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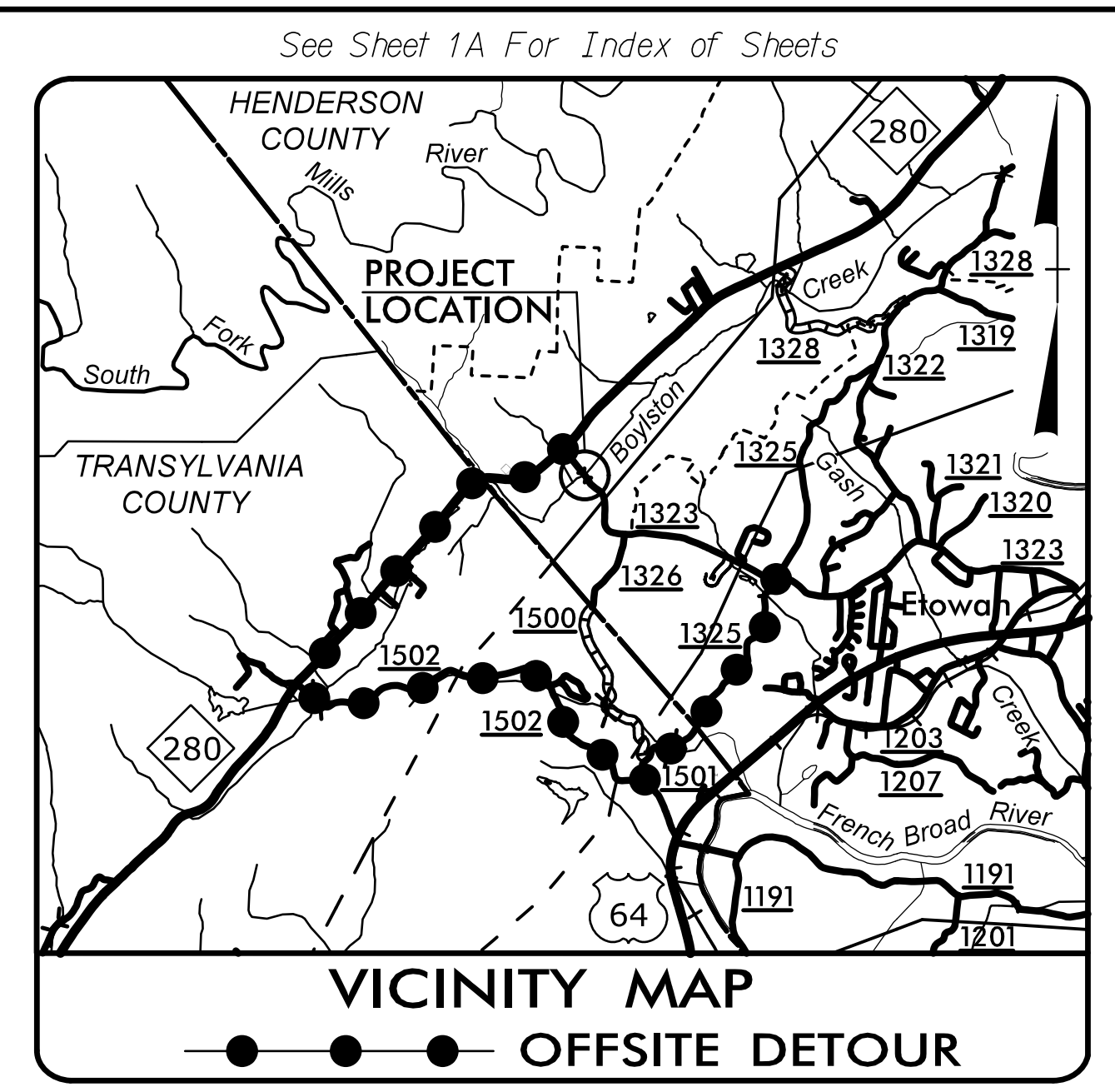
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09/08/99

9/6/2024 X:\NGDOT\Division 14 - 2017\Henderson 440015\Roadway\Proj\440015\_Rdy\_tsh.dgn User:smelvin

PROJECT: BP14-R020

CONTRACT: DN01067



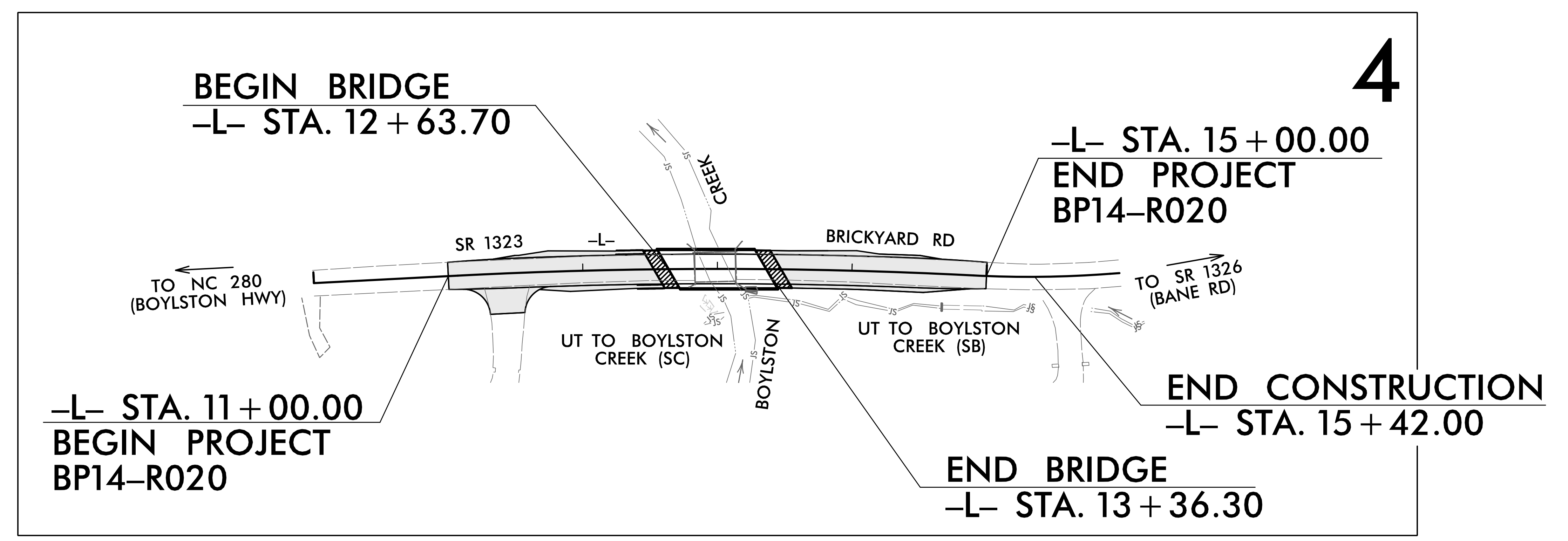
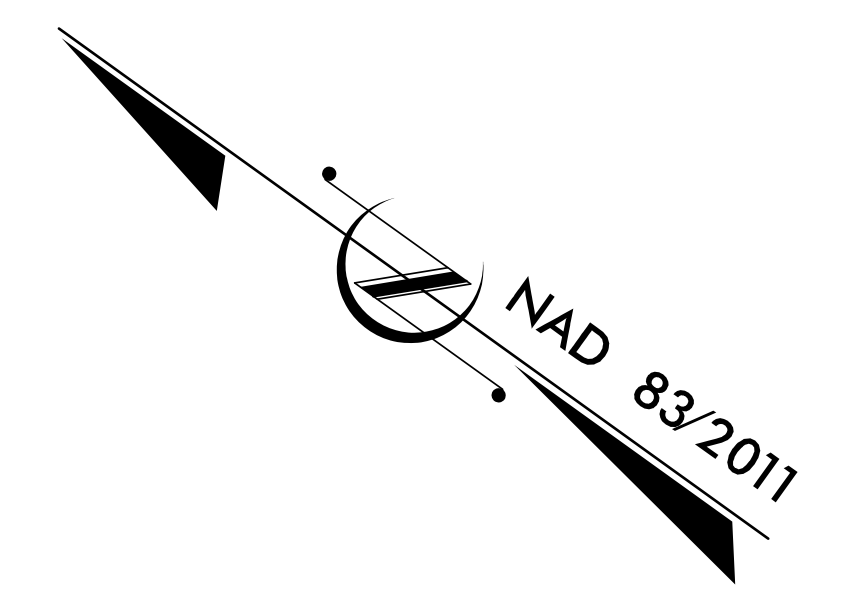
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**HENDERSON COUNTY**

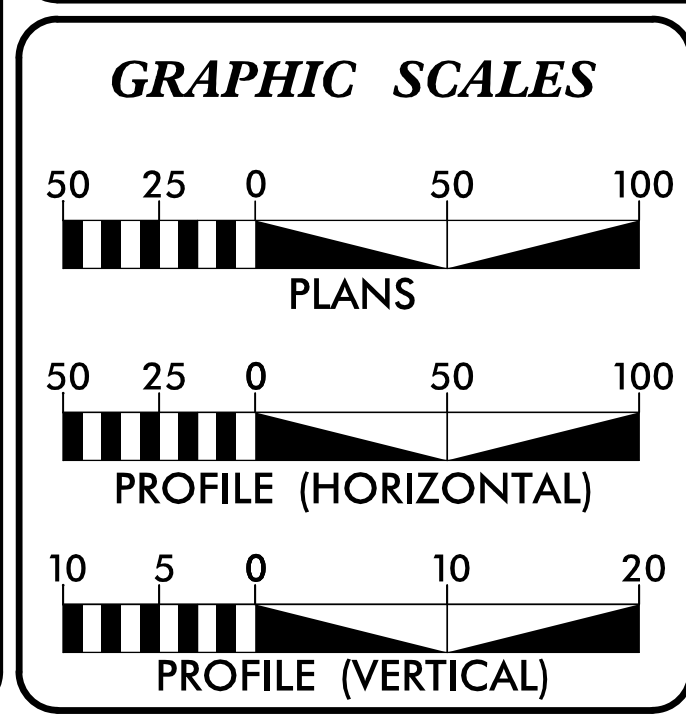
LOCATION: BRIDGE #440015 OVER BOYLSTON CREEK  
ON SR 1323 (BRICKYARD RD)

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP14-R020	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP14.R020.1	N/A	PE	
BP14.R020.2	N/A	RW & UTIL.	
BP14.R020.3	N/A	CONST.	



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UNLESS ALL SIGNATURES COMPLETED



**DESIGN DATA**

ADT 2024 = 2100  
 T = 6 % \*  
 V = 45 MPH  
 \* TTST = 3% DUAL = 3%

FUNC CLASS =  
LOCAL - RURAL

SUB REGIONAL TIER

**PROJECT LENGTH**

LENGTH ROADWAY PROJECT BP14-R020 #440015	= 0.062
LENGTH STRUCTURE PROJECT BP14-R020 #440015	= 0.014
TOTAL LENGTH PROJECT BP14-R020 #440015	= 0.076

NCDOT CONTACT: ZACH SHULER

<b>PLANS PREPARED BY:</b>  TGS ENGINEERS 201 W. MARION ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	<b>PLANS PREPARED FOR:</b> NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION 14 345 Toof Hollow Rd Bryson City, NC 28713
<b>RIGHT OF WAY DATE:</b> FEBRUARY 1, 2023	JIMMY L. TERRY, PE PROJECT ENGINEER
<b>LETTING DATE:</b> DECEMBER 10, 2024	CLINTON PRUETT, PE PROJECT DESIGN ENGINEER

2024 STANDARD SPECIFICATIONS

**HYDRAULICS ENGINEER**

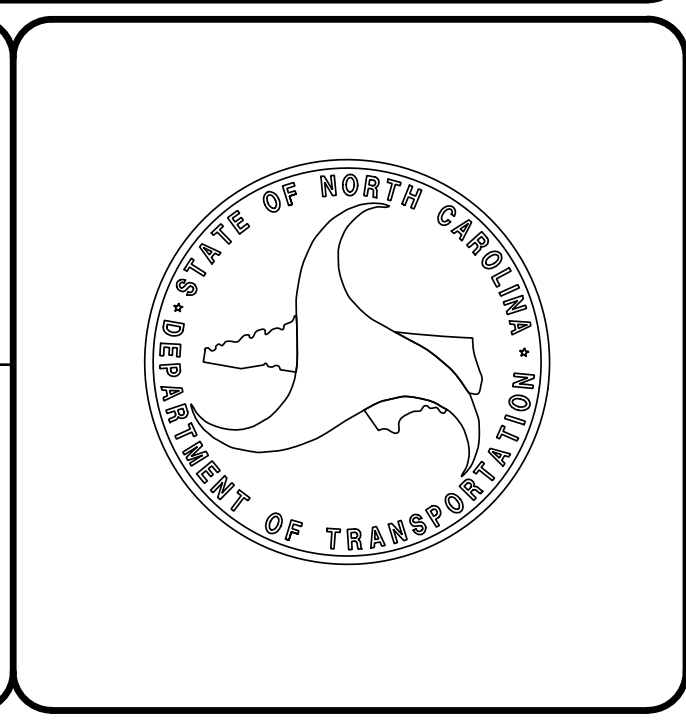
9/13/2024

Signed by: *David B. Petty* P.E.  
 DAVID B. PETTY  
 SEAL 038697  
 PROFESSIONAL ENGINEER

**ROADWAY DESIGN ENGINEER**

9/13/2024

DocuSigned by: *Jimmy L. Terry* P.E.  
 JIMMY L. TERRY  
 SEAL 35018  
 PROFESSIONAL ENGINEER



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

PROJECT REFERENCE NO. <i>BP14-R020</i>	SHEET NO. <i>1A</i>
ROADWAY DESIGN ENGINEER	

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# INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1 THRU 2C-2	SPECIAL DETAILS - GUARDRAIL PLACEMENT
2C-3 THRU 2C-4	SPECIAL DETAILS - METHOD OF PIPE INSTALLATION
3B-1	ROADWAY AND DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
4	PLAN AND PROFILE SHEET
RW01 THRU RW04	SURVEY CONTROL SHEETS
TMP-1 THRU TMP-4	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1 THRU RF-2	STREAMBANK REFORESTATION DETAIL SHEETS
UD-1 THRU UD-2	UTILITIES BY OTHERS PLANS
X-1	CROSS-SECTION SUMMARY SHEET
X-2 THRU X-3	CROSS-SECTIONS
S-1 THRU S-16	STRUCTURE PLANS
STRUCTURE STANDARD NOTES	

# GENERAL NOTES

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

**GRADE LINE:  
 GRADING AND SURFACING:**

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

**CLEARING:**

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

**SUPERELEVATION:**

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

**SHOULDER CONSTRUCTION:**

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

**SIDE ROADS:**

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

**SUBSURFACE DRAINS:**

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

**GUARDRAIL:**

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

**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 DUKE ENERGY, AT&T, AND OPTIMUM.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

**RIGHT-OF-WAY MARKERS:**

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

# STANDARD DRAWINGS

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
<b>DIVISION 2 - EARTHWORK</b>	
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
<b>DIVISION 3 - PIPE CULVERTS</b>	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
<b>DIVISION 4 - MAJOR STRUCTURES</b>	
423.01	Bridge Approach Fills - Type 1 Approach Fill for Bridge Abutment
<b>DIVISION 5 - SUBGRADE, BASES AND SHOULDERS</b>	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
<b>DIVISION 8 - INCIDENTALS</b>	
815.02	Subsurface Drain
840.00	Concrete Base Pad for Drainage Structures
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
866.04	Barbed Wire Fence - with Wood Posts
876.01	Rip Rap in Channels and Ditches
876.02	Guide for Rip Rap at Pipe Outlets

EFF. 01-16-2024  
REV.

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

Note: Not to Scale

## BOUNDARIES AND PROPERTY:

State Line	_____
County Line	_____
Township Line	_____
City Line	_____
Reservation Line	_____
Property Line	_____
Existing Iron Pin (EIP)	○ EIP
Computed Property Corner	✕
Existing Concrete Monument (ECM)	□ ECM
Parcel/Sequence Number	②③
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	---WLB---
Proposed Wetland Boundary	---WLB---
Existing Endangered Animal Boundary	---EAB---
Existing Endangered Plant Boundary	---EPB---
Existing Historic Property Boundary	---HPB---
Known Contamination Area: Soil	---S---S---
Potential Contamination Area: Soil	---S---S---
Known Contamination Area: Water	---W---W---
Potential Contamination Area: Water	---W---W---
Contaminated Site: Known or Potential	☠ ?

## BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	✕
Foundation	□
Area Outline	□
Cemetery	□ †
Building	□
School	□
Church	□
Dam	_____

## HYDROLOGY:

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

## RAILROADS:

Standard Gauge	_____
RR Signal Milepost	○
Switch	□
RR Abandoned	_____
RR Dismantled	_____

## RIGHT OF WAY & PROJECT CONTROL:

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

## ROADS AND RELATED FEATURES:

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

Woods Line	_____
Orchard	_____
Vineyard	_____

## EXISTING STRUCTURES:

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

## UTILITIES:

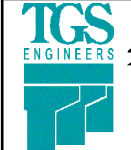
\* SUE - Subsurface Utility Engineering  
LOS - Level of Service - A, B, C or D (Accuracy)

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

## TELEPHONE:

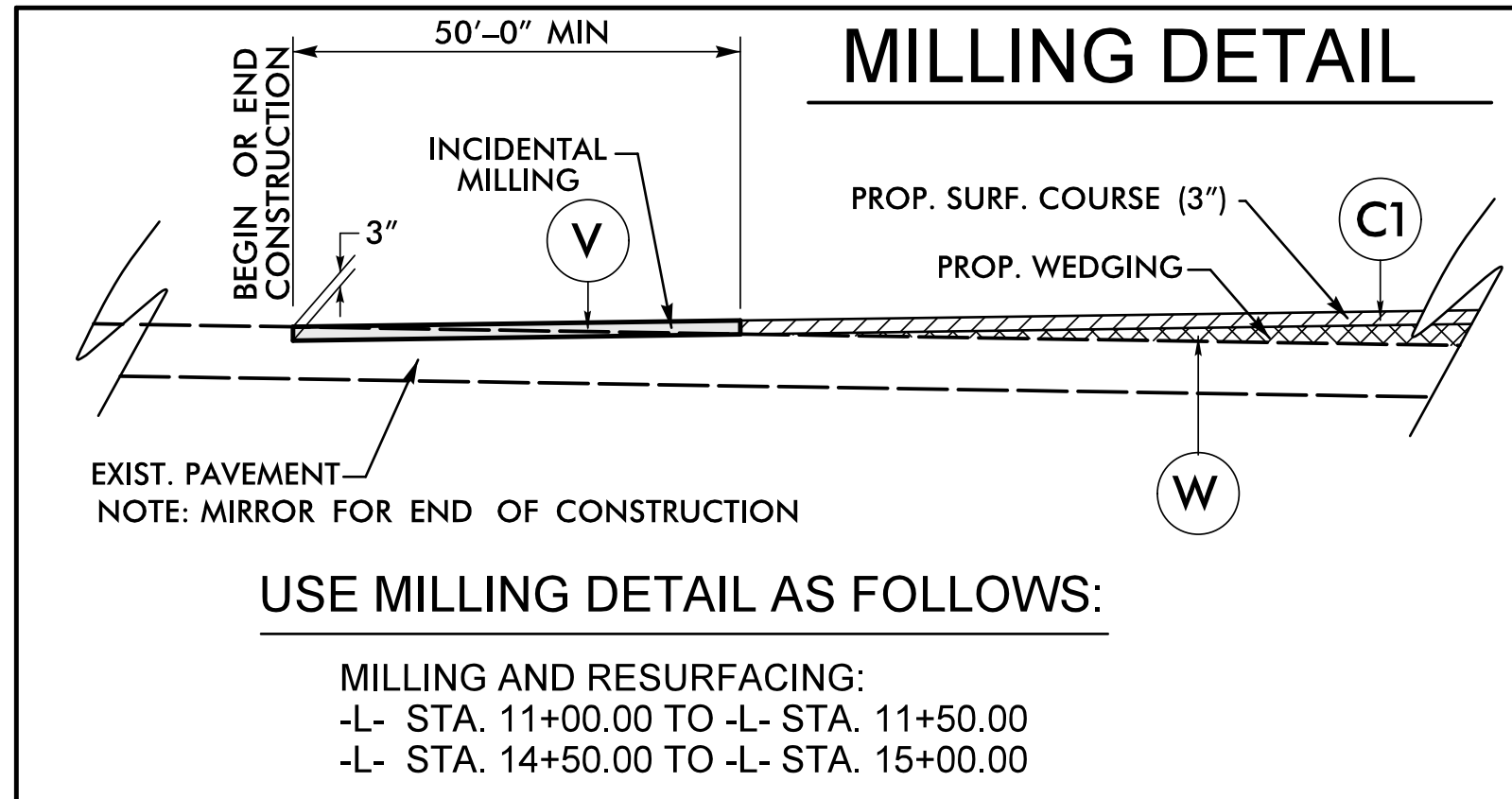
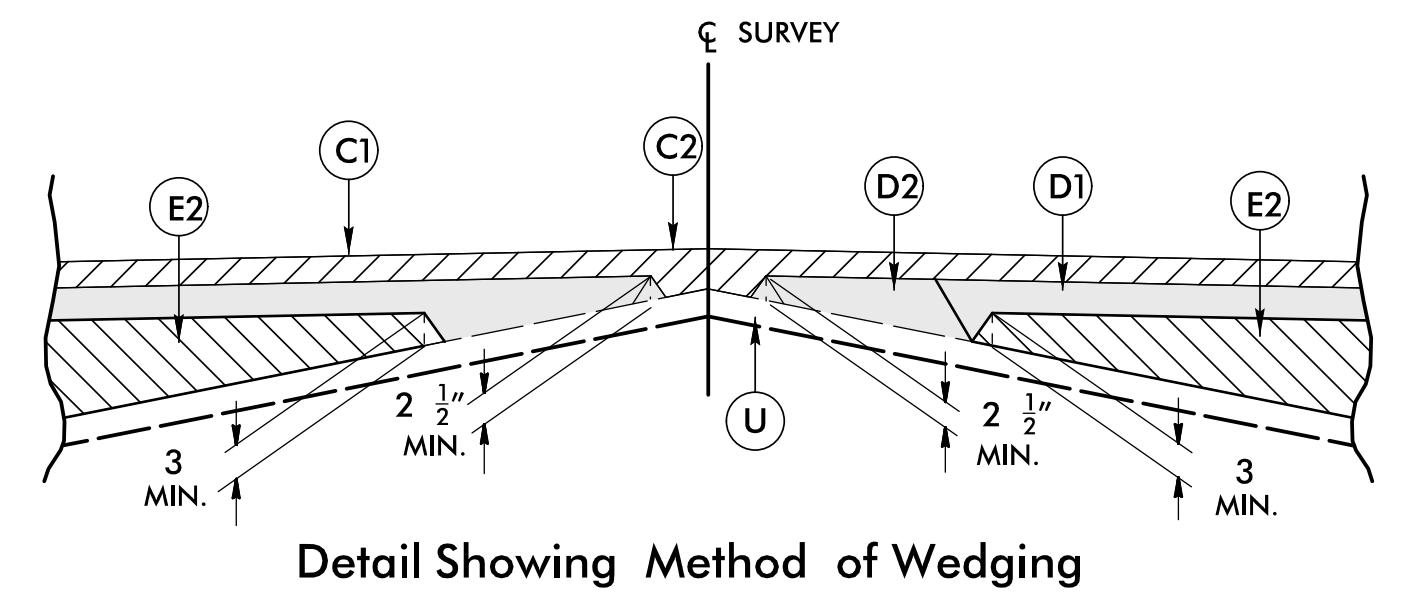
Existing Telephone Pole	_____
Proposed Telephone Pole	_____
Telephone Manhole	_____
Telephone Pedestal	_____
Telephone Cell Tower	_____
U/G Telephone Cable Hand Hole	_____
U/G Telephone Test Hole (SUE - LOS A)*	_____
U/G Telephone Cable (SUE - LOS B)*	_____
U/G Telephone Cable (SUE - LOS C)*	_____
U/G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

WATER:	
Water Manhole	_____
Water Meter	_____
Water Valve	_____
Water Hydrant	_____
U/G Water Line Test Hole (SUE - LOS A)*	_____
U/G Water Line (SUE - LOS B)*	_____
U/G Water Line (SUE - LOS C)*	_____
U/G Water Line (SUE - LOS D)*	_____
Above Ground Water Line	_____
TV:	
TV Pedestal	_____
TV Tower	_____
U/G TV Cable Hand Hole	_____
U/G TV Test Hole (SUE - LOS A)*	_____
U/G TV Cable (SUE - LOS B)*	_____
U/G TV Cable (SUE - LOS C)*	_____
U/G TV Cable (SUE - LOS D)*	_____
U/G Fiber Optic Cable (SUE - LOS B)*	_____
U/G Fiber Optic Cable (SUE - LOS C)*	_____
U/G Fiber Optic Cable (SUE - LOS D)*	_____
GAS:	
Gas Valve	_____
Gas Meter	_____
U/G Gas Line Test Hole (SUE - LOS A)*	_____
U/G Gas Line (SUE - LOS B)*	_____
U/G Gas Line (SUE - LOS C)*	_____
U/G Gas Line (SUE - LOS D)*	_____
Above Ground Gas Line	_____
SANITARY SEWER:	
Sanitary Sewer Manhole	_____
Sanitary Sewer Cleanout	_____
U/G Sanitary Sewer Line	_____
Above Ground Sanitary Sewer	_____
SS Force Main Line Test Hole (SUE - LOS A)*	_____
SS Force Main Line (SUE - LOS B)*	_____
SS Force Main Line (SUE - LOS C)*	_____
SS Force Main Line (SUE - LOS D)*	_____
MISCELLANEOUS:	
Utility Pole	_____
Utility Pole with Base	_____
Utility Located Object	_____
Utility Traffic Signal Box	_____
Utility Unknown U/G Line (SUE - LOS B)*	_____
U/G Tank; Water, Gas, Oil	_____
Underground Storage Tank, Approx. Loc.	_____
A/G Tank; Water, Gas, Oil	_____
Geoenvironmental Boring	_____
Abandoned According to Utility Records	_____
End of Information	_____

