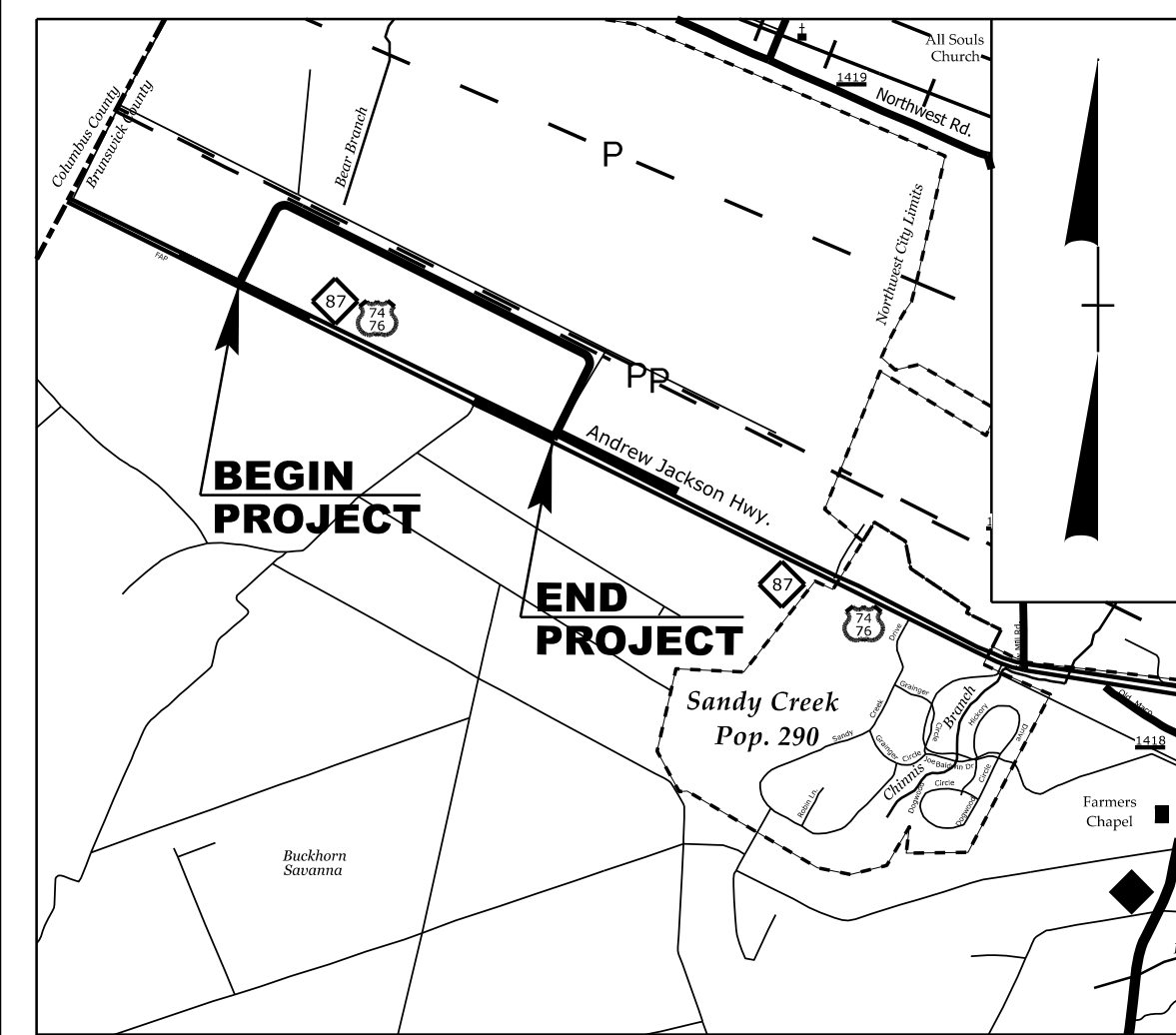


TIP PROJECT: HE-0016

CONTRACT: C204970

See Sheet 1A For Index of Sheets



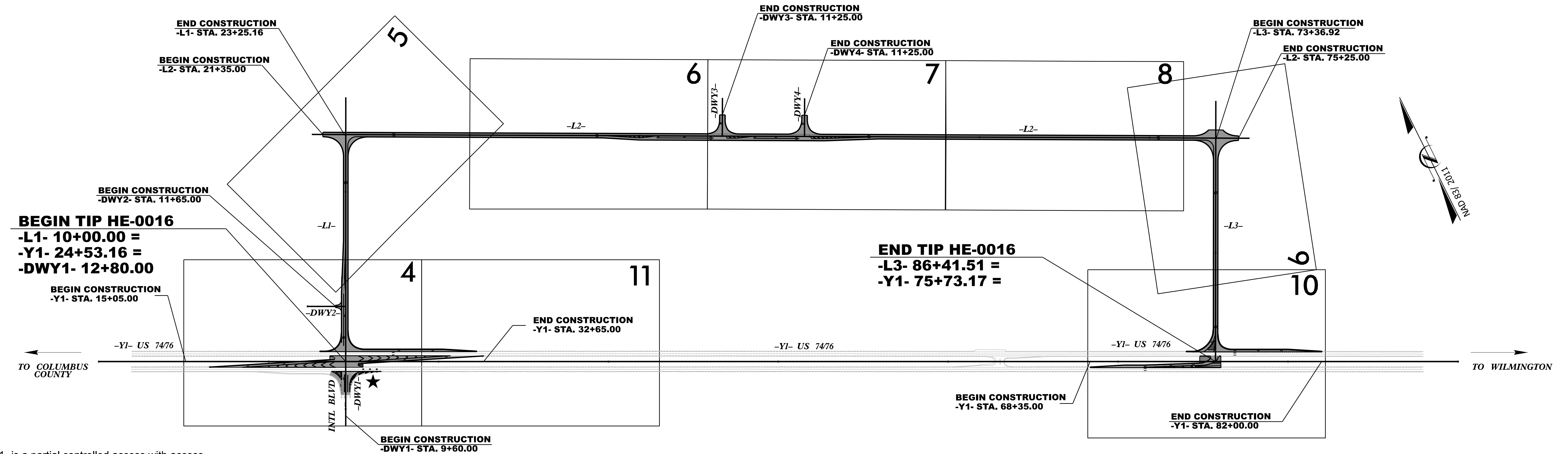
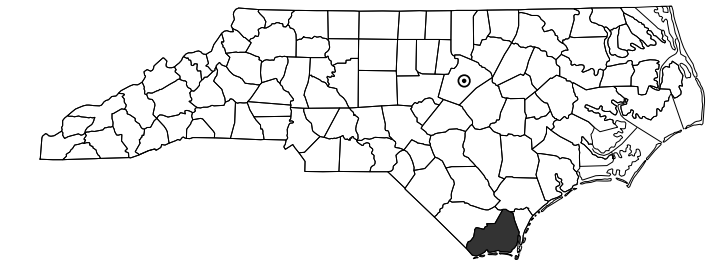
# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

## BRUNSWICK COUNTY

LOCATION: *NEW ROUTE FROM 0.5 MILES EAST OF BRUNSWICK COUNTY LINE TO 1.5 MILES EAST OF BRUNSWICK COUNTY LINE ON US 74/76*

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

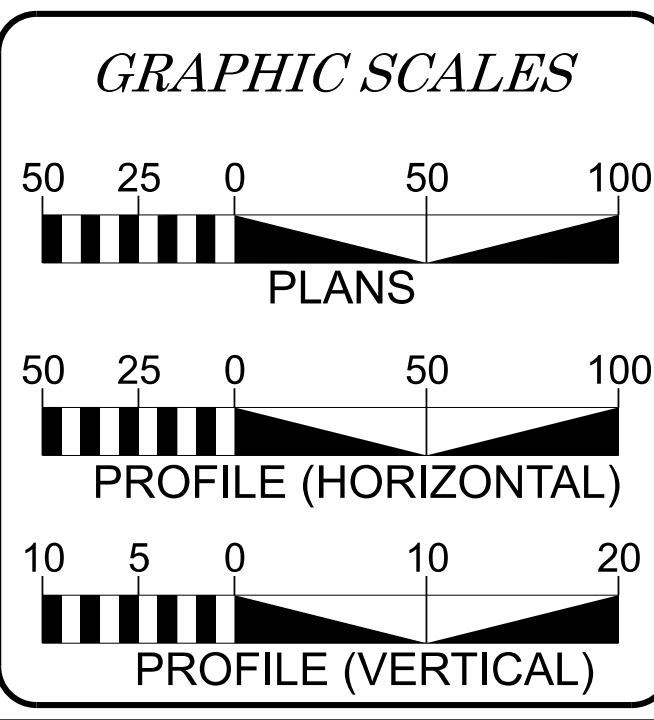
| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.   | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C.            | HE-0016                     | 11          |              |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION |              |
| 51325.1.1       |                             | PE          |              |
| 51325.2.1       |                             | R/W         |              |
| 51325.2.2       |                             | UTIL        |              |
| 51325.3.1       |                             | CONST       |              |



-Y1- is a partial controlled access with access being limited to points shown on the plans.

★ PROPOSED SIGNAL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



**DESIGN DATA**

ADT 2026 = 500  
ADT 2045 = 1,000  
V = 40 MPH

FUNC CLASS = LOCAL  
SUBREGIONAL TIER

**PROJECT LENGTH**

LENGTH OF ROADWAY TIP PROJECT HE-0016 = 1.472 MILES  
TOTAL LENGTH OF TIP PROJECT HE-0016 = 1.472 MILES

-L1-, -L2-, & -L3- WERE UTILIZED TO DETERMINE PROJECT LENGTH.

Prepared in the Office of:

**WETHERILL ENGINEERING**  
License No. F-0377  
Bus: 919.851.8077 Fax: 919.851.8107  
1223 Jones Franklin Rd., Raleigh, N.C. 27606

2024 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
JANUARY 20, 2025

**LETTING DATE:**  
JUNE 16, 2026

Prepared for:

**DIVISION OF HIGHWAYS  
DIVISION 3**  
5501 Barbasco Blvd., Castle Hayne, NC 28429

**FARRELL NICHOLSON, PE**  
PROJECT ENGINEER

**JOSE A. ROSADO JR.**  
PROJECT DESIGN ENGINEER

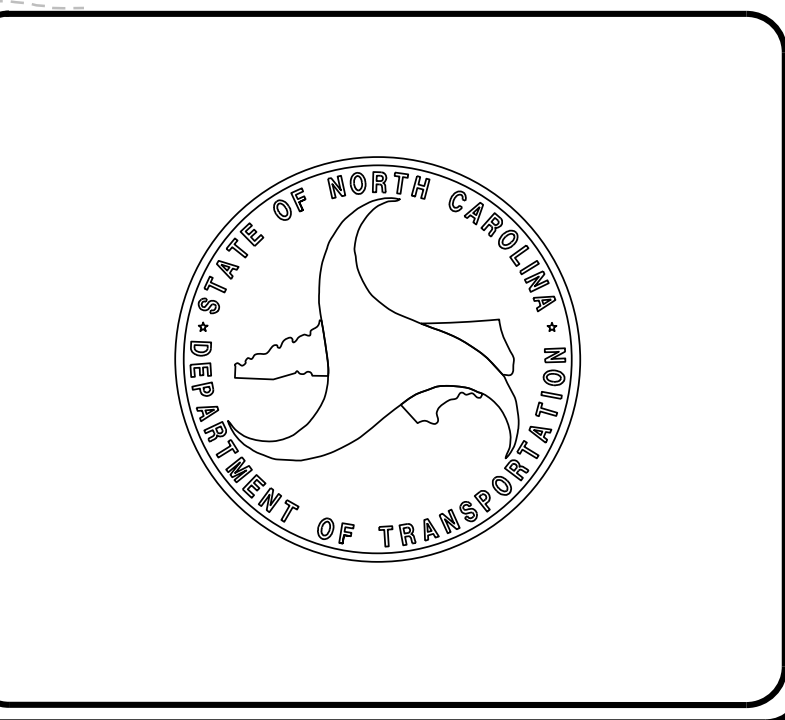
**BRIAN HARDING, PE**  
NCDOT CONTACT

**HYDRAULICS ENGINEER**

Signed by: *Matthew Haney*  
D8419C2078AEE  
SIGNATURE: *Matthew Haney*  
P.E. 3/31/2026

