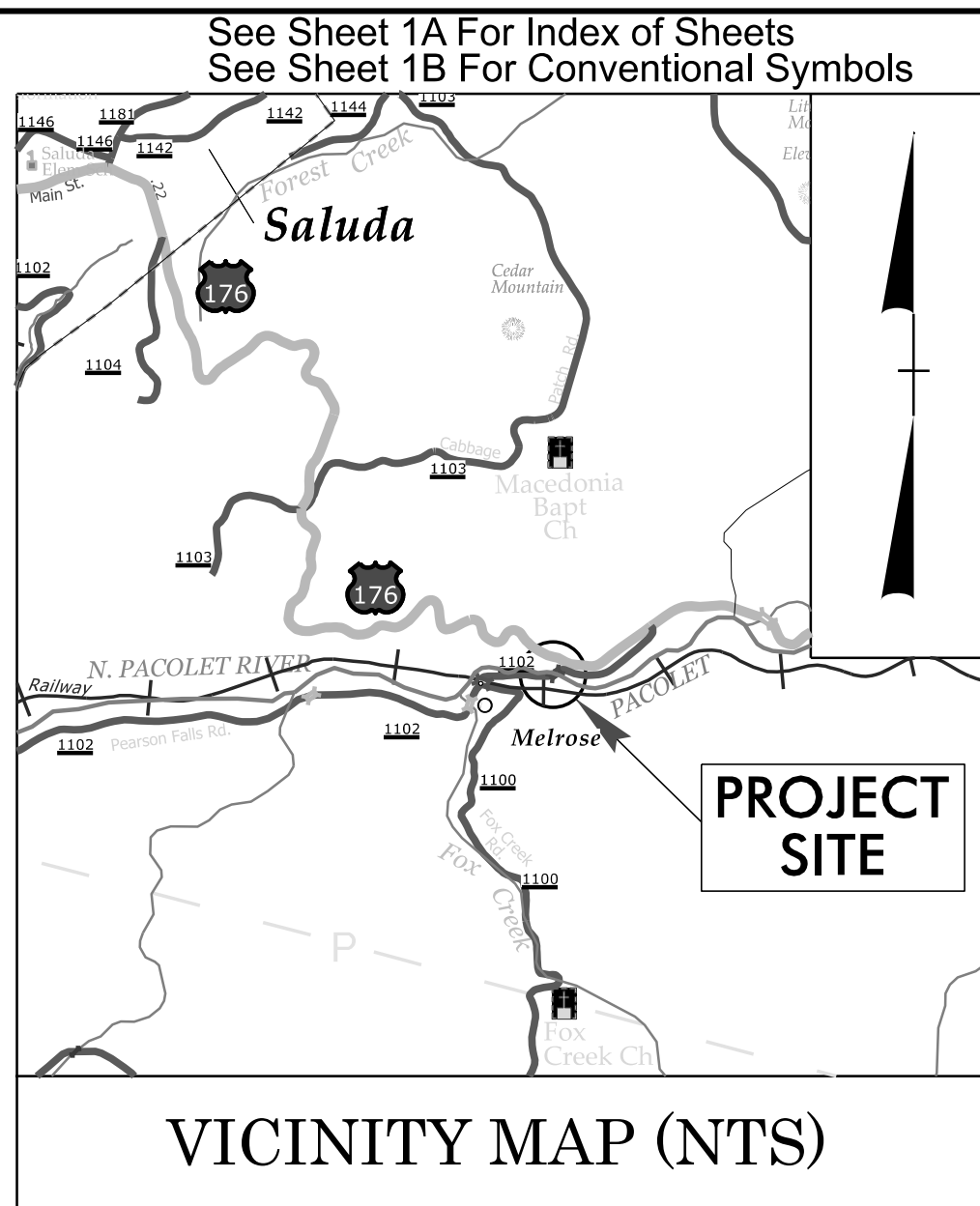


**This electronic collection of documents is provided  
for the convenience of the user  
and is Not a Certified Document –**

**The documents contained herein were originally issued  
and sealed by the individuals whose names and license  
numbers appear on each page, on the dates appearing  
with their signature on that page.**

**This file or an individual page  
shall not be considered a certified document.**

CONTRACT: DN01130 BRIDGE PROJECT: BP14-R038



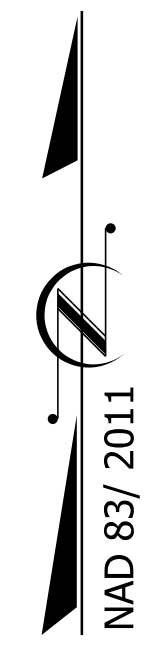
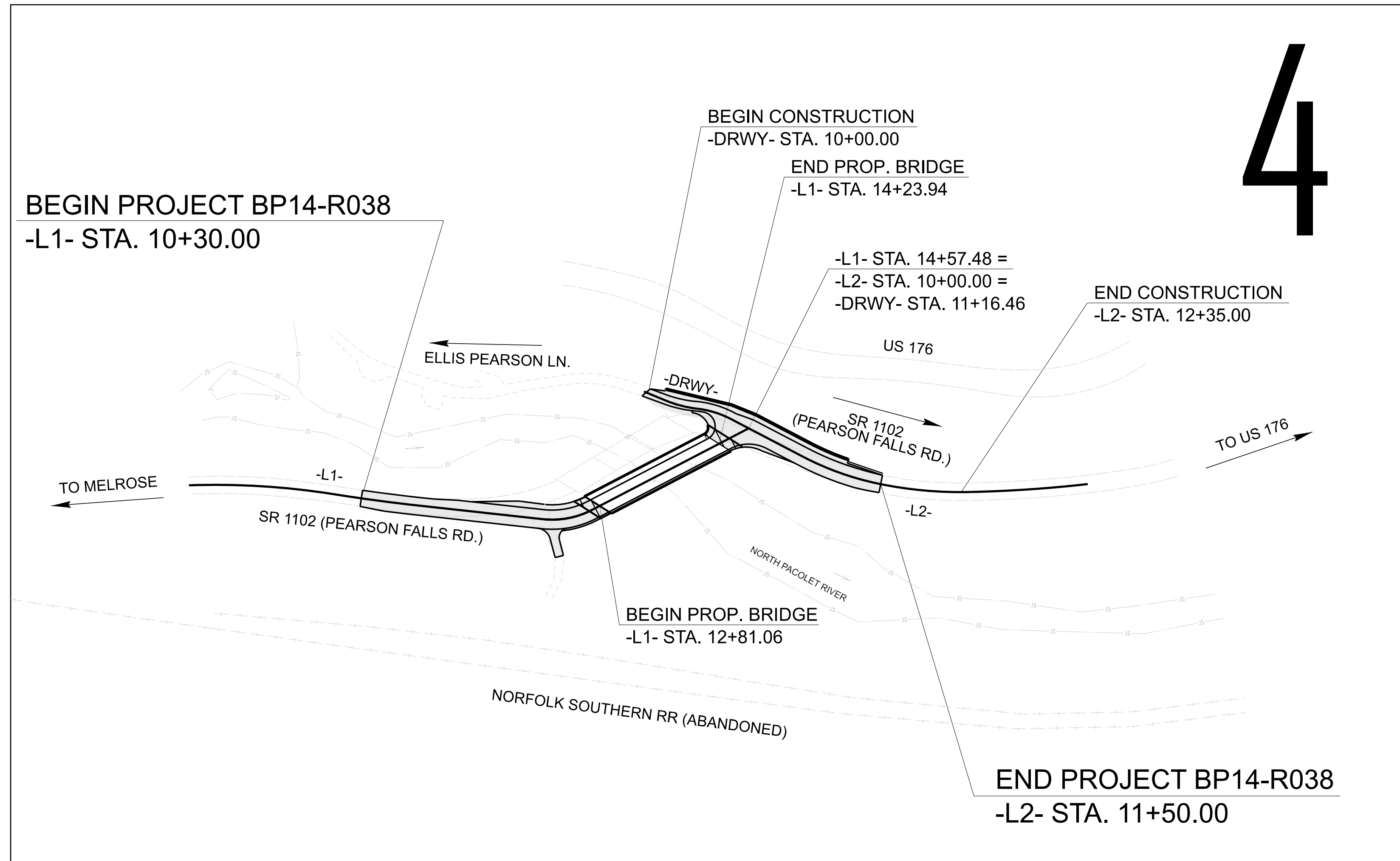
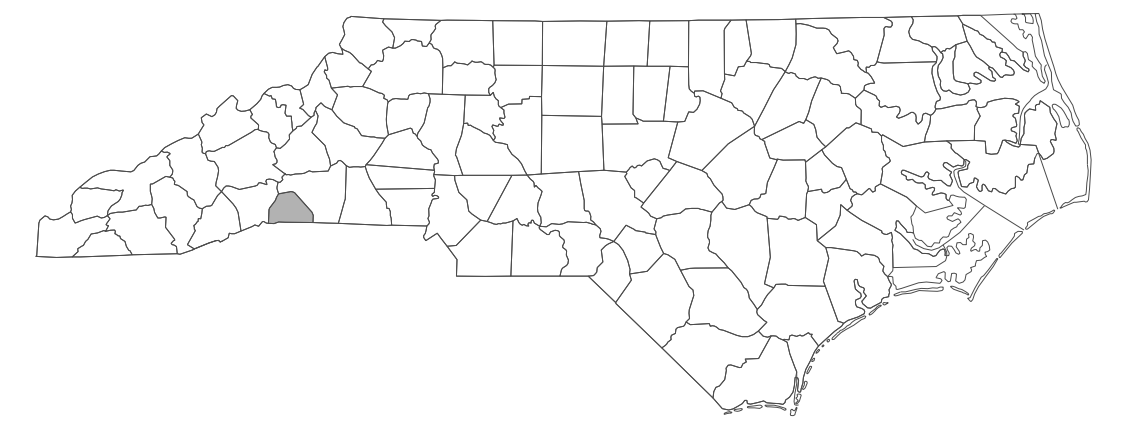
# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

## POLK COUNTY

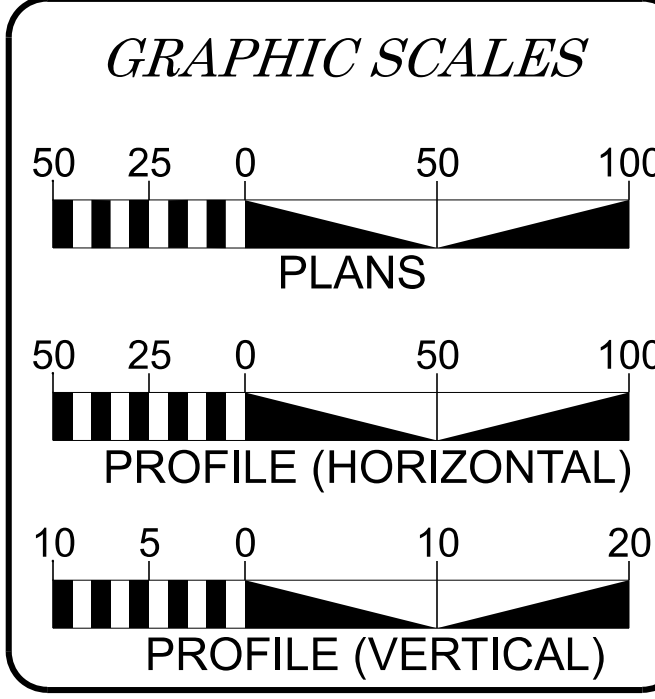
LOCATION: *REPLACE BRIDGE #740009 ON SR 1102 (PEARSON FALLS ROAD) OVER NORTH PACOLET RIVER*

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP14-R038	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
BP14.R038.1		PE	
BP14.R038.2		ROW/UTILITY	
BP14.R038.3		CONST.	



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



**DESIGN DATA**

ADT 2019 =	140
ADT 2022 =	250
K =	N/A
D =	N/A
T =	N/A *
V =	30 MPH
* TTST N/A	DUAL N/A
FUNC CLASS =	LOCAL
	SUBREGIONAL TIER

**PROJECT LENGTH**

PROJECT LENGTHS FOR BRIDGE PROJECT BP14-R038:
LENGTH ROADWAY PROJECT BP14-R038 = 0.082 MILES
LENGTH STRUCTURES PROJECT BP14-R038 = 0.027 MILES
TOTAL LENGTH PROJECT BP14-R038 = 0.109 MILES
(PROJECT LENGTHS BASED ON -L1- AND -L2-)

NCDOT Contact: ZACH SHULER, P.E.  
Prepared in the Office of:

2024 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
MARCH 11, 2025

**LETTING DATE:**  
JANUARY 13, 2026

**THAD F. DUNCAN, PE**  
PROJECT ENGINEER

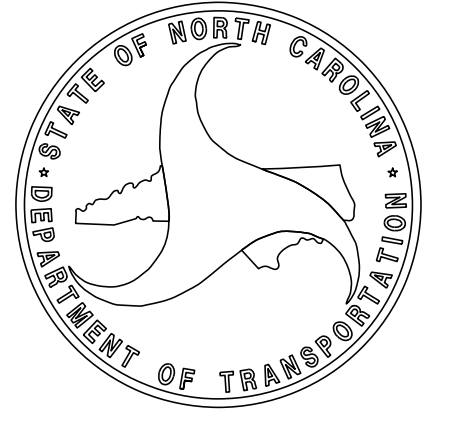
**LANG PHOMMACHANH, PE**  
PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**  
11/5/2025

DocuSigned by:  
*Eric Berger*  
510984782448E... P.E.

**ROADWAY DESIGN ENGINEER**  
11/4/2025

DocuSigned by:  
*Thad Duncan*  
510984782448E... P.E.



INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1 THRU 2A-2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1 THRU 2C-8	SPECIAL DETAILS
2G-1	DETAIL OF TEMPORARY SHORING
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
4 THRU 5	PLAN AND PROFILE SHEET
RW-1 THRU RW-4	SURVEY CONTROL, EXISTING CENTERLINES, RIGHT OF WAY, EASEMENT AND PROPERTY TIES
TMP-1 THRU TMP-6	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
SIGN-1 THRU SIGN-3	SIGNING PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1	CROSS-SECTION INDEX
X-1A	CROSS-SECTION SUMMARY SHEET
X-2 THRU X-12	CROSS-SECTIONS
W-1 THRU W-2	WALL PLANS
S-1 THRU S-32	STRUCTURE PLANS
STRUCTURE STANDARD NOTES	

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	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.06	Method of Grading Sight Distance at Intersections
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation (Use Details in Lieu of Standards for Sheets 1 and 2 of 2)
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
423.01	Bridge Approach Fills - Type 1 Approach Fill for Bridge Abutment
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of 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
857.01	Precast Reinforced Concrete Barrier - 41" Single Faced
862.01	Guardrail Placement (Use Details in Lieu of Standards for Sheets 4, 6, 12, and 14 of 15)
862.02	Guardrail Installation (Use Detail in Lieu of Standard for Sheet 5 of 9)
862.03	Structure Anchor Units (Use Detail in Lieu of Standard for Sheet 8 of 9)
876.02	Guide for Rip Rap at Pipe Outlets

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

GRADE LINE:  
GRADING AND SURFACING:

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

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

SIDE ROADS:

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

SUBSURFACE DRAINS:

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

GUARDRAIL:

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

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR 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
- TELECOMMUNICATIONS
- RIVERSTREET NETWORKS
- SEGRA
- WINDSTREAM
- DUKE ENERGY

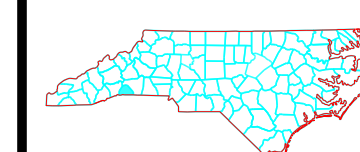
RIGHT-OF-WAY MARKERS:

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

BP14-R038

4RDI IA

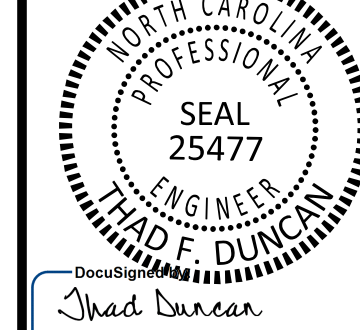
NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
POLK COUNTY



ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

12/1/2025



DocuSign  
1E108E817F2435

PREPARED BY



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

# 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	----- X
Existing Concrete Monument (ECM)	----- □ ECM
Parcel / Sequence Number	----- (23)
Existing Fence Line	----- x-x-x-x
Proposed Woven Wire Fence	----- ○
Proposed Chain Link Fence	----- □
Proposed Barbed Wire Fence	----- ◇
Existing Wetland Boundary	----- WLB
Proposed Wetland Boundary	----- WLB
Existing Endangered Animal Boundary	----- EAB
Existing Endangered Plant Boundary	----- EPB
Existing Historic Property Boundary	----- HPB

Known Contamination Area: Soil	----- S-S-S-S
Potential Contamination Area: Soil	----- S-S-S-S
Known Contamination Area: Water	----- W-W-W-W
Potential Contamination Area: Water	----- W-W-W-W
Contaminated Site: Known or Potential	----- ☠ ☡

### BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	----- ○
Sign	----- ○
Well	----- W
Small Mine	----- X
Foundation	----- □
Area Outline	----- □
Cemetery	----- □
Building	----- □
School	----- □
Church	----- □
Dam	----- ▬

### HYDROLOGY:

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

### RAILROADS:

Standard Gauge	-----
RR Signal Milepost	-----
Switch	-----
RR Abandoned	-----
RR Dismantled	-----

### RIGHT OF WAY & PROJECT CONTROL:

Primary Horiz Control Point	-----
Primary Horiz and Vert Control Point	-----
Secondary Horiz and Vert Control Point	-----
Vertical Benchmark	-----
Existing Right of Way Monument	-----
Proposed Right of Way Monument (Rebar and Cap)	-----
Proposed Right of Way Monument (Concrete)	-----
Existing Permanent Easement Monument	-----
Proposed Permanent Easement Monument (Rebar and Cap)	-----
Existing C/A Monument	-----
Proposed C/A Monument (Rebar and Cap)	-----
Proposed C/A Monument (Concrete)	-----
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Existing Control of Access Line	-----
Proposed Control of Access Line	-----
Proposed ROW and CA Line	-----
Existing Easement Line	-----
Proposed Temporary Construction Easement	-----
Proposed Temporary Drainage Easement	-----
Proposed Permanent Drainage Easement	-----
Proposed Permanent Drainage/Utility Easement	-----
Proposed Permanent Utility Easement	-----
Proposed Temporary Utility Easement	-----
Proposed Aerial Utility Easement	-----

### ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	-----
Proposed Slope Stakes Fill	-----
Proposed Curb Ramp	-----
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	-----
Pavement Removal	-----
VEGETATION:	
Single Tree	-----
Single Shrub	-----
Hedge	-----

Woods Line	-----
Orchard	-----
Vineyard	-----

### EXISTING STRUCTURES:

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

### UTILITIES:

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

POWER:	
Existing Power Pole	-----
Proposed Power Pole	-----
Existing Joint Use Pole	-----
Proposed Joint Use Pole	-----
Power Manhole	-----
Power Line Tower	-----
Power Transformer	-----
U/G Power Cable Hand Hole	-----
H-Frame Pole	-----
U/G Power Line Test Hole (SUE - LOS A)*	-----
U/G Power Line (SUE - LOS B)*	-----
U/G Power Line (SUE - LOS C)*	-----
U/G Power Line (SUE - LOS D)*	-----

### TELEPHONE:

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

### WATER:

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

### TV:

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

### GAS:

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

### SANITARY SEWER:

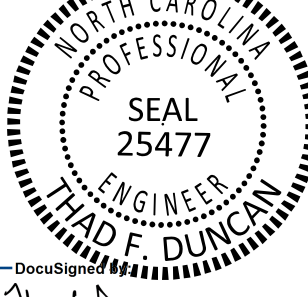
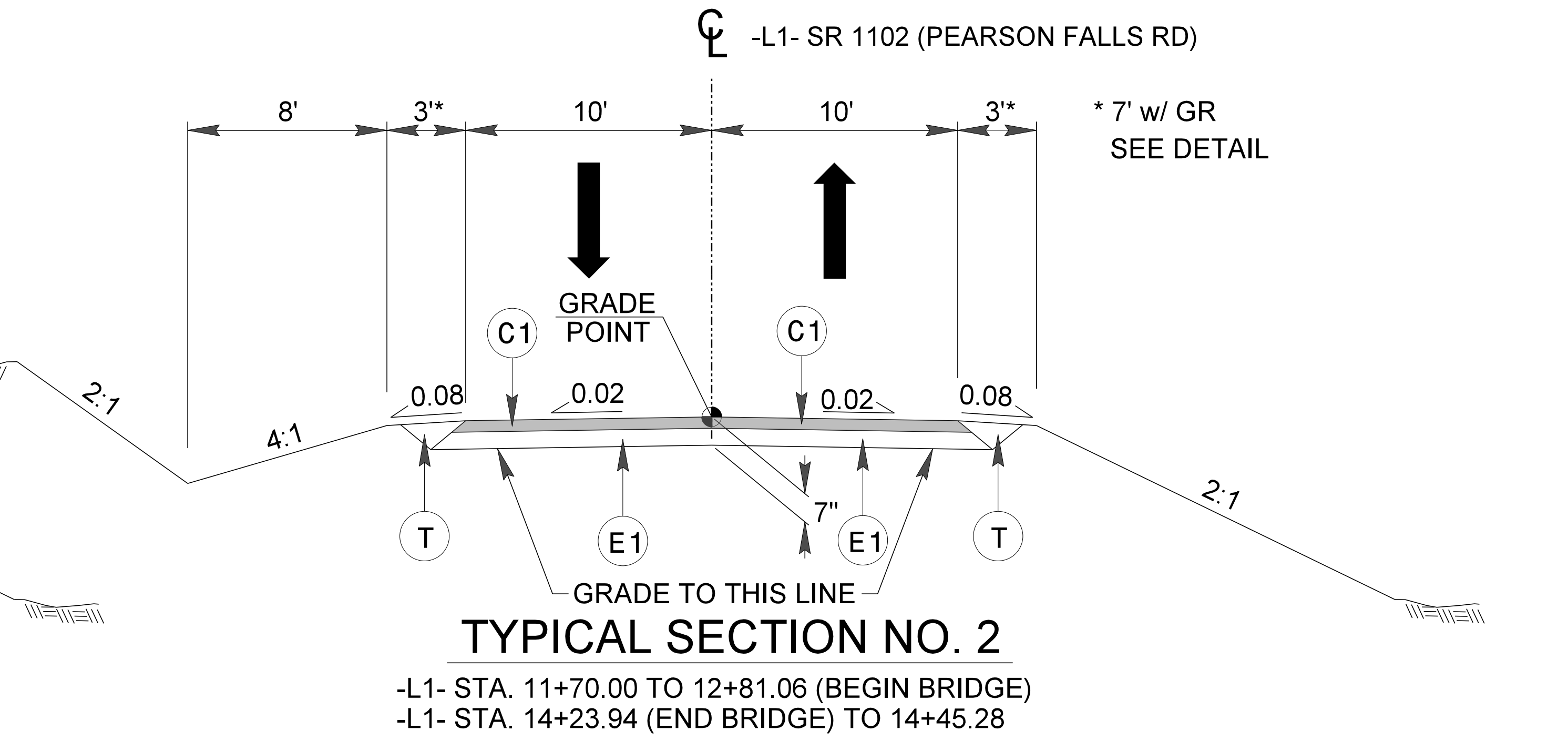
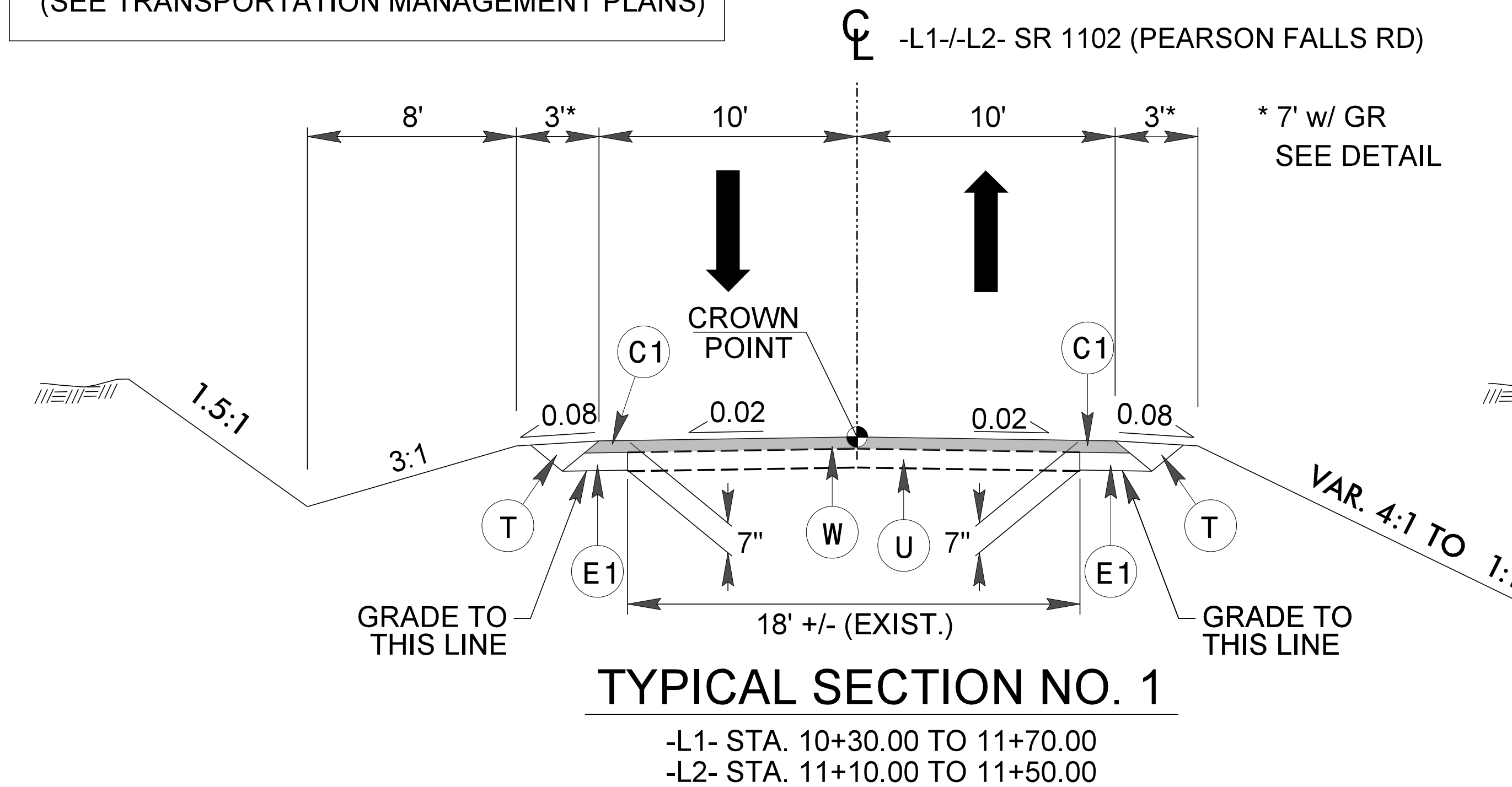
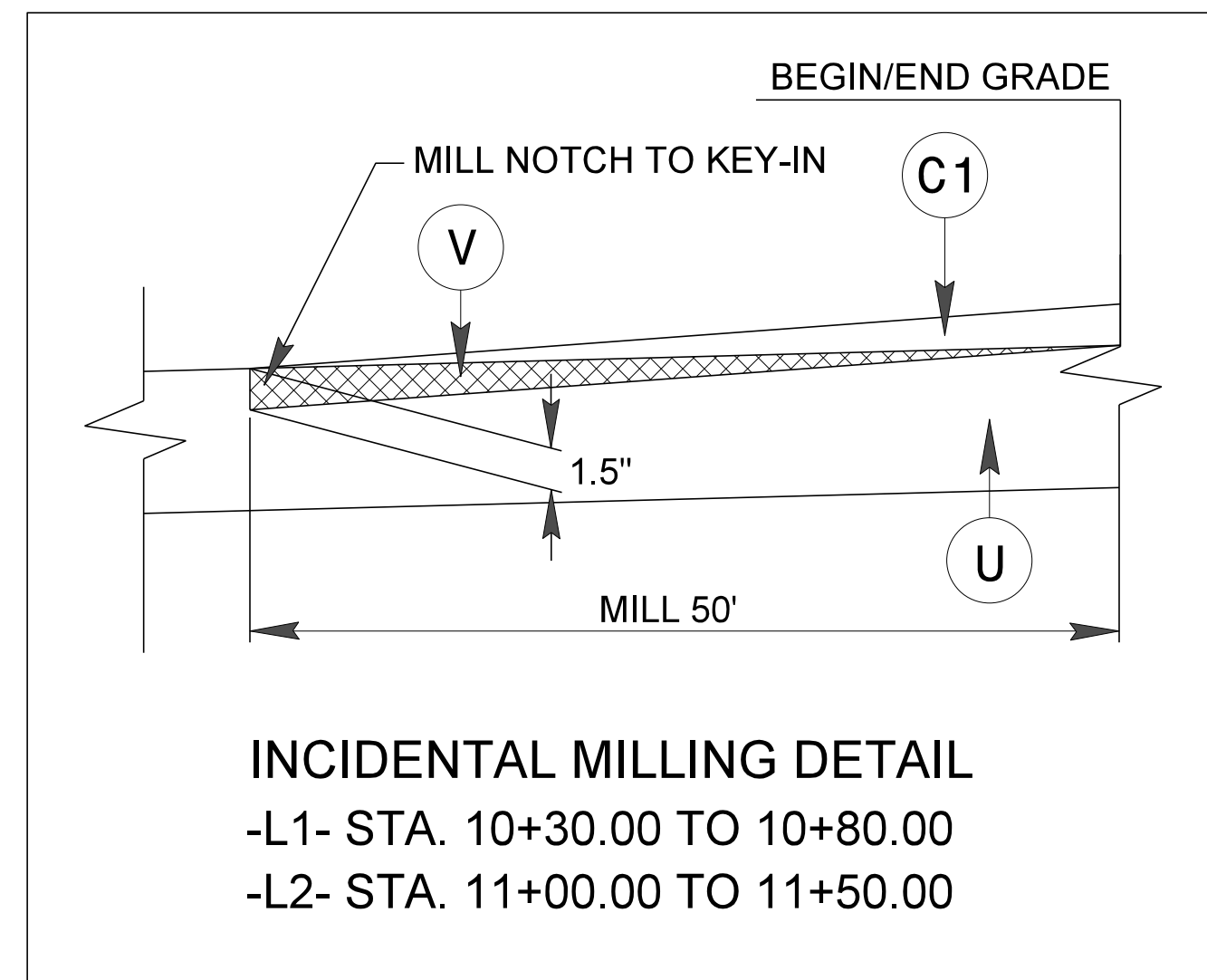
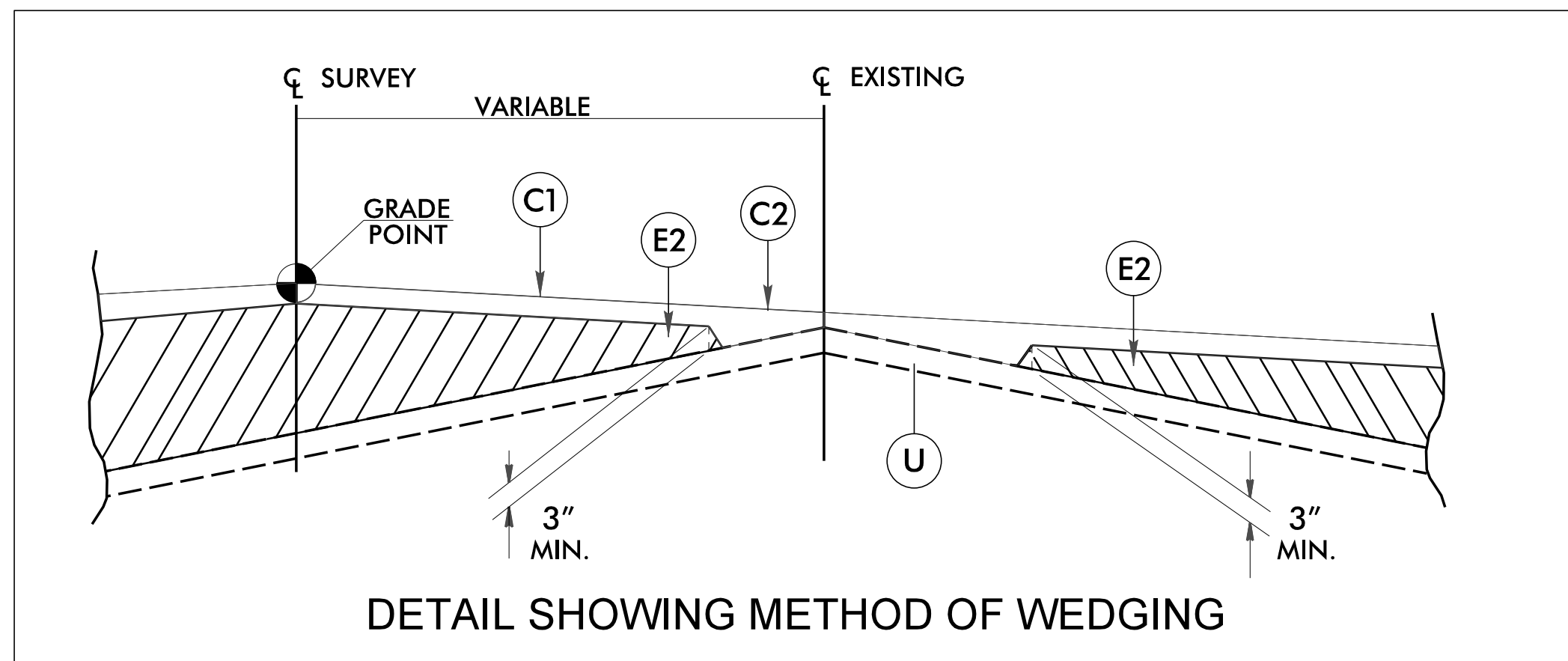
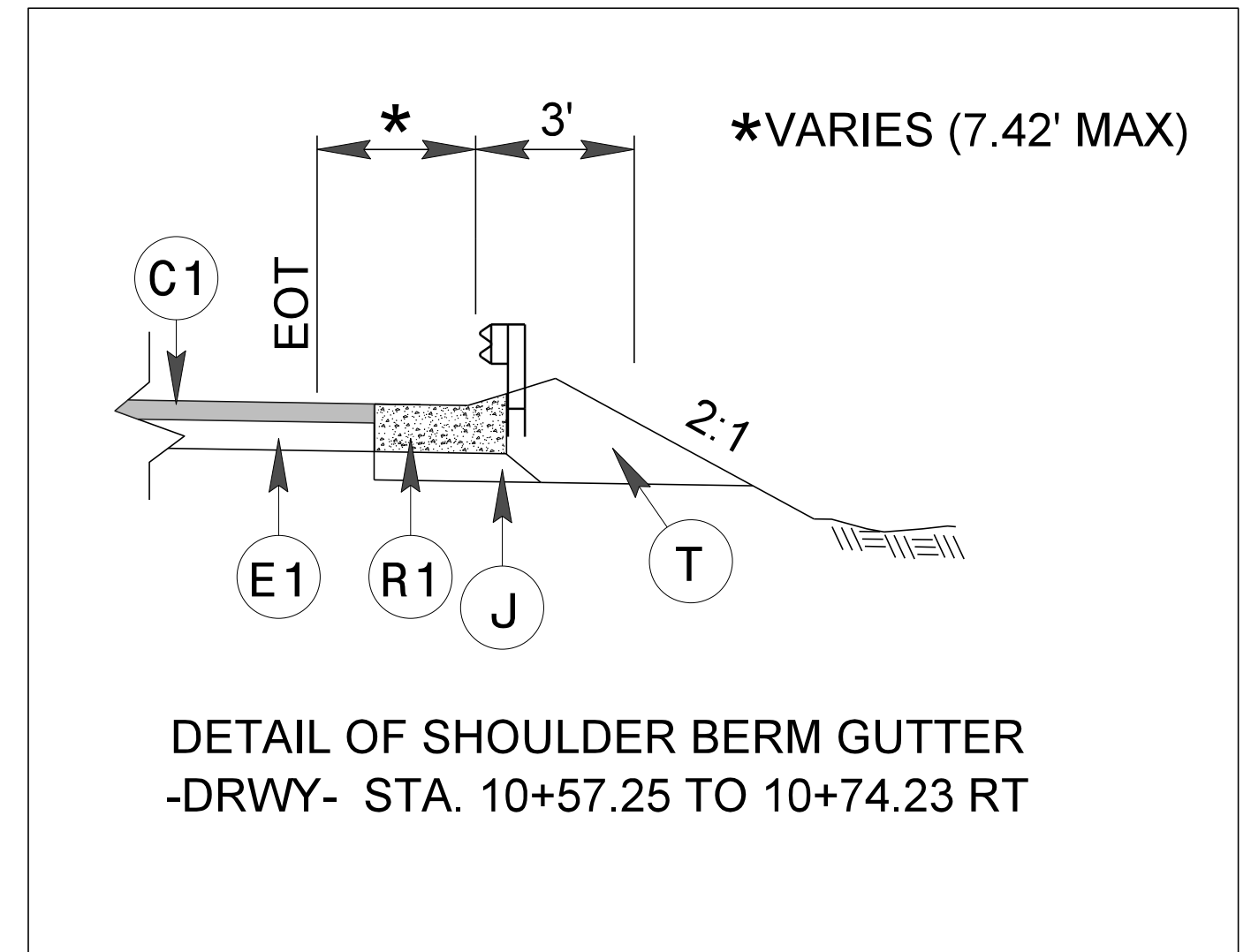
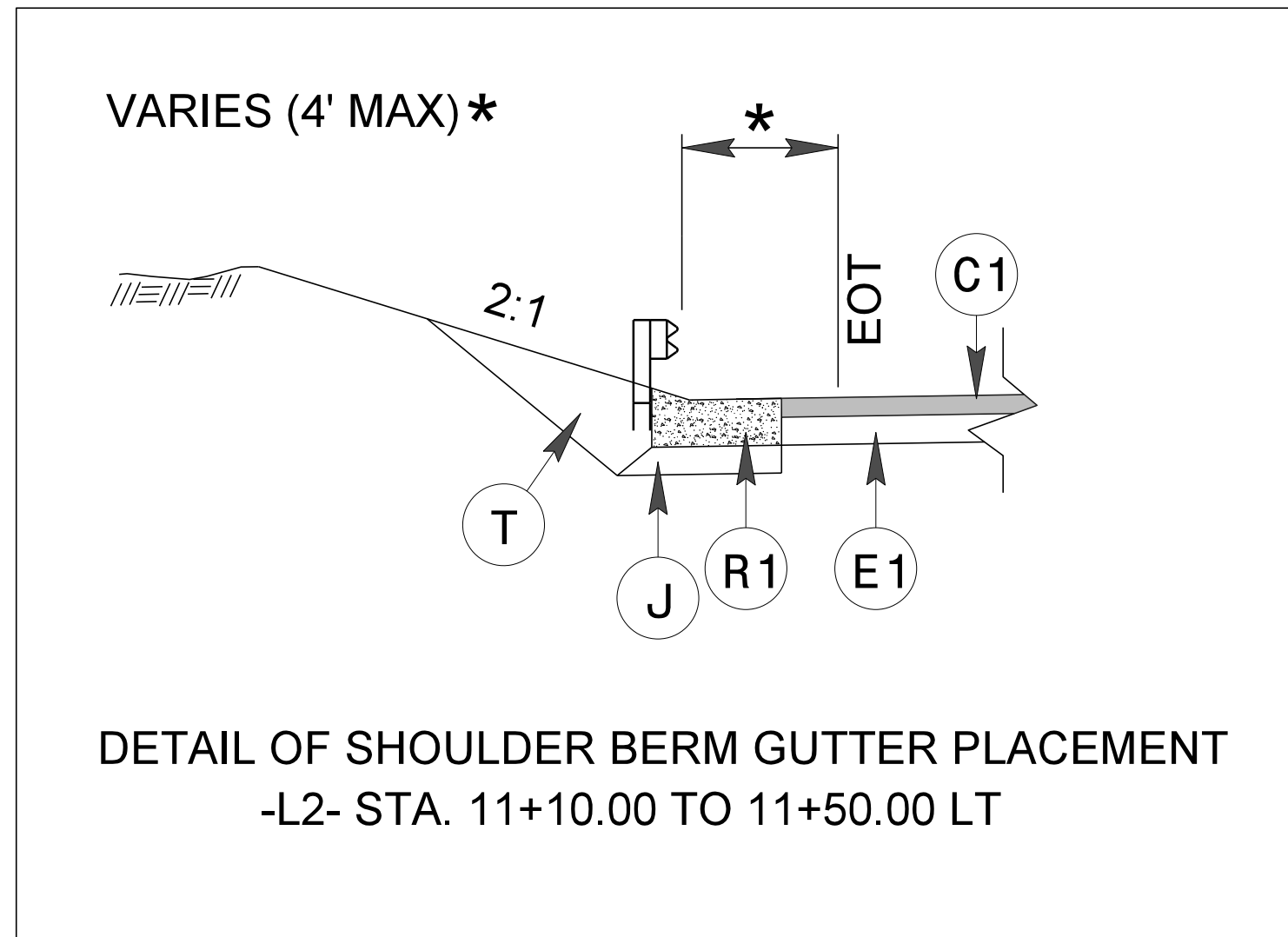
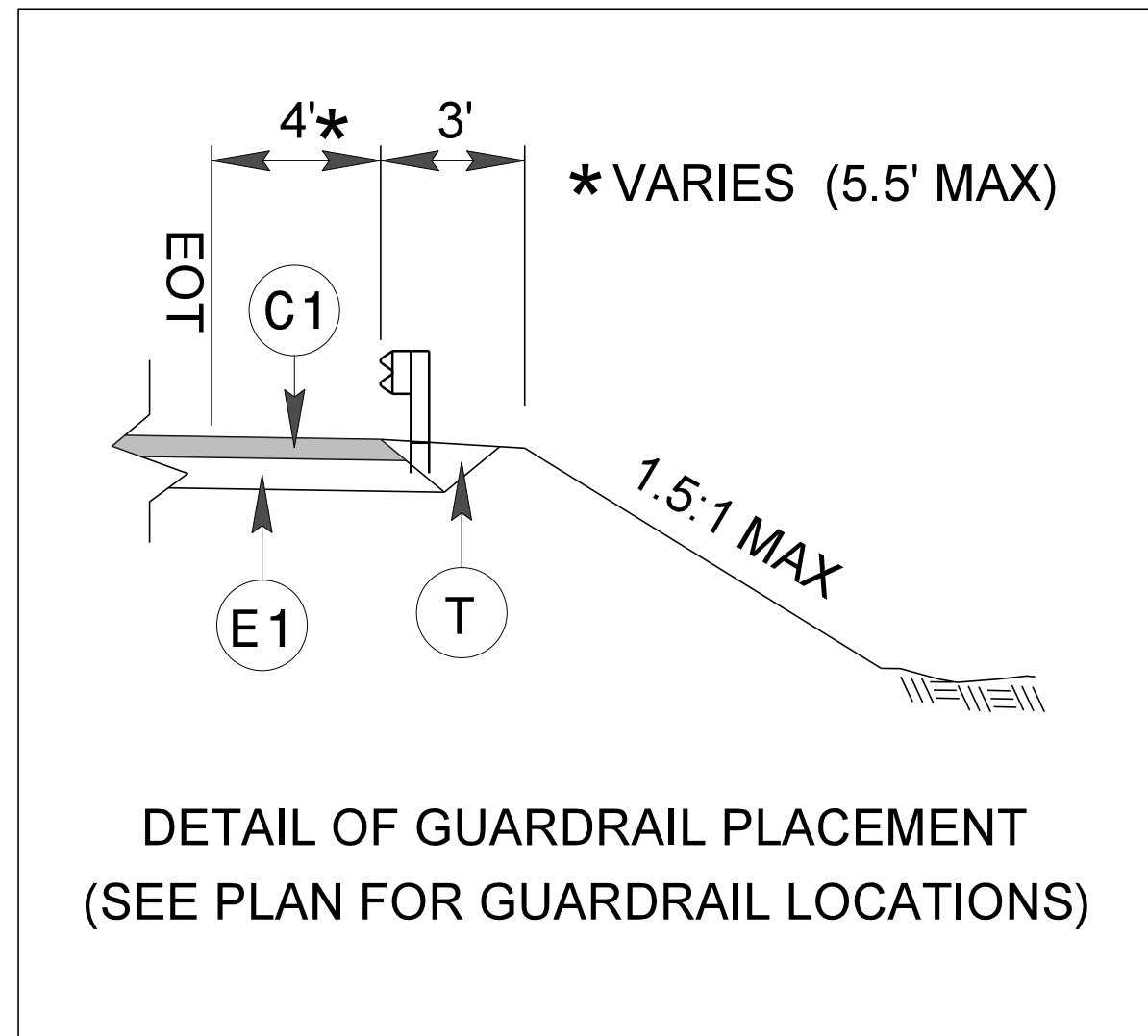
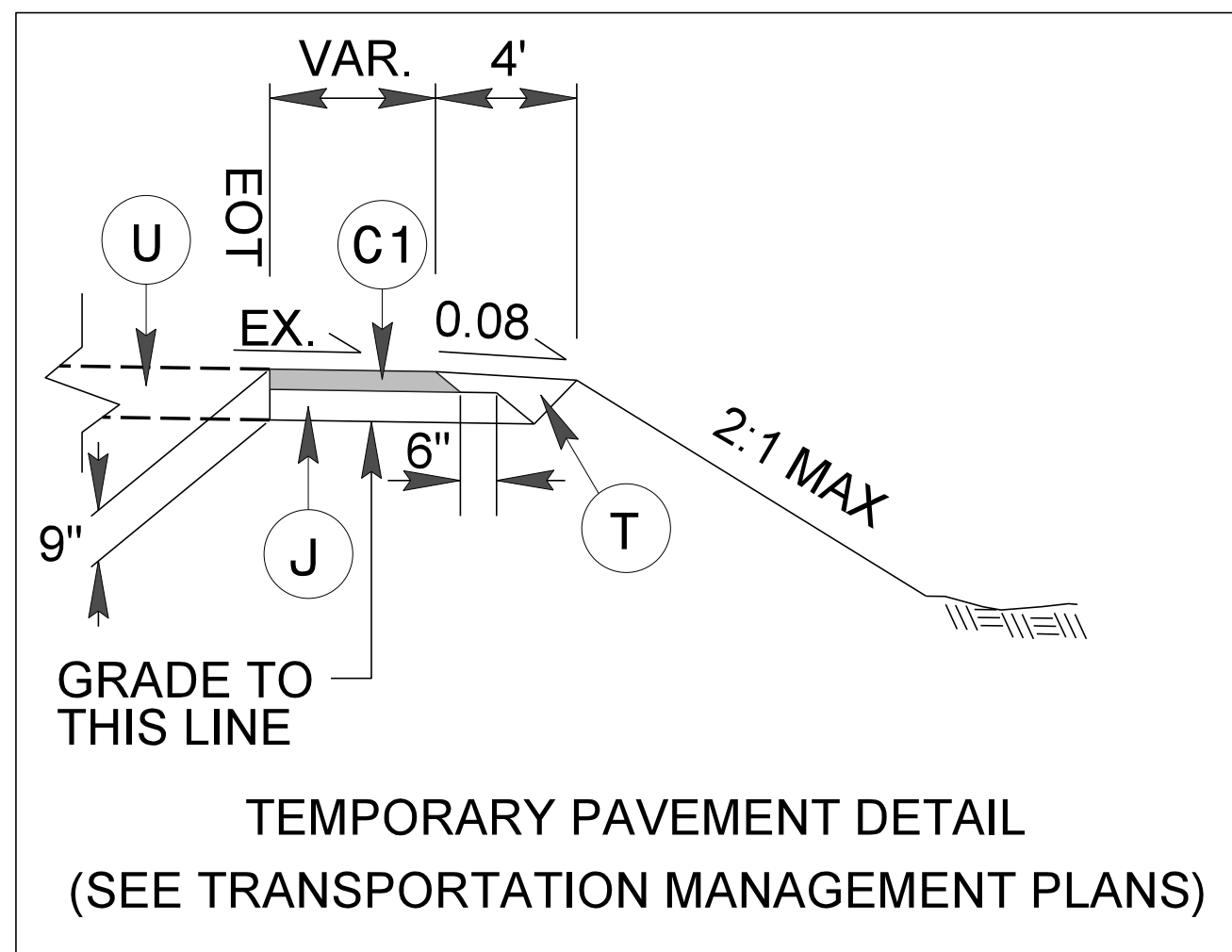
Sanitary Sewer Manhole	-----
Sanitary Sewer Cleanout	-----
U/G Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	-----
SS Force Main Line Test Hole (SUE - LOS A)*	-----
SS Force Main Line (SUE - LOS B)*	-----
SS Force Main Line (SUE - LOS C)*	-----
SS Force Main Line (SUE - LOS D)*	-----

