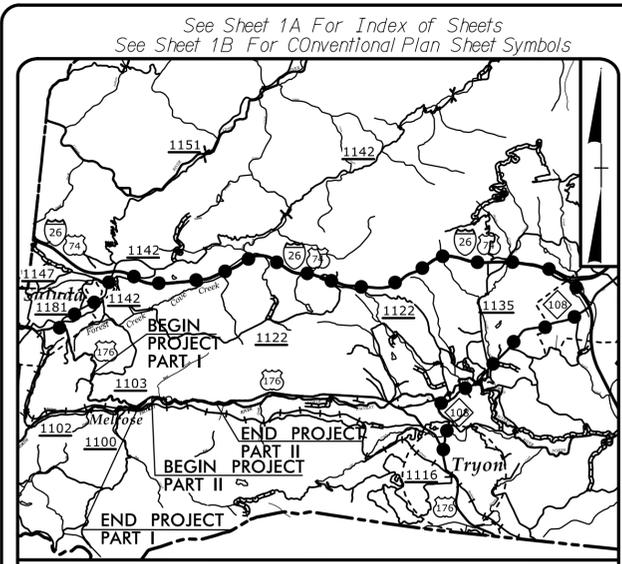


09\_08/2011

**TIP PROJECT: W03293**



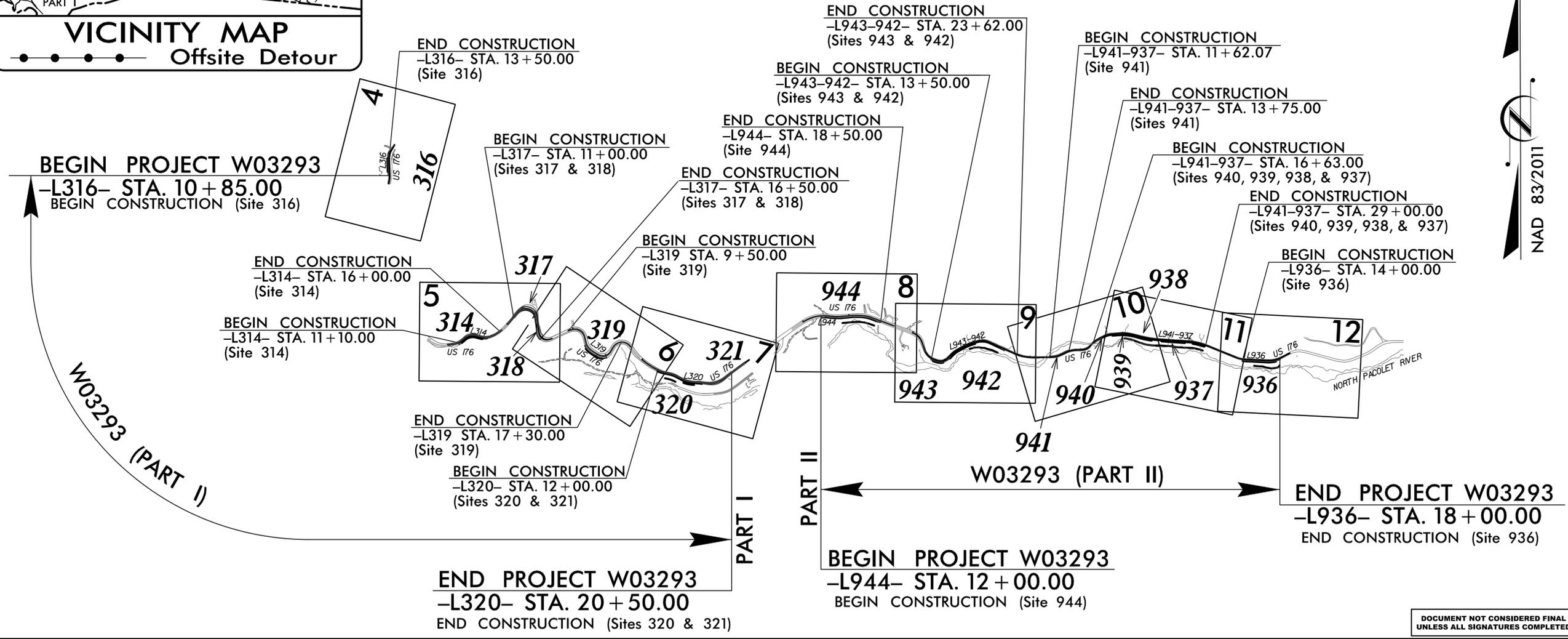
**VICINITY MAP**  
Offsite Detour

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

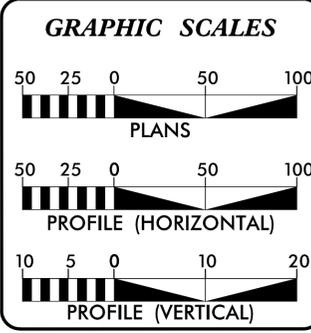
**LOCATION: US 176 FROM 0.1 MILES NORTH OF THOMPSON ROAD TO 0.8 MILES EAST OF BEAR CREEK LANE**

**TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND RETAINING WALLS**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W03293	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
18314.1075023		314	
18314.1075025		316	
18314.1075026		317	
18314.1075027		318	
18314.1075028		319	
18314.1075029		320	
18314.1075030		321	
18314.1075015		936	
18314.1075016		937	
18314.1075017		938	
18314.1075018		939	
18314.1075019		940	
18314.1075035		941	
18314.1075020		942	
18314.1075021		943	
18314.1075022		944	



**CONTRACT: C205165**



**DESIGN DATA**

ADT 2025 = 1,230  
ADT 2050 = 1,570  
V = 60 MPH

FUNC CLASS = MAJOR COLLECTOR SUBREGIONAL TIER

**PROJECT LENGTH**

TOTAL LENGTH ROADWAY PROJECT = 0.556 MILES  
W03293 PART 1

TOTAL LENGTH ROADWAY PROJECT = 0.665 MILES  
W03293 PART 2

TOTAL LENGTH ROADWAY PROJECT = 1.221 MILES  
W03293

**NC DOT CONTACT: JEANETTE WHITE, PE**

<p>PLANS PREPARED BY:</p> <p>TGS ENGINEERS 201 W. MARION ST., STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO. C-0275</p>	<p>PLANS PREPARED FOR:</p> <p>NORTH CAROLINA DEPARTMENT OF TRANSPORTATION</p> <p>DIVISION 14 252 Webster Rd Sylva, NC 28779</p>
<p><b>RIGHT OF WAY DATE:</b> AUG. 29, 2025 (300s) AUG 12, 2025 (900s)</p>	<p><b>JIMMY L. TERRY, PE</b> PROJECT ENGINEER</p>
<p><b>LETTING DATE:</b> MARCH 17, 2026</p>	<p><b>AUSTIN R. TURNER, PE</b> PROJECT DESIGN ENGINEER</p>

2024 STANDARD SPECIFICATIONS

**HYDRAULICS ENGINEER**

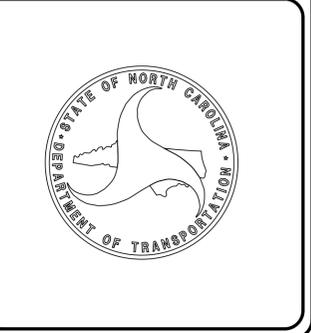
1/12/2026

Signed by: P.E.

**ROADWAY DESIGN ENGINEER**

1/9/2026

DocuSigned by: P.E.



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

I:\9\2026 X:\NCDOT\Div 14 US 176 Repair\Roadway\Design\Title\_Typicals\_Detalls\_Summaries\US176\_Rdy\_+tsh\_Combined.dgn User:cpue11

8/17/99  
12/30/2025  
X:\NCD001\Div 14 US 176 Repair\Roadway\Design\Title\_Typicals\_Details\_Summaries\US176\_Rdy\_tah\_Combined.dgn

# INDEX OF SHEETS



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

PROJECT REFERENCE NO.	SHEET NO.
W03293	1A

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

## STANDARD DRAWINGS



EFF. 08-11-2025  
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
275.01	Rock Plating
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation (Use Details in Lieu of Standards for Sheets 1 and 2 of 2)
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
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
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.37	Steel Grate and Frame
840.46	Traffic Bearing Precast Drainage Structure
850.01	Concrete Paved Ditches
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
862.01	Guardrail Placement (Use Details in Lieu of Standards for Sheets 4, 6, 11, 12, and 14 of 15)
862.02	Guardrail Installation (Use Details in Lieu of Standards for Sheet 5 of 9)
876.01	Rip Rap in Channels and Ditches
876.02	Guide for Rip Rap at Pipe Outlets

INDEX OF SHEETS	SHEET NUMBER	SHEET
	1	TITLE SHEET
	1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
	1B	CONVENTIONAL SYMBOLS

W03293 PART I INDEX OF SHEETS	SHEET NUMBER	SHEET
	1	TITLE SHEET
	2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
	2C-1 THRU 2C-2	SPECIAL DETAIL - METHOD OF PIPE INSTALLATION
	2C-3	SPECIAL DETAIL - GUARDRAIL PLACEMENT
	2C-4	SPECIAL DETAIL - GUARDRAIL INSTALLATION
	2C-5	SPECIAL DETAIL - GUARDRAIL PLACEMENT
	2D-1	DRAINAGE DETAIL - TRAFFIC BEARING GRATED INLET
	2G-1	GEOTECHNICAL DETAIL - ROCK EMBANKMENT SITE 314
	3B-1 THRU 3B-3	ROADWAY SUMMARIES (EARTHWORK, PAVEMENT REMOVAL, & SHOULDER BERM GUTTER)
	3B-4	GUARDRAIL SUMMARY
	3D-1 THRU 3D-2	DRAINAGE SUMMARIES
	3G-1	GEOTECHNICAL SUMMARIES
	3P-1	PARCEL INDEX SHEET
	4 THRU 7	PLAN SHEETS
	8	PROFILE SHEET
	RW-1 THRU RW-7	SURVEY CONTROL SHEETS
	TMP-1 THRU TMP-12	TRANSPORTATION MANAGEMENT PLANS
	PMP-1 THRU PMP-5	PAVEMENT MARKING PLANS
	EC-1 THRU EC-11	EROSION CONTROL PLANS
	RF-1	REFORESTATION DETAIL SHEET
	SIGN-1 THRU SIGN-6	SIGNING PLANS
	UO-1 THRU UO-7	UTILITIES BY OTHERS PLANS
	X-1	CROSS-SECTION INDEX SHEET
	X-1A	CROSS-SECTION SUMMARY SHEET
	X-2 THRU X-49	CROSS-SECTIONS
	W-1 THRU W-3	SITE 316 RETAINING WALL
	W-4 THRU W-5	SITE 314 RETAINING WALL
	W-6 THRU W-7	SITE 319 RETAINING WALL
	W-8 THRU W-10	SITE 320 RETAINING WALL

W03293 PART II INDEX OF SHEETS	SHEET NUMBER	SHEET
	1	TITLE SHEET
	2A-1 THRU 2A-2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
	2C-1 THRU 2C-2	SPECIAL DETAIL - METHOD OF PIPE INSTALLATION
	2C-3	SPECIAL DETAIL - GUARDRAIL PLACEMENT
	2C-4	SPECIAL DETAIL - GUARDRAIL INSTALLATION
	2C-5	SPECIAL DETAIL - GUARDRAIL PLACEMENT
	2D-1	DRAINAGE DETAIL - TRAFFIC BEARING GRATED INLET
	2G-1 THRU 2G-2	GEOTECHNICAL DETAIL - SITE 941 WIRE FORM EMBANKMENT
	2G-3	GEOTECHNICAL DETAIL - SITE 940 ROCK EMBANKMENTS
	3B-1 THRU 3B-3	ROADWAY SUMMARIES (EARTHWORK, PAVEMENT REMOVAL, SHOULDER BERM GUTTER, & 8" CURB)
	3B-4	GUARDRAIL SUMMARY
	3D-1 THRU 3D-2	DRAINAGE SUMMARIES
	3G-1	GEOTECHNICAL SUMMARIES
	3P-1	PARCEL INDEX SHEET
	8 THRU 12	PLAN SHEETS
	RW-1 THRU RW-12	SURVEY CONTROL SHEETS
	TMP-1 THRU TMP-6	TRANSPORTATION MANAGEMENT PLANS
	PMP-1 THRU PMP-6	PAVEMENT MARKING PLANS
	EC-1 THRU EC-13	EROSION CONTROL PLANS
	RF-1	REFORESTATION DETAIL SHEET
	SIGN-1 THRU SIGN-7	SIGNING PLANS
	UO-1; UO-8 THRU UO-12	UTILITIES BY OTHERS PLANS
	X-1	CROSS-SECTION INDEX SHEET
	X-1A	CROSS-SECTION SUMMARY SHEET
	X-2 THRU X-70	CROSS-SECTIONS
	W-1 THRU W-5	SITE 944 RETAINING WALL
	W-6 THRU W-7	SITE 943 RETAINING WALL
	W-8 THRU W-11	SITE 942 RETAINING WALL
	W-12 THRU W-15	SITES 938/938 RETAINING WALL
	W-16 THRU W-19	SITE 937 RETAINING WALL
	W-20 THRU W-23	SITE 936 RETAINING WALL
	W-24 THRU W-25	PARTIALLY GROUTED ROCK FILL NOTES & DETAILS

## 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 II.

**SUPERELEVATION:**

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

**SHOULDER CONSTRUCTION:**

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

**SUBSURFACE DRAINS:**

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

**GUARDRAIL:**

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

**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 DUKE ENERGY, MCNC, DUKE FIBER, AND RIVER STREET.

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

**RIGHT-OF-WAY MARKERS:**

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

05/20/24

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)	○
Computed Property Corner	×
Existing Concrete Monument (ECM)	□
Parcel / Sequence Number	123
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-WLB-
Proposed Wetland Boundary	-WLB-
Existing Endangered Animal Boundary	-EAB-
Existing Endangered Plant Boundary	-EPB-
Existing Historic Property Boundary	-HPB-
Known Contamination Area: Soil	-S-S-
Potential Contamination Area: Soil	-S-S-
Known Contamination Area: Water	-W-W-
Potential Contamination Area: Water	-W-W-
Contaminated Site: Known or Potential	☠ ☢
<b>BUILDINGS AND OTHER CULTURE:</b>	
Gas Pump Vent or U/G Tank Cap	○
Sign	○
Well	⊕
Small Mine	⋈
Foundation	□
Area Outline	□
Cemetery	⊕
Building	□
School	□
Church	⊕
Dam	—
<b>HYDROLOGY:</b>	
Stream or Body of Water	_____
Hydro, Pool or Reservoir	□
Jurisdictional Stream	-JS-
Buffer Zone 1	-BZ 1-
Buffer Zone 2	-BZ 2-
Flow Arrow	←
Disappearing Stream	→
Spring	○
Wetland	⋈
Proposed Lateral, Tail, Head Ditch	→
False Sump	◁

