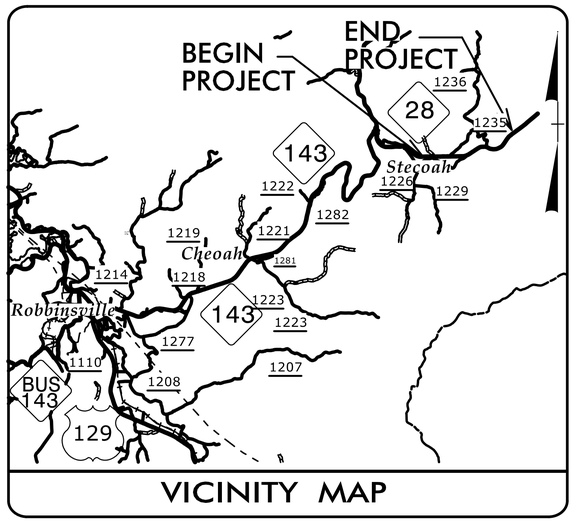
09/08/99

TIP PROJECT: A–0009CD

CONTRACT: C205159

See Sheet 1A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GRAHAM COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	A–0009CD	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
32572.1.15		PE
32572.3.19	0028011	CONST.

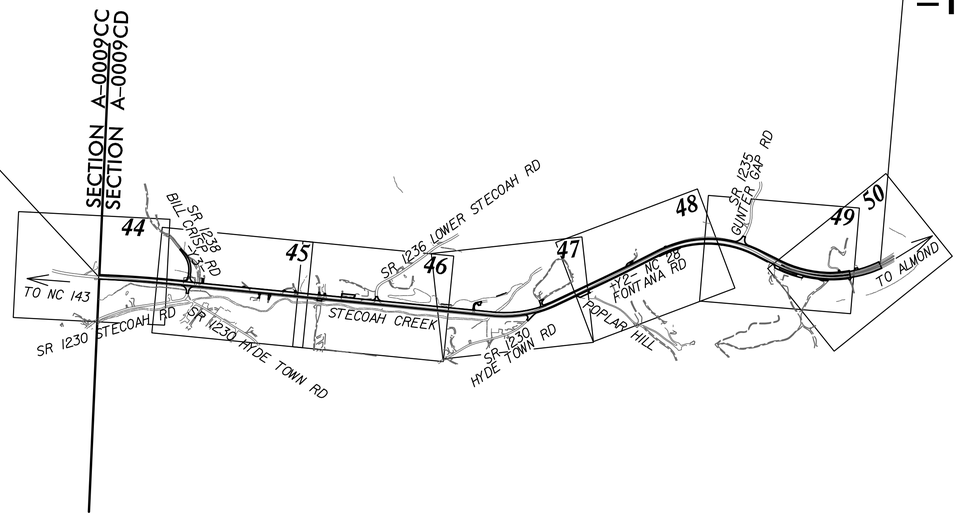
LOCATION: *NC 28 FROM WEST OF SR 1228 (STECOAH RD) TO SR 1235 (GUNTER GAP RD)*

TYPE OF WORK: *GRADING, PAVING, DRAINAGE, CULVERTS, & RETAINING WALLS*

NAD 83/2011

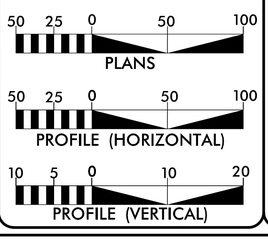
BEGIN TIP PROJECT A–0009CD
–Y2– STA. 89 + 80.00

END TIP PROJECT A–0009CD
–Y2– STA. 169 + 60.00



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



–Y2– DESIGN DATA

ADT 2026 = 4100
ADT 2045 = 5200
K = 11 %
D = 67.5 %
T = 7 % *
V = 50 MPH
* TTST = 2% DUAL = 5%
FUNC CLASS =
RURAL ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT A–0009CD = 1.511 MILES

TOTAL LENGTH TIP PROJECT A–0009CD = 1.511 MILES

NCDOT CONTACT: JEANETTE WHITE, PE

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

RIGHT OF WAY DATE: AUGUST 12, 2021

LETTING DATE: MAY 19, 2026

JIMMY L. TERRY, PE
PROJECT ENGINEER

AUSTIN TURNER, PE
PROJECT DESIGN ENGINEER

2024 STANDARD SPECIFICATIONS

HYDRAULICS ENGINEER

2/27/2026

Signed by: David B. Petty P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 038697 ENGINEER DAVID B. PETTY

ROADWAY DESIGN ENGINEER

2/27/2026

DocuSigned by: Jimmy Terry P.E.
SIGNATURE:

NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JIMMY L. TERRY

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

2/20/2026
X:\NCDOT\A-0009\Roadway\Proj\A-0009CD Plan Sheets\A-0009CD_Rdy_tsh.dgn
User:smelvin

8/17/99

INDEX OF SHEETS

GENERAL NOTES

GENERAL NOTES: 2024 SPECIFICATIONS
EFFECTIVE: 01-16-2024
REVISED:

GRADE LINE:
GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 AND STD. NO. 225.05 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

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

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.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS 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 NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE DUKE ENERGY, FRONTIER, AND ZITO MEDIA

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

RIGHT-OF-WAY MARKERS:

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

CURB RAMPS

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.06.

ROCK

ROCK IS ANTICIPATED BETWEEN 106+25 TO 106+75, 133+25 TO 137+75, AND 150+25 TO 160+75. BLASTING MAY BE REQUIRED FOR EXCAVATION ON THE PROJECT. SEE SECTION 220 OF THE STANDARD SPECIFICATIONS AND IF APPLICABLE, ROCK BLASTING PROVISION.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	1A

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

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JIMMY L. TERRY
2/27/2026

STANDARD DRAWINGS

EFF. 08-11-2025
REV.11-26-2025

2024 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.05	Method of Obtaining Superelevation - Divided Highways
225.06	Method of Grading Sight Distance at Intersections
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation (Use Details in Lieu of Standards for Sheets 1 and 2 of 2)
310.10	Driveway Pipe Construction
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
838.27	Reinforced Concrete Endwall - for Single 60" Pipe 90 Skew
838.45	Notes for Reinforced Concrete Endwall - Std. Dwg 838.21 thru 838.40
838.57	Reinforced Brick Endwall - for Single 60" Pipe 90 Skew
838.75	Notes for Reinforced Brick Endwall - Std. Dwg 838.51 thru 838.70
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
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
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 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
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	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
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.01	Concrete Sidewalk (Use Detail in Lieu of Standard for Sheet 1 of 1)
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.06	Curb Ramp (Use Details in Lieu of Standards for Sheets 9 and 10 of 13)
848.07	Concrete Sidepath / Shared Use Path / Greenway Construction
850.01	Concrete Paved Ditches
850.10	Guide for Berm Drainage Outlet - 15" and 18" Pipe
852.01	Concrete Islands
852.04	Method for Placement of Drop Inlets in Grassed Median - Using 1'-6" Curb and Gutter
852.06	Method for Placement of Drop Inlets in Concrete Islands
854.02	Double Faced Concrete Barrier - Types T, T1 and T2
857.01	Precast Reinforced Concrete Barrier - 41" Single Faced
862.01	Guardrail Placement (Use Details in Lieu of Standards for Sheets 4, 6, 11, 12, and 14 of 15)
862.02	Guardrail Installation (Use Detail in Lieu of Standard for Sheet 5 of 9)
862.03	Structure Anchor Units (Use Detail in Lieu of Standards for Sheet 6 and 8 of 9)
862.04	Anchoring End of Guardrail - for B-77 and B-83 Anchor Units
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

2/20/2026
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tsheimelyn

05/29/25

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

A-0009CD 1B

Note: Not to Scale

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

BUILDINGS AND OTHER CULTURE:
- Gas Pump Vent or U/G Tank Cap
- Sign
- Well
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

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

RAILROADS:
- Standard Gauge
- RR Signal Milepost
- Switch
- RR Abandoned
- RR Dismantled

RIGHT OF WAY & PROJECT CONTROL:
- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Secondary Horiz and Vert Control Point
- Vertical Benchmark
- Existing Right of Way Monument
- Proposed Right of Way Monument (Rebar and Cap)
- Proposed Right of Way Monument (Concrete)
- Existing Permanent Easement Monument
- Proposed Permanent Easement Monument (Rebar and Cap)
- Existing C/A Monument
- Proposed C/A Monument (Rebar and Cap)
- Proposed C/A Monument (Concrete)
- Existing Right of Way Line
- Proposed Right of Way Line
- Existing Control of Access Line
- Proposed Control of Access Line
- Proposed ROW and CA Line
- Existing Easement Line
- Proposed Temporary Construction Easement
- Permanent 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.

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2A-1

ROADWAY DESIGN ENGINEER — SEAL 035018 — JIMMY L. TERRY — 2/27/2026

PAVEMENT DESIGN ENGINEER — SEAL 041986 — D. MATTHEW BREWER — 2/26/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

FINAL PAVEMENT SCHEDULE

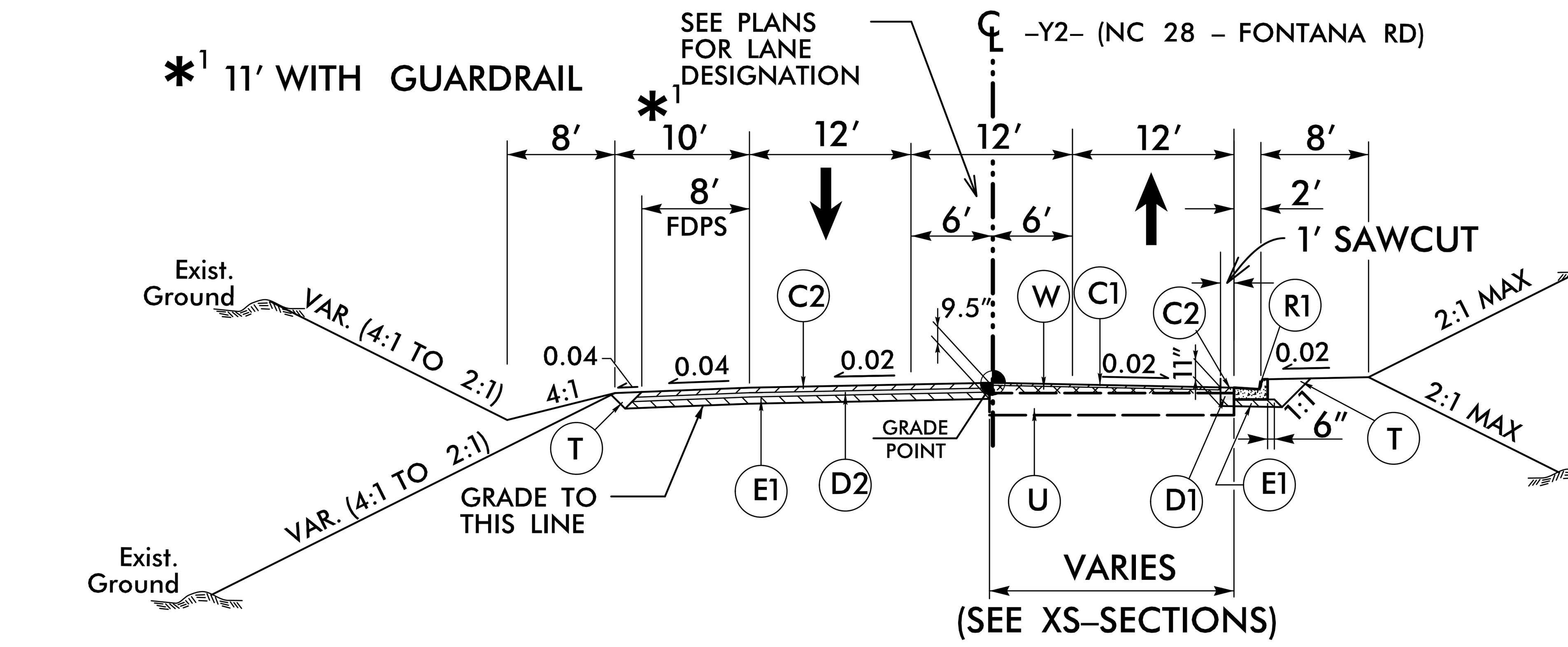
(NOV. 21, 2025)

C1	PROP. APPROX. 1 ½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	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.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1 ½" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. APPROX. 2 ½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LSSS THAN 2 ½" OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" OR GREATER THAN 5 ½" IN DEPTH.
K	CLASS IV SUBGRADE STABILIZATION
J1	PROP. 6" AGGREGATE BASE COURSE.
N	GEOTEXTILE FOR SUBGRADE STABILIZATION
R1	2'-6" CONCRETE CURB AND GUTTER.
R3	8" X 12" CONCRETE CURB
R4	SHOULDER BERM GUTTER
R5	5"MONOLITHIC CONCRETE ISLAND (SURFACE-MOUNT)
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V1	MILLING, 0 TO 3" DEPTH, SEE THIS SHEET FOR DETAIL
V2	1 ½" MILLING
W	WEDGING EXISTING PAVEMENT, SEE THIS SHEET FOR DETAILS
Y1	4" CONCRETE MULTI-USE PATH

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

NOTE:
ANYWHERE ALONG THE PROJECT IN WHICH LESS THAN 3" OF OVERLAY HAS BEEN CALLED FOR THE CONTRACTOR SHALL MILL EXISTING PAVEMENT AND PROVIDE A MINIMUM OF TWO FULL LAYERS OF S9.5C TO SATISFY RIDEABILITY REQUIREMENTS PER CONTRACT FOR -Y2-.

*[1] 11' WITH GUARDRAIL

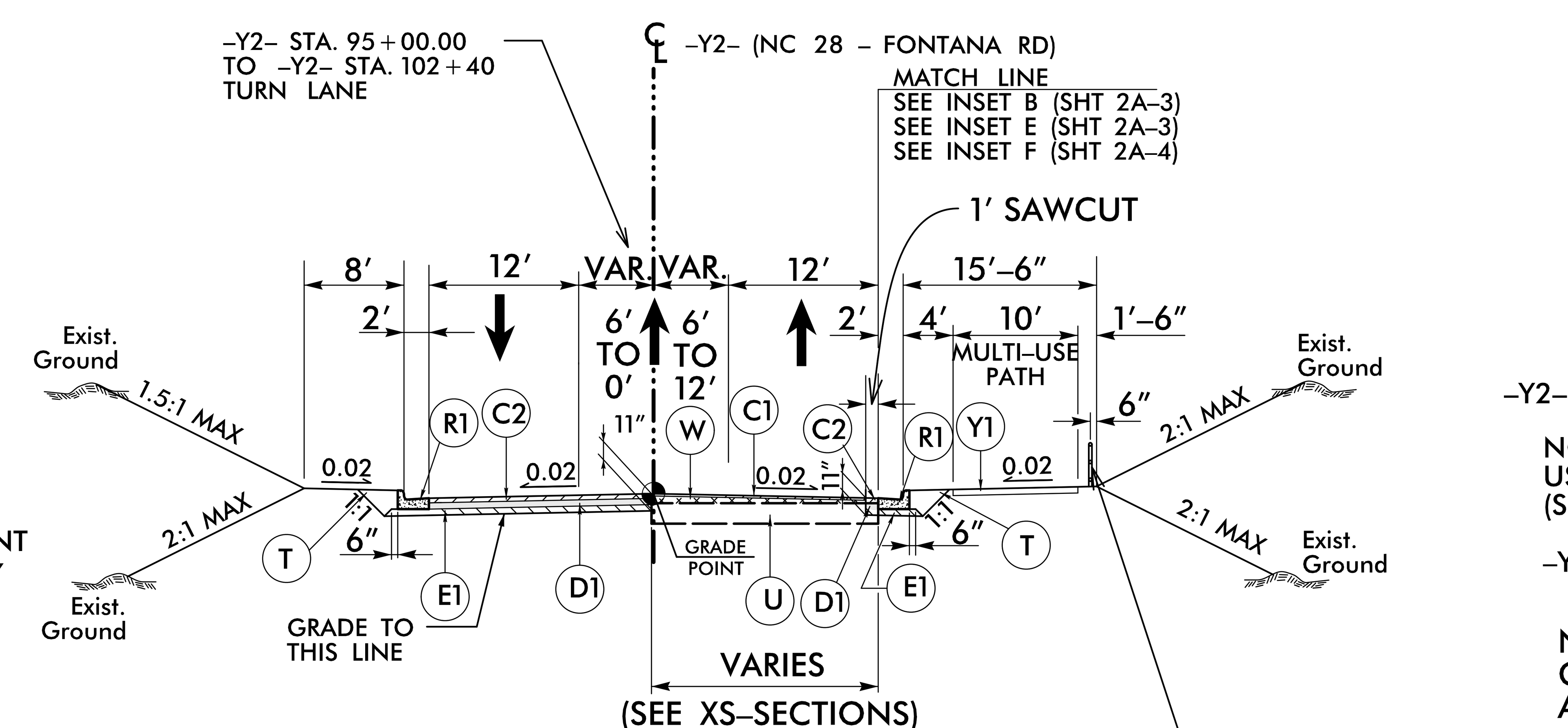


TYPICAL SECTION NO. 1

NOTE:
USE 4' BERM :
-Y2- STA. 92+50 TO 93+00.00, RT
USE 6' BERM :
-Y2- STA. 89+90.00 TO 92+00.00, RT
-Y2- STA 93+50.00, RT

USE TYPICAL SECTION NO. 1
-Y2- STA. 89+90.00 TO -Y2- STA. 98+65.27

NOTE: DETAIL SHT. 2C-4
GUARDRAIL 6" FROM FACE OF CURB.



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
-Y2- STA. 98+65.27 TO -Y2- STA. 135+21.96

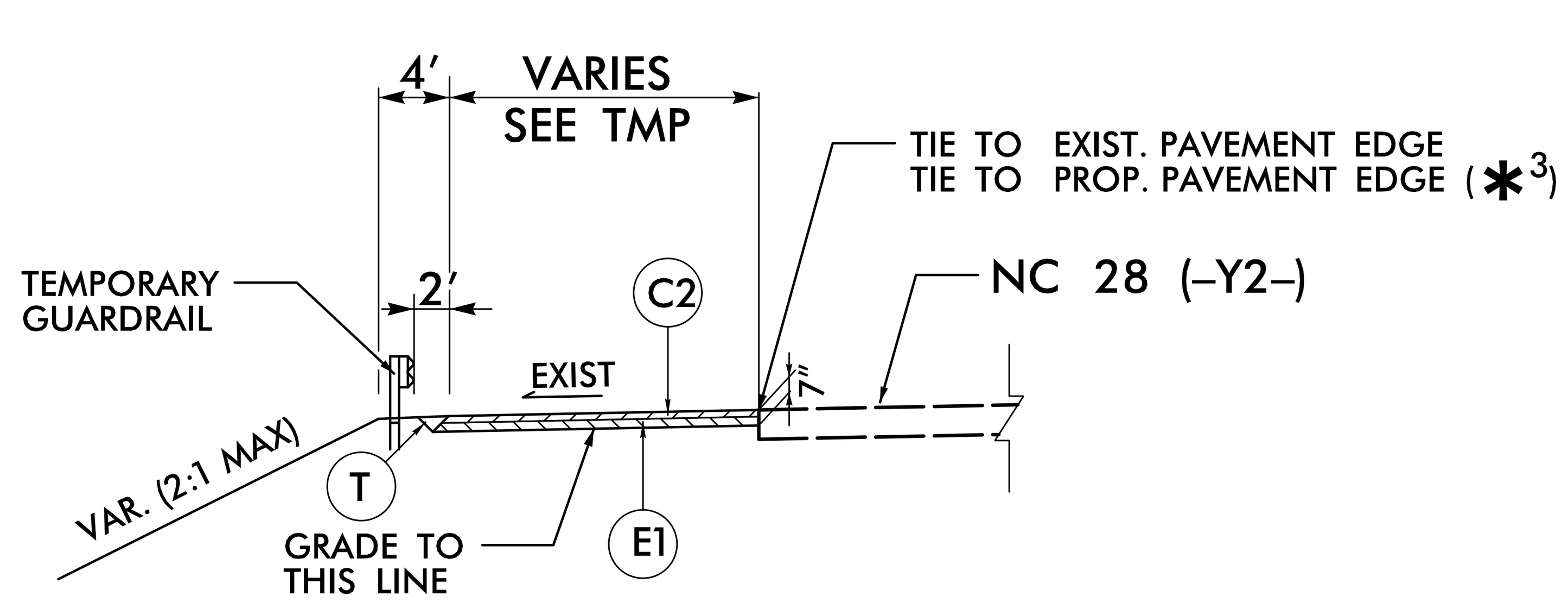
NOTE:
USE SHOULDER SECTION AND STANDARD DITCH
(SEE TYPICAL SECTION NO. 1)

-Y2- STA. 134+09± TO -Y2- STA. 135+21.96, LT

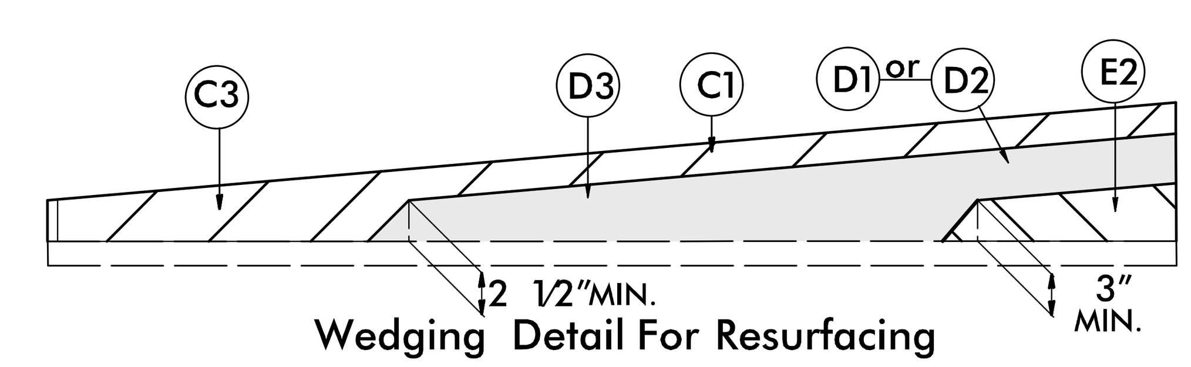
NOTE: SEE DETAIL SHT. 2C-4
GUARDRAIL 6" FROM FACE OF CURB.
AT MUP PLACE GUARDRAIL IN LINE WITH FACE OF CURB

TIMBER RAIL FENCE
(SEE DETAIL SHT 2B-2)

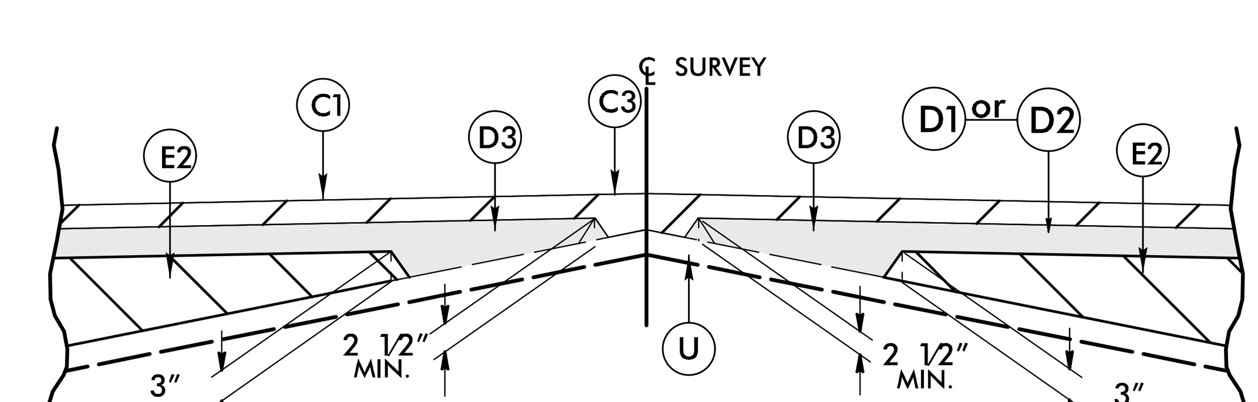
TEMPORARY PAVEMENT DETAIL



-Y2- STA. 97+60± TO -Y2- STA. 102+15±, RT (PHASE I, STEP 3)
-Y2- STA. 98+97± TO -Y2- STA. 102+75±, LT (PHASE I, STEP 5) *[3]
-Y2- STA. 101+30± TO -Y2- STA. 101+80±, RT (PHASE I, STEP 3)



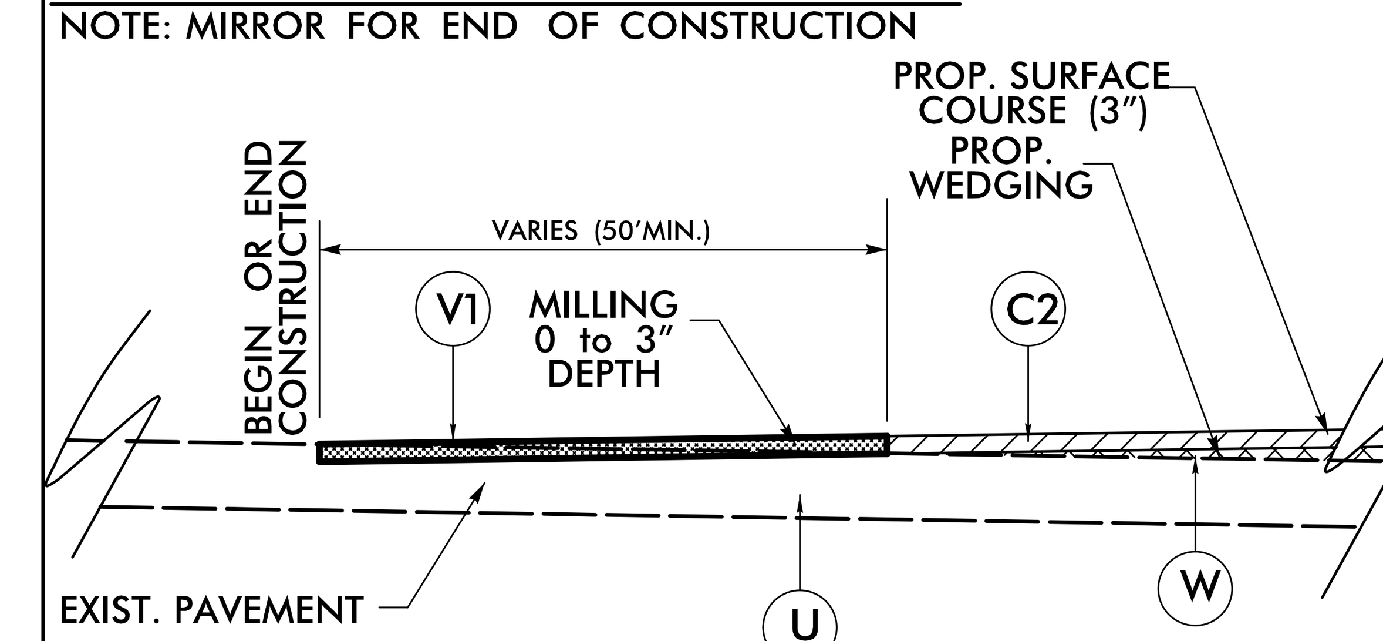
Wedging Detail For Resurfacing



Detail Showing Method of Wedging

MILLING DETAIL AT TIE-IN LOCATIONS

NOTE: MIRROR FOR END OF CONSTRUCTION



USE MILLING DETAIL FOR TIE-IN LOCATIONS
-Y2- STA. 89+90.00 TO -Y2- STA. 91+25.00
-Y2- STA. 152+50.00 TO -Y2- STA. 154+00.00

2/20/2026
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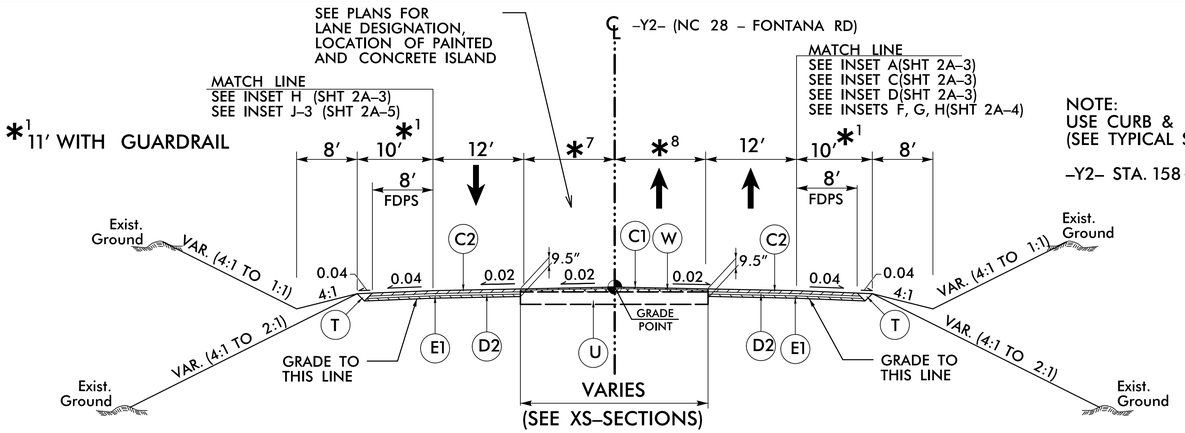
6/2/99

PAVEMENT SCHEDULE			
C1	1.5″ S9.5C	T	EARTH MATERIAL
C2	3″ S9.5C	U	EXISTING PAVEMENT
D2	2 ½″ I19.0C	V2	1 ½″ MILLING
E1	4″ B25.0C	W	WEDGING

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.
SEE SHEET 2A-1 FOR DETAILED PAVEMENT SCHEDULE.



TYPICAL SECTION NO. 3

NOTE:
USE CURB & GUTTER AND 8′ BERM
(SEE TYPICAL SECTION NO. 1)

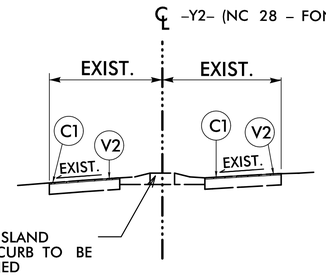
–Y2– STA. 158+32± TO –Y2– STA. 161.24, RT

USE TYPICAL SECTION NO. 3

–Y2– STA. 135+21.96 TO –Y2– STA. 166+45.00

NOTE: USE FULL DEPTH PAVEMENT AS FOLLOWS:
–Y2– STA. 151+50.00 TO –Y2– STA. 152+00.00

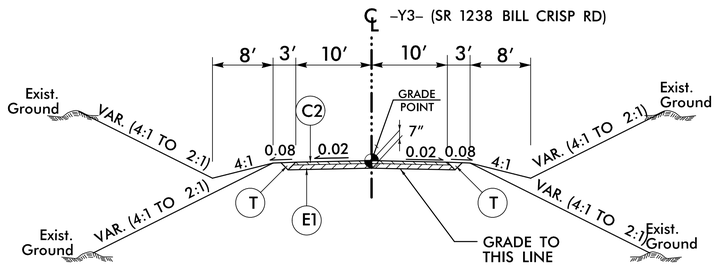
	WIDTH	STA TO STA
*7	0′	–Y2– STA. 135+21.96 TO –Y2– STA. 148+20.00
	0′ TO 19′	–Y2– STA. 148+20.00 TO –Y2– STA. 158+65.00
	19′	–Y2– STA. 158+65.00 TO –Y2– STA. 158+96.87
	19′ TO 16′	–Y2– STA. 158+96.87 TO –Y2– STA. 164+50.00
	16′ TO 18′–7″	–Y2– STA. 164+50.00 TO –Y2– STA. 166+45.00
*8	12′	–Y2– STA. 135+21.96 TO –Y2– STA. 158+96.87
	12′ TO 15′	–Y2– STA. 158+96.87 TO –Y2– STA. 164+50.00
	15′ TO 17′–4″	–Y2– STA. 164+50.00 TO –Y2– STA. 166+45.00



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

–Y2– STA. 166+45.00 TO –Y2– STA. 169+60.00



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5

–Y3– STA. 10+50.00 TO –Y3– STA. 14+02.24

PROJECT REFERENCE NO.	SHEET NO.
A–0009CD	2A–2

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JIMMY L. TERRY
2/27/2026

PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 041986 ENGINEER MATTHEW D. BREWER
2/26/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

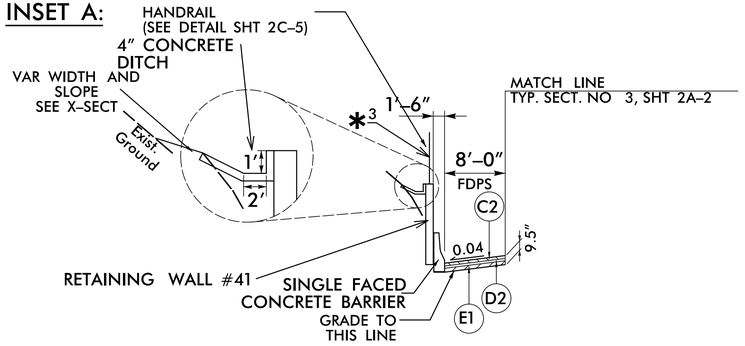
TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476–0003
CORP. LICENSE NO.: C–0275

6/2/99

PAVEMENT SCHEDULE	
C2	3″ S9.5C
D1	4″ I19.0C
D2	2 ½″ I19.0C
E1	4″ B25.0C
J1	6″ ABC
R1	2′-6″ C&G
R3	8″ X 12″ CONCRETE CURB
R4	SHOULDER BERM GUTTER
T	EARTH MATERIAL
Y1	4″ CONC MULTI-USE PATH

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE. SEE SHEET 2A-1 FOR DETAILED PAVEMENT SCHEDULE.