### MISCELLANEOUS:

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

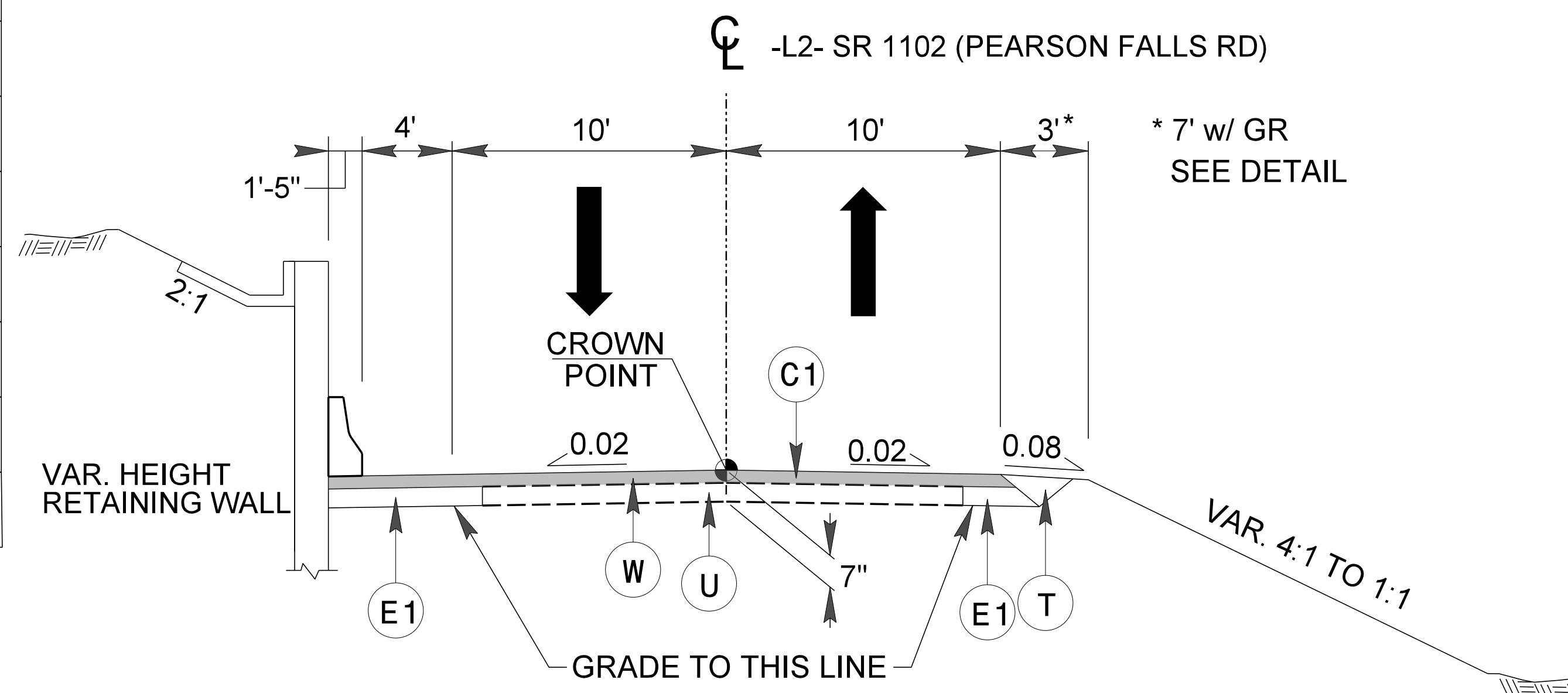
PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
J	PROP. 6" AGGREGATE BASE COURSE
R1	PROP. SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	INCIDENTAL MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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

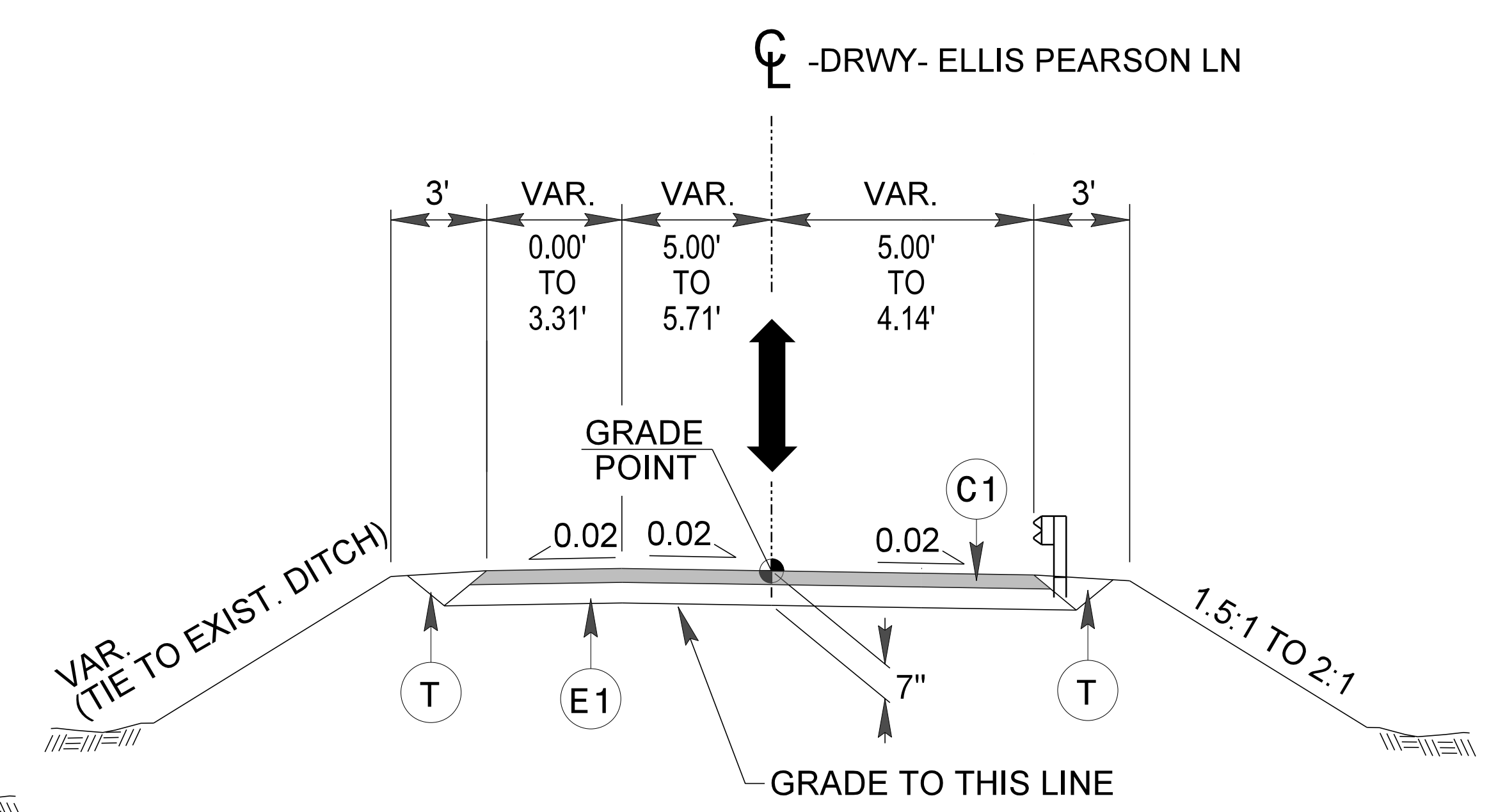


FINAL PAVEMENT SCHEDULE	
C1	3" DEPTH TYPE S9.5B,
C2	VAR. DEPTH TYPE S9.5B,
E1	4" DEPTH TYPE B25.0C.
J	6" ABC
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VAR. DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

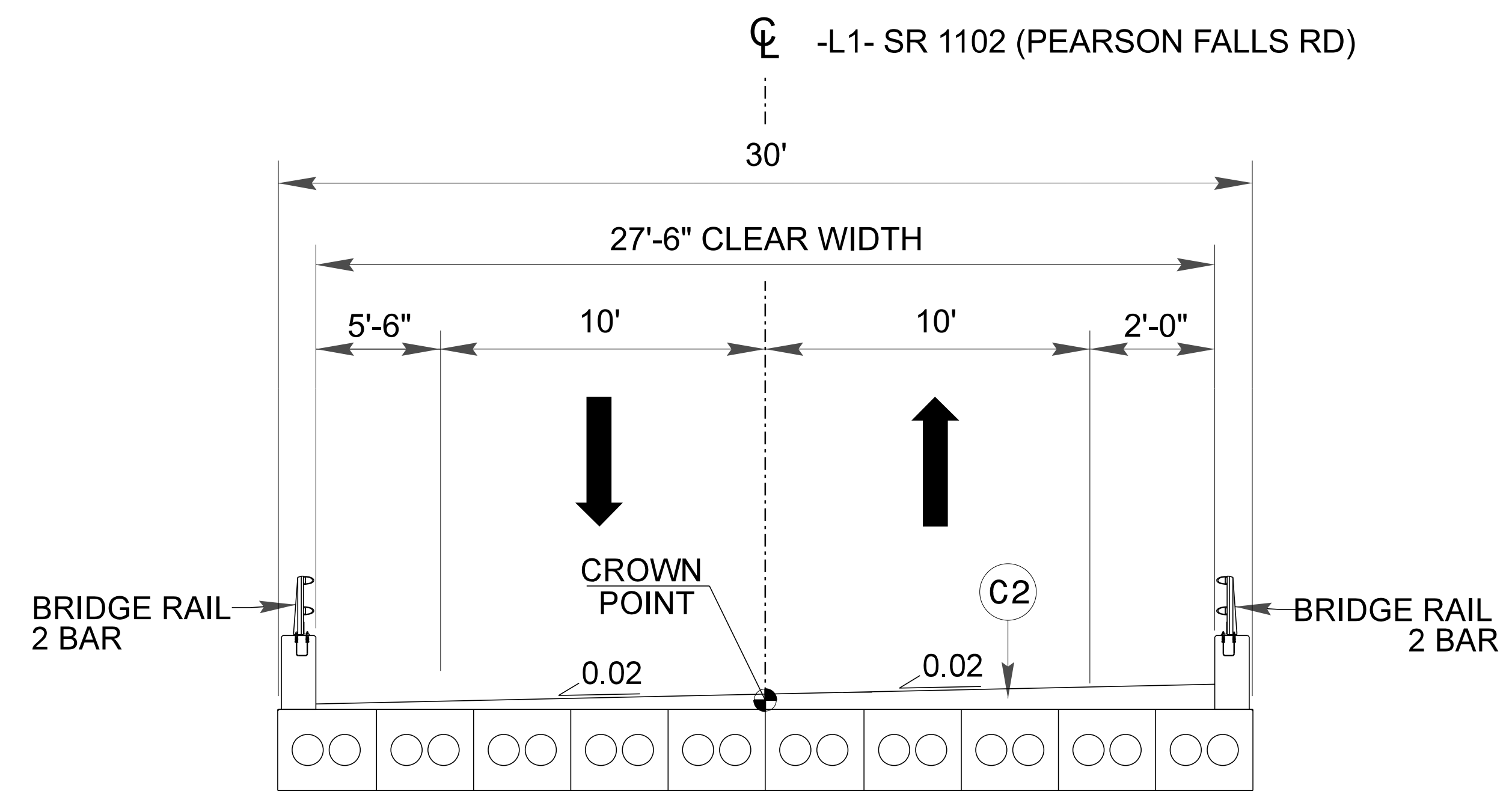
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



**TYPICAL SECTION NO. 3**  
-L2- STA. 10+00.00 TO 11+10.00

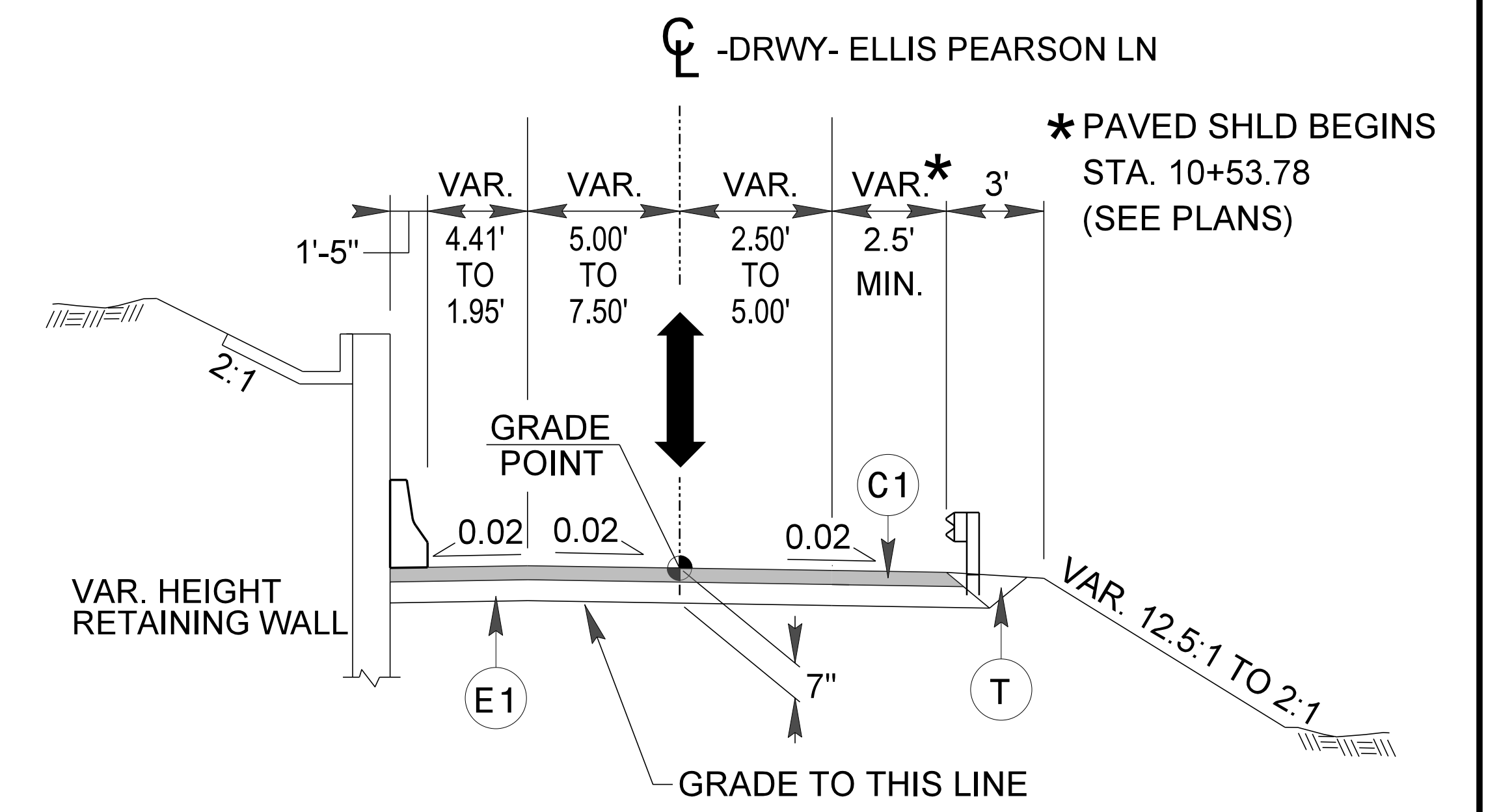


**TYPICAL SECTION NO. 4**  
-DRWY- STA. 10+05.00 TO 10+20.16



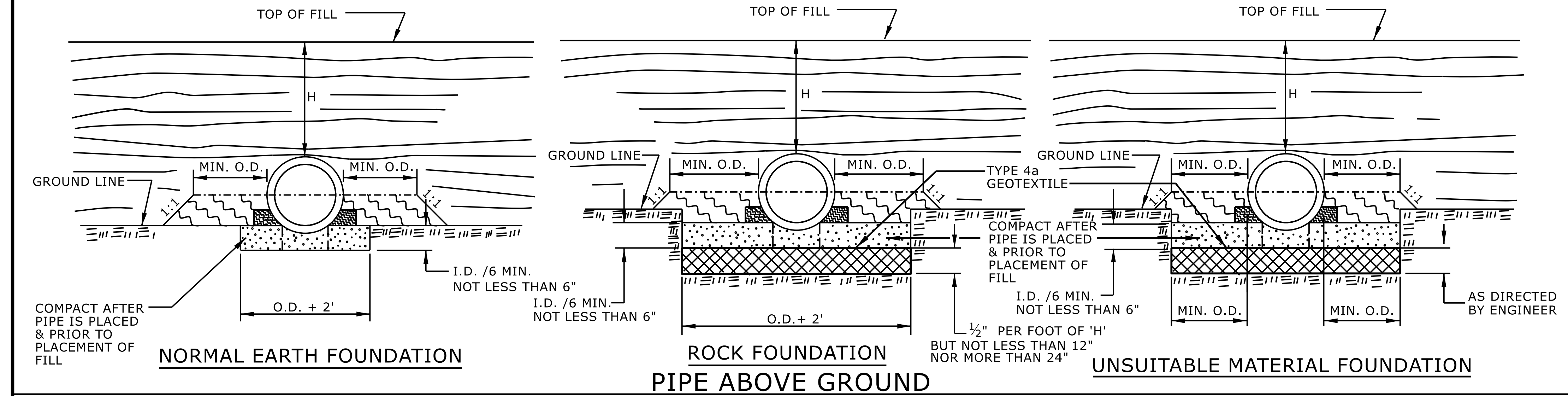
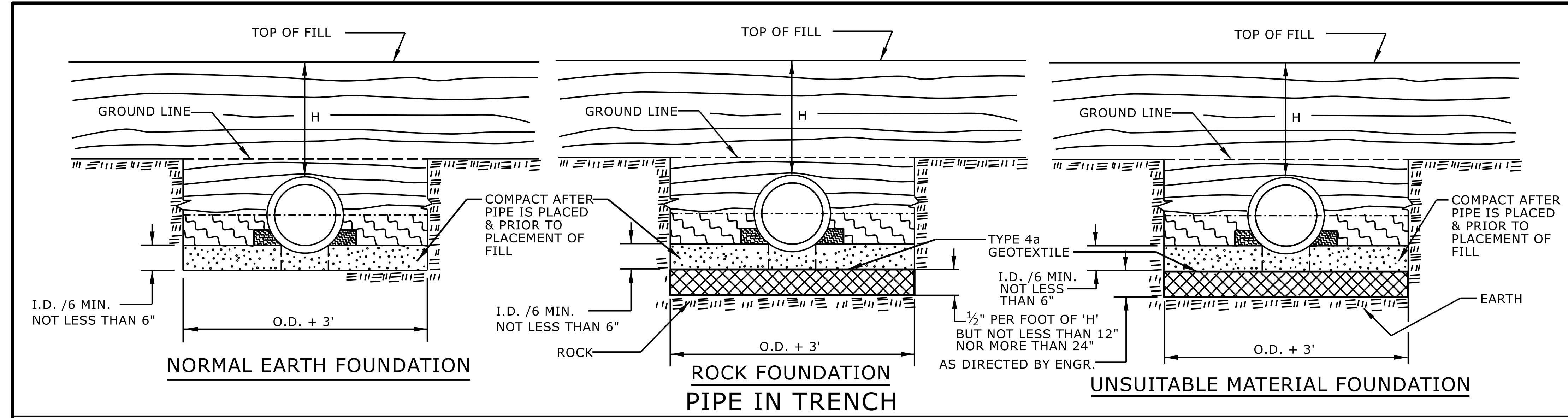
**PROPOSED STRUCTURE**  
-L1- STA. 12+81.06 TO 14+23.96

(SEE STRUCTURE PLANS FOR STRUCTURE CONSTRUCTION DETAILS)






**TYPICAL SECTION NO. 5**  
-DRWY- STA. 10+20.16 TO 11+16.46

BP14-R038  
4RDI 2A-2  
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION POLK COUNTY  
ROADWAY DESIGN UNIT  
ROADWAY DESIGN ENGINEER  
11/4/2025  
NORTH CAROLINA PROFESSIONAL SEAL 25477  
THAD F. DUNCAN  
11/4/2025  
NORTH CAROLINA PROFESSIONAL SEAL 24964  
JOSEPH T. HOLLAND  
Prepared by Joseph T. Holland  
vhb  
vhb Engineering, Inc., P.C. (C-2705)  
340 Main Campus Drive, Suite 500  
Raleigh, NC 27606  
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

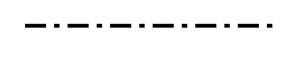

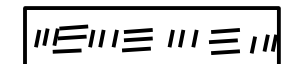



**GENERAL NOTES:**  
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.  
 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.  
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

-  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.

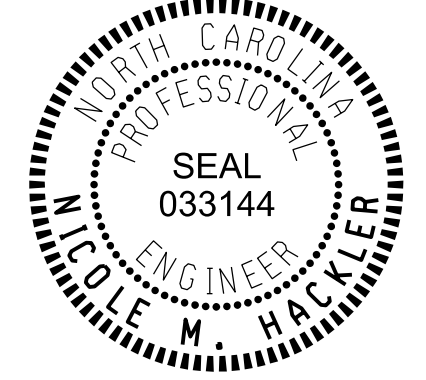
DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

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**

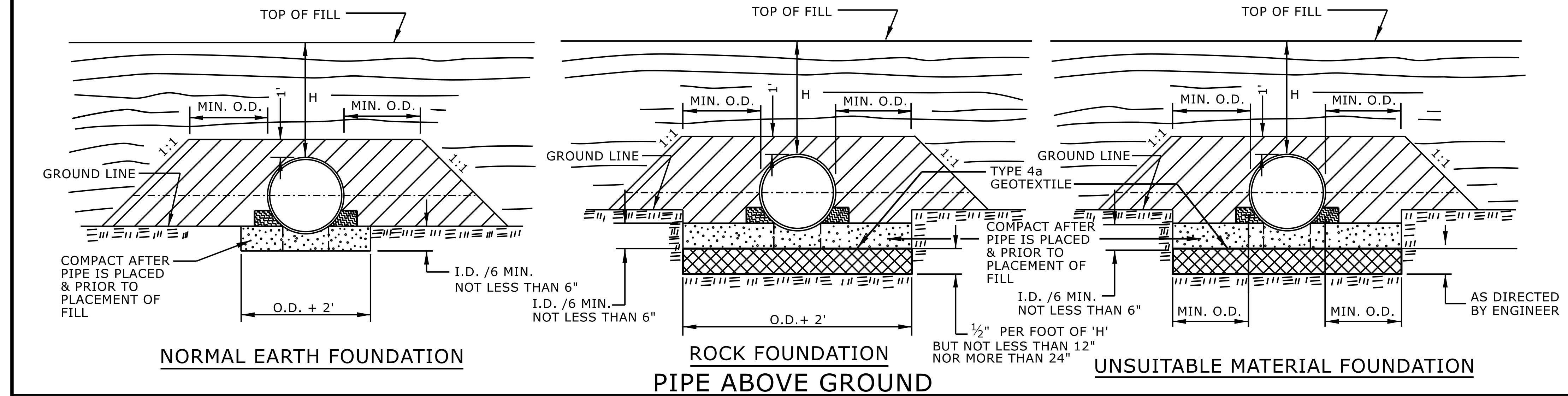
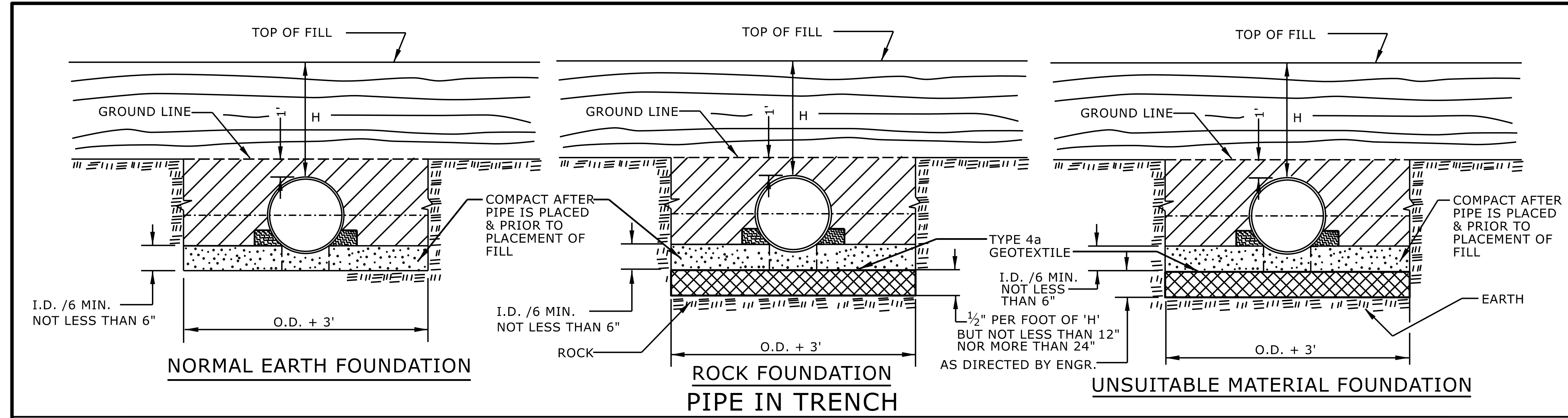
11/4/2025  
  
 Signed by:  
*Nicole M. Hekler*  
 5884323034164C5...

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED



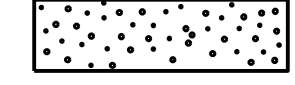
**CONTRACTS STANDARDS AND DEVELOPMENT UNIT**  
 Office 919-707-6950 FAX 919-250-4119

**SEE TITLE BLOCK**

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

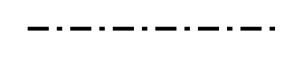
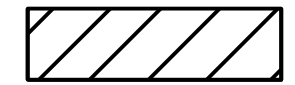
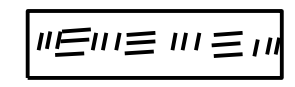



**GENERAL NOTES:**  
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.  
 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.  
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

 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**

11/4/2025



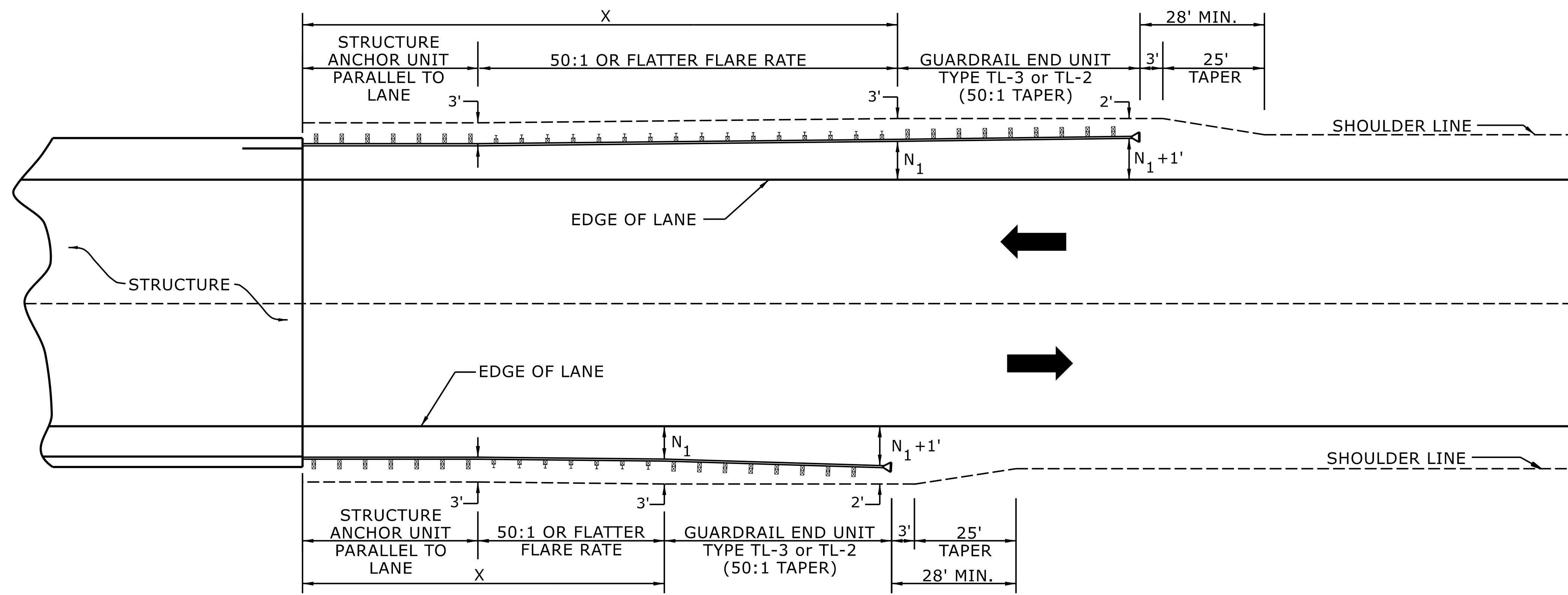
Signed by:  
*Nicole M. Hackler*  
 5884323034164C5...

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.:



USE FLARE RATE AS THE CONTROL IF THE "N<sub>1</sub>" DISTANCE IS NOT OBTAINED.  
 ("N<sub>1</sub>" 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.

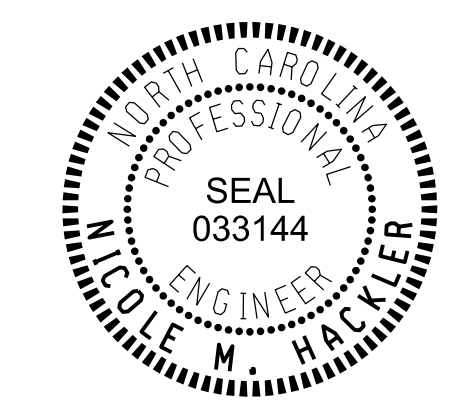
**LENGTHS AND OFFSETS FOR PROPOSED GUARDRAIL AT TWO LANE - TWO WAY LOCATIONS**

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

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**

SHEET 4 OF 15  
**862D01**

11/4/2025



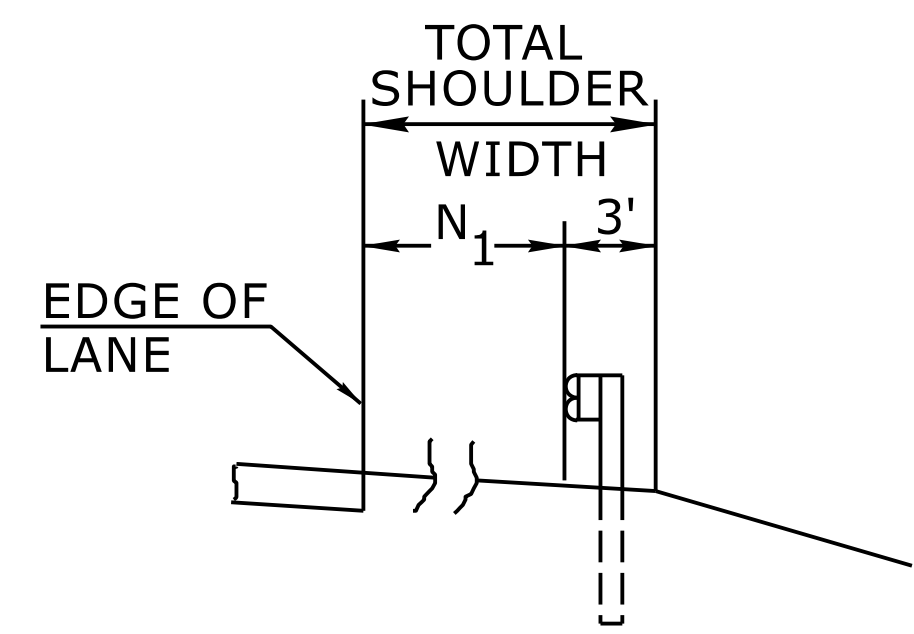
Signed by:  
*Nicole M. Hackler*  
 5884323034184CS...

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

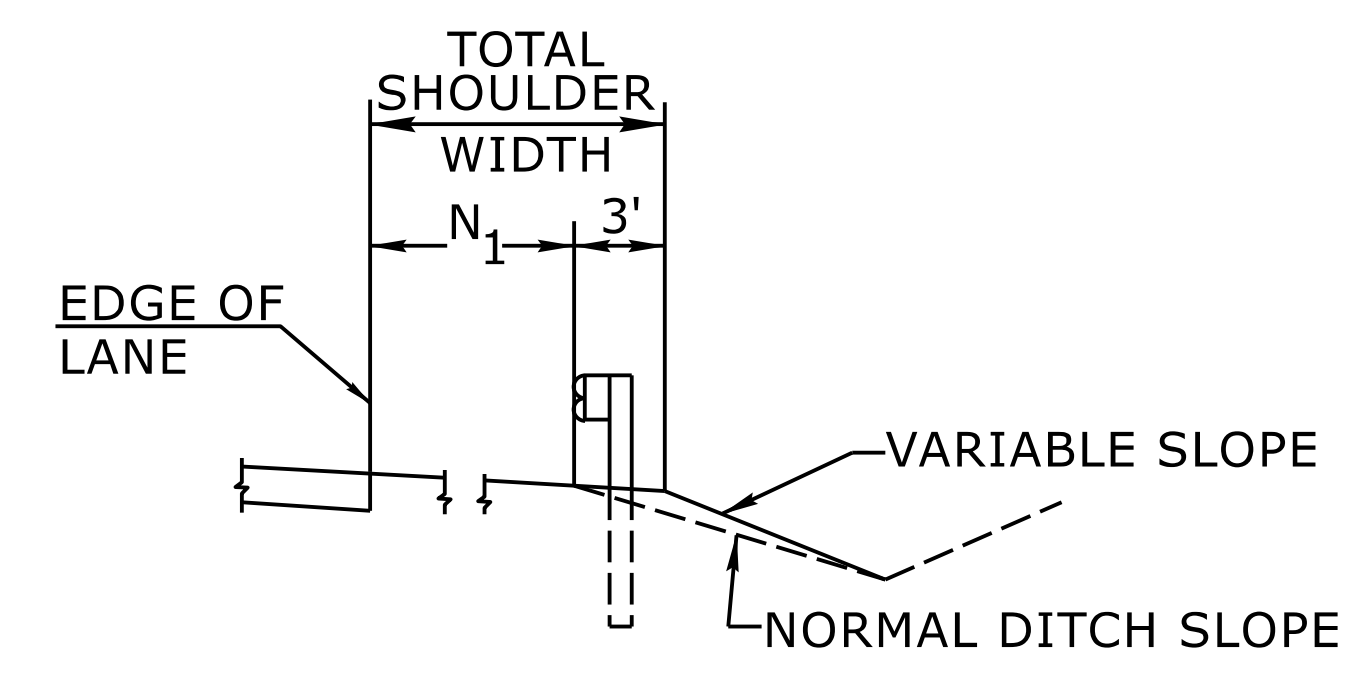
**CONTRACTS STANDARDS  
 AND DEVELOPMENT UNIT**  
 Office 919-707-6950 FAX 919-250-4119

**SEE TITLE BLOCK**

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

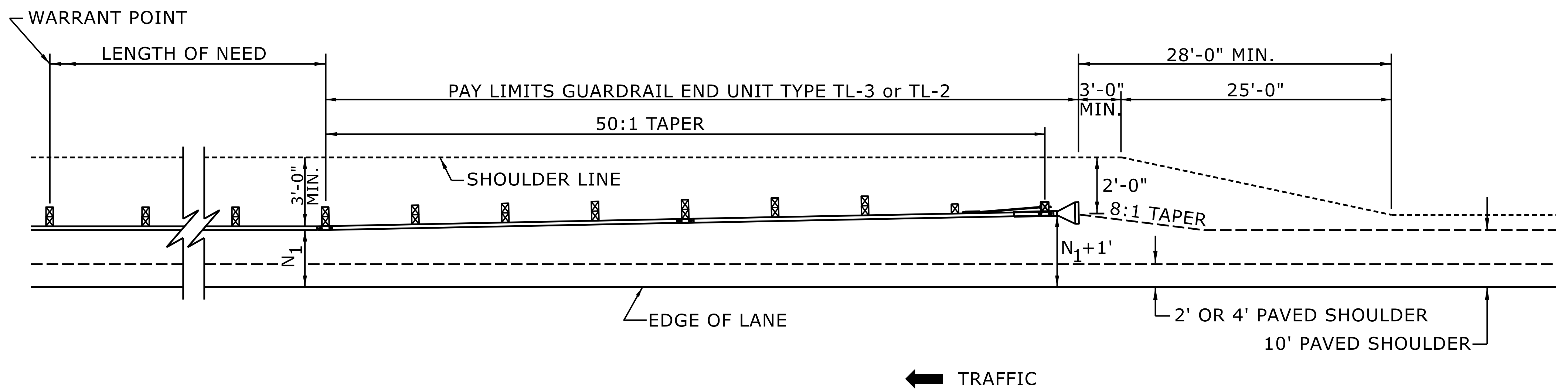


**FILL SECTION**



**CUT SECTION**

"N<sub>1</sub>" = 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

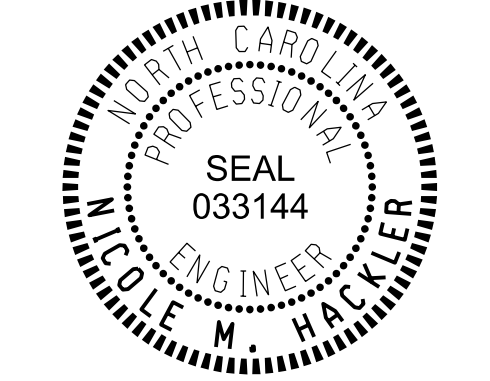
**DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION**

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

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**

SHEET 6 OF 15  
**862D01**

11/4/2025



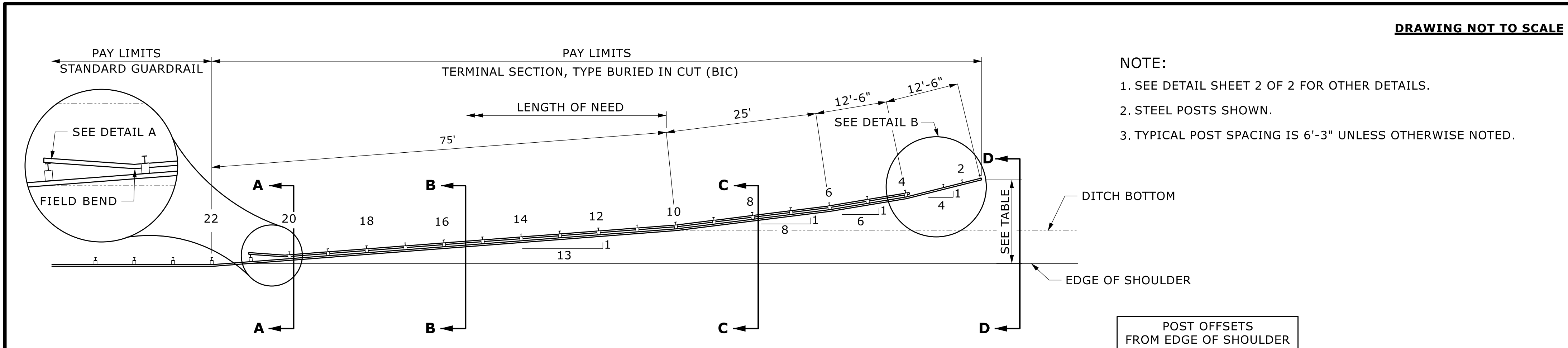
Signed by:  
*Nicole M. Hackler*  
5884323D34164C5...

