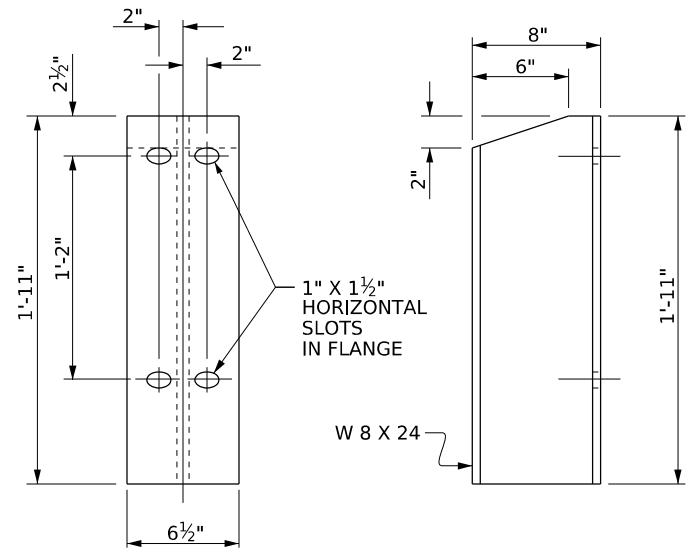
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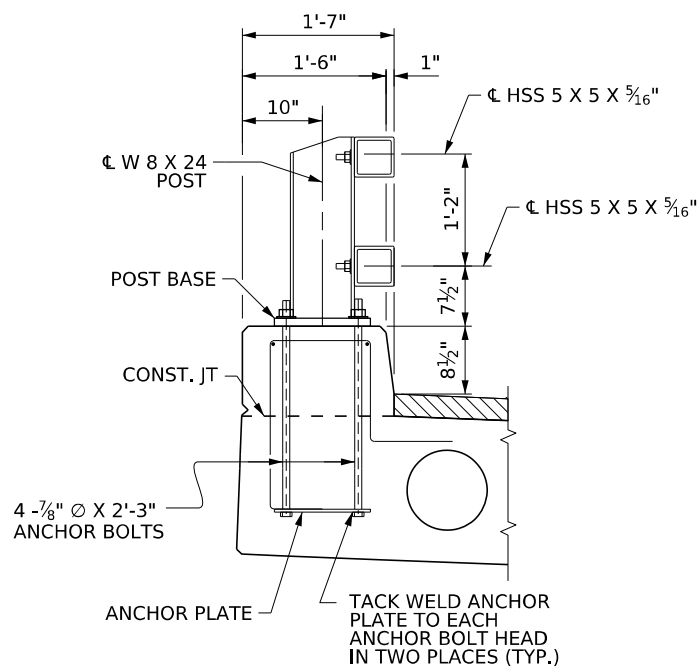
ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR9.



FRONT ELEVATION SIDE ELEVATION

DETAILS OF POST



SECTION THRU RAIL

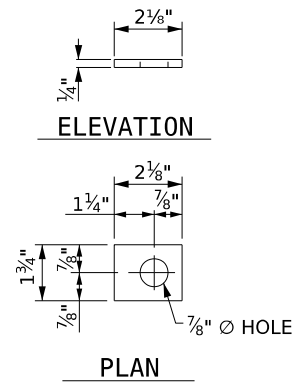
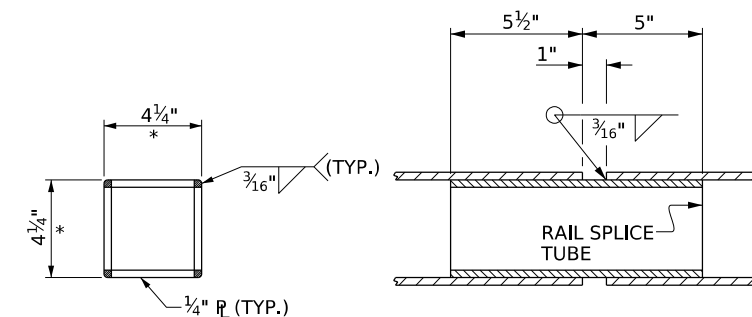
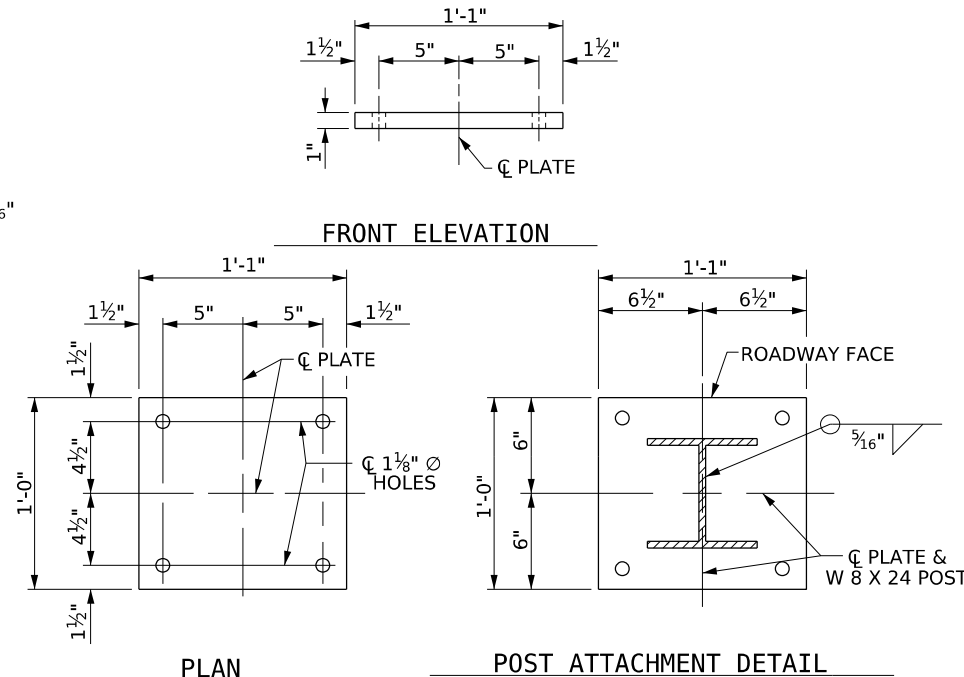


PLATE WASHER

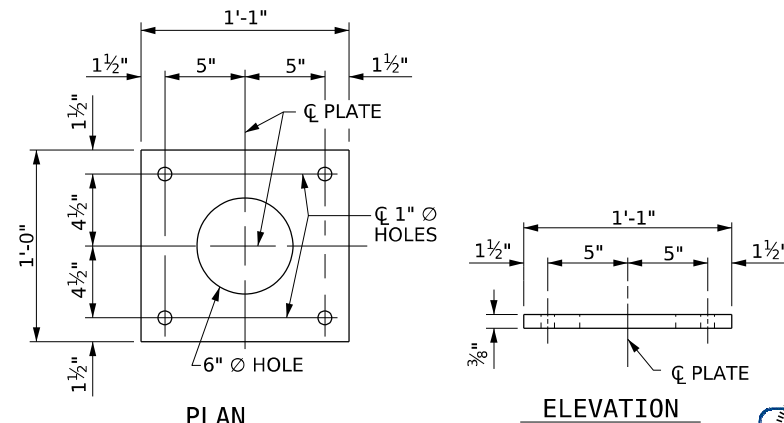


RAIL SPLICE DETAILS

* - DIMENSION AFTER GRINDING RADIUS ON CORNERS TO MATCH INSIDE OF METAL RAIL. GRIND ALL EDGES PRIOR TO GALVANIZING TO ASSURE FIT.



POST BASE DETAILS



ANCHOR PLATE DETAILS

METAL RAIL LENGTH 95.00 LIN. FT.

NOTES

METAL RAIL SHALL BE GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS. ALUMINUM RAIL WILL NOT BE AN OPTION.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, ANCHOR PLATES AND RAIL SPLICE TUBES: ASTM A36 GRADE 36 STRUCTURAL STEEL-GALVANIZED TO ASTM A123.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

RAILS: ASTM A500 GRADE B - GALVANIZED TO ASTM A123.

WELDED RAIL STUDS: ASTM A108-GALVANIZED TO ASTM A123.

HIGH STRENGTH ANCHOR BOLTS SHALL CONFORM TO ASTM F1554 GRADE 105. HEAVY HEX NUTS SHALL CONFORM TO ASTM A563 DH, AND WASHERS TO ASTM F436, TYPE 1. ANCHOR BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED TO ASTM A123.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR9.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

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

THE RAIL SECTIONS SHALL BE ATTACHED TO THE POSTS BY TWO THREADED 3/4" Ø WELDED STUDS, PLATE WASHERS, LOCKWASHERS, AND NUTS.

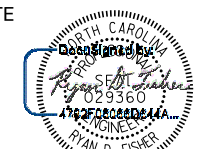
FOR 32" ALASKA RAIL, SEE THE STANDARD SPECIFICATIONS.

PROJECT NO. DF18313.2011297.PR
BUNCOMBE COUNTY
STATION **11+69.00 -L-**

SHEET 1 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
32" ALASKA RAIL



12/10/2025

| | |
|--------------------------------------|--------------------|
| ASSEMBLED BY : J. MYA | DATE : 01/2025 |
| CHECKED BY : R. FISHER | DATE : 06/2025 |
| DESIGN ENGINEER OF RECORD: R. FISHER | DATE : 11/2025 |
| DRAWN BY : RWW 7/14 | REV. 12/17 MAA/THC |
| CHECKED BY : TMG 7/14 | REV. 5/18 MAA/THC |
| | REV. 10/23 BNB/SNM |



GFT Infrastructure, Inc.
One Glenwood Avenue, Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

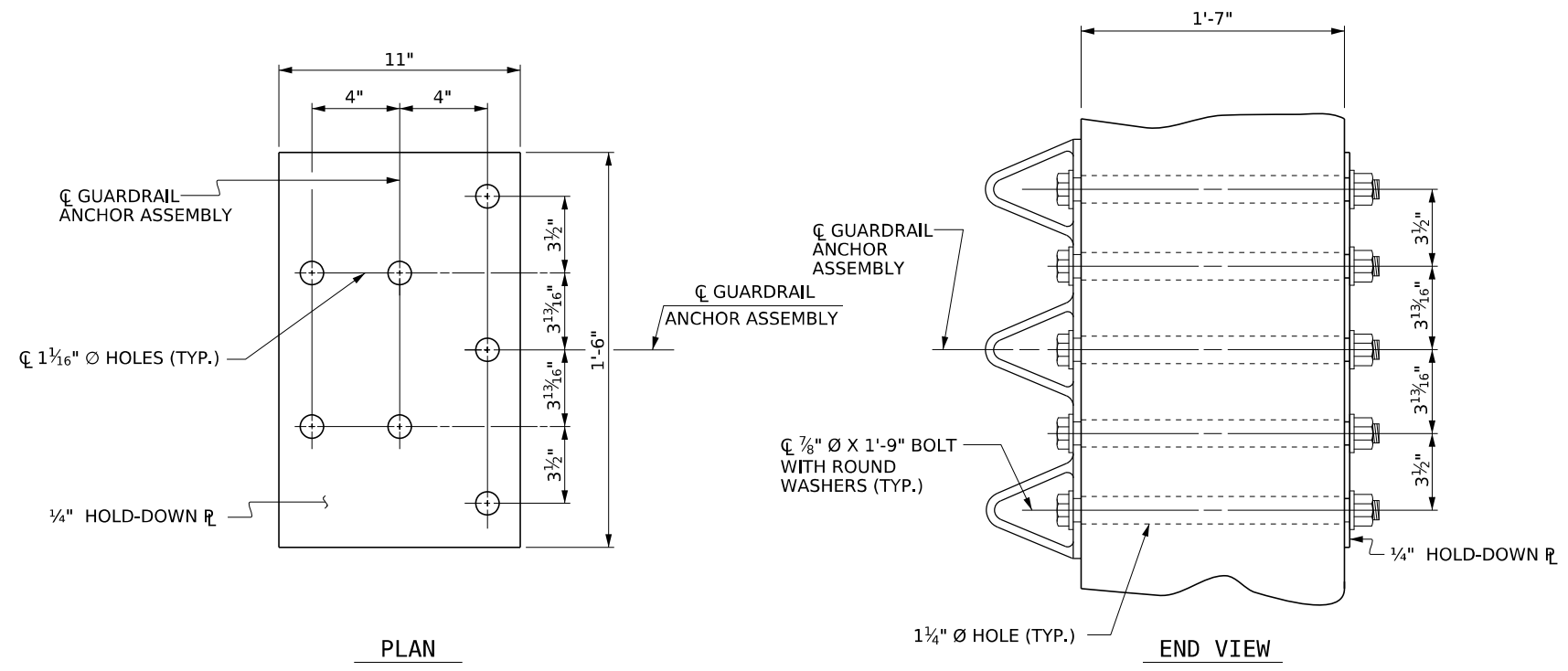
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S-11
TOTAL SHEETS
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STD. NO. BMR8

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GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