INSET A:

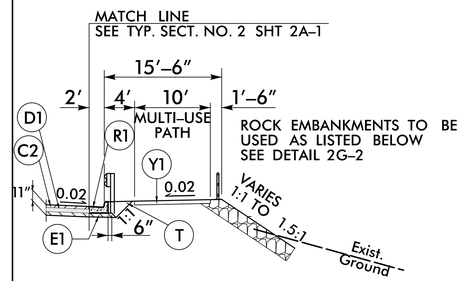


(FOR RETAINING WALLS SEE DETAIL SHTs W41-1 THRU W41-3)

USE INSET A

–Y2– STA. 146+60± TO –Y2– STA. 148+80, RT

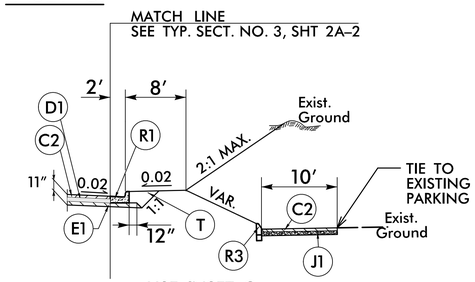
INSET B:



USE INSET B

–Y2– STA. 102+75± TO –Y2– STA. 103+75±, RT
–Y2– STA. 107+75± TO –Y2– STA. 111+25±, RT
–Y2– STA. 111+75± TO –Y2– STA. 114+75±, RT
–Y2– STA. 115+25± TO –Y2– STA. 116+75±, RT
–Y2– STA. 117+75± TO –Y2– STA. 128+25±, RT

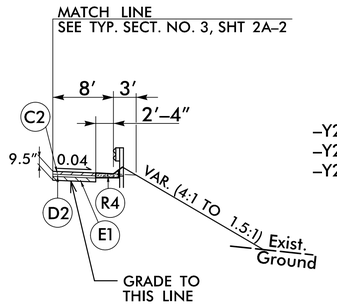
INSET C:



USE INSET C

–Y2– STA. 159+43± TO –Y2– STA. 161+24±, RT

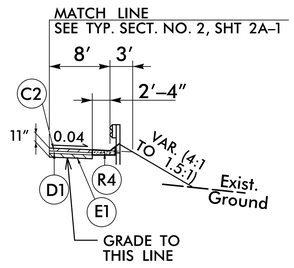
INSET D:



USE INSET D

–Y2– STA 139+50± TO –Y2– STA. 142+00±, RT
–Y2– STA 152+95± TO –Y2– STA. 153+25±, RT
–Y2– STA 161+00± TO –Y2– STA. 161+30±, LT

INSET E:



USE INSET E

–Y2– STA 133+32± TO 133+60±, RT

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2A-3

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JIMMY L. TERRY
6/27/2026

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 041986 ENGINEER MATTHEW BREWER
6/26/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2A-4

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JIMMY L. TERRY

2/27/2026

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 041986 ENGINEER MATTHEW BREWER

2/26/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

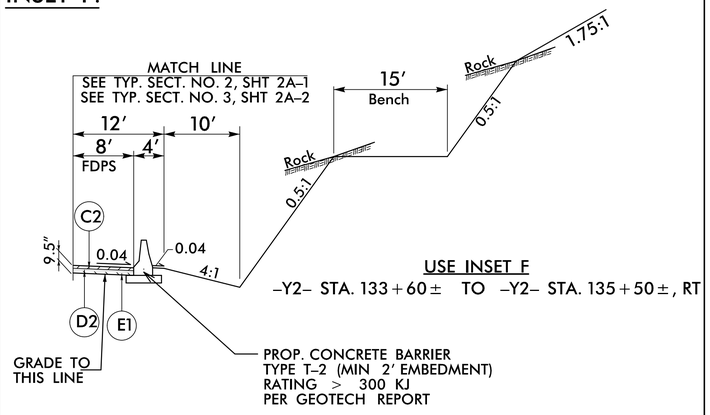
TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

PAVEMENT SCHEDULE

C2	3″ S9.5C	N	GEOTEXTILE FOR SUBGRADE STABILIZATION
D1	4″ I19.0C	T	EARTH MATERIAL
D2	2 ½″ I19.0C		
E1	4″ B25.0C		
K	CL IV SUBGRADE STABILIZATION		

PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE. SEE SHEET 2A-1 FOR DETAILED PAVEMENT SCHEDULE.

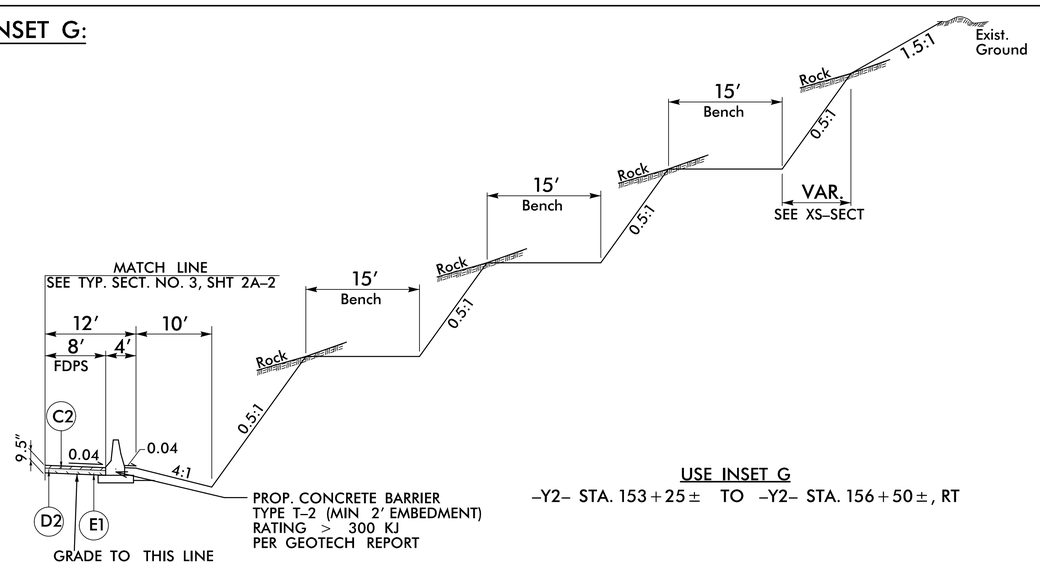
INSET F:



USE INSET F

–Y2– STA. 133+60± TO –Y2– STA. 135+50±, RT

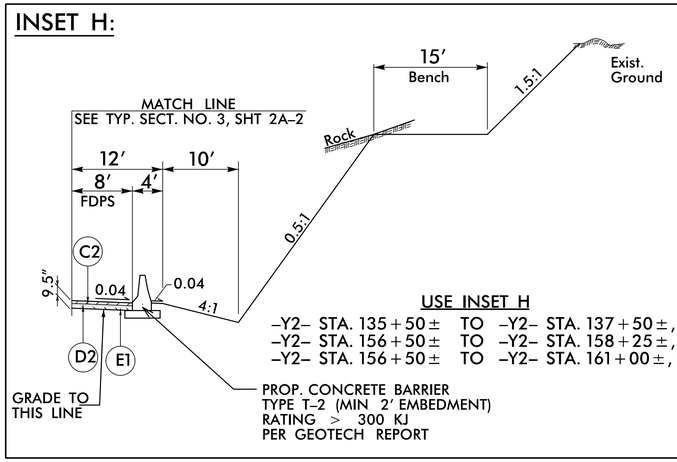
INSET G:



USE INSET G

–Y2– STA. 153+25± TO –Y2– STA. 156+50±, RT

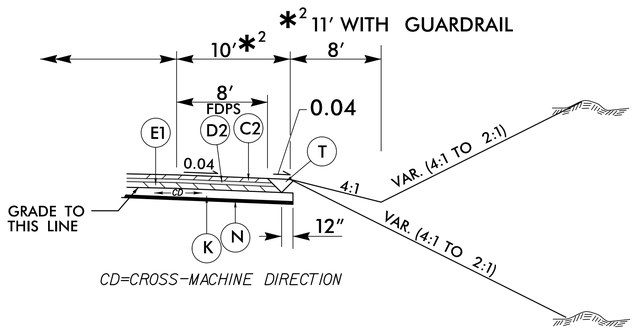
INSET H:



USE INSET H

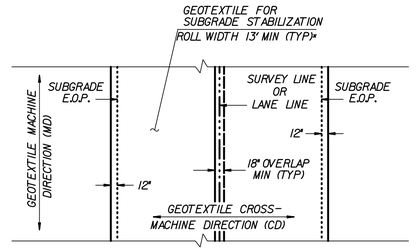
–Y2– STA. 135+50± TO –Y2– STA. 137+50±, RT
–Y2– STA. 156+50± TO –Y2– STA. 158+25±, RT
–Y2– STA. 156+50± TO –Y2– STA. 161+00±, LT

AGGREGATE SUBGRADE FOR SHOULDER WITH ASPHALT BASE DETAIL



STA TO STA	LOC
–Y2– STA. 90+00 TO –Y2– STA. 95+00	LT & RT
–Y2– STA. 118+00 TO –Y2– STA. 126+50	LT
–Y2– STA. 127+50 TO –Y2– STA. 129+50	LT
–Y2– STA. 137+50 TO –Y2– STA. 141+50	LT & RT

AREAS WILL BE INVESTIGATED DURING CONSTRUCTION



GEOTEXTILE FOR SUBGRADE STABILIZATION PLACEMENT (PLAN VIEW)

(100% COVERAGE REQUIRED)

*INSTALL GEOTEXTILE FOR SUBGRADE STABILIZATION WITH MINIMUM ROLL WIDTH UNDER ROADWAY EDGES AND SHOULDERS ADJACENT TO FILL SLOPES

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2B-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 35018 JIMMY L TERRY
2/27/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

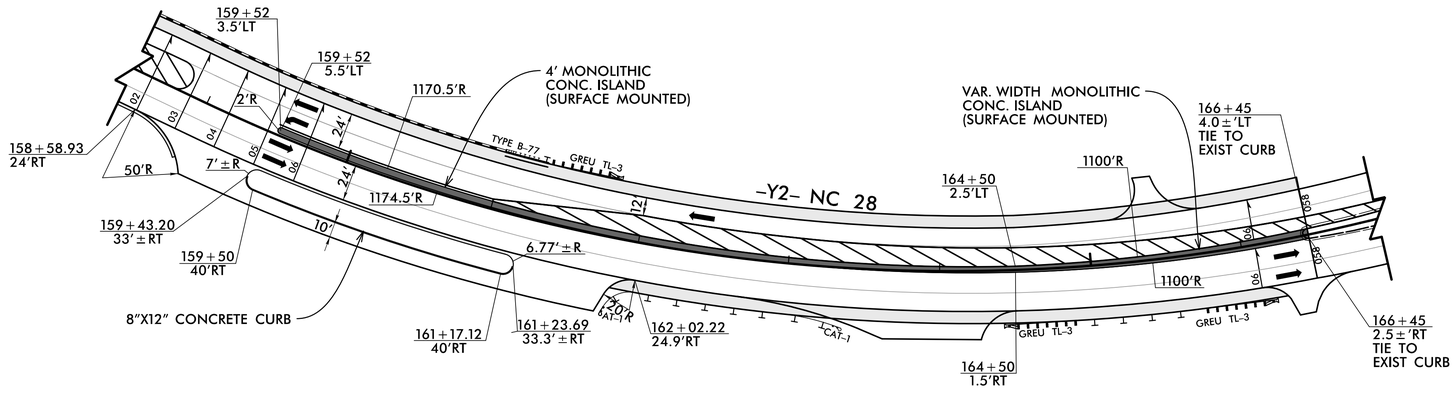
8/17/99

REVISIONS

160

NAD 83/2011

165



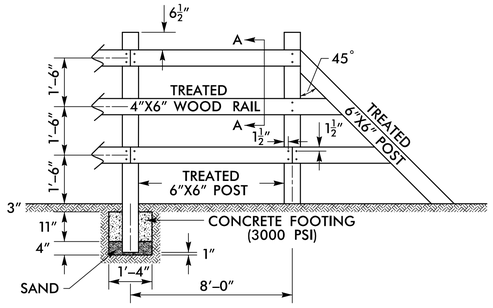
SEE PLAN SHEETS NO. 49 AND 50 FOR PLAN

50' 0' 50' 100'
25'

LAYOUT OF MONOLITHIC CONCRETE ISLANDS, 8" CONCRETE CURB AND MISC. DRIVES

2/7/2026
X:\NCDOT\A-0009\Roadway\Proj\A-0009CD Plan Sheets\A-0009CD_Rdy_Detail Sht_02B-1(Conc Island Layout).dgn
User:jmelvin

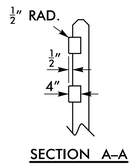
PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2B-2



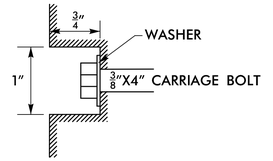
TIMBER RAIL - DETAIL

NOTE: $1\frac{1}{4}$" NOTCH IN 6"X6" POSTS

NOTE: $1\frac{3}{4}$" NOTCH IN 4"X6" RAIL



SECTION A–A



RAIL BOLT DETAIL

NOTE: BOLTS TO BE SPACED AS SHOWN

TIMBER RAIL TO BE CONSTRUCTED AT THE FOLLOWING LOCATIONS IN CONJUCTION WITH THE TYPICAL SECTIONS AND THE DIRECTION OF THE ENGINEER.

–Y2– STA 98+97.00 TO –Y2– STA 105+65.00, RT (MIN. 1' FROM EDGE OF MULTI–USE PATH)

–Y2– STA 105+89.00 TO –Y2– STA 106+64.00, RT (MIN. 1' FROM EDGE OF MULTI–USE PATH)

–Y2– STA 106+88.00 TO –Y2– STA 111+49.00, RT (MIN. 1' FROM EDGE OF MULTI–USE PATH)

–Y2– STA 111+95.00 TO –Y2– STA 132+25.00, RT (MIN. 1' FROM EDGE OF MULTI–USE PATH)

2/27/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

TIMBER RAIL at MULTI-USE PATH

ORIGINAL BY: C.B. PRUETT DATE: JULY 2020
MODIFIED BY: S. G. MELVIN DATE: JUNE 2022
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

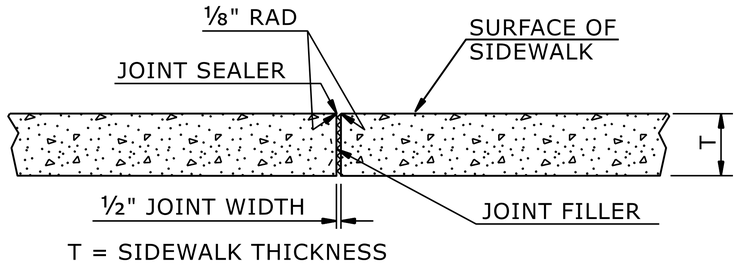
PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2C-1

NOTES:

CONSTRUCT STANDARD SIDEWALK 5' WIDE AND 4" THICK UNLESS OTHERWISE DENOTED ON PLANS.

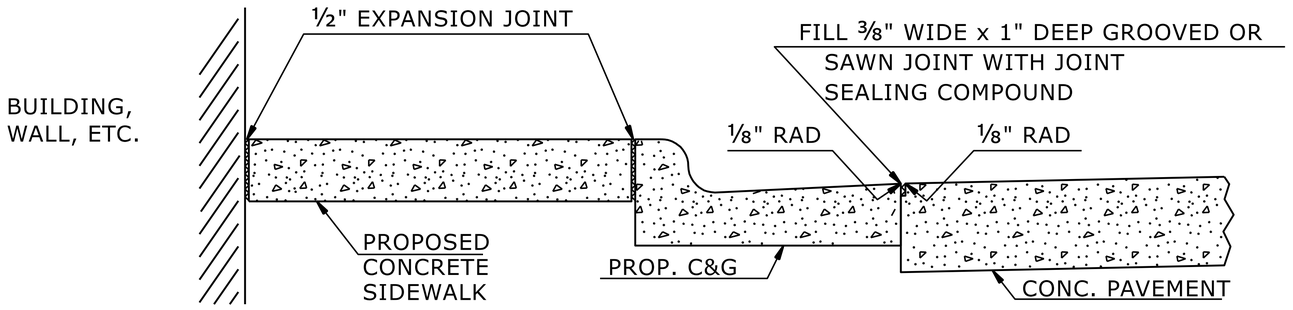
PLACE A GROOVE JOINT 1" DEEP WITH ⅛" RADII IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE ½" EXPANSION JOINT WILL BE REQUIRED AT 50' INTERVALS. A ½" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.

SEE STD. DWG. 848.06 FOR CURB RAMP LOCATION REQUIREMENTS AND CONSTRUCTION GUIDELINES.



T = SIDEWALK THICKNESS

TRANSVERSE EXPANSION JOINT IN SIDEWALK



DETAILS SHOWING JOINTS IN CONCRETE SIDEWALK

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

ROADWAY DETAIL DRAWING FOR

CONCRETE SIDEWALK

SHEET 1 OF 1

848D01

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER
Signed by: Nicole M. Hackler
2/26/2026

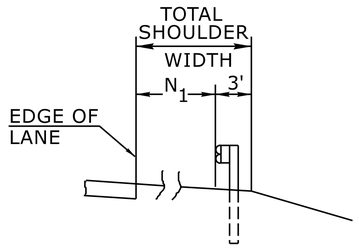
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

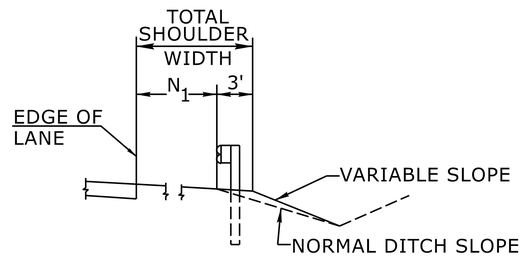
SEE TITLE BLOCK

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

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2C-2

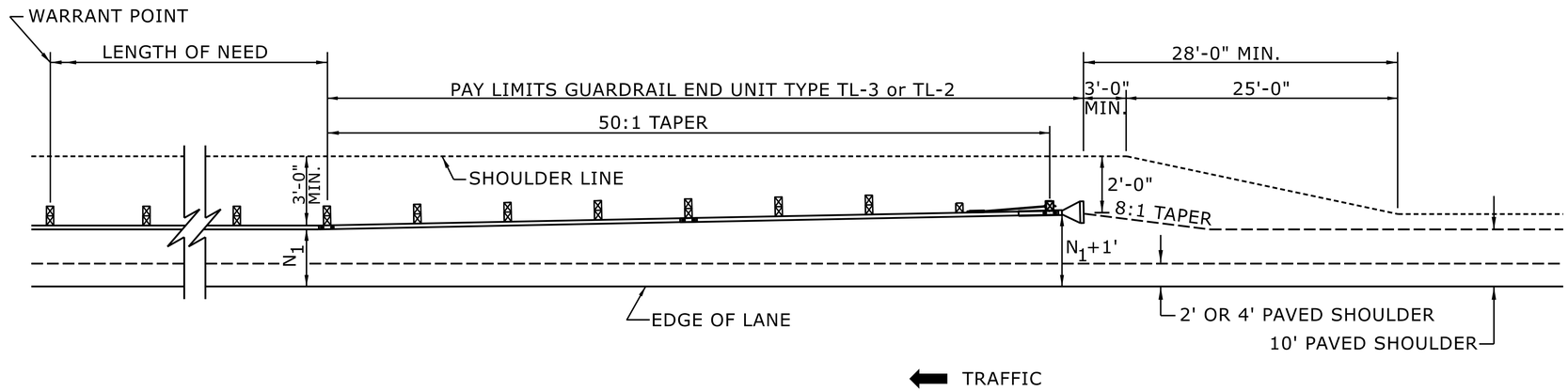


FILL SECTION



CUT SECTION

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



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

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER
Signed by: Nicole M. Hackler
2/26/2026

SHEET 6 OF 15

862D01

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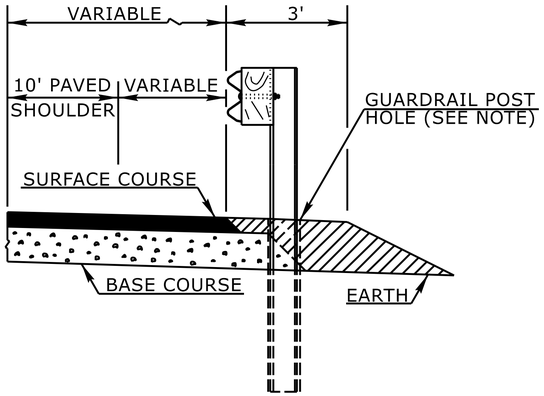
CONTRACTS STANDARDS
AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

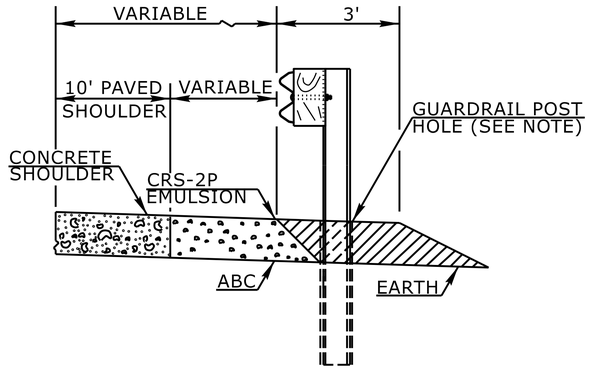
SEE TITLE BLOCK

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

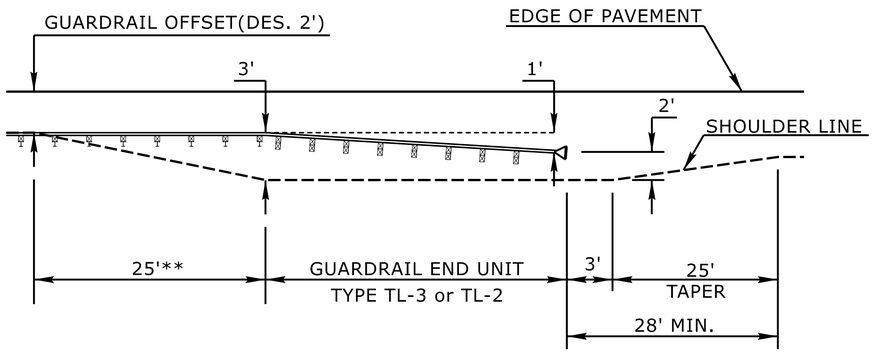
PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2C-3



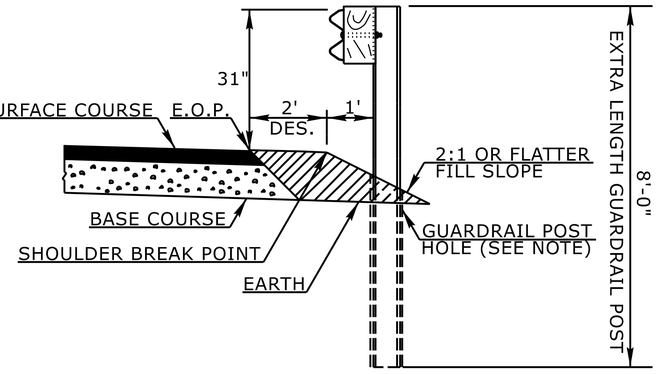
FLEXIBLE PAVED SHOULDER



CONCRETE PAVED SHOULDER



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



8' GUARDRAIL POST ON 2:1 SLOPE*

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

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

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 11OF 15

862D01

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER
2/26/2026

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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

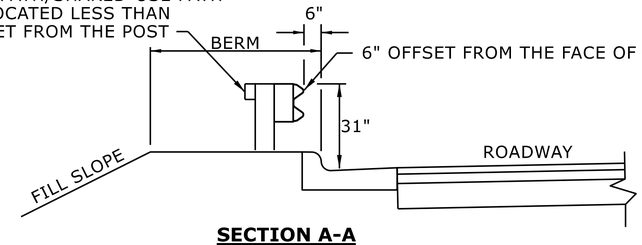
SEE TITLE BLOCK

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

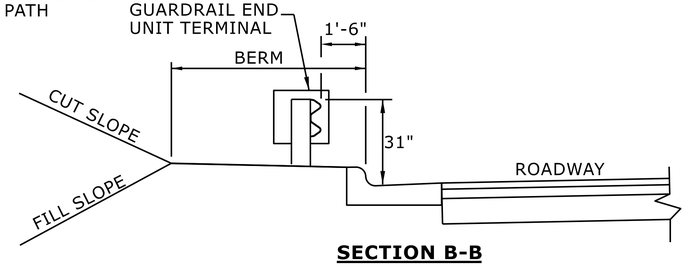
PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2C-4

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

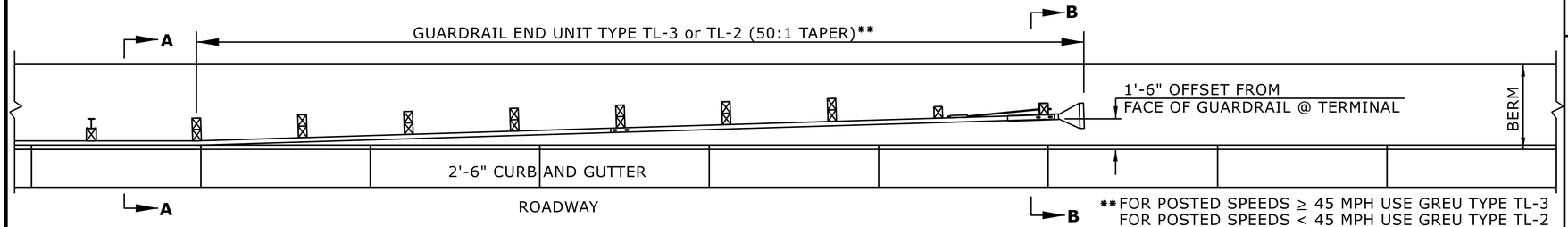
SEE THE ROADWAY DESIGN MANUAL (PART I CHAPTER 4 SECTION 4.14) FOR OFFSET DISTANCES FROM FACE OF GUARDRAIL AND BACK OF GUARDRAIL TO SIDEWALK OR SIDEPATH/SHARED-USE PATH



SECTION A-A



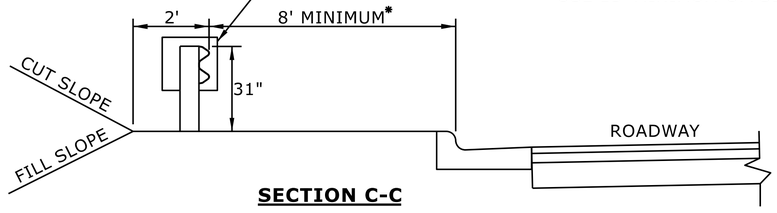
SECTION B-B



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



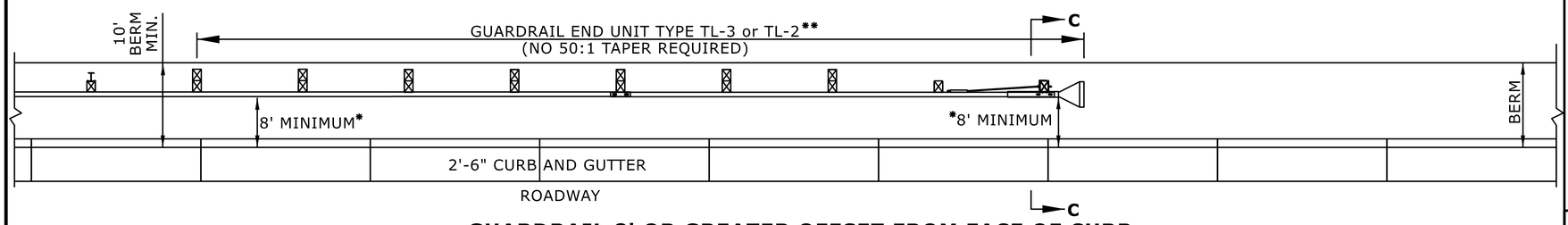
SECTION C-C

* 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

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER
Signed by: Nicole M. Hackler
2/26/2026

SHEET 12 OF 15

862D01

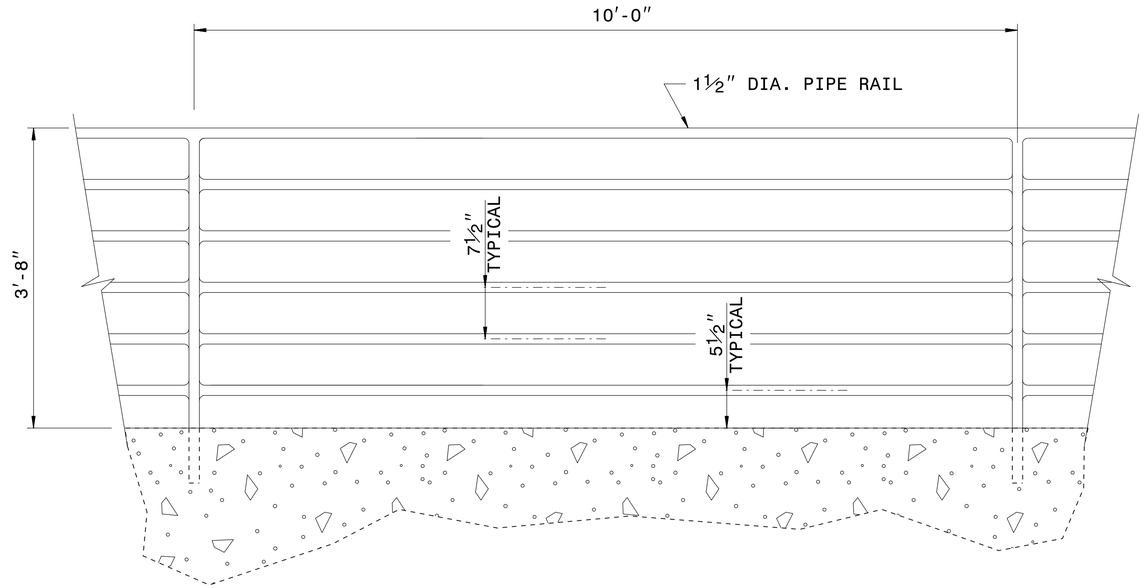
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

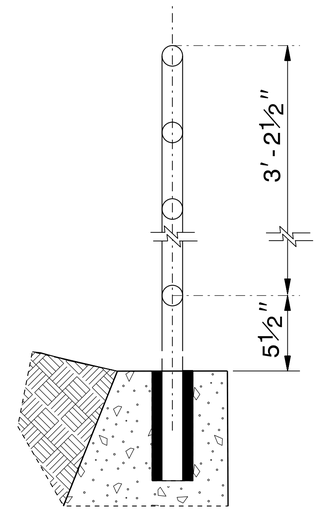
SEE TITLE BLOCK

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

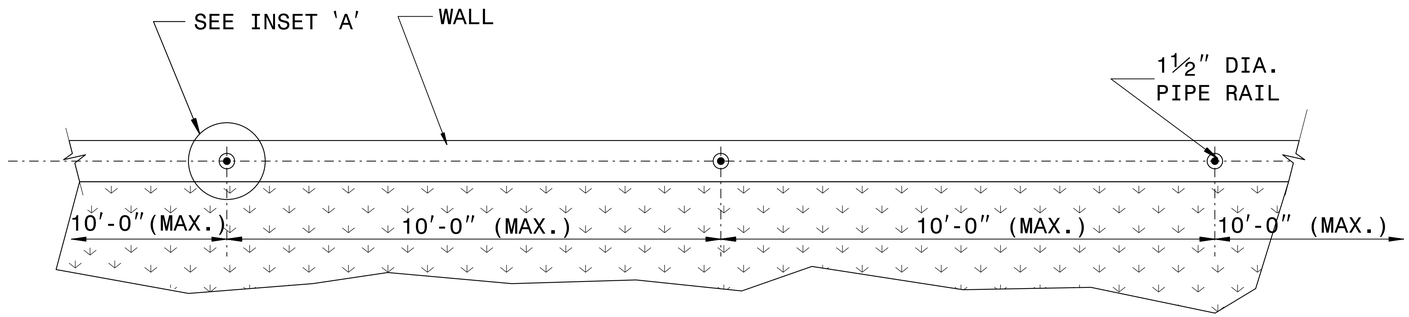
PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2C-5



ELEVATION OF HANDRAIL



INSET 'A'



PLAN VIEW

NOTES:

CONSTRUCT PROPOSED STEEL PIPE RAIL 1½″ DIAMETER SCHEDULE 40 PLAIN END GALVANIZED STEEL PIPE MEETING THE REQUIREMENTS OF ASTM A53.