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

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

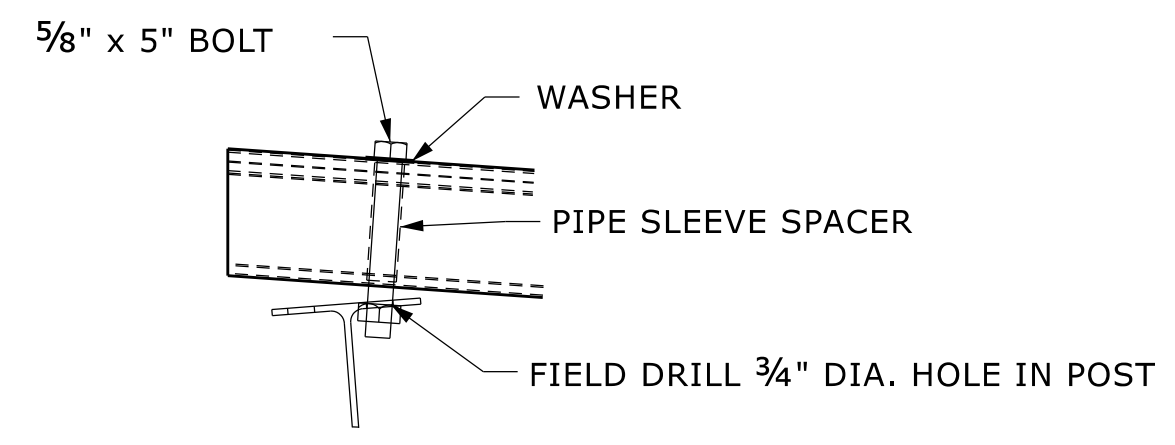
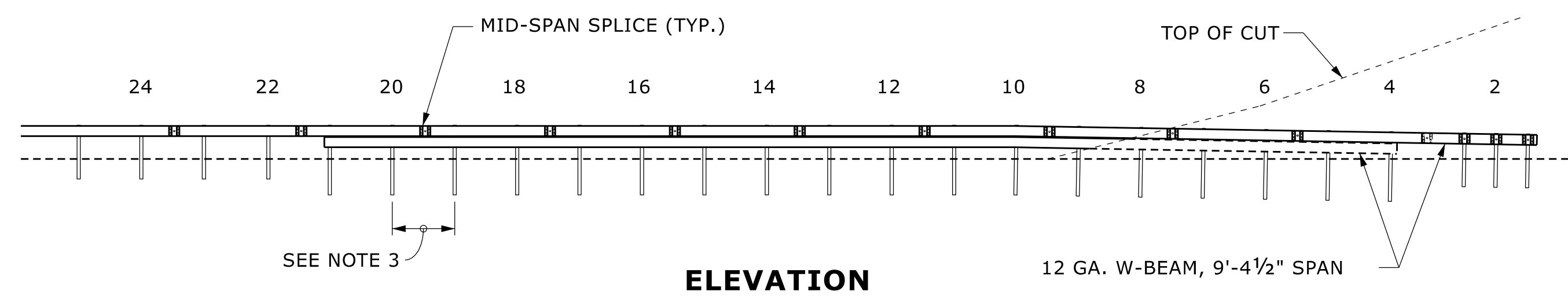
**SEE TITLE BLOCK**

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

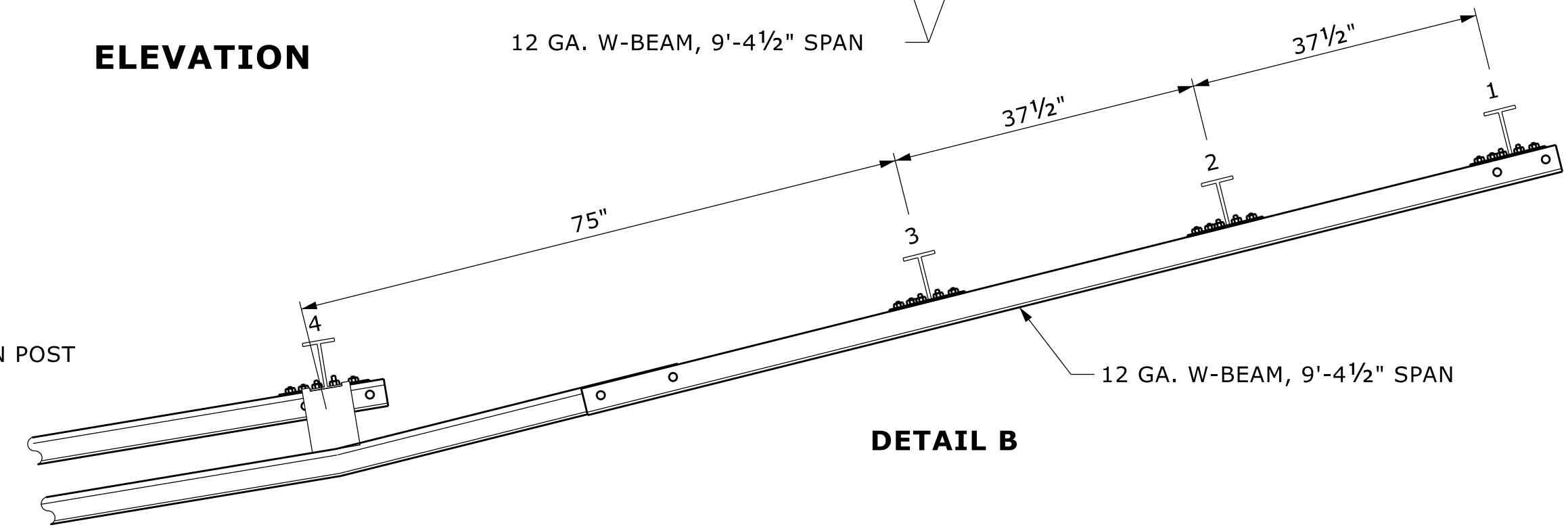


- NOTE:**
1. SEE DETAIL SHEET 2 OF 2 FOR OTHER DETAILS.
  2. STEEL POSTS SHOWN.
  3. TYPICAL POST SPACING IS 6'-3" UNLESS OTHERWISE NOTED.

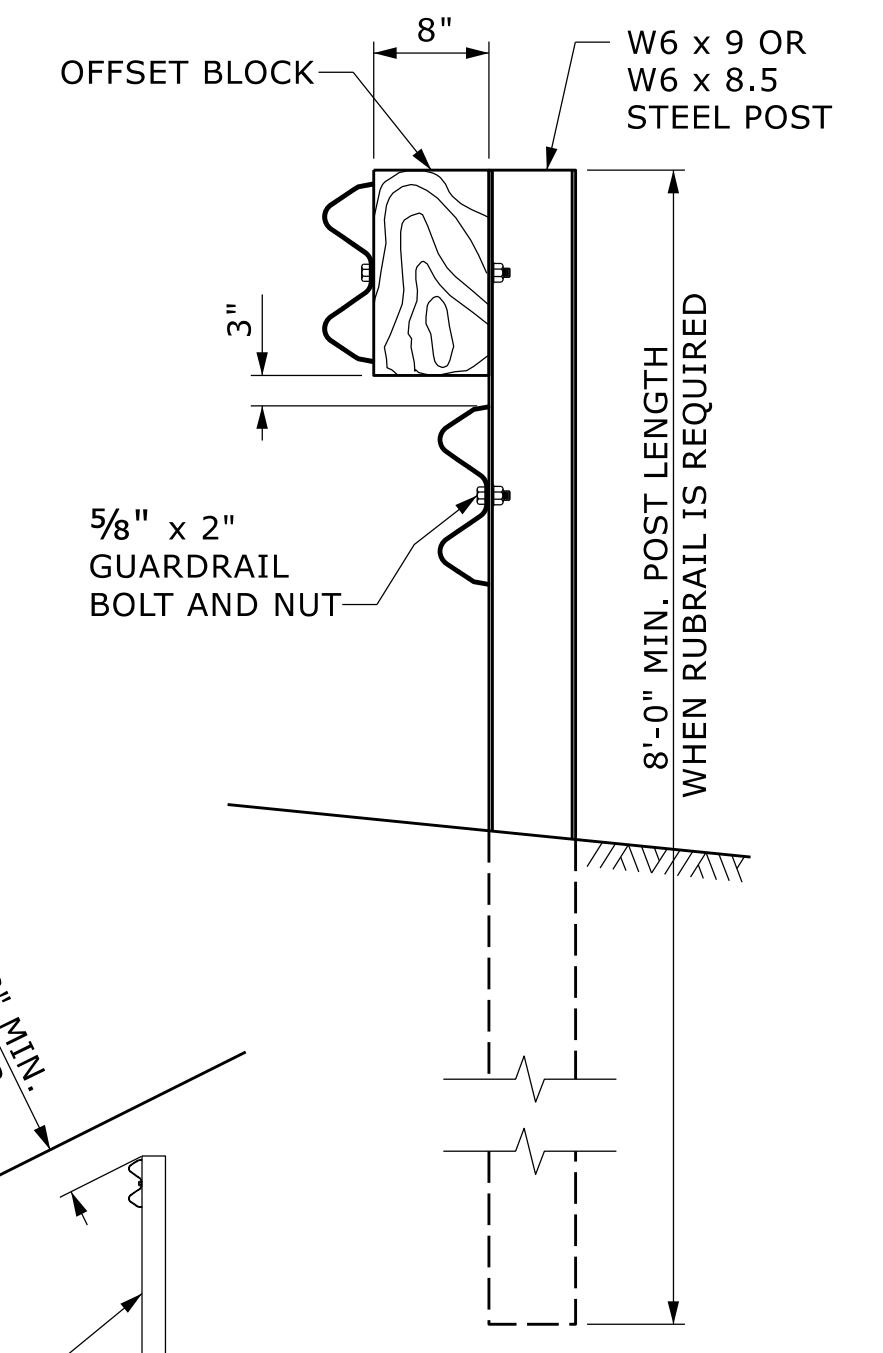
POST OFFSETS FROM EDGE OF SHOULDER	
POST	DISTANCE
1	13'-11 <sup>3</sup> / <sub>4</sub> "
4	10'-11"
6	8'-10 <sup>1</sup> / <sub>4</sub> "
10	69"



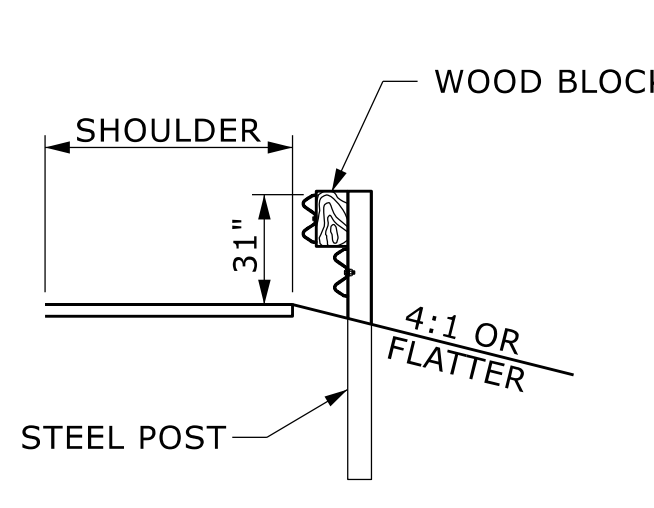
**DETAIL A**



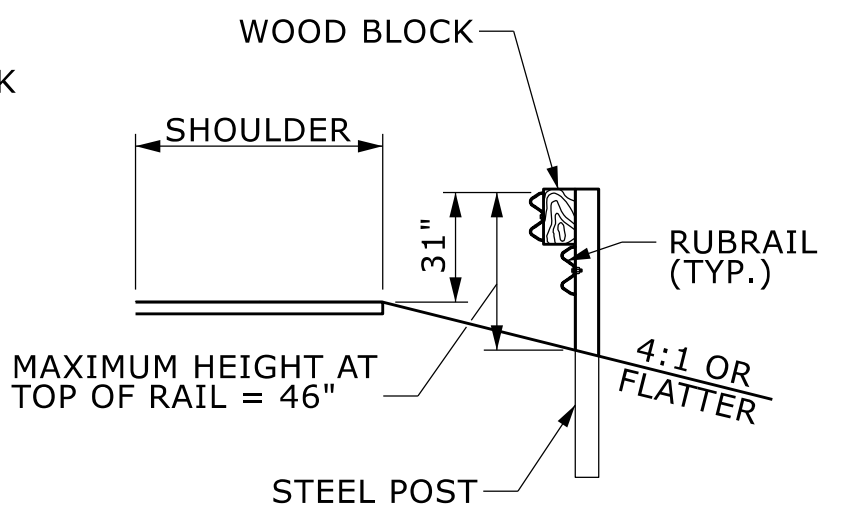
**DETAIL B**



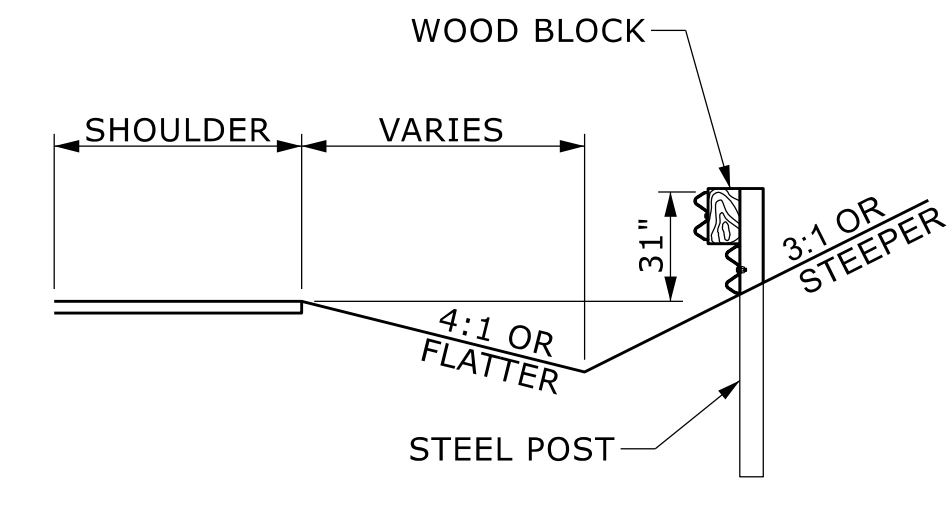
**STEEL POST AND BLOCK DETAIL**



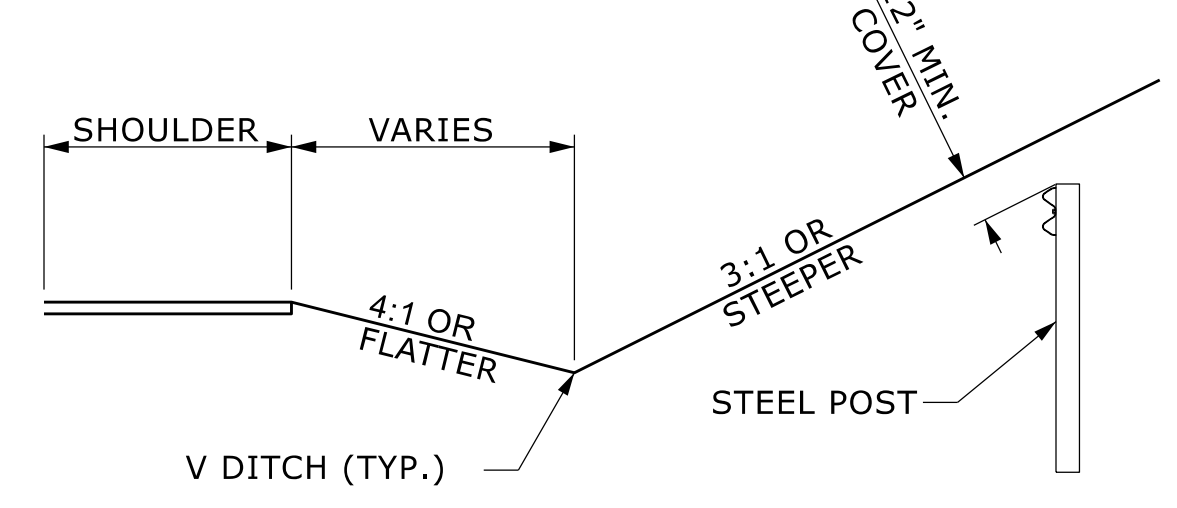
**SECTION A-A**



**SECTION B-B**



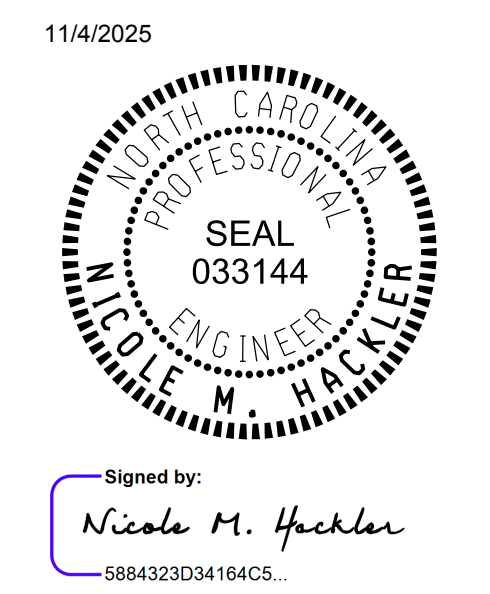
**SECTION C-C**



**SECTION D-D**

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

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**  
BURIED IN CUT END UNIT



SHEET 14 OF 15  
**862D01**

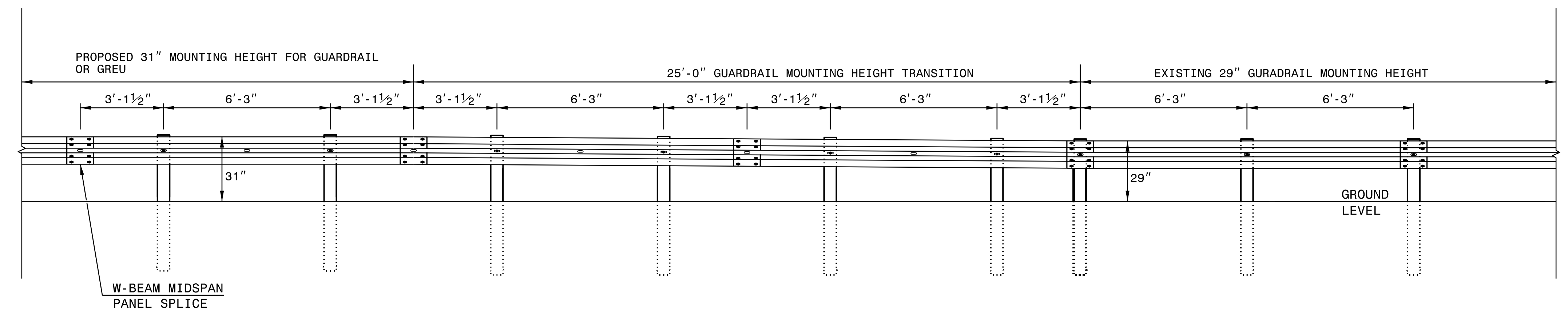
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

**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.: \_\_\_\_\_

**NOTE: IF EXISTING GUARDRAIL IS LOWER THAN 29", USE AN ADDITIONAL 12'-6" LONG SECTION OF GUARDRAIL, FOR EVERY 1" OF HEIGHT DIFFERENCE, TO TRANSITION FROM EXISTING GUARDRAIL TO PROPOSED 31" GUARDRAIL.**



**ELEVATION VIEW**

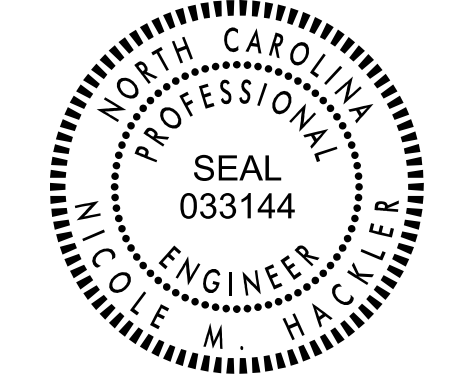
**TRANSITION FROM 29" TO 31" W-BEAM GUARDRAIL MOUNTING HEIGHT**

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

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET 5 OF 9  
**862D02**

11/4/2025



Signed by:  
*Nicole M. Hacker*  
588432034164CS...

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

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

**SEE TITLE BLOCK**

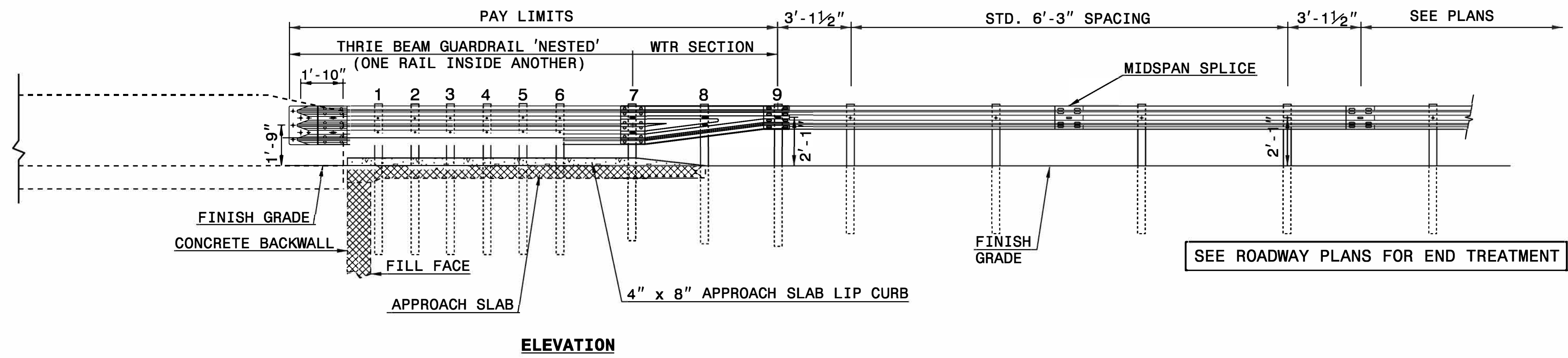
ORIGINAL BY: K. Aldridge	DATE: 02-25
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.:	

05-FEB-2025 07:53 U:\spec\of\Details\Revisions\862D02 Detail\862D02.dgn \$\$\$USERNAME\$\$\$

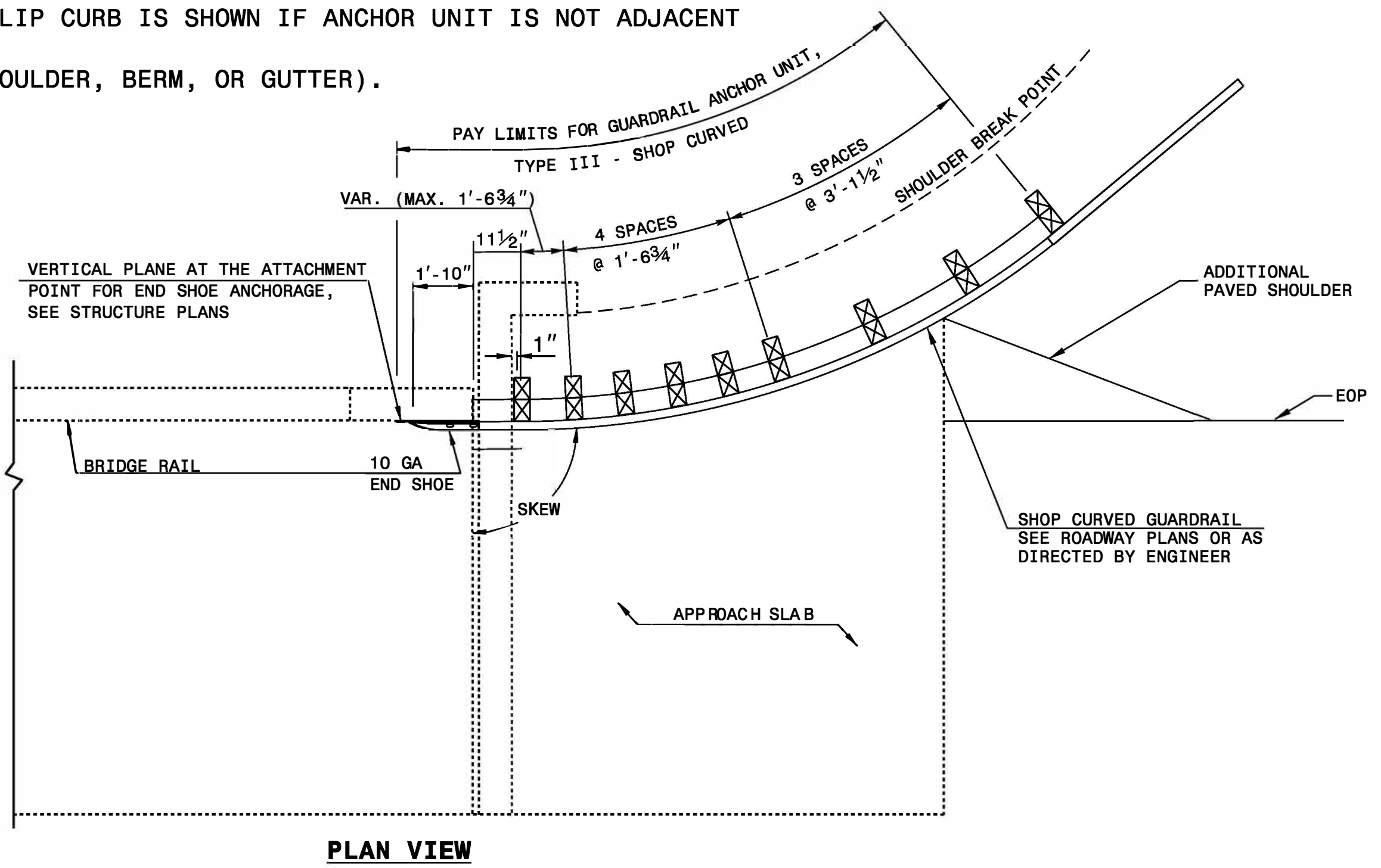
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR  
**TYPE III - SHOP CURVED  
STRUCTURE ANCHOR UNIT**

SHEET 1 OF 1  
**TYPE III SC**



- NOTE:
- \*\*POST NOT REQUIRED FOR SKEW ANGLES GREATER THAN 150° OR LESS THAN 30° UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
  - \*THE DISTANCE FROM END OF BRIDGE RAIL TO CENTER LINE OF THE FIRST POST SHOULD BE 11 1/2" IF CONCRETE BACKWALL IS NOT PRESENT.
  - SHOULDER BERM GUTTER MUST BE INSTALLED TO THE LIMITS 8" x 4" LIP CURB IS SHOWN IF ANCHOR UNIT IS NOT ADJACENT TO AN APPROACH SLAB.
  - MEASURE GUARDRAIL HEIGHT FROM THE TOP OF ADJACENT SURFACE (SHOULDER, BERM, OR GUTTER).
  - USE NO STEEL POSTS WITHIN THE GUARDRAIL ANCHOR UNIT LIMITS.
  - LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
  - SEE STANDARD 862.03 SHEET 4 FOR POST SECTIONS 1 THRU 9.



**GUARDRAIL ANCHOR UNIT, TYPE III - SHOP CURVED  
FOR ATTACHMENT TO RAIL ON BRIDGE**

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

ENGLISH DETAIL DRAWING FOR  
**TYPE III - SHOP CURVED  
STRUCTURE ANCHOR UNIT**

SHEET 1 OF 1  
**TYPE III SC**

01-FEB-2018 09:49 S:\Contracts\Special Details\howerton\guardrail\31 inch Guardrail\type.iii.sc.dgn howerton AT USD-292595

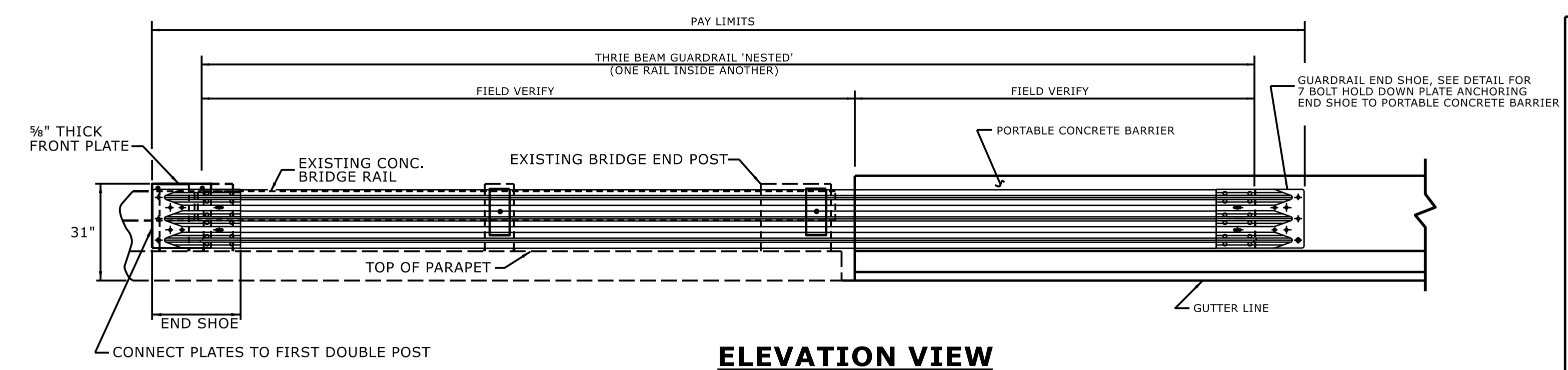
11/4/2025  
Seal: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 33144  
Signed by: Nicole M. Heckler  
5884323034184C5...

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

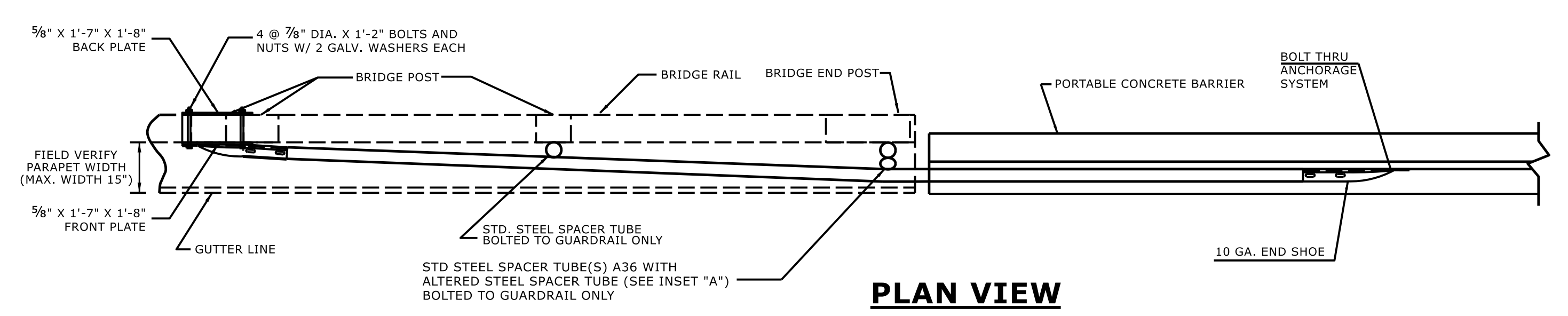
**CONTRACT STANDARDS AND DEVELOPMENT UNIT**  
Office 919-707-6950 FAX 919-250-4119

**SEE PLATE FOR TITLE**

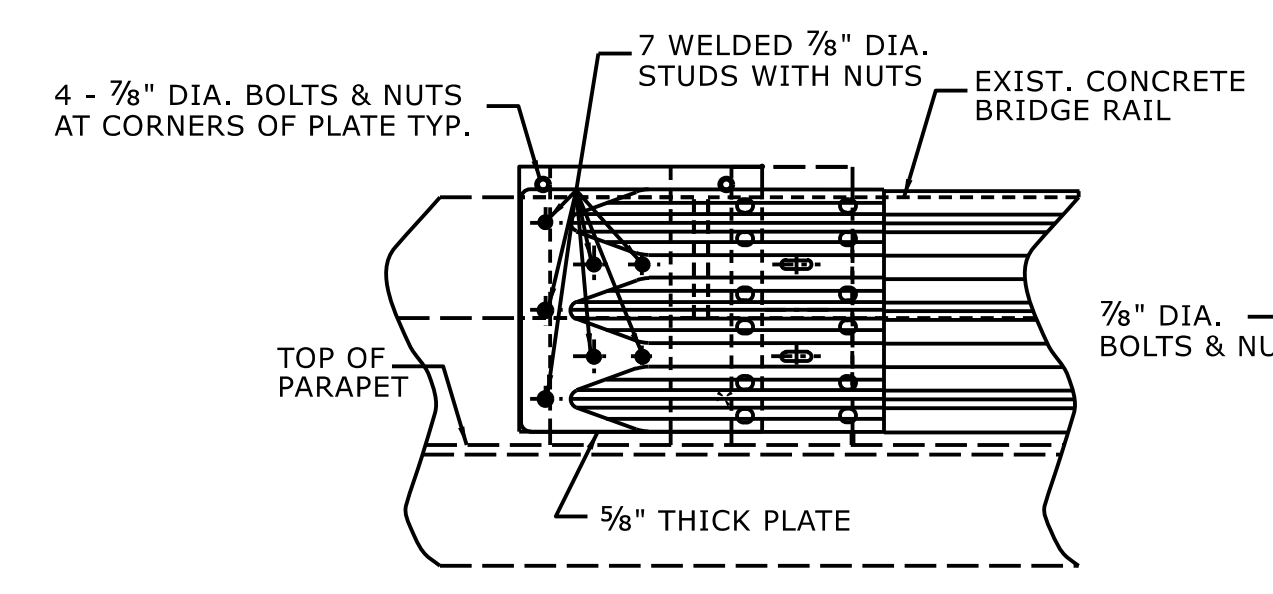
ORIGINAL BY: E.E.Ward	DATE: 4-4-02
MODIFIED BY: T.S.Spell	DATE: 2-01-18
CHECKED BY:	DATE:
FILE SPEC.: jhowerton\guardrail\31inguardrail\typeiiisc.dgn	



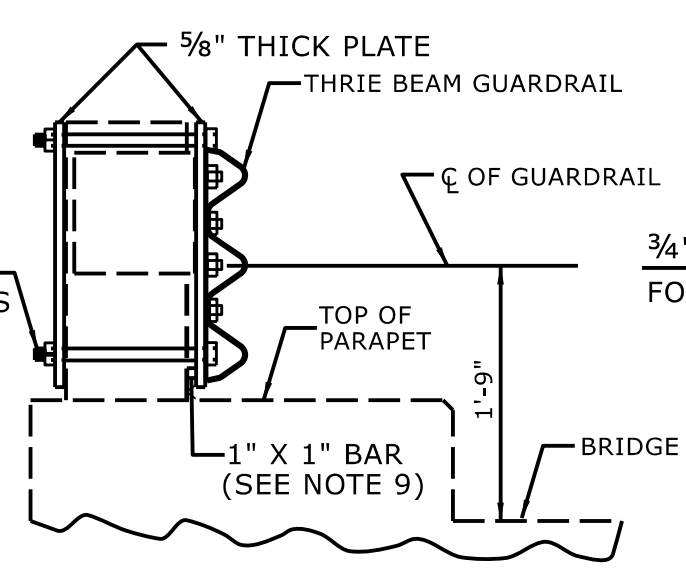
**ELEVATION VIEW**



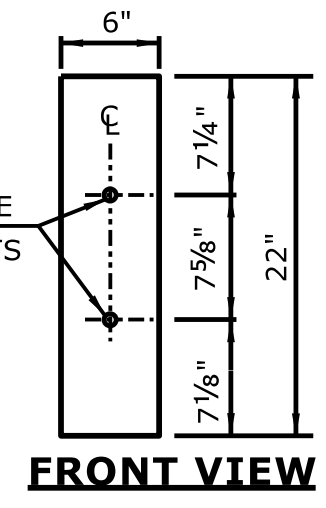
**PLAN VIEW**



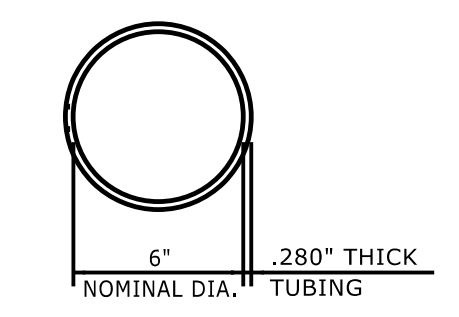
**ELEVATION VIEW**



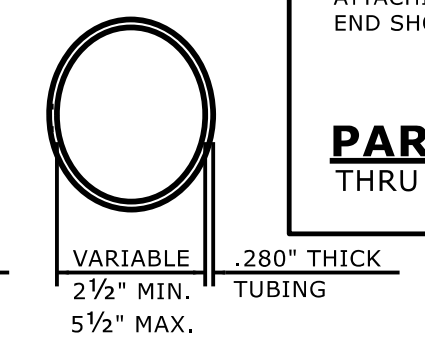
**SECTION VIEW**



**FRONT VIEW**

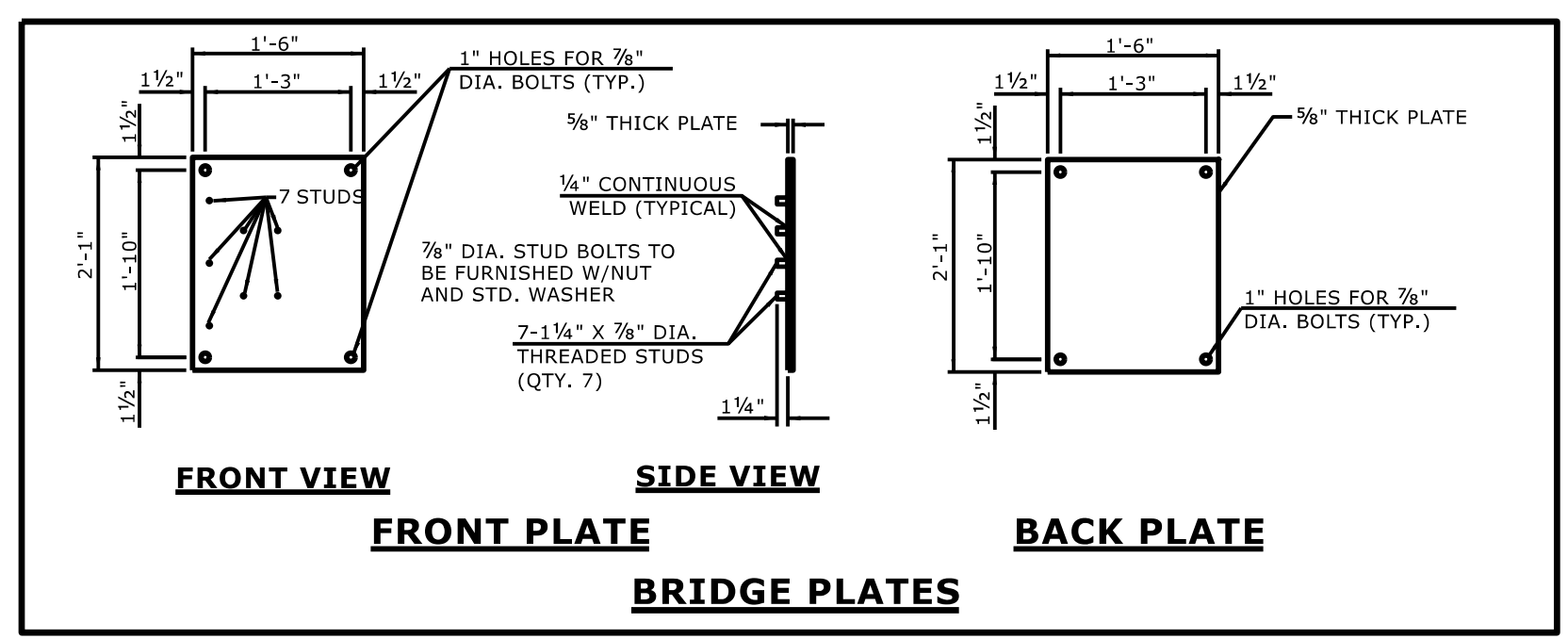


**PLAN VIEW**



**PLAN VIEW INSET "A"**

**STEEL SPACER TUBE**



**FRONT VIEW**

**SIDE VIEW**

**BACK VIEW**

**FRONT PLATE**

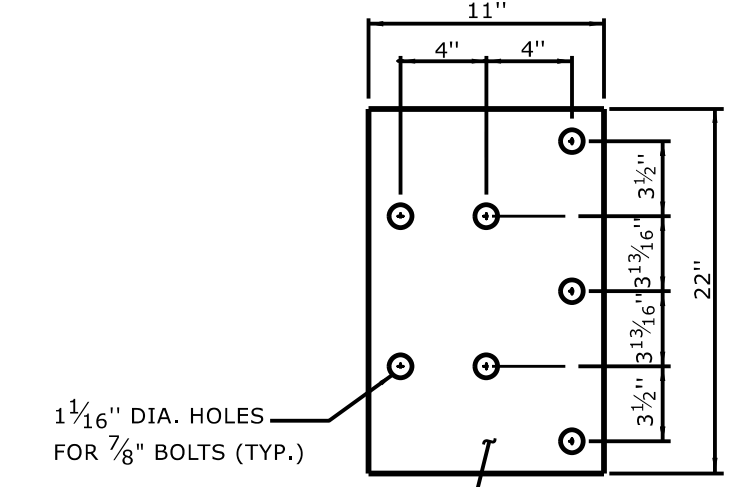
**BRIDGE PLATES**

**NOTES FOR 7 BOLT HOLD DOWN PLATE**

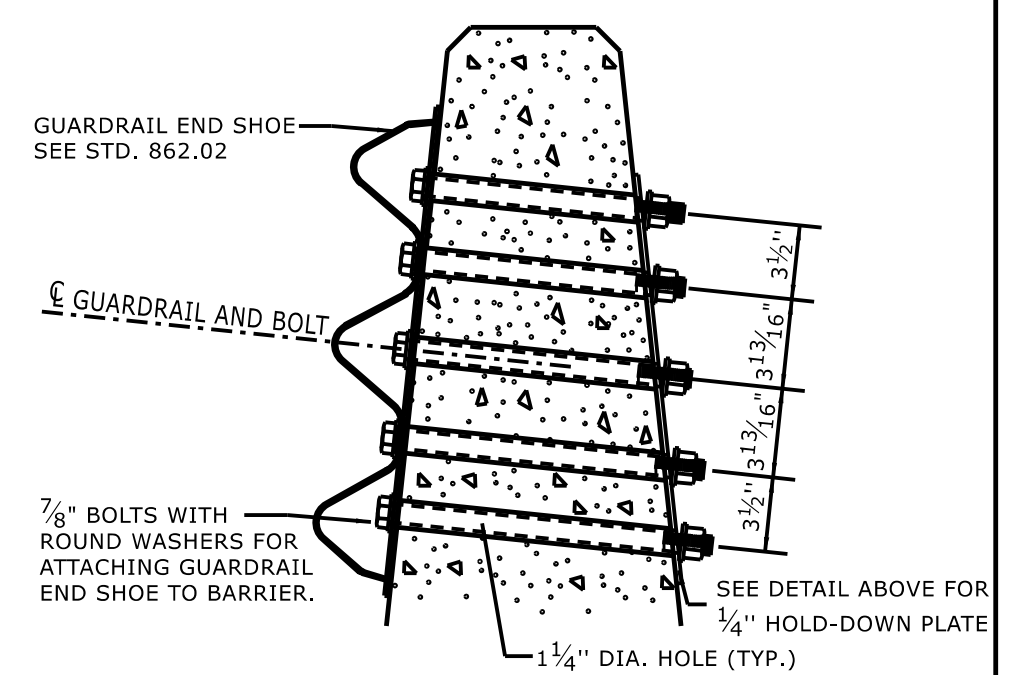
THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" DIA. BOLTS WITH NUTS AND WASHERS.

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.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL. THE 1/4" DIA. 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.



