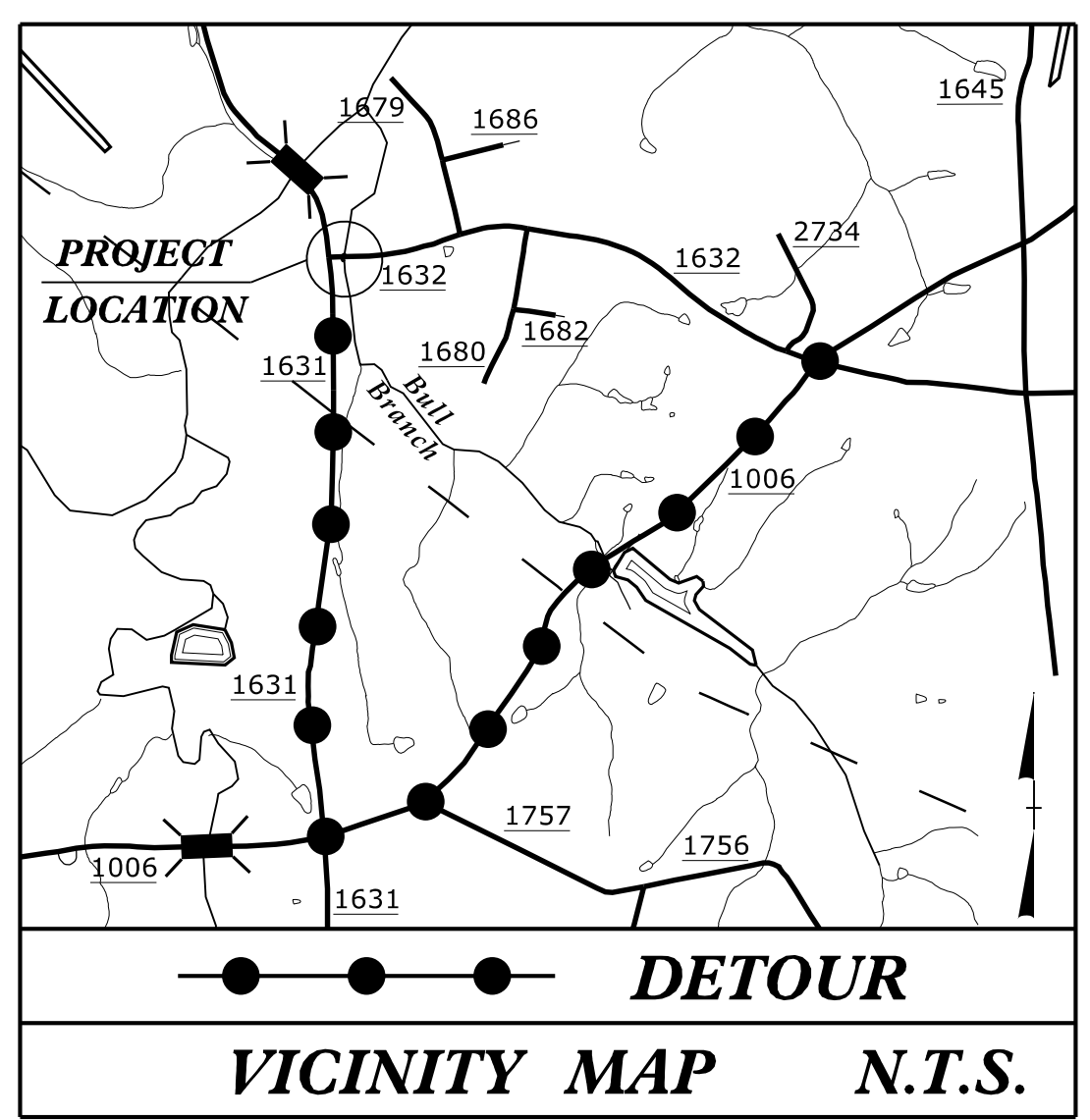


09_08/2019

PROJECT TIP: BP10-C005

CONTRACT:

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



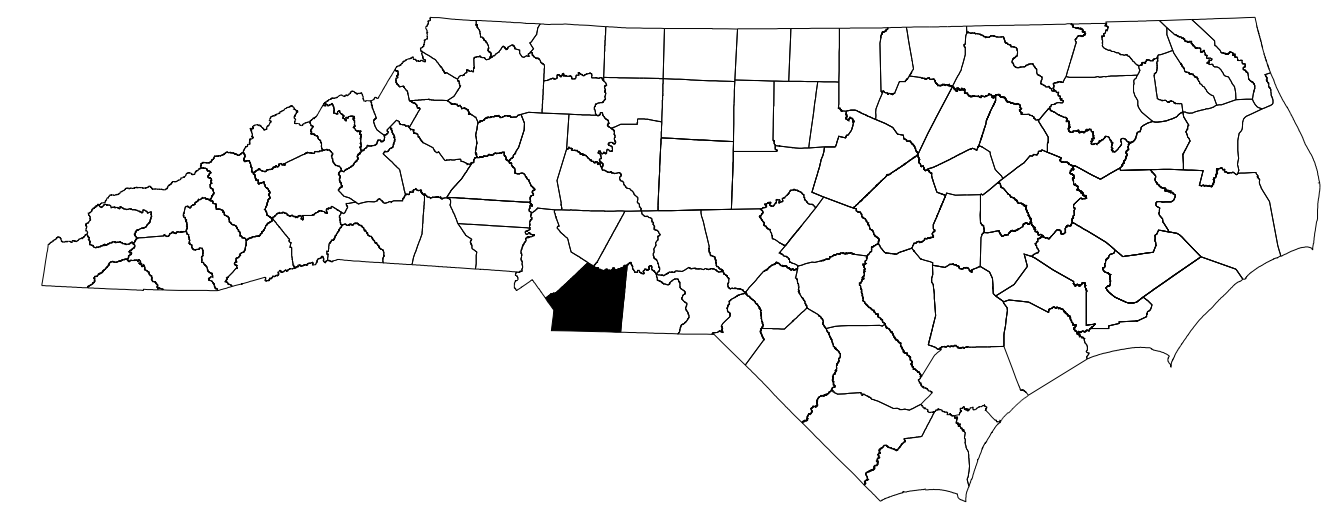
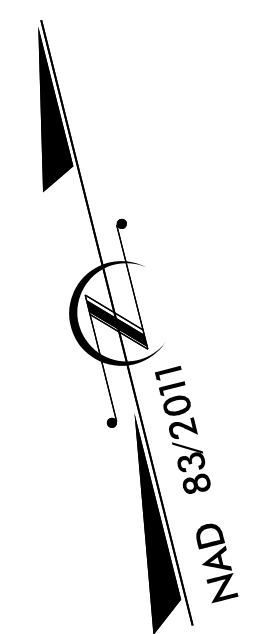
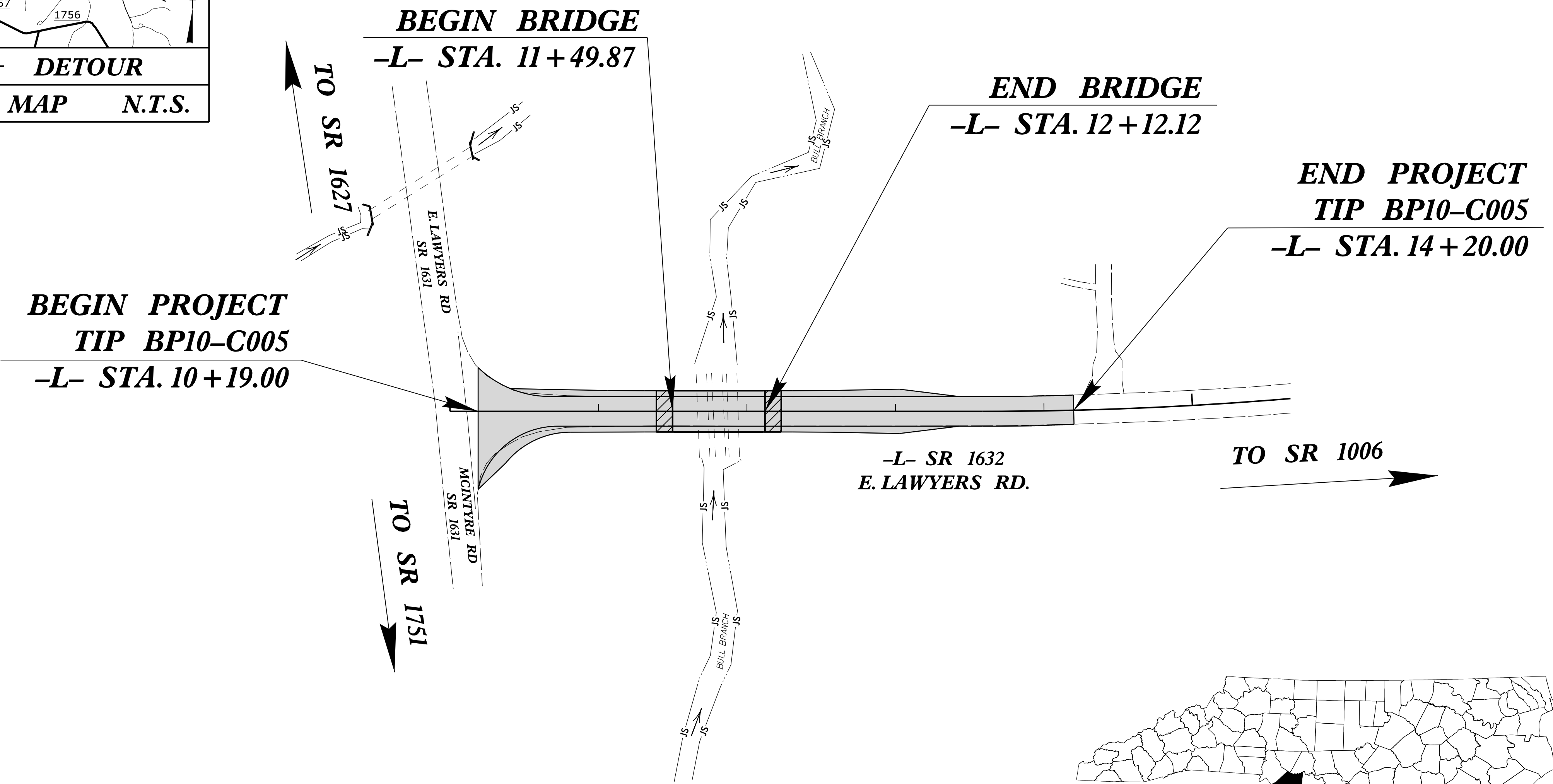
100% PLANS

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS **UNION COUNTY**

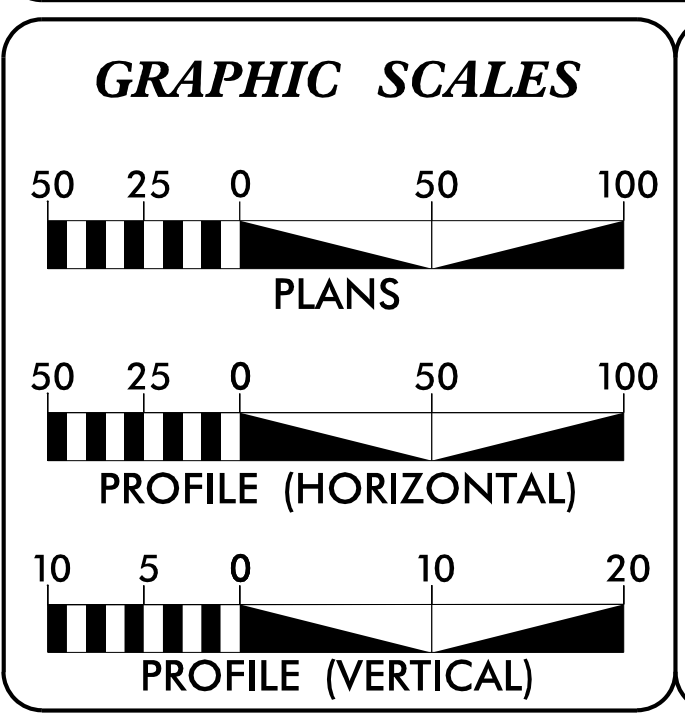
**LOCATION: BRIDGE 89025 OVER BULL BRANCH
ON SR 1632 (E LAWYERS ROAD)**

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE (BRIDGE)

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP10-C005	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP10.C005.1	N/A	PE	
BP10.C005.2	N/A	ROWUTIL	
BP10.C005.3	N/A	CONST	



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2025 = 478
ADT 2045 = 230
T = 6 %
V = 50 MPH
FUNC CLASS = LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT BP10-C005 = 0.065 MILES
LENGTH STRUCTURE TIP PROJECT BP10-C005 = 0.011 MILES
TOTAL LENGTH TIP PROJECT BP10-C005 = 0.076 MILES

PREPARED IN THE OFFICE OF:

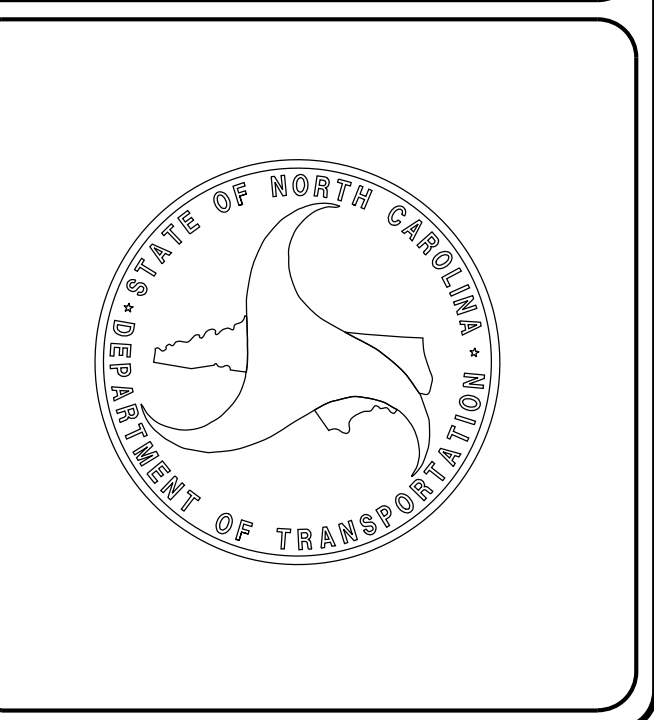
RS&H


1520 SOUTH BOULEVARD, SUITE 200
CHARLOTTE, NC 28203
NC FIRM LICENSE No: F-0493

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
2024 STANDARD SPECIFICATIONS

<p>RIGHT OF WAY DATE: JANUARY 6, 2024</p> <p>LETTING DATE: MAY 21, 2025</p>	<p style="text-align: center;">ALLISON DRAKE, PE <small>PROJECT ENGINEER</small></p> <hr/> <p style="text-align: center;">CASSIE ROBINSON, PE <small>PROJECT DESIGN ENGINEER</small></p> <hr/> <p style="text-align: center;">YANWEI MA, PE <small>NCDOT CONTACT</small></p>
---	---

<p style="text-align: center;">SIGNATURE: _____ P.E.</p>	<p>HYDRAULICS ENGINEER</p>
<p style="text-align: center;">SIGNATURE: _____ P.E.</p>	<p>ROADWAY DESIGN ENGINEER</p>



PROJECT REFERENCE NO.	SHEET NO.
<i>BPIO-005</i>	<i>1A</i>
ROADWAY DESIGN ENGINEER	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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NC FIRM LICENSE No: F-0493

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
3B-1	SUMMARY OF DRAINAGE QUANTITIES, SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, PAVEMENT REMOVAL SUMMARY, AND SUMMARY OF SHOULDER BERM GUTTER
3G-1	GEOTECHNICAL SUMMARIES
3P-1	PARCEL INDEX SHEET
4	PLAN SHEET
5	PROFILE SHEET
RW02C-1 THRU RW04	SURVEY CONTROL SHEETS
TMP-1 THRU TMP-3	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-6	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-2	SIGNING PLANS
X-1	CROSS-SECTION SUMMARY SHEET AND CROSS SECTION INDEX
X-2 THRU X-3	CROSS-SECTIONS
S-1 THRU S-14	STRUCTURE PLANS
SN	STRUCTURE STANDARD NOTES SHEET

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

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.

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
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Super-elevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation (Use Details in Lieu of Standards for Sheets 1, and 2 of 2)
DIVISION 4 - MAJOR STRUCTURES	
423.01	Bridge Approach Fills - Type 1 Approach Fill for Bridge Abutment
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Super-elevated Curve - Method I
DIVISION 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
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement (Use Details in Lieu of Standards for Sheets 4, 6, 12, and 14 of 15)
862.02	Guardrail Installation
862.03	Structure Anchor Units (Use Details in Lieu of Standards for Sheet 8 of 9)
876.01	Rip Rap in Channels and Ditches
876.02	Guide for Rip Rap at Pipe Outlets

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

Note: Not to Scale

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○
Well	○
Small Mine	×
Foundation	□
Area Outline	□
Cemetery	+
Building	□
School	□
Church	□
Dam	—

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	-----
Jurisdictional Stream	JS
Buffer Zone 1	BZ 1
Buffer Zone 2	BZ 2
Flow Arrow	←
Disappearing Stream	→
Spring	○
Wetland	WLB
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:

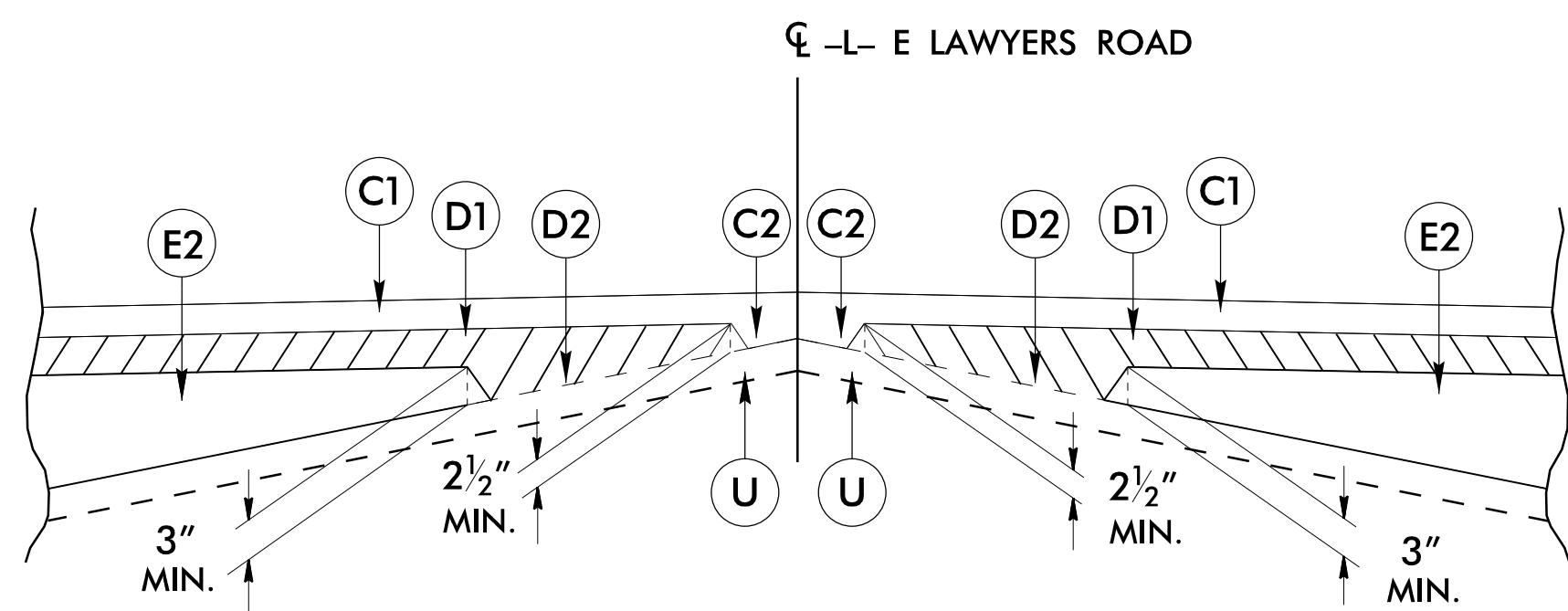
Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	⊠
Utility Unknown U/G Line (SUE - LOS B)*	-----
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	⊕
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊕
Abandoned According to Utility Records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

5/14/2025

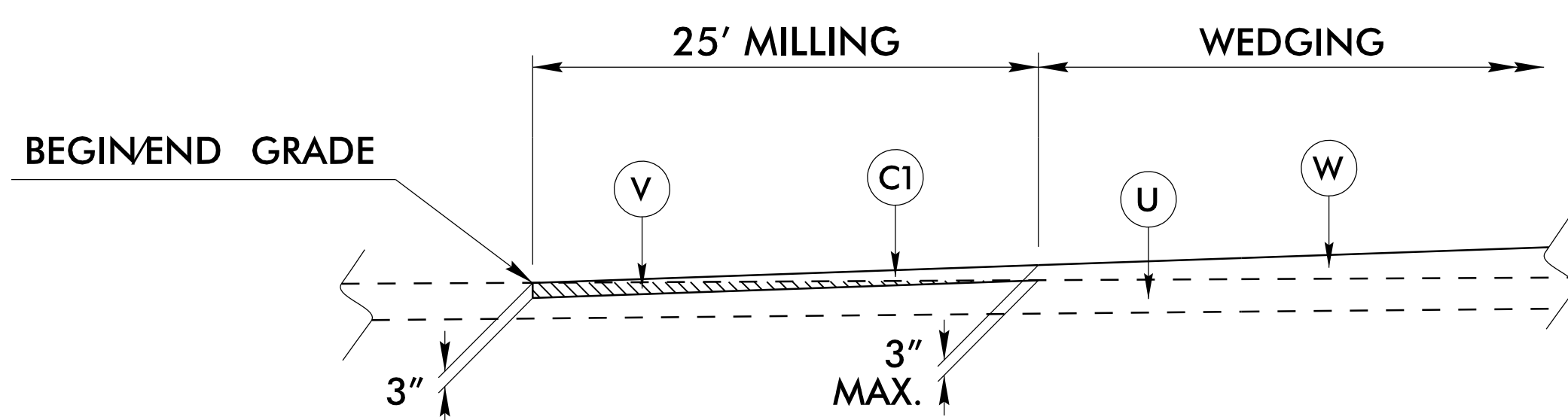
PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)

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 LESS THAN 1.5" IN DEPTH OR GREATER THAN 2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAT 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 THAT 5.5" IN DEPTH.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING, 0" - 3" (SEE MILLING DETAIL THIS SHEET)
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