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

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

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

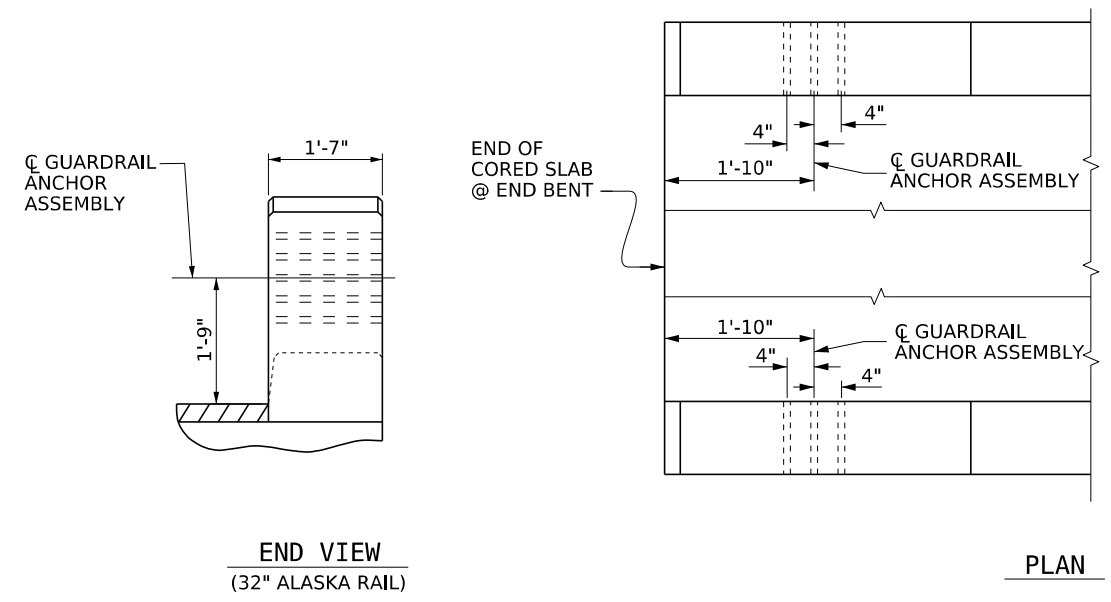
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF THE PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

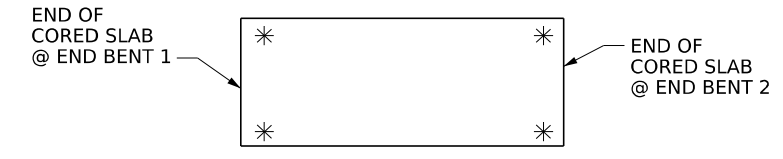
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

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

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



LOCATION OF GUARDRAIL ANCHOR AT END POST



SKETCH SHOWING POINTS OF ATTACHMENT

* LOCATION OF GUARDRAIL ATTACHMENT

PROJECT NO. DF18313.2011297.PR
BUNCOMBE COUNTY
 STATION 11+69.00 -L-

DESIGNED BY
 RAY D. FISHER
 12/10/2025

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

**GUARDRAIL ANCHORAGE
 DETAILS
 FOR METAL RAILS**

| | |
|-------------------------------------|--------------------|
| ASSEMBLED BY : J.MYA | DATE : 01/2025 |
| CHECKED BY : R.FISHER | DATE : 06/2025 |
| DESIGN ENGINEER OF RECORD: R.FISHER | DATE : 11/2025 |
| DRAWN BY : RWW 7/14 | REV. 12/17 MAA/THC |
| CHECKED BY : TMG 7/14 | REV. 5/18 MAA/THC |
| | REV. 10/23 BNB/SNM |

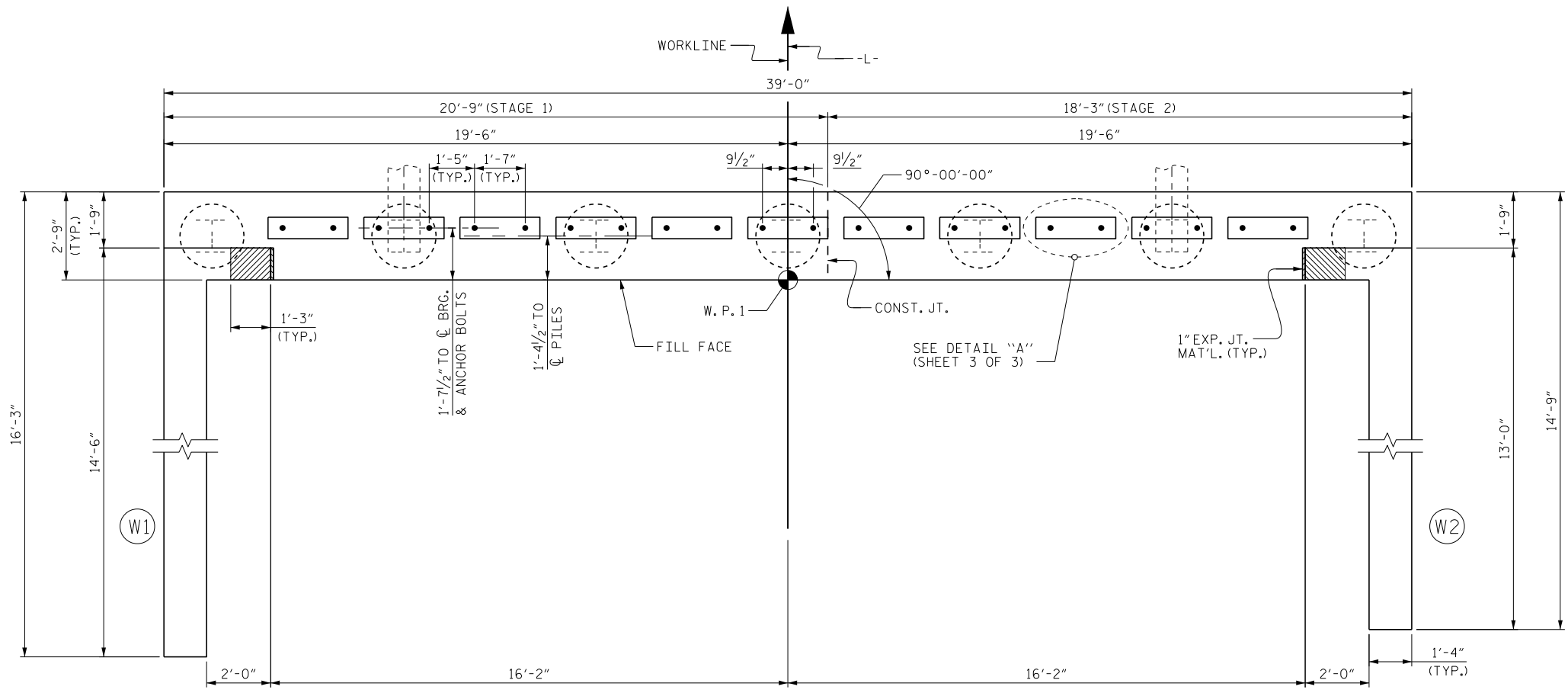


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TOTAL SHEETS: 21

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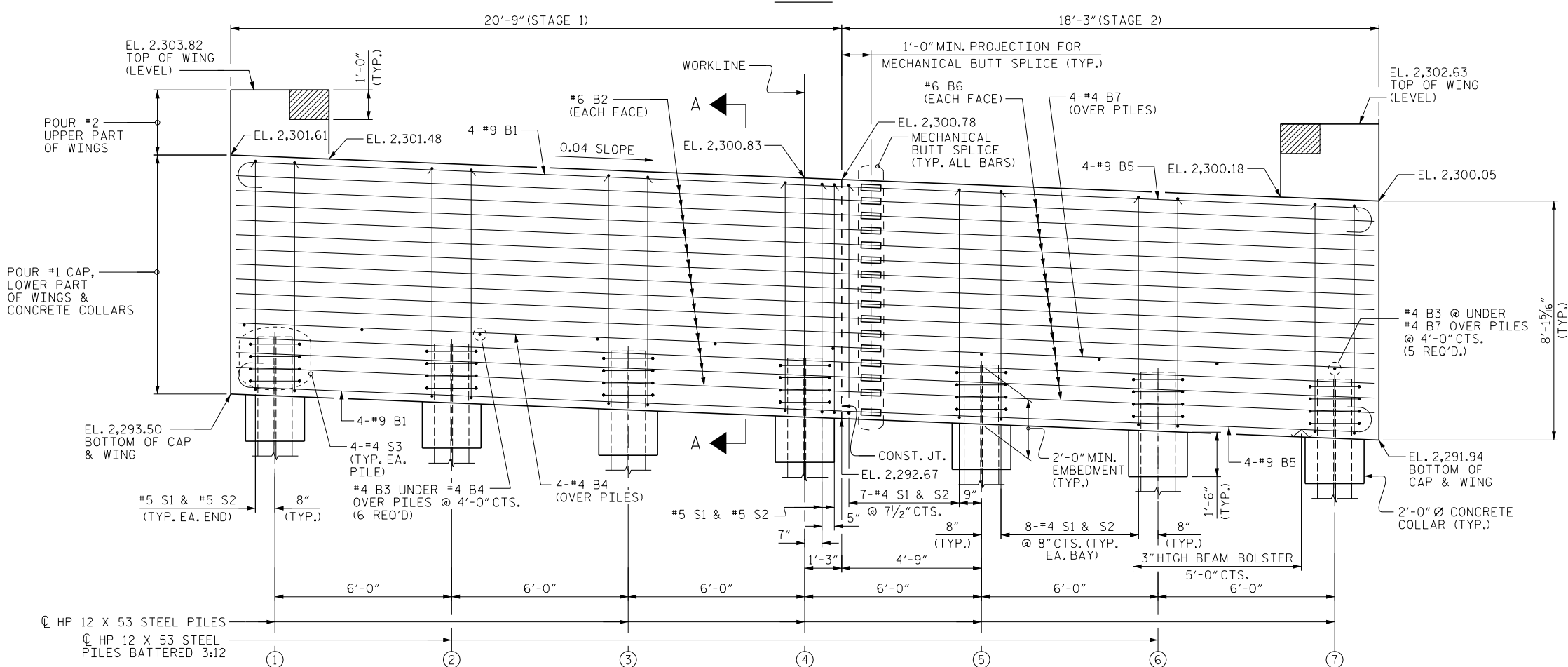


PLAN

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 3 OF 3.
- FOR WING DETAILS, SEE SHEET 2 OF 3.
- FOR MECHANICAL BUTT SPLICES, SEE SECTION 1070-9 OF THE STANDARD SPECIFICATIONS.
- ANCHOR BOLTS SHALL MEET THE REQUIREMENTS OF ASTM A449. ANCHOR PLATES, WASHERS, AND NUTS SHALL MEET THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS. ANCHOR PLATES, WASHERS, AND NUTS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
- NO SEPARATE PAYMENT SHALL BE MADE FOR THE ANCHOR BOLTS, ANCHOR PLATES, WASHERS, AND NUTS. THE COST OF THE MATERIAL AND INSTALLATION SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

| TOP OF PILE ELEVATIONS | |
|------------------------|----------|
| ① | 2,295.44 |
| ② | 2,295.20 |
| ③ | 2,294.96 |
| ④ | 2,294.72 |
| ⑤ | 2,294.48 |
| ⑥ | 2,294.24 |
| ⑦ | 2,294.00 |



ELEVATION

WINGS NOT SHOWN FOR CLARITY. FOR SECTION A-A, SEE SHEET 3 OF 3.

PROJECT NO. DF18313.2011297.PR
BUNCOMBE COUNTY
 STATION: 11+69.00 -L-
 SHEET 1 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1

12/10/2025

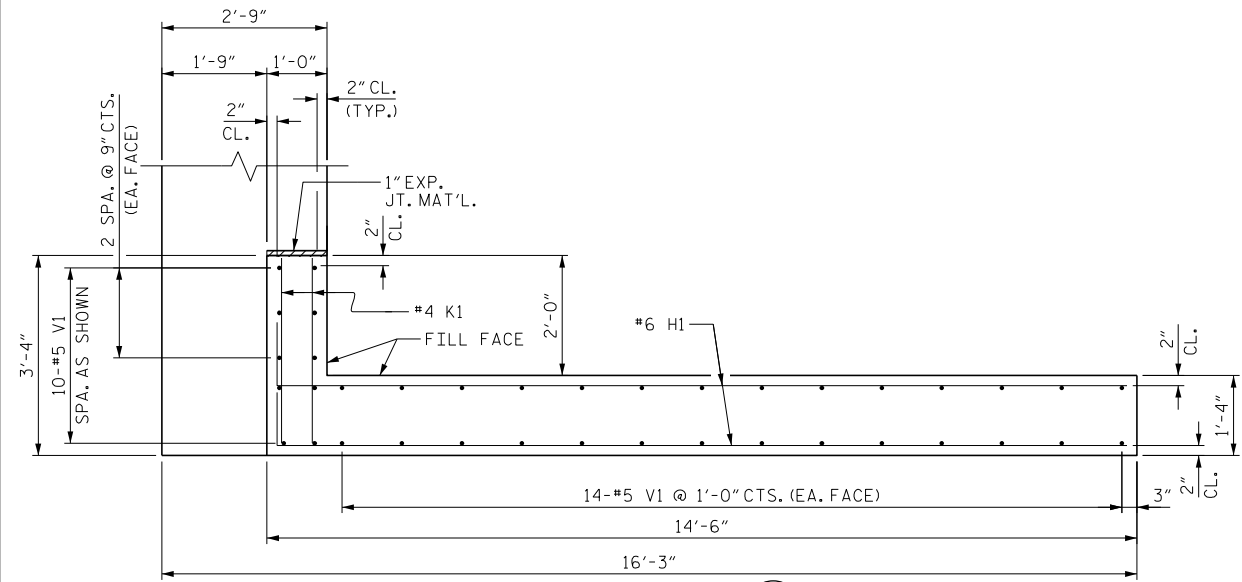
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 CHECKED BY : R. FISHER DATE : 07/2025
 DESIGN ENGINEER OF RECORD : R. FISHER DATE : 11/2025