**7 BOLT HOLD DOWN PLATE**



**PART SECTION OF BARRIER OR RAIL THRU END SHOE SECTION AND 7 BOLT HOLD DOWN PLATE**

- GENERAL NOTES:**
- USE NUTS, BOLTS, AND WASHERS CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-307 AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
  - TAP NUTS FOR THE 7/8" DIA. STUDS AND BOLTS AFTER GALVANIZING SEE A.S.T.M. A-563.
  - USE PLATES AND TUBES CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-36 AND GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
  - ADDITIONAL FIELD HOLES MAY BE DRILLED IN STEEL RAIL AS DIRECTED BY THE ENGINEER.
  - INSTALL FACE OF GUARDRAIL AS NEAR AS POSSIBLE TO PLUMB WITH THE PARAPET FACE AT BRIDGE END POST SPACER TUBE LOCATION BY USING STANDARD OR ALTERED SPACER TUBES OR A COMBINATION THEREOF OR AS DIRECTED BY THE ENGINEER. FOR VERY SMALL PARAPET WIDTHS, GUARDRAIL MAY BE INSTALLED AGAINST BRIDGE RAIL WITHOUT SPACER TUBES.
  - DO NOT DRILL BRIDGE RAIL IN ORDER TO INSTALL GUARDRAIL ANCHOR UNIT.
  - USE THIS DETAIL ONLY FOR BRIGES WITH POST AND BEAM TYPE RAIL.
  - ATTACH 1" X 1" BAR AND THREADED STUDS TO PLATE WITH 1/4" WELDS ALL AROUND.
  - 1" X 1" BAR MAY NOT BE NEEDED ON BRIDGE RAILS WHERE FACE OF RAIL DOES NOT PROJECT BEYOND FACE OF POST.
  - PROVIDE SHOP DRAWINGS OF THE PLATES TO THE ENGINEER FOR APPROVAL BEFORE FABRICATING THE PLATES.
  - LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
  - SEE ROADWAY STANDARD DRAWING 862.03 SHEET 3 FOR ADDITIONAL INFORMATION ON THE TYPE III ANCHOR UNIT

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

ROADWAY DETAIL DRAWING FOR  
**STRUCTURE ANCHOR UNITS**  
TEMPORARY ANCHOR UNIT TYPE THRIE-BEAM

SHEET 8 OF 9  
**862D03**

11/4/2025



Signed by:  
*Nicole M. Hacker*  
5884323034164C5...

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.:	

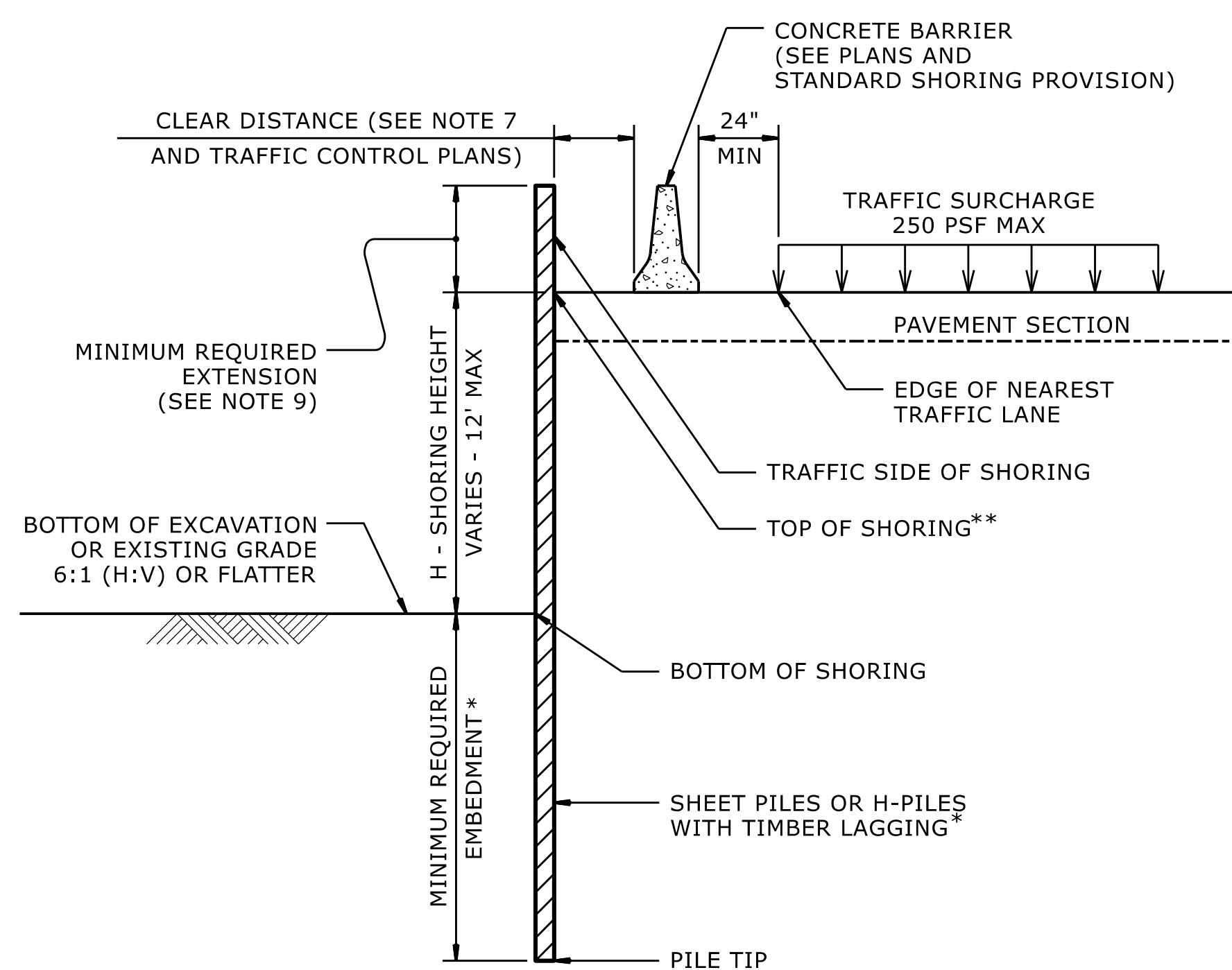
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN <sup>4</sup> /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN <sup>4</sup> /FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
			HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73	
GROUNDWATER ELEVATION BETWEEN 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 "--".

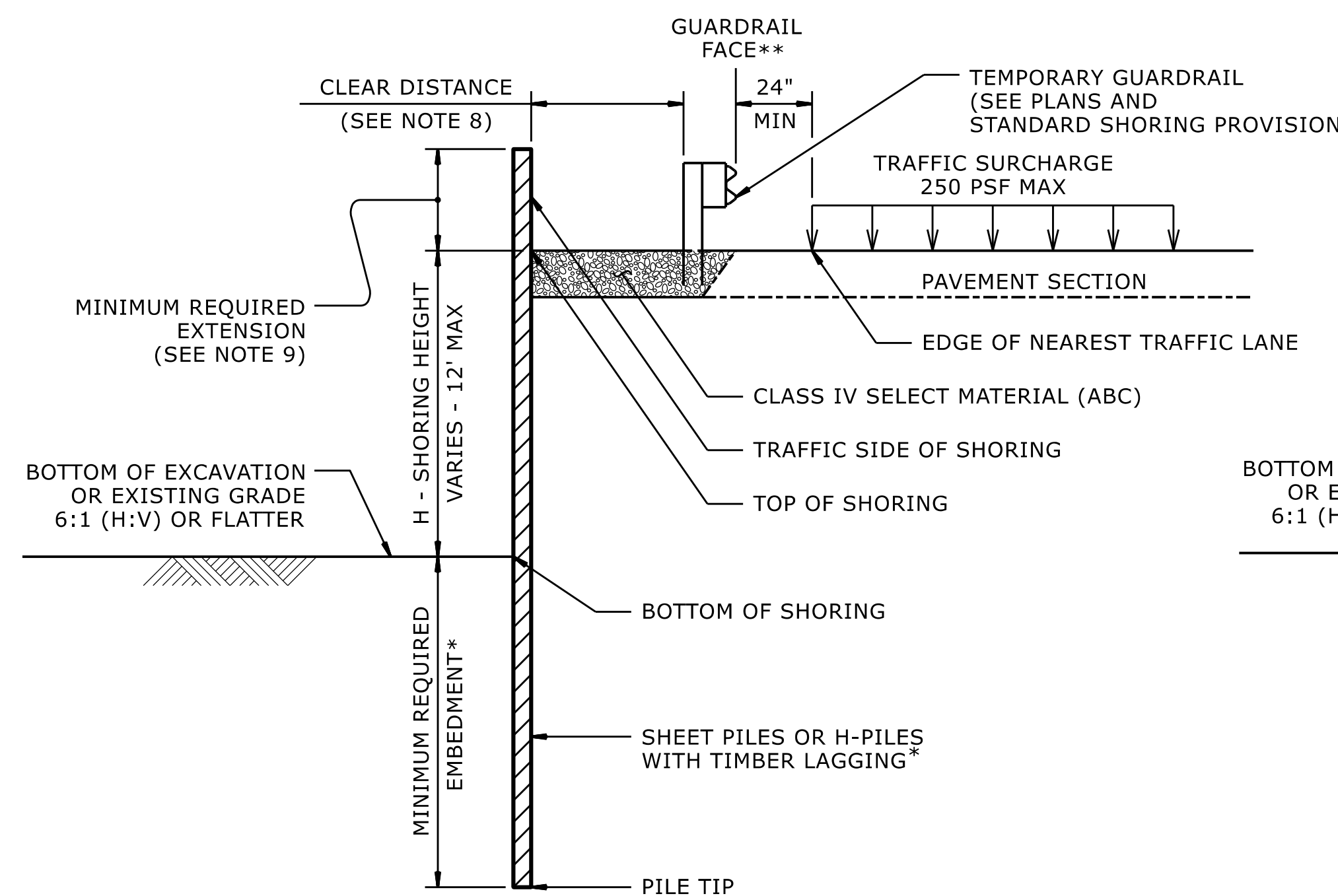
### NOTES:

- AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
- FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
- STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:  
UNIT WEIGHT,  $\gamma = 120$  PCF  
FRICTION ANGLE,  $\phi = 30$  DEGREES  
COHESION,  $c = 0$  PSF
- DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
- DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
- 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.
- 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".
- 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".
- MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
- 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.
- 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](http://connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx)
- CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



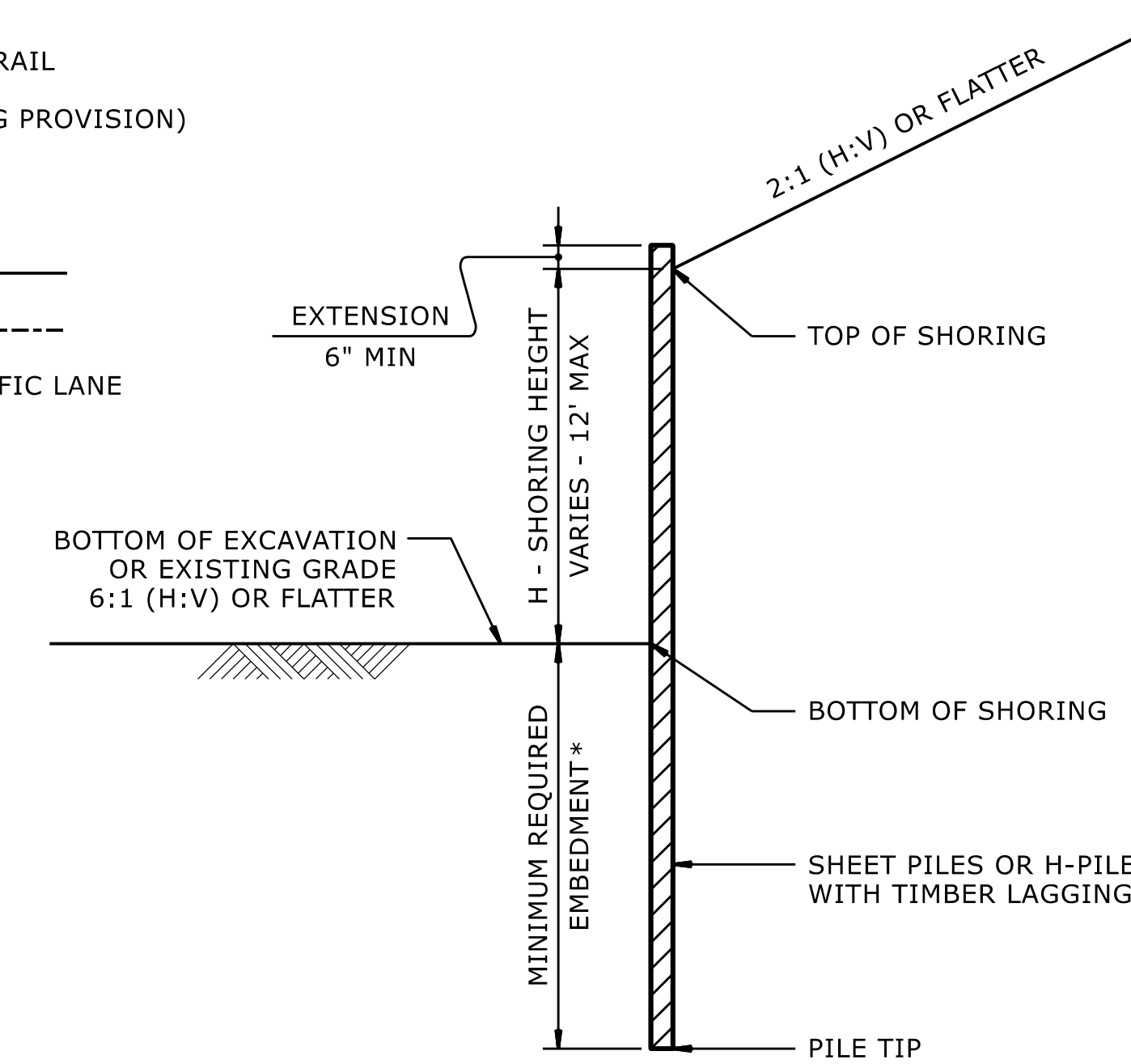
**CONCRETE BARRIER**

\*\*TOP OF SHORING = EDGE OF PAVEMENT



**TEMPORARY GUARDRAIL**

\*\*GUARDRAIL FACE = EDGE OF PAVEMENT

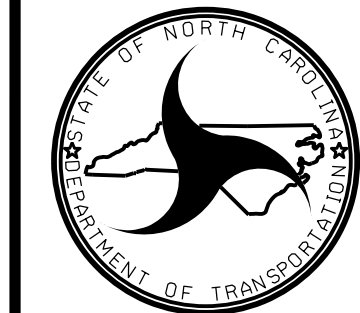


**STANDARD TEMPORARY SHORING**

(SLOPE CASE)  
\*SEE TABLE ABOVE.

### STANDARD TEMPORARY SHORING

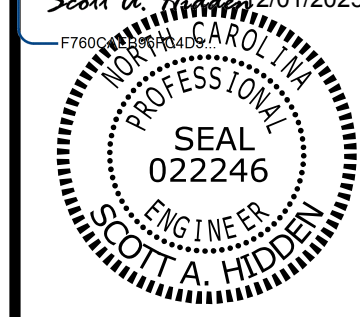
(SURCHARGE CASE)  
\*SEE TABLE ABOVE.



GEOTECHNICAL ENGINEERING UNIT

GEOTECHNICAL ENGINEER

DocuSigned by: Scott A. Hidden 2/20/2025



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STANDARD DETAIL NO. 1801.01

GEOTECHNICAL STANDARD DETAIL FOR TEMPORARY SHORING





**STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS**

**SUMMARY OF SUBSURFACE DRAINAGE**

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

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

**SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION**

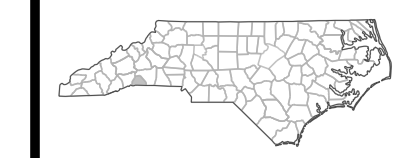
LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Subgrade Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU(1)		100	200	300		
					<b>TOTAL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

**SUMMARY OF REINFORCED SOIL SLOPES AND SLOPE EROSION CONTROL**

LINE	Beginning Slope/ RSS (H:V)	Approx. Station	Ending Slope/ RSS (H:V)	Approx. Station	Location LT/RT	Reinforced Soil Slope (RSS) SY	Geocells SY	Compost Blanket for Geocells SY	Coir Fiber Mat SY	Matting for Erosion Control SY
L1	1.5:1	10+30+/-	1.5:1	13+00+/-	RT				550	
						<b>TOTAL SY:</b>	0	0	550*	0**

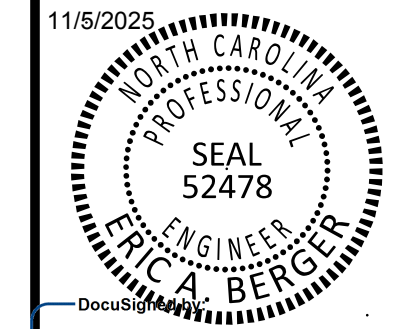
\*Total square yards of "Coir Fiber Mat" is only the estimated quantity for slopes steeper than 2:1 (H:V) and may only represent a portion of the coir fiber mat quantity shown in the Item Sheets of the Proposal.  
 \*\*Total square yards of "Matting for Erosion Control" is only the estimated quantity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



ROADWAY DESIGN UNIT ROADWAY DESIGN ENGINEER



11/14/2025 Document No. 1E108857



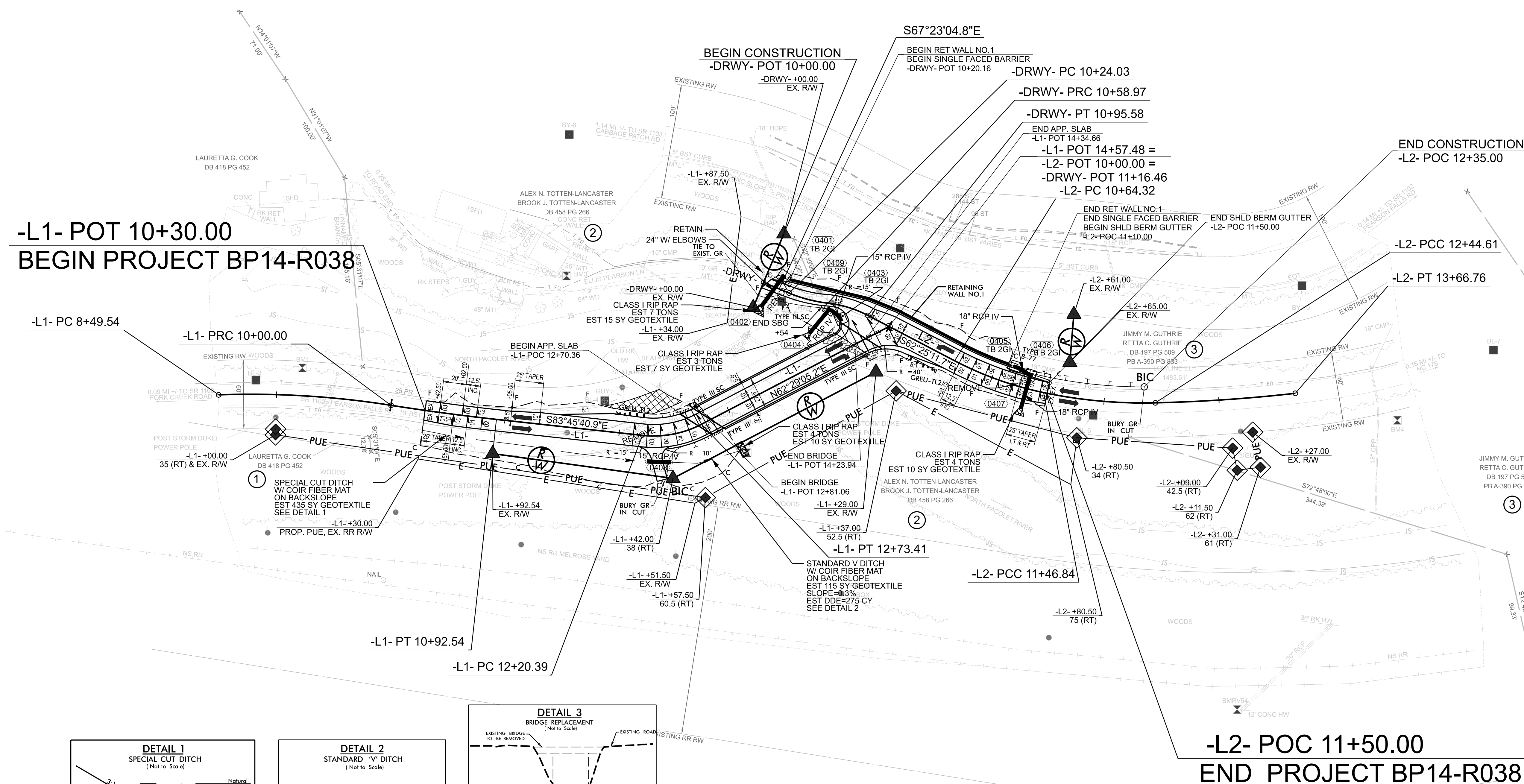
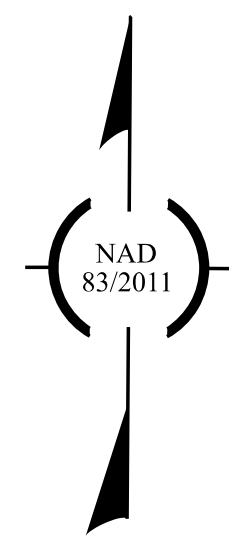
11/5/2025 Document No. 1E108857



11/5/2025 Document No. 1E108857

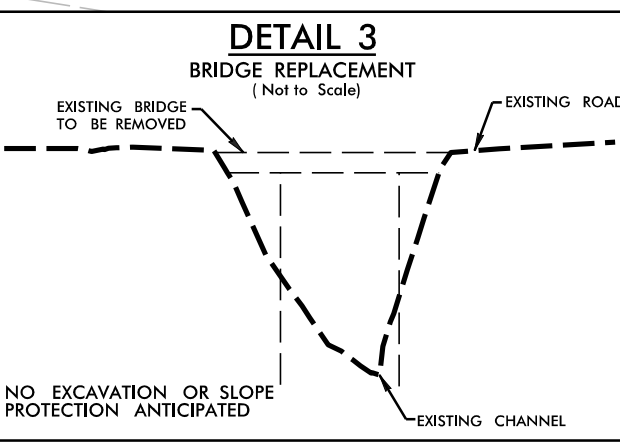
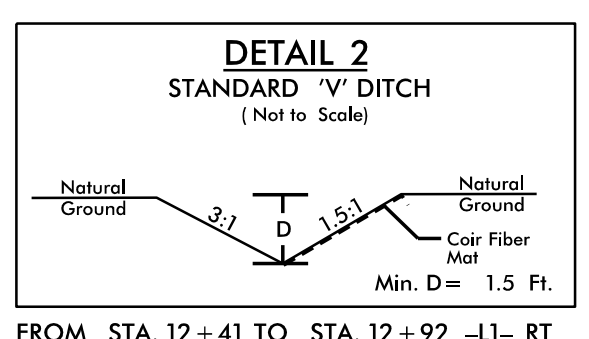
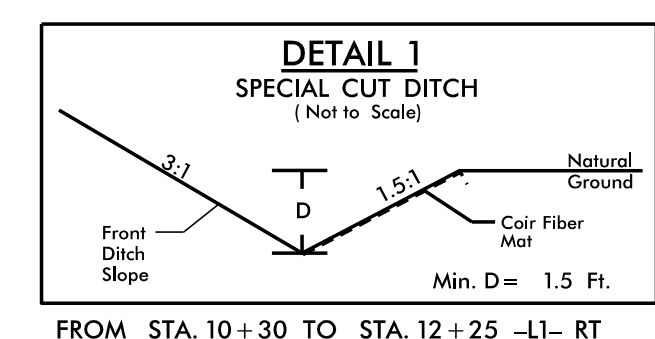
UNLESS ALL SIGNATURES COMPLETED

CUR DATA -L1-	CUR DATA -L1-	CUR DATA -L1-	CUR DATA -L2-	CUR DATA -L2-	CUR DATA -L2-	CUR DATA -L2-	CUR DATA -DRWY-	CUR DATA -DRWY-
Pic 9+25.00	Pic 10+46.28	Pic 12+47.69	Pic 11+05.84	Pic 11+95.94	Pic 13+05.73	Pic 10+41.62	Pic 10+77.48	Pic 10+77.48
$\Delta c = 11^{\circ}03'07.9''$ (RT)	$\Delta c = 02^{\circ}45'15.6''$ (LT)	$\Delta c = 33^{\circ}45'13.9''$ (LT)	$\Delta c = 15^{\circ}45'36.3''$ (LT)	$\Delta c = 13^{\circ}10'54.4''$ (LT)	$\Delta c = 05^{\circ}03'11.4''$ (LT)	$\Delta c = 16^{\circ}00'44.0''$ (LT)	$\Delta c = 20^{\circ}58'37.2''$ (RT)	$\Delta c = 20^{\circ}58'37.2''$ (RT)
D = 07°20'44.2"	D = 02°58'35.1"	D = 63°39'43.1"	D = 19°05'54.9"	D = 13°28'52.9"	D = 04°08'12.8"	D = 45°50'12.0"	D = 57°17'44.8"	D = 57°17'44.8"
Lc = 150.46	Lc = 92.54	Lc = 53.02	Lc = 82.52	Lc = 97.78	Lc = 122.15	Lc = 34.93	Lc = 36.61	Lc = 36.61
Tc = 75.46	Tc = 46.28	Tc = 27.30	Tc = 41.52	Tc = 49.11	Tc = 61.11	Tc = 17.58	Tc = 18.51	Tc = 18.51
R = 780	R = 1,925	R = 90	R = 300	R = 425	R = 1,385	R = 125	R = 100	R = 100
SE = EXIST.	SE = EXIST.	SE = NC	SE = NC	SE = EXIST.	SE = EXIST.	SE = NC	SE = NC	SE = NC
		DS = 20 MPH*						

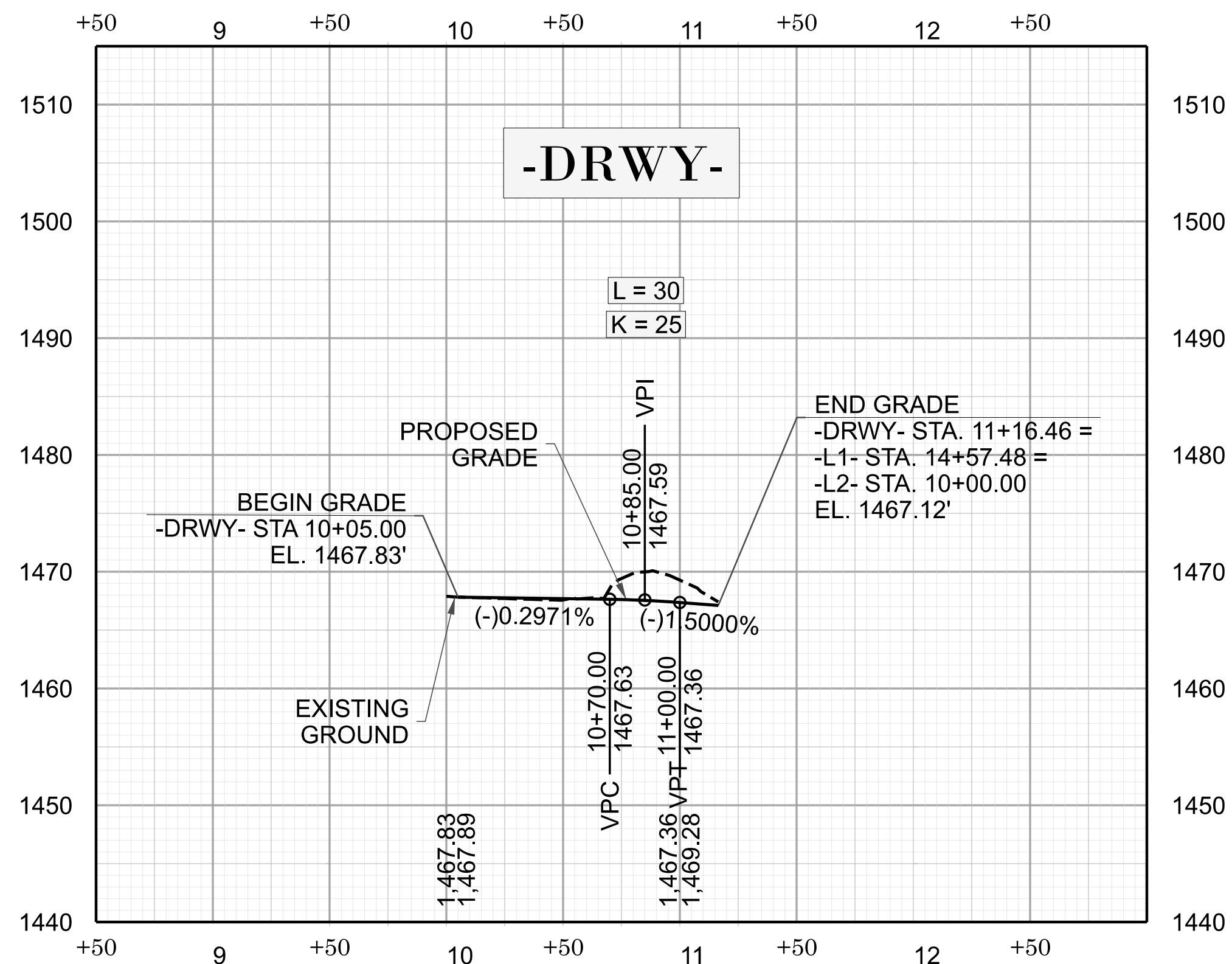
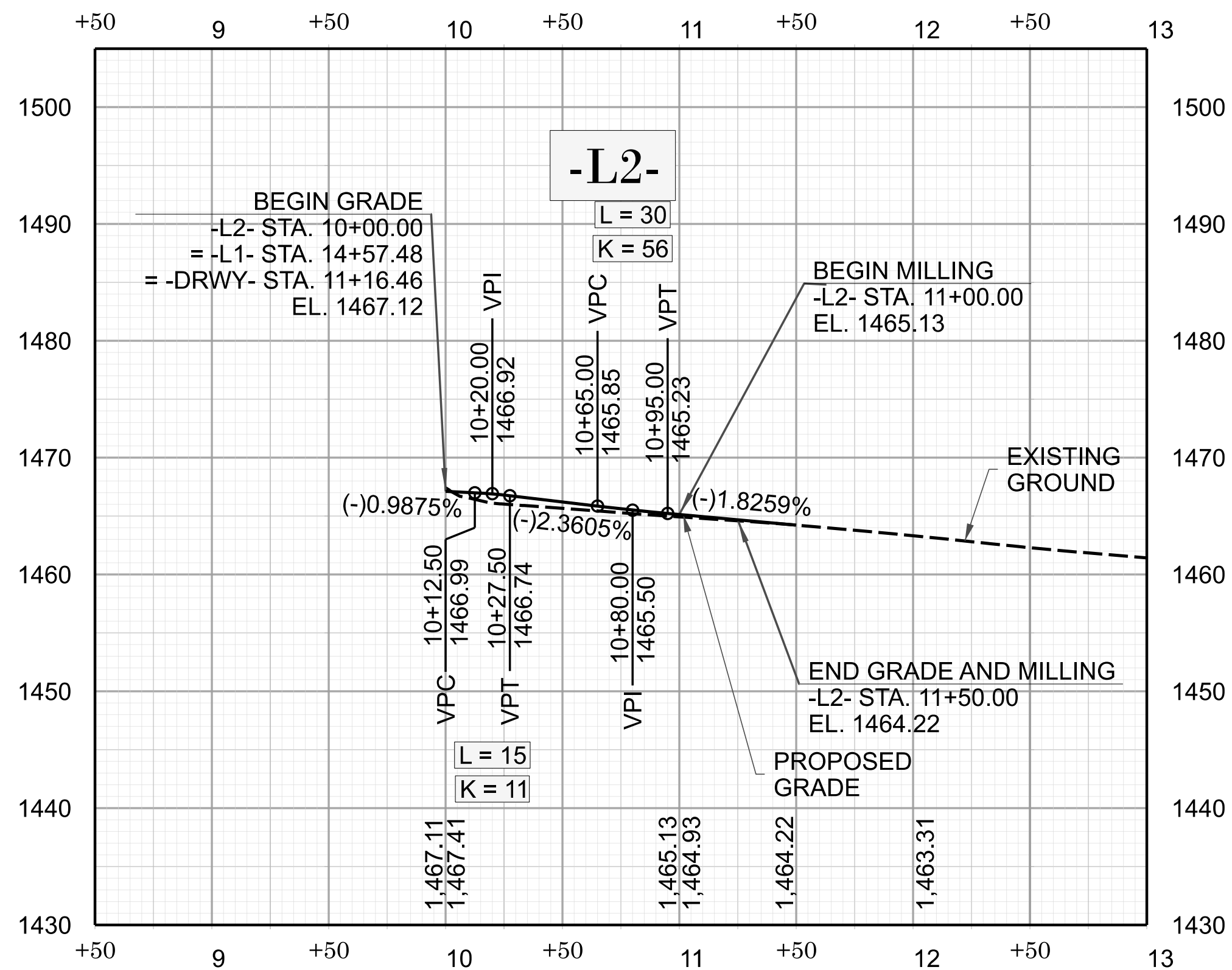
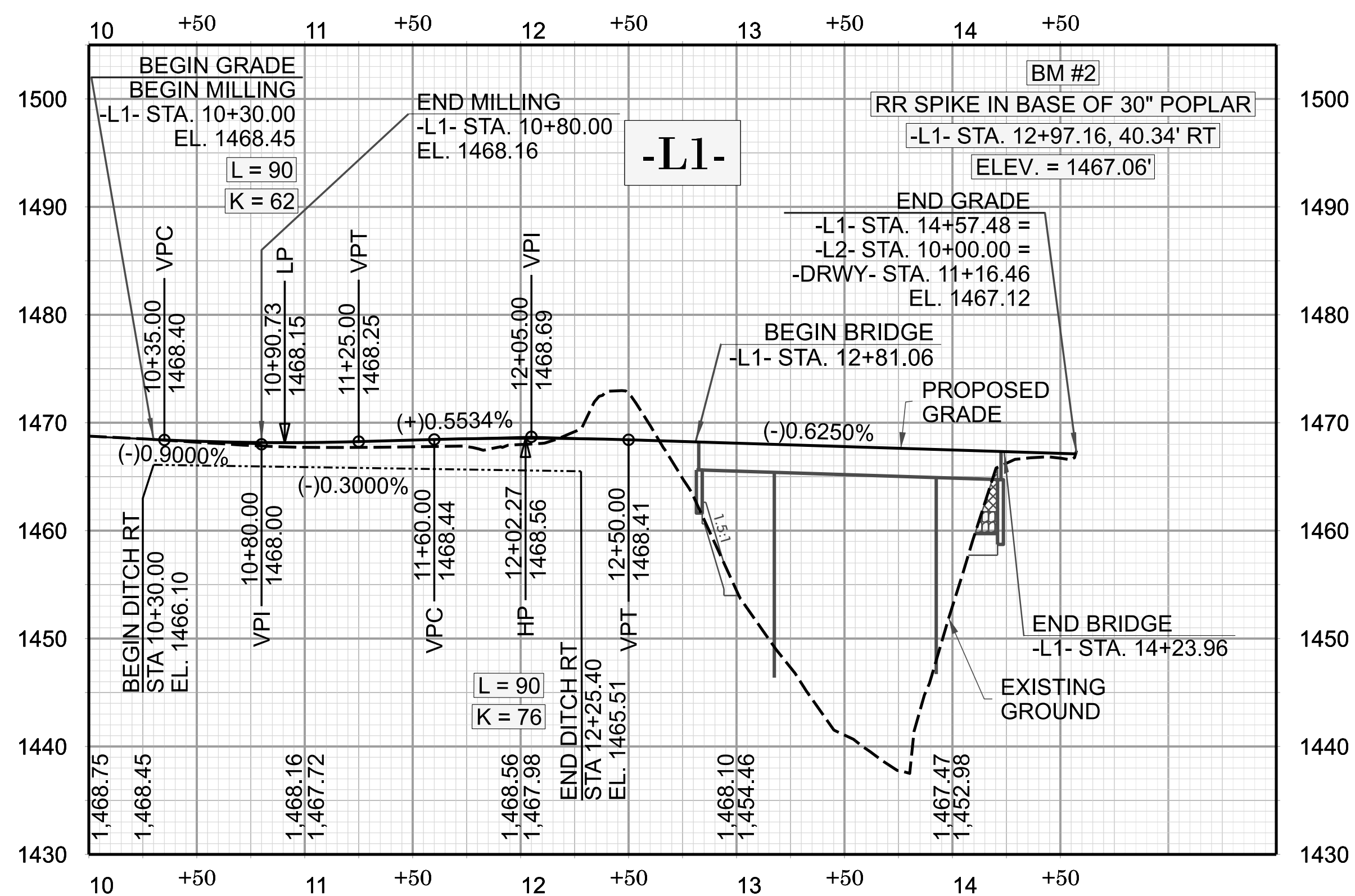


-L1- POT 10+30.00  
BEGIN PROJECT BP14-R038

-L2- POC 11+50.00  
END PROJECT BP14-R038



SEE SHEET 5 FOR -L1-, -L2-, AND -DRWY- PROFILES



*BRIDGE HYDRAULIC DATA*

DESIGN DISCHARGE	=	2300 CFS
DESIGN FREQUENCY	=	25 YRS
DESIGN HW ELEVATION	=	1449.4 FT
BASE DISCHARGE	=	3460 CFS
BASE FREQUENCY	=	100 YRS
BASE HW ELEVATION	=	1450.9 FT
OVERTOPPING DISCHARGE	=	16000 CFS
OVERTOPPING FREQUENCY	=	500+ YR
OVERTOPPING ELEVATION	=	1466.8 FT
W.S. ELEVATION ON DATE OF SURVEY(7/31/24)	=	76133 FT

SEE SHEET 4 FOR PLAN VIEW OF ALL ALIGNMENTS

**BP14-R038**  
4R01 | 05

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
POLK COUNTY

ROADWAY DESIGN UNIT  
ROADWAY DESIGN ENGINEER

11/4/2025  
SEAL 25477  
ERIC A. DUNCAN  
ENGINEER

11/5/2025  
SEAL 52478  
ERIC A. BERGER  
ENGINEER

Eric Berger  
VHB Engineering, Inc. P.C. (C-3705)  
940 Main Campus Drive, Suite 500  
Raleigh, NC 27606

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

09/08/2025

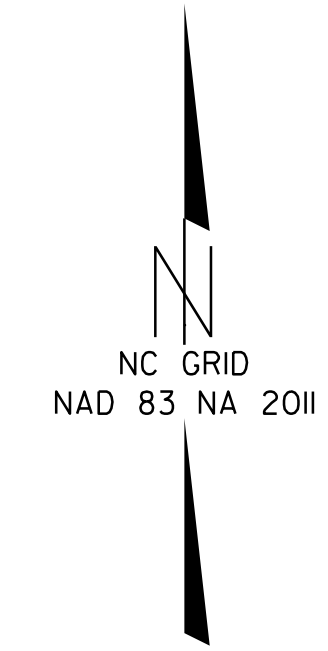
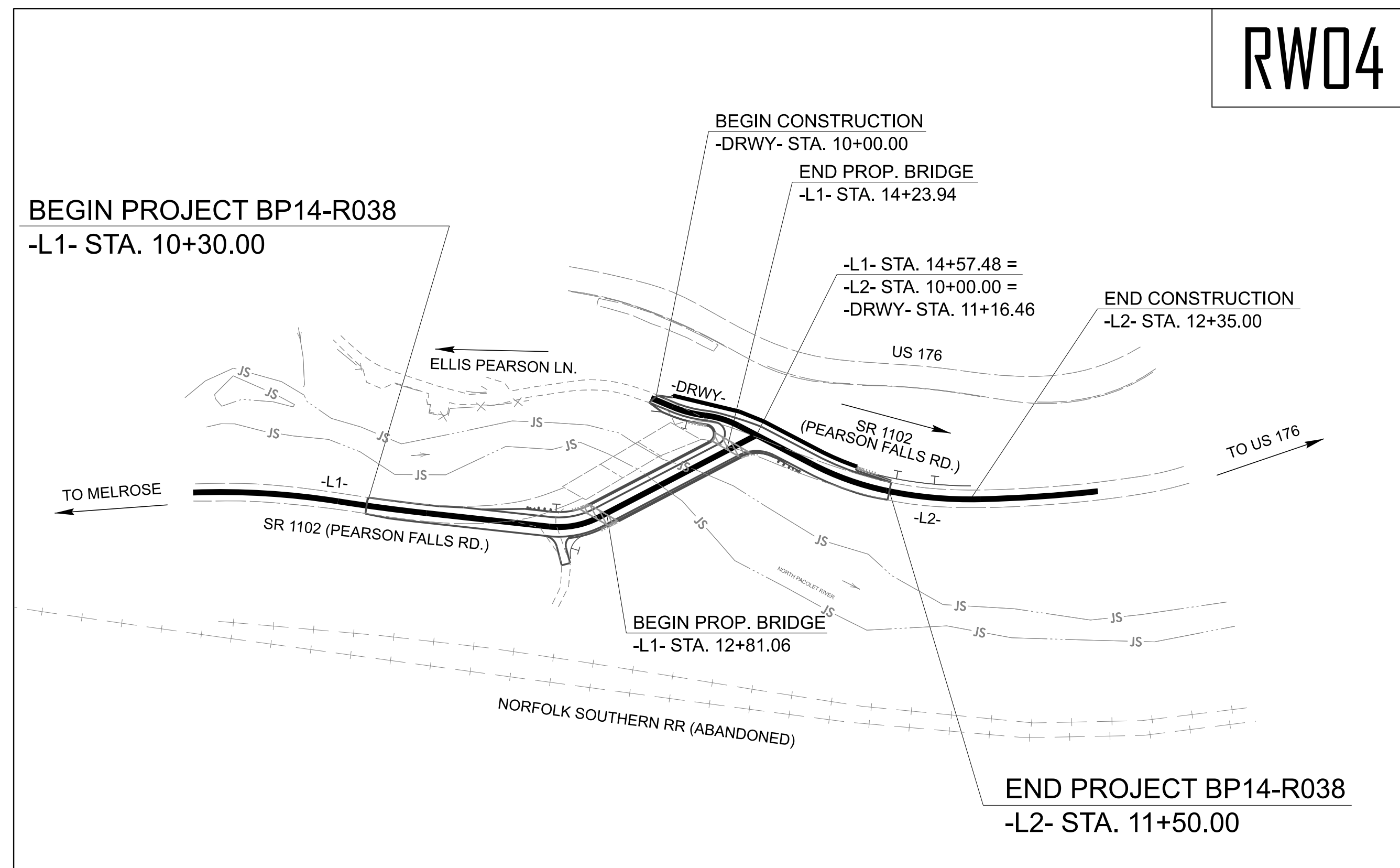
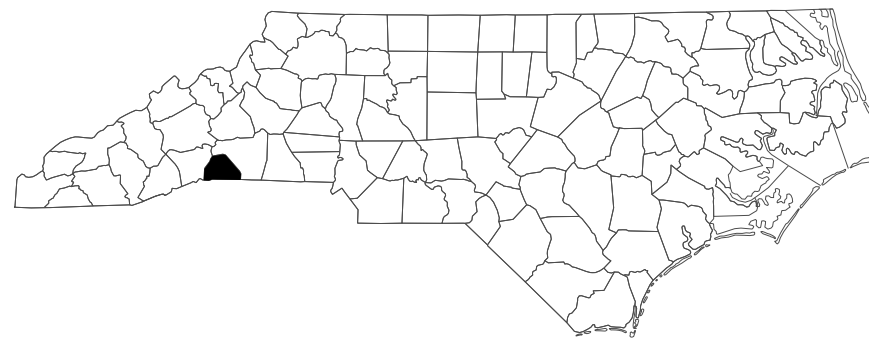
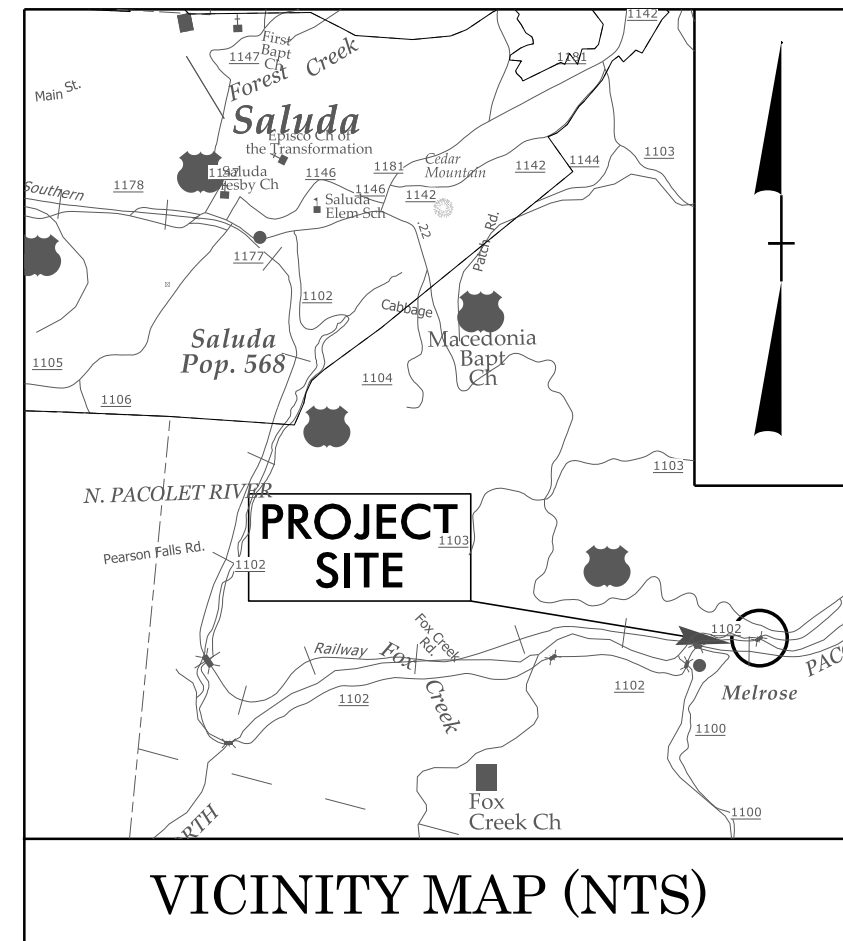
TIP PROJECT: BP14.R038

# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

STATE NO.	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP14.R038	RW01	5

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

# POLK COUNTY



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

### GRAPHIC SCALES



### DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT 09-2 WITH NAD83/2011 STATE PLANE GRID COORDINATES OF  
NORTHING: 552206.4630' EASTING: 1009242.0210'  
ELEVATION: 1449.77'

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99980858  
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
VERTICAL DATUM USED IS NAVD 88

Prepared in the Office of:

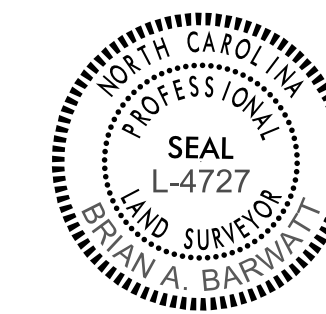
LOCATION AND SURVEYS  
DIVISION 14  
122 BONNIE LANE  
SYLVA, NC 28779

2024 STANDARD SPECIFICATIONS

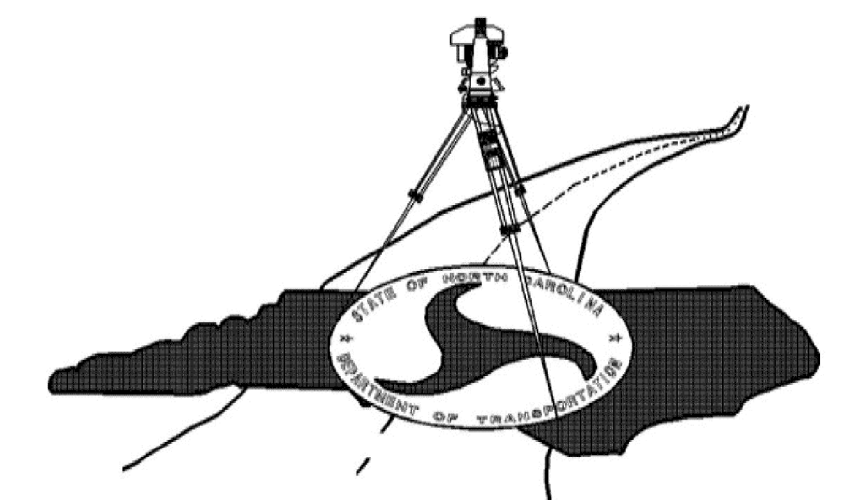
RIGHT OF WAY DATE:  
APRIL 25, 2025

LETTING DATE:  
NOVEMBER 11, 2025

PROFESSIONAL LAND SURVEYOR



DocuSigned by:  
*Brian Barwatt* 09/22/2025  
ASSISTANCE  
SIGNATURE: DATE:



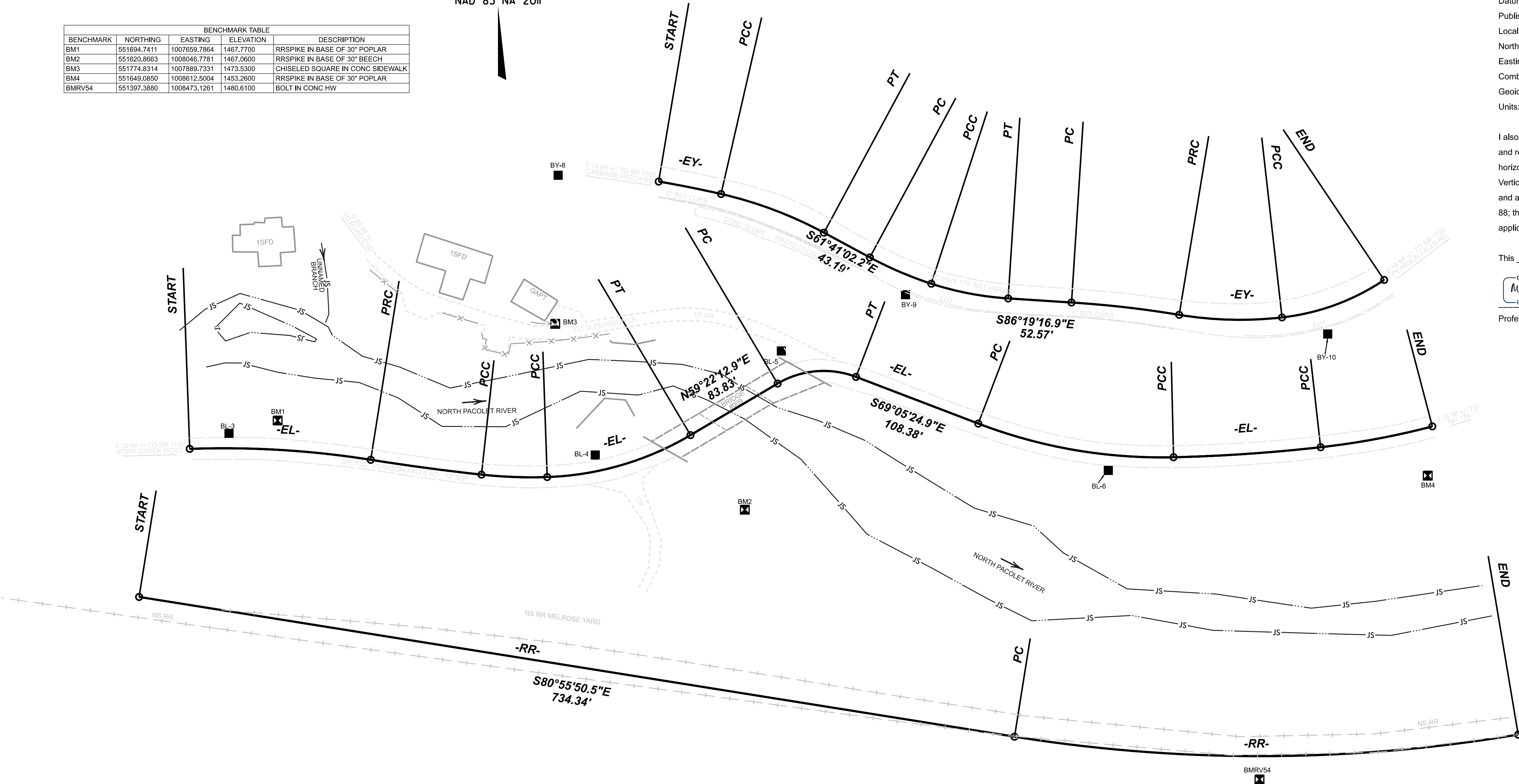
# SURVEY CONTROL SHEET

## W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

BASELINE POINTS TABLE				
POINT	DESC	NORTH	EAST	ELEVATION
1	09-1	552515.3980	1009531.2710	1443.5100
2	09-2	552206.4630	1009242.0210	1449.7700
3	BL-3	551684.1490	1007619.3480	1469.3500
4	BL-4	551665.1696	1007922.8996	1466.4200
5	BL-5	551752.4350	1008076.8943	1467.0800
6	BL-6	551653.4582	1008347.8176	1463.3300
7	BL-7	551710.2903	1008696.1390	1455.2600
8	BY-8	551897.7985	1007892.0656	1544.2900
9	BY-9	551799.0294	1008179.8567	1525.8400

NC GRID  
NAD 83 NA 2011

BENCHMARK TABLE				
BENCHMARK	NORTHING	EASTING	ELEVATION	DESCRIPTION
BM1	551694.7411	1007659.7864	1467.7700	RRSPIKE IN BASE OF 30' POPLAR
BM2	551620.8663	1008046.7781	1467.0600	RRSPIKE IN BASE OF 30' BEECH
BM3	551774.8314	1007889.7331	1473.5300	CHISELED SQUARE IN CONC SIDEWALK
BM4	551649.0850	1008612.5004	1453.2600	RRSPIKE IN BASE OF 30' POPLAR
BMRV54	551397.3880	1008473.1261	1480.6100	BOLT IN CONC HW



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: May 2023  
 Datum/Epoch: NAD83/2011  
 Published/Fixed-control use: N/A  
 Localized around: 09-2  
 Northing: 552206.463  
 Easting: 1009242.021  
 Combined grid factor: 0.99980858  
 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 from May 2023 to July 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 8/16/2023  
 DocuSigned by:  
**Matthew Cornwell**  
 E8036F11473E475  
 Professional Land Surveyor L-4775

74-0009  
 R/W 02C-1  
 NORTH CAROLINA  
 DEPARTMENT  
 OF TRANSPORTATION

PROFESSIONAL LAND  
 SURVEYOR

DOCUMENT NOT CONSIDERED  
 FINAL UNLESS ALL SIGNATURES  
 ARE COMPLETED

2018 STANDARD  
 SPECIFICATIONS

**TIP PROJECT: 74-0009**  
**County: Polk**

EXISTING ALIGNMENT NAME:EL									
POINT	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R
PC	551671.2595	1007586.9577			11°03'07.9" Right	07°20'44.2"	150.46	75.46	780.00
PRC	551662.1751	1007736.9093			02°45'15.6" Left	02°58'35.1"	92.54	46.28	1925.00
PCC	551649.9121	1007828.6232			08°13'33.5" Left	15°04'40.2"	54.56	27.33	380.00
PT	551682.6204	1008001.7980			28°38'32.6" Left	22°55'05.9"	124.98	63.82	250.00
LINE	551725.3298	1008073.9301	N59°22'12.9"E	83.8280					
PT	551730.8548	1008138.9090			51°32'22.2" Right	76°23'39.7"	67.47	36.21	75.00
LINE	551692.1743	1008240.1516	S69°05'24.9"E	108.3801					
PC	551672.5860	1008523.7618			22°16'17.4" Left	13°28'52.9"	165.20	83.66	425.00
PCC	551672.5860	1008523.7618			05°03'11.4" Left	04°08'12.8"	122.15	61.11	1385.00
PC	551672.5860	1008523.7618			08°18'20.2" Left	08°48'53.0"	94.22	47.19	650.00

EXISTING ALIGNMENT NAME:EY									
POINT	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R
PC	551892.6663	1007975.4352			03°21'18.2" Right	06°21'58.3"	52.70	26.36	900.00
PCC	551882.3887	1008027.1169			15°23'28.4" Right	16°51'06.1"	91.33	45.94	340.00
PT	551850.3199	1008112.3422			S61°41'02.2"E	43.1921			
LINE	551829.8324	1008150.3661							
PC	551808.0534	1008201.2829			10°18'57.0" Left	18°38'09.1"	55.45	27.80	308.00
PCC	551795.8635	1008264.9466			14°19'17.7" Left	22°02'12.6"	64.99	32.66	260.00
PT	551792.4904	1008317.4110			S86°19'16.9"E	52.5727			
LINE	551782.2934	1008406.6081			05°41'10.3" Right	06°19'51.7"	89.81	44.94	905.00
PC	551780.1163	1008491.8068			15°48'07.4" Left	18°28'57.0"	85.50	43.02	310.00
PCC	551780.1163	1008491.8068			27°26'23.5" Left	30°09'20.4"	90.99	46.39	190.00

EXISTING ALIGNMENT NAME:RR									
POINT	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R
START	551548.5611	1007545.0208							
LINE			S80°55'50.5"E	734.3402					
PC	551432.8076	1008270.1806							
CURVE			18°36'52.5" Left	04°26'29.5"	419.10	211.41	1290.00		

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

PREPARED FOR

LOCATION AND  
 SURVEYS UNIT

PREPARED BY

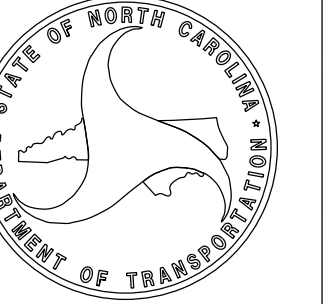
TGS ENGINEERS  
 201 WEST MARION ST.  
 SUITE 200  
 SHELBY, NC 28150  
 704-476-0003

# PROPOSED ALIGNMENT CONTROL SHEET

BP14.R038

R/W 020-1

NORTH CAROLINA  
DEPARTMENT  
OF TRANSPORTATION



I, BRIAN BARWATT, 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 22ND DAY OF SEPTEMBER, 2025.

DocuSigned by:  
*Brian Barwatt*

PROFESSIONAL LAND SURVEYOR L-4727

PROFESSIONAL LAND  
SURVEYOR



DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL SIGNATURES  
ARE COMPLETED

2024 STANDARD  
SPECIFICATIONS

**TIP PROJECT: BP14.R038**  
County: Polk

PROPOSED ALIGNMENT: L1												
POINT	STATION	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R	LT	ST
START/PC	8+49.54	551671.2595	1007586.9577	S86°31'59.2"E	150.2265	11°03'07.9"	07°20'44.2"	150.4600	75.4640	780.0000		
PRC	10+00.00	551662.1751	1007736.9093	S82°23'03.1"E	92.5301	02°45'15.6"	02°58'35.1"	92.5390	46.2780	1925.0000		
PT	10+92.54	551649.9121	1007828.6232	S83°45'40.9"E	127.8465							
PC	12+20.39	551636.0190	1007955.7126	N79°21'42.2"E	52.2570	33°45'13.9"	63°39'43.1"	53.0200	27.3050	90.0000		
PT	12+73.41	551645.6661	1008007.0714	N62°29'05.2"E	184.0725							
END	14+57.48	551730.7046	1008170.3231									

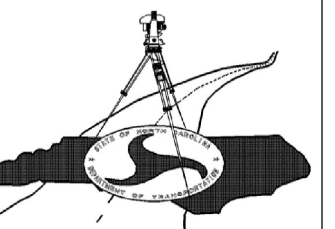
PROPOSED ALIGNMENT: L2												
POINT	STATION	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R	LT	ST
START	10+00.00	551730.7046	1008170.3230	S62°25'11.7"E	64.3172							
PC	10+64.32	551700.9265	1008227.3320	S70°17'59.8"E	82.2597	15°45'36.3"	19°05'54.9"	82.5196	41.5219	300.0000		
PCC	11+46.84	551673.1971	1008304.7770	S84°46'15.2"E	97.5623	13°10'54.4"	13°28'52.9"	97.7778	49.1057	425.0000		
PCC/END	12+44.61	551664.3054	1008401.9330	N86°06'41.9"E	122.1099	05°03'11.4"	04°08'12.8"	122.1495	61.1144	1385.0000		

PROPOSED ALIGNMENT: DRWY												
POINT	STATION	NORTHING	EASTING	BEARING	DIST	DELTA	D	L	T	R	LT	ST
START	10+00.00	551769.0990	1008061.1314	S67°23'04.8"E	24.0341							
PC	10+24.03	551759.8569	1008083.3175	S75°23'26.8"E	34.8197	16°00'44.0"	45°50'12.0"	34.9333	17.5812	124.9999		
PRC	10+58.97	551751.0745	1008117.0114	S72°54'30.3"E	36.4076	20°58'37.2"	57°17'44.8"	36.6118	18.5131	100.0000		
PT	10+95.58	551740.3743	1008151.8112	S62°25'11.7"E	20.8853							
END	11+16.46	551730.7046	1008170.3231									

**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.

PREPARED FOR



LOCATION AND  
SURVEYS UNIT

PREPARED BY

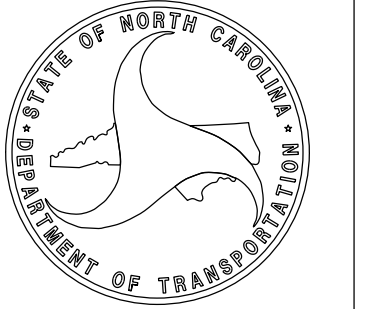
LOCATION AND SURVEYS  
DIVISION 14  
122 BONNIE LANE  
SYLVA, NC 28779

# RIGHT OF WAY CONTROL SHEET

**BP14.R038**

R/W 03E-1

NORTH CAROLINA  
DEPARTMENT  
OF TRANSPORTATION



PROFESSIONAL LAND  
SURVEYOR



DOCUMENT NOT CONSIDERED  
FINAL UNLESS ALL SIGNATURES  
ARE COMPLETED

2024 STANDARD  
SPECIFICATIONS

I, BRIAN BARWATT, 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 5/13/2025 TO 5/14/2025, 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 22ND DAY OF SEPTEMBER, 2025.

DocuSigned by:  
*Brian Barwatt*  
PROFESSIONAL LAND SURVEYOR L-4727  
PROFESSIONAL LAND SURVEYOR L-4727

PERMANENT ROW MARKER IRON PIN AND CAP: L1			
STATION	OFFSET	NORTH	EAST
10+92.54	30.00	551620.0896	1007825.3641
12+42.00	38.00	551598.5874	1007982.2480
14+29.00	29.79	551691.1282	1008158.8318

PERMANENT EASEMENT MARKER IRON PIN AND CAP: L1			
STATION	OFFSET	NORTH	EAST
9+00.00	30.00	551641.4532	1007636.5458
9+00.00	35.00	551636.4553	1007636.4021
12+57.50	60.50	551581.8643	1008010.4713
14+37.00	52.50	551674.6823	1008176.4152

PERMANENT ROW MARKER IRON PIN AND CAP: L2			
STATION	OFFSET	NORTH	EAST
11+61.00	-71.89	551741.3424	1008331.0581
11+65.00	-30.00	551699.4572	1008327.5138

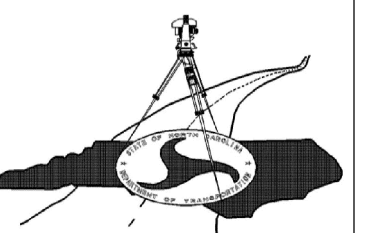
PERMANENT EASEMENT MARKER IRON PIN AND CAP: L2			
STATION	OFFSET	NORTH	EAST
11+80.50	34.00	551633.8873	1008333.6551
13+09.00	42.50	551624.9357	1008469.2248
13+11.50	62.00	551605.6695	1008473.1990
13+27.00	30.00	551638.8149	1008486.6830
13+31.00	61.00	551608.2756	1008493.4220

PERMANENT ROW MARKER IRON PIN AND CAP: DRWY			
STATION	OFFSET	NORTH	EAST
10+00.00	-45.81	551811.3871	1008078.7462
10+00.00	23.70	551747.2194	1008052.0170

-POINT NOT SET (INACCESSIBLE)

**TIP PROJECT: BP14.R038**  
County: Polk

PREPARED FOR



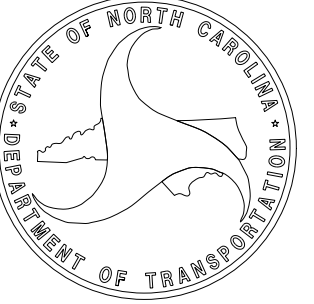
LOCATION AND  
SURVEYS UNIT

PREPARED BY

LOCATION AND SURVEYS  
DIVISION 14  
122 BONNIE LANE  
SYLVA, NC 28779

NOTES:

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



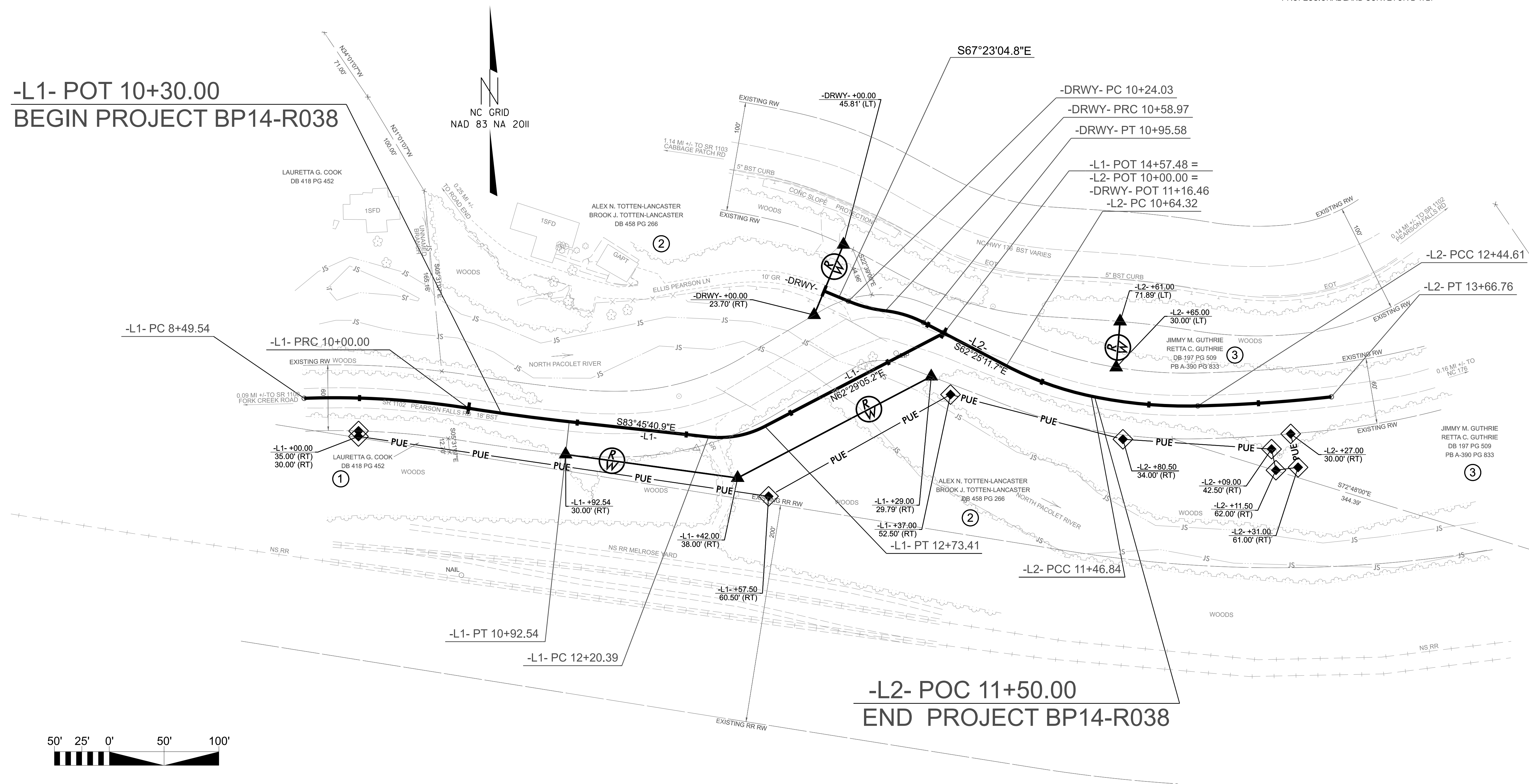
I, BRIAN BARWATT, PLS, CERTIFY THAT THE RIGHT OF WAY AND PERMANENT EASEMENT MONUMENTATION FOR THIS PROJECT SHOWN HEREIN WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT ALL HORIZONTAL CLOSURES HAD A MINIMUM RATIO OF PRECISION OF 1:10,000 (CLASS A). FIELD WORK WAS PERFORMED FROM 5/13/2025 TO 5/14/2025, 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 22ND DAY OF SEPTEMBER, 2025.

Designed by: *Brian Barwatt*  
PROFESSIONAL LAND SURVEYOR L-4727

CUR DATA -L1-	CUR DATA -L1-	CUR DATA -L1-	CUR DATA -L2-	CUR DATA -L2-	CUR DATA -L2-	CUR DATA -L2-	CUR DATA -DRWY-	CUR DATA -DRWY-
Plc 9+25.00	Plc 10+46.28	Plc 12+47.69	Plc 11+05.84	Plc 11+95.94	Plc 13+05.73	Plc 10+41.62	Plc 10+77.48	
$\Delta c = 11^{\circ}03'07.9''$ (RT)	$\Delta c = 02^{\circ}45'15.6''$ (LT)	$\Delta c = 33^{\circ}45'13.9''$ (LT)	$\Delta c = 15^{\circ}45'36.3''$ (LT)	$\Delta c = 13^{\circ}10'54.4''$ (LT)	$\Delta c = 05^{\circ}03'11.4''$ (LT)	$\Delta c = 16^{\circ}00'44.0''$ (LT)	$\Delta c = 20^{\circ}58'37.2''$ (RT)	
D = 07'20'44.2"	D = 02'58'35.1"	D = 63'39'43.1"	D = 19'05'54.9"	D = 13'28'52.9"	D = 04'08'12.8"	D = 45'50'12.0"	D = 57'17'44.8"	
Lc = 150.46	Lc = 92.54	Lc = 53.02	Lc = 82.52	Lc = 97.78	Lc = 122.15	Lc = 34.93	Lc = 36.61	
Tc = 75.46	Tc = 46.28	Tc = 27.30	Tc = 41.52	Tc = 49.11	Tc = 61.11	Tc = 17.58	Tc = 18.51	
R = 780	R = 1,925	R = 90	R = 300	R = 425	R = 1,385	R = 125	R = 100	

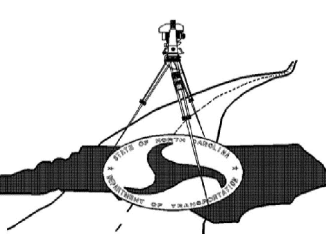
**-L1- POT 10+30.00  
BEGIN PROJECT BP14-R038**



**-L2- POC 11+50.00  
END PROJECT BP14-R038**

**TIP PROJECT: BP14.R038**  
County: Polk

PREPARED FOR



LOCATION AND SURVEYS UNIT

PREPARED BY

LOCATION AND SURVEYS DIVISION 14 122 BONNIE LANE SYLVIA, NC 28779

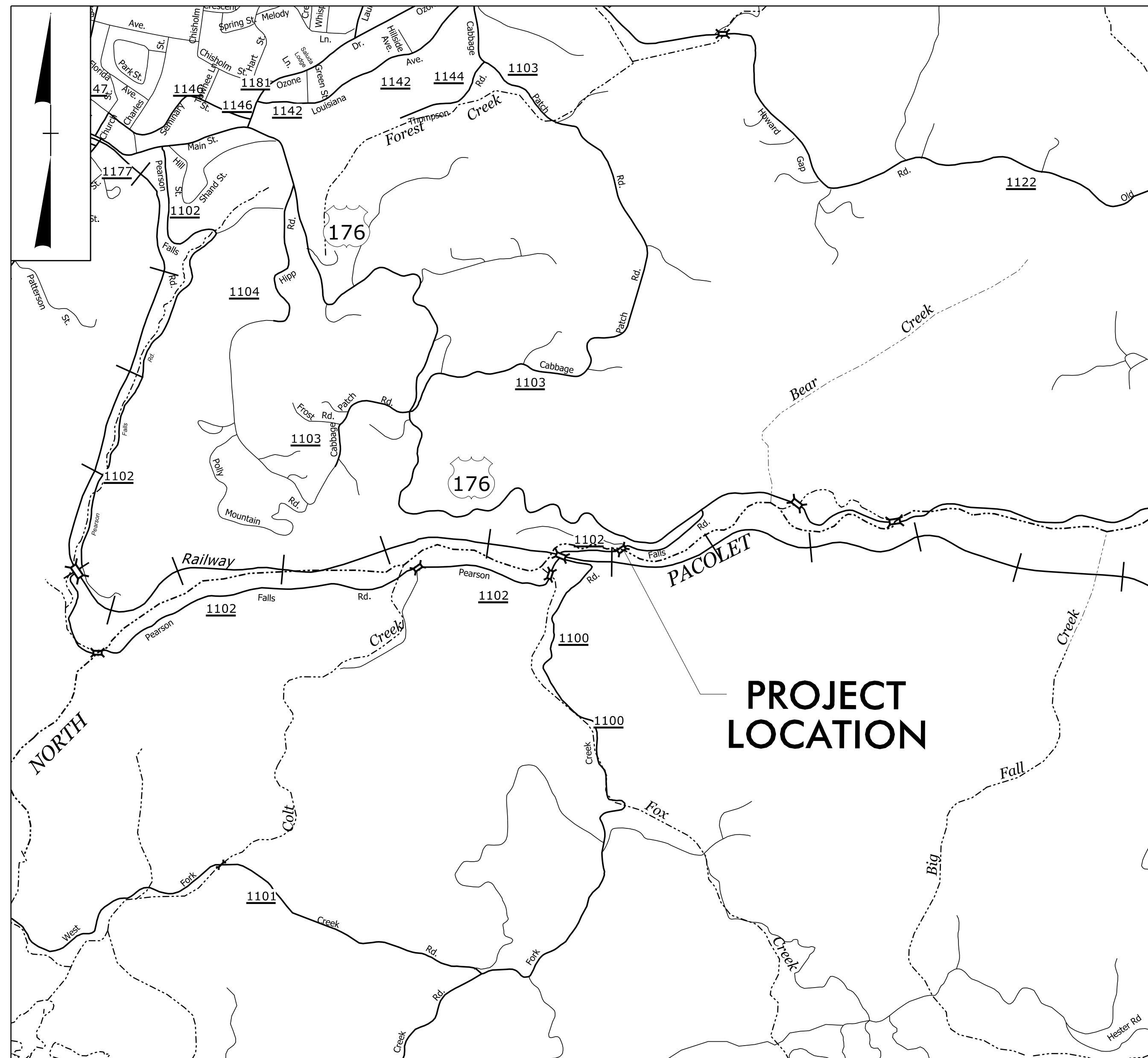
NOTES:

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

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

TRANSPORTATION MANAGEMENT PLAN  
POLK COUNTY

LOCATION: REPLACE BRIDGE #740009 ON SR 1102 (PEARSON FALLS ROAD)  
OVER NORTH PACOLET RIVER



VICINITY MAP

INDEX

SHEET NO.	DESCRIPTION
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-1B-1C	TRANSPORTATION OPERATIONS PLAN: MANAGEMENT STRATEGIES, GENERAL NOTES, AND LOCAL NOTES
TMP-2	PORTABLE CONCRETE BARRIER AT TEMPORARY SHORING LOCATIONS
TMP-2A	TEMPORARY SHORING DATA
TMP-3	TEMPORARY TRAFFIC CONTROL PHASING
TMP-4	TEMPORARY TRAFFIC CONTROL DETAIL - PHASE ONE
TMP-5	TEMPORARY TRAFFIC CONTROL DETAIL - PHASE TWO
TMP-6	TEMPORARY TRAFFIC CONTROL DETAIL - PHASE THREE

NCDOT CONTACTS

ZACH SHULER, PE - DIVISION 14 BRIDGE PROGRAM MANAGER

BP14-R038  
TMP 001

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
POLK COUNTY

WORK ZONE TRAFFIC CONTROL UNIT

PREPARED BY  
vhb  
VHB Engineering, Inc. P.E. (C-3705)  
5401 Main Campus Drive, Suite 500  
Raleigh, NC 27606

TEMPORARY TRAFFIC CONTROL DETAIL  
PHASE ONE

CONTRACT: DN01130 TIP PROJECT: BP14-R038

# ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
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
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGERS
1160.01	TEMPORARY CRASH CUSHION
1165.01	TRUCK MOUNTED ATTENUATOR
1170.01	PORTABLE CONCRETE BARRIER
1180.01	SKINNY DRUMS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.03	PAVEMENT MARKINGS - EXITS AND ENTRANCE RAMP
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.06	PAVEMENT MARKINGS - LANE DROPS
1205.07	PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1205.10	PAVEMENT MARKINGS - SCHOOL AREAS
1205.11	PAVEMENT MARKINGS - RAILROAD CROSSINGS
1205.12	PAVEMENT MARKINGS - BRIDGES
1205.13	PAVEMENT MARKINGS - LANE REDUCTIONS
1205.14	PAVEMENT MARKINGS - ROUNDABOUTS
1205.15	PAVEMENT MARKINGS - REDUCED CONFLICT INTERSECTIONS
1205.16	BICYCLE FACILITIES
1205.17	PAVEMENT MARKINGS - SIDE-BY-SIDE/ADJACENT ON/OFF RAMP
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION
1266.01	RAISED PAVEMENT MARKERS TUBULAR MARKERS
1267.01	FLEXIBLE DELINEATORS - INSTALLATION
1267.02	FLEXIBLE DELINEATORS - SPACING TABLES
1267.03	FLEXIBLE DELINEATORS - INTERCHANGE PLACEMENT

# LEGEND

## GENERAL

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

## SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

## PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

SYMBOL	TEMPORARY PAVEMENT MARKINGS DESCRIPTION
P1	PAINT WHITE EDGELINE (4")
P13	YELLOW DOUBLE CENTER (4")
P61	WHITE STOPBAR (24")

## 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



PREPARED BY  
  
 VHB Engineering, Inc. P.E. (C-3705)  
 3441 Main Campus Drive, Suite 500  
 Raleigh, NC 27605

TEMPORARY TRAFFIC CONTROL DETAIL PHASE ONE

TIP PROJECT: BP14-R038

# **TRANSPORTATION 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
- SHOULDER CLOSURES
- ONE-LANE, TWO WAY OPERATION (FLAGGING)
- ONE-LANE, TWO WAY OPERATION (SIGNALIZED)

## **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.

LANE AND SHOULDER CLOSURE REQUIREMENTS

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

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

- D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRAFFIC CONTROL PLANS, ROADWAY STANDARD DRAWINGS, OR AS

DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

- E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.
- F) USE SEQUENTIAL FLASHING WARNING LIGHTS ON DRUMS USED FOR THE MERGING TAPERS OF NIGHTTIME LANE CLOSURES IN ACCORDANCE WITH SECTION 1140 IN THE STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES.
- G) NOTIFY THE NCDOT STATEWIDE TRANSPORTATION OPERATIONS CENTER (STOC) AT 877-627-7862 APPROXIMATELY 30 MINUTES PRIOR TO INSTALLING AND WITHIN 15 MINUTES AFTER REMOVING LANE CLOSURES ON INTERSTATES, FREEWAYS, CONTROLLED ACCESS FACILITIES, AND US ROUTES.
- H) PROVIDE TRAFFIC CONTROL FOR APPROPRIATE LANE CLOSURES FOR SURVEYING DONE BY THE DEPARTMENT.

PAVEMENT EDGE DROP OFF REQUIREMENTS

- I) 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.

- J) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 1,000 FT (≥ 55 MPH) / 500 FT (55 MPH) / 350 FT (40-50 MPH) / 200 FT (≤ 35 MPH) IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

- L) 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.

- M) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.

- N) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

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

- P) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 1,000 FT (≥ 55 MPH) / 500 FT (55 MPH) / 350 FT (40-50 MPH) / 200 FT (≤ 35 MPH) IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC BARRIER

- Q) 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.

- R) 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.

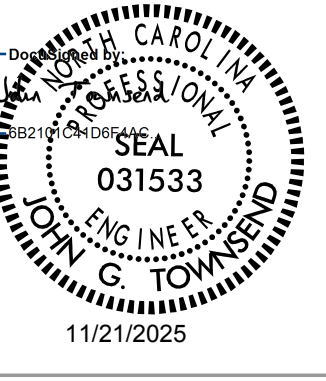
BP14-R038

TMP 001B

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION POLK COUNTY



WORK ZONE TRAFFIC CONTROL UNIT



PREPARED BY



TRANSPORTATION MANAGEMENT STRATEGIES, GENERAL NOTES, AND LOCAL NOTES

**TIP PROJECT: BP14-R038**

### GENERAL NOTES (CONTINUED)

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)

<u>POSTED SPEED LIMIT</u>	<u>MINIMUM OFFSET</u>
40 OR LESS	15 FT
45 – 50	20 FT
55	25 FT
60 MPH or HIGHER	30 FT

#### TRAFFIC CONTROL DEVICES

- S) 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. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.
- T) PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11-2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.
- U) PLACE ADDITIONAL SETS OF THREE CHANNELIZING DEVICES PERPENDICULAR TO THE EDGE OF TRAVELWAY ON 1,000 FT (≥ 55 MPH) / 500 FT (55 MPH) / 350 FT (40-50 MPH) / 200 FT (≤ 35 MPH) CENTERS WHEN UNOPENED LANES ARE CLOSED TO TRAFFIC.

#### PAVEMENT MARKINGS AND MARKERS

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

<u>ROAD NAME</u>	<u>MARKING</u>	<u>MARKER</u>
SR 1102	PAINT	NONE

- W) 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.
- X) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- Y) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

#### MISCELLANEOUS

- Z) LAW ENFORCEMENT SHALL BE USED TO MAINTAIN TRAFFIC THROUGH THE WORK AREA AND/OR INTERSECTIONS AS DIRECTED BY THE ENGINEER.

### LOCAL NOTES

- AA) THE TEMPORARY PORTABLE TRAFFIC SIGNAL SYSTEM SHALL BE ACTUATED, NOT PRETIMED. THE SIGNALS ARE TO REST IN ALL RED OR AS DIRECTED BY THE ENGINEER.

