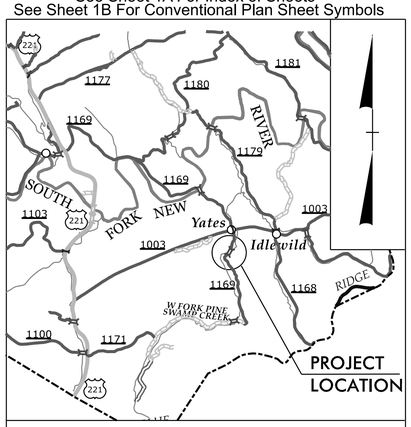
01/16/24

TIP PROJECT: BP11-R046

CONTRACT: DK00431

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



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ASHE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP11-R046	1	

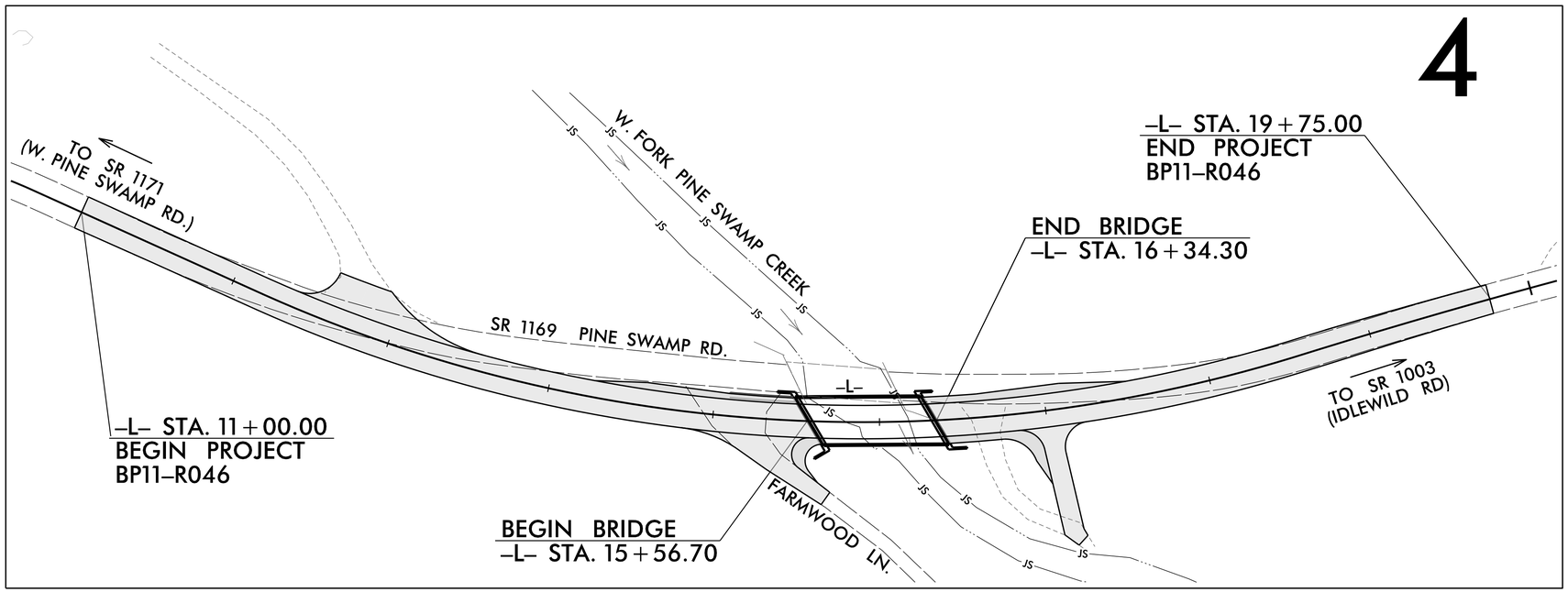
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
BP11.R046.1	N/A	PE
BP11.R046.2	N/A	R/W & UTIL.
BP11.R046.3	N/A	CONST.

LOCATION: *BRIDGE #040156 OVER W. FORK PINE SWAMP ON SR 1169 (PINE SWAMP ROAD)*

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

NAD 83/ 2011

4



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2025 = 190
ADT 2045 = 230
T = 6 % *
V = 50 MPH
* TTST =3% DUAL = 3%

FUNC CLASS =
LOCAL RURAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT BP11-R046 = 0.151 MILES
LENGTH OF STRUCTURE PROJECT BP11-R046 = 0.015 MILE
TOTAL LENGTH OF PROJECT BP11-R046 = 0.166 MILES

NCDOT CONTACT: ROB N. WEISZ, PE

TGS ENGINEERS
201 W. MARION ST.
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

NORTH CAROLINA DEPARTMENT OF TRANSPORATION
DIVISION 11
801 STATESVILLE RD
NORTH WILKESBORO, NC 28659

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOV. 15, 2024

LETTING DATE:
SEPT. 18, 2025

JIMMY L. TERRY, PE
PROJECT ENGINEER

AUSTIN R. TURNER, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

8/4/2025

Signed by: Benjamin J. Henegar P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 044158 ENGINEER BENJAMIN J. HENEGAR

ROADWAY DESIGN ENGINEER

8/4/2025

DocuSigned by: Jimmy Terry P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JIMMY L. TERRY

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

11/15/23

TGS ENGINEERS
201 W. WARREN ST. STE 200
SHELBY, NC 28150
PH: (704) 476-0003
CORP. LICENSE NO.: C-0275

BP11-R046
3RD1 | 001A

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JIMMY L. TERRY
JIMMY L. TERRY
8/6/2025

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INDEX OF SHEETS

GENERAL NOTES: 2024 SPECIFICATIONS
EFFECTIVE: 01-16-2024
REVISED:

GRADE LINE:
GRADING AND SURFACING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SUBSURFACE DRAINS:

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

GUARDRAIL:

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

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE SKYLINE

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.

ROCK

ROCK IS ANTICIPATED BETWEEN -L- 11+25+/- TO 14+75+/-, RT. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS AND IF APPLICABLE, ROCK BLASTING PROVISION.

EFF. 01-16-2024
REV.

2024 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Contracts Standards and Development Unit - N. C. Department of Transportation - Raleigh, N. C., Dated January 16, 2024 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO. TITLE

DIVISION 2 - EARTHWORK

200.03 Method of Clearing - Method III
225.02 Guide for Grading Subgrade - Secondary and Local
225.04 Method of Obtaining Superelevation - Two Lane Pavement

DIVISION 3 - PIPE CULVERTS

300.01 Method of Pipe Installation (Use Details in Lieu of Standards for Sheets 1 and 2 of 2)

DIVISION 4 - MAJOR STRUCTURES

423.02 Bridge Approach Fills - Type 1A Alternate Approach Fill for Integral 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
840.00 Concrete Base Pad for Drainage Structures
840.29 Frames and Narrow Slot Flat Grates
840.35 Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46 Traffic Bearing Precast Drainage Structure
840.66 Drainage Structure Steps
846.01 Concrete Curb, Gutter and Curb & Gutter
846.04 Drop Inlet Installation in Shoulder Berm Gutter
862.01 Guardrail Placement (Use Details in Lieu of Standards for Sheets 4, 6, 12, and 14 of 15)
862.02 Guardrail Installation
862.03 Structure Anchor Units (Use Detail in Lieu of Standard for Sheet 8 of 9)
862.04 Anchoring End of Guardrail - for B-77 and B-83 Anchor Units
866.04 Barbed Wire Fence - with Wood Posts
876.01 Rip Rap in Channels and Ditches
876.02 Guide for Rip Rap at Pipe Outlets

05/20/24

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) — EIP
- Computed Property Corner
- Existing Concrete Monument (ECM) — ECM
- Parcel / Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil — S
- Potential Contamination Area: Soil — S
- Known Contamination Area: Water — W
- Potential Contamination Area: Water — W
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY & PROJECT CONTROL:

- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Secondary Horiz and Vert Control Point
- Vertical Benchmark
- Existing Right of Way Monument
- Proposed Right of Way Monument (Rebar and Cap)
- Proposed Right of Way Monument (Concrete)
- Existing Permanent Easement Monument
- Proposed Permanent Easement Monument (Rebar and Cap)
- Existing C/A Monument
- Proposed C/A Monument (Rebar and Cap)
- Proposed C/A Monument (Concrete)
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Existing Control of Access Line — CA
- Proposed Control of Access Line — CA
- Proposed ROW and CA Line — RW CA
- 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 — CR
- 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 — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

** 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 — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- H-Frame Pole
- U/G Power Line Test Hole (SUE - LOS A)*
- U/G Power Line (SUE - LOS B)* — P
- U/G Power Line (SUE - LOS C)* — P
- U/G Power Line (SUE - LOS D)* — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- U/G Telephone Test Hole (SUE - LOS A)*
- U/G Telephone Cable (SUE - LOS B)* — T
- U/G Telephone Cable (SUE - LOS C)* — T
- U/G Telephone Cable (SUE - LOS D)* — T
- U/G Telephone Conduit (SUE - LOS B)* — TC
- U/G Telephone Conduit (SUE - LOS C)* — TC
- U/G Telephone Conduit (SUE - LOS D)* — TC
- U/G Fiber Optics Cable (SUE - LOS B)* — T FO
- U/G Fiber Optics Cable (SUE - LOS C)* — T FO
- U/G Fiber Optics Cable (SUE - LOS D)* — T FO

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

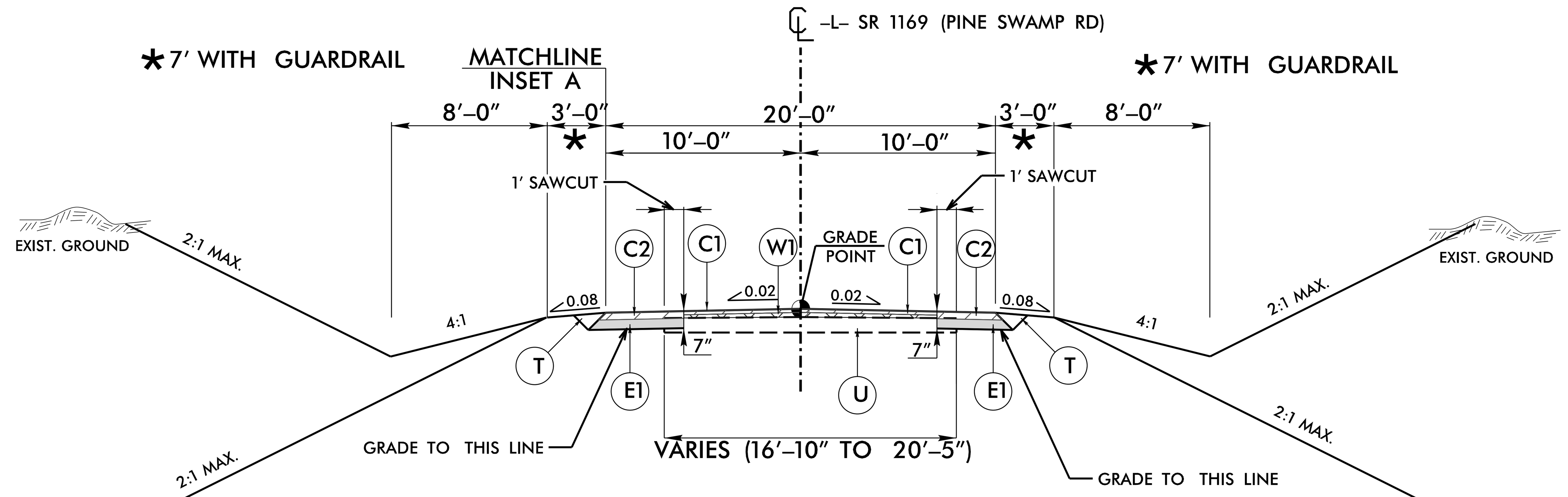
MISCELLANEOUS:

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

11/14/23

FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	INCIDENTAL MILLING (SEE MILLING DETAIL THIS SHEET).
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAILS THIS SHEET).

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

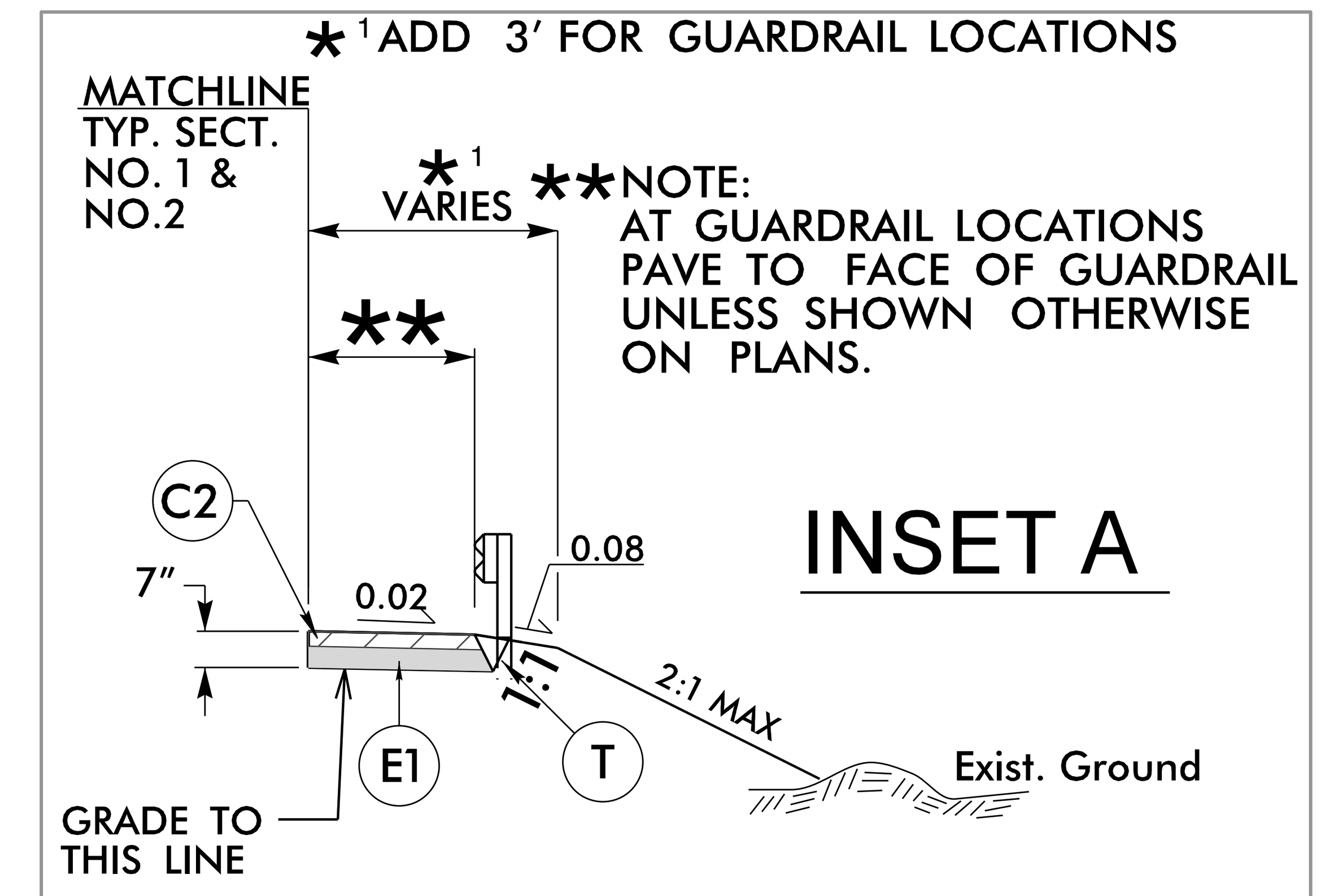


TYPICAL SECTION NO. 1

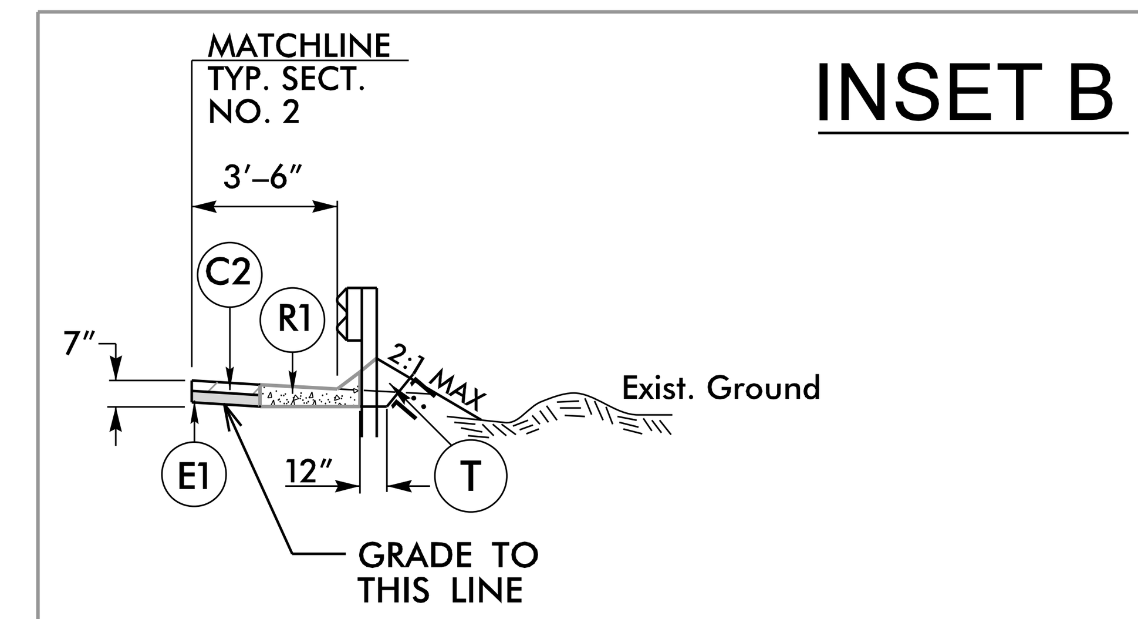
USE TYPICAL SECTION NO. 1

-L- STA. 12+00.00 TO -L- STA. 13+50.00
-L- STA. 17+00.00 TO -L- STA. 18+75.00

NOTE: TRANSITION BETWEEN EXISTING AND TYP. SECT. NO. 1 AS FOLLOWS:
-L- STA. 11+00.00 TO -L- STA. 12+00.00
-L- STA. 18+75.00 TO -L- STA. 19+75.00



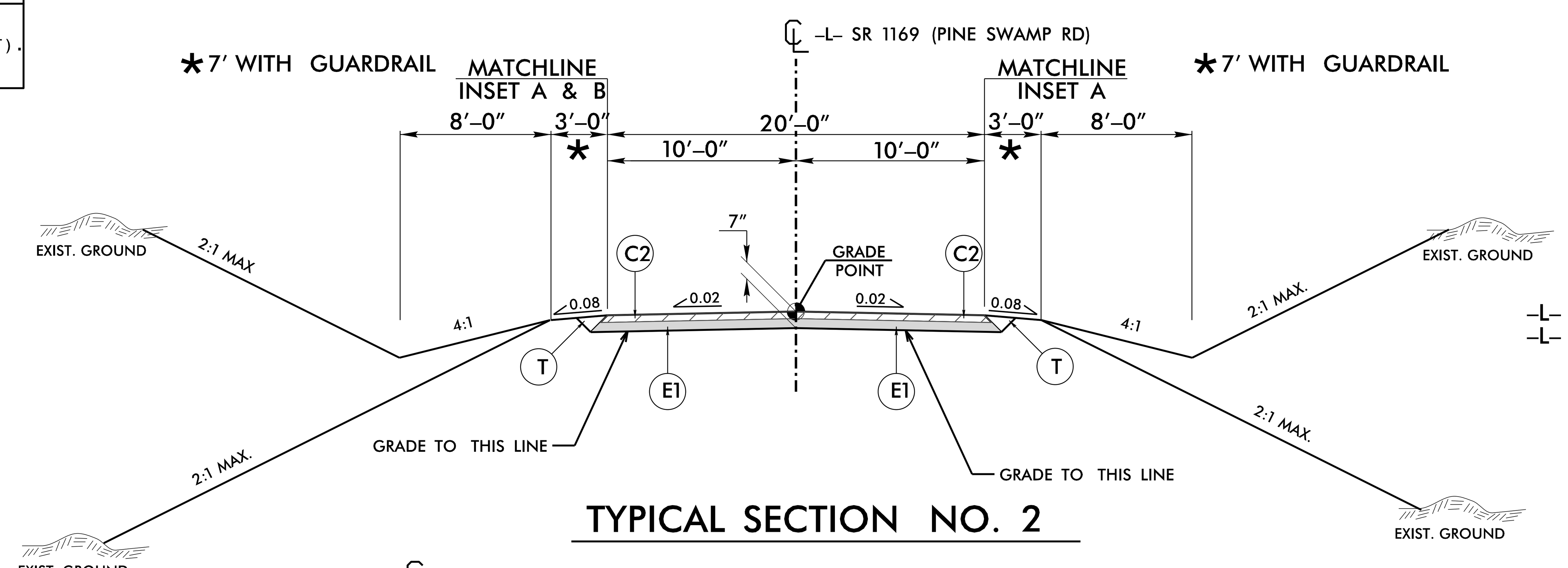
INSET A



INSET B

USE INSET B

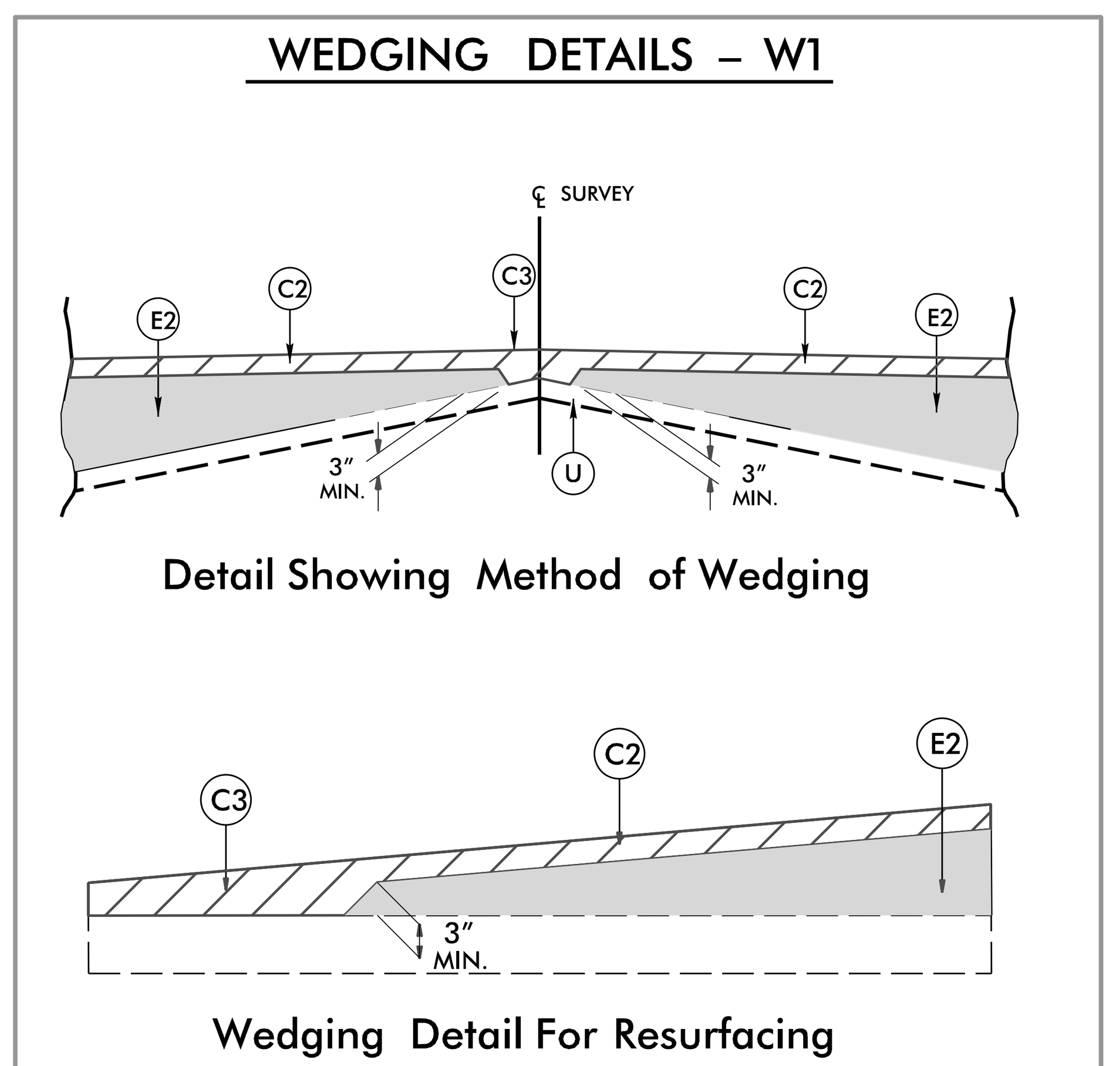
-L- STA. 15+09.00 LT TO -L- STA. 15+47.37 LT (BEGIN BRIDGE)

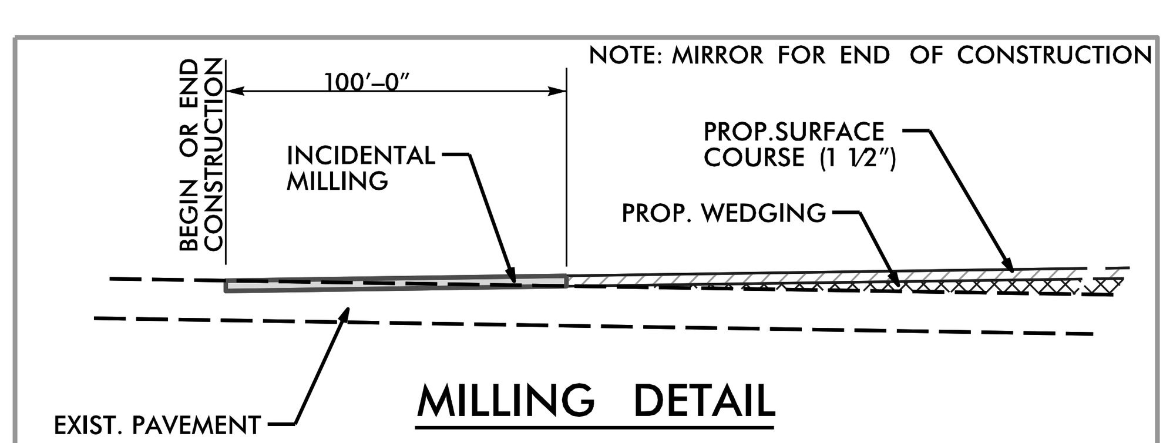


TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

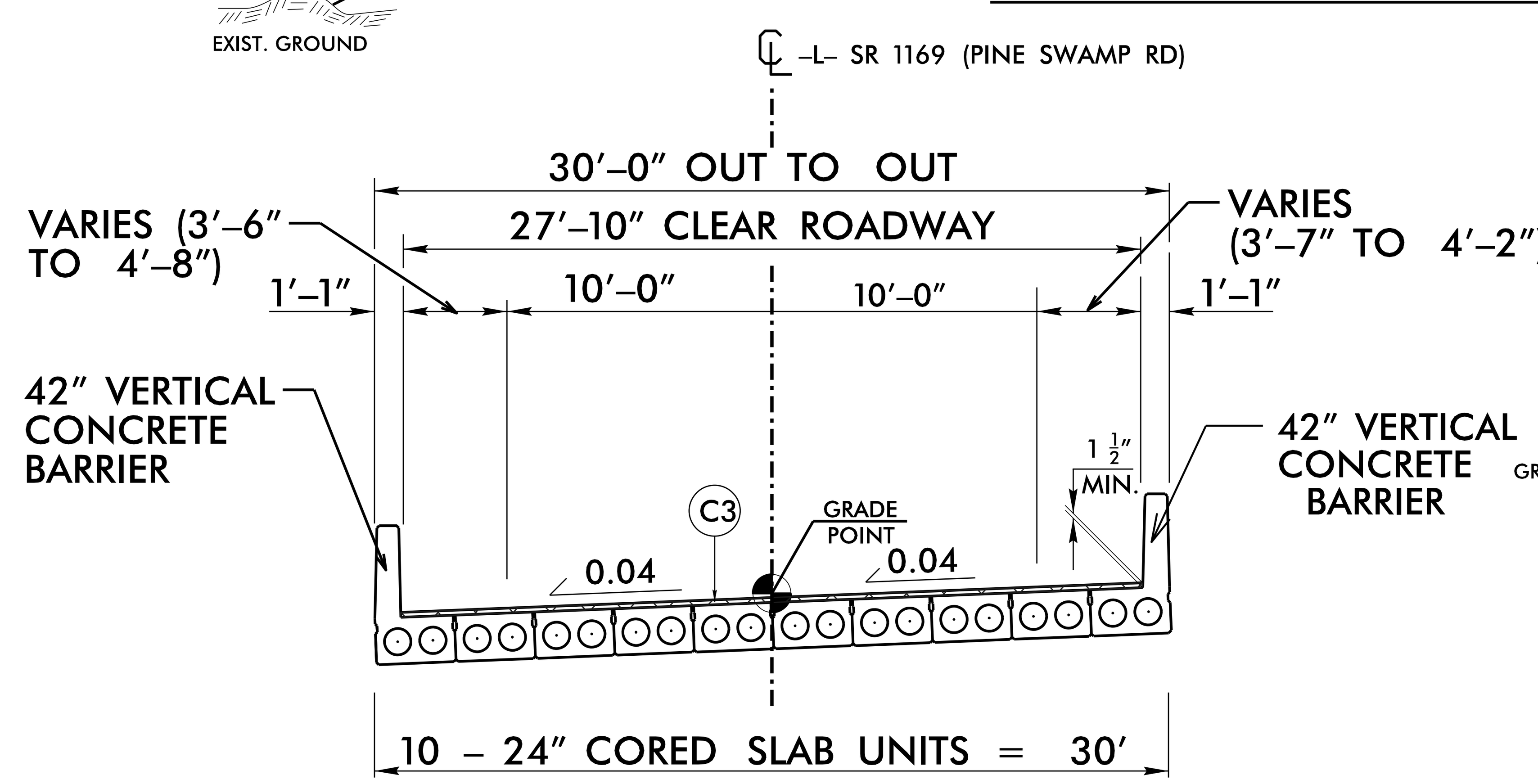
-L- STA. 13+50.00 TO -L- STA. 15+56.70 (BEGIN BRIDGE)
-L- STA. 16+34.30 (END BRIDGE) TO -L- STA. 17+00.00





MILLING DETAIL

USE MILLING DETAIL AS FOLLOWS:
-L- STA. 11+00.00 TO -L- STA. 12+00.00
-L- STA. 18+75.00 TO -L- STA. 19+75.00

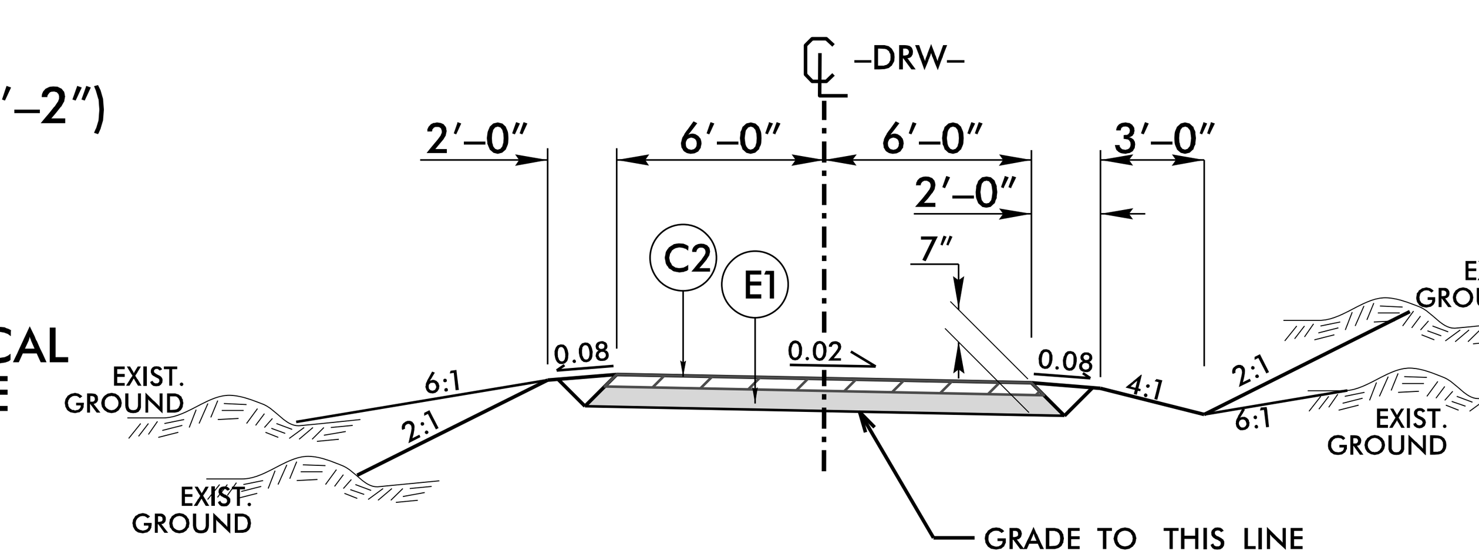


SEE STRUCTURE PLANS FOR STRUCTURE CONSTRUCTION DETAILS

TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

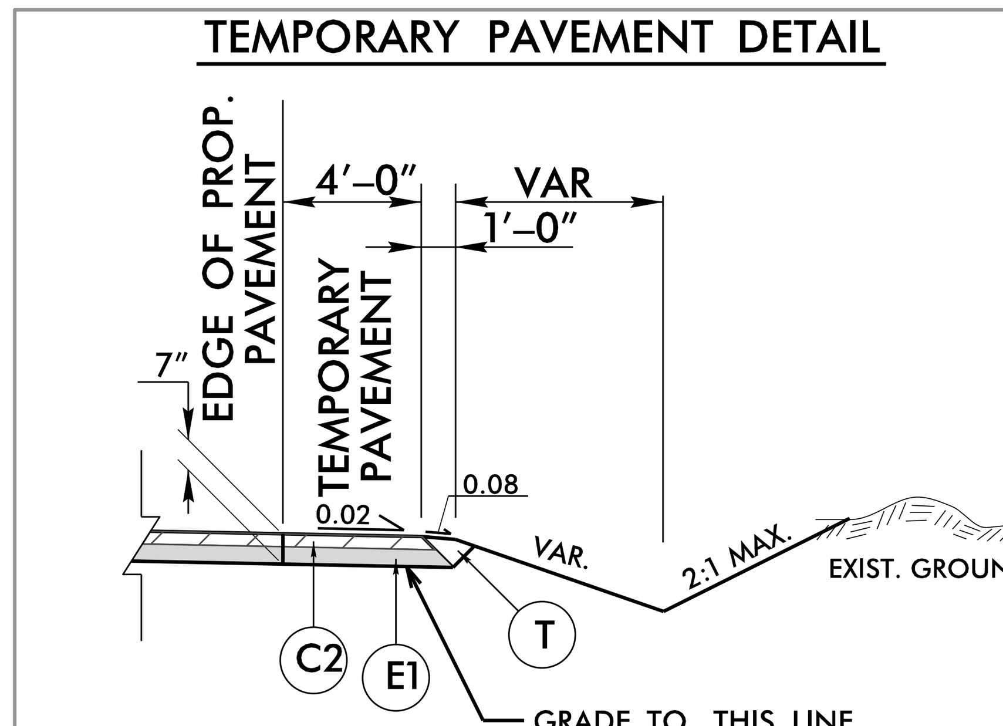
-L- STA. 15+56.70 TO -L- STA. 16+34.30



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

DRW AT -L- STA. 15+25.00 RT (FARMWOOD LN.)
DRW AT -L- STA. 17+00.00 RT



TEMPORARY PAVEMENT DETAIL

USE DETAIL AS FOLLOWS
-L- STA. 13+45± TO -L- STA. 15+05±, RT
-L- STA. 17+13± TO -L- STA. 18+06±, RT

SEE SHEET TMP-4 FOR LAYOUT

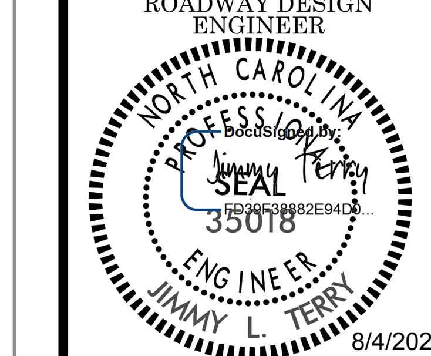
BP11-R046

3RD1 | 2A-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION ASHE COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER



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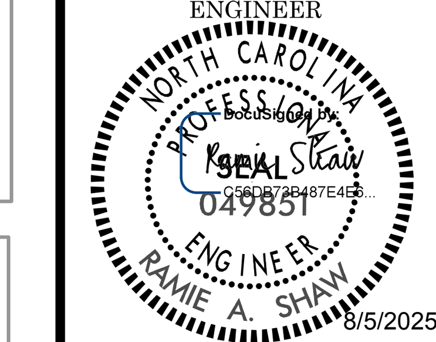
PAVEMENT DESIGN ENGINEER



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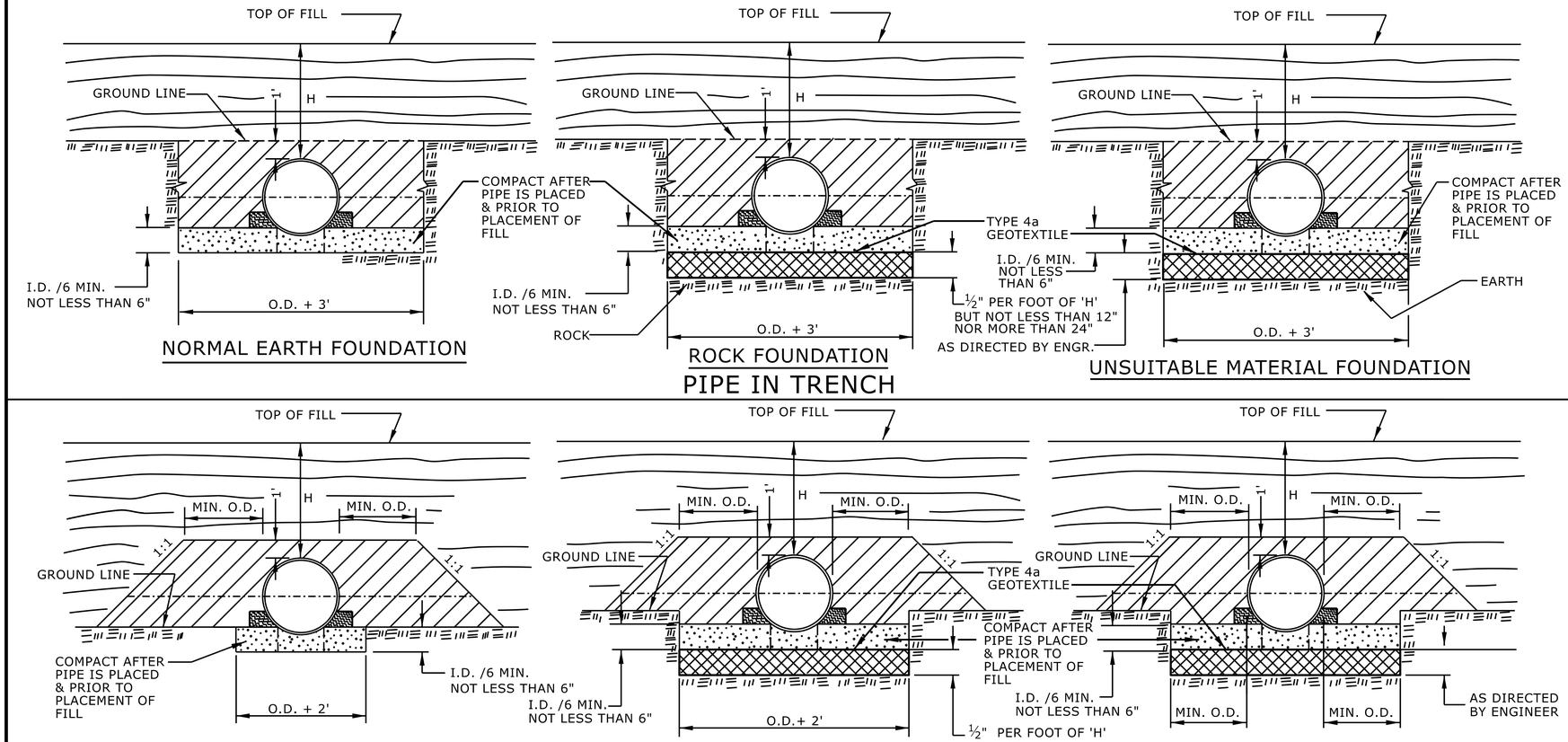
PREPARED BY

TGS ENGINEERS
201 W. MARION ST. STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BP11-R046	2C-1



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, 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

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKER Signed by: 6/11/2025

6/11/2025

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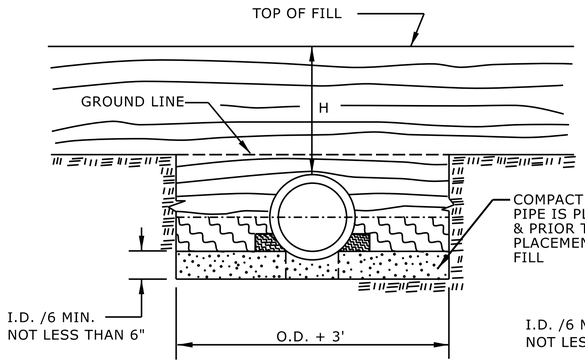
CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

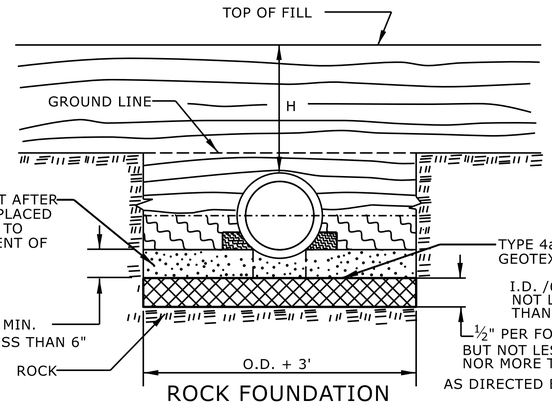
SEE TITLE BLOCK

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

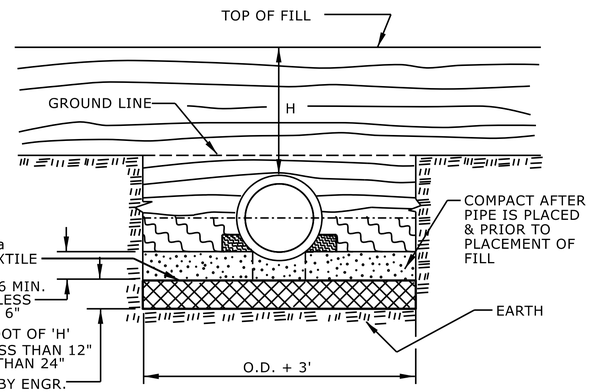
PROJECT REFERENCE NO.	SHEET NO.
BP11-R046	2C-2



NORMAL EARTH FOUNDATION

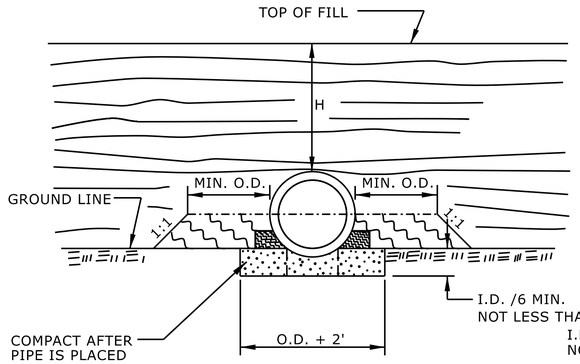


ROCK FOUNDATION

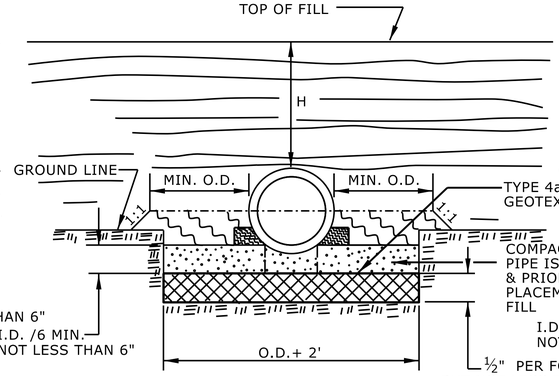


UNSUITABLE MATERIAL FOUNDATION

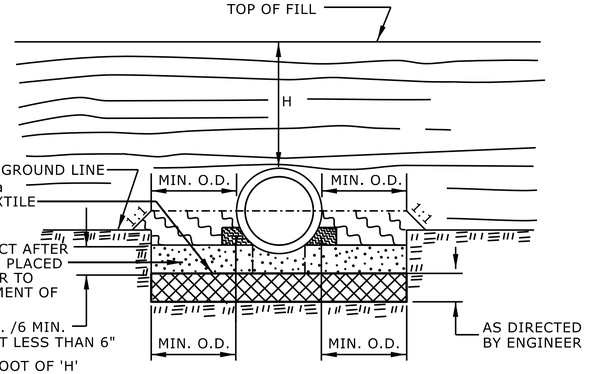
PIPE IN TRENCH



NORMAL EARTH FOUNDATION



ROCK FOUNDATION



UNSUITABLE MATERIAL FOUNDATION

PIPE ABOVE GROUND

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

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKER

6/11/2025

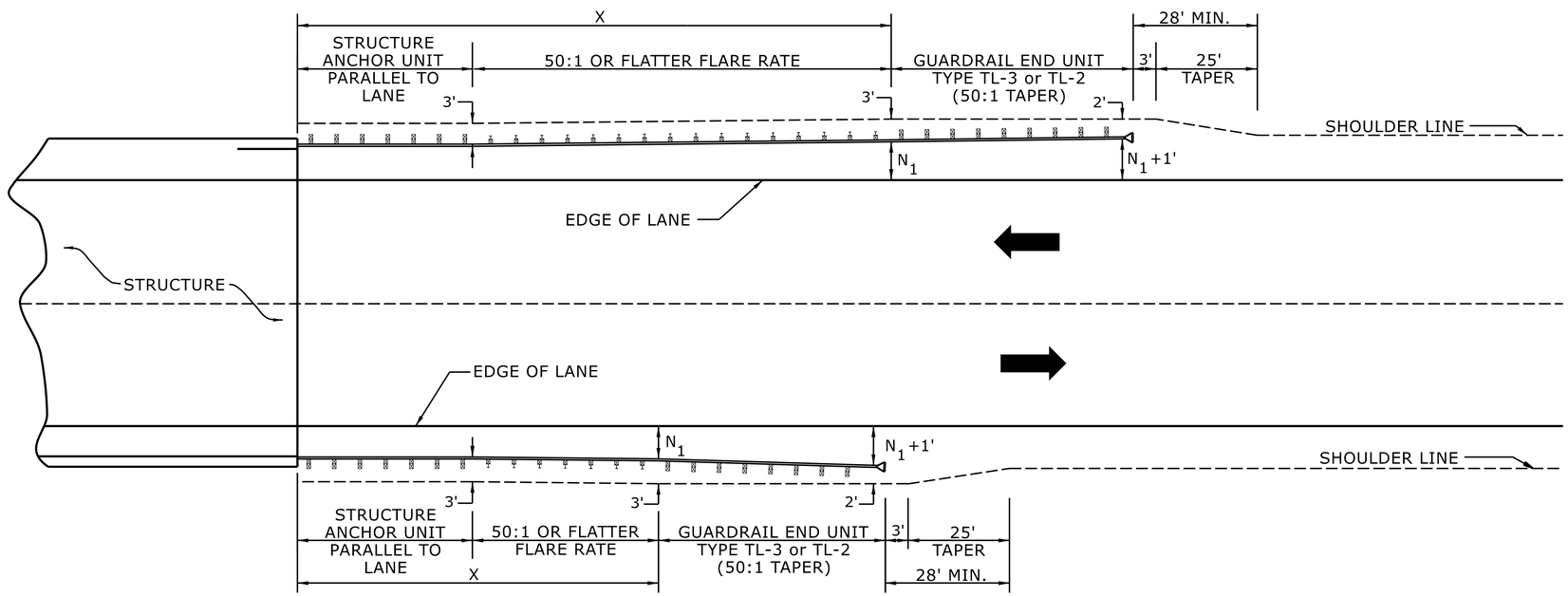
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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.: _____

PROJECT REFERENCE NO.	SHEET NO.
BP11-R046	2C-3



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 ≥ 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

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER
Digitally signed by Nicole M. Hackler
6/11/2025

SHEET 4 OF 15

862D01

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

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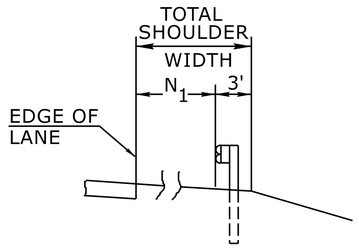
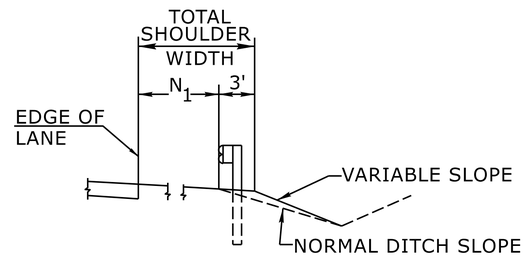
ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

PROJECT REFERENCE NO.	SHEET NO.
BP11-R046	2C-4

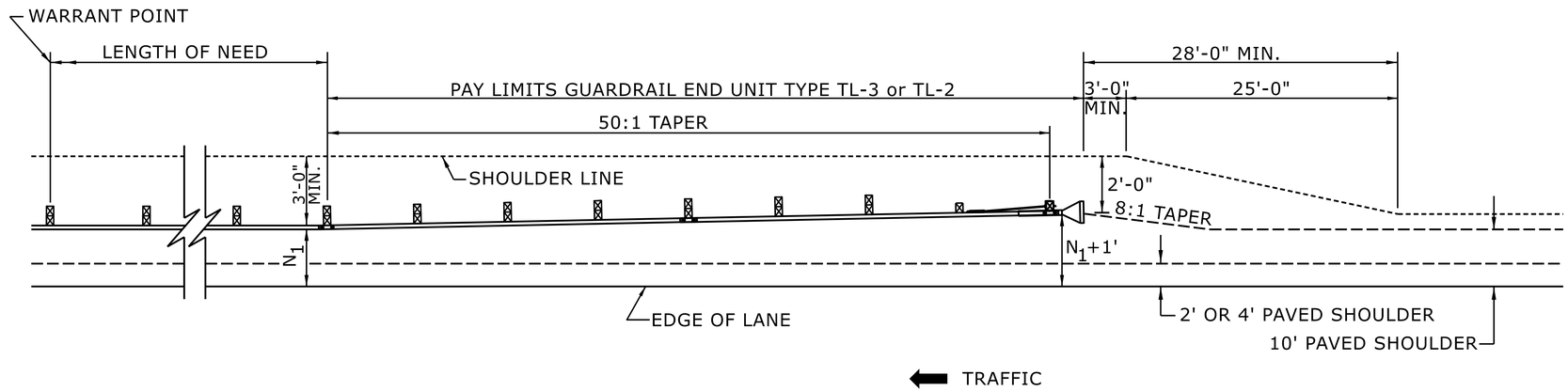


FILL SECTION



CUT SECTION

"N_1"= 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

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER
Signed by: Nicole M. Hackler
6/11/2025

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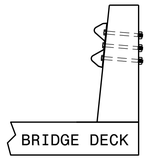
CONTRACTS STANDARDS
AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

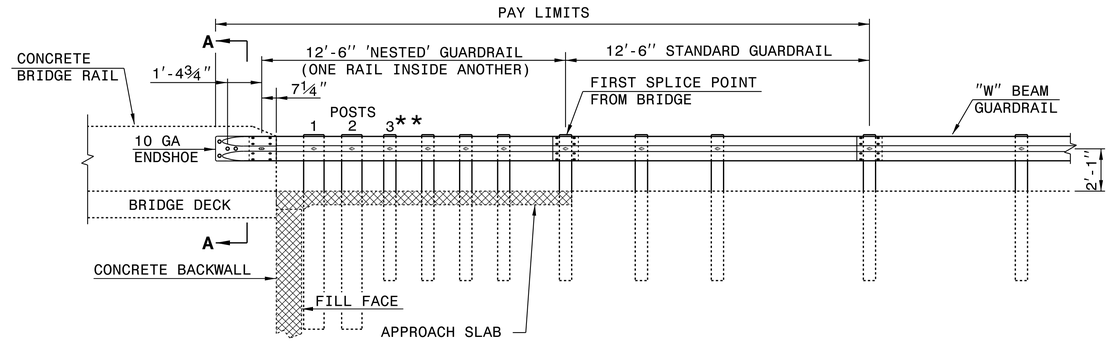
SEE TITLE BLOCK

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

PROJECT REFERENCE NO.	SHEET NO.
BP11-R046	2C-5

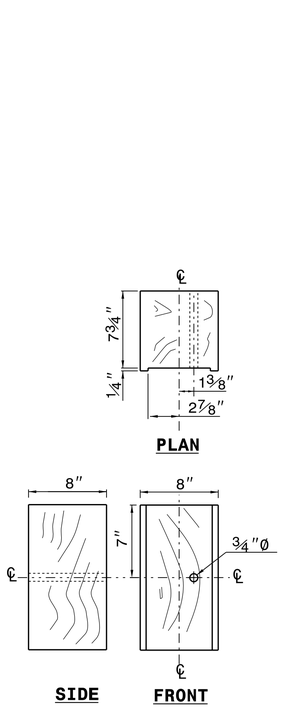


SECTION A-A

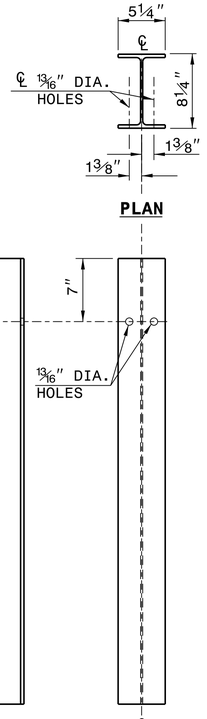


ELEVATION VIEW

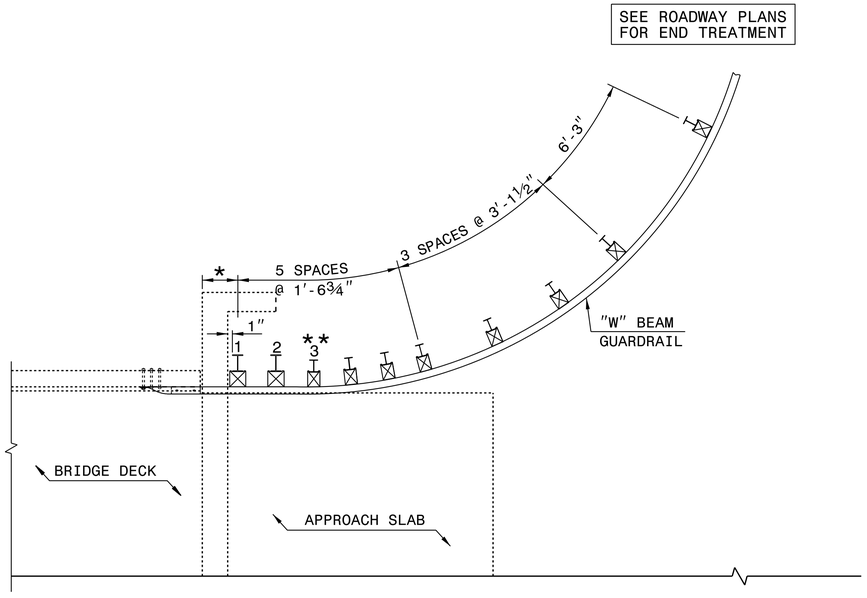
NOTE:
**ELIMINATE POST 3 AND SHIFT POSTS 1 & 2 ON SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11½" IF CONCRETE BACKWALL IS NOT PRESENT.
-MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
-USE NO WOOD POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
-LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
-POSTS 1 AND 2 TO BE W8 x 21 X 8'-0" LONG STEEL POST AND 8" X 8" X 14" WOOD ROUTED OFFSET BLOCK.



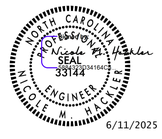
8"X 8"X 14" ROUTED WOOD OFFSET BLOCK



"W8 X 21 X 8'-0" STEEL POST



PLAN VIEW



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

GUARDRAIL ANCHOR UNIT TYPE B-83 SHOP CURVED

ORIGINAL BY:	E.E. WARD	DATE:	6-10-02
MODIFIED BY:	E.E. WARD	DATE:	7-14-04
CHECKED BY:		DATE:	
FILE SPEC.:			

19-NOV-2018 08:26
S:\Contracts\Contracts\Special Details\Verieward\Misc guardrail\NCHRP350 Approved\b-83 mnndot.dgn
jhowerton AT CSD-292595

5/26/20

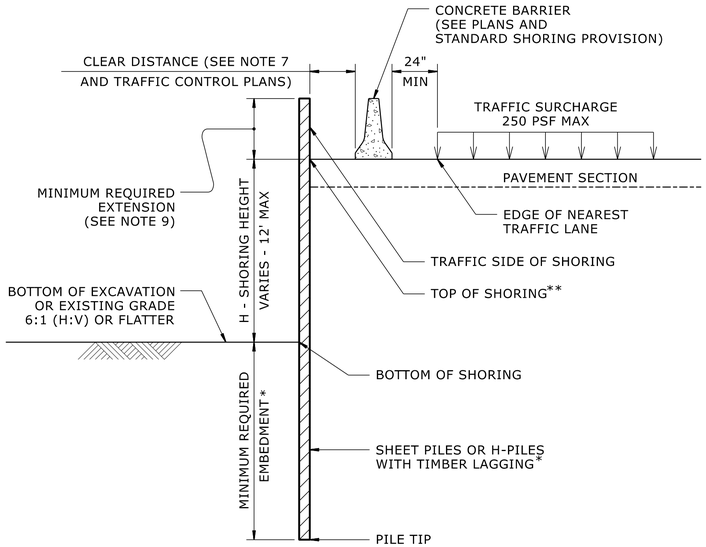
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".