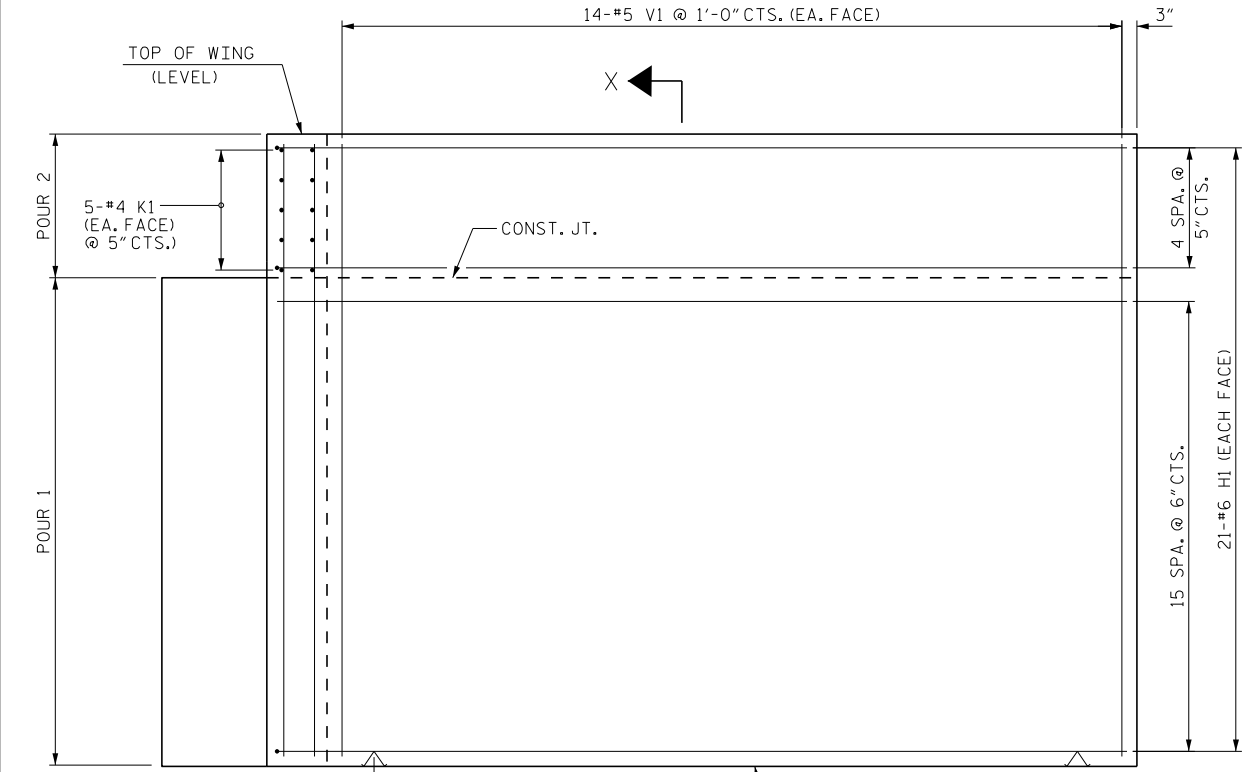
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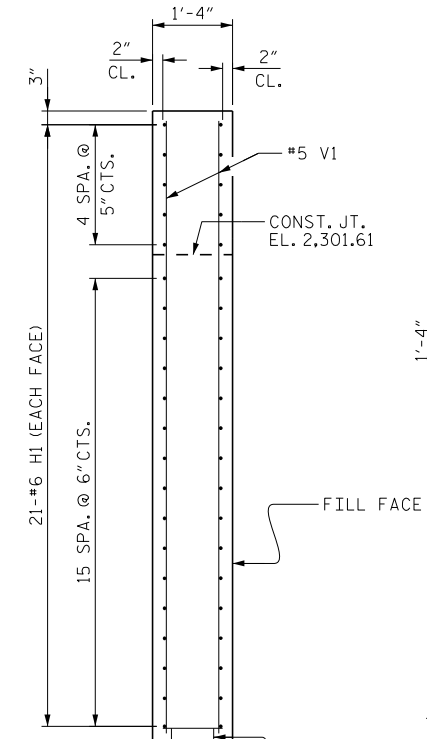
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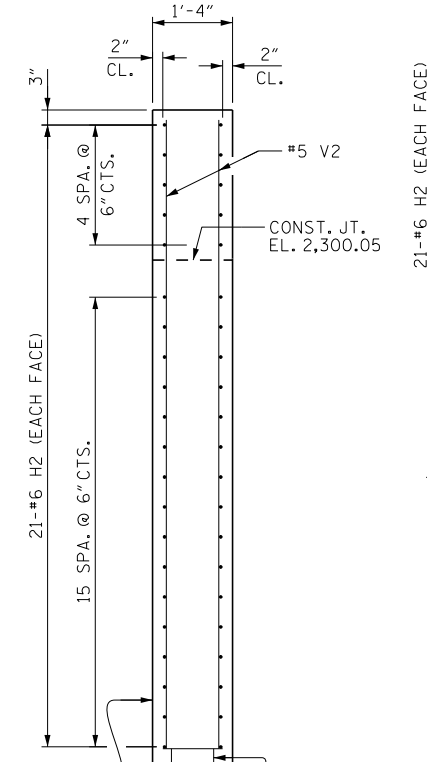
PLAN (W1)
(STAGE 1)



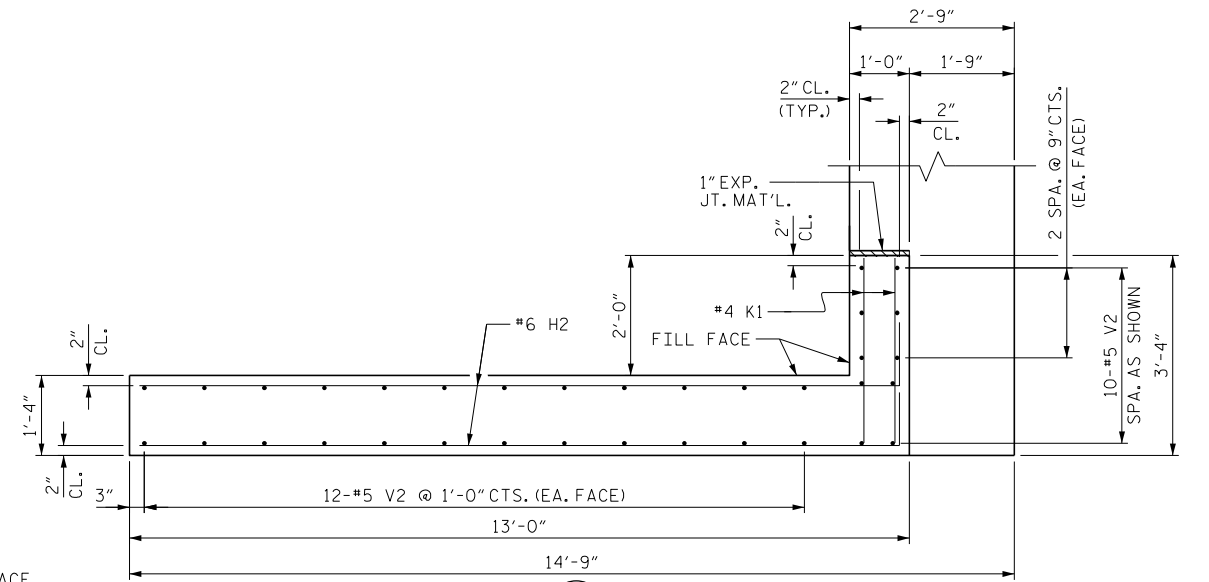
ELEVATION (W1)
(STAGE 1)



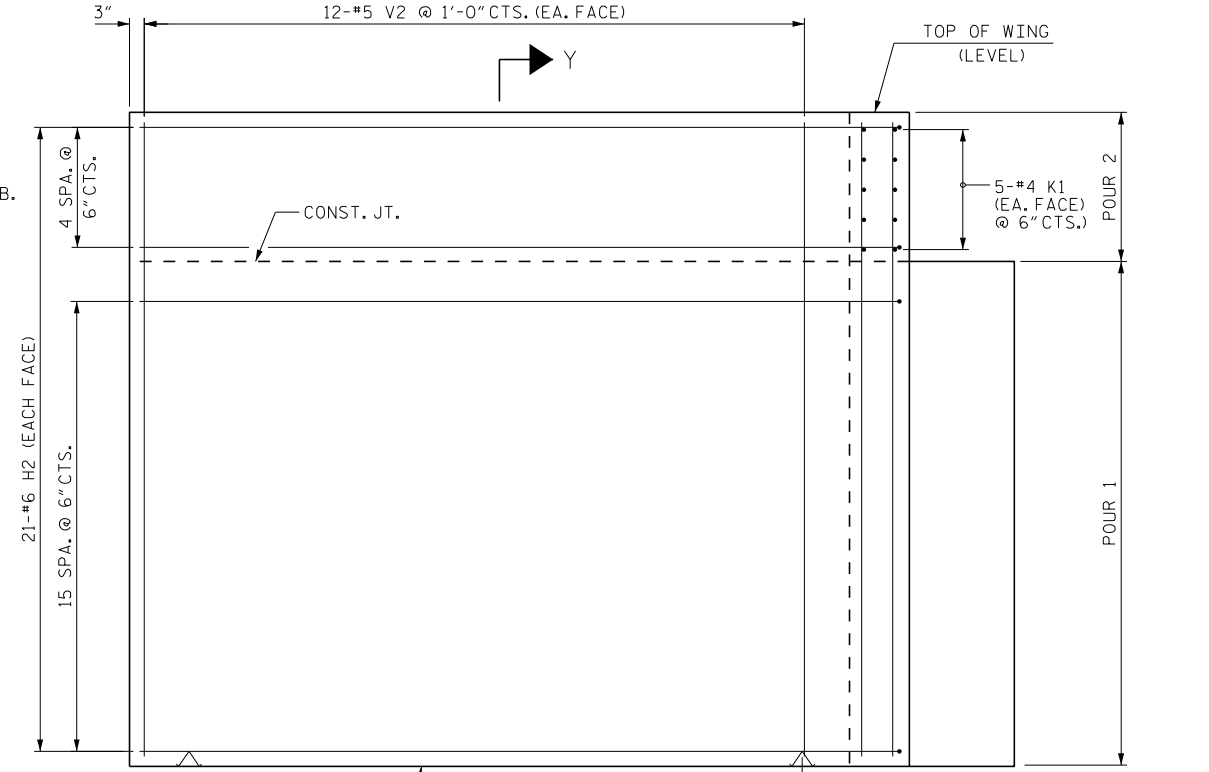
SECTION X-X



SECTION Y-Y

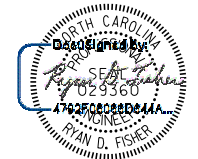


PLAN (W2)
(STAGE 2)



ELEVATION (W2)
(STAGE 2)

PROJECT NO. DF18313.2011297.PR
BUNCOMBE COUNTY
 STATION: 11+69.00 -L-
 SHEET 2 OF 3



12/10/2025

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 SUBSTRUCTURE
 END BENT 1
 WING DETAILS

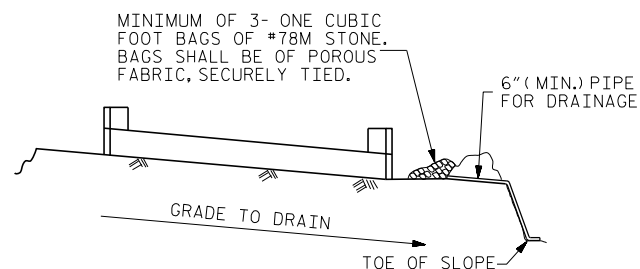
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 CHECKED BY : R. FISHER DATE : 07/2025
 DESIGN ENGINEER OF RECORD: R. FISHER DATE : 11/2025



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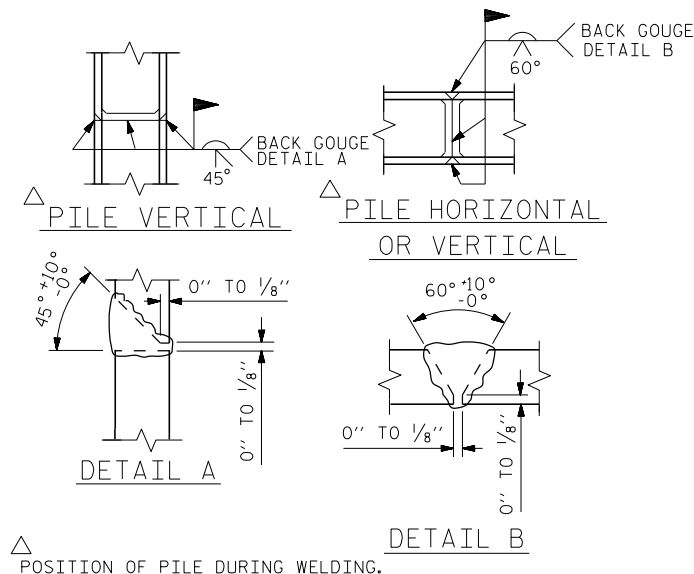