## RAILROADS:

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

## RIGHT OF WAY & PROJECT CONTROL:

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

## ROADS AND RELATED FEATURES:

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

## VEGETATION:

Single Tree	○
Single Shrub	○
Hedge	_____

Woods Line	_____
Orchard	_____
Vineyard	_____

## EXISTING STRUCTURES:

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

## UTILITIES:

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

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	⊕
Power Line Tower	⊕
Power Transformer	⊕
U/G Power Cable Hand Hole	⊕
H-Frame Pole	●
U/G Power Line Test Hole (SUE - LOS A)*	⊕
U/G Power Line (SUE - LOS B)*	_____
U/G Power Line (SUE - LOS C)*	_____
U/G Power Line (SUE - LOS D)*	_____
TELEPHONE:	
Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊕
Telephone Pedestal	⊕
Telephone Cell Tower	⊕
U/G Telephone Cable Hand Hole	⊕
U/G Telephone Test Hole (SUE - LOS A)*	⊕
U/G Telephone Cable (SUE - LOS B)*	_____
U/G Telephone Cable (SUE - LOS C)*	_____
U/G Telephone Cable (SUE - LOS D)*	_____
U/G Telephone Conduit (SUE - LOS B)*	_____
U/G Telephone Conduit (SUE - LOS C)*	_____
U/G Telephone Conduit (SUE - LOS D)*	_____
U/G Fiber Optics Cable (SUE - LOS B)*	_____
U/G Fiber Optics Cable (SUE - LOS C)*	_____
U/G Fiber Optics Cable (SUE - LOS D)*	_____

## WATER:

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

## TV:

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

## GAS:

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

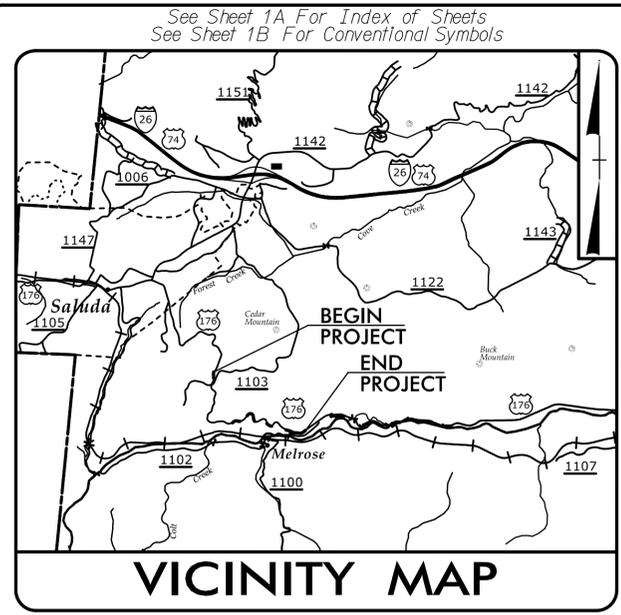
## SANITARY SEWER:

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

## MISCELLANEOUS:

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

**PROJECT: W03293**



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

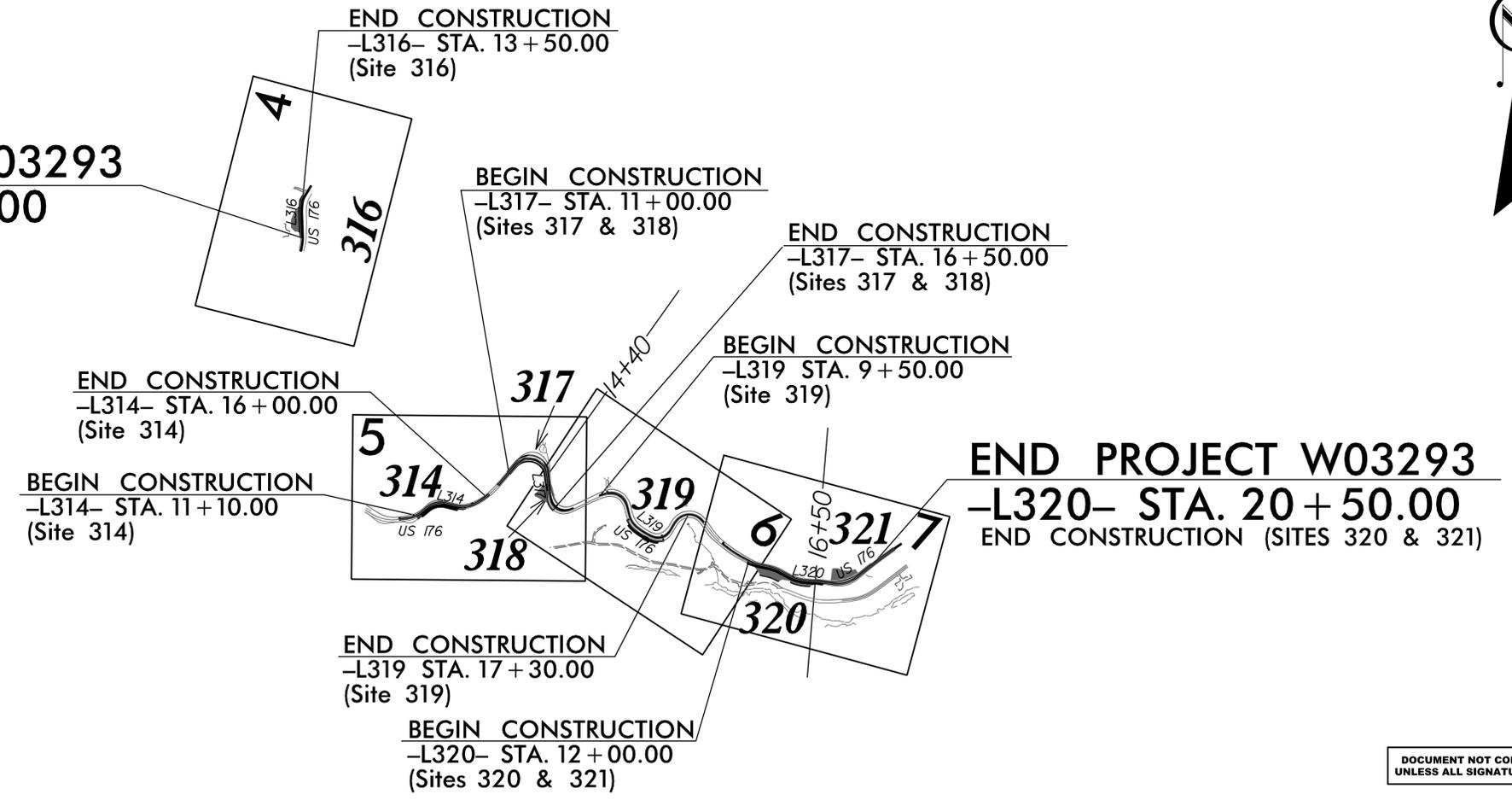
**LOCATION: US 176**

**TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND RETAINING WALLS**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	<b>W03293</b>	1	
STATE PROJ. NO.	DESCRIPTION		
18314.1075023	314		
18314.1075025	316		
18314.1075026	317		
18314.1075027	318		
18314.1075028	319		
18314.1075029	320		
18314.1075030	321		

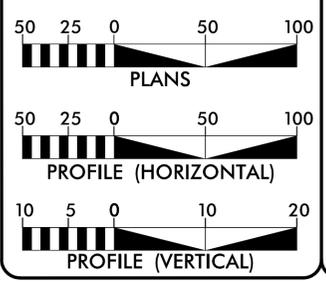
**PART I**

**BEGIN PROJECT W03293**  
**-L316- STA. 10 + 85.00**  
BEGIN CONSTRUCTION (SITE 316)



DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

**GRAPHIC SCALES**



**DESIGN DATA**

ADT 2025 = 1,230  
ADT 2050 = 1,570  
V = 60 MPH  
  
FUNC CLASS =  
MAJOR COLLECTOR  
SUBREGIONAL

**PROJECT LENGTH**

LENGTH ROADWAY SITE 314	=	0.093 MILES
LENGTH ROADWAY SITE 316	=	0.050 MILES
LENGTH ROADWAY SITE 317	=	0.064 MILES
LENGTH ROADWAY SITE 318	=	0.040 MILES
LENGTH ROADWAY SITE 319	=	0.148 MILES
LENGTH ROADWAY SITE 320	=	0.085 MILES
LENGTH ROADWAY SITE 321	=	0.076 MILES
<b>TOTAL LENGTH ROADWAY PROJECT W03293</b>	<b>=</b>	<b>0.556</b>

**NCDOT CONTACT: JEANETTE WHITE, PE**

PLANS PREPARED BY:	PLANS PREPARED FOR:
TGS ENGINEERS 201 W. MARION ST., STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO. C-0275	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  DIVISION 14 252 Webster Rd Sylva, NC 28779

**RIGHT OF WAY DATE:**  
AUGUST 29, 2025

**LETTING DATE:**  
MARCH 17, 2026

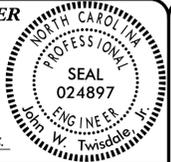
2024 STANDARD SPECIFICATIONS

**HYDRAULICS ENGINEER**

1/5/2026  
Signed by: P.E.

**ROADWAY DESIGN ENGINEER**

1/5/2026  
Signed by: P.E.



6/2/2026

# FINAL PAVEMENT SCHEDULE

(Nov 11, 2025)

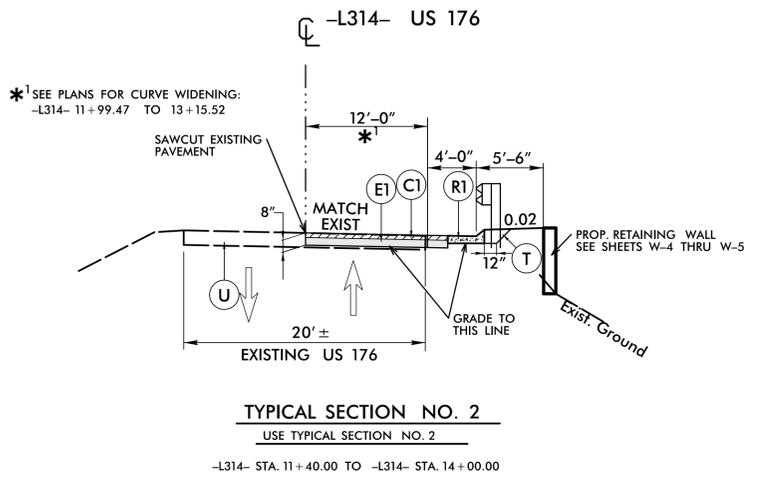
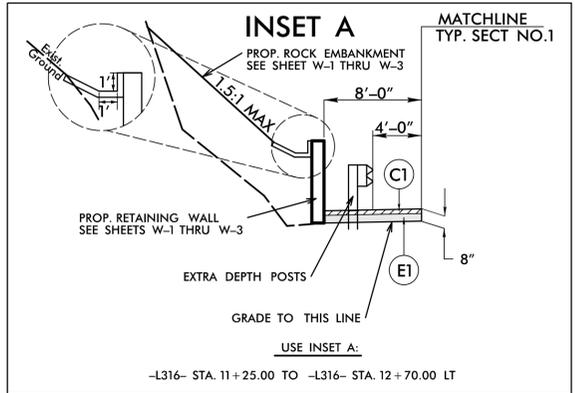
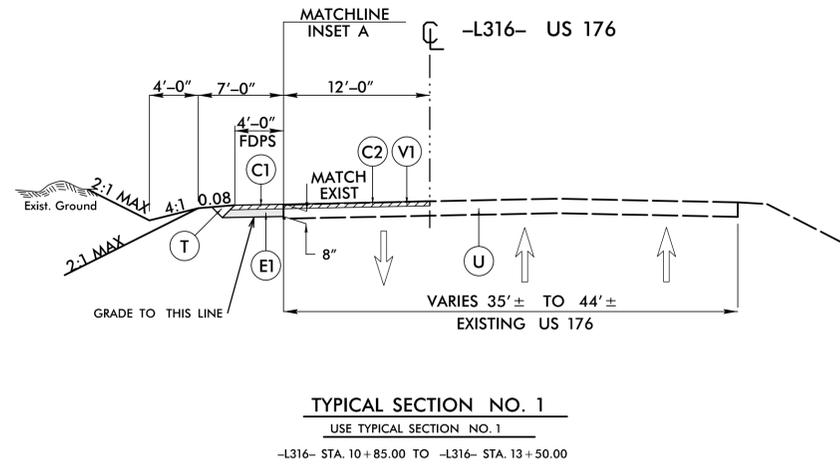
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT
V1	MILLING BITUMINOUS PAVEMENT, 1 1/2" DEPTH