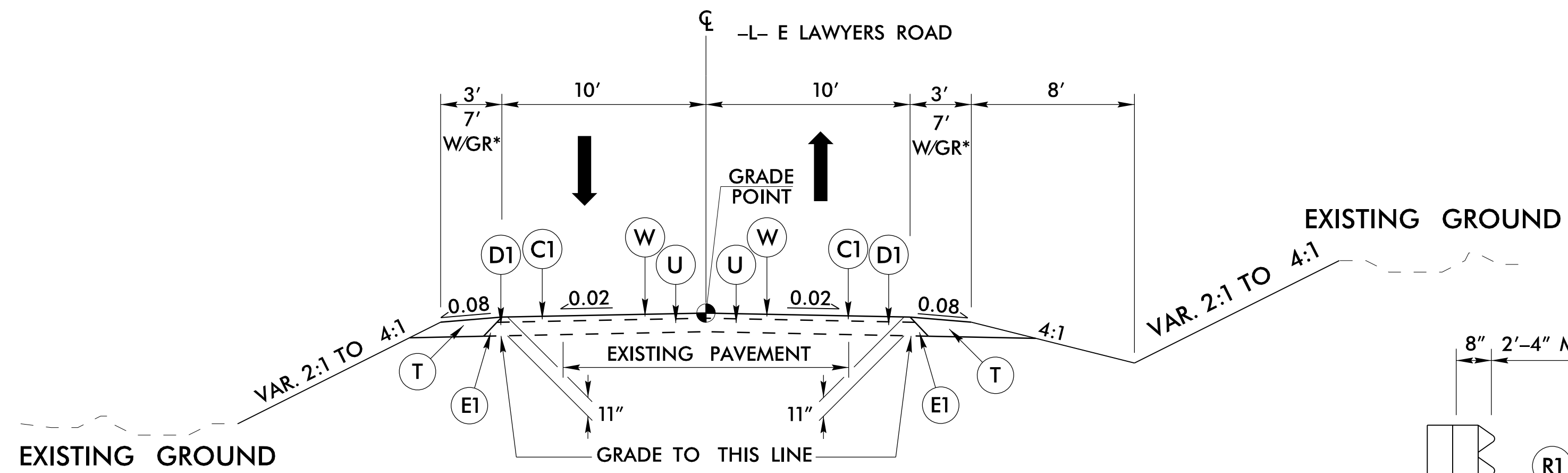
NOTE: ALL PAVEMENT SLOPES 1:1 UNLESS NOTED OTHERWISE



WEDGING DETAIL

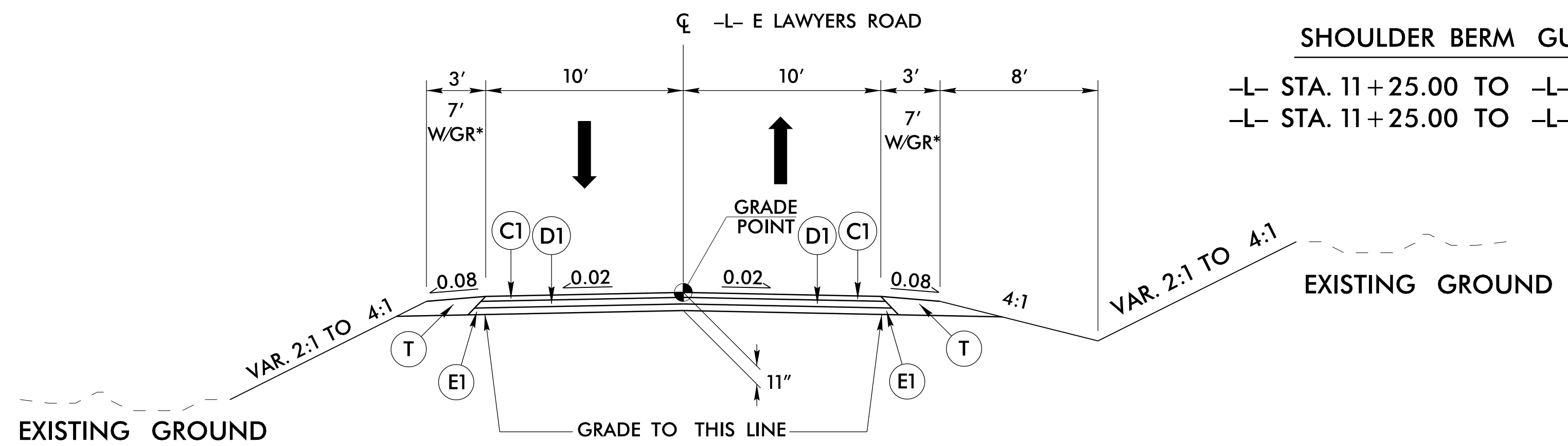


Detail of 3.0" Incidental Milling at Pavement Tie-ins



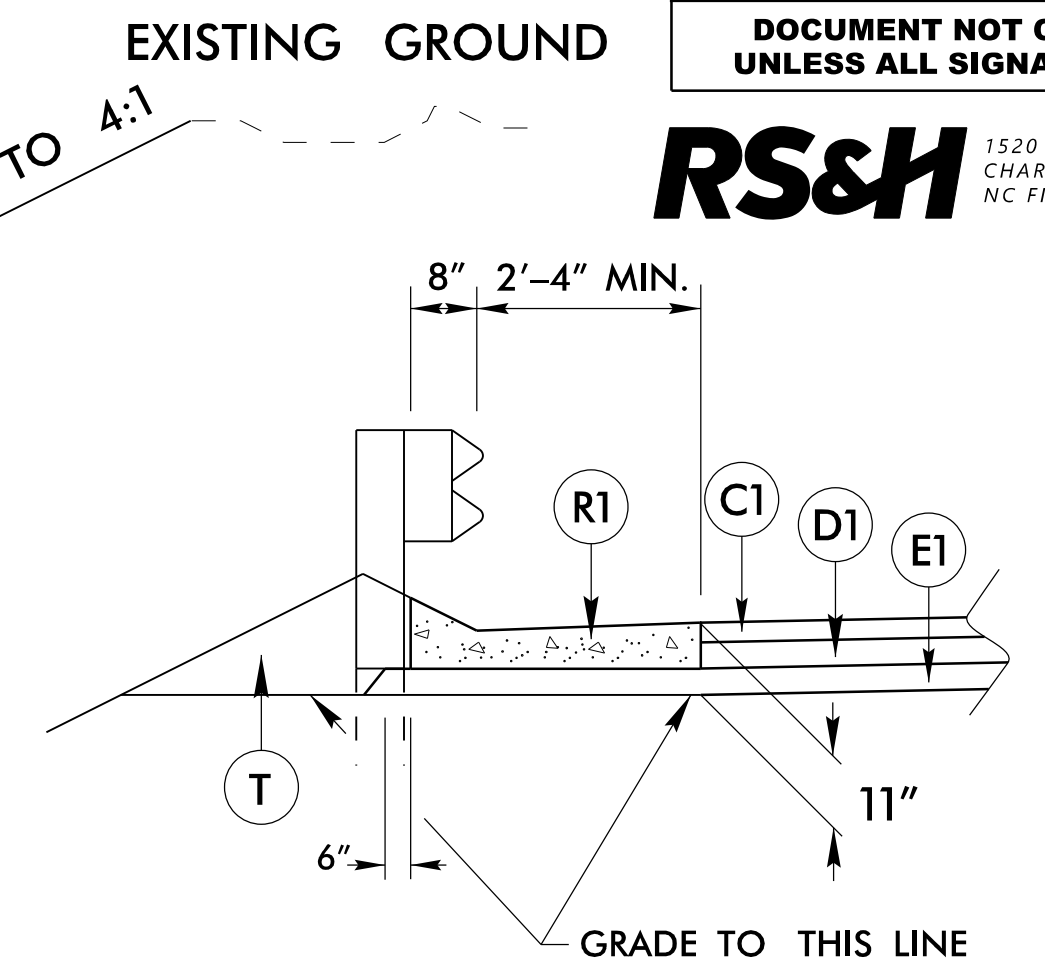
TYPICAL SECTION NO. 1

-L- STA. 10+19.00 TO -L- STA. 10+70.00
-L- STA. 13+30.00 TO -L- STA. 14+20.00



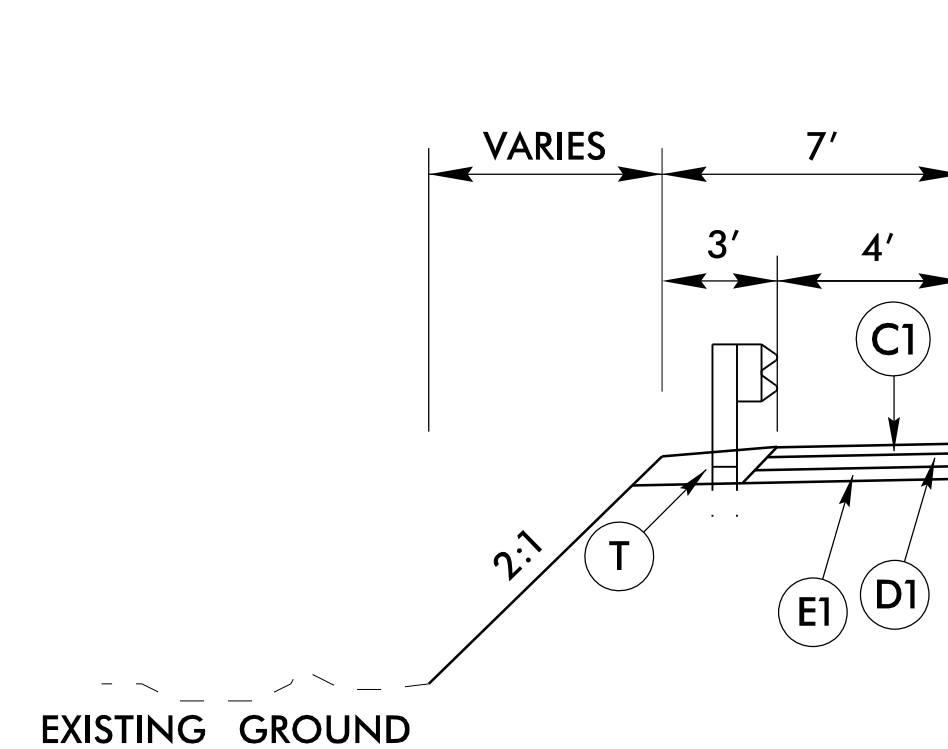
TYPICAL SECTION NO. 2

-L- STA. 10+70.00 TO -L- STA. 11+49.87 (BEGIN BRIDGE)
-L- STA. 12+12.12 (END BRIDGE) TO -L- STA. 13+30.00



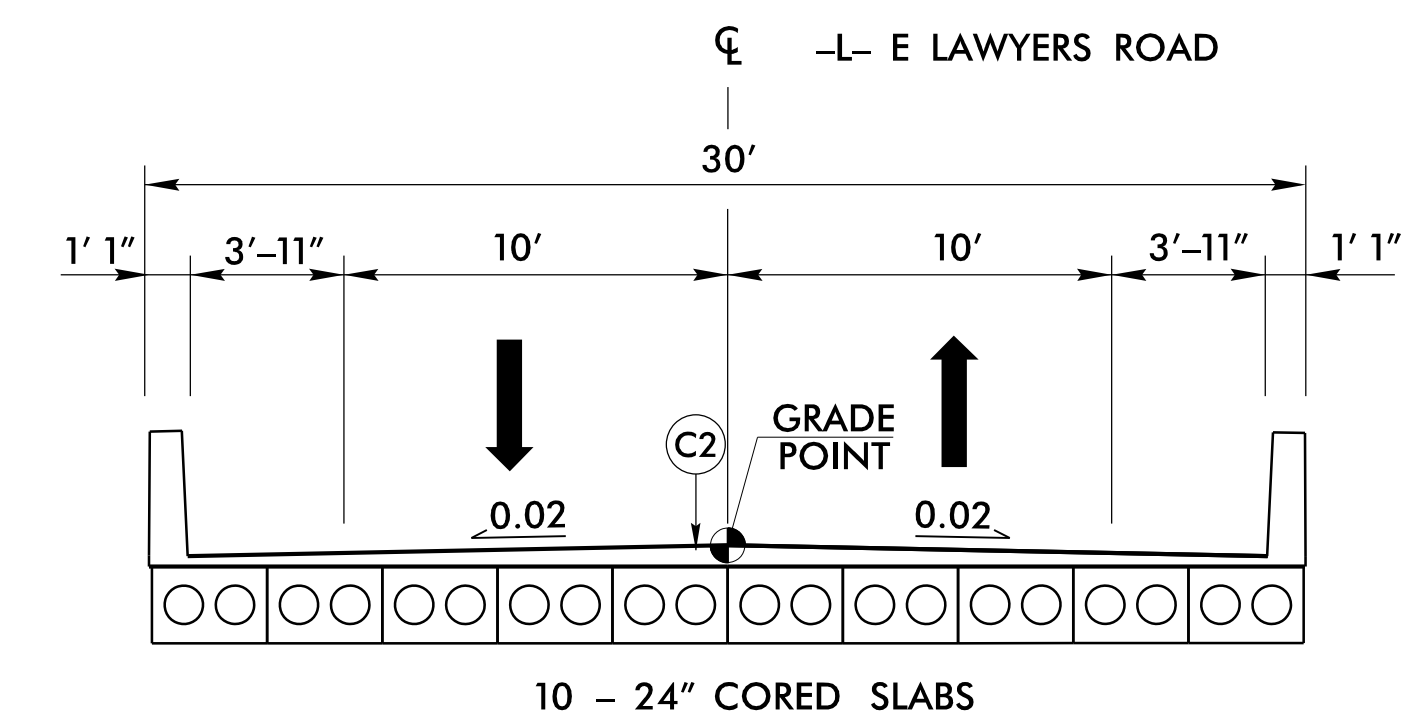
SHOULDER BERM GUTTER DETAIL

-L- STA. 11+25.00 TO -L- STA. 11+39.00 LT
-L- STA. 11+25.00 TO -L- STA. 11+39.00 RT



***SHOULDER DETAIL**

USE IN CONJUNCTION WITH GUARDRAIL ON -L-
SEE CROSS SECTIONS



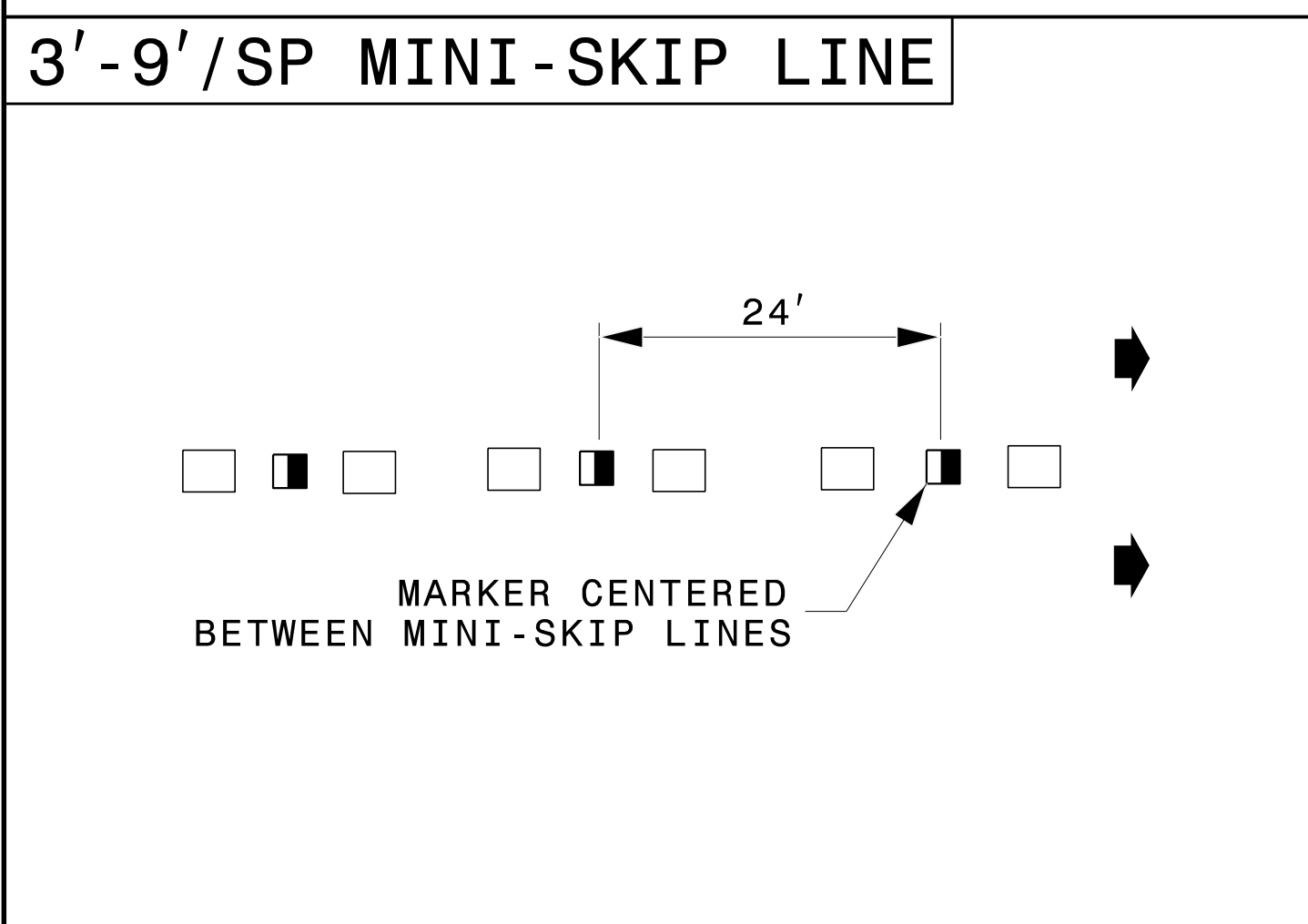
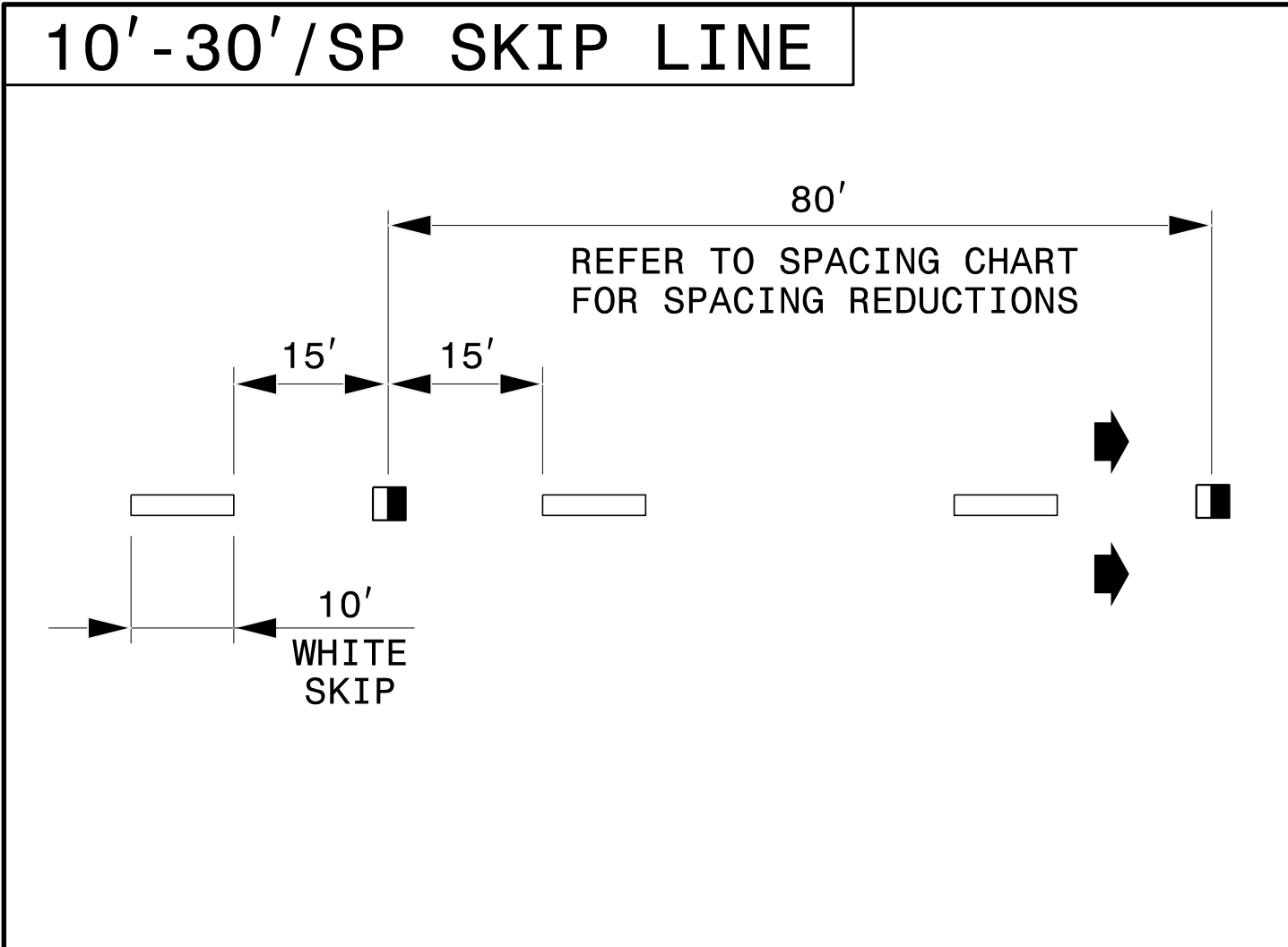
TYPICAL SECTION NO. 3

-L- STA. 11+49.87 TO -L- STA. 12+12.12

PROJECT REFERENCE NO. BP10-C005	SHEET NO. 2A-1
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER NCDOT DIVISION 10 HAS PROVIDED AND APPROVED THE FINAL PAVEMENT DESIGN. THE ROADWAY DESIGN ENGINEER IS NOT RESPONSIBLE FOR THE FINAL PAVEMENT DESIGN.
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