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

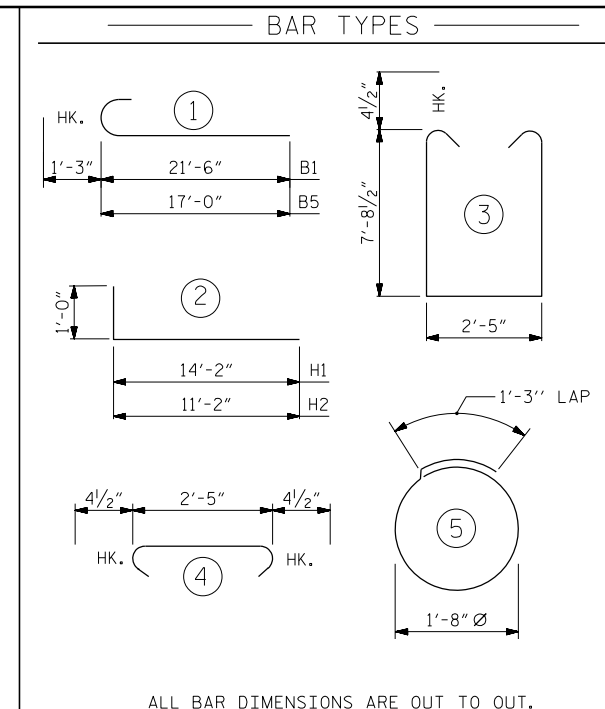
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NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

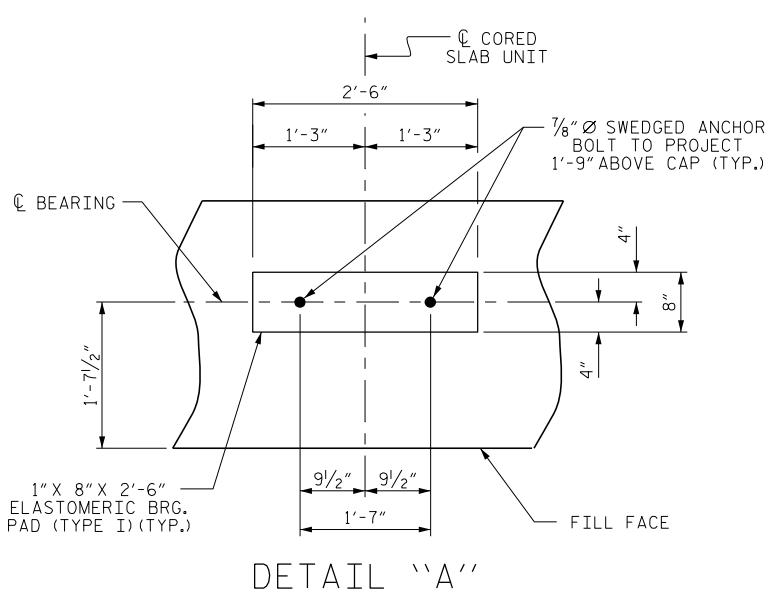


PILE SPLICE DETAILS

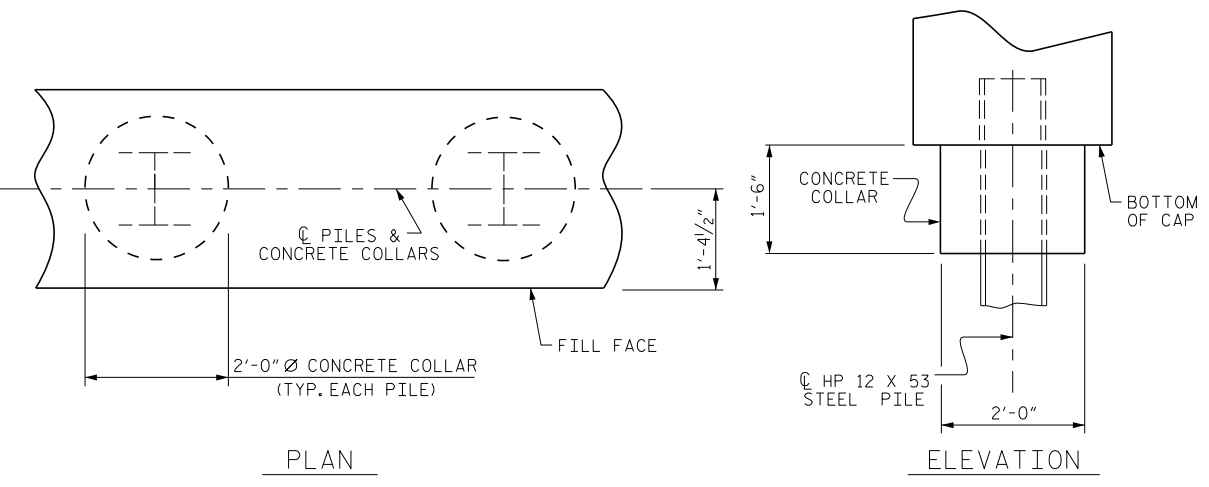


ALL BAR DIMENSIONS ARE OUT TO OUT.

| BILL OF MATERIAL | | | | | BILL OF MATERIAL | | | | | | |
|--|------|------|--------|--------|----------------------|--|------|--------|--------|--------|------------|
| END BENT 1 (STAGE 1) | | | | | END BENT 1 (STAGE 2) | | | | | | |
| BAR NO. | SIZE | TYPE | LENGTH | WEIGHT | BAR NO. | SIZE | TYPE | LENGTH | WEIGHT | | |
| B1 | #8 | | 22'-9" | 619 | B5 | #8 | | 18'-3" | 496 | | |
| B2 | #28 | STR. | 21'-7" | 908 | B6 | #28 | STR. | 17'-1" | 718 | | |
| B3 | #6 | STR. | 2'-5" | 10 | B3 | #4 | STR. | 2'-5" | 8 | | |
| B4 | #4 | STR. | 21'-7" | 58 | B7 | #4 | STR. | 17'-1" | 46 | | |
| H1 | #42 | #6 | 2 | 15'-2" | 957 | H2 | #42 | #6 | 2 | 13'-8" | 862 |
| K1 | 10 | #4 | STR. | 2'-11" | 19 | K1 | 10 | #4 | STR. | 2'-11" | 19 |
| S1 | 27 | #4 | 3 | 18'-7" | 335 | S1 | 24 | #4 | 3 | 18'-7" | 298 |
| S2 | 27 | #4 | 4 | 3'-2" | 57 | S2 | 24 | #4 | 4 | 3'-2" | 51 |
| S3 | 16 | #4 | 5 | 6'-6" | 69 | S3 | 12 | #4 | 5 | 6'-6" | 52 |
| V1 | 38 | #5 | STR. | 9'-10" | 390 | V2 | 34 | #5 | STR. | 10'-3" | 363 |
| REINFORCING STEEL | | | | | 3,422 LBS. | REINFORCING STEEL | | | | | 2,913 LBS. |
| CLASS A CONCRETE BREAKDOWN | | | | | | CLASS A CONCRETE BREAKDOWN | | | | | |
| POUR #1 CAP, LOWER PART OF WINGS & COLLARS | | | | | 23.3 C.Y. | POUR #1 CAP, LOWER PART OF WINGS & COLLARS | | | | | 20.4 C.Y. |
| POUR #2 UPPER PART OF WINGS | | | | | 1.8 C.Y. | POUR #2 UPPER PART OF WINGS | | | | | 1.8 C.Y. |
| TOTAL CLASS A CONCRETE | | | | | 25.1 C.Y. | TOTAL CLASS A CONCRETE | | | | | 22.2 C.Y. |
| TOTAL BILL OF MATERIAL | | | | | | | | | | | |
| REINFORCING STEEL | | | | | | REINFORCING STEEL | | | | | 6,335 LBS. |
| TOTAL CLASS A CONCRETE | | | | | | TOTAL CLASS A CONCRETE | | | | | 47.3 C.Y. |

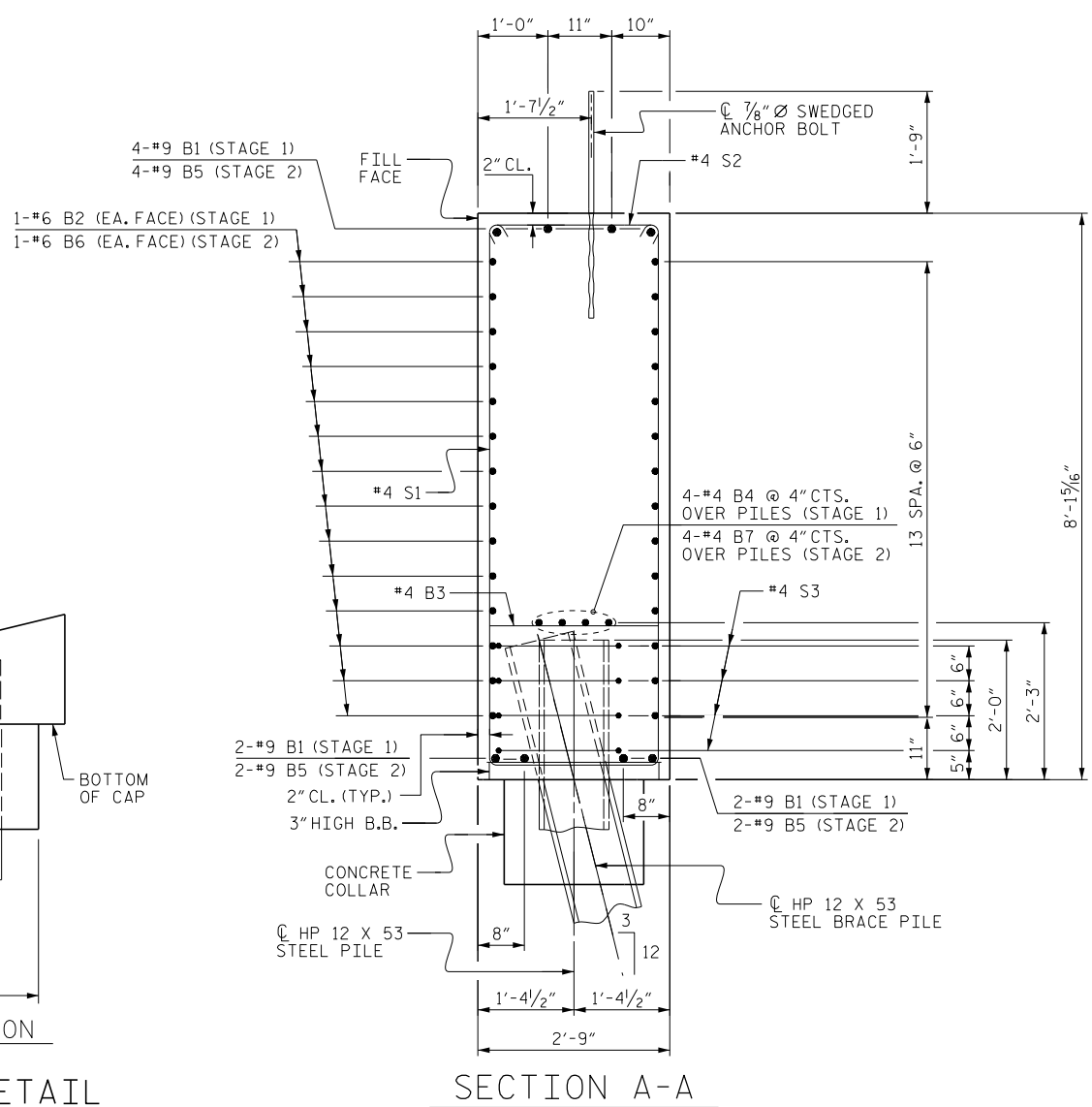


DETAIL "A"



