Docusign Envelope ID: 2AD89466-EEF5-420C-B4F1-E7AAEE24BACE

09/08/99

# TIP PROJECT: U-4700CC

# STATE OF NORTH CAROLINA
# DIVISION OF HIGHWAYS

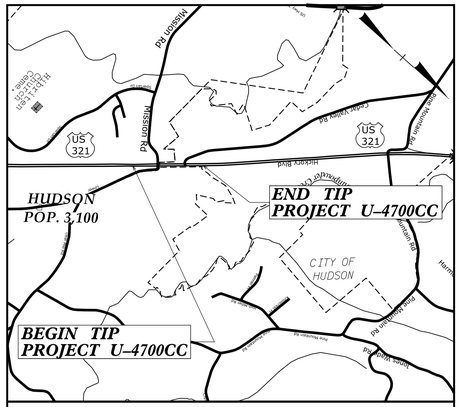
# CALDWELL COUNTY

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|---|---|---|---|
| N.C. | U-4700CC | 1 | |

| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION |
|---|---|---|
| 35993.1.12 | | PE |
| 35993.2.10 | NHP-0321(045) | RW |
| 35993.2.14 | NHP-0321(045) | UTIL |
| 35993.3.10 | NHP-0321(045) | CONST |

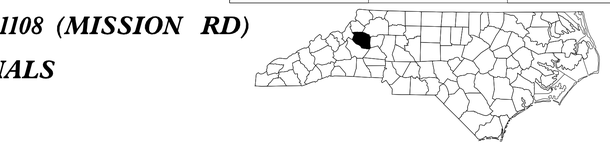
**LOCATION: INTERSECTION UPGRADE AT US-321 AND SR-1108 (MISSION RD)**

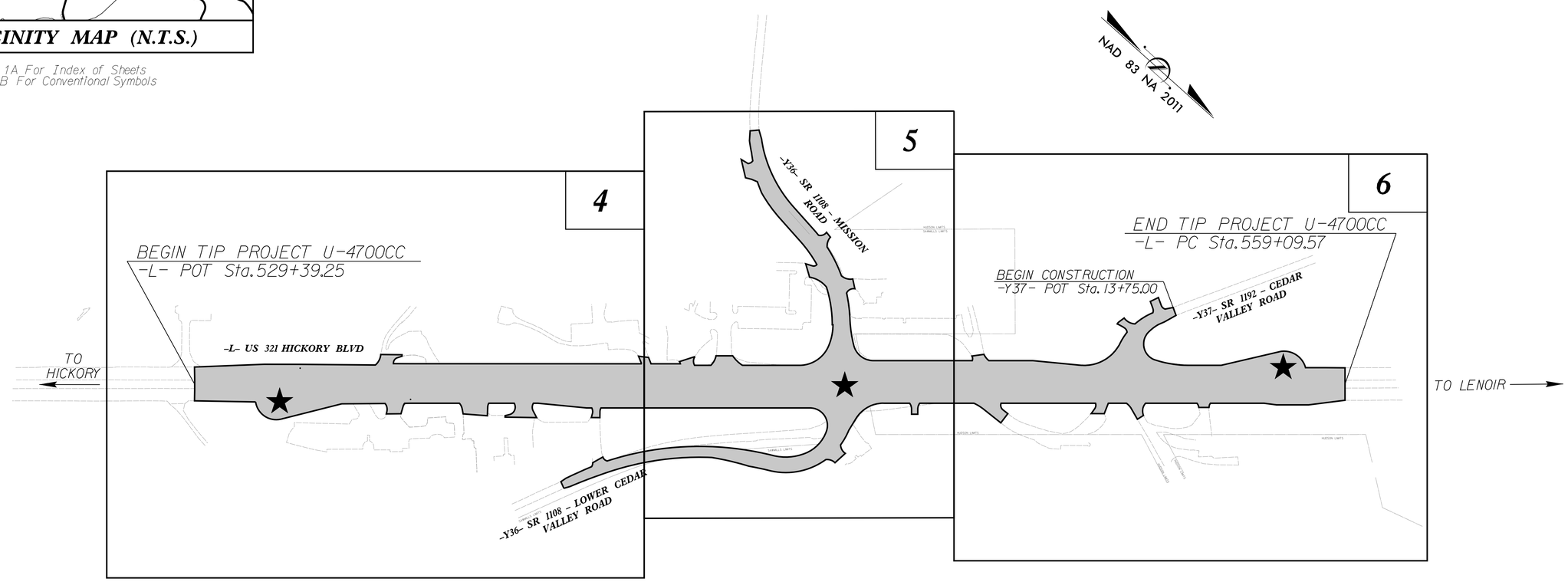
**TYPE OF WORK: GRADING, DRAINAGE, PAVING AND SIGNALS**




**VICINITY MAP (N.T.S.)**

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






★ PROPOSED SIGNAL

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

This project is within the municipal boundaries of the city of Hudson.
This is a Limited Controlled Access Project with access being limited to interchanges and at-grade intersections.

NCDOT CONTACT: RAMIE A. SHAW, PE DIVISION PROJECT DEVELOPMENT ENGINEER

**CONTRACT: C204840**

### GRAPHIC SCALES

50 0 50 100
PLANS

50 0 50 100
PROFILE (HORIZONTAL)

10 0 10 20
PROFILE (VERTICAL)

### DESIGN DATA

ADT 2025 = 39,250
ADT 2045 = 50,050
K = 8 %
D = 55 %
T = 7 % *
V = 60 MPH
* TTST = 3% DUAL 4%
FUNC CLASS = PRINCIPAL ARTERIAL

STATEWIDE TIER

### PROJECT LENGTH

LENGTH ROADWAY PROJECT U-4700CC = 0.563 MI.
TOTAL LENGTH OF PROJECT U-4700CC = 0.563 MI.

Prepared In the Office of:
Johnson, Mirmiran, & Thompson Inc.
4700 Falls of Neuse Rd, Suite 100,
Raleigh, NC, 27609
License No: C-3097

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
DECEMBER 31, 2018

LETTING DATE:
OCTOBER 21, 2025

REECE SCHULER, PE, PLS
PROJECT ENGINEER

JOSHUA ROEMER, PE
PROJECT DESIGN ENGINEER

### HYDRAULICS ENGINEER

Signed by: Kevin P. Higgins
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8/13/2025 2:57:22 PM EDT
SIGNATURE: P.E.
NORTH CAROLINA PROFESSIONAL SEAL 035700 ENGINEER KEVIN P. HIGGINS

### ROADWAY DESIGN ENGINEER

DocuSigned by: Reece Schuler
16634024C7624FC...
8/13/2025 1:23:03 AM PDT
SIGNATURE: P.E.
NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE M. SCHULER

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

8/13/2025 11:49:00 AM
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User:JRoemer

Docusign Envelope ID: 2AD89466-EEF5-420C-B4F1-E7AAEE24BACE

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-4700CC | 1A |

ROADWAY DESIGN ENGINEER

8/14/2026 | 9:23:01 AM PDT

NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE M. SCHULER

DocuSigned by: Reece Schuler
16634024C7824FC...

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

INDEX OF SHEETS


| SHEET NUMBER | SHEET |
|---|---|
| 1 | TITLE SHEET |
| 1A | INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS |
| 1B | CONVENTIONAL SYMBOLS |
| 2A-1 THRU 2A-3 | PAVEMENT SCHEDULE AND TYPICAL SECTIONS |
| 2B-1 | INTERSECTION DETAIL SHEET |
| 2C-1THRU 2C-2 | PIPE INSTALLATION DETAILS |
| 2C-3 THRU 2C-6 | GUARDAIL PLACEMENT DETAILS |
| 2C-7 | GUARDRAIL INSTALLATION DETAIL |
| 3B-1 | ROADWAY SUMMARIES |
| 3D-1 THRU 3D-2 | DRAINAGE SUMMARIES |
| 3G-1 | GEOTECHNICAL SUMMARIES |
| 3P-1 | PARCEL INDEX SHEET |
| 4 THRU 10 | PLAN & PROFILE SHEETS |
| RW-01 THRU RW-04 | RIGHT OF WAY PLANS |
| TMP-1 THRU TMP-13 | TRANSPORTATION MANAGEMENT PLANS |
| PMP-1 THRU PMP-4 | PAVEMENT MARKING PLANS |
| EC-1 THRU EC-9 | EROSION CONTROL PLANS |
| SIGN-1 THRU SIGN-5 | SIGNING PLANS |
| SIG 1.0 THRU SCP-1 | SIGNAL PLANS |
| UC-1 THRU UC-6B | UTILITY CONSTRUCTION PLANS |
| UO-1 THRU UO-6 | UTILITIES BY OTHERS PLANS |
| X-1 | CROSS-SECTION INDEX |
| X-1A | CROSS-SECTION SUMMARY |
| X-2 THRU X-25 | CROSS-SECTIONS |


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 III.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 AND 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

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.

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

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.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE AT&T, BLUE RIDGE ELECTRIC, CALDWELL COUNTY, CENTURY LINK, CHARTER/SPECTRUM, CITY OF LENOIR, DUKE ENERGY, MCNC, PIEDMONT NATURAL GAS, AND TOWN OF SAWMILLS. 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.

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 | |
| 200.03 | METHOD OF CLEARING - METHOD III |
| 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 |
| DIVISION 3 - PIPE CULVERTS | |
| 310.10 | DRIVEWAY PIPE CONSTRUCTION |
| DIVISION 5 - SUBGRADE, BASES AND SHOULDERS | |
| 560.01 | METHOD OF SHOULDER CONSTRUCTION - HIGH SIDE OF SUPERELEVATED CURVE - METHOD I |
| DIVISION 6 - ASPHALT BASES AND PAVEMENTS | |
| 654.01 | PAVEMENT REPAIRS |
| DIVISION 8 - INCIDENTALS | |
| 815.02 | SUBSURFACE DRAIN |
| 840.00 | CONCRETE BASE PAD FOR DRAINAGE STRUCTURES |
| 840.01 | BRICK CATCH BASIN - 12" THRU 54" PIPE |
| 840.02 | CONCRETE CATCH BASIN - 12" THRU 54" PIPE |
| 840.03 | FRAME, GRATES AND HOOD - FOR USE ON STANDARD CATCH BASIN |
| 840.17 | CONCRETE GRATED DROP INLET TYPE 'A' - 12" THRU 72" PIPE |
| 840.18 | CONCRETE GRATED DROP INLET TYPE 'B' - 12" THRU 36" PIPE |
| 840.25 | ANCHORAGE FOR FRAMES |
| 840.26 | BRICK GRATED DROP INLET TYPE 'A' - 12" THRU 72" PIPE |
| 840.27 | BRICK GRATED DROP INLET TYPE 'B' - 12" THRU 36" PIPE |
| 840.29 | FRAMES AND NARROW SLOT FLAT GRATES |
| 840.31 | CONCRETE JUNCTION BOX - 12" THRU 66" PIPE |
| 840.32 | BRICK JUNCTION BOX - 12" THRU 66" PIPE |
| 840.34 | TRAFFIC BEARING JUNCTION BOX - FOR USE WITH PIPES 42" AND UNDER |
| 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 |
| 840.51 | BRICK MANHOLE - 12" THRU 36" PIPE |
| 840.53 | PRECAST MANHOLE WITH MASONRY BASE - 12" THRU 42" PIPE |
| 840.54 | MANHOLE FRAME AND COVER |
| 840.66 | DRAINAGE STRUCTURE STEPS |
| 840.71 | CONCRETE AND BRICK PIPE PLUG |
| 840.72 | PIPE COLLAR |
| 846.01 | CONCRETE CURB, GUTTER AND CURB & GUTTER |
| 848.04 | STREET TURNOUT |
| 852.01 | CONCRETE ISLANDS |
| 852.06 | METHOD FOR PLACEMENT OF DROP INLETS IN CONCRETE ISLANDS |
| 862.01 | GUARDRAIL PLACEMENT (USE DETAILS IN LIEU OF STANDARDS FOR SHEETS 4, 6, 12 AND 14 OF 15) |
| 862.02 | GUARDRAIL INSTALLATION (USE DETAIL IN LIEU OF STANDARD FOR SHEET 5 OF 9) |
| 876.02 | GUIDE FOR RIP RAP AT PIPE OUTLETS |
| 876.04 | DRAINAGE DITCHES WITH CLASS B RIPRAP |

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Users: Rcamer

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
- 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
- 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.

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| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-4700CC | 2A-1 |

| ROADWAY DESIGN ENGINEER | PAVEMENT DESIGN ENGINEER |
|---|---|
| 9/3/2025 | 7:26:35 AM PDT | 9/3/2025 | 9:20:00 AM EDT |
| NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE M. SCHULER | NORTH CAROLINA PROFESSIONAL SEAL 049851 ENGINEER RAMIE A. SHAW |
| DocuSigned by: Reece Schuler 46B4A9247B24FC... | DocuSigned by: Ramie Shaw C56DB73B487E4E8... |

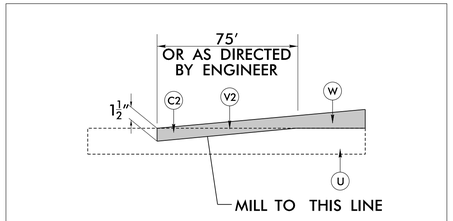
**DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED**

*Johnson, Mirmiran, & Thompson Inc.*
4700 Falls of Neuse Rd, Suite 100,
Raleigh, NC, 27609
License No: C-3097

# FINAL PAVEMENT SCHEDULE

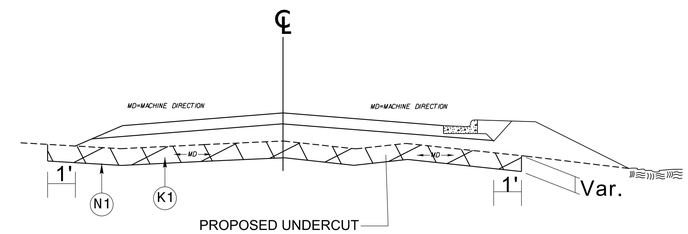
| | | | |
|---|---|---|---|
| C1 | PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS PER SQ. YARD IN EACH OF TWO LAYERS. | N1 | GEOTEXTILE FOR SUBGRADE STABILIZATION |
| C2 | PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YARD PER 1″ DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 2″ IN DEPTH. | R2 | 2′-6″ CURB AND GUTTER |
| D1 | PROP. APPROX. 4.0″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS PER SQ. YARD. | R3 | EXPRESSWAY GUTTER |
| D2 | PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD PER 1″ DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.5″ IN DEPTH OR GREATER THAN 4.0″ IN DEPTH. | R4 | 8″ X 12″ CONCRETE CURB |
| E1 | PROP. APPROX. 5.5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS PER SQ. YARD. | T | EARTH MATERIAL |
| E2 | PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD PER 1″ DEPTH TO BE PLACED IN LAYERS NOT GREATER THAN 5.5″ IN DEPTH OR LESS THAN 3.0″ IN DEPTH. | U | EXISTING PAVEMENT |
| R1 | 1′-6″ CURB AND GUTTER | V1 | MILLING BITUMINOUS PAVEMENT. 1.5″ DEPTH |
| K1 | PROP. 8″ CLASS IV SUBGRADE STABILIZATION. | V2 | MILLING BITUMINOUS PAVEMENT. 0″ TO 1.5″ DEPTH (INCIDENTAL MILLING) |
| K2 | PROP. 12″ CLASS IV SUBGRADE STABILIZATION. | W | VARIABLE DEPTH ASPHALT PAVEMENT (SEE STD WEDGING DETAIL THIS SHEET) |