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

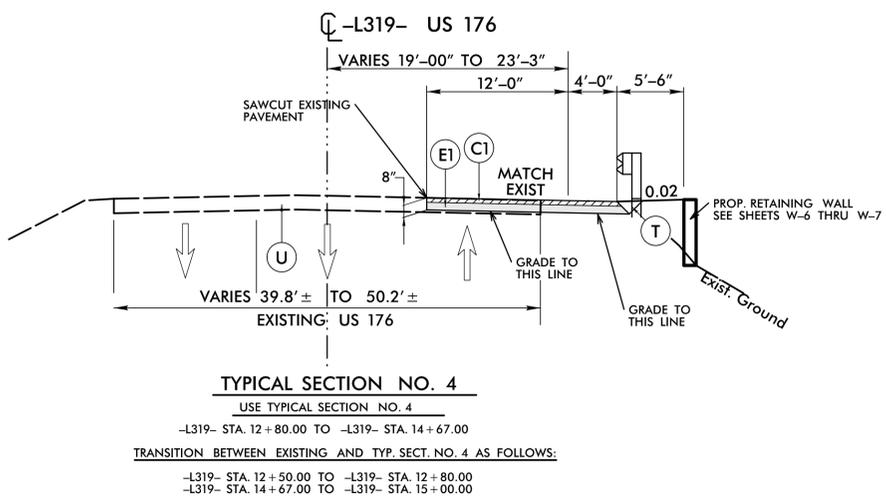
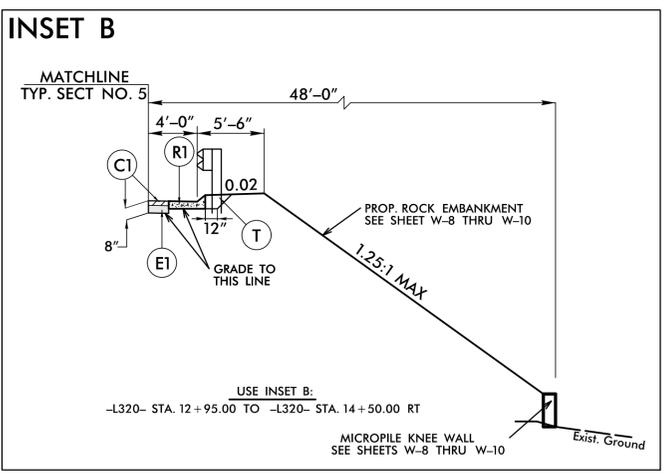
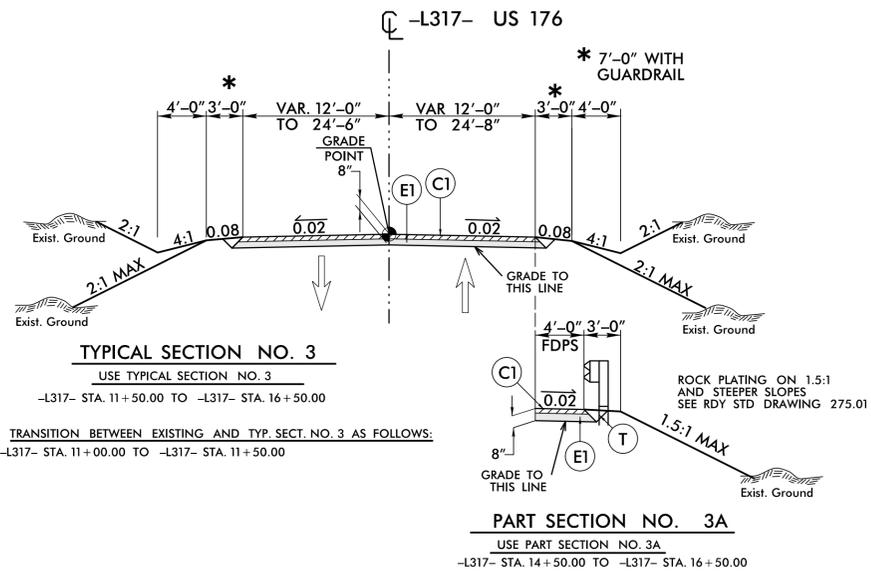
**NOTE:**

DUE TO UNKNOWN DAMAGE TO THE EXISTING PAVEMENT STRUCTURE FROM HELENE, FULL DEPTH PAVEMENT IS SHOWN TO EXTEND FOR THE FULL LENGTH OF AREAS COVERED BY TYPICAL SECTIONS NO. 2, 3 4 AND 5.  
 IF AGREED UPON BY THE RESIDENT ENGINEER AND CONTRACTOR DURING CONSTRUCTION TO OVERLAY EXISTING PAVEMENT ONLY, STANDARD NCDOT MILLING AND RESURFACING METHODS SHALL APPLY. THE ENGINEER OF RECORD SHALL BE NOTIFIED OF CHANGES, AND STANDARD DETAILS CAN BE PROVIDED UPON REQUEST.

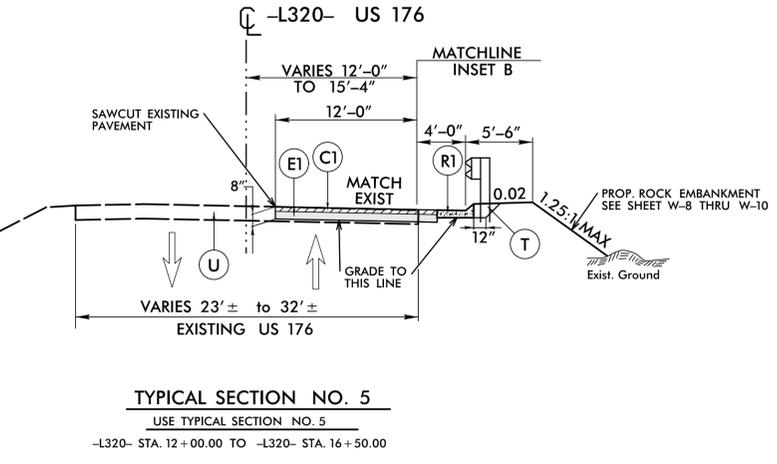
PROJECT REFERENCE NO. <b>W03293</b>	SHEET NO. <b>2A-1</b>
ROADWAY DESIGN ENGINEER  JIMMY L. TERRY 12/31/2026	PAVEMENT DESIGN ENGINEER  KELLY DE MONTBRUN 12/31/2026
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
 TGS ENGINEERS 201 W. MARION ST. STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	



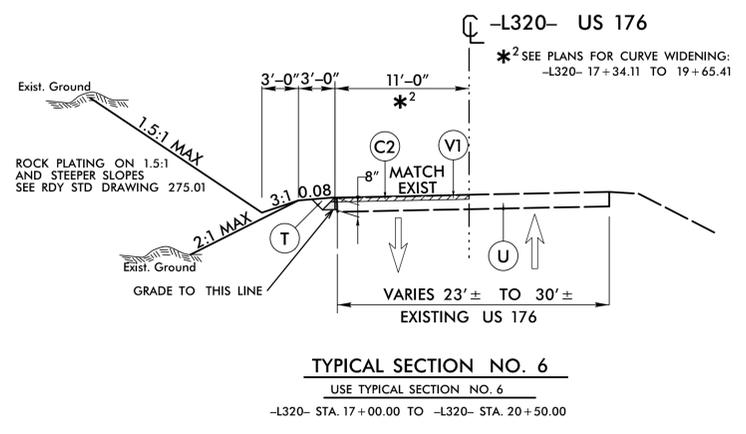
TRANSITION BETWEEN EXISTING AND TYP. SECT. NO. 2 AS FOLLOWS:  
 -L314- STA. 11+10.00 TO -L314- STA. 11+40.00  
 -L314- STA. 14+00.00 TO -L314- STA. 14+50.00



TRANSITION BETWEEN EXISTING AND TYP. SECT. NO. 4 AS FOLLOWS:  
 -L319- STA. 12+50.00 TO -L319- STA. 12+80.00  
 -L319- STA. 14+67.00 TO -L319- STA. 15+00.00

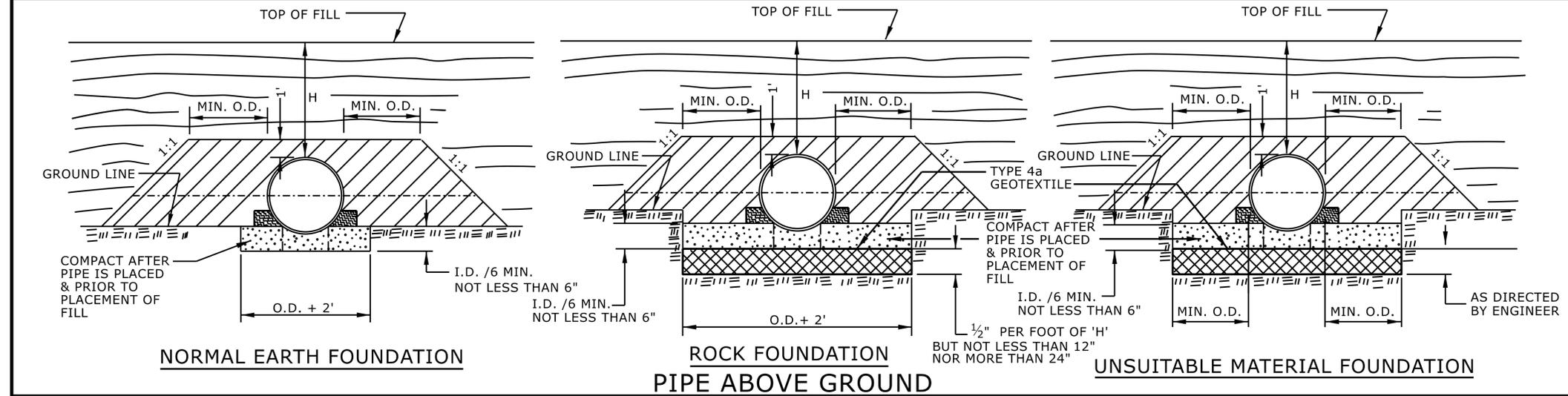
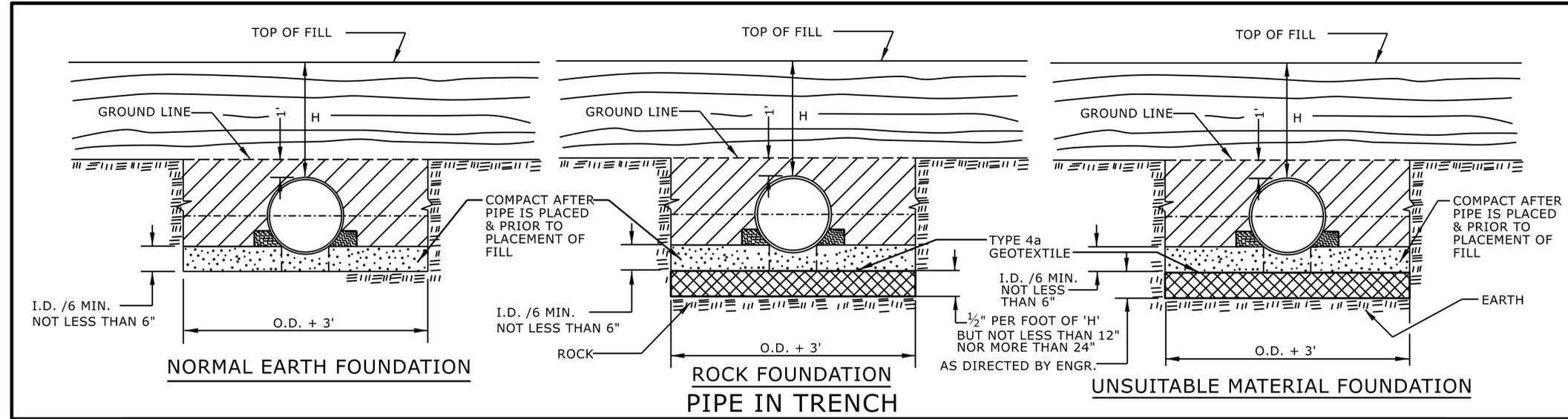


TRANSITION BETWEEN TYP. SECT. NO. 5 AND TYP. SECT. NO. 6 AS FOLLOWS:  
 -L320- STA. 16+50.00 TO -L320- STA. 17+00.00



\*2 SEE PLANS FOR CURVE WIDENING:  
 -L320- 17+34.11 TO 19+65.41

3/6/2026 Div 14 US 176 Repair Roadway Design Title Typicals Details Summaries US176\_Rdy\_3000\_tjpd.dgn  
 User: tjpd

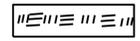


**GENERAL NOTES:**  
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.  
 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.  
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

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

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

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

 SPRINGLINE OF PIPE  
 SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.  
 UNDISTURBED EARTH MATERIAL  
 SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

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 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.

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



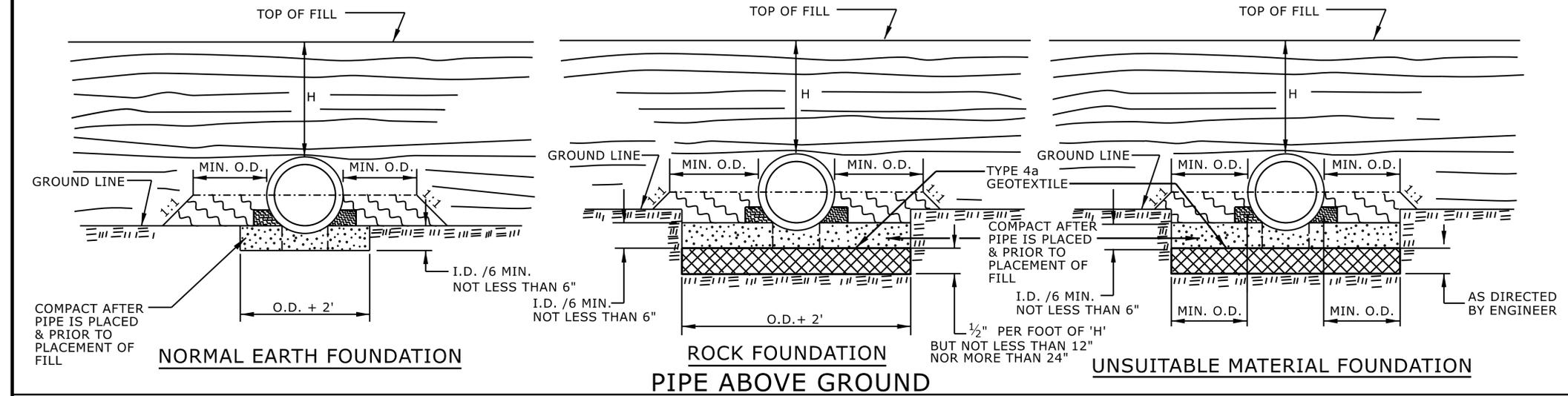
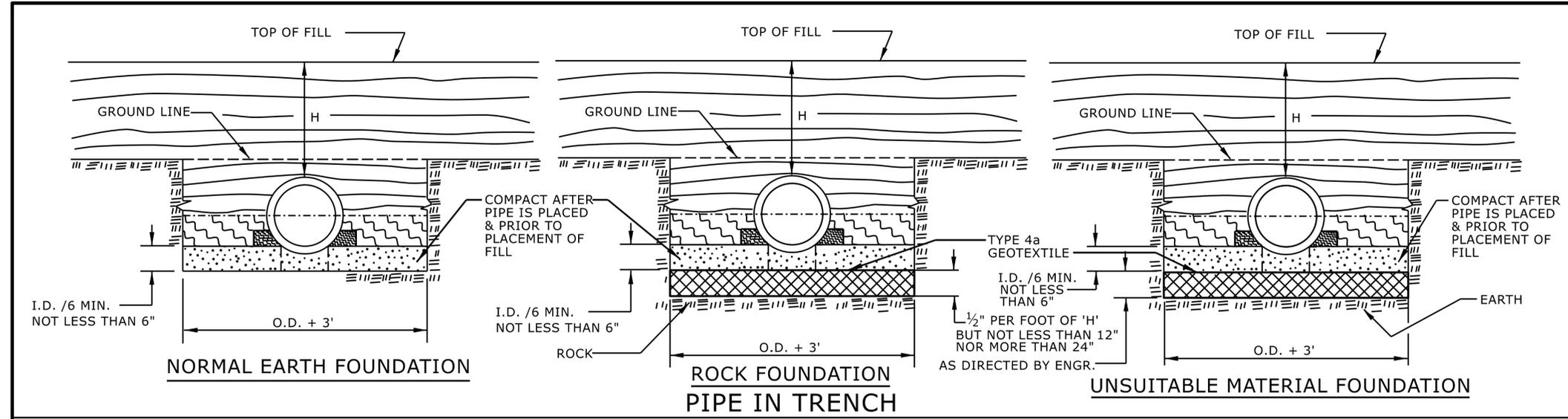
SHEET 1 OF 2  
**300.01**