CORROSION PROTECTION FOR STEEL PILES DETAIL

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



SECTION A-A

PROJECT NO. DF18313.2011297.PR
 BUNCOMBE COUNTY
 STATION: 11+69.00 -L-
 SHEET 3 OF 3



12/10/2025

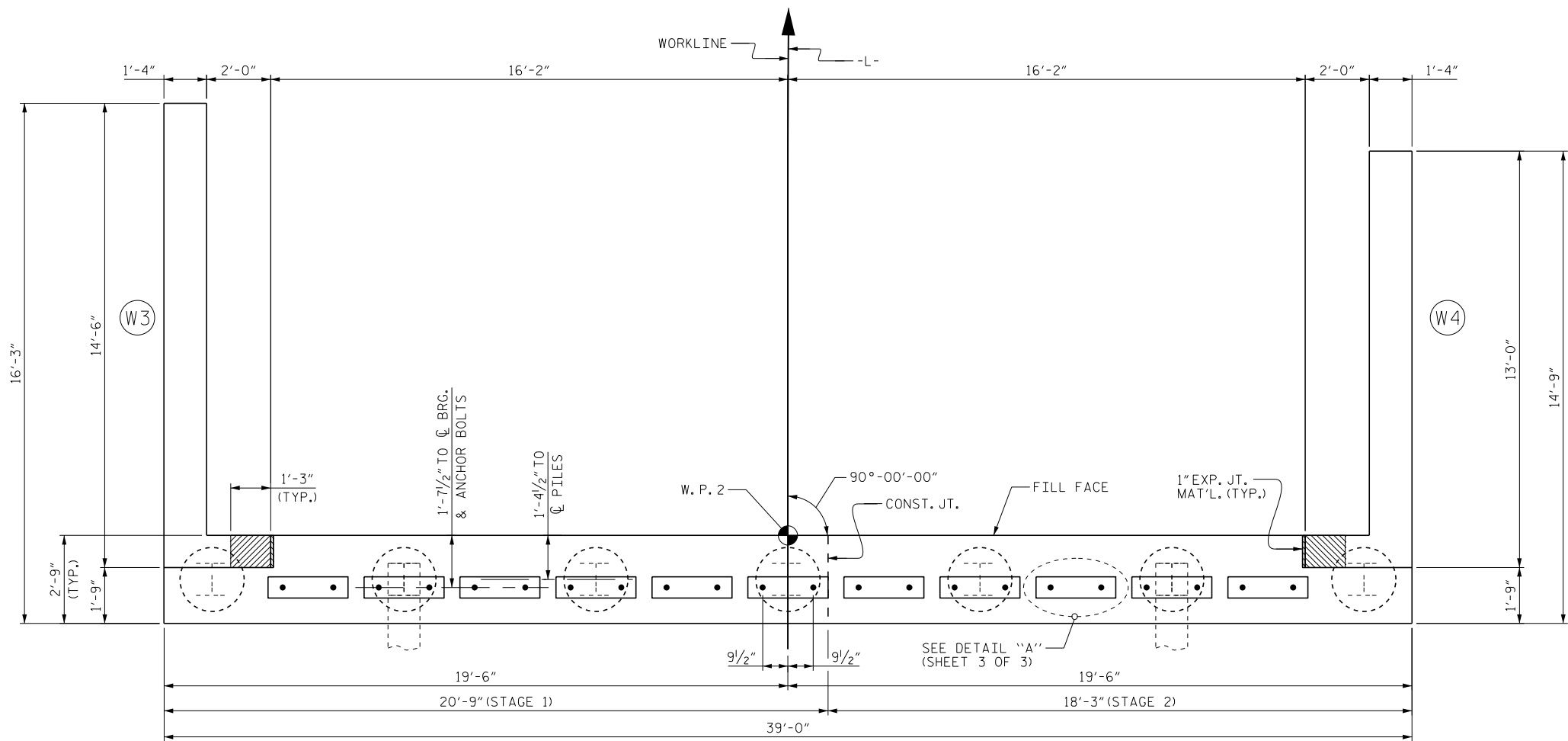
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 CHECKED BY : R. FISHER DATE : 07/2025
 DESIGN ENGINEER OF RECORD : R. FISHER DATE : 11/2025



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NOTES:

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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 3 OF 3.

FOR WING DETAILS, SEE SHEET 2 OF 3.

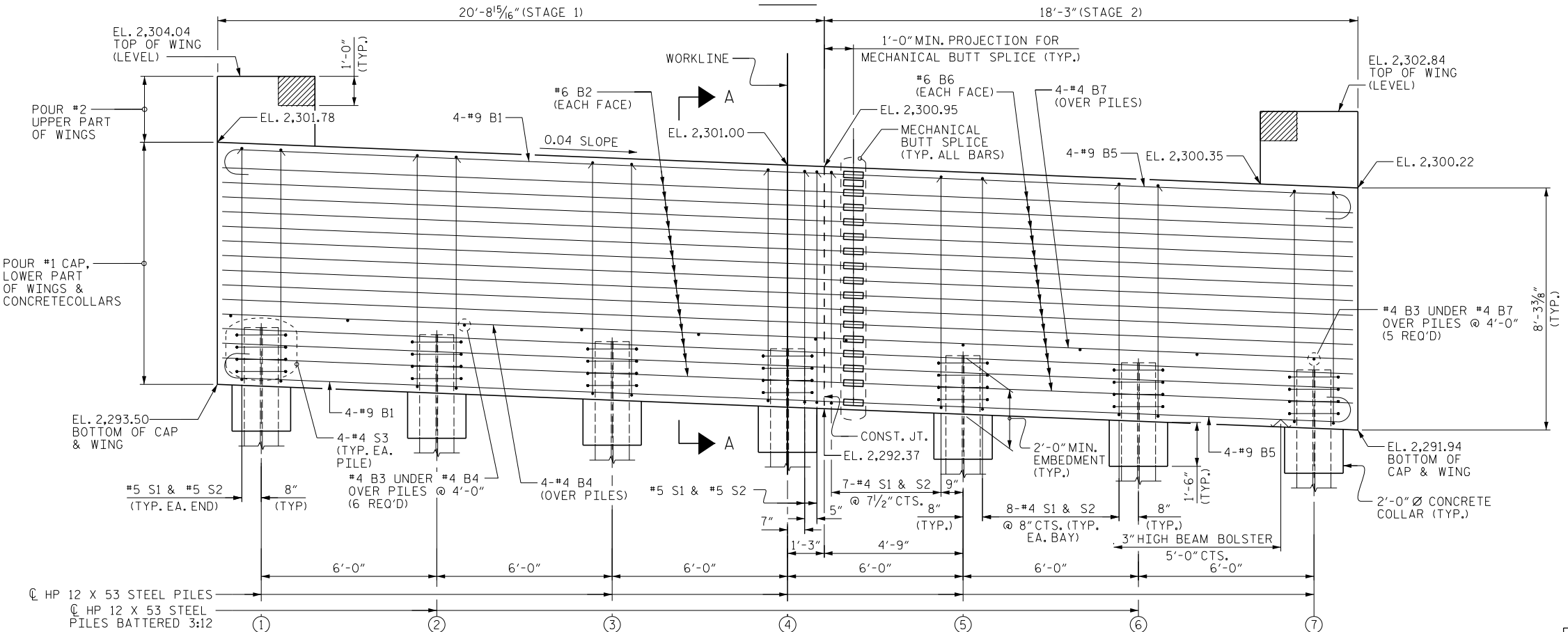
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| TOP OF PILE ELEVATIONS | |
|------------------------|----------|
| ① | 2,295.44 |
| ② | 2,295.20 |
| ③ | 2,294.96 |
| ④ | 2,294.72 |
| ⑤ | 2,294.48 |
| ⑥ | 2,294.24 |
| ⑦ | 2,294.00 |

PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY. FOR SECTION A-A, SEE SHEET 3 OF 3.

PROJECT NO. DF18313.2011297.PR
 BUNCOMBE COUNTY
 STATION: 11+69.00 -L-
 SHEET 1 OF 3



12/10/2025

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 2

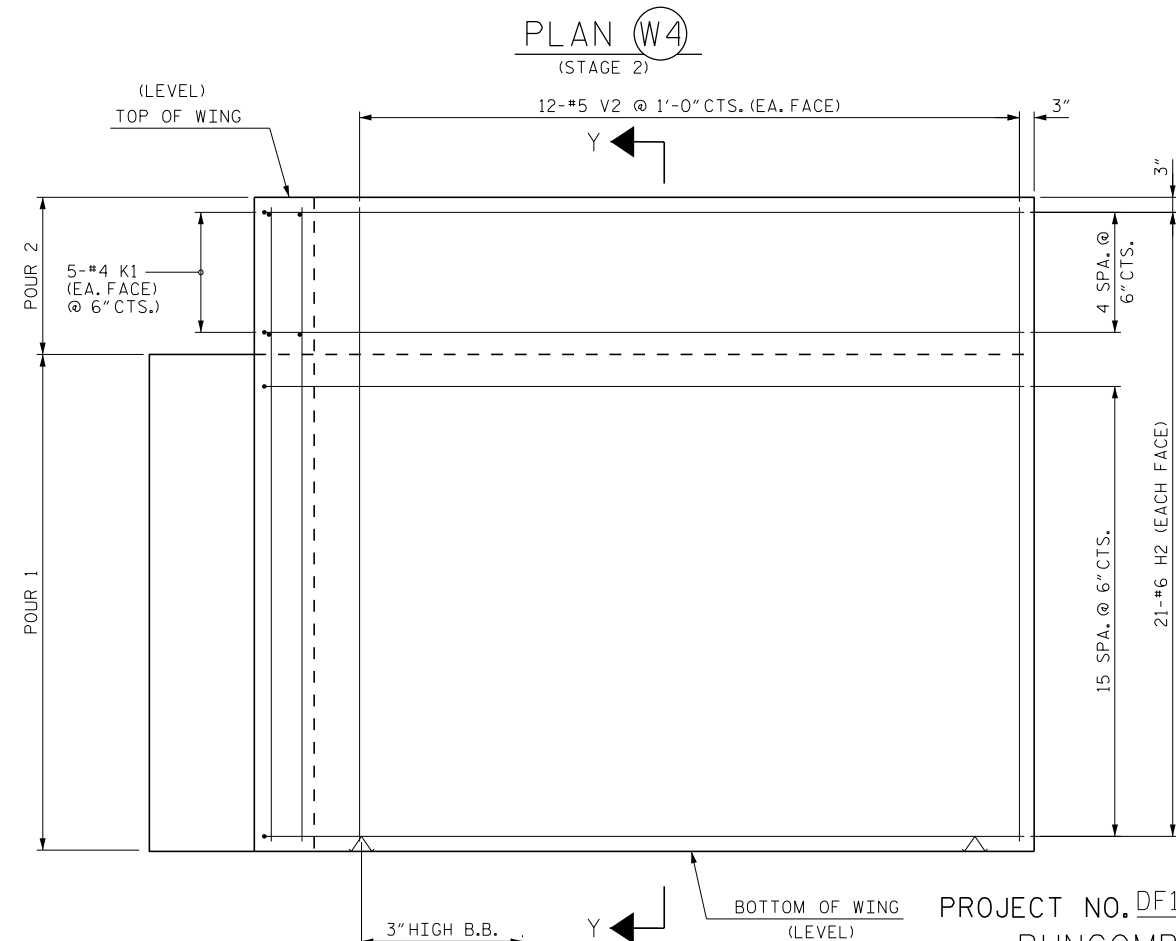
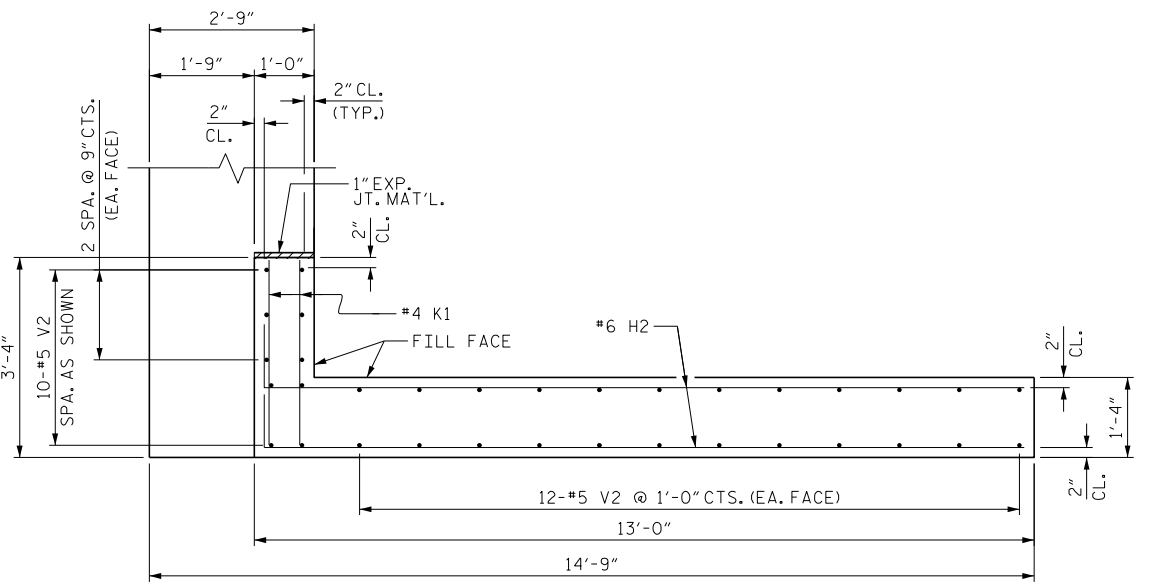
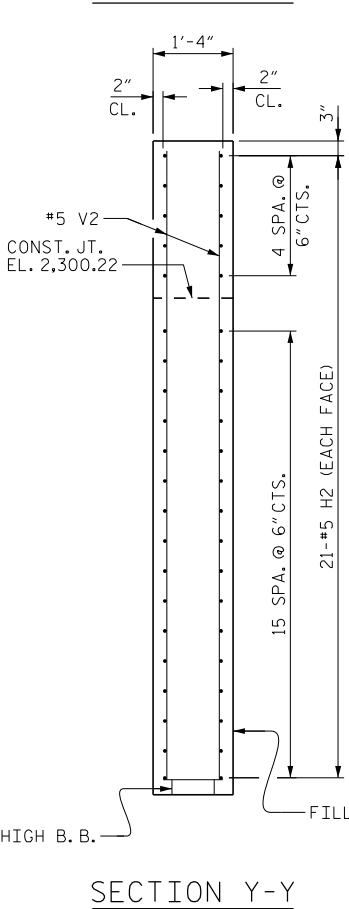
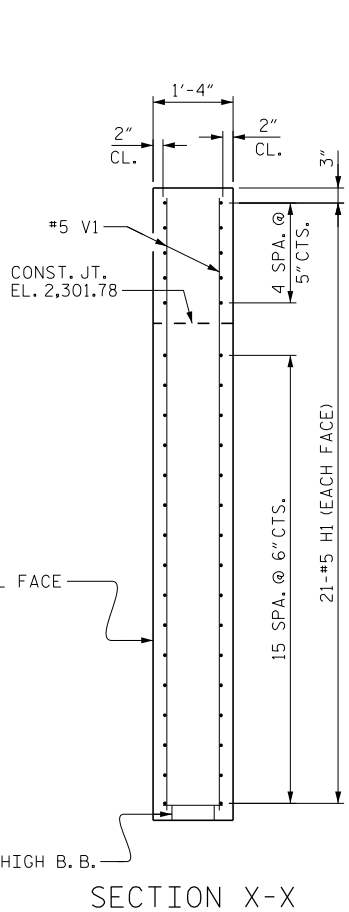
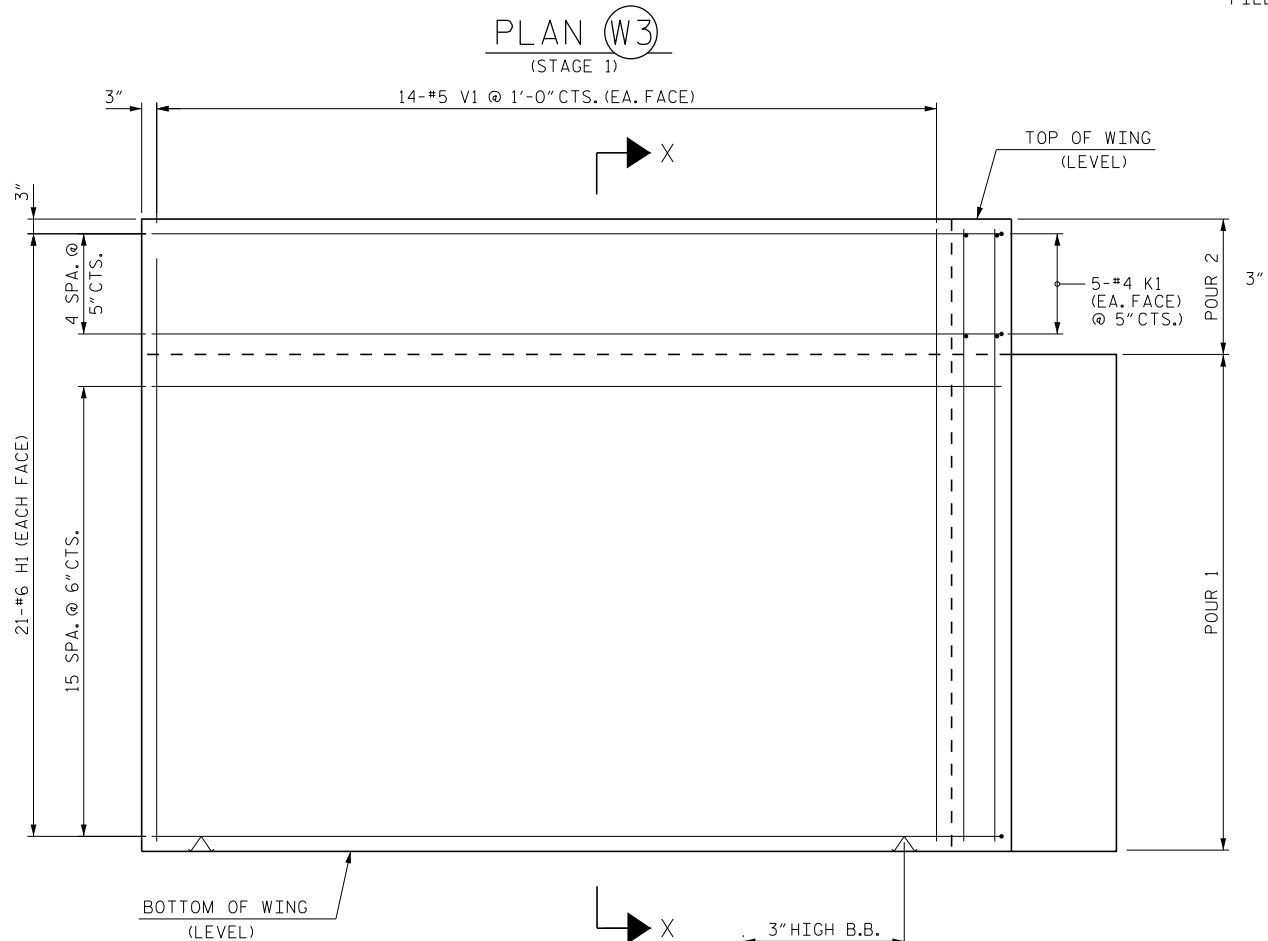
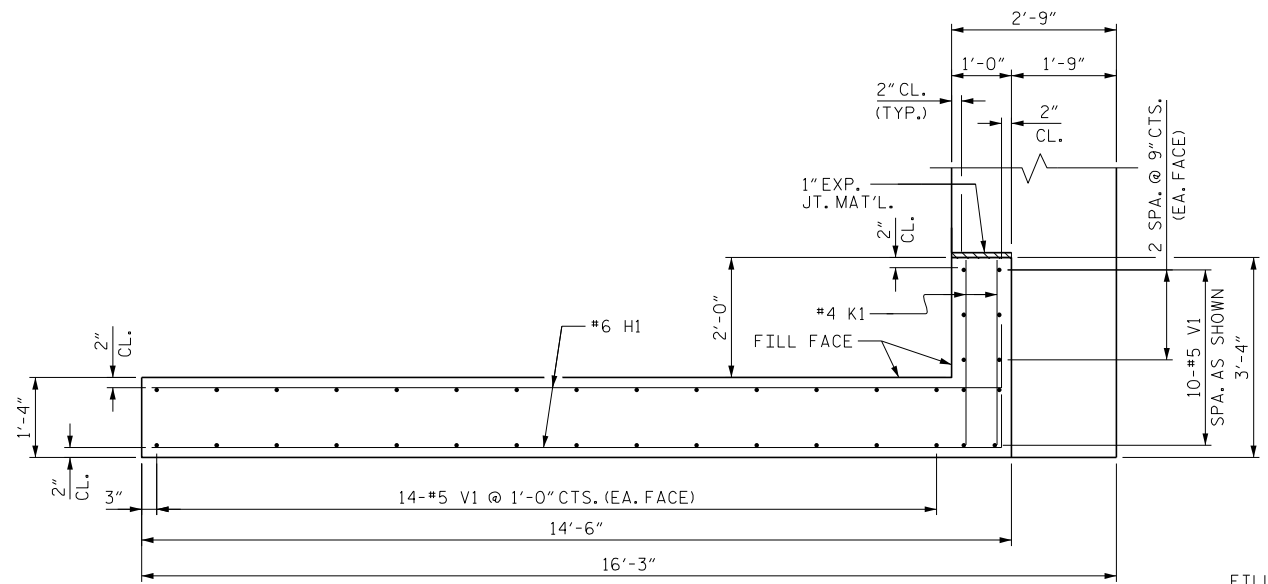
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 DESIGN ENGINEER OF RECORD: R. FISHER DATE: 11/2025