EMBED PIPE RAIL INTO PROPOSED WALL WITH CHEMICAL OR CONCRETE GROUT ANCHORING SYSTEM PER THE WALL MANUFACTURER'S RECOMMENDATIONS.

REPAIR GALVANIZING IN ACCORDANCE WITH SECTION 1076 OF THE NCDOT STANDARD SPECIFICATIONS.

PAINT, IF REQUIRED BY THE ENGINEER, IN ACCORDANCE WITH SECTION 1080 OF THE STANDARD SPECIFICATIONS.

CENTER THE PROPOSED RAILING ON TOP OF THE WALL WITH POST SPACING SYMMETRICAL ABOUT THE CENTER-LINE OF THE WALL.

WELD IN ACCORDANCE WITH ARTICLE 1072-18 OF THE STANDARD SPECIFICATIONS.

SUBMIT THE ATTACHMENT OF THE HANDRAIL TO THE RETAINING WALL TO THE CONTRACTS AND STANDARDS OFFICE FOR APPROVAL.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 33144 ENGINEER Nicole M. Fowler

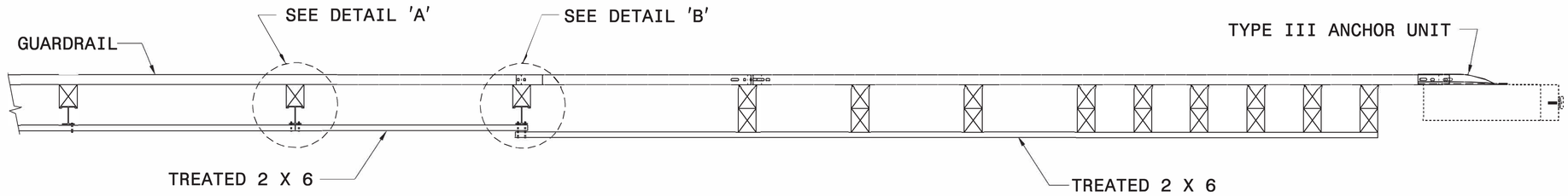
2/26/2026

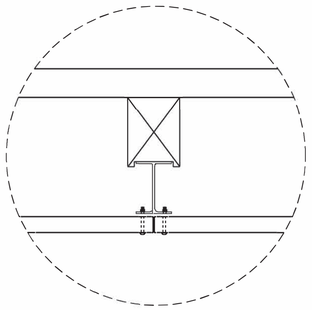
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

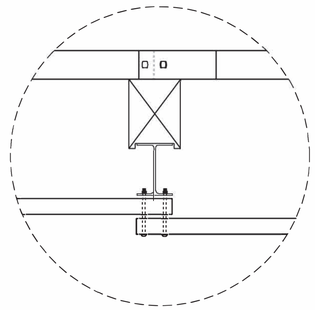
DETAIL OF PIPE HANDRAIL MOUNTED ON A WALL

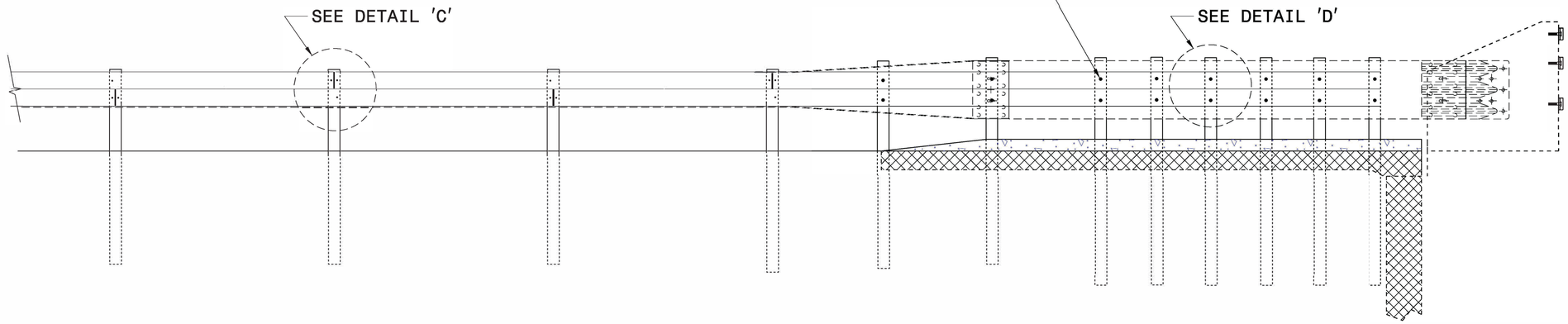
ORIGINAL BY: E.E. WARD DATE: 12-99
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: jhowerton/handrail on retaining wall.dgn

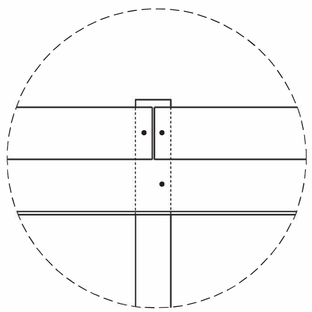
24-MAY-2018 14:10
S:\Contracts\Contracts\Special Details\jhowerton\Handrail on Retaining Wall.dgn
jhowerton AT CSD-292595

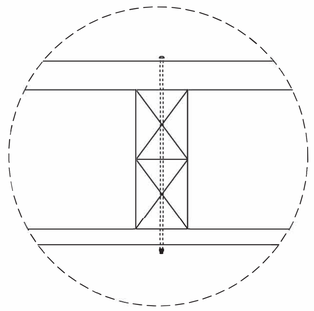


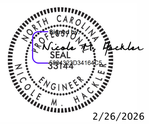












PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2C-6

PLAN

DETAIL 'A'

DETAIL 'B'

USE BOLTS AND NUTS FROM TYPE III ANCHOR UNIT TO FASTEN 2 X 6 WOOD RAILS TO THE WOOD POSTS - BOLTS MAY NEED TO BE LENGTHENED TO ACCOMMODATE FOR THE 2 X 6 WOOD RAILS.

ELEVATION

DETAIL 'C'

DETAIL 'D'

NOTES:

1. USE #2 SYP TREATED 2 X 6 FOR WOOD RAIL.
2. USE GUARDRAIL BOLTS TO FASTEN WOOD RAIL TO GUARDRAIL POSTS. SEE ROADWAY STD.NO.862.02.
3. THE MOUNTING HEIGHT OF THE WOOD RAIL TO BE DETERMINED IN THE FIELD.
4. PLACE THE TREATED 2 X 6 WOOD RAIL AS DIRECTED BY THE ENGINEER.
5. DO NOT PLACE WOOD RAIL WITHIN THE PAY LIMITS OF THE GREU TL-3 END UNIT.

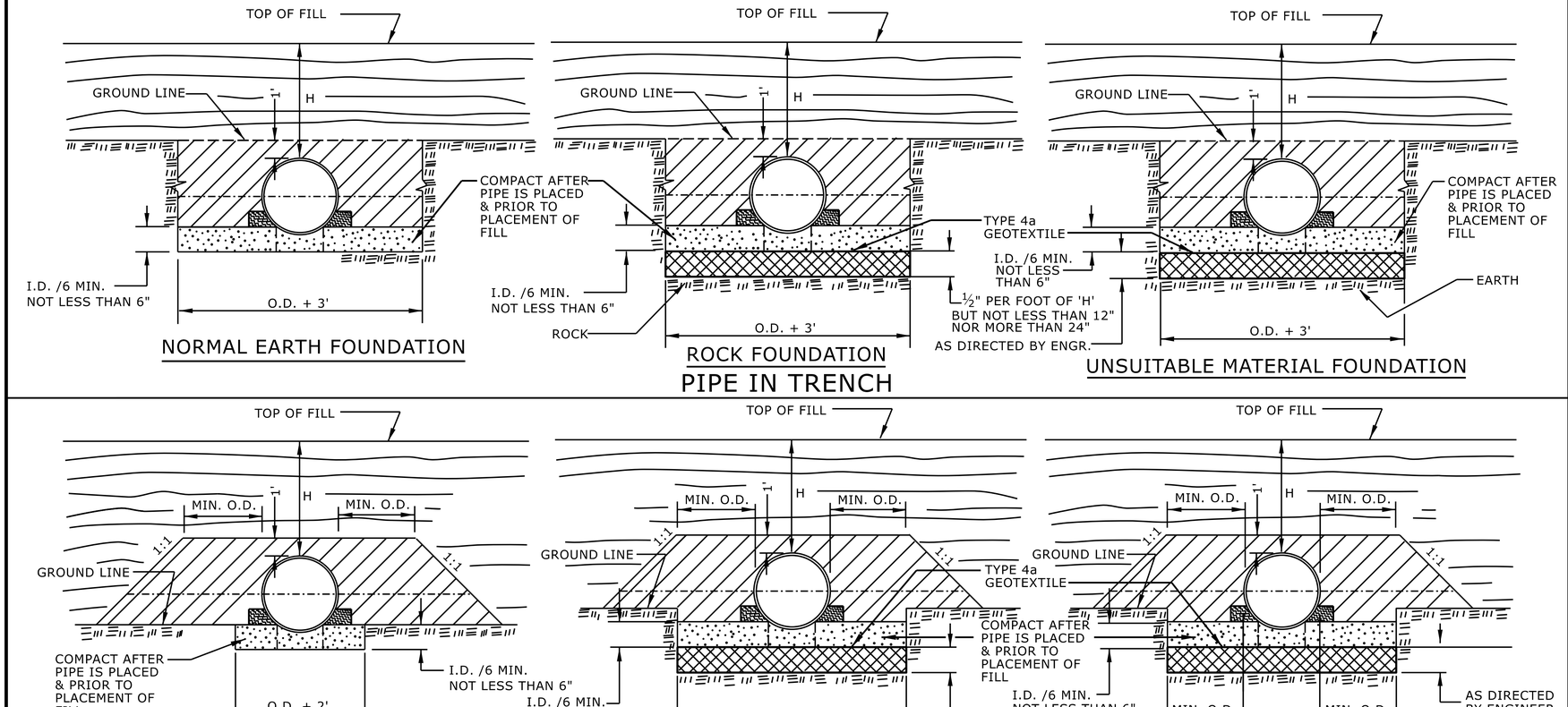
Signed by:
Nicole M. Hackler
5884323D34164C5...
NICOLE M. HACKLER
33144
2/26/2026

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

DETAIL OF WOOD RUB RAIL

ORIGINAL BY: STD.8_26 DATE: 1-25-12
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: jhowerton/Wood Rail on Back of Guardrail

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2C-7



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.

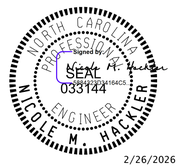
ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

FLEXIBLE PIPE

SHEET 1 OF 2

300.01



2/26/2026

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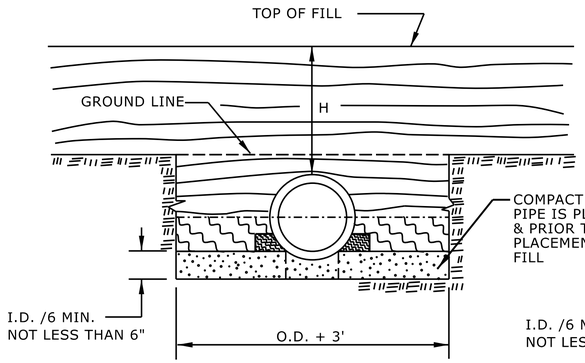
UNLESS ALL SIGNATURES COMPLETED

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

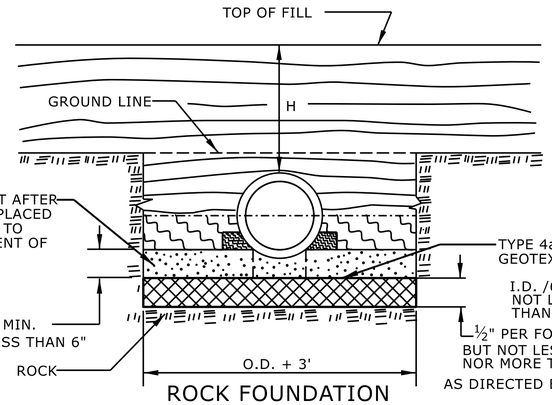
SEE TITLE BLOCK

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

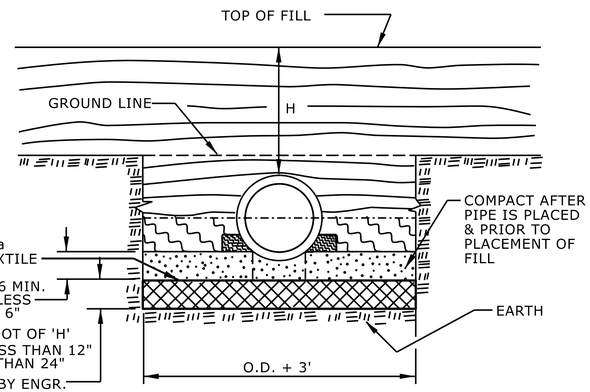
PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2C-8



NORMAL EARTH FOUNDATION

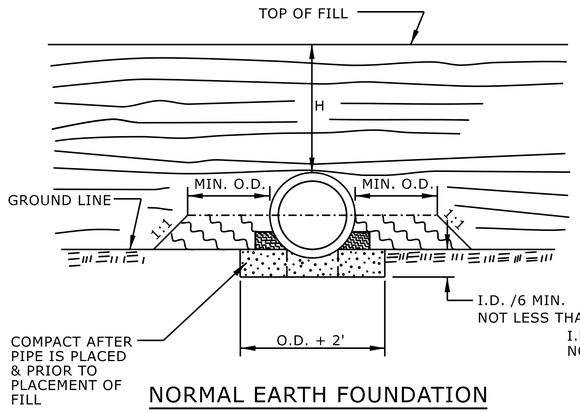


ROCK FOUNDATION

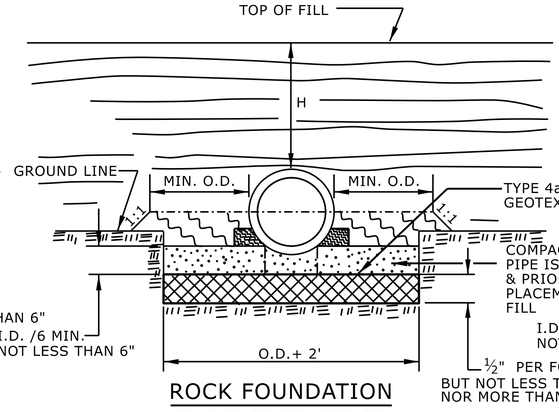


UNSUITABLE MATERIAL FOUNDATION

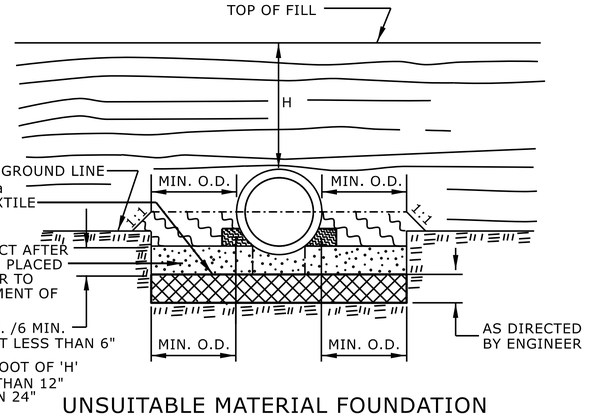
PIPE IN TRENCH



NORMAL EARTH FOUNDATION



ROCK FOUNDATION



UNSUITABLE MATERIAL FOUNDATION

PIPE ABOVE GROUND

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.

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

ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

RIGID PIPE

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER
Nicole M. Hackler
2/26/2026

SHEET 2 OF 2

300.01

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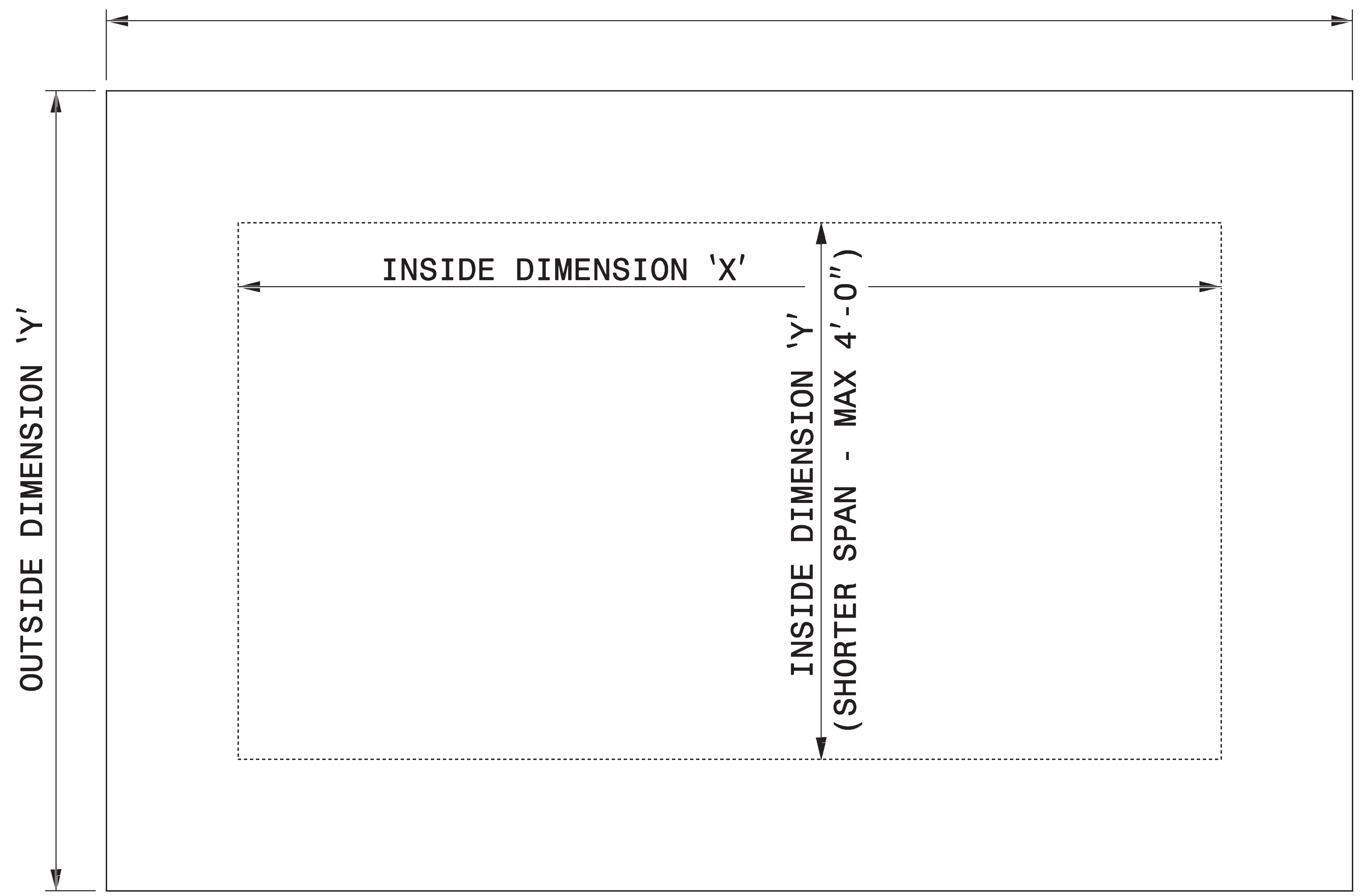
CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

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

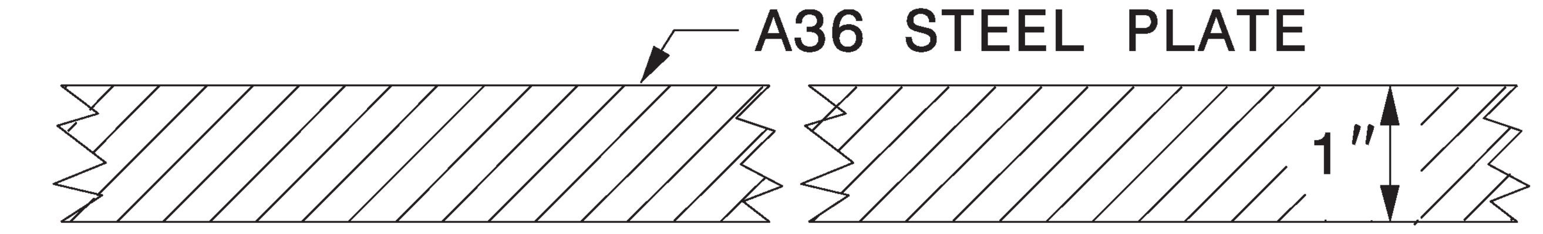
PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2D-1



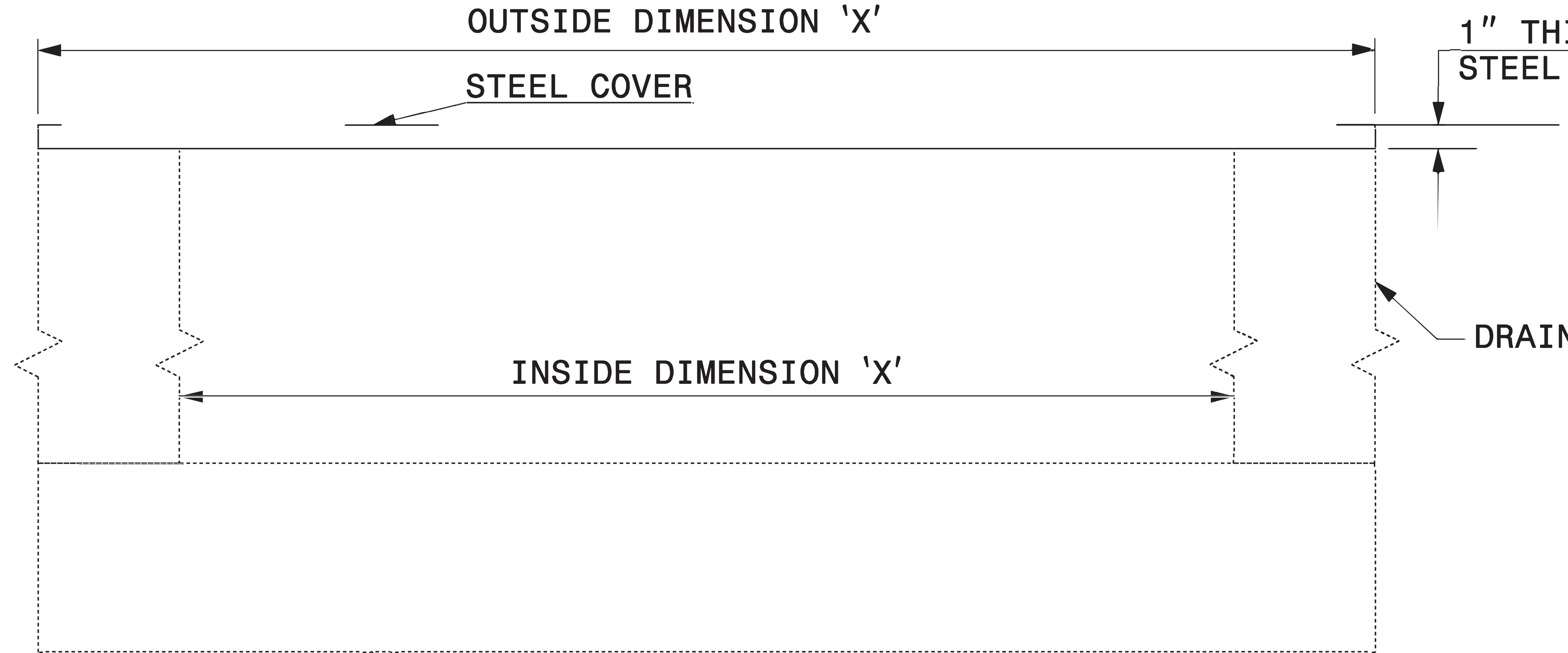
PLAN VIEWS

GENERAL NOTES:

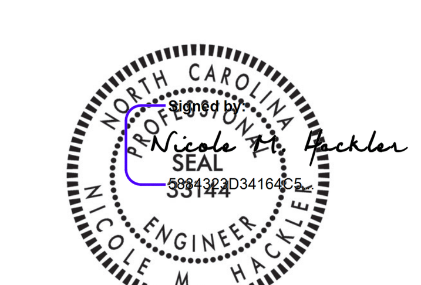
-USE GRADE A36 STEEL
-STEEL COVERS ARE FOR TEMPORARY USE DURING PHASE CONSTRUCTION.
-FILL SHALL BE PLACED DIRECTLY OVER THE STEEL PLATES.
-SEE ROADWAY PLANS AND PROVISIONS FOR LOCATIONS
-QUANTITES TO BE PAID FOR AT THE UNIT PRICE BID PER EACH.



SECTION VIEW OF STEEL TOP PLATE



ELEVATION VIEWS



2/26/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

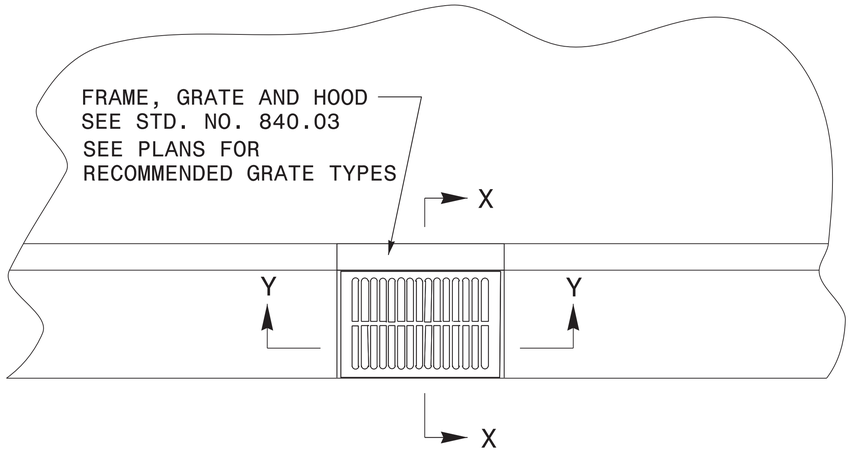
DETAIL OF TEMPORARY 1" STEEL COVER OVER DRAINAGE STRUCTURE

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

$$$$$SYSTIME$$$$$ $$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$ $$$$USERNAME$$$$

5/14/99

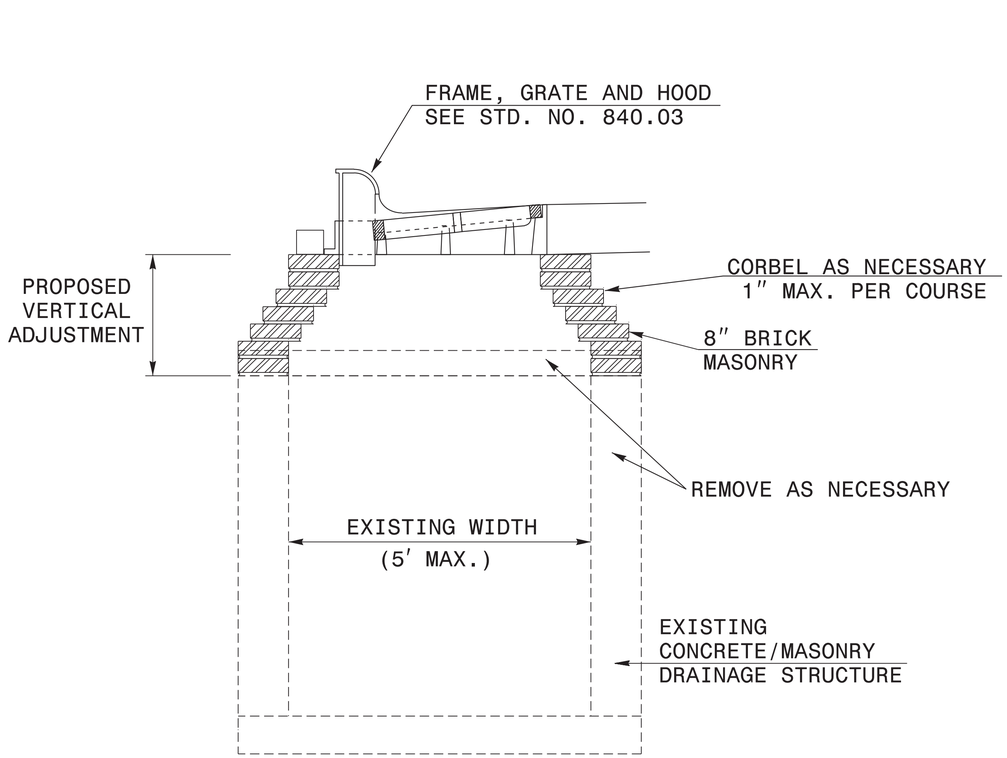
PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2D-2



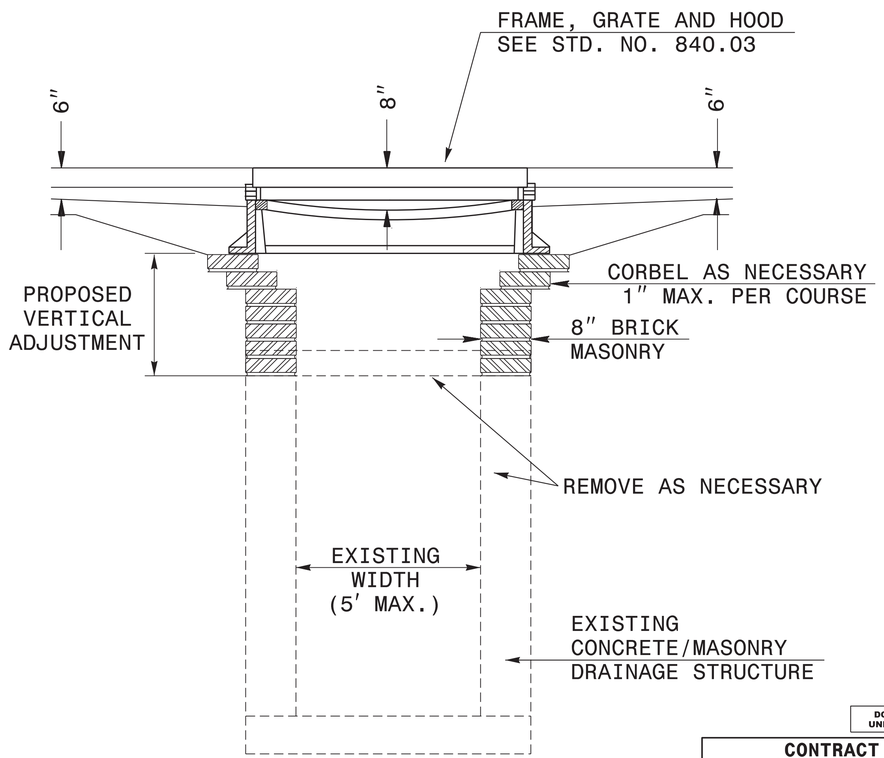
PLAN

GENERAL NOTES:

- THE ROADWAY PLANS INDICATE STRUCTURES TO BE CONVERTED.
- AFTER REMOVAL, STORE GRATES AND FRAMES AS DIRECTED BY THE ENGINEER.
- 4″ SOLID CLAY BRICK, JUMBO BRICK, CONCRETE, OR 4″ SOLID CONCRETE BLOCK MAY BE USED FOR VERTICAL ADJUSTMENT OF THE STRUCTURE.
- CONVERT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.