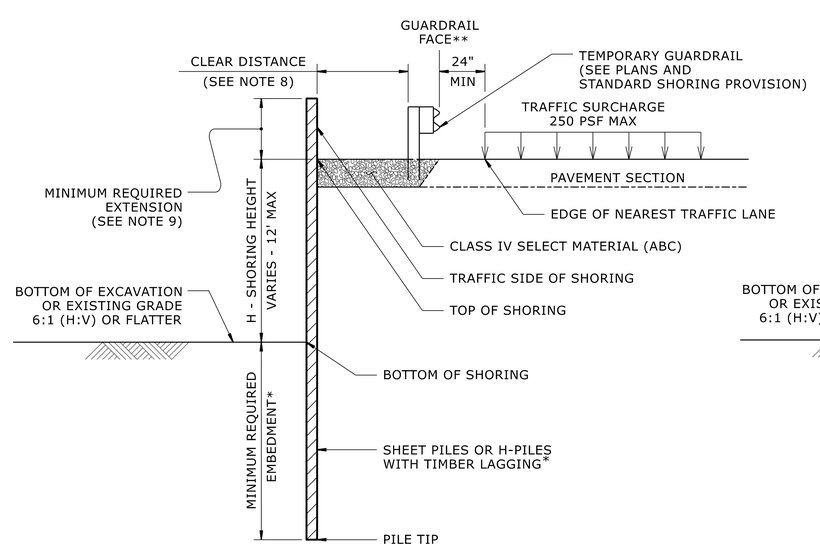
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, φ = 30 DEGREES
   COHESION, c = 0 PSF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



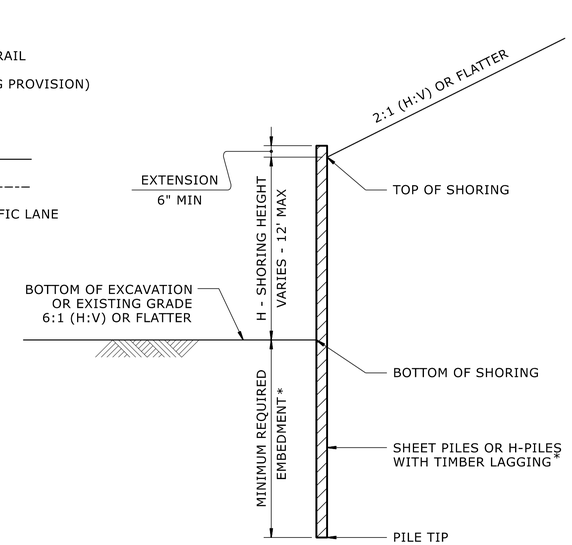
CONCRETE BARRIER

**TOP OF SHORING = EDGE OF PAVEMENT



TEMPORARY GUARDRAIL

**GUARDRAIL FACE = EDGE OF PAVEMENT



STANDARD TEMPORARY SHORING

(SLOPE CASE)
*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)
*SEE TABLE ABOVE.

BP11-R046
3RD1 | 2G-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 031361 SHUPING YANG
2/18/2025

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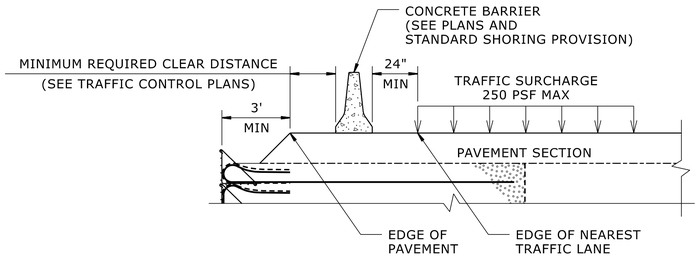
STANDARD DETAIL NO. 1801.01

GEOTECHNICAL STANDARD DETAIL FOR

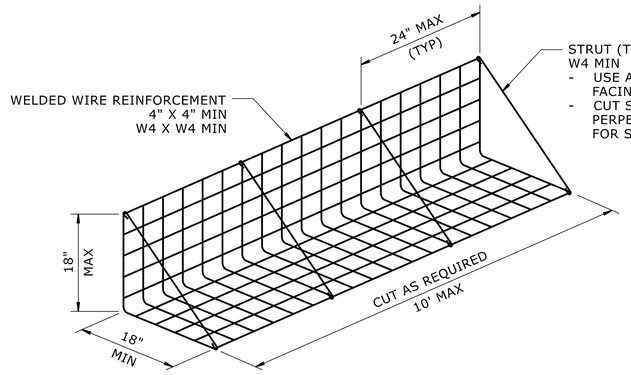
TEMPORARY SHORING

DATE: 02-18-2025

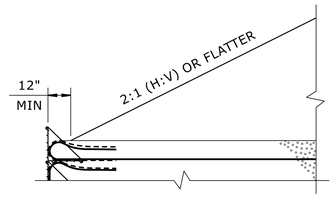
5/26/20



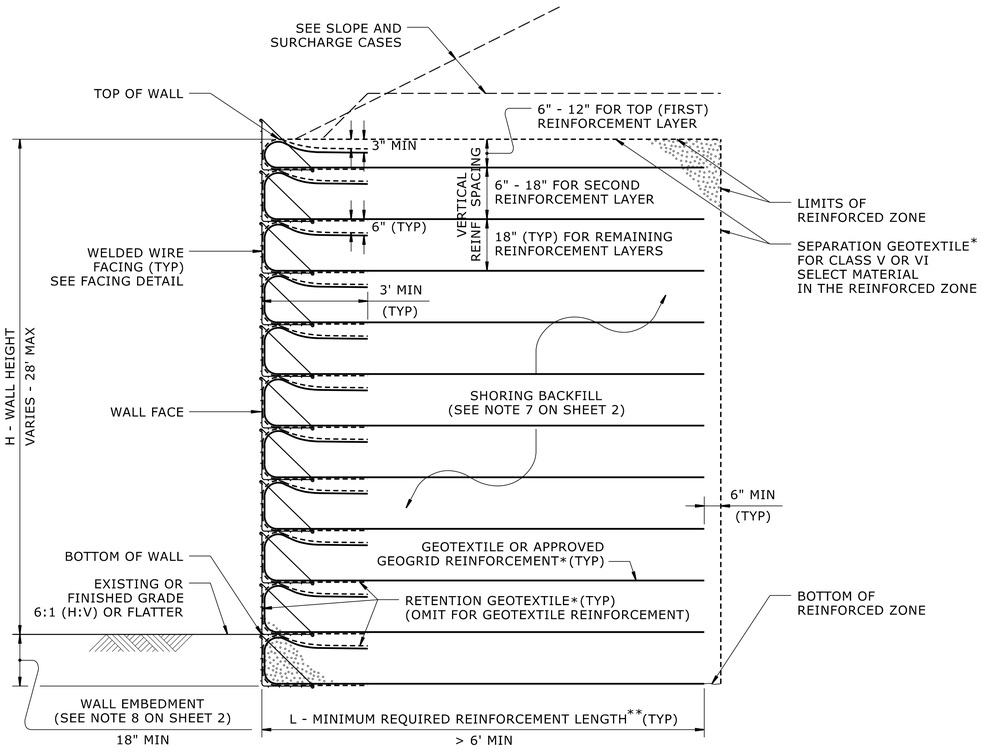
SURCHARGE CASE



FACING DETAIL

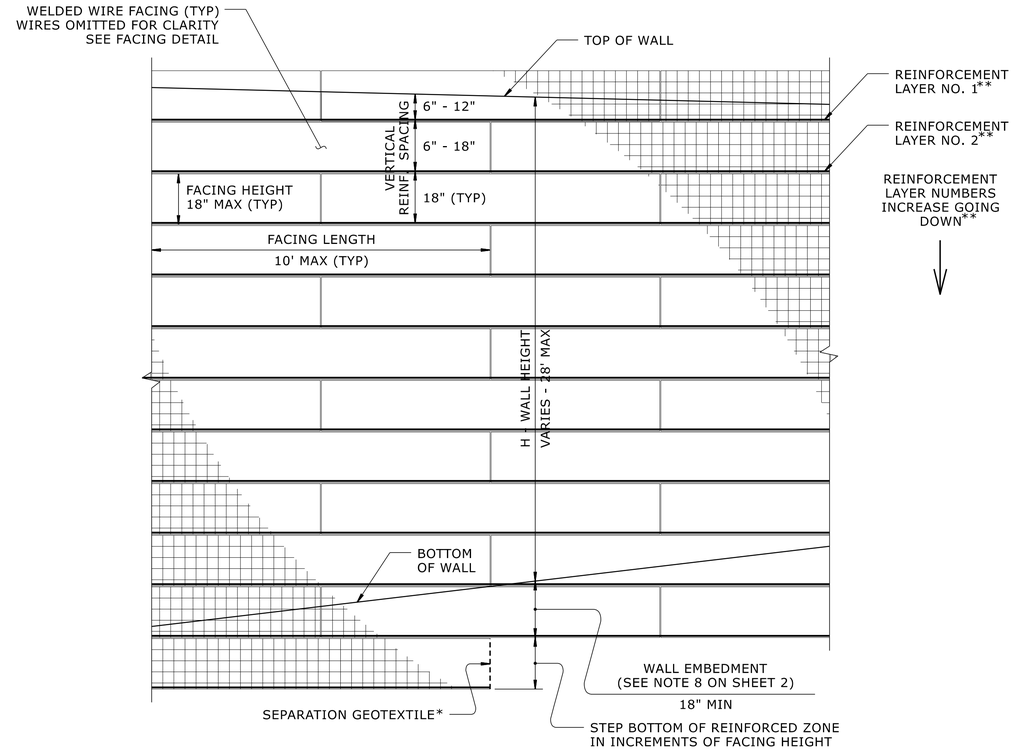


SLOPE CASE



STANDARD TEMPORARY WALL

(FOR STANDARD TEMPORARY WALLS ON STRUCTURES,
SEE TEMPORARY WALL ON STRUCTURE DETAIL ON SHEET 2.)
*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.



STANDARD TEMPORARY WALL - PARTIAL ELEVATION

*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.

BP11-R046
3RD1 | 2G-2

NORTH CAROLINA
DEPARTMENT
OF TRANSPORTATION

GEOTECHNICAL
ENGINEERING UNIT

GEOTECHNICAL
ENGINEER

NORTH CAROLINA
PROFESSIONAL
SEAL
031501
ENGINEER
SHIPING YANG
11/1/2025

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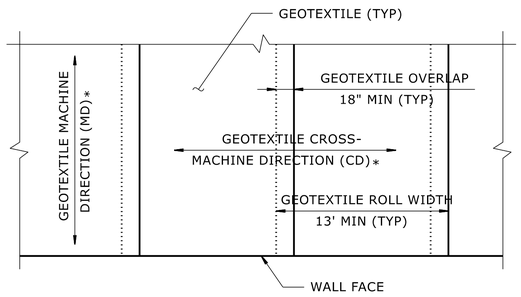
STANDARD
DETAIL NO. 1801.02

GEOTECHNICAL STANDARD DETAIL FOR TEMPORARY WALL (SHEET 1 OF 3)

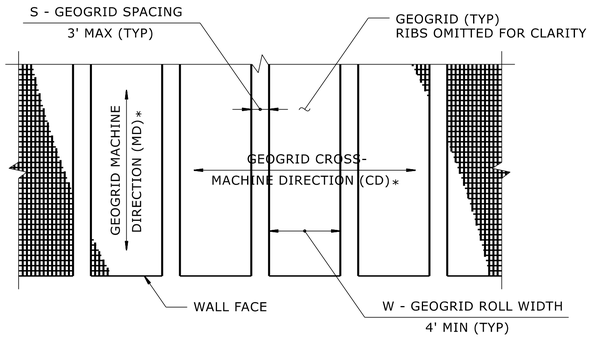
DATE: 02-18-2025

5/26/20



GEOTEXTILE PLACEMENT

(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)

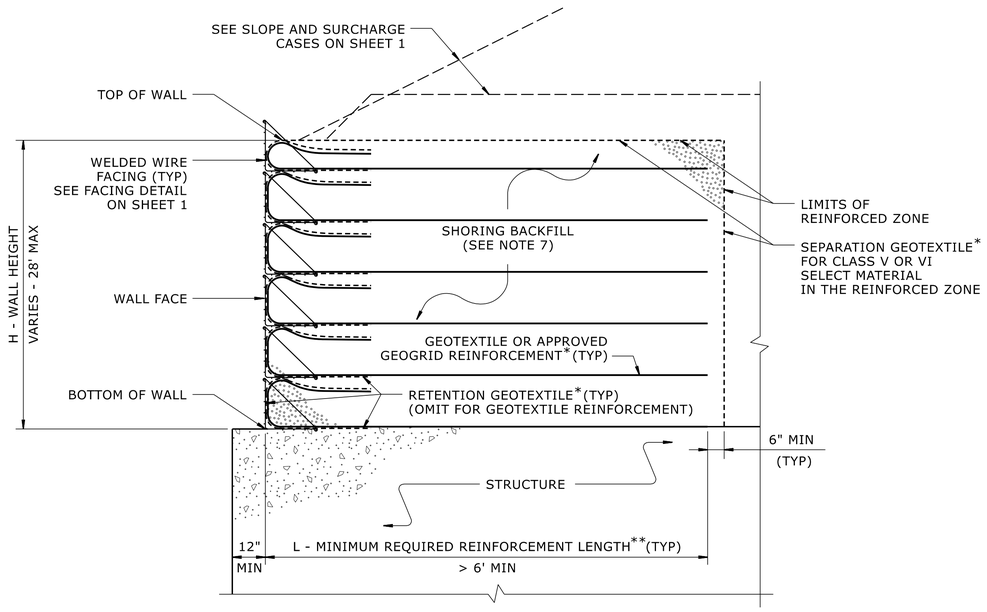


GEOGRID PLACEMENT

(80% COVERAGE MIN FOR GEOGRID REINFORCEMENT - $\frac{W}{W+S} \times 100 \geq 80\%$, SEE NOTE 11)

GEOSYNTHETIC PLACEMENT DETAILS

(PLAN VIEW)
*SEE NOTE 12.



TEMPORARY WALL ON STRUCTURE DETAIL

*SEE GEOSYNTHETIC PLACEMENT DETAILS.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, φ = 30 DEGREES
   COHESION, c = 0 PSF
4. DO NOT USE STANDARD TEMPORARY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, ASSUME GROUNDWATER DEPTH IS LESS THAN 7' BELOW BOTTOM OF REINFORCED ZONE. DO NOT USE STANDARD TEMPORARY WALLS IF GROUNDWATER OR FLOOD ELEVATION IS ABOVE BOTTOM OF REINFORCED ZONE.
7. DO NOT USE A-2-4 SOIL FOR STANDARD TEMPORARY WALLS AROUND CULVERTS OR IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS FOR SLOPE CASES. DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS WITH GEOTEXTILE REINFORCEMENT.
8. WALL EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
9. DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
10. GEOGRIDS FOR GEOGRID REINFORCEMENT ARE APPROVED FOR SHORT TERM DESIGN STRENGTHS (3-YEAR DESIGN LIFE) IN THE MD AND CD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Products.aspx
    DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE 1 OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

11. FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
12. AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH OF THE FOLLOWING CONDITIONS OCCUR:
    - W (REINFORCEMENT ROLL WIDTH) > (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND
    - REINFORCEMENT STRENGTH IN CD > MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
13. SUBMIT A "STANDARD TEMPORARY WALL SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY WALL CONSTRUCTION. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
14. DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
15. FOR STANDARD TEMPORARY WALLS WITH PILE FOUNDATIONS IN THE REINFORCED ZONE, DRIVE PILES THROUGH REINFORCEMENT AFTER CONSTRUCTING TEMPORARY WALLS.
16. DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
17. CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
18. FOR STANDARD TEMPORARY WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.
19. FOR STANDARD TEMPORARY WALLS WITH TOP OF WALL WITHIN 5' OF FINISHED GRADE, REMOVE TOP FACING AND INCORPORATE TOP REINFORCEMENT LAYER INTO FILL WHEN PLACING FILL IN FRONT OF WALL.

BP11-R046
3RD1 | 2G-3

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 034361 ENGINEER SHIPING YANG
02/27/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STANDARD DETAIL NO. 1801.02

GEOTECHNICAL STANDARD DETAIL FOR
TEMPORARY WALL (SHEET 2 OF 3)

DATE: 02-18-2025

5/26/20

SLOPE OR SURCHARGE CASE	GROUNDWATER DEPTH BELOW BOTTOM OF REINFORCED ZONE (SEE NOTE 6 ON SHEET 2) (FT)	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)	H - WALL HEIGHT (FT)																								
			< 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
SLOPE CASE	> 0	CLASS II, TYPE 1, CLASS III, CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	8	9	11	12	13	13	14	15	16	17	18	19	20	21	22	23	24	24	25	26	27	27
SURCHARGE CASE	> 0 TO 7 FOR H < 20' > 0 TO 10 FOR H > 20'	ALL SHORING BACKFILL TYPES	6	7	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	17	17	18	19	19	20	21	22
	> 7 FOR H < 20' > 10 FOR H > 20'	A-2-4 SOIL	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21
		CLASS II, TYPE 1 OR CLASS III SELECT MATERIAL	6	6	7	7	8	8	9	10	10	11	11	12	12	13	14	15	15	16	16	17	17	18	18	19	20
		CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	7	7	8	8	9	9	10	10	11	12	13	13	14	14	15	15	16	17	17	18	19	19

L - MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)

(FOR ALL REINFORCEMENT TYPES)

WALL HEIGHT (H) + WALL EMBEDMENT (FT)	NUMBER OF REINFORCEMENT LAYERS*
2.5 - 4	3
4 - 5.5	4
5.5 - 7	5
7 - 8.5	6
8.5 - 10	7
10 - 11.5	8
11.5 - 13	9
13 - 14.5	10
14.5 - 16	11
16 - 17.5	12
17.5 - 19	13
19 - 20.5	14
20.5 - 22	15
22 - 23.5	16
23.5 - 25	17
25 - 26.5	18
26.5 - 28	19
28 - 29.5	20

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

REINFORCEMENT LAYER NUMBER *	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II, TYPE 1 OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II, TYPE 1 OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	2400
2	2400	2400	2400	2400	2400
3	2400	2400	2400	2400	2400
4	2400	2400	2500	2400	2400
5	2500	2400	3000	2400	2400
6	3000	2400	3500	2800	2400
7	3500	2700	4000	3200	2600
8	4000	3100	4500	3600	2900
9	4500	3500	5000	4000	3200
10	5000	3900	5500	4400	3500
11	5500	4300	6000	4800	3800
12	6000	4700	6500	5200	4100
13	6500	5100	7000	5600	4400
14	7000	5400	7500	6000	4700
15	7500	5800	8000	6400	5000
16	8000	6200	8500	6800	5300
17	8500	6600	9000	7200	5600
18	9000	7000	9500	7600	5900
19	9500	7400	10000	8000	6200
20	10000	7800	10500	8400	6500

GEOTEXTILE REINFORCEMENT ULTIMATE TENSILE STRENGTH (LB/FT)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II, TYPE 1 OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL	A-2-4 SOIL	CLASS II, TYPE 1 OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL
1	240	200	340	290	240
2	380	310	520	430	350
3	530	420	700	570	460
4	690	550	870	720	570
5	860	690	1050	860	680
6	1030	830	1220	1000	790
7	1200	970	1400	1150	900
8	1370	1110	1580	1290	1010
9	1550	1240	1750	1430	1120
10	1720	1380	1930	1580	1230
11	1890	1520	2100	1720	1340
12	2060	1660	2280	1860	1450
13	2240	1800	2450	2010	1560
14	2410	1940	2630	2150	1670
15	2580	2080	2800	2290	1780
16	2750	2220	2980	2440	1890
17	2930	2360	3160	2580	2000
18	3100	2500	3330	2720	2110
19	3270	2640	3510	2860	2220
20	3440	2780	3690	3000	2330

GEOGRID REINFORCEMENT SHORT-TERM DESIGN STRENGTH (LB/FT)

(SEE NOTE 10 ON SHEET 2.)

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD

(SEE NOTE 9 ON SHEET 2.)
*SEE PARTIAL ELEVATION ON SHEET 1
FOR REINFORCEMENT LAYER NUMBERING.

BP11-R046
3RD1 2G-4

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

GEOTECHNICAL ENGINEERING UNIT

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 031361 ENGINEER Shipping Yang 11/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STANDARD DETAIL NO. 1801.02

GEOTECHNICAL STANDARD DETAIL FOR

TEMPORARY WALL (SHEET 3 OF 3)

DATE: 02-18-2025

COMPUTED BY: SGM DATE: 5/7/2025
CHECKED BY: JLT DATE: 5/14/2025

PROJECT NO.	SHEET NO.
BP11-R046	3B-1

STATE OF NORTH CAROLINA

SUMMARY OF EARTHWORK

IN CUBIC YARDS

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L- 11+00.00	-L- 15+56.70	5,619	106		5,513
BRIDGE					
-L- 16+34.30	-L- 19+75.00	133	2,184	2,051	
TOTALS:		5,752	2,290	2,051	5,513
LOSS DUE TO CLEARING & GRUBBING		-450			-450
ROCK WASTE TO REPLACE BORROW				-644	-644
ADJUST FOR ROCK WASTE			-97	-97	
WASTE IN LIEU OF BORROW				-1,310	-1,310
PROJECT TOTALS:		5,302	2,193	0	3,109
GRAND TOTALS:		5,302	2,193		3,109
SAY		**5,500**			

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

Note: Earthwork quantities are calculated by TGS Engineers. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

DDE = 70 CUBIC YARDS

SELECT GRANULAR MATERIAL = 600 CUBIC YARDS

EST. SHALLOW UNDERCUT = 100 CUBIC YARDS

PER GEOTECH RECOMMENDATION, ESTIMATED 700 CUBIC YARDS OF UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.

SHOULDER BERM GUTTER SUMMARY

IN LINEAR FEET

LINE	STATION	STATION	LENGTH
-L-, LT	15+09	15+47	38.2
		TOTAL:	38.20
		SAY	**40**

PAVEMENT REMOVAL SUMMARY

IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL	ASPHALT BREAKUP	CONCRETE REMOVAL	CONCRETE BREAKUP
-L-	11+77	15+47	LT	466.45			
-L-	16+09	18+24	LT	229.94			
-L-	Exist. Farmland Ln			214.85			
Temp. Pavement Removal							
-L-	13+45	15+05	RT	68.78			
-L-	17+13	18+06	RT	40.48			
			TOTAL:	1,020.50			
			SAY	**1,100**			

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

IN FEET

LINE	BEG. STA.	END STA.	LOC.	LENGTH: STRAIGHT	LENGTH: SHOP CURVED	LENGTH: DOUBLE FACED	WARRANT POINT: APPR. END	WARRANT POINT: TRAIL. END	"N" DIST. FROM E.O.L.	TOTAL SHLDR WIDTH	FLAIR LENGTH: APPR. END	FLAIR LENGTH: TRAIL. END	W: APPR. END	W: TRAIL. END	ANCHORS: TYPE III	ANCHORS: TL-3	ANCHORS: AT-1	ANCHORS: TYPE B-83 SC	ANCHORS:	IMP. ATTEN. TYPE 350: EA	IMP. ATTEN. TYPE 350: G	IMP. ATTEN. TYPE 350: NG	REMOVE AND RESET EXISTING GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMARKS
-L-	11+00.00	12+41.00	LT	50.00												1							90	50	
-L-	14+60.37	15+47.87	LT	87.50				15+47.87	3.5'	6.5'		50		1	1	1									
-L-	15+64.44	15+64.00	RT		31.25		15+64.44		3.5'	6.5'							1	1							R=10'R
-L-	16+41.62	16+90.92	RT	31.25	31.25			16+41.62	4.2'	7.2'					1		1								R=20'R
-L-	16+26.77	17+08.02	LT	81.25			16+26.77		4.2'	7.2'	50		1		1	1									
SUB-TOTALS				250.00	62.5										3	3	2	1					90	50	
LESS ANCHOR DEDUCTIONS																									
	TYPE III	3 @ 18.75 ft		56.25																					
	TYPE TL-3	3 @ 50.00 ft		150.00																					
	AT-1	2 @ 6.25 ft			12.5																				
	TYPE B-83 Shop Curved	1 @ 25.00 ft			25.00																				
ANCHOR TOTALS				206.25	37.5																				
GRAND-TOTALS				**43.75**	**25.00**										**3**	**3**	**2**	**1**					**90**	**50**	
SAY				**50.00**	**25.00**										**3**	**3**	**2**	**1**					**90**	**50**	
ADDITIONAL GUARDRAIL POSTS = 5 EA																									

TEMPORARY GUARDRAIL SUMMARY

-L-	15+55+/-	16+35+/-	RT	81.25																					TIE TO CONCRETE BARRIER WITH 10GA END SHOE
SUB-TOTALS				81.25																					
GRAND-TOTALS				**81.25**																					
SAY				**87.50**																					

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

COMPUTED BY: Ben J. Henegar, PE DATE: 5/6/2025
CHECKED BY: Rusty Lassiter DATE: 5/6/2025

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION FT	INVERT ELEVATION FT	INVERT ELEVATION FT	SLOPE CRITICAL %	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC): 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
L 14+48	CL	0401			2910.2	2908.1													
L 14+85	27 LT																		
L 15+19	7 LT																		
L 15+13	12 LT	0404		2911.5															
		0404	0403		2908.3	290.2													
TOTALS																			

STATION / SIZE / THICKNESS OR GAUGE	C.S. PIPE: 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV: 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS V: 12"	15"	18"	24"	30"	36"	42"	48"
L 14+48	.064	.064	.064	.064	.079	.079	.109	.109												64						
L 14+85																										
L 15+19																										
L 15+13																										
											16															
TOTALS											**16**									**64**						

STATION / SIZE / THICKNESS OR GAUGE	*** R.C. PIPE CLASS V	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	***** RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 & 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	QUANTITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL."B") A: PER EACH (0' THRU 5.0') EACH	B: 5.0' THRU 10.0' LIN.FT	B: 10.0' AND ABOVE LIN.FT	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE: E	F	G	CONCRETE TRANSITIONAL SECTION: DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	G.D.I. TYPE "S" STD. 840.18 OR STD. 840.27	T.B.D.I STD. 840.35	G.D.I. (N.S. FLAT-FRAME W/O GRATES STD. 840.39	T.B.D.I STD. 840.35	(CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
L 14+48																									24" RCP-V
L 14+85																								50	REMOVE EXIST. 24" CMP
L 15+19																								92	REMOVE EXIST. 18" CMP
L 15+13													1								1		1		TB2GI
																									15" RCP-IV
TOTALS													**1**								**1**		**1**	**142**	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

COMPUTED BY: B. Smith, PG DATE: 6/6/24
CHECKED BY: S. Johnson, PE,PG DATE: 6/4/24

(2-3-23)

PROJECT NO.	SHEET NO.
BP11-R046	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	350
				TOTAL LF:	350

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

SUMMARY OF GEOTEXTILE FOR SUBGRADE STABILIZATION

LINE	Station	Station	Geotextile for Subgrade Stabilization SY
CONTINGENCY			300
		TOTAL SY:	300*

*Total square yards of "Geotextile for Subgrade Stabilization" is only the estimated quantity for subgrades and may only represent a portion of the geotextile quantity shown in the Item Sheets of the Proposal.

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

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

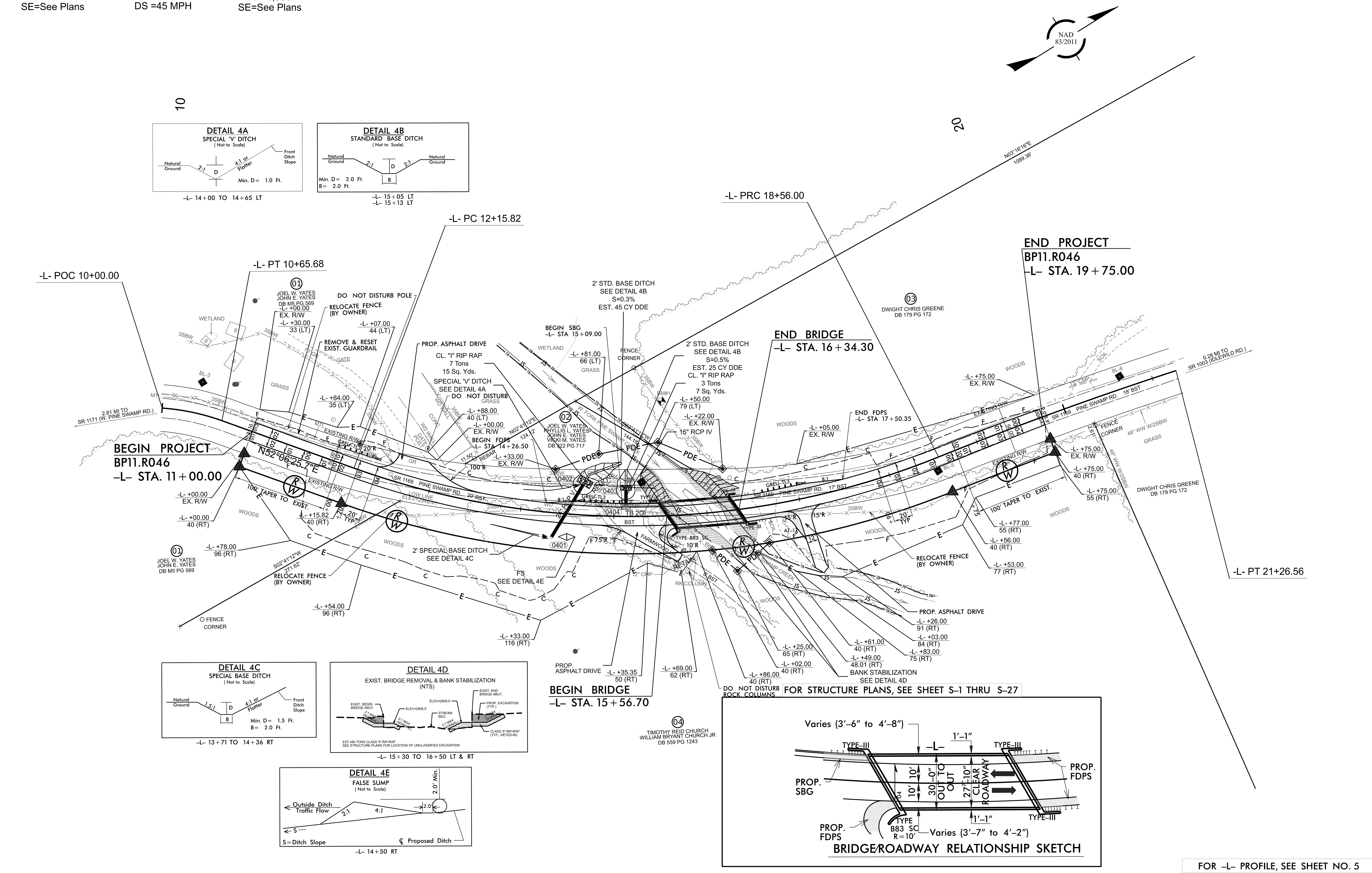
*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)
*AST = Aggregate Stabilization
**Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Subgrade Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization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

11/14/23

CUR DATA -L-	CUR DATA -L-	CUR DATA -L-
PIc 10+33.05	PIc 15+50.81	PIc 19+91.30
Δc = 15°40'46.4" (RT)	Δc = 41°40'52.4" (LT)	Δc = 03°52'28.9" (RT)
D = 23°52'23.7"	D = 06°30'39.2"	D = 01°25'56.6"
Lc = 65.68	Lc = 640.18	Lc = 270.50
Tc = 33.05	Tc = 334.99	Tc = 135.30
R = 240	R = 880	R = 4,000
SE=See Plans	SE=0.04	SE=See Plans
	DS =45 MPH	

BRIDGE APPROACH SLAB

PAVEMENT REMOVAL



NAD 83/2011
DETAIL 4A
SPECIAL 'V' DITCH
(Not to Scale)
Min. D= 1.0 Ft.
-L- 14+00 TO 14+65 LT
DETAIL 4B
STANDARD BASE DITCH
(Not to Scale)
Min. D= 2.0 Ft.
B= 2.0 Ft.
-L- 15+05 LT
-L- 15+13 LT
-L- PRC 18+56.00
-L- PC 12+15.82
-L- PT 10+65.68
-L- POC 10+00.00
END PROJECT
BP11.R046
-L- STA. 19+75.00
END BRIDGE
-L- STA. 16+34.30
BEGIN PROJECT
BP11.R046
-L- STA. 11+00.00
BEGIN BRIDGE
-L- STA. 15+56.70
-L- PT 21+26.56
JOEL W. YATES
JOHN E. YATES
DB M5 PG 569
DWIGHT CHRIS GREENE
DB 179 PG 172
TIMOTHY REID CHURCH
WILLIAM BRYANT CHURCH JR
DB 559 PG 1243
SR 1169 PINE SWAMP RD.
SR 1171 (W. PINE SWAMP RD.)
SR 1003 (IDLEWILD RD.)
DO NOT DISTURB POLE
RELOCATE FENCE (BY OWNER)
REMOVE & RESET EXIST. GUARDRAIL
PROP. ASPHALT DRIVE
2' STD. BASE DITCH SEE DETAIL 4B S=0.3% EST. 45 CY DDE
2' STD. BASE DITCH SEE DETAIL 4B S=0.5% EST. 25 CY DDE
CL. "I" RIP RAP 3 Tons 7 Sq. Yds.
CL. "I" RIP RAP 7 Tons 15 Sq. Yds.
SPECIAL 'V' DITCH SEE DETAIL 4A
DO NOT DISTURB
BEGIN SBG -L- STA 15+09.00
BEGIN FDPS -L- STA 14+26.50
END FDPS -L- STA 17+50.35
2' SPECIAL BASE DITCH SEE DETAIL 4C
FS SEE DETAIL 4E
BANK STABILIZATION SEE DETAIL 4D
DO NOT DISTURB ROCK COLUMNS
100' TAPER TO EXIST.
FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-27
DETAIL 4C
SPECIAL BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
B= 2.0 Ft.
-L- 13+71 TO 14+36 RT
DETAIL 4D
EXIST. BRIDGE REMOVAL & BANK STABILIZATION
(NTS)
-L- 15+30 TO 16+50 LT & RT
DETAIL 4E
FALSE SUMP
(Not to Scale)
Outside Ditch Traffic Flow
S=Ditch Slope
Proposed Ditch
-L- 14+50 RT
BRIDGE/ROADWAY RELATIONSHIP SKETCH
Varies (3'-6" to 4'-8")
Varies (3'-7" to 4'-2")
30'-0" OUT TO OUT
27'-10" CLEAR ROADWAY
PROP. SBG
PROP. FDPS
TYPE B83 SC R=10'
TYPE-III

FOR -L- PROFILE, SEE SHEET NO. 5

BP11-R046

3RD1 | 004

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
ASHE COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

SEAL 035018 — JIMMY L. TERRY — 2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HYDRAULICS ENGINEER

SEAL 044158 — BENJAMIN J. HENEGAR — 2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

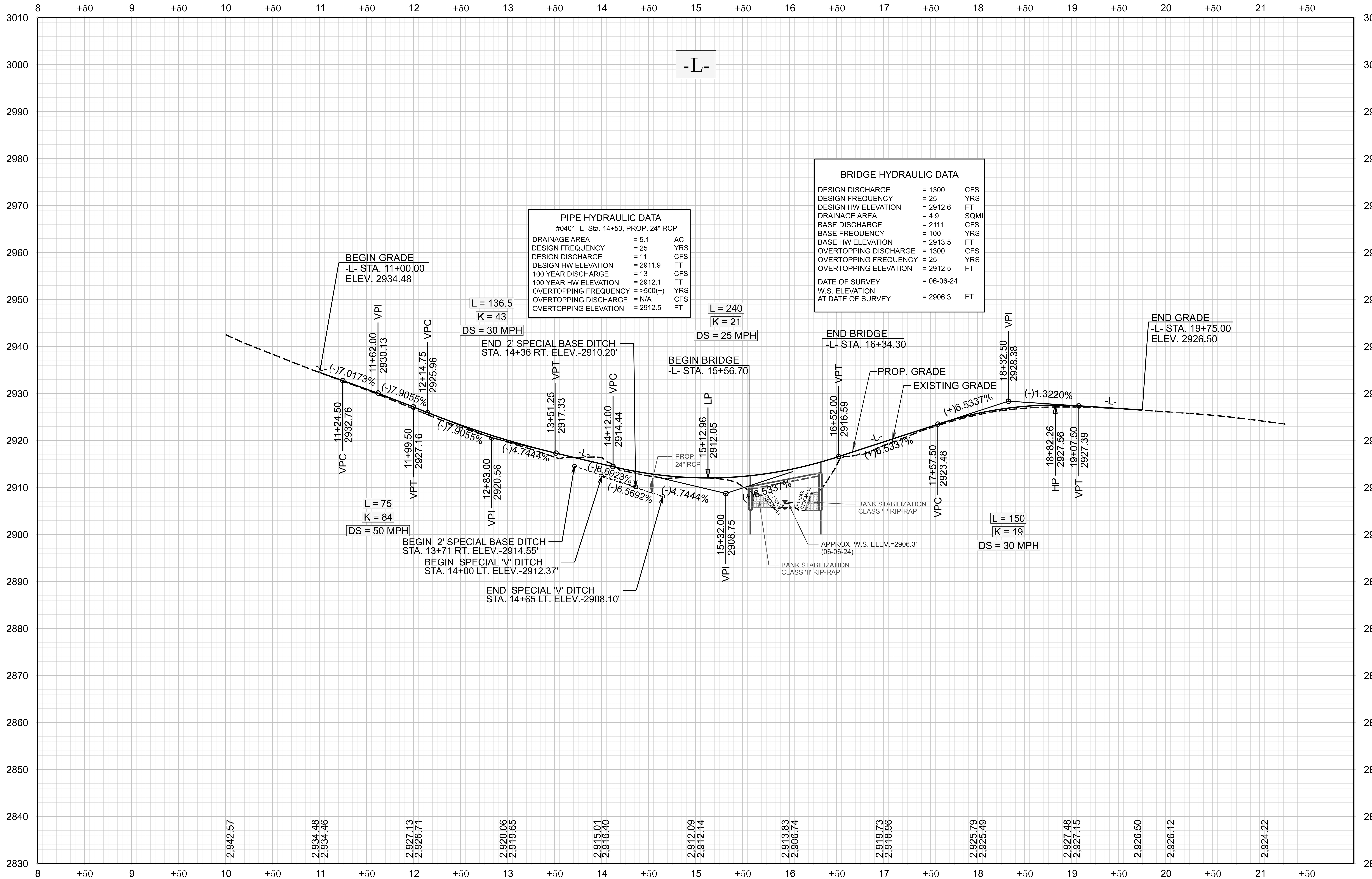
PREPARED BY

TGS ENGINEERS
201 W. MARION ST. STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

REVISIONS

TGSE/smelvin - 8/6/2025

11/14/23



PIPE HYDRAULIC DATA

#0401 -L- Sta. 14+53, PROP. 24" RCP

DRAINAGE AREA	= 5.1	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 11	CFS
DESIGN HW ELEVATION	= 2911.9	FT
100 YEAR DISCHARGE	= 13	CFS
100 YEAR HW ELEVATION	= 2912.1	FT
OVERTOPPING FREQUENCY	= >500(+)	YRS
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING ELEVATION	= 2912.5	FT

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 1300	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 2912.6	FT
DRAINAGE AREA	= 4.9	SQMI
BASE DISCHARGE	= 2111	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2913.5	FT
OVERTOPPING DISCHARGE	= 1300	CFS
OVERTOPPING FREQUENCY	= 25	YRS
OVERTOPPING ELEVATION	= 2912.5	FT
DATE OF SURVEY	= 06-06-24	
W.S. ELEVATION AT DATE OF SURVEY	= 2906.3	FT

FOR -L- PLAN, SEE SHEET NO. 04

BP11-R046

3RD1 | 005

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ASHE COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JIMMY L. TERRY
DocuSigned by: Jimmy Terry FD39F38882E94D0... 6/11/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044158 ENGINEER BENJAMIN J. HENEGAR
Signed by: Benjamin J. Henegar D7B6AA8B40FF437... 6/11/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PREPARED BY

TGS ENGINEERS
201 W. MARION ST., STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

REVISIONS

TGSE/smelvin - 6/10/2025

09/08/99

TIP PROJECT: *BP11R046*

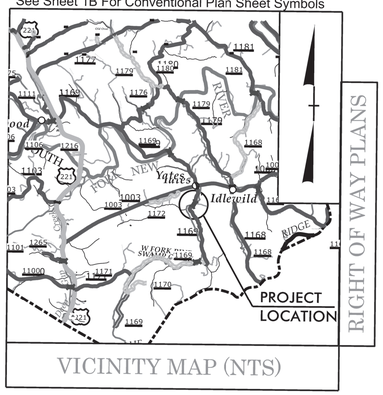
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP11R046	RW01	7

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

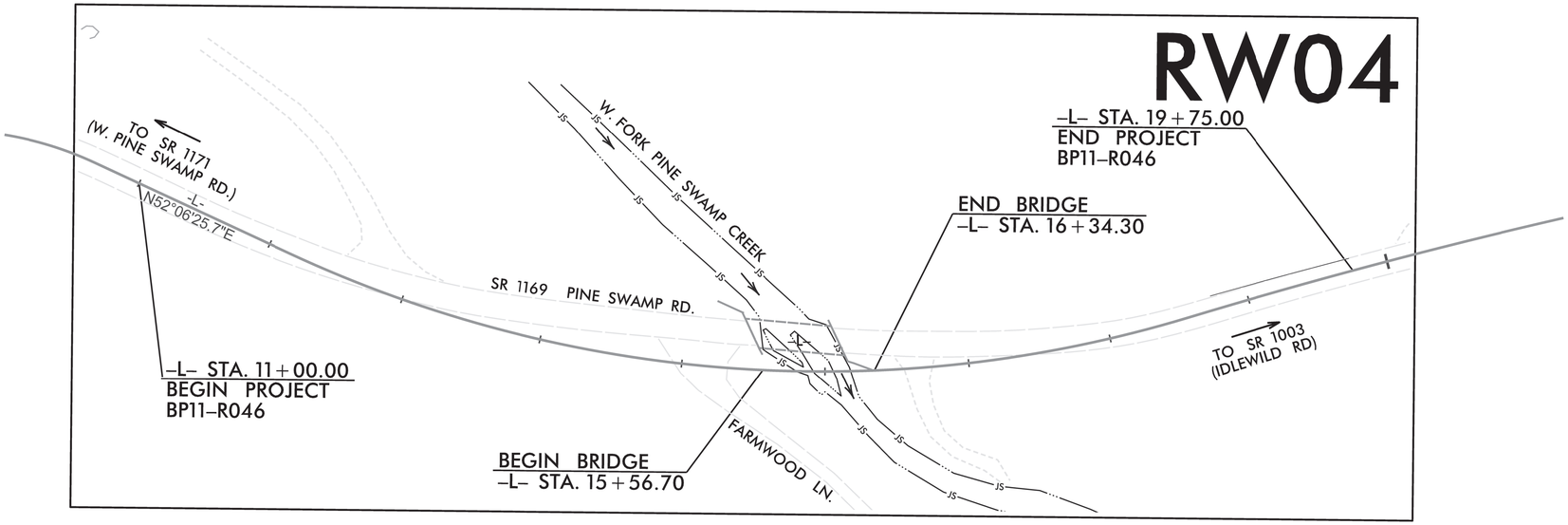
ASHE COUNTY

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



VICINITY MAP (NTS)

NAD 83/ 2011



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50' 25' 0' 50' 100'

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT 156-1
WITH NAD 1983 (2011) STATE PLANE GRID COORDINATES OF
NORTHING: 932593.030 EASTING: 1275588.896
ELEVATION: 2932.29
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99990073
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

WSP USA Inc.
1001 WADE AVE
SUITE 400
RALEIGH, NC 27605
TEL: 919.836.4040
WWW.WSP.COM

2024 STANDARD SPECIFICATIONS

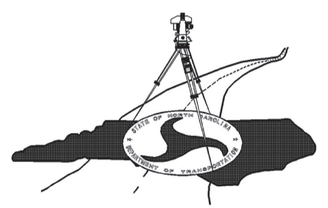
RIGHT OF WAY DATE: **NOV. 2024**

LETTING DATE: **SEPT. 2025**

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L–5617 LAND SURVEYOR SARAH J. VINCENT

DocuSigned by: Sarah Vincent 12/19/2024
SIGNATURE: DATE:



5/26/20

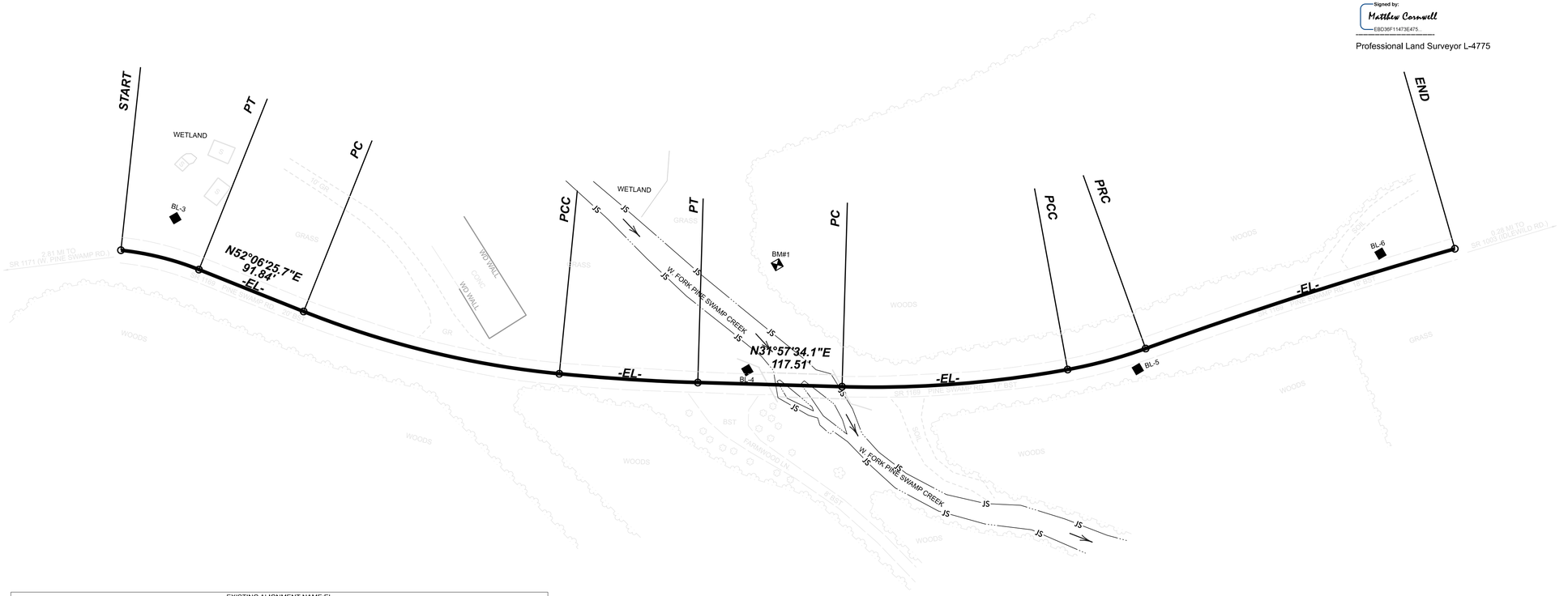
SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

NC GRID NAD 83 NA 2011

BASELINE POINTS TABLE				
POINT	DESC	NORTH	EAST	ELEVATION
1	156-1	932593.0300	1275588.8960	2932.2900
2	156-2	933016.9630	1275547.5690	2918.4500
3	BL-3	931173.8435	1274792.6502	2933.0700
4	BL-4	931513.5160	1275134.6203	2911.8400
5	BL-5	931788.5266	1275294.2792	2925.8800
6	BL-6	932006.6394	1275312.7892	2924.1600

BENCHMARK TABLE				
BENCHMARK	NORTHING	EASTING	ELEVATION	DESCRIPTION
BM1	931577.9052	1275072.7268	2916.4000	RR SPIKE IN BASE OF DOUBLE MAPLE



EXISTING ALIGNMENT NAME:EL									
POINT	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R
PC	931122.3938	1274792.8292							
CURVE					15°40'46.4" Right	23°52'23.7"	65.68	33.05	240.00
PT	931169.2789	1274838.5303							
LINE			N52°06'25.7"E	91.8407					
PC	931225.6862	1274911.0074							
CURVE					16°12'38.6" Left	07°32'20.1"	215.03	108.24	760.00
PCC	931379.8437	1275059.8849							
CURVE					03°56'13.0" Left	03°28'58.9"	113.03	56.54	1645.00
PT	931473.6130	1275122.9616							
LINE			N31°57'34.1"E	117.5065					
PC	931573.3082	1275185.1601							
CURVE					12°01'12.5" Left	06°30'39.2"	184.62	92.65	880.00
PCC	931739.0070	1275265.7957							
CURVE					09°25'46.8" Left	14°19'26.2"	65.83	32.99	400.00
PRC	931802.4564	1275283.0637							
CURVE					03°47'27.3" Right	01°25'56.6"	264.66	132.38	4000.00

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

Class of survey: ***AA***
Type of GPS field procedure: RTN
Dates of survey: March 2023
Datum/Epoch: NAD83/2011
Published/Fixed-control use: N/A
Localized around: 156-1
Northing: 932593.030
Easting: 1275588.896
Combined grid factor: 0.99990073
Geoid model: GEOID18
Units: US Survey Feet

I also certify that the Baseline Control for this project was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:20,000 (Class AA) and Vertical accuracy to Class A. Field work was performed March 2023, and all coordinates are based on NAD 83/2011 and all elevations are based on NAVD 88; that this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 6/10/2025

Signed by:
Matthew Cornwell
EBD36F114473E475...

Professional Land Surveyor L-4775

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.

BP11R046
R/W | D2C-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR
NORTH CAROLINA PROFESSIONAL SEAL L-4775 LAND SURVEYOR MATTHEW T. CORNWELL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2018 STANDARD SPECIFICATIONS

TIP PROJECT: BP11R046
County: Ashe

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

TGS ENGINEERS
201 WEST MARION ST.
SUITE 200
SHELBY, NC 28150
704-476-0003

5/26/20

PROPOSED ALIGNMENT CONTROL SHEET

I, Sarah J. Vincent, 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 19TH DAY OF DECEMBER, 2024.

DocuSigned by:
Sarah Vincent
B605417B8A5848A...

PROFESSIONAL LAND SURVEYOR L-5617

PROPOSED ALIGNMENT: L

POINT	STATION	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R	LT	ST
PC	10+00.00	931122.3938	1274792.8292	N44°16'02.5"E	65.47	15°40'46.4"	23°52'23.7"	65.68	33.05	240.00		
PT	10+65.68	931169.2789	1274838.5303	N52°06'25.7"E	150.14							
PC	12+15.82	931261.4926	1274957.0146	N31°15'59.5"E	626.15	41°40'52.4"	06°30'39.2"	640.18	334.99	880.00		
PRC	18+56.00	931796.7058	1275282.0012	N12°21'47.7"E	270.45	03°52'28.9"	01°25'56.6"	270.50	135.30	4000.00		
END	21+26.50	932060.8871	1275339.9077									

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.

BP11R046

R/W | 02D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-5617 LAND SURVEYOR SARAH J. VINCENT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: BP11R046

County: Ashe

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

WSP USA Inc.
1001 WADE AVE
SUITE 300
RALEIGH, NC 27605
TEL: 919.835.4545
www.wsp.com

5/26/20

RIGHT OF WAY CONTROL SHEET

I , Sarah J. Vincent , 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 12/16/2024 TO 12/19/2024, 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 19TH DAY OF DECEMBER, 2024.

DocuSigned by:
Sarah Vincent
B605417B8A5848A...

PROFESSIONAL LAND SURVEYOR L-5617

PERMANENT ROW MARKER IRON PIN AND CAP:			
STATION	OFFSET	NORTH	EAST
11+00.00	25.00	931170.6297	1274880.9702
11+00.00	40.00	931158.7923	1274890.1830
12+15.82	40.00	931229.9262	1274981.5821
18+56.00	40.00	931789.4672	1275321.3408
19+75.00	40.00	931905.0020	1275344.3813
19+75.00	25.00	931908.1540	1275329.7162

PERMANENT EASEMENT MARKER IRON PIN AND CAP:			
STATION	OFFSET	NORTH	EAST
14+33.00	-46.59	931443.2381	1275073.5639
14+81.00	-66.00	931490.9097	1275084.6094
15+50.00	-79.00	931551.2368	1275107.7646
16+02.00	40.00	931538.8081	1275236.5237
16+22.00	-45.35	931594.5104	1275168.8610
16+25.00	65.00	931549.6305	1275269.7162
16+61.00	40.00	931594.6810	1275262.6282

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

BP11R046
R/W | 03E-I

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR

SEAL L-5617 SARAH J. VINCENT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: BP11R046
County: Ashe

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

WSP USA Inc.
1961 NASE AVE
SUITE 200
RALEIGH, NC 27603
TEL: 919.835.4444
www.wsp.com

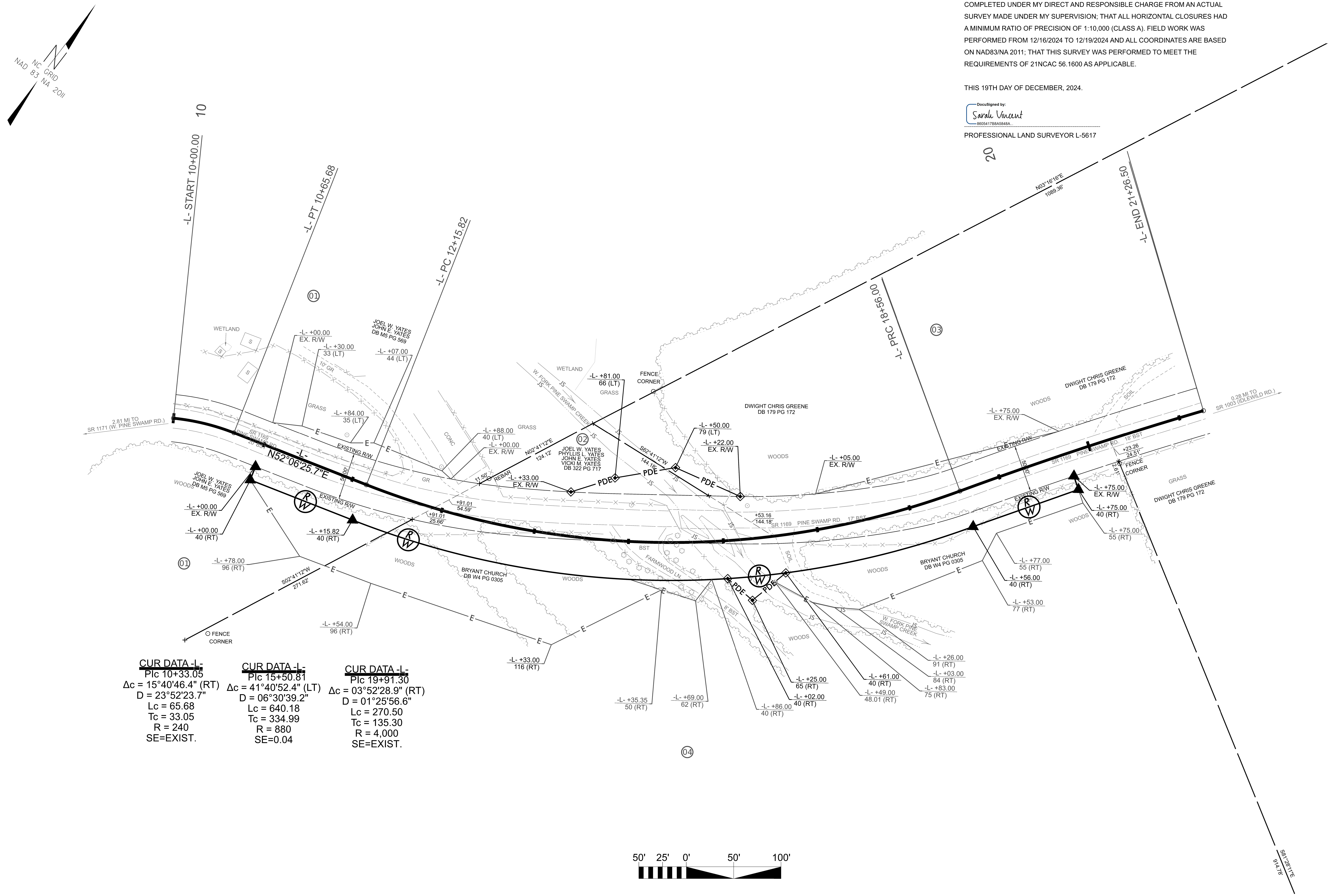
5/26/20

I , Sarah J. Vincent , 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 12/16/2024 TO 12/19/2024 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 19TH DAY OF DECEMBER, 2024.

DocuSigned by:
Sarah Vincent
8605417B8A5848A...

PROFESSIONAL LAND SURVEYOR L-5617



CUR DATA -L-	CUR DATA -L-	CUR DATA -L-
PIc 10+33.05	PIc 15+50.81	PIc 19+91.30
Δc = 15°40'46.4" (RT)	Δc = 41°40'52.4" (LT)	Δc = 03°52'28.9" (RT)
D = 23°52'23.7"	D = 06°30'39.2"	D = 01°25'56.6"
Lc = 65.68	Lc = 640.18	Lc = 270.50
Tc = 33.05	Tc = 334.99	Tc = 135.30
R = 240	R = 880	R = 4,000
SE=EXIST.	SE=0.04	SE=EXIST.