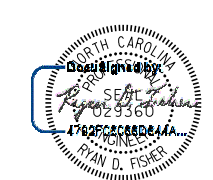
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 BUNCOMBE COUNTY
 STATION: 11+69.00 -L-
 SHEET 2 OF 3



12/10/2025

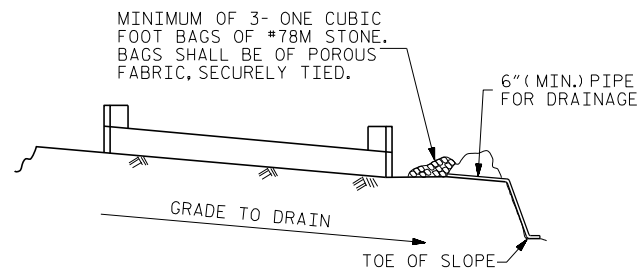
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| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
| SUBSTRUCTURE END BENT 2 WING DETAILS | | | | | |
| REVISIONS | | | | | |
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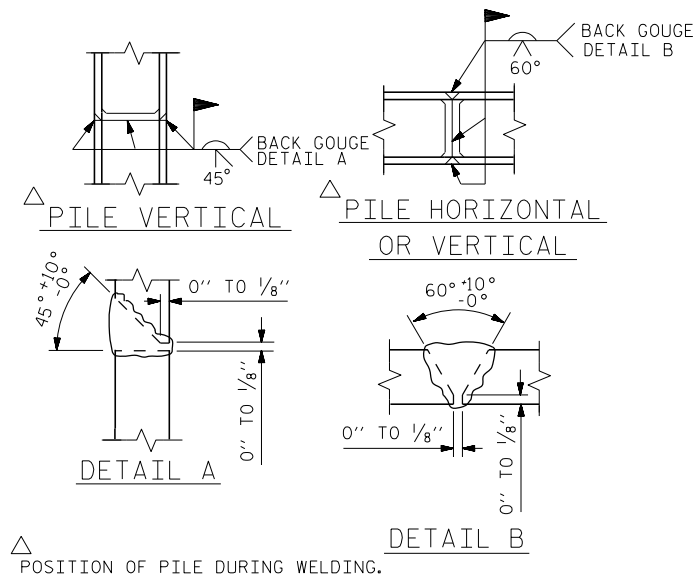


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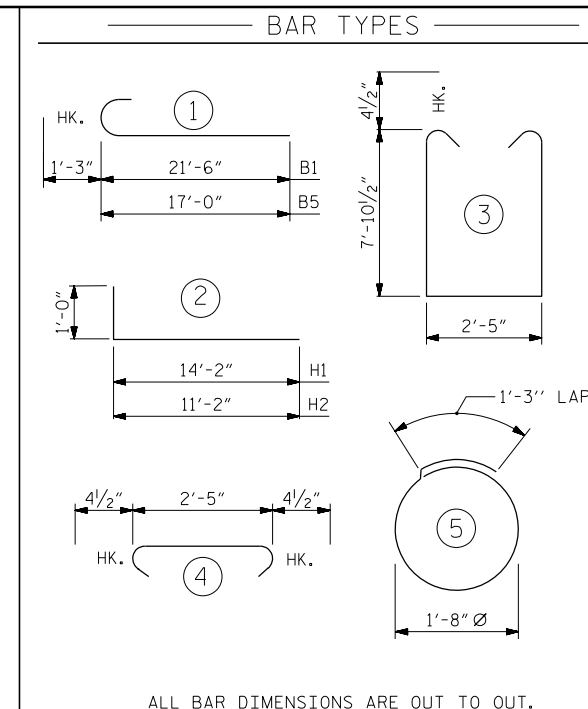
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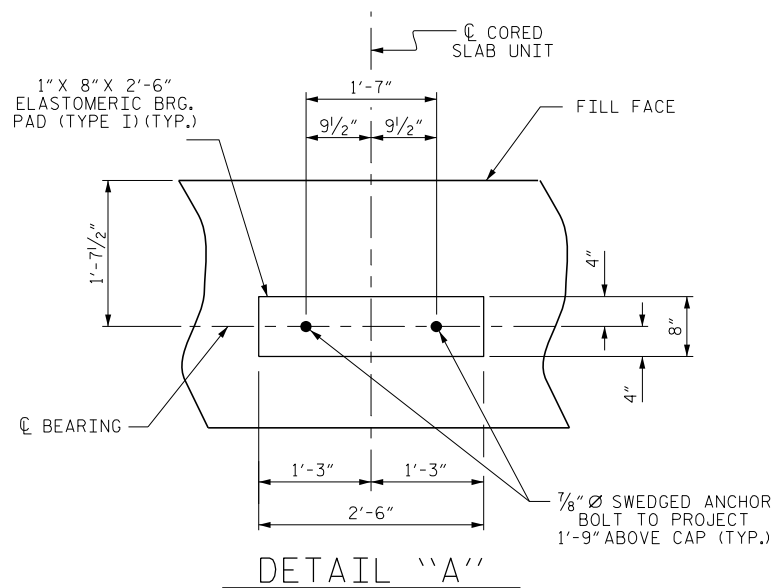
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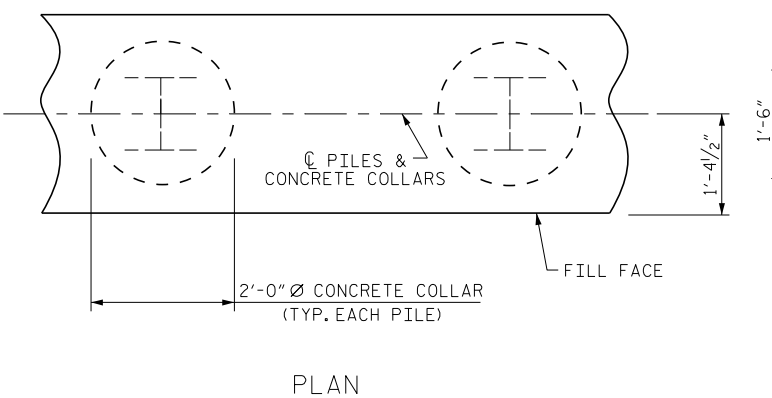
PILE SPLICE DETAILS



| BILL OF MATERIAL | | | | | BILL OF MATERIAL | | | | | | |
|--|------|------|---------|--------|----------------------|--|------|---------|--------|--|------------|
| END BENT 2 (STAGE 1) | | | | | END BENT 2 (STAGE 2) | | | | | | |
| BAR NO. | SIZE | TYPE | LENGTH | WEIGHT | BAR NO. | SIZE | TYPE | LENGTH | WEIGHT | | |
| B1 | #9 | 1 | 22'-9" | 619 | B5 | #9 | 1 | 18'-3" | 496 | | |
| B2 | #6 | STR. | 21'-7" | 908 | B6 | #6 | STR. | 17'-1" | 718 | | |
| B3 | #4 | STR. | 2'-5" | 10 | B3 | #4 | STR. | 2'-5" | 8 | | |
| B4 | #4 | STR. | 21'-7" | 58 | B7 | #4 | STR. | 17'-1" | 46 | | |
| H1 | #6 | 2 | 15'-2" | 957 | H2 | #6 | 2 | 13'-8" | 862 | | |
| K1 | #4 | STR. | 2'-11" | 19 | K1 | #4 | STR. | 2'-11" | 19 | | |
| S1 | #4 | 3 | 18'-11" | 341 | S1 | #4 | 3 | 18'-11" | 303 | | |
| S2 | #4 | 4 | 3'-2" | 57 | S2 | #4 | 4 | 3'-2" | 51 | | |
| S3 | #4 | 5 | 6'-6" | 69 | S3 | #4 | 5 | 6'-6" | 52 | | |
| V1 | #5 | STR. | 10'-1" | 400 | V2 | #5 | STR. | 10'-5" | 369 | | |
| REINFORCING STEEL | | | | | 3,438 LBS. | REINFORCING STEEL | | | | | 2,924 LBS. |
| CLASS A CONCRETE BREAKDOWN | | | | | | CLASS A CONCRETE BREAKDOWN | | | | | |
| POUR #1 CAP, LOWER PART OF WINGS & COLLARS | | | | | 23.7 C.Y. | POUR #1 CAP, LOWER PART OF WINGS & COLLARS | | | | | 20.8 C.Y. |
| POUR #2 UPPER PART OF WINGS | | | | | 1.8 C.Y. | POUR #2 UPPER PART OF WINGS | | | | | 1.9 C.Y. |
| TOTAL CLASS A CONCRETE | | | | | 25.5 C.Y. | TOTAL CLASS A CONCRETE | | | | | 22.7 C.Y. |
| TOTAL BILL OF MATERIAL | | | | | | | | | | | |
| REINFORCING STEEL | | | | | | REINFORCING STEEL | | | | | 6,362 LBS. |
| TOTAL CLASS A CONCRETE | | | | | | TOTAL CLASS A CONCRETE | | | | | 48.2 C.Y. |