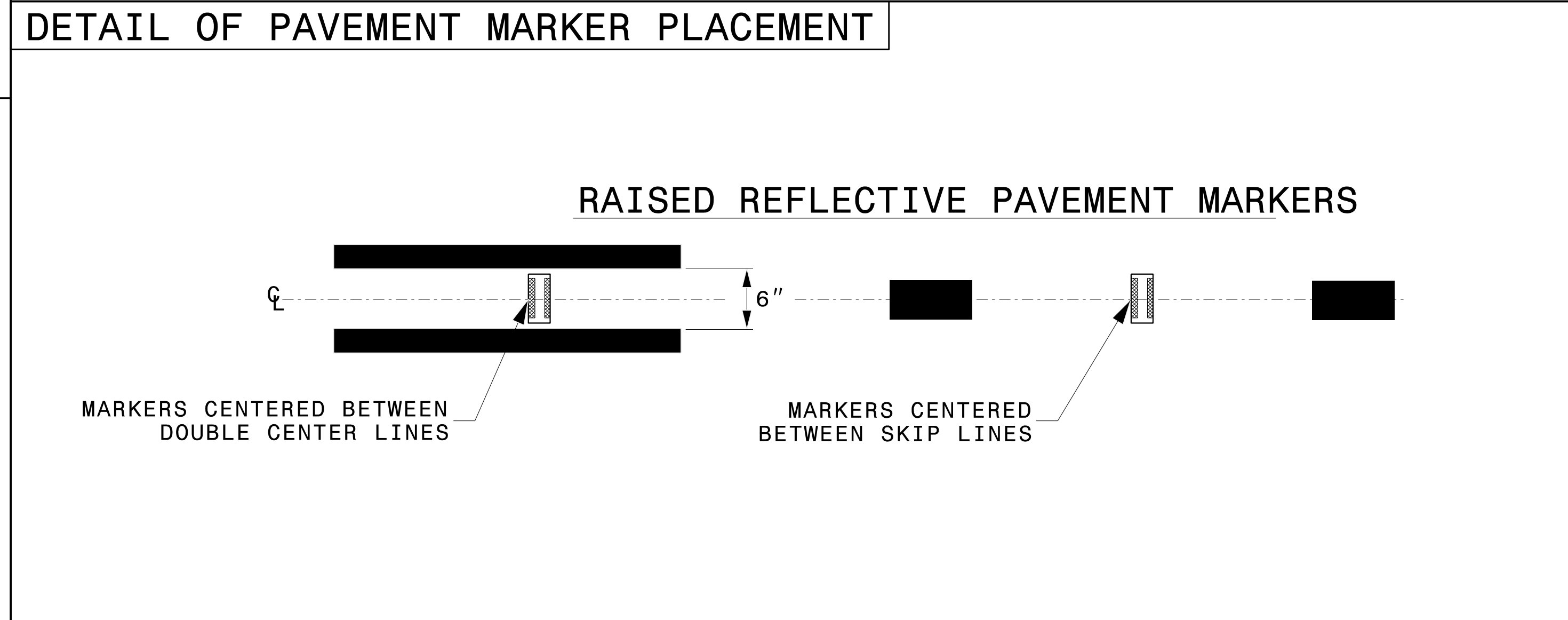
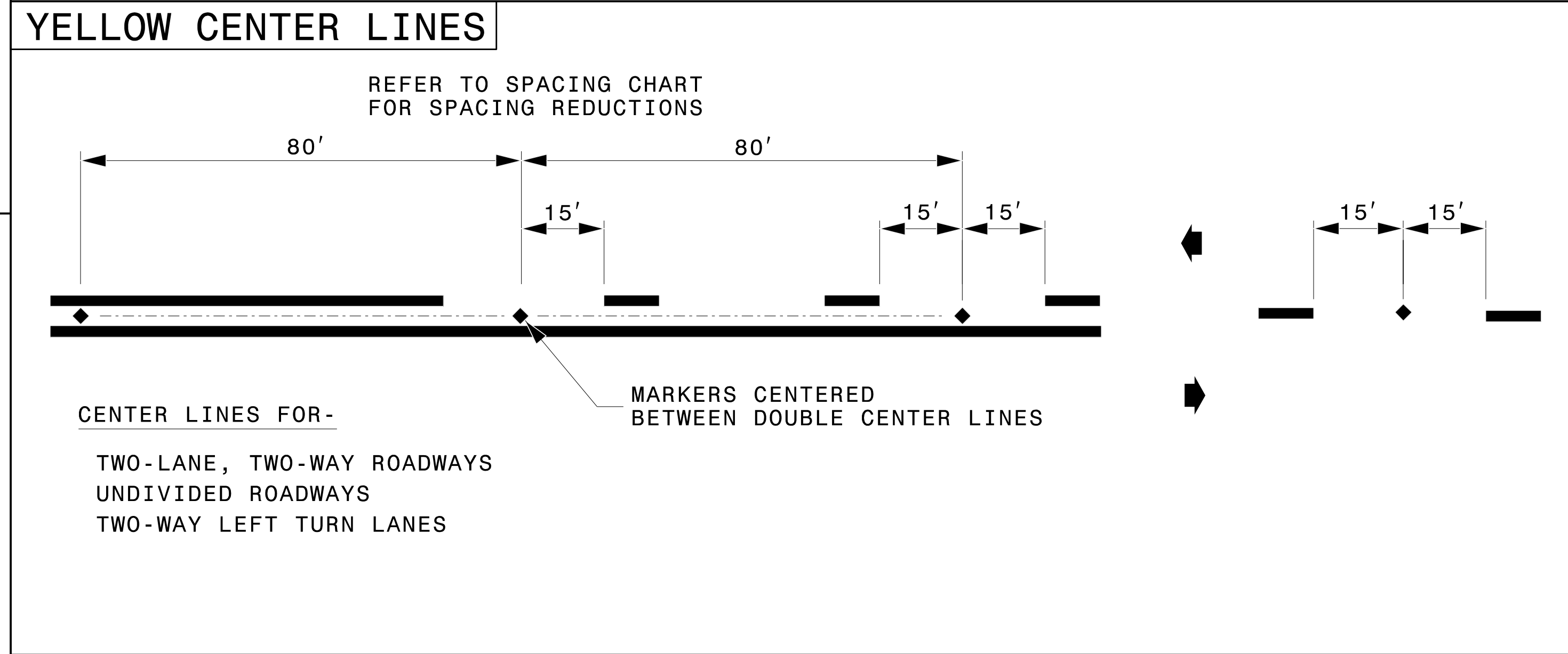
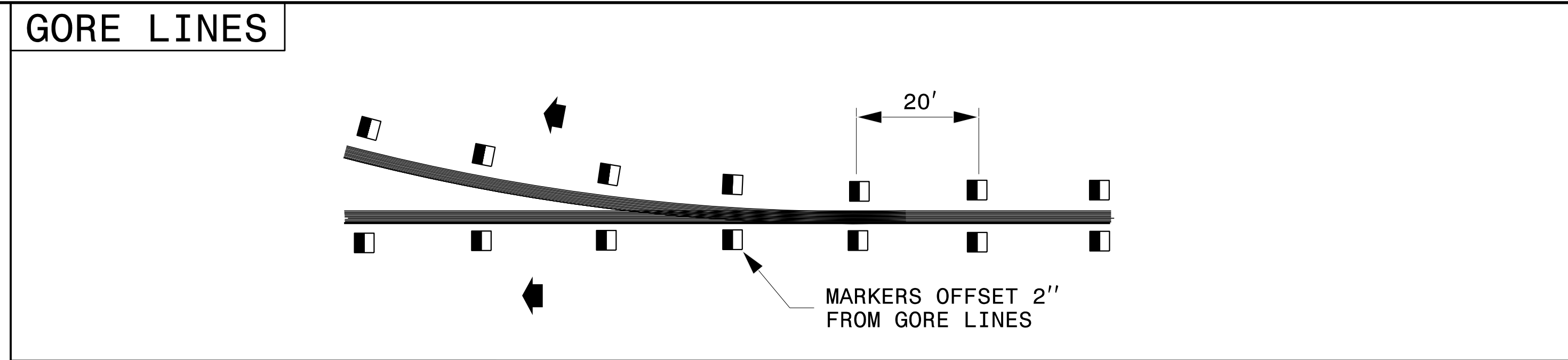
RS&H 1520 SOUTH BOULEVARD, SUITE 200
CHARLOTTE, NC 28203
NC FIRM LICENSE No. F-0493

03-APR-2025 12:10:00 BP10-C005-2A-1.dgn



LEGEND

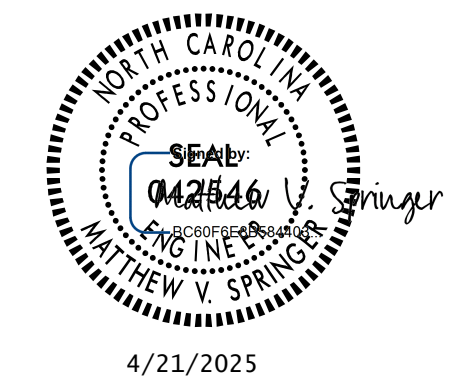
	CRYSTAL/RED PAVEMENT MARKER
	YELLOW/YELLOW PAVEMENT MARKER
	DIRECTION OF TRAFFIC FLOW



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

ROADWAY DETAIL DRAWING FOR
RAISED PAVEMENT MARKERS
INSTALLATION SPACING

SHEET 2 OF 3
1250D01



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

SEE TITLE BLOCK

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

12/06/07

COMPUTED BY: CLR DATE: 2/10/2023
CHECKED BY: BEP DATE: 02/14/2023

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. SHEET NO.
BP10-C005 3B-1



SUMMARY OF EARTHWORK
IN CUBIC YARDS

Table with 8 columns: STATION, STATION, UNCL. EXCAV., UNDERCUT, UNSUIT. UNCL., EMBANK. +%, BORROW, WASTE. Rows include station ranges like -L- 10+19.00 and -L- 11+49.87 (BRIDGE), and summary rows for TOTAL, PROJECT TOTALS, and GRAND TOTALS.

TOTAL SHALLOW UNDERCUT = 100 CY
CLASS IV SUBGRADE STABILIZATION = 200 TON
SELECT GRANULAR MATERIAL = 200 CY
PER GEOTECH RECOMMENDATION, ESTIMATED 450 CUBIC YARDS OF UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER

Earthwork quantities are calculated by the Roadway Designer. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

Note: Approximate quantities only. Borrow excavation, fine grading, clearing and grubbing, and removal of existing pavement will be paid for at the contract lump sum price for Grading.

NOTE: INVERT ELEVATIONS INDICATED ARE FOR BID PURPOSES ONLY AND SHALL NOT BE USED FOR PROJECT CONSTRUCTION STAKE OUT. SEE "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, SECTION 300-5".

SHOULDER BERM GUTTER SUMMARY

Table with 4 columns: SURVEY LINE, STATION, STATION, LENGTH. Rows include -L- LT and -L- RT with station ranges 11+25.00 to 11+39.00 and a total length of 28.

ASPHALT PAVEMENT REMOVAL SUMMARY

Table with 5 columns: SURVEY LINE, STATION, STATION, LOCATION LT/RT/CL, YD². Rows include -L- with station 10+70 to 13+30 and a total of 575.26 YD².

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

Large table listing pipe details: STATION, SIZE, THICKNESS OR GAUGE, LOCATION, DRAINAGE PIPE, C.S. PIPE, R.C. PIPE, ENDWALLS, QUANTITIES FOR DRAINAGE STRUCTURES, TYPE OF GRATE, CONCRETE TRANSITIONAL SECTION, PIPE REMOVAL LIN. FT., and REMARKS.

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

GUARDRAIL SUMMARY

Table summarizing guardrail: SURVEY LINE, BEG. STA., END STA., LOCATION, LENGTH (STRAIGHT, SHOP CURVED, DOUBLE FACED), WARRANT POINT (APPROACH END, TRAILING END), FLARE LENGTH, W, ANCHORS (AT-1, GREU, TYPE III), IMPACT ATTENUATOR TYPE 350, SINGLE FACED GUARDRAIL, REMOVE EXISTING GUARDRAIL, REMOVE AND STOCKPILE EXISTING GUARDRAIL, and REMARKS.

ANCHOR DEDUCTION
AT-1: 1 @ 6.25' = 6.25'
GREU TL-3: 3 @ 50' = 150'
TYPE III: 4 @ 18.75' = 75'
GRAND TOTAL = 231.25'
ADDITIONAL GUARDRAIL POSTS = 5

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C:\csh

COMPUTED BY: Paul Weaver DATE: December 23, 2022
 CHECKED BY: Matthew Lattin DATE: December 23, 2022

(12-17-19)

PROJECT NO.	SHEET NO.
BP10.C005.1 (SF-890025)	3G-1

**STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS**

SUMMARY OF SUBSURFACE DRAINAGE

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

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

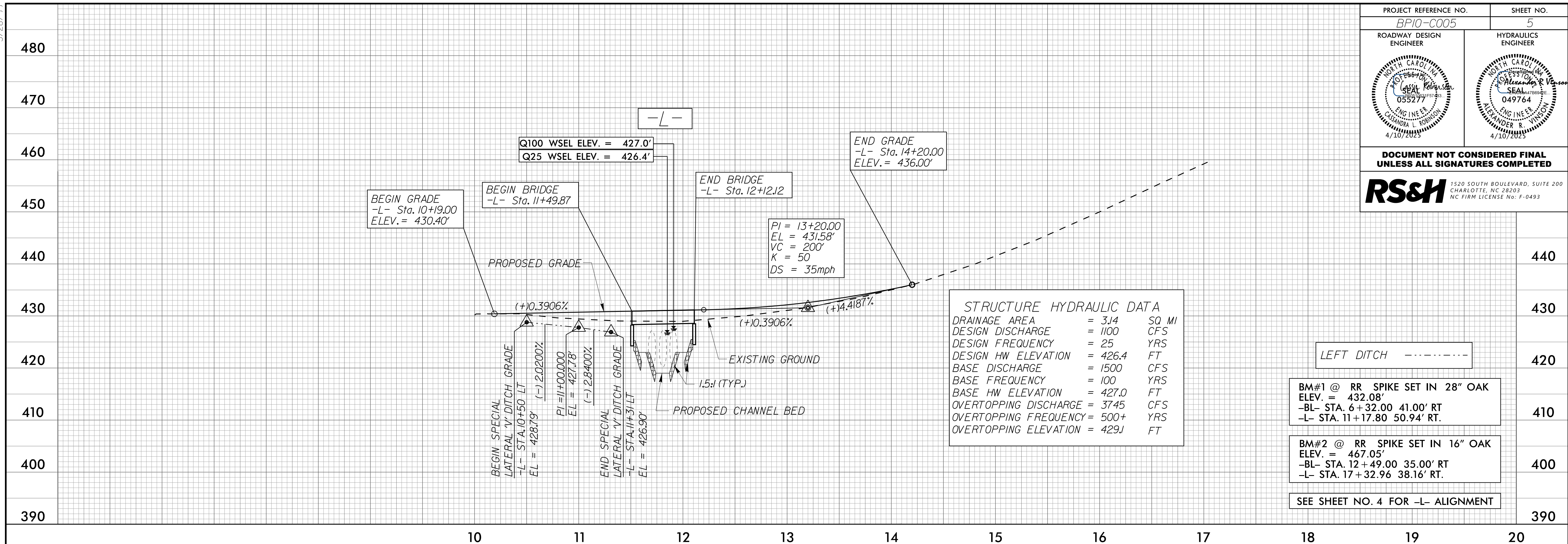
SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY					100	200	500		
					TOTAL CY/TONS/SY:	100	200**	500**	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.

5/28/24

PROJECT REFERENCE NO. <i>BP10-C005</i>	SHEET NO. 5
ROADWAY DESIGN ENGINEER <i>SEAN R. VANDERKAM</i> 055277 4/10/2023	HYDRAULICS ENGINEER <i>ALEXANDER R. VANDERKAM</i> 049764 4/16/2023
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
RS&H 1520 SOUTH BOULEVARD, SUITE 200 CHARLOTTE, NC 28203 NC FIRM LICENSE NO: F-0493	



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6/2/09

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
89-0025	RW02C-1
Location and Surveys	
NIV5	
<small>7500 EAST INDEPENDENCE BOULEVARD, SUITE 100 CHARLOTTE, NC 28227 phone: 704.537.7300 NIV5.com NC License # F-1333</small>	

NC GRID
NAD 83 NA 2011



DATUM DESCRIPTION

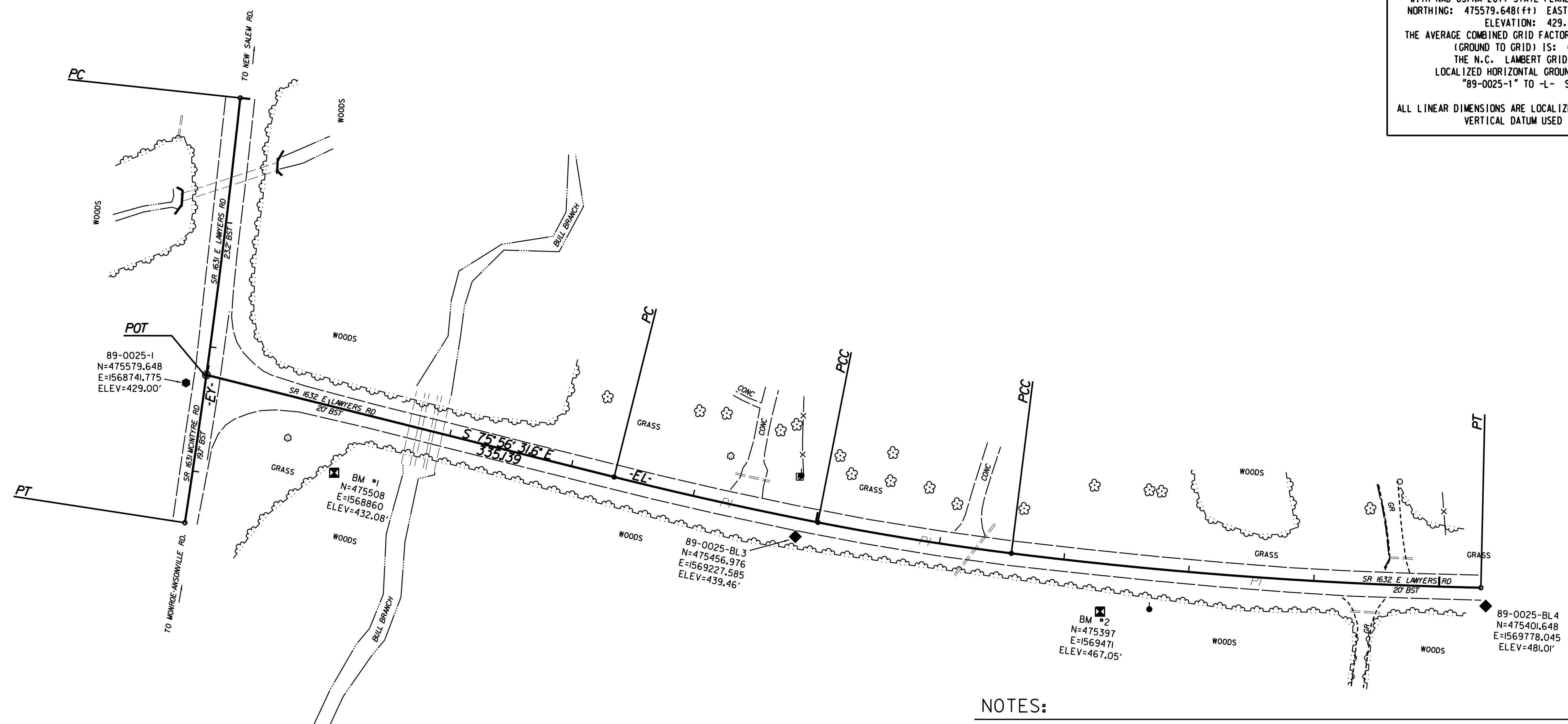
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "89-0025-1"

WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 475579.648(ft) EASTING: 1568741.775(ft)
ELEVATION: 429.001(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9998631116

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "89-0025-1" TO -L- STATION IS

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



89-0025-2
N=476186.8330
E=1568806.4120
ELEV=432.84'

89-0025-1
N=475579.648
E=1568741.775
ELEV=429.00'

BM #1
N=475508
E=1568860
ELEV=432.08'

89-0025-BL3
N=475456.976
E=1569227.585
ELEV=439.46'

BM #2
N=475397
E=1569471
ELEV=467.05'

89-0025-BL4
N=475401.648
E=1569778.045
ELEV=481.01'

REVISIONS

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.

STRUCTURE: PIPE 25 OVER BULL BRANCH
ON SR-1632 E LAWYERS RD
COUNTY: UNION

SEE SHEET RW02C-2 FOR
FUTHER ALIGNMENT DETAILS.


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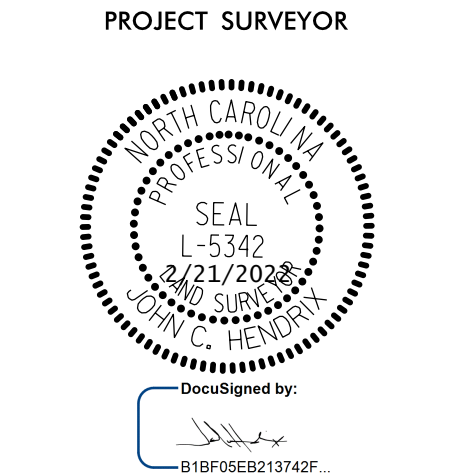
6/2/09

REVISIONS

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
89-0025	RW02C-2
Location and Surveys	
 <small>7500 EAST INDEPENDENCE BOULEVARD, SUITE 100 CHARLOTTE, NC 28227 phone: 704.537.7300 NIV5.com NC License # F-1333</small>	



EL									
POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	475586.017	1568758.063							
LINE			S 75°56'31.6" E	335.14					
PC	475504.611	1569083.165							
CURVE			S 77°25'57.1" E	166.46	02°58'50.9"(L T)	01°47'25.8"	166.48	83.26	3200.00
PCC	475468.391	1569245.638							
CURVE			S 80°54'44.3" E	156.21	03°58'43.3"(L T)	02°32'47.3"	156.24	78.15	2250.00
PCC	475443.718	1569399.889							
CURVE			S 85°48'32.8" E	375.35	05°48'53.7"(L T)	01°32'54.7"	375.51	187.92	3700.00
PT	475416.288	1569774.236							

EY									
POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
PC	475806.926	1568785.067							
CURVE			S 07°25'32.8" W	341.68	02°37'08.1"(RT)	00°45'59.1"	341.71	170.88	7475.77
PT	475468.113	1568740.908							

.....
 BM1 ELEVATION = 432.08
 N 475508 E 1568860
 BL STATION 6+32.00 41 RIGHT
 RR SPIKE SET IN 28" OAK

 BM2 ELEVATION = 467.05
 N 475397 E 1569471
 BL STATION 12+49.00 35 RIGHT
 RR SPIKE SET IN 16" OAK

BL	POINT	DESC.	NORTH	EAST	ELEVATION
1		890025-1	475579.6480	1568741.7750	429.00
3		890025-BL3	475456.9760	1569227.5850	439.46
4		890025-BL4	475401.6480	1569778.0450	481.01

BY	POINT	DESC.	NORTH	EAST	ELEVATION
2		890025-2	476186.8330	1568806.4120	432.84
E01		890025-1	475579.6480	1568741.7750	429.00

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.