SECTION X-X



SECTION Y-Y

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 33144 NICOLE M. HACKLER
2/26/2026

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

DETAIL TO CONVERT DROP INLET OR JB TO CATCH BASIN

ORIGINAL BY: E.E. WARD DATE: 11-97
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: DS37:usr\details\stand\jbtocb.dgn

26-JUN-2017 10:42
S:\Contracts\Special Details\jhowerton\convert DI or JB to CB.dgn
jhowerton AT CSD-292595

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2G-1

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 041986 ENGINEER MATTHEW BREWER

DocuSigned by: D. Matthew Brewer 1/15/2023
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

FOR USE IN THE FOLLOWING LOCATIONS, OR AS DIRECTED BY THE ENGINEER.

STATIONS:
-Y2- 120+50 TO 122+00, LT

NOTES:

FOR ROCK EMBANKMENTS, SEE ROCK EMBANKMENTS SPECIAL PROVISION

CONSTRUCT ROCK EMBANKMENTS AS SHOWN IN THE DETAIL AND IN ACCORDANCE WITH THE ROCK EMBANKMENTS SPECIAL PROVISION

CONSTRUCT ROCK EMBANKMENTS A MINIMUM OF 2 FT. ABOVE POND SURFACE WATER ELEVATION.

USE SELECT MATERIAL, CLASS VII, RIP RAP CLASS A, RIP RAP CLASS B, AND SELECT MATERIAL, CLASS VI TO CONSTRUCT ROCK EMBANKMENTS AS SHOWN. RIP RAP CLASS A AND SELECT MATERIAL, CLASS VI SHALL BE USED TO CHOKE OFF VOIDS IN SELECT MATERIAL, CLASS VII BEFORE PLACING SEPARATION GEOTEXTILES AND SOIL EMBANKMENT FILL

SELECT MATERIAL, CLASS VII AND RIP RAP CLASS A AND B SHALL MEET THE REQUIREMENTS OF SECTION 1042 OF THE STANDARD SPECIFICATIONS

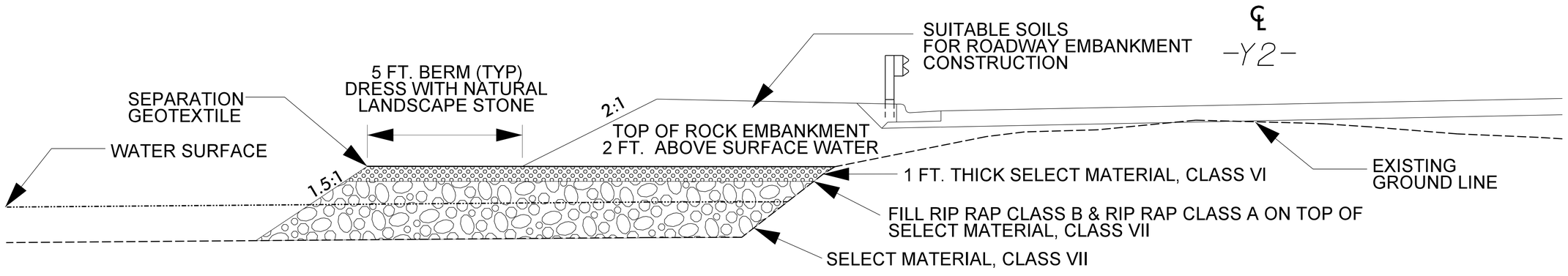
SELECT MATERIAL, CLASS VI SHALL MEET THE GRADATION REQUIREMENTS IN SECTION 1016 OF THE STANDARD SPECIFICATIONS

INSTALL SEPARATION GEOTEXTILE ON TOP OF ROCK EMBANKMENTS IN ACCORDANCE WITH THE ROCK EMBANKMENTS SPECIAL PROVISION AND ARTICLE 270-3 OF THE STANDARD SPECIFICATIONS

PLACE APPROXIMATELY 6 TO 10 INCHES OF NATURAL LANDSCAPE STONE ON THE SURFACE OF EXPOSED GEOTEXTILE AND SELECT MATERIAL, CLASS VII ON THE ROCK EMBANKMENT BERM. FOR NATURAL LANDSCAPE STONE, SEE SPECIAL PROVISION.

ESTIMATED QUANTITIES ROCK EMBANKMENTS	
SELECT MATERIAL, CLASS VII FOR ROCK EMBANKMENTS	2,260 TON
SELECT MATERIAL, CLASS VI FOR ROCK EMBANKMENTS	400 TON
RIP RAP CLASS B	400 TON
RIP RAP CLASS A	400 TON
GEOTEXTILE FOR ROCK EMBANKMENTS	690 SY

ESTIMATED QUANTITIES LANDSCAPING NATURAL STONE	
NATURAL LANDSCAPE STONE	50 TON



ROCK EMBANKMENTS TYPICAL DETAILS

NOT TO SCALE

PREPARED BY: D. MATTHEW BREWER, P.E.	DATE: 1/15/23
REVIEWED BY: ROBERT E. KRAL, P.E.	DATE: 1/15/23

Prepared in the Office of:

CAROLINAS GEOTECHNICAL GROUP
2400 CROWNPOINT EXECUTIVE DRIVE
SUITE 800
CHARLOTTE, NC 28227
(980) 339-8684

GEOTECHNICAL CONSTRUCTION DETAILS - ROCK EMBANKMENTS - POND DETAIL

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2G-2

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 041986 ENGINEER D. MATTHEW BREWER

DocuSigned by: D. Matthew Brewer 1/15/2023
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

FOR USE IN THE FOLLOWING LOCATIONS, OR AS DIRECTED BY THE ENGINEER.

STATIONS:

-Y2- 102+75 TO 103+75, RT
-Y2- 107+75 TO 111+25, RT
-Y2- 111+75 TO 114+75, RT
-Y2- 115+25 TO 116+75, RT
-Y2- 117+75 TO 128+25, RT

NOTES:

FOR ROCK EMBANKMENTS, SEE ROCK EMBANKMENTS SPECIAL PROVISION

CONSTRUCT ROCK EMBANKMENTS AS SHOWN IN THE DETAIL AND IN ACCORDANCE WITH THE ROCK EMBANKMENTS SPECIAL PROVISION

USE SELECT MATERIAL, CLASS VII, RIP RAP CLASS A, RIP RAP CLASS B, AND SELECT MATERIAL, CLASS VI TO CONSTRUCT ROCK EMBANKMENTS AS SHOWN. RIP RAP CLASS A AND SHALL BE USED TO CHOKE OFF VOIDS IN SELECT MATERIAL, CLASS VII BEFORE PLACING SEPARATION GEOTEXTILES AND SELECT MATERIAL, CLASS IV.

SELECT MATERIAL, CLASS VII AND RIP RAP CLASS A AND B SHALL MEET THE REQUIREMENTS OF SECTION 1042 OF THE STANDARD SPECIFICATIONS

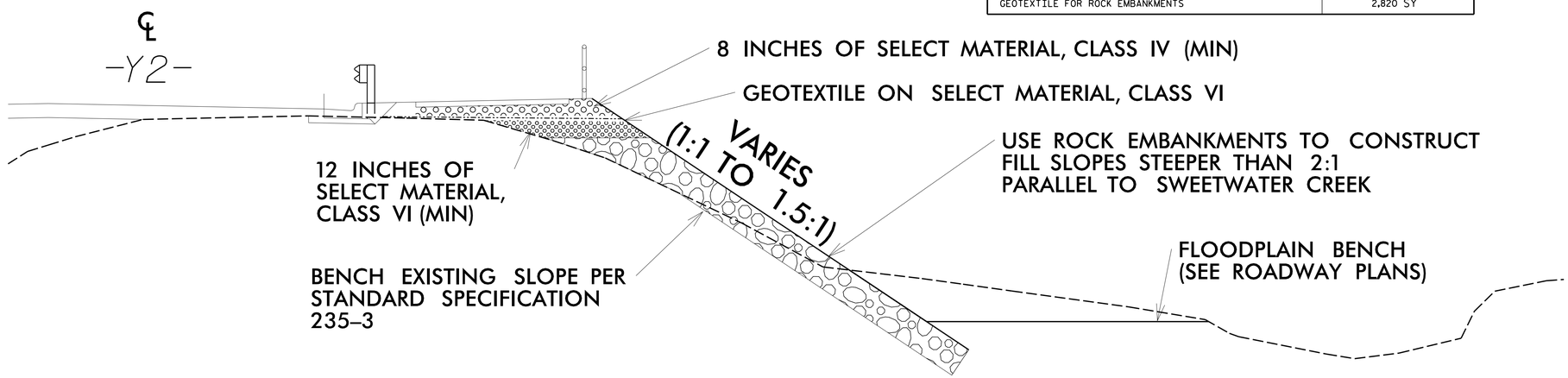
SELECT MATERIAL, CLASS VI SHALL MEET THE GRADATION REQUIREMENTS IN SECTION 1016 OF THE STANDARD SPECIFICATIONS

SELECT MATERIAL, CLASS IV SHALL MEET THE GRADATION REQUIREMENTS IN SECTION 1016 OF THE STANDARD SPECIFICATIONS

INSTALL SEPARATION GEOTEXTILE ON TOP OF ROCK EMBANKMENTS IN ACCORDANCE WITH THE ROCK EMBANKMENTS SPECIAL PROVISION AND ARTICLE 270-3 OF THE STANDARD SPECIFICATIONS

ESTIMATED QUANTITIES
ROCK EMBANKMENTS

SELECT MATERIAL, CLASS VII FOR ROCK EMBANKMENTS	3,010 TON
SELECT MATERIAL, CLASS VI FOR ROCK EMBANKMENTS	940 TON
SELECT MATERIAL, CLASS IV FOR ROCK EMBANKMENTS	910 TON
RIP RAP CLASS B	450 TON
RIP RAP CLASS A	450 TON
GEOTEXTILE FOR ROCK EMBANKMENTS	2,820 SY



PREPARED BY: D. MATTHEW BREWER, P.E.	DATE: 1/15/23
REVIEWED BY: ROBERT E. KRAL, P.E.	DATE: 1/15/23

Prepared in the Office of:

CAROLINAS GEOTECHNICAL GROUP
2400 CROWNPOINT EXECUTIVE DRIVE
SUITE 800
CHARLOTTE, NC 28227
(980) 339-8684

GEOTECHNICAL CONSTRUCTION DETAILS - ROCK EMBANKMENTS - WIDENED FILL DETAIL

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2G-3

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 041986 ENGINEER MATTHEW BREWER

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FOR USE IN THE FOLLOWING LOCATIONS, OR AS DIRECTED BY THE ENGINEER

STATIONS:
-Y2- 90+75 TO 99+25, LT

NOTES:

PERFORM UNDERCUT EXCAVATION IN THE AREAS NOTED. UNDERCUT SHALL EXTEND FROM TOE OF EXISTING SLOPE TO TOE OF PROPOSED SLOPE. UNDERCUT SHALL EXTEND TO A DEPTH OF 3 FEET BELOW EXISTING GRADE.

PLACE GEOTEXTILE TYPE V FOR EMBANKMENT STABILIZATION. FOR GEOTEXTILE FOR EMBANKMENT STABILIZATION, SEE SPECIAL PROVISION

PLACE THE GEOTEXTILE FOR EMBANKMENT STABILIZATION WITHOUT ANY CREASES OR WRINKLES

THE TERMS ROLL AND MACHINE DIRECTION ARE USED INTERCHANGEABLY

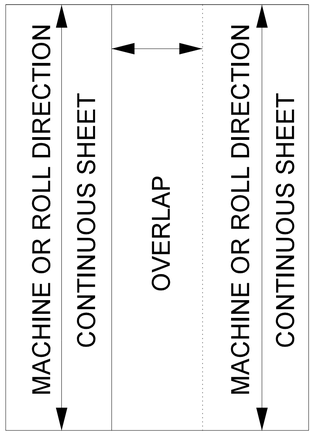
GEOTEXTILE FOR EMBANKMENT STABILIZATION PLACEMENT SHALL BE CONTINUOUS IN THE MACHINE DIRECTION PERPINDICULAR TO -L- AS SHOWN IN THE PLANS AND OF SUFFICIENT LENGTH TO COVER THE AREA INDICATED. THE GEOTEXTILE SHALL BE PLACED IN THE BOTTOM OF THE UNDERCUT EXCAVATION

NO SEAMS OR JOINTS ARE ALLOWED IN THE MACHINE/ROLL DIRECTION

THE MINIMUM OVERLAP BETWEEN ADJACENT GEOTEXTILE OF THE SAME MACHINE/ROLL DIRECTION IS 18 INCHES UNLESS SEWING IS USED TO ACHIEVE THE REQUIRED SEAM STRENGTH

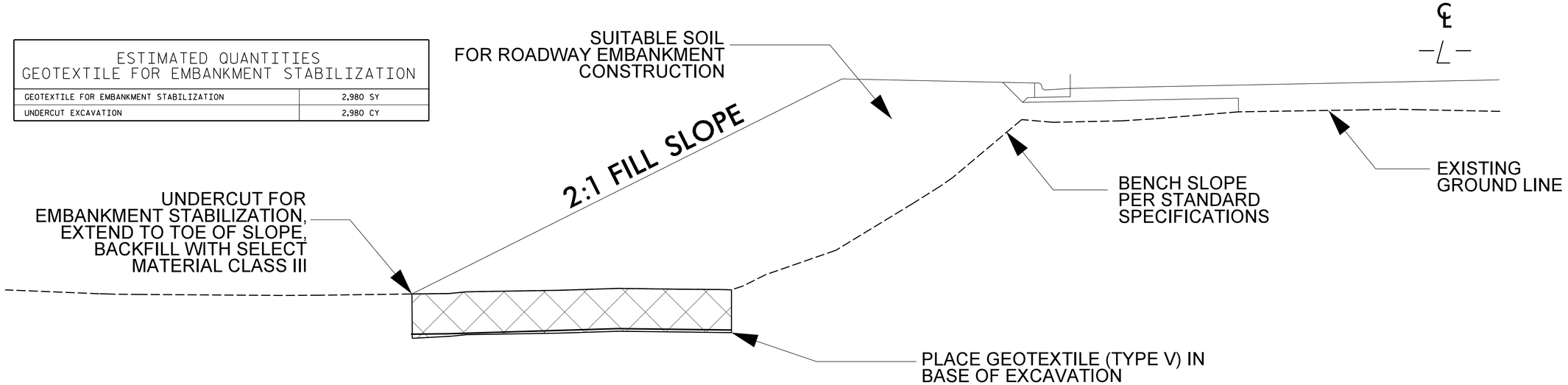
BACKFILL UNDERCUT WITH SELECT MATERIAL, CLASS III

18 INCHES MIN OVERLAP
OR SEE MANUFACTURER
GUIDELINES IF SEWN.



GEOTEXTILE FOR EMBANKMENT STABILIZATION OVERLAP DETAIL
NOT TO SCALE

ESTIMATED QUANTITIES GEOTEXTILE FOR EMBANKMENT STABILIZATION	
GEOTEXTILE FOR EMBANKMENT STABILIZATION	2,980 SY
UNDERCUT EXCAVATION	2,980 CY



GEOTEXTILE FOR EMBANKMENT STABILIZATION WITH UNDERCUT TYPICAL DETAILS
NOT TO SCALE

PREPARED BY: D. MATTHEW BREWER, P.E.	DATE: 1/15/23
REVIEWED BY: ROBERT E. KRAL, P.E.	DATE: 1/15/23

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GEOTECHNICAL CONSTRUCTION DETAILS - GEOTEXTILE FOR EMBANKMENT STABILIZATION

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2G-4

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 041986 ENGINEER MATTHEW BREWER

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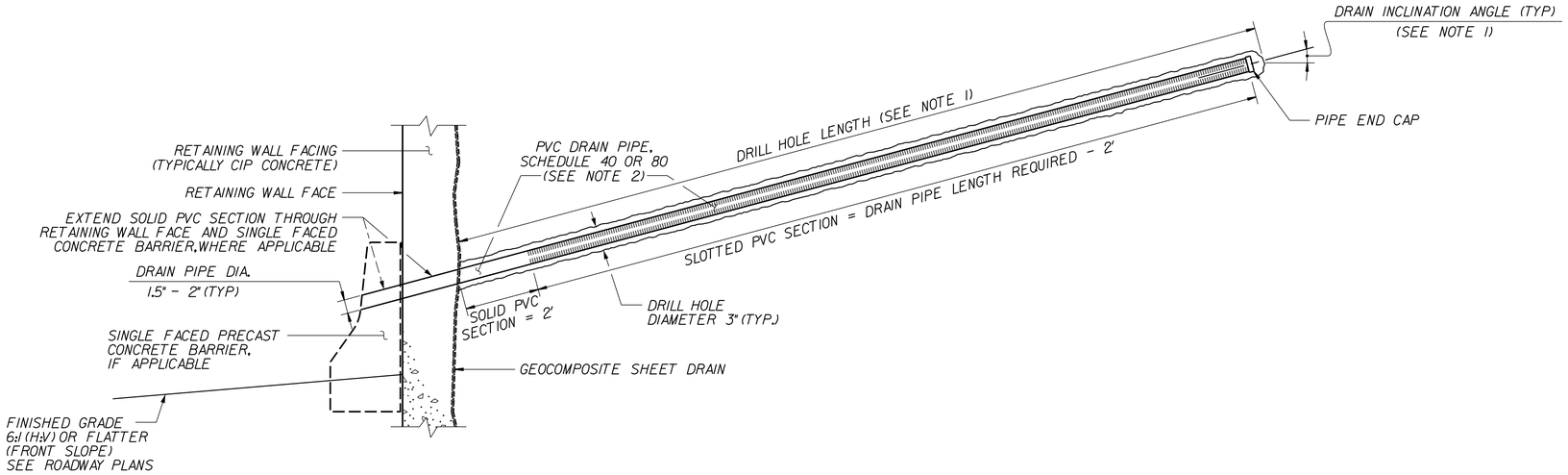
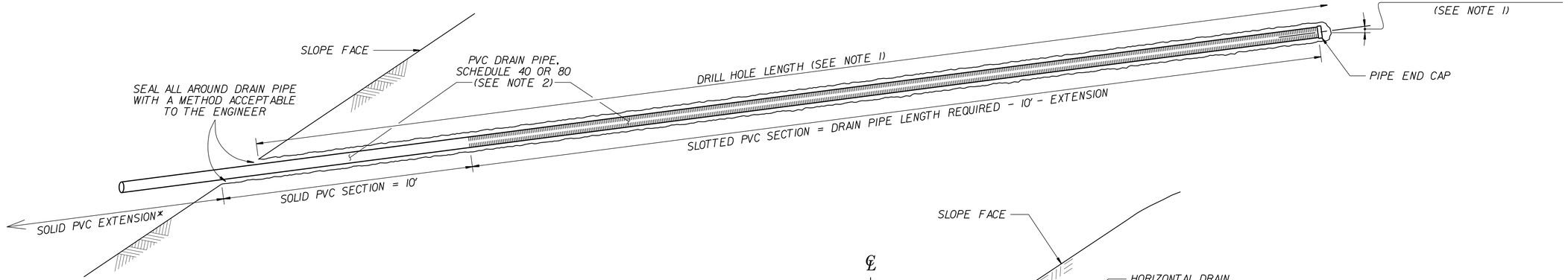
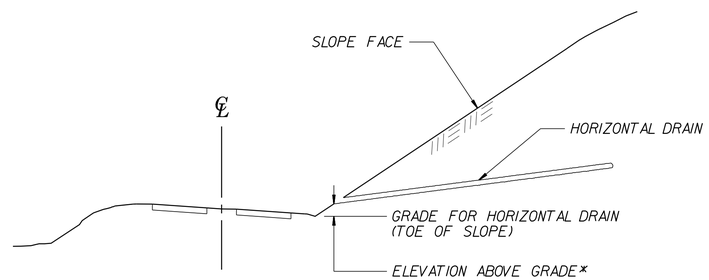


RETAINING WALL HORIZONTAL DRAIN



SLOPE HORIZONTAL DRAIN

*EXTEND SOLID PVC SECTION TO CONNECT PIPE TO A DRAINAGE SYSTEM OR DISCHARGE WATER AS DIRECTED



EXAMPLE CROSS-SECTION WITH SLOPE HORIZONTAL DRAIN

*SEE NOTE 1 FOR DRAIN ELEVATIONS ABOVE (OR BELOW) GRADE

NOTES:

1. SEE ROADWAY SUMMARY SHEETS FOR APPROXIMATE KNOWN HORIZONTAL DRAIN LOCATIONS,ELEVATIONS, INCLINATION AND LENGTHS. ADDITIONAL DRAINS MAY BE REQUIRED AS DETERMINED BY THE ENGINEER.
2. DRAIN PIPES MAY BE OMITTED FOR SOME HORIZONTAL DRAINS. SEE ROADWAY SUMMARY SHEETS FOR DRAIN PIPE REQUIREMENTS INCLUDING THOSE DRAINS WITHOUT PIPES.
3. FOR HORIZONTAL DRAINS,SEE HORIZONTAL DRAINS SPECIAL PROVISION.

PREPARED BY: D. MATTHEW BREWER, P.E.	DATE: 1/15/23
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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

GEOTECHNICAL CONSTRUCTION DETAILS - HORIZONTAL DRAINS

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2G-5

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 041986 ENGINEER D. MATTHEW BREWER

DocuSigned by: D. Matthew Brewer 04/09/2026
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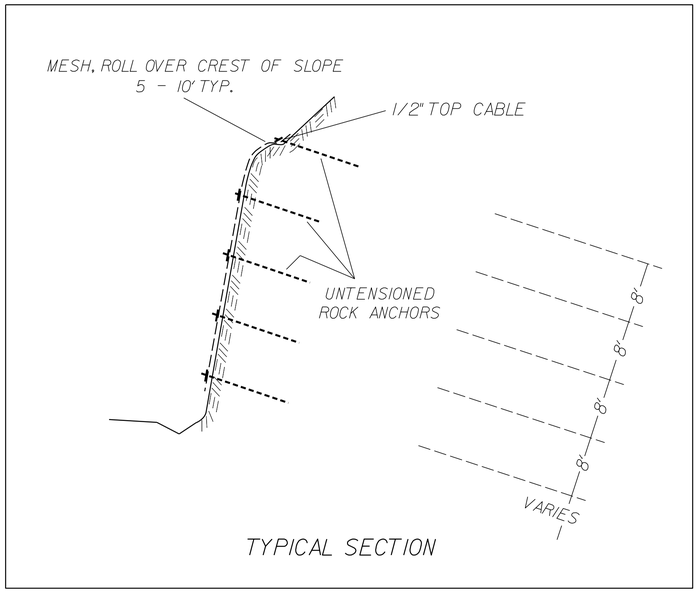
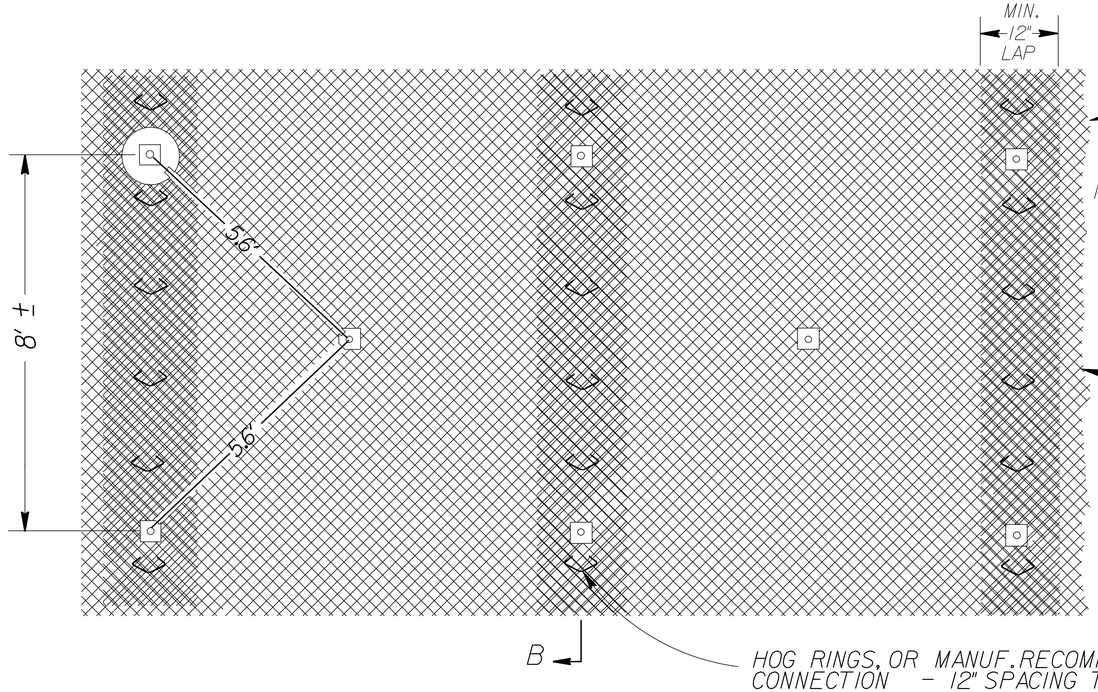
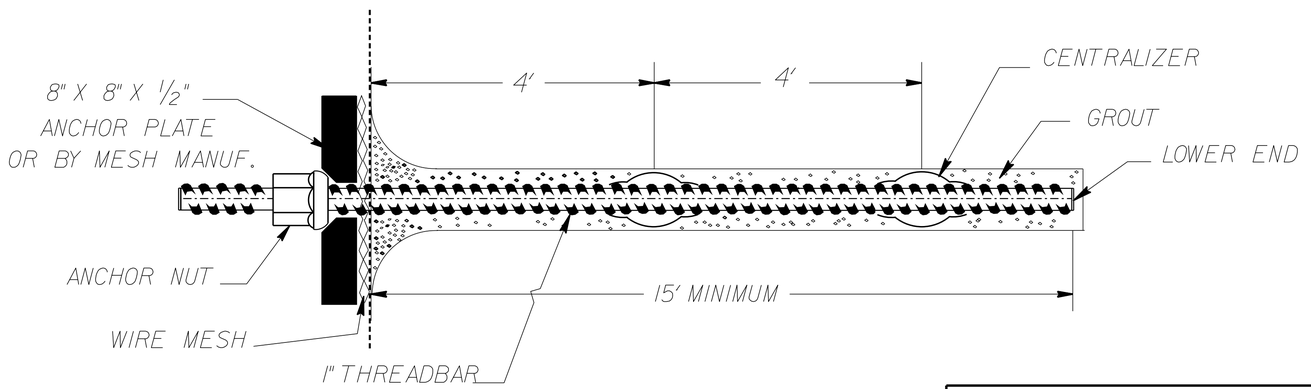


TYPICAL SECTION



DETAIL OF WIRE MESH

N.T.S.



ANCHOR FOR WIRE MESH

N.T.S.

NOTES:

1) WIRE MESH SHALL BE INSTALLED ON SLOPES AT LOCATIONS AS DIRECTED BY THE ENGINEER.

