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

09/08/99

WBS: BP14.R002

CONTRACT: DN01153

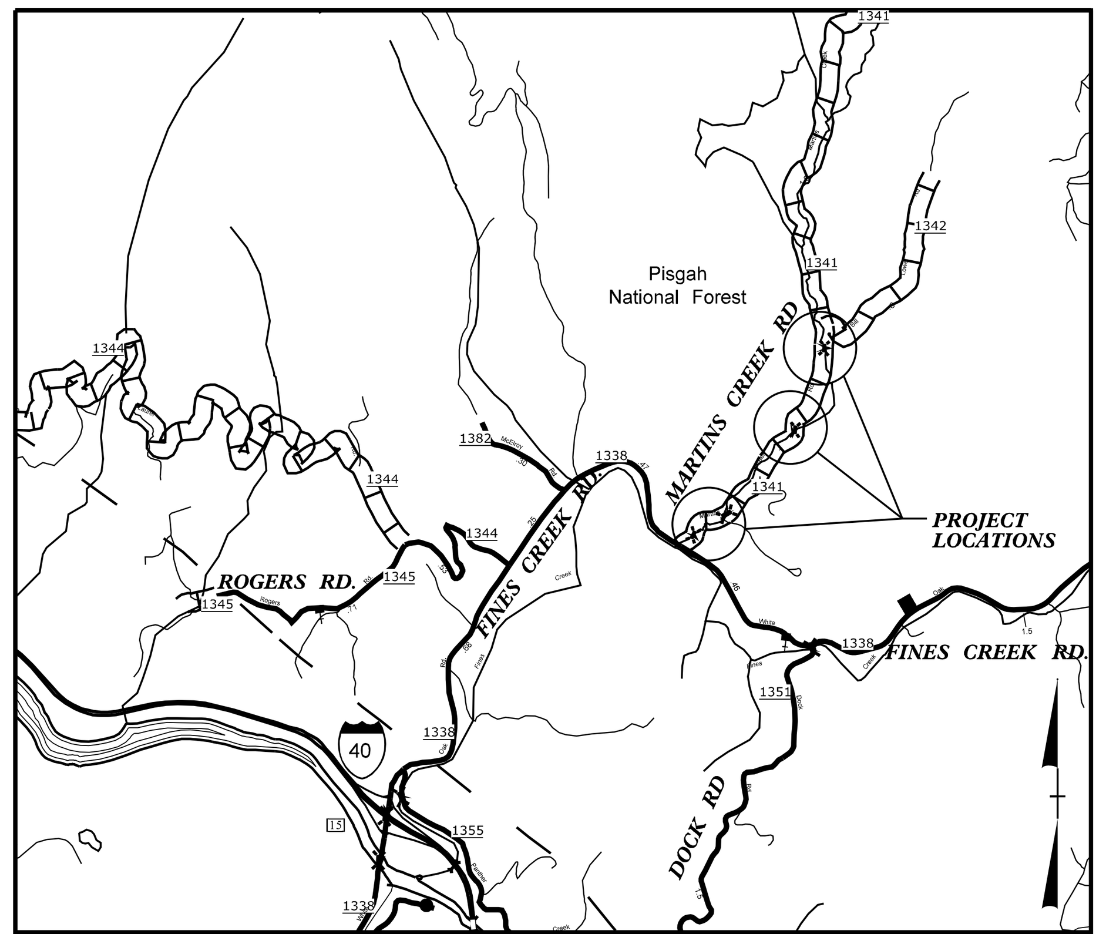
See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HAYWOOD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP14.R002	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
BP14.R002.1	N/A	PE
BP14.R002.2	N/A	ROW, UTL.
BP14.R002.3	N/A	CONST

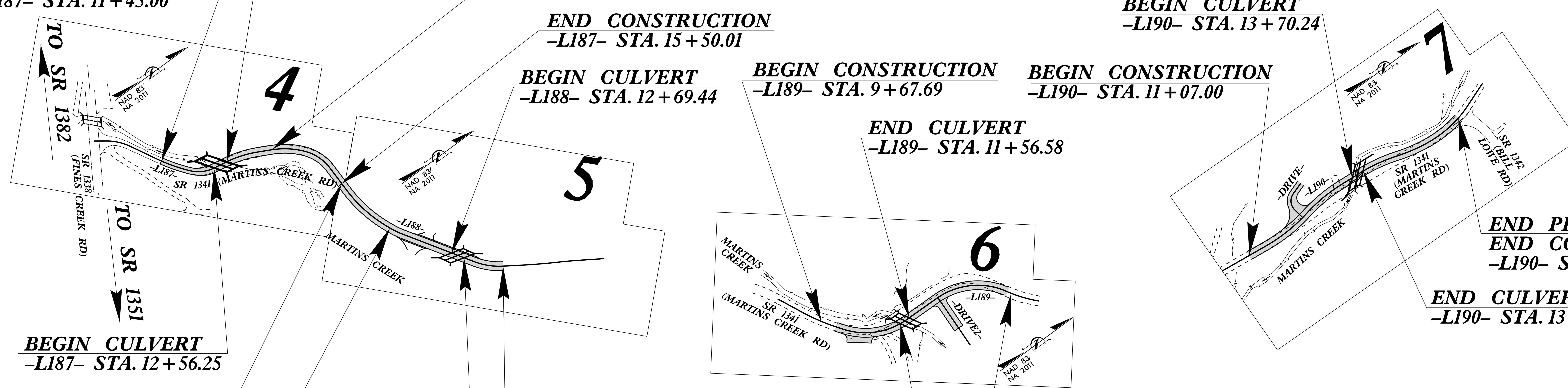


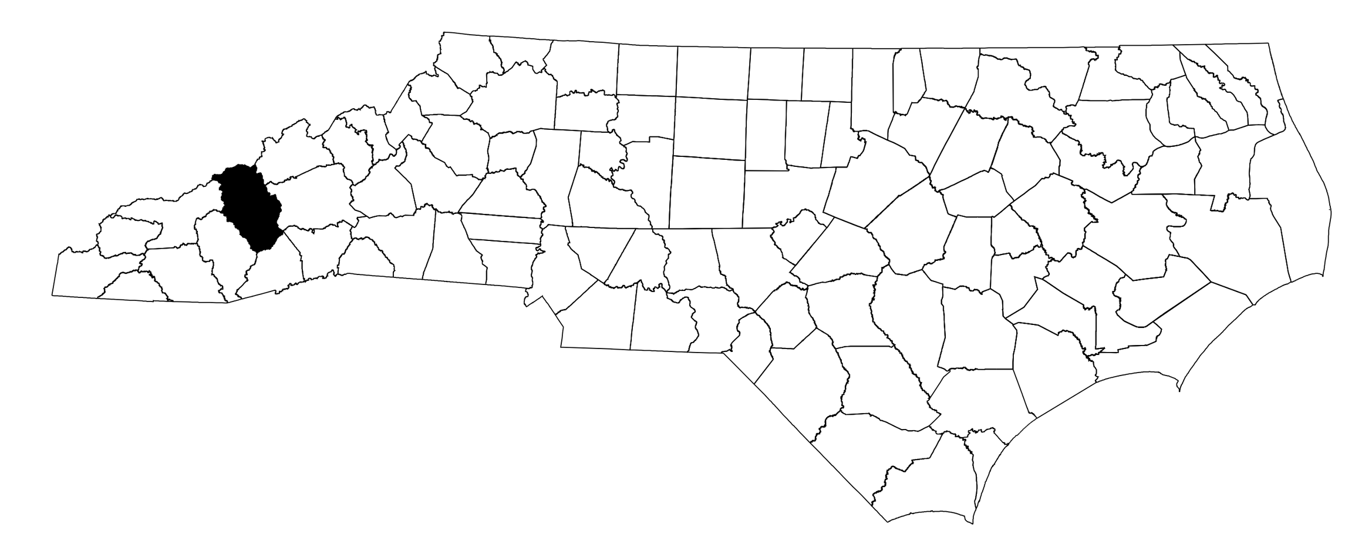
VICINITY MAP N.T.S.

100% PLANS

LOCATION: CULVERTS 430187, 430188, 430189 AND 430190 OVER MARTINS CREEK ON SR 1341 (MARTINS CREEK RD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND CULVERTS





DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2016 = 100

T = 6%
V = 25 MPH
430187, 430188, 430189
V = 30 MPH
430190
FUNC CLASS = LOCAL
SUB REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY = 0.305 MILES
LENGTH STRUCTURE = 0.020 MILES
TOTAL LENGTH = 0.325 MILES

–L187–, –L188–, –L189– & –L190– USED TO CALCULATE LENGTH

Prepared In the Office of:
RS&H
ARCHITECTS–ENGINEERS–PLANNERS, INC.
8521 SIX FORKS RD, SUITE 400
RALEIGH, NC 27615

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 2024

LETTING DATE:
MARCH 24, 2026

SEAN KORTOVICH, PE
PROJECT ENGINEER

ALLISON HARRIS, PE
PROJECT DESIGN ENGINEER

ZACH SHULER, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 049764 ALEXANDER R. VINSON

DocuSigned by: Alexander R Vinson 2/17/2026
P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044511 SEAN M. KORTOVICH

Signed by: 2/17/2026
P.E.
SIGNATURE:

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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HarrisA

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	1A

ROADWAY DESIGN ENGINEER

11/24/2025

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INDEX OF SHEETS

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

GUARDRAIL:

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

TEMPORARY SHORING:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE HAYWOOD EMC, AT&T, AND SKYRUNNER.

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
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation (Use Details in Lieu of Standards for Sheets 1 and 2 of 2)
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
862.01	Guardrail Placement (Use Details in Lieu of Standards for Sheets 4, 6, 12, and 14 of 15)
862.02	Guardrail Installation
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
876.04	Drainage Ditches with Class 'B' Rip Rap

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Harrison

5/20/2024

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	1B

Note: Not to Scale

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

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Secondary Horiz and Vert Control Point
- Vertical Benchmark
- Existing Right of Way Monument
- Proposed Right of Way Monument (Rebar and Cap)
- Proposed Right of Way Monument (Concrete)
- Existing Permanent Easement Monument
- Proposed Permanent Easement Monument (Rebar and Cap)
- Existing C/A Monument
- Proposed C/A Monument (Rebar and Cap)
- Proposed C/A Monument (Concrete)
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Existing Control of Access Line — CA
- Proposed Control of Access Line — CA
- Proposed ROW and CA Line — RW CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage/Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

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

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

8/17/99

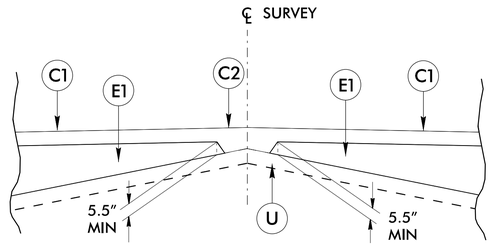
REVISIONS

PAVEMENT SCHEDULE

(FINAL PAVEMENT SCHEDULE)

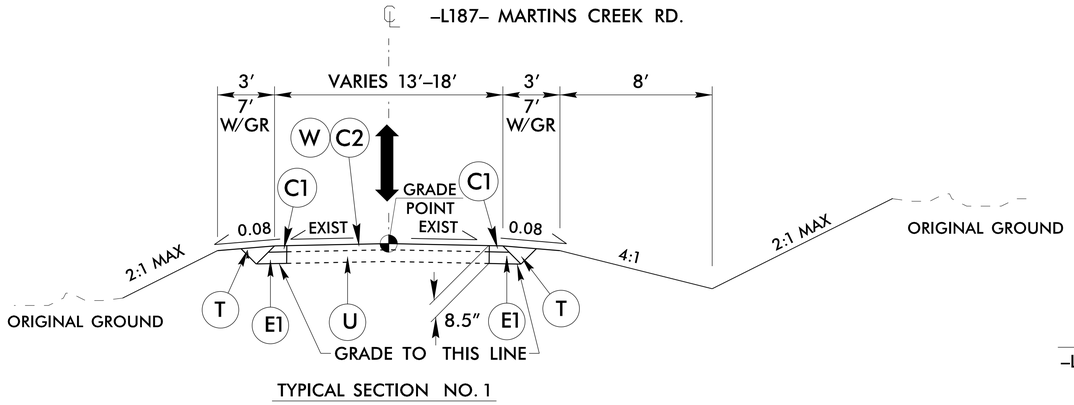
C1	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.5″ IN DEPTH OR GREATER THAN 2″ IN DEPTH.
E1	PROP. APPROX. 5½″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
J1	8″ ABC
T	EARTH MATERIAL
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL.)
U	EXISTING PAVEMENT.

NOTE: ALL PAVEMENT SLOPES ARE 1:1 UNLESS LABELED OTHERWISE.



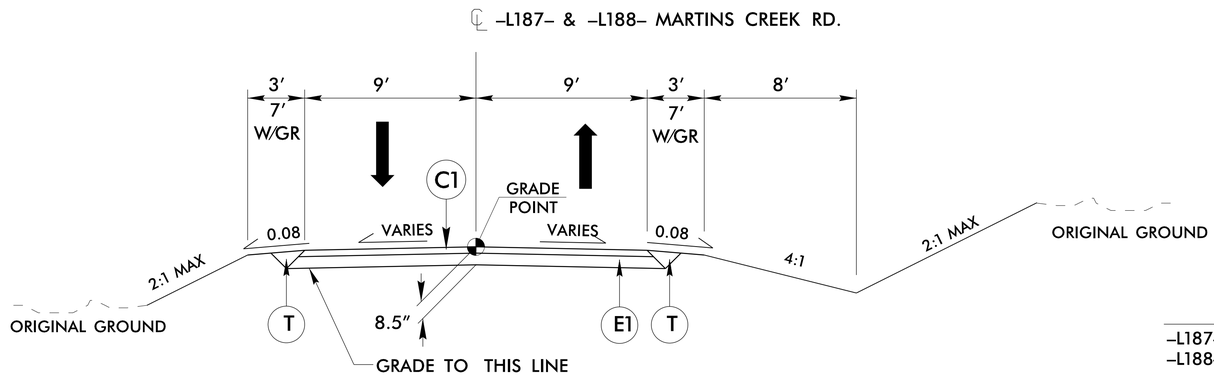
Detail Showing Method of Wedging (W)

CULVERTS NO. 430187, 430188, 430189 & 430190



TYPICAL SECTION NO. 1

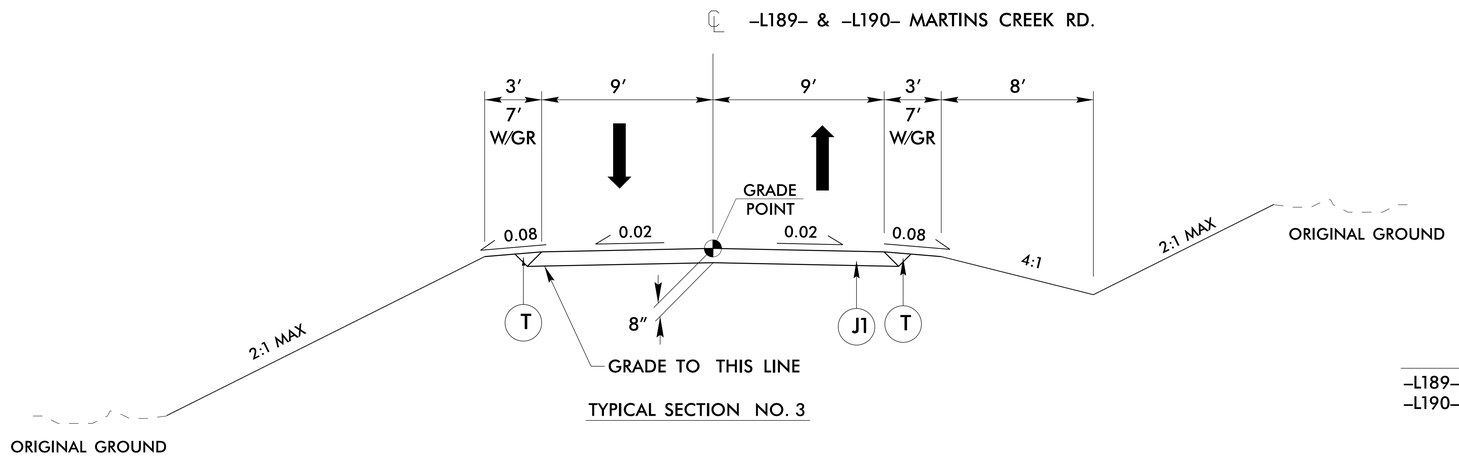
USE TYPICAL SECTION NO. 1
–L187– STA. 11+45.00 TO –L187– STA. 12+62.00



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
–L187– STA. 12+62.00 TO –L187– STA. 13+80.00
–L188– STA. 11+34.00 TO –L188– STA. 13+78.25

NOTE:
PAVE EXISTING ROAD FROM –L187– STA. 13+80.00 TO –L188– STA. 11+34.00. MATCH EXISTING WIDTH.