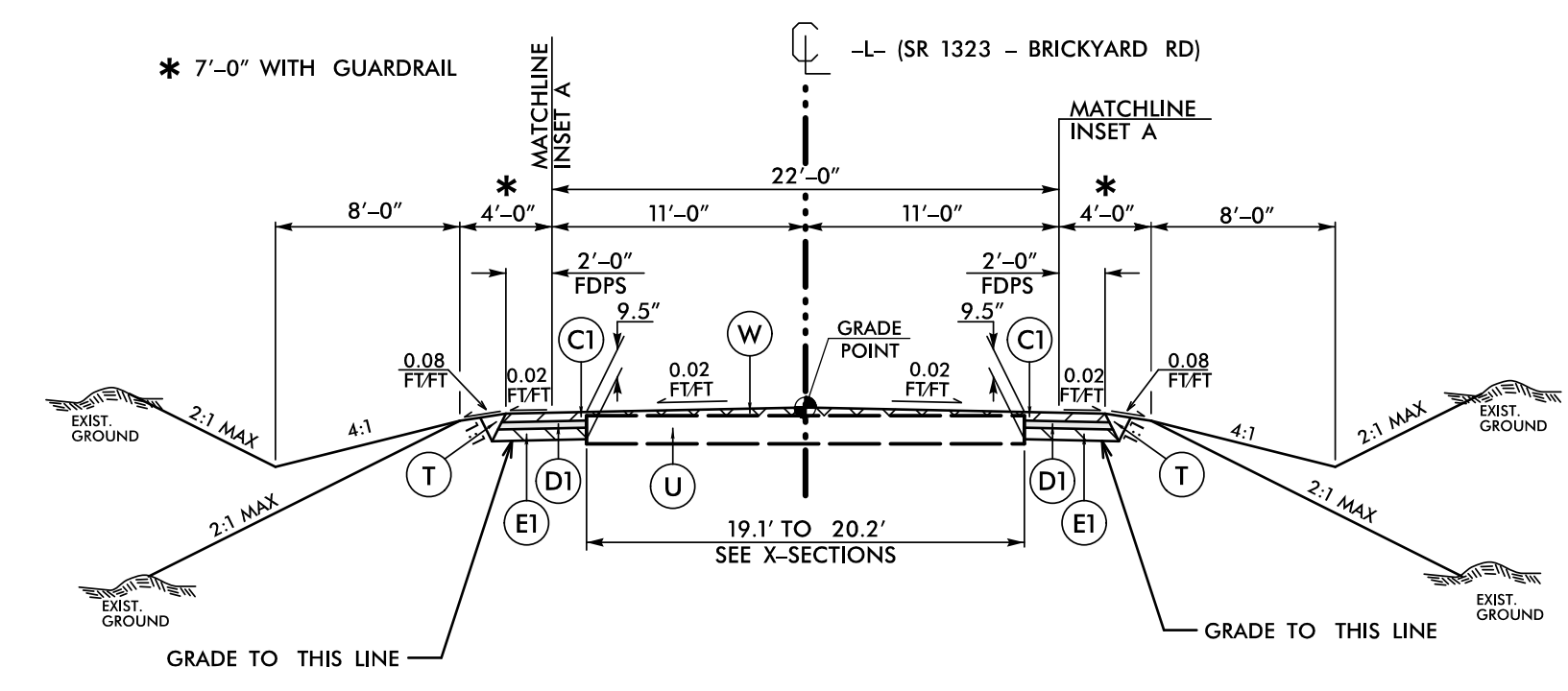
PROJECT REFERENCE NO. BPI4-R020	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER JIMMY L. TERRY 35018 9/13/2024	PAVEMENT DESIGN ENGINEER JIMMY L. TERRY 35018 9/13/2024
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
 <b>TGS ENGINEERS</b> 201 W. MARION ST. STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 2 1/2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2 1/2" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	INCIDENTAL MILLING (SEE MILLING DETAIL THIS SHEET)
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL THIS SHEET)

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



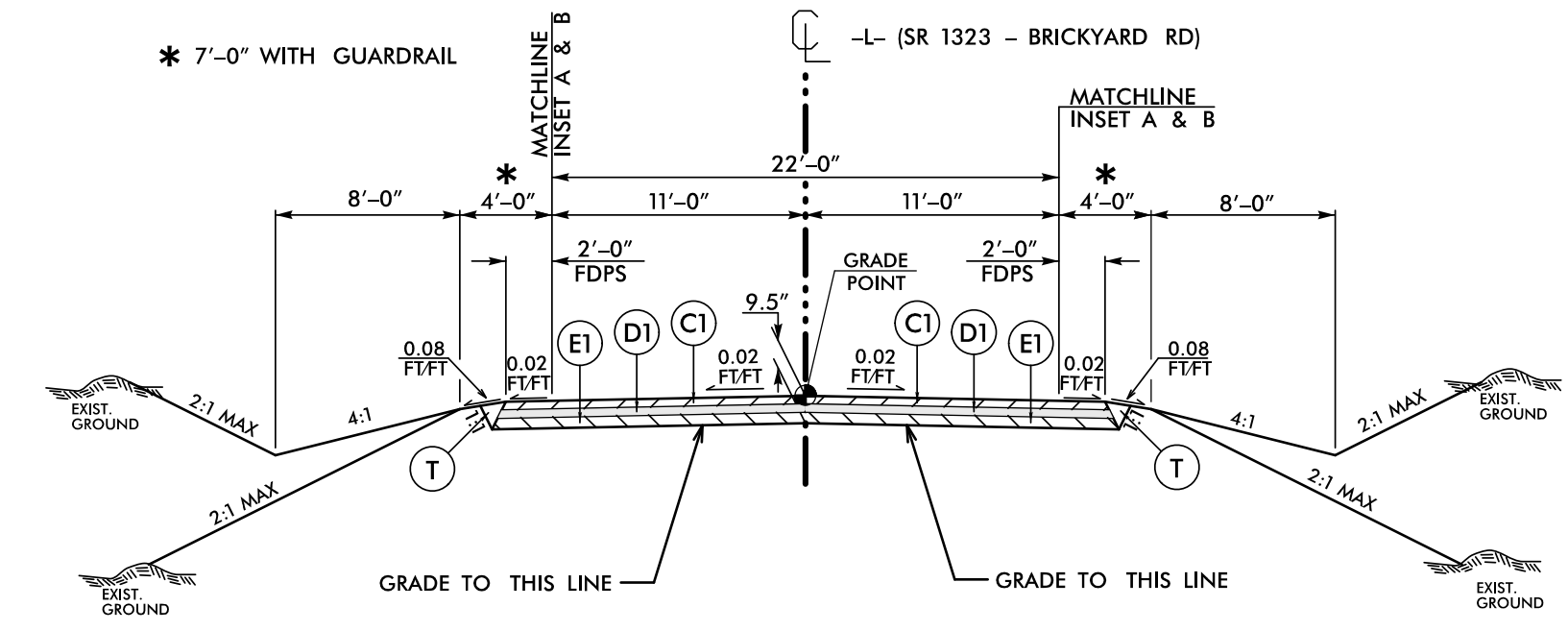
MILLING AND RESURFACING:  
 -L- STA. 11+00.00 TO -L- STA. 11+50.00  
 -L- STA. 14+50.00 TO -L- STA. 15+00.00



**TYPICAL SECTION NO. 1**

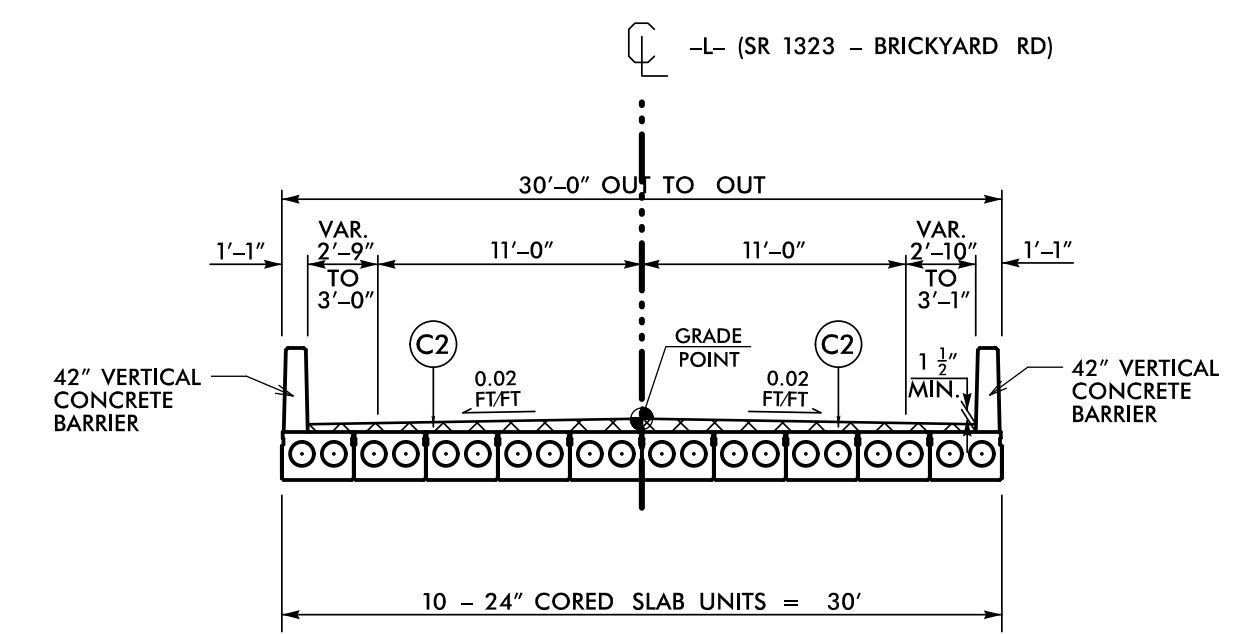
USE TYPICAL SECTION NO. 1  
 -L- STA. 11+50.00 TO -L- STA. 12+25.00  
 -L- STA. 13+75.00 TO -L- STA. 14+50.00

NOTE: TRANSITION BETWEEN EXISTING AND TYP. SECT. NO.1 AS FOLLOWS:  
 -L- STA. 11+00.00 TO -L- STA. 11+50.00  
 -L- STA. 14+50.00 TO -L- STA. 15+00.00



**TYPICAL SECTION NO. 2**

USE TYPICAL SECTION NO. 2  
 -L- STA. 12+25.00 TO -L- STA. 12+63.70 (BEGIN BRIDGE)  
 -L- STA. 13+36.30 (END BRIDGE) TO -L- STA. 13+75.00



**TYPICAL SECTION NO. 3**

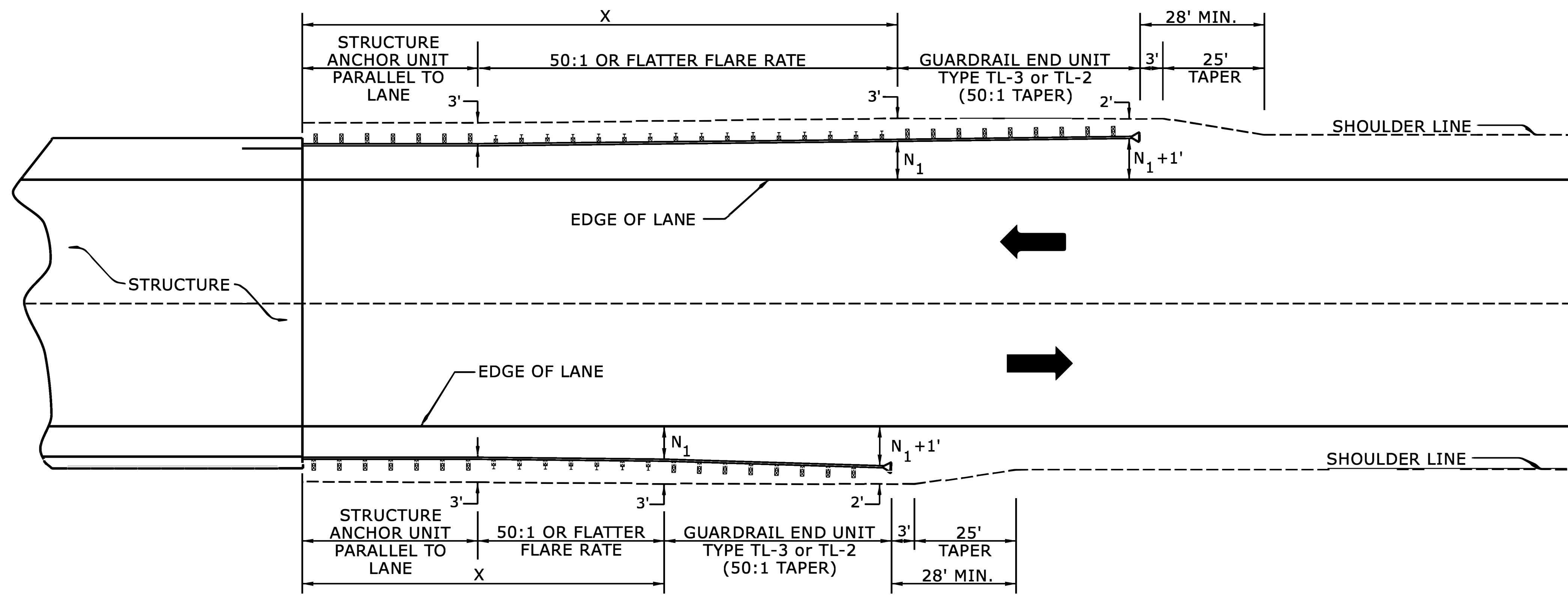
USE TYPICAL SECTION NO. 3  
 -L- STA. 12+63.70 TO -L- STA. 13+36.30

FDPS WIDTH	STA. TO STA.
0'-0" TO 2'-0"	-L- STA. 11+33.34 TO -L- STA. 11+50.00 LT -L- STA. 14+50.00 TO -L- STA. 14+66.67 LT
2'-0" TO 3'-5"	-L- STA. 13+39.18 (END APPROACH SLAB) TO -L- STA. 14+19.98 LT -L- STA. 11+52.96 TO -L- STA. 12+24.70 (BEGIN SBG) LT
2'-0" TO 3'-7"	-L- STA. 11+67.24 TO -L- STA. 12+40.26 (BEGIN SBG) RT
2'-10"	-L- STA. 13+55.63 (END APPROACH SLAB) TO -L- STA. 14+24.85 RT
2'-10" TO 3'-5"	-L- STA. 14+07.00 TO -L- STA. 14+53.56 RT
3'-5" TO 0'-0"	-L- STA. 14+53.56 TO -L- STA. 14+88.36 RT

USE INSET A

USE INSET B

-L- STA. 12+24.70 TO -L- STA. 12+44.95 (BEGIN APPROACH SLAB) LT  
 -L- STA. 12+40.26 TO -L- STA. 12+60.64 (BEGIN APPROACH SLAB) RT

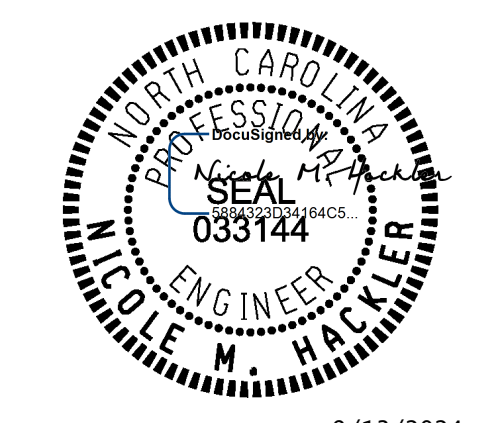


USE FLARE RATE AS THE CONTROL IF THE " $N_1$ " DISTANCE IS NOT OBTAINED.  
 (" $N_1$ " IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)  
 SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS  
 FOR POSTED SPEEDS  $\geq$  45MPH USE GREU TYPE TL-3  
 FOR POSTED SPEEDS  $<$  45MPH USE GREU TYPE TL-2  
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

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

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

ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**



9/13/2024

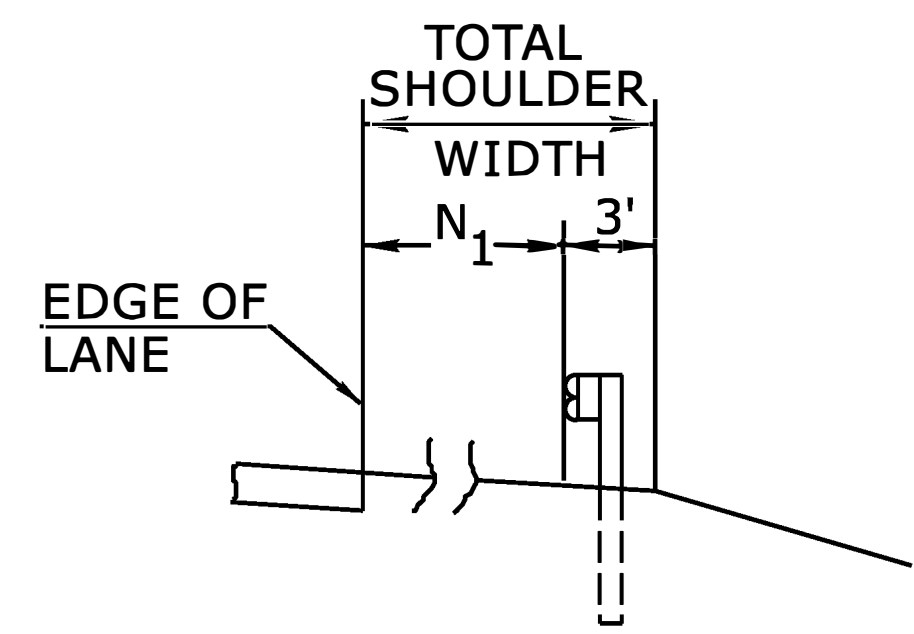
SHEET 4 OF 15  
**862D01**

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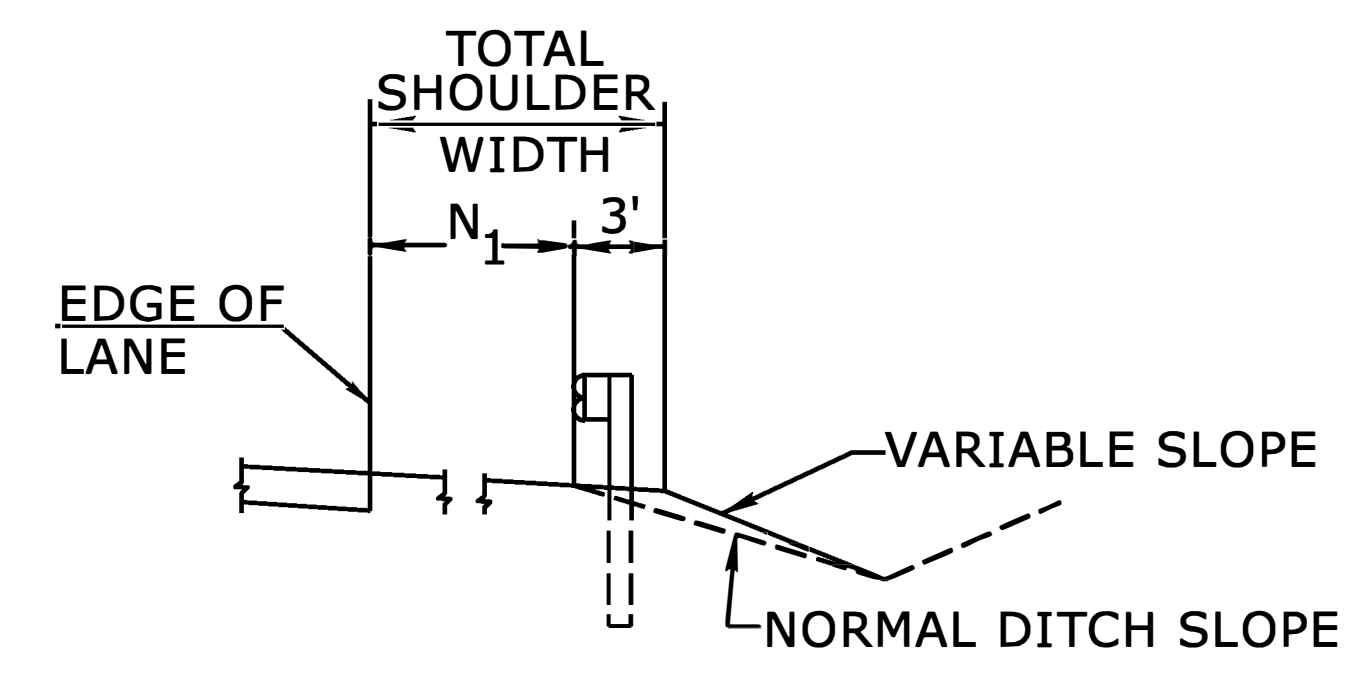
**CONTRACTS STANDARDS  
 AND DEVELOPMENT UNIT**  
 Office 919-707-6950 FAX 919-250-4119

**SEE TITLE BLOCK**

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

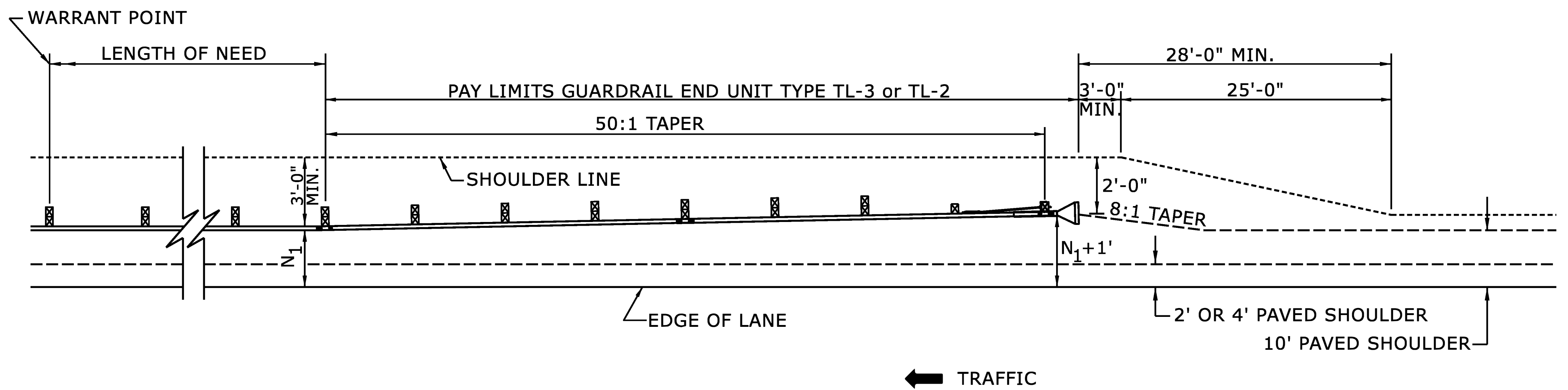


**FILL SECTION**



**CUT SECTION**

"N<sub>1</sub>" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.