NOTES:

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

BP11R046

R/W RW04

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PROFESSIONAL LAND SURVEYOR

SEAL L-5617 SARAH J. VINCENT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES ARE COMPLETED

2024 STANDARD SPECIFICATIONS

TIP PROJECT: BP11R046

County: Ashe

PREPARED FOR

LOCATION AND SURVEYS UNIT

PREPARED BY

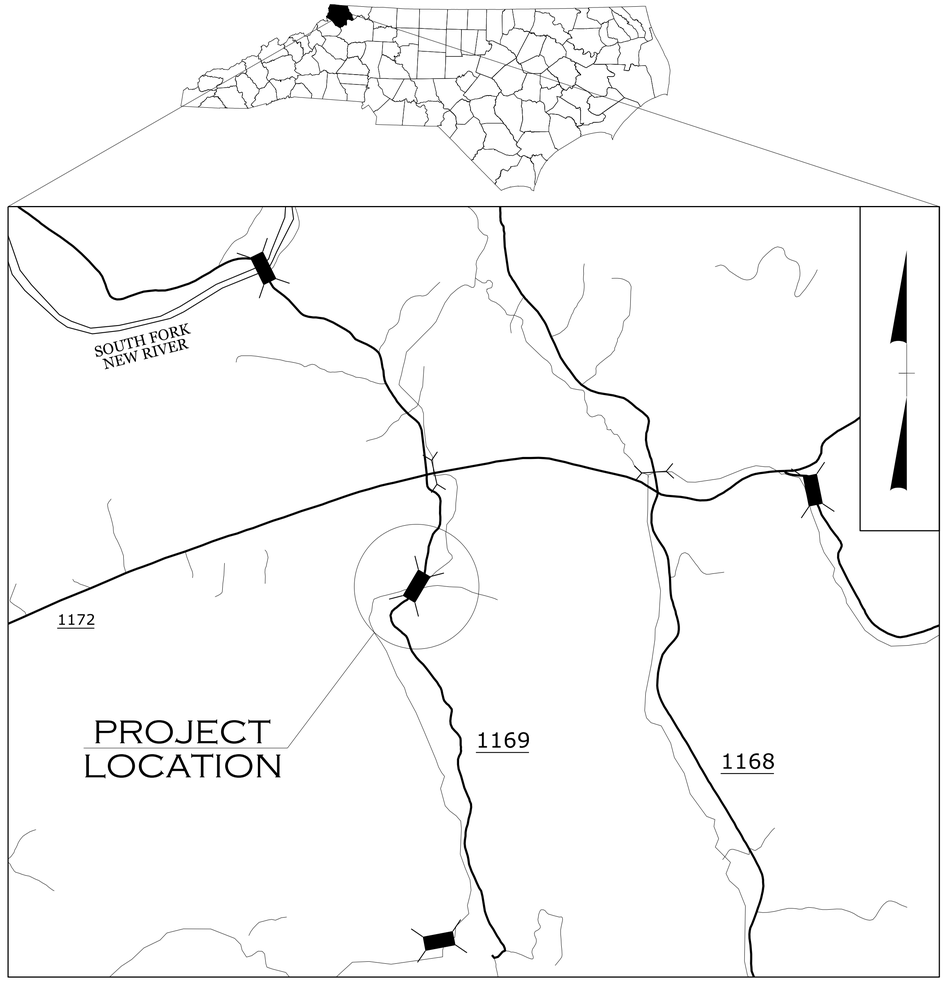
wsp

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

ASHE COUNTY

LOCATION: BRIDGE #040156 OVER W. FORK PINE SWAMP
ON SR 1169 (PINE SWAMP ROAD)



VICINITY MAP

INDEX OF SHEETS

SHEET NO.
TMP-1

TIP PROJECT: BP11-R046

PLANS PREPARED FOR N.C.D.O.T. BY: TGS ENGINEERS

TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

DON A. PARKER, P.E.
PROJECT ENGINEER

CODA BRANNAN, E.I.
DESIGN ENGINEER

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

APPROVED: Signed by: Don A. Parker 75OB9E90ADEF440...

DATE: 6/11/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

5/14/2025
X:\NCDOT\Div II\Ashe I56\Traffic\TrafficControl\TCP\Ashe I56_TC_TMP_01.dgn
User:cbrannan

PROJ. REFERENCE NO.	SHEET NO.
BP11-R046	TMP-1A

TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

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
1101.04	TEMPORARY SHOULDER CLOSURES
1101.06	WARNING SIGNS FOR BLASTING ZONES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1135.01	CONES
1150.01	FLAGGERS
1160.01	TEMPORARY CRASH CUSHION
1170.01	PORTABLE CONCRETE BARRIER
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 END DELINEATION

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
- WEDGING
- TEMPORARY PAVEMENT

SIGNALS

EXISTING PROPOSED TEMP TEMPORARY

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	WHITE EDGELINE (4")
P61	WHITE STOPBAR (24")

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440...

DATE: 6/11/2025

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

ROADWAY STANDARD DRAWINGS & LEGEND

5/14/2025
X:\NCDOT\Div. II\Ashe I56\Traffic\TrafficControl\TCP\Ashe I56_TC_TMP_01A.dgn
User:cbrannan

PROJ. REFERENCE NO.	SHEET NO.
BP11-R046	TMP-1B

TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

GENERAL NOTES

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

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

TIME RESTRICTIONS

A) DO NOT STOP TRAFFIC AS FOLLOWS:

ROAD NAME:	DAY AND TIME:	DURATION AND OPERATION:
SR 1169 PINE SWAMP RD.	MONDAY THRU SUNDAY 12:00 AM TO 9:00 AM AND 3:00 PM TO 11:59 PM	20 MINUTES FOR ROCK BLASTING

LANE AND SHOULDER CLOSURE REQUIREMENTS

B) 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.

C) 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.

D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, 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 ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

E) 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.

F) 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.

PAVEMENT EDGE DROP OFF REQUIREMENTS

G) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

I) 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.

J) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

K) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 500 FT IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC BARRIER

L) INSTALL TEMPORARY BARRIER ACCORDING TO THE TRANSPORTATION MANAGEMENT PLANS A MAXIMUM OF TWO (2) WEEKS PRIOR TO BEGINNING WORK IN ANY LOCATION. ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION PROCEED IN A CONTINUOUS MANNER TO COMPLETE THE PROPOSED WORK IN THAT LOCATION UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS OR AS DIRECTED BY THE ENGINEER.

DO NOT PLACE BARRIER DIRECTLY ON ANY SURFACE OTHER THAN ASPHALT OR CONCRETE.

ONCE TEMPORARY BARRIER IS INSTALLED AT ANY LOCATION AND NO WORK IS PERFORMED BEHIND THE TEMPORARY BARRIER FOR A PERIOD LONGER THAN TWO (2) MONTHS, REMOVE / RESET TEMPORARY BARRIER AT NO COST TO THE DEPARTMENT UNLESS OTHERWISE STATED IN THE TRANSPORTATION MANAGEMENT PLANS, TEMPORARY BARRIER IS PROTECTING A HAZARD, OR AS DIRECTED BY THE ENGINEER.

INSTALL TEMPORARY BARRIER WITH THE TRAFFIC FLOW BEGINNING WITH THE UPSTREAM SIDE OF TRAFFIC. REMOVE TEMPORARY BARRIER AGAINST THE TRAFFIC FLOW BEGINNING WITH THE DOWNSTREAM SIDE OF TRAFFIC.

INSTALL AND SPACE DRUMS NO GREATER THAN TWICE THE POSTED SPEED LIMIT (MPH) TO CLOSE OR KEEP THE SECTION OF THE ROADWAY CLOSED UNTIL THE TEMPORARY BARRIER CAN BE PLACED OR AFTER THE TEMPORARY BARRIER IS REMOVED.

M) PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER AT ALL TIMES DURING THE INSTALLATION AND REMOVAL OF THE BARRIER BY EITHER A TRUCK MOUNTED ATTENUATOR (MAXIMUM 72 HOURS) OR A TEMPORARY CRASH CUSHION.

PROTECT THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER FROM ONCOMING TRAFFIC AT ALL TIMES BY A TEMPORARY CRASH CUSHION UNLESS THE APPROACH END OF MOVABLE/PORTABLE CONCRETE BARRIER IS OFFSET FROM ONCOMING TRAFFIC AS FOLLOWS OR AS SHOWN IN THE PLANS: (SEE ALSO 1101.05)

POSTED SPEED LIMIT	MINIMUM OFFSET
40 OR LESS	15 FT
45 - 50	20 FT
55	25 FT
60 MPH or HIGHER	30 FT

TRAFFIC CONTROL DEVICES

N) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH) EXCEPT, 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPEN TRAVELWAY UNLESS OTHERWISE SHOWN IN THE TMP. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

PAVEMENT MARKINGS AND MARKERS

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

ROAD NAME	MARKING	MARKER
SR 1169 PINE SWAMP ROAD	PAINT	NONE

P) 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.

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

R) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

MANAGEMENT STRATEGIES

THE FOLLOWING LISTED WORK ZONE STRATEGIES ARE RECOMMENDED FOR INCLUSION WITHIN THIS TRANSPORTATION MANAGEMENT PLAN (TMP).

RECOMMENDED STRATEGIES:

TRAFFIC MANAGEMENT STRATEGIES:
LANE SHIFTS OR CLOSURES
ONE-LANE, TWO WAY OPERATION (FLAGGING)
ONE-LANE, TWO WAY OPERATION (SIGNALIZED)

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440...

DATE: 6/11/2025

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

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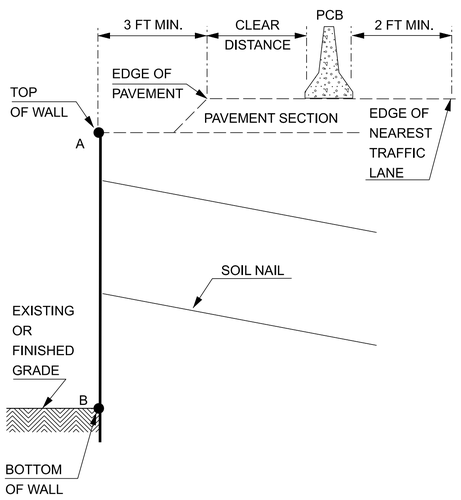
DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

TRANSPORTATION OPERATIONS PLAN

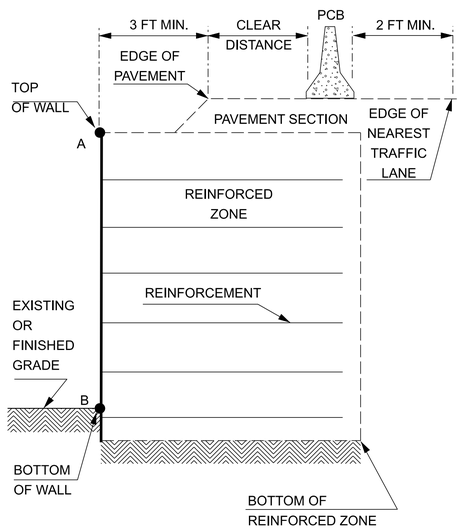
5/14/2025
X:\NCDOT\Div II\Ashe I56\Traffic\TrafficControl\TCP\Ashe I56_TC_TMP_01B.dgn
User:cbrannan

PROJ. REFERENCE NO.	SHEET NO.
BP11-R046	TMP-2

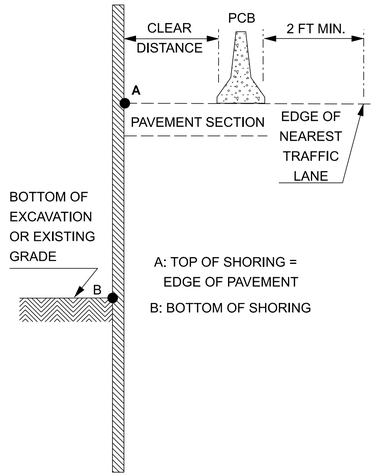
TEMPORARY SOIL NAIL WALL



TEMPORARY MSE WALL



TEMPORARY SHORING



NOTE: WALL OR SHORING HEIGHT = A-B

FIGURE A

NOTES

1- REFER TO THE TRAFFIC CONTROL PLANS FOR TEMPORARY SHORING LOCATIONS AND NOTES.

2- REFER TO THE "TEMPORARY SHORING" STANDARD PROVISION FOR INFORMATION ABOUT TEMPORARY SHORING AND PORTABLE CONCRETE BARRIER (PCB).

3- 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).

4- 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.

5- 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.

6- USE NCDOT PORTABLE CONCRETE BARRIER (PCB) IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1170.01 AND SECTION 1170 OF THE STANDARD SPECIFICATIONS.

7- 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.

8- 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.

9- 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

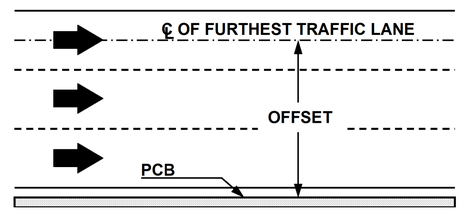


FIGURE B

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440...

DATE: 6/11/2025

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

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

PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS

PROJ. REFERENCE NO.	SHEET NO.
BP11-R046	TMP-2A

TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

SHORING NOTES

Shoring Location Nos. 1 and 2

THE FOLLOWING SHORING RECOMMENDATIONS ARE FOR TEMPORARY SHORING LOCATIONS AS INDICATED BELOW:
1) TEMPORARY SHORING LOCATION NO. 1 FROM STATION 15+40 -L-, 7.6' RT, TO STATION 15+70 -L-, 9.0' LT.
2) TEMPORARY SHORING LOCATION NO. 2 FROM STATION 16+21 -L-, 9.0' LT, TO STATION 16+62 -L-, 6.9' LT.

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 NOS. 1 AND 2 FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT (γ) = 120 LB/CF
FRICTION ANGLE (ϕ) = 30 DEGREES
COHESION (c) = 0 LB/SF
GROUNDWATER ELEVATION = 2906 FT

DRIVEN PILING FOR TEMPORARY SHORING LOCATION NOS. 1 AND 2 MAY NOT PENETRATE BELOW ELEVATION 2906 FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING LOCATION NOS. 1 AND 2.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING LOCATION NOS. 1 AND 2. SEE STANDARD DETAIL NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

IT MAY BE PREFERRED TO USE A TEMPORARY SOIL NAIL WALL FOR TEMPORARY SHORING LOCATION NOS. 1 AND 2. FOR TEMPORARY SOIL NAIL WALLS, SEE TEMPORARY SOIL NAIL WALLS PROVISION

Shoring Location Nos. 3 and 4

THE FOLLOWING SHORING RECOMMENDATIONS ARE FOR TEMPORARY SHORING LOCATIONS AS INDICATED BELOW:
1) TEMPORARY SHORING LOCATION NO. 3 FROM STATION 15+43 -L-, 2.8' LT, TO STATION 15+53 -L-, 3.4' LT.
2) TEMPORARY SHORING LOCATION NO. 4 FROM STATION 16+33 -L-, 3.6' LT, TO STATION 16+43 -L-, 3.1' LT.

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 NOS. 3 AND 4 FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT (γ) = 120 LB/CF
FRICTION ANGLE (ϕ) = 30 DEGREES
COHESION (c) = 0 LB/SF
GROUNDWATER ELEVATION = 2906 FT

AT THE CONTRACTOR'S OPTION, USE A STANDARD TEMPORARY WALL FOR TEMPORARY SHORING LOCATION NOS. 3 AND 4. SEE GEOTECHNICAL STANDARD DETAIL NO. 1801.02 FOR STANDARD TEMPORARY WALLS.

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

THE TEMPORARY SHORING NOTES SHOWN ON THIS SHEET WERE PROVIDED THROUGH A SEALED DOCUMENT FROM THE GEOTECHNICAL ENGINEERING UNIT. THE DOCUMENT WAS SUBMITTED TO TGS ENGINEERS AND DIVISION 11 ON 03/27/2025 AND SEALED BY A PROFESSIONAL ENGINEER, SHIPING YANG, Ph.D., P.E., LICENSE #031361.

APPROVED: Digitally signed by Don A. Parker 75DB9E90ADEF440...
DATE: 6/11/2025

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

TEMPORARY SHORING NOTES

PROJ. REFERENCE NO.	SHEET NO.
BP11-R046	TMP-3

TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

PHASING

NOTE: FOR ALL FLAGGING OPERATIONS, SEE RSD 1101.02, SHEET 1

FOR BLASTING OPERATIONS REFER TO RSD 1101.03, SHEET 8, RSD 1101.06, AND INTERMEDIATE CONTRACT TIME.

PHASE I

STEP 1 -- USE FLAGGERS TO COMPLETE THE FOLLOWING:

-- INSTALL ALL WORK ZONE ADVANCE WARNING SIGNS IN ACCORDANCE WITH RSD 1101.01 SHEET 3 AND TMP-4.

-- INSTALL AND COVER TEMPORARY PORTABLE SIGNALS (SEE TMP-4 AND SPECIAL PROVISION).

STEP 2 -- USING FLAGGERS, PLACE INCIDENTAL STONE TO RELOCATE THE EXISTING DRIVEWAY TO THE PROPOSED ALIGNMENT AT -L- STA. 16+60 +/-.

NOTE: WORK IN A CONTINUOUS MANNER TO COMPLETE STEP 3 IN A SINGLE WORK PERIOD.

STEP 3 -- USE FLAGGERS TO COMPLETE THE FOLLOWING:

-- INSTALL STOP BARS AS SHOWN ON TMP-4.

-- INSTALL WATER FILLED BARRIER FROM -L- STA. 16+12 +/- TO -L- STA. 16+90 +/-.

-- UNCOVER SIGNAL WARNING SIGNS AND ACTIVATE ALL TEMPORARY PORTABLE SIGNALS AND PLACE TRAFFIC IN THE PHASE I 1 LANE-2 WAY TRAFFIC PATTERN.

STEP 4 -- AWAY FROM TRAFFIC, COMPLETE THE FOLLOWING:

-- CONSTRUCT STAGE 1 OF THE PROPOSED STRUCTURE INCLUDING TEMPORARY SHORING LOCATIONS 1 AND 2 (SEE SHEET TMP-2A AND TMP-4).

-- CONSTRUCT -L- FROM -L- STA. 11+80 +/- TO THE BEGINNING OF THE PROPOSED STRUCTURE, INCLUDING TEMPORARY SHORING LOCATION 3, AND FROM THE END OF THE PROPOSED STRUCTURE TO -L- STA. 18+75 +/-, INCLUDING TEMPORARY SHORING LOCATION 4. (SEE TMP-2A AND TMP-4)

-- INSTALL PARTIALLY CONSTRUCTED 24” RCP (DRAINAGE STRUCTURE 0401) AS SHOWN ON TMP-4.

-- PLACE 4’ OF TEMPORARY PAVEMENT FROM -L- STA. 13+45 +/- RT TO -L- STA. 15+05 +/-, AND FROM -L- STA. 17+13 +/- TO -L- STA. 18+06 +/- RT.

PHASE II

NOTE: WORK IN A CONTINUOUS MANNER TO COMPLETE STEP 1 IN A SINGLE WORK PERIOD.

STEP 1 -- AWAY FROM TRAFFIC, COMPLETE THE FOLLOWING:

-- PLACE TEMPORARY PAINT PAVEMENT MARKINGS AS SHOWN ON SHEET TMP-5.

-- INSTALL PCB AND CRASH CUSHIONS FROM -L- STA. 14+40 +/- TO THE PROPOSED STRUCTURE, AND FROM THE PROPOSED STRUCTURE TO -L- STA. 17+10 +/-. TIE PCB TO THE TEMPORARY GUARDRAIL ON THE PROPOSED STRUCTURE.

-- ADJUST DRUM TAPERS AND RESUME SIGNAL CONTROL AT THE END OF THE WORK PERIOD WITH TRAFFIC IN THE PHASE II 1 LANE-2 WAY PATTERN.

STEP 2 -- AWAY FROM TRAFFIC, DEMOLISH THE EXISTING STRUCTURE AND COMPLETE STAGE 2 OF THE PROPOSED STRUCTURE.

-- COMPLETE THE CONSTRUCTION OF -L- FROM -L- STA. 11+85 +/- TO -L- STA. 18+75 +/- INCLUDING ALL DRAINAGE AND SHOULDER WORK.

PHASE III

STEP 1 -- USING FLAGGERS, REMOVE PCB AND TEMPORARY GUARDRAIL AND REPLACE WITH DRUMS.

-- RESUME SIGNAL CONTROL AT THE END OF THE WORK PERIOD WITH TRAFFIC IN PHASE II PATTERN.

STEP 2 -- USING FLAGGERS, REMOVE PHASE II TEMPORARY PAVEMENT AND PLACE THE FINAL SURFACE COURSE THROUGHOUT THE PROJECT LIMITS.

-- RESUME SIGNAL CONTROL AT THE END OF THE WORK PERIOD WITH TRAFFIC IN THE PHASE II PATTERN.

STEP 3 -- USING FLAGGERS, INSTALL FINAL PAVEMENT MARKINGS AND OPEN TO 2 LANE-2 WAY TRAFFIC PATTERN (FINAL PATTERN).

STEP 4 -- REMOVE ALL TRAFFIC CONTROL DEVICES.

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440...

DATE: 6/11/2025

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A PARKER

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

PHASING

PROJ. REFERENCE NO.	SHEET NO.
BP11-R046	TMP-4

TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
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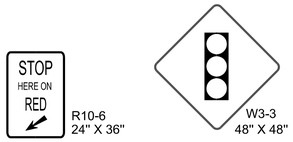
PH (919) 773-8887
CORP. LICENSE NO.: C-0275



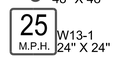
R10-6
24" X 36"

W3-3
48" X 48"

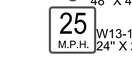
W3-4
48" X 48"

W20-4
48" X 48"

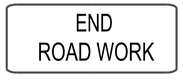
W20-1
48" X 48"



W13-1
24" X 24"

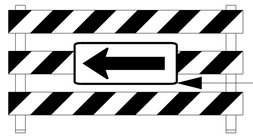


W13-1
24" X 24"

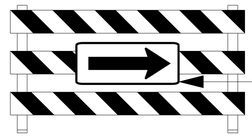


G20-2 A
48" X 24"

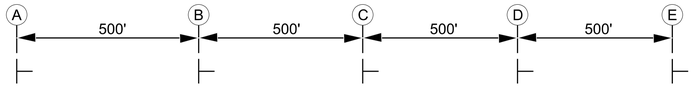
(F)

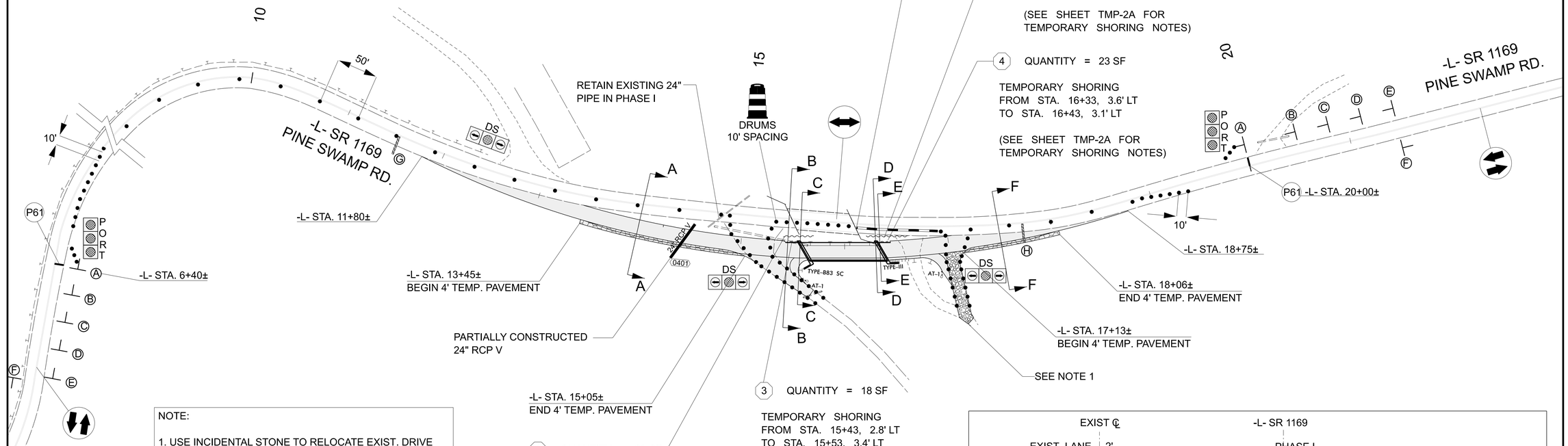

W1-6L
48" x 24"

TYPE III BARRICADE
(G)


W1-6R
48" x 24"

TYPE III BARRICADE
(H)





(2) QUANTITY = 160 SF

TEMPORARY SHORING
FROM STA. 16+21, 9.0' LT
TO STA. 16+62, 6.9' LT

(SEE SHEET TMP-2A FOR
TEMPORARY SHORING NOTES)

(4) QUANTITY = 23 SF

TEMPORARY SHORING
FROM STA. 16+33, 3.6' LT
TO STA. 16+43, 3.1' LT

(SEE SHEET TMP-2A FOR
TEMPORARY SHORING NOTES)

(1) QUANTITY = 90 SF

TEMPORARY SHORING
FROM STA. 15+40, 7.6' LT
TO STA. 15+70, 9.0' LT

(SEE SHEET TMP-2A FOR
TEMPORARY SHORING NOTES)

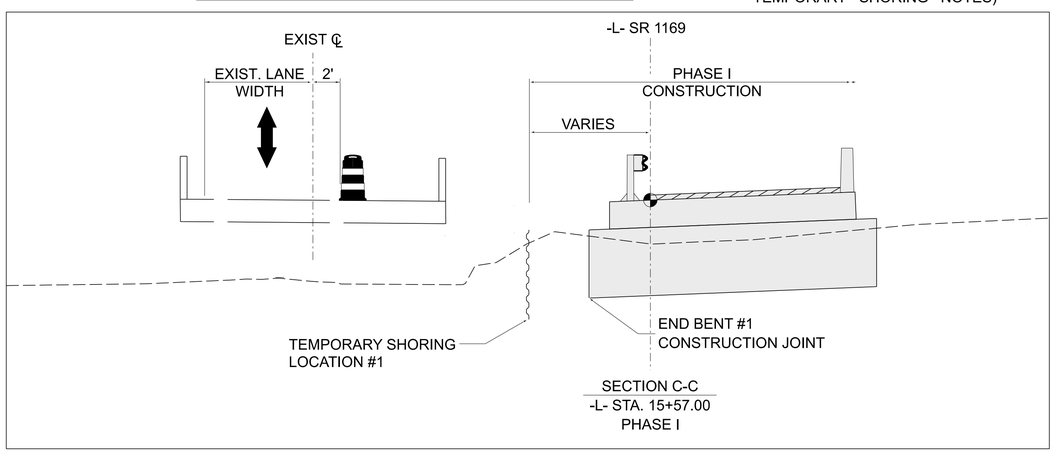
(3) QUANTITY = 18 SF

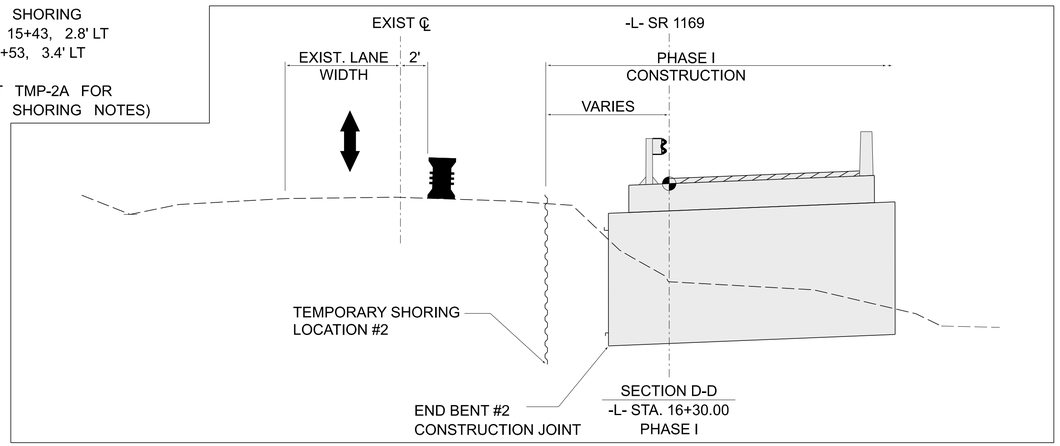
TEMPORARY SHORING
FROM STA. 15+43, 2.8' LT
TO STA. 15+53, 3.4' LT

(SEE SHEET TMP-2A FOR
TEMPORARY SHORING NOTES)

NOTE:

1. USE INCIDENTAL STONE TO RELOCATE EXIST. DRIVE PRIOR TO PCB INSTALLATION AND SIGNAL ACTIVATION.
2. DUE TO BRIDGE WEIGHT RESTRICTIONS, DO NOT PLACE WFB ON EXISTING BRIDGE.
3. FOR CUT SECTIONS A-A, B-B, E-E, AND F-F, SEE SHEET TMP-4A





APPROVED: Don A. Parker
75DB9E90ADEF440...

DATE: 8/5/2025

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A PARKER

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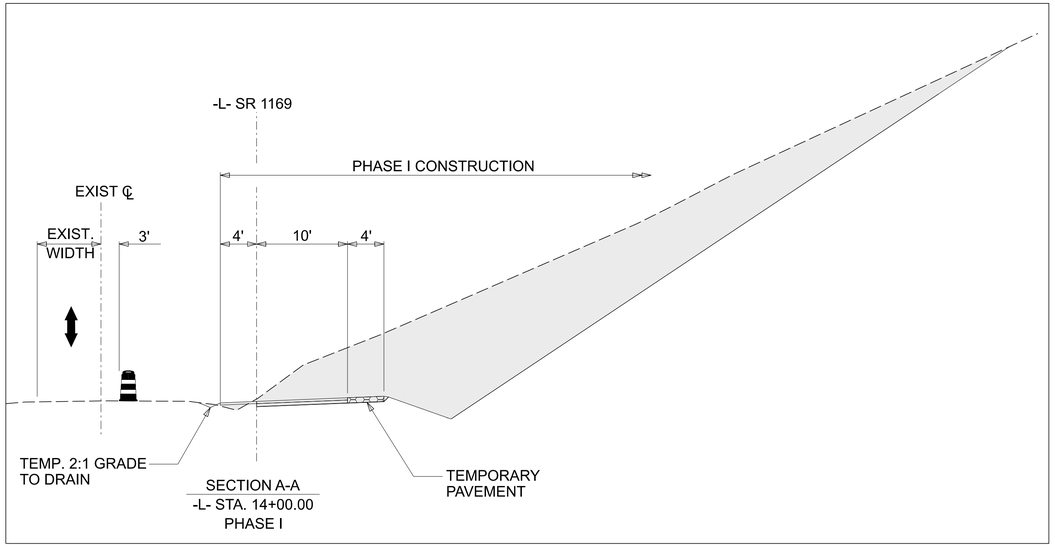
DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

PHASE I

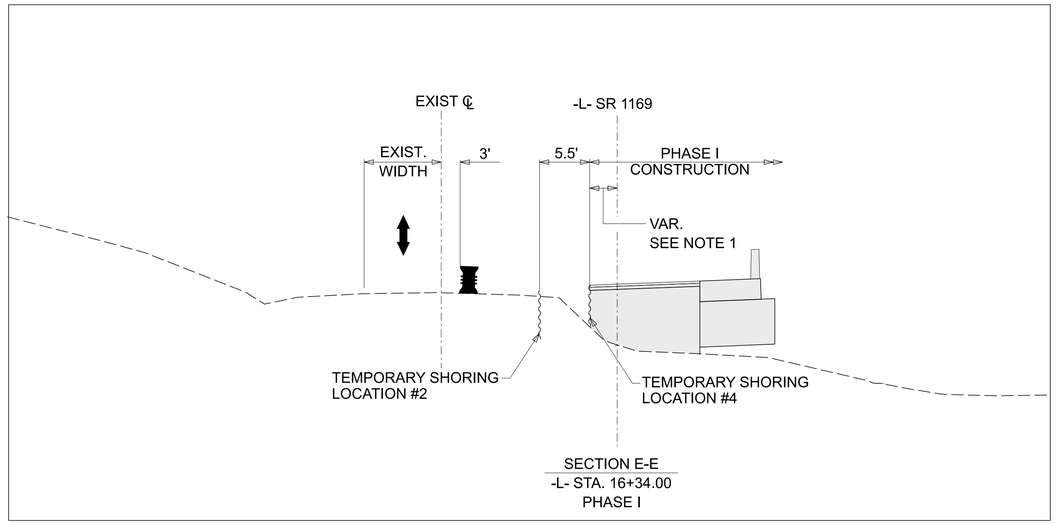
7/29/2025
X:\NCDOT\Div II\Ashe 156\Traffic\TrafficControl\TCP\Ashe 156_TC_TMP_04.dgn
User:rsmelvin

PROJ. REFERENCE NO.	SHEET NO.
BP11-R046	TMP-4A

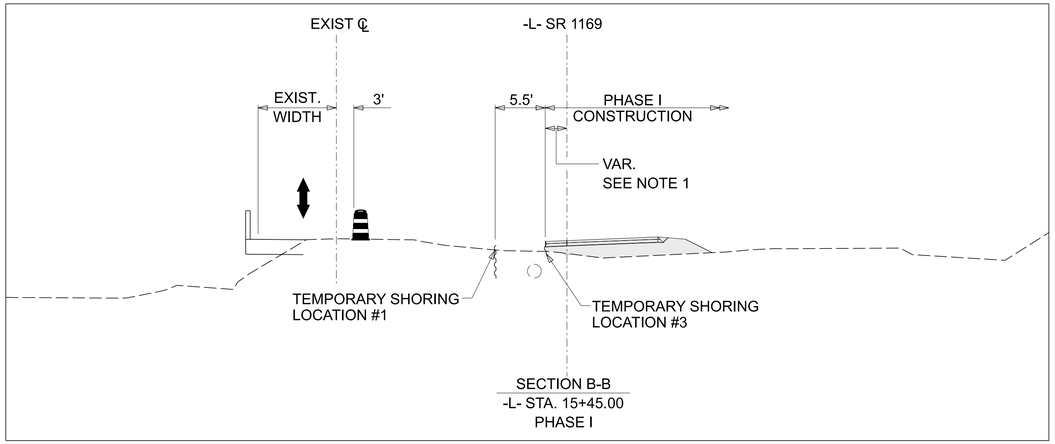
TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275



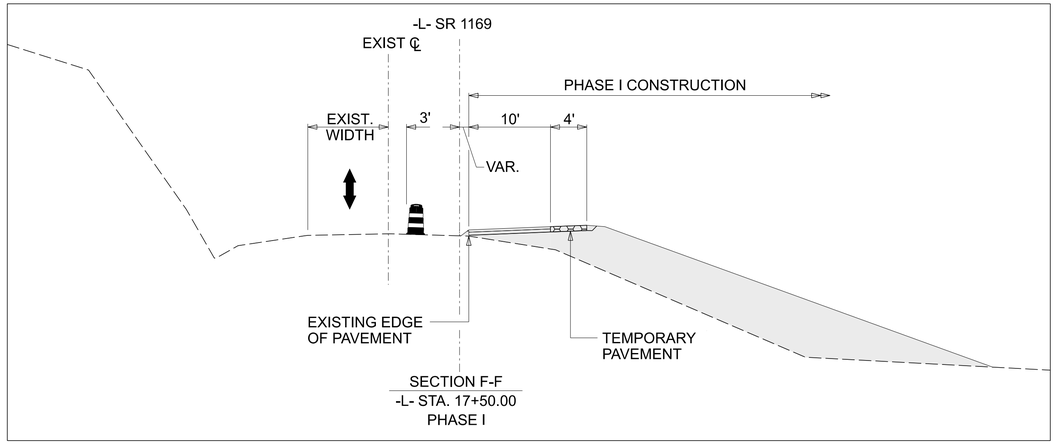
SECTION A-A
-L- STA. 14+00.00
PHASE I



SECTION E-E
-L- STA. 16+34.00
PHASE I



SECTION B-B
-L- STA. 15+45.00
PHASE I



SECTION F-F
-L- STA. 17+50.00
PHASE I

APPROVED: Don A. Parker
Signed by: 76DB9E90ADEF440...

DATE: 8/5/2025

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

PHASE I

7/29/2025
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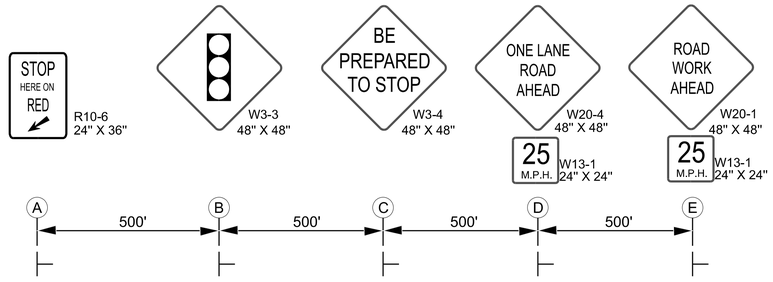
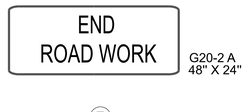
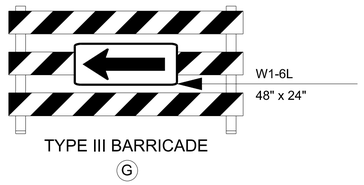
User:rsmelvin

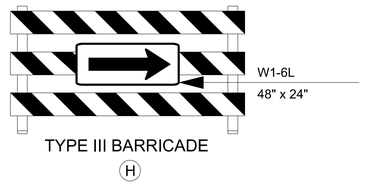
PROJ. REFERENCE NO.	SHEET NO.
BP11-R046	TMP-5

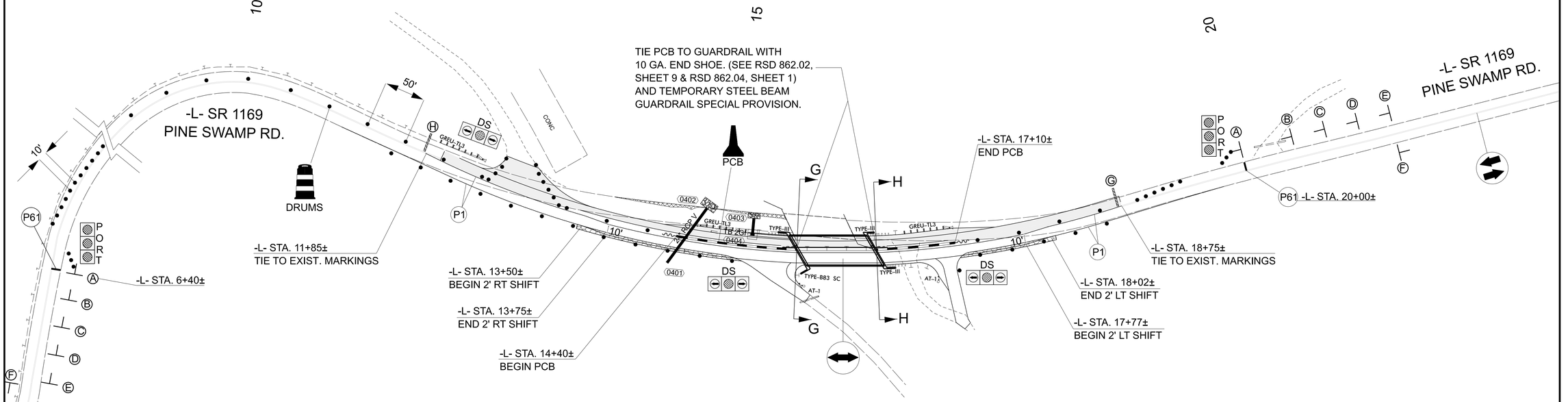
TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

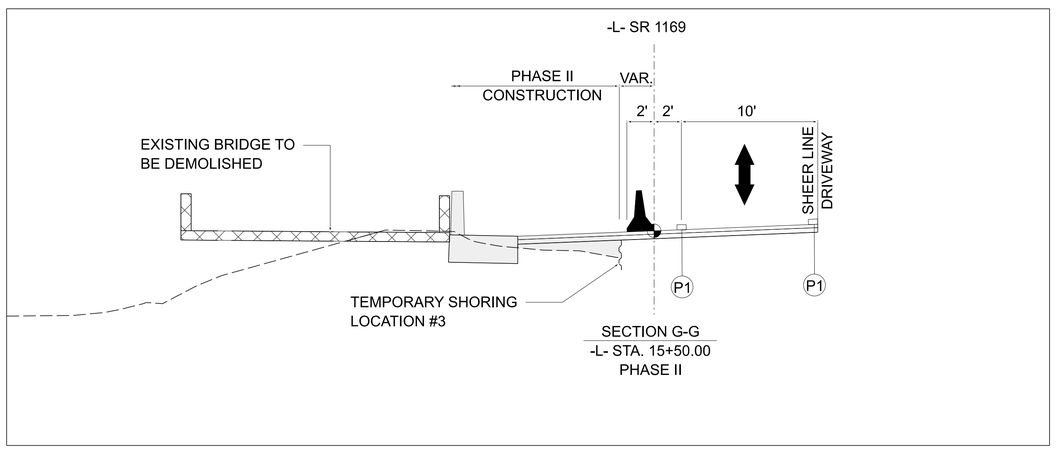


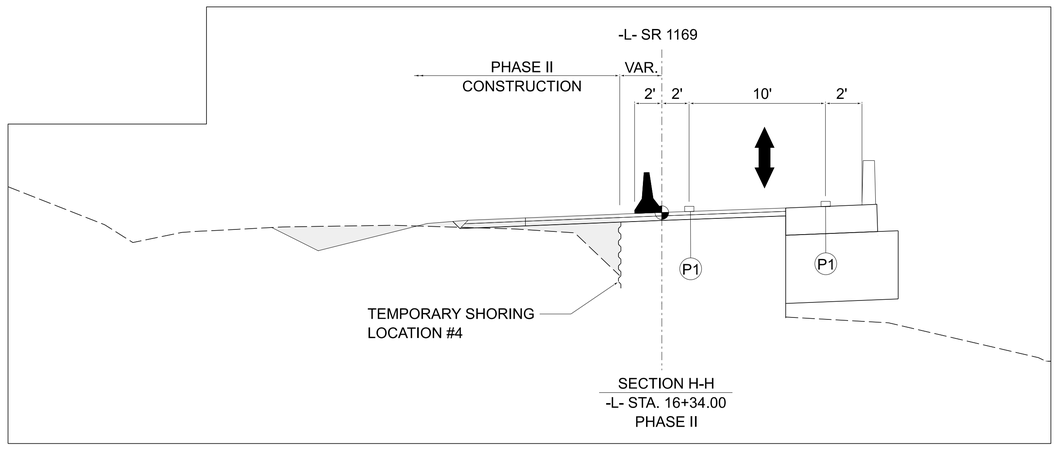












APPROVED: Signed by: Don A. Parker 7BDB9E90ADEF440...

DATE: 8/5/2025

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

PHASE II

7/29/2025
X:\NCDOT\Div II Ashe I56\Traffic\TrafficControl\TCP\Ashe I56_TC_TMP_05.dgn
User:smelvin

T.I.P.: BP11-R046

TIP NO.	SHEET NO.
BP11-R046	PMP-1

APPROVED: Don A. Parker
DATE: 6/11/2025

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
ASHE COUNTY

LOCATION: *BRIDGE #040156 OVER W. FORK PINE SWAMP ON SR 1169 (PINE SWAMP ROAD)*

INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN TITLE, SCHEDULE SHEET, INDEX OF SHEETS, LIST OF APPPLICABLE ROADWAY STANDARD DRAWINGS, GENERAL NOTES, AND FINAL PAVEMENT MARKING SCHEDULE
PMP-2	PAVEMENT MARKING DETAIL

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 END DELINEATION

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 AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKING	MARKER
SR 1169 PINE SWAMP RD	PAINT	NONE

B) PLACE TWO APPLICATIONS OF PAINT PAVEMENT MARKINGS ON THE FINAL WEARING SURFACE. PLACE THE SECOND APPLICATION OF PAINT UPON SUFFICIENT DRYING TIME OF THE FIRST.

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

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

E) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

FINAL PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION
PAVEMENT MARKINGS	
PAINT (4")	
P1	(4") WHITE EDGELINE
P13	(4") YELLOW DOUBLE CENTER

PLAN SUBMITTED TO: NCDOT

ROB N. WEISZ, P.E. DIVISION 11 BRIDGE PROGRAM MANAGER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PLAN PREPARED BY: TGS ENGINEERS

DON A. PARKER, P.E. PROJECT ENGINEER
CODA BRANNAN, E.I. DESIGN ENGINEER

TGS ENGINEERS
TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

TIP NO.	SHEET NO.
BP11-R046	PMP-2

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440...

DATE: 8/5/2025

SEAL

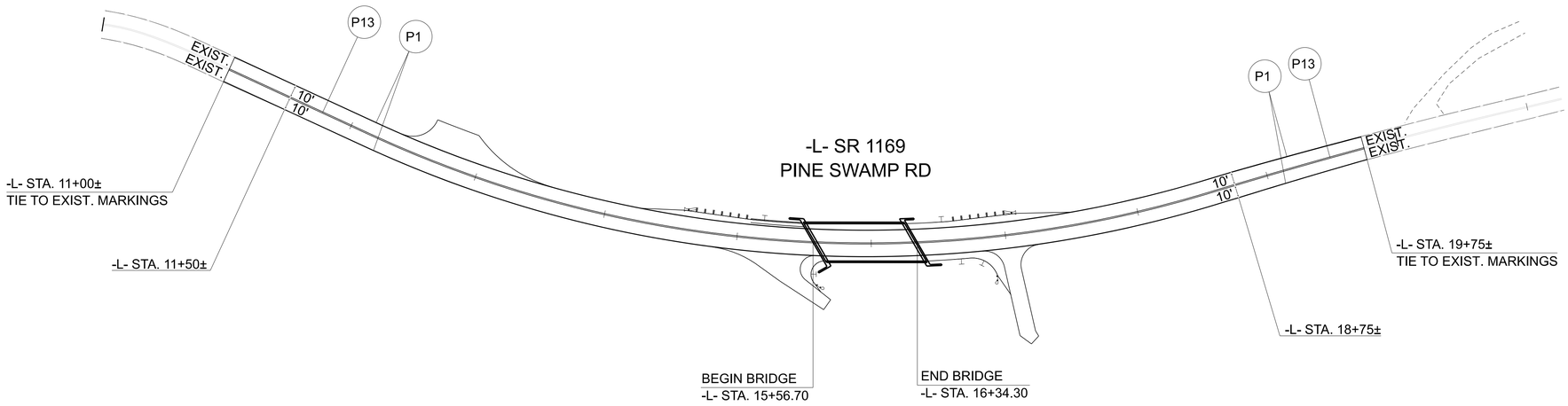
NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
706 HILLSBOROUGH STREET
(SUITE 200)
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

10

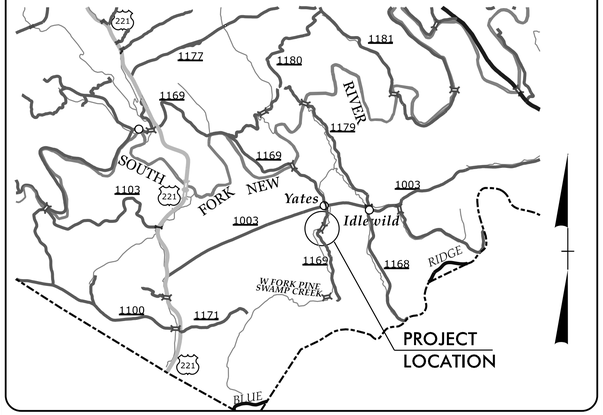
20



PAVEMENT MARKING DETAIL

7/29/2025
X:\NCDOT\Div II\Ashe I56\Traffic\Pavement Markings\Ashe I56_Sgn_PMP_02.dgn
User:smelvin

TIP PROJECT: BP11–R046



VICINITY MAP
NOT TO SCALE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

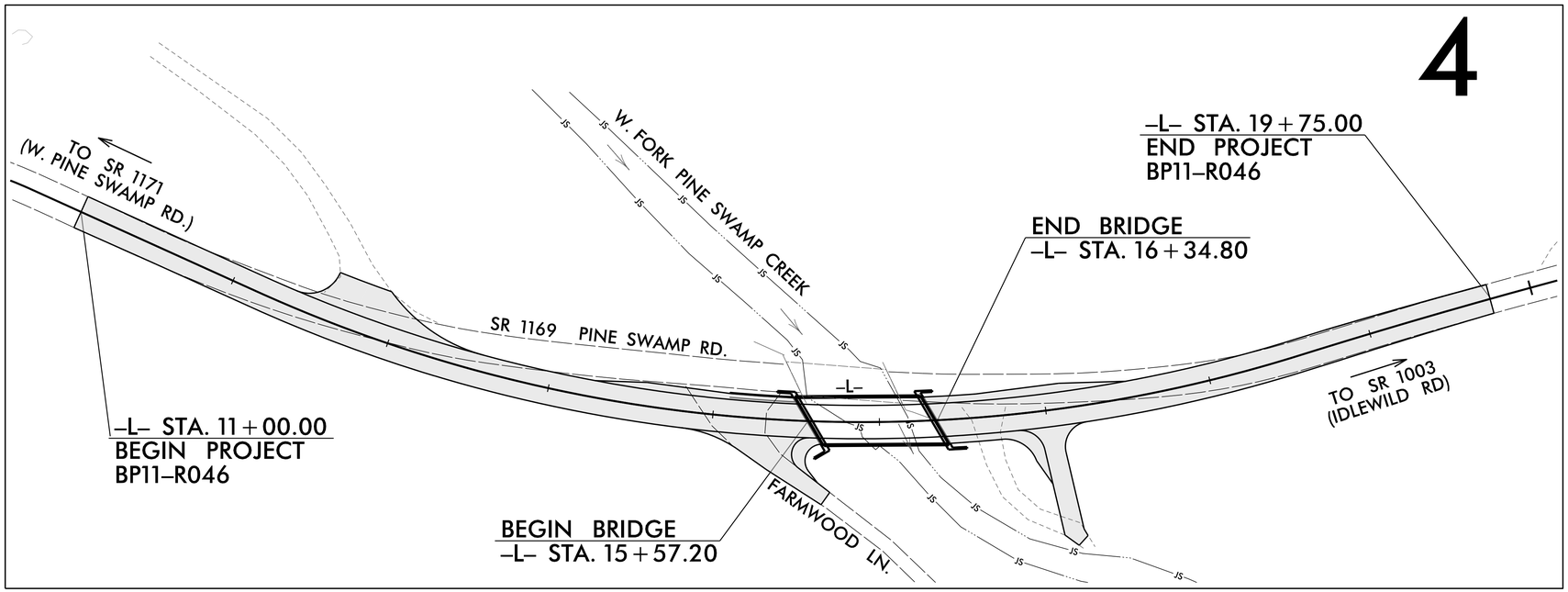
ASHE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP11-R046	EC-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

LOCATION: *BRIDGE #040156 OVER W. FORK PINE SWAMP ON SR 1169 (PINE SWAMP ROAD)*

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

NAD 83/ 2011



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

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

Refer To E. C. Special Provisions for Special Considerations.

GRAPHIC SCALE

50 25 0 50 100
PLANS

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG 010000 GENERAL STORMWATER CONSTRUCTION PERMIT ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF ENERGY, MINERAL, AND LAND RESOURCES.

TGS ENGINEERS

Prepared In the Office of:
TGS ENGINEERS
706 HILLSBOROUGH ST
SUITE 200
RALEIGH, NC 27603

Designed by:
Ben Henegar, PE — *NAME*
3564 — *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.

PROJECT REFERENCE NO.	SHEET NO.
BP11-R046	EC-02
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

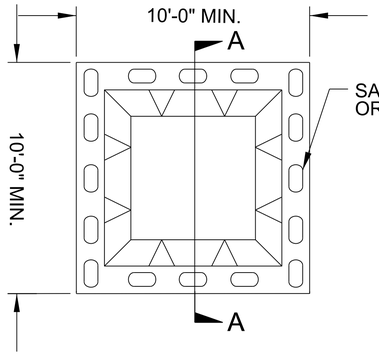
EROSION & SEDIMENT CONTROL LEGEND

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1630.03	Temporary Silt Ditch	TSD
1630.04	Stilling Basin	
1630.05	Temporary Diversion	TD
1630.06	Special Stilling Basin	
1630.07	Skimmer Basin	
1630.08	Tiered Skimmer Basin	
1630.09	Earthen Dam with Skimmer	
	Infiltration Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C

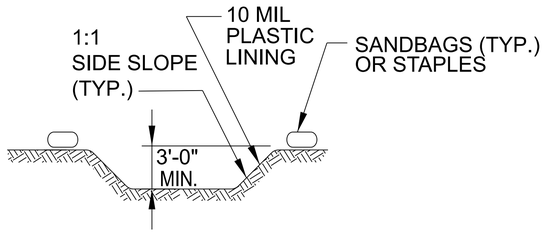
Std. #	Description	Symbol
1633.01	Temporary Rock Silt Check Type A	
1633.02	Temporary Rock Silt Check Type B	
1633.03	Temporary Rock Silt Check Type A with Excelsior Matting and Flocculant	
1634.01	Temporary Rock Sediment Dam Type A	
1634.02	Temporary Rock Sediment Dam Type B	
1635.01	Rock Pipe Inlet Sediment Trap Type A	A
1635.02	Rock Pipe Inlet Sediment Trap Type B	B
1636.01	Excelsior Wattle Check	
1636.01	Excelsior Wattle Check with Flocculant	
1636.01	Coir Fiber Wattle Check	
1636.01	Coir Fiber Wattle Check with Flocculant	
1636.02	Silt Fence Excelsior Wattle Break	EW
	Silt Fence Coir Fiber Wattle Break	CFW
1636.03	Excelsior Wattle Barrier	—EW—EW—EW—
1636.03	Coir Fiber Wattle Barrier	—CFW—CFW—CFW—

PROJECT REFERENCE NO.	SHEET NO.
BPII-R046	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



PLAN



SECTION A-A

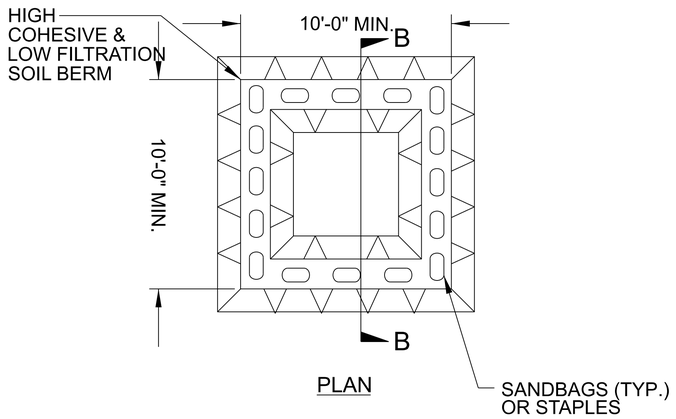
NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

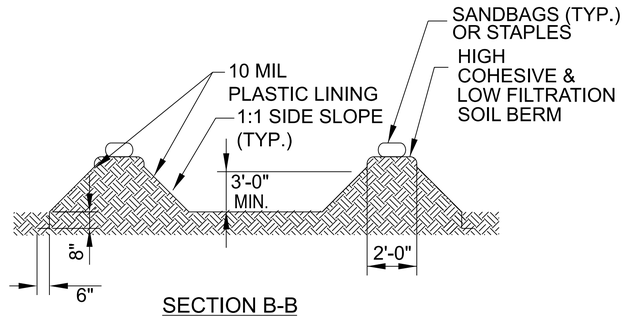
3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

BELOW GRADE WASHOUT STRUCTURE

NOT TO SCALE



PLAN



SECTION B-B

NOTES:
1. ACTUAL LOCATION DETERMINED IN FIELD

2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.

3.CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARY MARKED WITH SIGNAGE NOTING DEVICE.

ABOVE GRADE WASHOUT STRUCTURE

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
BP11-R046	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 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

PROJECT REFERENCE NO.	SHEET NO.
BP11-R046	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

DITCHLINE EXCELSIOR MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	–L–	11+50	14+36	RT	310
4	–L–	13+50	14+65	LT	135
4	–L–	16+50	19+00	LT	290
			SUBTOTAL		735

SLOPE MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	–L–	11+65	14+60	RT	1,700
4	–L–	16+50	19+75	RT	1,350
			SUBTOTAL		3,050

MATTING FOR EROSION CONTROL TOTALS

	ESTIMATE (SY)
DITCHLINE STRAW MATTING SUBTOTAL	N/A
DITCHLINE EXCELSIOR MATTING SUBTOTAL	735
SLOPE MATTING SUBTOTAL	3,050
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER	165
TOTAL	3,950
SAY	4,000

11/14/23

CUR DATA -L-
PIc 10+33.05
Δc = 15°40'46.4" (RT)
D = 23°52'23.7"
Lc = 65.68
Tc = 33.05
R = 240
SE=See Plans

CUR DATA -L-
PIc 15+50.81
Δc = 41°40'52.4" (LT)
D = 06°30'39.2"
Lc = 640.18
Tc = 334.99
R = 880
SE=0.04
DS =45 MPH

CUR DATA -L-
PIc 19+91.30
Δc = 03°52'28.9" (RT)
D = 01°25'56.6"
Lc = 270.50
Tc = 135.30
R = 4,000
SE=See Plans

ENVIRONMENTALLY SENSITIVE AREA
SEE PROJECT SPECIAL PROVISIONS

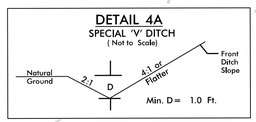
NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE - B AND TEMPORARY ROCK SILT CHECKS TYPE - A AT DRAINAGE OUTLETS.

CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04

NOTE:
UTILIZE SPECIAL STILLING BASIN(S) AS STILLING BASIN WHERE APPLICABLE.

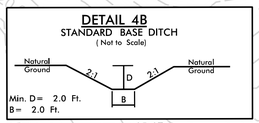
NAD
83/2011

DETAIL 4A
SPECIAL 'V' DITCH
(Not to Scale)



–L– 14+00 TO 14+65 LT

DETAIL 4B
STANDARD BASE DITCH
(Not to Scale)



–L– 15+05 LT
–L– 15+13 LT

-L- POC 10+00.00
-L- PT 10+65.68
-L- PC 12+15.82
-L- PRC 18+56.00
-L- PT 21+26.50

BEGIN PROJECT
BP11.R046
–L– STA. 11+00.00

END PROJECT
BP11.R046
–L– STA. 19+75.00

END BRIDGE
–L– STA. 16+34.30

BEGIN BRIDGE
–L– STA. 15+56.70

IMPERVIOUS DIKE

DO NOT DISTURB POLE

REMOVE & RESET EXIST. CAMPBELL

RELOCATE FENCE (BY OWNER)

PROP. ASPHALT DRIVE

CL. "I" RIP RAP
7 Tons
15 Sq. Yds.

SPECIAL 'V' DITCH
SEE DETAIL 4A
DO NOT DISTURB

2' STD. BASE DITCH
SEE DETAIL 4B
S=0.3%
EST. 45 CY DDE

2' STD. BASE DITCH
SEE DETAIL 4B
S=0.5%
EST. 25 CY DDE

CL. "I" RIP RAP
3 Tons
7 Sq. Yds.

BEGIN FDDS
–L– STA. 14+26.50

END FDDS
–L– STA 17+50.35

15" RCP IV

2' SPECIAL BASE DITCH
SEE DETAIL 4C

FS
SEE DETAIL 4E

REMOVE

DO NOT DISTURB ROCK COLUMNS

BANK STABILIZATION
SEE DETAIL 4D

01 JOEL W. YATES
JOHN E. YATES
DB M5 PG 569

02 JOEL W. YATES
PHYLLIS L. YATES
JOHN E. YATES
VICKI M. YATES
DB 222 PG 717

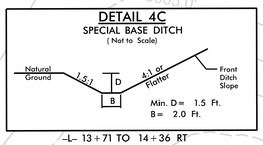
03 DWIGHT CHRIS GREENE
DB 179 PG 172

04 TIMOTHY REID CHURCH
WILLIAM BRYANT CHURCH JR
DB 559 PG 1243

2.81 MI TO SR 1171 (W. PINE SWAMP RD.)

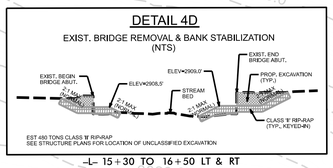
0.28 MI TO SR 1003 (OLD EWELD RD.)