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




DETAIL SHOWING INCIDENTAL MILLING

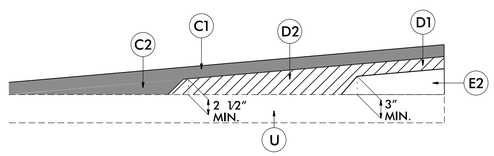
–Y37– Sta. 13+75.00 to Sta. 14+50.00




–Y36– STA. 23+25.00 to 23+75.00
–Y36– STA. 24+25.00 to 27+25.00
–Y37– STA. 13+75.00 to 16+36.00

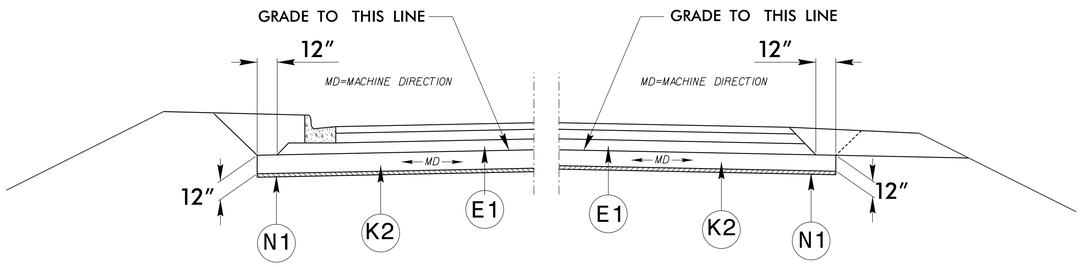
Contractor Should Investigate These Areas During Construction to Determine if Stabilization Fabric is Required

## UNDERCUT DETAIL

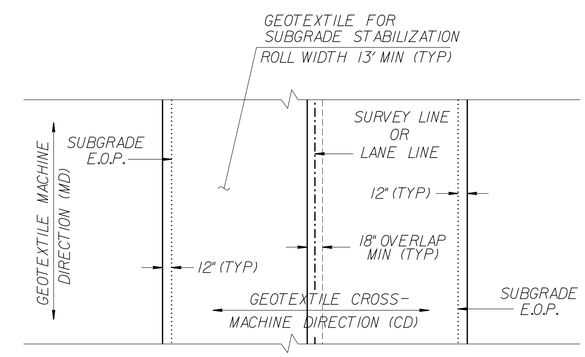



DETAIL SHOWING METHOD OF WEDGING

## SHALLOW UNDERCUT DETAIL




–L– Sta. 550+25.00 to 552+75.00
–L– Sta. 553+25.00 to 554+25.00
–Y36– Sta. 27+25.00 to 29+00.00




## GEOTEXTILE FOR SUBGRADE STABILIZATION PLACEMENT (PLAN VIEW)

(100% COVERAGE REQUIRED)

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| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-4700CC | 2A-2 |

ROADWAY DESIGN ENGINEER
9/3/2025 | 7:26:35 AM PDT
NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE M. SCHULER
DocuSigned by: Reece Schuler
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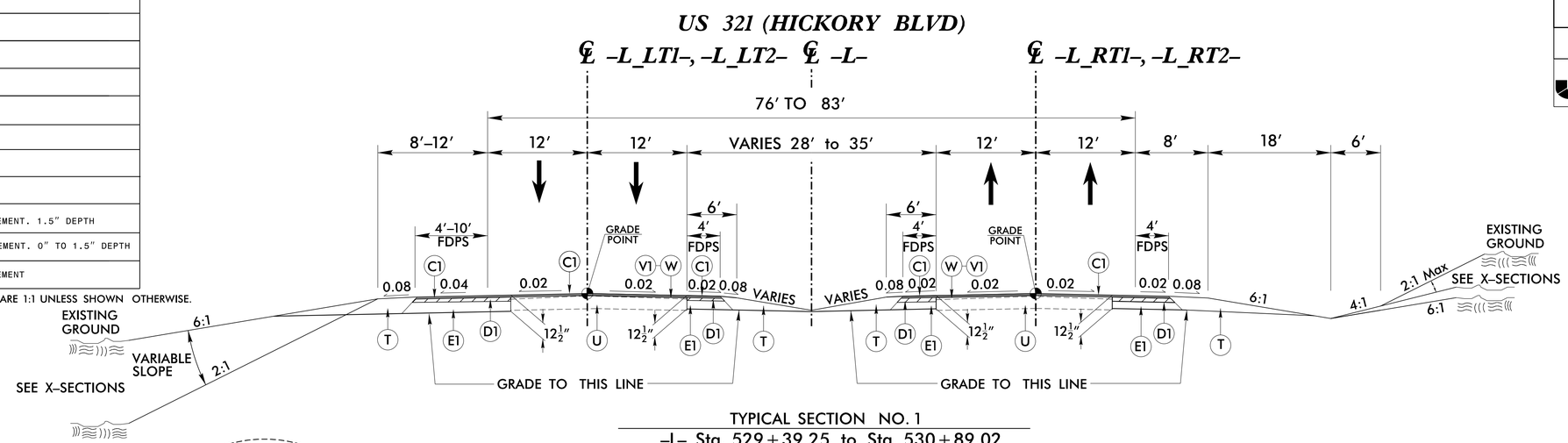
PAVEMENT DESIGN ENGINEER
9/3/2025 | 9:20:00 AM EDT
NORTH CAROLINA PROFESSIONAL SEAL 049851 ENGINEER RAMIE A. SHAW
DocuSigned by: Ramie Shaw
6568D79D467E4C6...

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

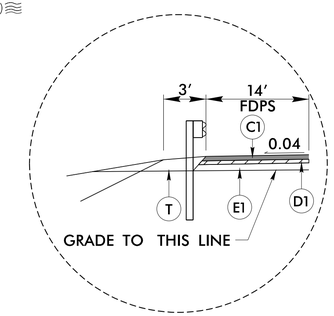
*Johnson, Mirmiran, & Thompson Inc.*
4700 Falls of Neuse Rd, Suite 100,
Raleigh, NC, 27609
License No: C-3097

| PAVEMENT SCHEDULE | |
|---|---|
| C1 | 3" TYPE S9.5C |
| C2 | VAR. TYPE S9.5C |
| D1 | 4" TYPE I19.0C |
| D2 | VAR. TYPE I19.0C |
| E1 | 5.5" TYPE B25.0C |
| E2 | VAR. TYPE B25.0C |
| R1 | 1'-6" CURB AND GUTTER |
| R2 | 2'-6" CURB AND GUTTER |
| R3 | EXPRESSWAY GUTTER |
| R4 | 8" X 12" CONCRETE CURB |
| T | EARTH MATERIAL |
| U | EXISTING PAVEMENT |
| V1 | MILLING BITUMINOUS PAVEMENT. 1.5" DEPTH |
| V2 | MILLING BITUMINOUS PAVEMENT. 0" TO 1.5" DEPTH |
| W | VAR. DEPTH ASPHALT PAVEMENT |

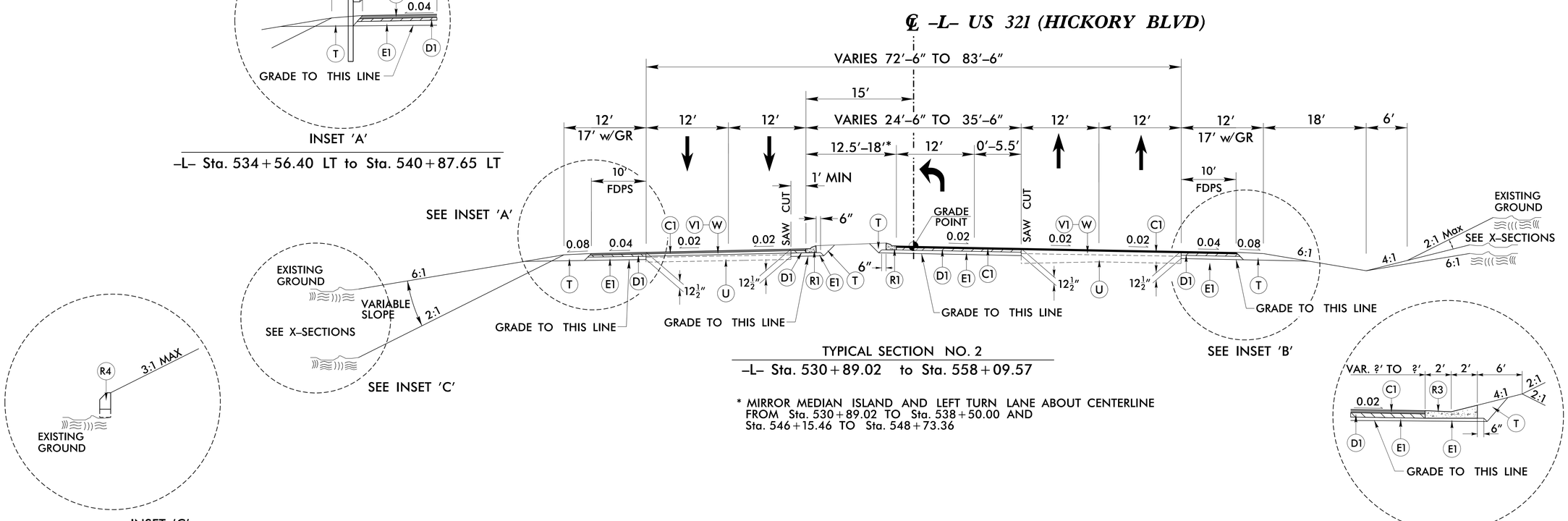
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.




TYPICAL SECTION NO. 1
-L- Sta. 529+39.25 to Sta. 530+89.02
-L- Sta. 558+09.57 to Sta. 559+09.57




INSET 'A'
-L- Sta. 534+56.40 LT to Sta. 540+87.65 LT




TYPICAL SECTION NO. 2
-L- Sta. 530+89.02 to Sta. 558+09.57

* MIRROR MEDIAN ISLAND AND LEFT TURN LANE ABOUT CENTERLINE FROM Sta. 530+89.02 TO Sta. 538+50.00 AND Sta. 546+15.46 TO Sta. 548+73.36

INSET 'C'
-L- Sta. 541+19.12 LT to Sta. 541+89.67 LT

INSET 'B'
-L- Sta. 530+89.25 RT to Sta. 533+18.54 RT

9/3/2025 8:56:19 AM
U-4700CC_RDWY_TYP2A-1.dgn
User: RBrenner

Docusign Envelope ID: A6748FC7-C916-4D60-BE11-9163976BB473

| PAVEMENT SCHEDULE | |
|---|---|
| C1 | 3" TYPE S9.5C |
| C2 | VAR. TYPE S9.5C |
| D1 | 4" TYPE I19.0C |
| D2 | VAR. TYPE I19.0C |
| E1 | 5.5" TYPE B25.0C |
| E2 | VAR. TYPE B25.0C |
| R1 | 1'-6" CURB AND GUTTER |
| R2 | 2'-6" CURB AND GUTTER |
| R3 | EXPRESSWAY GUTTER |
| R4 | 8" X 12" CONCRETE CURB |
| T | EARTH MATERIAL |
| U | EXISTING PAVEMENT |
| V1 | MILLING BITUMINOUS PAVEMENT. 1.5" DEPTH |
| V2 | MILLING BITUMINOUS PAVEMENT. 0" TO 1.5" DEPTH |
| W | VAR. DEPTH ASPHALT PAVEMENT |

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

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-4700CC | 2A-3 |

ROADWAY DESIGN ENGINEER
9/3/2025 | 7:26:35 AM PDT
NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE M. SCHULER
DocuSigned by: Reece Schuler
1B53B02A7C782AFC...

PAVEMENT DESIGN ENGINEER
9/3/2025 | 9:20:00 AM EDT
NORTH CAROLINA PROFESSIONAL SEAL 049851 ENGINEER RAMIE A. SHAW
DocuSigned by: Ramie Shaw
056BDF3D46FD4E0...