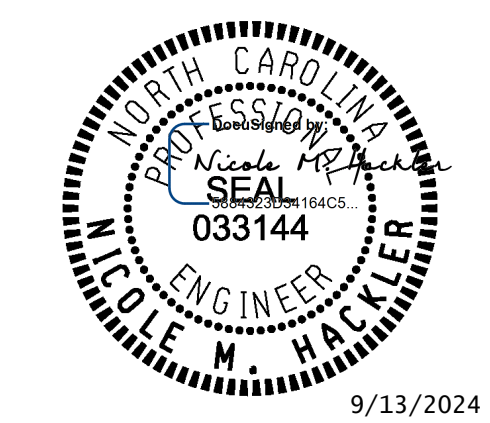


FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3  
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

**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**



9/13/2024

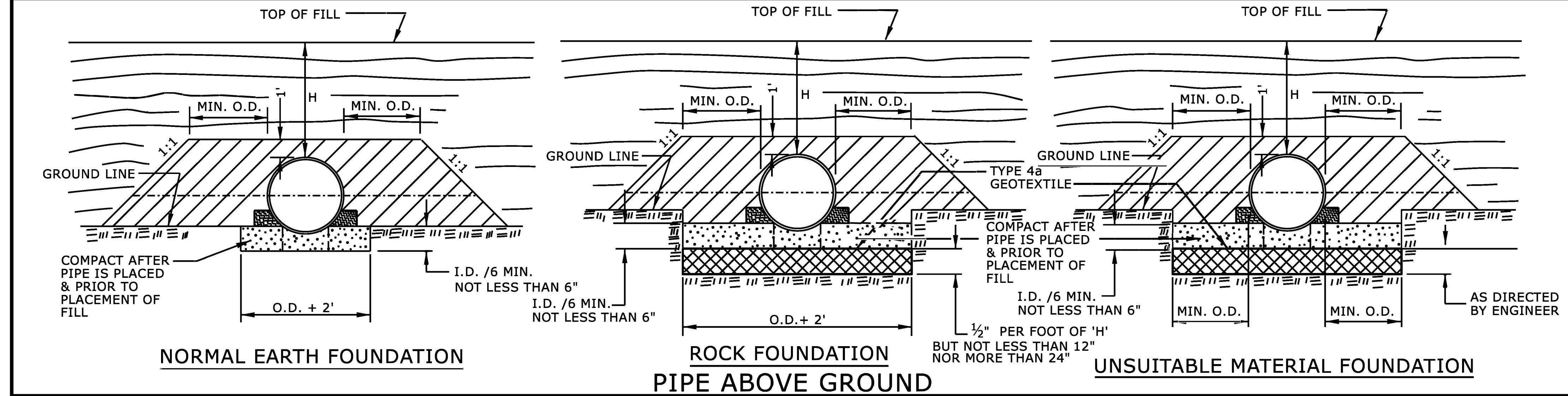
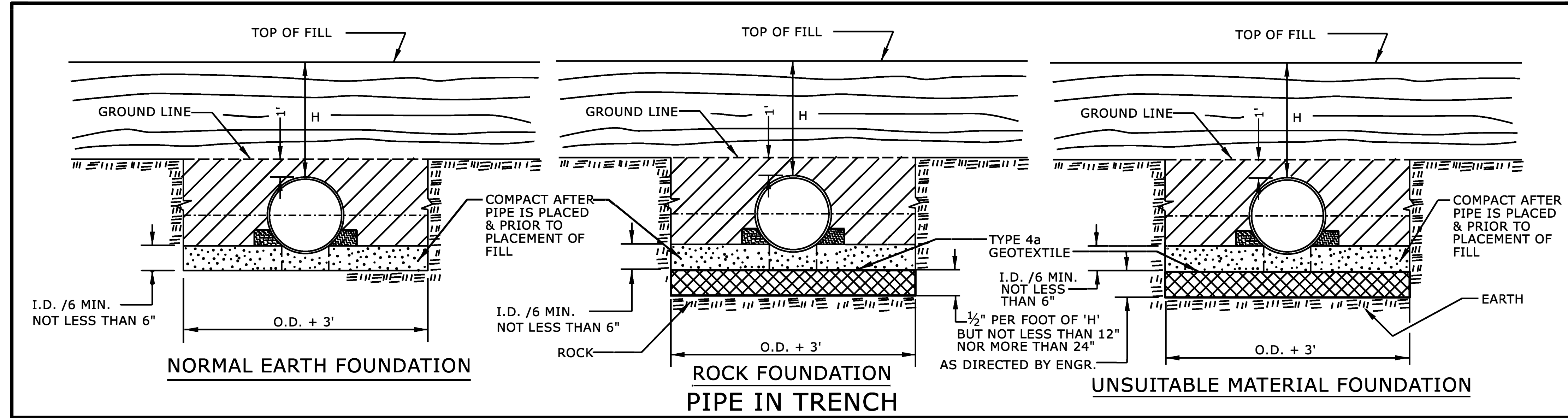
SHEET 6 OF 15  
**862D01**

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED




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

**SEE TITLE BLOCK**


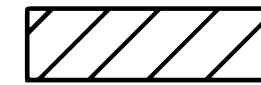
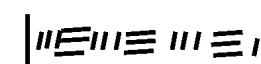

ORIGINAL BY: S. CALHOUN	DATE: 7-25-2024
MODIFIED BY: _____	DATE: _____
CHECKED BY: _____	DATE: _____
FILE SPEC.: _____	



**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.

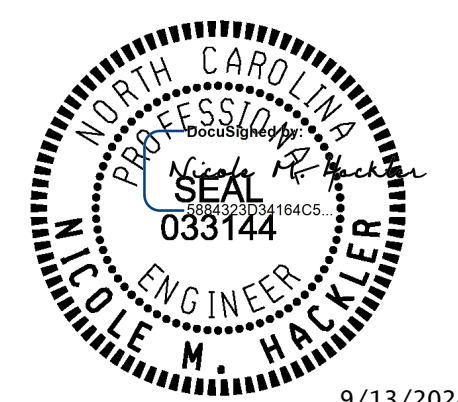
 APPROVED SUITABLE LOCAL MATERIAL.  
 TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.  
 LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

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



9/13/2024

SHEET 1 OF 2  
**300.01**

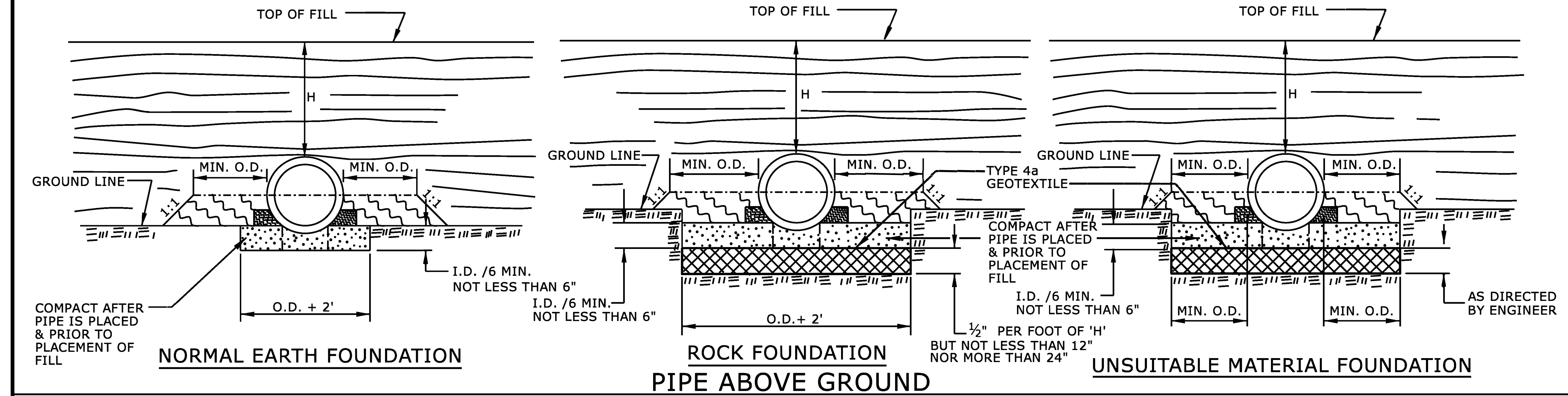
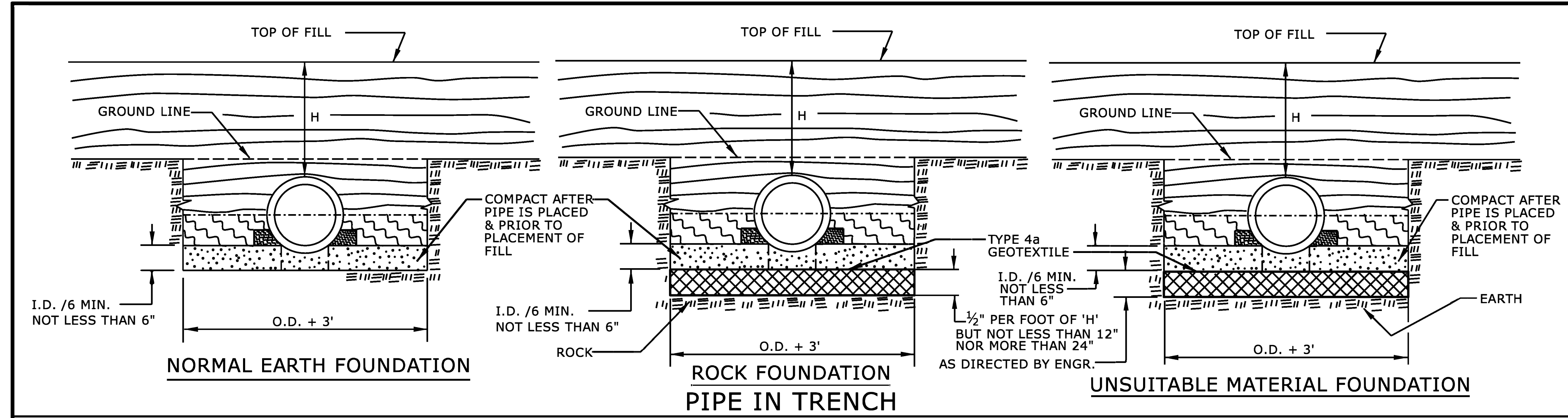
DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

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



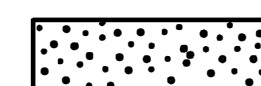
**SEE TITLE BLOCK**

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

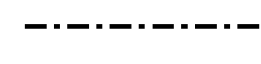

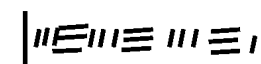





**GENERAL NOTES:**  
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STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR  
**METHOD OF PIPE INSTALLATION**  
 RIGID PIPE



9/13/2024

SHEET 2 OF 2  
**300.01**

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

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

**SEE TITLE BLOCK**

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



COMPUTED BY: D. Matthew Brewer, P.E. DATE: 10/26/22  
 CHECKED BY: Robert E. Kral, P.E. DATE: 10/26/22

PROJECT NO. SHEET NO.  
 BP14-R020 3G-1

**(12-17-19)**  
**STATE OF NORTH CAROLINA**  
**DIVISION OF HIGHWAYS**

**SUMMARY OF SUBSURFACE DRAINAGE**

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

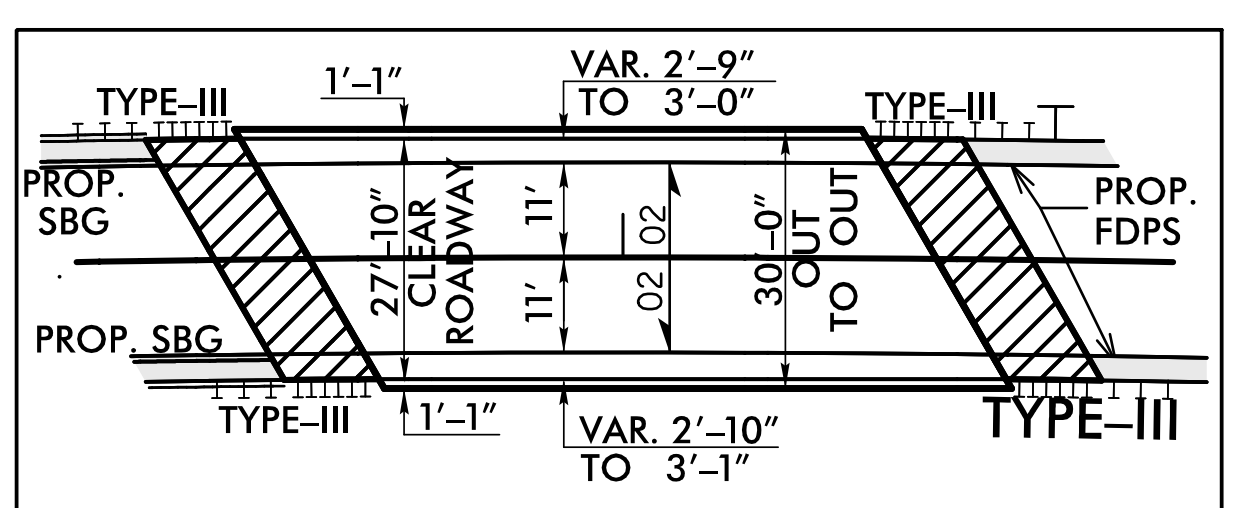
\*UD = Underdrain  
 \*BD = Blind Drain  
 \*SD = Subsurface Drain

**SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION**

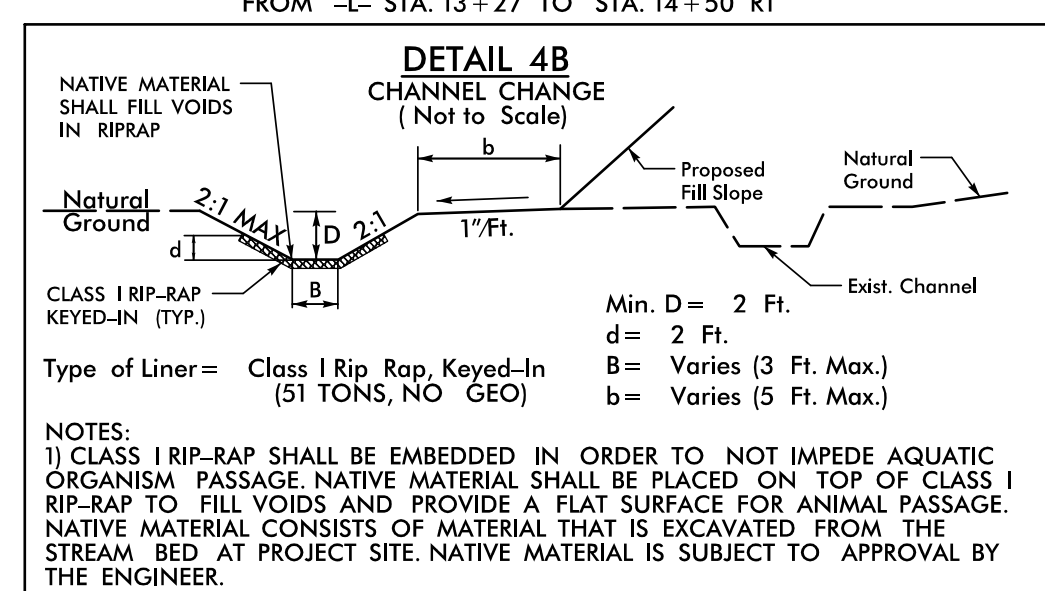
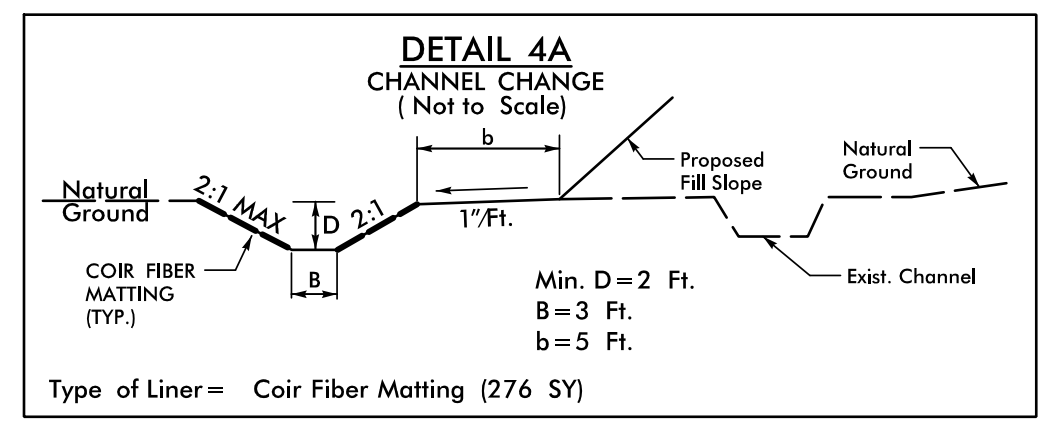
LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			1	12	100	100	300		
TOTAL CY/TONS/SY: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

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

8/17/99

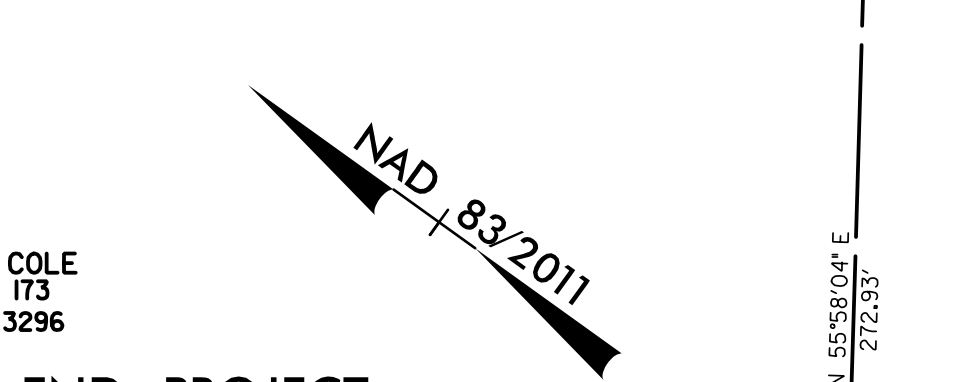
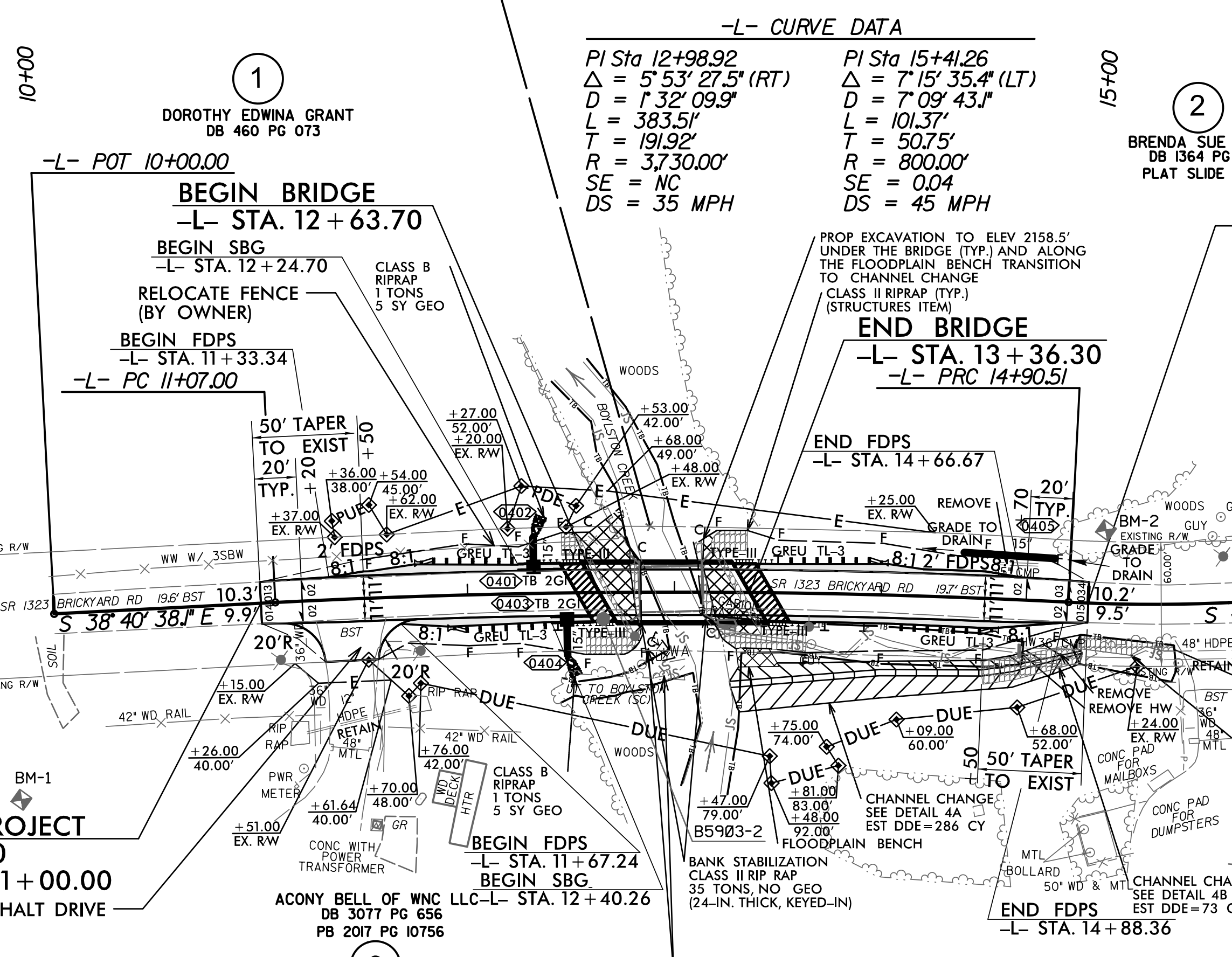


BRIDGE/ROADWAY RELATIONSHIP SKETCH FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-16

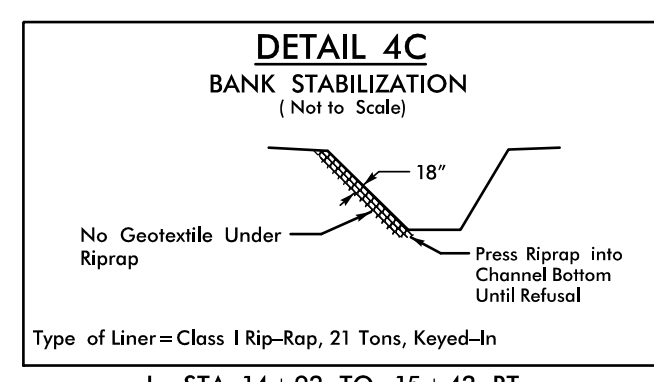


NOTES:  
 1) CLASS I RIP-RAP SHALL BE EMBEDDED IN ORDER TO NOT IMPEDE AQUATIC ORGANISM PASSAGE. NATIVE MATERIAL SHALL BE PLACED ON TOP OF CLASS I RIP-RAP TO FILL VOIDS AND PROVIDE A FLAT SURFACE FOR ANIMAL PASSAGE. NATIVE MATERIAL CONSISTS OF MATERIAL THAT IS EXCAVATED FROM THE STREAM BED AT PROJECT SITE. NATIVE MATERIAL IS SUBJECT TO APPROVAL BY THE ENGINEER.

ROBERT P. GRANT AND BRIAN KELLY GRANT  
 DB 1651 PG 386  
 PLAT SLIDE 9822

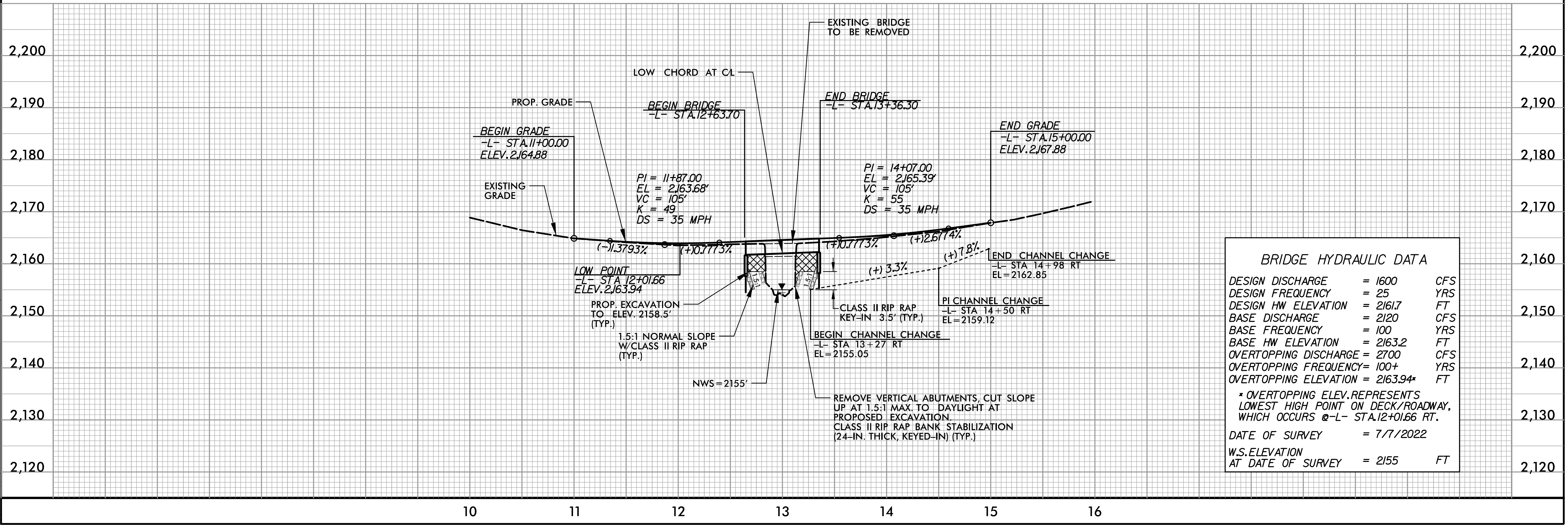


PROJECT REFERENCE NO. BP14-R020	SHEET NO. 4
ROADWAY DESIGN ENGINEER TERRY J. TERRY 35018 11/13/2024	HYDRAULICS ENGINEER DAVID B. PETTY 038897 11/13/2024
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
TGS ENGINEERS 804-C N. LAFAYETTE ST SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	



REVISIONS

8/15/2024 X:\NCDOT\_Division 14 - 2017\Henderson 440015\Roadway\Proj\440015\_Rdy\_psh.dgn



BRIDGE HYDRAULIC DATA	
DESIGN DISCHARGE	= 1600 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 2161.7 FT
BASE DISCHARGE	= 2120 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 2163.2 FT
OVERTOPPING DISCHARGE	= 2700 CFS
OVERTOPPING FREQUENCY	= 100+ YRS
OVERTOPPING ELEVATION	= 2163.94* FT
* OVERTOPPING ELEV. REPRESENTS LOWEST HIGH POINT ON DECK/ROADWAY, WHICH OCCURS @ -L- STA. 12+01.66 RT.	
DATE OF SURVEY	= 7/7/2022
W.S. ELEVATION AT DATE OF SURVEY	= 2155 FT