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 UNLESS ALL SIGNATURES COMPLETED

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

**SEE TITLE BLOCK**

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



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

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

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.  
 REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

- SPRINGLINE OF PIPE
- SELECT BACKFILL MATERIAL CLASS III OR CLASS II, 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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ROADWAY DETAIL DRAWING FOR  
**METHOD OF PIPE INSTALLATION**  
 RIGID PIPE



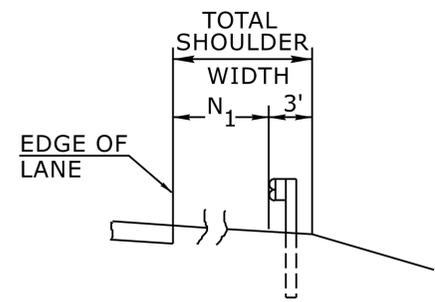
SHEET 2 OF 2  
**300.01**

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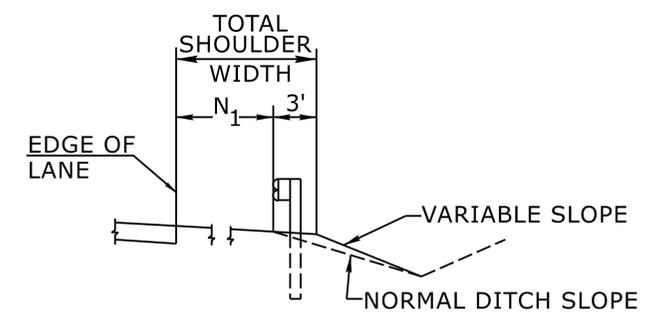
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 MODIFIED BY: DATE: \_\_\_\_\_  
 CHECKED BY: DATE: \_\_\_\_\_  
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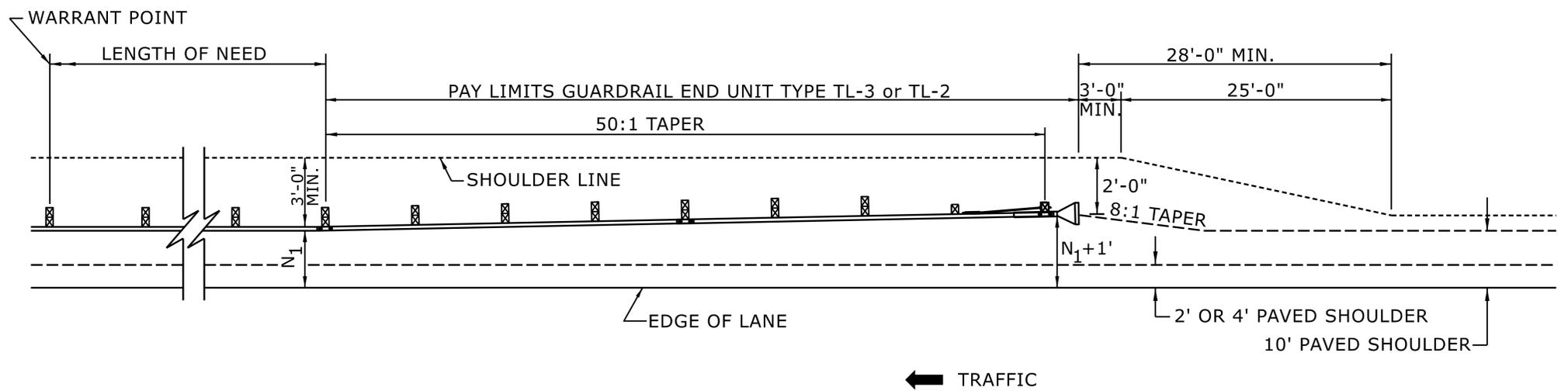


**FILL SECTION**



**CUT SECTION**

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



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

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

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ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**



1/5/2026

SHEET 6 OF 15  
**862D01**

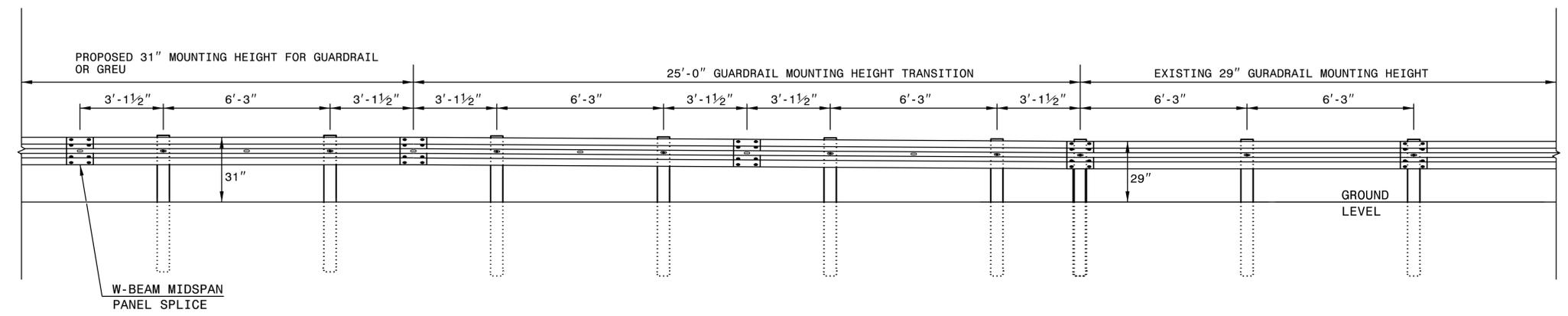
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AND DEVELOPMENT UNIT**  
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ORIGINAL BY: S.CALHOUN	DATE: 7-25-2024
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.:	

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



**ELEVATION VIEW**

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

STATE OF  
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ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL INSTALLATION**

SHEET 5 OF 9  
**862D02**



1/5/2026

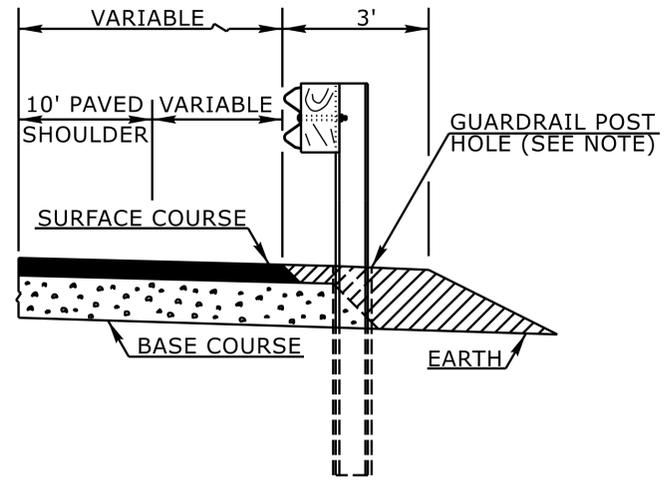
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AND DEVELOPMENT UNIT**  
Office 919-707-8950 FAX 919-250-4119

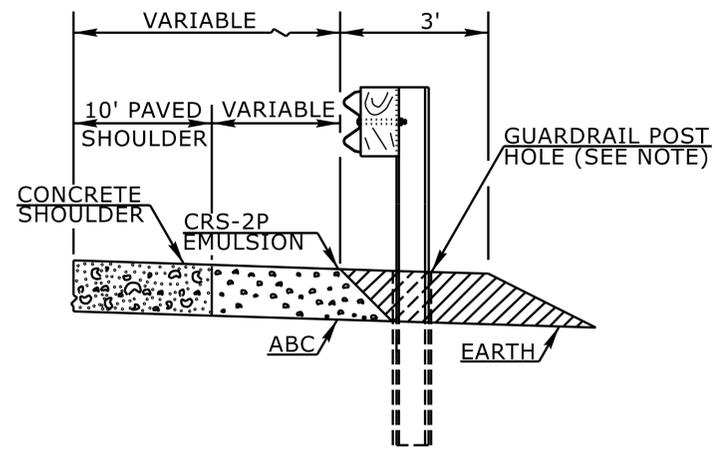
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ORIGINAL BY: K. Aldridge	DATE: 02-25
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.:	

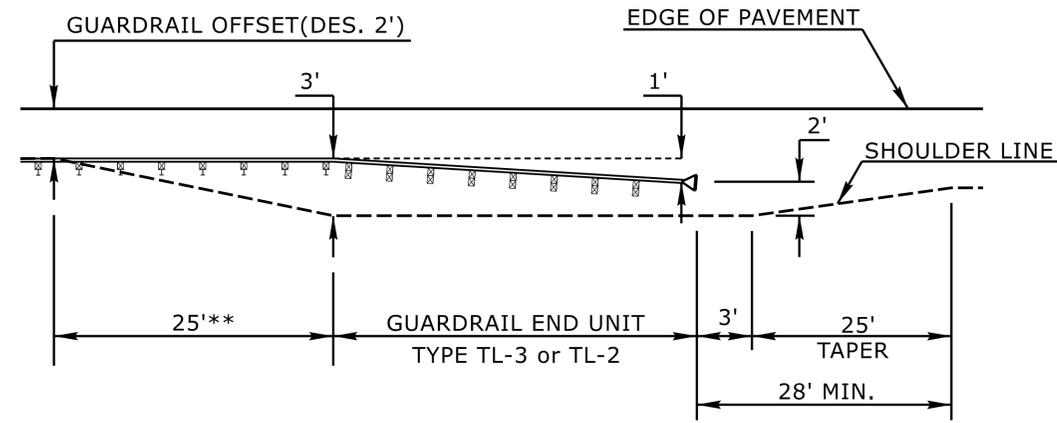
05-FEB-2025 07:53  
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Revisions\862D02 Detail\862D02.dgn  
\$\$\$\$\$USERNAME\$\$\$\$\$



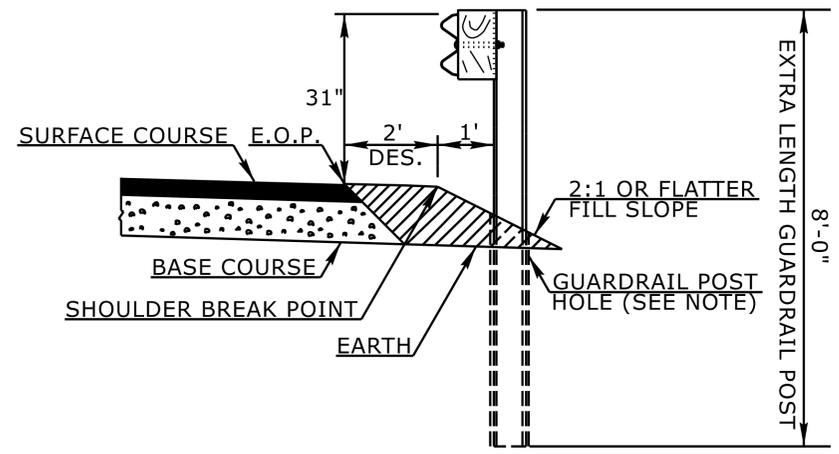
**FLEXIBLE PAVED SHOULDER**



**CONCRETE PAVED SHOULDER**



**8' GUARDRAIL POST ON 2:1 SLOPE-END UNIT TRANSITION\*  
PLAN VIEW**



**8' GUARDRAIL POST ON 2:1 SLOPE\***

\* THE 8' GUARDRAIL POST ON 2:1 SLOPE DETAIL IS INTENDED FOR USE ONLY IN SEVERELY CONSTRAINED AREAS WITH A POSTED SPEED ≤ 60 MPH. GUARDRAIL END UNITS MAY NOT BE PLACED ON THE 2:1 SLOPE AND MUST TRANSITION TO THE SHOULDER.  
\*\* 8' GUARDRAIL POST SHOULD BE USED IN THIS RANGE

NOTE:  
WHEN WOODEN GUARDRAIL POSTS ARE USED, DRILL HOLES THROUGH EARTH MATERIAL AND BASE COURSE. THE POST MAY THEN BE DRIVEN TO THE PROPER DEPTH. DRILL THE HOLE OF SUFFICIENT SIZE TO ACCOMMODATE THE PARTICULAR POST BEING USED. BACKFILL AND TAMP HOLES USING THE EXCAVATED MATERIAL.