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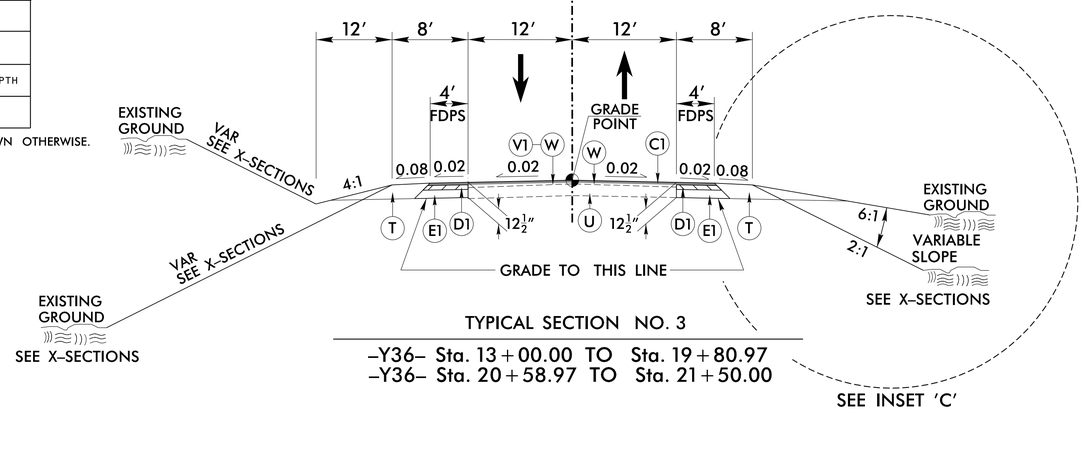
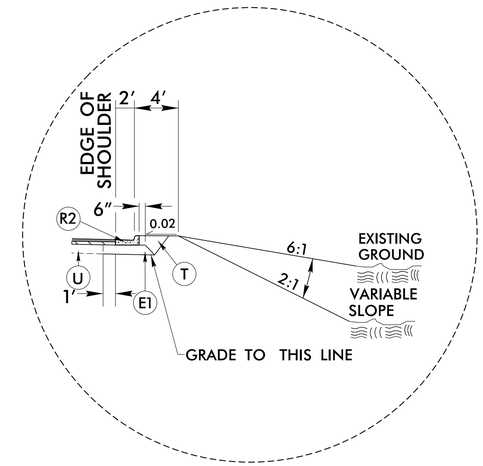
## ℄ –Y36– SR 1108 (MISSION RD)




TYPICAL SECTION NO. 3

–Y36– Sta. 13+00.00 TO Sta. 19+80.97
–Y36– Sta. 20+58.97 TO Sta. 21+50.00

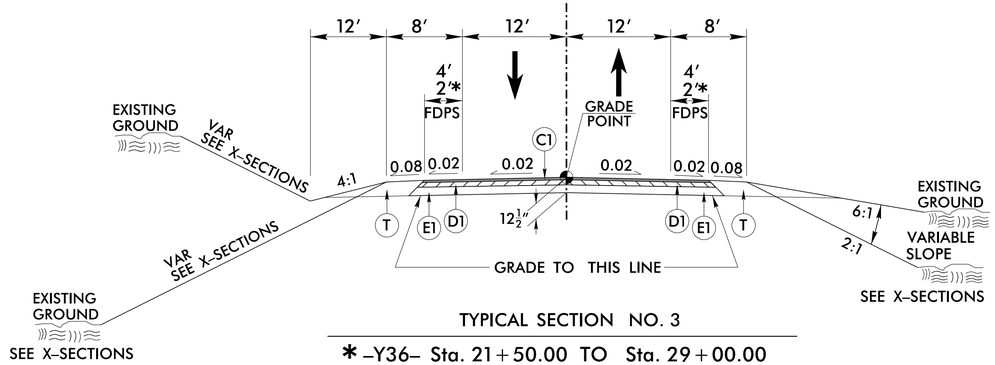
SEE INSET 'C'




INSET 'C'

–Y36– Sta. 14+26.03 RT TO –Y36– Sta. 18+66.27 RT

## –Y36– SR 1108 (LOWER CEDAR VALLEY RD)
## ℄ –Y37– SR 1192 (CEDAR VALLEY RD)




TYPICAL SECTION NO. 3

* –Y36– Sta. 21+50.00 TO Sta. 29+00.00
–Y37– Sta. 13+75.00 TO Sta. 15+97.25

9/3/2025 8:59:19 AM
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| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-4700CC | 2B-1 |

ROADWAY DESIGN ENGINEER

8/11/2025 10:23:01 AM PDT

NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE SCHULER

Reece Schuler

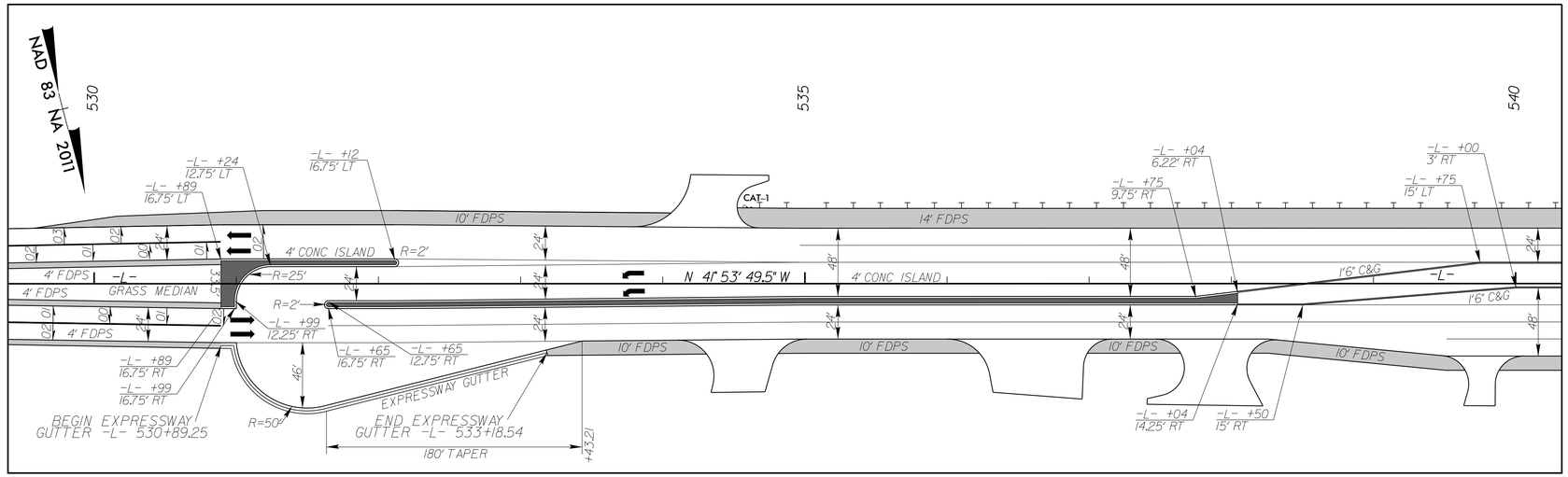
1663402467824FC...

JMT Johnson, Mirmiran, & Thompson Inc.
4700 Falls of Neuse Rd, Suite 100,
Raleigh, NC, 27609
License No: C-3097

# INTERSECTION DETAILS
# US 321 (–L–)

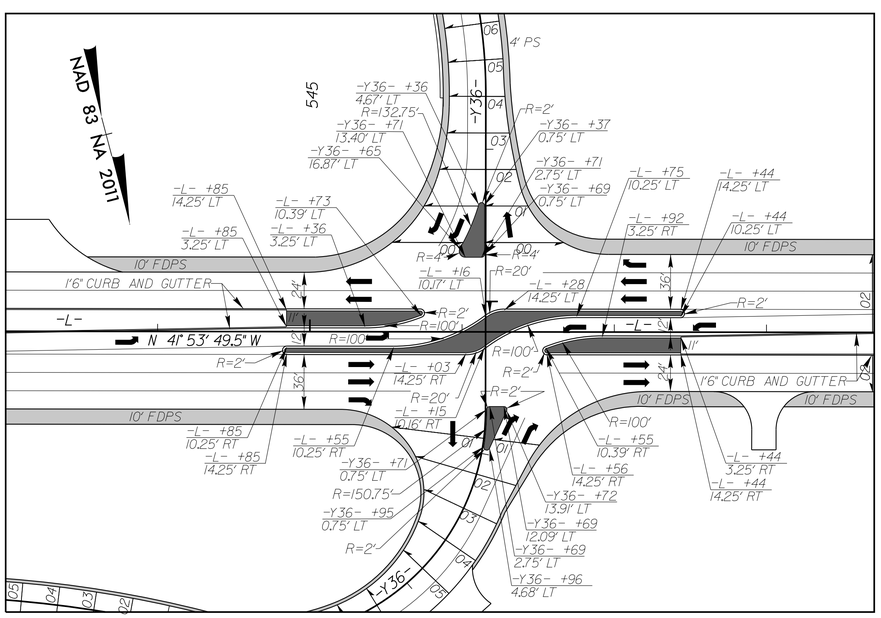
LEGEND
PROPOSED 5" MONOLITHIC ISLAND
PROPOSED FULL DEPTH PAVED SHOULDER

50 25 0 50 100



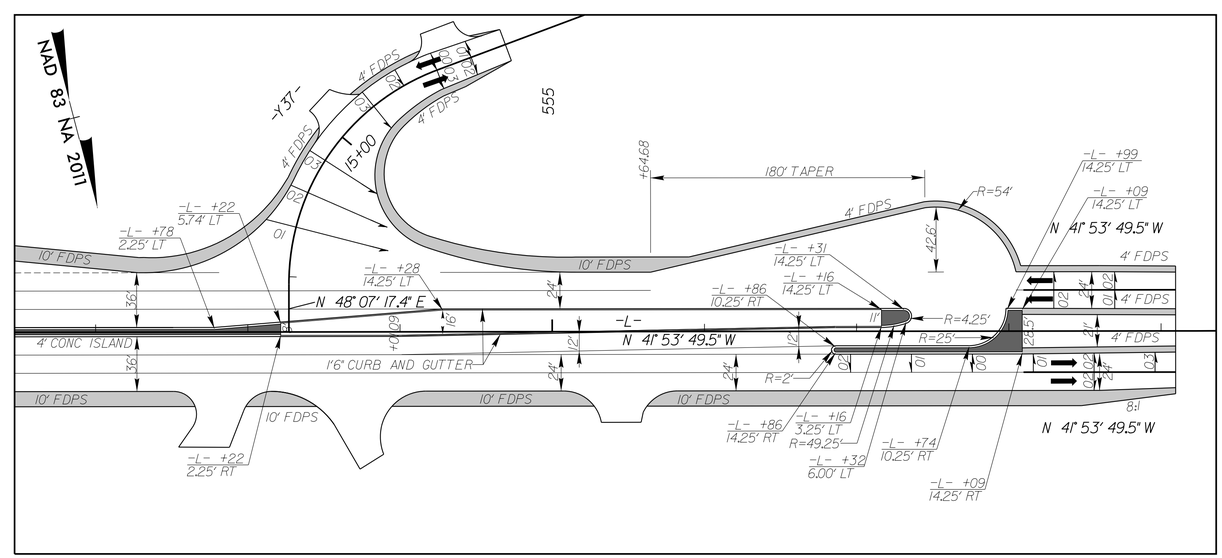

–L– Sta. 529+50 TO Sta. 540+50

INTERSECTION DETAIL SHOWN FROM PLAN SHEET 4




–L– Sta. 543+00 TO Sta. 548+50

INTERSECTION DETAIL SHOWN FROM PLAN SHEET 5




–L– Sta. 551+50 TO Sta. 559+50

INTERSECTION DETAIL SHOWN FROM PLAN SHEET 6

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User:HRamer

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| PROJECT REFERENCE NO. | SHEET NO. |
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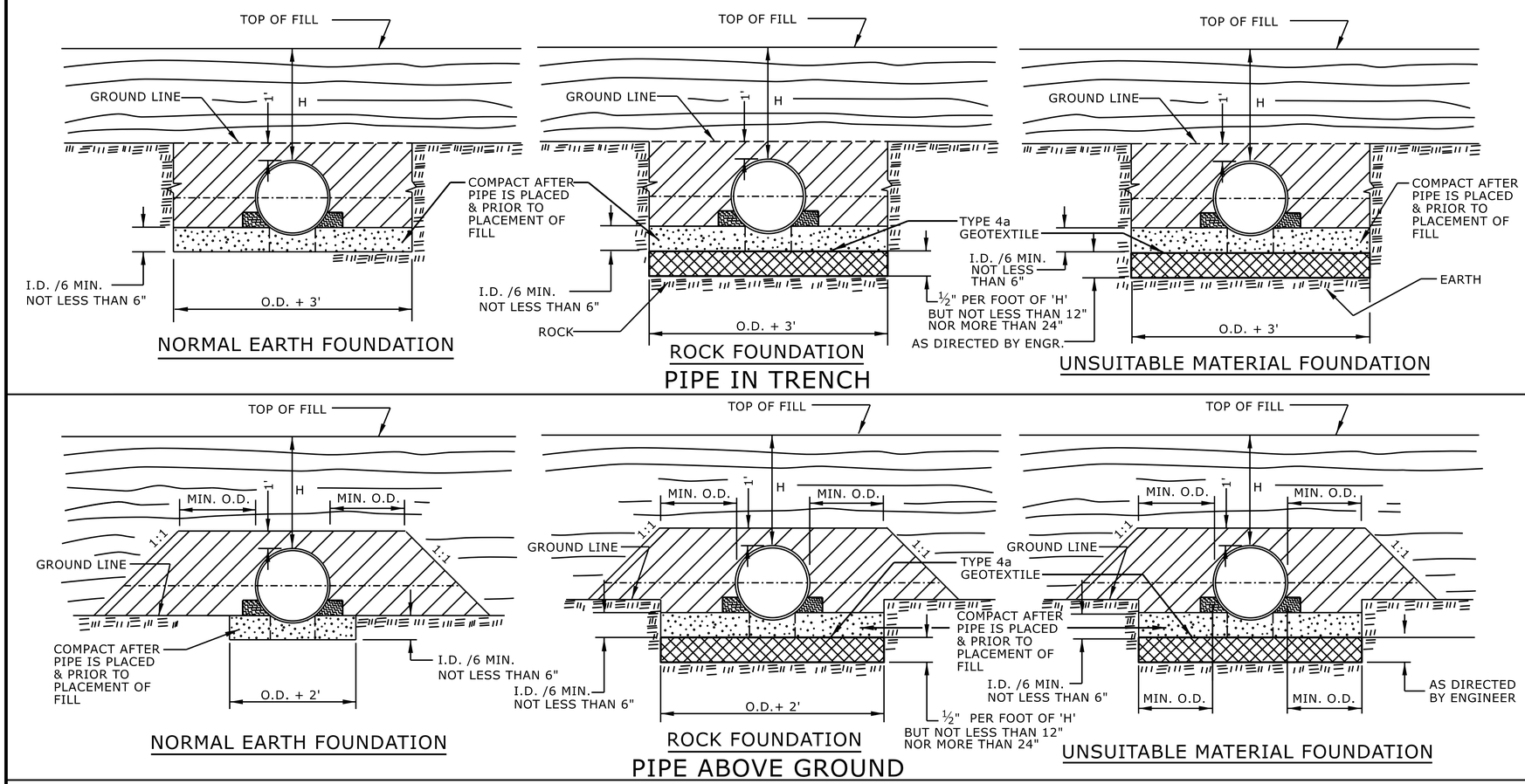
| U-4700 CC | 2C-1 |




GENERAL NOTES:

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

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

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

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

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

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

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

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.