DETAIL 4C
SPECIAL BASE DITCH
(Not to Scale)



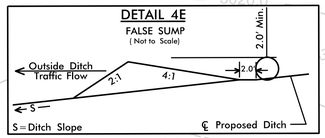
–L– 13+71 TO 14+36 RT

DETAIL 4D
EXIST. BRIDGE REMOVAL & BANK STABILIZATION
(NTS)



–L– 15+30 TO 16+50 LT & RT

DETAIL 4E
FALSE SUMP
(Not to Scale)



–L– 14+50 RT

BP11-R046
EC-04/CONST.04

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ASHE COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PREPARED BY

TGS ENGINEERS
201 W. MARION ST. STE 200
SHELBY, NC 28150
PH: (704) 476-9005
CORP. LICENSE NO.: C-0275

REVISIONS

11/14/23

CUR DATA -L-
PIc 10+33.05
Δc = 15°40'46.4" (RT)
D = 23°52'23.7"
Lc = 65.68
Tc = 33.05
R = 240
SE=See Plans

CUR DATA -L-
PIc 15+50.81
Δc = 41°40'52.4" (LT)
D = 06°30'39.2"
Lc = 640.18
Tc = 334.99
R = 880
SE=0.04
DS =45 MPH

CUR DATA -L-
PIc 19+91.30
Δc = 03°52'28.9" (RT)
D = 01°25'56.6"
Lc = 270.50
Tc = 135.30
R = 4,000
SE=See Plans

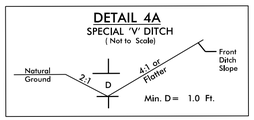
NOTE:
UTILIZE SPECIAL STILLING BASIN(S) AS STILLING BASIN WHERE APPLICABLE.

NAD 83/2011

10

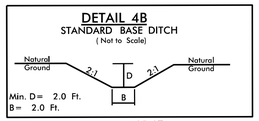
02

DETAIL 4A
SPECIAL 'V' DITCH
(Not to Scale)



–L– 14+00 TO 14+65 LT

DETAIL 4B
STANDARD BASE DITCH
(Not to Scale)



–L– 15+05 LT
–L– 15+13 LT

-L- POC 10+00.00

-L- PT 10+65.68

-L- PC 12+15.82

-L- PRC 18+56.00

NO3°16'16"E
1089.36'

END PROJECT
BP11.R046
–L– STA. 19+75.00

END BRIDGE
–L– STA. 16+34.30

BEGIN PROJECT
BP11.R046
–L– STA. 11+00.00

BEGIN BRIDGE
–L– STA. 15+56.70

01 JOEL W. YATES
JOHN E. YATES
DB M5 PG 569

02 JOEL W. YATES
PHYLLIS L. YATES
JOHN E. YATES
VICKI M. YATES
DB 222 PG 717

03 DWIGHT CHRIS GREENE
DB 179 PG 172

04 TIMOTHY REID CHURCH
WILLIAM BRYANT CHURCH JR
DB 559 PG 1243

IMPERVIOUS DIKE

2' STD. BASE DITCH
SEE DETAIL 4B
S=0.3%
EST. 45 CY DDE

2' STD. BASE DITCH
SEE DETAIL 4B
S=0.5%
EST. 25 CY DDE

CL. "I" RIP RAP
7 Tons
15 Sq. Yds.

CL. "I" RIP RAP
3 Tons
7 Sq. Yds.

SPECIAL 'V' DITCH
SEE DETAIL 4A
DO NOT DISTURB

2' SPECIAL BASE DITCH
SEE DETAIL 4C

FS
SEE DETAIL 4E

RELOCATE FENCE (BY OWNER)

REMOVE & RESET EXIST. CULVERT

15" RCP IV

DO NOT DISTURB POLE

DO NOT DISTURB ROCK COLUMNS

BANK STABILIZATION
SEE DETAIL 4D

PROP. ASPHALT DRIVE

WETLAND

WOODS

GRASS

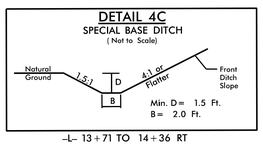
FENCE CORNER

2.81 MI TO SR 1171 (W. PINE SWAMP RD.)

0.28 MI TO SR 1003 (OLD EWELD RD.)

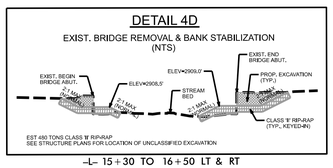
PINE SWAMP RD.

DETAIL 4C
SPECIAL BASE DITCH
(Not to Scale)



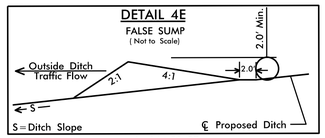
–L– 13+71 TO 14+36 RT

DETAIL 4D
EXIST. BRIDGE REMOVAL & BANK STABILIZATION
(NTS)



–L– 15+30 TO 16+50 LT & RT

DETAIL 4E
FALSE SUMP
(Not to Scale)



–L– 14+50 RT

BP11-R046

EC-05/CONST.04

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ASHE COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PREPARED BY

TGS ENGINEERS
201 W. MARION ST. STE 200
SHELBY, NC 28150
PH: (704) 476-9005
CORP. LICENSE NO.: C-0275

REVISIONS

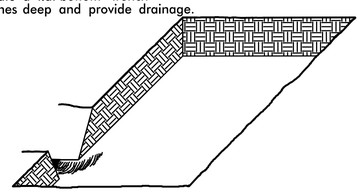
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP11–R046	RF–1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

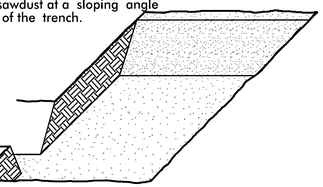
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

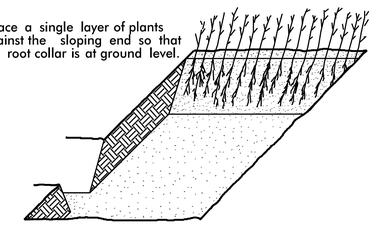
1. Locate a healing–in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



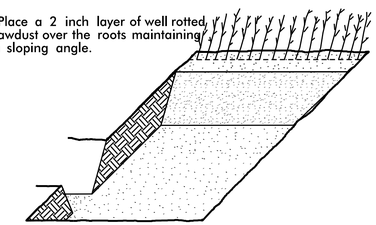
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

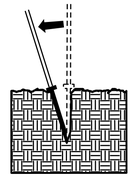


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

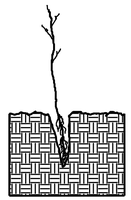


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

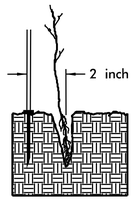
DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR



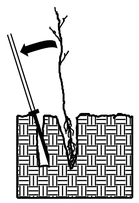
1. Insert planting bar as shown and pull handle toward planter.



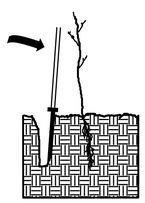
2. Remove planting bar and place seedling at correct depth.



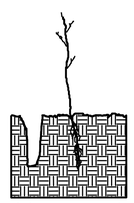
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.



5. Push handle forward firming soil at top.



6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.

KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.

ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION

☐ TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

25%	LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in – 18 in BR
25%	PLATANUS OCCIDENTALIS	SYCAMORE	12 in – 18 in BR
25%	BETULA NIGRA	RIVER BIRCH	12 in – 18 in BR
25%	NYSSA SYLVATICA	BLACK GUM	12 in – 18 in BR

REFORESTATION DETAIL SHEET

N.C.D.O.T. – ROADSIDE ENVIRONMENTAL UNIT

T.I.P.: BP11-R046

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

TIP NO.	SHEET NO.
BP11-R046	SIGN-1

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440... DATE: 6/11/2025

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 043251 ENGINEER DON A. PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SIGNING PLAN
ASHE COUNTY

LOCATION: *BRIDGE #040156 OVER W. FORK PINE SWAMP ON SR 1169 (PINE SWAMP ROAD)*

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
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS

GENERAL NOTES

. SIGNS FURNISHED BY STATE

. CONFIRM IN WRITING AT LEAST 4 MONTHS IN ADVANCE, THE ACTUAL DATE THE DEPARTMENT FURNISHED SIGNS WILL BE REQUIRED.

. IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY OTHERS.

. WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' AND 'F' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER

. ALL EXISTING SIGNS ON "U" CHANNEL POST WITHIN THE PROJECT LIMITS SHALL BE REMOVED AND DISPOSED OF UNLESS OTHERWISE NOTED ON PLANS.

. THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.

. SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	13	L.F.
4102000000	904	SIGN ERECTION, TYPE E	1	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	6	EA.

INDEX

PLAN SUBMITTED TO: NCDOT

ROB N. WEISZ, P.E. DIVISION 11 BRIDGE PROGRAM MANAGER

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

PLAN PREPARED BY: TGS ENGINEERS

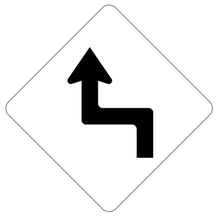
DON A. PARKER, P.E. PROJECT ENGINEER

CODA BRANNAN, E.I. DESIGN ENGINEER

TGS ENGINEERS
706 HILLSBOROUGH ST. SUITE 200
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

5/9/2025
X:\NCDOT\Div 11 Ashe 156\Traffic\Signing\CADD\Signing Layout Plans\Ashe 156_Sgn_SGN_01.dgn
User:smelvin

401 QUANTITY REQ'D _1_



30 X 30
W1-3

ONE "U" POST PER SIGN

402 QUANTITY REQ'D _1_

18 X 18
W13-1P

MOUNT BELOW SIGN 401
IN 1 INSTALLATIONS

TIP NO.	SHEET NO.
BP11-R046	SIGN-2

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440...

DATE: 6/11/2025

SEAL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
706 HILLSBOROUGH STREET
(SUITE 200)
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

TYPE "E" SIGNS

TIP NO.	SHEET NO.
BP11-R046	SIGN-3

APPROVED: Signed by: Don A. Parker 75DB9E90ADEF440...

DATE: 8/5/2025

SEAL

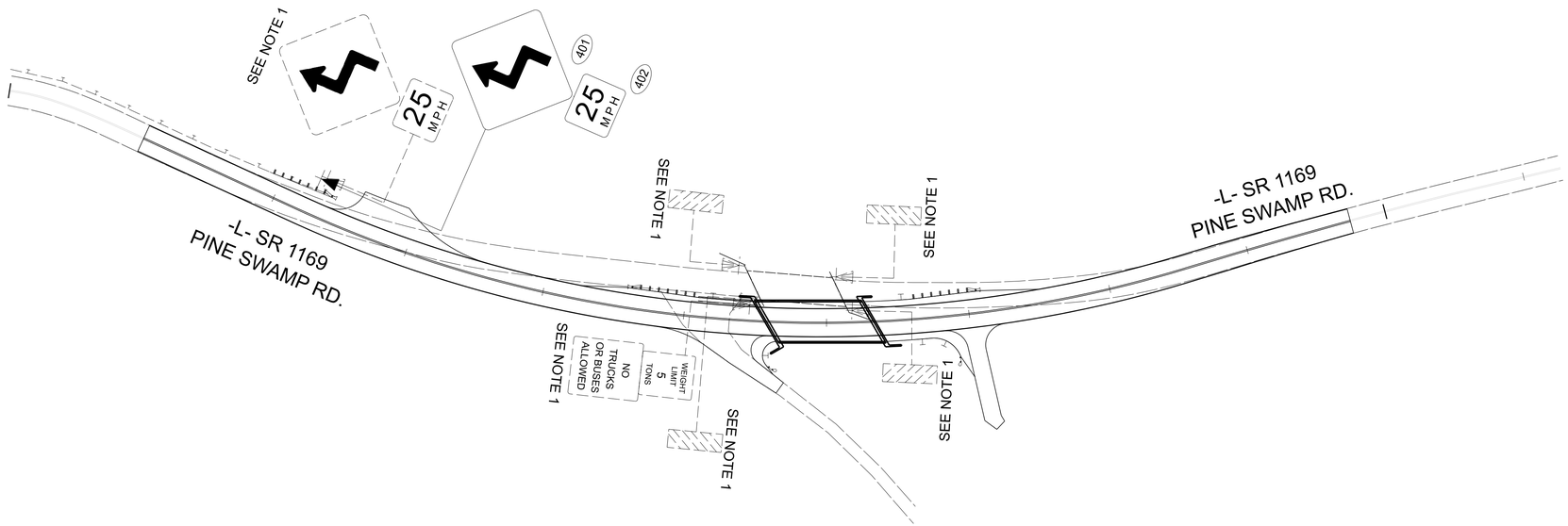
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043251 DON A. PARKER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
706 HILLSBOROUGH STREET
(SUITE 200)
RALEIGH, NC 27603
PH (919) 773-8887
CORP. LICENSE NO.: C-0275

10

20



PROJECT NOTES

NOTE:

1. DISPOSAL OF SIGN SYSTEM, U-CHANNEL

EXISTING/PROPOSED SIGNS

7/29/2025
X:\NCDOT\Div 11 Ashe 156\Traffic\Signing\CADD\Signing Layout Plans\Ashe 156_Sgn_SGN.dgn
User:smelvin

09/08/99

TIP PROJECT: BP11-R046

CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

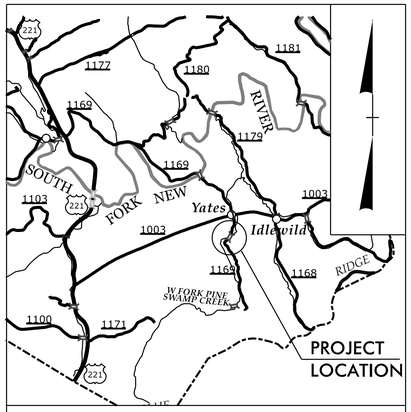
UTILITIES BY OTHERS PLANS
ASHE COUNTY

LOCATION: BRIDGE #040156 OVER W. FORK PINE SWAMP ON SR 1169 (PINE SWAMP ROAD)

TYPE OF WORK: COMMUNICATIONS

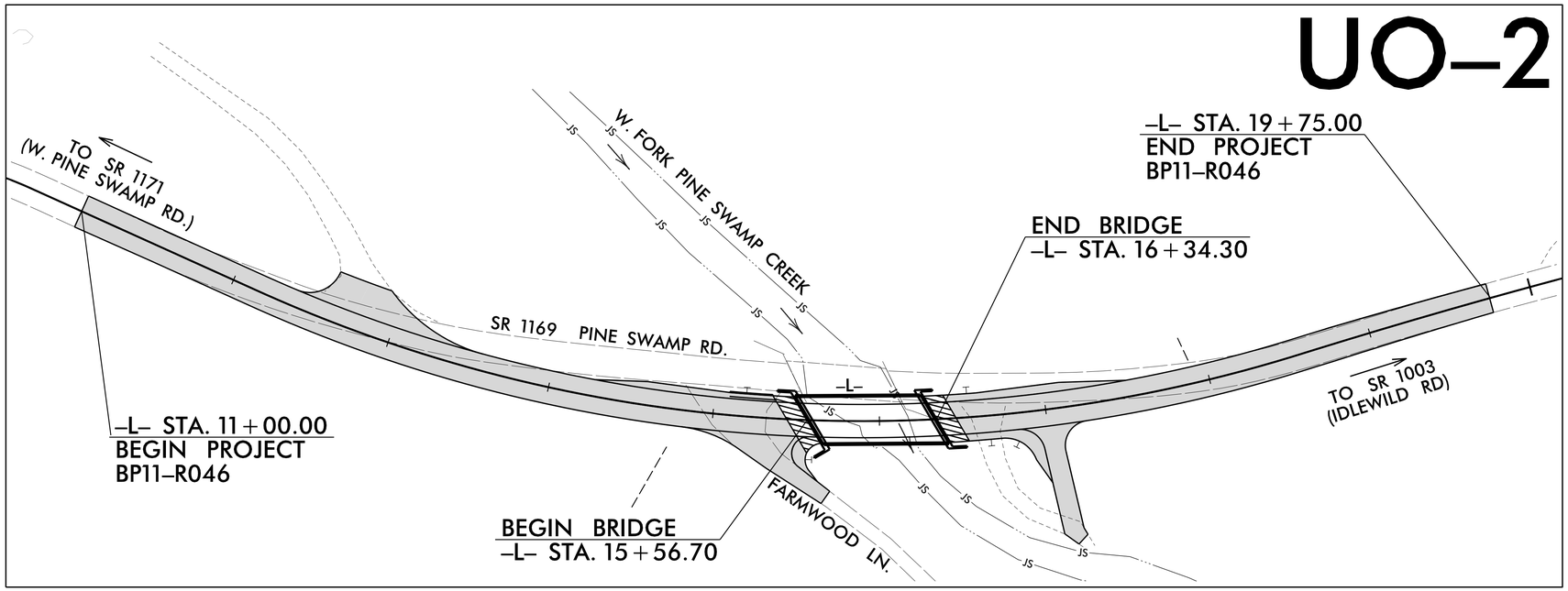
T.I.P. NO.	SHEET NO.
BP11–R046	UO–1

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



VICINITY MAP (NTS)

NAD 83/ 2011



GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

UTILITY OWNERS WITH CONFLICTS

(A) COMMUNICATIONS – SKYLINE

PREPARED IN THE OFFICE OF

TELICS

TELICS
1598 WESTBROOK PLAZA DR.
SUITE 202
WINSTON SALEM, NC 27103
(336) 705 – 8844

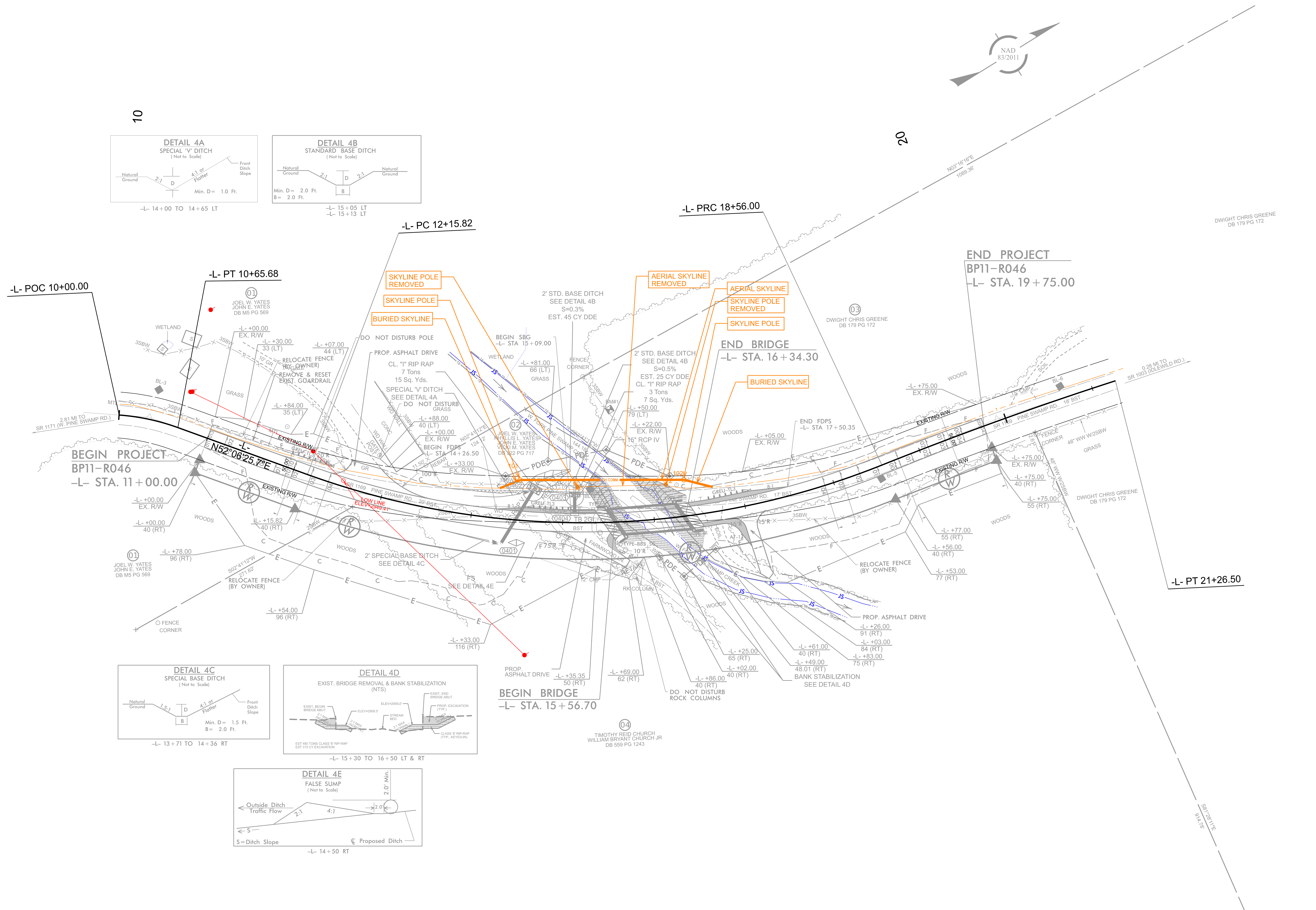
CORY WOOD — *UTILITY PROJECT MANAGER*
CORY WOOD — *UTILITY COORDINATOR*

DIVISION OF HIGHWAYS
DIVISION 11
801 STATESVILLE RD.
NORTH WILKESBORO, NC 28659
PHONE (336) 903–9101

BRANDON GREER — *DIVISION UTILITIES ENGINEER*
RAMIE SHAW — *DIVISION PROJECT DEVELOPMENT*

02/02/22

UTILITIES BY OTHERS


NAD 83/2011
DETAIL 4A
SPECIAL 'V' DITCH
(Not to Scale)
-L- 14+00 TO 14+65 LT
DETAIL 4B
STANDARD BASE DITCH
(Not to Scale)
-L- 15+05 LT
-L- 15+13 LT
-L- POC 10+00.00
-L- PT 10+65.68
-L- PC 12+15.82
-L- PRC 18+56.00
-L- PT 21+26.50
SKYLINE POLE REMOVED
SKYLINE POLE
BURIED SKYLINE
AERIAL SKYLINE REMOVED
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SKYLINE POLE REMOVED
SKYLINE POLE
BURIED SKYLINE
BEGIN PROJECT
BP11-R046
-L- STA. 11+00.00
END PROJECT
BP11-R046
-L- STA. 19+75.00
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N52°06'25.7"E
DWIGHT CHRIS GREENE
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DB 559 PG 1243
2' STD. BASE DITCH
SEE DETAIL 4B
S=0.3%
EST. 45 CY DDE
2' STD. BASE DITCH
SEE DETAIL 4B
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DO NOT DISTURB POLE
PROP. ASPHALT DRIVE
RELOCATE FENCE (BY OWNER)
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DETAIL 4C
SPECIAL BASE DITCH
(Not to Scale)
-L- 13+71 TO 14+36 RT
DETAIL 4D
EXIST. BRIDGE REMOVAL & BANK STABILIZATION
(NTS)
-L- 15+30 TO 16+50 LT & RT
DETAIL 4E
FALSE SUMP
(Not to Scale)
S=Ditch Slope
Proposed Ditch
-L- 14+50 RT

BP11-R046

UO-2

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
ASHE COUNTY

UTILITY DESIGN UNIT

UTILITY CONSTRUCTION PLANS ONLY

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

DESIGNED BY:

DRAWN BY:

CHECKED BY:

APPROVED BY:

REVISED:

TELICS
1598 WESTBROOK PLAZA DR.
SUITE 202
WINSTON SALEM, NC 27103
PHONE (336)705-8844

REVISIONS

PROJ. REFERENCE NO.	SHEET NO.
BP11-R046	X-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

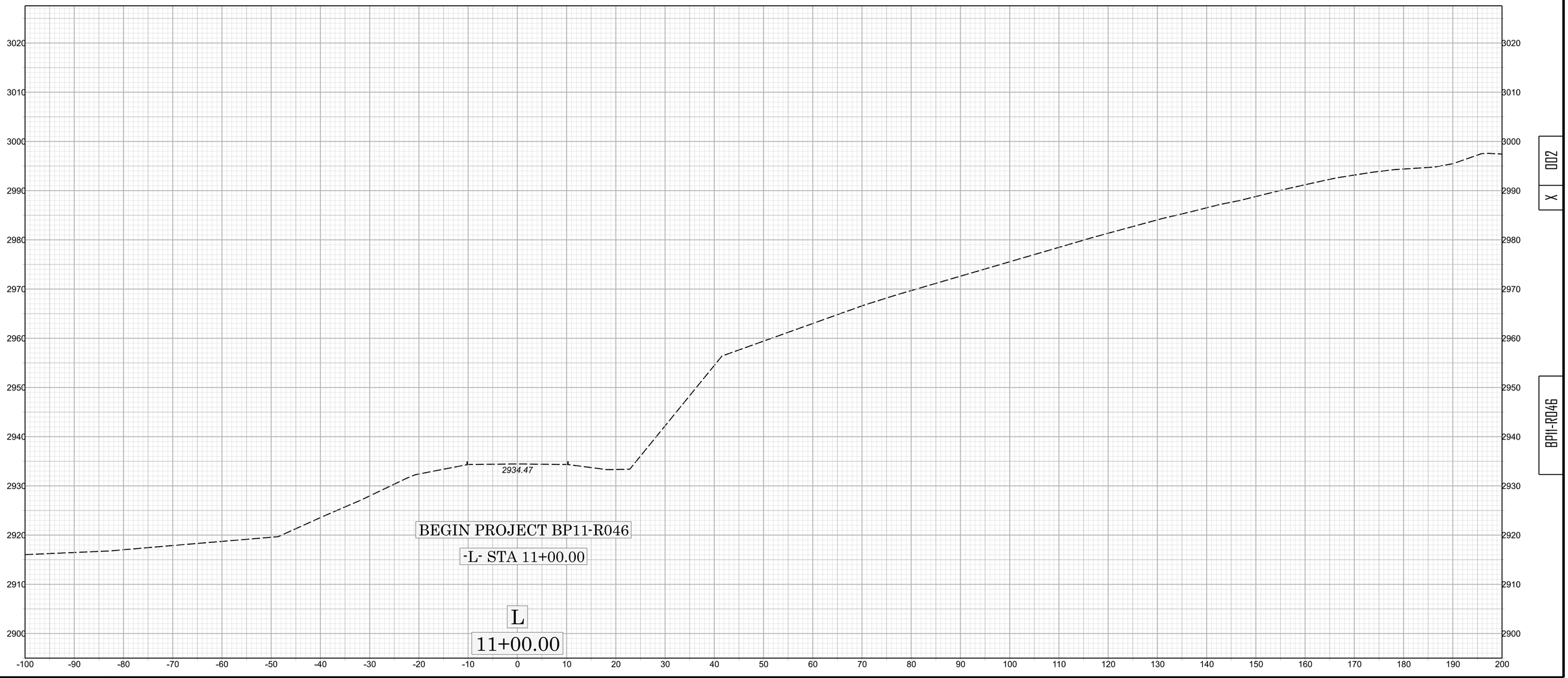
CROSS-SECTION SUMMARY

Station -L-	Uncl. Exc. (cu yd)	Embt (cu yd)
11+00.00		
11+50.00	0	4
12+00.00	435	11
12+50.00	922	12
12+70.00	414	4
13+00.00	693	5
13+50.00	1144	4
14+00.00	1050	1
14+50.00	644	34
15+00.00	186	35
15+25.00	79	2
15+50.00	52	14
15+56.70	0	7
Station -L-	Uncl. Exc. (cu yd)	Embt (cu yd)
16+34.30		
16+50.00	26	90
17+00.00	60	501
17+50.00	31	533
18+00.00	13	290
18+50.00	0	244
19+00.00	1	171
19+50.00	1	60
19+75.00	1	10

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

11/14/23

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

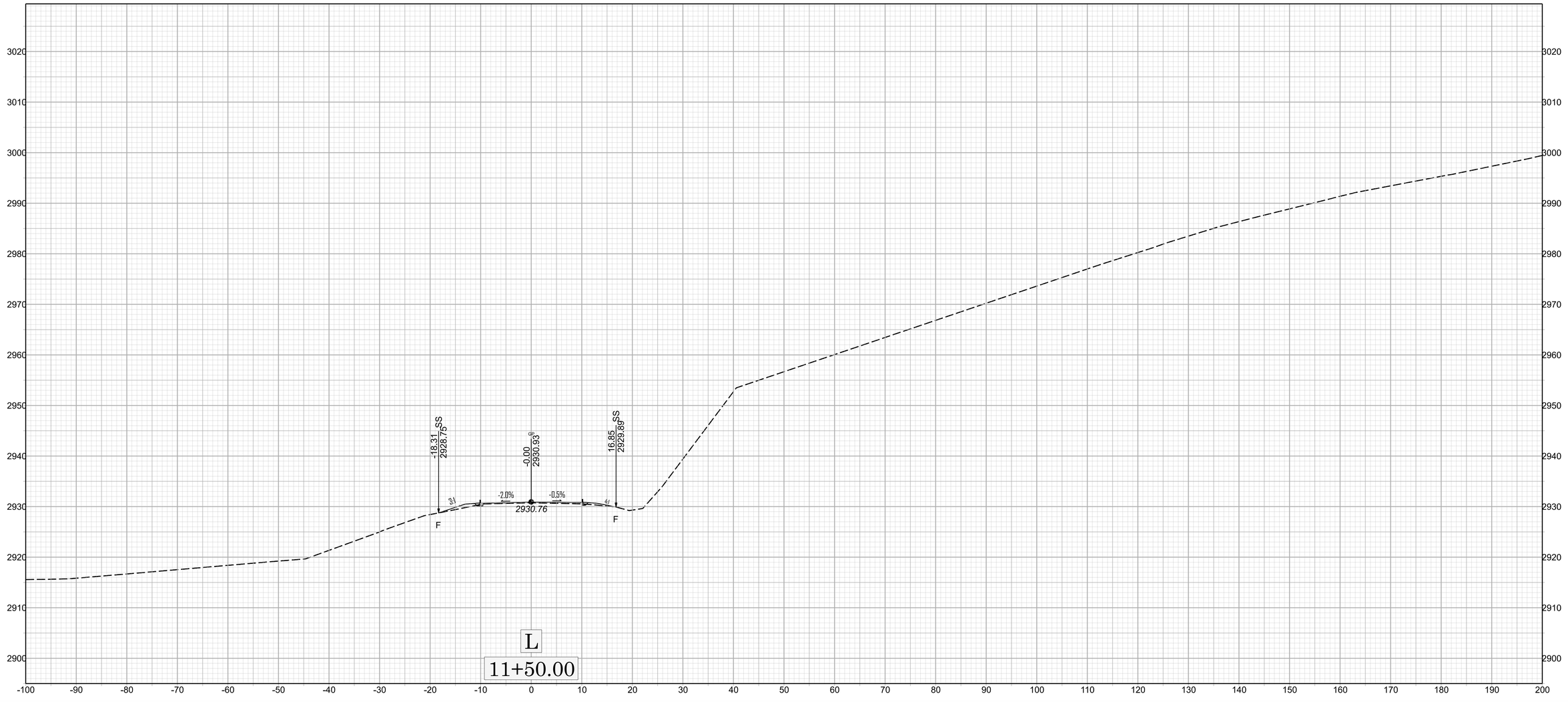


0 10 20

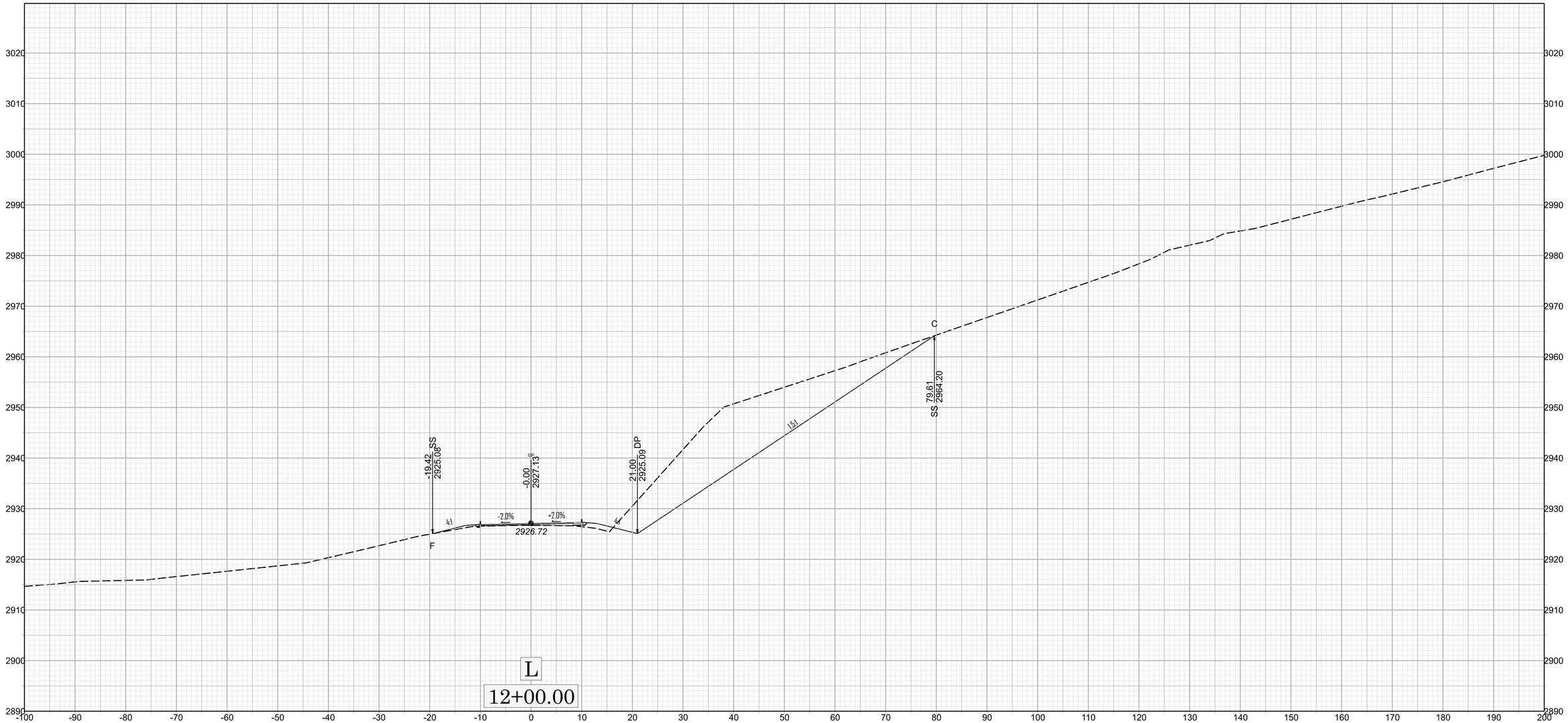
X 002

BP11-R046

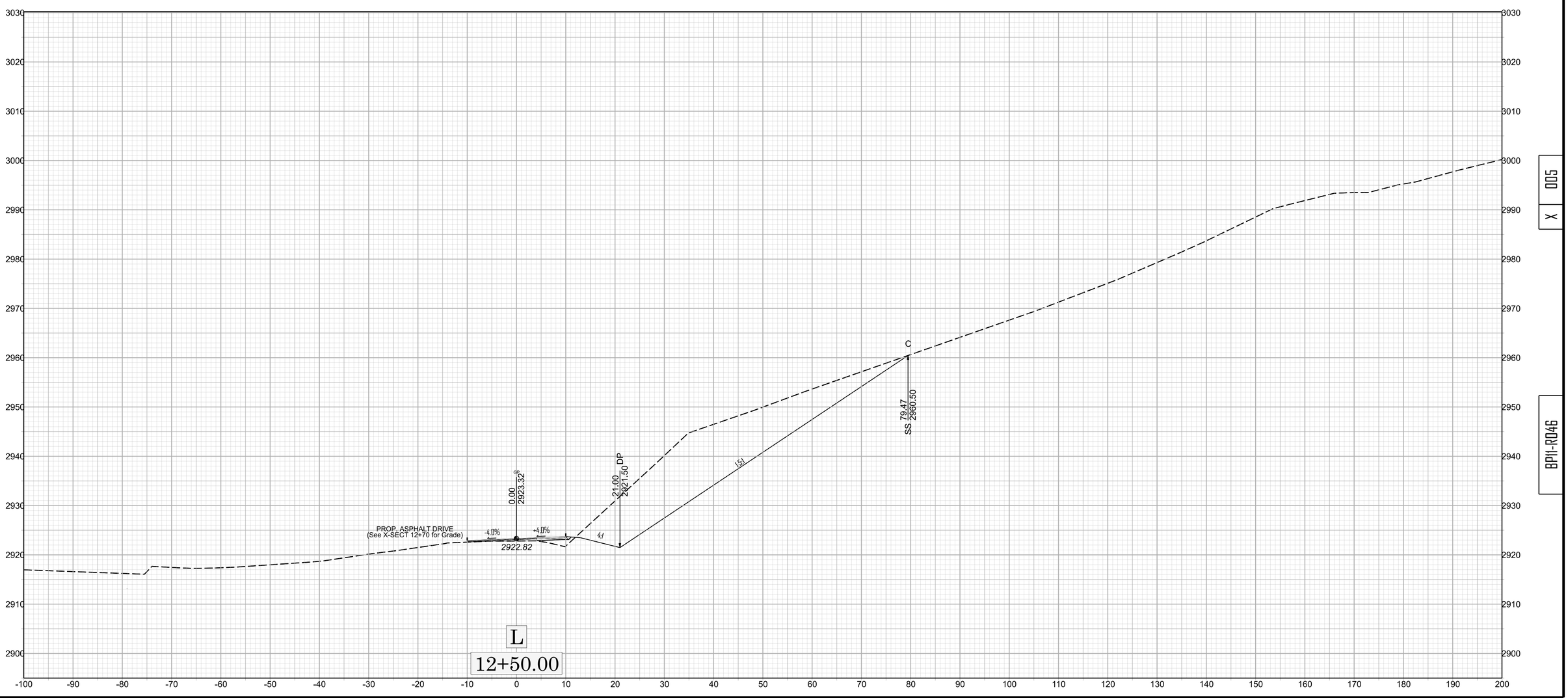
11/14/23



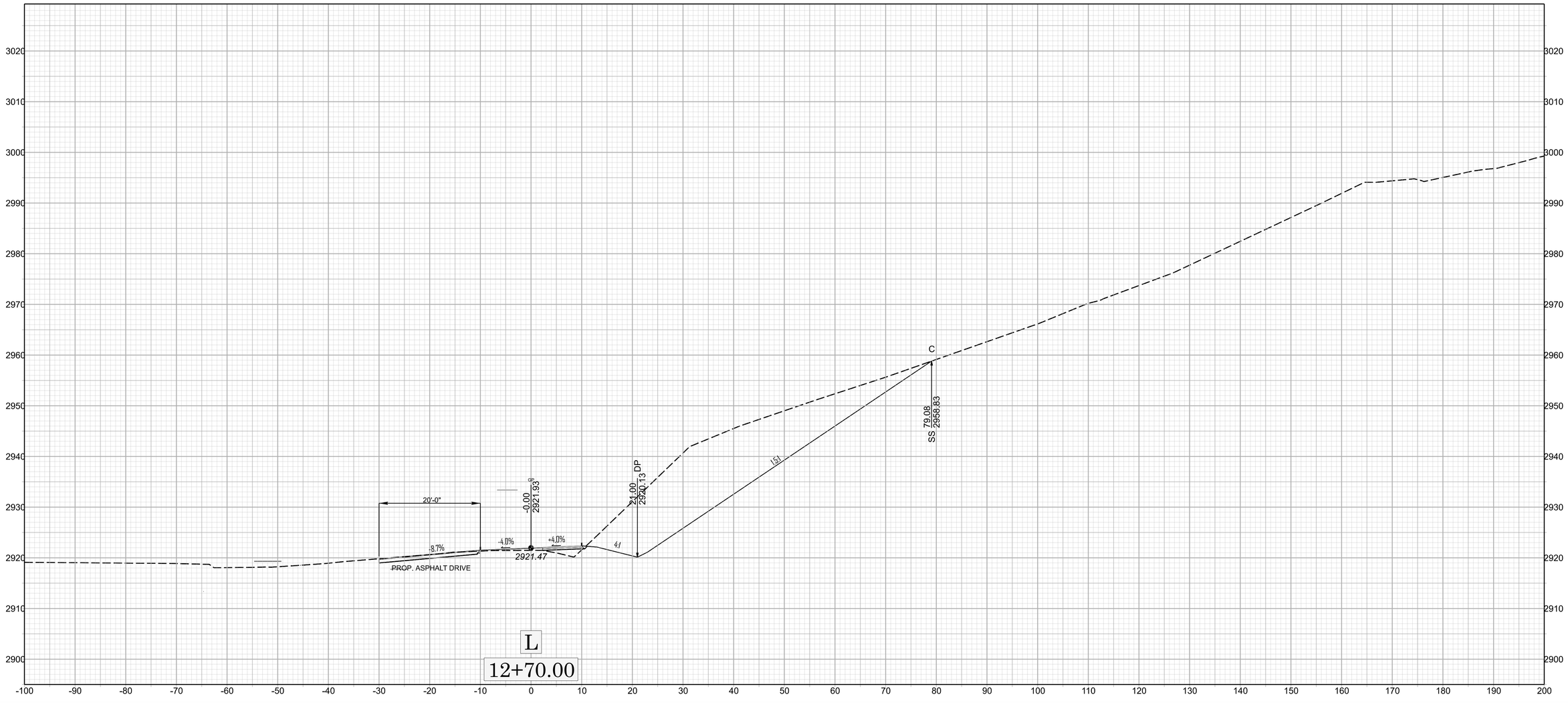
11/14/23



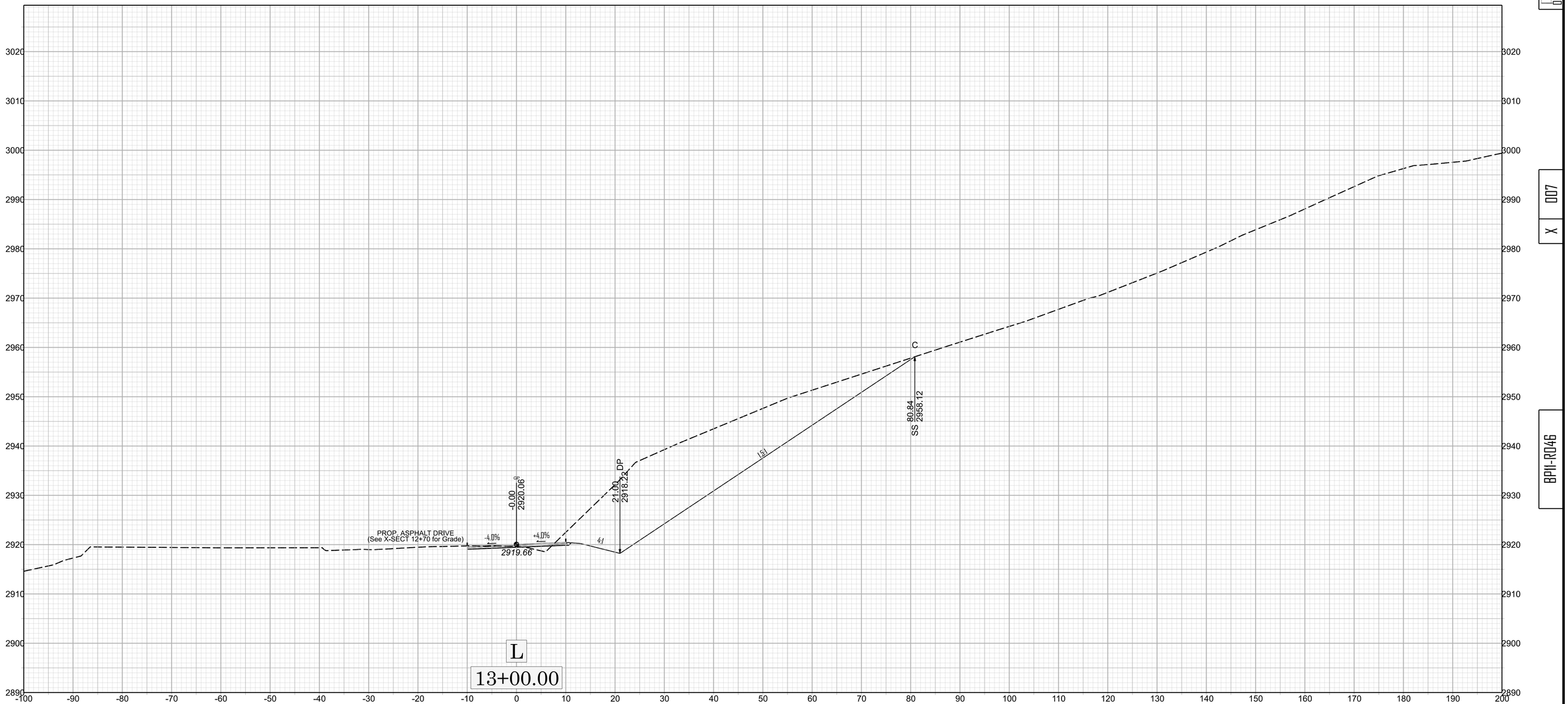
11/14/23



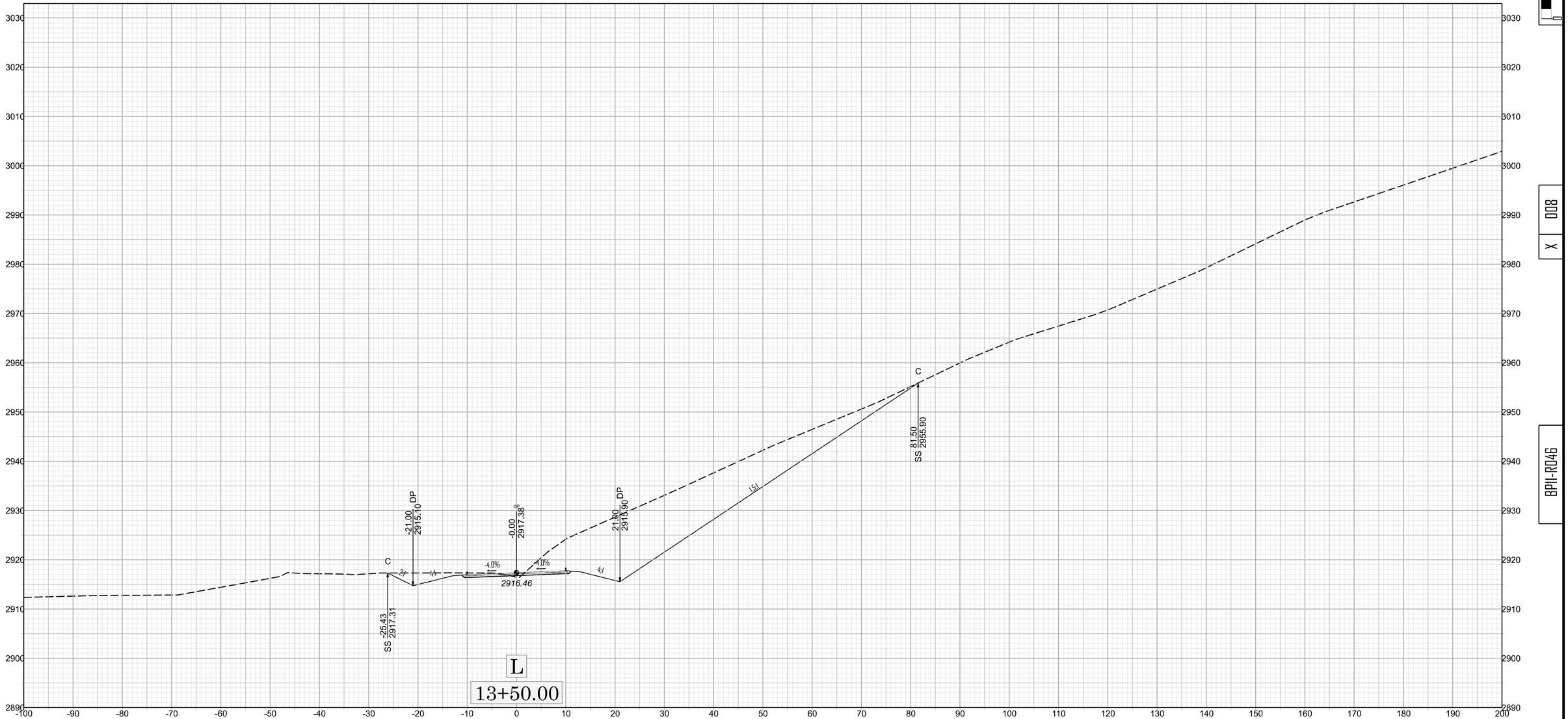
11/14/23



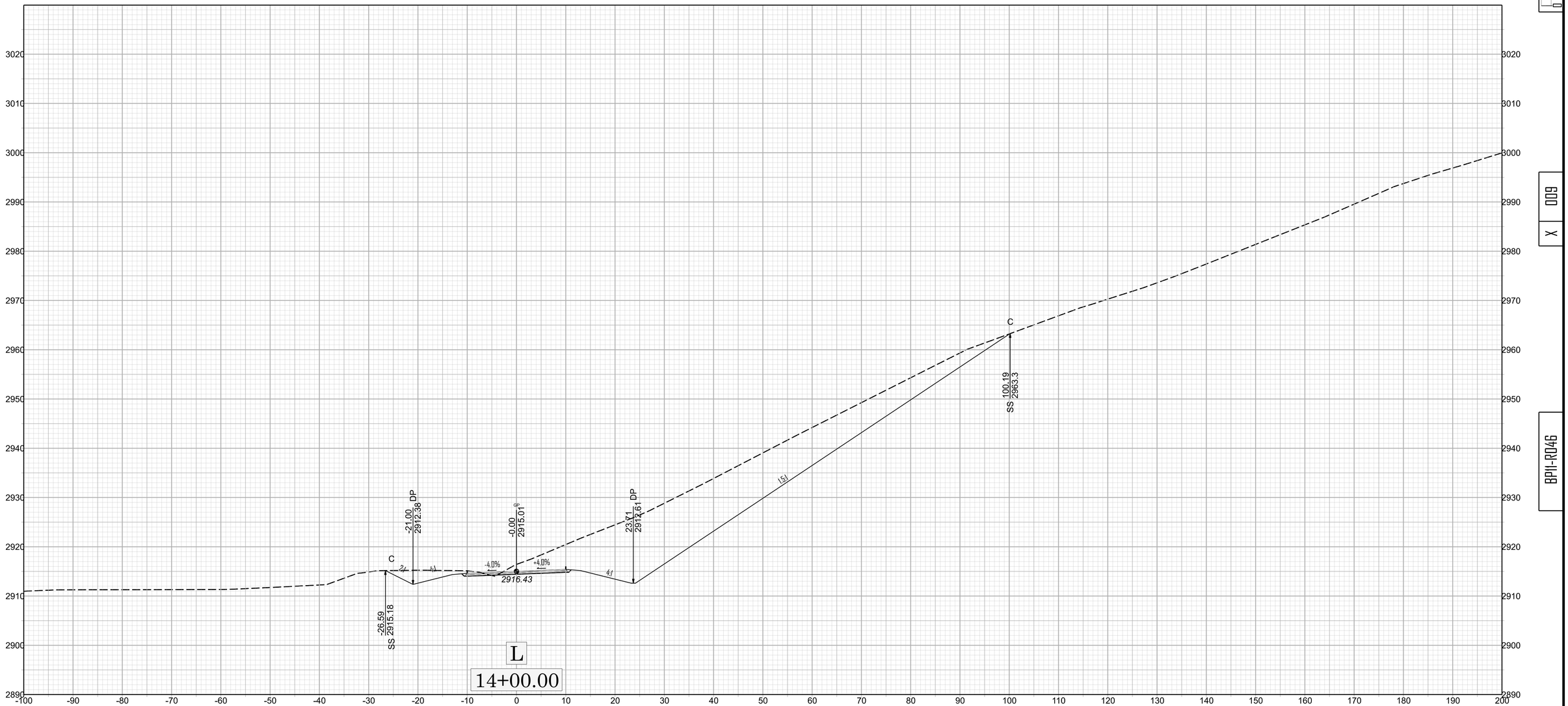
11/14/23



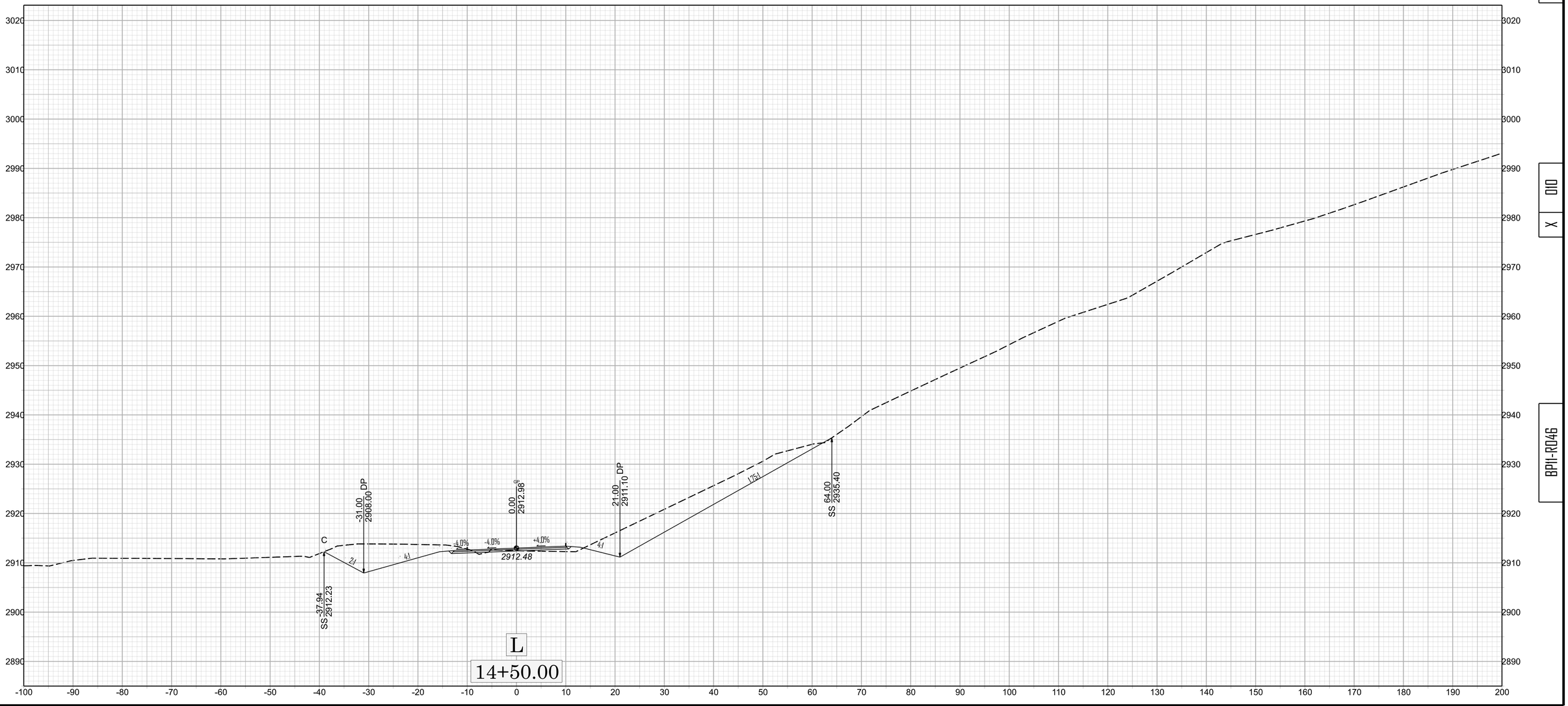
11/14/23



11/14/23



11/14/23



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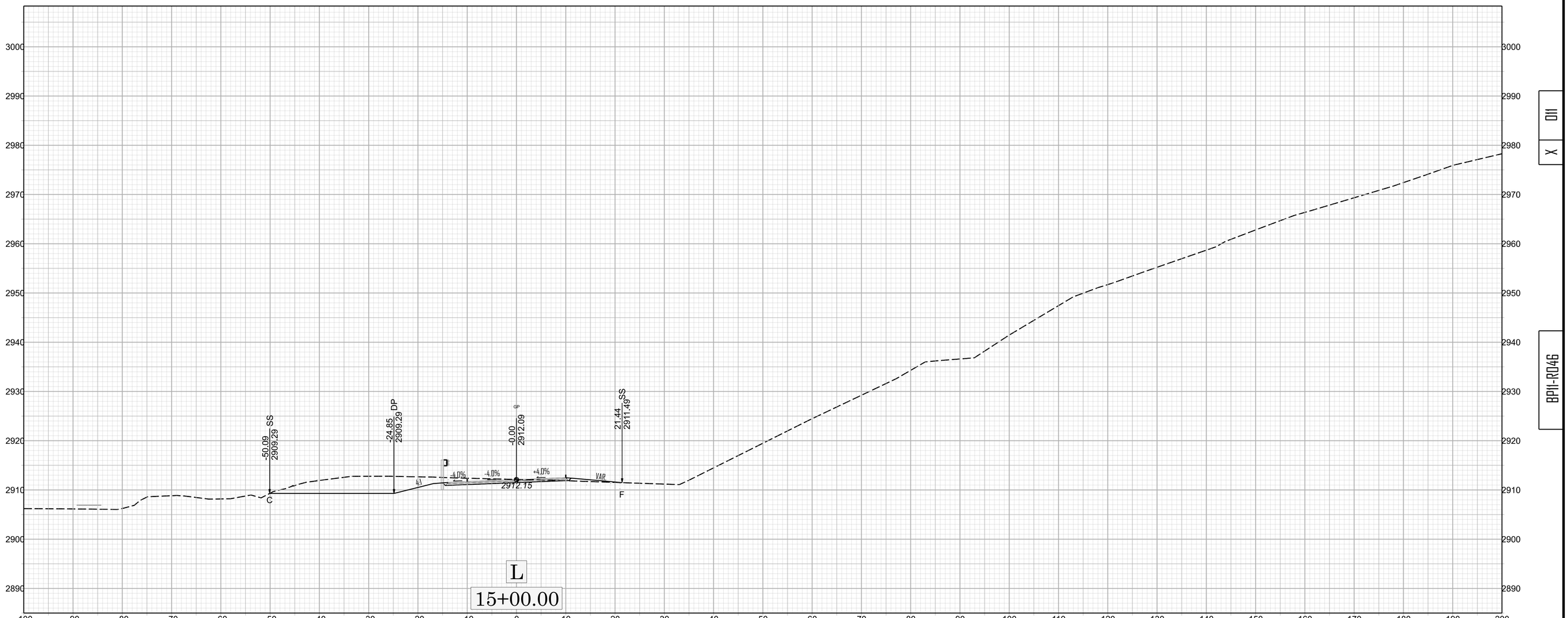