09/08/99

TIP PROJECT · BP14-R020

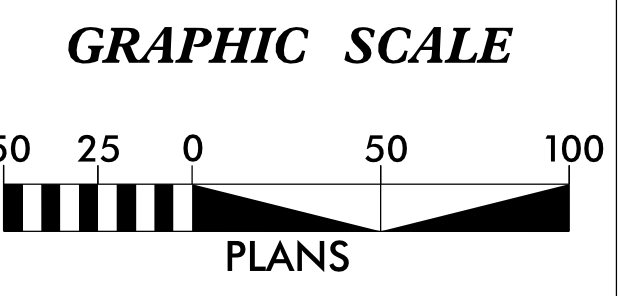
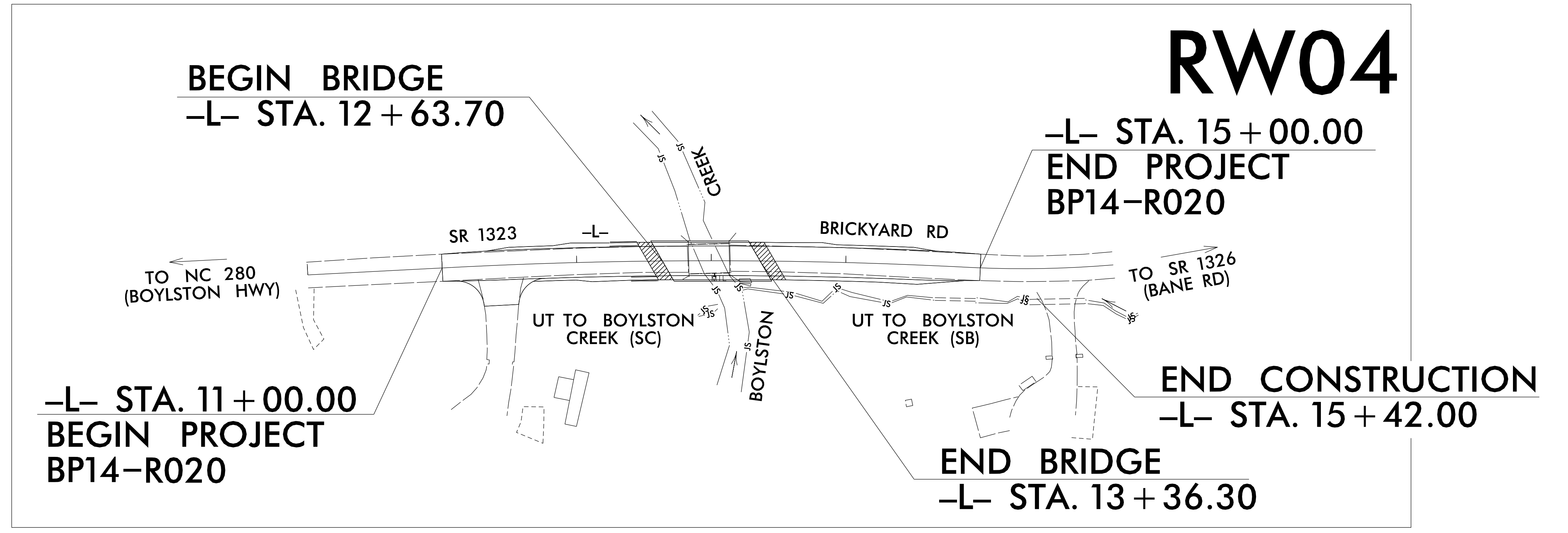
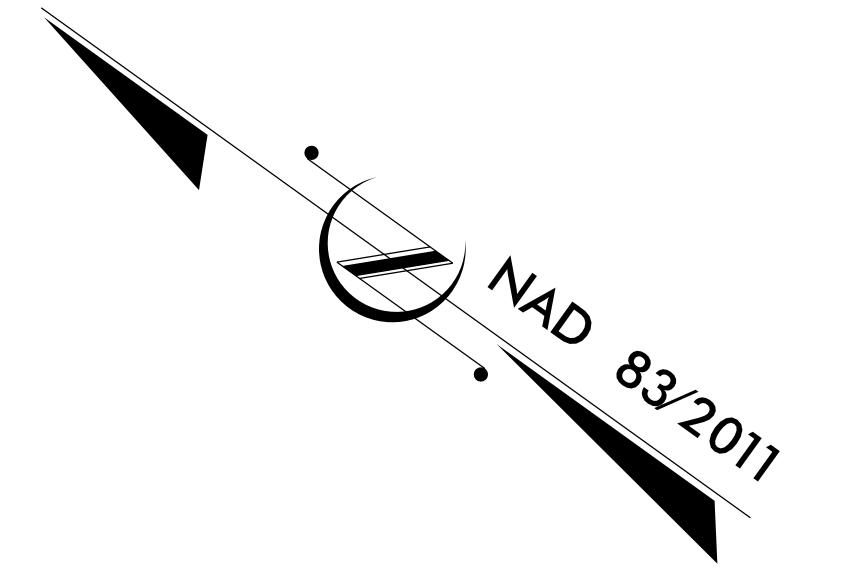
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP14-R020	RW01	05

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

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

**HENDERSON COUNTY**

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



**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "B5903-1" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 595228.260(ft) EASTING: 915103.138(ft) ELEVATION: 2189.38(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999774373 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5903-1" TO -L- STATION 10+00.00 IS S 37°09'00.1" E 362.44(ft) 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:  
02/01/2023

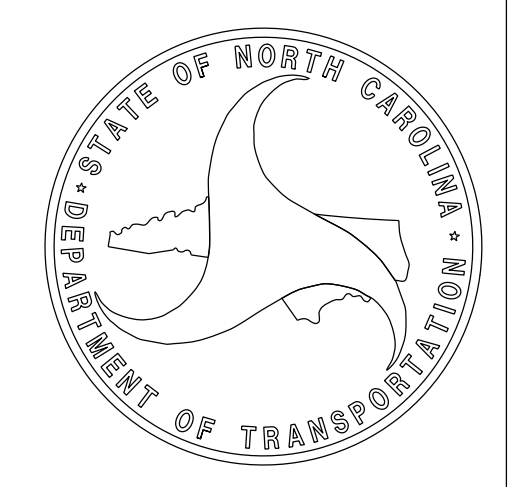
LETTING DATE:  
12/10/2024

PROFESSIONAL LAND SURVEYOR



DocuSigned by:  
*Brian Barnatt*  
SIGNATURE


03/25/2024  
Date:



25-MAR-2024 16:23  
C:\Sylv\Bridg\440015\BP14-R020-LS-RW01.dgn  
dabar.wat AT LS-330173L

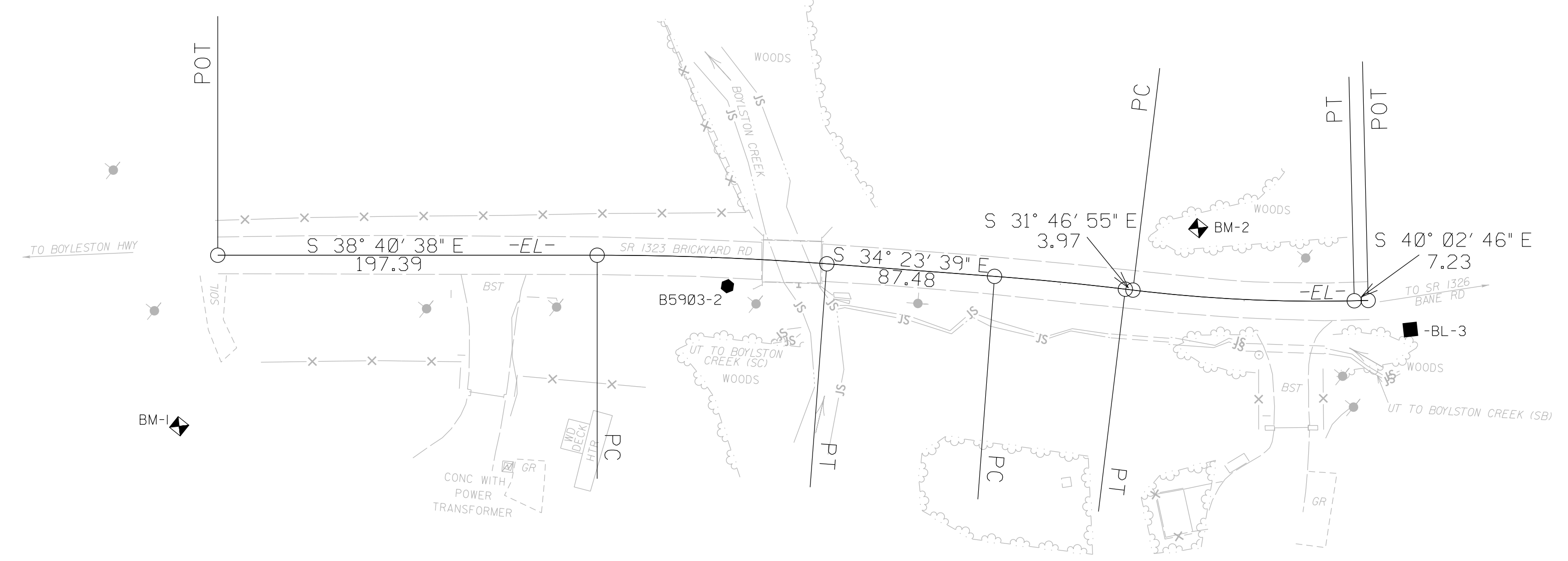
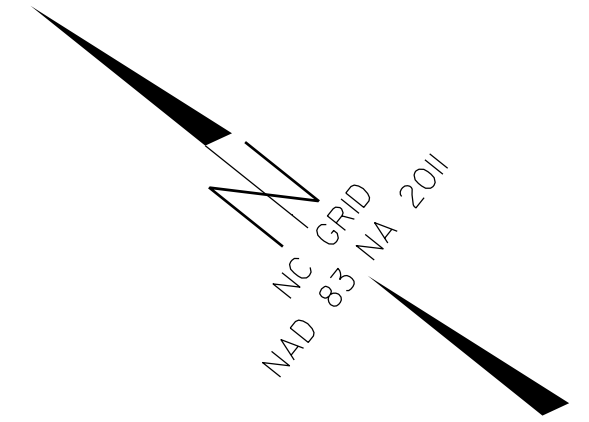
# SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
BP14-R020	RW02C-1
<b>Location and Surveys</b>	
LOCATION AND SURVEYS, DIVISION 14 122 BONNIE LANE SYLVA, NC 28779	
PROJECT SURVEYOR	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

BL POINT	DESC.	NORTH	EAST	ELEVATION
1	B5903-1	595228.2600	915103.1380	2189.38
2	B5903-2	594722.5720	915474.9330	2162.58
3	BL-3	594431.1130	915679.3220	2172.20

.....  
 BM1 ELEVATION = 2164.43  
 N 594900 E 915240  
 RR SPIKE IN BASE OF 18 INCH OAK  
 .....  
 BM2 ELEVATION = 2171.28  
 N 594550 E 915652  
 RR SPIKE IN BASE OF 24 INCH OAK  
 .....

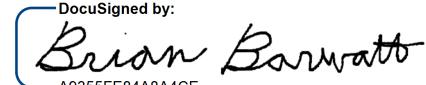


I, Brian Barwatt, PLS, certify that the Project Control was verified under my supervision from an actual GPS survey made under my supervision and the following information was used to perform the survey:

Class of survey: **AA**  
 Type of GPS field procedure: VRS  
 Dates of survey: April, 2016  
 Datum/Epoch: NAD 83/NA 2011  
 Published/Fixed-control use: N/A  
 Localized around: B5903-1  
 Northing: 595228.260  
 Easting: 915103.138  
 Combined grid factor: 0.999774373  
 Geoid model: 12A  
 Units: U.S. 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 April 2016, 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 25th day of March, 2024.

DocuSigned by:  
  
 Professional Land Surveyor L-4727

REVISIONS


EL POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	594939.666	915321.784	S 38°40'38.1" E	197.39					
LINE									
PC	594785.565	915445.142	S 36°32'08.4" E	119.58	04°16'59.3"(RT)	03°34'51.6"	119.61	59.83	1600.00
CURVE									
PT	594689.484	915516.330	S 34°23'38.8" E	87.48					
LINE									
PC	594617.295	915565.748	S 33°05'16.7" E	68.38	02°36'44.1"(RT)	03°49'11.0"	68.39	34.20	1500.00
CURVE									
PT	594560.002	915603.080	S 31°46'54.7" E	3.97					
LINE									
PC	594556.624	915605.173	S 35°54'50.3" E	115.29	08°15'51.3"(LT)	07°09'43.1"	115.39	57.80	800.00
CURVE									
PT	594463.250	915672.799	S 40°02'46.0" E	7.23					
LINE									
POT	594457.714	915677.452							

**NOTES:**

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

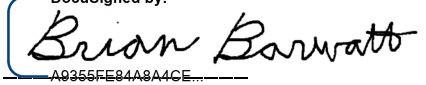
REVISIONS

# PROPOSED ALIGNMENT CONTROL SHEET

PROJECT REFERENCE NO. BP14-R020	SHEET NO. RW02D-1
<b>Location and Surveys</b>	
LOCATION AND SURVEYS, DIVISION 14 122 BONNIE LANE SYLVA, NC 28779	
PROJECT SURVEYOR 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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 25th day of March, 2024.

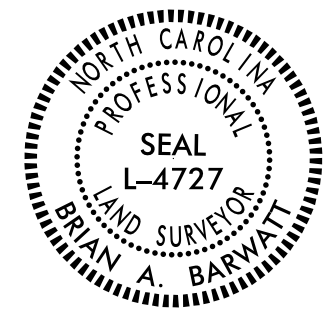
DocuSigned by:  
  
Professional Land Surveyor L-4727

		L	
TYPE	STATION	NORTH	EAST
POT	10+00.00	594939.3771	915322.0151
PC	11+07.00	594855.8445	915388.8829
PRC	14+90.51	594544.6667	915612.7484
PT	15+91.87	594463.1492	915672.8839
POT	15+98.87	594457.7905	915677.3877

**NOTES:**

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

# RIGHT OF WAY CONTROL SHEET

PROJECT REFERENCE NO. BP14-R020	SHEET NO. RW03E-1
Location and Surveys	
LOCATION AND SURVEYS, DIVISION 14 122 BONNIE LANE SYLVA, NC 28779	
PROJECT SURVEYOR	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

## PUE

### ROW MARKER PERMANENT EASEMENT - E

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+36.00	-38.00	594856.6507	915436.7672
L	11+37.00	-30.12	594850.9832	915431.2024
L	11+54.00	-45.00	594846.6456	915453.5048
L	11+62.00	-30.41	594831.3067	915446.9535

## PDE

### ROW MARKER PERMANENT EASEMENT - E

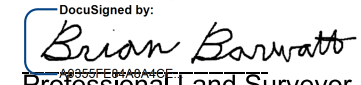
ALIGN	STATION	OFFSET	NORTH	EAST
L	12+20.00	-31.55	594785.5335	915483.3701
L	12+27.00	-52.00	594792.1469	915503.9746
L	12+48.00	-31.85	594763.0818	915500.4987
L	12+53.00	-42.00	594765.0530	915511.6598

## DUE

### ROW MARKER PERMANENT EASEMENT - E

ALIGN	STATION	OFFSET	NORTH	EAST
L	11+51.00	29.74	594803.0213	915392.7396
L	11+70.00	48.00	594776.9720	915389.8625
L	11+76.00	42.00	594775.9457	915398.2341
L	13+47.00	79.00	594618.4853	915468.0171
L	13+48.00	92.00	594610.2314	915457.9261
L	13+75.00	74.00	594598.8099	915487.7667
L	13+81.00	83.00	594588.8705	915483.6789
L	14+09.00	60.00	594579.1161	915518.1474
L	14+68.00	52.00	594535.1290	915556.9587
L	15+24.00	30.01	594499.6033	915606.9417

I, Brian Barwatt, 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 during February 2023, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 26th day of March, 2024.  
  
 Brian Barwatt  
 Professional Land Surveyor L-4727


REVISIONS

P:\MAR-2024\_08-31\25-Survey\25-10015\BP14-R020.LS\_RW03E-1.dgn  
 Brian Barwatt  
 PLSS-3301731

#### NOTES:

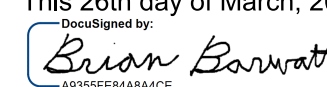
1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED DURING FEBRUARY 2023.



PROJECT REFERENCE NO.	SHEET NO.
BP14-R020	RW04
<b>Location and Surveys</b>	
LOCATION AND SURVEYS, DIVISION 14 122 BONNIE LANE SYLVA, NC 28779	
PROJECT SURVEYOR	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

I, Brian Barwatt, 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 during February 2023, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 26th day of March, 2024.

Designed by:  
  
 Brian Barwatt  
 Professional Land Surveyor L-4727

REVISIONS

ROBERT P. GRANT  
AND  
BRIAN KELLY GRANT  
DB 165 PG 386  
PLAT SLIDE 9822

1  
DOROTHY EDWINA GRANT  
DB 460 PG 073

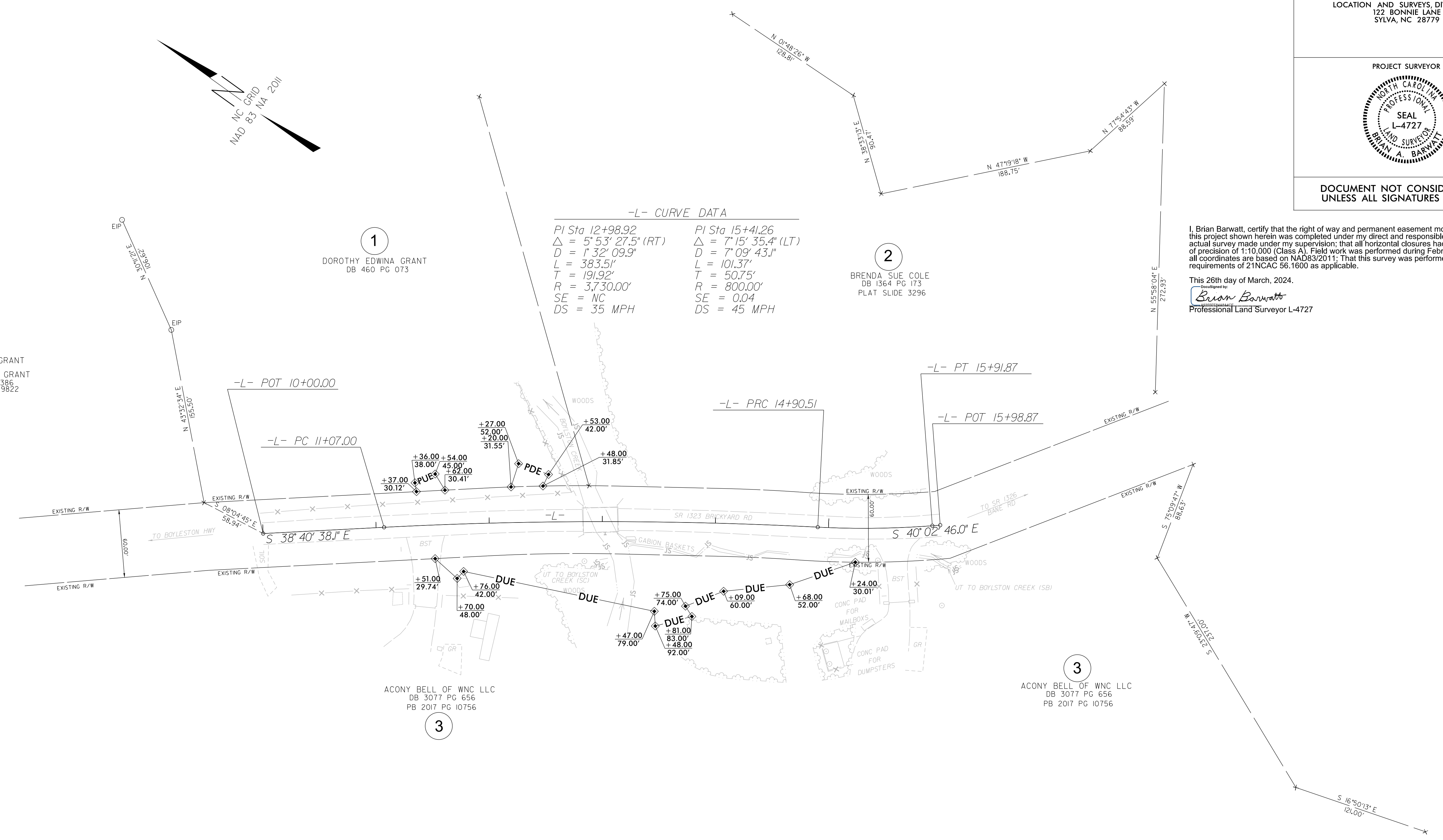
2  
BRENDA SUE COLE  
DB 1364 PG 173  
PLAT SLIDE 3296

3  
ACONY BELL OF WNC LLC  
DB 3077 PG 656  
PB 2017 PG 10756

3  
ACONY BELL OF WNC LLC  
DB 3077 PG 656  
PB 2017 PG 10756

-L- CURVE DATA

PI Sta 12+98.92	PI Sta 15+41.26
$\Delta = 5^{\circ} 53' 27.5''$ (RT)	$\Delta = 7^{\circ} 15' 35.4''$ (LT)
D = 1'32' 09.9"	D = 7' 09' 43.1"
L = 383.51'	L = 101.37'
T = 191.92'	T = 50.75'
R = 3,730.00'	R = 800.00'
SE = NC	SE = 0.04
DS = 35 MPH	DS = 45 MPH



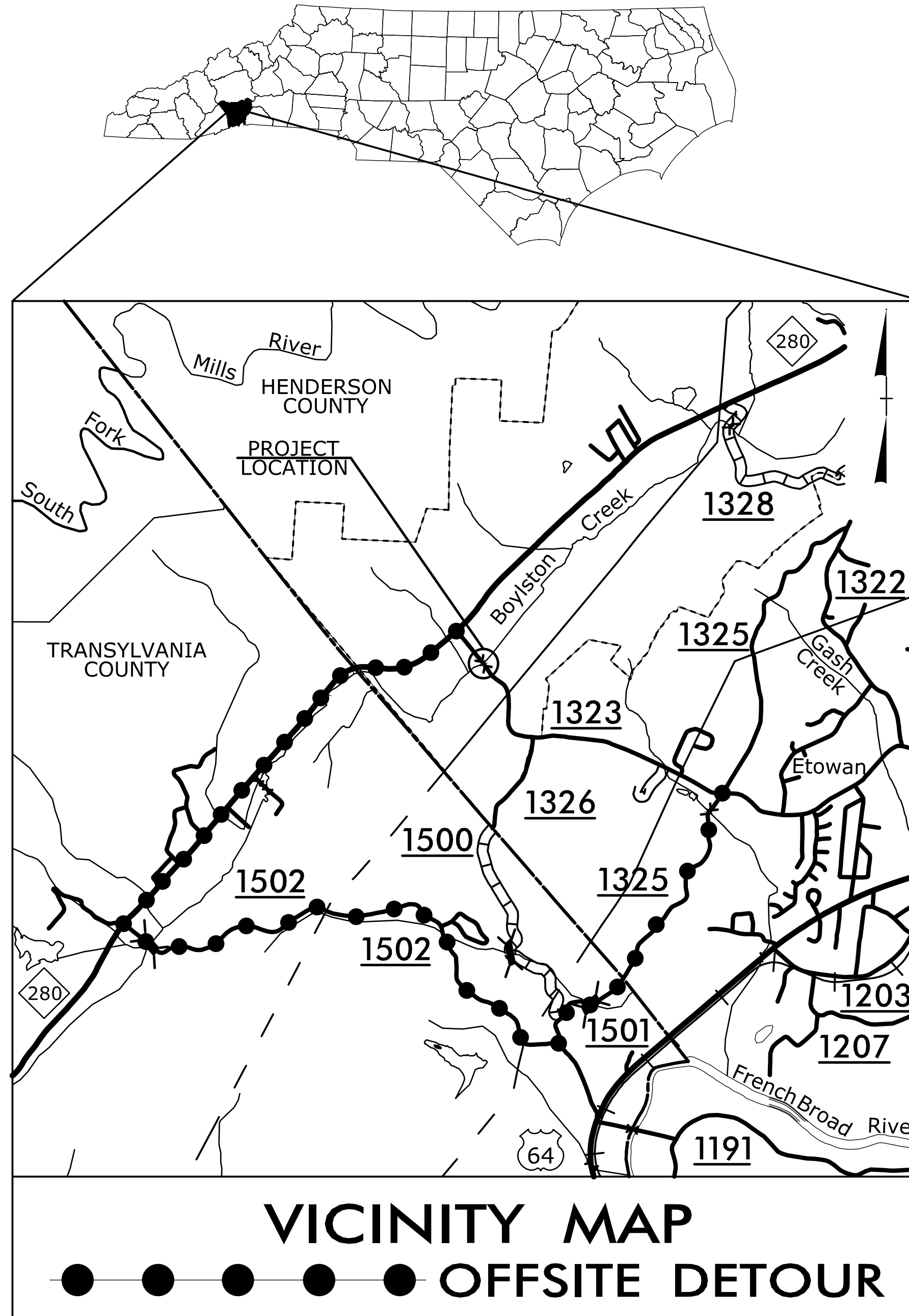
**NOTES:**

1. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
2. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
3. RIGHT OF WAY MONUMENTATION ESTABLISHED DURING FEBRUARY 2023.