UNDISTURBED EARTH MATERIAL

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

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

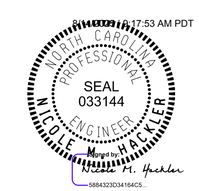
ROADWAY DETAIL DRAWING FOR

**METHOD OF PIPE INSTALLATION**

FLEXIBLE PIPE

SHEET 1 OF 2

**300.01**

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

**SEE TITLE BLOCK**

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

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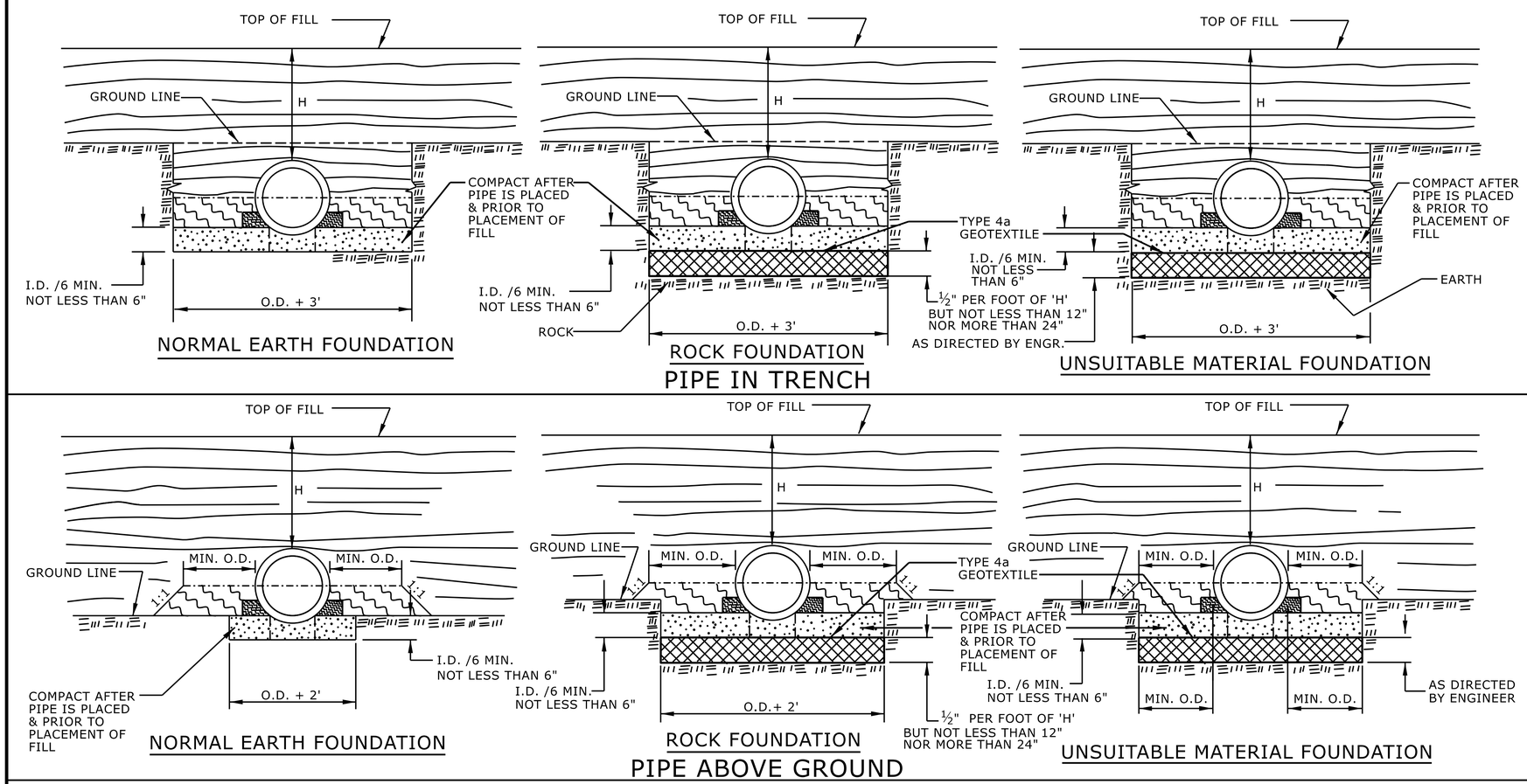
| U-4700 CC | 2C-2 |




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

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

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.

SHEET 2 OF 2

**300.01**

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Office 919-707-6950 FAX 919-250-4119

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FILE SPEC.:

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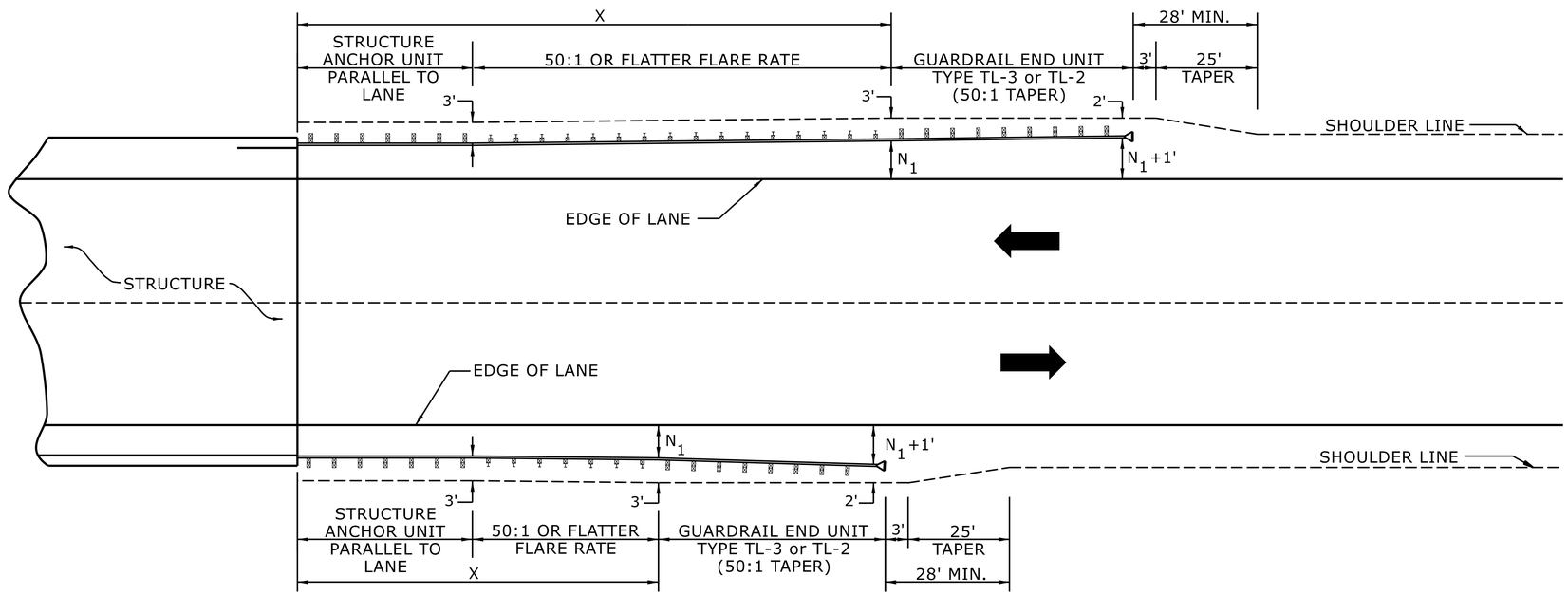


USE FLARE RATE AS THE CONTROL IF THE "$N_1$" DISTANCE IS NOT OBTAINED.
("$N_1$" IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

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

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

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

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

ROADWAY DETAIL DRAWING FOR
**GUARDRAIL PLACEMENT**

SHEET 4 OF 15

**862D01**

8/4/2025 10:17:53 AM PDT
NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER
Nicole M. Hackler
5884323D34164C5...

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

**SEE TITLE BLOCK**

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CHECKED BY: DATE:
FILE SPEC.:

Docusign Envelope ID: 2AD89466-EEF5-420C-B4F1-E7AAEE24BACE

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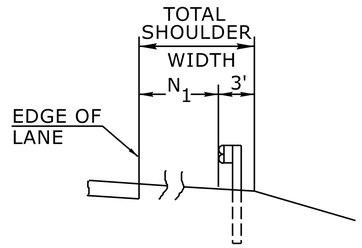
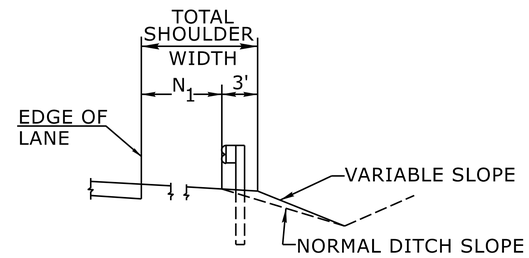
| U-4700 CC | 2C-4 |

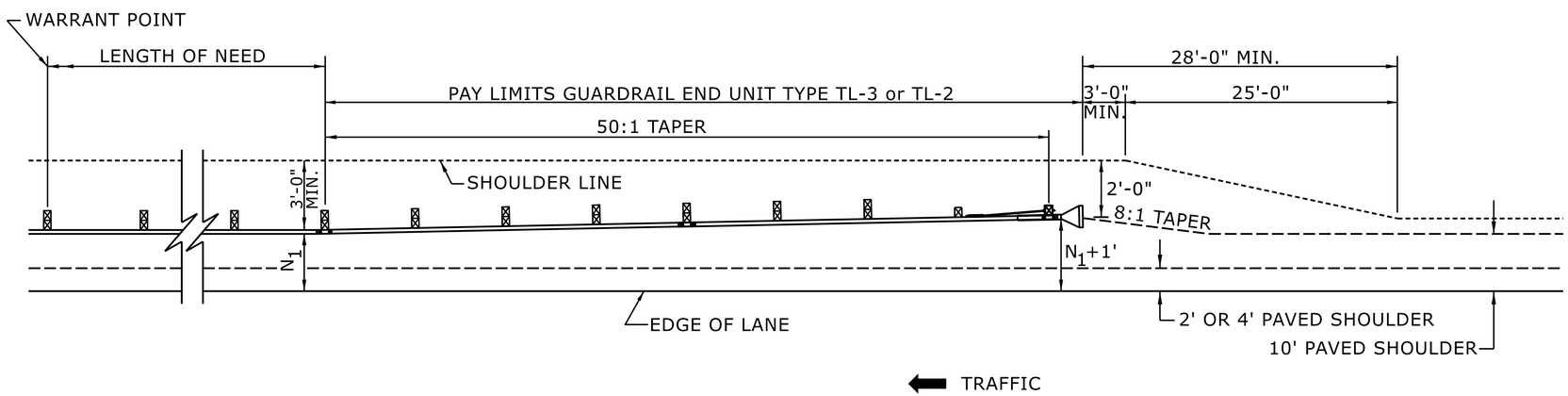



FILL SECTION




CUT SECTION

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




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

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

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

ROADWAY DETAIL DRAWING FOR
**GUARDRAIL PLACEMENT**

SHEET 6 OF 15

**862D01**

8/14/2024 | 10:07:53 AM PDT
NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER
Nicole M. Hackler
5884323D34164C5...

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

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FILE SPEC.:

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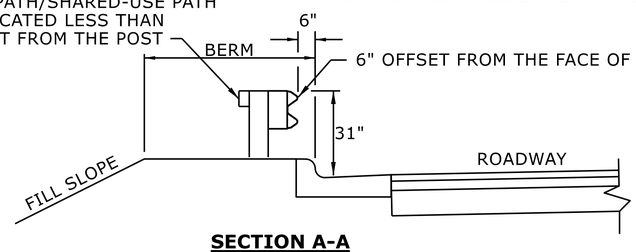
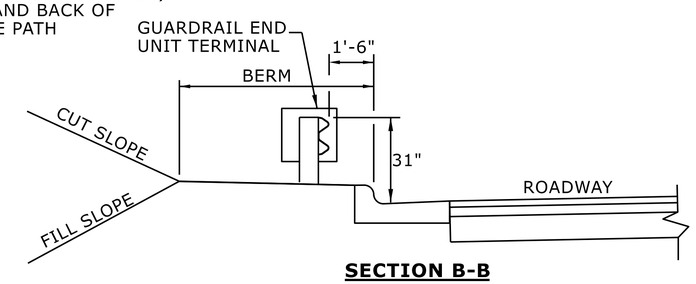
|---|---|
| U-4700 CC | 2C-5 |

PLACE APPROVED BICYCLE FRIENDLY RAILINGS, FENCE, OR RUB RAILS IF SIDEPATH/SHARED-USE PATH IS LOCATED LESS THAN 4 FEET FROM THE POST

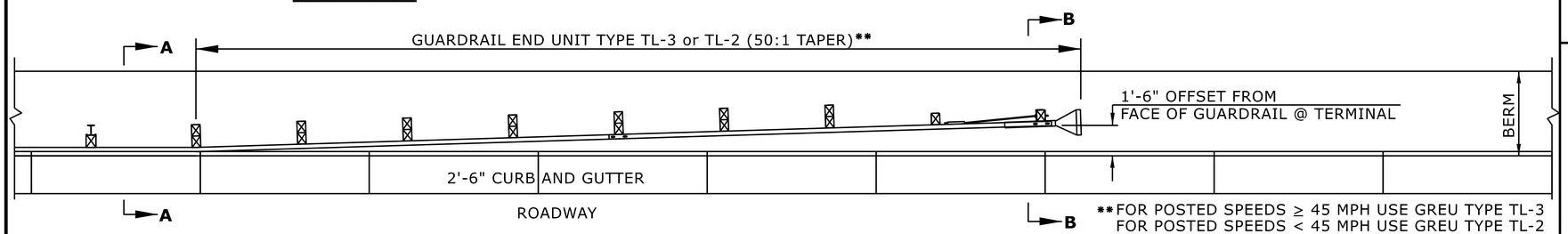
SEE THE ROADWAY DESIGN MANUAL (PART I CHAPTER 4 SECTION 4.14) FOR OFFSET DISTANCES FROM FACE OF GUARDRAIL AND BACK OF GUARDRAIL TO SIDEWALK OR SIDEPATH/SHARED-USE PATH




**SECTION A-A**



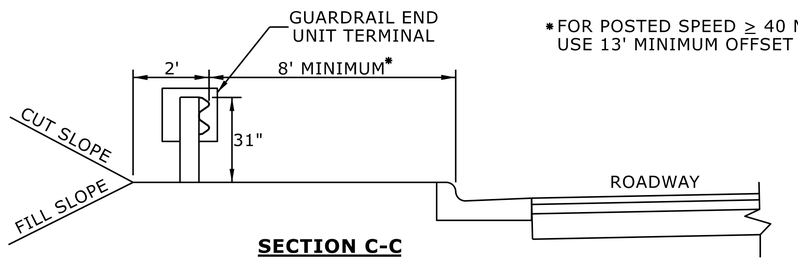

**SECTION B-B**




**GUARDRAIL 6" FROM THE FACE OF CURB**

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

BICYCLE FRIENDLY RAILINGS, FENCE OR RUB RAIL SHOULD NOT BE PLACED WITHIN THE LIMITS OF THE STRUCTURAL ANCHOR OR END UNITS