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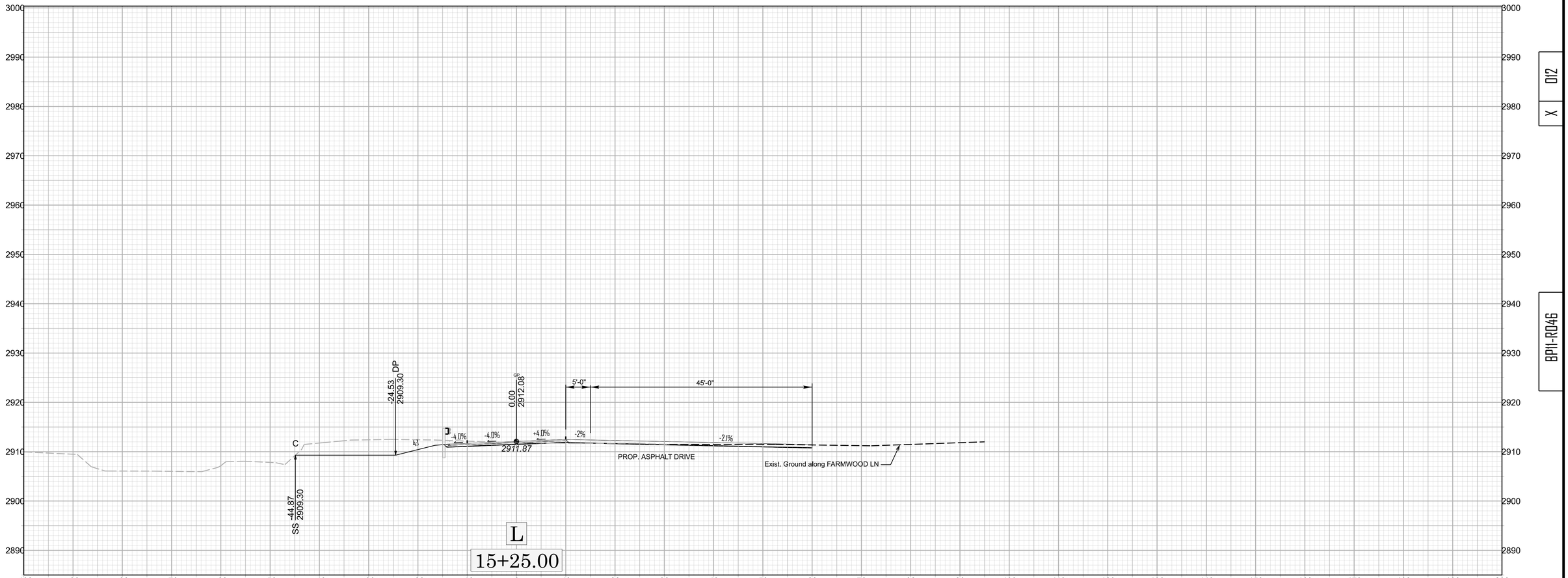

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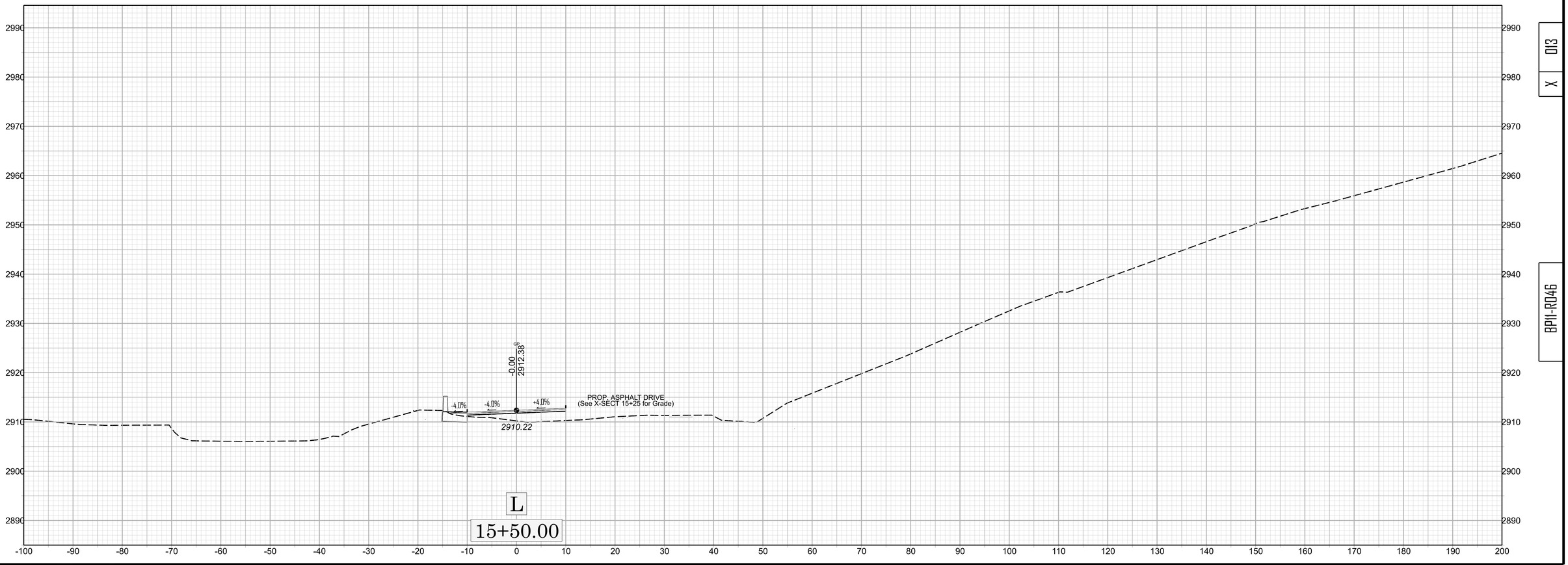

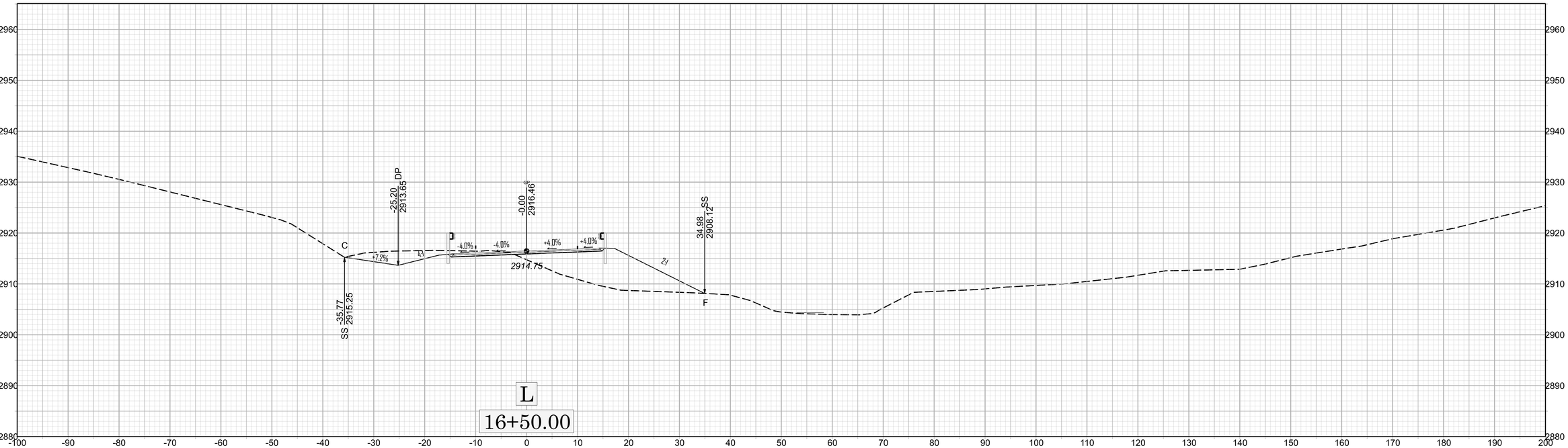

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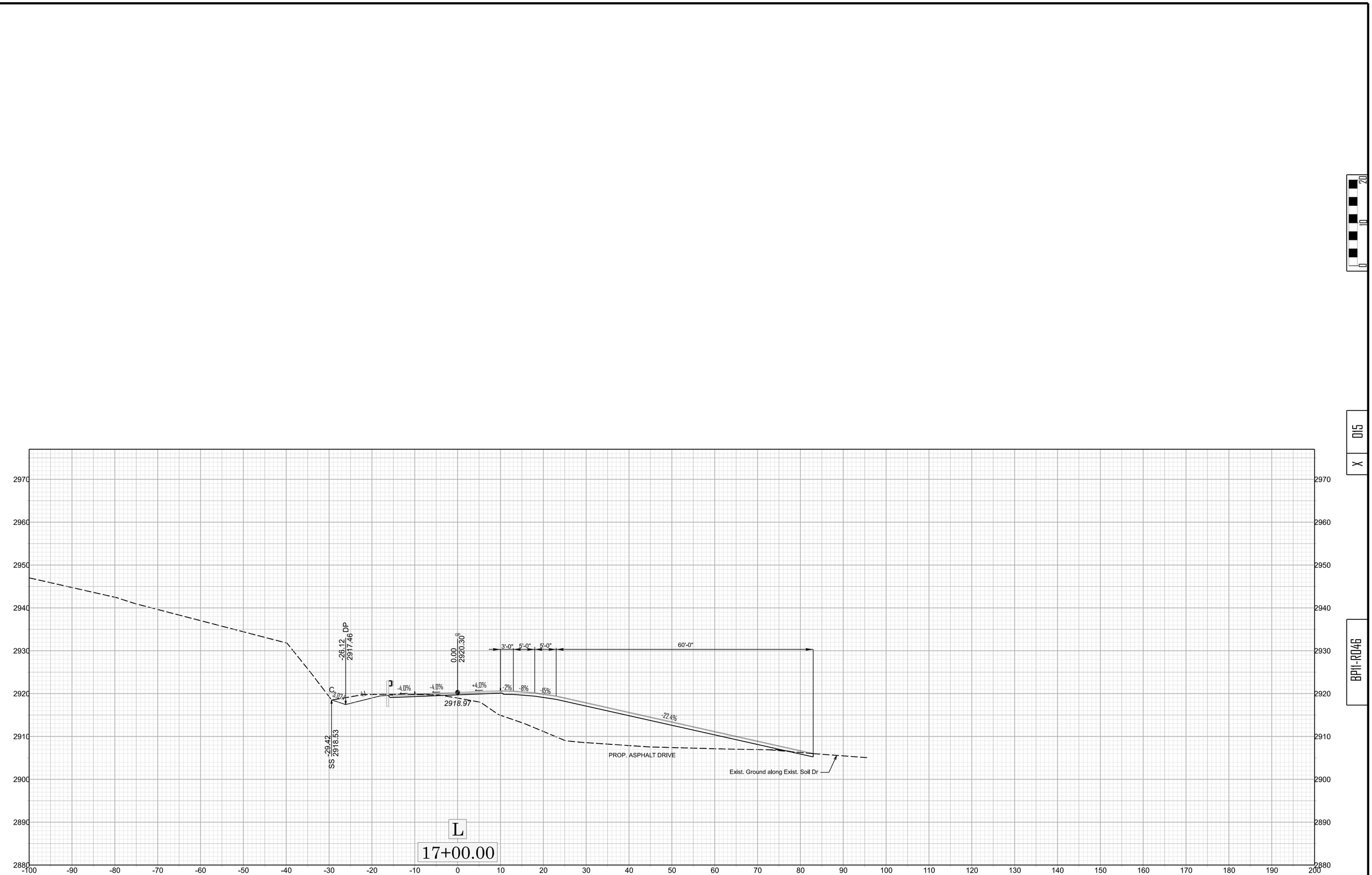

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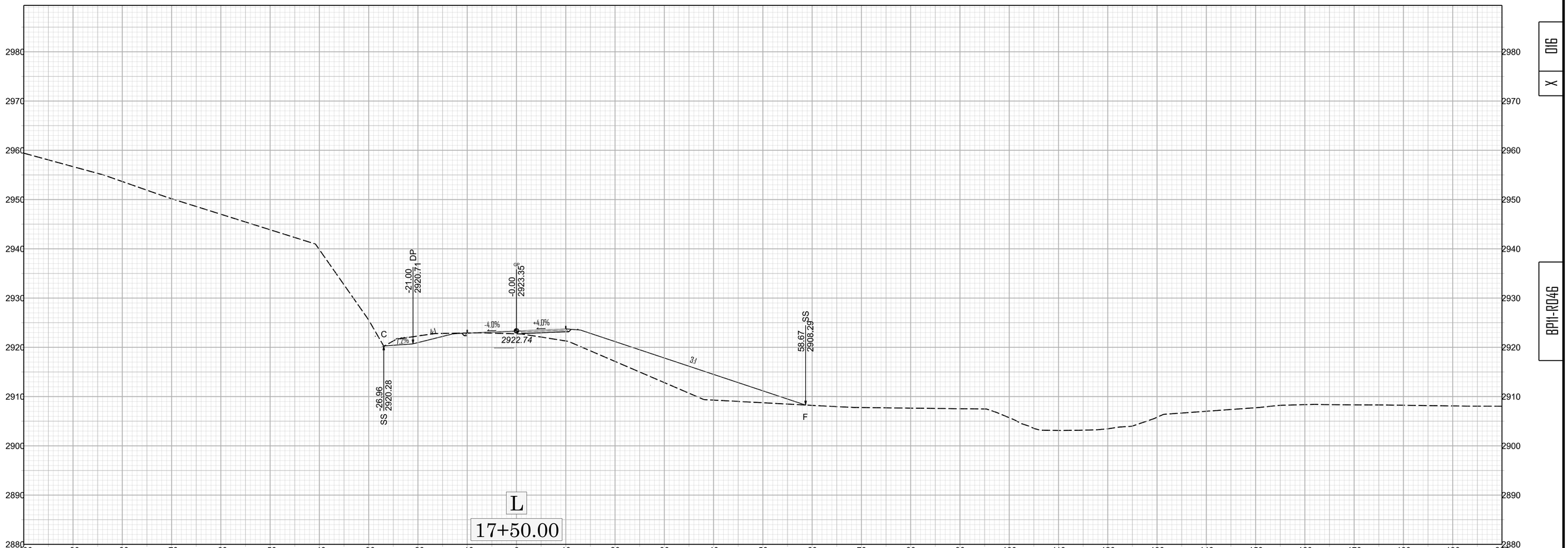

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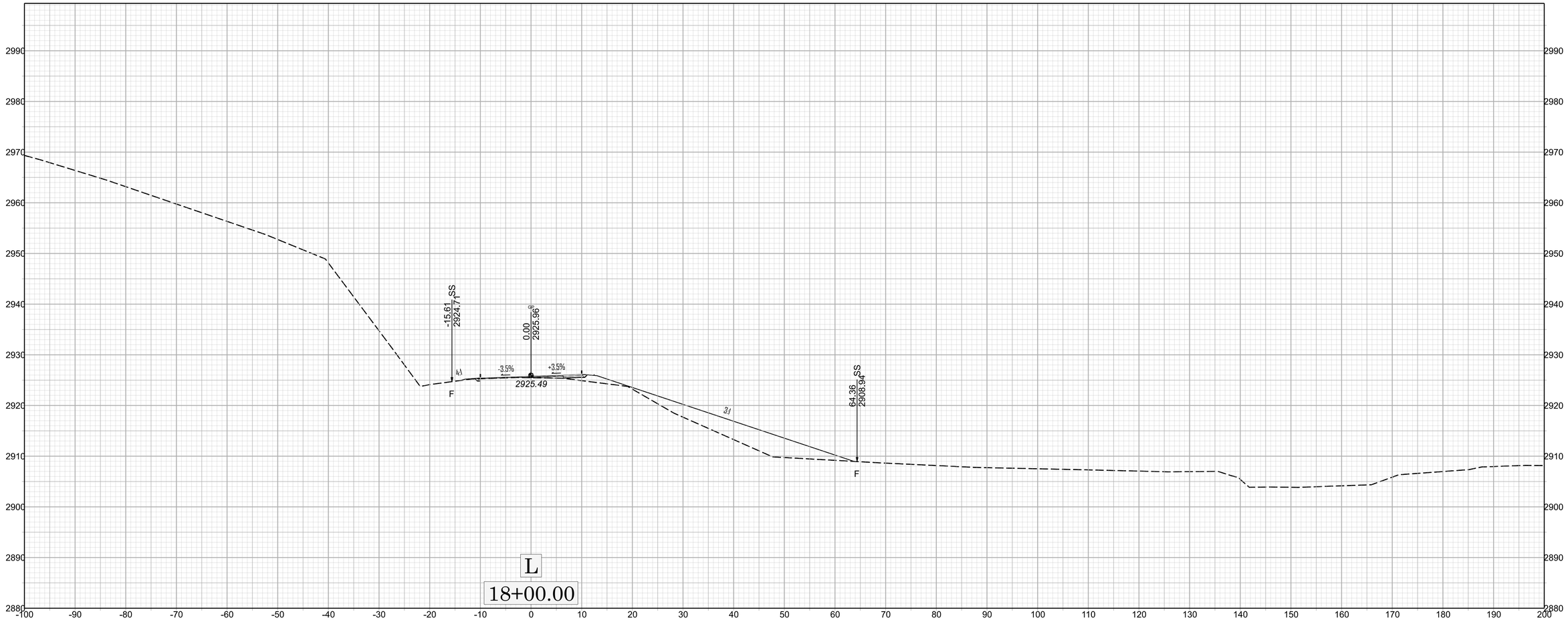

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BPII-R046

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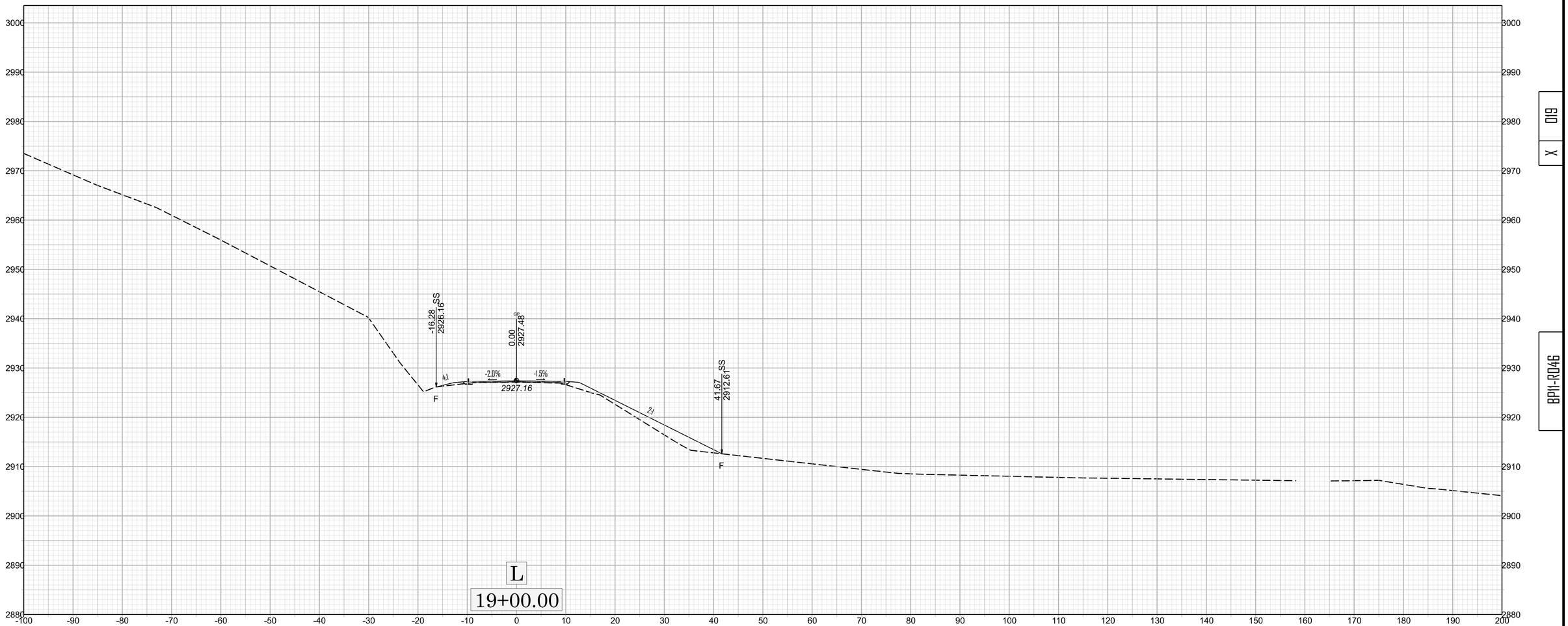
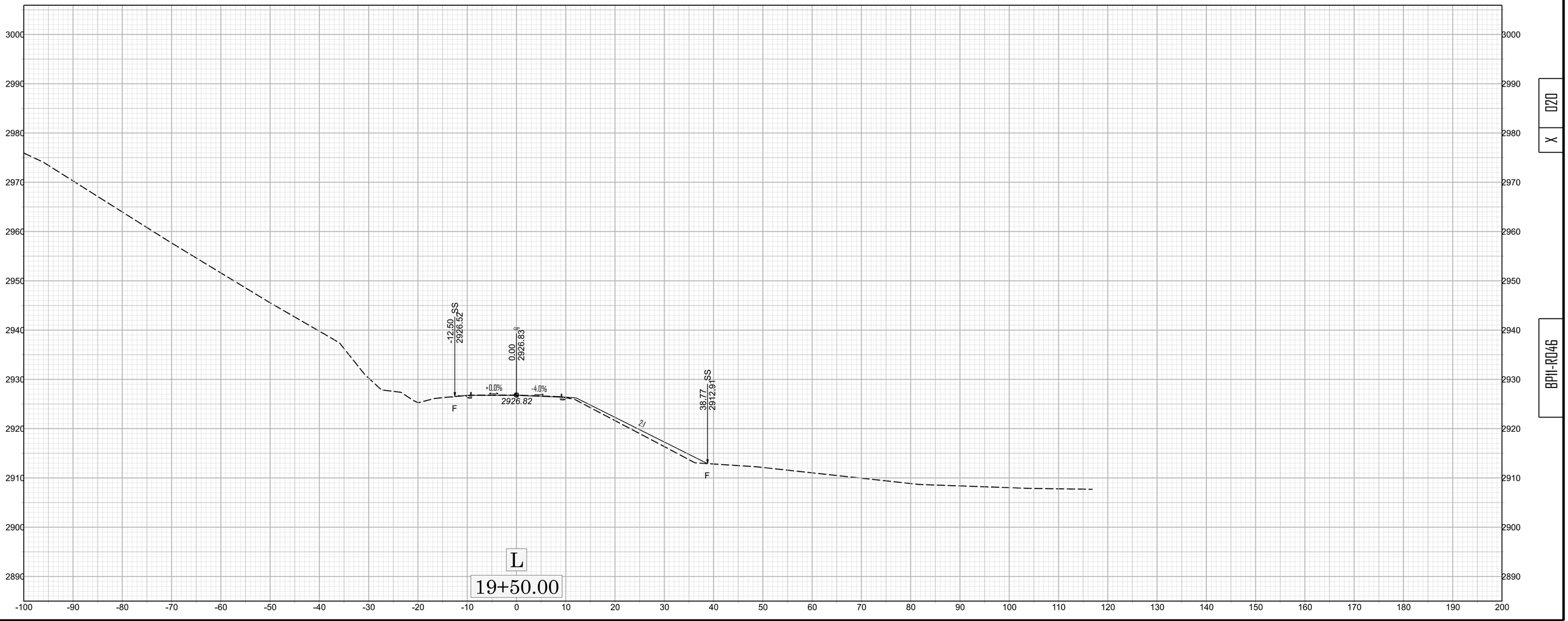
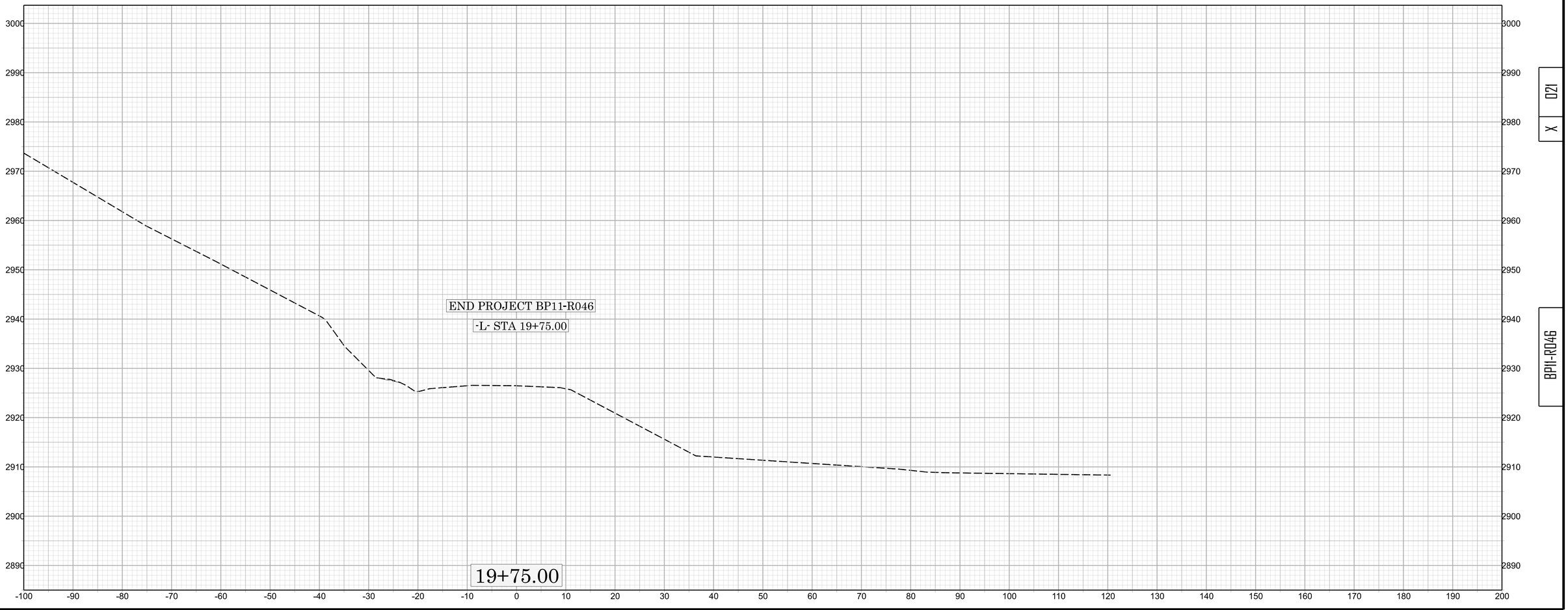
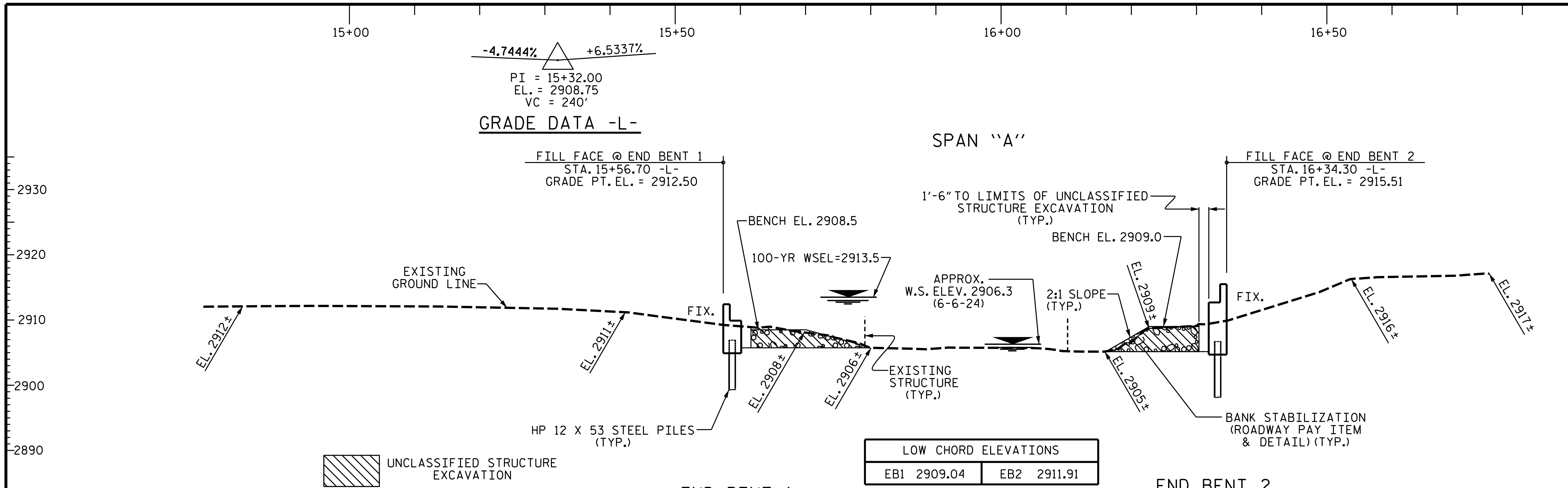


11/14/23



11/14/23

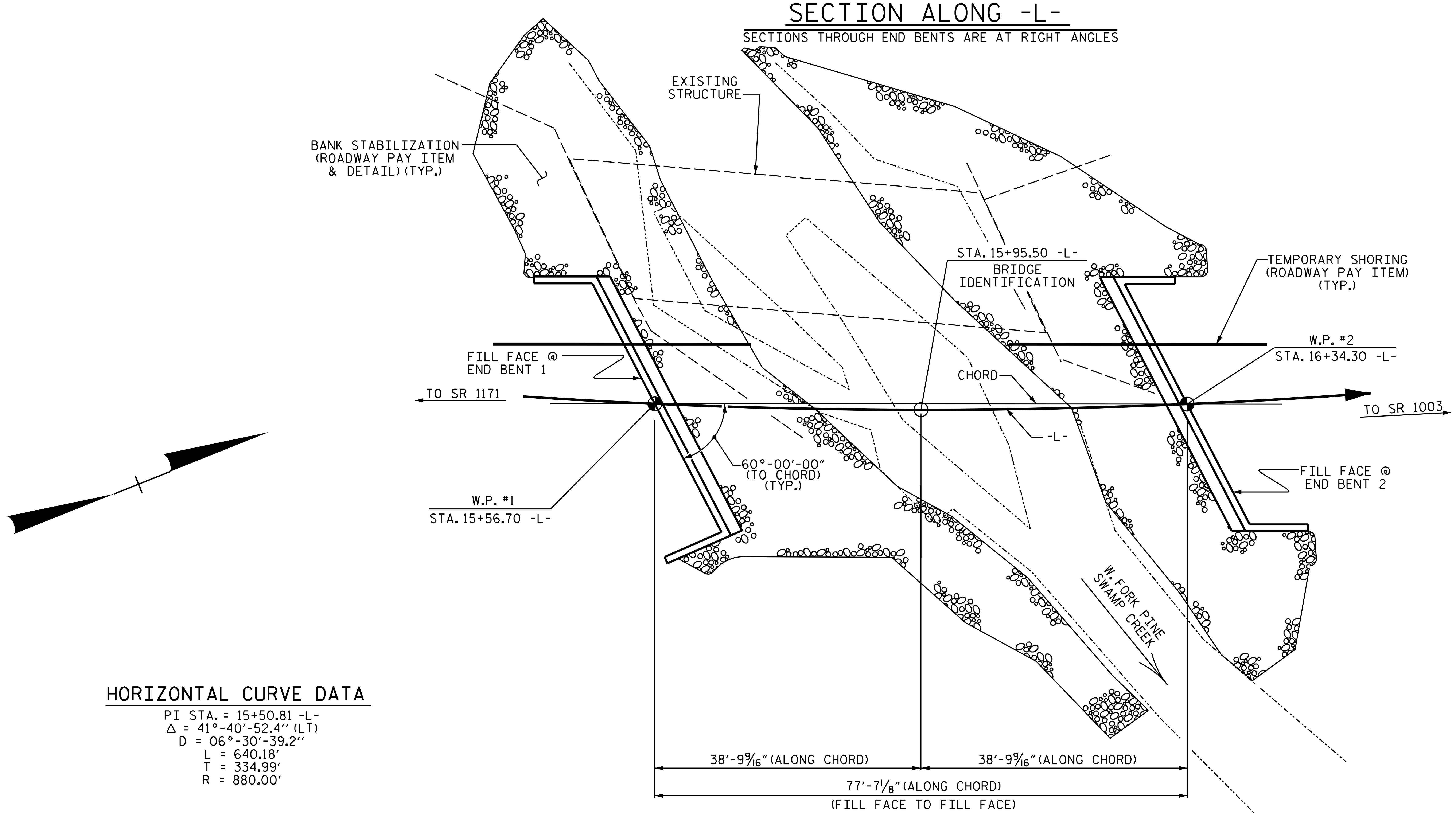




LOW CHORD ELEVATIONS	
EB1 2909.04	EB2 2911.91

SECTION ALONG -L-

SECTIONS THROUGH END BENTS ARE AT RIGHT ANGLES



PLAN

(PILES NOT SHOWN IN PLAN VIEW FOR CLARITY)

HORIZONTAL CURVE DATA

PI STA. = 15+50.81 -L-
Δ = 41°-40'-52.4" (LT)
D = 06°-30'-39.2"
L = 640.18'
T = 334.99'
R = 880.00'

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. BP11-R046
ASHE COUNTY
STATION: 15+95.50 -L-

SHEET 1 OF 5 REPLACES BRIDGE NO. 040156

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER
WEST FORK PINE SWAMP CREEK
ON SR 1169
BETWEEN SR 1171 AND SR 1003

NORTH CAROLINA PROFESSIONAL ENGINEER 29125 MARSHALL G. CHEEK, JR.
Marshall G. Cheek, Jr.
8/6/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST.
SUITE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			27

DRAWN BY :	ZCS	DATE :	1/25
CHECKED BY :	MGC	DATE :	3/25

8/1/2025
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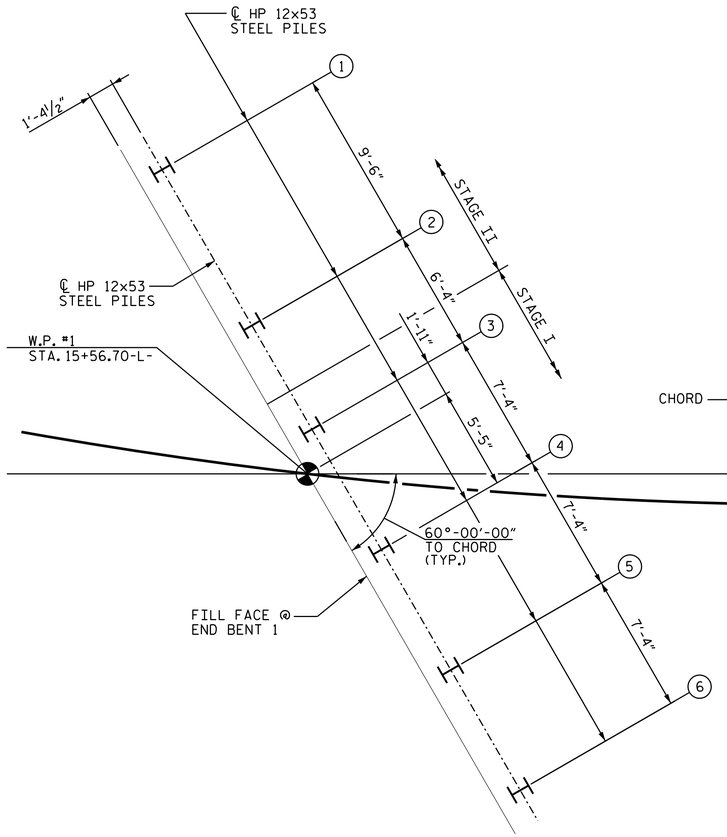
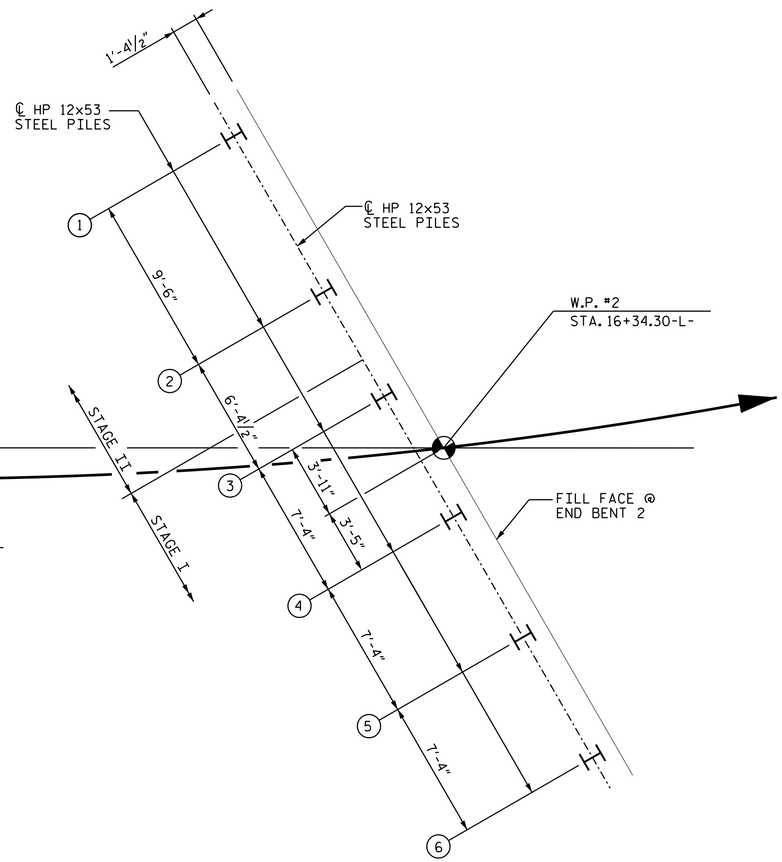


END BENT 1



END BENT 2

CHORD

-L-

FOUNDATION LAYOUT PLAN

ALL END BENT PILES ARE HP12x53 STEEL PILES.
DIMENSIONS LOCATING PILES ARE SHOWN TO THE CENTERLINE OF PILES. ORIENT PILES AS SHOWN.

NOTES:

FOR PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

PILE EXCAVATION FOR END BENT 1 AND 2 WILL EXTEND A MINIMUM OF 5 FEET INTO ROCK/ WEATHERED ROCK.

CONCRETE IS REQUIRED TO FILL HOLES FOR PILE EXCAVATION AT END BENT 1 AND 2.

PROJECT NO. BP11-R046

ASHE COUNTY

STATION: 15+95.50 -L-

SHEET 2 OF 5

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20125 MARSHALL G. CHEEK, JR. ENGINEER

Marshall G. Cheek, Jr.

8/6/2025

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201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER
WEST FORK PINE SWAMP CREEK
ON SR 1169
BETWEEN SR 1171 AND SR 1003

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			27

DRAWN BY :	ZCS	DATE : 5/25
CHECKED BY :	MGC	DATE : 5/25

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 Dia 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 1-6	6	180		10	N/A		N/A					2898	5.50	0.60
End Bent 2, Piles 1-6	6	198		10	N/A		N/A					2899	5.50	0.50
TOTAL QUANTITY:													66.00	6.60

** 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.

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

SUMMARY OF DPT / PILE ORDER LENGTHS

(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

Dynamic Pile Testing (DPT)		
End Bent/ Bent No.	DPT Test Pile Length FT	Total DPT Quantity EACH

Pile Order Lengths for Concrete Piles	
End Bent/ Bent No.	Pile Order Length Basis * EST or DPT

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

PILE DESIGN INFORMATION

(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

End Bent/ Bent No. Pile(s) #-# (e.g., "Bent 1, Piles 1-5")	Factored Axial Load per Pile KIPS	Factored Drag Load per Pile KIPS	Factored Dead Load * per Pile KIPS	Dynamic Resistance Factor	Nominal Drag Resistance per Pile KIPS
End Bent 1, Piles 1-6	179			N/A	
End Bent 2, Piles 1-6	195			N/A	

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

SUMMARY OF PILE ACCESSORIES

(BLANK ENTRIES INDICATE ITEM IS NOT APPLICABLE TO STRUCTURE)

End Bent/ Bent No. Pile(s) #-# (e.g., "Bent 1, Piles 1-5")	Pipe Pile Plates EACH	Steel Pile Points		
		Pipe Pile Cutting Shoes EACH	Pipe Pile Conical Points EACH	H-Pile Points EACH
End Bent 1, Piles 1-6				
End Bent 2, Piles 1-6				
TOTAL QUANTITY:				

NOTES:

1. The Pile Foundation Tables are based on the bridge substructure design and foundation recommendations sealed by a North Carolina Professional Engineer (Shiping Yang, 031361) on 05/7/2025.
2. Total Pile Driving Equipment Setup quantity (not shown in Pile Foundation Tables) equals the number of driven piles, ie., the number of piles with a Required Driving Resistance.
3. The Engineer may adjust the quantity for DPT Testing and Pipe Pile Plates when necessary.

PROJECT NO. BP11-R046

ASHE COUNTY

STATION: 15+95.50-L-

SHEET 3 OF 5

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20125 MARSHALL G. CHEEK, JR. Marshall G. Cheek, Jr. 8/6/2025

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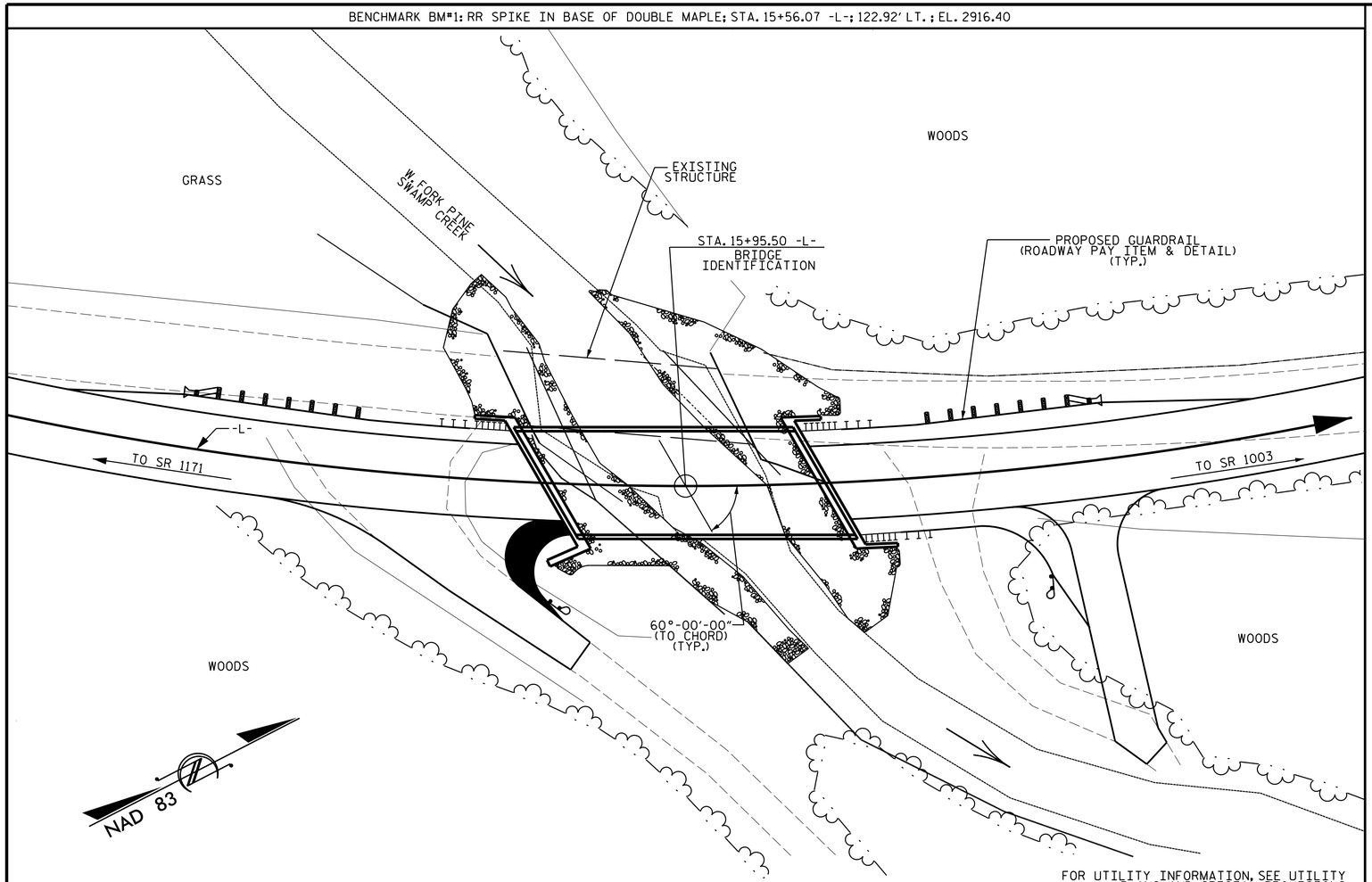
TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PILE FOUNDATION TABLES

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			27

DRAWN BY : ZCS DATE : 5/25
CHECKED BY : MGC DATE : 5/25



LOCATION SKETCH

HYDRAULIC DATA

DESIGN DISCHARGE---------- 1300 CFS
FREQUENCY OF DESIGN FLOOD------- 25 YR.
DESIGN HIGH WATER ELEVATION---- 2912.6
DRAINAGE AREA---------- 4.9 SQ.MI.
BASIC DISCHARGE (Q100)--------- 2111 CFS
BASIC HIGH WATER ELEVATION----- 2913.5

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE---------- 1300 CFS
FREQUENCY OF OVERTOPPING FLOOD--- 25 YRS.
OVERTOPPING FLOOD ELEVATION✳--- 2912.5

✳ RT. EP @ SAG STA. 15+13 -L-
W.S. EL. TAKEN @ RIVER STA. 6455 (U/S TOE)

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

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

THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.

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

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.

THE MATERIAL SHOWN IN THE CROSS-HATCHED AREA ON SHEET S-1 SHALL BE EXCAVATED FOR THE DISTANCE OF 55 FT. (LT) AND 50 FT (RT) @ END BENT 1 AND 70 FT. (LT.) AND 40 FT. (RT.) @ END BENT 2 EACH SIDE OF THE CENTERLINE OF THE BRIDGE AS DIRECTED BY THE ENGINEER. THIS WORK WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR UNCLASSIFIED STRUCTURE EXCAVATION, SEE SECTION 412 OF THE STANDARD SPECIFICATIONS.

THE EXISTING 2-SPAN STRUCTURE (2 @ 30'-5") ON A TIMBER FLOOR ON STEEL I-BEAMS WITH A CLEAR ROADWAY WIDTH OF 19'-1" AND 1½" ASPHALT WEARING SURFACE AND A SUBSTRUCTURE CONSISTING OF VERTICAL TIMBER ABUTMENTS AND LOCATED UPSTREAM OF THE SITE OF THE PROPOSED BRIDGE, SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY POSTED BELOW THE LEGAL LOAD LIMIT. SHOULD THE INTEGRITY OF THE BRIDGE DETERIORATE THIS LOAD LIMIT MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.

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

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

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

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

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

FOR ASBESTOS ASSESSMENT, SEE SPECIAL PROVISIONS.

TEMPORARY SHORING WILL BE REQUIRED AS SHOWN ON THE PLAN VIEW, SHEET 1 OF 5.

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.

INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE AT STATION 15+95.50 -L-."

PROJECT NO. BP11-R046
ASHE COUNTY
STATION: 15+95.50 -L-

SHEET 4 OF 5

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER Marshall G. Check, Jr.
Marshall G. Check, Jr.
8/6/2025

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TGS ENGINEERS
201 W. MARION ST.
SUITE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER
WEST FORK PINE SWAMP CREEK
ON SR 1169 BETWEEN
SR 1171 AND SR 1003

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4
1			3			TOTAL SHEETS
2			4			27

DRAWN BY : ZCS DATE : 1/25
CHECKED BY : MGC DATE : 3/25

8/1/2025
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TOTAL BILL OF MATERIAL

ITEM	REMOVAL OF EXISTING STRUCTURE	ASBESTOS ASSESSMENT	PILE EXCAVATION IN SOIL	PILE EXCAVATION NOT IN SOIL	UNCLASSIFIED STRUCTURE EXCAVATION	CLASS "A" CONCRETE	REINFORCING STEEL	HP 12x53 STEEL PILES		VERTICAL CONCRETE BARRIER RAIL	ELASTOMERIC BEARINGS	3'-0" x 2'-0" PRESTRESSED CONCRETE CORED SLABS	
	LUMP SUM	LUMP SUM	LIN. FT.	LIN. FT.	LUMP SUM	C.Y.	LBS.	NO.	LIN. FT.	LIN. FT.	LUMP SUM	NO.	LIN. FT.
SUPERSTRUCTURE										150.00		10	750.00
END BENT 1			3.60	33.00	LUMP SUM	32.2	3895	6	60				
END BENT 2			3.00	33.00	LUMP SUM	51.0	6952	6	60				
TOTALS	LUMP SUM	LUMP SUM	6.60	66.00	LUMP SUM	83.2	10847	12	120	150.00	LUMP SUM	10	750.00

PROJECT NO. BP11-R046

ASHE COUNTY

STATION: 15+95.50 -L-

SHEET 5 OF 5

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20129 Marshall G. Cheek, Jr. MARSHALL G. CHEEK, JR. ENGINEER

8/6/2025

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201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING FOR BRIDGE OVER WEST FORK PINE SWAMP CREEK ON SR 1169 BETWEEN SR 1171 AND SR 1003

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			27

DRAWN BY : ZCS DATE : 1/25
CHECKED BY : MGC DATE : 3/25

8/26/21

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 (γ 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 (γ LL)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD		HL-93 (INVENTORY)	N/A	1	1.09	--	1.75	0.26	1.13	A	I	36.923	0.66	1.09	A	EL	1.593	0.80	0.26	1.49	A	EL	36.923	
		HL-93 (OPERATING)	N/A		1.47	--	1.35	0.26	1.47	A	I	36.923	0.66	1.64	A	EL	6.923	N/A	--	--	--	--	--	
		HS-20 (INVENTORY)	36.000	2	1.49	53.640	1.75	0.26	1.49	A	I	36.923	0.66	1.58	A	EL	6.923	0.80	0.26	1.96	A	EL	36.923	
		HS-20 (OPERATING)	36.000		1.93	69.480	1.35	0.26	1.93	A	I	36.923	0.66	2.10	A	EL	6.923	N/A	--	--	--	--	--	
LEGAL LOAD	SINGLE VEHICLE (SV)	SNSH	13.500		4.21	56.835	1.40	0.26	4.21	A	I	36.923	0.66	5.06	A	EL	6.923	0.80	0.26	4.43	A	EL	36.923	
		SNGARBS2	20.000		3.13	62.600	1.40	0.26	3.13	A	I	36.923	0.66	3.54	A	EL	6.923	0.80	0.26	3.29	A	EL	36.923	
		SNAGRIS2	22.000		2.97	65.340	1.40	0.26	2.97	A	I	36.923	0.66	3.27	A	EL	6.923	0.80	0.26	3.12	A	EL	36.923	
		SNCOTTS3	27.250		2.10	57.225	1.40	0.26	2.10	A	I	36.923	0.66	2.44	A	EL	6.923	0.80	0.26	2.20	A	EL	36.923	
		SNAGGRS4	34.925		1.75	61.119	1.40	0.26	1.75	A	I	36.923	0.66	1.99	A	EL	6.923	0.80	0.26	1.84	A	EL	36.923	
		SNS5A	35.550		1.71	60.791	1.40	0.26	1.71	A	I	36.923	0.66	2.02	A	EL	6.923	0.80	0.26	1.80	A	EL	36.923	
		SNS6A	39.950		1.57	62.722	1.40	0.26	1.57	A	I	36.923	0.66	1.83	A	EL	6.923	0.80	0.26	1.65	A	EL	36.923	
		SNS7B	42.000		1.49	62.580	1.40	0.26	1.49	A	I	36.923	0.66	1.79	A	EL	6.923	0.80	0.26	1.57	A	EL	36.923	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.91	63.030	1.40	0.26	1.91	A	I	36.923	0.66	2.20	A	EL	6.923	0.80	0.26	2.01	A	EL	36.923	
		TNT4A	33.075		1.92	63.504	1.40	0.26	1.92	A	I	36.923	0.66	2.14	A	EL	6.923	0.80	0.26	2.02	A	EL	36.923	
		TNT6A	41.600		1.57	65.312	1.40	0.26	1.57	A	I	36.923	0.66	1.91	A	EL	6.923	0.80	0.26	1.65	A	EL	36.923	
		TNT7A	42.000		1.58	66.360	1.40	0.26	1.58	A	I	36.923	0.66	1.87	A	EL	6.923	0.80	0.26	1.66	A	EL	36.923	
		TNT7B	42.000		1.63	68.460	1.40	0.26	1.63	A	I	36.923	0.66	1.74	A	EL	6.923	0.80	0.26	1.71	A	EL	36.923	
		TNAGRIT4	43.000		1.55	66.650	1.40	0.26	1.55	A	I	36.923	0.66	1.68	A	EL	6.923	0.80	0.26	1.63	A	EL	36.923	
		TNAGT5A	45.000		1.46	65.700	1.40	0.26	1.46	A	I	36.923	0.66	1.67	A	EL	6.923	0.80	0.26	1.54	A	EL	36.923	
		TNAGT5B	45.000	3	1.45	65.250	1.40	0.26	1.45	A	I	36.923	0.66	1.59	A	EL	6.923	0.80	0.26	1.52	A	EL	36.923	
EMERGENCY VEHICLE (EV)		EV2	28.750		2.33	66.988	1.30	0.26	2.39	A	I	36.923	0.66	2.63	A	EL	6.923	0.80	0.26	2.33	A	EL	36.923	
		EV3	43.000	4	1.52	65.360	1.30	0.26	1.56	A	I	36.923	0.66	1.72	A	EL	6.923	0.80	0.26	1.52	A	EL	36.923	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ DC	γ DW
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

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

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

COMMENTS:

1.

2.

3.