ESTIMATED QUANTITIES	
WIRE MESH (TYPE 1)	750 SY
WIRE MESH (TYPE 2)	750 SY
UNTENSIONED ROCK ANCHOR FOR WIRE MESH	3,000 LF

PREPARED BY: D. MATTHEW BREWER, P.E.	DATE: 4/9/2026
REVIEWED BY: ROBERT E. KRAL, P.E.	DATE: 4/9/2026

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

GEOTECHNICAL CONSTRUCTION DETAILS -
SLOPE STABILIZATION FOR WEATHERED ROCK AND ROCK SLOPES

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2G-6

GEOTECHNICAL ENGINEER

SEAL 041986 — NORTH CAROLINA PROFESSIONAL ENGINEER — D. MATTHEW BREWER

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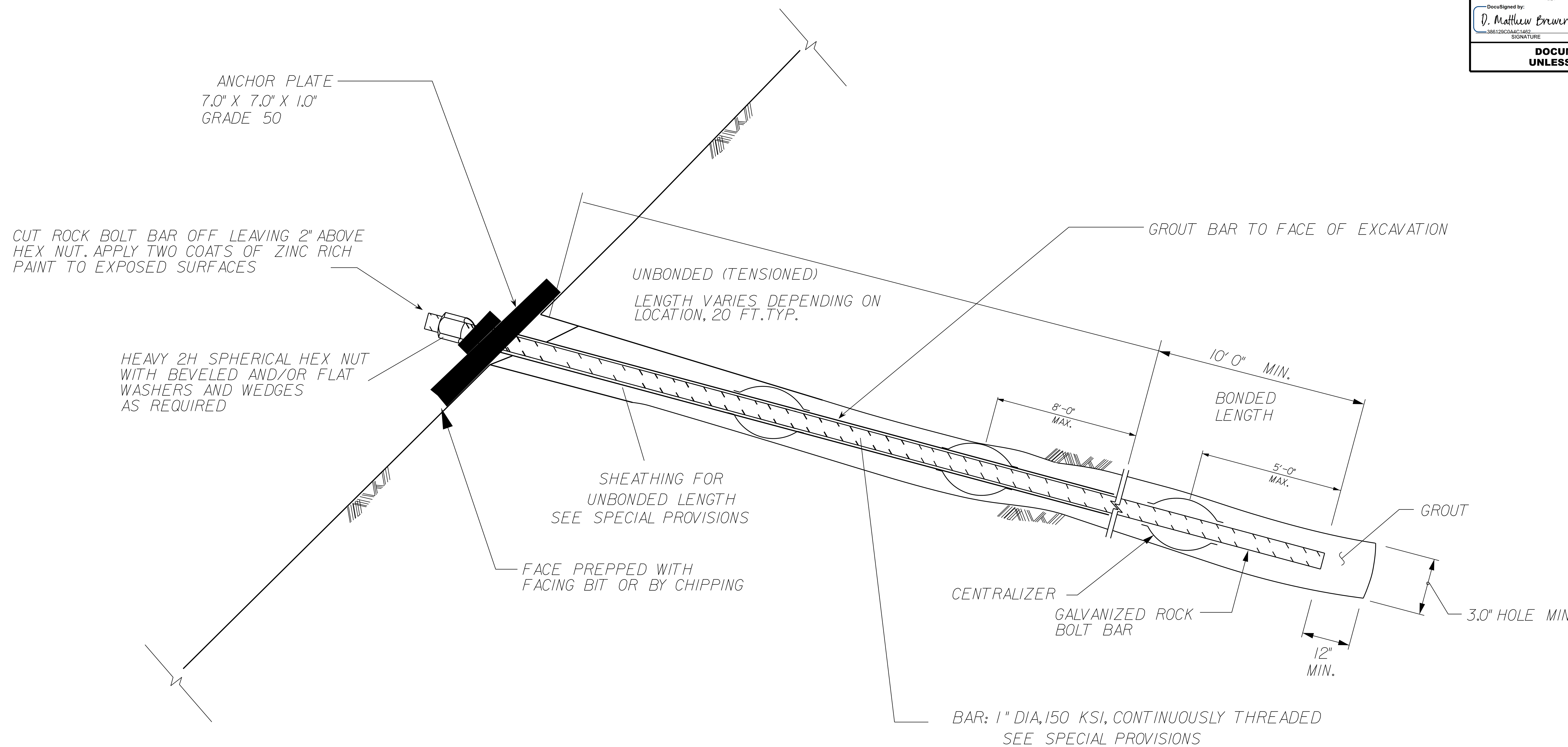
NOTE: GALVANIZE ALL ACCESSORIES INCLUDING PLATES,WASHERS,WEDGES, CLIPES,CLAMPS,WIRES,RINGS,AND ALL INCIDENTALS NECESSARY FOR INSTALLATION,TO THE REQUIREMENTS OF ASTM A-153-80



TYPICAL SECTION

ESTIMATED QUANTITIES	
TENSIONED SPOT ROCK BOLTS - 75 KIPS	3,060 LF

PREPARED BY: D. MATTHEW BREWER, P.E.	DATE: 1/15/23
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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

GEOTECHNICAL CONSTRUCTION DETAILS - TENSIONED SPOT ROCK BOLTS - 75 KIPS

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2G-7

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 041986 ENGINEER MATTHEW BREWER

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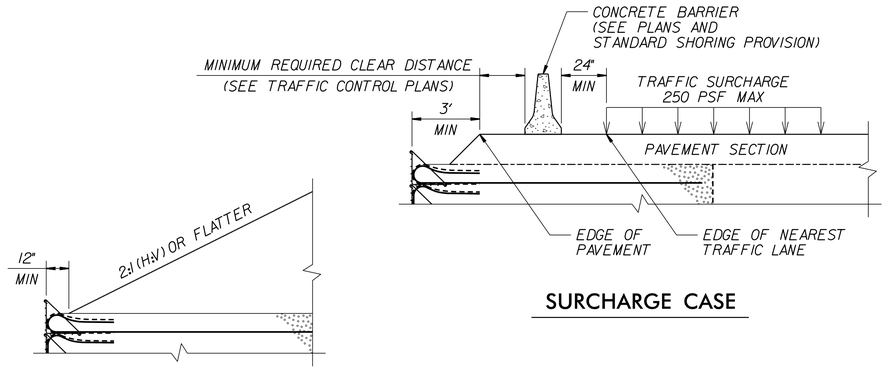
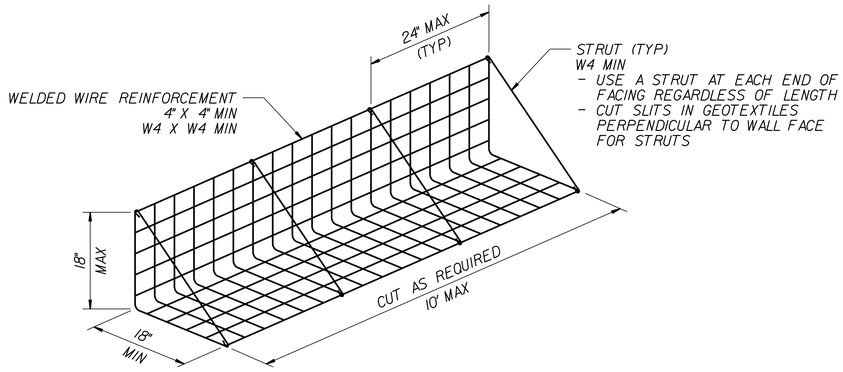
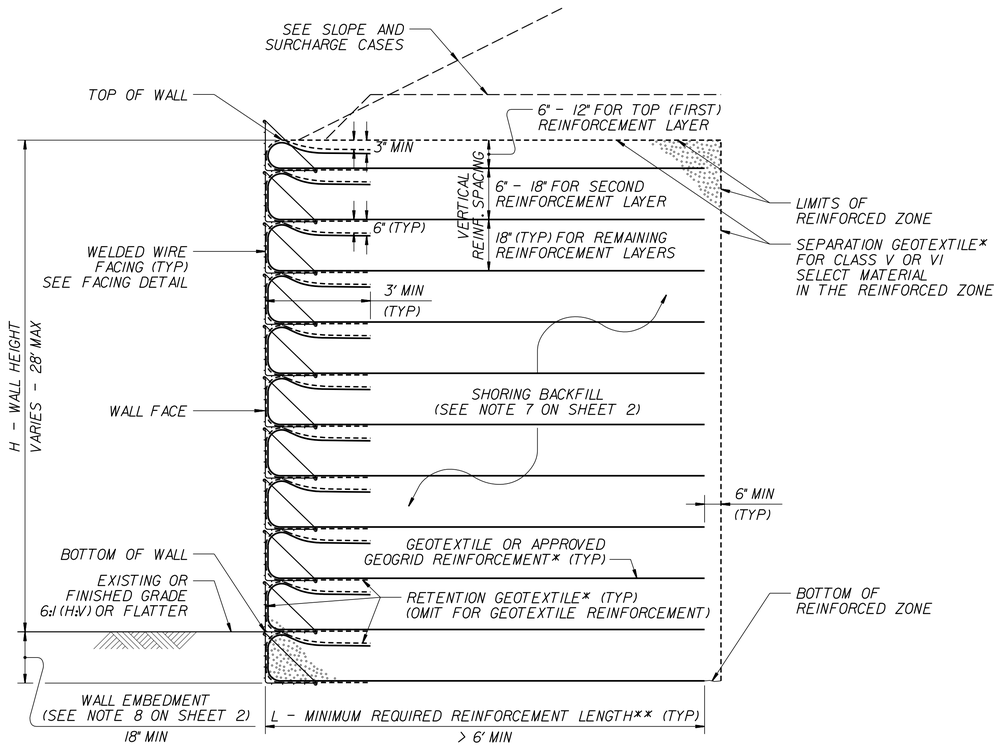


SURCHARGE CASE

SLOPE CASE

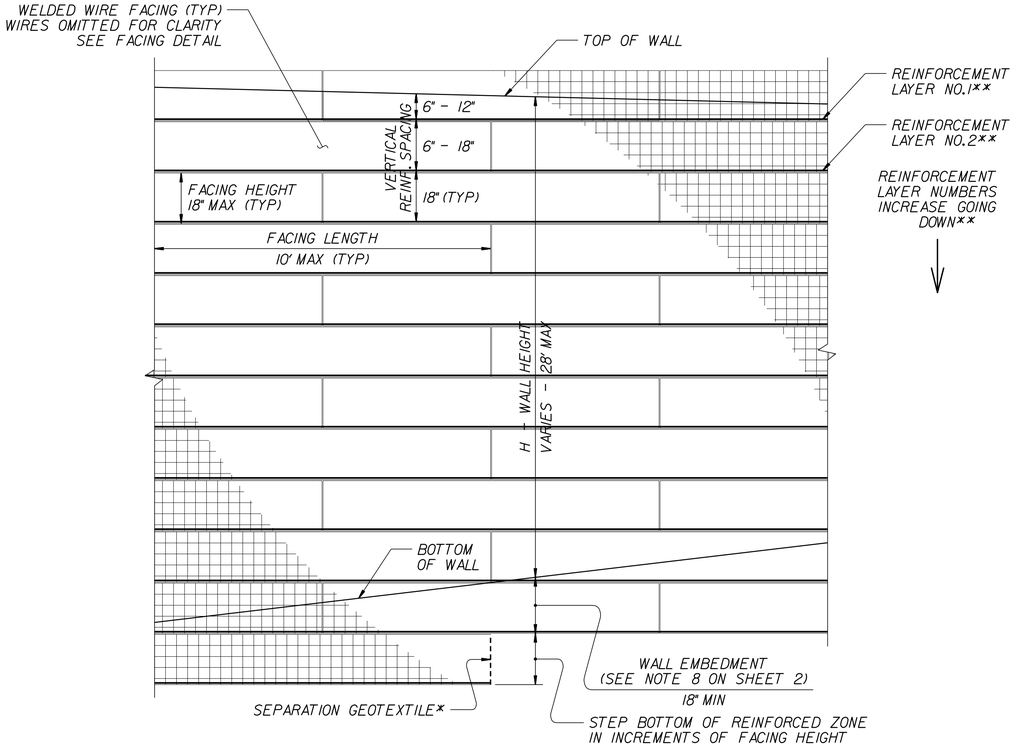


FACING DETAIL



STANDARD TEMPORARY WALL

(FOR STANDARD TEMPORARY WALLS ON STRUCTURES, SEE TEMPORARY WALL ON STRUCTURE DETAIL ON SHEET 2.)
*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.



STANDARD TEMPORARY WALL – PARTIAL ELEVATION

*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD
TEMPORARY WALL
SHEET 1 OF 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2G-8

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 041986 ENGINEER D. MATTHEW BREWER

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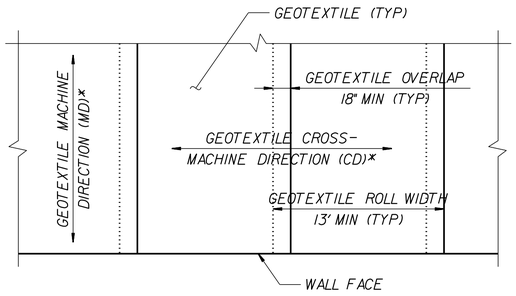
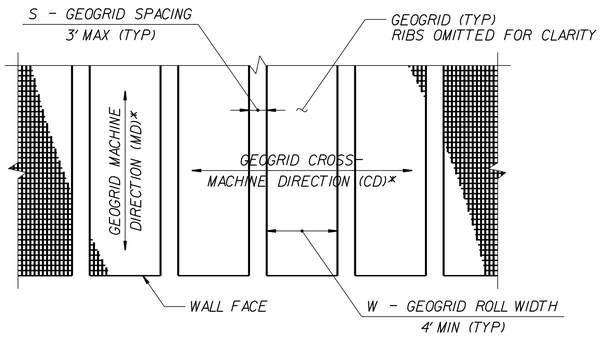


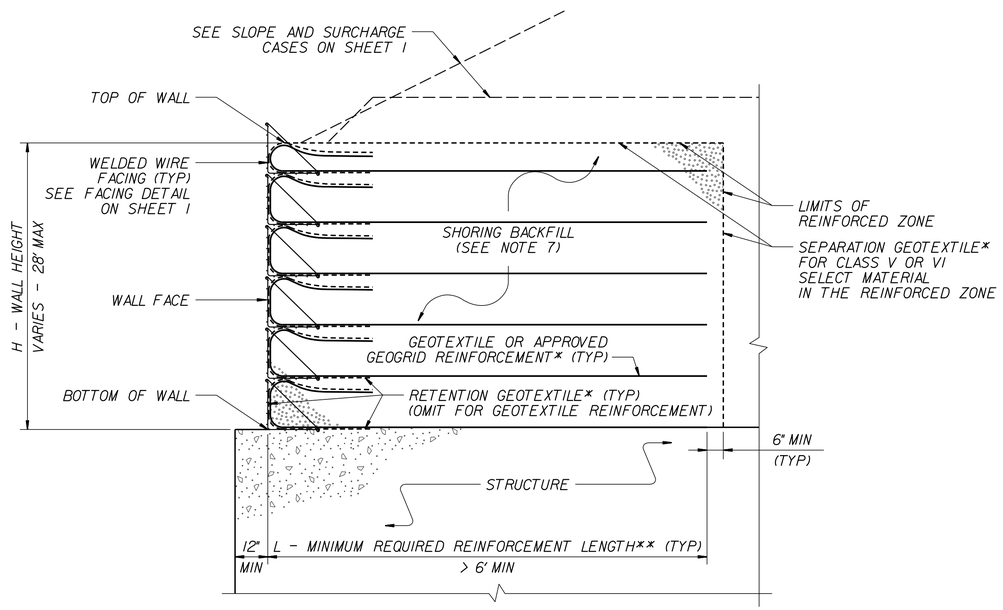
GEOTEXTILE PLACEMENT
(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)



GEOGRID PLACEMENT
(80% COVERAGE MIN FOR GEOGRID REINFORCEMENT – $\frac{W}{W+S}$ x 100 $\geq$ 80%, SEE NOTE 11)

GEOSYNTHETIC PLACEMENT DETAILS

(PLAN VIEW)
*SEE NOTE 12.



TEMPORARY WALL ON STRUCTURE DETAIL
*SEE GEOSYNTHETIC PLACEMENT DETAILS.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 PSF
4. DO NOT USE STANDARD TEMPORARY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, ASSUME GROUNDWATER DEPTH IS LESS THAN 7' BELOW BOTTOM OF REINFORCED ZONE. DO NOT USE STANDARD TEMPORARY WALLS IF GROUNDWATER OR FLOOD ELEVATION IS ABOVE BOTTOM OF REINFORCED ZONE.
7. DO NOT USE A-2-4 SOIL FOR STANDARD TEMPORARY WALLS AROUND CULVERTS OR IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS FOR SLOPE CASES. DO NOT USE SELECT MATERIAL, CLASS VI IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS WITH GEOTEXTILE REINFORCEMENT.
8. WALL EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
9. DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
10. GEOGRIDS FOR GEOGRID REINFORCEMENT ARE APPROVED FOR SHORT TERM DESIGN STRENGTHS (3-YEAR DESIGN LIFE) IN THE MD AND CD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Products.aspx
    DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE I OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

11. FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
12. AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH OF THE FOLLOWING CONDITIONS OCCUR:
    - W (REINFORCEMENT ROLL WIDTH) $\geq$ (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND
    - REINFORCEMENT STRENGTH IN CD $\geq$ MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
13. SUBMIT A "STANDARD TEMPORARY WALL SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY WALL CONSTRUCTION. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
14. DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
15. FOR STANDARD TEMPORARY WALLS WITH PILE FOUNDATIONS IN THE REINFORCED ZONE, DRIVE PILES THROUGH REINFORCEMENT AFTER CONSTRUCTING TEMPORARY WALLS.
16. DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
17. CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
18. FOR STANDARD TEMPORARY WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.
19. FOR STANDARD TEMPORARY WALLS WITH TOP OF WALL WITHIN 5' OF FINISHED GRADE, REMOVE TOP FACING AND INCORPORATE TOP REINFORCEMENT LAYER INTO FILL WHEN PLACING FILL IN FRONT OF WALL.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD TEMPORARY WALL
SHEET 2 OF 3

DATE: 10-19-21

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2G-9

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 041986 ENGINEER MATTHEW BREWER

DocuSigned by: D. Matthew Brewer 1/15/2023
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SLOPE OR SURCHARGE CASE	GROUNDWATER DEPTH BELOW BOTTOM OF REINFORCED ZONE (SEE NOTE 6 ON SHEET 2) (FT)	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)	H - WALL HEIGHT (FT)																									
			< 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
SLOPE CASE	> 0	CLASS II,TYPE I, CLASS III,CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	8	9	11	12	13	13	14	15	16	17	18	19	20	21	22	23	24	24	25	26	27	27
SURCHARGE CASE	> 0 TO 7 FOR H < 20' > 0 TO 10 FOR H ≥ 20'	ALL SHORING BACKFILL TYPES	6	7	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	17	17	18	19	19	20	21	22
	> 7 FOR H < 20' > 10 FOR H ≥ 20'	A-2-4 SOIL	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21
		CLASS II,TYPE I OR CLASS III SELECT MATERIAL	6	6	7	7	8	8	9	10	10	11	11	12	12	13	14	15	15	16	16	17	17	18	18	19	20
		CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	7	7	8	8	9	9	10	10	11	12	13	13	14	14	15	15	16	17	17	18	19	19

L – MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)

(FOR ALL REINFORCEMENT TYPES)

WALL HEIGHT (H) + WALL EMBEDMENT (FT)	NUMBER OF REINFORCEMENT LAYERS*
2.5 - 4	3
4 - 5.5	4
5.5 - 7	5
7 - 8.5	6
8.5 - 10	7
10 - 11.5	8
11.5 - 13	9
13 - 14.5	10
14.5 - 16	11
16 - 17.5	12
17.5 - 19	13
19 - 20.5	14
20.5 - 22	15
22 - 23.5	16
23.5 - 25	17
25 - 26.5	18
26.5 - 28	19
28 - 29.5	20

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	2400
2	2400	2400	2400	2400	2400
3	2400	2400	2400	2400	2400
4	2400	2400	2500	2400	2400
5	2500	2400	3000	2400	2400
6	3000	2400	3500	2800	2400
7	3500	2700	4000	3200	2600
8	4000	3100	4500	3600	2900
9	4500	3500	5000	4000	3200
10	5000	3900	5500	4400	3500
11	5500	4300	6000	4800	3800
12	6000	4700	6500	5200	4100
13	6500	5100	7000	5600	4400
14	7000	5400	7500	6000	4700
15	7500	5800	8000	6400	5000
16	8000	6200	8500	6800	5300
17	8500	6600	9000	7200	5600
18	9000	7000	9500	7600	5900
19	9500	7400	10000	8000	6200
20	10000	7800	10500	8400	6500

GEOTEXTILE REINFORCEMENT
ULTIMATE TENSILE STRENGTH (LB/FT)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL
1	240	200	340	290	240
2	380	310	520	430	350
3	530	420	700	570	460
4	690	550	870	720	570
5	860	690	1050	860	680
6	1030	830	1220	1000	790
7	1200	970	1400	1150	900
8	1370	1110	1580	1290	1010
9	1550	1240	1750	1430	1120
10	1720	1380	1930	1580	1230
11	1890	1520	2100	1720	1340
12	2060	1660	2280	1860	1450
13	2240	1800	2450	2010	1560
14	2410	1940	2630	2150	1670
15	2580	2080	2800	2290	1780
16	2750	2220	2980	2440	1890
17	2930	2360	3160	2580	2000
18	3100	2500	3330	2720	2110
19	3270	2640	3510	2860	2220
20	3440	2780	3690	3000	2330

GEOGRID REINFORCEMENT
SHORT–TERM DESIGN STRENGTH (LB/FT)
(SEE NOTE 10 ON SHEET 2.)

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD

(SEE NOTE 9 ON SHEET 2.)
*SEE PARTIAL ELEVATION ON SHEET 1
FOR REINFORCEMENT LAYER NUMBERING.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD
TEMPORARY WALL
SHEET 3 OF 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	2G-10

GEOTECHNICAL ENGINEER — SEAL 041986, NORTH CAROLINA PROFESSIONAL ENGINEER, D. MATTHEW BREWER

DocuSigned by: D. Matthew Brewer 1/15/2023

SIGNATURE DATE — ENGINEER — SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

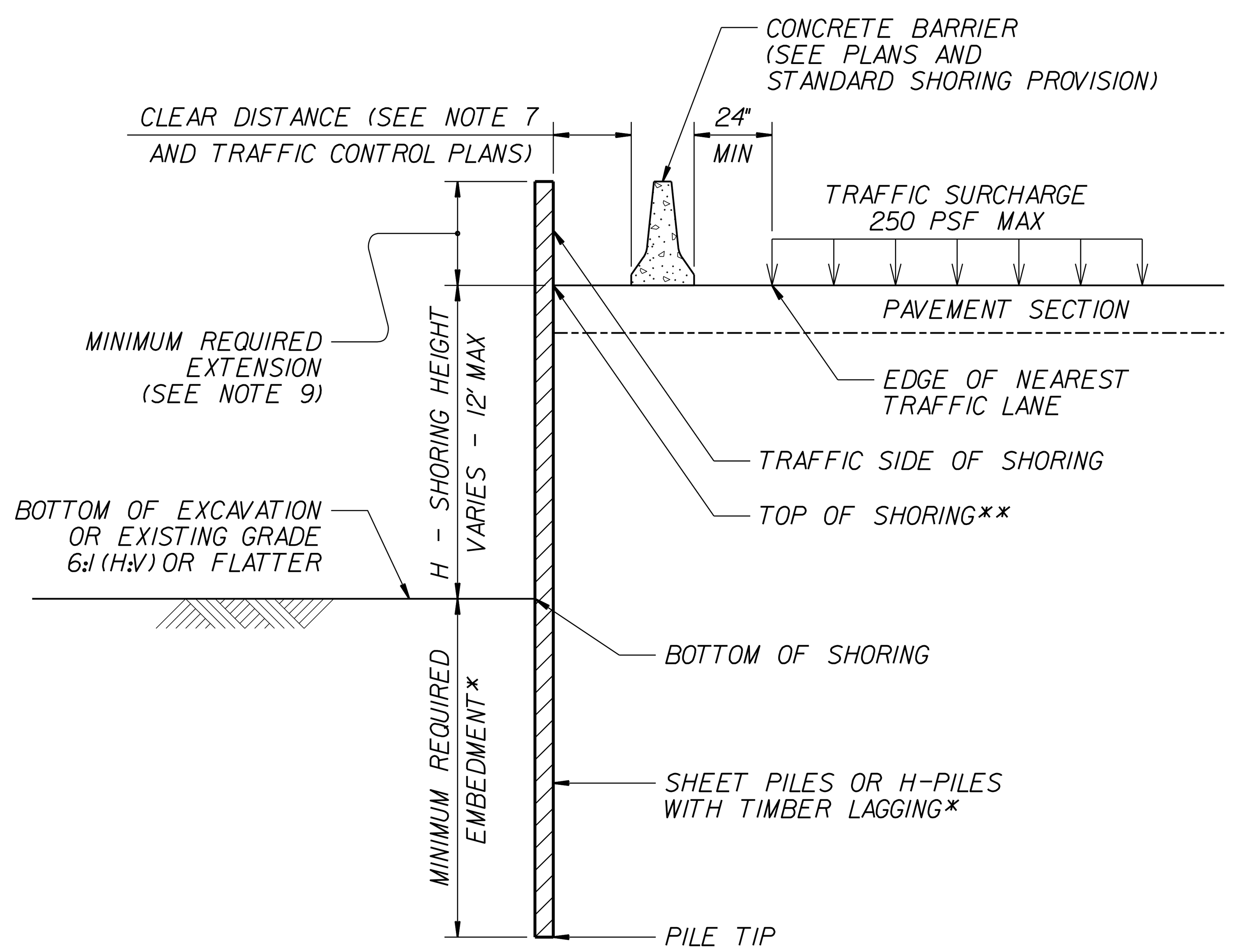
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".

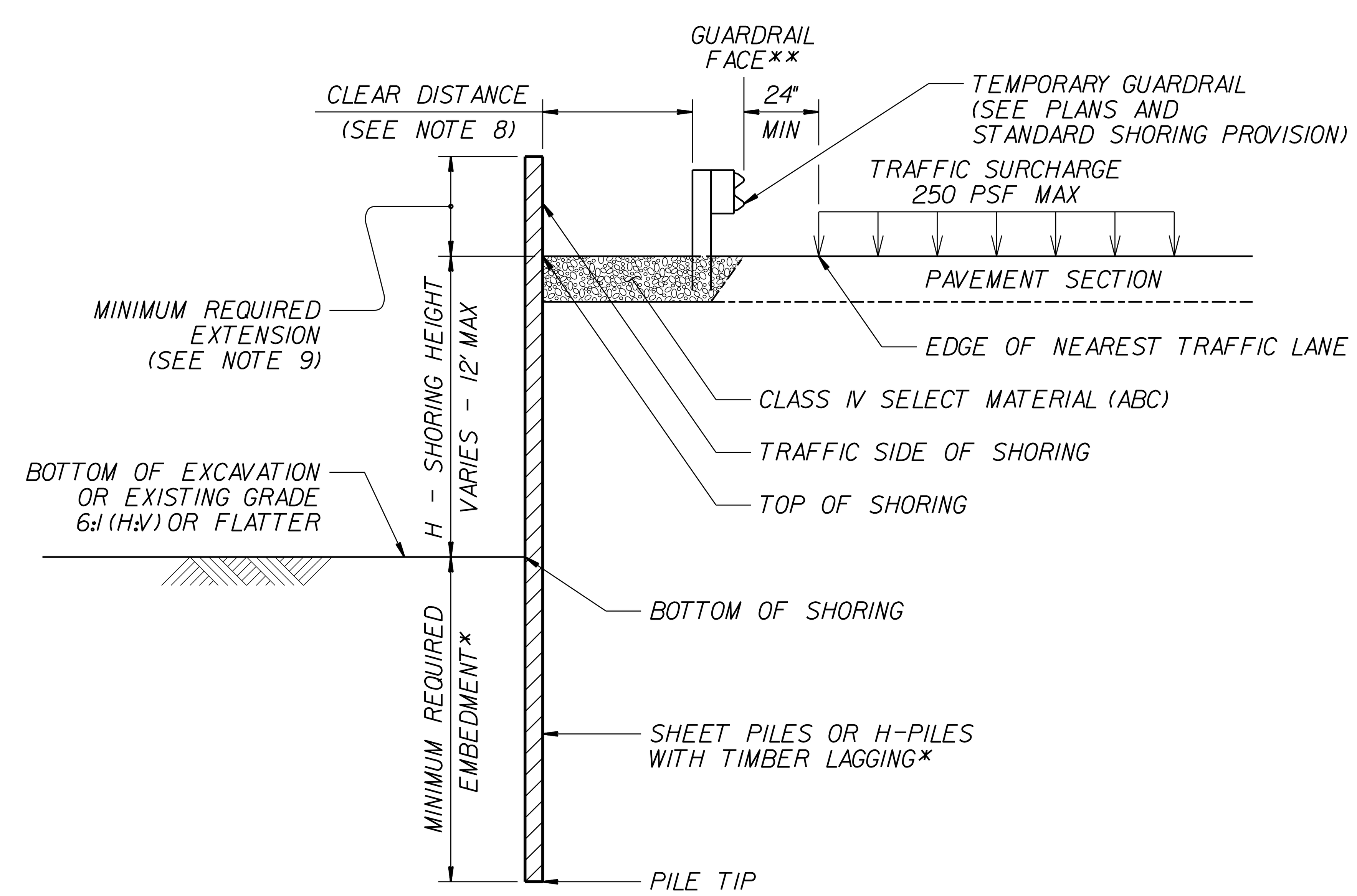
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 PSF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



CONCRETE BARRIER

**TOP OF SHORING = EDGE OF PAVEMENT

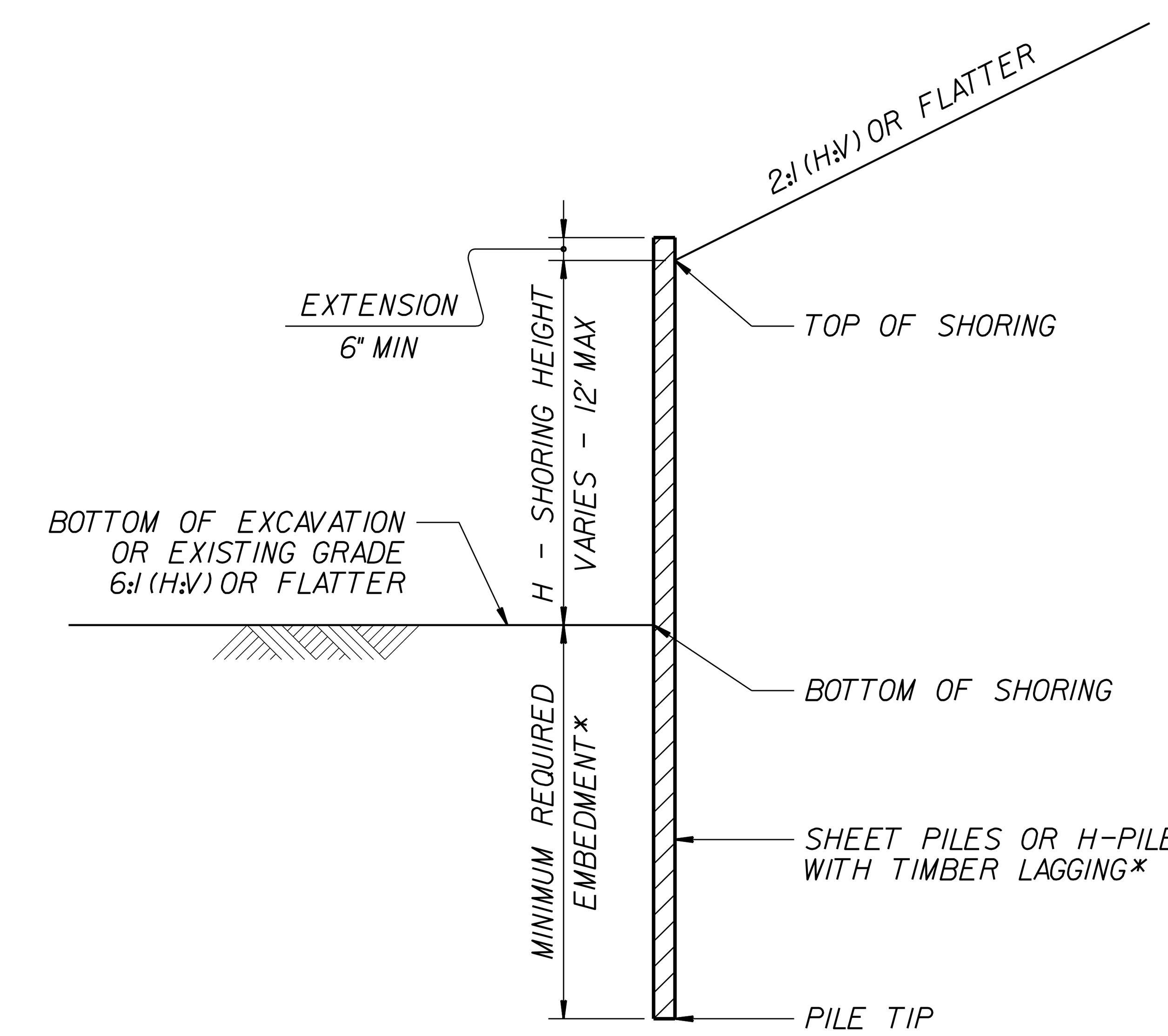


TEMPORARY GUARDRAIL

**GUARDRAIL FACE = EDGE OF PAVEMENT

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)
*SEE TABLE ABOVE.



STANDARD TEMPORARY SHORING

(SLOPE CASE)
*SEE TABLE ABOVE.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 11-19-13

COMPUTED BY: SGM DATE: 1/6/2026
CHECKED BY: JLT DATE: 1/13/26

PROJECT NO.	SHEET NO.
A-0009CD	3B-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

IN CUBIC YARDS

Station	Station	Uncl. Excav.	Undercut	Embank. +%	Borrow	Waste
-Y2- 89+80.00	-Y2- 100+00.00	102		8,221	8,119	
-Y3- 10+50.00	-Y3- 14+02.24	2,881		1,334		1,547
-Y2- 90+75.00	-Y2- 99+25.00		2,980			2,980
SUBTOTAL 1		**2,983**	**2,980**	**9,555**	**8,119**	**4,527**
-Y2- 100+00.00	-Y2- 130+00.00	7,170		14,190	7,020	
-Y2- 117+75.00	-Y2- 130+00.00		5,076			5,076
SUBTOTAL 2		**7,170**	**5,076**	**14,190**	**7,020**	**5,076**
-Y2- 130+00.00	-Y2- 158+00.00	357,395		15,504		341,891
-Y2-130+00.00	-Y2- 133+75.00		1,554			1,554
-Y2- 138+25.00	-Y2- 141+75.00		2,320			2,320
SUBTOTAL 3		**357,395**	**3,874**	**15,504**		**345,765**
-Y2- 158+00.00	-Y2- 169+60.00	54,499		670		53,829
SUBTOTAL 4		**54,499**		**670**		**53,829**
TOTAL		422,047	11,930	39,919	15,139	409,197
LOSS DUE TO CLEARING & GRUBBING		-18,000				-18,000
ADDITIONAL UNDERCUT (CONTINGENCY -PER GEOTECH)			750			750
ADDITIONAL UNDERCUT (PER CFI)			10,000			10,000
HARD ROCK WASTE TO REPLACE BORROW					-10,531	-10,531
ADJUST ROCK SWELL				-2,633	-2,633	
ELIMINATE EARTH SHRINKAGE FACTOR				-1,975	-1,975	
ADJUST ROCK SWELL				-1,476		1,476
ELIMINATE EARTH SHRINKAGE FACTOR				-1,107		1,107
APPLY ROCK SWELL FACTOR TO PERMANENTLY WASTED HARD ROCK						29,576
APPLY ROCK SHRINKAGE TO PERMANENTLY WASTED HARD ROCK						22,182
GRAND TOTALS:		**404,047**	**22,680**	**32,728**	**0**	**445,757**
SAY		**410,000**	**22,680**			

Note: Earthwork quantities are calculated by TGS Engineers. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

EST. DDE = 800 CUBIC YARDS
SELECT GRANULAR MATERIAL, CLASS III = 13,630 CY
PAVEMENT STRUCTURE VOLUME = 2,300 CY

Quantities are approximate only. The Resident Engineer will recross-section the work accurately when the project is staked out. These cross-section notes will be used in computing the final quantities for which the contractor will be paid.