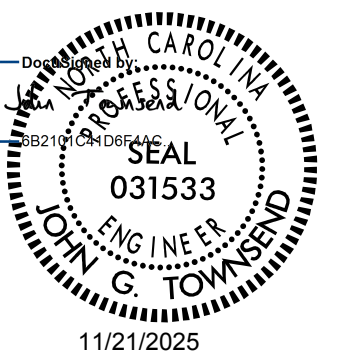
BP14-R038

TMP 001C

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
POLK COUNTY



WORK ZONE TRAFFIC CONTROL UNIT



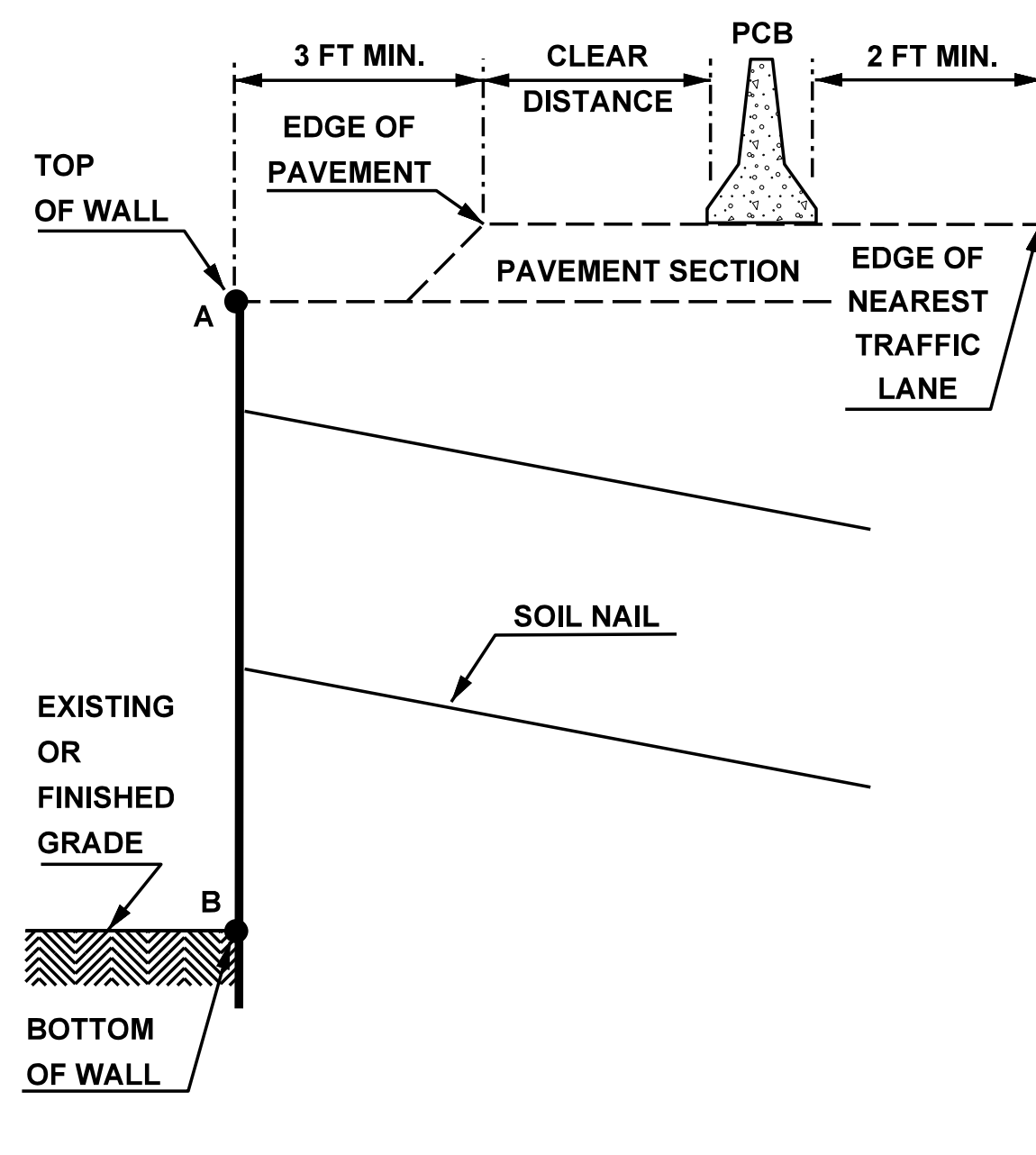
PREPARED BY



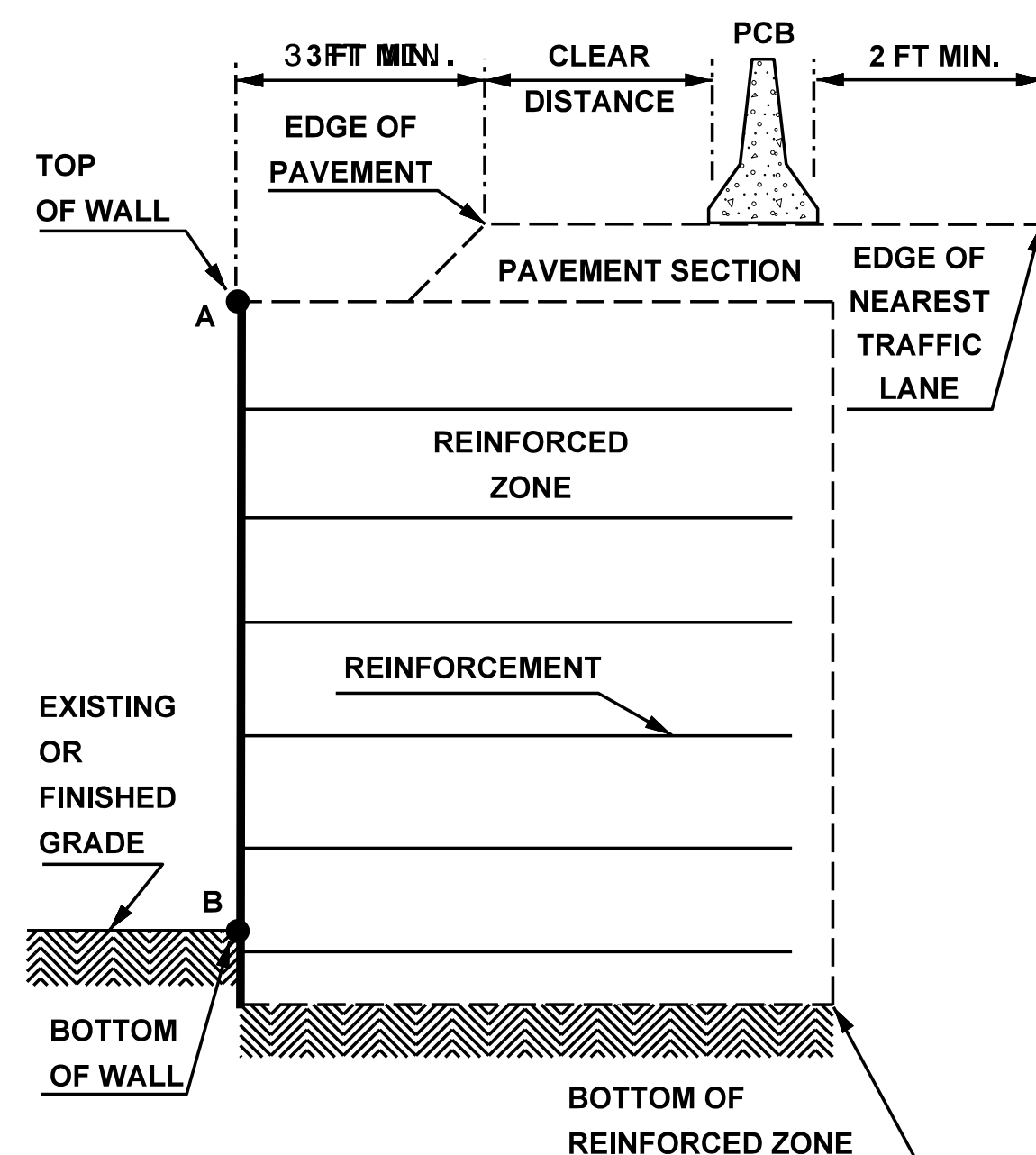
TRANSPORTATION  
MANAGEMENT  
STRATEGIES, GENERAL  
NOTES, AND LOCAL  
NOTES

TIP PROJECT: BP14-R038

**TEMPORARY SOIL NAIL WALL**

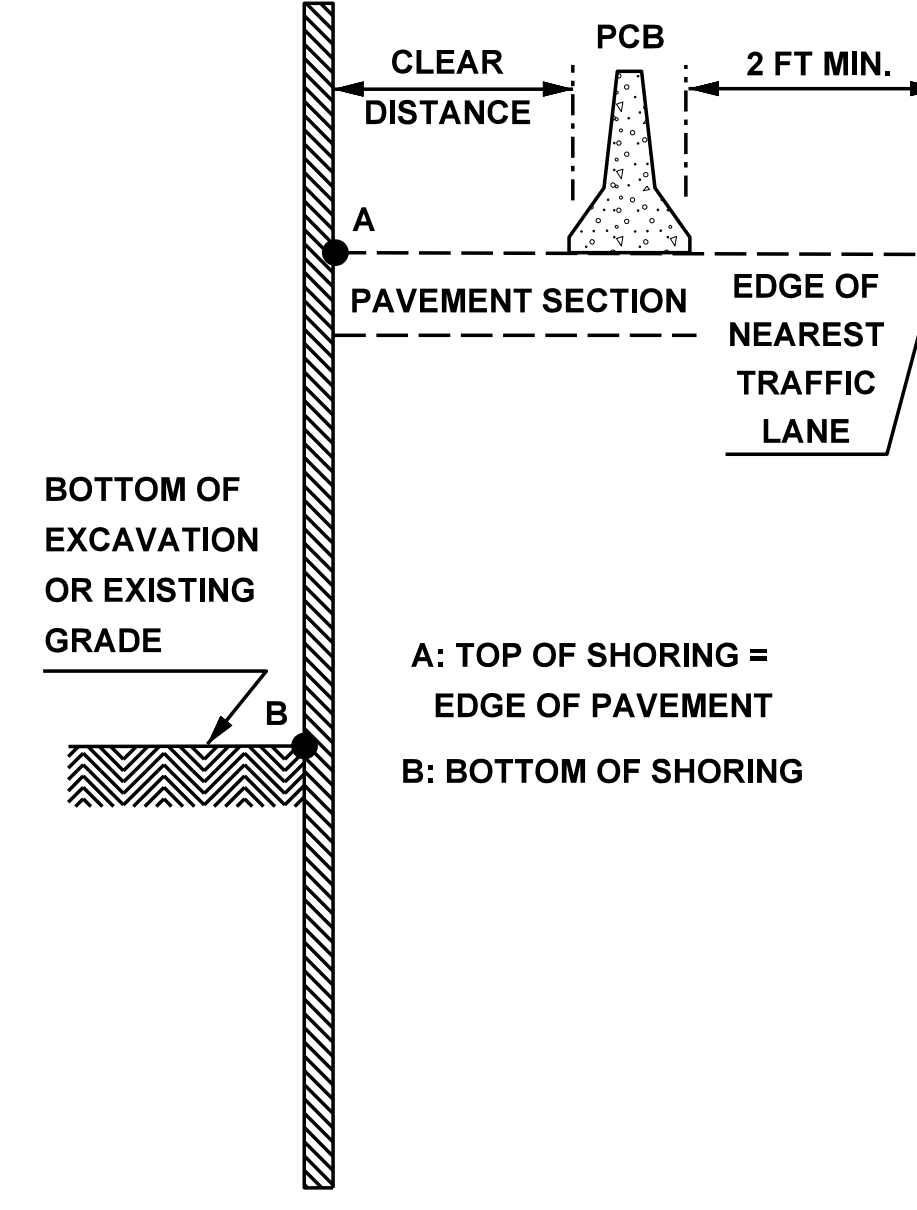


**TEMPORARY MSE WALL**



NOTE: WALL OR SHORING HEIGHT = A-B

**TEMPORARY SHORING**



**FIGURE A**

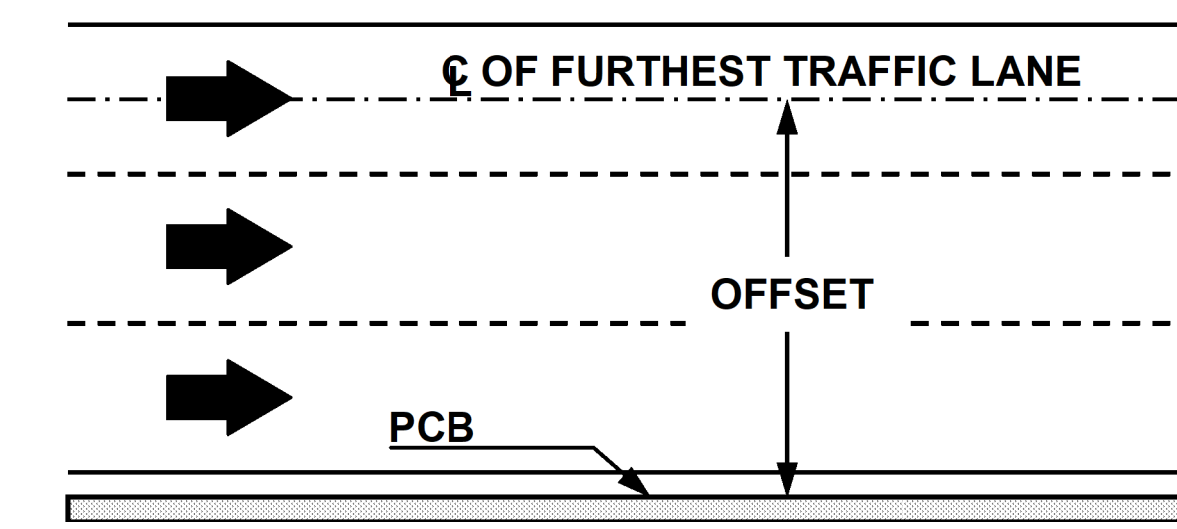
**NOTES**

- 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		
>56	26	26	28	32	35	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**

**NOTES FOR TEMPORARY SHORING NO. 1**

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

TEMPORARY SHORING IS REQUIRED FOR THE BRIDGE END BENT CONSTRUCTION FROM STATION -L1- STA. 12+50.72±, 14.30' LT, TO STATION -L1- 12+57.02±, 20.70 LT, TO STATION -L1- STA. 12+77.63±, 20.38' LT.

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 FROM STATION -L1- STA. 12+50.72±, 14.30' LT, TO STATION -L1- 12+57.02±, 20.70 LT, TO STATION -L1- STA. 12+77.63±, 20.38' LT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

- UNIT WEIGHT ( $\gamma$ ) = 120 PCF
- FRICTION ANGLE ( $\phi$ ) = 28 DEGREES
- COHESION ( $c$ ) = 0 PSF
- GROUNDWATER ELEVATION = 1,458 FT

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION -L1- STA. 12+50.72±, 14.30' LT, TO STATION -L1- 12+57.02±, 20.70 LT, TO STATION -L1- STA. 12+77.63±, 20.38' LT MAY NOT PENETRATE BELOW ELEVATION 1,453 FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -L1- STA. 12+50.72±, 14.30' LT, TO STATION -L1- 12+57.02±, 20.70 LT, TO STATION -L1- STA. 12+77.63±, 20.38' LT.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION -L1- STA. 12+50.72±, 14.30' LT, TO STATION -L1- 12+57.02±, 20.70 LT, TO STATION -L1- STA. 12+77.63±, 20.38' LT. SEE STANDARD DETAIL NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

IT MAY BE PREFERRED TO USE A TEMPORARY SOIL NAIL WALL FOR TEMPORARY SHORING FROM STATION -L1- STA. 12+50.72±, 14.30' LT, TO STATION -L1- 12+57.02±, 20.70 LT, TO STATION -L1- STA. 12+77.63±, 20.38' LT. FOR TEMPORARY SOIL NAIL WALLS, SEE TEMPORARY SOIL NAIL WALLS PROVISION.

**NOTES FOR TEMPORARY SHORING NO. 2**

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

TEMPORARY SHORING IS REQUIRED FOR THE BRIDGE END BENT CONSTRUCTION FROM STATION -L1- STA. 14+04.78±, 21.83' LT, TO STATION -L1- STA. 14+10.16±, 33.37' LT, TO STATION -L1- STA. 14+18.98±, 29.15' LT , TO STATION -L1- STA. 14+30.31±, 20.61' LT, TO STATION -L1- STA. 14+57.25±, 17.11' RT.

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 FROM STATION -L1- STA. 14+04.78±, 21.83' LT, TO STATION -L1- STA. 14+10.16±, 33.37' LT, TO STATION -L1- STA. 14+18.98±, 29.15' LT , TO STATION -L1- STA. 14+30.31±, 20.61' LT, TO STATION -L1- STA. 14+57.25±, 17.11' RT, FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

- UNIT WEIGHT ( $\gamma$ ) = 120 PCF
- FRICTION ANGLE ( $\phi$ ) = 28 DEGREES
- COHESION ( $c$ ) = 0 PSF
- GROUNDWATER ELEVATION = 1,452 FT

DRIVEN PILING FOR TEMPORARY SHORING FROM STATION -L1- STA. 14+04.78±, 21.83' LT, TO STATION -L1- STA. 14+10.16±, 33.37' LT, TO STATION -L1- STA. 14+18.98±, 29.15' LT , TO STATION -L1- STA. 14+30.31±, 20.61' LT, TO STATION -L1- STA. 14+57.25±, 17.11' RT MAY NOT PENETRATE BELOW ELEVATION 1,451 FT DUE TO OBSTRUCTIONS, VERY DENSE OR HARD SOIL, BOULDERS OR WEATHERED OR HARD ROCK.

DO NOT USE A TEMPORARY WALL FOR TEMPORARY SHORING FROM STATION -L1- STA. 14+04.78±, 21.83' LT, TO STATION -L1- STA. 14+10.16±, 33.37' LT, TO STATION -L1- STA. 14+18.98±, 29.15' LT , TO STATION -L1- STA. 14+30.31±, 20.61' LT, TO STATION -L1- STA. 14+57.25±, 17.11' RT.

AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING FOR TEMPORARY SHORING FROM STATION -L1- STA. 14+04.78±, 21.83' LT, TO STATION -L1- STA. 14+10.16±, 33.37' LT, TO STATION -L1- STA. 14+18.98±, 29.15' LT , TO STATION -L1- STA. 14+30.31±, 20.61' LT, TO STATION -L1- STA. 14+57.25±, 17.11' RT. SEE STANDARD DETAIL NO. 1801.01 FOR STANDARD TEMPORARY SHORING.

IT MAY BE PREFERRED TO USE A TEMPORARY SOIL NAIL WALL FOR TEMPORARY SHORING FROM STATION -L1- STA. 14+04.78±, 21.83' LT, TO STATION -L1- STA. 14+10.16±, 33.37' LT, TO STATION -L1- STA. 14+18.98±, 29.15' LT , TO STATION -L1- STA. 14+30.31±, 20.61' LT, TO STATION -L1- STA. 14+57.25±, 17.11' RT. FOR TEMPORARY SOIL NAIL WALLS, SEE TEMPORARY SOIL NAIL WALLS PROVISION.

THE TEMPORARY SHORING NOTES SHOWN ON THIS SHEET WERE PROVIDED THROUGH A SEALED DOCUMENT FROM THE GEOTECHNICAL ENGINEERING UNIT. THE DOCUMENT WAS SUBMITTED TO DIVISION 14 ON OCTOBER 24, 2025, AND SEALED BY A PROFESSIONAL ENGINEER, SHIPING YANG, LICENSE #031361.

BP14-R038  
 TMP 002A  
 NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 POLK COUNTY

WORK ZONE TRAFFIC CONTROL UNIT

PREPARED BY  
  
 Vhb Engineering, Inc. P.E. (C-3765)  
 5441 Main Campus Drive, Suite 500  
 Raleigh, NC 27606

TEMPORARY SHORING DATA

TIP PROJECT: BP14-R038

# PHASING

## NOTES:

REPLACE MARKINGS AND RETURN TO THE CURRENT TRAFFIC PATTERN AT THE END OF EACH WORK PERIOD UNLESS OTHERWISE NOTED IN THE PHASING OR DIRECTED BY THE ENGINEER.

MAINTAIN VEHICULAR ACCESS TO ALL RESIDENCES AND BUSINESSES DURING THE LIFE OF THE CONTRACT UNLESS OTHERWISE NOTED IN THE PHASING OR DIRECTED BY THE ENGINEER.

COMPLETE ANY PROPOSED WIDENING IN SUCH A MANNER THAT PONDING OF WATER WILL NOT OCCUR IN THE TRAVEL LANE. THIS MAY REQUIRE A COMBINATION OF INSTALLATION OF PROPOSED PIPES, TEMPORARY PIPES, STEEL PLATES, TEMPORARY MEDIAN, AND OUTSIDE DITCHES. PROVIDE WEDGING AS REQUIRED TO PROMOTE POSITIVE DRAINAGE AND SMOOTH TRANSITIONS.

PAVE PROPOSED CONSTRUCTION UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE, IN ALL PHASES UNTIL STATED TO INSTALL FINAL LAYER IN PHASING.

THE TERM RSD REFERS TO ROADWAY STANDARD DRAWINGS.

## PHASE I

STEP 1: USING RSD 1101.01 (SHEETS 1 THRU 3), INSTALL ADVANCE WARNING SIGNS ON -L1- (PEARSON FALLS RD), -L2- (PEARSON FALLS RD) AND ALL -Y- LINES AND SIDE STREETS.

STEP 2: USING RSD 1101.02 (SHEET 17 OF 19), INSTALL PORTABLE TEMPORARY SIGNALS AS SHOWN ON SHEET TMP-4 TO MAINTAIN THE EXISTING ONE-LANE/TWO-WAY OPERATIONS.

STEP 3: USING TEMPORARY FLAGGERS AS NEEDED, CONSTRUCT THE RETAINING WALL AND THE LEFT SIDE OF -L2- AND -DRWY- AS SHOWN ON SHEET TMP-4.

USING TEMPORARY FLAGGERS AS NEEDED, CLOSE THE RIGHT SIDE OF -L1- (PEARSON FALLS RD) AND INSTALL TEMPORARY ASPHALT PAVEMENT WITH ANCHORED TEMPORARY PORTABLE CONCRETE BARRIER WITH DRAINAGE SLOTS AND A TEMPORARY CRASH CUSHION AND A TEMPORARY ANCHOR UNIT TIED INTO THE EXISTING BRIDGE RAIL ON THE APPROACH END OF THE EXISTING BRIDGE AS SHOWN ON SHEET TMP-4.

AWAY FROM TRAFFIC AND USING TEMPORARY FLAGGERS AS NEEDED, CONSTRUCT TEMPORARY SHORING AND END BENT 1 OF THE PROPOSED BRIDGE AS SHOWN ON SHEET TMP-4.

USING TEMPORARY FLAGGERS, STAGE CONSTRUCT THE CROSS PIPES AS SHOWN ON SHEET TMP-4.

STEP 4: USING TEMPORARY FLAGGERS AS NEEDED, CONSTRUCT THE RIGHT SIDE OF -L1- (PEARSON FALLS RD) FROM EXISTING PEARSON FALLS RD UP TO END BENT 1 AS SHOWN ON SHEET TMP-4.

## PHASE II

STEP 1: USING RSD 1101.02 (SHEET 17 OF 19) AS NEEDED, SHIFT THE ONE-LANE/TWO-WAY OPERATIONS TO THE LEFT SIDE OF -L2- (PEARSON FALLS RD) AND INSTALL ANCHORED TEMPORARY PORTABLE CONCRETE BARRIER WITH DRAINAGE

SLOTS AND A CRASH CUSHION ON THE RIGHT SIDE OF -L2- (PEARSON FALLS RD) AND A TEMPORARY ANCHOR UNIT TIED INTO THE EXISTING BRIDGE RAIL AS SHOWN ON SHEET TMP-5.

STEP 2: AWAY FROM TRAFFIC, BEHIND BARRIER, AND USING TEMPORARY FLAGGERS AS NEEDED, CONSTRUCT TEMPORARY SHORING AND THE REMAINDER OF THE PROPOSED BRIDGE.

## PHASE III

STEP 1: USING RSD 1101.02 (SHEET 17 OF 19) AS NEEDED, SHIFT THE ONE-LANE/TWO-WAY OPERATIONS TO THE RIGHT SIDE OF THE NEW STRUCTURE AND INSTALL ANCHORED TEMPORARY PORTABLE CONCRETE BARRIER WITH DRAINAGE SLOTS AND CRASH CUSHIONS ON THE LEFT SIDE OF -L1- (PEARSON FALLS RD) AS SHOWN ON SHEET TMP-6.

STEP 2: AWAY FROM TRAFFIC, BEHIND BARRIER, AND USING TEMPORARY FLAGGERS AS NEEDED, COMPLETE THE LEFT SIDE OF -L1- (PEARSON FALL RD) AND THE RIGHT SIDE OF -DRWY- AND REMOVE THE EXISTING BRIDGE AND COMPLETE THE DRAINAGE AND ANY REMAINING GRADING.

## PHASE IV

STEP 1: USING RSD 1101.02 (SHEET 1 OF 19) AS NECESSARY, REMOVE THE ANCHORED TEMPORARY PORTABLE CONCRETE BARRIER WITH DRAINAGE SLOTS AND CRASH CUSHIONS, INSTALL THE FINAL PAVEMENT LAYER AND FINAL PAVEMENT MARKINGS AND MARKERS, AND REMOVE ALL TEMPORARY TRAFFIC CONTROL DEVICES AND OPEN ALL LANES TO TRAFFIC.

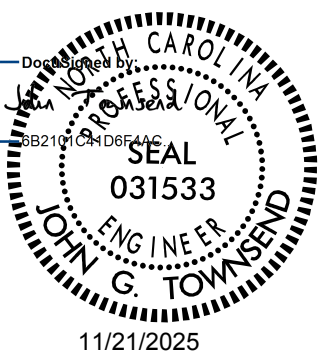
BP14-R038

TMP 003

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
POLK COUNTY



WORK ZONE TRAFFIC CONTROL UNIT




PREPARED BY



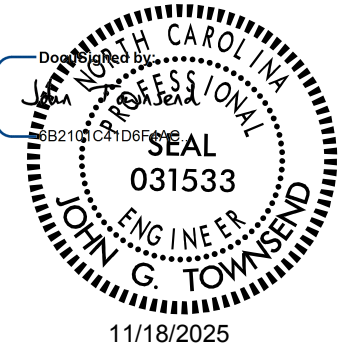
TEMPORARY TRAFFIC  
CONTROL PHASING


TIP PROJECT: BP14-R038

**BP14-R038**  
**TMP 004**  
 NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 POLK COUNTY



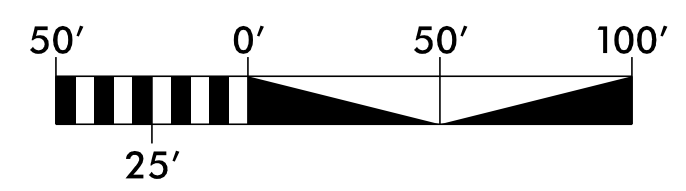
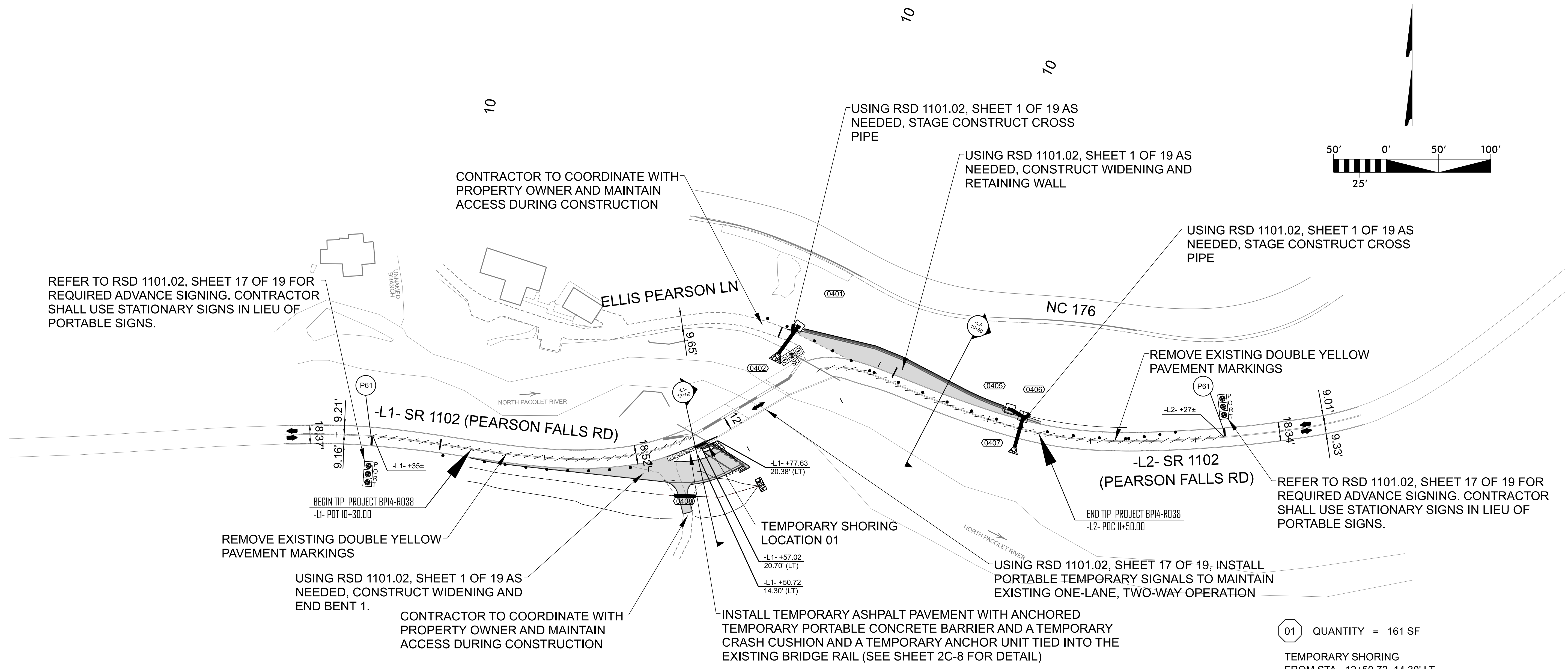
WORK ZONE TRAFFIC CONTROL UNIT



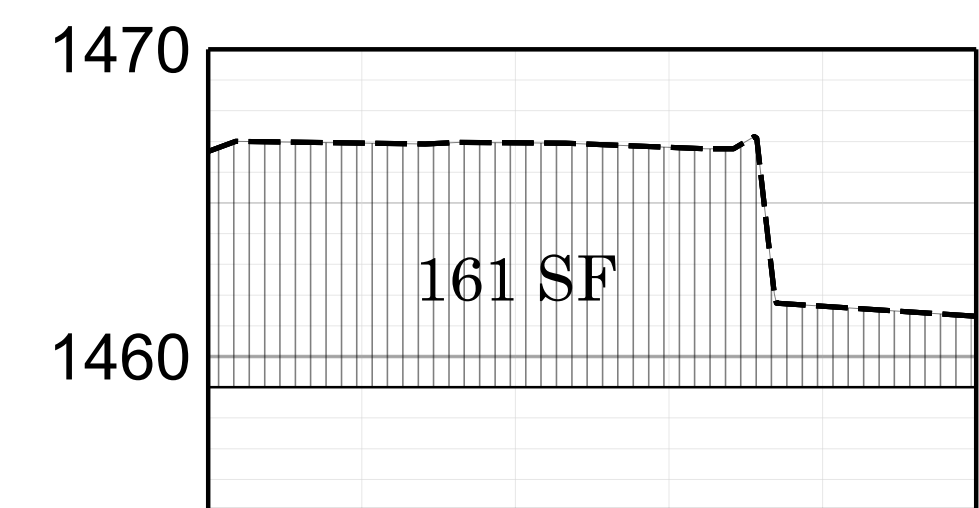
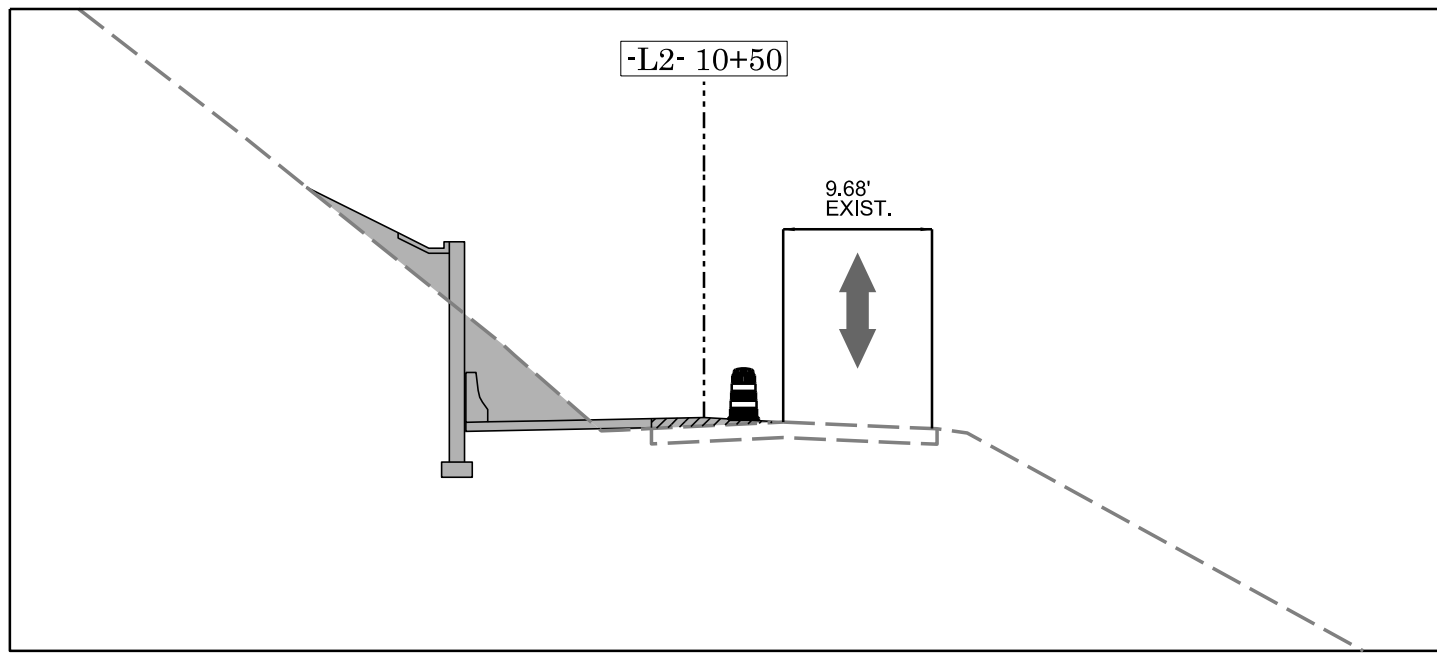
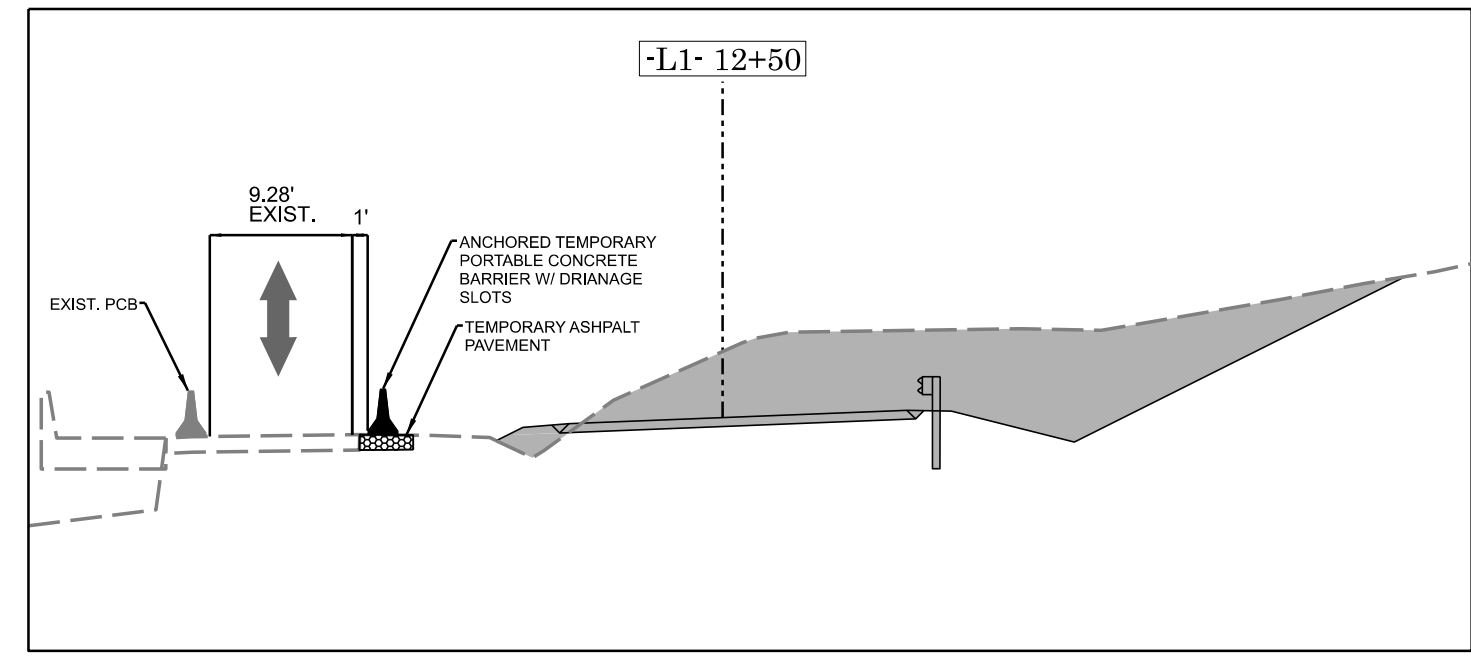
PREPARED BY  
  
 VHB Engineering, Inc. P.E. (C-3765)  
 5401 Main Campus Drive, Suite 500  
 Raleigh, NC 27606

**TEMPORARY TRAFFIC CONTROL DETAIL PHASE ONE**


**TIP PROJECT: BP14-R038**



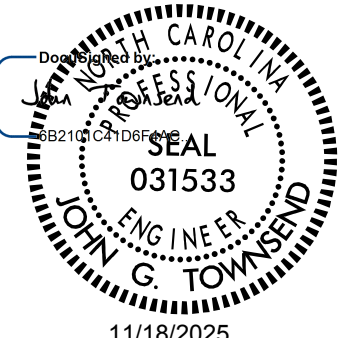
01 QUANTITY = 161 SF  
 TEMPORARY SHORING  
 FROM STA. 12+50.72, 14.30' LT  
 TO STA. 12+57.02, 20.70' LT  
 TO STA. 12+77.63, 20.38' LT  
 (SEE SHEET TMP-2A FOR TEMPORARY SHORING NOTES)




BP14-R038  
 TMP 005  
 NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 POLK COUNTY



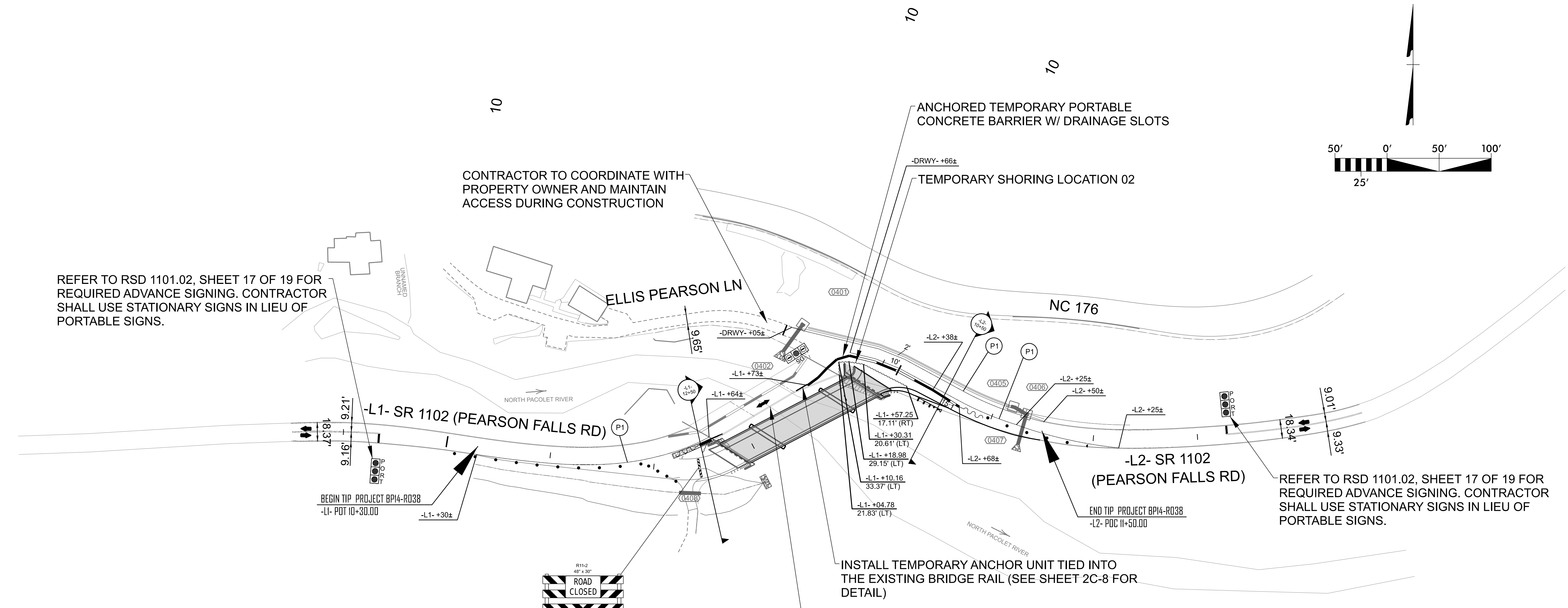
WORKZONE TRAFFIC CONTROL UNIT



PREPARED BY  
  
 VHB Engineering, Inc. P.E. (C-3705)  
 540 Main Campus Drive, Suite 500  
 Raleigh, NC 27605

TEMPORARY TRAFFIC CONTROL DETAIL PHASE TWO

TIP PROJECT: BP14-R038



REFER TO RSD 1101.02, SHEET 17 OF 19 FOR REQUIRED ADVANCE SIGNING. CONTRACTOR SHALL USE STATIONARY SIGNS IN LIEU OF PORTABLE SIGNS.

REFER TO RSD 1101.02, SHEET 17 OF 19 FOR REQUIRED ADVANCE SIGNING. CONTRACTOR SHALL USE STATIONARY SIGNS IN LIEU OF PORTABLE SIGNS.

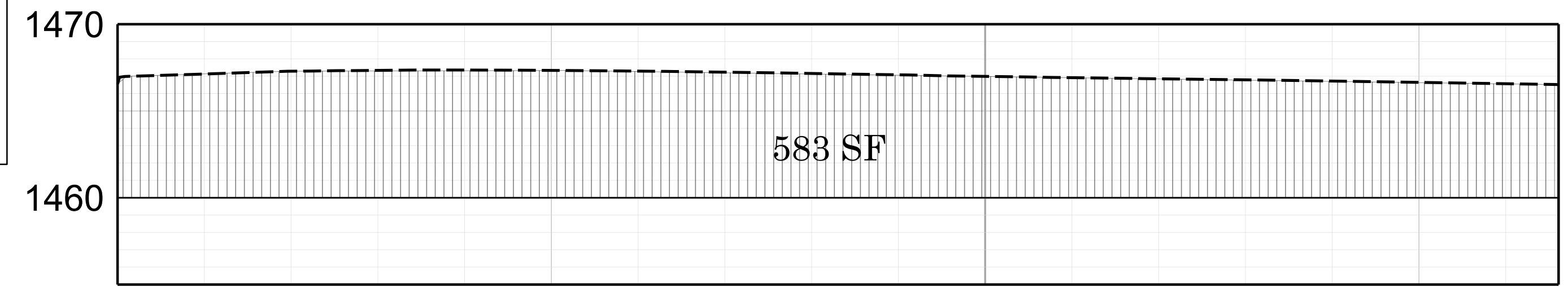
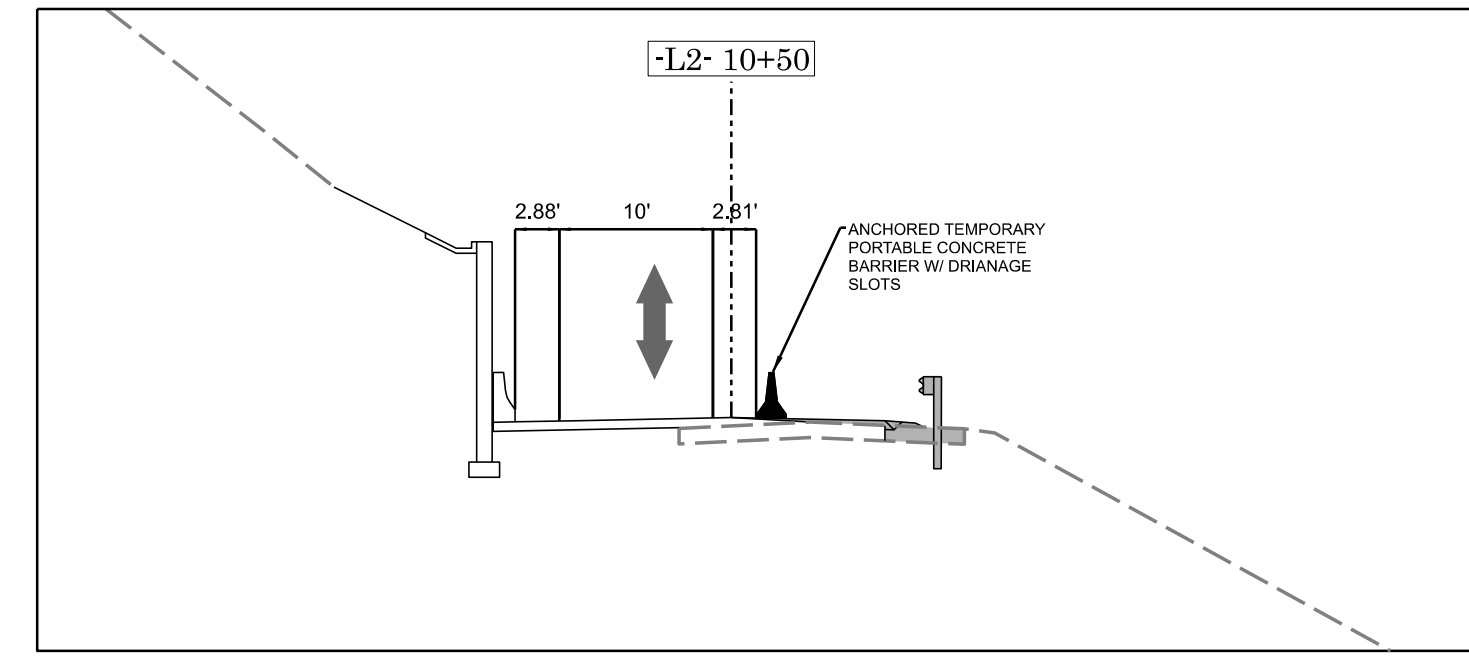
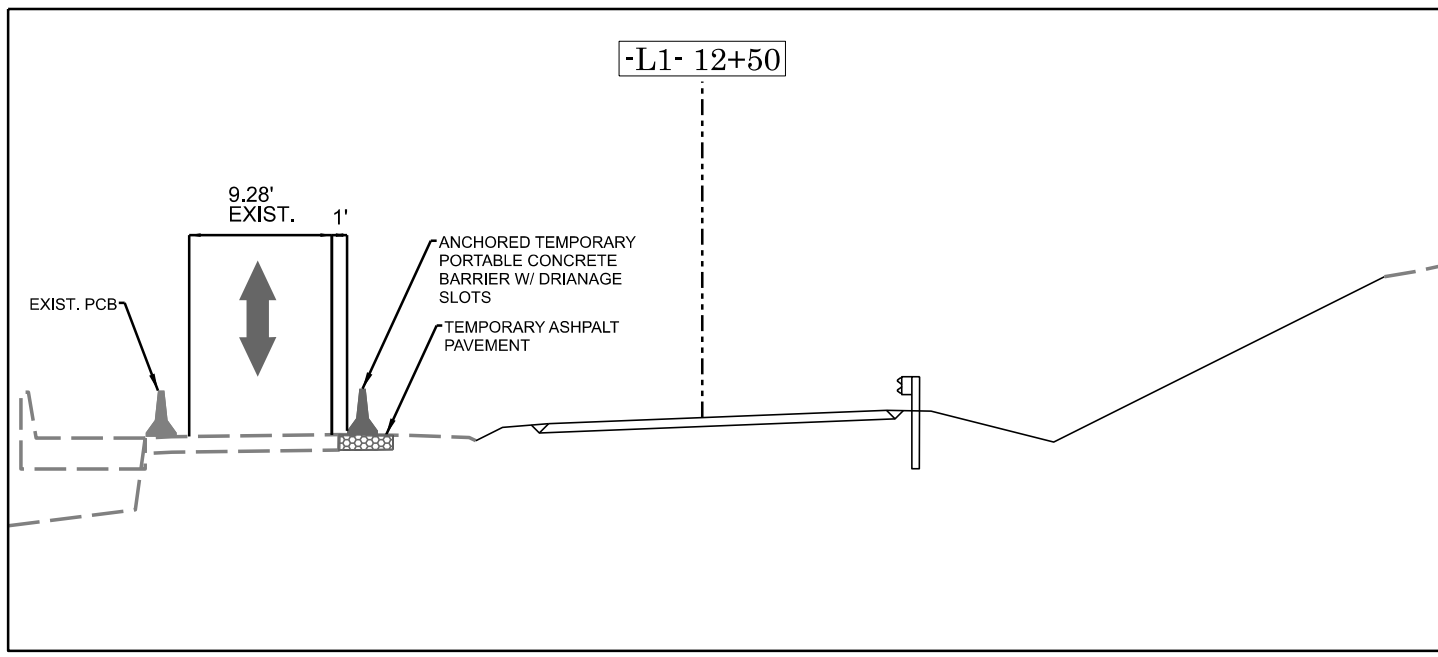
INSTALL TEMPORARY ANCHOR UNIT TIED INTO THE EXISTING BRIDGE RAIL (SEE SHEET 2C-8 FOR DETAIL)