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
–L189– STA. 10+00.00 TO –L189– STA. 13+73.50
–L190– STA. 11+07.00 TO –L190– STA. 16+20.00

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	2A-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044511 SEAN W. KORTE
12/1/2025

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

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jharris

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	2A-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044511 SEAN M. KOROVICH
12/1/2025

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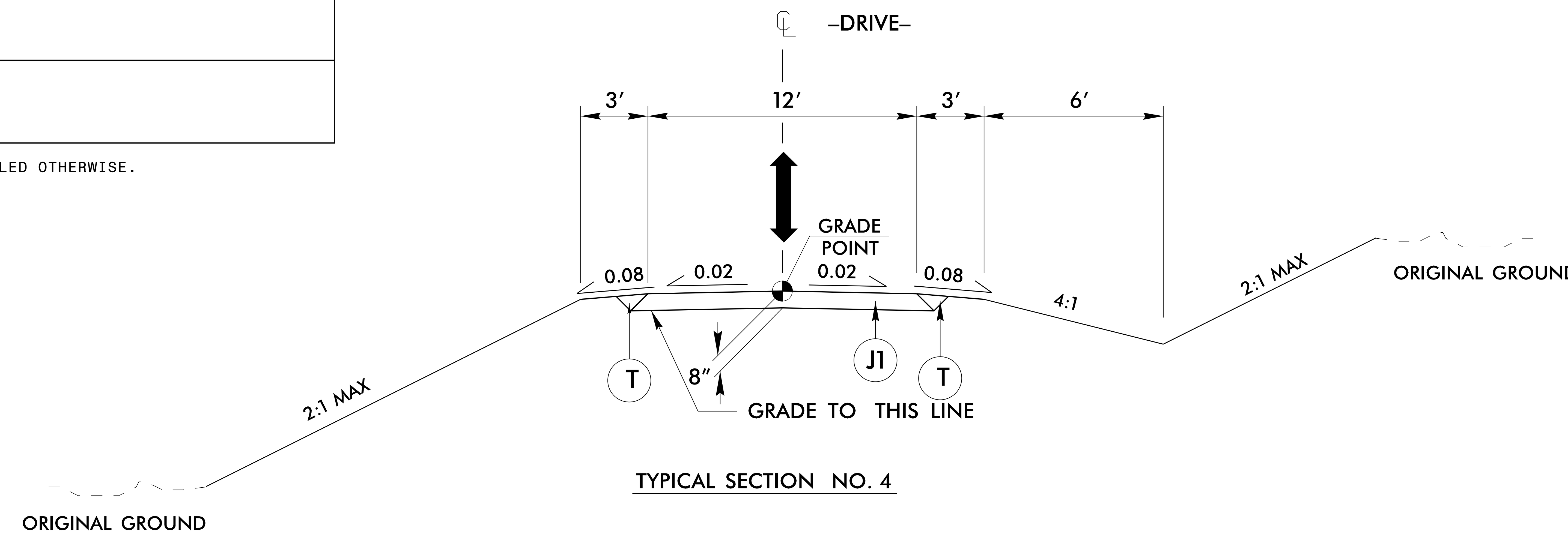
RS&H
8521 SIX FORKS ROAD, SUITE 400
RALEIGH, NC 27615
NC FIRM LICENSE No: F-0493

CULVERTS NO. 430187, 430188, 430189 & 430190

PAVEMENT SCHEDULE
(FINAL PAVEMENT SCHEDULE)

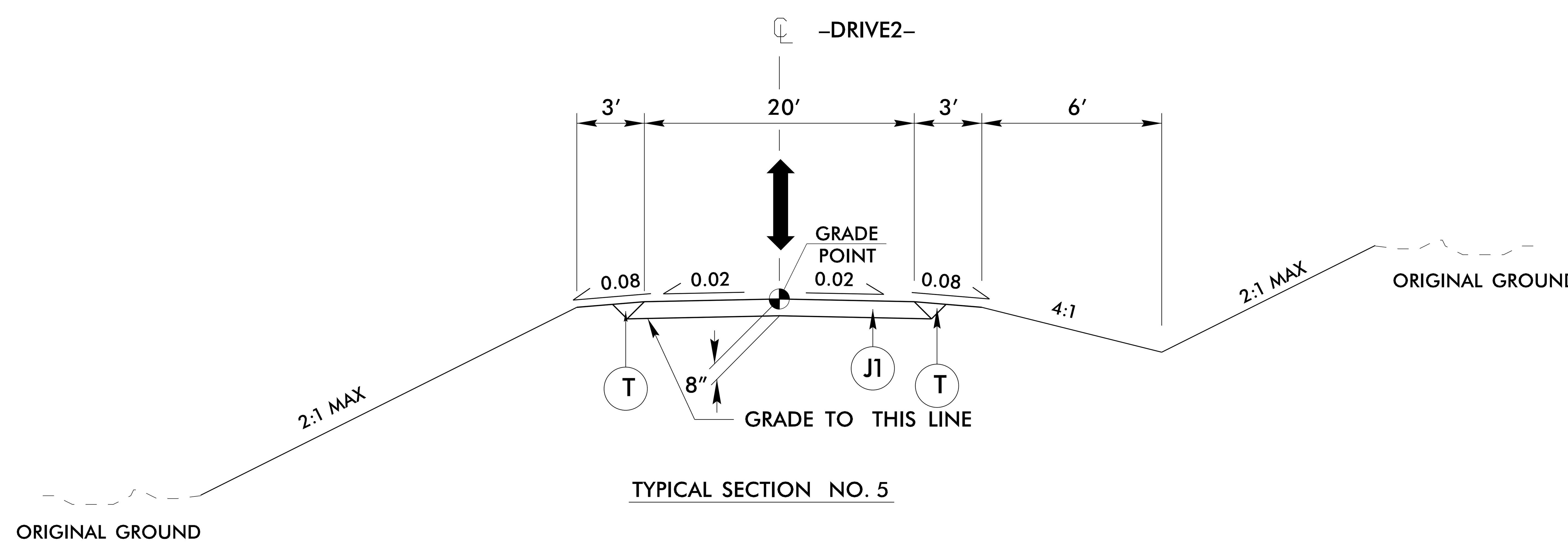
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E1	PROP. APPROX. 5½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
J1	8" ABC
T	EARTH MATERIAL

NOTE: ALL PAVEMENT SLOPES ARE 1:1 UNLESS LABELED OTHERWISE.



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4
-DRIVE- STA. 10+09.00 TO -DRIVE- STA. 10+84.00



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5
-DRIVE2- STA. 10+09.00 TO -DRIVE2- STA. 10+75.00

REVISIONS

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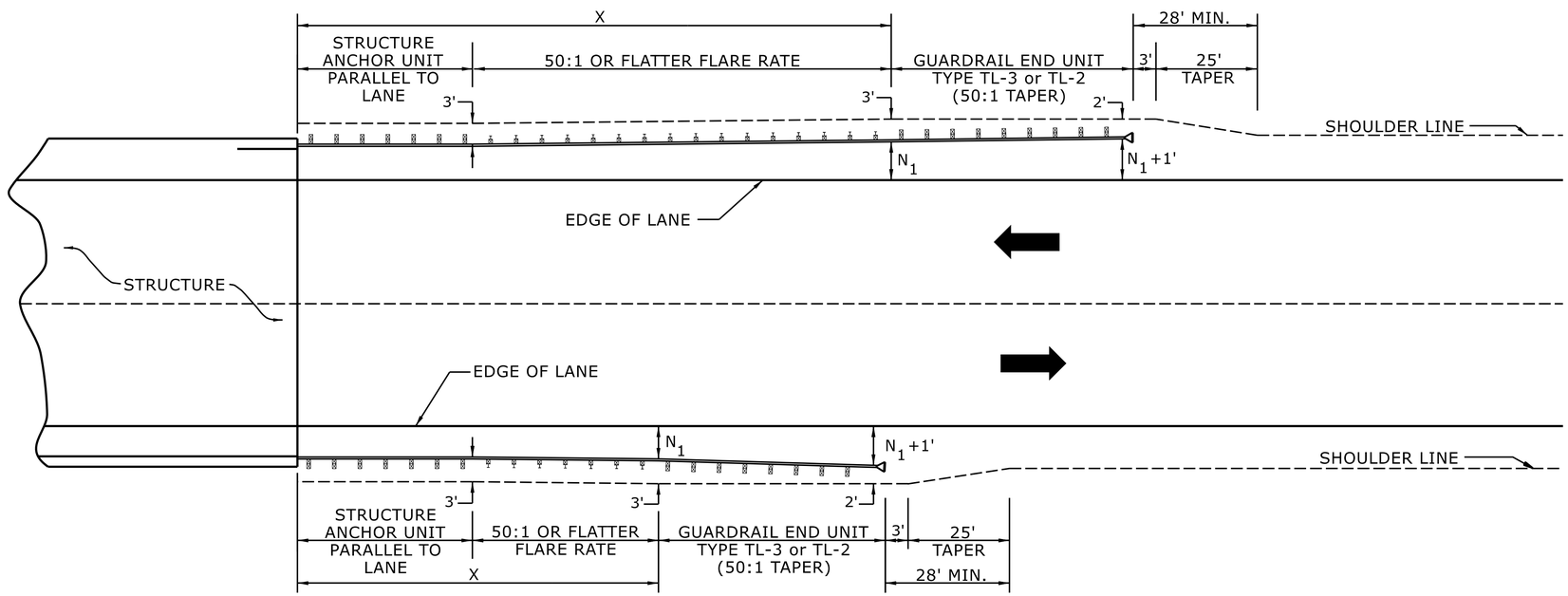
PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	2C-1



USE FLARE RATE AS THE CONTROL IF THE "N_1" DISTANCE IS NOT OBTAINED.
("N_1" IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

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

GUARDRAIL LENGTH OF NEED (X) IS CALCULATED BASED ON THE AASHTO ROADSIDE DESIGN GUIDE.

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

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 4 OF 15

862D01

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER

Signed by: Nicole M. Hackler
5884323D34164C5...
11/24/2025

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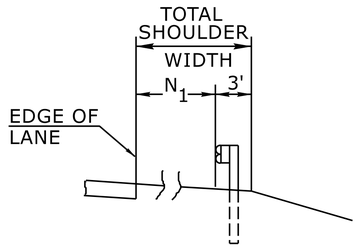
CONTRACTS STANDARDS
AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

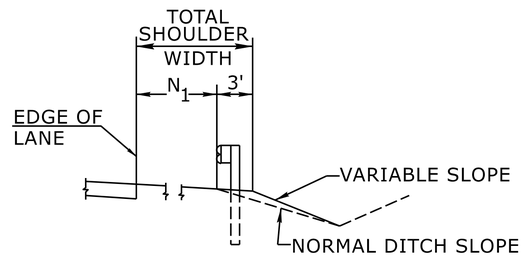
SEE TITLE BLOCK

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

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	2C-2

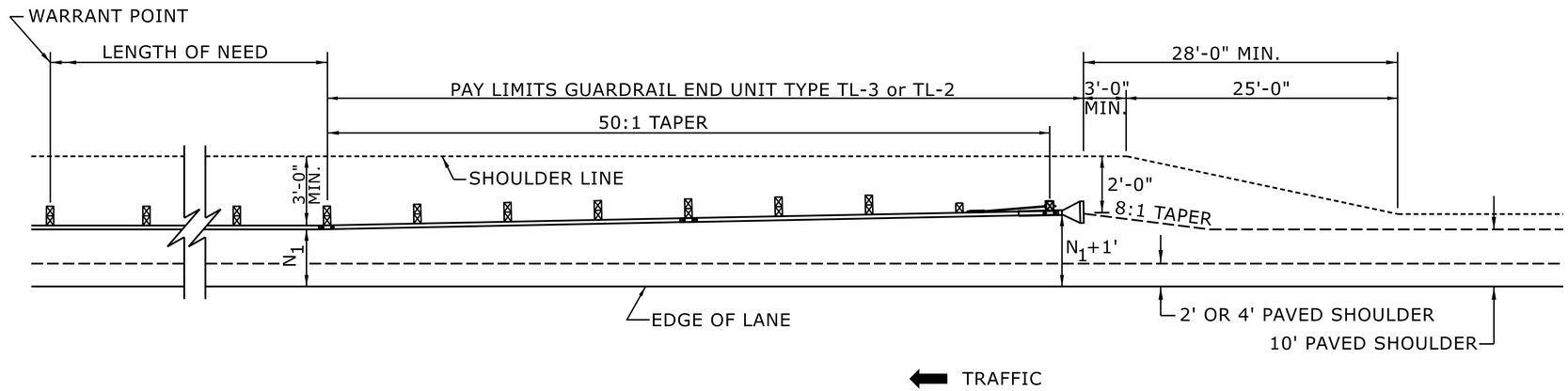


FILL SECTION



CUT SECTION

"N_1"= DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.



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

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 15

862D01

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER

Signed by:
Nicole M. Hackler
5884323D34164C5...
11/24/2025

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

SEE TITLE BLOCK

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

12/06/07

COMPUTED BY: ARH DATE: 5/27/25
CHECKED BY: SMK DATE: 5/27/25

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	3B-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

–L187– & –L188– SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. +15%	BORROW	WASTE
PHASE I:					
–L187– 13+50.00	–L187– 15+50.00	64	3		61
–L188– 10+00.00	–L188– 14+50.00	31	2		29
SUBTOTALS:		95	5		90
PHASE II:					
–L187– 11+45.00	–L187– 15+50.00	198	90		108
–L188– 10+00.00	–L188– 14+00.00	204	62		142
SUBTOTALS:		402	152		250
PHASE III:					
–L187– 11+45.00	–L187– 15+50.00	101	80		21
–L188– 10+00.00	–L188– 14+00.00	48	34		14
SUBTOTALS:		149	114		35
PHASE IV:					
–L187– 11+45.00	–L187– 15+50.00	4	121	117	
–L188– 10+00.00	–L188– 14+00.00		2	2	
SUBTOTALS:		4	123	119	
PROJECT TOTALS:		650	394	119	375
WASTE IN LIEU OF BORROW				–119	–119
EST. 5% TO REPLACE TOP SOIL					
GRAND TOTALS:		650	394		256
SAY:		660	400		260

EST. UNDERCUT = 100 CY (CONTINGENCY)
EST. SELECT GRANULAR MATERIAL = 100 CY (CONTINGENCY)
EST. FABRIC FOR SOIL STABILIZATION = 100 SY (CONTINGENCY)

–L189– SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. +15%	BORROW	WASTE
PHASE I:					
–L189– 10+00.00	–L189– 13+73.50	313	569	256	
–DRIVE2– 10+09.00	–DRIVE2– 10+75.00		48	48	
SUBTOTALS:		313	617	304	
PHASE II:					
–L189– 10+00.00	–L189– 13+73.50	260	69		191
SUBTOTALS:		260	69		191
PROJECT TOTALS:		573	686	304	191
WASTE IN LIEU OF BORROW					
EST. 5% TO REPLACE TOP SOIL				15	
GRAND TOTALS:		573	686	319	191
SAY:		580	690	320	200

EST. UNDERCUT = 50 CY (CONTINGENCY)
EST. SELECT GRANULAR MATERIAL = 50 CY (CONTINGENCY)
EST. FABRIC FOR SOIL STABILIZATION = 50 SY (CONTINGENCY)

–L190– SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. +15%	BORROW	WASTE
PHASE I:					
–L190– 15+00.00	–L190– 16+20.00	33			33
SUBTOTALS:		33			33
PHASE II:					
–L190– 11+07.00	–L190– 16+20.00	420	118		302
–DRIVE– 10+09.00	–DRIVE– 10+84.00	467	3		464
SUBTOTALS:		887	121		766
PHASE III:					
–L190– 11+07.00	–L190– 16+20.00	250	80		170
SUBTOTALS:		250	80		170
PROJECT TOTALS:		1170	201		969
WASTE IN LIEU OF BORROW					
EST. 5% TO REPLACE TOP SOIL					
GRAND TOTALS:		1170	201		969
SAY:		1180	210		970

EST. UNDERCUT = 50 CY (CONTINGENCY)
EST. SELECT GRANULAR MATERIAL = 50 CY (CONTINGENCY)
EST. FABRIC FOR SOIL STABILIZATION = 50 SY (CONTINGENCY)

BARBED WIRE FENCING RESET

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	LF
–L187–	13+00.00	14+61.56	LT	185.90
–L189–	13+39.51	13+73.63	LT	65.71
–L190–	10+78.85	12+83.92	LT	215.00
			TOTAL:	466.61
			SAY:	470

ELECTRIC FENCING RESET

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	LF
–L188–	12+21.32	12+79.73	RT	64.91
–L188–	12+69.79	13+22.08	LT	59.10
–L190–	11+39.59	11+76.22	RT	41.82
–L190–	12+02.34	16+07.74	RT	412.29
			TOTAL:	578.12
			SAY:	580

PAVEMENT ASPHALT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
–L187–	11+56.89	11+65.49	LT	0.01
–L187–	11+86.79	12+19.35	LT	0.49
–L187–	12+00.13	12+21.64	RT	0.71
TEMP PVMT:				
–L187–	11+71.34	14+71.47	LT	253.01
–L188–	13+17.68	14+10.25	LT	14.99
			TOTAL:	269.20
			SAY:	270

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12/06/07

COMPUTED BY: ARH DATE: 6/25/2025
CHECKED BY: SMK DATE: 6/25/2025

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	3B-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

"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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS				IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU, TL-2	AT-1	CAT-1		EA	G	NG				
-L187-	11+90.60	13+18.01	LT	112.5			11+95.41	12+76.98	4	7	25	25	.5	.5	2										
-L187-	12+31.93	13+64.84	RT	125.0			12+65.30	13+23.17	4	7	25	25	.5	.5	2										
			SUBTOTALS	237.5																					
			ANCHOR DEDUCTION	100.0																					
			TOTAL	137.5											4										
			SAY	137.5											4										