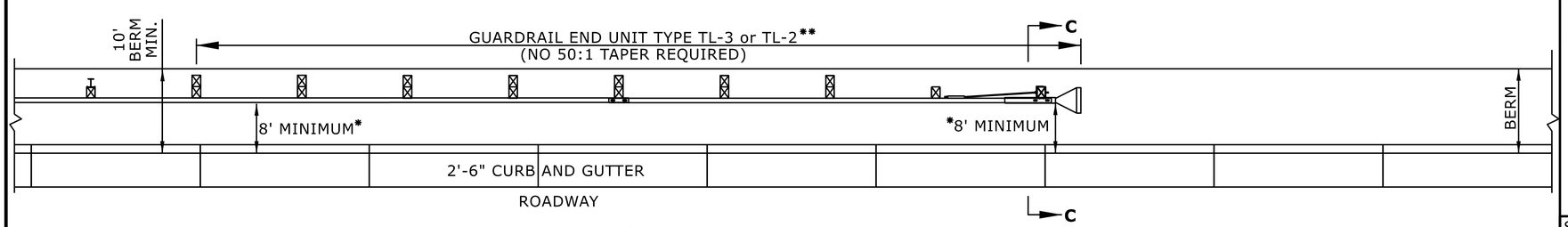

**SECTION C-C**

* FOR POSTED SPEED ≥ 40 MPH USE 13' MINIMUM OFFSET

SEE THE ROADWAY DESIGN MANUAL (PART I CHAPTER 4 SECTION 4.14) FOR OFFSET DISTANCES FROM FACE OF GUARDRAIL AND BACK OF GUARDRAIL TO SIDEWALK OR SIDEPATH/SHARED-USE PATH

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

BICYCLE FRIENDLY RAILINGS, FENCE OR RUB RAIL SHOULD NOT BE PLACED WITHIN THE LIMITS OF THE STRUCTURAL ANCHOR OR END UNITS




**GUARDRAIL 8' OR GREATER OFFSET FROM FACE OF CURB**

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

ROADWAY DETAIL DRAWING FOR
**GUARDRAIL PLACEMENT**
GUARDRAIL TREATMENT AT CURB AND GUTTER

SHEET 12 OF 15

**862D01**

8/14/2024 | 7:17:53 AM PDT
NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER
Nicole M. Hackler
5884323D34164C5...

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

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ORIGINAL BY: S.CALHOUN DATE: 7-25-2024
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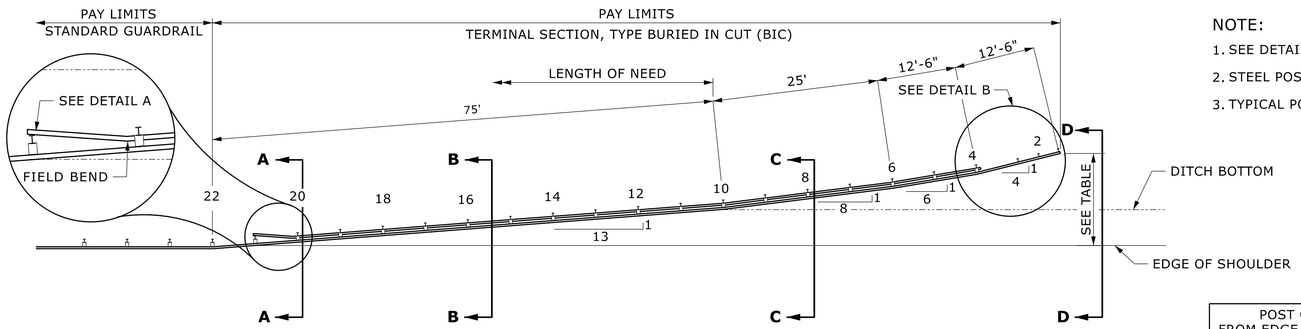
Docusign Envelope ID: 2AD89466-EEF5-420C-B4F1-E7AAEE24BACE

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-4700 CC | 2C-6 |

**DRAWING NOT TO SCALE**

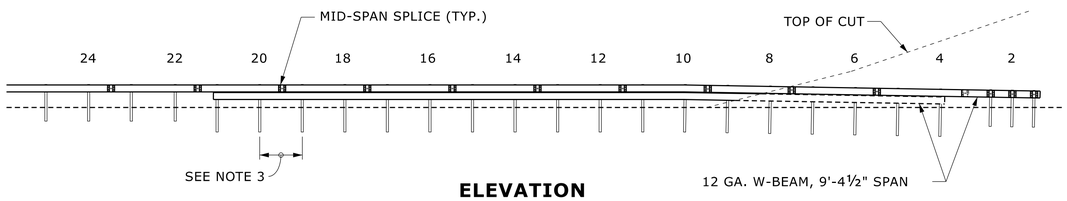
NOTE:

1. SEE DETAIL SHEET 2 OF 2 FOR OTHER DETAILS.
2. STEEL POSTS SHOWN.
3. TYPICAL POST SPACING IS 6'-3" UNLESS OTHERWISE NOTED.

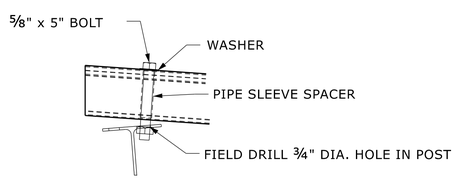



**PLAN**

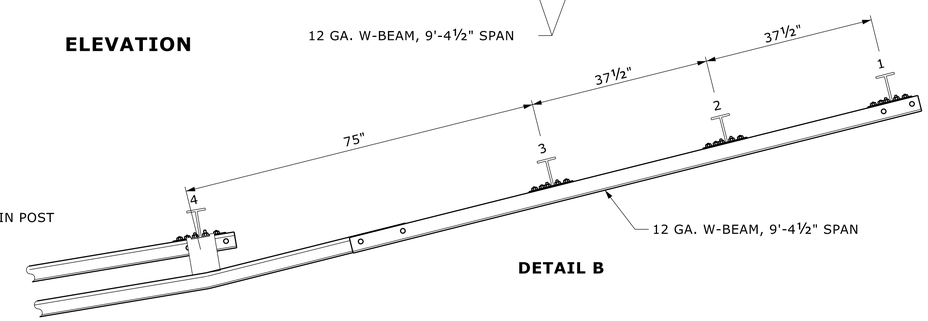
| POST OFFSETS FROM EDGE OF SHOULDER | |
|---|---|
| POST | DISTANCE |
| 1 | 13'-11¾" |
| 4 | 10'-11" |
| 6 | 8'-10¼" |
| 10 | 69" |



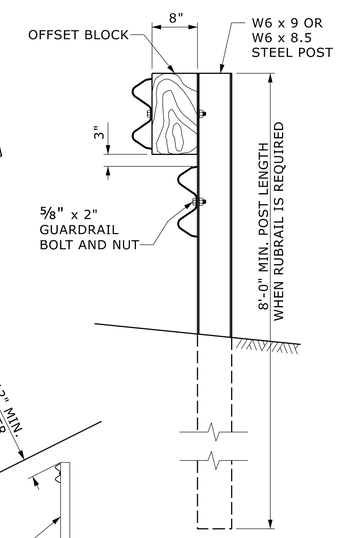

**ELEVATION**



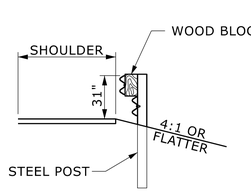

**DETAIL A**



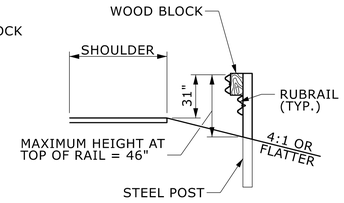

**DETAIL B**



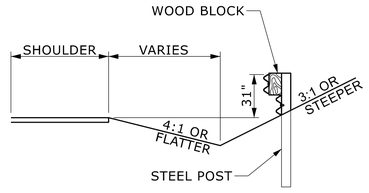

**STEEL POST AND BLOCK DETAIL**



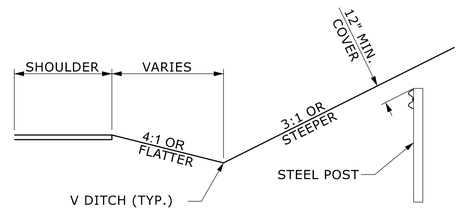

**SECTION A-A**




**SECTION B-B**




**SECTION C-C**



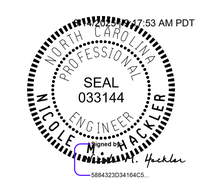

**SECTION D-D**

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

ROADWAY DETAIL DRAWING FOR
**GUARDRAIL PLACEMENT**
BURIED IN CUT END UNIT

SHEET 14 OF 15

**862D01**




DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

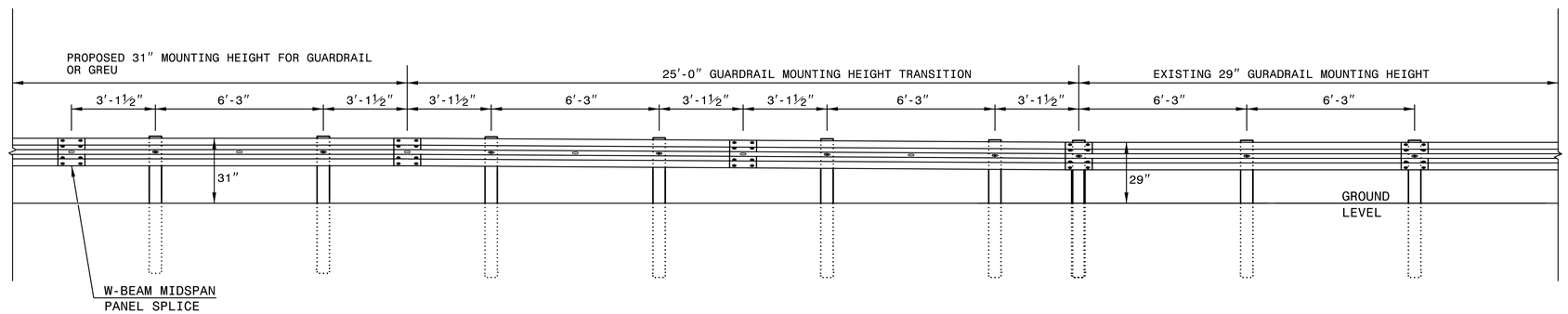
**SEE TITLE BLOCK**

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

Docusign Envelope ID: 2AD89466-EEF5-420C-B4F1-E7AAEE24BACE

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-4700 CC | 2C-7 |

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

ROADWAY DETAIL DRAWING FOR
**GUARDRAIL INSTALLATION**

SHEET 5 OF 9

**862D02**

8/22/2025 7:53 AM PDT
NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER
Nicole M. Hackler
5884323D34164C5...

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

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

**SEE TITLE BLOCK**

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

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

| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-4700CC | 3B-1 |

Johnson, Mirmiran, & Thompson Inc.
4700 Falls of Neuse Rd, Suite 100,
Raleigh, NC, 27609
License No: C-3097

# SUMMARY OF EARTHWORK

IN CUBIC YARDS

| Station | Station | Uncl. Excav. | Undercut | Embank. +% | Borrow | Waste |
|---|---|---|---|---|---|---|
| PHASE 1 | | | | | | |
| -L- Sta. 530+89.00 RT | -L- Sta. 533+49.00 RT | 248 | | 374 | 126 | |
| L Sta. Med 530+89.00 | L Sta. Med 534+05.00 | 5 | | 704 | 699 | |
| L- Sta. 538+13.00 RT | L Sta. 545+50.00 RT | 105 | | 813 | 708 | |
| Y36 Sta. 13+00.00 | Y36 Sta. 19+80.97 | 1,288 | | 536 | | 752 |
| Y36 Sta. 20+58.97 | Y36 Sta. 29+00.00 | 1,760 | 1,000 | 2,078 | 318 | 1,000 |
| Y37 Sta. 13+75.00 | Y37 Sta. 15+97.25 | 693 | 1,900 | 530 | | 2,063 |
| L Sta. 555+32.00 LT | L Sta. 558+08.00 LT | 3,161 | | 97 | | 3,064 |
| **SUBTOTALS:** | | 7,260 | 2,900 | 5,131 | 1,850 | 6,879 |
| PHASE 2 | | | | | | |
| -L- Sta. 529+39.25 LT | -L- Sta. 555+32.00 LT | 4,352 | | 4,129 | | 224 |
| L Sta. 558+08 LT | L Sta. 559+09.57 LT | 256 | | | | 256 |
| L Sta. 529+39.25 RT | L Sta. 530+89.00 RT | 324 | | 122 | | 202 |
| L Sta. 533+49.00 RT | L Sta. 538+13.00 RT | 68 | | 131 | 63 | |
| L Sta. 545+50.00 RT | L Sta. 559+09.57 RT | 381 | | 797 | 416 | |
| L Med Sta. 529+39.25 | L Med Sta. 530+89.00 | 40 | | 37 | | 3 |
| L Med Sta. 534+05.00 | L Med Sta. 559+09.57 | 45 | | 2,920 | 2,875 | |
| **SUBTOTALS:** | | 5,466 | | 8,135 | 3,353 | 684 |
| **TOTALS:** | | 12,726 | 2,900 | 13,266 | 5,203 | 7,563 |
| **LOSS DUE TO CLEARING AND GRUBBING** | | -1,050 | | | 1,050 | |
| **ADDITIONAL UNDERCUT** | | | 900 | 1,035 | 1,035 | 900 |
| **WASTE IN LIEU OF BORROW** | | | | | -4,663 | -4,663 |
| **PROJECT TOTAL:** | | 11,676 | 3,800 | 14,301 | 2,625 | 3,800 |
| **EST. 5% REPLACE TOPSOIL ON BORROW PIT** | | | | | 131 | |
| **GRAND TOTAL:** | | 11,676 | 3,800 | | 2,756 | 3,800 |
| **SAY:** | | **11,700** | **4,000** | | **3,000** | |

GEOTEXTILE FOR SOIL STABILIZATION = 4705 SY
SHALLOW UNDERCUT = 560 CY
CLASS IV SUBGRADE STABILIZATION = 1120 TONS
SELECT GRANULAR MATERIAL = 6400 TONS
GEOTEXTILE FOR SUBGRADE STABILIZATION = 1680 SY
UNCLASSIFIED EXCAVATION ACCEPTABLE BUT NOT IN THE TOP THREE FEET OF EMBANKMENT
L STA 550+25 TO 552+75 LT & RT 450 CY
L STA 553+25 TO 554+25 RT 5 CY
Y36 STA 23+25 TO 29+00 LT & RT 975 CY
Y37 STA 13+75 TO 16+36 LT & RT 850 CY

Note: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at the contract lump sum price for grading.