USING RSD 1101.02, SHEET 17 OF 19, INSTALL PORTABLE TEMPORARY SIGNALS TO MAINTAIN EXISTING ONE-LANE, TWO-WAY OPERATION

02 QUANTITY = 583 SF

TEMPORARY SHORING  
 FROM STA. 14+04.78, 21.83' LT  
 TO STA. 14+10.16, 33.37' LT  
 TO STA. 14+18.98, 29.15' LT  
 TO STA. 14+30.31, 20.61' LT  
 TO STA. 14+57.25, 17.11' RT

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

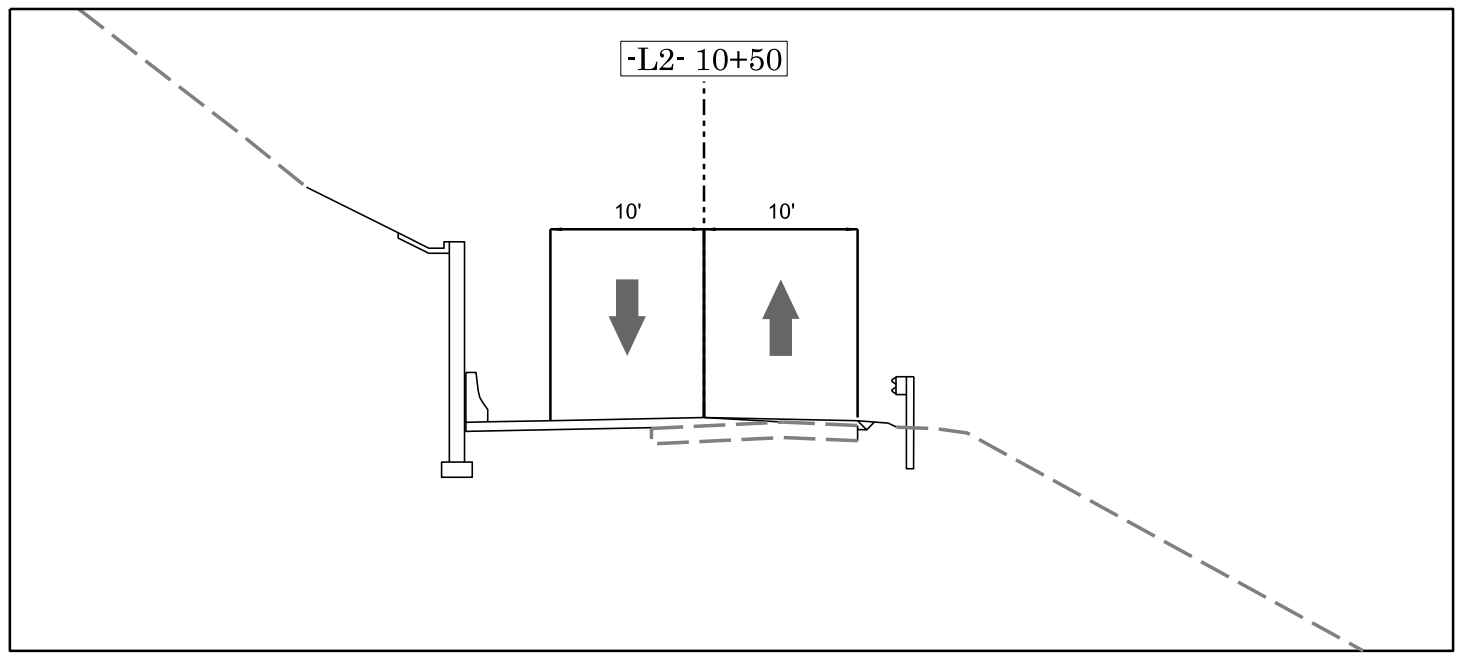
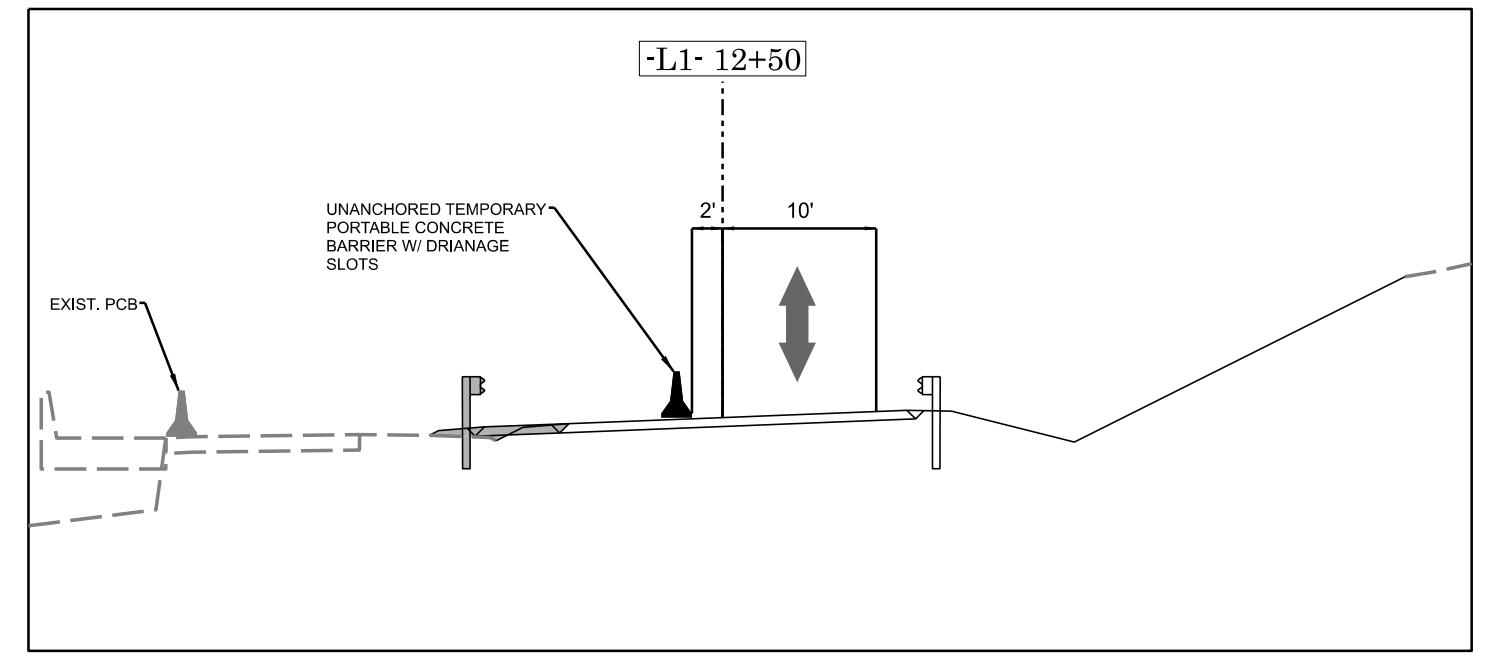
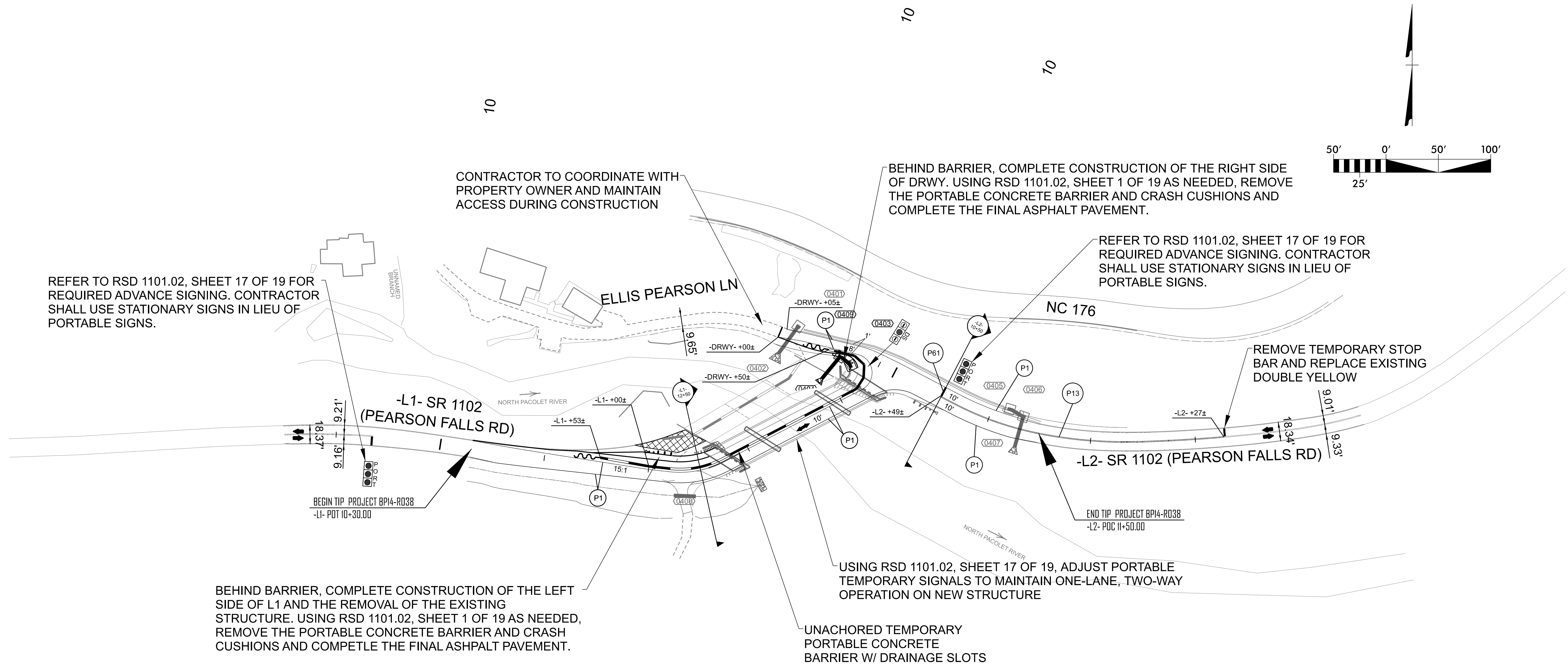


BP14-R038  
 TMP 006  
 NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 POLK COUNTY  
 WORKZONE TRAFFIC CONTROL UNIT  
 PROFESSIONAL SEAL  
 031533  
 G. TOMASEWICZ  
 11/18/2025

PREPARED BY  
 vhb  
 VHB Engineering, Inc. P.E. (C-3705)  
 540 Main Campus Drive, Suite 500  
 Raleigh, NC 27605

TEMPORARY TRAFFIC CONTROL DETAIL  
 PHASE THREE

TIP PROJECT: BP14-R038



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

PAVEMENT MARKING PLAN  
POLK COUNTY

LOCATION: REPLACE BRIDGE #740009 ON SR 1102 (PEARSON FALLS ROAD)  
OVER NORTH PACOLET RIVER

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 MULTI-LANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
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

PAVEMENT MARKING SCHEDULE

THERMOPLASTIC PAVEMENT MARKINGS	
SYMBOL	DESCRIPTION
T1	WHITE EDGELINE (4", 90 MIL)
T5	2 FT. - 6 FT./SP WHITE MINISKIP (4", 90 MIL)
T13	YELLOW DOUBLE CENTER (4", 90 MIL)
T61	WHITE STOPBAR (24", 90 MIL)

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 1102 (PEARSON FALLS RD)	THERMOPLASTIC	NONE
ELLIS PEARSON LN	THERMOPLASTIC	NONE

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

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

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

E) STOP BAR LOCATION AT NON-SIGNALIZED INTERSECTIONS MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER.

INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN TITLE AND SCHEDULE SHEET
PMP-2	PAVEMENT MARKING DETAIL

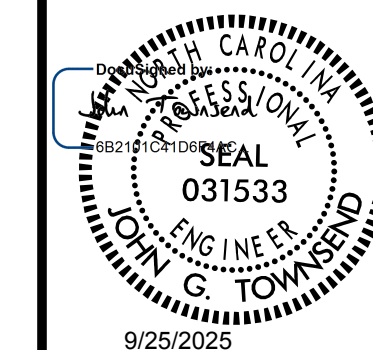
BP14-R038

PMP 001

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
POLK COUNTY



SIGNING AND DELINEATION UNIT



9/25/2025

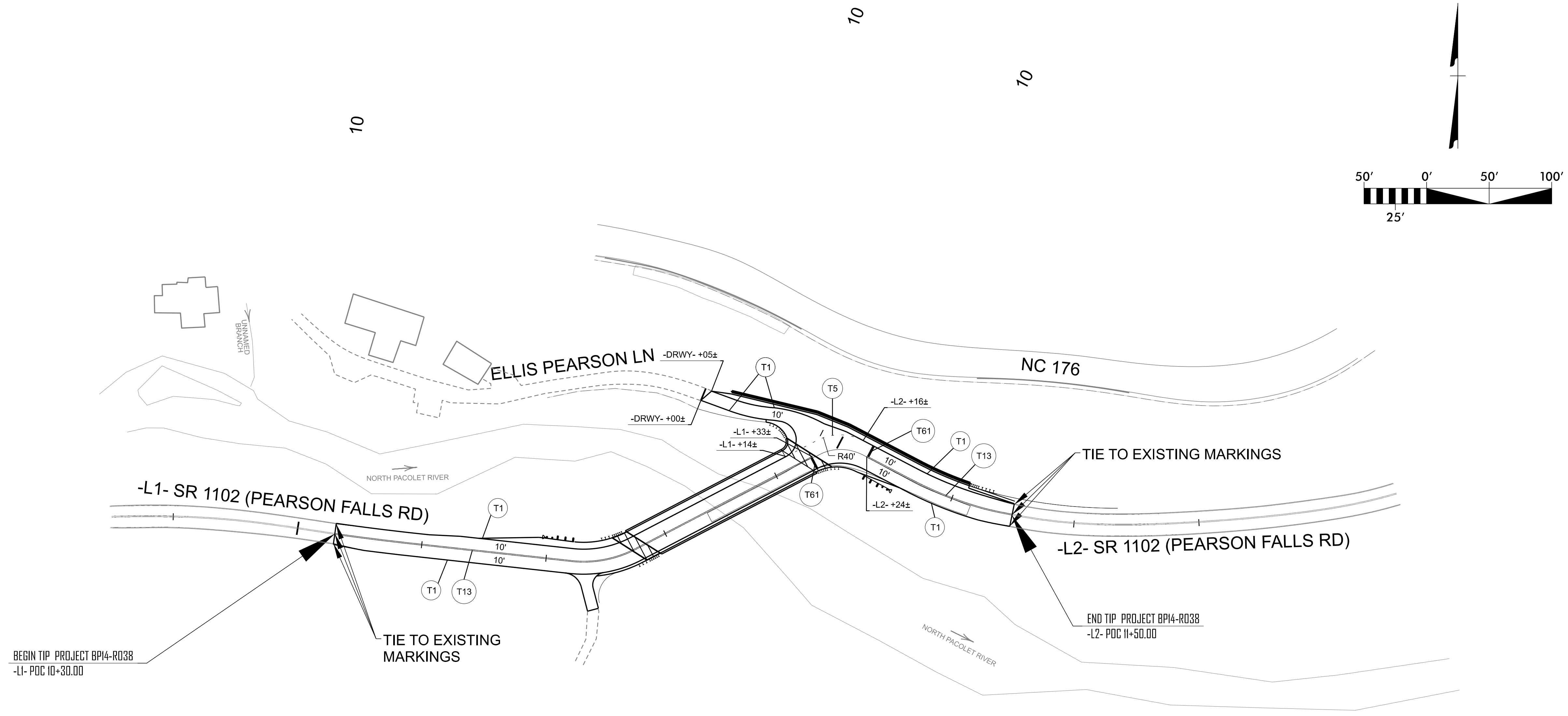
PREPARED BY



PAVEMENT MARKING  
TITLE SHEET

PROJECT: BP14-R038

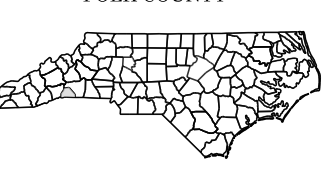
CONTRACT: DN01130



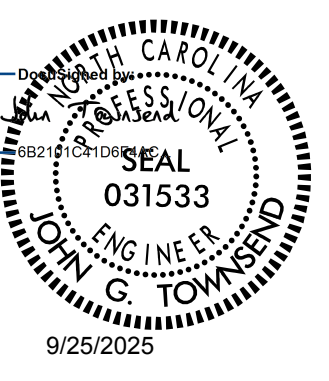
BP14-R038

PMP 002

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION POLK COUNTY



SIGNING AND DELINEATION UNIT



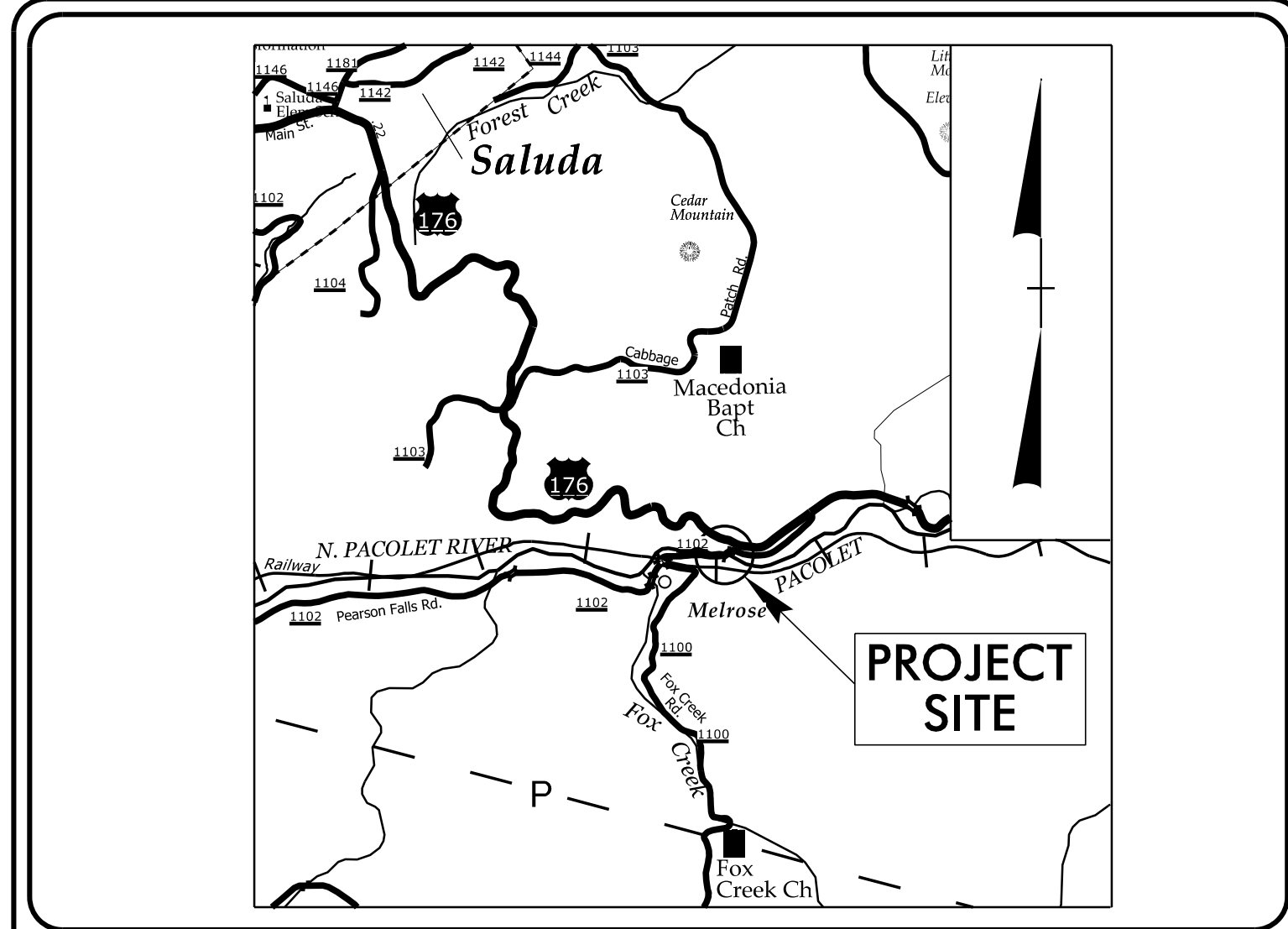
PREPARED BY



PAVEMENT MARKING DETAIL

PROJECT: BP14-R038

**TIP PROJECT: BP14.R038**



**VICINITY MAP**  
NOT TO SCALE

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

---

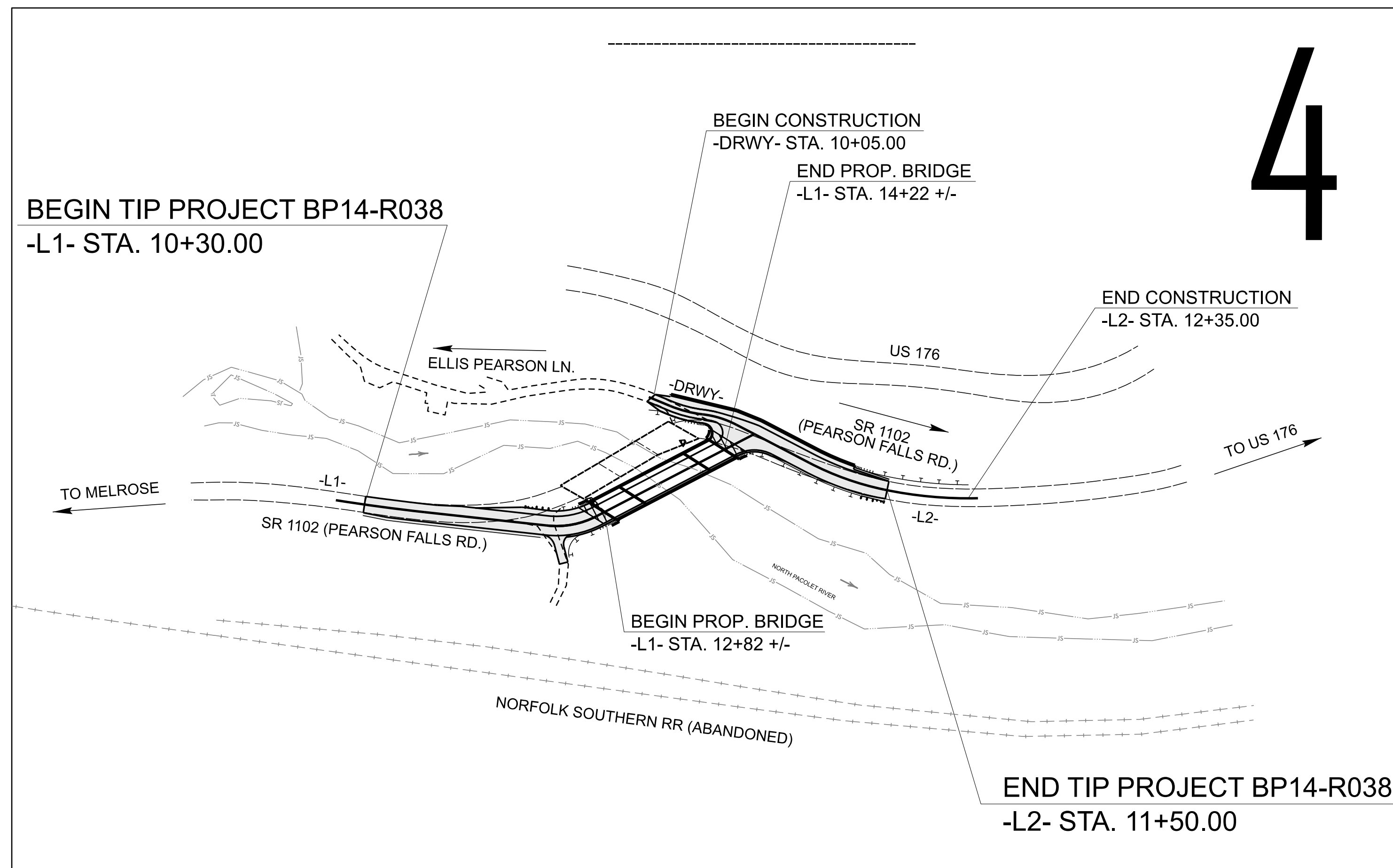
PLAN FOR PROPOSED  
HIGHWAY EROSION CONTROL

---

**POLK COUNTY**

LOCATION: *REPLACE BRIDGE #740009 ON SR 1102 (PEARSON FALLS ROAD) OVER NORTH PACOLET RIVER*

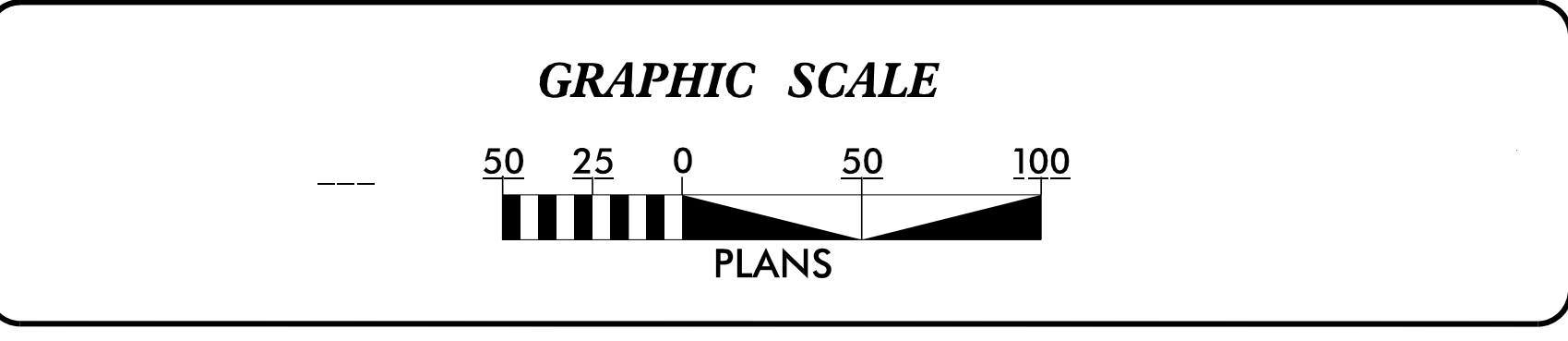
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP14.R038	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP14.R038.1		PE	



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

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT  
*Refer To E. C. Special Provisions for Special Considerations.*

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.



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.

VHB Engineering NC, P.C. (C-3705)  
940 Main Campus Drive, Suite 500  
Raleigh, NC 27606

Prepared in the Office of:

VHB Engineering NC, P.C. (C-3705)  
940 Main Campus Drive, Suite 500  
Raleigh, NC 27606

Designed by:

**GRAYSON BRANNAN, EI**      **4468**

NAME      LEVEL III CERTIFICATION NO.

**Roadway Standard Drawings**

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

# DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

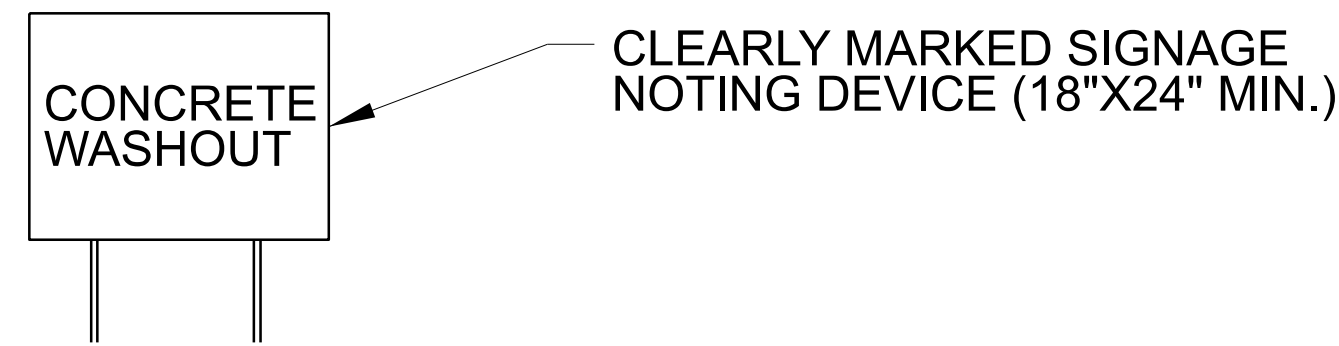
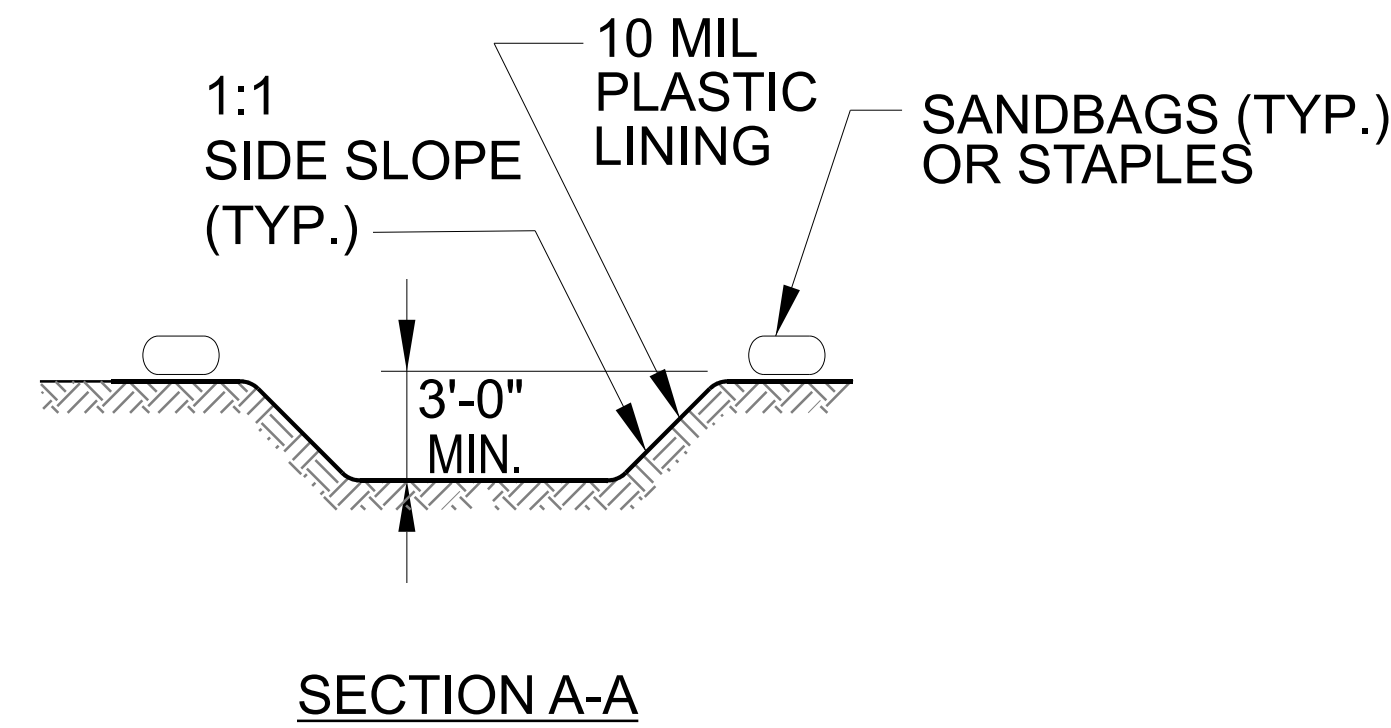
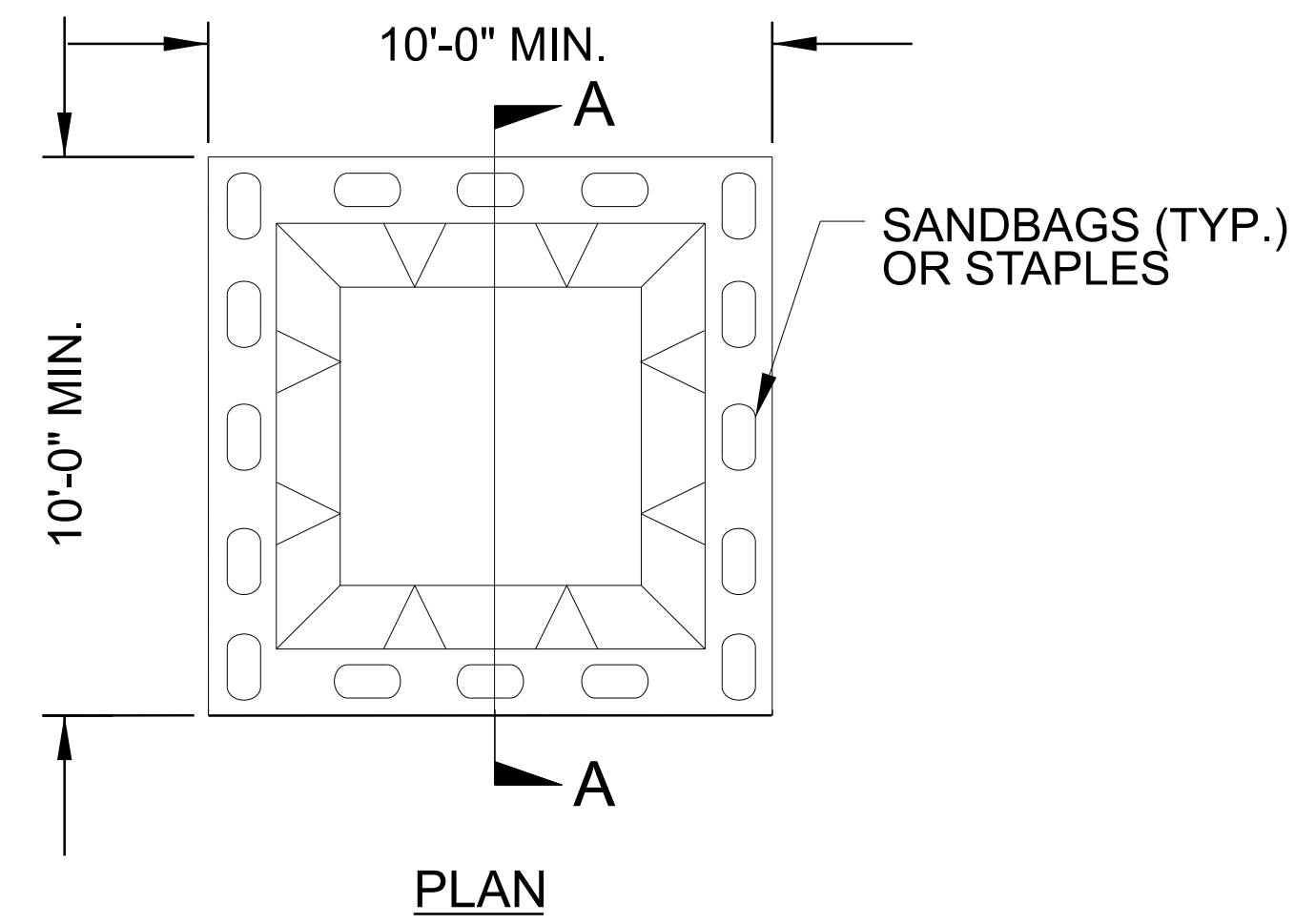
PROJECT REFERENCE NO.	SHEET NO.
<b>BP14.R038</b>	<b>EC-02</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

## EROSION & SEDIMENT CONTROL LEGEND

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

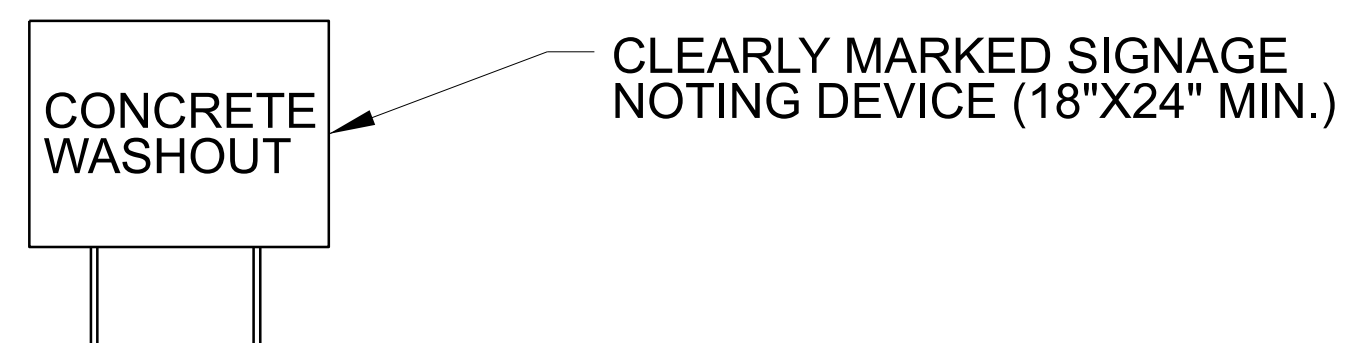
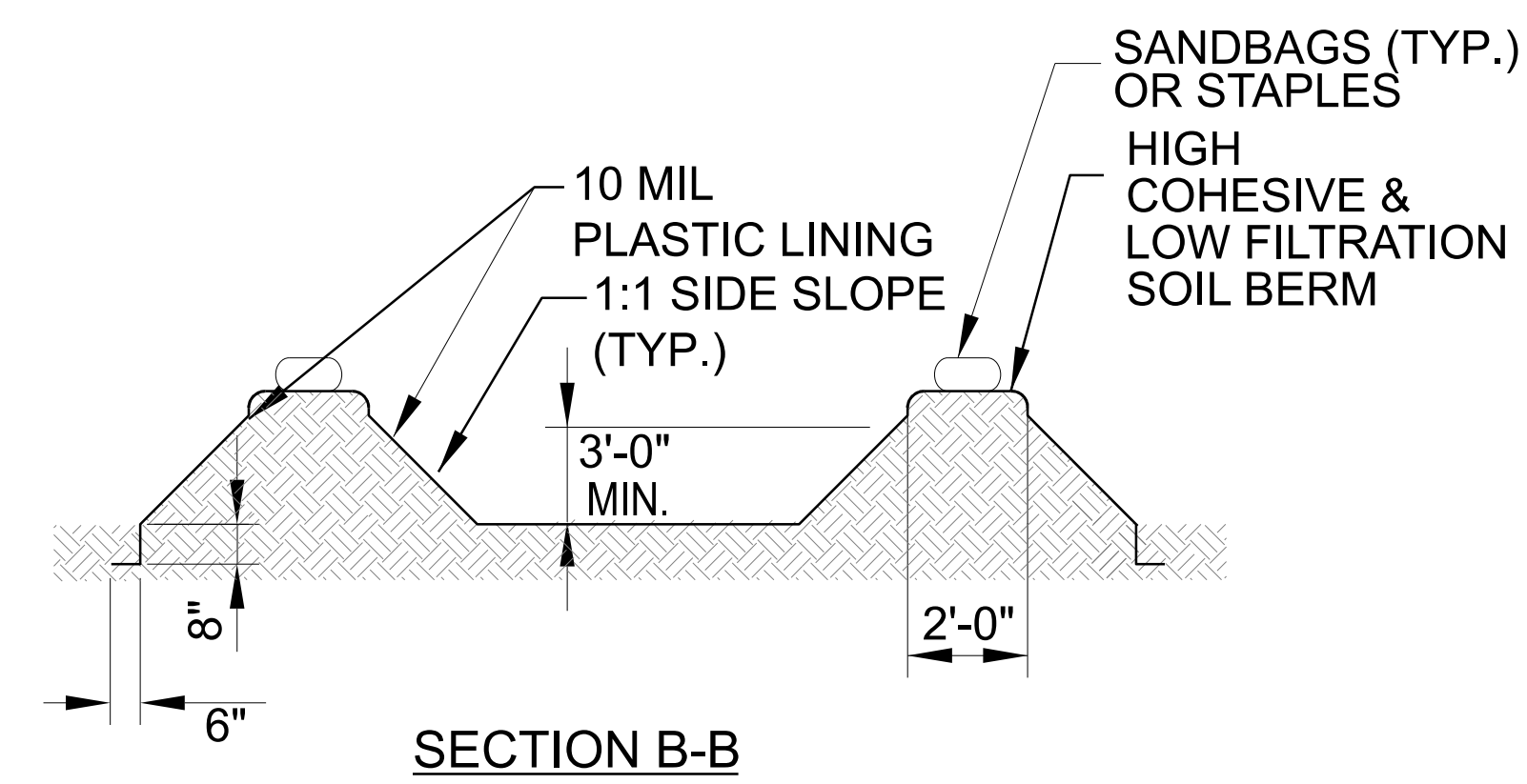
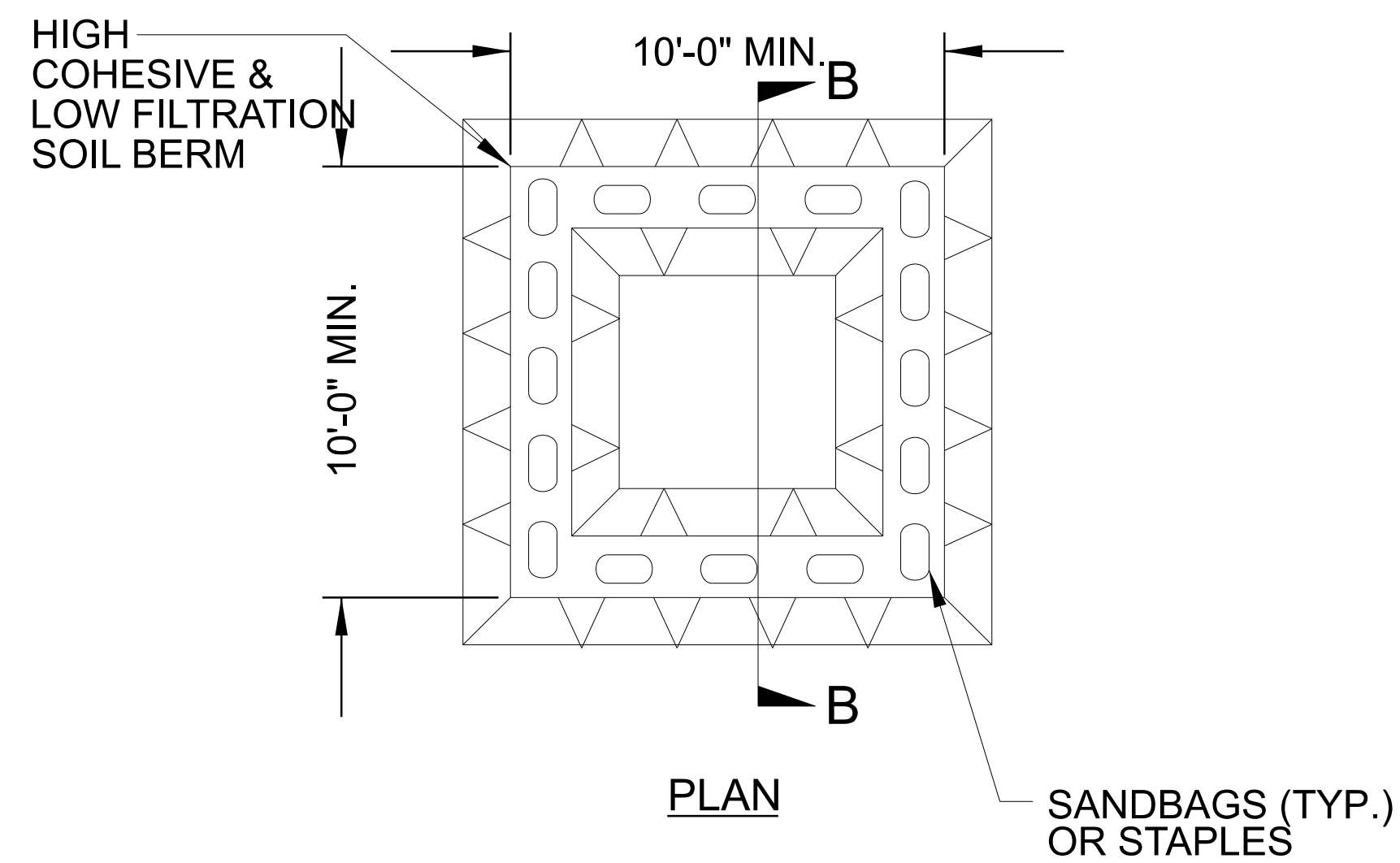
PROJECT REFERENCE NO. <i>BPI4.R038</i>	SHEET NO. <i>EC-02A</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