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ROADWAY DETAIL DRAWING FOR  
**GUARDRAIL PLACEMENT**

SHEET 11 OF 15  
**862D01**



1/5/2026

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

**SEE TITLE BLOCK**

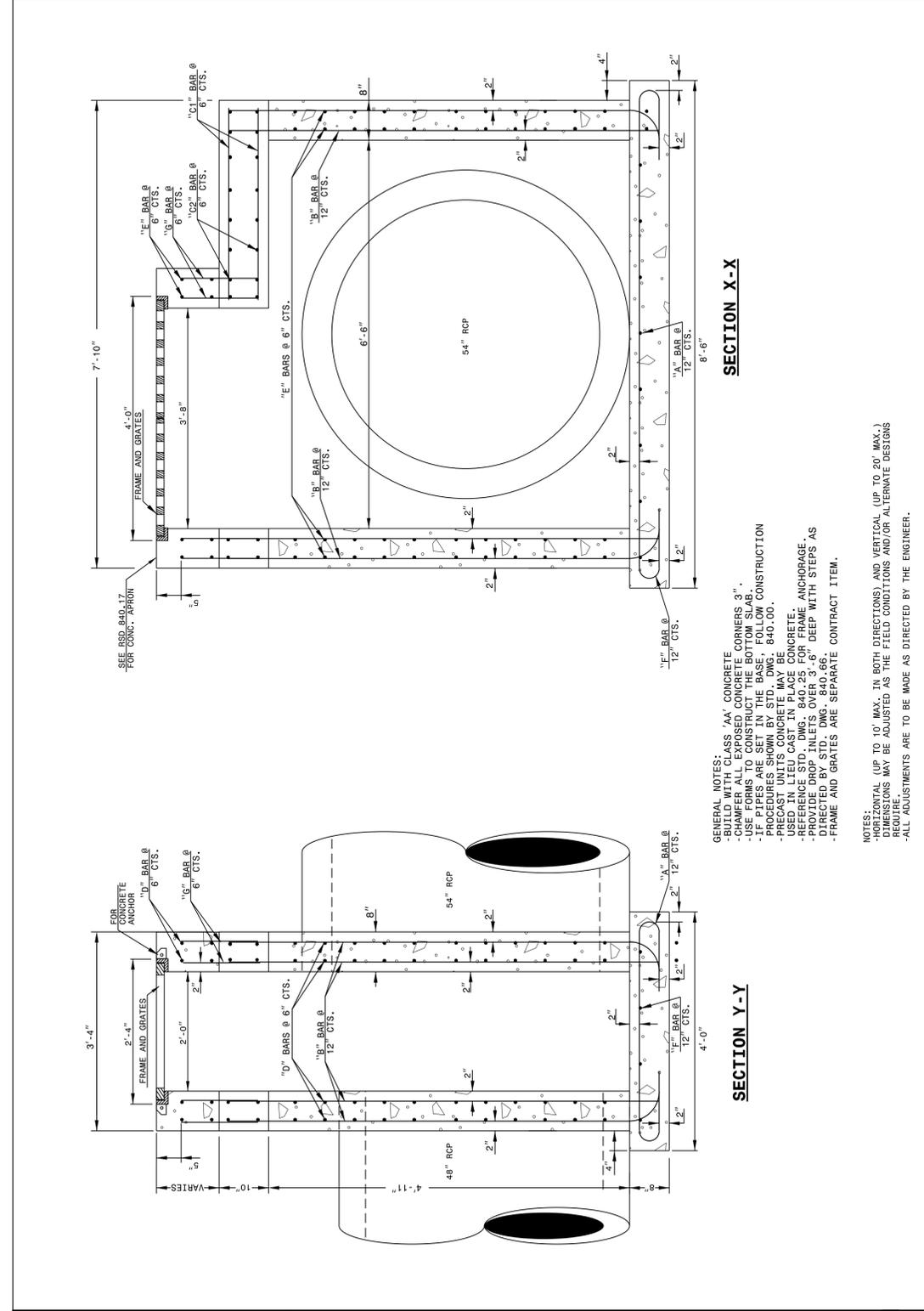
ORIGINAL BY: L.SMITH DATE: 10-14-2025  
MODIFIED BY: DATE:  
CHECKED BY: DATE:  
FILE SPEC.: DATE:

I3-AUG-2018 09:00 S:\Contracts\Contractors\Special Details\Jhewerton\840d35 TBDI Up to 54in.dgn .Jhewerton AT\_CSD-292595

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

ENGLISH DETAIL DRAWING FOR  
**TRAFFIC BEARING GRATED INLET**  
FOR PIPES UP TO 54"

SHEET 1 OF 2  
**840D35**



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

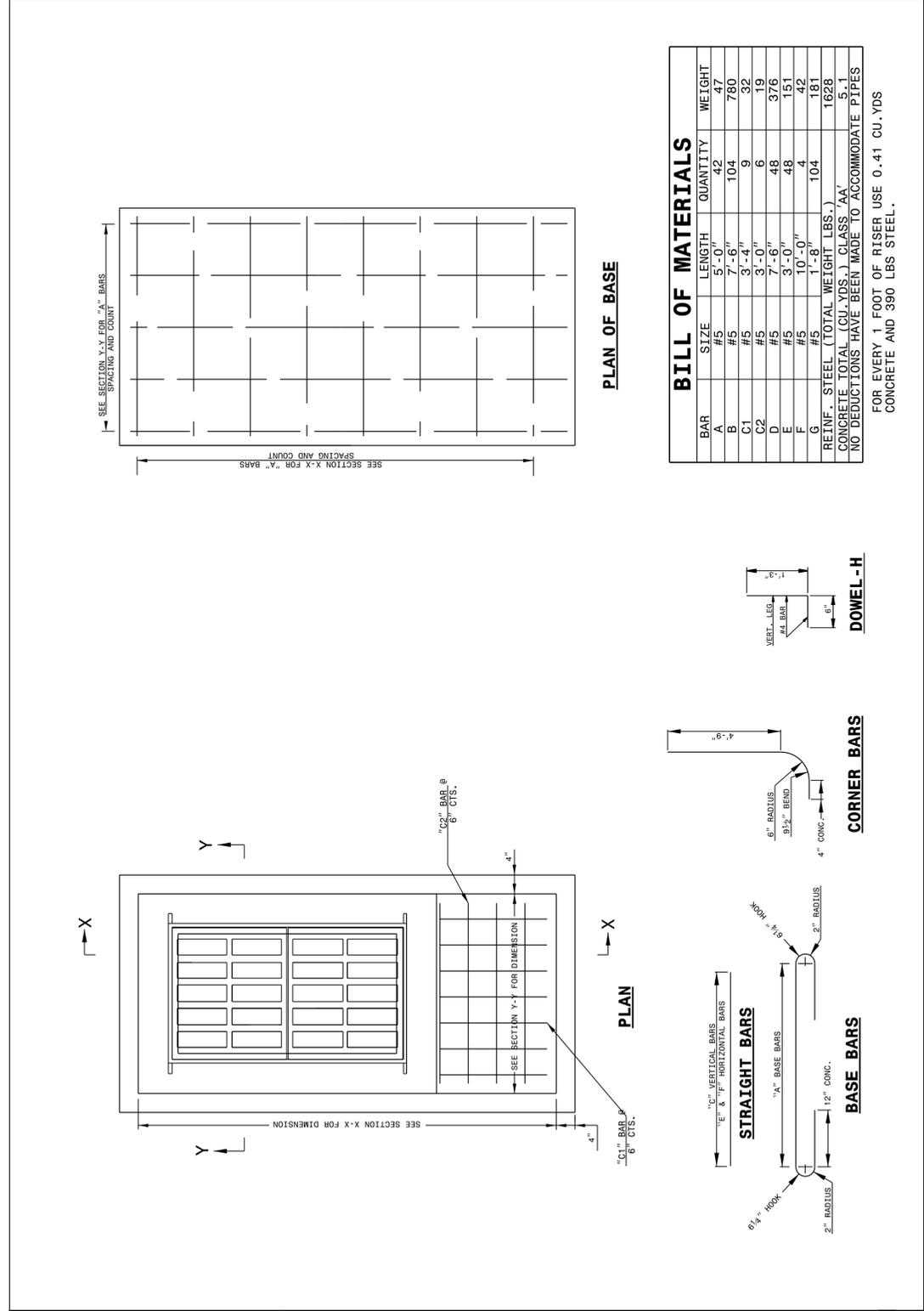
ENGLISH DETAIL DRAWING FOR  
**TRAFFIC BEARING GRATED INLET**  
FOR PIPES UP TO 54"

SHEET 1 OF 2  
**840D35**

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

ENGLISH DETAIL DRAWING FOR  
**TRAFFIC BEARING GRATED INLET**  
FOR PIPES UP TO 54"

SHEET 2 OF 2  
**840D35**



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

ENGLISH DETAIL DRAWING FOR  
**TRAFFIC BEARING GRATED INLET**  
FOR PIPES UP TO 54"

SHEET 2 OF 2  
**840D35**

**SECTION X-X**

GENERAL NOTES:  
-BUILD WITH CLASS 'AA' CONCRETE  
-CHAMFER ALL EXPOSED CONCRETE CORNERS 3".  
-USE FORMS TO CONSTRUCT THE BOTTOM SLAB.  
-PIPE ANCHORS IN THE BASE, FOLLOW CONSTRUCTION PRACTICES SHOWN IN THE BASE, DRG 840.00.  
-PRECAST UNITS CONCRETE MAY BE USED IN LIEU CAST IN PLACE CONCRETE.  
-REFERENCE STD. DRG. 840.25 FOR FRAME ANCHORAGE.  
-FRAME AND GRATES ARE SEPARATE CONTRACT ITEM.  
-FRAME AND GRATES ARE SEPARATE CONTRACT ITEM.

NOTES:  
-HORIZONTAL UP TO 10' MAX. IN BOTH DIRECTIONS AND VERTICAL (UP TO 20' MAX.) DIMENSIONS MAY BE ADJUSTED AS THE FIELD CONDITIONS AND/OR ALTERNATE DESIGNS REQUIRE.  
-ALL ADJUSTMENTS ARE TO BE MADE AS DIRECTED BY THE ENGINEER.

**BILL OF MATERIALS**

BAR	SIZE	LENGTH	QUANTITY	WEIGHT
A	#2	5'-0"	42	47
B	#2	7'-6"	104	790
C1	#3	3'-0"	9	32
C2	#3	3'-0"	6	19
D	#5	3'-6"	48	376
E	#5	3'-0"	48	151
F	#5	1'-0"	4	42
G	#5	1'-0"	104	181
REFIN. STEEL (TOTAL WEIGHT LBS.)				1626
CONCRETE TOTAL (CU. YDS.) CLASS 'AA'				5.1
NO DEDUCTIONS HAVE BEEN MADE TO ACCOMMODATE PIPES				

FOR EVERY 1 FOOT OF RISER USE 0.41 CU. YDS CONCRETE AND 390 LBS STEEL.



1/5/2026

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

**SEE PLATE FOR TITLE**

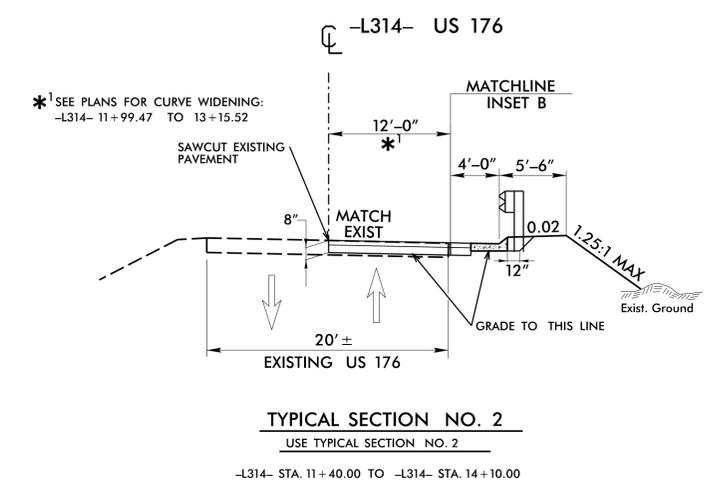
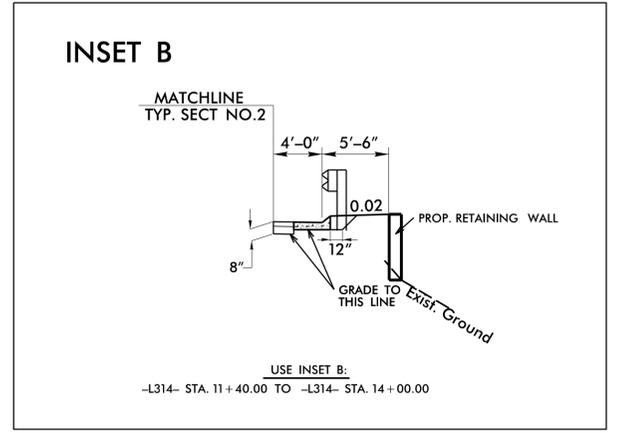
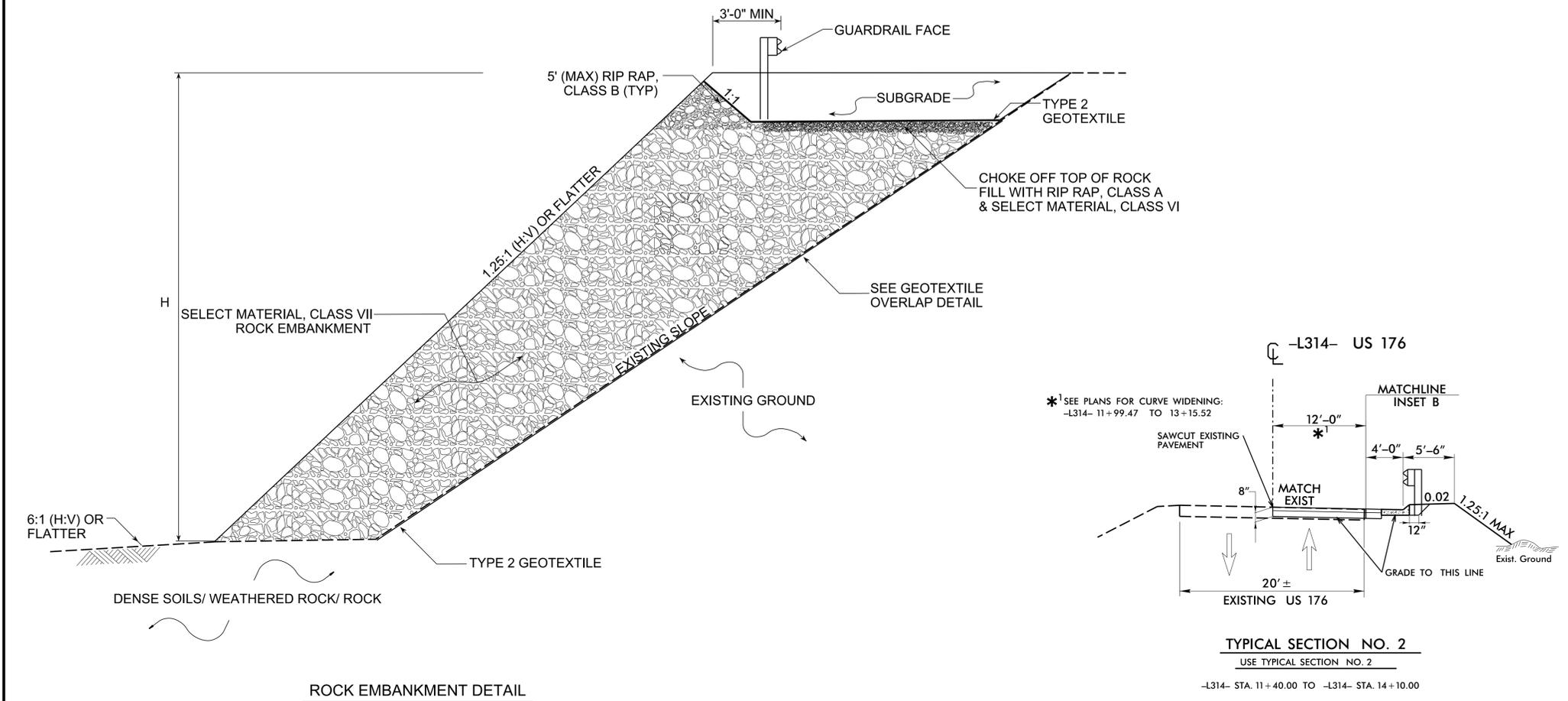
ORIGINAL BY: K. KEMPF DATE: 03-03-2015  
 MODIFIED BY: DATE:  
 CHECKED BY: DATE:  
 FILE SPEC.: jhewerton/840d35 TBDI Up to 54in.dgn