**ROADWAY DESIGN ENGINEER**

Signed by: *Farrell Nicholson*  
428AC8AED789ACE  
SIGNATURE: *Farrell Nicholson*  
P.E. 3/31/2026



# INDEX OF SHEETS

| SHEET NUMBER        | SHEET   |
|---------------------|---|
| 1                   | TITLE SHEET   |
| 1A                  | INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS |
| 1B                  | CONVENTIONAL SYMBOLS                                  |
| 2A-1 THRU 2A- 2     | PAVEMENT SCHEDULE AND TYPICAL SECTIONS                |
| 2B-1 THRU 2B-2      | ROADWAY DETAILS                                       |
| 2C-1 THRU 2C-5      | SPECIAL DETAILS                                       |
| 3B-1                | ROADWAY SUMMARIES                                     |
| 3D-1 THRU 3D-2      | DRAINAGE SUMMARIES                                    |
| 3G-1 THRU 3G-2      | GEOTECHNICAL SUMMARIES                                |
| 3P-1                | PARCEL INDEX  |
| 4 THRU 19           | PLAN AND PROFILE SHEETS                               |
| RW01 THRU RW11      | RIGHT OF WAY PLANS                                    |
| TMP-1 THRU TMP-06   | TRAFFIC MANAGEMENT PLANS                              |
| PMSP-1 THRU PMSP-7  | PAVEMENT MARKING PLANS                                |
| EC-1 THRU EC-19     | EROSION CONTROL PLANS                                 |
| SIG-1.0 THRU SIG1.8 | SIGNAL PLANS  |
| SIG.M1A THRU SIG.M9 | STANDARD DRAWINGS FOR ALL METAL POLES                 |
| UC-1 THRU UC-8      | UTILITY CONSTRUCTION PLANS                            |
| UO-1 THRU UO-11     | UTILITY BY OTHERS PLANS                               |
| X-1                 | CROSS-SECTION INDEX                                   |
| X-1A THRU X-1B      | CROSS-SECTION SUMMARY SHEET                           |
| X-2 THRU X-95       | CROSS-SECTIONS  |

# GENERAL NOTES

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 MODIFIED METHOD III.

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

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.

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 (COMM), CHARTER (COMM)  
DUKE (ELECTRIC), FOCUS BROADBAND (COMM), PNG (GAS), NCDOT (COMM)  
BRUNSWICK COUNTY (WATER & SEWER)

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.

# STANDARD DRAWINGS

EFF. 01-16-2024  
REV.

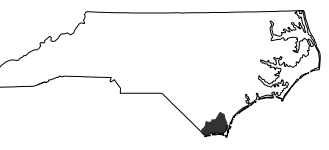
2024 ROADWAY ENGLISH STANDARD DRAWINGS

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:

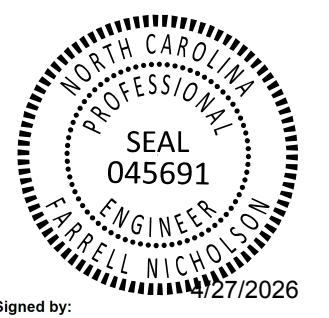
| STD.NO.   | TITLE  |
|---|--|
| <b>DIVISION 2 - EARTHWORK</b>                     |  |
| 200.03  | Method of Clearing - Mod Method III  |
| 225.01  | Guide for Grading Subgrade - Interstate and Freeway                                    |
| 225.02  | Guide for Grading Subgrade - Secondary and Local                                       |
| 225.04  | Method of Obtaining Superelevation - Two Lane Pavement                                 |
| 225.05  | Method of Obtaining Superelevation - Divided Highways                                  |
| 225.06  | Method of Grading Sight Distance at Intersections                                      |
| <b>DIVISION 3 - PIPE CULVERTS</b>                 |  |
| 300.01  | Method of Pipe Installation - Use Details in Lieu of Standards for Sheets 1 and 2 of 2 |
| <b>DIVISION 5 - SUBGRADE, BASES AND SHOULDERS</b> |  |
| 560.01  | Method of Shoulder Construction - High Side of Superelevated Curve - Method I          |
| <b>DIVISION 6 - ASPHALT BASES AND PAVEMENTS</b>   |  |
| 654.01  | Pavement Repairs   |
| 665.01  | Asphalt Shoulders - Milled Rumble Strips   |
| 665.02  | Limits for Asphalt Shoulders - Milled Rumble Strips                                    |
| <b>DIVISION 8 - INCIDENTALS</b>                   |  |
| 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         |
| 838.21  | Reinforced Concrete Endwall - for Single 54" Pipe 90° Skew                             |
| 838.33  | Reinforced Concrete Endwall - for Single 66" Pipe 90° Skew                             |
| 838.45  | Notes for Reinforced Concrete Endwall - Std. Dwg.s 838.21 thru 838.40                  |
| 838.51  | Reinforced Brick Endwall - for Single 54" Pipe 90° Skew                                |
| 840.00  | Concrete Base Pad for Drainage Structures  |
| 840.14  | Concrete Drop Inlet - 12" thru 30" Pipe  |
| 840.15  | Brick Drop Inlet - 12" thru 30" Pipe   |
| 840.16  | Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15                  |
| 840.25  | Anchorage for Frames - Brick/Concrete/Precast Concrete                                 |
| 840.45  | Precast Drainage Structure   |
| 840.66  | Drainage Structure Steps   |
| 840.72  | Pipe Collar  |
| 848.04  | Street Turnout   |
| 852.01  | Concrete Islands   |
| 852.06  | Method for Placement of Drop Inlets in Concrete Islands                                |
| 876.01  | Rip Rap in Channels and Ditches  |
| 876.02  | Guide for Rip Rap at Pipe Outlets  |
| 876.04  | Drainage Ditches with Class 'B' Rip Rap  |

HE-0016  
RDY | IA

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
BRUNSWICK COUNTY



ROADWAY DESIGN UNIT  
ROADWAY DESIGN  
ENGINEER



Signed by:  
*Farrell Nicholson*  
428AC8ED784CE

PREPARED BY  
**WETHERILL ENGINEERING**

WE Design your Tomorrow ...  
1223 Jones Franklin Road  
Raleigh, NC 27606  
(919) 851-8077  
NC License F-0377

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

Note: Not to Scale

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

HE-0016  
RDY IB

BOUNDARIES AND PROPERTY:

Table listing symbols for 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:

Table listing symbols for 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:

Table listing symbols for 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:

Table listing symbols for railroads: Standard Gauge, RR Signal Milepost, Switch, RR Abandoned, RR Dismantled.

RIGHT OF WAY & PROJECT CONTROL:

Table listing symbols for right of way and 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:

Table listing symbols for 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:

Table listing symbols for vegetation: Single Tree, Single Shrub, Hedge.

Table listing symbols for existing structures: Woods Line, Orchard, Vineyard.

EXISTING STRUCTURES:

Table listing symbols for 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)

Table listing symbols for utilities: 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:

Table listing symbols for 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:

Table listing symbols for 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:

Table listing symbols for 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:

Table listing symbols for 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:

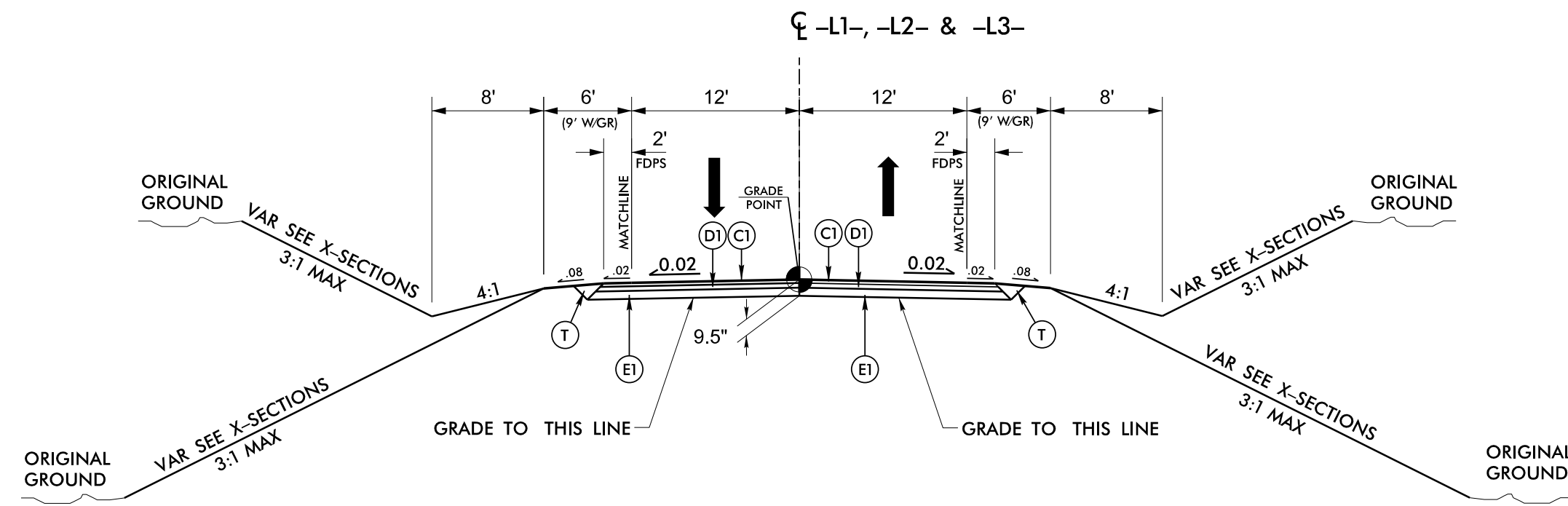
Table listing symbols for sanitary sewer: Sanitary Sewer Manhole, Sanitary Sewer Cleanout, U/G Sanitary Sewer Line, Above Ground Sanitary Sewer, SS Force Main Line Test Hole (SUE - LOS A)\*, SS Force Main Line (SUE - LOS B)\*, SS Force Main Line (SUE - LOS C)\*, SS Force Main Line (SUE - LOS D)\*.

MISCELLANEOUS:

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

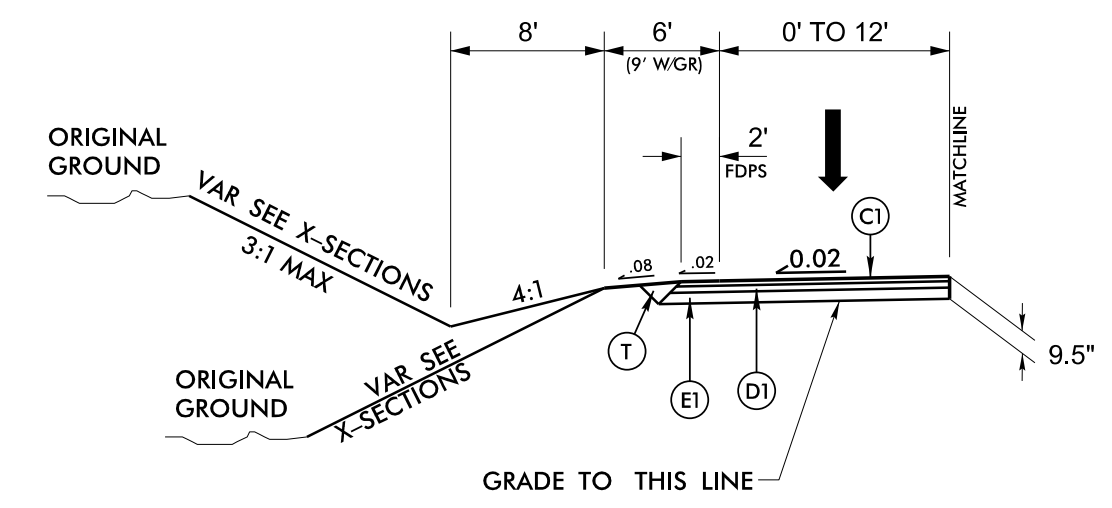
| PAVEMENT SCHEDULE<br><small>(FINAL PAVEMENT DESIGN)</small> |   |
|---|---|
| C1  | PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS. |
| C2  | PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.                      |
| D1  | PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YARD.               |
| D2  | PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD.                 |
| E1  | PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD.                        |
| E2  | PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YARD.                        |
| J1  | PROP. 6" AGGREGATE BASE COURSE  |
| R1  | 5" MONOLITHIC CONCRETE ISLAND (KEYED IN)  |
| R2  | 5" MONOLITHIC CONCRETE ISLAND (SURFACE MOUNT)   |
| T   | EARTH MATERIAL  |
| U   | EXISTING PAVEMENT   |
| V1  | 1.5" MILLING  |
| Y   | RUMBLE STRIPS   |