STRUCTURE: PIPE 25 OVER BULL BRANCH
 ON SR-1632 E LAWYERS RD
 COUNTY: UNION

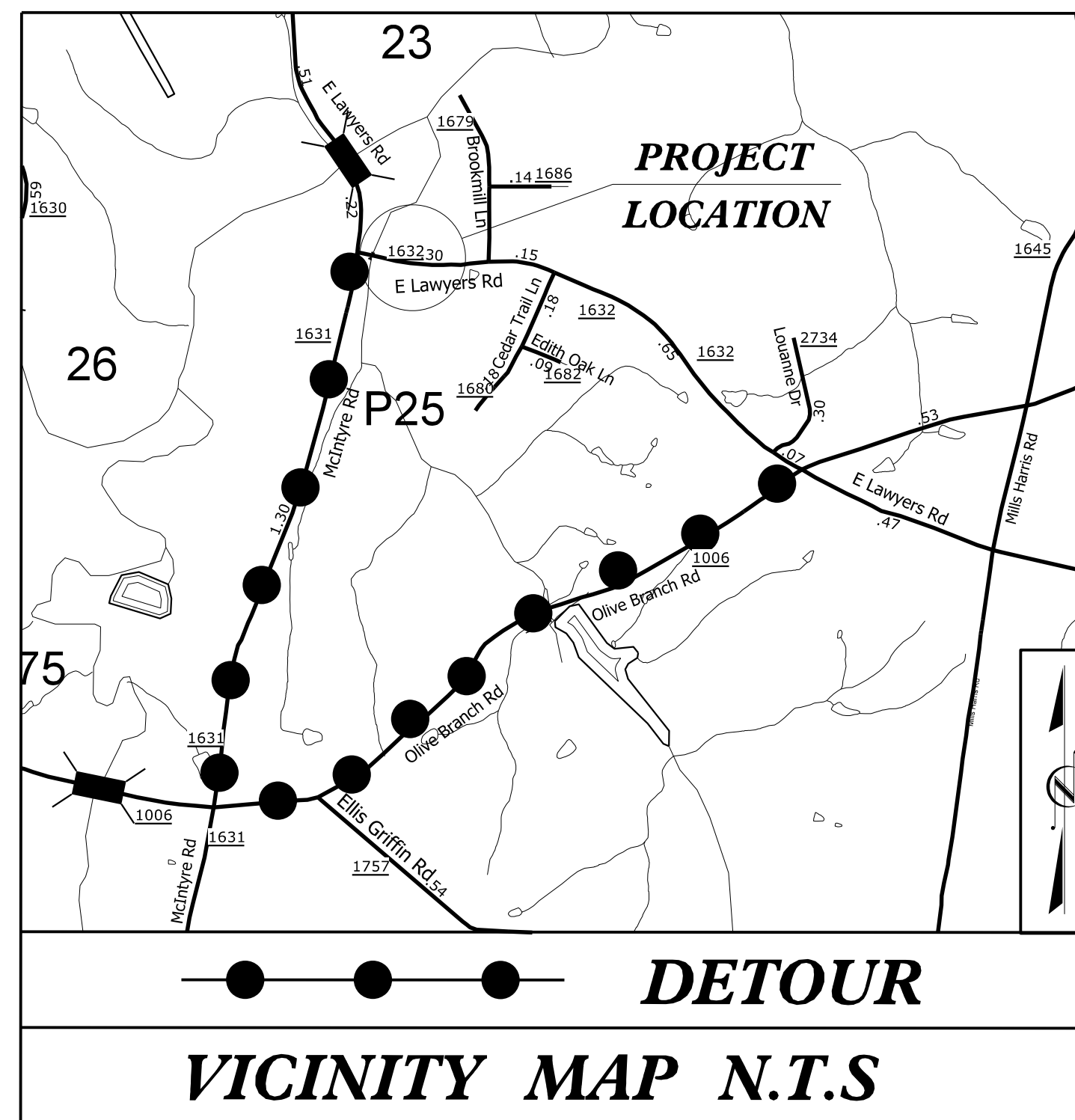
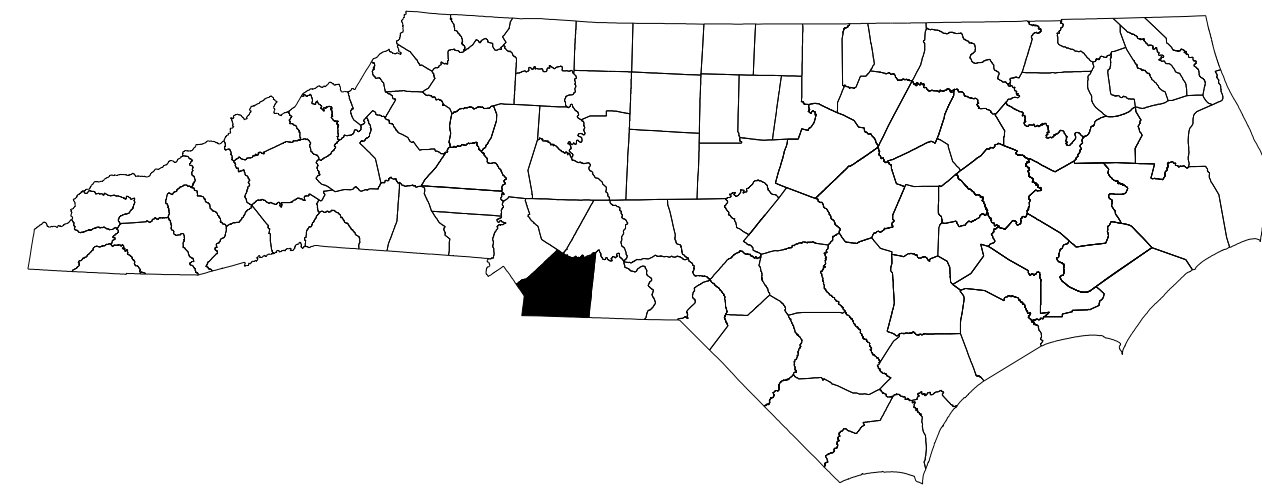
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 jbennett_AT_NIV5

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

UNION COUNTY

**LOCATION: BRIDGE NO. 890025 OVER BULL BRANCH
ON SR 1632 (E. LAWYERS RD.)**



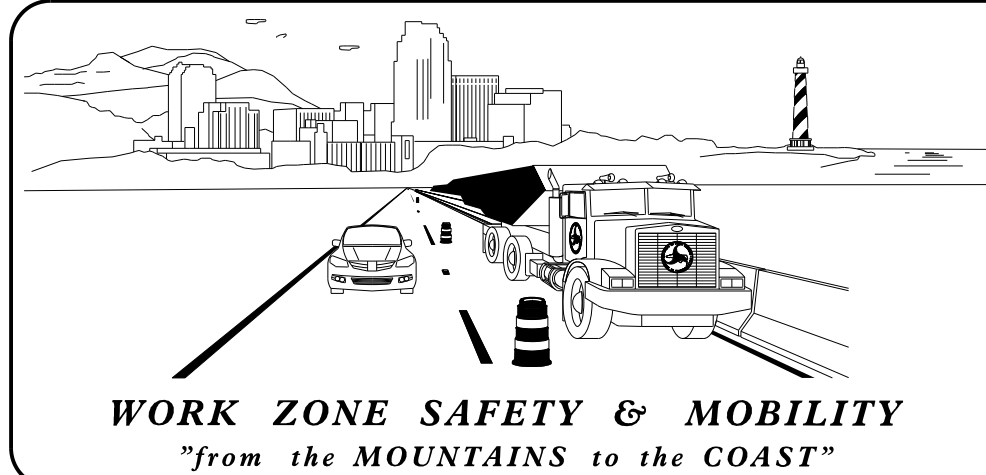
INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET, VICINITY MAP, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-1B	TRANSPORTATION OPERATIONS PLAN: MANAGEMENT STRATEGY, PHASING NOTES, AND GENERAL NOTES
TMP-2	E LAWYERS ROAD DETOUR SIGN DESIGN
TMP-3	E LAWYERS ROAD DETOUR ROUTE

SHEET NO.
TMP-1

PROJECT TIP: BP10-C005

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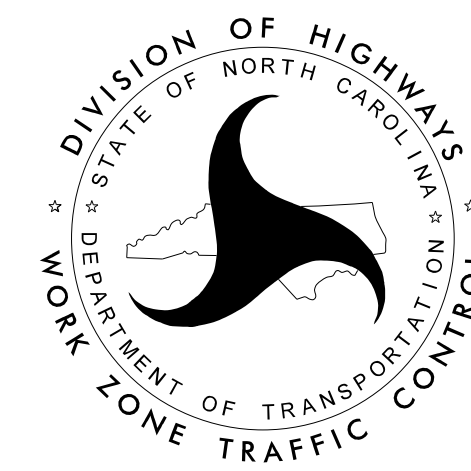


PLANS PREPARED BY:

ALLISON DRAKE, PE
PROJECT ENGINEER
REBECCA WRIGHT, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACTS:

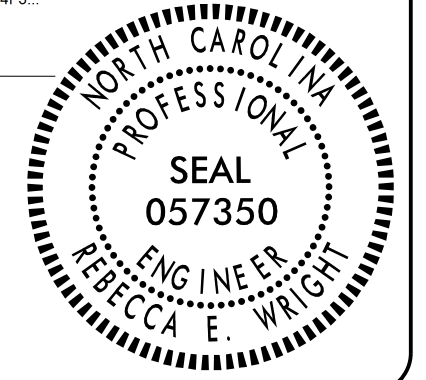
YANWEI MA, PE
NCDOT DIVISION 10 BRIDGE
PROGRAM MANAGER



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UNLESS ALL SIGNATURES COMPLETED**

APPROVED: *Rebecca E. Wright*
DATE: 4/10/2025

RS&H
NC FIRM LICENSE No: F-0493
1520 SOUTH BOULEVARD, SUITE 200
CHARLOTTE, NC 28203



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
1145.01	BARRICADES

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

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RS&H
 1520 SOUTH BOULEVARD, SUITE 200
 CHARLOTTE, NC 28203
 NC FIRM LICENSE No: F-0493

APPROVED: DATE: 4/10/2025			ROADWAY STANDARD DRAWINGS & LEGEND
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

PROJ. REFERENCE NO.	SHEET NO.
BP10-C005	TMP-1B

MANAGEMENT STRATEGY

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

RECOMMENDED STRATEGIES:

TRAFFIC MANAGEMENT STRATEGIES:
 FULL ROADWAY CLOSURES
 OFF-SITE DETOURS / USE OF ALTERNATIVE ROUTES

PHASING NOTES

STEP 1 - USING THE ROADWAY STANDARD DRAWINGS INCLUDED ON SHEET TMP-1A IN CONJUNCTION WITH THE SIGNS INCLUDED ON SHEETS TMP-2 AND TMP-3, CLOSE SR 1632 (E. LAWYERS RD.) AND PLACE TRAFFIC ON OFF-SITE DETOUR.

STEP 2 - REMOVE EXISTING STRUCTURE NO. 890025 AND CONSTRUCT PROPOSED ROADWAY, BRIDGE AND APPROACHES, UP TO AND INCLUDING THE FINAL LAYER OF SURFACE COURSE. PLACE FINAL PAVEMENT MARKING/MARKERS AND TIE-IN WITH EXISTING MARKERS.

STEP 3 - REMOVE ALL TRAFFIC CONTROL DEVICES AND REOPEN ROAD TO FINAL TRAFFIC PATTERN.

LOCAL NOTES

1. NOTIFY UNION COUNTY EMERGENCY SERVICES AND PUBLIC SCHOOLS AT LEAST ONE MONTH PRIOR TO ROAD CLOSURE.

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.

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.

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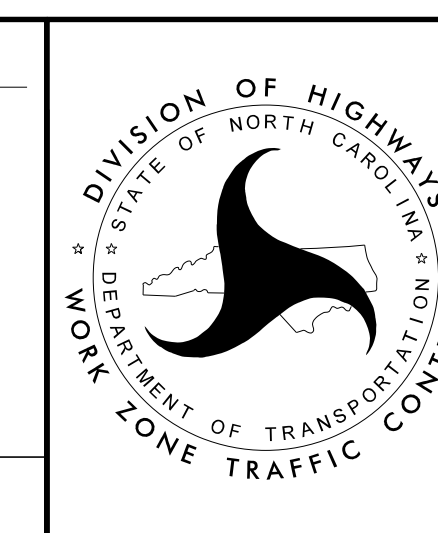
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 CHARLOTTE, NC 28203
 NC FIRM LICENSE No: F-0493

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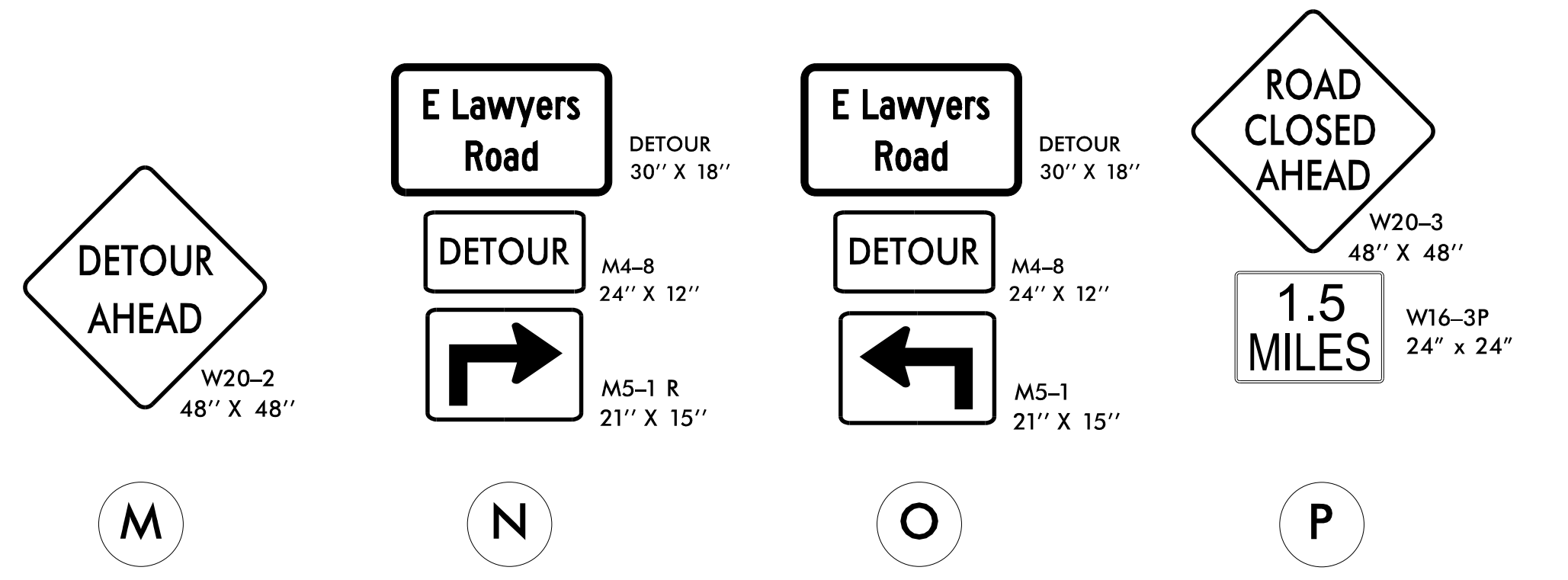
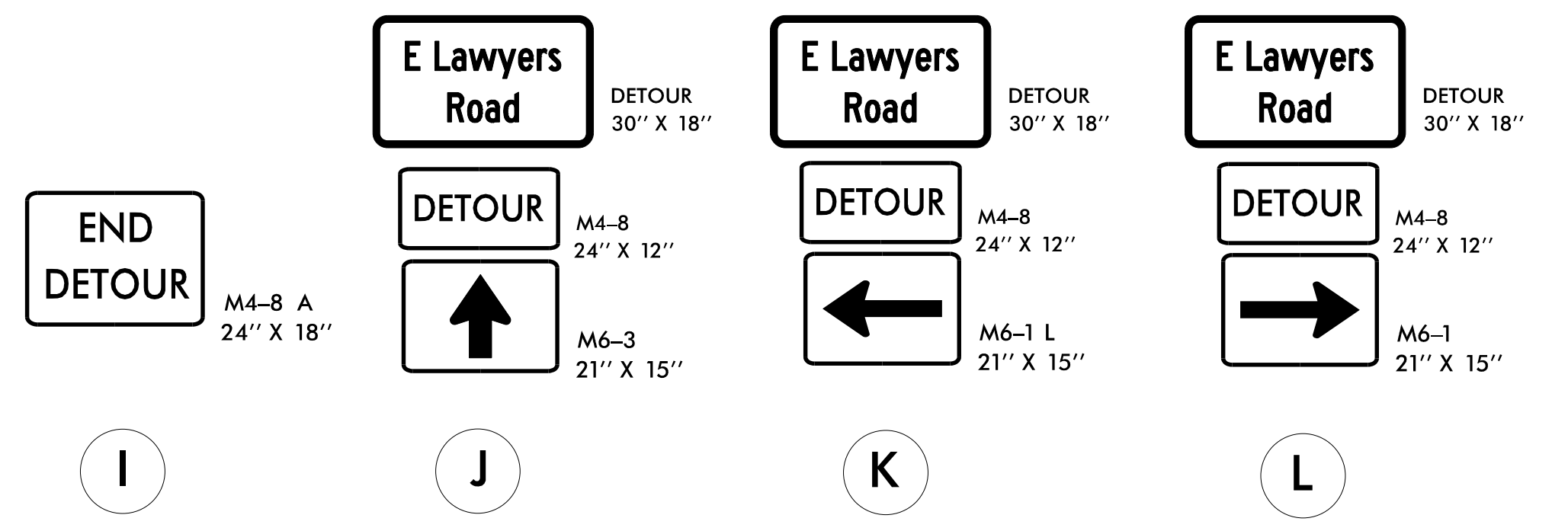
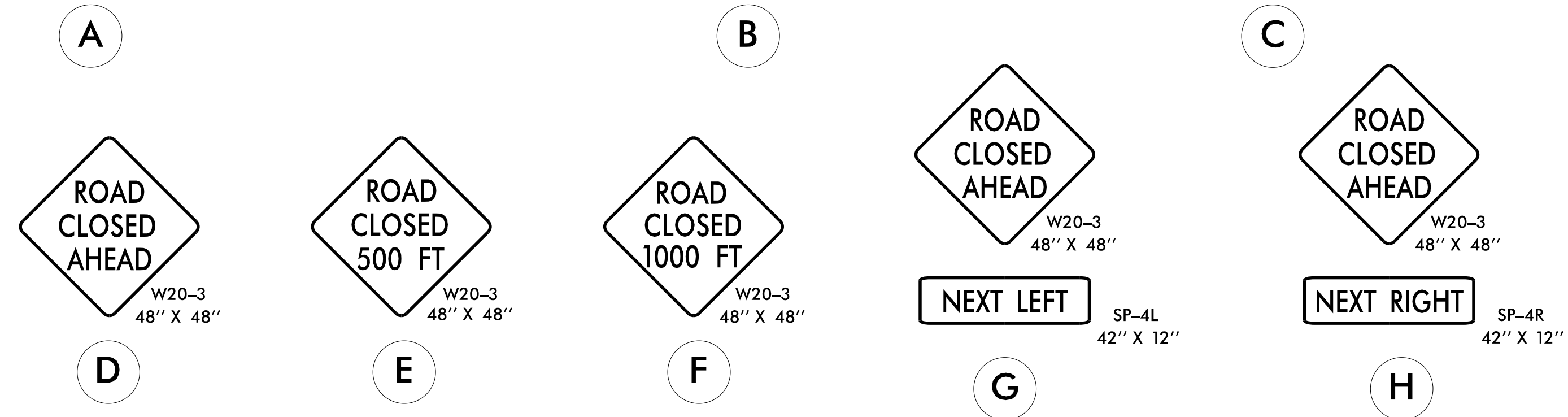
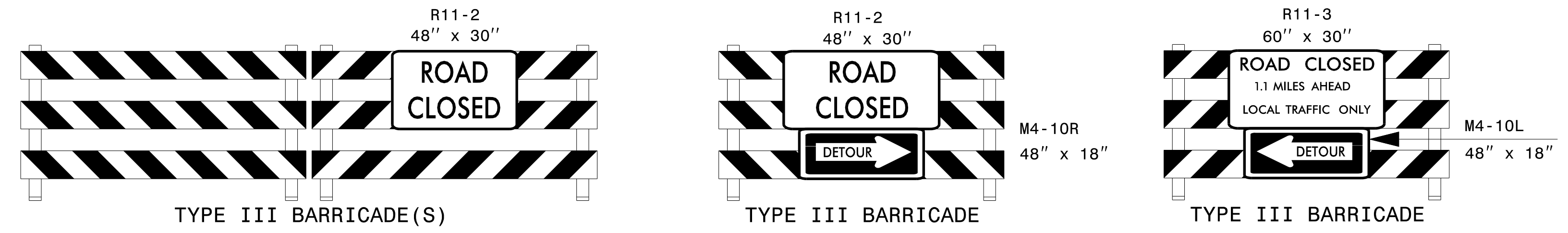
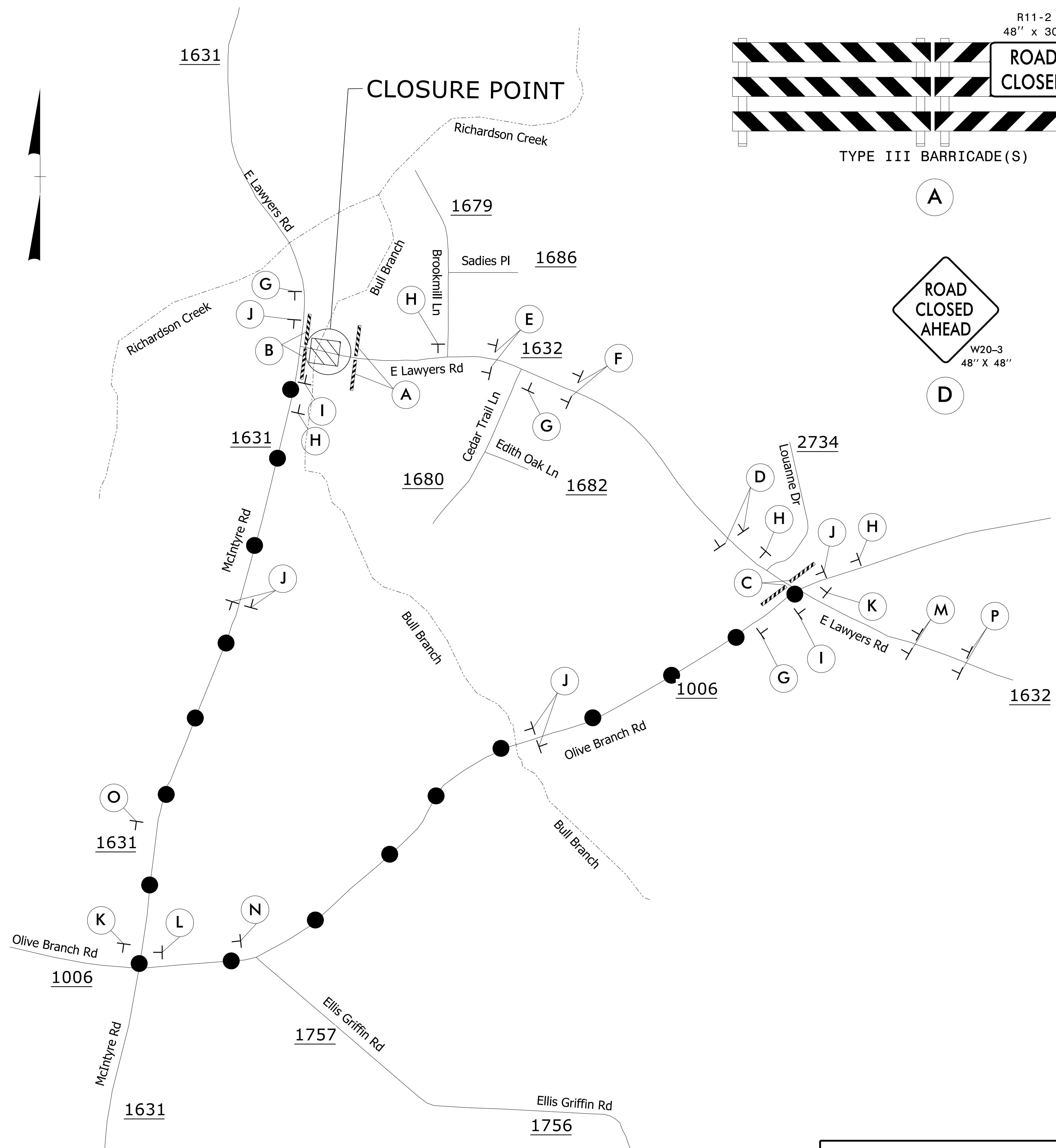
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 REBECCA E. WRIGHT
 ENGINEER
 057350
 NORTH CAROLINA
 PROFESSIONAL