GEOTECHNICAL ENGINEER

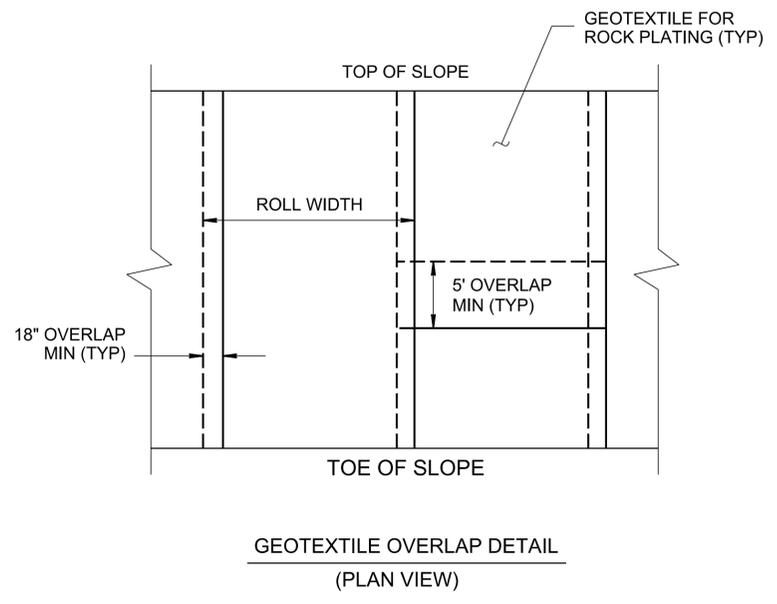
ENGINEER

Signed by: *Kelly de Montigny* DATE: 12/2/2025

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



- NOTES:**
1. USE ROCK EMBANKMENTS WHERE SLOPES WITH AN INCLINATION OF UP TO 1.25:1 (H:V) ARE PLANNED: -L314- STA. 14+00.00 TO -L314- STA. 14+10.00
  2. THE MAXIMUM ALLOWABLE HEIGHT FOR THE ROCK EMBANKMENT DETAIL IS 80'.
  3. FOR ROCK EMBANKMENT, BENCH EXISTING SLOPE IN ACCORDANCE WITH SECTION 235 OF THE STANDARD SPECIFICATIONS, WHERE POSSIBLE.
  4. FOR ROCK EMBANKMENTS, SEE ROCK EMBANKMENTS SPECIAL PROVISION.



ESTIMATED SITE 314 QUANTITIES	
ROCK EMBANKMENTS	15 TONS
GEOTEXTILE FOR ROCK EMBANKMENTS	25 SY

PROJECT NO.: W03293

POLK COUNTY

STATION: -L314- STA. 11+40.00 TO 14+00.00, RT

PREPARED BY: KND	DATE: 07/25
REVIEWED BY: REK	DATE: 07/25

Prepared in the Office of:

**CAROLINAS GEOTECHNICAL GROUP**

1805 SARDIS ROAD NORTH  
SUITE 100  
CHARLOTTE, NC 28270  
(980) 339-8684

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

**GEOTECHNICAL ENGINEERING UNIT**

SITE 314 ROCK EMBANKMENTS					
REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1	-	-	3	-	-
2	-	-	4	-	-

SHEET NO. 2G-1

COMPUTED BY: SGM DATE: 10/8/2025  
 CHECKED BY: JLT DATE: 11/10/2025

PROJECT NO.	SHEET NO.
W03293	3B-1

**STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS**

**SUMMARY OF EARTHWORK**  
 IN CUBIC YARDS

**NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY TGS ENGINEERS. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.**

**APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE LUMP SUM PRICE FOR "GRADING".**

PROJECT TOTALS	EXCAVATION TOTAL UNCLASS.	BORROW	WASTE
SITE			
SITE 316		320	
SITE 314	51	274	
SITE 317	20	436	
SITE 318	22	1,300	
SITE 319	13	265	
SITE 320	80		78
SITE 321	956		774
<b>GRAND TOTALS</b>	<b>1,142</b>	<b>2,595</b>	<b>852</b>
<b>SAY W03293 (Part I)</b>	<b>1,150</b>	<b>2,600</b>	

SEE SHEET 3B-2 FOR EARTHWORK SUMMARY  
 SEE SHEET 3B-3 FOR EARTHWORK SUMMARY

<b>SAY W03293 (Part II)</b>	<b>1,260</b>	<b>2,050</b>
<b>SAY W03293 (Combined Project )</b>	<b>2,410</b>	<b>4,650</b>

	Part I	Part II	Combined Project
EST. DDE(CY)	<b>25</b>	<b>N/A</b>	<b>25</b>
BORROW FOR WIRE FORM EMBANKMENT (CY)	<b>N/A</b>	<b>4,900</b>	<b>4,900</b>
SELECT GRANULAR MATERIAL (CY)	<b>1,400</b>	<b>1,800</b>	<b>3,200</b>
EST. SHALLOW UNDERCUT (CY)	<b>350</b>	<b>450</b>	<b>800</b>
ESTIMATED UNDERCUT TO BE USED AT THE DISCRETION OF THE RESIDENT ENGINEER PER GEOTECH RECOMMENDATION. (CY)	<b>1,400</b>	<b>1,800</b>	<b>3,200</b>

COMPUTED BY: SGM DATE: 10/8/25  
 CHECKED BY: JLT DATE: 11/10/2025

PROJECT NO. SHEET NO.  
 W03293 3B-2

## STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY TGS ENGINEERS. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

### SUMMARY OF EARTHWORK

IN CUBIC YARDS

Site 316

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L316- 10+85.00	-L316-13+50.00	27	305	278	
<b>SUBTOTALS:</b>		27	305	278	
<b>TOTALS:</b>		27	305	278	
LOSS DUE TO CLEARING & GRUBBING		-27		27	
<b>PROJECT TOTALS:</b>		0	305	305	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				15	
<b>GRAND TOTALS:</b>			305	320	

SELECT GRANULAR MATERIAL = 200 CUBIC YARDS  
 EST. SHALLOW UNDERCUT = 50 CUBIC YARDS

PER GEOTECH RECOMMENDATION, ESTIMATED 200 CUBIC YARDS OF UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.

APPROXIMATE QUANTITIES ONLY. BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE LUMP SUM PRICE FOR "GRADING".

### SUMMARY OF EARTHWORK

IN CUBIC YARDS

Site 318

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L317- 14+40.00	-L317- 16+50.00	72	1260	1188	
<b>SUBTOTALS:</b>		72	1260	1188	
<b>TOTALS:</b>		72	1260	1188	
LOSS DUE TO CLEARING & GRUBBING		-50		50	
<b>PROJECT TOTALS:</b>		22	1260	1238	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				62	
<b>GRAND TOTALS:</b>		22	1,260	1,300	

SELECT GRANULAR MATERIAL = 200 CUBIC YARDS  
 EST. SHALLOW UNDERCUT = 50 CUBIC YARDS

PER GEOTECH RECOMMENDATION, ESTIMATED 200 CUBIC YARDS OF UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.

APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE LUMP SUM PRICE FOR "GRADING".

### SUMMARY OF EARTHWORK

IN CUBIC YARDS

Site 314

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L314- 11+10.00	-L314- 14+50.00	101	312	211	
<b>SUBTOTALS:</b>		101	312	211	
<b>TOTALS:</b>		101	312	211	
LOSS DUE TO CLEARING & GRUBBING		-50		50	
<b>PROJECT TOTALS:</b>		51	312	261	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				13	
<b>GRAND TOTALS:</b>		51	312	274	

SELECT GRANULAR MATERIAL = 200 CUBIC YARDS  
 EST. SHALLOW UNDERCUT = 50 CUBIC YARDS

PER GEOTECH RECOMMENDATION, ESTIMATED 200 CUBIC YARDS OF UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.

APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE LUMP SUM PRICE FOR "GRADING".

### SUMMARY OF EARTHWORK

IN CUBIC YARDS

Site 319

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L319- 12+50.00	-L319- 15+00.00	63	265	202	
<b>SUBTOTALS:</b>		63	265	202	
<b>TOTALS:</b>		63	265	202	
LOSS DUE TO CLEARING & GRUBBING		-50		50	
<b>PROJECT TOTALS:</b>		13	265	252	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				13	
<b>GRAND TOTALS:</b>		13	265	265	

SELECT GRANULAR MATERIAL = 200 CUBIC YARDS  
 EST. SHALLOW UNDERCUT = 50 CUBIC YARDS

PER GEOTECH RECOMMENDATION, ESTIMATED 200 CUBIC YARDS OF UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.

APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE LUMP SUM PRICE FOR "GRADING".

### SUMMARY OF EARTHWORK

IN CUBIC YARDS

Site 317

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L317- 11+00.00	-L317- 14+40.00	70	435	365	
<b>SUBTOTALS:</b>		70	435	365	
<b>TOTALS:</b>		70	435	365	
LOSS DUE TO CLEARING & GRUBBING		-50		50	
<b>PROJECT TOTALS:</b>		20	435	415	
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT				21	
<b>GRAND TOTALS:</b>		20	435	436	

EST. DDE = 25 CUBIC YARDS  
 SELECT GRANULAR MATERIAL = 200 CUBIC YARDS  
 EST. SHALLOW UNDERCUT = 50 CUBIC YARDS

PER GEOTECH RECOMMENDATION, ESTIMATED 200 CUBIC YARDS OF UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.

APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE LUMP SUM PRICE FOR "GRADING".

### SUMMARY OF EARTHWORK

IN CUBIC YARDS

Site 320

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L320- 12+00.00	-L320- 16+50.00	130	2		128
<b>SUBTOTALS:</b>		130	2		128
<b>TOTALS:</b>		130	2		128
LOSS DUE TO CLEARING & GRUBBING		-50			-50
<b>PROJECT TOTALS:</b>		80	2		78
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT					
<b>GRAND TOTALS:</b>		80	2		78

SELECT GRANULAR MATERIAL = 200 CUBIC YARDS  
 EST. SHALLOW UNDERCUT = 50 CUBIC YARDS

PER GEOTECH RECOMMENDATION, ESTIMATED 200 CUBIC YARDS OF UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.

APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE LUMP SUM PRICE FOR "GRADING".

COMPUTED BY: SGM DATE: 10/8/2025  
 CHECKED BY: JLT DATE: 11/10/2025

PROJECT NO. SHEET NO.  
 W03293 3B-3

**STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS**

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY TGS ENGINEERS. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

**SUMMARY OF EARTHWORK**

IN CUBIC YARDS

Site 321

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L320- 16+50.00	-L320- 20+50.00	1006	182		824
<b>SUBTOTALS:</b>		1006	182		824
<b>TOTALS:</b>		1006	182		824
LOSS DUE TO CLEARING & GRUBBING		-50			-50
<b>PROJECT TOTALS:</b>		956	182		774
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT					
<b>GRAND TOTALS:</b>		956	182		774

SELECT GRANULAR MATERIAL = 200 CUBIC YARDS  
 EST. SHALLOW UNDERCUT = 50 CUBIC YARDS

PER GEOTECH RECOMMENDATION, ESTIMATED 200 CUBIC YARDS OF UNDERCUT TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.

APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE LUMP SUM PRICE FOR "GRADING".