PAVEMENT REMOVAL SUMMARY

IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL
-Y2-	89+80	98+47	RT	817.54
-Y2-	92+10	95+00	RT	138.13
-Y2-	98+80	132+27	RT	4,590.52
-Y2-	139+46	154+49	LT	1,957.62
-Y2-	155+33	156+13	LT	46.67
SR 1238 Bill Crisp Rd (Lt of -Y2- 99+50)				163.48
		TOTAL:		7,713.96
		SAY:		**7,750**

COMPUTED BY: SGM DATE: 12/16/2025
CHECKED BY: JLT DATE: 1/13/26

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	3B-2

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.	LOC	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR		EXTRA LENGTH GUARDRAIL POSTS (8' STEEL)	WOOD RUB RAIL	REMOVE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END		B-77	GREU, TL-3	GREU, TL-2	CAT-1	AT-1	B-77 SC	END SECTION	G	NG				
-Y2-	89+78.70	97+84.95	RT	806.250					VAR. BERM 4'-8'		50'	50'	1'	1'			2											STD 862.01, SHT 12 OF 15: GUARDRAIL 6" FROM FACE OF CURB
-Y2-	99+85.00	105+04.00	RT																							519		
-Y2-	90+50.00	-Y3- 13+34.50	LT	762.500	87.5				8'	11'		50'		1'						1								REMOVE GR ANCHOR & TIE TO EXIST. GUARDRAIL (A-0009CC)
-Y2-	99+35.00	105+53.75	RT	618.750					15.5' BERM		50'	50'	1'	1'			2										50.0	STD 862.01, SHT 12 OF 15
-Y2-	107+00.00	111+06.25	RT	406.250					15.5' BERM		50'	50'	1'	1'			2											AT MUP PLACE GUARDRAIL IN LINE WITH FACE OF CURB
-Y2-	112+13.00	132+00.50	RT	1987.500					15.5' BERM		50'	50'	1'	1'			2											
-Y2-	107+50.00	110+56.00	RT																							306		
-Y2-	112+63.00	131+51.00	RT																							1888		
-Y2-	117+80.00	126+80.00	LT	900.000					8' BERM		50'	50'	1'	1'			2										880.0	STD 862.01, SHT 12 OF 15: GUARDRAIL 6" FROM FACE OF CURB
-Y2-	127+20.00	133+51.25	LT	631.250					8'BERM		50'	50'	1'	1'			2										470.0	
-Y2-	133+20.00	133+60.00	RT	29.125	25				8'	11'						1				1								SHOULDER BERM GUTTER INSTALLATION; TIE TO DBL FACED CONCRETE BARRIER
-Y2-	135+50.00	143+00.00	LT	750.000					8'	806.12	50'	50'	1'	1'													501.4	
-Y2-	139+00.00	142+50.00	RT	350.000					8'	11'	50'	50'	1'	1'			2											SHOULDER BERM GUTTER INSTALLATION
-Y2-	143+75.00	147+37.50	LT	362.500					8'	11'	50'	50'	1'	1'			2										326.8	
-Y2-	145+80.88	146+60.00	RT	79.125					8'	11'	50'		1'			1	1											TIE TO SGL FACED CONCRETE BARRIER
-Y2-	147+71.00	155+02+/-	LT	731.250	106.25				8'	11'	25'	50'	0.5'	1'			1	1									817.9	
-Y2-	148+80.00	149+59.13	RT	79.125					8'	11'		50'		1'		1	1											TIE TO SGL FACED CONCRETE BARRIER
-Y2-	152+45.88	153+25.00	RT	79.125					8'	11'	50'		1'			1	1											TIE TO DBL FACED CONCRETE BARRIER, SHOULDER BERM GUTTER INSTALLATION
-Y2-	155+70.88	156+50.00	LT	79.125					8'	11'		50'		1'		1	1											TIE TO DBL FACED CONCRETE BARRIER, SHOULDER BERM GUTTER INSTALLATION
-Y2-	161+00.00	161+72.88	LT	72.875					8'	11'	50		1'			1	1											TIE TO DBL FACED CONCRETE BARRIER, SHOULDER BERM GUTTER INSTALLATION
-Y2-	161+84.00	163+37.00	RT	137.500	31.25				8'	11'									1	1							100.6	
-Y2-	164+42.00	166+17.00	RT	175.000					8'	11'							2										162.7	
SUB-TOTALS				9,037.250	250.000											6	24	1	1	3						2,713	3,309.4	
LESS ANCHOR DEDUCTIONS																												
	TYPE B-77	6 @ 22.875 FT		137.250																								
	TYPE TL-3	24 @ 50.00 FT		1,200.000																								
	TYPE TL-2	1@ 25.00 FT		25.000																								
	CAT-1	1@ 6.25 FT		6.250																								
	AT-1	3@ 6.25 FT			18.750																							
ANCHOR TOTAL				1,368.500	18.750																							
GRAND-TOTALS				7,668.750	231.25											6	24	1	1	3						2,713	3,309.40	
SAY				**7,700**	**237.5**											**6**	**24**	**1**	**1**	**3**						**2,750**	**3,310**	
ADDITIONAL GUARDRAIL POSTS =				**10 EA**																								
TEMPORARY GUARDRAIL																												
-Y2-	98+92.00	102+29.50	LT	337.50													2											TEMPORARY ANCHOR UNITS
-Y2-	98+86.00	102+15.00	RT	312.50	31.25					7							1			1								TEMPORARY ANCHOR UNITS
-Y2-	140+55.00	142+11.25	RT	156.25													2											TEMPORARY ANCHOR UNITS
SUB-TOTALS				806.25	31.25												5			1								
LESS ANCHOR DEDUCTIONS																												
	TEMP. TYPE TL-3	5 @ 50.00 FT		250.00																								
	TEMP. TYPE AT-1	1 @ 6.25 FT			6.25																							
ANCHOR TOTAL				250.00	6.25																							
GRAND-TOTALS				556.25	25.00												5			1								
SAY				**556.25**	**25**												**5**			**1**								

Docusign Envelope ID: 048D5AD3-1A89-4C07-BD36-E3D7C8CB3E79

TGSZJR-LAPTOP

COMPUTED BY:	Zachary Richard, PE	**DATE:**	10/12/2022
CHECKED BY:	David Petty, PE	**DATE:**	2/20/2026

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
A-0009CD	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)

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

LINE & STATION	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC)										C. S. PIPE							R. C. PIPE CLASS III						R. C. PIPE CLASS IV						ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)			C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03			CONCRETE TRANSITIONAL SECTION		D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18, 840.27, OR 840.45	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	TEMP STEEL PLATE COVER SEE SHEET 2D-1	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	TB PRECAST DRAINAGE STRUCTURE STD. 840.46	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO C.B. SEE SHT 2D-2	CONVERT EXISTING D.I. TO C.B. SEE SHT 2D-2	ADJUST D.I.	ADJUST M.H.	ADJUST C.B.	15" C.S. ELBOW, 0.064" THICK	18" C.S. ELBOW, 0.064" THICK	15" ELBOW	18" ELBOW	BERM DRAINAGE OUTLET STD. 850.10 (SY)	FLOWABLE FILL	CONCRETE COLLARS CL. "B" STD. 840.72	CONCRETE AND BRICK PIPE PLUG STD. 840.71	PIPE REMOVAL	REMARKS
SIZE								15	18	24	30	36	42					15	18	24	30	36	42	48	18	24	30	36	42	48	15	18	24	30	36	42			A	B		GRATE TYPE																																				
THICKNESS OR GAUGE		FROM	TO	FT.	FT.	FT.	%							DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	.064	.064	.064	.079	.079	.109	.109													CY	0' THRU 5' EACH	5' THRU 10' LIN. FT.	10' AND ABOVE LIN. FT.		E	F	G	D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05																													CY	CY	CY	LIN. FT.	
Y2 94+10	20 RT	4410		2036.4																																1			1		1																																				
		4410	4411		2033.2	2033.0		20																																																																							
Y2 95+89	20 RT	4412		2030.3																																1			1		1																																				
		4412	4413		2027.1	2026.9		28							X	X																																																															
Y2 92+00	20 RT	4414		2044.0																																1			1		1																																				
		4414	4415		2040.8	2036.0		28						X																																																																
Y2 91+07	22 LT	4416		2048.4																																																																1											Adjust MH Top up to 2048.4.
Y2 91+14	41 LT	4417																																																																												0.4465			18" Pipe Collar
		4417	4418		2039.0	2038.9			8																																																																						
Y2 97+80	20 RT	4501		2025.4																																1			1		1																																				
		4501	4502		2022.2	2022.0		28							X	X																																																															
Y3 12+00	2 LT	4503			2030.0	2029.4																									56																																															
Y3 13+31	3 LT	4504			2016.9	2016.5																				80																																																				Bury 0.5'
Y2 102+47	20 RT	4505		2016.7																																1			1		1																																				
		4505	4506		2013.5	2013.2		48							X	X																																																															
Y2 101+50	20 LT	4507		2018.5																																1			1			1														1																				See Sheet 2D-1
		4507	4508		2015.3	2013.7																								84																																																
Y2 102+35	20 LT	4508		2016.9																																1			1			1																																			
		4508	4527		2013.7	2011.5																								116																																																
Y2 103+93	20 LT	4510		2013.9																																1			1			1																																			
		4510	4511		2010.7	2009.4																								68																																																
Y2 104+62	20 LT	4511		2012.6																																1			1			1																																			
		4511	4514		2009.4	2008.1																								68																																																
Y2 104+62	20 RT	4512		2012.6																																1			1		1																																				
		4512	4513		2008.8	2007.0			32						X	X																																																															
Y2 105+30	20 LT	4514		2011.3																																1			1			1																																			
		4514	4515		2008.1	2006.8																								68																																																
Y2 106+00	20 LT	4515		2010.0																																1			1			1																																			
		4515	4516		2006.8	2004.8																								104																																																
Y2 107+06	20 LT	4516		2008.0																																1			1			1																																			
		4516	4517		2004.8	2003.2	0.4																								88																																																
Y2 107+94	20 LT	4517		2006.4																																1			1			1																																			
		4517	4518		2003.2	2000.9	0.6																								116																																																
Y2 109+12	20 LT	4518		2004.1																																1			1			1																																			
		4518	4520		2000.9	1999.3	0.9																								68																																																
Y2 109+81	20 LT	4520		2002.8																																							1																					1														Convert J.B. to CB-G See Sheet 2D-2
Y2 107+06	20 RT	4521		2008.0																																1			1		1																																				
		4521	4522		2004.8	2004.5		32							X	X																																																															
Y2 109+12	20 RT	4523		2004.1																																1			1		1																																				
Y2 100+50	20 LT	4525		2020.4																																1			1			1														1																				See Sheet 2D-1
		4525	4526		2017.4	2017.0		72							X	X																																																															
Y2 103+50	20 LT	4527		2014.7																																1			1			1																																			
		4527	4528		2011.2	2010.9																									40																																															
Y2 103+50	20 RT	4528		2014.7																																1			1		1															1																				See Sheet 2D-1
		4528	4512		2010.9	2008.8																									112																																															
Y2 111+14	20 RT	4601		2000.3																																1			1		1																																				
		4601	4602		1997.1	1996.9		20							X	X																																																															
Y2 111+31	20 LT	4604		2000.0																																							1																					1														Convert J.B. to CB-G See Sheet 2D-2
Y2 111+85	37 LT	4605		1999.5																																																																											
		4605	4606		1998.0	1995.7			20					X																																																																	Tie into existing CB
SHEET TOTALS								276	60																		80				780	208						21			21		10	13														3							2			1								0.4465			

TGSZJR-LAPTOP

COMPUTED BY: Zachary Richard, PE **DATE:** 10/12/2022

CHECKED BY: David Petty, PE **DATE:** 2/20/2026

PROJECT NO.	SHEET NO.
A-0009CD	3D-2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC)										C. S. PIPE							R. C. PIPE CLASS III						R. C. PIPE CLASS IV						ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)			C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03				CONCRETE TRANSITIONAL SECTION			D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18, 840.27, OR 840.45	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20		G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33		T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36		TEMP STEEL PLATE COVER SEE SHEET 2D-1		M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	TB PRECAST DRAINAGE STRUCTURE STD. 840.46		CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO C.B. SEE SHT 2D-2	CONVERT EXISTING D.I. TO C.B. SEE SHT 2D-2	ADJUST D.I.	ADJUST M.H.	ADJUST C.B.			15" C.S. ELBOW, 0.064" THICK	18" C.S. ELBOW, 0.064" THICK	15" ELBOW	18" ELBOW	BERM DRAINAGE OUTLET STD. 850.10 (SY)		FLOWABLE FILL	CONCRETE COLLARS CL. "B" STD. 840.72	CONCRETE AND BRICK PIPE PLUG STD. 840.71	PIPE REMOVAL	REMARKS
SIZE								15	18	24	30	36	42					15	18	24	30	36	42	48	18	24	30	36	42	48	15	18	24	30	36	42			A	B																																																		
THICKNESS OR GAUGE		FROM	TO	FT.	FT.	FT.	%							DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	.064	.064	.064	.079	.079	.109	.109													CY	0' THRU 5' EACH	5' THRU 10' LIN. FT.	10' AND ABOVE LIN. FT.		GRATE TYPE E	F	G		D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05																																											CY	CY	CY	LIN. FT.	
Y2 111+92	20 LT	4606		1999.0																																								1																													1																		Convert J.B. to CB-G See Sheet 2D-2
Y2 113+73	20 LT	4608		1995.4																																		1			1			1																																															
		4608	4609		1992.2	1991.8		24							X	X																																																																												
Y2 113+82	40 LT	4609		1995.0																																		1											1	1																																											
		4609	4610		1991.8	1989.7																									116																																																																
Y2 115+00	40 LT	4610		1992.9																																		1																			1				1																																	
		4610	4611		1989.7	1986.9	0.6																								88																																																																
Y2 115+91	39 LT	4611		1990.1																																		1																			1				1																																	
		4611	4613		1986.6	1984.3	0.6																									112																																																													
Y2 116+89	20 LT	4612		1989.5																																								1																														1																	Convert D.I. to CB-G See Sheet 2D-2
Y2 115+50	20 RT	4615		1992.1																																		1			1		1																																																	
		4615	4616		1988.9	1988.7		24							X	X																																																																											
Y2 118+00	20 RT	4617		1987.4																																		1			1		1																																																	
		4617	4618		1984.2	1982.7		24							X	X																																																																											
Y2 119+50	20 LT	4619		1984.5																																		1			1			1																																															
		4619	4620		1981.3	1975.0		32						X																																																																															
Y2 121+00	20 RT	4621		1981.7																																		1			1		1																																																
		4621	4622		1978.5	1973.4		32						X																																																																															
Y2 123+25	20 LT	4623		1977.4																																		1			1			1																																															
		4623	4624		1974.2	1967.0		36						X																																																																															
Y2 124+00	20 RT	4625		1976.0																																		1			1		1																																																	
		4625	4626		1971.0	1962.6		40						X																																																																															
Y2 117+20	47 LT	4627		1988.5																																						1																																	1																		Convert J.B. to CB-E See Sheet 2D-2
Y2 126+50	20 LT	4701		1971.0																																		1			1			1																																															
		4701	4702		1967.8	1959.3		36						X																																																																															
Y2 126+89	20 RT	4703		1970.1																																		1			1		1																																																	
		4703	4704		1966.9	1966.1																									40																																																															
Y2 127+29	20 RT	4704		1969.3																																		1			1		1																																																	
		4704	4705		1966.1	1959.2		36						X																																																																															
Y2 128+62	20 LT	4706		1966.2																																		1			1			1																																															
		4706	4707		1963.0	1956.9		32						X																																																																															
Y2 131+00	18 LT	4708		1961.7																																		1			1			1																																															
		4708	4709		1958.5	1950.8		40						X																																																																															
Y2 132+06	17 LT	4710		1961.0																																		1			1			1																																															
		4710	4711		1957.8	1951.4		36						X																																																																															
Y2 132+89	58 RT	4712		1961.3																																																																																										
		4712	4714		1958.8	1956.7																												76																																																												
Y2 132+42	57 RT	4713			1959.9	1959.4																										76																																																															
Y2 132+89	16 LT	4714		1961.0																																		1			1		1																																																	
		4714	4716		1956.7	1951.0	0.6														40																																																																								
Y2 132+48	16 LT	4715		1961.0																																		1			1	1																																																		
		4715	4710		1958.0	1957.8																									40																																																															
Y2 133+36	28 RT	4717		1962.9																																		1															1							1																																		
		4717	4718		1960.9	1960.8		12							X	X																																																																														
Y2 142+66	13 LT	4805			1994.8	1969.5													140																																																																		2									
Y2 149+80	96 RT	4806		2067.0																																																																																					11						18" BDO
		4806	4807		2065.5	2034.9			60					X																																																																									1							
Y2 149+55	42 RT	4807		2037.9																																		1													1				1																																						
		4807	4808		2034.9	2030.7	0.5		52						X	X																																																																												
Y2 149+00	39 RT	4808		2035.7																																		1													1				1																																						
							SHEET TOTALS	404	112										140		40										284	188		76				21			15	2	7	9					1	1	2		1		2	2				3													2	1							2		1	11						

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

TGSZJR-LAPTOP

COMPUTED BY:	Zachary Richard, PE	**DATE:**	10/12/2022
CHECKED BY:	David Petty, PE	**DATE:**	2/20/2026

PROJECT NO.	SHEET NO.
A-0009CD	3D-3

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**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	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC)										C. S. PIPE							R. C. PIPE CLASS III						R. C. PIPE CLASS IV						ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE)	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)			C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03			
SIZE		FROM	TO	FT.	FT.	FT.	%	15	18	24	30	36	42	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	15	18	24	30	36	42	48	18	24	30	36	42	48	15	18	24	30	36	42	CY	0' THRU 5'	A 5' THRU 10'	B 10' AND ABOVE		GRATE TYPE E	F	G	
THICKNESS OR GAUGE																		.064	.064	.064	.079	.079	.109	.109														EACH	LIN. FT.	LIN. FT.					
		4808	4815		2030.7	2028.2	0.9		20					X																															
Y2 146+00	42 RT	4809		2017.2																																		1							
		4809	4810		2014.2	1981.0	2.1												124																										
Y2 149+90	29 RT	4811		2042.1																																		1							
		4811	4812		2037.7	2009.5	0.9												132																										
Y2 139+60	30 RT	4813		1979.6																																		1							
		4813	4814		1974.6	1968.5		28						X																															
Y2 148+78	31 RT	4815		2035.5																																		1	2.3						
		4815	4816		2028.2	2025.2																										104													
Y2 147+70	31 RT	4816		2028.7																																		1							
		4816	4817		2025.2	2015.5																										104													
Y2 146+62	31 RT	4817		2022.8																																		1	2.3						
		4817	4809		2015.5	2014.2	1.3		60						X	X																													
Y2 151+22	42 RT	4818		2046.4																																		1							
		4818	4811		2043.4	2037.7	0.9		128						X	X																													
Y2 154+00	46 RT	4901		2056.2																																		1							
		4901	4908		2053.9	2053.8																										16													
Y2 158+70	45 RT	4903		2072.3																																		1							
		4903	4904		2068.6	2065.6			72						X	X																													
Y2 162+00	3 LT	4905		2063.9																																		1							
		4905	4906		2060.7	2055.7																									156														
Y2 163+60	2 LT	4906		2058.9																																		1							
		4906	4907		2055.7	2048.9																									156														
Y2 165+20	0 CL	4907		2052.1																																		1	2.1						
Y2 154+00	31 RT	4908		2058.9																																		1	0.1						
		4908	4902		2053.8	2053.1	0.5																									84													
Y2 153+00	31 RT	4909		2055.7																																		1							
		4909	4910		2053.8	2053.7		12							X	X																													
Y2 161+25	37 LT	4911		2063.6																																		1							
		4911	4912		2061.7	2061.6		12							X	X																													
Y2 166+35	0 CL	5001		2047.0																																		1							
		5001	5002		2043.8	2041.7																									52														
Y2 132+70	64 LT																																												
Y3A 10+64	1 RT																																												
Y2 158+67	32 RT																																												
Y2 163+61	14 LT																																												
Y2 99+58	24 LT																																												
Y2 99+60	19 LT																																												
Y2 99+81	9 LT																																												
Y2 99+87	21 RT																																												
Y3 11+95	27 LT																																												
Y2 104+63	26 RT																																												
Y2 107+97	1 RT																																												
Y2 141+19	11 LT																																												
Y2 132+36	9 RT																																												
Y2 132+37	59 RT																																												
Y2 132+70	49 LT																																												
Y2 142+72	17 LT																																												
Y2 146+10	69 LT																																												
Y2 145+96	20 LT																																												
							SHEET TOTALS	52	280										256												364	308						16	6.8						

LINE & STATION	FROM	TO	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	CONCRETE TRANSITIONAL SECTION C.B. STD. 852.05		D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18, 840.27, OR 840.45	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20		G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33		T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36		TEMP STEEL PLATE COVER SEE SHEET 2D-1		M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	TB PRECAST DRAINAGE STRUCTURE STD. 840.46		CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO C.B. SEE SHT 2D-2	CONVERT EXISTING D.I. TO C.B. SEE SHT 2D-2	ADJUST D.I.	ADJUST M.H.	ADJUST C.B.			15" C.S. ELBOW, 0.064" THICK	18" C.S. ELBOW, 0.064" THICK	15" ELBOW	18" ELBOW	BERM DRAINAGE OUTLET STD. 850.10 (SY)		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
	4808	4815																																												
Y2 146+00	4809							1				1																																		
	4809	4810																																		2									
Y2 149+90	4811													1									1																							
	4811	4812																																		2									
Y2 139+60	4813									1							1																													
	4813	4814																																												
Y2 148+78	4815							1		1																																				
	4815	4816																																												
Y2 147+70	4816							1		1																																				
	4816	4817																																												
Y2 146+62	4817							1		1																																				
	4817	4809																																												
Y2 151+22	4818							1				1																																		
	4818	4811																																												
Y2 154+00	4901								1			1																																		
	4901	4908																																												
Y2 158+70	4903					1	1																																							
	4903	4904																																												
Y2 162+00	4905		1							1							1																													CONFIRM EX 15" LOCATION, SEE NOTE ON PLANS.
	4905	4906																																												EX INV UNKNOWN. SEE NOTE ON PLANS.
Y2 163+60	4906		1							1							1																													
	4906	4907																																												
Y2 165+20	4907		1							1							1																													EX INV UNKNOWN. SEE NOTE ON PLANS.
Y2 154+00	4908							1		1																																				
	4908	4902																																												
Y2 153+00	4909								1	1																																				
	4909	4910																																												
Y2 161+25	4911								1	1																																				
	4911	4912																																												
Y2 166+35	5001		1							1							1																													
	5001	5002																																												
Y2 132+70																																											0.013		Plug 8" HDPE.
Y3A 10+64																																												49	
Y2 158+67																																												29	
Y2 163+61																																												317	
Y2 99+58																																												30	Remove 18"
Y2 99+60																																												31	Remove 18" CMP (flowable filled from A-0009CE)
Y2 99+81																																												10	Remove 66" CMP
Y2 99+87																																												52	Remove 66" CMP
Y3 11+95																																												21	
Y2 104+63																																												49	
Y2 107+97																																												20	
Y2 141+19																																									108				
Y2 132+36																																												110	
Y2 132+37																																												69	
Y2 132+70																																												29	
Y2 142+72																																									5				
Y2 146+10																																												20	
Y2 145+96																																									5				
SHEET TOTALS			4			1	1	6	3	11		3		1			5							1													4					118		0.013	836	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

TGSZJR-LAPTOP

COMPUTED BY:	Zachary Richard, PE	DATE:	10/12/2022
CHECKED BY:	David Petty, PE	DATE:	2/20/2026

PROJECT NO.	SHEET NO.
A-0009CD	3D-4

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC) 15	18	24	30	36	42	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C. S. PIPE 15 .064	18 .064	24 .064	30 .079	36 .079	42 .109	48 .109	R. C. PIPE CLASS III 18	24	30	36	42	48	R. C. PIPE CLASS IV 15	18	24	30	36	42	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) 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 D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05		D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "B" STD. 840.18, 840.27, OR 840.45	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20		G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33		T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36		TEMP STEEL PLATE COVER SEE SHEET 2D-1		M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	TB PRECAST DRAINAGE STRUCTURE STD. 840.46		CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO C.B. SEE SHT 2D-2	CONVERT EXISTING D.I. TO C.B. SEE SHT 2D-2	ADJUST D.I.	ADJUST M.H.	ADJUST C.B.			15" C.S. ELBOW, 0.064" THICK	18" C.S. ELBOW, 0.064" THICK	15" ELBOW	18" ELBOW	BERM DRAINAGE OUTLET STD. 850.10 (SY)		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
Y2 149+62	38 LT																																																																																					6				
Y2 153+91	24 LT																																																																																					3				
Y2 148+29	13 RT																																																																																									20	
Y2 100+02	14 RT																																																																																				19				Flowable Fill 36" CMP
Y2 100+07	50 RT																																																																																								8	Remove 36" CMP
Y2 103+93	9 LT																																																																																										22	Remove 15"
Y2 104+28	2 RT																																																																																									66	Remove 15"
Y2 109+12	10 RT																																																																																									20	Remove 15"
Y2 111+86	25 LT																																																																																										16	Remove 18"
Y2 111+31	9 LT																																																																																											18	Remove 15"
Y2 116+45	11 LT																																																																																										87	Remove 15"
SHEET TOTALS																																																																																									28			257	
PROJECT TOTALS								732	452										396		40						80				1428	704		76				58	6.8		36	2	17	22		4			2	2	8	3	12		5	2	1			8			3			1						4	1		1					6		1	11		146	0.4465	0.013	1093	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

TGSZJR-LAPTOP

COMPUTED BY:	Zachary Richard, PE	**DATE:**	10/12/2022
CHECKED BY:	David Petty, PE	**DATE:**	10/12/2022

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
A-0009CD	3D-5

**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 54 INCHES & OVER)

LINE & STATION	OFFSET	STRUCTURE NUMBER		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	MINIMUM REQUIRED SLOPE	Drainage Pipe (RCP, CSP, CAAP, HDPE, or PVC)											C. A. A. PIPE						R. C. PIPE CLASS III						60" WELDED STEEL PIPE 0.5" THICK, GRADE B IN SOIL	60" WELDED STEEL PIPE 0.5" THICK, GRADE B NOT IN SOIL	ENDWALLS STD. 838.04 OR STD. 838.14 (UNLESS NOTED OTHERWISE)	REINFORCED ENDWALLS	DRAINAGE STRUCTURE	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)			C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03			CONCRETE TRANSITIONAL SECTION		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	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.	FLOWABLE FILL	CONCRETE COLLARS CL. "B" STD. 840.72	CONCRETE AND BRICK PIPE PLUG STD. 840.71	PIPE REMOVAL	REMARKS
SIZE THICKNESS OR GAUGE		FROM	TO	FT.	FT.	FT.	%	54	60	66	72	78	84	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	DO NOT USE PVC	54 .105	60 .135	66 .164	72	78	84	54	60	66	72	78	84			CY	CY	MASONRY CY	0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.		GRATE TYPE E	F	G	D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05																																CY	CY	CY	LIN. FT.	
Y2 141+15	106 RT	4801																																5.900																																															
		4801	4802		1952.7	1950.2														40																																																													
Y2 141+26	66 RT	4802		1957.0																															4.400																											1																	JB with Slab Lid
		4802	4803		1950.2	1941.2																									73	73																																																TRENCHLESS INSTALLATION, L=146'
Y2 141+42	83 LT	4803		1948.0																															4.400																											1																	JB with Slab Lid
		4803	4804		1941.2	1937.6														60																																																													
SHEET TOTALS																				100											73	73		5.900	8.800																											2																	
PROJECT TOTALS																				100											73	73		5.900	8.800																											2																	

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

COMPUTED BY:	Zachary Richard, PE	DATE:	5/16/2022
CHECKED BY:	David Petty, PE	DATE:	5/16/2022

(08-05-21)

TIP/PROJECT NO.	SHEET NO.
A-0009CD	3D- 6

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

Note: Not intended for use in determining bid quantities. Only a stormwater control measure device summary list for easy reference and location.

SUMMARY OF STORMWATER CONTROL MEASURES

CONST SHEET NO.	SCM TYPE	LINE	STATION	Location LT/RT/CL	Latitude	Longitude
47	Swale	Y2	132+00	RT	35.37139	-83.67977
47	Swale	Y2	130+29	LT	35.37163	-83.68043

SUMMARY OF STORMWATER CONTROL MEASURES

CONST SHEET NO.	SCM TYPE	LINE	STATION	Location LT/RT/CL	Latitude	Longitude

SUMMARY OF STORMWATER CONTROL MEASURES

CONST SHEET NO.	SCM TYPE	LINE	STATION	Location LT/RT/CL	Latitude	Longitude

COMPUTED BY: D. Matthew Brewer DATE: 1/5/2026
CHECKED BY: Robert E. Kral DATE: 1/5/2026

(9-17-24)

PROJECT NO.	SHEET NO.
A-0009CD	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
-Y2-	123+50	128+50	LT to RT	SD	1000
CONTINGENCY				SD	200
				TOTAL LF:	1200

*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
-Y2-	90+00	95+00	ASU (1)	12		690	1580		
-Y2-	118+00	126+50	ASU (1)	12		1180	2750		
-Y2-	127+50	129+50	ASU (1)	12		270	580		
-Y2-	137+50	141+50	ASU (1)	12		420	950		
CONTINGENCY			ASU (1)	12	150	300	450	150	0
CONTINGENCY			ASU (1)	12	150	300	450		
				TOTAL CY/TONS/SY:	300	1290**	2430**	150	0

*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)
*AST = Aggregate Stabilization

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

SUMMARY OF PRE-SPLITTING OF ROCK

LINE	Beginning Rock Cut Slope (H:V)	Approx. Station	Ending Rock Cut Slope (H:V)	Approx. Station	Location LT/RT	Pre-splitting of Rock SY
-Y2-	0.5:1	134+00	0.5:1	137+50	RT	1750
-Y2-	0.5:1	153+50	0.5:1	158+25	RT	1850
-Y2-	0.5:1	156+50	0.5:1	160+00	LT	4000
					TOTAL SY:	7600

SUMMARY OF HORIZONTAL DRAINS

LINE	Approximate Station	Location LT/RT	Elevation Above or Below Grade (+/-) FT	Inclination Angle DEGREES	PVC Pipe Schedule 40/80 or NO PIPE	Horizontal Drain FT	Horizontal Drain W/O Pipe FT
CONTINGENCY						210	
					TOTAL FT:	210	0

SUMMARY OF REINFORCED SOIL SLOPES AND SLOPE EROSION CONTROL

LINE	Beginning Slope/ RSS (H:V)	Approx. Station	Ending Slope/ RSS (H:V)	Approx. Station	Location LT/RT	Reinforced Soil Slope (RSS) SY	Geocells SY	Coir Fiber Mat SY	Matting for Erosion Control SY
-Y2-	1.5:1	100+75	1.5:1	102+75	LT			2930	
-Y2-	1.5:1	104+25	1.5:1	106+75	LT			2350	
-Y2-	1.5:1	133+75	1.5:1	137+75	RT			12500	
-Y2-	1.5:1	145+25	1.5:1	147+25	RT			1140	
-Y2-	1.5:1	148+25	1.5:1	158+25	RT			25850	
-Y2-	1.5:1	156+25	1.5:1	162+25	LT			11000	
					TOTAL SY:	0	0	55770*	0

*Total square yards of "Coir Fiber Mat" is only the estimated quantity for slopes steeper than 2:1 (H:V) and may only represent a portion of the coir fiber mat quantity shown in the Item Sheets of the Proposal.