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



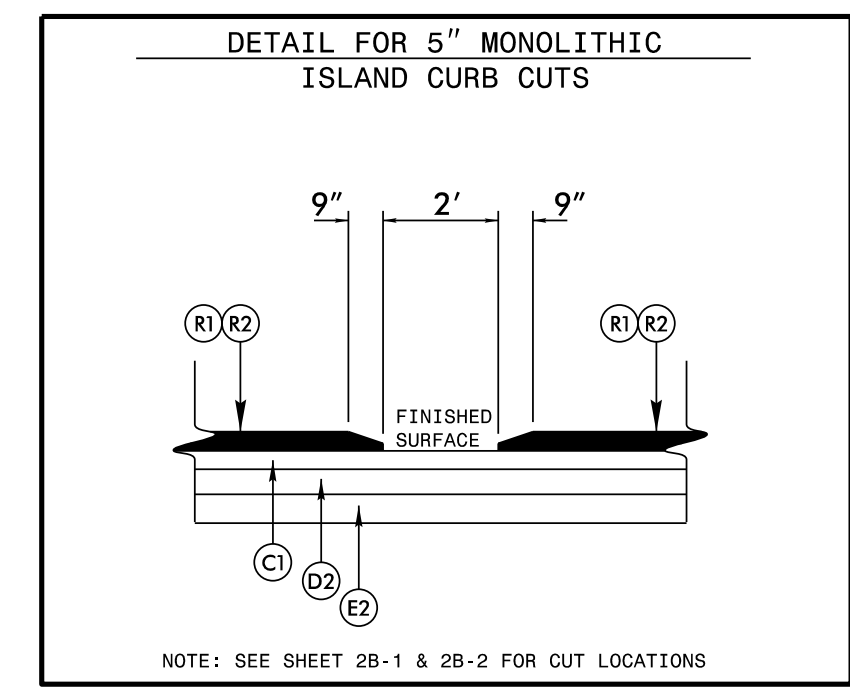
### TYPICAL SECTION NO. 1

-L1- STA. 10+58.00 TO STA. 23+25.16  
 -L2- STA. 21+35.00 TO STA. 75+25.00  
 -L3- STA. 73+36.92 TO STA. 85+84.51

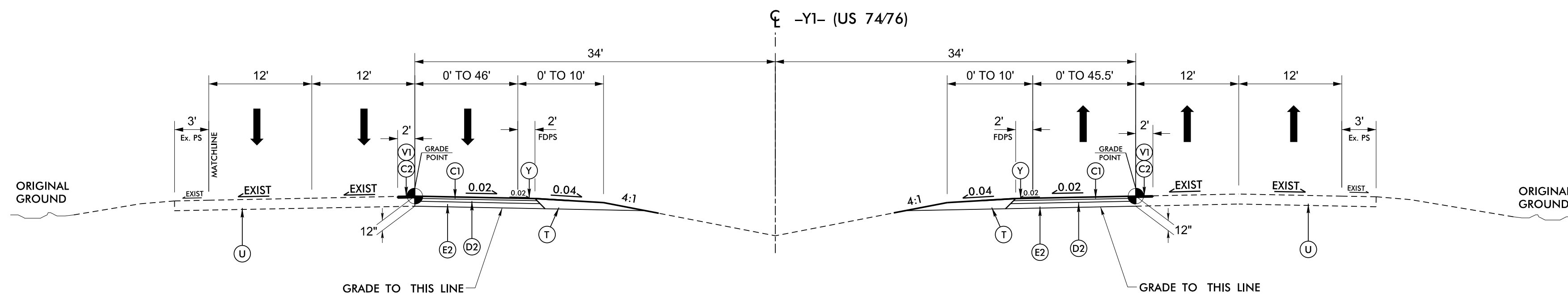


### USE WITH TYP. NO. 1

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 -L2- STA. 37+85.00 TO STA. 54+10.00 (REVERSE)