ANCHOR DEDUCTION
TYPE GREU, TL-2: 4 @ 25' = 100'
GRAND TOTAL = 100'
ADDITIONAL GUARDRAIL POSTS =5

"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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS				IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU, TL-2	AT-1	CAT-1		EA	G	NG				
-L188-	12+21.79	13+17.21	RT	87.5			12+39.63	12+82.78	4	7	25		.5		2										
-L188-	12+27.73	13+78.58	LT	137.5			13+21.32	12+82.29	4	7	25		.5		2										
			SUBTOTALS	225																					
			ANCHOR DEDUCTION	100																					
			TOTAL	125											4										
			SAY	125											4										

ANCHOR DEDUCTION
TYPE GREU, TL-2: 4 @ 25' = 100'
GRAND TOTAL = 100'
ADDITIONAL GUARDRAIL POSTS =5

"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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS				IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU, TL-2	AT-1	CAT-1		EA	G	NG				
-L189-	10+76.30	11+91.13	LT	100			11+49.84	11+09.58	4	7	25		.5		2										
-L189-	10+98.04	12+13.86	RT	112.5			11+39.82	11+73.10	4	7	25		.5		2										
-L189-	12+43.50	13+77.86	RT	118.75			12+50.00	13+50.00	4	7	25		.5		1		1								
			SUBTOTALS	331.25																					
			ANCHOR DEDUCTION	131.25																					
			TOTAL	200											5		1								
			SAY	200											5		1								

ANCHOR DEDUCTION
TYPE GREU, TL-2: 5 @ 25' = 125'
CAT-1: 1 @ 6.25' = 6.25'
GRAND TOTAL = 131.25'
ADDITIONAL GUARDRAIL POSTS =5

"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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS				IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU, TL-2	AT-1	CAT-1		EA	G	NG				
-L190-	12+74.18	14+76.44	LT	200.0			14+14.97	13+80.45	4	7	25	25	.5	.5	2										
-L190-	13+06.78	14+17.43	RT	100.0			13+37.21	13+73.49	4	7	25		.5		2										
			SUBTOTALS	300.0																					
			ANCHOR DEDUCTION	100.0																					
			TOTAL	200.0											4										
			SAY	200.0											4										

ANCHOR DEDUCTION
TYPE GREU, TL-2: 4 @ 25' = 100'
GRAND TOTAL = 100'
ADDITIONAL GUARDRAIL POSTS =5

"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

TEMPORARY GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS					IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU, TL-2	AT-1	CAT-1	B-77		EA	G	NG				
-L187-	13+43.30	15+30.73	RT	162.5			13+48.20	14+99.92	1	3					2										TEMPORARY GUARDRAIL FOR TRAFFIC CONTROL (PHASE I)
-L187-	12+80.04	13+93.85	CL	110.375			12+80.04	12+80.04	1	3					1			1							TEMPORARY GUARDRAIL FOR TRAFFIC CONTROL (PHASE II)
-L188-	12+09.06	13+89.37	RT	175.0			12+86.54	13+31.49	1	3					2										TEMPORARY GUARDRAIL FOR TRAFFIC CONTROL (PHASE II)
-L189-	10+83.04	11+95.62	LT	100.0			11+47.22	11+79.52	1	3					2										TEMPORARY GUARDRAIL FOR TRAFFIC CONTROL (PHASE I)
-L189-	10+67.67	12+13.06	CL	112.5			11+08.36	11+47.13	1	3					2										TEMPORARY GUARDRAIL FOR TRAFFIC CONTROL (PHASE II)
-L190-	12+69.13	14+57.04	RT	175.0			13+86.79	14+29.56	1	3					2										TEMPORARY GUARDRAIL FOR TRAFFIC CONTROL (PHASE II)
-L190-	12+84.69	14+55.90	RT	162.5			13+44.42	13+95.43	1	3					2										TEMPORARY GUARDRAIL FOR TRAFFIC CONTROL (PHASE III)
			SUBTOTALS	997.875																					
			ANCHOR DEDUCTION	327.875																					
			TOTAL	650																					
			SAY	650																					

ANCHOR DEDUCTION
TYPE GREU,TL-2: 13 @ 25' = 325'
TYPE B-77: 1 @ 22.875' = 22.875'
GRAND TOTAL = 347.875'
ADDITIONAL GUARDRAIL POSTS =5

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12/06/07

COMPUTED BY:	LKM	DATE:	8/5/25
CHECKED BY:	ARV	DATE:	8/5/25

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	3D-1

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".

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

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC)								DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
SIZE								12"	15"	18"	24"	30"	36"	42"	48"				
THICKNESS OR GAUGE		FROM	TO																
–L189– 10+50	RT	0601			2471.36	2469.48													
–L189– 12+27	RT	0602			2480.50	2479.20													
–L189– SUBTOTALS																			

STATION	C.S. PIPE							R.C. PIPE (CLASS III)							R.C. PIPE (CLASS V)							
SIZE	12"	15"	18"	24"	36"	42"	48"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"
THICKNESS OR GAUGE	.064	.064	.064	.064	.079	.109	.109															
–L189– 10+50																						
–L189– 12+27																44						
–L189– SUBTOTALS																44						

STATION	**" R. C. PIPE (CLASS V)	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	ENDWALLS CU. YDS. C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET		FRAMES AND NARROW SLOT FLAT GRATES STD. 840.29	T.B.G.D.I. STD. 840.35	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	15" C.S. ELBOW	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
–L189– 10+50				72																								
–L189– 12+27																												
–L189– SUBTOTALS				72																								

ABBREVIATIONS

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

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

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC)								DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
SIZE								12"	15"	18"	24"	30"	36"	42"	48"				
THICKNESS OR GAUGE		FROM	TO																
–L190– 12+41	LT	0703			2474.28	2473.75													
–L190– SUBTOTALS																			
GRAND TOTALS																			

STATION	C.S. PIPE							R.C. PIPE (CLASS III)							R.C. PIPE (CLASS IV)							
SIZE	12"	15"	18"	24"	36"	42"	48"	15"	18"	24"	30"	36"	42"	48"	12"	15"	18"	24"	30"	36"	42"	48"
THICKNESS OR GAUGE	.064	.064	.064	.064	.079	.109	.109															
–L190– 12+41																						
–L190– SUBTOTALS																						
GRAND TOTALS																44						

STATION	**" R. C. PIPE (CLASS V)	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	**" R. C. PIPE CULVERTS, CONTRACTOR DESIGN PIPE	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	ENDWALLS CU. YDS. C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G		CONCRETE TRANSITIONAL SECTION CATCH BASIN	DROP INLET		FRAMES AND NARROW SLOT FLAT GRATES STD. 840.29	T.B.G.D.I. STD. 840.35	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	15" C.S. ELBOW	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
–L190– 12+41				36																								
																												HEADWALL
–L190– SUBTOTALS				36																								
GRAND TOTALS				108																								

ABBREVIATIONS

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

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PROJ. REFERENCE NO.	SHEET NO.
BP14.R002	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4, 5	MEDFORD D. RUSSELL, MARIE L. RUSSELL, ERNEST RUSSELL, KETURAH B. BUCHANAN
2	4	RANDY A. DEESE, VANESSA S. DEESE
3	5	JAMES ROBERT LOWE
4	5	MICHAEL L. RATHBONE, NATHAN D. RATHBONE
5	4, 5	JOHNNY O. LOWE, BOBBY M. LOWE
6	6, 7	MICHAEL F. BELL
7	6	ELIJAH S. SCOTT, ASIA L. SCOTT
8	6, 7	STEPHEN M. TUCKER, LISSETTE L. TUCKER

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

8/17/99

REVISIONS

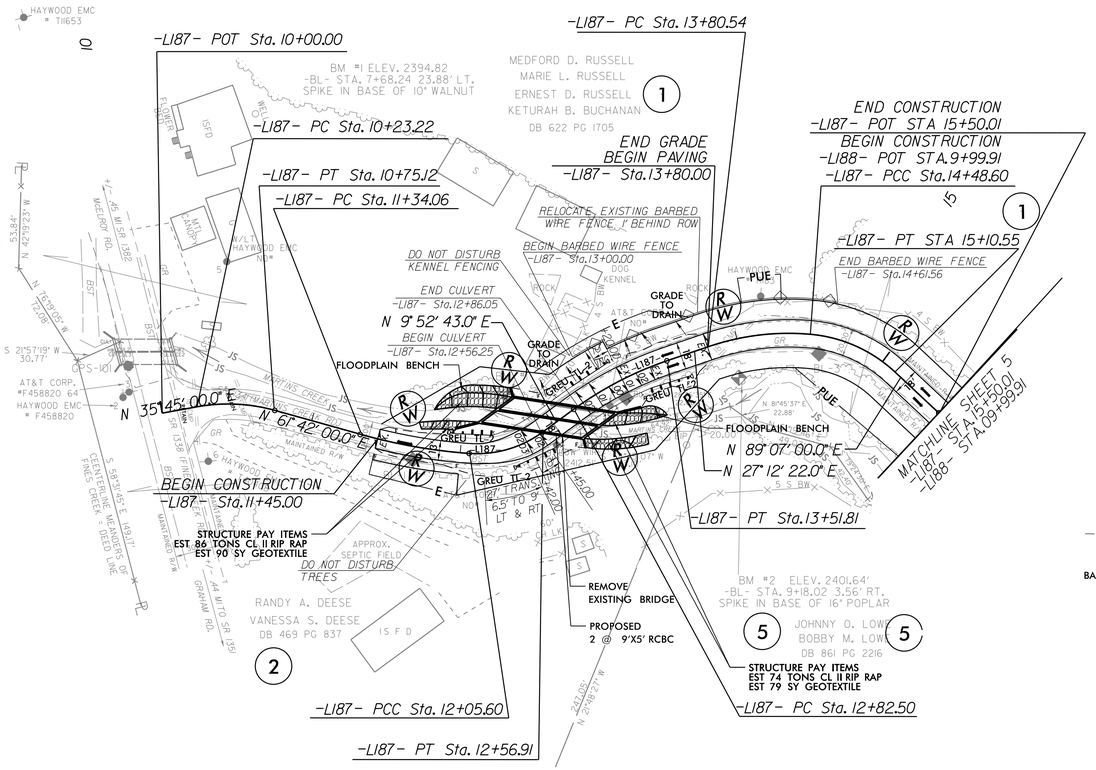
06-26-2024: ROW REVISION - DO NOT DISTURB NOTE ADDED TO KENNEL ON PARCEL 1.(SMK)
07-12-2024: ROW REVISION - TCE REDUCED ON PARCEL 2.DO NOT DISTURB NOTE ADDED TO TREES ON PARCEL 2.(SMK)

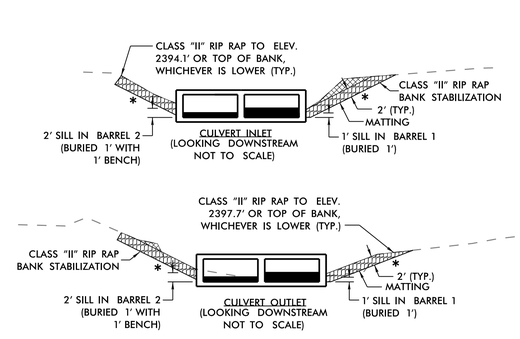
-LI87- CURVE DATA

-LI87- CURVE RADII AND SUPERELEVATIONS MATCHED TO -EL-

PI Sta 10+49.63	PI Sta 11+69.95	PI Sta 12+32.37
△ = 25° 57′ 00.0″ (RT)	△ = 11° 24′ 43.7″ (LT)	△ = 40° 24′ 33.3″ (LT)
D = 50° 00′ 00.0″	D = 15° 57′ 06.3″	D = 78° 45′ 22.4″
L = 51.90′	L = 71.54′	L = 51.31′
T = 26.40′	T = 35.89′	T = 26.77′
R = 114.59′	R = 359.18′	R = 72.75′
SE = EXIST	SE = EXIST	SE = 02*
PI Sta 13+17.42	**PI Sta 14+15.07**	**PI Sta 14+80.77**
△ = 17° 19′ 39.0″ (RT)	△ = 23° 50′ 33.5″ (RT)	△ = 38° 04′ 04.5″ (RT)
D = 25° 00′ 00.0″	D = 35° 01′ 53.0″	D = 61° 27′ 27.7″
L = 69.31′	L = 68.06′	L = 61.94′
T = 34.92′	T = 34.53′	T = 32.16′
R = 229.18′	R = 163.56′	R = 93.23′
SE = 02*	SE = EXIST	SE = EXIST

* SUPERELEVATION TO MATCH EXISTING EXCEPT FOR TRANSITIONS TO 02 ON CULVERT.





* BEGIN OF 2:1 RIP RAP SLOPE AND EXCAVATION WILL DEPEND ON WINGWALL SKEW AND LOCATION (WINGWALLS NOT SHOWN

SEE SHEET RW04 FOR -L187- R/W

SEE SHEETS C1-1 THRU C1-10 FOR CULVERT PLANS

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 690 C.F.S
DESIGN FREQUENCY	= 25 YRS.
DESIGN HW ELEVATION	= 2396.7'
BASE DISCHARGE	= 990 C.F.S
BASE FREQUENCY	= 100 YRS.
BASE HW ELEVATION	= 2397.3'
OVERTOPPING DISCHARGE	= 690 C.F.S
OVERTOPPING FREQUENCY	= 25 YRS
OVERTOPPING ELEVATION	= 2396.6'

BM #1 ELEV. 2394.82'
-L187- STA. 12+49.45 33.42' LT
-BL- STA. 7+68.24 23.88' LT
SPIKE IN BASE OF 10" WALNUT

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 044511 ENGINEER STEVEN M. KORTE
11/24/2025

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 047764 ENGINEER ALEXANDER R. VINSON
12/1/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

22-OCT-2025 15:18
R:\Roadway\Proj\R-173 BRIDGES_Rdy_psh_4.dgn
$$$$USERNAME$$$$

CULVERT NO. 430188

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 044511 — 11/24/2025

HYDRAULICS ENGINEER — SEAL 040764 — 12/1/2025

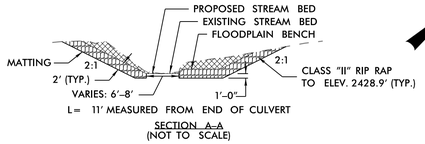
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

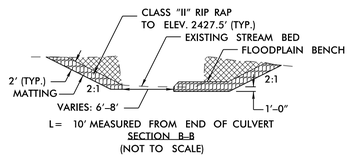
REVISIONS

8/17/99

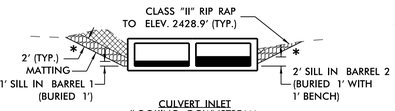
06-26-2024: ROW REVISION - DO NOT DISTURB NOTE ADDED TO TREE ON PARCEL 4. DO NOT DISTURB NOTE ADDED TO DRAIN LINES ON PARCEL 5. (SMK)



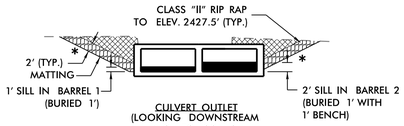
SECTION A-A
(NOT TO SCALE)



SECTION B-B
(NOT TO SCALE)

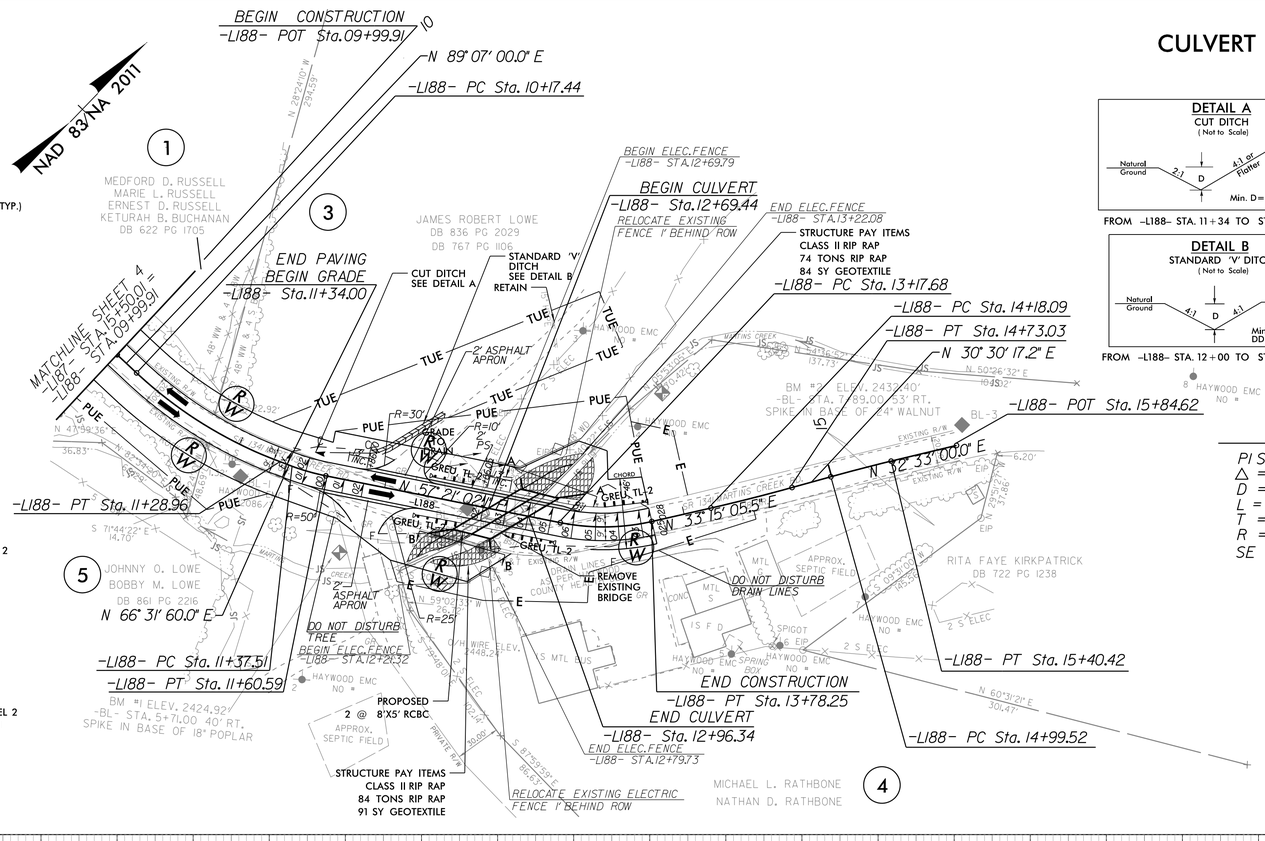


CULVERT INLET
(LOOKING DOWNSTREAM
NOT TO SCALE)