4.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING * *

(4) EMERGENCY VEHICLE LOAD RATING * *

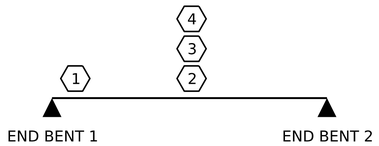
* * SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

I - INTERIOR GIRDER

EL - EXTERIOR LEFT GIRDER

ER - EXTERIOR RIGHT GIRDER



LRFR SUMMARY

PROJECT NO. BP11-R046

ASHE COUNTY

STATION: 15+95.50 -L-

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20125 MARSHALL G. CHEEK, JR.
Marshall G. Cheek, Jr.
8/6/2025

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TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

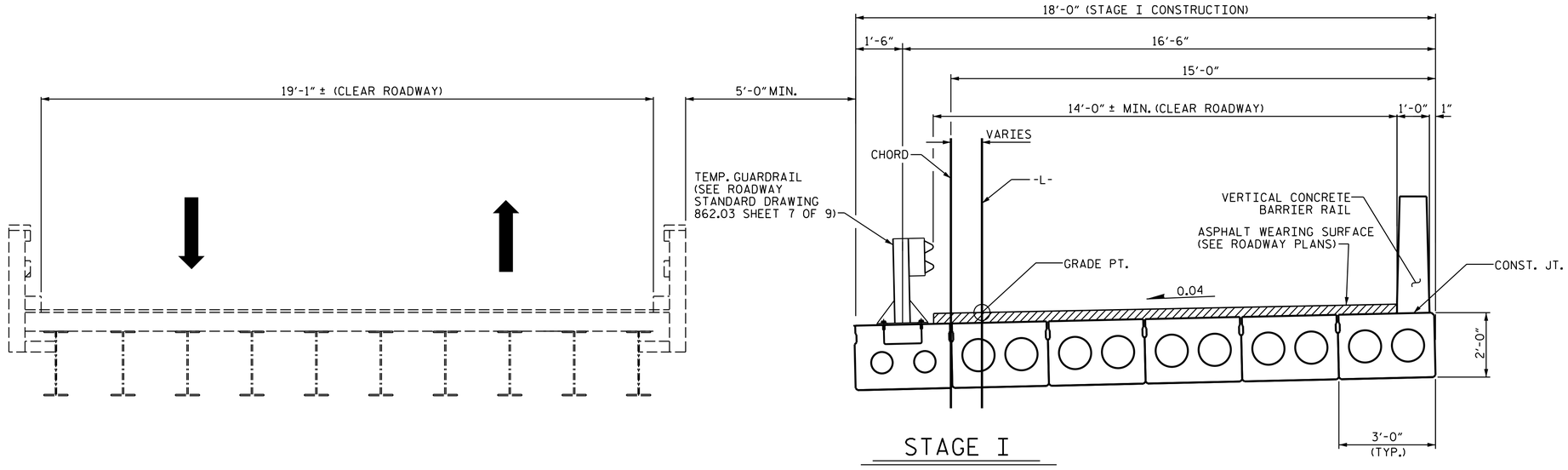
LRFR SUMMARY FOR 75' CORED SLAB UNIT 60° SKEW

(NON-INTERSTATE TRAFFIC)

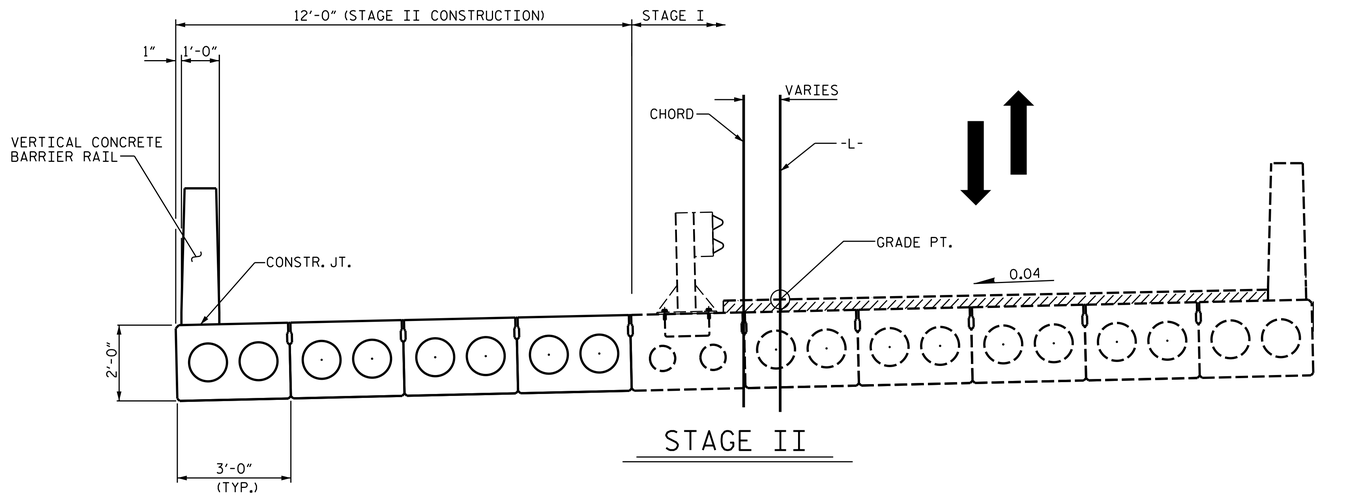
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			27

DRAWN By:	ZCS	DATE :	1/25
CHECKED BY :	MGC	DATE :	3/25
DESIGN ENGINEER OF RECORD:	ZCS	DATE :	3/25

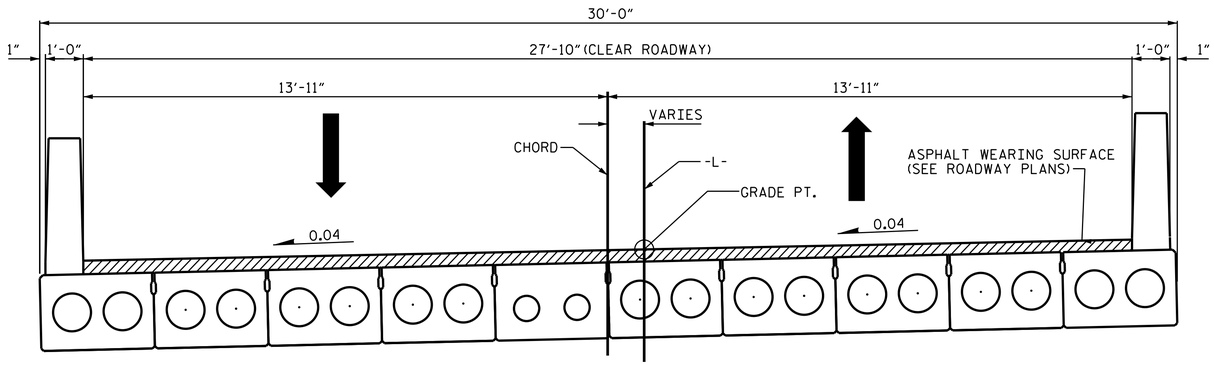
8/1/2025
G:\workdir\ncdot-pw.bentley.com_ncdot-pw-01\zachary smith\d0138093\Ratings.dgn
ZSmith



STAGE I



STAGE II



FINAL

= TWO WAY TRAFFIC

NOTE:

FOR TRAFFIC PHASING, SEE TRAFFIC CONTROL PLANS.

FOR TEMPORARY GUARDRAIL DETAILS AND PAY ITEM, SEE ROADWAY PLANS.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20125 MARSHALL G. CHEEK, JR.
Digitally Signed by: Marshall G. Cheek, Jr.
DocuSigned by: 8/6/2025

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TGS ENGINEERS
201 W. MARION ST.
SUITE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PROJECT NO. BP11-R046

ASHE COUNTY

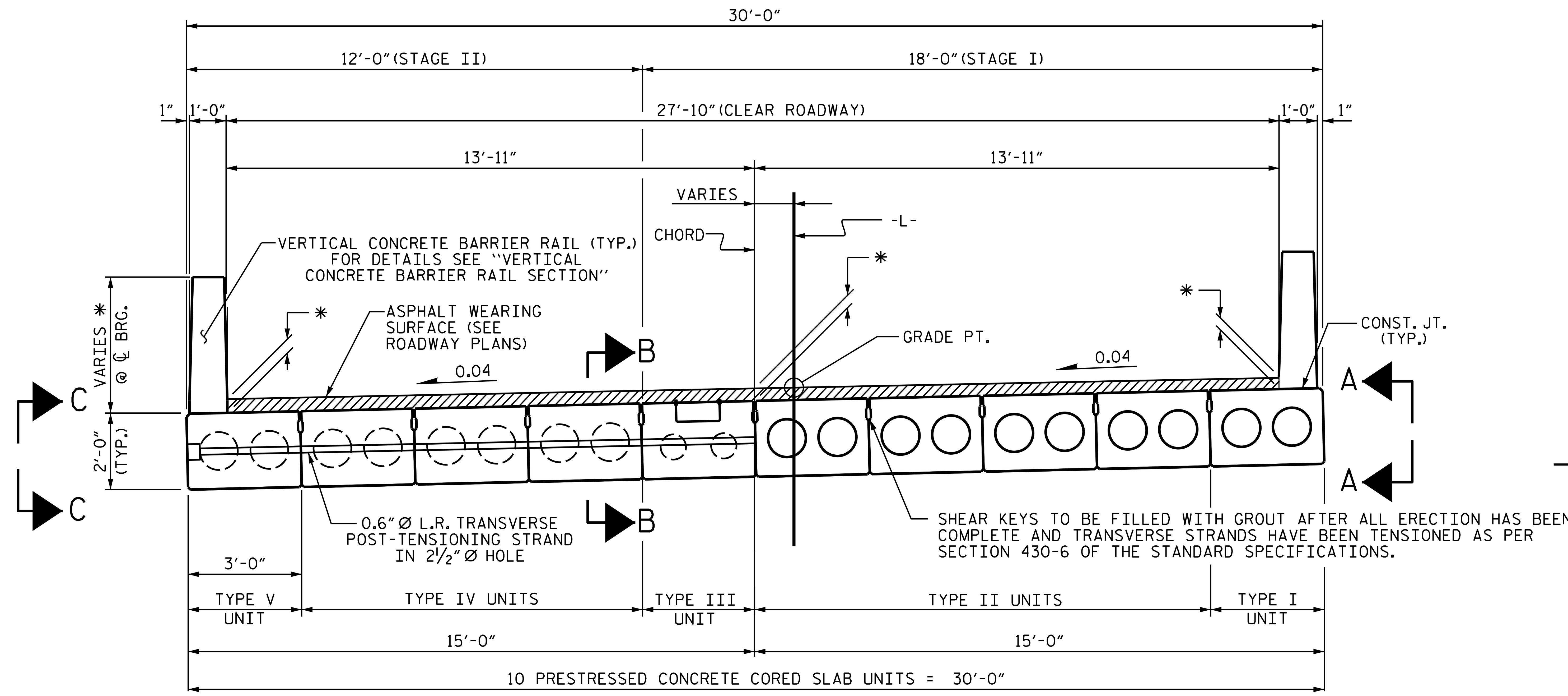
STATION: 15+95.50-L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

CONSTRUCTION STAGING

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-7
1			3			TOTAL SHEETS
2			4			27

DRAWN BY : S. B. WILLIAMS DATE : 9/24
CHECKED BY : MGC DATE : 3/25



HALF SECTION
AT INTERMEDIATE DIAPHRAGMS

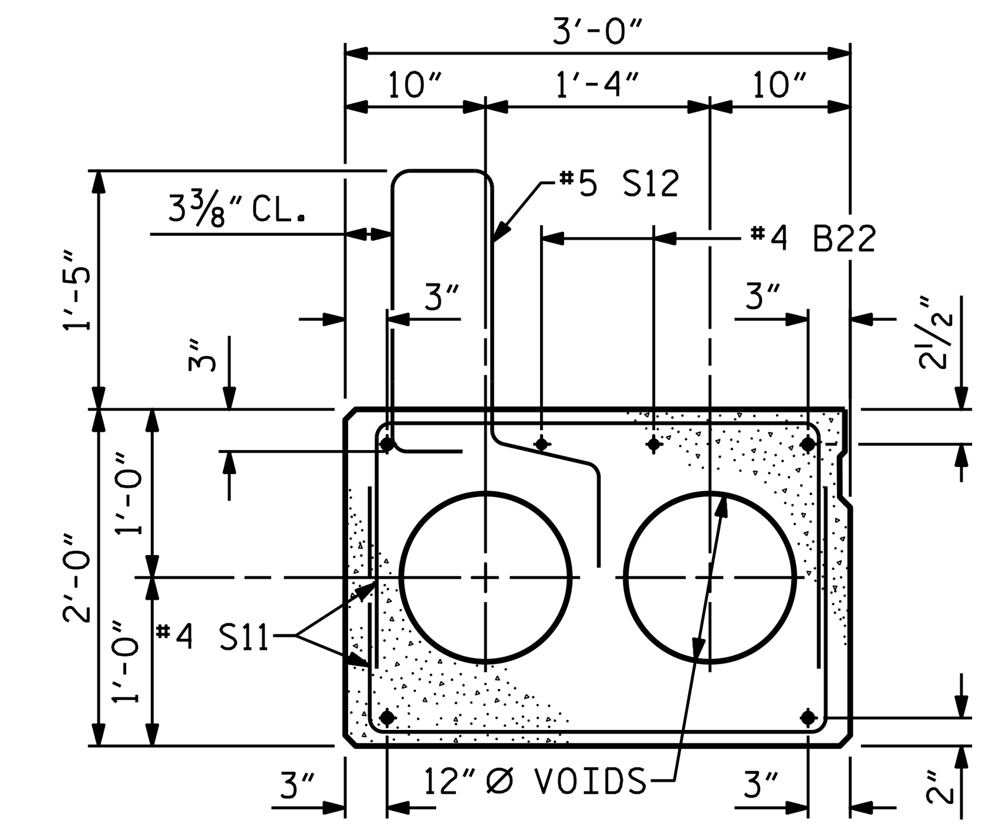
TYPICAL SECTION

HALF SECTION
THROUGH VOIDS

*-THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS VARIES. 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, SEE "ASPHALT WEARING SURFACE THICKNESS & RAIL HEIGHT" TABLE.

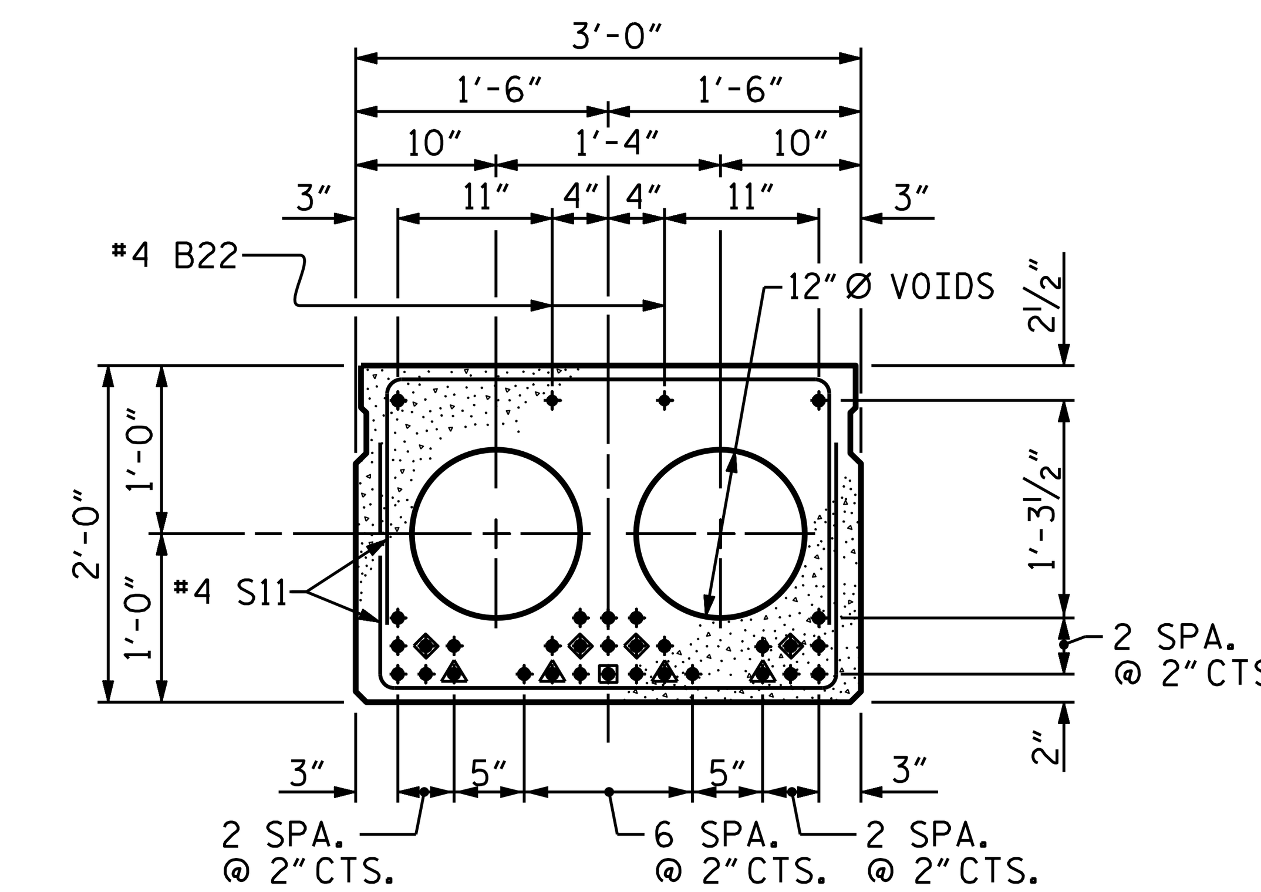
ASPHALT WEARING SURFACE THICKNESS & RAIL HEIGHT
BASED ON PREDICTED FINAL CAMBER AND THEORETICAL GRADE LINE ELEVATIONS

	LT. GUTTER	℄ -CHORD-	RT. GUTTER	LT. RAIL HT.	RT. RAIL HT.
℄ BRG. @ END BENT 1	8 1/2"	6 3/4"	5 1/4"	4'-2 1/2"	3'-11 1/4"
MIDSPAN	1 3/4"	1 1/2"	1 3/4"	3'-7 3/4"	3'-7 3/4"
℄ BRG. @ END BENT 2	5 1/4"	6 3/4"	8 5/8"	3'-11 1/4"	4'-2 5/8"



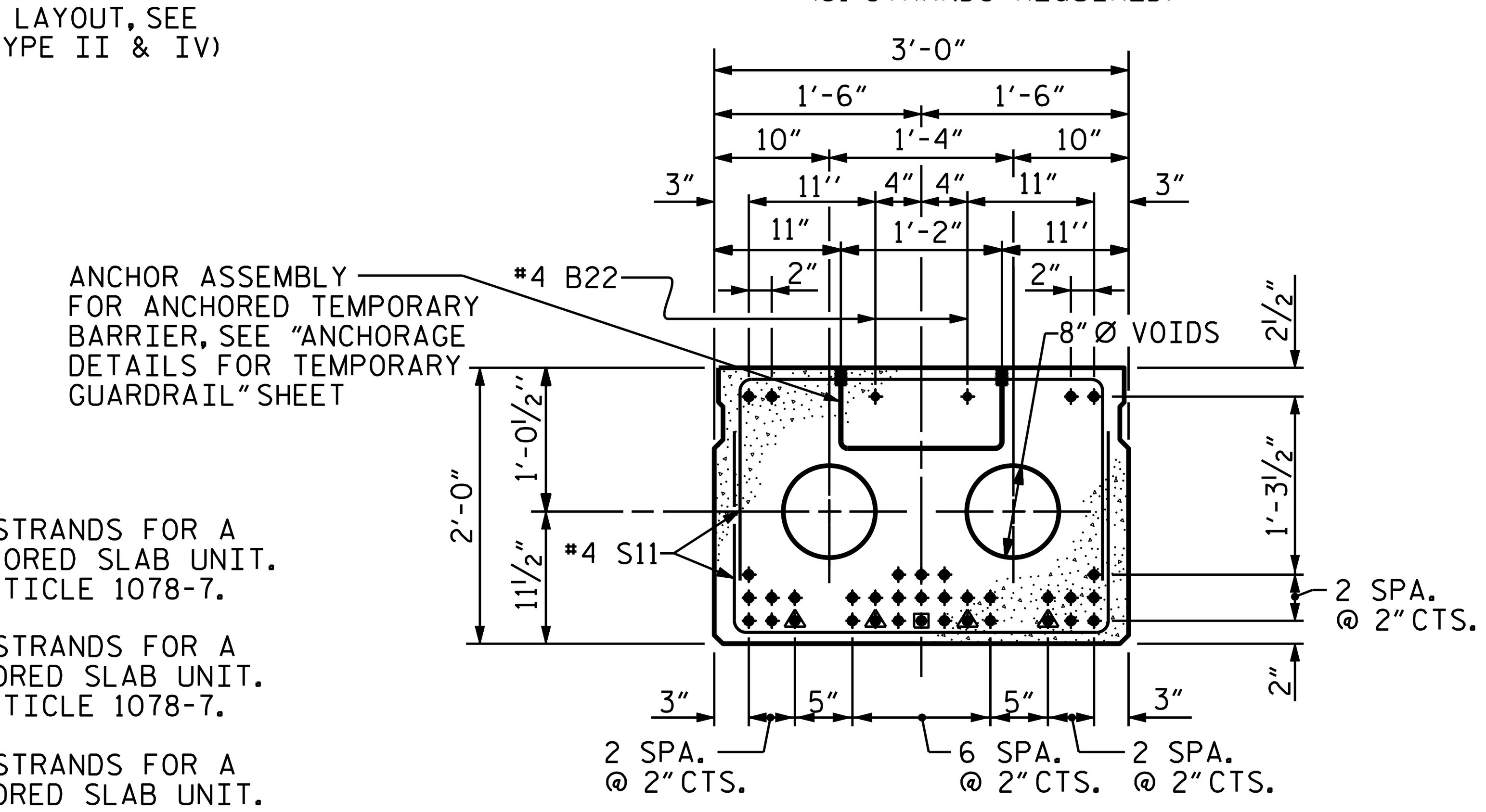
EXTERIOR SLAB SECTION (75' UNIT) (TYPE I & V)

(FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION- TYPE II & IV)



INTERIOR SLAB SECTION (75' UNIT) (TYPE II & IV)

(31 STRANDS REQUIRED)



INTERIOR SLAB SECTION (75' UNIT) (TYPE III)

(35 STRANDS REQUIRED)

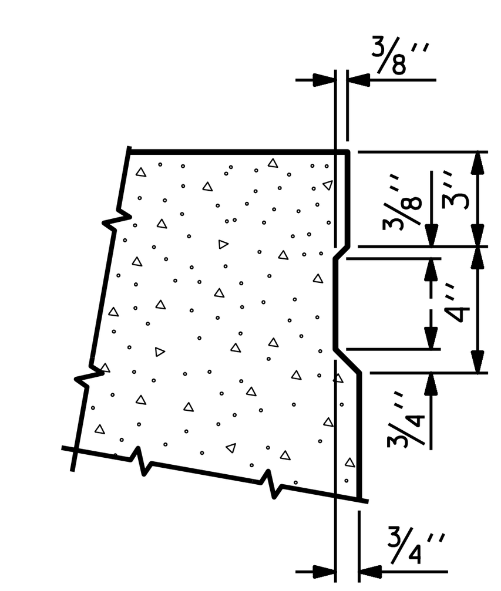
0.6" Ø LOW RELAXATION STRAND LAYOUT

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

■ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 4'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

◆ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 8'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

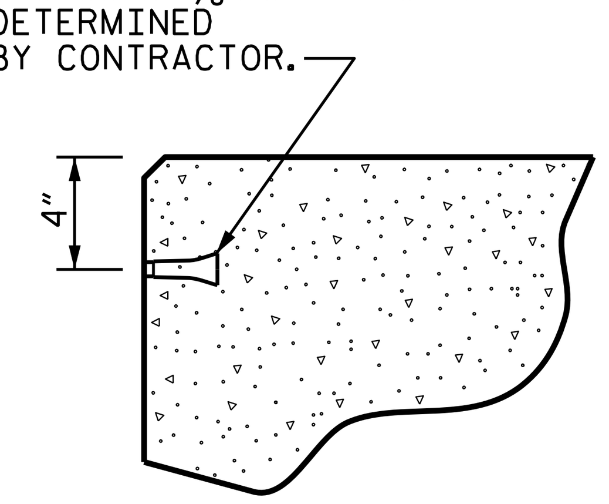
DEBONDING LEGEND



SHEAR KEY DETAIL

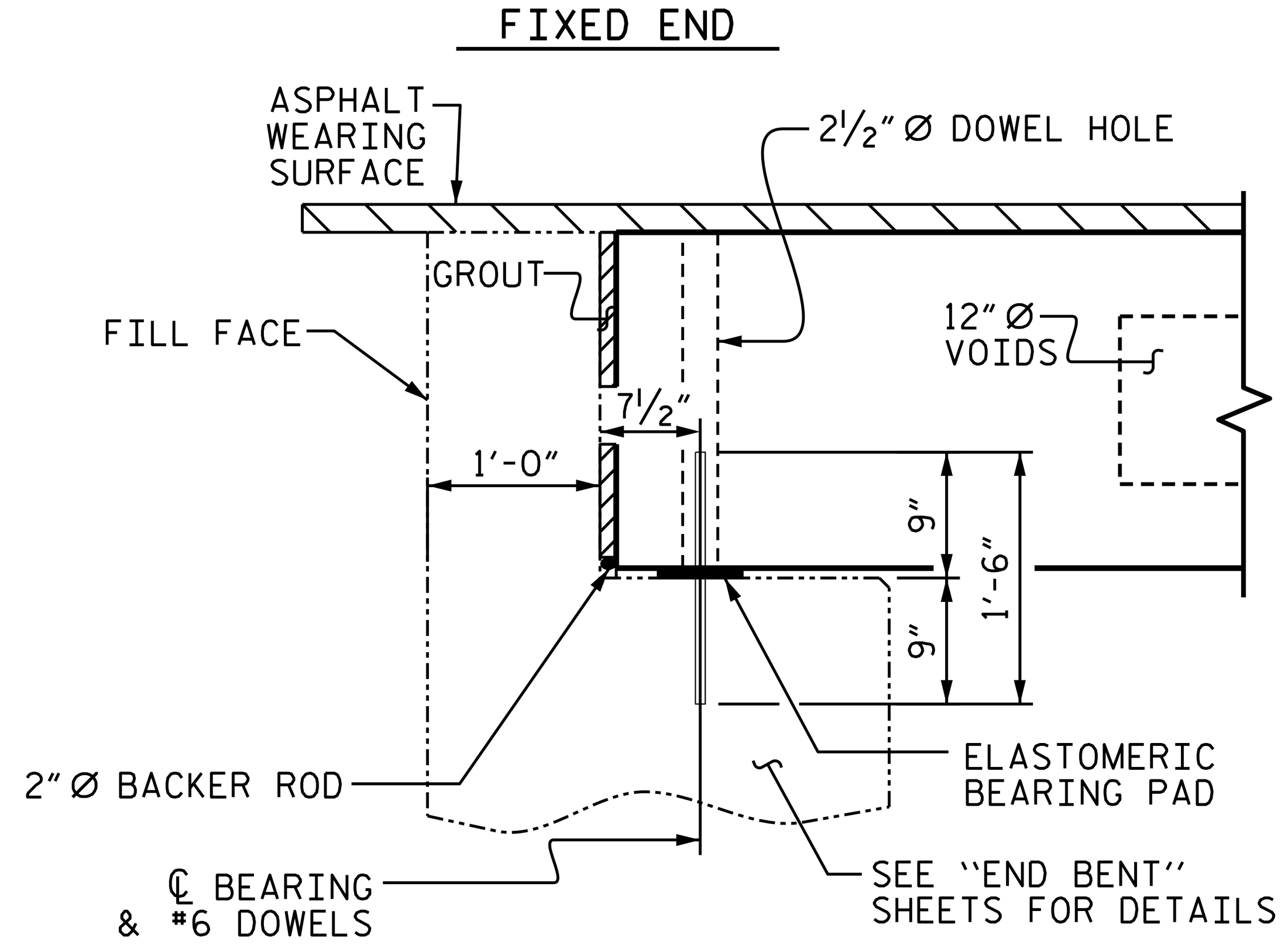
NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.

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

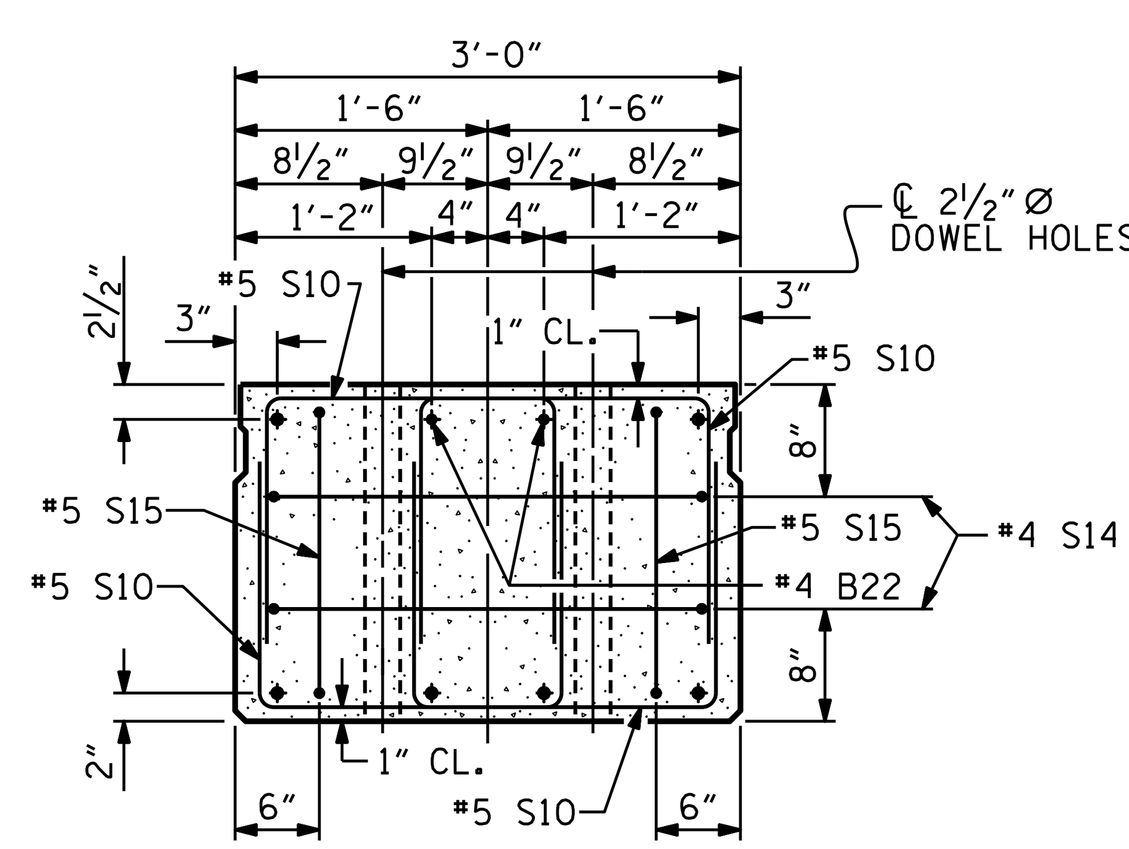


THREADED INSERT DETAIL

FIXED END



SECTION AT END BENT

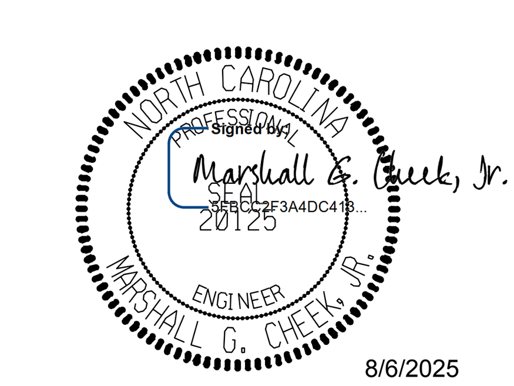


END ELEVATION

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

PROJECT NO. BP11-R046
ASHE COUNTY
STATION: 15+95.50 -L-

SHEET 1 OF 8



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TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

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

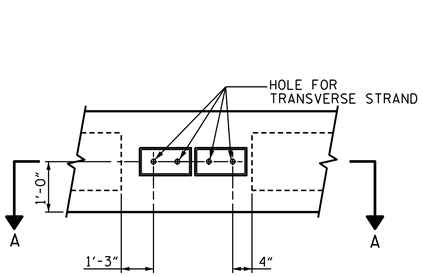
REVISIONS

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

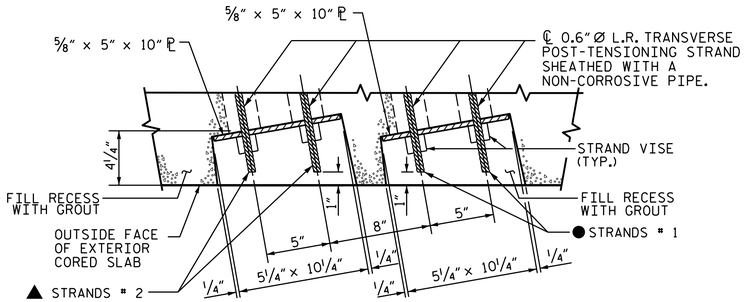
SHEET NO. S-8
TOTAL SHEETS 27

DRAWN BY : ZCS DATE : 1/25
CHECKED BY : MGC DATE : 3/25
DESIGN ENGINEER OF RECORD: ZCS DATE : 3/25

8/6/2025
c:\workdir\ncdot-pw.bentley.com.ncdot-pw-01\zachary smith\d0138093\Working_Zach.dgn
ZSmith



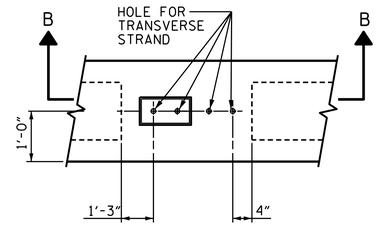
VIEW A-A



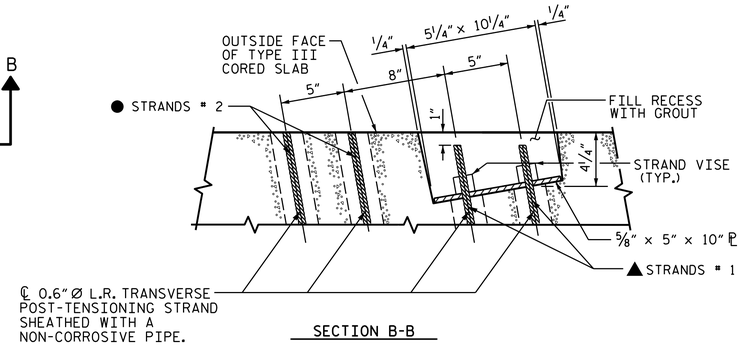
SECTION A-A

DETAIL A
GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS

(TYPE I UNIT)



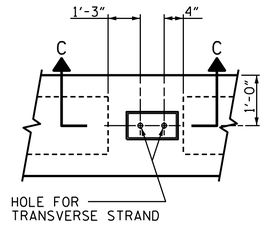
VIEW B-B



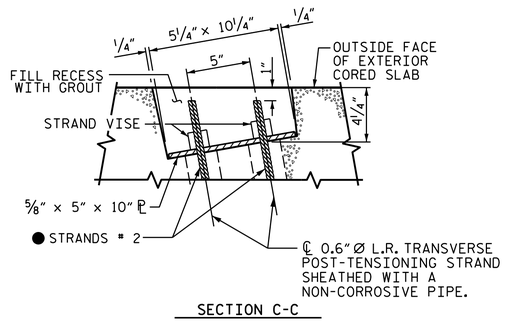
SECTION B-B

DETAIL B
GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS

(TYPE III UNIT)



VIEW C-C



SECTION C-C

DETAIL C
GROUTED RECESS AT END OF POST-TENSIONED STRAND OF CORED SLABS

(TYPE V UNIT)

▲ STRANDS # 1 GOES THRU 6 CORED SLAB UNITS
(TO BE TENSIONED DURING STAGE I CONSTRUCTION)

● STRANDS # 2 GOES THRU ALL 10 CORED SLAB UNITS
(TO BE TENSIONED DURING STAGE II CONSTRUCTION)

PROJECT NO. BP11-R046

ASHE COUNTY

STATION: 15+95.50 -L-

SHEET 2 OF 8

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20129 — Marshall G. Cheek, Jr. — MARSHALL G. CHEEK, JR. — ENGINEER

8/6/2025

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TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

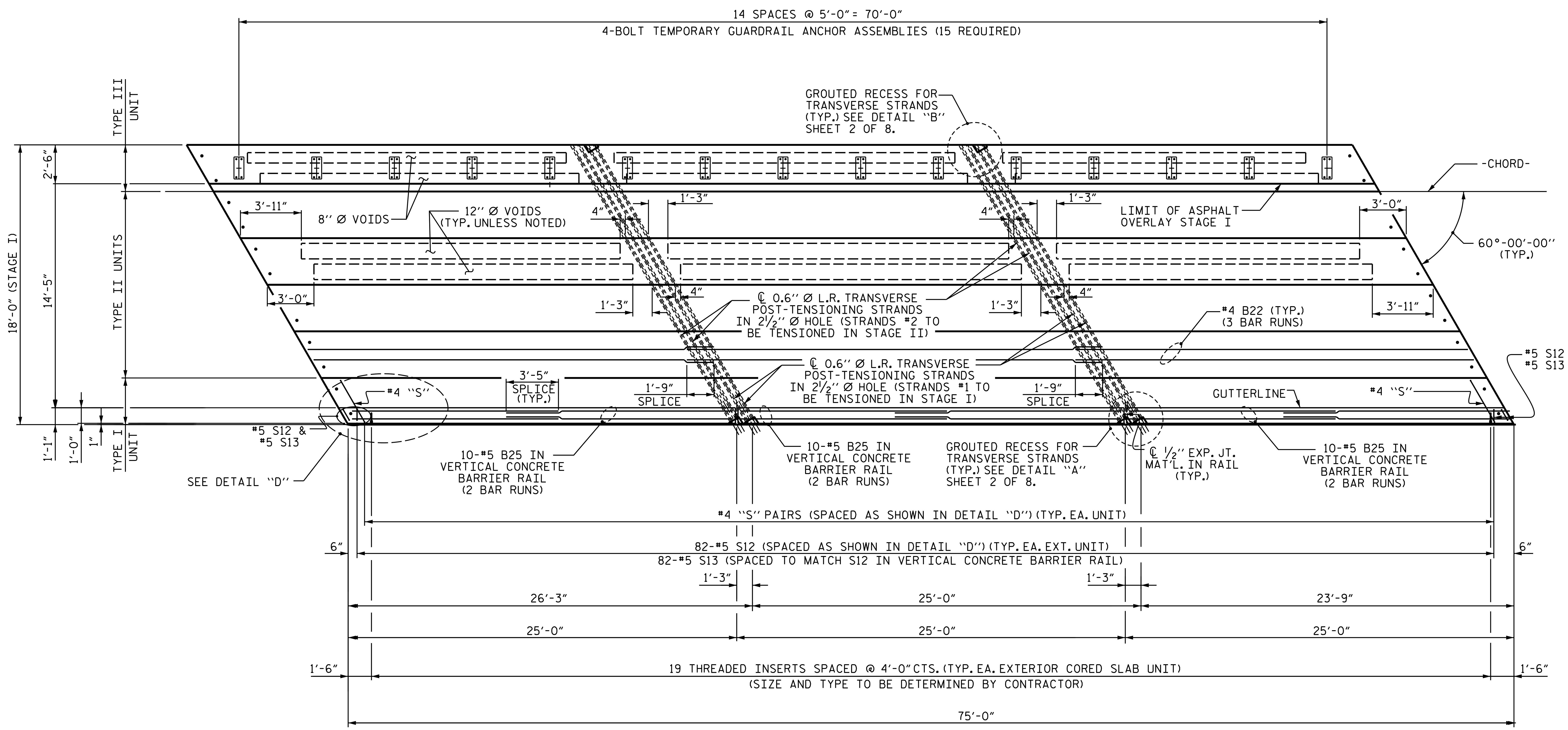
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PRESTRESSED CONCRETE CORED SLAB DETAILS

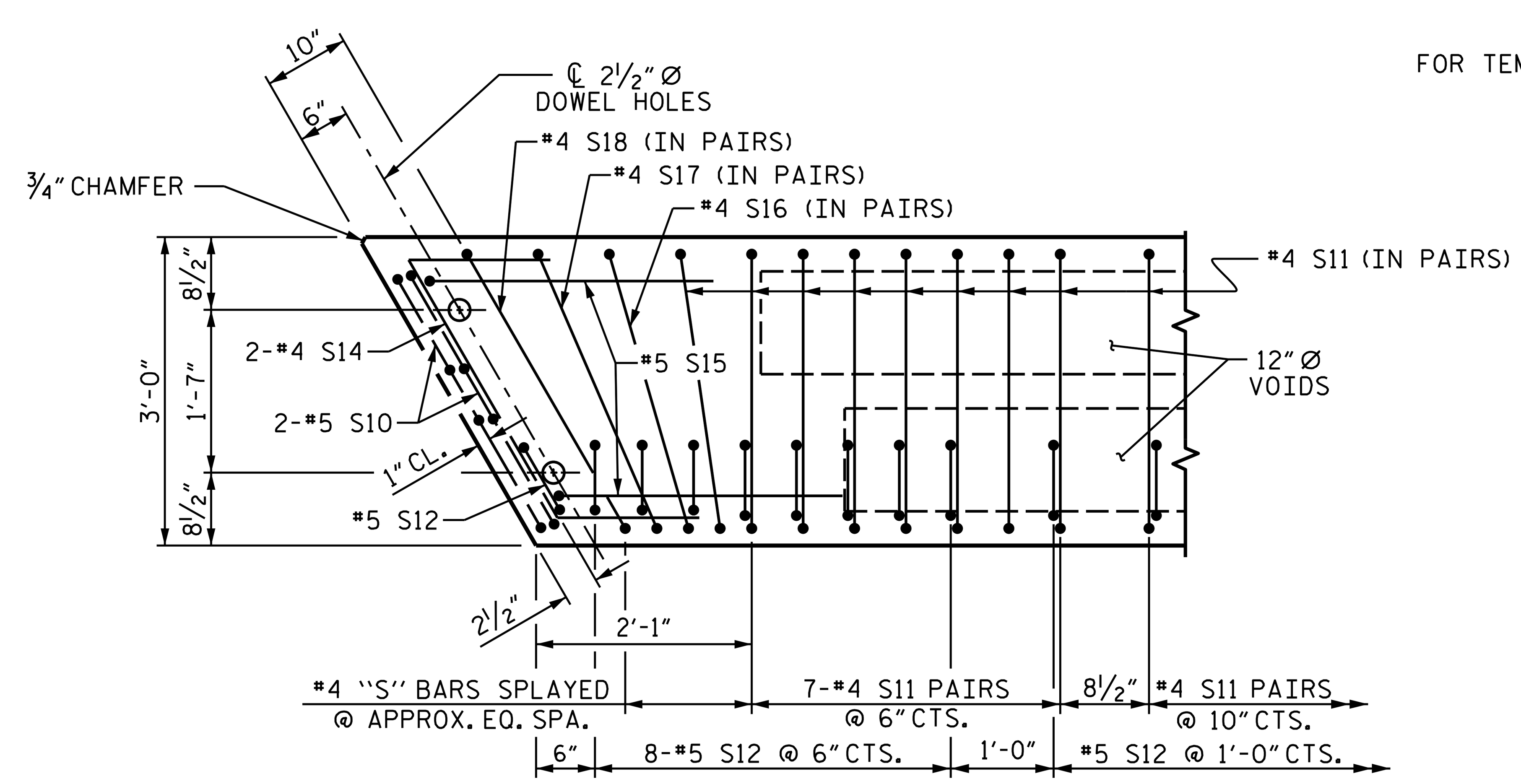
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-9
1			3			TOTAL SHEETS
2			4			27

DRAWN BY :	ZCS	DATE :	1/25
CHECKED BY :	MGC	DATE :	2/25



PLAN OF SPAN - STAGE I

FOR TEMPORARY GUARDRAIL ANCHOR ASSEMBLIES, SEE "ANCHORAGE DETAILS FOR TEMPORARY GUARDRAIL" SHEET.



DETAIL "D"

(SIMILAR EACH END OF UNIT)

NOTE: TYPE I UNIT SHOWN - TYPE II & TYPE III UNITS SIMILAR EXCEPT OMIT #5 S12 BARS.

PROJECT NO. BP11-R046

ASHE COUNTY

STATION: 15+95.50 -L-

SHEET 3 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

PLAN OF SPAN
STAGE I

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL G. CHEEK, JR.
Marshall G. Cheek, Jr.
8/6/2025

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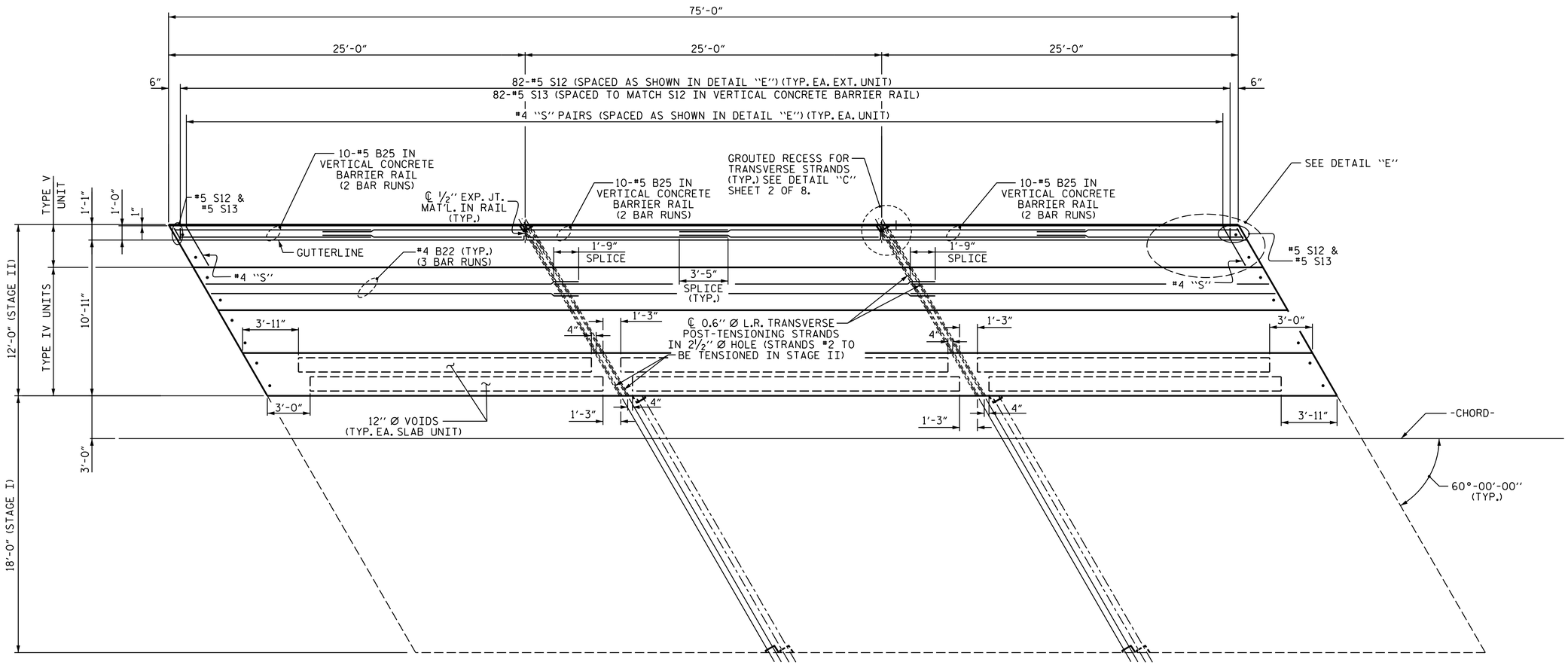
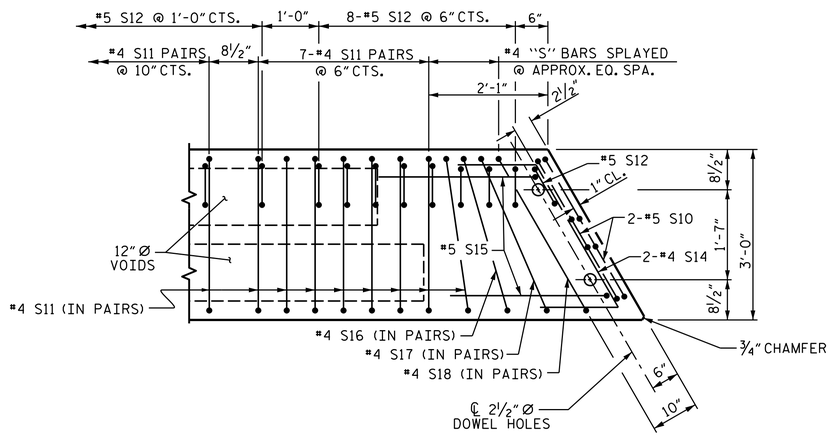
TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-10
1			3			TOTAL SHEETS
2			4			27

DRAWN BY :	ZCS	DATE :	1/25
CHECKED BY :	MGC	DATE :	2/25
DESIGN ENGINEER OF RECORD :	ZCS	DATE :	4/25



PLAN OF SPAN - STAGE II



DETAIL "E"

(SIMILAR EACH END OF UNIT)
NOTE: TYPE V UNIT SHOWN - TYPE IV UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.

DRAWN BY :	ZCS	DATE :	1/25
CHECKED BY :	MGC	DATE :	2/25
DESIGN ENGINEER OF RECORD :	ZCS	DATE :	3/25

PROJECT NO. BP11-R046
ASHE COUNTY
STATION: 15+95.50 -L-
SHEET 4 OF 8

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL G. CREEK, JR.
Marshall G. Creek, Jr.
8/6/2025

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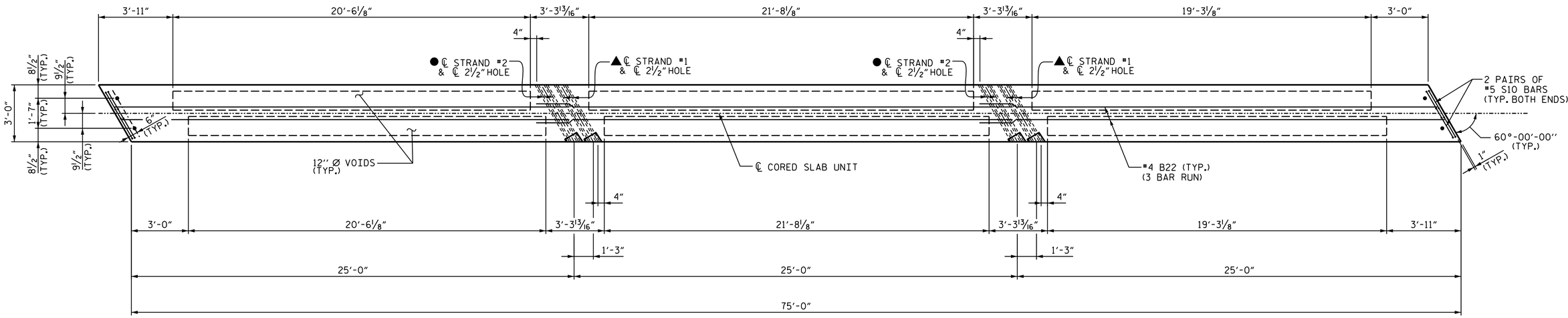
TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

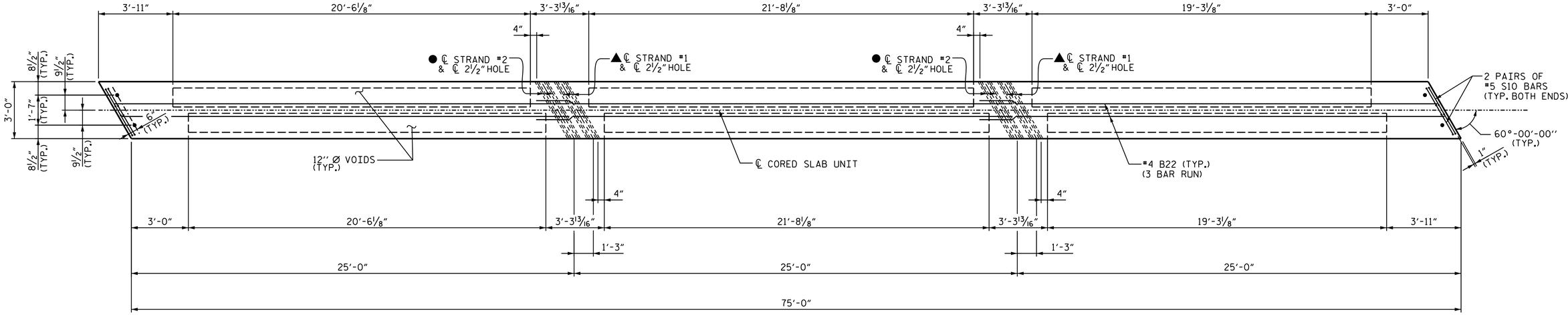
PLAN OF SPAN
STAGE II

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-11
1			3			TOTAL SHEETS
2			4			27



PLAN OF SPAN - TYPE I UNIT - STAGE I

NOTE: SEE "PLAN OF SPAN STAGE I" FOR SPACING OF THE "S" BARS AND THREADED INSERTS



PLAN OF SPAN - TYPE II UNIT - STAGE I

NOTE: SEE "PLAN OF SPAN STAGE I" FOR SPACING OF THE "S" BARS AND THREADED INSERTS

NOTES

▲ STRANDS # 1 GOES THRU 6 CORED SLAB UNITS (TO BE TENSIONED DURING STAGE I CONSTRUCTION)

● STRANDS # 2 GOES THRU ALL 10 CORED SLAB UNITS (TO BE TENSIONED DURING STAGE II CONSTRUCTION)

FOR GROUTED RECESS, SEE SHEET 2 OF 8

PROJECT NO. BP11-R046

ASHE COUNTY

STATION: 15+95.50 -L-

SHEET 5 OF 8

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL G. CHEEK, JR.
Marshall G. Cheek, Jr.
8/6/2025

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TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLAB UNIT DETAILS STAGE I

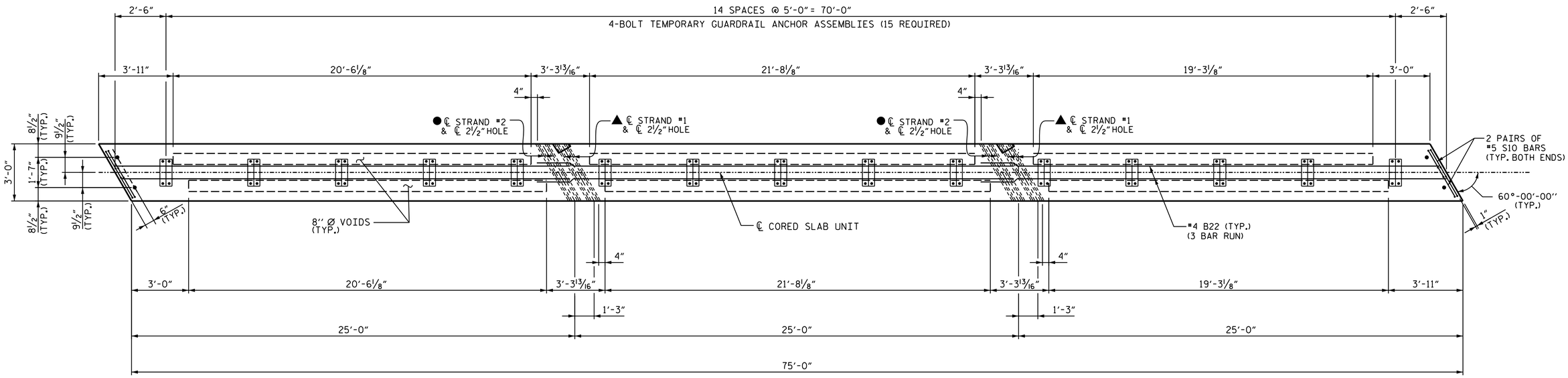
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-12
1			3			TOTAL SHEETS
2			4			27

DRAWN BY :	ZCS	DATE :	1/25
CHECKED BY :	MGC	DATE :	2/25

NOTES

- ▲ STRANDS # 1 GOES THRU 6 CORED SLAB UNITS (TO BE TENSIONED DURING STAGE I CONSTRUCTION)
- ● STRANDS # 2 GOES THRU ALL 10 CORED SLAB UNITS (TO BE TENSIONED DURING STAGE II CONSTRUCTION)

FOR GROUTED RECESS, SEE SHEET 2 OF 8



PLAN OF SPAN - TYPE III UNIT - STAGE I

NOTE: SEE "PLAN OF SPAN STAGE I" FOR SPACING OF THE "S" BARS AND THREADED INSERTS

PROJECT NO. BP11-R046

ASHE COUNTY

STATION: 15+95.50 -L-

SHEET 6 OF 8

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20125 MARSHALL G. CHEEK, JR. ENGINEER
Marshall G. Cheek, Jr.
8/6/2025

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201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

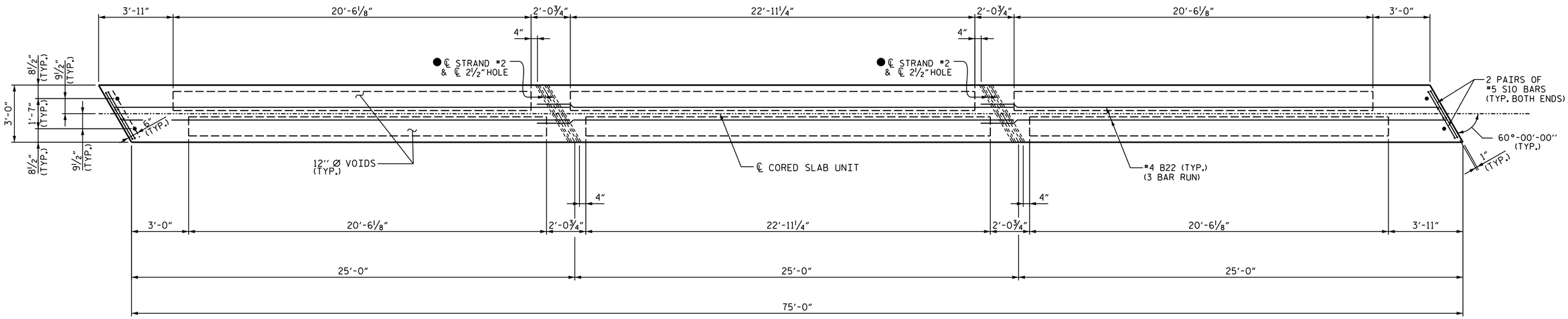
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLAB UNIT DETAILS STAGE I

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-13
1			3			TOTAL SHEETS
2			4			27

DRAWN BY :	ZCS	DATE :	1/25
CHECKED BY :	MGC	DATE :	2/25



PLAN OF SPAN - TYPE IV UNIT - STAGE II

NOTE: SEE "PLAN OF SPAN STAGE II" FOR SPACING OF THE "S" BARS AND THREADED INSERTS

PLAN OF SPAN - TYPE V UNIT - STAGE II

NOTE: SEE PLAN OF SPAN STAGE II FOR SPACING OF THE "S" BARS AND THREADED INSERTS

NOTES

- STRANDS # 2 GOES THRU ALL 10 CORED SLAB UNITS (TO BE TENSIONED DURING STAGE II CONSTRUCTION)

  FOR GROUTED RECESS, SEE SHEET 2 OF 8

PROJECT NO. BP11-R046

ASHE COUNTY

STATION: 15+95.50 -L-

SHEET 7 OF 8

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20125 MARSHALL G. CHEEK, JR. ENGINEER

Marshall G. Cheek, Jr.

8/6/2025

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TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

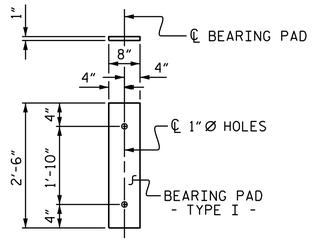
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

3'-0" X 2'-0" PRESTRESSED CONCRETE CORED SLAB UNIT DETAILS STAGE II

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-14
1			3			TOTAL SHEETS
2			4			27

DRAWN BY :	ZCS	DATE :	1/25
CHECKED BY :	MGC	DATE :	2/25



FIXED END
(TYPE I - 20 REQ'D)

ELASTOMERIC BEARING DETAILS

ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.