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**TRANSPORTATION MANAGEMENT PLAN**

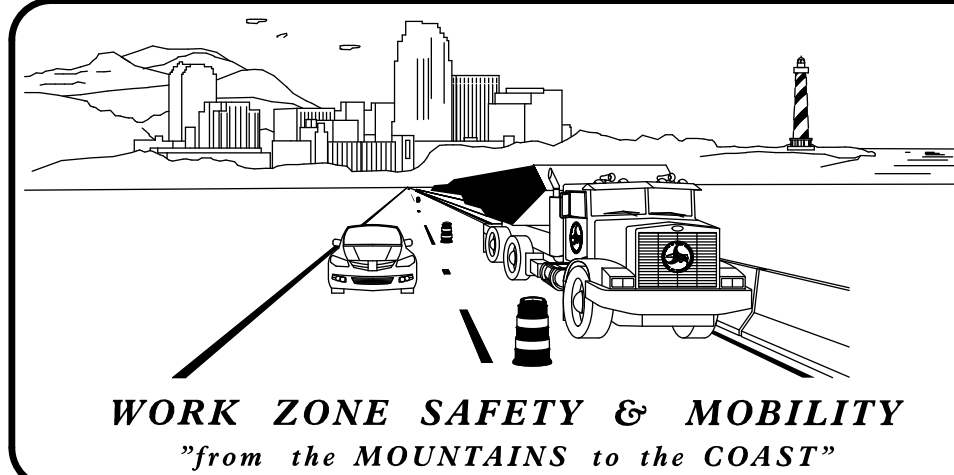
**HENDERSON COUNTY**



<b><u>INDEX OF SHEETS</u></b>	
<u>SHEET NO.</u>	<u>TITLE</u>
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: (MANAGEMENT STRATEGIES, GENERAL NOTES AND LOCAL NOTES)
TMP-2	SPECIAL SIGN DESIGN
TMP-3	OVERVIEW AND PHASING
TMP-4	OFFSITE DETOUR LOCATION AND BARRICADE PLACEMENT

SHEET NO.  
TMP-1  
**PROJECT: BPI4-R020**

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



**PLANS PREPARED BY:**

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

**NCDOT CONTACTS:**

JIMMY TERRY, PE PROJECT ENGINEER  
MALLORY COLLINS DESIGN ENGINEER



**APPROVED:** *Jimmy Terry*  
DATE: 9/13/2024

6/17/2024 X:\NCDOT\Division 14 - 2017\Henderson 440015\TrafficControl\TCP\Henderson\_15\_TC\_TMP\_01(TSH).dgn User:smelvin






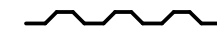

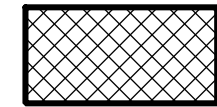
# ROADWAY STANDARD DRAWINGS

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





STD. NO.	TITLE
1101.01	WORK ZONE WARNING SIGNS
1101.03	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1145.01	BARRICADES
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1205.12	PAVEMENT MARKINGS - BRIDGES
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

# LEGEND

## GENERAL

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












## SIGNALS

-  EXISTING
-  PROPOSED
-  TEMPORARY
-  PORTABLE




## PAVEMENT MARKINGS

-  EXISTING LINES
-  TEMPORARY LINES




## TRAFFIC CONTROL DEVICES

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

## TEMPORARY SIGNING

-  PORTABLE SIGN
-  STATIONARY SIGN
-  STATIONARY OR PORTABLE SIGN

## PAVEMENT MARKERS


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

## PAVEMENT MARKING SYMBOLS

-  PAVEMENT MARKING SYMBOLS

6/7/2024 X:\NCDOT\Division 14 - 2017\Henderson 440015\TrafficControl\TCP\Henderson\_15\_TC\_TMP\_01A\STA & Legend.dgn User:smelvin

APPROVED:  DATE: 9/13/2024			ROADWAY STANDARD DRAWINGS, LEGEND & TEMPORARY PAVEMENT MARKING SCHEDULE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

PROJ. REFERENCE NO.	SHEET NO.
BP14-R020	TMP-1B
 TGS ENGINEERS 201 W. MARION ST STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	

## GENERAL NOTES

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

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

ACCESS TO ALL DRIVEWAYS MUST BE PROVIDED AT ALL TIMES WITHIN THE PROJECT LIMITS.

### TRAFFIC PATTERN ALTERATIONS

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

### SIGNING

- B) 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.
- C) 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.

- D) 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.

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

### TRAFFIC CONTROL DEVICES

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

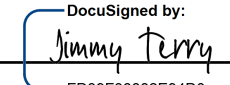
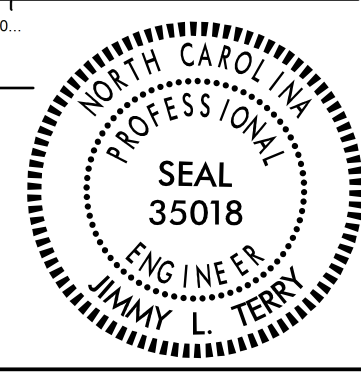

### PAVEMENT MARKINGS AND MARKERS

- G) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE.
- H) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

## MANAGEMENT STRATEGIES

DURING CONSTRUCTION OF THE PROPOSED STRUCTURE, BRICKYARD RD. WILL BE CLOSED TO THROUGH TRAFFIC. BRICKYARD RD. TRAFFIC WILL BE MAINTAINED ON THE FOLLOWING DETOUR: FROM NC 280 (ASHEVILLE HWY) TO SR 1502 (KING RD.) TO SR 1501 (BLANTYRE CHURCH RD.) TO SR 1325 (TURNPIKE RD.)

9/6/2024 X:\NCDOT\Division 14 - 2017\Henderson 440015\Traffic\TrafficControl\TCP\Henderson\_15\_TC\_TWP\_01B(TOP).dgn User:smelvin

APPROVED:  DATE: 9/13/2024			<h3 style="margin: 0;">TRANSPORTATION OPERATIONS PLAN</h3>
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>			

<b>SIGN NUMBER:</b> DET-1 <b>TYPE:</b> STATIONARY <b>QUANTITY:</b> SEE PLANS <b>SIGN WIDTH:</b> 4'-0" <b>HEIGHT:</b> 1'-6" <b>TOTAL AREA:</b> 6.0 Sq.Ft. <b>BORDER TYPE:</b> INSET <b>RECESS:</b> 0.38" <b>WIDTH:</b> 0.63" <b>RADII:</b> 1.5" <b>NO. Z BARS:</b> <b>LENGTH:</b>	<b>BACKG COLOR:</b> Fluorescent Orange <b>COPY COLOR:</b> Black <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th>SYMBOL</th> <th>X</th> <th>Y</th> <th>WID</th> <th>HT</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table> <b>MAT'L:</b> 0.080" (2.0 mm) ALUMINUM	SYMBOL	X	Y	WID	HT																																														<b>DESIGN BY:</b> SGM <b>PROJECT ID:</b> BP14-R020	<b>CHECKED BY:</b> JLT <b>LOCATION:</b> HENDERSON CO <b>Jun 16, 2023</b> <b>DIV:</b> 14
SYMBOL	X	Y	WID	HT																																																	

Spacing Factor is 1 unless specified otherwise

**LETTER POSITIONS**

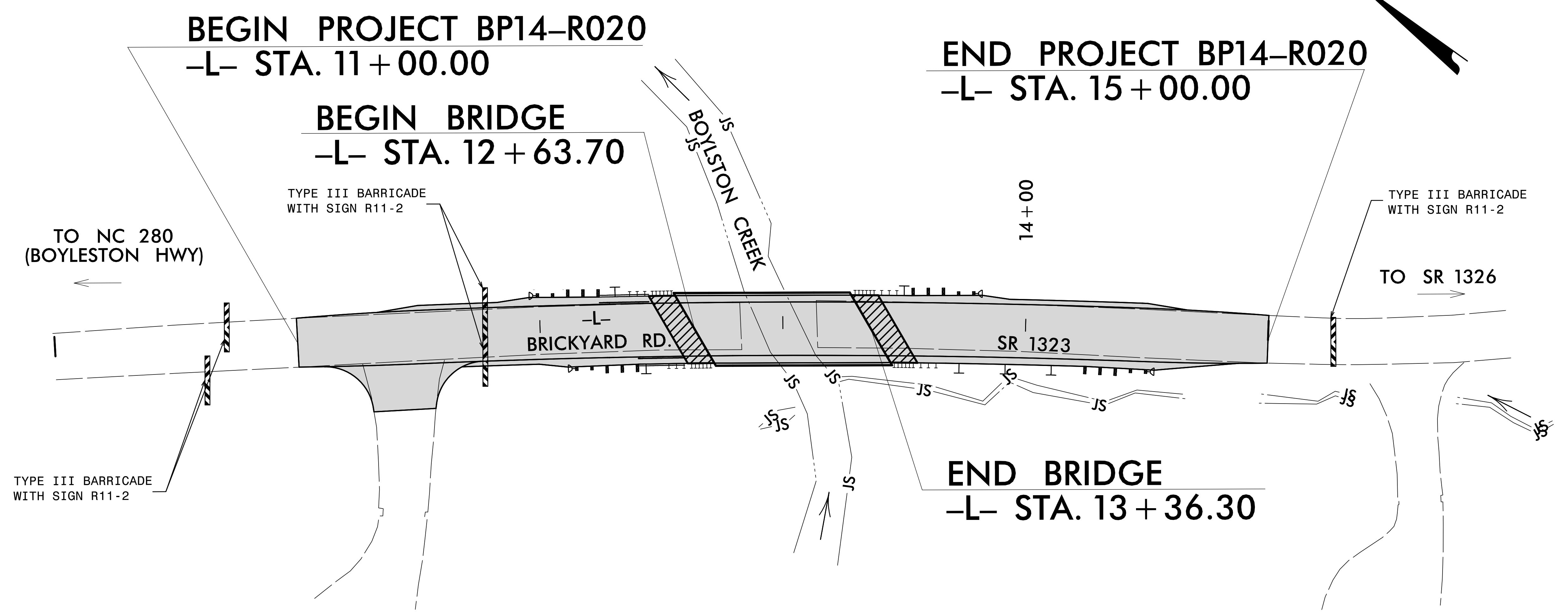
**Letter spacings are to start of next letter**

														Series/Size	
														Text Length	
	B	R	I	C	K	Y	A	R	D		R	D			C 2000
	3.3	3.7	3.6	1.7	3.8	3.3	3.5	3.9	3.7	2.8	5	3.6	2.8	3.3	41.4

FILENAME: Henderson\_15\_TC\_TMP\_02(SD) NORTH CAROLINA D.O.T. SIGN DETAIL

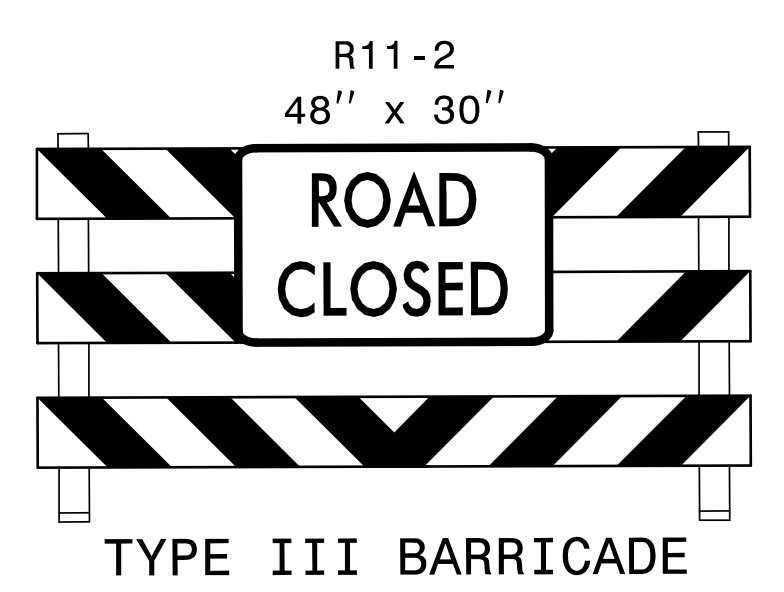
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APPROVED: DATE: 9/13/2024			<h1 style="margin: 0;">SPECIAL SIGN</h1>
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



**PHASING NOTES**

- STEP 1: INSTALL ALL ADVANCE WARNING SIGNS AND DETOUR ROUTE SIGNS USING NCDOT ROADWAY STD. DRAWING 1101.01 (SHEET 3 OF 3). INSTALL ALL DETOUR SIGNS IN ACCORDANCE WITH NCDOT ROADWAY STD. DRAWING 1101.03 (SHEET 1 OF 9) AND AS SHOWN ON SHEET TMP-4. COVER ALL DETOUR SIGNS UNTIL NEXT STEP.
- STEP 2: INSTALL TYPE III BARRICADES AND SIGNS, AND CLOSE BRICKYARD RD. TO TRAFFIC (TMP-3 AND TMP-4).  
PLACE TRAFFIC ON DETOUR.
- STEP 3: DEMOLISH AND REMOVE THE EXISTING BRIDGE OVER BOYLSTON CREEK.  
CONSTRUCT THE NEW BRIDGE OVER BOYLSTON CREEK FROM -L- STA. 12+63.70 TO 13+36.30.  
CONSTRUCT THE ROADWAY ON BRICKYARD RD. FROM -L- STA. 11+00.00 TO -L- STA. 12+63.70 (BEGIN BRIDGE) AND FROM -L- STA. 13+36.30 (END BRIDGE) TO 15+00.00 UP TO AND INCLUDING THE FINAL LAYER OF SURFACE COURSE.
- STEP 4: REFERRING TO PAVEMENT MARKING PLANS, PLACE FINAL PAVEMENT MARKINGS ON THE FOLLOWING: BRICKYARD RD. FROM STA. 11+00.00 TO STA. 15+00.00.
- STEP 5: REMOVE BARRICADES, SIGNS, AND ALL OTHER TRAFFIC CONTROL DEVICES AND OPEN BRICKYARD RD. TO TRAFFIC IN FINAL PATTERN.

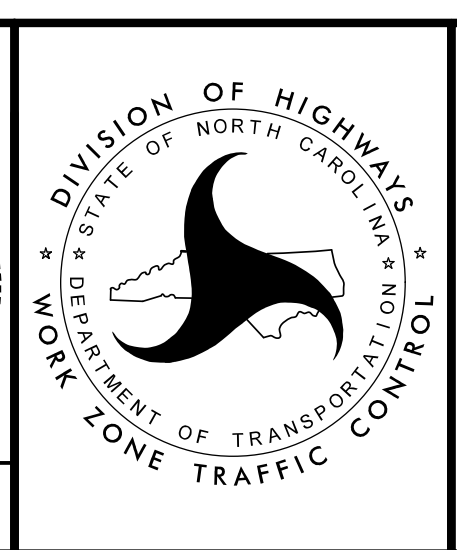


APPROVED: *Jimmy Terry*  
DATE: 9/13/2024

DocuSigned by:  
Jimmy Terry  
FD39F3882E94D0...

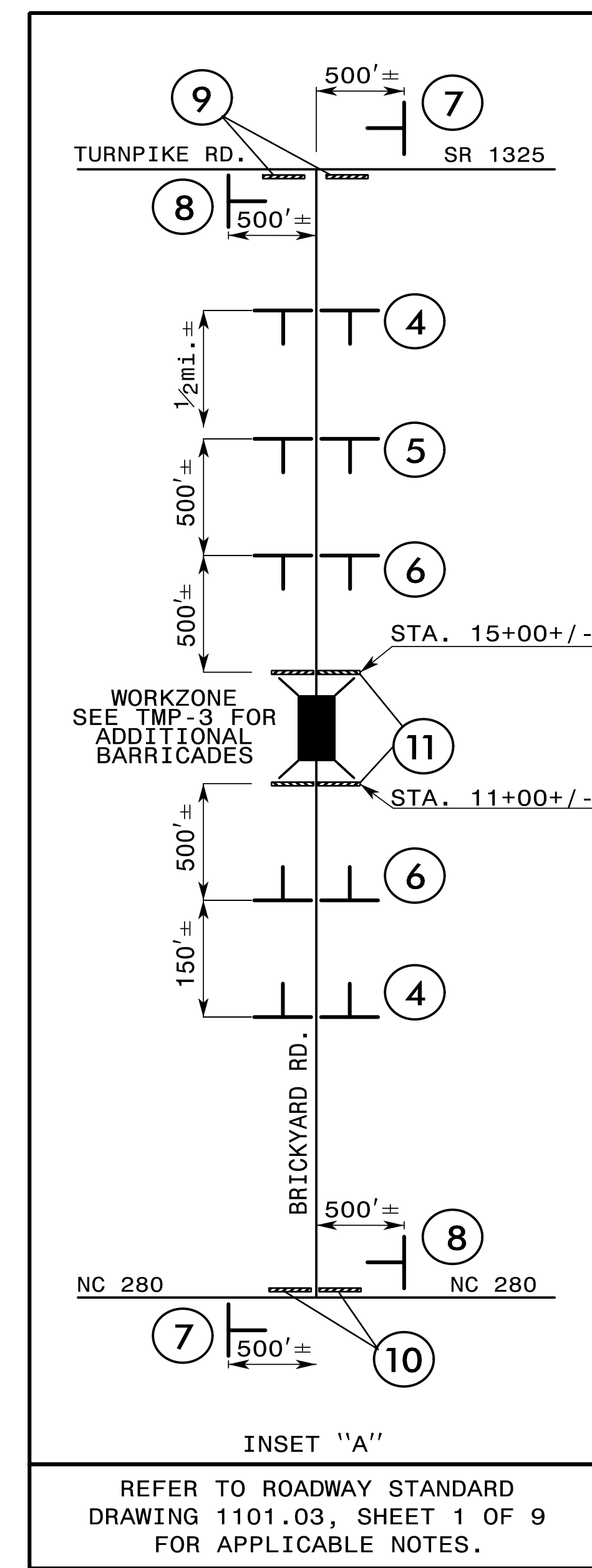
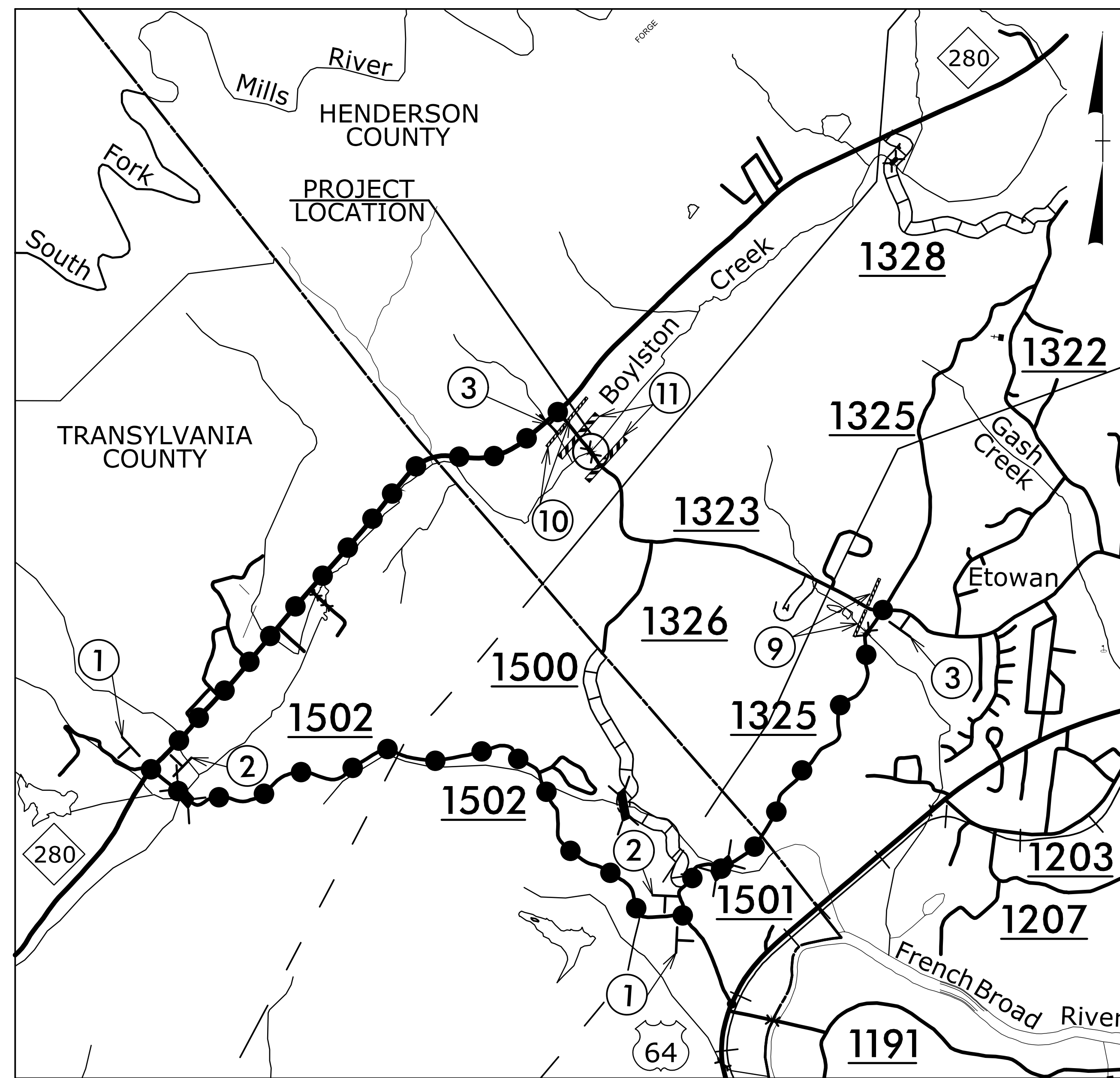
SEAL  
35018  
ENGINEER  
JIMMY L. TERRY

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

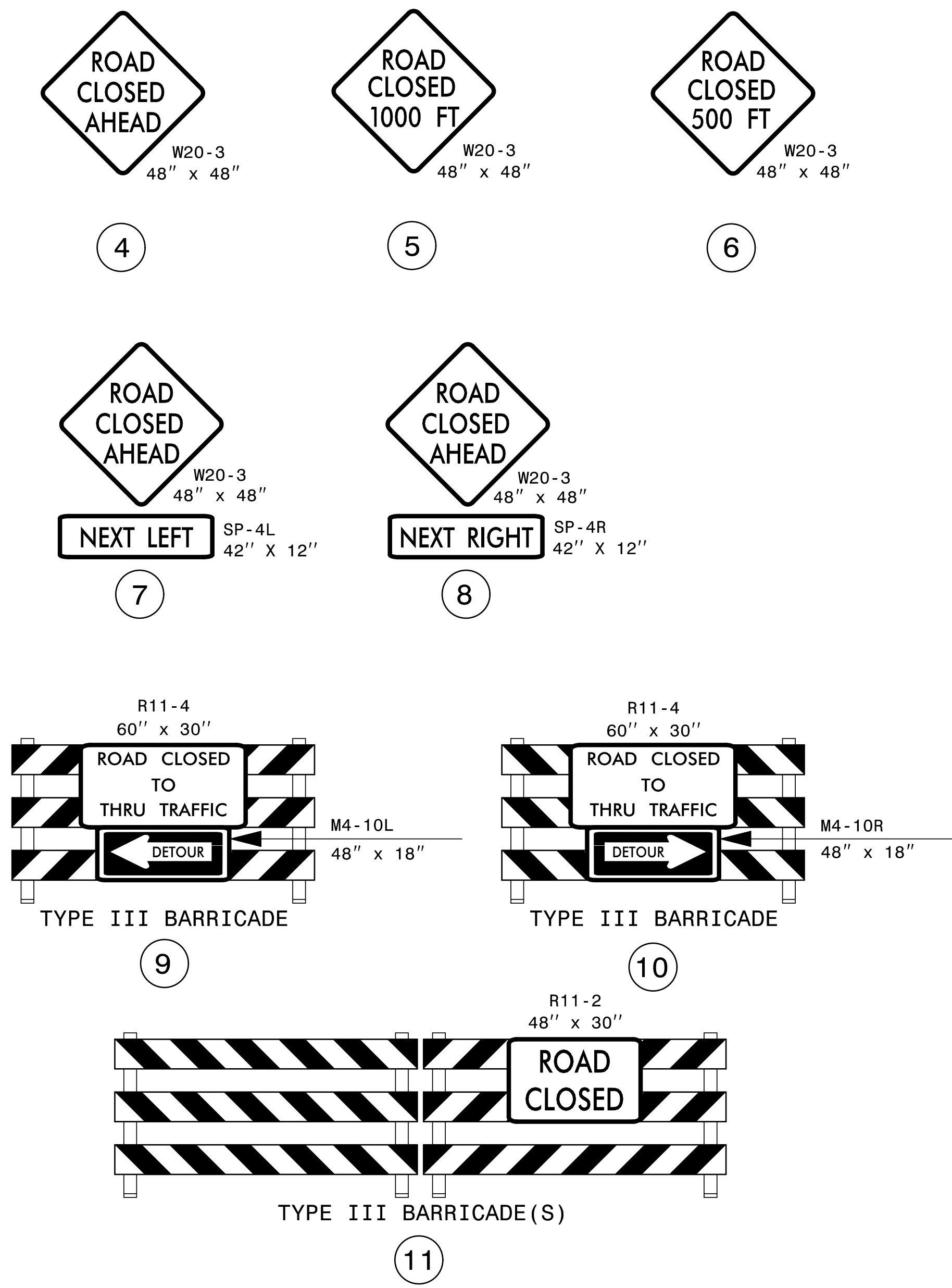


**OVERVIEW  
AND PHASING**

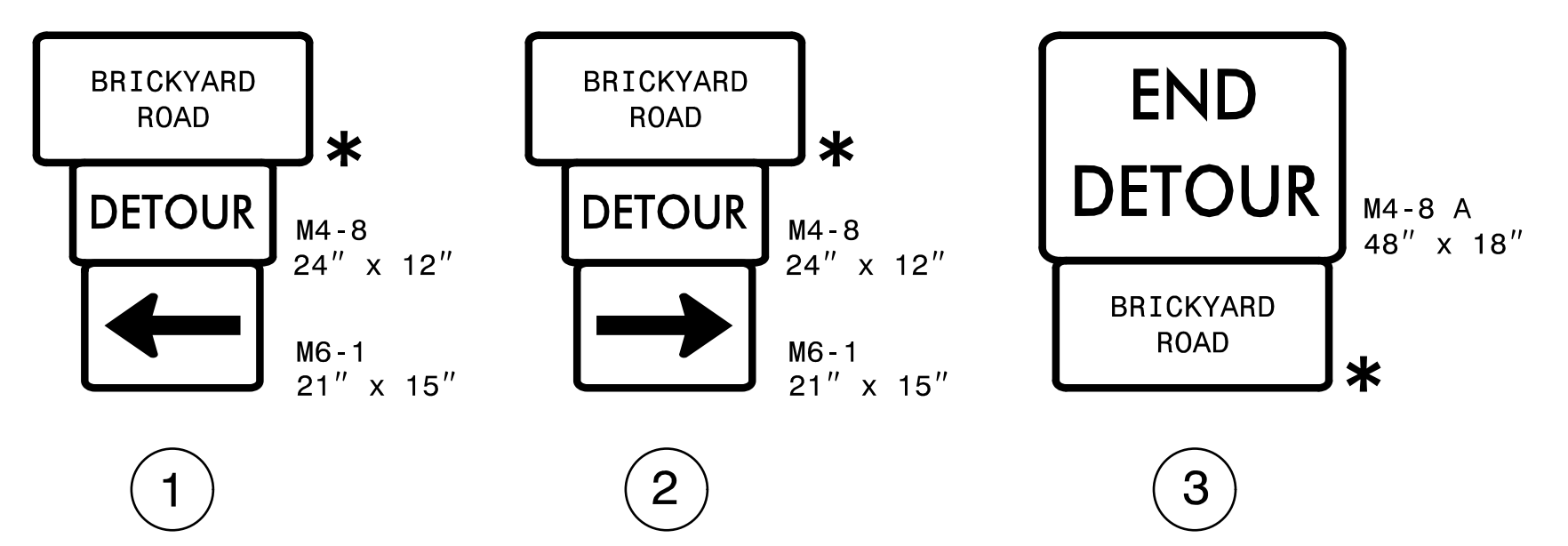
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User:smelvin



REFER TO ROADWAY STANDARD  
DRAWING 1101.03, SHEET 1 OF 9  
FOR APPLICABLE NOTES.