# ASPHALT PAVEMENT REMOVAL SUMMARY

IN SQUARE YARDS

| SURVEY LINE | Station | Station | LOCATION LT/RT/CL | ASPHALT REMOVAL | ASPHALT BREAKUP | CONCRETE REMOVAL | CONCRETE BREAKUP |
|---|---|---|---|---|---|---|---|
| -L- | 529+39.25 | 530+89.02 | RT | 86.00 | | | |
| -L- | 529+39.25 | 530+89.02 | RT | 20.56 | | | |
| -L- | 529+39.25 | 530+89.02 | LT | 89.56 | | | |
| -L- | 529+39.25 | 530+89.02 | LT | 52.89 | | | |
| -L- | 534+04.67 | 535+00.00 | CL | 251.78 | | | |
| -L- | 535+00.00 | 538+00.00 | CL | 995.98 | | | |
| -L- | 535+00.00 | 538+80.48 | LT | 190.56 | | | |
| -L- | 538+00.00 | 539+99.53 | CL/LT | 158.89 | | | |
| -L- | 538+00.00 | 540+00.00 | CL/RT | 102.78 | | | |
| -L- | 535+02.70 | 538+61.85 | RT | 149.89 | | | |
| -L- | 538+80.48 | 542+73.10 | LT | 226.44 | | | |
| -L- | 540+00.00 | 545+82.28 | LT/CL | 259.56 | | | |
| -L- | 540+00.00 | 545+87.94 | RT/CL | 810.00 | | | |
| -L- | 542+73.10 | 545+43.89 | LT | 184.11 | | | |
| -L- | 545+82.28 | 550+28.70 | CL/LT | 825.67 | | | |
| -L- | 546+84.17 | 550+23.29 | CL/RT | 140.44 | | | |
| -L- | 546+31.12 | 547+52.41 | Y36/LT | 148.11 | | | |
| -L- | 546+27.15 | 549+25.74 | Y36/RT | 512.67 | | | |
| -L- | 549+57.47 | 550+05.82 | LT | 23.33 | | | |
| -L- | 549+25.74 | 553+55.84 | RT | 227.00 | | | |
| -L- | 550+28.76 | 554+28.00 | CL/LT | 329.00 | | | |
| -L- | 550+21.94 | 558+09.57 | CL/RT | 54.44 | | | |
| -L- | 551+51.63 | 552+86.45 | LT | 40.67 | | | |
| -L- | 553+89.20 | 555+22.21 | RT | 47.00 | | | |
| -L- | 553+95.03 | 555+90.51 | LT | 189.11 | | | |
| -L- | 554+28.00 | 557+37.49 | CL/LT | 154.33 | | | |
| -L- | 555+70.17 | 559+09.57 | RT | 105.11 | | | |
| -L- | 558+03.81 | 559+09.57 | LT | 41.78 | | | |
| -L- | 557+37.49 | 557+98.09 | LT/CL | 31.22 | | | |
| -L- | 557+98.09 | 559+09.57 | LT/CL | 53.33 | | | |
| -L- | 558+09.57 | 559+09.57 | RT/CL | 43.89 | | | |
| -Y36- | 21+28.87 | 27+50.65 | CL | 1156.00 | | | |
| -Y37- | 14+00.00 | 15+88.66 | CL | 1016.00 | | | |
| | | **TOTAL:** | | 8718.09 | | | |
| | | **SAY:** | | **9,400** | | | |

**COMPUTED BY:** *Joshua Roemer, PE* **DATE:** *2/21/2023*
**CHECKED BY:** *John Lansford, PE* **DATE:** *2/21/2023*

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

# GUARDRAIL SUMMARY

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL

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

| 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 | | SINGLE FACED CONCRETE BARRIER | 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 | Type III | B-77 | GREU, TL-3 | GREU, TL-2 | CAT-1 | AT-1 | Type III SC | B-77 SC | G | NG | | | | |
| -L- | 534+56.40 | 540+87.65 | LT | 631.25' | | | 540+50.00 | 536+00.00 | 14' | 17' | 50' | 0' | 1' | 0' | | | 1 | | 1 | | | | | | | 496' | | |
| -L- | 541+21.86 | 541+86.96 | LT | | | | | | | | | | | | | | | | | | | | | | | 66' | | |
| -L- | 557+22.86 | 559+62.88 | RT | | | | | | | | | | | | | | | | | | | | | | | 240' | | |
| | | | **SUBTOTALS:** | 631.25' | | | | | | | | | | | | | 1 | | 1 | | | | | | | 802' | | |
| | | | **ANCHOR DEDUCTIONS** | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | **CAT-1: 1 @ 6.25'** | -6.25' | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | **GREU TL-3: 1 @ 50'** | -50' | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | **TOTALS:** | 575.00' | | | | | | | | | | | | | 1 | | 1 | | | | | | | 802' | | |
| | | | **SAY:** | **575.00'** | | | | | | | | | | | | | **1** | | **1** | | | | | | | **803'** | | |
| | | | **ADDITIONAL POSTS:** | 5 | | | | | | | | | | | | | | | | | | | | | | | | |

8/29/2025 11:02:09 AM
jroemer
U4700CC_RDY_3B-1_SUM.dgn

CNC2516L

| COMPUTED BY: | OJS | DATE: | 08/05/2025 |
|---|---|---|---|
| CHECKED BY: | KPH | DATE: | 08/05/2025 |

# NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
# DIVISION OF HIGHWAYS

| PROJECT NO. | SHEET NO. |
|---|---|
| U-4700 CC | 3D-1 |

**Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".**

## *LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)*

| LINE & STATION / SIZE / THICKNESS OR GAUGE | OFFSET | | STRUCTURE NUMBER FROM | TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | DO NOT USE PVC | C. S. PIPE .064 12 | .064 15 | .064 18 | .064 24 | R. C. PIPE CLASS III 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | DRAINAGE STRUCTURE MASONRY CY | QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH | A 5' THRU 10' LIN. FT. | B 10' AND ABOVE LIN. FT. | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION T.B.D.I. STD. 852.04 OR STD. 852.06 | T.B.D.I. STD. 852.07 | OPEN THROAT C.B. STD. 840.04 OR STD. 840.05 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | DRIVEWAY D.I. STD. 840.30 | FRAME W/ GRATE FOR DRIVEWAY STD. 840.30 | J.B. STD. 840.31 OR STD. 840.32 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 | T.B.D.I. FOR STEEL GRATES STD. 840.36 | STEEL FRAME WITH TWO GRATES STD. 840.37 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | SPRING BOX STD. 840.41 | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | ADJUST D.I. | BERM DITCH OUTLET STD. 850.10 (PER EACH) | BERM DITCH OUTLET STD. 850.11 (PER EACH) | MODIFIED CONC. FLUME | PREFORMED SCOUR HOLE (PER EACH) | ENERGY DISSIPATION BASIN | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---|---

CN/2516L

| COMPUTED BY: | OJS | DATE: | 08/05/2025 |
|---|---|---|---|
| CHECKED BY: | KPH | DATE: | 08/05/2025 |

# NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
# DIVISION OF HIGHWAYS

| PROJECT NO. | SHEET NO. |
|---|---|
| U-4700 CC | 3D-2 |

**Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout. See "Standard Specifications For Roads and Structures, Section 300-5".**

## *LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)*

| LINE & STATION / SIZE / THICKNESS OR GAUGE | OFFSET | | STRUCTURE NUMBER FROM | TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Side Drain Pipe (RCP, CSP, CAAP, HDPE, or PVC) 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | DO NOT USE RCP | DO NOT USE CSP | DO NOT USE CAAP | DO NOT USE HDPE | DO NOT USE PVC | C. S. PIPE 12 .064 | 15 .064 | 18 .064 | 24 .064 | R. C. PIPE CLASS III 12 | 15 | 18 | 24 | 30 | 36 | 42 | 48 | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY | REINFORCED ENDWALLS CY | DRAINAGE STRUCTURE MASONRY CY | QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH | A 5' THRU 10' LIN. FT. | B 10' AND ABOVE LIN. FT. | C.B. STD. 840.01 OR STD. 840.02 | FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E | F | G | CONCRETE TRANSITIONAL SECTION T.B.D.I. STD. 852.04 OR STD. 852.06 | T.B.D.I. STD. 852.07 | OPEN THROAT C.B. STD. 840.04 OR STD. 840.05 | CONCRETE BRIDGE APPROACH D.I. STD. 840.13 | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATES STD. 840.16 | G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26 | G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27 | G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28 | G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20 | G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20 | G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22 | G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22 | G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24 | G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24 | G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29 | G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29 | DRIVEWAY D.I. STD. 840.30 | FRAME W/ GRATE FOR DRIVEWAY STD. 840.30 | J.B. STD. 840.31 OR STD. 840.32 | ANGLED VANE GRATES AND FRAMES STD. 840.33 | T.B.J.B. STD. 840.34 | T.B.D.I. STD. 840.35 | T.B.D.I. FOR STEEL GRATES STD. 840.36 | STEEL FRAME WITH TWO GRATES STD. 840.37 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | SPRING BOX STD. 840.41 | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | ADJUST D.I. | BERM DITCH OUTLET STD. 850.10 (PER EACH) | BERM DITCH OUTLET STD. 850.11 (PER EACH) | MODIFIED CONC. FLUME | PREFORMED SCOUR HOLE (PER EACH) | ENERGY DISSIPATION BASIN | FLOWABLE FILL CY | CONCRETE COLLARS CL. "B" STD. 840.72 CY | CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY | PIPE REMOVAL LIN. FT. | REMARKS |
|---|---|---|---

COMPUTED BY: KND DATE: 08/06/25
CHECKED BY: MJW DATE: 08/07/25

(9-17-24)

# 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 |
|---|---|---|---|---|---|---|---|---|---|
| -L- | 550+25 | 552+75 | ASU(1) | 12 | 295 | 590 | 885 | | |
| -L- | 553+25 | 554+25 | ASU(1) | 12 | 40 | 80 | 120 | | |
| -Y36- | 27+25 | 29+00 | ASU(1) | 12 | 75 | 150 | 225 | | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| CONTINGENCY | | | ASU(1) | 12 | 150 | 300 | 450 | | |
| | | | | | | | | | |
| | | | TOTAL CY/TONS/SY: | | 560 | 1120** | 1680** | 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.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| PROJECT REFERENCE NO. | SHEET NO. |
|---|---|
| U-4700CC | 3P-1 |

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License No: C-3097

# STATE OF NORTH CAROLINA
# DIVISION OF HIGHWAYS

## *PARCEL INDEX SHEET*

| PARCEL No. | SHEET No. | PROPERTY OWNER NAME |
|---|---|---|
| 1 | 4 | MARK H. TERRY |
| 2 | 4, 5 | GARY E. BOLICK |
| 3 | 5 | NATHAN ARNEY |
| 4 | 5 | COLONIAL HUDSON, LLC |
| 5 | 5 | HARRIS PROPERTIES OF CALDWELL, LLC |
| 6 | 5 | ROGER D. KNIGHT |
| 7 | 5 | RALPH G. WILCOX |
| 8 | 5 | CHARLES A. WILCOX LOT E |
| 9 | 5, 6 | T&M OF NORTH CAROLINA, LLC |
| 10 | 6 | RALPH & JEAN WILCOX LOT A |
| 11 | 6 | HALL & HIGGINS, LLC |
| 12 | 6 | CHARLES & REBECCA WILCOX LOT B |
| 13 | 6 | CHARLES & REBECCA WILCOX LOT C |

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| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| 8/14/2025 10:23:01 AM PDT | 8/14/2025 12:57:27 PM EDT |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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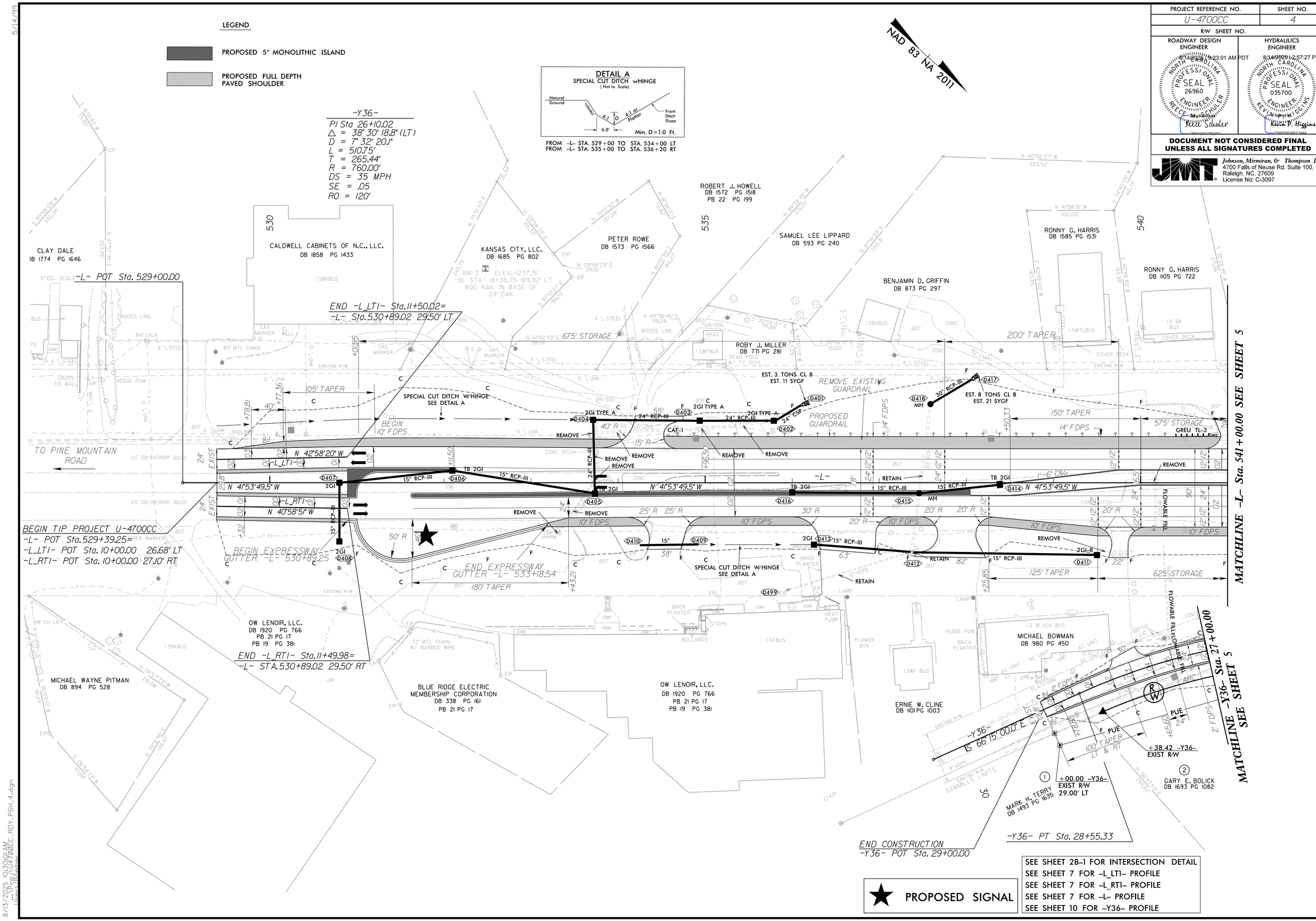


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Lisa Pearce

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| R/W SHEET NO. | |

ROADWAY DESIGN ENGINEER
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NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE SCHULER
Reece Schuler

HYDRAULICS ENGINEER
8/13/2025 12:57:27 PM EDT
NORTH CAROLINA PROFESSIONAL SEAL 035700 ENGINEER KEVIN P. HIGGINS
Kevin P. Higgins
DocuSigned by: 6B0B0E4E5C3444...