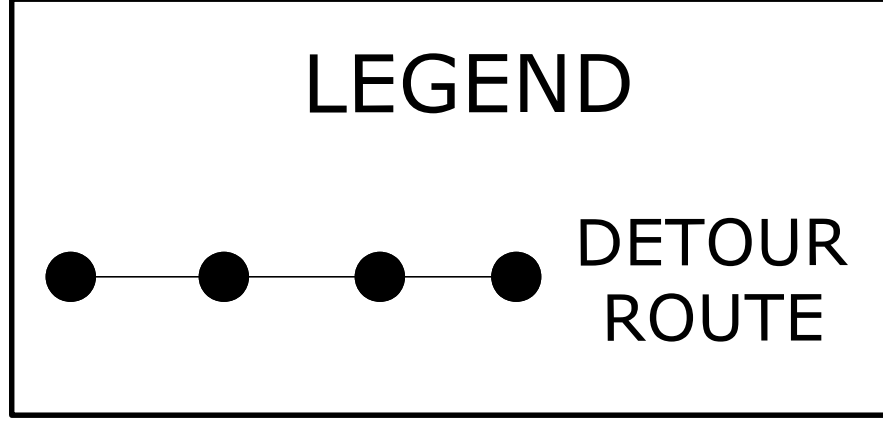
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**MANAGEMENT STRATEGY,
 PHASING NOTES,
 AND GENERAL NOTES**

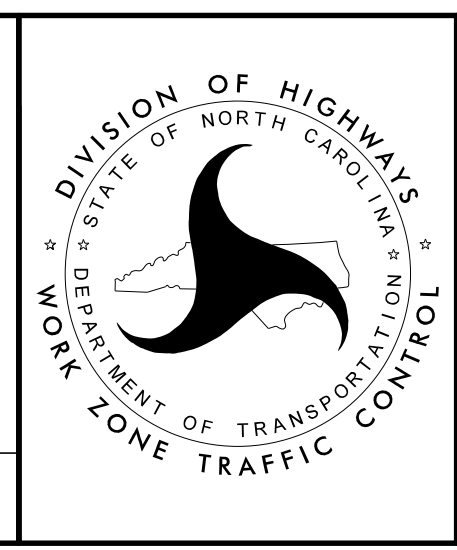


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APPROVED: *Rebecca E. Wright*
DATE: 4/10/2025

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RS&H 1520 SOUTH BOULEVARD, SUITE 200
CHARLOTTE, NC 28203
NC FIRM LICENSE No: F-0493

**E LAWYERS ROAD
DETOUR**

PROJECT TIP: BP10-C005

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**PAVEMENT MARKING PLAN
UNION COUNTY**

**LOCATION: BRIDGE NO. 890025 OVER BULL BRANCH
ON SR 1632 (E LAWYERS ROAD)**

<small>TIP NO.</small> BP10-C005	<small>SHEET NO.</small> PMP-1
<small>APPROVED:</small>	
<small>DATE:</small> 4/10/2025	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

INDEX

<u>SHEET NO.</u>	<u>DESCRIPTION</u>
PMP-1	PAVEMENT MARKING PLAN TITLE AND SCHEDULE SHEET
PMP-2	PAVEMENT MARKING DETAIL

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:

<small>ROAD NAME</small>	<small>MARKING</small>	<small>MARKER</small>
E LAWYERS RD	THERMOPLASTIC	INLAID RAISED
- 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.

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:

<u>STD. NO.</u>	<u>TITLE</u>
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.12	PAVEMENT MARKINGS - BRIDGES
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

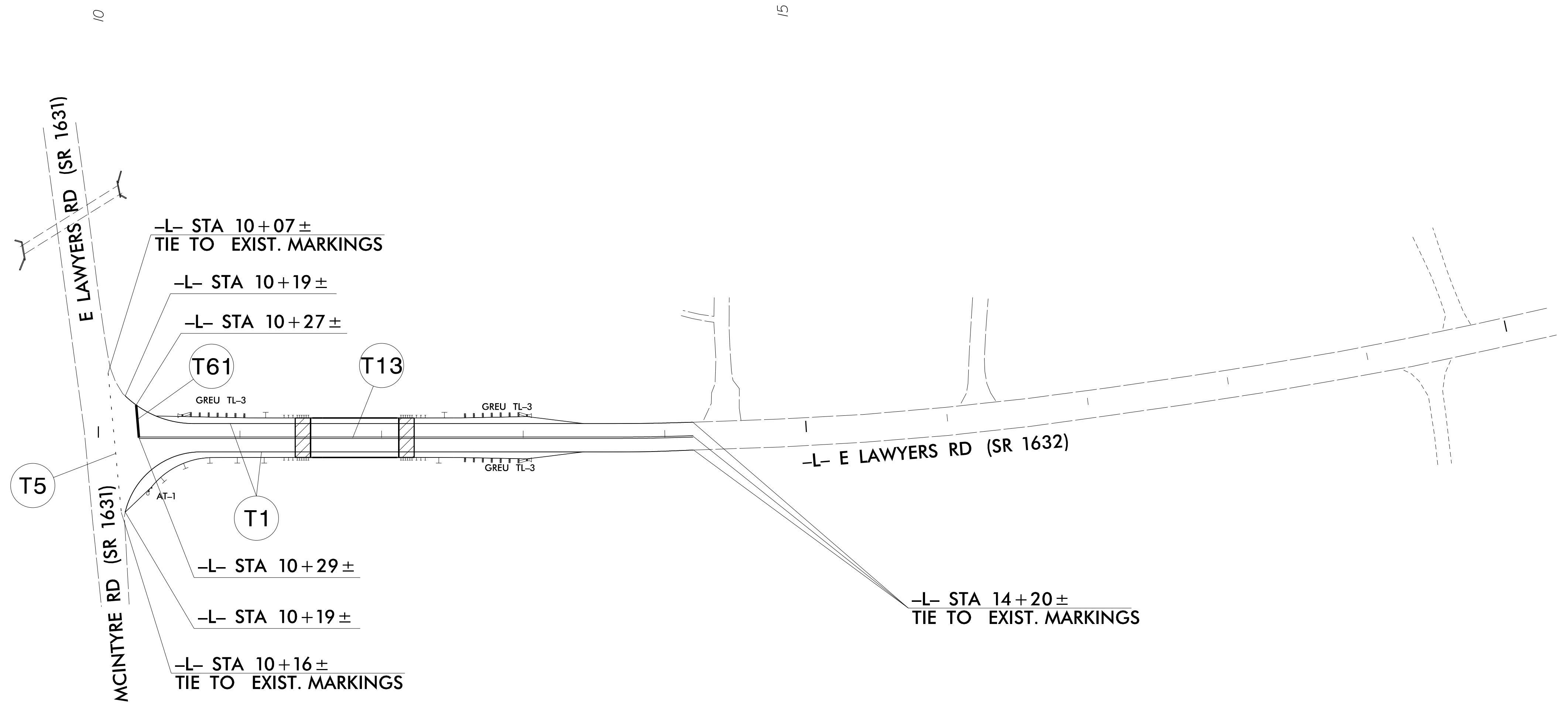
PAVEMENT MARKING SCHEDULE

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

PLAN SUBMITTED TO: NCDOT DIVISION 10	
YANWEI MA, PE NCDOT CONTACT	

PLAN PREPARED BY: RS&H	 <small>1520 SOUTH BOULEVARD, SUITE 200 CHARLOTTE, NC 28203 NC FIRM LICENSE No: F-0493</small>
ALLISON DRAKE, PE PROJECT ENGINEER	
REBECCA WRIGHT, PE PROJECT DESIGNER	

TIP NO.	SHEET NO.
BP10-C005	PMP-2
APPROVED: <i>Rebecca E. Wright</i>	
DATE: 4/10/2025	
SEAL	
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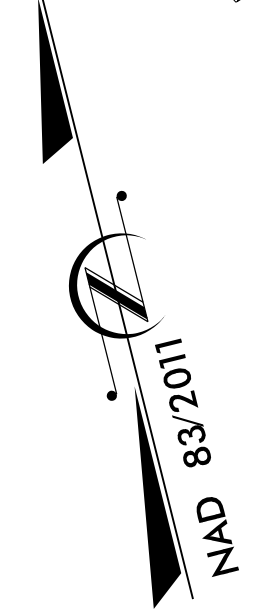
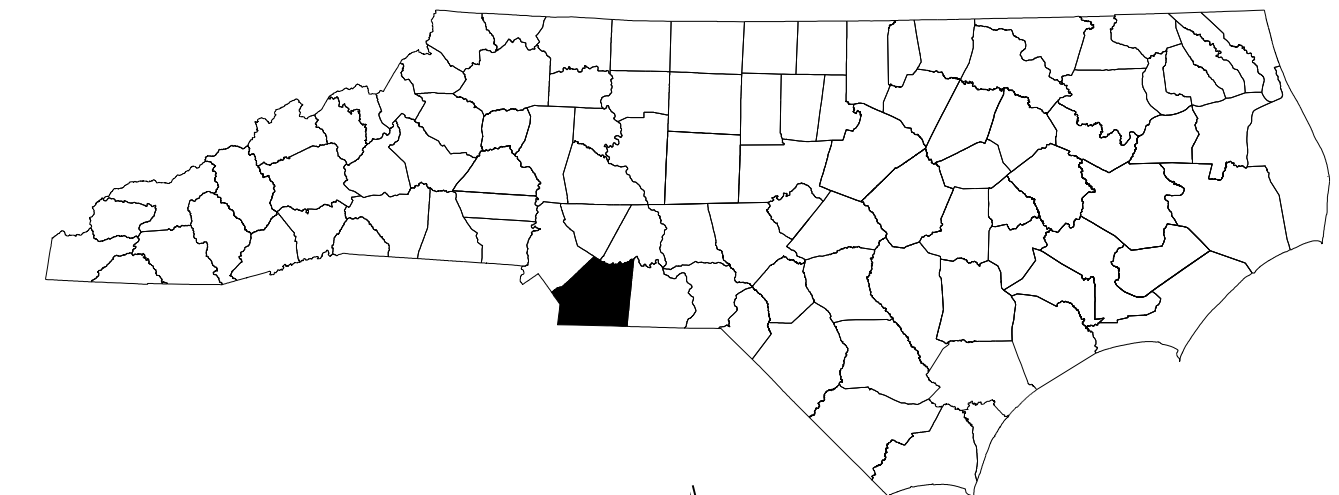


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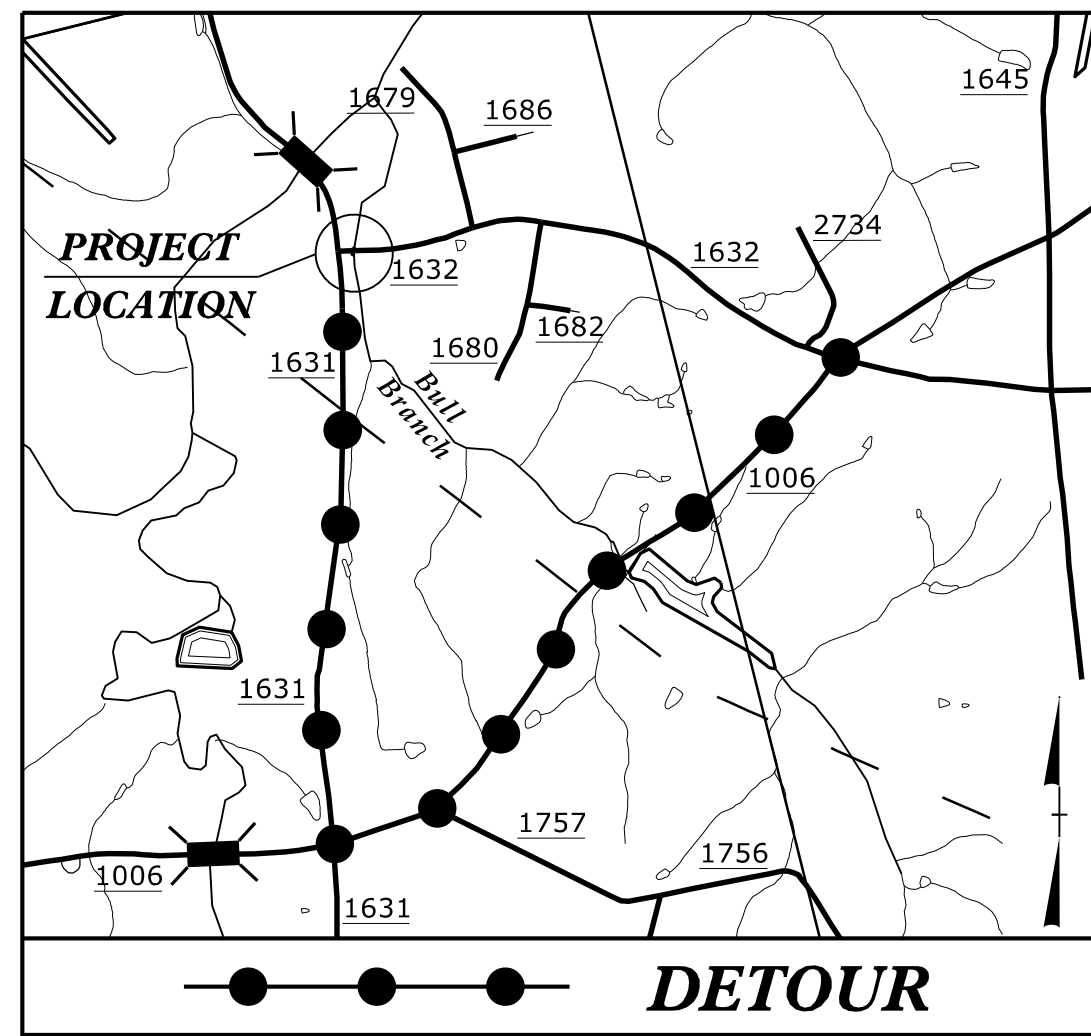
RS&H 1520 SOUTH BOULEVARD, SUITE 200
 CHARLOTTE, NC 28203
 NC FIRM LICENSE No: F-0493

PAVEMENT MARKING DETAIL

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP10-C005	EC-1	9
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
BP10.C005.1	N/A	PE	
BP10.C005.2	N/A	ROW/UTIL	
BP10.C005.3	N/A	CONST	



PROJECT TIP: BP10-C005



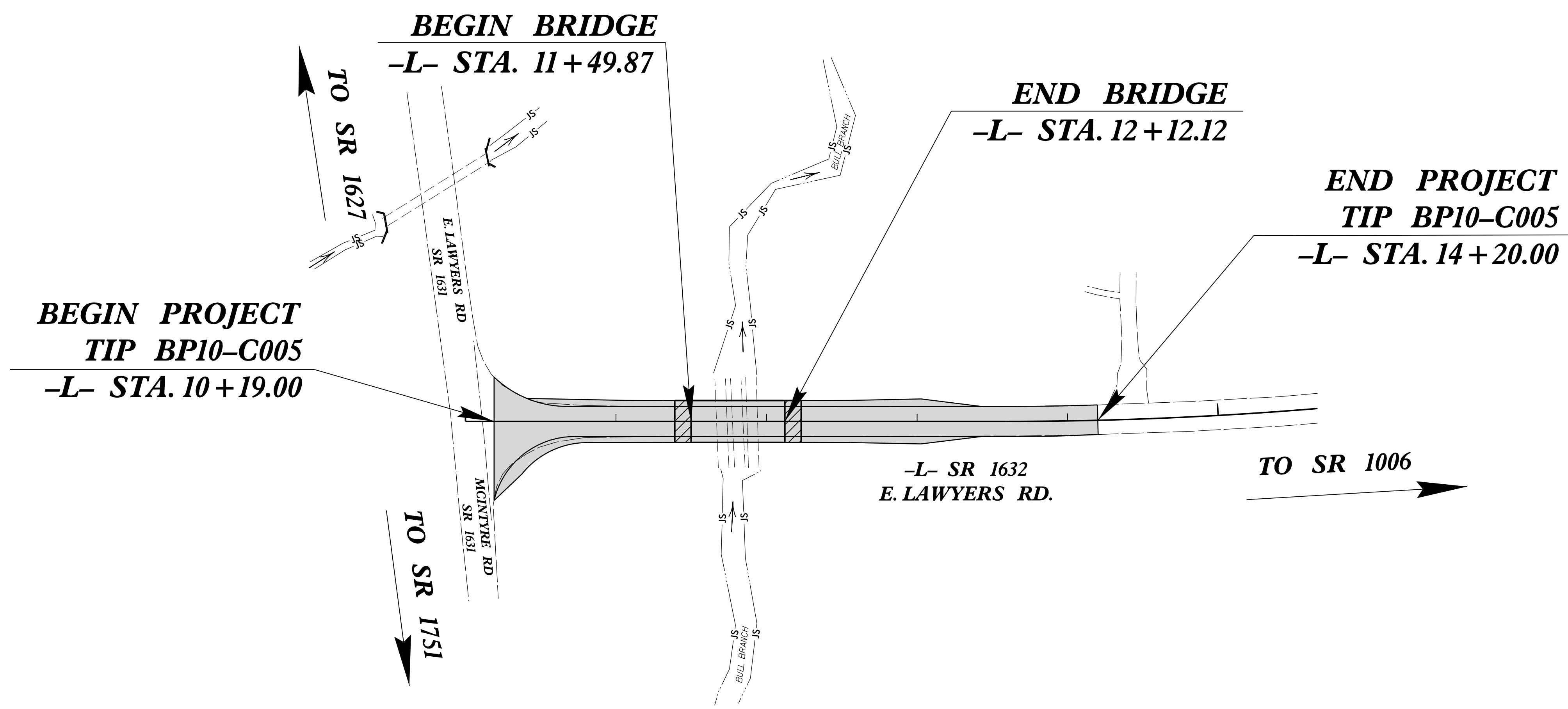
VICINITY MAP
NOT TO SCALE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

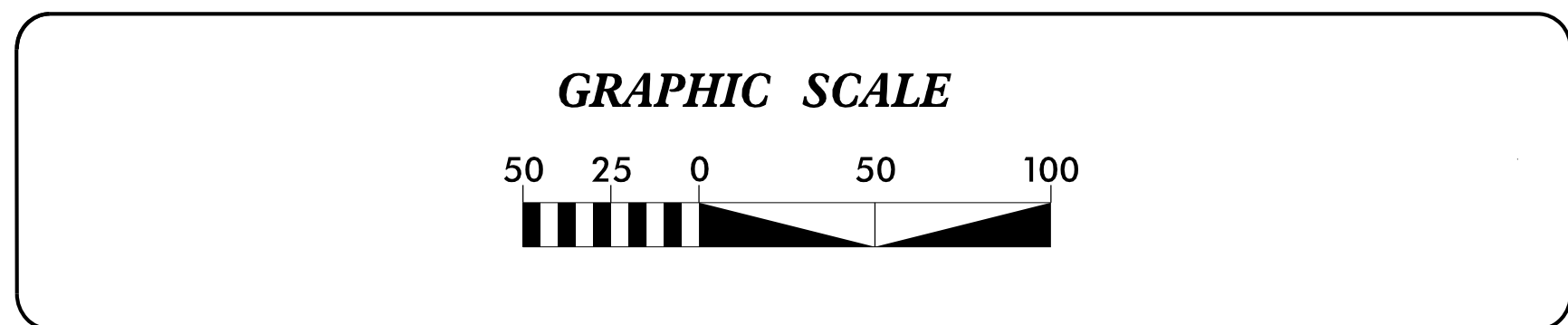
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

UNION COUNTY

**LOCATION: BRIDGE 890025 OVER BULL BRANCH
ON SR 1632 (E LAWYERS ROAD)**
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE (BRIDGE)



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



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



Prepared in the Office of:
RS&H
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

Designed by:
LILY MCKINNEY **4559**
NAME LEVEL III CERTIFICATION NO.