● — ● — ● DETOUR ROUTE



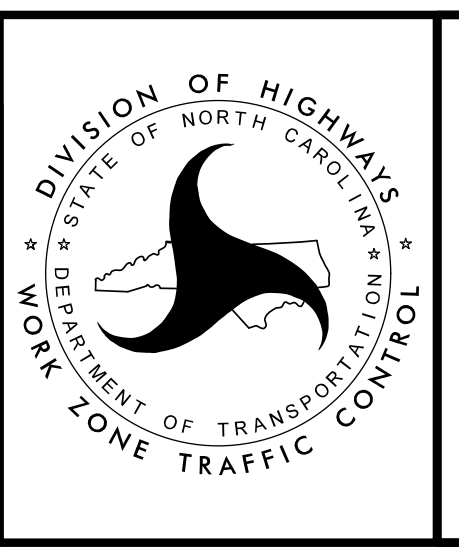
\* SEE SHEET TMP-2  
FOR SIGN DESIGN

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APPROVED: *Jimmy Terry*  
DATE: 9/13/2024

SEAL  
35018  
ENGINEER  
JIMMY L. TERRY

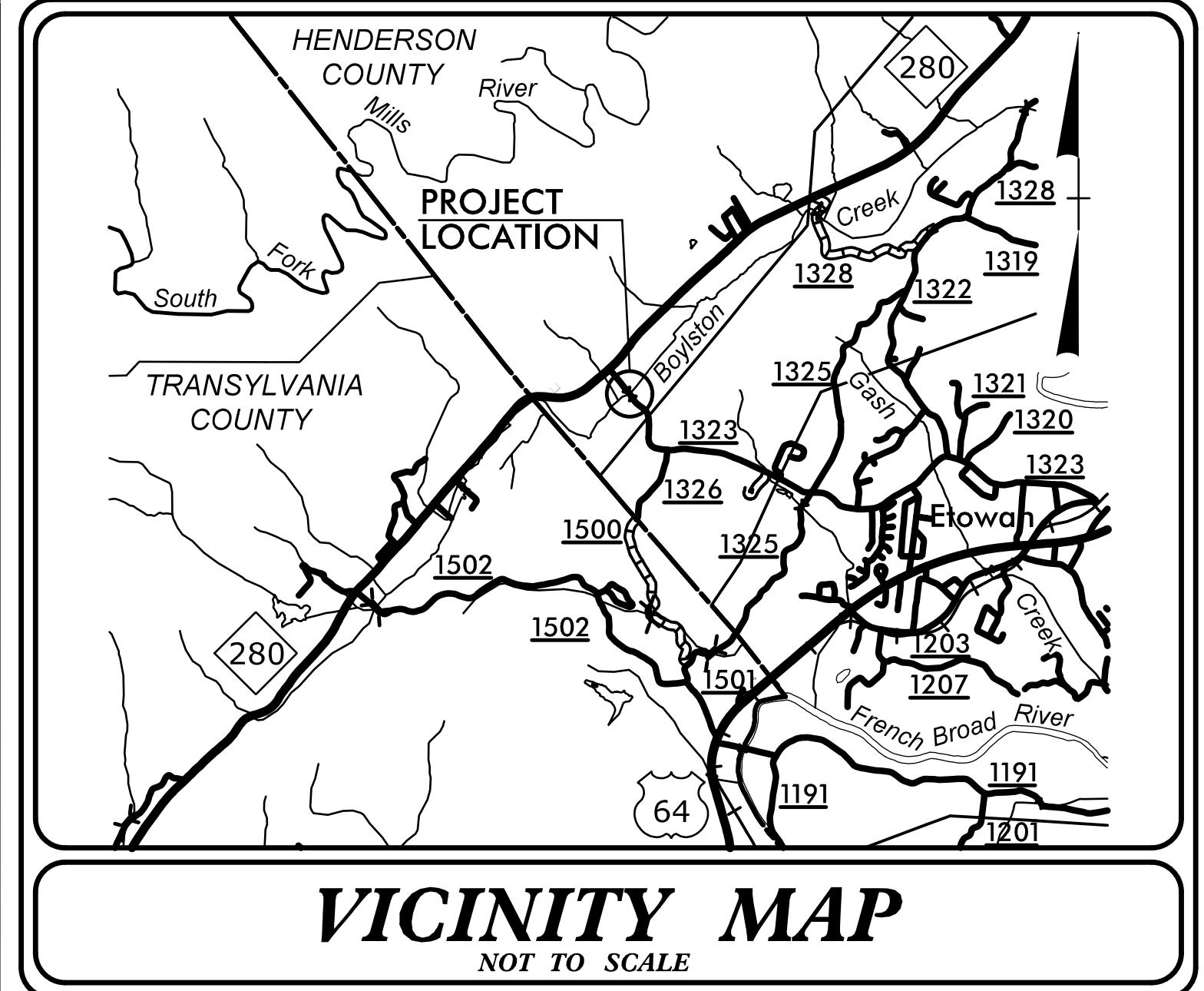
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



OFFSITE DETOUR  
ROUTE AND  
BARRICADE PLACEMENT

**PROJECT: BP14-R020**

**CONTRACT: DN01067**

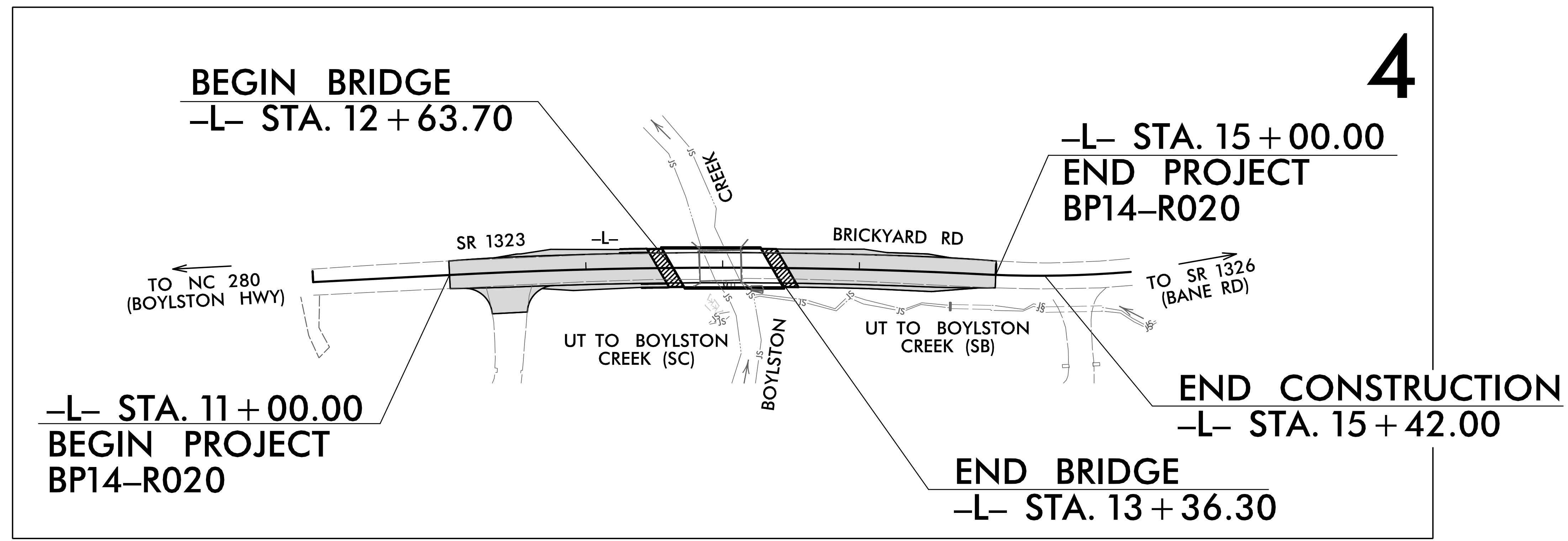
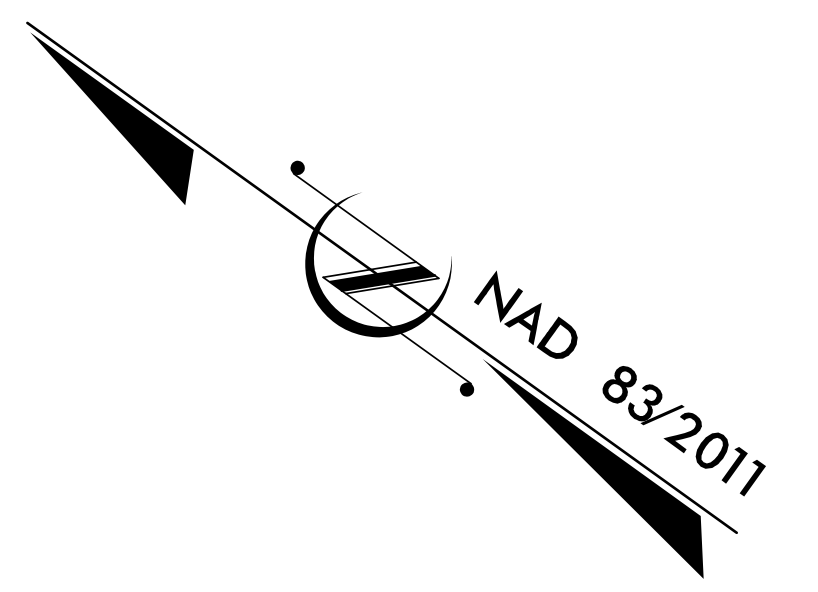


STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
PLAN FOR PROPOSED  
HIGHWAY EROSION CONTROL

**HENDERSON COUNTY**  
LOCATION: BRIDGE NO. 440015 OVER BOYLSTON CREEK  
ON SR 1323 (BRICKYARD ROAD)

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

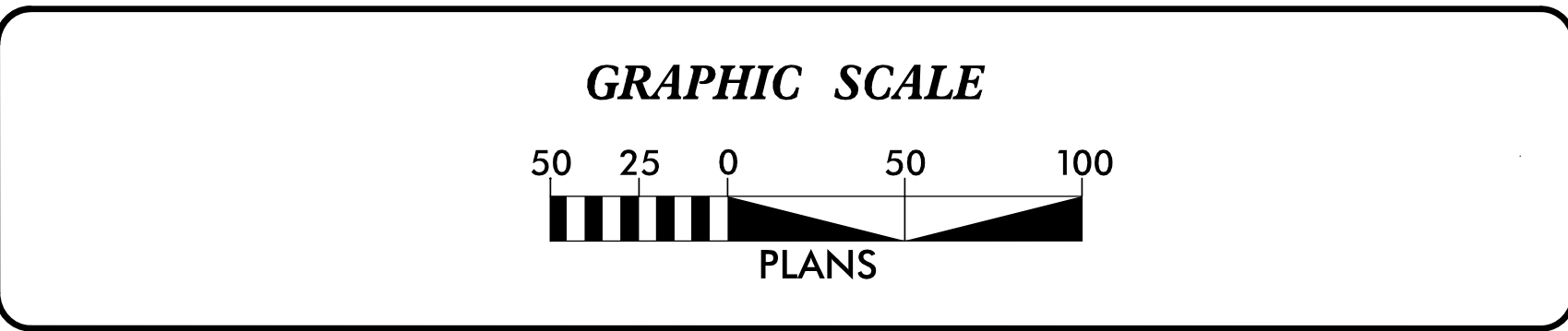
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP14-R020	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
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BP14.R020.2	N/A	RW & UTIL	
BP14.R020.3	N/A	CONST	



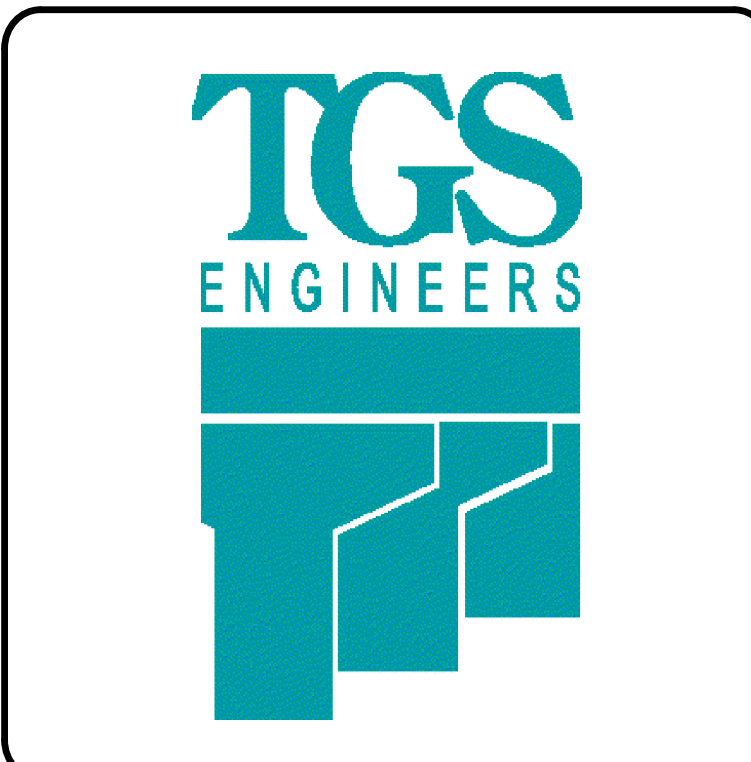
THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

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



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.



Prepared In the Office of:  
**TGS ENGINEERS**  
201 W. MARION ST-STE 200  
SHELBY, NC 28150

Designed by:  
**Andrew H. Cochrane, PE**      3015  
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

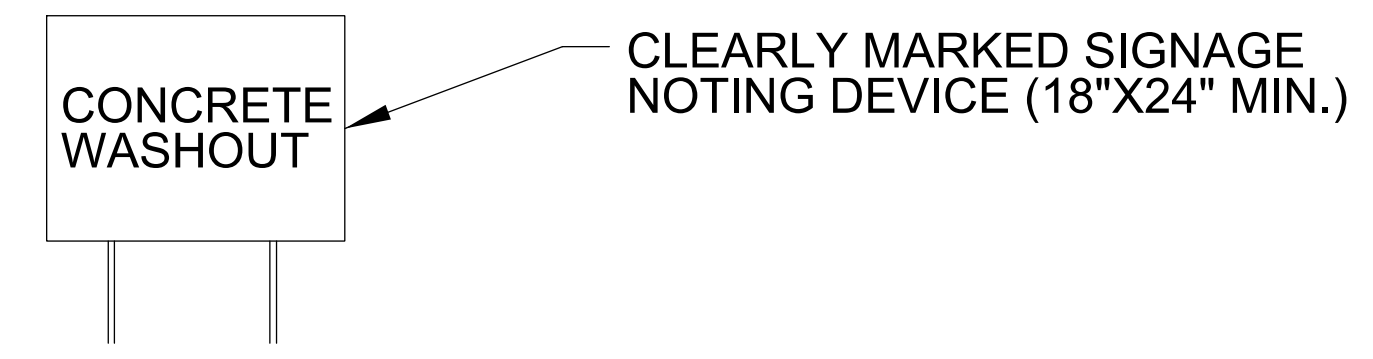
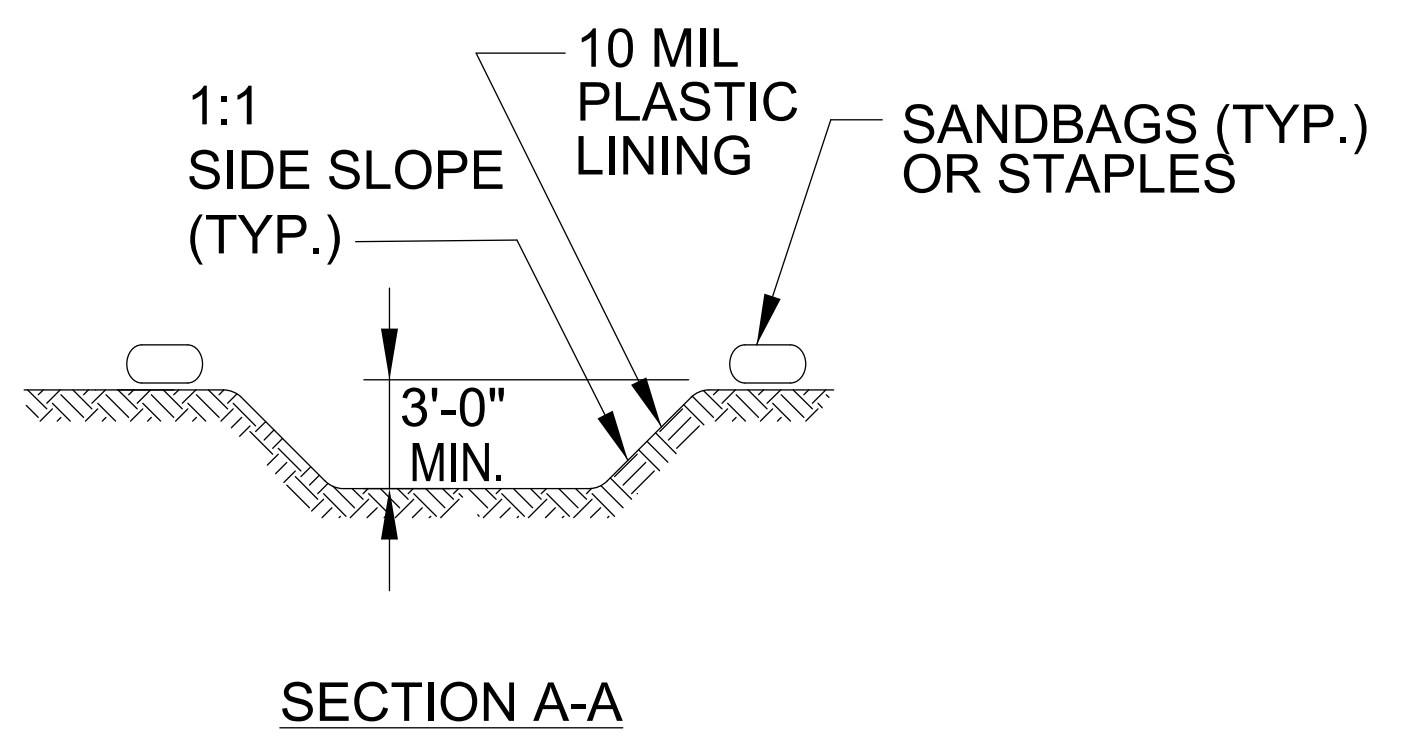
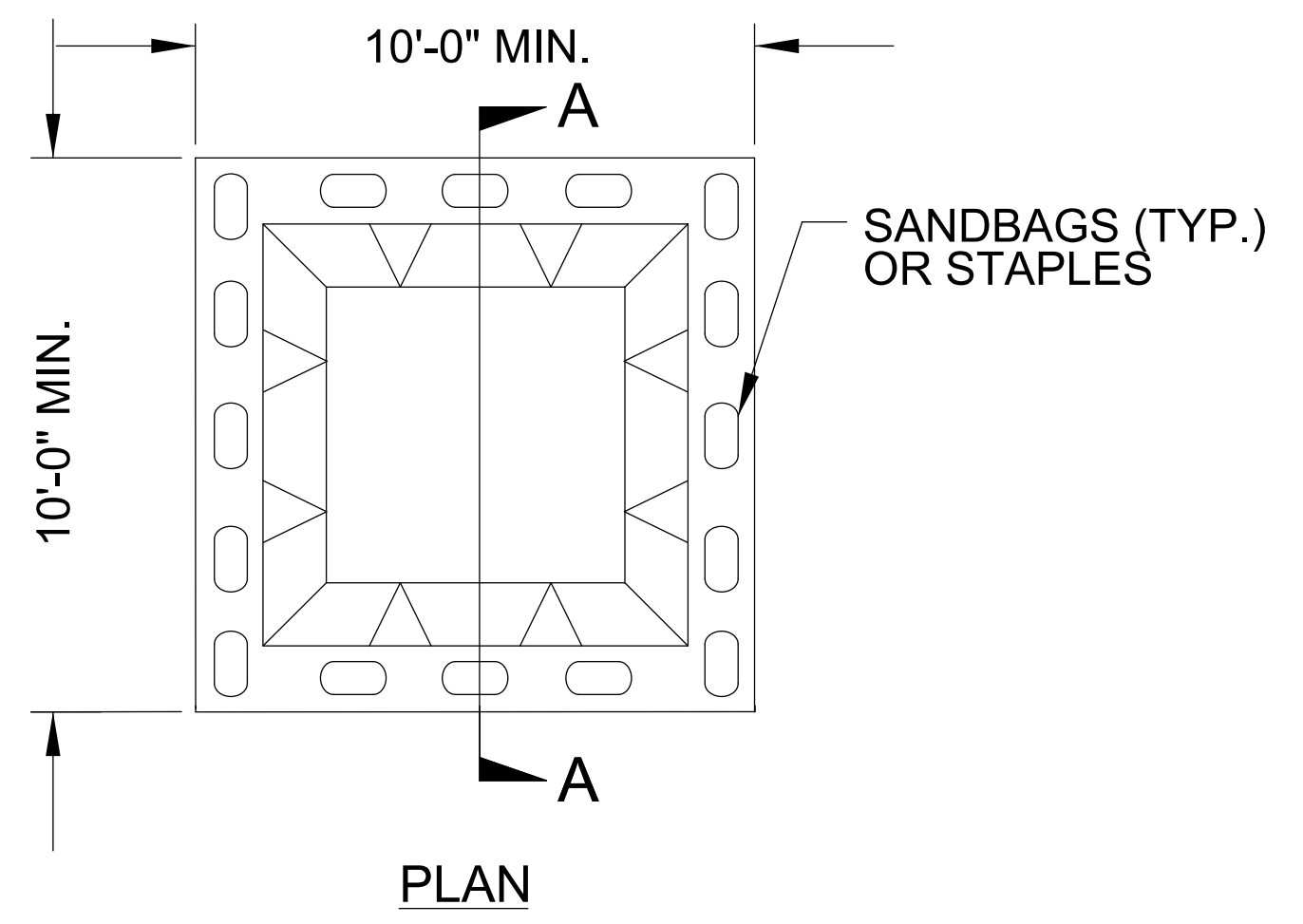
PROJECT REFERENCE NO. <b>BP14-R020</b>	SHEET NO. <b>EC-02</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

## 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		1636.03	Excelsior Wattle Barrier	
1632.02	Type B		1636.03	Coir Fiber Wattle Barrier	
1632.03	Type C				