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-Y36-

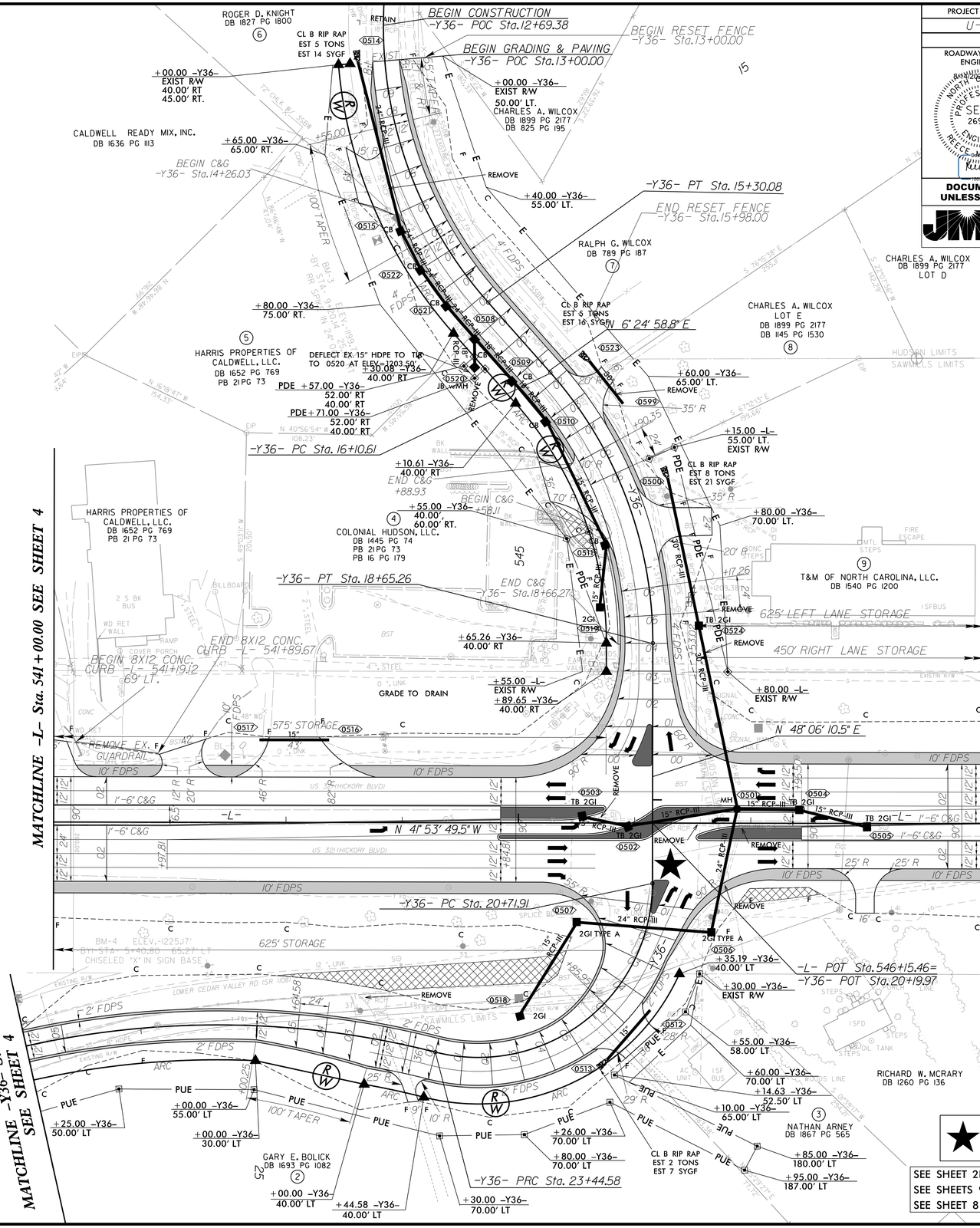
| PI Sta 13+92.72 | PI Sta 17+43.87 | PI Sta 22+64.43 | PI Sta 26+10.02 |
|---|---|---|---|
| △ = 46° 44' 01.2" (LT) | △ = 41° 41' 11.8" (RT) | △ = 104° 09' 08.3" (RT) | △ = 38° 30' 18.8" (LT) |
| D = 16° 00' 00.0" | D = 16° 22' 12.8" | D = 38° 11' 49.9" | D = 7° 32' 20.1" |
| L = 292.09' | L = 254.65' | L = 272.67' | L = 510.75' |
| T = 154.72' | T = 133.26' | T = 192.52' | T = 265.44' |
| R = 358.10' | R = 350.00' | R = 150.00' | R = 760.00' |
| DS = 35 MPH | DS = 35 MPH | DS = 25 MPH | DS = 35 MPH |
| SE = .06 | SE = .06 | SE = .05 | SE = .05 |
| RO = 144' | RO = 144' | RO = 120' | RO = 120' |

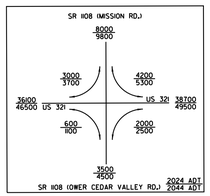
NAD 83 NA 2011

LEGEND

PROPOSED 5" MONOLITHIC ISLAND

PROPOSED FULL DEPTH PAVED SHOULDER




REVISIONS

5/14/99

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| 8/14/2026 1:23:01 AM EDT | 8/14/2026 2:57:27 PM EDT |

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

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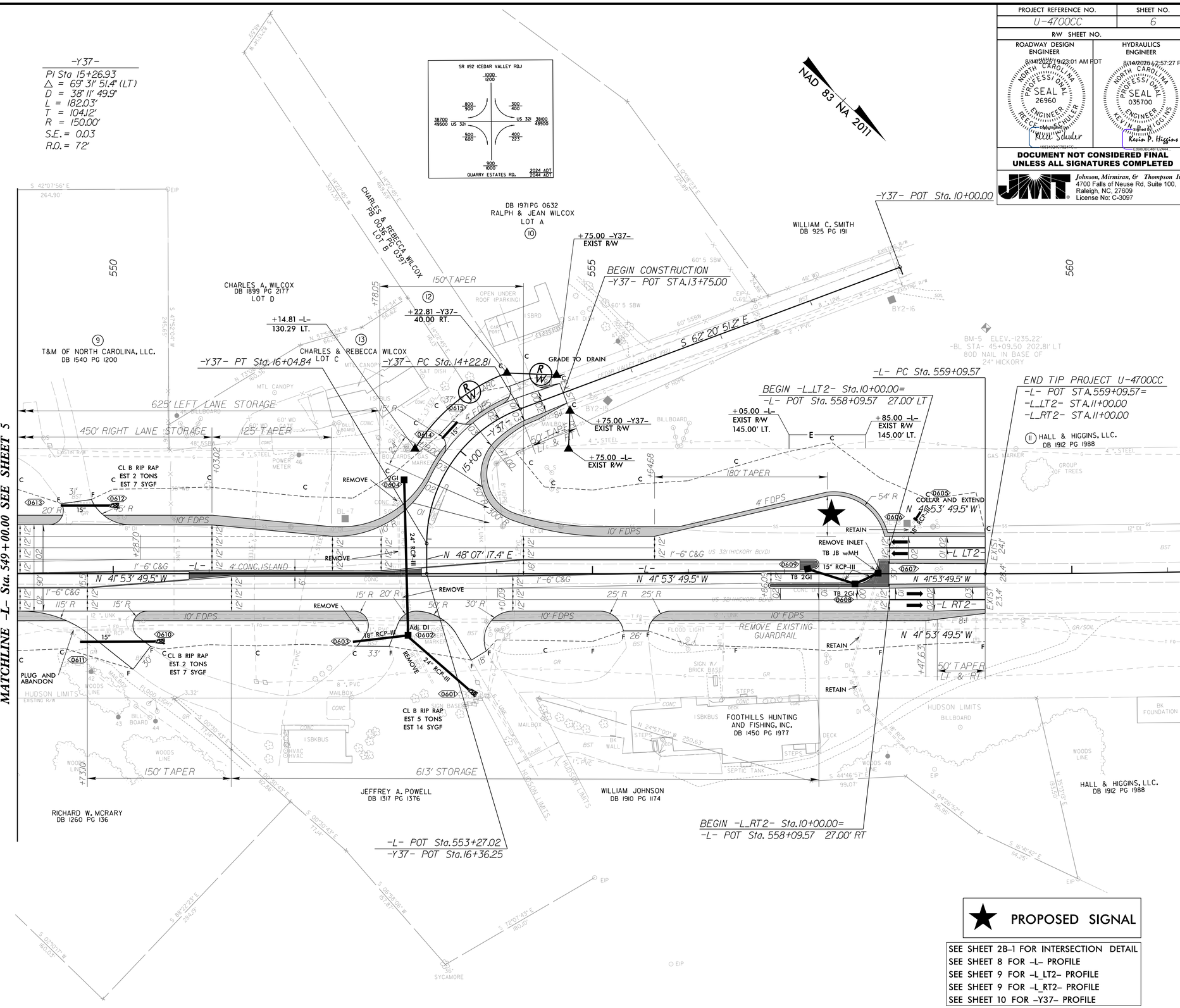
LEGEND

PROPOSED 5" MONOLITHIC ISLAND

PROPOSED FULL DEPTH PAVED SHOULDER

-Y37-
PI Sta 15+26.93
Δ = 69° 31' 51.4" (LT)
D = 38° 11' 49.9"
L = 182.03'
T = 104.12'
R = 150.00'
S.E. = 0.03
R.O. = 72'




SEE SHEET 2B-1 FOR INTERSECTION DETAIL
SEE SHEET 8 FOR -L- PROFILE
SEE SHEET 9 FOR -L_LT2- PROFILE
SEE SHEET 9 FOR -L_RT2- PROFILE
SEE SHEET 10 FOR -Y37- PROFILE

REVISIONS

5/14/99

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| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
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| NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE M. SCHULER | NORTH CAROLINA PROFESSIONAL SEAL 035700 ENGINEER KEVIN P. HIGGINS |
| Reece Schuler | Kevin P. Higgins |
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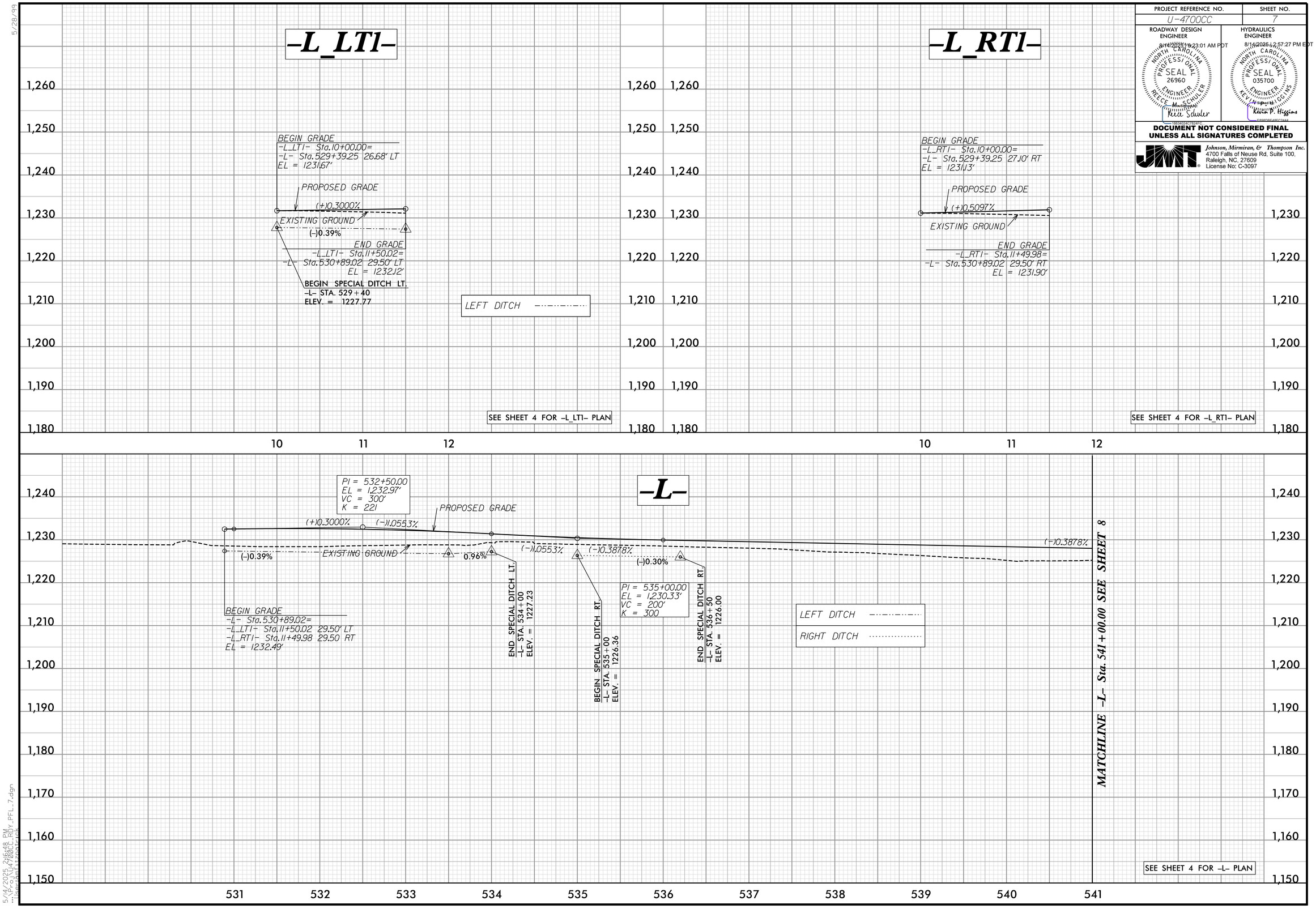