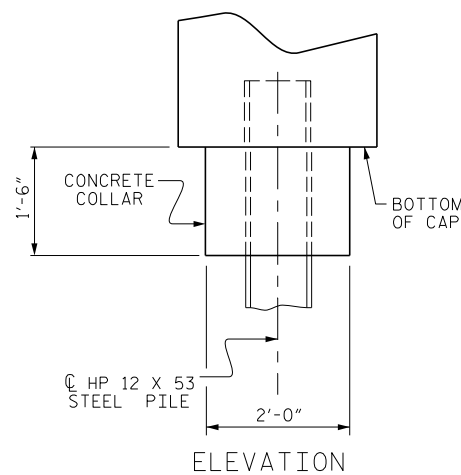


DETAIL "A"

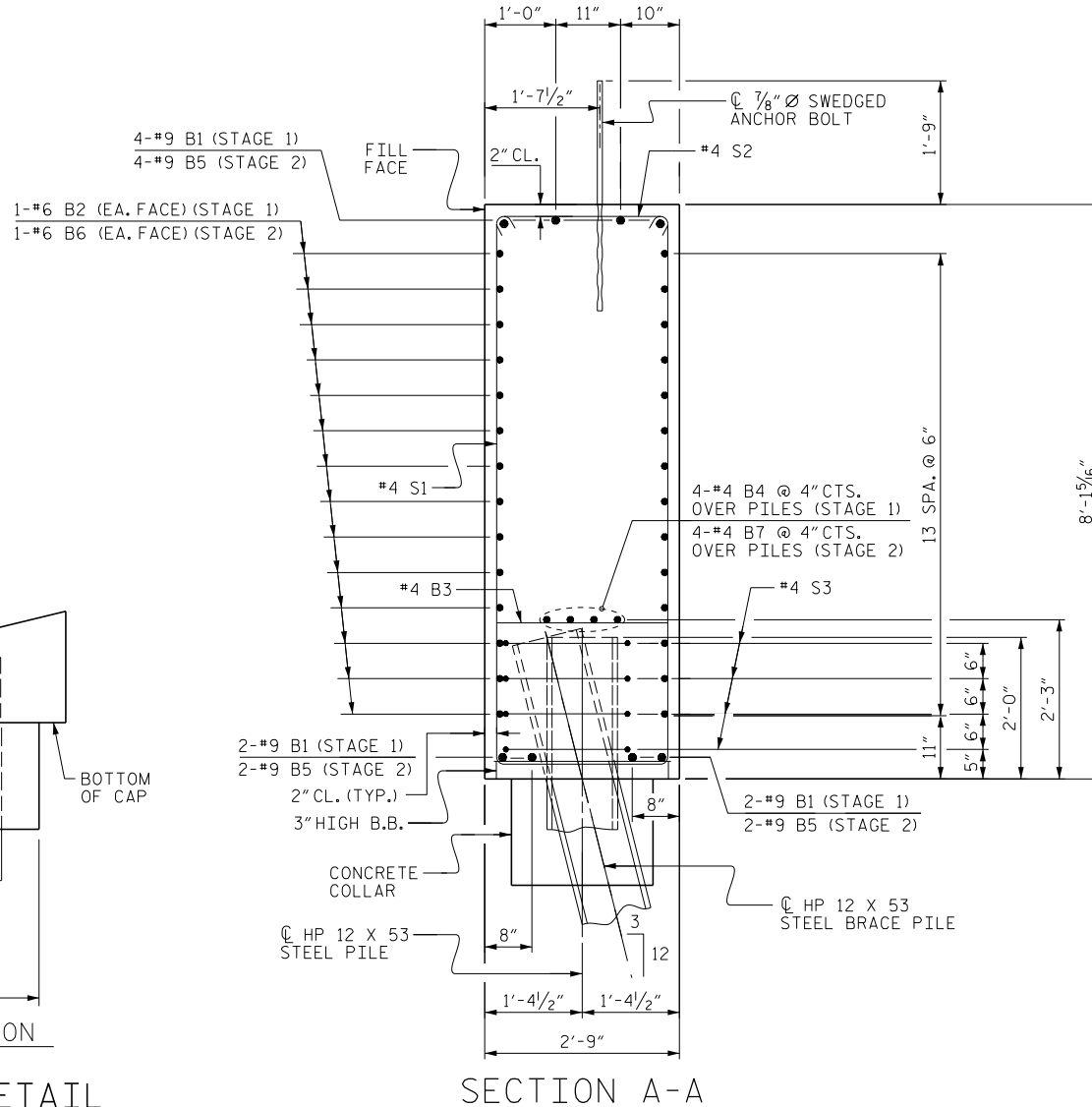


CORROSION PROTECTION FOR STEEL PILES DETAIL

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



ELEVATION

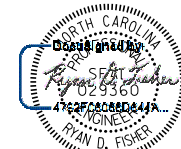


SECTION A-A

DRAWN BY : J. MYA DATE : 01/2025
 CHECKED BY : R. FISHER DATE : 07/2025
 DESIGN ENGINEER OF RECORD : R. FISHER DATE : 11/2025



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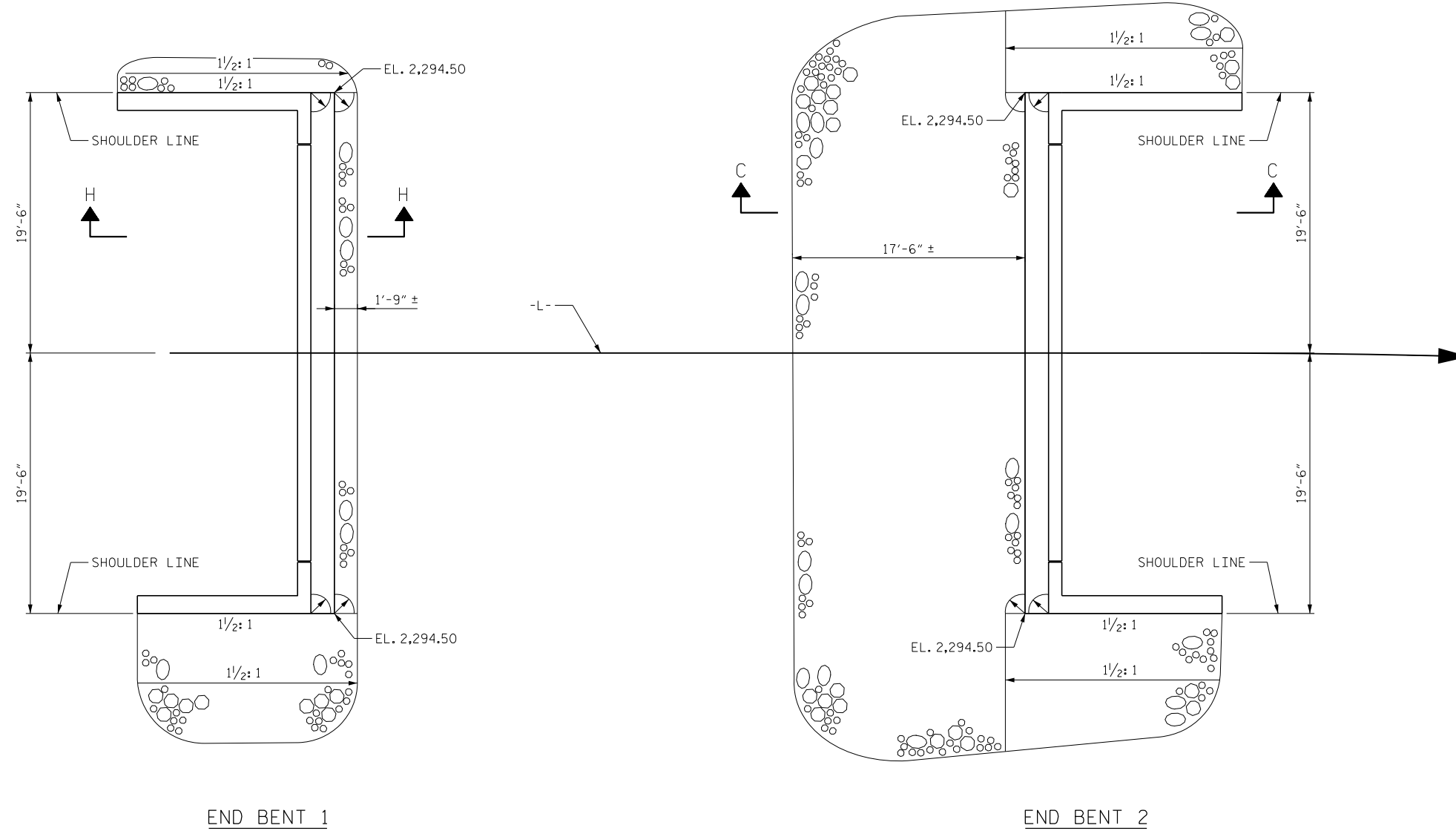
12/10/2025

PROJECT NO. DF18313.2011297.PR
 BUNCOMBE COUNTY
 STATION: 11+69.00 -L-
 SHEET 3 OF 3

| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
|--|-----|-------|-----|-----|-------|
| SUBSTRUCTURE END BENT 2 DETAILS | | | | | |
| REVISIONS | | | | | |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

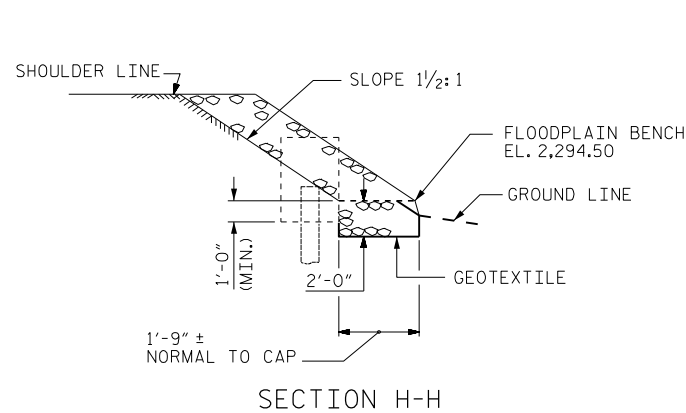
SHEET NO. S-19
TOTAL SHEETS 21

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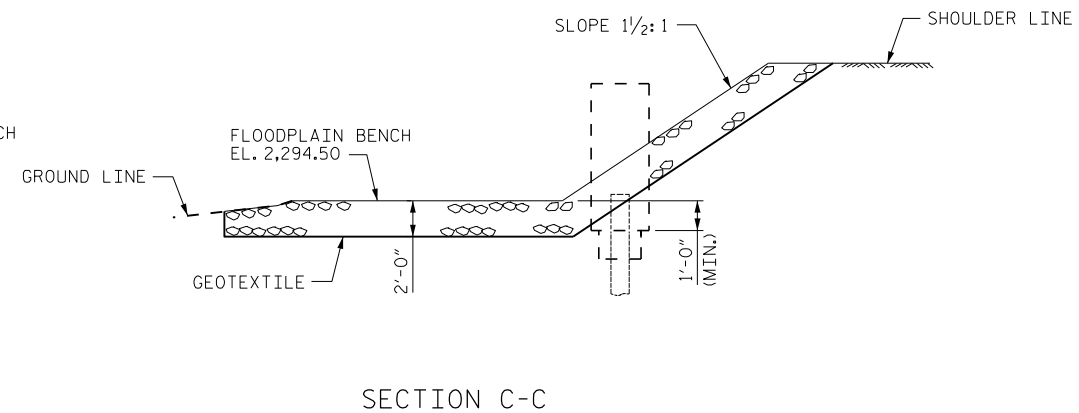