**Total square yards of "Matting for Erosion Control" is only the estimated quantity for RSS and may only represent a portion of the matting quantity shown in the Item Sheets of the Proposal.

PROJ. REFERENCE NO.	SHEET NO.
A-0009CD	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET

REVISIONS

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
143	44	PATRICIA LYNN EDWARDS, JOHN CRAIG EDWARDS, AND MAXINE M. EDWARDS
146	45	JOSEPH LOCKE EDWARDS & WIFE NAOIMI M. EDWARDS
147	45	GREGORY DALE BURCHFIELD & WIFE VICKI BURCHFIELD
148	45	WILLIAM CARR & WIFE TAMMY C. CARR
149	45	ROANNE GORDON (BY WILL)
150	45 & 46	AARON E. FARLEY & WIFE APRIL G. FARLEY
151	46	DANA KILBY
152	46 & 47	DANYELL D. WILSON
152A	46 & 47	JAMES R. HYDE & JUNE N. HYDE, TRUSTEES
153	47	SUSAN B. IVEY
154	47 & 48	KICKSTAND LODGE, LTD
155	47 & 48	CIRCLE G. MANAGEMENT
156	48 & 49	ESTATE OF TJ EDWARDS
157	48 & 49	MICHAEL HOLDER & WIFE DELORES HOLDER
158	49	LEONDUS MCCRACKEN & WIFE DONNA MCCRACKEN
159	49 & 50	RONALD J. BAKER, JR
160	49	LEONDUS MCCRACKEN & WIFE DONNA MCCRACKEN

PARCEL No.	SHEET No.	PROPERTY OWNER NAME

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	44
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 35018 JIMMY L. TERRY — DocuSigned by: Jimmy Terry FD39F38882E94D0... 2/27/2026	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038697 DAVID B. PETTY — Signed by: David B. Petty 400EFF4863B6465... 2/27/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

8/17/99

REVISIONS

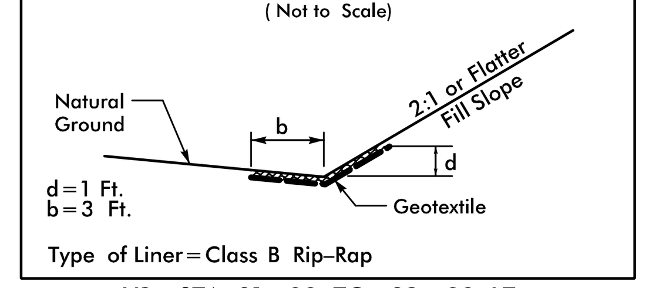
-Y2- CURVE DATA

PI Sta 93+85.36
Δ = 3° 06' 33.3" (RT)
D = 0° 29' 53.6"
L = 624.07'
T = 312.11'
R = 11,500.00'
SE = 0.02
DS = 70 MPH

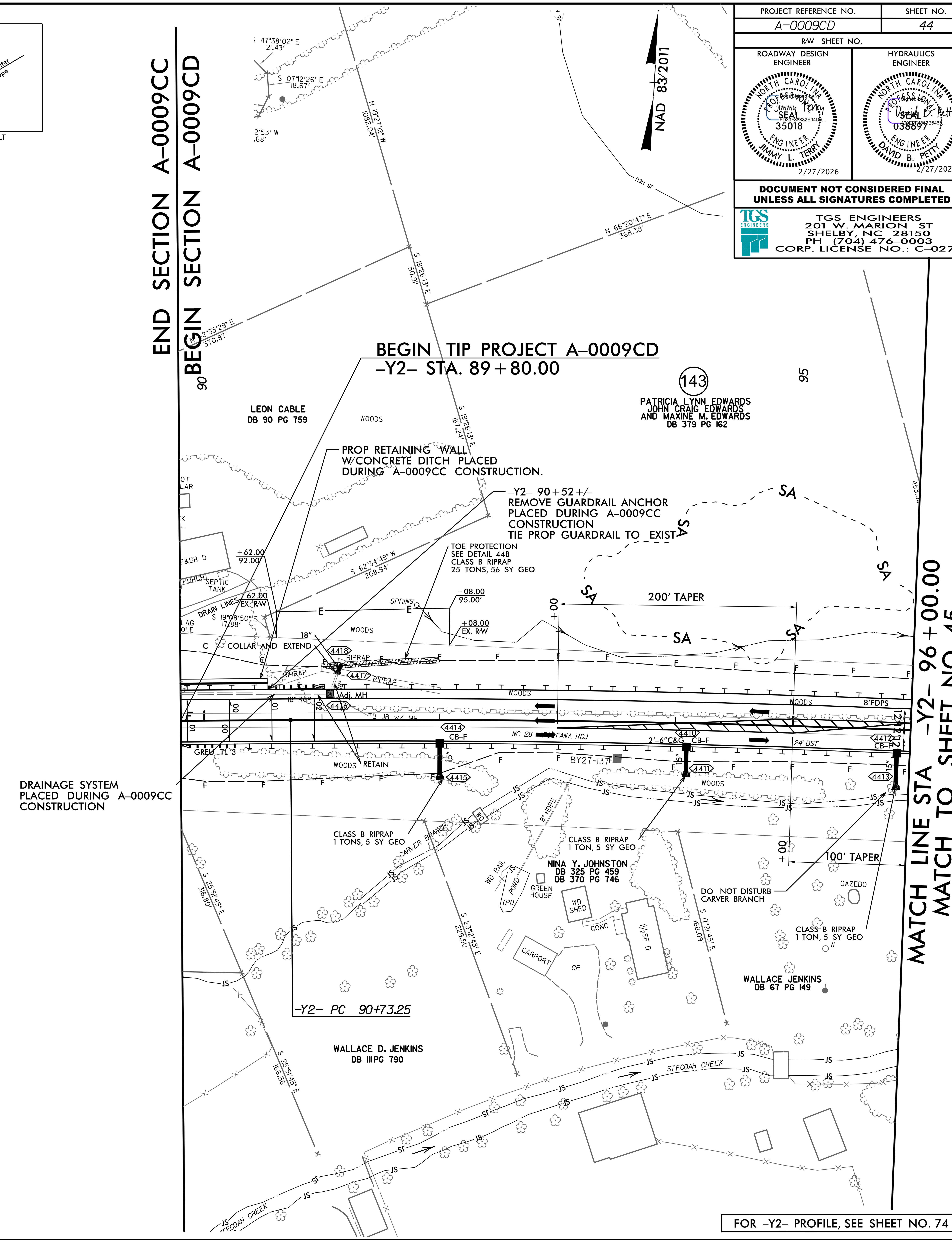
- - - SA - - - ELIGIBLE AND UNASSESSED SITES

NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED. END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE-IN PER CROSS-SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.

DETAIL 44B
TOE PROTECTION
(Not to Scale)



-Y2- STA. 91+00 TO 92+00 LT


END SECTION A-0009CC
BEGIN SECTION A-0009CD
NAD 83/2011
BEGIN TIP PROJECT A-0009CD
-Y2- STA. 89+80.00
LEON CABLE
DB 90 PG 759
143
PATRICIA LYNN EDWARDS
JOHN CRAIG EDWARDS
AND MAXINE M. EDWARDS
DB 379 PG 162
PROP RETAINING WALL
W/CONCRETE DITCH PLACED
DURING A-0009CC CONSTRUCTION.
-Y2- 90+52 +/-
REMOVE GUARDRAIL ANCHOR
PLACED DURING A-0009CC
CONSTRUCTION
TIE PROP GUARDRAIL TO EXIST
TOE PROTECTION
SEE DETAIL 44B
CLASS B RIPRAP
25 TONS, 56 SY GEO
200' TAPER
COLLAR AND EXTEND
RETAIN
DRAINAGE SYSTEM
PLACED DURING A-0009CC
CONSTRUCTION
CLASS B RIPRAP
1 TONS, 5 SY GEO
CLASS B RIPRAP
1 TON, 5 SY GEO
NINA Y. JOHNSTON
DB 325 PG 459
DB 370 PG 746
100' TAPER
DO NOT DISTURB
CARVER BRANCH
CLASS B RIPRAP
1 TON, 5 SY GEO
WALLACE JENKINS
DB 67 PG 149
-Y2- PC 90+73.25
WALLACE D. JENKINS
DB 111 PG 790
STECOAH CREEK
MATCH LINE STA -Y2- 96+00.00
MATCH TO SHEET NO. 45

FOR -Y2- PROFILE, SEE SHEET NO. 74

1/14/2026
X:\NCDOT\A-0009\Roadway\Proj\A-0009CD Plan Sheets\A-0009CD_Rdy_psh_44.dgn

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	45
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 035018 JIMMY L. TERRY 2/27/2026

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038697 DAVID B. PETTY 2/27/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

8/17/99

REVISIONS

-Y2- CURVE DATA

PI Sta 93+85.36
Δ = 3° 06' 33.3" (RT)
D = 0° 29' 53.6"
L = 624.07'
T = 312.11'
R = 11,500.00'
SE = 0.02
DS = 70 MPH

-Y3- CURVE DATA

PI Sta 10+46.10
Δ = 5° 04' 03.3" (LT)
D = 5° 30' 00.0"
L = 92.14'
T = 46.10'
R = 1,041.74'
SE = EXIST.

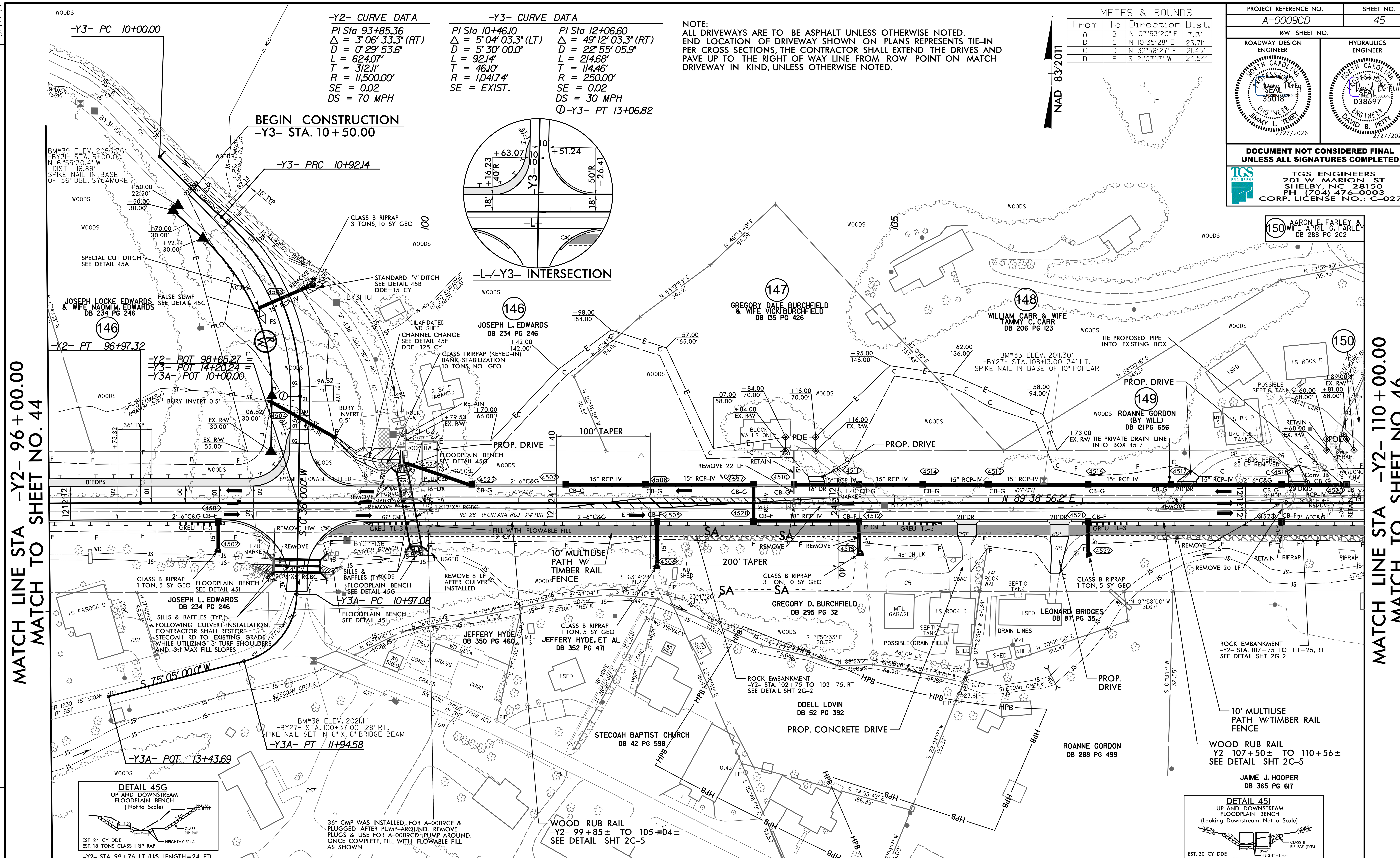
PI Sta 12+06.60
Δ = 49° 12' 03.3" (RT)
D = 22° 55' 05.9"
L = 214.68'
T = 114.46'
R = 250.00'
SE = 0.02
DS = 30 MPH
-Y3- PT 13+06.82

NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED.
END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE-IN PER CROSS-SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.

METES & BOUNDS

From	To	Direction	Dist.
A	B	N 07°53'20" E	17.13'
B	C	N 10°35'28" E	23.71'
C	D	N 32°56'27" E	21.45'
D	E	S 21°07'17" W	24.54'

NAD 83/2011



BEGIN CONSTRUCTION
-Y3- STA. 10+50.00
-Y3- PC 10+00.00
-Y3- PRC 10+92.14
-L-/-Y3- INTERSECTION
MATCH LINE STA -Y2- 96+00.00
MATCH TO SHEET NO. 44
MATCH LINE STA -Y2- 110+00.00
MATCH TO SHEET NO. 46
-Y2- PT 96+97.32
-Y2- POT 98+65.27 = -Y3- POT 14+20.24 = -Y3A- POT 10+00.00
-Y3A- PC 10+97.08
-Y3A- PT 11+94.58
-Y3A- POT 13+43.69
JOSEPH LOCKE EDWARDS & WIFE NAOMI M. EDWARDS DB 234 PG 246
JOSEPH L. EDWARDS DB 234 PG 246
GREGORY DALE BURCHFIELD & WIFE VICKI BURCHFIELD DB 135 PG 426
WILLIAM CARR & WIFE TAMMY C. CARR DB 206 PG 123
ROANNE GORDON (BY WILL) DB 121 PG 656
AARON E. FARLEY & WIFE APRIL G. FARLEY DB 288 PG 202
GREGORY D. BURCHFIELD DB 295 PG 32
LEONARD BRIDGES DB 87 PG 35
JEFFERY HYDE DB 350 PG 460
JEFFERY HYDE, ET AL DB 352 PG 471
ODELL LOVIN DB 52 PG 392
STECOAH BAPTIST CHURCH DB 42 PG 598
ROANNE GORDON DB 288 PG 499
JAIME J. HOOPER DB 365 PG 617
BM#39 ELEV. 2056.76' -BY31- STA. 5+00.00 N 61°55'30.4" W DIST 16.89' SPIKE NAIL IN BASE OF 36" DBL. SYCAMORE
BM#33 ELEV. 2011.30' -BY27- STA. 108+13.00 34' LT. SPIKE NAIL IN BASE OF 10" POPLAR
BM#38 ELEV. 2021.11' -BY27- STA. 100+37.00 128' RT. SPIKE NAIL SET IN 6" X 6" BRIDGE BEAM
N 89°38'56.2" E
PROP. DRIVE
PROP. CONCRETE DRIVE
100' TAPER
200' TAPER
10' MULTIUSE PATH W/ TIMBER RAIL FENCE
WOOD RUB RAIL -Y2- 99+85± TO 105+04± SEE DETAIL SHT 2C-5
WOOD RUB RAIL -Y2- 107+50± TO 110+56± SEE DETAIL SHT 2C-5
ROCK EMBANKMENT -Y2- STA. 102+75 TO 103+75, RT SEE DETAIL SHT 2G-2
ROCK EMBANKMENT -Y2- STA. 107+75 TO 111+25, RT SEE DETAIL SHT. 2G-2
SILLS & BAFFLES (TYP.) FOLLOWING CULVERT INSTALLATION, CONTRACTOR SHALL RESTORE STECOAH RD. TO EXISTING GRADE WHILE UTILIZING 3' TURF SHOULDERS AND 3:1 MAX FILL SLOPES
36" CMP WAS INSTALLED FOR A-0009CE & PLUGGED AFTER PUMP-AROUND. REMOVE PLUGS & USE FOR A-0009CD PUMP-AROUND. ONCE COMPLETE, FILL WITH FLOWABLE FILL AS SHOWN.
FILL WITH FLOWABLE FILL 19 CY
TIE PROPOSED PIPE INTO EXISTING BOX
TIE PRIVATE DRAIN LINE INTO BOX 4517

DETAIL 45G
UP AND DOWNSTREAM FLOODPLAIN BENCH (Not to Scale)
EST. 24 CY DDE
EST. 18 TONS CLASS I RIP RAP
-Y2- STA. 99+76 LT (U/S LENGTH=24 FT)
-Y2- STA. 99+90 RT (D/S LENGTH=12 FT)

DETAIL 45A
SPECIAL CUT DITCH (Not to Scale)
Min. D=2 Ft.
-Y3- STA 11+50 TO 12+00 RT
SEE PFL FOR DITCH GRADE (7.6%)

DETAIL 45B
STANDARD 'V' DITCH (Not to Scale)
Min. D=1.5 Ft.
-Y3- STA 12+00(29' LT) TO 12+00(54' LT)
DAYLIGHT AT 1.0% SLOPE

DETAIL 45C
FALSE SUMP (Not to Scale)
S=Ditch Slope
-Y3- STA. 12+10 RT

DETAIL 45F
CHANNEL CHANGE (Not to Scale)
Min. D=2 Ft.
B=3 Ft.
Min. b=3 Ft.
Type of Liner=Grass
-Y2- STA 99+04 TO 99+74 LT
SEE PFL FOR CHANNEL CHANGE GRADE (0.5%)

DETAIL 45I
UP AND DOWNSTREAM FLOODPLAIN BENCH (Looking Downstream, Not to Scale)
EST. 20 CY DDE
EST. 42 TONS CLASS II RIP RAP
-Y2- STA. 98+12 TO 98+39 RT (U/S L=27 FT)
-Y2- STA. 98+89 TO 99+12 RT (D/S L=23 FT)

PAVEMENT REMOVAL

SA — ELIGIBLE AND UNASSESSED SITES

FOR -Y2- PROFILE, SEE SHEET NO. 74

FOR -Y3- PROFILE, SEE SHEET NO. 77

Docusign Envelope ID: 048D5AD3-1A89-4C07-BD36-E3D7C8CB3E79

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	46

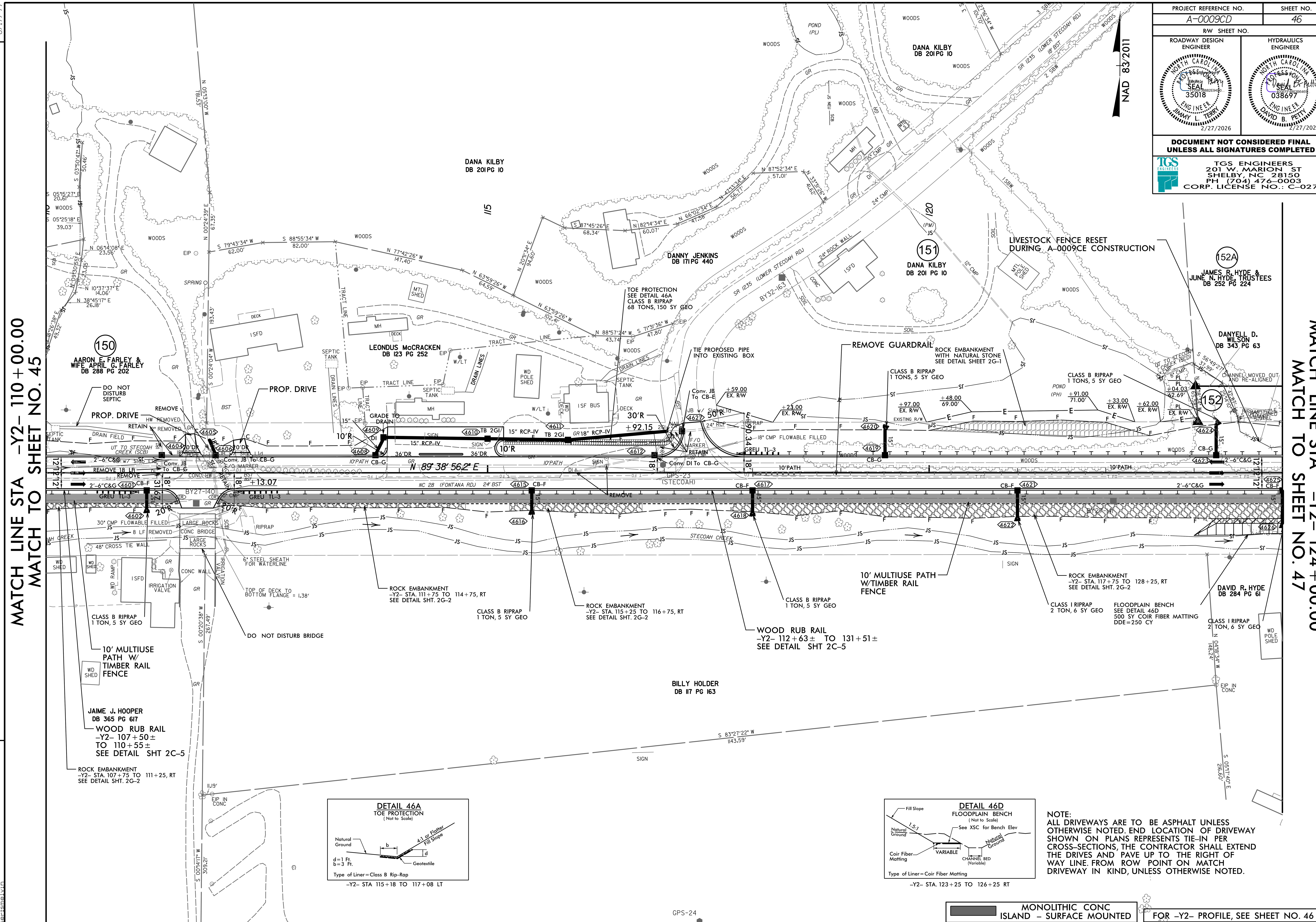
R/W SHEET NO.

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JIMMY L. TERRY 2/27/2026

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 038697 ENGINEER DAVID B. PETTY 2/27/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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



NAD 83/2011
MATCH LINE STA -Y2- 110+00.00
MATCH TO SHEET NO. 45
MATCH LINE STA -Y2- 124+00.00
MATCH TO SHEET NO. 47
DANA KILBY DB 201 PG 10
DANNY JENKINS DB 171 PG 440
AARON E. FARLEY & WIFE APRIL G. FARLEY DB 288 PG 202
LEONDUS McCRACKEN DB 123 PG 252
JAMES R. HYDE & JUNE N. HYDE, TRUSTEES DB 252 PG 224
DANYELL D. WILSON DB 343 PG 63
DAVID R. HYDE DB 284 PG 61
BILLY HOLDER DB 117 PG 163
JAIME J. HOOPER DB 365 PG 617
DO NOT DISTURB SEPTIC
PROP. DRIVE
TOE PROTECTION SEE DETAIL 46A CLASS B RIPRAP 68 TONS, 150 SY GEO
TIE PROPOSED PIPE INTO EXISTING BOX
REMOVE GUARDRAIL
ROCK EMBANKMENT WITH NATURAL STONE SEE DETAIL SHEET 2G-1
LIVESTOCK FENCE RESET DURING A-0009CE CONSTRUCTION
CLASS B RIPRAP 1 TONS, 5 SY GEO
N 89° 38' 56.2" E
NC 28 (FONTANA RD) 24' BST
SR 1235 (LOWER STECOAH RD)
STECOAH CREEK
ROCK EMBANKMENT -Y2- STA. 111+75 TO 114+75, RT SEE DETAIL SHT. 2G-2
ROCK EMBANKMENT -Y2- STA. 115+25 TO 116+75, RT SEE DETAIL SHT. 2G-2
ROCK EMBANKMENT -Y2- STA. 117+75 TO 128+25, RT SEE DETAIL SHT. 2G-2
ROCK EMBANKMENT -Y2- STA. 107+75 TO 111+25, RT SEE DETAIL SHT. 2G-2
CLASS B RIPRAP 1 TON, 5 SY GEO
DO NOT DISTURB BRIDGE
10' MULTIUSE PATH W/ TIMBER RAIL FENCE
WOOD RUB RAIL -Y2- 112+63± TO 131+51± SEE DETAIL SHT 2C-5
WOOD RUB RAIL -Y2- 107+50± TO 110+55± SEE DETAIL SHT 2C-5
CLASS I RIPRAP 2 TON, 6 SY GEO
FLOODPLAIN BENCH SEE DETAIL 46D 500 SY COIR FIBER MATTING DDE=250 CY
DETAIL 46A TOE PROTECTION (Not to Scale)
Type of Liner=Class B Rip-Rap
-Y2- STA 115+18 TO 117+08 LT
DETAIL 46D FLOODPLAIN BENCH (Not to Scale)
Type of Liner=Coir Fiber Matting
-Y2- STA. 123+25 TO 126+25 RT
GPS-24

NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED. END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE-IN PER CROSS-SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.

MONOLITHIC CONC ISLAND - SURFACE MOUNTED

FOR -Y2- PROFILE, SEE SHEET NO. 46

2/24/2026
X:\NCDOT\A-0009\Roadway\Proj\A-0009CD_Rdy_psh_46.dgn

8/17/99

REVISIONS

-Y2- CURVE DATA
PI Sta 132+08.73
Δ = 30° 56' 09.8" (LT)
D = 4° 48' 53.2"
L = 642.52'
T = 329.30'
R = 1,190.00'
SE = 0.04
DS = 55 MPH

DETAIL 47A
TOE PROTECTION
(Not to Scale)
Natural Ground
b
2:1 or Flatter Fill Slope
d
Geotextile
d=1 Ft.
b=3 Ft.
Type of Liner=Class B Rip-Rap
-Y2- STA 128+50 TO 129+00 LT

DETAIL 47B
LATERAL GRASSED SWALE
(Not to Scale)
Natural Ground
3:1
D
3:1
b
1'-Ft.
B
Fill Slope
Min. D=1.6 Ft.
B=5 Ft.
b=3 Ft.
-Y2- STA 130+29 TO 132+75 LT
SEE PFL FOR DITCH GRADE (0.4%)

DETAIL 47E
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
4:1
D
4:1 or Flatter
Front Ditch Slope
Min. D=1.0 Ft.
-Y2- STA 129+00 TO 132+06 RT
SEE PFL FOR DITCH GRADE (1.34%)

NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED.
END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE-IN PER CROSS-SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	47
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 35018 JIMMY L. TERRY
2/27/2026

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038697 DAVID B. PETTY
2/27/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

MATCH LINE STA -Y2- 124+00.00 MATCH TO SHEET NO. 46

MATCH LINE STA -Y2- 138+00.00 MATCH TO SHEET NO. 48

NAD 83/2011

-Y2- PC 128+79.43

-Y2- PT 135+21.96

642.53' TAPER

LIVESTOCK FENCE RESET DURING A-0009CE CONSTRUCTION

DO NOT DISTURB WELL (APPROX. LOCATION)

PROP. DRIVE

CLASS B RIPRAP 1 TONS, 5 SY GEO

TOE PROTECTION SEE DETAIL 47A CLASS B RIPRAP 13 TONS, 28 SY GEO

RCBC EXTENSION PLACED DURING PROJECT A-0009CE CONSTRUCTION

LATERAL GRASSED SWALE SEE DETAIL 47B DDE=320 CY

DO NOT DISTURB SIGN
BM#34 ELEV. 1956.92'
BY27- STA. 131+59.00 38' LT.
SPIKE NAIL IN BASE OF 18" WALNUT

DO NOT DISTURB WELL & WATER LINE (APPROX. LOCATION)

152A
JAMES R. HYDE & JUNE N. HYDE, TRUSTEES
DB 252 PG 224

152
DANYELL D. WILSON
DB 343 PG 63

153
SUSAN B. IVEY
DB 252 PG 744

154
KICKSTAND LODGE, LTD.
DB 243 PG 455

155
CIRCLE G MANAGEMENT, LLC
DB 366 PG 138

DAVID R. HYDE
DB 284 PG 61

JAMES R. HYDE, TRUSTEE
DB 252 PG 224

WILLIAM M. HYDE
DB 347 PG 253

GRAHAM WELL DRILLING, LLC
DB 347 PG 257

MICHAEL CABLE, ET AL
DB 373 PG 578

REMOVE GUARDRAIL

10' MULTIUSE PATH W/TIMBER RAIL FENCE

WOOD RUB RAIL
-Y2- 112+63± TO 131+51±
SEE DETAIL SHT 2C-5

ROCK EMBANKMENT
-Y2- STA. 117+75 TO 128+25, RT
SEE DETAIL SHT. 2G-2

FLOODPLAIN BENCH SEE DETAIL 46D

CLASS I RIPRAP 2 TON, 6 SY GEO

SPECIAL CUT DITCH SEE DETAIL 47E

CLASS I RIPRAP 11 TONS, 22 SY GEO

REMOVE 29 LF

CLASS B RIPRAP 2 TONS, 7 SY GEO

CLASS B RIPRAP 2 TONS, 7 SY GEO

CLASS B RIPRAP 3 TONS, 10 SY GEO

SHOULDER BERM GUTTER -Y2- STA. 133+32 TO 133+60, RT

DOUBLE FACED CONCRETE BARRIER TYPE T-2 -Y2- STA. 133+60 to 137+50, RT

ABANDON 8" HDPE

REMOVE 8" HDPE

REMOVE 18" CMP

REMOVE DI

18" RCP-IV

15" RCP-IV

24" RCP-IV

30" RCP-IV

2'-6"C&G

2'-6"C&G NC 28 (FONTANA RD)

10'PATH

8'FDPS

TB 2GI

TYPE B-77

AT-V

CB-G

CB-E

CB-F

CB-F S

GREU TL-3

GRADE TO DRAIN

RETAIN

CULVERT EXTENDED

380"X9" CONC BOX CULVERT

UT TO STECOAH CREEK (SCD)

STECOAH CREEK

POND (PG)

WOODS

I SFD

I SF RENTAL UNIT

I SF BUS

I S MTL BUS

I S MTL BUS (STORAGE UNITS)

SEPTIC TANK

DRAIN LINES

CONC WD PLATFORM

WD SHEDS

SR 1230 (HYDE TOWN RD)

PROP. DRIVE

FOR -Y2- PROFILE, SEE SHEET NO. 75

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	48
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 35018 JIMMY L. TERRY 2/27/2026

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038697 DAVID B. PETTY 2/27/2026