CULVERT OUTLET
(LOOKING DOWNSTREAM
NOT TO SCALE)

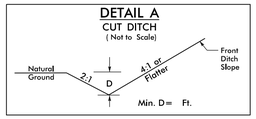
* BEGIN OF 2:1 RIP RAP SLOPE AND EXCAVATION WILL DEPEND ON WINGWALL SKEW AND LOCATION (WINGWALLS NOT SHOWN)



SEE SHEET RW05 FOR -LI88- R/W

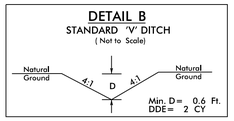
SEE SHEETS C2-1 THRU C2-8 FOR CULVERT PLANS

DETAIL A
CUT DITCH
(Not to Scale)



FROM -LI88- STA. 11+34 TO STA. 12+00 LT

DETAIL B
STANDARD 'V' DITCH
(Not to Scale)

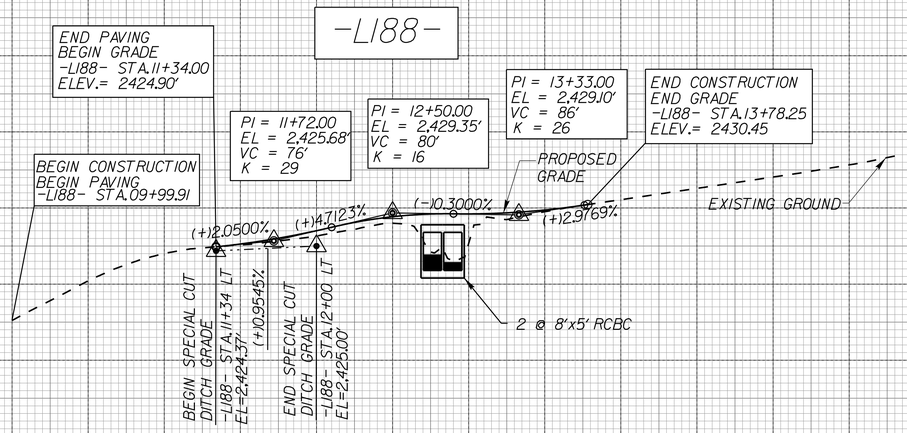


FROM -LI88- STA. 12+00 TO STA. 12+29 LT

-LI88- CURVE DATA

PI Sta 10+73.93	PI Sta 11+49.07	PI Sta 13+48.42
Δ = 22° 35' 00.00" (LT)	Δ = 9° 10' 57.8" (LT)	Δ = 24° 05' 56.6" (LT)
D = 20° 15' 00.0"	D = 39° 47' 19.4"	D = 39° 47' 19.4"
L = 111.52'	L = 23.08'	L = 60.57'
T = 56.49'	T = 11.56'	T = 30.74'
R = 282.94'	R = 144.00'	R = 144.00'
SE = EXIST	SE = EXIST	SE = 06

PI Sta 14+45.57	PI Sta 15+19.97
Δ = 2° 44' 48.3" (LT)	Δ = 2° 02' 42.8" (RT)
D = 5° 00' 00.0"	D = 5° 00' 00.0"
L = 54.94'	L = 40.90'
T = 27.47'	T = 20.45'
R = 1,145.92'	R = 1,145.92'



CULVERT HYDRAULIC DATA

DRAINAGE AREA	= 2.06	SQ MI
DESIGN DISCHARGE	= 360	CFS
DESIGN FREQUENCY	= 5	YRS
DESIGN HW ELEVATION	= 2427.9	FT
BASE DISCHARGE	= 950	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2430.6	FT
OVERTOPPING DISCHARGE	= 465	CFS
OVERTOPPING FREQUENCY	= 5+	YRS
OVERTOPPING ELEVATION	= 2428.3	FT

LEFT DITCH ----------

BM #1 ELEV. 2424.92'
-LI88- STA.11+57.28 47.67' RT
-BL- STA.5+71.35 40.32' RT
SPIKE IN BASE OF 18" POPLAR

BM #2 ELEV. 2432.40'
-LI88- STA.13+81.56 80.54' LT
-BL- STA.7+89.32 53.29' LT
SPIKE IN BASE OF 24" WALNUT

2460 2450 2440 2430 2420 2410 2400 2390 2380

10 11 12 13 14 15 16

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 044511, 11/24/2025
HYDRAULICS ENGINEER — Alexander R. Vinson, 12/1/2025

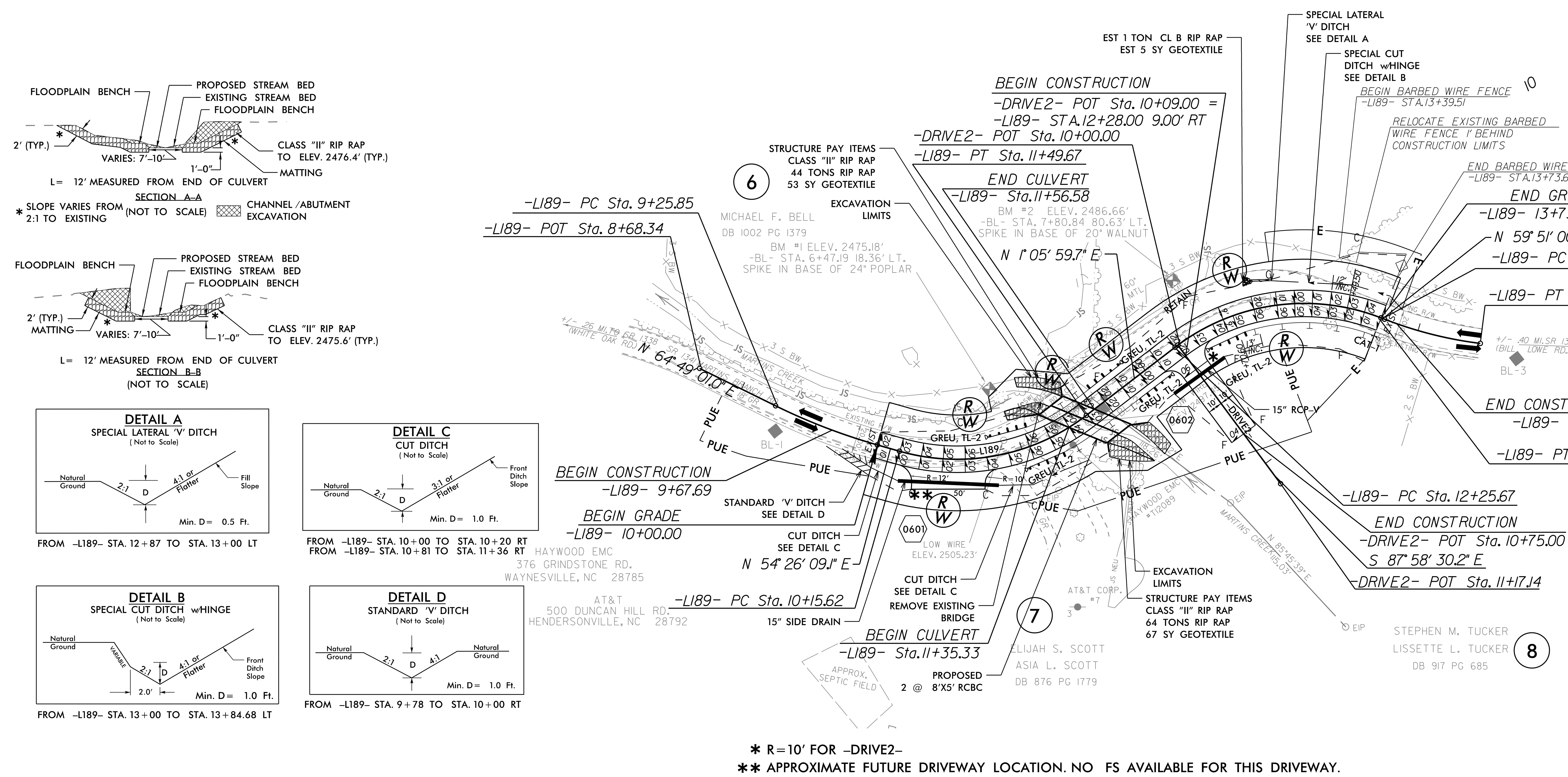
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

CULVERT NO. 430189

REVISIONS
ROW REVISION 7- -22: PUE REVISED ON PARCELS 7 AND 8. TCE REVISED ON PARCEL 8 BECAUSE OF PUE REVISION. (SMK)

8/17/99

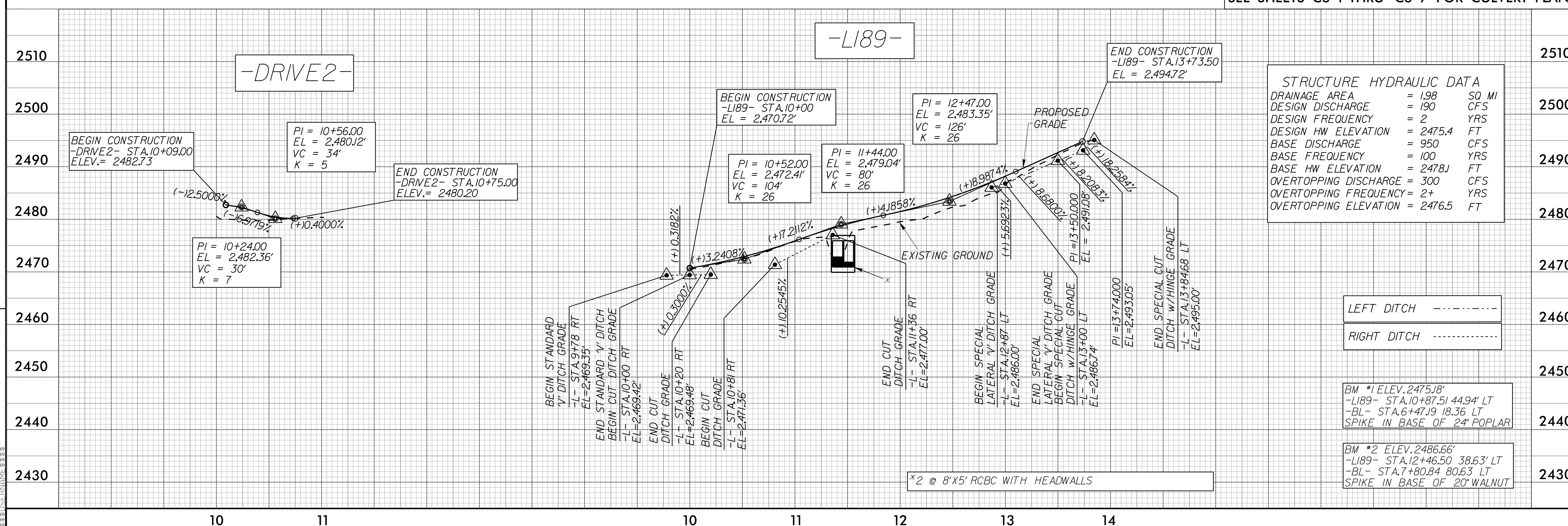


-L189- CURVE DATA

PI Sta 9+63.03	PI Sta 10+87.94	PI Sta 13+06.73	PI Sta 14+09.76
Δ = 10° 22' 53.0" (LT)	Δ = 53° 20' 09.4" (LT)	Δ = 58° 45' 00.3" (RT)	Δ = 14° 07' 22.7" (LT)
D = 14° 00' 00.0"	D = 39° 47' 19.4"	D = 39° 47' 19.4"	D = 21° 00' 00.0"
L = 74.15'	L = 134.05'	L = 147.66'	L = 67.25'
T = 37.18'	T = 72.32'	T = 81.06'	T = 33.80'
R = 409.26'	R = 144.00'	R = 144.00'	R = 272.84'
SE= EXIST	SE= 06	SE= 06	SE= EXIST

SEE SHEET RW06 FOR -L189- R/W

SEE SHEETS C3-1 THRU C3-7 FOR CULVERT PLANS



STRUCTURE HYDRAULIC DATA

DRAINAGE AREA	=	1.98	SQ MI
DESIGN DISCHARGE	=	190	CFS
DESIGN FREQUENCY	=	2	YRS
DESIGN HW ELEVATION	=	2475.4	FT
BASE DISCHARGE	=	950	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	2478.1	FT
OVERTOPPING DISCHARGE	=	300	CFS
OVERTOPPING FREQUENCY	=	2+	YRS
OVERTOPPING ELEVATION	=	2476.5	FT

22-OCT-2025 15:22
R173 BRIDGES_Rdy_psh_6.dgn

8/17/99

REVISIONS

CULVERT NO. 430190

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 044511 ENGINEER KEVIN M. KORTH — 11/24/2025

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 047644 ENGINEER ALEXANDER R. VINSON — 12/1/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

NAD 83/NA 2007

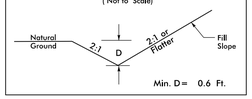
-DRIVE- CURVE DATA

PI Sta 10+44.12
△ = 81° 19' 22.6" (RT)
D = 229° 10' 59.2"
L = 35.48'
T = 21.47'
R = 25.00'

-L190- CURVE DATA

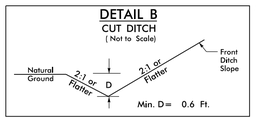
PI Sta 11+98.55	PI Sta 12+97.55	PI Sta 14+29.59	PI Sta 15+07.81	PI Sta 15+98.18
△ = 17° 46' 51.0" (LT)	△ = 15° 37' 55.0" (RT)	△ = 14° 12' 19.4" (RT)	△ = 12° 11' 12.2" (LT)	△ = 26° 35' 09.7" (LT)
D = 16° 51' 06.1"	D = 16° 51' 06.1"	D = 16° 51' 06.1"	D = 16° 51' 06.1"	D = 24° 54' 40.4"
L = 105.51'	L = 92.76'	L = 84.30'	L = 72.32'	L = 106.72'
T = 53.18'	T = 46.67'	T = 42.37'	T = 36.30'	T = 54.34'
R = 340.00'	R = 340.00'	R = 340.00'	R = 340.00'	R = 230.00'
SE = 06	SE = 06	SE = 06	SE = 06	SE = EXIST

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



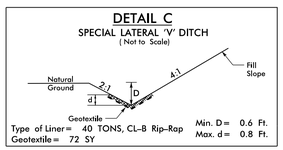
FROM -L190- STA. 13+50 TO STA. 13+65 LT
FROM -L190- STA. 14+25 TO STA. 15+00 RT

DETAIL B
CUT DITCH
(Not to Scale)



FROM -L190- STA. 11+07 TO STA. 12+24 LT
FROM -L190- STA. 12+60 TO STA. 13+50 LT

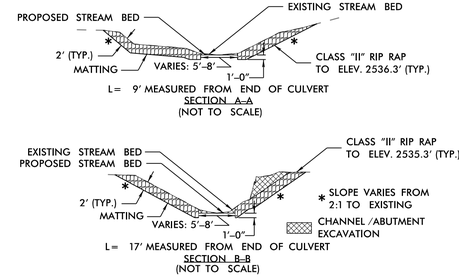
DETAIL C
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Type of Liner = 40 TONS, CL-B Rip-Rap — Min. D = 0.6 Ft.
Geotextile = 72 SY — Max. d = 0.8 Ft.