Roadway Standard Drawings

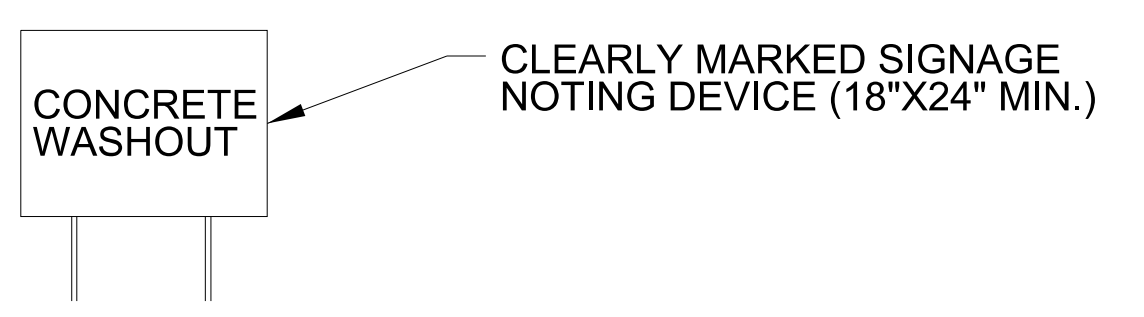
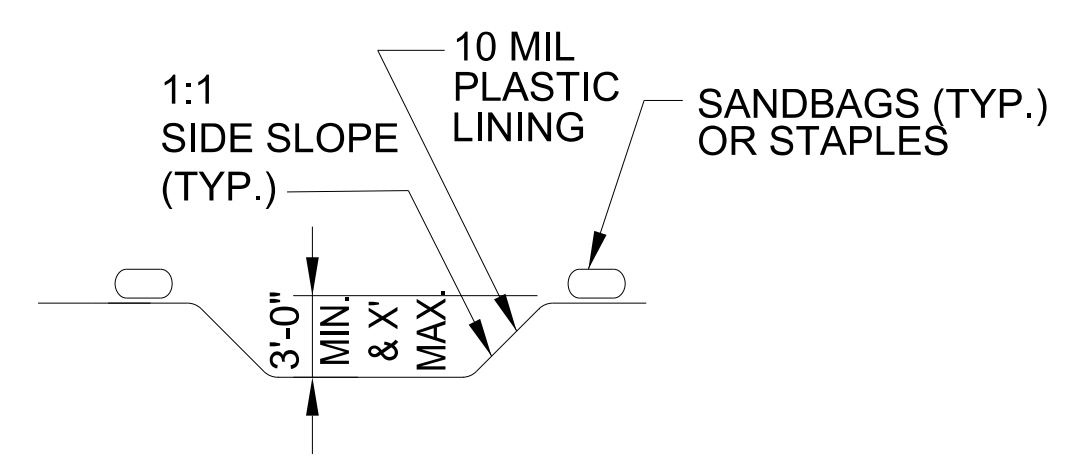
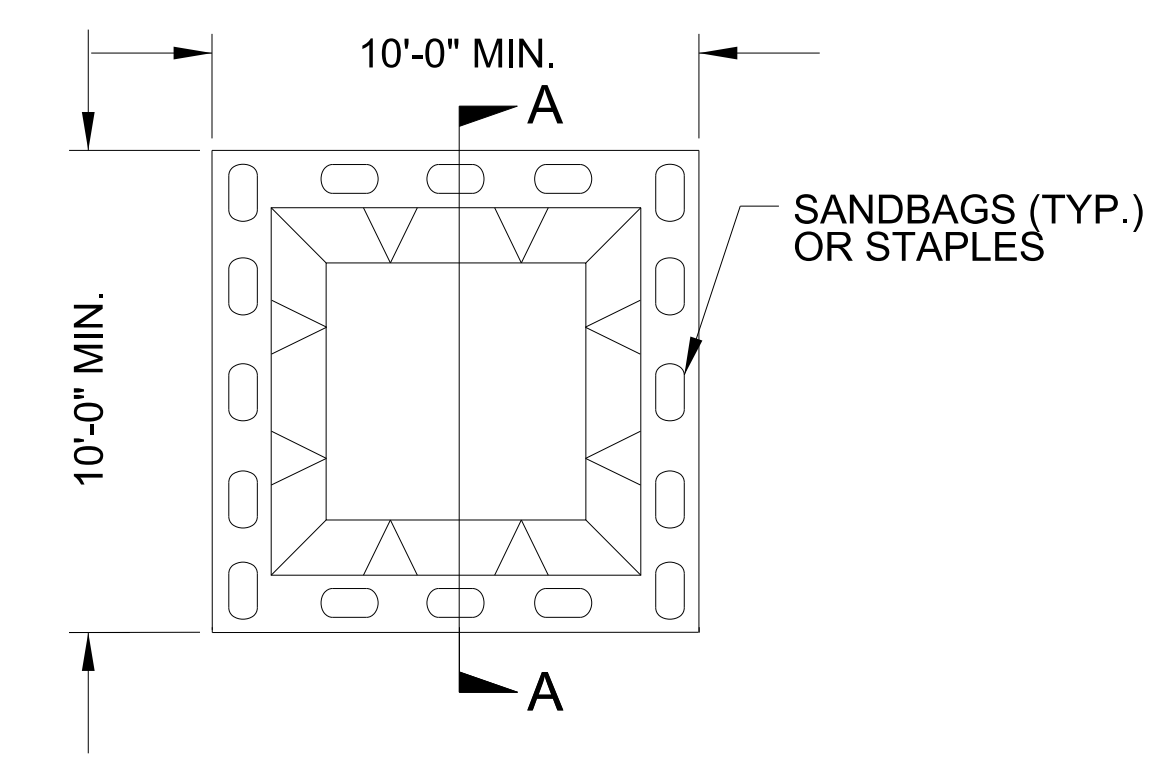
The "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2024 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

EROSION & SEDIMENT CONTROL LEGEND

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

ONSITE CONCRETE WASHOUT STRUCTURE WITH LINER



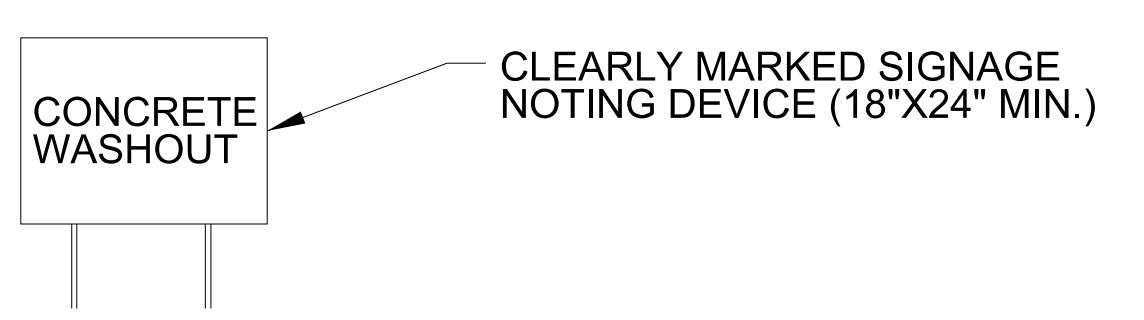
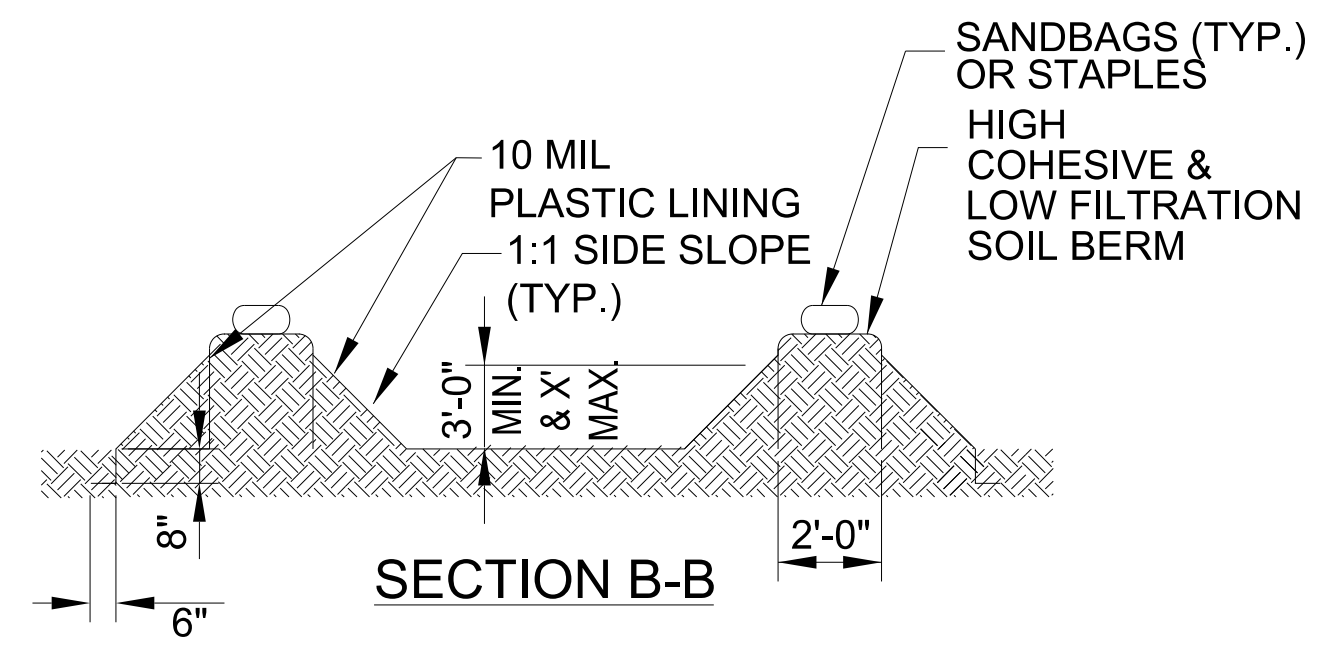
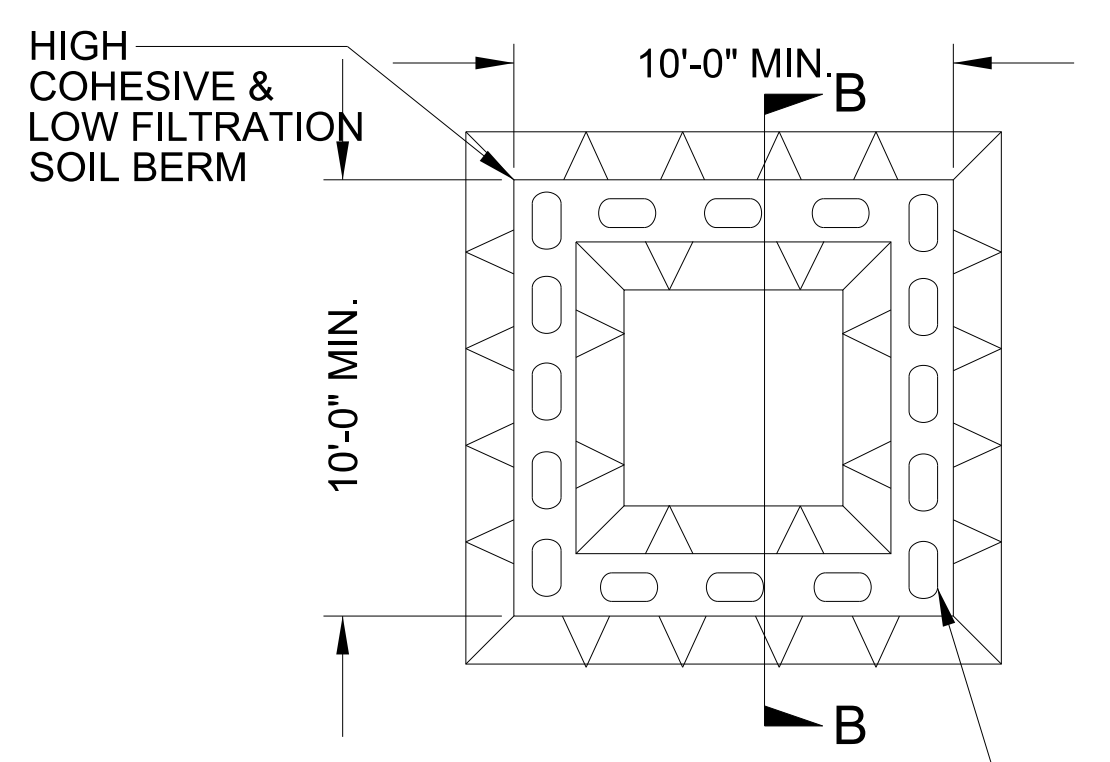
SECTION A-A

NOTES:

1. ACTUAL LOCATION DETERMINED IN FIELD
2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY.
3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE NOTING DEVICE.

PLAN

BELOW GRADE WASHOUT STRUCTURE NOT TO SCALE



NOTES:

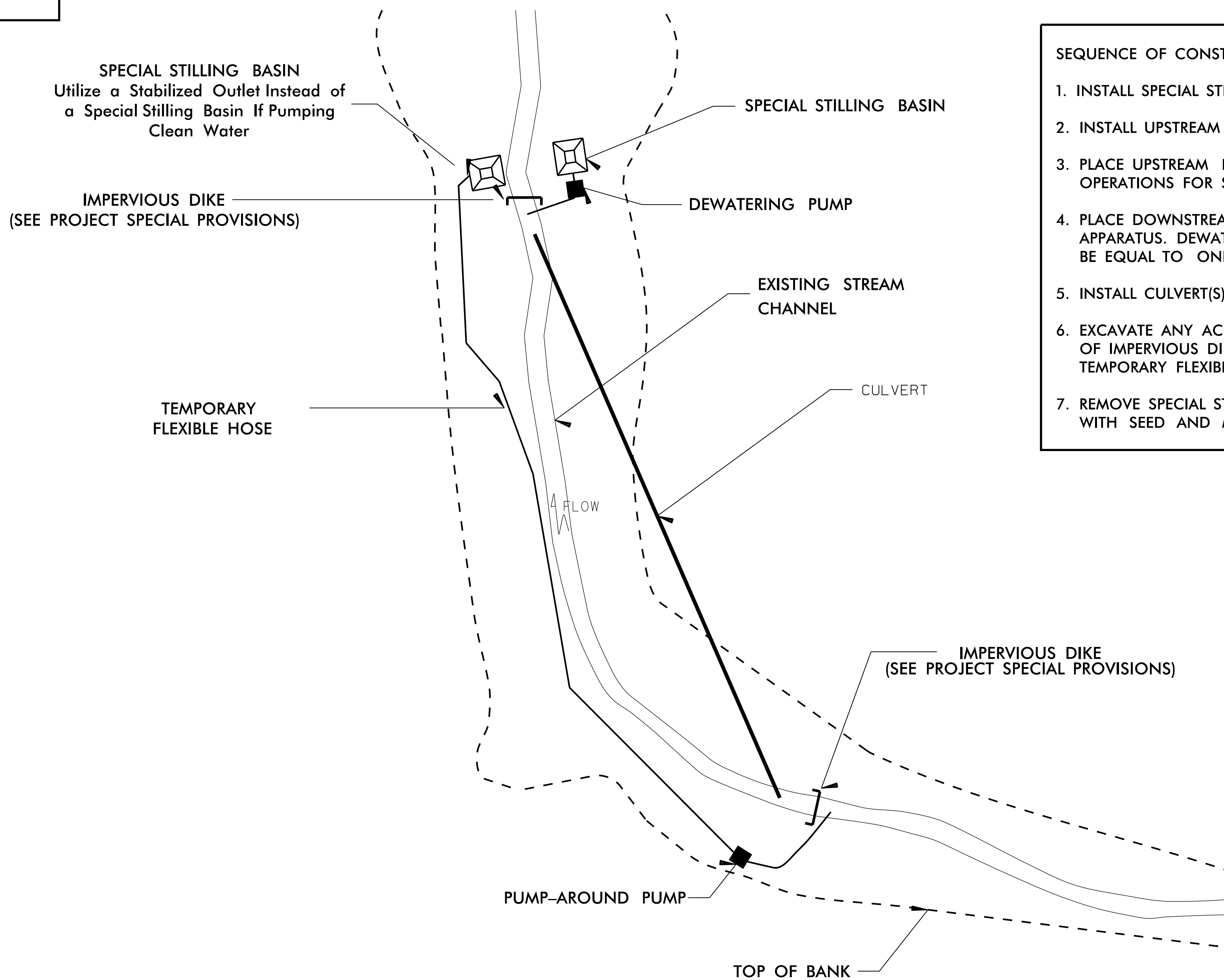
1. ACTUAL LOCATION DETERMINED IN FIELD
2. THE CONCRETE WASHOUT STRUCTURES SHALL BE MAINTAINED WHEN THE LIQUID AND/OR SOLID REACHES 75% OF THE STRUCTURES CAPACITY TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM 12 INCHES OF FREEBOARD.
3. CONCRETE WASHOUT STRUCTURE NEEDS TO BE CLEARLY MARKED WITH SIGNAGE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

PLAN

ABOVE GRADE WASHOUT STRUCTURE NOT TO SCALE

EXAMPLE OF PUMP-AROUND OPERATION

- NOTES:**
- 1) All excavation shall be performed in only dry or isolated areas of the work zone.
 - 2) Impervious dikes are to be used to isolate work from stream flow when necessary.
 - 3) Maintenance of stream flow operations shall be incidental to the work. This includes polyethylene sheeting, diversion pipes, pumps and hoses.
 - 4) Pumps and hoses shall be of sufficient size to dewater the work area.



- SEQUENCE OF CONSTRUCTION FOR TYPICAL WORK AREA**
1. INSTALL SPECIAL STILLING BASIN(S).
 2. INSTALL UPSTREAM PUMP AND TEMPORARY FLEXIBLE HOSE.
 3. PLACE UPSTREAM IMPERVIOUS DIKE AND BEGIN PUMPING OPERATIONS FOR STREAM DIVERSION.
 4. PLACE DOWNSTREAM IMPERVIOUS DIKE AND PUMPING APPARATUS. DEWATER ENTRAPPED AREA. AREA TO BE DEWATERED SHALL BE EQUAL TO ONE DAY'S WORK.
 5. INSTALL CULVERT(S) IN ACCORDANCE WITH THE PLANS.
 6. EXCAVATE ANY ACCUMULATED SILT AND DEWATER BEFORE REMOVAL OF IMPERVIOUS DIKES. REMOVE IMPERVIOUS DIKES, PUMPS, AND TEMPORARY FLEXIBLE HOSE. (DOWNSTREAM IMPERVIOUS DIKES FIRST).
 7. REMOVE SPECIAL STILLING BASIN(S) AND BACKFILL. STABILIZE DISTURBED AREA WITH SEED AND MULCH.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

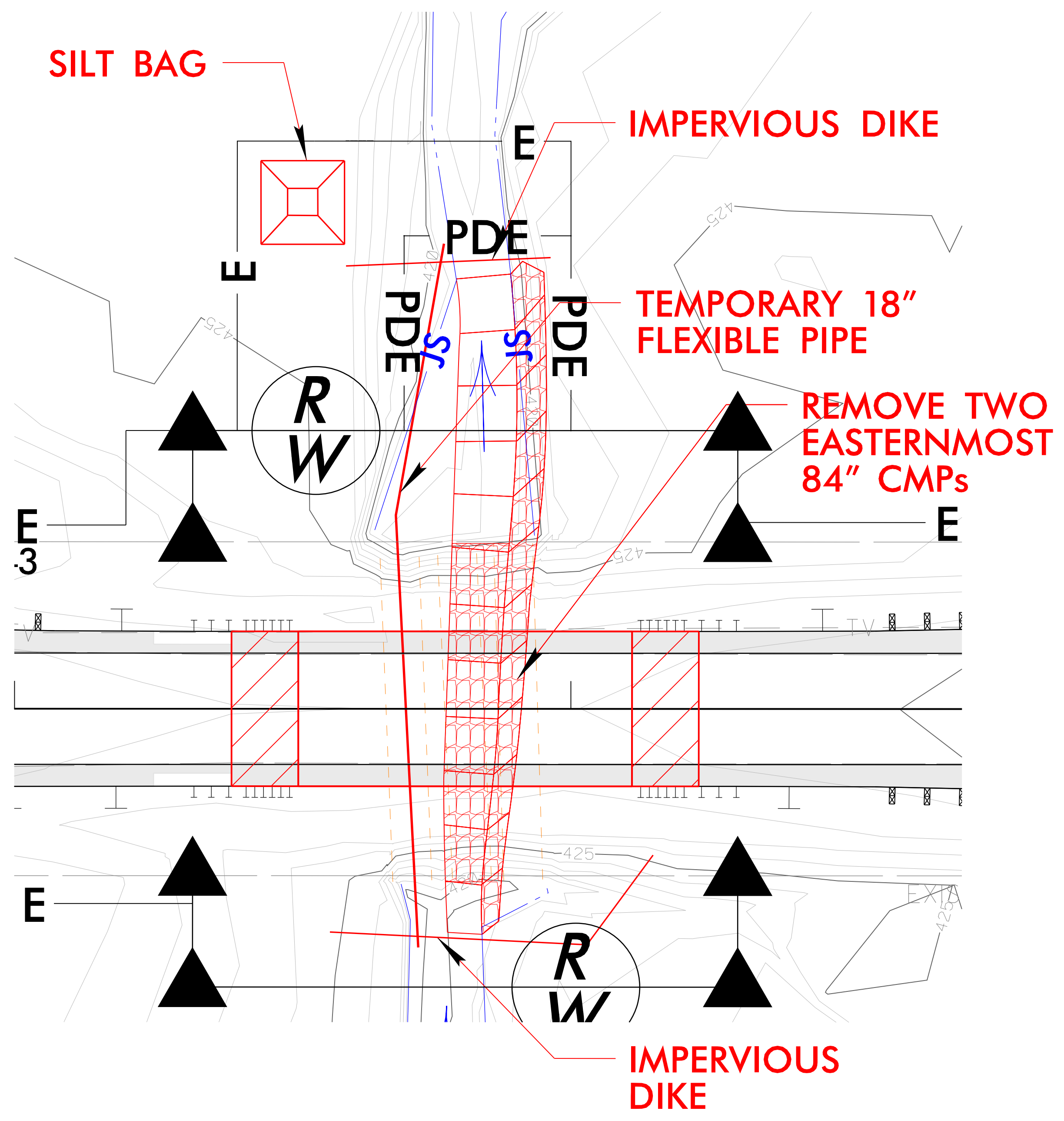
<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES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