PLAN OF RIP RAP

| ESTIMATED QUANTITIES | | |
|-------------------------------|--------------------------------------|----------------------------|
| BRIDGE @ STA. 11+69.00 -L- | RIP RAP CLASS II (2'-0" THICK) | GEOTEXTILE FOR DRAINAGE |
| | TONS | SQUARE YARDS |
| END BENT 1 | 57 | 39 |
| END BENT 2 | 143 | 136 |
| TOTAL | 200 | 175 |

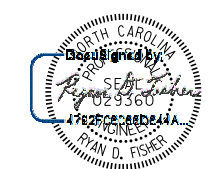


SECTION H-H



SECTION C-C

PROJECT NO. DF18313.2011297.PR
 BUNCOMBE COUNTY
 STATION: 11+69.00 -L-



12/10/2025

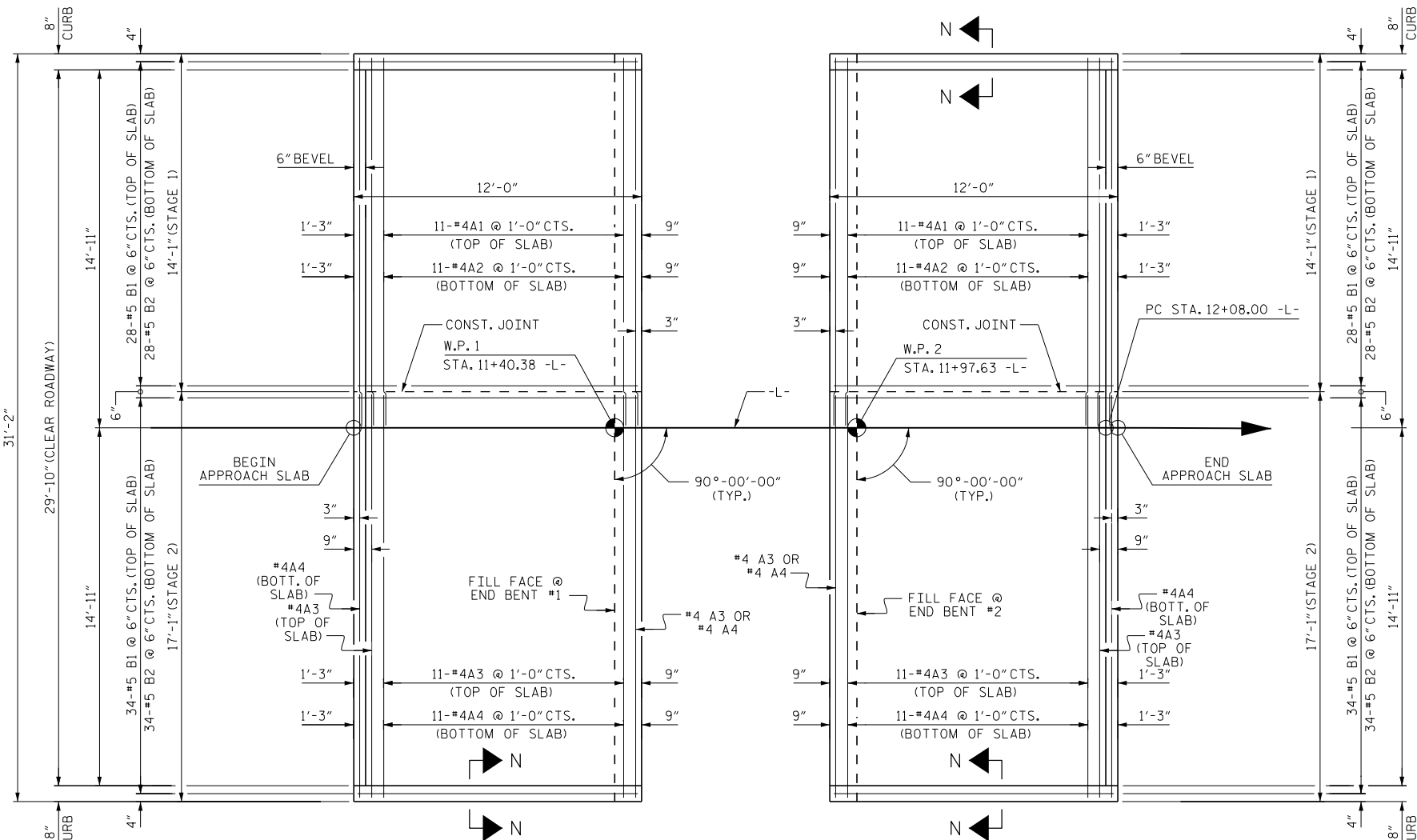
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| STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH | | | | | |
| RIP RAP DETAILS | | | | | |
| REVISIONS | | | | | |
| NO. | BY: | DATE: | NO. | BY: | DATE: |
| 1 | | | 3 | | |
| 2 | | | 4 | | |
| | | | | | SHEET NO. S-20 |
| | | | | | TOTAL SHEETS 21 |

DRAWN BY : J. MYA DATE : 01/2025
 CHECKED BY : R. FISHER DATE : 07/2025
 DESIGN ENGINEER OF RECORD: R. FISHER DATE : 11/2025



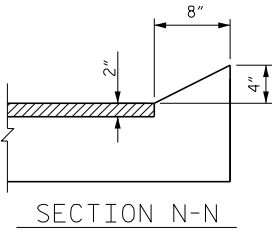
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 SIGNATURES COMPLETED

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

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



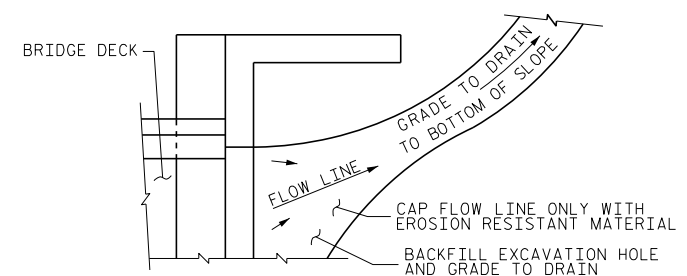
| BILL OF MATERIAL | | | | | | BILL OF MATERIAL | | | | | |
|---|-----|------|------|--------|--------|---|-----|------|------|--------|--------|
| APPROACH SLAB AT EB #1 | | | | | | APPROACH SLAB AT EB #2 | | | | | |
| STAGE 1 | | | | | | STAGE 1 | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT | BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| *A1 | 13 | #4 | STR. | 16'-0" | 139 | *A1 | 13 | #4 | STR. | 16'-0" | 139 |
| A2 | 13 | #4 | STR. | 15'-8" | 136 | A2 | 13 | #4 | STR. | 15'-8" | 136 |
| | | | | | | | | | | | |
| *B1 | 28 | #5 | STR. | 11'-2" | 326 | *B1 | 28 | #5 | STR. | 11'-2" | 326 |
| B2 | 28 | #6 | STR. | 11'-8" | 491 | B2 | 28 | #6 | STR. | 11'-8" | 491 |
| REINFORCING STEEL LBS. 627 | | | | | | REINFORCING STEEL LBS. 627 | | | | | |
| * EPOXY COATED REINFORCING STEEL LBS. 465 | | | | | | * EPOXY COATED REINFORCING STEEL LBS. 465 | | | | | |
| | | | | | | | | | | | |
| CLASS AA CONCRETE C. Y. 8.0 | | | | | | CLASS AA CONCRETE C. Y. 8.0 | | | | | |
| STAGE 2 | | | | | | STAGE 2 | | | | | |
| BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT | BAR | NO. | SIZE | TYPE | LENGTH | WEIGHT |
| *A3 | 13 | #4 | STR. | 16'-9" | 145 | *A3 | 13 | #4 | STR. | 16'-9" | 145 |
| A4 | 13 | #4 | STR. | 16'-9" | 145 | A4 | 13 | #4 | STR. | 16'-9" | 145 |
| | | | | | | | | | | | |
| *B1 | 34 | #5 | STR. | 11'-2" | 396 | *B1 | 34 | #5 | STR. | 11'-2" | 396 |
| B2 | 34 | #6 | STR. | 11'-8" | 596 | B2 | 34 | #6 | STR. | 11'-8" | 596 |
| REINFORCING STEEL LBS. 741 | | | | | | REINFORCING STEEL LBS. 741 | | | | | |
| * EPOXY COATED REINFORCING STEEL LBS. 541 | | | | | | * EPOXY COATED REINFORCING STEEL LBS. 541 | | | | | |
| | | | | | | | | | | | |
| CLASS AA CONCRETE C. Y. 9.7 | | | | | | CLASS AA CONCRETE C. Y. 9.7 | | | | | |

NOTES

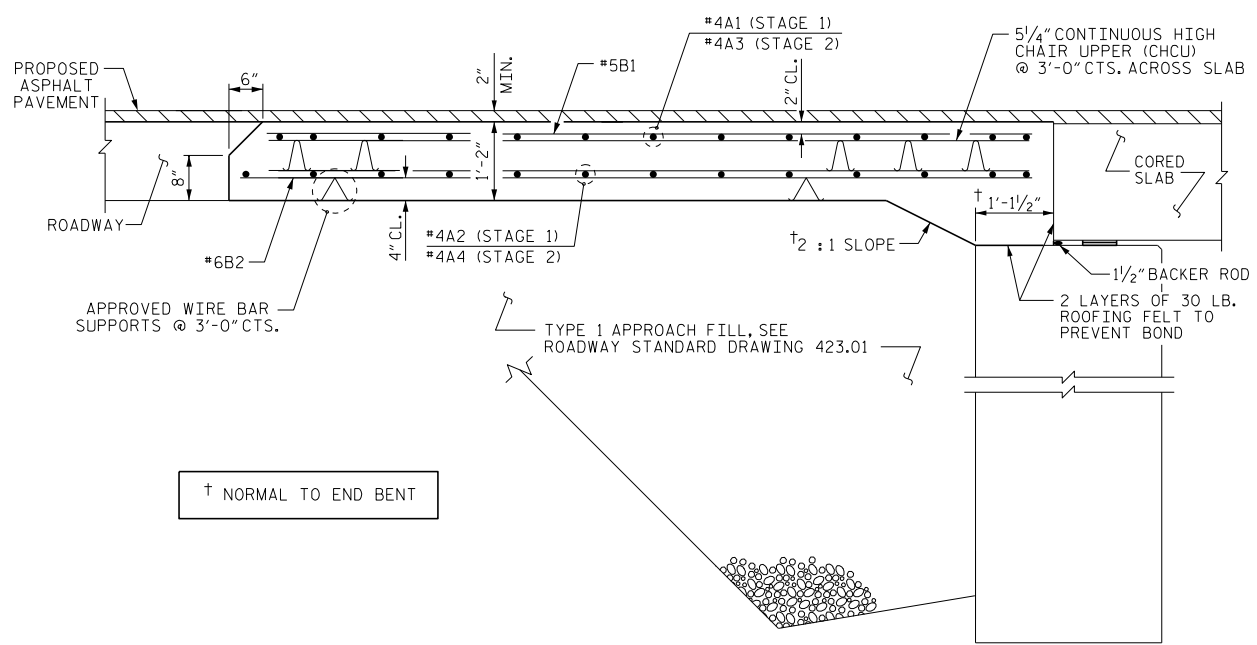
FOR BRIDGE APPROACH FILL SEE ROADWAY PLANS.

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.

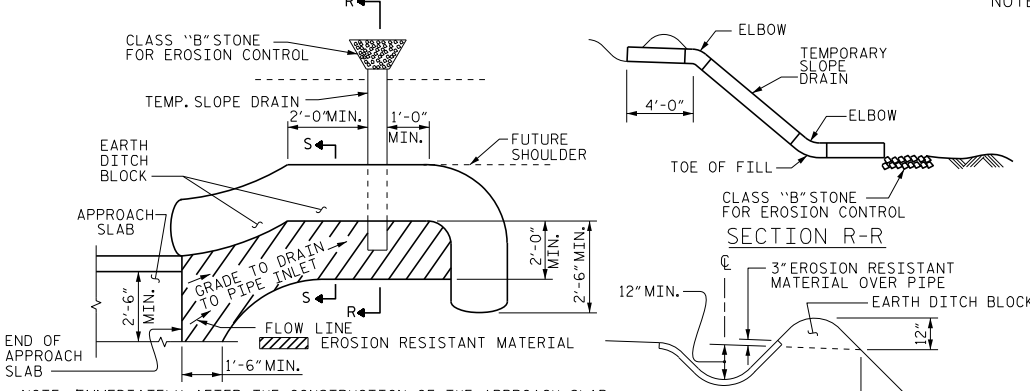
APPROACH SLAB GROOVING IS NOT REQUIRED.



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



SECTION THRU SLAB



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

DRAWN BY: J. MYA DATE: 01/2025
 CHECKED BY: R. FISHER DATE: 07/2025
 DESIGN ENGINEER OF RECORD: R. FISHER DATE: 11/2025



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 12/10/2025

PROJECT NO. DF18313.2011297.PR
 BUNCOMBE COUNTY
 STATION: 11+69.00 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER) 90° SKEW

| REVISIONS | | | | | | SHEET NO. | |
|-----------|-----|-------|-----|-----|-------|--------------|--|
| NO. | BY: | DATE: | NO. | BY: | DATE: | S-21 | |
| 1 | | | 3 | | | TOTAL SHEETS | |
| 2 | | | 4 | | | 21 | |