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| NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE M. SCHULER | NORTH CAROLINA PROFESSIONAL SEAL 035700 ENGINEER KEVIN P. HIGGINS |
| Reece Schuler | Kevin P. Higgins |
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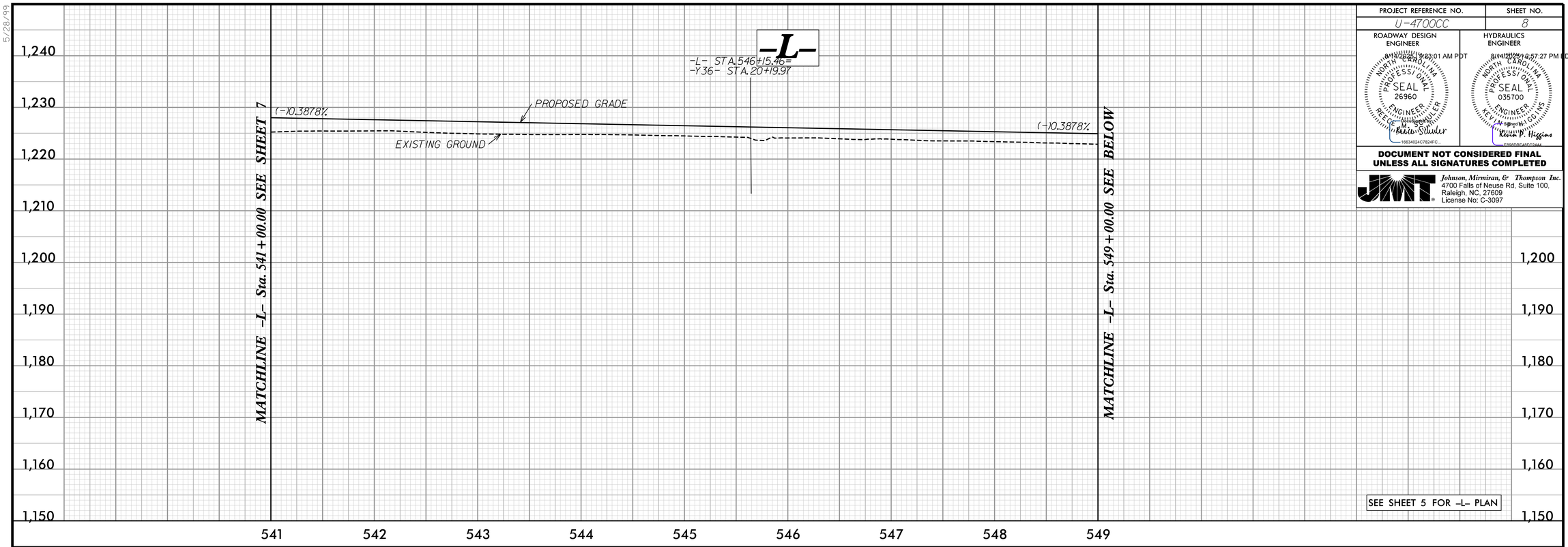


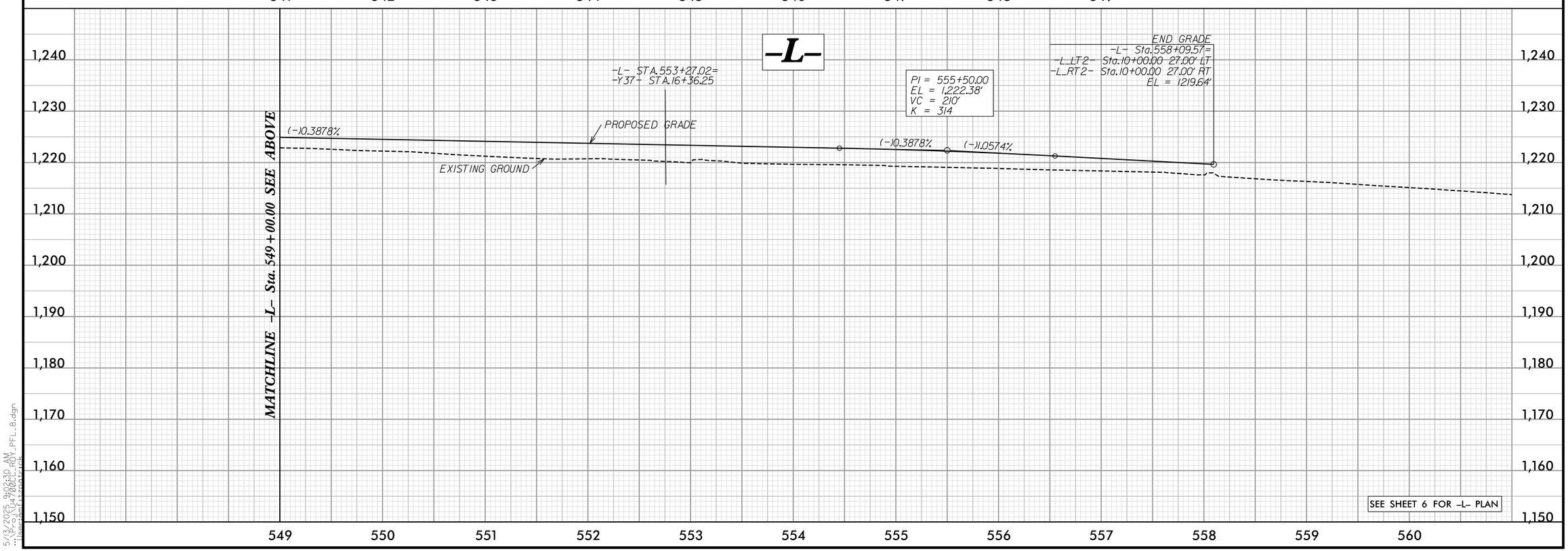


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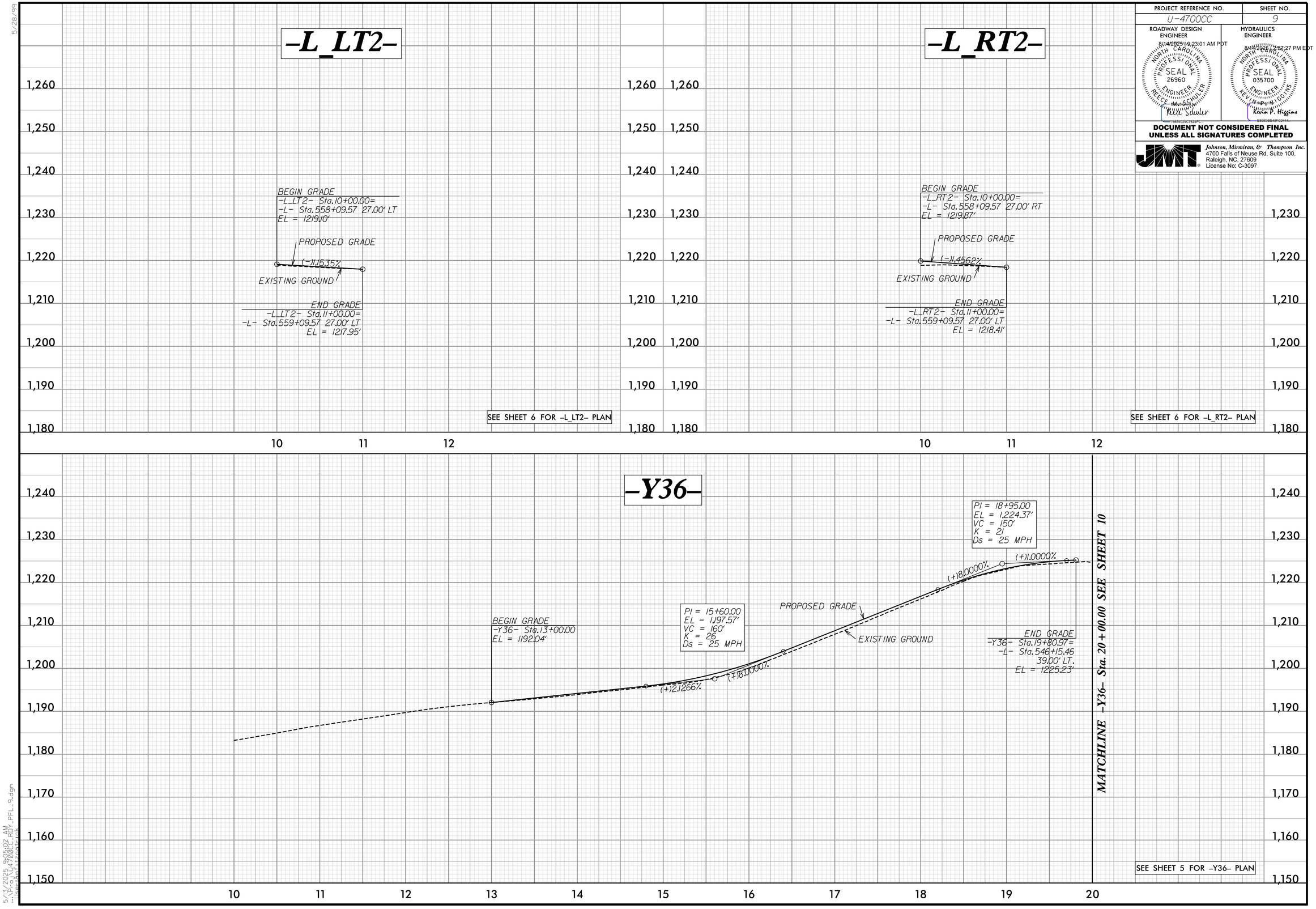

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| NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER | NORTH CAROLINA PROFESSIONAL SEAL 035700 ENGINEER |
| Kevin Schuler | Kevin P. Higgins |

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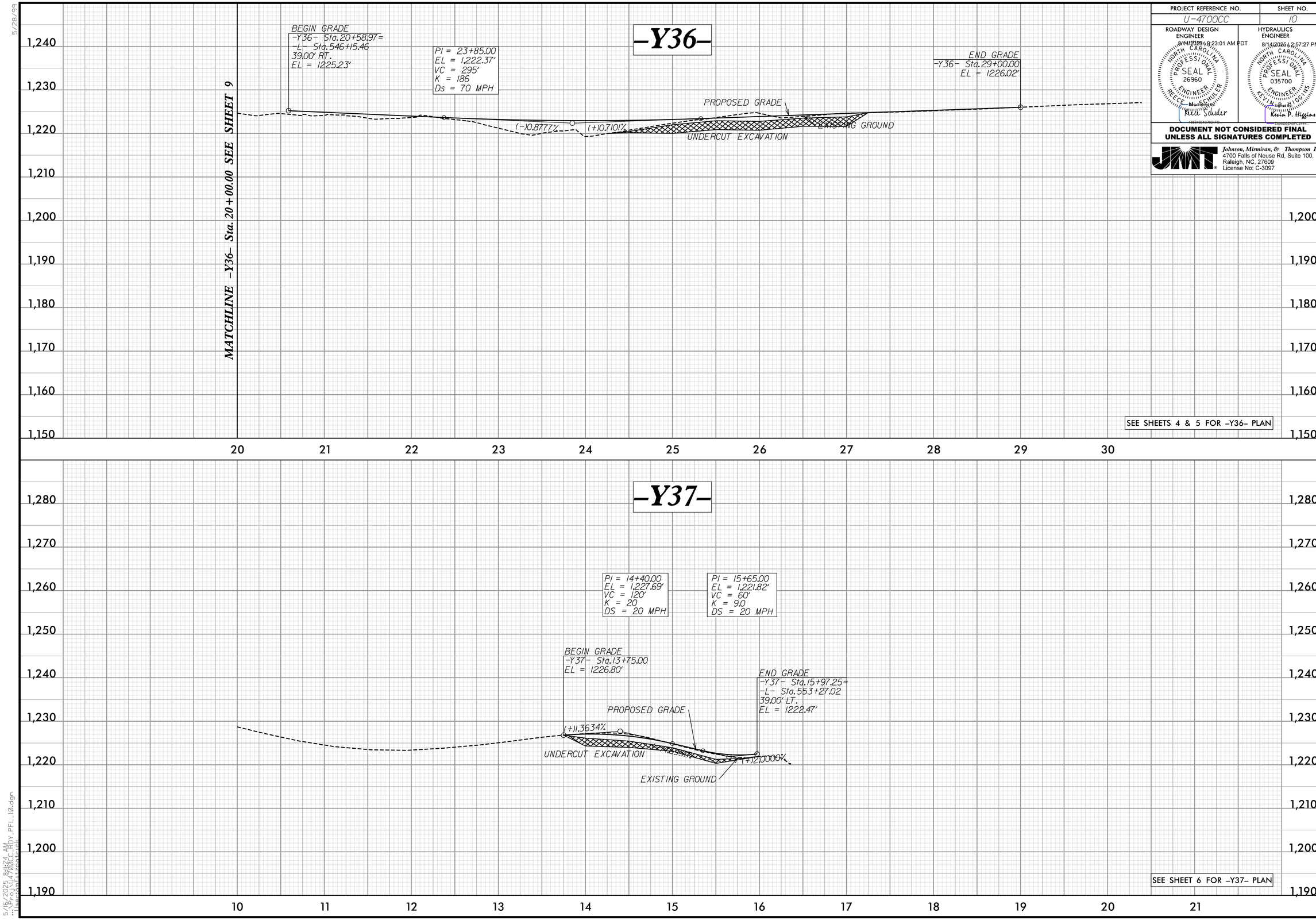


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