BULL BRANCH CHANNEL CONSTRUCTION SEQUENCE

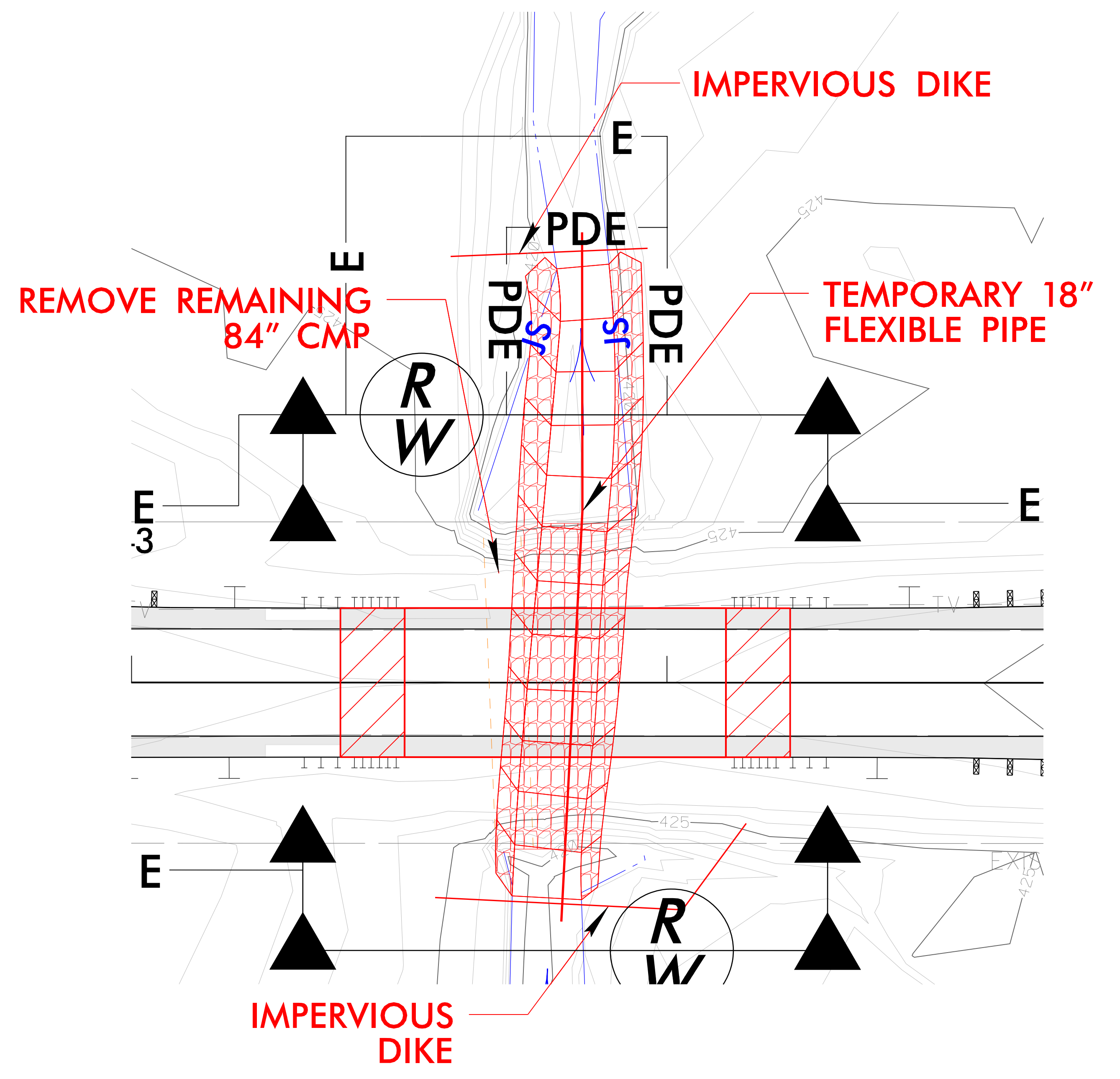
1. UTILIZE SPECIAL STILLING BASIN(S) DURING CULVERT CONSTRUCTION AS NEEDED.
2. INSTALL 18 INCH TEMPORARY PIPE. CONSTRUCT IMPERVIOUS DIKES AND DIVERT FLOW THROUGH THE TEMPORARY PIPE.
3. STAGE 1 – REMOVE THE TWO EASTERNMOST 84" CORRUGATED METAL PIPES AND THEN CONSTRUCT AS MUCH OF THE PROPOSED CHANNEL AS POSSIBLE.
4. RELOCATE THE TEMPORARY 18" PIPE TO LIE WITHIN THE CONSTRUCTED SECTION OF THE PROPOSED CHANNEL.
5. STAGE 2 – REMOVE THE LAST 84" CORRUGATED METAL PIPE AND FINISH CONSTRUCTION OF THE PROPOSED CHANNEL.
6. REMOVE IMPERVIOUS DIKES, ALLOWING FLOW THROUGH THE PROPOSED CHANNEL.

RS&H 8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

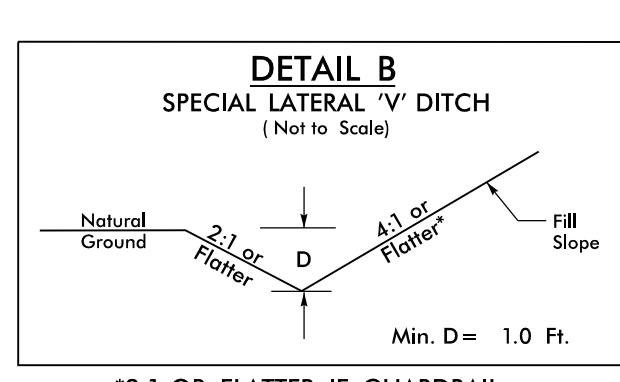
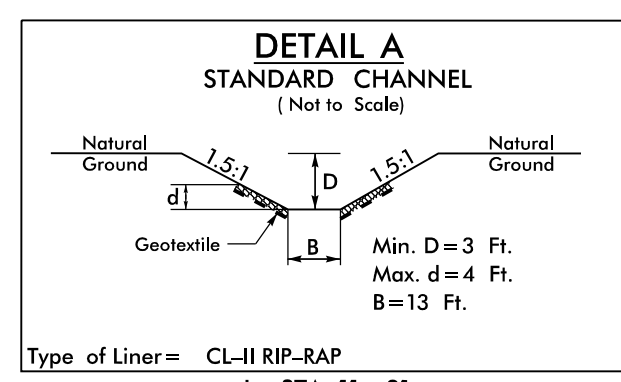
STAGE 1



STAGE 2



8/17/99
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 RS&H\Projects\PSH\BP10\C005_EC.dwg EC-5.dgn
 \$\$\$\$USERNAME\$\$\$\$



CL-II RIP-RAP
-L- STA. 11+81
EST 136 TONS CL-II RIP-RAP
EST 144 SY GEOTEXTILE
EST 250 CY DDE

*2:1 OR FLATTER IF GUARDRAIL
FROM -L- STA. 10+50 TO STA. 11+31 LT

WILLIAM WELDON BRASWELL AND,
DAVID ELTON BRASWELL
DB CS20 PG 145
DB 327 PG 261 (NOT FOUND)

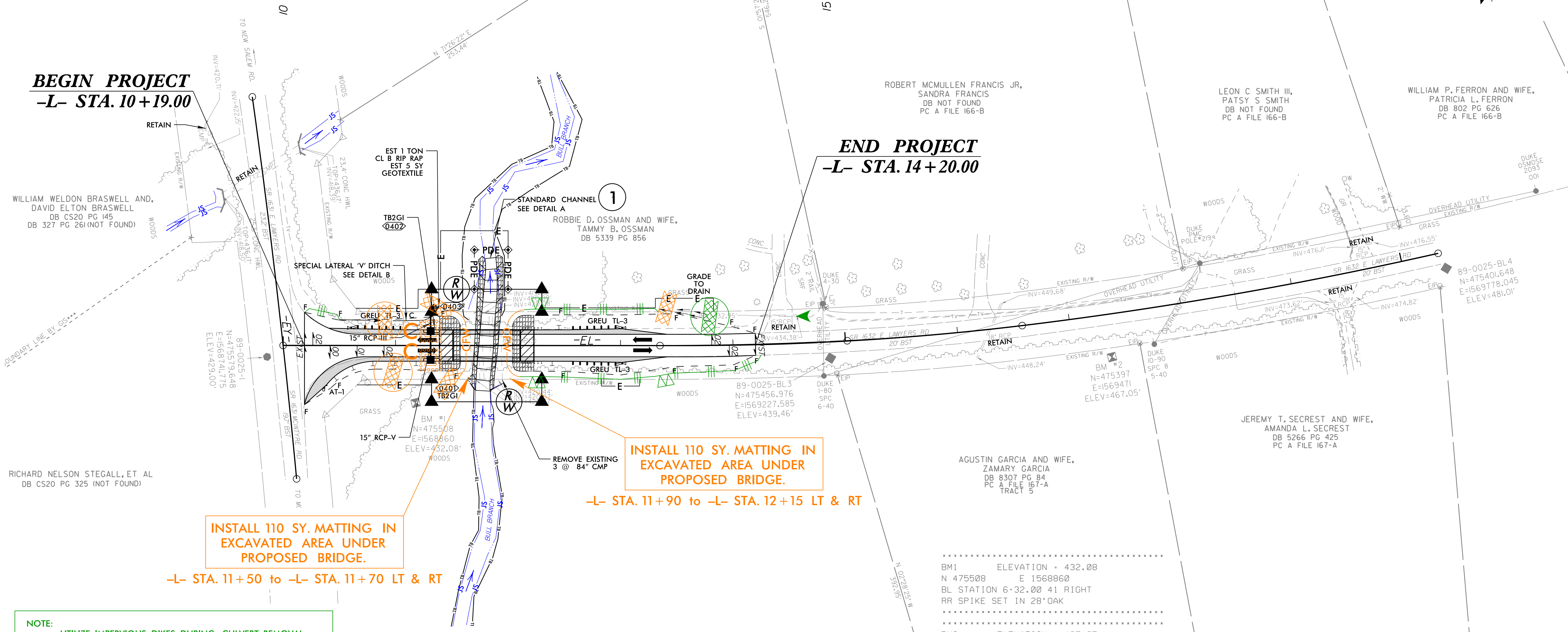
NOTE:
THE EXISTING DRAINAGE DITCHES ARE ALL STABLE AND HAVE NO SIGNS OF EROSION. THE EXISTING 72" CROSS PIPE UNDER SR 1631 IS IN GOOD CONDITION AND DOES NOT HAVE SIGNIFICANT SEDIMENT ACCUMULATION. THE EXISTING 3@84" CROSS PIPES ARE IN POOR CONDITION. THE EXISTING 18" CROSS PIPE AT -L- STA. 16+29 IS IN GOOD CONDITION. THE EXISTING DRIVEWAY PIPES IN THE VICINITY OF THE PROJECT ARE IN FAIR CONDITION.

SBG FROM 11+25.00 TO 11+39.00 -L- LT & RT

-L- CURVE DATA
PI Sta 15+15.49 PI Sta 18+52.75
 $\Delta = 7^{\circ}10'31.9"$ (LT) $\Delta = 5^{\circ}35'56.0"$ (LT)
 $D = 2^{\circ}17'30.6"$ $D = 1^{\circ}32'54.7"$
 $L = 313.09'$ $L = 361.56'$
 $T = 156.75'$ $T = 180.92'$
 $R = 2,500.00'$ $R = 3,700.00'$
 $SE = EXIST$ $SE = EXIST$

BEGIN PROJECT
-L- STA. 10+19.00

END PROJECT
-L- STA. 14+20.00



INSTALL 110 SY. MATTING IN EXCAVATED AREA UNDER PROPOSED BRIDGE.
-L- STA. 11+50 to -L- STA. 11+70 LT & RT

INSTALL 110 SY. MATTING IN EXCAVATED AREA UNDER PROPOSED BRIDGE.
-L- STA. 11+90 to -L- STA. 12+15 LT & RT

NOTE:
UTILIZE IMPERVIOUS DIKS DURING CULVERT REMOVAL WHERE APPLICABLE.

NOTE:
STABILIZE STREAM BANKS WITH PERMANENT GROUND COVER UPON REMOVAL OF EXISTING STRUCTURE

NOTE:
STABILIZE PROPOSED EXCAVATION LIMITS WITH COIR FIBER MATTING AND NATIVE SEED UPON COMPLETION OF THE EXCAVATION.

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

.....
BM1 ELEVATION = 432.08
N 475508 E 1568860
BL STATION 6+32.00 41 RIGHT
RR SPIKE SET IN 28" OAK
.....
BM2 ELEVATION = 467.05
N 475397 E 1569471
BL STATION 12+49.00 35 RIGHT
RR SPIKE SET IN 16" OAK
.....

REVISIONS

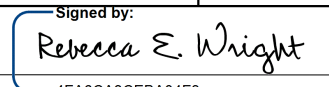

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PROJECT TIP: BP10-C005

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**SIGNING PLAN
UNION COUNTY**

**LOCATION: BRIDGE NO. 890025 OVER BULL BRANCH
ON SR 1632 (E LAWYERS ROAD)**

TIP NO. BP10-C005	SHEET NO. SIGN-1
APPROVED:  4/10/2025	DATE: 4/10/2025
SEAL 	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

ROADWAY STANDARD DRAWING

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

STD. NO.	TITLE
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS

GENERAL NOTES

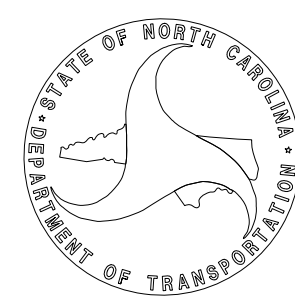
- . SIGNS FURNISHED BY STATE
- . CONFIRM IN WRITING AT LEAST 4 MONTHS IN ADVANCE, THE ACTUAL DATE THE DEPARTMENT FURNISHED SIGNS WILL BE REQUIRED.
- . ALL TYPE 'D' SIGNS SHALL BE MOUNTED ON TWO U-CHANNEL POSTS UNLESS OTHERWISE INDICATED ON THE PLANS.
- . IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (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
- . 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.
- . SEE ROADWAY PLANS FOR GUARD/GUIDE RAIL DETAILS.


SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	30	L.F.
4102000000	904	SIGN ERECTION, TYPE E	1	EA.
4116100000	904	SIGN ERECTION, RELOCATE SIGN TYPE D	2	EA.
4116100000	904	SIGN ERECTION, RELOCATE SIGN TYPE E	1	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	5	EA.
4192000000	907	DISPOSAL OF SUPPORT, U-CHANNEL	2	EA.

INDEX

SHEET NO.	DESCRIPTION
SIGN-1	TITLE SHEET
SIGN-2	EXISTING AND PROPOSED SIGN DETAIL

PLAN SUBMITTED TO: NCDOT DIVISION 10	
YANWEI MA, PE NCDOT CONTACT	

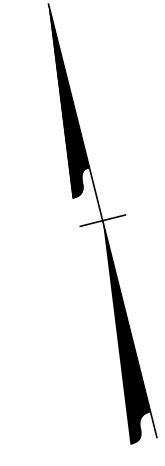
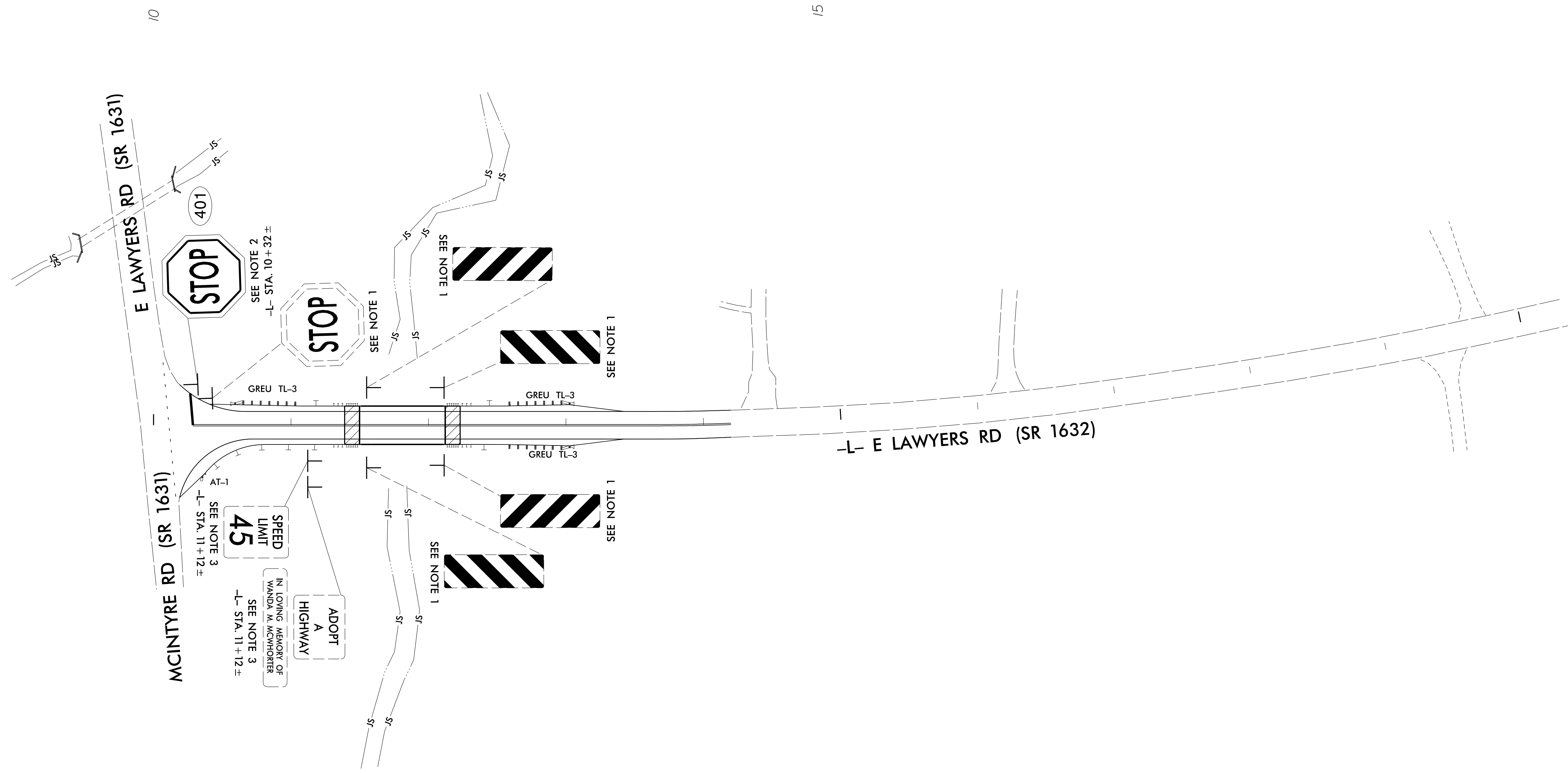
PLAN PREPARED BY: RS&H	 1520 SOUTH BOULEVARD, SUITE 200 CHARLOTTE, NC 28203 NC FIRM LICENSE No: F-0493
ALLISON DRAKE, PE PROJECT ENGINEER	
REBECCA WRIGHT, PE PROJECT DESIGNER	

TIP NO.	SHEET NO.
BP10-C005	SIGN-2
APPROVED: <i>Rebecca E. Wright</i>	
DATE: 4/10/2025	
SEAL	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

401 QUANTITY REQ'D 1

R1-1
30 X 30

ONE "U" POST PER SIGN



20

PROJECT NOTES

1. DISPOSAL OF SIGN SYSTEM, U-CHANNEL
2. SIGN ERECTION, TYPE D, E, AND F, U-CHANNEL
3. RELOCATE SIGN SYSTEM, TYPE D, E, AND F, U-CHANNEL

RS&H 1520 SOUTH BOULEVARD, SUITE 200
CHARLOTTE, NC 28203
NC FIRM LICENSE No: F-0493

**EXISTING AND PROPOSED
SIGN DETAIL**

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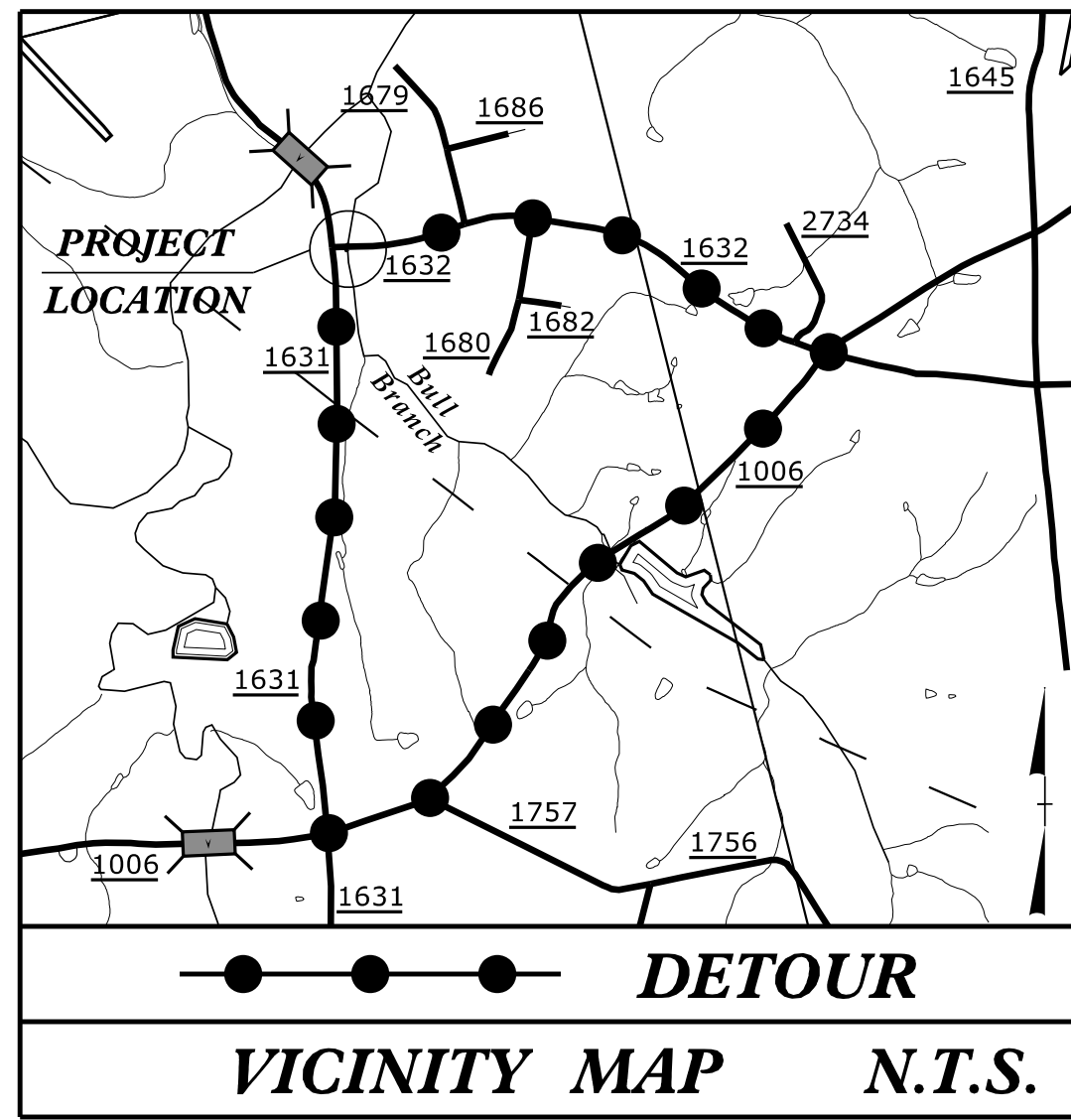
11/15/22