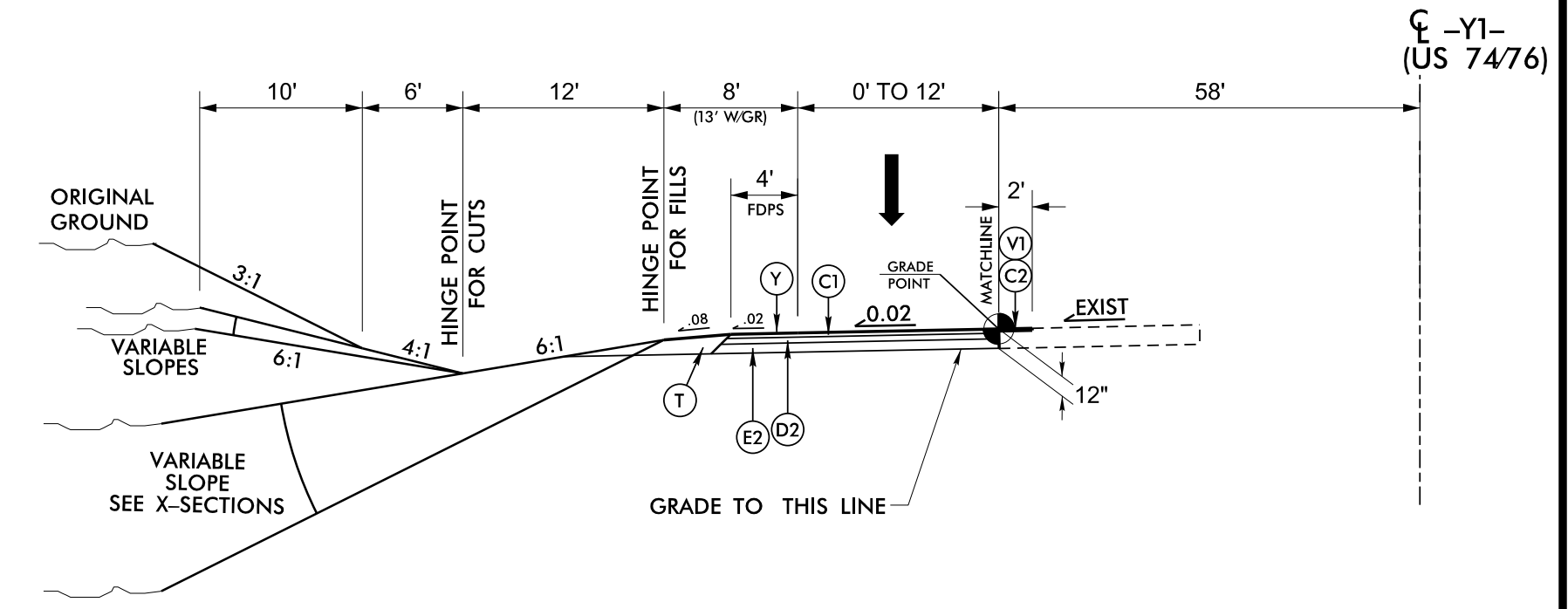


NOTE: SEE SHEET 2B-1 & 2B-2 FOR CUT LOCATIONS



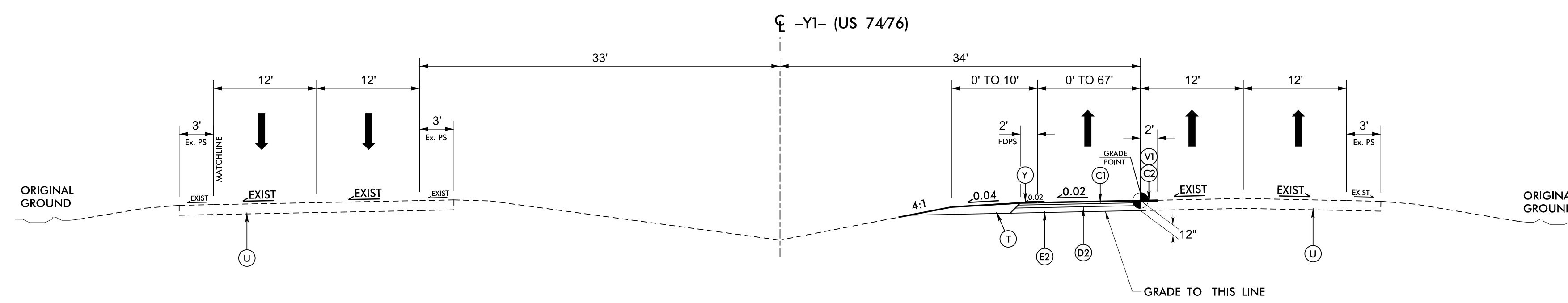
### TYPICAL SECTION NO. 2

-Y1- STA. 16+50.00 TO STA. 32+65.00



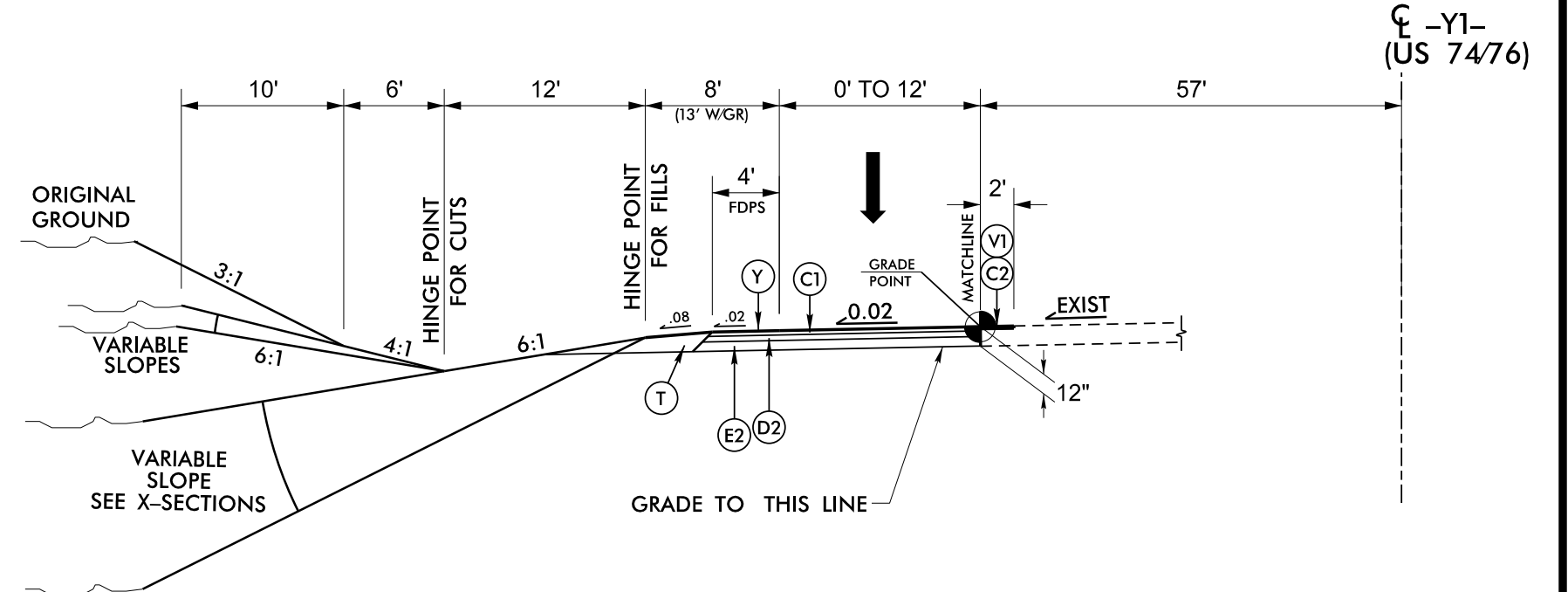
### USE WITH TYP. NO. 2

-Y1- STA. 23+00.00 TO STA. 32+25.00



### TYPICAL SECTION NO. 3

-Y1- STA. 68+35.00 TO STA. 76+05.00



### USE WITH TYP. NO. 3

-Y1- STA. 74+00.00 TO STA. 82+00.00

**HE-0016**  
**RDY 2A-1**

NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 BRUNSWICK COUNTY

ROADWAY DESIGN UNIT  
 ROADWAY DESIGN  
 ENGINEER

**SEAL 045691**  
 ENGINEER  
 MARRELL NICHOLS  
 11/2026

Signed by:  
*Farrall Nelson*  
 PAVEMENT DESIGN  
 ENGINEER

**SEAL 044590**  
 ENGINEER  
 ANDREW D. WARR  
 11/2026

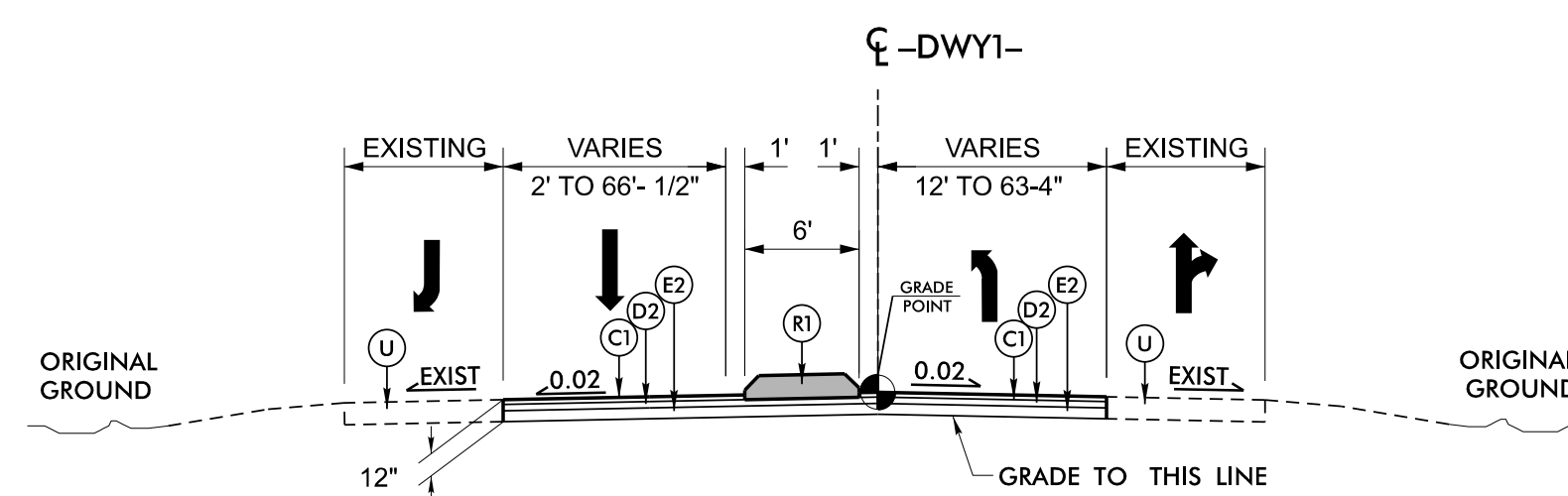
DocuSigned by:  
*Andrew Warr*  
 2023-11-14 10:00:00 AM  
 PREPARED BY  
**WETHERILL ENGINEERING**

WE Design your Tomorrow ...  
 1223 Jones Franklin Road  
 Raleigh, NC 27606  
 (919) 851-8077  
 NC License F-0377

DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

| (FINAL PAVEMENT DESIGN) |   |
|-------------------------|---|
| C1                      | PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS. |
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| T                       | EARTH MATERIAL  |
| U                       | EXISTING PAVEMENT   |
| V1                      | 1.5" MILLING  |
| Y                       | RUMBLE STRIPS   |

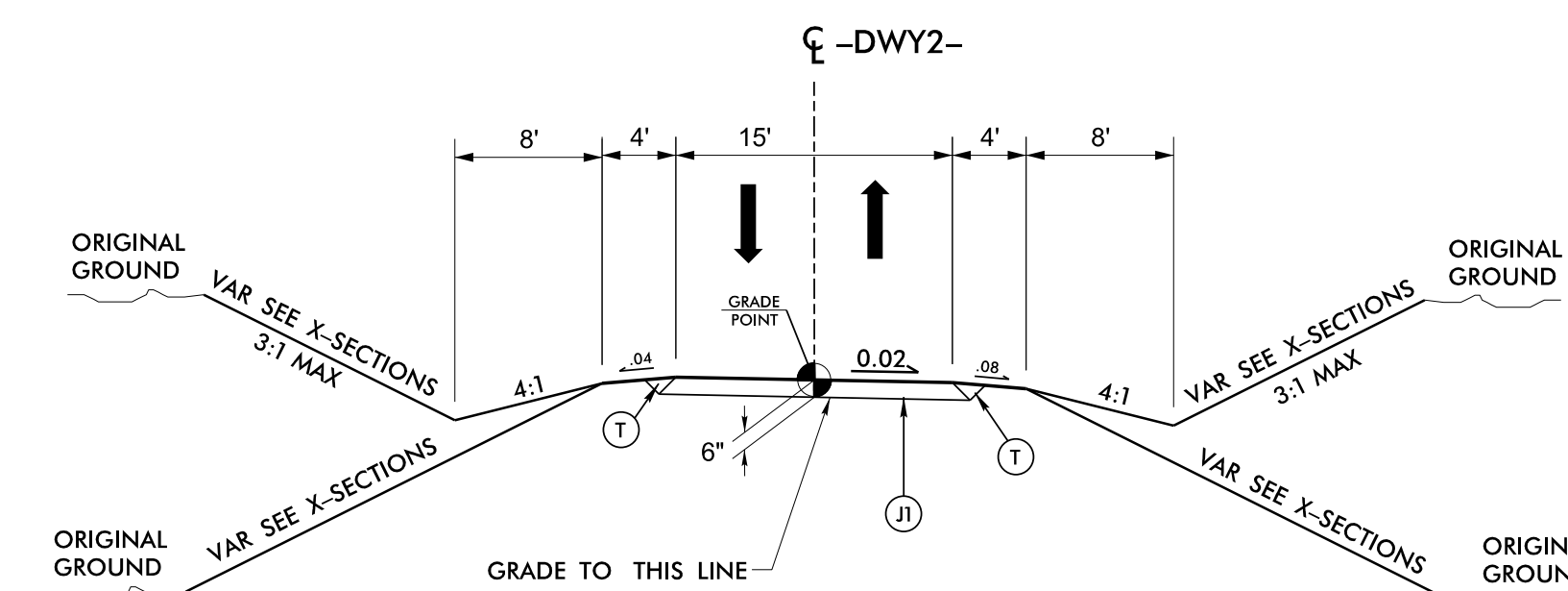
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