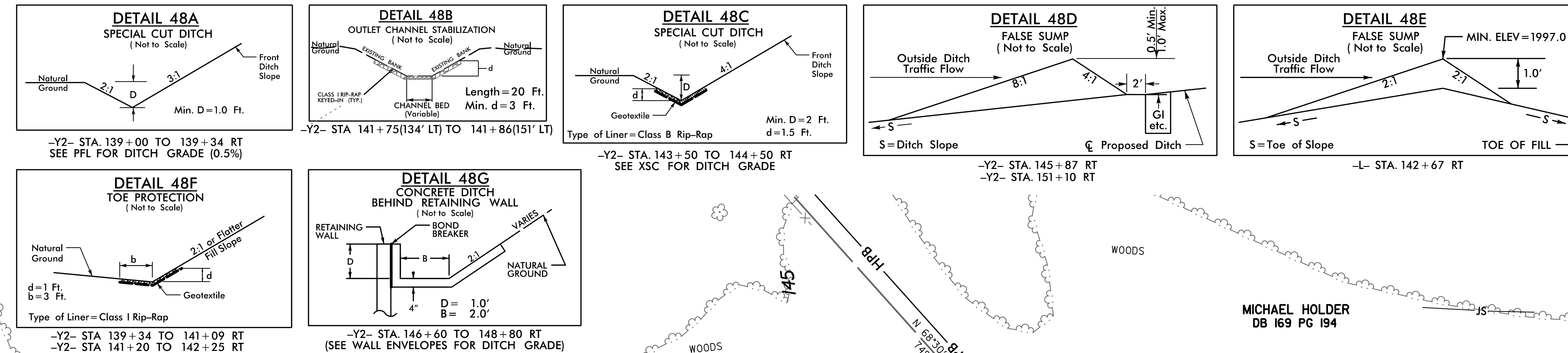
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

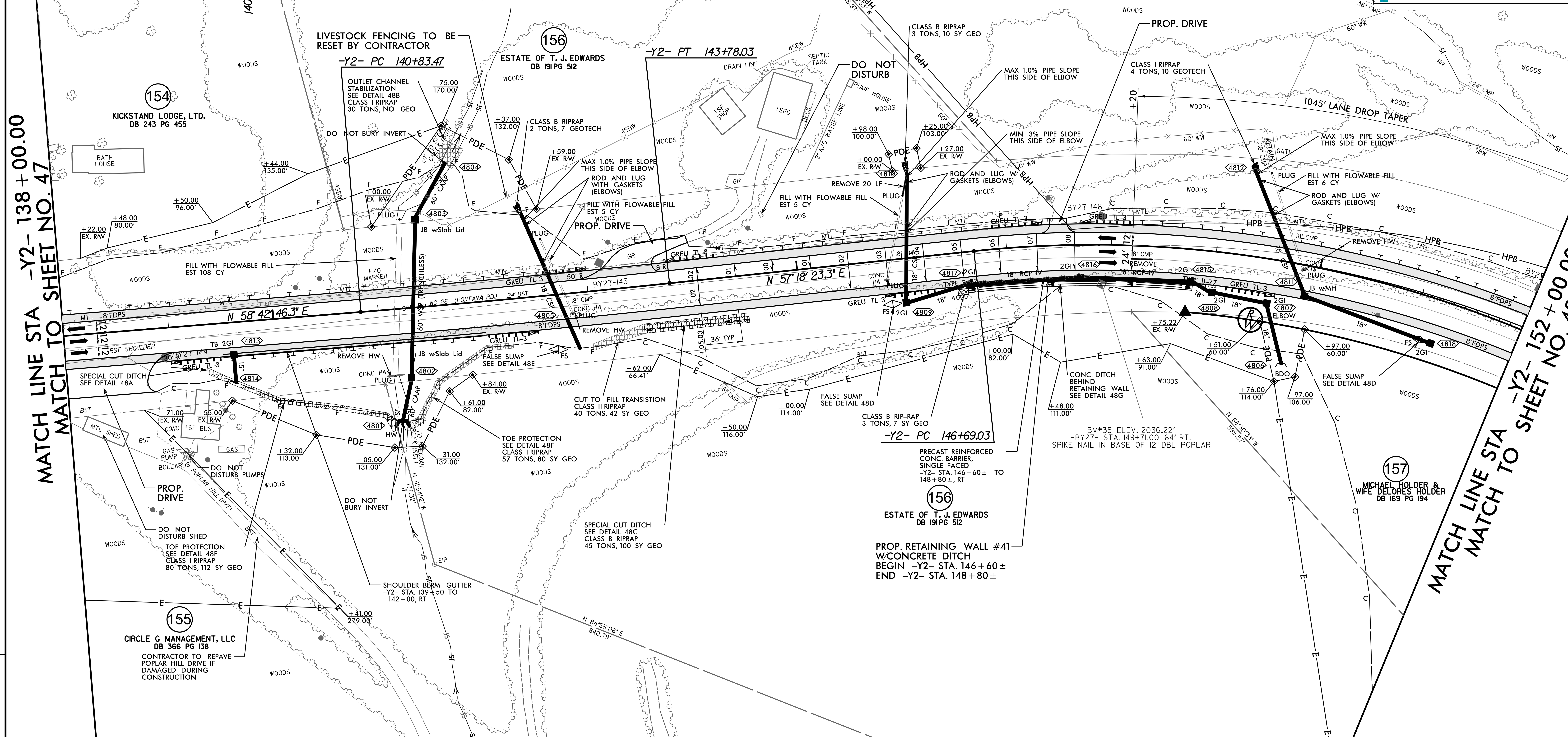
TGS ENGINEERS
201 W. MARION ST
SHELBY, NC 28150
PH (704) 476-0003
CORP. LICENSE NO.: C-0275

REVISIONS

-Y2- CURVE DATA

PI Sta 142+30.76	PI Sta 152+17.13
Δ = 1° 24' 23.1" (LT)	Δ = 54° 14' 50.1" (RT)
D = 0° 28' 38.9"	D = 5° 21' 17.1"
L = 294.56'	L = 1,013.07'
T = 147.29'	T = 548.10'
R = 12,000.00'	R = 1,070.00'
SE = NC	SE = 0.08
DS = 60 MPH	DS = 55 MPH


DETAIL 48A
SPECIAL CUT DITCH (Not to Scale)
-Y2- STA. 139+00 TO 139+34 RT
SEE PFL FOR DITCH GRADE (0.5%)
DETAIL 48B
OUTLET CHANNEL STABILIZATION (Not to Scale)
Length = 20 Ft. Min. d = 3 Ft.
-Y2- STA. 141+75(134' LT) TO 141+86(151' LT)
DETAIL 48C
SPECIAL CUT DITCH (Not to Scale)
Type of Liner = Class B Rip-Rap
Min. D = 2 Ft. d = 1.5 Ft.
-Y2- STA. 143+50 TO 144+50 RT
SEE XSC FOR DITCH GRADE
DETAIL 48D
FALSE SUMP (Not to Scale)
-Y2- STA. 145+87 RT
-Y2- STA. 151+10 RT
DETAIL 48E
FALSE SUMP (Not to Scale)
MIN. ELEV = 1997.0
-L- STA. 142+67 RT
DETAIL 48F
TOE PROTECTION (Not to Scale)
d = 1 Ft. b = 3 Ft.
Type of Liner = Class I Rip-Rap
-Y2- STA 139+34 TO 141+09 RT
-Y2- STA 141+20 TO 142+25 RT
DETAIL 48G
CONCRETE DITCH BEHIND RETAINING WALL (Not to Scale)
D = 1.0' B = 2.0'
-Y2- STA. 146+60 TO 148+80 RT
(SEE WALL ENVELOPES FOR DITCH GRADE)


NAD 83/2011
MATCH LINE STA -Y2- 138+00.00 MATCH TO SHEET NO. 47
MATCH LINE STA -Y2- 152+00.00 MATCH TO SHEET NO. 49
KICKSTAND LODGE, LTD. DB 243 PG 455
ESTATE OF T. J. EDWARDS DB 191 PG 512
MICHAEL HOLDER DB 169 PG 194
MICHAEL HOLDER & WIFE DELORES HOLDER DB 169 PG 194
CIRCLE G MANAGEMENT, LLC DB 366 PG 138
CONTRACTOR TO REPAVE POPLAR HILL DRIVE IF DAMAGED DURING CONSTRUCTION
LIVESTOCK FENCING TO BE RESET BY CONTRACTOR
-Y2- PC 140+83.47
-Y2- PT 143+78.03
-Y2- PC 146+69.03
N 58° 42' 46.3" E
N 57° 18' 23.3" E
1045' LANE DROP TAPER
PROP. RETAINING WALL #41 W/CONCRETE DITCH BEGIN -Y2- STA. 146+60± END -Y2- STA. 148+80±
PRECAST REINFORCED CONC. BARRIER, SINGLE FACED -Y2- STA. 146+60± TO 148+80±, RT
BM#35 ELEV. 2036.22' -BY27- STA. 149+71.00 64' RT. SPIKE NAIL IN BASE OF 12" DBL POPLAR
SPECIAL CUT DITCH SEE DETAIL 48C CLASS B RIPRAP 45 TONS, 100 SY GEO
CUT TO FILL TRANSITION CLASS II RIPRAP 40 TONS, 42 SY GEO
TOE PROTECTION SEE DETAIL 48F CLASS I RIPRAP 57 TONS, 80 SY GEO
TOE PROTECTION SEE DETAIL 48F CLASS I RIPRAP 80 TONS, 112 SY GEO
FILL WITH FLOWABLE FILL EST 108 CY
SHOULDER BERM GUTTER -Y2- STA. 139+50 TO 142+00, RT

NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED. END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE-IN PER CROSS-SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.

NOTE:
PRIOR TO COMMENCING WORK ON ANY TRENCHLESS INSTALLATION, PROVIDE A DESIGN FOR THE TRENCHLESS INSTALLATION CERTIFIED BY AN ENGINEER LICENSED BY THE STATE OF NORTH CAROLINA, AS REQUIRED BY SUBARTICLE 1550-3(B) OF THE STANDARD SPECIFICATIONS.

FOR -Y2- PROFILE, SEE SHEET NO. 76

8/17/99

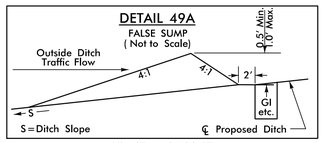
REVISIONS

-Y2- CURVE DATA

PI Sta 152+17.13	PI Sta 167+46.16
△ = 54°14' 50.1" (RT)	△ = 72° 53' 32.5" (LT)
D = 5° 21' 17.1"	D = 4° 58' 56.1"
L = 1,013.07'	L = 1,463.04'
T = 548.10'	T = 849.28'
R = 1,070.00'	R = 1,150.00'
SE = 0.08	SE = 0.06
DS = 55 MPH	DS = 55 MPH

PROP MONOLITHIC CONC ISLAND – SURFACE MOUNTED

DETAIL 49A
FALSE SUMP
(Not to Scale)



-Y2- STA. 153+86 RT

NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED.
END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE-IN PER CROSS-SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	49
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 35018 JIMMY L. TERRY ENGINEER
JIMMY L. TERRY 12/27/2026

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038697 DAVID B. PETTY ENGINEER
DAVID B. PETTY 12/27/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

MATCH LINE STA -Y2- 152+00.00
MATCH TO SHEET NO. 48

MATCH LINE STA -Y2- 166+00.00
MATCH TO SHEET NO. 50

BM#41 ELEV. 2063.76'
-BY27- STA. 157+23.85
N 22°12'25.4" E DIST. 94.64'
SPIKE NAIL IN BASE OF 22" POPLAR

ROGER HOLDER
DB 365 PG 480

MICHAEL HOLDER &
WIFE DELORES HOLDER
DB 169 PG 194

RONALD J. BAKER, JR.
DB 342 PG 811

LEONDUS McCRACKEN &
WIFE DONNA McCRACKEN
DB 261PG 244

ESTATE OF
T. J. EDWARDS
DB 191PG 512

LEONDUS McCRACKEN
DB 237 PG 414

WOLF CREEK DEN, LLC
DB 358 PG 230

-Y2- PC 158+96.87

-Y2- PT 156+82.10

1045' LANE DROP TAPER

CLASS B RIPRAP
2 TONS, 7 GEOTECH

FILL WITH FLOWABLE FILL
EST 3 CY

8'FDPS

GREU TL-3

18" RCP-IV

15" RCP-IV

TYPE B-77

2GI-D

2GI

TB 2GI

CLASS B RIPRAP
2 TONS, 7 SY GEO

FALSE SUMP
SEE DETAIL 49A

SHOULDER BERM GUTTER
-Y2- STA. 152+95 TO
153+25, RT

DOUBLE FACED CONCRETE
BARRIER TYPE T-2
-Y2- STA. 153+25 TO 158+25, RT

DOUBLE FACED CONCRETE
BARRIER TYPE T-2
-Y2- STA. 156+50 TO 161+00, LT

TRANSITION BARRIER TO
FACE OF CURB

2'-6"C&G

GRADE TO
DRAIN

CLASS B RIPRAP
3 TONS, 10 SY GEO

TIE TO EX 18" HDPE

REMOVE
29 LF

DO NOT
DISTURB

18" HDPE
DIRECTION ONLY

PROP. DRIVE

FOR CONCRETE CURB & DRIVE
LAYOUT SEE DETAIL SHT 2B-1

FOR CONCRETE ISLAND
LAYOUT SEE DETAIL SHT 2B-1

SHOULDER BERM GUTTER
-Y2- STA. 161+00 TO
161+30, LT

CLASS B RIPRAP
2 TONS, 7 SY GEO

100' TAPER

100' BUFFER

660' LANE DROP TAPER

510' TAPER TO EXISTING

195' ISLAND TAPER TO EXIST.

748.13' TAPER TO EXISTING

PROP. DRIVE

PROP.
GRAVEL DRIVE

REMOVE BLIND JB

15" CMP REMOVE

TIE PROPOSED SYSTEM INTO EXISTING 15" CMP (UNKNOWN INVERT). CONTRACTOR SHALL CONFIRM HORIZONTAL & VERTICAL LOCATION OF EXISTING 15" CMP PRIOR TO ORDERING STR# 4905.

TIE PROPOSED SYSTEM INTO EXISTING 24" CMP (UNKNOWN INVERT). CONTRACTOR SHALL CONFIRM ELEVATIONS PRIOR TO ORDERING STR #4907.

FOR -Y2- PROFILE, SEE SHEET NO. 76

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	50
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JIMMY L. TERRY 2/27/2026	NORTH CAROLINA PROFESSIONAL SEAL 038697 ENGINEER DAVID B. PETTY 2/27/2026

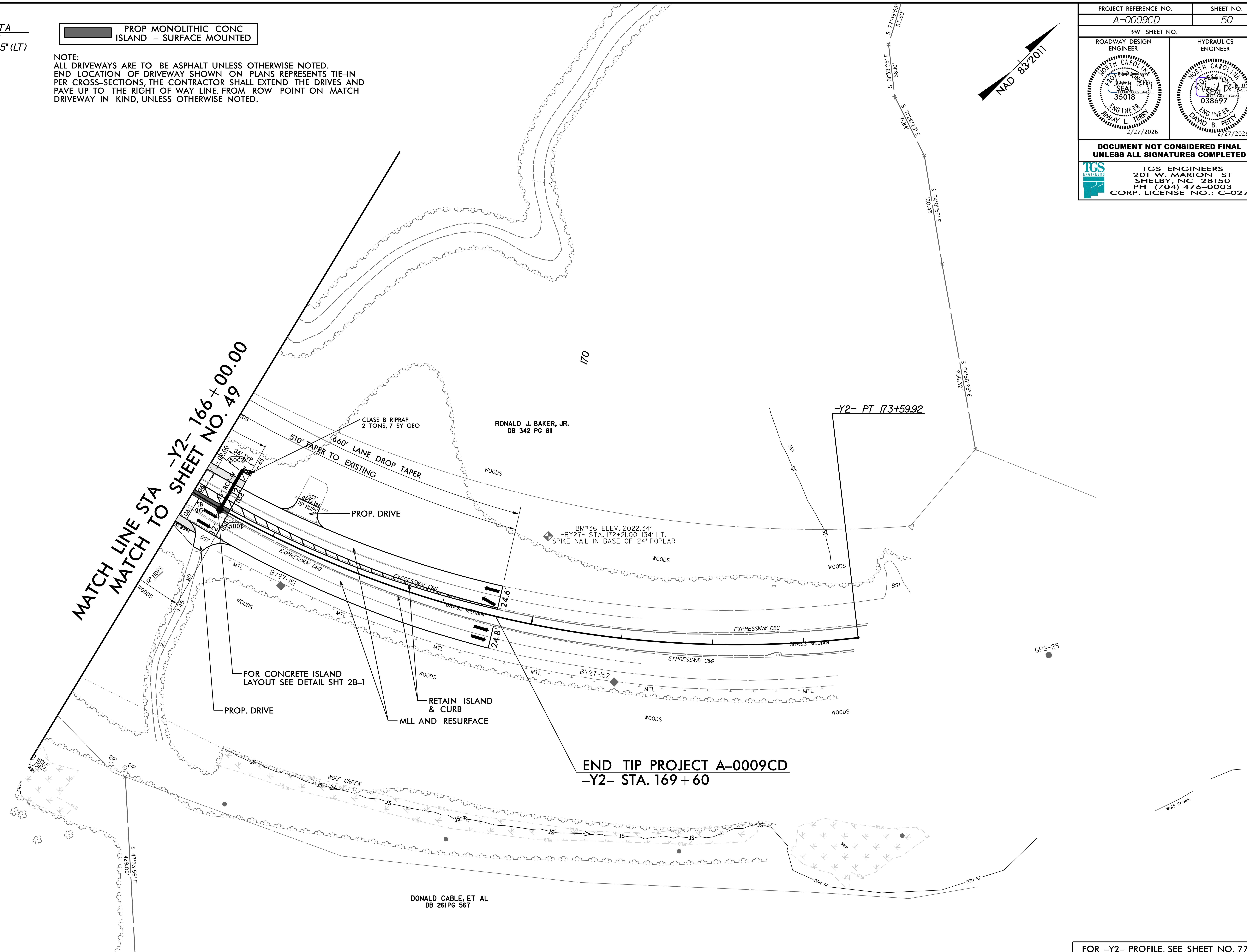
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

-L- CURVE DATA
PI Sta 167+46.16
Δ = 72° 53' 32.5" (LT)
D = 4° 58' 56.1"
L = 1,463.04'
T = 849.28'
R = 1,150.00'
SE = 0.06
DS = 55 MPH

PROP MONOLITHIC CONC ISLAND – SURFACE MOUNTED

NOTE:
ALL DRIVEWAYS ARE TO BE ASPHALT UNLESS OTHERWISE NOTED.
END LOCATION OF DRIVEWAY SHOWN ON PLANS REPRESENTS TIE-IN PER CROSS-SECTIONS, THE CONTRACTOR SHALL EXTEND THE DRIVES AND PAVE UP TO THE RIGHT OF WAY LINE. FROM ROW POINT ON MATCH DRIVEWAY IN KIND, UNLESS OTHERWISE NOTED.



FOR -Y2- PROFILE, SEE SHEET NO. 77

REVISIONS

8/17/99

1/7/2026
X:\NCDOT\A-0009\Roadway\Proj\A-0009CD_Rdy_psh_50.dgn

5/28/99

–Y2–

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	74

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JIMMY L. TERRY
2/27/2026

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 038697 ENGINEER DAVID B. PETTY
2/27/2026

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

BEGIN GRADE SECTION CD
–Y2– STA 89+80.00
EL.2052.65'

FOR –Y2– PLAN, SEE SHEET NO. 44

2,100 2,090 2,080 2,070 2,060 2,050 2,040 2,030 2,020

82 83 84 85 86 87 88 89 90 91 92 93 94 95 96

CULVERT HYDRAULIC DATA
1@ 12'x5' RCBC –Y2– Sta.99+82

DRAINAGE AREA	= 0.33	SqMI
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 300	CFS
DESIGN HW ELEVATION	= 2021.3	FT
100 YEAR DISCHARGE	= 370	CFS
100 YEAR HW ELEVATION	= 2021.4	FT
OVERTOPPING FREQUENCY	= 300	YRS
OVERTOPPING DISCHARGE	= 50+\-	CFS
OVERTOPPING ELEVATION	= 2021.3	FT

PI = 96+55.00
EL = 2,028.50'
VC = 350'
K = 207
DS = 75 MPH

(–)3.5772%

(–)1.8876%

(–) 0.50%

BEGIN CHANNEL CHANGE
–Y2– STA.99+04 LT
EL=2017.00

END CHANNEL CHANGE
–Y2– STA.99+74 LT
EL=2016.60

PROPOSED 1@12'x5' RCBC

FOR –Y2– PLAN, SEE SHEET NO. 45

2,060 2,050 2,040 2,030 2,020 2,010 2,000 1,990 1,980

96 97 98 99 100 101 102 103 104 105 106 107 108 109 110

5/28/99

–Y2–

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	75

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JIMMY L. TERRY
2/27/2026

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 038697 ENGINEER DAVID B. PETTY
2/27/2026

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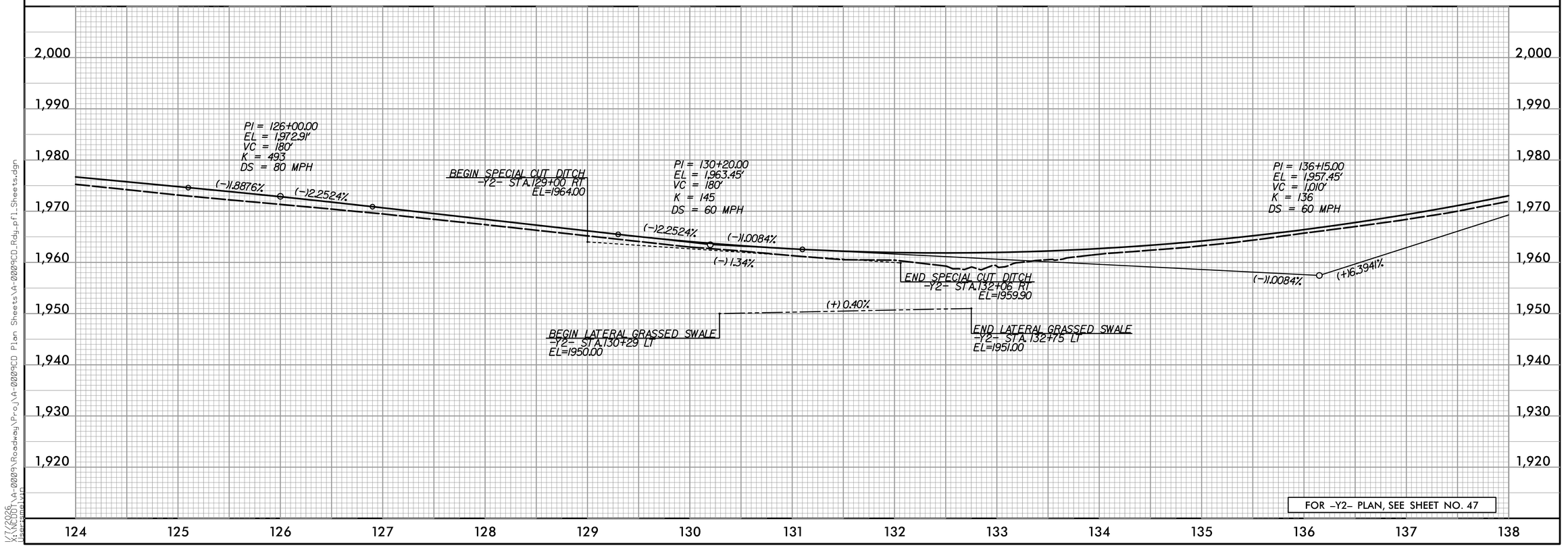

5/28/99

–Y2–

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	76

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 35018 JIMMY L. TERRY
2/27/2026

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038697 DAVID B. PETTY
2/27/2026

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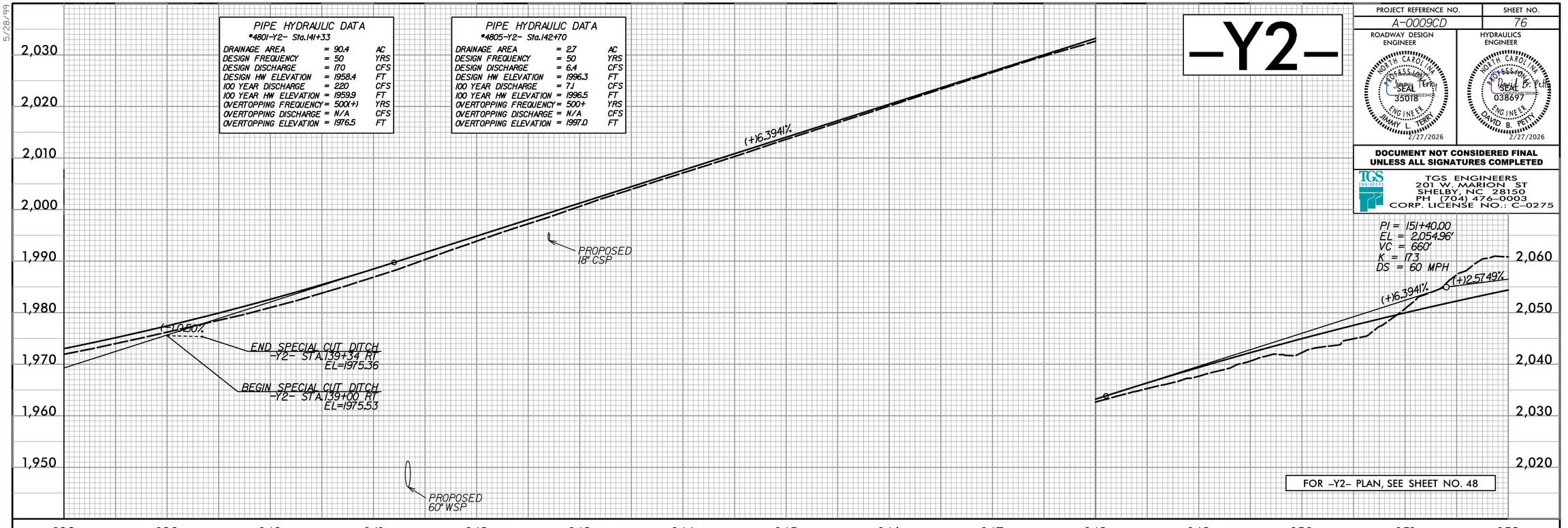
PIPE HYDRAULIC DATA
•4801–Y2– Sta.141+33

DRAINAGE AREA	= 90.4	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 170	CFS
DESIGN HW ELEVATION	= 1958.4	FT
100 YEAR DISCHARGE	= 220	CFS
100 YEAR HW ELEVATION	= 1959.9	FT
OVERTOPPING FREQUENCY	= 500(+)	YRS
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING ELEVATION	= 1976.5	FT

PIPE HYDRAULIC DATA
•4805–Y2– Sta.142+70

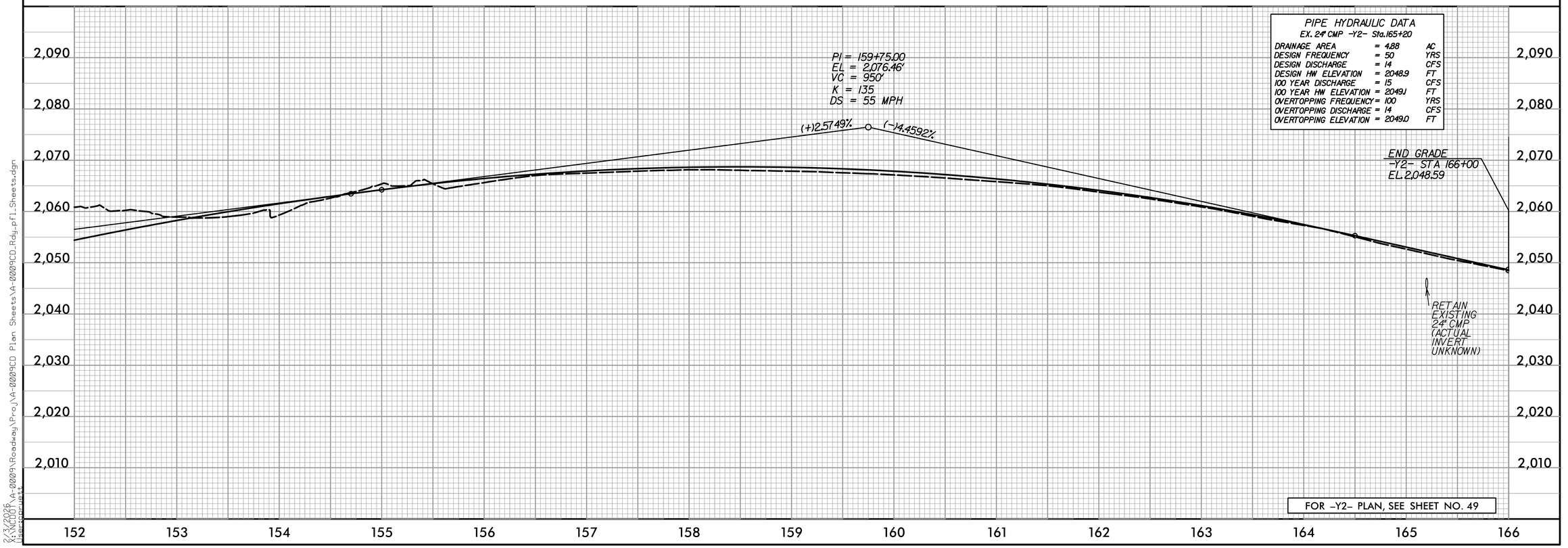
DRAINAGE AREA	= 2.7	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 6.4	CFS
DESIGN HW ELEVATION	= 1996.3	FT
100 YEAR DISCHARGE	= 7.1	CFS
100 YEAR HW ELEVATION	= 1996.5	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING ELEVATION	= 1997.0	FT



FOR –Y2– PLAN, SEE SHEET NO. 48

PIPE HYDRAULIC DATA
EX. 24" CMP –Y2– Sta.165+20

DRAINAGE AREA	= 4.88	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 14	CFS
DESIGN HW ELEVATION	= 2048.9	FT
100 YEAR DISCHARGE	= 15	CFS
100 YEAR HW ELEVATION	= 2049.1	FT
OVERTOPPING FREQUENCY	= 100	YRS
OVERTOPPING DISCHARGE	= 14	CFS
OVERTOPPING ELEVATION	= 2049.0	FT



FOR –Y2– PLAN, SEE SHEET NO. 49

2/27/2026
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User:jrust

5/28/99

-Y2-

MILL & RESURFACE

169+60

FOR -Y2- PLAN, SEE SHEET NO. 50

-Y3-

PIPE HYDRAULIC DATA
*4503-Y3- Sta.12+00

DRAINAGE AREA	= 1.0	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 2.2	CFS
DESIGN HW ELEVATION	= 2030.8	FT
100 YEAR DISCHARGE	= 2.8	CFS
100 YEAR HW ELEVATION	= 2030.9	FT
OVERTOPPING FREQUENCY	= 500(+)	YRS
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING ELEVATION	= 2031.5	FT

PIPE HYDRAULIC DATA
*4504-Y3- Sta.13+30

DRAINAGE AREA	= 1.1	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 2.2	CFS
DESIGN HW ELEVATION	= 2019.9	FT
100 YEAR DISCHARGE	= 2.8	CFS
100 YEAR HW ELEVATION	= 2020.5	FT
OVERTOPPING FREQUENCY	= 500(+)	YRS
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING ELEVATION	= 2026.2	FT

BEGIN GRADE
-Y3- STA 10+50.00
EL.2,041.71

PI = 11+50.00
EL = 2,036.36'
VC = 100'
K = 15.4
DS = 60 MPH

(-)5.3500%

(-)6.0000%

(-)7.60%

BEGIN SPECIAL CUT DITCH
-Y3- STA.11+50 RT
EL=2033.79

PROPOSED
18" RCP

END SPECIAL CUT DITCH
-Y3- STA.12+00 RT
EL=2030.0

PI = 13+25.00
EL = 2,025.86'
VC = 100'
K = 26
DS = 25 MPH

(-)6.0000%

(-)12.1941%

02

PROPOSED
30" RCP

END GRADE
-Y3- STA 14+02.24 =
-Y2- STA 98+65.57, 18'LT
EL.2,024.17

FOR -Y3- PLAN, SEE SHEET NO. 45

2,070
2,060
2,050
2,040
2,030
2,020
2,010
2,000

166 167 168 169 170 171 10 11 12 13 14

PROJECT REFERENCE NO.	SHEET NO.
A-0009CD	77

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JIMMY L. TERRY
2/27/2026

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 038697 ENGINEER DAVID B. PETTY
2/27/2026

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