TIP PROJECT: BP10-C005

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

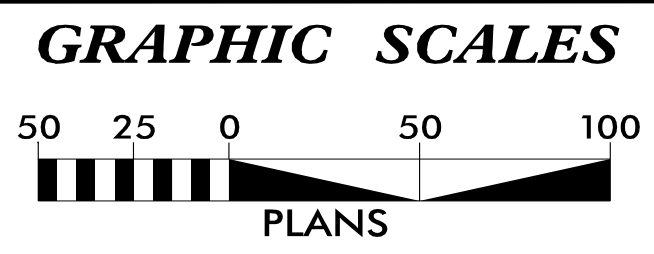
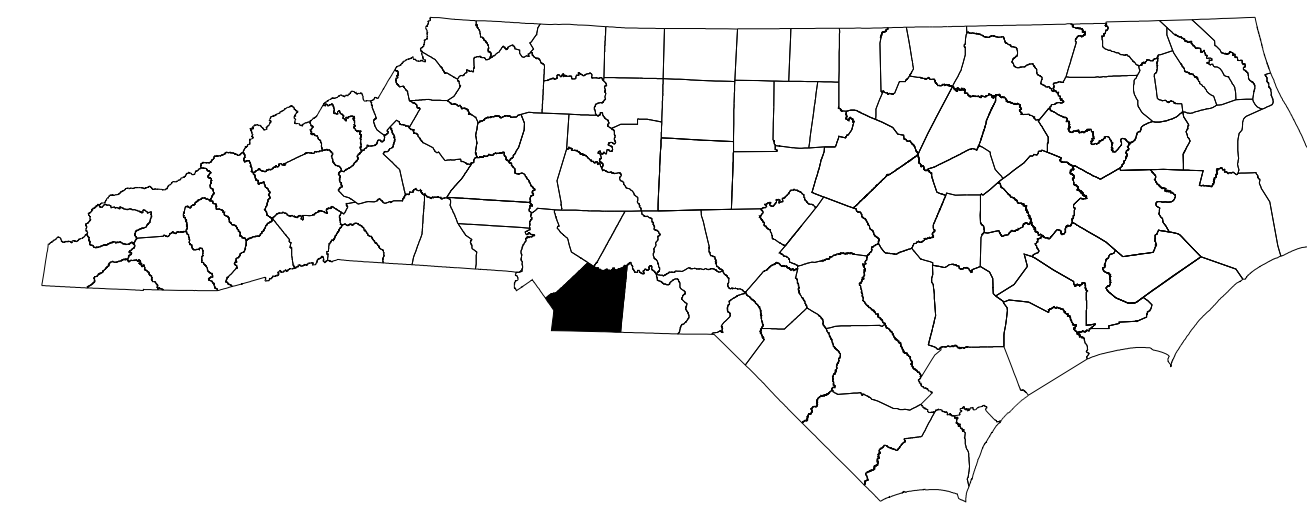
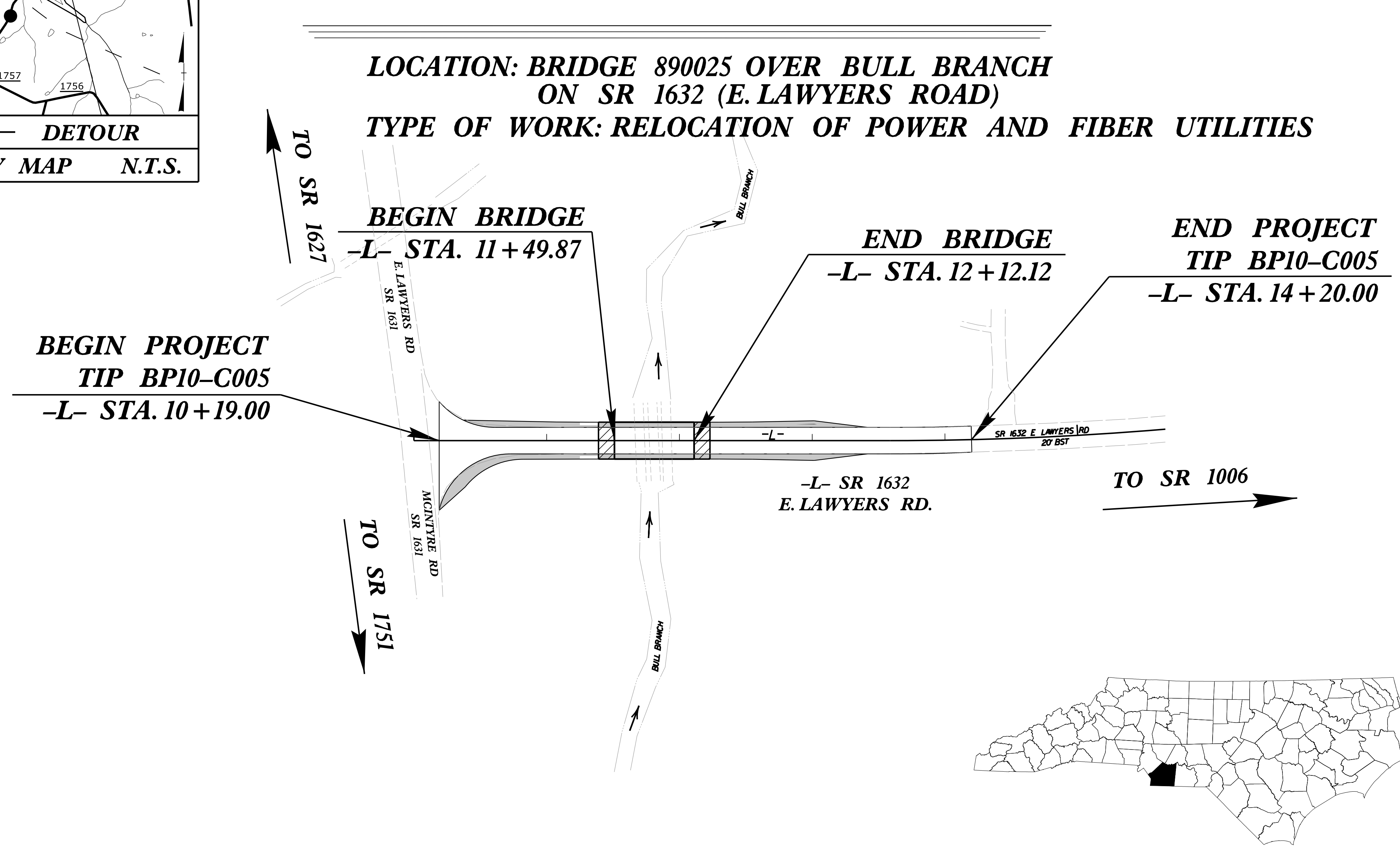
T.I.P. NO.	SHEET NO.
BP10-C005	UO-1

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.



UTILITIES BY OTHERS PLANS UNION COUNTY

LOCATION: BRIDGE 890025 OVER BULL BRANCH ON SR 1632 (E. LAWYERS ROAD)
TYPE OF WORK: RELOCATION OF POWER AND FIBER UTILITIES



INDEX OF SHEETS

SHEET NO.:	DESCRIPTION:
UO-1	TITLE SHEET
UO-2	UBO SYMBOLOGY SHEET
UO-3	OMITTED
UO-4	UBO PLAN SHEETS

UTILITY OWNERS WITH CONFLICTS

(A) POWER - DUKE ENERGY
(B) FIBER - SPECTRUM

PROJECT LET: MAY 21, 2025

PREPARED IN THE OFFICE OF:

Johnson, Mirmiran, & Thompson, Inc.

2550 W. Tyvola Rd.
Charlotte, NC 28217
License No. C-3097

Nick Asaro, PLS UTILITY PROJECT MANAGER
Bill Black PROJECT UTILITY COORDINATOR

**DIVISION OF HIGHWAYS
DIVISION 10**

DIV ADDRESS
716 W. MAIN STREET
ALBEMARLE, NC 28001

Adam Preslar SENIOR DIVISION UTILITY COORDINATOR
Lynn Basinger DIVISION UTILITY ENGINEER

2/10/2025 1:30:00 PM
...\\BP10.C005.3-UTIL_UO-1.dgn
User:invasarfo

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS



UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	
11¼ Degree Bend	
22½ Degree Bend	
45 Degree Bend	
90 Degree Bend	
Plug	
Tee	
Cross	
Reducer	
Gate Valve	
Butterfly Valve	
Tapping Valve	
Line Stop	
Line Stop with Bypass	
Blow Off	
Fire Hydrant	
Relocate Fire Hydrant	
Remove Fire Hydrant	
Water Meter	
Relocate Water Meter	
Remove Water Meter	
Water Pump Station	
RPZ Backflow Preventer	
DCV Backflow Preventer	
Relocate RPZ Backflow Preventer	
Relocate DCV Backflow Preventer	

PROPOSED SEWER SYMBOLS

Gravity Sewer Line (Sized as Shown)	
Force Main Sewer Line (Sized as Shown)	
Manhole (Sized per Note)	
Sewer Pump Station	

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Telephone Pedestal	
Utility Line by Others (Type as Shown)	
Trenchless Installation	
Encasement by Open Cut	
Encasement	

Thrust Block	
Air Release Valve	
Utility Vault	
Concrete Pier	
Steel Pier	
Plan Note	
Pay Item Note	

EXISTING UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Utility Pole	
Utility Pole with Base	
H-Frame Pole	
Power Transmission Line Tower	
Water Manhole	
Power Manhole	
Telephone Manhole	
Sanitary Sewer Manhole	
Hand Hole for Cable	
Power Transformer	
Telephone Pedestal	
CATV Pedestal	
Gas Valve	
Gas Meter	
Located Miscellaneous Utility Object	
Abandoned According to Utility Records	
End of Information	

*Underground Power Line	
*Underground Telephone Cable	
*Underground Telephone Conduit	
*Underground Fiber Optics Telephone Cable	
*Underground TV Cable	
*Underground Fiber Optics TV Cable	
*Underground Gas Pipeline	
Aboveground Gas Pipeline	
*Underground Water Line	
Aboveground Water Line	
*Underground Gravity Sanitary Sewer Line	
Aboveground Gravity Sanitary Sewer Line	
*Underground SS Forced Main Line	
Underground Unknown Utility Line	
SUE Test Hole	
Water Meter	
Water Valve	
Fire Hydrant	
Sanitary Sewer Cleanout	

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

UTILITIES BY OTHERS

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



Johnson, Mirmiran, & Thompson, Inc.
 2550 W. Tyvola Rd.
 Charlotte, NC 28217
 License No. C-3097

WILLIAM P. FERRON AND WIFE,
 PATRICIA L. FERRON
 DB 802 PG 626
 PC A FILE 166-B

LEON C SMITH III,
 PATSY S SMITH
 DB NOT FOUND
 PC A FILE 166-B

ROBERT MCMULLEN FRANCIS JR.,
 SANDRA FRANCIS
 DB NOT FOUND
 PC A FILE 166-B

WILLIAM WELDON BRASWELL AND,
 DAVID ELTON BRASWELL
 DB CS20 PG 145
 DB 327 PG 261 (NOT FOUND)

WILLIAM WELDON BRASWELL AND,
 DAVID ELTON BRASWELL
 DB CS20 PG 145
 DB 327 PG 261 (NOT FOUND)

BEGIN PROJECT
TIP BP10-C005
-L- STA. 10+19.00

END PROJECT
TIP BP10-C005
-L- STA. 14+20.00

-L- PT Sta. 20+33.39

SPECTRUM LINE IS DEACTIVATED
 AND ABANDONED. NO CONFLICT.

ROBBIE D. OSSMAN AND WIFE,
 TAMMY B. OSSMAN
 DB 5339 PG 856

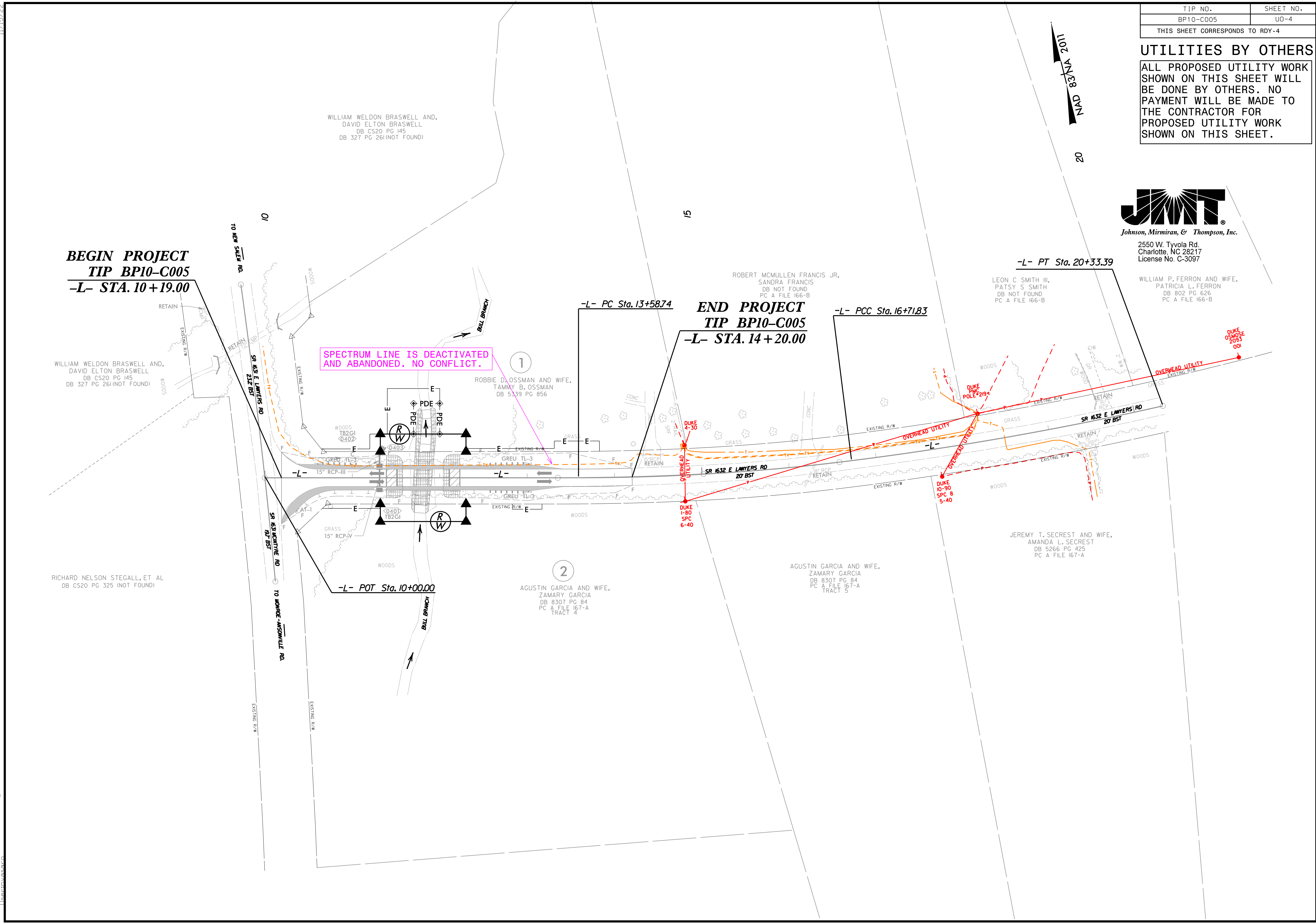
AGUSTIN GARCIA AND WIFE,
 ZAMARY GARCIA
 DB 8307 PG 84
 PC A FILE 167-A
 TRACT 4

AGUSTIN GARCIA AND WIFE,
 ZAMARY GARCIA
 DB 8307 PG 84
 PC A FILE 167-A
 TRACT 5

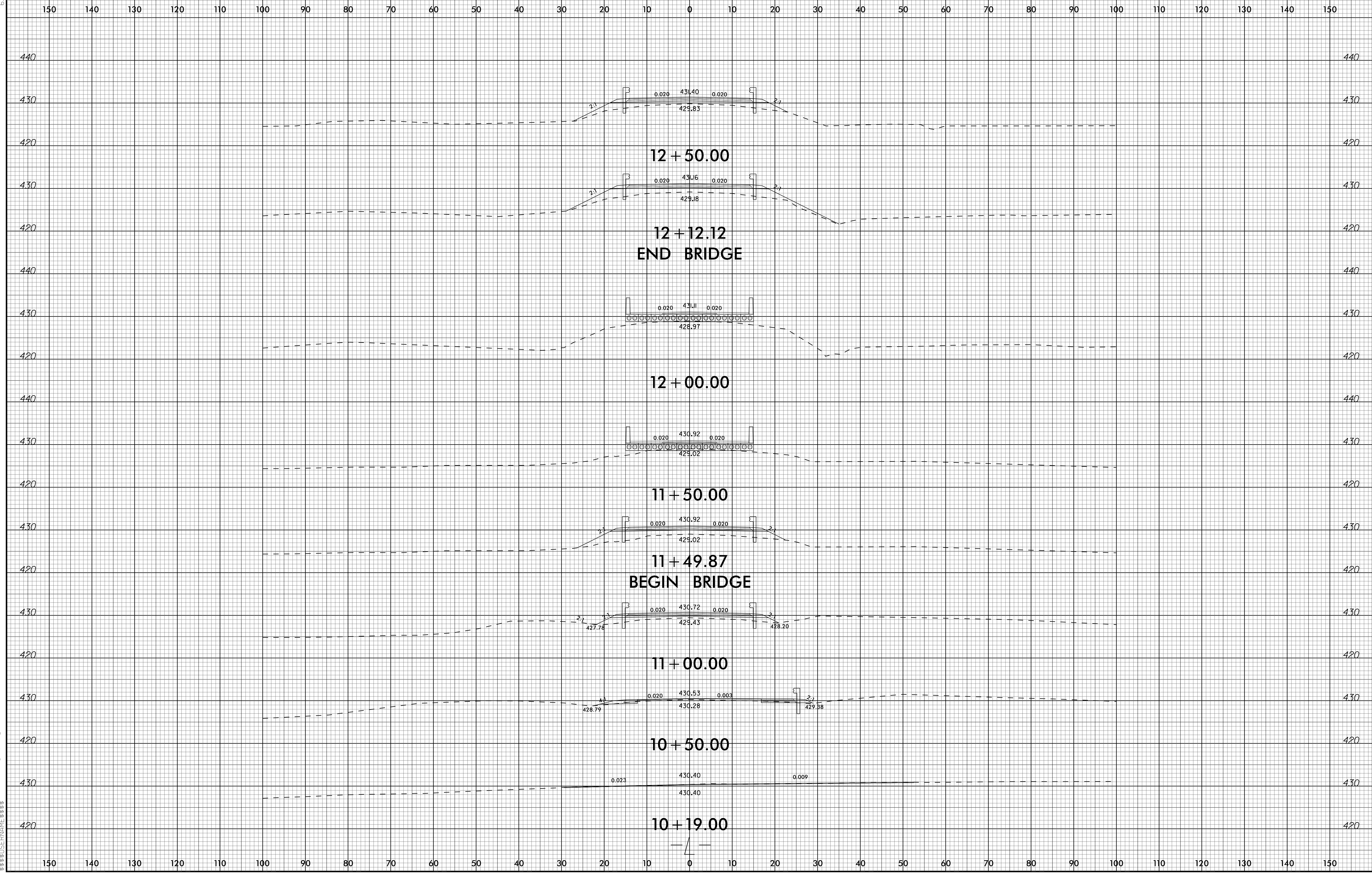
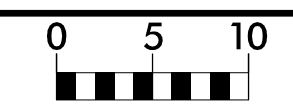
JEREMY T. SECREST AND WIFE,
 AMANDA L. SECREST
 DB 5266 PG 425
 PC A FILE 167-A

RICHARD NELSON STEGALL, ET AL
 DB CS20 PG 325 (NOT FOUND)

11/15/22
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 User: jmvassato

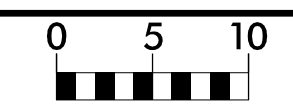


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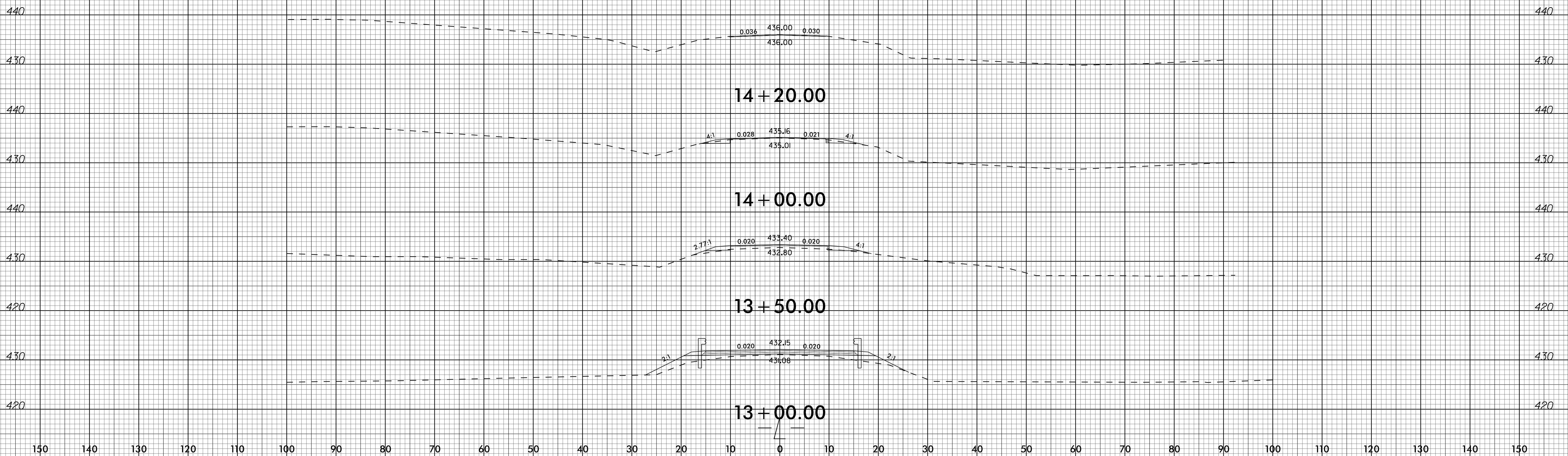


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