### TYPICAL SECTION NO. 4

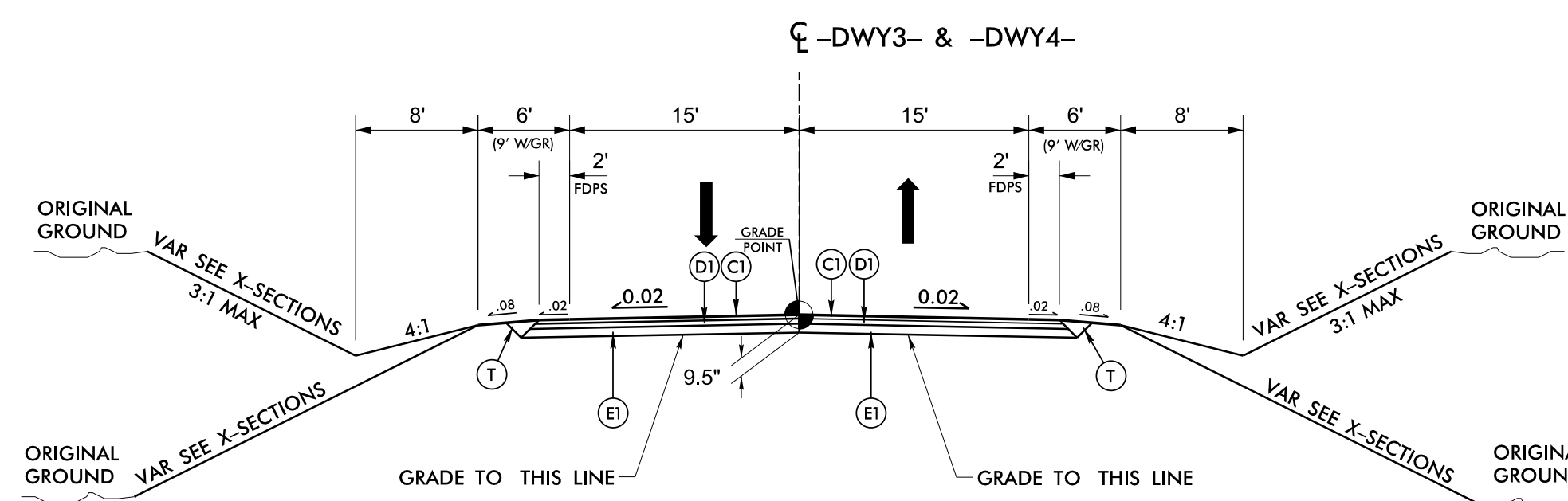
-DWY1- STA. 10+85.00 TO STA. 12+20.00

NOTE: SAW CUT AND REMOVE EXISTING ISLAND, CURB & GUTTER



### TYPICAL SECTION NO. 5

-DWY2- STA. 11+65.00 TO STA. 12+01.00



### TYPICAL SECTION NO. 6

-DWY3- STA. 10+12.00 TO STA. 11+25.00

-DWY4- STA. 10+12.00 TO STA. 11+25.00

HE-0016  
RDY 2A-2

NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
BRUNSWICK COUNTY

ROADWAY DESIGN UNIT  
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEERS  
SEAL 045691  
MICHAEL NICHOLS

PAVEMENT DESIGN ENGINEER

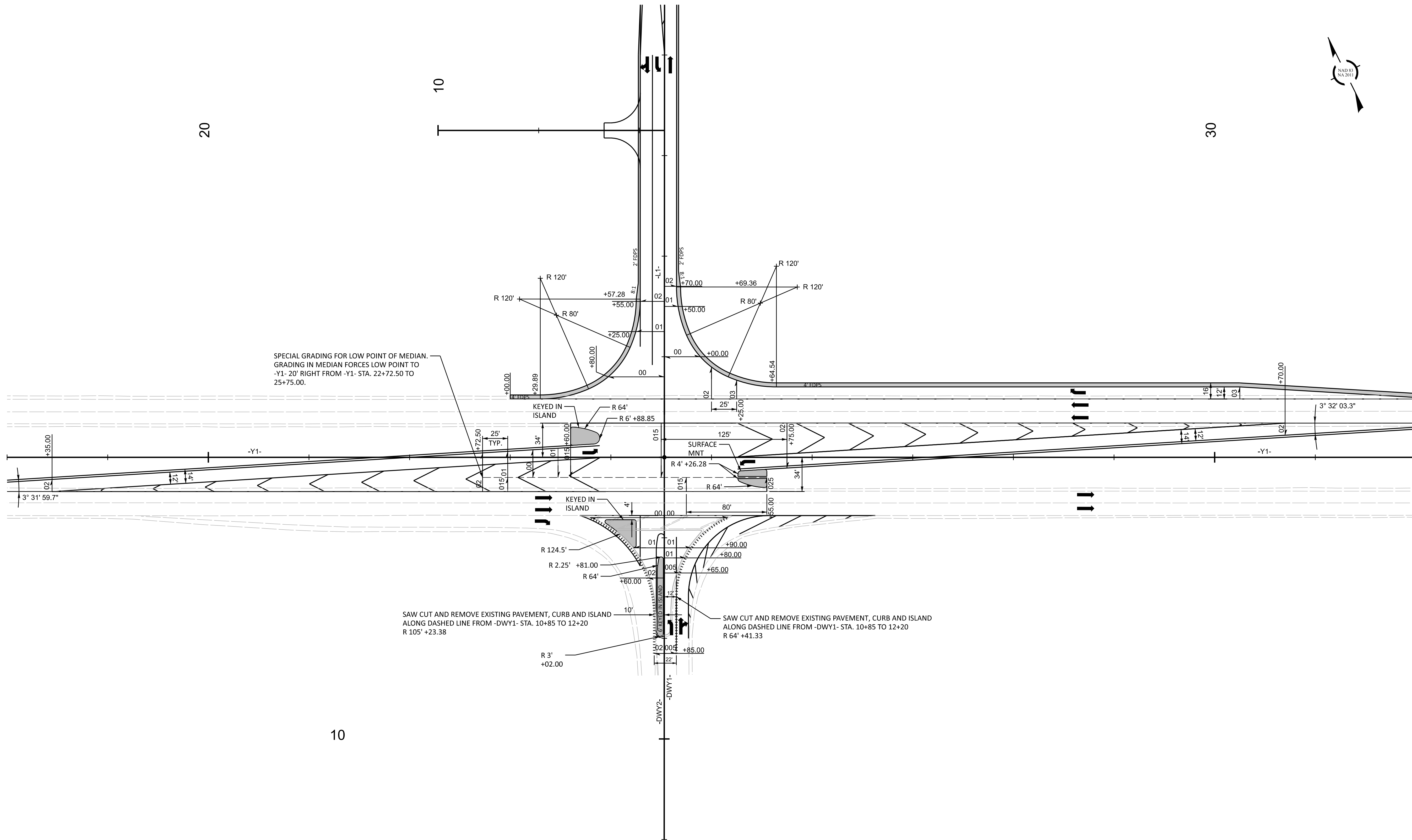
NORTH CAROLINA PROFESSIONAL ENGINEERS  
SEAL 044590  
ANDREW D. WALES

PREPARED BY  
WETHERILL ENGINEERING

WE Design your Tomorrow ...  
1223 Jones Franklin Road  
Raleigh, NC 27606  
(919) 851-8077  
NC License F-0377

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

# -Y1- INTERSECTION DETAIL



SPECIAL GRADING FOR LOW POINT OF MEDIAN.  
 GRADING IN MEDIAN FORCES LOW POINT TO  
 -Y1- 20' RIGHT FROM -Y1- STA. 22+72.50 TO  
 25+75.00.

SAW CUT AND REMOVE EXISTING PAVEMENT, CURB AND ISLAND  
 ALONG DASHED LINE FROM -DWY1- STA. 10+85 TO 12+20  
 R 105' +23.38

SAW CUT AND REMOVE EXISTING PAVEMENT, CURB AND ISLAND  
 ALONG DASHED LINE FROM -DWY1- STA. 10+85 TO 12+20  
 R 64' +41.33

- NOTES:
- SEE 2A-1 FOR CURB CUTS IN 5" MONOLITHIC ISLANDS.
  - ALL MONOLITHIC ISLAND RADII ARE MINIMUM 2' UNLESS SPECIFICALLY NOTED.

| LEGEND |                        |
|--------|------------------------|
| ---    | SPECIAL MEDIAN GRADING |
| .....  | SAW CUT LINE           |

HE-0016  
 RDY | 28-1

NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 BRUNSWICK COUNTY

ROADWAY DESIGN UNIT  
 ROADWAY DESIGN  
 ENGINEER

31/2026

Seal: NORTH CAROLINA PROFESSIONAL ENGINEERS SEAL 045691 LABEL NICHOLSON

Signed by:  
*Ernell Nicholson*  
 428AC04ED7894CE

PREPARED BY  
**WETHERILL ENGINEERING**

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 (919) 851-8077

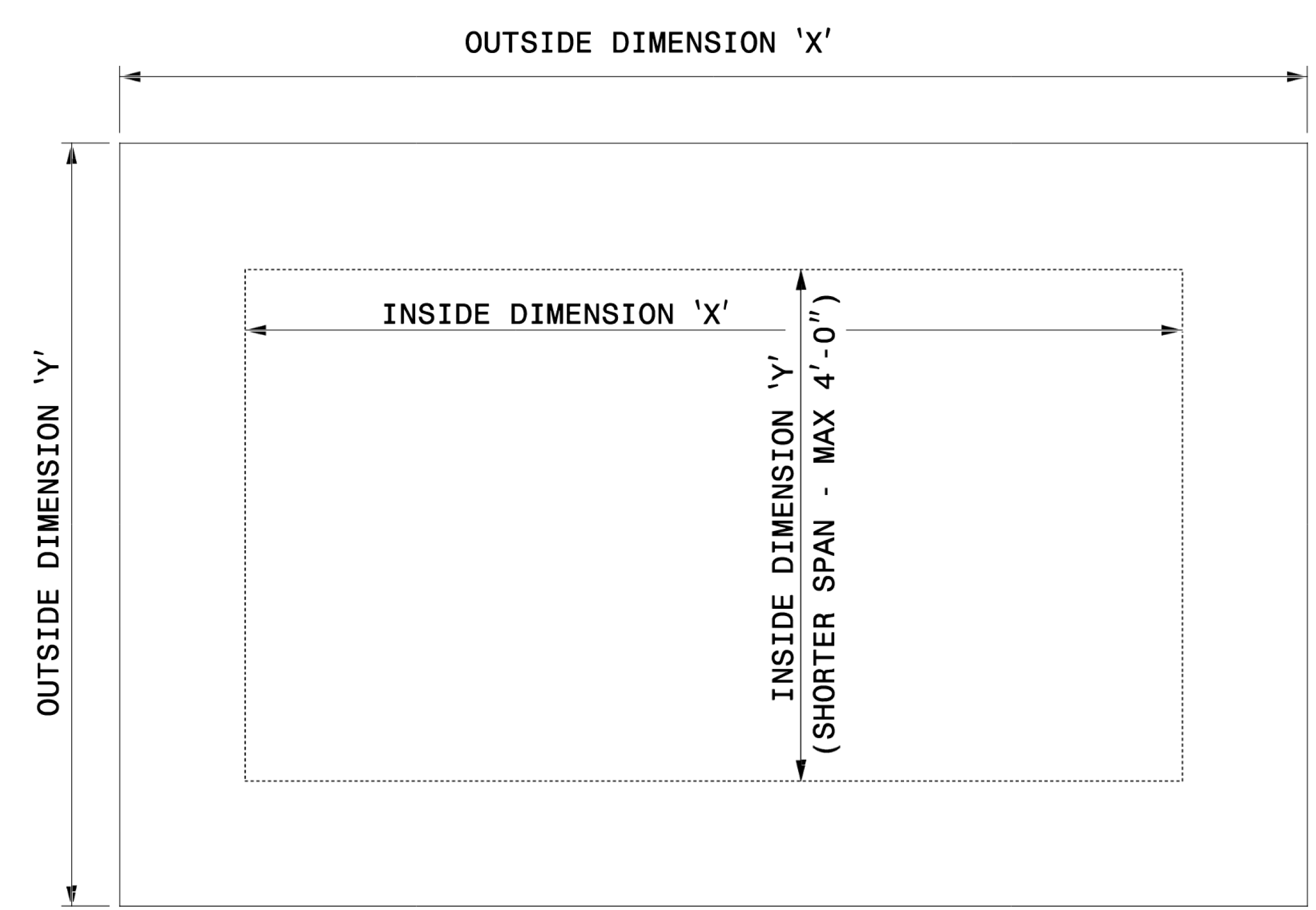
NC License F-0377

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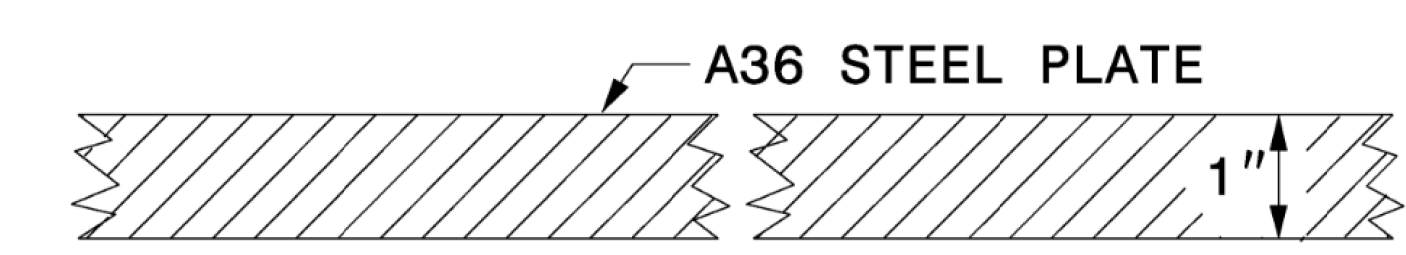


|                       |           |
|-----------------------|-----------|
| PROJECT REFERENCE NO. | SHEET NO. |
|                       |           |



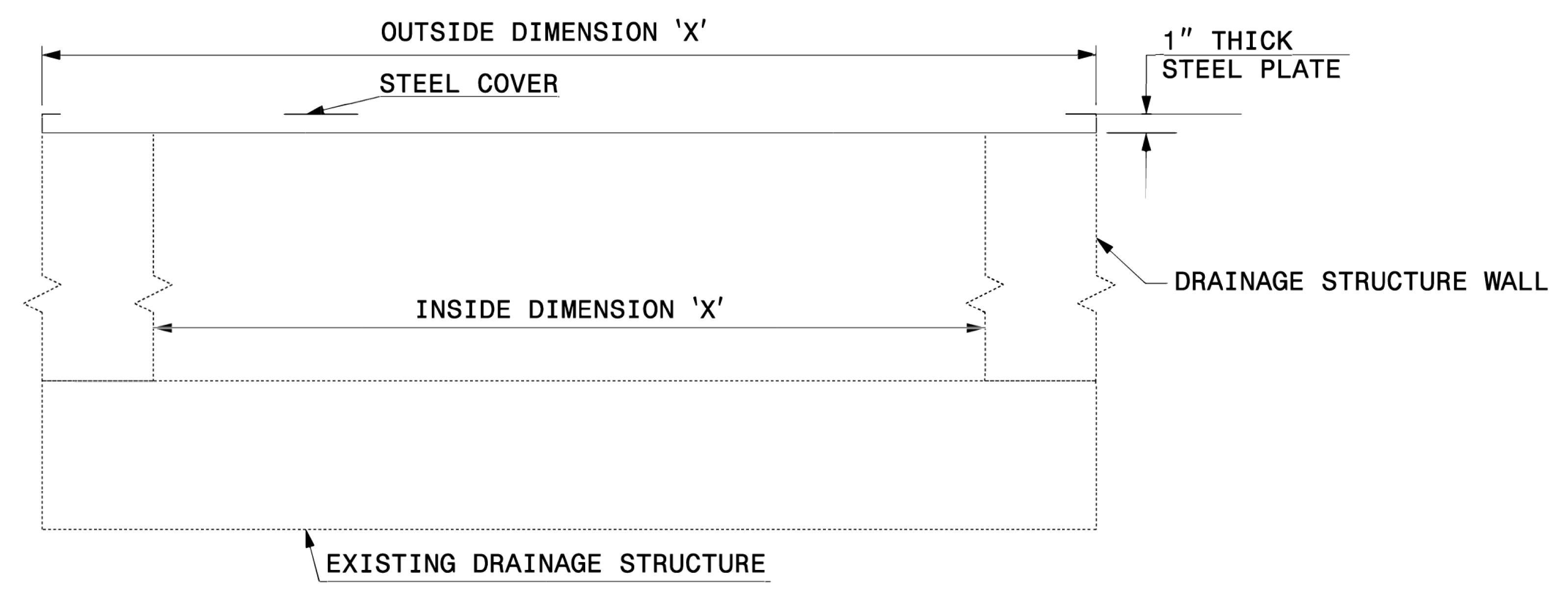
GENERAL NOTES:

- USE GRADE A36 STEEL
- STEEL COVERS ARE FOR TEMPORARY USE DURING PHASE CONSTRUCTION.
- FILL SHALL BE PLACED DIRECTLY OVER THE STEEL PLATES.
- SEE ROADWAY PLANS AND PROVISIONS FOR LOCATIONS
- QUANTITIES TO BE PAID FOR AT THE UNIT PRICE BID PER EACH.