BILL OF MATERIAL FOR ONE CORED SLAB UNIT

				TYPE I UNIT		TYPE II UNIT		TYPE III UNIT		TYPE IV UNIT		TYPE V UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT	LENGTH	WEIGHT
B22	6	#4	STR	26'-2"	105	26'-2"	105	26'-2"	105	26'-2"	105	26'-2"	105
S10	8	#5	3	5'-0"	42	5'-0"	42	5'-0"	42	5'-0"	42	5'-0"	42
S11	182	#4	3	5'-10"	709	5'-10"	709	5'-10"	709	5'-10"	709	5'-10"	709
✱S12	84	#5	1	5'-8"	496							5'-8"	496
S14	4	#4	4	5'-11"	16	5'-11"	16	5'-11"	16	5'-11"	16	5'-11"	16
S15	4	#5	3	7'-1"	30	7'-1"	30	7'-1"	30	7'-1"	30	7'-1"	30
S16	4	#4	3	5'-11"	16	5'-11"	16	5'-11"	16	5'-11"	16	5'-11"	16
S17	4	#4	3	6'-1"	16	6'-1"	16	6'-1"	16	6'-1"	16	6'-1"	16
S18	4	#4	3	6'-3"	17	6'-3"	17	6'-3"	17	6'-3"	17	6'-3"	17
REINFORCING STEEL			LBS.		951		951		951		951		951
✱EPOXY COATED REINFORCING STEEL			LBS.		496								496
8500 P.S.I. CONCRETE			CU. YDS.		13.0		12.9		14.9		12.8		12.9
0.6"Ø L.R. STRANDS			No.		31		31		35		31		31

DEAD LOAD DEFLECTION AND CAMBER

	3'-0" x 2'-0"
75' CORED SLAB UNIT	0.6"Ø L.R. STRAND
CAMBER (SLAB ALONE IN PLACE)	$2^{11}/_{16}$"
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD✱✱	1"
FINAL CAMBER	$1^{11}/_{16}$"

✱✱ INCLUDES FUTURE WEARING SURFACE

BILL OF MATERIAL FOR VERTICAL CONCRETE BARRIER RAIL

BAR	BARS PER PAIR OF EXTERIOR UNITS	TOTAL NO.	SIZE	TYPE	LENGTH	WEIGHT
	75' UNIT					
✱B25	120	120	#5	STR	14'-4"	1794
✱S13	168	168	#5	2	7'-2"	1256
✱EPOXY COATED REINFORCING STEEL				LBS.		3050
CLASS AA CONCRETE				CU.YDS.		19.6
TOTAL VERTICAL CONCRETE BARRIER RAIL				LN. FT.		150.00

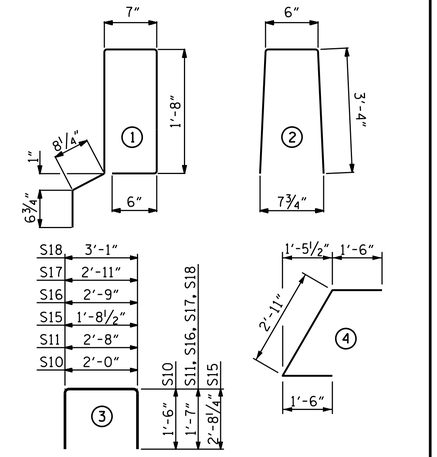
CORED SLABS REQUIRED

		NUMBER	LENGTH	TOTAL LENGTH
STAGE I	TYPE I	1	75'-0"	75'-0"
	TYPE II	4	75'-0"	300'-0"
	TYPE III	1	75'-0"	75'-0"
	STAGE I TOTAL	6		450'-0"
STAGE II	TYPE IV	3	75'-0"	225'-0"
	TYPE V	1	75'-0"	75'-0"
	STAGE II TOTAL	4		300'-0"
	TOTAL	10		750'-0"

CONCRETE RELEASE STRENGTH

UNIT	PSI
TYPE I, II, IV, V UNITS	6000
TYPE III UNITS	7000

BAR TYPES



ALL BAR DIMENSIONS ARE OUT TO OUT

NOTES

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

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

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

THE $2^1/_2$"Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE JOINT SEALER MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE SL LOW MODULUS SILICONE SEALANT. THE 2"Ø BACKER ROD SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING 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.

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

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

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

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, ½" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE BARRIER RAIL AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN BARRIER RAIL EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF BARRIER RAIL SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

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

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

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

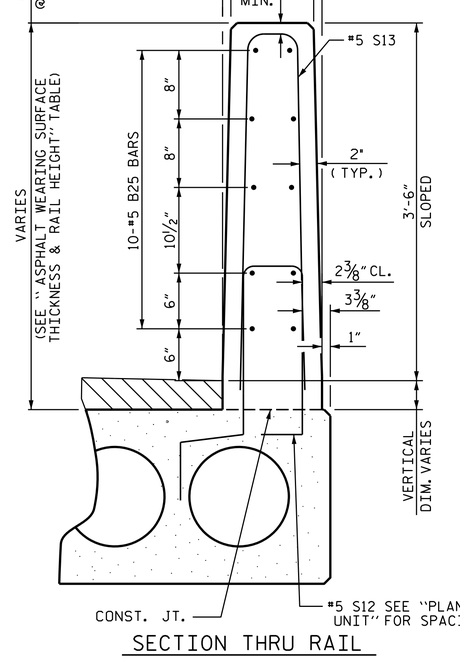
FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

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

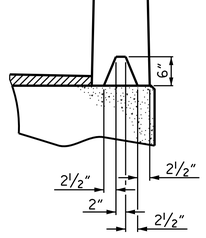
THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

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

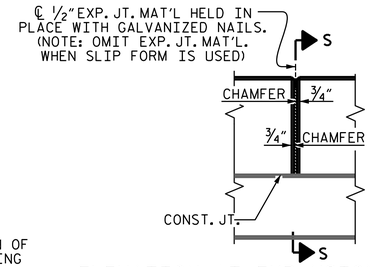
THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.



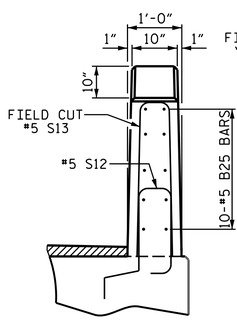
SECTION THRU RAIL



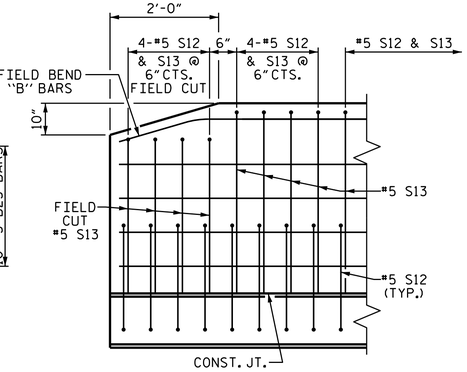
SECTION S-S
AT DAM IN OPEN JOINT
(THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS



END VIEW



SIDE VIEW

GRADE 270 STRANDS

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

VERTICAL CONCRETE BARRIER RAIL DETAILS

END OF RAIL DETAILS

PROJECT NO. BP11-R046
ASHE COUNTY
STATION: 15+95.50 -L-
SHEET 8 OF 8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUPERSTRUCTURE

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

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20125 ENGINEER MARSHALL G. CHEEK, JR.
Marshall G. Cheek, Jr.
8/6/2025

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TGS ENGINEERS
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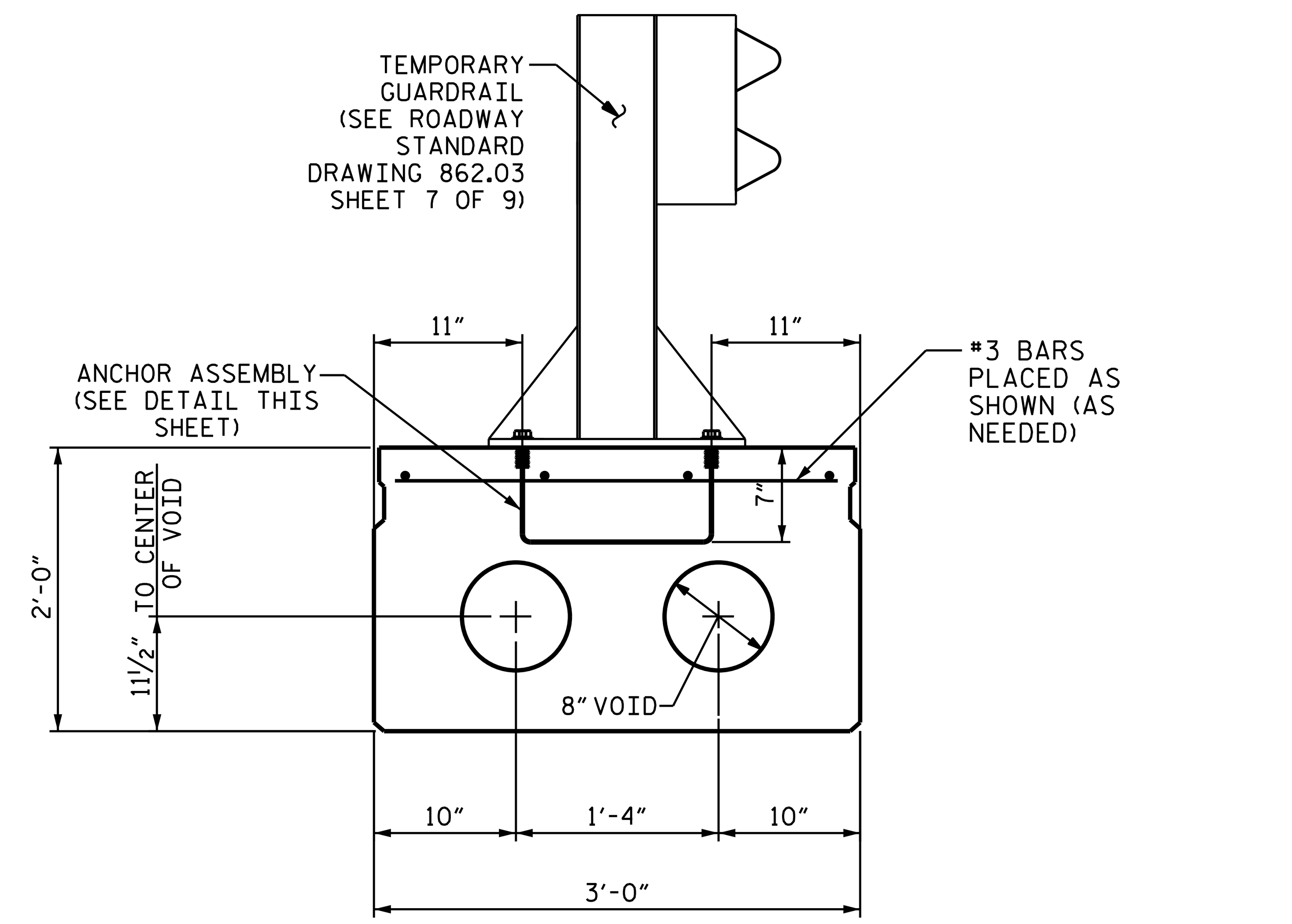
CORP. LICENSE NO.: C-0275

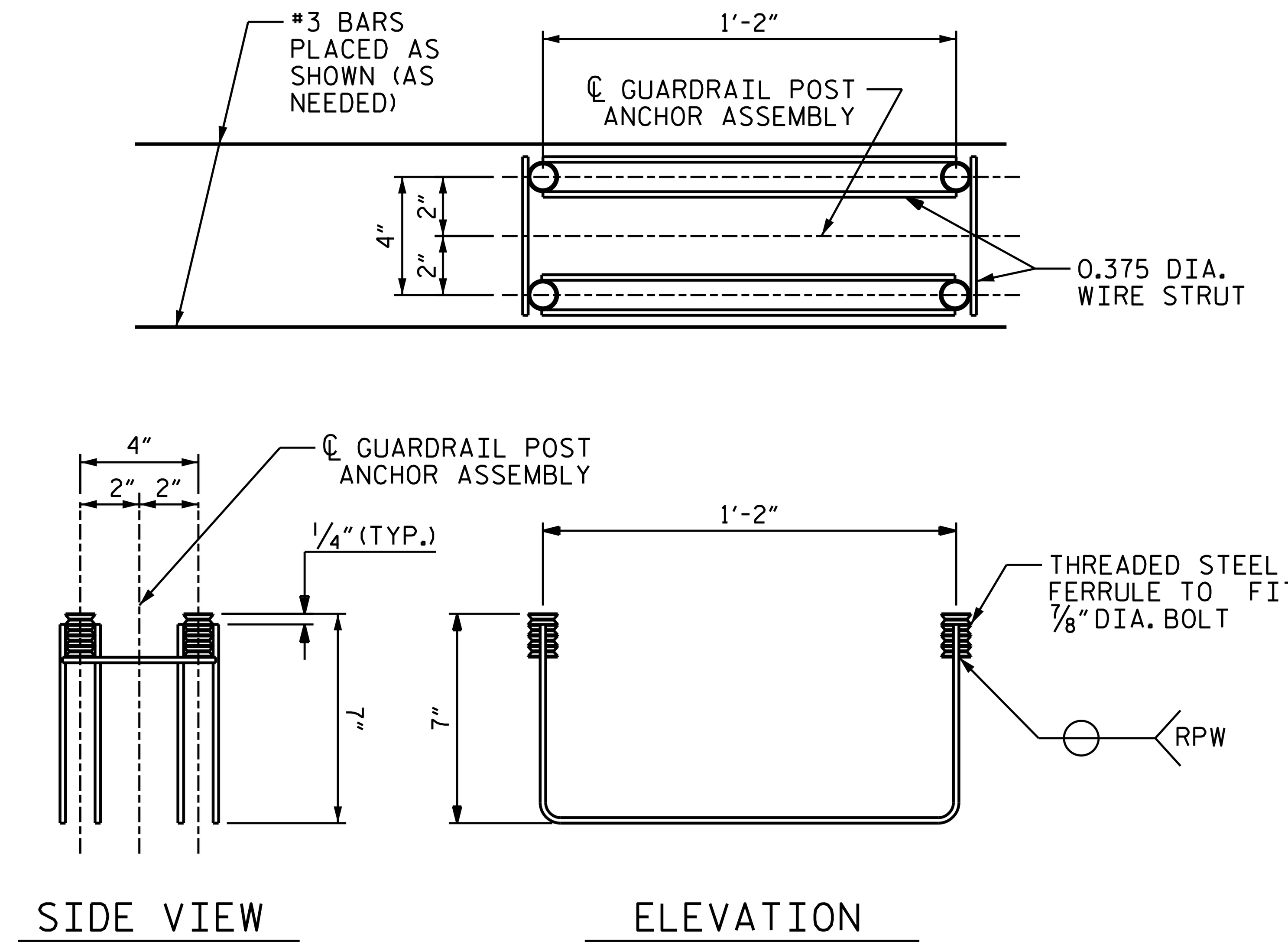
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-15
1			3			TOTAL SHEETS
2			4			27

DRAWN BY :	ZCS	DATE : 1/25
CHECKED BY :	MGC	DATE : 2/25
DESIGN ENGINEER OF RECORD :	ZCS	DATE : 3/25



SECTION OF ANCHOR ASSEMBLY LOCATION

(TYPE III UNIT)



TEMPORARY GUARDRAIL ANCHOR ASSEMBLY

(15 ASSEMBLIES REQUIRED IN THE TYPE III CORED SLAB UNIT)

NOTES FOR TEMPORARY GUARDRAIL

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

A) FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2 1/2".

B) 2-7/8" DIA x 5" ANCHOR BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. ANCHOR BOLTS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATIVE FOR THE 7/8" DIA. x 5" GALVANIZED ANCHOR BOLTS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

C) WIRE STRUT SHOWN IN THE ANCHOR ASSEMBLY DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI.

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

THE COST OF THE ANCHOR ASSEMBLY COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR "3'-0" x 2'-0" PRESTRESSED CONCRETE CORED SLABS".

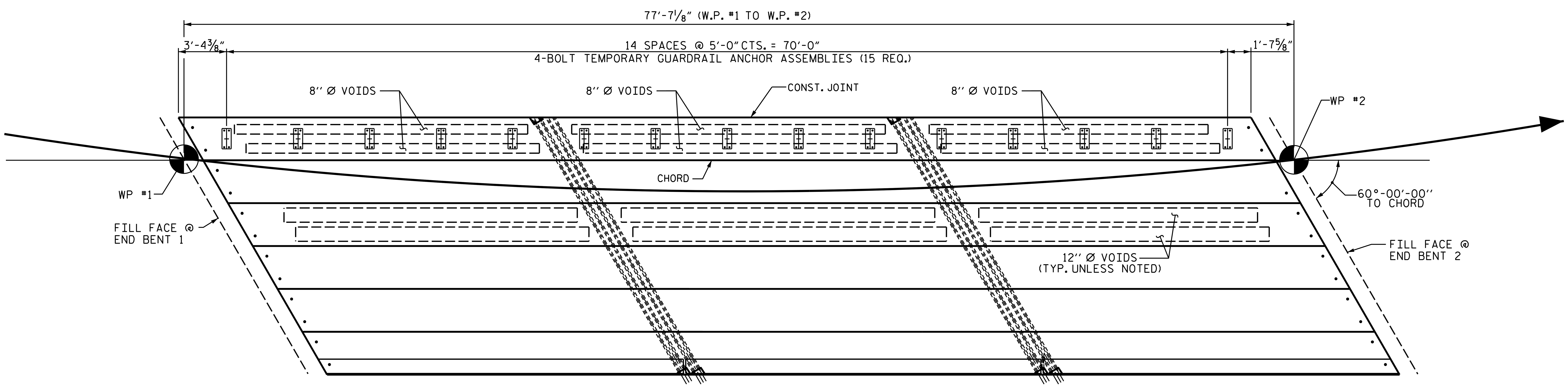
FERRULES TO BE PLUGGED DURING CASTING OF THE CORED SLAB UNITS AS RECOMMMENDED BY THE MANUFACTURER.

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

PAYMENT FOR ANCHORED TEMPORARY GUARDRAIL ARE INCLUDED IN TRAFFIC CONTROL.

PLUG FERRULES WITH GROUT UPON REMOVAL OF TEMPORARY GUARDRAIL BOLTS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.



RAIL POST SPACING FOR TEMPORARY GUARDRAIL - STAGE I

PROJECT NO. BP11-R046
ASHE COUNTY
STATION: 15+95.50 -L-

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20125 MARSHALL G. CHEEK, JR.
Marshall G. Cheek, Jr.
8/6/2025

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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ANCHORAGE DETAILS FOR TEMPORARY GUARDRAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			27

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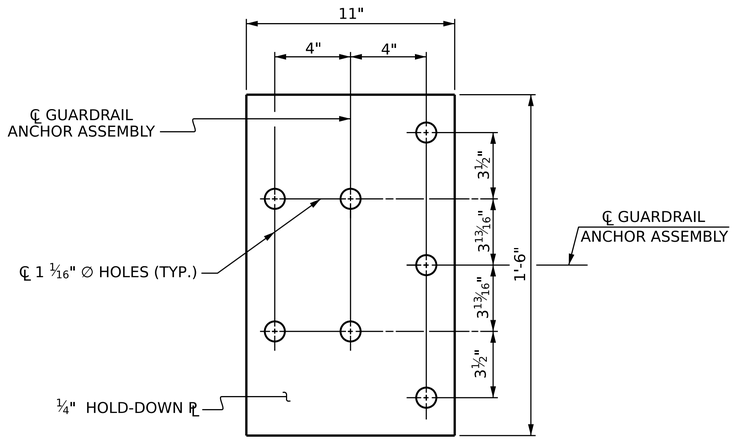
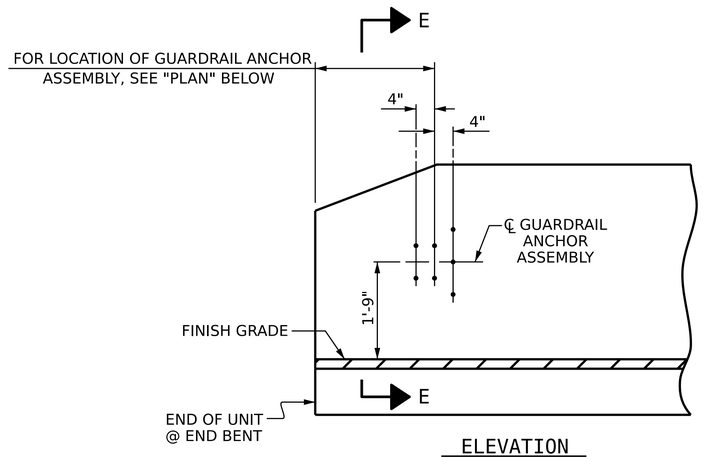
CHECKED BY :	MGC	DATE :	8/25



PLAN



ELEVATION

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A ¼'' HOLD DOWN PLATE AND 7 - ⅞'' ∅ 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 ⅞'' ∅ GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

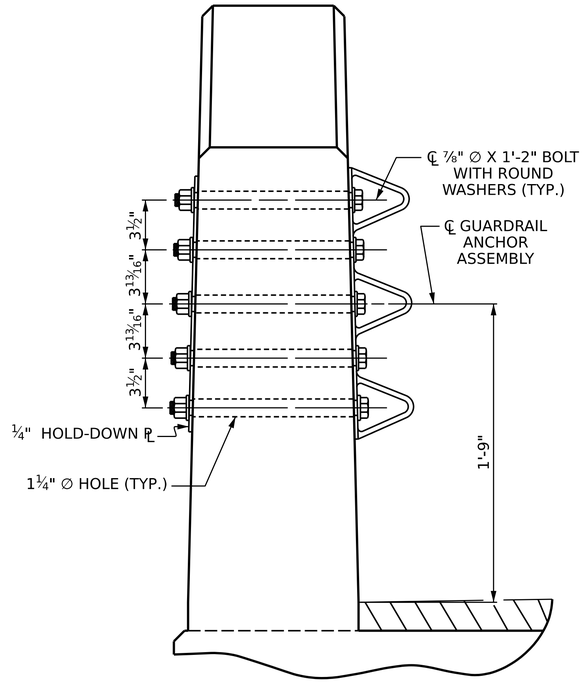
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF BARRIER RAIL. FOR POINTS OF ATTACHMENT, SEE SKETCH.

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

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

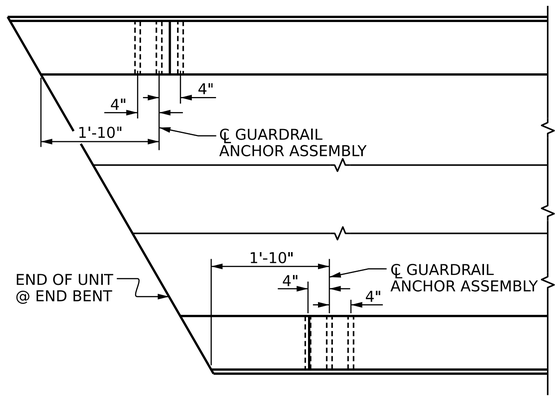
THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE VERTICAL CONCRETE BARRIER RAIL TO CLEAR ASSEMBLY BOLTS.

THE 1 ¼'' ∅ 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.



SECTION E-E

GUARDRAIL ANCHOR ASSEMBLY DETAILS



PLAN

SKETCH SHOWING POINTS OF ATTACHMENT

* DENOTES GUARDRAIL ANCHOR ASSEMBLY

LOCATION OF ANCHORS FOR GUARDRAIL

END BENT 1 SHOWN, END BENT 2 SIMILAR.

PROJECT NO. BP11-R046

ASHE COUNTY

STATION: 15+95.50 -L-

ASSEMBLED BY :	ZCS	DATE :	1/25
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CHECKED BY : GM	5/10	REV. 12/17	MAA/THC
		REV. 5/18	MAA/THC

8/1/2025
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ZSmith

NORTH CAROLINA Professional Engineer Marshall G. Cheek, Jr. SEAL 20125 ENGINEER MARSHALL G. CHEEK, JR.

8/6/2025

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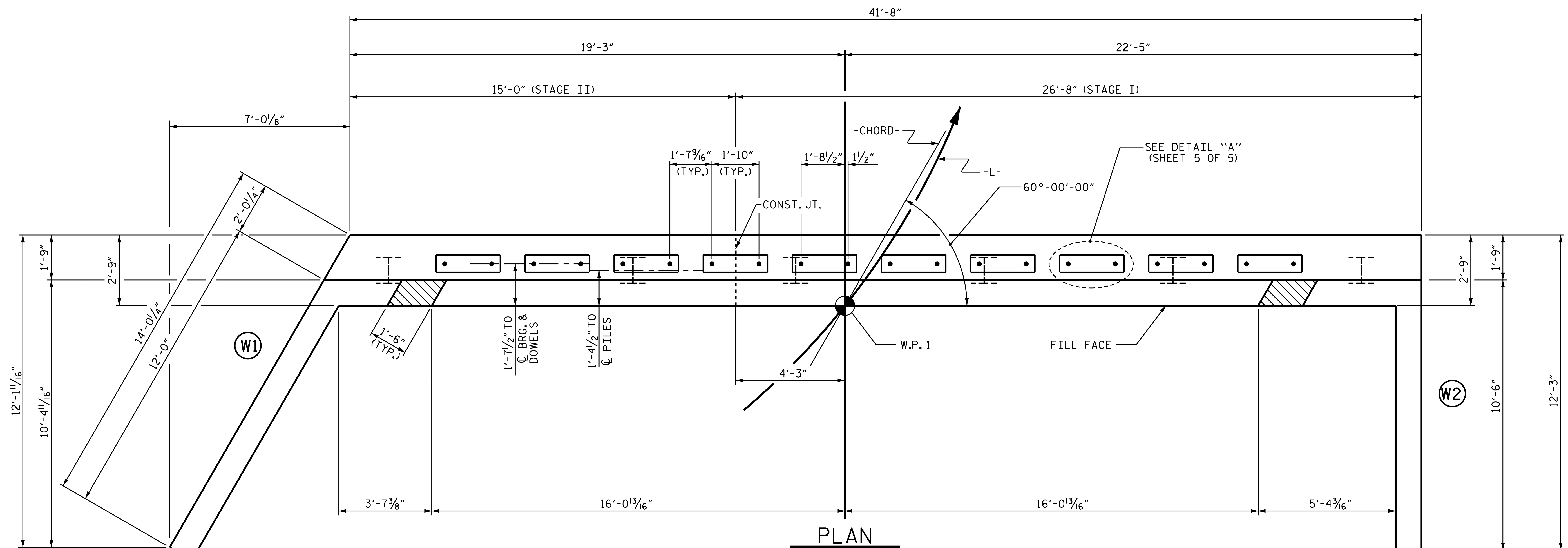
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD

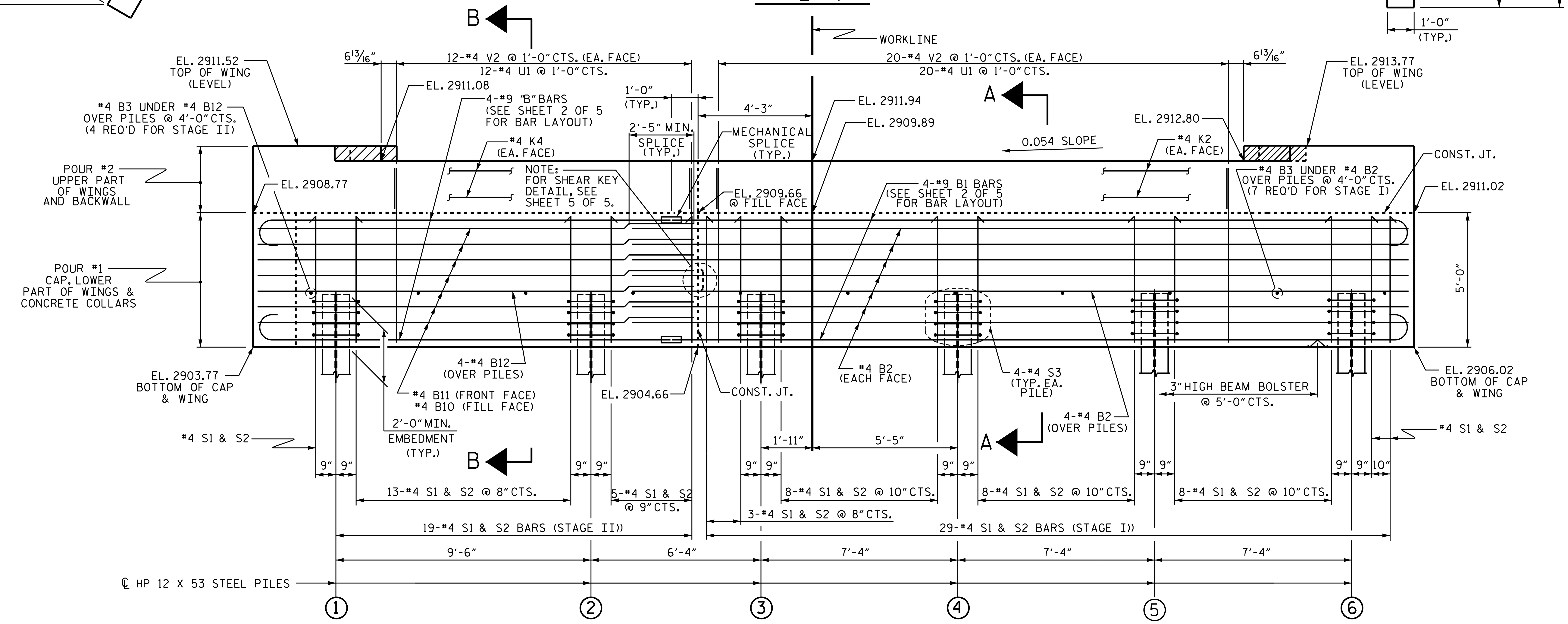
GUARDRAIL ANCHORAGE DETAILS FOR VERTICAL CONCRETE BARRIER RAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-17
1			3			TOTAL SHEETS
2			4			27

STD. GRA3 Sht.1b



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTIONS A-A & B-B, SEE SHEET 3 OF 5.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 5 OF 5.

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 5 OF 5.

FOR WING DETAILS, SEE SHEET 4 OF 5.

THE COST OF THE MECHANICAL SPLICES SHALL BE INCLUDED IN THE CONTRACT PRICE BID FOR REINFORCING STEEL.

TOP OF PILE ELEVATIONS	
1	2905.96
2	2906.47
3	2906.81
4	2907.21
5	2907.60
6	2908.00

Marshall G. Cheek, Jr.
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 28125 MARSHALL G. CHEEK, JR.
8/6/2025

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PROJECT NO. BP11-R046
ASHE COUNTY
STATION: 15+95.50 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			27

DRAWN BY :	ZCS	DATE :	7/25
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8/5/2025
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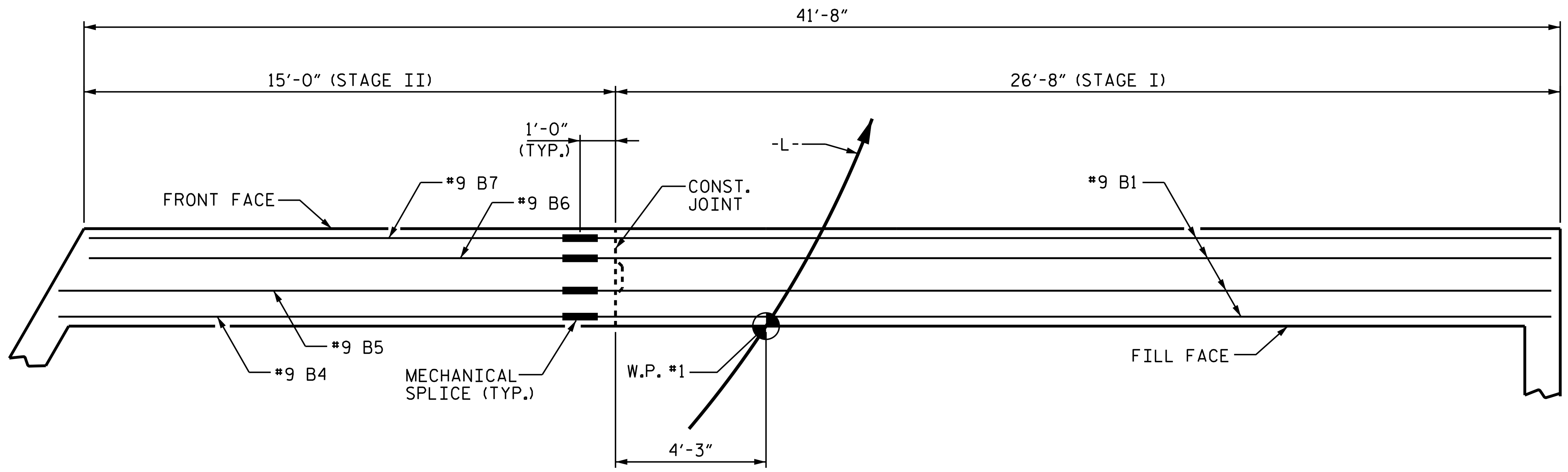
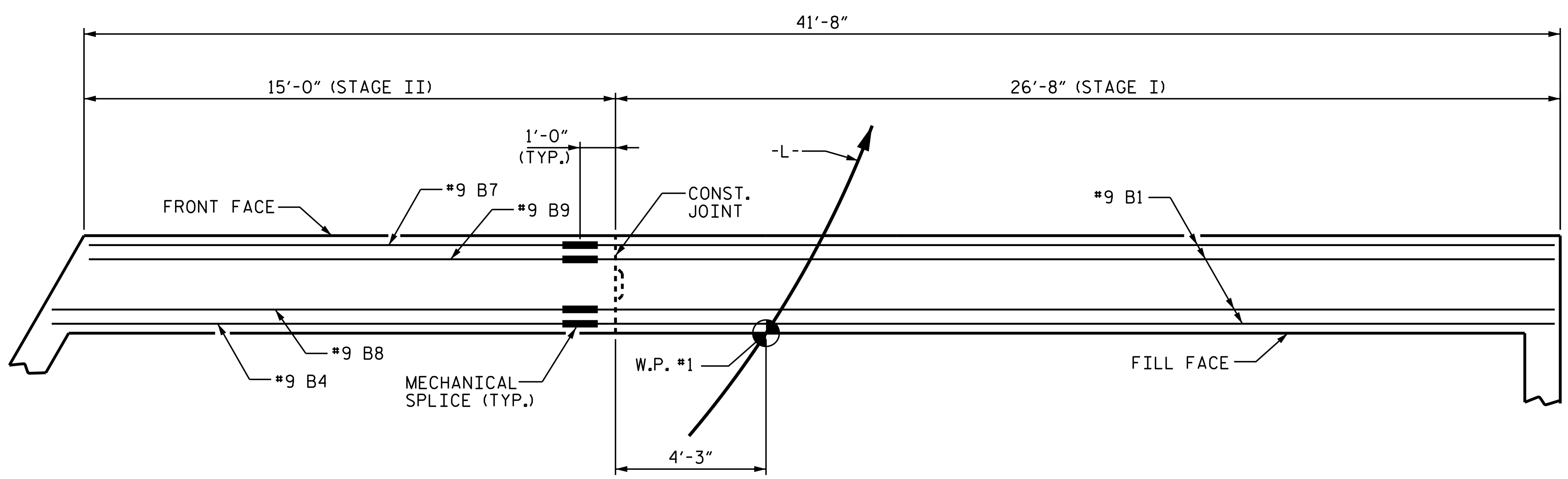
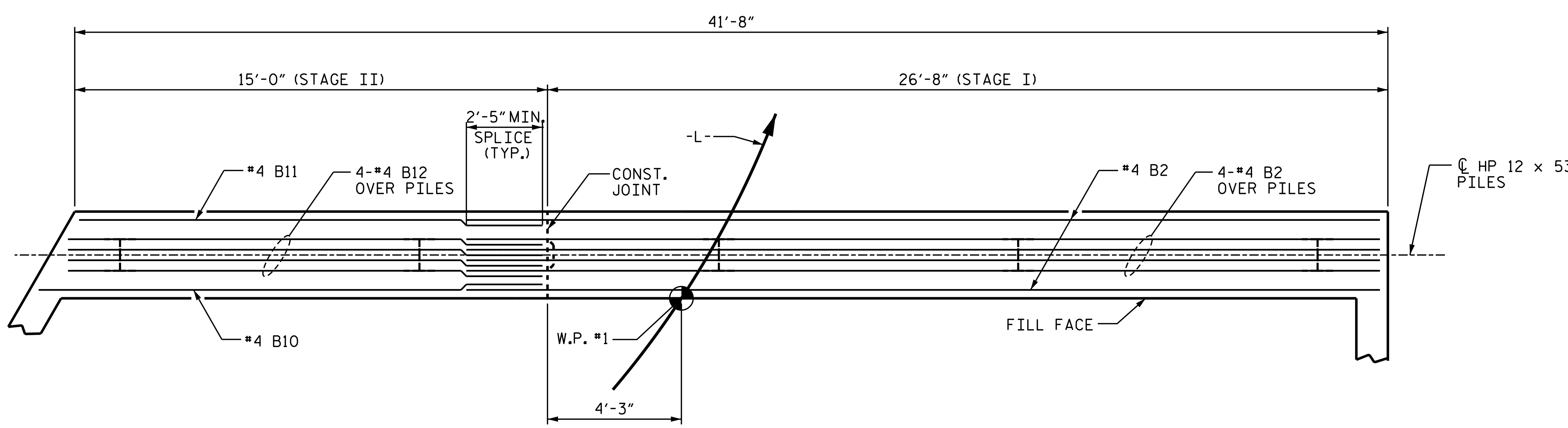
ZSmith



#9 "B" BARS - TOP OF CAP



#9 "B" BARS - BOTTOM OF CAP



#4 "B" BARS - FACES OF CAP AND OVER TOP OF PILES

PROJECT NO. BP11-R046
ASHE COUNTY
STATION: 15+95.50 -L-
SHEET 2 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1
DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL G. CHEEK, JR.
Marshall G. Cheek, Jr.
8/6/2025

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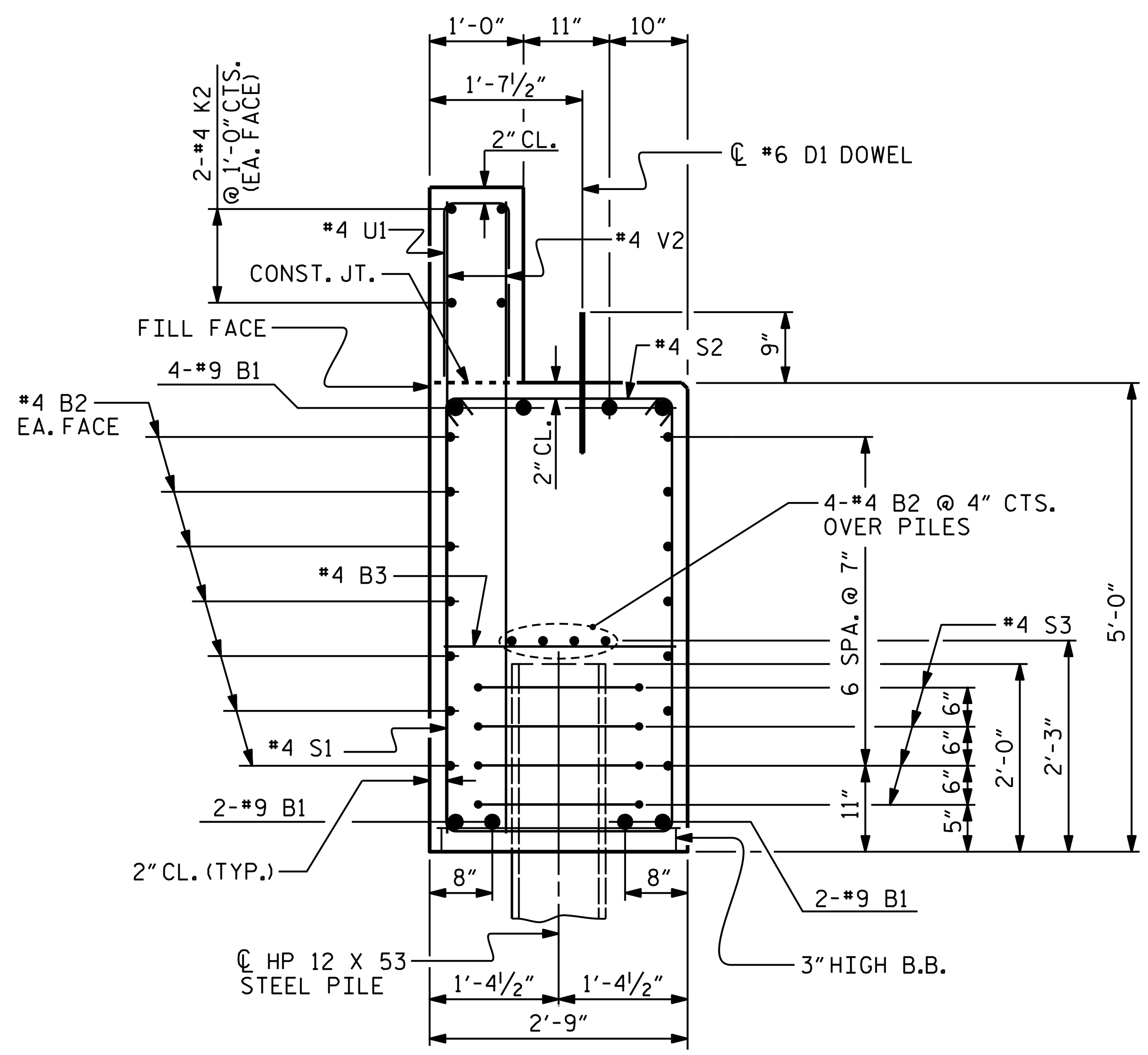
TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

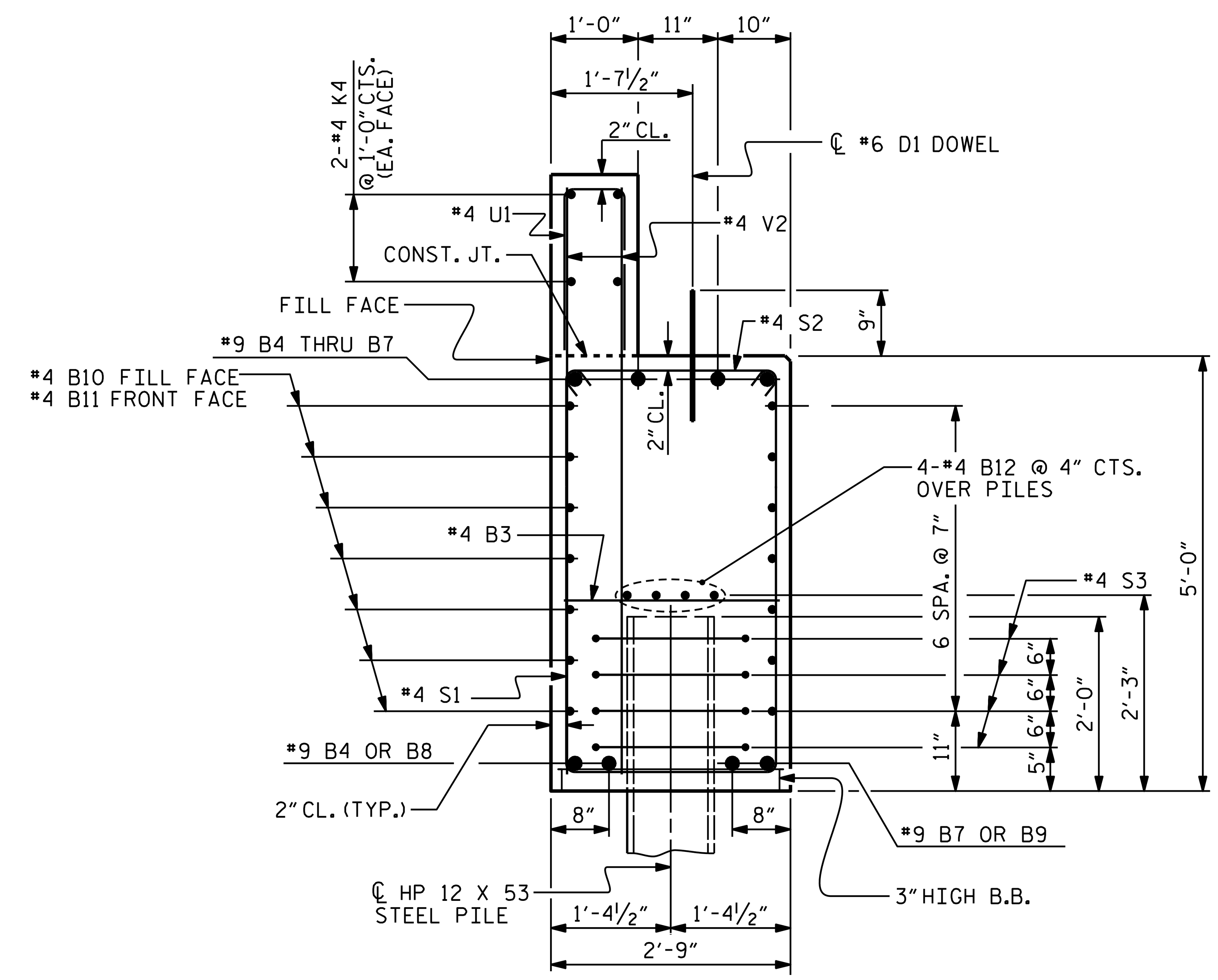
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-19
1			3			TOTAL SHEETS
2			4			27

DRAWN BY :	ZCS	DATE :	2/25
CHECKED BY :	MGC	DATE :	3/25
DESIGN ENGINEER OF RECORD :	ZCS	DATE :	3/25



SECTION A-A

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



SECTION B-B

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

PROJECT NO. BP11-R046

ASHE COUNTY

STATION: 15+95.50 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1
DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 20125 ENGINEER MARSHALL G. CHEEK, JR.
Marshall G. Cheek, Jr.
8/6/2025

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SHELBY, NC 28150
PH (704) 476-0003
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REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-20
TOTAL SHEETS 27

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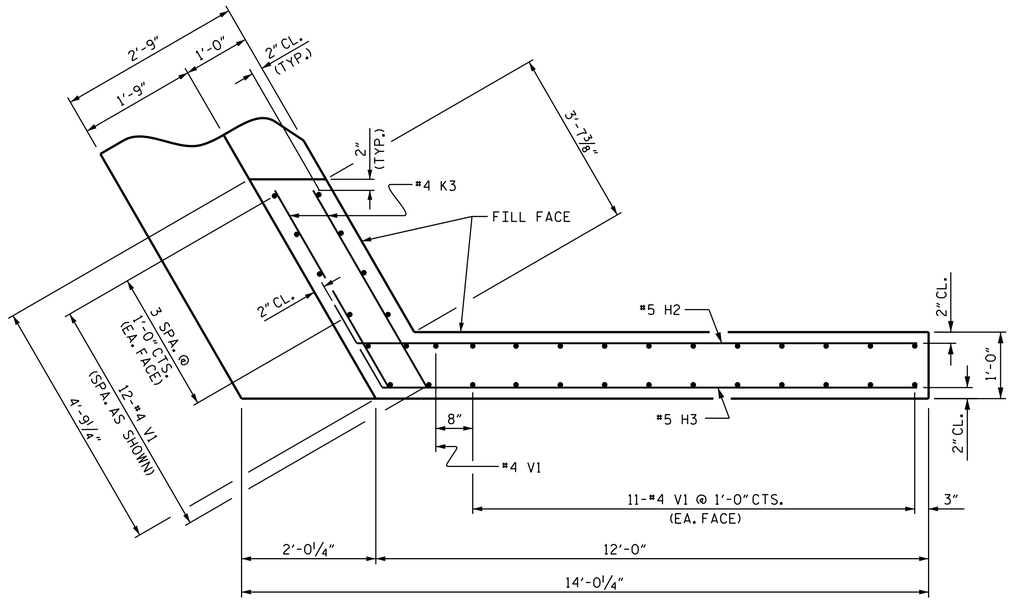
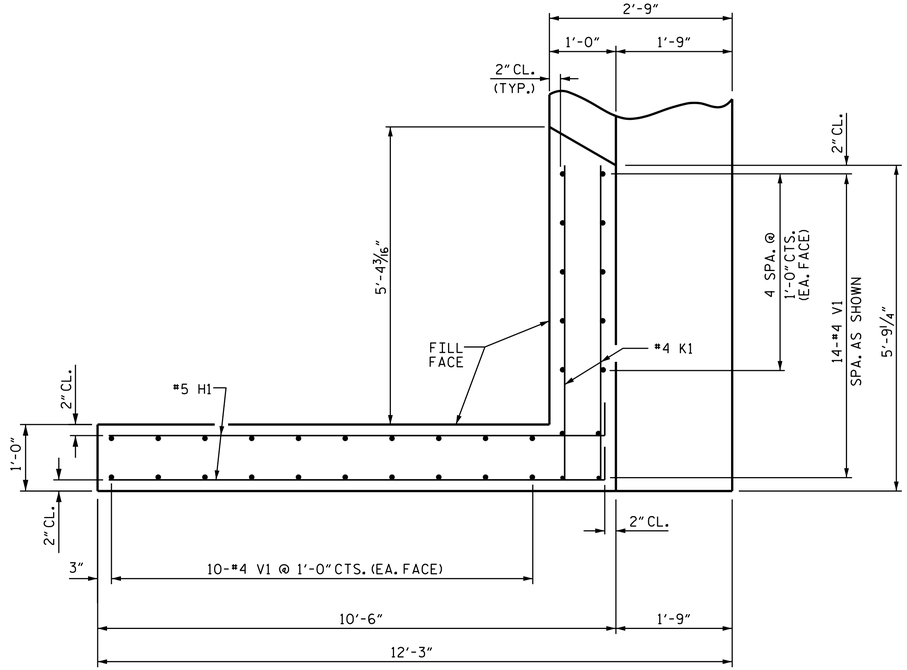
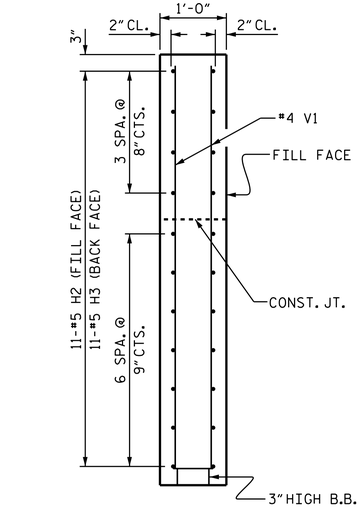
CHECKED BY :	MGC	DATE :	8/25
DESIGN ENGINEER OF RECORD :	ZCS	DATE :	8/25



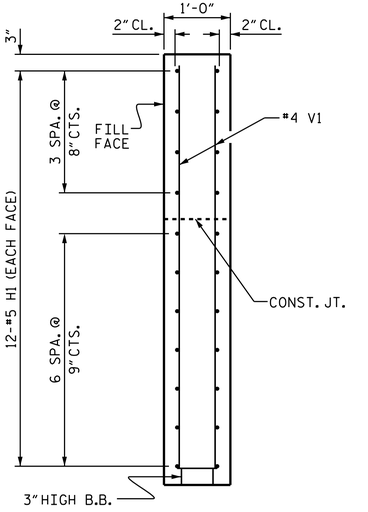
PLAN OF WING (W1)



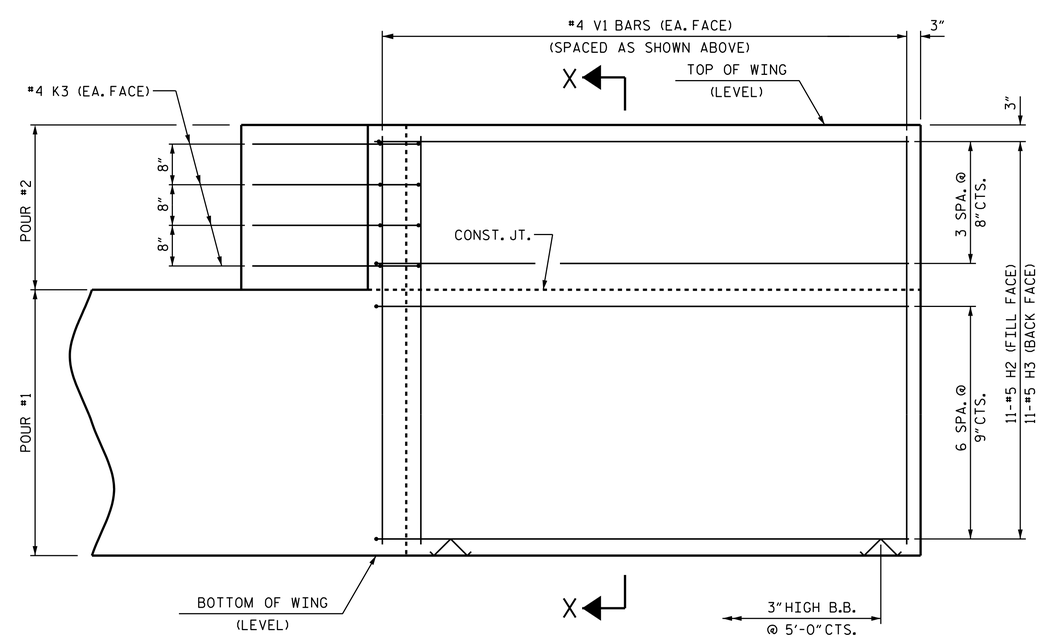
PLAN OF WING (W2)



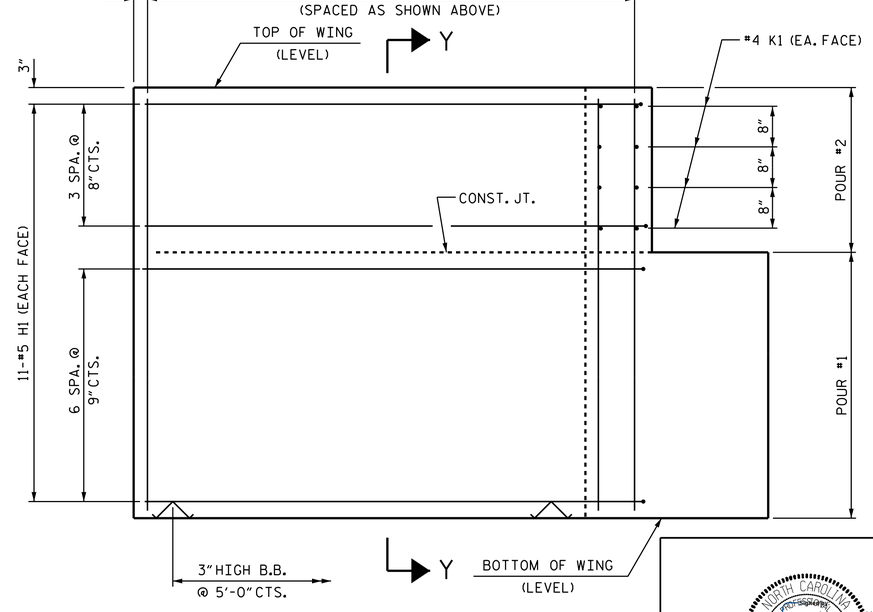
SECTION X-X



SECTION Y-Y



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

WING DETAILS

PROJECT NO. BP11-R046

ASHE COUNTY

STATION: 15+95.50 -L-

SHEET 4 OF 5

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20125 — Marshall G. Check, Jr. — ENGINEER — 8/6/2025

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TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

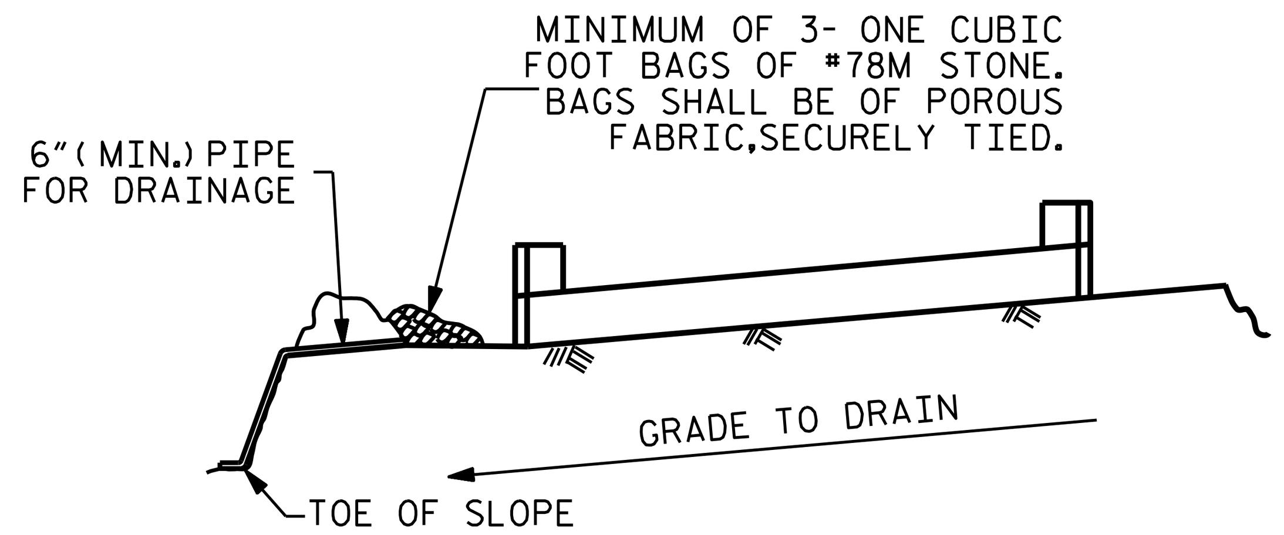
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 1
WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-21
1			3			TOTAL SHEETS
2			4			27

DRAWN BY :	ZCS	DATE :	7/25
CHECKED BY :	MGC	DATE :	8/25
DESIGN ENGINEER OF RECORD :	MGC	DATE :	8/25

8/5/2025
c:\workdir\ncdot-pw.bentley.com_ncdot-pw-01\zachary smith\d0138093\Working_Zach.dgn
ZSmith

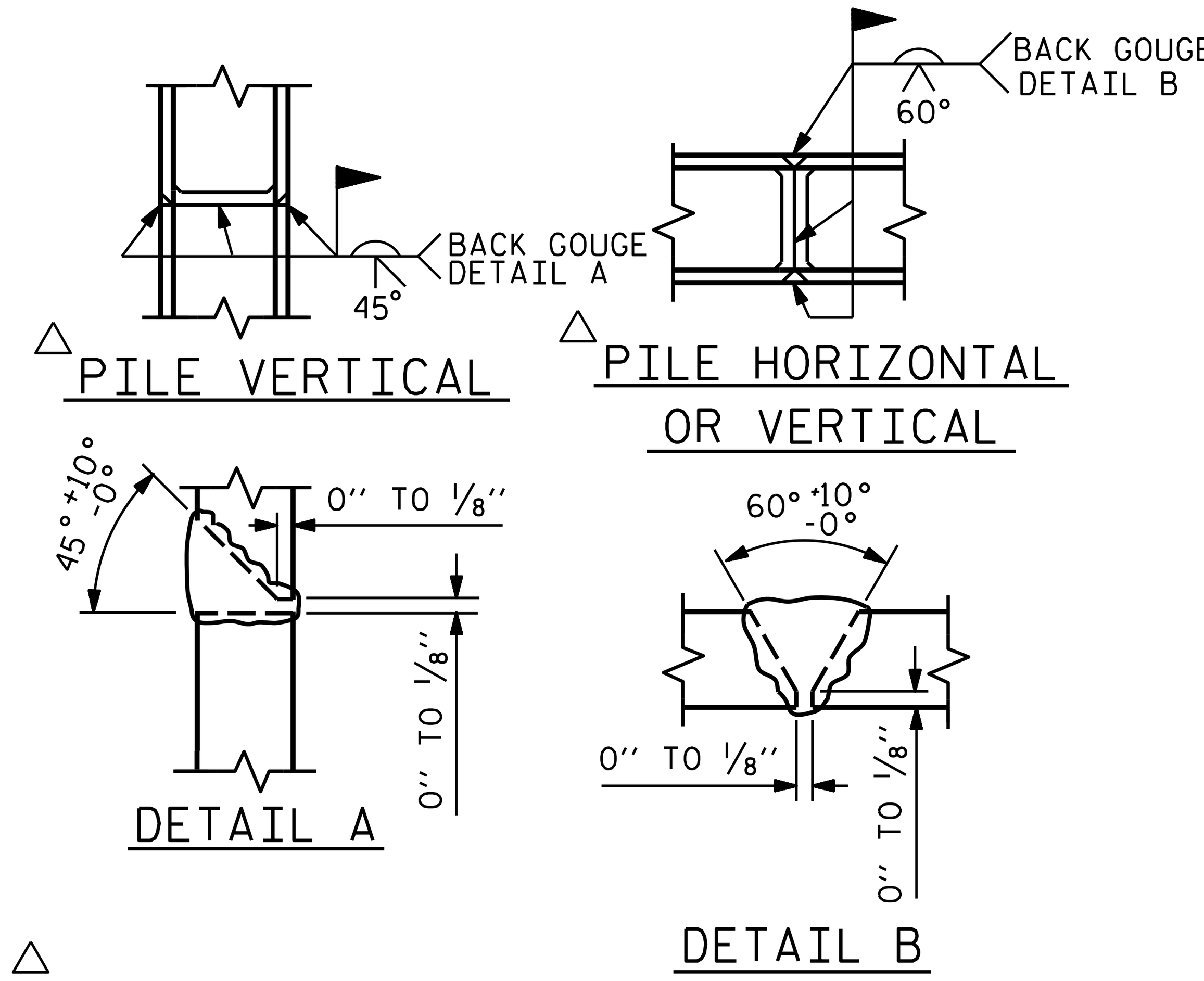


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

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

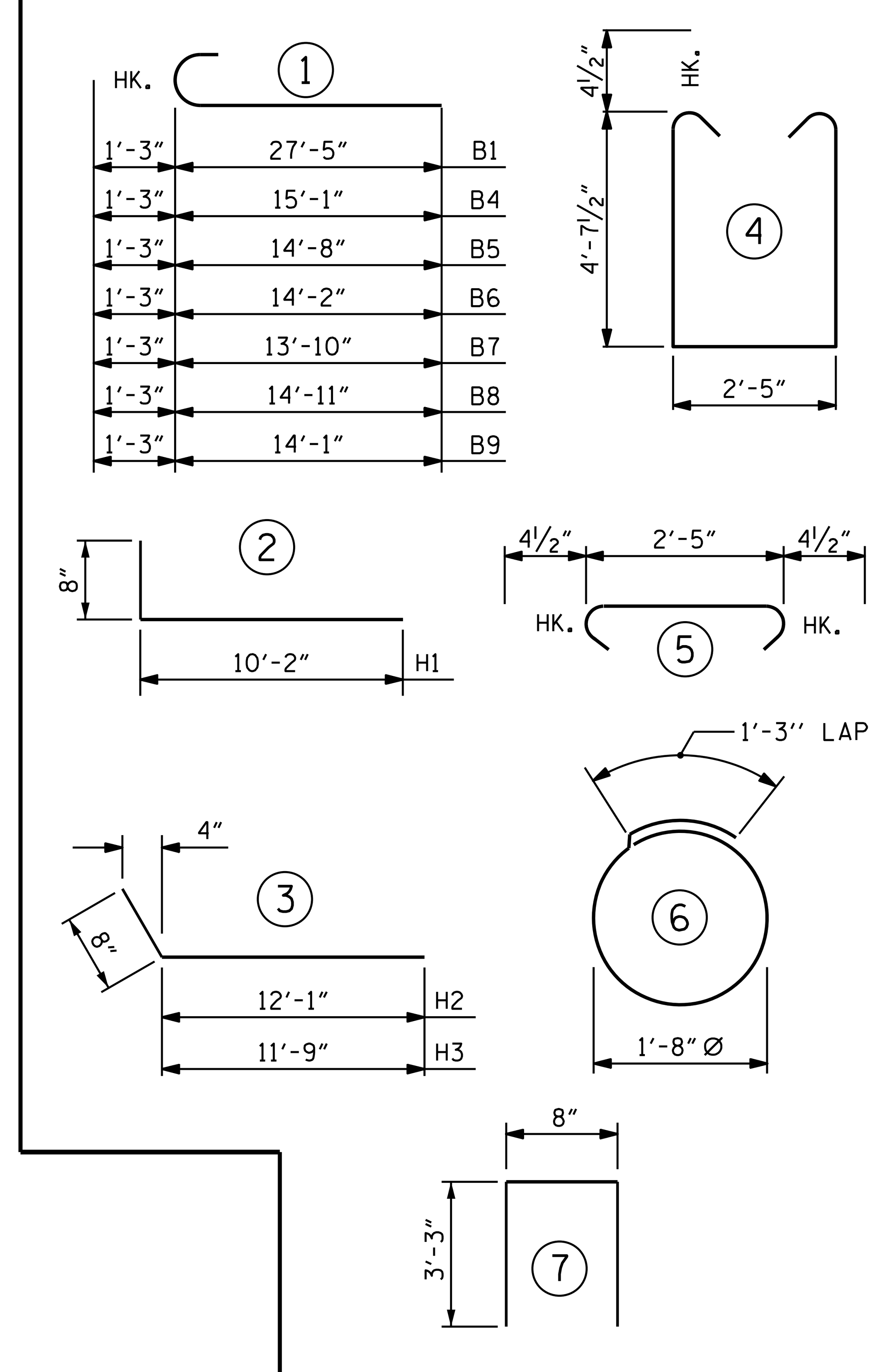
TEMPORARY DRAINAGE AT END BENT



△ POSITION OF PILE DURING WELDING.