FROM -L190- STA. 15+00 TO STA. 16+18 RT

-DRIVE- PC Sta. 10+22.64
BEGIN CONSTRUCTION
-DRIVE- POT Sta. 10+09.00 =
-L190- STA.12+40.37 9.00' LT
-DRIVE- POT Sta. 10+00.00
-L190- PC Sta. 11+45.36
-L190- POT Sta. 10+00.00
-DRIVE- PT Sta. 10+58.13
RELOCATE EXISTING BARBED WIRE FENCE 'I' BEHIND CONSTRUCTION LIMITS
BEGIN BARBED WIRE FENCE -L190- STA.10+78.85
CUT DITCH SEE DETAIL B
RELOCATE EXISTING BARBED WIRE FENCE 'I' BEHIND ROW
0703
15" SIDE DRAIN
REMOVE BARN
N 6° 33' 58.4" E
BEGIN ELEC.FENCE -L190- STA.11+39.59
RELOCATE EXISTING ELECTRIC FENCE 'I' BEHIND CONSTRUCTION LIMITS
END ELEC.FENCE -L190- STA.11+76.22
BEGIN CONSTRUCTION -L190- 11+07.00
BEGIN ELEC.FENCE -L190- STA.12+02.34
S 80° 33' 20.2" W
-L190- PRC Sta. 12+50.88
-L190- PT Sta. 13+43.64
EXCAVATION LIMITS
N 4° 25' 02.5" E
STRUCTURE PAY ITEMS
CLASS II RIP RAP
93 TONS RIP RAP
97 SY GEOTEXTILE
-L190- PC Sta. 13+87.22
REMOVE EXISTING BRIDGE
PROPOSED 2 @ 8'X6' RCBC
END CONSTRUCTION -L190- STA.12+83.92
END CONSTRUCTION
-DRIVE- POT Sta. 10+84.00
N 18° 07' 07.8" W
CUT DITCH SEE DETAIL B
SPECIAL LATERAL 'V' DITCH SEE DETAIL A
EST 1 TON CL B RIP RAP
EST 5 SY GEOTEXTILE
END CULVERT -L190- Sta.13+95.59
BEGIN CULVERT -L190- Sta.13+70.24
BM #2 ELEV. 2541.59' -BL- STA. 9+86.68 52.16' LT. SPIKE IN BASE OF 15" WALNUT
MICHAEL F. BELL DB 1002 PG 1379
BM #1 ELEV. 2538.75' -BL- STA. 8+30.64 5.42' LT. SPIKE IN BASE OF 10" WALNUT
-L190- PC Sta. 15+43.84
EXCAVATION LIMITS
STRUCTURE PAY ITEMS
CLASS II RIP RAP
82 TONS RIP RAP
97 SY GEOTEXTILE
-L190- PT Sta. 16+50.56
-L190- POT Sta. 17+06.59
N 20° 09' 00.0" W
MICHAEL F. BELL DB 922 PG 2451
SPECIAL LATERAL 'V' DITCH w/RIP RAP SEE DETAIL C
END ELEC.FENCE -L190- STA.16+07.74
RELOCATE EXISTING ELECTRIC FENCE 'I' BEHIND CONSTRUCTION LIMITS
-L190- PRC Sta. 14+71.52
END PROJECT
END CONSTRUCTION
-L190- 16+20.00



SEE SHEET RW07 FOR -L190- R/W

SEE SHEETS C4-1 THRU C4-10 FOR CULVERT PLANS

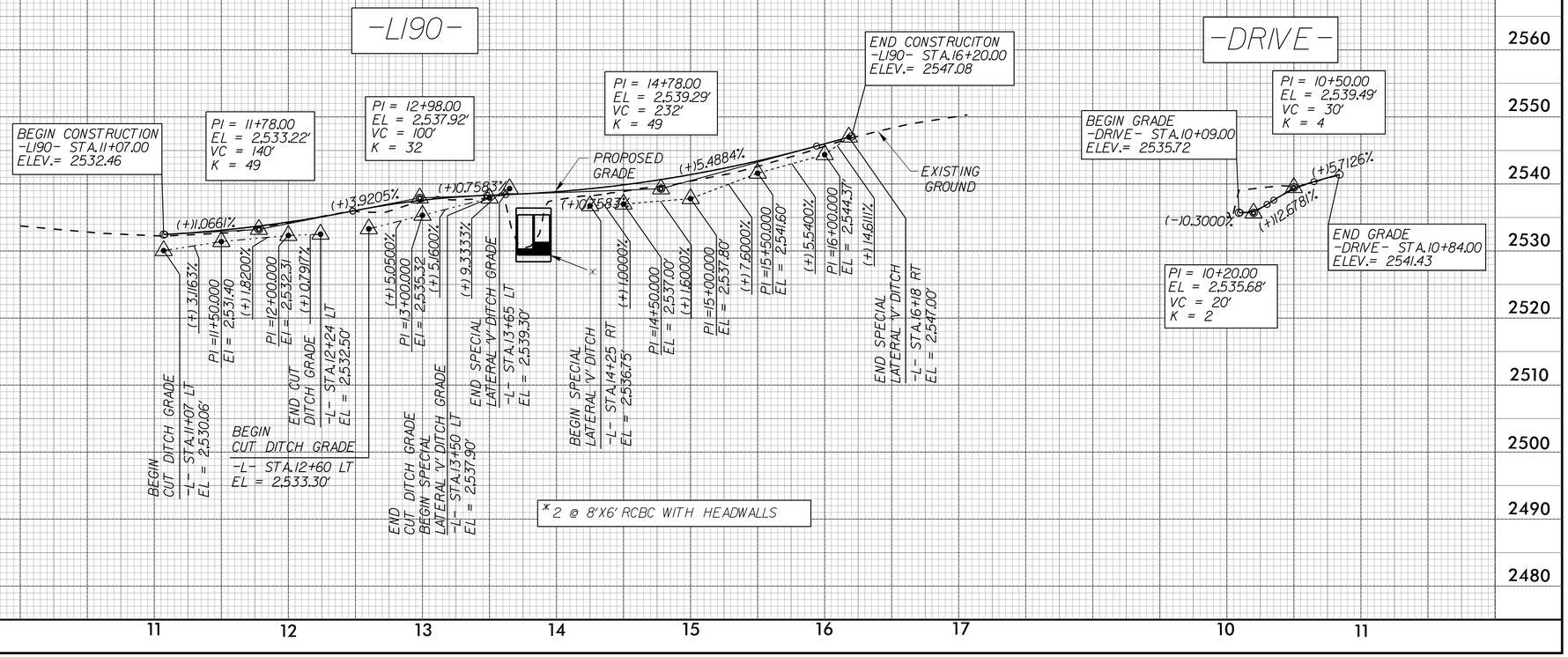
STRUCTURE HYDRAULIC DATA

DRAINAGE AREA	= 1.30	SQ MI
DESIGN DISCHARGE	= 480	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 2536.9	FT
BASE DISCHARGE	= 700	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2538.5	FT
OVERTOPPING DISCHARGE	= 1000	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 2540.9	FT

LEFT DITCH
RIGHT DITCH

BM #1 ELEV. 2538.75'
-L190- STA.12+95.83 4.06 LT
-BL- STA.8+30.64 5.42 LT
SPIKE IN BASE OF 10" WALNUT

BM #2 ELEV. 2541.59'
-L190- STA.14+51.57 41.11 LT
-BL- STA.9+86.68 52.16 LT
SPIKE IN BASE OF 15" WALNUT



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BP14.R.002	RW01	17

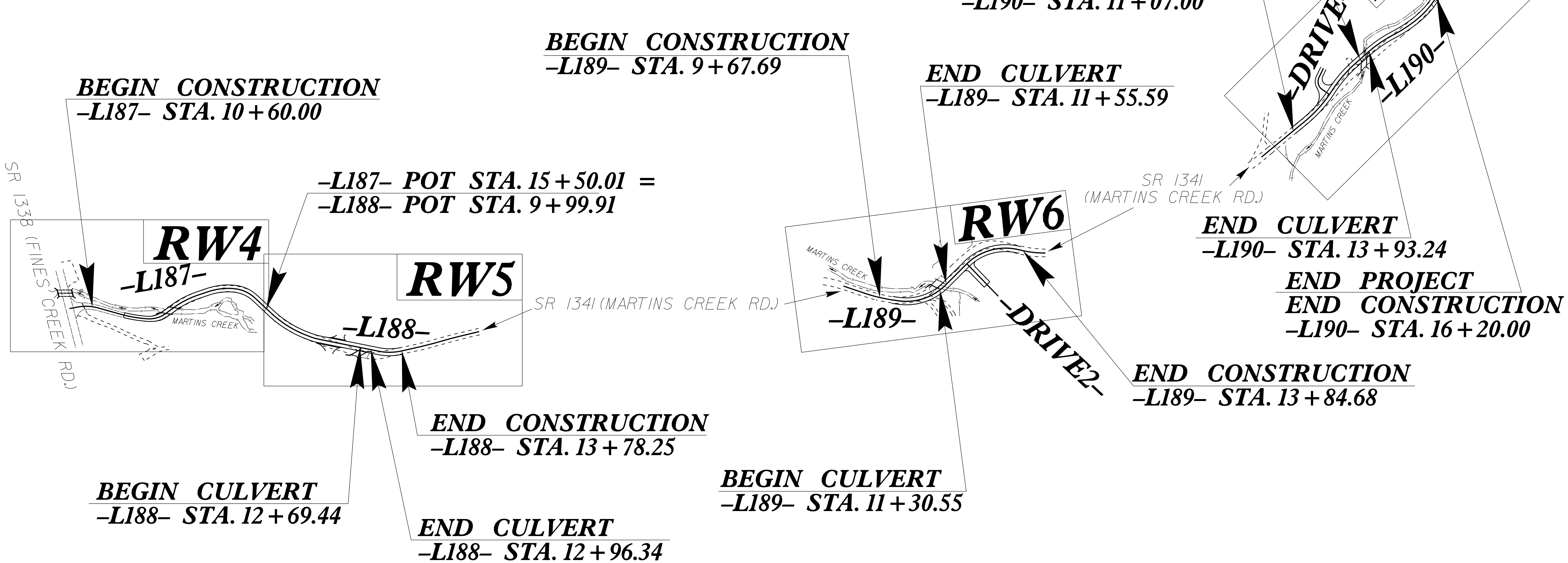
TIP PROJECT: BP14.R002

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

HAYWOOD COUNTY

LOCATION: CULVERTS 430188, 430189 AND 430190 OVER MARTINS CREEK ON SR 1341 (MARTINS CREEK RD)
TYPE OF WORK: GRADING, DRAINAGE, PAVING AND CULVERTS



GRAPHIC SCALE

50 25 0 50 100

PLANS

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "GPS-103"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 728,454.276(ft) EASTING: 820,264.062(ft)
ELEVATION: 2,549.46(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9997875932
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS-103" TO -L188- STATION 10+00.00 IS
S 37°36'33.2" W 3,161.32'(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

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:	LETTING DATE:
MARCH 2024	MARCH 24, 2026

PROFESSIONAL LAND SURVEYOR

DocuSigned by:
Brian A. Barwatt
A9355FE84A84CE...

2/19/2026

SIGNATURE: Date:

NORTH CAROLINA PROFESSIONAL SEAL L-4727 LAND SURVEYOR BRIAN A. BARWATT

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

19-FEB-2026 10:30
X:\P\030014001.Div 14 Bridges.2016\030014001.RJ73 430187.188.189.190\Correspondence\Submittals\Design\D-038R.Revised Sealed Plans.20260109\02.To NCDOT\Electronic Files\RightOfWay\bp14...
HarrisA
09/08/99

SURVEY CONTROL SHEET

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

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

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL LAND SURVEYOR SEAL L-4727 BRIAN A. BARWATT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

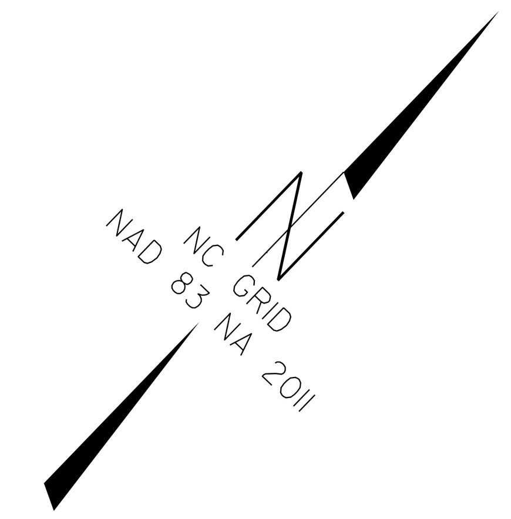
BASELINE

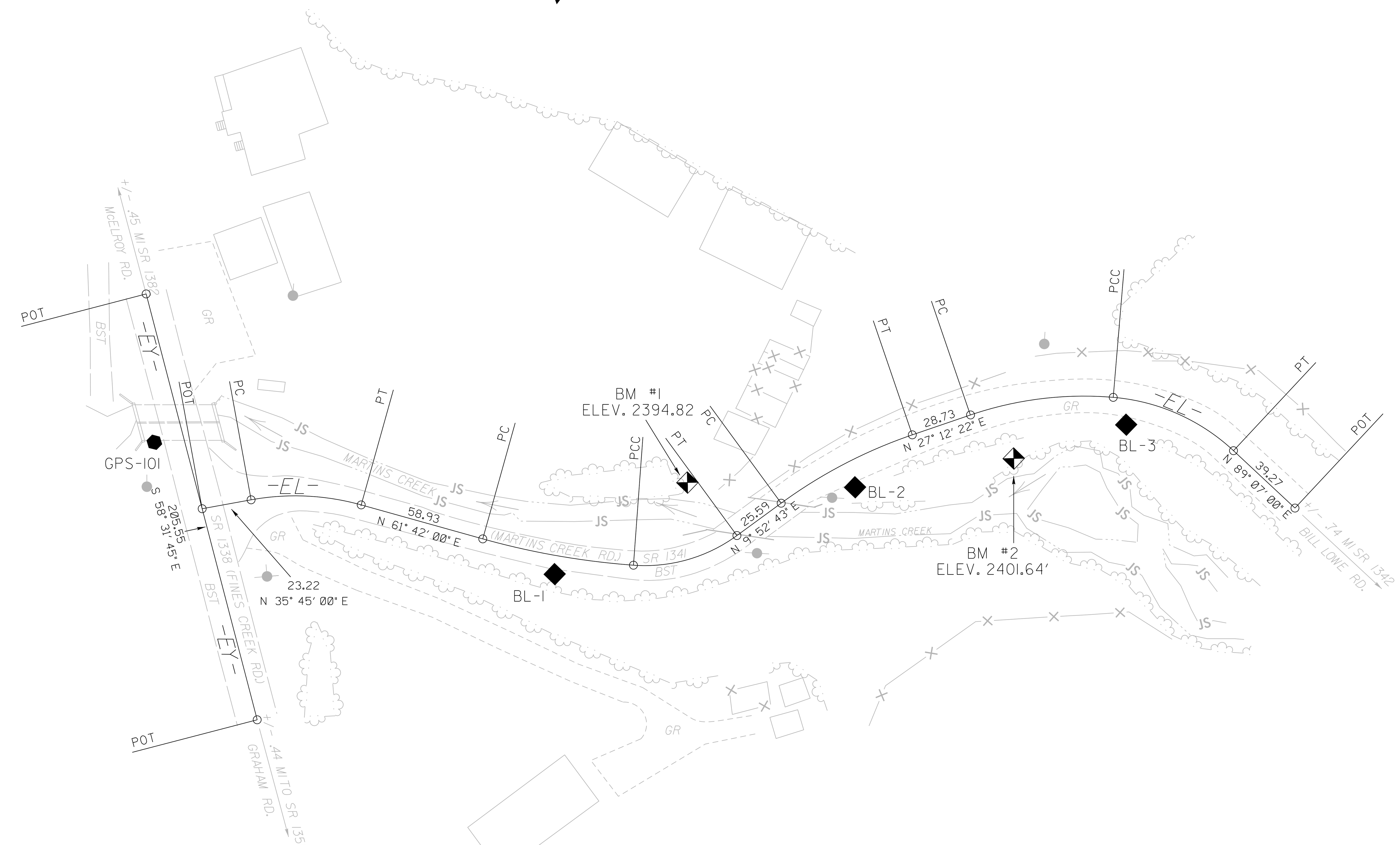
BL

POINT	DESC.	NORTH	EAST	ELEVATION
GPS101	GPS-101	725602.6300	817929.8910	2389.99
1	BL-1	725687.9010	818107.2453	2391.33
2	BL-2	725814.4064	818180.1158	2396.05
3	BL-3	725923.2595	818251.0152	2405.26

BM1 ELEVATION = 2394.82
N 725762 E 818122
SPIKE IN BASE OF 10" WALNUT

BM2 ELEVATION = 2401.64
N 725876 E 818224
SPIKE IN BASE OF 16" POPLAR





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: May 10, 2016
Datum/Epoch: NAD83/NA 2011
Published/Fixed-control use: N/A
Localized around: GPS-103
Northing: 728454.276'
Easting: 820264.062'
Combined grid factor: 0.9997875932
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 during May 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 12th day of February, 2025.

DocuSigned by: Brian Barwatt
A9355FE84A8A4CE...
Professional Land Surveyor L-4727

EL

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	725595.774	817967.508							
LINE			N 35°45'00.0" E	23.22					
PC	725614.622	817981.076							
CURVE			N 48°43'30.0" E	51.46	25°57'00.0"(RT)	50°00'00.0"	51.90	26.40	114.59
PT	725648.567	818019.749							
LINE			N 61°42'00.0" E	58.93					
PC	725676.506	818071.637							
CURVE			N 55°59'38.2" E	71.42	11°24'43.7"(LT)	15°57'06.3"	71.54	35.89	359.18
PCC	725716.452	818130.846							
CURVE			N 30°04'59.7" E	50.25	40°24'33.3"(LT)	78°45'22.4"	51.31	26.77	72.75
PT	725759.935	818156.035							
LINE			N 09°52'43.0" E	25.59					
PC	725785.150	818160.426							
CURVE			N 18°32'32.5" E	69.05	17°19'39.0"(RT)	25°00'00.0"	69.31	34.92	229.18
PT	725850.611	818182.383							
LINE			N 27°12'22.0" E	28.73					
PC	725876.166	818195.520							
CURVE			N 39°02'51.4" E	67.12	23°40'58.8"(RT)	35°01'53.0"	67.61	34.29	163.56
PCC	725928.296	818237.806							
CURVE			N 70°00'10.4" E	61.42	38°13'39.2"(RT)	61°05'16.1"	62.58	32.50	93.79
PT	725949.302	818295.527							
LINE			N 89°07'00.0" E	39.27					
POT	725949.907	818334.796							

EY

POINT	N	E	BEARING	DIST
POT	725649.902	817879.078		
LINE			S 58°31'44.7" E	205.55
POT	725542.590	818054.396		

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.

6/2/99
REVISIONS
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babarwatt AT LS-330173L

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	RW02C-2

Location and Surveys

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

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL LAND SURVEYOR SEAL L-4727 BRIAN A. BARWATT

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

SURVEY CONTROL SHEET 43–0188

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

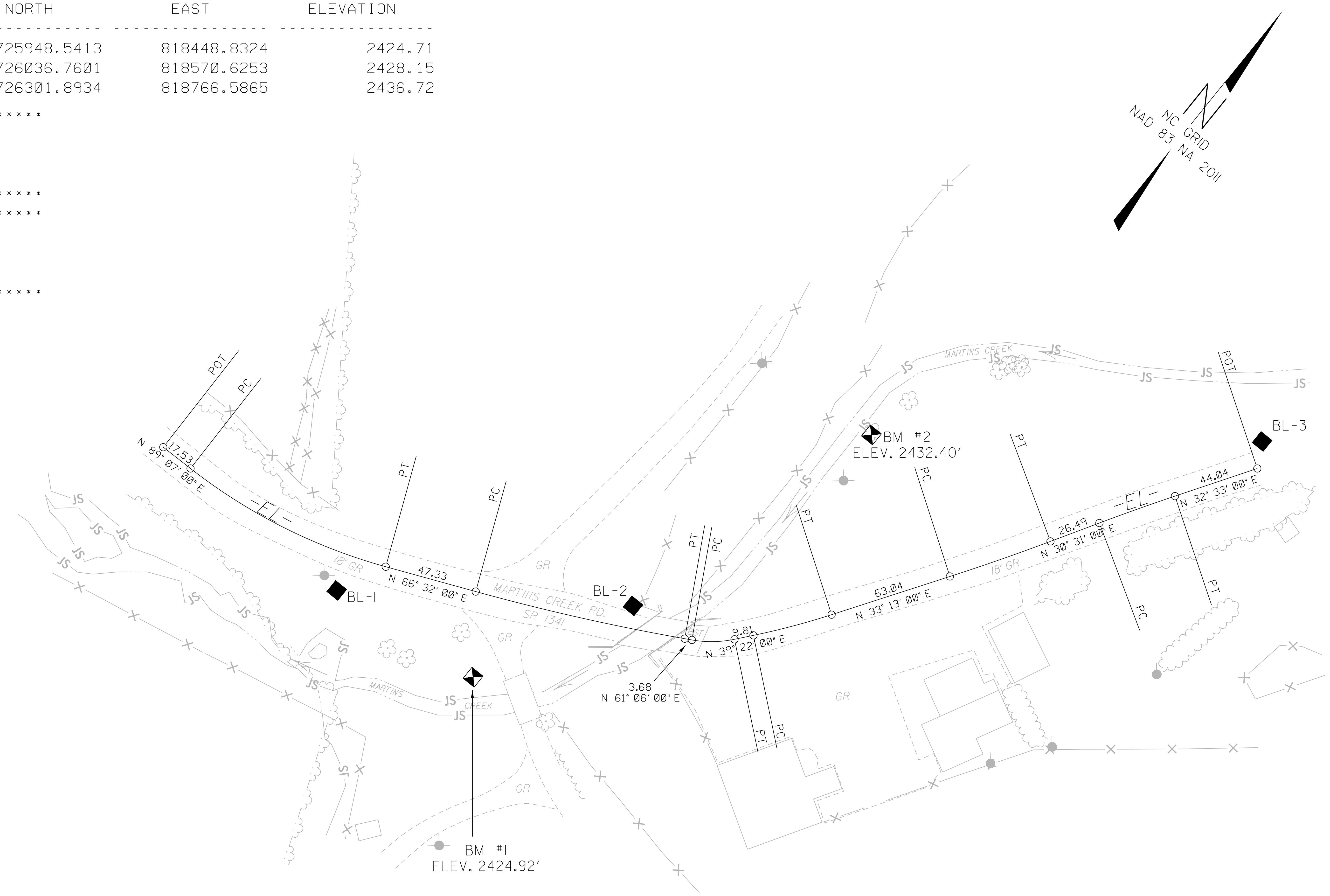
BASELINE

BL

POINT	DESC.	NORTH	EAST	ELEVATION
1	BL-1	725948.5413	818448.8324	2424.71
2	BL-2	726036.7601	818570.6253	2428.15
3	BL-3	726301.8934	818766.5865	2436.72

BM1 ELEVATION = 2424.92
N 725958 E 818530
SPIKE IN BASE OF 18" POPLAR

BM2 ELEVATION = 2432.40
N 726180 E 818610
SPIKE IN BASE OF 24" WALNUT



EL

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	725949.907	818334.796							
LINE			N 89°07'00.0" E	17.53					
PC	725950.177	818352.322							
CURVE			N 77°49'30.0" E	110.80	22°35'00.0"(LT)	20°15'00.0"	111.52	56.49	282.94
PT	725973.545	818460.632							
LINE			N 66°32'00.0" E	47.33					
PC	725992.393	818504.048							
CURVE			N 63°49'00.0" E	108.63	05°26'00.0"(LT)	05°00'00.0"	108.67	54.37	1145.92
PT	726040.324	818601.528							
LINE			N 61°06'00.0" E	3.68					
PC	726042.104	818604.754							
CURVE			N 50°14'00.0" E	21.60	21°44'00.0"(LT)	100°00'00.0"	21.73	11.00	57.30
PT	726055.923	818621.359							
LINE			N 39°22'00.0" E	9.81					
PC	726063.508	818627.582							
CURVE			N 36°17'30.0" E	40.98	06°09'00.0"(LT)	15°00'00.0"	41.00	20.52	381.97
PT	726096.539	818651.838							
LINE			N 33°13'00.0" E	63.04					
PC	726149.277	818686.371							
CURVE			N 31°52'00.0" E	54.00	02°42'00.0"(LT)	05°00'00.0"	54.00	27.00	1145.92
PT	726195.134	818714.878							
LINE			N 30°31'00.0" E	26.49					
PC	726217.955	818728.329							
CURVE			N 31°32'00.0" E	40.66	02°02'00.0"(RT)	05°00'00.0"	40.67	20.34	1145.92
PT	726252.614	818749.596							
LINE			N 32°33'00.0" E	44.04					
POT	726289.739	818773.293							

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: May 10, 2016
Datum/Epoch: NAD83/NA 2011
Published/Fixed-control use: N/A
Localized around: GPS-103
Northing: 728454.276'
Easting: 820264.062'
Combined grid factor: 0.9997875932
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 during May 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 15th day of March, 2022.

DocuSigned by:
Brian Barwatt
A9355FE84A8A4CE...
Professional Land Surveyor L-4727

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

6/2/99

15-MAR-2022 08:28
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bbarwatt AT LS-317902

6/2/99

REVISIONS

SURVEY CONTROL SHEET 43–0189

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	RW02C–3

Location and Surveys

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

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4727 LAND SURVEYOR BRIAN A. BARWATT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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: May 10, 2016
Datum/Epoch: NAD83/NA 2011
Published/Fixed-control use: N/A
Localized around: GPS-103
Northing: 728454.276'
Easting: 820264.062'
Combined grid factor: 0.9997875932
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 during May 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 16th day of March, 2022.

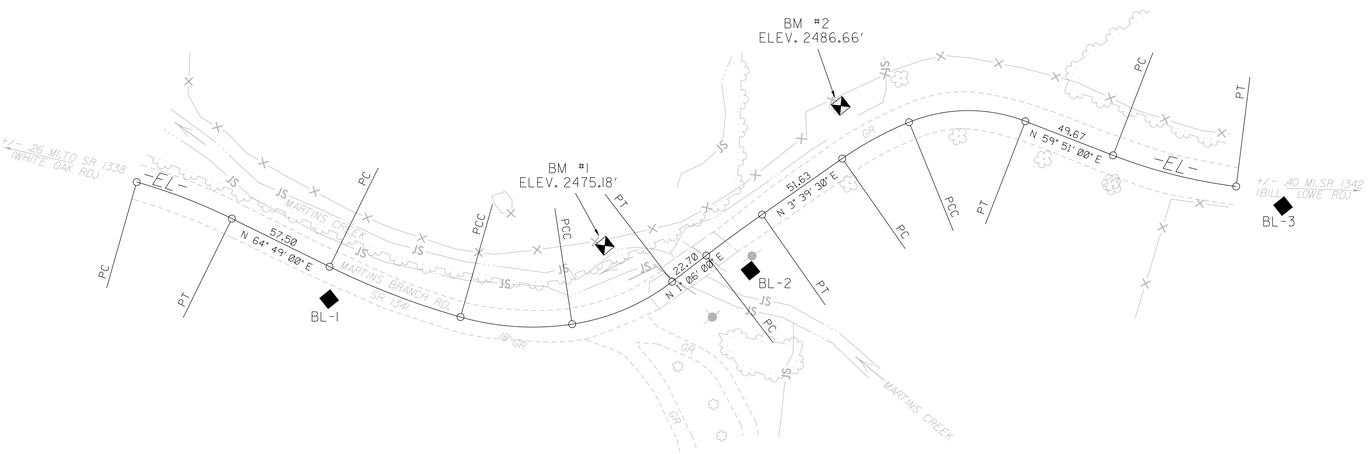
DocuSigned by:
Brian Barwatt
A8505FE8A8A4CE...
Professional Land Surveyor L-4727

BASELINE

BL

POINT	DESC.	NORTH	EAST	ELEVATION
1	BL-1	727043.5639	819436.4644	2469.71
2	BL-2	727226.8257	819563.5261	2478.36
3	BL-3	727467.8337	819712.3543	2501.81

****
BM1 ELEVATION = 2475.18
N 727175 E 819505
SPIKE IN BASE OF 24" POPLAR
****
****
BM2 ELEVATION = 2486.66
N 727318 E 819525
SPIKE IN BASE OF 20" WALNUT
****



EL

POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
PC	727002.771	819324.724							
CURVE			N 59°37'26.8" E	53.87	10°23'06.4"(RT)	19°15'00.0"	53.95	27.05	297.64
PT	727030.014	819371.203							
LINE			N 64°49'00.0" E	57.50					
PC	727054.482	819423.240							
CURVE			N 59°37'33.5" E	74.05	10°22'53.0"(LT)	14°00'00.0"	74.15	37.18	409.26
PCC	727091.926	819487.128							
CURVE			N 42°15'50.5" E	59.09	24°20'33.1"(LT)	40°53'23.4"	59.53	30.22	140.12
PCC	727135.652	819526.865							
CURVE			N 15°35'47.0" E	57.37	28°59'33.9"(LT)	49°59'59.9"	57.99	29.63	114.59
PT	727190.909	819542.289							
LINE			N 01°06'00.0" E	22.70					
PC	727213.603	819542.725							
CURVE			N 02°22'45.0" E	36.54	02°33'30.0"(RT)	07°00'00.0"	36.55	18.28	818.51
PT	727250.117	819544.242							
LINE			N 03°39'30.0" E	51.63					
PC	727301.644	819547.537							
CURVE			N 10°02'57.9" E	40.18	12°46'55.8"(RT)	31°45'00.0"	40.26	20.21	180.46
PCC	727341.203	819554.547							
CURVE			N 38°08'42.9" E	61.42	43°24'34.2"(RT)	69°00'00.0"	62.91	33.05	83.04
PT	727389.505	819592.483							
LINE			N 59°51'00.0" E	49.67					
PC	727414.455	819635.436							
CURVE			N 52°47'17.7" E	67.08	14°07'24.5"(LT)	21°00'00.0"	67.25	33.80	272.84
PT	727455.025	819688.863							

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.

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bbarwatt AT LS-317902

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REVISIONS

SURVEY CONTROL SHEET 43–0190

W/ EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	RW02C–4

Location and Surveys

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

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4727 LAND SURVEYOR BRIAN A. BARWATT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

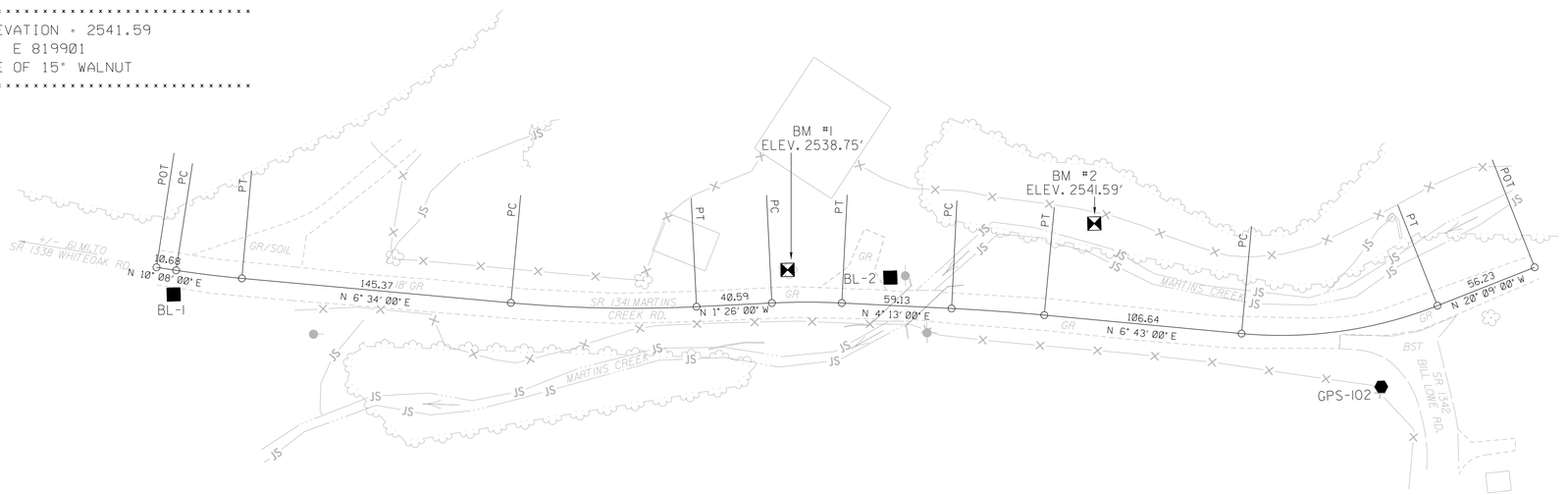
BASELINE

BL

POINT	DESC.	NORTH	EAST	ELEVATION
1	BL-1	727985.5704	819927.2197	2533.86
2	BL-2	728371.3568	819927.4193	2537.71
GPS102	GPS-102	728634.1060	819992.4320	2549.22

****
BM1 ELEVATION = 2538.75
N 728316 E 819922
SPIKE IN BASE OF 10" WALNUT
****
****
BM2 ELEVATION = 2541.59
N 728482 E 819901
SPIKE IN BASE OF 15" WALNUT
****

NC GRID
NAD 83 NA 2011



POINT	N	E	BEARING	DIST	DELTA	D	L	T	R
POT	727976.719	819912.409							
LINE			N 10°08'00.0" E	10.68					
PC	727987.231	819914.288							
CURVE			N 08°21'00.0" E	35.66	03°34'00.0"(LT)	10°00'00.0"	35.67	17.84	572.96
PT	728022.514	819919.466							
LINE			N 06°34'00.0" E	145.37					
PC	728166.930	819936.091							
CURVE			N 02°34'00.0" E	99.92	08°00'00.0"(LT)	08°00'00.0"	100.00	50.08	716.20
PT	728266.748	819940.565							
LINE			N 01°26'00.0" W	40.59					
PC	728307.329	819939.550							
CURVE			N 01°23'30.0" E	37.65	05°39'00.0"(RT)	15°00'00.0"	37.67	18.85	381.97
PT	728344.969	819940.464							
LINE			N 04°13'00.0" E	59.13					
PC	728403.936	819944.812							
CURVE			N 05°28'00.0" E	50.00	02°30'00.0"(RT)	05°00'00.0"	50.00	25.00	1145.92
PT	728453.704	819949.575							
LINE			N 06°43'00.0" E	106.64					
PC	728559.614	819962.047							
CURVE			N 06°43'00.0" W	106.48	26°52'00.0"(LT)	25°00'00.0"	107.47	54.74	229.18
PT	728665.368	819949.593							
LINE			N 20°09'00.0" W	56.23					
POT	728718.153	819930.224							

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: May 10, 2016
Datum/Epoch: NAD83/NA 2011
Published/Fixed-control use: N/A
Localized around: GPS-103
Northing: 728454.276'
Easting: 820264.062'
Combined grid factor: 0.9997875932
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 during May 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 21st day of March, 2022.

DocuSigned by:
Brian Barwatt
A8055FE84A8A4CE...

Professional Land Surveyor L-4727

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.

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babarwatt AT LS-317902

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REVISIONS

PROPOSED ALIGNMENT CONTROL SHEET 43-0187

L187

TYPE	STATION	NORTH	EAST
POT	10+00.00	725595.7742	817967.5076
PC	10+23.22	725614.6222	817981.0762
PT	10+75.12	725648.5674	818019.7492
PC	11+34.06	725676.5064	818071.6375
PCC	12+05.60	725716.4521	818130.8459
PT	12+56.91	725759.9354	818156.0353
PC	12+82.50	725785.1496	818160.4262
PT	13+51.81	725850.6115	818182.3833
PC	13+80.54	725876.1656	818195.5198
PCC	14+48.60	725928.5833	818238.1602
PT	15+10.55	725949.2985	818295.3315
POT	15+50.01	725949.9070	818334.7955

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	RW02D-1

Location and Surveys

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

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4727 LAND SURVEYOR BRIAN A. BARWATT

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 12th day of February, 2025.

DocuSigned by:
Brian Barwatt
A8555FE8A8A84CE...
Professional Land Surveyor L-4727

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.

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bbarwatt AP LS-330173L

PROPOSED ALIGNMENT CONTROL SHEET 43-0188

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	RW02D-2

Location and Surveys

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

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL LAND SURVEYOR SEAL L-4727 BRIAN A. BARWATT

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 13th day of February, 2025.

DocuSigned by:
Brian Barwatt
A9355FE84A8A4CE...
Professional Land Surveyor L-4727

L188

TYPE	STATION	NORTH	EAST
POT	09+99.91	725949.9070	818334.7955
PC	10+17.44	725950.1772	818352.3225
PT	11+28.96	725973.5452	818460.6325
PC	11+37.51	725976.9490	818468.4731
PT	11+60.59	725987.7928	818488.8176
PC	13+17.68	726072.5439	818621.0878
PT	13+78.25	726114.8327	818663.8233
PC	14+18.09	726148.1536	818685.6708
PT	14+73.03	726194.7987	818714.6801
PC	14+99.52	726217.6219	818728.1266
PT	15+40.42	726252.4867	818749.5147
POT	15+84.62	726289.7425	818773.2950

NOTES:

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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.

REVISIONS

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babarwatt AT LS-33017JL

PROPOSED ALIGNMENT CONTROL SHEET 43–0189

L189

TYPE	STATION	NORTH	EAST
POT	8+68.34	727030.0139	819371.2031
PC	9+25.85	727054.4820	819423.2403
PT	10+00.00	727091.9252	819487.1277
PC	10+15.62	727101.0098	819499.8336
PT	11+49.67	727215.3849	819560.0540
PC	12+25.67	727291.3780	819561.5127
PT	13+73.33	727413.1329	819633.1592
PC	13+75.97	727414.4573	819635.4394
PT	14+43.22	727455.0261	819688.8639
POT	14+43.22	727455.0261	819688.8639

NOTES:

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

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PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	RW02D-3

Location and Surveys

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

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4727 LAND SURVEYOR BRIAN A. BARWATT

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 16th day of March, 2022.

DocuSigned by:
Brian Barwatt
A9355FE84A8A4CE...

Professional Land Surveyor L-4727

REVISIONS

6/2/99

PROPOSED ALIGNMENT CONTROL SHEET 43-0190

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	RW02D-4

Location and Surveys

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

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4727 LAND SURVEYOR BRIAN A. BARWATT

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This 21st day of March, 2022.

DocuSigned by:
Brian Barwatt
A9355FE8A8A4CE...
Professional Land Surveyor L-4727

REVISIONS

L190

TYPE	STATION	NORTH	EAST
POT	10+00.00	728022.5139	819919.4662
PC	11+45.36	728166.9240	819936.0888
PRC	12+50.88	728271.9282	819931.8270
PT	13+43.64	728364.2399	819926.3449
PC	13+87.22	728407.6932	819929.7017
PRC	14+71.52	728490.0801	819946.4935
PCC	15+43.84	728560.5422	819962.1525
PT	16+50.56	728665.5540	819949.5247
POT	17+06.59	728718.1564	819930.2229

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.

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	RW03E-1

Location and Surveys

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

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4727 LAND SURVEYOR BRIAN A. BARWATT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

RIGHT OF WAY CONTROL SHEET 43–0187

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 on February 18, 2025, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 19th day of February, 2025.

Brian Barwatt
Professional Land Surveyor L-4727

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST	
L187	11+45.00	-10.00	725690.4972	818076.1863	
L187	11+45.00	10.00	725673.1847	818086.2001	
L187	11+45.00	14.00	725669.7213	818088.2013	
L187	12+00.00	14.00	725702.0015	818135.2883	
L187	12+00.00	28.00	725691.0938	818144.0645	
L187	12+20.00	-57.00	725762.5161	818096.6134	
L187	12+83.00	-28.00	725790.5054	818132.9381	
L187	13+18.00	51.00	725803.1160	818217.4879	
L187	13+20.00	-22.50	725828.8227	818148.6051	
L187	13+20.00	-28.00	725830.6363	818143.4128	
L187	13+51.81	-22.50	725860.8983	818162.3725	
L187	13+80.54	22.50	725865.8788	818215.5305	
L187	13+80.54	-22.50	725886.4524	818175.5090	
L187	14+48.60	22.50	725911.0855	818252.3050	POINT NOT SET (IN ROCK)
L187	14+48.60	-22.50	725946.0811	818224.0153	POINT NOT SET (IN FENCE)
L187	15+10.55	-22.50	725971.7959	818294.9846	
L187	15+10.55	22.50	725926.8012	818295.6784	
L187	15+50.01	22.50	725927.4097	818335.1424	
L187	15+50.01	-22.50	725972.4043	818334.4484	

PUE
ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST	
L187	14+07.00	-39.00	725921.8007	818178.1010	
L187	14+07.00	-22.50	725911.9920	818191.3690	
L187	14+30.00	-22.50	725931.8701	818208.3482	
L187	14+30.00	-39.00	725943.4416	818196.5859	
L187	14+39.00	22.50	725905.6921	818246.0199	POINT NOT SET (IN ROCK)

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 MAY OF 2024.

REVISIONS

6/2/99

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babarwatt AT LS-330173L

RIGHT OF WAY CONTROL SHEET 43–0188

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	RW03E–2

Location and Surveys

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

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 May of 2024, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 13th day of February, 2025.

DocuSigned by:
Brian Barwatt
Professional Land Surveyor L-4727

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4727 LAND SURVEYOR BRIAN A. BARWATT

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

REVISIONS

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST	
L188	10+17.44	-22.50	725972.6746	818351.9756	
L188	10+17.44	22.50	725927.6799	818352.6694	
L188	11+28.96	-22.50	725994.1843	818451.6726	
L188	11+28.96	22.50	725952.9061	818469.5923	
L188	11+61.00	-30.00	726013.2751	818472.9803	
L188	11+61.00	-22.50	726006.9602	818477.0265	
L188	11+72.81	26.00	725972.4965	818513.1378	POINT NOT SET (IN TREE)
L188	12+13.00	46.00	725977.3374	818557.7645	PUNCH HOLE IN ROCK
L188	12+65.00	50.00	726002.0233	818603.7059	
L188	12+85.00	-30.00	726080.1722	818577.3859	
L188	12+90.00	26.28	726035.4827	818611.9587	8" NAIL SET
L188	13+19.49	-54.78	726119.2782	818592.4778	
L188	13+38.39	15.00	726073.5889	818647.4803	
L188	13+50.00	-50.00	726127.9148	818610.4558	
L188	13+50.00	-31.07	726114.6505	818623.9577	
L188	13+78.25	-30.00	726131.2821	818638.7352	
L188	13+78.25	-11.28	726121.0157	818654.3931	
L188	13+78.25	15.00	726106.6079	818676.3674	NAIL SET IN ROCK
L188	13+78.25	8.73	726110.0482	818671.1204	

PUE

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST	
L188	11+00.00	48.00	725917.6384	818448.0389	PUNCH HOLE IN ROCK
L188	13+80.00	-84.00	726162.3558	818594.5368	

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 MAY OF 2024.

6/2/99

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babarwatt AT LS-3301731

RIGHT OF WAY CONTROL SHEET 43–0189

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	RW03E-3

Location and Surveys

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

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 on 01/20/2022, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 16th day of March, 2022.

DocuSigned by:
Brian Barwatt
A9355FE84A8A4CE
Professional Land Surveyor L-4727

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4727 LAND SURVEYOR BRIAN A. BARWATT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST	
L189	10+00.00	35.00	727063.4545	819507.4840	
L189	10+00.00	-10.00	727100.0604	819481.3114	
L189	10+00.00	10.00	727083.7911	819492.9436	
L189	10+00.00	-30.00	727116.3297	819469.6791	PT. NOT SET (IN CREEK)
L189	10+15.62	-30.00	727125.4137	819482.3851	PT. NOT SET (IN CREEK)
L189	10+15.62	35.00	727072.5382	819520.1888	
L189	10+85.00	-30.00	727166.6954	819517.8086	PT. NOT SET (IN CREEK)
L189	10+85.00	-40.00	727171.2091	819508.8845	PAINT ON ROCK
L189	11+20.00	-52.00	727197.6033	819505.7572	PAINT ON ROCK
L189	11+35.00	35.00	727196.5344	819593.7701	
L189	11+57.00	-30.00	727223.2920	819530.2003	
L189	11+60.00	55.00	727224.6602	819615.2422	
L189	11+87.00	30.00	727252.1350	819590.7650	
L189	11+87.00	58.00	727251.5977	819618.7598	
L189	12+25.67	-30.00	727291.9537	819531.5182	
L189	12+25.67	30.00	727290.8022	819591.5071	
L189	13+73.33	-30.00	727439.0742	819618.0911	
L189	13+73.33	30.00	727387.1910	819648.2276	
L189	13+73.33	10.00	727404.4853	819638.1823	
L189	13+75.97	-30.00	727440.3986	819620.3713	
L189	13+75.97	-10.00	727423.1039	819630.4170	

PUE
ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L189	8+90.00	43.82	726999.5713	819409.4473
L189	8+90.00	10.00	727030.1791	819395.0553
L189	10+78.00	58.00	727118.3265	819591.6919
L189	12+99.50	30.00	727346.4302	819607.2349
L189	13+25.00	80.00	727330.2810	819656.9073

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 ON 01/20/2022.

REVISIONS

6/2/99

16-MAR-2022 09:33
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babarwatt AT LS-317902

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	RW03E-4

Location and Surveys

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

PROJECT SURVEYOR

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

RIGHT OF WAY CONTROL SHEET 43–0190

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST	
L190	10+65.00	30.00	728083.6569	819956.7028	
L190	10+65.00	10.00	728085.9440	819936.8340	
L190	10+65.00	-10.00	728088.2310	819916.9652	
L190	10+65.00	-30.00	728090.5181	819897.0959	
L190	11+45.36	30.00	728163.4934	819965.8920	
L190	11+45.36	-30.00	728170.3545	819906.2856	
L190	12+17.06	-30.00	728235.6054	819906.8833	
L190	12+50.88	30.00	728277.7627	819961.2542	
L190	12+71.55	-30.00	728288.2819	819898.6977	
L190	13+00.00	30.00	728322.1714	819955.7420	
L190	13+00.00	50.00	728323.1960	819975.7157	PAINT ON ROCK
L190	13+43.64	50.00	728360.3889	819976.1964	
L190	13+43.64	-30.00	728366.5505	819896.4340	
L190	13+60.00	-30.00	728382.8630	819897.6942	
L190	13+87.22	50.00	728403.8421	819979.5532	
L190	14+05.00	-55.00	728432.4712	819876.9934	
L190	14+30.00	-40.00	728458.0860	819896.4881	
L190	14+40.00	30.00	728452.8815	819967.0205	
L190	14+40.00	50.00	728448.2766	819986.4831	
L190	14+71.52	-40.00	728502.8535	819908.5879	
L190	14+71.52	-30.00	728499.6601	819918.0643	
L190	14+71.52	30.00	728480.5000	819974.9228	
L190	15+43.84	-30.00	728563.9050	819932.3416	
L190	15+43.84	30.00	728557.1794	819991.9635	
L190	16+12.57	30.00	728634.5363	819989.0929	
L190	16+20.00	-9.98	728634.0851	819948.3746	
L190	16+20.00	-30.00	728629.7394	819928.8329	

PUE

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L190	11+07.00	43.00	728123.8949	819974.4198
L190	11+07.00	30.00	728125.3815	819961.5051
L190	13+80.00	61.00	728395.7947	819989.9643
L190	14+92.00	30.00	728501.8236	819981.4002

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 on 01/20/2022, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 21st day of March, 2022.

DocuSigned by:
Brian Barwatt
A9355FE84A8A4CE...
Professional Land Surveyor L-4727

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 ON 01/20/2022.

REVISIONS

6/2/99

21-MAR-2022 11:58
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babarwatt AT LS-317902

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	RW04

Location and Surveys

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

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL SEAL L-4727 LAND SURVEYOR BRIAN A. BARWATT

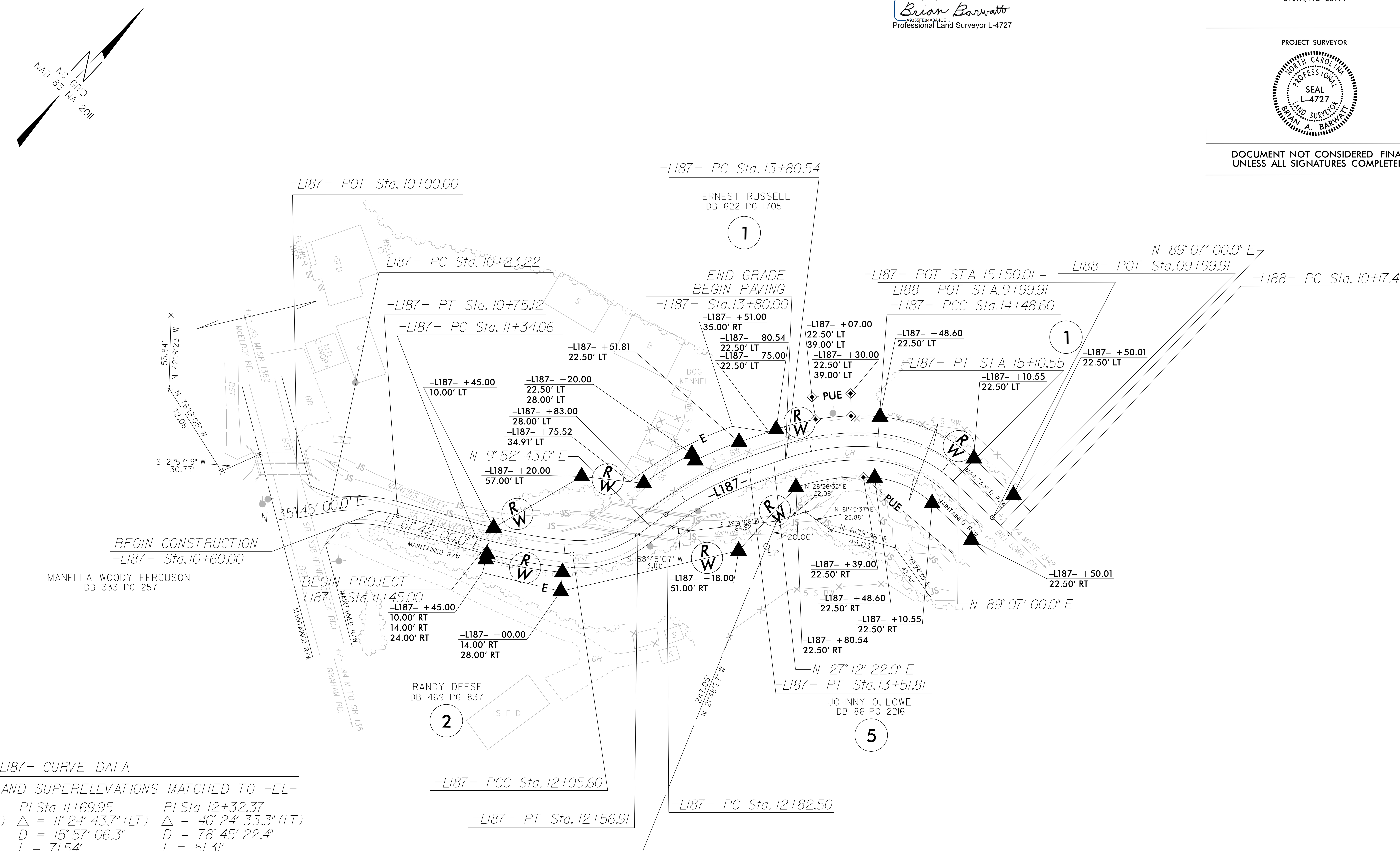
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 on February 18, 2025, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 19th day of February, 2025.

DocuSigned by: Brian Barwatt

Professional Land Surveyor L-4727



-L187- CURVE DATA

-L187- CURVE RADII AND SUPERELEVATIONS MATCHED TO -EL-

PI Sta 10+49.63	PI Sta 11+69.95	PI Sta 12+32.37
Δ = 25° 57' 00.0" (RT)	Δ = 11° 24' 43.7" (LT)	Δ = 40° 24' 33.3" (LT)
D = 50° 00' 00.0"	D = 15° 57' 06.3"	D = 78° 45' 22.4"
L = 51.90'	L = 71.54'	L = 51.31'
T = 26.40'	T = 35.89'	T = 26.77'
R = 114.59'	R = 359.18'	R = 72.75'
SE = EXIST	SE = EXIST	SE = 02*

PI Sta 13+17.42	PI Sta 14+15.07	PI Sta 14+80.77
Δ = 17° 19' 39.0" (RT)	Δ = 23° 50' 33.5" (RT)	Δ = 38° 04' 04.5" (RT)
D = 25° 00' 00.0"	D = 35° 01' 53.0"	D = 61° 27' 27.7"
L = 69.31'	L = 68.06'	L = 61.94'
T = 34.92'	T = 34.53'	T = 32.16'
R = 229.18'	R = 163.56'	R = 93.23'
SE = 02*	SE = EXIST	SE = EXIST

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 MAY OF 2024.

REVISIONS

6/2/99

19-FEB-2025 10:48
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bebarwatt AT LS-3301731

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	RW05

Location and Surveys

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

PROJECT SURVEYOR

SEAL L-4727 NORTH CAROLINA PROFESSIONAL LAND SURVEYOR BRIAN A. BARWATT

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 May of 2024, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

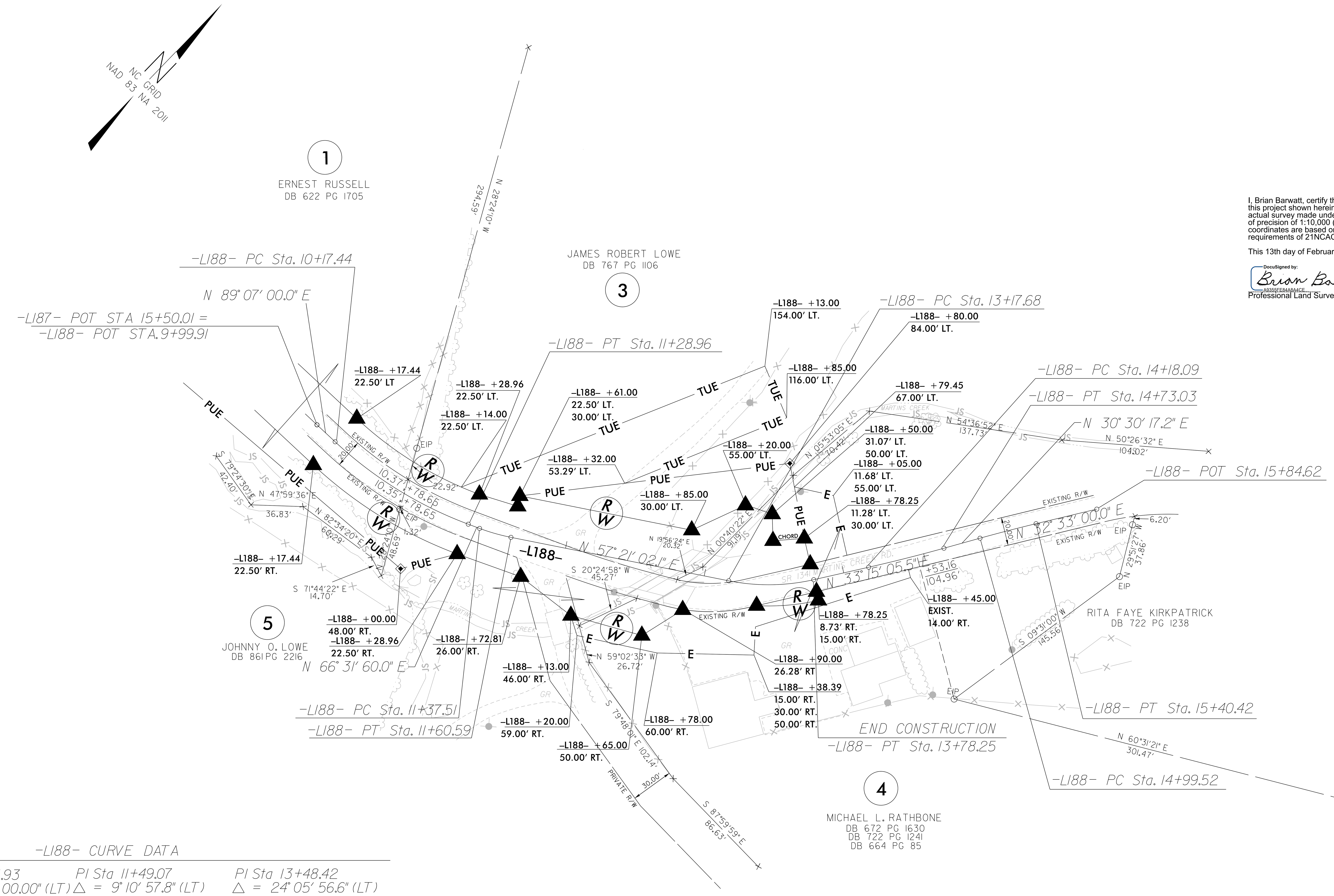
This 13th day of February, 2025.

DocuSigned by: Brian Barwatt

Professional Land Surveyor L-4727

REVISIONS

6/2/99



-L188- CURVE DATA

PI Sta 10+73.93	PI Sta 11+49.07	PI Sta 13+48.42
△ = 22° 35' 00.00" (LT)	△ = 9° 10' 57.8" (LT)	△ = 24° 05' 56.6" (LT)
D = 20° 15' 00.0"	D = 39° 47' 19.4"	D = 39° 47' 19.4"
L = 111.52'	L = 23.08'	L = 60.57'
T = 56.49'	T = 11.56'	T = 30.74'
R = 282.94'	R = 144.00'	R = 144.00'
SE = EXIST	SE = EXIST	SE = 06

PI Sta 14+45.57	PI Sta 15+19.97
△ = 2° 44' 48.3" (LT)	△ = 2° 02' 42.8" (RT)
D = 5° 00' 00.0"	D = 5° 00' 00.0"
L = 54.94'	L = 40.90'
T = 27.47'	T = 20.45'
R = 1,145.92'	R = 1,145.92'

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 MAY OF 2024.

13-FEB-2025 08:31
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bobarwatt AT LS-3301731

Location and Surveys

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

PROJECT SURVEYOR

SEAL L-4727 — NORTH CAROLINA PROFESSIONAL LAND SURVEYOR — BRIAN A. BARWATT

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-L189- CURVE DATA

PI Sta 9+63.03	PI Sta 10+87.94
△ = 10° 22′ 53.0″ (LT)	△ = 53° 20′ 09.4″ (LT)
D = 14° 00′ 00.0″	D = 39° 47′ 19.4″
L = 74.15′	L = 134.05′
T = 37.18′	T = 72.32′
R = 409.26′	R = 144.00′
SE = EXIST	SE = 06
PI Sta 13+06.73	PI Sta 14+09.76
△ = 58° 45′ 00.3″ (RT)	△ = 14° 07′ 22.7″ (LT)
D = 39° 47′ 19.4″	D = 21° 00′ 00.0″
L = 147.66′	L = 67.25′
T = 81.06′	T = 33.80′
R = 144.00′	R = 272.84′
SE = 06	SE = EXIST

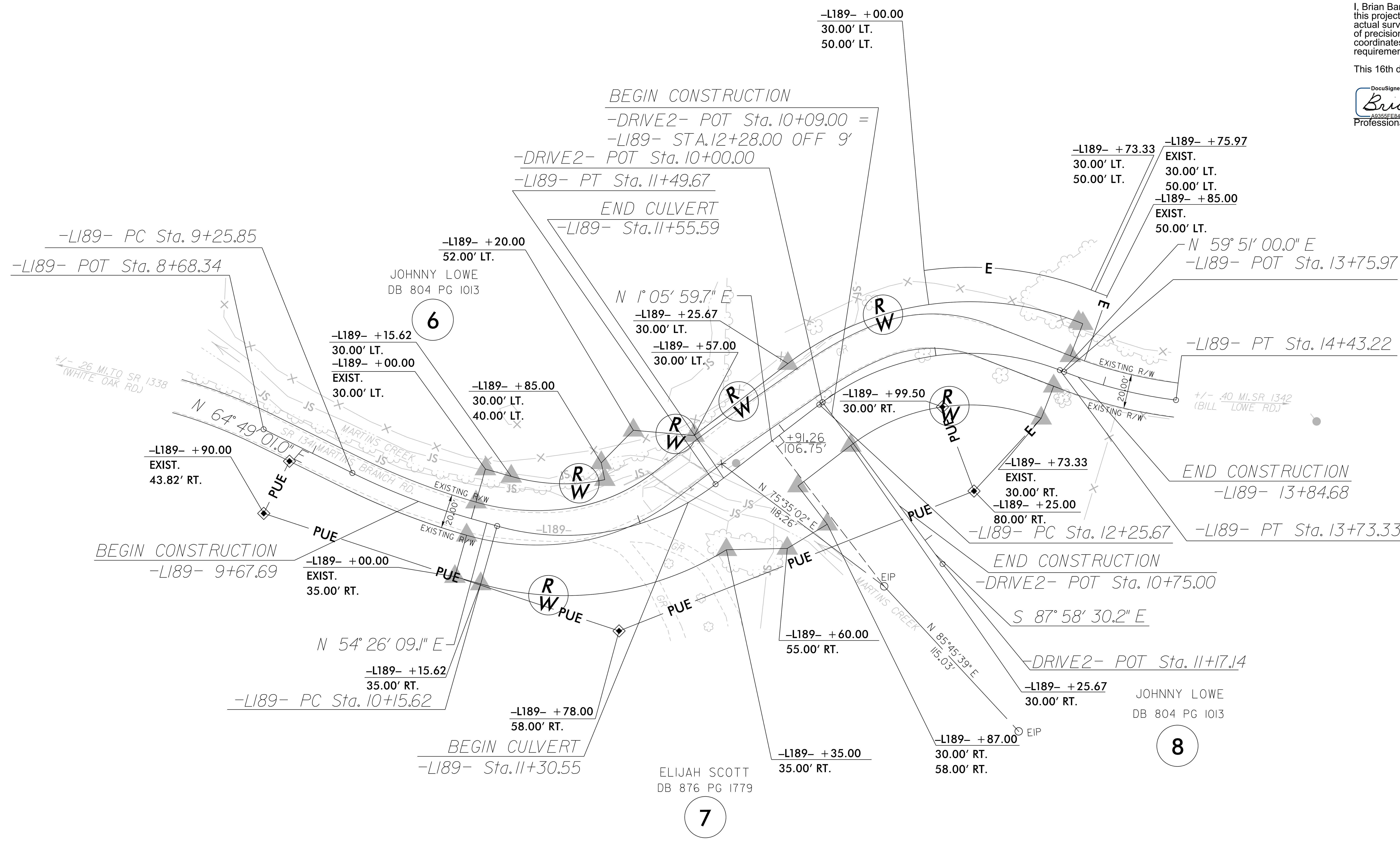
NC GRID NAD 83 NA 2011

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 on 01/20/2022, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 16th day of March, 2022.

DocuSigned by: Brian Barwatt

Professional Land Surveyor L-4727



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 ON 01/20/2022.

REVISIONS

6/2/99

16-MAR-2022 10:22
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babarwatt AT LS-317902

PROJECT REFERENCE NO.	SHEET NO.
BP14.R002	RW07

Location and Surveys

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

PROJECT SURVEYOR

NORTH CAROLINA PROFESSIONAL LAND SURVEYOR
SEAL
L-4727
BRIAN A. BARWATT

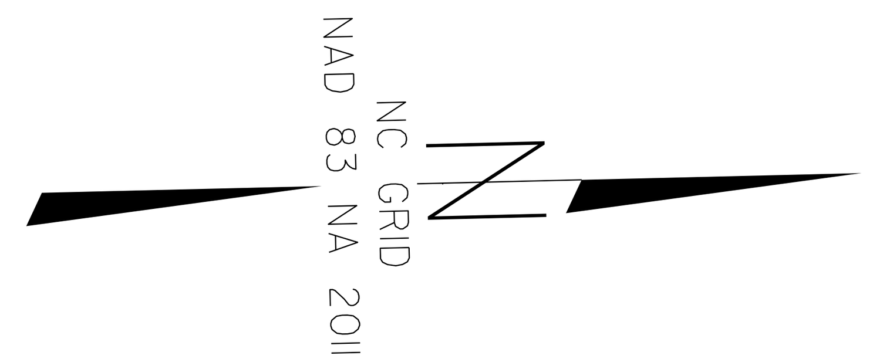
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

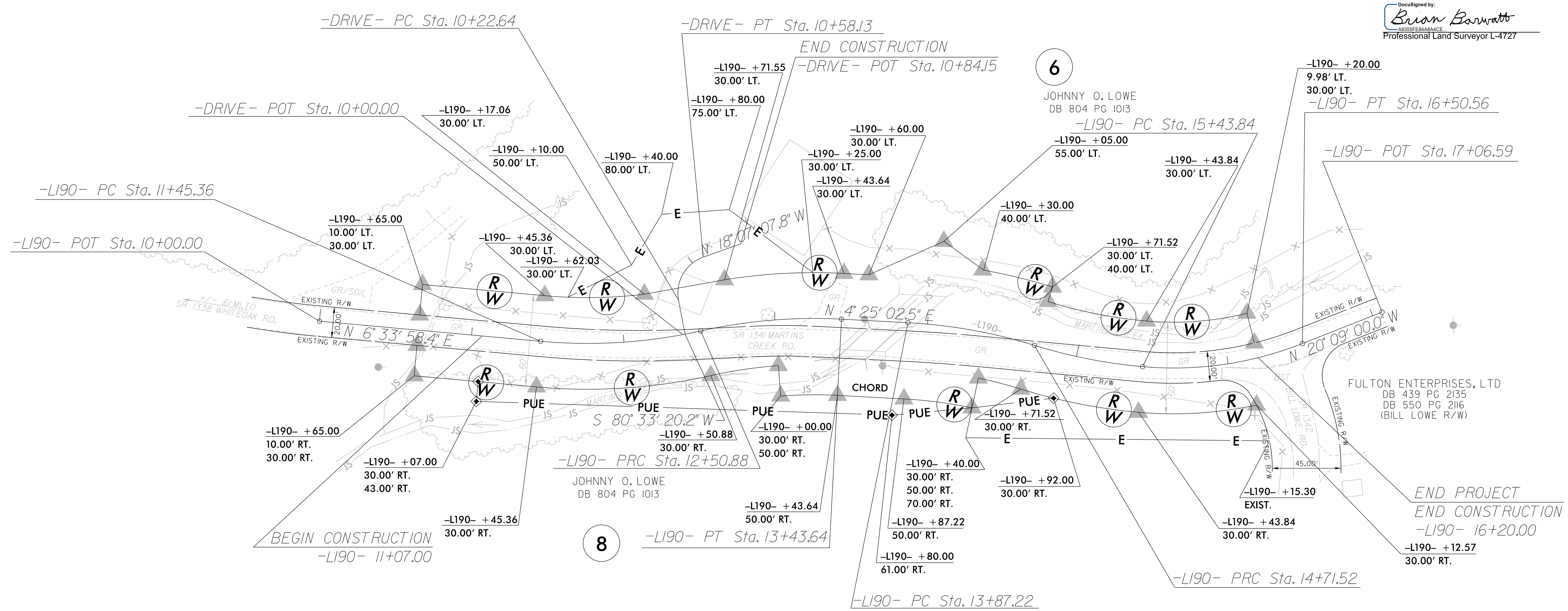
I, Brian Barwatt, certify that the right of way and permanent easement monumentation for this project shown herein was completed under my direct and responsible charge from an actual survey made under my supervision; that all horizontal closures had a minimum ratio of precision of 1:10,000 (Class A). Field work was performed on 01/20/2022, and all coordinates are based on NAD83/2011; That this survey was performed to meet the requirements of 21NCAC 56.1600 as applicable.

This 21st day of March, 2022.

DocuSigned by:
Brian Barwatt
A9355FE84A8A4CE...
Professional Land Surveyor L-4727

REVISIONS





-L190- CURVE DATA

PI Sta 11+98.55	PI Sta 12+97.55	PI Sta 14+29.59	PI Sta 15+07.81	PI Sta 15+98.18
△ = 17° 46' 51.0" (LT)	△ = 15° 37' 55.0" (RT)	△ = 14° 12' 19.4" (RT)	△ = 12° 11' 12.2" (LT)	△ = 26° 35' 09.7" (LT)
D = 16° 51' 06.1"	D = 16° 51' 06.1"	D = 16° 51' 06.1"	D = 16° 51' 06.1"	D = 24° 54' 40.4"
L = 105.51'	L = 92.76'	L = 84.30'	L = 72.32'	L = 106.72'
T = 53.18'	T = 46.67'	T = 42.37'	T = 36.30'	T = 54.34'
R = 340.00'	R = 340.00'	R = 340.00'	R = 340.00'	R = 230.00'
SE = 06	SE = 06	SE = 06	SE = 06	SE = EXIST

-DRIVE- CURVE DATA

PI Sta 10+44.12
△ = 81° 19' 22.6" (RT)
D = 229° 10' 59.2"
L = 35.48'
T = 21.47'
R = 25.00'

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 ON 01/20/2022.

6/2/99

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