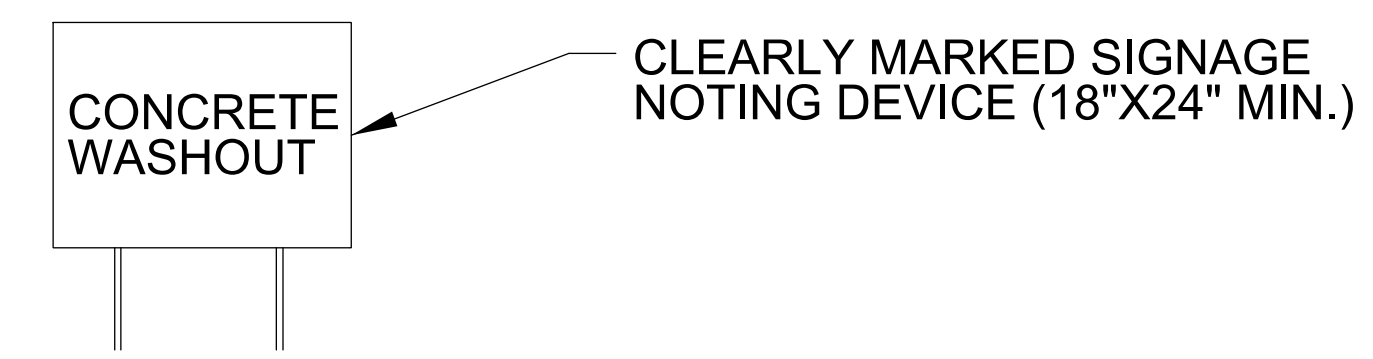
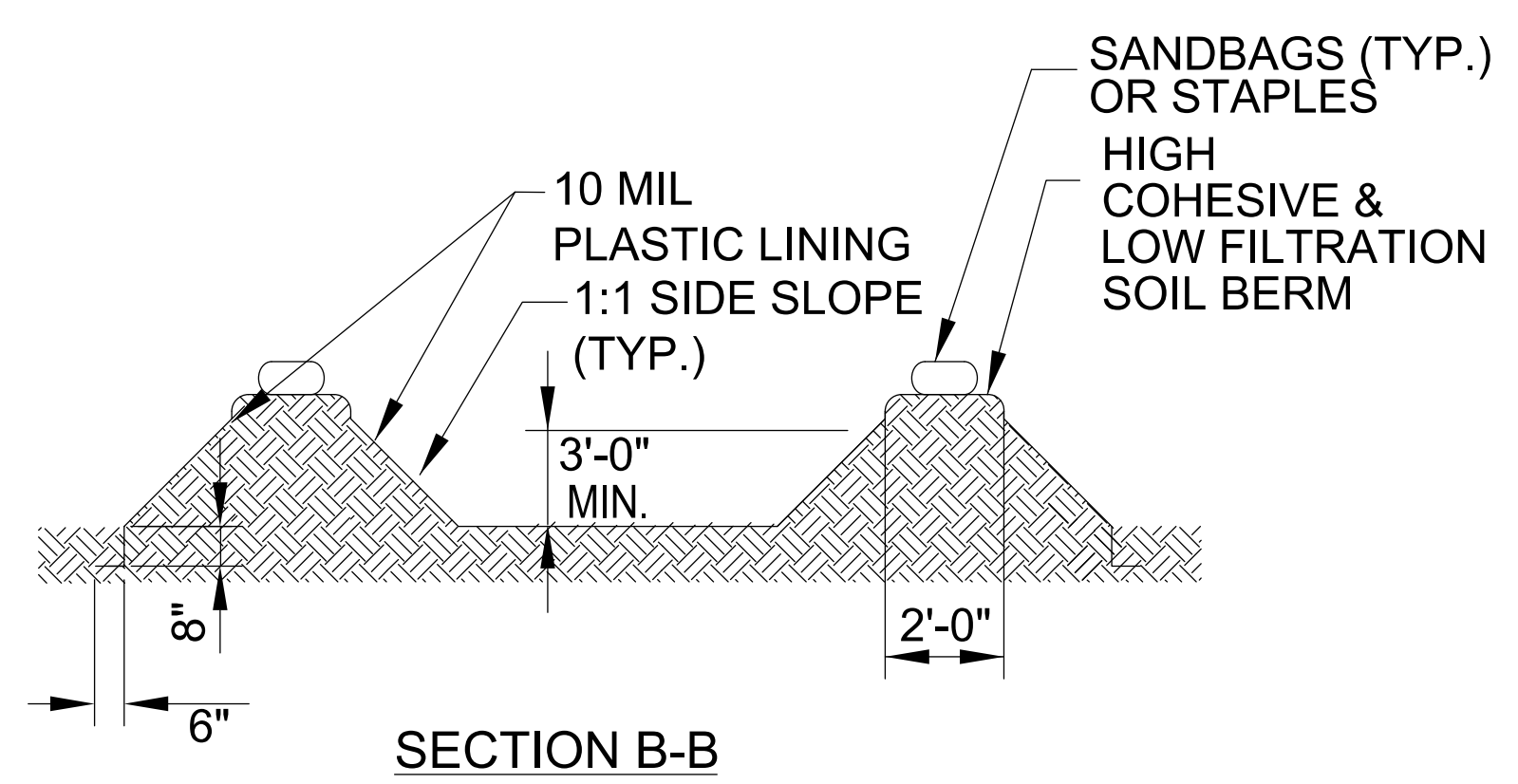
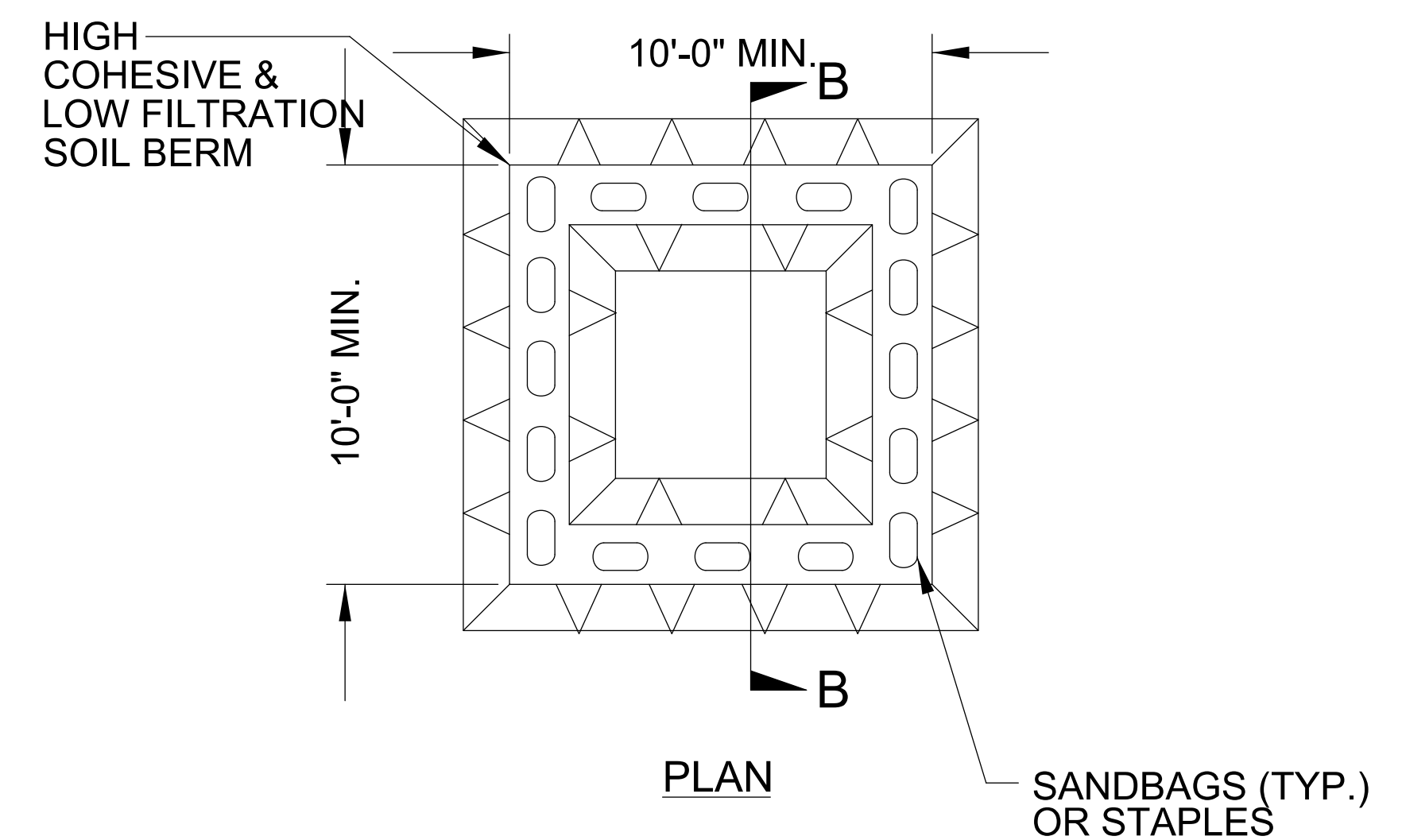
PROJECT REFERENCE NO. <i>BP14-R020</i>	SHEET NO. <i>EC-2A</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# 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

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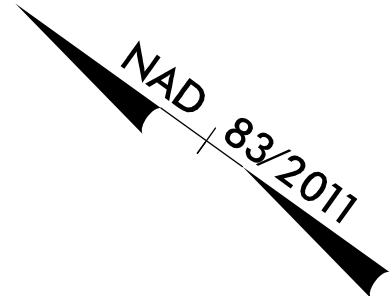
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PROJECT REFERENCE NO. <i>BPI4-R020</i>	SHEET NO. <i>EC-3</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# ***SOIL STABILIZATION TIMEFRAMES***

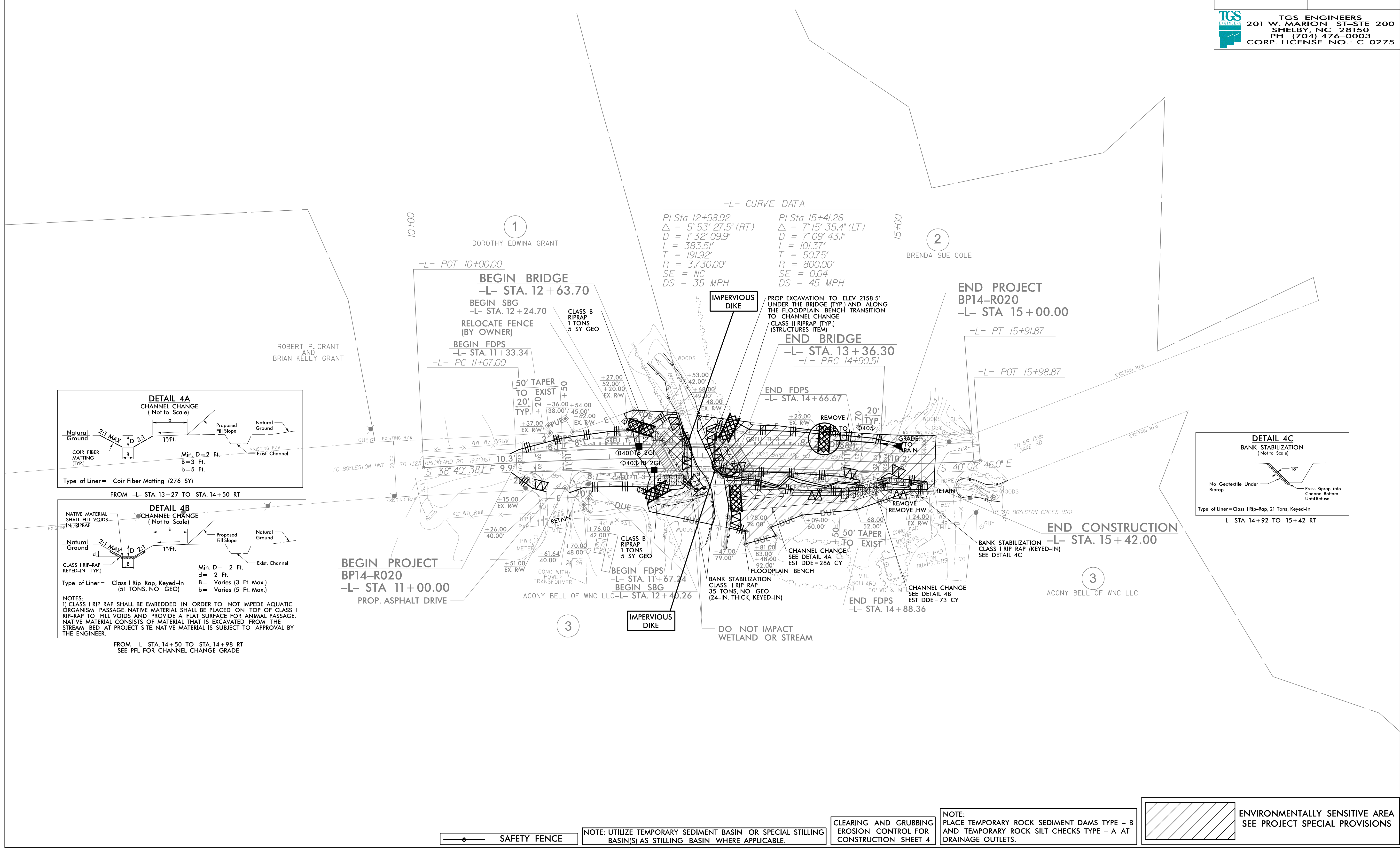
<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES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

# HENDERSON COUNTY BRIDGE #440015



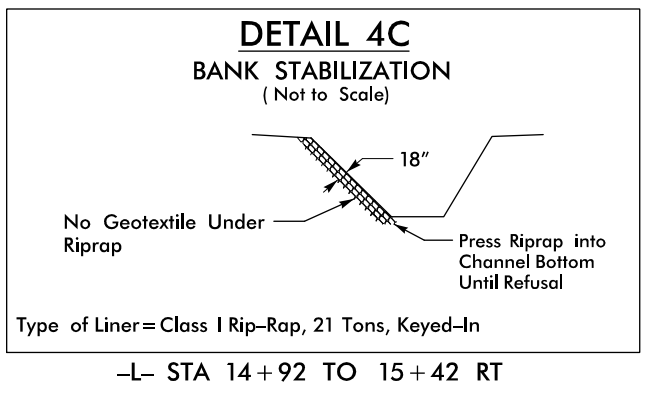
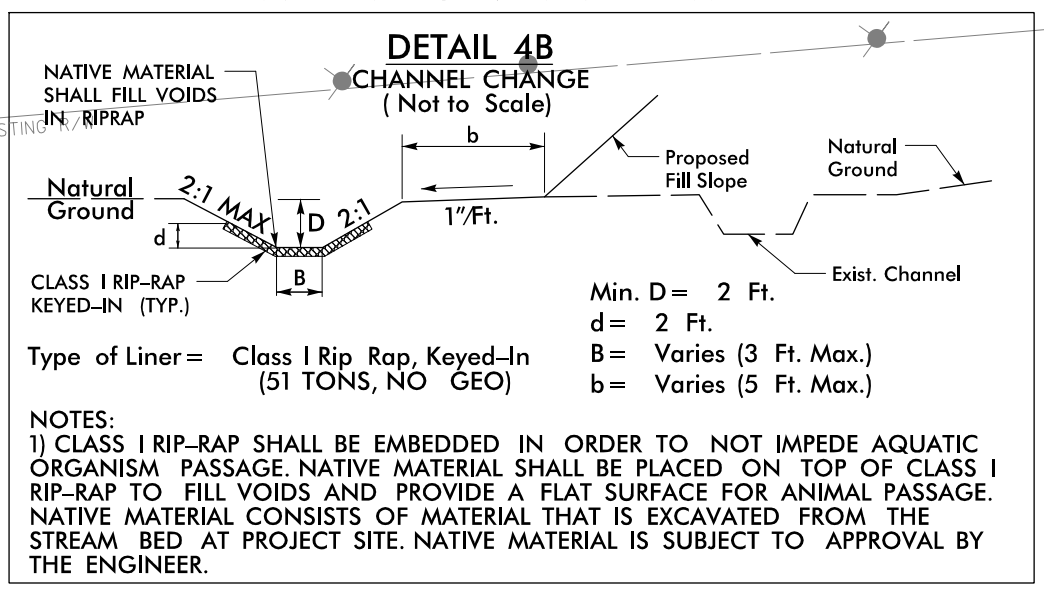
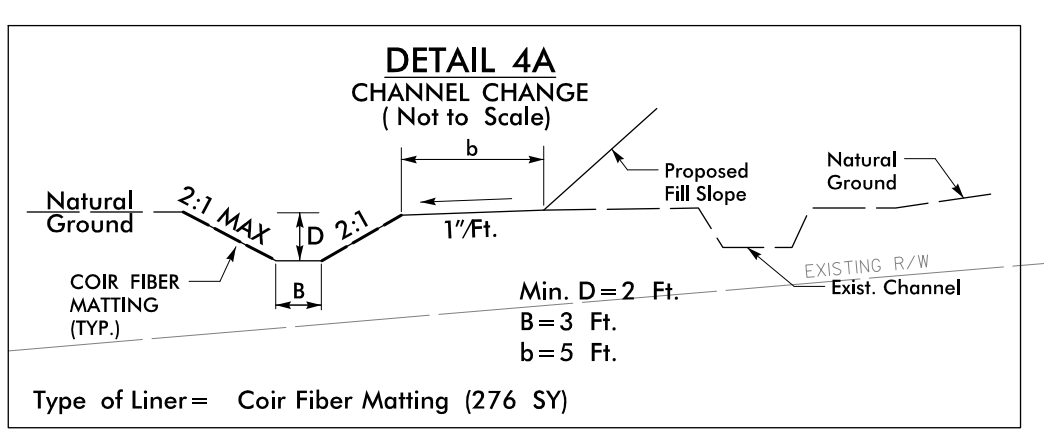
PROJECT REFERENCE NO. BPI4-R020	SHEET NO. EC-04/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



-L- CURVE DATA

PI Sta 12+98.92 Δ = 5° 53' 27.5" (RT) D = 1° 32' 09.9" L = 383.5' T = 191.92' R = 3,730.00' SE = NC DS = 35 MPH	PI Sta 15+41.26 Δ = 7° 15' 35.4" (LT) D = 7° 09' 43.1" L = 101.37' T = 50.75' R = 800.00' SE = 0.04 DS = 45 MPH
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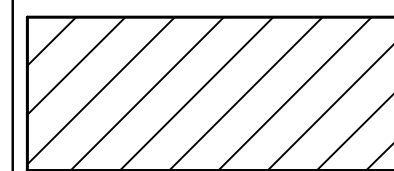


—●— SAFETY FENCE

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

CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 4

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



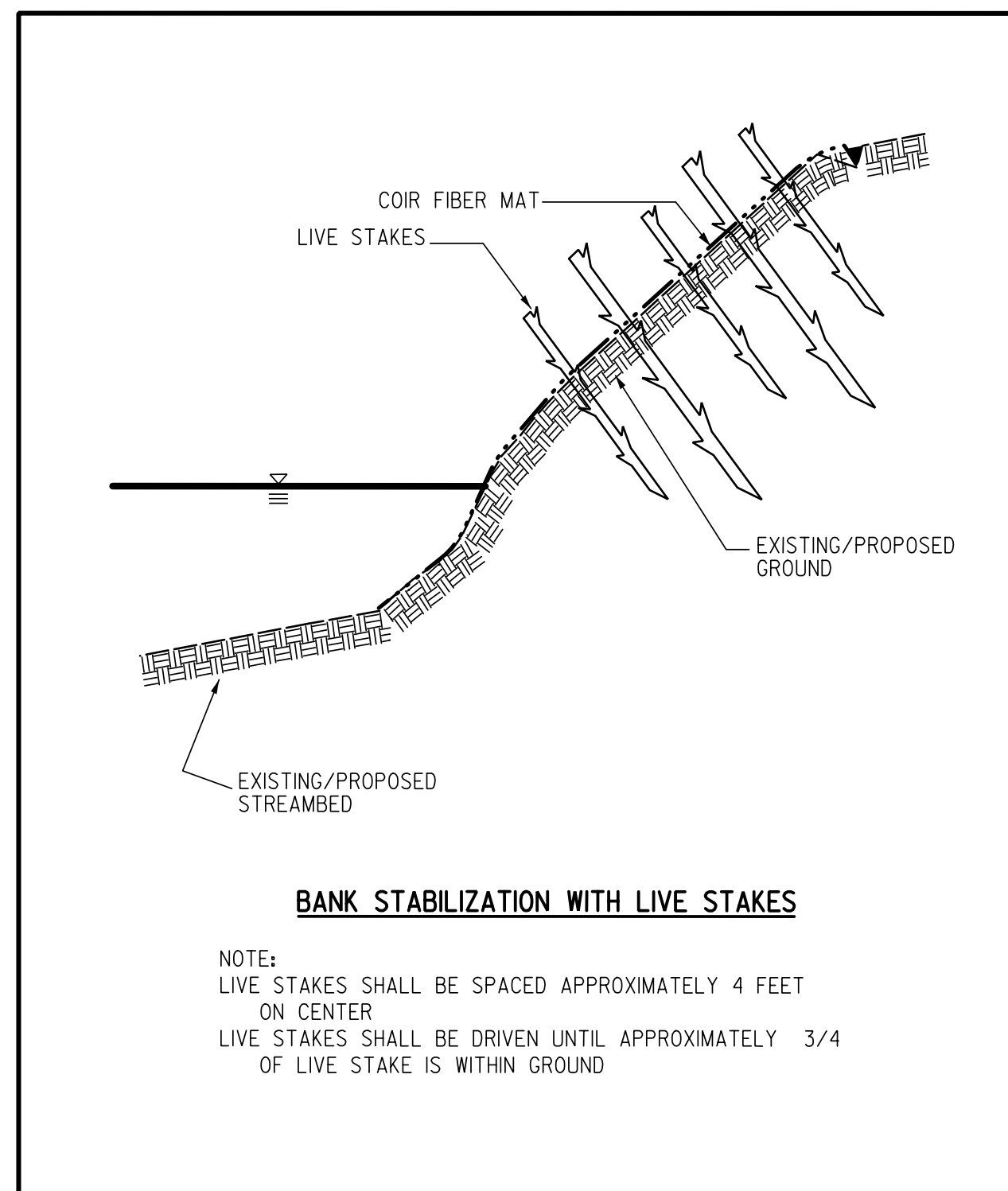
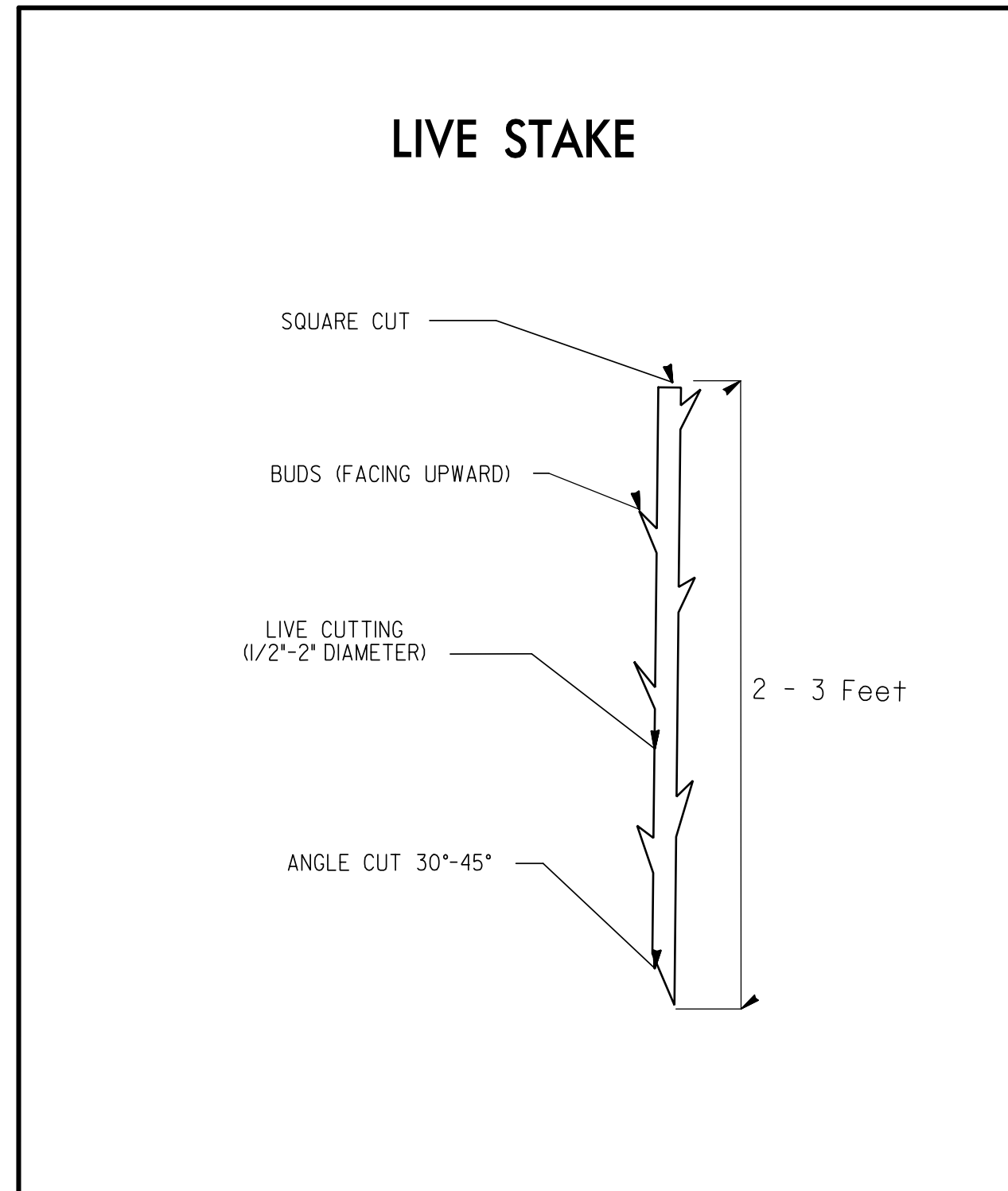
ENVIRONMENTALLY SENSITIVE AREA  
SEE PROJECT SPECIAL PROVISIONS