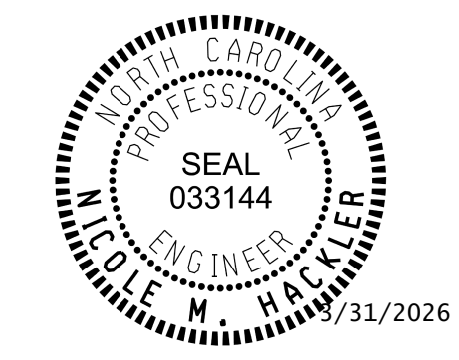


SECTION VIEW OF STEEL TOP PLATE

PLAN VIEWS



ELEVATION VIEWS



Signed by:  
*Nicole M. Hecker*  
 5884323D34164C5

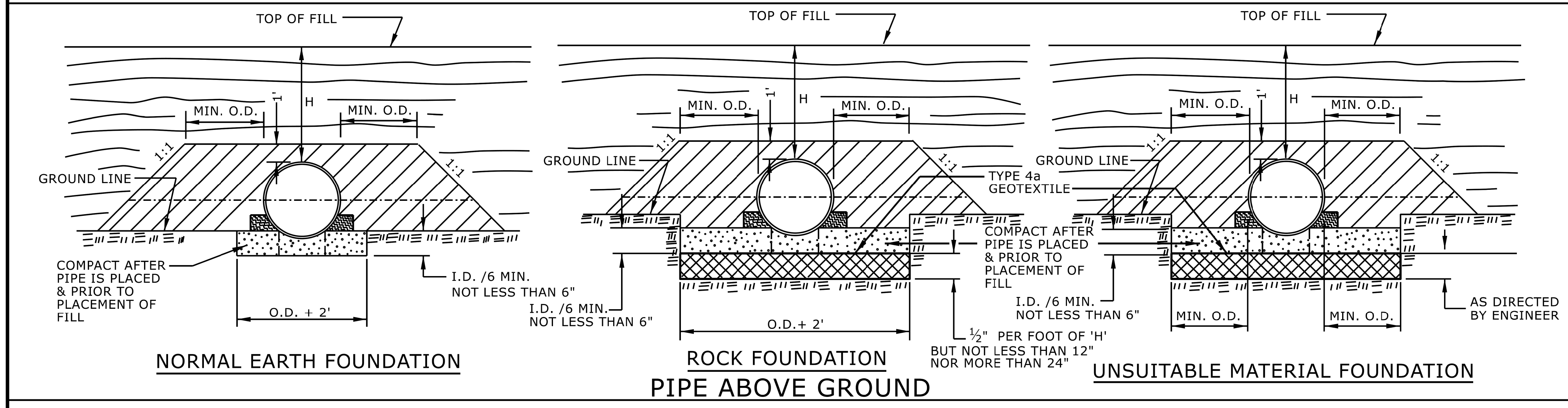
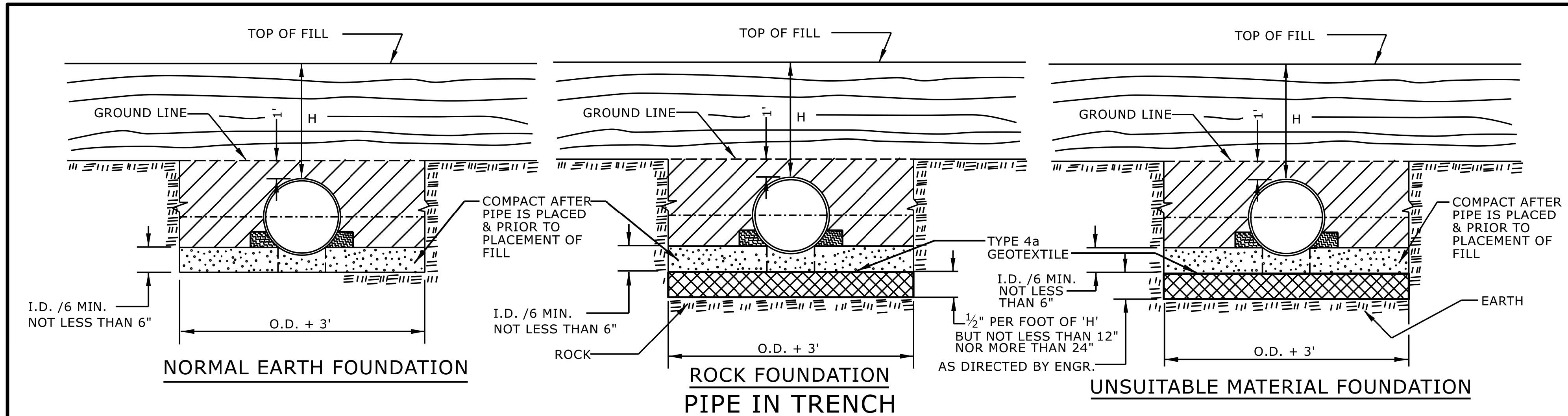
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**CONTRACT STANDARDS  
 AND DEVELOPMENT UNIT**  
 Office 919-707-6950 FAX 919-250-4119

**DETAIL OF TEMPORARY  
 1" STEEL COVER  
 OVER DRAINAGE STRUCTURE**

ORIGINAL BY: E.E. WARD DATE: 2-2-98  
 MODIFIED BY: DATE: \_\_\_\_\_  
 CHECKED BY: DATE: \_\_\_\_\_  
 FILE SPEC.: eric:/usr/details/metric/stand/stlcvr2.dgn

\$\$\$\$\$SYTIME\$\$\$\$\$  
 \$\$\$\$\$\$DATE\$\$\$\$\$  
 \$\$\$\$\$\$NAME\$\$\$\$\$



**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**

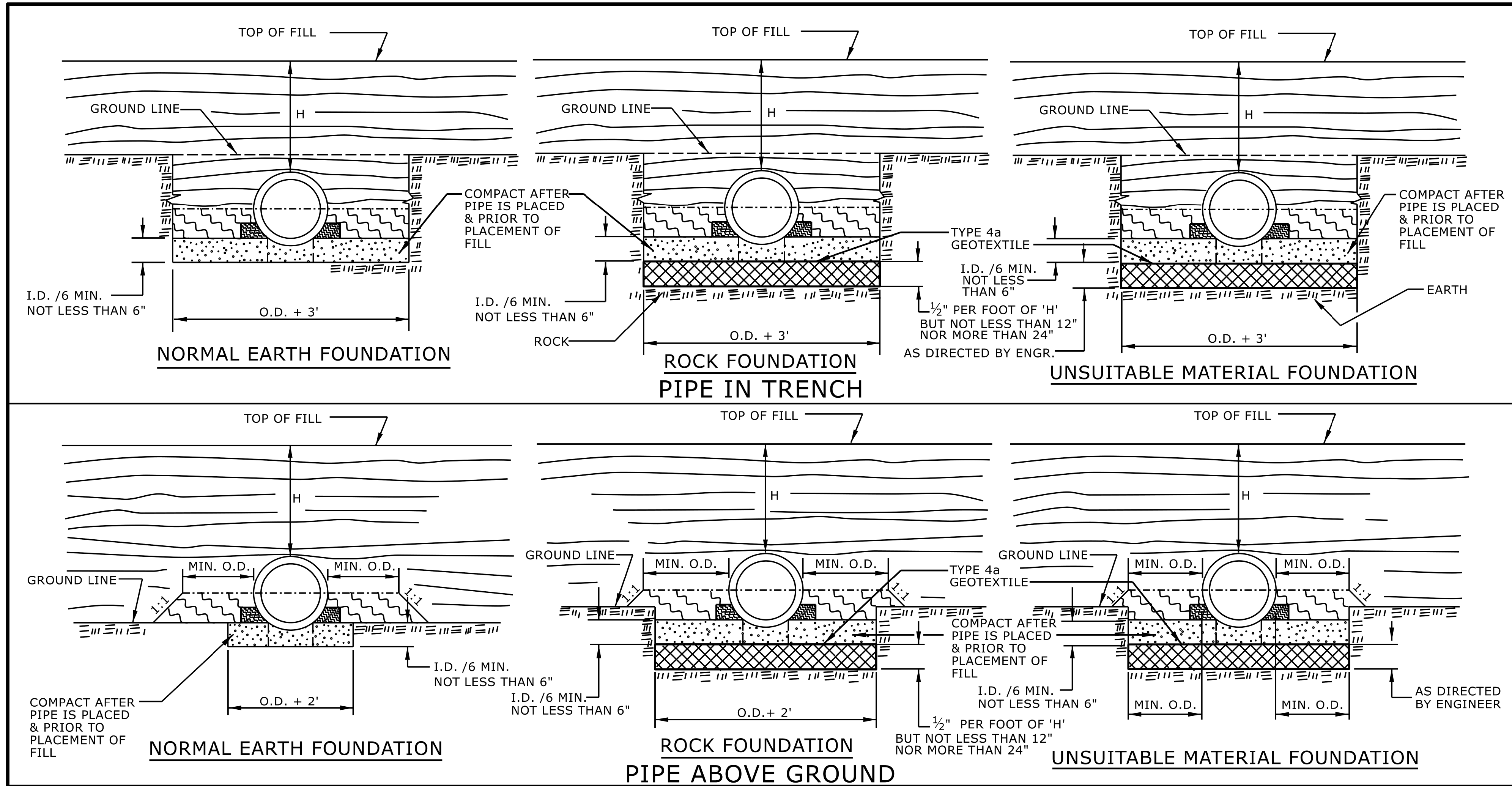
Signed by:  
 Nicole M. Hekler  
 584323034104CS

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.: \_\_\_\_\_



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

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

SHEET 2 OF 2  
**300.01**

**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.

Signed by:  
*Nicole M. Hacker*  
3/31/2026  
588432034164CS

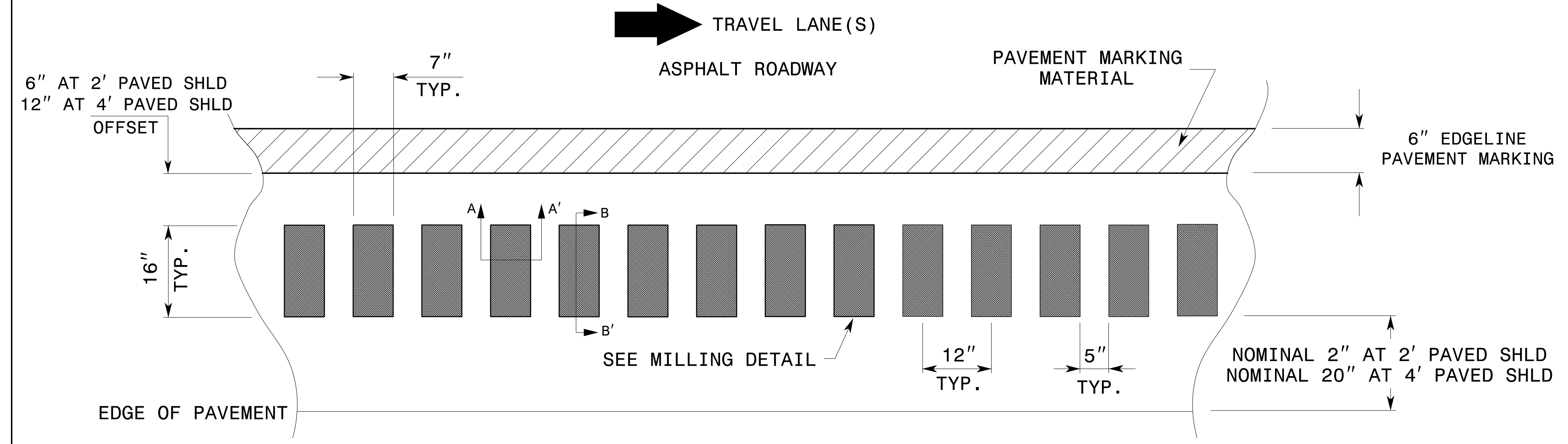
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**CONTRACTS STANDARDS  
AND DEVELOPMENT UNIT**  
Office 919-707-6950 FAX 919-250-4119