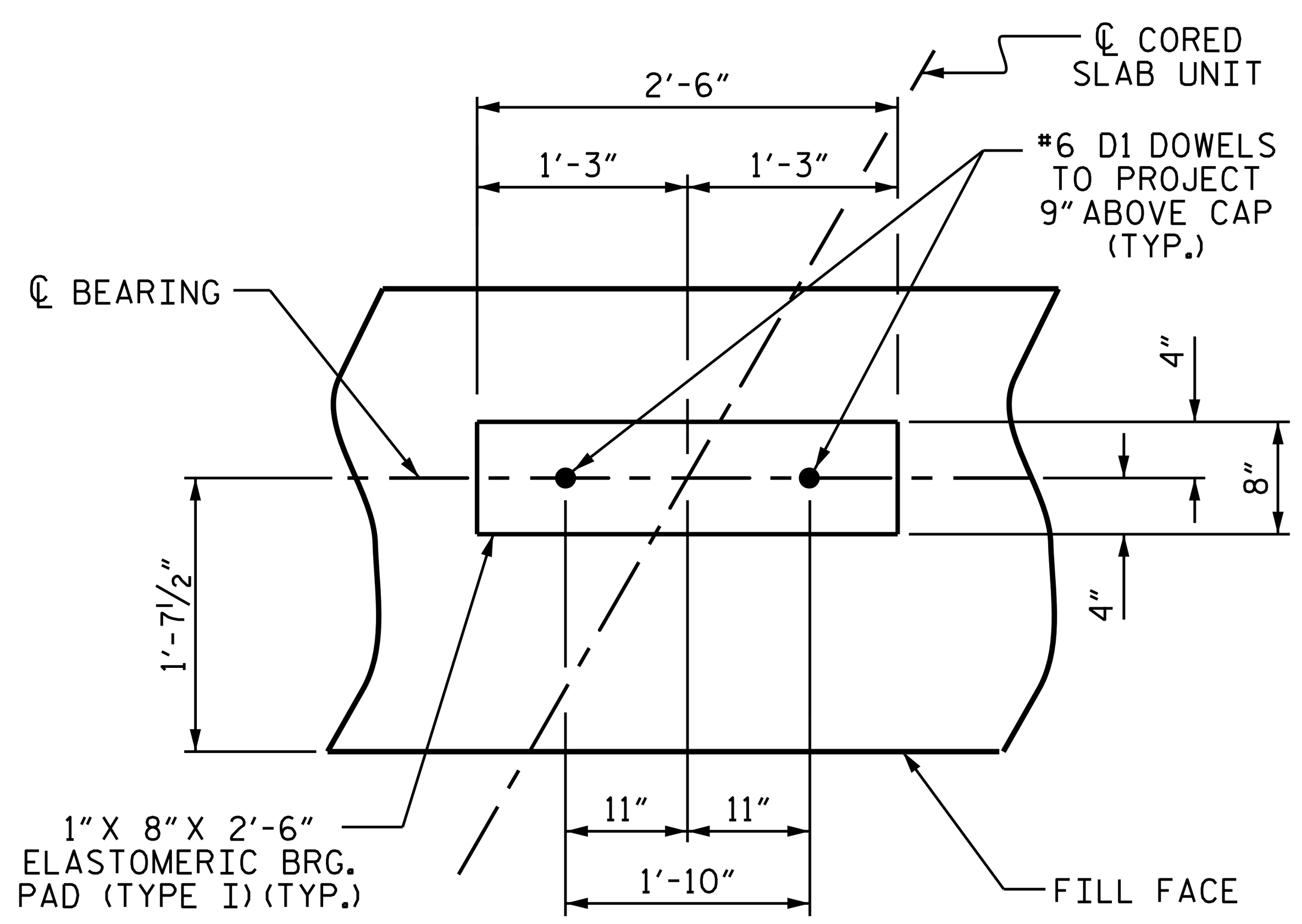
PILE SPLICE DETAILS

BAR TYPES

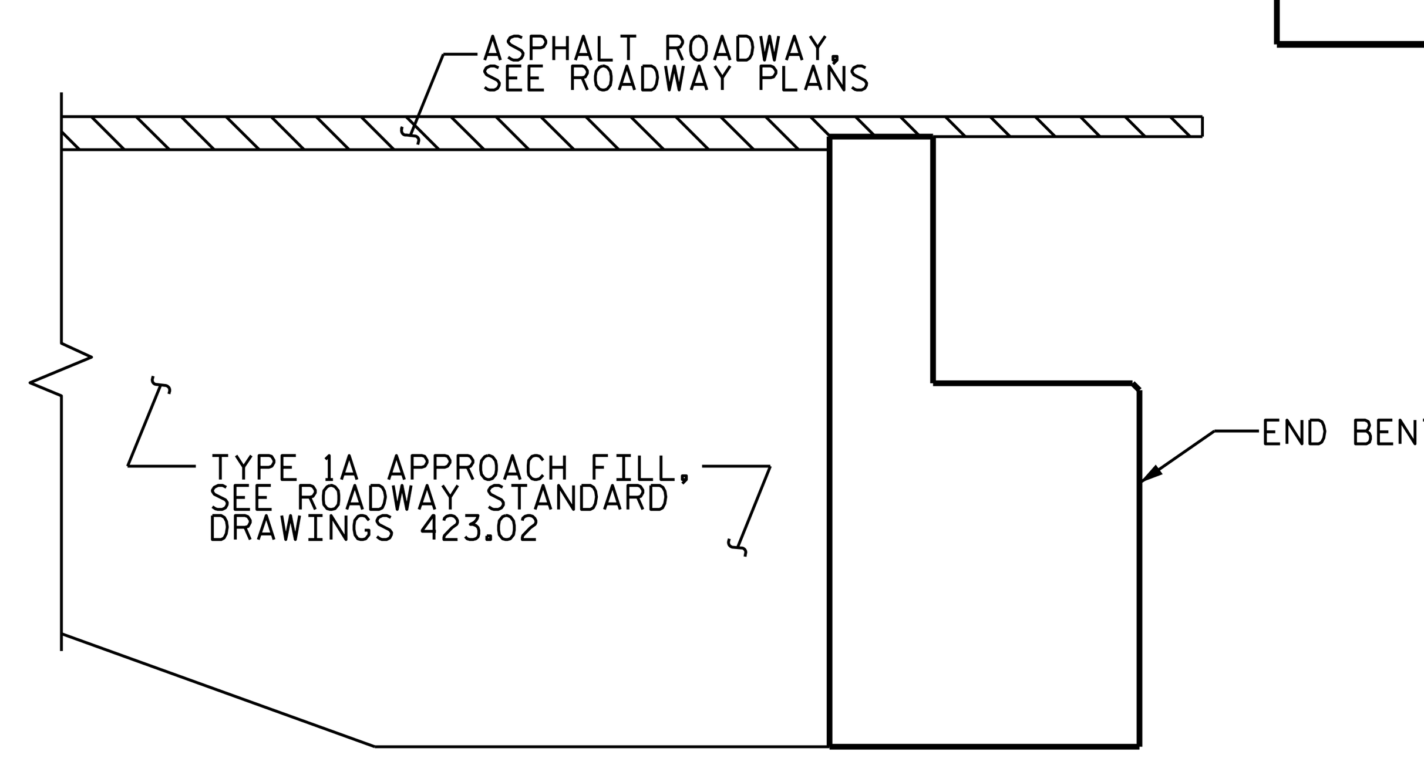


ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL - END BENT 1											
STAGE I						STAGE II					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	28'-8"	780	B4	2	#9	1	16'-4"	111
B2	18	#4	STR	29'-0"	349	B5	1	#9	1	15'-11"	54
B3	7	#4	STR	2'-5"	11	B6	1	#9	1	15'-5"	52
						B7	2	#9	1	15'-1"	103
D1	13	#6	STR	1'-6"	29	B8	1	#9	1	16'-2"	55
						B9	1	#9	1	15'-4"	52
H1	22	#5	2	10'-10"	249	B10	7	#4	STR	16'-0"	75
						B11	7	#4	STR	14'-9"	69
K1	8	#4	STR	5'-6"	29	B12	4	#4	STR	15'-1"	40
K2	4	#4	STR	29'-0"	77	B3	4	#4	STR	2'-5"	6
S1	29	#4	4	12'-5"	241	D1	7	#6	STR	1'-6"	16
S2	29	#4	5	3'-2"	61						
S3	16	#4	6	6'-6"	69	H2	11	#5	3	12'-9"	146
						H3	11	#5	3	12'-5"	142
U1	20	#4	7	7'-2"	96						
						K3	8	#4	STR	4'-5"	24
V1	34	#4	STR	7'-5"	168	K4	4	#4	STR	16'-0"	43
V2	40	#4	STR	6'-8"	178						
						S1	19	#4	4	12'-5"	158
						S2	19	#4	5	3'-2"	40
						S3	8	#4	6	6'-6"	35
						U1	12	#4	7	7'-2"	57
						V1	35	#4	STR	7'-5"	173
						V2	24	#4	STR	6'-8"	107
REINFORCING STEEL					2337 LBS.	REINFORCING STEEL					1558 LBS.
CLASS A CONCRETE						CLASS A CONCRETE					
POUR #1 CAP, LOWER PART OF WINGS & COLLARS					16.0 C.Y.	POUR #1 CAP, LOWER PART OF WINGS & COLLARS					10.5 C.Y.
POUR #2 UPPER PART OF WINGS & BACKWALL					3.2 C.Y.	POUR #2 UPPER PART OF WINGS & BACKWALL					2.5 C.Y.
TOTAL CLASS A CONCRETE					19.2 C.Y.	TOTAL CLASS A CONCRETE					13.0 C.Y.

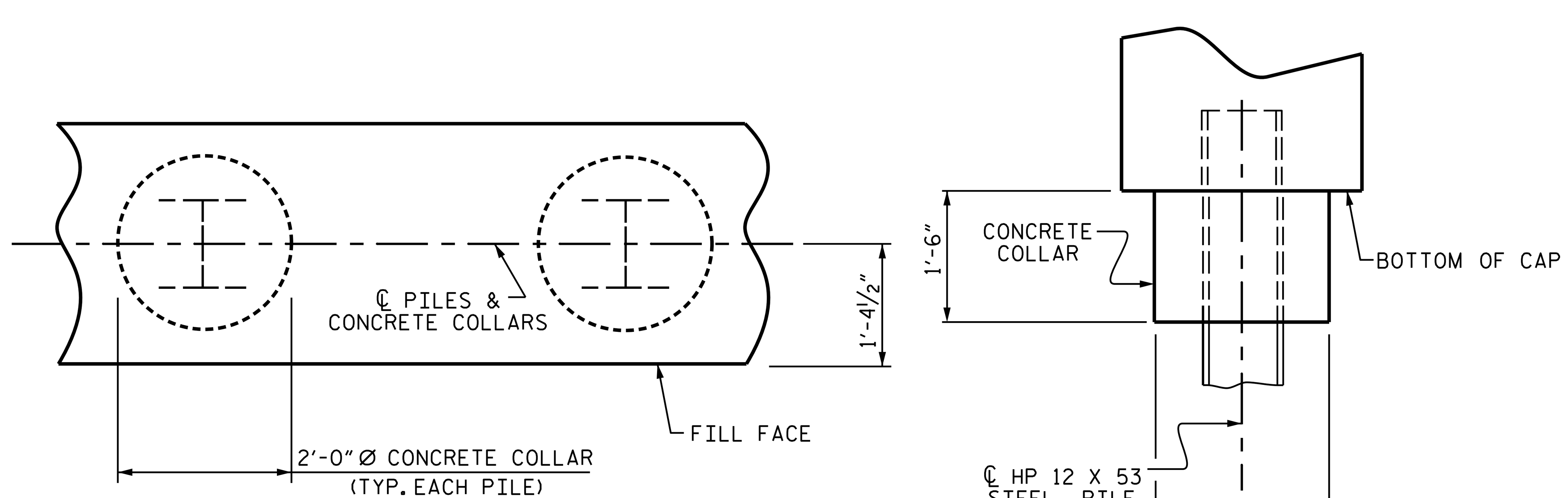


DETAIL ''A''

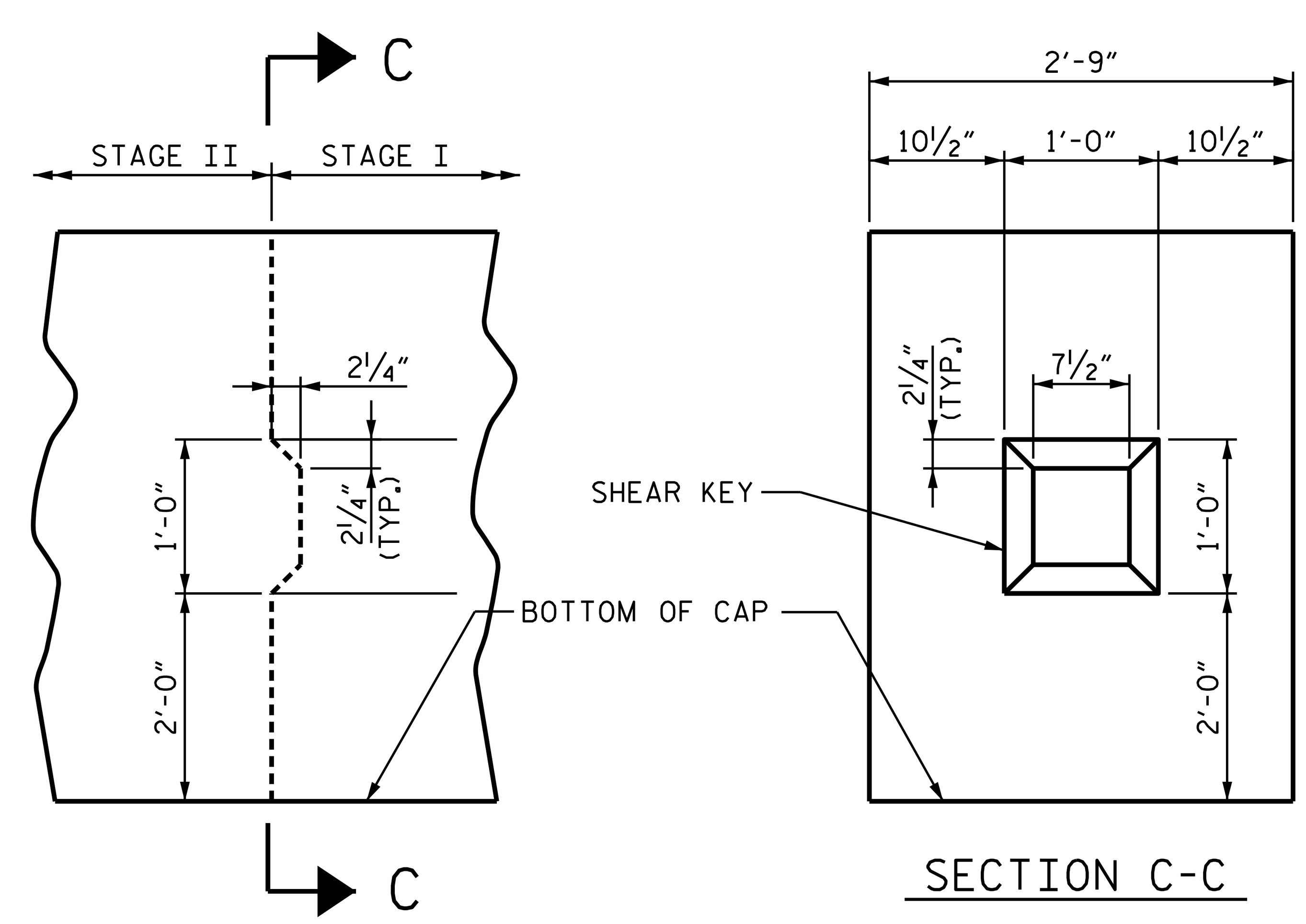


BACK FILL DETAILS

TOTAL QUANTITIES	
REINFORCING STEEL	3895 LBS.
CLASS A CONCRETE	32.2 C.Y.



CORROSION PROTECTION FOR STEEL PILES DETAIL



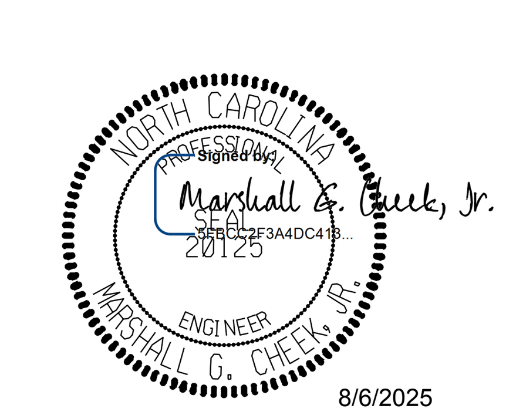
SHEAR KEY DETAIL

PROJECT NO. BP11-R046

ASHE COUNTY

STATION: 15+95.50 -L-

SHEET 5 OF 5



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201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 1
DETAILS

REVISIONS								SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:			S-22
1			3					TOTAL SHEETS
2			4					27

DRAWN BY :	ZCS	DATE :	7/25
CHECKED BY :	MGC	DATE :	8/25
DESIGN ENGINEER OF RECORD :	MGC	DATE :	8/25

8/5/2025
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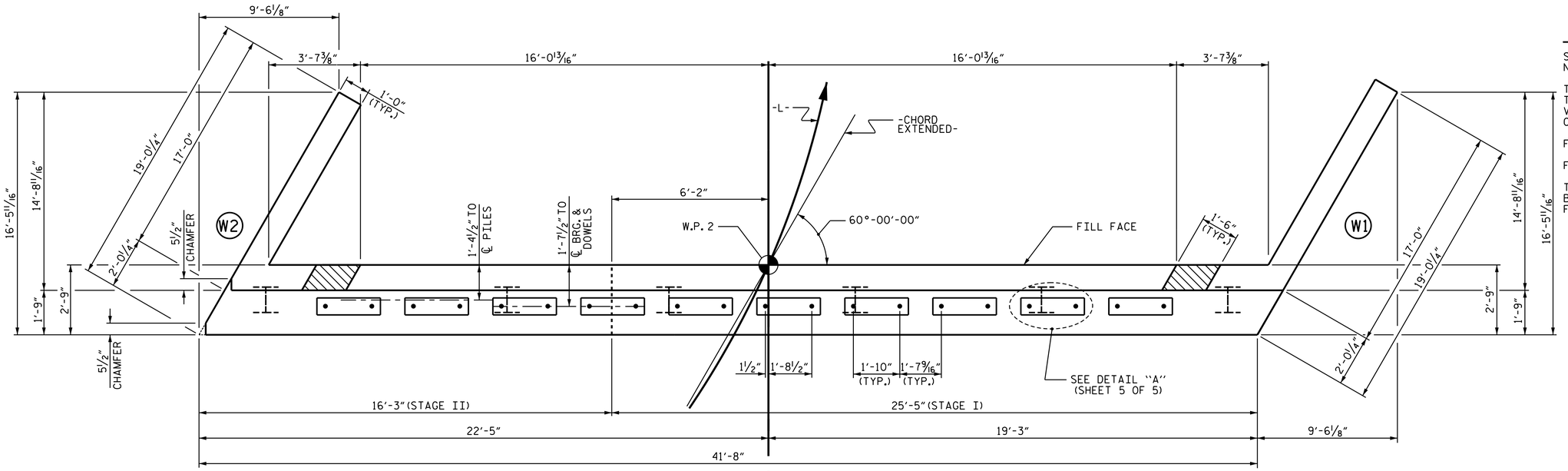
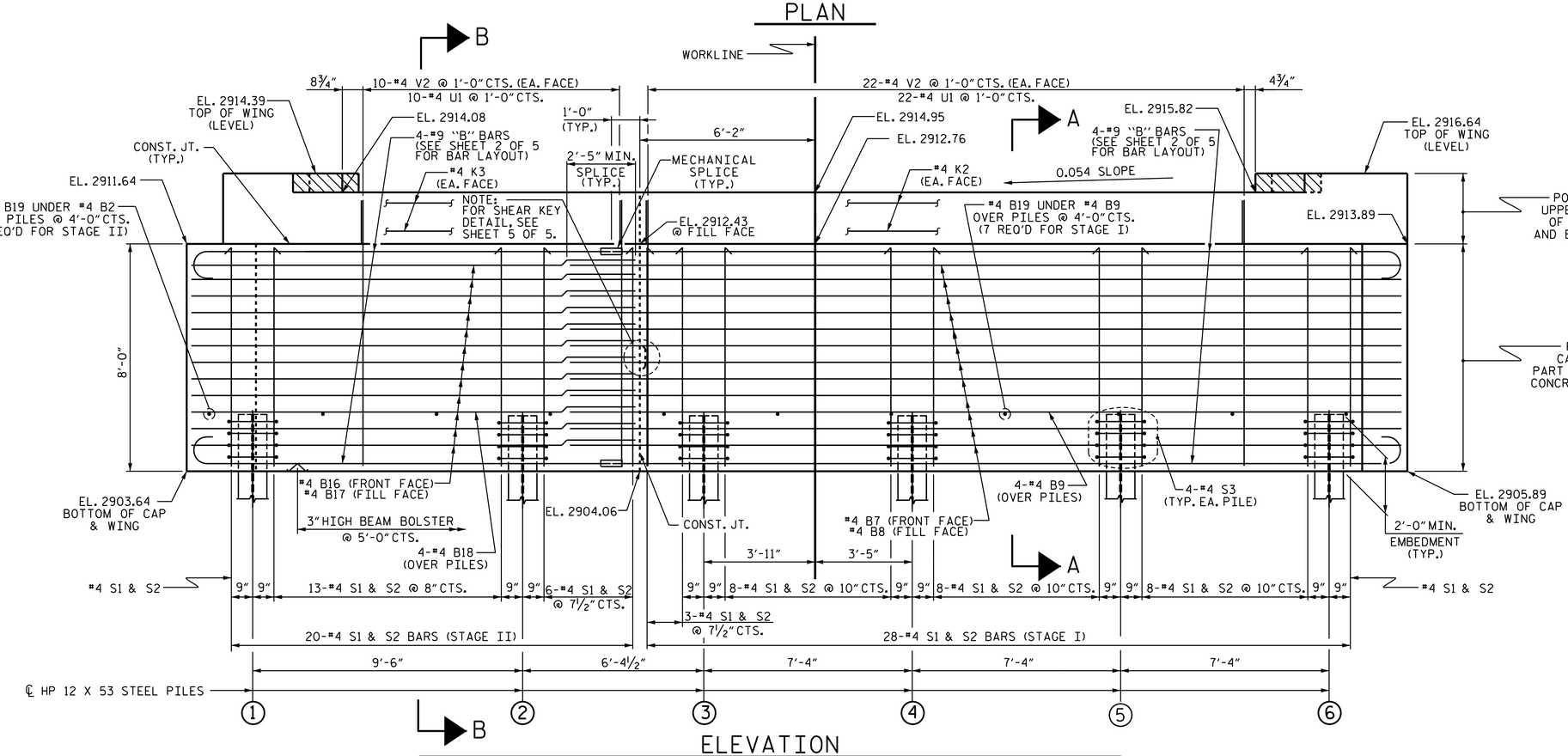
ZSmith



PLAN



ELEVATION

WINGS NOT SHOWN FOR CLARITY.
FOR SECTIONS A-A & B-B, SEE SHEET 3 OF 5.
CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 5 OF 5.

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 5 OF 5.

FOR WING DETAILS, SEE SHEET 4 OF 5.

THE COST OF THE MECHANICAL SPLICES SHALL BE INCLUDED IN THE CONTRACT PRICE BID FOR REINFORCING STEEL.

TOP OF PILE ELEVATIONS	
①	2905.72
②	2906.23
③	2906.57
④	2906.97
⑤	2907.37
⑥	2907.76

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20125 MARSHALL S. CHEEK, JR. Signed by: Marshall S. Cheek, Jr. 8/6/2025

8/6/2025

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201 W. MARION ST STE 200
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PROJECT NO. BP11-R046

ASHE COUNTY

STATION: 15+95.50 -L-

SHEET 1 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-23
1			3			TOTAL SHEETS
2			4			27

DRAWN BY :	ZCS	DATE :	7/25
CHECKED BY :	MGC	DATE :	8/25
DESIGN ENGINEER OF RECORD :	ZCS	DATE :	8/25

8/5/2025
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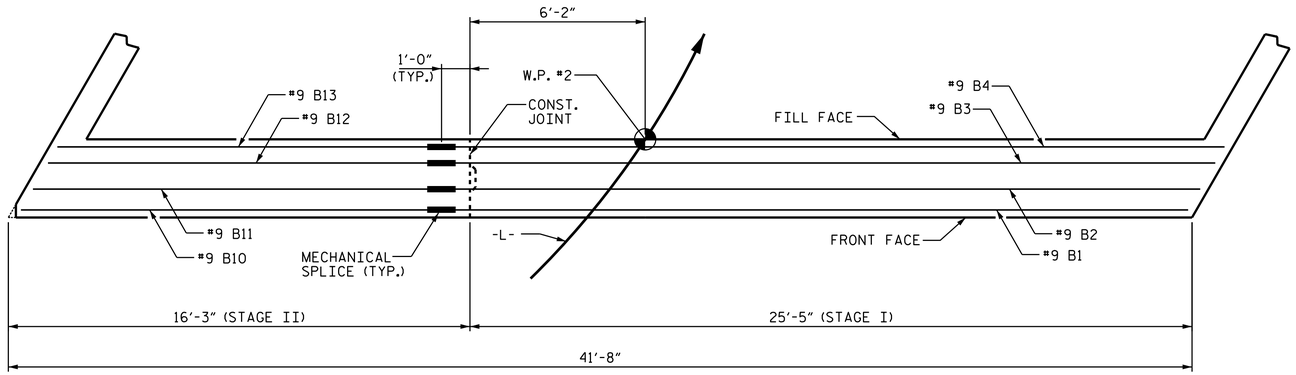
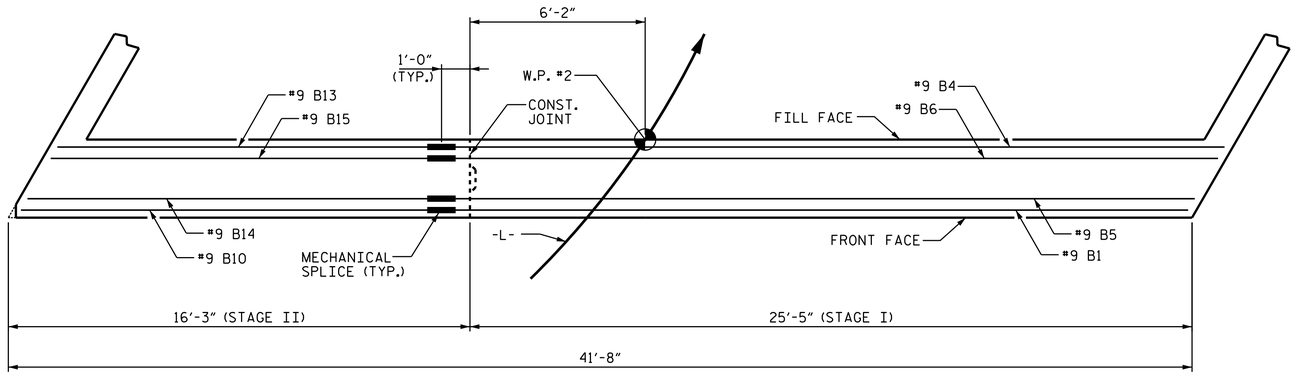
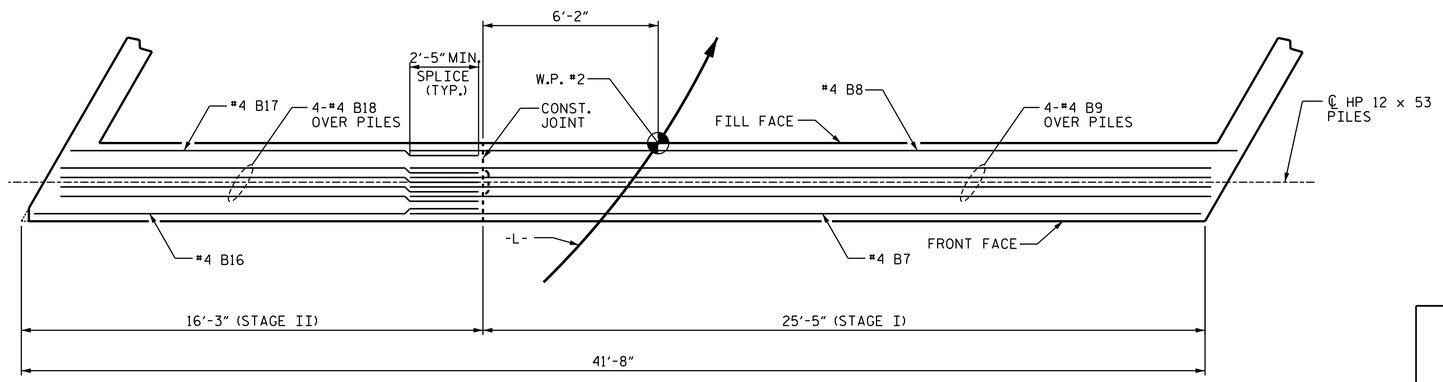


#9 "B" BARS - TOP OF CAP



#9 "B" BARS - BOTTOM OF CAP



#4 "B" BARS - FACES OF CAP AND OVER TOP OF PILES

PROJECT NO. BP11-R046

ASHE COUNTY

STATION: 15+95.50 -L-

SHEET 2 OF 5

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20125 MARSHALL G. CHEEK, JR. ENGINEER

Marshall G. Cheek, Jr.

8/6/2025

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DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-24
1			3			TOTAL SHEETS
2			4			27

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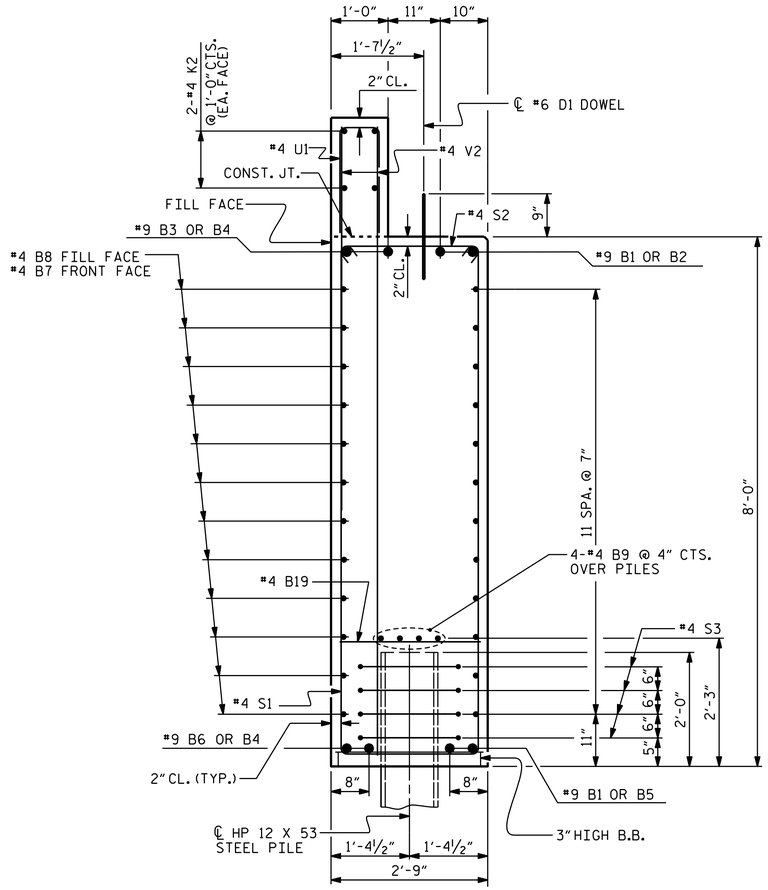
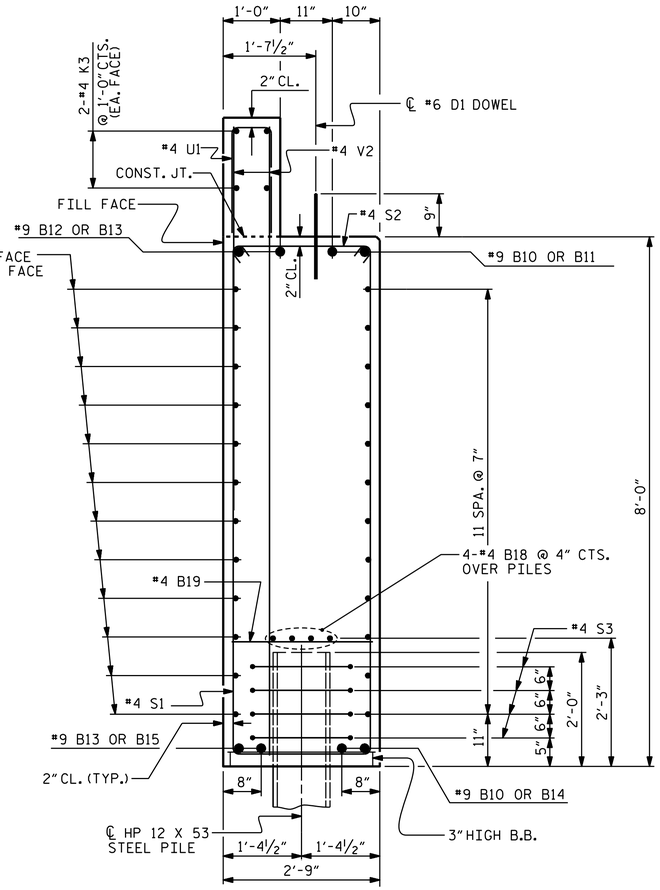
CHECKED BY :	MGC	DATE :	2/25
DESIGN ENGINEER OF RECORD :	ZCS	DATE :	3/25



SECTION A-A

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



SECTION B-B

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

PROJECT NO. BP11-R046

ASHE COUNTY

STATION: 15+95.50 -L-

SHEET 3 OF 5

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20125 — Marshall G. Cheek, Jr. — 8/6/2025

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DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-25
1			3			TOTAL SHEETS
2			4			27

DRAWN BY :	ZCS	DATE : 7/25
CHECKED BY :	MGC	DATE : 8/25
DESIGN ENGINEER OF RECORD :	ZCS	DATE : 8/25

8/5/2025
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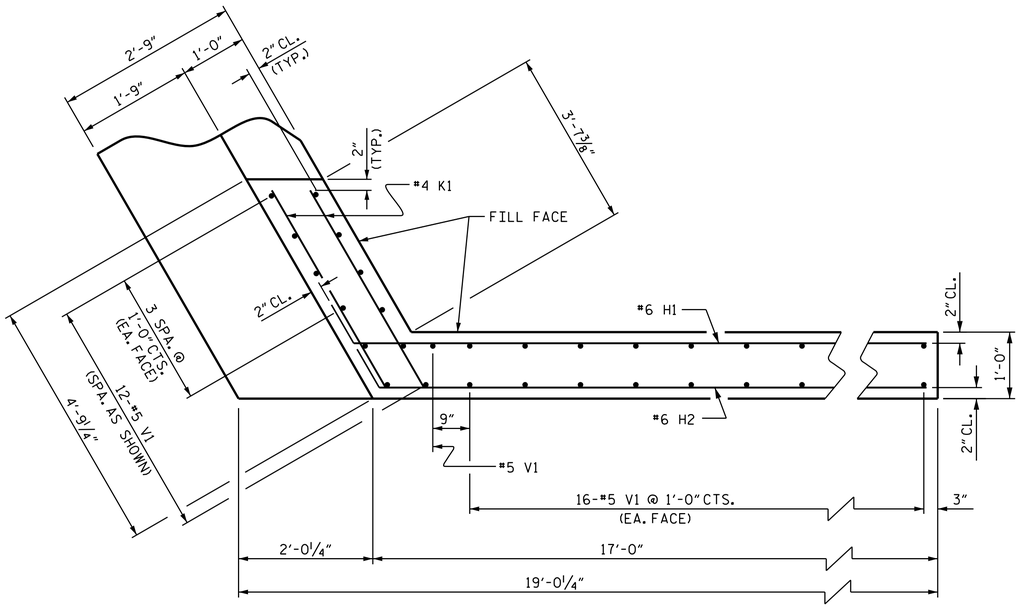
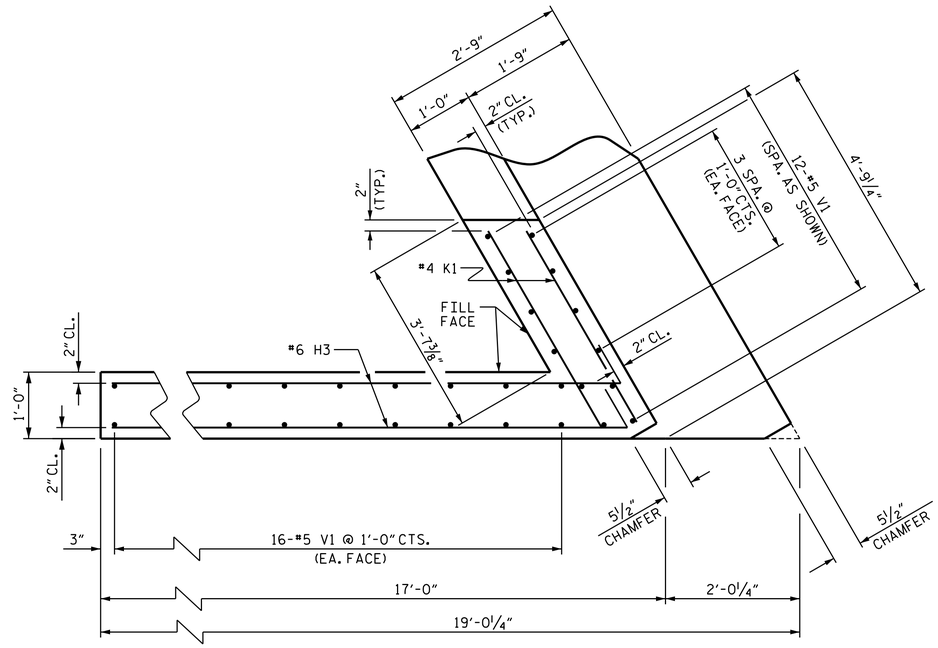
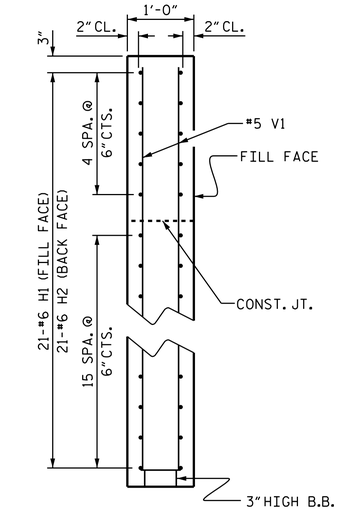
ZSmith



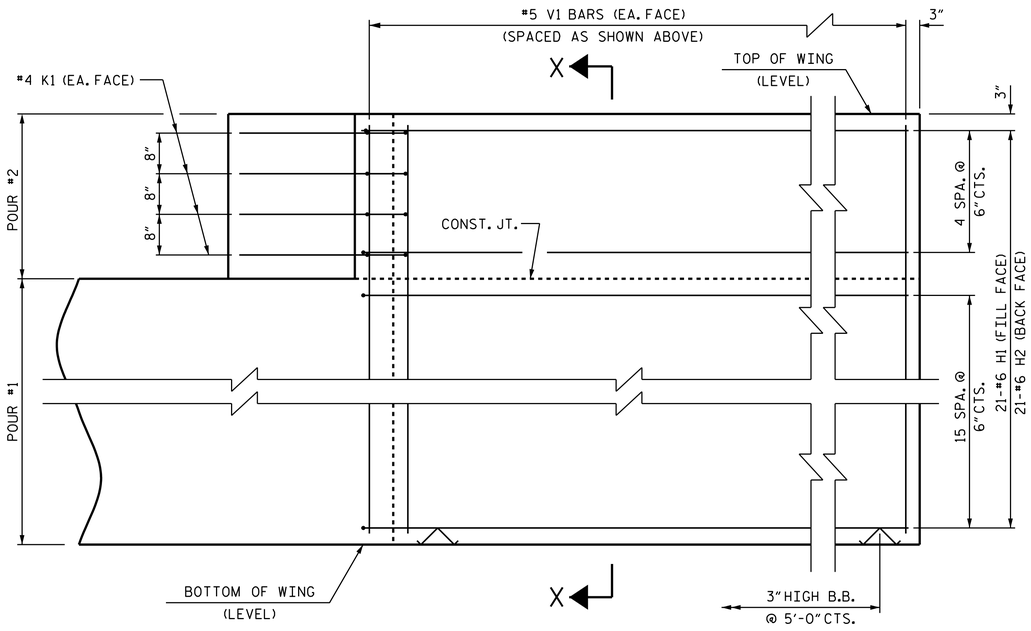
PLAN OF WING (W1)



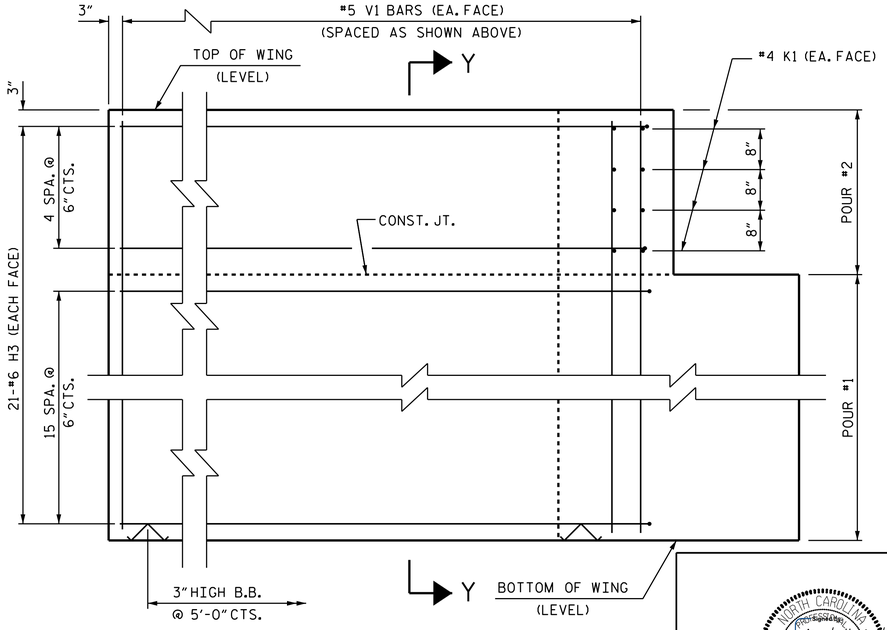
PLAN OF WING (W2)



SECTION X-X



ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

SECTION Y-Y

WING DETAILS

PROJECT NO. BP11-R046

ASHE COUNTY

STATION: 15+95.50 -L-

SHEET 4 OF 5

ASSEMBLED BY : ZCS	DATE : 7/25		
CHECKED BY : MGC	DATE : 8/25		
DRAWN BY : WJH 12/11	REV. 4/15	MAA/TMG	
CHECKED BY : AAC 12/11			

8/5/2025
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ZSmith

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20125 — Marshall G. Check, Jr. — MARSHALL G. CHECK, JR. — ENGINEER
8/6/2025

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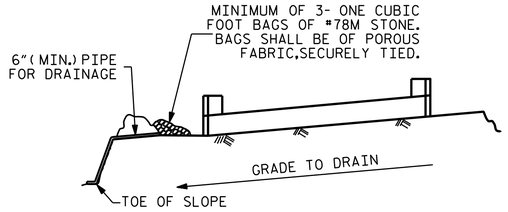
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE
END BENT 2
WING DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-26
1			3			TOTAL SHEETS
2			4			27

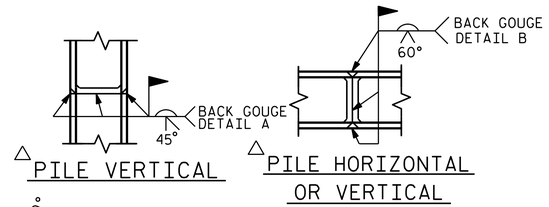


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

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

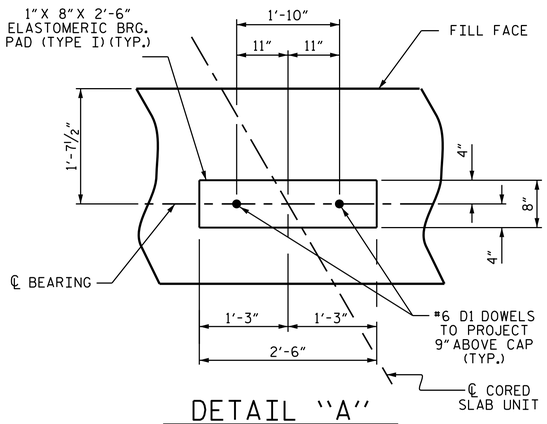
NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

TEMPORARY DRAINAGE AT END BENT

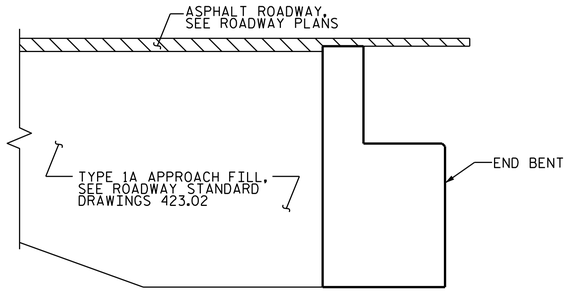


△ POSITION OF PILE DURING WELDING.

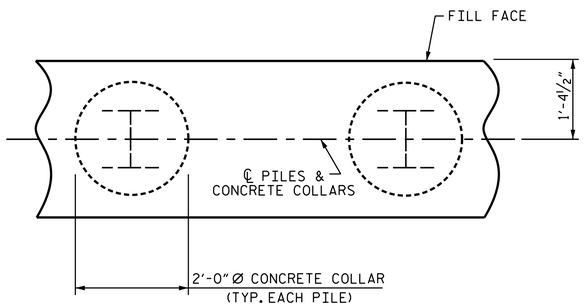
PILE SPLICE DETAILS



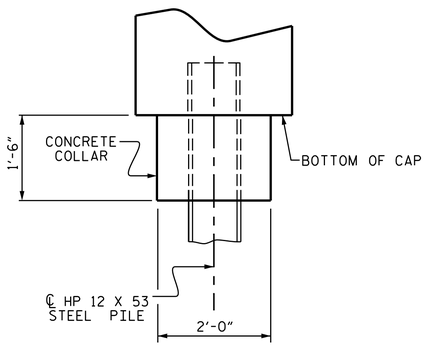
DETAIL ''A''



BACK FILL DETAILS

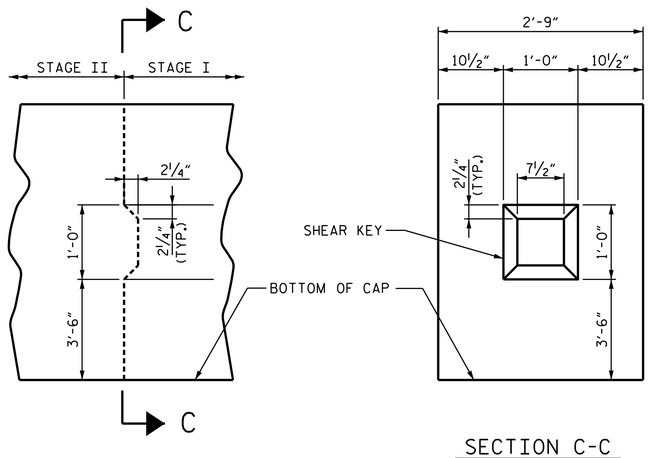


PLAN



ELEVATION

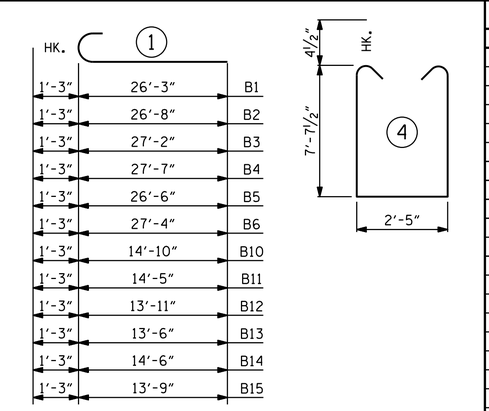
CORROSION PROTECTION FOR STEEL PILES DETAIL

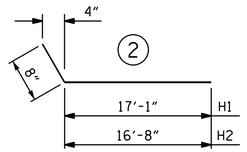


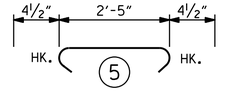
SECTION C-C

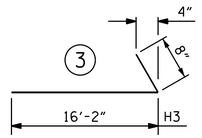
SHEAR KEY DETAIL

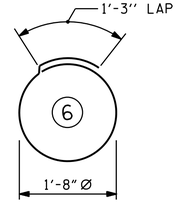
BAR TYPES

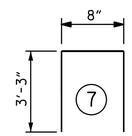












ALL BAR DIMENSIONS ARE OUT TO OUT.

BILL OF MATERIAL - END BENT 2

STAGE I

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	2	#9	1	27'-6"	187
B2	1	#9	1	27'-11"	95
B3	1	#9	1	28'-5"	97
B4	2	#9	1	28'-10"	196
B5	1	#9	1	27'-9"	94
B6	1	#9	1	28'-7"	97
B7	12	#4	STR	27'-10"	223
B8	12	#4	STR	29'-2"	234
B9	4	#4	STR	28'-2"	75
B19	7	#4	STR	2'-5"	11
D1	13	#6	STR	1'-6"	29
H1	21	#6	2	17'-9"	560
H2	21	#6	2	17'-4"	547
K1	8	#4	STR	4'-2"	22
K2	4	#4	STR	29'-2"	78
S1	28	#4	4	18'-5"	344
S2	28	#4	5	3'-2"	59
S3	16	#4	6	6'-6"	69
U1	22	#4	7	7'-2"	105
V1	45	#5	STR	10'-5"	489
V2	44	#5	STR	9'-8"	444

REINFORCING STEEL 4055 LBS.

CLASS A CONCRETE

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 26.8 C.Y.

POUR #2 UPPER PART OF WINGS & BACKWALL 3.8 C.Y.

TOTAL CLASS A CONCRETE 30.6 C.Y.

STAGE II

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B10	2	#9	1	16'-1"	109
B11	1	#9	1	15'-8"	53
B12	1	#9	1	15'-2"	52
B13	2	#9	1	14'-9"	100
B14	1	#9	1	15'-9"	54
B15	1	#9	1	15'-0"	51
B16	12	#4	STR	15'-9"	126
B17	12	#4	STR	14'-7"	117
B18	4	#4	STR	14'-8"	39
B19	4	#4	STR	2'-5"	6
D1	7	#6	STR	1'-6"	16
H3	42	#6	3	16'-10"	1062
K1	8	#4	STR	4'-2"	22
K3	4	#4	STR	14'-6"	39
S1	20	#4	4	18'-5"	246
S2	20	#4	5	3'-2"	42
S3	8	#4	6	6'-6"	35
U1	10	#4	7	7'-2"	48
V1	44	#5	STR	10'-5"	478
V2	20	#5	STR	9'-8"	202

REINFORCING STEEL 2897 LBS.

CLASS A CONCRETE

POUR #1 CAP, LOWER PART OF WINGS & COLLARS 17.5 C.Y.

POUR #2 UPPER PART OF WINGS & BACKWALL 2.9 C.Y.

TOTAL CLASS A CONCRETE 20.4 C.Y.

TOTAL QUANTITIES

REINFORCING STEEL	6952 LBS.
CLASS A CONCRETE	51.0 C.Y.

PROJECT NO. BP11-R046

ASHE COUNTY

STATION: 15+95.50 -L-

SHEET 5 OF 5

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 20129 MARSHALL G. CHEEK, JR. Marshall G. Cheek, Jr.

8/6/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TGS ENGINEERS
201 W. MARION ST STE 200
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

SUBSTRUCTURE

END BENT 2 DETAILS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-27
1			3			TOTAL SHEETS
2			4			27

DRAWN BY :	ZCS	DATE :	7/25
CHECKED BY :	MGC	DATE :	8/25
DESIGN ENGINEER OF RECORD :	MGC	DATE :	8/25

8/5/2025
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ZSmith

8/26/21

STANDARD NOTES

DESIGN DATA:

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

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2024 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

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

CONCRETE:

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

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO ½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A ¼" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

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

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

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE ⅞" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾" Ø STUDS BASED ON THE RATIO OF 3 - ⅞"Ø STUDS FOR 4 - ¾" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST $\frac{5}{16}$" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY $\frac{1}{16}$" OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

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