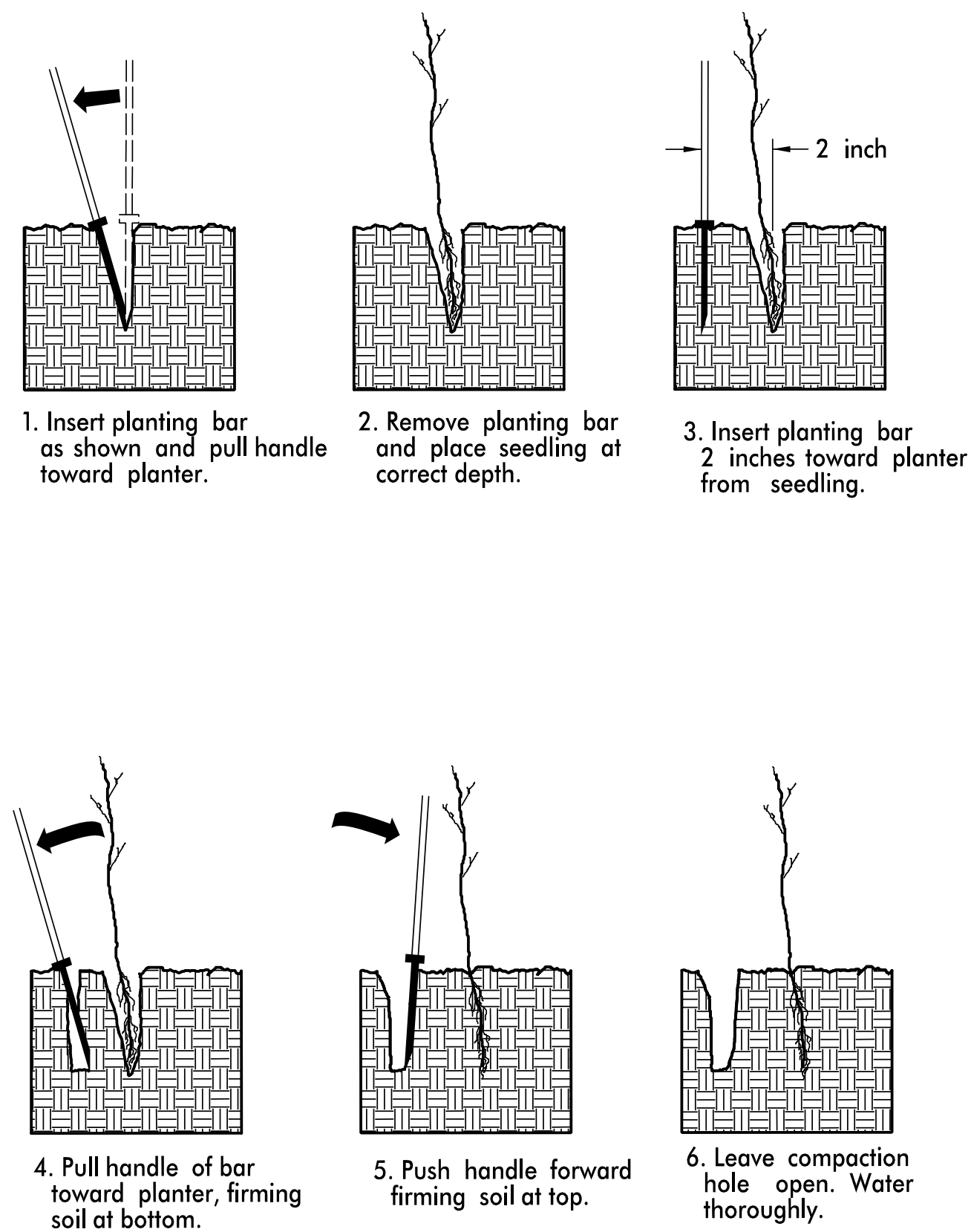
PROJECT REFERENCE NO. <i>BP14-R020</i>	SHEET NO. <i>RF-1</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

# PLANTING DETAILS

## LIVE STAKES PLANTING DETAIL



## BAREROOT PLANTING DETAIL DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR

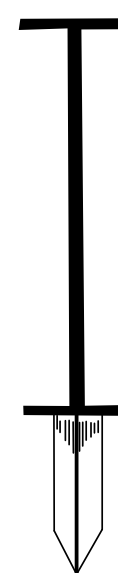


### PLANTING NOTES:

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



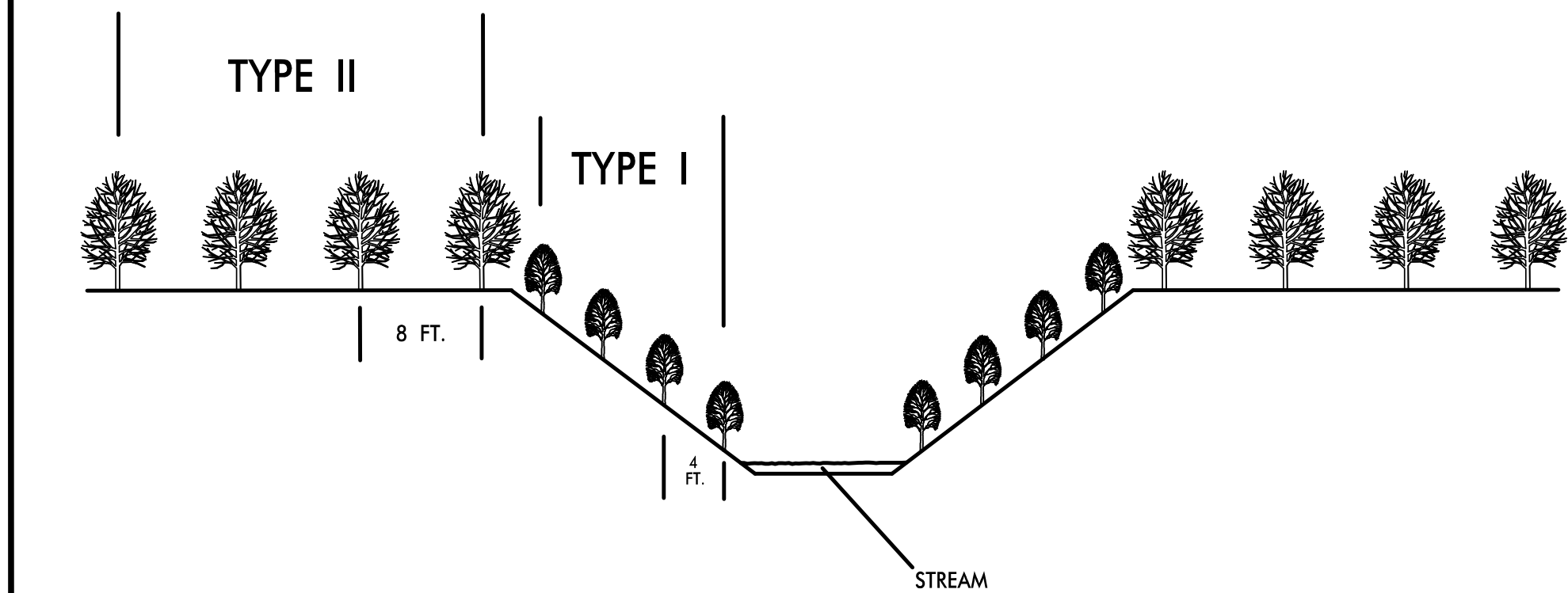
**KBC PLANTING BAR**  
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



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

- TYPE 1 STREAMBANK REFORESTATION SHALL BE PLANTED 3 FT. TO 5 FT. ON CENTER, RANDOM SPACING, AVERAGING 4 FT. ON CENTER, APPROXIMATELY 2724 PLANTS PER ACRE.
- TYPE 2 STREAMBANK REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.
- NOTE: TYPE 1 AND TYPE 2 STREAMBANK REFORESTATION SHALL BE PAID FOR AS "STREAMBANK REFORESTATION"

## STREAMBANK REFORESTATION TYPICAL



### STREAMBANK REFORESTATION

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

#### TYPE 1

50% SALIX NIGRA	BLACK WILLOW	2 ft - 3 ft LIVE STAKES
50% CORNUS AMOMUM	SILKY DOGWOOD	2 ft - 3 ft LIVE STAKES

#### TYPE 2

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

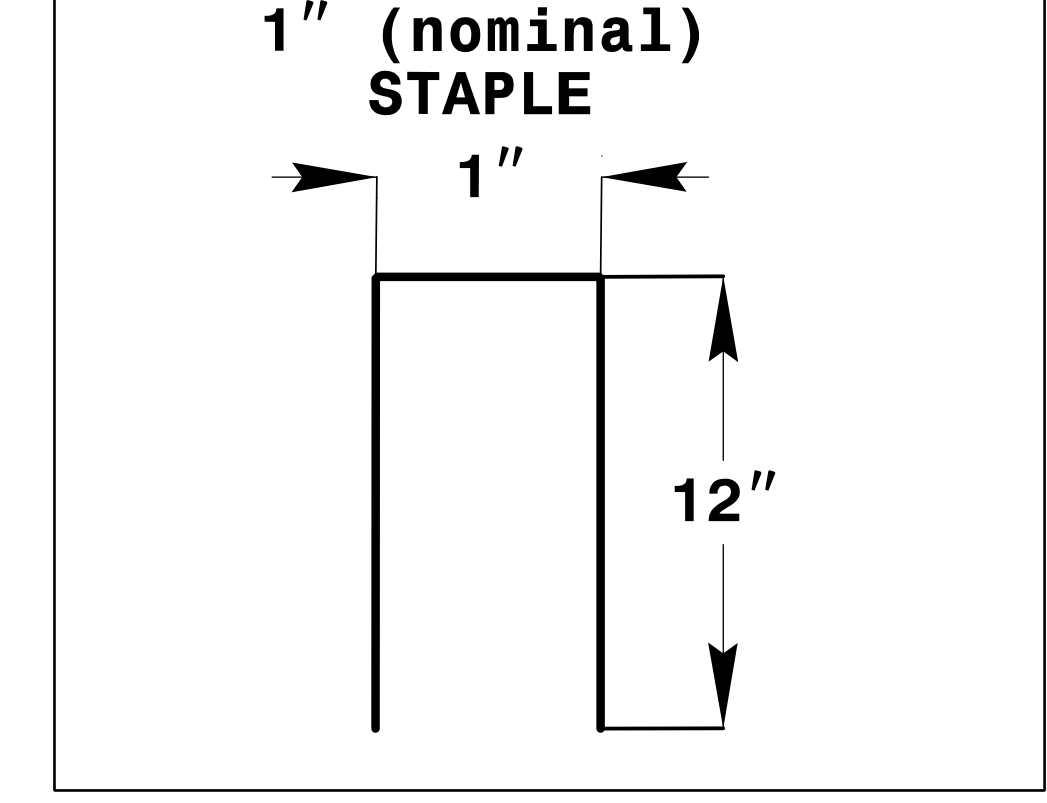
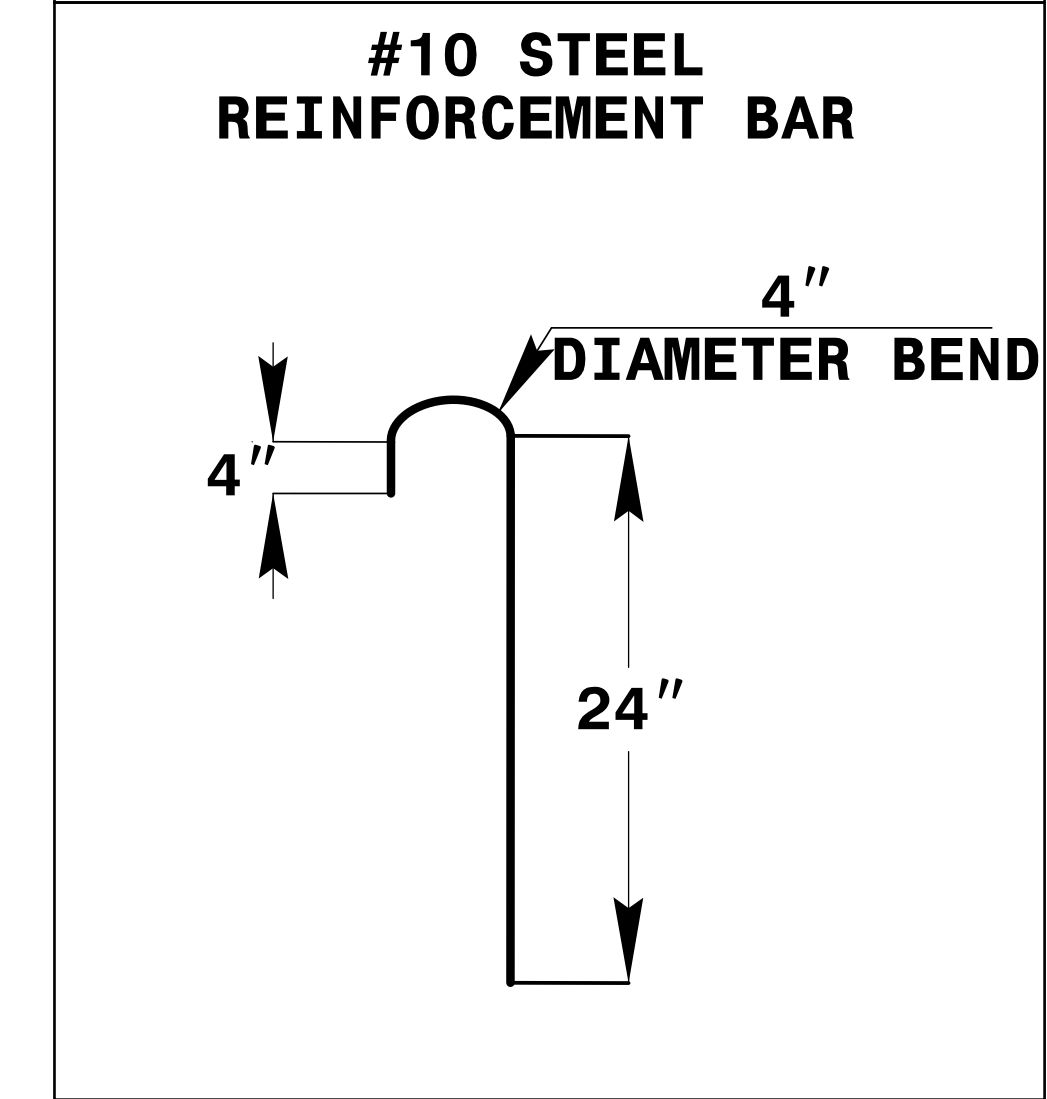
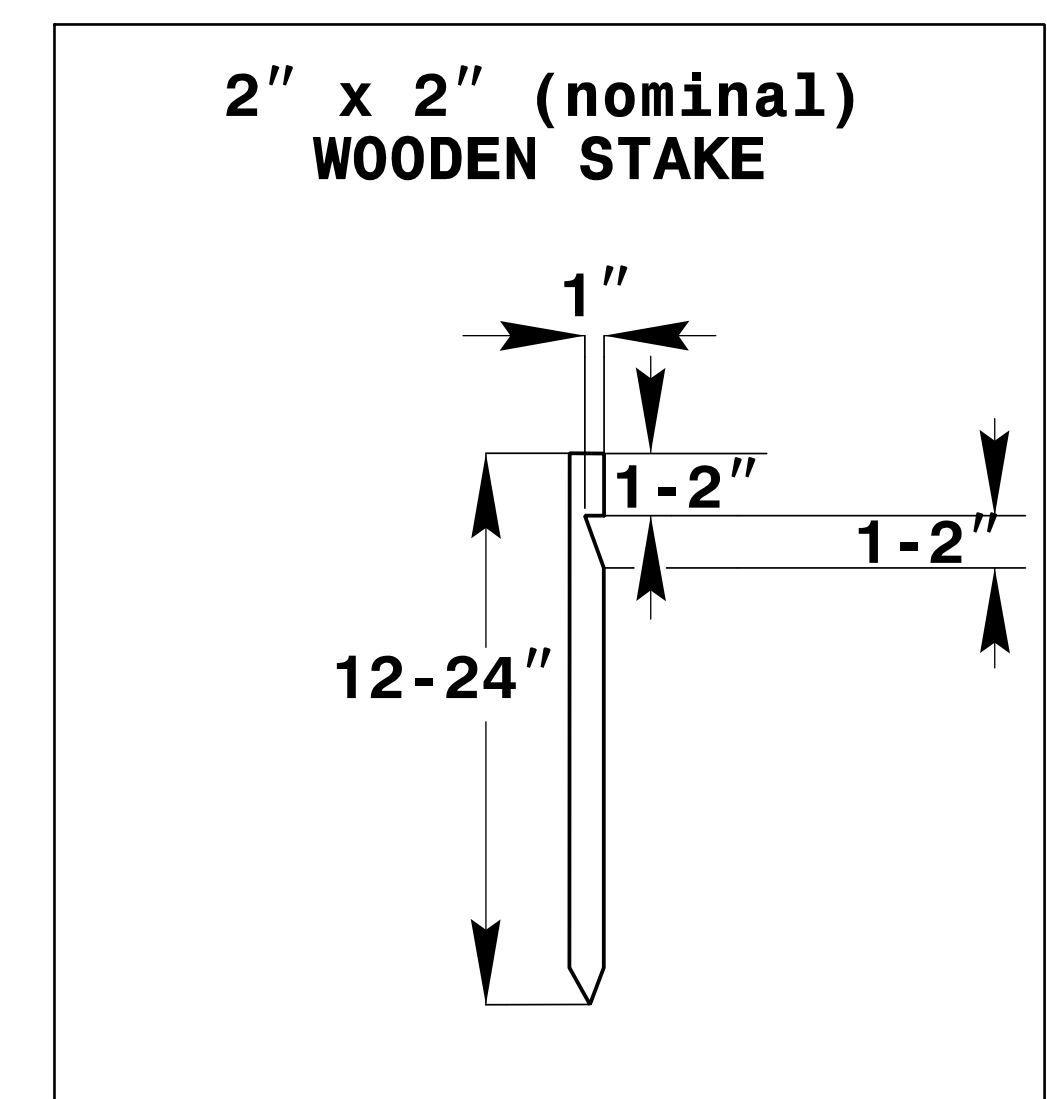
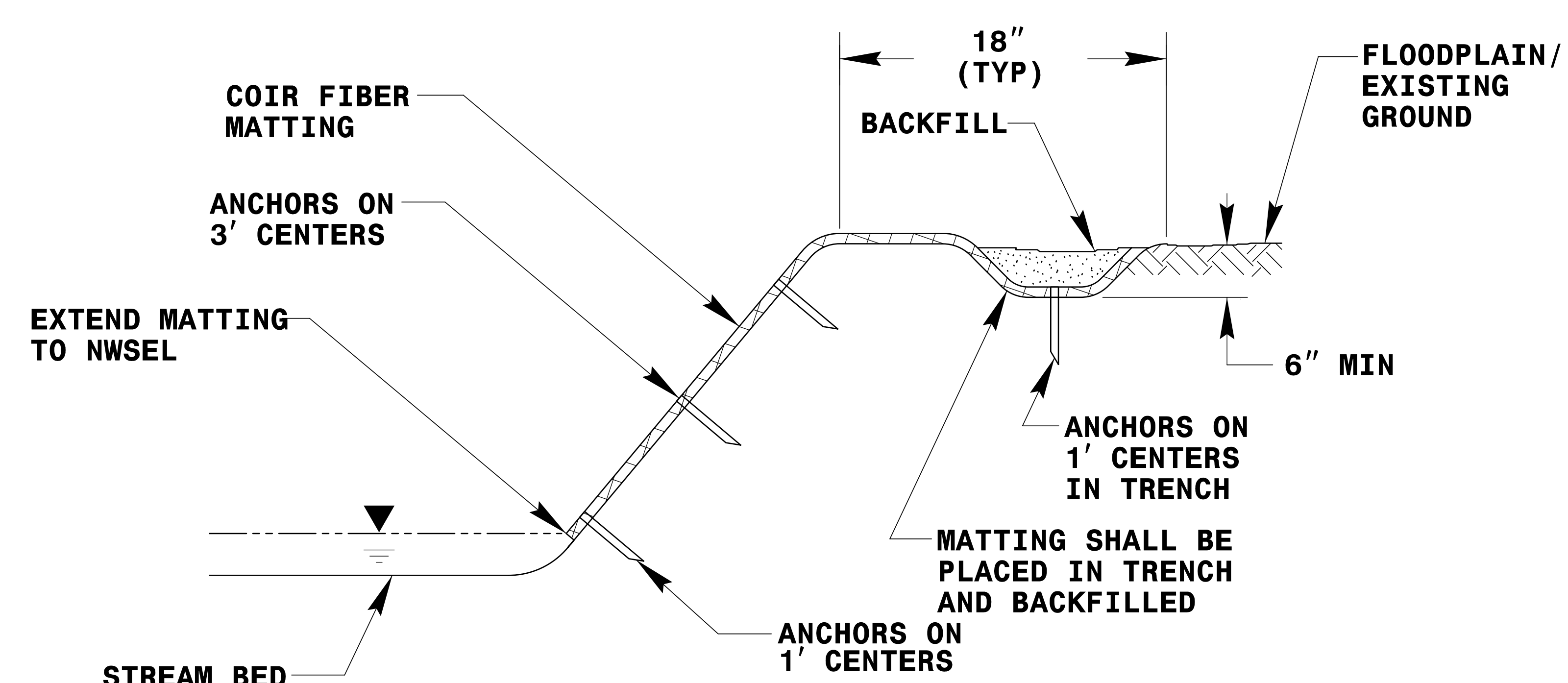
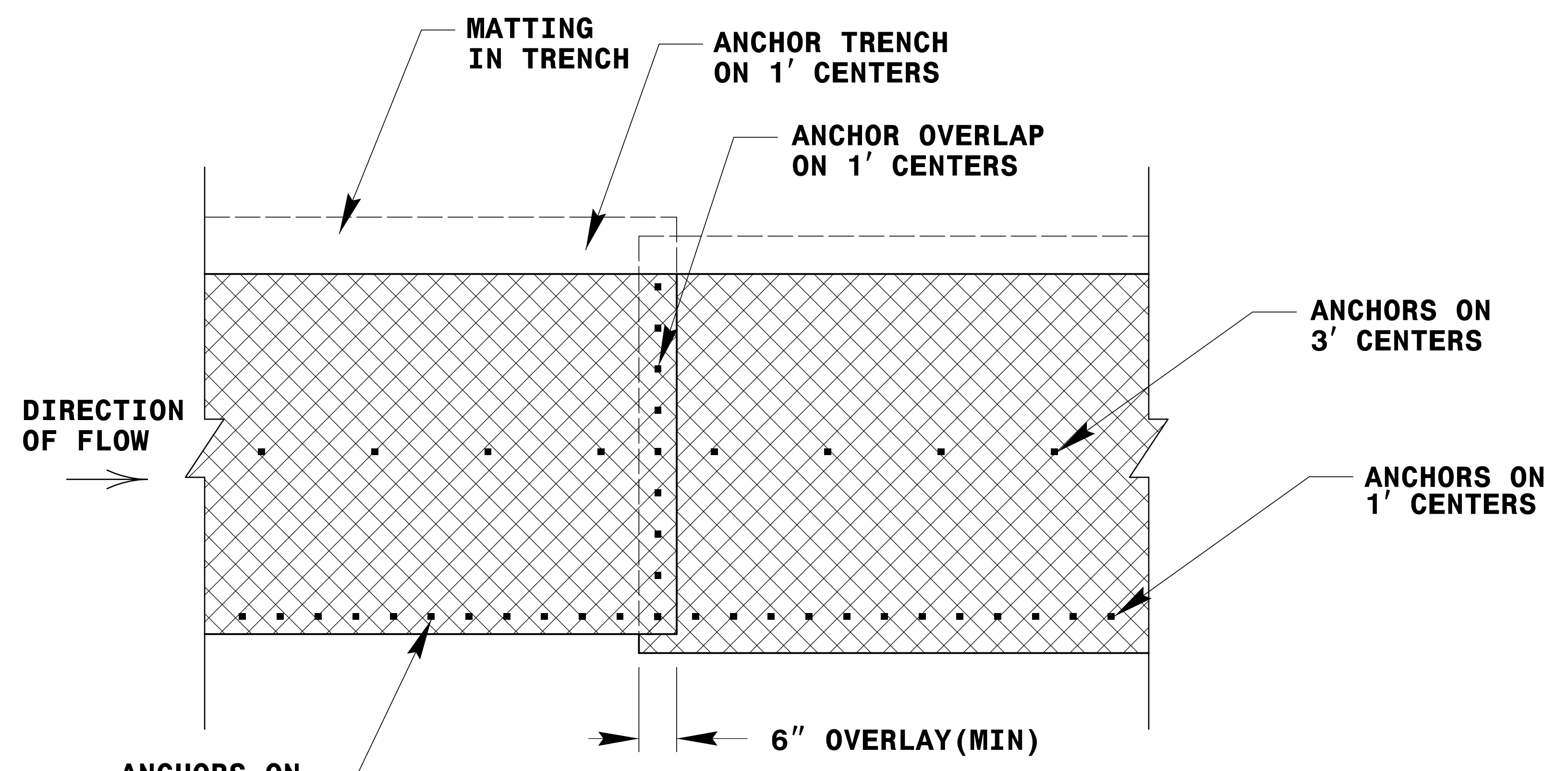
SEE PLAN SHEETS FOR AREAS TO BE PLANTED

## STREAMBANK REFORESTATION

### DETAIL SHEET 1 OF 2

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

PROJECT REFERENCE NO. <i>BP14-R020</i>	SHEET NO. <i>RF-2</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



**ANCHOR OPTIONS**

**COIR FIBER MATTING DETAIL**

NOT TO SCALE

**STREAMBANK REFORESTATION**  
**DETAIL SHEET 2 OF 2**  
 N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT