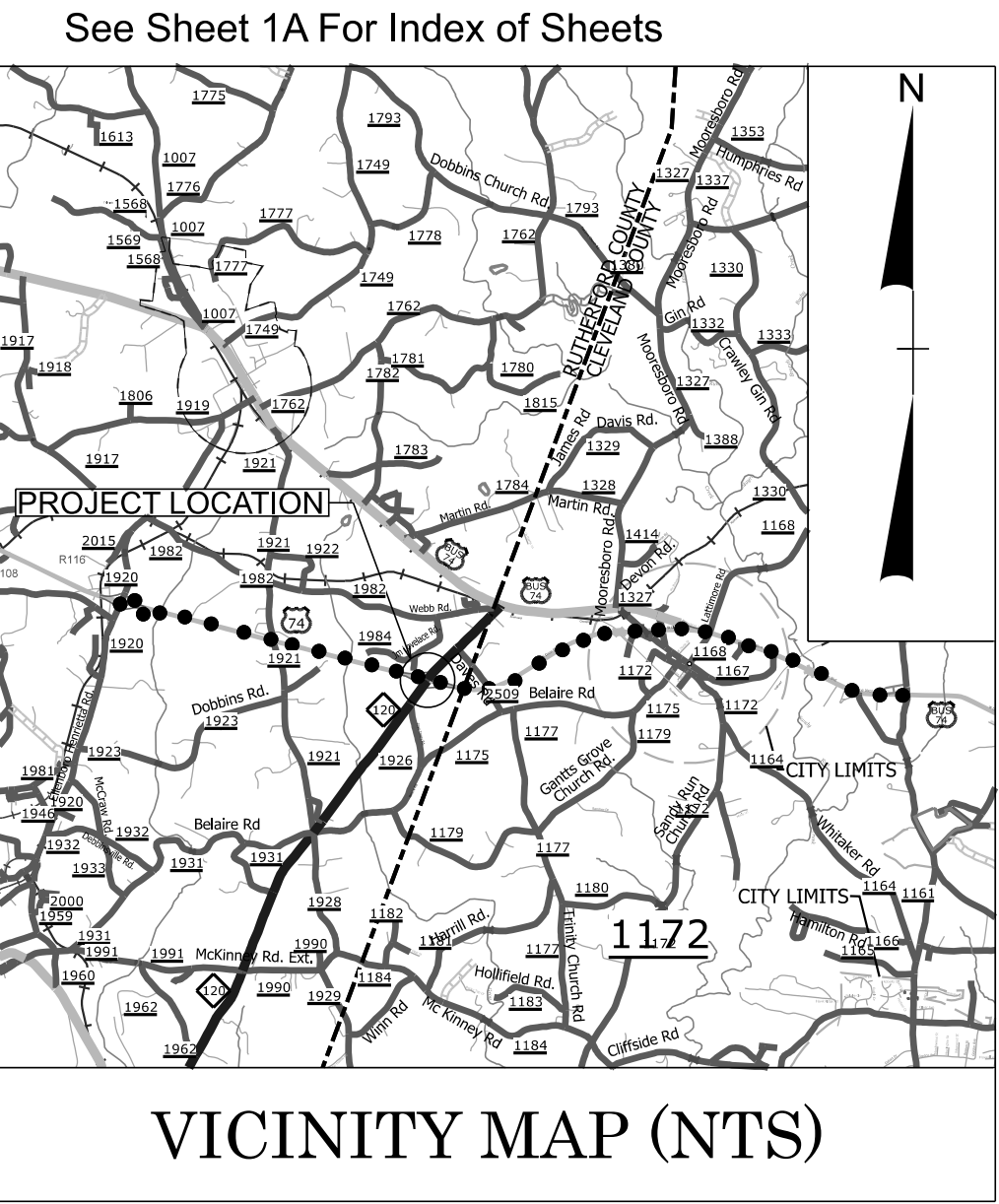


TIP PROJECT: BR-0099

CONTRACT: C205070



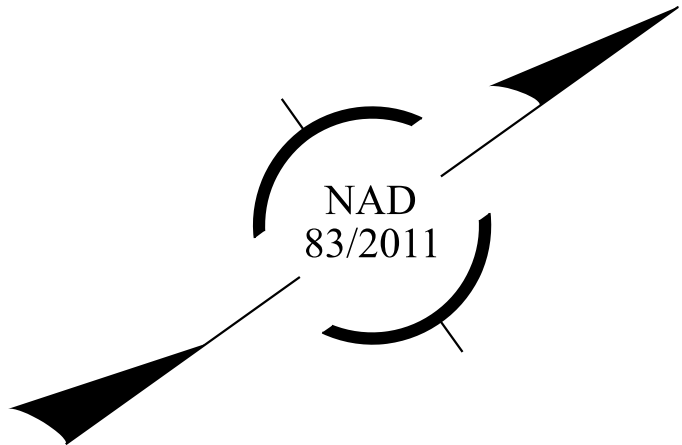
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RUTHERFORD COUNTY

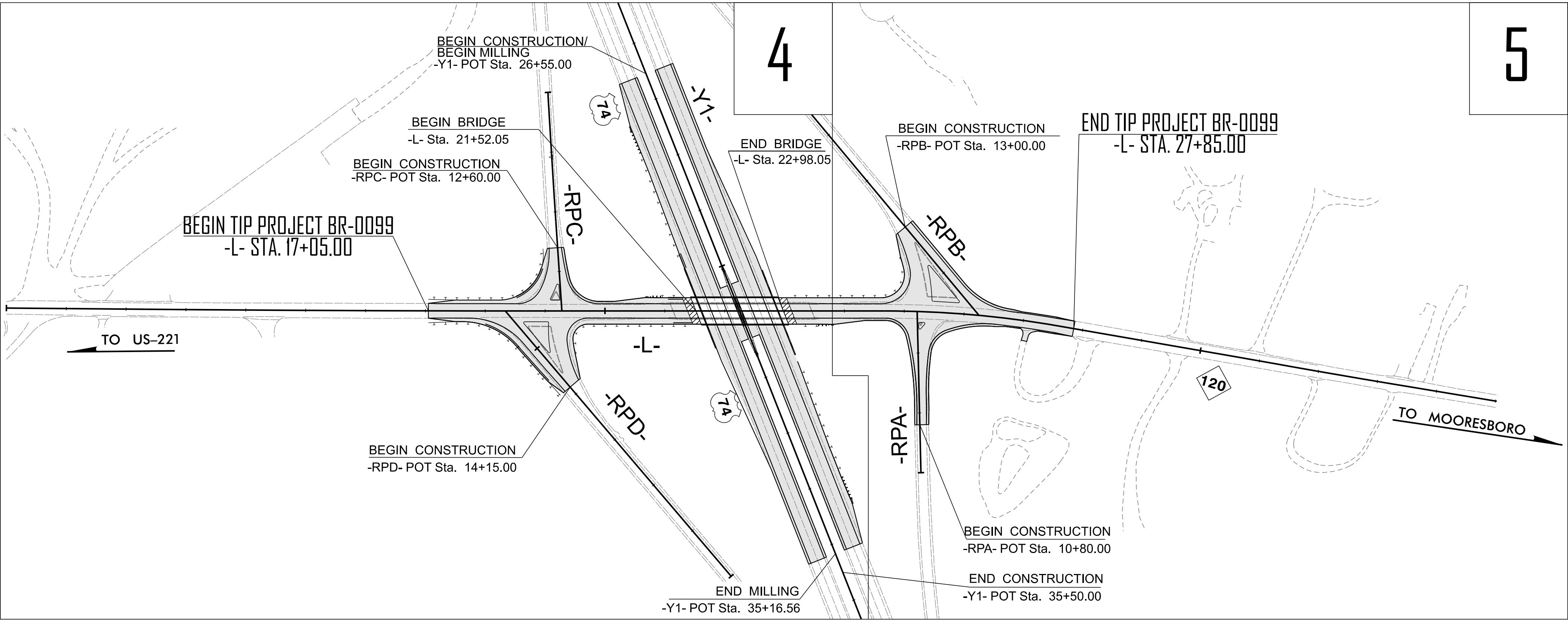
LOCATION: *BRIDGE #12 OVER US 74 BYPASS ON NC 120*

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0099	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
67099.1.1		PE	
67099.2.1		R/W & UTILITY	
67099.3.1		CONSTRUCTION	



● DETOUR



THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2025 = 2,870
ADT 2045 = 4,780
K = 11 %
D = 60 %
T = 6 % *
V = 40 MPH
* TTST =2% DUAL 4%
FUNC CLASS = RURAL,
MINOR COLLECTOR
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT BR-0099 = 0.177 MI
LENGTH STRUCTURE TIP PROJECT BR-0099 = 0.028 MI
TOTAL LENGTH TIP PROJECT BR-0099 = 0.205 MI

Prepared in the Office of:
wsp
WSP USA
131 FORTY-THREE STREET
SUITE 100
RALEIGH, NC 27601
TEL: 919.836.4040
FAX: 919.836.4099
LICENSE NO. E-0165

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JULY 19, 2024

LETTING DATE:
AUGUST 18, 2026

NCDOT CONTACT:

RONYELL THIGPEN, PE
PROJECT ENGINEER

ERIC MISAK
PROJECT DESIGN ENGINEER

CLAUDIA WILLIAMS, PE
DIVISION PROJECT MANAGER

HYDRAULICS ENGINEER

DocuSigned by:
Vidya Mohandas
SIGNATURE: 7/13/2026

ROADWAY DESIGN ENGINEER

DocuSigned by:
Ronyell Thigpen
SIGNATURE: 7/13/2026

Seal 1: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 043232, 7/13/2026, VIDYA MOHANDAS

Seal 2: NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 33290, 7/13/2026, RONYELL A THIGPEN

INDEX OF SHEETS	
SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
2A-1 THRU 2A-3	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1 THRU 2C-5	SPECIAL DETAILS
3B-1	ROADWAY SUMMARIES
3D-1	DRAINAGE SUMMARIES
3G-1	GEOTECHNICAL SUMMARIES
3P-1	PARCEL INDEX SHEET
4 THRU 5	ROADWAY PLAN SHEETS
6 THRU 7	ROADWAY PROFILE SHEETS
RW01 THRU RW05	SURVEY CONTROL AND EXISTING CENTERLINES
TMP-01 THRU TMP-05	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-3	PAVEMENT MARKING PLANS
EC-1 THRU EC-07	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-5	SIGNING PLANS
UO-1 THRU UO-3	UTILITY BY OTHERS PLANS
X-1	CROSS-SECTION INDEX
X-1A	CROSS-SECTION SUMMARY
X-002 THRU X-029	CROSS-SECTIONS
S-1 THRU S-26	STRUCTURE PLANS
SN	STRUCTURE NOTES
W-1 THRU W-5	WALL PLANS

GENERAL NOTES:	2024 SPECIFICATIONS EFFECTIVE: 01-16-2024 REVISED:
GRADING AND SURFACING OR RESURFACING AND WIDENING:	THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED 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 11.
SUPERELEVATION:	ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 AND STD. NO. 225.05 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 AND STD. NO. 560.02
SIDE ROADS:	THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.
SUBSURFACE DRAINS:	SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.
GUARDRAIL:	THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.
TEMPORARY SHORING:	SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.
END BENTS:	THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.
UTILITIES:	UTILITY OWNERS ON THIS PROJECT ARE DUKE ENERGY 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.

EFF. 01-16-2024

REV. 2024 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.05	Method of Obtaining Superelevation - Divided Highways
225.06	Method of Grading Sight Distance at Intersections
225.09	Guide for Shoulder and Ditch Transition at Grade Separations
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation (Use Details in Lieu of Standards for Sheets 1 and 2 of 2)
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
423.03	Bridge Approach Fills - Type 2 Approach Fill for Bridge Abutment with MSE Wall
423.04	Bridge Approach Fills - Type 2A Alternate Approach Fill for Integral Bridge Abutment with MSE Wall
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
610.04	Guide for Paving Shoulders Under Bridges - Method IV
654.01	Pavement Repairs
665.01	Asphalt Shoulders - Milled Rumble Strips
665.02	Limits for Asphalt Shoulders - Milled Rumble Strips
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
815.03	Pipe Underdrain and Blind Drain
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
840.00	Concrete Base Pad for Drainage Structures
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
852.01	Concrete Islands
854.01	Double Faced Concrete Barrier - Types I, II, III and IV
854.06	Median Hazard Protection
857.01	Precast Reinforced Concrete Barrier - 41" Single Faced
862.01	Guardrail Placement (Use Details in Lieu of Standards for Sheets 4, 6, 12, and 14 of 15)
862.02	Guardrail Installation
862.03	Structure Anchor Units (Use Detail in Lieu of Standard for Sheet 8 of 9)
862.04	Anchoring End of Guardrail - for B-77 and B-83 Anchor Units
865.01	Cable Guiderail
866.01	Chain Link Fence - 4', 5' and 6' High Fence
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

BR-0099

1-A

ROADWAY DESIGN
ENGINEER
6/9/2026

NORTH CAROLINA
PROFESSIONAL
ENGINEER
SEAL
33290

DOUGLAS A. THIGPEN
DRAFTER
PCSEA14286427

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UNLESS ALL SIGNATURES COMPLETED

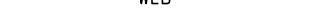


ROADWAY DESIGN UNIT

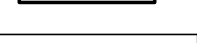
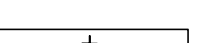
PREPARED BY
WSP
434 FAYETTEVILLE ST. #1500
RALEIGH, N.C. 27601
NC ENG P-1253

Note: Not to Scale

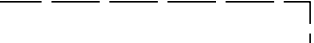
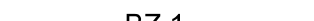
BOUNDARIES AND PROPERTY:

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	
Existing Fence Line	
Proposed Woven Wire Fence	
Proposed Chain Link Fence	
Proposed Barbed Wire Fence	
Existing Wetland Boundary	
Proposed Wetland Boundary	
Existing Endangered Animal Boundary	
Existing Endangered Plant Boundary	
Existing Historic Property Boundary	
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	

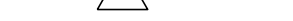
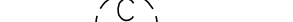
HYDROLOGY:

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

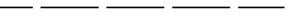
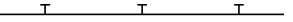
RAILROADS:

Standard Gauge	
RR Signal Milepost	
Switch	
RR Abandoned	
RR Dismantled	

RIGHT OF WAY & PROJECT CONTROL:

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

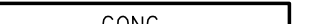
ROADS AND RELATED FEATURES:

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

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

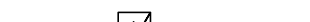
Woods Line	
Orchard	
Vineyard	

EXISTING STRUCTURES:

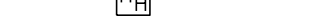
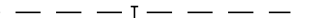
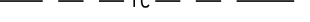
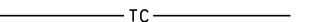
MAJOR:	
Bridge, Tunnel or Box Culvert	
Bridge Wing Wall, Head Wall and End Wall	
MINOR:	
Head and End Wall	
Pipe Culvert	
Footbridge	
Drainage Box: Catch Basin, DI or JB	
Paved Ditch Gutter	
Storm Sewer Manhole	
Storm Sewer	

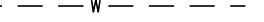
UTILITIES:

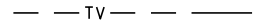
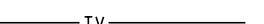
* SUE - Subsurface Utility Engineering
LOS - Level of Service - A,B,C or D (Accuracy)

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

TELEPHONE:

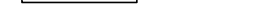
Existing Telephone Pole	
Proposed Telephone Pole	
Telephone Manhole	
Telephone Pedestal	
Telephone Cell Tower	
U/G Telephone Cable Hand Hole	
U/G Telephone Test Hole (SUE - LOS A)*	
U/G Telephone Cable (SUE - LOS B)*	
U/G Telephone Cable (SUE - LOS C)*	
U/G Telephone Cable (SUE - LOS D)*	
U/G Telephone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

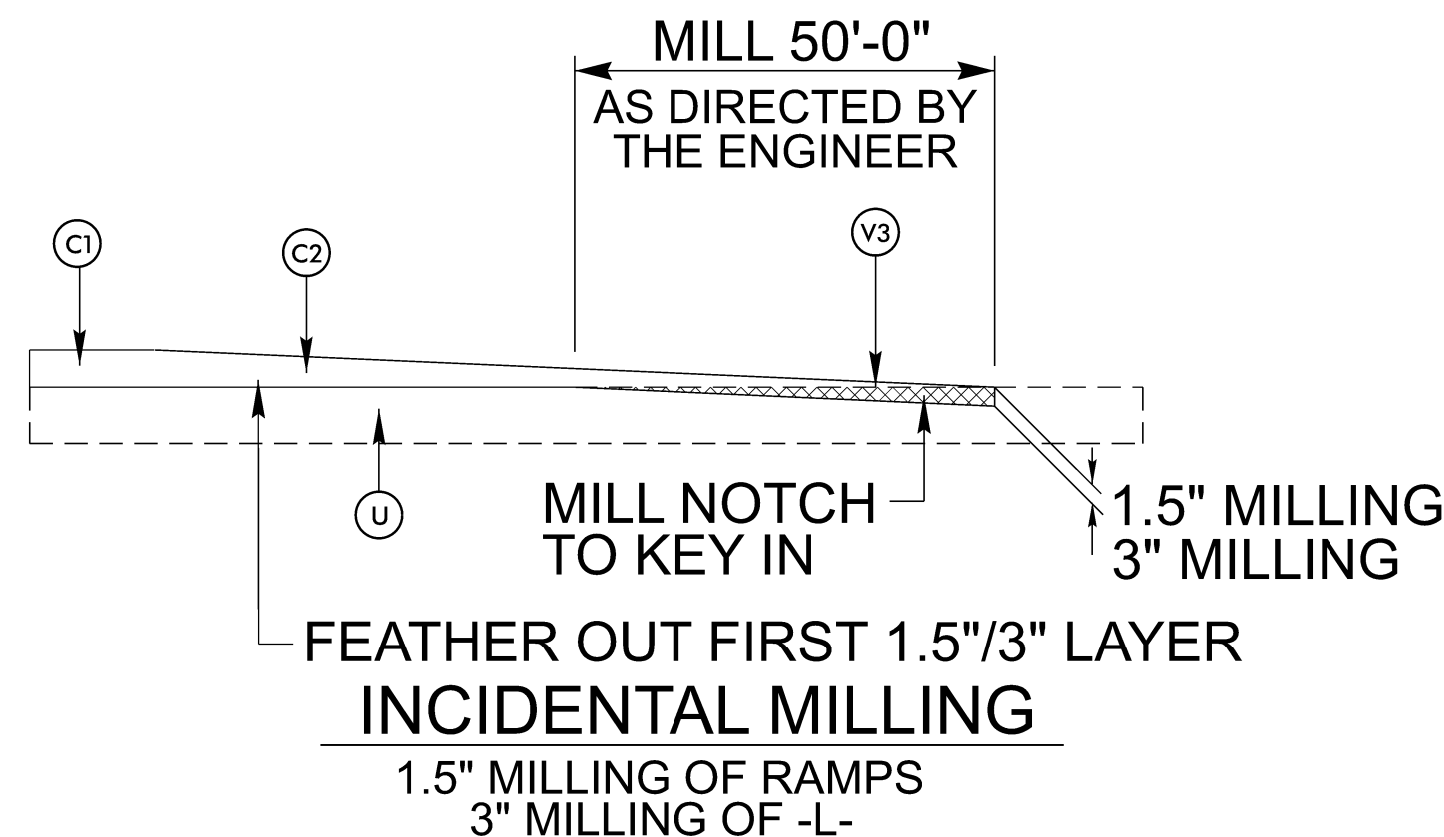
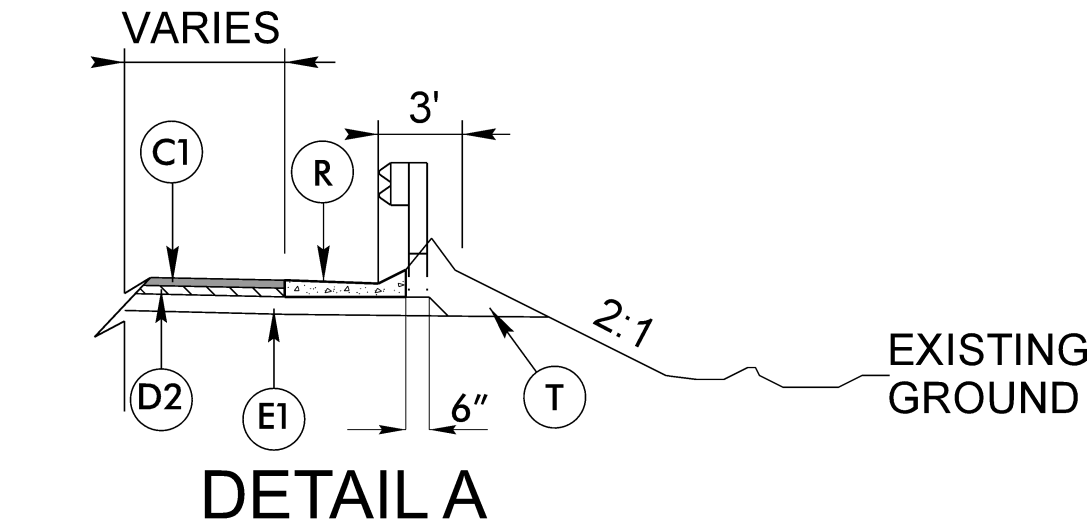
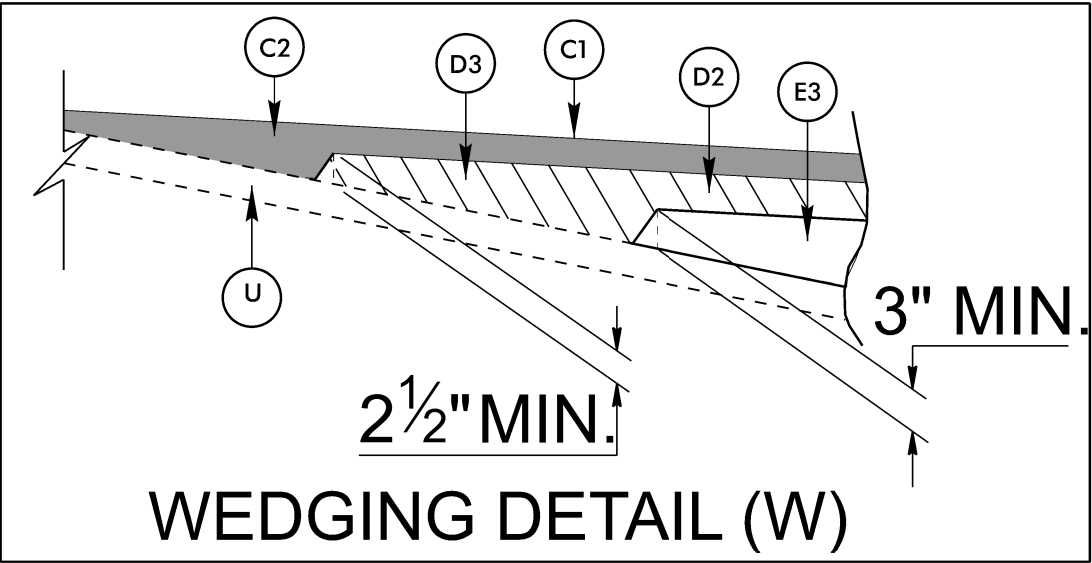
WATER:	
Water Manhole	
Water Meter	
Water Valve	
Water Hydrant	
U/G Water Line Test Hole (SUE - LOS A)*	
U/G Water Line (SUE - LOS B)*	
U/G Water Line (SUE - LOS C)*	
U/G Water Line (SUE - LOS D)*	
Above Ground Water Line	

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

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

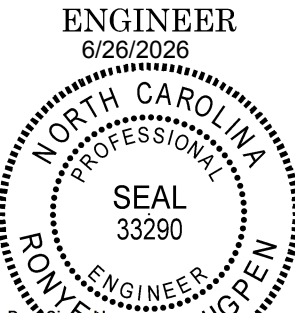
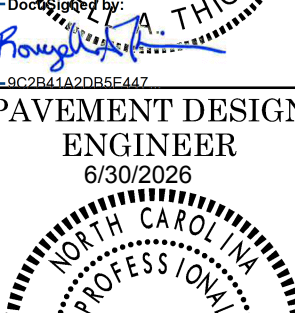
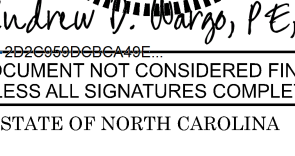
SANITARY SEWER:	
Sanitary Sewer Manhole	
Sanitary Sewer Cleanout	
U/G Sanitary Sewer Line	
Above Ground Sanitary Sewer	
SS Force Main Line Test Hole (SUE - LOS A)*	
SS Force Main Line (SUE - LOS B)*	
SS Force Main Line (SUE - LOS C)*	
SS Force Main Line (SUE - LOS D)*	

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



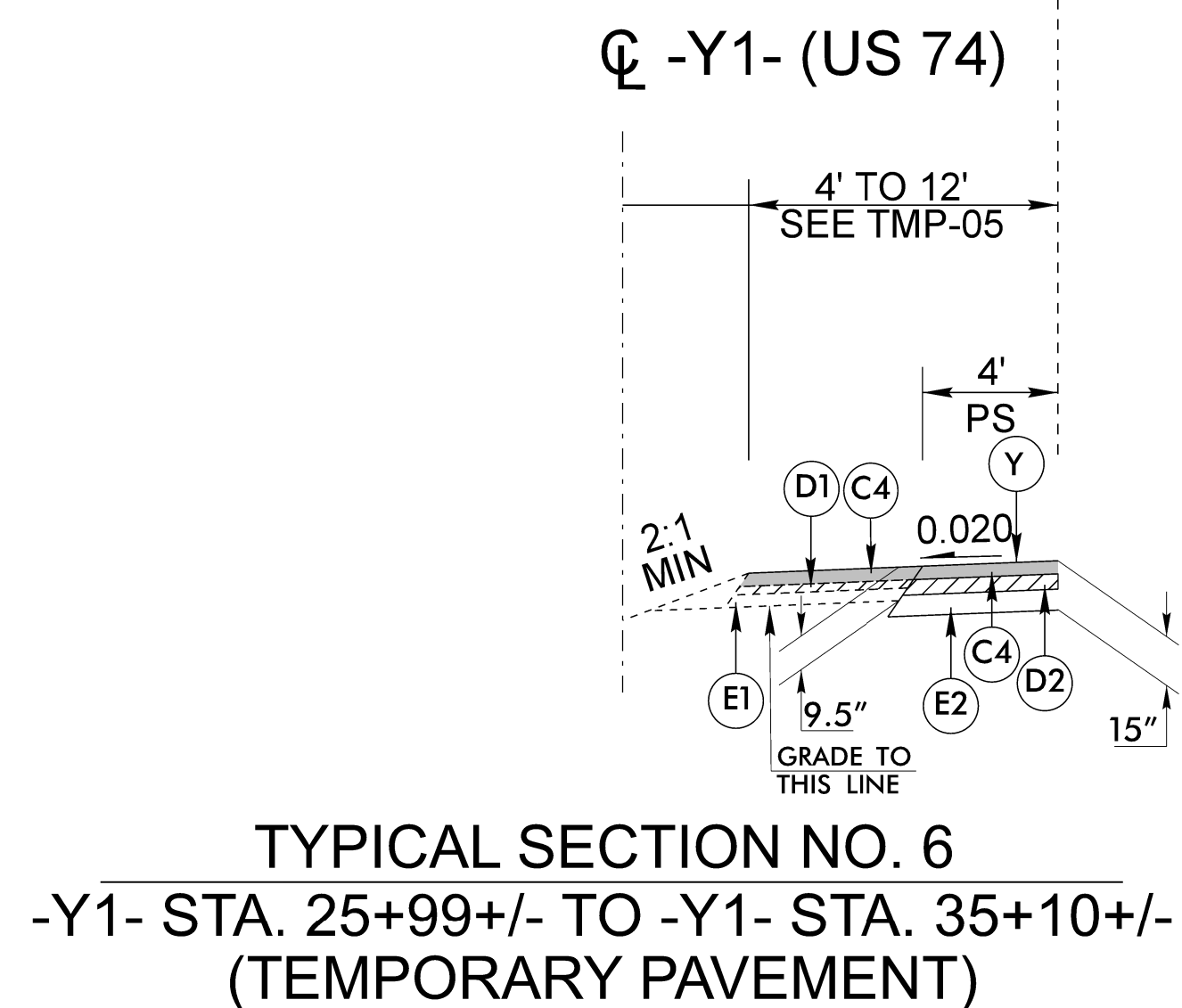
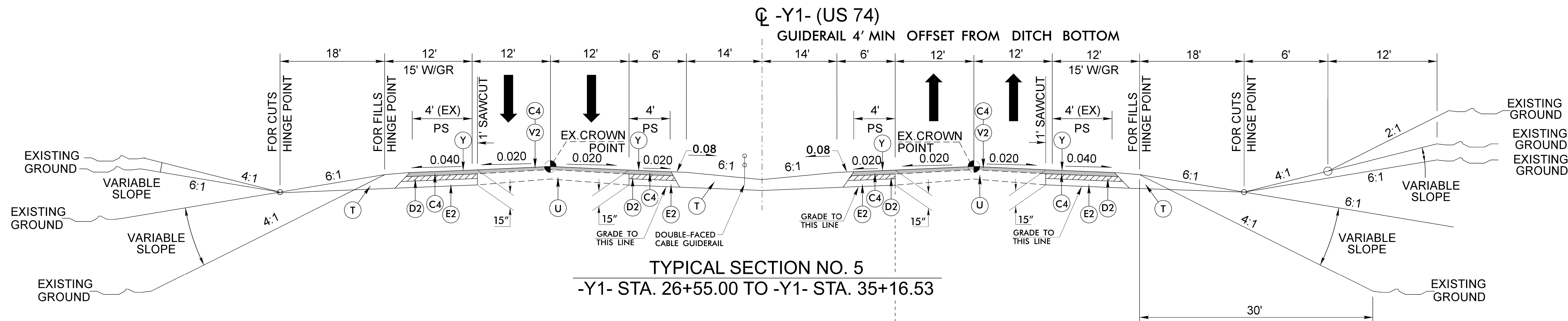
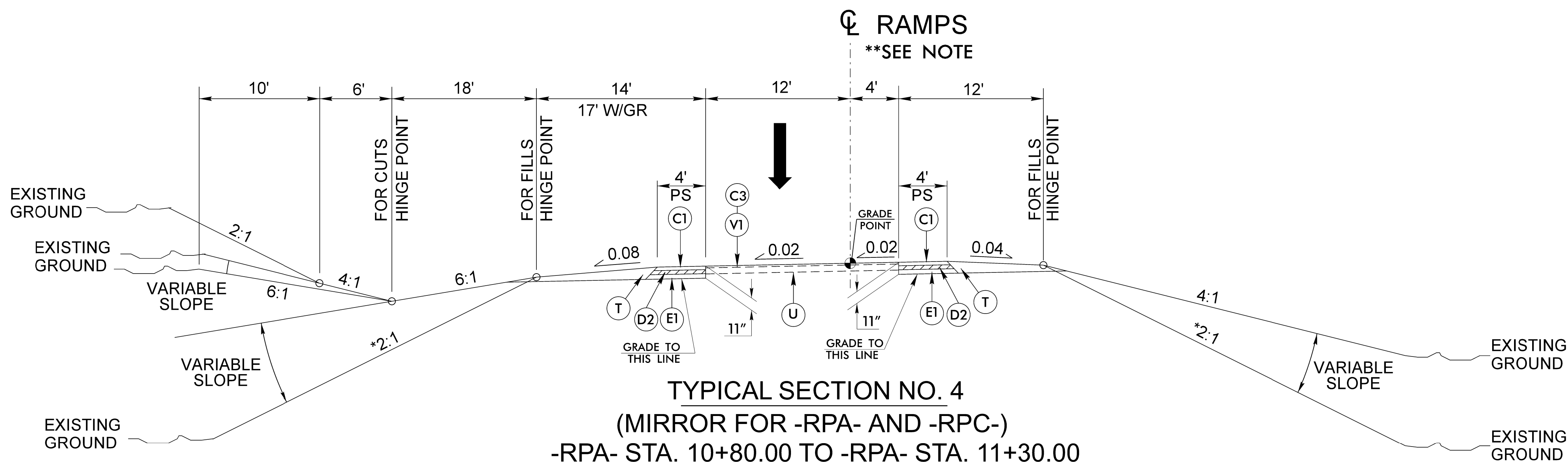
FINAL PAYEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1½" IN DEPTH.
C3	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C4	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.
C5	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. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YARD
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD
D3	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 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. APPROX. 8" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD IN EACH OF TWO LAYERS.
E3	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
R	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	1½" MILLING (RAMPS)
V2	3" MILLING (-Y1-)
V3	INCIDENTAL MILLING
W	ASPHALT WEDGING (SEE WEDGING DETAIL)
Y	RUMBLE STRIPS

NOTE:
*USE 4:1 MAX. SLOPES WITHIN INTERCHANGE.
**REFERENCE PSH 4 & 5 FOR MONOLITHIC ISLANDS ON RAMPS.

BR-0099	2A-1
ROADWAY DESIGN ENGINEER 6/29/2026	
	
PAVEMENT DESIGN ENGINEER 6/30/2026	
	
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ROADWAY DESIGN UNIT wsp PREPARED BY	
434 FAYETTEVILLE ST. #1500 RALEIGH, NC 27601 NC ENG F-1253	

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RALEIGH, N.C. 27601
NC ENG F-1253

FINAL PAVEMENT SCHEDULE	
C1	3" TYPE S9.5B
C3	1.5" TYPE S9.5C
C4	3" TYPE S9.5C
D1	2.5" TYPE I19.0C
D2	4" TYPE I19.0C
E1	4" TYPE B25.0C
E2	8" TYPE B25.0C
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	1 1/2" MILLING (RAMPS)
V2	3" MILLING (-Y1-)
Y	RUMBLE STRIPS



434 FAYETTEVILLE ST. #15
RALEIGH, N.C. 27601
NC ENG F-1253



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

PROJECT REFERENCE NO.	SHEET NO.
BR-0099	2C-2

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

ROADWAY DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
RIGID PIPE

SHEET 2 OF 2
300.01

TOP OF FILL

GROUND LINE

H

I.D. /6 MIN.
NOT LESS THAN 6"

O.D. + 3'

NORMAL EARTH FOUNDATION

TOP OF FILL

GROUND LINE

H

I.D. /6 MIN.
NOT LESS THAN 6"

ROCK

O.D. + 3'

**ROCK FOUNDATION
PIPE IN TRENCH**

TOP OF FILL

GROUND LINE

H

TYPE 4a
GEOTEXTILE

I.D. /6 MIN.
NOT LESS
THAN 6"

1½" PER FOOT OF 'H'
BUT NOT LESS THAN 12"
NOR MORE THAN 24"
AS DIRECTED BY ENGR.

O.D. + 3'

UNSUITABLE MATERIAL FOUNDATION

TOP OF FILL

GROUND LINE

H

MIN. O.D.

MIN. O.D.

I.D. /6 MIN.
NOT LESS THAN 6"

O.D. + 2'

NORMAL EARTH FOUNDATION

TOP OF FILL

GROUND LINE

H

MIN. O.D.

MIN. O.D.

I.D. /6 MIN.
NOT LESS THAN 6"

O.D. + 2'

**ROCK FOUNDATION
PIPE ABOVE GROUND**

TOP OF FILL

GROUND LINE

H

MIN. O.D.

MIN. O.D.

TYPE 4a
GEOTEXTILE

COMPACT AFTER
PIPE IS PLACED
& PRIOR TO
PLACEMENT OF
FILL

I.D. /6 MIN.
NOT LESS THAN 6"

1½" PER FOOT OF 'H'
BUT NOT LESS THAN 12"
NOR MORE THAN 24"
AS DIRECTED BY ENGINEER

MIN. O.D.

MIN. O.D.

UNSUITABLE MATERIAL FOUNDATION

GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT
ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP
OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1
FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE
UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL
ACCOMPLISH COMPACTION.

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

REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS
FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II,
BELOW SPRINGLINE.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE
WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.



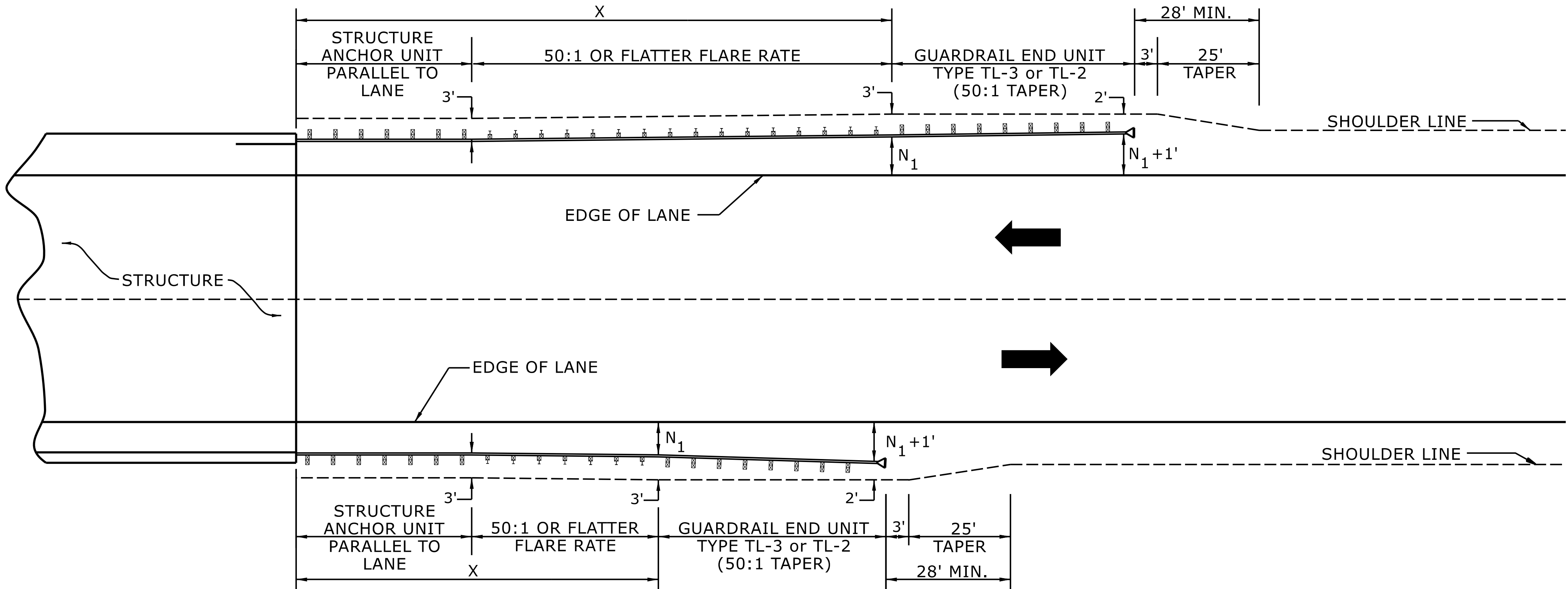
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**CONTRACTS STANDARDS
AND DEVELOPMENT UNIT**
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

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PROJECT REFERENCE NO.	SHEET NO.
BR-0099	2C-3



USE FLARE RATE AS THE CONTROL IF THE "N₁" DISTANCE IS NOT OBTAINED.
("N₁" 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

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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 4 OF 15

862D01



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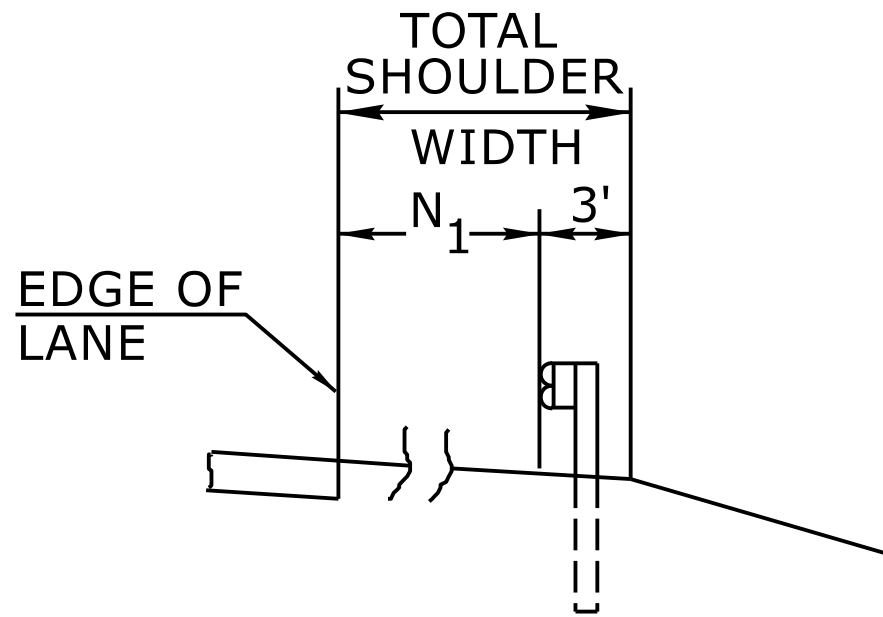
**CONTRACTS STANDARDS
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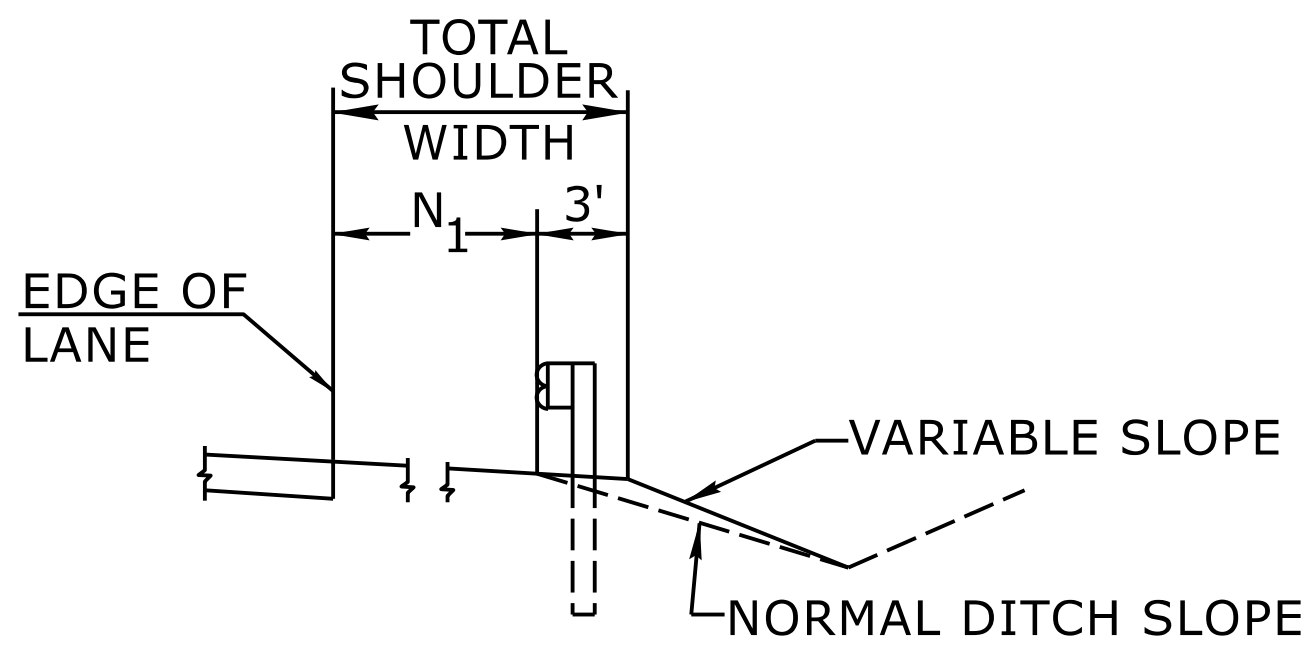
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PROJECT REFERENCE NO.	SHEET NO.
BR-0099	2C-4

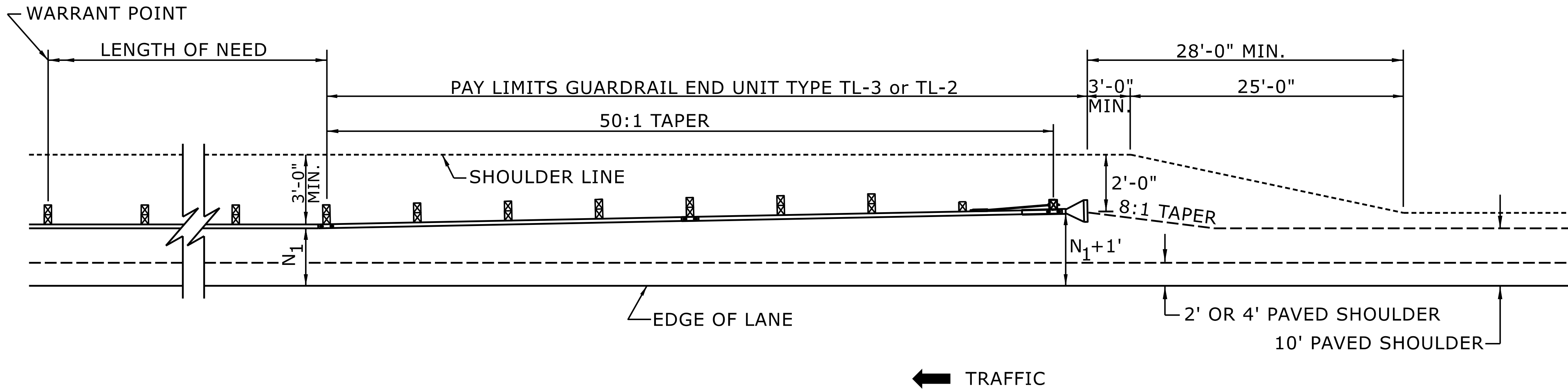


FILL SECTION



CUT SECTION

"N₁"= DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.

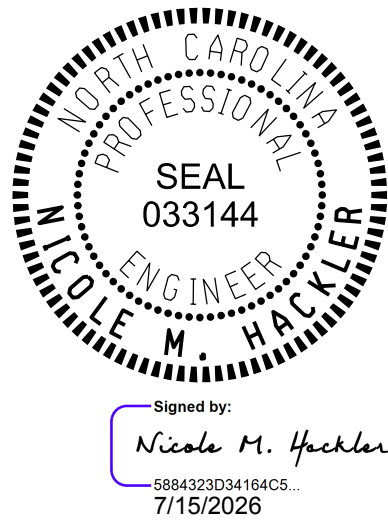


FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

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

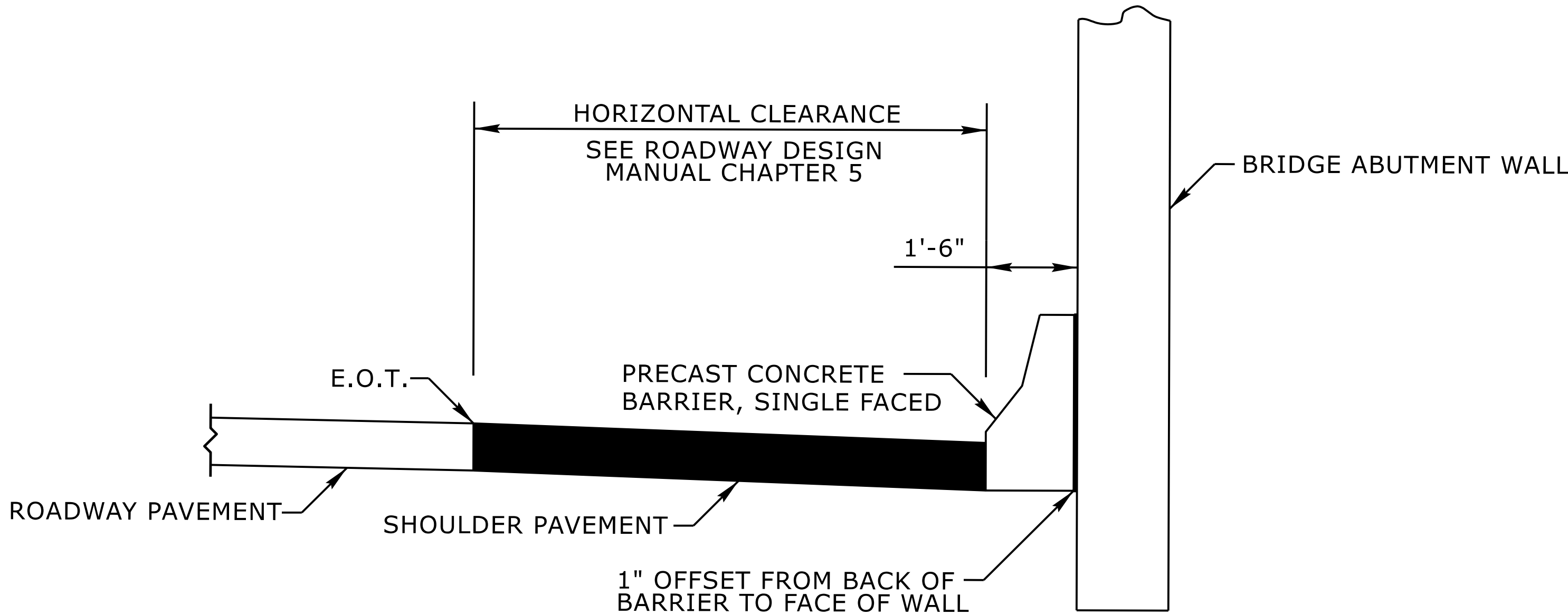
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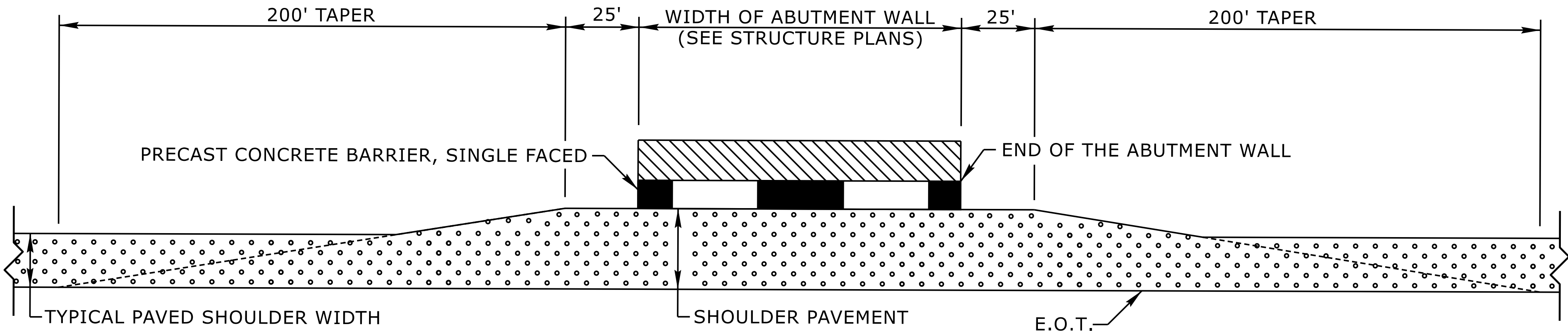
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PROJECT REFERENCE NO.	SHEET NO.
BR-0099	2C-5



ELEVATION



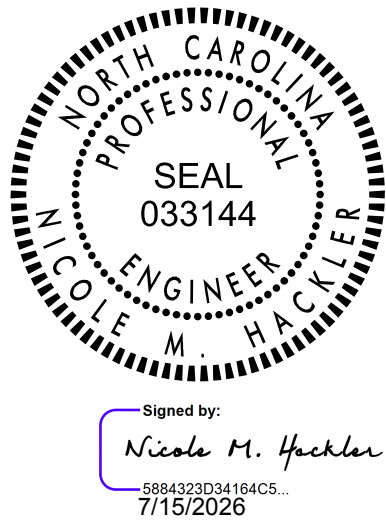
PLAN

NOTE:
1. SHOULDER PAVEMENT SHOULD BE CONSTRUCTED AS SHOWN IN THE PLANS WITH THE SAME PAVEMENT DESIGN USED ON THE PAVED SHOULDER APPROACHING THE STRUCTURE UNDERPASS.

STATE OF
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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
**GUIDE FOR PAVING
SHOULDER UNDER BRIDGES**
METHOD IV

SHEET 1 OF 1
610D04



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**CONTRACTS STANDARDS
AND DEVELOPMENT UNIT**
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SEE TITLE BLOCK

ORIGINAL BY: L.SMITH DATE: 9-17-2025
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

COMPUTED BY:	HEC	DATE:	9/21/23
CHECKED BY:	EDM	DATE:	5/22/24

SUMMARY OF EARTHWORK
(CUBIC YARDS)

STATION	STATION	UNCL EXCAV.	EMBANK. + %	BORROW	WASTE
-L- 17 + 05.00	-L- 21 + 52.05	47	5433	5386	
-RPD- 14 + 15.00	-RPD- 15 + 66.47	5	156	151	
-RPC- 12 + 60.00	-RPC- 13 + 53.83	5	460	455	
SUBTOTALS:		57	6050	5993	
-L- 23 + 50.05	-L- 27 + 85.00	21	4356	4335	
-RPA- 10 + 80.00	-RPA- 12 + 57.45		21	21	
-RPB- 13 + 00.00	-RPB- 14 + 75.40		305	305	
SUBTOTALS:		21	4682	4662	
-Y1- 26 + 55.00	-Y1- 35 + 10.00	2321	383		1938
SUBTOTALS:		2321	382		1938
TOTAL		2399	11114	10655	1938
WASTE IN LEU OF BORROW				-1938	-1938
ADDITIONAL UNDERCUT			518	518	450
PROJECT TOTAL		2399	11632	9235	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				462	
GRAND TOTALS:		2399	11632	9697	450
SAY:		2400		9700	

DRAINAGE DITCH EXCAVATION = 130 CY.

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

Note: Approximate quantities only. Unclassified excavation, Fine Grading, Clearing and Grubbing, Breaking of Existing Pavement and removal of existing pavement will be paid for at the lump sum price for "Grading."

"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 TL-3
NG = NON-GATING IMPACT ATTENUATOR TL-3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD ³
L	20 + 85.00	21 + 13.84	CL	83.67
L	23 + 45.53	23 + 65.00	CL	56.89
RPA			LT/RT	152.00
RPB			LT/RT	148.89
RPC			LT/RT	66.67
RPD			LT/RT	140.00
			TOTAL:	648.11
			SAY:	650

SUMMARY OF BREAKING
EXISTING ASPHALT PAVEMENT

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD ³
L	19 + 57.00	20 + 85.00	CL	403.33
L	23 + 65.00	25 + 17.00	CL	436.67
			TOTAL:	840.00
			SAY:	840

CHAIN LINK FENCE RESET

SURVEY LINESIDE	STATION	STATION	SIDE	LENGTH (FT)
RPC	12 + 69.50	12 + 99.50	RT	30.00
RPB	13 + 80.00	14 + 80.00	LT	100.00
RPD	15 + 25.00	15 + 75.00	LT	50.00
RPA	12 + 10.00	12 + 20.00	RT	10.00
			TOTAL:	190.00
			SAY:	190

CABLE GUIDERAIL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	DOUBLE FACED LENGTH (LF)	END ANCHOR UNIT (EA)	INTERMEDIATE ANCHOR UNIT (EA)	REMOVE EXISTING GUIDERAIL (LF)	COMMENTS
Y1	27 + 05.11	29 + 55.04	CL	277	1	1	670	
Y1	32 + 08.29	35 + 09.24	CL	329	1	1		
		SUBTOTAL:		606			670	
		GRAND TOTALS:		606	2	2	670	
		SAY:		700	2	2	700	
ADDITIONAL GUIDERAIL POSTS = 5 EA.								

SHOULDER BERM GUTTER SUMMARY

SURVEY LINESIDE	STATION	STATION	LENGTH (FT)
RPC(RT)	12 + 93.08	13 + 39.02	67.84
RPD(LT)	14 + 46.10	15 + 82.24	144.37
L(LT)	21 + 05.50	21 + 30.03	24.53
L(RT)	21 + 14.08	21 + 45.87	31.79
Y1(RT)	29 + 54.72	29 + 80.85	26.13
		TOTAL:	294.66
		SAY:	295

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 TL-3					REMOVE EXISTING GUARDRAIL	SINGLE FACED CONCRETE BARRIER	MED. HAZARD PROTECTION	REMARKS																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	B-77	TYPE III	GREU TL-3	GREU TL-2	XIII	CAT-1	VI MOD	BIC	AT-1	EA	G	NG																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
L/RPC	-L- 17 + 05.00	-RPC- 12 + 60.00	LT/RT	117.92	127.86				6'-0"	9'-0"																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												

BR-0099

38-1

STATE OF NORTH CAROLINA



ROADWAY DESIGN UNIT

PREPARED BY

wsp

434 FAYETTEVILLE ST., #1500
RALEIGH, N.C. 27601
NC ENG P-1253

PROJECT NO.	SHEET NO.
BR-099	3D-1

COMPUTED BY: DMM DATE: 12/12/2023
CHECKED BY: DCE DATE: 12/12/2023

(2-3-23)

PROJECT NO.
BR-0099

SHEET NO.
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 Subgrade Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU	12	100	200	300		
			TOTAL CY/TONS/SY:		100	200**	300**	0	0

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	4	CHRISTOPHER T. PEAVY NICOLE D. PEAVY
2	4	DLP RUTHERFORD REGIONAL HEALTH SYSTEM, LLC.
3	5	LINDA MORRISON BRANDON MORRISON
4	5	JOE R. BLANTON CAROLYN W. BLANTON

BR-0099

3P-1

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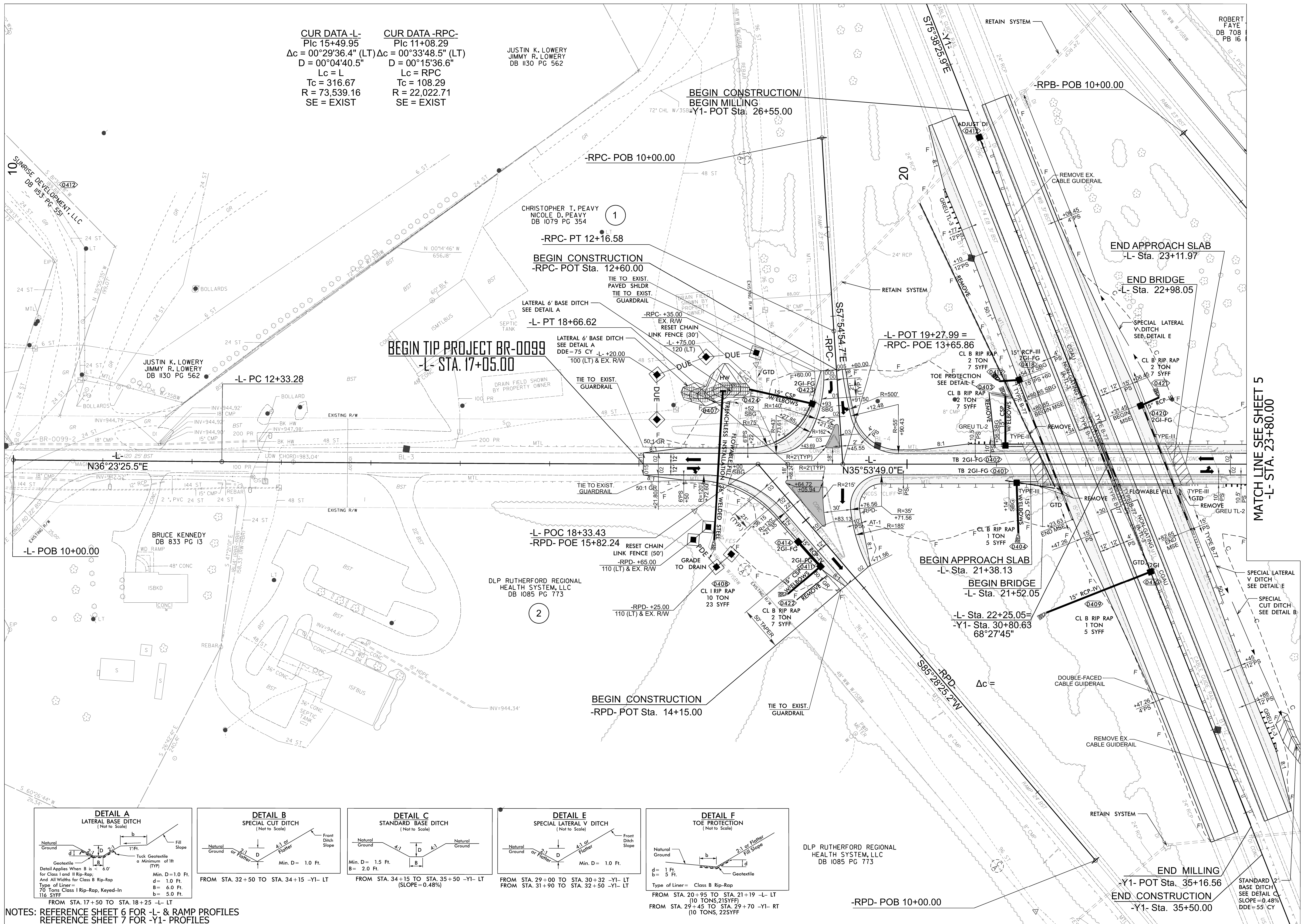


ROADWAY DESIGN UNIT

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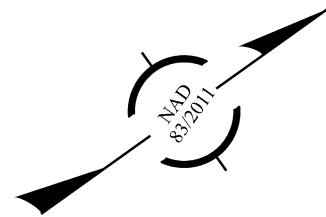
NOTES: REFERENCE SHEET 6 FOR -L- & RAMP PROFILES
REFERENCE SHEET 7 FOR -Y1- PROFILES