**PAVEMENT REMOVAL SUMMARY**

IN SQUARE YARDS

Site	SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL	SITE TOTAL
316	-L316-	10+85	13+50	LT	16.76	16.76
314	-L314-	11+10	14+50	RT	530.54	530.54
317	-L317-	11+00	14+40	CL	1,340.63	1,340.63
318	-L317-	14+40	16+50	CL	794.04	794.04
319	-L319-	12+50	15+00	RT	347.84	347.84
320	-L320-	12+00	16+50	RT	634.97	634.97
321	-L320-	16+50	20+50	RT	557.86	557.86

<b>TOTAL (PART I):</b>	<b>4,222.64</b>
<b>SAY (PART I):</b>	<b>4,300</b>
<b>SAY (PART II):</b>	<b>4,350</b>
<b>SAY (COMBINED PROJECT):</b>	<b>8,650</b>

**SHOULDER BERM GUTTER SUMMARY**

IN FEET

Site	LINE	Station	Station	LENGTH	SAY
314	-L314-, RT	11+40	14+10	270.00	<b>280</b>
320	-L320-, RT	12+00	16+50	450.00	<b>470</b>
321	-L320-, RT	16+50	17+00	50.00	<b>60</b>

<b>TOTAL (PART I):</b>	<b>770.00</b>	<b>810</b>
<b>TOTAL (PART II):</b>	<b>2,262.00</b>	<b>2,370</b>
<b>COMBINED PROJECT TOTAL</b>	<b>3,032.00</b>	<b>3,180</b>

COMPUTED BY: <u>SGM</u>	DATE: <u>10/8/25</u>
CHECKED BY: <u>JLT</u>	DATE: <u>11/10/25</u>

**DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA**

PROJECT REFERENCE NO. <b>W03293</b>	SHEET NO. <b>3B-4</b>
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"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

# GUARDRAIL SUMMARY

G = GATING IMPACT ATTENUATOR TYPE 350  
 NG = NON-GATING IMPACT ATTENUATOR TYPE 350

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		EXTRA DEPTH POSTS	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	CAT-1	GREU, TL-3	G	NG						
<b>SITE 316</b>																								
-L316-	10+85.00	13+22.50	LT	237.50			12+70	11+25	4'	8'	50		1'											
<b>SUB-TOTALS</b>				237.50																				
<b>LESS ANCHOR DEDUCTIONS</b>																								
		GREU, TL-3	2 @ 50.00 ft	100.00		12.5																		
<b>ANCHOR TOTALS</b>				100.00																				
<b>SITE 316 TOTALS</b>				137.50																				
<b>SAY</b>				<b>150.00</b>			<b>Additional Guardrail Posts = 2 EA</b>																	
<b>SITE 314</b>																								
-L314-	11+10.00	14+35.00	RT	325.00																		87.3	TIE TO EXIST. GUARDRAIL	
<b>SITE 314 TOTALS</b>				325.00																			87.3	
<b>SAY</b>				<b>337.5</b>			<b>Additional Guardrail Posts = 2 EA</b>																<b>90</b>	
<b>SITE 317</b>																								
-L317-	12+93+/-	13+61+/-	LT																			97.4		
<b>SITE 317 TOTALS</b>																							97.4	
<b>SAY</b>							<b>Additional Guardrail Posts = 2 EA</b>																<b>100</b>	
<b>SITE 318</b>																								
-L317-	14+50.00	16+50.00	RT	200.00			15+00		4'	7'	50'		1'									126.1	TIE TO EXIST. GUARDRAIL	
<b>SUB-TOTALS</b>				200.00																				
<b>LESS ANCHOR DEDUCTIONS</b>																								
		GREU, TL-3	1 @ 50.00 ft	50.00																				
<b>ANCHOR TOTALS</b>				50.00																				
<b>SITE 318 TOTALS</b>				150.00																				126.1
<b>SAY</b>				<b>162.5</b>			<b>Additional Guardrail Posts = 2 EA</b>																<b>130</b>	
<b>SITE 319</b>																								
-L319-	12+50.00	15+00.00	RT	250.00																		250	TIE TO EXIST. GUARDRAIL	
<b>SITE 319 TOTALS</b>				250.00																			250.0	
<b>SAY</b>				<b>262.5</b>			<b>Additional Guardrail Posts = 2 EA</b>																<b>255</b>	
<b>SITE 320</b>																								
-L320-	12+00.00	16+50.00	RT	450.00																		457.6	TIE TO EXIST. GUARDRAIL	
<b>SITE 320 TOTALS</b>				450.00																			457.6	
<b>SAY</b>				<b>456.25</b>			<b>Additional Guardrail Posts = 2 EA</b>																<b>460</b>	
<b>SITE 321</b>																								
-L320-	16+50.00	17+43.75	RT	93.75																		90.2	TIE TO EXIST. GUARDRAIL	
<b>SITE 321 TOTALS</b>				93.75																			90.2	
<b>SAY</b>				<b>100.0</b>			<b>Additional Guardrail Posts = 2 EA</b>																<b>95</b>	
<b>W03293 (PART I) TOTALS</b>				<b>1468.75</b>			<b>Additional Guardrail Posts = 12 EA</b>																<b>3</b>	
<b>W03293 (PART II) TOTALS</b>				<b>3206.25</b>			<b>Additional Guardrail Posts = 18 EA</b>																<b>4</b>	
<b>W03293 COMBINED PLANS TOTALS</b>				<b>4675.00</b>			<b>Additional Guardrail Posts = 30 EA</b>																<b>7</b>	





COMPUTED BY: PMP DATE: 07/31/2025  
 CHECKED BY: KND DATE: 07/31/2025

(9-17-24)

PROJECT NO. W03293	SHEET NO. 3G-1
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**STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS**

PART I

**SUMMARY OF SUBSURFACE DRAINAGE**

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
	CONTINGENCY (SITE 314 / 18314.1075023)			SD	100
	CONTINGENCY (SITE 316 / 18314.1075025)			SD	100
	CONTINGENCY (SITE 317 / 18314.1075026)			SD	100
	CONTINGENCY (SITE 318 / 18314.1075027)			SD	100
	CONTINGENCY (SITE 319 / 18314.1075028)			SD	100
	CONTINGENCY (SITE 320 / 18314.1075029)			SD	100
	CONTINGENCY (SITE 321 / 18314.1075030)			SD	100
				<b>TOTAL LF:</b>	700

\*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 (SITE 314 / 18314.1075023)			ASU1	12	50	100	150	
	CONTINGENCY (SITE 316 / 18314.1075025)			ASU1	12	50	100	150	
	CONTINGENCY (SITE 317 / 18314.1075026)			ASU1	12	50	100	150	
	CONTINGENCY (SITE 318 / 18314.1075027)			ASU1	12	50	100	150	
	CONTINGENCY (SITE 319 / 18314.1075028)			ASU1	12	50	100	150	
	CONTINGENCY (SITE 320 / 18314.1075029)			ASU1	12	50	100	150	
	CONTINGENCY (SITE 321 / 18314.1075030)			ASU1	12	50	100	150	
				<b>TOTAL CY/TONS/SY:</b>		350	700**	1050**	0

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

**SUMMARY OF ROCK PLATING**

LINE	Beginning Slope (H:V)	Approx. Station	Ending Slope (H:V)	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	Rock Plating SY
	SITE 318 / 18314.1075027							
-L317-	1.5:1	14+50	1.5:1	16+50	RT	2		2150
	SITE 321 / 18314.1075030							
-L320-	1.5:1	17+50	1.5:1	19+50	LT	4		1525
							<b>TOTAL SY:</b>	3675

\*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.

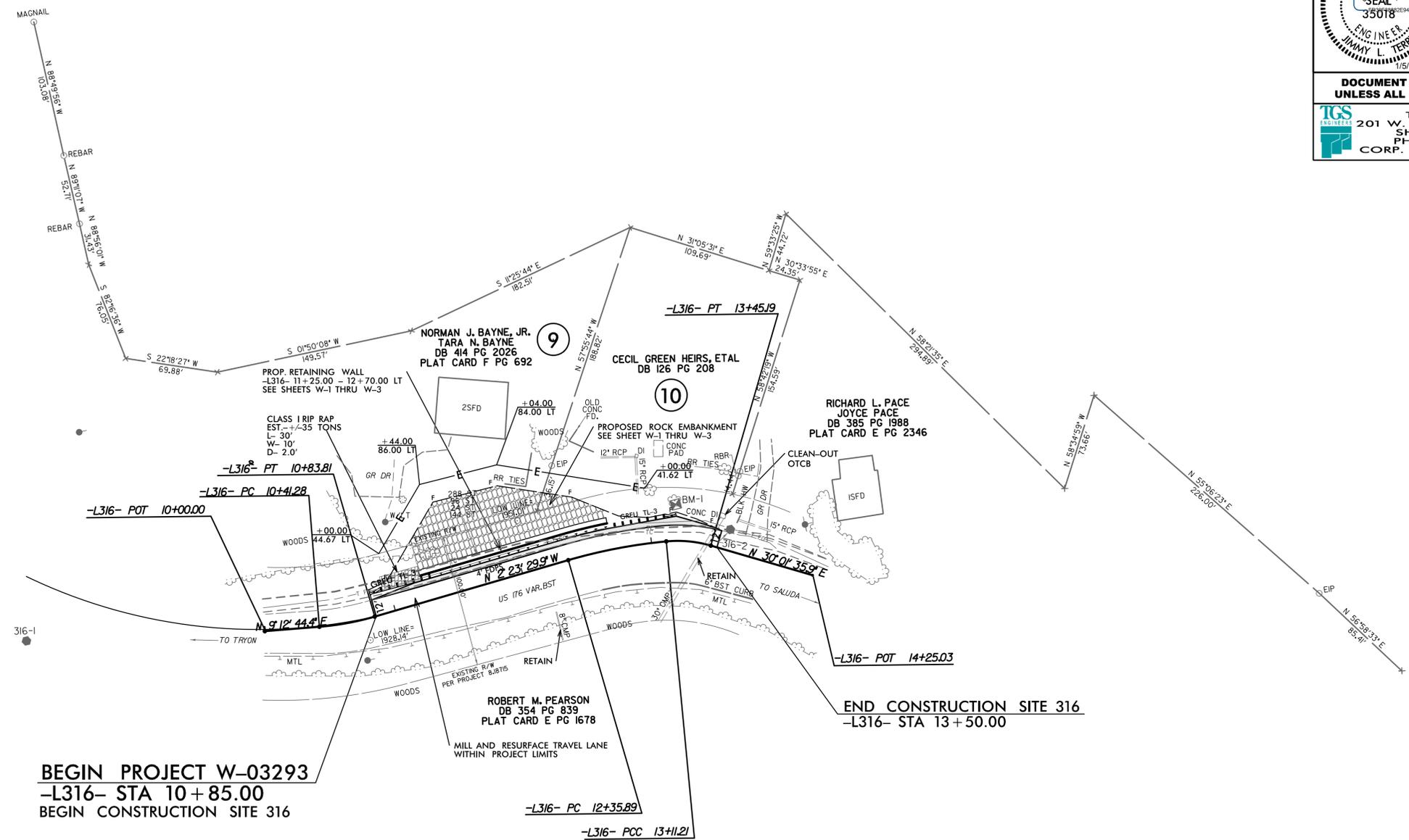
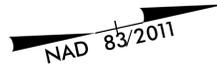


8/17/99

REVISIONS

X:\Road\2025\Div 14 US 176 Repair\Roadway\Design\PlanSheets\US176\_Rdy\_psh\_04.dgn  
12/28/2025  
K:\Road\2025\Div 14 US 176 Repair\Roadway\Design\PlanSheets\US176\_Rdy\_psh\_04.dgn  
12/28/2025

PROJECT REFERENCE NO. <b>W03293</b>	SHEET NO. <b>4</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
 <b>TGS ENGINEERS</b> 201 W. MARION ST., STE 200 SHELBY, NC 28150 PH: (704) 476-0003 CORP. LICENSE NO.: C-0275	



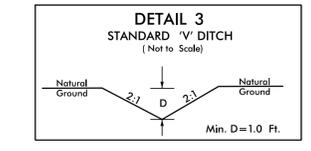
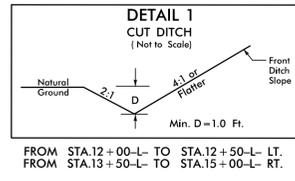
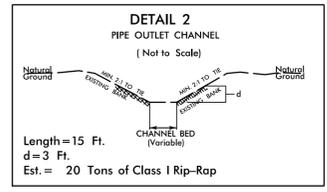
**BEGIN PROJECT W-03293**  
**-L316- STA 10+85.00**  
**BEGIN CONSTRUCTION SITE 316**

**END CONSTRUCTION SITE 316**  
**-L316- STA 13+50.00**

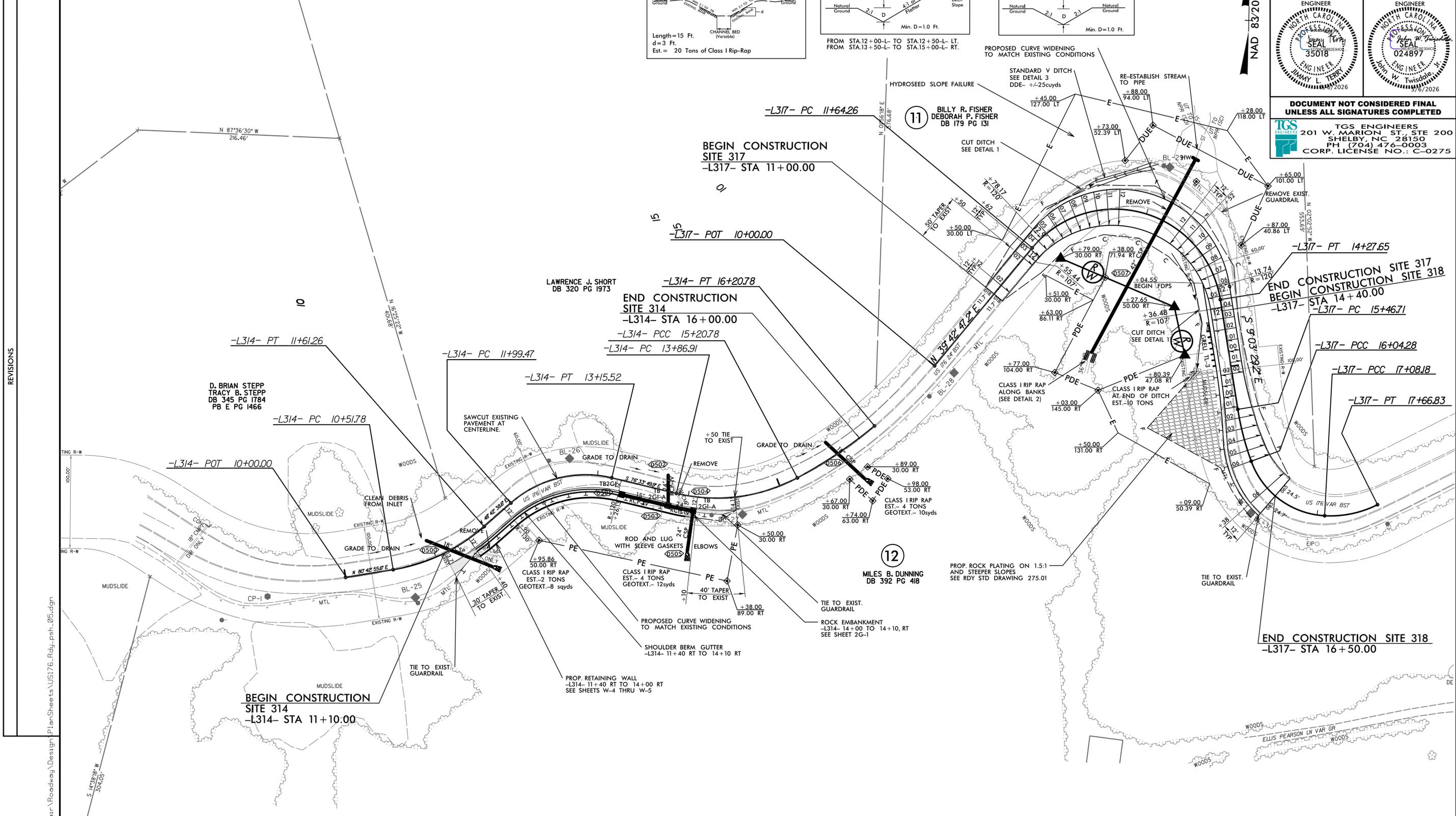
**-L316- CURVE DATA**

PI Sta	PI Sta	PI Sta
10+62.62	12+73.66	13+28.41
$\Delta = 11^{\circ}36'14.4''$ (LT)	$\Delta = 10^{\circ}47'22.5''$ (RT)	$\Delta = 21^{\circ}37'43.3''$ (RT)
$D = 27^{\circ}17'01.3''$	$D = 14^{\circ}19'26.2''$	$D = 63^{\circ}39'43.1''$
$L = 42.53'$	$L = 75.33'$	$L = 33.97'$
$T = 21.34'$	$T = 37.77'$	$T = 17.19'$
$R = 210.00'$	$R = 400.00'$	$R = 90.00'$
SE = EXIST.	SE = EXIST.	SE = EXIST.