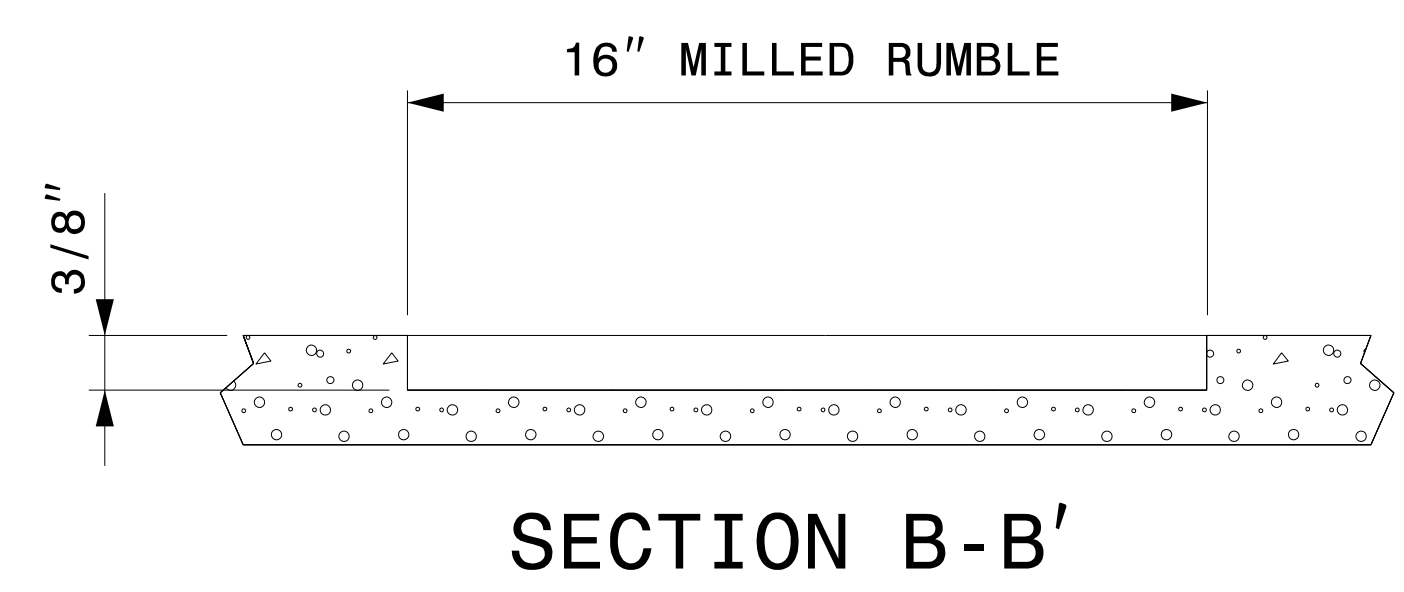
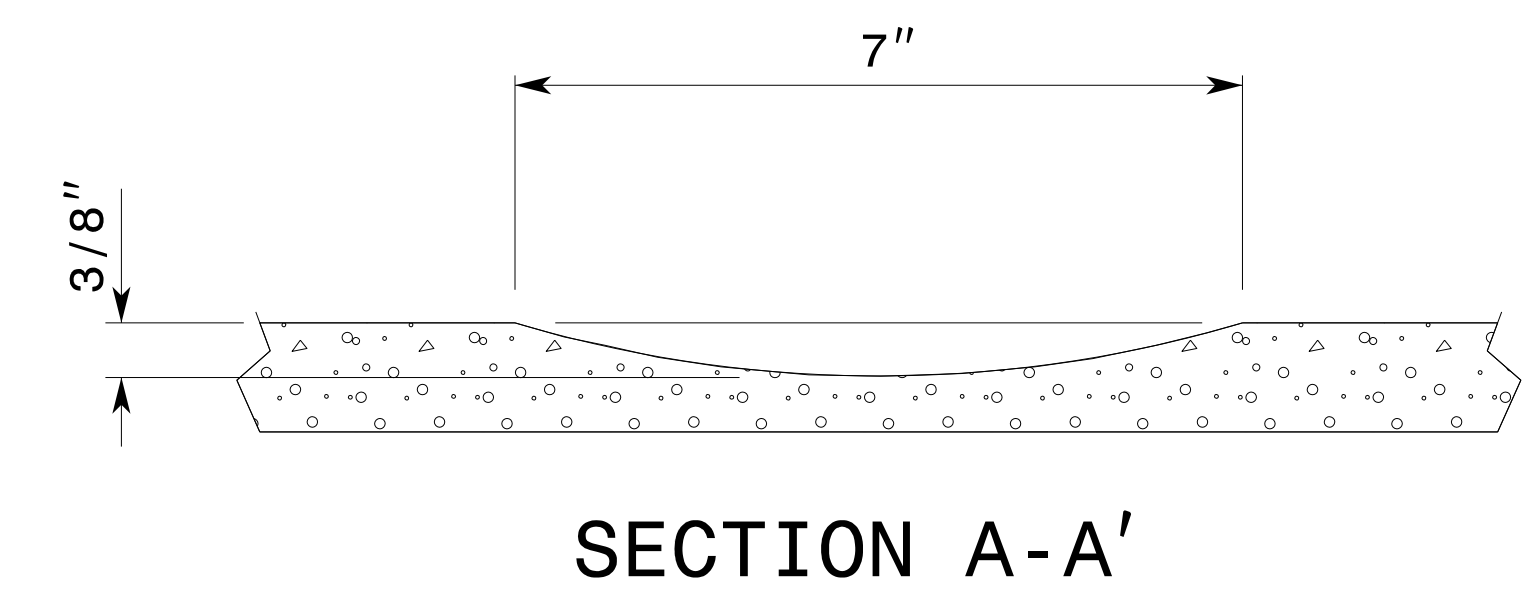
**SEE TITLE BLOCK**

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

See Table 1 within Rumble Strip Policy for Design Guidance



MILLING DETAIL:



REFERENCE DRAWING ID: Trad.Strip

STATE OF NORTH CAROLINA  
 DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 RALEIGH, N.C.  
 ROADWAY DETAIL DRAWING FOR  
**RUMBLE STRIPS / STRIPES**  
 TRADITIONAL SHOULDER RUMBLE STRIP  
 SHEET 1 OF 9



Signed by: *Farrell Nicholson*  
428AC94ED7B4CE...  
3/31/2026


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

SEE TITLE BLOCK

ORIGINAL BY: C. SIMPSON DATE: 04-24-2025  
 MODIFIED BY: DATE: \_\_\_\_\_  
 CHECKED BY: DATE: \_\_\_\_\_  
 FILE SPEC.: \_\_\_\_\_

COMPUTED BY: JAR DATE: 06/18/2025  
 CHECKED BY: FSN DATE: 06/20/2025

STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

HE-0016  
 RDY 38-1  
 NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 BRUNSWICK COUNTY  
  
 ROADWAY DESIGN UNIT  
 DOCUMENT NOT CONSIDERED FINAL  
 UNLESS ALL SIGNATURES COMPLETED

| SUMMARY OF EARTHWORK<br>IN CUBIC YARDS |   |                |          |               |               |             |
|--|---|----------------|----------|---------------|---------------|-------------|
| BEGIN STATION                          | END STATION                               | TOTAL UNCLASS. | UNDERCUT | EMBANK. +25%  | BORROW        | WASTE       |
| -L1- 10+58.00                          | -L1- 23+25.16                             | 961            |          | 9,668         | 8,707         |             |
| -L2- 21+35.00                          | -L2- 75+25.00                             | 5,386          |          | 45,840        | 40,454        |             |
| -L3- 73+36.92                          | -L3- 85+84.51                             | 1,471          |          | 6,014         | 4,543         |             |
|  |   |                |          |               |               |             |
| -Y1- 16+50.00                          | -Y1- 32+65.00                             | 2,145          |          | 2,825         | 680           |             |
| -Y1- 68+35.00                          | -Y1- 82+00.00                             | 942            |          | 1,055         | 113           |             |
|  |   |                |          |               |               |             |
| -DWY1- 10+85.00                        | -DWY1- 12+20.00                           | 238            |          |               |               | 238         |
| -DWY3- 10+12.00                        | -DWY3- 11+25.00                           | 19             |          | 21            | 2             |             |
| -DWY3- 10+12.00                        | -DWY3- 11+25.00                           | 7              |          | 30            | 23            |             |
| -DWY4- 10+12.00                        | -DWY4- 11+25.00                           |                |          | 89            | 89            |             |
|  |   |                |          |               |               |             |
|  | <b>SUBTOTAL:</b>                          | <b>11,169</b>  |          | <b>65,542</b> | <b>54,306</b> | <b>238</b>  |
|  | <b>TOTAL</b>                              | <b>11,169</b>  |          | <b>65,542</b> | <b>54,611</b> | <b>238</b>  |
|  | MATERIAL FOR SHOULDER CONSTRUCTION        |                |          | <b>1,830</b>  | <b>1,830</b>  |             |
|  | WASTE IN LIEU OF BORROW                   |                |          |               | <b>-238</b>   | <b>-238</b> |
|  | <b>PROJECT TOTAL</b>                      | <b>11,169</b>  |          | <b>67,372</b> | <b>56,203</b> |             |
|  |   |                |          |               |               |             |
|  | EST. 5% TO REPLACE TOP SOIL ON BORROW PIT |                |          |               | 2,810         |             |
|  |   |                |          |               |               |             |
|  | <b>GRAND TOTAL</b>                        | <b>11,169</b>  |          | <b>67,372</b> | <b>59,013</b> |             |
|  | <b>SAY</b>                                | <b>11,300</b>  |          |               | <b>59,100</b> |             |

| SUMMARY OF REMOVAL<br>EXISTING ASPHALT PAVEMENT |         |         |          |              |           |
|---|---------|---------|----------|--------------|-----------|
| LINE  | STATION | STATION | LOCATION |              | AREA (SY) |
| Y1  | 23+00   | 32+25   | LT       |              | 360       |
| Y1  | 23+60   | 32+65   | LT       |              | 302       |
| Y1  | 16+50   | 25+55   | RT       |              | 293       |
| Y1  | 68+35   | 76+05   | RT       |              | 257       |
| Y1  | 74+00   | 82+00   | LT       |              | 356       |
| DWY1  | 10+85   | 12+20   | LT/RT    |              | 680       |
|   |         |         |          |              |           |
|   |         |         |          |              |           |
|   |         |         |          |              |           |
|   |         |         |          | <b>TOTAL</b> | 2,248     |
|   |         |         |          | <b>SAY</b>   | 2,250     |

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

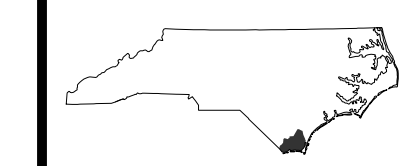
EST. DDE = 1,880 CUBIC YARDS

PER GEOTECH RECOMMENDATION:  
 EST. 300 CY OF UNDERCUT EXCAVATION FOR EMBANKMENT STABILITY CONTINGENCY TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.  
 EST. 300 SY GEOTEX TILE FOR SOIL STABILIZATION CONTINGENCY TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.  
 EST. 1000 CY UNDERCUT EXCAVATION CONTINGENCY FOR SUBGRADE STABILITY TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.  
 EST. 800 CY SELECT GRANULAR MATERIAL CONTINGENCY TO BE USED IN THE DISCRETION OF THE RESIDENT ENGINEER.