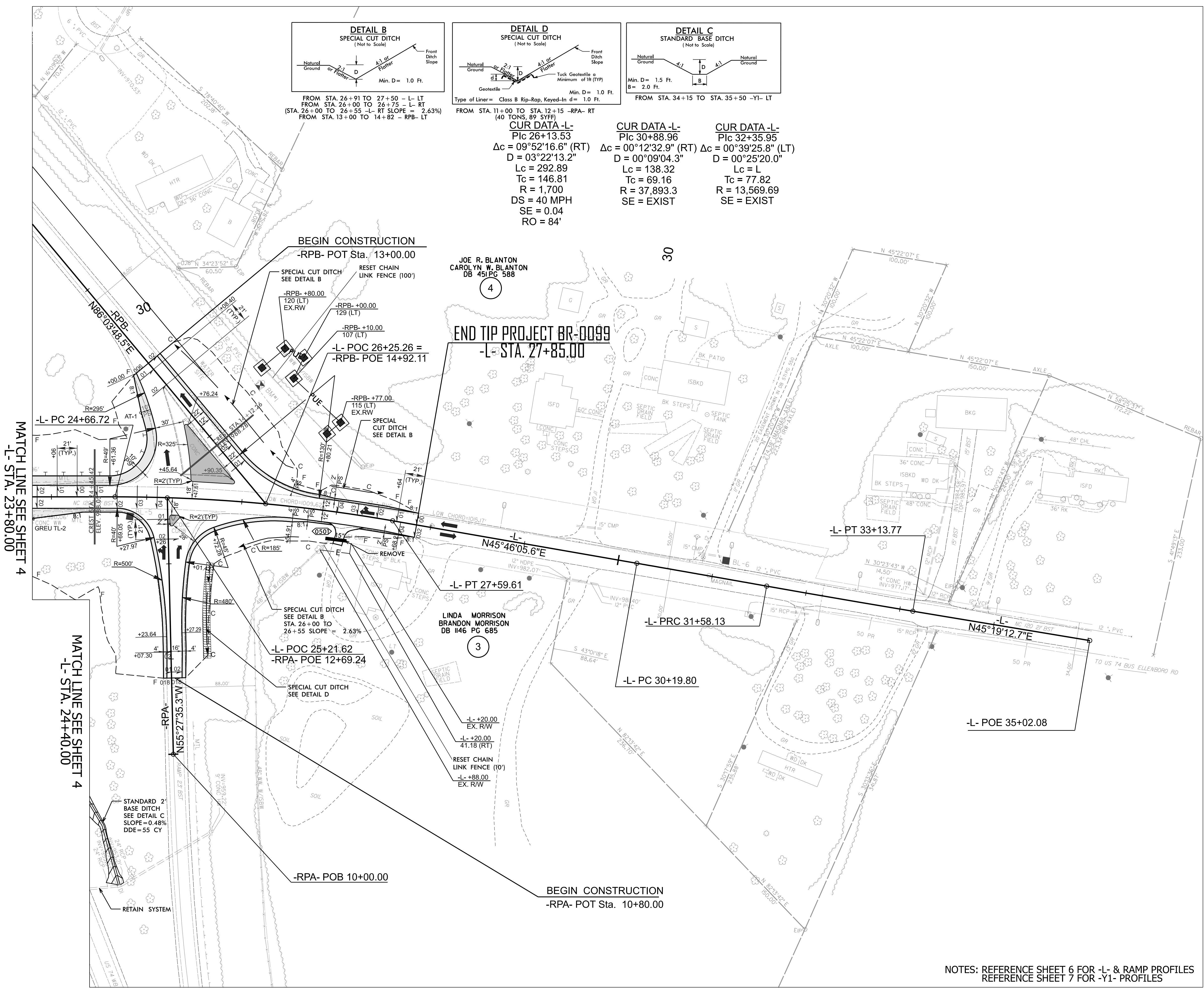


ROADWAY DESIGN UNIT

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NC ENG F-1253





NOTES: REFERENCE SHEET 6 FOR -L- & RAMP PROFILES
REFERENCE SHEET 7 FOR -Y1- PROFILES

BR-0099
5

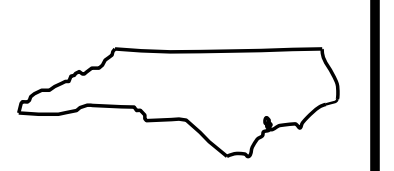
ROADWAY DESIGN
ENGINEER



HYDRAULIC DESIGN
ENGINEER



STATE OF NORTH CAROLINA

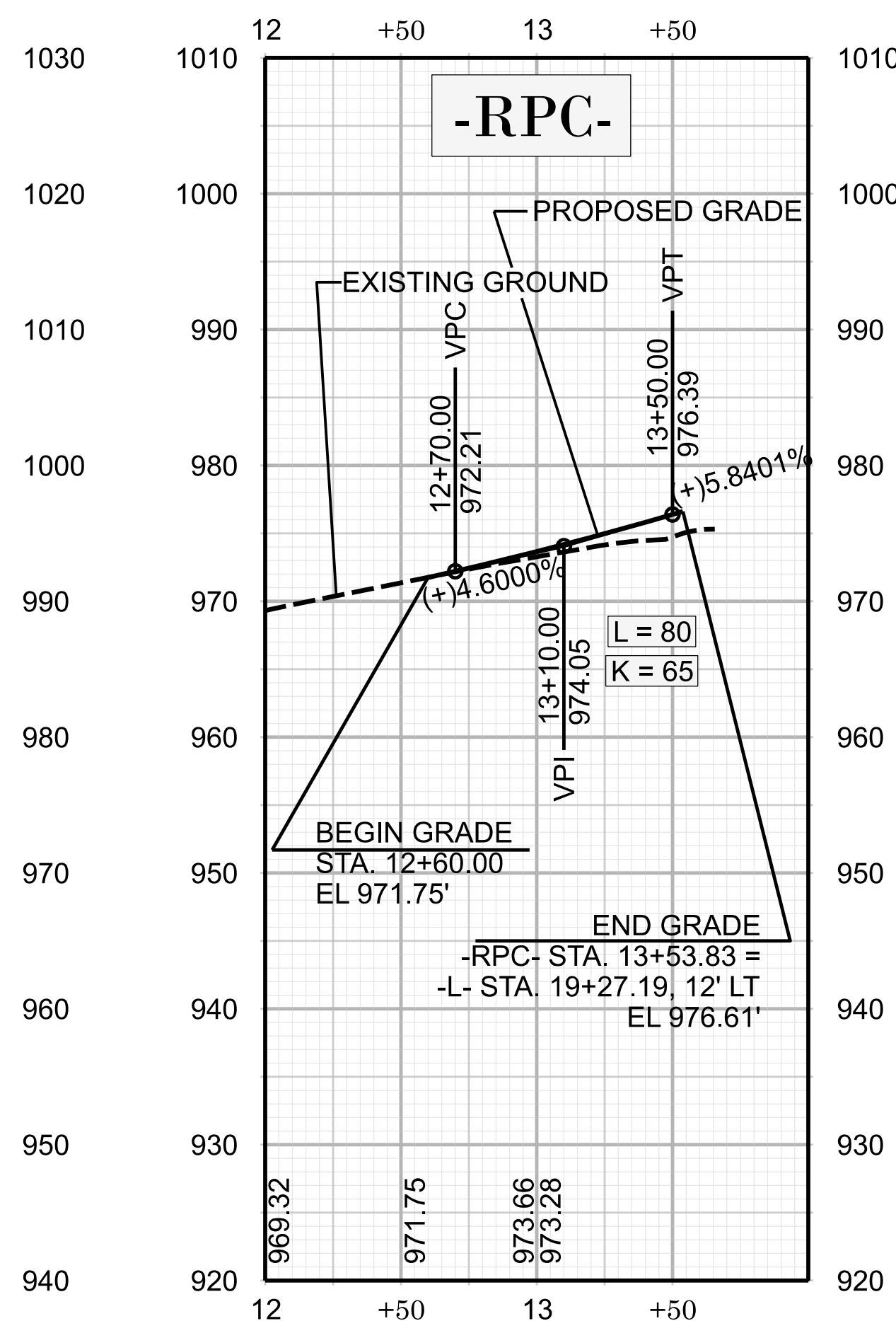
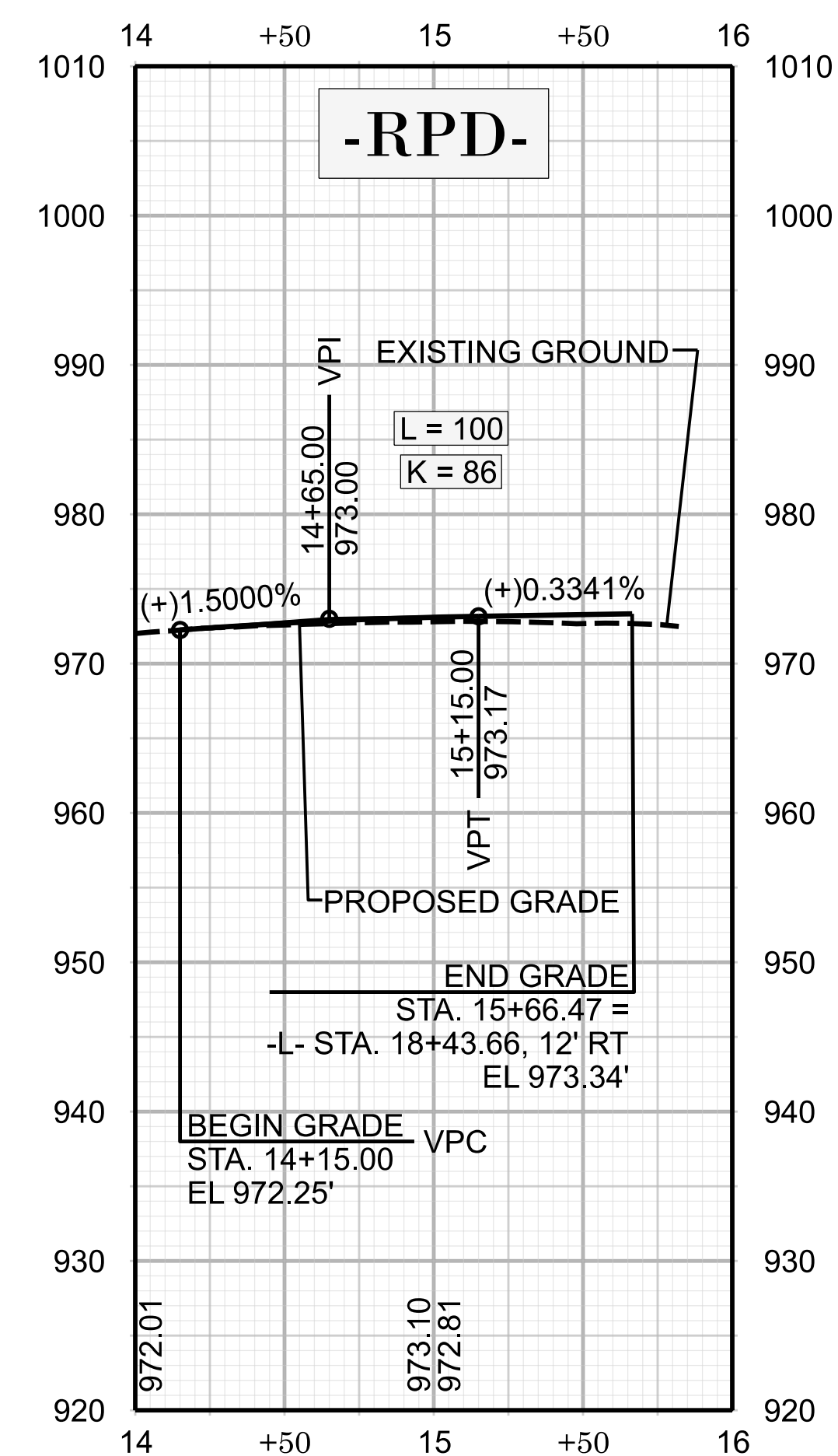


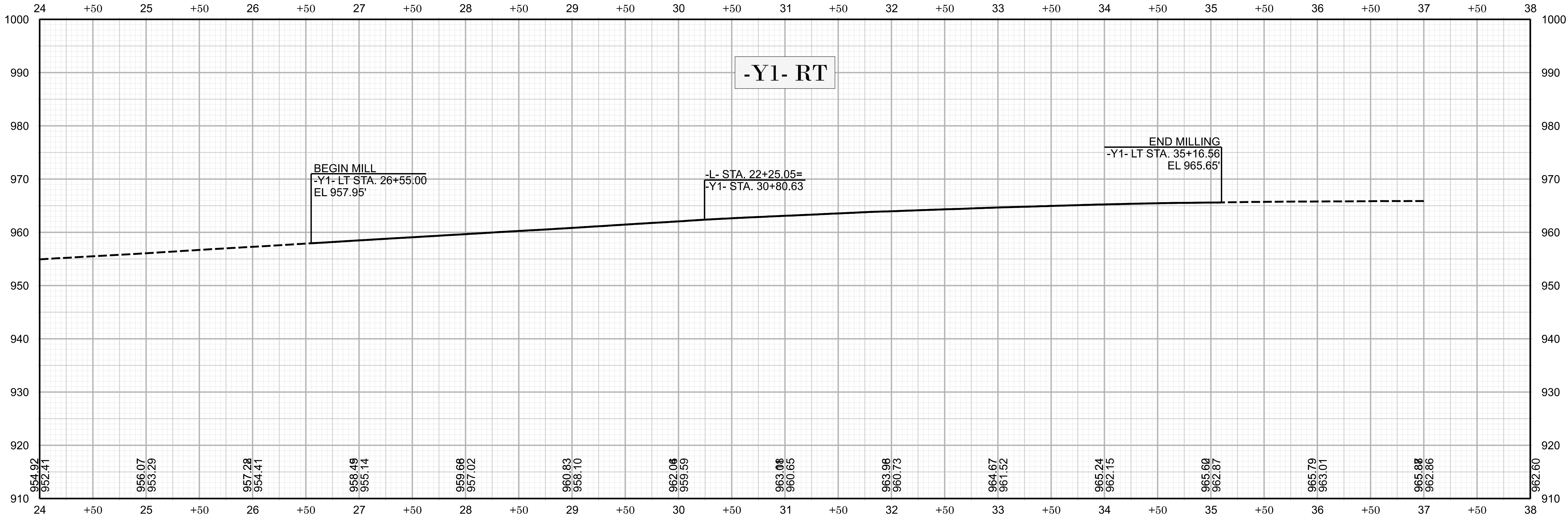
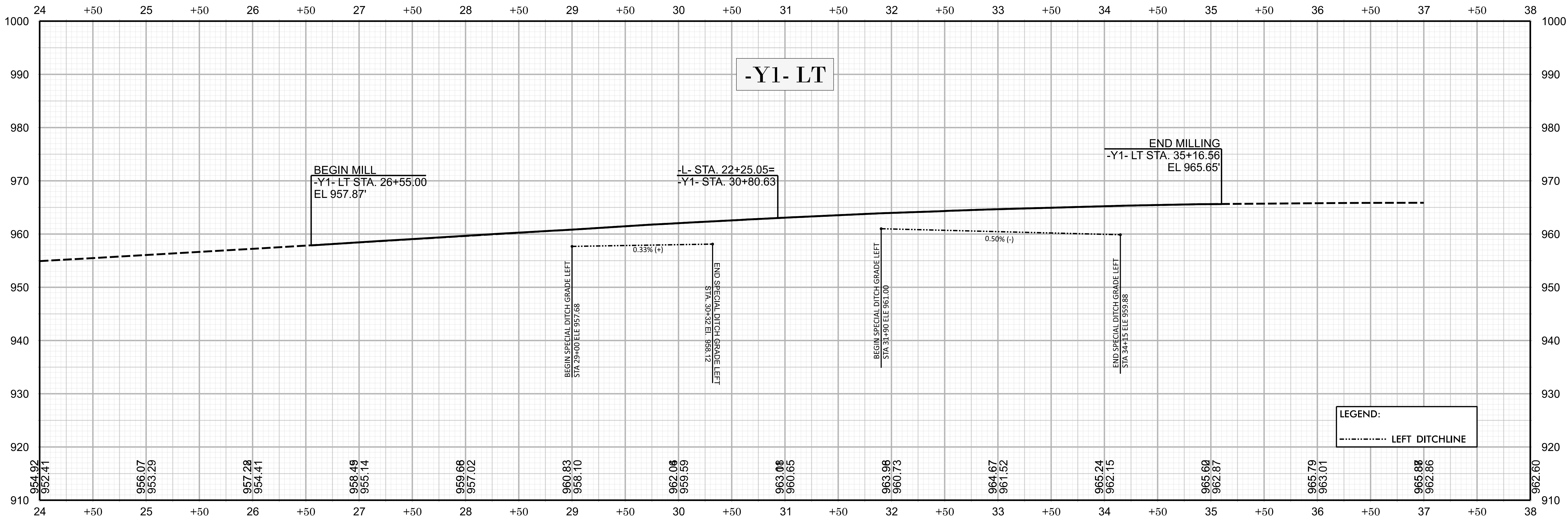
ROADWAY DESIGN UNIT

PREPARED BY
wsp

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RALEIGH, N.C. 27601
NC ENG P-1253







BR-0099

7

ROADWAY DESIGN
ENGINEER

Signatures:
Ronnell Thigpen
HYDRAULIC DESIGN
ENGINEER

Design:
Vidya Mohandas

STATE OF NORTH CAROLINA

ROADWAY DESIGN UNIT

PREPARED BY

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RALEIGH, N.C. 27601
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