PROJECT REFERENCE NO. W03293	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 35018 JIMMY L. TERRY 08/27/2026	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 024897 John W. Wasdale 06/27/2026
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
TGS ENGINEERS 201 W. MARION ST., STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	



NAD 83/2011



-L314- Curve Data

PI Sta 11+07.99 Δ = 32° 00' 17.0" (LT) D = 29° 13' 57.1" L = 109.48' T = 56.21' R = 196.00' SE = EXIST.	PI Sta 12+62.35 Δ = 54° 43' 31.5" (RT) D = 47° 09' 25.3" L = 116.05' T = 62.88' R = 121.50' SE = EXIST.	PI Sta 14+56.93 Δ = 41° 27' 40.2" (LT) D = 30° 58' 14.5" L = 133.87' T = 70.02' R = 185.00' SE = EXIST.	PI Sta 15+70.96 Δ = 11° 38' 43.7" (LT) D = 11° 38' 43.7" L = 100.00' T = 50.17' R = 492.00' SE = EXIST.
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-L317- Curve Data

PI Sta 14+17.95 Δ = 131° 13' 43.6" (RT) D = 49° 49' 20.7" L = 263.39' T = 253.69' R = 115.00' SE = 0.12 DS = 20 MPH	PI Sta 15+75.58 Δ = 10° 59' 48.1" (LT) D = 19° 05' 54.9" L = 57.58' T = 28.88' R = 300.00' SE = 0.06 DS = 30 MPH	PI Sta 16+63.07 Δ = 66° 53' 18.9" (LT) D = 64° 22' 38.2" L = 103.90' T = 58.78' R = 89.00' SE = EXIST.	PI Sta 17+38.18 Δ = 29° 44' 01.6" (LT) D = 50° 42' 14.9" L = 58.64' T = 30.00' R = 113.00' SE = EXIST.
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FOR -L317 PROFILE, SEE SHEET NO. 8

REVISIONS

3/6/2026 Div 14 US 176 Repair Roadway Design PlanSheets\US176\_Rdy\_psh\_05.dgn

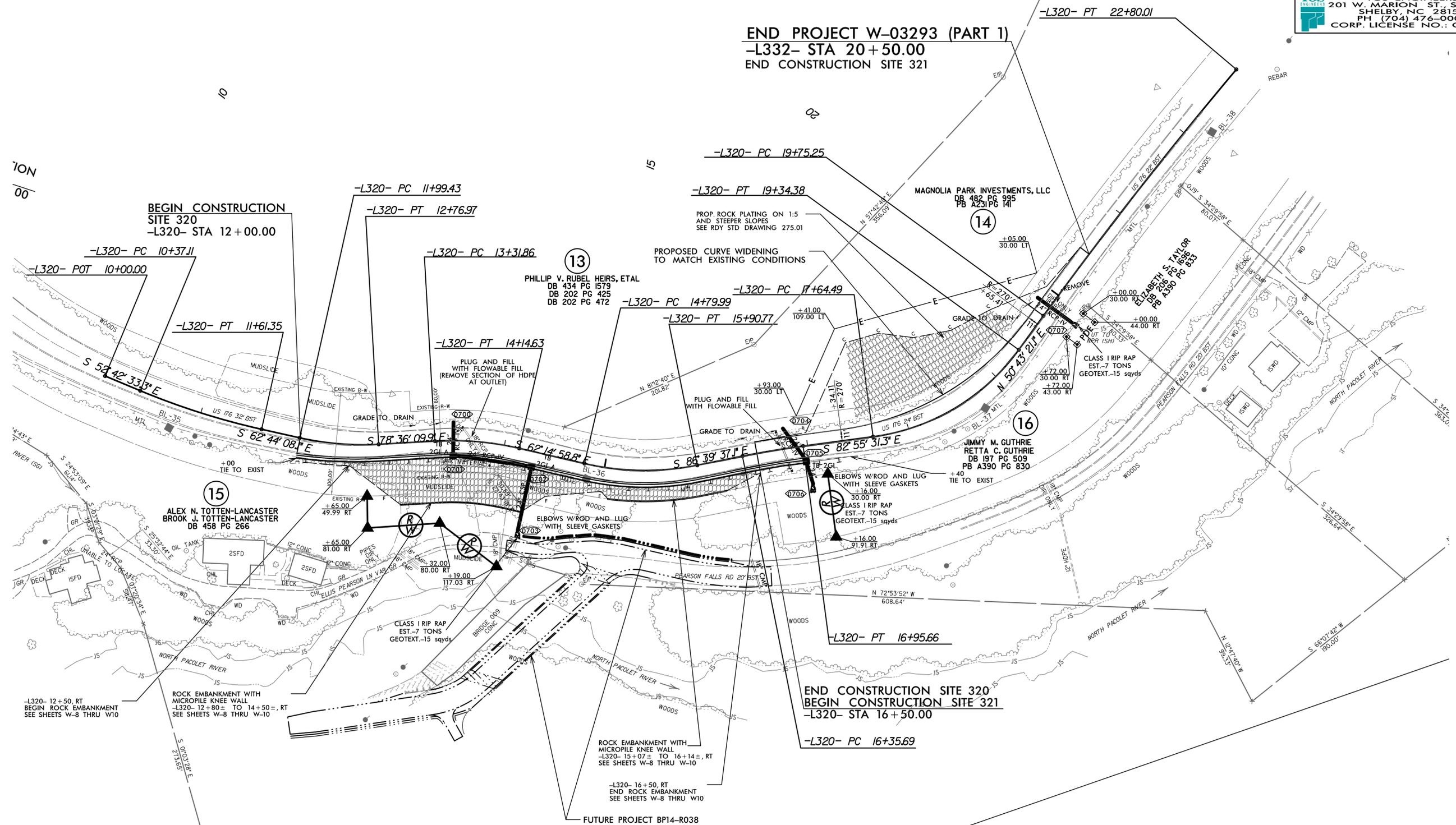
S 01051818 W



**-L320- CURVE DATA**

PI Sta 10+99.39 Δ = 10° 01' 34.8" (LT) D = 8° 04' 11.4" L = 124.24' T = 62.28' R = 710.00' SE = EXIST.	PI Sta 12+38.45 Δ = 15° 52' 01.8" (LT) D = 20° 27' 46.0" L = 77.54' T = 39.02' R = 290.00' SE = EXIST.	PI Sta 13+73.53 Δ = 16° 21' 11.1" (RT) D = 19° 45' 25.8" L = 82.77' T = 41.67' R = 290.00' SE = EXIST.	PI Sta 15+36.23 Δ = 24° 24' 38.2" (LT) D = 22° 02' 12.6" L = 110.77' T = 56.24' R = 260.00' SE = EXIST.	PI Sta 16+65.69 Δ = 3° 44' 05.8" (RT) D = 6° 13' 40.1" L = 59.97' T = 30.00' R = 920.00' SE = EXIST.	PI Sta 18+54.39 Δ = 46° 21' 07.6" (LT) D = 27° 17' 01.3" L = 169.89' T = 89.90' R = 210.00' SE = EXIST.	PI Sta 21+27.70 Δ = 4° 06' 20.2" (RT) D = 1° 20' 49.9" L = 304.75' T = 152.44' R = 4253.00' SE = EXIST.
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PROJECT REFERENCE NO. <b>W03293</b>	SHEET NO. <b>7</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
 <b>TGS ENGINEERS</b> 201 W. MARION ST., STE 200 SHELBY, NC 28150 PH: (704) 476-0003 CORP. LICENSE NO.: C-0275	



REVISIONS

12/30/2025  
K:\Roadwork\Div 14 US 176 Repair\Roadway\Design\PlanSheets\US176\_Rdy\_psh\_07.dgn  
User: jsm

-L320- 12+50, RT  
BEGIN ROCK EMBANKMENT  
SEE SHEETS W-8 THRU W-10

ROCK EMBANKMENT WITH  
MICROPILE KNEE WALL  
-L320- 12+80 ± TO 14+50 ±, RT  
SEE SHEETS W-8 THRU W-10

ROCK EMBANKMENT WITH  
MICROPILE KNEE WALL  
-L320- 15+07 ± TO 16+14 ±, RT  
SEE SHEETS W-8 THRU W-10

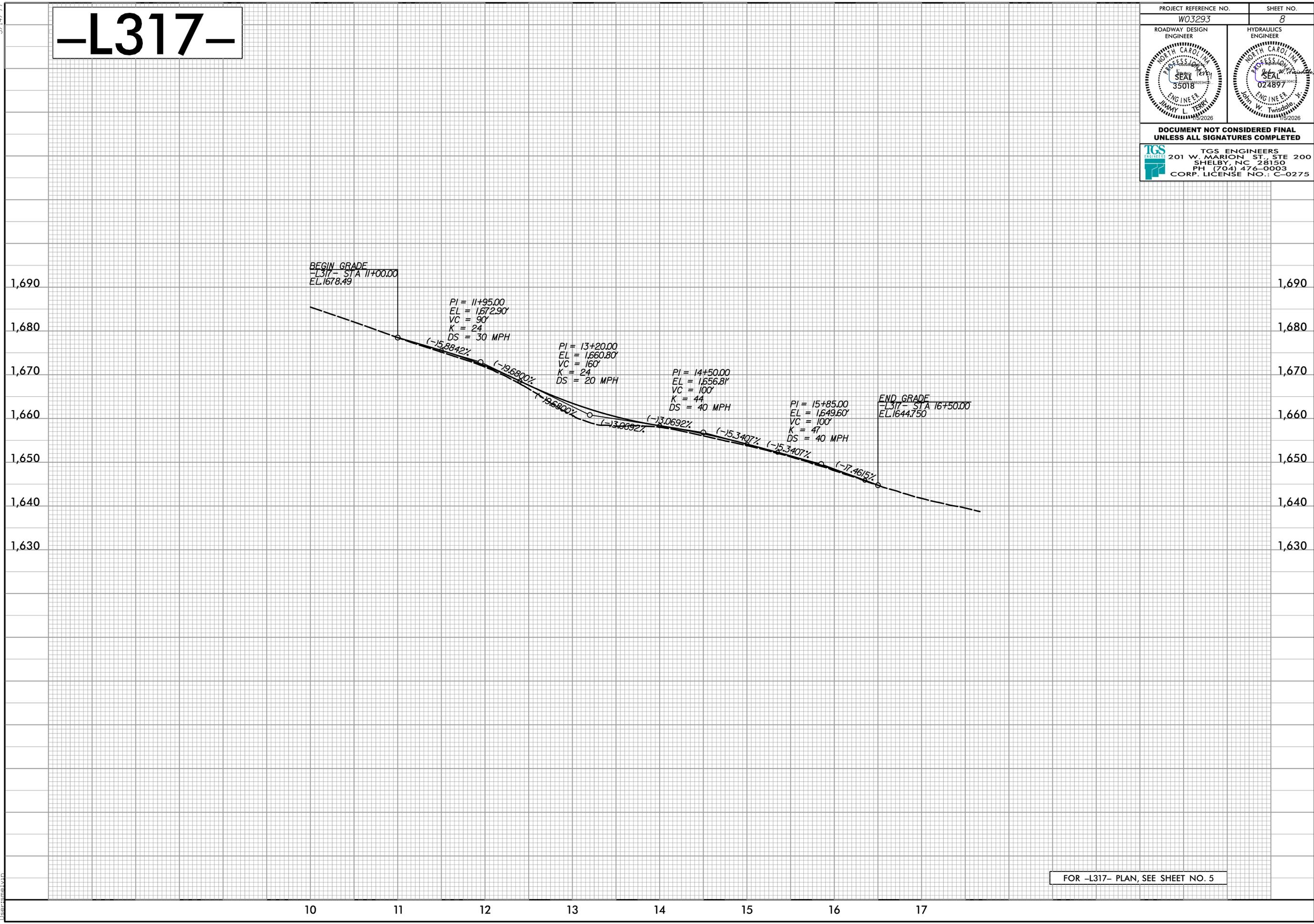
-L320- 16+50, RT  
END ROCK EMBANKMENT  
SEE SHEETS W-8 THRU W-10

FUTURE PROJECT BP14-R038

5/14/99

# -L317-

PROJECT REFERENCE NO. W03293	SHEET NO. 8
ROADWAY DESIGN ENGINEER 	HYDRAULICS ENGINEER 
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	
 <b>TGS ENGINEERS</b> 201 W. MARION ST. STE 200 SHELBY, NC 28150 PH (704) 476-0003 CORP. LICENSE NO.: C-0275	



FOR -L317- PLAN, SEE SHEET NO. 5

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