PAVEMENT STRUCTURE VOLUME = 11,920 CUBIC YARDS







COMPUTED BY: Tyler C. Bottoms DATE: 7/10/2024  
CHECKED BY: Thein Tun Zan DATE: 7/18/2024

(2-3-23)

PROJECT NO.  
HE-0016

SHEET NO.  
3G-1

### STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

#### SUMMARY OF SUBSURFACE DRAINAGE

| LINE | Station | Station | Location<br>LT/RT/CL | Drain Type*<br>UD/BD/SD | LF  |
|------|---------|---------|----------------------|-------------------------|-----|
|      |         |         |                      |                         |     |
|      |         |         |                      |                         |     |
|      |         |         |                      |                         |     |
|      |         |         | CONTINGENCY          | SD                      | 500 |
|      |         |         |                      | TOTAL LF:               | 500 |

\*UD = Underdrain

\*BD = Blind Drain

\*SD = Subsurface Drain

COMPUTED BY: Sean E Arias DATE: 9/13/24  
 CHECKED BY: Jeffrey B Barfield DATE: 9/13/24

(9-17-24)

|             |           |
|-------------|-----------|
| PROJECT NO. | SHEET NO. |
| HE-0016     | 3G-2      |

**STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS**

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

| LINE | Station | Station | Aggregate Type*<br>ASU(1/2)/<br>AST | Aggregate Thickness<br>INCHES<br>[8" for<br>ASU(2)] | Shallow Undercut<br>CY | Class IV Subgrade Stabilization<br>TONS | Geotextile for Subgrade Stabilization<br>SY | Stabilizer Aggregate<br>TONS | Class IV Aggregate Stabilization<br>TONS |
|------|---------|---------|-------------------------------------|---|------------------------|---|---|------------------------------|--|
|      |         |         |                                     |   |                        |   |   |                              |  |
|      |         |         |                                     |   |                        |   |   |                              |  |
|      |         |         |                                     |   |                        |   |   |                              |  |
|      |         |         | CONTINGENCY                         | AST   | 3"                     |   |   |                              | 250                                      |
|      |         |         |                                     |   |                        |   |   |                              |  |
|      |         |         | TOTAL CY/TONS/SY:                   |   |                        | 0                                       | 0**   | 0**                          | 0  |
|      |         |         |                                     |   |                        |   |   |                              | 250                                      |

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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

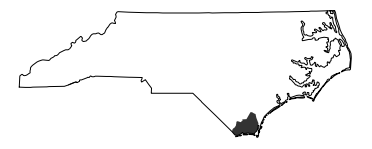
PARCEL INDEX SHEET

| PARCEL No. | SHEET No.                | PROPERTY OWNER NAME              |
|------------|--------------------------|----------------------------------|
| 1          | 4, 5, 6, 7, 8, 9, 10, 11 | WILLIAM L. GRAINGER              |
| 2          | 4, 11                    | ACME HOBBS LAND LLC              |
| 3          | 4                        | INTERNATIONAL COMMERCE CENTER    |
| 4          | 4                        | BRUNSWICK COLUMBUS INTERNATIONAL |
| 5          | 4                        | BRUNSWICK COUNTY                 |

HE-0016

RDY | 3P-1

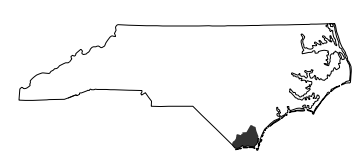
NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
BRUNSWICK COUNTY



ROADWAY DESIGN UNIT

DOCUMENT NOT CONSIDERED FINAL  
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Signed by: *William L. Grainger*  
Professional Engineer



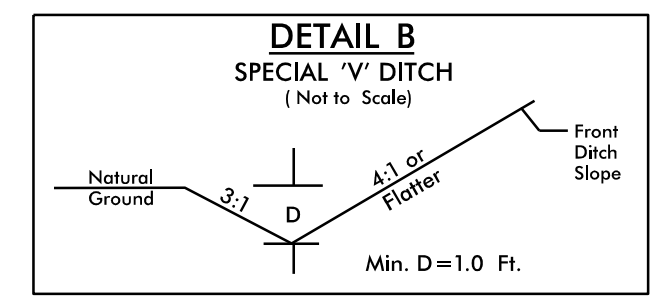
Signed by: *Matthew Harvey*  
Professional Engineer

PREPARED BY  
**WETHERILL ENGINEERING**

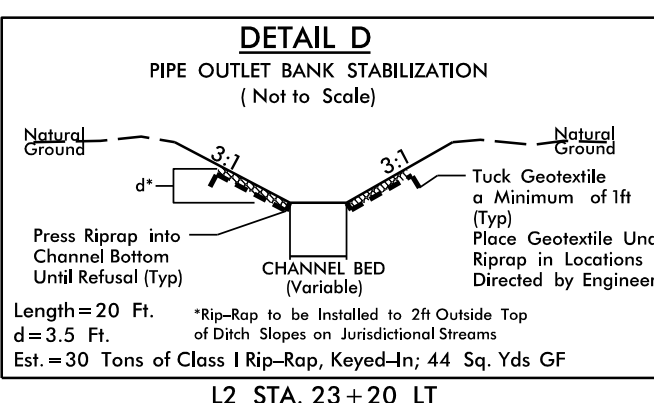
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Raleigh, NC 27606  
(919) 851-8077

NC License F-0377

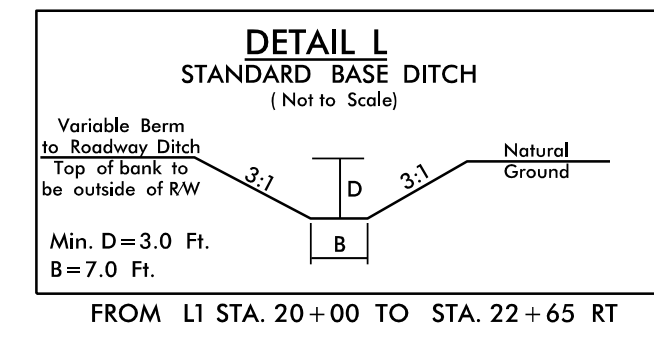
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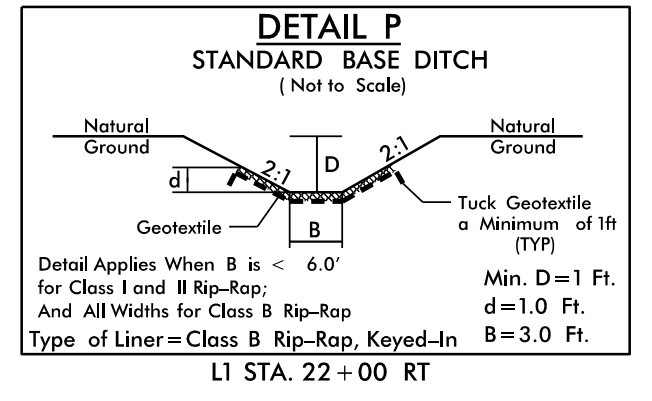
FROM L1 STA. 13+85 TO STA. 22+00 RT  
FROM L1 STA. 22+00 TO STA. 22+70 LT  
FROM L2 STA. 21+40 TO STA. 22+06 RT  
FROM L2 STA. 23+25 TO STA. 33+80 RT  
FROM L2 STA. 23+25 TO STA. 33+85 LT



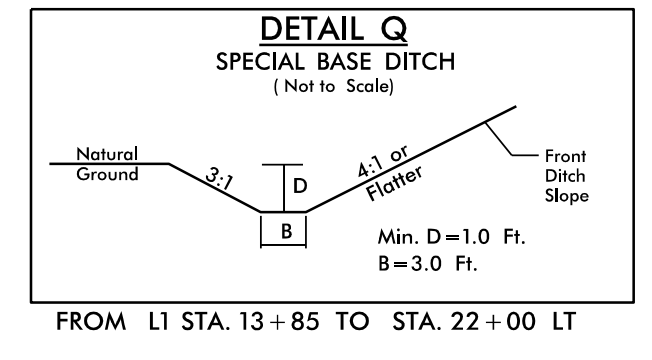
L2 STA. 23+20 LT



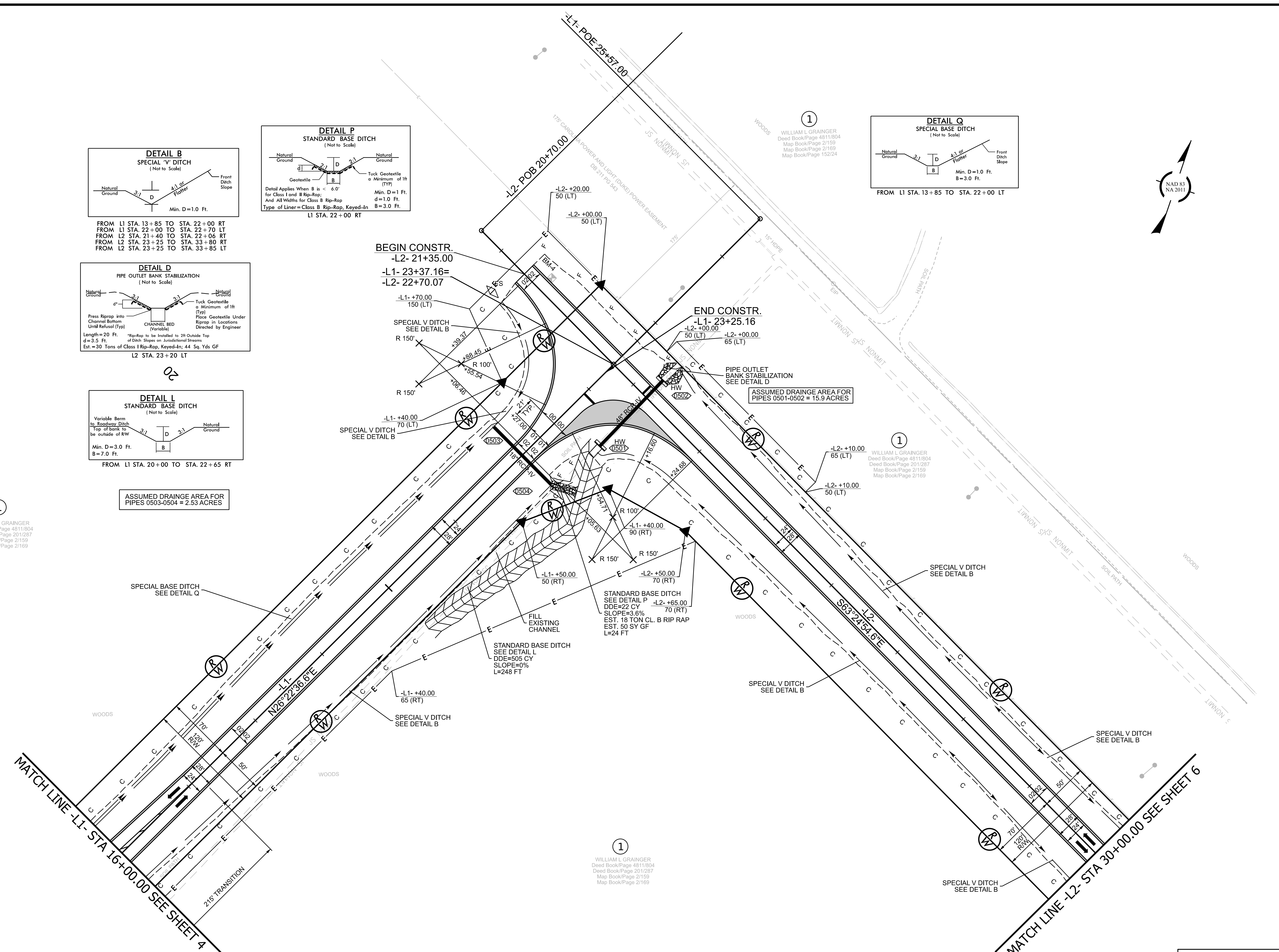
FROM L1 STA. 20+00 TO STA. 22+65 RT



L1 STA. 22+00 RT



FROM L1 STA. 13+85 TO STA. 22+00 LT



ASSUMED DRAINAGE AREA FOR PIPES 0503-0504 = 2.53 ACRES

ASSUMED DRAINAGE AREA FOR PIPES 0501-0502 = 15.9 ACRES

1  
WILLIAM L. GRAINGER  
Deed Book/Page 4811/804  
Deed Book/Page 2012/287  
Map Book/Page 2/159  
Map Book/Page 2/169

1  
WILLIAM L. GRAINGER  
Deed Book/Page 4811/804  
Deed Book/Page 2012/287  
Map Book/Page 2/159  
Map Book/Page 2/169

FOR -L1- PROFILE, SEE SHEET 12  
FOR -L2- PROFILE, SEE SHEET 13