**BELOW GRADE WASHOUT STRUCTURE**  
NOT TO SCALE

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



**ABOVE GRADE WASHOUT STRUCTURE**  
NOT TO SCALE

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

DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

---

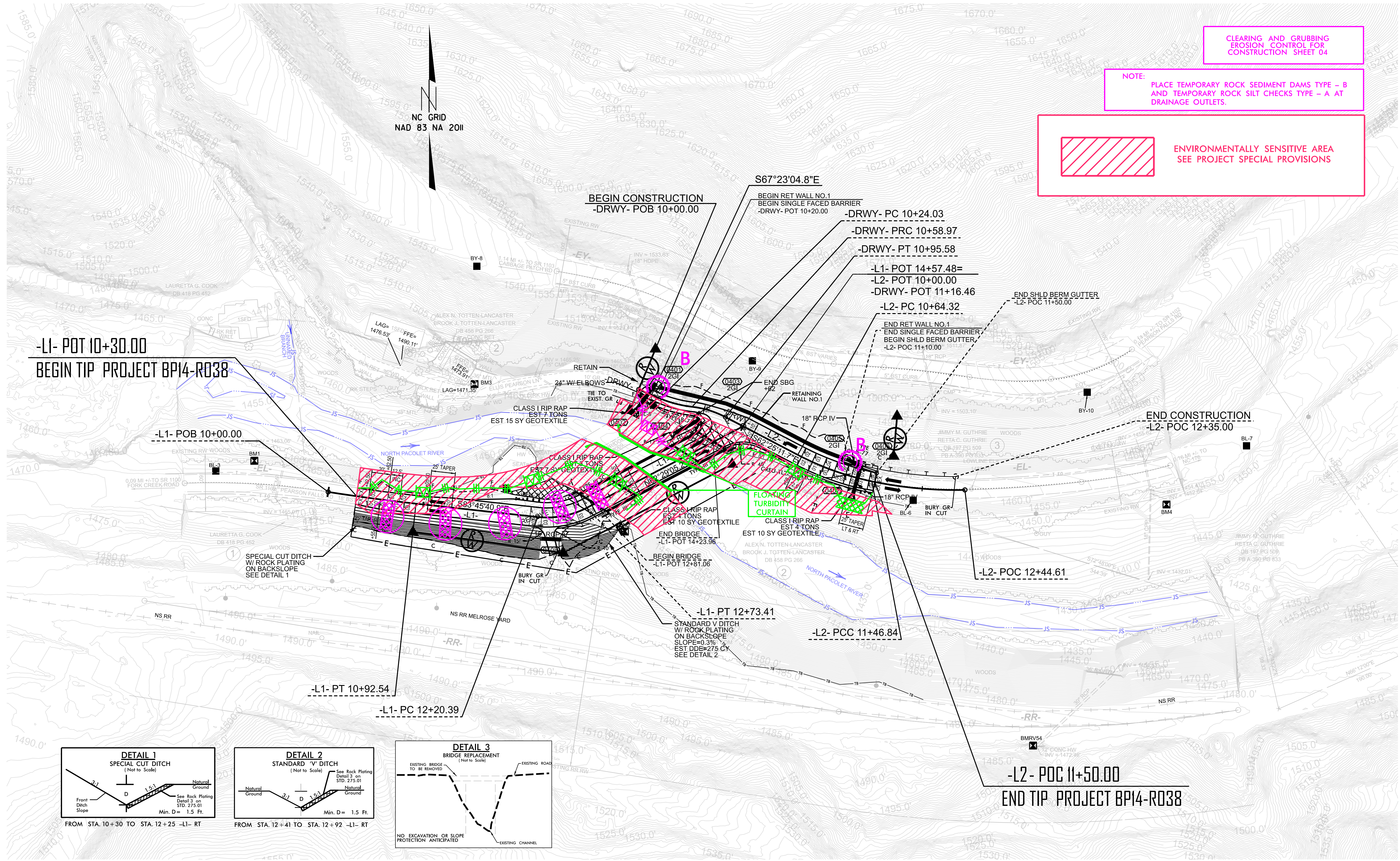


---

PROJECT REFERENCE NO. <i>BPI4.R038</i>	SHEET NO. <i>EC-03</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# ***SOIL STABILIZATION TIMEFRAMES***

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



CLEARING AND GRUBBING  
EROSION CONTROL FOR  
CONSTRUCTION SHEET 04

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

 ENVIRONMENTALLY SENSITIVE AREA  
SEE PROJECT SPECIAL PROVISIONS

-L1- POT 10+30.00  
BEGIN TIP PROJECT BP14-R038

-L1- POB 10+00.00

-L1- PT 10+92.54

-L1- PC 12+20.39

BEGIN CONSTRUCTION  
-DRWY- POB 10+00.00

S67°23'04.8"E

BEGIN RET WALL NO.1  
BEGIN SINGLE FACED BARRIER  
-DRWY- POT 10+20.00

-DRWY- PC 10+24.03

-DRWY- PRC 10+58.97

-DRWY- PT 10+95.58

-L1- POT 14+57.48=

-L2- POT 10+00.00

-DRWY- POT 11+16.46

-L2- PC 10+64.32

END RET WALL NO.1  
END SINGLE FACED BARRIER  
BEGIN SHLD BERM GUTTER,  
-L2- POC 11+10.00

END SHLD BERM GUTTER  
-L2- POC 11+50.00

END CONSTRUCTION  
-L2- POC 12+35.00

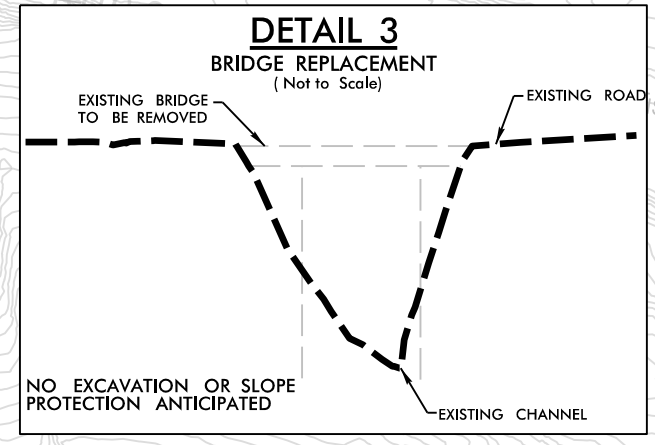
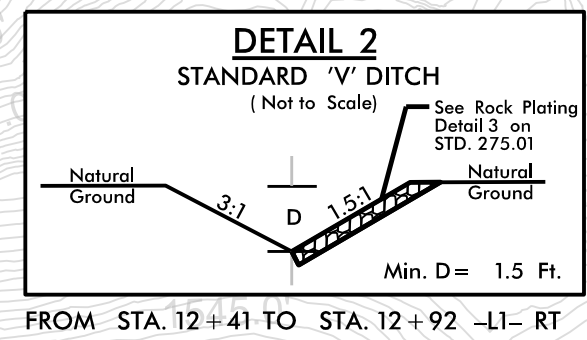
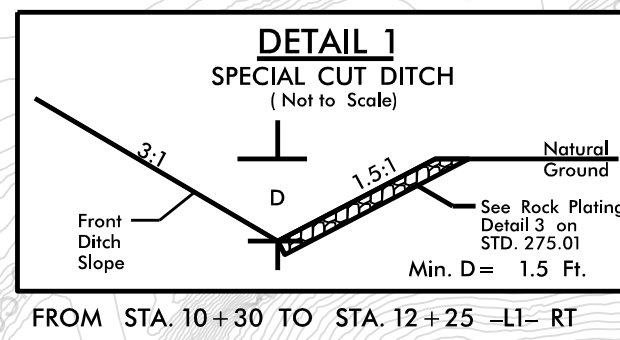
-L2- POC 12+44.61

-L1- PT 12+73.41

-L2- PCC 11+46.84

-L2- POC 11+50.00

END TIP PROJECT BP14-R038



NC GRID  
NAD 83 NA 2011

-L1- POT 10+30.00  
BEGIN TIP PROJECT BP14-R038

-L1- POB 10+00.00

-L1- PT 10+92.54

-L1- PC 12+20.39

BEGIN CONSTRUCTION  
-DRWY- POB 10+00.00

S67°23'04.8"E

BEGIN RET WALL NO.1  
BEGIN SINGLE FACED BARRIER  
-DRWY- POT 10+20.00

-DRWY- PC 10+24.03

-DRWY- PRC 10+58.97

-DRWY- PT 10+95.58

-L1- POT 14+57.48=

-L2- POT 10+00.00

-DRWY- POT 11+16.46

-L2- PC 10+64.32

END RET WALL NO.1  
END SINGLE FACED BARRIER  
BEGIN SHLD BERM GUTTER  
-L2- POC 11+10.00

END SHLD BERM GUTTER  
-L2- POC 11+50.00

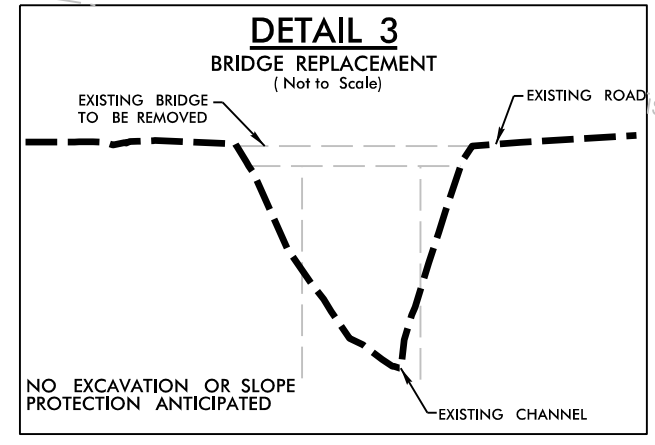
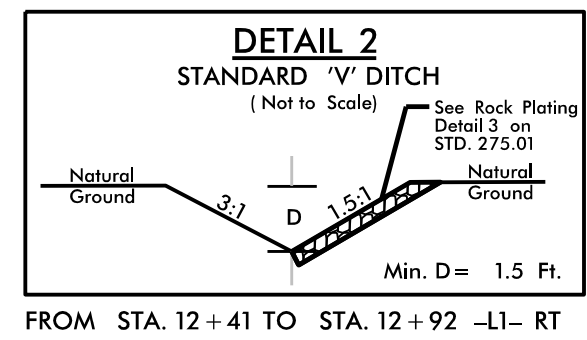
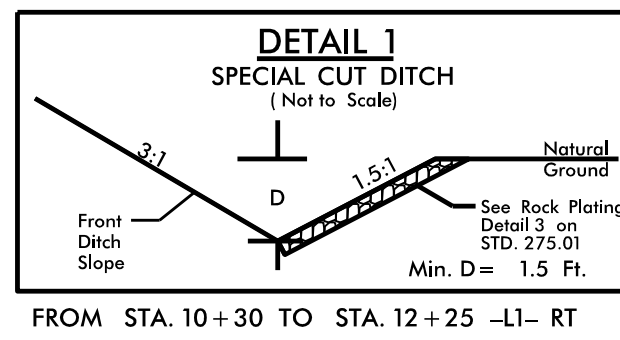
END CONSTRUCTION  
-L2- POC 12+35.00

-L2- POC 12+44.61

-L1- PT 12+73.41

-L2- PCC 11+46.84

-L2- POC 11+50.00  
END TIP PROJECT BP14-R038

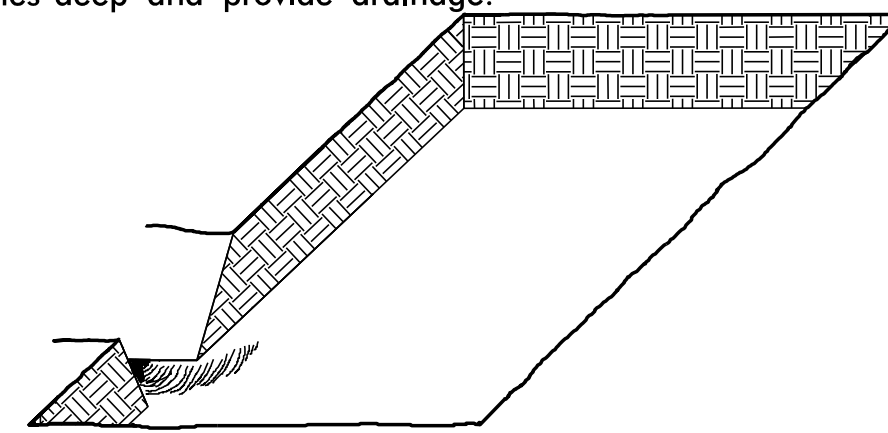


# PLANTING DETAILS

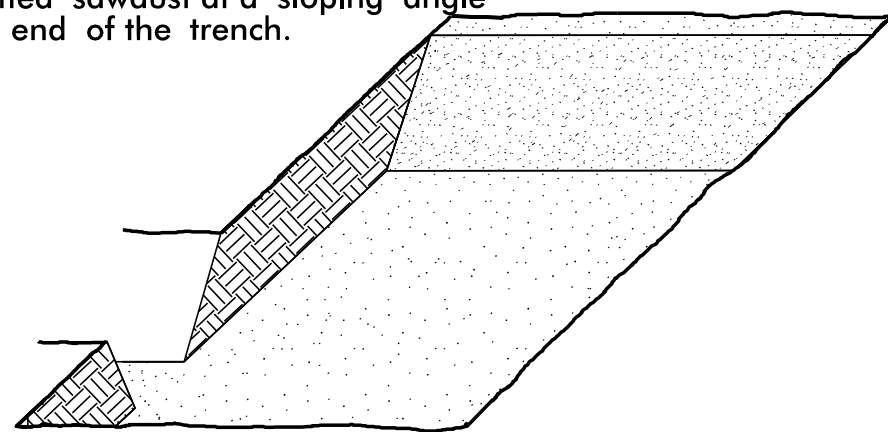
## SEEDLING / LINER BAREROOT PLANTING DETAIL

### HEALING IN

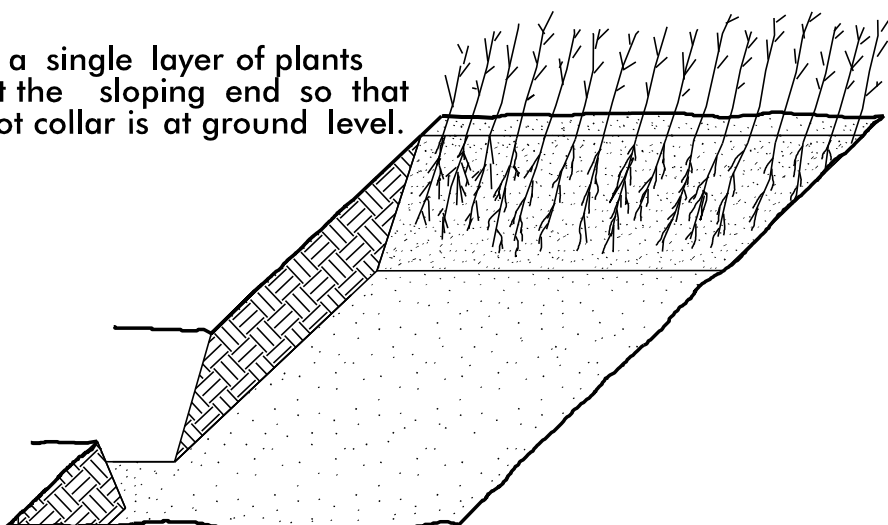
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



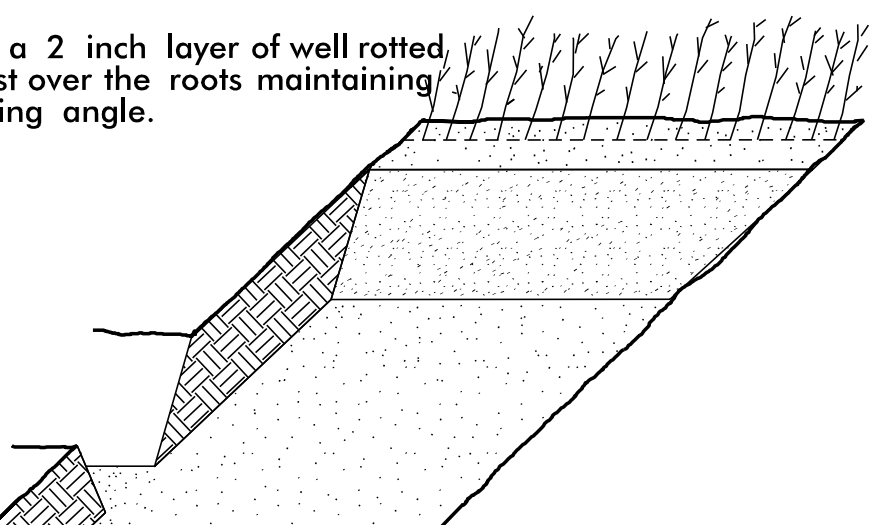
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

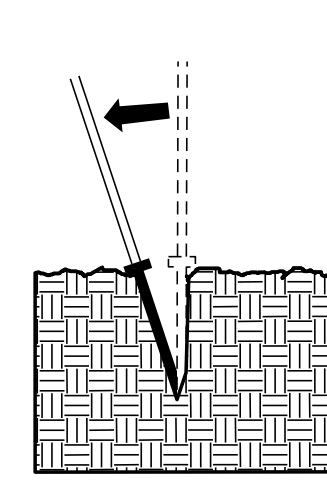


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

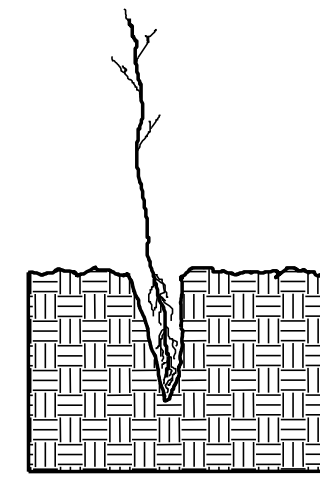


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

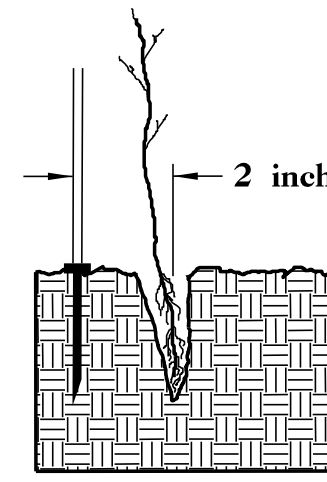
### DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR



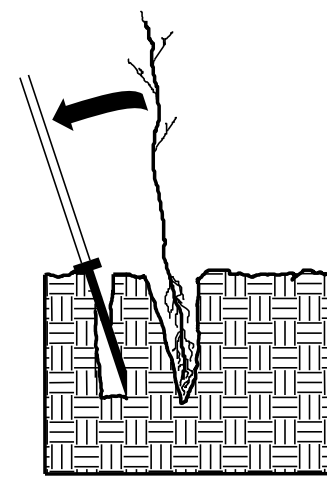
1. Insert planting bar as shown and pull handle toward planter.



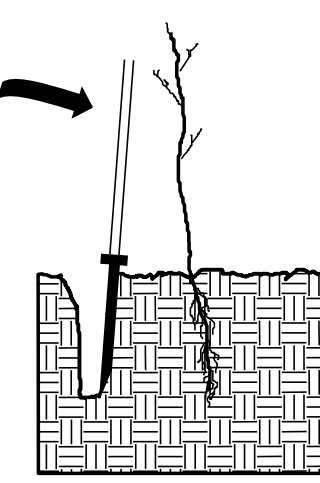
2. Remove planting bar and place seedling at correct depth.



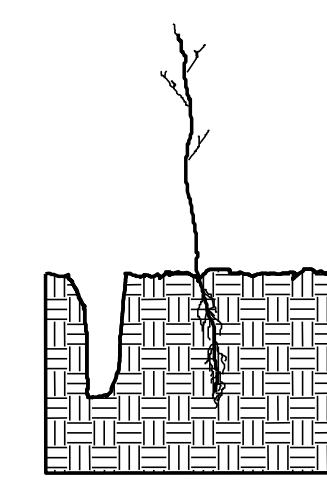
3. Insert planting bar 2 inches toward planter from seedling.



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



5. Push handle forward firming soil at top.



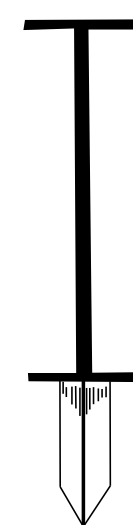
6. Leave compaction hole open. Water thoroughly.

### 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:

40% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in BR
30% PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in - 18 in BR
30% BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR

## REFORESTATION DETAIL SHEET

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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

SIGNING PLAN  
POLK COUNTY

LOCATION: REPLACE BRIDGE #740009 ON SR 1102 (PEARSON FALLS ROAD)  
OVER NORTH PACOLET RIVER

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4025000000	901	CONTRACTOR FURNISHED, TYPE "E" SIGN	35.75	S.F.
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	48	L.F.
4080200000	903	SUPPORTS, STEEL SQUARE TUBE	7	L.F.
4102000000	904	SIGN ERECTION, TYPE E	9	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	12	EA.
4360000000	SP	OMNI-DIRECTIONAL BREAKWAY SIGN SUPPORT	1	EA.

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 CONTRACTOR
- ALL TYPE 'D' SIGNS SHALL BE MOUNTED ON TWO U-CHANNEL POSTS UNLESS OTHERWISE INDICATED ON THE PLANS.
- 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.
- WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.
- THE BACKGROUND FOR TYPE E & F SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.
- DO NOT BEGIN FABRICATION FOR TYPES A & B SIGNS MOUNTED ON OVERHEAD STRUCTURES OR STEEL SUPPORTS UNTIL "S" DIMENSIONS HAVE BEEN FIELD VERIFIED.
- SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.

PROJECT NOTES

- 1 DISPOSAL OF SIGN SYSTEM, U-CHANNEL

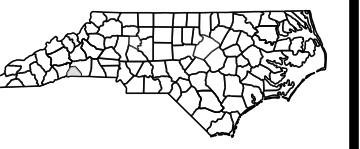
INDEX

SHEET NO.	DESCRIPTION
SIGN-1	TITLE SHEET
SIGN-2	TYPE "E" SIGNS
SIGN-3	SIGN DETAIL SHEET

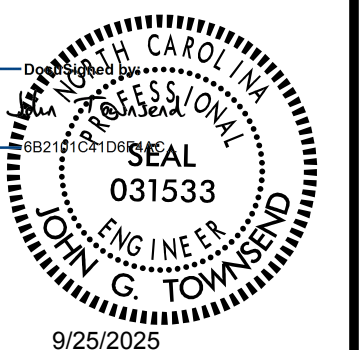
BP14-R038

SIGN 001

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
POLK COUNTY



SIGNING AND DELINEATION UNIT



PREPARED BY

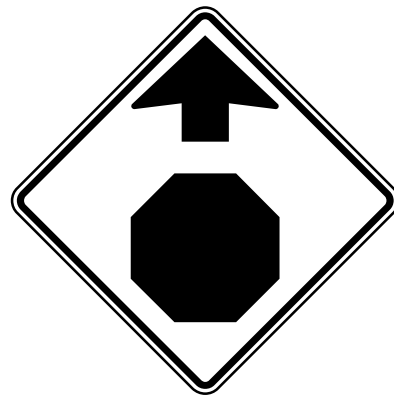


SIGNING  
TITLE SHEET

PROJECT: BP14-R038  
CONTRACT: DN01130

11/14/23

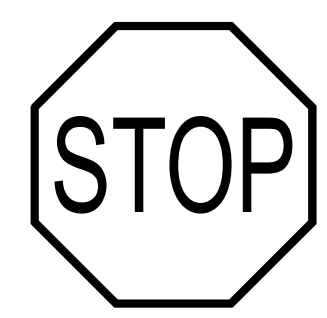
401 QUANTITY REQ'D 2



30 X 30  
W3-1

ONE "U" POST PER SIGN

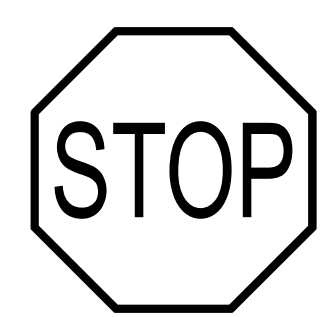
402 QUANTITY REQ'D 2



30 X 30  
R1-1

ONE "U" POST PER SIGN


403 QUANTITY REQ'D 1



30 X 30  
R1-1

ONE OMNI-DIRECTIONAL BREAKAWAY SIGN SUPPORT  
AND ONE STEEL SQUARE TUBE PER SIGN


404 QUANTITY REQ'D 3



18 X 6  
R1-3P

MOUNT BELOW SIGN 402 IN 2 INSTALLATIONS  
MOUNT BELOW SIGN 403 IN 1 INSTALLATION

405 QUANTITY REQ'D 1




36 X 9  
W14-1a

MOUNT ABOVE SIGN 402 IN 1 INSTALLATION AND  
FACING IN THE OPPOSITE DIRECTION

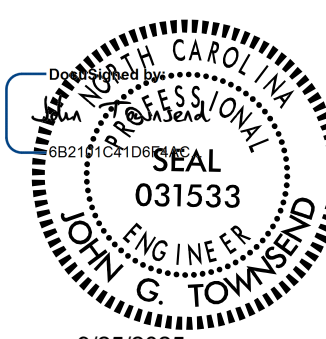
BP14-R038

SIGN 002

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
POLK COUNTY




SIGNING AND DELINEATION UNIT



9/25/2025

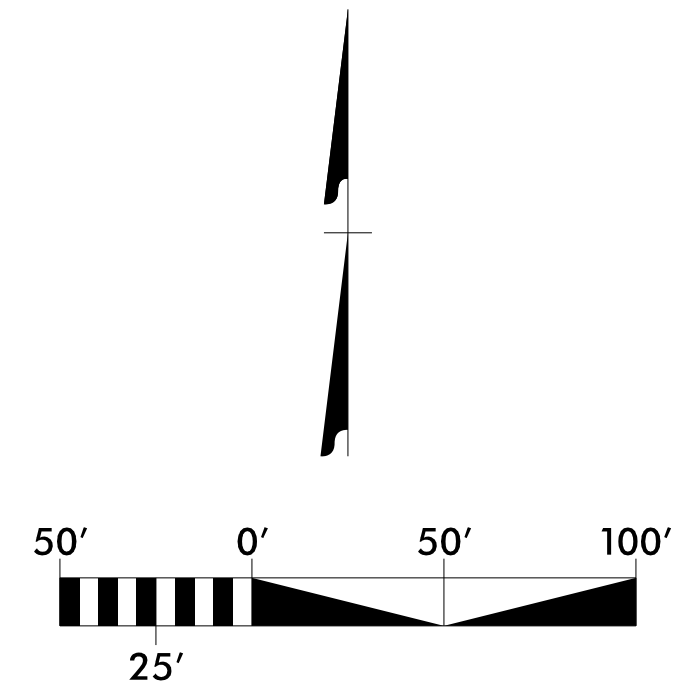
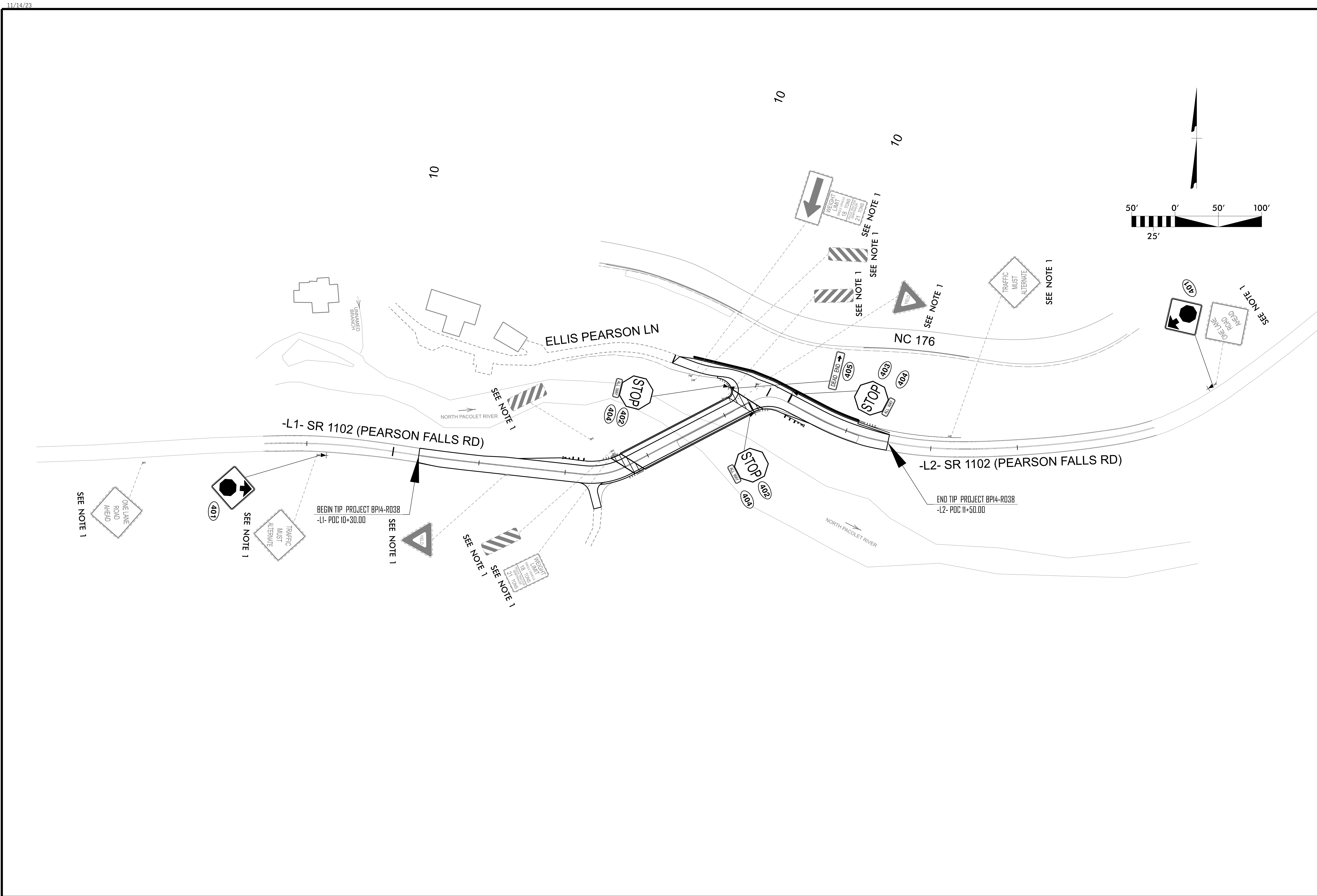
PREPARED BY



VHB Engineering, Inc. P.C. (C-3705)  
540 Main Campus Drive, Suite 500  
Raleigh, NC 27605

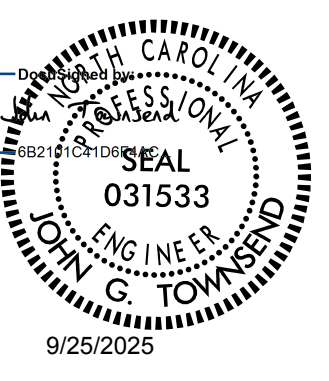
TYPE "E" SIGNS

PROJECT: BP14-R038



BP14-R038  
SIGN 003

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
POLK COUNTY



PREPARED BY  
**vhb**  
VHB Engineering, Inc. P.C. (C-3705)  
543 Main Campus Drive, Suite 500  
Raleigh, NC 27605

SIGN DETAIL SHEET  
EXISTING AND  
PROPOSED SIGNS

PROJECT: BP14-R038

09/08/09

TIP PROJECT: BP14.R038

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

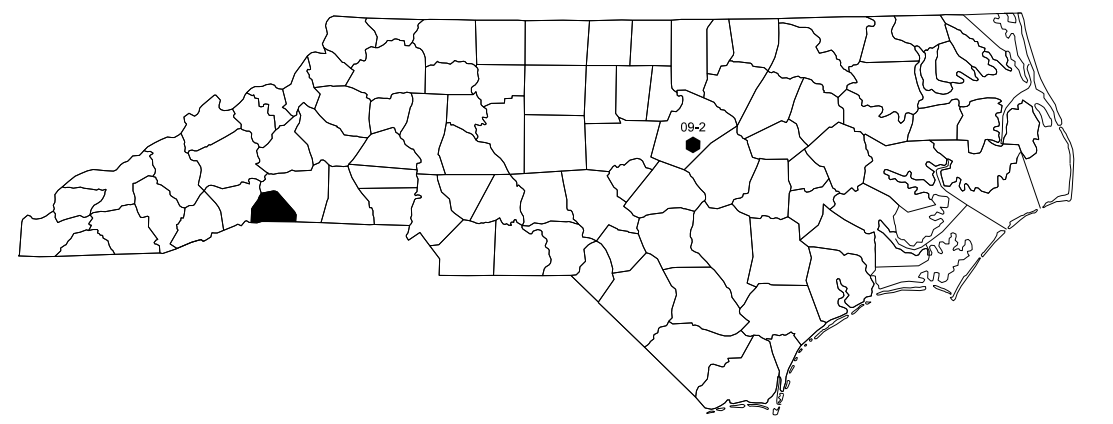
**POLK COUNTY  
UTILITIES BY OTHERS PLANS**

LOCATION: REPLACE BRIDGE #740009 ON SR 1102 (PEARSON  
FALLS ROAD) OVER NORTH PACOLET RIVER

TYPE OF WORK: POWER (DISTRIBUTION), COMMUNICATIONS

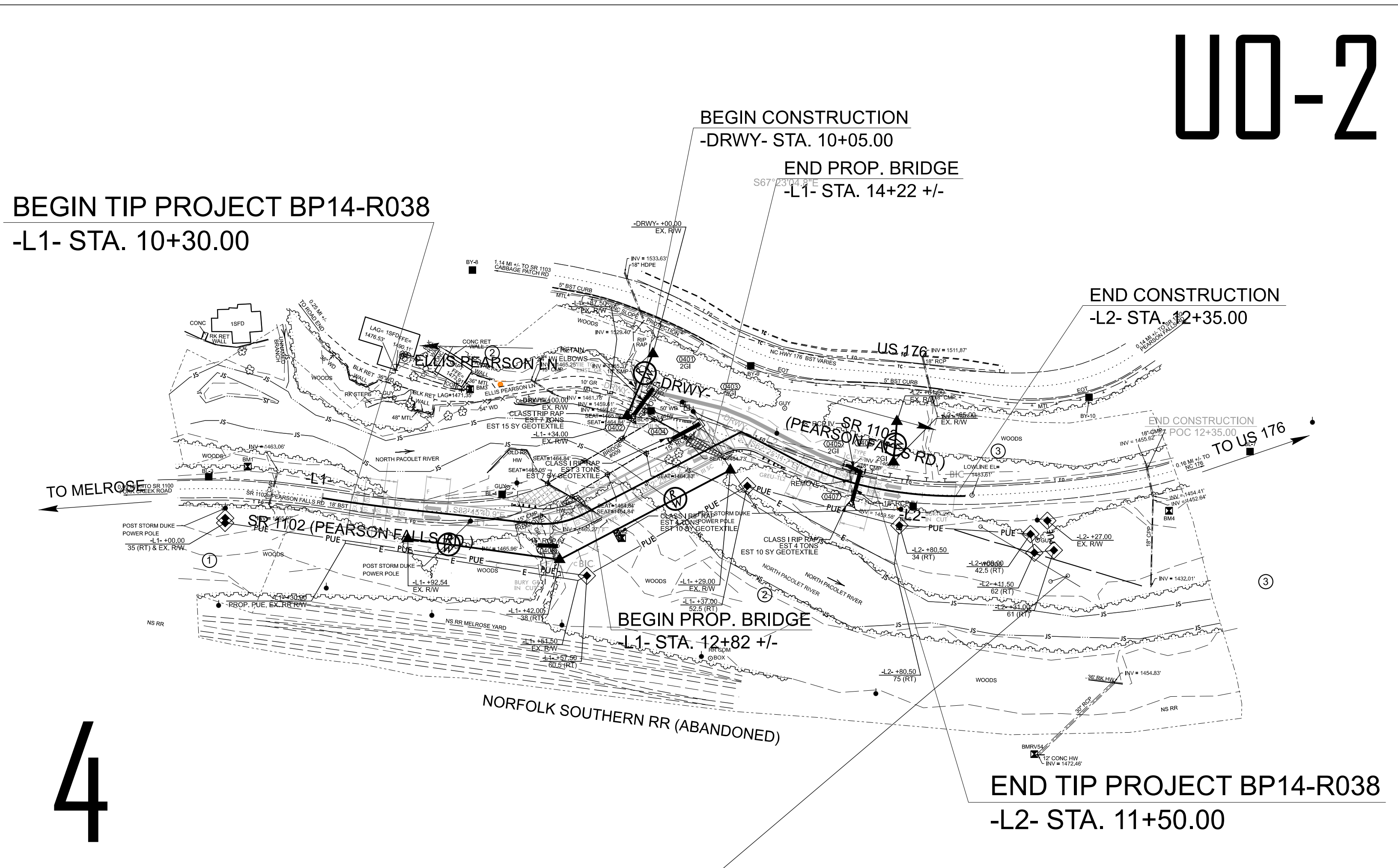
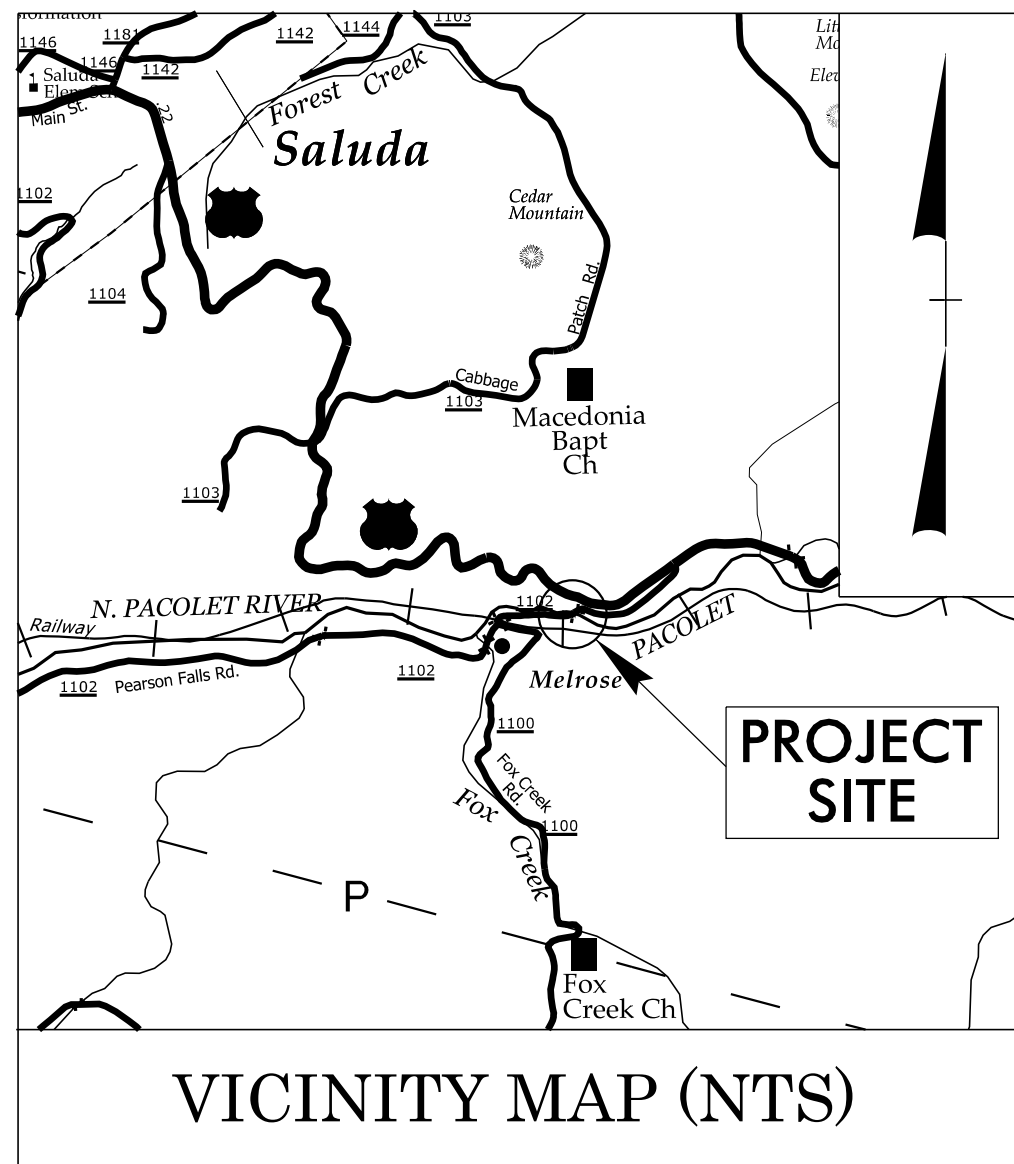
T.I.P. NO.	SHEET NO.
BP14.R038	UO-1

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.

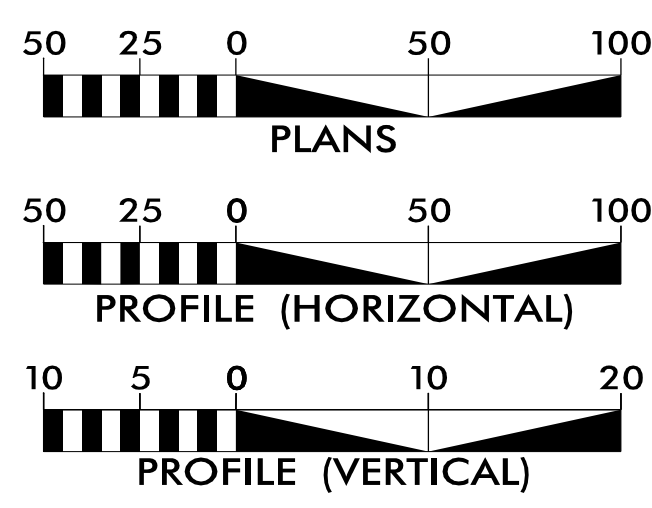


NAD 83/ 2011

UO-2



GRAPHIC SCALES



INDEX OF SHEETS

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

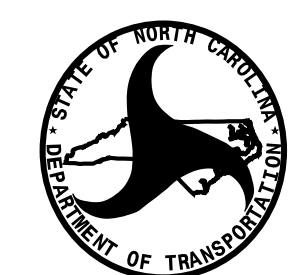
UTILITY OWNERS WITH CONFLICTS

- (A) POWER (DISTRIBUTION) - DUKE ENERGY
- (B) COMMUNICATIONS- RIVERSTREET NETWORKS

PREPARED IN THE OFFICE OF:

**SAI** 2641 Summer Boulevard  
Suite 116  
Raleigh, NC 27616  
(919) 878-7466

TODD BUTNER UTILITY PROJECT MANAGER  
WILL PACE PROJECT UTILITY COORDINATOR



DIVISION OF HIGHWAYS  
DIVISION 14  
253 WEBSTER ROAD  
SYLVA, NC 28779

BOB GOLDING DIVISION UTILITY ENGINEER  
WESLEY T. GRINDSTAFF, PE DIVISION ENGINEER

9/4/2025 11:44:23 AM \\BP14-R038\_RDY\_TSH-SAM-UC.dgn

